How to Use This Manual

This manual is divided into 23 sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page.

You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Each section includes:

1. 1. A table of contents, or an exploded view index showing:
   - Parts disassembly sequence.
   - Bolt torques and thread sizes.
   - Page references to descriptions in text.
2. 2. Disassembly/assembly procedures and tools.
   3. Inspection.
   4. Testing/troubleshooting.
   5. Repair.
   6. Adjustments.

Safety Messages

Your safety and the safety of others, is very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgement.
You will find important safety information in a variety of forms including:

- Safety Labels - on the vehicle.
- Safety Messages - preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING or CAUTION.

These signal words mean:

⚠ DANGER

You WILL be KILLED or SERIOUSLY HURT if you do not follow instructions.

⚠ WARNING

You CAN be KILLED or SERIOUSLY HURT if you do not follow instructions.

⚠ CAUTION

You CAN be HURT if you do not follow instructions.

- Instructions - how to service this vehicle correctly and safely.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

General Info
Specifications
Maintenance
Engine Electrical
Engine
Cooling
Fuel and Emissions
*Transaxle
*Steering
Suspesion
*Brakes (Including ABS)
* Body
*Heating, Ventilation and Air Conitioning
* Body Electrical
*Restraints

As you read this manual, you will find information that is preceded by a NOTICE symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

First Edition 7/2000 2494 pages HONDA MOTOR CO.,LTD.

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As sections with *include SRS components; special precautions are required when servicing.

A Few Words about Safety

Service Information

IMPORTANT SAFETY PRECAUTIONS

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace a part, use genuine Honda parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

FOR YOUR CUSTOMER'S SAFETY

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

FOR YOUR SAFETY

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts - wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in this manual.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:
  - Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts and the skills required to perform the tasks safely and completely.
  - Protect your eyes by using proper safety glasses, goggles or face shields any time you hammer, drill, grind, or work around pressurised air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
  - Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
  - Protect yourself and others whenever you have the vehicle up in the air. Any time you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.
- Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:
  - Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
  - Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
  - Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.
- Gasoline vapours and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.
  - Use only a non-flammable solvent, not gasoline to clean parts.
  - Never drain or store gasoline in an open container.
  - Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.

Introduction

Supplemental Restraint System (SRS)

The Civic SRS includes a driver's airbag in the steering wheel hub and a passenger's airbag in the dashboard above the glove box and seat belt tensioners in the front seat belt retractors. Information necessary to safely service the SRS is included in this Shop Manual. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorised Honda dealer.

⚠ WARNING

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorised Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags.
- SRS electrical wiring harnesses are identified by yellow colour coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, and in the dashboard above the glove box. Do not use electrical test equipment on these circuits.

Engine Cooling

Cooling System

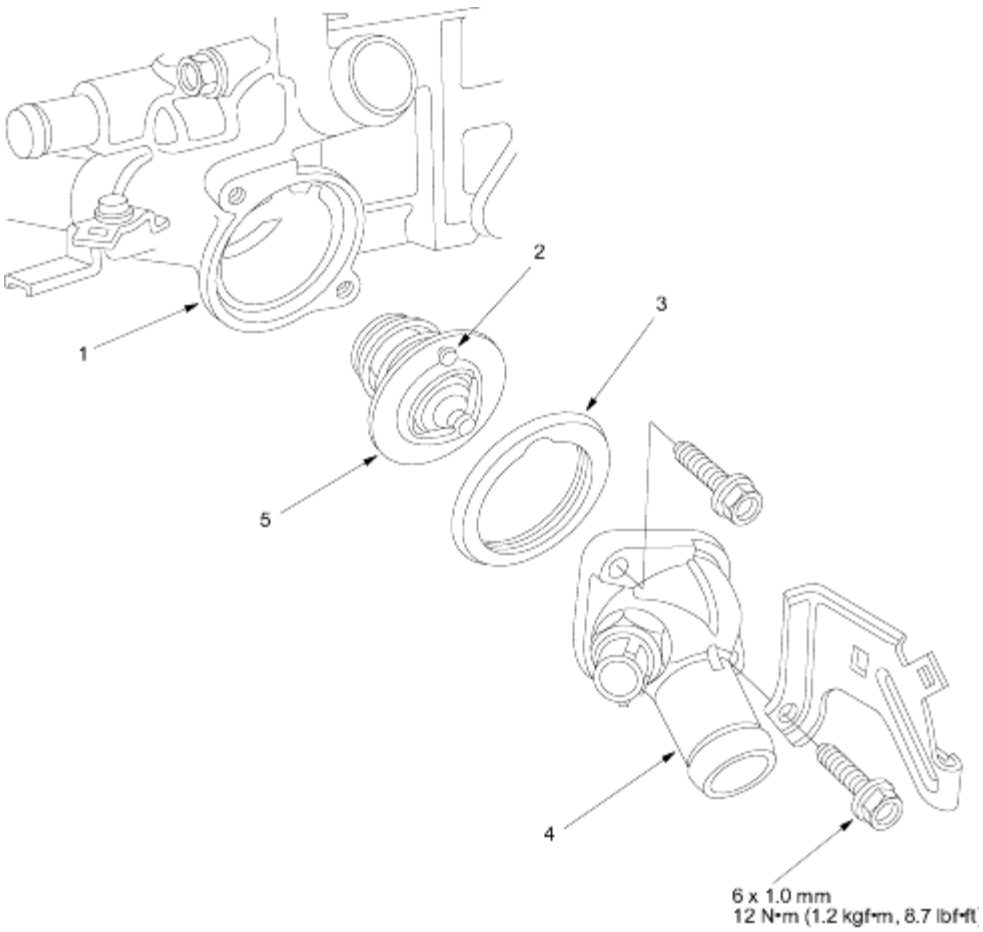
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Fan Controls

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Cooling System

Thermostat Replacement

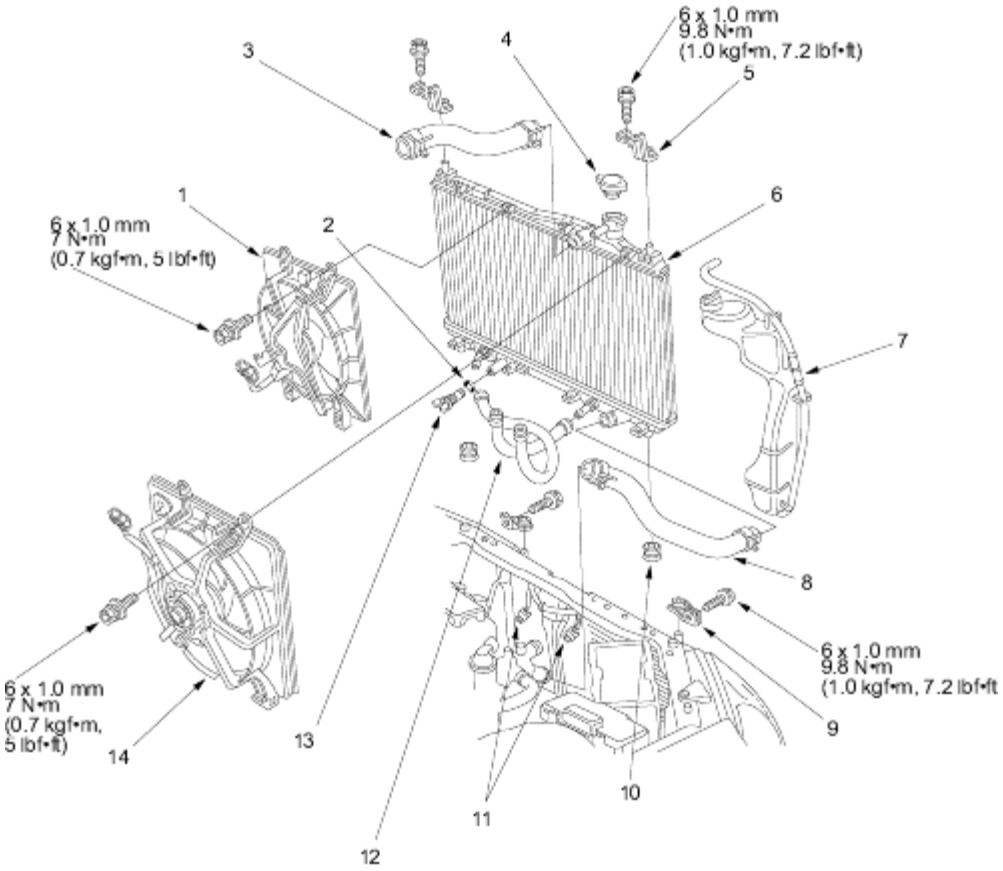


1. WATER PASSAGE
2. PIN
3. RUBBER SEAL
   Replace.
4. THERMOSTAT COVER
5. THERMOSTAT
   Install with pin up.

Cooling System

Radiator and Fan Replacement

1. 1. Drain engine coolant.
   2. Remove the front bumper (see page 20-104).
   3. Remove the hood latch (see page 20-106).
   4. Remove the upper and lower radiator hoses and ATF cooler hoses.

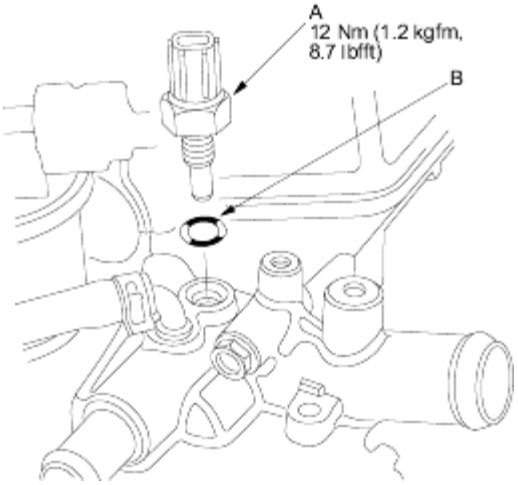


1. A/C CONDENSER FAN ASSEMBLY
2. O-RING
   Replace.
3. UPPER RADIATOR HOSE
4. RADIATOR CAP
5. UPPER BRACKET AND CUSHION
6. RADIATOR
7. COOLANT RESERVOIR
8. LOWER RADIATOR HOSE
9. CONDENSER BRACKET
10. LOWER CUSHION
11. FAN MOTOR CONNECTORS
12. ATF COOLER HOSES
13. DRAIN PLUG
14. RADIATOR FAN ASSEMBLY

   5. Disconnect the fan motor connectors and compressor clutch connector.
   6. Remove the radiator upper brackets, then pull up the radiator.
   7. Remove the fan shroud assemblies and other parts from the radiator.
   8. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
   9. Fill the radiator with engine coolant and bleed the air.

Cooling System
ECT Sensor Replacement

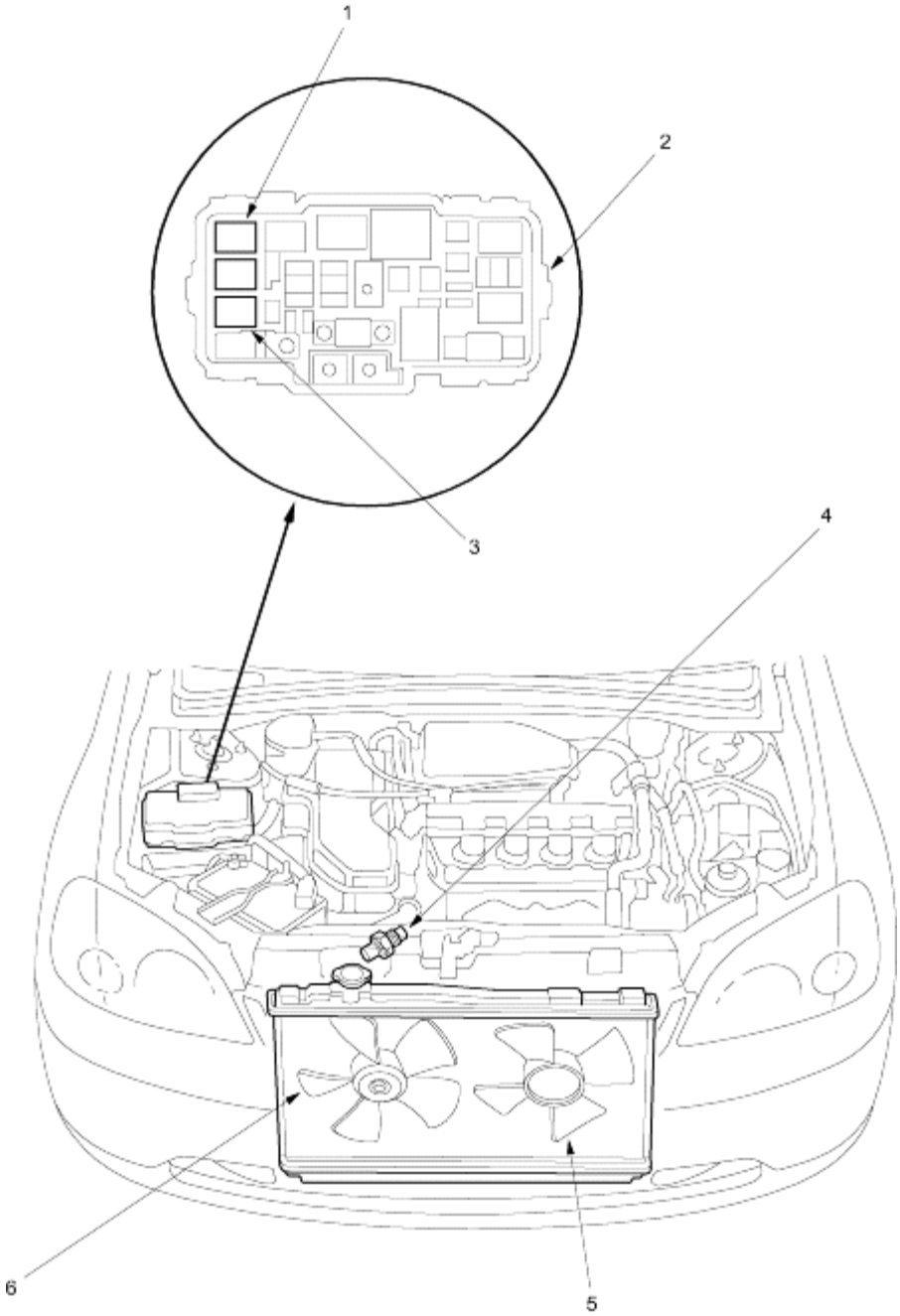
1. 1. Remove the resonator.
2. 2. Disconnect the ECT sensor connector, then remove the ECT sensor (A).



3. 3. Install the ECT sensor using a new O-ring (B).
   4. Install the resonator.

Fan Controls

Component Location Index



1. RADIATOR FAN RELAY
   Test, page 22-80
2. UNDER-HOOD FUSE/RELAY BOX
3. CONDENSER FAN RELAY
   Test, page 22-80
4. RADIATOR FAN SWITCH
   Test, page 10-9Replacement, page 10-19
5. CONDENSER FAN ASSEMBLY
   Motor Test, page 10-6
6. RADIATOR FAN ASSEMBLY
   Motor Test, page 10-6

Fan Controls

Symptom Troubleshooting Index

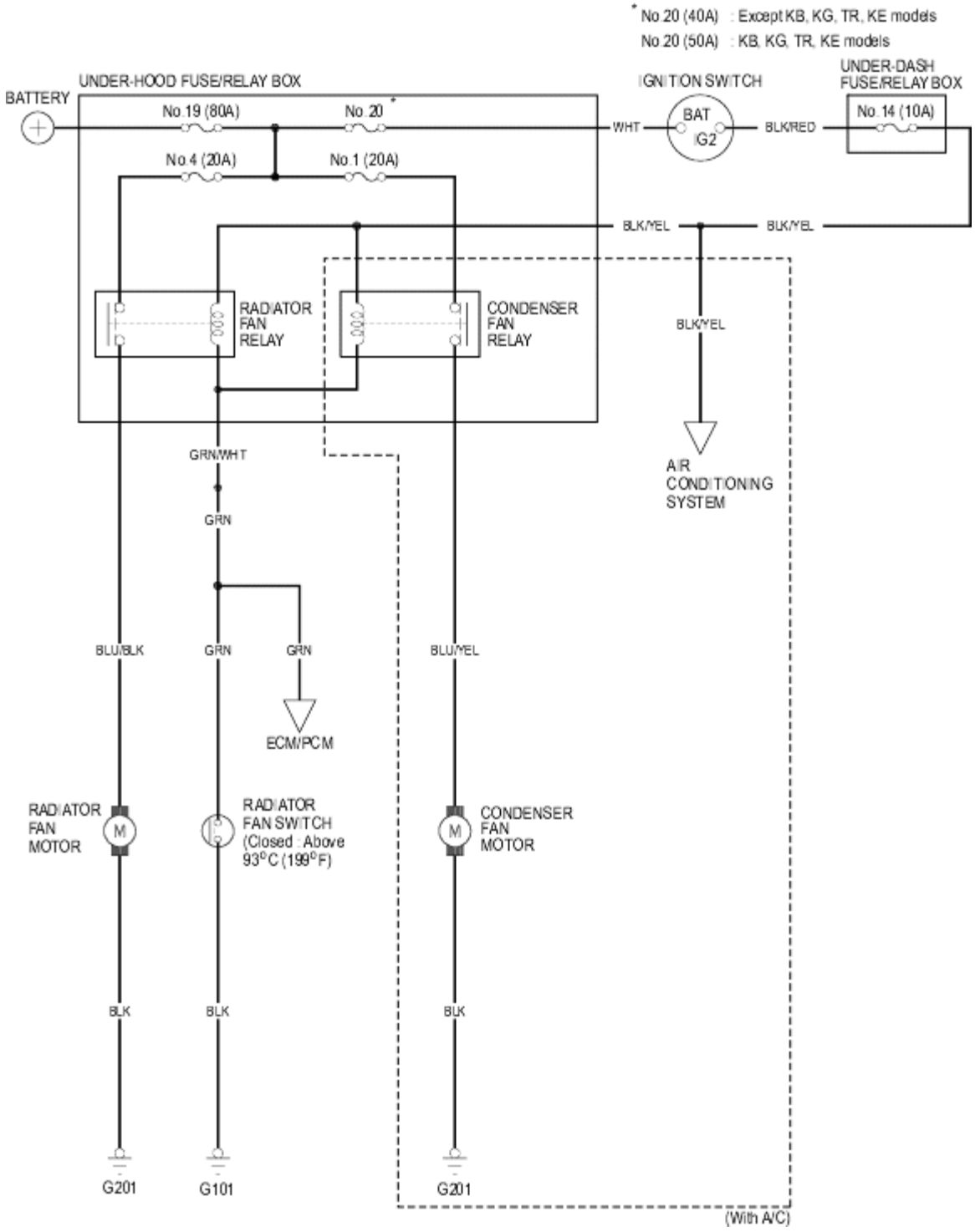
Before performing any troubleshooting procedures check:

- Fuses
- Grounds
- Cleanliness and tightness of all connectors

SYMPTOM	PROCEDURE
Radiator fan does not run at all	Radiator Fan Circuit Troubleshooting (see page 10-16).
Radiator fan does not runs for engine cooling, but it runs with A/C on	Radiator Fan Switch Circuit Troubleshooting (Open) (see page 10-18).
Radiator fan runs with ignition switch ON (II), A/C off and engine temperature below 93°C (199°F)	Radiator Fan Switch Circuit Troubleshooting (Short) (see page 10-18).

Fan Controls

Circuit Diagram



Fan Controls

Radiator Fan Circuit Troubleshooting

1. 1. Check the No. 4 (20A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse (s) OK?

   YES - Go to step 2.

   NO - Replace the fuse (s) and recheck. ■

2. 2. Remove the radiator fan relay from the under-hood fuse/relay box and test it (see page 22-80).

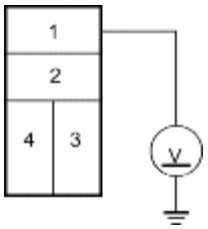
   Is the relay OK?

   YES - Go to step 3.

   NO - Replace the radiator fan relay. ■

3. 3. Measure the voltage between the No. 1 terminal of the radiator fan relay 4P socket and body ground.

   RADIATOR FAN RELAY 4P SOCKET

   Terminal side of female terminals

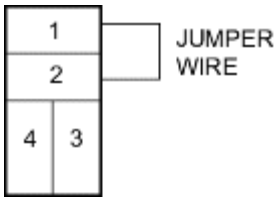
   Is there battery voltage?

   YES - Go to step 4.

   NO - Replace the under-hood fuse/relay box. ■

1. 4. Connect the No. 1 and No. 2 terminals of the radiator fan relay 4P socket with a jumper wire.

   RADIATOR FAN RELAY 4P SOCKET

   Terminal side of female terminals

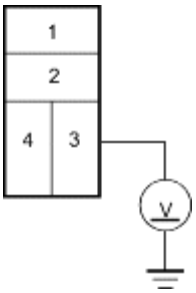
   Does the radiator fan run?

   YES - Go to step 5.

   NO - Go to step 6.

2. 5. Disconnect the jumper, and turn the ignition switch ON (II). Check for voltage between the No. 3 terminal of the radiator fan relay 4P socket and body ground.

   RADIATOR FAN RELAY 4P SOCKET

   Terminal side of female terminals

   Is there battery voltage?

   YES - Go to step 9.

   NO - Check for an open in the wire between the under-hood fuse/relay box and under-dash fuse/relay box. ■

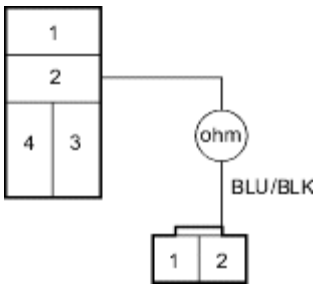
Fan Controls

Radiator Fan Circuit Troubleshooting (cont'd)

1. 6. Disconnect the radiator fan motor 2P connector.
2. 7. Check for continuity between the No. 2 terminal of the radiator fan relay 4P socket and the No. 2 terminal of the radiator fan motor 2P connector.

RADIATOR FAN RELAY 4P SOCKET

Terminal side of female terminals



Wire side of female terminals

RADIATOR FAN MOTOR 2P CONNECTOR

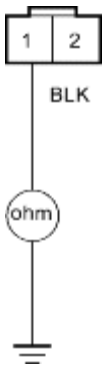
Is there continuity?

YES - Go to step 8.

NO - Repair open in the wire between the under-hood fuse/relay box and the radiator fan motor 2P connector terminal No. 2. ■

3. 8. Check for continuity between the No. 1 terminal of the radiator fan motor 2P connector and body ground.

RADIATOR FAN MOTOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the radiator fan motor. ■

NO - Check for an open in the wire between radiator fan motor 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G201. ■

1. 9. Reinstall the radiator fan relay.
2. 10. Disconnect the radiator fan switch 2P connector. jumper terminals No. 1 and No. 2 to see if fan runs.

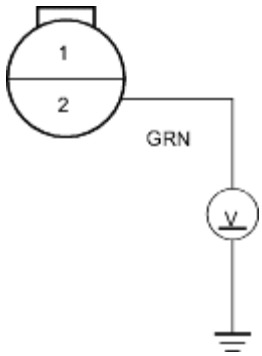
Does the radiator fan run?

YES - Replace the radiator fan switch. ■

NO - Go to step 11.

3. 11. Remove the jumper wire, and measure the voltage between the No. 2 terminal of the radiator fan switch connector and body ground.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Check for an open in the wire between radiator fan switch 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G101. ■

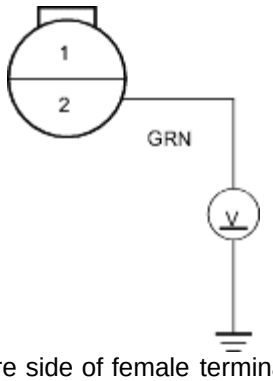
NO - Repair open in the wire between the radiator fan switch terminal No. 2 and the under-hood fuse/relay box. ■

Fan Controls

Radiator Fan Switch Circuit Troubleshooting (Open)

1. 1. Disconnect the radiator fan switch 2P connector.
2. 2. Turn the ignition switch ON (II).
   3. Measure voltage between the No. 2 terminal of the radiator fan switch 2P connector and body ground.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

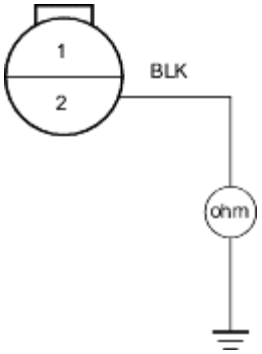
Is there battery voltage?

YES - Go to step 4.

NO - Repair open in the wire between the radiator fan switch 2P connector terminal No. 2 and under-hood fuse/relay box. ■

3. 4. Turn the ignition switch OFF and check for continuity between the No. 1 terminal of the radiator fan switch 2P connector and body ground.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the radiator fan switch. ■

NO - Check for an open in the wire between the radiator fan switch 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G101. ■

1. 1. Remove the radiator fan relay from the under-hood fuse/relay box and test it (see page 22-80).

Is the relay OK?

YES - Go to step 2.

NO - Replace the radiator fan relay. ■

2. 2. Remove the radiator fan switch and test it (see page 10-19).

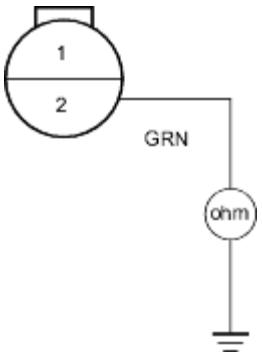
Is the radiator fan switch OK?

YES - Go to step 3.

NO - Replace the radiator fan switch. ■

3. 3. Disconnect ECM/PCM connector B (24P) and under-hood fuse relay box 14P connector.
   4. Check for continuity between the No. 2 terminal of the radiator fan switch 2P connector and body ground.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the radiator fan switch 2P connector terminal No. 2 and under-hood fuse/relay box. ■

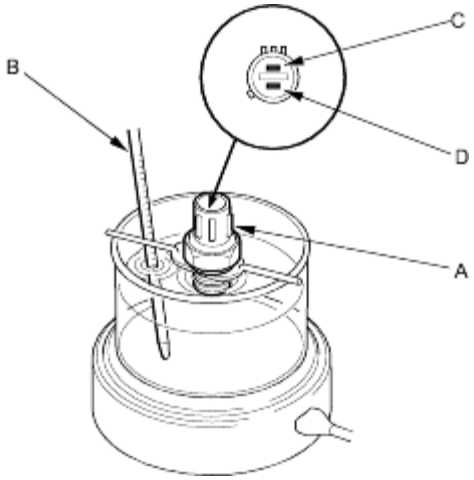
NO - Replace the under-hood fuse/relay box. ■

Fan Controls

Radiator Fan Switch Test

NOTE: Bleed air from the cooling system after installing the radiator fan switch (see page 10-8).

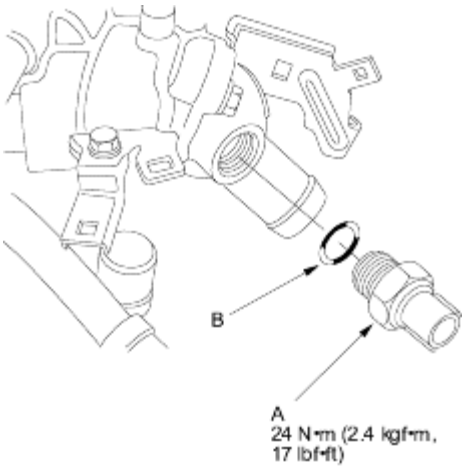
1. 1. Remove the radiator fan switch from the thermostat cover (see page 10-19).
   2. Suspend the radiator fan switch (A) in a container of water as shown.



2. 3. Heat the water and check the temperature with a thermometer. Do not let the thermometer (B) touch the bottom of the hot container.
   4. Measure the continuity between the A terminal (C) and B terminal (D) according to the table.

Operation		Temperature	Terminal A	Terminal B
SWITCH	ON	91 – 95 °C (196 – 203 °F)	○—○	
	OFF	3 – 8 °C (5 – 15 °F) lower than the temperature when it goes on		

1. 1. Disconnect the radiator fan switch connector, then remove the radiator fan switch (A).

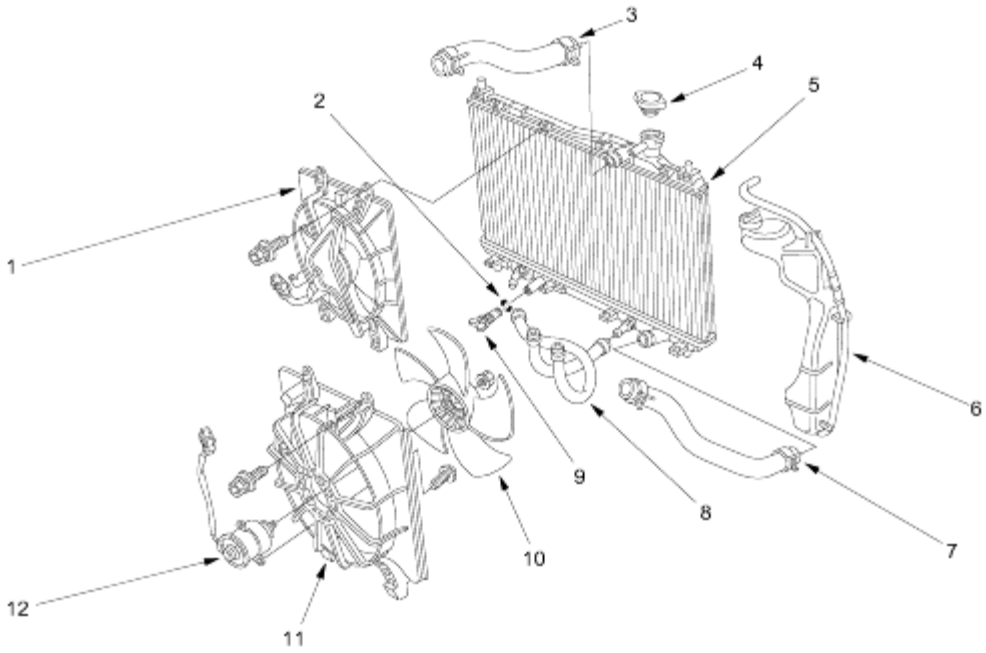


2. 2. Install the radiator fan switch using a new O-ring (B).

Cooling System

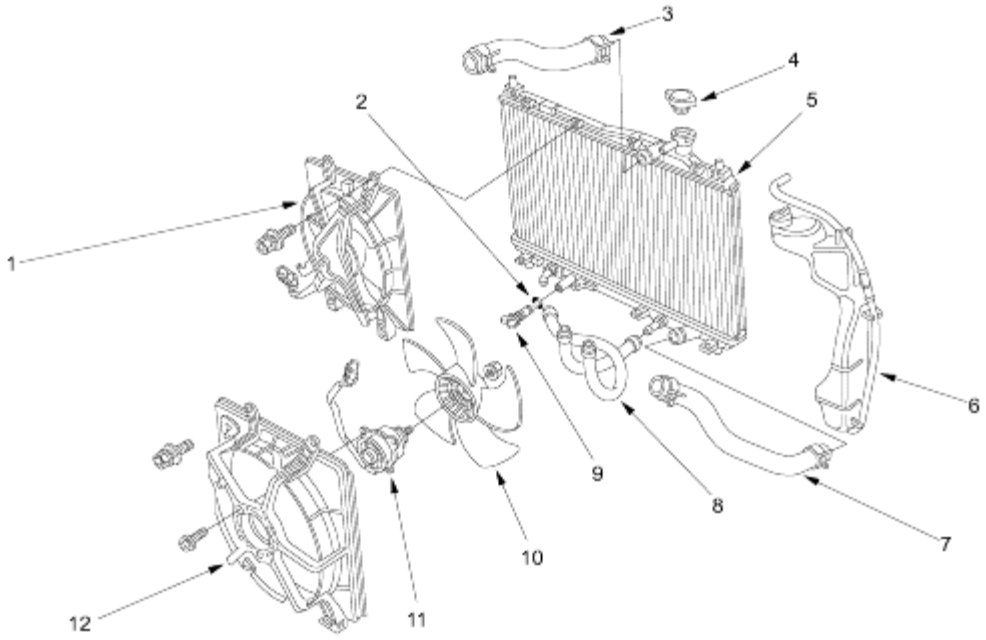
Component Location Index

DENSO:



1. A/C CONDENSER FAN ASSEMBLY
   Replacement, page 10-11
   Fan Motor Test, page 10-6
2. O-RING
3. UPPER RADIATOR HOSE
4. RADIATOR CAP
5. RADIATOR
   Replacement, page 10-11
6. COOLANT RESERVOIR
7. LOWER RADIATOR HOSE
8. ATF COOLER HOSES
9. DRAIN PLUG
10. RADIATOR FAN
    Replacement, page 10-11
11. RADIATOR FAN SHROUD
    Replacement, page 10-11
12. RADIATOR FAN MOTOR
    Test, page 10-6
    Replacement, page 10-11

TOYO RADIATOR:

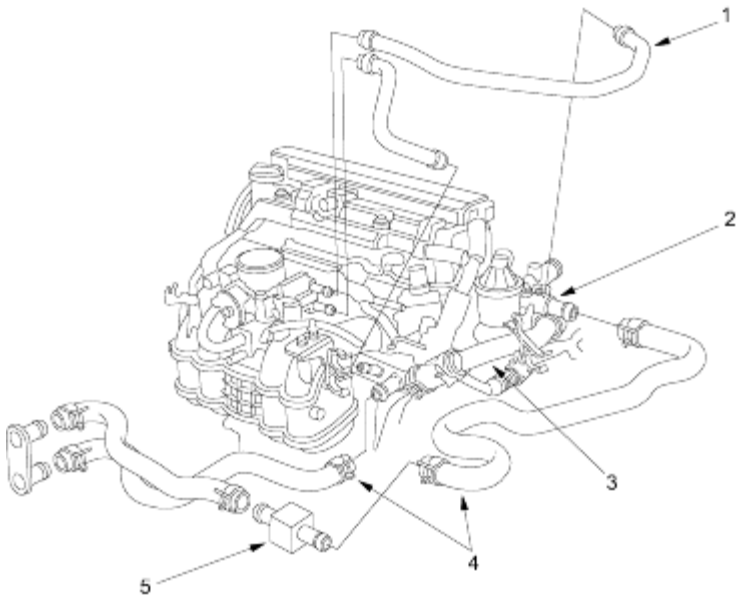


1. A/C CONDENSER FAN ASSEMBLY
   Replacement, page 10-11
   Fan Motor Test, page 10-6
2. O-RING
3. UPPER RADIATOR HOSE
4. RADIATOR CAP
5. RADIATOR
   Replacement, page 10-11
6. COOLANT RESERVOIR
7. LOWER RADIATOR HOSE
8. ATF COOLER HOSES
9. DRAIN PLUG
10. RADIATOR FAN
    Replacement, page 10-11
11. RADIATOR FAN MOTOR
    Test, page 10-6
    Replacement, page 10-11
12. RADIATOR FAN SHROUD
    Replacement, page 10-11

Cooling System

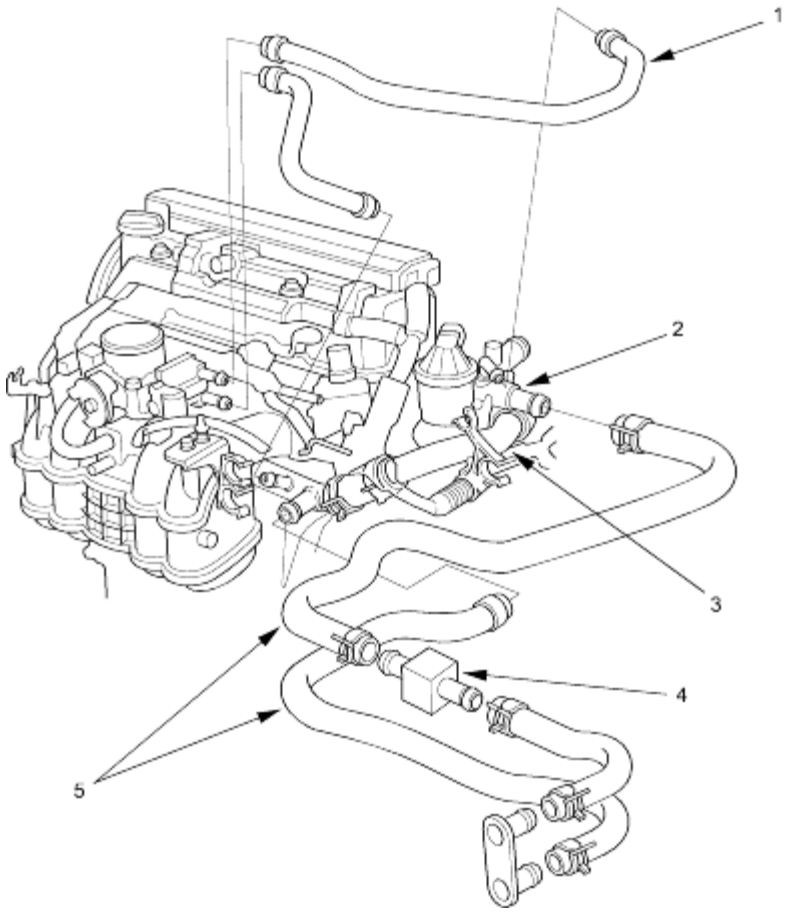
Component Location Index (cont'd)

RHD models:



1. WATER BYPASS HOSE
2. WATER PASSAGE
3. CONNECTING PIPE
4. HEATER HOSES
5. HEATER VALVE

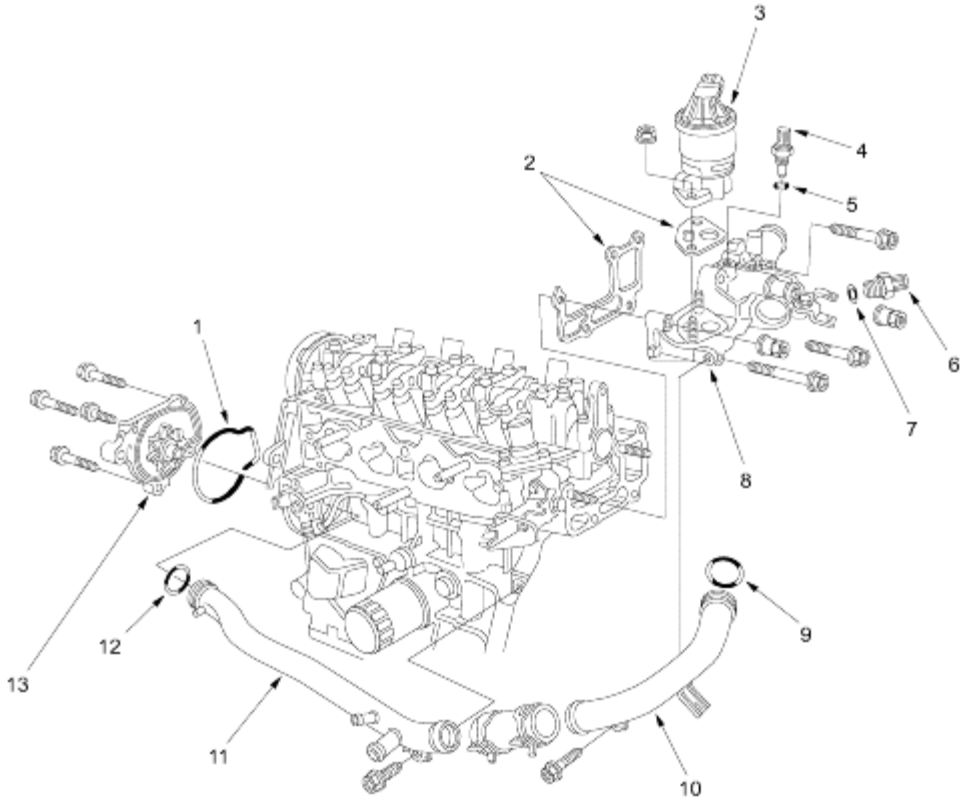
LHD models:



1. WATER BYPASS HOSE
2. WATER PASSAGE
3. CONNECTING PIPE
4. HEATER VALVE
5. HEATER HOSES

Cooling System

Component Location Index (cont'd)

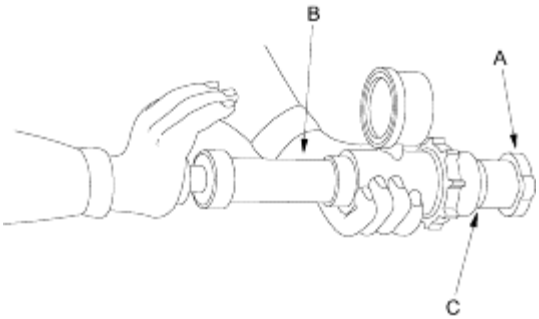


1. O-RING
2. GASKET
3. EXHAUST GAS RECIRCULATION (EGR) VALVE
   (D14Z5, D15Y4, D16W7, S17A2 (KQ, KU models) engines)
4. ENGINE COOLANT TEMPERATURE (ECT) SENSOR
5. O-RING
6. RADIATOR FAN SWITCH
7. O-RING
8. WATER PASSAGE
9. O-RING
10. CONNECTING PIPE
11. CONNECTING PIPE
12. O-RING
13. WATER PUMP
    Inspection, page 10-7
    Replacement, page 10-7

Cooling System

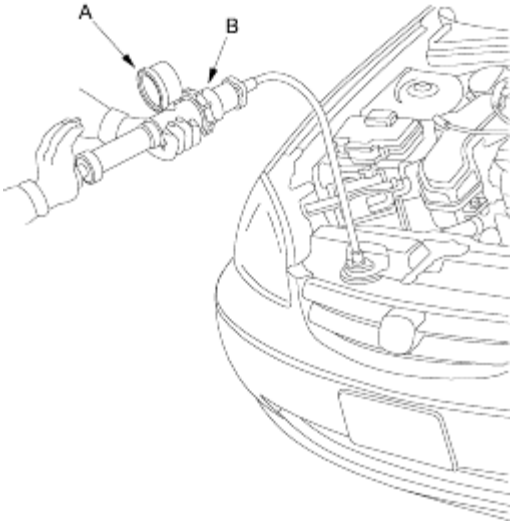
Radiator Cap Test

1. 1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on the pressure tester (B) (commercially available). Use a small adapter H-901122-09 (C) (commercially available) to install the radiator cap.



2. 2. Apply a pressure of 93 - 123 kPa (0.95 - 1.25 kgf/cm^2, 14 - 18 psi).
   3. Check for a drop in pressure.
   4. If the pressure drops, replace the cap.

1. 1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. 2. Attach the pressure tester (A) (commercially available) to the radiator. Use a small adapter H-901122-09 (B) (commercially available) to attach the pressure tester.

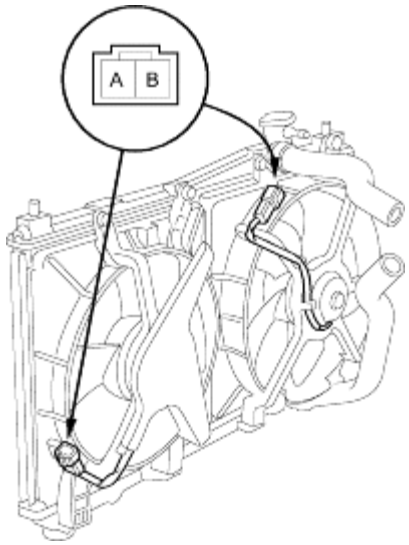


3. 3. Apply a pressure of 93 - 123 kPa (0.95 - 1.25 kgf/cm^2, 14 - 18 psi).
   4. Inspect for engine coolant leaks and a drop in pressure.
   5. Remove the tester and reinstall the radiator cap.
   6. Check for engine oil in the coolant and/or coolant in the engine oil.

Cooling System
Fan Motor Test

1. 1. Disconnect the 2P connectors from the radiator fan motor and condenser fan motor.

Terminal side of male terminals

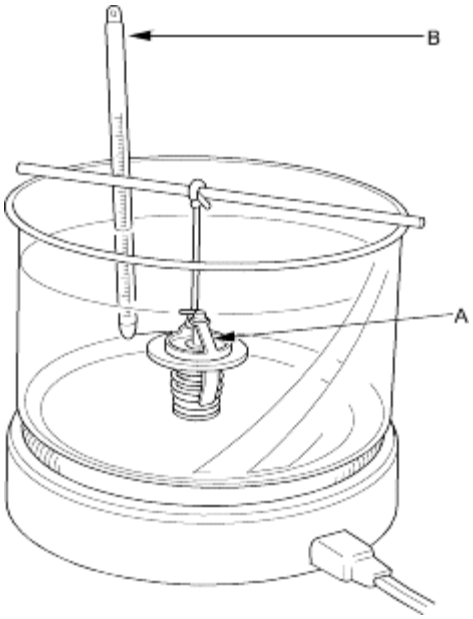


2. 2. Test the motor by connecting battery power to the B terminal and ground to the A terminal.
   3. If the motor fails to run or does not run smoothly, replace it.

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. 1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. 2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens and at which it is fully open.
   3. Measure the lift height of the thermostat when it is fully open.

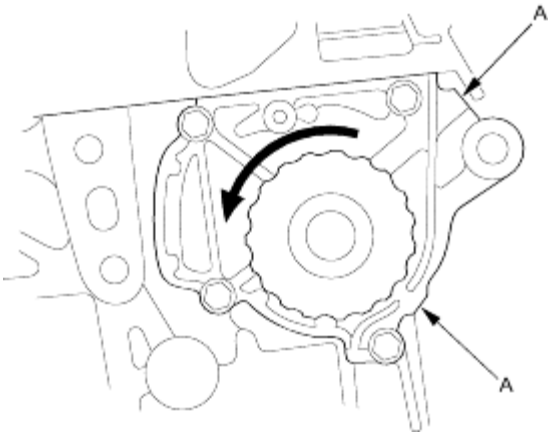
STANDARD THERMOSTAT

Lift height:	above 8.0 mm (0.31 in.)
Starts opening:	76 - 80°C (169 – 176°F)
Fully open:	90°C (194°F)

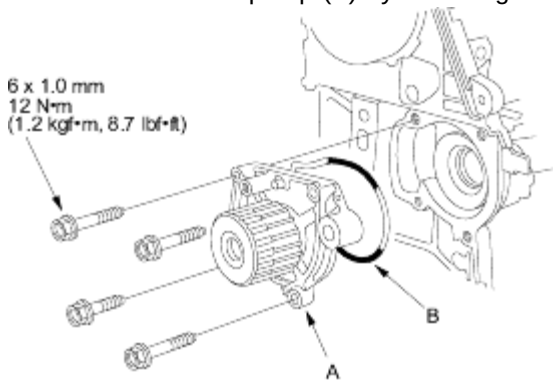
Cooling System

Water Pump Inspection

1. Remove the timing belt (see page 6-18).
2. Turn the water pump pulley counter-clockwise. Check that it turns freely.
3. Check for signs of seal leakage. A small amount of "weeping" from the bleed hole (A) is normal.



1. Remove the timing belt (see page 6-18).
2. Remove the water pump (A) by removing four bolts.

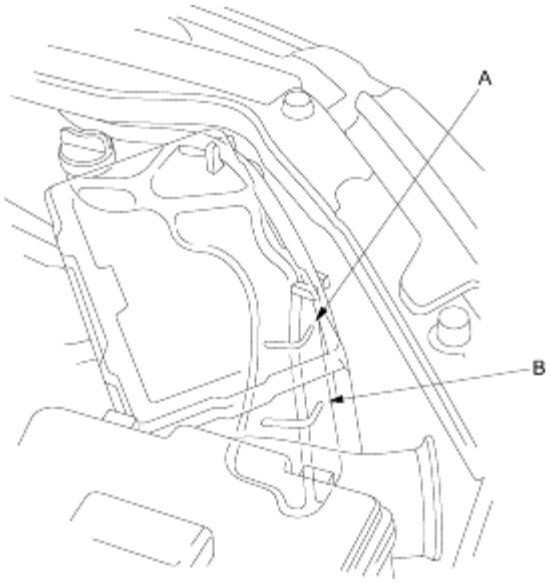


3. Inspect and clean the O-ring groove and mating surface with the cylinder block.
4. Install the water pump with a new O-ring (B) in the reverse order of removal.
5. Clean up any spilled engine coolant.

Cooling System

Coolant Check

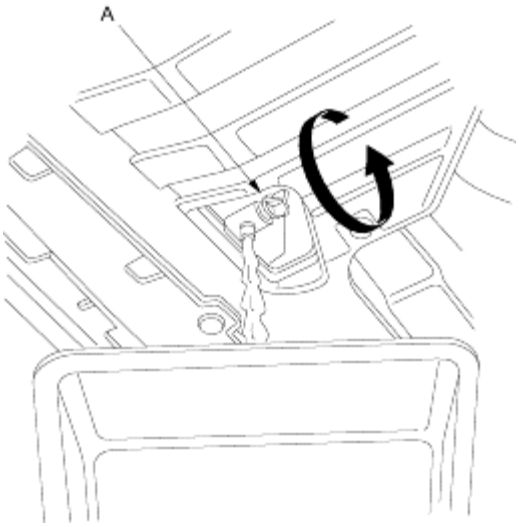
1. 1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX (A) and MIN mark (B).



2. 2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark and inspect the cooling system for leaks.

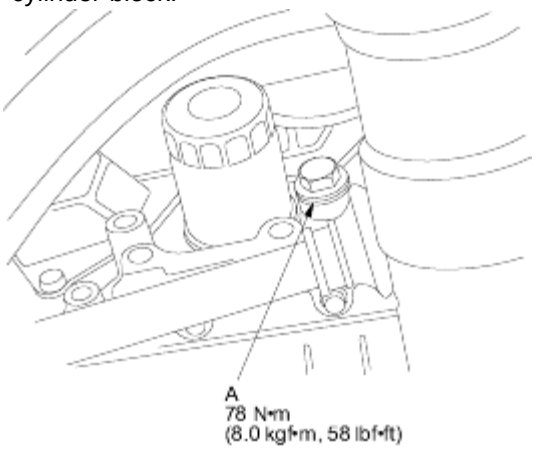
Coolant Replacement

1. 1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. 2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   3. Remove the battery.
   4. Remove the radiator cap.
   5. Loosen the drain plug (A) and drain the coolant.

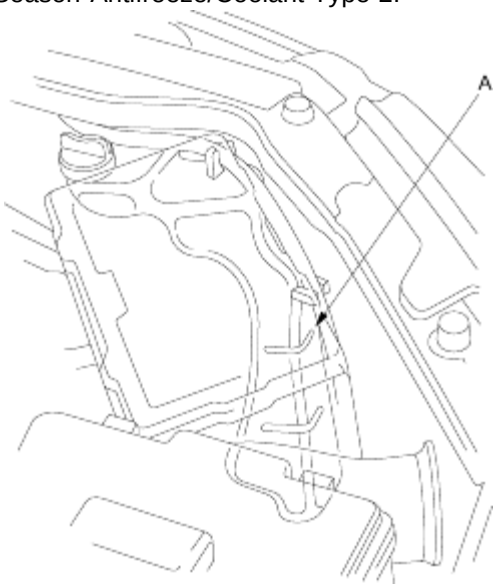


Cooling System
Coolant Replacement (cont'd)

1. 6. Remove the drain bolt (A) from the rear of the cylinder block.



2. 7. After the coolant has drained, apply liquid gasket to the drain bolt threads, then reinstall the bolt with a new washer and tighten it securely.
   8. Tighten the radiator drain plug securely.
   9. Remove, drain and reinstall the reservoir. Fill the tank to the MAX mark (A) with genuine Honda All Season Antifreeze/Coolant Type 2.



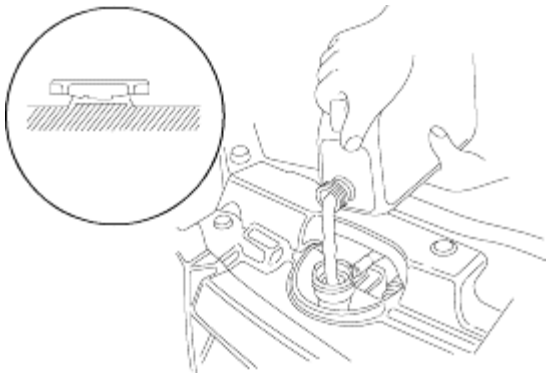
1. 10. Pour genuine Honda All Season Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

NOTE:

- Always use genuine Honda All Season Antifreeze/Coolant Type 2. Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
- Genuine Honda All Season Antifreeze/Coolant Type 2 is a mixture of 50% antifreeze and 50% water. Pre-mixing is not required.

Engine Coolant Refill Capacity [including the reservoir capacity of 0.4 **/** (0.4 US qt, 0.4 lmp qt)]:

M/T:	4.0 **/** (4.2 US qt, 3.5 lmp qt)
A/T, HONDA MULTI MATIC:	3.9 **/** (4.1 US qt, 3.4 lmp qt)



2. 11. Install the radiator cap loosely.
   12. Install the battery.
   13. Start the engine and let it run until it warms up (the radiator fan comes on at least twice).
   14. Turn off the engine. Check the level in the radiator and add genuine Honda All Season Antifreeze/Coolant Type 2 if needed.
   15. Put the radiator cap on tightly, then run the engine again and check for leaks.
   16. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

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General Information

Chassis and Engine Numbers (cont'd)

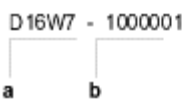
5-Door Model

Vehicle Identification Number



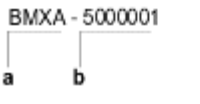
a. Manufacturer, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD.
HONDA Passenger vehicle
b. Line, Body and Engine Type
EU3: CIVIC/D17A2 (KQ model)
EU5: CIVIC/D14Z5 (KE model)
EU6: CIVIC/D16W7 (KE model),
D16V2 (KT models)
c. Body Type and Transmission Type
7: 4-door Stationwagon/5-speed Manual
8: 4-door Stationwagon/4-speed Manual
d. Vehicle Grade (Series)
2: 1.4S (KE model),
1.6S (KE model)
3: VI (KQ model)
4: 1.4LS (KE model),
1.6LS (KE model),
EXI (KT model)
5: VTI (KQ model)
7: 1.6ES (KE model)
VTI (KQ model)
8: VTI (KQ model)
e. Fixed Code
f. Model Year
1: 2001
g. Factory Code
S: Suzuka Factory in Japan (Mie)
h. Serial Number

Engine Number



a. Engine Type
D14Z5: 1.4 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D16W7: 1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D16V2: 1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine without three way catalytic converter
D17A2: 1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
b. Serial Number

Transmission Number



a. Transmission Type
SLXA: 4-speed Automatic
SLW: 5-speed Manual
b. Serial Number

4-door
(KB, KE, KG, TR models)

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General Information

Chassis and Engine Numbers (cont'd)

Applicable Area Code/VIN/Engine Number/Transmission Number List

MODEL	APPLICABLE AREA CODE	GRADE NAME	TRANSMISSION TYPE	VEHICLE IDENTIFICATION NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
CIVIC	KE	1.4S	5MT	JHMEU57201S200001-	D14Z5-1000001-	SLW-1000001-
		1.4LS	5MT	JHMEU57401S200001-	D14Z5-1000001-	SLW-1000001-
		1.6S	5MT	JHMEU67201S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMEU68201S200001-	D16W7-1000001-	SLXA-1000001-
		1.6LS	5MT	JHMEU67401S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMEU68401S200001-	D16W7-1000001-	SLXA-1000001-
		1.6ES	5MT	JHMEU67701S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMEU68701S200001-	D16W7-1000001-	SLXA-1000001-
	KQ	VI	5MT	JHMEU37301S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMEU38301S200001-	D17A2-1000001-	SLXA-1000001-
		VTI	5MT	JHMEU37501S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMEU38501S200001-	D17A2-1000001-	SLXA-1000001-
			5MT	JHMEU37701S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMEU38701S200001-	D17A2-1000001-	SLXA-1000001-
			5MT	JHMEU37801S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMEU38801S200001-	D17A2-1000001-	SLXA-1000001-
	KT	EXI	5MT	JHMEU67401S200001-	D16V2-1000001-	SLW-1000001-
			4AT	JHMEU68401S200001-	D16V2-1000001-	SLXA-1000001-

Fuel and Emissions Systems
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the Diagnostic Trouble Code (DTC) with the scan tool. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-127).	• Low compression • Intake air leaks • Locked up engine • Slipped/ broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-100).	
Engine will not start (immobiliser indicator light comes on)	Troubleshoot the immobiliser system (see page 22-245).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Check the fuel pressure (see page 11-131).	• Low compression • Intake air leaks • Contaminated fuel
Cold fast idle too low (MIL works OK, no DTCs set)	Check the idle speed (see page 11-125).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-125). 2. Inspect/adjust the throttle cable (see page 11-149). 3. Inspect and test the throttle body (see page 11-145).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-125). 2. Inspect/adjust the throttle cable (see page 11-149). 3. Inspect and test the throttle body (see page 11-145).	Intake air leaks
After warming up idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-120). 2. Inspect and test the throttle body (see page 11-145).	Vacuum hose clogged/cracked/poor connection
After warming up idle speed is above specifications with no load (MIL works OK, no DTCs set)	Troubleshoot the ALT FR signal circuit (see page 11-120).	
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-131). 2. Inspect and test the throttle body (see page 11-145). 3. Inspect/adjust the throttle cable (see page 11-149).	Low compression
Engine stalls (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-131). 2. Check the idle speed (see page	• Intake air leaks • Faulty harness and sensor connections

	11-125). 3. Troubleshoot the brake pedal position switch signal circuit (see page 11-123).	

PGM-FI System

MIL Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II) and watch the Malfunction Indicator Lamp (MIL).

Does the MIL come on and stay on?

YES- If the MIL always comes on and stays on, go to step 70. But if the MIL sometimes works normally, first check for these problems.

- An intermittent short in the wire between the ECM/PCM (E29) and the Data Link Connector (DLC).
- An intermittent short in the wire between the ECM/PCM (E31) and the gauge assembly.

NO If the MIL is always off, go to step 2. But if the MIL sometimes works normally, first check for these problems.

- A loose No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.
- A loose No. 20 IG (40A) fuse in the under-hood fuse/relay box.
- A loose No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.
- A loose No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
- A poor connection at ECM/PCM terminal E31.
- An intermittent open in the GRN/ORN wire between the ECM/PCM (E31) and the gauge assembly.
- An intermittent short in the wire between the ECM/PCM (A21) and the manifold absolute pressure (MAP) sensor.
- An intermittent short in the wire between the ECM/PCM (A20) and the throttle position (TP) sensor, knock sensor, exhaust gas recirculation (EGR) valve position sensor.
- An intermittent short in the wire between the ECM/PCM (A8) and the knock sensor.

2. 2. Turn the ignition switch OFF.
3. Press the inertia switch button.
4. Turn the ignition switch ON (II).

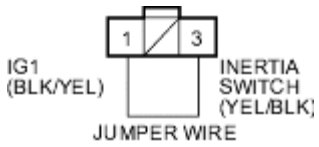
Does the MIL come on for 2 seconds after the ignition switch is turned ON (II)?

YES - Intermittent failure system is OK at this time. ■

NO - Go to step 5.

1. 5. Turn the ignition switch OFF.
2. 6. Disconnect the inertia switch 3P connector.
7. Connect the inertia switch 3P connector terminals No. 1 and No. 3 with a jumper wire.

INERTIA SWITCH 3P CONNECTOR



Wire side of female terminals

3. 8. Turn the ignition switch ON (II).

Does the MIL come on for 2 seconds after the ignition switch is turned ON (II)?

YES - Replace the inertia switch. ■

NO - Go to step 9.

4. 9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II).

Is the low oil pressure light on?

YES - Go to step 13.

NO - Go to step 11.

11. Inspect the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 12.

NO - Repair short in the wire between No. 10 METER (7.5A) fuse and the gauge assembly. Also replace the No. 10 METER (7.5A) fuse. ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 12. Inspect the No. 20 IG1 (40A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES - Repair open in the wire between the No. 20 IG1 (40A) fuse and the gauge assembly. If the wires are OK, test the ignition switch (see page 22-83).

NO - Repair short in the wire between No. 20 IG1 (40A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG1 (40A) fuse. ■

13. Try to start the engine.

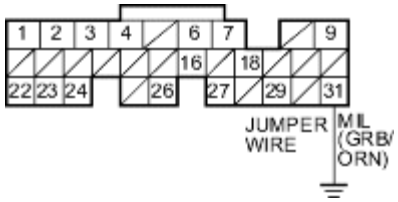
Does the engine start?

YES - Go to step 14.

NO - Go to step 17.

14. Turn the ignition switch OFF.
15. Connect ECM/PCM connector terminal E31 and body ground with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

16. Turn the ignition switch ON (II).

Is the MIL on?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check for an open in the wire between the ECM/PCM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly. ■

1. 17. Turn the ignition switch OFF.

18. Inspect the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

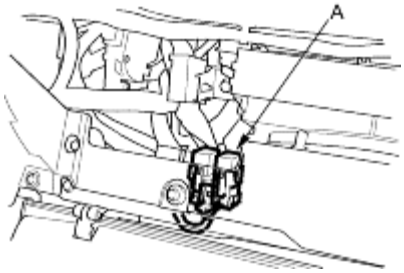
Is the fuse OK?

YES - Go to step 25.

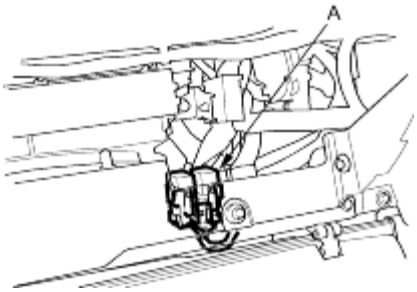
NO - Go to step 19.

19. Remove the blown No. 6 ECU (ECM/PCM) (15A) fuse in the under-dash fuse/relay box.
20. Remove the PGM-FI main relay 1 (A).

LHD model:

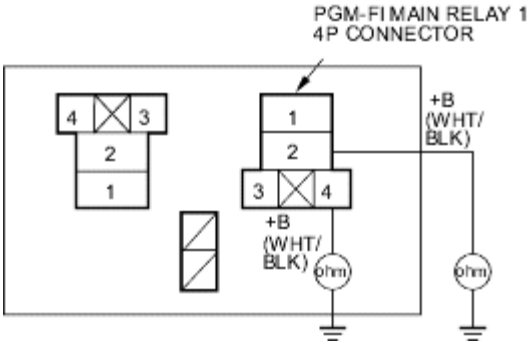


RHD model:



PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 21. Check for continuity between body ground and the PGM-FI main relay 14P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

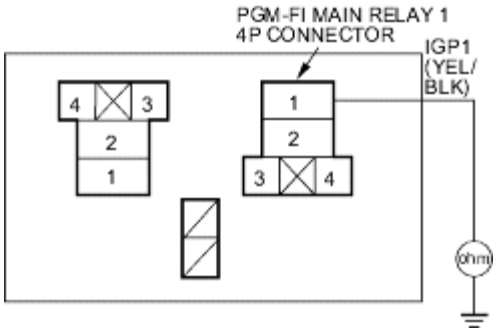
Is there continuity?

YES - Repair short in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Go to step 22.

22. Disconnect each of the components or the connectors below, one at a time, and check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

- PGM-FI main relay 2
- ECM/PCM connector A (31P)
- Each injector 2P connector
- Idle air control (IAC) valve 3P connector
- Top dead centre (TDC) sensor 3P connector
- Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

YES - Go to step 23.

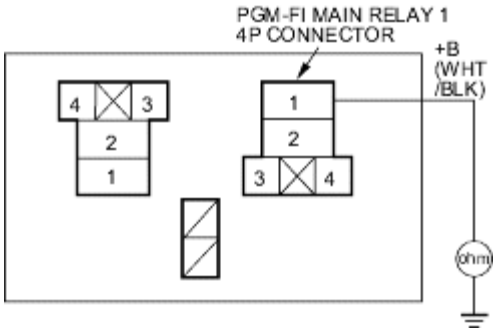
NO - Replace the component that made continuity to body ground go away when disconnected. If the item is the ECM/PCM, substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM.

Also replace the No. 6 ECU (ECM/PCM) (15 A) fuse.

23. Disconnect the connectors of all these components.

- PGM-FI main relay 2
- ECM/PCM connector A (31P)
- Injectors
- Idle air control (IAC) valve
- Top dead centre (TDC) sensor
- Crankshaft position (CKP) sensor

24. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Replace the PGM-FI main relay 1. Also replace the No 6 ECU (ECM/PCM) (15A) fuse. ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 25. Inspect the No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

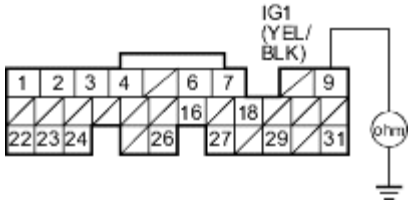
Is the fuse OK?

YES - Go to step 37.

NO - Go to step 26.

26. Remove the blown No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
27. Disconnect ECM/PCM connector E (31P).
28. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

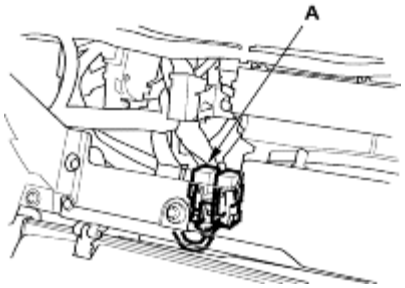
Is there continuity?

YES - Go to step 29.

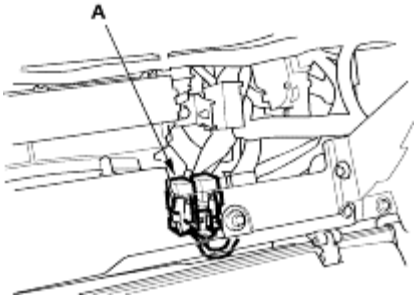
NO - Replace the No. 17 FUEL PUMP (15 A) fuse, and substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 29. Remove the PGM-FI main relay 2 (A).

LHD model:

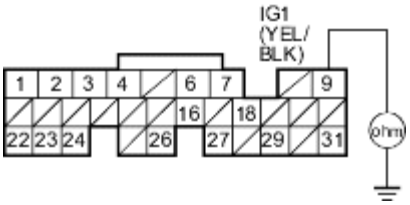


RHD model:



30. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9), or the No. 17 FUEL PUMP (15 A) fuse and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

NO - Go to step 31.

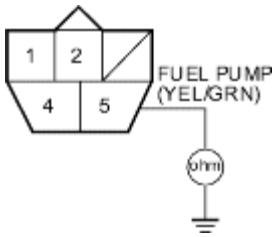
31. Remove the rear seat cushion (see page 20-95).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 32. Remove the access panel from the floor.

33. Disconnect the fuel pump 5P connector.
34. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

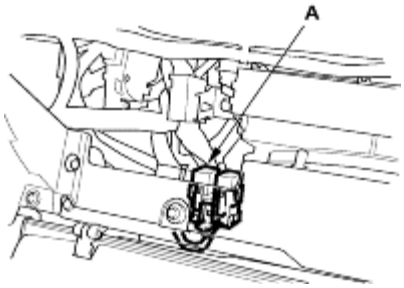
Is there continuity?

YES - Repair short in the wire between the fuel pump and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

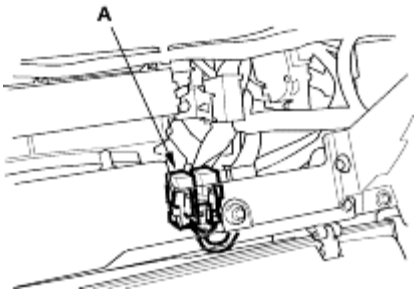
NO - Go to step 35.

35. Reinstall the PGM-FI main relay 2 (A).

LHD model:

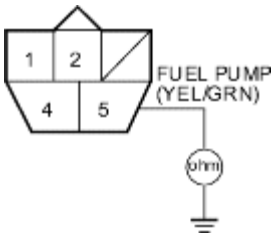


RHD model:



1. 36. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

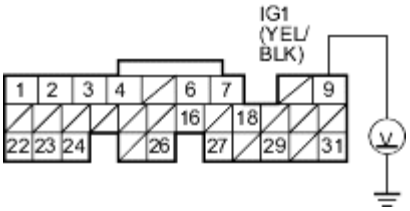
Is there continuity?

YES - Replace the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

NO - Check the fuel pump, and replace it as necessary. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

37. Disconnect ECM/PCM connector E (31P).
38. Turn the ignition switch ON (II).
39. Measure voltage between ECM/PCM connector terminals E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 40.

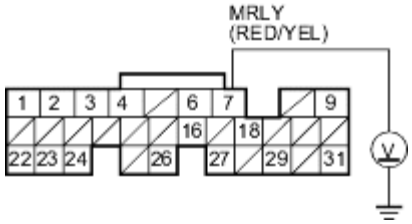
NO - Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 40. Turn the ignition switch OFF.

41. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 45.

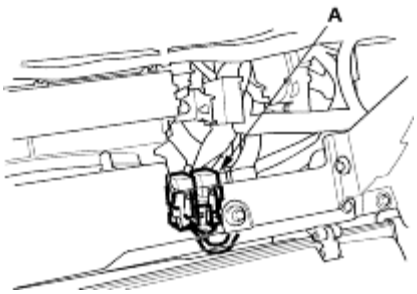
NO - Go to step 42.

42. Remove the PGM-FI main relay 1 (A).

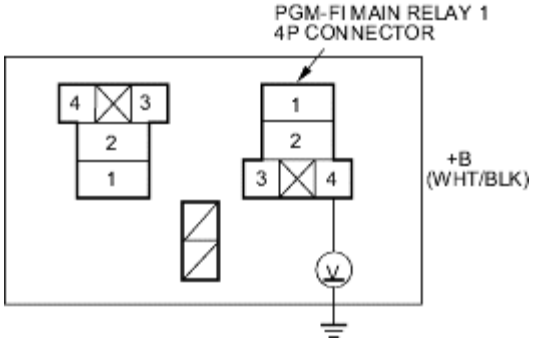
LHD model:



RHD model:



1. 43. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



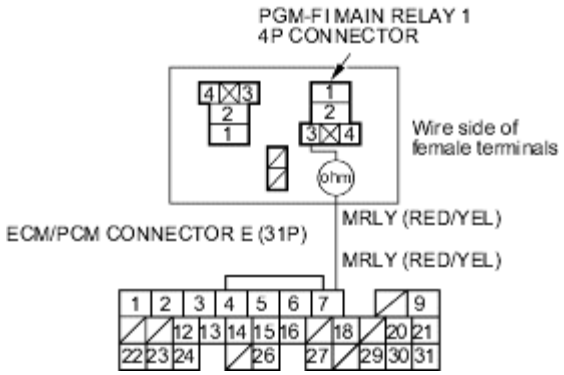
Wire side of female terminals

Is there battery voltage?

YES - Go to step 44.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15 A) fuse and the PGM-FI main relay 1. ■

44. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal E7.



Wire side of female terminals

Is there continuity?

YES - Test the PGM-FI main relay 1 (see page 22-80). If the relay is OK, substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

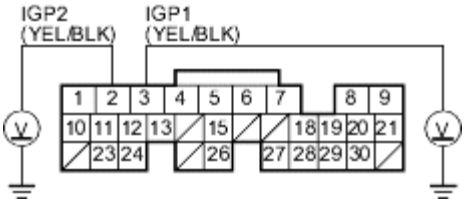
NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (E7). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 45. Reconnect ECM/PCM connector E (31P).

46. Turn the ignition switch ON (II).
47. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 54.

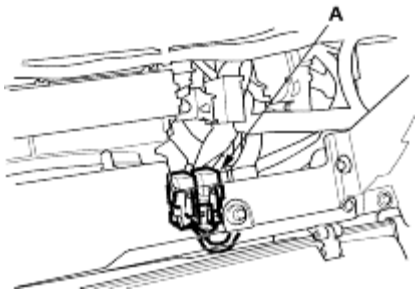
NO - Go to step 48.

48. Turn the ignition switch OFF.
49. Remove the PGM-FI main relay 1 (A).

LHD model:

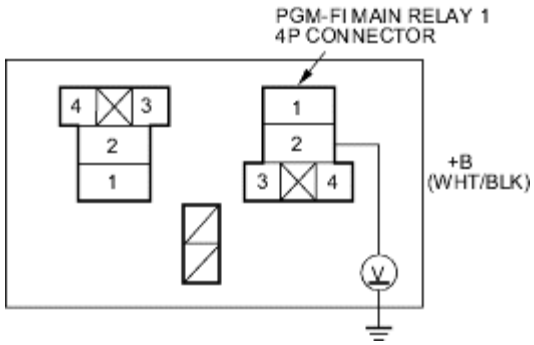


RHD model:



1. 50. Turn the ignition switch ON (II).

51. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



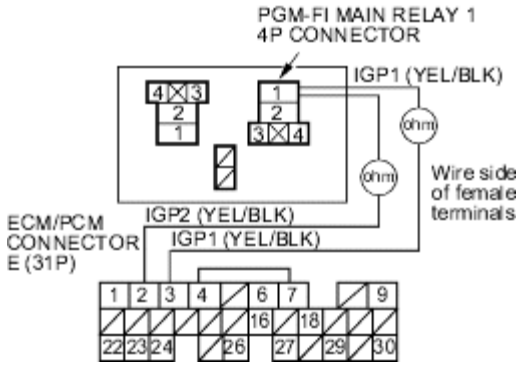
Wire side of female terminals

Is there battery voltage?

YES - Go to step 52.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. ■

52. Turn the ignition switch OFF.
53. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and ECM/PCM connector terminals A2 and A3 individually.



Wire side of female terminals

Is there continuity?

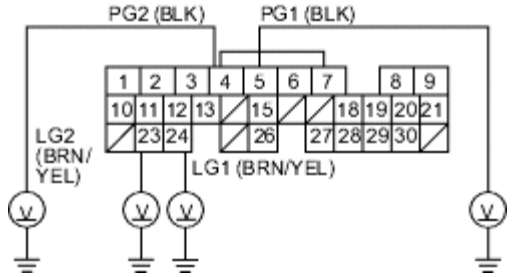
YES - Replace the PGM-FI main relay 1. ■

NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (A2, A3). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 54. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A23 and A24 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

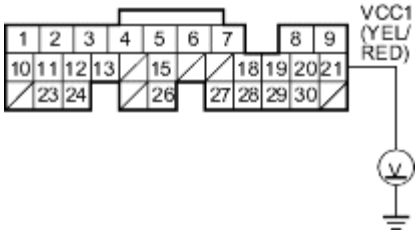
Is there less than 1.0 V?

YES - Repair open in the wire (s) between that had more than 1.0 V between G101 and the ECM/PCM (A4, A5, A23, A24). ■

NO - Go to step 55.

55. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

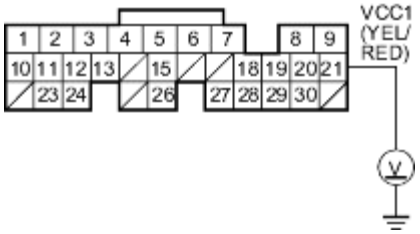
YES - Go to step 63.

NO - Go to step 56.

1. 56. Turn the ignition switch OFF.

57. Disconnect the manifold absolute pressure (MAP) sensor 3P connector.
58. Turn the ignition switch ON (II).
59. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the MAP sensor. ■

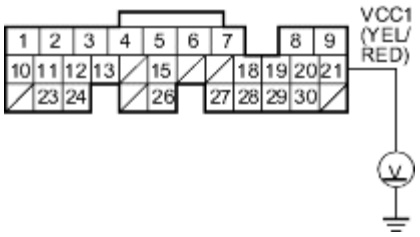
NO - Go to step 60.

60. Turn the ignition switch OFF.
61. Disconnect ECM/PCM connector A (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 62. Check for continuity between ECM/PCM connector terminal A21 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

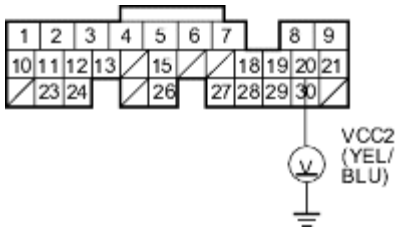
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A21) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

63. Measure voltage between body ground and ECM/PCM connector terminal A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

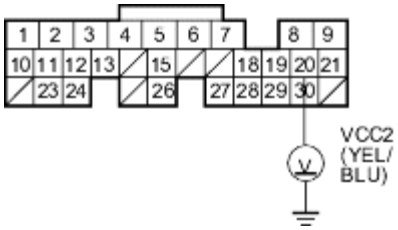
NO - Go to step 64.

1. 64. Turn the ignition switch OFF.

65. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II).

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the sensor that restored about 5 V when disconnected. ■

NO - Go to step 66.

66. Turn the ignition switch OFF.
67. Disconnect the 3P connectors from the following sensors.

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

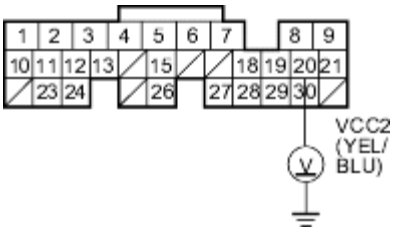
68. Disconnect ECM/PCM connector A (31P).

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 69. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the EGR valve position sensor, knock sensor or TP sensor, or repair short in the wire between the ECM/PCM (A8) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 70. Turn the ignition switch OFF.

71. Connect a scan tool/Honda PGM Tester (see page 11-3).
72. Turn the ignition switch ON (II), and read the scan tool/Honda PGM Tester.

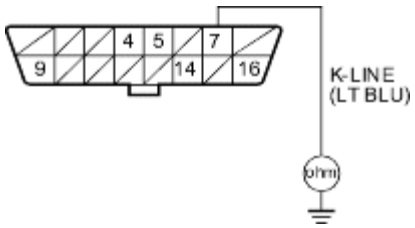
Does the scan tool/Honda PGM Tester communicate with the ECM/PCM?

YES - Go to step 77.

NO - Go to step 73.

73. Turn the ignition switch OFF.
74. Disconnect ECM/PCM connector E (31P).
75. Check for continuity between body ground and data link connector (DLC) terminal No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the DLC and the ECM/PCM (E23). After repairing it, check the DTC with the scan tool/Honda PGM Tester and go to the DTC Troubleshooting Index.

NO - Go to step 76.

Fuel and Emissions Systems

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the Engine Control Module (ECM) on vehicles with manual transmissions or the Powertrain Control Module (PCM) on vehicles with automatic transmissions.

Fail-safe Function

When an abnormality occurs in a signal from a sensor, the ECM/PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function

When an abnormality occurs in the ECM/PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis

When an abnormality occurs in the signal from a sensor, the ECM/PCM supplies ground for the Malfunction Indicator Lamp (MIL) and stores the Diagnostic Trouble Code (DTC) in erasable memory. When the ignition is first turned on, the ECM/PCM supplies ground for the MIL for 2 seconds to check the MIL bulb condition.

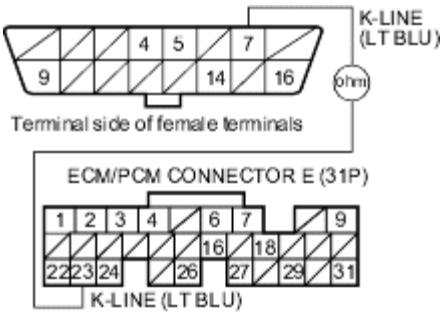
Two Driving Cycle Detection Method

To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM informs the driver by turning on the MIL.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 76. Check for continuity between ECM/PCM connector terminal E23 and DLC terminal No. 7.

DATA LINK CONNECTOR (DLC)



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the DLC and the ECM/PCM (E23). After repairing it, check the DTC with the scan tool/Honda PGM Tester and go to the DTC Troubleshooting Index.

77. Check the scan tool/Honda PGM Tester for DTCs.

Are any DTCs indicated?

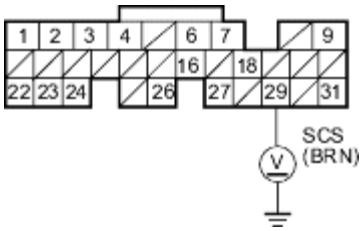
YES - Go to the DTC Troubleshooting Index.

NO - Go to step 78.

78. Turn the ignition switch OFF.
79. Turn the ignition switch ON (II).

1. 80. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES - Go to step 84.

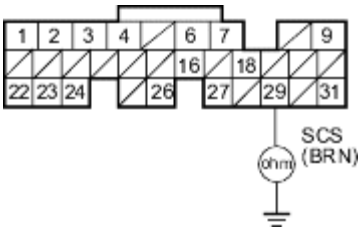
NO - Go to step 81.

81. Turn the ignition switch OFF.
82. Disconnect ECM/PCM connector E (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 83. Check for continuity between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the service check connector and the ECM/PCM (E29). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

84. Turn the ignition switch OFF.
85. Disconnect ECM/PCM connector E (31P).
86. Turn the ignition switch ON (II).

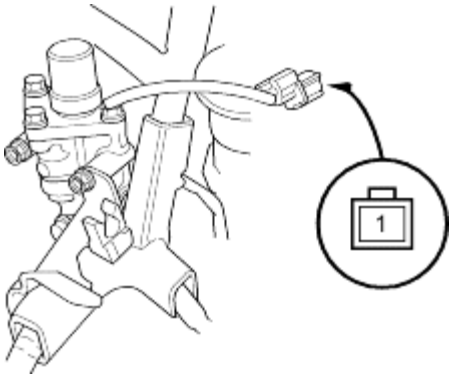
Is the MIL on?

YES - Repair short in the wire between the gauge assembly and the ECM/PCM (E31). If the wires are OK, replace the gauge assembly. ■

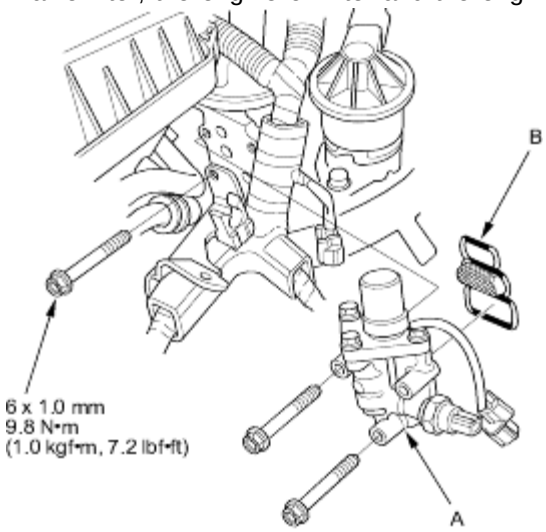
NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
VTEC Solenoid Valve Test

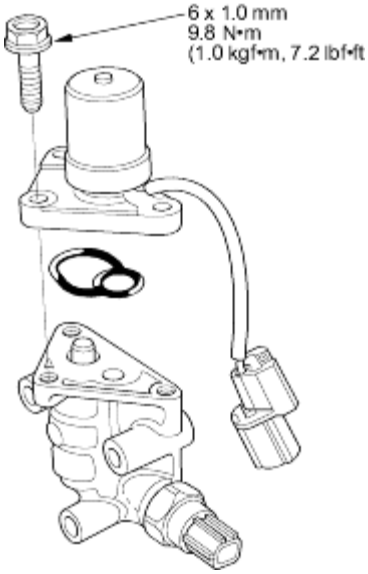
1. 1. Remove the resonator (see page 11-148).
2. 2. Disconnect the VTEC solenoid valve 1P connector.
   3. Measure resistance between the VTEC solenoid valve connector terminal No. 1 and body ground.
      Resistance: 14-30 ohms



3. 4. If the resistance is within specifications, remove the VTEC solenoid valve assembly (A) from the cylinder head, and check the VTEC solenoid valve filter (B) for clogging. If there is clogging, replace the solenoid valve filter, the engine oil filter and the engine oil.

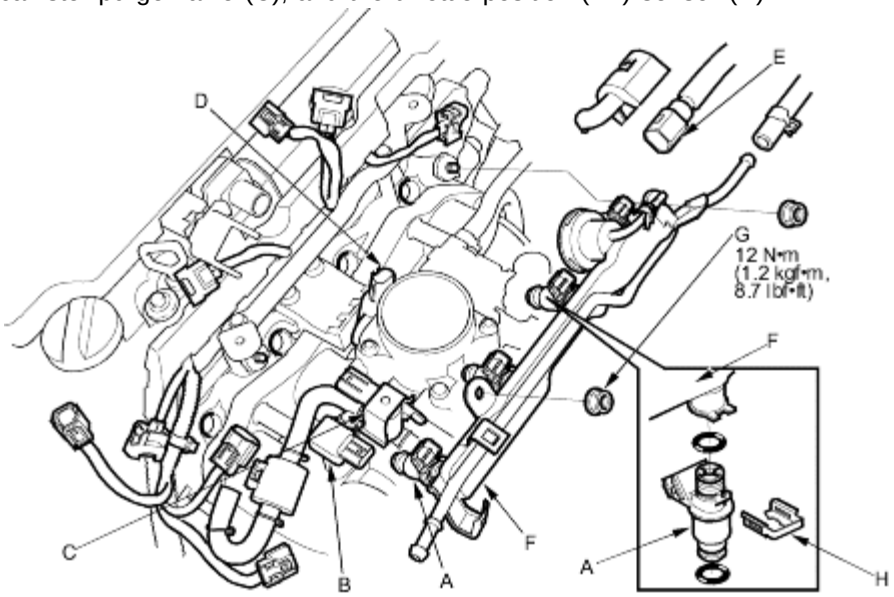


1. 5. If the filter is not clogged, push the VTEC solenoid valve with your finger and check its movement. If the VTEC solenoid valve is normal, check the engine oil pressure.



PGM-FI System
Injector Replacement

1. 1. Relieve fuel pressure (see page 11-130).
   2. Remove the air cleaner (see page 11-146).
   3. Disconnect the connectors from the injectors (A), the manifold absolute pressure (MAP) sensor (B), the evaporative emission (EVAP) canister purge valve (C), and the throttle position (TP) sensor (D).

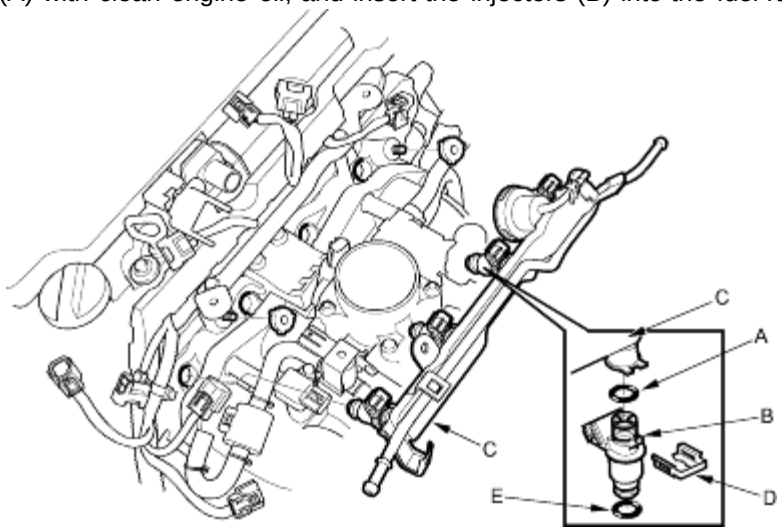


2. 4. Disconnect the quick-connect fittings (E).
   5. Disconnect the hoses from the fuel rail (F).
   6. Remove the fuel rail mounting nuts (G) from the fuel rail.
   7. Remove the injector clip (H) from the injector.
   8. Remove the injector from the fuel rail.

PGM-FI System

Injector Replacement (cont'd)

1. 9. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



2. 10. Install the injector clip (D).
   11. Coat the injector O-ring (E) with clean engine oil.
   12. To prevent damage to the O-rings, install the injectors in the fuel rail first, then install them in the injector base.
   13. Install the fuel rail mounting nuts.
   14. Connect the connectors on the injectors, the MAP sensor, the EVAP canister purge valve, and the TP sensor.
   15. Connect the quick-connect fittings.
   16. Install the air cleaner (see page 11-146).
   17. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for approximately 2 seconds, the fuel pressure in the fuel line rises. Repeat this 2 or 3 times, then check for fuel leakage.

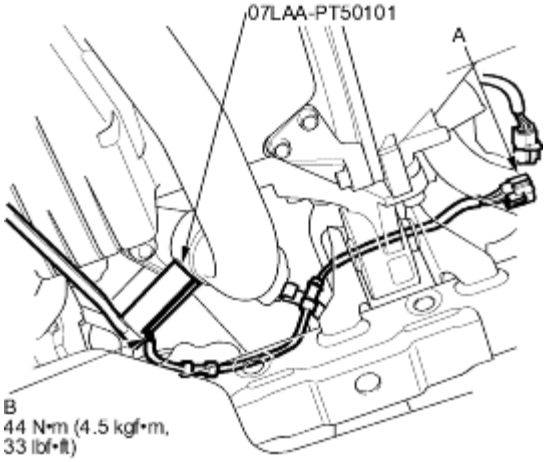
PGM-FI System

Primary HO2S Replacement

Special Tools Required

O2 sensor wrench 07LAA-PT50101

1. 1. Disconnect the primary HO2S 4P connector (A), then remove the primary HO2S (B).



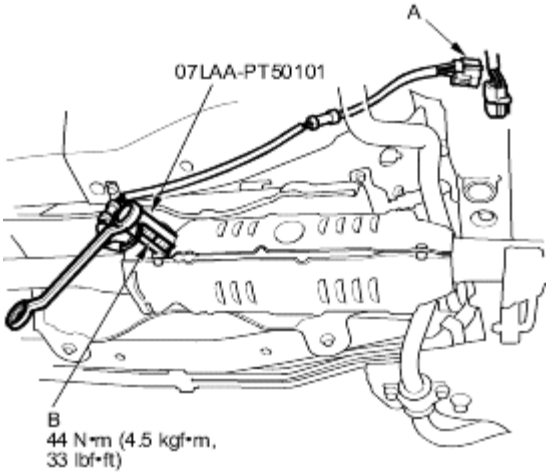
2. 2. Install the primary HO2S in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required

O2 sensor wrench 07LAA-PT50101

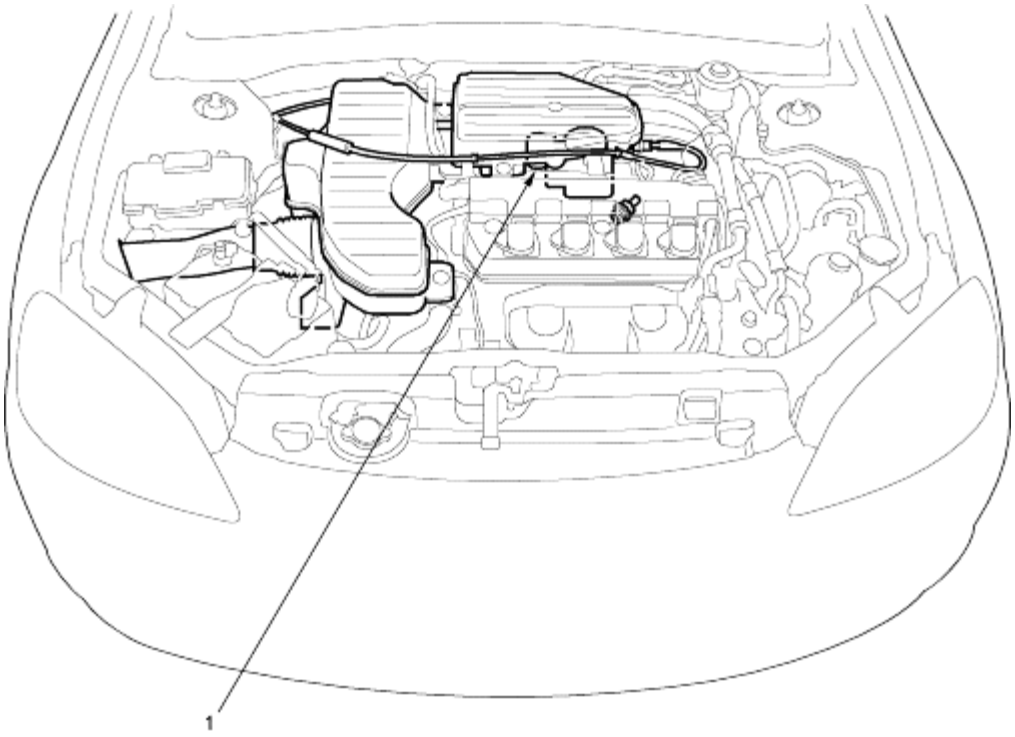
1. 1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



2. 2. Install the secondary HO2S in the reverse order of removal.

Idle Control System

Component Location Index



1. IDLE AIR CONTROL (IAC) VALVE
   Troubleshooting, page 11-117

Idle Control System
DTC Troubleshooting

DTC P1519: IAC Valve Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Turn the ignition switch ON (II).

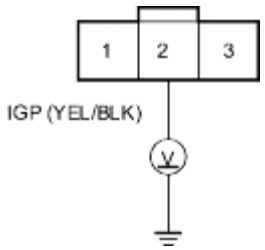
Is DTC P1519 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAC valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAC valve 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the IAC valve 3P connector terminal No. 2 and body ground.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

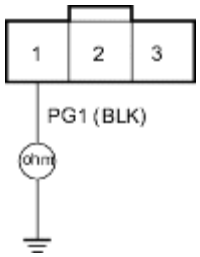
YES - Go to step 7.

NO - Repair open in the wire between the IAC valve and the PGM-FI main relay. ■

3. 7. Turn the ignition switch OFF.

1. 8. Check for continuity between body ground and IAC valve 3P connector terminal No. 1.

IAC VALVE 3P CONNECTOR



Wire side female terminals

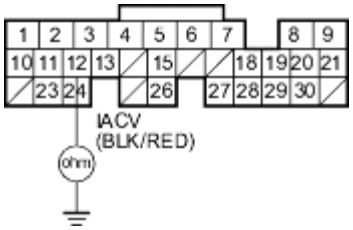
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the IAC valve and G101. ■

2. 9. Disconnect ECM/PCM connector A (31P).
   10. Check for continuity between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

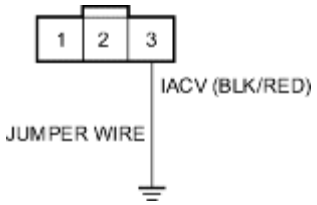
YES - Repair short in the wire between the IAC valve and the ECM/PCM (A12). ■

NO - Go to step 11.

Idle Control System
DTC Troubleshooting (cont'd)

1. 11. Connect the IAC valve 3P connector terminal No. 3 and body ground with a jumper wire.

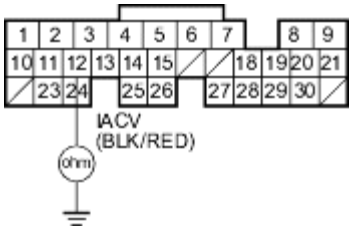
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A12 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

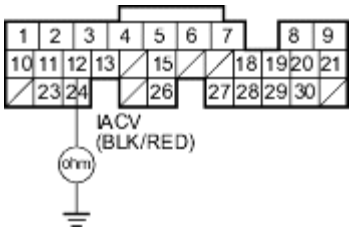
YES - Go to step 13.

NO - Repair open in the wire between the IAC valve and the ECM/PCM (A12). ■

13. Reconnect the IAC valve 3P connector.
14. Turn the ignition switch ON (II).

1. 15. Measure voltage between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

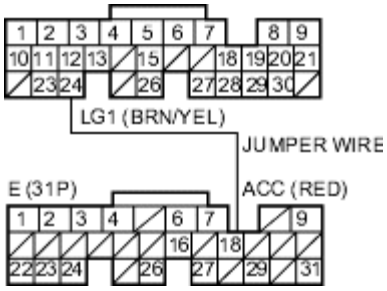
YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the IAC valve. ■

Idle Control System
A/C Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Momentarily connect ECM/PCM connector terminals A24 and E18 with a jumper wire several times.

ECM/PCM CONNECTORS A (31P)



Wire side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES - Go to step 3.

NO - Go to step 6.

3. 3. Start the engine.
   4. Turn the blower switch ON.
   5. Turn the A/C switch ON.

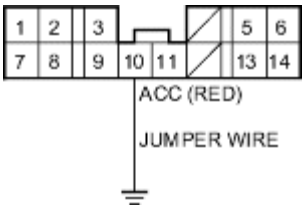
Does the A/C operate?

YES - The air conditioning signal is OK. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 6. Momentarily connect the under-hood fuse/relay box 14P connector terminal No. 10 and body ground with a jumper wire several times.

UNDER-HOOD FUSE/RELAY BOX 14P CONNECTOR



Wire side of female terminals

Is there clicking noise from the A/C compressor clutch?

YES - Repair open in the wire between the ECM/PCM (E18) and the A/C clutch relay. ■

NO - Check the A/C system for other symptoms. ■

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Data

You can retrieve data from the ECM/PCM by connecting the scan tool or the Honda PGM Tester to the Data Link Connector (DLC). The items listed in the table below conform to SAE recommended practice. The Honda PGM Tester also reads data beyond that recommended by SAE so that this data may help you find the causes of intermittent problems.

NOTE:

- The "operating values" listed are approximate and may vary depending on the environment and the individual vehicle.
- Unless noted otherwise, "at idle speed" means idling with the engine completely warmed up, A/T in Park or neutral, M/T in neutral position, and the A/C and all accessories turned off.

Data	Description	Operating Value	Freeze Data
Diagnostic Trouble Code (DTC)	If the ECM/PCM detects a problem, it will store it as a code consisting of one letter and four numbers. Depending on the problem, an SAE-defined code (P0xxx) or a Honda-defined code (P1xxx) will be output to the tester.	If no problem is detected, there is no output.	YES
Engine Speed	The ECM/PCM computes engine speed from the signals sent from the Crankshaft Position (CKP) sensor. This data is used for determining the time and amount of injected fuel.	Nearly the same as tachometer indication At idle speed: 650±50 rpm (min-1)	YES
Vehicle Speed	The ECM/PCM converts pulse signals from Vehicle Speed Sensor (VSS).	Nearly the same as speedometer indication	YES
Manifold Absolute Pressure (MAP)	The absolute pressure caused in the intake manifold by engine load and speed.	With engine stopped: Nearly the same as atmospheric pressure At idle speed: about 20-34 kPa (150-260 mmHg, 6-10 in.Hg), 0.7-1.1 V	YES
Engine Coolant Temperature (ECT)	The ECT sensor converts coolant temperature into voltage and signals the ECM/PCM. The sensor is a thermistor whose internal resistance changes with coolant temperature. The ECM/PCM uses the voltage signals from the ECT sensor to determine the amount of injected fuel.	With cold engine: Same as ambient temperature and IAT With engine warmed up: about 80-100°C (176-212°F), 0.5-0.8 V	YES

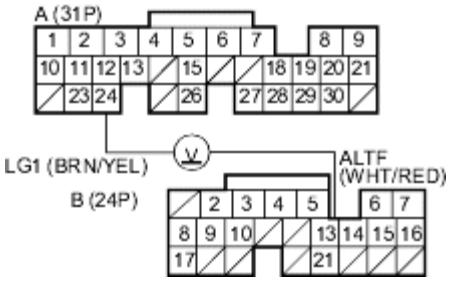
Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1), Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2)	The HO2S detects the oxygen content in the exhaust gas and sends voltage signals to the ECM/PCM. Based on these signals, the ECM/PCM controls the air fuel ratio. When the oxygen content is high (that is, when the ratio is leaner than the stoichiometric ratio), the voltage signal is lower. When the oxygen content is low (that is, when the radio is richer than the stoichiometric ratio), the voltage signal is higher.	0.0-1.25 V At idle speed: about 0.1-0.9 V	NO

Idle Control System

Alternator FR Signal Circuit Troubleshooting

1. 1. Disconnect the ALT 4P connector.
2. 2. Turn the ignition switch ON (II).
   3. Measure voltage between ECM/PCM connector terminals A24 and B13.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES - Go to step 4.

NO - Go to step 14.

3. 4. Turn the ignition switch OFF.
   5. Reconnect the ALT 4P connector.
   6. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   7. Measure voltage between ECM/PCM connector terminals A24 and B13.

Does the voltage decrease when the headlights and rear window defogger are turned on?

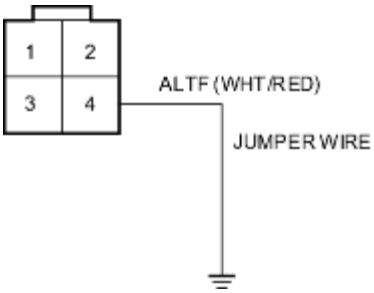
YES - The ALT FR signal is OK. ■

NO - Go to step 8.

4. 8. Turn the ignition switch OFF.
   9. Disconnect the negative cable from the battery.
   10. Disconnect ECM/PCM connector B (24P).
   11. Disconnect the ALT 4P connector.

1. 12. Connect the ALT 4P connector terminal No. 4 and body ground with a jumper wire.

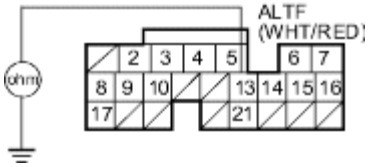
ALT 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Test the ALT (see step 1 on page 4-29). ■

NO - Repair open in the wire between the ECM/PCM (B13) and the ALT. ■

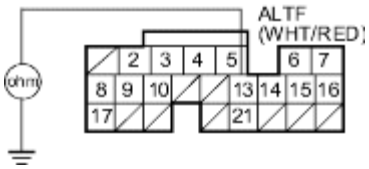
14. Turn the ignition switch OFF.
15. Disconnect the negative cable from the battery.
16. Disconnect ECM/PCM connector B (24P).

Idle Control System

Alternator FR Signal Circuit Troubleshooting (cont'd)

1. 17. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B13) and the ALT. ■

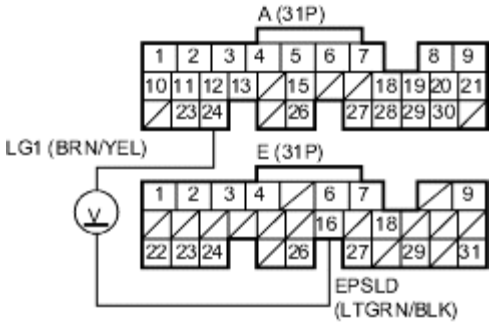
NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

Idle Control System

Electrical Power Steering (EPS) Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES - Go to step 6.

NO - Go to step 3.

3. 3. Start the engine.
   4. Turn the steering wheel to the full lock position.
   5. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there battery voltage momentarily?

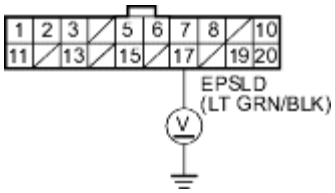
YES - The EPS signal is OK. ■

NO - Go to step 10.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the EPS control unit 20P connector.
   8. Turn the ignition switch ON (II).

1. 9. Measure voltage between the EPS control unit terminal No.17 and body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

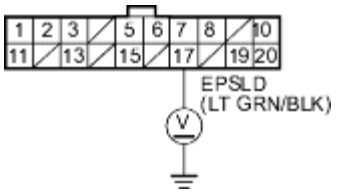
YES - Substitute a known-good EPS control unit and recheck. ■

NO - Repair open in the wire between the ECM/PCM (E16) and the EPS control unit. ■

10. Turn the ignition switch OFF.
11. Disconnect the EPS control unit 20P connector.
12. Turn the ignition switch ON (II).

1. 13. Measure voltage between EPS control unit terminal No. 17 and the body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

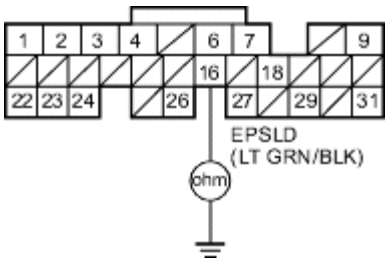
Is there battery voltage?

YES - Substitute a known-good EPS control unit and recheck. ■

NO - Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect the ECM/PCM connector E (31P).
16. Check for continuity between body ground and ECM/PCM connector terminal E16.

ECM/PCM CONNECTORS E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E16) and the EPS control unit. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If prescribed voltage is now available, replace the original ECM. ■

1. 1. Check the brake lights.

Are the brake lights on without pressing the brake pedal?

YES - Inspect the brake pedal position switch (see page 19-10). ■

NO - Go to step 2.

2. 2. Press the brake pedal.

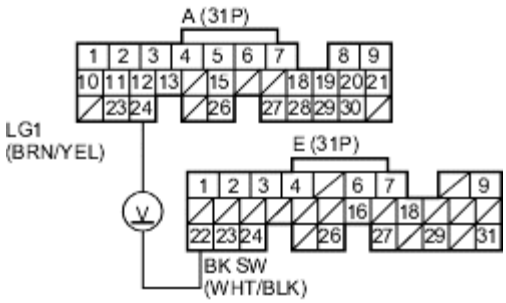
Do the brake lights come on?

YES - Go to step 3.

NO - Go to step 4.

3. 3. Measure voltage between ECM/PCM connector terminals A24 and E22 with the brake pedal pressed.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES - The brake pedal position switch signal is OK. ■

NO - Repair open in the wire between the ECM/PCM (E22) and the brake pedal position switch. ■

Idle Control System

Brake Pedal Position Switch Signal Circuit Troubleshooting (cont'd)

1. 4. Inspect the No. 7 HORN, STOP (15A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

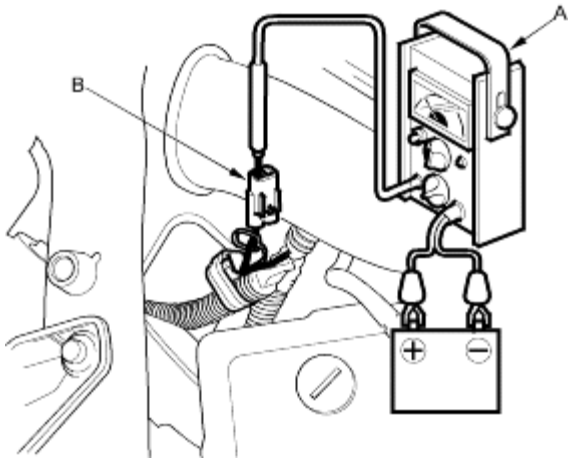
YES - Repair open in the wire between the brake pedal position switch and the No. 7 HORN, STOP (15 A) fuse. Inspect the brake pedal position switch (see page 19-10). ■

NO - Repair short in the wire between the ECM/PCM (E22) and the No. 7 HORN, STOP (15A) fuse. Replace the No. 7 HORN, STOP (15A) fuse. ■

Idle Control System
Idle Speed Inspection

NOTE:
- Leave the Idle Air Control (IAC) valve connected.
- Before checking the idle speed, check these items:
  - The Malfunction Indicator Lamp (MIL) has not been reported on.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system

2. 1. Disconnect the Evaporative Emission (EVAP) canister purge valve 2P connector.
   2. Connect a tachometer (A) to the test tachometer connector (B).



3. 3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Turn the ignition switch OFF.
   5. Start the engine.Check the idle speed with no-load conditions: headlights, blower fan, rear defogger, radiator fan, and air conditioner are not operating.

Idle speed should be:

M/T	650±50 rpm (min^{-1})
A/T	650±50 rpm (min^{-1}) (in Park or neutral)

NOTE:ECM/PCM might control to raise the idle speed 750 rpm (min^{-1}) in case of the battery performance,etc. In this case, idle speed is OK.Go to step 6.

1. 6. Idle the engine for 1 minute with heater fan switch on HI and air conditioner on, then check the idle speed.

Idle speed should be:

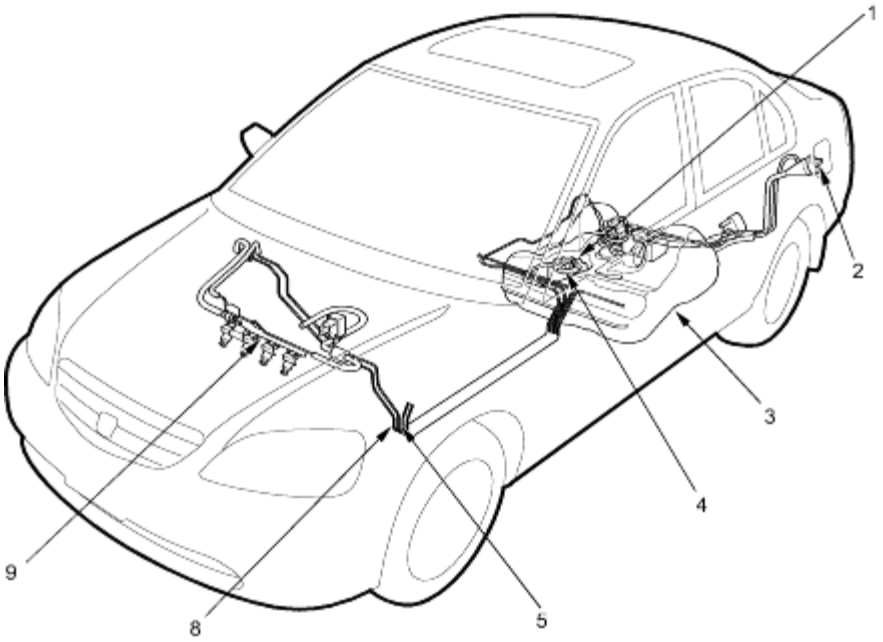
M/T	750±50 rpm (min^{-1})
A/T	750±50 rpm (min^{-1}) (in Park or neutral)

NOTE: If the idle speed in not within specification, see Symptom Chart.

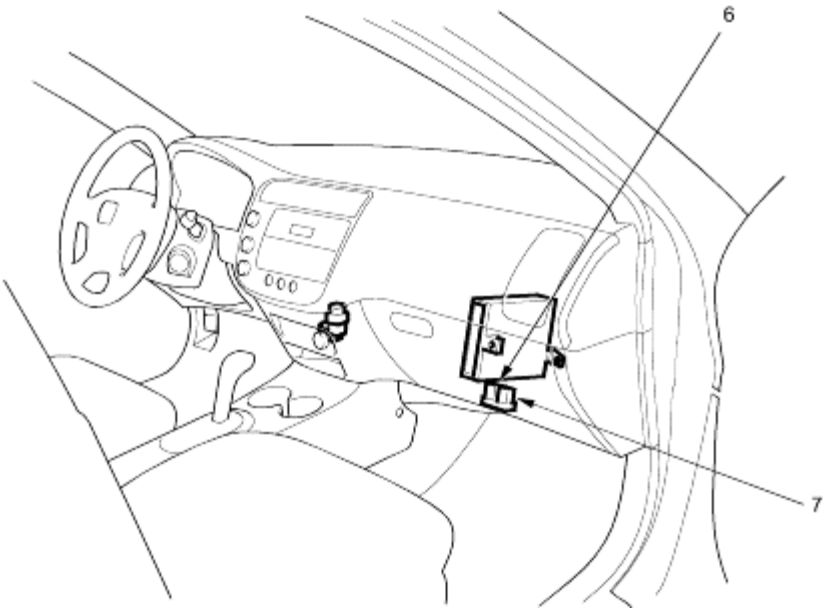
2. 7. Reconnect the EVAP canister purge valve 2P connector.

Fuel Supply System

Component Location Index



1. FUEL PUMP
   Troubleshooting, page 11-127
   Replacement, page 11-139
   FUEL FILTER
   Replacement, page 11-138
   FUEL GAUGE SENDING UNIT
   Test/Replacement, page 11-141
   FUEL PRESSURE REGULATOR
   Replacement, page 11-138
2. FUEL FILL CAP
3. FUEL TANK
   Replacement, page 11-140
4. FUEL TUBE/QUICK-CONNECT FITTINGS
   Precautions, page 11-134
   Removal, page 11-135
   Installation, page 11-136
5. FUEL VAPOUR PIPE
6. PGM-FI MAIN RELAY 2
   Troubleshooting, page 11-127
7. PGM-FI MAIN RELAY 1
8. FUEL FEED PIPE
9. FUEL RAIL



*: The illustration shows LHD model.

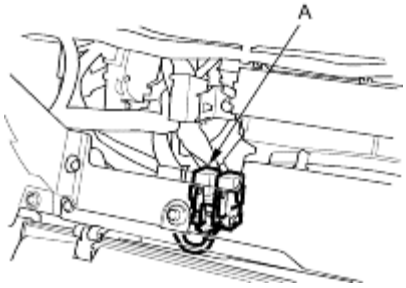
Fuel Supply System

Fuel Pump Circuit Troubleshooting

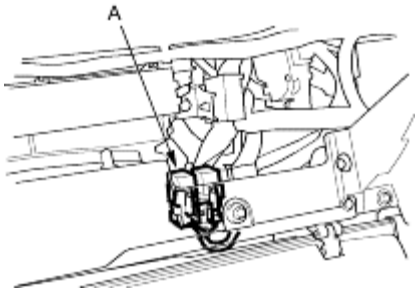
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. 1. Turn the ignition switch OFF.
   2. Remove the glove box (see page 20-79), then remove the PGM-FI main relay 2 (A).

LHD model:

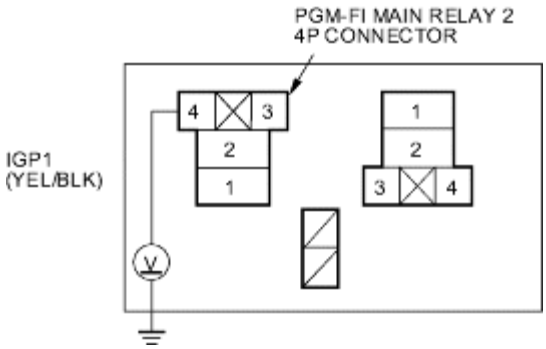


RHD model:



2. 3. Turn the ignition switch ON (II).

1. 4. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 4 and body ground.



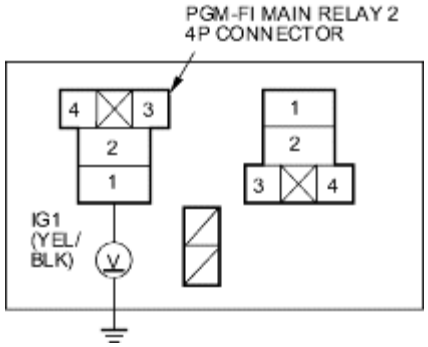
Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the PGM-FI main relay 1 and the PGM-FI main relay 2. ■

2. 5. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 1 and body ground.



Wire side of female terminals

Is there battery voltage?

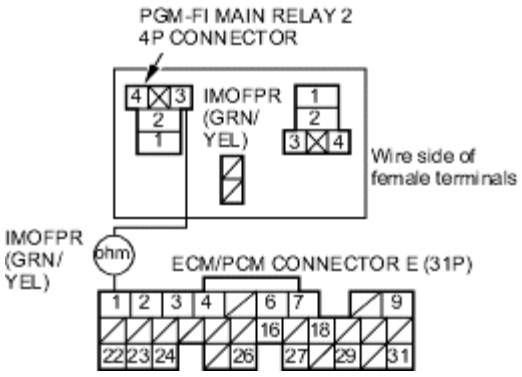
YES - Go to step 6.

NO - Repair open in the wire between the under dash fuse/relay box and PGM-FI main relay 2. ■

3. 6. Turn the ignition switch OFF.
   7. Disconnect ECM/PCM connector E (31P).

Fuel Supply System
Fuel Pump Circuit Troubleshooting (cont'd)

1. 8. Check for continuity between the PGM-FI main relay 2 4P connector terminal No. 3 and ECM/PCM connector terminal E1.



Wire side of female terminals

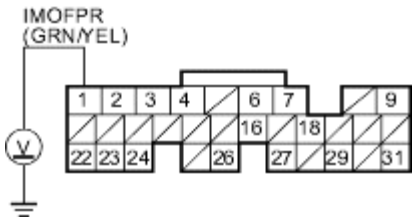
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the PGM-FI main relay 2 and the ECM/PCM (E1). ■

2. 9. Reinstall the PGM-FI main relay 2.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal E1 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

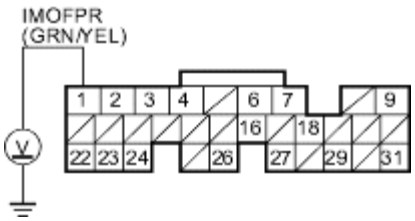
YES - Go to step 12.

NO - Replace the PGM-FI main relay 2. ■

12. Turn the ignition switch OFF.
13. Reconnect ECM/PCM connector E (31P).

1. 14. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E1 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

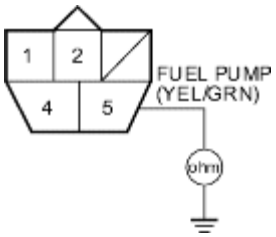
Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Remove the rear seat cushion (see page 20-95).
17. Remove the access panel from the floor.
18. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

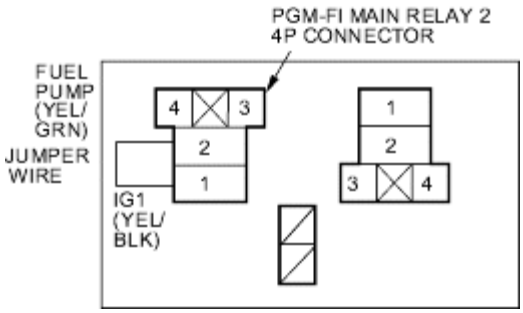
YES - Go to step 24.

NO - Go to step 19.

Fuel Supply System
Fuel Pump Circuit Troubleshooting (cont'd)

1. 19. Turn the ignition switch OFF.

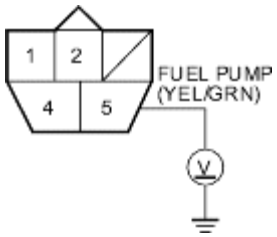
20. Remove the PGM-FI main relay 2.
21. Connect the PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

22. Turn the ignition switch ON (II).
23. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

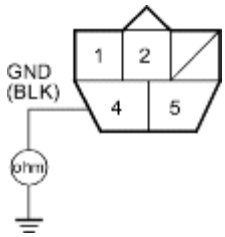
YES - Replace the PGM-FI main relay 2. ■

NO - Repair open in the wire between the PGM-FI main relay 2 and the fuel pump 5P connector. ■

1. 24. Turn the ignition switch OFF.

25. Check for continuity between the fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the fuel pump. ■

NO - Repair open in the wire between the fuel pump 5P connector and G551. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Data (cont'd)

Data	Description	Operating Value	Freeze Data
Fuel System Status	Fuel system status is indicated as "open" or "closed". Closed: Based on the HO2S output, the ECM/PCM determines the air/fuel ratio and controls the amount of injected fuel. Open: ignoring HO2S output, the ECM/PCM refers to signals from the Throttle Position (TP), Manifold Absolute Pressure (MAP), Intake Air Temperature (IAT), Barometric Pressure (BARO) and Engine Coolant Temperature (ECT)) sensors to control the amount of injected fuel.	At idle speed: closed	YES
Short Term Fuel Trim	The air/fuel ratio correction coefficient for correcting the amount of injected fuel when the Fuel System Status is "closed. "When the ratio is leaner than the stoichiometric ratio, the ECM/PCM increases short term fuel trim gradually, and the amount of injected fuel increases. The air/fuel ratio gradually gets richer, causing a lower oxygen content in the exhaust gas. Consequently, the short term fuel trim is lowered, and the ECM/PCM reduces the amount of injected fuel. This cycle keeps the air/fuel ratio close to the stoichiometric ratio when in closed loop status.	0.6-1.5	YES
Long Term Fuel Trim	Long term fuel trim is computed from short term fuel trim and indicates changes occurring in the fuel supply system over a long period. If long term fuel trim is higher than 1.00, the amount of injected fuel must be increased. If it is lower than 1.00, the amount of injected fuel must be reduced.	0.8-1.2	YES
Intake Air Temperature (IAT)	The IAT sensor converts intake air temperature into voltage and signals the ECM/PCM. When intake air temperature is low, the internal resistance of the sensor increases, and the voltage signal is higher.	With cold engine: Same as ambient temperature and ECT	YES
Throttle Position	Based on the accelerator pedal position, the opening angle of the throttle valve is indicated.	At idle speed: about 10 %	YES
Ignition Timing	Ignition timing is the ignition advance angle set by the ECM/PCM. The ECM/PCM matches ignition timing to the driving conditions.	At idle speed: 8°±2° BTDC when the SCS short connector is connected	NO

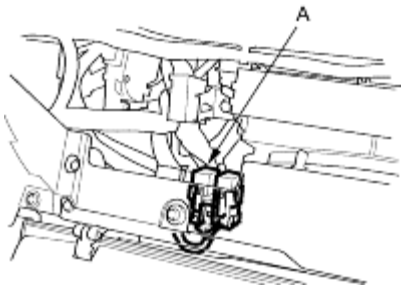
Fuel Supply System

Fuel Pressure Relieving

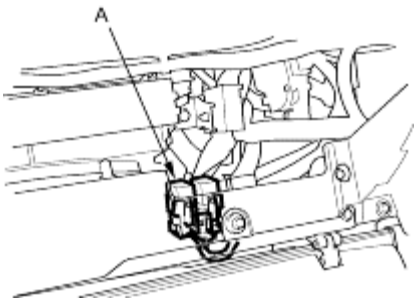
Before disconnecting fuel pipes or hoses, relieve pressure from the system by disconnecting the fuel tube/quick connect fitting in the engine compartment.

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Turn the ignition switch OFF.
   3. Remove the glove box (see page 20-79), then remove the PGM-FI main relay 2 (A).

LHD model:



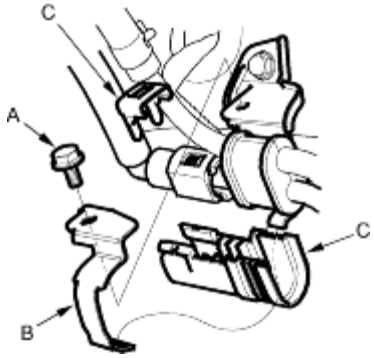
RHD model:



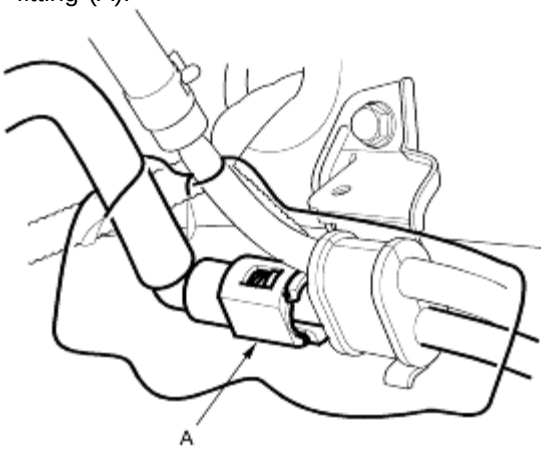
2. 4. Start the engine, and let it idle until it is stalls.

NOTE: The DTCs or Temporary DTCs P0301, P0302, P0303, P0304 may come on during this procedure. If any DTCs are stored, ignore them.

1. 5. Turn the ignition switch OFF.
2. 6. Remove the fuel fill cap, and relieve fuel pressure in the fuel tank.
   7. Disconnect the negative cable from the battery.
   8. Remove the bolt (A) and the fuel feed pipe mounting bracket (B), then remove the quick-connect fitting covers (C).



3. 9. Check the fuel quick-connect fitting for dirt, and clean if necessary.
   10. Place a rag or shop towel over the quick-connect fitting (A).



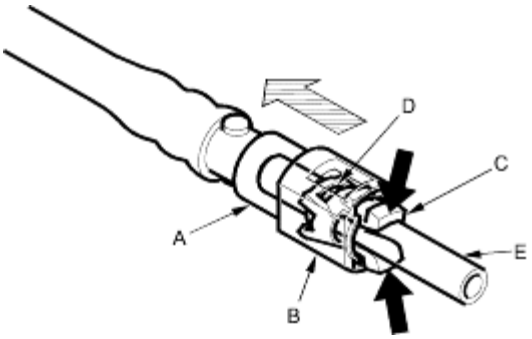
Fuel Supply System

Fuel Pressure Relieving (cont'd)

11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand and squeeze the retainer tabs (C) with the other hand to release them from the locking pawls (D). Pull the connector off.

NOTE:

- Prevent the remaining fuel in the fuel feed pipe or hose from flowing out with a rag or shop towel.
- Be careful not to damage the pipe (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.

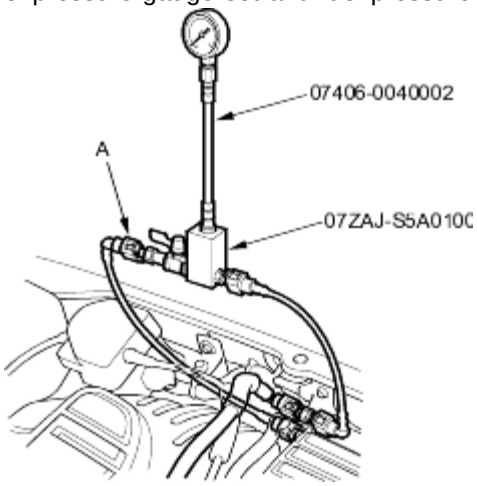


12. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-135).

Special Tools Required

- Fuel pressure gauge 07406-0040002
- Fuel pressure gauge set 07ZAJ-S5A0100

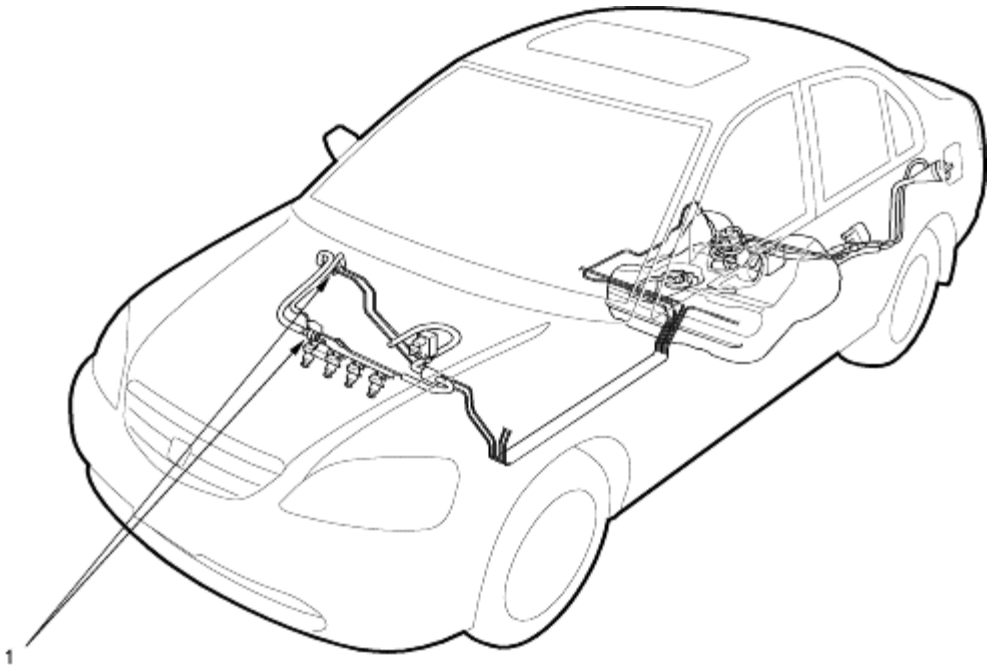
1. Relieve the fuel pressure (see page 11-130).
2. Disconnect the quick-connect fitting (A). Attach the fuel pressure gauge set and fuel pressure gauge.



3. Start the engine and let it idle.
   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
   - If the pump runs, step 5.
   - If the pump does not run, perform the fuel pump circuit troubleshooting (see page 11-127).
5. Read the pressure gauge. The pressure should be 270-320 kpa (2.8-3.3 kgf/cm2, 40-47 psi)
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator and the fuel filter (see page 11-138), and recheck the fuel pressure.

Fuel Supply System
Fuel Lines Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.



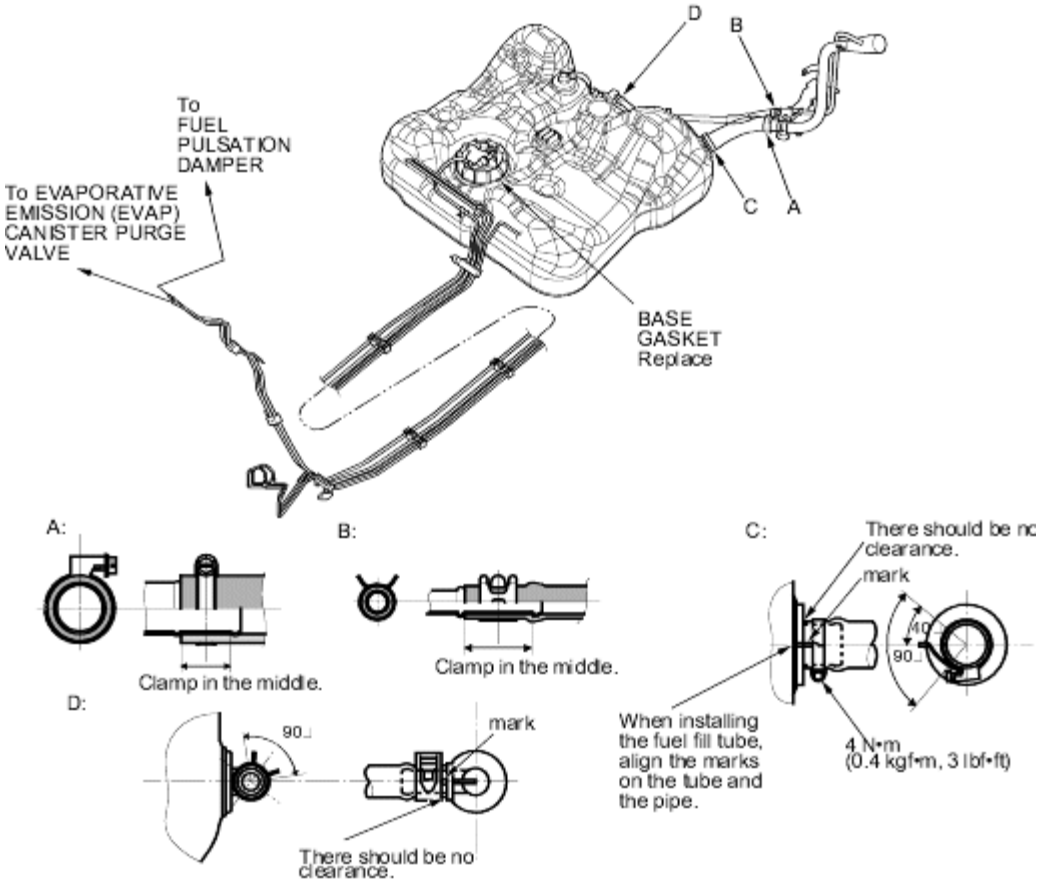
1. Make sure the connection is secure and the quick-connect fitting cover is firmly locked into place.

Fuel Supply System

Fuel Lines Inspection (cont'd)

Check all clamps and retighten if necessary.

▲:Do not disconnect the hose from the pipe at these joints.



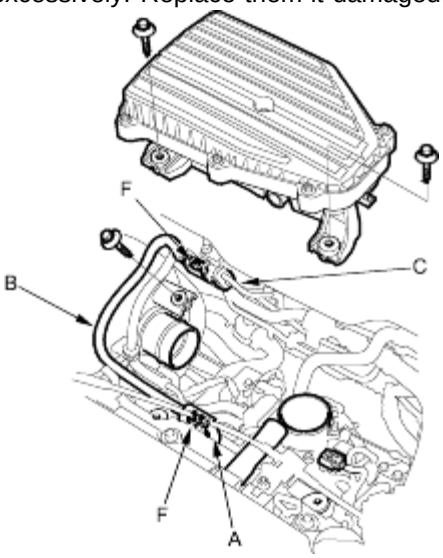
Fuel Supply System

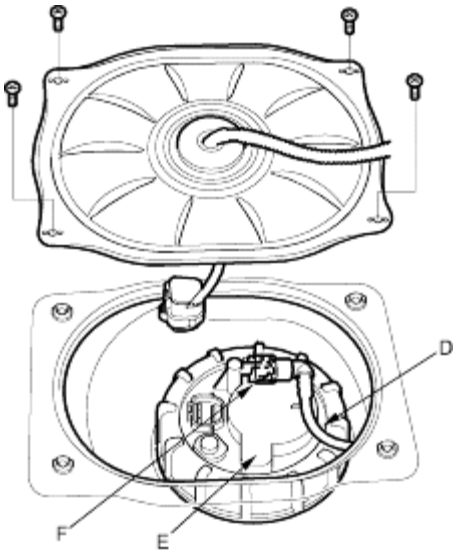
Fuel Tube/Quick-Connect Fittings Precaution

The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel pipe (C), and the fuel tube (D) to the fuel tank unit (E). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (F) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (F) are not acid-proof; do not touch them with a shop towel which was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel tube (D) and quick-connect fittings (F), be careful not to bend or twist them excessively. Replace them it damaged.





A disconnected quick-connect fitting can be reconnected, but the retainer on the mating pipe cannot be reused once it has been removed from the pipe. Replace the retainer when

- replacing the fuel rail.
- replacing the fuel pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.

PART	MANUFACTURER	RETAINER COLOUR
ENGINE COMPARTMENT	TOKAI	GREEN
FUEL TANK UNIT	SANOH	WHITE

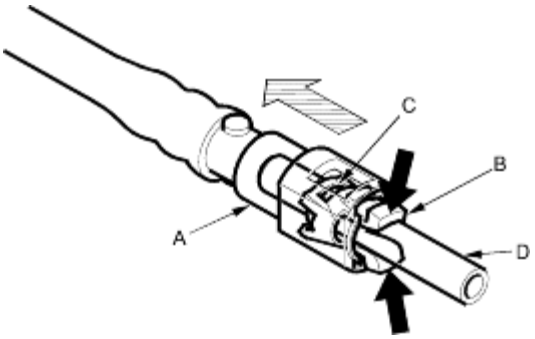
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Removal

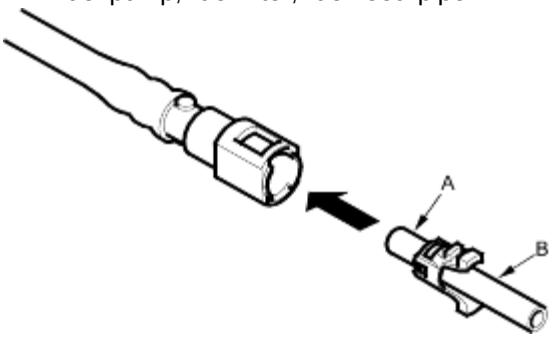
1. 1. Relieve fuel pressure (see page 11-130).
2. 2. Check the fuel quick-connect fittings for dirt, and clean if necessary.
   3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (C). Pull the connector off.

NOTE:

- Be careful not to damage the pipe (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.



1. 4. Check the contact area (A) of the pipe (B) for dirt and damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, fuel feed pipe.



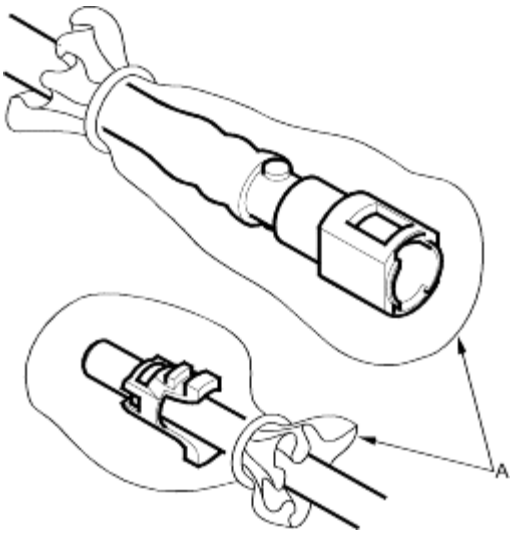
2. 5. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with plastic bags (A).

NOTE:

- The retainer cannot be reused once it has been removed from the pipe.

Replace the retainer when

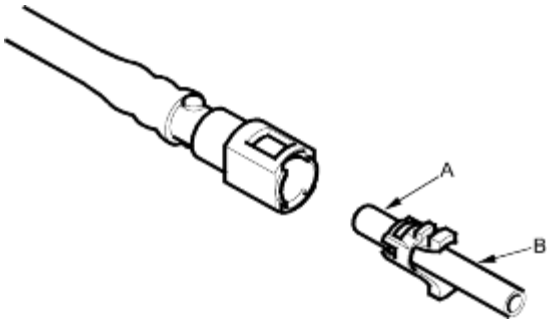
- replacing the fuel rail.
- replacing the fuel feed pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.



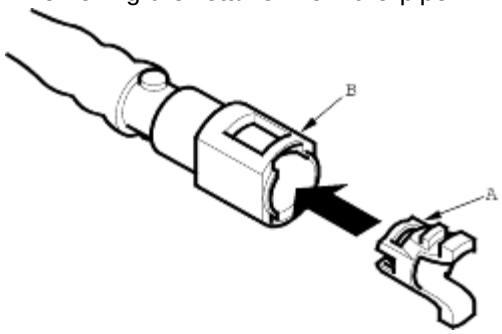
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation

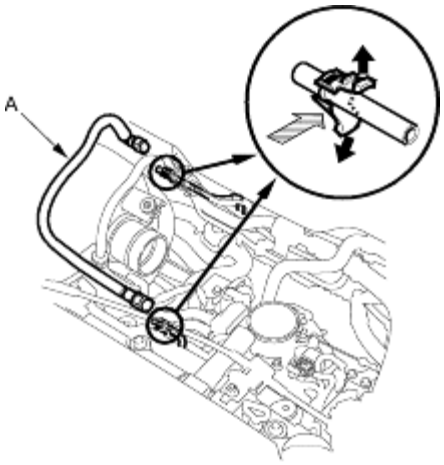
1. 1. Check the contact area (A) of the pipe (B) for dirt and damage, and clean if necessary.

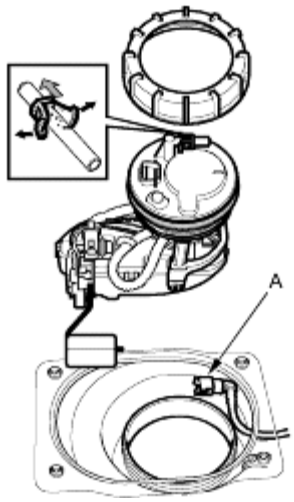


2. 2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed pipe.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the pipe.



1. 3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating pipe.





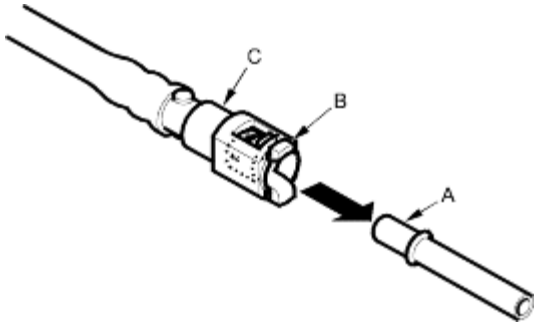
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation (cont'd)

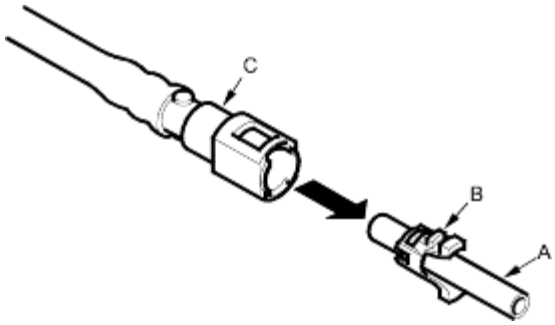
1. 4. Align the quick-connect fittings with the pipe (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the pipe until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the pipe end.

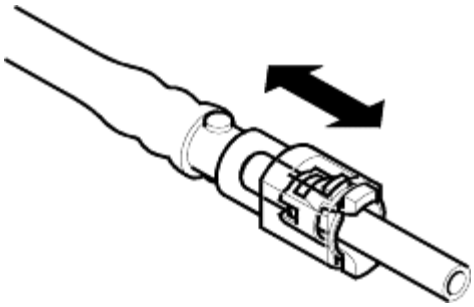
Connection with new retainer:



Reconnection to existing retainer:



1. 5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.

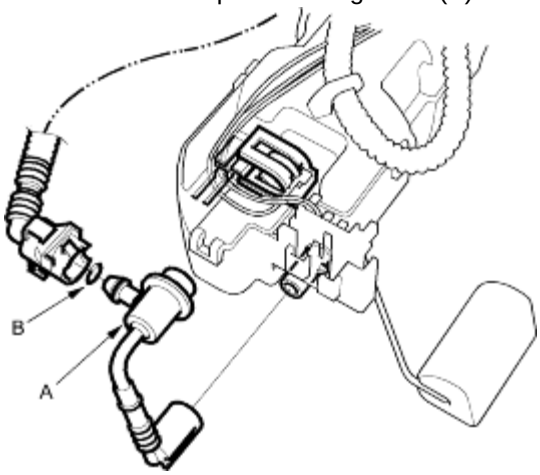


2. 6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

Fuel Pressure Regulator Replacement

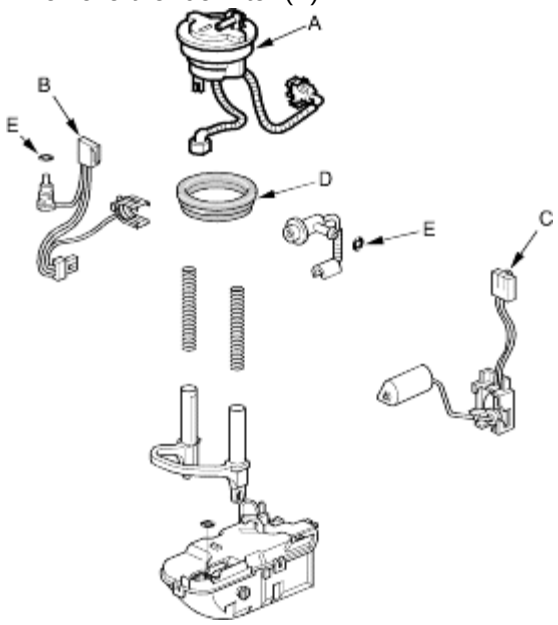
1. 1. Remove the fuel pump (see page 11-139).
2. 2. Remove the fuel pressure regulator (A).



3. 3. Install the part in the reverse order of removal with a new O-ring (B).

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (270-320 kPa, 2.8-3.3 kgf/cm2, 40-47 psi) after making sure that the fuel pump and the fuel pressure regulator are OK.

1. 1. Remove the fuel pump (see page 11-139).
   2. Remove the fuel filter (A).



2. 3. Install the part in the reverse order of removal with a new base gasket (D) and new O-rings (E), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the terminal (B) is firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

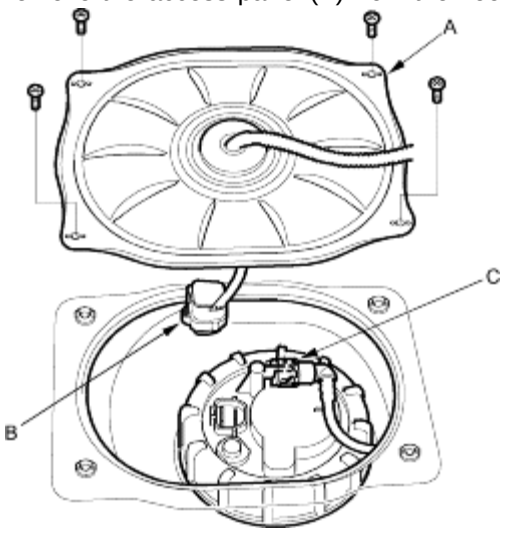
Fuel Supply System

Fuel Pump/Fuel Gauge Sending Unit Replacement

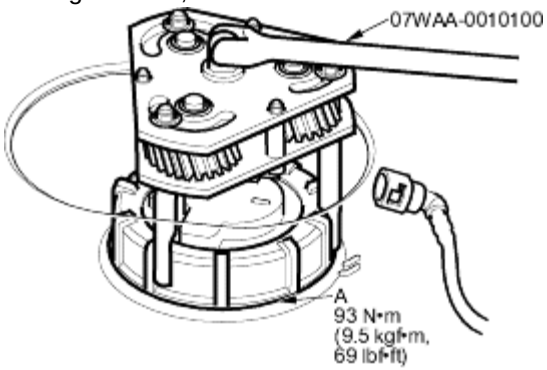
Special Tools Required

Adjustable ring wrench 07WAA-0010100

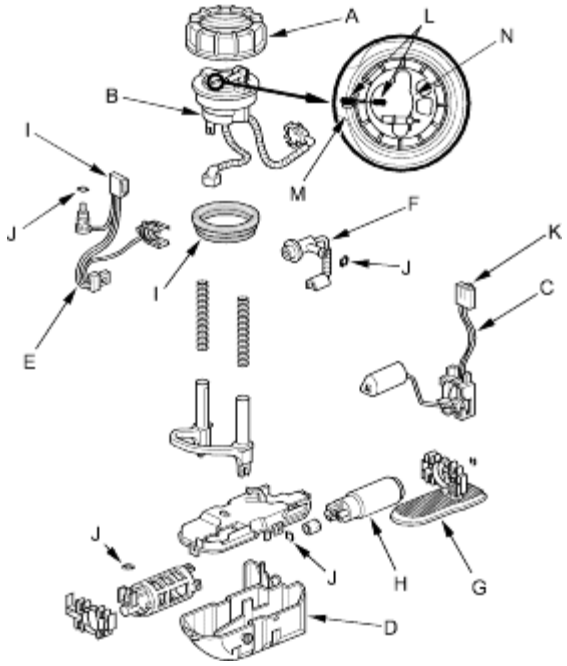
1. 1. Relieve the fuel pressure (see page 11-130).
   2. Remove the fuel fill cap.
   3. Remove the seat cushion (see page 20-95).
   4. Remove the access panel (A) from the floor.



2. 5. Disconnect the fuel pump 5P connector (B).
   6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
   7. Using the tool, loosen the fuel tank unit locknut (A).



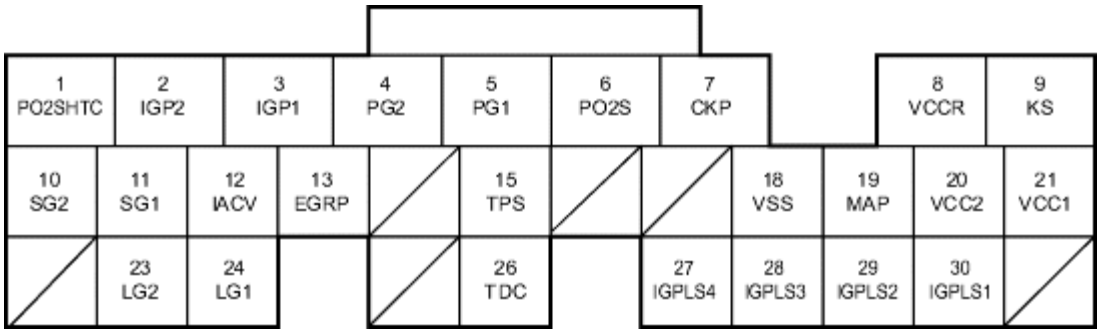
1. 8. Remove the locknut (A), the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).



2. 9. When connecting the fuel tank unit, make sure the connection is secure and the suction filter (G) is firmly connected to the fuel pump (H).
   10. Install the part in the reverse order of removal with a new base gasket (I) and new O-rings (J), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the connector (K) is firmly locked into the place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
   - When installing the fuel tank unit align the marks (L) on the fuel tank (M) and the fuel tank unit (N).

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1	BLK/WHT	PO2SHTC (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) HEATER CONTROL)	Drives primary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
6	WHT	PHO2S (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S), SENSOR 1)	Detects primary HO2S sensor (sensor 1) signal	With throttle fully opened from idle with fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
7	BLU	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
8	YEL	VCCR (SENSOR VOLTAGE RETURN)	Detects sensor voltage	With ignition switch ON (II): about 5 V With the ignition switch OFF: about 0 V
9	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses With ignition switch ON (II): about 5 V
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
12	BLK/RED	IACV (IDLE AIR CONTROL (IAC) VALVE)	Drives IAC valve	With engine running: duty controlled With ignition switch ON (II): about 5 V
13	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2 V-2.0 V (depending on EGR valve lift)
15	RED/BLK			

		TPS (THROTTLE POSITION (TP) SENSOR)	Detects TP sensor signal	With throttle fully open: about 4.8 V With throttle fully closed: about 0.5 V
18	WHT/GRN	VSS (VEHICLE SPEED SENSOR (VSS))	Detects VSS signal	With ignition switch ON (II) and front wheels rotating: cycles 0 V-about 5 V or battery voltage

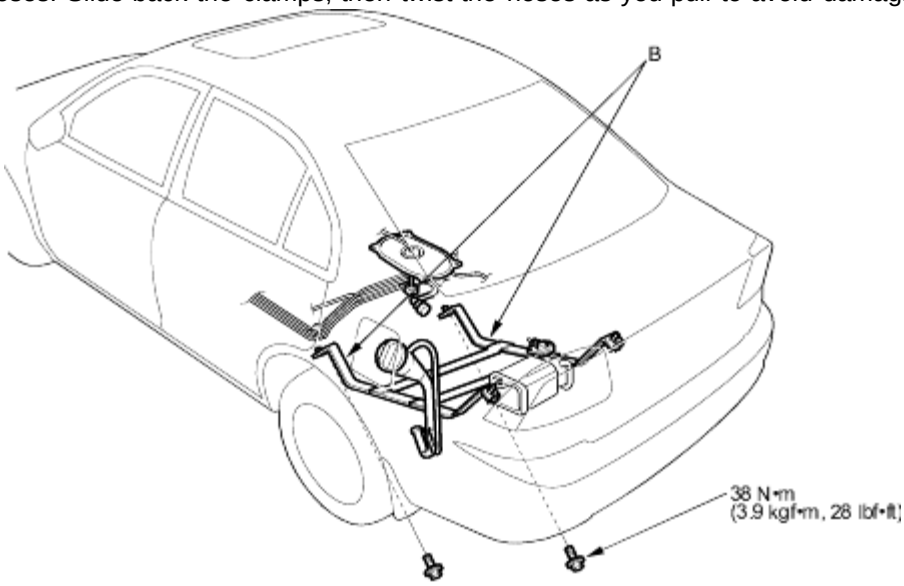
*1: D16W7, D16V1 engines

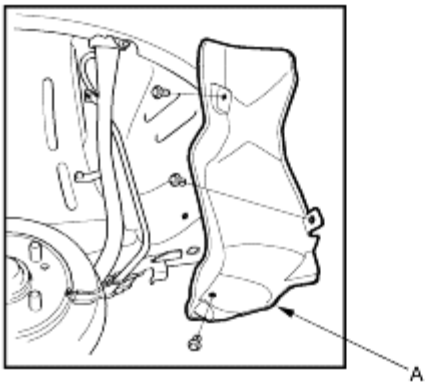
*2: A/T

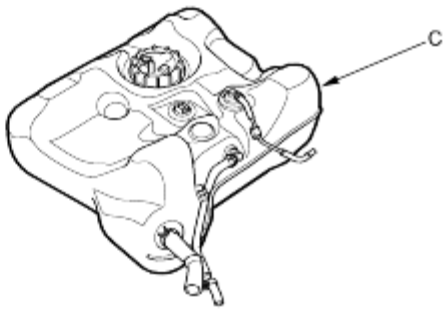
Fuel Supply System

Fuel Tank Replacement

1. 1. Relieve the fuel pressure (see page 11-130).
   2. Drain the fuel tank: Remove the fuel pump (see page 11-139). Using a hand pump, hose and container suitable for gasoline, draw the fuel from the fuel tank.
   3. Jack up the vehicle, and support it with jackstands.
   4. Remove the fuel pipe cover (A). Disconnect the fuel vapour hose and quick-connect fittings.
      Disconnect the hoses. Slide back the clamps, then twist the hoses as you pull to avoid damaging them.







2. 5. Place a jack, or other support, under the tank.
   6. Remove the strap bolts, and let the strap (B) fall free.
   7. Remove the fuel tank (C). If it sticks to the undercoat on its mount, carefully pry it off the mount.
   8. Install the remaining parts in the reverse order of removal.

Fuel Supply System

Fuel Gauge Sending Unit Test

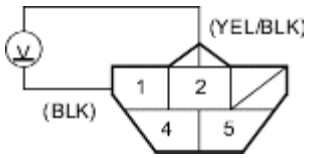
Special Tools Required

Adjustable ring wrench 07WAA-0010100

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-88).

1. 1. Check the No. 10 METER (75A) fuse in the under-dash fuse/relay box before testing.
   2. Turn the ignition switch OFF.
   3. Remove the rear seat cushion (see page 20-95).
   4. Remove the access panel from the floor.
   5. Disconnect the fuel pump 5P connector.
   6. Measure voltage between the fuel pump 5P connector terminals No. 1 and No. 2 with the ignition switch ON (II). There should be between 5 and 8 V.
      - If the voltage is as specified, go to step 7.
      - If the voltage is not as specified, check for:
   – – an open in the YEL/BLK or BLK wire.
   – – poor ground (G551).

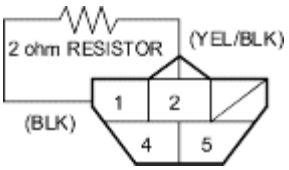
FUEL PUMP 5P CONNECTOR



Wire side of female terminals

1. 7. Turn the ignition switch OFF.
2. 8. Install a 2 ohm; resistor between the fuel pump 5P connector terminals No. 1 and No. 2, then turn the ignition switch ON (II).

FUEL PUMP 5P CONNECTOR



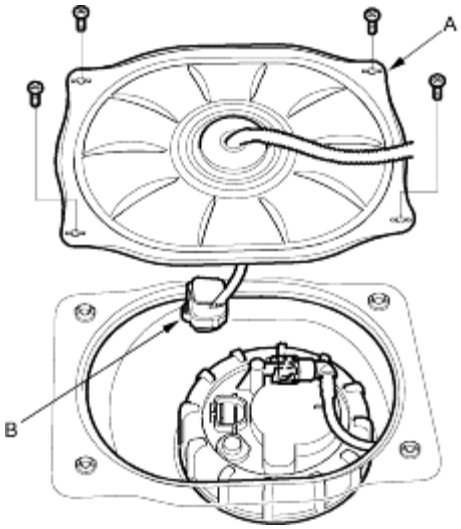
Wire side of female terminals

3. 9. Check that the pointer of the fuel gauge indicates "F".
   - If the pointer of the fuel gauge does not indicate "F", replace the gauge.
   - If the gauge is OK, inspect the fuel gauge sending unit.

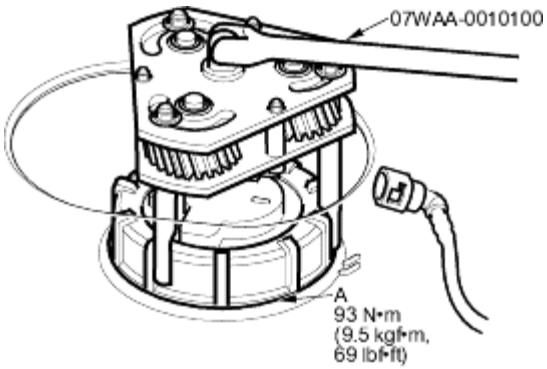
NOTE: The pointer of the fuel gauge returns to the bottom on the gauge dial when the ignition switch is OFF regardless of the fuel level.

Fuel Supply System
Fuel Gauge Sending Unit Test (cont'd)

10. Relieve the fuel pressure (see page 11-130).
11. Remove the fuel fill cap.
12. Remove the rear seat cushion (see page 20-95).
13. Remove the access panel (A) from the floor.



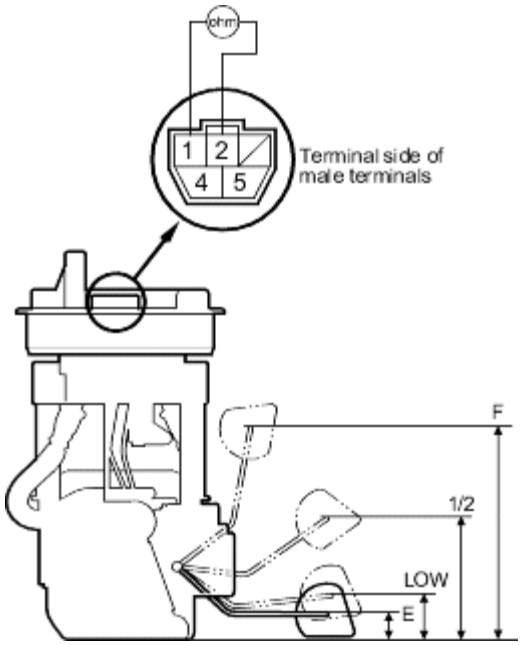
14. Disconnect the fuel pump 5P connector (B).
15. Disconnect the quick-connect fittings from the fuel pump.
16. Using the tool, loosen the fuel tank unit locknut (A).



17. Measure the resistance between the No. 1 and No. 2 terminals with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

If you do not get the following readings, replace the fuel gauge sending unit (see page 11-139).

Float Position	F	1/2	LOW	E
Resistance (ohms)	11-13	68.5-74.5	113.4-128	130-132



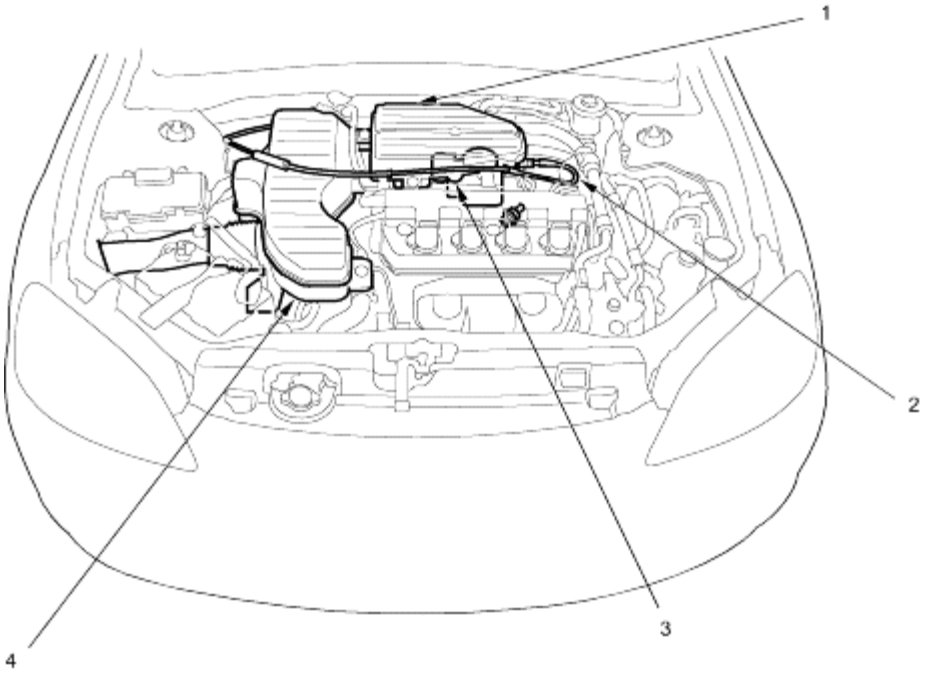
Fuel Supply System

Low Fuel Indicator Light Test

1. 1. Do the fuel gauge sending unit test (see page 11-141).
   - If the system is OK, go to step 2.
   - If the system has any malfunction, repair it.
2. 2. Turn the ignition switch ON (II) with the float at the E (EMPTY) position.
   - If the low fuel indicator light is on , go to step 3.
   - If the low fuel indicator light is not on, refer to the low fuel indicator Circuit Diagram (see page 22-88) and check the circuit.
3. 3. Lift the float above the LOW position.
   - If the low fuel indicator light goes off, the system is OK.
   - If the low fuel indicator light is still on, refer to the low fuel indicator Circuit Diagram (see page 22-88) and check the circuit.

Intake Air System

Component Location Index



1. AIR CLEANER
   Replacement, page 11-146
   AIR CLEANER ELEMENT
   Replacement, page 11-147
2. THROTTLE CABLE
   Adjustment, page 11-149
   Removal/Installation, page 11-150
3. THROTTLE BODY
   Test, page 11-145
   Removal/Installation, page 11-151
   Disassembly/Reassembly, page 11-152
4. RESONATOR
   Replacement, page 11-148

Intake Air System
Throttle Body Test

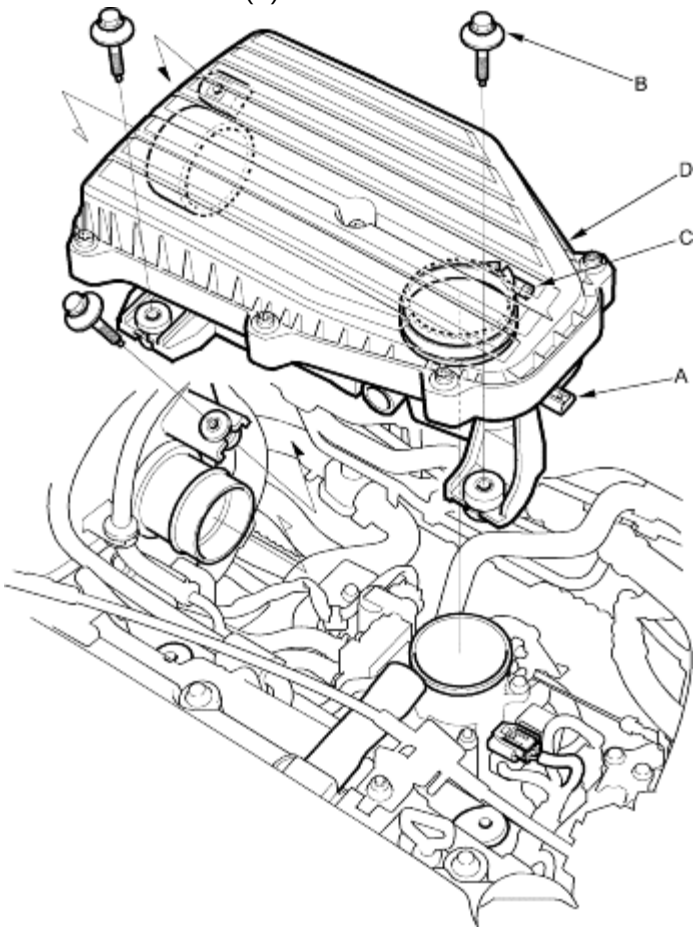
NOTE:

- Do not adjust the throttle stop screw. It is preset at the factory.
- If the Malfunction Indicator Lamp (MIL) has been reported on, check for Diagnostic Trouble Codes (DLC) (see page 11-3).

1. With the engine off, check the throttle cable operation. The cable should operate without binding or sticking.
   - If the cable operates OK, go to step 2.
   - If the cable binds or sticks, check it and its routing. If it is faulty, re-route it or replace it and adjust it (see page 11-149), then go to step 2.
2. Operate the throttle lever by hand to see if the throttle valve and/or shaft are too loose or too tight.
   - If there is excessive play in the throttle valve shaft, or any binding in the throttle valve at the fully closed position, replace the throttle body.
   - If the throttle valve and shaft are OK, go to step 3.
3. Connect the scan tool to the Data Link Connector (DLC).
4. Turn the ignition switch ON (II).
5. Check the throttle position with the scan tool. There should be about 10% when the throttle is fully closed and about 90% when the throttle is fully opened.
   - If the throttle position is correct, the throttle body is OK.
   - If the throttle position is not correct, replace the throttle body.

Intake Air System
Air Cleaner Replacement

1. 1. Disconnect the connector from the IAT sensor (A).

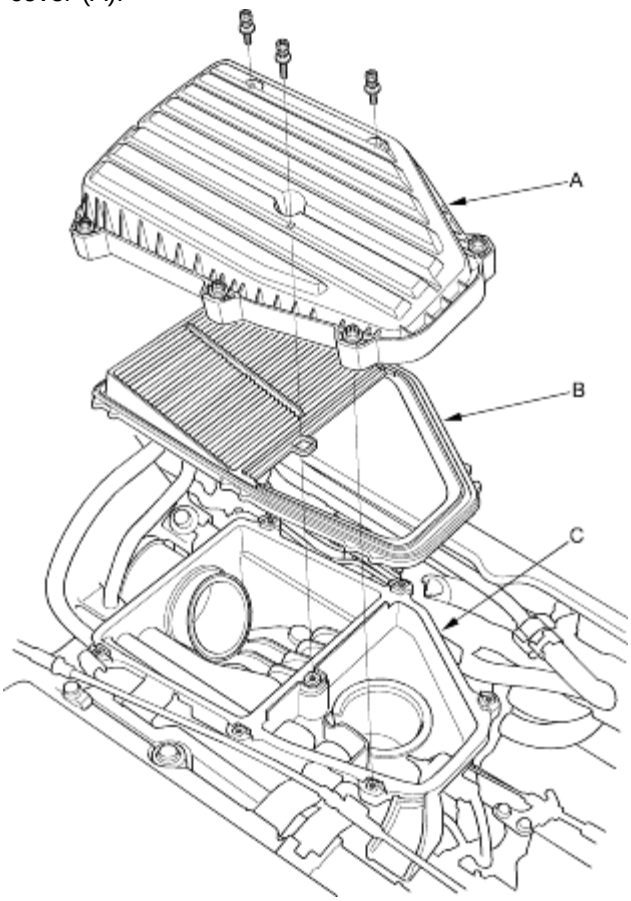


2. 2. Remove the bolts (B).
   3. Loosen the screw (C).
   4. Remove the air cleaner (D).
   5. Install the parts in the reverse order of removal.

Intake Air System

Air Cleaner Element Replacement

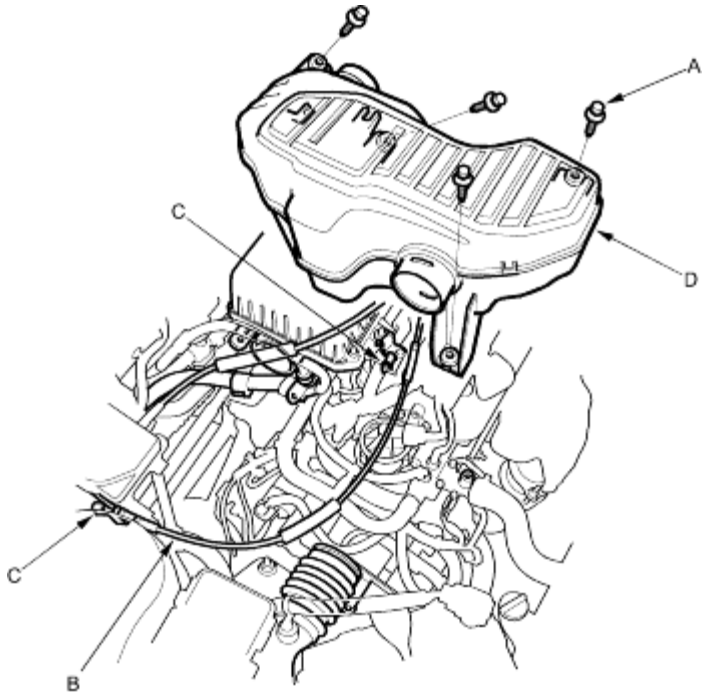
1. 1. Open the air cleaner housing cover (A).



2. 2. Remove the air cleaner element (B) from the air cleaner housing (C).
   3. Install the parts in the reverse order of removal.

Intake Air System
Resonator Replacement

1. 1. Remove the bolts (A).

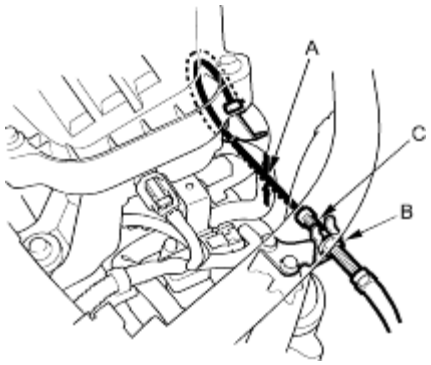


2. 2. Remove the throttle cable (B) from the bracket (C).
   3. Remove the resonator (D).
   4. Install the parts in the reverse order of removal.

Intake Air System

Throttle Cable Adjustment

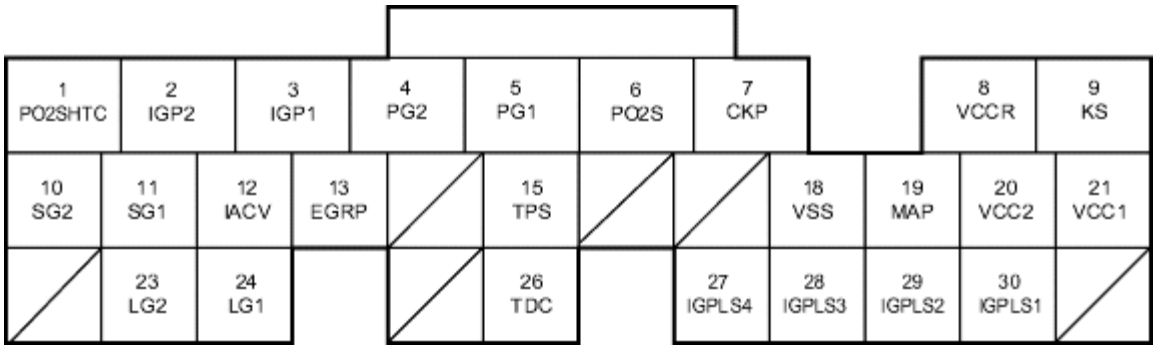
1. 1. Check cable free play at the throttle linkage. Cable deflection (A) should be 10-12 mm (3/8-1/2 in.).



2. 2. If deflection (A) is not within spec (10-12 mm, 3/8-1/2 in.) loosen the locknut (B), turn the adjusting nut (C) until the deflection (A) is as specified, then retighten the locknut (B).
   3. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
19	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
23	BRN/YEL	LG2 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
26	GRN	TDC (TOP DEAD CENTRE (TDC) SENSOR)	Detects TDC sensor	With engine running: pulses
27	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
29	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
30	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	

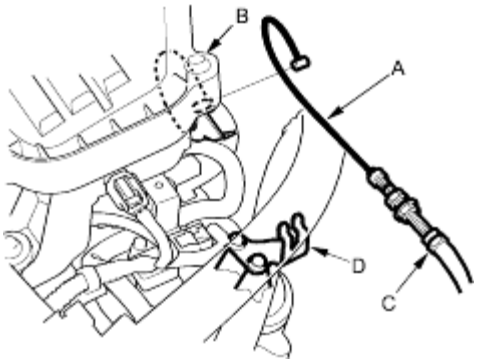
*1: D16W7, D16V1 engines

*2: A/T

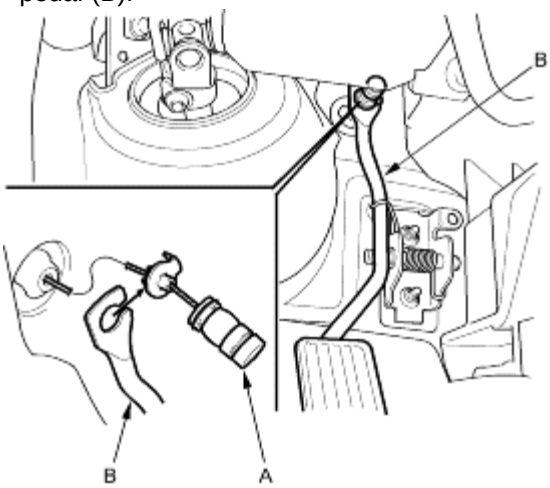
Intake Air System

Throttle Cable Removal/Installation

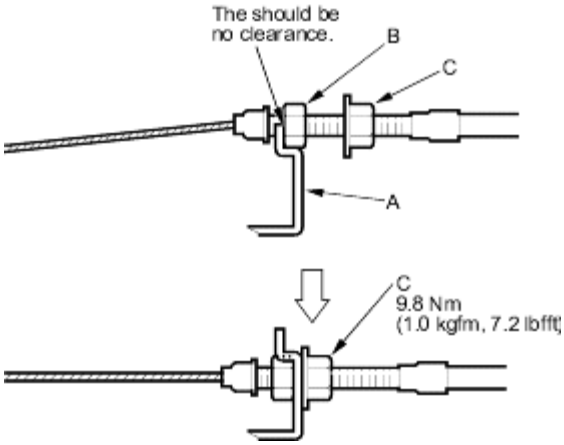
1. 1. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).



2. 2. Remove the cable housing (C) from the cable bracket (D).
   3. Remove the throttle cable (A) from the accelerator pedal (B).



1. 4. Install in the reverse order of removal.
2. 5. After installing, start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   6. Hold the cable, removing all slack from the cable.
   7. Set the locknut on the cable bracket (A).
   Adjust the adjusting nut (B) so that its free play is 0 mm.



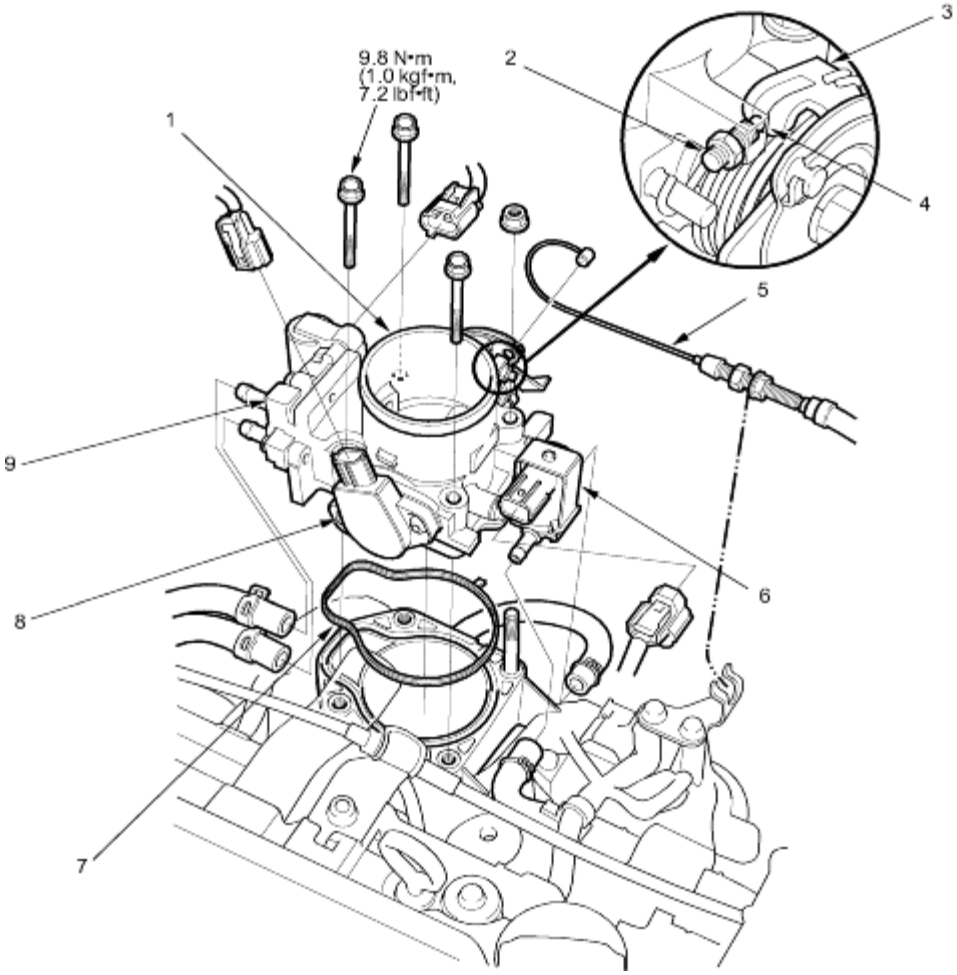
3. 8. Remove the cable from the throttle bracket (A). Reset the adjusting nut (B) and tighten the locknut (C).
   9. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Intake Air System

Throttle Body Removal/Installation

NOTE:

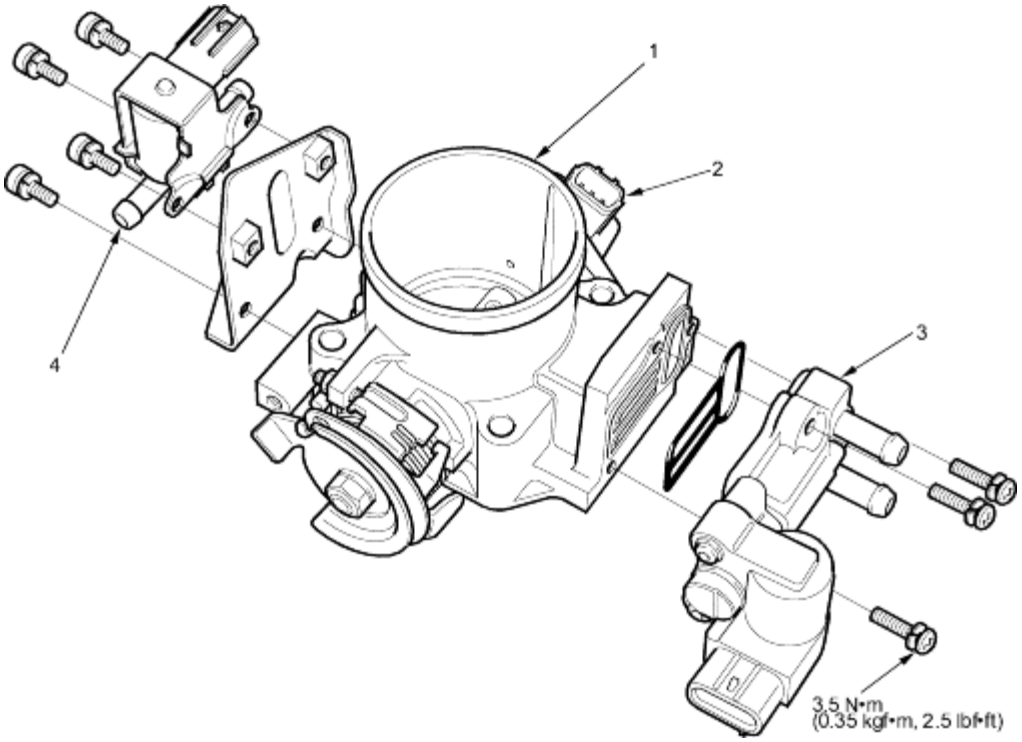
- Do not adjust the throttle stop screw.
- After reassembly, adjust the throttle cable (see page 11-149).
- The Throttle Position (TP) sensor is not removable.



1. THROTTLE BODY
2. THROTTLE STOP SCREW
   (Do not adjust)
3. THROTTLE LEVER
4. There should be no clearance
5. THROTTLE CABLE
6. EVAPORATIVE EMISSION
   (EVAP) CANISTER PURGE
   VALVE
7. GASKET
   Replace.
8. THROTTLE POSITION (TP)
   SENSOR
9. IDLE AIR CONTROL (IAC)
   VALVE

Intake Air System

Throttle Body Disassembly/Reassembly



1. THROTTLE BODY
2. TP SENSOR
3. IAC VALVE
4. EVAP CANISTER PURGE VALVE

Catalytic Converter System
DTC Troubleshooting

DTC P0420: Catalytic System Efficiency Below Threshold

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot those DTCs first, then recheck for DTC P0420.

P0137, P0138: Secondary Heated Oxygen Sensor (secondary HO2S) (Sensor 2)

P0141: Secondary HO2S (Sensor 2) heater

1. 1. Reset the ECM/PCM (see page 11-4), then continue to step 2 through 5 to reset the readiness code.
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Drive for about 10 minutes without stopping on a highway or freeway. Your speed can vary.
   4. With the A/T in D position, M/T in 4th gear, drive at a steady speed between 80-100 km/h (50-62 mph) for 30 seconds.
   5. Repeat step 4 three times. Between each repetition, close the throttle completely for 1-2 seconds. If the engine is stopped during this part of the procedure, go to step 3 and do the procedure again.
   6. Check for a Temporary DTC with the scan tool.

Does the scan tool indicate Temporary DTC P0420?

YES - Check the TWC. If necessary, replace the TWC. ■

NO - Check for readiness code completion. If the readiness is complete, it was a intermittent failure, system is OK at this time. If the readiness is incomplete, repeat steps 2 through 5. ■

1. 1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
2. 2. Connect a tachometer.
   3. Check the idle speed (see page 11-125).
   4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
   5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.
      The CO meter should indicate 0.1 % maximum.

EGR System
DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Test-drive under the following conditions.
      - Without any electrical load.
      - Decelerate from 88 km/h (55 mph) for at least 5 seconds.
2. 3. Check the Temporary DTC with scan tool.

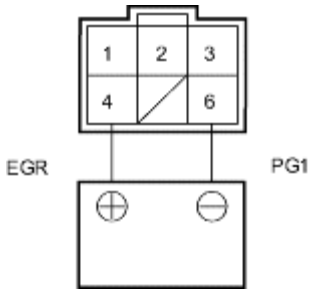
Is Temporary DTC P0401 indicated?

YES - Clean the intake manifold EGR port with carburettor cleaner. Clean the passage inside the EGR valve with carburettor cleaner or replace the EGR valve.

NO - Intermittent failure, go to step 4.

3. 4. Turn the ignition switch OFF.
   5. Disconnect the EGR valve 6P connector.
   6. Connect the battery positive terminal to EGR valve connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

4. 7. Start the engine and let it idle, then connect the battery negative to terminal No. 6.

Did the engine stall or run rough?

YES - Intermittent failure, system is OK at this time. ■

NO - Clean the intake manifold EGR port with carburettor cleaner. Clean the passage inside the EGR valve with carburettor cleaner or replace the EGR valve. ■

DTC P1491: EGR Valve Insufficient Lift

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700-2,500 rpm (min-1) range.
   4. Check the Temporary DTC with the scan tool.

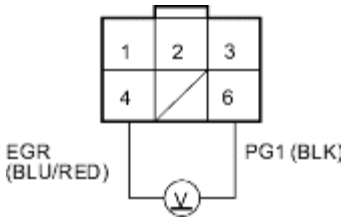
Is Temporary DTC P1491 indicated?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect the EGR valve 6P connector.
   7. Start the engine and let it idle.
   8. Measure voltage between the EGR valve 6P connector terminals No. 4 and No. 6.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

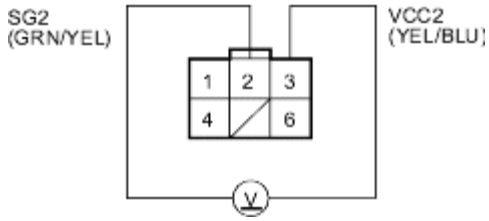
NO - Go to step 9.

EGR System
DTC Troubleshooting (cont'd)

1. 9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).
11. Measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

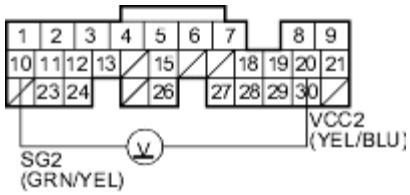
Is there about 5 V?

YES - Go to step 13.

NO - Go to step 12.

12. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

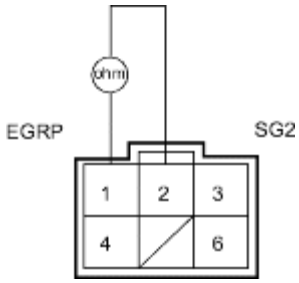
YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10, A20). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 13. Turn the ignition switch OFF.

14. At the sensor side, measure resistance between the EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

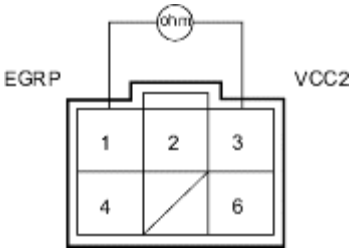
Is there continuity or resistance of 100 kohms or higher?

YES - Replace the EGR valve. ■

NO - Go to step 15.

15. Measure resistance between the EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 kohms or higher?

YES - Replace the EGR valve. ■

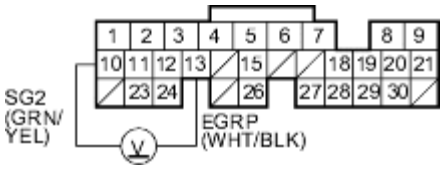
NO - Go to step 16.

16. Reconnect the EGR valve connector.
17. Turn the ignition switch ON (II).

EGR System
DTC Troubleshooting (cont'd)

1. 18. Measure voltage between ECM/PCM connector terminals A10 and A13.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

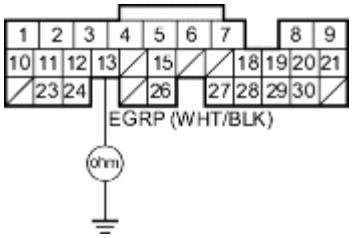
Is there about 1.2 V?

YES - Go to step 21.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Check for continuity between ECM/PCM connector terminal A13 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

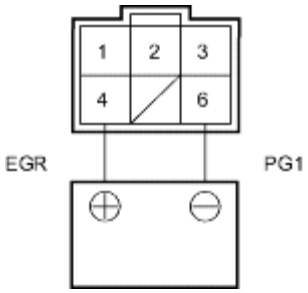
YES - Repair short in the wire between the EGR valve and the ECM/PCM (A13). ■

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A13). ■

1. 21. Turn the ignition switch OFF.

22. Disconnect the EGR valve 6P connector.
23. Connect the battery positive terminal to the EGR valve 6P connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

24. Start the engine and let it idle, then connect the battery negative terminal to the EGR valve 6P connector terminal No. 6.

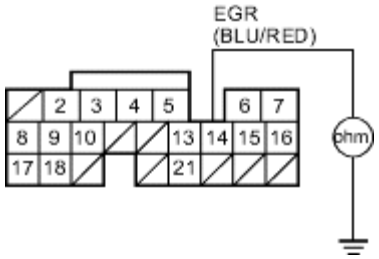
Does the engine stall or run rough?

YES - Go to step 25.

NO - Replace the EGR valve. ■

25. Turn the ignition switch OFF.
26. Disconnect ECM/PCM connector B (24P).
27. Check for continuity between ECM/PCM connector terminal B14 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

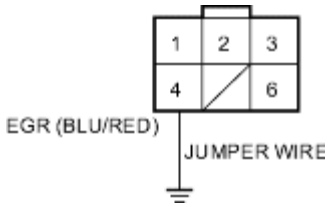
YES - Repair short in the wire between the EGR valve and the ECM/PCM (B14). ■

NO - Go to step 28.

EGR System
DTC Troubleshooting (cont'd)

1. 28. Connect the EGR valve 6P connector terminal No. 4 and body ground with a jumper wire.

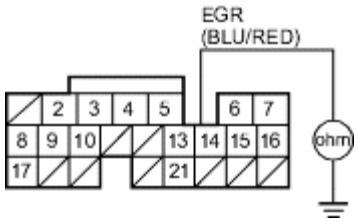
EGR VALVE 6P CONNECTOR



Wire side of female terminals

29. Check for continuity between ECM/PCM connector terminal B14 and the body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

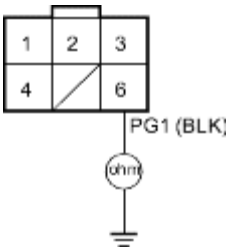
YES - Go to step 30.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (B14). ■

1. 30. Disconnect the jumper wire from the EGR valve 6P connector.

31. Connect the EGR valve 6P connector terminal No. 6 to body ground with a jumper wire.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EGR valve and G101. ■

EGR System

DTC Troubleshooting (cont'd)

DTC P1498:EGR Valve Position Sensor Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine.

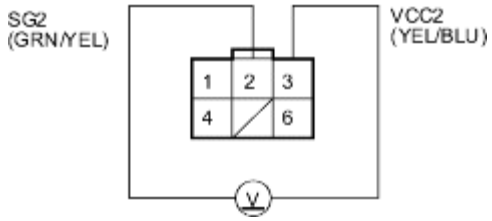
Is DTC P1498 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the EGR valve 6P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

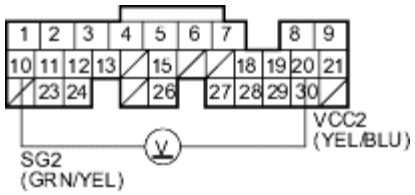
Is there about 5 V?

YES - Replace the EGR valve. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

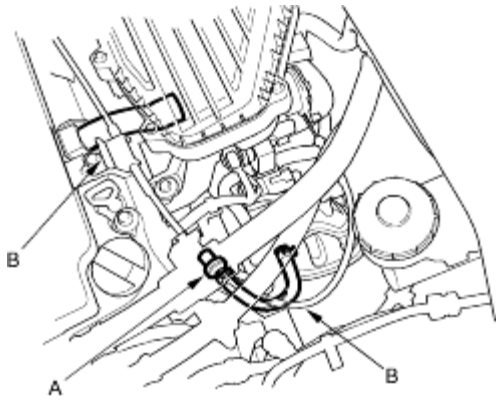
YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

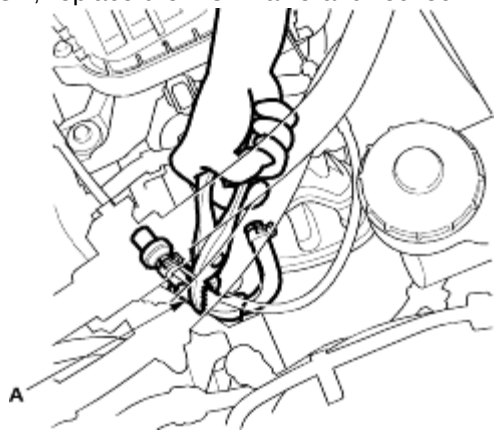
PCV System

PCV Valve Inspection and Test

1. 1. Check the PCV valve (A), hoses (B) and connections for leaks or restrictions.

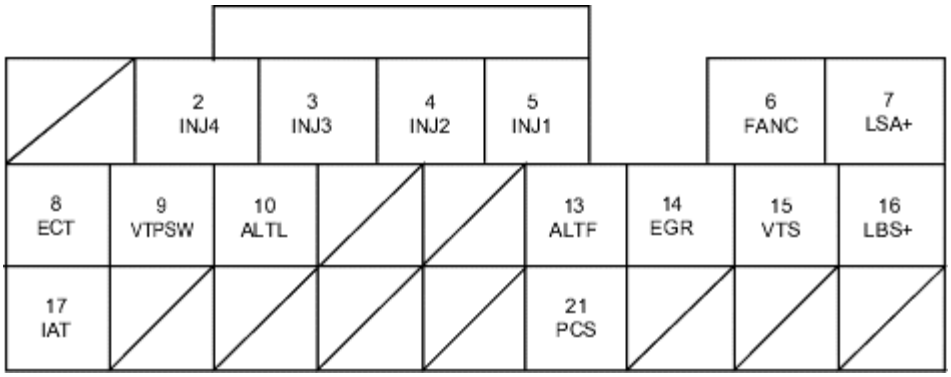


2. 2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	With ignition switch ON (II): battery voltage At idle: duty controlled
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
7*2	RED/BLK	LSA + (A/T PRESSURE CONTROL SOLENOID VALVE A + SIDE	Drives A/T pressure control solenoid valve A	With the ignition switch ON (II): duty controlled
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE (ECT) SENSOR)	Detects ECT sensor signal	With the ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
9*1	BLU/BLK	VTPSW (VTEC OIL PRESSURE SWITCH)	Detects VTEC oil pressure switch signal	At idle: about 0 V
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0 V-5 V (depending on electrical load)
14	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
15*1	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
16*2	BLK/RED	LSB + (A/T PRESSURE CONTROL SOLENOID VALVE B + SIDE	Drives A/T pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1 V-4.8 V

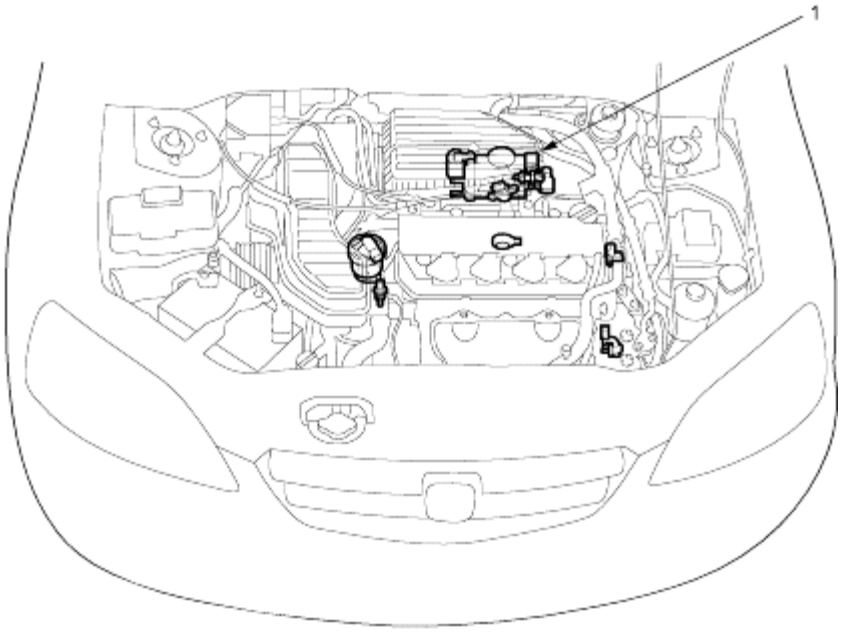
				(depending on intake air temperature)
21	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 70°C (158°F): battery voltage With engine running, engine coolant above 70°C (158°F): duty controlled

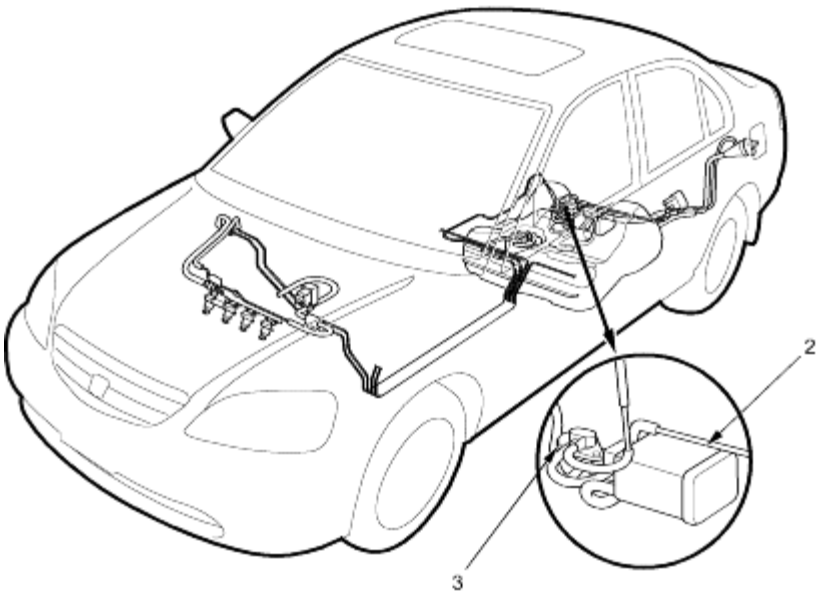
*1: D16W7, D16V1 engines

*2: A/T

Evaporative Emission Control System

Component Location Index





1. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
   Troubleshooting, page 11-161
2. EVAPORATIVE EMISSION (EVAP) CANISTER
   Troubleshooting, page 11-163
3. EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
   Test, page 11-164

Evaporative Emission Control System
DTC Troubleshooting

DTC P0443: EVAP Canister Purge Valve Circuit Malfunction.

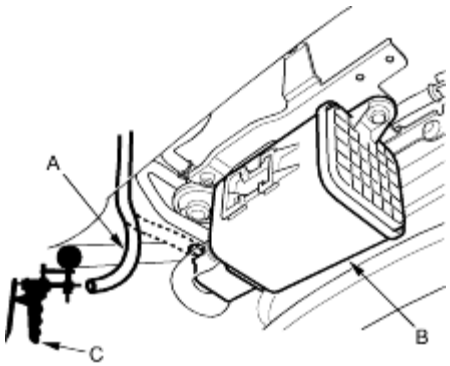
1. 1. Reset the ECM/PCM (see page 11-4).
   2. Turn the ignition switch ON (II).

Is the DTC P0443 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires between the EVAP canister purge valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum gauge (C) to the hose.



3. 5. Start the engine end let it idle.

Is there vacuum?

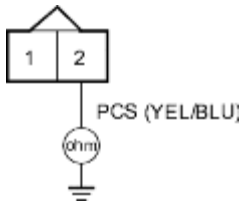
YES - Go to step 6.

NO - Go to step 11.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the EVAP canister purge valve 2P connector.

1. 8. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

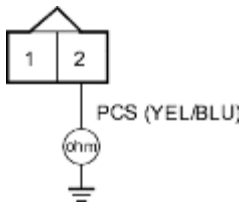
Is there continuity?

YES - Go to step 9.

NO - Replace the EVAP canister purge valve. ■

2. 9. Disconnect ECM/PCM connector B (24P).
   10. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

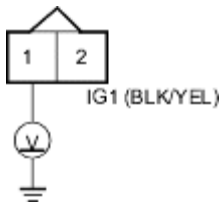
YES - Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

Evaporative Emission Control System
DTC Troubleshooting (cont'd)

1. 11. Turn the ignition switch OFF.
12. Disconnect the EVAP canister purge valve 2P connector.
13. Turn the ignition switch ON (II).
14. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

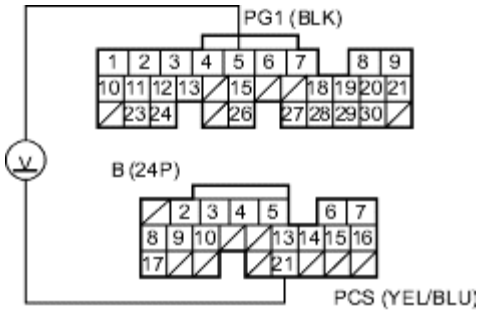
YES - Go to step 15.

NO - Repair open in the wire between No. 4 ACG (10 A) fuse in the under-dash fuse/relay box and the EVAP canister purge valve. ■

15. Turn the ignition switch OFF.
16. Reconnect the EVAP canister purge valve 2P connector.
17. Turn the ignition switch ON (II).

1. 18. Measure voltage between ECM/PCM connector terminals A5 and B21.

ECM/PCM CONNECTORS A (31P)



Wire side of female terminals

Is there battery voltage?

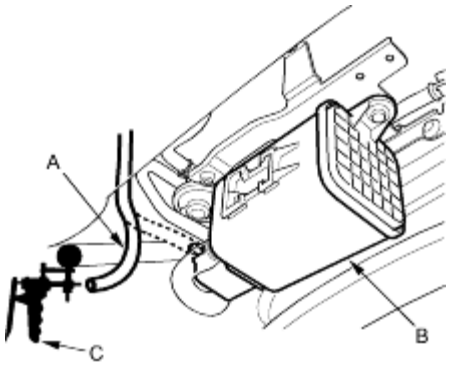
YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21). If wire is OK, replace the EVAP canister purge valve. ■

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting

1. 1. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum gauge (C) to the hose.



2. 2. Start the engine and let it idle.
NOTE: Engine coolant temperature must be below 70°C (158°F).

Is there vacuum?

YES - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

NO - Go to step 3.

3. 3. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then raise the engine speed to 3,000 rpm (min-1).

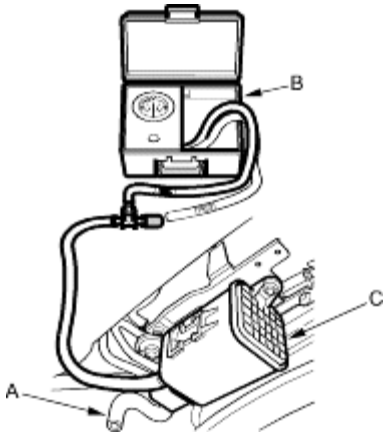
Is there vacuum?

YES - Go to step 4.

NO - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

4. 4. Turn the ignition switch OFF.
5. Reconnect the vacuum hose to the EVAP canister.
6. Remove the fuel fill cap.

1. 7. Disconnect the purge air hose (A) from the EVAP canister and connect a vacuum pressure gauge 0-100 mmHg (0-4 in.Hg) (B) to EVAP canister (C).



2. 8. Start the engine and raise speed to 3,000 rpm (min-1).

Does vacuum appear on gauge within 1 minute?

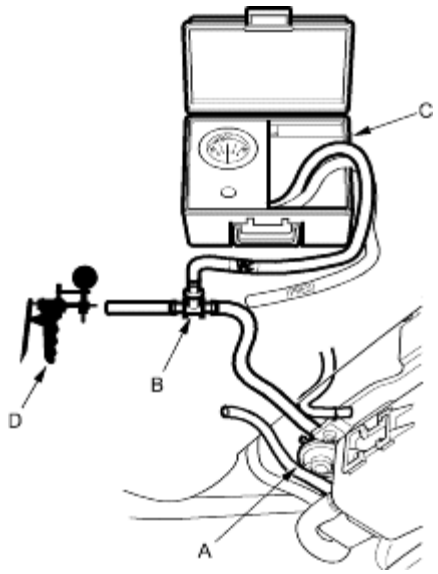
YES - See EVAP two way valve test to complete. Evaporative emission controls are OK. ■

NO - Replace the EVAP canister. ■

Evaporative Emission Control System

EVAP Two Way Valve Test

1. 1. Remove the fuel cap.
2. 2. Disconnect the vapour line from the EVAP two way valve (A). Connect it to a T-fitting (B) from the vacuum gauge (C) and the vacuum pump (D) as shown.

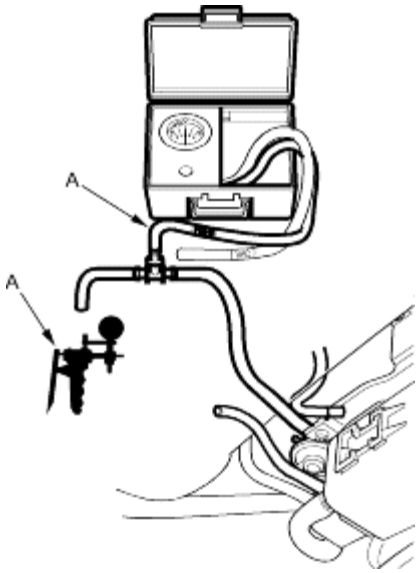


3. 3. Apply vacuum slowly and continuously while watching the gauge.

The vacuum should stabilise momentarily at 0.8-2.1 kPa (6-16 mmHg, 0.2-0.6 in.Hg).

If the vacuum stabilises (valve opens) below 0.8 kPa (6 in.Hg), or above 2.1 kPa (16 mmHg, 0.6 in.Hg), install a new valve and retest.

1. 4. Move the vacuum pump hose from the vacuum fitting to the pressure fitting, and move the vacuum gauge hose from the vacuum side to the pressure side (A) as shown.



2. 5. Slowly pressurise the vapour line while watching the gauge. The pressure should stabilise momentarily above 1.0 kPa (8 mmHg, 0.3 in.Hg).
   - If the pressure momentarily stabilises (valve opens) above 1.0 kPa (8 mmHg, 0.3 in.Hg), the valve is OK.
   - If the pressure stabilises below 1.0 kPa (8 mmHg, 0.3 in.Hg), install a new valve and retest.

4-door
(Except KB, KE, KG, TR models)

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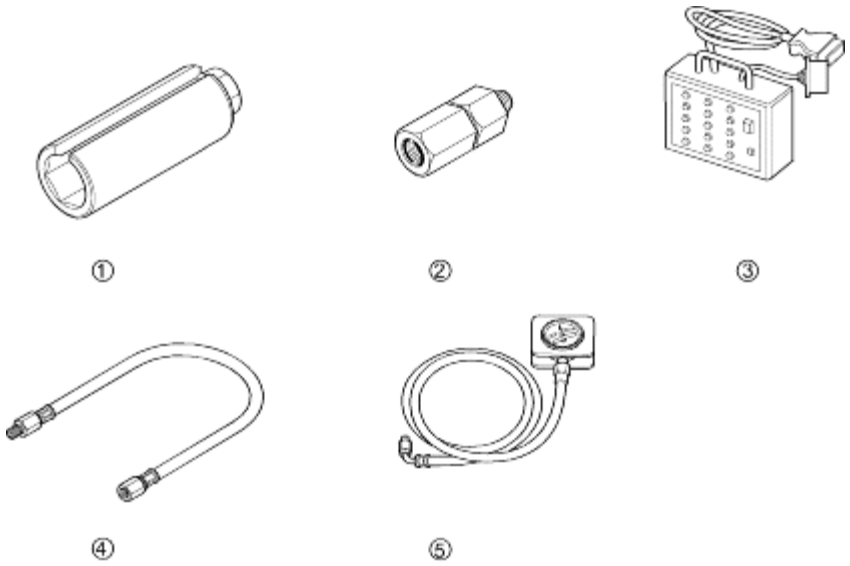
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Fuel and Emissions Systems

Special Tools

Ref. No.	Tool Number	Description	Qty
(1)	07LAA-PT50101	O2 Sensor Socket Wrench	1
(2)	07NAJ-P070100	Oil Pressure Gauge Attachment	1
(3)	07WAJ-0010100	DLC Terminal Box	1
(4)	07ZAJ-S5A0200	Hose, Oil Pressure	1
(5)	07406-0070001	Low Pressure Gauge	1



Fuel and Emissions Systems

General Troubleshooting Information

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the Malfunction Indicator Lamp (MIL) on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting.

Opens and Shorts

"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. In complex electronics (like ECM's/PCM's) this can sometimes mean something works, but not the way it is supposed to.

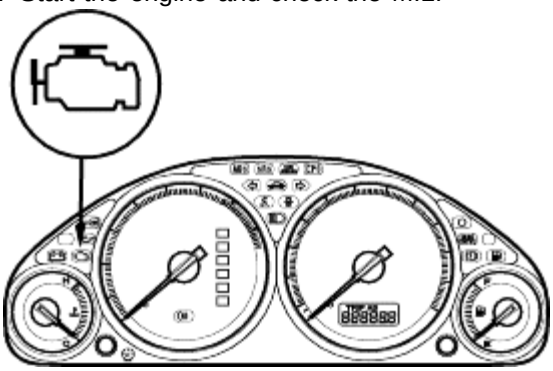
How to Troubleshoot

Special Tool Required

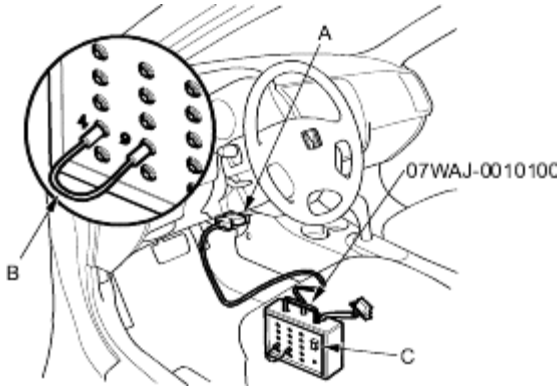
DLC terminal box 07WAJ-0010100

If the MIL (Malfunction Indicator Lamp) has come on

1. 1. Start the engine and check the MIL.



1. 2. If the MIL stays on, jump the SCS line
    1. Connect the DLC terminal box to the 16P Data Link Connector (DLC) (A) located under the driver's side of the dashboard.
    2. Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire (B), then push the switch (C).



*: The illustration shows LHD model.

2. 3. Check the Diagnostic Trouble Code (DTC) and note it. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

If the MIL did not come on

If the MIL did not come on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you cannot duplicate the DTC

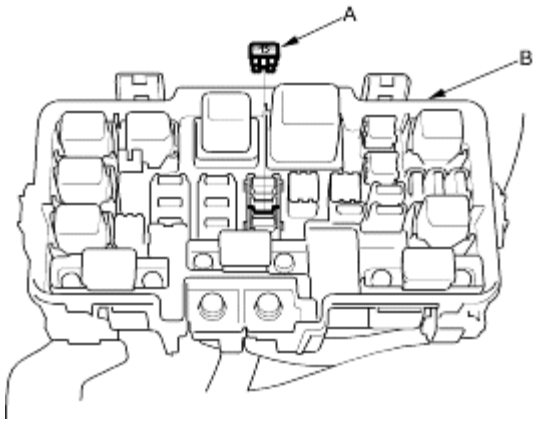
Some of the troubleshooting in this section requires you to reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) and try to duplicate the DTC. If the problem is intermittent and you cannot duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Reset the ECM/PCM

Turn the ignition switch OFF, and remove the No. 6 ECU (ECM/PCM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



How to End a Troubleshooting Session (required after any troubleshooting)

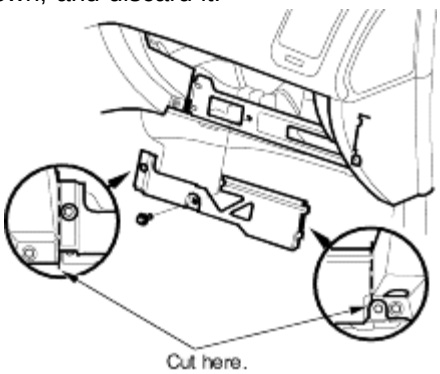
1. 1. Reset the ECM/PCM as described above.
   2. Turn the ignition switch OFF.
   3. Disconnect the DLC terminal box from the DLC (16P).

NOTE: The ECM/PCM is part of the immobiliser system (D15Y6, D15Y3 (KY with immobiliser, KN models), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY with immobiliser, KN models) engines). If you replace the ECM/PCM, it will have a different immobiliser code. In order for the engine to start, you must rewrite the immobiliser code with the Honda PGM Tester.

How to Remove the ECM/PCM for Testing

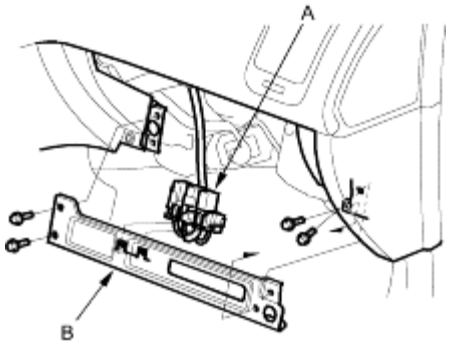
If the inspection for a trouble code requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it:

1. 1. Remove the passenger's dashboard lower cover (see page 20-78), the passenger's kick panel (see page 20-64), and the glove box (see page 20-79).
   2. Remove the bolt. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown, and discard it.



*: The illustration shows LHD model.

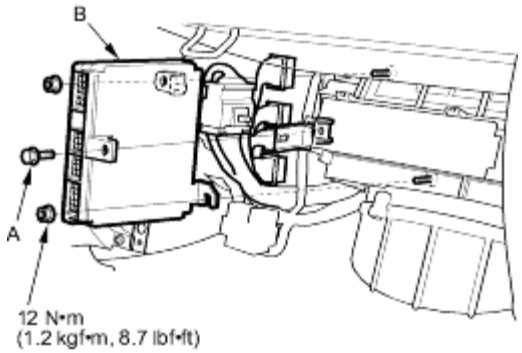
2. 3. Remove the relays (A), then remove the bolts and the glove box frame (B).



*: The illustration shows LHD model.

Fuel and Emissions Systems
General Troubleshooting Information (cont'd)

1. 4. Remove the grey 20P ECM/PCM wire harness connector from the ECM/PCM mounting bracket. Remove the ECM/PCM mounting bolt (A) and the bracket.

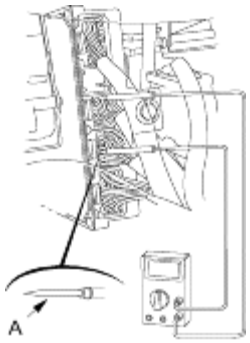


*: The illustration shows LHD model.

2. 5. Remove the nuts, then remove the ECM/PCM (B).

How to Troubleshoot Circuits at the ECM/PCM

1. 1. Gently slide the sharp tester probe (A) into the connector from wire side until it touches the end of the wire terminal.

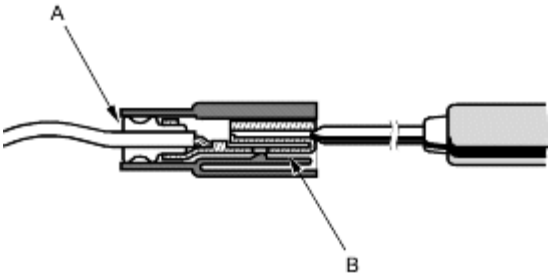


*: The illustration shows LHD model.

2. 2. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

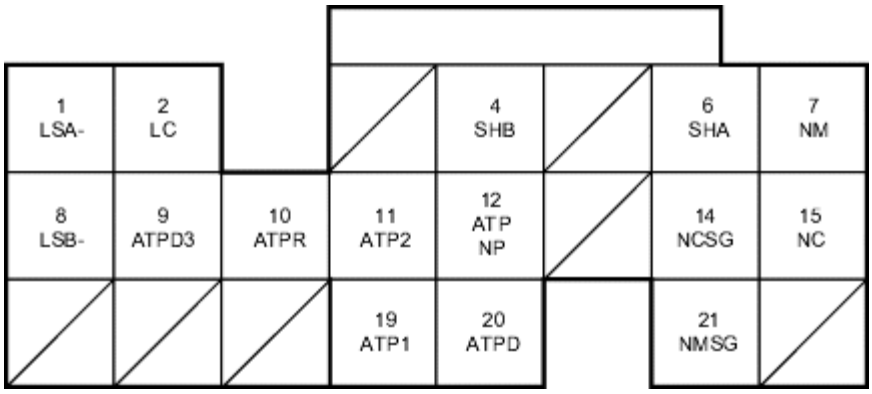
NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



Fuel and Emissions Systems
System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*2	WHT/BLK	LSA- (A/T PRESSURE CONTROL SOLENOID VALVE A-SIDE	Ground for A/T pressure control solenoid valve A	
2*2	YEL/BLU	LC (TORQUE CONVERTER CLUTCH SOLENOID VALVE)	Drives torque converter clutch solenoid valve	With lock-up ON: battery voltage With lock-up OFF: about 0 V
4*2	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in 1st, 2nd gears: battery voltage With engine running in 3rd, 4th gears: about 0 V
6*2	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2nd, 3rd gears: battery voltage With engine running in 1st, 4th gears: about 0 V
7*2	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With engine running: pulses
8*2	BRN/WHT	LSB- (A/T PRESSURE CONTROL SOLENOID VALVE B-SIDE	Ground for A/T pressure control solenoid valve B	
9*2	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage
10*2	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V or battery voltage
11*2	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2 POSITION)	Detects transmission range switch 2 position signal	In 2nd position: about 0 V In any other position: about 5 V or battery voltage
12*2	BLU/WHT	ATPNP (TRANSMISSION RANGE SWITCH NEUTRAL/PARK POSITION)	Detects transmission range switch Neutral/Park position signal	In Park or neutral: about 0 V In any other position: about 5 V or battery voltage
14*2	GRN	NCSG (COUNTERSHAFT SPEED SENSOR GROUND)	Ground for countershaft speed sensor	

15*2	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects countershaft speed sensor signals	With ignition switch ON (II), and front wheels rotating: battery voltage
19*2	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1 POSITION)	Detects transmission range switch 1 position signal	In 1st position: about 0 V In any other position: about 5 V or battery voltage
20*2	YEL	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5 V or battery voltage
21*2	WHT/GRN	NMSG (MAINSHAFT SPEED SENSOR GROUND)	Ground for mainshaft speed sensor	

*1: D16W7, D16A1 engines

*2: A/T

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Substitute the ECM/PCM (D15Y6, D15Y3 (KY with immobiliser, KN models), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY with immobiliser, KN models) engines)

1. 1. Remove the ECM/PCM from the vehicle.
   2. Install a known-good ECM/PCM in the vehicle.
   3. Rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester. It allows you to start the engine.
   4. After completing your tests, reinstall the original ECM/PCM and rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester again.

Fuel and Emissions Systems

DTC Troubleshooting Index

DTC (MIL indication)	Detection Item	Page
0	MIL does not come on or does not go off, no DTC stored	(see page 11-264)
1	Primary Heated Oxygen Sensor (Primary HO2S, Sensor 1)*1	(see page 11-225)
3	Manifold Absolute Pressure (MAP) Sensor	(see page 11-226)
4	Crankshaft Position (CKP) Sensor	(see page 11-228)
6	Engine Coolant Temperature (ECT) Sensor	(see page 11-229)
7	Throttle Position (TP) Sensor	(see page 11-232)
8	Top Dead Centre Position (TDC) Sensor	(see page 11-234)
10	Intake Air Temperature (IAT) Sensor	(see page 11-235)
11	Idle Mixture Adjuster (IMA)*2	(see page 11-237)
12	Exhaust Gas Recirculation (EGR) Valve Lift Sensor*3	(see page 11-301)
13	Barometric Pressure (BARO) Sensor*4	(see page 11-239)
14	Idle Air Control (IAC) Valve	(see page 11-281)
17	Vehicle Speed Sensor*10	(see page 11-239)
20	Electrical Load Detector (ELD)*5	(see page 11-240)
21	VTEC System*6	(see page 11-242)
23	Knock Sensor*7	(see page 11-245)
34	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	(see page 11-247)
38	VTEC System*12	(see page 11-249)
39	Serial Communication Link Malfunction	Refer to the Multiplex Control System Troubleshooting (see page 22-273)
41	Primary Heated Oxygen Sensor (Primary HO2S) Heater*1	(see page 11-252)
45	Fuel System Malfunction*8	(see page 11-254)
63	Secondary Heated Oxygen Sensor (Secondary HO2S)*8	(see page 11-255)
65	Secondary Heated Oxygen Sensor (Secondary HO2S) Heater*8	(see page 11-256)
70	Automatic Transaxle*11	Refer to the Automatic Transmission DTC Troubleshooting Index
71	No. 1 Cylinder Misfire*8	(see page 11-258)
72	No. 2 Cylinder Misfire*8	(see page 11-258)
73	No. 3 Cylinder Misfire*8	(see page 11-258)
74	No. 4 Cylinder Misfire*8	(see page 11-258)

*1: with TWC model (except KV model)
*2: without TWC model
*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines
*4: D15Y5, D15Y6, D17A1, D17A2 (except MA model), D17Z1 (KQ model), D17Z2 (KM model), D17Z3 (KM model) engine
*5: D15Y4, D17A2 (KU model) engines
*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines
*7: except D15Y2, D15Y3, D15Y5, D15Y6 engines
*8: KU model
*9: D15Y4, D15Y6, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines
*10: A/T and M/T
*11: A/T and CVT
*12: D16W8, D16W9 engines

Fuel and Emissions Systems
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the Diagnostic Trouble Code (DTC). If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-287).	• Low compression • Intake air leaks • Locked up engine • Slipped/broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-264).	
Engine will not start*1 (immobiliser indicator light comes on)	Troubleshoot the immobiliser system (see page 22-245).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Check the fuel pressure (see page 11-131).	• Low compression • Intake air leaks • Contaminated fuel
When cold fast idle out of spec (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-285). 2. Inspect/adjust the throttle cable (see page 11-149). 3. Inspect and test the throttle body (see page 11-299).	
After warming up idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-120).*2 2. Inspect and test the throttle body (see page 11-299).	Vacuum hose clogged/cracked/poor connection
After warming up idle speed is above specifications with no load*2 (MIL works OK, no DTCs set)	Troubleshoot the ALT FR signal circuit (see page 11-120).	
After warming up idle speed fluctuates with electrical load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-120).*2 2. Inspect and test the throttle body (see page 11-299).	• Vacuum hose clogged/cracked/poor connection • A/C system
After warming up idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Troubleshoot the PSP switch signal circuit (see page 11-283), (the EPS signal circuit: (see page 11-122)). 2. Inspect and test the throttle body (see page 11-299).	Power steering system

*1: D15Y6, D15Y3 (KY with immobiliser, KN models), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY with immobiliser, KN models) engines)

*2: except D15Y4, D17A2 (KU model) engines

Fuel and Emissions Systems

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Test the fuel pressure (see page 11-131). 2. Test the injectors (see page 11-276). 3. Troubleshoot the ALT FR signal circuit (see page 11-120). 4. Inspect and test the PCV valve (see page 11-159).	• Contaminated fuel
Misfire or rough running (MIL works OK, no DTCs set)	1. Check the spark plugs (see page 4-25) 2. Test the fuel pressure (see page 11-131). 3. Test the injectors (see page 11-276). 4. Troubleshoot the fuel pump circuit (see page 11-287).	• Low compression • Valve Clearance • Contaminated fuel
Fails emission test (MIL works OK, no DTCs set)	1. Inspect the three way catalytic converter (TWC) (see page 11-300).*3 2. Check the spark plugs (see page 4-25). 3. Test the fuel pressure (see page 11-131). 4. Test the injectors (see page 11-276). 5. Check the EVAP emission control system (see page 11-305).	• Contaminated fuel • Low compression • Slipped/broken timing belt
Low power (MIL works OK, no DTCs set)	1. Test the fuel pressure (see page 11-131). 2. Check the air cleaner element (see page 11-147). 3. Inspect/adjust the throttle cable (see page 11-149). 4. Inspect and then test the throttle body (see page 11-299). 5. Inspect the three way catalytic converter (TWC) (see page 11-300).*3 6. Test the injectors (see page 11-276).	• Contaminated fuel
Engine stalls (MIL works OK, no DTCs)	1. Test the fuel pressure (see page 11-131). 2. Check/adjust the idle speed (see page 11-285). 3. Troubleshoot the brake pedal position switch signal circuit (see page 11-123). 4. Check the spark plugs (see page 4-25).	• Intake air leaks • Faulty harness and sensor connections

*3: with TWC model

Fuel and Emissions Systems

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the Engine Control Module (ECM) on vehicles with manual transmissions or the Powertrain Control Module (PCM) on vehicles with automatic transmissions and continuously variable transmissions.

Fail-safe Function

When an abnormality occurs in a signal from a sensor, the ECM/PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function

When an abnormality occurs in the ECM/PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis

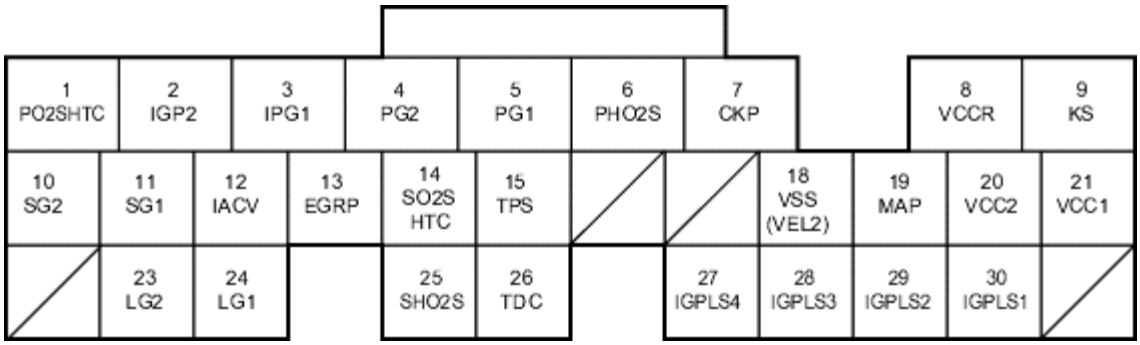
When an abnormality occurs in the signal from a sensor, the ECM/PCM supplies ground for the Malfunction Indicator Lamp (MIL) and stores the Diagnostic Trouble Code (DTC) in erasable memory. When the ignition is first turned on, the ECM/PCM supplies ground for the MIL for 2 seconds to check the MIL bulb condition.

Two Driving Cycle Detection Method

To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM informs the driver by turning on the MIL.

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*1	BLK/WHT	PO2SHTC (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) HEATER CONTROL)	Drives primary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
6*1	WHT	PHO2S (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S), SENSOR 1)	Detects primary HO2S sensor (sensor 1) signal	With throttle fully opened from idle with fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
7	BLU	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
8	YEL	VCCR (SENSOR VOLTAGE RETURN)	Detects sensor voltage	With ignition switch ON (II): about 5 V With the ignition switch OFF: about 0 V
9*8	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses With ignition switch ON (II): about 5 V
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times

12	BLK/RED	IACV (IDLE AIR CONTROL (IAC) VALVE)	Drives IAC valve	With engine running: duty controlled With ignition switch ON (II): about 5 V
13*3	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2 V-2.0 V (depending on EGR valve lift)

*1: with TWC model (except KV model)

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

*13: D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

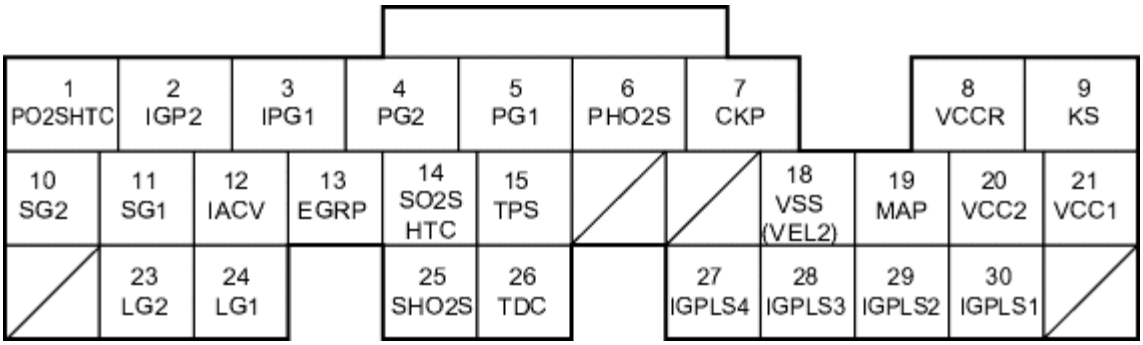
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
14*9	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
15	RED/BLK	TPS (THROTTLE POSITION (TP) SENSOR)	Detects TP sensor signal	With throttle fully open: about 4.8 V With throttle fully closed: about 0.5 V
18*15	WHT/GRN	VSS (VEHICLE SPEED SENSOR (VSS))	Detects VSS signal	With ignition switch ON (II) and front wheels rotating: cycles 0 V-about 5 V or battery voltage
18*16	BLU/WHT	VEL2 (CVT SPEED SENSOR 2)	Detects CVT speed sensor 2	Depending on vehicle speed: pulses When vehicle is stopped: about 0 V
19	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
23	BRN/YEL	LG2 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
25*9	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V

26	GRN	TDC (TOP DEAD CENTRE (TDC) SENSOR)	Detects TDC sensor	With engine running: pulses
27	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
29	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
30	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	

*1: with TWC model (except KV model)

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

*13: D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

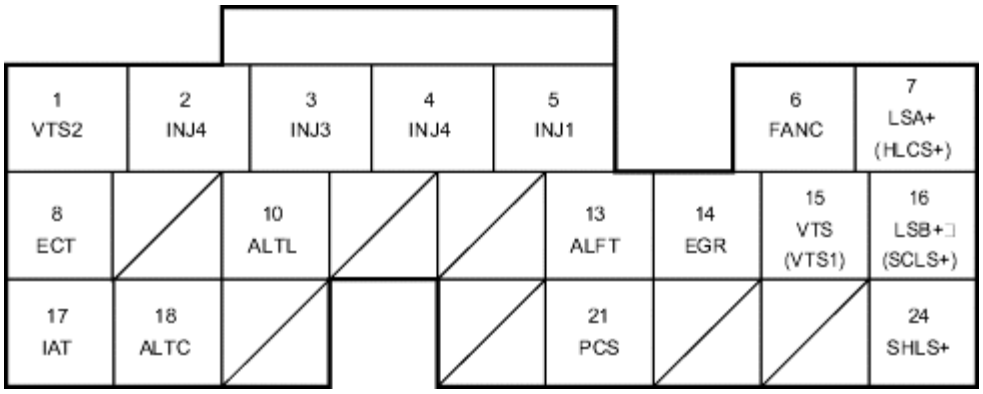
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*7	RED	VTS 2 (VTEC SOLENOID VALVE 2)	Drives VTEC solenoid valve 2	At idle: about 0 V
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	With ignition switch ON (II): battery voltage At idle: duty controlled
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
7*18	RED/BLK	LSA + (A/T PRESSURE CONTROL SOLENOID VALVE A + SIDE	Drives A/T pressure control solenoid valve A	With the ignition switch ON (II): duty controlled
7*16	GRN/WHT	HLCLS + (CVT PULLEY PRESSURE CONTROL VALVE + SIDE))	Drives CVT pulley pressure control valve	With ignition switch ON (II): pulsing signal
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE (ECT) SENSOR)	Detects ECT sensor signal	With the ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0 V-5 V (depending on electrical load)
14*3	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
15*6	GRN/YEL	VTS (VTS 1) (VTEC SOLENOID VALVE (1))	Drives VTEC solenoid valve (1)	At idle: about 0 V
16*18	BLK/RED	LSB + (A/T PRESSURE CONTROL SOLENOID VALVE B + SIDE	Drives A/T pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
16*16	YEL/GRN	SCLS + (CVT START CLUTCH	Drives CVT start clutch	With ignition switch ON (II): pulsing

		PRESSURE CONTROL VALVE + SIDE)	pressure control valve	signal
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1 V-4.8 V (depending on intake air temperature)
18*5	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With engine running: about 0 - 5 V (depending on electrical load)
21*14	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 70°C (158°F): battery voltage With engine running, engine coolant above 70°C (158°F): duty controlled
24*16	BLU/WHT	SHLS + (CVT SPEED CHANGE CONTROL VALVE + SIDE)	Drives CVT speed change control valve	With ignition switch ON (II): duty controlled

*1: with TWC model (except KV model)

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

*13: D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

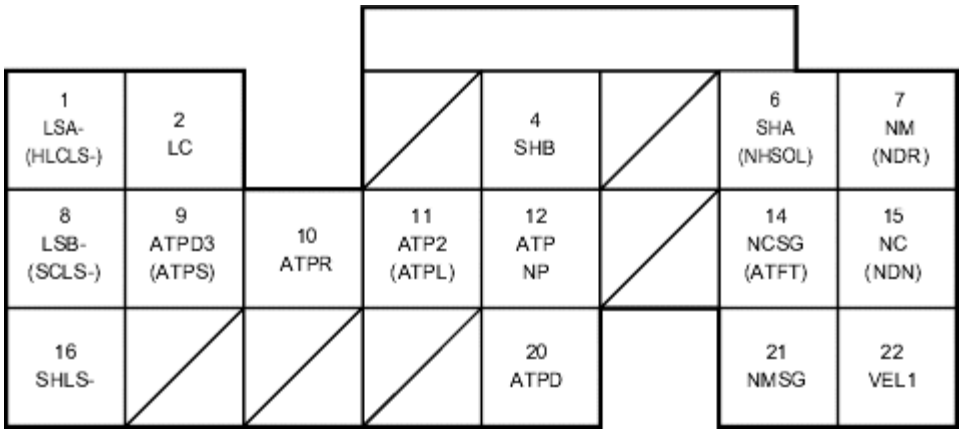
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*18	WHT/BLK	LSA- (A/T PRESSURE CONTROL SOLENOID VALVE A-SIDE	Ground for A/T pressure control solenoid valve A	
1*16	BLK/RED	HLCLS - (CVT PULLEY PRESSURE CONTROL VALVE - SIDE)	Ground for CVT pulley pressure control valve	
2*18	YEL/BLU	LC (TORQUE CONVERTER CLUTCH SOLENOID VALVE)	Drives torque converter clutch solenoid valve	With lock-up ON: battery voltage With lock-up OFF: about 0 V
4*18	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in 1st, 2nd gears: battery voltage With engine running in 3rd, 4th gears: about 0 V
6*18	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2nd, 3rd gears: battery voltage With engine running in 1st, 4th gears: about 0 V
6*16	GRN/RED	INHSOL (INHIBITOR SOLENOID CONTROL)	Drives Inhibitor solenoid	With inhibitor solenoid ON With inhibitor solenoid OFF
7*18	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With engine running: pulses
7*16	RED/BLU	NDR (CVT DRIVE PULLEY SPEED SENSOR)	Detects CVT drive pulley speed sensor signal	In other than Park or neutral: pulses
8*18	BRN/WHT	LSB - (A/T PRESSURE CONTROL SOLENOID VALVE B-SIDE	Ground for A/T pressure control solenoid valve B	
8*16	BLU/RED	SCLS - (CVT START CLUTCH PRESSURE CONTROL VALVE B-SIDE)	Ground for CVT start clutch pressure control valve	
9*18	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage

9*16	RED	ATPS (TRANSMISSION RANGE SWITCH S POSITION)	Detects transmission range switch S position signal	In S position: about 0 V In any other position: about 5 V or battery voltage
10*17	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V or battery voltage

*1: with TWC model (except KV model)

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

*13: D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

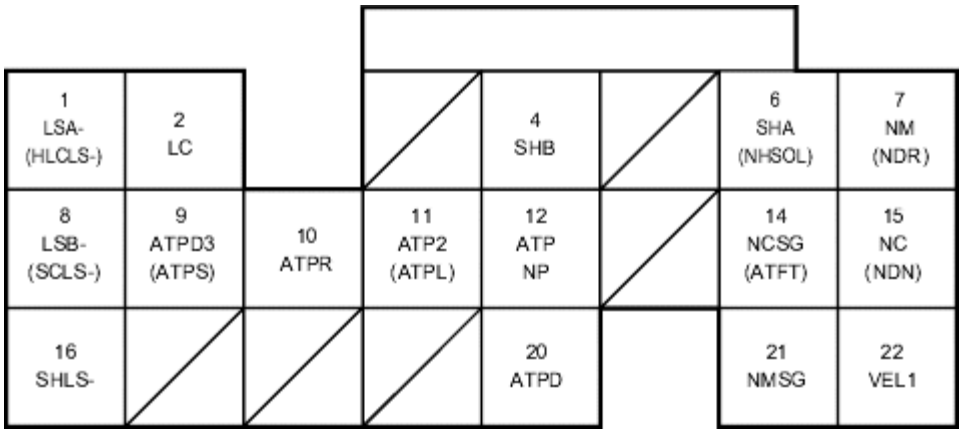
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
11*18	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2 POSITION)	Detects transmission range switch 2 position signal	In 2nd position: about 0 V In any other position: about 5 V or battery voltage
11*16	BLU	ATPL (TRANSMISSION RANGE SWITCH L POSITION)	Detects transmission range switch L signal	In L position: about 0 V In any other position: about 5 V or battery voltage
12*17	BLU/WHT	ATPNP (TRANSMISSION RANGE SWITCH NEUTRAL/PARK POSITION)	Detects transmission range switch Neutral/Park position signal	In Park or Neutral: about 0 V In any other position: about 5 V or battery voltage
14*18	GRN	NCSG (COUNTERSHAFT SPEED SENSOR GROUND)	Ground for countershaft speed sensor	
15*18	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects Countershaft speed sensor signal	With ignition switch ON (II), and front wheels rotating: battery voltage
15*16	WHT/GRN	NDN (CVT DRIVEN PULLEY SPEED SENSOR)	Detects CVT driven pulley speed sensor signal	In other than Park or neutral: pulses
16*16	GRN/YEL	SHLS - (CVT SPEED CHANGE CONTROL VALVE-SIDE)	Ground for CVT speed change control valve	With ignition switch ON (II): duty controlled
20*17	YEL	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5 V or battery voltage
21*18	WHT/GRN	NMSG (MAINSHAFT SPEED SENSOR GROUND)	Ground for mainshaft speed sensor	
22*16	WHT/RED	VEL1 (CVT SPEED SENSOR 1)	Detects CVT speed sensor 1	Depending on vehicle speed: pulses When vehicle is stopped: about 0 V

*1: with TWC model (except KV model)

*13: D15Y6, D15Y3 (KY model with immobiliser, KN

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

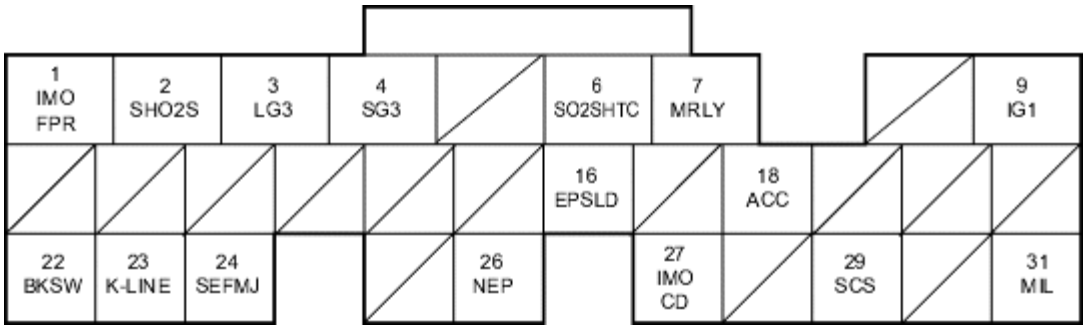
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for the ECM/PCM control circuit	Less than 1.0 V at all times
4	PNK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
6	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 Power source for the DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
9	YEL/BLK	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
16	LT GRN/BLK	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects power steering load signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage momentarily
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION	Detects brake pedal	With brake pedal released:

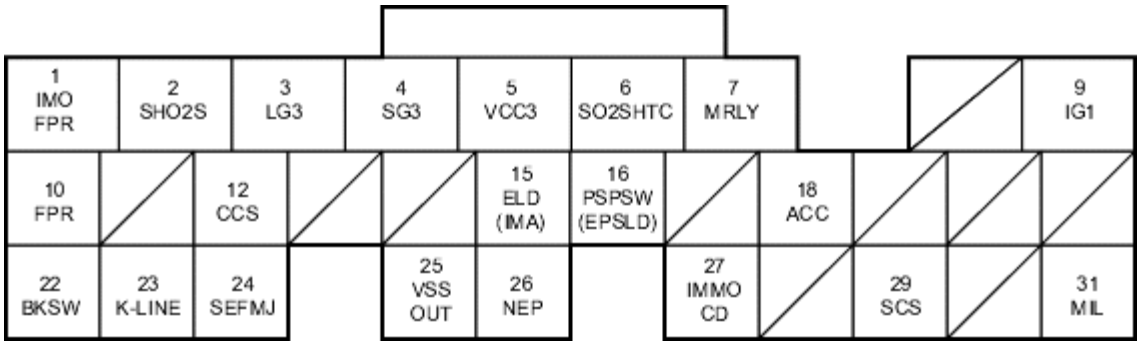
		SWITCH)	position switch signal	about 0 V With brake pedal pressed: battery voltage
23	LT BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II): pulses or battery voltage
24	YEL	SEFMJ	Communicates with multiplex control unit	With ignition switch ON (II): about 5 V With engine running under load: pulses
26	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
27	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobiliser signal	
29	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted: about 0 V With the service check signal opened: about 5 V battery voltage
31	GRN/ORN	MIL (MALFUNCTION INDICATOR LAMP)	Drives MIL	With MIL turned ON: about 0 V With MIL turned OFF: battery voltage

*1: D16W7, D16V1 engines

*2: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*13	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2*10	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for the ECM/PCM control circuit	Less than 1.0 V at all times
4	PNK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	YEL/BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
6*10	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 Power source for the DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
9	YEL/BLK	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
10*19	GRN/YEL	FPR (FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
12*4	BLU/ORN	CCS (CRUISE CONTROL SIGNAL)	Detects cruise control signal	With ignition switch ON (II): pulse

15*5	GRN/RED	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1-4.8 V (depending on electrical load)
15*2	ORN	IMA (IDLE MIXTURE ADJUSTER (IMA))	Detects IMA signal	With ignition switch ON (II): about 0.5-4.5 V (depending on idle mixture)

*1: with TWC model (except KV model)

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

*13: D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

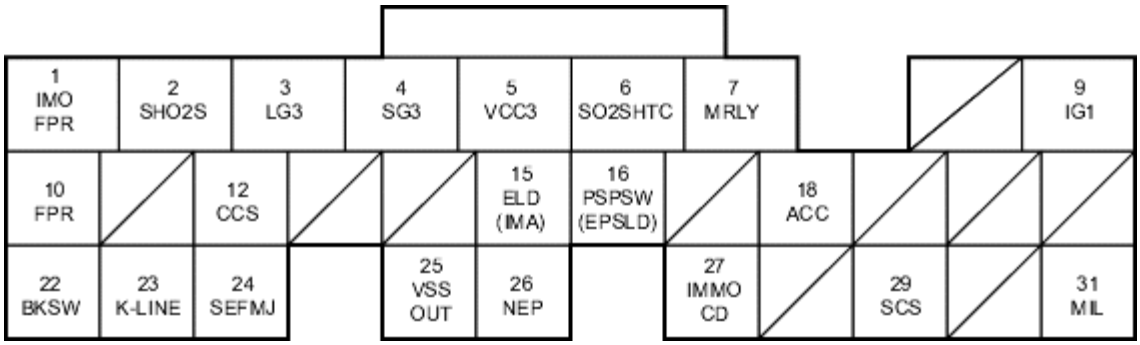
*17: A/T and CVT

*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
16*12	LT GRN/BLK	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: 0 V At idle with steering wheel at full lock: battery voltage
16*11	LT GRN/BLK	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects power steering load signal	At idle with steering wheel in straight ahead position: 0 V At idle with steering wheel at full lock: battery voltage momentarily
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
23	LT BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II): pulses or battery voltage
24	YEL	SEFMJ	Communicates with multiplex control unit	With ignition switch ON (II): about 5 V With engine running under load: pulses
25*10	BLU/WHT	VSSOUT (VEHICLE SPEED SENSOR (VSS) OUTPUT SIGNAL)	Sends vehicle speed sensor signal	Depending on vehicle speed: pulses
26	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
27*13	RED/BLU	IMOCD (IMMOBILISER CODE)	Detects immobiliser signal	
29	BRN	SCS (SERVICE CHECK CONNECTOR)	Detects service check signal	With the service check signal shorted with the PGM Tester: about 0 V With the service check signal opened: about 5 V battery voltage
31	GRN/ORN	MIL (MALFUNCTION INDICATOR LAMP)	Drives MIL	With MIL turned ON: about 0 V With MIL turned OFF: battery voltage

*1: with TWC model (except KV model)

*13: D15Y6, D15Y3 (KY model with immobiliser, KN

*2: without TWC model

*3: D15Y4, D17A2 (KU, KQ, KZ, FO models) engines

*4: with cruise control

*5: D15Y4, D17A2 (KU model) engines

*6: D15Y4, D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

*7: D16W8, D16W9 engines

*8: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*11:KU model

*12 except KU model

model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engines

*14: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

*15: A/T and M/T

*16: CVT

*17: A/T and CVT

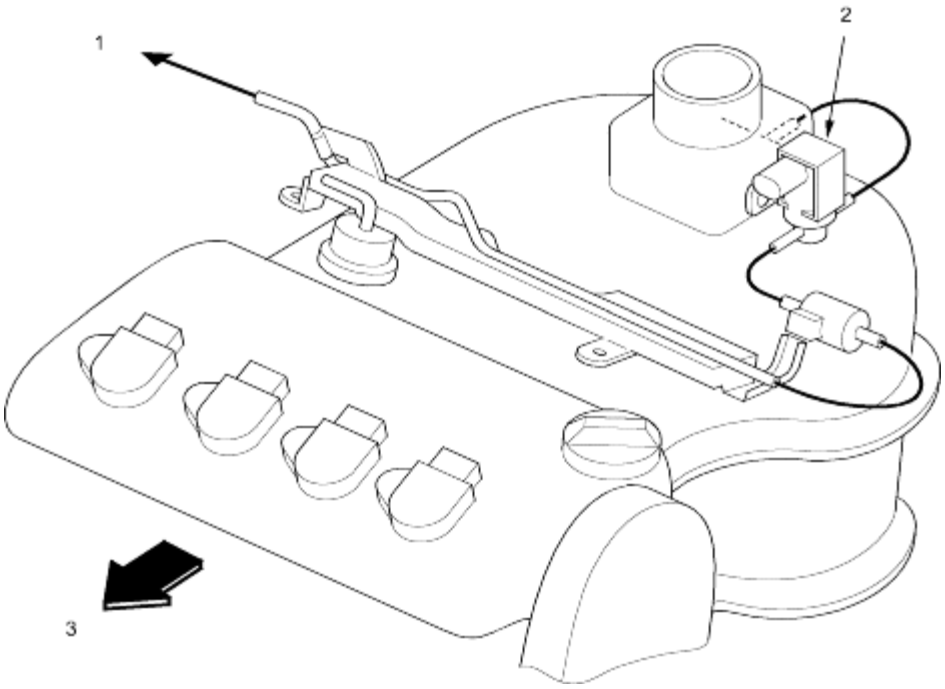
*18: A/T

*19:except D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model), D17A5 (KY model with immobiliser, KN model) engine

Fuel and Emissions Systems
System Descriptions (cont'd)

Vacuum Hose Routing

except D15Y3 (PA,KW,KT,KN models),
D16W9 (PA model),D17A5 (KN model) engines:

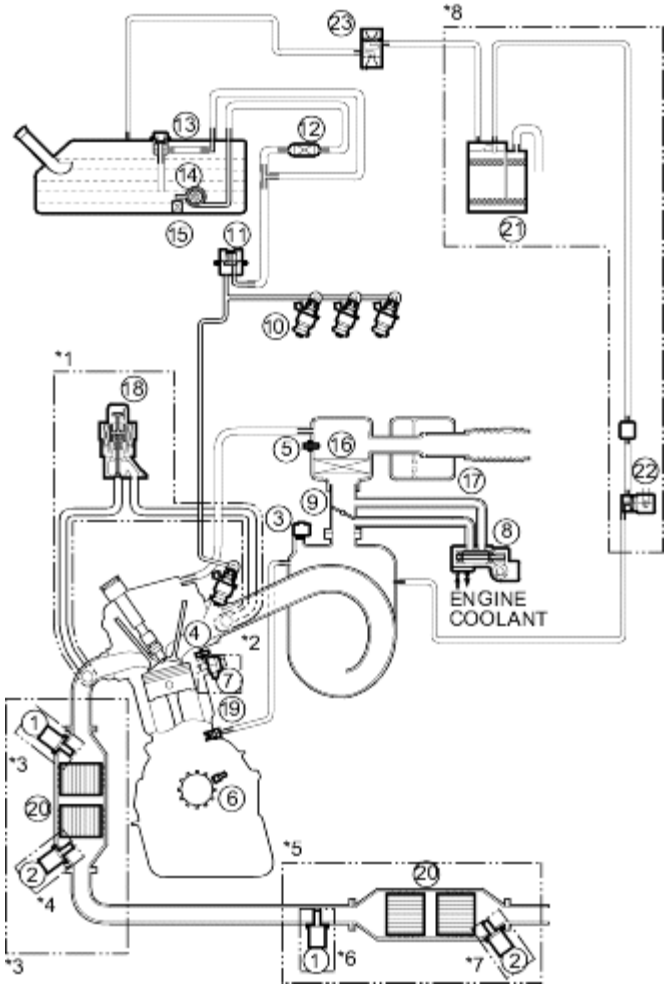


1. To EVAPORATIVE EMISSION (EVAP) CANISTER
2. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
3. FRONT OF VEHICLE

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Distribution



*1: D15Y4, D17A2 (KQ, KU, KZ, FO models) engines

*2: except D15Y2, D15Y3, D15Y5, D15Y6 engines

*3: D15Y5, D15Y6, D17A1, D17Z2 engines

*4: D15Y6 engine

*5: D15Y3 (KV model), D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17A5 (KV model), D17Z4 engines

*6: D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17Z4 engines

*7: D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines

*8: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

(1) PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)

(2) SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)

(3) MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

(4) ENGINE COOLANT TEMPERATURE (ECT) SENSOR

(13) FUEL PRESSURE REGULATOR

(14) FUEL PUMP

(15) FUEL TANK

(16) AIR CLEANER

(17) RESONATOR

(18) EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR

(5) INTAKE AIR TEMPERATURE (IAT) SENSOR

(6) CRANKSHAFT POSITION (CKP) SENSOR

(7) KNOCK SENSOR (KS)

(8) IDLE AIR CONTROL (IAC) VALVE

(9) THROTTLE BODY

(10) INJECTOR

(11) FUEL PULSATION DAMPER

(12) FUEL FILTER

(19) POSITIVE CRANKCASE VENTILATION (PCV) VALVE

(20) THREE WAY CATALYTIC CONVERTER

(21) EVAPORATIVE EMISSION (EVAP) CANISTER

(22) EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE

(23) EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE

Fuel and Emissions Systems

System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energised, and enriches the mixture to assure smooth transition to the A/C mode.

Alternator Control

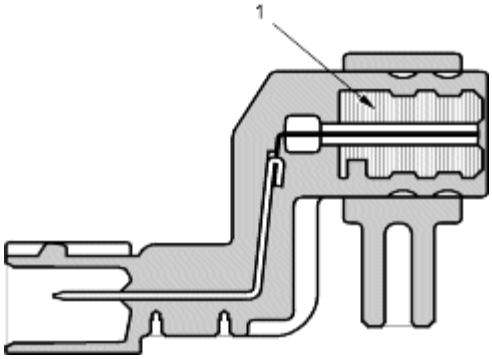
The alternator signals the Engine Control Module (ECM)/Powertrain Control Module (PCM) during charging. The ECM/PCM then controls the voltage generated at the alternator according to the electrical load determined by the Electrical Load Detector (ELD) and driving mode. This reduces engine load to improve fuel economy.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Crankshaft Position (CKP) Sensor

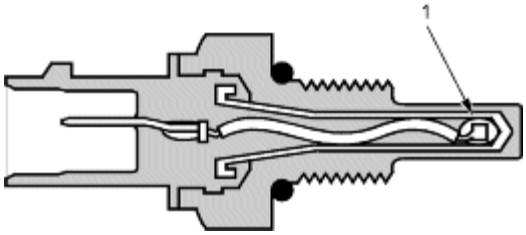
The CKP sensor detects engine speed and determines ignition timing and timing for fuel injection of each cylinder.



1. 1. MAGNET

Engine Coolant Temperature (ECT) Sensor

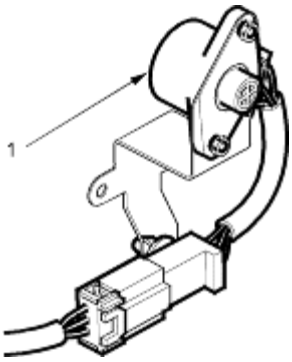
The ECT sensor is a temperature dependent resistor (thermistor). The resistor of the thermistor decreases as the engine coolant temperature increases.



1. 1. THERMISTOR

Idle Mixture Adjuster (IMA) (without TWC model)

The idle mixture adjuster (IMA) is selected resistance device used to control idle mixture.



2. 1. IMA

Ignition Timing Control

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration

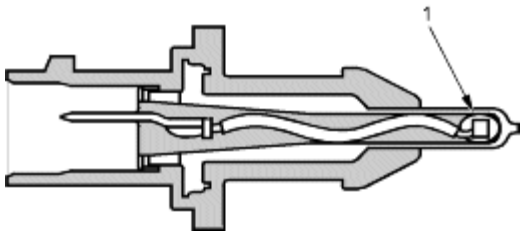
The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system, and will set a Diagnostic Trouble Code (DTC).

Fuel and Emissions Systems
System Descriptions (cont'd)

Intake Air Temperature (IAT) Sensor

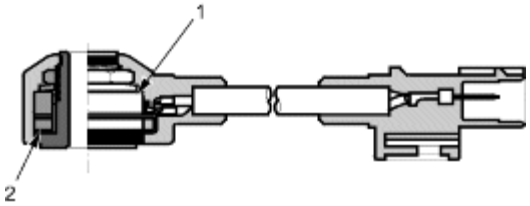
The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



1. 1. THERMISTOR

Knock Sensor

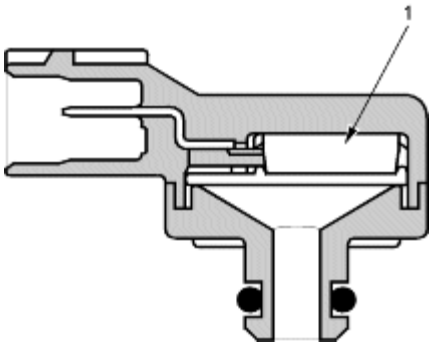
The knock control system adjusts the ignition timing to minimise knock.



2. 2. PIEZO ELEMENT

Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



3. 1. SENSOR UNIT

Primary Heated Oxygen Sensor (Primary HO2S)

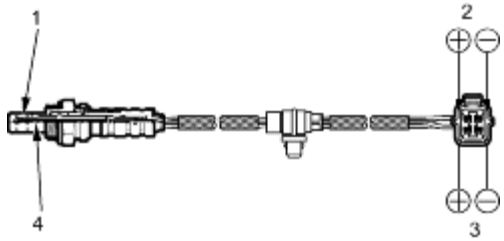
The primary HO2S detects the oxygen content in the exhaust gas and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The primary HO2S is installed in the TWC (D15Y5, D15Y6, D17A1, D17Z2 engines) or in the exhaust manifold (D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3 (KP model), D17Z4 engines). By controlling the air fuel ratio with primary HO2S and secondary HO2S, the deterioration of the primary HO2S can be evaluated by its feedback period. When the feedback period exceeds a certain value during stable driving conditions, the sensor is considered deteriorated and the ECM/PCM sets a DTC.



1. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the Three Way Catalytic Converter (TWC) and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC (D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines).



2. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Starting Control

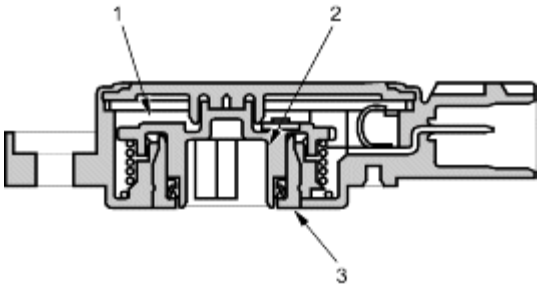
When the engine is started, the ECM/PCM provides a rich mixture by increasing injector duration.

Fuel and Emissions Systems

System Descriptions (cont'd)

Throttle Position (TP) Sensor

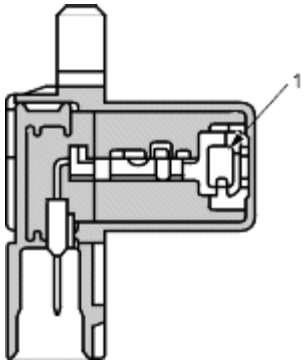
The TP sensor is a potentiometer connected to the throttle valve shaft. As the throttle position changes, the sensor varies the signal voltage to the ECM/PCM. The TP sensor is not replaceable apart from the throttle body.



1. 1. ELEMENT
   2. BRUSH HOLDER
   3. BRUSH

Top Dead Centre (TDC) Sensor

The TDC sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



2. 1. MAGNET

Vehicle Speed Sensor (VSS)

The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the Idle Air Control (IAC) valve to maintain the correct idle speed. Refer to the System Diagram to see the functional layout of the system.

Brake Pedal Position Switch

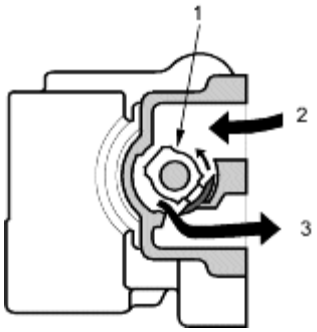
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the ECM/PCM when the power steering load is high.

Idle Air Control (IAC) Valve

To maintain the proper idle speed, the IAC valve changes the amount of air bypassing the throttle body in response to an electrical signal from the ECM/PCM.



1. 1. VALVE
   2. From AIR CLEANER
   3. To INTAKE MANIFOLD

Power Steering Pressure (PSP) Switch

The PSP switch signals the ECM/PCM when the power steering load is high.

Fuel and Emissions Systems

System Descriptions (cont'd)

Fuel Supply System

Fuel Cut-off Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at speeds over 850 rpm (min-1). Fuel cut-off action also occurs when engine speed exceeds 6,900 rpm (min-1) (D15Y2, D15Y3, D15Y5, D15Y6 engines: 6,600 rpm (min-1)), regardless of the position of the throttle valve, to protect the engine from over-revving. With A/T model, when the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm (min-1).

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurise the fuel system. With the engine running, the ECM/PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

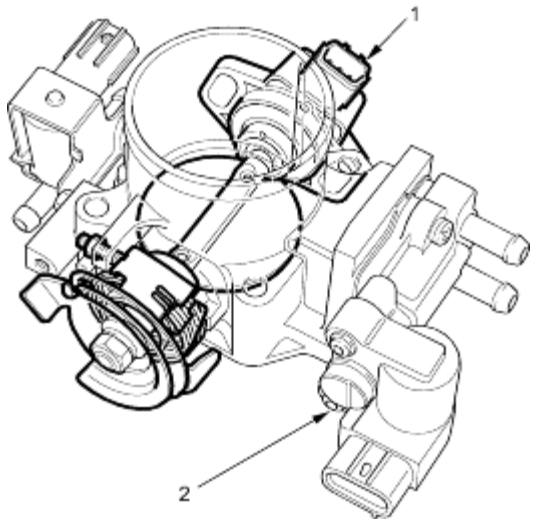
The PGM-FI relay consists of two separate relays. The PGM-FI main relay 1 is energised whenever the ignition switch is ON (II) which supplies battery voltage to the ECM/PCM, power to the injectors, and power for the PGM-FI main relay 2. The PGM-FI main relay 2 is energised to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is running.

Intake Air System

Refer to the System Diagram to see the functional layout of the system.

Throttle Body

The throttle body is a single-barrel down draft type. The side portion of the IAC valve is heated by engine coolant from the cylinder head.



1. 1. TP SENSOR
   2. IAC VALVE

Fuel and Emissions Systems

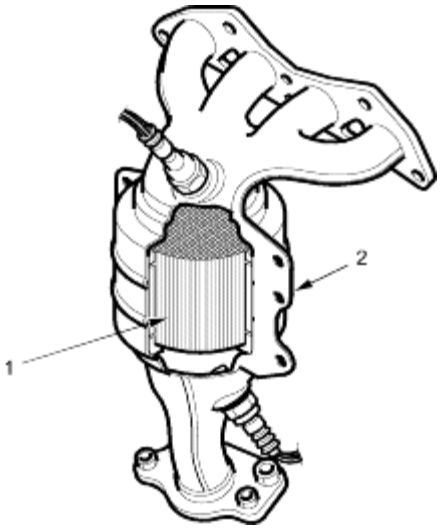
System Descriptions (cont'd)

Catalytic Converter System

Three Way Catalytic Converter (TWC)

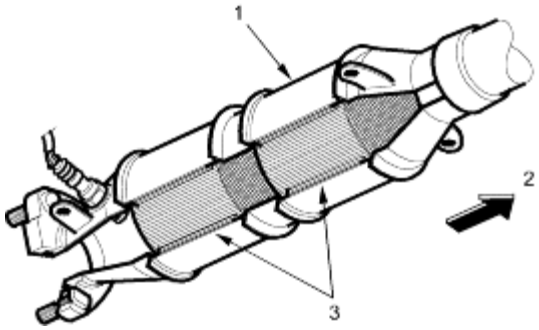
The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), dinitrogen (N2), and water vapour.

D15Y4, D15Y6, D17A1, D17Z2 engine:



1. 1. THREE WAY CATALYST
   2. HOUSING

D15Y3 (KV model), D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3 (KP model), D17A5 (KV model), D17Z4 engine:



2. 1. HOUSING
   2. FRONT OF VEHICLE
   3. THREE WAY CATALYSTS

Exhaust Gas Recirculation (EGR) System

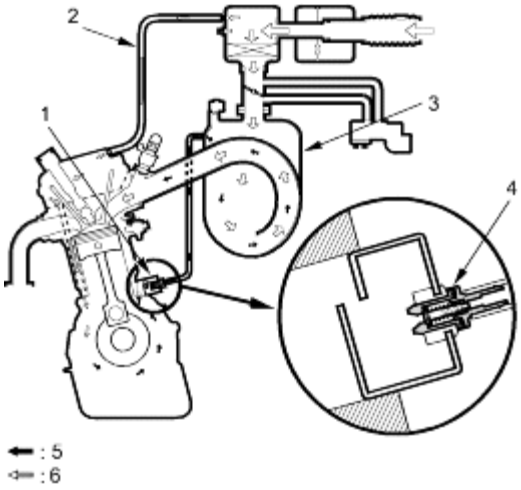
Refer to the System Diagram to see the functional layout of the system.

EGR Valve

The EGR valve is designed to lower peak combustion temperatures and reduce oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



1. 1. PCV HOSE
   2. BREATHER PIPE
   3. INTAKE MANIFOLD
   4. PCV VALVE
   5. BLOW BY VAPOUR
   6. FRESH AIR

Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapour from the fuel tank until it can be purged back into the engine and burned (refer to the System Diagram to see the functional layout of the system).

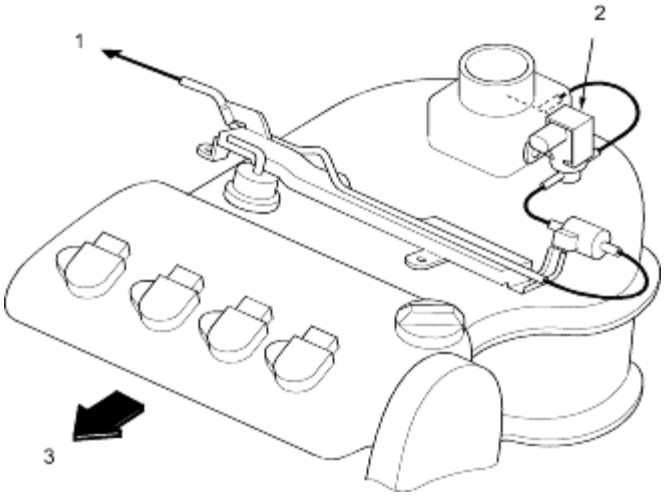
EVAP Canister Purge Valve

When the engine coolant temperature is below 70°C (158°F), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Hose Routing



1. To EVAPORATIVE EMISSION (EVAP) CANISTER
2. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
3. FRONT OF VEHICLE

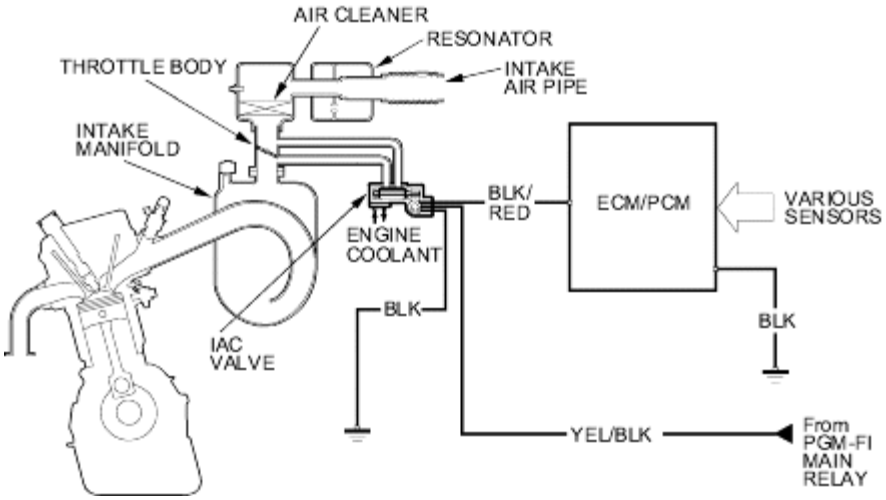
Fuel and Emissions Systems

System Descriptions (cont'd)

Idle Control System Diagram

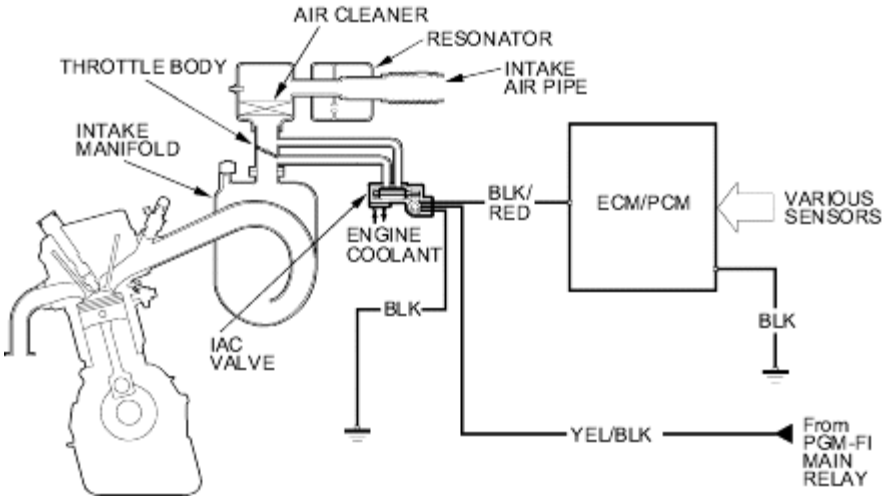
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- After the engine starts, the IAC valve opens for a certain amount of time. The amount of air is increased to raise the idle speed.
- When the engine coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to engine coolant temperature.



Intake Air System Diagram

This system supplies air for engine needs. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.



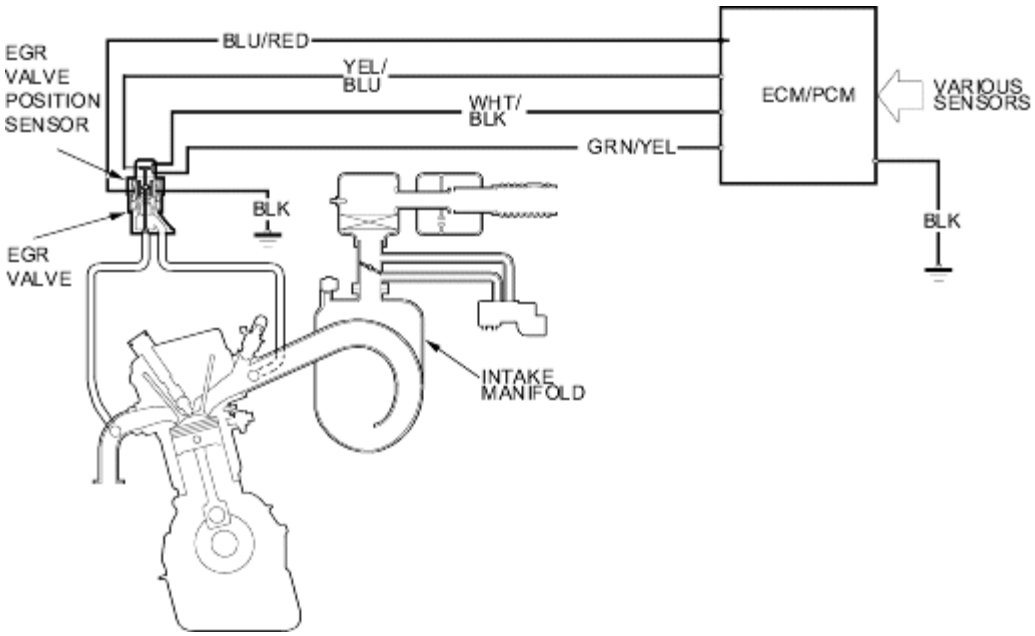
Fuel and Emissions Systems

System Descriptions (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.



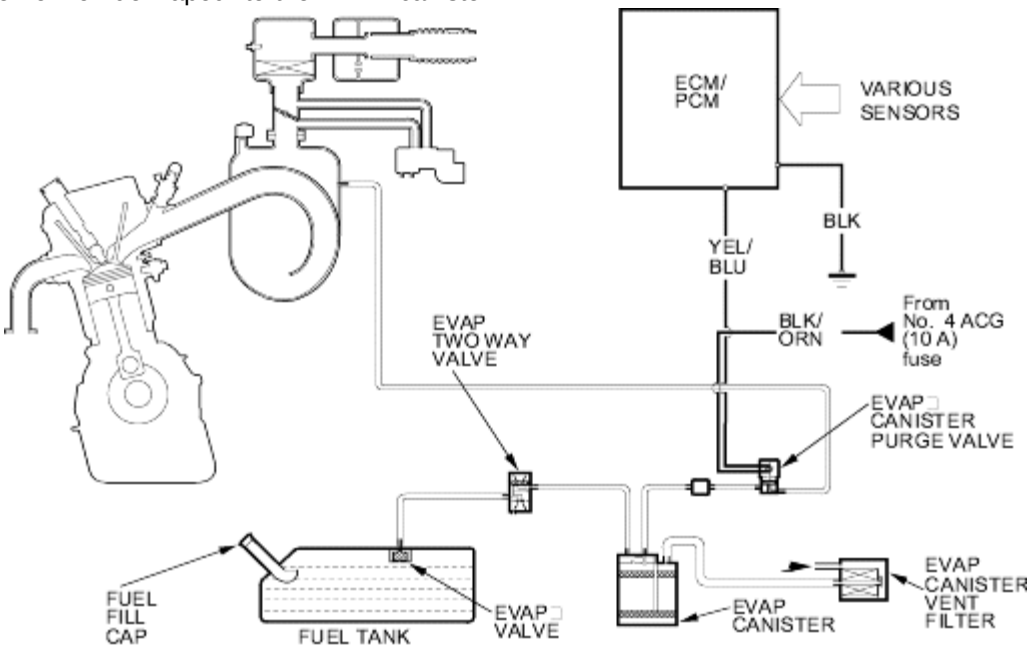
Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control Diagram

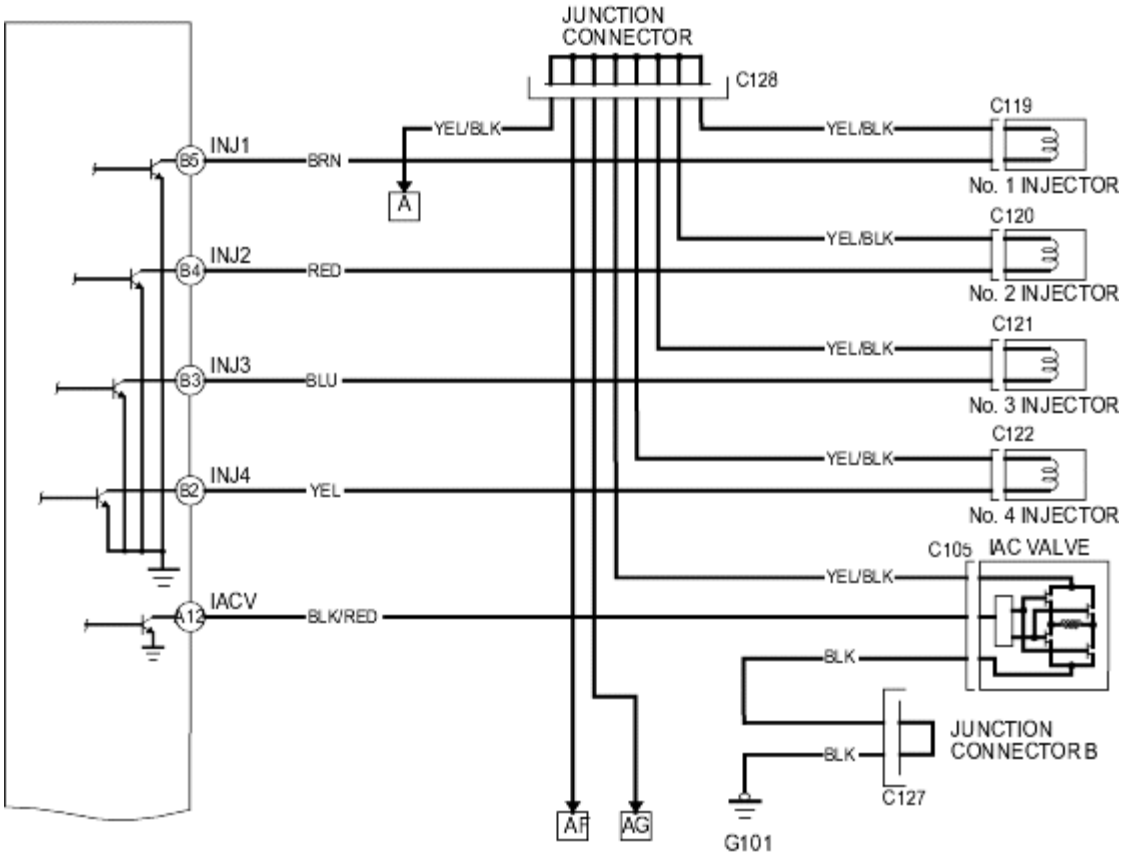
The EVAP controls minimise the amount of fuel vapour escaping to the atmosphere. Vapour from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the EVAP canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.
  The purging vacuum is controlled by the EVAP canister purge valve, which is open whenever engine coolant temperature is above 70°C (158°F).
- When vapour pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapour to the EVAP canister.



Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Circuit Diagram



*1: A/T

*2: KX model (M/T)

*3: KU model

*4: except KU model

*5: D17A2 (KU, KQ, KZ, FO models), D15Y4 engine

*6: D15Y4, D15A2 (KU model) engine

*7: CVT

*8: A/T and CVT

*9: M/T and A/T

*10: D15Y6, D15Y3 (KY with immobiliser, KN models), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except FO, MA models), D17A5 (KY with immobiliser, KN model) engine

*11: except D15Y2, D15Y3, D15Y5, D15Y6 engine

*12: except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engine

*13: D15Y6, D15Y5, D17A1, D17Z2 engine

*14: D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3 (KP model), D17A5 (KV model), D17Z4 engine

*15: D15Y6 engine

*16 D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engine

*17: without TWC model

*18: with cruise control

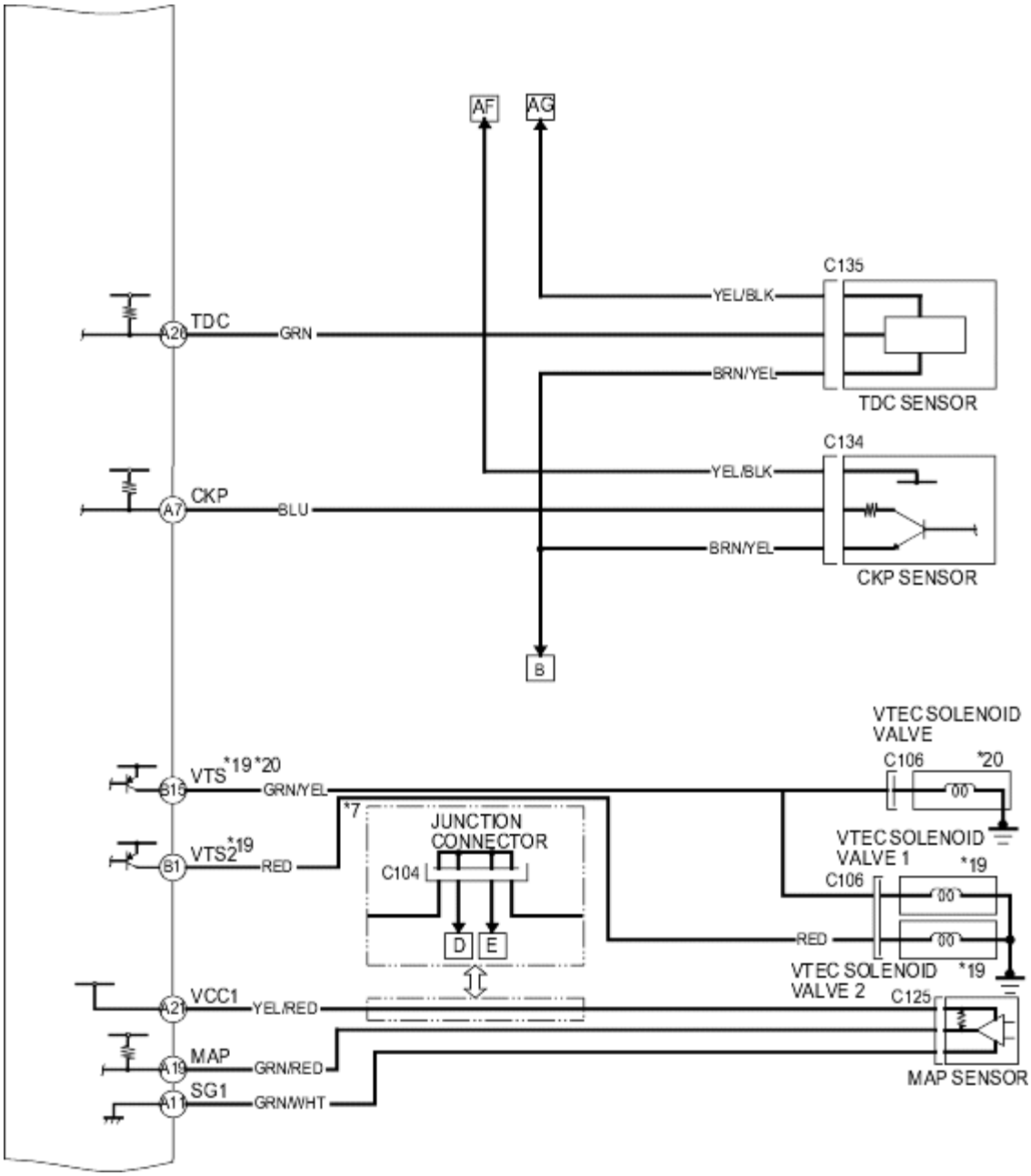
*19: D16W8, D16W9 engine

*20 D15Y4, D17A2, D17A5, D17Z3, D17Z4 engine

Fuel and Emissions Systems

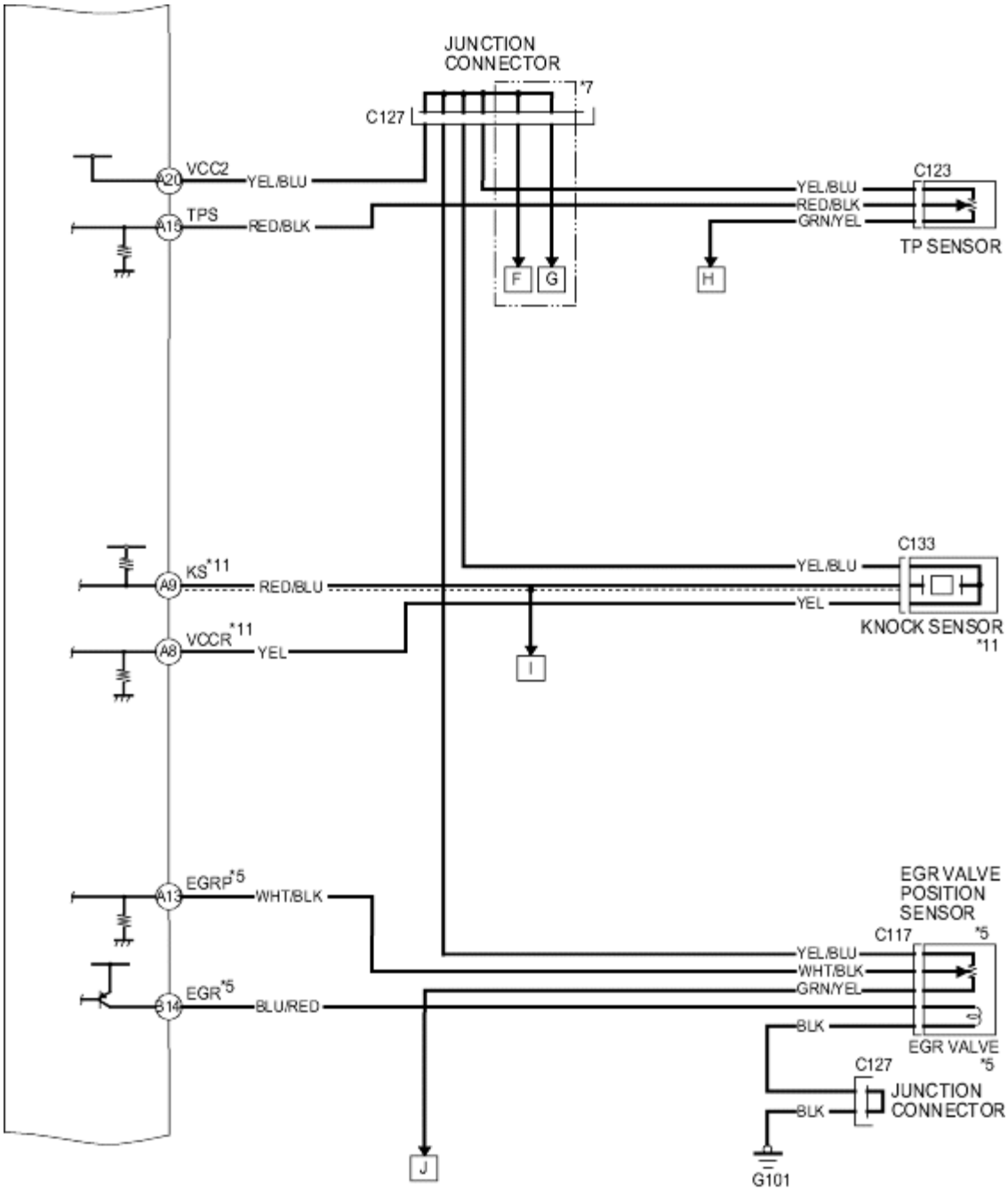
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

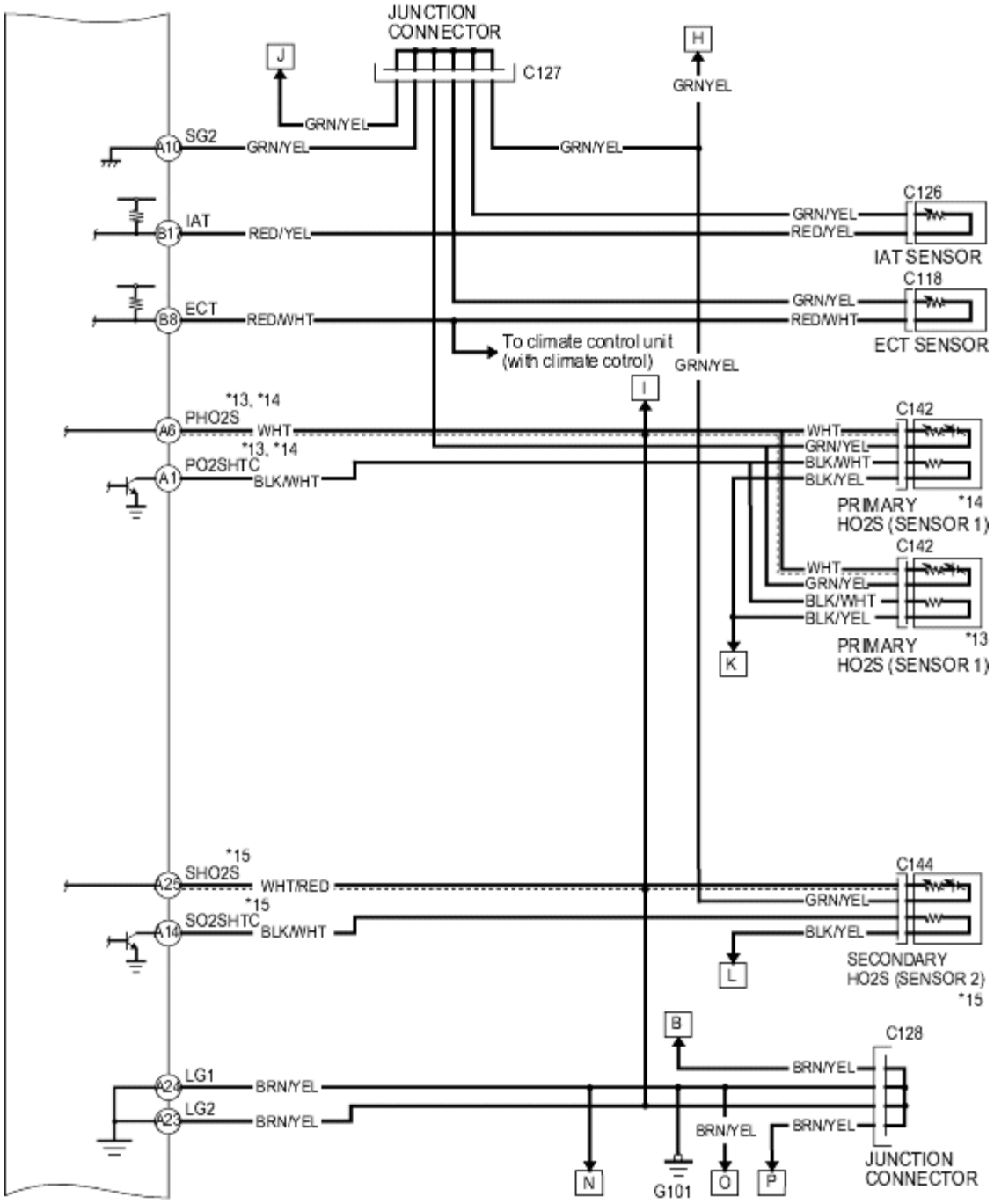
System Descriptions (cont'd)



Fuel and Emissions Systems

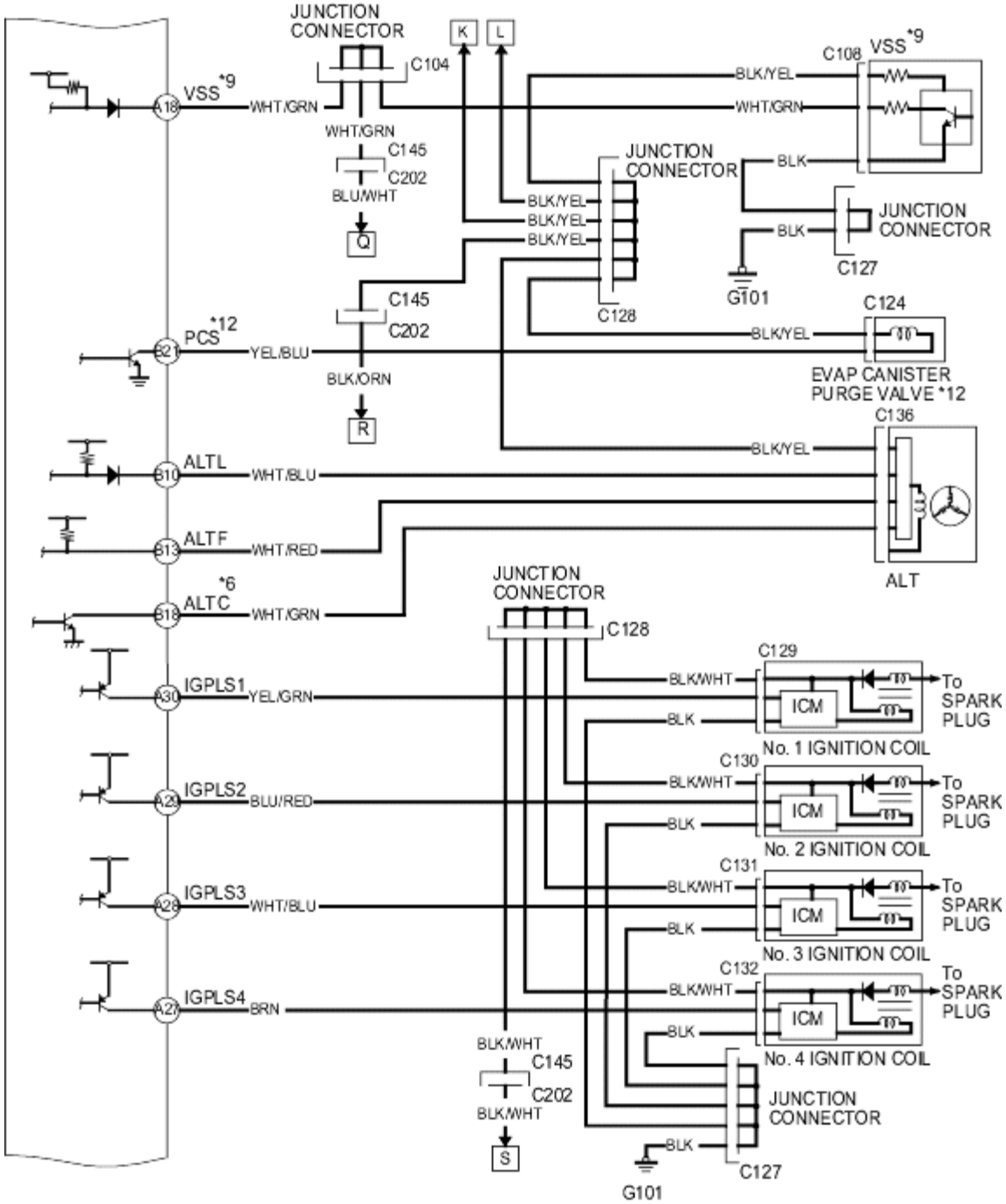
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

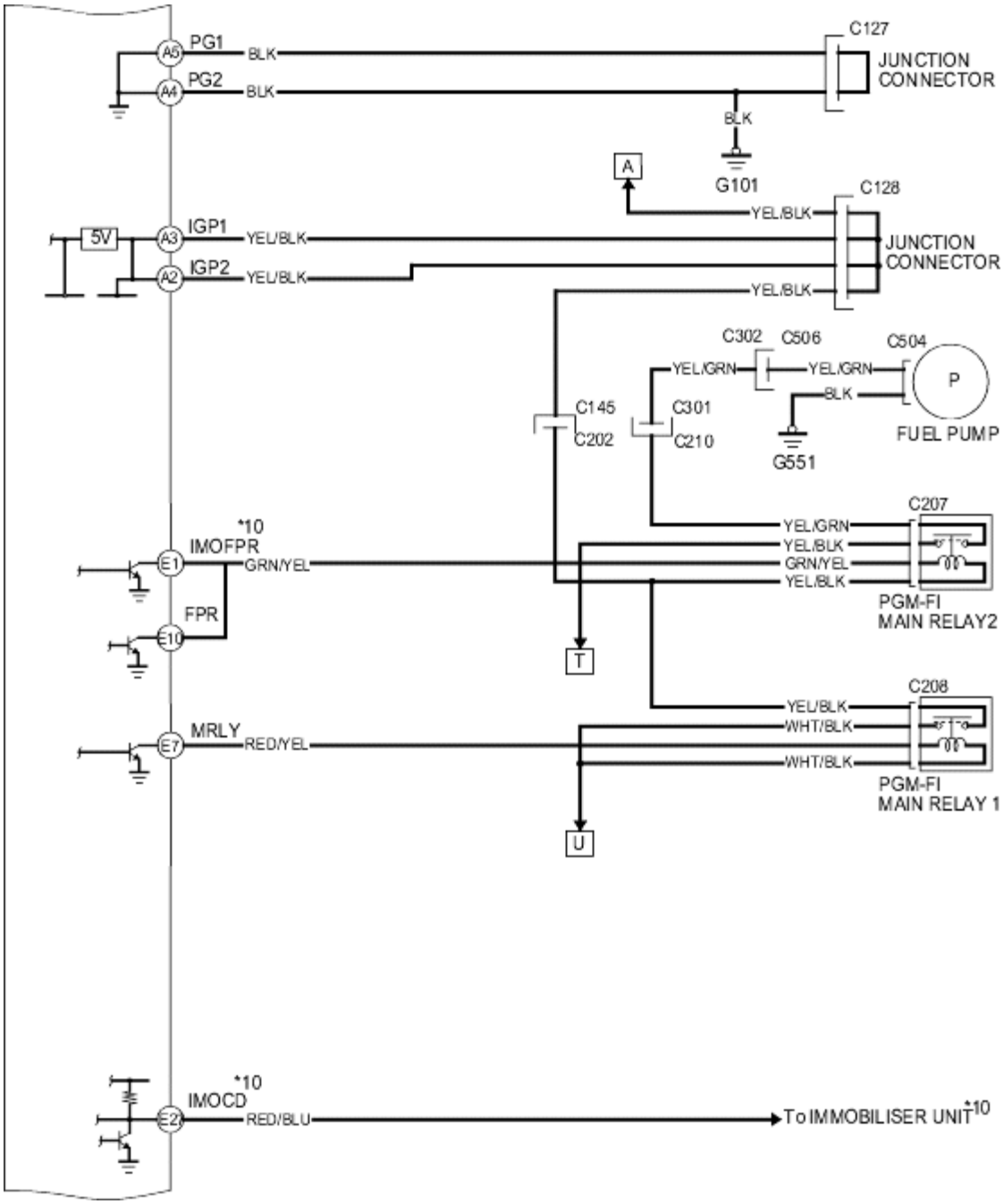
System Descriptions (cont'd)



Fuel and Emissions Systems

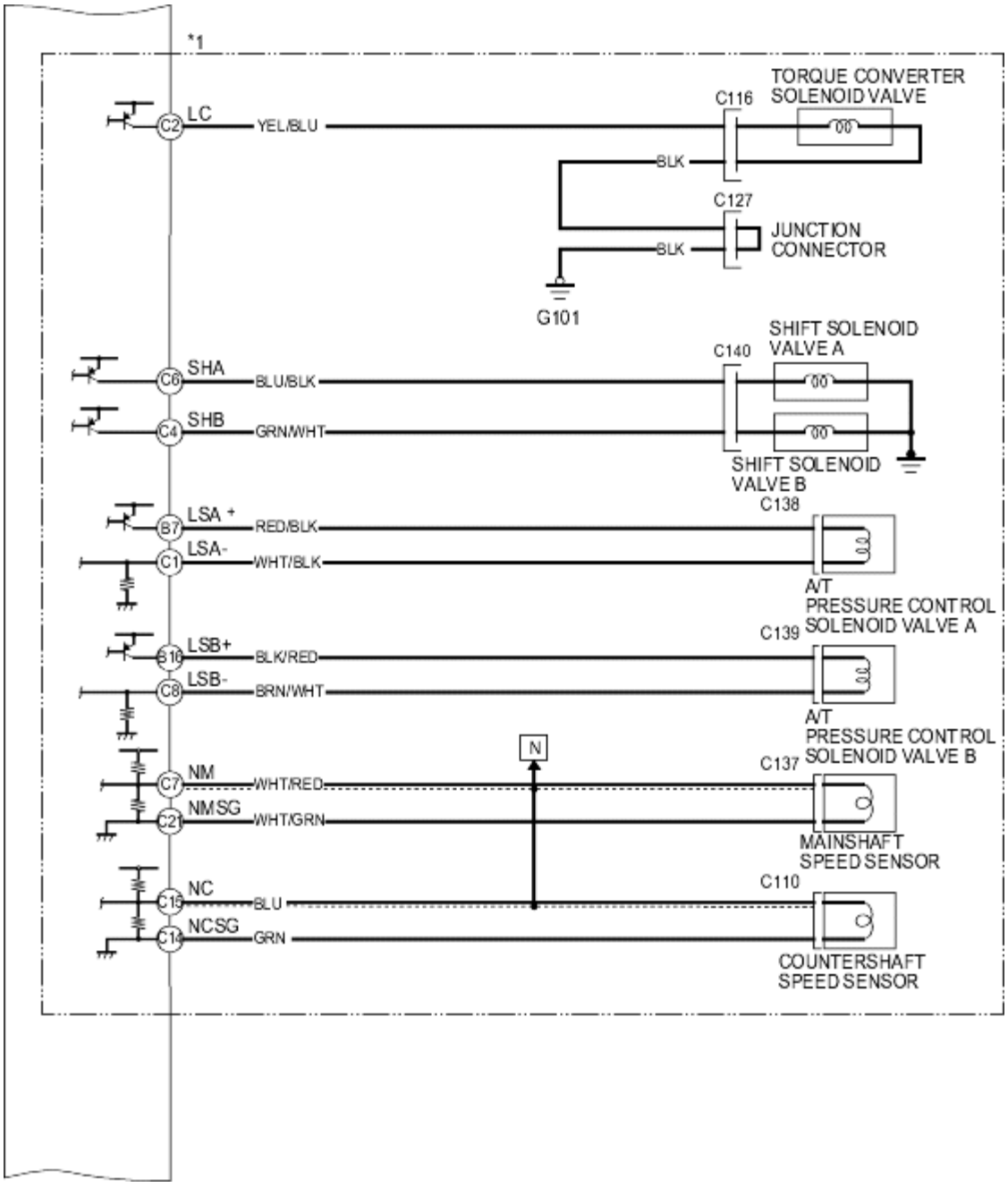
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

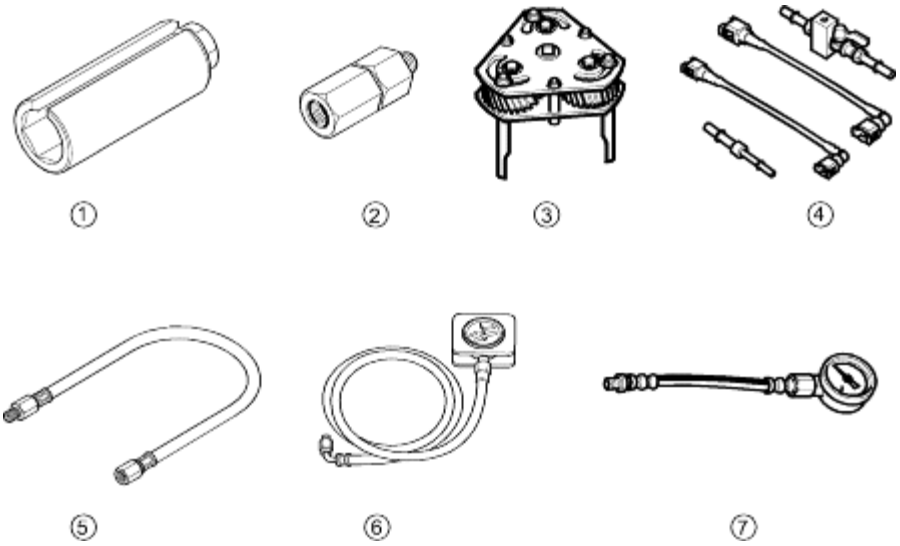
System Descriptions (cont'd)



Fuel and Emissions Systems

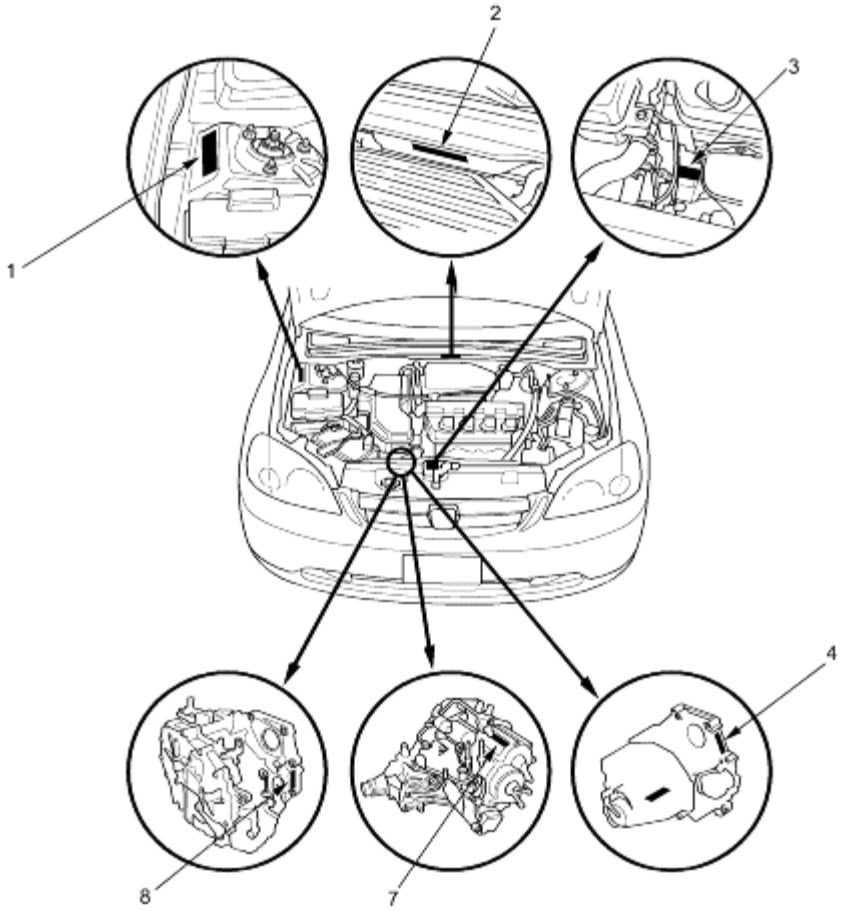
Special Tools

Ref. No.	Tool Number	Description	Qty
(1)	07LAA-PT50101	O2 Sensor Socket Wrench	1
(2)	07NAJ-P070100	Oil Pressure Gauge Attachment	1
(3)	07WAA-0010100	Adjustable Ring Wrench	1
(4)	07ZAJ-S5A0100	Fuel Pressure Gauge Set	1
(5)	07ZAJ-S5A0200	Hose, Oil Pressure	1
(6)	07406-0070001	Low Pressure Gauge	1
(7)	07406-0040002	Fuel Pressure Gauge	1



General Information

Identification Number Locations

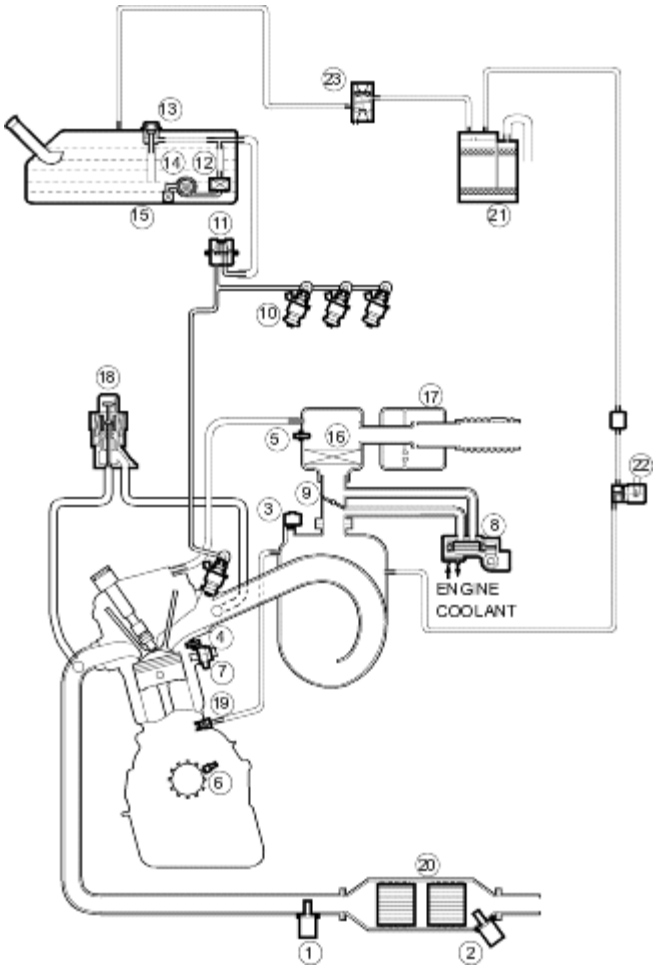


1. Build Date and Vehicle Type
   Except KK, KX, KY models
2. Vehicle Identification Number (VIN)
3. Engine Number
4. Transmission Number (Manual)
5. Certification Plate
   (KK, KX models)
6. Certification Plate
   (KY model)
7. Transmission Number (Automatic)
8. Transmission Number (Honda Multi Matic)

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Distribution



(1) PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)

(2) SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)

(3) MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

(4) ENGINE COOLANT TEMPERATURE (ECT) SENSOR

(5) INTAKE AIR TEMPERATURE (IAT) SENSOR

(6) CRANKSHAFT POSITION (CKP) SENSOR

(7) KNOCK SENSOR

(8) IDLE AIR CONTROL (IAC) VALVE

(9) THROTTLE BODY

(10) INJECTOR

(13) FUEL PRESSURE REGULATOR

(14) FUEL PUMP

(15) FUEL TANK

(16) AIR CLEANER

(17) RESONATOR

(18) EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR

(19) POSITIVE CRANKCASE VENTILATION (PCV) VALVE

(20) THREE WAY CATALYTIC CONVERTER

(21) EVAPORATIVE EMISSION (EVAP) CANISTER

(22) EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE

(11) FUEL PULSATION DAMPER

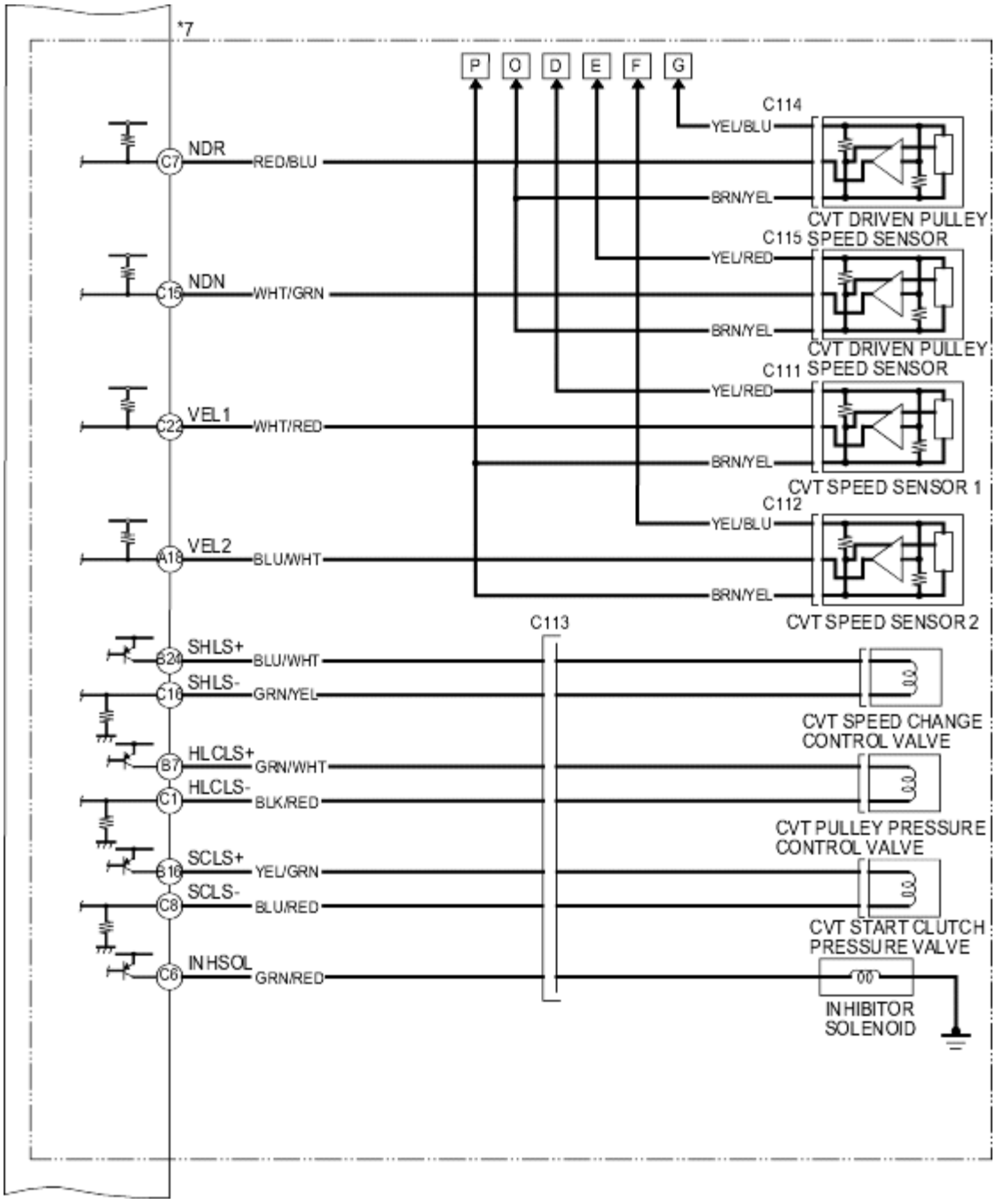
(12) FUEL FILTER

(23) EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE

Fuel and Emissions Systems

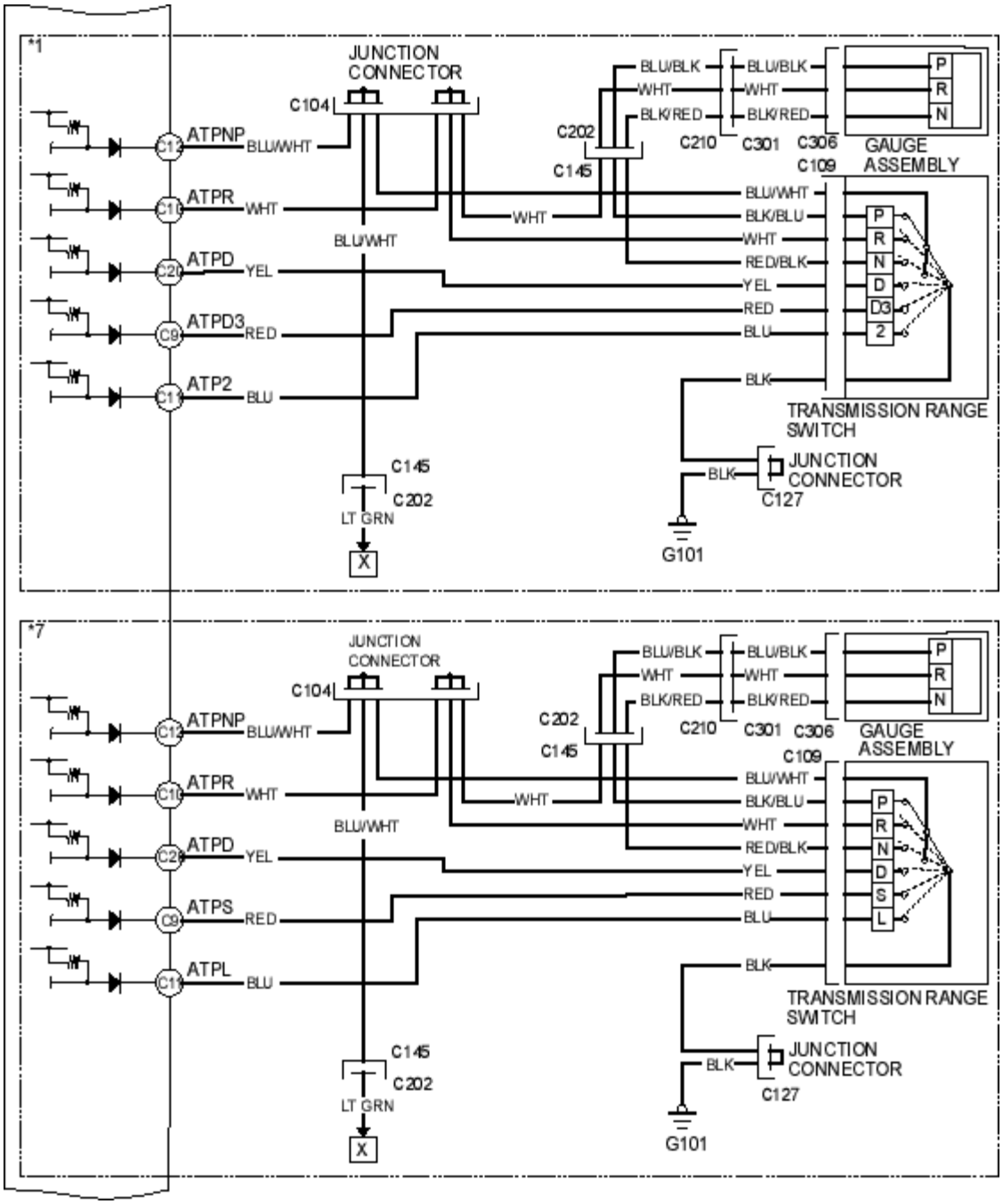
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

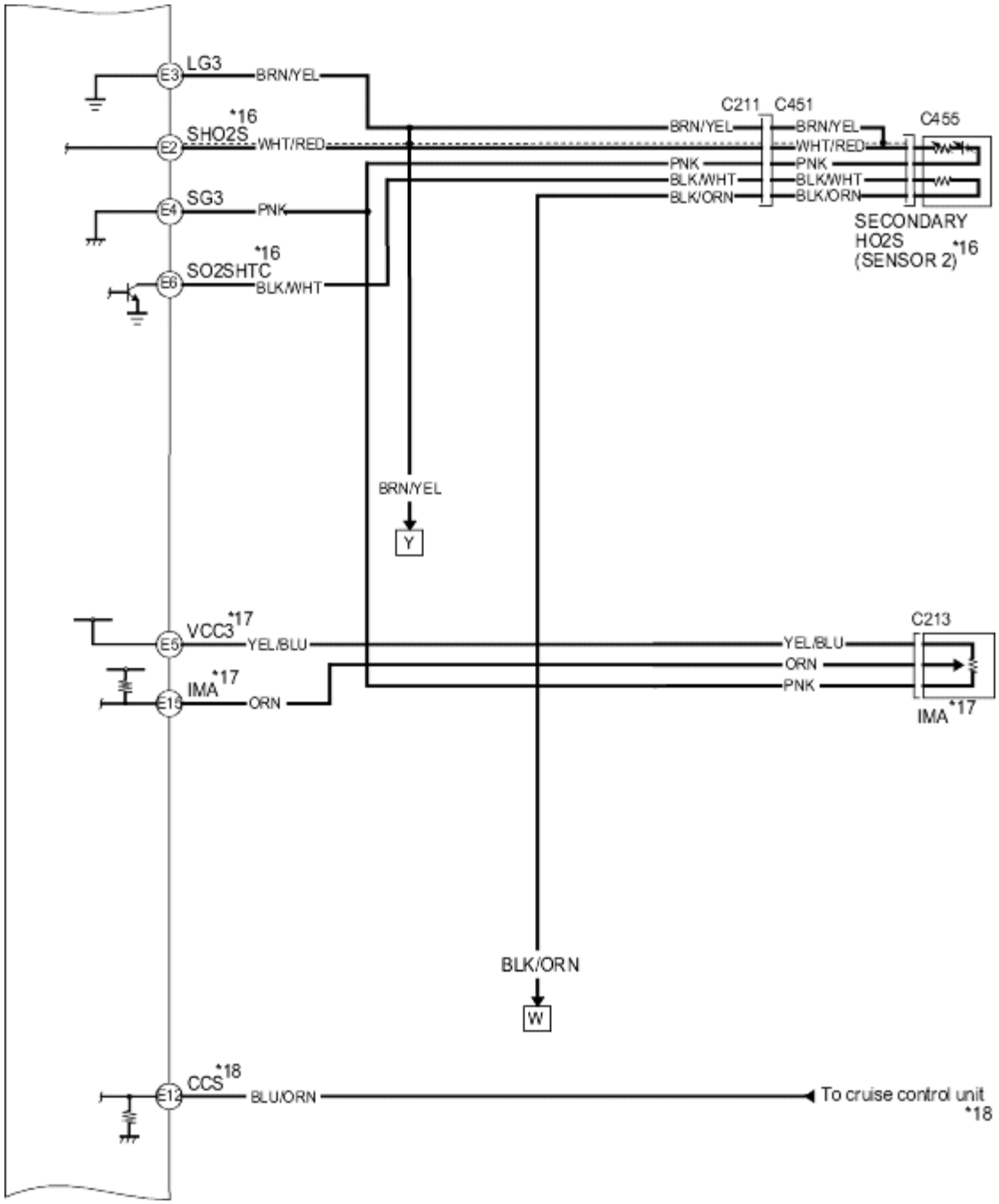
System Descriptions (cont'd)



Fuel and Emissions Systems

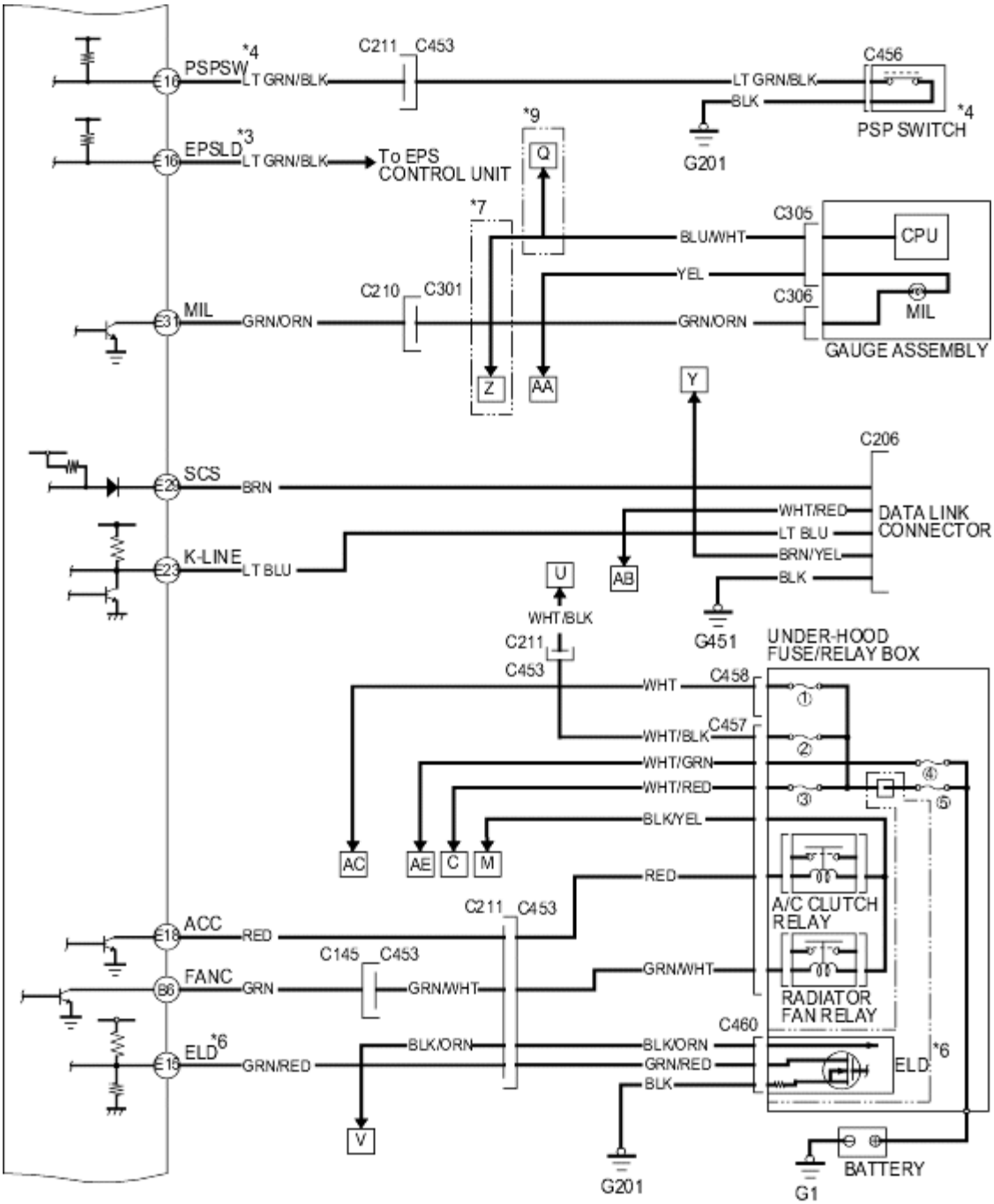
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

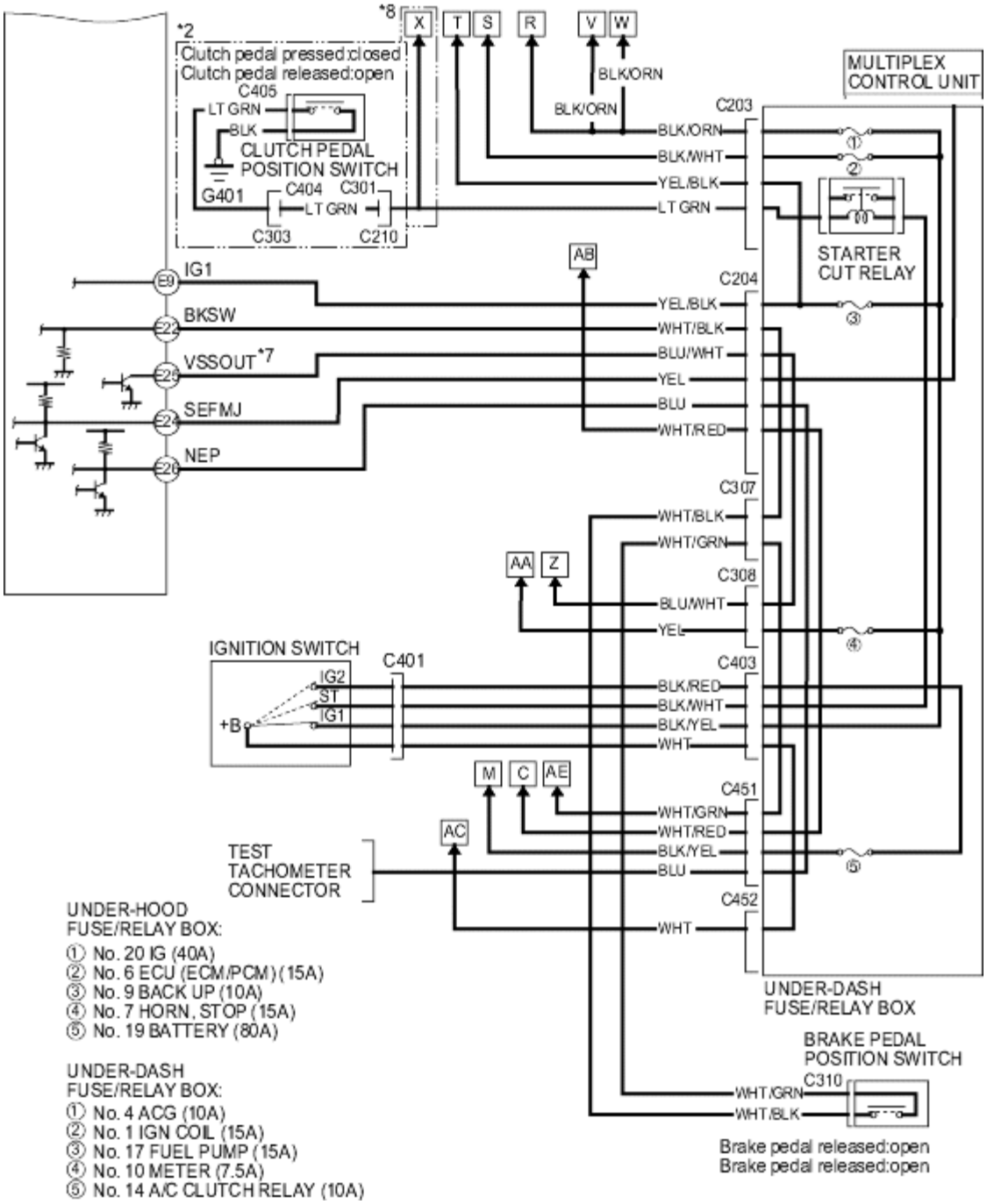
System Descriptions (cont'd)



Fuel and Emissions Systems

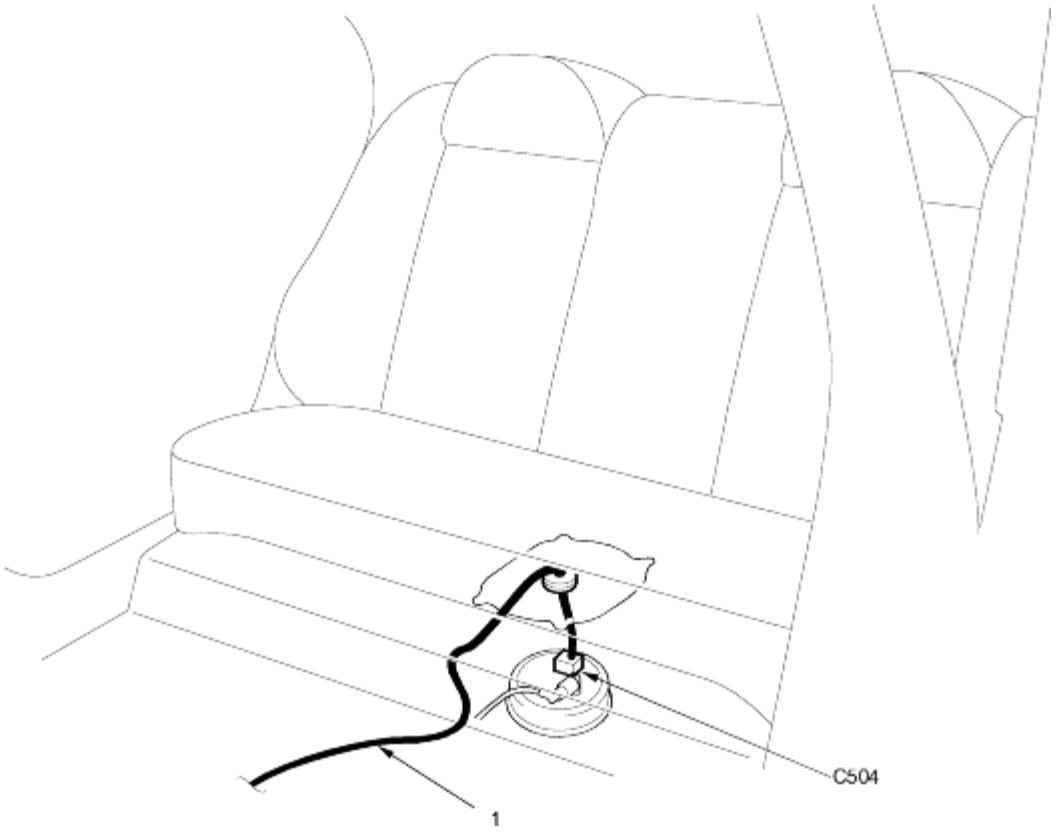
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

System Descriptions (cont'd)



1. FLOOR WIRE HARNESS

C504



1	BLK
2	YEL/BLK
3	——
(4)	BLK
(5)	YEL/GRN

NOTE

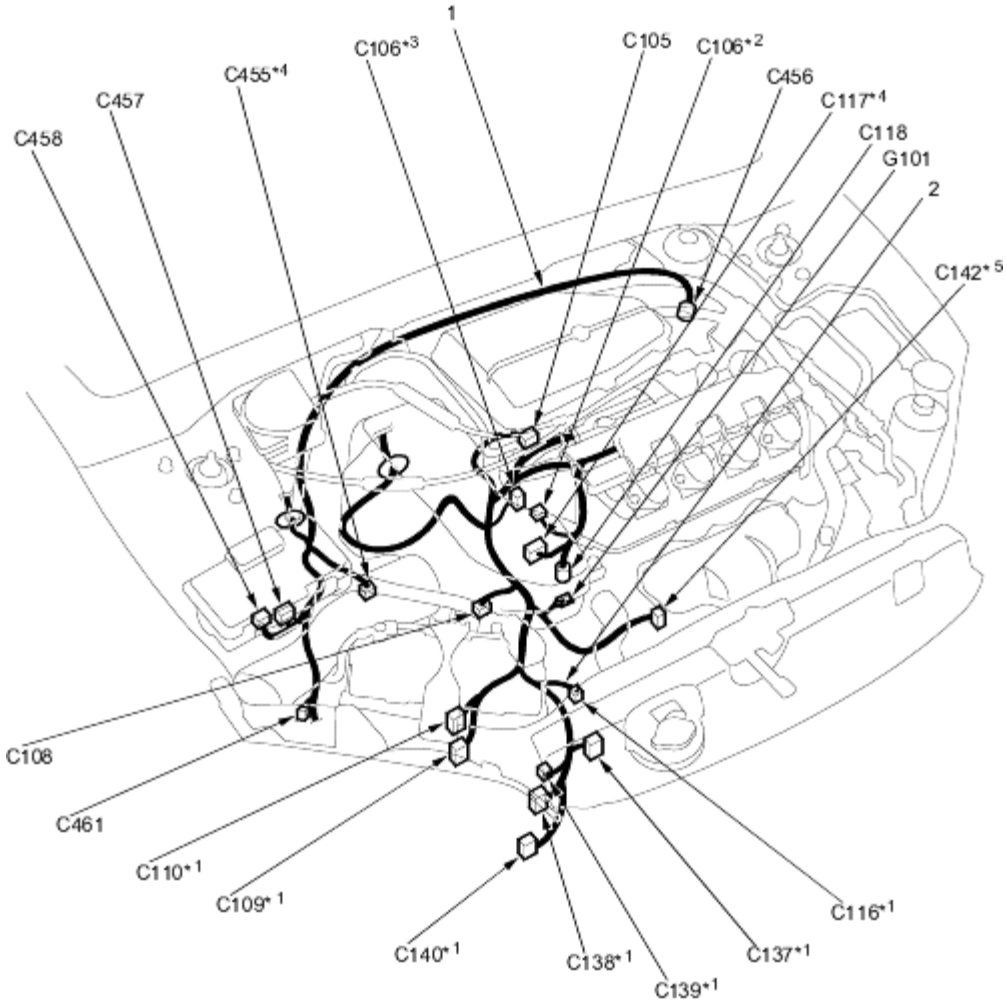
- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side
- O: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:



1. ENGINE COMPARTMENT WIRE HARNESS
2. ENGINE WIRE HARNESS

*1: A/T*2: D16W8, D16W9 engines

*3: D17A2, D17A5, D17Z3, D17Z4 engines

*4: D17A2 (KZ, FO models) engine

*5: with TWC model (except KV model)

Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106 (D17A2, D17A5 D17Z3, D17Z4 engines)



①	GRN/YEL

C106 (D16W8, D16W9 engines)



①	GRN/YEL
②	RED

C108



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	—	7	—
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
⑤	RED	10	RED/BLK

C110 (A/T)



①	GRN
②	BLU

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK
②	GRN/YEL
③	YEL/BLU
④	BLU/RED
5	—
⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142 (D15Y5, D17A1, A17Z2 engines)



①	WHT
②	GRN/YEL
③	BLK/YEL
④	BLK/WHT

C142



①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C455 (D17A2 (KZ, FO models) engines)



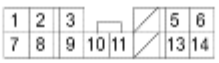
①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/GRN

C456



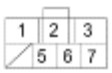
①	LT GRN/BLK
②	BLK

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	10	RED
4	—	11	WHT/RED
5	WHT/BLU	12	—
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	—
5	BLK
6	WHT/BLK
7	YEL/BLK

C461



1	—
②	BLU

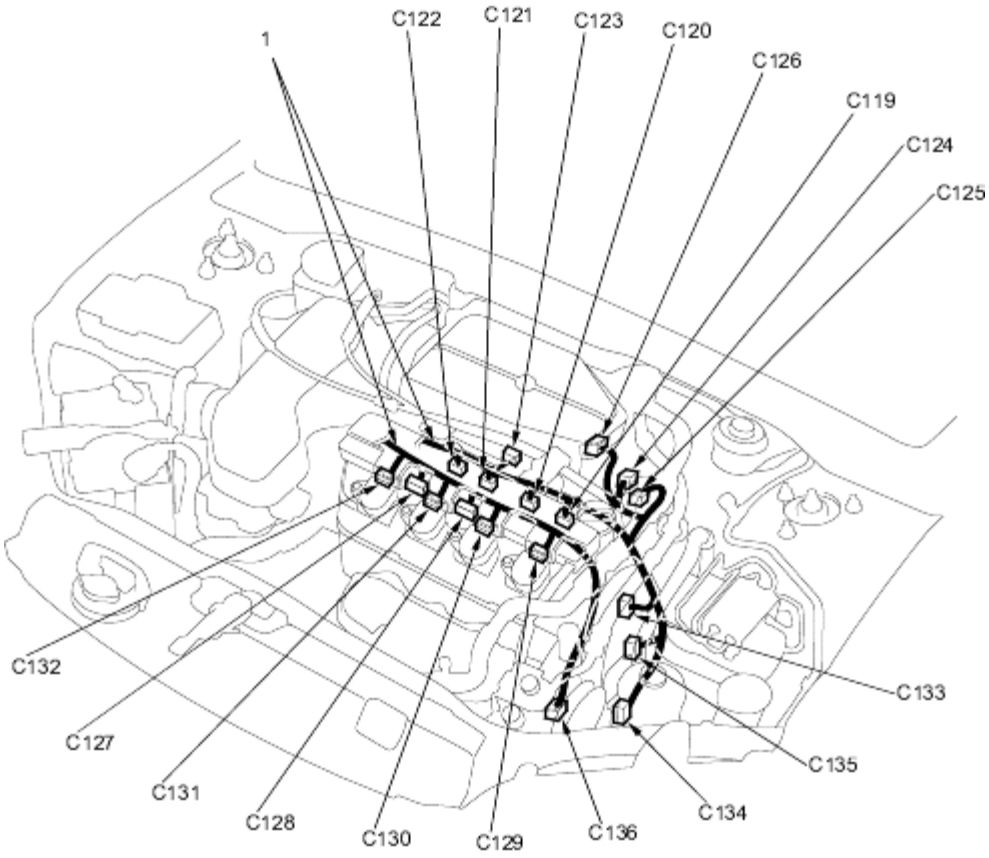
NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:

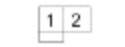


1. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C119



①	YEL/BLK
②	BRN

C120



①	YEL/BLK
②	RED

C121



①	YEL/BLK
②	BLU

C122



①	YEL/BLK
②	YEL

C123



①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124



①	BLK/YEL
②	YEL/BLU

C125



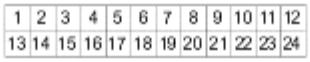
①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126



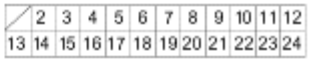
①	GRN/YEL
②	RED/YEL

C127



①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128



1	——	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129



①	YEL/GRN
②	BLK
③	BLK/WHT

C130



①	BLU/RED
②	BLK
③	BLK/WHT

C131



①	WHT/BLU
②	BLK
③	BLK/WHT

C132



①	BRN
②	BLK
③	BLK/WHT

C133



①	RED/BLU
②	YEL/BLU
③	YEL

C134



①	BLU
②	BRN/YEL
③	YEL/BLK

C135



①	BRN/YEL
②	GRN
③	YEL/BLK

C136



①	BLK/YEL
2	——
③	WHT/BLU
④	WHT/RED

NOTE ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energised, and enriches the mixture to assure smooth transition to the A/C mode.

Alternator Control

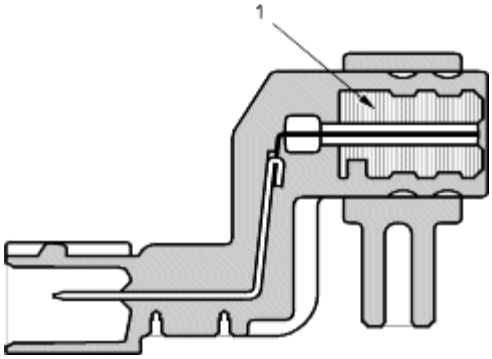
The alternator signals the Engine Control Module (ECM)/Powertrain Control Module (PCM) during charging.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Crankshaft Position (CKP) Sensor

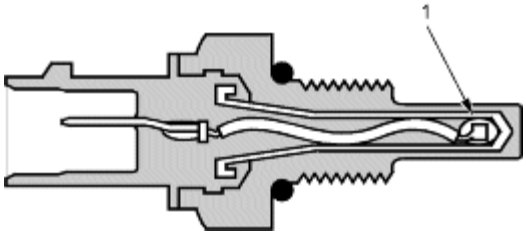
The CKP sensor detects engine speed and determines ignition timing and timing for fuel injection of each cylinder.



1. 1. MAGNET

Engine Coolant Temperature (ECT) Sensor

The ECT sensor is a temperature dependent resistor (thermistor). The resistor of the thermistor decreases as the engine coolant temperature increases.



1. 1. THERMISTOR

Ignition Timing Control

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

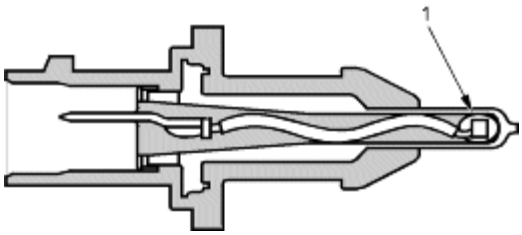
Injector Timing and Duration

The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system, and will set a Diagnostic Trouble Code (DTC).

Intake Air Temperature (IAT) Sensor

The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



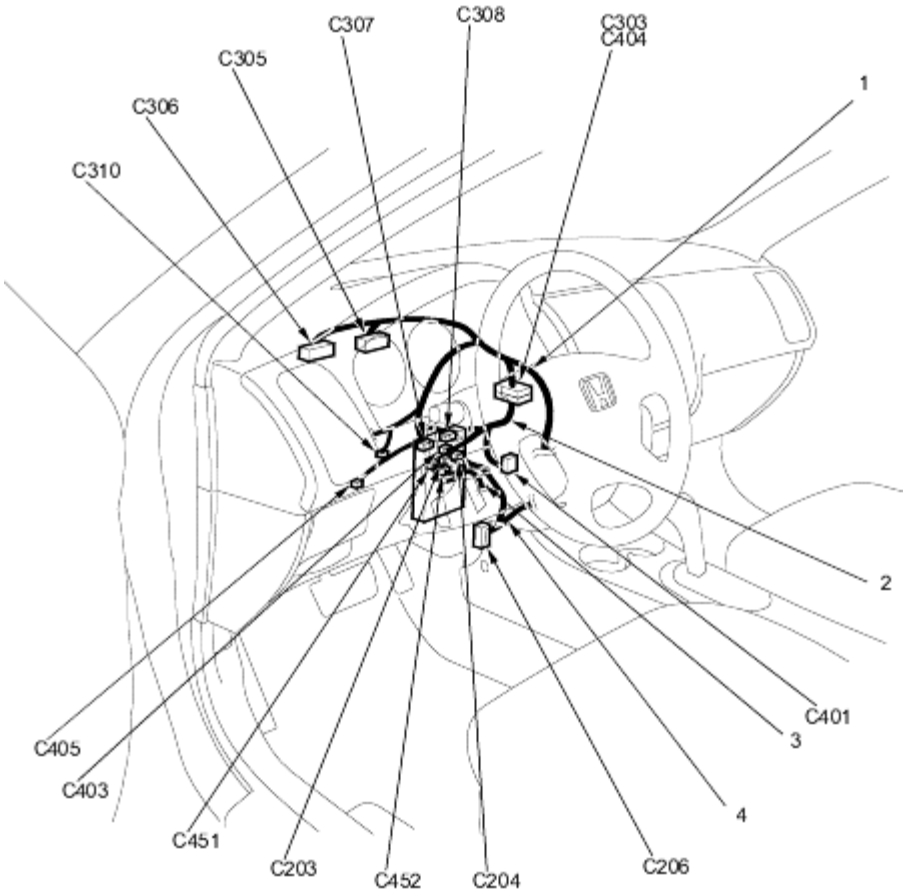
2. 1. THERMISTOR

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:



1. DASHBOARD WIRE HARNESS A
2. DASHBOARD WIRE HARNESS B
3. ENGINE COMPARTMENT WIRE HARNESS
4. ECM/PCM WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

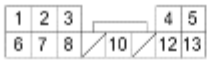
C203



1	BLK/WHT	⑦	LT GRN
2	———	8	GRN
③	BLK/ORN	9	———
4	———	10	BLU/BLK*1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

*1 : except M/T

C204



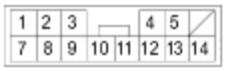
1	GRY	8	RED/BLU
2	YEL/RED	9	———
③	WHT/BLK	10	YEL
④	BLU/WHT	11	———
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

C206*



1	———	⑨	BRN
2	———	10	———
3	———	11	———
④	BLK	12	———
⑤	BRN/YEL	13	———
6	———	14	GRY
⑦	LT BLU	15	———
8	———	16	WHT/RED

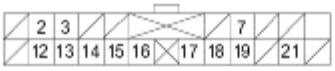
C303



1	BRN/YEL*1	8	RED/WHT
2	YEL/BLK*1	9	BLU/RED
3	BLU/ORN*1	10	WHT*2
4	RED/BLK*2	11	LT GRN/BLK*3
5	BLU/BLK*2	12	GRY/RED*3
6	———	13	LT BLU*3
7	ORN	14	LT GRN*4

*1 : D15Y3 (KY with immobilizer model), D15Y5, D17Z1 (KZ model), D17A2 engines
*2 : with fog light
*3 : with cruise control
*4 : KX model (M/T)

C305



1	———	9	———	⑰	YEL
2	WHT/GRN	10	———	18	WHT/RED
3	YEL/BLK	11	———	19	WHT/BLK
4	———	⑫	BLU/WHT	20	———
5	———	13	BLU	20	WHT/BLU
6	———	14	BLU/YEL*2	21	PNK/BLU
7	WHT*1	15	BLK/YEL	22	———
8	———	16	BLK		

*1 : with fog light
*2 : with cruise control

C306



1	RED/BLU	9	———	17	RED
2	RED/YEL	10	WHT/RED*3	18	BLK
③	BLK/RED*1	11	WHT*1	19	———
4	———	12	GRN/YEL	20	YEL/RED
⑤	BLU/BLK*1	13	GRN/RED	21	GRN/ORN
6	BLU/YEL*2	14	PNK	22	BLU/ORN*3
7	RED/WHT	15	BLU/RED		
8	———	16	RED/BLK		

*1 : A/T
*2 : with fog light
*3 : D15Y3 (KY with immobilizer model), D15Y5, D17Z1 (KZ model), D17A2 engines

C307



1	WHT*1	7	GRN/RED
1	RED/YEL	8	RED/BLK*3
2	GRN*2	9	BLU/YEL*3
3	BLK/ORN*3	10	RED*3
4	WHT/BLU	11	BLU/WHT*3
⑤	WHT/BLK	12	WHT/GRN
6	YEL/GRN*2		

*1 : KM model
*2 : with sun roof
*3 : with cruise control

C308



1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	WHT/RED*1	12	———
4	WHT/RED	13	WHT/RED
5	BLU/YEL*2	14	———
6	YEL	15	RED/WHT*3
⑦	YEL	16	———
⑧	BLU/WHT	17	———
9	———		

*1 : KK, KM models
*2 : with cruise control
*3 : with fog light

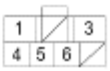
C310



1	WHT/GRN	
2	WHT/BLK	
3	BLU*	
4	LT GRN*	

*: with cruise control

C401



①	BLK/WHT	
2	———	
③	WHT	
④	BLK/RED	
5	WHT/RED	
⑥	BLK/YEL	
7	———	

C403



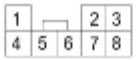
①	WHT	
2	WHT/RED	
③	BLK/WHT	
④	BLK/RED	
⑤	BLK/YEL	

C405
(KX model (M/T))



①	LT GRN	
②	BLK	

C451



①	BLK/YEL	⑤	BLU
②	WHT/RED	6	ORN
③	WHT/GRN	7	WHT
4	BLK	8	WHT/BLU

C452



①	WHT	
②	WHT/RED	
3	WHT/BLK	

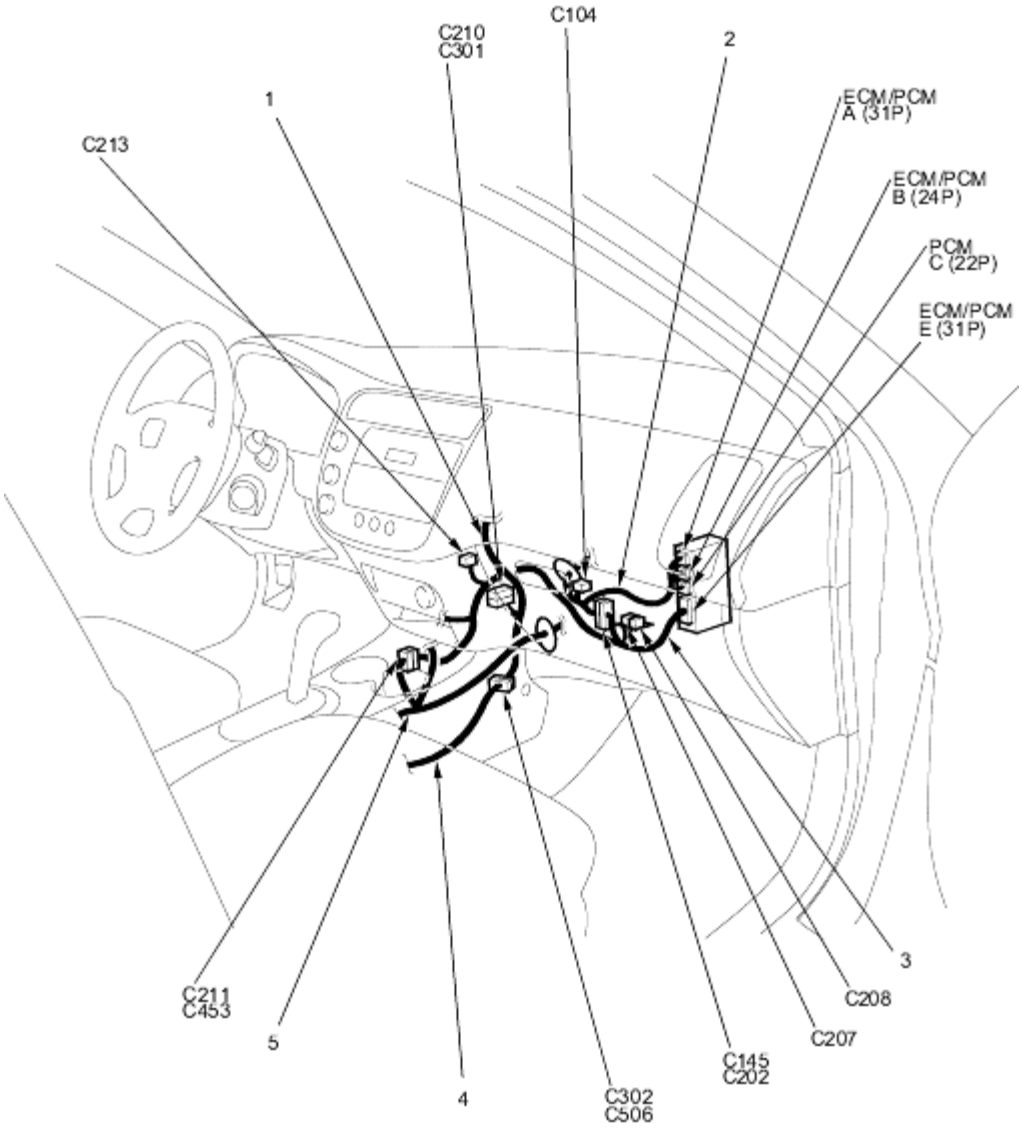
NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.
* : Terminal side of female terminals

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:

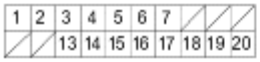


1. DASHBOARD WIRE HARNESS A
2. ENGINE WIRE HARNESS
3. ECM/PCM WIRE HARNESS
4. FLOOR WIRE HARNESS
5. ENGINE COMPARTMENT WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	8		14	WHT/GRN
②	YEL/BLK	9		15	BLU/WHT*
③	YEL/BLK	10		16	BLU/WHT*
④	YEL/BLK	11		17	BLU/WHT*
⑤	GRN	12		18	WHT*
⑥	GRN	12	WHT/GRN	19	WHT*
⑦	GRN	13	WHT/GRN*	20	WHT*

* : A/T

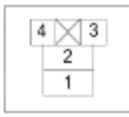
C145



①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT*3	16	BLK/WHT
③	BLU/WHT*1	10		17	BLK/YEL
4	GRN/WHT*2	11	WHT*1	18	YEL/RED
5	YEL*2	12		19	YEL/BLK
⑥	WHT/GRN	13		20	BLK/WHT
7	GRN	14			

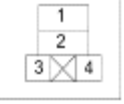
*1 : A/T
*2 : M/T
*3 : with cruise control

C207



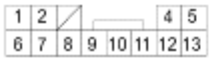
①	YEL/BLK
②	YEL/GRN
③	GRN/YEL
④	YEL/BLK

C208

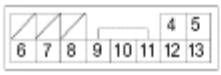


①	YEL/BLK
②	WHT/BLK
③	RED/YEL
④	WHT/BLK

C210



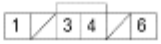
C211



C213 (without TWC model)



C506



ECM/PCM A (31P)



1	RED/YEL	⑧	BLK/RED*4	1		①	YEL/BLU	①	YEL/GRN
2	BLU/ORN	⑨	WHT*4	2		②	ORN	2	
3		10	LT GRN*1	3		③	PNK	3	PNK
4	BRN/YEL*3	11	RED/WHT*2	4	LT GRN/BLK			4	PNK/BLU
5	YEL/BLK*3	12	GRN/ORN	5	BLK/YEL*1			5	
⑥	YEL/GRN	13	YEL/RED	⑥	BLK/WHT*2			6	YEL/BLK
⑦	BLU/BLK*4			⑦	BRN/YEL*2				
				⑧	WHT/RED*2				
				⑨	BLK/ORN*2				
				10	PNK*2				
				11	GRN/WHT				
				12	RED				
				13	WHT/BLK				

①	BLK/WHT*1	12	BLK/RED	23	BRN/YEL				
②	YEL/BLK	13	WHT/BLK*3	24	BRN/YEL				
③	YEL/BLK	14		25					
④	BLK	15	RED/BLK	26	GRN				
⑤	BLK	16		27	BRN				
⑥	WHT*1	17		28	WHT/BLU				
⑦	BLU	18	WHT/GRN	29	BLU/RED				
⑧	YEL*2	19	GRN/RED	30	YEL/GRN				
⑨	RED/BLU*2	20	YEL/BLU	31					
10	GRN/YEL	21	YEL/RED*4						
11	GRN/WHT	22							

*1 : M/T
*2 : with cruise control
*3 : D15Y3 (KY with immobilizer model), D15Y5, D17Z1 (KZ model), D17A2 engines
*4 : except M/T

*1 : with seat heater
*2 : D17A2 (KZ, FO models) engine

*1 : with TWC model (except KV model)
*2 : except D15Y2, D15Y3, D15Y5 engines
*3 : D17A2 (EXCEPT KZ, FO models) engines
*4 : A/T

ECM/PCM B (24P)



①	RED*1	⑨		17	RED/YEL
②	YEL	10	WHT/BLU	18	
③	BLU	11		19	
④	RED	12		20	
⑤	BRN	13	WHT/RED	21	YEL/BLU*3
⑥	GRN	14	BLU/RED*4	22	
⑦	RED/BLK*2	15	GRN/YEL*5	23	
⑧	RED/WHT	16	BLK/RED*2	24	

PCM C (22P)



①	WHT/BLK	⑨	RED	17	
②	YEL/BLU	10	WHT	18	
3		11	BLU	19	
④	GRN/WHT	12	BLU/WHT	20	YEL
5		13		21	WHT/GRN
⑥	BLU/BLK	14	GRN	22	
⑦	WHT/RED	15	BLU		
⑧	BRN/WHT	16			

ECM/PCM E (31P)



①	GRN/YEL*1	12	BLU/ORN*5	23	LT BLU				
②	WHT/RED*2	13		24	YEL				
③	BRN/YEL	14		25					
④	PNK*2	15		26	BLU				
⑤	YEL/BLU*3	16	LT GRN/WHT	27	RED/BLU*1				
⑥	BLK/WHT*2	17		28					
⑦	RED/YEL	18	RED	29	BRN				
8		19		30					
⑨	YEL/BLK	20		31	GRN/ORN				
10	GRN/YEL*4	21							
11		22	WHT/BLK						

*1 : D16W8, D16W9 engines
*2 : A/T
*3 : except D15Y3 (PA, KW models) engine
*4 : D17A2 (KZ, FO models) engine
*5 : D16W8, D16W9, D17A2, D17A5, D17Z3, D17Z4 engines

NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

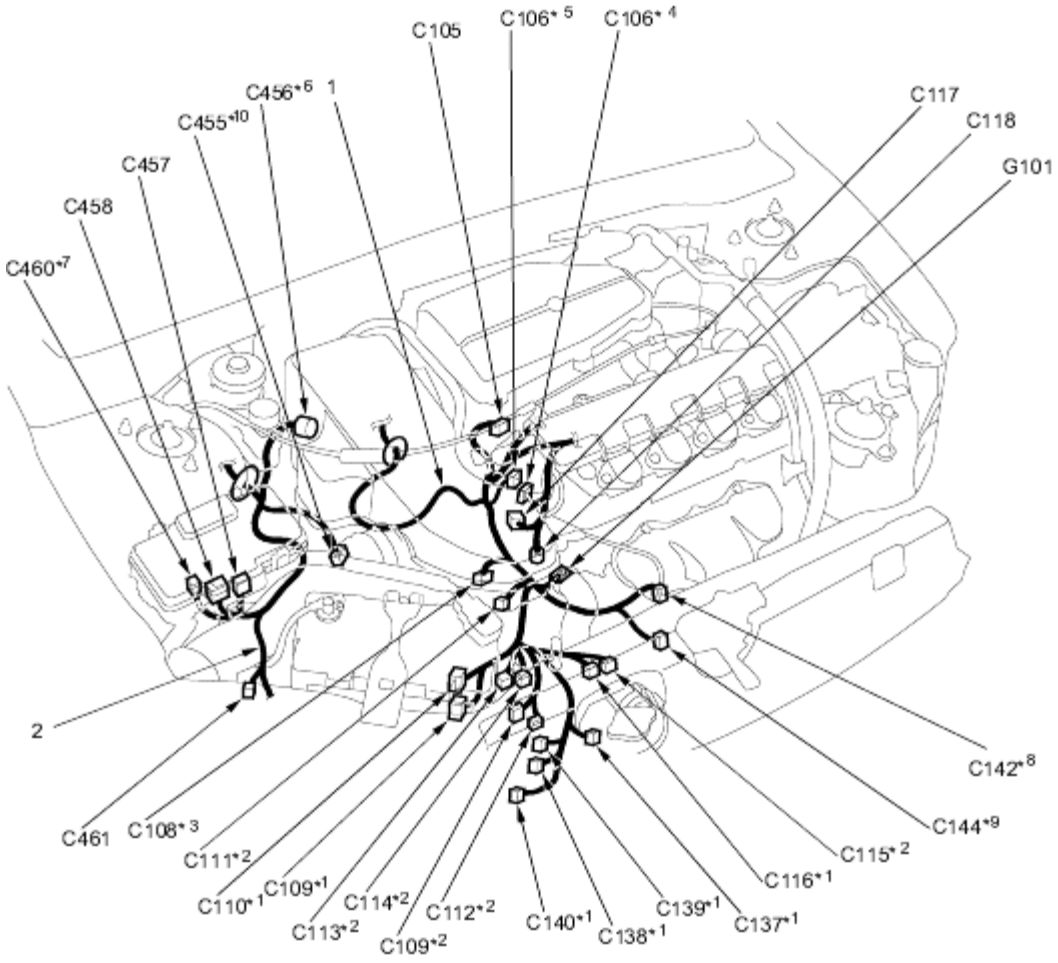
*1 : D15Y3 (KY with immobilizer model), D15Y5, D17Z1 (KZ model), D17A2 (except FO, MA models) engine
*2 : D17A2 (KZ, FO models) engine
*3 : without TWC model
*4 : except D15Y3 (KY immobilizer model), D15Y5, D17Z1 (KZ model), D17A2 engines
*5 : with cruise control

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:



1. ENGINE WIRE HARNESS
2. ENGINE COMPARTMENT WIRE HARNESS

*1: A/T*2:CVT

*3: A/T and M/T

*4: D16W9 engine

*5:D15Y4, D17A2, D17A5 engines

*6: KU model

*7: D15Y4, D17A2 (KU model) engines

*8: With TWC model

*9: D15Y6 engine

*10: D15Y4, D17A2 (KU, KQ models), D17Z1 (KQ model) engines

Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106 (D15Y4, D17A2, D17A5 engines)



①	GRN/YEL

C106 (D16W9 engine)



①	GRN/YEL
②	RED

C108 (M/T and A/T)



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	——	7	——
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
⑤	RED	10	RED/BLK

C109 (CVT)



①	BLU/WHT	6	——
②	BLK	7	——
③	BLU	⑧	RED
④	YEL	⑨	RED/BLK
⑤	WHT	10	BLU/BLK

C110 (A/T)



①	GRN
②	BLU

C111 (CVT)



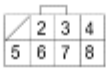
①	YEL/RED
②	WHT/RED
③	BRN/YEL

C112 (CVT)



①	YEL/BLU
②	BLU/WHT
③	BRN/YEL

C113 (CVT)



1	——	⑤	GRN/RED
②	GRN/WHT	⑥	BLK/RED
③	BLU/WHT	⑦	GRN/YEL
④	YEL/GRN	⑧	BLU/RED

C114 (CVT)



①	YEL/BLU
②	RED/BLU
③	BRN/YEL

C115 (CVT)



①	YEL/RED
②	WHT/GRN
③	BRN/YEL

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK	④	BLU/RED
②	GRN/YEL	5	——
③	YEL/BLU	⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142 (D15Y6 engine)



①	WHT
②	GRN/YEL
③	BLK/YEL
④	BLK/WHT

C142 (D15Y4, D17Z1, D17A2 engines)



①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C144 (D15Y6 engine)



①	GRN/YEL
②	WHT/RED
③	BLK/WHT
④	BLK/YEL

C455 (D15Y4, D17A2 (KU, KQ models, D17Z1 (KQ model) engines)



①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/ORN

C456 (KU model)



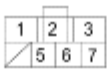
①	LT GRN/BLK
②	BLK

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	10	RED
4	——	⑪	WHT/RED
5	WHT/BLU	12	——
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	——
5	BLK
6	WHT/BLK
7	YEL/BLK

C460 (D15Y4, D17A2 (KU model) engines



①	BLK/ORN
②	BLK
③	GRN/RED

C461



1	——
②	BLU

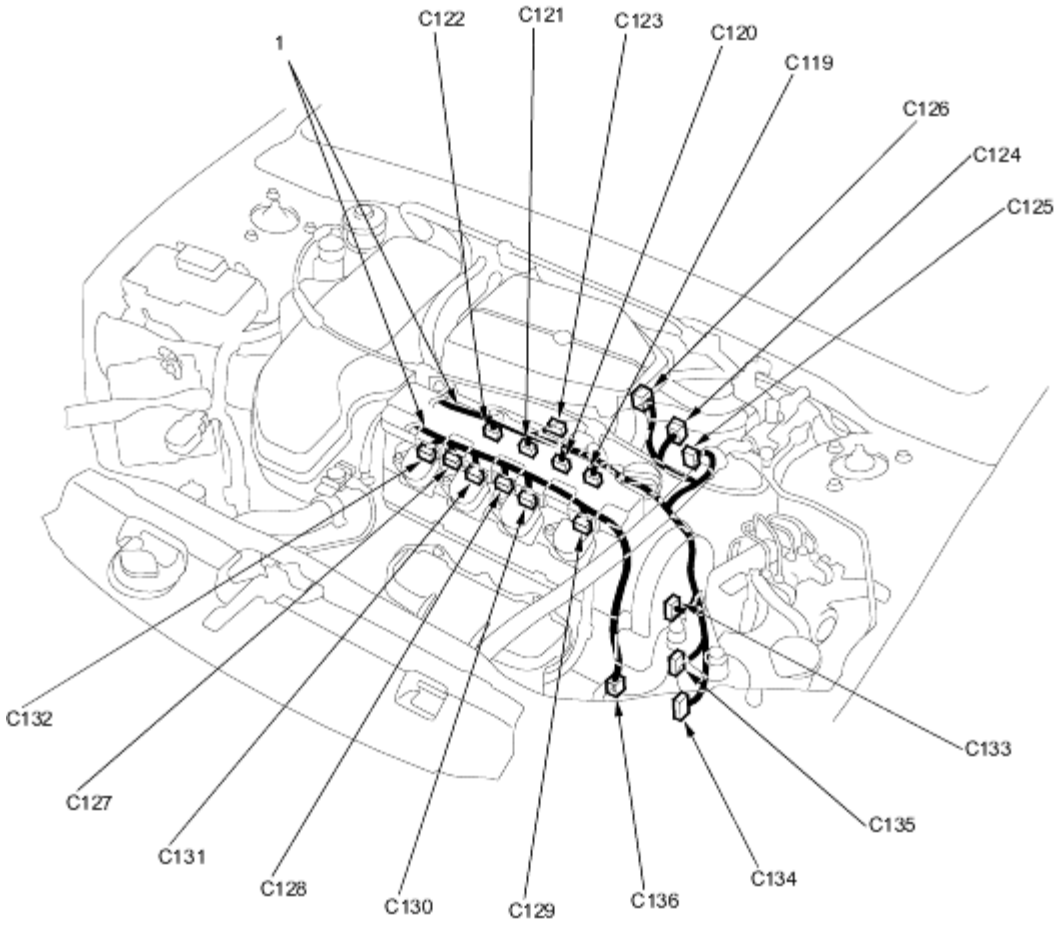
NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:



1. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C119



①	YEL/BLK
②	BRN

C120



①	YEL/BLK
②	RED

C121



①	YEL/BLK
②	BLU

C122



①	YEL/BLK
②	YEL

C123



①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124



①	BLK/YEL
②	YEL/BLU

C125



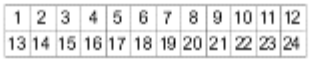
①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126



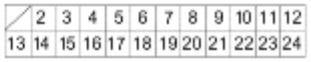
①	GRN/YEL
②	RED/YEL

C127



①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128



1	——	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129



①	YEL/GRN
②	BLK
③	BLK/WHT

C130



①	BLU/RED
②	BLK
③	BLK/WHT

C131



①	WHT/BLU
②	BLK
③	BLK/WHT

C132



①	BRN
②	BLK
③	BLK/WHT

C133



①	RED/BLU
②	YEL/BLU
③	YEL

C134



①	BLU
②	BRN/YEL
③	YEL/BLK

C135



①	BRN/YEL
②	GRN
③	YEL/BLK

C136



①	BLK/YEL
2	WHT/GRN*
③	WHT/BLU
④	WHT/RED

*: D15Y4, D17A2 (KU model) engines

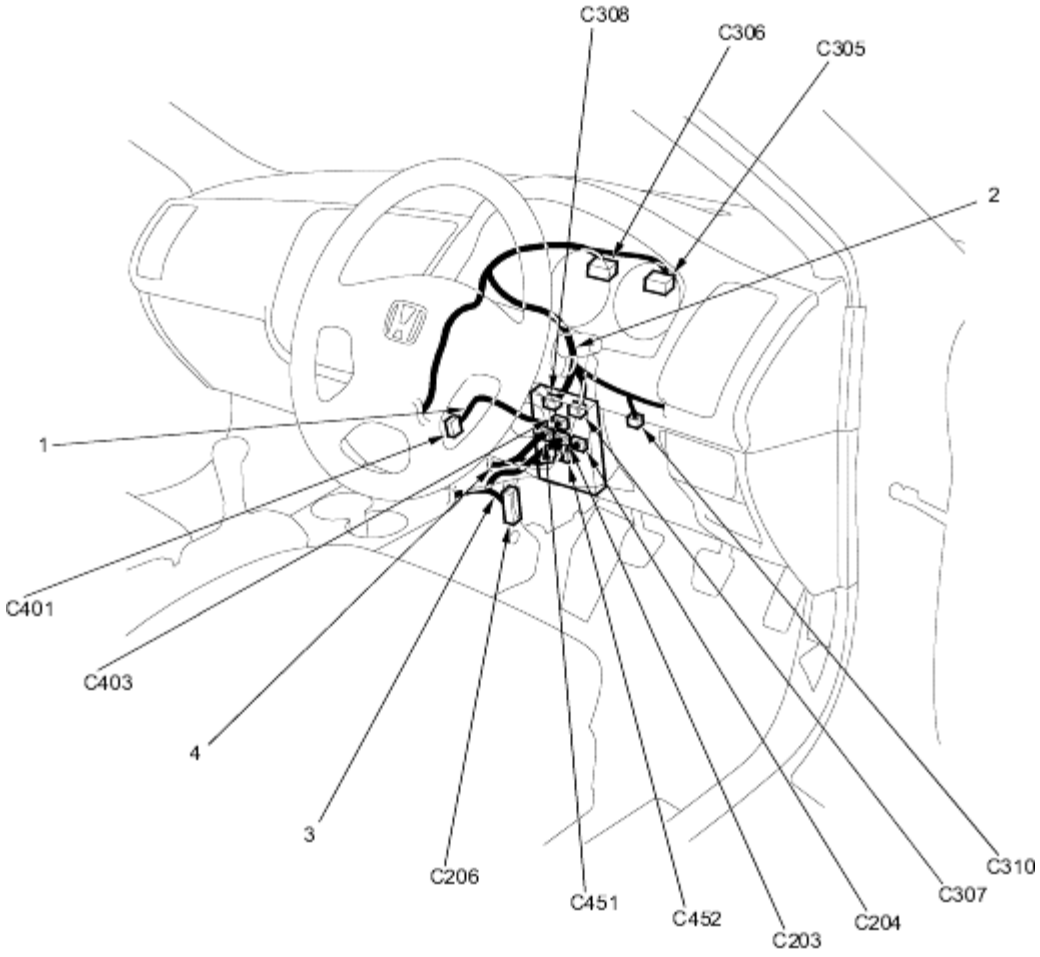
NOTE ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:

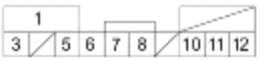


1. DASHBOARD WIRE HARNESS B
2. DASHBOARD WIRE HARNESS A
3. ECM/PCM WIRE HARNESS
4. ENGINE COMPARTMENT WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

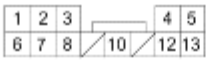
C203



1	BLK/WHT	⑦	LT GRN
2	———	8	GRN
③	BLK/ORN	9	———
4	———	10	BLU/BLK*1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

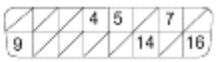
*1 : except M/T

C204



1	GRY	8	RED/BLU
2	YEL/RED	9	———
③	WHT/BLK	10	YEL
④	BLU/WHT	11	———
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

C206*



1	———	⑨	BRN
2	———	10	———
3	———	11	———
④	BLK	12	———
⑤	BRN/YEL	13	———
6	———	14	GRY
⑦	LT BLU	15	———
8	———	16	WHT/RED

C305



1	———	9	———	17	YEL
2	WHT/GRN	10	———	18	WHT/RED
3	YEL/BLK	11	———	19	———
4	———	12	BLU/WHT	20	YEL/BLU*2
5	———	13	BLU	21	PNK/BLU
6	———	14	———	22	———
7	WHT*1	15	BLK/YEL		
8	———	16	BLK		

*1 : withr fog light
*2 : KU model

C306



1	RED/BLU	9	———	17	RED
2	RED/YEL	10	WHT/RED*3	18	BLK
③	BLK/RED*1	11	WHT*1	19	———
4	———	12	GRN/YEL	20	YEL/RED
⑤	BLU/BLK*1	13	GRN/RED	21	GRN/ORN
6	———	14	PNK	22	BLU/ORN*3
7	RED/WHT	15	BLU/RED		
8	———	16	RED/BLK		

*1 : A/T and CVT
*2 : with fog light
*3 : D15Y6, D15Y3 (KN model), D15Y4, D17Z1 (KQ model), D17A2 (MA model) engines

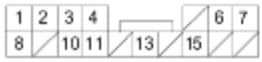
C307



1	WH*1	7	GRN/RED
2	GRN*2	8	———
3	———	9	———
4	WHT/BLU	10	———
⑤	WHT/BLK	11	———
6	YEL/GRN*2	12	WHT/GRN

*1 : KQ model
*2 : with sun roof

C308



1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	WHT/RED*1	12	———
4	WHT/RED	13	WHT/RED
5	———	14	———
6	YEL	15	RED/WHT*2
⑦	YEL	16	———
⑧	BLU/WHT	17	———
9	———		

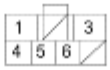
*1 : with keyless entry
*2 : with fog light

C310



1	WHT/GRN
2	WHT/BLK
3	———
4	———

C401



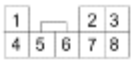
①	BLK/WHT
2	———
③	WHT
④	BLK/RED
5	WHT/RED
⑥	BLK/YEL
7	———

C403



①	WHT
2	WHT/RED
③	BLK/WHT
④	BLK/RED
⑤	BLK/YEL

C451



①	BLK/YEL	⑤	BLU
②	WHT/RED	6	ORN
③	WHT/GRN	7	WHT
4	BLK	8	WHT/BLU

C452



①	WHT
②	WHT/RED
3	WHT/BLK

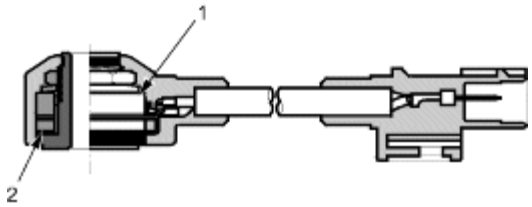
NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

* : Terminal side of female terminals

Fuel and Emissions Systems
System Descriptions (cont'd)

Knock Sensor

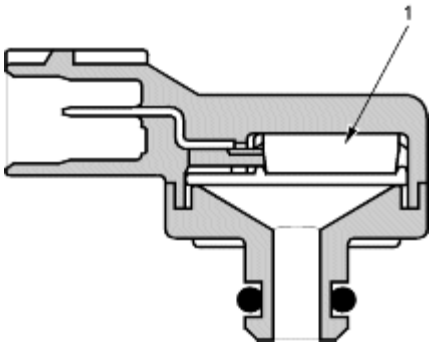
The knock control system adjusts the ignition timing to minimise knock.



1. 1. WEIGHT
   2. PIEZO ELEMENT

Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



2. 1. SENSOR UNIT

Primary Heated Oxygen Sensor (Primary HO2S)

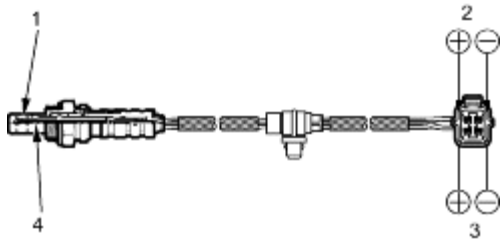
The primary HO2S detects the oxygen content in the exhaust gas and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The primary HO2S is installed in the exhaust manifold. By controlling the air fuel ratio with primary HO2S and secondary HO2S, the deterioration of the primary HO2S can be evaluated by its feedback period. When the feedback period exceeds a certain value during stable driving conditions, the sensor is considered deteriorated and the ECM/PCM sets a DTC.



1. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the Three Way Catalytic Converter (TWC) and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC.



2. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Starting Control

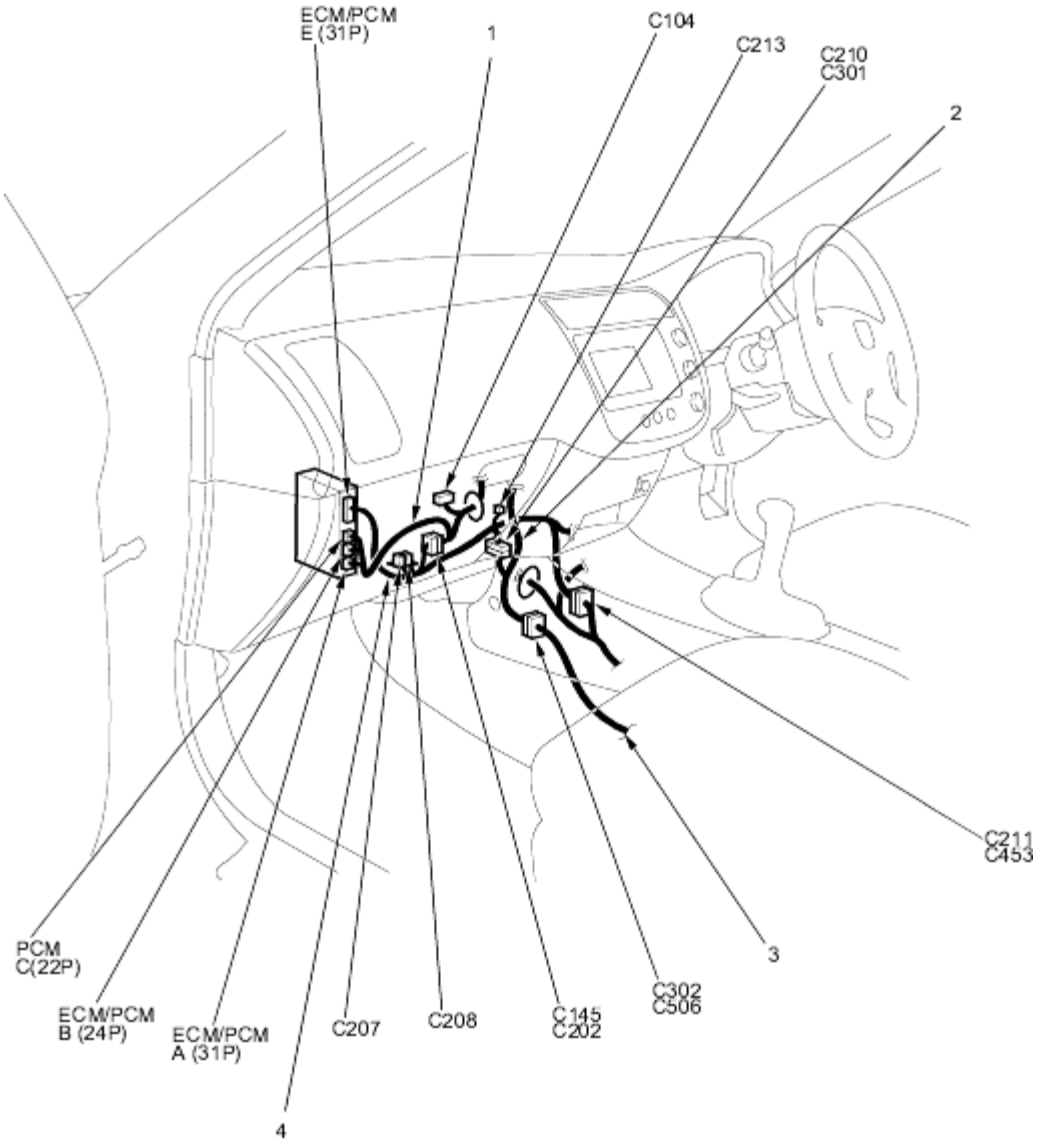
When the engine is started, the ECM/PCM provides a rich mixture by increasing injector duration.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:

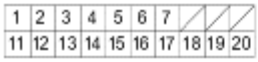


1. ENGINE WIRE HARNESS
2. DASHBOARD WIRE HARNESS A
3. FLOOR WIRE HARNESS
4. ECM/PCM WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	9		⑭	WHT/GRN*2
②	YEL/BLK	10		⑮	BLU/WHT*3
③	YEL/BLK	11	YEL/RED*1	⑯	BLU/WHT*3
④	YEL/BLK	12	YEL/RED*1	⑰	BLU/WHT*3
⑤	GRN	12	WHT/GRN*2	⑱	WHT*3
⑥	GRN	13	YEL/RED*1	⑲	WHT*3
⑦	GRN	13	WHT/GRN*2	⑳	WHT*3
8		⑭	YEL/RED*1		

*1 : CVT
*2 : except CVT
*3 : A/T and CVT

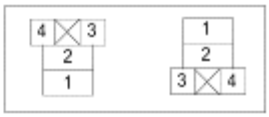
C145



①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT*4	16	BLK/WHT
③	BLU/WHT*1	10		⑰	BLK/YEL
4	GRN/WHT*2	⑪	WHT*1	18	YEL/RED
5	YEL*2	12		⑲	YEL/BLK
⑥	WHT/GRN*3	13		⑳	BLK/WHT
7	GRN	14			

*1 : A/T and CVT
*2 : M/T
*3 : except CVT
*4 : with climate control

C207

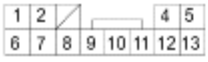


①	YEL/BLK
②	YEL/GRN
③	GRN/YEL
④	YEL/BLK

C208

①	YEL/BLK
②	WHT/BLK
③	RED/YEL
④	WHT/BLK

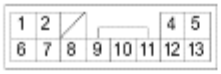
C210



1	RED/YEL	⑦	BLU/BLK*4
2	YEL/BLU*1	⑧	BLK/RED*4
2	BLU/ORN	⑨	WHT*4
3		10	LT GRN*5
4	BRN/YEL*3	11	RED/WHT*2
5	YEL/BLK*3	12	GRN/ORN
⑥	YEL/GRN	13	YEL/RED

*1 : KU model
*2 : with climate control
*3 : D15Y6, D15Y3 (KN model), D15Y4 D17Z1, (KQ model), D17A2 (except MA model) engines
*4 : except M/T
*5 : M/T

C211



1	GRN/RED*1		
2	BLK/ORN*1		
3			
4	LT GRN/BLK*2		
5	BLK/YEL*3		
⑥	BLK/WHT*4		
⑦	BRN/YEL*4		
⑧	WHT/RED*4		
⑨	BLK/ORN*4		
10	PNK*4		
11	GRN/WHT		
12	RED		
13	WHT/BLK		

*1 : D15Y4, D17A2 (KU model) engines
*2 : except KU model
*3 : with seat heater
*4 : D15Y4, D17A2 (KU, KQ models), D17Z1 (KQ model) engines

C213 (without TWC model)



①	YEL/BLU
②	ORN
③	PNK

C506



①	YEL/GRN
2	
3	PNK
4	PNK/BLU*
5	
6	YEL/BLK

*: KU model

ECM/PCM A (31P)



①	BLK/WHT*1	12	BLK/RED	22	
②	YEL/BLK	13	WHT/BLK*3	23	BRN/YEL
③	YEL/BLK	14	BLK/WHT*4	24	GRN/YEL
④	BLK	15	RED/BLK	25	WHT/RED*4
⑤	BLK	16		26	GRN
⑥	WHT*1	17		27	BRN
⑦	BLU	18	WHT/GRN*5	28	WHT/BLU
⑧	YEL*2	18	BLU/WHT*6	29	BLU/RED
⑨	RED/BLU*2	19	GRN/RED	30	YEL/GRN
⑩	GRN/YEL	20	YEL/BLU	31	
⑪	GRN/WHT	21	YEL/RED*7		

*1 : D15Y6 engine
*2 : except D15Y6 engine
*3 : D15Y4, D17A2 (KU, KQ models) engines
*4 : D15Y4, D17A2 (KU, KQ models), D17Z1 (KQ model) engines
*5 : except CVT
*6 : CVT
*7 : ezxcept M/T

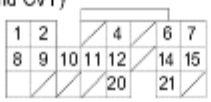
ECM/PCM B (24P)



①	RED*1	9		⑰	RED/YEL
②	YEL	⑩	WHT/BLU	⑱	WHT/GRN*7
③	BLU	⑪		⑲	
④	RED	⑫		⑳	
⑤	BRN	⑬	WHT/RED	㉑	YEL/BLU*4
⑥	GRN	⑭	BLU/RED*5	㉒	
⑦	RED/BLK*2	⑮	GRN/YEL*6	㉓	
⑦	GRN/WHT*3	⑯	BLK/RED*2	㉔	BLU/WHT*3
⑧	RED/WHT	⑯	YEL/GRN*3		

*1 : D16W9, engine
*2 : A/T
*3 : CVT
*4 : except D15Y3 (KT, KN models), D16W9 (PA model), D17A5 (KN model) engines
*5 : D15Y4 D17A2 (KU, KQ models) engines
*6 : D15Y4, D16W9, D17A2, D17A5 engine
*7 : D15Y4, D17A2 (KU model) engines

PCM C (22P) (A/T and CVT)



①	WHT/BLK*1	⑦	RED/BLU*2	⑮	BLU*1
①	BLU/RED*2	⑧	BRN/WHT*1	⑮	WHT/GRN*2
②	YEL/BLU*1	⑧	BLU/RED*2	⑯	GRN/YEL*2
3		⑨	RED	17	
④	GRN/WHT*1	⑩	WHT	18	
5		⑪	BLU	19	
⑥	BLU/BLK*1	⑫	BLU/WHT	⑳	YEL
⑥	GRN/RED*2	13		㉑	WHT/GRN*1
⑦	WHT/RED*1	⑭	GRN*1	㉒	WHT/RED*2

*1 : A/T
*2 : CVT

ECM/PCM E (31P)



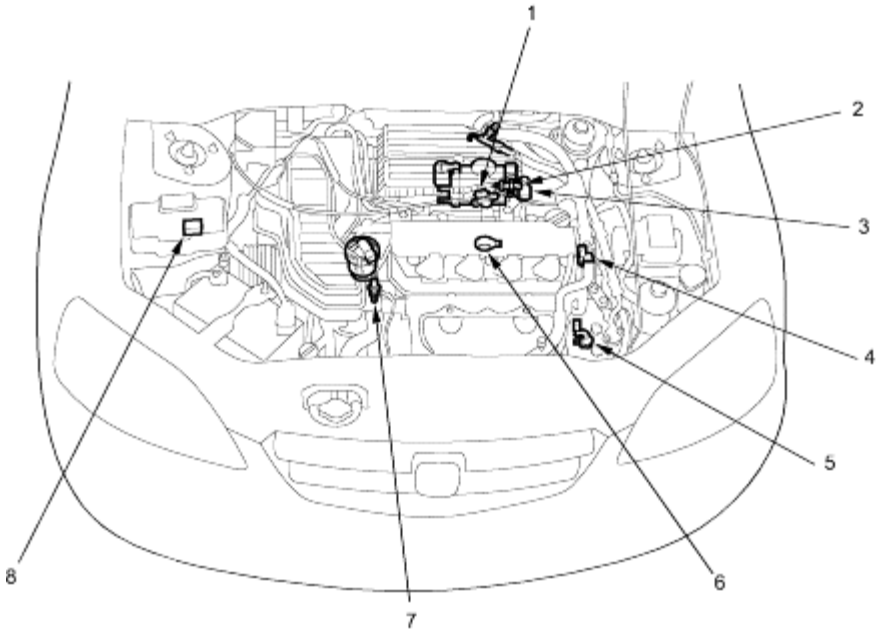
①	GRN/YEL*1	⑫	BLU/ORN*5	㉒	WHT/BLK
②	WHT/RED*2	13		㉓	LT BLU
③	BRN/YEL	14		㉔	YEL
④	PNK*2	⑮	GRN/RED*7	㉕	BLU/WHT*6
⑤	YEL/BLU*3	⑮	ORN*3	㉖	BLU
⑥	BLK/WHT*2	⑯	LT GRN/WHT*8	㉗	RED/BLU*1
⑦	RED/YEL	17		28	
8		⑱	RED	29	BRN
⑨	YEL/BLK	19		30	
⑩	GRN/YEL*4	20		31	GRN/ORN
11		21			

*1 : D15Y6, D15Y3 (KN model), D15Y4, D17Z1 (KQ model), D17A2 (except MA model) engines
*2 : D15Y4, D17A2 (KU, KQ models), D17Z1 (KQ model) engine
*3 : without TWC model
*4 : except D15Y6, D15Y3 (KN model), D15Y4, D17Z1 (KQ model), D17A2 (except MA model) engines
*5 : with cruise control
*6 : CVT
*7 : D15Y4, D17A2 (KU model) engines
*8 : except KU model

NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○ : Related to ECM/PCM control.

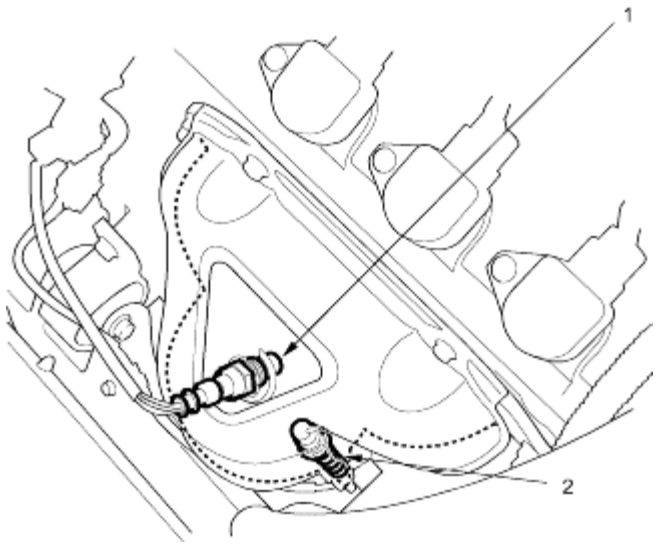
PGM-FI System

Component Location Index



1. THROTTLE POSITION (TP) SENSOR
   Troubleshooting, page 11-232
2. INTAKE AIR TEMPERATURE (IAT) SENSOR
   Troubleshooting, page 11-235
3. MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
   Troubleshooting, page 11-226
4. TOP DEAD CENTRE (TDC) SENSOR
   Troubleshooting, page 11-234
5. CRANKSHAFT POSITION (CKP) SENSOR
   Troubleshooting, page 11-228
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   Troubleshooting, page 11-245
7. ENGINE COOLANT TEMPERATURE (ECT) SENSOR
   Troubleshooting, page 11-229
8. ELECTRICAL LOAD DETECTOR (ELD)
   Troubleshooting, page 11-240

D15Y6, D15Y5, D17A1, D17Z2, engines:

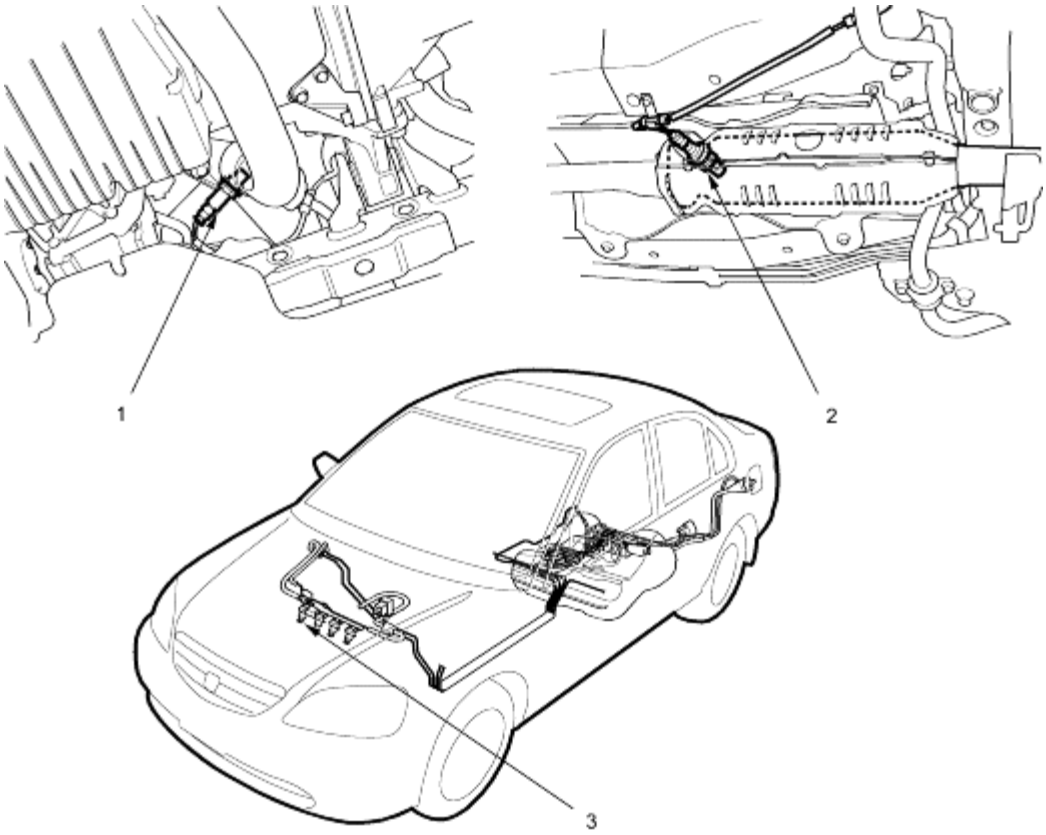


1. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)
   Troubleshooting, page 11-225
   Replacement, page 11-279
2. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
   Troubleshooting, page 11-255
   Replacement, page 11-279

PGM-FI System

Component Location Index (cont'd)

D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17Z4 engines:

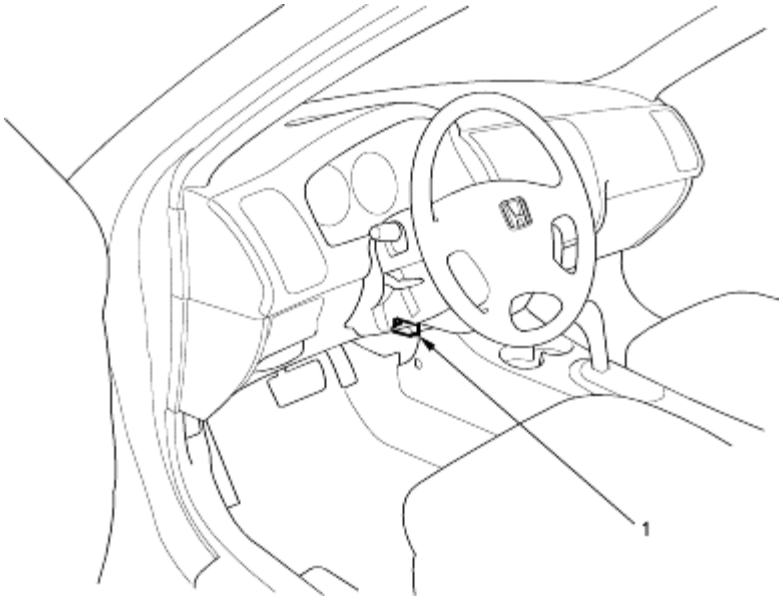


D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines:

1. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)
   Troubleshooting, page 11-225
   Replacement, page 11-279
2. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
   Troubleshooting, page 11-255
   Replacement, page 11-279
3. INJECTORS
   Test, page 11-276
   Replacement, page 11-113

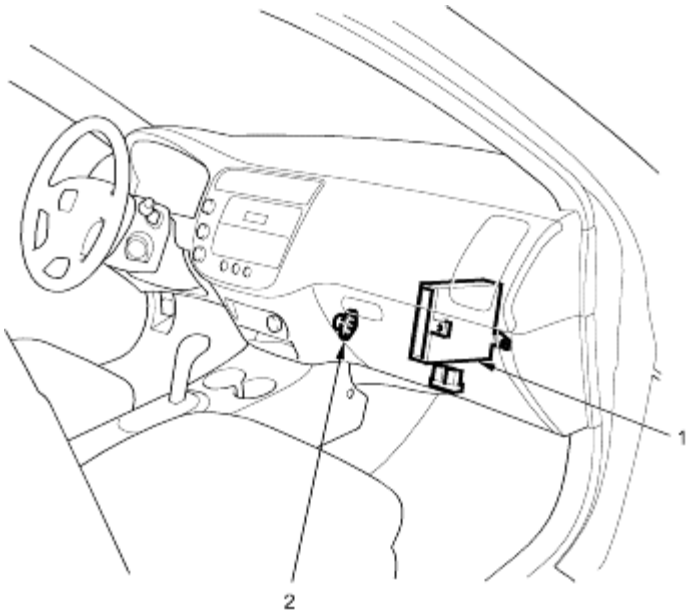
PGM-FI System

Component Location Index (cont'd)



1. DATA LINK CONNECTOR (DLC) General Troubleshooting Information, page 11-167

*: The illustration shows LHD model.



1. ENGINE CONTROL MODULE/POWERTRAIN CONTROL MODULE (ECM/PCM) General Troubleshooting Information, page 11-167
2. IDLE MIXTURE ADJUSTER (IMA) Troubleshooting, page 11-237

*: The illustration shows LHD model.

PGM-FI System
DTC Troubleshooting

DTC 1: Primary HO2S (Sensor 1) Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17Z4 engines.

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for at least one minute before test-driving.
   3. Test-drive under following conditions.
      - in MT, A/T: 2nd position (CVT: 2 position)
      - accelerate using wide open throttle for at least 5 seconds, then decelerate for at least 5 seconds with the throttle completely closed.

Is the MIL on and does it indicate DTC 1?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Inspect fuel pressure (see page 11-131).

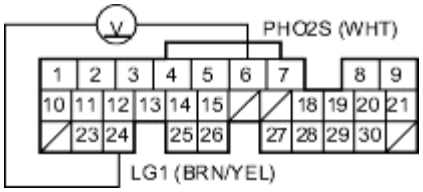
Is it normal?

YES - Go to step 5.

NO - Check for fuel supply system (see page 11-286). ■

3. 5. Let it idle for at least 1 minute before test-driving.
   6. Open the throttle wide open, then quickly release it.
   7. Measure voltage between ECM/PCM connector terminals A6 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

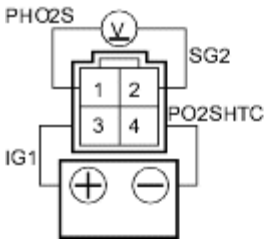
Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

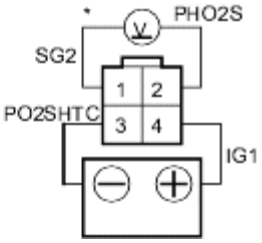
NO - Go to step 8.

1. 8. Turn the ignition switch OFF.
   9. Disconnect the primary HO2S (Sensor 1) 4P connector.
   10. At the Primary HO2S (Sensor 1) harness side, connect the battery positive terminal to terminal No. 3 (No. 4)* and battery negative terminal to terminal No. 4 (No. 3)*.
   11. Start the engine.
   12. After 2 minutes, measure voltage between primary HO2S (Sensor 1) 4P connector terminals No. 1 and No. 2.

PRIMARY HO2S 4P CONNECTOR



Terminal side of male terminals



Wire side of female terminals

Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Repair open or short in the wire between the ECM/PCM (A6) and the primary HO2S (Sensor 1). ■

NO - Replace the primary HO2S (Sensor 1) (see page 11-279). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 3:MAP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine and let it idle.

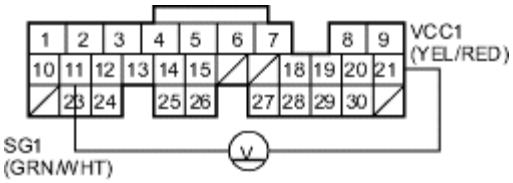
Is the MIL on and does it indicate DTC 3?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

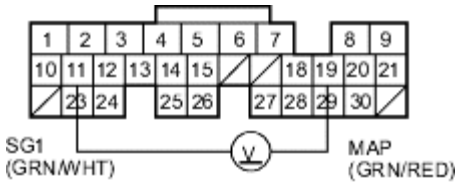
Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

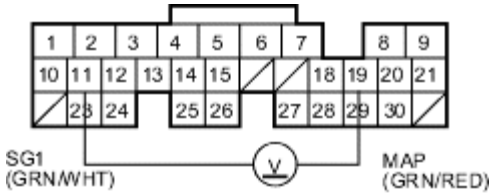
Is there about 3 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

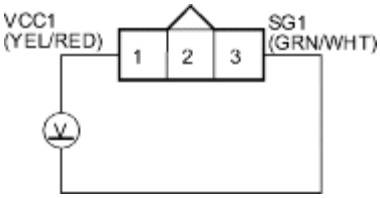
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 13.

2. 8. Turn the ignition switch OFF.
   9. Disconnect the MAP sensor 3P connector.
   10. Turn the ignition switch ON (II).
   11. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

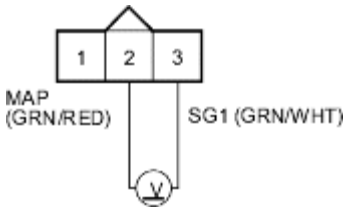
YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A11) and the MAP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between the MAP sensor 3P connector terminals No. 2 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

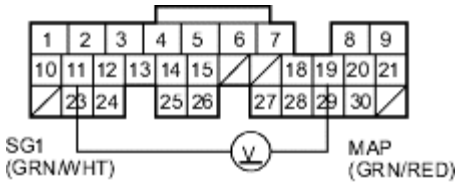
Is there about 5 V?

YES - Replace the MAP sensor. ■

NO - Repair open in the wire between the ECM/PCM (A19) and the MAP sensor. ■

13. Turn the ignition switch OFF.
14. Disconnect the MAP sensor 3P connector.
15. Turn the ignition switch ON (II).
16. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

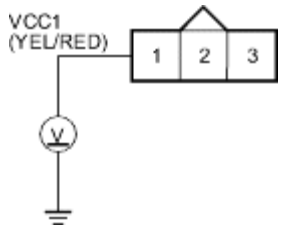
Is there about 5 V?

YES - Replace the MAP sensor. ■

NO - Go to step 17.

1. 17. Measure voltage between the MAP sensor 3P connector terminals No. 1 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

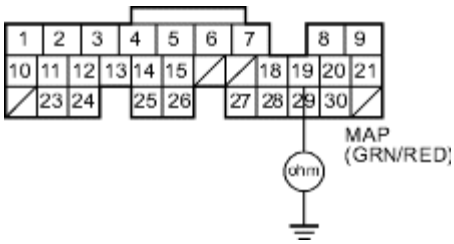
Is there about 5 V?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (A21) and the MAP sensor. ■

18. Turn the ignition switch OFF.
19. Disconnect ECM/PCM connector A (31P).
20. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A19) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC 4: CKP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine.

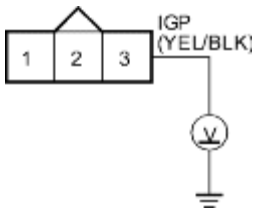
Is the MIL on and does it indicate DTC 4?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the CKP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the CKP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

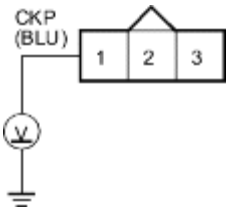
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the CKP sensor. ■

1. 7. Measure voltage between the CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

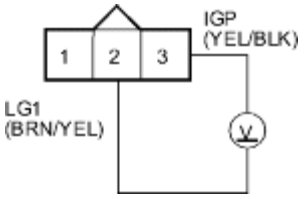
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and G101. ■

3. 9. Substitute a known-good CKP sensor and recheck.

Is the MIL on and does it indicate DTC 4?

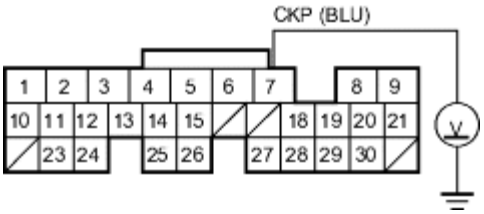
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original CKP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

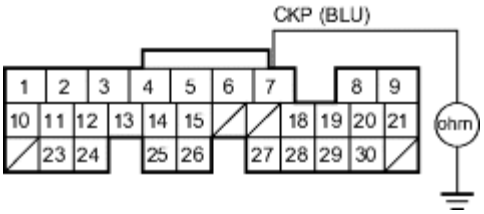
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

DTC 6: ECT Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
2. Turn the ignition switch ON (II).

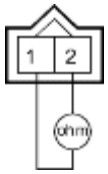
Is the MIL on and does it indicate DTC 6?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor, climate control unit (with climate control), and the ECM/PCM. ■

2. 3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF.
5. Disconnect the ECT sensor 2P connector.
6. Measure resistance between the ECT sensor 2P connector terminals No. 1 and No. 2.

ECT SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there 200-400 ohms?

YES - Go to step 7.

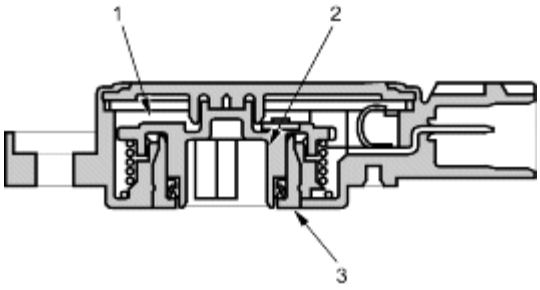
NO - Replace the ECT sensor. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

Throttle Position (TP) Sensor

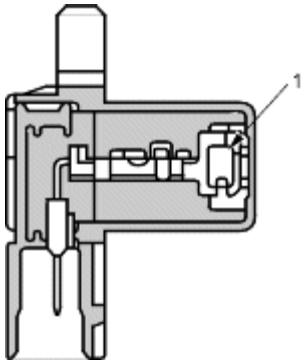
The TP sensor is a potentiometer connected to the throttle valve shaft. As the throttle position changes, the sensor varies the signal voltage to the ECM/PCM. The TP sensor is not replaceable apart from the throttle body.



1. 1. ELEMENT
   2. BRUSH HOLDER
   3. BRUSH

Top Dead Centre (TDC) Sensor

The TDC sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



2. 1. MAGNET

Vehicle Speed Sensor (VSS)

The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the Idle Air Control (IAC) valve to maintain the correct idle speed. Refer to the System Diagram to see the functional layout of the system.

Brake Pedal Position Switch

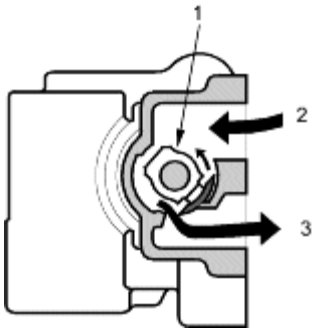
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the ECM/PCM when the power steering load is high.

Idle Air Control (IAC) Valve

To maintain the proper idle speed, the IAC valve changes the amount of air bypassing the throttle body in response to an electrical signal from the ECM/PCM.



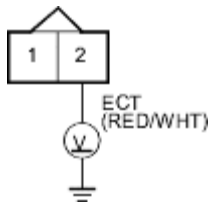
1. 1. VALVE
   2. From AIR CLEANER
   3. To INTAKE MANIFOLD

PGM-FI System

DTC Troubleshooting (cont'd)

1. 7. Turn the ignition switch ON (II).
2. 8. At the engine wire harness side, measure voltage between the ECT sensor 2P connector terminal No. 2 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

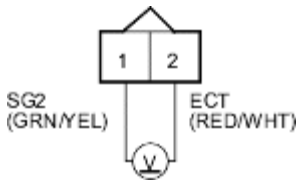
Is the about 5 V?

YES - Go to step 9.

NO - Go to step 10.

3. 9. Measure voltage between the ECT sensor 2P connector terminals No. 1 and No. 2.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

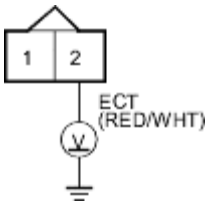
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10) and the ECT sensor. ■

10. Turn the ignition switch OFF.
11. Disconnect the climate control unit 22P connector.
12. Turn the ignition switch ON (II).

1. 13. At the engine harness side, measure voltage between the ECT sensor 2P connector terminal No. 2 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

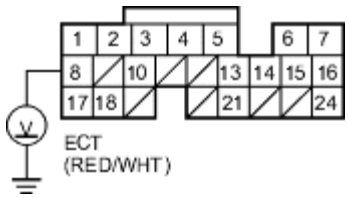
Is there about 5 V?

YES - Replace the climate control unit. ■

NO - Go to step 14.

14. Measure voltage between ECM/PCM connector terminal B8 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (B8) and the ECT sensor. ■

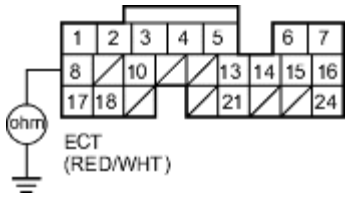
NO - Go to step 15.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 15. Turn the ignition switch OFF.

16. Disconnect ECM/PCM connector B (24P).
17. Check for continuity between ECM/PCM connector terminal B8 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B8) and the ECT sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 7:TP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine.

Is the MIL on and does it indicate DTC 7?

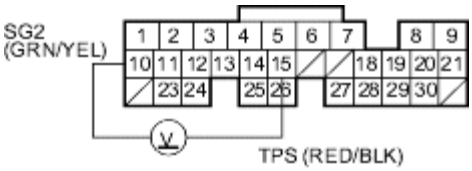
YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals A10 and A15.

NOTE: There should be a smooth transition as the throttle is pressed.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is the voltage about 0.5 V at full close throttle, and about 4.5 V at full open throttle?

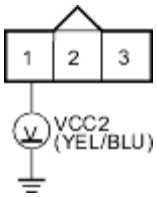
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Turn the ignition switch OFF.
   7. Disconnect the TP sensor 3P connector.
   8. Turn the ignition switch ON (II).

1. 9. At the engine wire harness side, measure voltage between the TP sensor 3P connector terminal No. 1 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

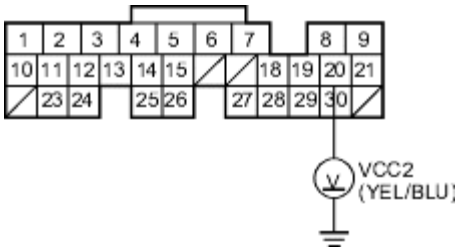
Is there about 5 V?

YES - Go to step 11.

NO - Go to step 10.

10. Measure voltage between ECM/PCM connector terminals A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

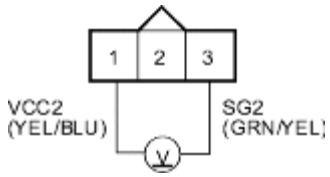
YES - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. At the engine wire harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

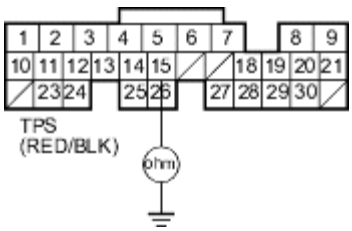
Is there about 5 V?

YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

12. Turn the ignition switch OFF.
13. Disconnect ECM/PCM connector A (31P).
14. Check for continuity between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

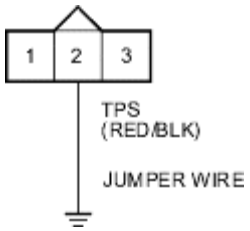
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A15) and the TP sensor. ■

NO - Go to step 15.

1. 15. Connect the TP sensor 3P connector terminal No. 2 and body ground with a jumper wire.

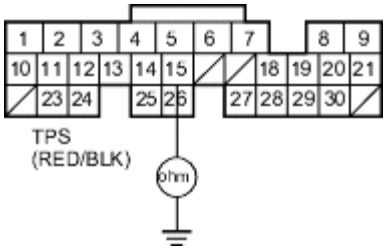
TP SENSOR 3P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Replace the TP sensor. ■

NO - Repair open in the wire between the ECM/PCM (A15) and the TP sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 8: TDC Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine.

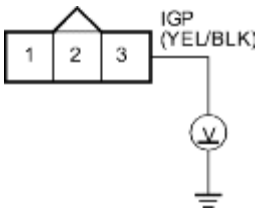
Is the MIL on and does it indicate DTC 8?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TDC sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TDC sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the TDC sensor 3P connector terminal No. 3 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

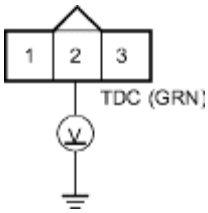
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the TDC sensor. ■

1. 7. Measure voltage between the TDC sensor 3P connector terminal No. 2 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

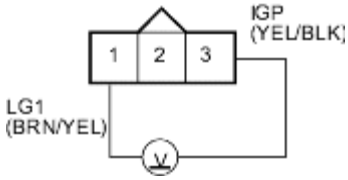
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the TDC sensor 3P connector terminals No. 1 and No. 3.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the TDC sensor and G101. ■

3. 9. Substitute a known-good TDC sensor and recheck.

Is the MIL on and does it indicate DTC 8?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

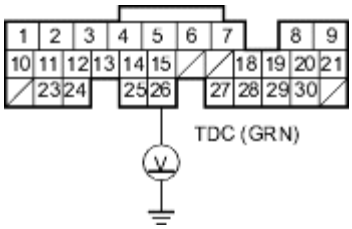
NO - Replace the original TDC sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

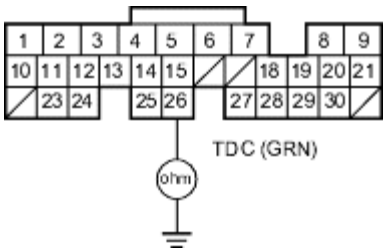
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A26) and TDC sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A26) and the TDC sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

DTC 10: IAT Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Turn the ignition switch ON (II).

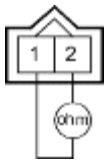
Is the MIL on and does it indicate DTC 10?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAT sensor 2P connector.
   5. Measure resistance between the IAT sensor 2P connector terminals No. 1 and No. 2.

IAT SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there 0.4-4.0 kohms?

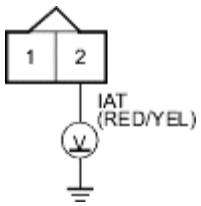
YES - Go to step 6.

NO - Replace the IAT sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 6. Turn the ignition switch ON (II).
2. 7. At the engine wire harness side, measure voltage between the IAT sensor 2P connector terminal No. 2 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

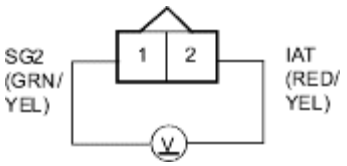
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 9.

3. 8. Measure voltage between the IAT sensor 2P connector terminals No. 1 and No. 2.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

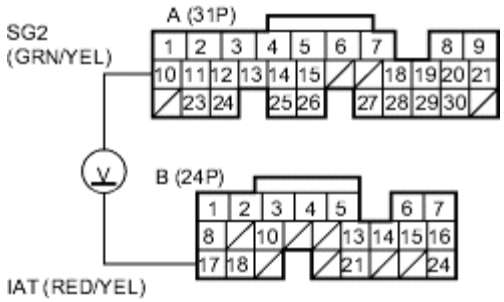
Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10) and the IAT sensor. ■

1. 9. Measure voltage between ECM/PCM connector terminals A10 and B17.

ECM/PCM CONNECTORS



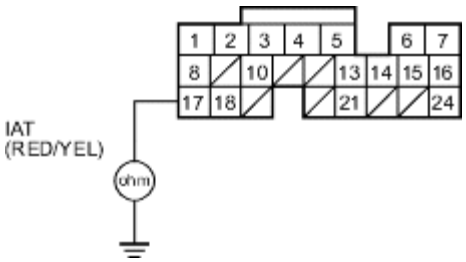
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (B17) and the IAT sensor. ■

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect ECM/PCM connector B (24P).
12. Check for continuity between ECM/PCM connector terminal B17 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B17) and the IAT sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 11: IMA Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine, then let it idle for more than 5 seconds.

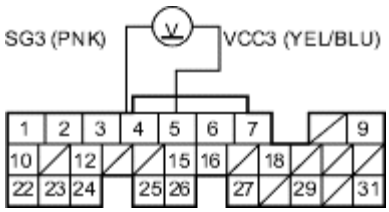
Is the MIL on and does it indicate DTC 11?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IMA sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals E4 and E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

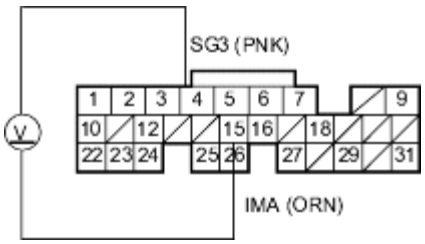
Is there about 5 V?

YES - Go to step 6.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

3. 6. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

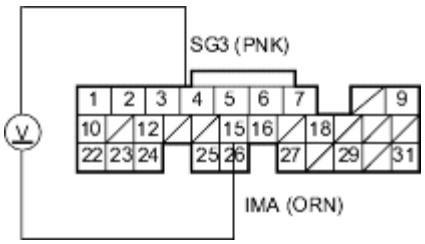
Is there about 0.5-4.5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR S (31P)



Wire side of female terminals

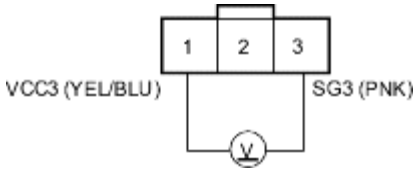
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 13.

2. 8. Turn the ignition switch OFF.
   9. Disconnect the IMA 3P connector.
   10. Turn the ignition switch ON (II).
   11. Measure voltage between IMA 3P connector terminals No. 1 and No. 3.

IMA 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

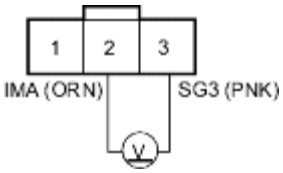
YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (E4) and the IMA. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between IMA 3P connector terminals No. 2 and No. 3.

IMA 3P CONNECTOR



Wire side of female terminals

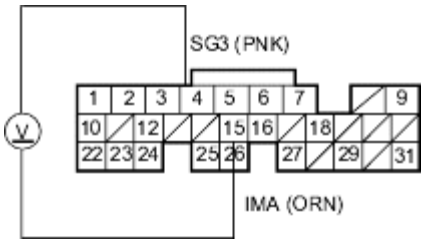
Is there about 5 V?

YES - Replace the IMA. ■

NO - Repair open in the wire between the ECM/PCM (E15) and the IMA. ■

13. Turn the ignition switch OFF.
14. Disconnect the IMA 3P connector.
15. Turn the ignition switch ON (II).
16. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

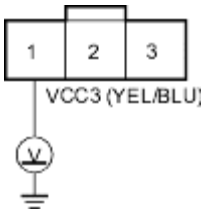
Is there about 5 V?

YES - Replace the IMA. ■

NO - Go to step 17.

1. 17. Measure voltage between IMA connector terminal No. 1 and body ground.

IMA 3P CONNECTOR



Wire side of female terminals

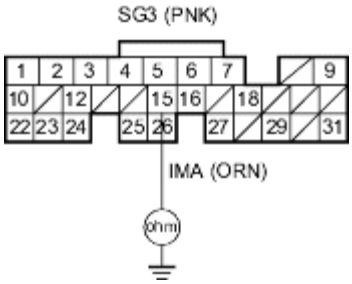
Is there about 5 V?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (E5) and the IMA. ■

18. Turn the ignition switch OFF.
19. Disconnect ECM/PCM connector E (31P).
20. Check for continuity between ECM/PCM connector terminal E15 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E15) and the IMA.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 13: BARO Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Turn the ignition switch ON (II).

Is the MIL on and does it indicate DTC 13?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time (test-drive may be necessary). ■

DTC 17: VSS Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Test-drive with no load (in Park or neutral), accelerate to 4,000 rpm (min-1), then decelerate to 1,500 rpm (min-1) with throttle fully closed for at least 5 seconds.

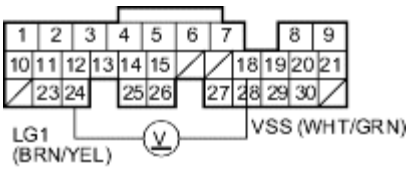
Is the MIL on and does it indicated DTC 17?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VSS and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Block the rear wheels and set the parking brake.
   5. Raise the front of the vehicle, and make sure it is securely supported.
   6. Turn the ignition switch ON (II).
   7. Block the right front wheel, and slowly rotate the left front wheel.
   8. Measure voltage between ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Does the voltage pulse between 0 V and 5 V (or battery voltage)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 9.

Fuel and Emissions Systems

System Descriptions (cont'd)

Fuel Supply System

Fuel Cut-off Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at speeds over 850 rpm (min-1). Fuel cut-off action also occurs when engine speed exceeds 6,400 rpm (min-1) (D14Z5, D14Z6 engines), 6,500 rpm (min-1) (D16W7, D16V1 engines), regardless of the position of the throttle valve, to protect the engine from over-revving. With A/T model, when the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm (min-1).

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurise the fuel system. With the engine running, the ECM/PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

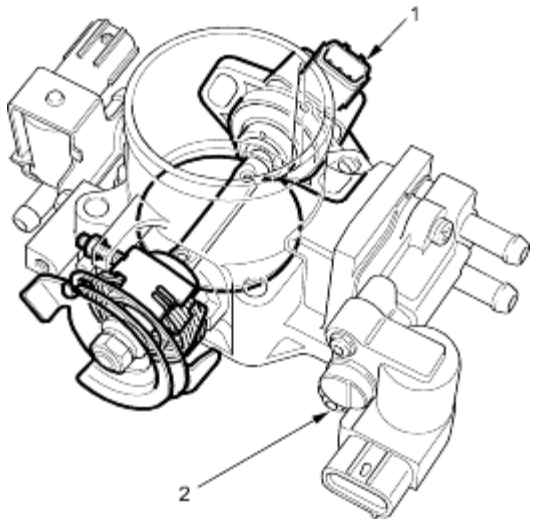
The PGM-FI relay consists of two separate relays. The PGM-FI main relay 1 is energised whenever the ignition switch is ON (II) which supplies battery voltage to the ECM/PCM, power to the injectors, and power for the PGM-FI main relay 2. The PGM-FI main relay 2 is energised to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is running.

Intake Air System

Refer to the System Diagram to see the functional layout of the system.

Throttle Body

The throttle body is a single-barrel down draft type. The side portion of the IAC valve is heated by engine coolant from the cylinder head.



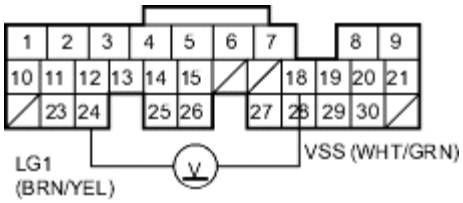
1. 1. TP SENSOR
   2. IAC VALVE

PGM-FI System

DTC Troubleshooting (cont'd)

1. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Turn the ignition switch ON (II).
   12. Block the right front wheel, and slowly rotate the left front wheel.
   13. Measure voltage between the ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Does the voltage pulse between 0 V and 5 V (or battery voltage)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check these items: ■

- A short or an open in the wire between the ECM/PCM (A18) and the VSS.
- If the wire is OK, test the VSS (see page 22-94).

DTC 20: ELD Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine and keep engine speed at idle.
   3. Turn the headlights on.

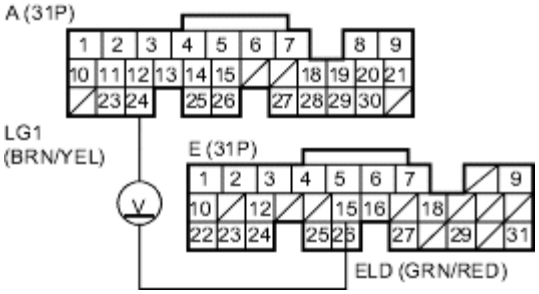
Does the MIL indicate DTC 20?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires the at ELD and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Start the engine and let it idle.
   6. Measure voltage between ECM/PCM connector terminals A24 and E15.
   7. While measuring voltage between ECM/PCM connector terminals A24 and E15, turn the headlights on (low).

ECM/PCM CONNECTORS



Wire side of female terminals

Does the voltage drop when the headlights are turned on?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

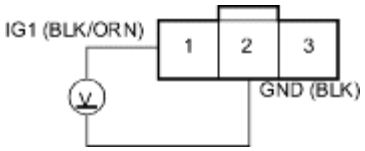
NO - Go to step 8.

3. 8. Turn the ignition switch and headlights OFF.
   9. Disconnect the ELD 3P connector.
   10. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Measure voltage between the ELD 3P connector terminals No. 1 and No. 2.

ELD 3P CONNECTOR



Wire side of female terminals

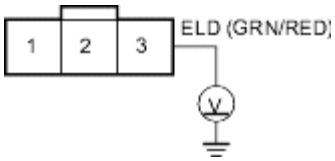
Is there battery voltage?

YES - Go to step 12.

NO - Go to step 13.

12. Measure voltage between ELD 3P connector terminal No. 3 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

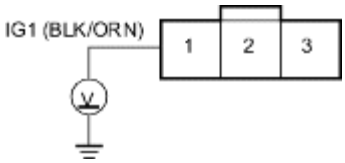
Is there about 5 V?

YES - Replace the under-hood fuse/relay box. ■

NO - Check for an open or short in the wire between the ECM/PCM (E15) and the ELD. If the wire is OK, substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

1. 13. Measure voltage between the ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Repair open in the wire between the ELD and G201. ■

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between No. 4 ACG (10A) fuse in the ELD. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 21: VTEC System Malfunction

Special Tools Required

- Oil pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

NOTE: Information marked with an asterisk (*) applies to D16W9, D16W8 engines.

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Check the engine oil level, and refill if necessary.
   3. Start the engine. Hold the engine at 3.000 rpm with no load (in Park or neutral) until the radiator fan comes on.
   4. Road test the vehicle:
      Accelerate in M/T, A/T: 2nd gear (CVT: L position) to an engine speed over 4,000 rpm. Hold that engine speed for at least 2 seconds. If DTC 21 is not repeated during the first road test, repeat this test 2 more times.

Is the MIL on and does it indicated DTC 21?

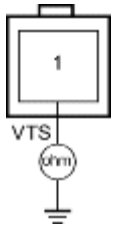
YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTEC solenoid valve and at the ECM/PCM. ■

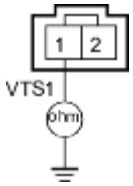
2. 5. Turn the ignition switch OFF.
   6. Remove the resonator (see page 11-148).

1. 7. Turn the ignition switch OFF.
   8. Disconnect the VTEC solenoid valve 1P (2P)* connector.
   9. Check for resistance between the VTEC solenoid valve 1P (2P)* connector terminal No. 1 and body ground.

VTEC SOLENOID VALVE CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Is there 14-30 ohms?

YES - Go to step 10.

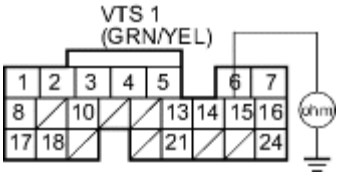
NO - Replace the VTEC solenoid valve. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Disconnect ECM/PCM connector B (24P).

11. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

NO - Go to step 12.

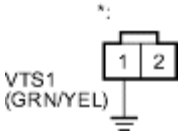
12. Connect the VTEC solenoid valve 1P (2P)* connector terminal No. 1 and body ground with a jumper wire.

VTEC SOLENOID VALVE HARNESS CONNECTORS



Wire side of female terminal

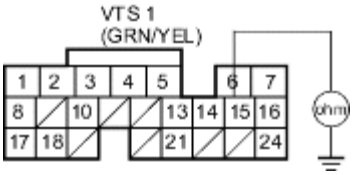
*:



Wire side of female terminal

13. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

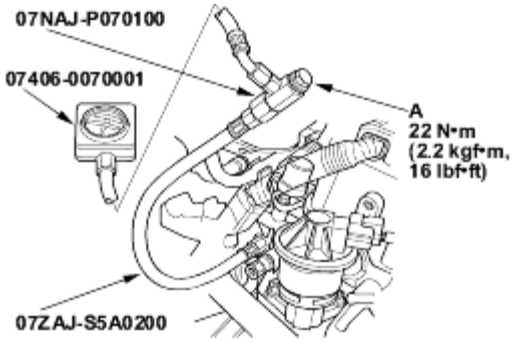
Is there continuity?

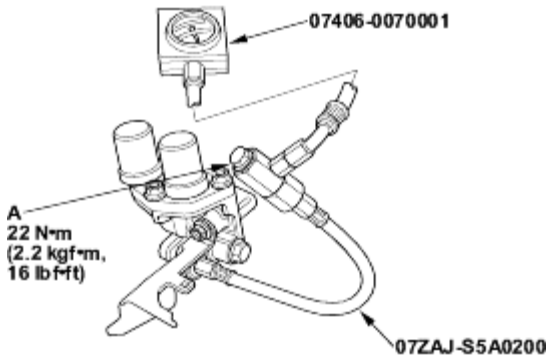
YES - Go to step 14.

NO - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 14. Install the special tools as shown.





15. Reconnect ECM/PCM connector B (24P) and the VTEC solenoid valve 1P (2P)* connector.
16. Connect a tachometer.
17. Start the engine. Hold the engine at 3.000 rpm with no load (in Park or neutral) until the radiator fan comes on.

1. 18. Check oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep measuring time as short as possible because the engine is running with no load (less than 1 minute).

Is pressure below 49 kPa (0.5 kgf/cm2, 7 psi)?

YES - Go to step 19.

NO - Inspect the VTEC solenoid valve (see page 11-277). ■

19. Turn the ignition switch OFF.
20. Disconnect the VTEC solenoid valve 1P (2P)* connector.
21. Attach the battery positive terminal to the VTEC solenoid 1P (2P)* valve terminal No. 1.
22. Start the engine, and check oil pressure at an engine speed of 3,000 rpm.

Is pressure above 390 kPa (4.0 kgf/cm2, 57 psi)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Inspect the VTEC solenoid valve (see page 11-277). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 23: Knock Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Turn the ignition switch ON (II).

Is the MIL on and does it indicated DTC 23?

YES - Go to step 5.

NO - Go to step 3.

2. 3. Start the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Hold the engine at 3,000-4,000 rpm (min-1) for at least 60 seconds.

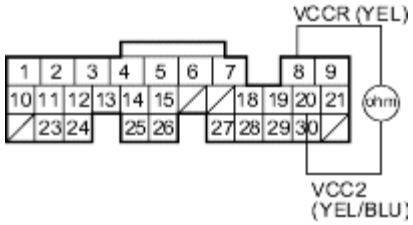
Is the MIL on and does it indicated DTC 23?

YES - Go to step 11.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector A (31P).
   7. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

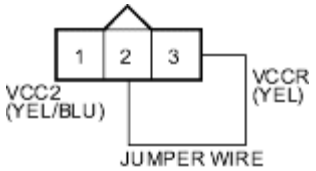
Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 8.

4. 8. Disconnect the knock sensor 3P connector.
   9. Connect the knock sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

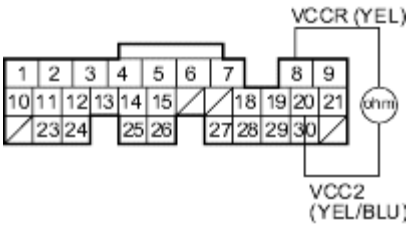
KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

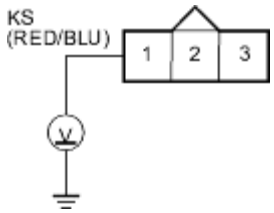
YES - Replace the knock sensor. ■

NO - Repair open in the wire between the ECM/PCM (A8, A20) and the knock sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Disconnect the knock sensor 3P connector.
13. Turn the ignition switch ON (II).
14. Measure voltage between knock sensor 3P connector terminal No. 1 and body ground.

KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

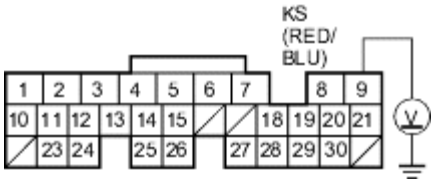
Is there about 5 V?

YES - Go to step 19.

NO - Go to step 15.

15. Measure voltage between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

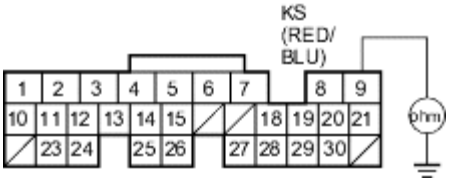
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A9) and knock sensor. ■

NO - Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect ECM/PCM connector A (31P).
18. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair short in the wire between ECM/PCM (A9) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

19. Substitute a known-good knock sensor and recheck.

Is the MIL on and does it indicated DTC 23?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 34: ECM/PCM Power Source Circuit Unexpected Voltage

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Turn the ignition switch OFF.
   3. Wait 5 seconds.
   4. Turn the ignition switch ON (II).

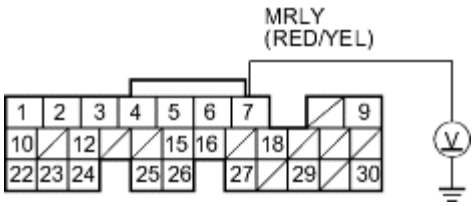
Is the MIL on and does it indicated DTC 34?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector E (31P).
   7. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

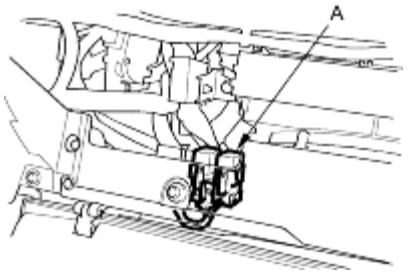
YES - Go to step 11.

NO - Go to step 8.

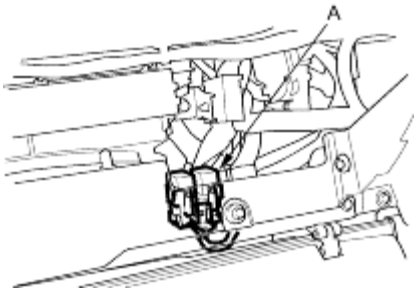
3. 8. Remove the glove box.

1. 9. Remove the PGM-FI main relay 1 (A).

LHD model:



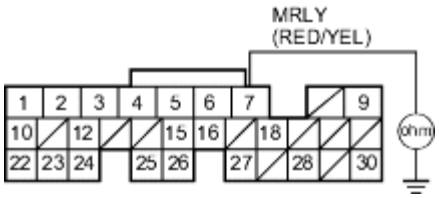
RHD model:



PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Check for continuity between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

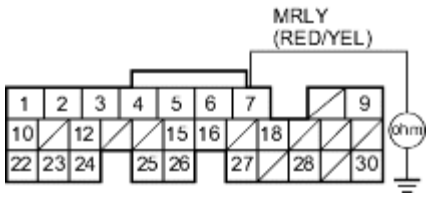
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E7) and the PGM-FI main relay 1. ■

NO - Replace the PGM-FI main relay 1. ■

11. Reconnect ECM/PCM connector E (31P).
12. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

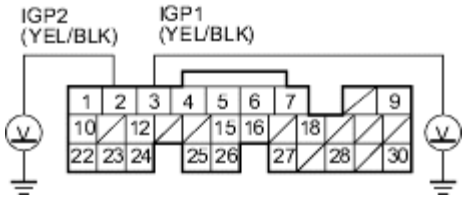
YES - Go to step 13.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

13. Disconnect ECM/PCM connector A (31P).

1. 14. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

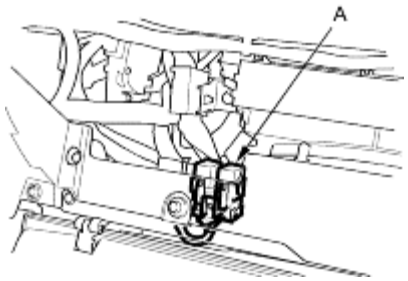
Is there battery voltage?

YES - Go to step 15.

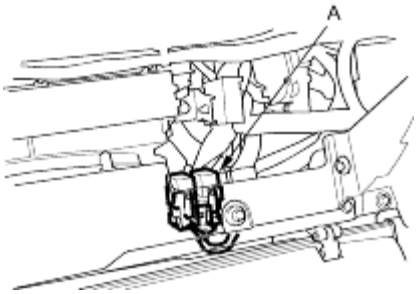
NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

15. Remove the glove box.
16. Remove the PGM-FI main relay 1 (A).

LHD model:



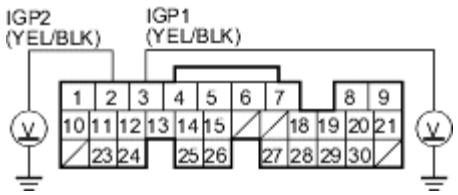
RHD model:



PGM-FI System
DTC Troubleshooting (cont'd)

1. 17. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (A2, A3) and the PGM-FI main relay 1. ■

NO - Replace the PGM-FI main relay 1. ■

DTC 38: VTEC System Malfunction

Special Tools Required

- Oil pressure gauge Attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Check the engine oil level, and refill if necessary.
   3. Start the engine. Hold the engine at 3.000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   4. Road test the vehicle:
      Accelerate in 2nd gear to an engine speed over 4,000 rpm. Hold that engine speed for at least 2 seconds. If DTC 38 is not repeated during the first road test, repeat this test 2 more times.

Is the MIL on and does it indicated DTC 38?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTEC solenoid valve and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Remove the resonator (see page 11-148).

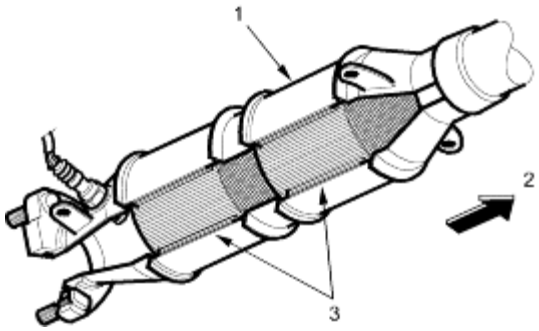
Fuel and Emissions Systems

System Descriptions (cont'd)

Catalytic Converter System

Three Way Catalytic Converter (TWC)

The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), dinitrogen (N2), and water vapour.



1. 1. HOUSING
   2. FRONT OF VEHICLE
   3. THREE WAY CATALYSTS

Exhaust Gas Recirculation (EGR) System

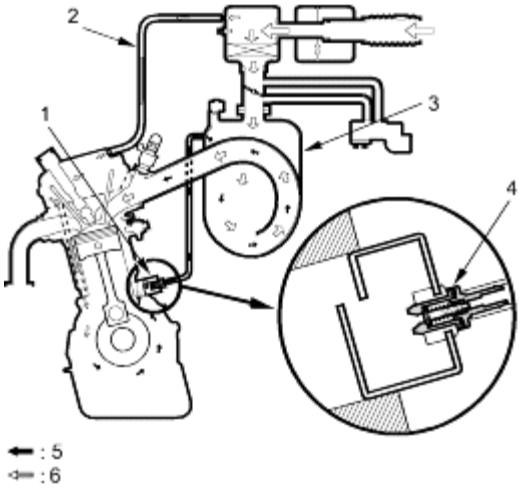
Refer to the System Diagram to see the functional layout of the system.

EGR Valve

The EGR valve is designed to lower peak combustion temperatures and reduce oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



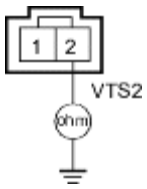
1. 1. PCV HOSE
   2. BREATHER PIPE
   3. INTAKE MANIFOLD
   4. PCV VALVE
   5. BLOW BY VAPOUR
   6. FRESH AIR

PGM-FI System

DTC Troubleshooting (cont'd)

1. 7. Turn the ignition switch OFF.
2. 8. Disconnect the VTEC solenoid valve 2P connector.
   9. Check for resistance between the VTEC solenoid valve 2P connector terminal No. 2 and body ground.

VTEC SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

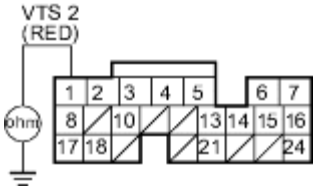
Is there 14-30 ohms?

YES - Go to step 10.

NO - Replace the VTEC solenoid valve. ■

10. Disconnect ECM/PCM connector B (24P).
11. Check for continuity between ECM/PCM connector terminal B1 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

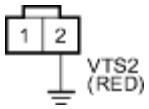
Is there continuity?

YES - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B1). ■

NO - Go to step 12.

1. 12. Connect the VTEC solenoid valve 2P connector terminal No. 2 and body ground with a jumper wire.

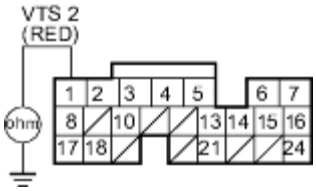
VTEC SOLENOID VALVE 2P CONNECTORS



Wire side of female terminals

13. Check for continuity between ECM/PCM connector terminal B1 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

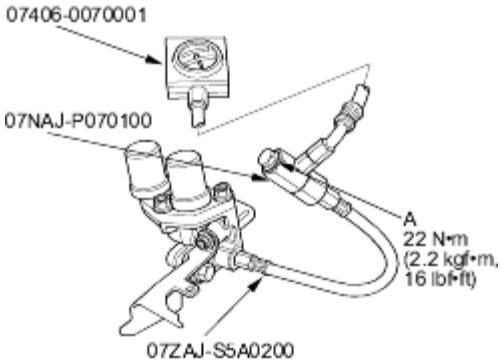
Is there continuity?

YES - Go to step 14.

NO - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B1). ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 14. Install the special tools as shown.



15. Reconnect ECM/PCM connector B (24P) and the VTEC solenoid valve 2P connector.
16. Connect a tachometer.
17. Start the engine. Hold the engine at 3.000 rpm with no load (in Park or neutral) until the radiator fan comes on.

1. 18. Check oil pressure at engine speeds of 3.000 and 5,000 rpm (min-1). Keep measuring time as short as possible because the engine is running with no load (less than 1 minute).

Is pressure below 49 kPa (0.5 kgf/cm2, 7 psi)?

YES - Go to step 19.

NO - Inspect the VTEC solenoid valve (see page 11-277). ■

19. Turn the ignition switch OFF.
20. Disconnect the VTEC solenoid valve 2P connector.
21. Attach the battery positive terminal to the VTEC solenoid valve terminal No. 2.
22. Start the engine, and check oil pressure at an engine speed of 6,000 rpm (min-1).

Is pressure above 390 kPa (4.0 kgf/cm2, 57 psi)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

NO - Inspect the VTEC solenoid valve (see page 11-277). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 41: Primary HO2S (Sensor 1) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17Z4 engines.

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine.

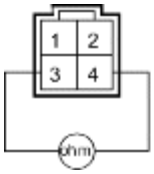
Is the MIL on and does it indicate DTC 41?

YES - Go to step 3.

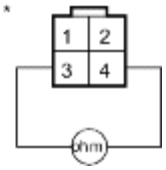
NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the primary HO2S (Sensor 1) 4P connector.
   5. At the primary HO2S side, measure resistance between the primary HO2S 4P connector terminals No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals



Wire side of female terminals

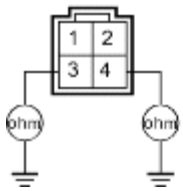
Is there 10-40 ohms?

YES - Go to step 6.

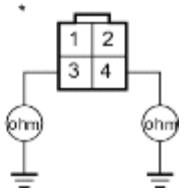
NO - Replace the primary HO2S (Sensor 1). ■

1. 6. Check for continuity between body ground and the primary HO2S 4P connector terminals No. 3 and No. 4 individually.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals



Wire side of female terminals

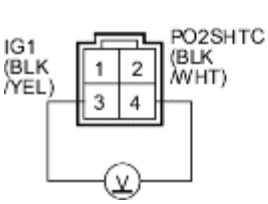
Is there continuity?

YES - Replace the primary HO2S (Sensor 1). ■

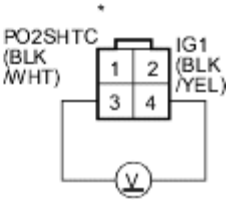
NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminals No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

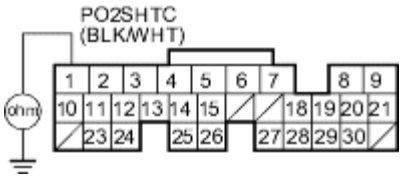
NO - Go to step 12.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Check for continuity between the ECM/PCM connector terminal A1 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

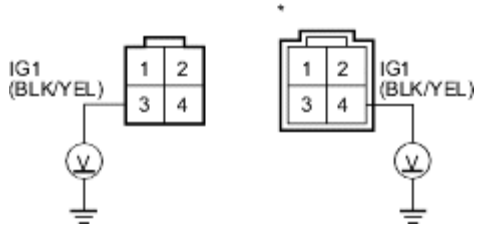
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 (No. 4)* and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Terminal side of male terminals

Is there battery voltage?

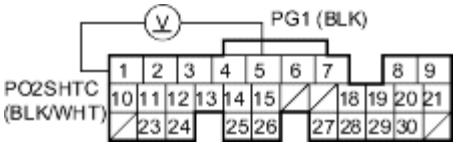
YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the primary HO2S (Sensor 1) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.

14. Reconnect the primary HO2S (Sensor 1) 4P connector.
15. Disconnect ECM/PCM connector A (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between the ECM/PCM connector terminal A1 and A5.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 45: Fuel System Malfunction

NOTE: If some of the DTCs listed below are stored at the same time as DTC 45, troubleshoot those DTCs first, then recheck for DTC 45.

DTC 3: MAP Sensor

DTC 41: Primary HO2S (Sensor 1) Heater

DTC 63: Secondary (Sensor 2) HO2S

DTC 65: Secondary HO2S (Sensor 2) Heater

DTC 12: EGR System

DTC 22: VTEC System

1. 1. Recheck the fuel pressure (see page 11-132).

Is fuel pressure OK?

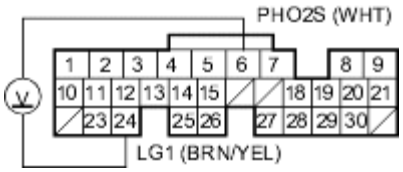
YES - Go to step 2.

NO - Check these items: ■

- If the pressure is too high. Check the fuel pressure regulator.
- If the pressure is too low. Check the fuel pump, the fuel feed pipe, the fuel filter, and the fuel pressure regulator.

2. 2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Measure voltage between ECM/PCM connector terminals A6 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Does it stay at less than 0.3 V or more than 0.6 V?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 4.

3. 4. Turn the ignition switch OFF.

1. 5. With a vacuum pump, apply vacuum to the EVAP canister purge valve from the intake manifold side.

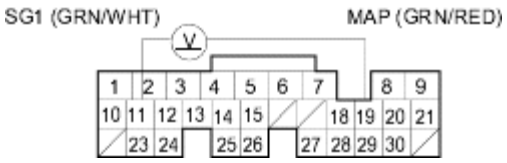
Does it hold vacuum?

YES - Go to step 6.

NO - Replace the EVAP canister purge valve. ■

2. 6. Turn the ignition switch ON (II).
   7. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

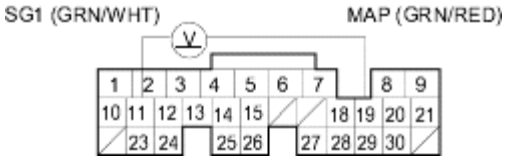
Is there approx. 3 V?

YES - Go to step 8.

NO - Replace the MAP sensor. ■

3. 8. Start the engine.
   9. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 1.5 V or less within 1 second after starting the engine?

YES - Check the valve clearance and adjust if necessary. If the valve clearances are OK, replace the injector. ■

NO - Replace the MAP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC 63: Secondary HO2S (Sensor 2) Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines.

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Jump the SCS line (see step 2 on page 11-167).
   3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for at least 1 minute before test-driving.

Is the MIL on and does it indicate DTC 63?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 4. Inspect fuel pressure (see page 11-131).

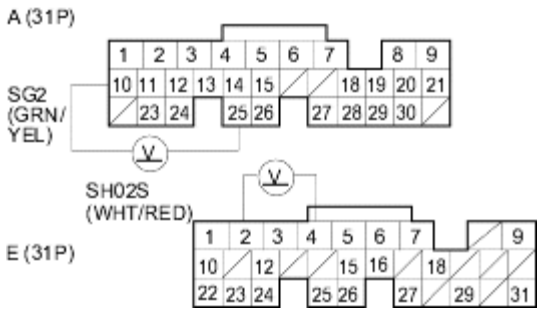
Is it normal?

YES - Go to step 5.

NO - Check for fuel supply system (see page 11-287). ■

3. 5. Let it idle for at least 1 minute before test-driving.
   6. Open the throttle wide open, then quickly release it.
   7. Measure voltage between ECM/PCM connector terminals A10 and A25 (E2 and E4)*.

ECM/PCM CONNECTORS



Wire side of female terminals

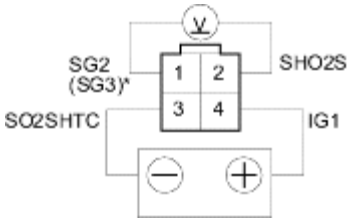
Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 7.

1. 8. Turn the ignition switch OFF.
   9. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   10. At the secondary HO2S (Sensor 2) harness side, connect the battery positive terminal to terminal No. 4 and battery negative terminal to terminal No. 3.
   11. Start the engine.
   12. After 2 minutes, measure voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2.

SECONDARY HO2S 4P CONNECTOR



Wire side of female terminals

Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Repair open or short in the wire between the ECM/PCM (A10, A25) (E2, E4)* and the secondary HO2S (Sensor 2). ■

NO - Replace the secondary HO2S (Sensor 2) (see page 11-279). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 65:Secondary HO2S (Sensor 2) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines.

1. 1. Reset the ECM/PCM (see page 11-167).
   2. Start the engine.

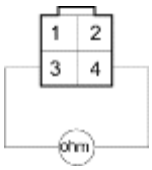
Is the MIL on and does it indicate DTC 65?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at Secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   5. At the HO2S side, measure resistance between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

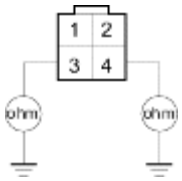
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the secondary HO2S (Sensor 2). ■

1. 6. Check for continuity between body ground and the secondary HO2S 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

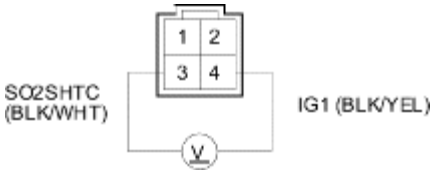
Is there continuity?

YES - Replace the Secondary HO2S (Sensor 2). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES - Go to step 9.

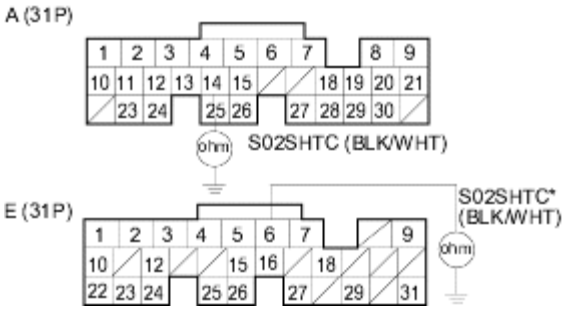
NO - Go to step 12.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P) (ECM/PCM connector E (31P))*.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal A 14 (E6)* and body ground.

ECM/PCM CONNECTORS



Wire side of female terminals

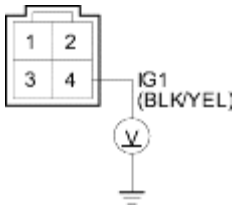
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A14, E6*) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

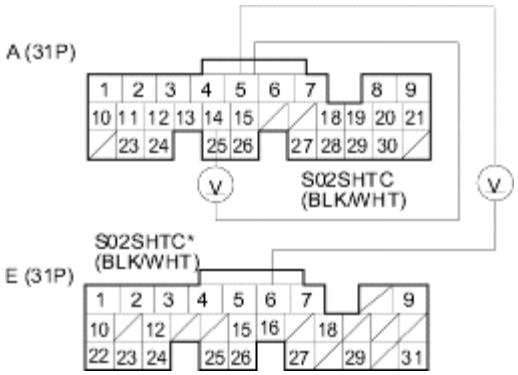
Is there battery voltage?

YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse. ■

13. Turn the ignition switch OFF.
14. Reconnect the secondary HO2S (Sensor 2) 4P connector.
15. Disconnect ECM/PCM connector A (31P) (ECM/PCM connector E, 31P)*.
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal A14 (E6)* and A5.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (A14, E6*) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC 71: No. 1 Cylinder Misfire

DTC 72: No. 2 Cylinder Misfire

DTC 73: No. 3 Cylinder Misfire

DTC 74: No. 4 Cylinder Misfire

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Start the engine, and listen for a clicking sound at the injector at the problem cylinder.

Does it click?

YES - Go to step 3.

NO - Go to step 30.

2. 3. Turn the ignition switch OFF, and reset the ECM/PCM.
   4. Exchange the ignition coil from the problem cylinder with one from another cylinder.
   5. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in park or neutral) until the radiator fan comes on, then let it idle with the headlights, rear defogger, blower fan and air conditioner turned off.
   6. Jump the SCS line (see step 2 on page 11-167).
   7. Test-drive the vehicle several times under various conditions.

Is DTC 71, 72, 73 or 74 indicated?

YES - Go to step 8.

NO - Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). ■

3. 8. Determine which cylinder had the misfire.

Does the misfire occur in the other cylinder whose ignition coil was exchanged?

YES - Replace the faulty ignition coil (see page 4-24). ■

NO - Go to step 9.

9. Turn the ignition switch OFF and reset the ECM/PCM.
10. Exchange the spark plug from the problem cylinder with one from another cylinder.
11. Test-drive the vehicle several times under various conditions.

Is DTC 71, 72, 73 or 74 indicated?

YES - Go to step 12.

NO - Intermittent misfire due to spark plug fouling, etc. (no misfire at that time). ■

12. Determine which cylinder had the misfire.

Does the misfire occur in the other cylinder whose spark plug was exchanged?

YES - Replace the faulty spark plug. ■

NO - Go to step 13.

PGM-FI System
DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.

14. Reset the ECM/PCM.
15. Exchange the injector from the problem cylinder with one from the another cylinder.
16. Let the engine idle for 2 minutes.
17. Test-drive the vehicle several times under various conditions.

Is DTC 71, 72, 73 or 74 indicated?

YES - Go to step 18.

NO - Intermittent misfire due to bad contact in the injector connector (no misfire at this time). ■

18. Determine which cylinder had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

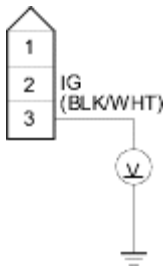
YES - Replace the faulty injector. ■

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the ignition coil 3P connector from the problem cylinder.
21. Turn the ignition switch ON (II).

22. Measure voltage between the ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

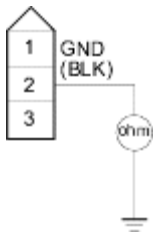
Is there battery voltage?

YES - Go to step 23.

NO - Repair open or short in the wire between the No. 1 IGN COIL (15A) fuse and the ignition coil. ■

23. Turn the ignition switch OFF.
24. Check for continuity between the ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ignition coil and G101. ■

25. Disconnect ECM/PCM connector C (31P).

Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapour from the fuel tank until it can be purged back into the engine and burned (refer to the System Diagram to see the functional layout of the system).

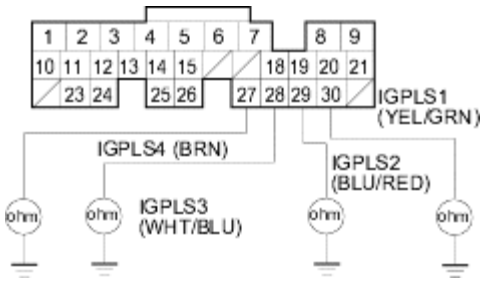
EVAP Canister Purge Valve

When the engine coolant temperature is below 70°C (158°F), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

PGM-FI System
DTC Troubleshooting (cont'd)

26. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	DTC 71	A30	YEL/GRN
No. 2	DTC 72	A29	BLU/RED
No. 3	DTC 73	A28	WHT/BLU
No. 4	DTC 74	A27	BRN

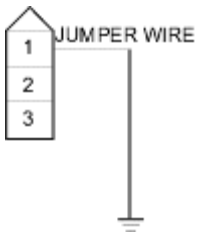
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the ignition coil. ■

NO - Go to step 27.

27. Connect the appropriate ignition coil 3P connector terminal No. 1 and body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

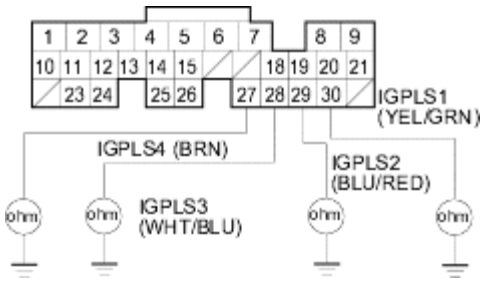


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	DTC 71	YEL/GRN
No. 2	DTC 72	BLU/RED
No. 3	DTC 73	WHT/BLU
No. 4	DTC 74	BRN

28. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	DTC 71	A30	YEL/GRN
No. 2	DTC 72	A29	BLU/RED
No. 3	DTC 73	A28	WHT/BLU
No. 4	DTC 74	A27	BRN

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM and the ignition coil. ■

29. Check the engine compression.

Is the engine compression OK?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

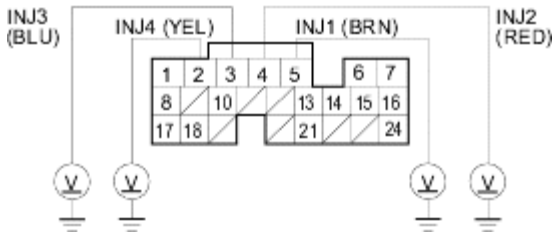
NO - Repair the engine. ■

30. Turn the ignition switch OFF, and disconnect ECM/PCM connector B (24P).
31. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

32. Measure voltage between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	DTC 71	B5	BRN
No. 2	DTC 72	B4	RED
No. 3	DTC 73	B3	BLU
No. 4	DTC 74	B2	YEL

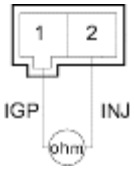
Is there battery voltage?

YES - Go to step 33.

NO - Go to step 42.

33. Turn the ignition switch OFF, and remove the air cleaner (see page 11-146).
34. Disconnect the injector 2P connector on the problem cylinder.
35. Measure the resistance between the injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10 ohms -13 ohms?

YES - Go to step 36.

NO - Replace the injector (see page 11-113). ■

36. Exchange the injector from the problem cylinder with one from another cylinder.
37. Install the air cleaner (see page 11-146), and reset the ECM/PCM.
38. Jump the SCS line (see step 2 on page 11-167).
39. Let the engine idle for 2 minutes.
40. Test-drive the vehicle several times under various conditions.

Is DTC 71, 72, 73 or 74 indicated?

YES - Go to step 41.

NO - Intermittent misfire due to bad contact in the injector connector (no misfire at this time). ■

41. Determine which cylinder had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

YES - Replace the faulty injector. ■

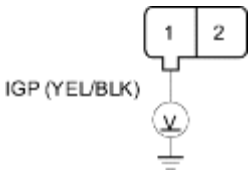
NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

42. Turn the ignition switch OFF.
43. Remove the air cleaner (see page 11-146).
44. Disconnect the injector 2P connector on the problem cylinder.
45. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

46. Measure voltage between the injector 2P connector terminals No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

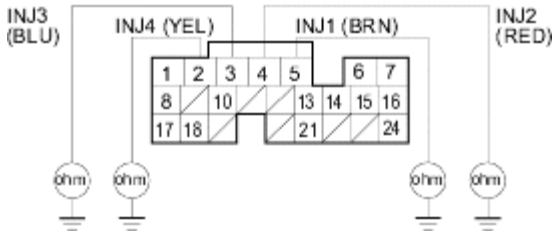
Is there battery voltage?

YES - Go to step 47.

NO - Repair open in the wire between the injector and the PGM-FI main relay. ■

47. Turn the ignition switch OFF.
48. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	DTC 71	B5	BRN
No. 2	DTC 72	B4	RED
No. 3	DTC 73	B3	BLU
No. 4	DTC 74	B2	YEL

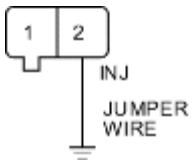
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the injector. ■

NO - Go to step 49.

49. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

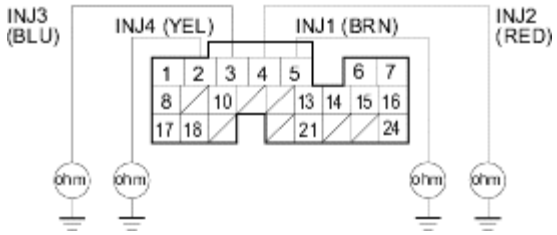


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	DTC 71	BRN
No. 2	DTC 72	RED
No. 3	DTC 73	BLU
No. 4	DTC 74	YEL

50. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	DTC 71	B5	BRN
No. 2	DTC 72	B4	RED
No. 3	DTC 73	B3	BLU
No. 4	DTC 74	B2	YEL

Is there continuity?

YES - Replace the injector, then recheck. ■

NO - Repair open in the wire between the ECM/PCM and the injector. ■

PGM-FI System
DTC Troubleshooting (cont'd)

Any combination of the

DTC 71: No. 1 Cylinder Misfire

DTC 72: No. 2 Cylinder Misfire

DTC 73: No. 3 Cylinder Misfire

DTC 74: No. 4 Cylinder Misfire

NOTE: If the misfiring is frequent enough to damage the catalyst, the MIL will blink whenever the misfiring occurs. When the misfiring stops, the MIL will remain on.

1. 1. Troubleshoot the following DTCs first if any of them were stored along with the random misfire DTC(s) :
   DTC 1: Primary Heated Oxygen Sensor
   DTC 3: Manifold Absolute Pressure sensor
   DTC 4: Crankshaft Position Sensor
   DTC 12: EGR system
   DTC 14: IAC Valve
   DTC 21: VTEC System
   DTC 45: Fuel System
2. 2. Test-drive the vehicle to verify the symptom.
   3. Find the symptom in the chart below, and do the related procedure in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Random misfire only at low engine speed and under load	Test the fuel pressure (see page 11-131).	• Low compression • Contaminated fuel
Random misfire only during acceleration	Test the fuel pressure (see page 11-131).	Malfunction in the VTEC system (see page 6-9)
Random misfire at high engine speed and load, or under random conditions	Test the fuel pressure (see page 11-131).	Correct valve clearance (see page 6-14)

PGM-FI System
MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II) and watch the Malfunction Indicator Lamp (MIL).

Does the MIL come on and stay on?

YES - If the MIL always comes on and stays on, go to step 70. But if the MIL sometimes works normally, first check for these problems.

- An intermittent short in the wire between the ECM/PCM (E29) and the Data Link Connector (DLC).
- An intermittent short in the wire between the ECM/PCM (E31) and the gauge assembly.

NO - If the MIL is always off, go to step 2. But if the MIL sometimes works normally, first check for these problems.

- A loose No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.
- A loose No. 20 IG (40A) fuse in the under-hood fuse/relay box.
- A loose No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.
- A loose No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
- A poor connection at ECM/PCM terminal E31.
- An intermittent open in the GRN/ORN wire between the ECM/PCM (E31) and the gauge assembly.
- An intermittent short in the wire between the ECM/PCM (A21) and the manifold absolute pressure (MAP) sensor, CVT driven pulley speed sensor (CVT), CVT speed sensor 1 (CVT).
- An intermittent short in the wire between the ECM/PCM (A20) and the throttle position (TP) sensor, knock sensor, exhaust gas recirculation (EGR) valve position sensor, CVT drive pulley speed sensor (CVT), CVT speed sensor 2 (CVT).
- An intermittent short in the wire between the ECM/PCM (A8) and the knock sensor.
- An intermittent short in the wire between the ECM/PCM (E5) and the idle mixture adjuster (IMA) (without TWC).

1. 2. Turn the ignition switch OFF.
2. 3. Turn the ignition switch ON (II).

Is the low oil pressure light on?

YES - Go to step 6.

NO - Go to step 4.

3. 4. Inspect the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 5.

NO - Repair short in the wire between No. 10 METER (7.5A) fuse and the gauge assembly. Also replace the No. 10 METER (7.5A) fuse. ■

4. 5. Inspect the No. 20 IG1 (40A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES - Repair open in the wire between the No. 20 IG (40A) fuse and the gauge assembly. If the wires are OK, test the ignition switch (see page 22-83). ■

NO - Repair short in the wire between No. 20 IG (40A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG (40A) fuse. ■

5. 6. Try to start the engine.

Does the engine start?

YES - Go to step 7.

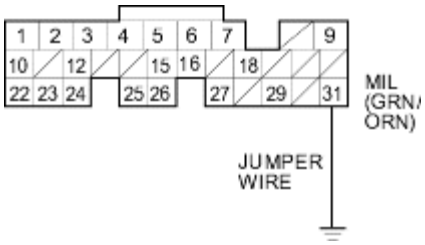
NO - Go to step 10.

6. 7. Turn the ignition switch OFF.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 8. Connect ECM/PCM connector terminal E31 and body ground with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

2. 9. Turn the ignition switch ON (II).

Is the MIL on?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check for an open in the wire between the ECM/PCM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly. ■

10. Turn the ignition switch OFF.
11. Inspect the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

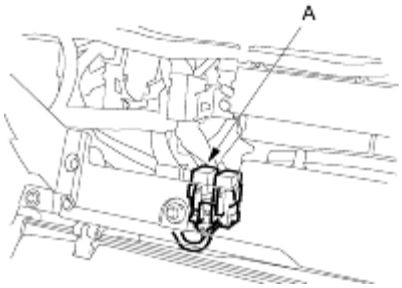
YES - Go to step 18.

NO - Go to step 12.

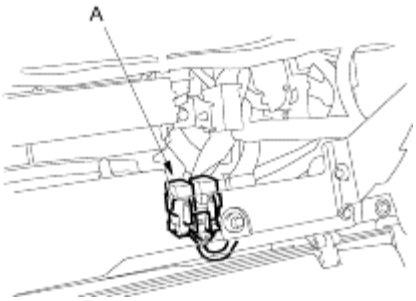
12. Remove the blown No. 6 ECU (ECM/PCM) (15A) fuse in the under-dash fuse/relay box.

1. 13. Remove the PGM-FI main relay 1 (A).

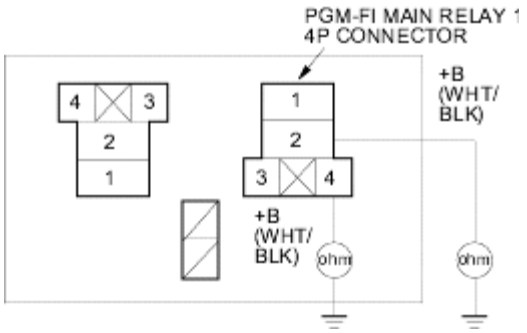
LHD model:



RHD model:



14. Check for continuity between body ground and the PGM-FI main relay 14P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

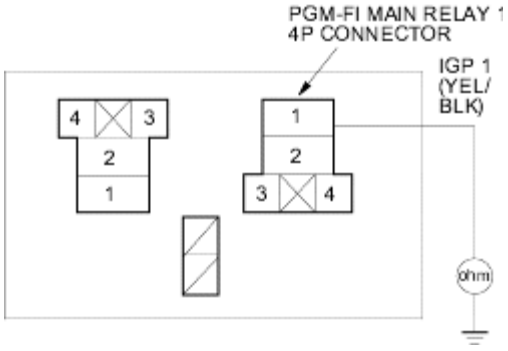
Is there continuity?

YES - Repair short in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Go to step 15.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 15. Disconnect each of the components or the connectors below, one at a time, and check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and body ground.
   - PGM-FI main relay 2
   - ECM/PCM connector A (31P)
   - Each injector 2P connector
   - Idle air control (IAC) valve 3P connector
   - Top dead centre (TDC) sensor 2P connector
   - Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

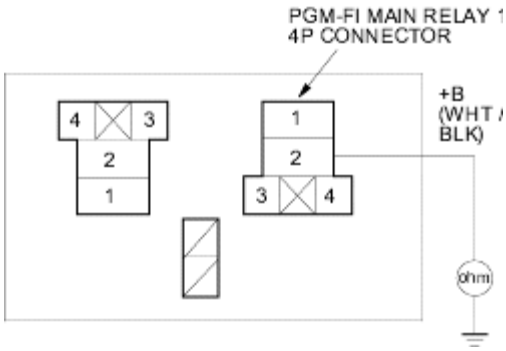
YES - Go to step 16.

NO - Replace the item that made continuity to body ground go away when disconnected. If the item is the ECM/PCM, substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

Also replace the No. 6 ECU (ECM/PCM) (15 A) fuse. ■

16. Disconnect the connectors of all following items.
   - PGM-FI main relay 2
   - ECM/PCM connector A (31P)
   - Injectors
   - Idle air control (IAC) valve
   - Top dead centre (TDC) sensor
   - Crankshaft position (CKP) sensor

1. 17. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Replace the PGM-FI main relay 1. Also replace the No 6 ECU (ECM/PCM) (15A) fuse. ■

18. Inspect the No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 30.

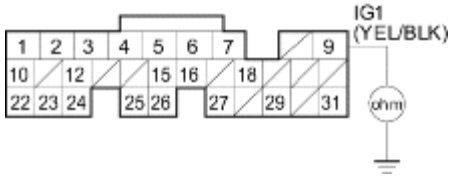
NO - Go to step 19.

19. Remove the blown No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
20. Disconnect ECM/PCM connector E (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 21. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

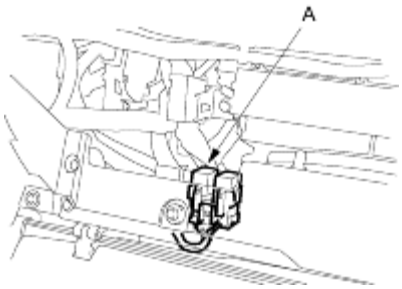
Is there continuity?

YES - Go to step 22.

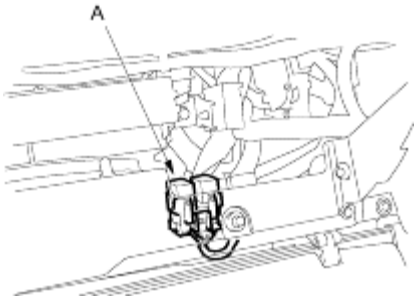
NO - Replace the No. 17 FUEL PUMP (15 A) fuse, and substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

22. Remove the PGM-FI main relay 2 (A).

LHD model:

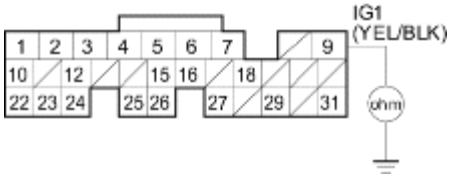


RHD model:



1. 23. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9), or the No. 17 FUEL PUMP (15 A) fuse and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

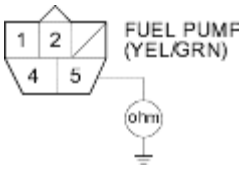
NO - Go to step 24.

24. Remove the rear seat cushion (see page 20-95).
25. Remove the access panel from the floor.
26. Disconnect the fuel pump 5P connector.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 27. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

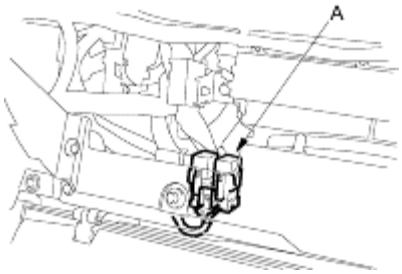
Is there continuity?

YES - Repair short in the wire between the fuel pump and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

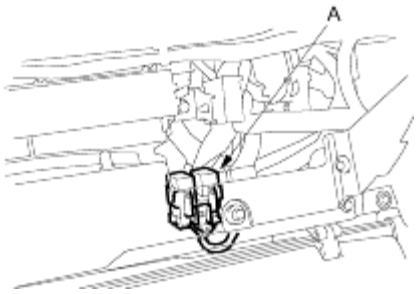
NO - Go to step 28.

28. Reinstall the PGM-FI main relay 2 (A).

LHD model:

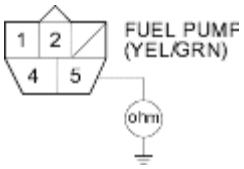


RHD model:



1. 29. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

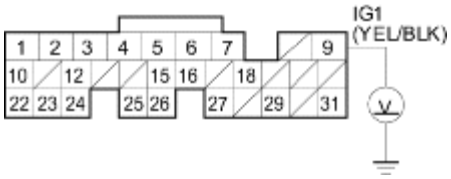
Is there continuity?

YES - Replace the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

NO - Check the fuel pump, and replace it as necessary. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

30. Disconnect ECM/PCM connector E (31P).
31. Turn the ignition switch ON (II).
32. Measure voltage between ECM/PCM connector terminals E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 33.

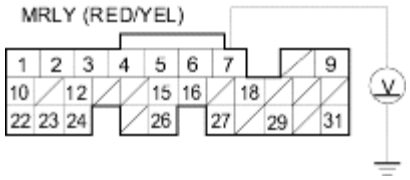
NO - Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 33. Turn the ignition switch OFF.

34. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

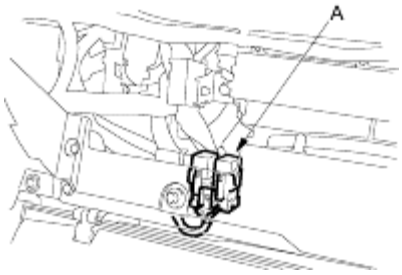
Is there battery voltage?

YES - Go to step 38.

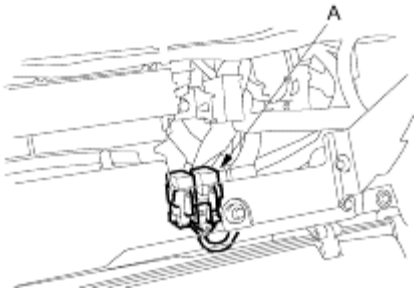
NO - Go to step 35.

35. Remove the PGM-FI main relay 1 (A).

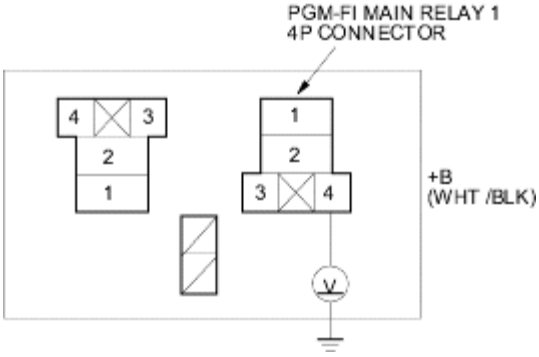
LHD model:



RHD model:



1. 36. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



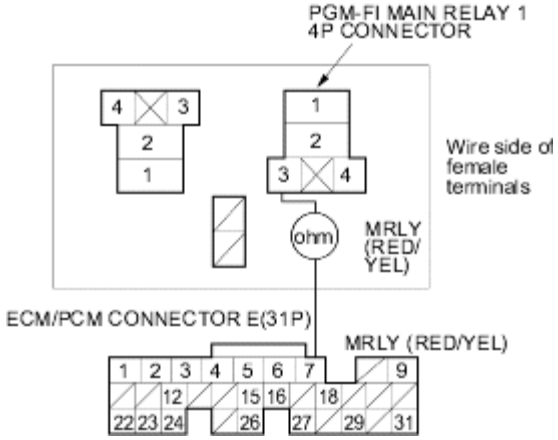
Wire side of female terminals

Is there battery voltage?

YES - Go to step 37.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15 A) fuse and the PGM-FI main relay 1. ■

37. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal E7.



Wire side of female terminals

Is there continuity?

YES - Test the PGM-FI main relay 1 (see page 22-80). If the relay is OK, substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

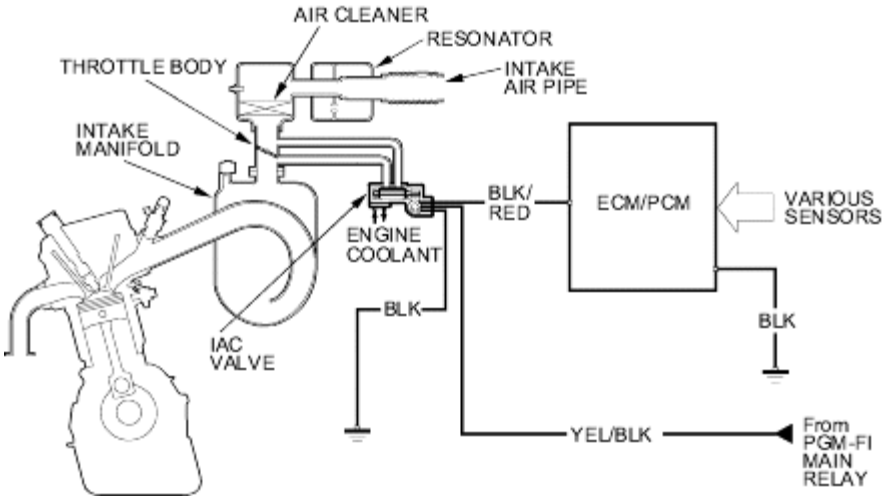
NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (E7). ■

Fuel and Emissions Systems
System Descriptions (cont'd)

Idle Control System Diagram

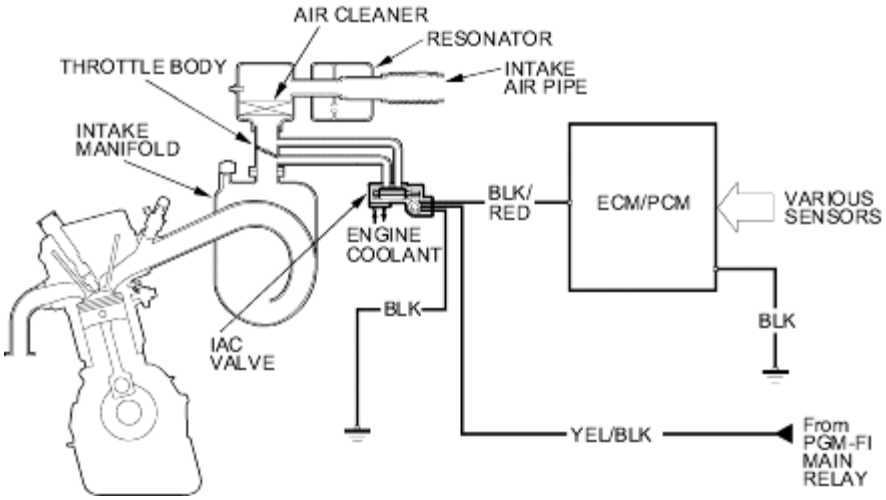
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- After the engine starts, the IAC valve opens for a certain amount of time. The amount of air is increased to raise the idle speed.
- When the engine coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to engine coolant temperature.



Intake Air System Diagram

This system supplies air for engine needs. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.

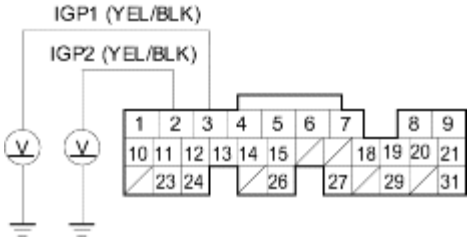


PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 38. Reconnect ECM/PCM connector E (31P).

39. Turn the ignition switch ON (II).
40. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

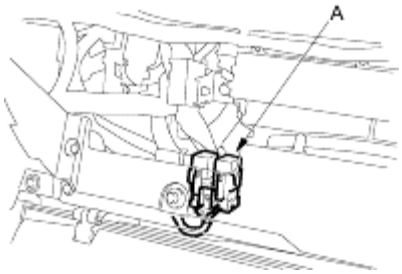
Is there battery voltage?

YES - Go to step 47.

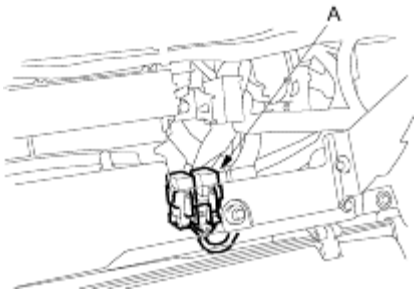
NO - Go to step 41.

41. Turn the ignition switch OFF.
42. Remove the PGM-FI main relay 1 (A).

LHD model:

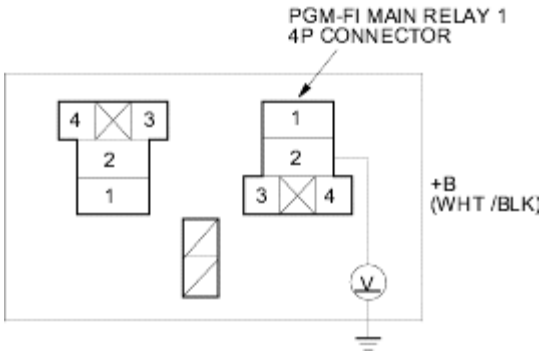


RHD model:



1. 43. Turn the ignition switch ON (II).

44. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



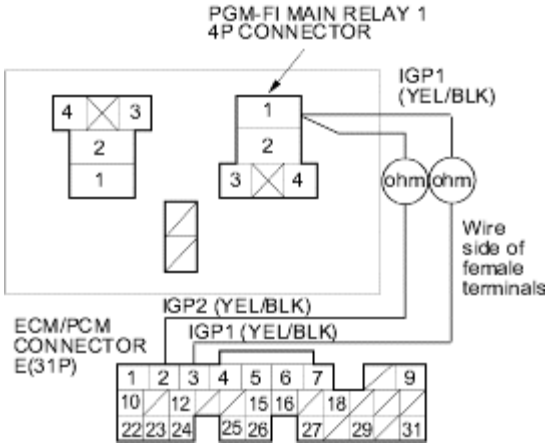
Wire side of female terminals

Is there battery voltage?

YES - Go to step 45.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. ■

45. Turn the ignition switch OFF.
46. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and ECM/PCM connector terminals A2 and A3 individually.



Wire side of female terminals

Is there continuity?

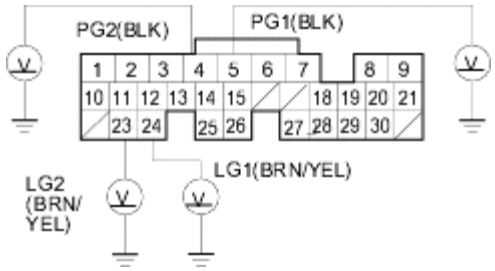
YES - Replace the PGM-FI main relay 1. ■

NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (A2, A3). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 47. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A23 and A24 individually.

ECM/PCM CONNECTOR A (31P)



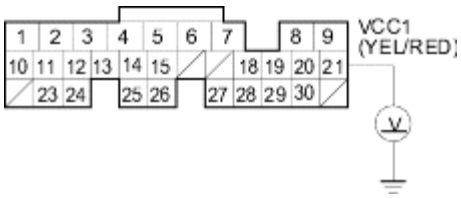
Is there less than 1.0 V?

YES - Repair open in the wire (s) between that had more than 1.0 V between G101 and ECM/PCM (A4, A5, A23, A24). ■

NO - Go to step 48.

48. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Go to step 55.

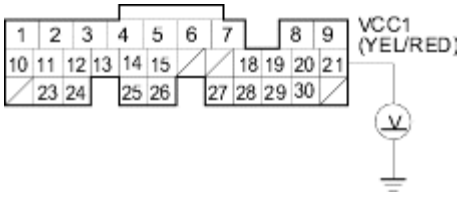
NO - Go to step 49.

1. 49. Turn the ignition switch OFF.

50. Disconnect the 3P connector from each of these sensors one at a time, and measure voltage between body ground and ECM/PCM connector terminal A21 with the ignition switch ON (II).

- Manifold absolute pressure (MAP) sensor
- CVT driven pulley speed sensor (CVT)
- CVT speed sensor 1 (CVT)

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the sensor that restored 5 V when disconnected. ■

NO - Go to step 51.

51. Turn the ignition switch OFF.
52. Disconnect 3P connector from the following sensors.

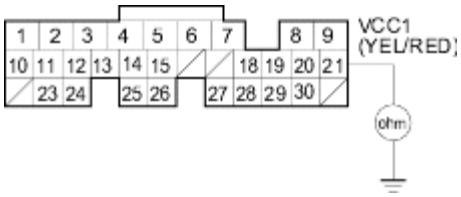
- Manifold absolute pressure (MAP) sensor
- CVT driven pulley speed sensor (CVT)
- CVT speed sensor 1.

53. Disconnect ECM/PCM connector A (31P)

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 54. Check for continuity between ECM/PCM connector terminal A21 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

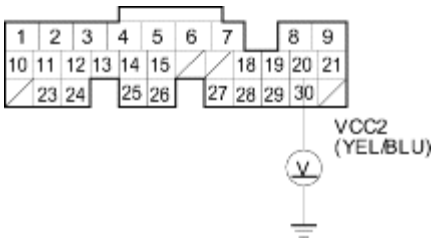
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A21) and the MAP sensor, CVT driven pulley speed sensor (CVT), CVT speed sensor 1 (CVT). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

55. Measure voltage between body ground and ECM/PCM connector terminal A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Go to step 62

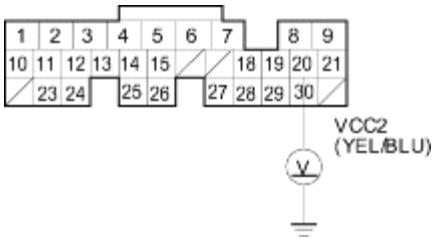
NO - Go to step 56.

1. 56. Turn the ignition switch OFF.

57. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II).

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor
- CVT drive pulley speed sensor (CVT)
- CVT speed sensor 2 (CVT)

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the sensor that restored about 5 V when disconnected. ■

NO - Go to step 58.

58. Turn the ignition switch OFF.
59. Disconnect the 3P connector from the following sensors.

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor
- CVT drive pulley speed sensor (CVT)
- CVT speed sensor 2 (CVT)

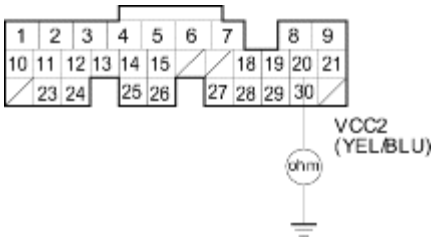
60. Disconnect ECM/PCM connector A (31P).

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 61. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

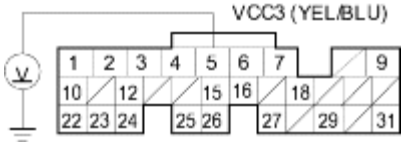
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the EGR valve position sensor, knock sensor or TP sensor, CVT drive pulley speed sensor (CVT), CVT speed sensor 2 (CVT) or repair short in the wire between ECM/PCM (A8) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

1. 62. Measure voltage between body ground and ECM/PCM connector terminals E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

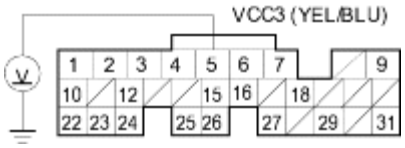
NO - Go to step 63.

63. Turn the ignition switch OFF.
64. Disconnect the idle mixture adjuster (IMA) sensor 3P connector.
65. Turn the ignition switch ON (II).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 66. Measure voltage between body ground and ECM/PCM connector terminal E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

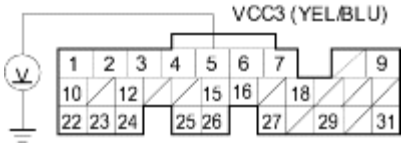
YES - Replace the IMA. ■

NO - Go to step 67.

67. Turn the ignition switch OFF.
68. Disconnect ECM/PCM connector E (31P).
69. Check for continuity between ECM/PCM connector terminal E5 and body ground.

Are any DTCs indicated?

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between ECM/PCM (E5) and the IMA. ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

1. 70. Turn the ignition switch OFF.

71. Jump the SCS line (see step 2 on page 11-167).
72. Turn the ignition switch ON (II), and read the MIL.

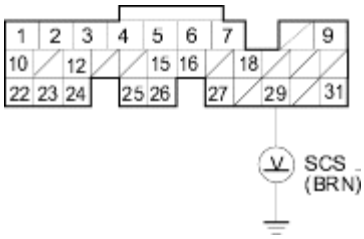
Are any DTCs indicated?

YES - Go to the DTC Troubleshooting Index. ■

NO - Go to step 73.

73. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES - Repair open in the wire between the DLC and the ECM/PCM (E3, E29). After repairing it, check the DTC and go to the DTC Troubleshooting Index. ■

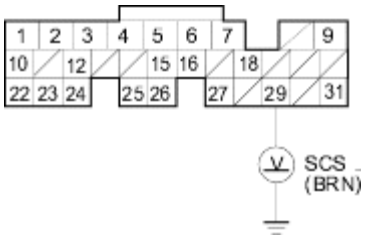
NO - Go to step 74.

74. Turn the ignition switch OFF.
75. Disconnect the DLC Terminal Box.
76. Turn the ignition switch ON (II).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 77. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

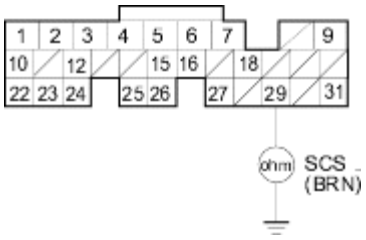
YES - Go to step 81.

NO - Go to step 78.

78. Turn the ignition switch OFF.
79. Disconnect ECM/PCM connector E (31P).

1. 80. Check for continuity between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the DLC and the ECM/PCM (E29). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

81. Turn the ignition switch OFF.
82. Disconnect ECM/PCM connector E (31P).
83. Turn the ignition switch ON (II).

Is the MIL on?

YES - Repair short in the wire between the gauge assembly and the ECM/PCM (E31). If the wires are OK, replace the gauge assembly. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
Injector Test

NOTE: Check the following items before testing: idle speed, ignition timing and idle CO%.

1. 1. Try to start the engine.

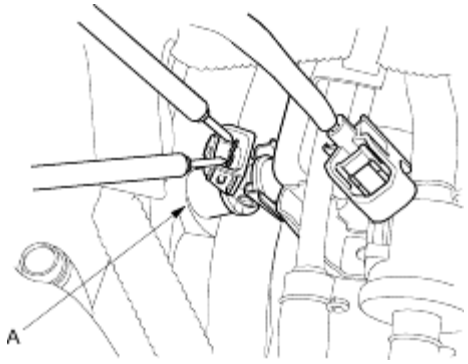
Does the engine start?

YES - Go to step 2.

NO - Go to step 6.

2. 2. Turn the ignition switch OFF. Remove the air cleaner (see page 11-146).
   3. Disconnect each injector connector individually.
   4. Install the air cleaner, and inspect the change in the idle speed.
      - If the idle speed drop is almost the same for each cylinder, the fuel injectors are normal.
      - If the idle speed or quality remains the same when you disconnect a particular injector, replace the injector and retest (see page 11-113).
3. 5. Check the clicking sound of each injector by means of a stethoscope when the engine is idling.
      - If any fuel injector fails to make the typical clicking sound, check the sound again after replacing the injector (see page 11-113).
      - If clicking sound is still absent, check the following.
   – – Whether there is wire breakage or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
   – Whether the junction connector is open or corroded.
   – Whether there is wire breakage or poor connection in the YEL/BLK wire between the junction connector and the injector.
   – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the injector and the ECM/PCM.
      - If all is OK, the test is complete.

1. 6. Turn the ignition switch OFF.
2. 7. Remove the air cleaner (see page 11-146).
   8. Remove the injector connector.
   9. Measure the resistance between injector (A) terminals No. 1 and No. 2.



Is there 10-13 ohms?

YES - Go to step 10.

NO - Replace the injector (see page 11-113). ■

10. Check the fuel pressure (see page 11-131).
    - If the fuel pressure is as specified, check the following:
  – – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
  – Whether the junction connector is open or corroded.
  – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the junction connector and the injector.
  – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the injector and the ECM/PCM.
    - If the fuel pressure is not as specified, recheck the fuel pressure (see page 11-131).

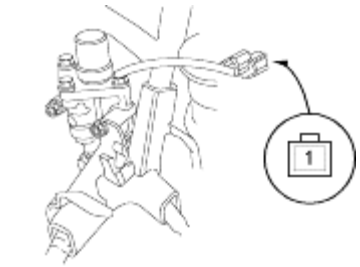
PGM-FI System

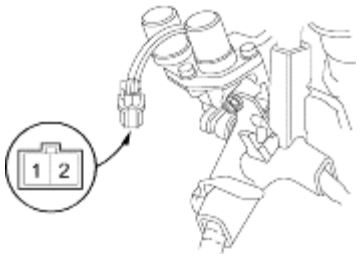
VTEC Solenoid Valve Test

NOTE: Information marked with an asterisk (*) applies to D16W9, D16W8 engines.

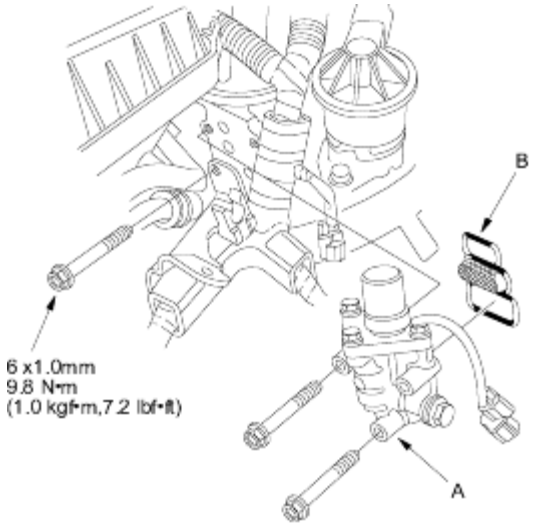
1. 1. Remove the resonator (see page 11-148).
   2. Disconnect the VTEC solenoid valve connector.
   3. Measure resistance between the VTEC solenoid valve connector terminal No. 1 and body ground (No. 1, No. 2 and body ground)*.

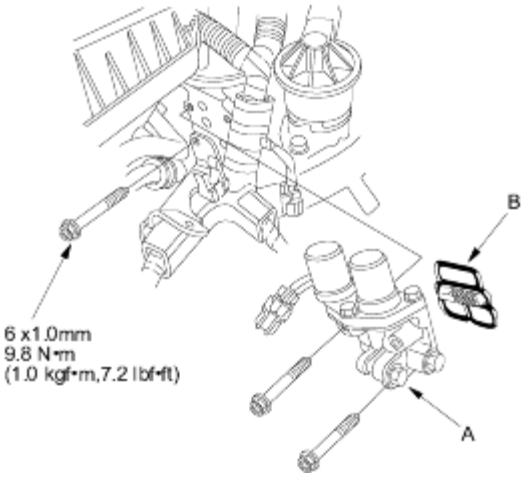
Resistance: 14-30 ohms





1. 4. If the resistance is within specifications, remove the VTEC solenoid valve assembly (A) from the cylinder head, and check the VTEC solenoid valve filter (B) for clogging. If there is clogging, replace the solenoid valve filter, the engine oil filter and the engine oil.

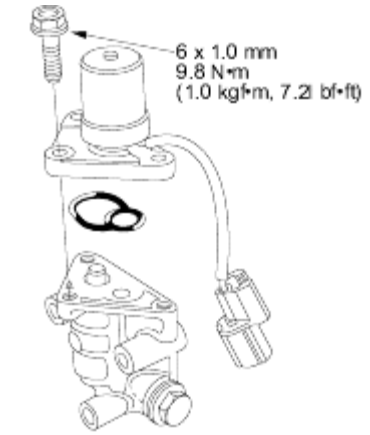


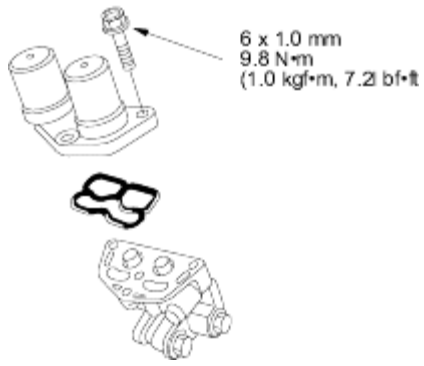


PGM-FI System

VTEC Solenoid Valve Test (cont'd)

1. 5. If the filter is not clogged, push the VTEC solenoid valve with your finger and check its movement. If the VTEC solenoid valve is normal, check the engine oil pressure.





PGM-FI System

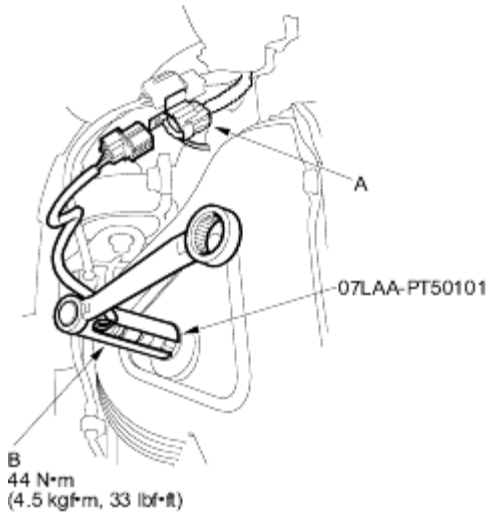
Primary HO2S Replacement

Special Tools Required

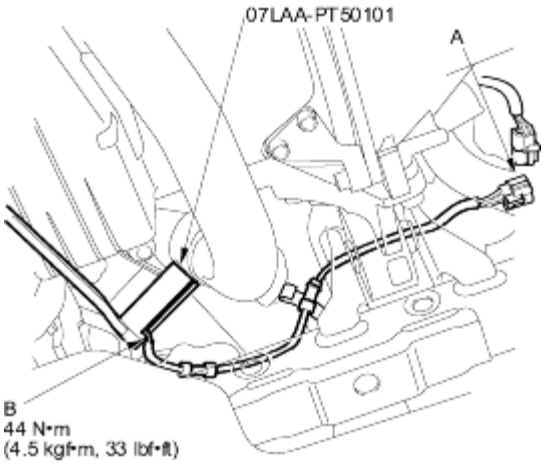
O2 sensor wrench 07LAA-PT50101

1. 1. Disconnect the primary HO2S 4P connector (A), then remove the primary HO2S (B).

D15Y6, D15Y5, D17A1, D17Z2 engines:



D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17Z4 engines:



2. 2. Install the primary HO2S in the reverse order of removal.

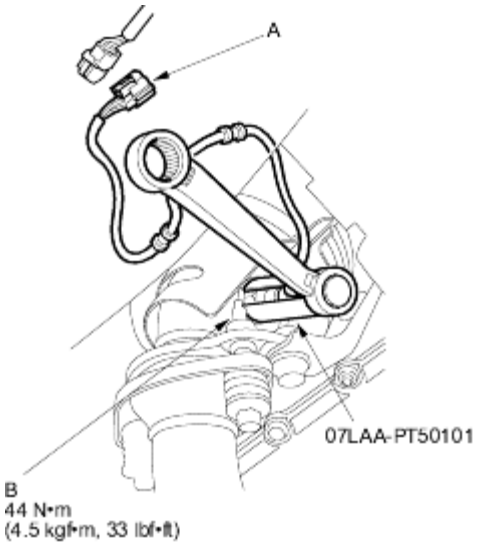
Secondary HO2S Replacement

Special Tools Required

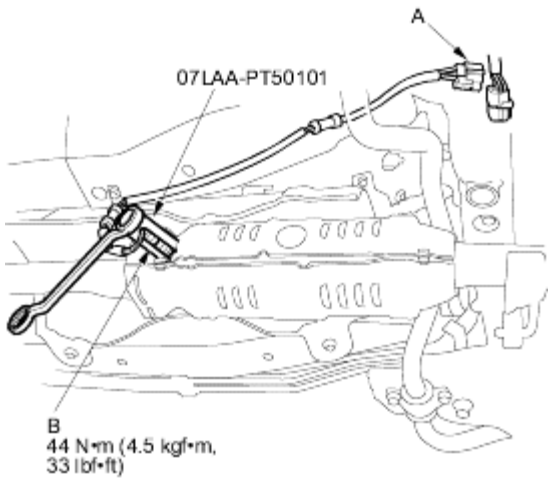
O2 sensor wrench 07LAA-PT50101

1. 1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).

D15Y6 engine:



D15Y4, D17A2 (KU, KQ, KZ, FO models), D17Z1 (KQ model) engines:



2. 2. Install the secondary HO2S in the reverse order of removal.

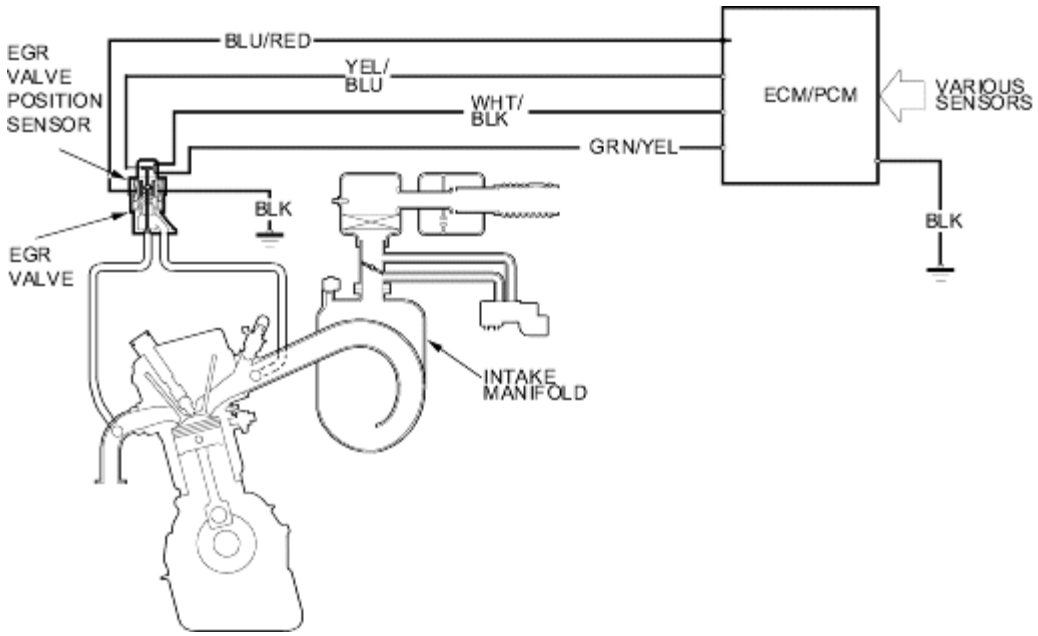
Fuel and Emissions Systems

System Descriptions (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

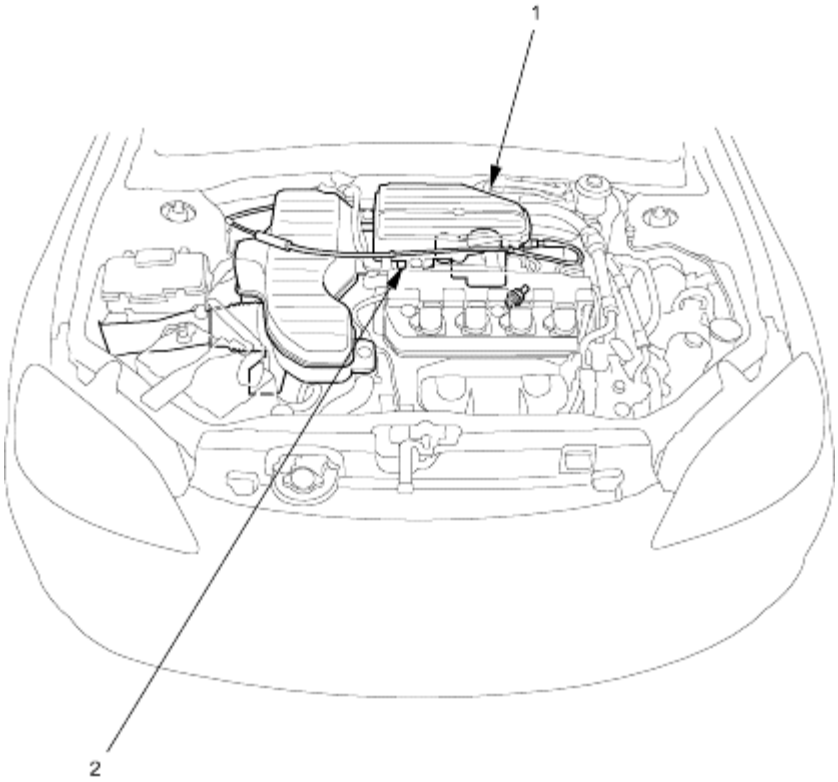
The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.



Idle Control System

Component Location Index



1. POWER STEERING PRESSURE (PSP) SWITCH
   Troubleshooting, page 11-283
2. IDLE AIR CONTROL (IAC) VALVE
   Troubleshooting, page 11-281

Idle Control System
DTC Troubleshooting

DTC 14: IAC Valve Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Turn the ignition switch ON (II).

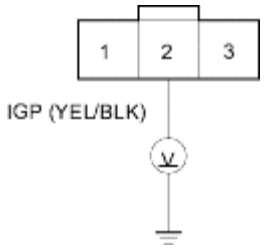
Is the MIL on and does it indicate DTC 14?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAC valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAC valve 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the IAC valve 3P connector terminal No. 2 and body ground.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

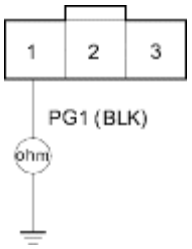
YES - Go to step 7.

NO - Repair open in the wire between the IAC valve and the PGM-FI main relay. ■

3. 7. Turn the ignition switch OFF.

1. 8. Check for continuity between body ground and the IAC valve 3P connector terminal No. 1.

IAC VALVE 3P CONNECTOR



Wire side female terminals

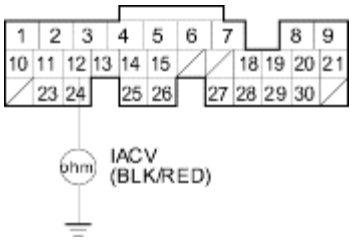
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the IAC valve and G101. ■

2. 9. Disconnect ECM/PCM connector A (31P).
   10. Check for continuity between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

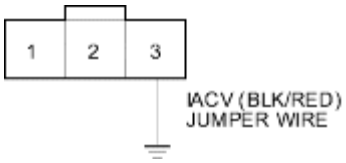
YES - Repair short in the wire between the IAC valve and the ECM/PCM (A12). ■

NO - Go to step 11.

Idle Control System
DTC Troubleshooting (cont'd)

1. 11. Connect the IAC valve 3P connector terminal No. 3 and body ground with a jumper wire.

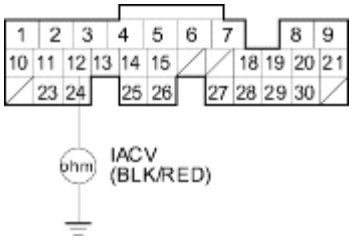
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A12 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

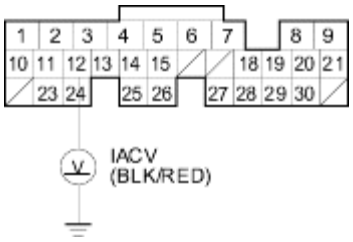
YES - Go to step 13.

NO - Repair open in the wire between the IAC valve and the ECM/PCM (A12). ■

13. Reconnect the jumper wire from the IAC valve 3P connector, then reconnect the IAC valve 3P connector.
14. Turn the ignition switch ON (II).

1. 15. Measure voltage between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

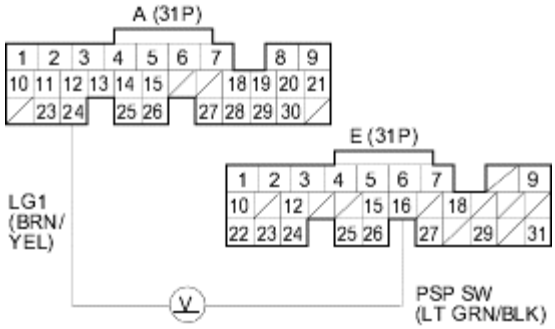
NO - Replace the IAC valve. ■

Idle Control System

PSP Switch Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there less than 1.0 V?

YES - Go to step 3.

NO - Go to step 6.

3. 3. Start the engine.
   4. Turn the steering wheel to the full lock position.
   5. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there battery voltage?

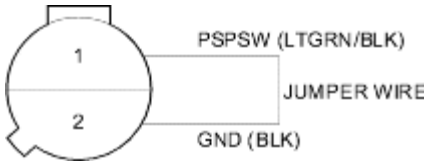
YES - The PSP switch signal is OK. ■

NO - Go to step 11.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the PSP switch 2P connector.
   8. Turn the ignition switch ON (II).

1. 9. At the harness side, connect the PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

10. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there less than 1.0 V?

YES - Replace the PSP switch. ■

NO - Check for these problems: ■

- An open in the wire between the ECM/PCM (E16) and the PSP switch.
- An open in wire between the PSP switch and G201.

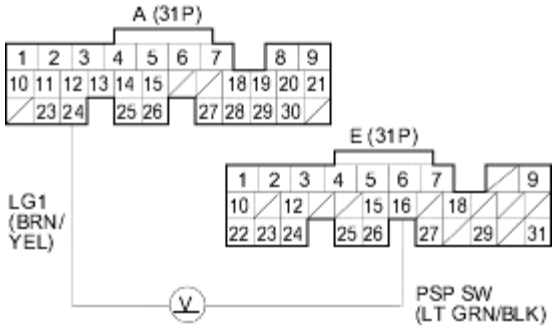
11. Turn the ignition switch OFF.
12. Disconnect the PSP switch 2P connector.
13. Turn the ignition switch ON (II).

Idle Control System

PSP Switch Signal Circuit Troubleshooting (cont'd)

1. 14. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTORS



Wire side of female terminals

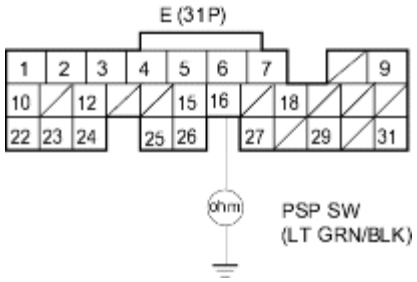
Is there battery voltage?

YES - Replace the PSP switch. ■

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect ECM/PCM connector E (31P).
17. Check for continuity between body ground and ECM/PCM connector terminal E16.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

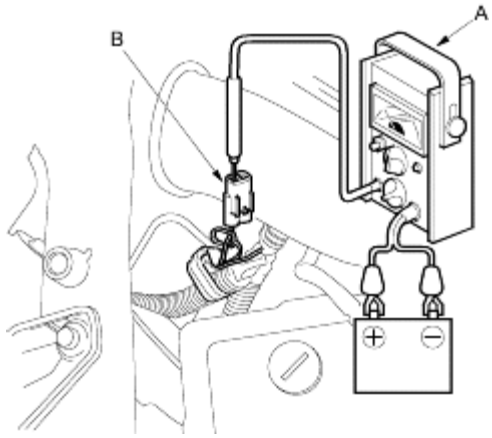
YES - Repair short in the wire between ECM/PCM (E16) and the PSP switch.

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

Idle Control System
Idle Speed Inspection

NOTE:
- Leave the Idle Air Control (IAC) valve connected.
- Before checking the idle speed, check these items:
  - The Malfunction Indicator Lamp (MIL) has not been reported on.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system

2. 1. Disconnect the Evaporative Emission (EVAP) canister purge valve 2P connector (except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines).
   2. Connect a tachometer (A) to the test tachometer connector (B).



3. 3. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Check the idle speed with no-load conditions: headlights, blower fan, radiator fan, and air conditioner are not operating.

Idle speed should be:

D15Y5, D15Y2, D16W8, D17A1, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines:	
M/T	720±50 rpm (min-1)
A/T, CVT	720±50 rpm (min-1) (in Park or neutral)
except D15Y5, D15Y2, D16W8, D17A1, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines:	
M/T	750±50 rpm (min-1)
A/T, CVT	750±50 rpm (min-1) (in Park or neutral)

1. 5. Idle the engine for 1 minute with heater fan switch on HI and air conditioner on, then check the idle speed.

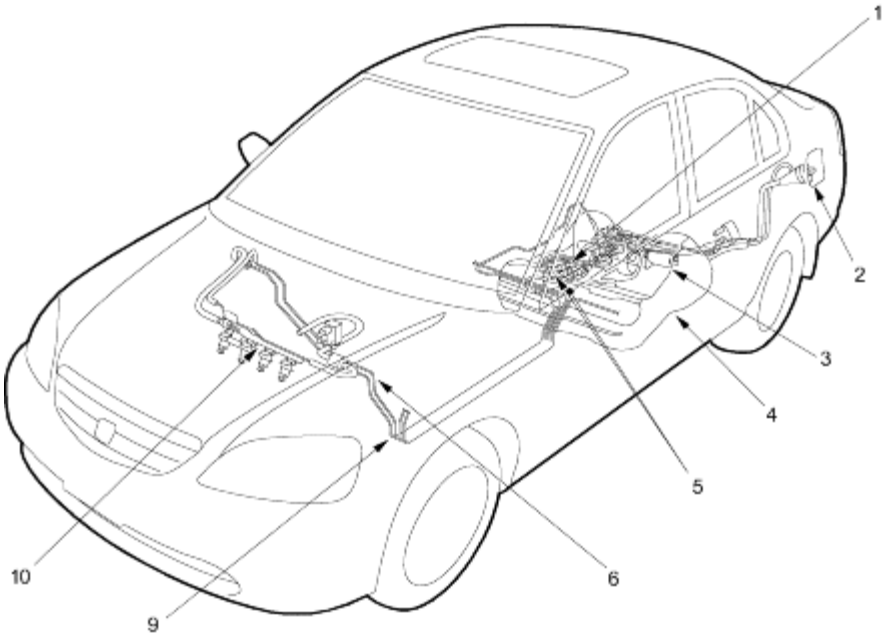
Idle speed should be:

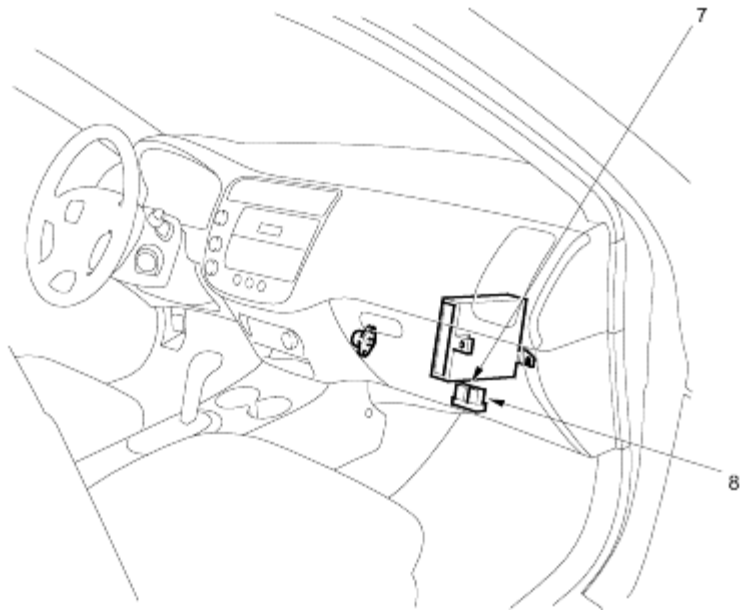
D15Y5, D15Y2, D16W8, D17A1, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines:	
M/T	720±50 rpm (min-1)
A/T, CVT	720±50 rpm (min-1) (in Park or neutral)
except D15Y5, D15Y2, D16W8, D17A1, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines:	
M/T	750±50 rpm (min-1)
A/T, CVT	750±50 rpm (min-1) (in Park or neutral)

NOTE: If the idle speed in not within specification, see Symptom Chart.

2. 6. Reconnect the EVAP canister purge valve 2P connector (except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines).

Fuel Supply System
Component Location Index





1. FUEL PUMP
   Troubleshooting, page 11-287
   Replacement, page 11-139
   FUEL GAUGE SENDING UNIT
   Test/Replacement, page 11-139
   FUEL PRESSURE REGULATOR
   Replacement, page 11-138
2. FUEL FILL CAP
3. FUEL FILTER
   Replacement, page 11-296
4. FUEL TANK
   Replacement, page 11-297
5. FUEL TUBE/QUICK-CONNECT FITTINGS
   Precautions, page 11-292
   Removal, page 11-293
   Installation, page 11-294
6. FUEL VAPOUR PIPE
7. PGM-FI MAIN RELAY 2
   Troubleshooting, page 11-287
8. PGM-FI MAIN RELAY 1
9. FUEL FEED PIPE
10. FUEL RAIL

*: The illustration shows LHD model.

Fuel Supply System

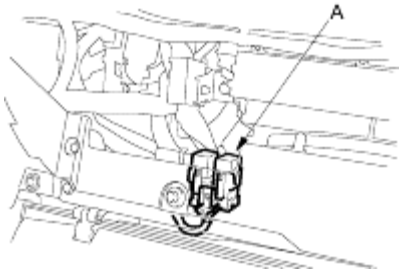
Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

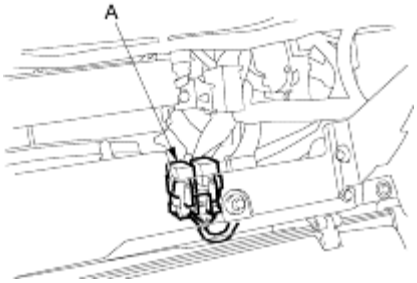
NOTE: Information marked with an asterisk (*) applies to D15Y6, D15Y3 (KY model with immobiliser, KN model), D15Y5, D15Y4, D17Z1 (KQ, KZ models), D17A1 (KK model), D17A2 (except MA model) engines.

1. 1. Turn the ignition switch OFF.
   2. Remove the glove box (see page 20-79), then remove the PGM-FI main relay 2.

LHD model:

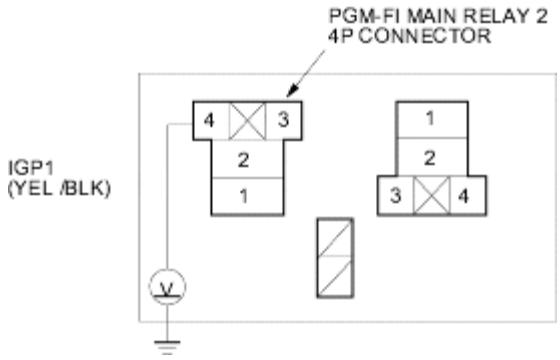


RHD model:



2. 3. Turn the ignition switch ON (II).

1. 4. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 4 and body ground.



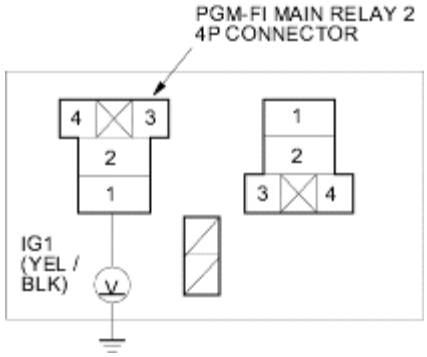
Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the PGM-FI main relay 1 and the PGM-FI main relay 2. ■

2. 5. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 1 and body ground.



Wire side of female terminals

Is there battery voltage?

YES - Go to step 6.

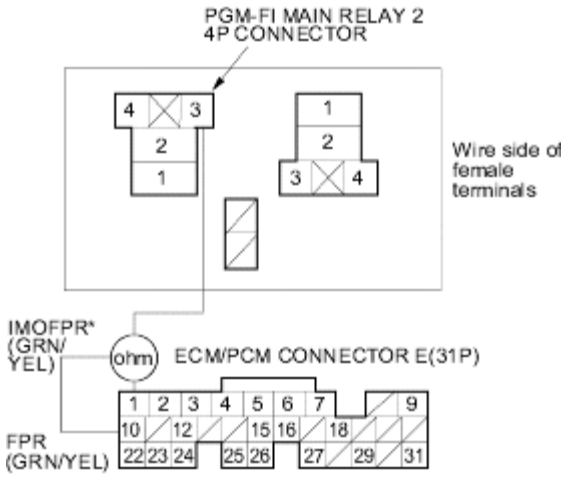
NO - Repair open in the wire between the under dash fuse/relay box and PGM-FI main relay 2. ■

3. 6. Turn the ignition switch OFF.
   7. Disconnect ECM/PCM connector E (31P).

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

1. 8. Check for continuity between the PGM-FI main relay 2 4P connector terminal No. 3 and ECM/PCM connector terminal E10 (E1)*.



Wire side of female terminals

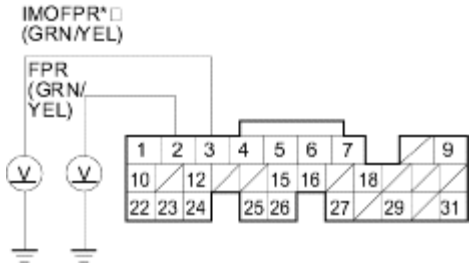
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the PGM-FI main relay 2 and the ECM/PCM (E10, E1*). ■

2. 9. Reinstall the PGM-FI main relay 2.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal E10 (E1*) and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

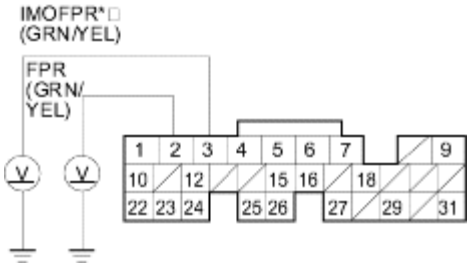
YES - Go to step 12.

NO - Replace the PGM-FI main relay 2. ■

12. Turn the ignition switch OFF.
13. Reconnect ECM/PCM connector E (31P).

1. 14. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E10 (E1*) and body ground within the first 2 seconds after the ignition switch was turned ON (II).

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 15.

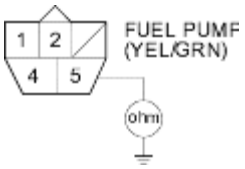
15. Turn the ignition switch OFF.
16. Remove the rear seat cushion (see page 20-95).
17. Remove the access panel from the floor.

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

1. 18. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



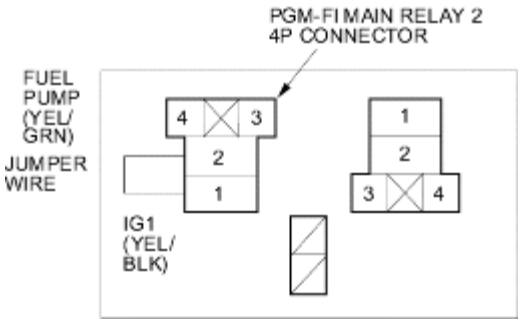
Wire side of female terminals

Is there battery voltage?

YES - Go to step 24.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the PGM-FI main relay 2.
21. Connect the PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.

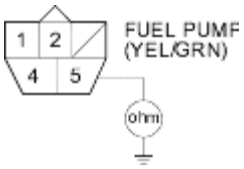


Wire side of female terminals

22. Turn the ignition switch ON (II).

1. 23. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

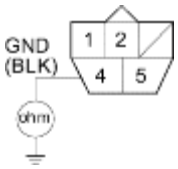
Is there battery voltage?

YES - Replace the PGM-FI main relay 2. ■

NO - Repair open in the wire between the PGM-FI main relay 2 and the fuel pump 5P connector. ■

24. Turn the ignition switch OFF.
25. Check for continuity between the fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the fuel pump. ■

NO - Repair open in the wire between the fuel pump 5P connector and G551. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

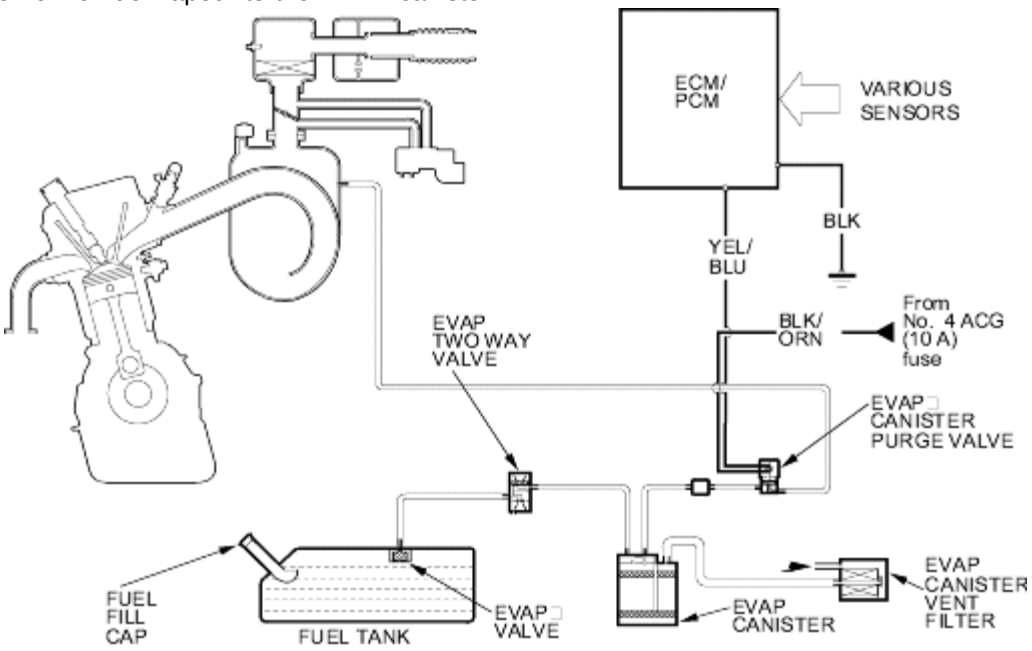
Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimise the amount of fuel vapour escaping to the atmosphere. Vapour from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the EVAP canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.

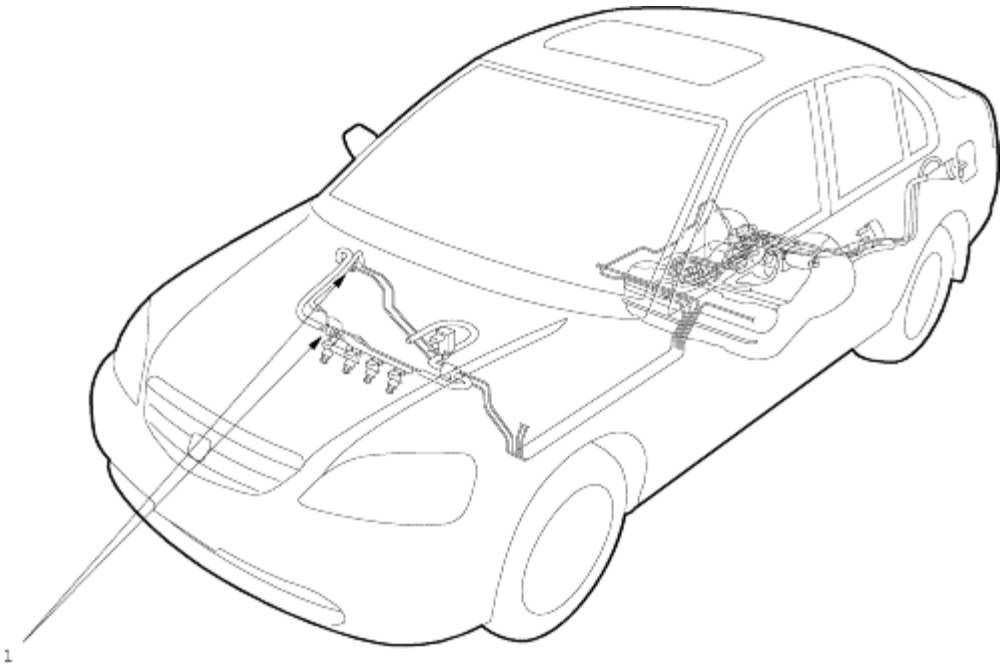
The purging vacuum is controlled by the EVAP canister purge valve, which is open whenever engine coolant temperature is above 70°C (158°F).

- When vapour pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapour to the EVAP canister.



Fuel Supply System
Fuel Lines Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.



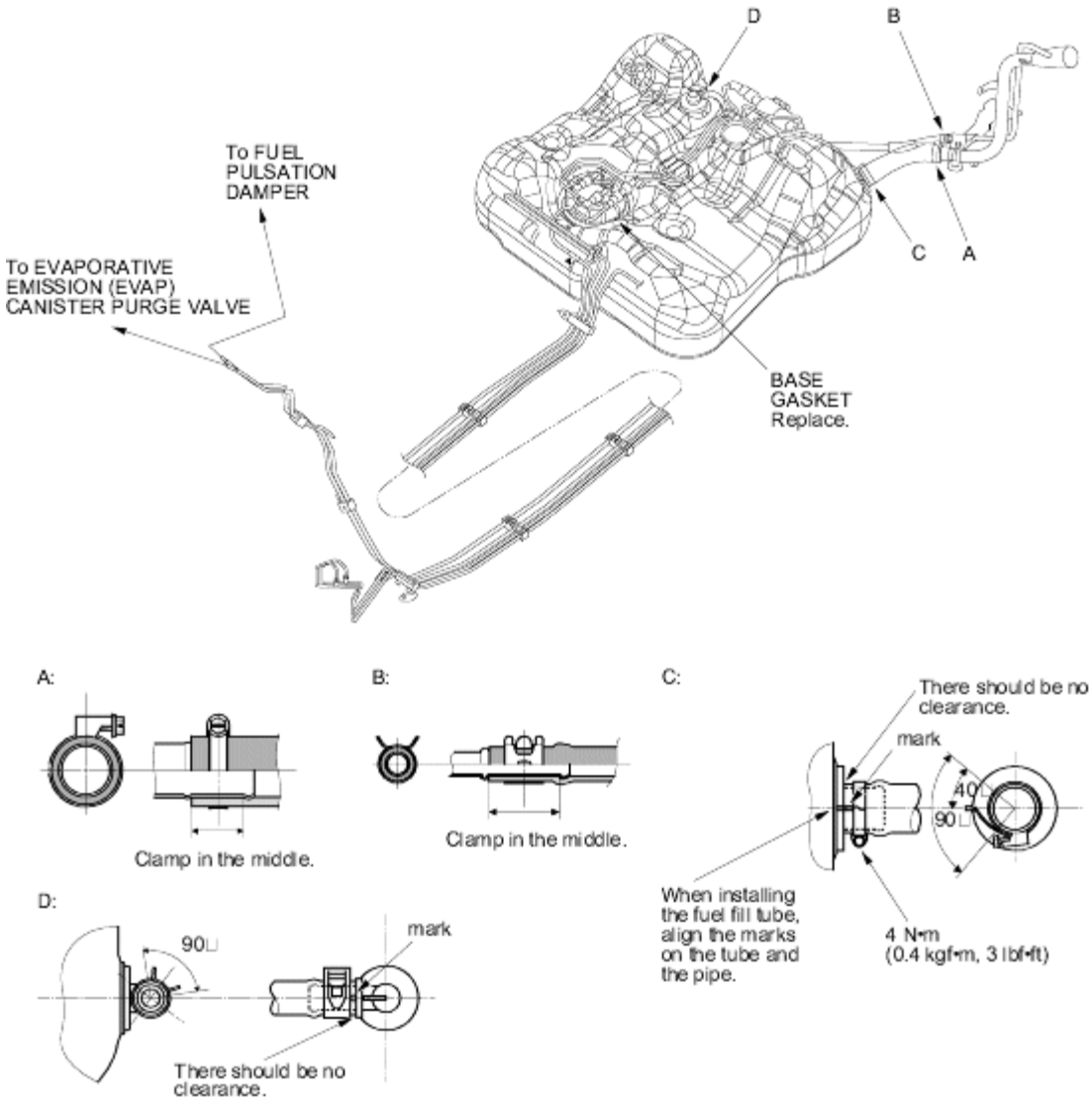
1. Make sure the connection is secure and the quick-connect fitting cover is firmly locked into place.

Fuel Supply System

Fuel Lines Inspection (cont'd)

Check all clamps and retighten if necessary.

▲ :Do not disconnect the hose from the pipe at these joints.



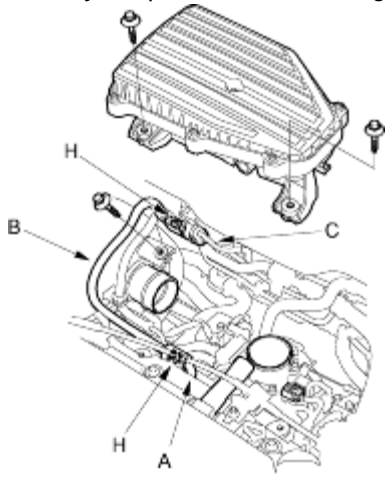
Fuel Supply System

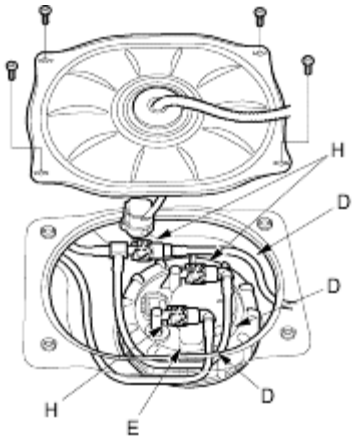
Fuel Tube/Quick-Connect Fittings Precaution

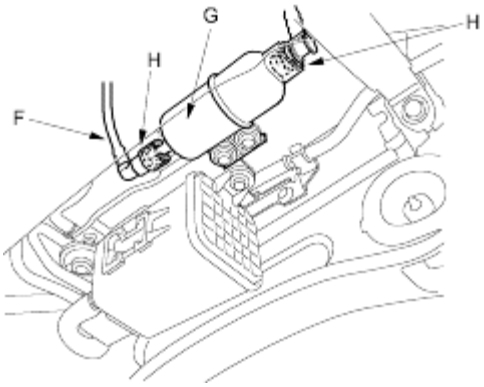
The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel pipe (C), and the fuel tube (D) to the fuel tank unit (E), and fuel tube (F) to the fuel filter (G). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (H) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (H) are not acid-proof; do not touch them with a shop towel which was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel tube (D) and quick-connect fittings (H), be careful not to bend or twist them excessively. Replace them it damaged.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating pipe cannot be reused once it has been removed from the pipe. Replace the retainer when

- replacing the fuel rail.
- replacing the fuel pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.

PART	MANUFACTURER	RETAINER COLOUR
ENGINE COMPARTMENT	TOKAI	GREEN
FUEL TANK UNIT FUEL FILTER	SANOH	WHITE
FUEL FILTER (FLOW SIDE)	MOD SIGNAL	NATURAL

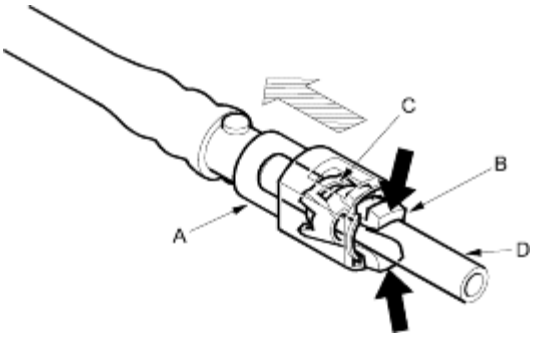
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Removal

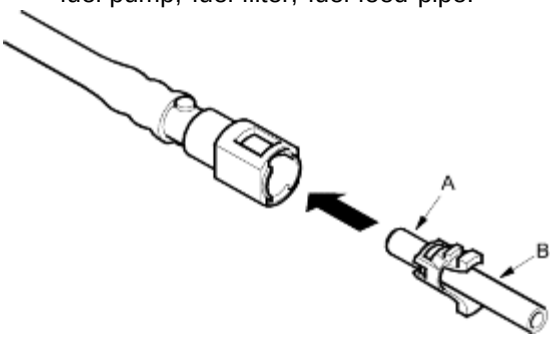
1. 1. Relieve fuel pressure (see page 11-130).
2. 2. Check the fuel quick-connect fittings for dirt, and clean if necessary.
   3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (C). Pull the connector off.

NOTE:

- Be careful not to damage the pipe (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.



1. 4. Check the contact area (A) of the pipe (B) for dirt and damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, fuel feed pipe.



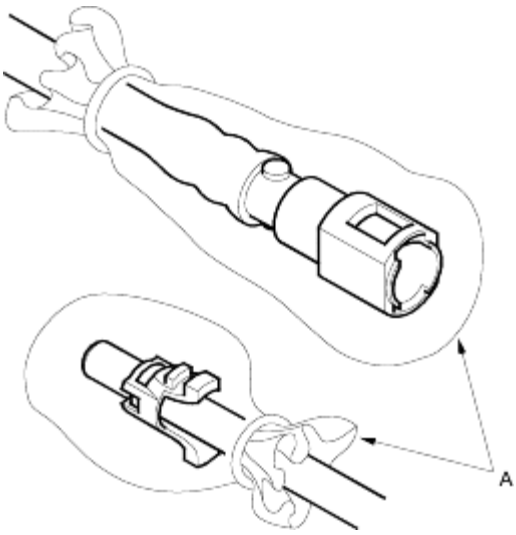
2. 5. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with plastic bags (A).

NOTE:

- The retainer cannot be reused once it has been removed from the pipe.

Replace the retainer when

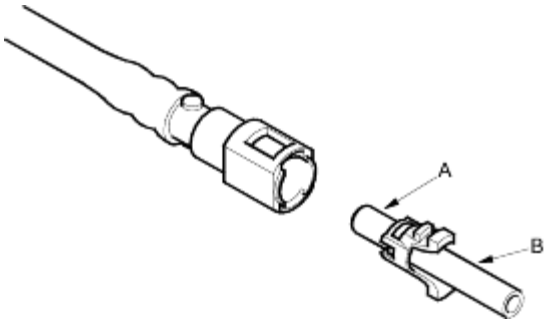
- – replacing the fuel rail.
- – replacing the fuel feed pipe.
- – replacing the fuel pump.
- – replacing the fuel filter.
- – replacing the fuel gauge sending unit.
- – it has been removed from the pipe.
- – it is damaged.



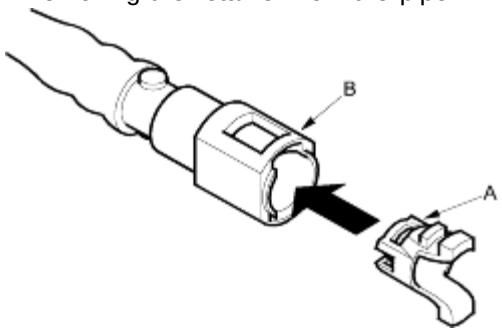
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation

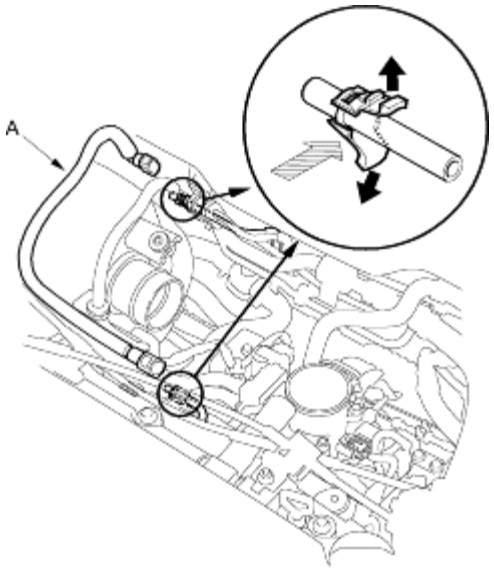
1. 1. Check the contact area (A) of the pipe (B) for dirt and damage, and clean if necessary.

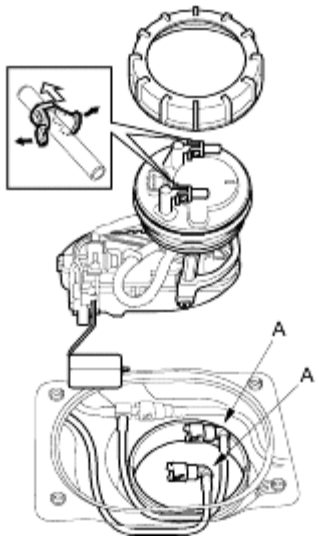


2. 2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed pipe.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the pipe.



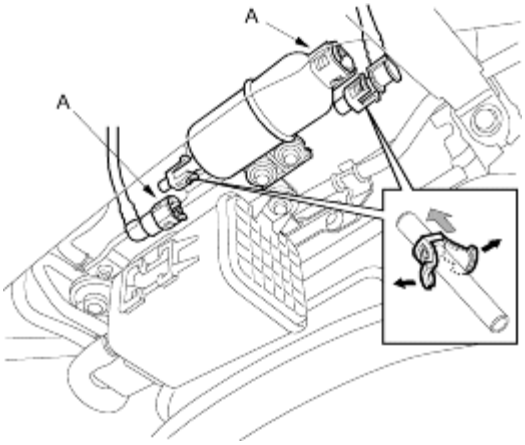
1. 3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating pipe.





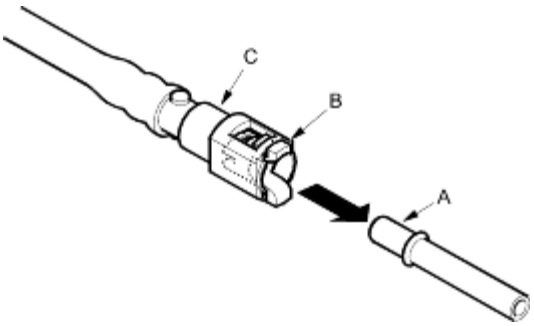
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation (cont'd)

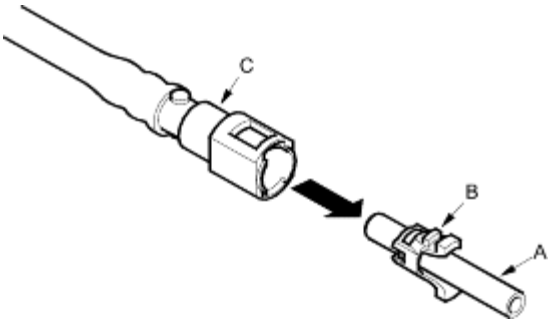


1. 4. Align the quick-connect fittings with the pipe (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the pipe until both retainer pawls lock with a clicking sound.
   NOTE: If it is hard to connect, put a small amount of new engine oil on the pipe end.

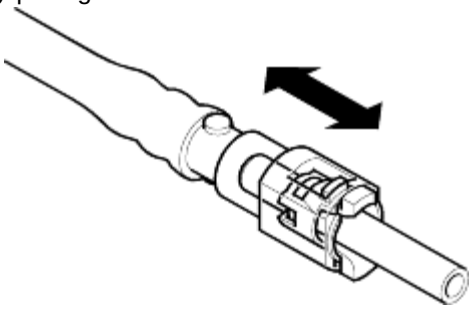
Connection with new retainer:



Reconnection to existing retainer:



1. 5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.

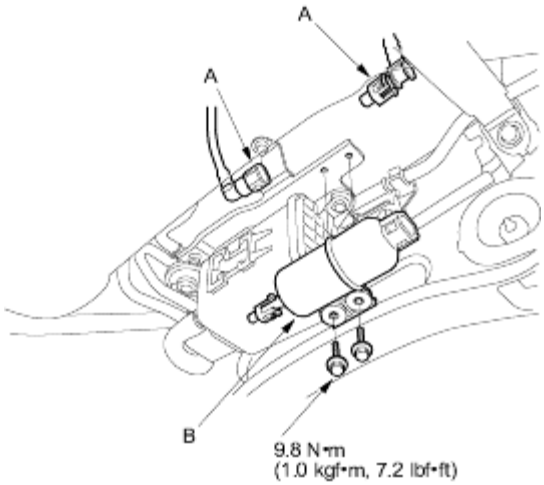


2. 6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

Fuel Filter Replacement

1. 1. The fuel filter should be replaced whenever the fuel pressure drops below the specified value (270-320 kPa, 2.8-3.3 kgf/cm2, 40-47 psi) after making sure that the fuel pump and the fuel pressure regulator are OK.
   2. Relieve fuel pressure (see page 11-130).
   3. Disconnect the hose and quick-connect fittings (A) (see page 11-293).

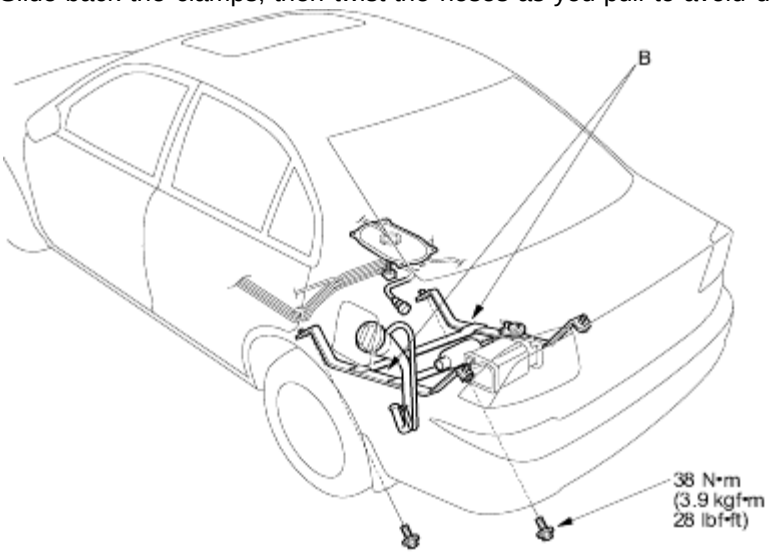


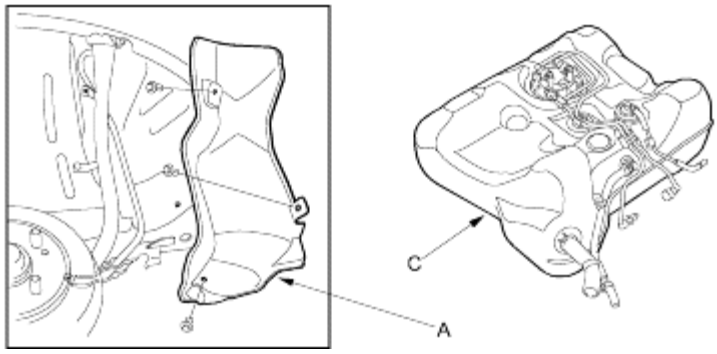
2. 3. Remove the fuel filter (B).
   4. Install the part in the reverse order of removal

Fuel Supply System

Fuel Tank Replacement

1. 1. Relieve the fuel pressure (see page 11-130).
   2. Drain the fuel tank: Remove the fuel pump (see page 11-139). Using a hand pump, hose and container suitable for gasoline, draw the fuel from the fuel tank.
   3. Jack up the vehicle, and support it with jackstands.
   4. Remove the fuel pipe cover (A). Disconnect the fuel vapour hose and quick-connect fittings.
      Disconnect the hoses. Slide back the clamps, then twist the hoses as you pull to avoid damaging them.

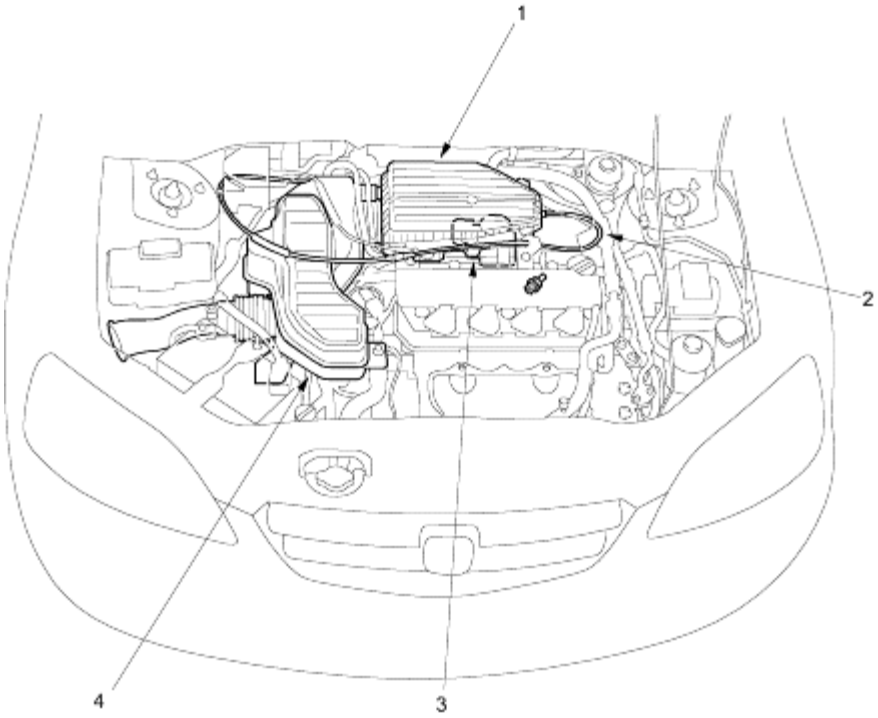




2. 5. Place a jack, or other support, under the tank.
   6. Remove the strap bolts, and let the strap (B) fall free.
   7. Remove the fuel tank (C). If it sticks to the undercoat on its mount, carefully pry it off the mount.
   8. Install the remaining parts in the reverse order of removal.

Intake Air System

Component Location Index

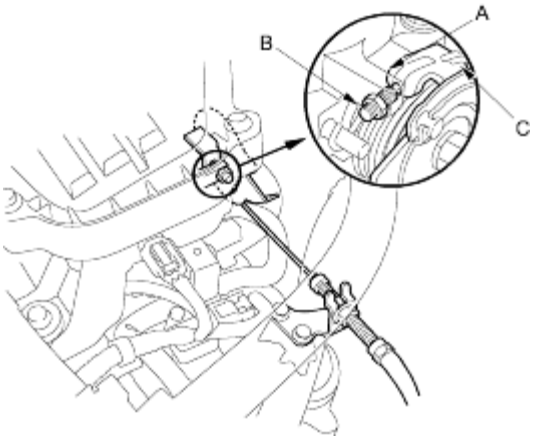


1. AIR CLEANER
   Replacement, page 11-146
   AIR CLEANER ELEMENT
   Replacement, page 11-147
2. THROTTLE CABLE
   Adjustment, page 11-149
   Removal/Installation, page 11-150
3. THROTTLE BODY
   Test, page 11-299
   Removal/Installation, page 11-151
   Disassembly/Reassembly, page 11-152
4. RESONATOR
   Replacement, page 11-148

Intake Air System

Throttle Body Test

1. 1. Check the throttle cable operation. The cable should operate without binding or sticking.
   - If the cable operates OK, go to step 2.
   - If the cable binds or sticks, check the throttle cable and its routing. If it is faulty, re-route it or replace it and adjust it (see page 11-150), then go to step 2.
2. 2. Operate the throttle lever by hand to see if the throttle valve and/or shaft are too loose or too tight.
   - If there is excessive play in the throttle valve shaft or the throttle valve binds at the fully closed position, replace the throttle body.
   - If the throttle valve and shaft are OK, go to step 3.
3. 3. Check for clearance (A) between the throttle stop screw (B) and the throttle lever (C) at the fully closed position. If there is any clearance, replace the throttle body (see page 11-151). Do not adjust the throttle stop screw.



Fuel and Emissions Systems
General Troubleshooting Information

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the Malfunction Indicator Lamp (MIL) on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting.

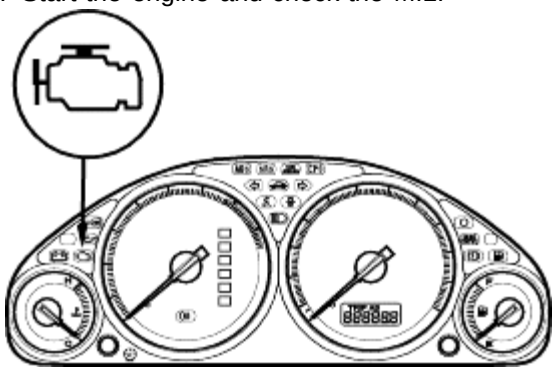
Opens and Shorts

"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. In complex electronics (like ECM's/PCM's) this can sometimes mean something works, but not the way it is supposed to.

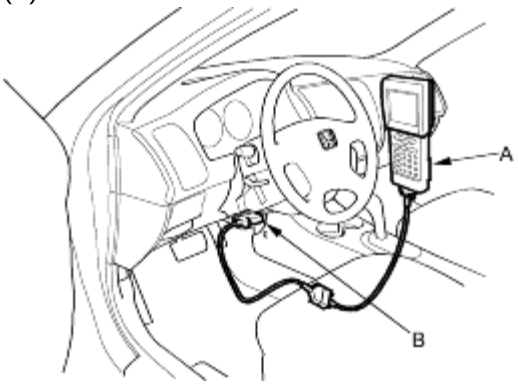
How to Use the PGM Tester or a Scan Tool

If the MIL (Malfunction Indicator Lamp) has come on

1. 1. Start the engine and check the MIL.



1. 2. If the MIL stays on, connect the Honda PGM Tester (A) or a scan tool to the Data Link Connector (DLC) (B) located under the driver's side of the dashboard.



*: The illustration shows LHD model.

2. 3. Turn the ignition switch ON (II).
4. Check the Diagnostic Trouble Code (DTC) and note it. Also check the freeze frame data. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

NOTE:

- Freeze frame data indicates the engine conditions when the first malfunction, misfire or fuel trim malfunction was detected.
- The scan tool and the Honda PGM Tester can read the DTC, freeze frame data, current data, and other Engine Control Module (ECM)/Powertrain Control Module (PCM) data.
- For specific operations, refer to the user's manual that came with the scan tool or Honda PGM Tester.

If the MIL did not come on

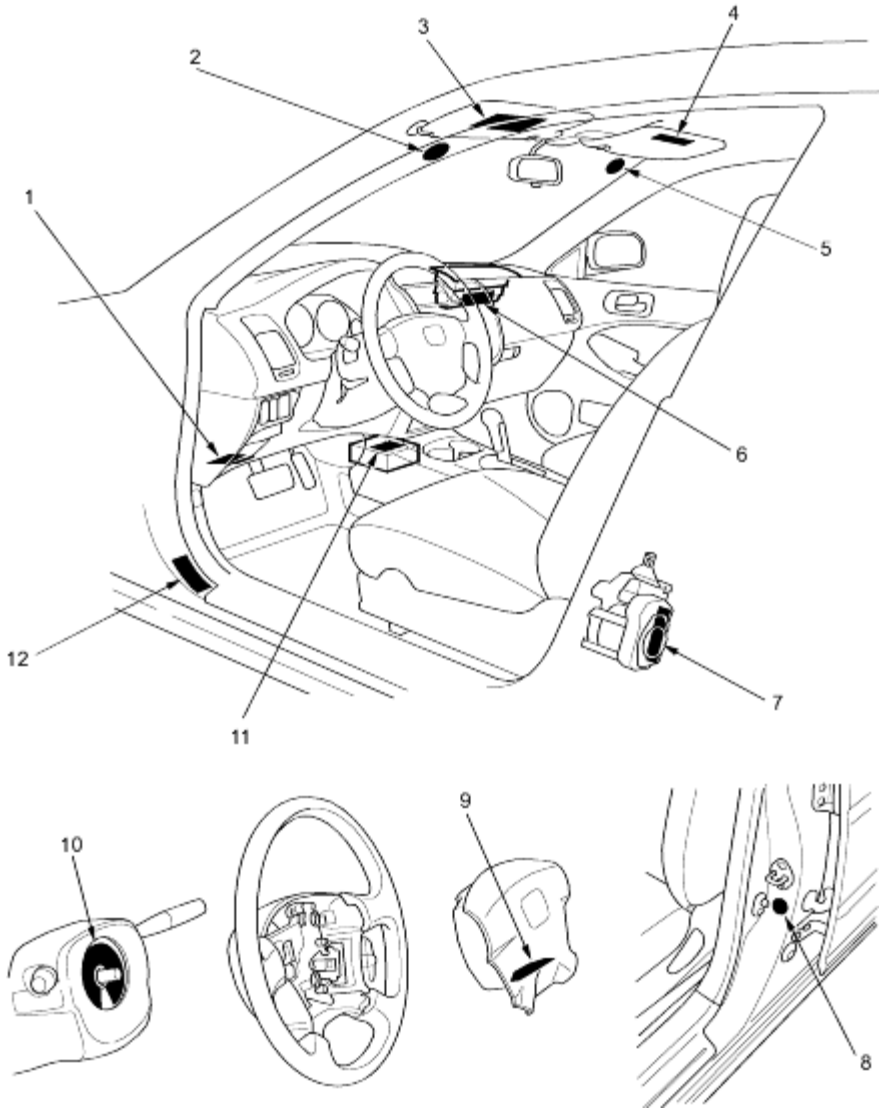
If the MIL did not come on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you cannot duplicate the DTC

Some of the troubleshooting in this section requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you cannot duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

General Information

Warning/Caution Label Locations

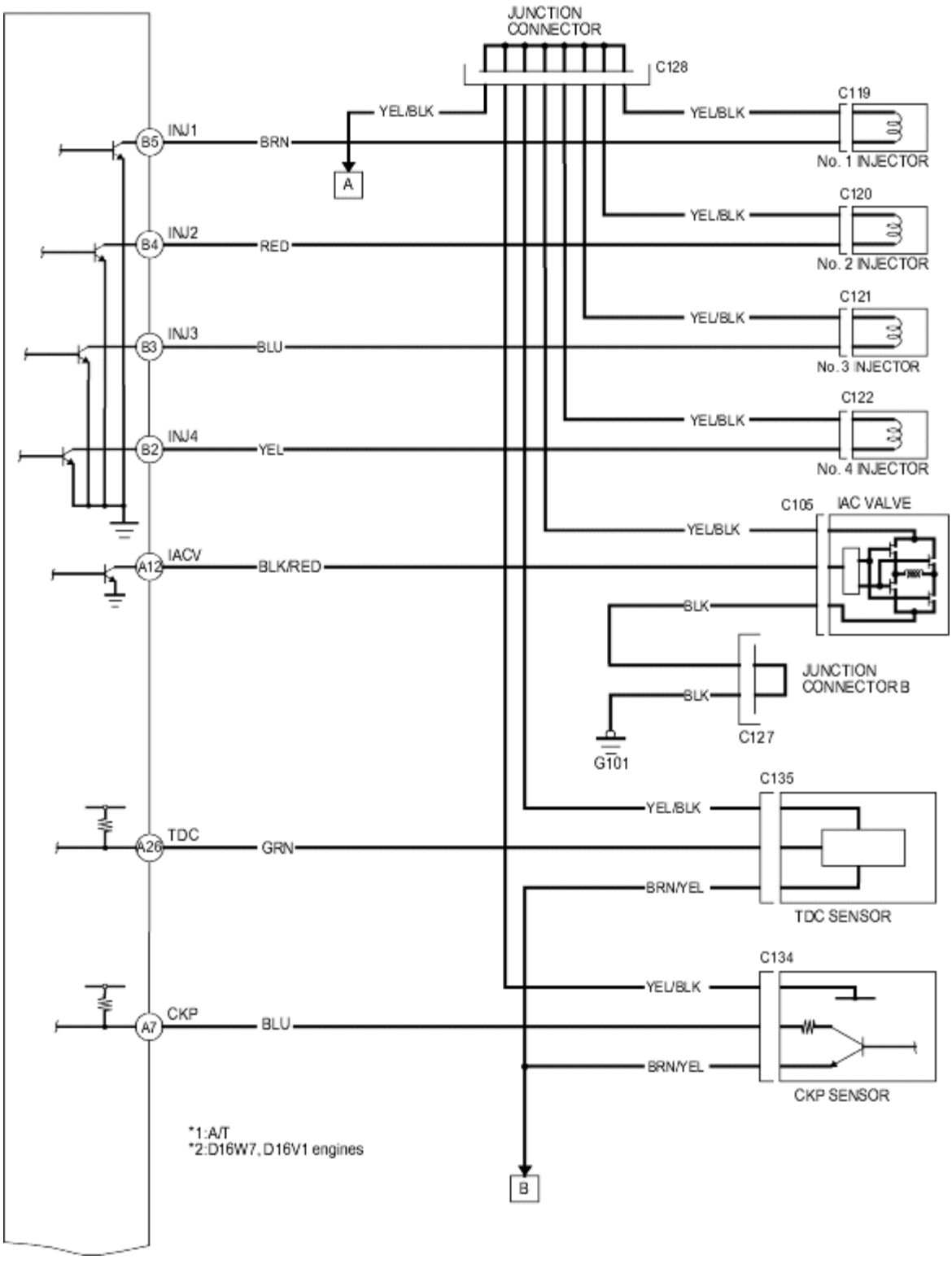


1. STEERING COLUMN NOTICE
2. PASSENGER AIRBAG CHILD SEAT CAUTION
   (KE model)
3. SRS INFORMATION
   (KG, KK, KX models)
4. SRS INFORMATION
   (KE, KN, KQ models)
5. PASSENGER AIRBAG CHILD SEAT CAUTION
   (KG model)
6. FRONT PASSENGER MODULE DANGER
7. FRONT SEATBELT TENSIONER WARNING
8. PASSENGER AIRBAG CHILD SEAT CAUTION
   (KQ model)
9. DRIVE MODULE DANGER
10. CABLE REEL CAUTION
11. MONITOR NOTICE
12. SIDE AIRBAG INFORMATION
    Located on driver's and passenger's door jamb (not shown)

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram

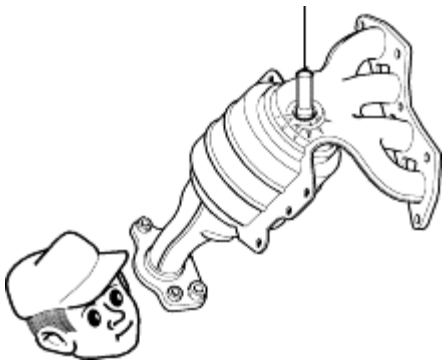


Catalytic Converter System

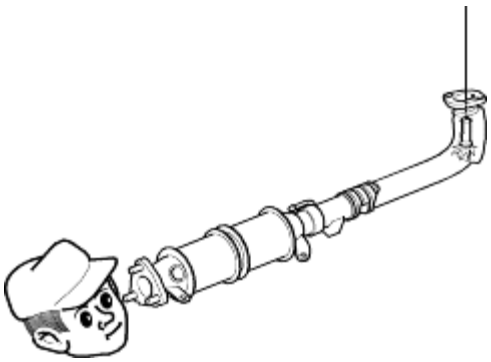
Catalytic Converter Inspection

If excessive exhaust system back-pressure is suspected, remove the TWC from the vehicle.
Using a flashlight, make a visual check for plugging, melting or cracking of the catalyst.
Replace the TWC if any of the visible area is damaged or plugged.

D15Y4, D15Y6, D17A1, D17Z2 engines:



D15Y3 (KV model), D15Y2, D15Y4, D16W8, D17Z1, D17A2, D17Z3, D17A5 (KV model), D17Z4 engines:



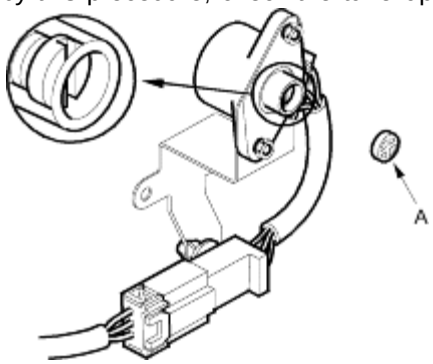
1. 1. Connect a tachometer.
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   3. Check the idle speed (see page 11-285).
   4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
   5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

   Specified CO%:

   For cars with TWC model (Except KV model): 0.1 % maximum

   For cars without TWC model: 1.0 ± 1.0 %

   - If unable to obtain this reading:
     Without TWC model, adjust by turning the adjusting screw (A) of the IMA.
     With TWC model, see DTC troubleshooting index.
   - If unable to obtain a CO reading of specified % by this procedure, check the tune-up condition.



EGR System
DTC Troubleshooting

DTC 12: EGR Insufficient Flow

1. 1. Reset the ECM/PCM (see page 11-168).
   2. Jump the SCS line (see step 2 on page 11-167).
   3. Test-drive necessary: Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle. Drive the vehicle on the road for about 10 minutes. Try to keep the engine speed in the 1,700-2,500 rpm (min-1) range.

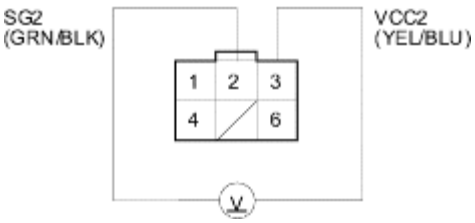
Is the MIL on and does it indicate DTC 12?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the EGR valve 6P connector.
   6. Turn the ignition switch ON (II).
   7. At the harness side, measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

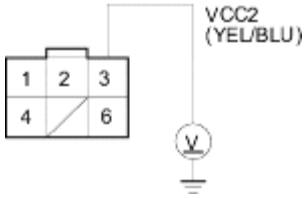
Is there about 5 V?

YES - Go to step 13.

NO - Go to step 8.

1. 8. Measure voltage between the EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

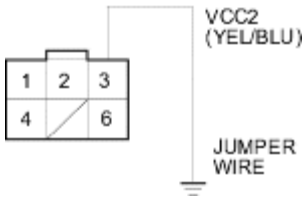
Is there about 5 V?

YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10).

NO - Go to step 9.

2. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Connect the EGR valve 6P connector terminal No. 3 and body ground with a jumper wire.

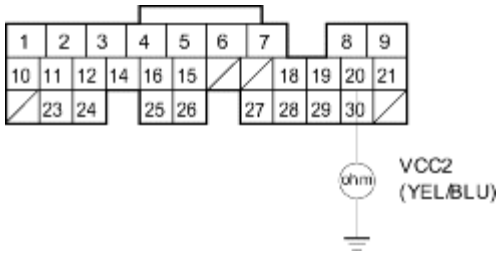
EGR VALVE 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

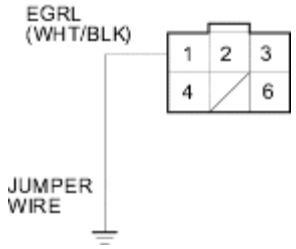
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A20). ■

EGR System
DTC Troubleshooting (cont'd)

1. 13. Turn the ignition switch OFF.
14. Disconnect ECM/PCM connector A (31P).
15. Connect the EGR valve 6P connector terminal No. 1 and body ground with a jumper wire.

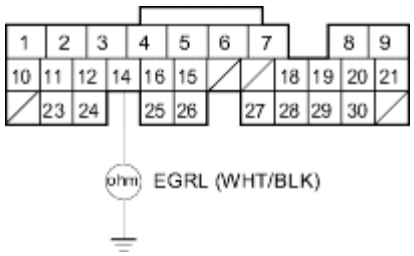
EGR VALVE 6P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminals A13 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

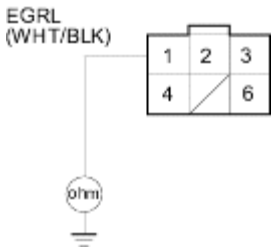
Is there continuity?

YES - Go to step 17.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A13). ■

17. Check for continuity between the EGR valve 6P connector terminal No. 1 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

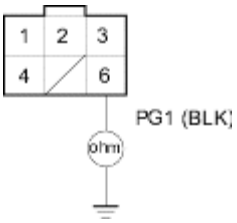
Is there continuity?

YES - Repair short in the wire between the EGR valve and the ECM/PCM (A13). ■

NO - Go to step 18.

18. Check for continuity between the EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

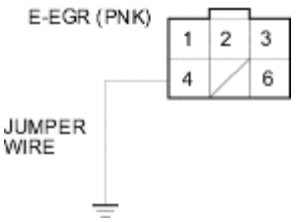
Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the EGR valve and the G101. ■

19. Disconnect ECM/PCM connector B (24P).
20. Connect EGR valve 6P connector terminal No. 4 and body ground with a jumper wire.

EGR VALVE 6P CONNECTOR

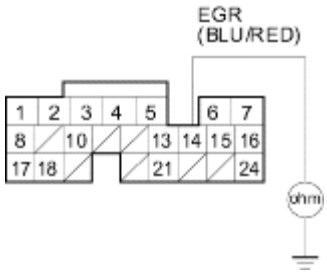


Wire side of female terminals

EGR System
DTC Troubleshooting (cont'd)

1. 21. Check for continuity between ECM/PCM connector terminal B14 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

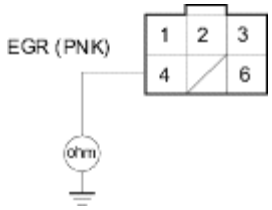
Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (B14). ■

22. Check for continuity between the EGR valve 6P connector terminal No. 4 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

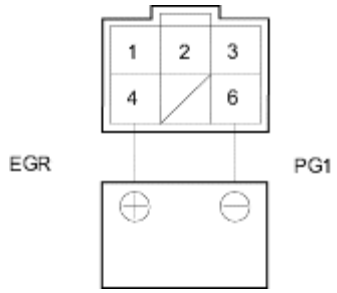
YES - Repair short in the wire between the EGR valve and the ECM/PCM (B14). ■

NO - Go to step 23.

23. Reconnect the ECM/PCM connector A (31P) and B (24P).
24. Connect the battery positive terminal to the EGR valve 6P connector terminal No. 4.

1. 25. Start the engine and let it idle, then connect the battery negative terminal to the EGR valve 6P connector terminal No. 6.

EGR VALVE 6P CONNECTOR



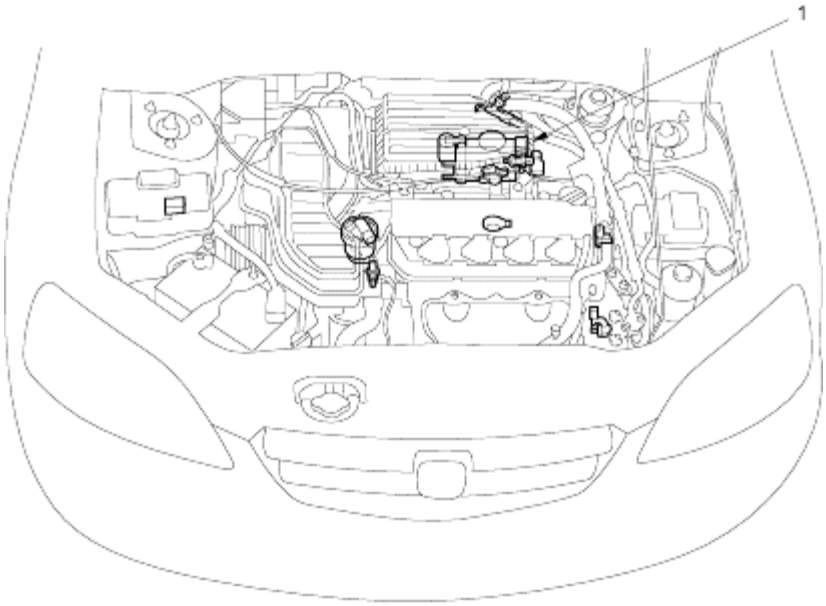
Terminal side of male terminals

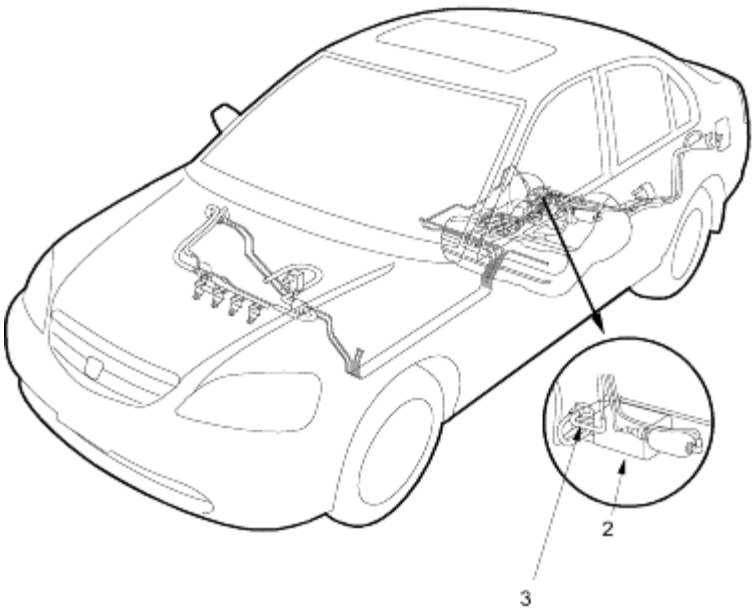
Does the engine stall or run rough?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the EGR valve. ■

Evaporative Emission Control System
Component Location Index





1. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
   Troubleshooting, page 11-305
2. EVAPORATIVE EMISSION (EVAP) CANISTER
   Troubleshooting, page 11-305
3. EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
   Test, page 11-307

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting

Except D15Y3 (PA, KW, KT, KN models), D16W9 (PA model), D17A5 (KN model) engines

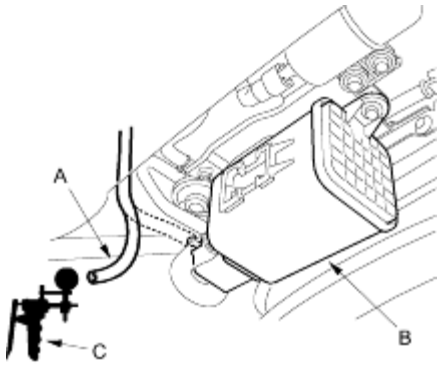
1. 1. Inspect the No. 4 ACG (10A) fuse in the under-dash fuse/relay box.

Is fuse OK?

YES - Go to step 2.

NO - Replace the fuse, and recheck. ■

2. 2. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum pump/gauge (C) to the hose.



3. 3. Start the engine and let it idle.

NOTE: Engine coolant temperature must be below 70°C (158°F).

4. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

YES - Go to step 5.

NO - Go to step 10.

4. 5. Disconnect the EVAP canister purge valve 2P connector.

6. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

YES - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

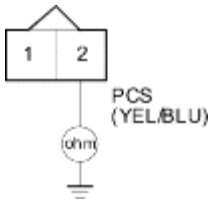
NO - Go to step 7.

5. 7. Turn the ignition switch OFF.

8. Disconnect ECM/PCM connector B (24P).

1. 9. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

10. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for vacuum at the vacuum hose after starting the engine.
12. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

YES - Go to step 23.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Inspect the vacuum hose routing.

Is the vacuum hose OK?

YES - Go to step 15.

NO - Repair the vacuum hose. ■

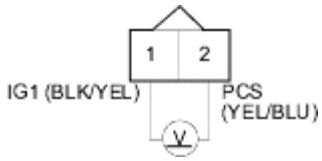
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting (cont'd)

1. 17. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

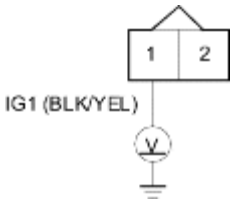
Is there any voltage?

YES - Replace the EVAP canister purge valve. ■

NO - Go to step 18.

18. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

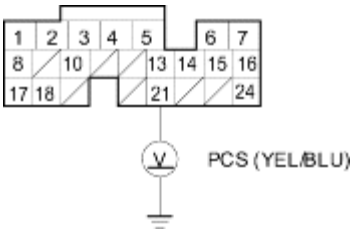
YES - Go to step 19.

NO - Repair open in the wire between No. 4 ACG (10A) fuse in the under-dash fuse/relay box and the EVAP canister purge valve. ■

19. Turn the ignition switch OFF.
20. Reconnect the EVAP canister purge valve 2P connector.
21. Turn the ignition switch ON (II).

1. 22. Measure voltage between ECM/PCM connector terminals B21 and body ground.

ECM/PCM CONNECTOR B (24P)



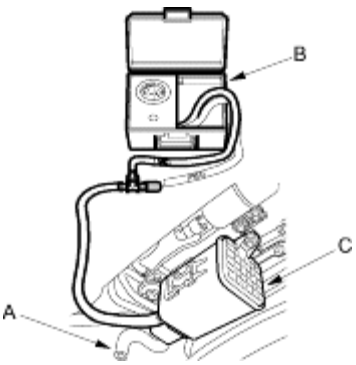
Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

23. Reconnect the vacuum hose to the EVAP canister.
24. Remove the fuel fill cap.
25. Disconnect the purge air hose (A) from the EVAP canister and connect a vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) (B) to EVAP canister (C).



26. Start the engine and raise speed to 3,000 rpm (min-1).

Does vacuum appear on gauge within 2 minute?

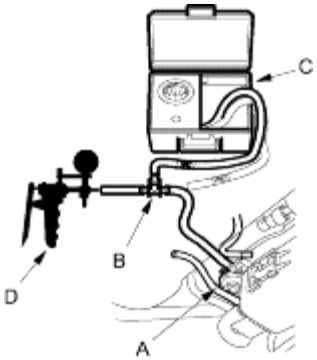
YES - When vacuum appears, evaporative emission controls are OK. Check the EVAP two way valve test (see page 11-307). ■

NO - Replace the EVAP canister. ■

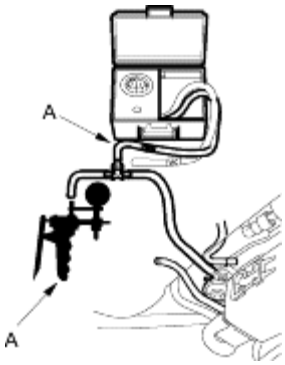
Evaporative Emission Control System

EVAP Two Way Valve Test

1. 1. Remove the fuel cap.
   2. Remove the vapour line from the EVAP two way valve (A) on the fuel tank, and connect it to a T-fitting (B) from the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) (C) and the vacuum pump/gauge (D) as shown.



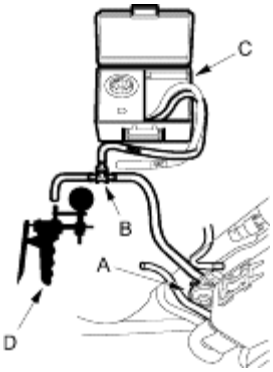
2. 3. Apply vacuum slowly and continuously while watching the gauge. The vacuum should stabilise momentarily at 0.7-2.0 kPa (5-15 mm Hg, 0.2-0.6 in.Hg).
   If the vacuum stabilises (valve opens) below 0.5 kPa (5 mm Hg, 0.2 in.Hg), or above 2.0 kPa (15 mmHg, 0.6 in.Hg), install a new valve and retest.
   4. Move the vacuum pump/gauge hose (A) from the vacuum fitting to the pressure fitting, and move the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) hose (B) from the vacuum side to the pressure side as shown.



1. 5. Slowly pressurise the vapour line while watching the gauge. The pressure should stabilise momentarily above 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg).
   - If the pressure momentarily stabilises (valve opens) above 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg), the valve is OK.
   - If the pressure stabilises below 1.3 kPa (10 mm Hg, 0.4 in.Hg), or above 4.7 kPa (35 mm Hg, 1.4 in.Hg), install a new valve and retest.

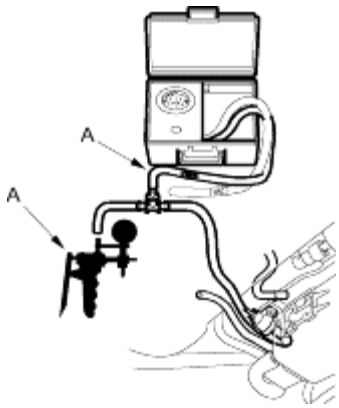
Evaporative Emission Control System
EVAP Two Way Valve Test (cont'd)

1. 1. Remove the fuel fill cap.
2. 2. Remove the vapour line from the EVAP two way valve (A) on the fuel tank, and connect it to a T-fitting (B) from the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) (C) and the vacuum pump/gauge (D) as shown.



3. 3. Apply vacuum slowly and continuously while watching the gauge. The vacuum should stabilise momentarily at 0.7-2.0 kPa (5-15 mm Hg, 0.2-0.6 in.Hg).
   If the vacuum stabilises (valve opens) below 0.5 kPa (5 mm Hg, 0.2 in.Hg), or above 2.0 kPa (15 mmHg, 0.6 in.Hg), install a new valve and retest.

1. 4. Move the vacuum pump/gauge hose (A) from the vacuum fitting to the pressure fitting, and move the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) hose (B) from the vacuum side to the pressure side as shown.



2. 5. Slowly pressurise the vapour line while watching the gauge. The pressure should stabilise momentarily above 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg).
   - If the pressure momentarily stabilises (valve opens) at 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg), the valve is OK.
   - If the pressure stabilises below 1.3 kPa (10 mm Hg, 0.4 in.Hg), or above 4.7 kPa (35 mm Hg, 1.4 in.Hg), install a new valve and retest.

5-door
(KE model)

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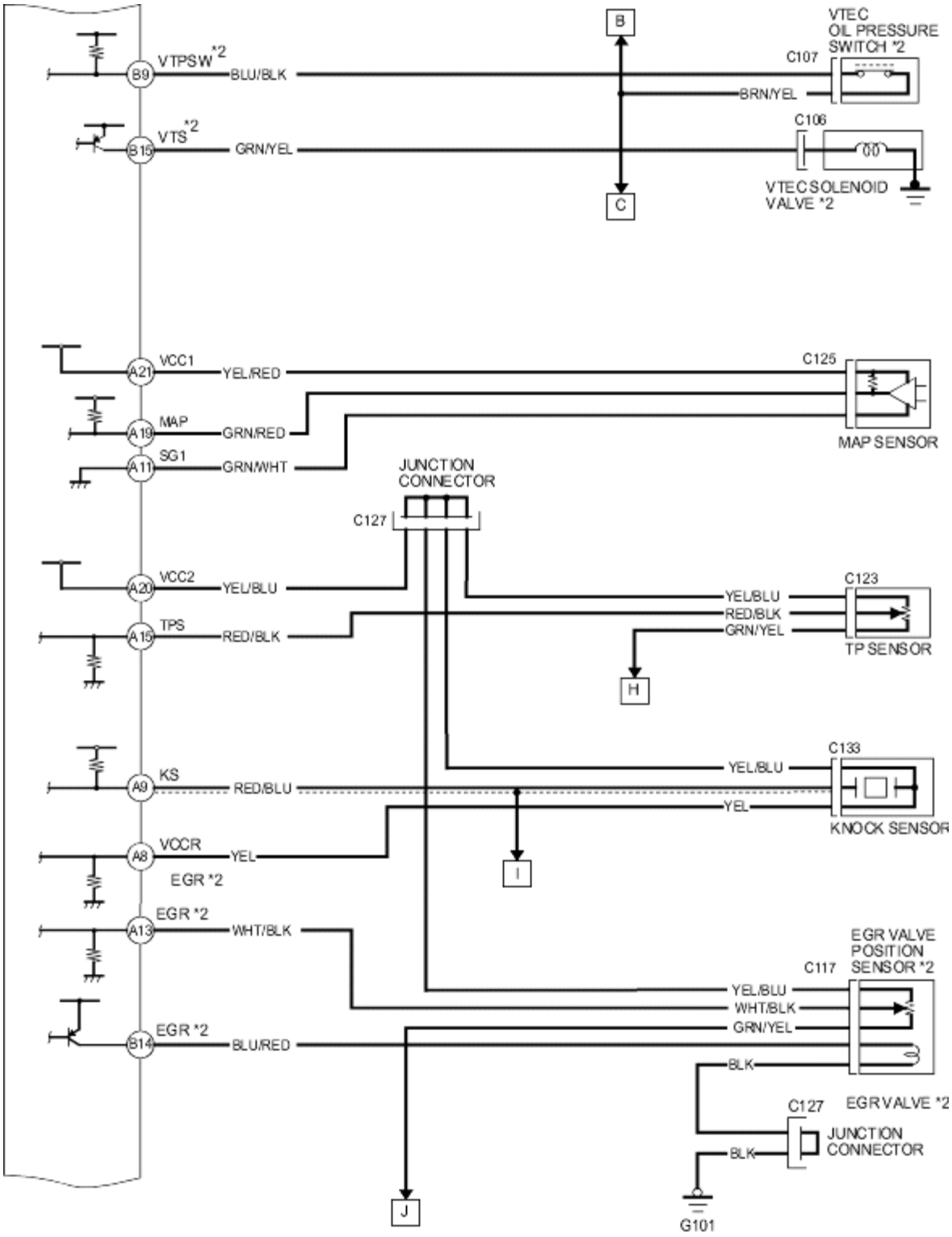
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Fuel and Emissions Systems

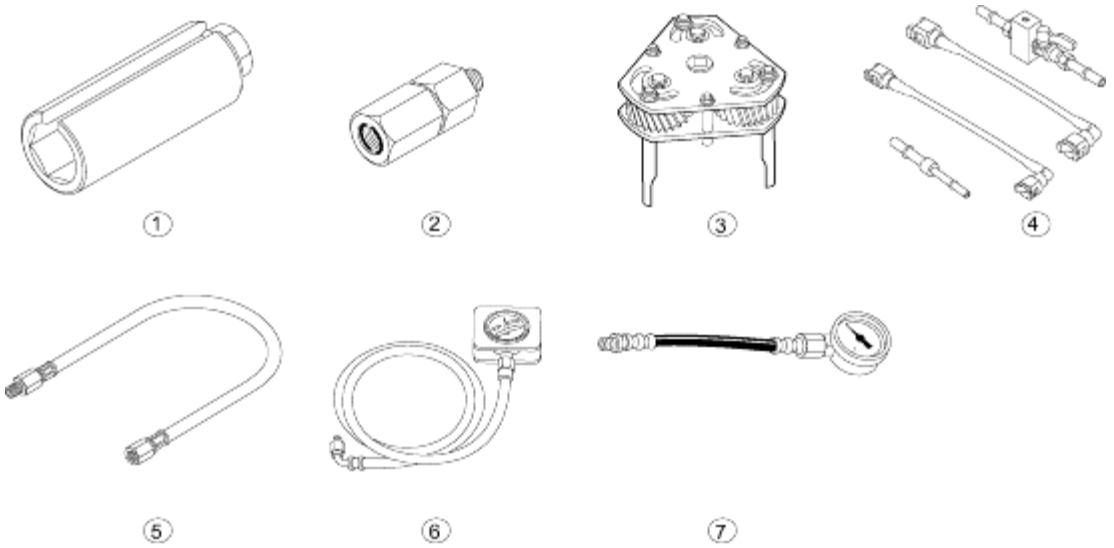
System Descriptions (cont'd)



Fuel and Emissions Systems

Special Tools

Ref. No.	Tool Number	Description	Qty
(1)	07LAA-PT50101	O2 Sensor Socket Wrench	1
(2)	07NAJ-P070100	Oil Pressure Gauge Attachment	1
(3)	07WAA-0010100	Adjustable Ring Wrench	1
(4)	07ZAJ-S5A0100	Fuel Pressure Gauge Set	1
(5)	07ZAJ-S5A0200	Hose, Oil Pressure	1
(6)	07406-0070001	Low Pressure Gauge	1
(7)	07406-0040002	Fuel Pressure Gauge	1



Fuel and Emissions Systems
General Troubleshooting Information

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the Malfunction Indicator Lamp (MIL) on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting.

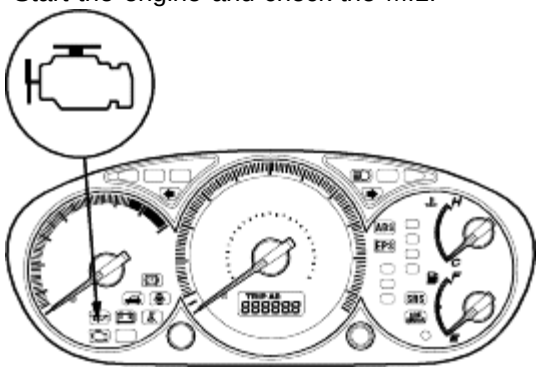
Opens and Shorts

"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. In complex electronics (like ECM's/PCM's) this can sometimes mean something works, but not the way it is supposed to.

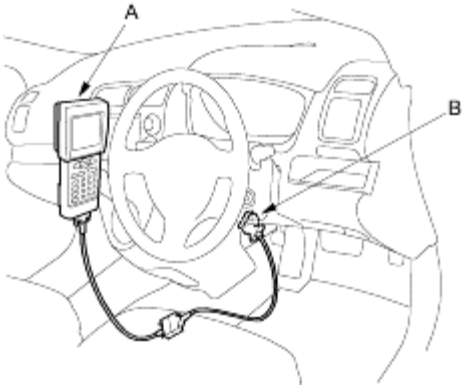
How to Use the PGM Tester or a Scan Tool

If the MIL (Malfunction Indicator Lamp) has come on

1. 1. Start the engine and check the MIL.



2. 2. If the MIL stays on, connect the Honda PGM Tester (A) or a scan tool to the Data Link Connector (DLC) (B) located under the driver's side of the dashboard.



2. 3. Turn the ignition switch ON (II).
4. Check the Diagnostic Trouble Code (DTC) and note it. Also check the freeze frame data. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

NOTE:

- Freeze frame data indicates the engine conditions when the first malfunction, misfire or fuel trim malfunction was detected.
- The scan tool and the Honda PGM Tester can read the DTC, freeze frame data, current data, and other Engine Control Module (ECM)/Powertrain Control Module (PCM) data.
- For specific operations, refer to the user's manual that came with the scan tool or Honda PGM Tester.

If the MIL did not come on

If the MIL did not come on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you cannot duplicate the DTC

Some of the troubleshooting in this section requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you cannot duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

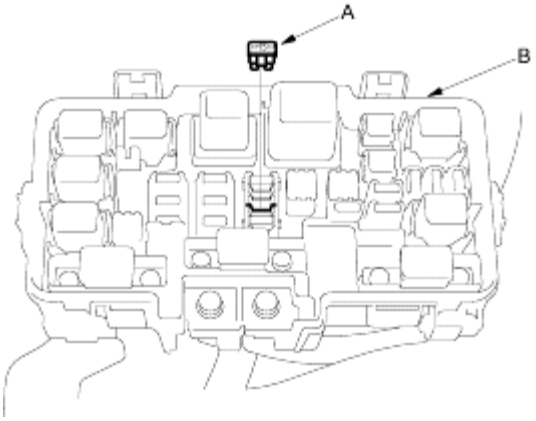
Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Reset the ECM/PCM

You can reset the ECM/PCM in either of 2 ways:

- Use the scan tool or Honda PGM Tester to clear the ECM's/PCM's memory.
  See the scan tool or Honda PGM Tester user's manuals for specific instructions.
- Turn the ignition switch OFF, and remove the No. 6 ECU (ECM/PCM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



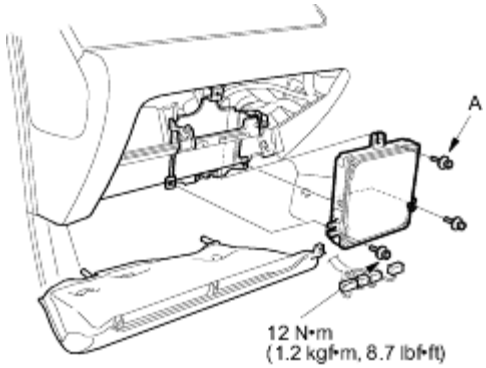
How to End a Troubleshooting Session (required after any troubleshooting)

1. 1. Reset the ECM/PCM as described above.
   2. Turn the ignition switch OFF.
   3. Disconnect the scan tool or Honda PGM Tester from the DLC.
      NOTE: The ECM/PCM is part of the immobiliser system. If you replace the ECM/PCM, it will have a different immobiliser code. In order for the engine to start, you must rewrite the immobiliser code with the Honda PGM Tester.

How to Remove the ECM/PCM for Testing

If the inspection for a trouble code requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it:

1. 1. Remove the passenger's dashboard lower cover (see page 20-220), the passenger's kick panel (see page 20-206), and the glove box (see page 20-220).
   2. Remove the ECM/PCM mounting bolt (A) and the bracket.



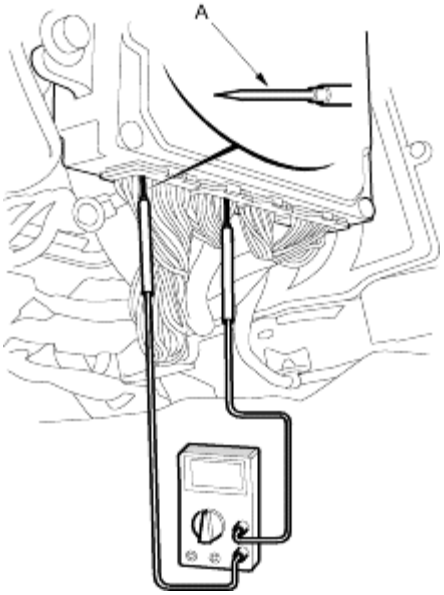
2. 3. Remove the ECM/PCM.

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the ECM/PCM

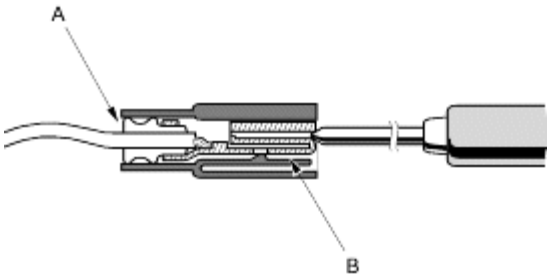
1. 1. Gently slide the sharp tester probe (A) into the connector from wire side until it touches the end of the wire terminal.



2. 2. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



How to Substitute the ECM/PCM

1. 1. Remove the ECM/PCM from the vehicle.
   2. Install a known-good ECM/PCM in the vehicle.
   3. Rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester. It allows you to start the engine.
   4. After completing your tests, reinstall the original ECM/PCM and rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester again.

Fuel and Emissions Systems

DTC Troubleshooting Index

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P0107	-	3-1 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 11-359)
P0108	-	3-2 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 11-360)
P0112	-	10-1 (10)	-	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	(see page 11-361)
P0113	-	10-2 (10)	-	Intake Air Temperature (IAT) Sensor Circuit High Voltage	(see page 11-362)
P0117	-	6-1 (6)	-	Engine Coolant Temperature (ECT) Sensor Circuit Low Voltage	(see page 11-363)
P0118	-	6-2 (6)	-	Engine Coolant Temperature (ECT) Sensor Circuit High Voltage	(see page 11-364)
P0122	-	7-1 (7)	-	Throttle Position (TP) Sensor Circuit Low Voltage	(see page 11-365)
P0123	-	7-2 (7)	-	Throttle Position (TP) Sensor Circuit High Voltage	(see page 11-367)
P0131	-	1-1 (1)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Circuit Low Voltage	(see page 11-368)
P0132	-	1-2 (1)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Circuit High Voltage	(see page 11-369)
P0133	P0133	61-1 (61)	T61-1	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Slow Response	(see page 11-370)
P0135	-	41-2 (41)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Heater Circuit Malfunction	(see page 11-371)
P0137	P0137	63-1 (63)	T63-9	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit Low Voltage	(see page 11-373)
P0138	P0138	63-2 (63)	T63-9	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit High Voltage	(see page 11-374)
P0139	P0139	63-3 (63)	T63-9	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Slow Response	(see page 11-375)
P0141	-	65-2 (65)	-	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Heater Circuit Malfunction	(see page 11-376)
P0171	P0171	45-2 (45)	-	Fuel system Too Lean	(see page 11-378)
P0172	P0172	45-1 (45)	-	Fuel system Too Rich	(see page 11-378)
P0300 and some of P0301 P0302 P0303 P0304	-	71-1 (71) 72-1 (72)	-	Random Misfire	(see page 11-379)

		73-1 (73) 74-1 (74)			

*: These DTCs will be indicated by the blinking of the Malfunction Indicator Lamp (MIL) when SCS short connector is connected.

**: The D indicator light and the Malfunction Indicator Lamp (MIL) may come on simultaneously.

*1: D16W7, D16V1 engines

*2: A/T

*3: M/T

Fuel and Emissions Systems
DTC Troubleshooting Index (cont'd)

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P0301	P0301	71-1(71)	T71-1	No. 1 Cylinder Misfire	(see page 11-380)
P0302	P0302	72-1(72)	T72-1	No. 2 Cylinder Misfire	(see page 11-380)
P0303	P0303	73-1(73)	T73-1	No. 3 Cylinder Misfire	(see page 11-380)
P0304	P0304	74-1(74)	T74-1	No. 4 Cylinder Misfire	(see page 11-380)
P0325	-	23-1 (23)	-	Knock Sensor Circuit Malfunction	(see page 11-385)
P0335	-	4-1 (4)	-	Crankshaft Position (CKP) Sensor No Signal	(see page 11-388)
P0336	-	4-2 (4)	-	Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 11-388)
P0401	P0401	80-1 (80)	T80-1	Exhaust Gas Recirculation (EGR) Insufficient Flow	(see page 11-454)
P0420	P0420	67-1 (67)	T67-1	Catalyst System Efficiency Below Threshold	(see page 11-453)
P0443	-	92-4 (92)	-	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	(see page 11-461)
P0500*3	-	17-1 (17)	-	Vehicle Speed Sensor (VSS) Circuit Malfunction	(see page 11-390)
P0501*2	-	17-2*2	-	Vehicle Speed Sensor (VSS) Range/Performance	(see page 11-390)
P0563	-	34-2 (34)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	(see page 11-391)
P0600	-	39-1 (39)	-	Serial Communication Link Malfunction	Refer to the Multiplex Control System Troubleshooting (see page 22-273).
P07xx** *2		70-2 (70)*2	-	Automatic Transaxle System Malfunction*2	Refer to the Automatic Transmission DTC Troubleshooting Index
P1107	-	13-1 (13)	-	Barometric Pressure (BARO) Sensor Circuit Low Voltage	(see page 11-393)
P1108	-	13-2 (13)	-	Barometric Pressure (BARO) Sensor Circuit High Voltage	(see page 11-393)
P1259*1	-	22-4 (22)*1	-	VTEC System Malfunction*1	(see page 11-394)
P1324	-	23-2 (23)	-	Knock Sensor Power Source Circuit Low Voltage	(see page 11-387)

*: These DTCs will be indicated by the blinking of the MIL when SCS short connector is connected.

**: The D indicator light and the MIL may come on simultaneously.

*1: D16W7, D16V1 engines

*2: A/T

*3: M/T

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P1361	-	8-2 (8)	-	Top Dead Centre (TDC) Sensor Intermittent Interruption	(see page 11-398)
P1362	-	8-1 (8)	-	Top Dead Centre (TDC) Sensor No Signal	(see page 11-398)
P1491	P1491	12-3 (12)	T12-3	Exhaust Gas Recirculation (EGR) Valve Insufficient Lift	(see page 11-454)
P1498	-	12-2 (12)	-	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	(see page 11-458)
P1519	-	14-3 (14)	-	Idle Air Control (IAC) Valve Circuit Malfunction	(see page 11-417)
P1607	-	0-2	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Circuit Malfunction	(see page 11-399)
P17xx** *2	-	70-3 (70)*2	-	Automatic Transaxle System Malfunction*2	Refer to the Automatic Transmission DTC Troubleshooting Index

*: These DTCs will be indicated by the blinking of the MIL when SCS short connector is connected.

**: The D indicator light and the MIL may come on simultaneously.

*1: D16W7, D16V1 engines

*2: A/T

*3: M/T

Fuel and Emissions Systems
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the Diagnostic Trouble Code (DTC) with the scan tool. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-427).	• Low compression • Intake air leaks • Locked up engine • Slipped/ broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-400).	
Engine will not start (immobiliser indicator light comes on)	Troubleshoot the immobiliser system (see page 22-245).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Check the fuel pressure (see page 11-431).	• Low compression • Intake air leaks • Contaminated fuel
Cold fast idle too low (MIL works OK, no DTCs set)	Check the idle speed (see page 11-425).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-425). 2. Inspect/adjust the throttle cable (see page 11-449). 3. Inspect and test the throttle body (see page 11-445).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-425). 2. Inspect/adjust the throttle cable (see page 11-449). 3. Inspect and test the throttle body (see page 11-445).	Intake air leaks
After warming up idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-420). 2. Inspect and test the throttle body (see page 11-445).	Vacuum hose clogged/cracked/poor connection
After warming up idle speed is above specifications with no load (MIL works OK, no DTCs set)	Troubleshoot the ALT FR signal circuit (see page 11-420).	
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-431). 2. Inspect and test the throttle body (see page 11-445). 3. Inspect/adjust the throttle cable (see page 11-449).	Low compression
Engine stalls (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-431). 2. Check the idle speed (see page	• Intake air leaks • Faulty harness and sensor connections

	11-425). 3. Troubleshoot the brake pedal position switch signal circuit (see page 11-423).	

Fuel and Emissions Systems

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the Engine Control Module (ECM) on vehicles with manual transmissions or the Powertrain Control Module (PCM) on vehicles with automatic transmissions.

Fail-safe Function

When an abnormality occurs in a signal from a sensor, the ECM/PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function

When an abnormality occurs in the ECM/PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis

When an abnormality occurs in the signal from a sensor, the ECM/PCM supplies ground for the Malfunction Indicator Lamp (MIL) and stores the Diagnostic Trouble Code (DTC) in erasable memory. When the ignition is first turned on, the ECM/PCM supplies ground for the MIL for 2 seconds to check the MIL bulb condition.

Two Driving Cycle Detection Method

To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM informs the driver by turning on the MIL.

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Data

You can retrieve data from the ECM/PCM by connecting the scan tool or the Honda PGM Tester to the Data Link Connector (DLC). The items listed in the table below conform to SAE recommended practice. The Honda PGM Tester also reads data beyond that recommended by SAE so that this data may help you find the causes of intermittent problems.

NOTE:

- The "operating values" listed are approximate and may vary depending on the environment and the individual vehicle.
- Unless noted otherwise, "at idle speed" means idling with the engine completely warmed up, A/T in Park or neutral, M/T in neutral position, and the A/C and all accessories turned off.

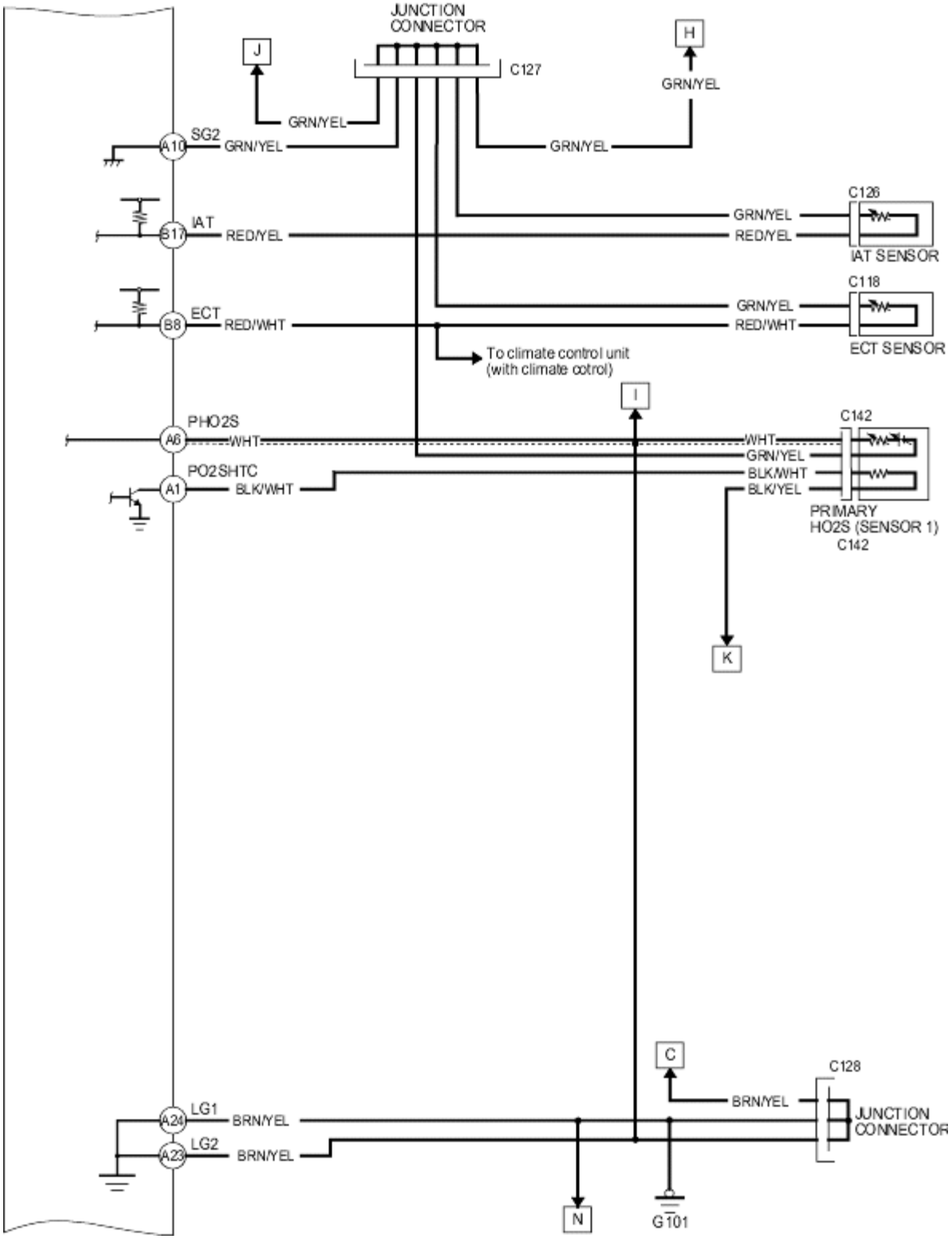
Data	Description	Operating Value	Freeze Data
Diagnostic Trouble Code (DTC)	If the ECM/PCM detects a problem, it will store it as a code consisting of one letter and four numbers. Depending on the problem, an SAE-defined code (P0xxx) or a Honda-defined code (P1xxx) will be output to the tester.	If no problem is detected, there is no output.	YES
Engine Speed	The ECM/PCM computes engine speed from the signals sent from the Crankshaft Position (CKP) sensor. This data is used for determining the time and amount of injected fuel.	Nearly the same as tachometer indication At idle speed: 650±50 rpm (min-1)	YES
Vehicle Speed	The ECM/PCM converts pulse signals from Vehicle Speed Sensor (VSS).	Nearly the same as speedometer indication	YES
Manifold Absolute Pressure (MAP)	The absolute pressure caused in the intake manifold by engine load and speed.	With engine stopped: Nearly the same as atmospheric pressure At idle speed: about 20-34 kPa (150-260 mmHg, 6-10 in.Hg), 0.7-1.1 V	YES
Engine Coolant Temperature (ECT)	The ECT sensor converts coolant temperature into voltage and signals the ECM/PCM. The sensor is a thermistor whose internal resistance changes with coolant temperature. The ECM/PCM uses the voltage signals from the ECT sensor to determine the amount of injected fuel.	With cold engine: Same as ambient temperature and IAT With engine warmed up: about 80-100°C (176-212°F), 0.5-0.8 V	YES

Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1), Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2)	The HO2S detects the oxygen content in the exhaust gas and sends voltage signals to the ECM/PCM. Based on these signals, the ECM/PCM controls the air fuel ratio. When the oxygen content is high (that is, when the ratio is leaner than the stoichiometric ratio), the voltage signal is lower. When the oxygen content is low (that is, when the radio is richer than the stoichiometric ratio), the voltage signal is higher.	0.0-1.25 V At idle speed: about 0.1-0.9 V	NO

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



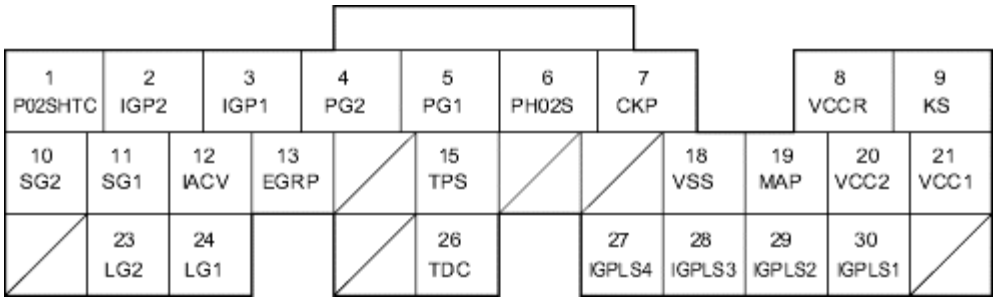
Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Data (cont'd)

Data	Description	Operating Value	Freeze Data
Fuel System Status	Fuel system status is indicated as "open" or "closed". Closed: Based on the HO2S output, the ECM/PCM determines the air/fuel ratio and controls the amount of injected fuel. Open: ignoring HO2S output, the ECM/PCM refers to signals from the Throttle Position (TP), Manifold Absolute Pressure (MAP), Intake Air Temperature (IAT), Barometric Pressure (BARO) and Engine Coolant Temperature (ECT)) sensors to control the amount of injected fuel.	At idle speed: closed	YES
Short Term Fuel Trim	The air/fuel ratio correction coefficient for correcting the amount of injected fuel when the Fuel System Status is "closed". 'When the ratio is leaner than the stoichiometric ratio, the ECM/PCM increases short term fuel trim gradually, and the amount of injected fuel increases. The air/fuel ratio gradually gets richer, causing a lower oxygen content in the exhaust gas. Consequently, the short term fuel trim is lowered, and the ECM/PCM reduces the amount of injected fuel. This cycle keeps the air/fuel ratio close to the stoichiometric ratio when in closed loop status.	0.6-1.5	YES
Long Term Fuel Trim	Long term fuel trim is computed from short term fuel trim and indicates changes occurring in the fuel supply system over a long period. If long term fuel trim is higher than 1.00, the amount of injected fuel must be increased. If it is lower than 1.00, the amount of injected fuel must be reduced.	0.8-1.2	YES
Intake Air Temperature (IAT)	The IAT sensor converts intake air temperature into voltage and signals the ECM/PCM. When intake air temperature is low, the internal resistance of the sensor increases, and the voltage signal is higher.	With cold engine: Same as ambient temperature and ECT	YES
Throttle Position	Based on the accelerator pedal position, the opening angle of the throttle valve is indicated.	At idle speed: about 10 %	YES
Ignition Timing	Ignition timing is the ignition advance angle set by the ECM/PCM. The ECM/PCM matches ignition timing to the driving conditions.	At idle speed: 8°±2° BTDC when the SCS short connector is connected	NO

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1	BLK/WHT	PO2SHTC (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) HEATER CONTROL)	Drives primary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
6	WHT	PHO2S (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S), SENSOR 1)	Detects primary HO2S sensor (sensor 1) signal	With throttle fully opened from idle with fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
7	BLU	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
8	YEL	VCCR (SENSOR VOLTAGE RETURN)	Detects sensor voltage	With ignition switch ON (II): about 5 V With the ignition switch OFF: about 0 V
9	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses With ignition switch ON (II): about 5 V
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
12	BLK/RED	IACV (IDLE AIR CONTROL (IAC) VALVE)	Drives IAC valve	With engine running: duty controlled With ignition switch ON (II): about 5 V
13	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2 V-2.0 V (depending on EGR valve lift)
15	RED/BLK	TPS (THROTTLE POSITION (TP)	Detects TP sensor	With throttle fully open: about 4.8 V

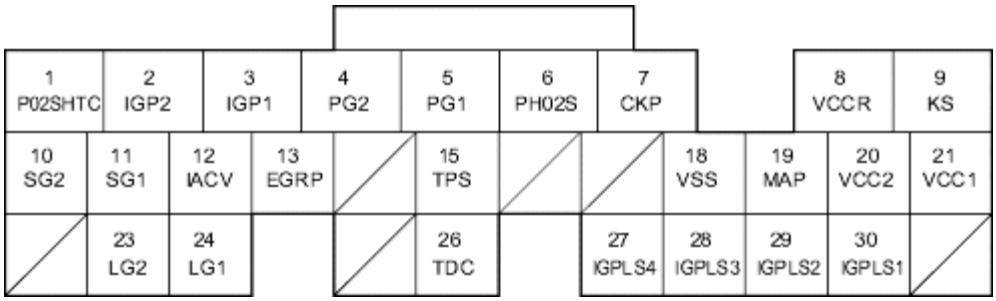
		SENSOR)	signal	With throttle fully closed: about 0.5 V
18	WHT/GRN	VSS (VEHICLE SPEED SENSOR (VSS))	Detects VSS signal	With ignition switch ON (II) and front wheels rotating: cycles 0 V-about 5 V or battery voltage

*1: D16W7, D16V1 engines

*2: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

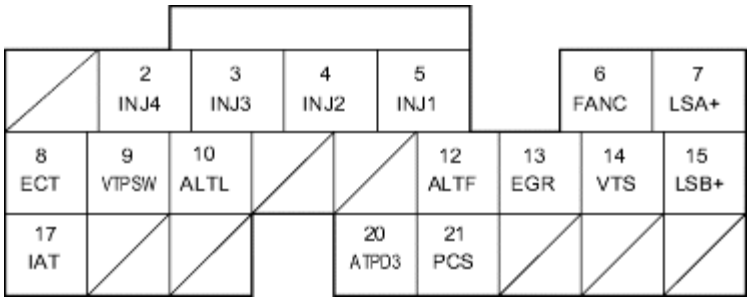
Terminal number	Wire colour	Terminal name	Description	Signal
19	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
23	BRN/YEL	LG2 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
26	GRN	TDC (TOP DEAD CENTRE (TDC) SENSOR)	Detects TDC sensor	With engine running: pulses
27	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
29	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
30	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	

*1: D16W7, D16V1 engines

*2: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	With ignition switch ON (II): battery voltage At idle: duty controlled
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
7*2	RED/BLK	LSA + (A/T PRESSURE CONTROL SOLENOID VALVE A + SIDE	Drives A/T pressure control solenoid valve A	With the ignition switch ON (II): duty controlled
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE (ECT) SENSOR)	Detects ECT sensor signal	With the ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
9*1	BLU/BLK	VTPSW (VTEC OIL PRESSURE SWITCH)	Detects VTEC oil pressure switch signal	At idle: about 0 V
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0 V-5 V (depending on electrical load)
14	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
15*1	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
16*2	BLK/RED	LSB + (A/T PRESSURE CONTROL SOLENOID VALVE B + SIDE	Drives A/T pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1 V-4.8 V (depending on intake air temperature)
21	YEL/BLU	PCS (EVAPORATIVE EMISSION	Drives EVAP canister	With engine running, engine coolant

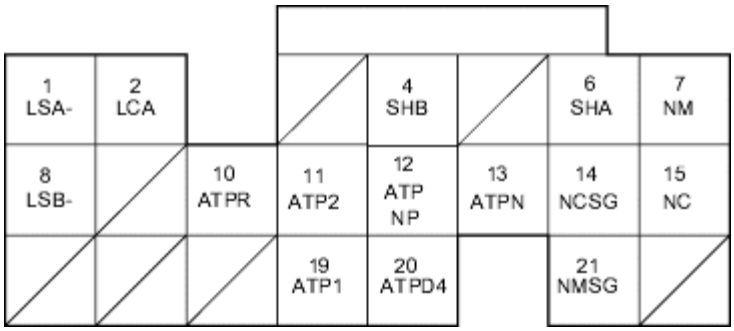
		(EVAP) CANISTER PURGE VALVE)	purge valve	below 70°C (158°F): battery voltage With engine running, engine coolant above 70°C (158°F): duty controlled

*1: D16W7, D16V1 engines

*2: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*2	WHT/BLK	LSA- (A/T PRESSURE CONTROL SOLENOID VALVE A-SIDE)	Ground for A/T pressure control solenoid valve A	
2*2	YEL/BLU	LC (TORQUE CONVERTER CLUTCH SOLENOID VALVE)	Drives torque converter clutch solenoid valve	With lock-up ON: battery voltage With lock-up OFF: about 0 V
4*2	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in 1st, 2nd gears: battery voltage With engine running in 3rd, 4th gears: about 0 V
6*2	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2nd, 3rd gears: battery voltage With engine running in 1st, 4th gears: about 0 V
7*2	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With engine running: pulses
8*2	BRN/WHT	LSB- (A/T PRESSURE CONTROL SOLENOID VALVE B-SIDE	Ground for A/T pressure control solenoid valve B	
9*2	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage
10*2	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V or battery voltage
11*2	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2 POSITION)	Detects transmission range switch 2 position signal	In 2nd position: about 0 V In any other position: about 5 V or battery voltage
12*2	BLU/WHT	ATPNP (TRANSMISSION RANGE SWITCH NEUTRAL/PARK POSITION)	Detects transmission range switch Neutral/Park position signal	In Park or neutral: about 0 V In any other position: about 5 V or battery voltage
13*2	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL POSITION)	Detects transmission range switch Neutral position signal	In Neutral: about 0 V In any other position: about 5 V or battery voltage
14*2	GRN			

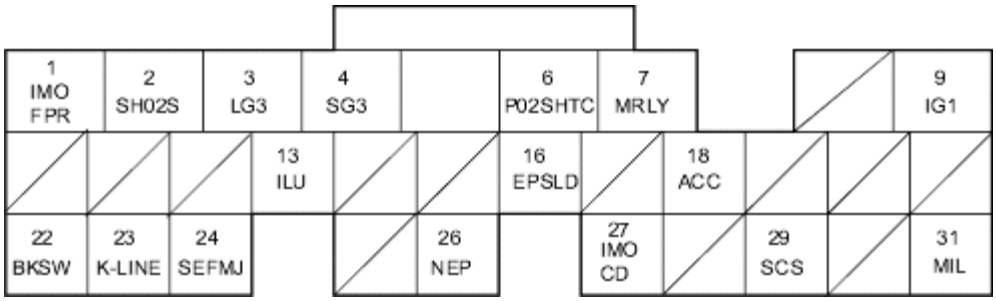
		NCSG (COUNTERSHAFT SPEED SENSOR GROUND)	Ground for countershaft speed sensor	
15*2	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects countershaft speed sensor signals	With ignition switch ON (II), and front wheels rotating: battery voltage
19*2	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1 POSITION)	Detects transmission range switch 1 position signal	In 1st position: about 0 V In any other position: about 5 V or battery voltage
20*2	YEL	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5 V or battery voltage
21*2	WHT/GRN	NMSG (MAINSHAFT SPEED SENSOR GROUND)	Ground for mainshaft speed sensor	

*1: D16W7, D16A1 engines

*2: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for the ECM/PCM control circuit	Less than 1.0 V at all times
4	PNK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
6	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 Power source for the DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
9	YEL/BLK	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
16	LT GRN/BLK	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects power steering load signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage momentarily
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V

				With brake pedal pressed: battery voltage
23	LT BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II): pulses or battery voltage
24	YEL	SEFMJ	Communicates with multiplex control unit	With ignition switch ON (II): about 5 V With engine running under load: pulses
26	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
27	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobiliser signal	
29	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted: about 0 V With the service check signal opened: about 5 V battery voltage
31	GRN/ORN	MIL (MALFUNCTION INDICATOR LAMP)	Drives MIL	With MIL turned ON: about 0 V With MIL turned OFF: battery voltage

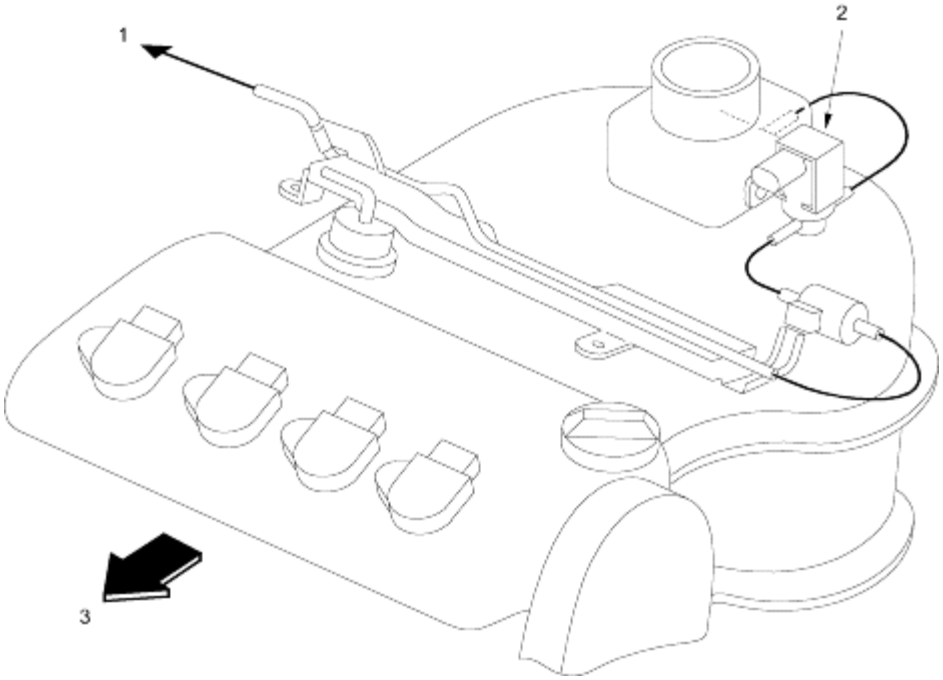
*1: D16W7, D16V1 engines

*2: A/T

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Hose Routing

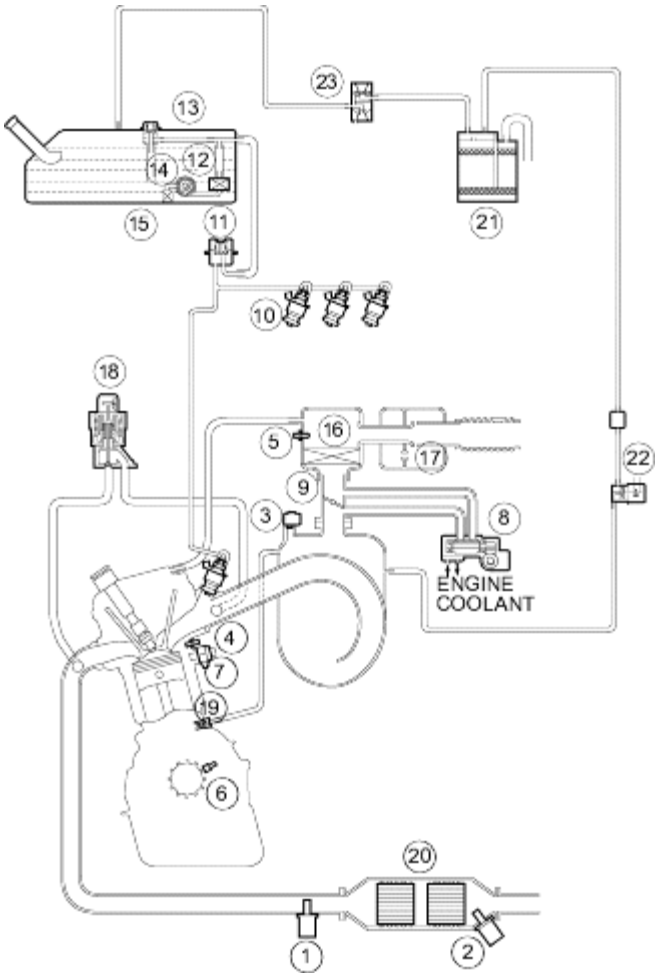


1. To EVAPORATIVE EMISSION (EVAP) CANISTER
2. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
3. FRONT OF VEHICLE

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Distribution



(1) PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)

(2) SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)

(3) MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

(4) ENGINE COOLANT TEMPERATURE (ECT) SENSOR

(5) INTAKE AIR TEMPERATURE (IAT) SENSOR

(6) CRANKSHAFT POSITION (CKP) SENSOR

(7) KNOCK SENSOR

(8) IDLE AIR CONTROL (IAC) VALVE

(9) THROTTLE BODY

(10) INJECTOR

(13) FUEL PRESSURE REGULATOR

(14) FUEL PUMP

(15) FUEL TANK

(16) AIR CLEANER

(17) RESONATOR

(18) EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR

(19) POSITIVE CRANKCASE VENTILATION (PCV) VALVE

(20) THREE WAY CATALYTIC CONVERTER

(21) EVAPORATIVE EMISSION (EVAP) CANISTER

(22) EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE

(11) FUEL PULSATION DAMPER

(12) FUEL FILTER

(23) EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE

Fuel and Emissions Systems

System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energised, and enriches the mixture to assure smooth transition to the A/C mode.

Alternator Control

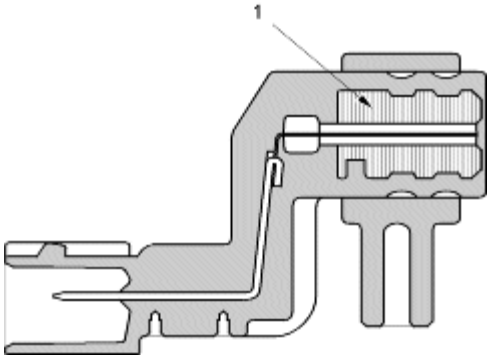
The alternator signals the Engine Control Module (ECM)/Powertrain Control Module (PCM) during charging.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Crankshaft Position (CKP) Sensor

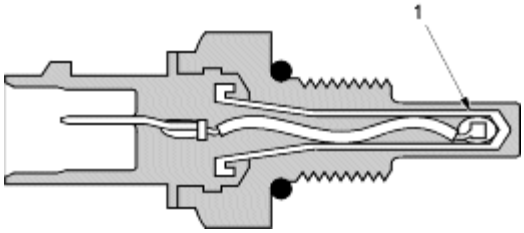
The CKP sensor detects engine speed and determines ignition timing and timing for fuel injection of each cylinder.



1. 1. MAGNET

Engine Coolant Temperature (ECT) Sensor

The ECT sensor is a temperature dependent resistor (thermistor). The resistor of the thermistor decreases as the engine coolant temperature increases.



1. 1. THERMISTOR

Ignition Timing Control

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

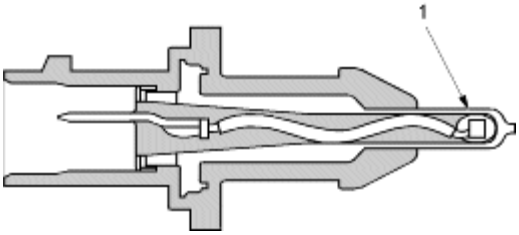
Injector Timing and Duration

The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system, and will set a Diagnostic Trouble Code (DTC).

Intake Air Temperature (IAT) Sensor

The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.

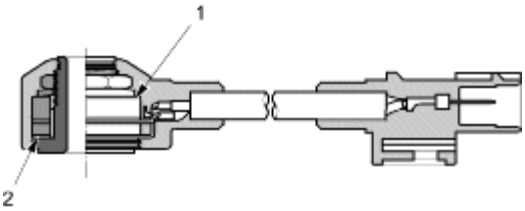


2. 1. THERMISTOR

Fuel and Emissions Systems
System Descriptions (cont'd)

Knock Sensor

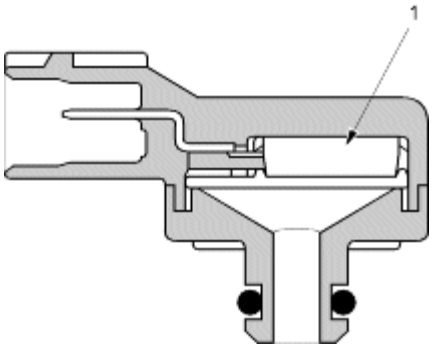
The knock control system adjusts the ignition timing to minimise knock.



1. 1. WEIGHT
   2. PIEZO ELEMENT

Manifold Absolute Pressure (MAP) Sensor

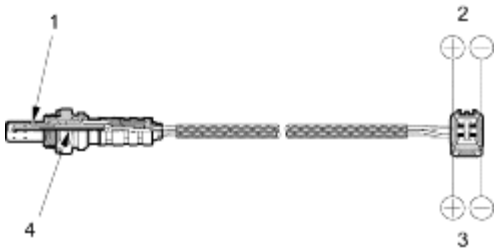
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



2. 1. SENSOR UNIT

Primary Heated Oxygen Sensor (Primary HO2S)

The primary HO2S detects the oxygen content in the exhaust gas and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The primary HO2S is installed in the exhaust manifold. By controlling the air fuel ratio with primary HO2S and secondary HO2S, the deterioration of the primary HO2S can be evaluated by its feedback period. When the feedback period exceeds a certain value during stable driving conditions, the sensor is considered deteriorated and the ECM/PCM sets a DTC.



1. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the Three Way Catalytic Converter (TWC) and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC.



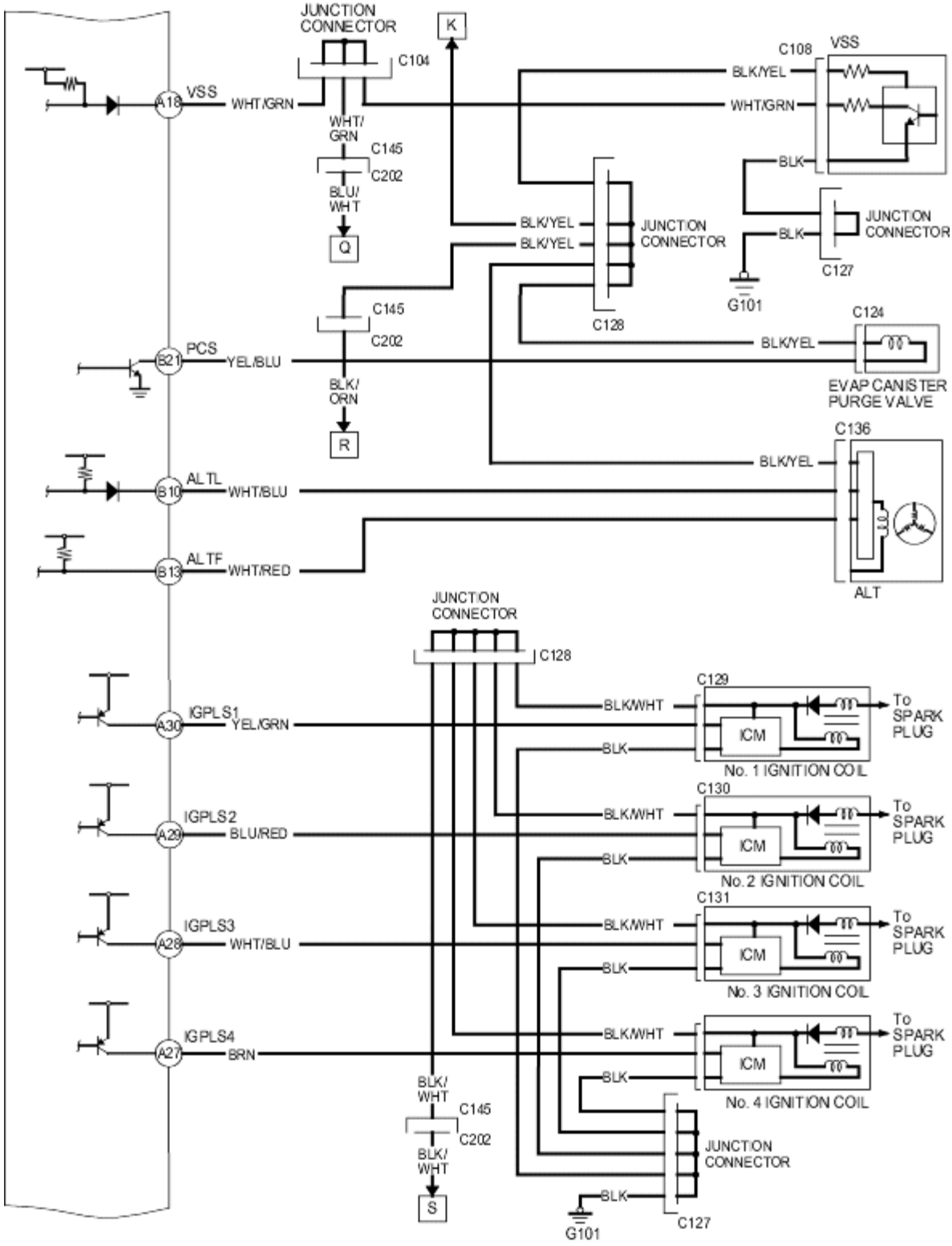
2. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Starting Control

When the engine is started, the ECM/PCM provides a rich mixture by increasing injector duration.

Fuel and Emissions Systems

System Descriptions (cont'd)

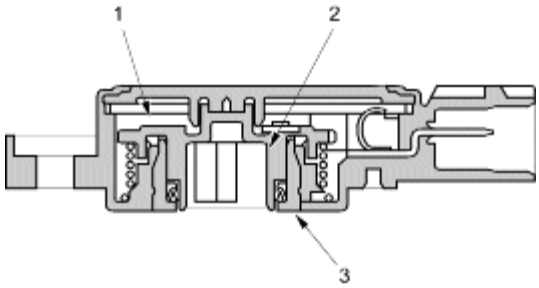


Fuel and Emissions Systems

System Descriptions (cont'd)

Throttle Position (TP) Sensor

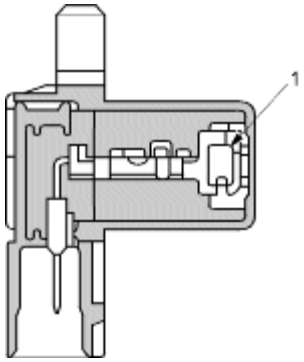
The TP sensor is a potentiometer connected to the throttle valve shaft. As the throttle position changes, the sensor varies the signal voltage to the ECM/PCM. The TP sensor is not replaceable apart from the throttle body.



1. 1. ELEMENT
   2. BRUSH HOLDER
   3. BRUSH

Top Dead Centre (TDC) Sensor

The TDC sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



2. 1. MAGNET

Vehicle Speed Sensor (VSS)

The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the Idle Air Control (IAC) valve to maintain the correct idle speed. Refer to the System Diagram to see the functional layout of the system.

Brake Pedal Position Switch

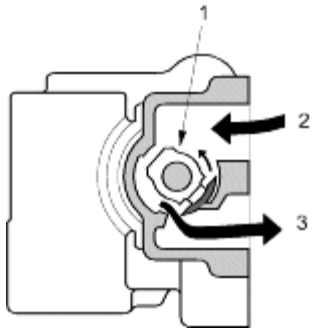
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the ECM/PCM when the power steering load is high.

Idle Air Control (IAC) Valve

To maintain the proper idle speed, the IAC valve changes the amount of air bypassing the throttle body in response to an electrical signal from the ECM/PCM.



1. 1. VALVE
   2. From AIR CLEANER
   3. To INTAKE MANIFOLD

Fuel and Emissions Systems

System Descriptions (cont'd)

Fuel Supply System

Fuel Cut-off Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at speeds over 850 rpm (min-1). Fuel cut-off action also occurs when engine speed exceeds 6,400 rpm (min-1) (D14Z5, D14D6 engines), 6,500 rpm (min-1) (D16W7, D16V1 engines), regardless of the position of the throttle valve, to protect the engine from over-revving. With A/T model, when the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm (min-1).

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurise the fuel system. With the engine running, the ECM/PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

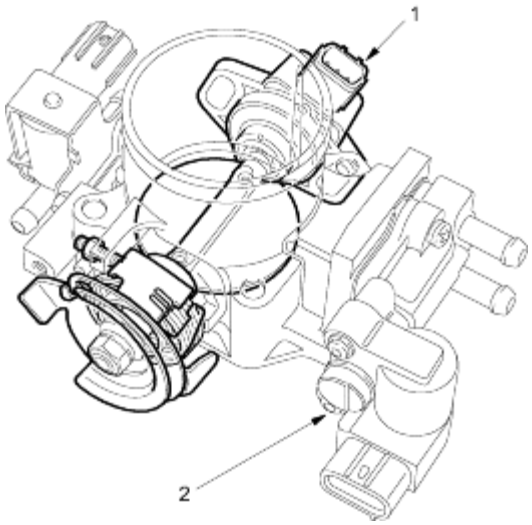
The PGM-FI relay consists of two separate relays. The PGM-FI main relay 1 is energised whenever the ignition switch is ON (II) which supplies battery voltage to the ECM/PCM, power to the injectors, and power for the PGM-FI main relay 2. The PGM-FI main relay 2 is energised to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is running.

Intake Air System

Refer to the System Diagram to see the functional layout of the system.

Throttle Body

The throttle body is a single-barrel down draft type. The side portion of the IAC valve is heated by engine coolant from the cylinder head.



1. 1. TP SENSOR
   2. IAC VALVE

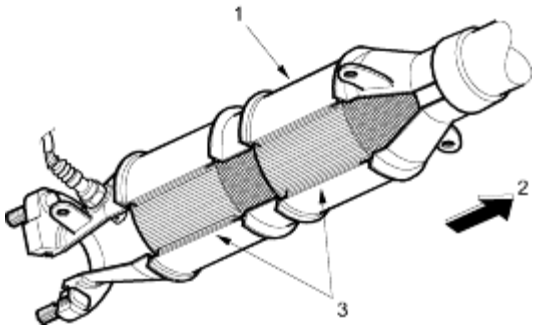
Fuel and Emissions Systems

System Descriptions (cont'd)

Catalytic Converter System

Three Way Catalytic Converter (TWC)

The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), dinitrogen (N2), and water vapour.



1. 1. HOUSING
   2. FRONT OF VEHICLE
   3. THREE WAY CATALYSTS

Exhaust Gas Recirculation (EGR) System

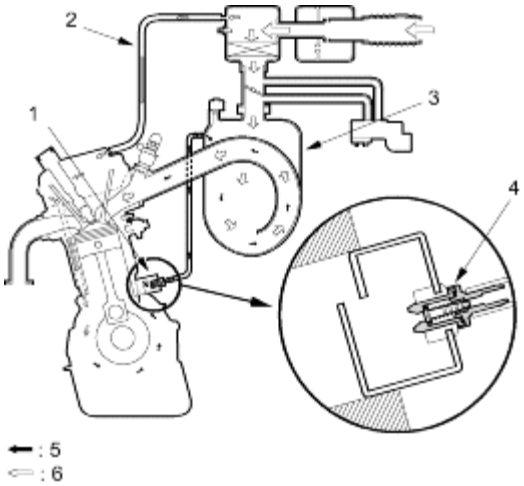
Refer to the System Diagram to see the functional layout of the system.

EGR Valve

The EGR valve is designed to lower peak combustion temperatures and reduce oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



1. 1. PCV HOSE
   2. BREATHER PIPE
   3. INTAKE MANIFOLD
   4. PCV VALVE
   5. BLOW BY VAPOUR
   6. FRESH AIR

Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapour from the fuel tank until it can be purged back into the engine and burned (refer to the System Diagram to see the functional layout of the system).

EVAP Canister Purge Valve

When the engine coolant temperature is below 70°C (158°F), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

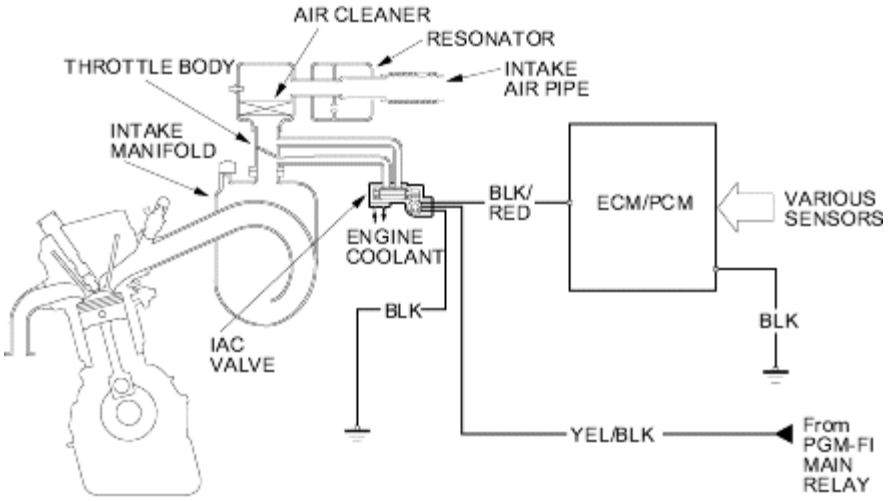
Fuel and Emissions Systems

System Descriptions (cont'd)

Idle Control System Diagram

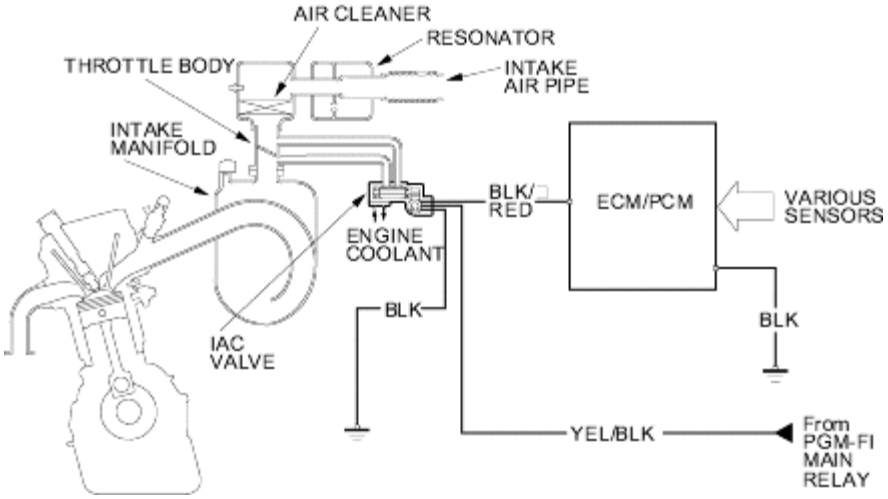
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- After the engine starts, the IAC valve opens for a certain amount of time. The amount of air is increased to raise the idle speed.
- When the engine coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to engine coolant temperature.



Intake Air System Diagram

This system supplies air for engine needs. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.



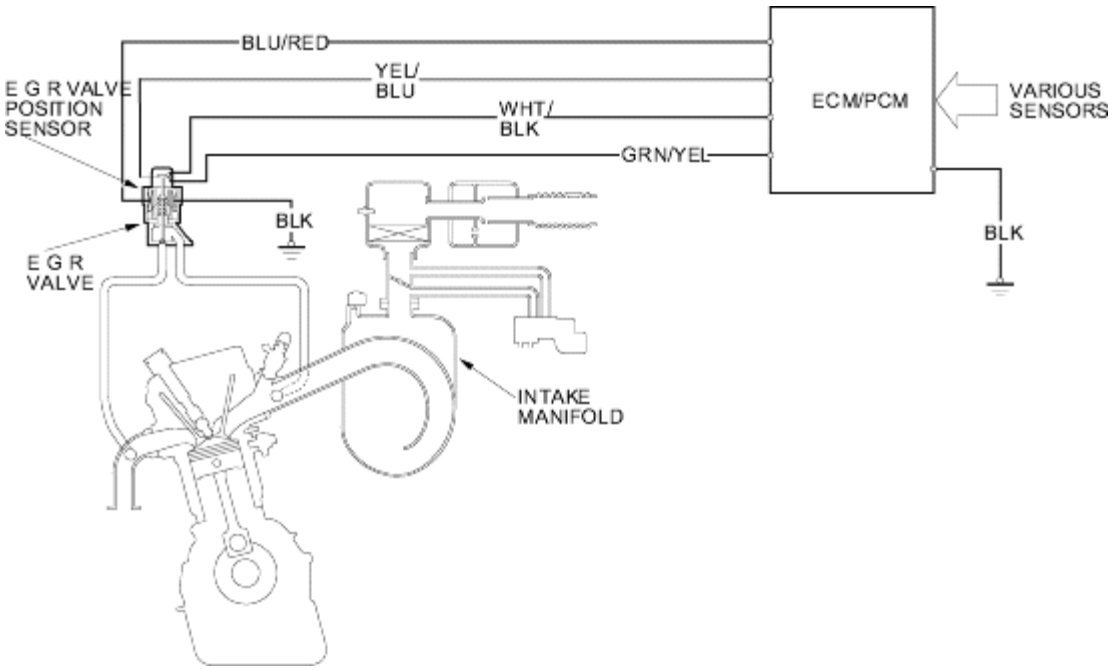
Fuel and Emissions Systems

System Descriptions (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.



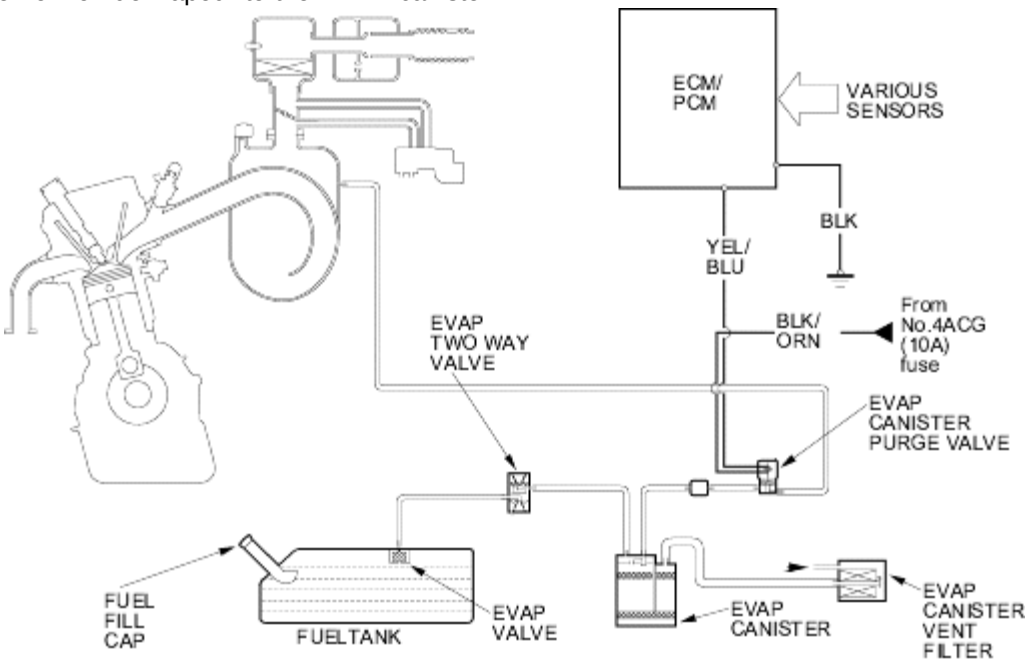
Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimise the amount of fuel vapour escaping to the atmosphere. Vapour from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the EVAP canister into the engine and burned.

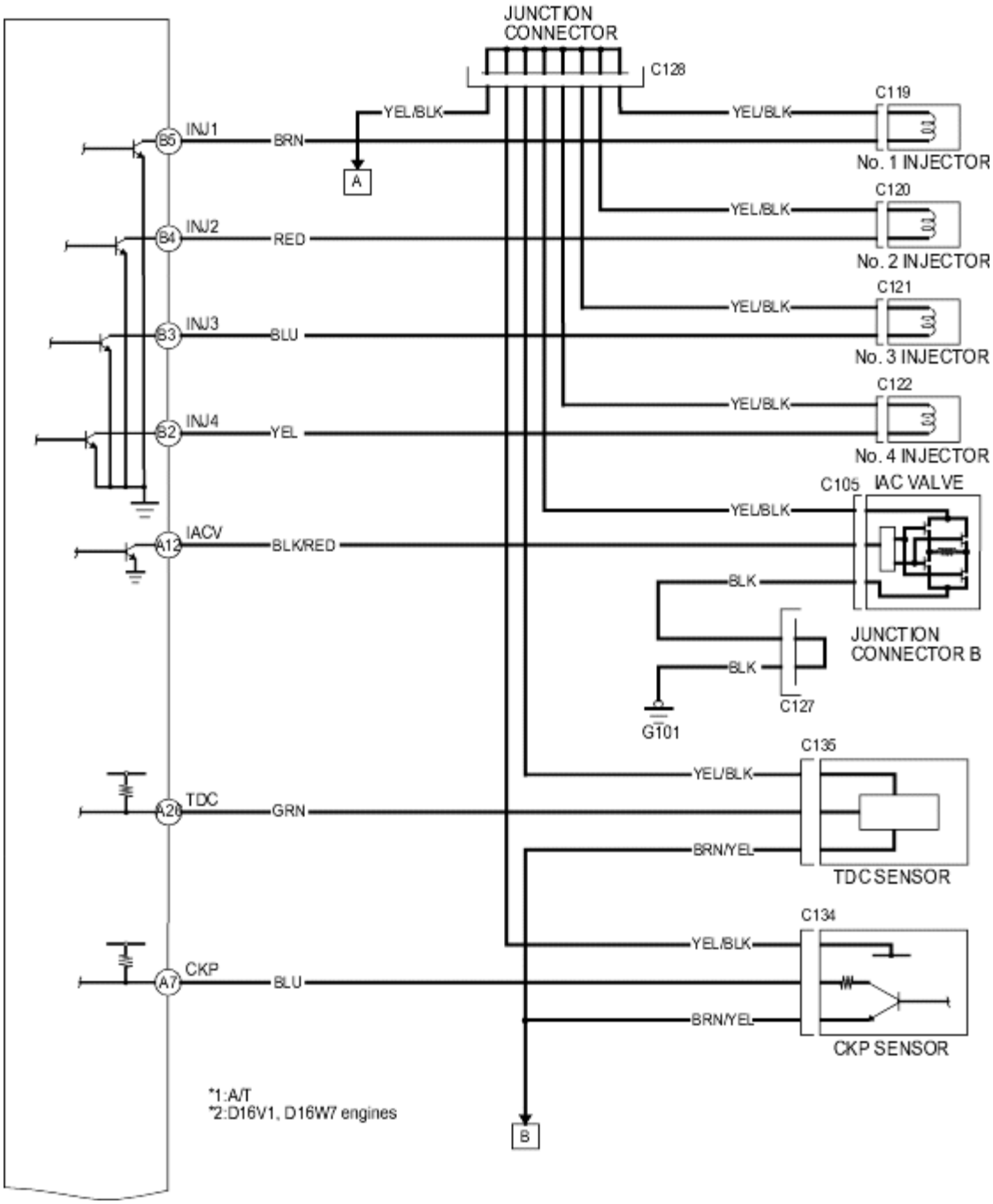
- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.
  The purging vacuum is controlled by the EVAP canister purge valve, which is open whenever engine coolant temperature is above 70°C (158°F).
- When vapour pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapour to the EVAP canister.



Fuel and Emissions Systems

System Descriptions (cont'd)

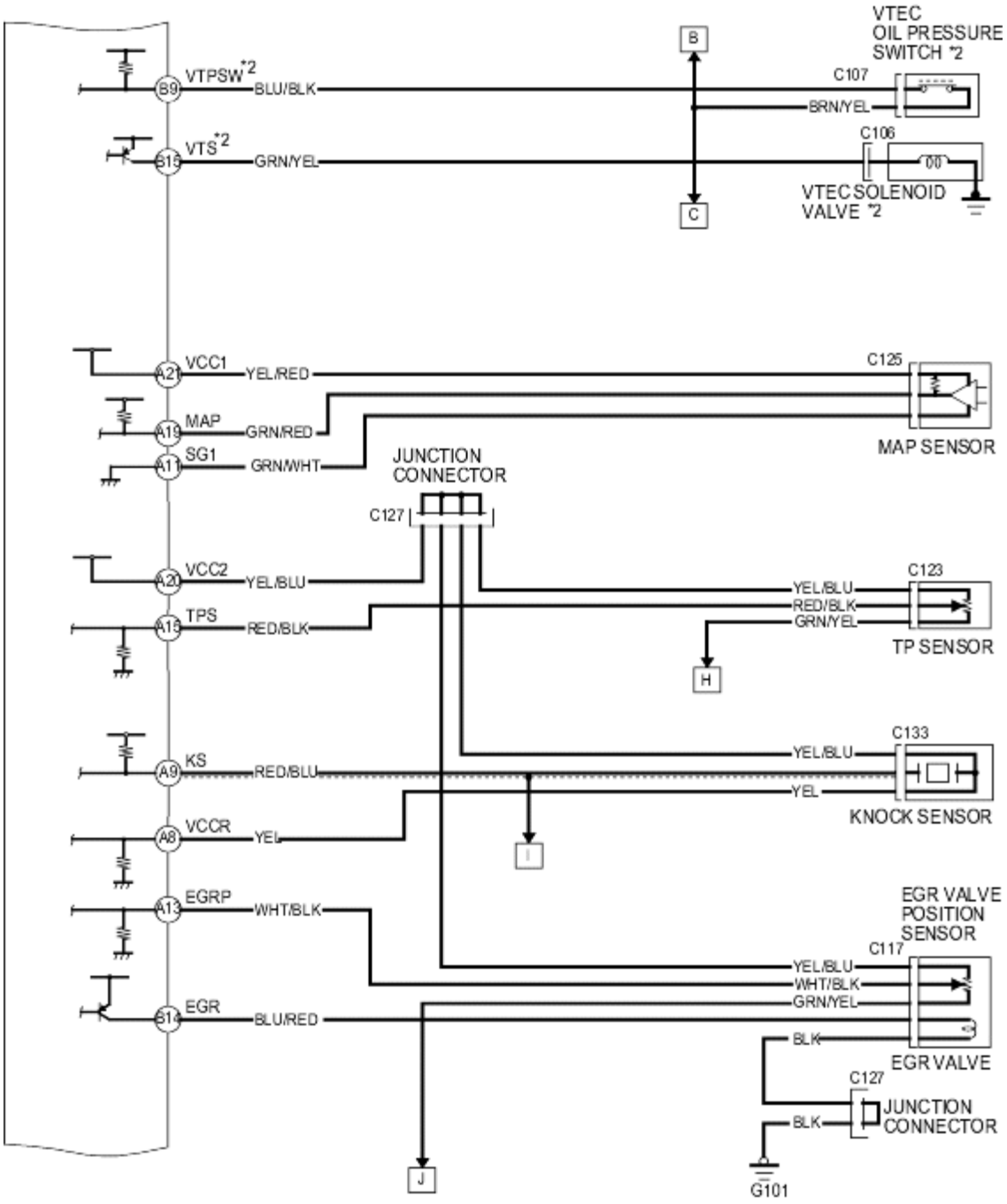
ECM/PCM Circuit Diagram



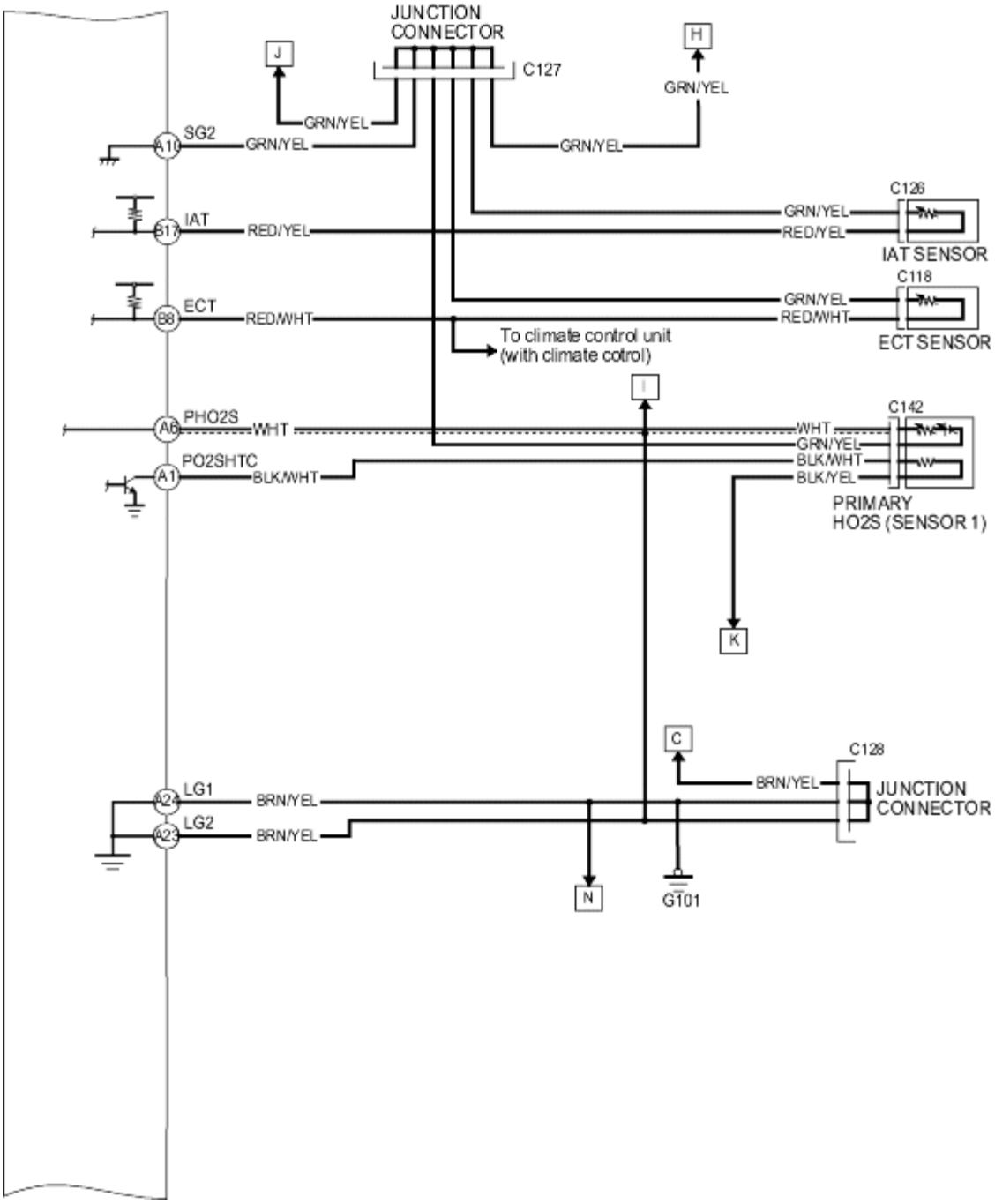
Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



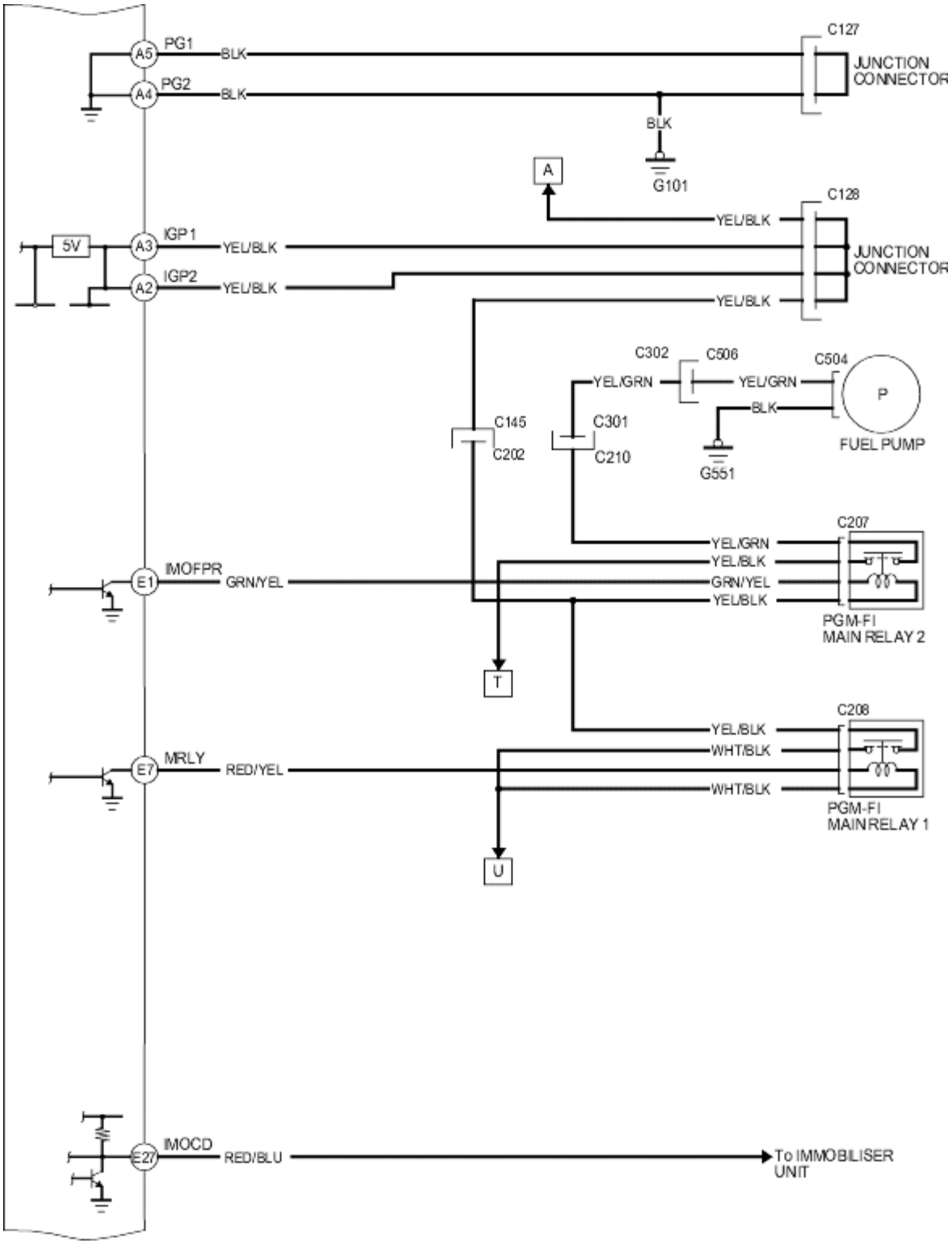
Fuel and Emissions Systems
System Descriptions (cont'd)



Fuel and Emissions Systems

System Descriptions (cont'd)

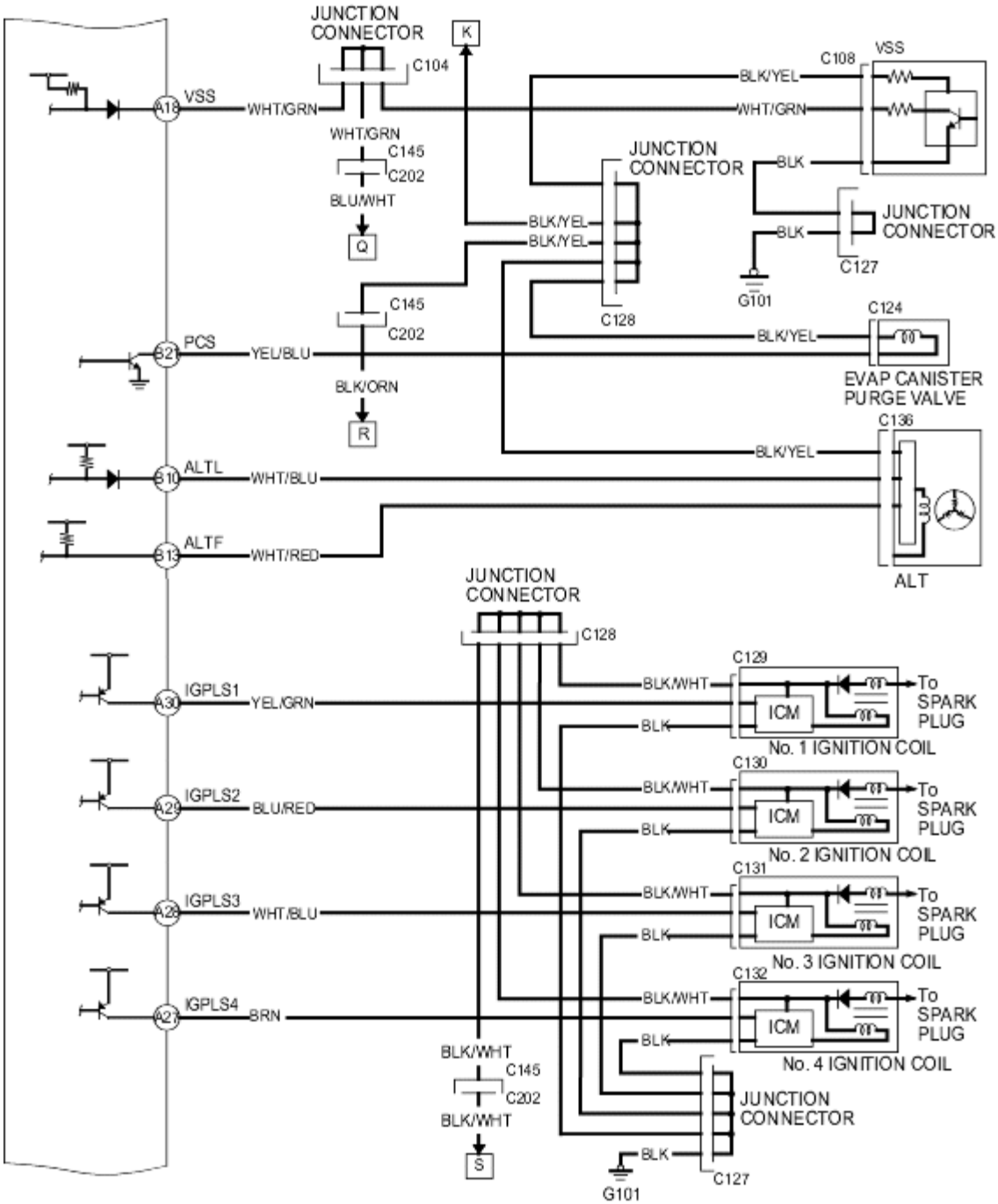
ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

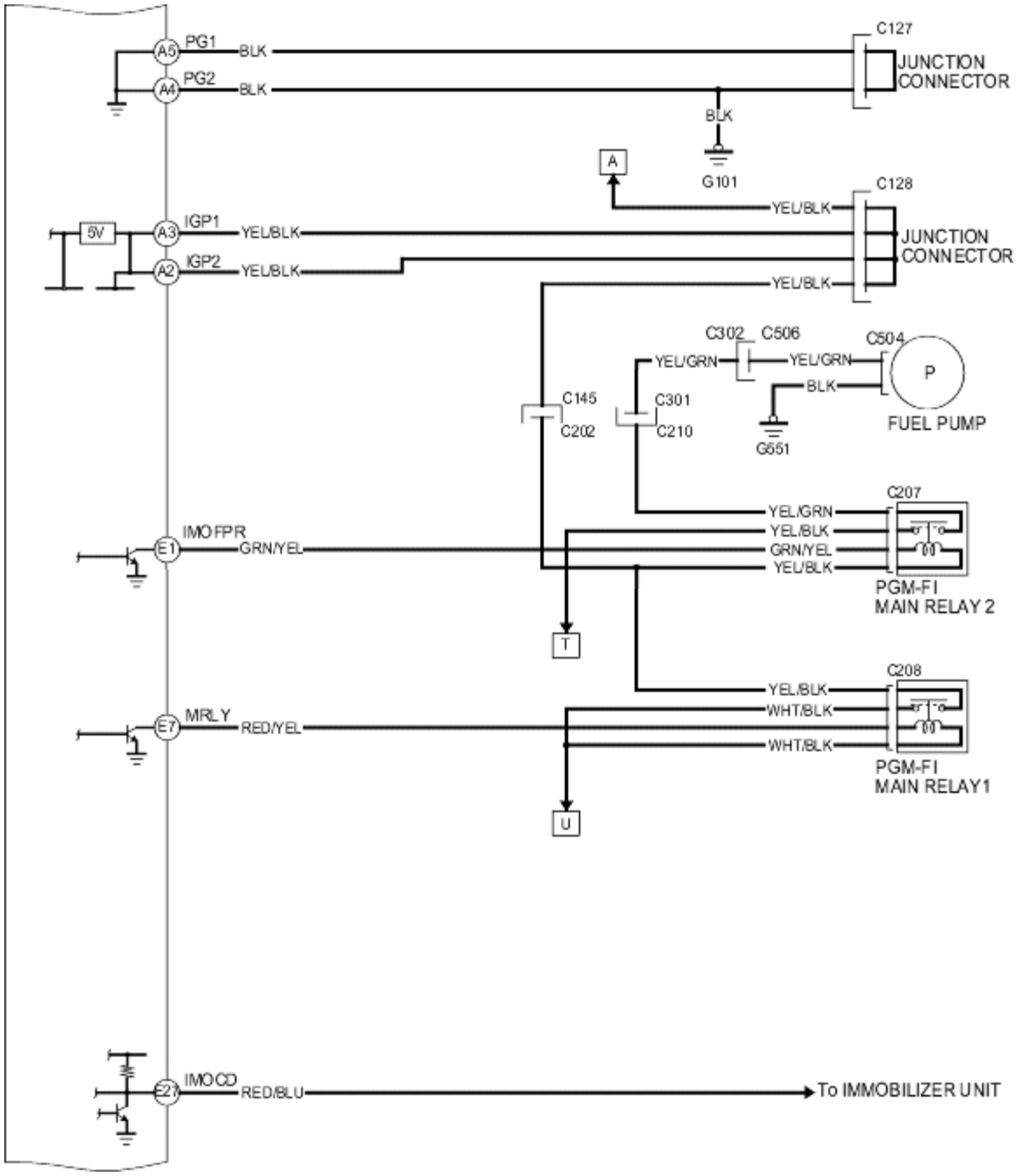
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

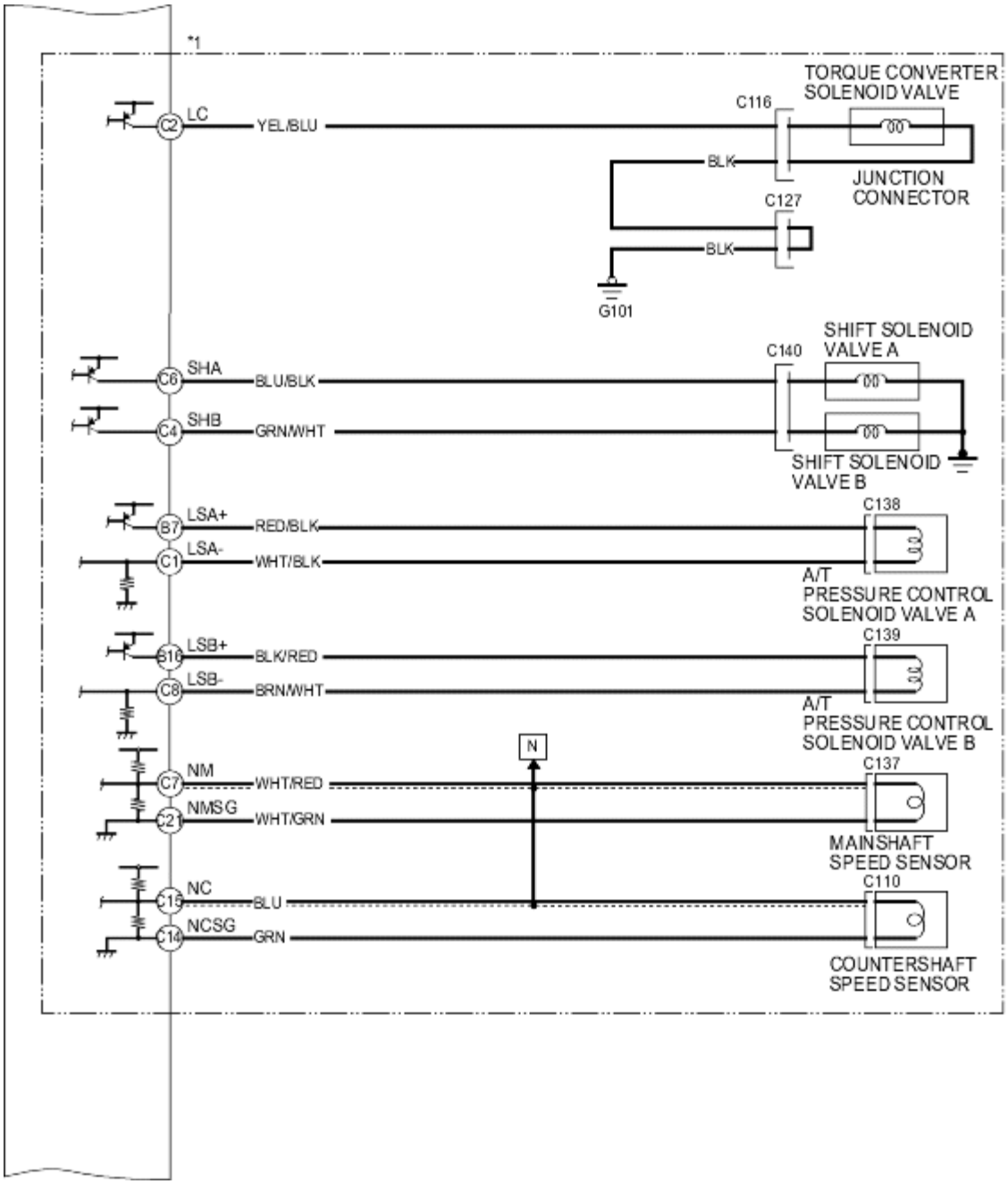
System Descriptions (cont'd)



Fuel and Emissions Systems

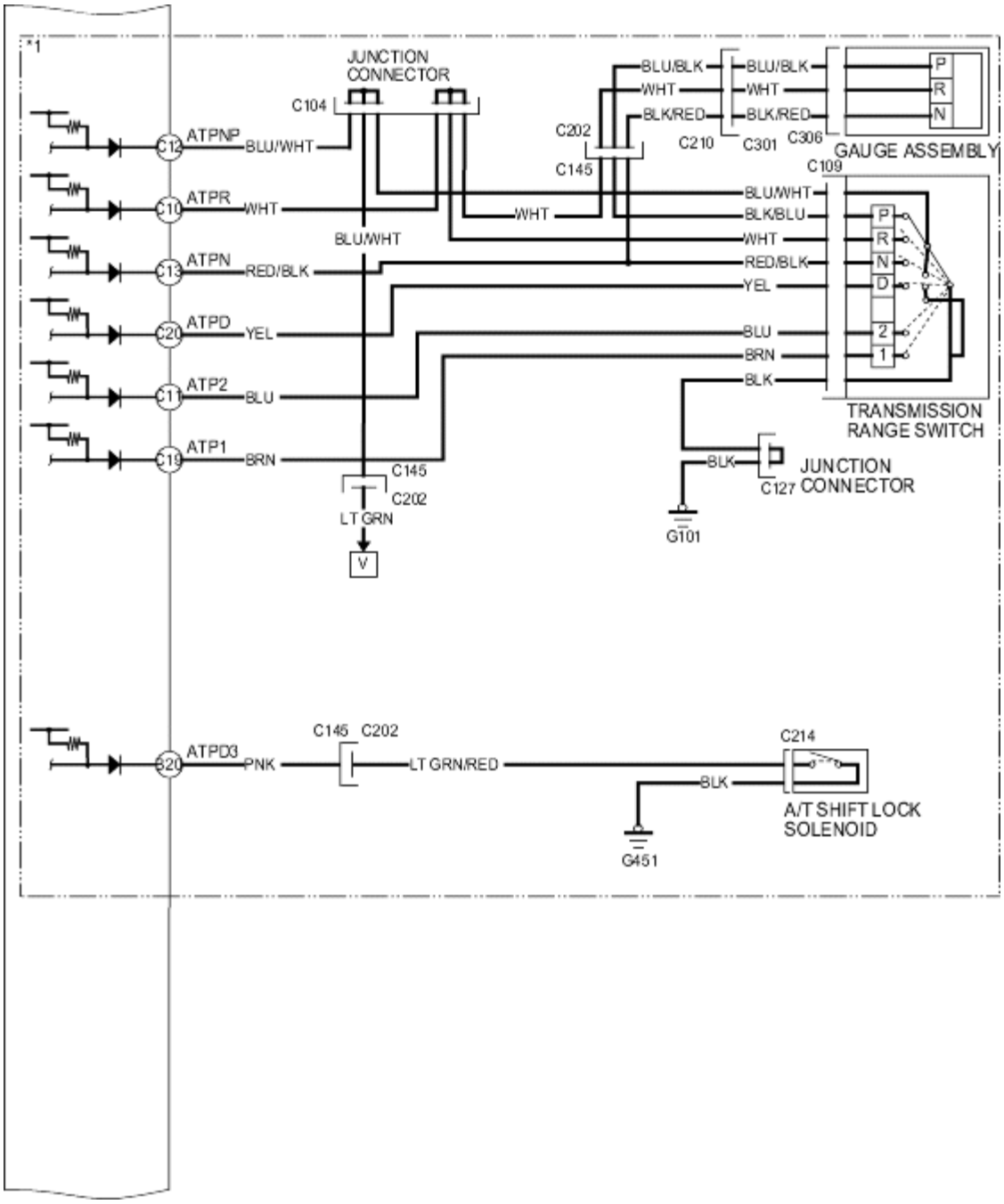
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



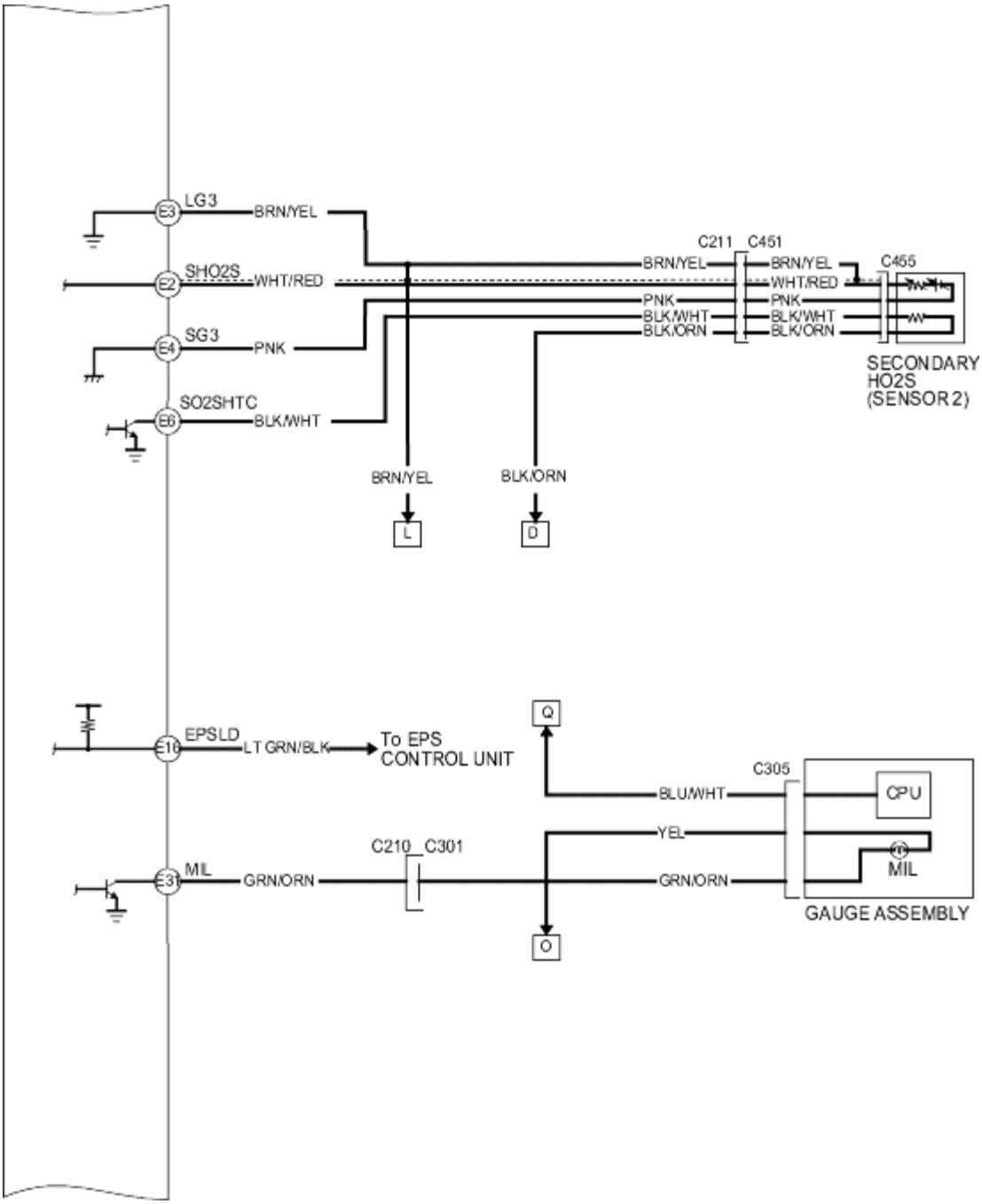
Fuel and Emissions Systems

System Descriptions (cont'd)



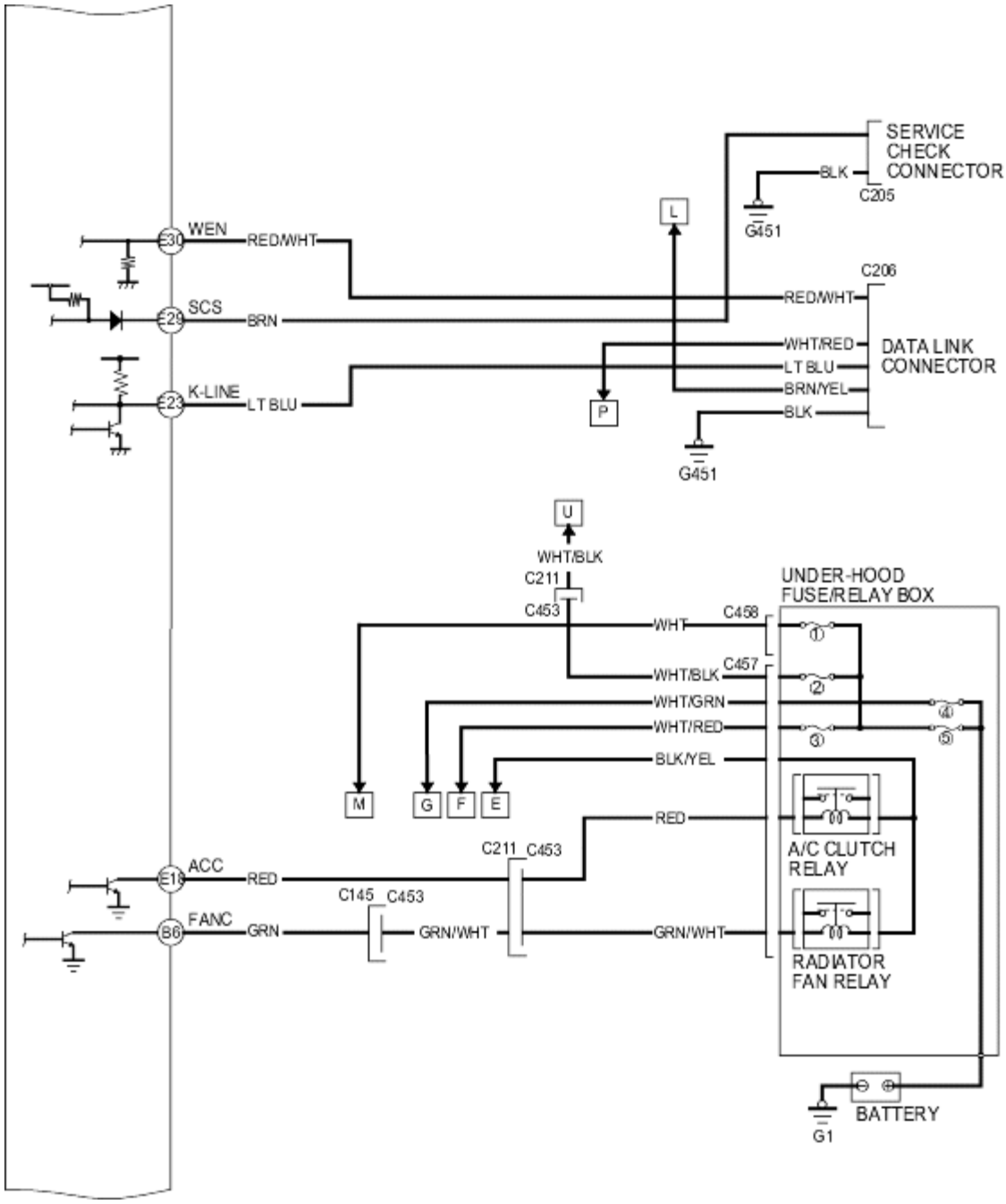
Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

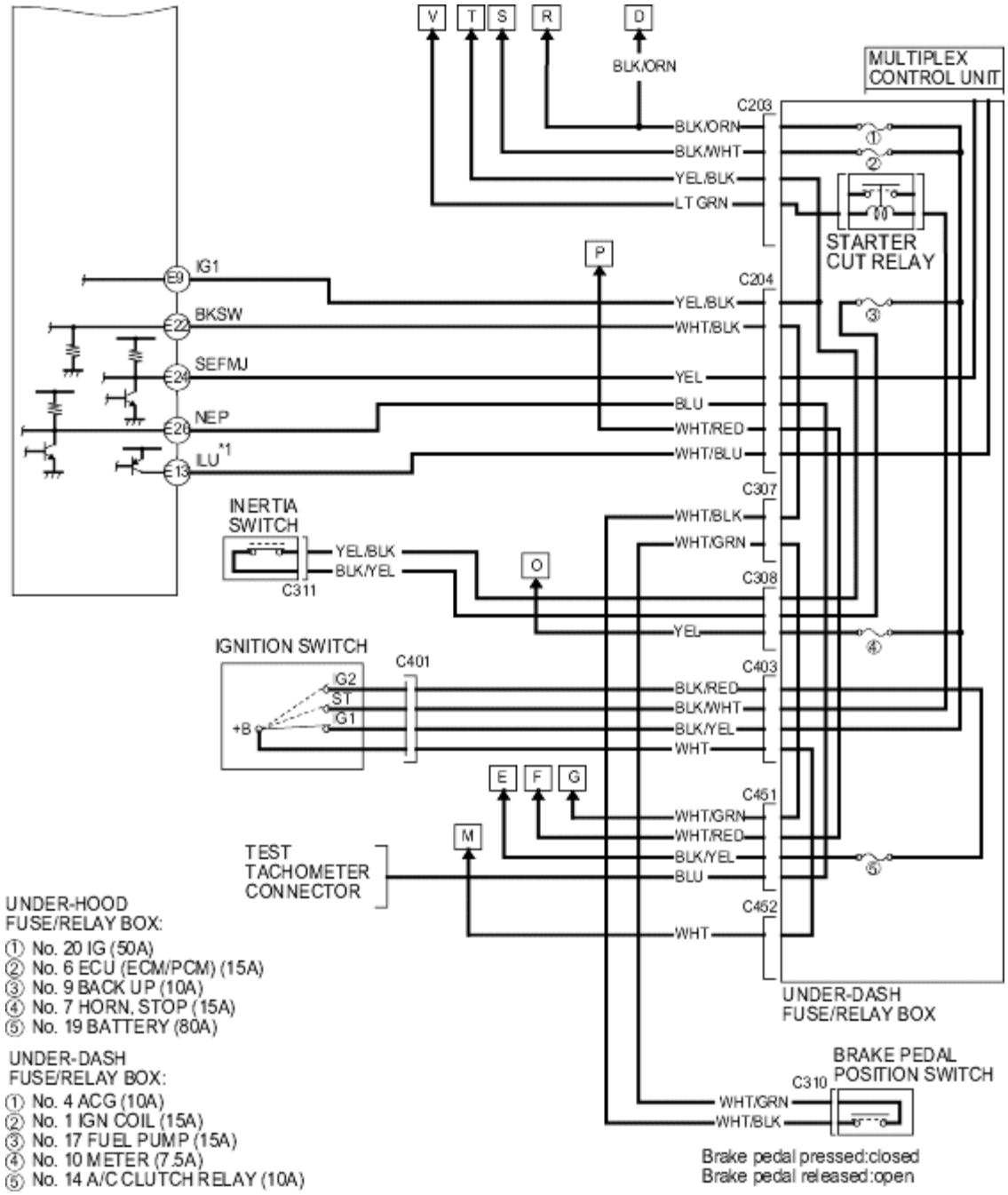
System Descriptions (cont'd)



Fuel and Emissions Systems

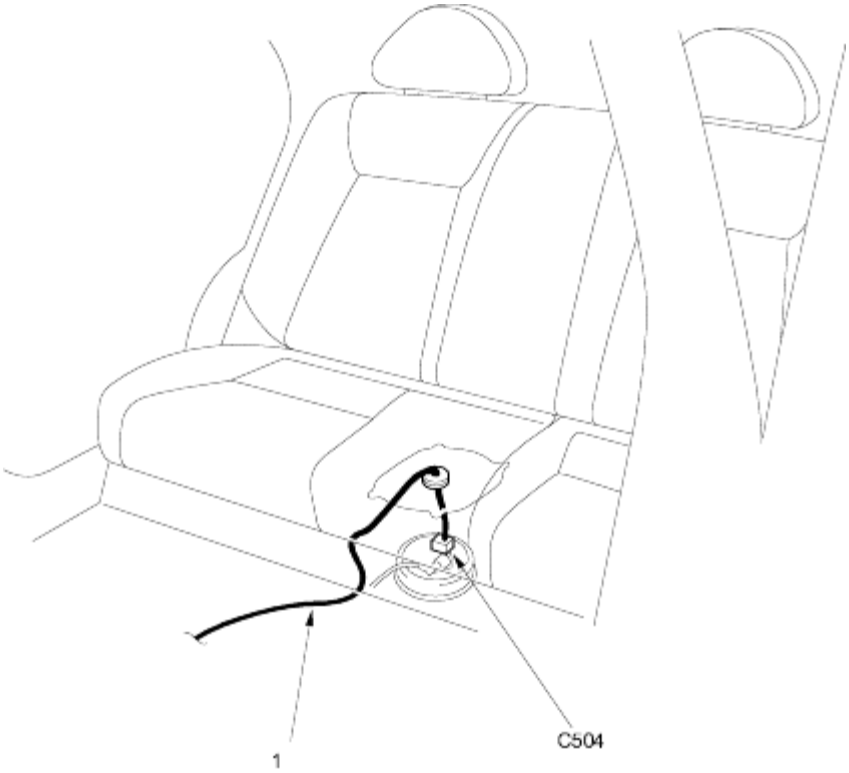
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



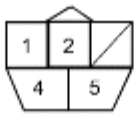
Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. FLOOR WIRE HARNESS

C504

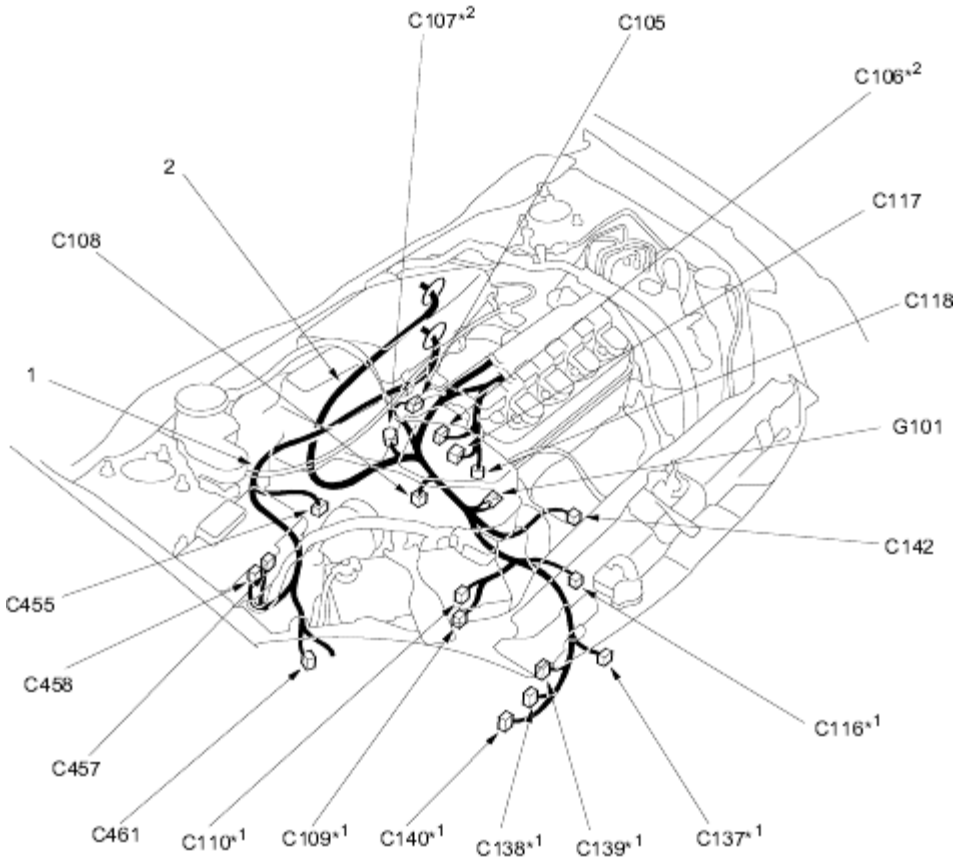


1	BLK
2	YEL/BLK
3	
4	BLK
5	YEL/GRN

NOTE
- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side
- O: Related to ECM/PCM control.

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. ENGINE COMPARTMENT WIRE HARNESS
2. ENGINE WIRE HARNESS

*1: A/T

*2: D16V1, D16W7 engines

Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106 (D16V1, D16W7 engines)



①	GRN/YEL

C106



①	GRN/YEL
②	RED

C107 (D16W7, D16V1 engines)



①	BLU/BLK
②	BRN/YEL

C108



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	——	⑦	BRN
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
5	——	10	RED/BLK

C110 (A/T)



①	GRN
②	BLU

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK
②	GRN/YEL
③	YEL/BLU
④	BLU/RED
5	——
⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142



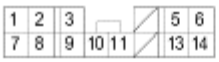
①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C455



①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/GRN

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	⑩	RED
4	——	⑪	WHT/RED
5	WHT/BLU	12	——
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	——
5	BLK
6	WHT/BLK
7	YEL/BLK

C461

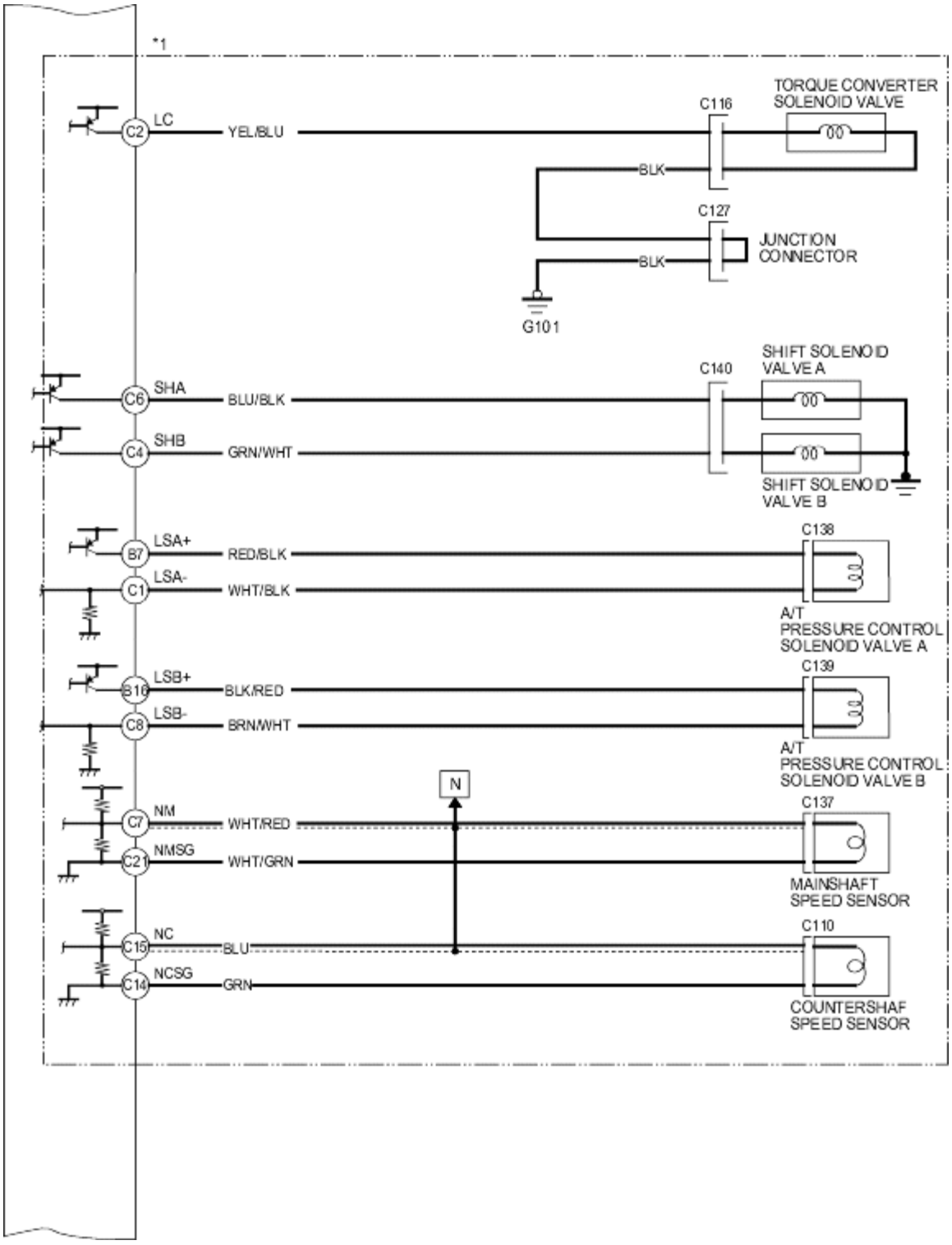


1	——
②	BLU

NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

Fuel and Emissions Systems

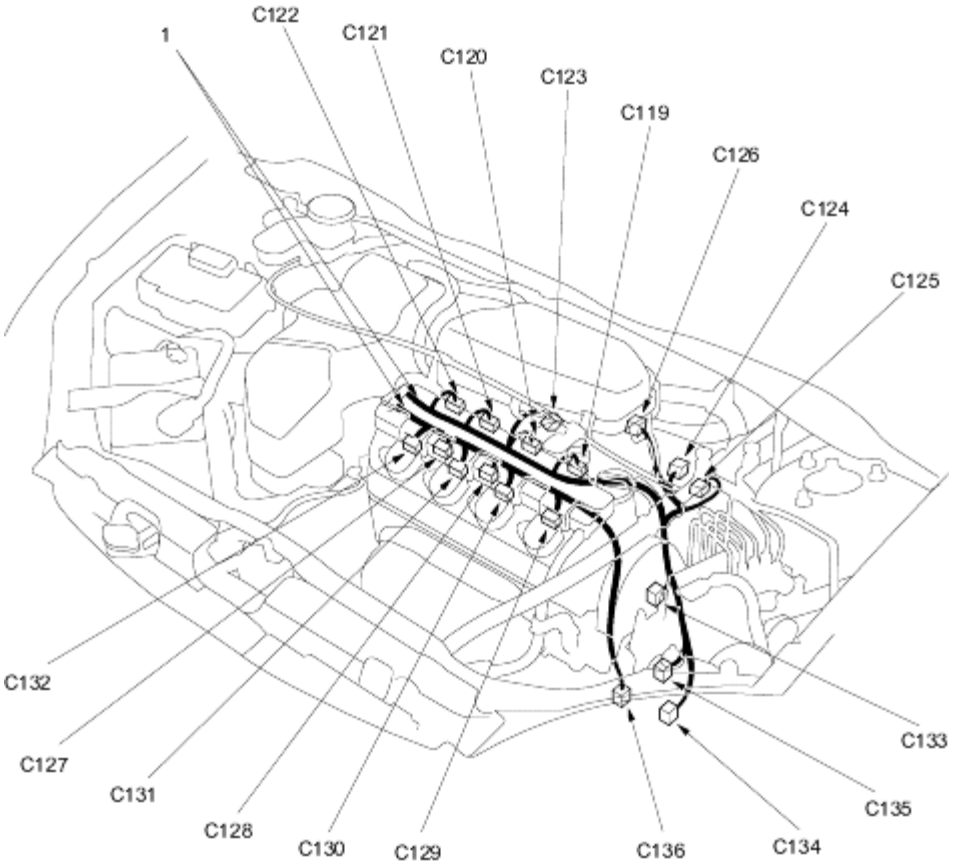
System Descriptions (cont'd)



Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C119

1	2

①	YEL/BLK
②	BRN

C120

1	2

①	YEL/BLK
②	RED

C121

1	2

①	YEL/BLK
②	BLU

C122

1	2

①	YEL/BLK
②	YEL

C123

1	2	3

①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124

1	2

①	BLK/YEL
②	YEL/BLU

C125

1	2	3

①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126

1	2

①	GRN/YEL
②	RED/YEL

C127

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128

	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

1	——	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129

1
2
3

①	YEL/GRN
②	BLK
③	BLK/WHT

C130

1
2
3

①	BLU/RED
②	BLK
③	BLK/WHT

C131

1
2
3

①	WHT/BLU
②	BLK
③	BLK/WHT

C132

1
2
3

①	BRN
②	BLK
③	BLK/WHT

C133

1	2	3

①	RED/BLU
②	YEL/BLU
③	YEL

C134

1	2	3

①	BLU
②	BRN/YEL
③	YEL/BLK

C135

1	2	3

①	BRN/YEL
②	GRN
③	YEL/BLK

C136

1	
3	4

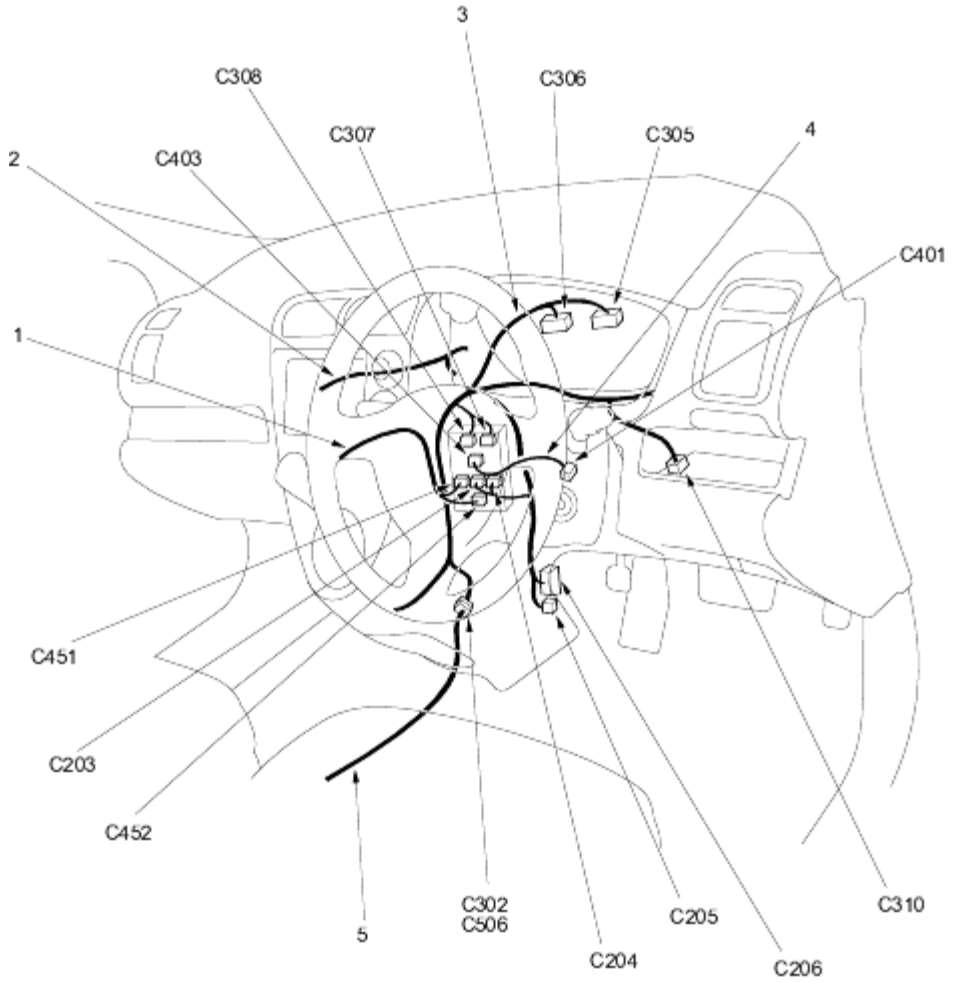
①	BLK/YEL
2	——
③	WHT/BLU
④	WHT/RED

NOTE ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

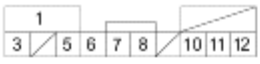


1. ENGINE COMPARTMENT WIRE HARNESS
2. ECM/PCM WIRE HARNESS
3. DASHBOARD WIRE HARNESS A
4. DASHBOARD WIRE HARNESS B
5. FLOOR WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

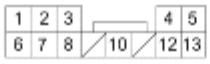
C203



1	BLK/WHT	⑦	LT GRN
2		8	GRN
③	BLK/ORN	9	
4		10	BLU/BLK*1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

*1 : except M/T

C204



1	GRY	8	RED/BLU
2	YEL/RED	9	
③	WHT/BLK	10	YEL
④	BLU/WHT	11	
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

C205



①	BRN
②	BLK

C206*



1		9	
2		10	
3		11	
④	BLK	12	
⑤	BRN/YEL	13	
6		14	GRY
⑦	LT BLU	15	
8		16	WHT/RED

C305



1	WHT/RED	9	YEL/RED	17	
②	YEL	10	GRN/RED	18	YEL/BLK
3	RED/BLK	11	BLK	19	BLU/ORN
4	BLU	12	BLK	20	
⑤	BLU/WHT	13	WHT/GRN	21	RED/WHT
6		14		22	
7		15			
⑧	GRN/ORN	16	WHT		

C306



1	RED/BLU	9		17	
2		10	PNK/BLK	18	
3		11	RED/BLU	19	
④	BLU/BLK*	12	BLU/RED	20	
⑤	WHT*	13	YEL/BLU	21	
⑥	BLU/RED*	14	PNK	22	GRN/YEL
7		15	PNK/BLU		
8		16	BLK/YEL		

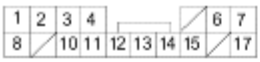
*1 : A/T

C307



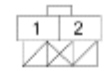
1		7	GRN/RED
2	GRN	8	RED/BLK
3		9	
4	WHT/BLU	10	RED
⑤	WHT/BLK	11	
6	YEL/GRN	12	WHT/GRN

C308



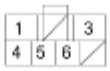
1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	WHT/RED	12	YEL/BLK
4	WHT/RED	13	WHT/RED
5		14	BLK/YEL
6	YEL	15	RED/WHT
⑦	YEL	16	
⑧	BLU/WHT	17	BLK
9			

C310



1	WHT/GRN
2	WHT/BLK
3	
4	

C401



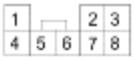
①	BLK/WHT
2	
③	WHT
④	BLK/RED
5	WHT/RED
⑥	BLK/YEL
7	

C403



①	WHT
2	WHT/RED
③	BLK/WHT
④	BLK/RED
⑤	BLK/YEL

C451



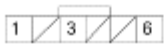
①	BLK/YEL
②	WHT/RED
③	WHT/GRN
4	BLK
⑤	BLU
6	ORN
7	WHT
8	WHT/BLU

C452



①	WHT
②	WHT/RED
③	WHT/BLK

C506



①	YEL/GRN	4	
2		5	
3	PNK	6	YEL/BLK

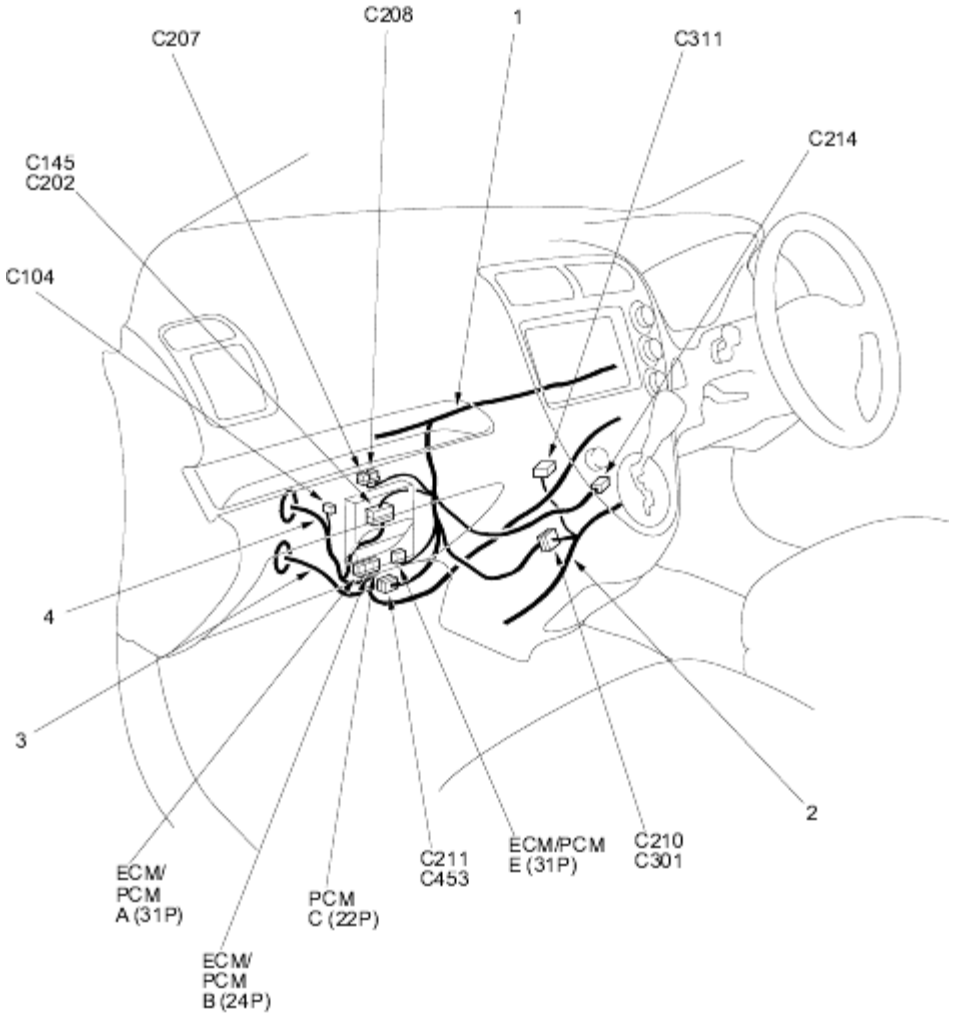
NOTE ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

* : Terminal side of female terminals

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

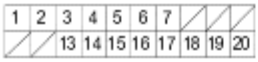


1. ECM/PCM WIRE HARNESS
2. DASHBOARD WIRE HARNESS A
3. ENGINE COMPARTMENT WIRE HARNESS
4. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	8		15	BLU/WHT*
②	YEL/BLK	9		16	BLU/WHT*
③	YEL/BLK	10		17	BLU/WHT*
④	YEL/BLK	11		18	WHT*
⑤	GRN	12		19	WHT*
⑥	GRN	13	WHT/GRN	20	WHT*
⑦	GRN	14	WHT/GRN		

* : A/T

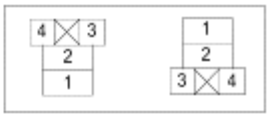
C145



①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT	16	BLK/WHT
③	BLU/WHT*1	10		17	BLK/YEL
4	GRN/WHT*2	11	WHT*1	18	YEL/RED
5	YEL*2	12		19	YEL/BLK
⑥	WHT/GRN	13	PNK*1	20	BLK/WHT
7	GRN	14			

*1 : A/T
*2 : M/T

C207

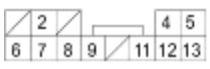


①	YEL/BLK
②	YEL/GRN
③	GRN/YEL
④	YEL/BLK

C208

①	YEL/BLK
②	WHT/BLK
③	RED/YEL
④	WHT/BLK

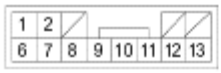
C210



1	
2	YEL/BLU
3	
4	BRN/YEL
5	YEL/BLK
⑥	YEL/GRN
⑦	BLU/BLK*
⑧	BLK/RED*
⑨	WHT*
10	
11	RED/WHT
12	GRN/ORN
13	YEL/RED

* : except M/T

C211



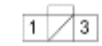
1	BLK/YEL
2	BLK/RED
3	
4	
5	
⑥	WHT/BLK
⑦	RED
⑧	GRN/WHT
⑨	PNK
10	BLK/ORN
11	WHT/RED
12	BRN/YEL
13	BLK/WHT

C214



1	YEL/RED
②	LT GRN/RED
3	YEL/BLK
4	RED/BLK
5	RED
⑥	BLK

C311



①	BLK/YEL
2	
③	YEL/BLK

ECM/PCM A (31P)



①	BLK/WHT	12	BLK/RED	23	BRN/YEL
②	YEL/BLK	13	WHT/BLK	24	BRN/YEL
③	YEL/BLK	14		25	
④	BLK	15	RED/BLK	26	GRN
⑤	BLK	16		27	BRN
⑥	RED	17		28	WHT/BLU
⑦	BLU	18	WHT/GRN	29	BLU/RED
⑧	YEL	19	GRN/RED	30	YEL/GRN
⑨	RED/BLU	20	YEL/BLU	31	
10	GRN/YEL	21	YEL/RED*		
11	GRN/WHT	22			

* : A/T

ECM/PCM B (24P)



1		⑨	RED/BLK*2	17	RED/YEL
②	YEL	10	WHT/BLU	18	
③	BLU	11		19	
④	RED	12		20	PNK*1
⑤	BRN	13	WHT/RED	21	YEL/BLU
⑥	GRN	14	BLU/RED	22	
⑦	RED/BLK*1	15	GRN/YEL*2	23	
⑧	RED/WHT	16	BLK/RED*1	24	

*1 : A/T
*2 : D16V1, D16W7 engine

PCM C (22P)



①	WHT/BLK*	9		17	
②	YEL/BLU*	10	WHT	18	
3		11	BLU	19	BRN
④	GRN/WHT*	12	BLU/WHT	20	YEL
5		13	RED/BLK	21	WHT/GRN*
⑥	BLU/BLK*	14	GRN*	22	
⑦	WHT/RED*	15	BLU*		
⑧	BRN/WHT*	16			

* : A/T

ECM/PCM E (31P)

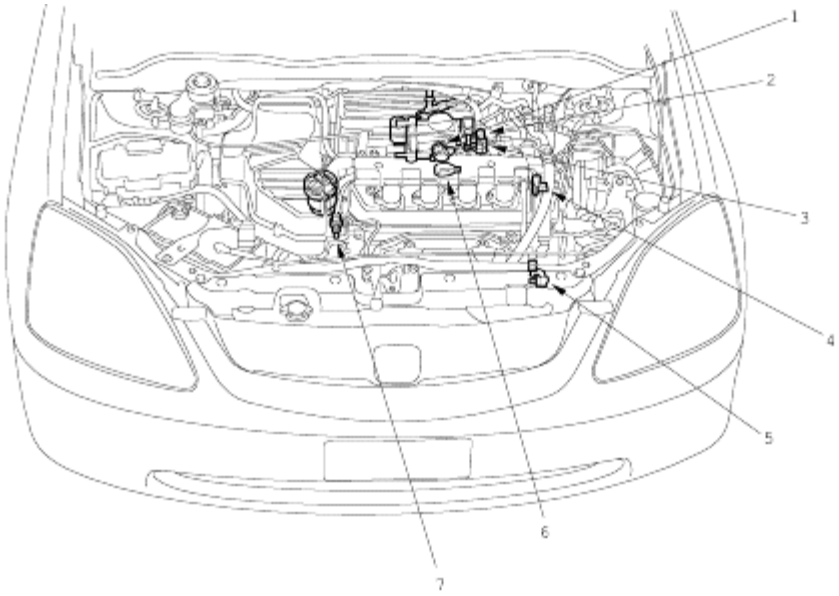


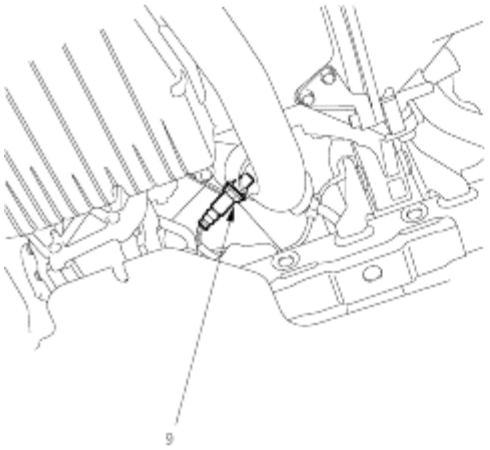
①	GRN/YEL	12		23	LT BLU
②	WHT/RED	13	WHT/BLU	24	YEL
③	BRN/YEL	14		25	
④	PNK	15		26	BLU
5		16	LT GRN/BLK	27	RED/BLU
⑥	BLK/WHT	17		28	
⑦	RED/YEL	18	RED	29	BRN
8		19		30	
⑨	YEL/BLK	20		31	GRN/ORN
10		21			
11		22	WHT/BLK		

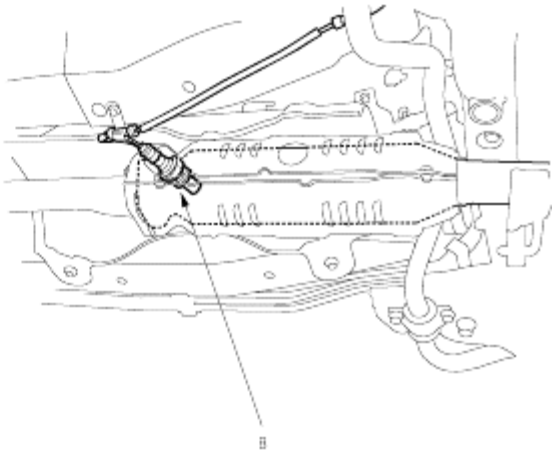
NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○: Related to ECM/PCM control.

PGM-FI System

Component Location Index



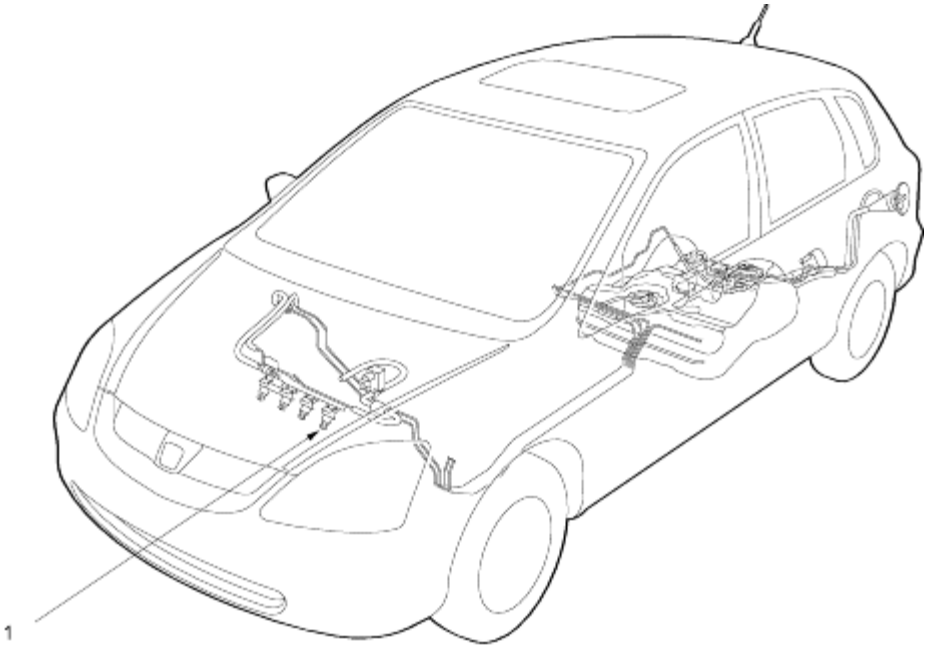




1. THROTTLE POSITION (TP) SENSOR
   Troubleshooting, page 11-365
2. INTAKE AIR TEMPERATURE (IAT) SENSOR
   Troubleshooting, page 11-361
3. MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
   Troubleshooting, page 11-359
4. TOP DEAD CENTRE (TDC) SENSOR
   Troubleshooting, page 11-398
5. CRANKSHAFT POSITION (CKP) SENSOR
   Troubleshooting, page 11-388
6. KNOCK SENSOR
   Troubleshooting, page 11-385
7. ENGINE COOLANT TEMPERATURE (ECT) SENSOR
   Troubleshooting, page 11-363
8. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
   Troubleshooting, page 11-373
   Replacement, page 11-415
9. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)
   Troubleshooting, page 11-368
   Replacement, page 11-415

PGM-FI System

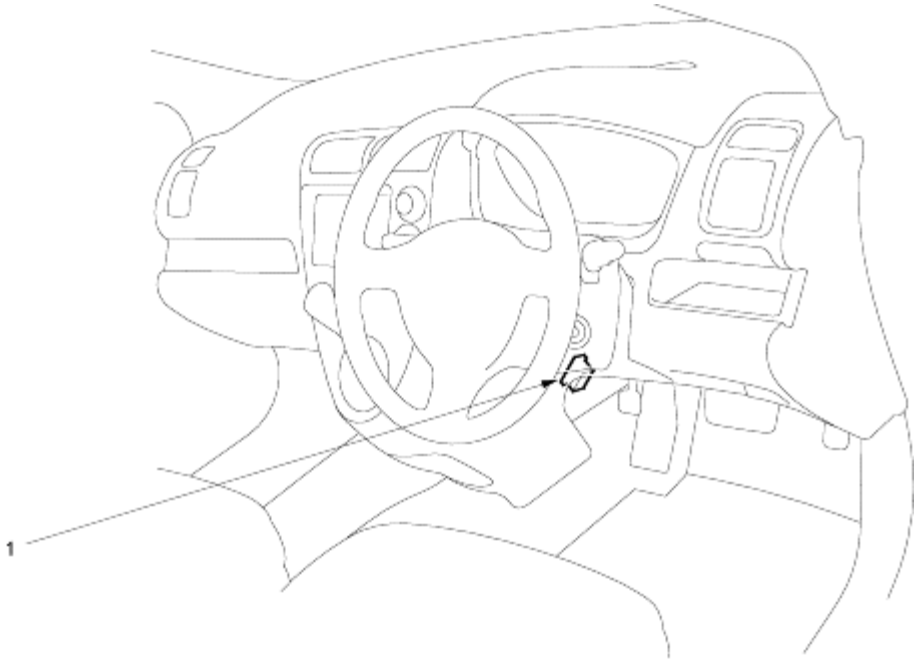
Component Location Index (cont'd)

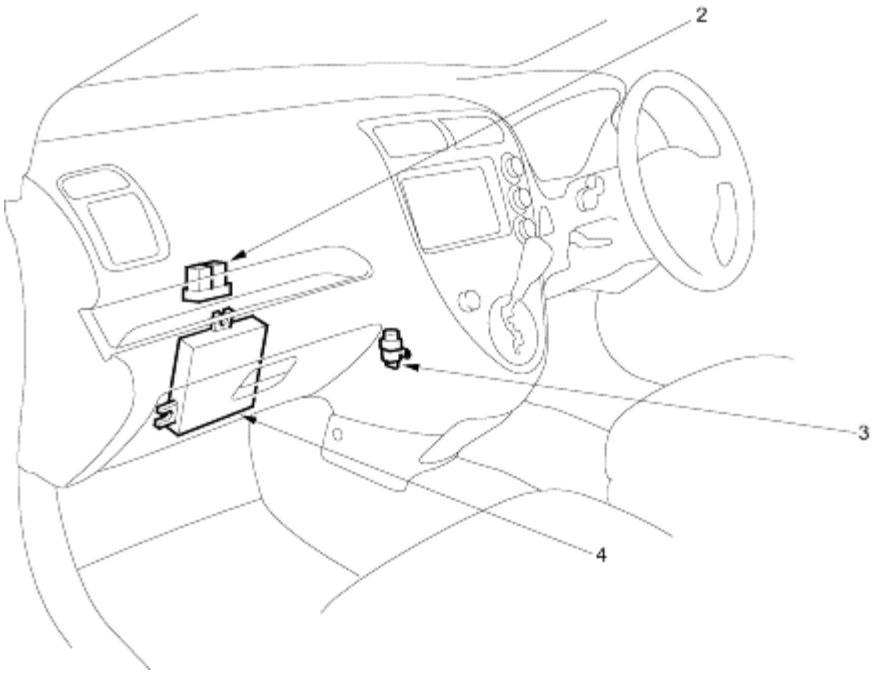


1. INJECTORS
   Replacement, page 11-413

PGM-FI System

Component Location Index (cont'd)





1. DATA LINK CONNECTOR (DLC)
   General Troubleshooting Information, page 11-311
2. PGM-FI MAIN RELAY 1
   Troubleshooting, page 11-400
3. INERTIA SWITCH
   Troubleshooting, page 11-400
4. ENGINE CONTROL MODULE/POWERTRAIN CONTROL MODULE (ECM/PCM)
   General Troubleshooting Information, page 11-311
   Troubleshooting, page 11-399

PGM-FI System
DTC Troubleshooting

DTC P0107: MAP Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the MAP with the scan tool.

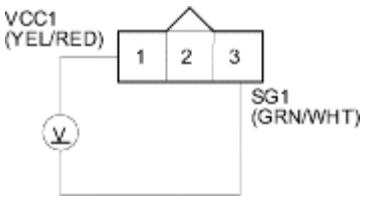
Is about 101 kPa (760 mmHg, 30 in.Hg) or 2.9 V indicated?

YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect the MAP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

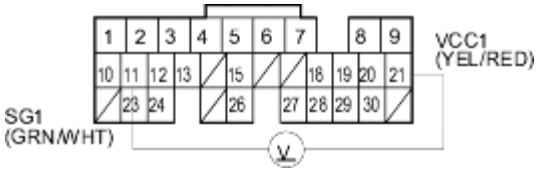
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 7.

3. 7. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between ECM/PCM (A21) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 8. Check the MAP with the scan tool.

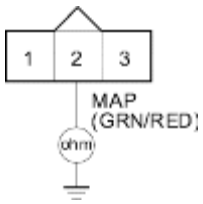
Is 2 kPa (15 mmHg, 0.6 in.Hg) or less or 0 V indicated?

YES - Go to step 9.

NO - Replace the MAP sensor. ■

2. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between the MAP sensor connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

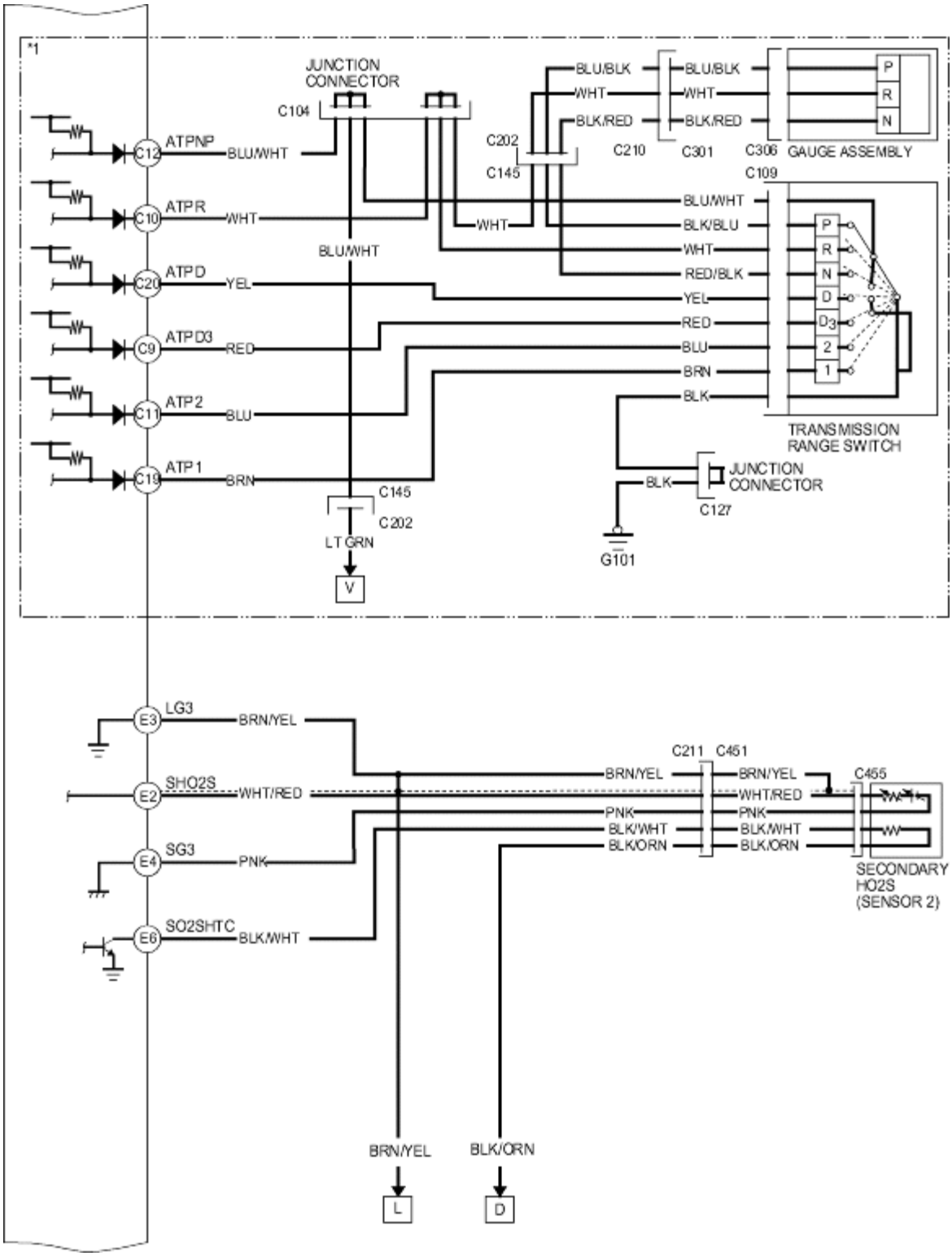
YES - Repair short in the wire between the ECM/PCM (A19) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

1. 1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   2. Check the MAP with the scan tool.

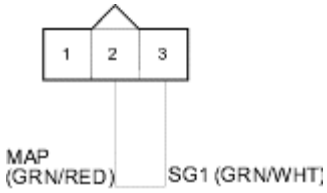
Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the MAP sensor 3P connector.
   5. Connect the MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



JUMPER WIRE

Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the MAP with the scan tool.

Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

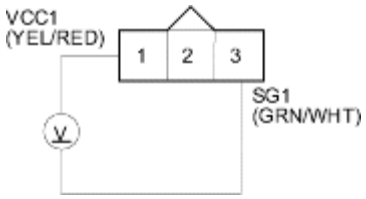
YES - Go to step 8.

NO - Replace the MAP sensor. ■

4. 8. Remove the jumper wire.

1. 9. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

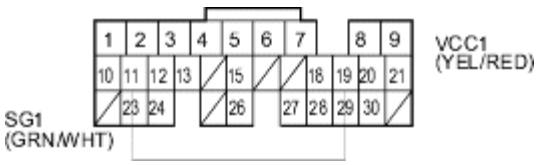
Is there about 5 V?

YES - Go to step 10.

NO - Repair open in the wire between the ECM/PCM (A11) and the MAP sensor. ■

10. Turn the ignition switch OFF.
11. Connect ECM/PCM connector terminals A11 and A19 with a jumper wire.

ECM/PCM CONNECTOR A (31P)



JUMPER WIRE

Wire side of female terminals

12. Turn the ignition switch ON (II).
13. Check the MAP with the scan tool.

Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A19) and the MAP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0112: IAT Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the IAT with the scan tool.

Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

YES - Go to step 3.

NO - Go to step 8.

2. 3. Disconnect the IAT sensor 2P connector.
   4. Check the IAT with the scan tool.

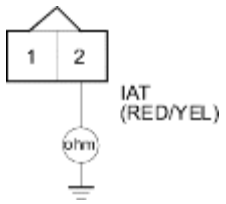
Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

YES - Go to step 5.

NO - Replace the IAT sensor. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector B (24P).
   7. Check for continuity between the IAT sensor 2P connector terminal No. 2 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B17) and the IAT sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 8. Check the temperature reading on the scan tool.

Be aware that if the engine is warm, the reading will be higher than ambient temperature. If the engine is cold, the IAT and ECT will have the same value.

Is the correct ambient temperature indicated?

YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

NO - Replace the IAT sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the IAT with the scan tool.

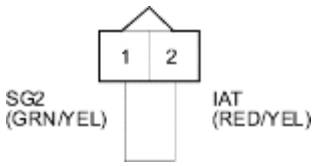
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAT sensor 2P connector.
   5. Connect the IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



JUMPER WIRE

Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the IAT with the scan tool.

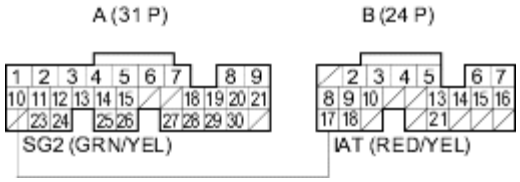
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 8.

NO - Replace the IAT sensor. ■

2. 8. Turn the ignition switch OFF.
   9. Remove the jumper wire.
   10. Connect ECM/PCM connector terminals A10 and B17 with a jumper wire.

ECM/PCM CONNECTORS



JUMPER WIRE

Wire side of female terminals

   11. Turn the ignition switch ON (II).
   12. Check the IAT with the scan tool.

Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10, B17) and the IAT sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM. ■

2. 3. Disconnect the ECT sensor 2P connector.
   4. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

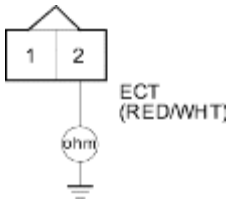
   YES - Go to step 5.

   NO - Replace the ECT sensor. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector B (24P).

1. 7. Check for continuity between the ECT sensor 2P connector terminal No. 2 and body ground.

   ECT SENSOR 2P CONNECTOR

   Wire side of female terminals

   Is there continuity?

   YES - Repair short in the wire between the ECM/PCM (B8) and the ECT sensor. ■

   NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the ECT with the scan tool.

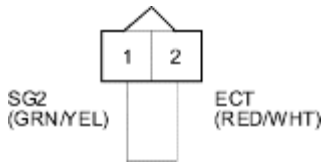
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the ECT sensor 2P connector.
   5. Connect the ECT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2P CONNECTOR



JUMPER WIRE

Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the ECT with the scan tool.

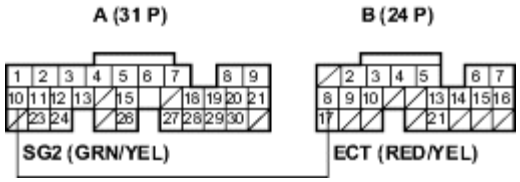
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 8.

NO - Replace the ECT sensor. ■

2. 8. Turn the ignition switch OFF.
   9. Remove the jumper wire.
   10. Connect ECM/PCM connector terminals A10 and B8 with a jumper wire.

ECM/PCM CONNECTORS



JUMPER WIRE

Wire side of female terminals

3. 11. Turn the ignition switch ON (II).
   12. Check the ECT with the scan tool.

Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10, B8) and the ECT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0122: TP Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the throttle position with the scan tool.

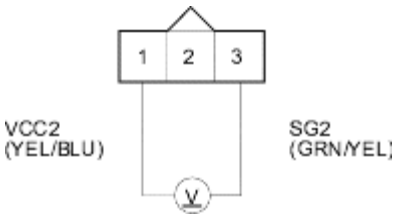
   Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

   NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

   TP SENSOR 3P CONNECTOR



   Wire side of female terminals

   Is there about 5 V?

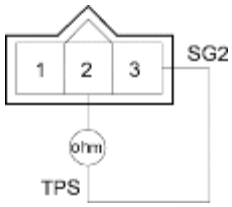
   YES - Go to step 7.

   NO - Go to step 14.

3. 7. Turn the ignition switch OFF.

1. 8. At the sensor side, measure resistance between the TP sensor 3P connector terminals No. 1 and No. 3 with the throttle fully closed.

   TP SENSOR 3P CONNECTOR



   Terminal side of male terminals

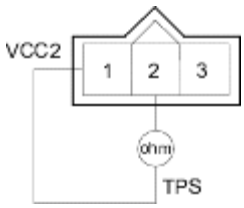
   Is there about 0.5-0.9 k ohms?

   YES - Go to step 9.

   NO - Replace the throttle body. ■

2. 9. Measure resistance between the TP sensor 3P connector terminals No. 1 and No. 2 with the throttle fully closed.

   TP SENSOR 3P CONNECTOR



   Terminal side of male terminals

   Is there about 4.5k ohms?

   YES - Go to step 10.

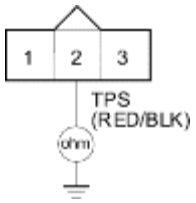
   NO - Replace the throttle body. ■

   10. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. At the wire harness side, check for continuity between TP sensor 3P connector terminal No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

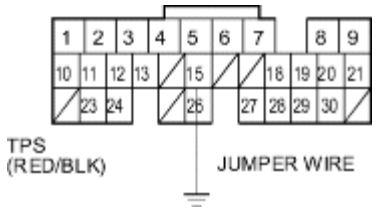
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A15) and the TP sensor. ■

NO - Go to step 12.

12. Connect ECM/PCM connector terminal A15 and body ground with a jumper wire.

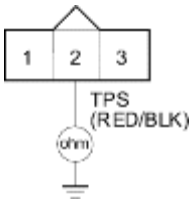
ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

1. 13. At the wire harness side, check for continuity between TP sensor 3P connector terminals No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

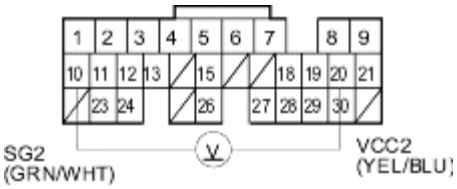
Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A15) and the TP sensor. ■

14. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the throttle position with the scan tool.

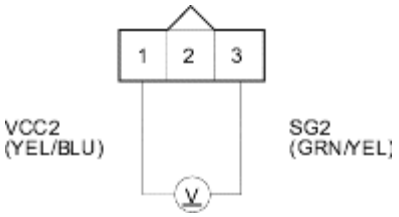
   Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

   NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. At the wire harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

   TP SENSOR 3P CONNECTOR



   Wire side of female terminals

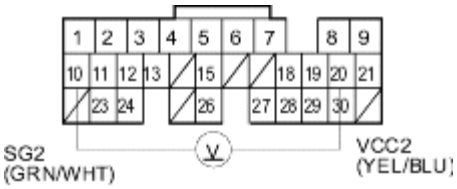
   Is there about 5 V?

   YES - Replace the throttle body. ■

   NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A10 and A20.

   ECM/PCM CONNECTOR A (31P)



   Wire side of female terminals

   Is there about 5 V?

   YES - Repair open in the wire between the ECM/PCM (A10) and the TP sensor. ■

   NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0131: Primary HO2S (Sensor 1) Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output voltage with the scan tool during acceleration using wide open throttle.

Does the voltage stay at 0.5 V or less?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Check the fuel pressure (see page 11-431).

Is it normal?

YES - Go to step 5.

NO - Repair the fuel supply system. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect the primary HO2S (Sensor 1) 4P connector.
   7. Turn the ignition switch ON (II).
   8. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

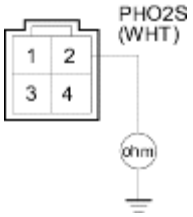
Does it stay at 0.5 V or less?

YES - Go to step 9.

NO - Replace the primary HO2S (Sensor 1). ■

1. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between the primary HO2S (Sensor 1) 4P connector terminal No. 2 and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A6) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0132: Primary HO2S (Sensor 1) Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

Does the voltage stay at 0.9 V or more?

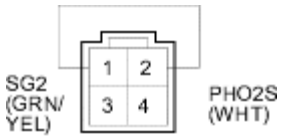
YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the primary HO2S (Sensor 1) 4P connector.
   6. Connect the primary HO2S (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR

JUMPER WIRE



Terminal side of male terminals

3. 7. Turn the ignition switch ON (II).
   8. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

Is there 0.9 V or more?

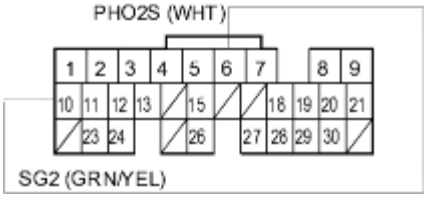
YES - Go to step 9.

NO - Replace the primary HO2S (Sensor 1). ■

1. 9. Turn the ignition switch OFF.

10. Connect ECM/PCM connector terminals A6 and A10 with a jumper wire.

ECM/PCM CONNECTOR A (31P)



JUMPER WIRE

Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

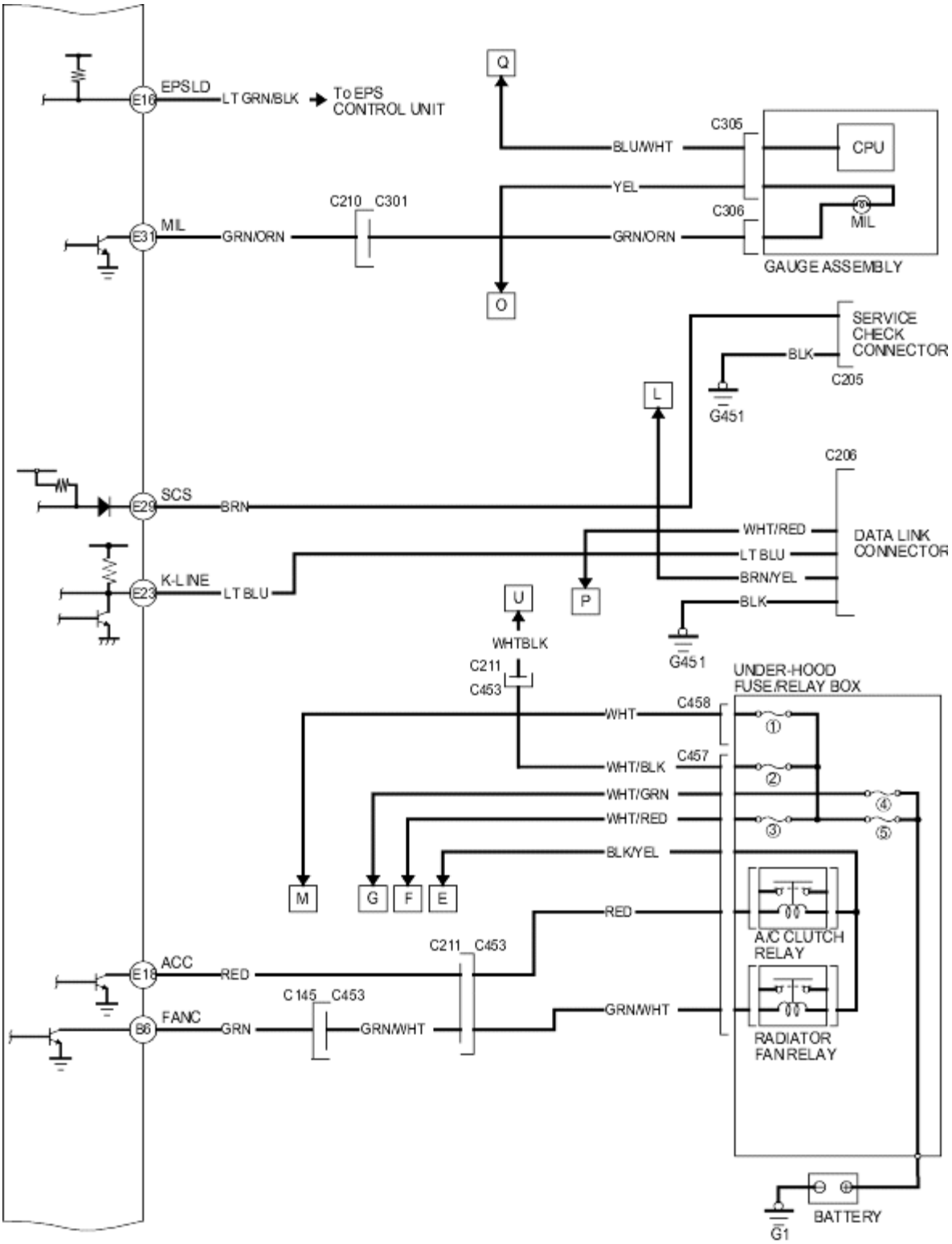
Is there 0.9 V or more?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A6, A10) and the primary HO2S (Sensor 1). ■

Fuel and Emissions Systems

System Descriptions (cont'd)



PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0133: Primary HO2S (Sensor 1) Slow Response

NOTE: If DTC P0131, P0132 and/or P0135 are stored at the same time as DTC P0133, troubleshoot those DTCs first, then recheck for DTC P0133.

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Test-drive under the following conditions:
      - 89 km/h (55 mph) steady speed
      - A/T in D position (M/T in 5th gear)
      - Until readiness code or Temporary DTC P0133 comes on
2. 4. Check for a Temporary DTC with the scan tool.

Is Temporary DTC P0133 indicated?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and the ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0135: Primary HO2S (Sensor 1) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine.

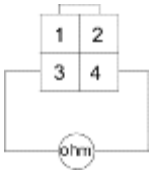
Is DTC P0135 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the primary HO2S (Sensor 1) 4P connector.
   5. At the primary HO2S side, measure resistance between the primary HO2S (sensor 1) 4P connector terminals No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

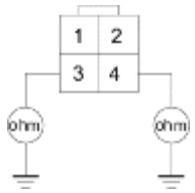
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the primary HO2S (Sensor 1). ■

1. 6. Check for continuity between body ground and the primary HO2S (Sensor 1) 4P connector terminals No. 3 and No. 4 individually.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

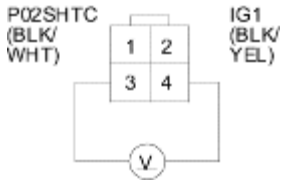
Is there continuity?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Go to step 12.

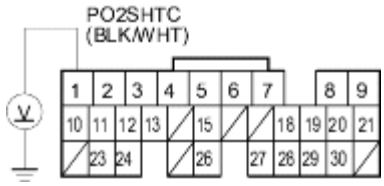
3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).

PGM-FI System

DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal A1 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

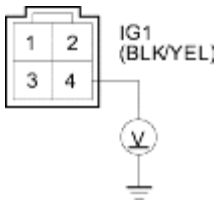
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 (No. 4)* and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

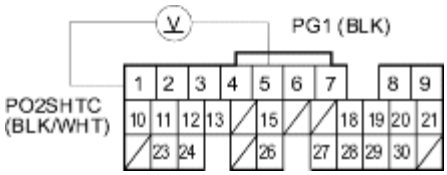
Is there battery voltage?

YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the primary HO2S (Sensor 1) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.
14. Reconnect the primary HO2S (Sensor 1) 4P connector.
15. Disconnect ECM/PCM connector A (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal A1 and A5.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0137: Secondary HO2S (Sensor 2) Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm (min-1) with the scan tool.

Does the voltage stay at 0.3 V or less?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   6. Turn the ignition switch ON (II).
   7. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

Does the voltage stay at 0.3 V or less?

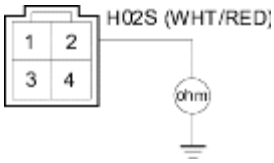
YES - Go to step 8.

NO - Replace the secondary HO2S (Sensor 2). ■

3. 8. Turn the ignition switch OFF.
   9. Disconnect ECM/PCM connector E (31P).

1. 10. Check for continuity between the secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E2) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0138: Secondary HO2S (Sensor 2) Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm (min-1) with the scan tool.

Does the voltage stay at 1.0 V or more?

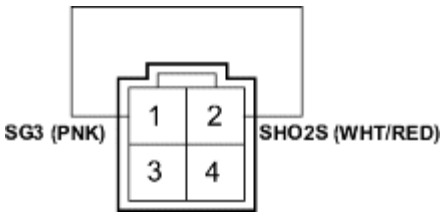
YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and the at ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   6. Connect the secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR

JUMPER WIRE



Terminal side of male terminals

3. 7. Turn the ignition switch ON (II).
   8. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

Is there 1.0 V or more?

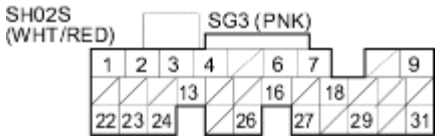
YES - Go to step 9.

NO - Replace the secondary HO2S (Sensor 2). ■

2. 9. Turn the ignition switch OFF.
   10. Connect ECM/PCM connector terminals E2 and E4 with a jumper wire.

ECM/PCM CONNECTOR E (31P)

JUMPER WIRE



Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

Is there 1.0 V or more?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (E2, E4) and the secondary HO2S (Sensor 2). ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0139: Secondary HO2S (Sensor 2) Slow Response

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm (min-1) with the scan tool.

Does the voltage stay within 0.3-0.8 V for 2 minutes?

YES - Replace the secondary HO2S (Sensor 2). ■

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine.

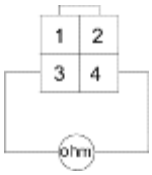
Is DTC P0141 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   5. At the secondary HO2S (Sensor 2) side, measure resistance between the HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

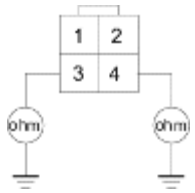
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the secondary HO2S (Sensor 2). ■

1. 6. Check continuity between body ground and the secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

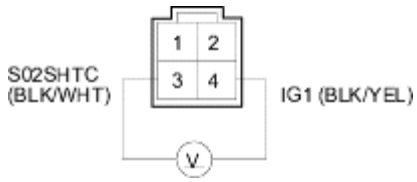
Is there continuity?

YES - Replace the secondary HO2S (Sensor 2). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES - Go to step 9.

NO - Go to step 12.

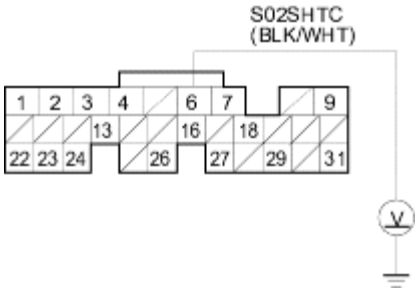
3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector E (31P).

PGM-FI System

DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal E6 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

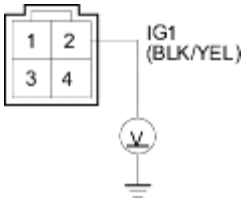
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

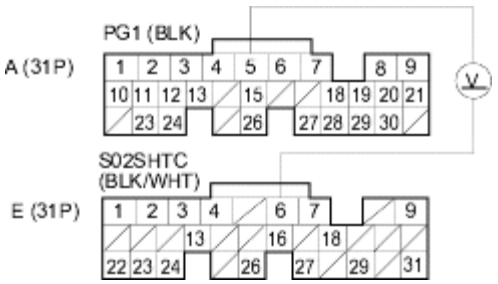
YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.

14. Reconnect the secondary HO2S (Sensor 2) 4P connector.
15. Disconnect ECM/PCM connector E (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal E6 and A5.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0171: Fuel System Too Lean

DTC P0172: Fuel System Too Rich

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0107, P0108, P1128, P1129: Manifold Absolute Pressure (MAP) sensor

P0135: Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) heater

P0137, P0138: Secondary HO2S (Sensor 2)

P0141: Secondary HO2S (Sensor 2) heater

P0401 P1491, P1498: Exhaust Gas Recirculation (EGR) system*

P1259: VTEC system*

*: D16W7, D16V1 engines

1. 1. Check the fuel pressure (see page 11-431).

Is fuel pressure OK?

YES - Go to step 2.

NO - Check these items:

- If the pressure is too high, replace the fuel pressure regulator (see page 11-438). ■
- If the pressure is too low, check the fuel pump, the fuel feed pipe, the fuel filter, and replace the fuel pressure regulator (see page 11-438). ■

2. 2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output with the scan tool.

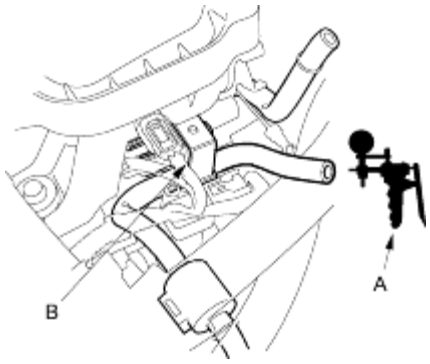
Does it stay at less than 0.3 V or more than 0.6 V?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 4.

3. 4. Turn the ignition switch OFF.

1. 5. With a vacuum pump (A), apply vacuum to the evaporative emission (EVAP) canister purge valve (B) from the intake manifold side.



Does it hold vacuum?

YES - Go to step 6.

NO - Replace the EVAP canister purge valve. ■

2. 6. Turn the ignition switch ON (II).
   7. Check the manifold pressure with the scan tool.

Does it indicate atmospheric pressure?

YES - Go to step 8.

NO - Replace the MAP sensor. ■

3. 8. Start the engine.
   9. Check the MAP with the scan tool.

Is a MAP of 40.0 kPa (300 mmHg, 12.0 in.Hg) or less indicated within 1 second after starting the engine?

YES - Check the valve clearances and adjust if necessary. If the valve clearances are OK, replace the injector. ■

NO - Replace the MAP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0300: Random misfire and any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

NOTE:

- If the misfiring is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0304) will be stored.
- If the misfiring is frequent enough to damage the catalyst, the MIL will blink whenever the misfiring occurs, and DTC P0300 (and some combination of P0301 through P0304) will be stored. When the misfiring stops, the MIL will remain on.

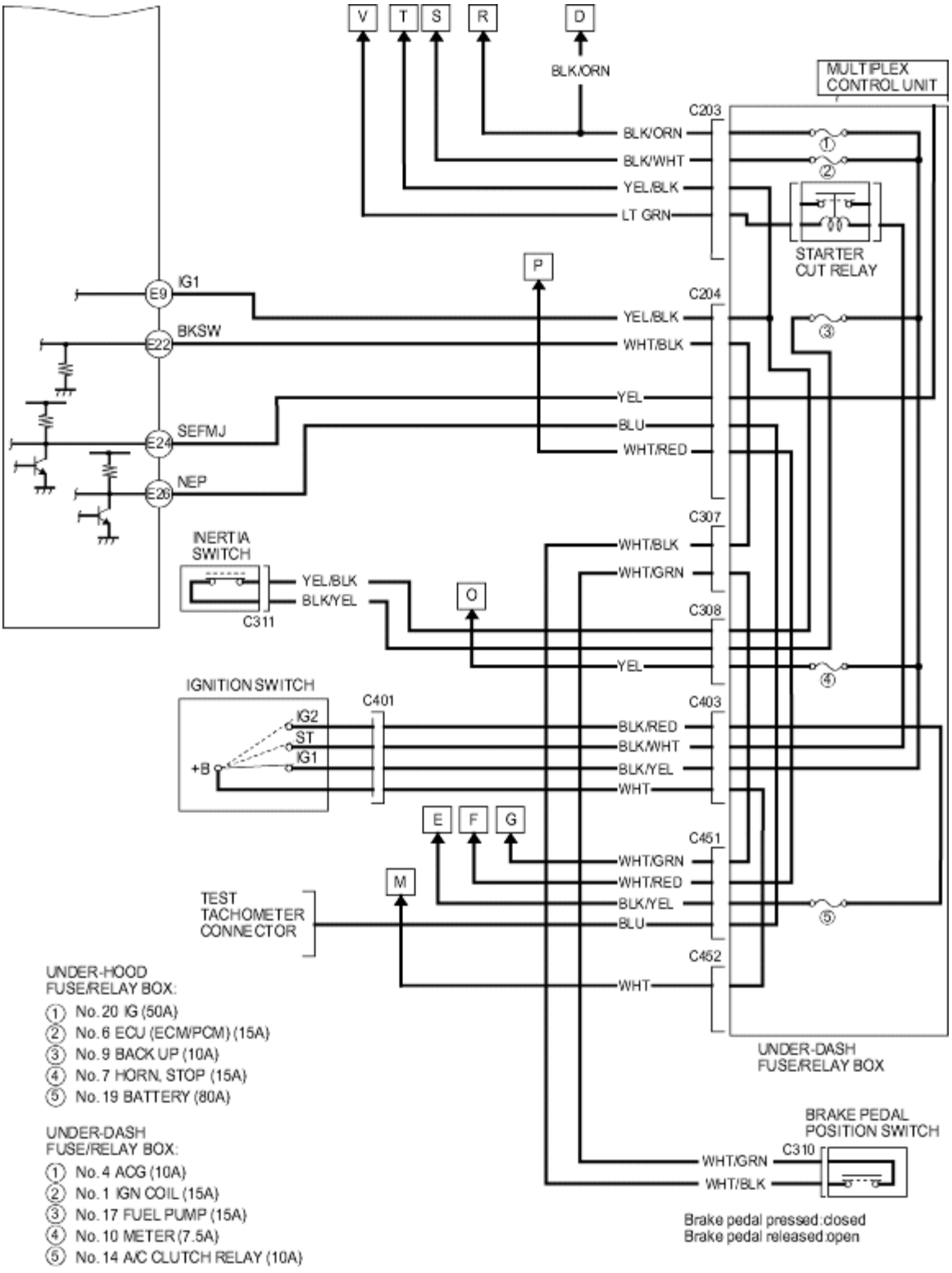
1. 1. Troubleshoot the following DTCs first if any of them were stored along with the random misfire DTC(s):
   P0107, P0108: Manifold Absolute Pressure (MAP) sensor
   P0131, P0132: Primary Heated Oxygen Sensor
   P0171, P0172: Fuel system
   P0335, P0336: Crankshaft Position (CKP) sensor
   P0401, P1491, P1498: Exhaust Gas Recirculation (EGR) system*
   P0505: Idle control system
   P1259: VTEC system*
   P1361, P1362: Top Dead Centre (TDC) sensor
   P1519: Idle Air Control (IAC) valve
   *: D16W7, D16V1 engines
   2. Test-drive the vehicle to verify the symptom.
   3. Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Random misfire only at low RPM and under load	Check fuel pressure (see page 11-431).	• Low compression. • Low quality fuel.
Random misfire only during acceleration	Check fuel pressure (see page 11-431).	Malfunction in the VTEC system (D16W7, D16V1 engine) (see page 6-9).
Random misfire at high RPM, under load, or under random conditions	Check fuel pressure (see page 11-431).	Correct valve clearance (see page 6-14).

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

1. 1. After checking and recording the freeze data, reset the ECM/PCM (see page 11-312). If there is no freeze data of the misfire, just clear the DTC.
   2. Start the engine, and listen for a clicking sound at the injector at the problem cylinder.

   Does it click?

   YES - Go to step 3.

   NO - Go to step 30.

2. 3. Turn the ignition switch OFF, and reset the ECM/PCM.
   4. Exchange the ignition coil from the problem cylinder with one from another cylinder.
   5. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
   6. Check the DTC or the Temporary DTC with the scan tool.

   Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

   YES - Go to step 7.

   NO - Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). ■

1. 7. Determine which cylinder(s) had the misfire.

   Does the misfire occur in the other cylinder whose ignition coil was exchanged?

   YES - Replace the faulty ignition coil. ■

   NO - Go to step 8.

2. 8. Turn the ignition switch OFF, and reset the ECM/PCM.
   9. Exchange the spark plug from the problem cylinder with one from another cylinder.
   10. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
   11. Check the DTC or the Temporary DTC with the scan Tool.

   Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

   YES - Go to step 12.

   NO - Intermittent misfire due to spark plug fouling, etc. (no misfire at this time). ■

12. Determine which cylinder(s) had the misfire.

    Does the misfire occur in the other cylinder whose spark plug was exchanged?

    YES - Replace the faulty spark plug. ■

    NO - Go to step 13.

13. Turn the ignition switch OFF, and reset the ECM/PCM.
14. Exchange the injector in the problem cylinder with one from another cylinder.
15. Let the engine idle for 2 minutes.

PGM-FI System
DTC Troubleshooting (cont'd)

16. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
17. Check the DTC or the Temporary DTC with the scan Tool.

Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

YES - Go to step 18.

NO - Intermittent misfire due to bad contact at the injector connector (no misfire at this time). ■

18. Determine which cylinder (s) had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

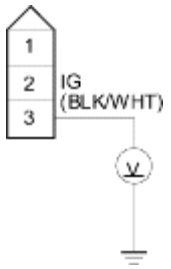
YES - Replace the faulty injector. ■

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the ignition coil 3P connector from the problem cylinder.
21. Turn the ignition switch ON (II).

22. Measure voltage between the ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

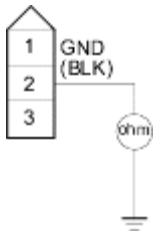
Is there battery voltage?

YES - Go to step 23.

NO - Repair open or short in the wire between the No. 1 IGN COIL (15A) fuse and the ignition coil. ■

23. Turn the ignition switch OFF.
24. Check for continuity between the ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 25.

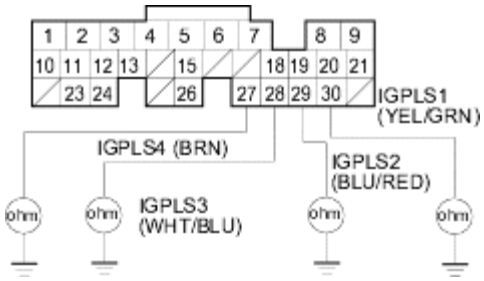
NO - Repair open in the wire between the ignition coil and G101. ■

25. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 26. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

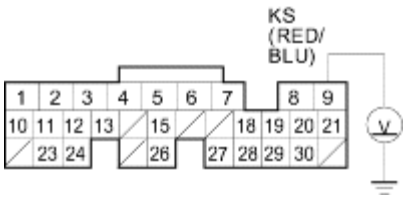
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the ignition coil. ■

NO - Go to step 27.

27. Connect the appropriate ignition coil 3P connector terminal No. 1 and body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

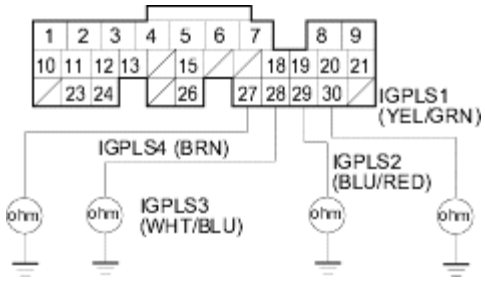


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	P0301	YEL/GRN
No. 2	P0302	BLU/RED
No. 3	P0303	WHT/BLU
No. 4	P0304	BRN

1. 28. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM and the ignition coil. ■

29. Check the compression.

Is the engine compression OK?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

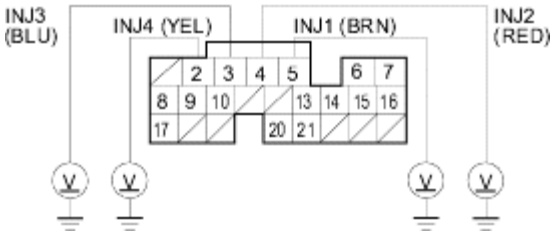
NO - Repair the engine. ■

30. Disconnect ECM/PCM connector B (24P).
31. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 32. Measure voltage between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

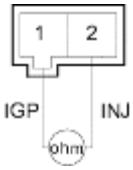
Is there battery voltage?

YES - Go to step 33.

NO - Go to step 42.

33. Turn the ignition switch OFF, and remove the air cleaner (see page 11-446).
34. Disconnect the injector 2P connector on the problem cylinder.
35. Measure the resistance between the injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10 ohms-13 ohms?

YES - Go to step 36.

NO - Replace the injector (see page 11-413). ■

1. 36. Exchange the injector in the problem cylinder with one from another cylinder.

37. Install the air cleaner (see page 11-446), and reset the ECM/PCM.
38. Let the engine idle for 2 minutes.
39. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
40. Check the DTC or the Temporary DTC with a scan tool.

Is DTC or Temporary DTC P0301, P0302, P0303, or P0304 indicated?

YES - Go to step 41.

NO - Intermittent misfire due to injector malfunction etc. ■

41. Determine which cylinder (s) had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

YES - Replace the faulty injector. ■

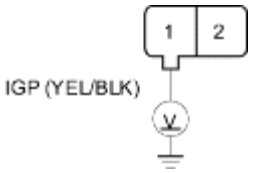
NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

42. Turn the ignition switch OFF.
43. Remove the air cleaner (see page 11-446).
44. Disconnect the injector 2P connector on the problem cylinder.
45. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 46. Measure voltage between the injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

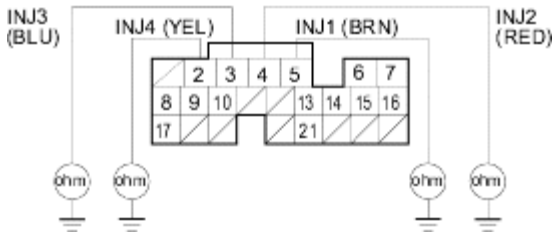
Is there battery voltage?

YES - Go to step 47.

NO - Repair open in the wire between the injector and the PGM-FI main relay. ■

47. Turn the ignition switch OFF.
48. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

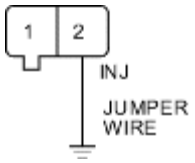
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the injector. ■

NO - Go to step 49.

1. 49. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

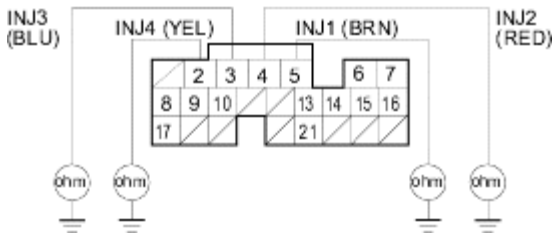


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL

50. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

Is there continuity?

YES - Replace the injector, then recheck. ■

NO - Repair open in the wire between the ECM/PCM and the injector. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0325: Knock Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   3. Hold the engine at 3,000-4,000 rpm (min-1) for at least 60 seconds.

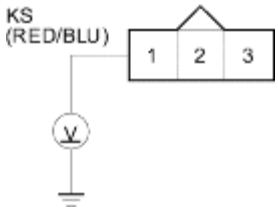
Is DTC P0325 indicated?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM.

2. 4. Turn the ignition switch OFF.
   5. Disconnect the knock sensor 3P connector.
   6. Turn the ignition switch ON (II).
   7. Measure voltage between knock sensor 3P connector terminal No. 1 and body ground.

KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

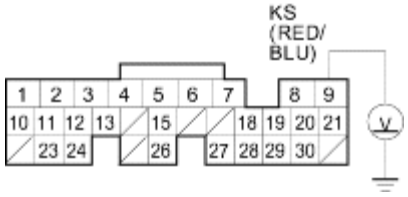
Is there about 5 V?

YES - Go to step 12.

NO - Go to step 8.

1. 8. Measure voltage between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

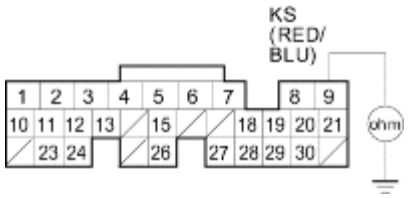
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A9) and knock sensor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair short in the wire between ECM/PCM (A9) and knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Substitute a known-good knock sensor and recheck.

Is DTC P0325 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1324: Knock Sensor Power Source Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Turn the ignition switch ON (II).

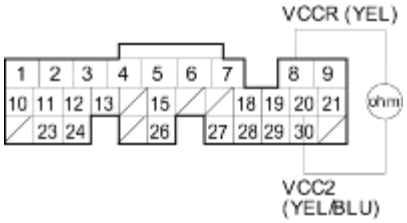
Is DTC P1324 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM.

2. 3. Turn the ignition switch OFF.
   4. Disconnect ECM/PCM connector A (31P).
   5. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

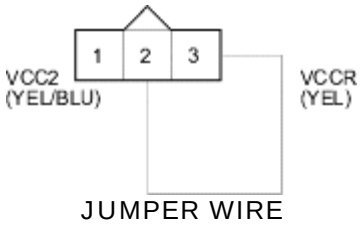
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Disconnect the knock sensor 3P connector.

1. 7. Connect the knock sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

KNOCK SENSOR 3P CONNECTOR

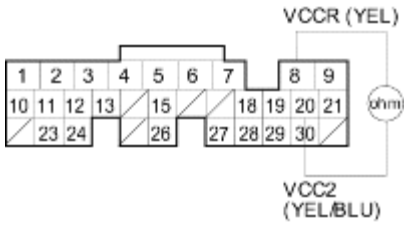


JUMPER WIRE

Wire side of female terminals

2. 8. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Replace the knock sensor. ■

NO - Repair open in the wire between the ECM/PCM (A8, A20) and the knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0335: - CKP Sensor No Signal

DTC P0336: - CKP Sensor Intermittent Interruption

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine.

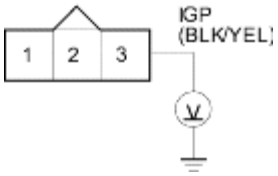
Is DTC P0335 and/or P0336 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the CKP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the CKP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

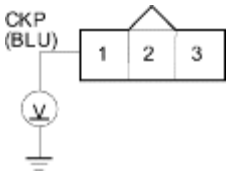
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the CKP sensor. ■

1. 7. Measure voltage between the CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

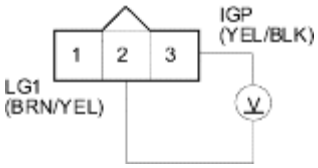
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and G101. ■

3. 9. Substitute a known-good CKP sensor and recheck.

Is DTC P0335 and/or P0336 indicated?

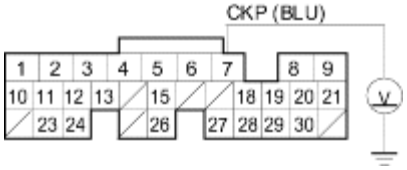
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original CKP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

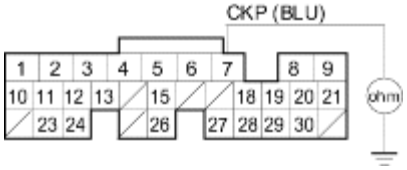
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



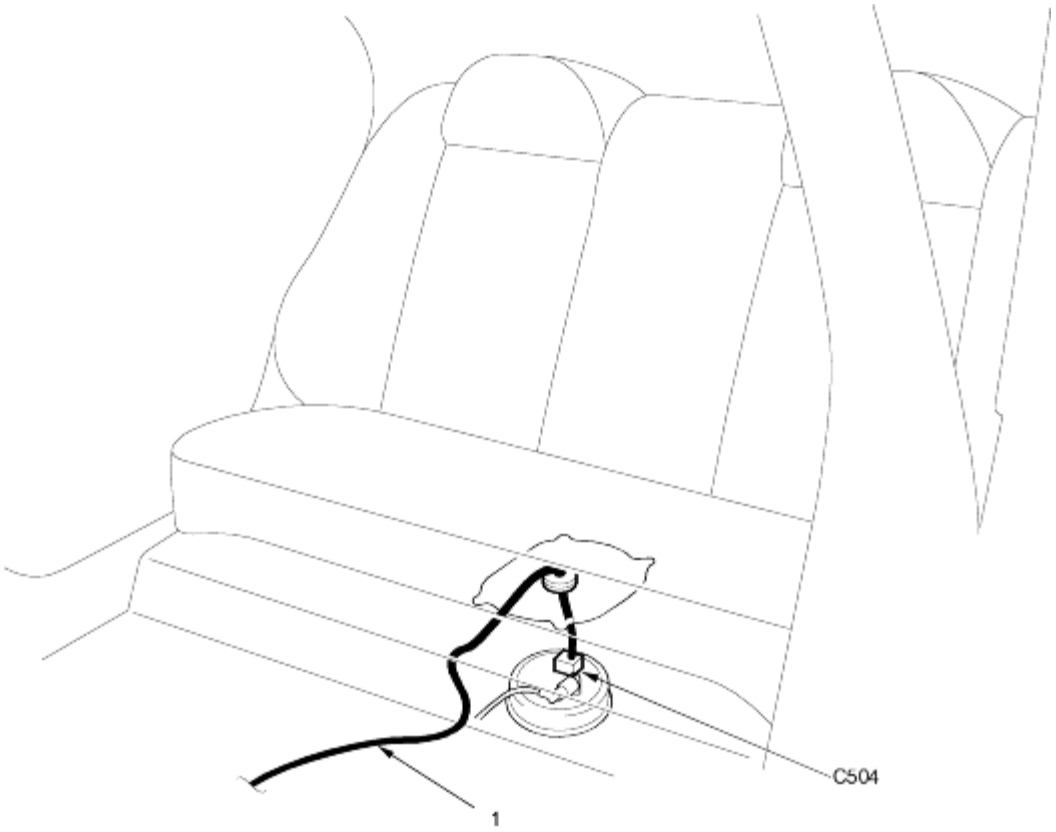
Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems
System Descriptions (cont'd)



1. FLOOR WIRE HARNESS

C504



1	BLK
2	YEL/BLK
3	——
(4)	BLK
(5)	YEL/GRN

NOTE
- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side
- O: Related to ECM/PCM control.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0500: VSS Circuit Malfunction

DTC P0501: VSS Range/Performance Problem

1. 1. Test-drive the vehicle.
   2. Check the vehicle speed with the scan tool.

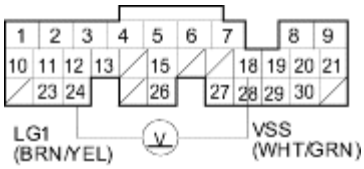
   Is the correct speed indicated?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VSS and at the ECM. ■

   NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Block the rear wheels and set the parking brake.
   5. Raise the front of the vehicle, and make sure it is securely supported.
   6. Turn the ignition switch ON (II).
   7. Block the right front wheel, and slowly rotate the left front wheel.
   8. Measure voltage between ECM/PCM connector terminals A18 and A24.

   ECM/PCM CONNECTOR A (31P)



   Wire side of female terminals

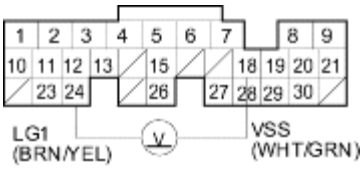
   Does the voltage pulse between 0 V and 5 V or battery voltage?

   YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

   NO - Go to step 9.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Turn the ignition switch ON (II).
   12. Block the right front wheel, and slowly rotate the left front wheel.
   13. Measure voltage between ECM/PCM connector terminals A18 and A24.

   ECM/PCM CONNECTOR A (31P)



   Wire side of female terminals

   Does the voltage pulse between 0 V and 5 V or battery voltage?

   YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

   NO - Check these items:

   - A short or an open in the wire between the ECM/PCM (A18) and the VSS.
   - If the wire is OK, test the VSS (see page 22-94).

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0563: ECM/PCM Power Source Circuit Unexpected Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Turn the ignition switch OFF.
   3. Wait 5 seconds.
   4. Turn the ignition switch ON (II).

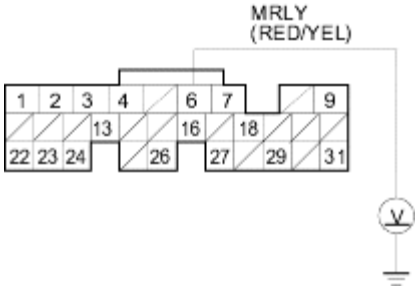
Is DTC P0563 indicated?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the No. 6 ECU (ECM/PCM) (15 A) fuse in the under-hood fuse/relay box and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector E (31P).
   7. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



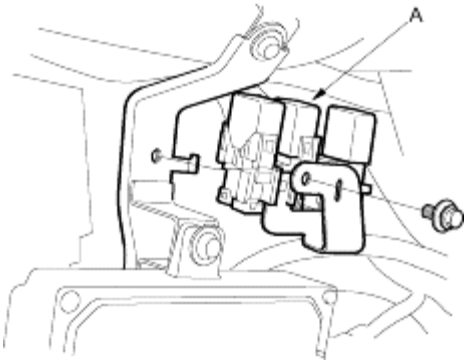
Wire side of female terminals

Is there battery voltage?

YES - Go to step 11.

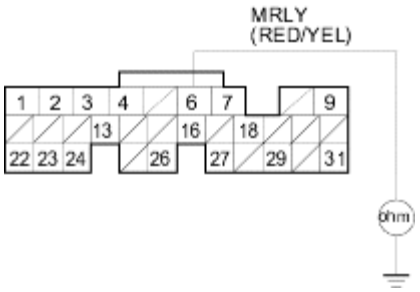
NO - Go to step 8.

1. 8. Remove the glove box.
2. 9. Remove the PGM-FI main relay 1 (A).



10. Check for continuity between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E7) and the PGM-FI main relay 1. ■

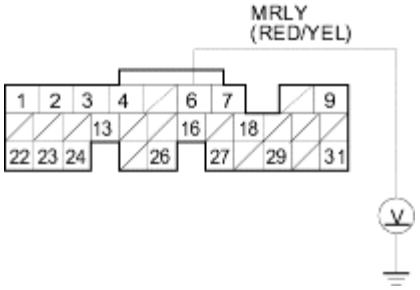
NO - Replace the PGM-FI main relay 1.

11. Reconnect ECM/PCM connector E (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

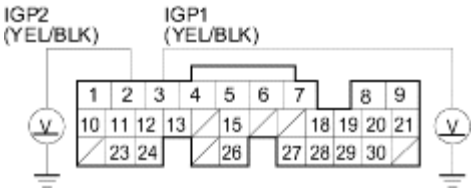
Is there battery voltage?

YES - Go to step 13.

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

13. Disconnect ECM/PCM connector A (31P).
14. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

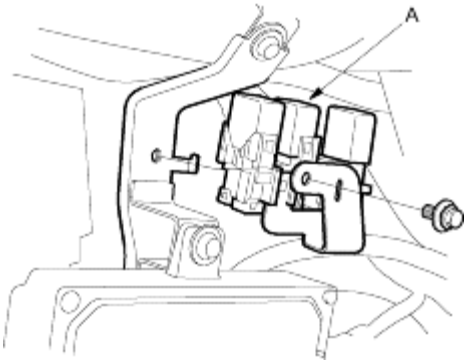
Is there battery voltage?

YES - Go to step 15.

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

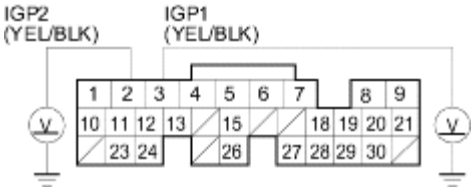
1. 15. Remove the glove box.

16. Remove the PGM-FI main relay 1 (A).



17. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (A2, A3) and the PGM-FI main relay 1. ■

NO - Replace the PGM-FI main relay 1. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P1107: BARO Sensor Circuit Low Voltage

DTC P1108: BARO Sensor Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Turn the ignition switch ON (II).

Is DTC P1107 or P1108 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1259: VTEC System Malfunction

Special Tools Required

- Oil pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Check the engine oil level, and refill if necessary.
   3. Start the engine. Hold the engine at 3.000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   4. Road test the vehicle:

   Accelerate in 1st gear to an engine speed over 4,000 rpm (min-1). Hold that engine speed for at least 2 seconds. If DTC P1259 is not repeated during the first road test, repeat this test 2 more times.

   Is DTC P1259 indicated?

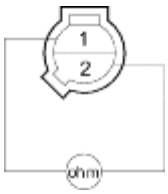
   YES - Go to step 5.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTEC solenoid valve and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Remove the resonator (see page 11-448).

1. 7. Disconnect the VTEC oil pressure switch 2P connector.
2. 8. Check for continuity on the VTEC oil pressure switch between the VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Terminal side of male terminals

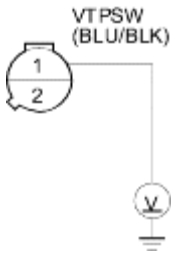
Is there continuity?

YES - Go to step 9.

NO - Replace the VTEC oil pressure switch. ■

3. 9. Turn the ignition switch ON (II).
   10. Measure voltage between the VTEC oil pressure switch 2P connector terminal No. 1 and body ground.

VTEC OIL PRESSURE SWITCH HARNESS 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

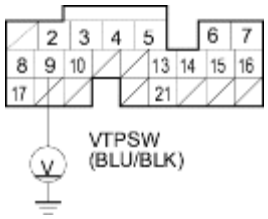
YES - Go to step 15.

NO - Go to step 11.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Measure voltage between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

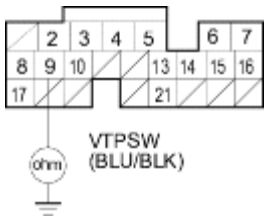
Is there battery voltage?

YES - Repair open in the wire between the VTEC oil pressure switch and ECM/PCM (B9). ■

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect ECM/PCM connector B (24P).
14. Check for continuity between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

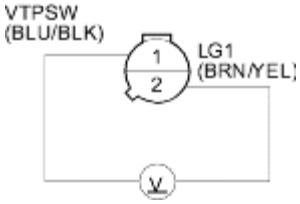
Is there continuity?

YES - Repair short in the wire between the VTEC oil pressure switch and the ECM/PCM (B9). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

15. Measure voltage between the VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH HARNESS 2P CONNECTOR



Wire side of female terminals

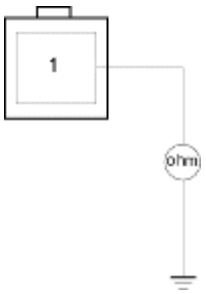
Is there battery voltage?

YES - Go to step 16.

NO - Repair open in the wire between the VTEC oil pressure switch and G101. ■

16. Turn the ignition switch OFF.
17. Disconnect the VTEC solenoid valve 1P connector.
18. Check for resistance between the VTEC solenoid valve 1P connector terminal No. 1 and body ground.

VTEC SOLENOID VALVE 1P CONNECTOR



Terminal side of male terminal

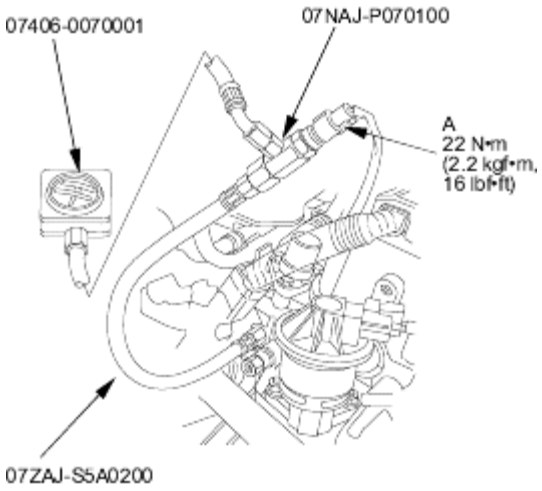
Is there 14-30 ohms?

YES - Go to step 19.

NO - Replace the VTEC solenoid valve. ■

PGM-FI System
DTC Troubleshooting (cont'd)

19. Remove the VTEC oil pressure switch (A) and install the special tools as shown, then reinstall the VTEC oil pressure switch.



20. Reconnect the VTEC solenoid valve 1P connector and VTEC oil pressure switch 2P connector.
21. Connect a tachometer.
22. Start the engine. Hold the engine at 3.000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
23. Check oil pressure at engine speeds of 1,000 and 2,000 rpm (min-1). Keep measuring time as short as possible because the engine is running with no load (less than 1 minute).

Is pressure below 49 kPa (0.5 kgf/cm2, 7 psi)?

YES - Go to step 24.

NO - Inspect the VTEC solenoid valve (see page 11-412). ■

24. Turn the ignition switch OFF.
25. Disconnect the VTEC solenoid valve 1P connector.
26. Attach the battery positive terminal to the VTEC solenoid valve terminal.
27. Start the engine, and check oil pressure at an engine speed of 3,000 rpm (min-1).

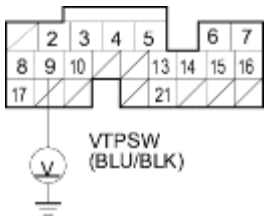
Is pressure above 390 kPa (4.0 kgf/cm2, 57 psi)?

YES - Go to step 28.

NO - Inspect the VTEC solenoid valve (see page 11-412). ■

28. With the battery positive terminal still connected to the VTEC solenoid valve, measure voltage between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage above 4,000 rpm (min-1)?

YES - Go to step 29.

NO - Replace the VTEC oil pressure switch. ■

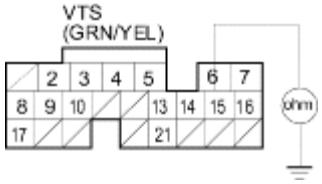
29. Turn the ignition switch OFF.
30. Disconnect the battery positive terminal from the VTEC solenoid valve terminal.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 31. Disconnect ECM/PCM connector B (24P).

32. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

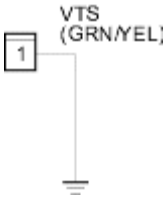
Is there continuity?

YES - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

NO - Go to step 33.

1. 33. Connect the VTEC solenoid valve 1P connector terminal No. 1 and body ground with a jumper wire.

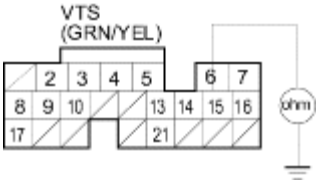
VTEC SOLENOID VALVE HARNESS 1P CONNECTORS



Wire side of female terminals

34. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P1361: TDC Sensor Intermittent Interruption

DTC P1362: TDC Sensor No Signal

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine.

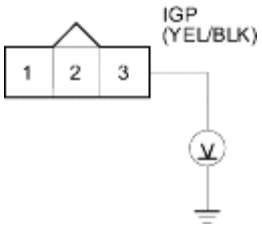
Is DTC P1361 and/or P1362 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TDC sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TDC sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the TDC sensor 3P connector terminal No. 3 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

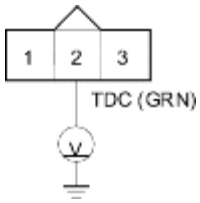
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the TDC sensor. ■

1. 7. Measure voltage between the TDC sensor 3P connector terminal No. 2 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

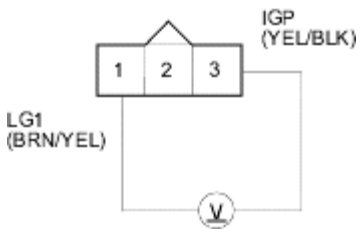
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the TDC sensor 3P connector terminals No. 1 and No. 3.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the TDC sensor and G101. ■

3. 9. Substitute a known-good TDC sensor and recheck.

Is DTC P1361 and/or P1362 indicated?

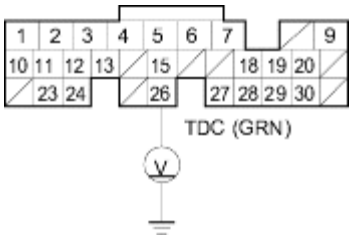
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original TDC sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

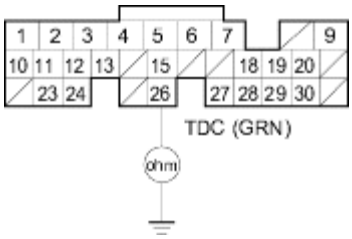
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A26) and TDC sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A26) and the TDC sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

DTC P1607:

Malfunction in ECM/PCM Internal Circuit

1. 1. Reset the ECM/PCM (see page 11-312).
2. Turn the ignition switch ON (II).
3. Wait 40 seconds.

Is DTC P1607 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time. ■

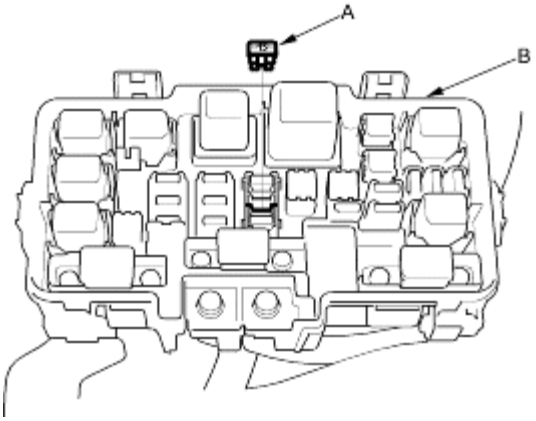
Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Reset the ECM/PCM

You can reset the ECM/PCM in either of 2 ways:

- Use the scan tool or Honda PGM Tester to clear the ECM's/PCM's memory.
  See the scan tool or Honda PGM Tester user's manuals for specific instructions.
- Turn the ignition switch OFF, and remove the No. 6 ECU (ECM/PCM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



How to End a Troubleshooting Session (required after any troubleshooting)

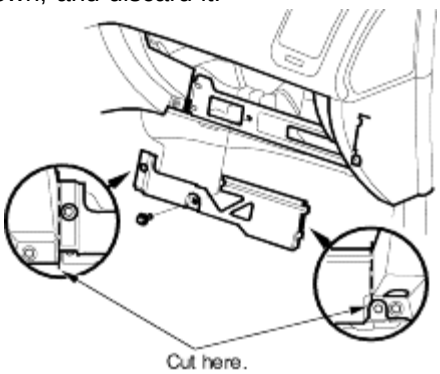
1. 1. Reset the ECM/PCM as described above.
   2. Turn the ignition switch OFF.
   3. Disconnect the scan tool or Honda PGM Tester from the DLC.

NOTE: The ECM/PCM is part of the immobiliser system. If you replace the ECM/PCM, it will have a different immobiliser code. In order for the engine to start, you must rewrite the immobiliser code with the Honda PGM Tester.

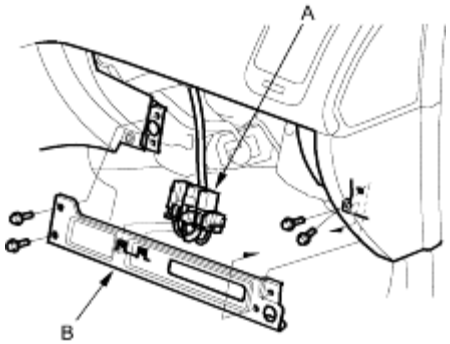
How to Remove the ECM/PCM for Testing

If the inspection for a trouble code requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it:

1. 1. Remove the passenger's dashboard lower cover (see page 20-78), the passenger's kick panel (see page 20-64), and the glove box (see page 20-79).
   2. Remove the bolt. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown, and discard it.

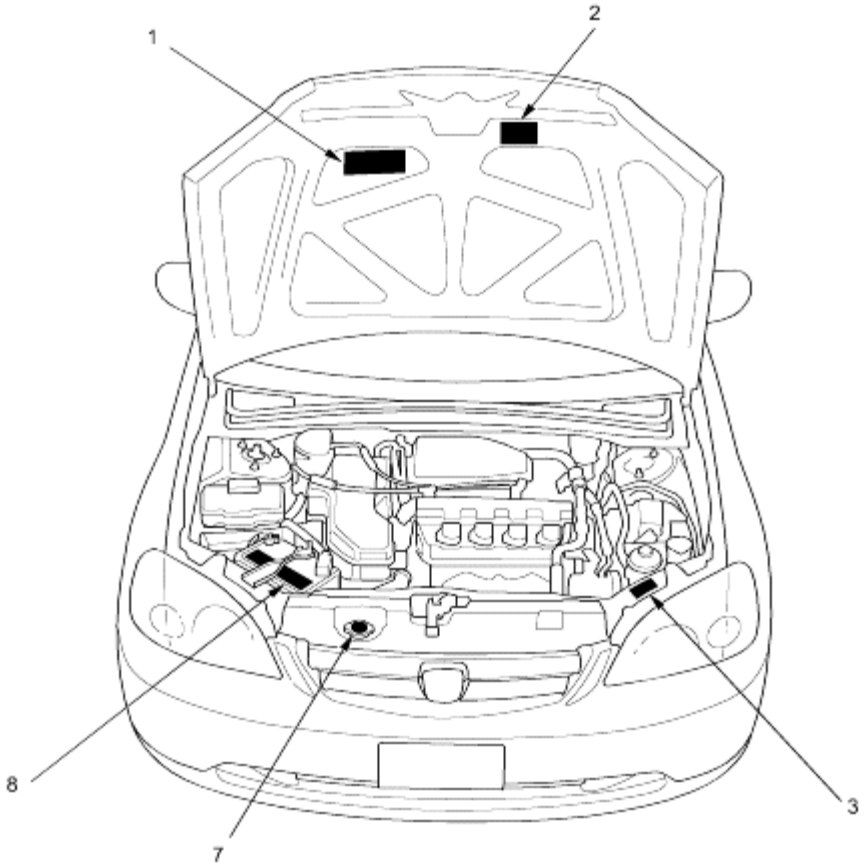


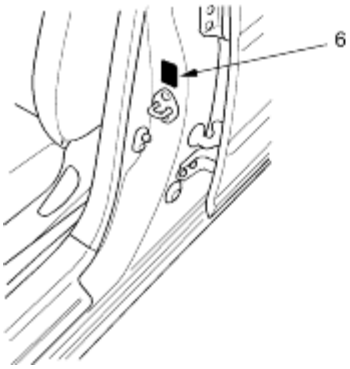
2. 3. Remove the relays (A), then remove the bolts and the glove box frame (B).

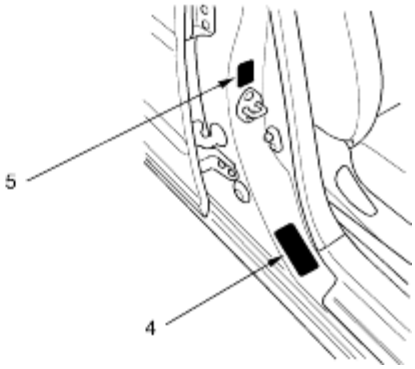


General Information

Warning/Caution Label Locations (cont'd)







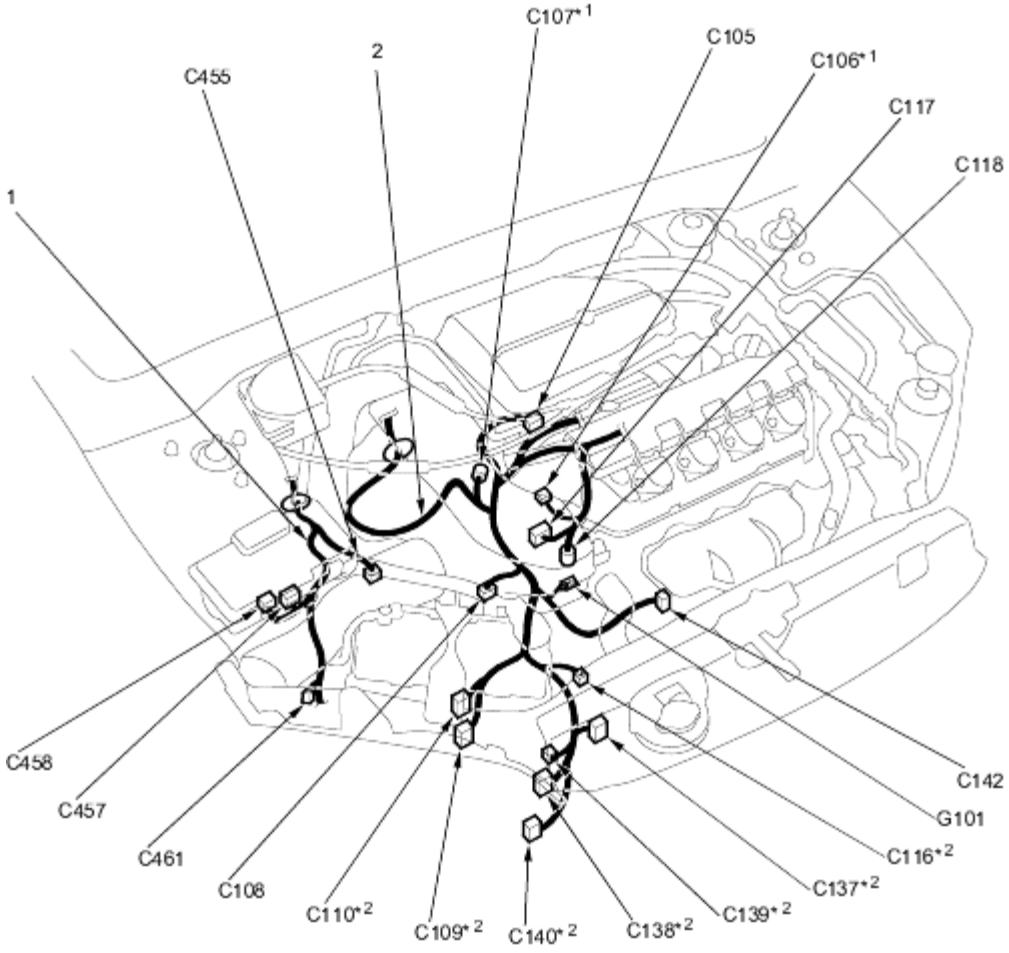
1. ENGINE COOLANT INFORMATION AND SERVICE INFORMATION
   (Under-hood Emission Control Label)
2. SRS WARNING LABEL
3. AIR CONDITIONING INFORMATION
4. TYRE INFORMATION
   (KQ model)
5. TYRE INFORMATION
   (KE, KT models)
6. TYRE INFORMATION
   (LH model)
7. RADIATOR CAP CAUTION
8. BATTERY CAUTION

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:



1. ENGINE COMPARTMENT WIRE HARNESS
2. ENGINE WIRE HARNESS

*1: D16W7, D16V1 engines

*2: A/T

PGM-FI System

MIL Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II) and watch the Malfunction Indicator Lamp (MIL).

Does the MIL come on and stay on?

YES - If the MIL always comes on and stays on, go to step 68. But if the MIL sometimes works normally, first check for these problems.

- An intermittent short in the wire between the ECM/PCM (E29) and the Data Link Connector (DLC).
- An intermittent short in the wire between the ECM/PCM (E31) and the gauge assembly.

NO If the MIL is always off, go to step 2. But if the MIL sometimes works normally, first check for these problems.

- A loose No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.
- A loose No. 20 IG (40A) fuse in the under-hood fuse/relay box.
- A loose No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.
- A loose No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
- A poor connection at ECM/PCM terminal E31.
- An intermittent open in the GRN/ORN wire between the ECM/PCM (E31) and the gauge assembly.
- An intermittent short in the wire between the ECM/PCM (A21) and the manifold absolute pressure (MAP) sensor.
- An intermittent short in the wire between the ECM/PCM (A20) and the throttle position (TP) sensor, knock sensor, exhaust gas recirculation (EGR) valve position sensor.
- An intermittent short in the wire between the ECM/PCM (A8) and the knock sensor.

2. 2. Turn the ignition switch OFF.
   3. Press the inertia switch button.
   4. Turn the ignition switch ON (II).

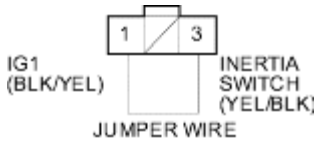
Does the MIL come on for 2 seconds after the ignition switch is turned ON (II)?

YES - Intermittent failure system is OK at this time. ■

NO - Go to step 5.

3. 5. Turn the ignition switch OFF.
1. 6. Disconnect the inertia switch 3P connector.
2. 7. Connect the inertia switch 3P connector terminals No. 1 and No. 3 with a jumper wire.

INERTIA SWITCH 3P CONNECTOR



Wire side of female terminals

3. 8. Turn the ignition switch ON (II).

Does the MIL come on for 2 seconds after the ignition switch is turned ON (II)?

YES - Replace the inertia switch. ■

NO - Go to step 9.

4. 9. Turn the ignition switch OFF.
   10. Turn the ignition switch ON (II).

Is the low oil pressure light on?

YES - Go to step 13.

NO - Go to step 11.

11. Inspect the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 12.

NO - Repair short in the wire between No. 10 METER (7.5A) fuse and the gauge assembly. Also replace the No. 10 METER (7.5A) fuse. ■

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 12. Inspect the No. 20 IG1 (40A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES - Repair open in the wire between the No. 20 IG (40A) fuse and the gauge assembly. If the wires are OK, test the ignition switch (see page 22-83).

NO - Repair short in the wire between No. 20 IG (40A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG1 (40A) fuse. ■

13. Try to start the engine.

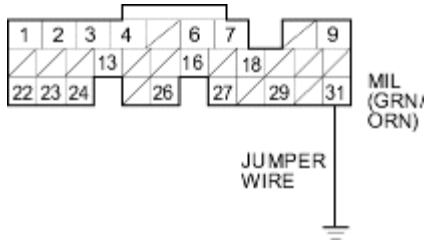
Does the engine start?

YES - Go to step 14.

NO - Go to step 17.

14. Turn the ignition switch OFF.
15. Connect ECM/PCM connector terminal E31 and body ground with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

16. Turn the ignition switch ON (II).

Is the MIL on?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check for an open in the wire between the ECM/PCM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly. ■

1. 17. Turn the ignition switch OFF.

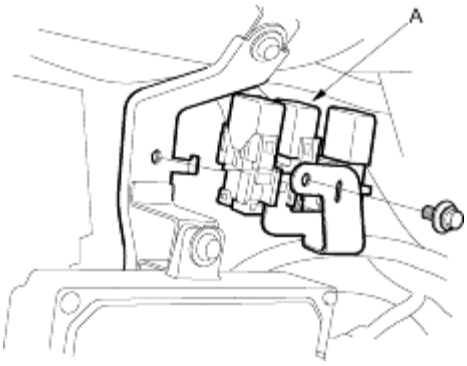
18. Inspect the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

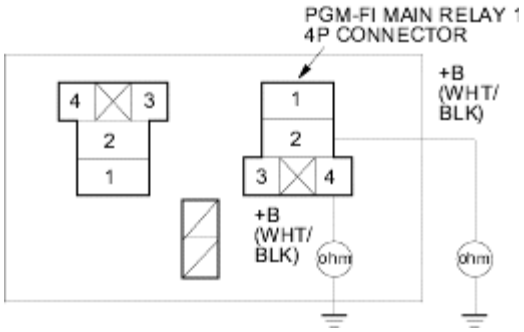
YES - Go to step 25.

NO - Go to step 19.

19. Remove the blown No. 6 ECU (ECM/PCM) (15A) fuse in the under-dash fuse/relay box.
20. Remove the PGM-FI main relay 1 (A).



21. Check for continuity between body ground and the PGM-FI main relay 1 4P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

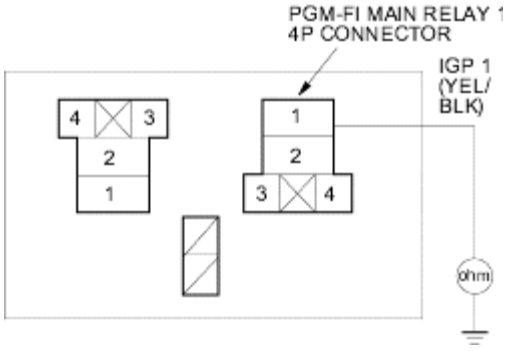
Is there continuity?

YES - Repair short in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Go to step 22.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 22. Disconnect each of the components or the connectors below, one at a time, and check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and body ground.
   - PGM-FI main relay 2
   - ECM/PCM connector A (31P)
   - Each injector 2P connector
   - Idle air control (IAC) valve 3P connector
   - Top dead centre (TDC) sensor 3P connector
   - Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

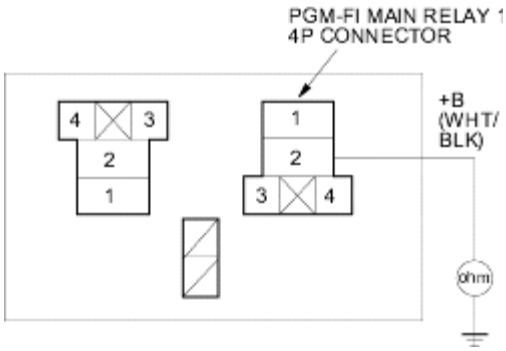
YES - Go to step 23.

NO - Replace the component that made continuity to body ground go away when disconnected. If the item is the ECM/PCM, substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM.

Also replace the No. 6 ECU (ECM/PCM) (15 A) fuse.

23. Disconnect the connectors of all these components.
    - PGM-FI main relay 2
    - ECM/PCM connector A (31P)
    - Injectors
    - Idle air control (IAC) valve
    - Top dead centre (TDC) sensor
    - Crankshaft position (CKP) sensor

1. 24. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Replace the PGM-FI main relay 1. Also replace the No 6 ECU (ECM/PCM) (15A) fuse. ■

25. Inspect the No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 37.

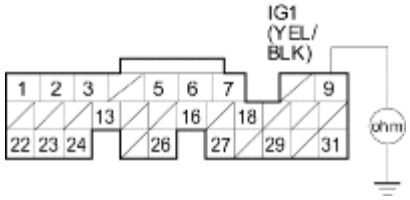
NO - Go to step 26.

26. Remove the blown No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
27. Disconnect ECM/PCM connector E (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 28. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



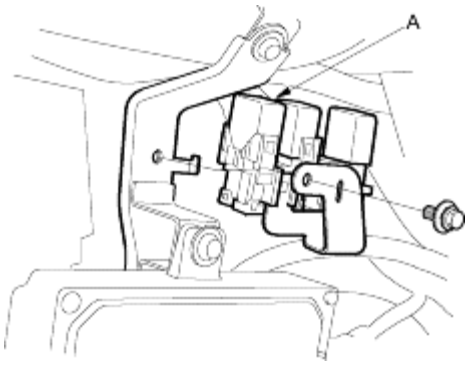
Wire side of female terminals

Is there continuity?

YES - Go to step 29.

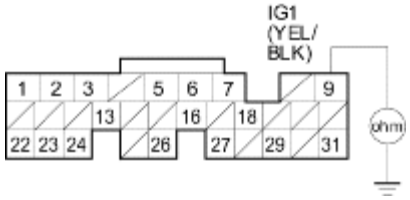
NO - Replace the No. 17 FUEL PUMP (15 A) fuse, and substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

29. Remove the PGM-FI main relay 2 (A).



1. 30. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9), or the No. 17 FUEL PUMP (15 A) fuse and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

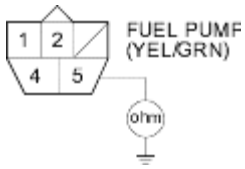
NO - Go to step 31.

31. Remove the rear seat cushion (see page 20-237).
32. Remove the access panel from the floor.
33. Disconnect the fuel pump 5P connector.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 34. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



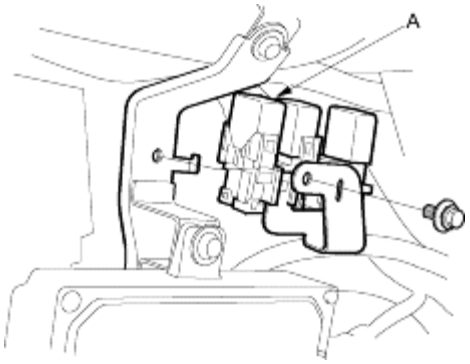
Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the fuel pump and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

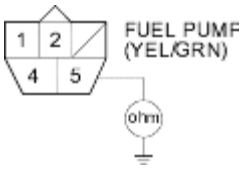
NO - Go to step 35.

35. Reinstall the PGM-FI main relay 2 (A).



1. 36. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

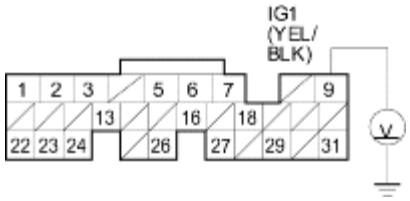
Is there continuity?

YES - Replace the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

NO - Check the fuel pump, and replace it as necessary. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

37. Disconnect ECM/PCM connector E (31P).
38. Turn the ignition switch ON (II).
39. Measure voltage between ECM/PCM connector terminals E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 40.

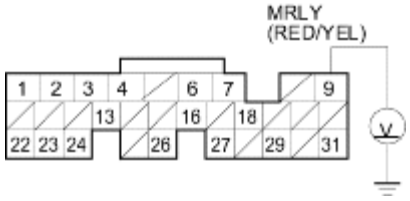
NO - Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 40. Turn the ignition switch OFF.

41. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



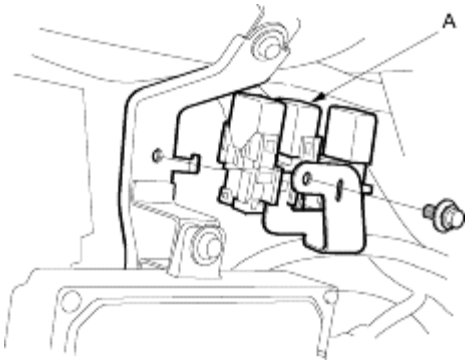
Wire side of female terminals

Is there battery voltage?

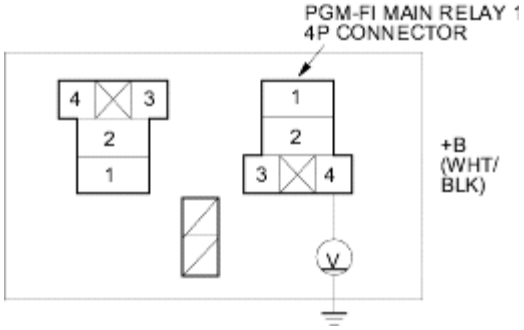
YES - Go to step 45.

NO - Go to step 42.

42. Remove the PGM-FI main relay 1 (A).



1. 43. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



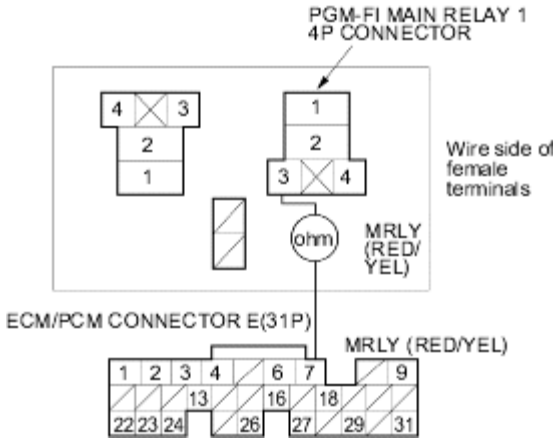
Wire side of female terminals

Is there battery voltage?

YES - Go to step 44.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15 A) fuse and the PGM-FI main relay 1. ■

44. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal E7.



Wire side of female terminals

Is there continuity?

YES - Test the PGM-FI main relay 1 (see page 22-80). If the relay is OK, substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

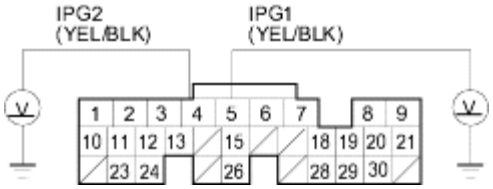
NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (E7). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 45. Reconnect ECM/PCM connector E (31P).

46. Turn the ignition switch ON (II).
47. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.

ECM/PCM CONNECTOR A (31P)



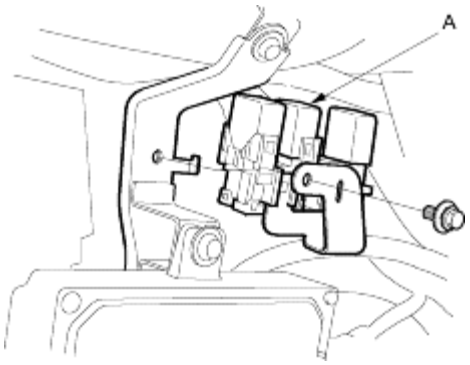
Wire side of female terminals

Is there battery voltage?

YES - Go to step 54.

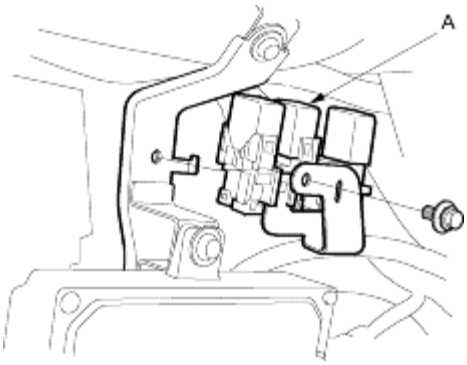
NO - Go to step 48.

48. Turn the ignition switch OFF.
49. Remove the PGM-FI main relay 1 (A).



50. Turn the ignition switch ON (II).

1. 51. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



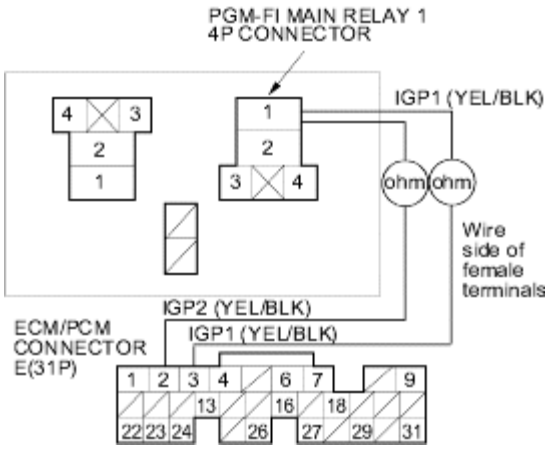
Wire side of female terminals

Is there battery voltage?

YES - Go to step 52.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. ■

52. Turn the ignition switch OFF.
53. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and ECM/PCM connector terminals A2 and A3 individually.



Wire side of female terminals

Is there continuity?

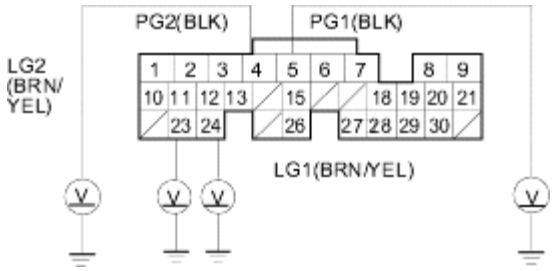
YES - Replace the PGM-FI main relay 1. ■

NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (A2, A3). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 54. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A23 and A24 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

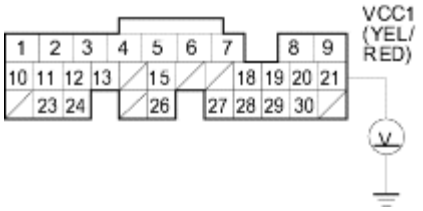
Is there less than 1.0 V?

YES - Repair open in the wire (s) between that had more than 1.0 V between G101 and the ECM/PCM (A4, A5, A23, A24). ■

NO - Go to step 55.

55. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

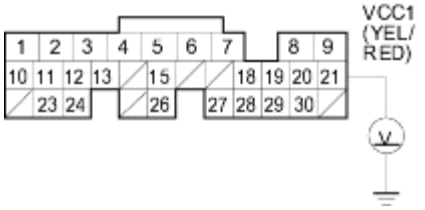
YES - Go to step 63.

NO - Go to step 56.

1. 56. Turn the ignition switch OFF.

57. Disconnect the manifold absolute pressure (MAP) sensor 3P connector.
58. Turn the ignition switch ON (II).
59. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the MAP sensor. ■

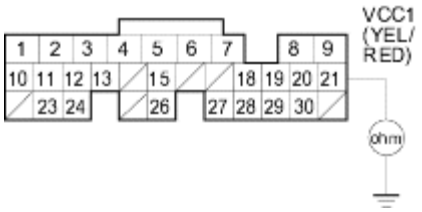
NO - Go to step 60.

60. Turn the ignition switch OFF.
61. Disconnect ECM/PCM connector A (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 62. Check for continuity between ECM/PCM connector terminal A21 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

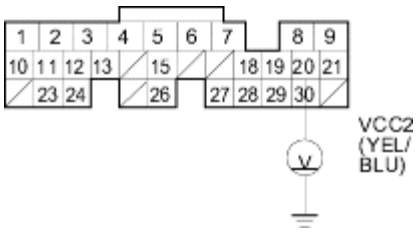
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A21) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

63. Measure voltage between body ground and ECM/PCM connector terminal A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

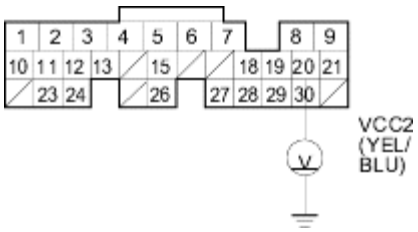
NO - Go to step 64.

1. 64. Turn the ignition switch OFF.

65. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II).

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the sensor that restored about 5 V when disconnected. ■

NO - Go to step 66.

66. Turn the ignition switch OFF.
67. Disconnect the 3P connectors from the following sensors.

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

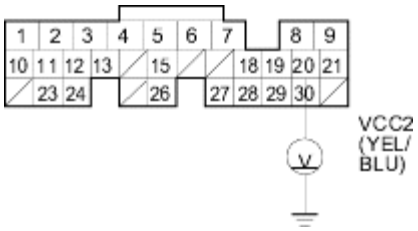
68. Disconnect ECM/PCM connector A (31P).

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 69. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the EGR valve position sensor, knock sensor or TP sensor, or repair short in the wire between the ECM/PCM (A8) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 70. Turn the ignition switch OFF.

71. Connect a scan tool/Honda PGM Tester (see page 11-311).
72. Turn the ignition switch ON (II), and read the scan tool/Honda PGM Tester.

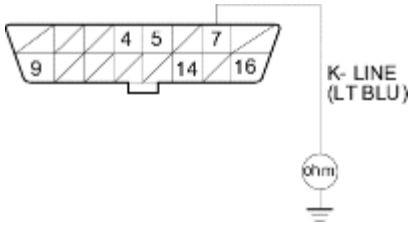
Does the scan tool/Honda PGM Tester communicate with the ECM/PCM?

YES - Go to step 77.

NO - Go to step 73.

73. Turn the ignition switch OFF.
74. Disconnect ECM/PCM connector E (31P).
75. Check for continuity between body ground and data link connector (DLC) terminal No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the DLC and the ECM/PCM (E23). After repairing it, check the DTC with the scan tool/Honda PGM Tester and go to the DTC Troubleshooting Index.

NO - Go to step 76.

Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106 (D16W7, D16V1 engines)



①	GRN/YEL

C107 (D16W7, D16V1 engines)



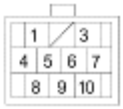
①	BLU/BLK
②	BRN/YEL

C108



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	——	⑦	BRN
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
⑤	RED	10	RED/BLK

C110 (A/T)



①	GRN
②	BLU

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK
②	GRN/YEL
③	YEL/BLU
④	BLU/RED
5	——
⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142



①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C455



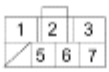
①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/GRN

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	10	RED
4	——	11	WHT/RED
5	WHT/BLU	12	——
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	——
5	BLK
6	WHT/BLK
7	YEL/BLK

C461



1	——
②	BLU

NOTE: ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 76. Check for continuity between ECM/PCM connector terminal E23 and DLC terminal No. 7.

DATA LINK CONNECTOR (DLC)

Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the DLC and the ECM/PCM (E23). After repairing it, check the DTC with the scan tool/Honda PGM Tester and go to the DTC Troubleshooting Index.

77. Check the scan tool/Honda PGM Tester for DTCs.

Are any DTCs indicated?

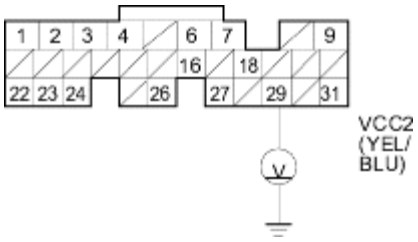
YES - Go to the DTC Troubleshooting Index.

NO - Go to step 78.

78. Turn the ignition switch OFF.
79. Turn the ignition switch ON (II).

1. 80. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES - Go to step 84.

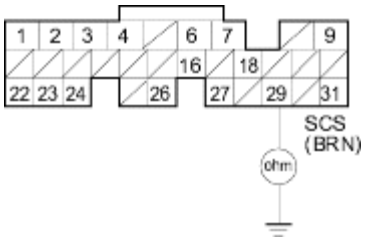
NO - Go to step 81.

81. Turn the ignition switch OFF.
82. Disconnect ECM/PCM connector E (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 83. Check for continuity between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the service check connector and the ECM/PCM (E29). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

84. Turn the ignition switch OFF.
85. Disconnect ECM/PCM connector E (31P).
86. Turn the ignition switch ON (II).

Is the MIL on?

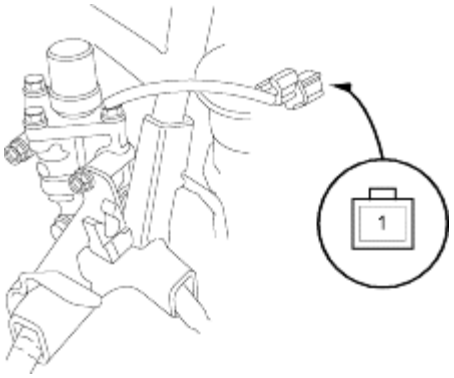
YES - Repair short in the wire between the gauge assembly and the ECM/PCM (E31). If the wires are OK, replace the gauge assembly. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

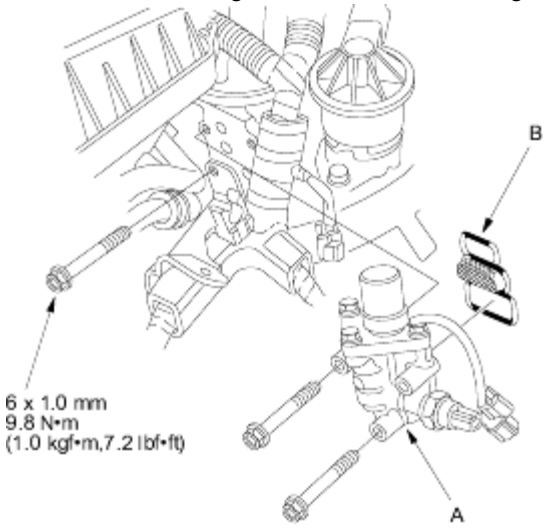
PGM-FI System

VTEC Solenoid Valve Test

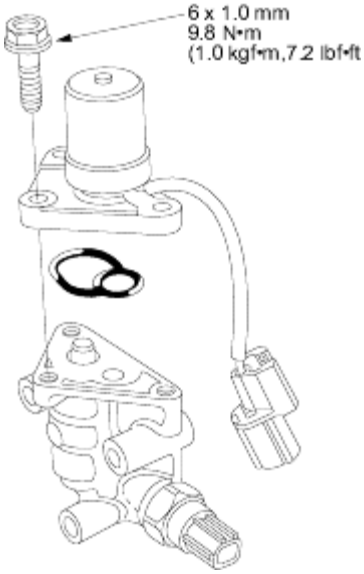
1. 1. Remove the resonator (see page 11-448).
2. 2. Disconnect the VTEC solenoid valve 1P connector.
   3. Measure resistance between the VTEC solenoid valve connector terminal No. 1 and body ground.
      Resistance: 14-30 ohms



3. 4. If the resistance is within specifications, remove the VTEC solenoid valve assembly (A) from the cylinder head, and check the VTEC solenoid valve filter (B) for clogging. If there is clogging, replace the solenoid valve filter, the engine oil filter and the engine oil.

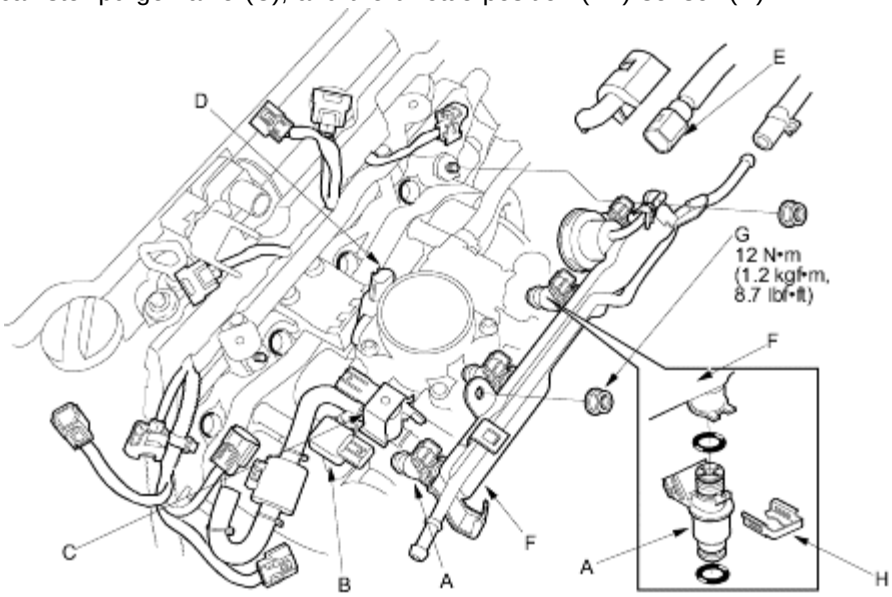


1. 5. If the filter is not clogged, push the VTEC solenoid valve with your finger and check its movement. If the VTEC solenoid valve is normal, check the engine oil pressure.



PGM-FI System
Injector Replacement

1. 1. Relieve fuel pressure (see page 11-430).
   2. Remove the air cleaner (see page 11-446).
   3. Disconnect the connectors from the injectors (A), the manifold absolute pressure (MAP) sensor (B), the evaporative emission (EVAP) canister purge valve (C), and the throttle position (TP) sensor (D).

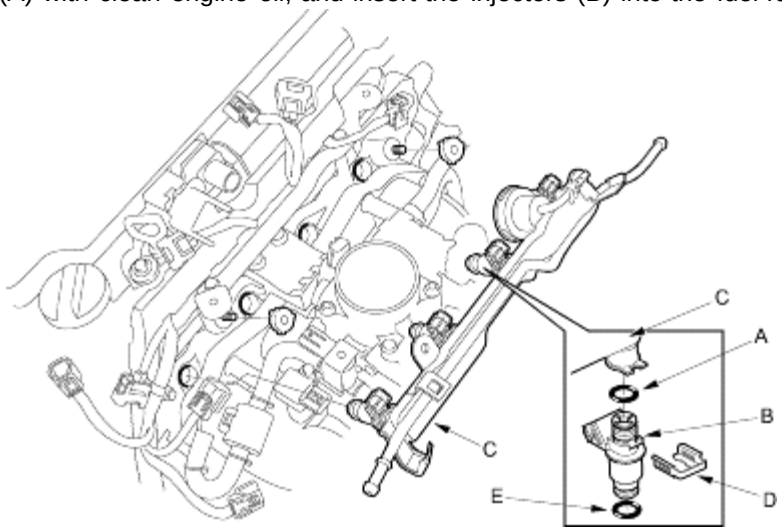


2. 4. Disconnect the quick-connect fittings (E).
   5. Disconnect the hoses from the fuel rail (F).
   6. Remove the fuel rail mounting nuts (G) from the fuel rail.
   7. Remove the injector clip (H) from the injector.
   8. Remove the injector from the fuel rail.

PGM-FI System

Injector Replacement (cont'd)

1. 9. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



2. 10. Install the injector clip (D).
   11. Coat the injector O-ring (E) with clean engine oil.
   12. To prevent damage to the O-rings, install the injectors in the fuel rail first, then install them in the injector base.
   13. Install the fuel rail mounting nuts.
   14. Connect the connectors on the injectors, the MAP sensor, the EVAP canister purge valve, and the TP sensor.
   15. Connect the quick-connect fittings.
   16. Install the air cleaner (see page 11-446).
   17. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for approximately 2 seconds, the fuel pressure in the fuel line rises. Repeat this 2 or 3 times, then check for fuel leakage.

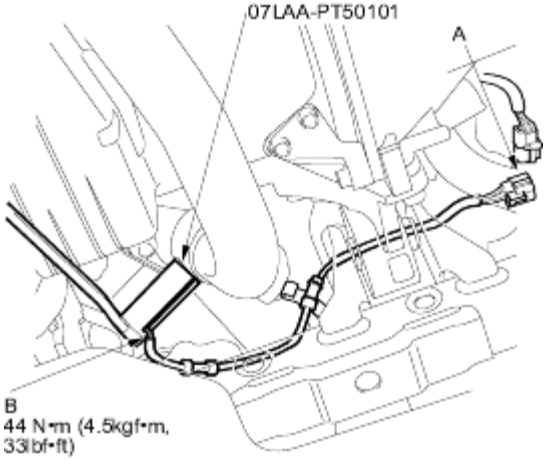
PGM-FI System

Primary HO2S Replacement

Special Tools Required

O2 sensor wrench 07LAA-PT50101

1. 1. Disconnect the primary HO2S 4P connector (A), then remove the primary HO2S (B).

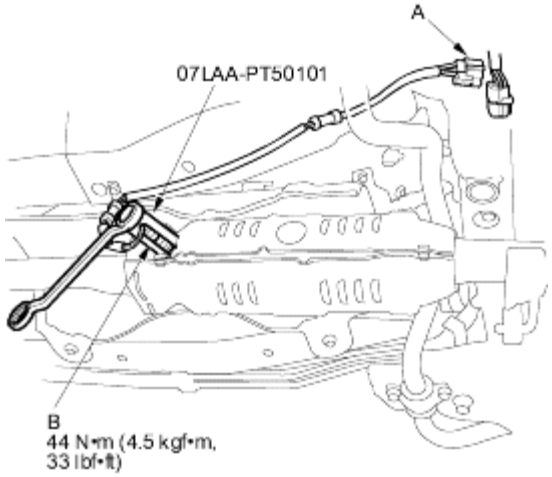


2. 2. Install the primary HO2S in the reverse order of removal.

Special Tools Required

O2 sensor wrench 07LAA-PT50101

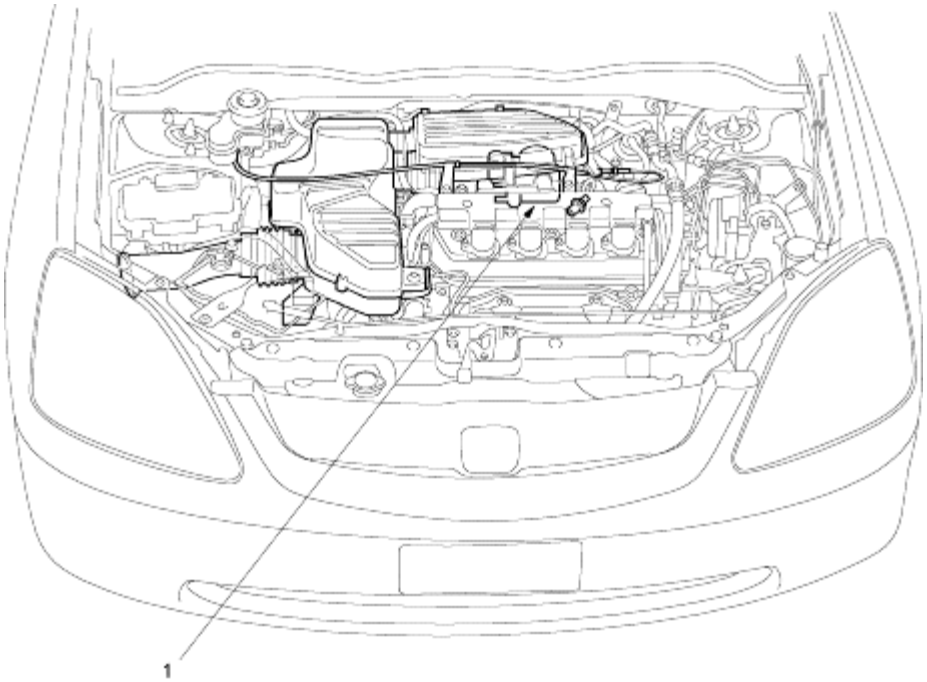
1. 1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



2. 2. Install the secondary HO2S in the reverse order of removal.

Idle Control System

Component Location Index



1. IDLE AIR CONTROL (IAC) VALVE
   Troubleshooting, page 11-417

Idle Control System
DTC Troubleshooting

DTC P1519: IAC Valve Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Turn the ignition switch ON (II).

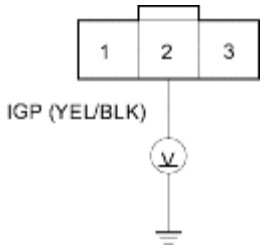
Is DTC P1519 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAC valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAC valve 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the IAC valve 3P connector terminal No. 2 and body ground.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

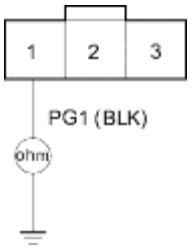
YES - Go to step 7.

NO - Repair open in the wire between the IAC valve and the PGM-FI main relay. ■

3. 7. Turn the ignition switch OFF.

1. 8. Check for continuity between body ground and IAC valve 3P connector terminal No. 1.

IAC VALVE 3P CONNECTOR



Wire side female terminals

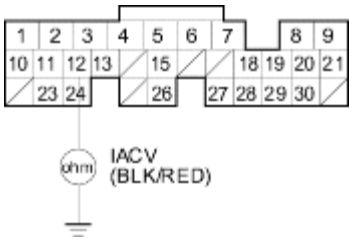
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the IAC valve and G101. ■

2. 9. Disconnect ECM/PCM connector A (31P).
   10. Check for continuity between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

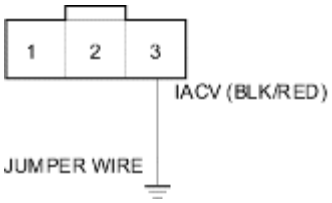
YES - Repair short in the wire between the IAC valve and the ECM/PCM (A12). ■

NO - Go to step 11.

Idle Control System
DTC Troubleshooting (cont'd)

1. 11. Connect the IAC valve 3P connector terminal No. 3 and body ground with a jumper wire.

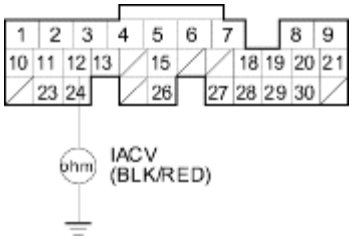
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A12 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

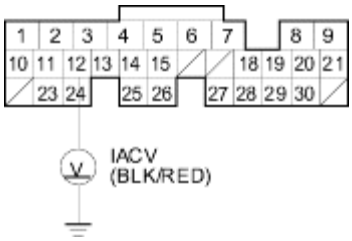
YES - Go to step 13.

NO - Repair open in the wire between the IAC valve and the ECM/PCM (A12). ■

13. Reconnect the IAC valve 3P connector.
14. Turn the ignition switch ON (II).

1. 15. Measure voltage between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

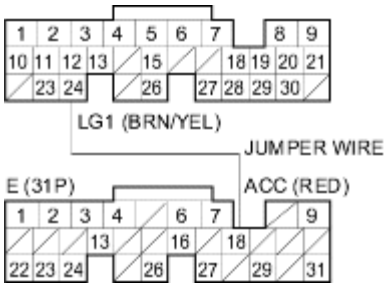
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the IAC valve. ■

Idle Control System
A/C Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Momentarily connect ECM/PCM connector terminals A24 and E18 with a jumper wire several times.

ECM/PCM CONNECTORS A (31P)



Wire side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES - Go to step 3.

NO - Go to step 6.

3. 3. Start the engine.
   4. Turn the blower switch ON.
   5. Turn the A/C switch ON.

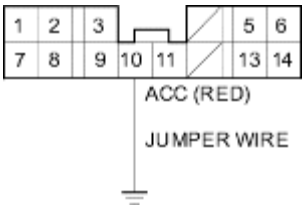
Does the A/C operate?

YES - The air conditioning signal is OK. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 6. Momentarily connect the under-hood fuse/relay box 14P connector terminal No. 10 and body ground with a jumper wire several times.

UNDER-HOOD FUSE/RELAY BOX 14P CONNECTOR



Wire side of female terminals

Is there clicking noise from the A/C compressor clutch?

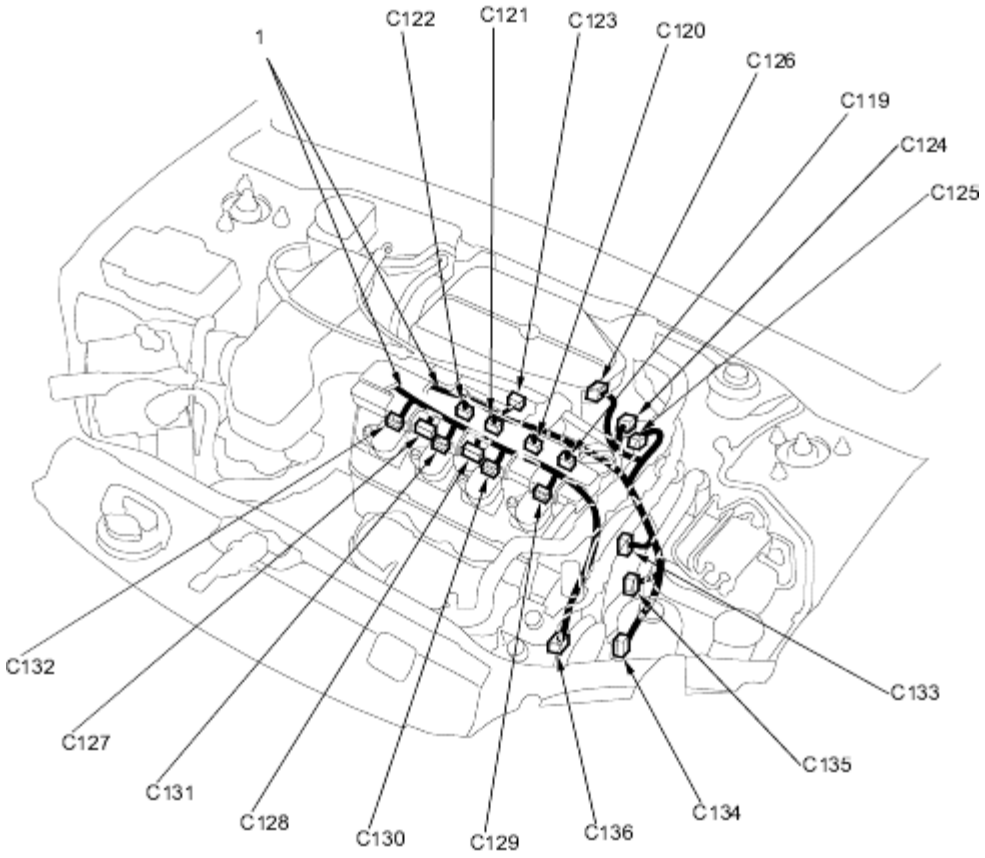
YES - Repair open in the wire between the ECM/PCM (E18) and the A/C clutch relay. ■

NO - Check the A/C system for other symptoms. ■

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:



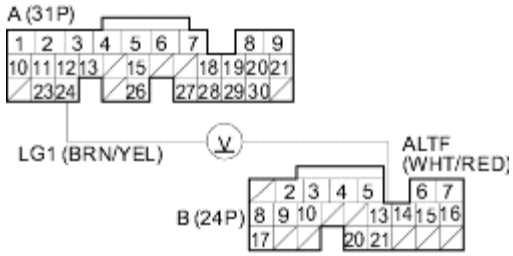
1. ENGINE WIRE HARNESS

Idle Control System

Alternator FR Signal Circuit Troubleshooting

1. 1. Disconnect the ALT 4P connector.
2. 2. Turn the ignition switch ON (II).
   3. Measure voltage between ECM/PCM connector terminals A24 and B13.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES - Go to step 4.

NO - Go to step 14.

3. 4. Turn the ignition switch OFF.
   5. Reconnect the ALT 4P connector.
   6. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   7. Measure voltage between ECM/PCM connector terminals A24 and B13.

Does the voltage decrease when the headlights and rear window defogger are turned on?

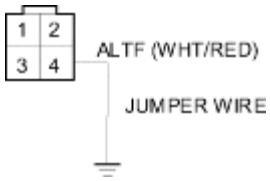
YES - The ALT FR signal is OK. ■

NO - Go to step 8.

4. 8. Turn the ignition switch OFF.
   9. Disconnect the negative cable from the battery.
   10. Disconnect ECM/PCM connector B (24P).
   11. Disconnect the ALT 4P connector.

1. 12. Connect the ALT 4P connector terminal No. 4 and body ground with a jumper wire.

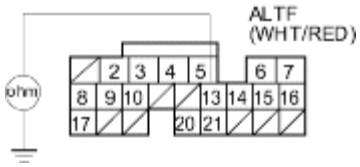
ALT 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Test the ALT (see step 1 on page 4-29). ■

NO - Repair open in the wire between the ECM/PCM (B13) and the ALT. ■

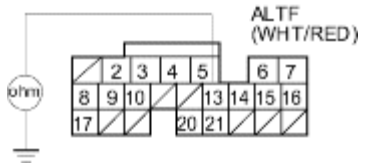
14. Turn the ignition switch OFF.
15. Disconnect the negative cable from the battery.
16. Disconnect ECM/PCM connector B (24P).

Idle Control System

Alternator FR Signal Circuit Troubleshooting (cont'd)

1. 17. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B13) and the ALT. ■

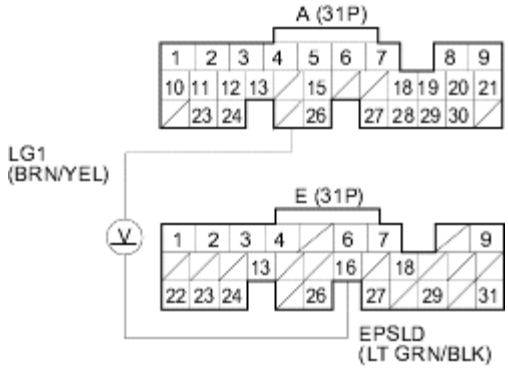
NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

Idle Control System

Electrical Power Steering (EPS) Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES - Go to step 6.

NO - Go to step 3.

3. 3. Start the engine.
   4. Turn the steering wheel to the full lock position.
   5. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there battery voltage momentarily?

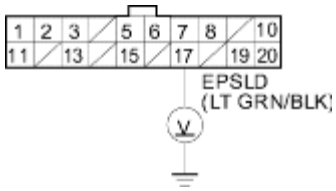
YES - The EPS signal is OK. ■

NO - Go to step 10.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the EPS control unit 20P connector.
   8. Turn the ignition switch ON (II).

1. 9. Measure voltage between the EPS control unit terminal No.17 and body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

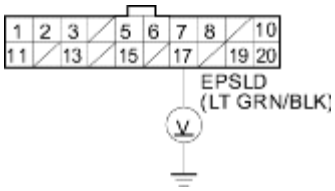
YES - Substitute a known-good EPS control unit and recheck. ■

NO - Repair open in the wire between the ECM/PCM (E16) and the EPS control unit. ■

10. Turn the ignition switch OFF.
11. Disconnect the EPS control unit 20P connector.
12. Turn the ignition switch ON (II).

1. 13. Measure voltage between EPS control unit terminal No. 17 and the body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

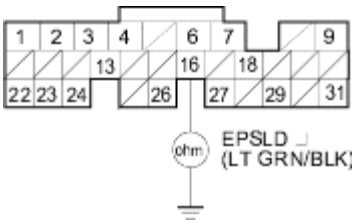
Is there battery voltage?

YES - Substitute a known-good EPS control unit and recheck. ■

NO - Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect ECM/PCM connector E (31P).
16. Check for continuity between body ground and ECM/PCM connector terminal E16.

ECM/PCM CONNECTORS E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E16) and the EPS control unit. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 1. Check the brake lights.

Are the brake lights on without pressing the brake pedal?

YES - Inspect the brake pedal position switch (see page 19-10). ■

NO - Go to step 2.

2. 2. Press the brake pedal.

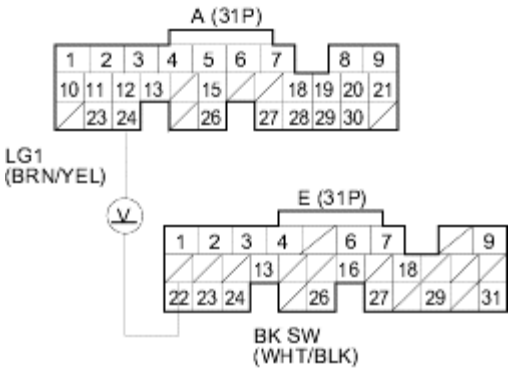
Do the brake lights come on?

YES - Go to step 3.

NO - Go to step 4.

3. 3. Measure voltage between ECM/PCM connector terminals A24 and E22 with the brake pedal pressed.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES - The brake pedal position switch signal is OK. ■

NO - Repair open in the wire between the ECM/PCM (E22) and the brake pedal position switch. ■

Idle Control System

Brake Pedal Position Switch Signal Circuit Troubleshooting (cont'd)

1. 4. Inspect the No. 7 HORN, STOP (15A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

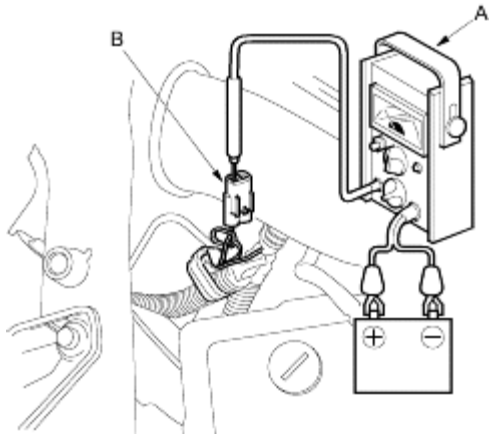
YES - Repair open in the wire between the brake pedal position switch and the No. 7 HORN, STOP (15 A) fuse. Inspect the brake pedal position switch (see page 19-10). ■

NO - Repair short in the wire between the ECM/PCM (E22) and the No. 7 HORN, STOP (15A) fuse. Replace the No. 7 HORN, STOP (15A) fuse. ■

Idle Control System
Idle Speed Inspection

NOTE:
- Leave the Idle Air Control (IAC) valve connected.
- Before checking the idle speed, check these items:
  - The Malfunction Indicator Lamp (MIL) has not been reported on.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system

2. 1. Disconnect the Evaporative Emission (EVAP) canister purge valve 2P connector.
   2. Connect a tachometer (A) to the test tachometer connector (B).



3. 3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Turn the ignition switch OFF.

1. 5. Start the engine.Check the idle speed with no-load conditions: headlights, blower fan, rear defogger, radiator fan, and air conditioner are not operating.
   Idle speed should be:

M/T	650±50 rpm (min^{-1})
A/T	650±50 rpm (min^{-1}) (in Park or neutral)

NOTE:ECM/PCM might control to raise the idle speed 750 rpm (min^{-1}) in case of the battery performance,etc. In this case, idle speed is OK.Go to step 6.

2. 6. Idle the engine for 1 minute with heater fan switch on HI and air conditioner on, then check the idle speed.
   Idle speed should be:

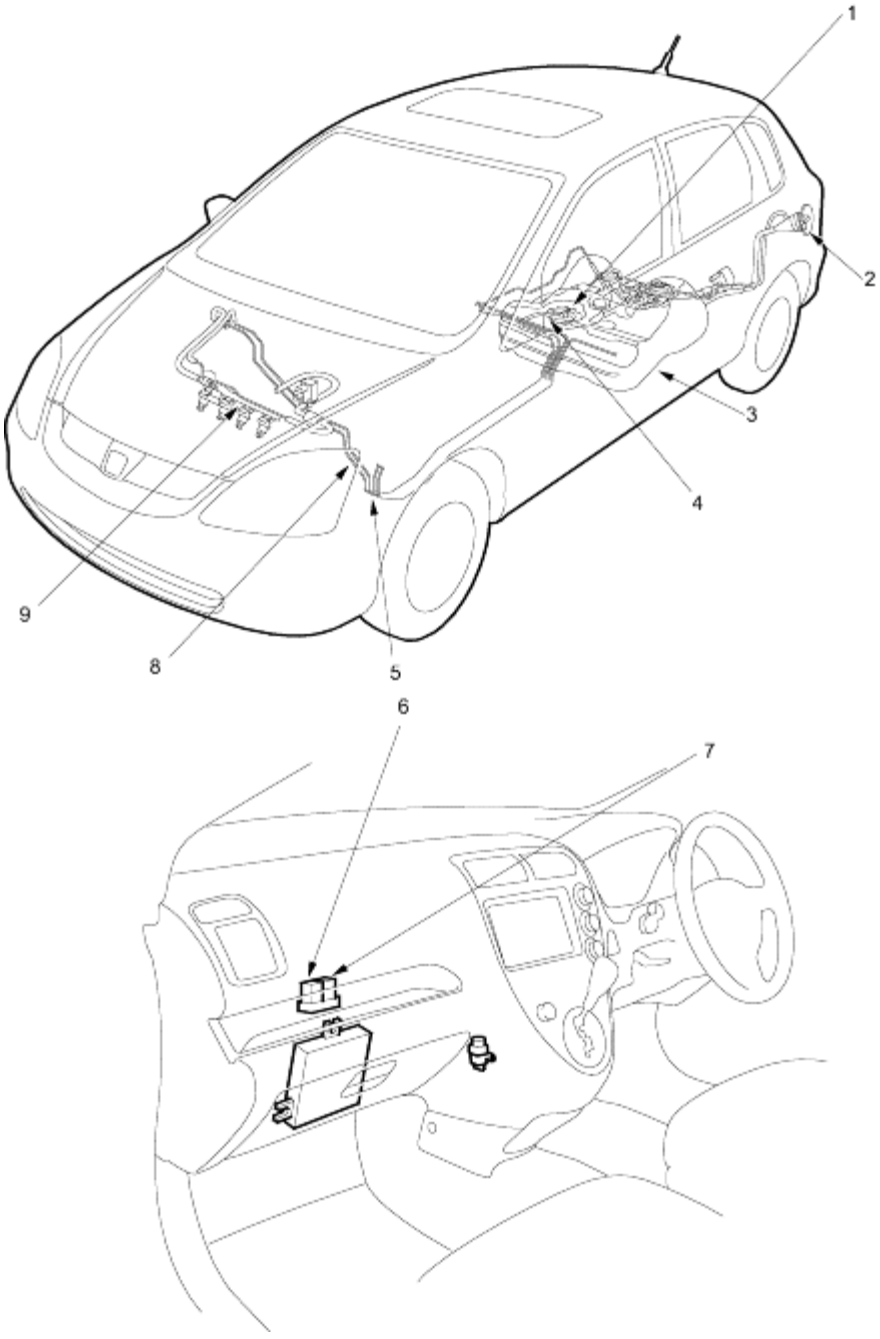
M/T	750±50 rpm (min-1)
A/T	750±50 rpm (min-1) (in Park or neutral)

NOTE: If the idle speed in not within specification, see Symptom Chart.

3. 7. Reconnect the EVAP canister purge valve 2P connector.

Fuel Supply System

Component Location Index



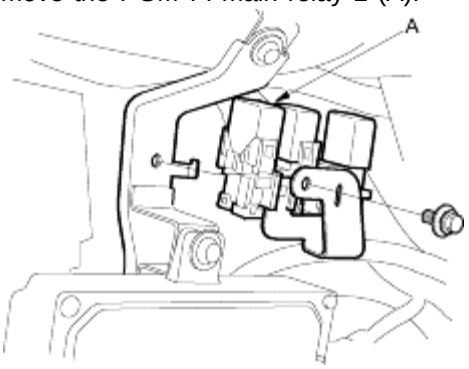
1. FUEL PUMP
   Troubleshooting, page 11-427
   Replacement, page 11-439
   FUEL FILTER
   Replacement, page 11-438
   FUEL GAUGE SENDING UNIT
   Test/Replacement, page 11-441
   FUEL PRESSURE REGULATOR
   Replacement, page 11-438
2. FUEL FILL CAP
3. FUEL TANK
   Replacement, page 11-440
4. FUEL TUBE/QUICK-CONNECT FITTINGS
   Precautions, page 11-434
   Removal, page 11-435
   Installation, page 11-436
5. FUEL VAPOUR PIPE
6. PGM-FI MAIN RELAY 2
   Troubleshooting, page 11-427
7. PGM-FI MAIN RELAY 1
8. FUEL FEED PIPE
9. FUEL RAIL

Fuel Supply System

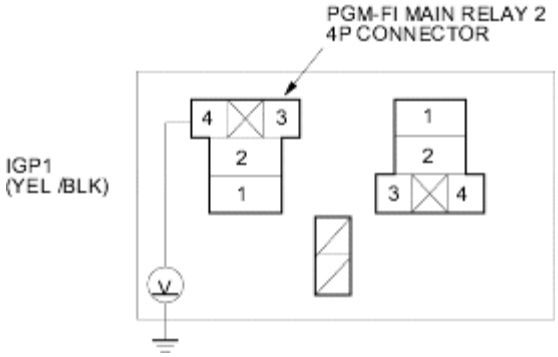
Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. 1. Turn the ignition switch OFF.
   2. Remove the glove box (see page 20-220), then remove the PGM-FI main relay 2 (A).



2. 3. Turn the ignition switch ON (II).
   4. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 4 and body ground.



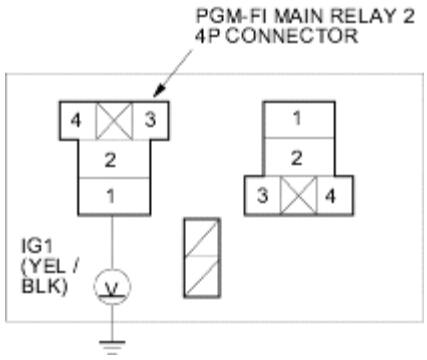
Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the PGM-FI main relay 1 and the PGM-FI main relay 2. ■

1. 5. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 1 and body ground.



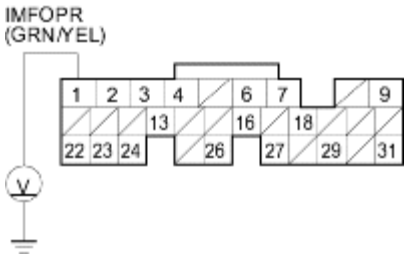
Wire side of female terminals

Is there battery voltage?

YES - Go to step 6.

NO - Repair open in the wire between the under-dash fuse/relay box and PGM-FI main relay 2. ■

2. 6. Turn the ignition switch OFF.
   7. Disconnect ECM/PCM connector E (31P).
   8. Check for continuity between the PGM-FI main relay 2 4P connector terminal No. 3 and ECM/PCM connector terminal E1.



Wire side of female terminals

Is there continuity?

YES - Go to step 9.

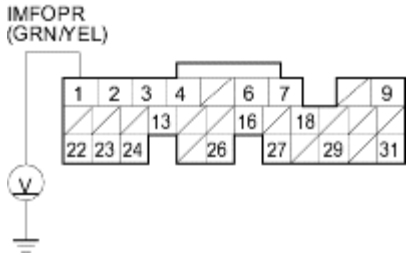
NO - Repair open in the wire between the PGM-FI main relay 2 and the ECM/PCM (E1). ■

Fuel Supply System
Fuel Pump Circuit Troubleshooting (cont'd)

1. 9. Reinstall the PGM-FI main relay 2.

10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal E1 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

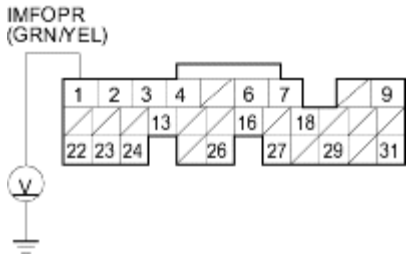
Is there battery voltage?

YES - Go to step 12.

NO - Replace the PGM-FI main relay 2. ■

12. Turn the ignition switch OFF.
13. Reconnect ECM/PCM connector E (31P).
14. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E1 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

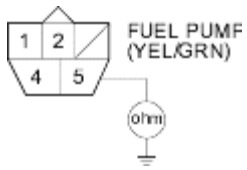
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 15.

1. 15. Turn the ignition switch OFF.

16. Remove the rear seat cushion (see page 20-237).
17. Remove the access panel from the floor.
18. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

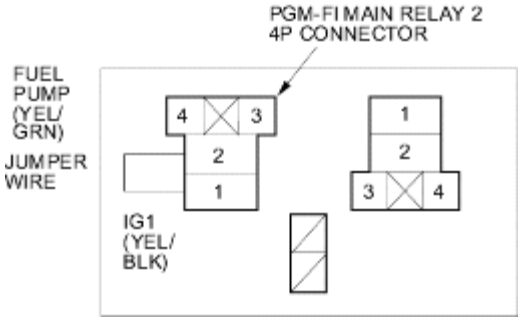
YES - Go to step 24.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the PGM-FI main relay 2.

Fuel Supply System
Fuel Pump Circuit Troubleshooting (cont'd)

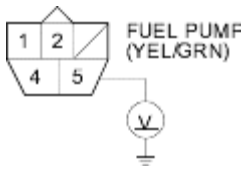
1. 21. Connect the PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

22. Turn the ignition switch ON (II).
23. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

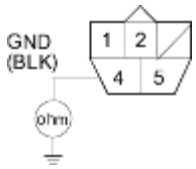
YES - Replace the PGM-FI main relay 2. ■

NO - Repair open in the wire between the PGM-FI main relay 2 and the fuel pump 5P connector. ■

24. Turn the ignition switch OFF.

1. 25. Check for continuity between the fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

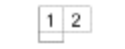
YES - Replace the fuel pump. ■

NO - Repair open in the wire between the fuel pump 5P connector and G551. ■

Fuel and Emissions Systems

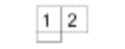
System Descriptions (cont'd)

C119



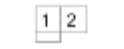
①	YEL/BLK
②	BRN

C120



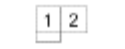
①	YEL/BLK
②	RED

C121



①	YEL/BLK
②	BLU

C122



①	YEL/BLK
②	YEL

C123



①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124



①	BLK/YEL
②	YEL/BLU

C125



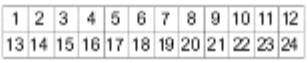
①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126



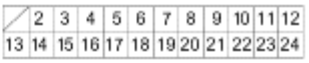
①	GRN/YEL
②	RED/YEL

C127



①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128



1	———	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129



①	YEL/GRN
②	BLK
③	BLK/WHT

C130



①	BLU/RED
②	BLK
③	BLK/WHT

C131



①	WHT/BLU
②	BLK
③	BLK/WHT

C132



①	BRN
②	BLK
③	BLK/WHT

C133



①	RED/BLU
②	YEL/BLU
③	YEL

C134



①	BLU
②	BRN/YEL
③	YEL/BLK

C135



①	BRN/YEL
②	GRN
③	YEL/BLK

C136



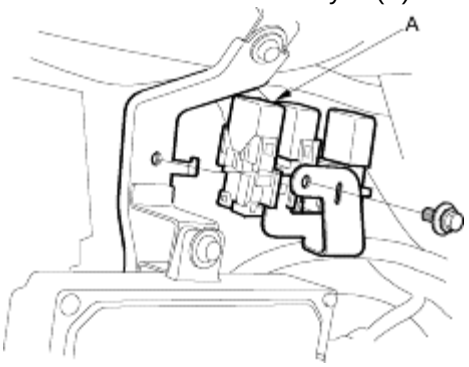
①	BLK/YEL
2	———
③	WHT/BLU
④	WHT/RED

NOTE: ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

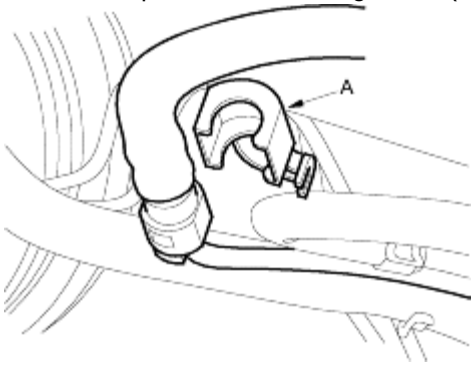
Fuel Supply System
Fuel Pressure Relieving

Before disconnecting fuel pipes or hoses, relieve pressure from the system by disconnecting the fuel tube/quick connect fitting in the engine compartment.

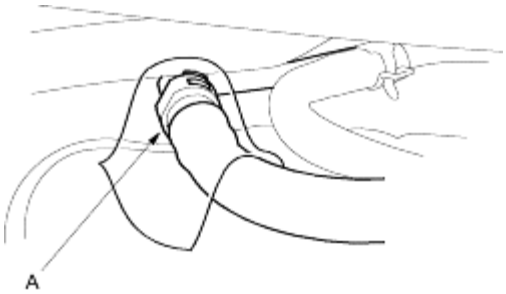
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Turn the ignition switch OFF.
3. Remove the glove box (see page 20-220), then remove the PGM-FI main relay 2 (A).



4. Start the engine, and let it idle until it is stalls. NOTE: The DTCs or Temporary DTCs P0301, P0302, P0303, P0304 may come on during this procedure. If any DTCs are stored, ignore them.
5. Turn the ignition switch OFF.
6. Remove the fuel fill cap, and relieve fuel pressure in the fuel tank.
7. Disconnect the negative cable from the battery.
8. Remove the quick-connect fitting cover (A).



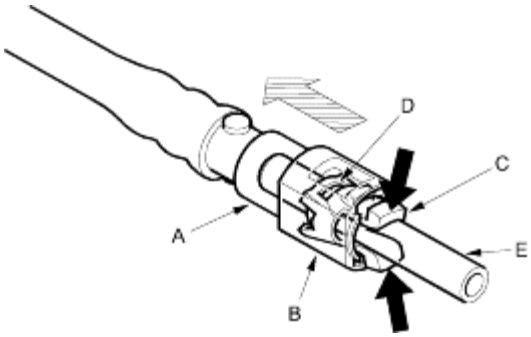
9. Check the fuel quick-connect fitting for dirt, and clean if necessary.
10. Place a rag or shop towel over the quick-connect fitting (A).



11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand and squeeze the retainer tabs (C) with the other hand to release them from the locking pawls (D). Pull the connector off.

NOTE:

- Prevent the remaining fuel in the fuel feed pipe or hose from flowing out with a rag or shop towel.
- Be careful not to damage the pipe (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.

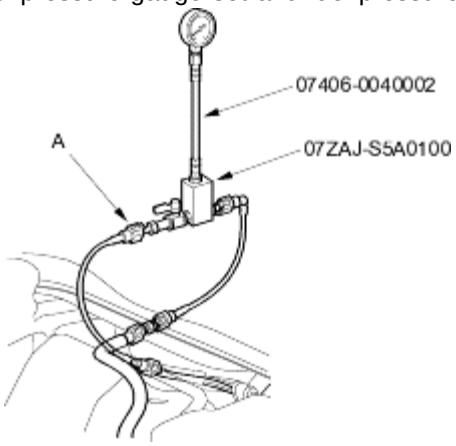


12. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-435).

Fuel Supply System
Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-0040002
- Fuel pressure gauge set 07ZAJ-S5A0100

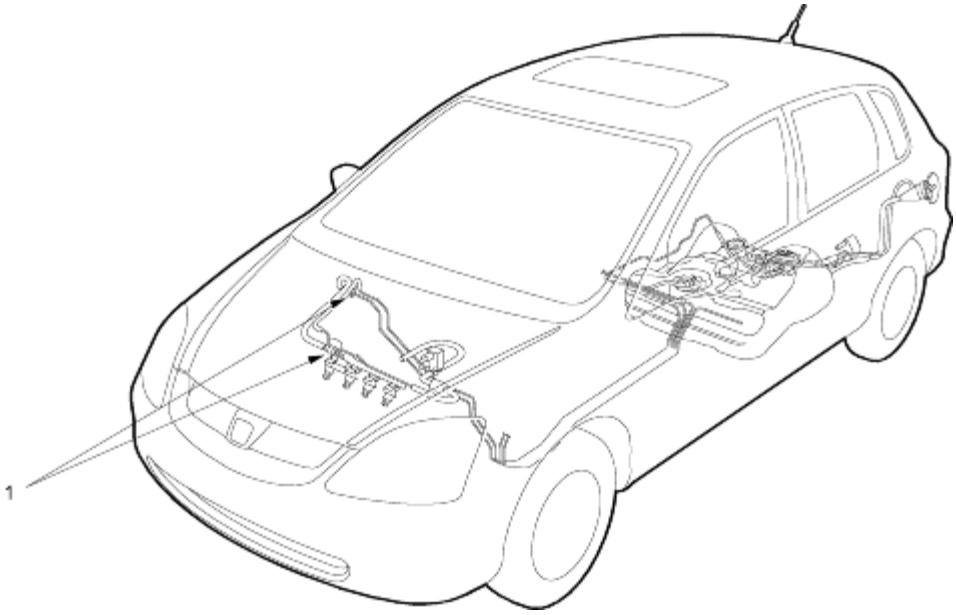
1. 1. Relieve the fuel pressure (see page 11-430).
   2. Disconnect the quick-connect fitting (A). Attach the fuel pressure gauge set and fuel pressure gauge.



2. 3. Start the engine and let it idle.
   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.
3. 4. Check to see if the fuel pump is running: listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
   - If the pump runs, step 5.
   - If the pump does not run, perform the fuel pump circuit troubleshooting (see page 11-427).
4. 5. Read the pressure gauge. The pressure should be 270-320 kpa (2.8-3.3 kgf/cm2, 40-47 psi)
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator and the fuel filter (see page 11-438), and recheck the fuel pressure.

Fuel Supply System
Fuel Lines Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.



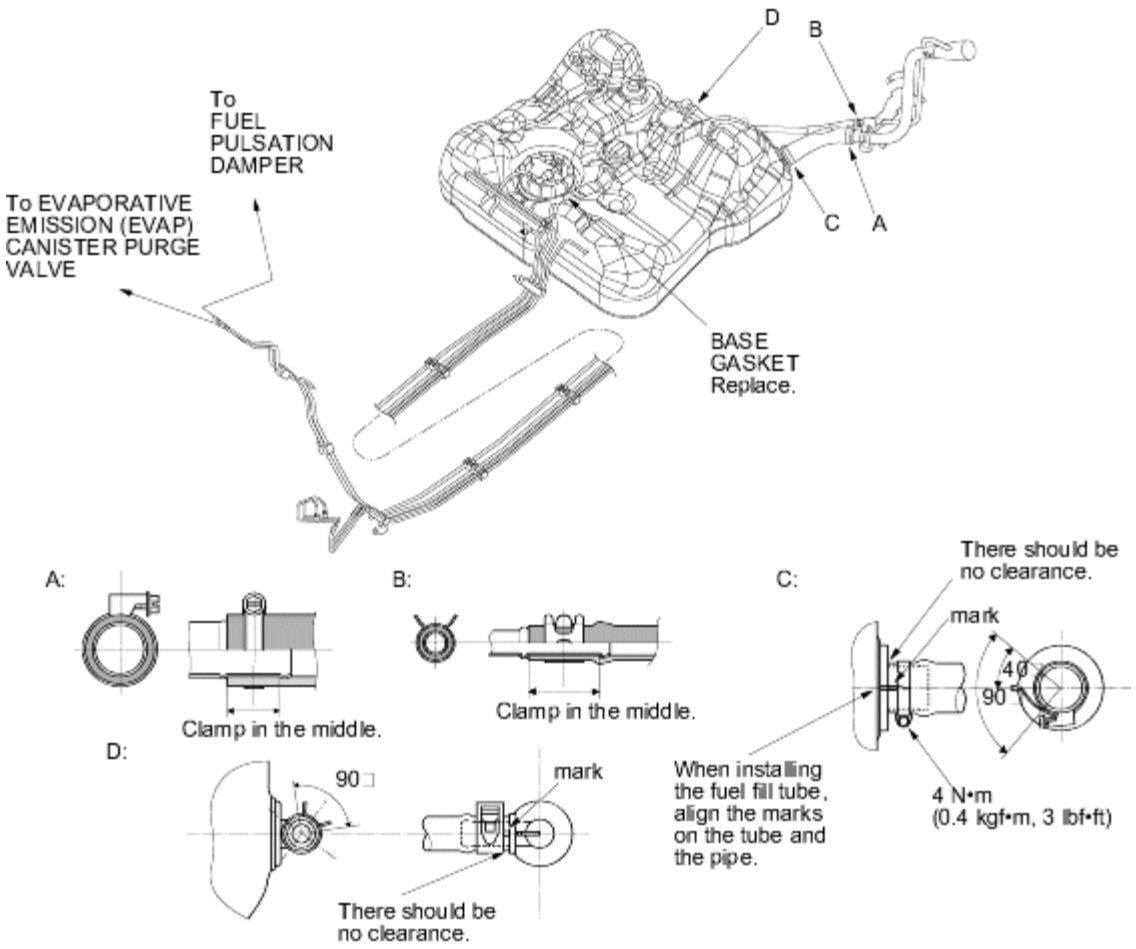
1. Make sure the connection is secure and the quick-connect fitting cover is firmly locked into place.

Fuel Supply System

Fuel Lines Inspection (cont'd)

Check all clamps and retighten if necessary.

▲ :Do not disconnect the hose from the pipe at these joints.



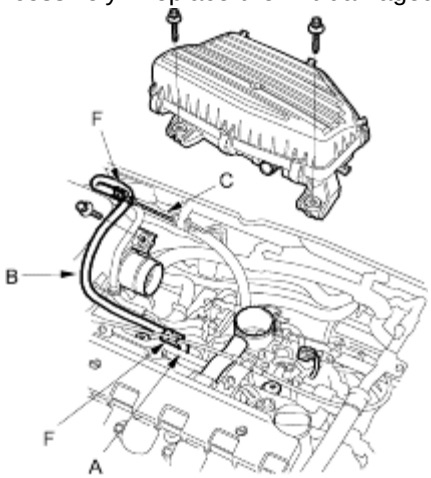
Fuel Supply System

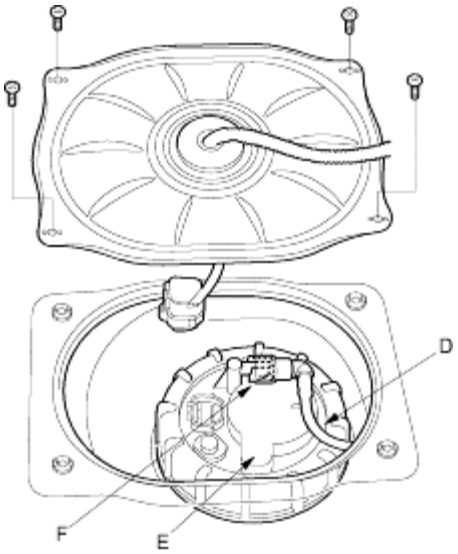
Fuel Tube/Quick-Connect Fittings Precaution

The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel pipe (C), and the fuel tube (D) to the fuel tank unit (E). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (F) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (F) are not acid-proof; do not touch them with a shop towel which was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel tube (D) and quick-connect fittings (E), be careful not to bend or twist them excessively. Replace them it damaged.





A disconnected quick-connect fitting can be reconnected, but the retainer on the mating pipe cannot be reused once it has been removed from the pipe. Replace the retainer when

- replacing the fuel rail.
- replacing the fuel pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.

PART	MANUFACTURER	RETAINER COLOUR
ENGINE COMPARTMENT	TOKAI	GREEN
FUEL TANK UNIT	SANOH	WHITE

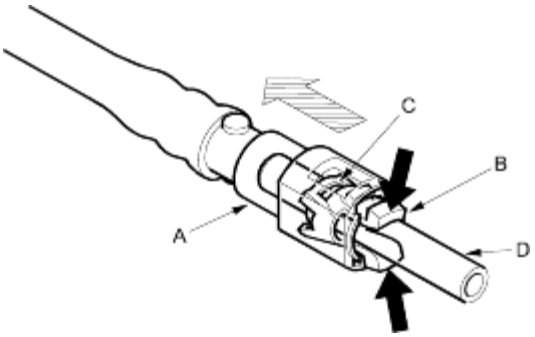
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Removal

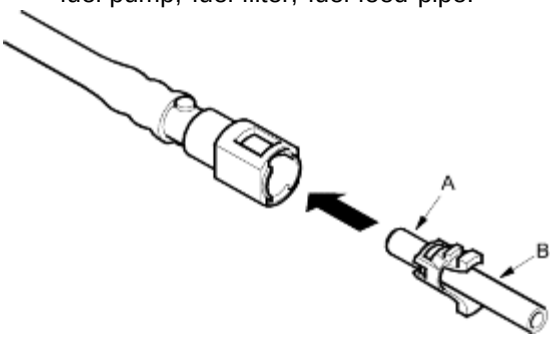
1. 1. Relieve fuel pressure (see page 11-430).
2. 2. Check the fuel quick-connect fittings for dirt, and clean if necessary.
   3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (C). Pull the connector off.

NOTE:

- Be careful not to damage the pipe (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.



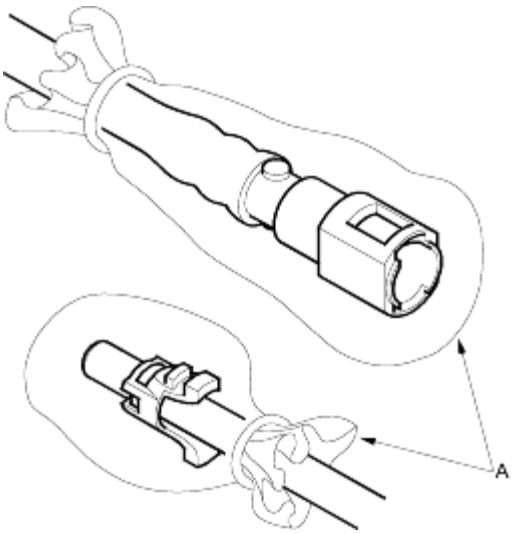
1. 4. Check the contact area (A) of the pipe (B) for dirt and damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, fuel feed pipe.



2. 5. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with plastic bags (A).

NOTE:

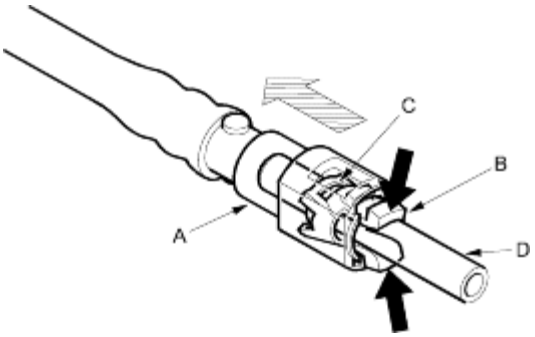
- The retainer cannot be reused once it has been removed from the pipe.
  Replace the retainer when
  - replacing the fuel rail.
  - replacing the fuel feed pipe.
  - replacing the fuel pump.
  - replacing the fuel filter.
  - replacing the fuel gauge sending unit.
  - it has been removed from the pipe.
  - it is damaged.



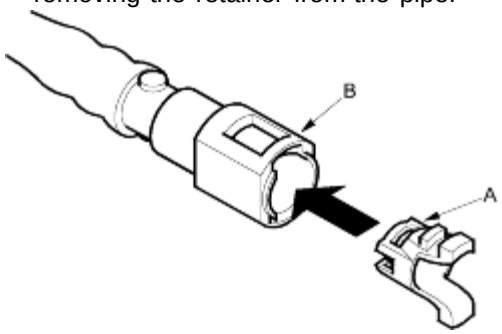
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation

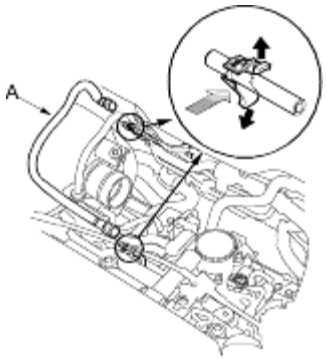
1. 1. Check the contact area (A) of the pipe (B) for dirt and damage, and clean if necessary.

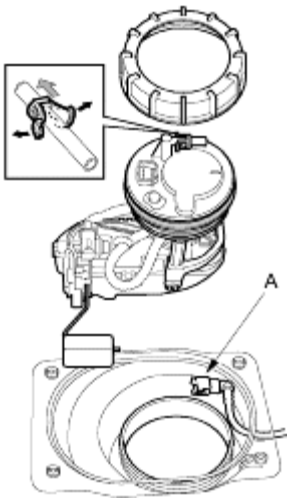


2. 2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed pipe.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the pipe.



1. 3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating pipe.





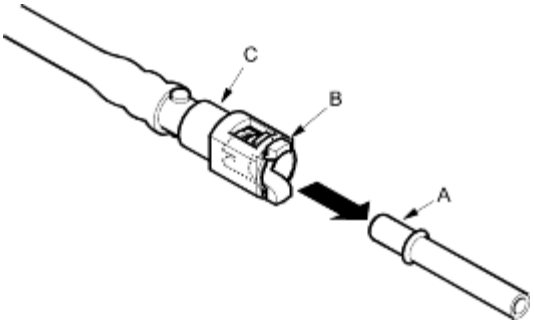
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation (cont'd)

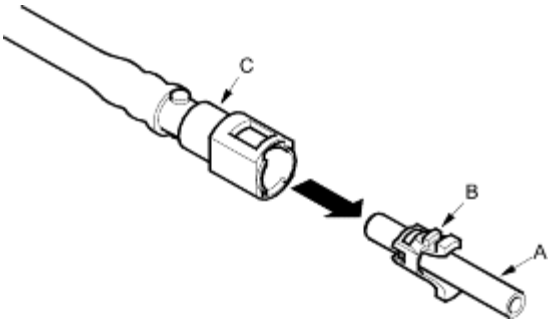
1. 4. Align the quick-connect fittings with the pipe (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the pipe until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the pipe end.

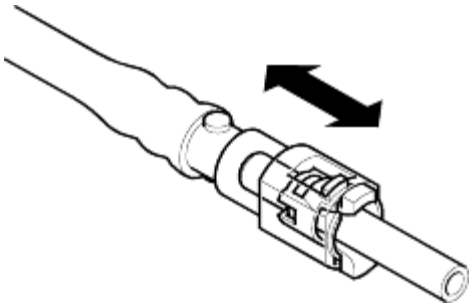
Connection with new retainer:



Reconnection to existing retainer:



1. 5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.

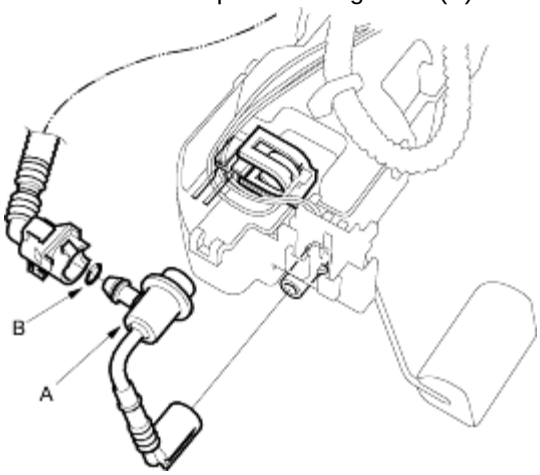


2. 6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

Fuel Pressure Regulator Replacement

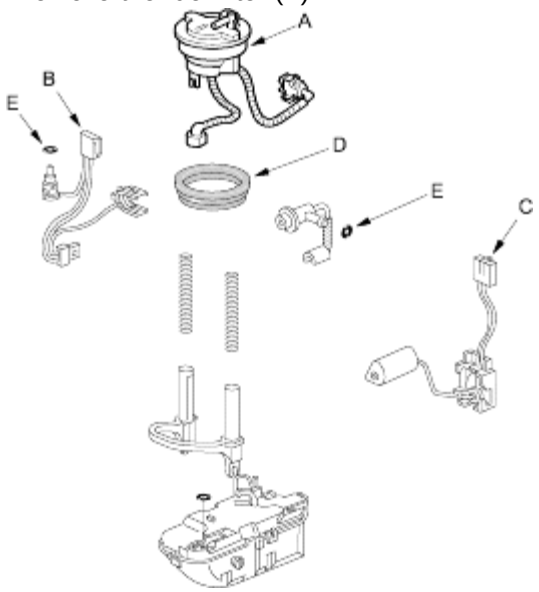
1. 1. Remove the fuel pump (see page 11-439).
2. 2. Remove the fuel pressure regulator (A).



3. 3. Install the part in the reverse order of removal with a new O-ring (B).

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (270-320 kPa, 2.8-3.3 kgf/cm2, 40-47 psi) after making sure that the fuel pump and the fuel pressure regulator are OK.

1. 1. Remove the fuel pump (see page 11-439).
   2. Remove the fuel filter (A).



2. 3. Install the part in the reverse order of removal with a new base gasket (D) and new O-rings (E), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the terminal (B) is firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

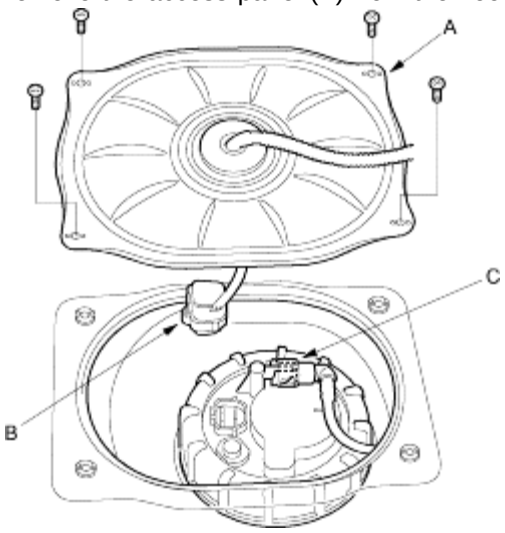
Fuel Supply System

Fuel Pump/Fuel Gauge Sending Unit Replacement

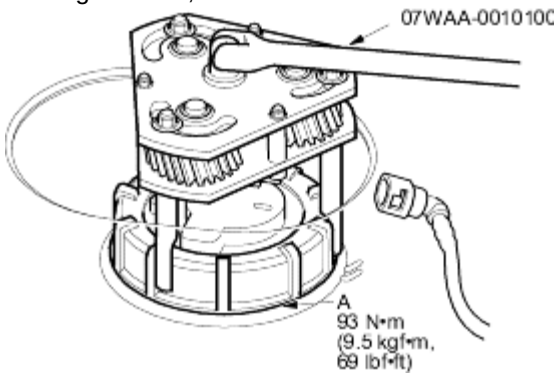
Special Tools Required

Adjustable ring wrench 07WAA-0010100

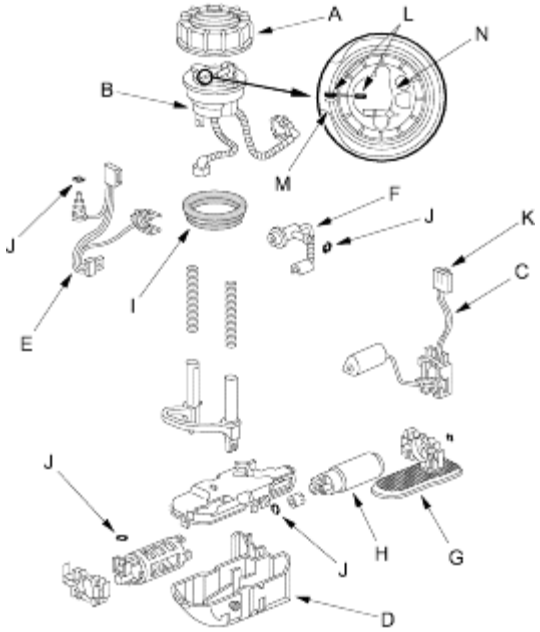
1. 1. Relieve the fuel pressure (see page 11-430).
   2. Remove the fuel fill cap.
   3. Remove the seat cushion (see page 20-237).
   4. Remove the access panel (A) from the floor.



2. 5. Disconnect the fuel pump 5P connector (B).
   6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
   7. Using the tool, loosen the fuel tank unit locknut (A).



1. 8. Remove the locknut (A), the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).



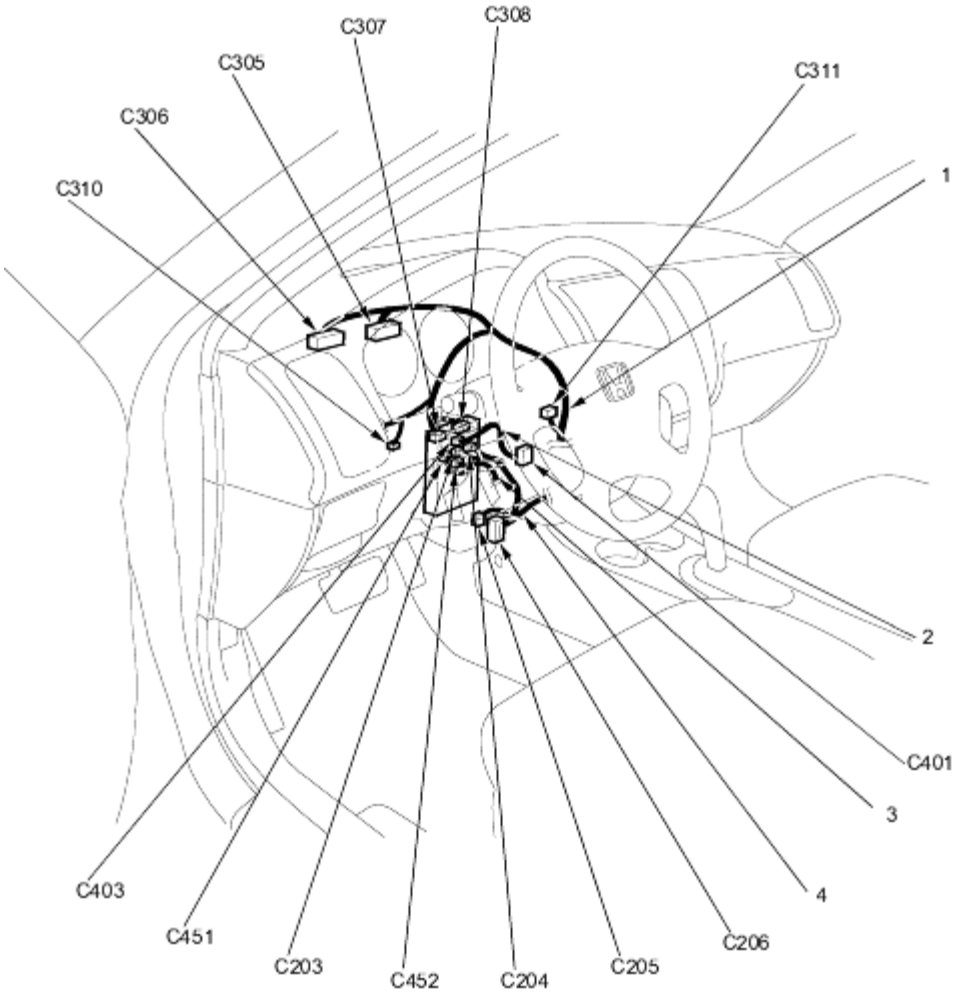
2. 9. When connecting the fuel tank unit, make sure the connection is secure and the suction filter (G) is firmly connected to the fuel pump (H).
   10. Install the part in the reverse order of removal with a new base gasket (I) and new O-rings (J), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the connector (K) is firmly locked into the place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
   - When installing the fuel tank unit align the marks (L) on the fuel tank (M) and the fuel tank unit (N).

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

LHD model:

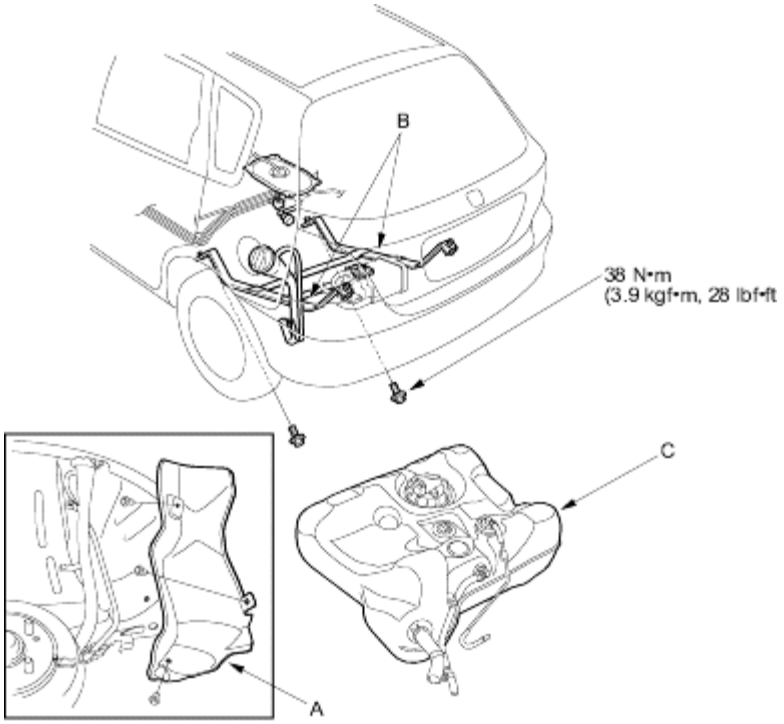


1. DASHBOARD WIRE HARNESS A
2. DASHBOARD WIRE HARNESS B
3. ENGINE COMPARTMENT WIRE HARNESS
4. ECM/PCM WIRE HARNESS

Fuel Supply System

Fuel Tank Replacement

1. 1. Relieve the fuel pressure (see page 11-430).
   2. Drain the fuel tank: Remove the fuel pump (see page 11-439). Using a hand pump, hose and container suitable for gasoline, draw the fuel from the fuel tank.
   3. Jack up the vehicle, and support it with jackstands.
   4. Remove the fuel pipe cover (A). Disconnect the fuel vapour hose and quick-connect fittings.
      Disconnect the hoses. Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
   5. Place a jack, or other support, under the tank.
   6. Remove the strap bolts, and let the strap (B) fall free.
   7. Remove the fuel tank (C). If it sticks to the undercoat on its mount, carefully pry it off the mount.
   8. Install the remaining parts in the reverse order of removal.



Fuel Supply System

Fuel Gauge Sending Unit Test

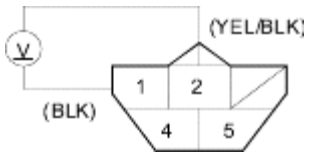
Special Tools Required

Adjustable ring wrench 07WAA-0010100

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-88).

1. 1. Check the No. 10 METER (75A) fuse in the under-dash fuse/relay box before testing.
   2. Turn the ignition switch OFF.
   3. Remove the rear seat cushion (see page 20-237).
   4. Remove the access panel from the floor.
   5. Disconnect the fuel pump 5P connector.
   6. Measure voltage between the fuel pump 5P connector terminals No. 1 and No. 2 with the ignition switch ON (II). There should be between 5 and 8 V.
      - If the voltage is as specified, go to step 7.
      - If the voltage is not as specified, check for:
   – – an open in the YEL/BLK or BLK wire.
   – – poor ground (G551).

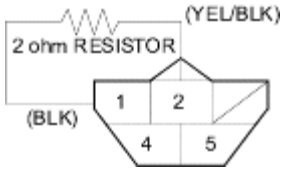
FUEL PUMP 5P CONNECTOR



Wire side of female terminals

1. 7. Turn the ignition switch OFF.
2. 8. Install a 2 ohm; resistor between the fuel pump 5P connector terminals No. 1 and No. 2, then turn the ignition switch ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

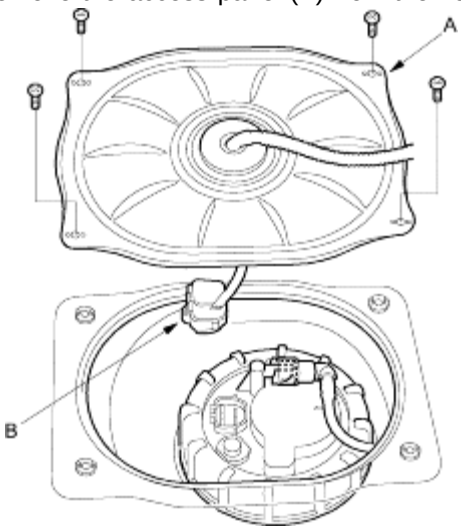
3. 9. Check that the pointer of the fuel gauge indicates "F".
   - If the pointer of the fuel gauge does not indicate "F", replace the gauge.
   - If the gauge is OK, inspect the fuel gauge sending unit.

NOTE: The pointer of the fuel gauge returns to the bottom on the gauge dial when the ignition switch is OFF regardless of the fuel level.

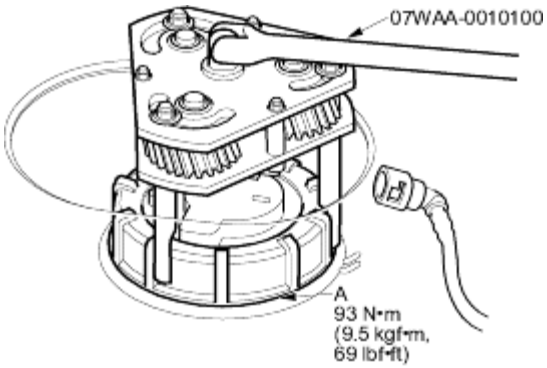
Fuel Supply System

Fuel Gauge Sending Unit Test (cont'd)

10. Relieve the fuel pressure (see page 11-430).
11. Remove the fuel fill cap.
12. Remove the rear seat cushion (see page 20-237).
13. Remove the access panel (A) from the floor.



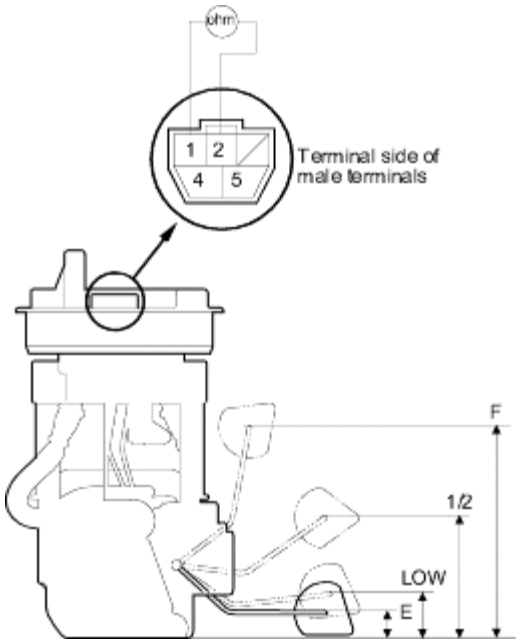
14. Disconnect the fuel pump 5P connector (B).
15. Disconnect the quick-connect fittings from the fuel pump.
16. Using the tool, loosen the fuel tank unit locknut (A).



17. Measure the resistance between the No. 1 and No. 2 terminals with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

If you do not get the following readings, replace the fuel gauge sending unit (see page 11-439).

Float Position	F	1/2	LOW	E
Resistance (ohms)	11-13	68.5-74.5	113.4-128	130-132



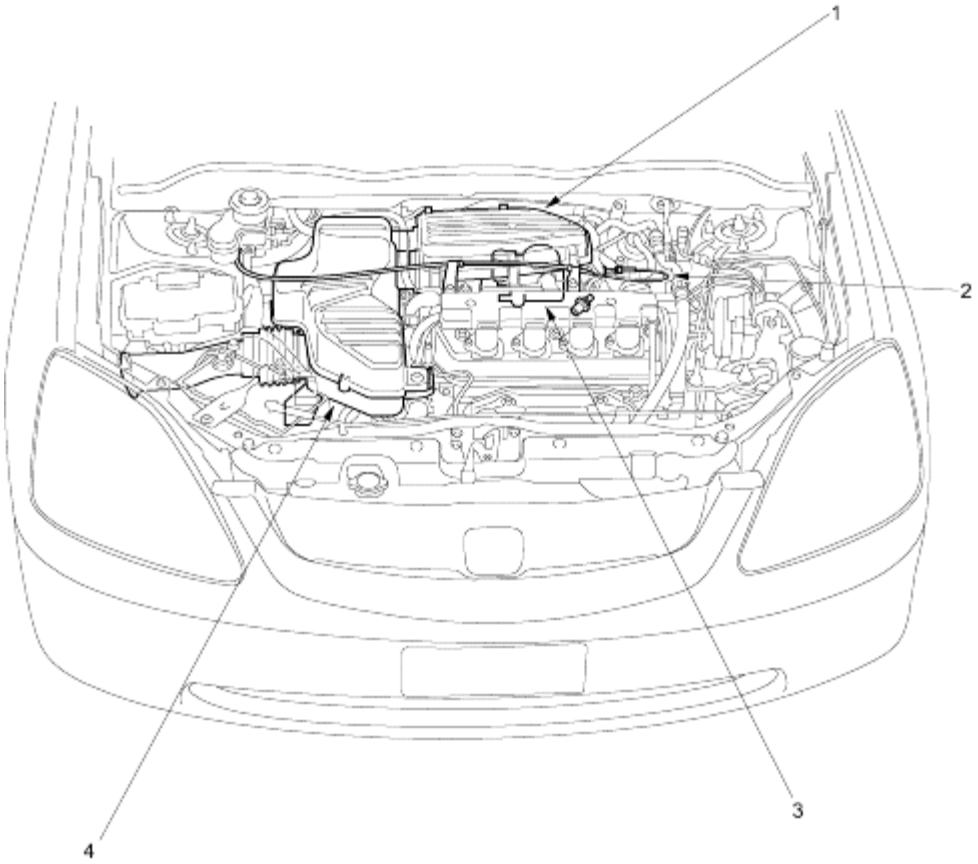
Fuel Supply System

Low Fuel Indicator Light Test

1. 1. Do the fuel gauge sending unit test (see page 11-441).
   - If the system is OK, go to step 2.
   - If the system has any malfunction, repair it.
2. 2. Turn the ignition switch ON (II) with the float at the E (EMPTY) position.
   - If the low fuel indicator light is on , go to step 3.
   - If the low fuel indicator light is not on, refer to the low fuel indicator Circuit Diagram (see page 22-88) and check the circuit.
3. 3. Lift the float above the LOW position.
   - If the low fuel indicator light goes off, the system is OK.
   - If the low fuel indicator light is still on, refer to the low fuel indicator Circuit Diagram (see page 22-88) and check the circuit.

Intake Air System

Component Location Index



1. AIR CLEANER
   Replacement, page 11-446
   AIR CLEANER ELEMENT
   Replacement, page 11-447
2. THROTTLE CABLE
   Adjustment, page 11-449
   Removal/Installation, page 11-450
3. THROTTLE BODY
   Test, page 11-445
   Removal/Installation, page 11-451
   Disassembly/Reassembly, page 11-452
4. RESONATOR
   Replacement, page 11-448

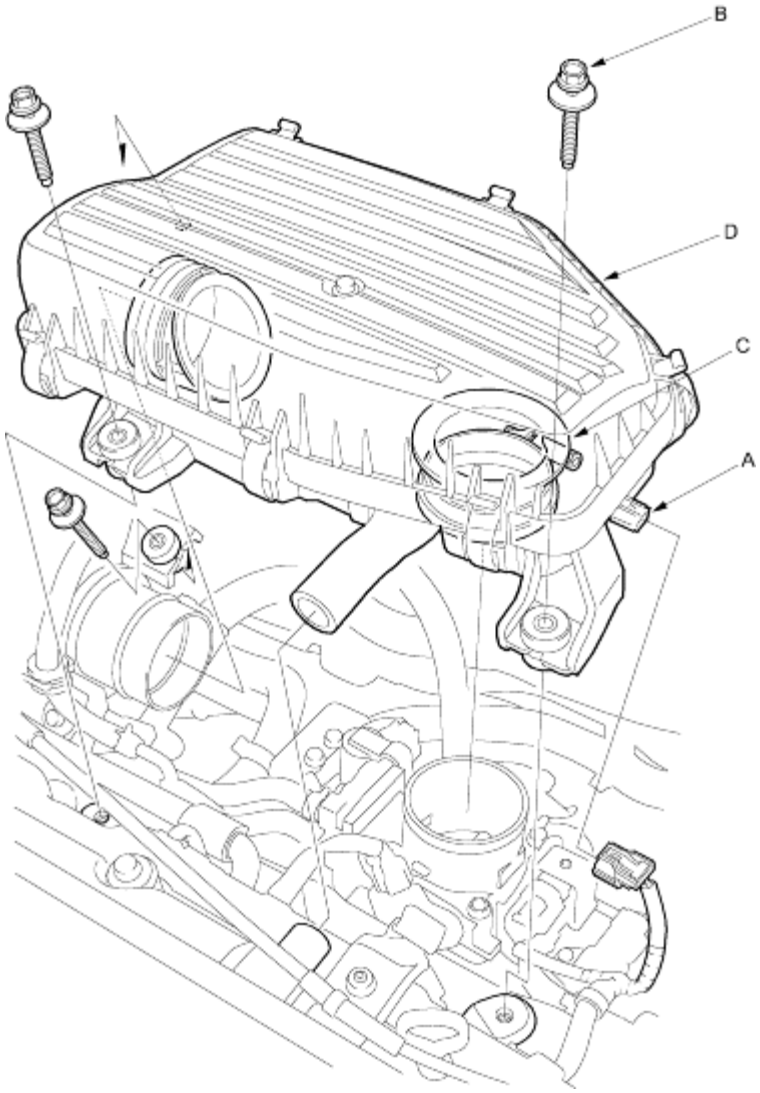
Intake Air System
Throttle Body Test

NOTE:
- Do not adjust the throttle stop screw. It is preset at the factory.
- If the Malfunction Indicator Lamp (MIL) has been reported on, check for Diagnostic Trouble Codes (DLC) (see page 11-311).

1. With the engine off, check the throttle cable operation. The cable should operate without binding or sticking.
   - If the cable operates OK, go to step 2.
   - If the cable binds or sticks, check it and its routing. If it is faulty, re-route it or replace it and adjust it (see page 11-449), then go to step 2.
2. Operate the throttle lever by hand to see if the throttle valve and/or shaft are too loose or too tight.
   - If there is excessive play in the throttle valve shaft, or any binding in the throttle valve at the fully closed position, replace the throttle body.
   - If the throttle valve and shaft are OK, go to step 3.
3. Connect the scan tool to the Data Link Connector (DLC).
4. Turn the ignition switch ON (II).
5. Check the throttle position with the scan tool. There should be about 10% when the throttle is fully closed and about 90% when the throttle is fully opened.
   - If the throttle position is correct, the throttle body is OK.
   - If the throttle position is not correct, replace the throttle body.

Intake Air System
Air Cleaner Replacement

1. 1. Disconnect the connector from the IAT sensor (A).

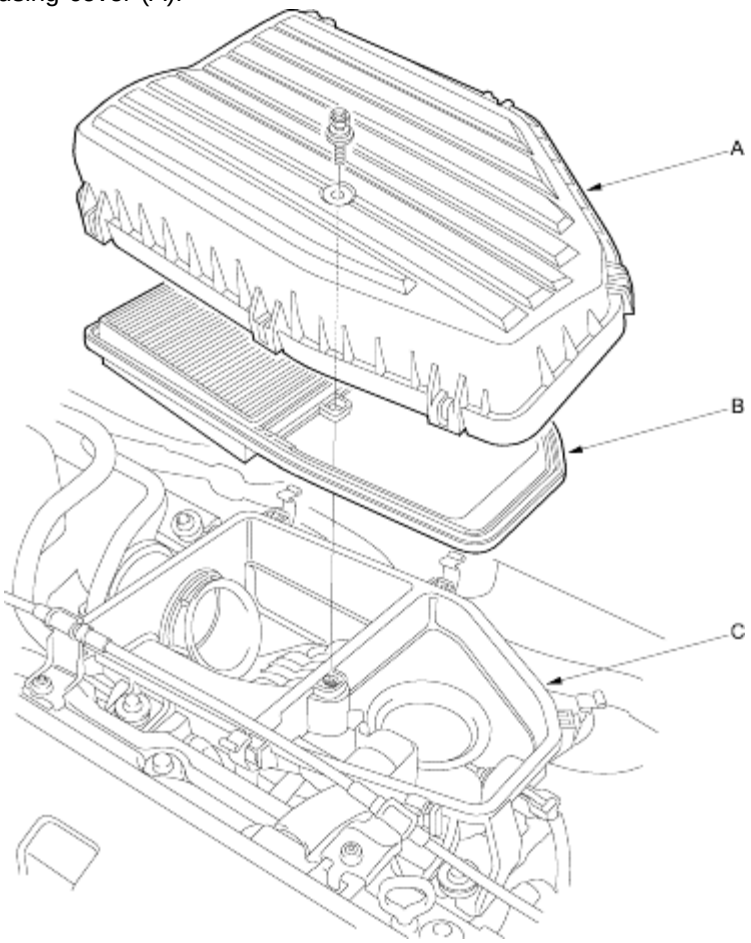


2. 2. Remove the bolts (B).
   3. Loosen the screw (C).
   4. Remove the air cleaner (D).
   5. Install the parts in the reverse order of removal.

Intake Air System

Air Cleaner Element Replacement

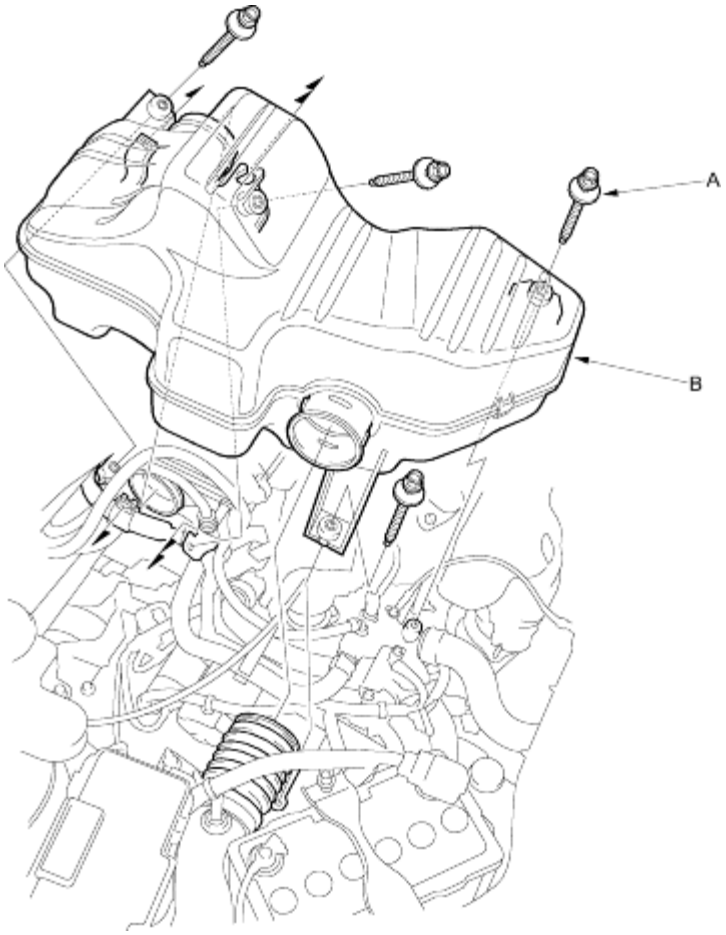
1. 1. Open the air cleaner housing cover (A).



2. 2. Remove the air cleaner element (B) from the air cleaner housing (C).
   3. Install the parts in the reverse order of removal.

Intake Air System
Resonator Replacement

1. 1. Remove the bolts (A).

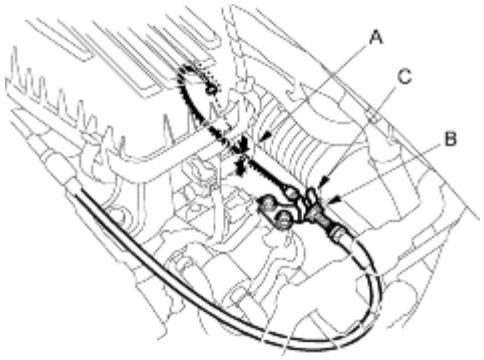


2. 2. Remove the resonator (B).
   3. Install the parts in the reverse order of removal.

Intake Air System

Throttle Cable Adjustment

1. 1. Check cable free play at the throttle linkage. Cable deflection (A) should be 10-12 mm (3/8-1/2 in.).

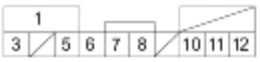


2. 2. If deflection (A) is not within spec (10-12 mm, 3/8-1/2 in.) loosen the locknut (B), turn the adjusting nut (C) until the deflection (A) is as specified, then retighten the locknut (B).
   3. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Fuel and Emissions Systems

System Descriptions (cont'd)

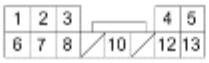
C203



1	BLK/WHT	⑦	LT GRN
2	———	8	GRN
③	BLK/ORN	9	———
4		10	BLU/BLK*1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

*1 : except M/T

C204



1	GRY	8	RED/BLU
2	YEL/RED	9	———
③	WHT/BLK	10	YEL
④	BLU/WHT	11	———
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

C205



①	BRN
②	BLK

C206*



1	———	9	———
2	———	10	———
3	———	11	———
④	BLK	12	———
⑤	BRN/YEL	13	———
6	———	14	GRY
⑦	LT BLU	15	———
8	———	16	WHT/RED

C305



1	———	9	———	17	YEL
2	WHT/GRN	10	———	18	WHT/RED
3	YEL/BLK	11	———	19	WHT/BLK
4	———	12	BLU/WHT	20	YEL/BLU
5	———	13	BLU	20	WHT/BLU
6	———	14	———	21	PNK/BLU
7	WHT*1	15	BLK/YEL	22	———
8	———	16	BLK		

*1 : with rear fog light

C306



1	RED/BLU	9	———	17	RED
2	RED/YEL	10	WHT/RED	18	BLK
③	BLK/RED*1	11	WHT*1	19	———
4	———	12	GRN/YEL	20	YEL/RED
⑤	BLU/BLK*1	13	GRN/RED	21	GRN/ORN
6	———	14	PNK	22	BLU/ORN
7	RED/WHT*2	15	BLU/RED		
8	———	16	RED/BLK		

*1 : A/T
*2 : with rear fog light

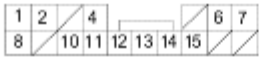
C307



1	WHT	7	GRN/RED
1	RED/YEL	8	RED/BLK
2	GRN*	9	BLU/YEL
3	BLK/ORN	10	RED
4	WHT/BLU	11	BLU/WHT
⑤	WHT/BLK	12	WHT/GRN
6	YEL/GRN*		

* : with sun roof

C308



1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	———	12	YEL/BLK*1
4	WHT/RED	13	WHT/RED
5	———	14	BLK/YEL*1
6	YEL	15	RED/WHT*2
⑦	YEL	16	———
⑧	BLU/WHT	17	———
9	———		

*1 : KG model
*2 : with rear fog light

C310



1	WHT/GRN
2	WHT/BLK
3	———
4	———

C311 (KG model)



①	BLK/YEL
2	———
③	YEL/BLK

C401



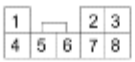
①	BLK/WHT
2	———
③	WHT
④	BLK/RED
5	WHT/RED
⑥	BLK/YEL
7	———

C403



①	WHT
2	WHT/RED
③	BLK/WHT
④	BLK/RED
⑤	BLK/YEL

C451



①	BLK/YEL	⑤	BLU
②	WHT/RED	6	ORN
③	WHT/GRN	7	WHT
4	BLK	8	WHT/BLU

C452



①	WHT
②	WHT/RED
3	WHT/BLK

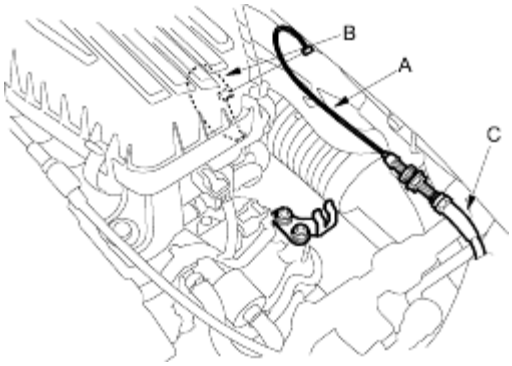
NOTE : ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

* : Terminal side of female terminals

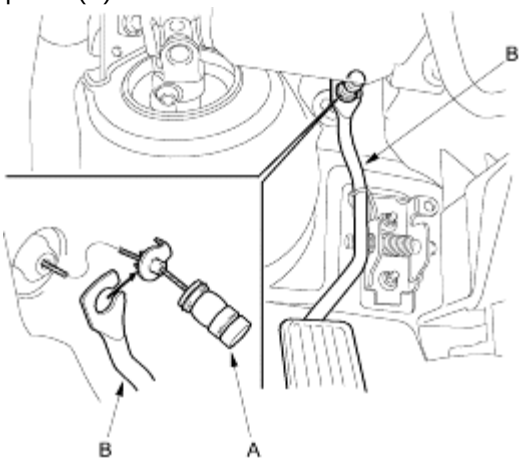
Intake Air System

Throttle Cable Removal/Installation

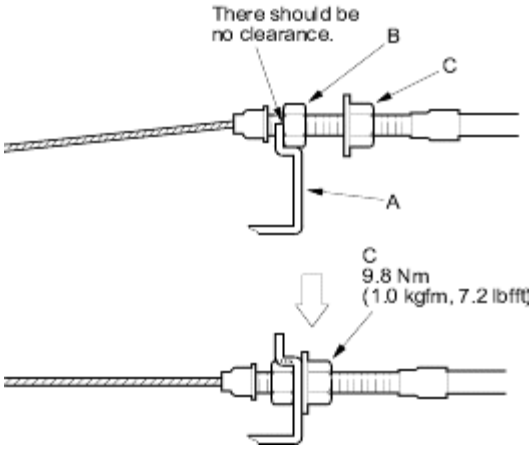
1. 1. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).



2. 2. Remove the cable housing (C) from the cable bracket (D).
   3. Remove the throttle cable (A) from the accelerator pedal (B).



1. 4. Install in the reverse order of removal.
2. 5. After installing, start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   6. Hold the cable, removing all slack from the cable.
   7. Set the locknut on the cable bracket (A).
   Adjust the adjusting nut (B) so that its free play is 0 mm.



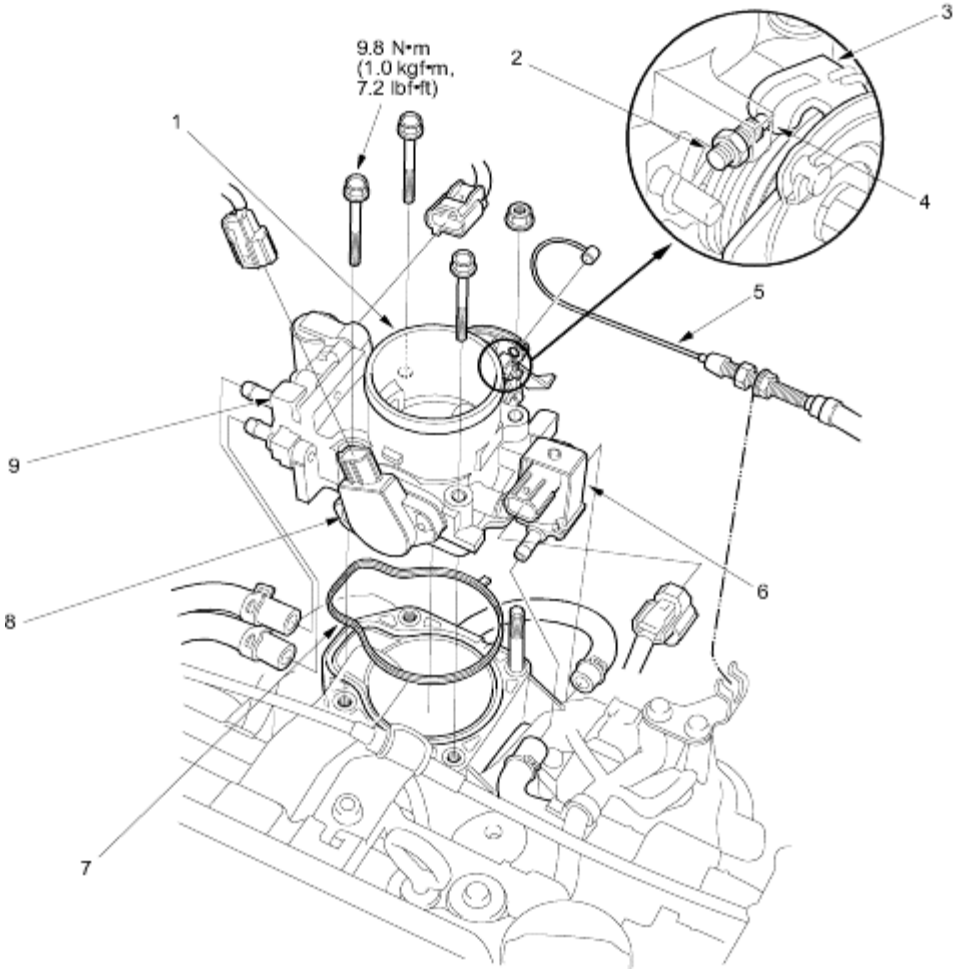
3. 8. Remove the cable from the throttle bracket (A). Reset the adjusting nut (B) and tighten the locknut (C).
   9. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Intake Air System

Throttle Body Removal/Installation

NOTE:

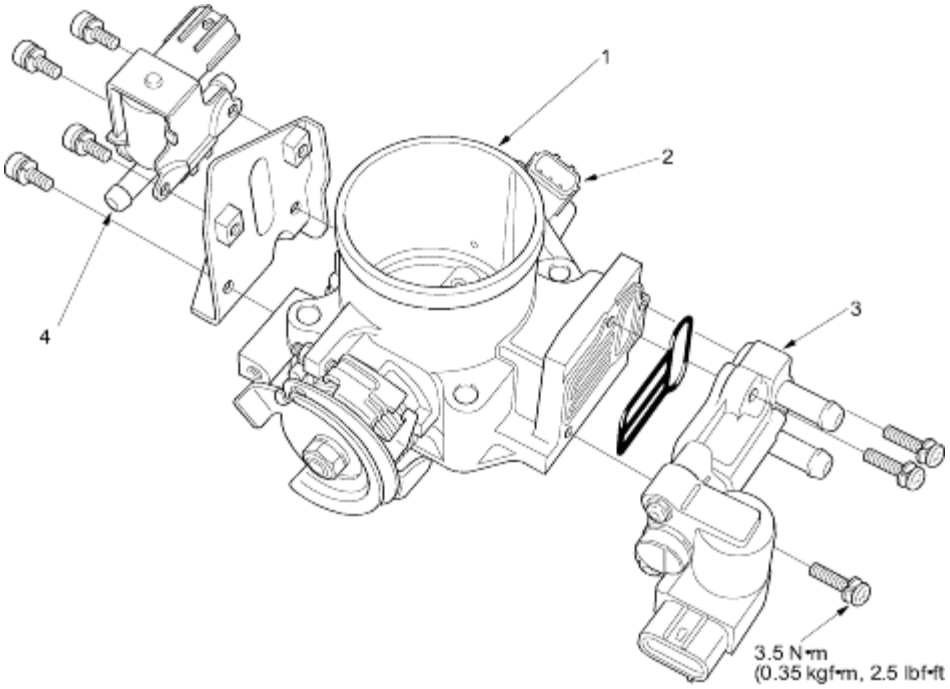
- Do not adjust the throttle stop screw.
- After reassembly, adjust the throttle cable (see page 11-449).
- The Throttle Position (TP) sensor is not removable.



1. THROTTLE BODY
2. THROTTLE STOP SCREW
   (Do not adjust)
3. THROTTLE LEVER
4. There should be no clearance
5. THROTTLE CABLE
6. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
7. GASKET
   Replace.
8. THROTTLE POSITION (TP) SENSOR
9. IDLE AIR CONTROL (IAC) VALVE

Intake Air System

Throttle Body Disassembly/Reassembly



1. THROTTLE BODY
2. TP SENSOR
3. IAC VALVE
4. EVAP CANISTER PURGE VALVE

Catalytic Converter System
DTC Troubleshooting

DTC P0420: Catalytic System Efficiency Below Threshold

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot those DTCs first, then recheck for DTC P0420.

P0137, P0138: Secondary Heated Oxygen Sensor (secondary HO2S) (Sensor 2)

P0141: Secondary HO2S (Sensor 2) heater

1. 1. Reset the ECM/PCM (see page 11-312), then continue to step 2 through 5 to reset the readiness code.
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Drive for about 10 minutes without stopping on a highway or freeway. Your speed can vary.
   4. With the A/T in D position, M/T in 5th gear, drive at a steady speed between 80-100 km/h (50-62 mph) for 30 seconds.
   5. Repeat step 4 three times. Between each repetition, close the throttle completely for 1-2 seconds. If the engine is stopped during this part of the procedure, go to step 3 and do the procedure again.
   6. Check for a Temporary DTC with the scan tool.

Does the scan tool indicate Temporary DTC P0420?

YES - Check the TWC. If necessary, replace the TWC. ■

NO - Check for readiness code completion. If the readiness is complete, it was a intermittent failure, system is OK at this time. If the readiness is incomplete, repeat steps 2 through 5. ■

1. 1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   2. Connect a tachometer.
   3. Check the idle speed (see page 11-425).
   4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
   5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.
      The CO meter should indicate 0.1 % maximum.

EGR System
DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Test-drive under the following conditions.
      - Without any electrical load.
      - Decelerate from 88 km/h (55 mph) for at least 5 seconds.
2. 3. Check the Temporary DTC with scan tool.

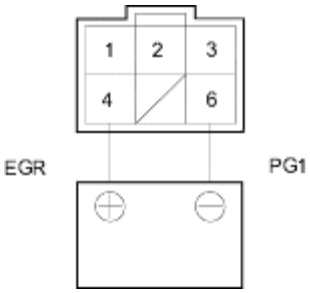
Is Temporary DTC P0401 indicated?

YES - Clean the intake manifold EGR port with carburettor cleaner. Clean the passage inside the EGR valve with carburettor cleaner or replace the EGR valve.

NO - Intermittent failure, go to step 4.

3. 4. Turn the ignition switch OFF.
   5. Disconnect the EGR valve 6P connector.
   6. Connect the battery positive terminal to EGR valve connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

4. 7. Start the engine and let it idle, then connect the battery negative to terminal No. 6.

Did the engine stall or run rough?

YES - Intermittent failure, system is OK at this time. ■

NO - Clean the intake manifold EGR port with carburettor cleaner. Clean the passage inside the EGR valve with carburettor cleaner or replace the EGR valve. ■

DTC P1491: EGR Valve Insufficient Lift

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700-2,500 rpm (min-1) range.
   4. Check the Temporary DTC with the scan tool.

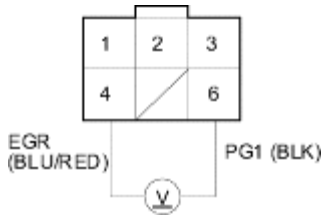
Is Temporary DTC P1491 indicated?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect the EGR valve 6P connector.
   7. Start the engine and let it idle.
   8. Measure voltage between the EGR valve 6P connector terminals No. 4 and No. 6.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

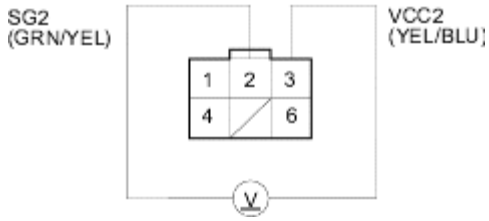
NO - Go to step 9.

EGR System
DTC Troubleshooting (cont'd)

1. 9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).
11. Measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

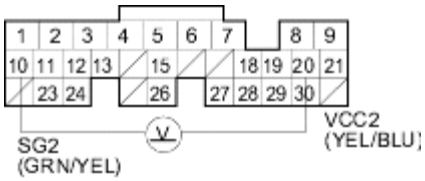
Is there about 5 V?

YES - Go to step 13.

NO - Go to step 12.

12. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

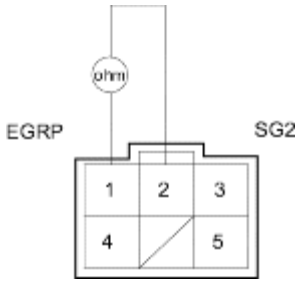
YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10, A20). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 13. Turn the ignition switch OFF.

14. At the sensor side, measure resistance between the EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

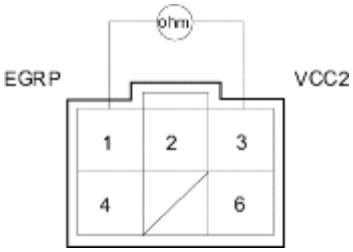
Is there continuity or resistance of 100 kohms or higher?

YES - Replace the EGR valve. ■

NO - Go to step 15.

15. Measure resistance between the EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 kohms or higher?

YES - Replace the EGR valve. ■

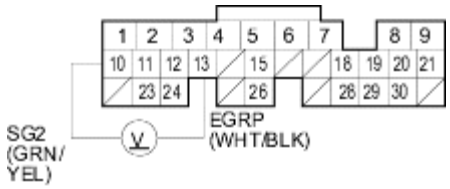
NO - Go to step 16.

16. Reconnect the EGR valve connector.
17. Turn the ignition switch ON (II).

EGR System
DTC Troubleshooting (cont'd)

1. 18. Measure voltage between ECM/PCM connector terminals A10 and A13.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

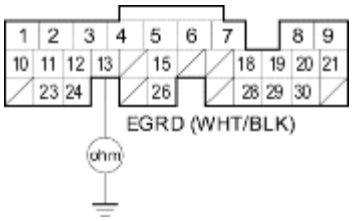
Is there about 1.2 V?

YES - Go to step 21.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Check for continuity between ECM/PCM connector terminal A13 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

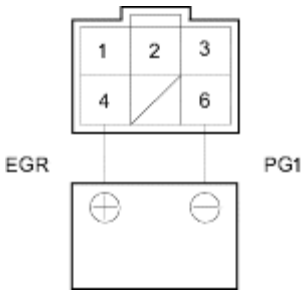
Is there continuity?

YES - Repair short in the wire between the EGR valve and the ECM/PCM (A13). ■

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A13). ■

1. 21. Turn the ignition switch OFF.
22. Disconnect the EGR valve 6P connector.
23. Connect the battery positive terminal to the EGR valve 6P connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

24. Start the engine and let it idle, then connect the battery negative terminal to the EGR valve 6P connector terminal No. 6.

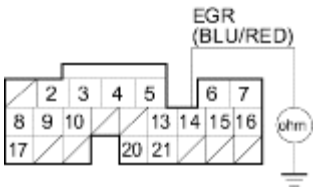
Does the engine stall or run rough?

YES - Go to step 25.

NO - Replace the EGR valve. ■

25. Turn the ignition switch OFF.
26. Disconnect ECM/PCM connector B (24P).
27. Check for continuity between ECM/PCM connector terminal B14 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

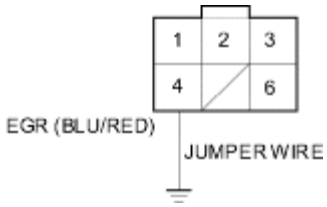
YES - Repair short in the wire between the EGR valve and the ECM/PCM (B14). ■

NO - Go to step 28.

EGR System
DTC Troubleshooting (cont'd)

1. 28. Connect the EGR valve 6P connector terminal No. 4 and body ground with a jumper wire.

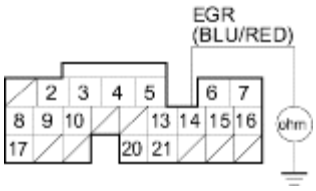
EGR VALVE 6P CONNECTOR



Wire side of female terminals

29. Check for continuity between ECM/PCM connector terminal B14 and the body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

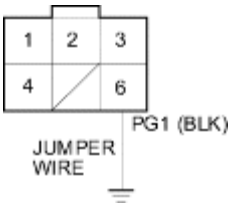
YES - Go to step 30.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (B14). ■

1. 30. Disconnect the jumper wire from the EGR valve 6P connector.

31. Connect the EGR valve 6P connector terminal No. 6 to body ground with a jumper wire.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EGR valve and G101. ■

EGR System
DTC Troubleshooting (cont'd)

DTC P1498: EGR Valve Position Sensor Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-312).
   2. Start the engine.

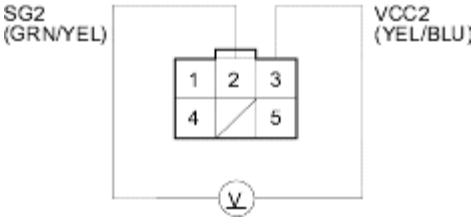
Is DTC P1498 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the EGR valve 6P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

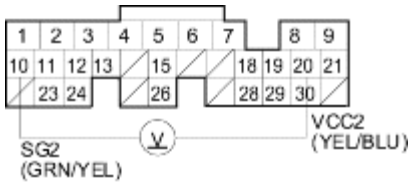
Is there about 5 V?

YES - Replace the EGR valve. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

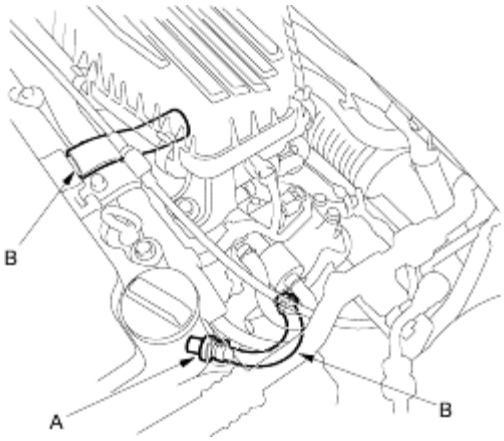
YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

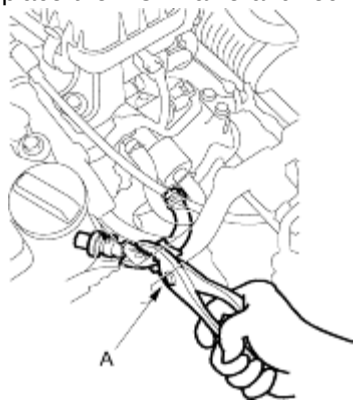
PCV System

PCV Valve Inspection and Test

1. 1. Check the PCV valve (A), hoses (B) and connections for leaks or restrictions.



2. 2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

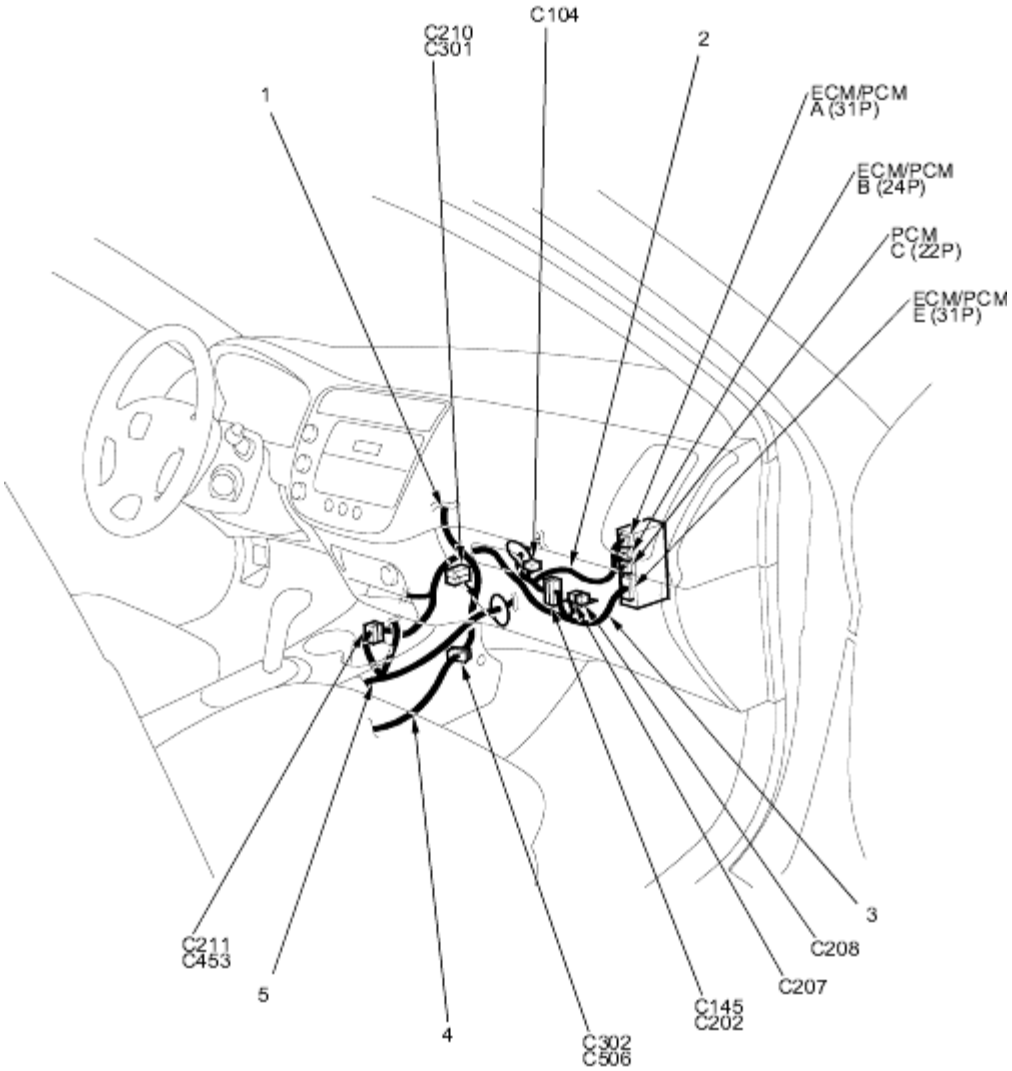


Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

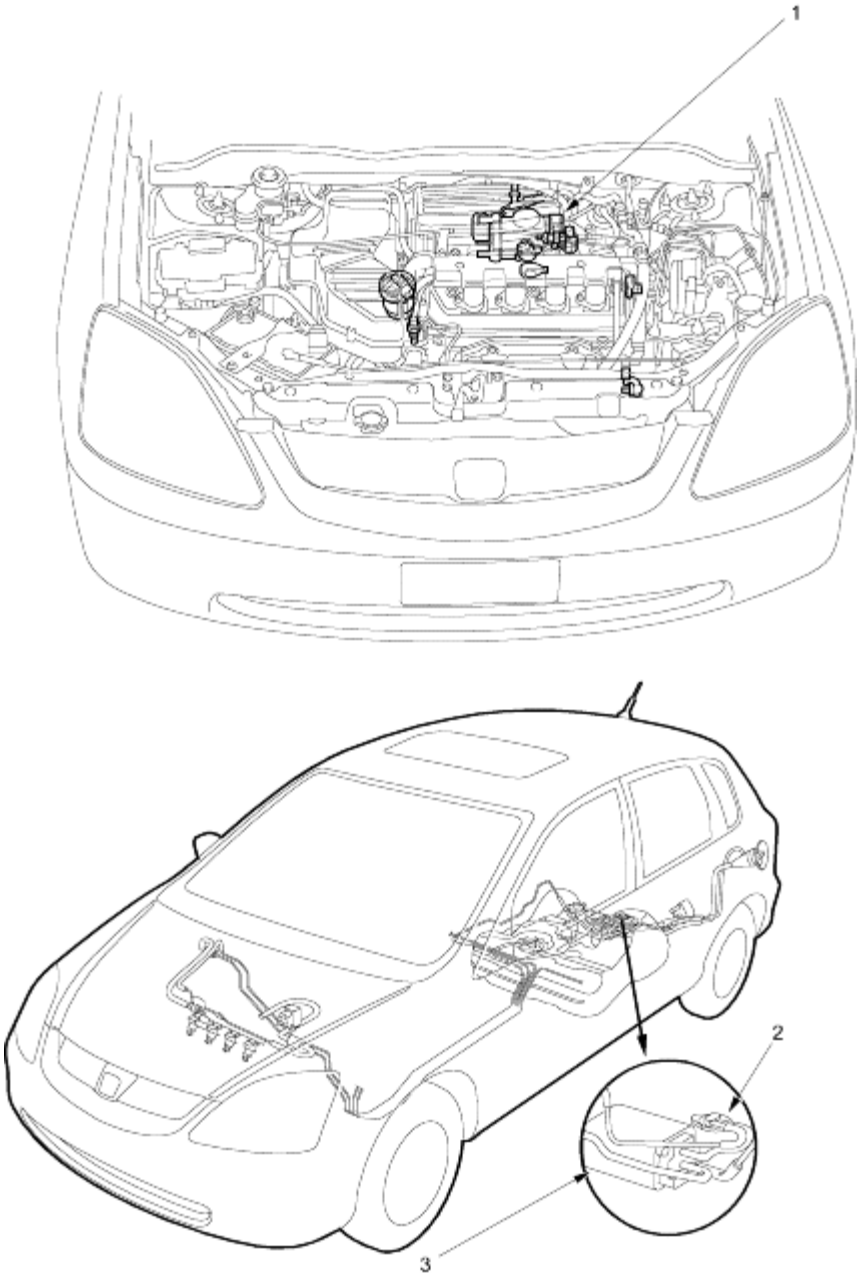
LHD model:



1. DASHBOARD WIRE HARNESS
2. ENGINE WIRE HARNESS
3. ECM/PCM WIRE HARNESS
4. FLOOR WIRE HARNESS
5. ENGINE COMPARTMENT WIRE HARNESS A

Evaporative Emission Control System

Component Location Index



1. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
   Troubleshooting, page 11-461
2. EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
   Test, page 11-464
3. EVAPORATIVE EMISSION (EVAP) CANISTER
   Troubleshooting, page 11-463

Evaporative Emission Control System
DTC Troubleshooting

DTC P0443: An electrical problem in the EVAP Canister Purge Valve circuit.

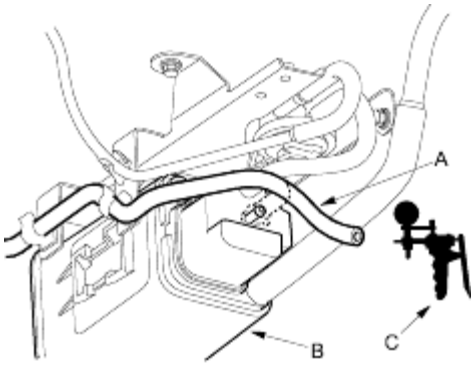
1. 1. Reset the ECM/PCM (see page 11-312).
   2. Turn the ignition switch ON (II).

Is the DTC P0443 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires between the EVAP canister purge valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum gauge (C) to the hose.



3. 5. Start the engine end let it idle.

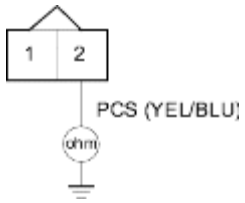
Is there vacuum?

YES - Go to step 6.

NO - Go to step 11.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the EVAP canister purge valve 2P connector.
   8. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

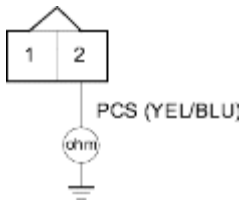
Is there continuity?

YES - Go to step 9.

NO - Replace the EVAP canister purge valve. ■

2. 9. Disconnect ECM/PCM connector B (24P).
   10. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

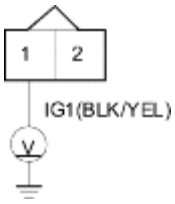
YES - Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

Evaporative Emission Control System
DTC Troubleshooting (cont'd)

1. 11. Turn the ignition switch OFF.
12. Disconnect the EVAP canister purge valve 2P connector.
13. Turn the ignition switch ON (II).
14. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

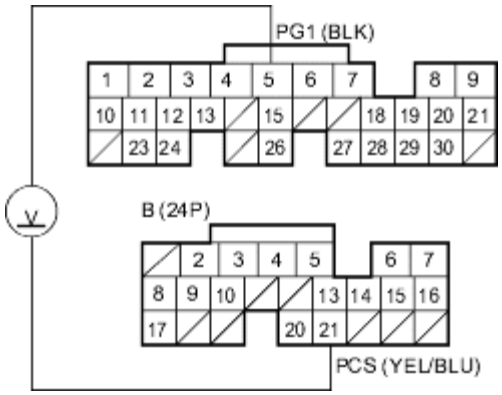
YES - Go to step 15.

NO - Repair open in the wire between No. 4 ACG (10 A) fuse in the under-dash fuse/relay box and the EVAP canister purge valve. ■

15. Turn the ignition switch OFF.
16. Reconnect the EVAP canister purge valve 2P connector.
17. Turn the ignition switch ON (II).

1. 18. Measure voltage between ECM/PCM connector terminals A5 and B21.

ECM/PCM CONNECTORS A (31P)



Wire side of female terminals

Is there battery voltage?

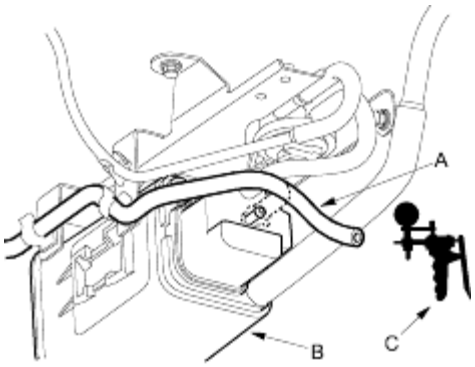
YES - Substitute a known-good ECM/PCM and recheck (see page 11-313). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21). If wire is OK, replace the EVAP canister purge valve. ■

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting

1. 1. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum gauge (C) to the hose.



2. 2. Start the engine and let it idle.
NOTE: Engine coolant temperature must be below 70°C (158°F).

Is there vacuum?

YES - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

NO - Go to step 3.

3. 3. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then raise the engine speed to 3,000 rpm (min-1).

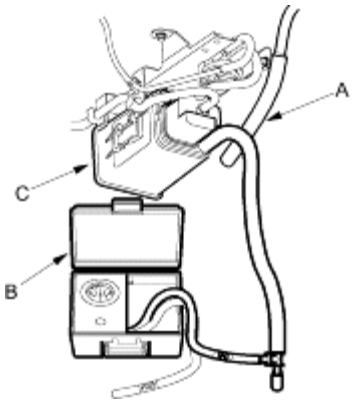
Is there vacuum?

YES - Go to step 4.

NO - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

4. 4. Turn the ignition switch OFF.
5. Reconnect the vacuum hose to the EVAP canister.
6. Remove the fuel fill cap.

1. 7. Disconnect the purge air hose (A) from the EVAP canister and connect a vacuum pressure gauge 0-100 mmHg (0-4 in.Hg) (B) to EVAP canister (C).



2. 8. Start the engine and raise speed to 3,000 rpm (min-1).

Does vacuum appear on gauge within 1 minute?

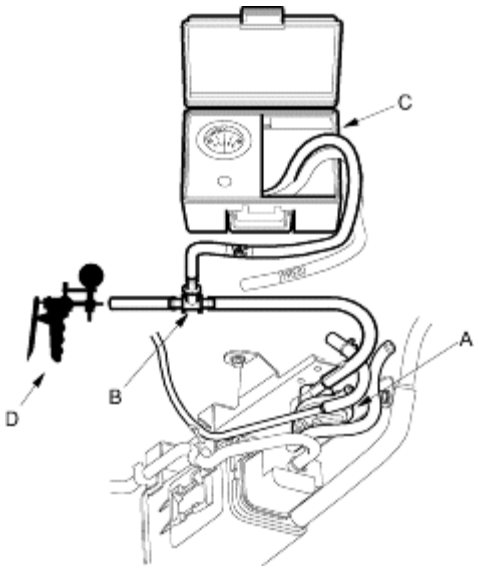
YES - See EVAP two way valve test to complete. Evaporative emission controls are OK. ■

NO - Replace the EVAP canister. ■

Evaporative Emission Control System

EVAP Two Way Valve Test

1. 1. Remove the fuel cap.
2. 2. Disconnect the vapour line from the EVAP two way valve (A). Connect it to a T-fitting (B) from the vacuum gauge (C) and the vacuum pump (D) as shown.

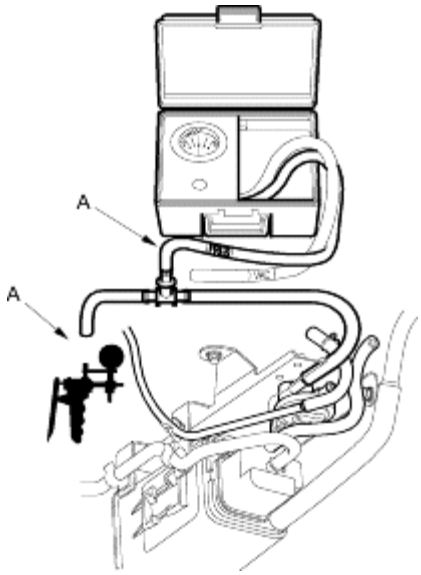


3. 3. Apply vacuum slowly and continuously while watching the gauge.

The vacuum should stabilise momentarily at 0.8-2.1 kPa (6-16 mmHg, 0.2-0.6 in.Hg).

If the vacuum stabilises (valve opens) below 0.8 kPa (6 in.Hg), or above 2.1 kPa (16 mmHg, 0.6 in.Hg), install a new valve and retest.

1. 4. Move the vacuum pump hose from the vacuum fitting to the pressure fitting, and move the vacuum gauge hose from the vacuum side to the pressure side (A) as shown.



2. 5. Slowly pressurise the vapour line while watching the gauge. The pressure should stabilise momentarily above 1.0 kPa (8 mmHg, 0.3 in.Hg).
   - If the pressure momentarily stabilises (valve opens) above 1.0 kPa (8 mmHg, 0.3 in.Hg), the valve is OK.
   - If the pressure stabilises below 1.0 kPa (8 mmHg, 0.3 in.Hg), install a new valve and retest.

5-door
(Except KE model)

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Intake Air System

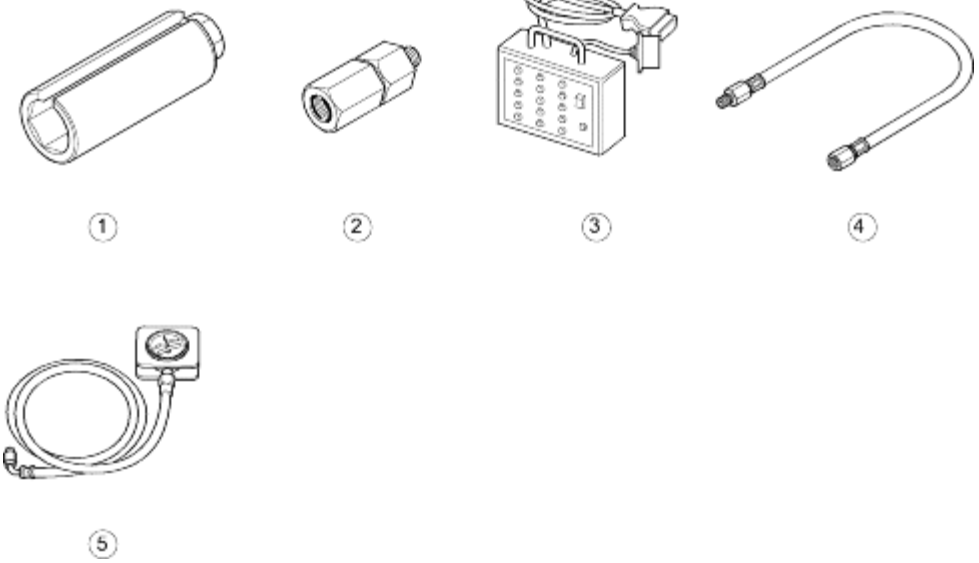
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Fuel and Emissions Systems

Special Tools

Ref. No.	Tool Number	Description	Qty
(1)	07LAA-PT50101	O2 Sensor Socket Wrench	1
(2)	07NAJ-P070100	Oil Pressure Gauge Attachment	1
(3)	07WAJ-0010100	DLC Terminal Box	1
(4)	07ZAJ-S5A0200	Hose, Oil Pressure	1
(5)	07406-0070001	Low Pressure Gauge	1



Fuel and Emissions Systems
General Troubleshooting Information

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the Malfunction Indicator Lamp (MIL) on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting.

Opens and Shorts

"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. In complex electronics (like ECM's/PCM's) this can sometimes mean something works, but not the way it is supposed to.

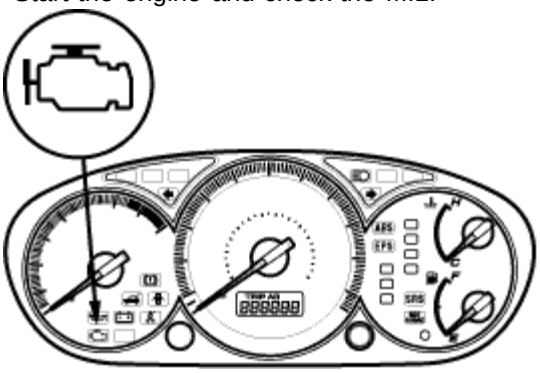
How to Troubleshoot

Special Tool Required

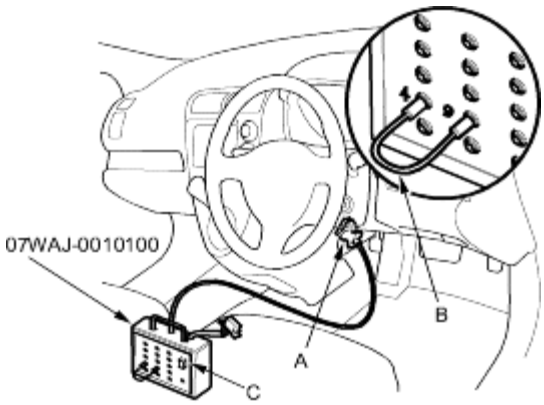
DLC terminal box 07WAJ-0010100

If the MIL (Malfunction Indicator Lamp) has come on

1. 1. Start the engine and check the MIL.



2. If the MIL stays on, jump the SCS line
    1. Connect the DLC terminal box to the 16P Data Link Connector (DLC) (A) located under the driver's side of the dashboard.
    2. Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire (B), then push the switch (C).



2. 3. Check the Diagnostic Trouble Code (DTC) and note it. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

If the MIL did not come on

If the MIL did not come on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you cannot duplicate the DTC

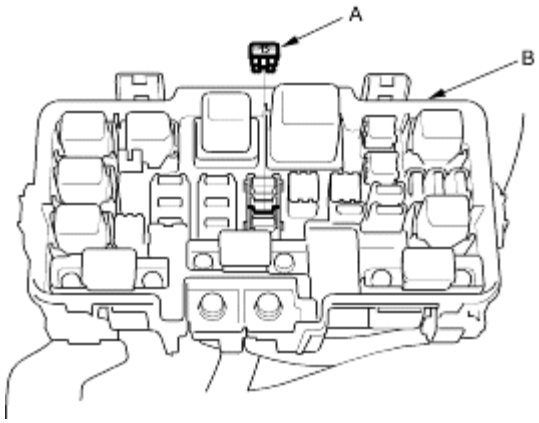
Some of the troubleshooting in this section requires you to reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) and try to duplicate the DTC. If the problem is intermittent and you cannot duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Reset the ECM/PCM

Turn the ignition switch OFF, and remove the No. 6 ECU (ECM/PCM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



How to End a Troubleshooting Session (required after any troubleshooting)

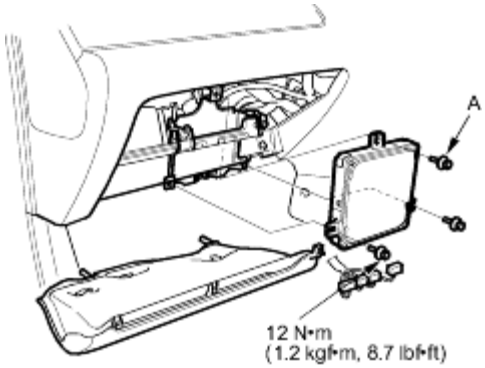
1. 1. Reset the ECM/PCM as described above.
   2. Turn the ignition switch OFF.
   3. Disconnect the DLC terminal box from the DLC (16P).

NOTE: The ECM/PCM is part of the immobiliser system (with TWC model). If you replace the ECM/PCM, it will have a different immobiliser code. In order for the engine to start, you must rewrite the immobiliser code with the Honda PGM Tester.

How to Remove the ECM/PCM for Testing

If the inspection for a trouble code requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it:

1. 1. Remove the passenger's dashboard lower cover (see page 20-220), the passenger's kick panel (see page 20-206), and the glove box (see page 20-220).
   2. Remove the ECM/PCM mounting bolt (A) and the bracket.



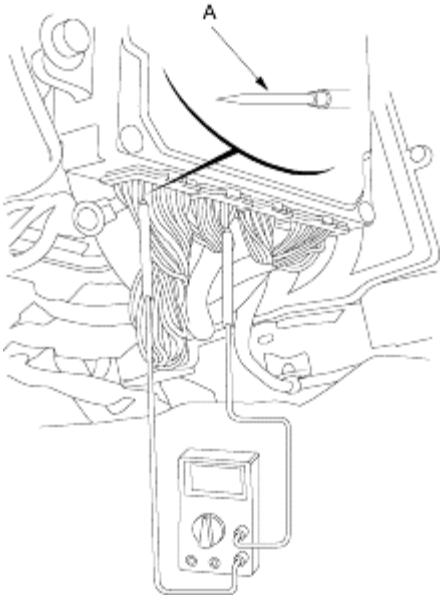
2. 3. Remove the ECM/PCM.

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the ECM/PCM

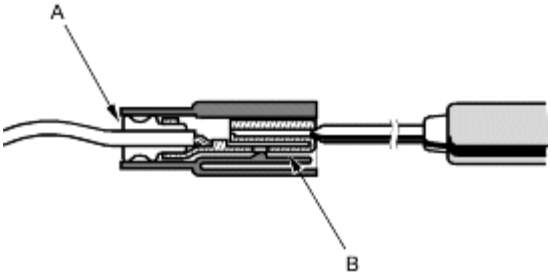
1. 1. Gently slide the sharp tester probe (A) into the connector from wire side until it touches the end of the wire terminal.



2. 2. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



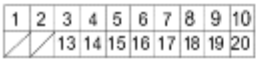
How to Substitute the ECM/PCM (with TWC model)

1. 1. Remove the ECM/PCM from the vehicle.
   2. Install a known-good ECM/PCM in the vehicle.
   3. Rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester. It allows you to start the engine.
   4. After completing your tests, reinstall the original ECM/PCM and rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester again.

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	8		15	BLU/WHT*
②	YEL/BLK	9		16	BLU/WHT*
③	YEL/BLK	10		17	BLU/WHT*
④	YEL/BLK	11		18	WHT*
⑤	GRN	12		19	WHT*
⑥	GRN	13	WHT/GRN	20	WHT*
⑦	GRN	14	WHT/GRN		

* : A/T

C145

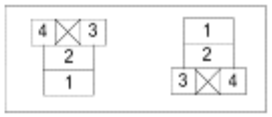


①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT	16	BLK/WHT
③	BLU/WHT*1	10		17	BLK/YEL
4	GRN/WHT*2	11	WHT*1	18	YEL/RED
5	YEL*2	12		19	YEL/BLK
⑥	WHT/GRN	13		20	BLK/WHT
7	GRN	14			

*1 : A/T

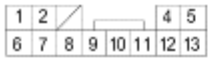
*2 : M/T

C207 C208



①	YEL/BLK	①	YEL/BLK
②	YEL/GRN	②	WHT/BLK
③	GRN/YEL	③	RED/YEL
④	YEL/BLK	④	WHT/BLK

C210

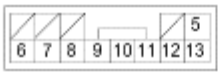


1	RED/YEL	⑦	BLU/BLK*1
2	YEL/BLU	⑧	BLK/RED*1
2	BLU/ORN	⑨	WHT*1
3		10	LT GRN*2
4	BRN/YEL	11	RED/WHT
5	YEL/BLK	12	GRN/ORN
⑥	YEL/GRN	13	YEL/RED

*1 : except M/T

*2 : M/T

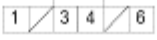
C211



1		⑧	WHT/RED
2		⑨	BLK/ORN
3		10	PNK
4		11	GRN/WHT
5	BLK/YEL*	12	RED
⑥	BLK/WHT	13	WHT/BLK
⑦	BRN/YEL		

* : with seat heater

C506



①	YEL/GRN	
2		
3	PNK	
4	PNK/BLU	
5		
6	YEL/BLK	

ECM/PCM A (31P)



①	BLK/WHT	12	BLK/RED	23	BRN/YEL
②	YEL/BLK	13	WHT/BLK	24	BRN/YEL
③	YEL/BLK	14		25	
④	BLK	15	RED/BLK	26	GRN
⑤	BLK	16		27	BRN
⑥	WHT	17		28	WHT/BLU
⑦	BLU	18	WHT/GRN	29	BLU/RED
⑧	YEL	19	GRN/RED	30	YEL/GRN
⑨	RED/BLU	20	YEL/BLU	31	
⑩	GRN/YEL	21	YEL/RED*		
⑪	GRN/WHT	22			

* : A/T

ECM/PCM B (24P)



1		⑨	RED/BLK*2	17	RED/YEL
②	YEL	10	WHT/BLU	18	
③	BLU	11		19	
④	RED	12		20	
⑤	BRN	13	WHT/RED	21	YEL/BLU
⑥	GRN	14	BLU/RED	22	
⑦	RED/BLK*1	15	GRN/YEL*2	23	
⑧	RED/WHT	16	BLK/RED*1	24	

*1 : A/T

*2 : D16W7, D16V1 engine

PCM C (22P)



①	WHT/BLK*	⑨	RED	17	
②	YEL/BLU*	10	WHT	18	
3		11	BLU	19	BRN
④	GRN/WHT*	12	BLU/WHT	20	YEL
5		13		21	WHT/GRN*
⑥	BLU/BLK*	14	GRN*	22	
⑦	WHT/RED*	15	BLU*		
⑧	BRN/WHT*	16			

* : A/T

ECM/PCM E (31P)



①	GRN/YEL	12		23	LT BLU
②	WHT/RED	13		24	YEL
③	BRN/YEL	14		25	
④	PNK	15	ORN	26	BLU
5		16	LT GRN/WHT	27	RED/BLU
⑥	BLK/WHT	17		28	
⑦	RED/YEL	18	RED	29	BRN
8		19		30	
⑨	YEL/BLK	20		31	GRN/ORN
10		21			
11		22	WHT/BLK		

NOTE: 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○ : Related to ECM/PCM control.

Fuel and Emissions Systems

DTC Troubleshooting Index

DTC (MIL indication)	Detection Item	Page
0	MIL does not come on or does not go off, no DTC stored	(see page 11-540)
1	Primary Heated Oxygen Sensor (Primary HO2S, Sensor 1)*1	(see page 11-512)
3	Manifold Absolute Pressure (MAP) Sensor	(see page 11-513)
4	Crankshaft Position (CKP) Sensor	(see page 11-515)
6	Engine Coolant Temperature (ECT) Sensor	(see page 11-516)
7	Throttle Position (TP) Sensor	(see page 11-519)
8	Top Dead Centre Position (TDC) Sensor	(see page 11-521)
10	Intake Air Temperature (IAT) Sensor	(see page 11-522)
11	Idle Mixture Adjuster (IMA)*2	(see page 11-524)
12	Exhaust Gas Recirculation (EGR) Valve Lift Sensor*1	(see page 11-576)
13	Barometric Pressure (BARO) Sensor*1	(see page 11-526)
14	Idle Air Control (IAC) Valve	(see page 11-556)
17	Vehicle Speed Sensor	(see page 11-527)
21	VTEC System	(see page 11-528)
23	Knock Sensor	(see page 11-531)
34	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	(see page 11-533)
39	Serial Communication Link Malfunction	Refer to the Multiplex Control System Troubleshooting (see page 22-273)
41	Primary Heated Oxygen Sensor (Primary HO2S) Heater*1	(see page 11-535)
63	Secondary Heated Oxygen Sensor (Secondary HO2S)*1	(see page 11-537)
65	Secondary Heated Oxygen Sensor (Secondary HO2S) Heater*1	(see page 11-538)
70	Automatic Transaxle*3	Refer to the Automatic Transmission DTC Troubleshooting Index

*1: with TWC model

*2: without TWC model

*3: A/T

Fuel and Emissions Systems
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the Diagnostic Trouble Code (DTC). If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-562).	• Low compression • Intake air leaks • Locked up engine • Slipped/broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-540).	
Engine will not start*1 (immobiliser indicator light comes on)	Troubleshoot the immobiliser system (see page 22-245).*1	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-79). 2. Check the fuel pressure (see page 11-431).	• Low compression • Intake air leaks • Contaminated fuel
When cold fast idle out of spec (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-560). 2. Inspect/adjust the throttle cable (see page 11-449). 3. Inspect and test the throttle body (see page 11-574).	
After warming up idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-420). 2. Inspect and test the throttle body (see page 11-574).	Vacuum hose clogged/cracked/poor connection
After warming up idle speed is above specifications with no load (MIL works OK, no DTCs set)	Troubleshoot the ALT FR signal circuit (see page 11-420).	
After warming up idle speed fluctuates with electrical load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-420). 2. Inspect and test the throttle body (see page 11-574).	• Vacuum hose clogged/cracked/poor connection • A/C system
After warming up idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Troubleshoot the PSP switch signal circuit (see page 11-558), (the EPS signal circuit: (see page 11-422)*1. 2. Inspect and test the throttle body (see page 11-574).	Power steering system
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Test the fuel pressure (see page 11-431). 2. Test the injectors (see page 11-552). 3. Troubleshoot the ALT FR signal circuit (see page 11-420). 4. Inspect and test the PCV valve	• Contaminated fuel

	(see page 11-459).	

*1: with TWC model

Fuel and Emissions Systems
Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Misfire or rough running (MIL works OK, no DTCs set)	1. Check the spark plugs (see page 4-25) 2. Test the fuel pressure (see page 11-431). 3. Test the injectors (see page 11-552). 4. Troubleshoot the fuel pump circuit (see page 11-398).	• Low compression • Valve Clearance • Contaminated fuel
Fails emission test (MIL works OK, no DTCs set)	1. Inspect the three way catalytic converter (TWC) (see page 11-575).*1 2. Check the spark plugs (see page 4-25). 3. Test the fuel pressure (see page 11-431). 4. Test the injectors (see page 11-552). 5. Check the EVAP emission control system (see page 11-580).	• Contaminated fuel • Low compression • Slipped/broken timing belt
Low power (MIL works OK, no DTCs set)	1. Test the fuel pressure (see page 11-431). 2. Check the air cleaner element (see page 11-447). 3. Inspect/adjust the throttle cable (see page 11-449). 4. Inspect and then test the throttle body (see page 11-574). 5. Inspect the three way catalytic converter (TWC) (see page 11-575).*1 6. Test the injectors (see page 11-552).	• Contaminated fuel
Engine stalls (MIL works OK, no DTCs)	1. Test the fuel pressure (see page 11-431). 2. Check the idle speed (see page 11-560). 3. Troubleshoot the brake pedal position switch signal circuit (see page 11-423). 4. Check the spark plugs (see page 4-25).	• Intake air leaks • Faulty harness and sensor connections

*1: with TWC model

Fuel and Emissions Systems

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the Engine Control Module (ECM) on vehicles with manual transmissions or the Powertrain Control Module (PCM) on vehicles with automatic transmissions.

Fail-safe Function

When an abnormality occurs in a signal from a sensor, the ECM/PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function

When an abnormality occurs in the ECM/PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis

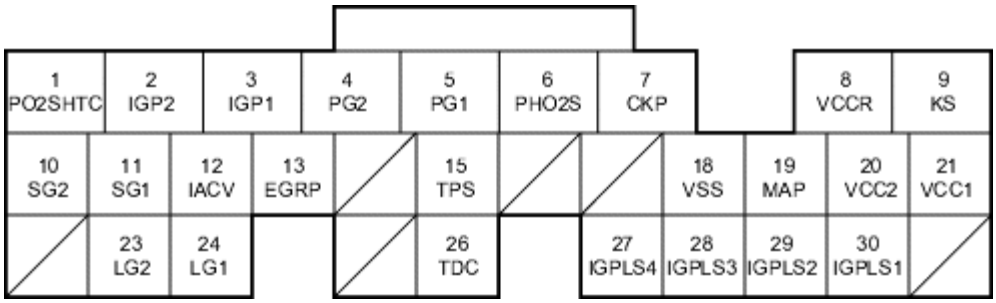
When an abnormality occurs in the signal from a sensor, the ECM/PCM supplies ground for the Malfunction Indicator Lamp (MIL) and stores the Diagnostic Trouble Code (DTC) in erasable memory. When the ignition is first turned on, the ECM/PCM supplies ground for the MIL for 2 seconds to check the MIL bulb condition.

Two Driving Cycle Detection Method

To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM informs the driver by turning on the MIL.

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*1	BLK/WHT	PO2SHTC (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) HEATER CONTROL)	Drives primary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for the ECM/PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
6*1	WHT	PHO2S (PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S), SENSOR 1)	Detects primary HO2S sensor (sensor 1) signal	With throttle fully opened from idle with fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
7	BLU	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
8	YEL	VCCR (SENSOR VOLTAGE RETURN)	Detects sensor voltage	With ignition switch ON (II): about 5 V With the ignition switch OFF: about 0 V
9	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses With ignition switch ON (II): about 5 V
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
12	BLK/RED	IACV (IDLE AIR CONTROL (IAC) VALVE)	Drives IAC valve	With engine running: duty controlled With ignition switch ON (II): about 5 V
13*1	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2 V-2.0 V (depending on EGR valve lift)
15	RED/BLK	TPS THROTTLE POSITION (TP)	Detects TP sensor	With throttle fully open: about 4.8 V

		SENSOR)	signal	With throttle fully closed: about 0.5 V
18	WHT/GRN	VSS (VEHICLE SPEED SENSOR (VSS))	Detects VSS signal	With ignition switch ON (II) and front wheels rotating: cycles 0 V-about 5 V or battery voltage

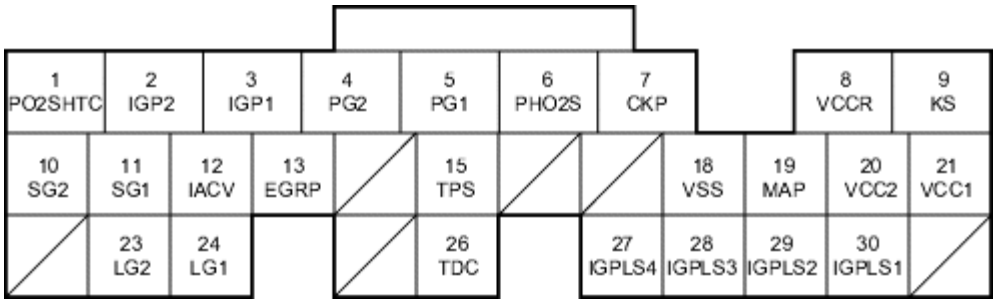
*1: with TWC model

*2: without TWC model

*3: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
19	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
23	BRN/YEL	LG2 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
26	GRN	TDC (TOP DEAD CENTRE (TDC) SENSOR)	Detects TDC sensor	With engine running: pulses
27	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
29	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
30	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	

*1: with TWC model

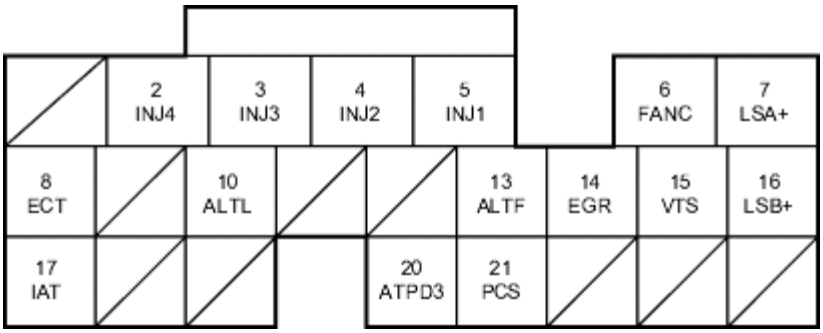
*2: without TWC model

*3: A/T

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	With ignition switch ON (II): battery voltage At idle: duty controlled
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
7*3	RED/BLK	LSA + (A/T PRESSURE CONTROL SOLENOID VALVE A + SIDE)	Drives A/T pressure control solenoid valve A	With the ignition switch ON (II): duty controlled
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE (ECT) SENSOR)	Detects ECT sensor signal	With the ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0 V-5 V (depending on electrical load)
14*1	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
15*1	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
16*3	BLK/RED	LSB + (A/T PRESSURE CONTROL SOLENOID VALVE B + SIDE	Drives A/T pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1 V-4.8 V (depending on intake air temperature)
20*3	PNK	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage

21*1	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 70°C (158°F): battery voltage With engine running, engine coolant above 70°C (158°F): duty controlled

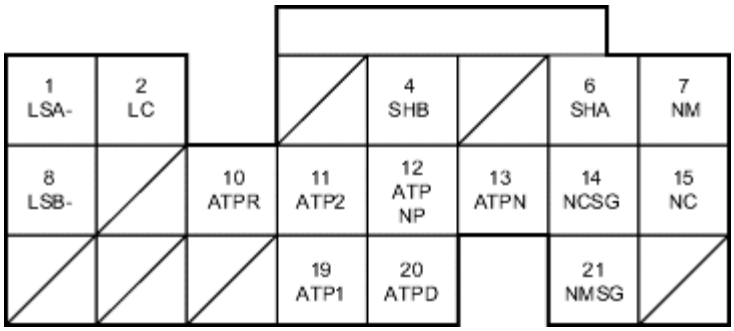
*1: with TWC model

*2: without TWC model

*3: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*3	WHT/BLK	LSA- (A/T PRESSURE CONTROL SOLENOID VALVE A-SIDE)	Ground for A/T pressure control solenoid valve A	
2*3	YEL/BLU	LC (TORQUE CONVERTER CLUTCH SOLENOID VALVE)	Drives torque converter clutch solenoid valve	With lock-up ON: battery voltage With lock-up OFF: about 0 V
4*3	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in 1st, 2nd gears: battery voltage With engine running in 3rd, 4th gears: about 0 V
6*3	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2nd, 3rd gears: battery voltage With engine running in 1st, 4th gears: about 0 V
7*3	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With engine running: pulses
8*3	BRN/WHT	LSB - (A/T PRESSURE CONTROL SOLENOID VALVE B-SIDE	Ground for A/T pressure control solenoid valve B	
9*3	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage
10*3	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V or battery voltage
11*3	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2 POSITION)	Detects transmission range switch 2 position signal	In 2nd position: about 0 V In any other position: about 5 V or battery voltage
12*3	BLU/WHT	ATPNP (TRANSMISSION RANGE SWITCH NEUTRAL/PARK POSITION)	Detects transmission range switch Neutral/Park position signal	In Park or Neutral: about 0 V In any other position: about 5 V or battery voltage
13*3	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL/PARK POSITION)	Detects transmission range switch Neutral position signal	In Neutral: about 0 V In any other position: about 5 V or battery voltage
14*3	GRN			

		NCSG (COUNTERSHAFT SPEED SENSOR GROUND)	Ground for countershaft speed sensor	
15*3	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects Countershaft speed sensor signals	With ignition switch ON (II), and front wheels rotating: battery voltage
19*3	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1 POSITION)	Detects transmission range switch 1 position signal	In 1sr position: about 0 V In any other position: about 5 V or battery voltage
18*3	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D3/D POSITION)	Detects transmission range switch D3/D position signal	In D3 or D position: about 0 V In any other position: about 5 V or battery voltage
20*3	YEL	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5 V or battery voltage
21*3	WHT/GRN	NMSG (MAINSHAFT SPEED SENSOR GROUND)	Ground for mainshaft speed sensor	

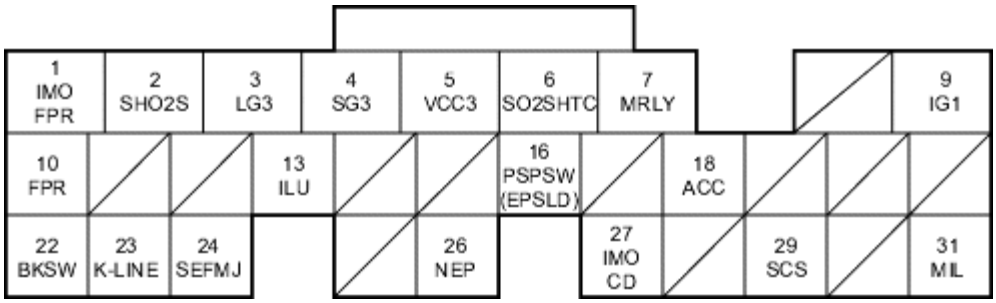
*1: with TWC model

*2: without TWC model

*3: A/T

Fuel and Emissions Systems
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire colour	Terminal name	Description	Signal
1*1	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2*1	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for the ECM/PCM control circuit	Less than 1.0 V at all times
4	PNK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	YEL/BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
6*1	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 Power source for the DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
9	YEL/BLK	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
10*2	GRN/YEL	FPR (FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
13*2	WHT/BLU	ILU (INTERLOCK CONTROL UNIT)	Drives interlock control unit	With ignition switch ON (II) and brake pedal depressed: battery voltage or about 0 V
15*2	ORN			

		IMA (IDLE MIXTURE ADJUSTER (IMA))	Detects IMA signal	With ignition switch ON (II): about 0.5-4.5 V (depending on idle mixture)
16*1	LT GRN/BLK	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: 0 V At idle with steering wheel at full lock: battery voltage
16*2	LT GRN/BLK	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects power steering load signal	At idle with steering wheel in straight ahead position: 0 V At idle with steering wheel at full lock: battery voltage momentarily
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
23	LT BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II): pulses or battery voltage
24	YEL	SEFMJ	Communicates with multiplex control unit	With ignition switch ON (II): about 5 V With engine running under load: pulses
26	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
27	RED/BLU	IMOCD (IMMOBILISER CODE)	Detects immobiliser signal	
29	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted: about 0 V With the service check signal opened: about 5 V battery voltage
31	GRN/ORN	MIL (MALFUNCTION INDICATOR LAMP)	Drives MIL	With MIL turned ON: about 0 V With MIL turned OFF: battery voltage

*1: with TWC model

*2: without TWC model

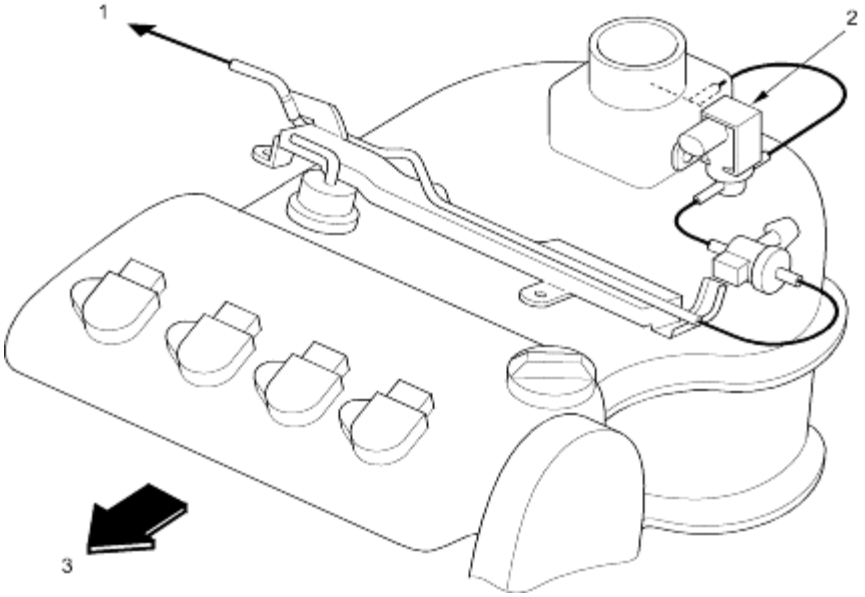
*3: A/T

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Hose Routing

With TWC model



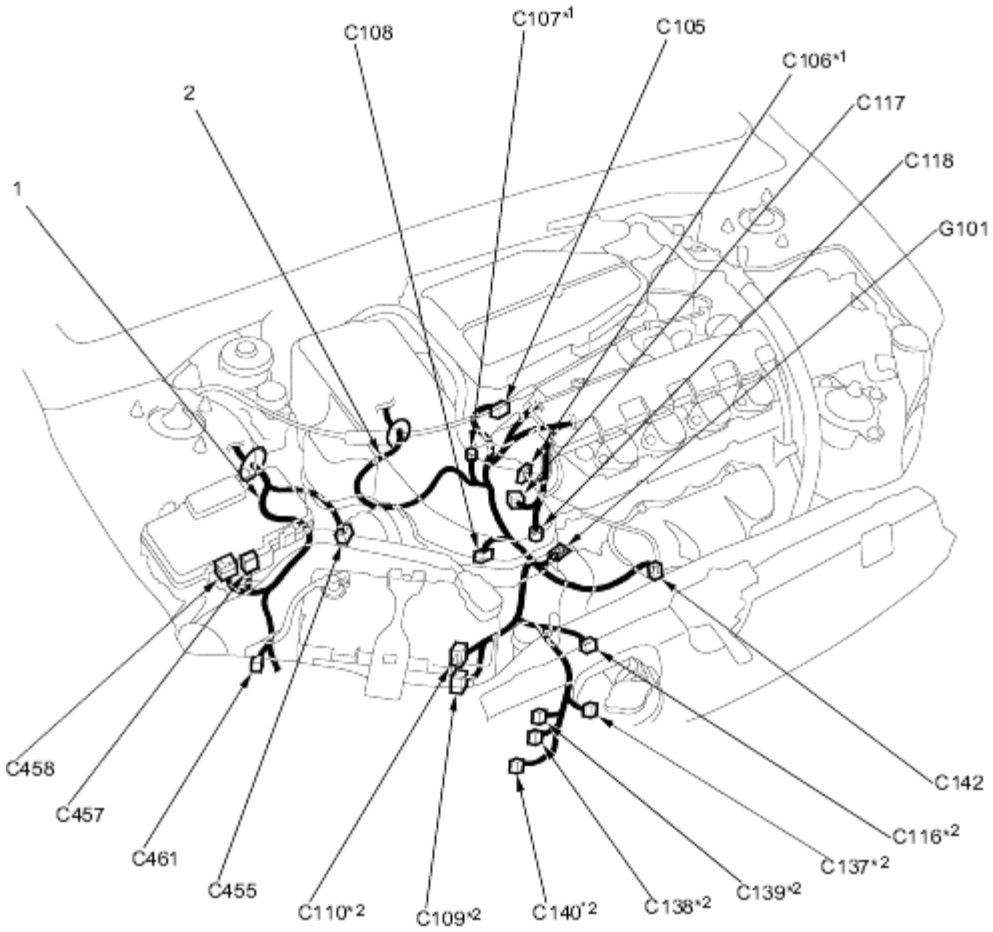
1. To EVAPORATIVE EMISSION (EVAP) CANISTER
2. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
3. FRONT OF VEHICLE

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:



1. ENGINE COMPARTMENT WIRE HARNESS
2. ENGINE WIRE HARNESS

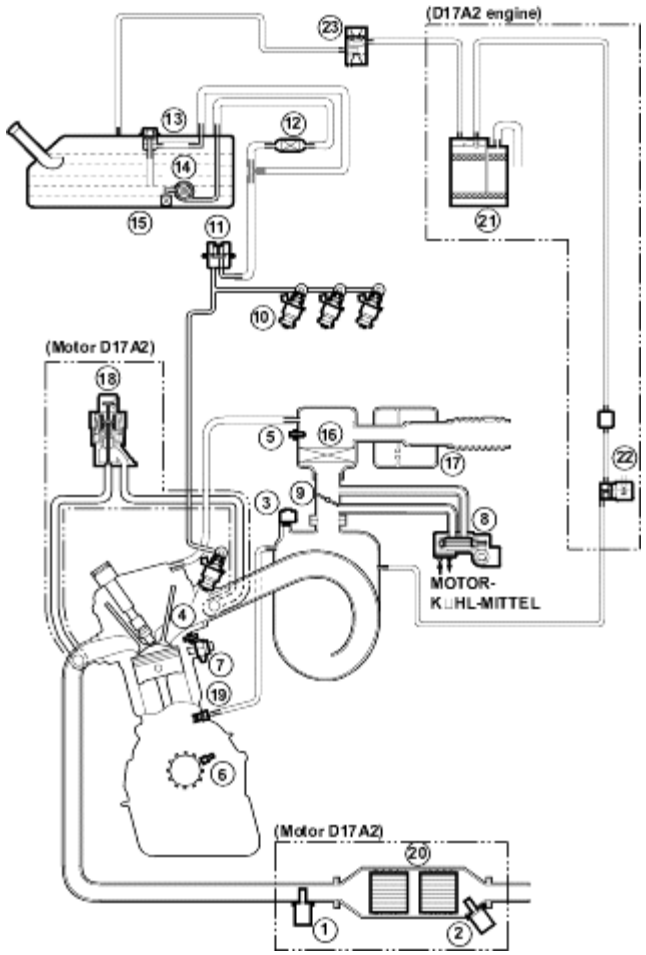
*1: D16W7 engine

*2: A/T

Fuel and Emissions Systems

System Descriptions (cont'd)

Vacuum Distribution



(1) PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)

(2) SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)

(3) MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

(4) ENGINE COOLANT TEMPERATURE (ECT) SENSOR

(5) INTAKE AIR TEMPERATURE (IAT) SENSOR

(6) CRANKSHAFT POSITION (CKP) SENSOR

(7) KNOCK SENSOR

(8) IDLE AIR CONTROL (IAC) VALVE

(9) THROTTLE BODY

(10) INJECTOR

(11) FUEL PULSATION DAMPER

(13) FUEL PRESSURE REGULATOR

(14) FUEL PUMP

(15) FUEL TANK

(16) AIR CLEANER

(17) RESONATOR

(18) EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR

(19) POSITIVE CRANKCASE VENTILATION (PCV) VALVE

(20) THREE WAY CATALYTIC CONVERTER

(21) EVAPORATIVE EMISSION (EVAP) CANISTER

(22) EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE

(12) FUEL FILTER

(23) EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE

Fuel and Emissions Systems
System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energised, and enriches the mixture to assure smooth transition to the A/C mode.

Alternator Control

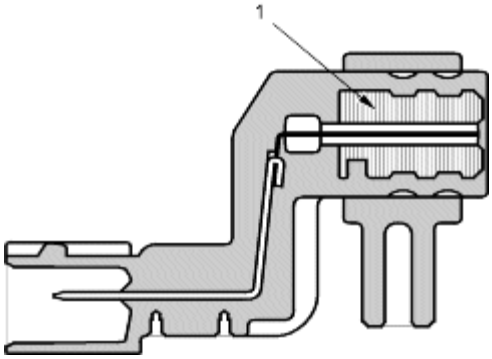
The alternator signals the Engine Control Module (ECM)/Powertrain Control Module (PCM) during charging.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Crankshaft Position (CKP) Sensor

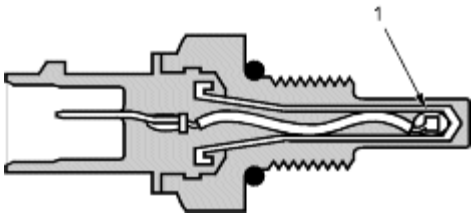
The CKP sensor detects engine speed and determines ignition timing and timing for fuel injection of each cylinder.



1. 1. MAGNET

Engine Coolant Temperature (ECT) Sensor

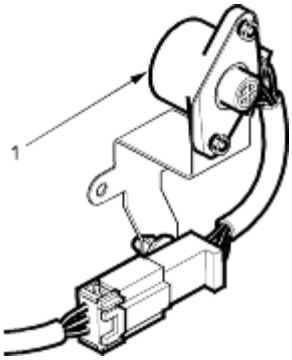
The ECT sensor is a temperature dependent resistor (thermistor). The resistor of the thermistor decreases as the engine coolant temperature increases.



1. 1. THERMISTOR

Idle Mixture Adjuster (IMA) (without TWC model)

The idle mixture adjuster (IMA) is selected resistance device used to control idle mixture.



2. 1. IMA

Ignition Timing Control

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration

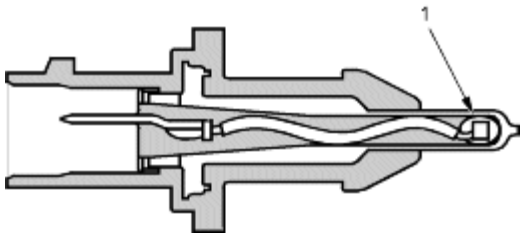
The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system, and will set a Diagnostic Trouble Code (DTC).

Fuel and Emissions Systems
System Descriptions (cont'd)

Intake Air Temperature (IAT) Sensor

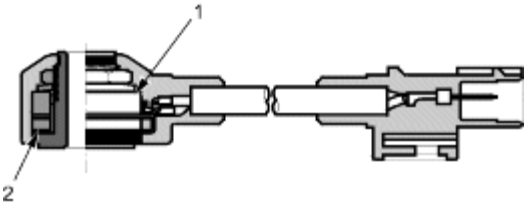
The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



1. 1. THERMISTOR

Knock Sensor

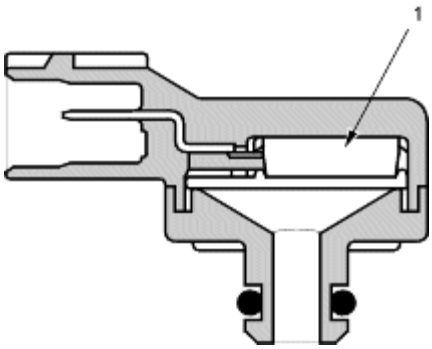
The knock control system adjusts the ignition timing to minimise knock.



2. 1. WEIGHT
   2. PIEZO ELEMENT

Manifold Absolute Pressure (MAP) Sensor

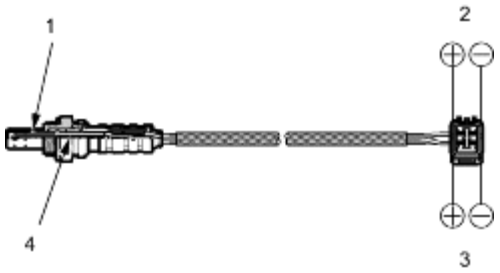
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



3. 1. SENSOR UNIT

Primary Heated Oxygen Sensor (Primary HO2S)

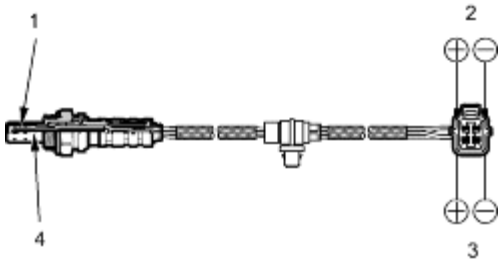
The primary HO2S detects the oxygen content in the exhaust gas and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The primary HO2S is installed in the exhaust manifold. By controlling the air fuel ratio with primary HO2S and secondary HO2S, the deterioration of the primary HO2S can be evaluated by its feedback period. When the feedback period exceeds a certain value during stable driving conditions, the sensor is considered deteriorated and the ECM/PCM sets a DTC.



1. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the Three Way Catalytic Converter (TWC) and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilise its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC.



2. 1. ZIRCONIA ELEMENT
   2. SENSOR TERMINALS
   3. HEATER TERMINALS
   4. HEATER

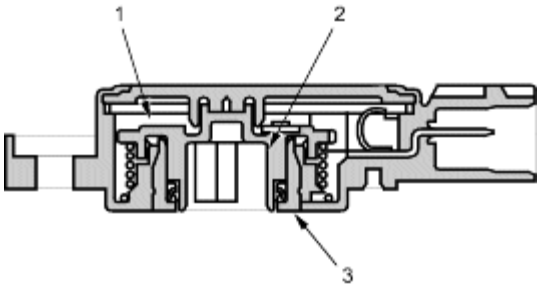
Starting Control

When the engine is started, the ECM/PCM provides a rich mixture by increasing injector duration.

Fuel and Emissions Systems
System Descriptions (cont'd)

Throttle Position (TP) Sensor

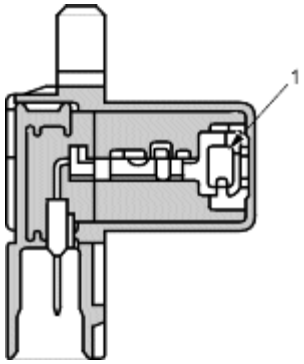
The TP sensor is a potentiometer connected to the throttle valve shaft. As the throttle position changes, the sensor varies the signal voltage to the ECM/PCM. The TP sensor is not replaceable apart from the throttle body.



1. 1. ELEMENT
   2. BRUSH HOLDER
   3. BRUSH

Top Dead Centre (TDC) Sensor

The TDC sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



2. 1. MAGNET

Vehicle Speed Sensor (VSS)

The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the Idle Air Control (IAC) valve to maintain the correct idle speed. Refer to the System Diagram to see the functional layout of the system.

Brake Pedal Position Switch

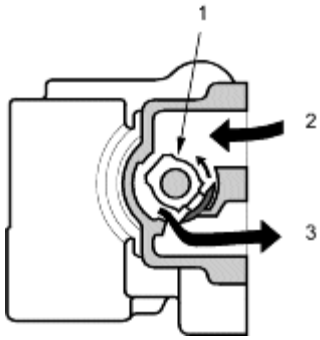
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the ECM/PCM when the power steering load is high.

Idle Air Control (IAC) Valve

To maintain the proper idle speed, the IAC valve changes the amount of air bypassing the throttle body in response to an electrical signal from the ECM/PCM.



1. 1. VALVE
   2. From AIR CLEANER
   3. To INTAKE MANIFOLD

Power Steering Pressure (PSP) Switch

The PSP switch signals the ECM/PCM when the power steering load is high.

Fuel and Emissions Systems
System Descriptions (cont'd)

Fuel Supply System

Fuel Cut-off Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at speeds over 850 rpm. Fuel cut-off action also occurs when engine speed exceeds 6,900 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. With A/T model, when the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm.

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurise the fuel system. With the engine running, the ECM/PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

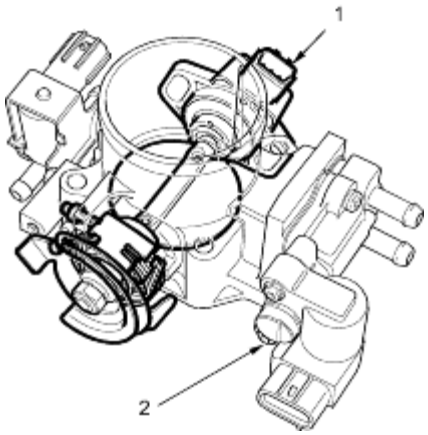
The PGM-FI relay consists of two separate relays. The PGM-FI main relay 1 is energised whenever the ignition switch is ON (II) which supplies battery voltage to the ECM/PCM, power to the injectors, and power for the PGM-FI main relay 2. The PGM-FI main relay 2 is energised to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is running.

Intake Air System

Refer to the System Diagram to see the functional layout of the system.

Throttle Body

The throttle body is a single-barrel down draft type. The side portion of the IAC valve is heated by engine coolant from the cylinder head.



1. 1. TP SENSOR
   2. IAC VALVE

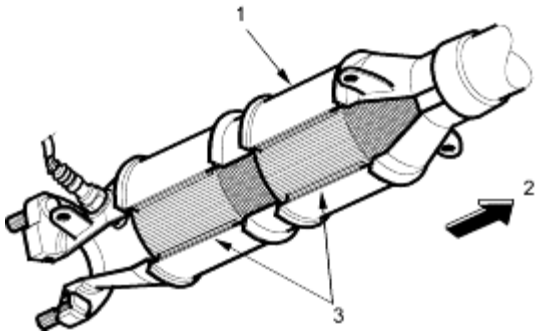
Fuel and Emissions Systems

System Descriptions (cont'd)

Catalytic Converter System

Three Way Catalytic Converter (TWC)

The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), dinitrogen (N2), and water vapour.



1. 1. HOUSING
   2. FRONT OF VEHICLE
   3. THREE WAY CATALYST

Exhaust Gas Recirculation (EGR) System

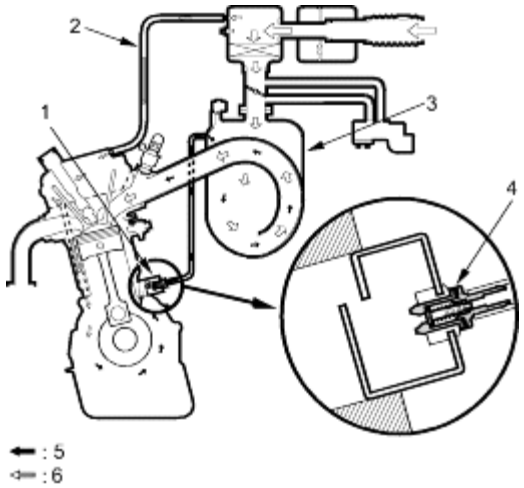
Refer to the System Diagram to see the functional layout of the system.

EGR Valve

The EGR valve is designed to lower peak combustion temperatures and reduce oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



1. 1. PCV HOSE
   2. BREATHER PIPE
   3. INTAKE MANIFOLD
   4. PCV VALVE
   5. BLOW BY VAPOUR
   6. FRESH AIR

Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapour from the fuel tank until it can be purged back into the engine and burned (refer to the System Diagram to see the functional layout of the system).

EVAP Canister Purge Valve

When the engine coolant temperature is below 70°C (158°F), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

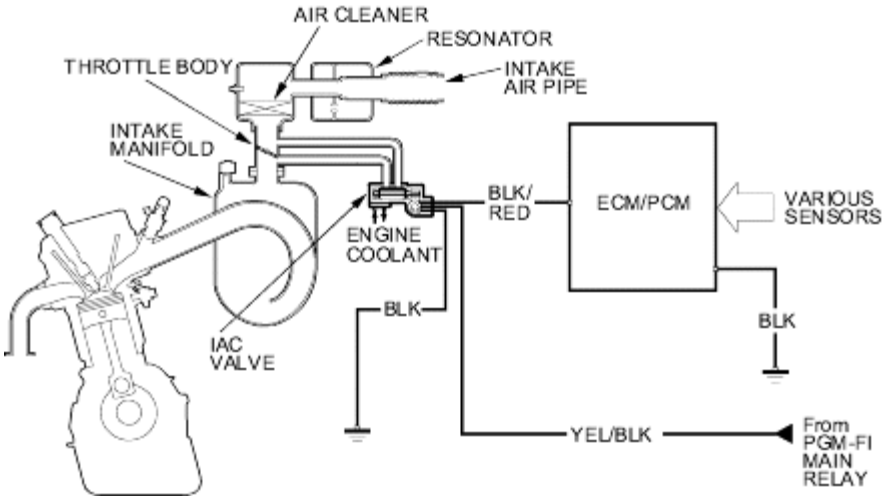
Fuel and Emissions Systems

System Descriptions (cont'd)

Idle Control System Diagram

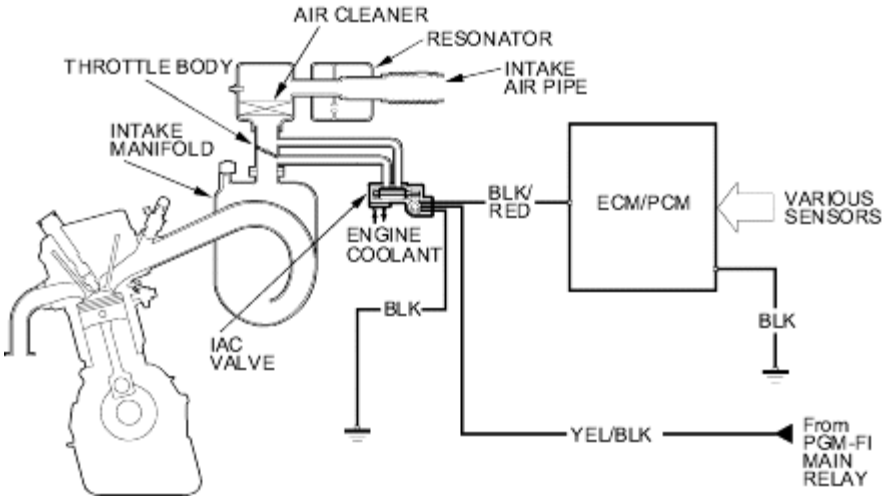
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- After the engine starts, the IAC valve opens for a certain amount of time. The amount of air is increased to raise the idle speed.
- When the engine coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to engine coolant temperature.



Intake Air System Diagram

This system supplies air for engine needs. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.



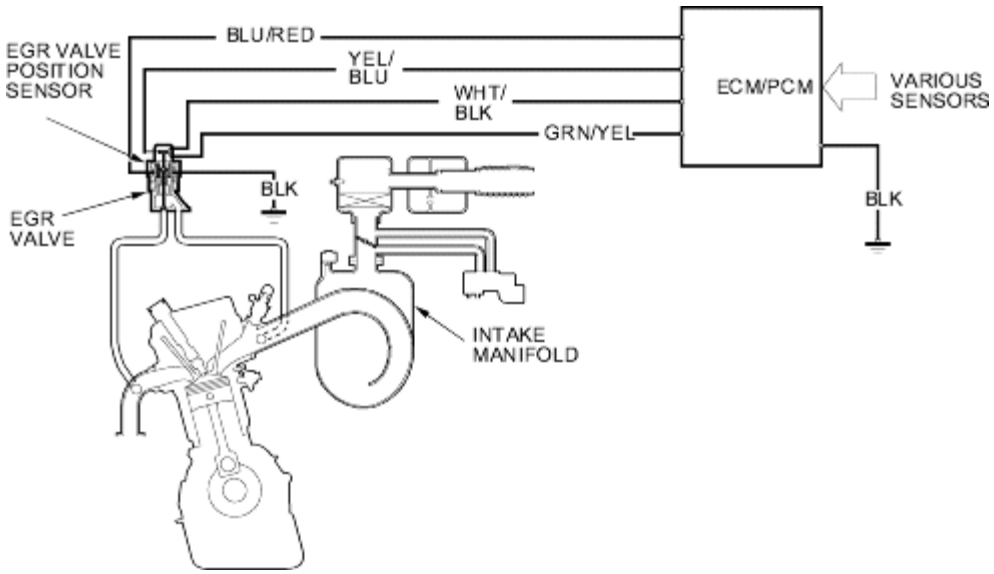
Fuel and Emissions Systems

System Descriptions (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.



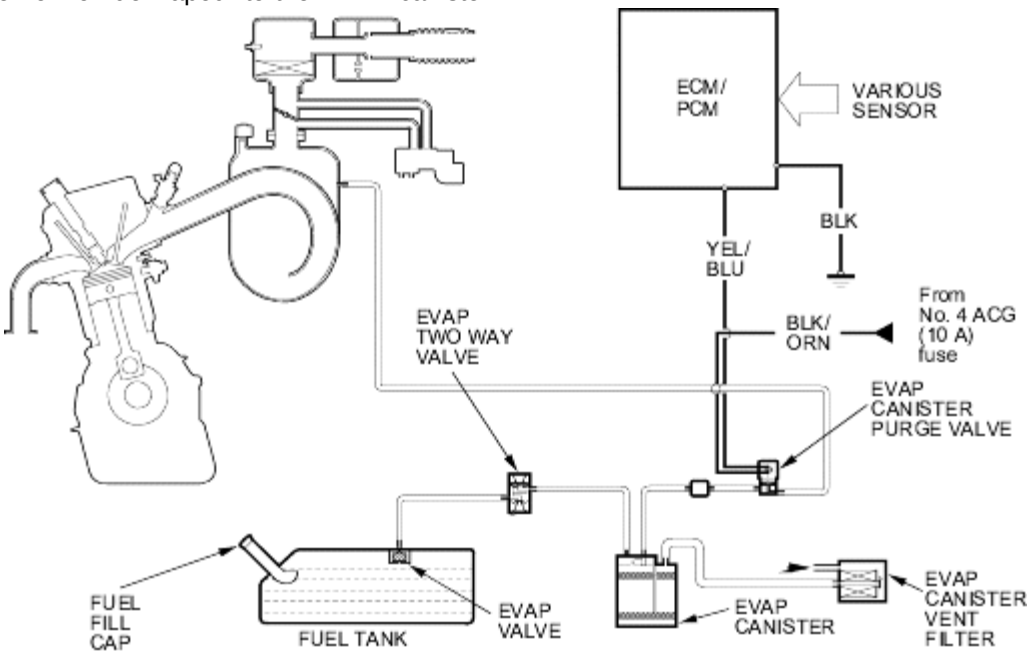
Fuel and Emissions Systems

System Descriptions (cont'd)

Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimise the amount of fuel vapour escaping to the atmosphere. Vapour from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the EVAP canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.
  The purging vacuum is controlled by the EVAP canister purge valve, which is open whenever engine coolant temperature is above 70°C (158°F).
- When vapour pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapour to the EVAP canister.



Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106 (D16W7, D16V1 engines)



①	GRN/YEL

C107 (D16W7, D16V1 engines)



①	BLU/BLK
②	BRN/YEL

C108



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	——	⑦	BRN
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
⑤	RED	10	RED/BLK

C110 (A/T)



①	GRN
②	BLU

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK
②	GRN/YEL
③	YEL/BLU
④	BLU/RED
5	——
⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142



①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C455



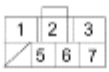
①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/GRN

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	10	RED
4	——	11	WHT/RED
5	WHT/BLU	12	——
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	——
5	BLK
6	WHT/BLK
7	YEL/BLK

C461



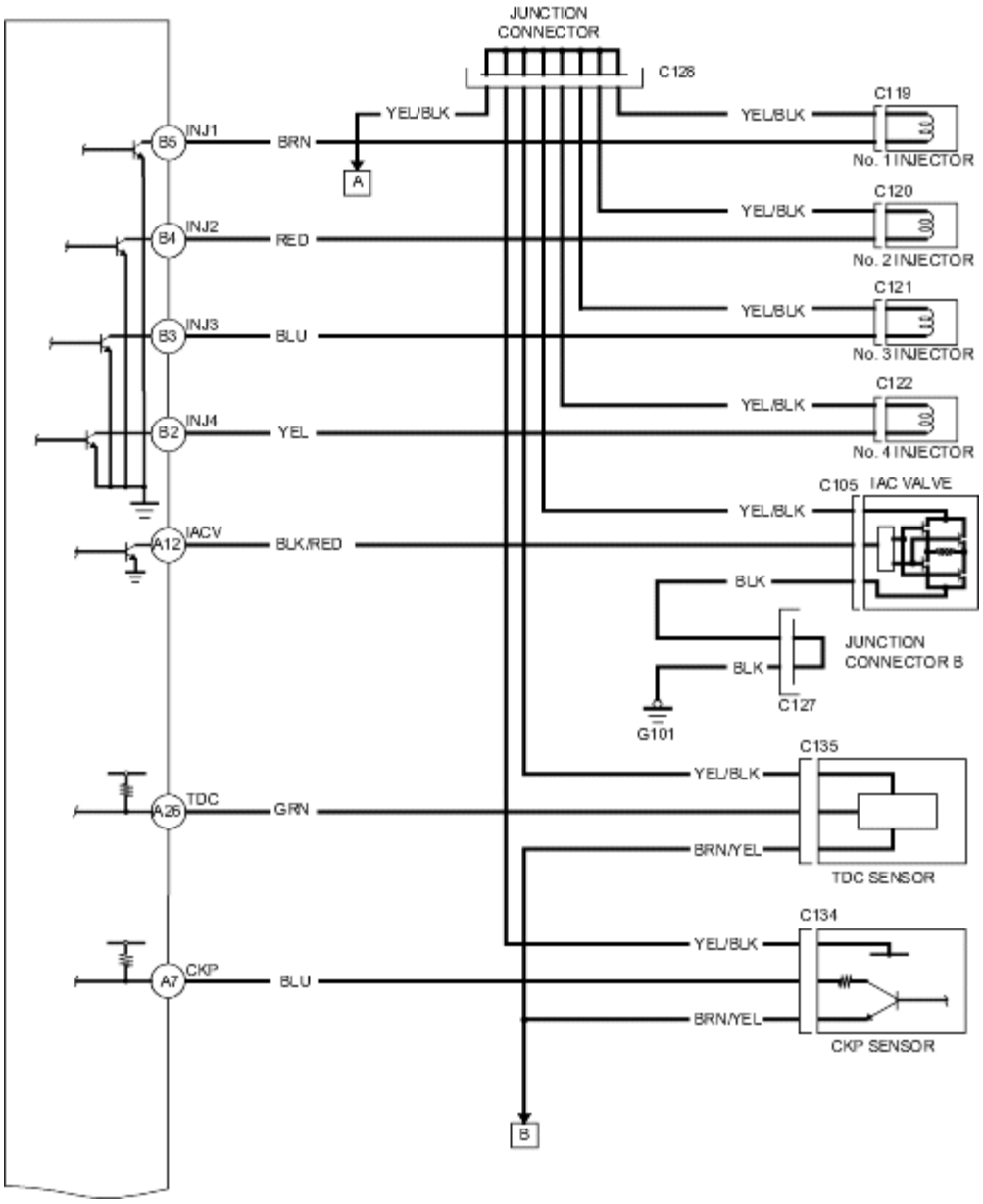
1	——
②	BLU

NOTE: ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

Fuel and Emissions Systems

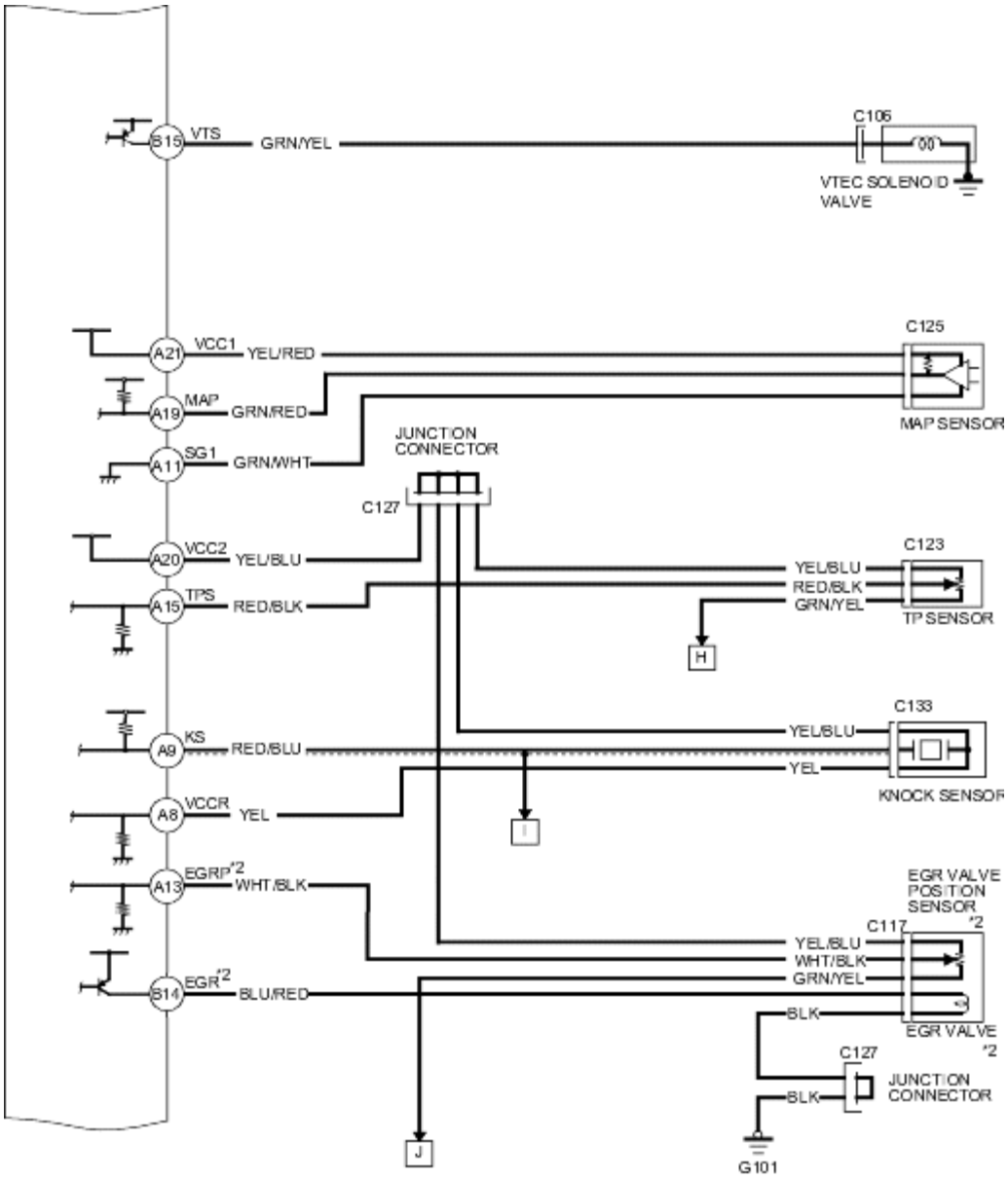
System Descriptions (cont'd)

ECM/PCM Circuit Diagram



Fuel and Emissions Systems

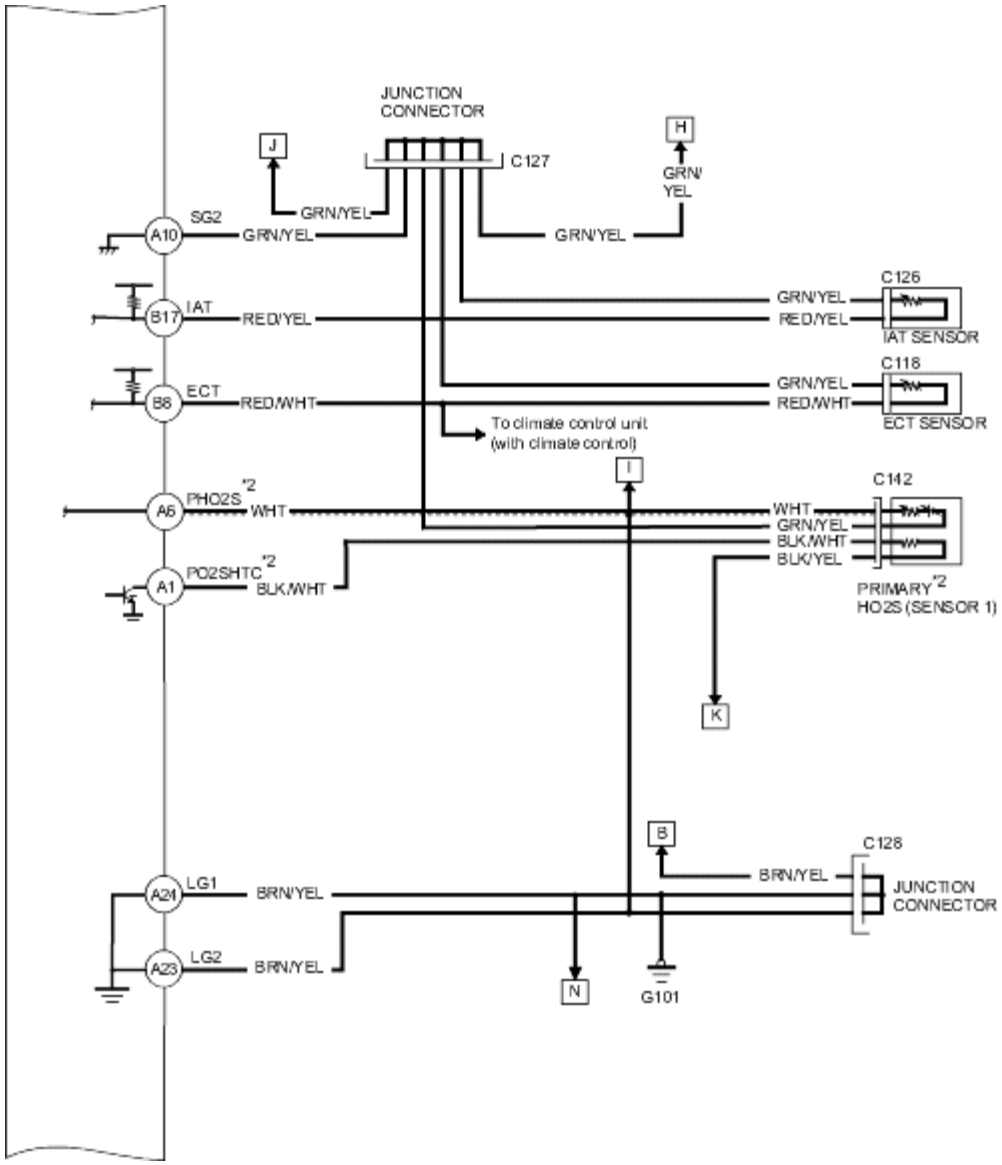
System Descriptions (cont'd)



Fuel and Emissions Systems

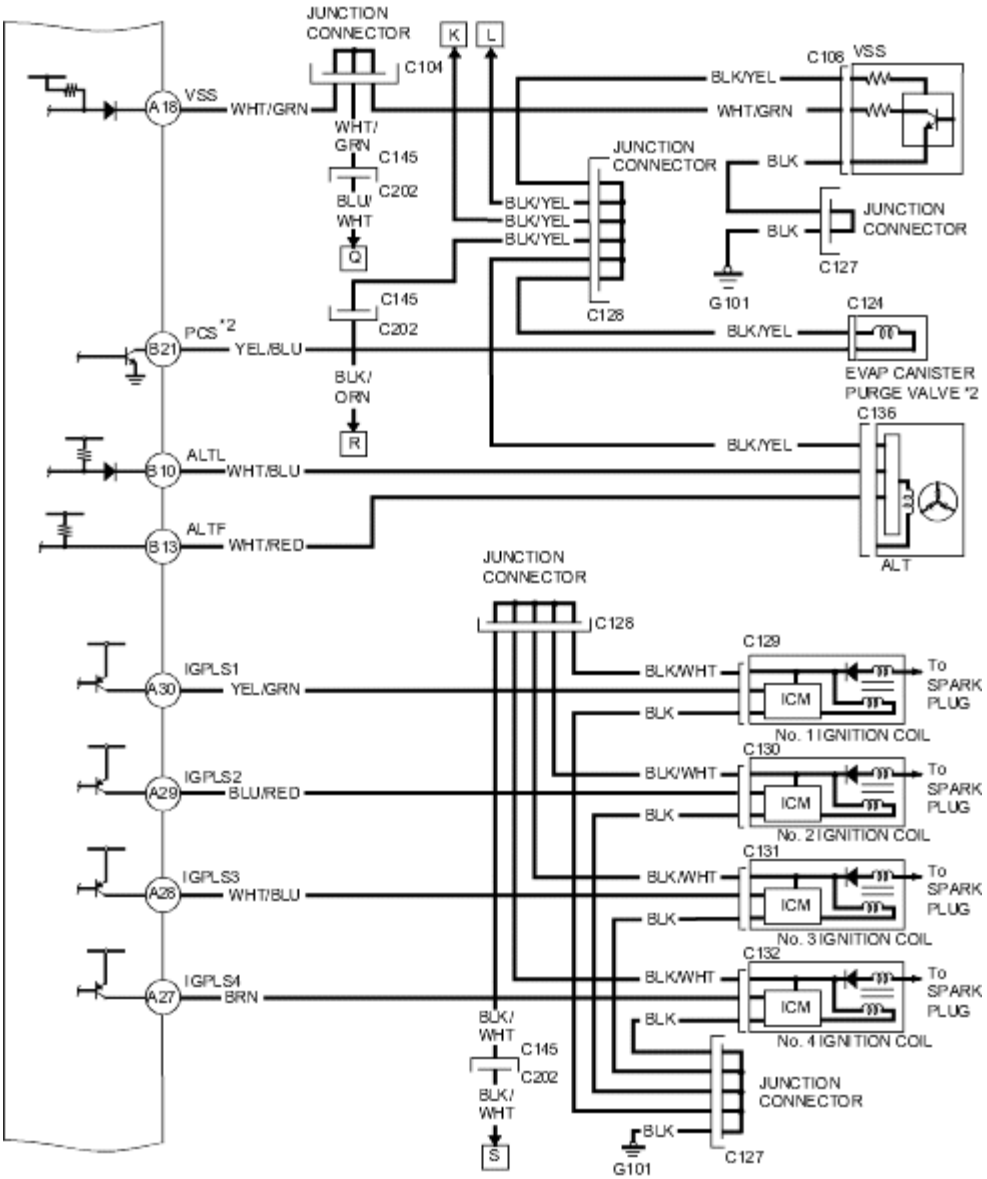
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

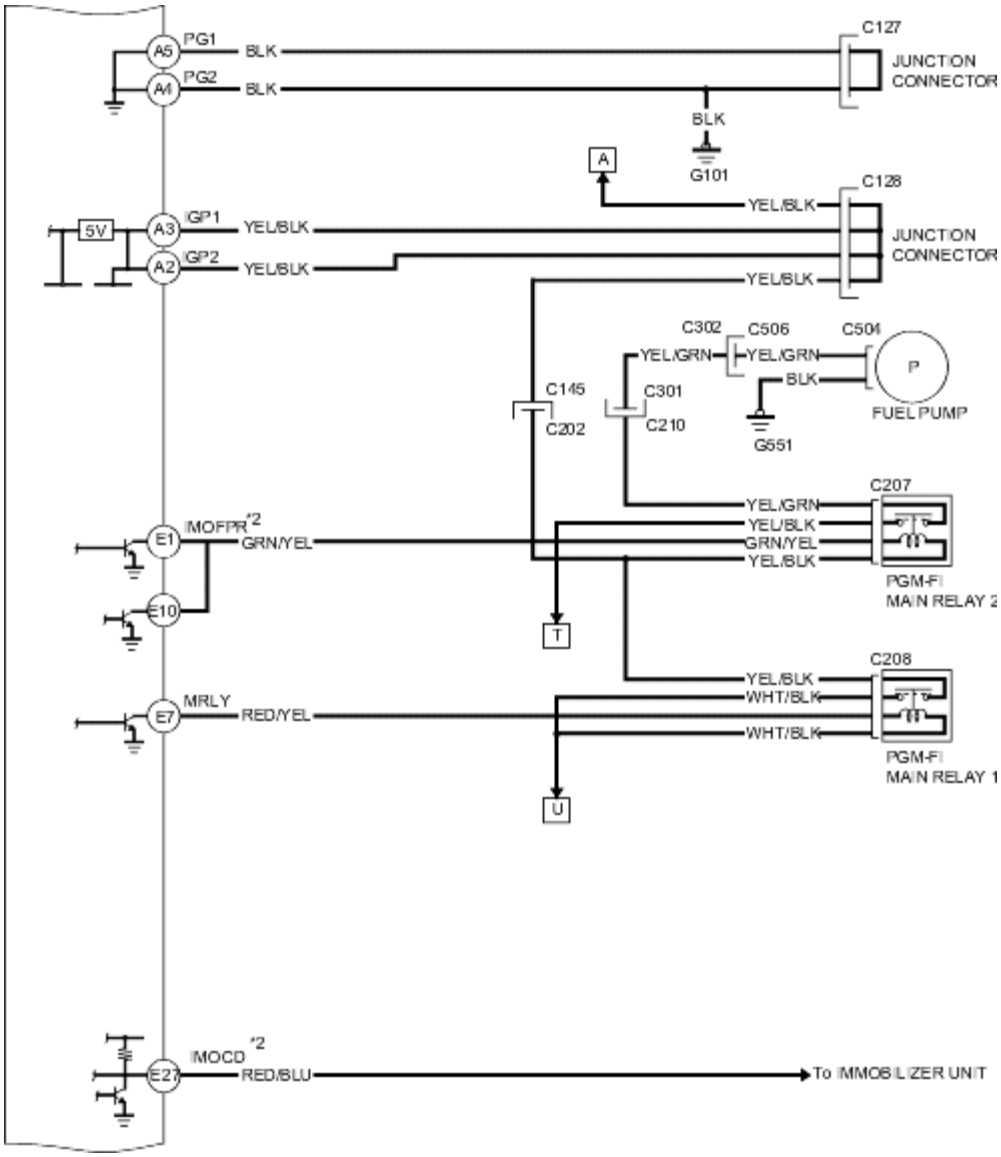
System Descriptions (cont'd)



Fuel and Emissions Systems

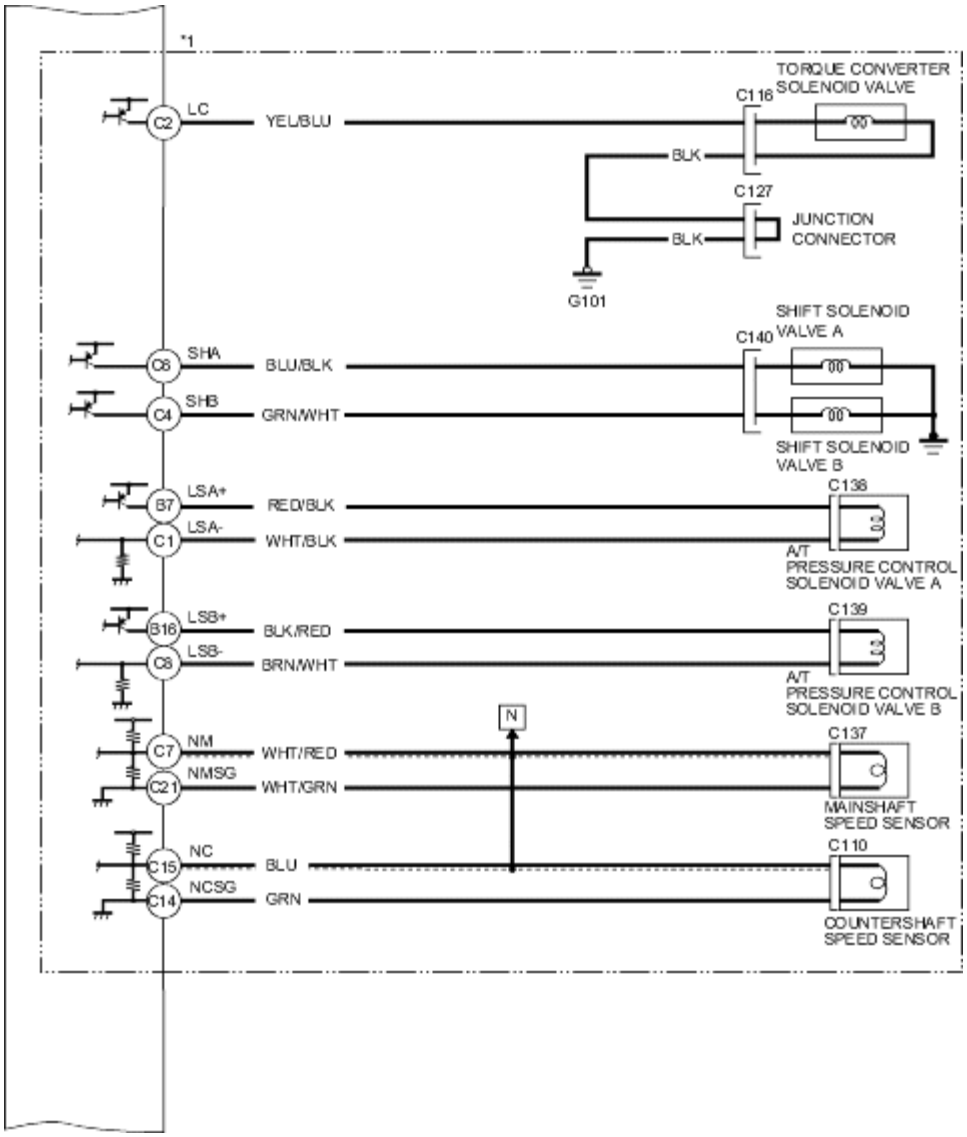
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

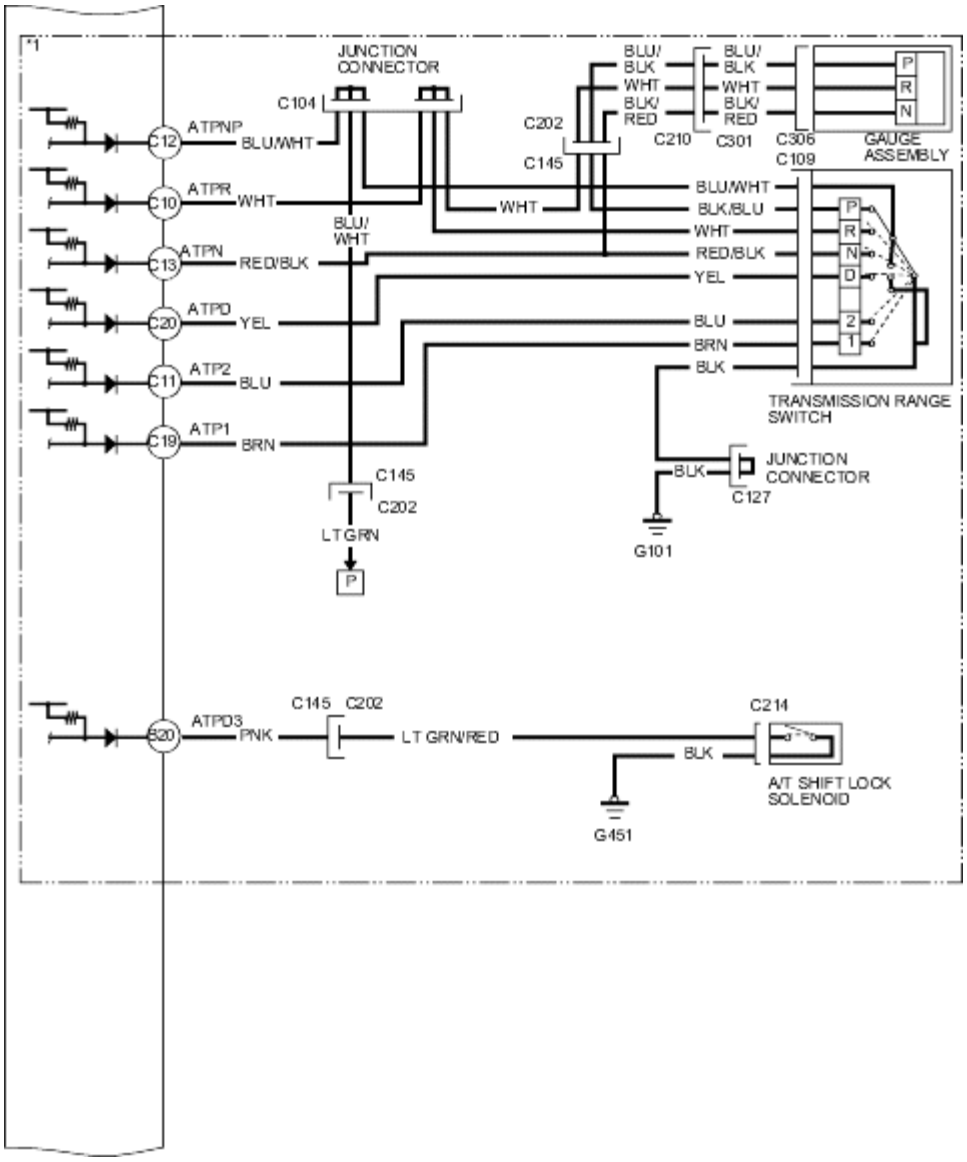
System Descriptions (cont'd)



Fuel and Emissions Systems

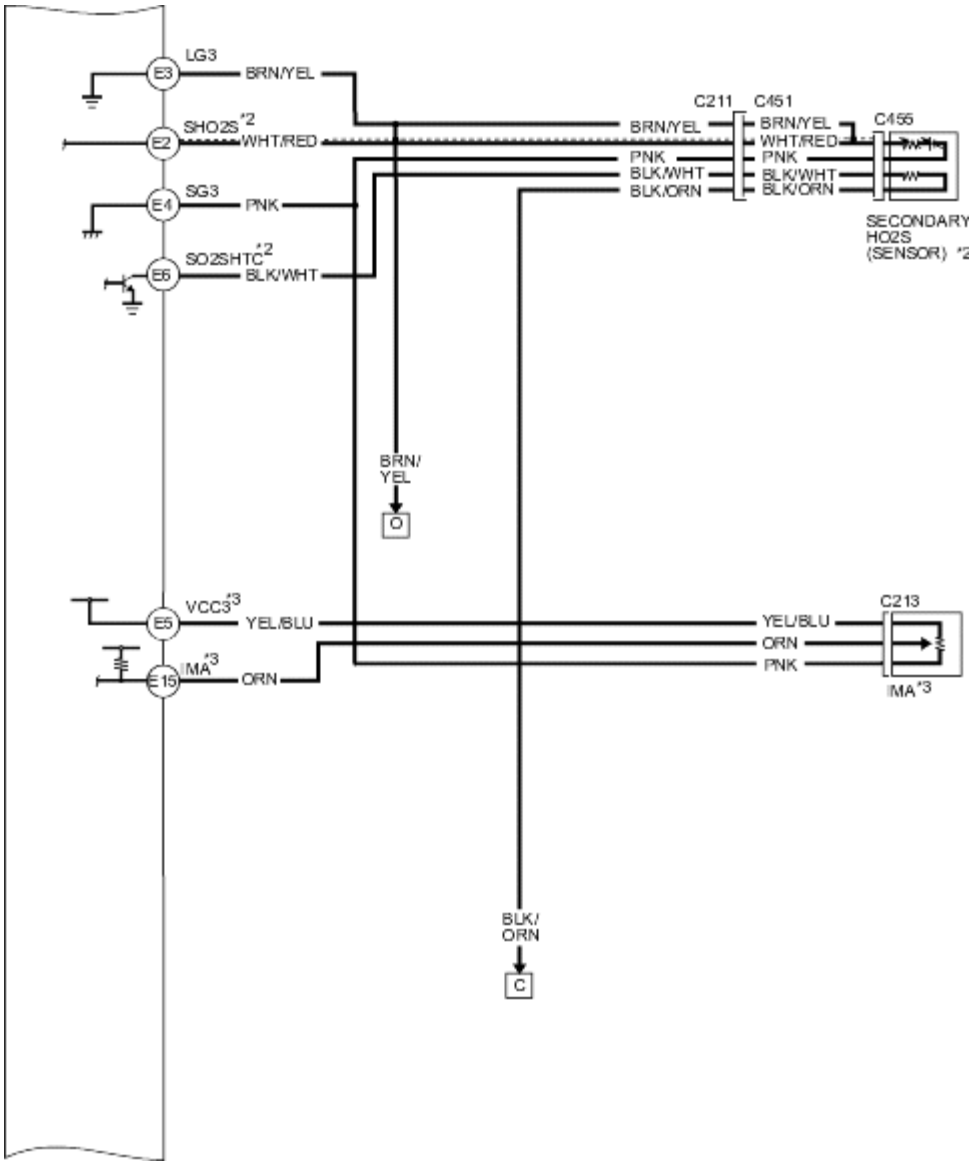
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



Fuel and Emissions Systems

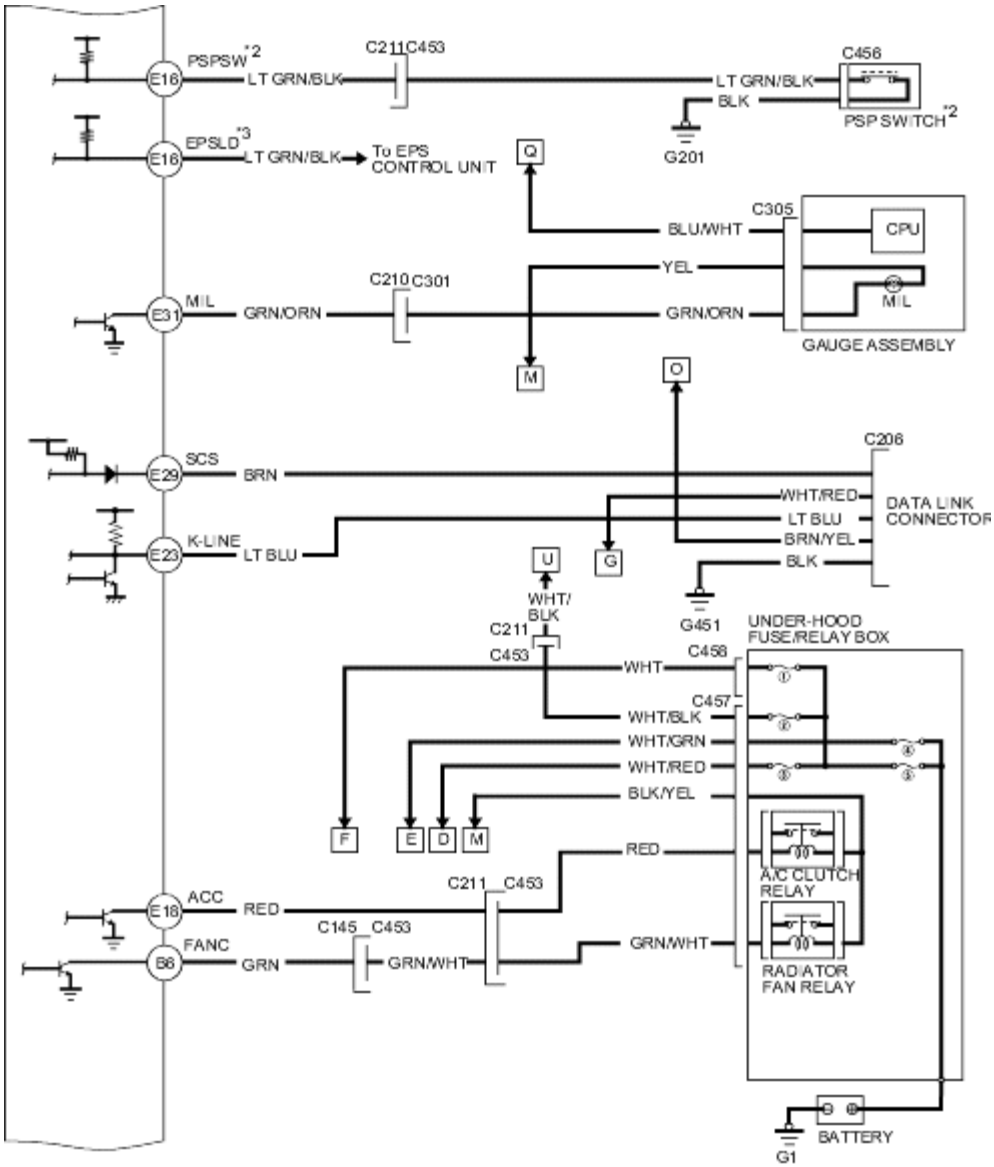
System Descriptions (cont'd)



Fuel and Emissions Systems

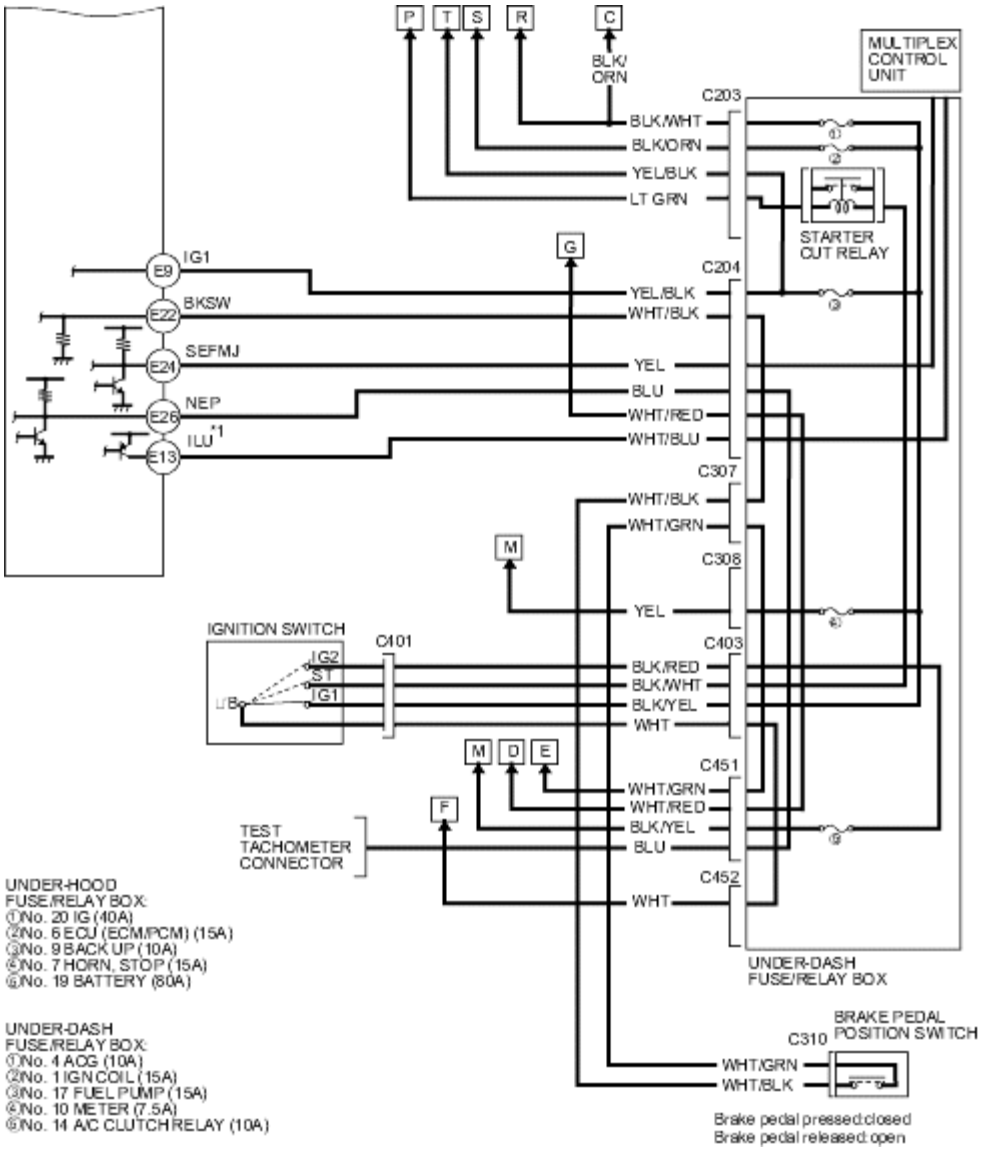
System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



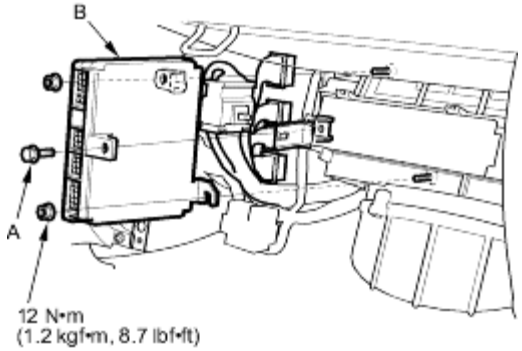
Fuel and Emissions Systems

System Descriptions (cont'd)



Fuel and Emissions Systems
General Troubleshooting Information (cont'd)

1. 4. Remove the grey 20P ECM/PCM wire harness connector from the ECM/PCM mounting bracket. Remove the ECM/PCM mounting bolt (A) and the bracket.

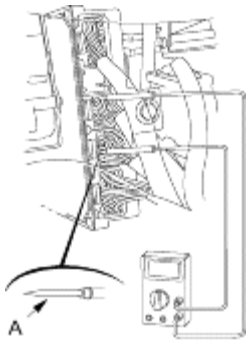


*: The illustration shows LHD model.

2. 5. Remove the nuts, then remove the ECM/PCM (B).

How to Troubleshoot Circuits at the ECM/PCM

1. 1. Gently slide the sharp tester probe (A) into the connector from wire side until it touches the end of the wire terminal.

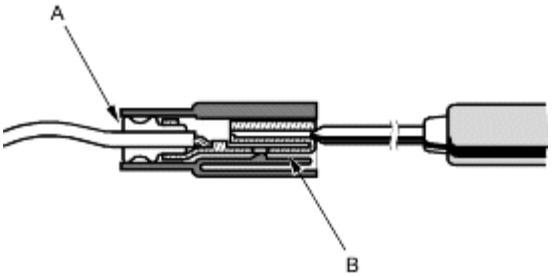


*: The illustration shows LHD model.

2. 2. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

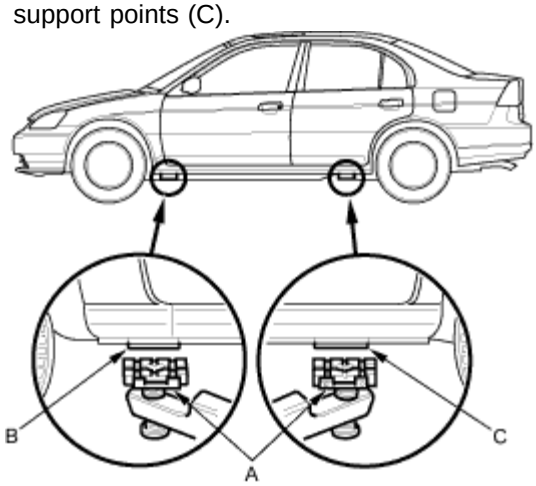


General Information
Lift and Support Points

NOTE: If you are going to remove heavy components such as suspension or the fuel tank from the rear of the vehicle, first support the front of the vehicle with tall safety stands. When substantial weight is removed from the rear of the vehicle, the centre of gravity can change and cause the vehicle to tip forward on the hoist.

Frame Hoist

1. 1. Position the hoist lift blocks (A), or safety stands, under the vehicle's front support points (B) and rear support points (C).



2. 2. Raise the hoist a few inches and rock the vehicle gently to be sure it is firmly supported.

Safety Stands

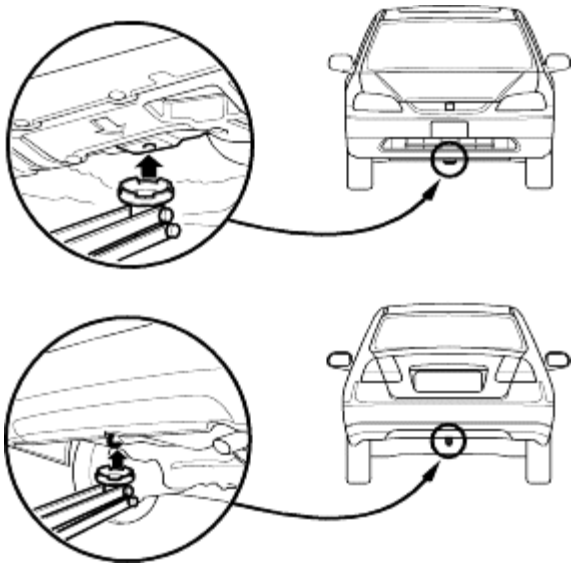
To support the vehicle on safety stands, use the same support points (B and C) as for a frame hoist. Always use safety stands when working on or under any vehicle that is supported only by a jack.

Floor Jack

1. 1. Block the rear wheels when raising the front of the vehicle; block the front wheels when raising the rear of the vehicle.

   Place the blocks behind and ahead of the wheels.

2. 2. Raise the vehicle high enough to insert the safety stands.
   3. Adjust and place the safety stands so the vehicle will be approximately level, then lower the vehicle onto them.

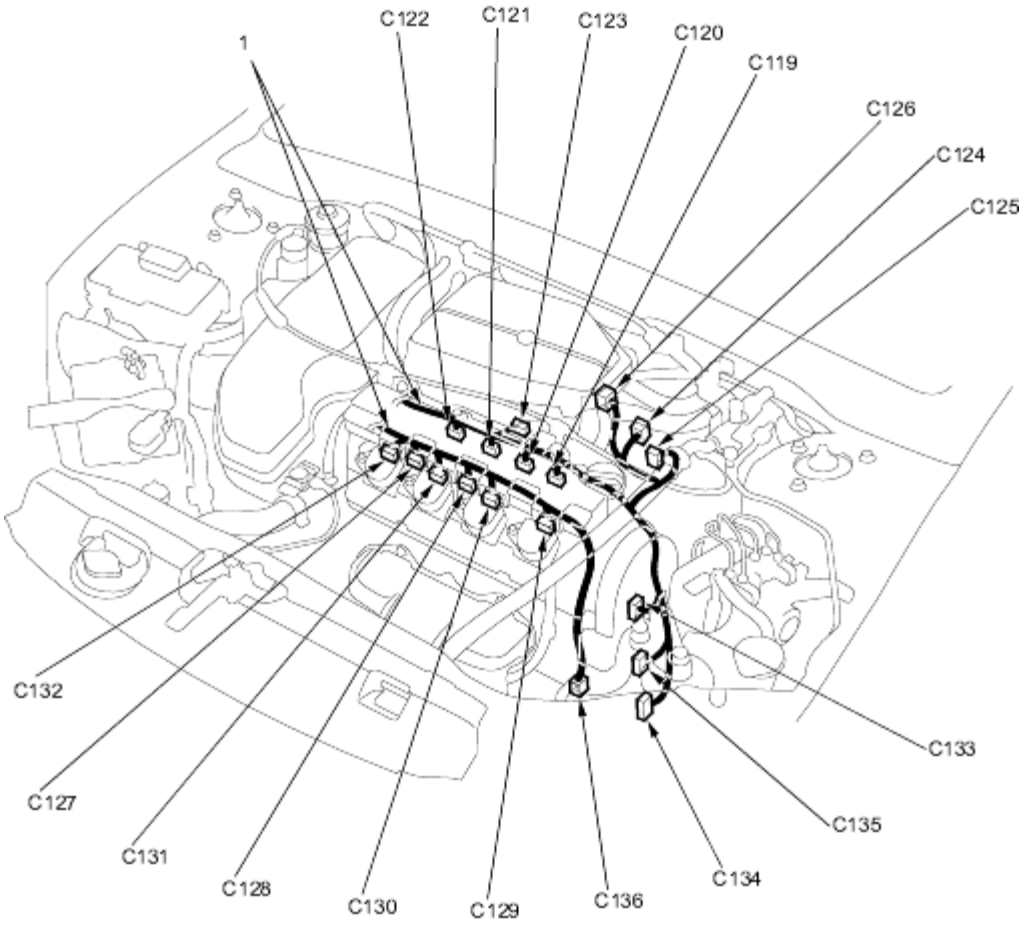


Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:

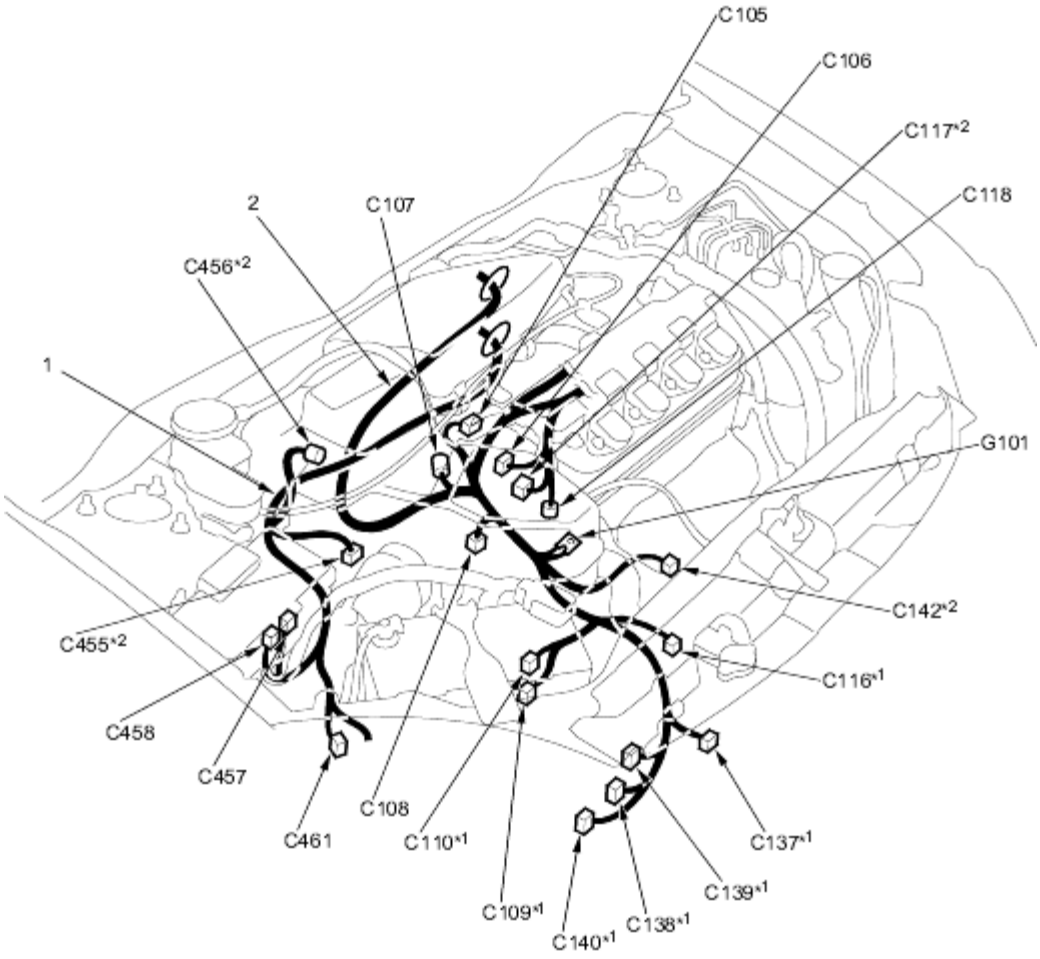


1. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. ENGINE COMPARTMENT WIRE HARNESS
2. ENGINE WIRE HARNESS

*1: A/T

*2: D17A2 engine

Fuel and Emissions Systems

System Descriptions (cont'd)

C105



①	BLK
②	YEL/BLK
③	BLK/RED

C106
(D17A2 engines)



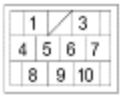
①	GRN/YEL

C108



①	BLK
②	BLK/YEL
③	WHT/GRN

C109 (A/T)



①	BLK	⑥	BLU
2	——	⑦	BRN
③	BLU/WHT	⑧	BLU/BLK
④	YEL	⑨	WHT
⑤	——	10	RED/BLK

C110 (A/T)



①	GRN
②	BLU

C116 (A/T)



①	BLK
②	YEL/BLU

C117



①	WHT/BLK
②	GRN/YEL
③	YEL/BLU
④	BLU/RED
5	——
⑥	BLK

C118



①	GRN/YEL
②	RED/WHT

C137 (A/T)



①	WHT/GRN
②	WHT/RED

C138 (A/T)



①	WHT/BLK
②	RED/BLK

C139 (A/T)



①	BRN/WHT
②	BLK/RED

C140 (A/T)



1	BLU/BLK
2	GRN/WHT

C142



①	GRN/YEL
②	WHT
③	BLK/WHT
④	BLK/YEL

C455



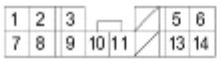
①	PNK
②	WHT/RED
③	BLK/WHT
④	BLK/ORN

C107
(D17A2 engines)



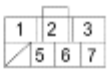
①	BLU/BLK
②	BRN/YEL

C457



1	ORN	⑧	BLK/YEL
2	BLU/RED	⑨	GRN/WHT
3	BLU/RED	⑩	RED
4	——	⑪	WHT/RED
5	WHT/BLU	12	——
⑥	WHT/BLK	13	BLK
⑦	WHT/GRN	14	WHT

C458



①	WHT
2	WHT/RED
3	BLU/WHT
4	——
5	BLK
6	WHT/BLK
7	YEL/BLK

C461



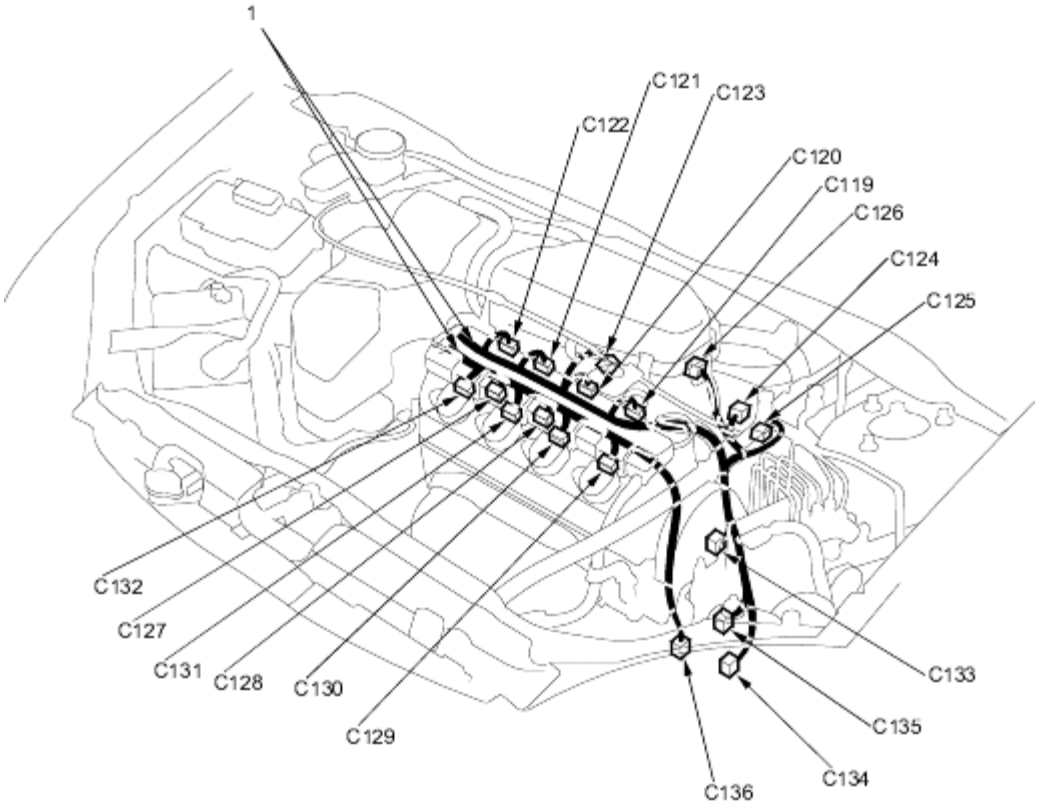
1	——
②	BLU

NOTE 1 Connector with male terminals (double outline) : View from terminal side
1 Connector with female terminals (single outline) : View from wire side
1 ○ : Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. ENGINE WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

C119



①	YEL/BLK
②	BRN

C120



①	YEL/BLK
②	RED

C121



①	YEL/BLK
②	BLU

C122



①	YEL/BLK
②	YEL

C123



①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124



①	BLK/YEL
②	YEL/BLU

C125



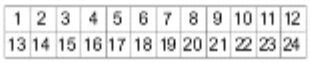
①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126



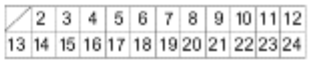
①	GRN/YEL
②	RED/YEL

C127



①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128



1	———	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129



①	YEL/GRN
②	BLK
③	BLK/WHT

C130



①	BLU/RED
②	BLK
③	BLK/WHT

C131



①	WHT/BLU
②	BLK
③	BLK/WHT

C132



①	BRN
②	BLK
③	BLK/WHT

C133



①	RED/BLU
②	YEL/BLU
③	YEL

C134



①	BLU
②	BRN/YEL
③	YEL/BLK

C135



①	BRN/YEL
②	GRN
③	YEL/BLK

C136



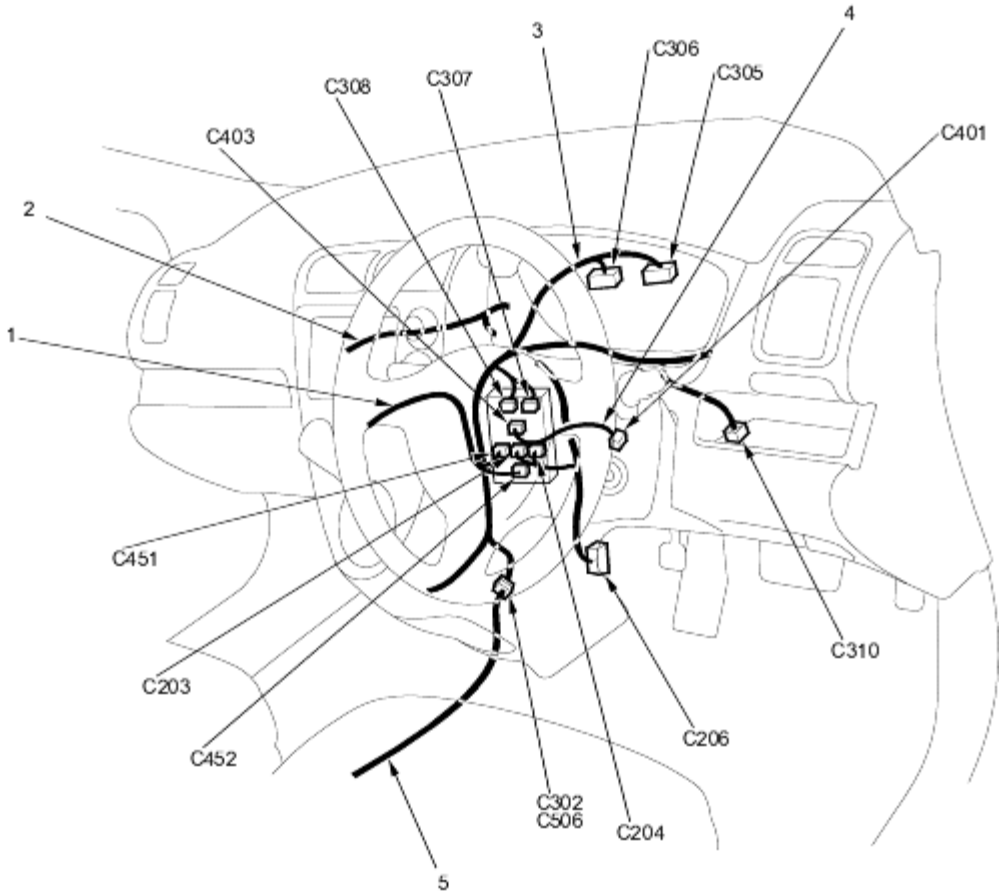
①	BLK/YEL
2	———
③	WHT/BLU
④	WHT/RED

NOTE ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

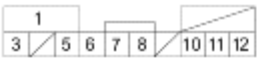


1. ENGINE COMPARTMENT WIRE HARNESS
2. ECM/PCM WIRE HARNESS
3. DASHBOARD WIRE HARNESS A
4. DASHBOARD WIRE HARNESS B
5. FLOOR WIRE HARNESS

Fuel and Emissions Systems

System Descriptions (cont'd)

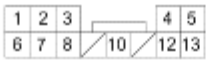
C203



1	BLK/WHT	⑦	LT GRN
2	———	8	GRN
③	BLK/ORN	9	———
4		10	BLU/BLK*1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

*1 : except M/T

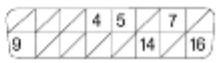
C204



1	GRY	8	RED/BLU*
2	YEL/RED	9	———
③	WHT/BLK	10	YEL
④	BLU/WHT	11	———
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

* :KQ model

C206*



1	———	9	BRN
2	———	10	———
3	———	11	———
④	BLK	12	———
⑤	BRN/YEL	13	———
6	———	14	GRY
⑦	LT BLU	15	———
8	———	16	WHT/RED

C305



1	WHT/RED	9	YEL/RED	17	———
②	YEL	10	GRN/RED	18	YEL/BLK
3	RED/BLK	11	BLK	19	BLU/ORN
4	BLU	12	BLK	20	———
⑤	BLU/WHT	13	WHT/GRN	21	RED/WHT
6	———	14	———	22	———
7	———	15	———		
⑧	GRN/ORN	16	———		

C306



1	RED/YEL	9	———	17	———
2	———	10	———	18	———
3	———	11	RED/BLU	19	———
④	BLU/BLK*1	12	BLU/RED	20	———
⑤	WHT*1	13	YEL/BLU	21	———
⑥	BLK/RED*1	14	PNK	22	BLU/ORN
7	———	15	PNK/BLU*2		
8	———	16	BLK/YEL		

*1 : A/T

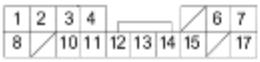
*2 : KQ model

C307



1	———	7	GRN/RED
2	GRN	8	RED/BLK
3	———	9	———
4	WHT/BLU	10	RED
⑤	WHT/BLK	11	———
6	YEL/GRN	12	WHT/GRN

C308



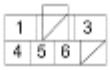
1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	WHT/RED	12	YEL/BLK
4	WHT/RED	13	WHT/RED
5	———	14	BLK/YEL
6	YEL	15	RED/WHT
⑦	YEL	16	———
⑧	BLU/WHT	17	BLK
9	———		

C310



1	WHT/GRN
2	WHT/BLK
3	———
4	———

C401



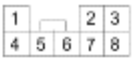
①	BLK/WHT
2	———
③	WHT
④	BLK/RED
5	WHT/RED
⑥	BLK/YEL
7	———

C403



①	WHT
2	WHT/RED
③	BLK/WHT
④	BLK/RED
⑤	BLK/YEL

C451



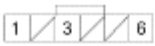
①	BLK/YEL	⑤	BLU
②	WHT/RED	6	ORN
③	WHT/GRN	7	WHT
4	BLK	8	WHT/BLU

C452



①	WHT
②	WHT/RED
3	WHT/BLK

C506



①	YEL/GRN	4	———
2	———	5	———
3	PNK	6	YEL/BLK

NOTE ⊥ Connector with male terminals (double outline) : View from terminal side

⊥ Connector with female terminals (single outline) : View from wire side

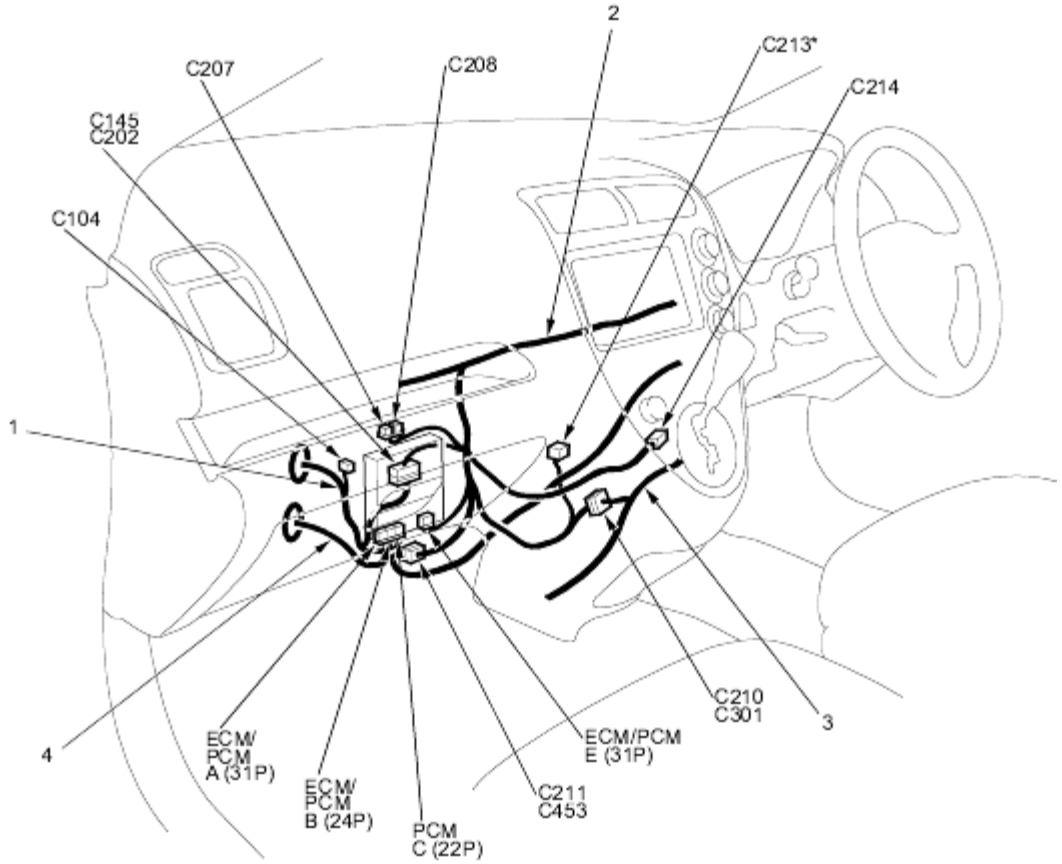
⊥ ○: Related to ECM/PCM control.

* : Terminal side of female terminals

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



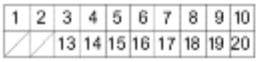
1. ENGINE WIRE HARNESS
2. ECM/PCM WIRE HARNESS
3. DASHBOARD WIRE HARNESS A
4. ENGINE COMPARTMENT WIRE HARNESS

*: Without TWC model

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	8		15	BLU/WHT*
②	YEL/BLK	9		16	BLU/WHT*
③	YEL/BLK	10		17	BLU/WHT*
④	YEL/BLK	11		18	WHT*
⑤	GRN	12		19	WHT*
⑥	GRN	13	WHT/GRN	20	WHT*
⑦	GRN	14	WHT/GRN		

* : A/T

C145

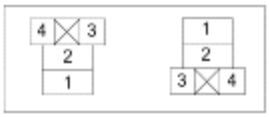


①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT	16	BLK/WHT
③	BLU/WHT*1	10		17	BLK/YEL
④	GRN/WHT*2	11	WHT*1	18	YEL/RED
⑤	YEL*2	12		19	YEL/BLK
⑥	WHT/GRN	13	PNK*1	20	BLK/WHT
7	GRN	14			

*1 : A/T

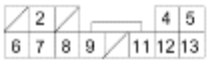
*2 : M/T

C207



①	YEL/BLK	①	YEL/BLK
②	YEL/GRN	②	WHT/BLK
③	GRN/YEL	③	RED/YEL
④	YEL/BLK	④	WHT/BLK

C210

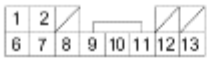


1	
2	YEL/BLU
3	
4	BRN/YEL
5	YEL/BLK
⑥	YEL/GRN
⑦	BLU/BLK*1
⑧	BLK/RED*1
⑨	WHT*1
10	
11	RED/WHT
12	GRN/ORN
13	YEL/RED

*1 : except M/T

*2 : KQ model

C211



1	BLK/YEL
2	LT GRN/BLK*
3	
4	
5	
⑥	WHT/BLK
⑦	RED
⑧	GRN/WHT
⑨	PNK*
10	BLK/ORN*
11	WHT/RED*
12	BRN/YEL*
13	BLK/WHT*

* : KQ model

C213



①	YEL/BLU
②	ORN
③	PNK

C214



1	YEL/RED
②	LT GRN/RED
3	YEL/BLK
4	RED/BLK
5	RED
6	BLK

ECM/PCM A (31P)



①	BLK/WHT	12	BLK/RED	23	BRN/YEL
②	YEL/BLK	13	WHT/BLK*2	24	BRN/YEL
③	YEL/BLK	14		25	
④	BLK	15	RED/BLK	26	GRN
⑤	BLK	16		27	BRN
⑥	WHT*2	17		28	WHT/BLU
⑦	BLU	18	WHT/GRN	29	BLU/RED
⑧	YEL	19	GRN/RED	30	YEL/GRN
⑨	RED/BLU*2	20	YEL/BLU	31	
⑩	GRN/YEL	21	YEL/RED*1		
⑪	GRN/WHT	22			

*1 : A/T

*2 : KQ model

ECM/PCM B (24P)



1		⑨	RED/BLK*2	17	RED/YEL
②	YEL	10	WHT/BLU	18	
③	BLU	11		19	
④	RED	12		20	PNK*1
⑤	BRN	13	WHT/RED	21	YEL/BLU
⑥	GRN	14	BLU/RED	22	
⑦	RED/BLK*1	15	GRN/YEL*2	23	
⑧	RED/WHT	16	BLK/RED*1	24	

*1 : A/T

*2 : KQ model

PCM C (22P)



①	WHT/BLK*	⑨		17	
②	YEL/BLU*	10	WHT	18	
3		11	BLU	19	BRN
④	GRN/WHT*	12	BLU/WHT	20	YEL
5		13	RED/BLK	21	WHT/GRN*
⑥	BLU/BLK*	14	GRN*	22	
⑦	WHT/RED*	15	BLU*		
⑧	BRN/WHT*	16			

* : A/T

ECM/PCM E (31P)



①	GRN/YEL*1	12		23	LT BLU
②	WHT/RED*1	13	WHT/BLU	24	YEL
③	BRN/YEL	14		25	
④	PNK	15	ORN*2	26	BLU
5	YEL/BLU*2	16	LT GRN/BLK	27	RED/BLU*1
⑥	BLK/WHT	17		28	
⑦	RED/YEL	18	RED	29	BRN
8		19		30	
⑨	YEL/BLK	20		31	GRN/ORN
10	GRN/YEL*2	21			
11		22	WHT/BLK		

*1 : KQ model

*2 : except KQ model

NOTE ⊥ Connector with male terminals (double outline) : View from terminal side

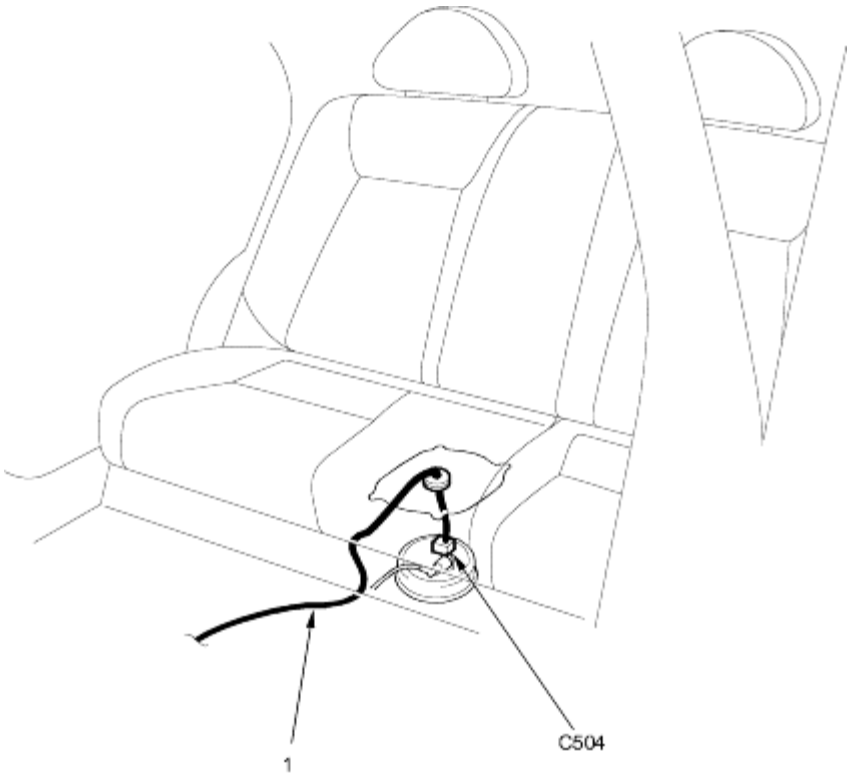
⊥ Connector with female terminals (single outline) : View from wire side

⊥ ○ : Related to ECM/PCM control.

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)



1. FLOOR WIRE HARNESS

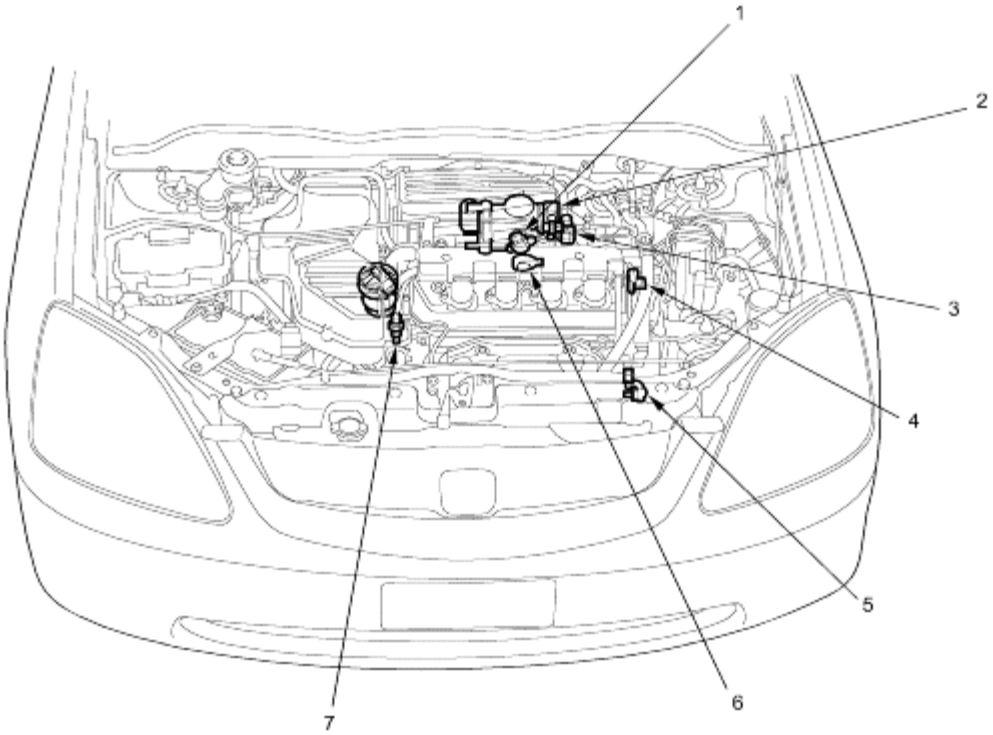
C504



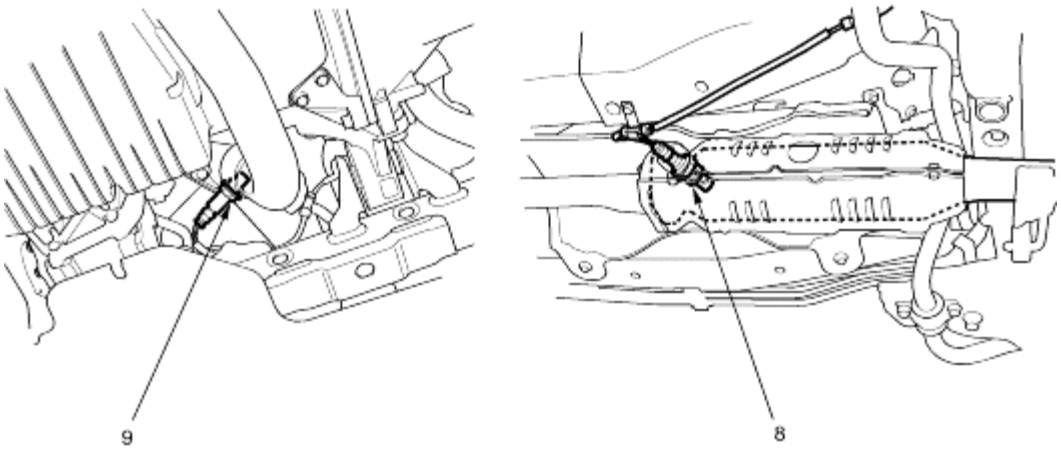
1	BLK
2	YEL/BLK
3	
④	BLK
⑤	YEL/GRN

PGM-FI System

Component Location Index



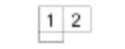
1. THROTTLE POSITION (TP) SENSOR
   Troubleshooting, page 11-519
2. INTAKE AIR TEMPERATURE (IAT) SENSOR
   Troubleshooting, page 11-522
3. MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
   Troubleshooting, page 11-513
4. TOP DEAD CENTRE (TDC) SENSOR
   Troubleshooting, page 11-521
5. CRANKSHAFT POSITION (CKP) SENSOR
   Troubleshooting, page 11-515
6. KNOCK SENSOR
   Troubleshooting, page 11-531
7. ENGINE COOLANT TEMPERATURE (ECT) SENSOR
   Troubleshooting, page 11-516
1. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
   Troubleshooting, page 11-537
   Replacement, page 11-554
2. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)
   Troubleshooting, page 11-512
   Replacement, page 11-554



Fuel and Emissions Systems

System Descriptions (cont'd)

C119



①	YEL/BLK
②	BRN

C120



①	YEL/BLK
②	RED

C121



①	YEL/BLK
②	BLU

C122



①	YEL/BLK
②	YEL

C123



①	YEL/BLU
②	RED/BLK
③	GRN/YEL

C124



①	BLK/YEL
②	YEL/BLU

C125



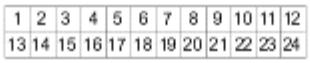
①	YEL/RED
②	GRN/RED
③	GRN/WHT

C126



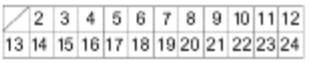
①	GRN/YEL
②	RED/YEL

C127



①	GRN/YEL	13	BLK
②	GRN/YEL	14	BLK
③	GRN/YEL	15	BLK
④	GRN/YEL	16	BLK
⑤	GRN/YEL	17	BLK
⑥	GRN/YEL	18	BLK
⑦	YEL/BLU	19	BLK
⑧	YEL/BLU	20	BLK
⑨	YEL/BLU	21	BLK
10	YEL/BLU	22	BLK
11	YEL/BLU	23	BLK
12	YEL/BLU	24	BLK

C128



1	———	13	BRN/YEL
②	BLK/YEL	14	BRN/YEL
③	BLK/YEL	15	BRN/YEL
④	BLK/YEL	16	BRN/YEL
⑤	BLK/YEL	17	YEL/BLK
⑥	BLK/YEL	18	YEL/BLK
⑦	BLK/YEL	19	YEL/BLK
⑧	BLK/WHT	20	YEL/BLK
⑨	BLK/WHT	21	YEL/BLK
10	BLK/WHT	22	YEL/BLK
11	BLK/WHT	23	YEL/BLK
12	BLK/WHT	24	YEL/BLK

C129



①	YEL/GRN
②	BLK
③	BLK/WHT

C130



①	BLU/RED
②	BLK
③	BLK/WHT

C131



①	WHT/BLU
②	BLK
③	BLK/WHT

C132



①	BRN
②	BLK
③	BLK/WHT

C133



①	RED/BLU
②	YEL/BLU
③	YEL

C134



①	BLU
②	BRN/YEL
③	YEL/BLK

C135



①	BRN/YEL
②	GRN
③	YEL/BLK

C136

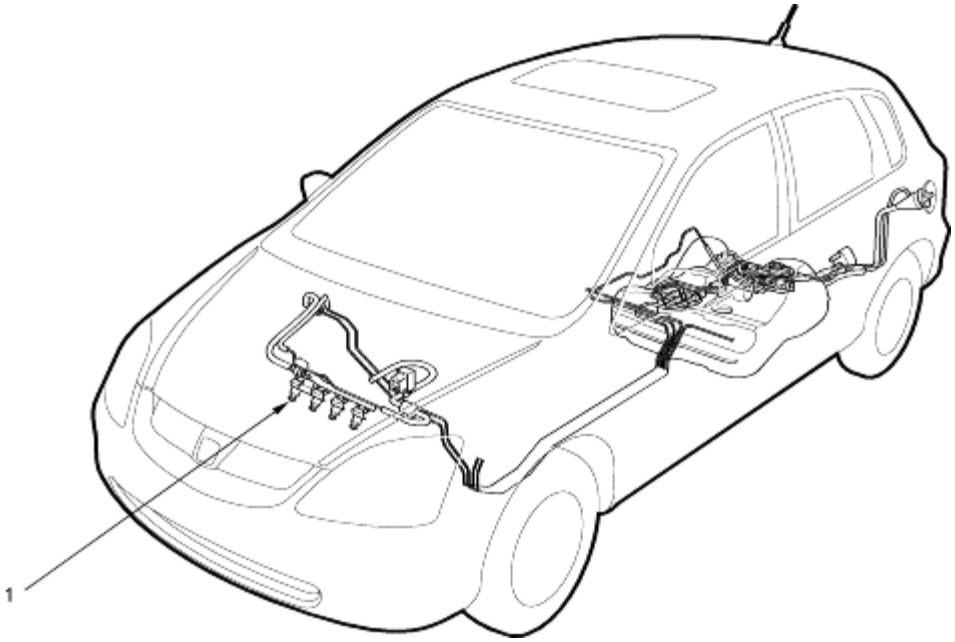


①	BLK/YEL
2	———
③	WHT/BLU
④	WHT/RED

NOTE: ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ○: Related to ECM/PCM control.

PGM-FI System

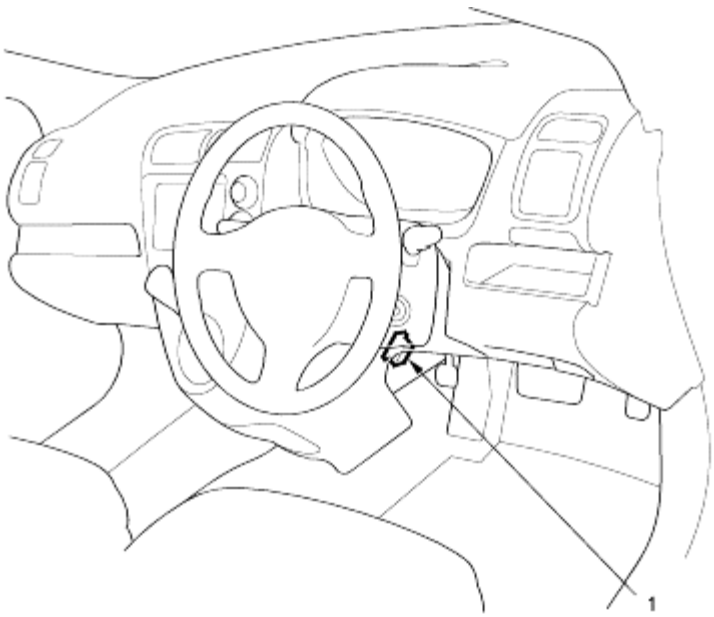
Component Location Index (cont'd)

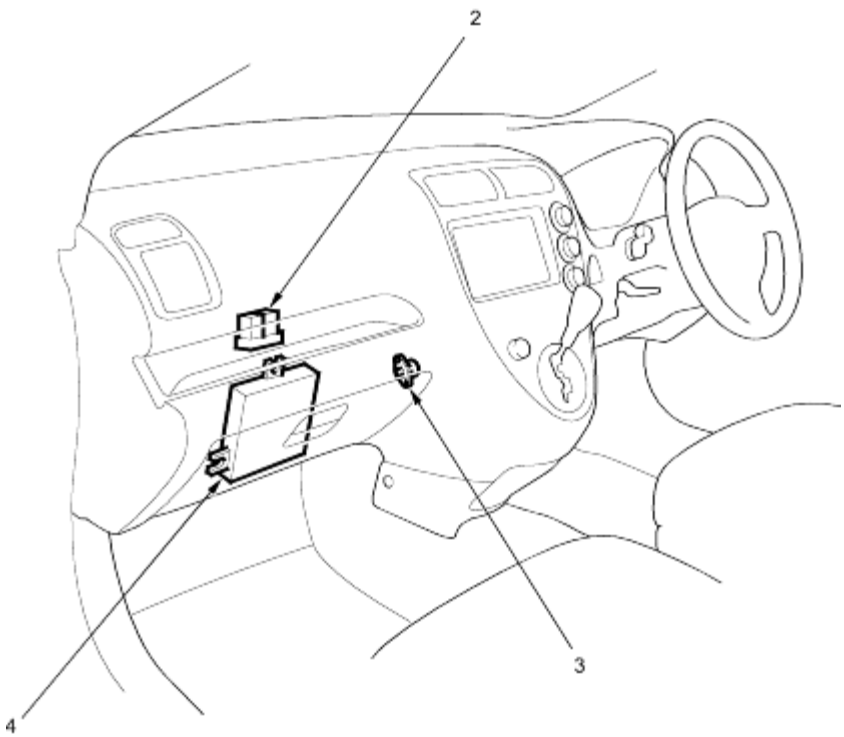


1. INJECTORS
   Test, page 11-552
   Replacement, page 11-413

PGM-FI System

Component Location Index (cont'd)





1. DATA LINK CONNECTOR (DLC)
   General Troubleshooting Information, page 11-467
1. PGM-FI MAIN RELAY 1
   Troubleshooting, page 11-540
2. IDLE MIXTURE ADJUSTER (IMA)
   Troubleshooting, page 11-524
3. ENGINE CONTROL MODULE/POWERTRAIN CONTROL MODULE (ECM/PCM)
   General Troubleshooting Information, page 11-467

PGM-FI System
DTC Troubleshooting

DTC 1: Primary HO2S (Sensor 1) Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for at least one minute before test-driving.
   3. Test-drive under following conditions.
      - in MT, A/T: 2nd position
      - accelerate using wide open throttle for at least 5 seconds, then decelerate for at least 5 seconds with the throttle completely closed.

Is the MIL on and does it indicate DTC 1?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Inspect fuel pressure (see page 11-430).

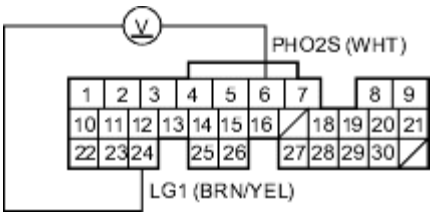
Is it normal?

YES - Go to step 5.

NO - Check for fuel supply system (see page 11-561). ■

3. 5. Let it idle for at least 1 minute before test-driving.
   6. Open the throttle wide open, then quickly release it.
   7. Measure voltage between ECM/PCM connector terminals A6 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

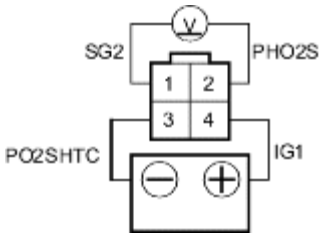
Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 8.

1. 8. Turn the ignition switch OFF.
   9. Disconnect the primary HO2S (Sensor 1) 4P connector.
   10. At the Primary HO2S (Sensor 1) harness side, connect the battery positive terminal to terminal No. 4 and battery negative terminal to terminal No. 3).
   11. Start the engine.
   12. After 2 minutes, measure voltage between primary HO2S (Sensor 1) 4P connector terminals No. 1 and No. 2.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Repair open or short in the wire between the ECM/PCM (A6) and the primary HO2S (Sensor 1). ■

NO - Replace the primary HO2S (Sensor 1) (see page 11-554). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 3: MAP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine and let it idle.

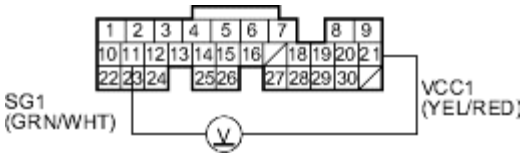
Is the MIL on and does it indicate DTC 3?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

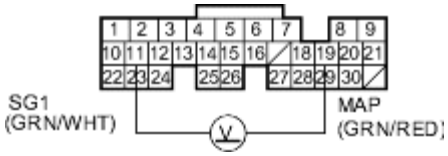
Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

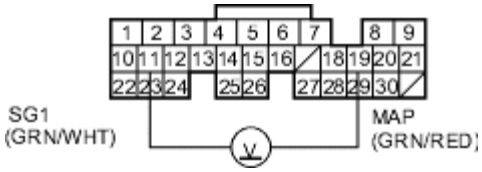
Is there about 3 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

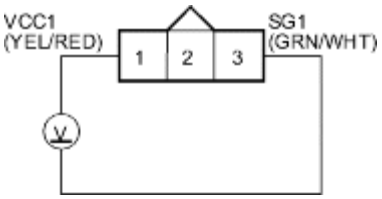
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 13.

2. 8. Turn the ignition switch OFF.
   9. Disconnect the MAP sensor 3P connector.
   10. Turn the ignition switch ON (II).
   11. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

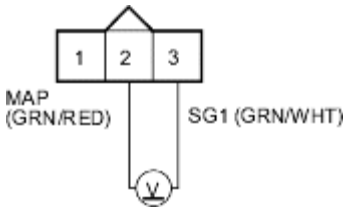
YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A11) and the MAP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between the MAP sensor 3P connector terminals No. 2 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

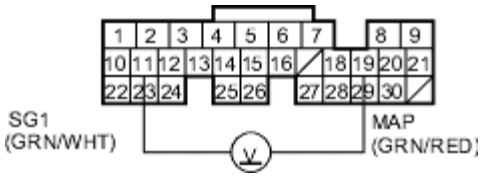
Is there about 5 V?

YES - Replace the MAP sensor. ■

NO - Repair open in the wire between the ECM/PCM (A19) and the MAP sensor. ■

13. Turn the ignition switch OFF.
14. Disconnect the MAP sensor 3P connector.
15. Turn the ignition switch ON (II).
16. Measure voltage between ECM/PCM connector terminals A11 and A19.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

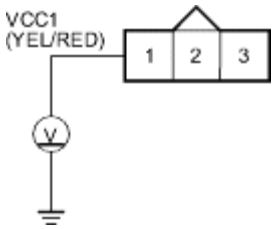
Is there about 5 V?

YES - Replace the MAP sensor. ■

NO - Go to step 17.

1. 17. Measure voltage between the MAP sensor 3P connector terminals No. 1 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

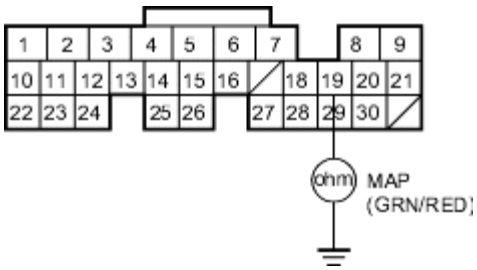
Is there about 5 V?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (A21) and the MAP sensor. ■

18. Turn the ignition switch OFF.
19. Disconnect ECM/PCM connector A (31P).
20. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A19) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 4: CKP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine.

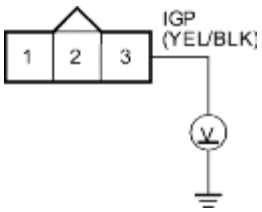
Is the MIL on and does it indicate DTC 4?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the CKP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the CKP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

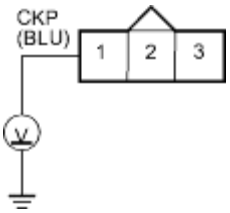
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the CKP sensor. ■

1. 7. Measure voltage between the CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

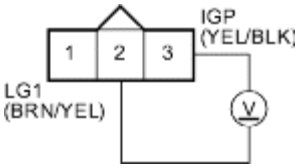
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and G101. ■

3. 9. Substitute a known-good CKP sensor and recheck.

Is the MIL on and does it indicate DTC 4?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

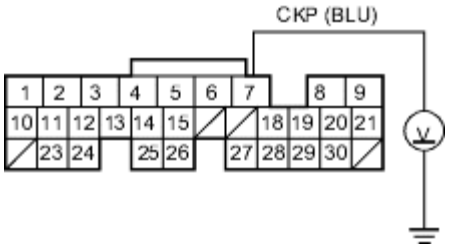
NO - Replace the original CKP sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

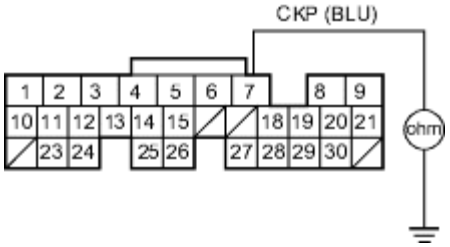
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

DTC 6: ECT Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
2. Turn the ignition switch ON (II).

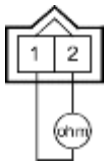
Is the MIL on and does it indicate DTC 6?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor, climate control unit (with climate control), and the ECM/PCM. ■

2. 3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF.
5. Disconnect the 2P connector from the ECT sensor.
6. Measure resistance between the ECT sensor 2P connector terminals No. 1 and No. 2.

ECT SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there 200-400 ohms?

YES - Go to step 7.

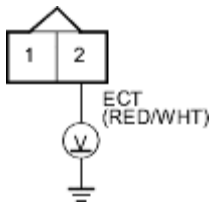
NO - Replace the ECT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

1. 7. Turn the ignition switch ON (II).
2. 8. At the engine wire harness side, measure voltage between the ECT sensor 2P connector terminal No. 2 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

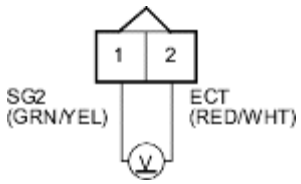
Is the about 5 V?

YES - Go to step 9.

NO - Go to step 10.

3. 9. Measure voltage between the ECT sensor 2P connector terminals No. 1 and No. 2.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

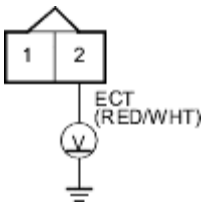
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10) and the ECT sensor. ■

1. 10. Turn the ignition switch OFF.

11. Disconnect the climate control unit 22P connector.
12. Turn the ignition switch ON (II).
13. At the engine harness side, measure voltage between the ECT sensor 2P connector terminal No. 2 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

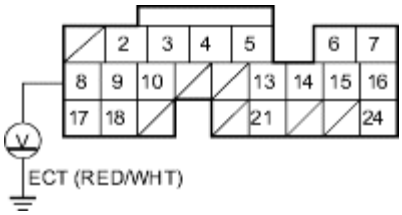
Is there about 5 V?

YES - Replace the climate control unit. ■

NO - Go to step 14.

14. Measure voltage between ECM/PCM connector terminal B8 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there about 5 V?

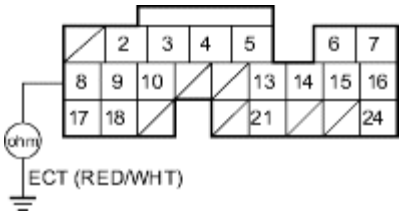
YES - Repair open in the wire between the ECM/PCM (B8) and the ECT sensor. ■

NO - Go to step 15.

1. 15. Turn the ignition switch OFF.

16. Disconnect ECM/PCM connector B (24P).
17. Check for continuity between ECM/PCM connector terminal B8 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B8) and the ECT sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 7: TP Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine.

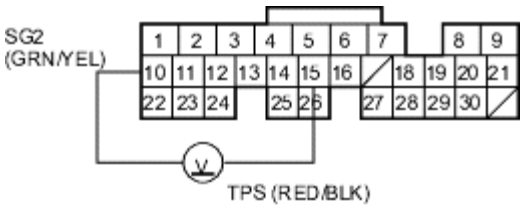
Is the MIL on and does it indicate DTC 7?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals A10 and A15.
   NOTE: There should be a smooth transition as the throttle is pressed.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is the voltage about 0.5 V at full close throttle, and about 4.5 V at full open throttle?

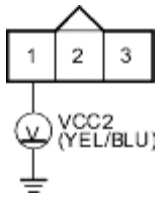
YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Turn the ignition switch OFF.
   7. Disconnect the TP sensor 3P connector.
   8. Turn the ignition switch ON (II).

1. 9. At the engine wire harness side, measure voltage between the TP sensor 3P connector terminal No. 1 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

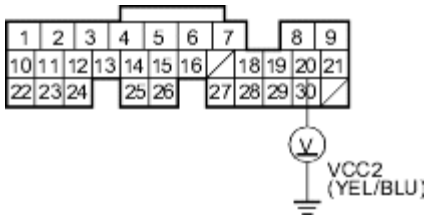
Is there about 5 V?

YES - Go to step 11.

NO - Go to step 10.

10. Measure voltage between ECM/PCM connector terminals A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

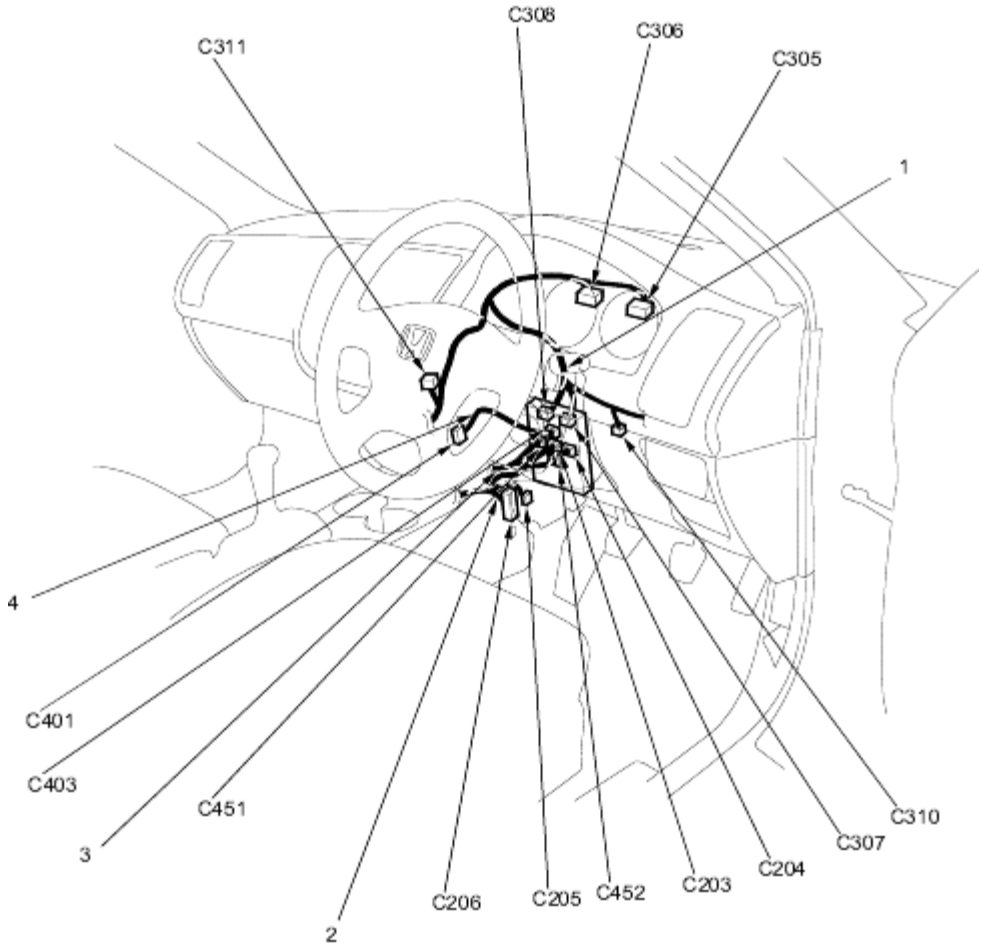
NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:



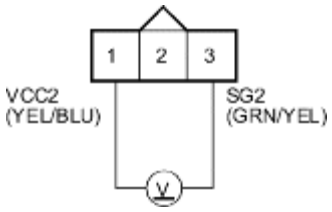
1. DASHBOARD WIRE HARNESS A
2. ECM/PCM WIRE HARNESS
3. ENGINE COMPARTMENT WIRE HARNESS
4. DASHBOARD WIRE HARNESS B

PGM-FI System

DTC Troubleshooting (cont'd)

1. 11. At the engine wire harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

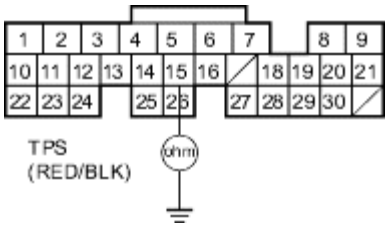
Is there about 5 V?

YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

12. Turn the ignition switch OFF.
13. Disconnect ECM/PCM connector A (31P).
14. Check for continuity between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

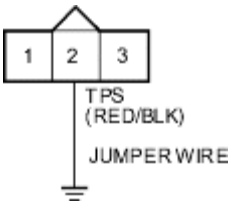
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A15) and the TP sensor. ■

NO - Go to step 15.

1. 15. Connect the TP sensor 3P connector terminal No. 2 and body ground with a jumper wire.

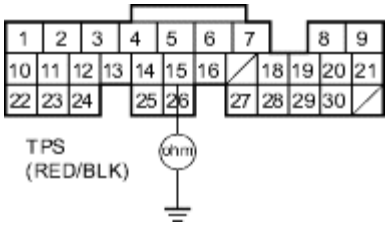
TP SENSOR 3P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Replace the TP sensor. ■

NO - Repair open in the wire between the ECM/PCM (A15) and the TP sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 8: TDC Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine.

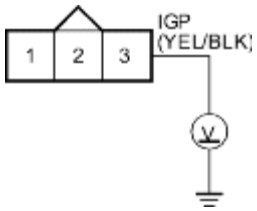
   Is the MIL on and does it indicate DTC 8?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TDC sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TDC sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the TDC sensor 3P connector terminal No. 3 and body ground.

   TDC SENSOR 3P CONNECTOR



   Wire side of female terminals

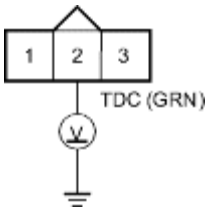
   Is there battery voltage?

   YES - Go to step 7.

   NO - Repair open in the wire between the PGM-FI main relay 1 and the TDC sensor. ■

1. 7. Measure voltage between the TDC sensor 3P connector terminal No. 2 and body ground.

   TDC SENSOR 3P CONNECTOR



   Wire side of female terminals

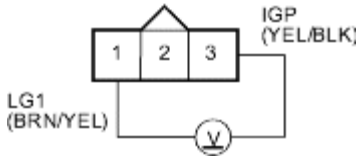
   Is there about 5 V?

   YES - Go to step 8.

   NO - Go to step 10.

2. 8. Measure voltage between the TDC sensor 3P connector terminals No. 1 and No. 3.

   TDC SENSOR 3P CONNECTOR



   Wire side of female terminals

   Is there battery voltage?

   YES - Go to step 9.

   NO - Repair open in the wire between the TDC sensor and G101. ■

3. 9. Substitute a known-good TDC sensor and recheck.

   Is the MIL on and does it indicate DTC 8?

   YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

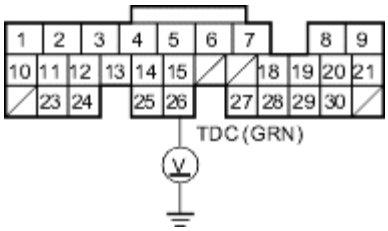
   NO - Replace the original TDC sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

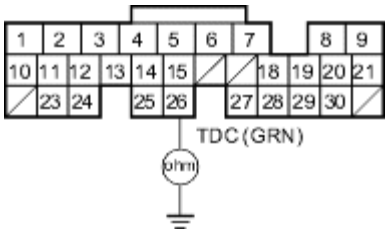
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A26) and TDC sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A26) and the TDC sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

DTC 10: IAT Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
2. Turn the ignition switch ON (II).

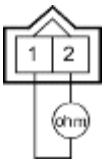
Is the MIL on and does it indicate DTC 10?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Measure resistance between the IAT sensor 2P connector terminals No. 1 and No. 2.

IAT SENSOR 2P CONNECTOR



Terminal side of male terminals

Is there 0.4-4.0 kohms?

YES - Go to step 6.

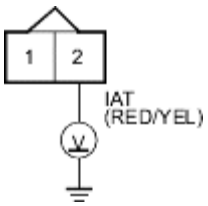
NO - Replace the IAT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

1. 6. Turn the ignition switch ON (II).
2. 7. At the engine wire harness side, measure voltage between the IAT sensor 2P connector terminal No. 2 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

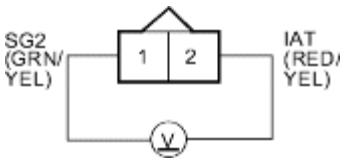
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 9.

3. 8. Measure voltage between the IAT sensor 2P connector terminals No. 1 and No. 2.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

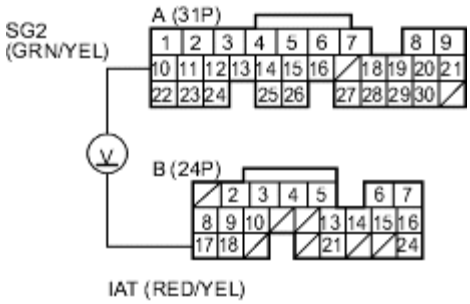
Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10) and the IAT sensor. ■

1. 9. Measure voltage between ECM/PCM connector terminals A10 and B17.

ECM/PCM CONNECTORS



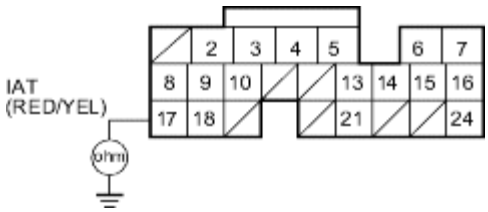
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (B17) and the IAT sensor. ■

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect ECM/PCM connector B (24P).
12. Check for continuity between ECM/PCM connector terminal B17 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B17) and the IAT sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 11: IMA Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine, then let it idle for more than 5 seconds.

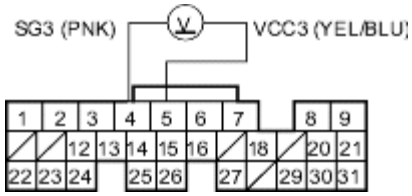
Is the MIL on and does it indicate DTC 11?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IMA sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Turn the ignition switch ON (II).
   5. Measure voltage between ECM/PCM connector terminals E4 and E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

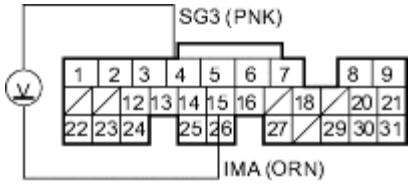
Is there about 5 V?

YES - Go to step 6.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

3. 6. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

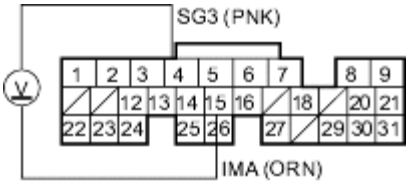
Is there about 0.5-4.5 V?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR S (31P)



Wire side of female terminals

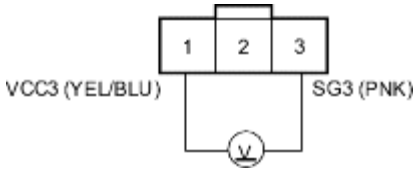
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 13.

2. 8. Turn the ignition switch OFF.
   9. Disconnect the IMA 3P connector.
   10. Turn the ignition switch ON (II).
   11. Measure voltage between IMA 3P connector terminals No. 1 and No. 3.

IMA 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

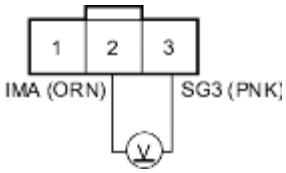
YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (E4) and the IMA. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between IMA 3P connector terminals No. 2 and No. 3.

IMA 3P CONNECTOR



Wire side of female terminals

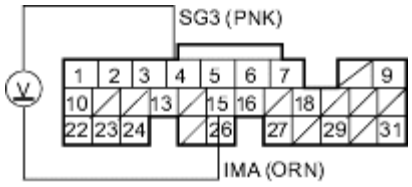
Is there about 5 V?

YES - Replace the IMA. ■

NO - Repair open in the wire between the ECM/PCM (E15) and the IMA. ■

13. Turn the ignition switch OFF.
14. Disconnect the IMA 3P connector.
15. Turn the ignition switch ON (II).
16. Measure voltage between ECM/PCM connector terminals E4 and E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

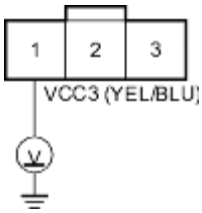
Is there about 5 V?

YES - Replace the IMA. ■

NO - Go to step 17.

1. 17. Measure voltage between IMA 3P connector terminal No. 1 and body ground.

IMA 3P CONNECTOR



Wire side of female terminals

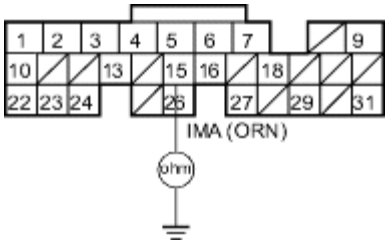
Is there about 5 V?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (E5) and the IMA. ■

18. Turn the ignition switch OFF.
19. Disconnect ECM/PCM connector E (31P).
20. Check for continuity between ECM/PCM connector terminal E15 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E15) and the IMA.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC 13: BARO Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Turn the ignition switch ON (II).

Is the MIL on and does it indicate DTC 13?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time (test-drive may be necessary). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 17: VSS Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Test-drive with no load (in Park or neutral), accelerate to 4,000 rpm (min-1), then decelerate to 1,500 rpm (min-1) with throttle fully closed for at least 5 seconds.

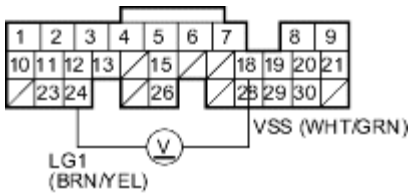
Is the MIL on and does it indicated DTC 17?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VSS and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Block the rear wheels and set the parking brake.
   5. Raise the front of the vehicle, and make sure it is securely supported.
   6. Turn the ignition switch ON (II).
   7. Block the right front wheel, and slowly rotate the left front wheel.
   8. Measure voltage between ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

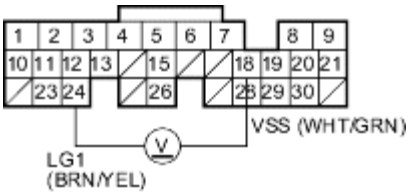
Does the voltage pulse between 0 V and 5 V (or battery voltage)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect ECM/PCM connector A (31P).
11. Turn the ignition switch ON (II).
12. Block the right front wheel, and slowly rotate the left front wheel.
13. Measure voltage between the ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Does the voltage pulse between 0 V and 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check these items: ■

- A short or an open in the wire between the ECM/PCM (A18) and the VSS.
- If the wire is OK, test the VSS (see page 22-94).

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 21: VTEC System Malfunction

Special Tools Required

- Oil pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Check the engine oil level, and refill if necessary.
   3. Start the engine. Hold the engine at 3.000 rpm with no load (in Park or neutral) until the radiator fan comes on.
   4. Road test the vehicle:
      Accelerate in M/T, A/T: 2nd gear to an engine speed over 4,000 rpm (min-1). Hold that engine speed for at least 2 seconds. If DTC 21 is not repeated during the first road test, repeat this test 2 more times.

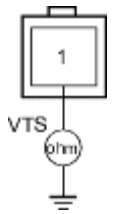
Is the MIL on and does it indicated DTC 21?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTEC solenoid valve and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Remove the resonator (see page 11-448).
1. 7. Turn the ignition switch OFF.
2. 8. Disconnect the VTEC solenoid valve 1P connector.
   9. Check for resistance between the VTEC solenoid valve 1P connector terminal No. 1 and body ground.

VTEC SOLENOID VALVE CONNECTOR



Terminal side of male terminals

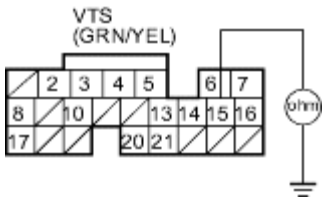
Is there 14-30 ohms?

YES - Go to step 10.

NO - Replace the VTEC solenoid valve. ■

10. Disconnect ECM/PCM connector B (24P).
11. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

NO - Go to step 12.

PGM-FI System

DTC Troubleshooting (cont'd)

1. 12. Connect the VTEC solenoid valve 1P connector terminal No. 1 and body ground with a jumper wire.

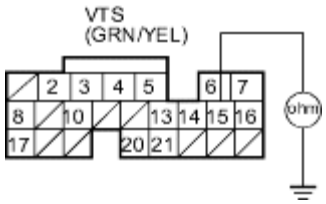
VTEC SOLENOID VALVE 1P CONNECTOR



Wire side of female terminal

13. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



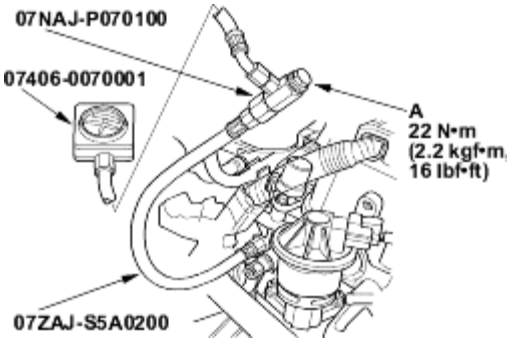
Wire side of female terminals

Is there continuity?

YES - Go to step 14.

NO - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

1. 14. Install the special tools as shown.



15. Reconnect ECM/PCM connector B (24P) and the VTEC solenoid valve connector.
16. Connect a tachometer.
17. Start the engine. Hold the engine at 3.000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.

2. 18. Check oil pressure at engine speeds of 1,000 and 2,000 rpm (min-1). Keep measuring time as short as possible because the engine is running with no load (less than 1 minute).

Is pressure below 49 kPa (0.5 kgf/cm2, 7 psi)?

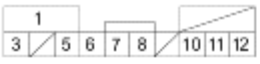
YES - Go to step 19.

NO - Inspect the VTEC solenoid valve (see page 11-553). ■

Fuel and Emissions Systems

System Descriptions (cont'd)

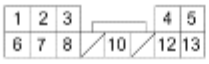
C203



1	BLK/WHT	⑦	LT GRN
2	———	8	GRN
③	BLK/ORN	9	———
4		10	BLU/BLK* 1
⑤	BLK/WHT	11	YEL
6	LT BLU	12	YEL/BLK

*1 : except M/T

C204



1	GRY	8	RED/BLU
2	YEL/RED	9	———
③	WHT/BLK	10	YEL
④	BLU/WHT	11	———
⑤	BLU	12	WHT/RED
⑥	YEL/BLK	13	WHT/BLK
7	BRN		

C205



①	BRN
②	BLK

C206*



1	———	9	———
2	———	10	———
3	———	11	———
④	BLK	12	———
⑤	BRN/YEL	13	———
6	———	14	GRY
⑦	LT BLU	15	———
8	———	16	WHT/RED

C305



1	———	9	———	17	YEL
2	WHT/GRN	10	———	18	WHT/RED
3	YEL/BLK	11	———	19	———
4	———	12	BLU/WHT	20	YEL/BLU
5	———	13	BLU	21	PNK/BLU
6	———	14	———	22	———
7	WHT	15	BLK/YEL		
8	———	16	BLK		

C306



1	RED/BLU	9	———	17	RED
2	RED/YEL	10	WHT/RED	18	BLK
③	BLK/RED*	⑪	WHT*	19	———
4	———	12	GRN/YEL	20	YEL/RED
⑤	BLU/BLK*	13	GRN/RED	21	GRN/ORN
6	———	14	PNK	22	BLU/ORN
7	RED/WHT	15	BLU/RED		
8	———	16	RED/BLK		

* : A/T

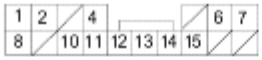
C307



1	———	8	RED/BLK
2	GRN	9	———
3	———	10	RED
4	WHT/BLU	11	———
⑤	WHT/BLK	12	WHT/GRN
6	YEL/GRN*		
7	GRN/RED		

* : with sun roof

C308



1	BLU	10	WHT/GRN
2	BLU/ORN	11	RED/BLK
3	———	12	YEL/BLK
4	WHT/RED	13	WHT/RED
5	———	14	BLK/YEL
6	YEL	15	RED/WHT
⑦	YEL	16	———
⑧	BLU/WHT	17	———
9	———		

C310



1	WHT/GRN	
2	WHT/BLK	
3	———	
4	———	

C311 (KG model)



①	BLK/YEL	
2	———	
③	YEL/BLK	

C401



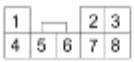
①	BLK/WHT	
2	———	
③	WHT	
④	BLK/RED	
5	WHT/RED	
⑥	BLK/YEL	
7	———	

C403



①	WHT	
2	WHT/RED	
③	BLK/WHT	
④	BLK/RED	
⑤	BLK/YEL	

C451



①	BLK/YEL	⑤	BLU
②	WHT/RED	6	ORN
③	WHT/GRN	7	WHT
4	BLK	8	WHT/BLU

C452



①	WHT
②	WHT/RED
3	WHT/BLK

NOTE: ⊥ Connector with male terminals (double outline) : View from terminal side
⊥ Connector with female terminals (single outline) : View from wire side
⊥ ◯: Related to ECM/PCM control.

* : Terminal side of female terminals

PGM-FI System
DTC Troubleshooting (cont'd)

1. 19. Turn the ignition switch OFF.

20. Disconnect the VTEC solenoid valve 1P connector.
21. Attach the battery positive terminal to the VTEC solenoid valve terminal.
22. Start the engine, and check oil pressure at an engine speed of 3,000 rpm (min-1).

Is pressure above 390 kPa (4.0 kgf/cm2, 57 psi)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Inspect the VTEC solenoid valve (see page 11-553). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 23: Knock Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Turn the ignition switch ON (II).

Is the MIL on and does it indicated DTC 23?

YES - Go to step 5.

NO - Go to step 3.

2. 3. Start the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Hold the engine at 3,000-4,000 rpm (min-1) for at least 60 seconds.

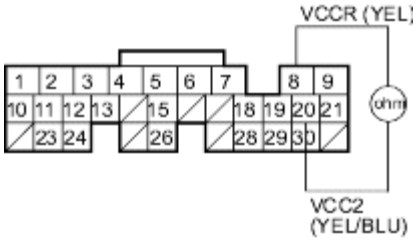
Is the MIL on and does it indicated DTC 23?

YES - Go to step 11.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector A (31P).
   7. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

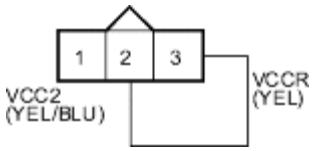
Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 8.

1. 8. Disconnect the knock sensor 3P connector.
   9. Connect the knock sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

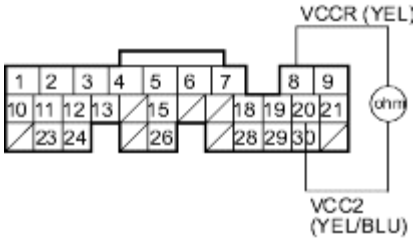
KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Replace the knock sensor. ■

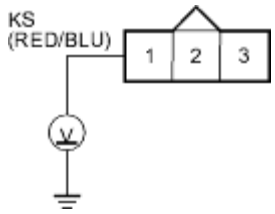
NO - Repair open in the wire between the ECM/PCM (A8, A20) and the knock sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Turn the ignition switch OFF.

12. Disconnect the knock sensor 3P connector.
13. Turn the ignition switch ON (II).
14. Measure voltage between knock sensor 3P connector terminal No. 1 and body ground.

KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

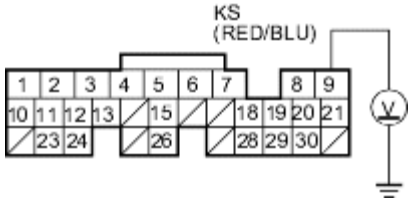
Is there about 5 V?

YES - Go to step 19.

NO - Go to step 15.

15. Measure voltage between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

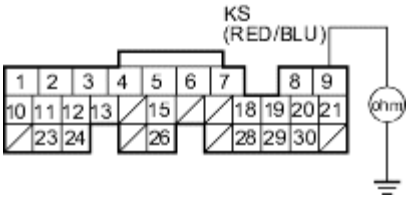
YES - Repair open in the wire between the ECM/PCM (A9) and knock sensor. ■

NO - Go to step 16.

1. 16. Turn the ignition switch OFF.

17. Disconnect ECM/PCM connector A (31P).
18. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair short in the wire between ECM/PCM (A9) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

19. Substitute a known-good knock sensor and recheck.

Is the MIL on and does it indicated DTC 23?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 34: ECM/PCM Power Source Circuit Unexpected Voltage

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Turn the ignition switch OFF.
   3. Wait 5 seconds.
   4. Turn the ignition switch ON (II).

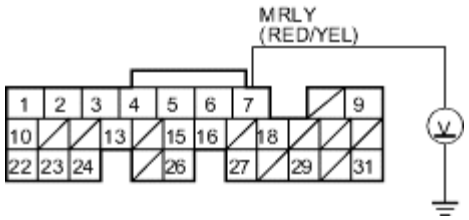
Is the MIL on and does it indicated DTC 34?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector E (31P).
   7. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



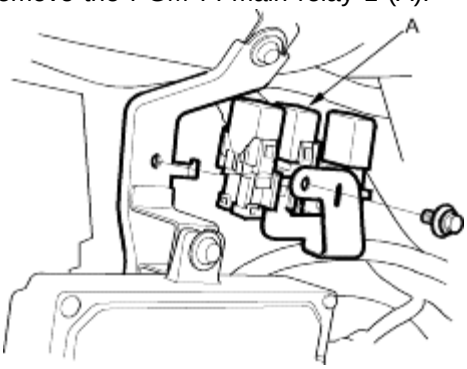
Wire side of female terminals

Is there battery voltage?

YES - Go to step 11.

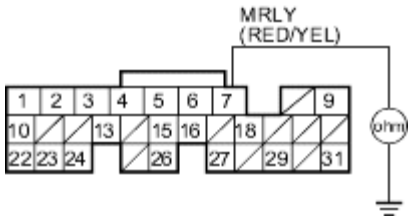
NO - Go to step 8.

1. 8. Remove the glove box.
2. 9. Remove the PGM-FI main relay 1 (A).



10. Check for continuity between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E7) and the PGM-FI main relay 1. ■

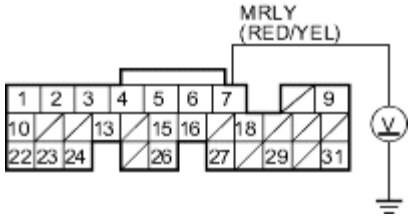
NO - Replace the PGM-FI main relay 1. ■

11. Reconnect ECM/PCM connector E (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 12. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

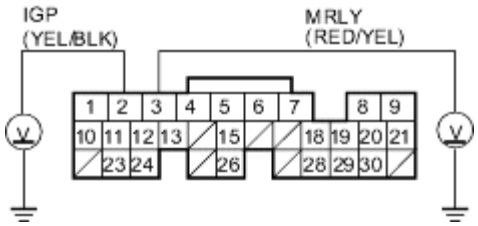
Is there battery voltage?

YES - Go to step 13.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

13. Disconnect ECM/PCM connector A (31P).
14. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

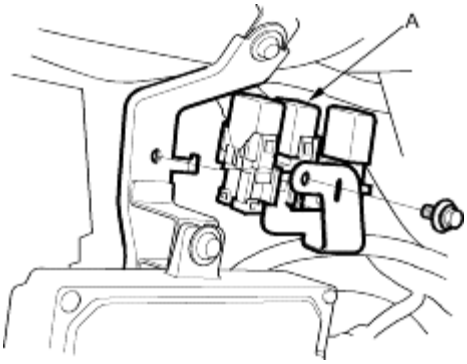
Is there battery voltage?

YES - Go to step 15.

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

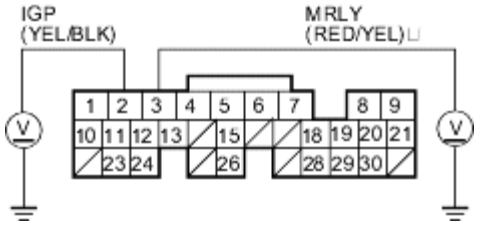
1. 15. Remove the glove box.

16. Remove the PGM-FI main relay 1 (A).



17. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (A2, A3) and the PGM-FI main relay 1. ■

NO - Replace the PGM-FI main relay 1. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 41: Primary HO2S (Sensor 1) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine.

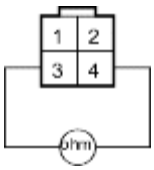
Is the MIL on and does it indicate DTC 41?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the primary HO2S (Sensor 1) 4P connector.
   5. At the primary HO2S side, measure resistance between the primary HO2S 4P connector terminals No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

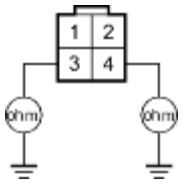
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the primary HO2S (Sensor 1). ■

1. 6. Check for continuity between body ground and the primary HO2S 4P connector terminals No. 3 and No. 4 individually.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

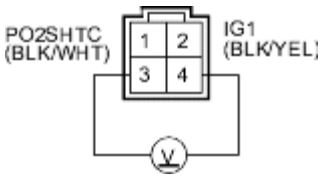
Is there continuity?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES - Go to step 9.

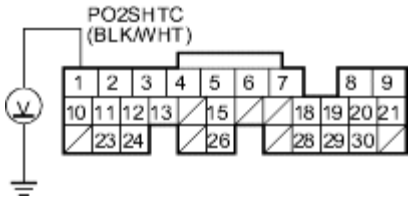
NO - Go to step 12.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Check for continuity between the ECM/PCM connector terminal A1 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

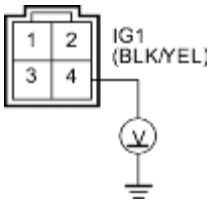
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 4 and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

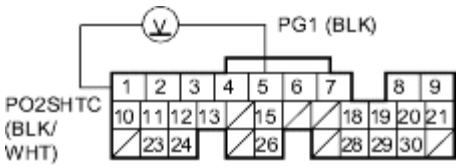
YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the primary HO2S (Sensor 1) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.

14. Reconnect the primary HO2S (Sensor 1) 4P connector.
15. Disconnect ECM/PCM connector A (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between the ECM/PCM connector terminal A1 and A5.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 63: Secondary HO2S (Sensor 2) Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Jump the SCS line (see step 2 on page 11-467).
   3. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for at least 1 minute before test-driving.

Is the MIL on and does it indicate DTC 63?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 4. Inspect fuel pressure (see page 11-561).

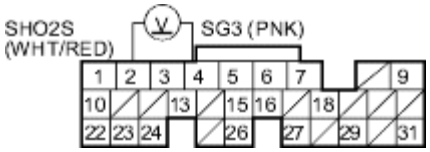
Is it normal?

YES - Go to step 5.

NO - Check for fuel supply system (see page 11-561). ■

3. 5. Let it idle for at least 1 minute before test-driving.
   6. Open the throttle wide open, then quickly release it.
   7. Measure voltage between ECM/PCM connector terminals E2 and E4.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

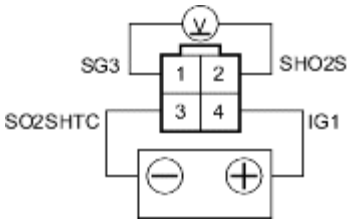
Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 8.

1. 8. Turn the ignition switch OFF.
   9. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   10. At the secondary HO2S (Sensor 2) harness side, connect the battery positive terminal to terminal No. 4 and battery negative terminal to terminal No. 3.
   11. Start the engine.
   12. After 2 minutes, measure voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2.

SECONDARY HO2S 4P CONNECTOR



Wire side of female terminals

Is the voltage above 0.6 V at wide open throttle to 4,500 rpm (min-1) and below 0.4 V when the throttle is quickly released from 4,500 rpm (min-1)?

YES - Repair open or short in the wire between the ECM/PCM (E2, E4) and the secondary HO2S (Sensor 2). ■

NO - Replace the secondary HO2S (Sensor 2) (see page 11-554). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC 65: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Start the engine.

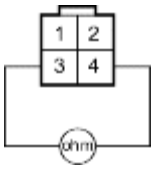
Is the MIL on and does it indicate DTC 65?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at Secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   5. At the HO2S side, measure resistance between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

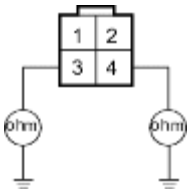
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the secondary HO2S (Sensor 2). ■

1. 6. Check for continuity between body ground and the secondary HO2S 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

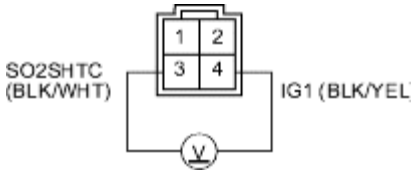
Is there continuity?

YES - Replace the Secondary HO2S (Sensor 2). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES - Go to step 9.

NO - Go to step 12.

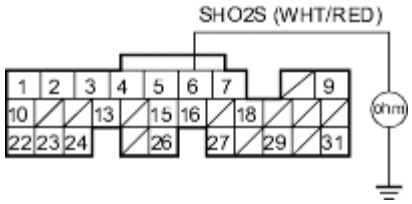
3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector E (31P).

PGM-FI System

DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal E6 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

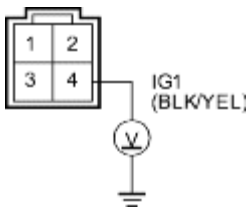
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

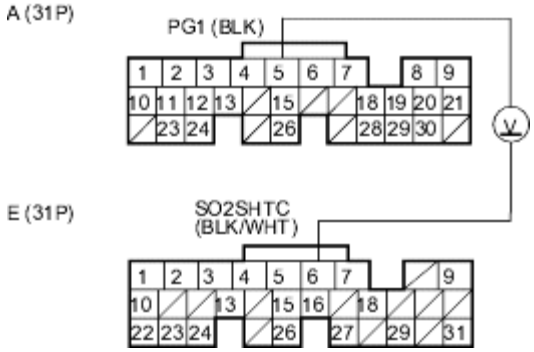
YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.

14. Reconnect the secondary HO2S (Sensor 2) 4P connector.
15. Disconnect ECM/PCM connector E (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal (E6) and A5.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

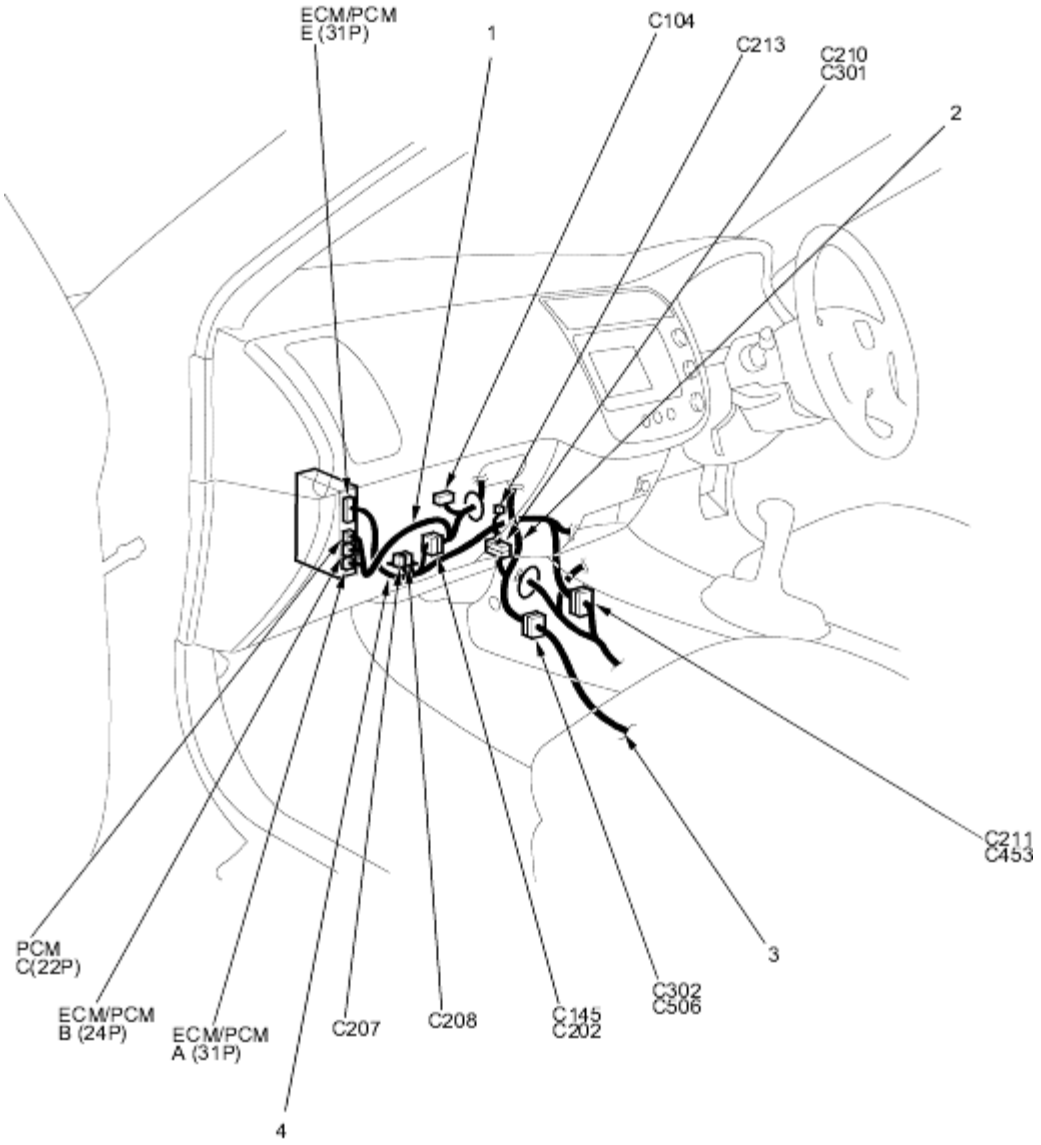
NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

RHD model:



1. ENGINE WIRE HARNESS
2. DASHBOARD WIRE HARNESS A
3. FLOOR WIRE HARNESS
4. ECM/PCM WIRE HARNESS

PGM-FI System
MIL Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II) and watch the Malfunction Indicator Lamp (MIL).

Does the MIL come on and stay on?

YES - If the MIL always comes on and stays on, go to step 70. But if the MIL sometimes works normally, first check for these problems.

- An intermittent short in the wire between the ECM/PCM (E29) and the Data Link Connector (DLC).
- An intermittent short in the wire between the ECM/PCM (E31) and the gauge assembly.

NO - If the MIL is always off, go to step 2. But if the MIL sometimes works normally, first check for these problems.

- A loose No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.
- A loose No. 20 IG (40A) fuse in the under-hood fuse/relay box.
- A loose No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.
- A loose No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
- A poor connection at ECM/PCM terminal E31.
- An intermittent open in the GRN/ORN wire between the ECM/PCM (E31) and the gauge assembly.
- An intermittent short in the wire between the ECM/PCM (A21) and the manifold absolute pressure (MAP) sensor.
- An intermittent short in the wire between the ECM/PCM (A20) and the throttle position (TP) sensor, knock sensor, exhaust gas recirculation (EGR) valve position sensor.
- An intermittent short in the wire between the ECM/PCM (A8) and the knock sensor.
- An intermittent short in the wire between the ECM/PCM (E5) and the idle mixture adjuster (IMA) (without TWC).

1. 2. Turn the ignition switch OFF.
2. 3. Turn the ignition switch ON (II).

Is the low oil pressure light on?

YES - Go to step 6.

NO - Go to step 4.

3. 4. Inspect the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 5.

NO - Repair short in the wire between No. 10 METER (7.5A) fuse and the gauge assembly. Also replace the No. 10 METER (7.5A) fuse. ■

4. 5. Inspect the No. 20 IG1 (40A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES - Repair open in the wire between the No. 20 IG (40A) fuse and the gauge assembly. If the wires are OK, test the ignition switch (see page 22-83). ■

NO - Repair short in the wire between No. 20 IG (40A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG (40A) fuse. ■

5. 6. Try to start the engine.

Does the engine start?

YES - Go to step 7.

NO - Go to step 10.

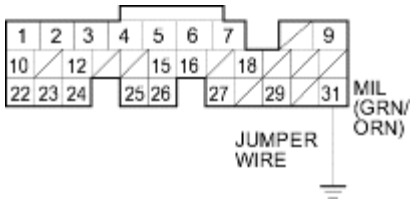
6. 7. Turn the ignition switch OFF.

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 8. Connect ECM/PCM connector terminal E31 and body ground with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

2. 9. Turn the ignition switch ON (II).

Is the MIL on?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check for an open in the wires between the ECM/PCM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly. ■

10. Turn the ignition switch OFF.
11. Inspect the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

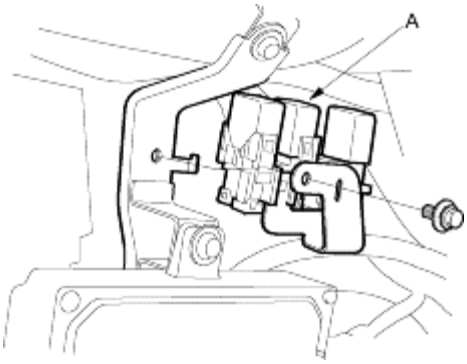
Is the fuse OK?

YES - Go to step 18.

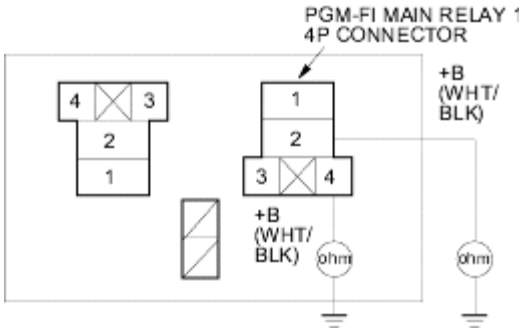
NO - Go to step 12.

12. Remove the blown No. 6 ECU (ECM/PCM) (15A) fuse in the under-dash fuse/relay box.

1. 13. Remove the PGM-FI main relay 1 (A).



14. Check for continuity between body ground and the PGM-FI main relay 1 4P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

Is there continuity?

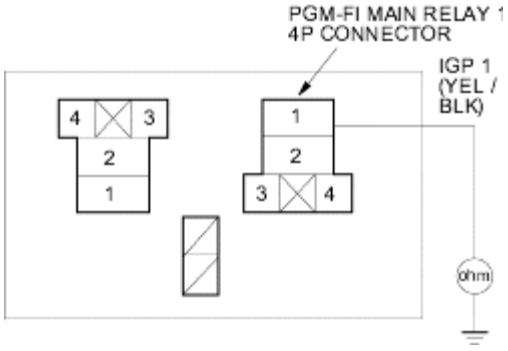
YES - Repair short in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Go to step 15.

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 15. Disconnect each of the components or the connectors below, one at a time, and check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and body ground.
   - PGM-FI main relay 2
   - ECM/PCM connector A (31P)
   - Each injector 2P connector
   - Idle air control (IAC) valve 3P connector
   - Top dead centre (TDC) sensor 2P connector
   - Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

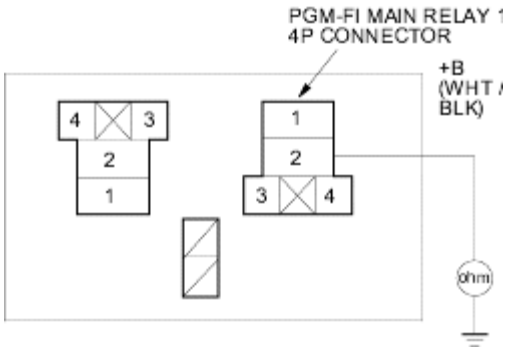
YES - Go to step 16.

NO - Replace the item that made continuity to body ground go away when disconnected. If the item is the ECM/PCM, substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

Also replace the No. 6 ECU (ECM/PCM) (15 A) fuse. ■

16. Disconnect the connectors of all following items.
    - PGM-FI main relay 2
    - ECM/PCM connector A (31P)
    - Injectors
    - Idle air control (IAC) valve
    - Top dead centre (TDC) sensor
    - Crankshaft position (CKP) sensor

1. 17. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO - Replace the PGM-FI main relay 1. Also replace the No 6 ECU (ECM/PCM) (15A) fuse. ■

18. Inspect the No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 30.

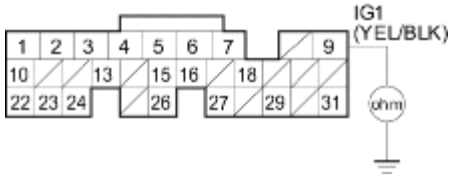
NO - Go to step 19.

19. Remove the blown No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
20. Disconnect ECM/PCM connector E (31P).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 21. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



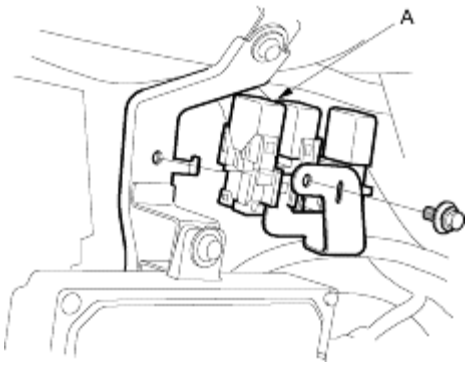
Wire side of female terminals

Is there continuity?

YES - Go to step 22.

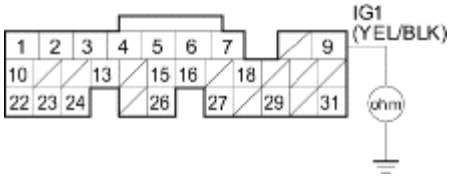
NO - Replace the No. 17 FUEL PUMP (15 A) fuse, and substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

22. Remove the PGM-FI main relay 2 (A).



1. 23. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9), or the No. 17 FUEL PUMP (15 A) fuse and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

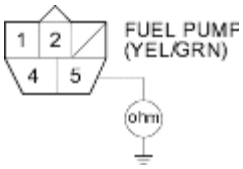
NO - Go to step 24.

24. Remove the rear seat cushion (see page 20-237).
25. Remove the access panel from the floor.
26. Disconnect the fuel pump 5P connector.

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 27. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



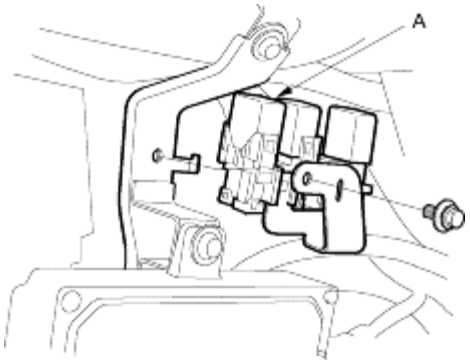
Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the fuel pump and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

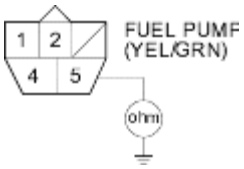
NO - Go to step 28.

28. Reinstall the PGM-FI main relay 2 (A).



1. 29. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

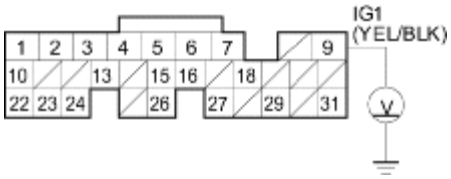
Is there continuity?

YES - Replace the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

NO - Check the fuel pump, and replace it as necessary. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

30. Disconnect ECM/PCM connector E (31P).
31. Turn the ignition switch ON (II).
32. Measure voltage between ECM/PCM connector terminals E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES - Go to step 33.

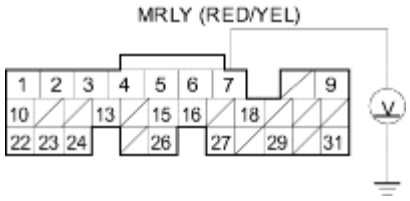
NO - Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 33. Turn the ignition switch OFF.

34. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



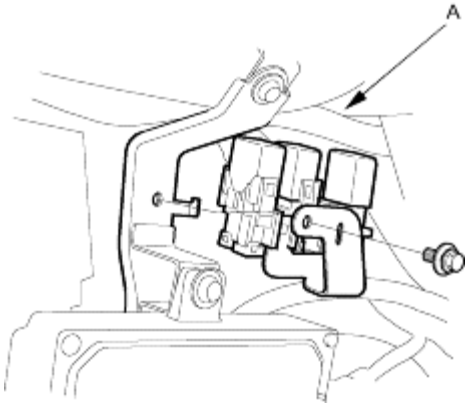
Wire side of female terminals

Is there battery voltage?

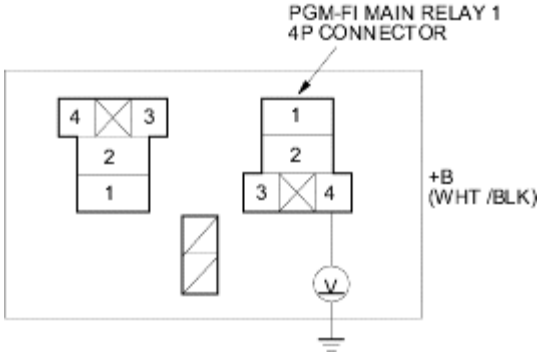
YES - Go to step 38.

NO - Go to step 35.

35. Remove the PGM-FI main relay 1 (A).



1. 36. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



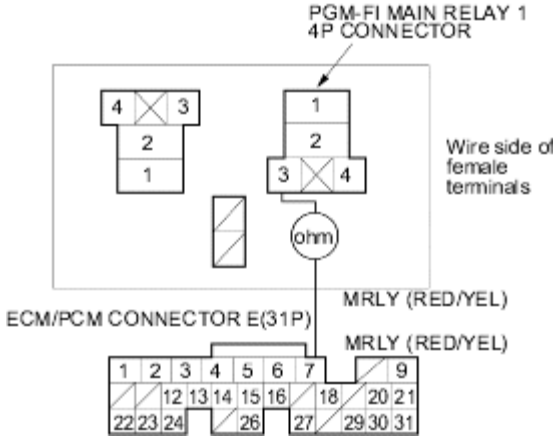
Wire side of female terminals

Is there battery voltage?

YES - Go to step 37.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15 A) fuse and the PGM-FI main relay 1. ■

37. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal E7.



Wire side of female terminals

Is there continuity?

YES - Test the PGM-FI main relay 1 (see page 22-80). If the relay is OK, substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

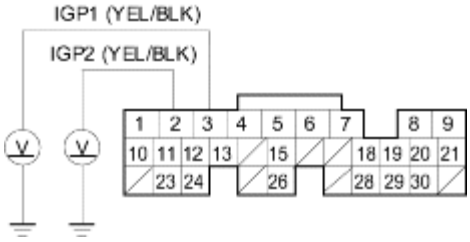
NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (E7). ■

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 38. Reconnect ECM/PCM connector E (31P).

39. Turn the ignition switch ON (II).
40. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.

ECM/PCM CONNECTOR A (31P)



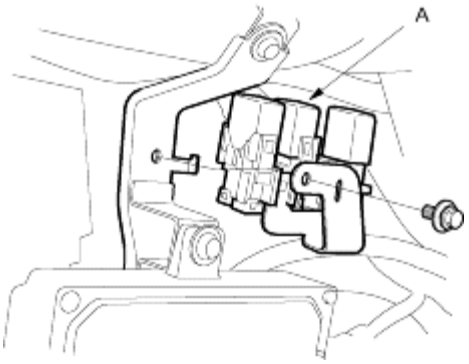
Wire side of female terminals

Is there battery voltage?

YES - Go to step 47.

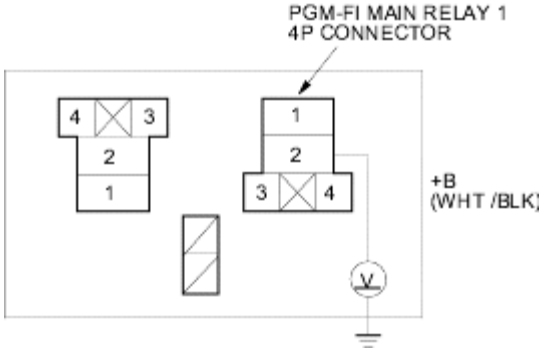
NO - Go to step 41.

41. Turn the ignition switch OFF.
42. Remove the PGM-FI main relay 1 (A).



43. Turn the ignition switch ON (II).

1. 44. Measure voltage between the PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



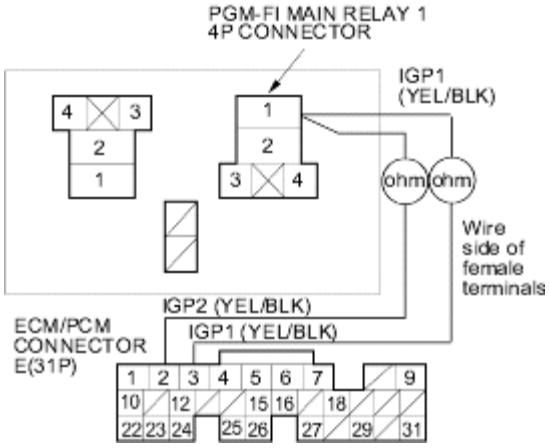
Wire side of female terminals

Is there battery voltage?

YES - Go to step 45.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and the PGM-FI main relay 1. ■

45. Turn the ignition switch OFF.
46. Check for continuity between the PGM-FI main relay 1 4P connector terminal No. 1 and ECM/PCM connector terminals A2 and A3 individually.



Wire side of female terminals

Is there continuity?

YES - Replace the PGM-FI main relay 1. ■

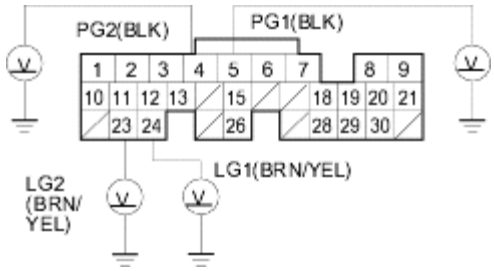
NO - Repair open in the wire between the PGM-FI main relay 1 and the ECM/PCM (A2, A3). ■

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 47. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A23 and A24 individually.

ECM/PCM CONNECTOR A (31P)



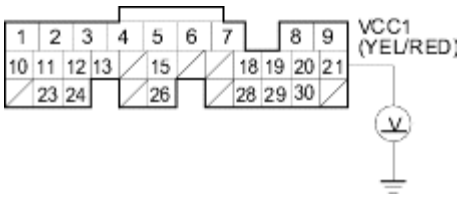
Is there less than 1.0 V?

YES - Repair open in the wire (s) between that had more than 1.0 V between G101 and ECM/PCM (A4, A5, A23, A24). ■

NO - Go to step 48.

48. Measure voltage between body ground and ECM/PCM connector terminal A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

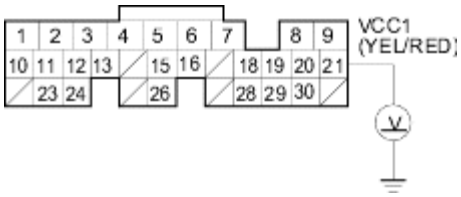
YES - Go to step 55.

NO - Go to step 49.

1. 49. Turn the ignition switch OFF.

50. Disconnect the MAP sensor 3P connector one at a time, and measure voltage between body ground and ECM/PCM connector terminal A21 with the ignition switch ON (II).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the MAP sensor. ■

NO - Go to step 51.

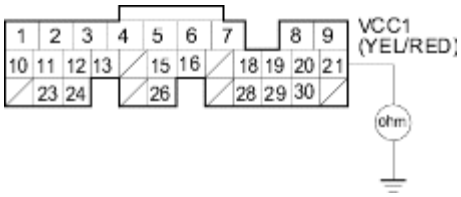
51. Turn the ignition switch OFF.
52. Disconnect the MAP sensor 3P connector.
53. Disconnect ECM/PCM connector A (31P)

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 54. Check for continuity between ECM/PCM connector terminal A21 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

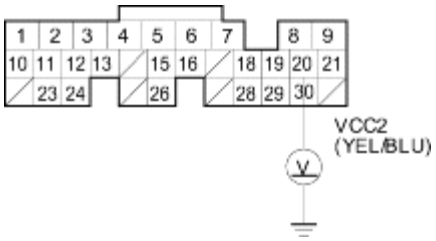
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A21) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

55. Measure voltage between body ground and ECM/PCM connector terminal A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Go to step 62

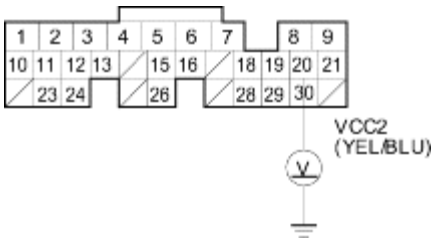
NO - Go to step 56.

1. 56. Turn the ignition switch OFF.

57. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II).

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Replace the sensor that restored about 5 V when disconnected. ■

NO - Go to step 58.

58. Turn the ignition switch OFF.
59. Disconnect the 3P connector from the following sensors.

- Exhaust gas recirculation (EGR) valve position sensor
- Knock sensor
- Throttle position (TP) sensor

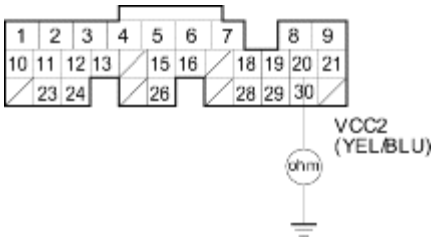
60. Disconnect ECM/PCM connector A (31P).

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 61. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

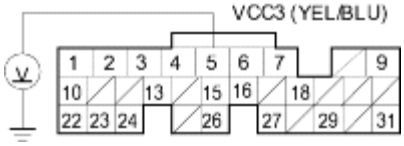
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the EGR valve position sensor, knock sensor or TP sensor, or repair short in the wire between ECM/PCM (A8) and the knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

1. 62. Measure voltage between body ground and ECM/PCM connector terminals E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

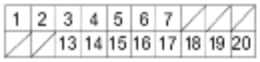
NO - Go to step 63.

63. Turn the ignition switch OFF.
64. Disconnect the idle mixture adjuster (IMA) 3P connector.
65. Turn the ignition switch ON (II).

Fuel and Emissions Systems

System Descriptions (cont'd)

C104



①	YEL/BLK	8		15	BLU/WHT*
②	YEL/BLK	9		16	BLU/WHT*
③	YEL/BLK	10		17	BLU/WHT*
④	YEL/BLK	11		18	WHT*
⑤	GRN	12		19	WHT*
⑥	GRN	13	WHT/GRN	20	WHT*
⑦	GRN	14	WHT/GRN		

* : A/T

C145

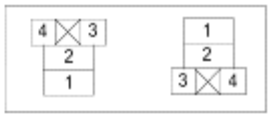


①	BLU/BLK*1	8	WHT/BLU	15	
②	RED/BLK*1	9	RED/WHT	16	BLK/WHT
③	BLU/WHT*1	10		17	BLK/YEL
4	GRN/WHT*2	11	WHT*1	18	YEL/RED
5	YEL*2	12		19	YEL/BLK
⑥	WHT/GRN	13		20	BLK/WHT
7	GRN	14			

*1 : A/T

*2 : M/T

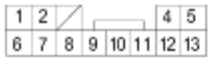
C207



①	YEL/BLK	①	YEL/BLK
②	YEL/GRN	②	WHT/BLK
③	GRN/YEL	③	RED/YEL
④	YEL/BLK	④	WHT/BLK

C208

C210

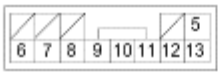


1	RED/YEL	⑦	BLU/BLK*1		
2	YEL/BLU	⑧	BLK/RED*1		
2	BLU/ORN	⑨	WHT*1		
3		10	LT GRN*2		
4	BRN/YEL	11	RED/WHT		
5	YEL/BLK	12	GRN/ORN		
⑥	YEL/GRN	13	YEL/RED		

*1 : except M/T

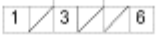
*2 : M/T

C211



1		⑧	WHT/RED
2		⑨	BLK/ORN
3		10	PNK
4		11	GRN/WHT
5	BLK/YEL	12	RED
⑥	BLK/WHT	13	WHT/BLK
⑦	BRN/YEL		

C506



①	YEL/GRN
2	
3	PNK
4	
5	
6	YEL/BLK

ECM/PCM A (31P)



①	BLK/WHT	12	BLK/RED	23	BRN/YEL
②	YEL/BLK	13	WHT/BLK	24	BRN/YEL
③	YEL/BLK	14		25	
④	BLK	15	RED/BLK	26	GRN
⑤	BLK	16		27	BRN
⑥	WHT	17		28	WHT/BLU
⑦	BLU	18	WHT/GRN	29	BLU/RED
⑧	YEL	19	GRN/RED	30	YEL/GRN
⑨	RED/BLU	20	YEL/BLU	31	
⑩	GRN/YEL	21	YEL/RED*		
⑪	GRN/WHT	22			

* : A/T

ECM/PCM B (24P)



1		⑨	RED/BLK*2	17	RED/YEL
②	YEL	10	WHT/BLU	18	
③	BLU	11		19	
④	RED	12		20	
⑤	BRN	13	WHT/RED	21	YEL/BLU
⑥	GRN	14	BLU/RED	22	
⑦	RED/BLK*1	15	GRN/YEL*2	23	
⑧	RED/WHT	16	BLK/RED*1	24	

*1 : A/T

*2 : D16W7,engine

PCM C (22P)



①	WHT/BLK*	⑨	RED	17	
②	YEL/BLU*	10	WHT	18	
3		11	BLU	19	BRN
④	GRN/WHT*	12	BLU/WHT	20	YEL
5		13		21	WHT/GRN*
⑥	BLU/BLK*	14	GRN*	22	
⑦	WHT/RED*	15	BLU*		
⑧	BRN/WHT*	16			

* : A/T

ECM/PCM E (31P)



①	GRN/YEL	12		23	LT BLU
②	WHT/RED	13		24	YEL
③	BRN/YEL	14		25	
④	PNK	15		26	BLU
5		16	LT GRN/WHT	27	RED/BLU
⑥	BLK/WHT	17		28	
⑦	RED/YEL	18	RED	29	BRN
8		19		30	
⑨	YEL/BLK	20		31	GRN/ORN
10		21			
11		22	WHT/BLK		

NOTE: 1 Connector with male terminals (double outline) : View from terminal side

1 Connector with female terminals (single outline) : View from wire side

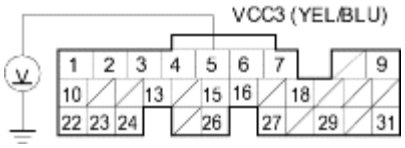
1 ○ : Related to ECM/PCM control.

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

1. 66. Measure voltage between body ground and ECM/PCM connector terminal E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

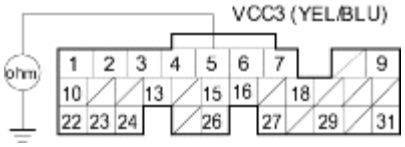
Is there about 5 V?

YES - Replace the IMA. ■

NO - Go to step 67.

67. Turn the ignition switch OFF.
68. Disconnect ECM/PCM connector E (31P).
69. Check for continuity between ECM/PCM connector terminal E5 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between ECM/PCM (E5) and the IMA. ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

1. 70. Turn the ignition switch OFF.
71. Jump the SCS line (see step 2 on page 11-467).
72. Turn the ignition switch ON (II), and read the MIL.

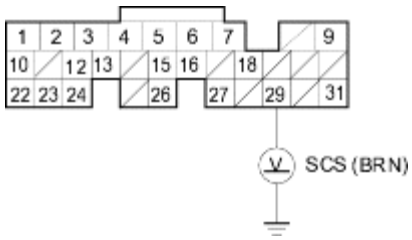
Are any DTCs indicated?

YES - Go to the DTC Troubleshooting Index. ■

NO - Go to step 73.

73. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES - Repair open in the wire between the DLC and the ECM/PCM (E3, E29). After repairing it, check the DTC and go to the DTC Troubleshooting Index. ■

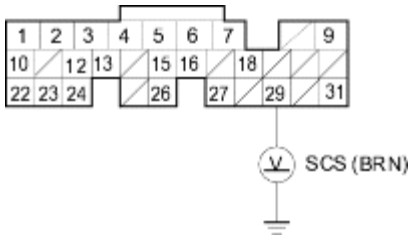
NO - Go to step 74.

74. Turn the ignition switch OFF.
75. Disconnect the DLC Terminal Box.
76. Turn the ignition switch ON (II).

PGM-FI System
MIL Circuit Troubleshooting (cont'd)

1. 77. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

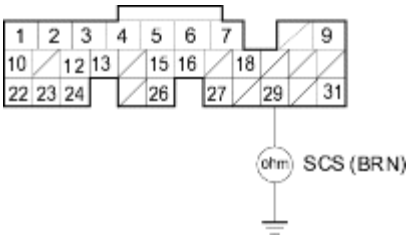
YES - Go to step 81.

NO - Go to step 78.

78. Turn the ignition switch OFF.
79. Disconnect the ECM/PCM connector E (31P).

1. 80. Check for continuity between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the DLC and the ECM/PCM (E29). ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

81. Turn the ignition switch OFF.
82. Disconnect ECM/PCM connector E (31P).
83. Turn the ignition switch ON (II).

Is the MIL on?

YES - Repair short in the wire between the gauge assembly and the ECM/PCM (E31). If the wires are OK, replace the gauge assembly. ■

NO - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
Injector Test

NOTE: Check the following items before testing: idle speed, ignition timing and idle CO%.

1. 1. Try to start the engine.

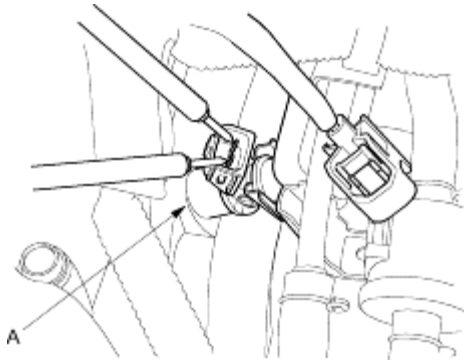
Does the engine start?

YES - Go to step 2.

NO - Go to step 6.

2. 2. Turn the ignition switch OFF. Remove the air cleaner (see page 11-446).
   3. Disconnect each injector connector individually.
   4. Install the air cleaner, and inspect the change in the idle speed.
      - If the idle speed drop is almost the same for each cylinder, the fuel injectors are normal.
      - If the idle speed or quality remains the same when you disconnect a particular injector, replace the injector and retest (see page 11-413).
3. 5. Check the clicking sound of each injector by means of a stethoscope when the engine is idling.
      - If any fuel injector fails to make the typical clicking sound, check the sound again after replacing the injector (see page 11-413).
      - If clicking sound is still absent, check the following.
   – – Whether there is wire breakage or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
   – Whether the junction connector is open or corroded.
   – Whether there is wire breakage or poor connection in the YEL/BLK wire between the junction connector and the injector.
   – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the injector and the ECM/PCM.
      - If all is OK, the test is complete.

1. 6. Turn the ignition switch OFF.
   7. Remove the air cleaner (see page 11-446).
   8. Remove the injector connector.
   9. Measure the resistance between injector (A) terminals No. 1 and No. 2.



Is there 10-13 ohms?

YES - Go to step 10.

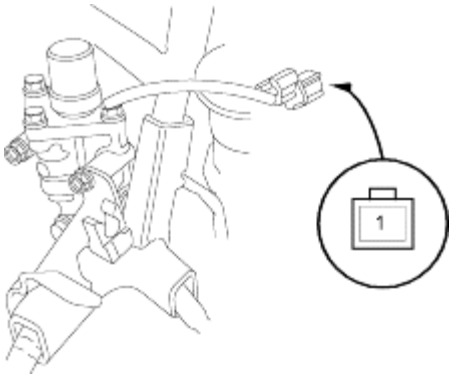
NO - Replace the injector (see page 11-413). ■

10. Check the fuel pressure (see page 11-431).
      - If the fuel pressure is as specified, check the following:
   – – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
   – Whether the junction connector is open or corroded.
   – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the junction connector and the injector.
   – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the injector and the ECM/PCM.
      - If the fuel pressure is not as specified, recheck the fuel pressure (see page 11-431).

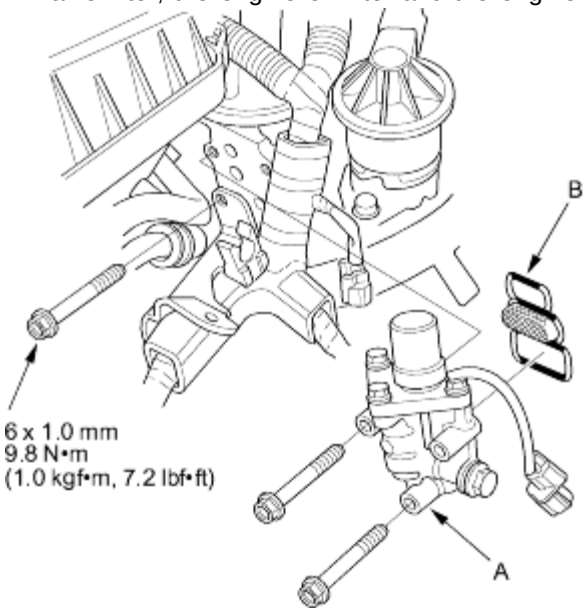
PGM-FI System

VTEC Solenoid Valve Test

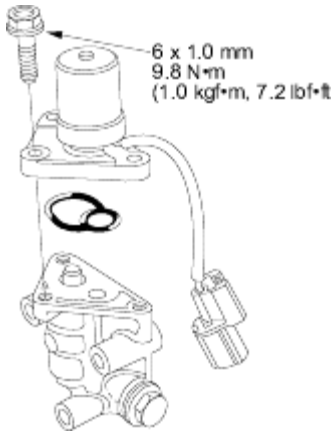
1. 1. Remove the resonator (see page 11-448).
2. 2. Disconnect the VTEC solenoid valve connector.
   3. Measure resistance between the VTEC solenoid valve connector terminal No. 1 and body ground.
      Resistance: 14-30 ohms



3. 4. If the resistance is within specifications, remove the VTEC solenoid valve assembly (A) from the cylinder head, and check the VTEC solenoid valve filter (B) for clogging. If there is clogging, replace the solenoid valve filter, the engine oil filter and the engine oil.



1. 5. If the filter is not clogged, push the VTEC solenoid valve with your finger and check its movement. If the VTEC solenoid valve is normal, check the engine oil pressure.



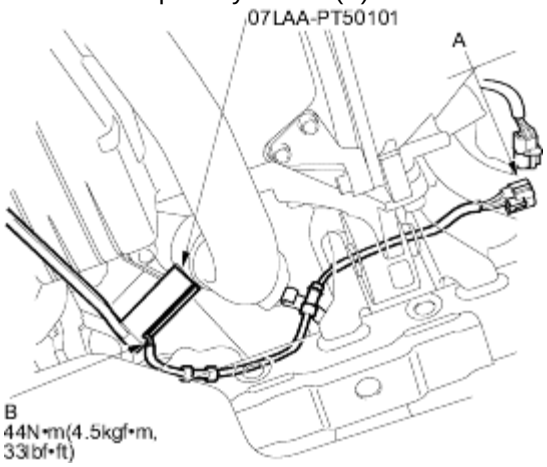
PGM-FI System

Primary HO2S Replacement

Special Tools Required

O2 sensor wrench 07LAA-PT50101

1. 1. Disconnect the primary HO2S 4P connector (A), then remove the primary HO2S (B).

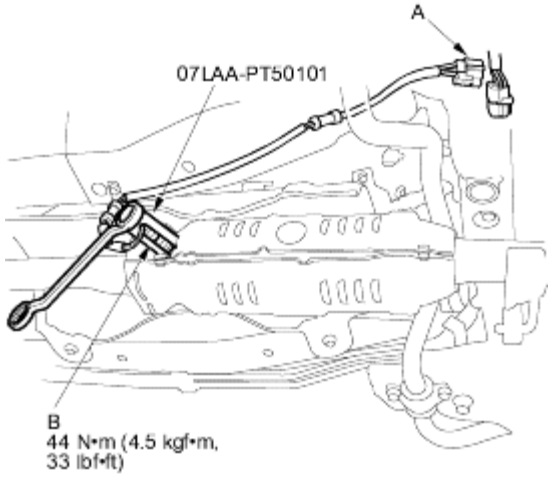


2. 2. Install the primary HO2S in the reverse order of removal.

Special Tools Required

O2 sensor wrench 07LAA-PT50101

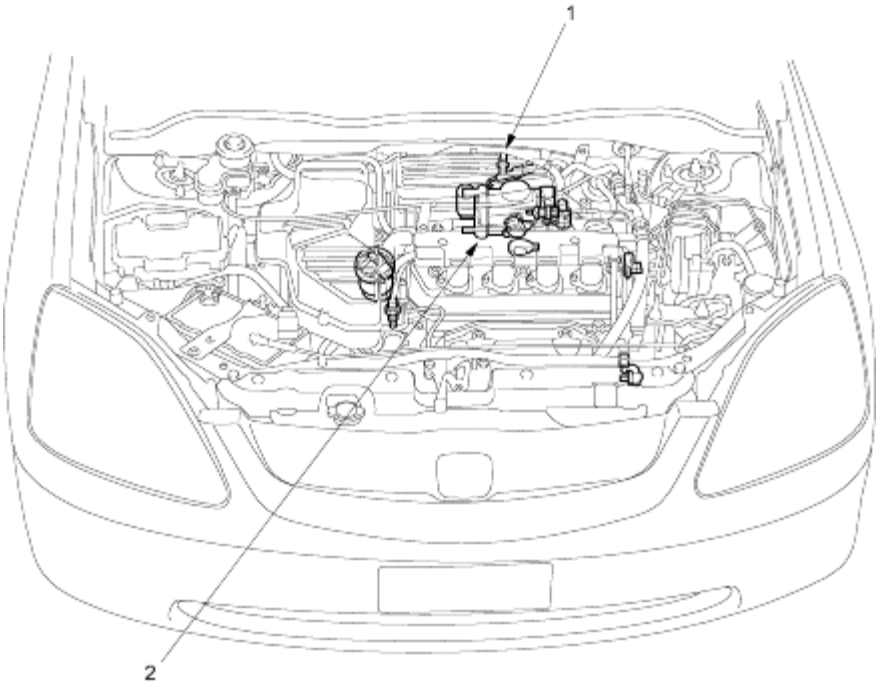
1. 1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



2. 2. Install the secondary HO2S in the reverse order of removal.

Idle Control System

Component Location Index



1. POWER STEERING PRESSURE (PSP) SWITCH
   Troubleshooting, page 11-558
2. IDLE AIR CONTROL (IAC) VALVE
   Troubleshooting, page 11-556

Idle Control System
DTC Troubleshooting

DTC 14: IAC Valve Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Turn the ignition switch ON (II).

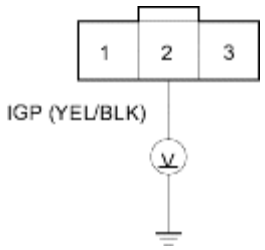
Is the MIL on and does it indicate DTC 14?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAC valve and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAC valve 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the IAC valve 3P connector terminal No. 2 and body ground.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

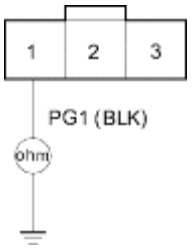
YES - Go to step 7.

NO - Repair open in the wire between the IAC valve and the PGM-FI main relay. ■

3. 7. Turn the ignition switch OFF.

1. 8. Check for continuity between body ground and the IAC valve 3P connector terminal No. 1.

IAC VALVE 3P CONNECTOR



Wire side female terminals

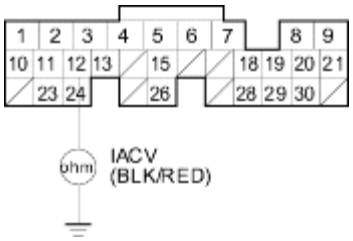
Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the IAC valve and G101. ■

2. 9. Disconnect ECM/PCM connector A (31P).
   10. Check for continuity between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

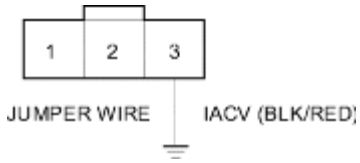
YES - Repair short in the wire between the IAC valve and the ECM/PCM (A12). ■

NO - Go to step 11.

Idle Control System
DTC Troubleshooting (cont'd)

1. 11. Connect the IAC valve 3P connector terminal No. 3 and body ground with a jumper wire.

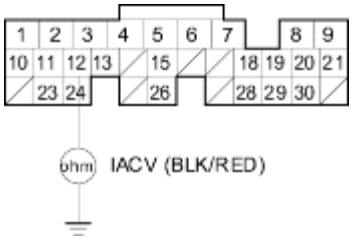
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A12 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

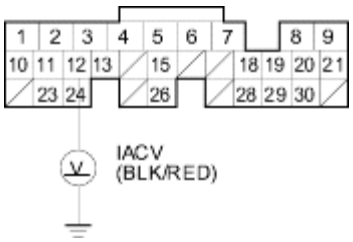
Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the IAC valve and the ECM/PCM (A12). ■

1. 13. Remove the jumper wire from the IAC valve 3P connector, then reconnect the IAC valve 3P connector.
14. Turn the ignition switch ON (II).
15. Measure voltage between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM. ■

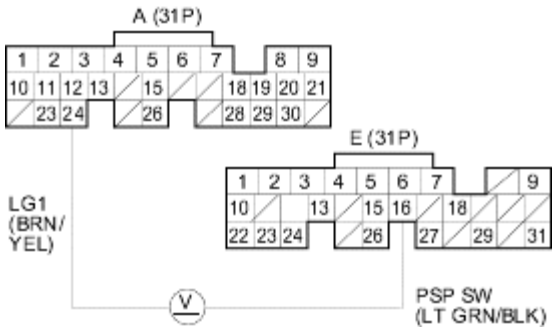
NO - Replace the IAC valve. ■

Idle Control System

PSP Switch Signal Circuit Troubleshooting

1. 1. Turn the ignition switch ON (II).
2. 2. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there less than 1.0 V?

YES - Go to step 3.

NO - Go to step 6.

3. 3. Start the engine.
   4. Turn the steering wheel to the full lock position.
   5. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there battery voltage?

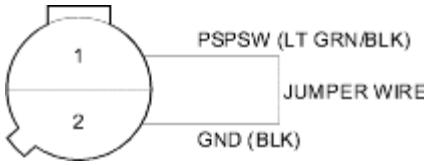
YES - The PSP switch signal is OK. ■

NO - Go to step 11.

4. 6. Turn the ignition switch OFF.
   7. Disconnect the PSP switch 2P connector.
   8. Turn the ignition switch ON (II).

1. 9. At the harness side, connect the PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

10. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there less than 1.0 V?

YES - Replace the PSP switch. ■

NO - Check for these problems: ■

- An open in the wire between the ECM/PCM (E16) and the PSP switch.
- An open in wire between the PSP switch and G201.

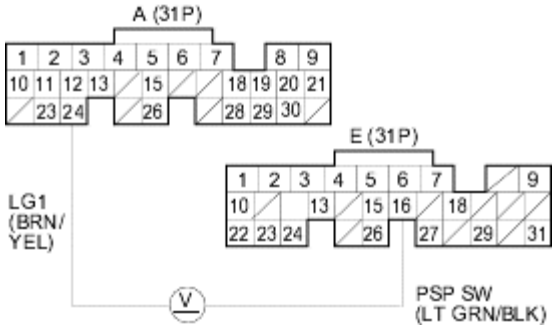
11. Turn the ignition switch OFF.
12. Disconnect the PSP switch 2P connector.
13. Turn the ignition switch ON (II).

Idle Control System

PSP Switch Signal Circuit Troubleshooting (cont'd)

1. 14. Measure voltage between ECM/PCM connector terminals A24 and E16.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

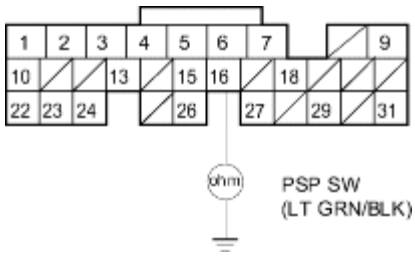
Is there battery voltage?

YES - Replace the PSP switch. ■

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect ECM/PCM connector E (31P).
17. Check for continuity between body ground and ECM/PCM connector terminal E16.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

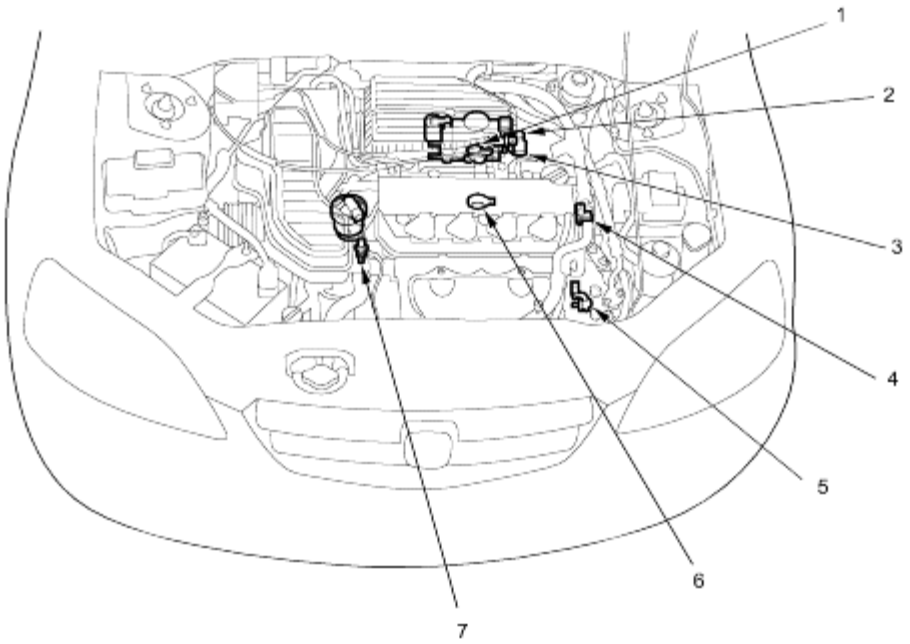
Is there continuity?

YES - Repair short in the wire between ECM/PCM (E16) and the PSP switch.

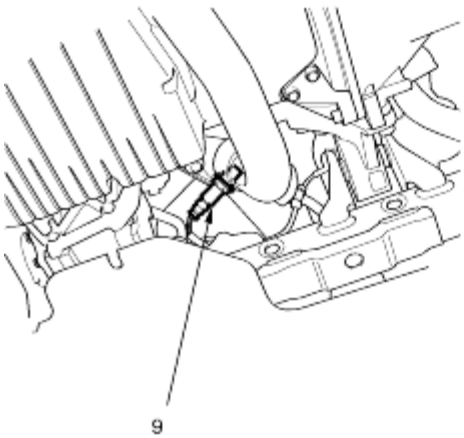
NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

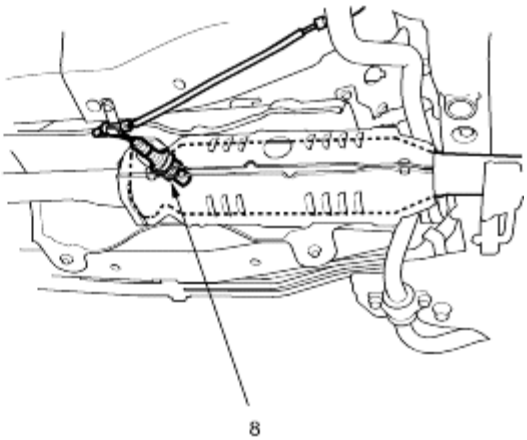
PGM-FI System

Component Location Index



1. THROTTLE POSITION (TP) SENSOR
   Troubleshooting, page 11-65
2. INTAKE AIR TEMPERATURE (IAT) SENSOR
   Troubleshooting, page 11-61
3. MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
   Troubleshooting, page 11-59
4. TOP DEAD CENTRE (TDC) SENSOR
   Troubleshooting, page 11-98
5. CRANKSHAFT POSITION (CKP) SENSOR
   Troubleshooting, page 11-88
6. KNOCK SENSOR
   Troubleshooting, page 11-85
7. ENGINE COOLANT TEMPERATURE (ECT) SENSOR
   Troubleshooting, page 11-63
8. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S) (SENSOR 1)
   Troubleshooting, page 11-68
   Replacement, page 11-115
9. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
   Troubleshooting, page 11-73
   Replacement, page 11-115

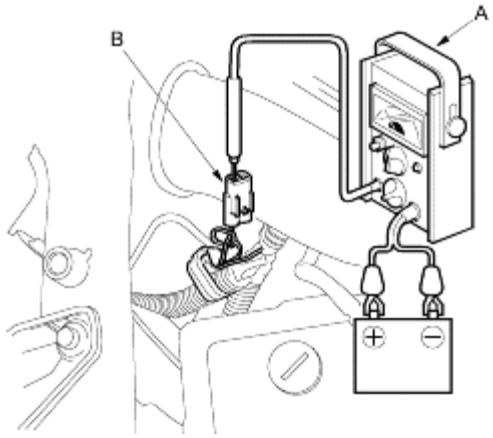




Idle Control System
Idle Speed Inspection

NOTE:
- Leave the Idle Air Control (IAC) valve connected.
- Before checking the idle speed, check these items:
  - The Malfunction Indicator Lamp (MIL) has not been reported on.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system

2. 1. Disconnect the Evaporative Emission (EVAP) canister purge valve 2P connector (with TWC model).
   2. Connect a tachometer (A) to the test tachometer connector (B).



3. 3. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   4. Check the idle speed with no-load conditions: headlights, blower fan, rear defogger, radiator fan, and air conditioner are not operating.

Idle speed should be:

with TWC model	
M/T	720±50 rpm (min-1)
A/T	720±50 rpm (min-1) (in Park or neutral)
without TWC model	
M/T	750±50 rpm (min-1)
A/T	750±50 rpm (min-1) (in Park or neutral)

1. 5. Idle the engine for 1 minute with heater fan switch on HI and air conditioner on, then check the idle speed.

Idle speed should be:

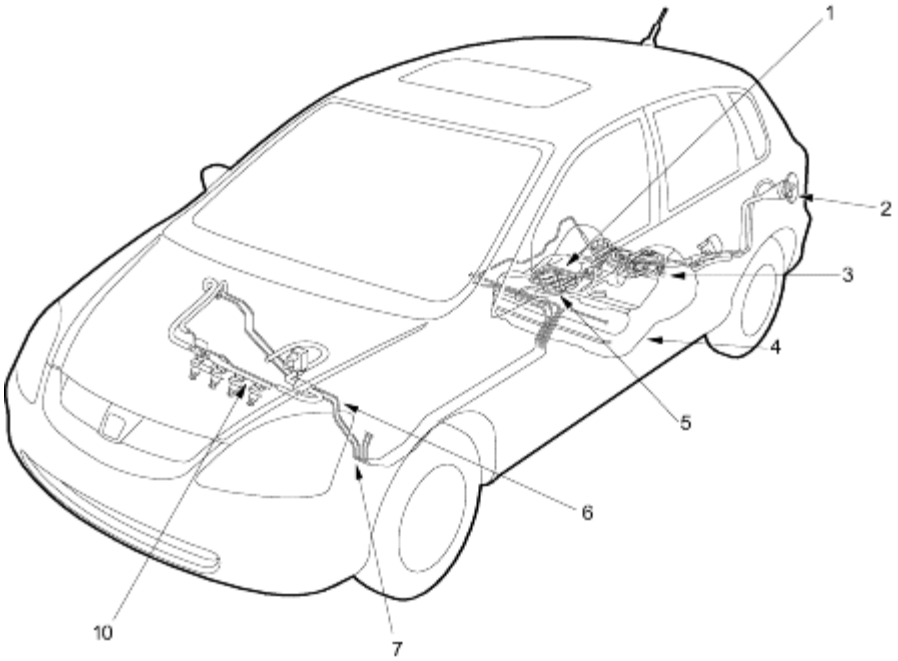
TWC model	
M/T	720±50 rpm (min-1)
A/T	720±50 rpm (min-1) (in Park or neutral)
without TWC model	
M/T	750±50 rpm (min-1)
A/T	750±50 rpm (min-1) (in Park or neutral)

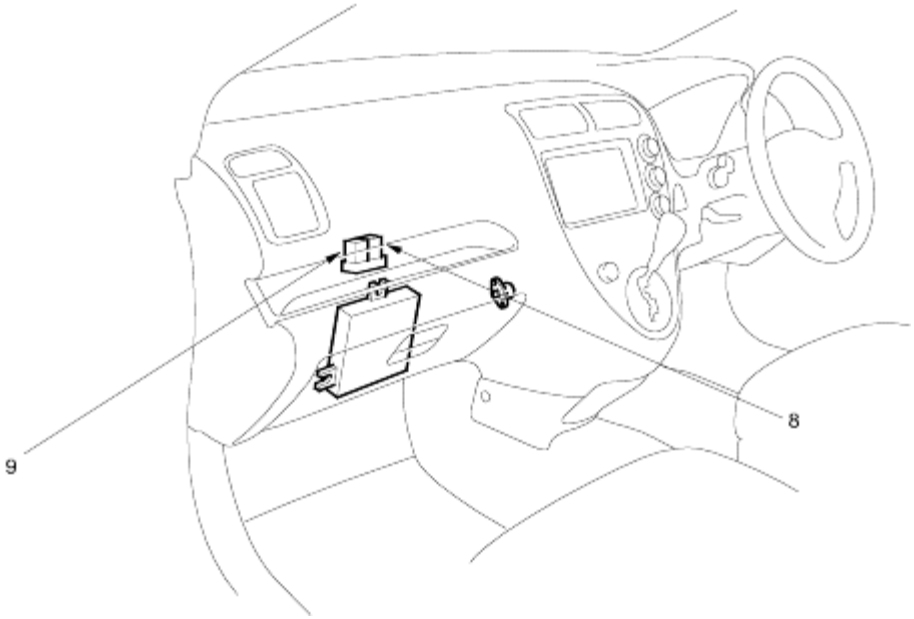
NOTE: If the idle speed is not within specification, see Symptom Chart.

2. 6. Reconnect the EVAP canister purge valve 2P connector (with TWC model).

Fuel Supply System

Component Location Index





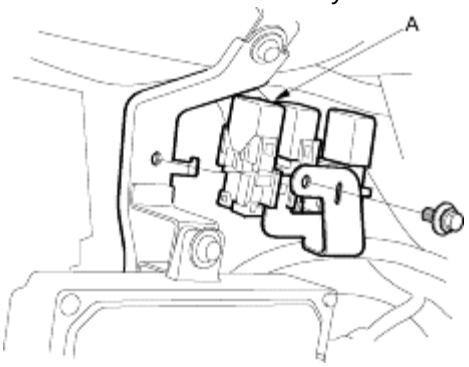
1. FUEL PUMP
   Troubleshooting, page 11-562
   Replacement, page 11-439
   FUEL GAUGE SENDING UNIT
   Test, page 11-441
   FUEL PRESSURE REGULATOR
   Replacement, page 11-438
2. FUEL FILL CAP
3. FUEL FILTER
   Replacement, page 11-571
4. FUEL TANK
   Replacement, page 11-572
5. FUEL TUBE/QUICK-CONNECT FITTINGS
   Precautions, page 11-567
   Removal, page 11-568
   Installation, page 11-569
6. FUEL VAPOUR PIPE
7. FUEL FEED PIPE
8. PGM-FI MAIN RELAY 1
9. PGM-FI MAIN RELAY 2
   Troubleshooting, page 11-562
10. FUEL RAIL

Fuel Supply System
Fuel Pump Circuit Troubleshooting

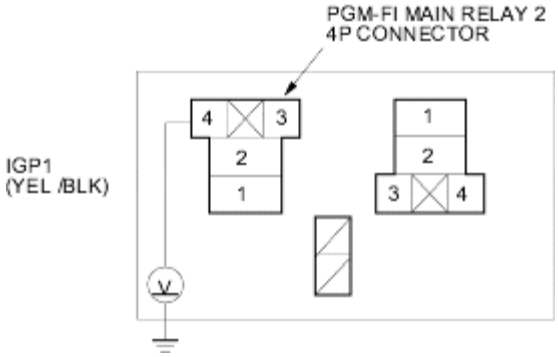
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

NOTE: Information marked with an asterisk (*) applies to with TWC model.

1. 1. Turn the ignition switch OFF.
   2. Remove the glove box (see page 20-220), then remove the PGM-FI main relay 2.



2. 3. Turn the ignition switch ON (II).
   4. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 4 and body ground.



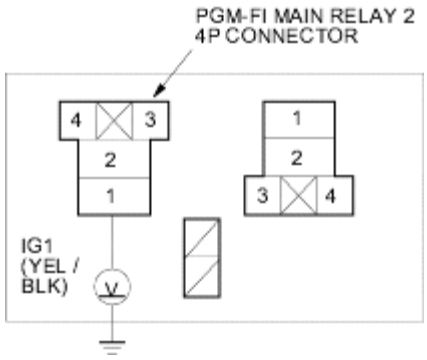
Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the PGM-FI main relay 1 and the PGM-FI main relay 2. ■

1. 5. Measure voltage between the PGM-FI main relay 2 4P connector terminal No. 1 and body ground.



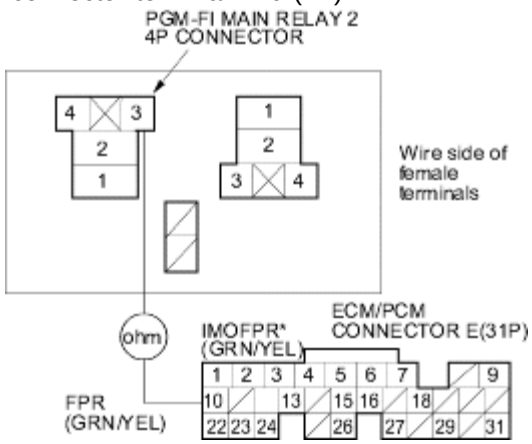
Wire side of female terminals

Is there battery voltage?

YES - Go to step 6.

NO - Repair open in the wire between the under dash fuse/relay box and PGM-FI main relay 2. ■

2. 6. Turn the ignition switch OFF.
   7. Disconnect ECM/PCM connector E (31P).
   8. Check for continuity between the PGM-FI main relay 2 4P connector terminal No. 3 and ECM/PCM connector terminal E10 (E1)*.



Wire side of female terminals

Is there continuity?

YES - Go to step 9.

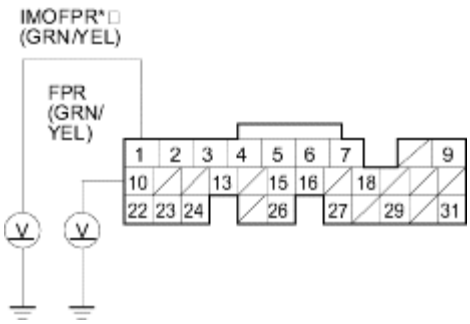
NO - Repair open in the wire between the PGM-FI main relay 2 and the ECM/PCM (E10, E1*). ■

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

1. 9. Reinstall the PGM-FI main relay 2.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal E10 (E1*) and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

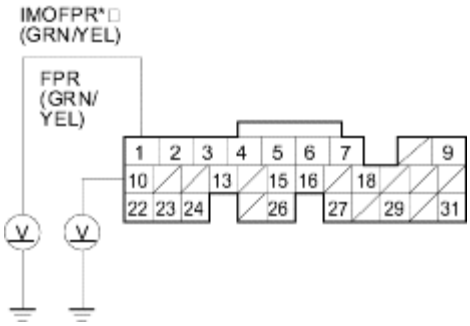
Is there battery voltage?

YES - Go to step 12.

NO - Replace the PGM-FI main relay 2. ■

12. Turn the ignition switch OFF.
13. Reconnect ECM/PCM connector E (31P).
14. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E10 (E1*) and body ground within the first 2 seconds after the ignition switch was turned ON (II).

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

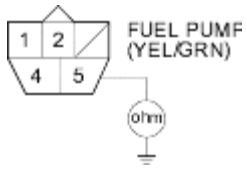
Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 15.

1. 15. Turn the ignition switch OFF.
16. Remove the rear seat cushion (see page 20-237).
17. Remove the access panel from the floor.
18. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

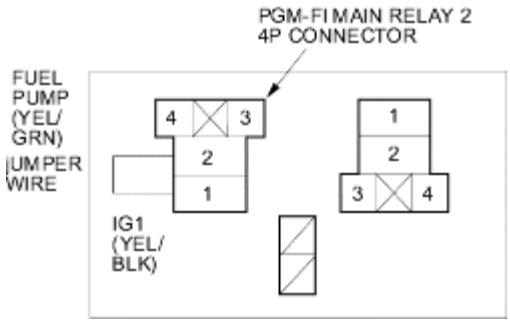
YES - Go to step 24.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the PGM-FI main relay 2.

Fuel Supply System
Fuel Pump Circuit Troubleshooting (cont'd)

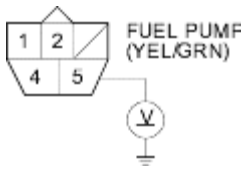
1. 21. Connect the PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

22. Turn the ignition switch ON (II).
23. Measure voltage between the fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

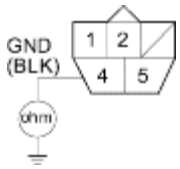
YES - Replace the PGM-FI main relay 2. ■

NO - Repair open in the wire between the PGM-FI main relay 2 and the fuel pump 5P connector. ■

24. Turn the ignition switch OFF.

1. 25. Check for continuity between the fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

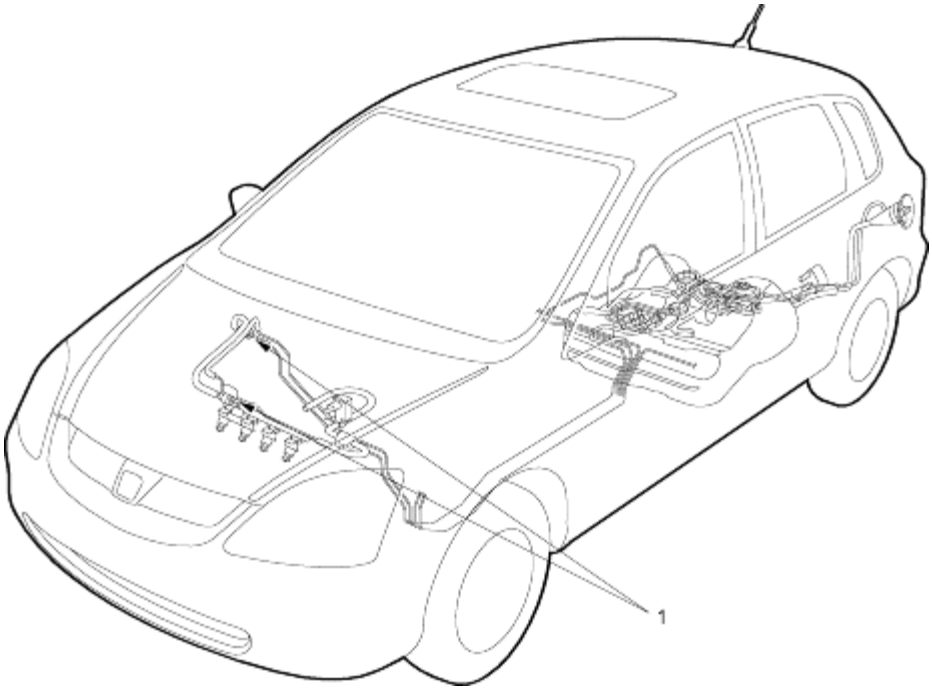
Is there continuity?

YES - Replace the fuel pump. ■

NO - Repair open in the wire between the fuel pump 5P connector and G551. ■

Fuel Supply System
Fuel Lines Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.

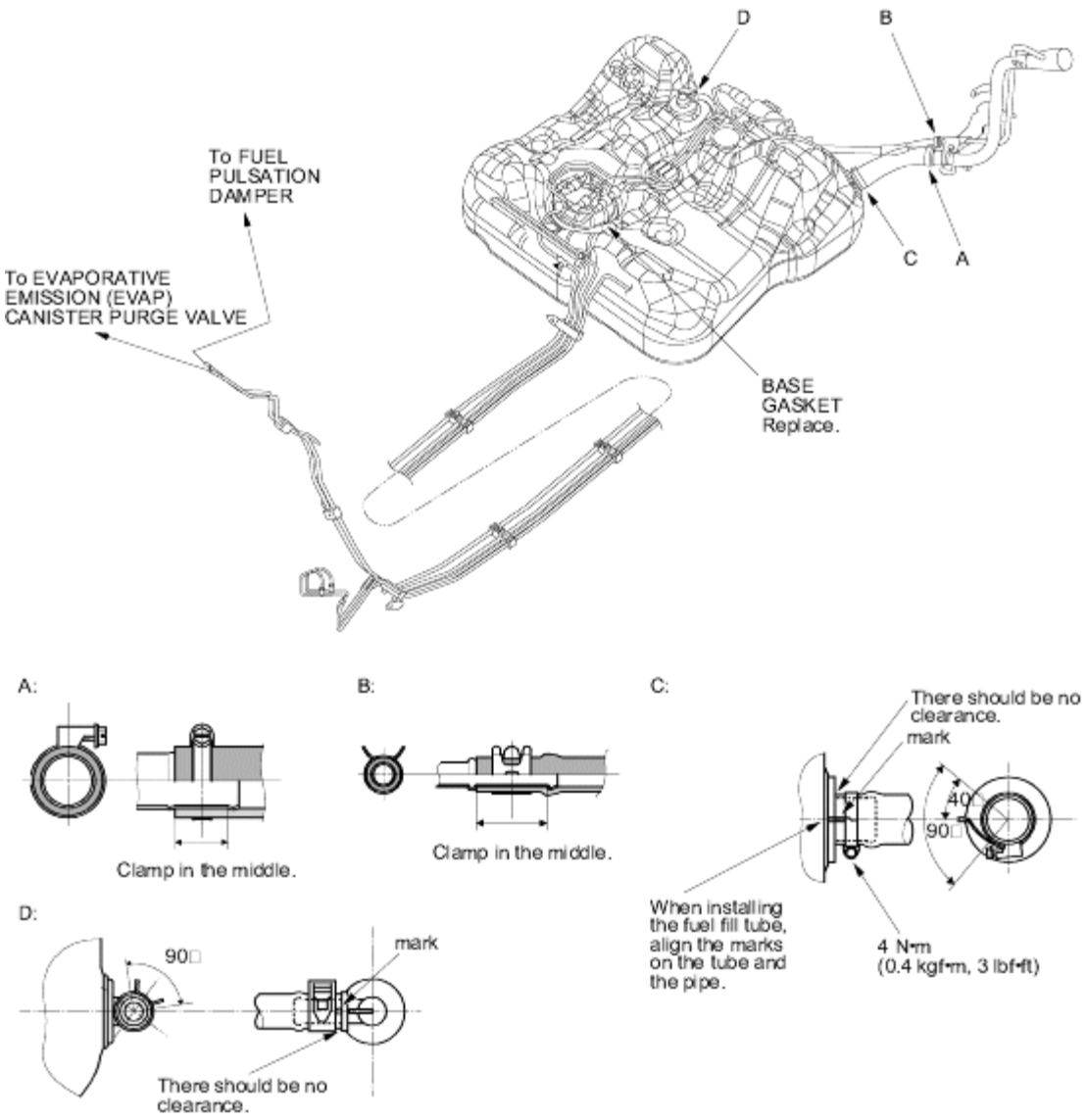


1. Make sure the connection is secure and the quick-connect fitting cover is firmly locked into place.

Fuel Supply System
Fuel Lines Inspection (cont'd)

Check all clamps and retighten if necessary.

▲ :Do not disconnect the hose from the pipe at these joints.



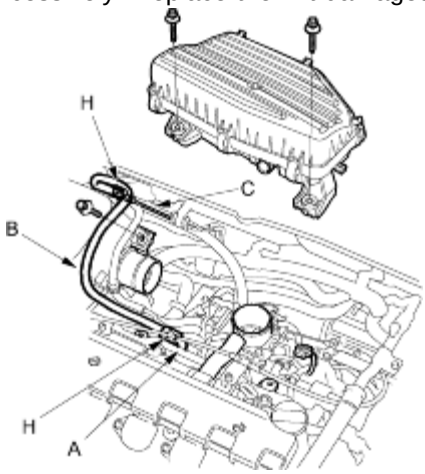
Fuel Supply System

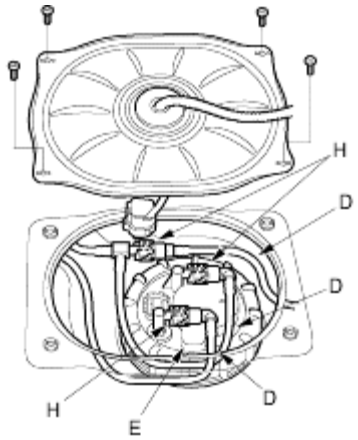
Fuel Tube/Quick-Connect Fittings Precaution

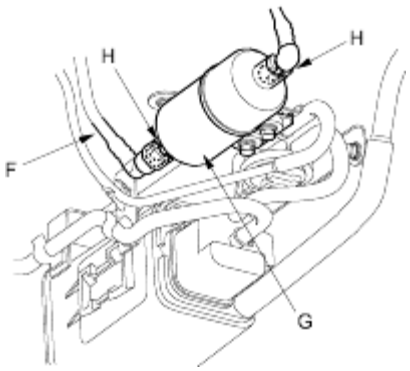
The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel pipe (C), and the fuel tube (D) to the fuel tank unit (E), and fuel tube (F) to the fuel filter (G). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (H) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (H) are not acid-proof; do not touch them with a shop towel which was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel tube (D) and quick-connect fittings (H), be careful not to bend or twist them excessively. Replace them it damaged.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating pipe cannot be reused once it has been removed from the pipe. Replace the retainer when

- replacing the fuel rail.
- replacing the fuel pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.

PART	MANUFACTURER	RETAINER COLOUR
ENGINE COMPARTMENT	TOKAI	GREEN
FUEL TANK UNIT FUEL FILTER	SANOH	WHITE
FUEL FILTER (FLOW SIDE)	MOD SIGNAL	NATURAL

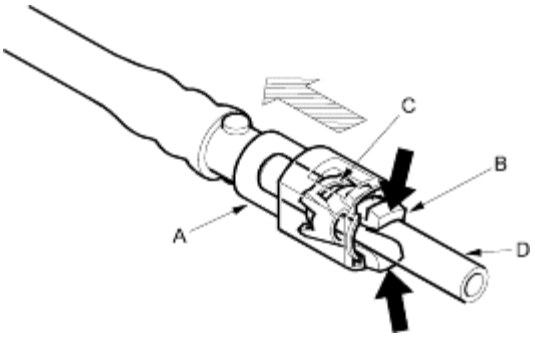
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Removal

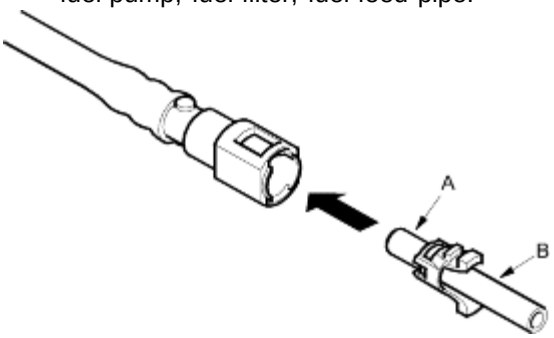
1. 1. Relieve fuel pressure (see page 11-430).
2. 2. Check the fuel quick-connect fittings for dirt, and clean if necessary.
   3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (C). Pull the connector off.

NOTE:

- Be careful not to damage the pipe (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.



1. 4. Check the contact area (A) of the pipe (B) for dirt and damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, fuel feed pipe.



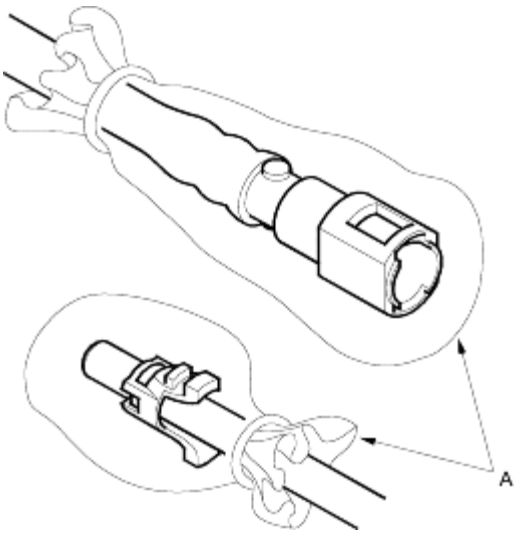
2. 5. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with plastic bags (A).

NOTE:

- The retainer cannot be reused once it has been removed from the pipe.

Replace the retainer when

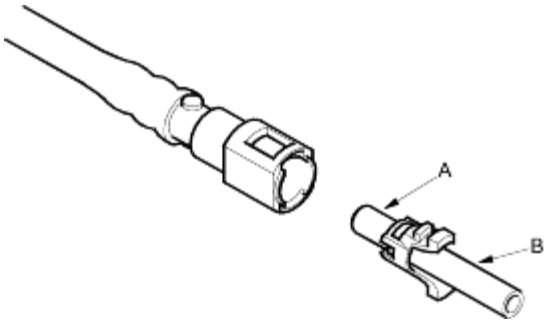
- replacing the fuel rail.
- replacing the fuel feed pipe.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the pipe.
- it is damaged.



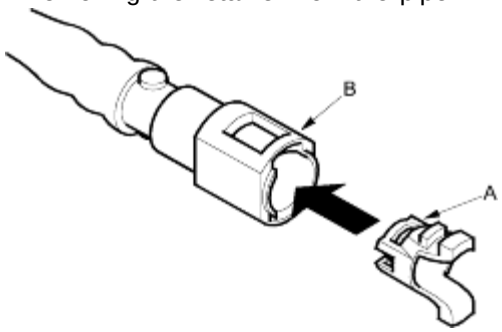
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation

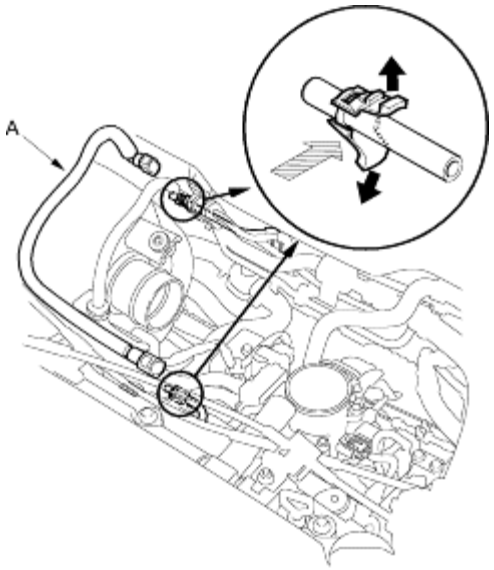
1. 1. Check the contact area (A) of the pipe (B) for dirt and damage, and clean if necessary.

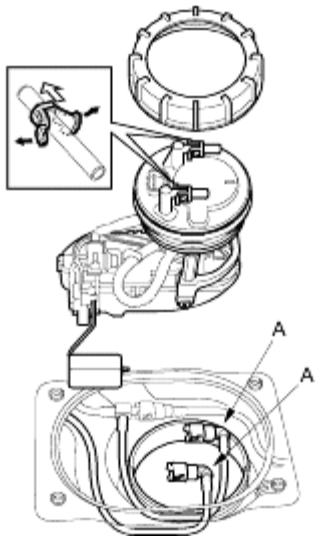


2. 2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed pipe.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the pipe.



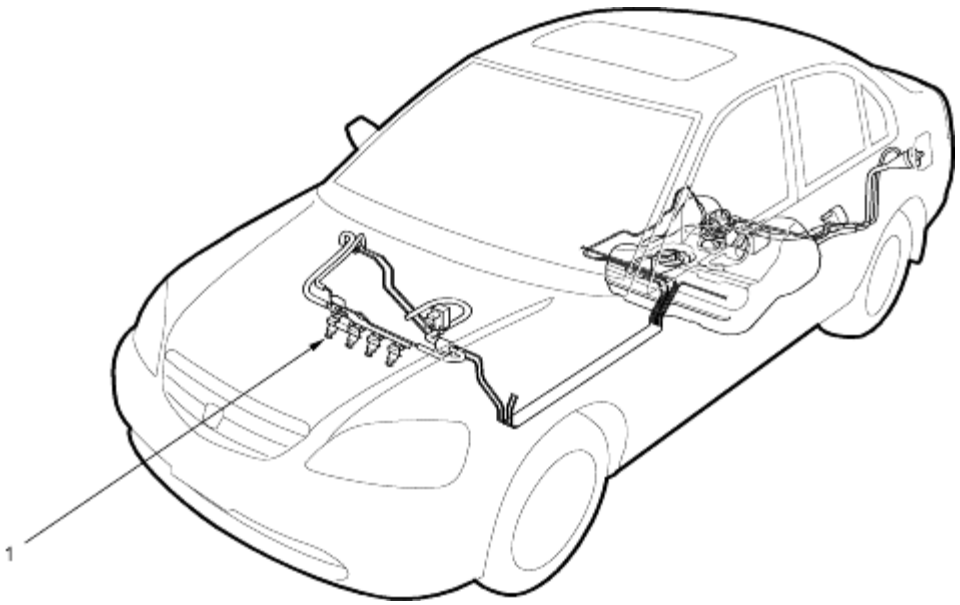
1. 3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating pipe.





PGM-FI System

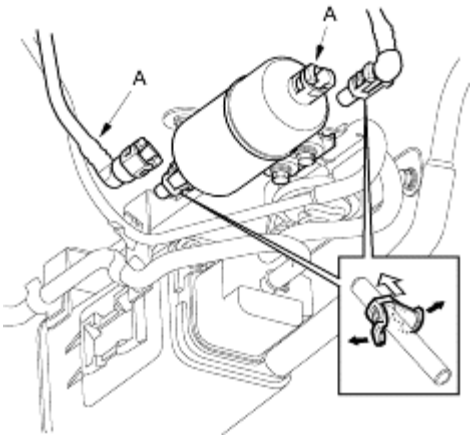
Component Location Index (cont'd)



1. INJECTORS
   Replacement, page 11-113

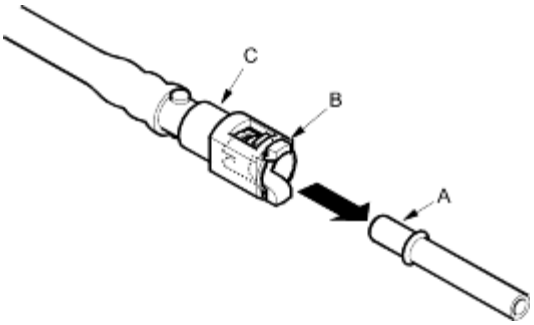
Fuel Supply System

Fuel Tube/Quick-Connect Fittings Installation (cont'd)

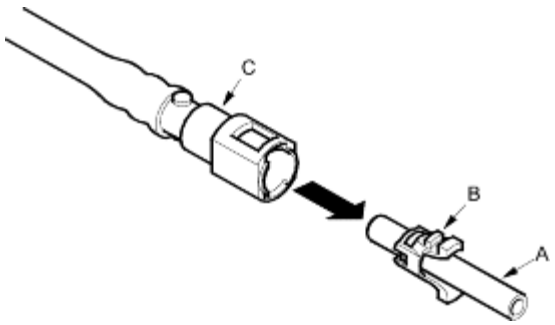


1. 4. Align the quick-connect fittings with the pipe (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the pipe until both retainer pawls lock with a clicking sound.
   NOTE: If it is hard to connect, put a small amount of new engine oil on the pipe end.

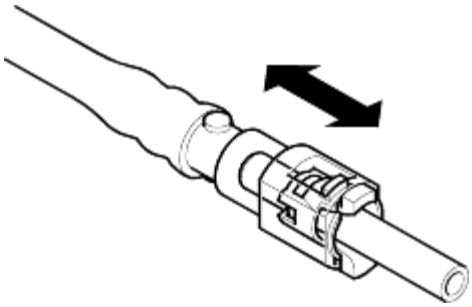
Connection with new retainer:



Reconnection to existing retainer:



1. 5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.



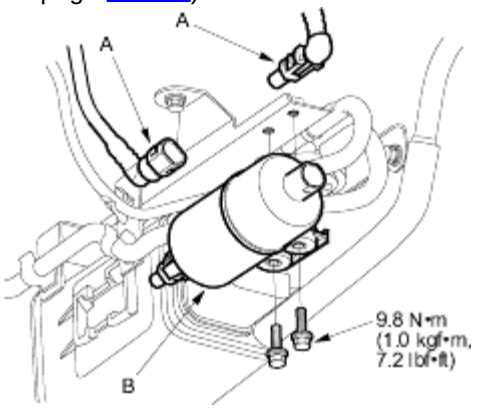
2. 6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (270-320 kPa, 2.8-3.3 kgf/cm2, 40-47 psi) after making sure that the fuel pump and the fuel pressure regulator are OK.

1. 1. Relieve fuel pressure (see page 11-430).
   2. Disconnect the hose and quick-connect fittings (A) (see page 11-568).

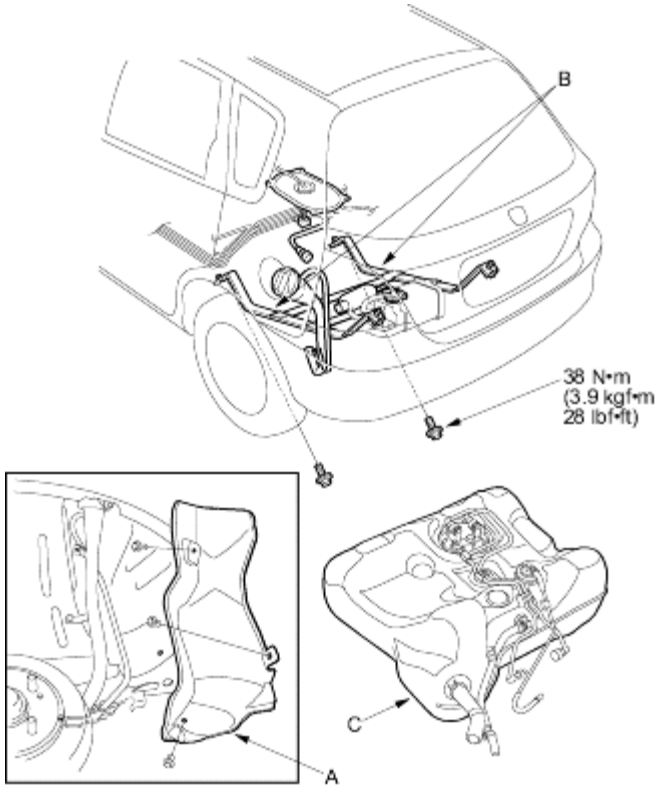


2. 3. Remove the fuel filter (B).
   4. Install the part in the reverse order of removal

Fuel Supply System

Fuel Tank Replacement

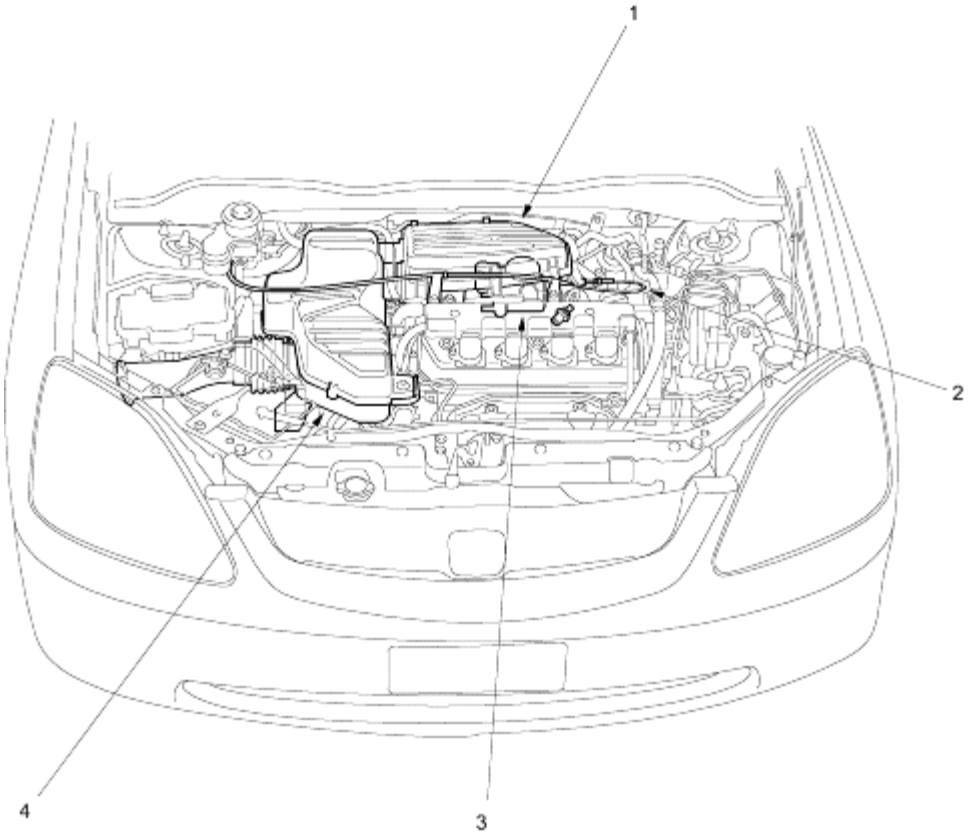
1. 1. Relieve the fuel pressure (see page 11-430).
   2. Drain the fuel tank: Remove the fuel pump (see page 11-439). Using a hand pump, hose and container suitable for gasoline, draw the fuel from the fuel tank.
   3. Jack up the vehicle, and support it with jackstands.
   4. Remove the fuel pipe cover (A). Disconnect the fuel vapour hose and quick-connect fittings.
      Disconnect the hoses. Slide back the clamps, then twist the hoses as you pull to avoid damaging them.



2. 5. Place a jack, or other support, under the tank.
   6. Remove the strap bolts, and let the strap (B) fall free.
   7. Remove the fuel tank (C). If it sticks to the undercoat on its mount, carefully pry it off the mount.
   8. Install the remaining parts in the reverse order of removal.

Intake Air System

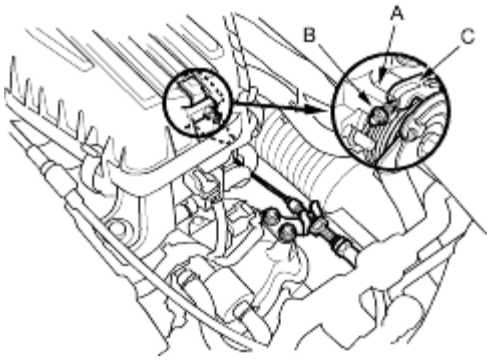
Component Location Index



1. AIR CLEANER
   Replacement, page 11-446
   AIR CLEANER ELEMENT
   Replacement, page 11-447
2. THROTTLE CABLE
   Adjustment, page 11-449
   Removal/Installation, page 11-450
3. THROTTLE BODY
   Test, page 11-574
   Removal/Installation, page 11-451
   Disassembly/Reassembly, page 11-452
4. RESONATOR
   Replacement, page 11-448

Intake Air System
Throttle Body Test

1. 1. Check the throttle cable operation. The cable should operate without binding or sticking.
   - If the cable operates OK, go to step 2.
   - If the cable binds or sticks, check the throttle cable and its routing. If it is faulty, re-route it or replace it and adjust it (see page 11-449), then go to step 2.
2. 2. Operate the throttle lever by hand to see if the throttle valve and/or shaft are too loose or too tight.
   - If there is excessive play in the throttle valve shaft or the throttle valve binds at the fully closed position, replace the throttle body.
   - If the throttle valve and shaft are OK, go to step 3.
3. 3. Check for clearance (A) between the throttle stop screw (B) and the throttle lever (C) at the fully closed position. If there is any clearance, replace the throttle body (see page 11-451). Do not adjust the throttle stop screw.



Tailpipe Emissions Test

Catalytic Converter System

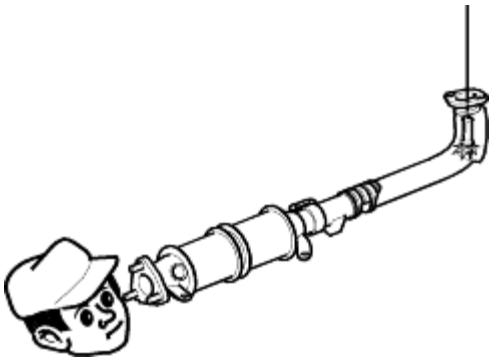
Catalytic Converter Inspection

With TWC model:

If excessive exhaust system back-pressure is suspected, remove the TWC from the vehicle.

Using a flashlight, make a visual check for plugging, melting or cracking of the catalyst.

Replace the TWC if any of the visible area is damaged or plugged.



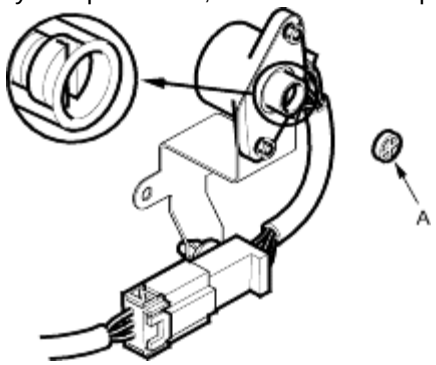
1. 1. Connect a tachometer.
2. 2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   3. Check the idle speed (see page 11-560).
   4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
   5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:

For cars with TWC model: 0.1 % maximum

For cars without TWC model: 1.0 ± 1.0 %

- If unable to obtain this reading:
  Without TWC model, adjust by turning the adjusting screw (A) of the IMA.
  With TWC model, see DTC troubleshooting index.
- If unable to obtain a CO reading of specified % by this procedure, check the tune-up condition.



EGR System
DTC Troubleshooting

DTC 12: EGR System Malfunction

1. 1. Reset the ECM/PCM (see page 11-468).
   2. Jump the SCS line (see step 2 on page 11-467).
   3. Test-drive necessary: Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle. Drive the vehicle on the road for about 10 minutes. Try to keep the engine speed in the 1,700-2,500 rpm (min-1) range.

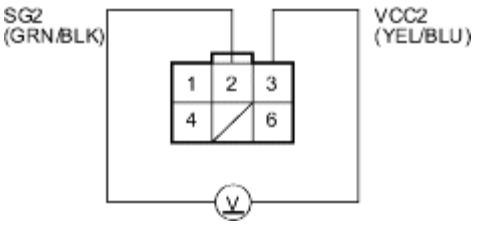
Is the MIL on and does it indicate DTC 12?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the EGR valve and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the EGR valve 6P connector.
   6. Turn the ignition switch ON (II).
   7. At the harness side, measure voltage between the EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

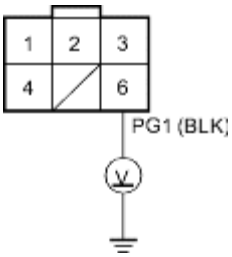
Is there about 5 V?

YES - Go to step 13.

NO - Go to step 8.

1. 8. Measure voltage between the EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

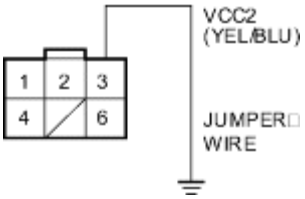
Is there about 5 V?

YES - Repair open in the wire between the EGR valve and the ECM/PCM (A10).

NO - Go to step 9.

2. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Connect the EGR valve 6P connector terminal No. 3 and body ground with a jumper wire.

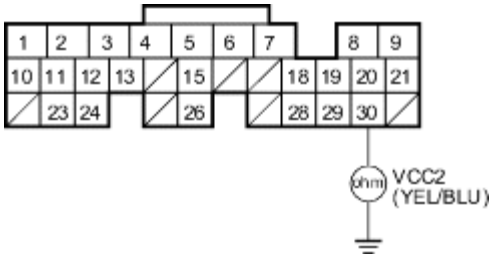
EGR VALVE 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A20). ■

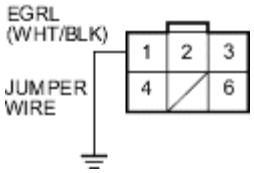
- EGR System

EGR System
DTC Troubleshooting (cont'd)

1. 13. Turn the ignition switch OFF.

14. Disconnect ECM/PCM connector A (31P).
15. Connect the EGR valve 6P connector terminal No. 1 and body ground with a jumper wire.

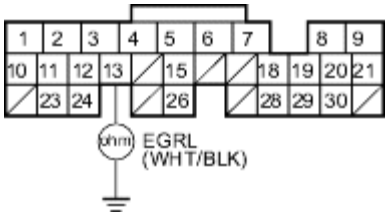
EGR VALVE 6P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminals A13 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

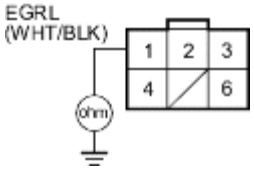
Is there continuity?

YES - Go to step 17.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (A13). ■

17. Check for continuity between the EGR valve 6P connector terminal No. 1 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

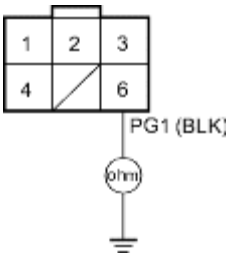
Is there continuity?

YES - Repair short in the wire between the EGR valve and the ECM/PCM (A13). ■

NO - Go to step 18.

18. Check for continuity between the EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

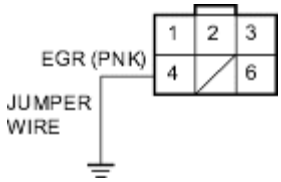
Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the EGR valve and the G101. ■

19. Disconnect ECM/PCM connector B (24P).
20. Connect EGR valve 6P connector terminal No. 4 and body ground with a jumper wire.

EGR VALVE 6P CONNECTOR

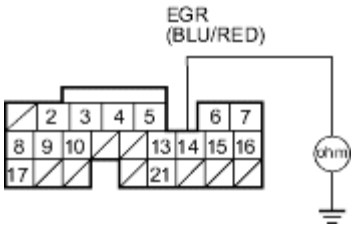


Wire side of female terminals

EGR System
DTC Troubleshooting (cont'd)

1. 21. Check for continuity between ECM/PCM connector terminal B14 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

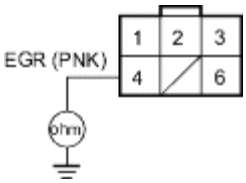
Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (B14). ■

22. Check for continuity between the EGR valve 6P connector terminal No. 4 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

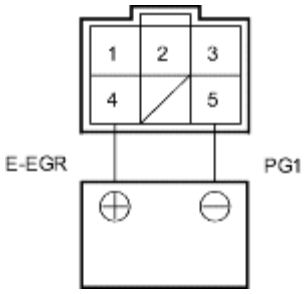
YES - Repair short in the wire between the EGR valve and the ECM/PCM (B14). ■

NO - Go to step 23.

23. Reconnect the ECM/PCM connector A (31P) and B (24P).
24. Connect the battery positive terminal to the EGR valve 6P connector terminal No. 4.

1. 25. Start the engine and let it idle, then connect the battery negative terminal to the EGR valve 6P connector terminal No. 6.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

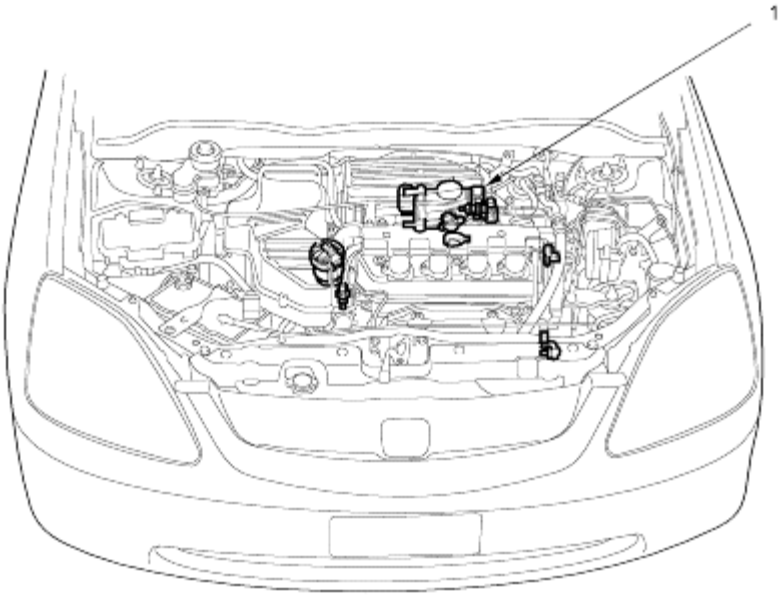
Does the engine stall or run rough?

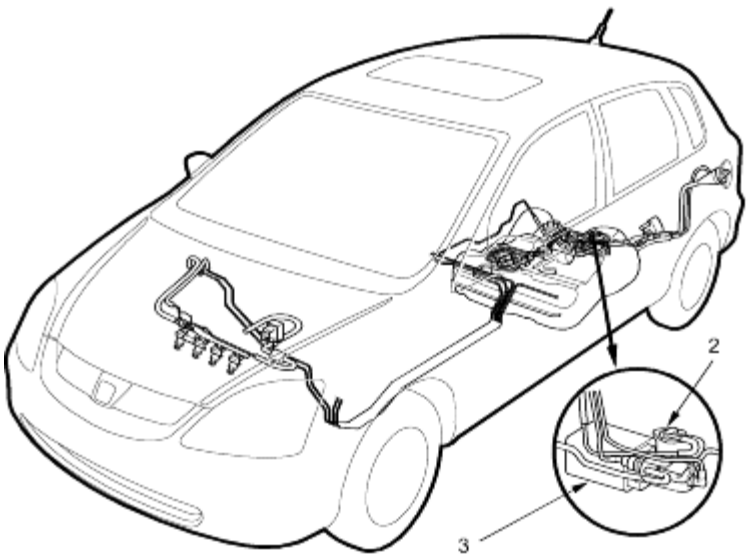
YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the EGR valve. ■

Evaporative Emission Control System

Component Location Index

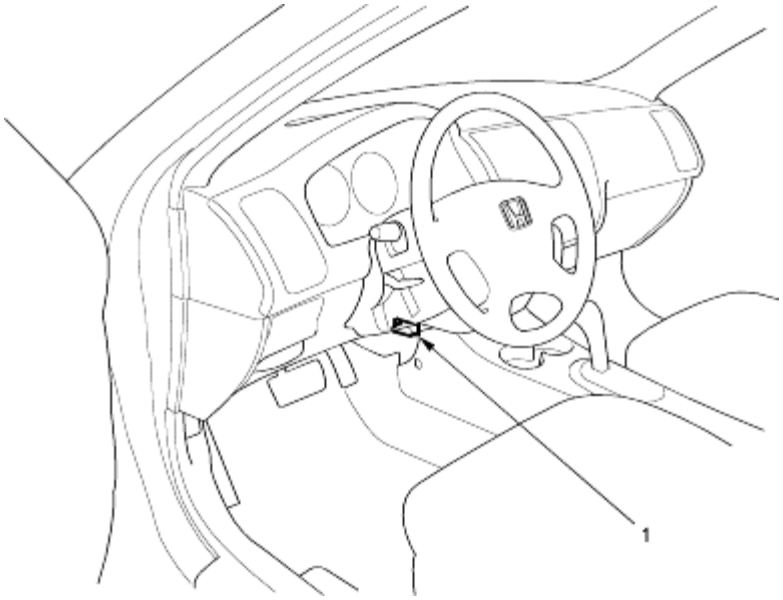




1. EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
   Troubleshooting, page 11-580
2. EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
   Test, page 11-582
3. EVAPORATIVE EMISSION (EVAP) CANISTER
   Troubleshooting, page 11-580

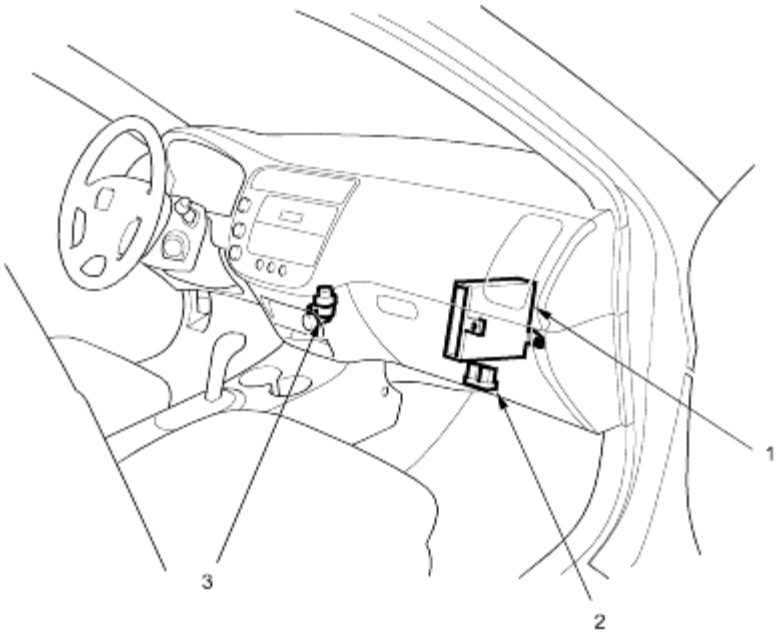
PGM-FI System

Component Location Index (cont'd)



1. DATA LINK CONNECTOR (DLC)
   General Troubleshooting Information, page 11-3

*: The illustration shows LHD model.



1. ENGINE CONTROL MODULE/POWERTRAIN CONTROL MODULE (ECM/PCM)
   General Troubleshooting Information, page 11-3
   Troubleshooting, page 11-99
2. PGM-FI MAIN RELAY 1
   Troubleshooting, page 11-100
3. INERTIA SWITCH
   Troubleshooting, page 11-100

*: The illustration shows LHD model.

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting

With TWC model

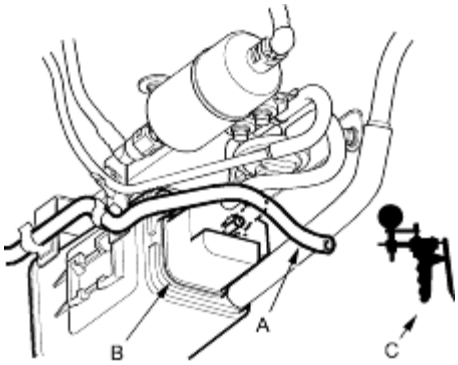
1. 1. Inspect the No. 4 ACG (10A) fuse in the under-dash fuse/relay box.

Is fuse OK?

YES - Go to step 2.

NO - Replace the fuse, and recheck. ■

2. 2. Disconnect the vacuum hose (A) from the EVAP canister (B) and connect a vacuum pump/gauge (C) to the hose.



3. 3. Start the engine and let it idle.

NOTE: Engine coolant temperature must be below 70°C (158°F).

4. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

YES - Go to step 5.

NO - Go to step 10.

4. 5. Disconnect the EVAP canister purge valve 2P connector.
6. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

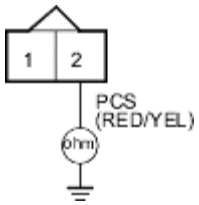
YES - Inspect vacuum hose routing. If OK, replace the EVAP canister purge valve. ■

NO - Go to step 7.

5. 7. Turn the ignition switch OFF.
8. Disconnect ECM/PCM connector B (24P).

1. 9. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

NO - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

10. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for vacuum at the vacuum hose after starting the engine.
12. Quickly raise the engine speed to 3,000 rpm (min-1).

Is there vacuum?

YES - Go to step 23.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Inspect the vacuum hose routing.

Is the vacuum hose OK?

YES - Go to step 15.

NO - Repair the vacuum hose. ■

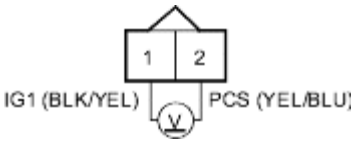
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).

Evaporative Emission Control System

Evaporative Emission (EVAP) System Troubleshooting (cont'd)

1. 17. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

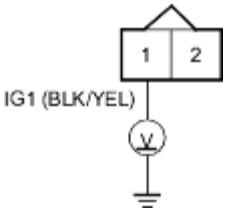
Is there any voltage?

YES - Replace the EVAP canister purge valve. ■

NO - Go to step 18.

18. At the harness side, measure voltage between the EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

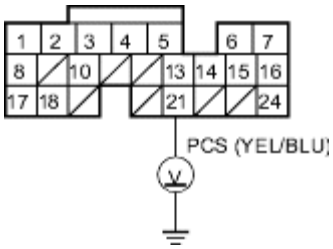
YES - Go to step 19.

NO - Repair open in the wire between No. 4 ACG (10A) fuse in the under-dash fuse/relay box and the EVAP canister purge valve. ■

19. Turn the ignition switch OFF.
20. Reconnect the EVAP canister purge valve 2P connector.
21. Turn the ignition switch ON (II).

1. 22. Measure voltage between ECM/PCM connector terminals B21 and body ground.

ECM/PCM CONNECTOR B (24P)



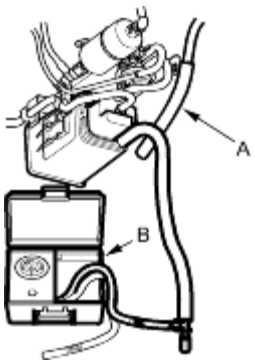
Wire side of female terminals

Is there battery voltage?

YES - Substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21). ■

23. Reconnect the vacuum hose to the EVAP canister.
24. Remove the fuel fill cap.
25. Disconnect the purge air hose (A) from the EVAP canister and connect a vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) (B) to EVAP canister (C).



26. Start the engine and raise speed to 3,000 rpm (min-1).

Does vacuum appear on gauge within 2 minutes?

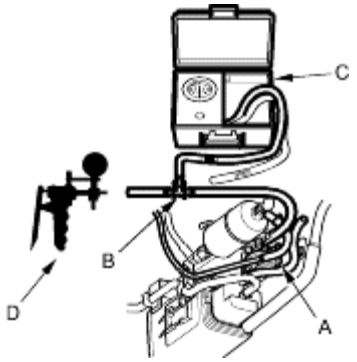
YES - When vacuum appears, evaporative emission controls are OK. Check the EVAP two way valve test (see page 11-307). ■

NO - Replace the EVAP canister. ■

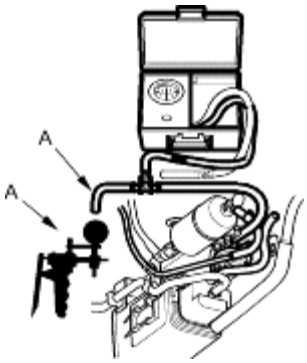
Evaporative Emission Control System

EVAP Two Way Valve Test

1. 1. Remove the fuel cap.
2. 2. Remove the vapour line from the EVAP two way valve (A) on the fuel tank, and connect it to a T-fitting (B) from the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) (C) and the vacuum pump/gauge (D) as shown.



3. 3. Apply vacuum slowly and continuously while watching the gauge. The vacuum should stabilise momentarily at 0.7-2.0 kPa (5-15 mm Hg, 0.2-0.6 in.Hg).
   If the vacuum stabilises (valve opens) below 0.5 kPa (5 mm Hg, 0.2 in.Hg), or above 2.0 kPa (15 mmHg, 0.6 in.Hg), install a new valve and retest.
4. Move the vacuum pump/gauge hose (A) from the vacuum fitting to the pressure fitting, and move the vacuum/pressure gauge 0-100 mm Hg (0-4 in. Hg) hose (B) from the vacuum side to the pressure side as shown.



1. 5. Slowly pressurise the vapour line while watching the gauge. The pressure should stabilise momentarily above 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg).
   - If the pressure momentarily stabilises (valve opens) above 1.3-4.7 kPa (10-35 mm Hg, 0.4-1.4 in.Hg), the valve is OK.
   - If the pressure stabilises below 1.3 kPa (10 mm Hg, 0.4 in.Hg), or above 4.7 kPa (35 mm Hg, 1.4 in.Hg), install a new valve and retest.

PGM-FI System
DTC Troubleshooting

DTC P0107: MAP Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the MAP with the scan tool.

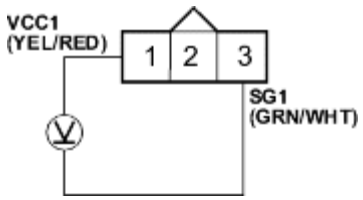
Is about 101 kPa (760 mmHg, 30 in.Hg) or 2.9 V indicated?

YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect the MAP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

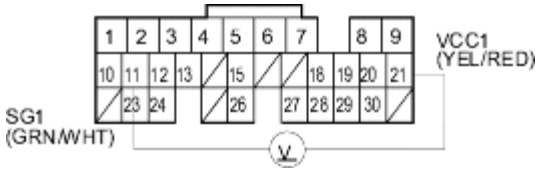
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 7.

3. 7. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between ECM/PCM (A21) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 8. Check the MAP with the scan tool.

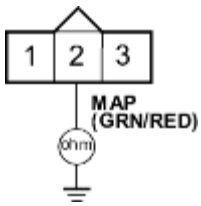
Is 2 kPa (15 mmHg, 0.6 in.Hg) or less or 0 V indicated?

YES - Go to step 9.

NO - Replace the MAP sensor. ■

2. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between the MAP sensor connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A19) and the MAP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Substitute the ECM/PCM

1. 1. Remove the ECM/PCM from the vehicle.
   2. Install a known-good ECM/PCM in the vehicle.
   3. Rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester. It allows you to start the engine.
   4. After completing your tests, reinstall the original ECM/PCM and rewrite the immobiliser code with the ECM/PCM replacement procedure on the Honda PGM Tester again.

General Information
Towing

If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with just a rope or chain. It is very dangerous.

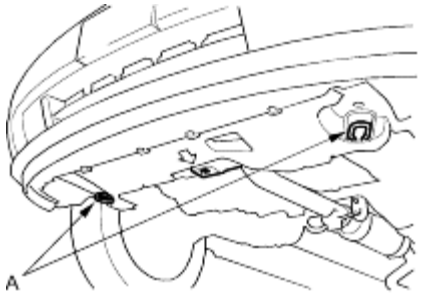
Emergency Towing

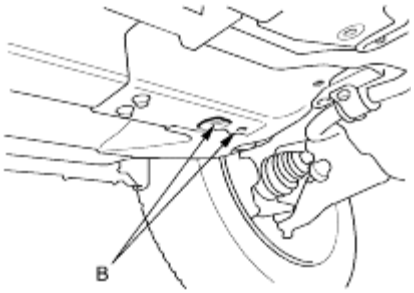
There are 3 popular methods of towing a vehicle.

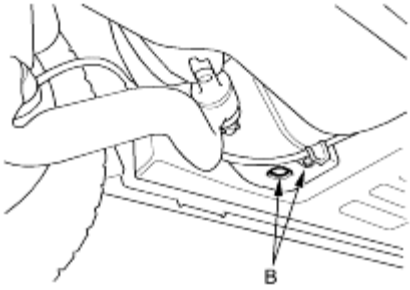
Flat-bed Equipment - The operator loads the vehicle on the back of a truck. This is the best way of transporting the vehicle.

To accommodate flat-bed equipment, the vehicle is equipped with a towing hook (A) and tie down hook hooking slots (B).

The towing hook can be used with a winch to pull the vehicle onto the truck and the tie down hook hooking slots can be used to secure the vehicle to the truck.







Wheel Lift Equipment - The tow truck uses 2 pivoting arms that go under the tyres (front or rear) and lift them off the ground. The other 2 wheels remain on the ground.

Sling-type Equipment - The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted.

If the vehicle cannot be transported by flat-bed, it should be towed with the front wheels off the ground. If due to damage, the vehicle must be towed with the front wheels on the ground, do the following:

- Release the parking brake.
- Start the engine.
- Shift to D position, then N position.
- Turn off the engine.

It is best to tow the vehicle no farther than 50 miles (80 km), and keep the speed below 35 mph (55 km/h).

NOTICE

- Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine (automatic transmission), the vehicle must be transported on a flat-bed.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

1. 1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   2. Check the MAP with the scan tool.

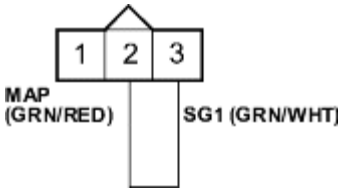
   Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the MAP sensor 3P connector.
   5. Connect the MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

   MAP SENSOR 3P CONNECTOR

   JUMPER WIRE

   Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the MAP with the scan tool.

   Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

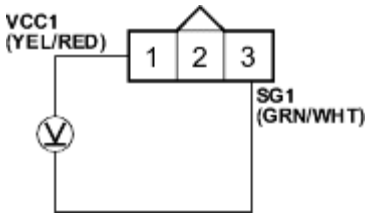
   YES - Go to step 8.

   NO - Replace the MAP sensor. ■

4. 8. Remove the jumper wire.

1. 9. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 3.

   MAP SENSOR 3P CONNECTOR

   Wire side of female terminals

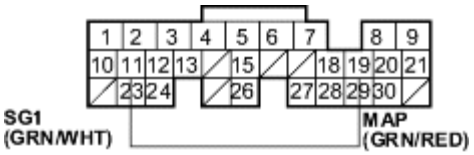
   Is there about 5 V?

   YES - Go to step 10.

   NO - Repair open in the wire between the ECM/PCM (A11) and the MAP sensor. ■

2. 10. Turn the ignition switch OFF.
   11. Connect ECM/PCM connector terminals A11 and A19 with a jumper wire.

   ECM/PCM CONNECTOR A (31P)

   JUMPER WIRE

   Wire side of female terminals

3. 12. Turn the ignition switch ON (II).
   13. Check the MAP with the scan tool.

   Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

   YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

   NO - Repair open in the wire between the ECM/PCM (A19) and the MAP sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0112: IAT Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the IAT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES - Go to step 3.

   NO - Go to step 8.

2. 3. Disconnect the IAT sensor 2P connector.
   4. Check the IAT with the scan tool.

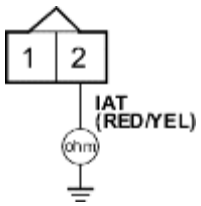
   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES - Go to step 5.

   NO - Replace the IAT sensor. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector B (24P).
   7. Check for continuity between the IAT sensor 2P connector terminal No. 2 and body ground.

   IAT SENSOR 2P CONNECTOR

   Wire side of female terminals

   Is there continuity?

   YES - Repair short in the wire between the ECM/PCM (B17) and the IAT sensor. ■

   NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

1. 8. Check the temperature reading on the scan tool.

   Be aware that if the engine is warm, the reading will be higher than ambient temperature. If the engine is cold, the IAT and ECT will have the same value.

   Is the correct ambient temperature indicated?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

   NO - Replace the IAT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the IAT with the scan tool.

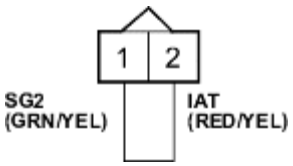
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the IAT sensor 2P connector.
   5. Connect the IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



JUMPER WIRE

Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the IAT with the scan tool.

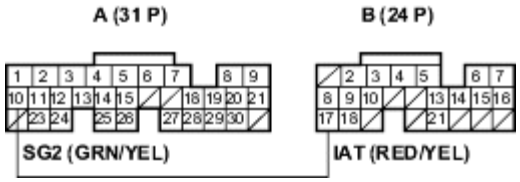
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 8.

NO - Replace the IAT sensor. ■

2. 8. Turn the ignition switch OFF.
   9. Remove the jumper wire.
   10. Connect ECM/PCM connector terminals A10 and B17 with a jumper wire.

ECM/PCM CONNECTORS



JUMPER WIRE

Wire side of female terminals

3. 11. Turn the ignition switch ON (II).
   12. Check the IAT with the scan tool.

Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10, B17) and the IAT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM. ■

2. 3. Disconnect the ECT sensor 2P connector.
   4. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

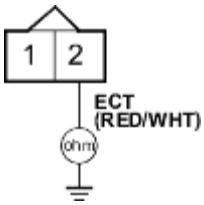
   YES - Go to step 5.

   NO - Replace the ECT sensor. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector B (24P).

1. 7. Check for continuity between the ECT sensor 2P connector terminal No. 2 and body ground.

   ECT SENSOR 2P CONNECTOR

   Wire side of female terminals

   Is there continuity?

   YES - Repair short in the wire between the ECM/PCM (B8) and the ECT sensor. ■

   NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the ECT with the scan tool.

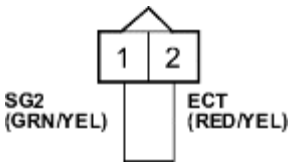
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the ECT sensor 2P connector.
   5. Connect the ECT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2P CONNECTOR



JUMPER WIRE

Wire side of female terminals

3. 6. Turn the ignition switch ON (II).
   7. Check the ECT with the scan tool.

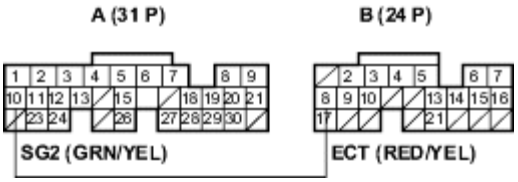
Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Go to step 8.

NO - Replace the ECT sensor. ■

2. 8. Turn the ignition switch OFF.
   9. Remove the jumper wire.
   10. Connect ECM/PCM connector terminals A10 and B8 with a jumper wire.

ECM/PCM CONNECTORS



JUMPER WIRE

Wire side of female terminals

3. 11. Turn the ignition switch ON (II).
   12. Check the ECT with the scan tool.

Is -20°C (-4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A10, B8) and the ECT sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0122: TP Sensor Circuit Low Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the throttle position with the scan tool.

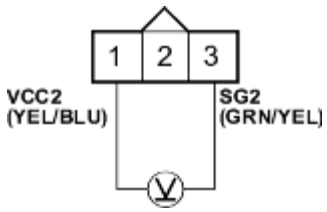
Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

NO - Go to step 3.

2. 8. Turn the ignition switch OFF.
   9. Disconnect the TP sensor 3P connector.
   10. Turn the ignition switch ON (II).
   11. Measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

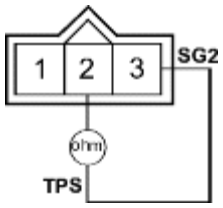
YES - Go to step 7.

NO - Go to step 14.

3. 7. Turn the ignition switch OFF.

1. 8. At the sensor side, measure resistance between the TP sensor 3P connector terminals No. 1 and No. 3 with the throttle fully closed.

TP SENSOR 3P CONNECTOR



Terminal side of male terminals

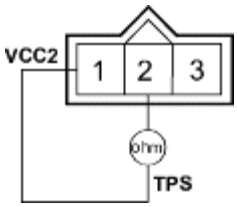
Is there about 0.5-0.9 k ohms?

YES - Go to step 9.

NO - Replace the throttle body. ■

2. 9. Measure resistance between the TP sensor 3P connector terminals No. 1 and No. 2 with the throttle fully closed.

TP SENSOR 3P CONNECTOR



Terminal side of male terminals

Is there about 4.5k ohms?

YES - Go to step 10.

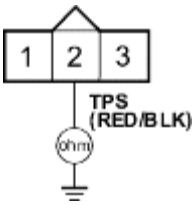
NO - Replace the throttle body. ■

10. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. At the wire harness side, check for continuity between TP sensor 3P connector terminal No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

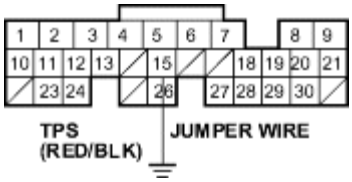
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A15) and the TP sensor. ■

NO - Go to step 12.

12. Connect ECM/PCM connector terminal A15 and body ground with a jumper wire.

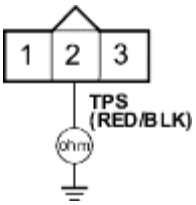
ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

1. 13. At the wire harness side, check for continuity between TP sensor 3P connector terminals No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

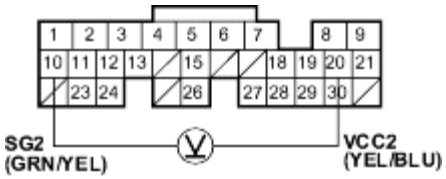
Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A15) and the TP sensor. ■

14. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor Circuit High Voltage

1. 1. Turn the ignition switch ON (II).
   2. Check the throttle position with the scan tool.

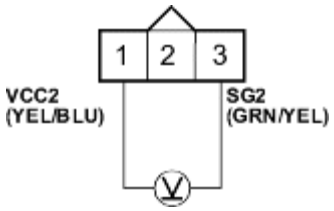
   Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TP sensor and at the ECM/PCM. ■

   NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. At the wire harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

   TP SENSOR 3P CONNECTOR



   Wire side of female terminals

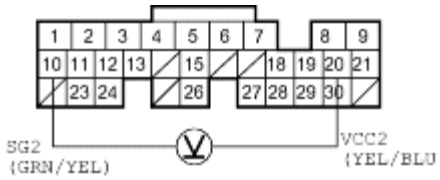
   Is there about 5 V?

   YES - Replace the throttle body. ■

   NO - Go to step 7.

1. 7. Measure voltage between ECM/PCM connector terminals A10 and A20.

   ECM/PCM CONNECTOR A (31P)



   Wire side of female terminals

   Is there about 5 V?

   YES - Repair open in the wire between the ECM/PCM (A10) and the TP sensor. ■

   NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0131: Primary HO2S (Sensor 1) Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output voltage with the scan tool during acceleration using wide open throttle.

Does the voltage stay at 0.5 V or less?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Check the fuel pressure (see page 11-131).

Is it normal?

YES - Go to step 5.

NO - Repair the fuel supply system. ■

3. 5. Turn the ignition switch OFF.
   6. Disconnect the primary HO2S (Sensor 1) 4P connector.
   7. Turn the ignition switch ON (II).
   8. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

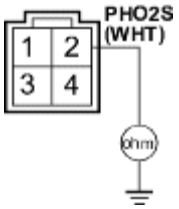
Does it stay at 0.5 V or less?

YES - Go to step 9.

NO - Replace the primary HO2S (Sensor 1). ■

1. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between the primary HO2S (Sensor 1) 4P connector terminal No. 2 and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A6) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0132: Primary HO2S (Sensor 1) Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

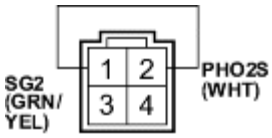
Does the voltage stay at 0.9 V or more?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the primary HO2S (Sensor 1) 4P connector.
   6. Connect the primary HO2S (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

3. 7. Turn the ignition switch ON (II).
   8. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

Is there 0.9 V or more?

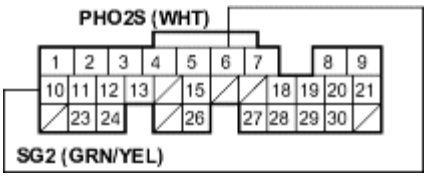
YES - Go to step 9.

NO - Replace the primary HO2S (Sensor 1). ■

1. 9. Turn the ignition switch OFF.

10. Connect ECM/PCM connector terminals A6 and A10 with a jumper wire.

ECM/PCM CONNECTOR A (31P)



JUMPER WIRE

Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the primary HO2S (Sensor 1) output voltage with the scan tool.

Is there 0.9 V or more?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (A6, A10) and the primary HO2S (Sensor 1). ■

Fuel and Emissions Systems

DTC Troubleshooting Index

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P0107	-	3-1 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 11-59)
P0108	-	3-2 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 11-60)
P0112	-	10-1 (10)	-	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	(see page 11-61)
P0113	-	10-2 (10)	-	Intake Air Temperature (IAT) Sensor Circuit High Voltage	(see page 11-62)
P0117	-	6-1 (6)	-	Engine Coolant Temperature (ECT) Sensor Circuit Low Voltage	(see page 11-63)
P0118	-	6-2 (6)	-	Engine Coolant Temperature (ECT) Sensor Circuit High Voltage	(see page 11-64)
P0122	-	7-1 (7)	-	Throttle Position (TP) Sensor Circuit Low Voltage	(see page 11-65)
P0123	-	7-2 (7)	-	Throttle Position (TP) Sensor Circuit High Voltage	(see page 11-67)
P0131	-	1-1 (1)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Circuit Low Voltage	(see page 11-68)
P0132	-	1-2 (1)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Circuit High Voltage	(see page 11-69)
P0133	P0133	61-1 (61)	T61-1	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Slow Response	(see page 11-70)
P0135	-	41-2 (41)	-	Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Heater Circuit Malfunction	(see page 11-71)
P0137	P0137	63-1 (63)	T61-1	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit Low Voltage	(see page 11-73)
P0138	P0138	63-2 (63)	T63-2	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit High Voltage	(see page 11-74)
P0139	P0139	63-3 (63)	T63-3	Secondary Heated Oxygen Sensor (Secondary	(see

				HO2S) (Sensor 2) Slow Response	page 11-75)
P0141	-	65-2 (65)	-	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Heater Circuit Malfunction	(see page 11-76)
P0171	P0171	45-2 (45)	T45-2	Fuel system Too Lean	(see page 11-78)
P0172	P0172	45-1 (45)	T45-1	Fuel system Too Rich	(see page 11-78)
P0300 and some of P0301 P0302 P0303 P0304	-	71-1 (71) 72-1 (72) 73-1 (73) 74-1 (74)	-	Random Misfire	(see page 11-79)

*: These DTCs will be indicated by the blinking of the Malfunction Indicator Lamp (MIL) when SCS short connector is connected.

**: The D indicator light and the Malfunction Indicator Lamp (MIL) may come on simultaneously.

*1: D16W7, D16V1 engines

*2: A/T

*3: M/T

General Information
Service Precautions

General

⚠ CAUTION

Observe all safety precautions and notes while working.

- Protect all painted surfaces and seats against dirt and scratches with a clean cloth or vinyl cover.



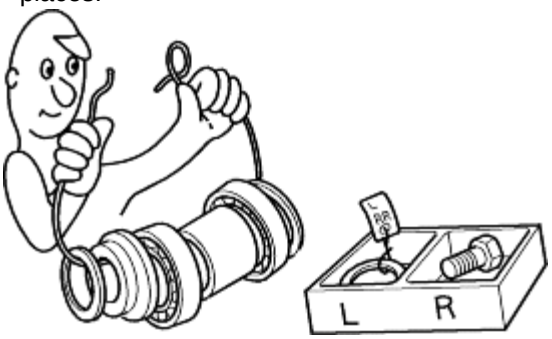
- Work safety and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate at frequently as possible when work involves 2 or more workers. Do not run the engine unless the shop or working area is well ventilated.



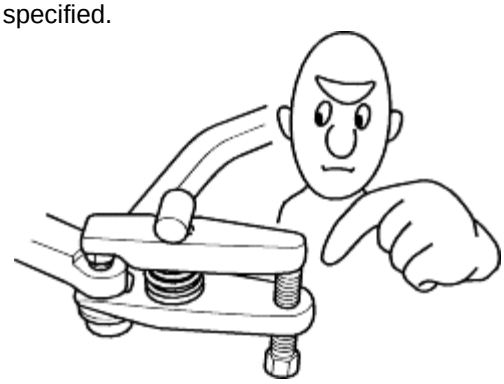
- Before removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



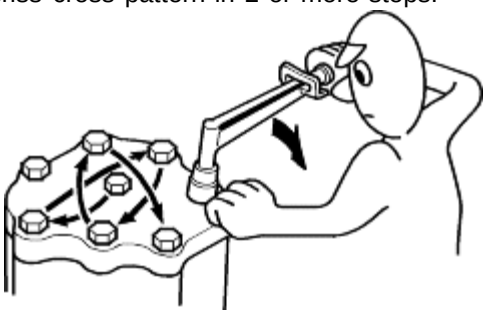
- Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.



- Use the special tool when use of such a tool is specified.



- Parts must be assembled with the proper torque according to the maintenance standards established.
- When tightening a series of bolts or nuts, begin with the centre or large diameter bolts and tighten them in criss-cross pattern in 2 or more steps.



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0133: Primary HO2S (Sensor 1) Slow Response

NOTE: If DTC P0131, P0132 and/or P0135 are stored at the same time as DTC P0133, troubleshoot those DTCs first, then recheck for DTC P0133.

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Test-drive under the following conditions:
      - 89 km/h (55 mph) steady speed
      - A/T in D position (M/T in 5th gear)
      - Until readiness code or Temporary DTC P0133 comes on
2. 4. Check for a Temporary DTC with the scan tool.

Is Temporary DTC P0133 indicated?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and the ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0135: Primary HO2S (Sensor 1) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine.

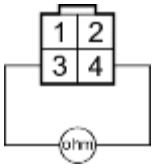
Is DTC P0135 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the primary HO2S (Sensor 1) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the primary HO2S (Sensor 1) 4P connector.
   5. At the primary HO2S side, measure resistance between the primary HO2S (sensor 1) 4P connector terminals No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

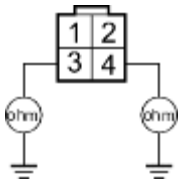
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the primary HO2S (Sensor 1). ■

1. 6. Check for continuity between body ground and the primary HO2S (Sensor 1) 4P connector terminals No. 3 and No. 4 individually.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

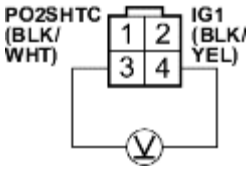
Is there continuity?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 and No. 4.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

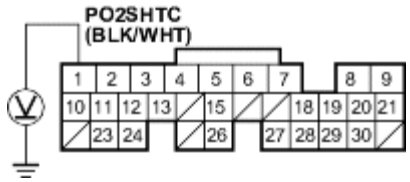
NO - Go to step 12.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal A1 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

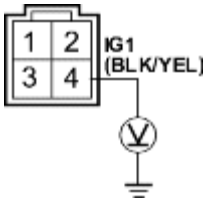
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the primary HO2S (Sensor 1) 4P connector terminal No. 3 (No. 4)* and body ground.

PRIMARY HO2S (SENSOR 1) 4P CONNECTOR



Terminals side of male terminals

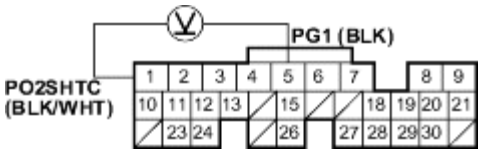
Is there battery voltage?

YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If fuse is OK, repair open in the wire between the primary HO2S (Sensor 1) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.
14. Reconnect the primary HO2S (Sensor 1) 4P connector.
15. Disconnect ECM/PCM connector A (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal A1 and A5.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (A1) and the primary HO2S (Sensor 1). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0137: Secondary HO2S (Sensor 2) Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm (min-1) with the scan tool.

Does the voltage stay at 0.3 V or less?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   6. Turn the ignition switch ON (II).
   7. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

Does the voltage stay at 0.3 V or less?

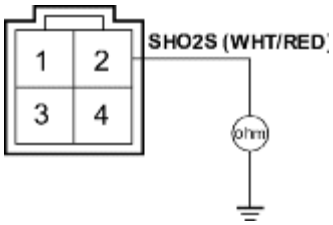
YES - Go to step 8.

NO - Replace the secondary HO2S (Sensor 2). ■

3. 8. Turn the ignition switch OFF.
   9. Disconnect ECM/PCM connector E (31P).

1. 10. Check for continuity between the secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E2) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0138: Secondary HO2S (Sensor 2) Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm (min-1) with the scan tool.

Does the voltage stay at 1.0 V or more?

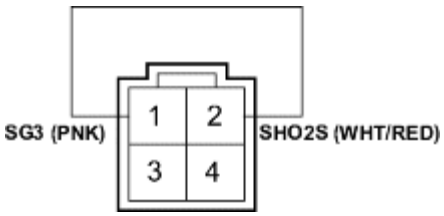
YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and the at ECM/PCM. ■

2. 4. Turn the ignition switch OFF.
   5. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   6. Connect the secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR

JUMPER WIRE



Terminal side of male terminals

3. 7. Turn the ignition switch ON (II).
   8. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

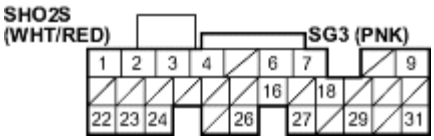
Is there 1.0 V or more?

YES - Go to step 9.

NO - Replace the secondary HO2S (Sensor 2). ■

2. 9. Turn the ignition switch OFF.
   10. Connect ECM/PCM connector terminals E2 and E4 with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

Is there 1.0 V or more?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the ECM/PCM (E2, E4) and the secondary HO2S (Sensor 2). ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0139: Secondary HO2S (Sensor 2) Slow Response

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

Does the voltage stay within 0.3-0.8 V for 2 minutes?

YES - Replace the secondary HO2S (Sensor 2). ■

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine.

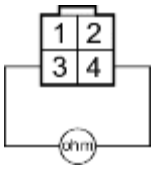
Is DTC P0141 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the secondary HO2S (Sensor 2) 4P connector.
   5. At the secondary HO2S (Sensor 2) side, measure resistance between the HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

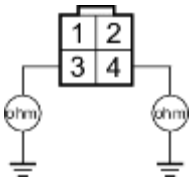
Is there 10-40 ohms?

YES - Go to step 6.

NO - Replace the secondary HO2S (Sensor 2). ■

1. 6. Check continuity between body ground and the secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

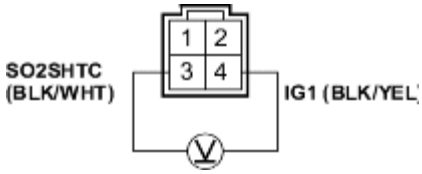
Is there continuity?

YES - Replace the secondary HO2S (Sensor 2). ■

NO - Go to step 7.

2. 7. Turn the ignition switch ON (II).
   8. Measure voltage between the secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES - Go to step 9.

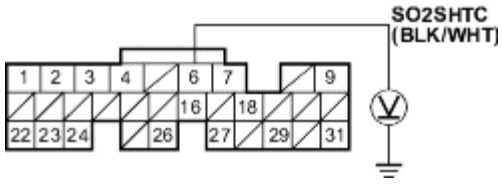
NO - Go to step 12.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector E (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 11. Check for continuity between ECM/PCM connector terminal E6 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

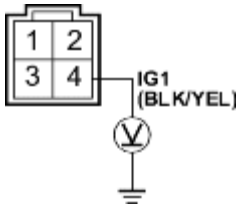
Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

12. Measure voltage between the secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

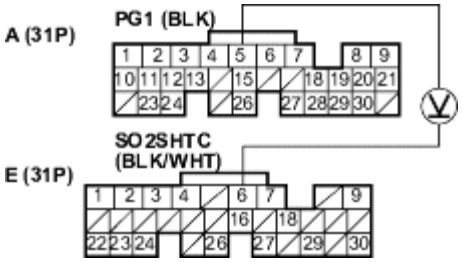
Is there battery voltage?

YES - Go to step 13.

NO - Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse. ■

1. 13. Turn the ignition switch OFF.
14. Reconnect the secondary HO2S (Sensor 2) 4P connector.
15. Disconnect ECM/PCM connector E (31P).
16. Turn the ignition switch ON (II).
17. Measure voltage between ECM/PCM connector terminal E6 and A5.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES - Repair open in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0171: Fuel System Too Lean

DTC P0172: Fuel System Too Rich

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0107, P0108: Manifold Absolute Pressure (MAP) sensor

P0135: Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) heater

P0137, P0138: Secondary HO2S (Sensor 2)

P0141: Secondary HO2S (Sensor 2) heater

P0401 P1491, P1498: Exhaust Gas Recirculation (EGR) system*

P1259: VTEC system*

*: D16W7, D16V1 engines

1. 1. Check the fuel pressure (see page 11-131).

Is fuel pressure OK?

YES - Go to step 2.

NO - Check these items:

- If the pressure is too high, replace the fuel pressure regulator (see page 11-138). ■
- If the pressure is too low, check the fuel pump, the fuel feed pipe, the fuel filter, and replace the fuel pressure regulator (see page 11-138). ■

2. 2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
   3. Check the primary HO2S (Sensor 1) output with the scan tool.

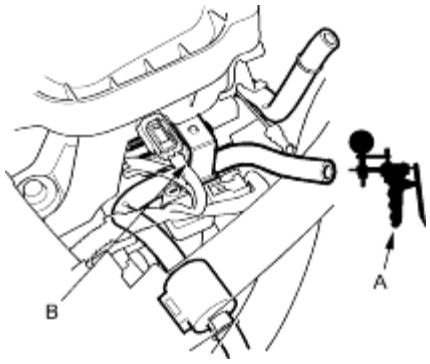
Does it stay at less than 0.3 V or more than 0.6 V?

YES - Replace the primary HO2S (Sensor 1). ■

NO - Go to step 4.

3. 4. Turn the ignition switch OFF.

1. 5. With a vacuum pump (A), apply vacuum to the evaporative emission (EVAP) canister purge valve (B) from the intake manifold side.



Does it hold vacuum?

YES - Go to step 6.

NO - Replace the EVAP canister purge valve. ■

2. 6. Turn the ignition switch ON (II).
   7. Check the manifold pressure with the scan tool.

Does it indicate atmospheric pressure?

YES - Go to step 8.

NO - Replace the MAP sensor. ■

3. 8. Start the engine.
   9. Check the MAP with the scan tool.

Is a MAP of 40.0 kPa (300 mmHg, 12.0 in.Hg) or less indicated within 1 second after starting the engine?

YES - Check the valve clearances and adjust if necessary. If the valve clearances are OK, replace the injectors. ■

NO - Replace the MAP sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0300: Random misfire and any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

NOTE:

- If the misfiring is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0304) will be stored.
- If the misfiring is frequent enough to damage the catalyst, the MIL will blink whenever the misfiring occurs, and DTC P0300 (and some combination of P0301 through P0304) will be stored. When the misfiring stops, the MIL will remain on.

1. 1. Troubleshoot the following DTCs first if any of them were stored along with the random misfire DTC(s):

P0107, P0108: Manifold Absolute Pressure (MAP) sensor

P0131, P0132: Primary Heated Oxygen Sensor

P0171, P0172: Fuel system

P0335, P0336: Crankshaft Position (CKP) sensor

P0401, P1491, P1498: Exhaust Gas Recirculation (EGR) system*

P0505: Idle control system

P1259: VTEC system*

P1361, P1362: Top Dead Centre (TDC) sensor

P1519: Idle Air Control (IAC) valve

*: D16W7, D16V1 engines

2. 2. Test-drive the vehicle to verify the symptom.
   3. Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Random misfire only at low RPM and under load	Check fuel pressure (see page 11-131).	• Low compression. • Low quality fuel.
Random misfire only during acceleration	Check fuel pressure (see page 11-131).	Malfunction in the VTEC system (D16W7, D16V1 engine) (see page 6-9).
Random misfire at high RPM, under load, or under random conditions	Check fuel pressure (see page 11-131).	Correct valve clearance (see page 6-14).

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P0301	P0301	71-1(71)	T71-1	No. 1 Cylinder Misfire	(see page 11-80)
P0302	P0302	72-1(72)	T72-1	No. 2 Cylinder Misfire	(see page 11-80)
P0303	P0303	73-1(73)	T73-1	No. 3 Cylinder Misfire	(see page 11-80)
P0304	P0304	74-1(74)	T74-1	No. 4 Cylinder Misfire	(see page 11-80)
P0325	-	23-1 (23)	-	Knock Sensor Circuit Malfunction	(see page 11-85)
P0335	-	4-1 (4)	-	Crankshaft Position (CKP) Sensor No Signal	(see page 11-88)
P0336	-	4-2 (4)	-	Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 11-88)
P0401	P0401	80-1 (80)	T80-1	Exhaust Gas Recirculation (EGR) Insufficient Flow	(see page 11-154)
P0420	P0420	67-1 (67)	T67-1	Catalyst System Efficiency Below Threshold	(see page 11-153)
P0443	-	92-4 (92)	-	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	(see page 11-161)
P0500*3	-	17-1 (17)	-	Vehicle Speed Sensor (VSS) Circuit Malfunction	(see page 11-90)
P0501*2	-	17-2*2	-	Vehicle Speed Sensor (VSS) Range/Performance	(see page 11-90)
P0563	-	34-2 (34)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	(see page 11-91)
P0600	-	39-1 (39)	-	Serial Communication Link Malfunction	Refer to the Multiplex Control System Troubleshooting (see page 22-273).
P07xx** *2		70-2 (70)*2	-	Automatic Transaxle System Malfunction*2	Refer to the Automatic Transmission DTC Troubleshooting Index
P1107	-	13-1 (13)	-	Barometric Pressure (BARO) Sensor Circuit Low Voltage	(see page 11-93)
P1108	-	13-2 (13)	-	Barometric Pressure (BARO) Sensor Circuit High Voltage	(see page 11-93)
P1259*1	-	22-4 (22)*1	-	VTEC System Malfunction*1	(see page 11-94)
P1324	-	23-2 (23)	-	Knock Sensor Power Source Circuit Low Voltage	(see page 11-87)

*: These DTCs will be indicated by the blinking of the MIL when SCS short connector is connected.

**: The D indicator light and the MIL may come on simultaneously.

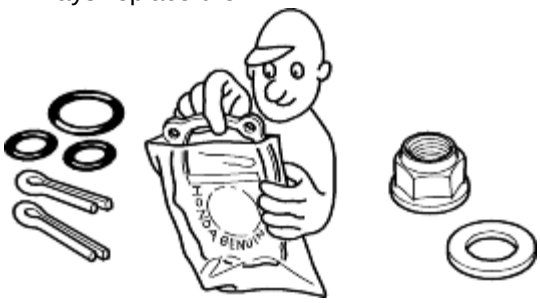
*1: D16W7, D16V1 engines

*2: A/T

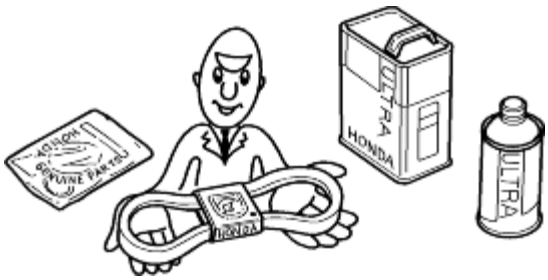
*3: M/T

General Information
Service Precautions (cont'd)

- Use new packings, gaskets, O-rings and cotter pins whenever reassembling.
- Do not reuse parts that must be required to replace. Always replace them.



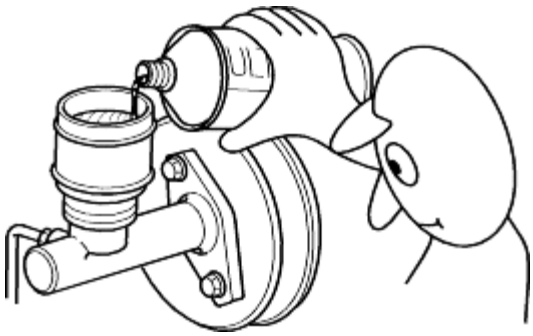
- Use genuine HONDA parts and lubricants or their equivalent. When parts are to be reused, they must be inspected carefully to make sure they are not damaged or deteriorated and are in good usable condition.



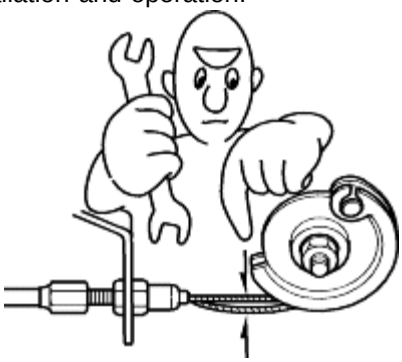
- Coat or fill parts with specified grease as specified (see page 3-2). Clean all removed parts with solvent upon disassembly.



- Brake fluid and hydraulic components
  - When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
  - Do not mix different brands of fluid, as they may not be compatible.
  - Do not reuse drained brake fluid.
  - Because brake fluid can cause damage to painted and resin surfaces, care should be taken not to spill it on such materials. If spilled accidentally, quickly rinse it with water or warm water from painted or resin surfaces.
  - After disconnecting brake hoses or pipes, be sure to plug the openings to prevent loss of brake fluid.
  - Clean all disassembled parts only in clean BRAKE FLUID. Blow open all holes and passages with compressed air.
  - Keep disassembled parts from air-borne dust and abrasives.
  - Check that parts are clean before assembly.



- Avoid oil or grease getting on rubber parts and tubes, unless specified.
- Upon assembling, check every part for proper installation and operation.



PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

1. 1. After checking and recording the freeze data, reset the ECM/PCM (see page 11-4). If there is no freeze data of the misfire, just clear the DTC.
   2. Start the engine, and listen for a clicking sound at the injector at the problem cylinder.

Does it click?

YES - Go to step 3.

NO - Go to step 30.

2. 3. Turn the ignition switch OFF, and reset the ECM/PCM.
   4. Exchange the ignition coil from the problem cylinder with one from another cylinder.
   5. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
   6. Check the DTC or the Temporary DTC with the scan tool.

Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

YES - Go to step 7.

NO - Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). ■

1. 7. Determine which cylinder(s) had the misfire.

Does the misfire occur in the other cylinder whose ignition coil was exchanged?

YES - Replace the faulty ignition coil. ■

NO - Go to step 8.

2. 8. Turn the ignition switch OFF, and reset the ECM/PCM.
   9. Exchange the spark plug from the problem cylinder with one from another cylinder.
   10. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
   11. Check the DTC or the Temporary DTC with the scan Tool.

Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

YES - Go to step 12.

NO - Intermittent misfire due to spark plug fouling, etc. (no misfire at this time). ■

12. Determine which cylinder(s) had the misfire.

Does the misfire occur in the other cylinder whose spark plug was exchanged?

YES - Replace the faulty spark plug. ■

NO - Go to step 13.

13. Turn the ignition switch OFF, and reset the ECM/PCM.
14. Exchange the injector in the problem cylinder with one from another cylinder.
15. Let the engine idle for 2 minutes.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 16. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.

17. Check the DTC or the Temporary DTC with the scan Tool.

Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

YES - Go to step 18.

NO - Intermittent misfire due to bad contact at the injector connector (no misfire at this time). ■

18. Determine which cylinder (s) had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

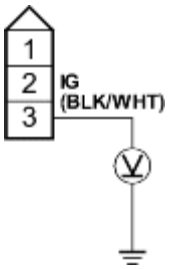
YES - Replace the faulty injector. ■

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the ignition coil 3P connector from the problem cylinder.
21. Turn the ignition switch ON (II).

1. 22. Measure voltage between the ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

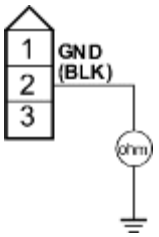
Is there battery voltage?

YES - Go to step 23.

NO - Repair open or short in the wire between the No. 1 IGN COIL (15A) fuse and the ignition coil. ■

23. Turn the ignition switch OFF.
24. Check for continuity between the ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 25.

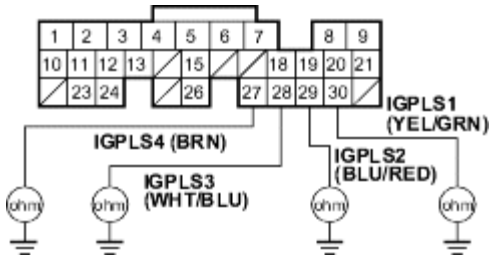
NO - Repair open in the wire between the ignition coil and G101. ■

25. Disconnect ECM/PCM connector A (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 26. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

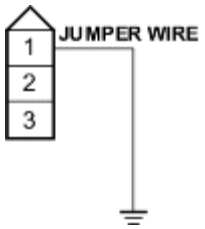
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the ignition coil. ■

NO - Go to step 27.

27. Connect the appropriate ignition coil 3P connector terminal No. 1 and body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

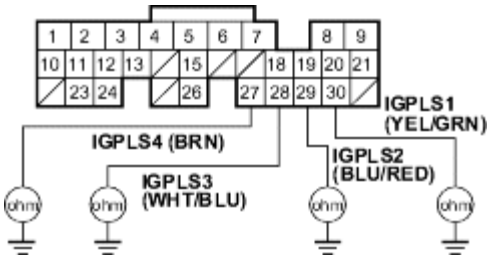


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	P0301	YEL/GRN
No. 2	P0302	BLU/RED
No. 3	P0303	WHT/BLU
No. 4	P0304	BRN

1. 28. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM and the ignition coil. ■

29. Check the compression.

Is the engine compression OK?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

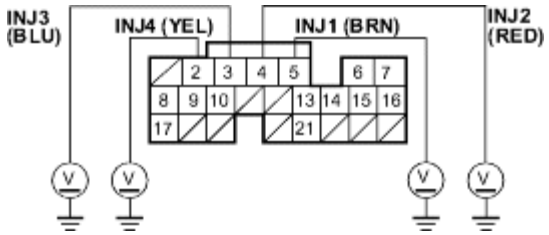
NO - Repair the engine. ■

30. Disconnect ECM/PCM connector B (24P).
31. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

1. 32. Measure voltage between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

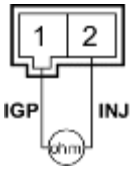
Is there battery voltage?

YES - Go to step 33.

NO - Go to step 42.

33. Turn the ignition switch OFF, and remove the air cleaner (see page 11-146).
34. Disconnect the injector 2P connector on the problem cylinder.
35. Measure the resistance between the injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10 ohms-13ohms?

YES - Go to step 36.

NO - Replace the injector (see page 11-113). ■

1. 36. Exchange the injector in the problem cylinder with one from another cylinder.
37. Install the air cleaner (see page 11-146), and reset the ECM/PCM.
38. Let the engine idle for 2 minutes.
39. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.
40. Check the DTC or the Temporary DTC with a scan tool.

Is DTC or Temporary DTC P0301, P0302, P0303, or P0304 indicated?

YES - Go to step 41.

NO - Intermittent misfire due to injector malfunction etc. ■

41. Determine which cylinder (s) had the misfire.

Does the misfire occur in the other cylinder whose injector was exchanged?

YES - Replace the faulty injector. ■

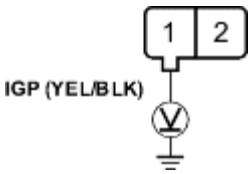
NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

42. Turn the ignition switch OFF.
43. Remove the air cleaner (see page 11-146).
44. Disconnect the injector 2P connector on the problem cylinder.
45. Turn the ignition switch ON (II).

PGM-FI System
DTC Troubleshooting (cont'd)

46. Measure voltage between the injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

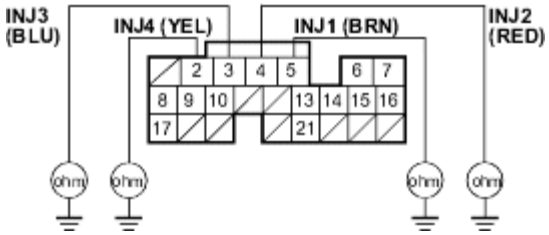
Is there battery voltage?

YES - Go to step 47.

NO - Repair open in the wire between the injector and the PGM-FI main relay. ■

47. Turn the ignition switch OFF.
48. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

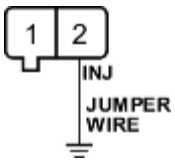
Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the injector. ■

NO - Go to step 49.

49. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

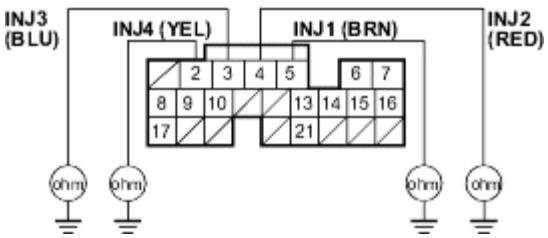


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOUR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL

50. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOUR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

Is there continuity?

YES - Replace the injector, then recheck. ■

NO - Repair open in the wire between the ECM/PCM and the injector. ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P0325:Knock Sensor Circuit Malfunction

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine. Hold the engine at 3,000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
   3. Hold the engine at 3,000-4,000 rpm (min-1) for at least 60 seconds.

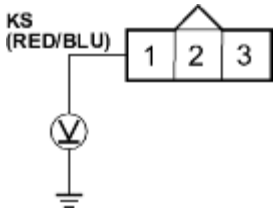
Is DTC P0325 indicated?

YES - Go to step 4.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM.

2. 4. Turn the ignition switch OFF.
   5. Disconnect the knock sensor 3P connector.
   6. Turn the ignition switch ON (II).
   7. Measure voltage between knock sensor 3P connector terminal No. 1 and body ground.

KNOCK SENSOR 3P CONNECTOR



Wire side of female terminals

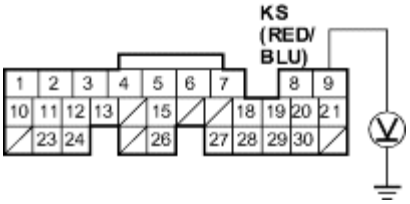
Is there about 5 V?

YES - Go to step 12.

NO - Go to step 8.

8. Measure voltage between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

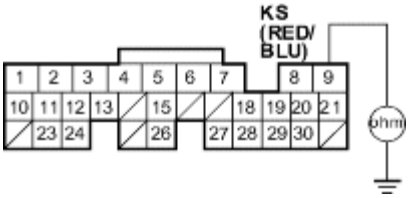
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A9) and knock sensor. ■

NO - Go to step 9.

1. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES - Repair short in the wire between ECM/PCM (A9) and knock sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

PGM-FI System
DTC Troubleshooting (cont'd)

12. Substitute a known-good knock sensor and recheck.

Is DTC P0325 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1324: Knock Sensor Power Source Circuit Low Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Turn the ignition switch ON (II).

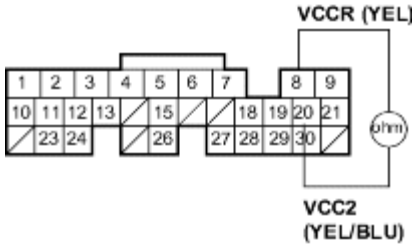
Is DTC P1324 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM.

2. 3. Turn the ignition switch OFF.
   4. Disconnect ECM/PCM connector A (31P).
   5. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

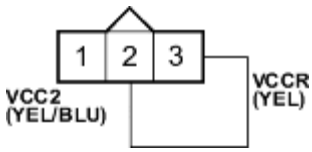
Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 6.

3. 6. Disconnect the knock sensor 3P connector.
   7. Connect the knock sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

KNOCK SENSOR 3P CONNECTOR

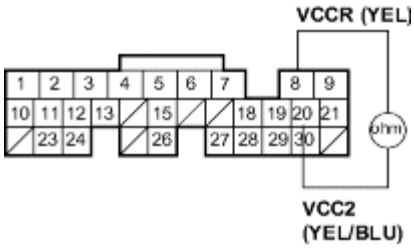


JUMPER WIRE

Wire side of female terminals

1. 8. Check for continuity between ECM/PCM connector terminals A8 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Replace the knock sensor. ■

NO - Repair open in the wire between the ECM/PCM (A8, A20) and the knock sensor. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0335: - CKP Sensor No Signal

DTC P0336: - CKP Sensor Intermittent Interruption

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine.

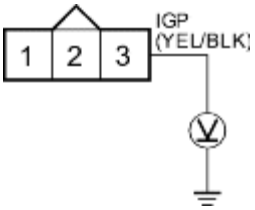
Is DTC P0335 and/or P0336 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the CKP sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the CKP sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

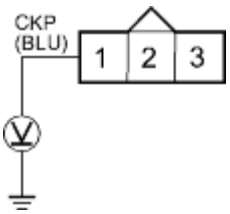
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the CKP sensor. ■

7. Measure voltage between the CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

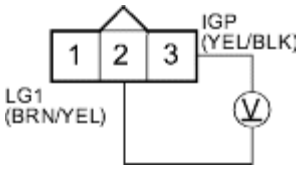
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

1. 8. Measure voltage between the CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and G101. ■

2. 9. Substitute a known-good CKP sensor and recheck.

Is DTC P0335 and/or P0336 indicated?

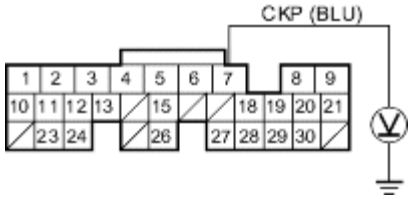
YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original CKP sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

10. Measure voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

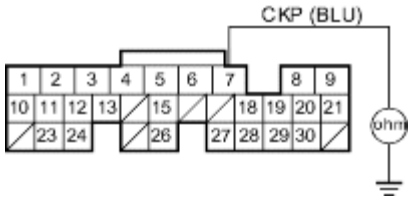
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

Scan tool DTC		Honda DTC		Detection Item	Page
DTC	Temporary DTC	DTC (MIL Indication*)	Temporary DTC		
P1361	-	8-2 (8)	-	Top Dead Centre (TDC) Sensor Intermittent Interruption	(see page 11-98)
P1362	-	8-1 (8)	-	Top Dead Centre (TDC) Sensor No Signal	(see page 11-98)
P1491	P1491	12-3 (12)	T12-3	Exhaust Gas Recirculation (EGR) Valve Insufficient Lift	(see page 11-154)
P1498	-	12-2 (12)	-	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	(see page 11-158)
P1519	-	14-3 (14)	-	Idle Air Control (IAC) Valve Circuit Malfunction	(see page 11-117)
P1607	-	0-2	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Circuit Malfunction	(see page 11-99)
P17xx** *2	-	70-3 (70)*2	-	Automatic Transaxle System Malfunction*2	Refer to the Automatic Transmission DTC Troubleshooting Index

*: These DTCs will be indicated by the blinking of the MIL when SCS short connector is connected.

**: The D indicator light and the MIL may come on simultaneously.

*1: D16W7, D16V1 engines

*2: A/T

*3: M/T

General Information
Service Precautions (cont'd)

Electrical Troubleshooting Information

Before Troubleshooting

1. 1. Check applicable fuses in the appropriate fuse/relay box.

Check the battery for damage, state of charge and clean and tighten the connections.

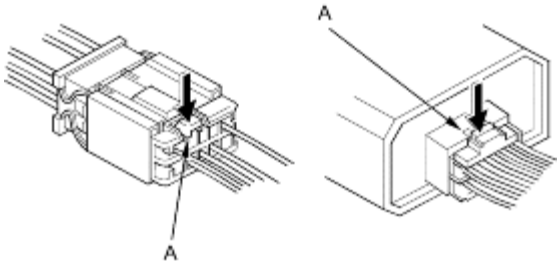
NOTICE

- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

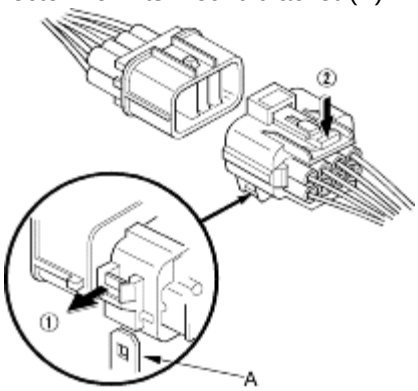
Check the alternator belt tension.

Handling Connectors

- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with grease (except watertight connectors).
- All connectors have push-down release type locks (A).



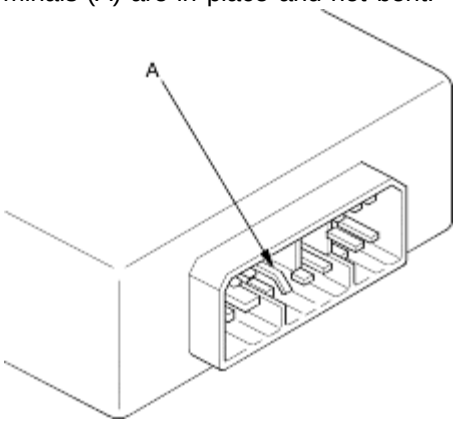
- Some connectors have a clip on their side used to attach them to a mounting bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



- Before connecting connectors, make sure the terminals (A) are in place and not bent.



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0500: VSS Circuit Malfunction

DTC P0501: VSS Range/Performance Problem

1. 1. Test-drive the vehicle.
   2. Check the vehicle speed with the scan tool.

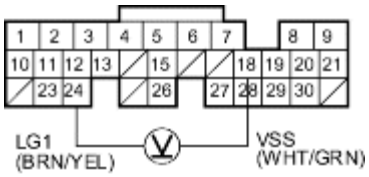
Is the correct speed indicated?

YES - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VSS and at the ECM. ■

NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Block the rear wheels and set the parking brake.
   5. Raise the front of the vehicle, and make sure it is securely supported.
   6. Turn the ignition switch ON (II).
   7. Block the right front wheel, and slowly rotate the left front wheel.
   8. Measure voltage between ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

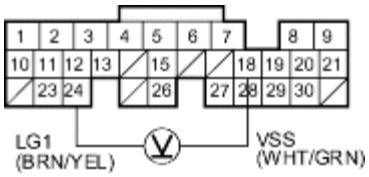
Does the voltage pulse between 0 V and 5 V or battery voltage?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Go to step 9.

3. 9. Turn the ignition switch OFF.
   10. Disconnect ECM/PCM connector A (31P).
   11. Turn the ignition switch ON (II).
   12. Block the right front wheel, and slowly rotate the left front wheel.
   13. Measure voltage between ECM/PCM connector terminals A18 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Does the voltage pulse between 0 V and 5 V or battery voltage?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Check these items:

- A short or an open in the wire between the ECM/PCM (A18) and the VSS.
- If the wire is OK, test the VSS (see page 22-94).

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0563: ECM/PCM Power Source Circuit Unexpected Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Turn the ignition switch OFF.
   3. Wait 5 seconds.
   4. Turn the ignition switch ON (II).

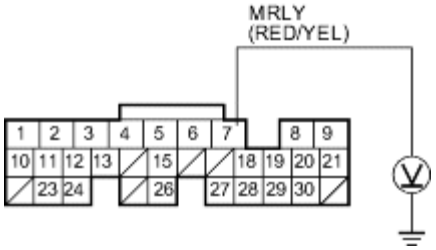
Is DTC P0563 indicated?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the No. 6 ECU (ECM/PCM) (15 A) fuse in the under-hood fuse/relay box and at the ECM/PCM. ■

2. 5. Turn the ignition switch OFF.
   6. Disconnect ECM/PCM connector E (31P).
   7. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

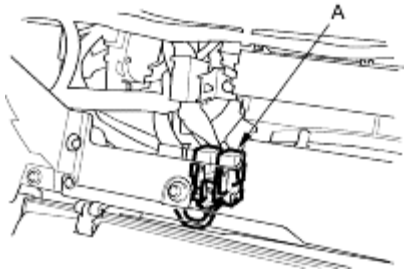
YES - Go to step 11.

NO - Go to step 8.

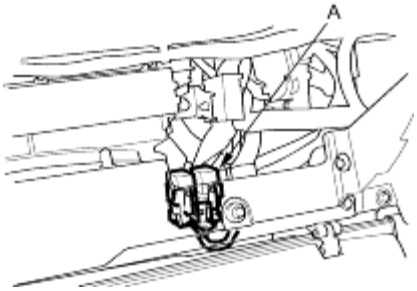
3. 8. Remove the glove box.

9. Remove the PGM-FI main relay 1 (A).

LHD model:

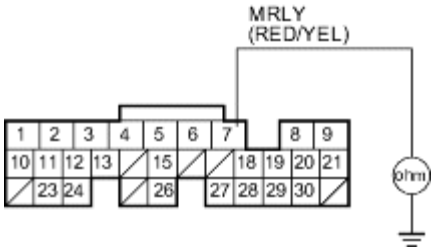


RHD model:



10. Check for continuity between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E7) and the PGM-FI main relay 1. ■

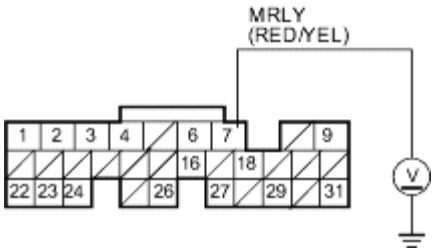
NO - Replace the PGM-FI main relay 1.

11. Reconnect ECM/PCM connector E (31P).

PGM-FI System
DTC Troubleshooting (cont'd)

12. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

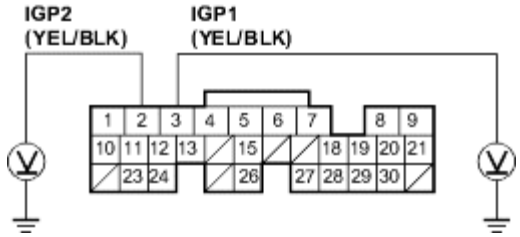
Is there battery voltage?

YES - Go to step 13.

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

13. Disconnect ECM/PCM connector A (31P).
14. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

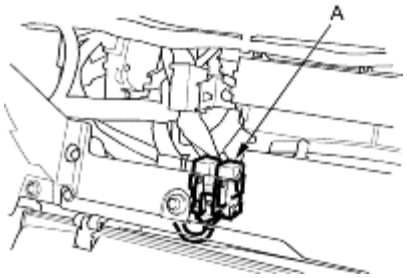
Is there battery voltage?

YES - Go to step 15.

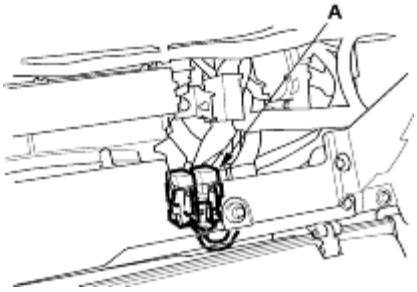
NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

15. Remove the glove box.
16. Remove the PGM-FI main relay 1 (A).

LHD model:



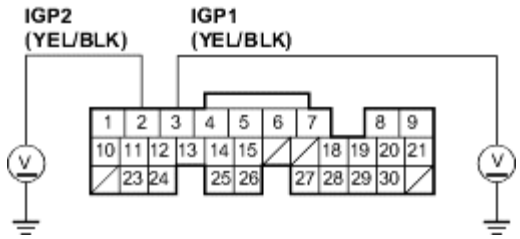
RHD model:



PGM-FI System
DTC Troubleshooting (cont'd)

1. 17. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (A2,A3) and the PGM-FI main relay 1. ■

NO - Replace the PGM-FI main relay 1. ■

DTC P1107: BARO Sensor Circuit Low Voltage

DTC P1108: BARO Sensor Circuit High Voltage

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Turn the ignition switch ON (II).

Is DTC P1107 or P1108 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1259: VTEC System Malfunction

Special Tools Required

- Oil pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

1. Reset the ECM/PCM (see page 11-4).
2. Check the engine oil level, and refill if necessary.
3. Start the engine. Hold the engine at 3.000 rpm (min-1) with no load (in Park or neutral) until the radiator fan comes on.
4. Road test the vehicle:

Accelerate in 1st gear to an engine speed over 4,000 rpm. Hold that engine speed for at least 2 seconds. If DTC P1259 is not repeated during the first road test, repeat this test 2 more times.

Is DTC P1259 indicated?

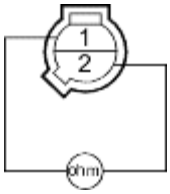
YES- Go to step 5.

NO- Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTEC solenoid valve and at the ECM/PCM. ■

1. 5. Turn the ignition switch OFF.
6. Remove the resonator (see page 11-148).
7. Disconnect the VTEC oil pressure switch 2P connector.

2. 8. Check for continuity on the VTEC oil pressure switch between the VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Terminal side of male terminals

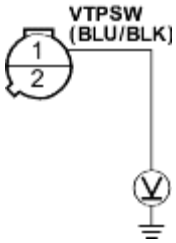
Is there continuity?

YES - Go to step 9.

NO - Replace the VTEC oil pressure switch. ■

3. 9. Turn the ignition switch ON (II).
10. Measure voltage between the VTEC oil pressure switch 2P connector terminal No. 1 and body ground.

VTEC OIL PRESSURE SWITCH HARNESS 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 15.

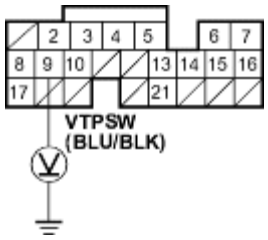
NO - Go to step 11.

PGM-FI System

DTC Troubleshooting (cont'd)

1. 11. Measure voltage between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

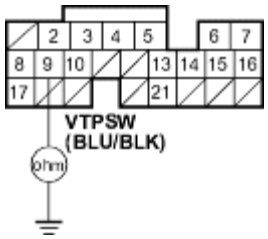
Is there battery voltage?

YES - Repair open in the wire between the VTEC oil pressure switch and ECM/PCM (B9). ■

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect ECM/PCM connector B (24P).
14. Check for continuity between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

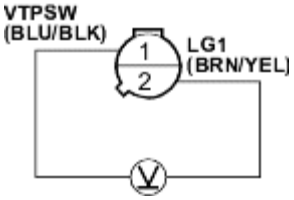
Is there continuity?

YES - Repair short in the wire between the VTEC oil pressure switch and the ECM/PCM (B9). ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

15. Measure voltage between the VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH HARNESS 2P CONNECTOR



Wire side of female terminals

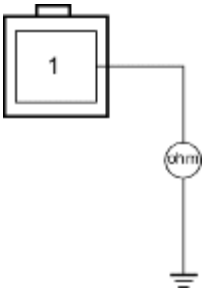
Is there battery voltage?

YES - Go to step 16.

NO - Repair open in the wire between the VTEC oil pressure switch and G101. ■

16. Turn the ignition switch OFF.
17. Disconnect the VTEC solenoid valve 1P connector.
18. Check for resistance between the VTEC solenoid valve 1P connector terminal No. 1 and body ground.

VTEC SOLENOID VALVE 1P CONNECTOR



Terminal side of male terminal

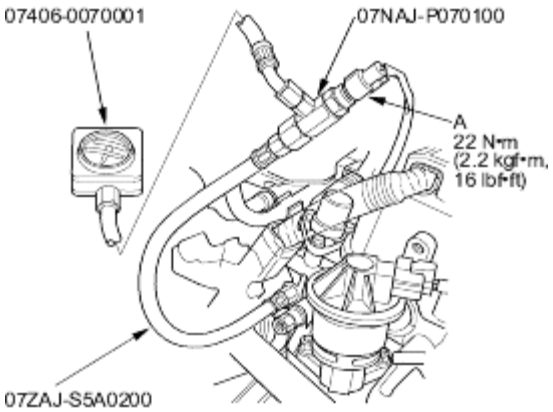
Is there 14-30 ohms?

YES - Go to step 19.

NO - Replace the VTEC solenoid valve. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 19. Remove the VTEC oil pressure switch (A) and install the special tools as shown, then reinstall the VTEC oil pressure switch.



20. Reconnect the VTEC solenoid valve 1P connector and VTEC oil pressure switch 2P connector.
21. Connect a tachometer.
22. Start the engine. Hold the engine at 3.000 rpm with no load (in Park or neutral) until the radiator fan comes on.
23. Check oil pressure at engine speeds of 1,000 and 2,000 rpm (min-1). Keep measuring time as short as possible because the engine is running with no load (less than 1 minute).

Is pressure below 49 kPa (0.5 kgf/cm2, 7 psi)?

YES - Go to step 24.

NO - Inspect the VTEC solenoid valve (see page 11-112). ■

1. 24. Turn the ignition switch OFF.

25. Disconnect the VTEC solenoid valve 1P connector.
26. Attach the battery positive terminal to the VTEC solenoid valve terminal.
27. Start the engine, and check oil pressure at an engine speed of 3,000 rpm (min-1).

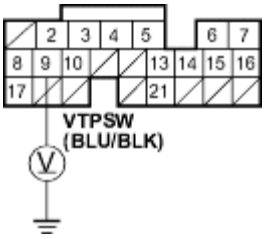
Is pressure above 390 kPa (4.0 kgf/cm2, 57 psi)?

YES - Go to step 28.

NO - Inspect the VTEC solenoid valve (see page 11-112). ■

28. With the battery positive terminal still connected to the VTEC solenoid valve, measure voltage between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage above 4,000 rpm?

YES - Go to step 29.

NO - Replace the VTEC oil pressure switch. ■

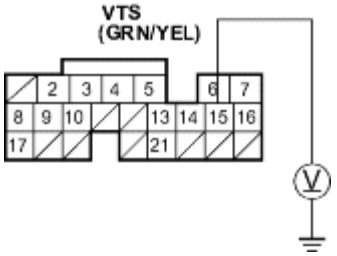
29. Turn the ignition switch OFF.
30. Disconnect the battery positive terminal from the VTEC solenoid valve terminal.

PGM-FI System
DTC Troubleshooting (cont'd)

1. 31. Disconnect ECM/PCM connector B (24P).

32. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

NO - Go to step 32.

1. 33. Connect the VTEC solenoid valve 1P connector terminal No. 1 and body ground with a jumper wire.

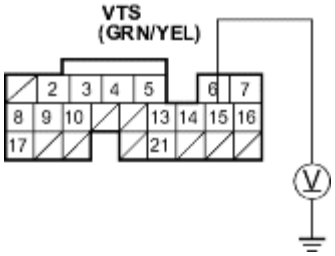
VTEC SOLENOID VALVE HARNESS 1P CONNECTORS



Wire side of female terminals

34. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

PGM-FI System
DTC Troubleshooting (cont'd)

DTC P1361: TDC Sensor Intermittent Interruption

DTC P1362: TDC Sensor No Signal

1. 1. Reset the ECM/PCM (see page 11-4).
   2. Start the engine.

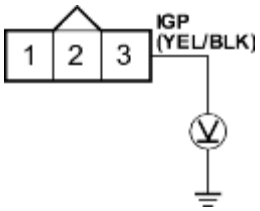
Is DTC P1361 and/or P1362 indicated?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the TDC sensor and at the ECM/PCM. ■

2. 3. Turn the ignition switch OFF.
   4. Disconnect the TDC sensor 3P connector.
   5. Turn the ignition switch ON (II).
   6. Measure voltage between the TDC sensor 3P connector terminal No. 3 and body ground.

TDC SENSOR 3P CONNECTOR



Wire of female terminals

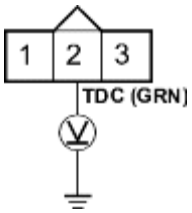
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the PGM-FI main relay 1 and the TDC sensor. ■

1. 7. Measure voltage between the TDC sensor 3P connector terminal No. 2 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

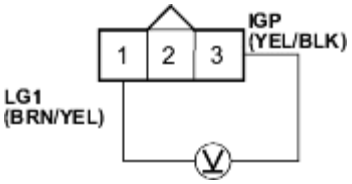
Is there about 5 V?

YES - Go to step 8.

NO - Go to step 10.

2. 8. Measure voltage between the TDC sensor 3P connector terminals No. 1 and No. 3.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the TDC sensor and G101. ■

3. 9. Substitute a known-good TDC sensor and recheck.

Is DTC P1361 and/or P1362 indicated?

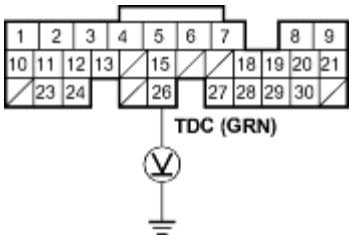
YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Replace the original TDC sensor. ■

PGM-FI System
DTC Troubleshooting (cont'd)

1. 10. Measure voltage between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

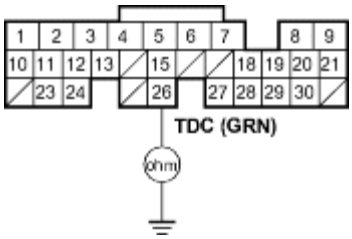
Is there about 5 V?

YES - Repair open in the wire between the ECM/PCM (A26) and TDC sensor. ■

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A26) and the TDC sensor. ■

NO - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

DTC P1607: Malfunction in ECM/PCM Internal Circuit

1. 1. Reset the ECM/PCM (see page 11-4).
2. Turn the ignition switch ON (II).
3. Wait 40 seconds.

Is DTC P1607 indicated?

YES - Substitute a known-good ECM/PCM and recheck (see page 11-6). If symptom/indication goes away, replace the original ECM/PCM. ■

NO - Intermittent failure, system is OK at this time. ■

General Information
Chassis and Engine Numbers

4-Door KE, KG, KQ Models

Vehicle Identification Number

JHM ES4 5 3 0 1 S 200001
a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD.
HONDA Passenger vehicle
b. Line, Body and Engine Type
ES1: CIVIC/CIVIC/D17Z1 (KQ model)
D17A2 (KQ model)
ES4: CIVIC/D14Z5 (KE, KG models)
ES5: CIVIC/D16W7 (KE, KG models)
c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual
6: 4-door Sedan/4-speed Automatic
d. Vehicle Grade (Series)
0: VTI (KQ model)
3: 1.4S (KE, KG models)
4: 1.6SE (KE model)
1.6LS (KG model)
5: 1.6LS (KG model)
GLI (KQ model)
7: 1.6ES (KG model)
9: 1.6ES (KG model)
VTI (KQ model)
e. Fixed Code
f. Model Year
1: 2001
g. Factory Code
S: Suzuka Factory in Japan (Mie)
h. Serial Number

Engine Number

D16W7 - 1000001
a b

a. Engine Type
D14Z5: 1.4 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D16W7: 1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A2: 1.2 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17Z1: 1.7 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
b. Serial Number

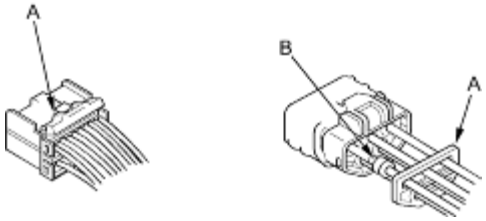
Transmission Number

SLXA - 1000001
a b

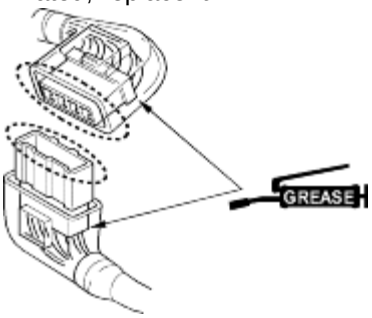
a. Transmission Type
SLXA: 4-speed Automatic
SLW: 5-speed Manual
b. Serial Number

General Information
Service Precautions (cont'd)

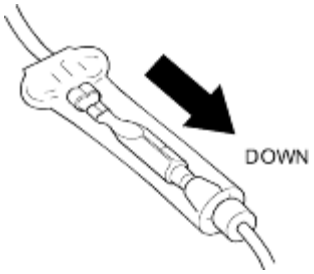
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with grease. Add grease if necessary. If the grease is contaminated, replace it.

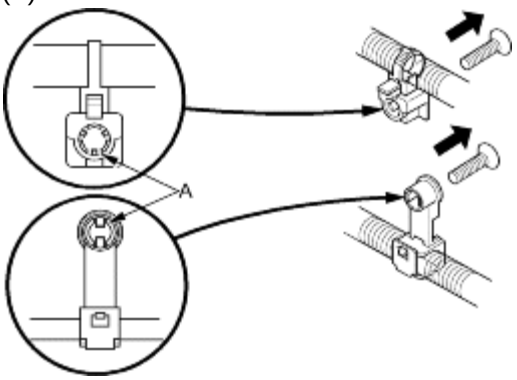


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

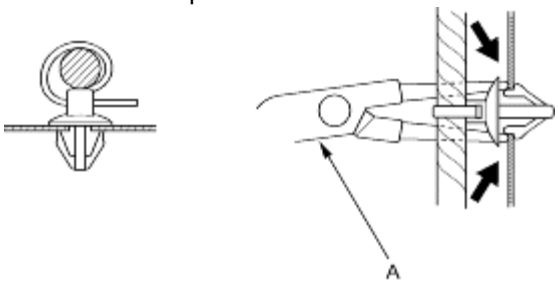


Handling Wires and Harnesses

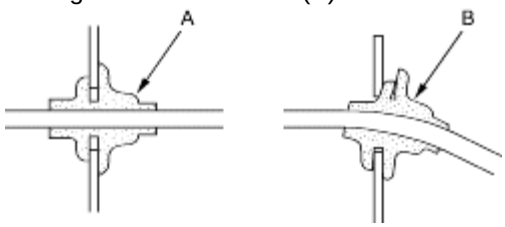
- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; do not damage their locks (A).



- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.



- After installing harness clips, make sure the harness does not interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).



Clutch

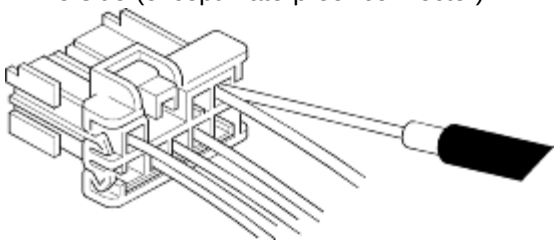
Special Tools	12-2
Component Location Index	12-3
Clutch Pedal and Clutch Switch Adjustment	12-4
Clutch Pedal Cylinder Replacement	12-5
Clutch Master Cylinder Removal	12-5a
Clutch Master Cylinder Installation	12-5b
Clutch Master Cylinder Overhaul	12-6
Slave Cylinder Replacement	12-8
Slave Cylinder Overhaul	12-10
Clutch Replacement	12-11
Manual Transmission	13-1
M/T Differential	13-50
Automatic Transmission	14-1
A/T Differential	14-233
Driveline/Axle	16-1

General Information

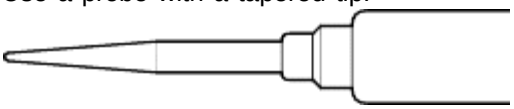
Service Precautions (cont'd)

Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use a probe with a tapered tip.



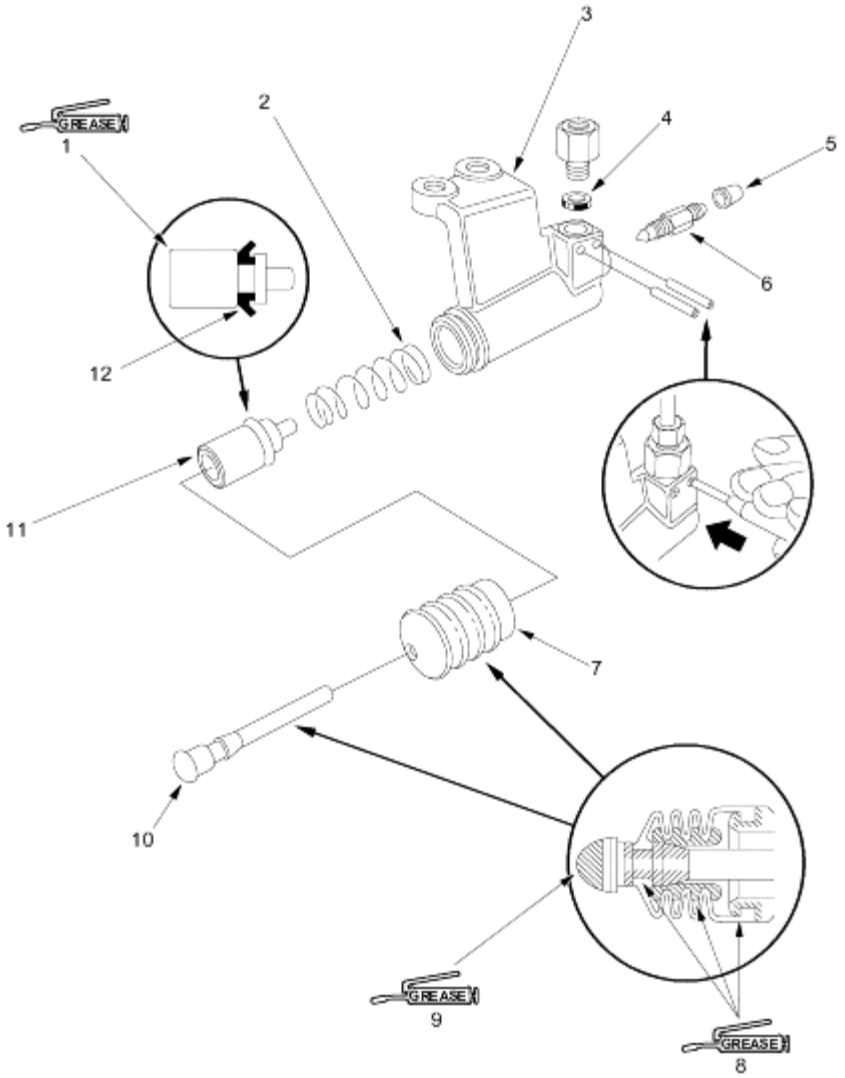
- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Clutch

Slave Cylinder Overhaul

NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid. Use only clean DOT 3 brake fluid.



1. (Brake Assembly Lube)
2. SLAVE CYLINDER SPRING
   Install with small end facing piston.
3. SLAVE CYLINDER BODY
   Check the cylinder wall for scoring and wear.
4. O-RING
   Replace.
5. BLEEDER SCREW CAP
6. BLEEDER SCREW
   8 Nm (0.8 kgf/m, 5.8 lbf/ft)
7. BOOT
   Check that it is fitted securely over the cylinder body.
8. (Brake Assembly Lube)
9. Urea Grease UM264
   (P/N 41211-PY5 -305)
10. PUSH ROD
11. SLAVE CYLINDER PISTON
    Check for wear and damage.
12. PISTON CUP
    Replace.

Clutch

Clutch Replacement

Special Tools Required

- Clutch alignment tool set 07PAF-0020000
- Ring gear holder 07LAB-PV00100 or 07924-PD20003
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200

Pressure Plate and Clutch Disc Removal

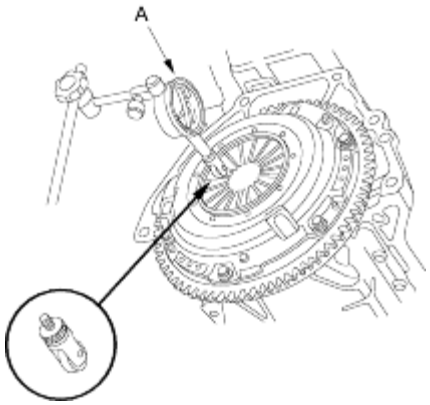
1. 1. Check the diaphragm spring fingers for height using the dial indicator (A). If the height is more than the service limit, replace the pressure plate.

D16W7, D16W8 Engine:

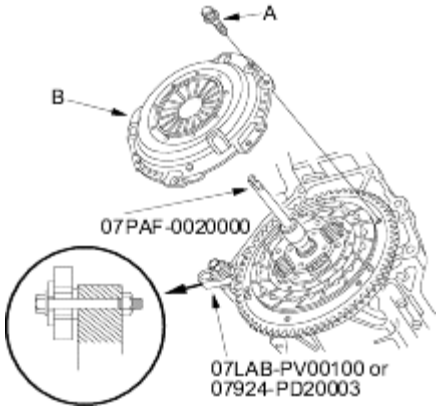
Standard (New):	0.6 mm (0.024 in.) max.
Service Limit:	0.8 mm (0.03 in.)

Except D16W7, D16W8 Engine:

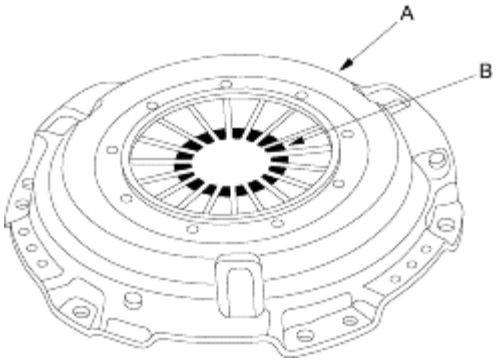
Standard (New):	0.6 mm (0.024 in.) max.
Service Limit:	1.0 mm (0.04 in.)



1. 2. Install the special tools.



2. 3. To prevent warping, unscrew the pressure plate mounting bolts (A) in a criss-cross pattern in several steps, then remove the pressure plate (B).
3. 4. Inspect the pressure plate (A) surface for wear, cracks and burning.



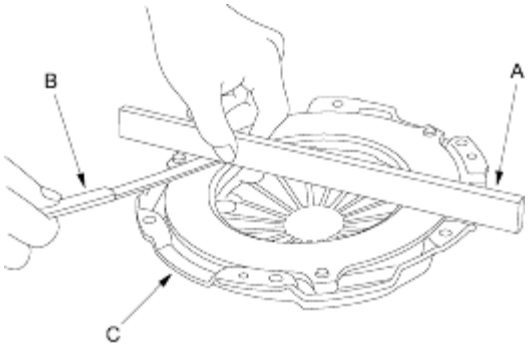
4. 5. Inspect the fingers of the diaphragm spring (B) for wear at the release bearing contact area.

Clutch

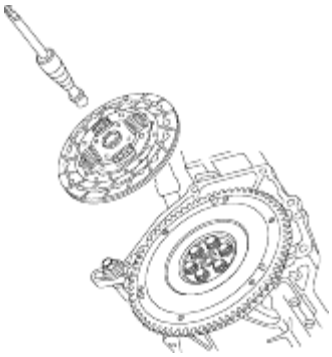
Clutch Replacement (cont'd)

1. 6. Inspect for warpage using a straight edge (A) and feeler gauge (B). Measure across the pressure plate (C). If the warpage is more than the services limit, replace the pressure plate.

Standard (New):	0.03 (0.001 in.) max.
Service Limit:	0.15 mm (0.006 in.)



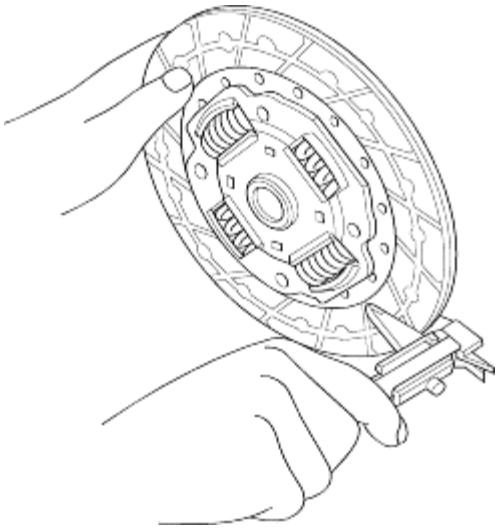
2. 7. Remove the clutch disc and special tools.



3. 8. Inspect the lining of the clutch for signs of slipping or oil. If the clutch disc is burned black or oil soaked, replace it.

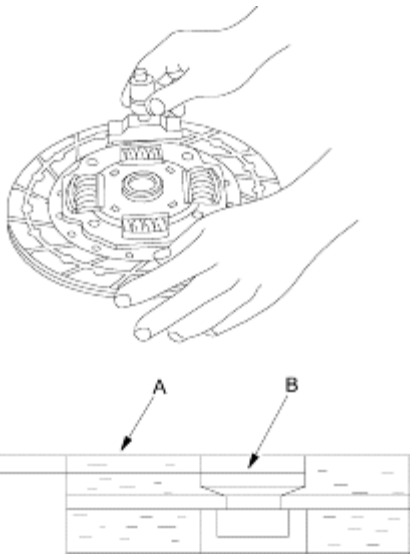
1. 9. Measure the clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

Standard (New):	8.3 - 9.0 mm (0.33 - 0.35 in.) max.
Service Limit:	5.7 mm (0.22 in.)



2. 10. Measure the rivet depth from the clutch disc lining surface (A) to the rivets (B) on both sides. If the rivet depth is less than the service limit, replace the clutch disc.

Standard (New):	1.2 - 1.7 mm (0.047 - 0.067 in.) max.
Service Limit:	0.2 mm (0.008 in.)



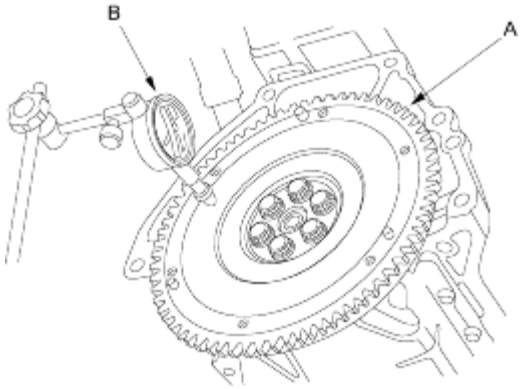
Clutch

Clutch Replacement (cont'd)

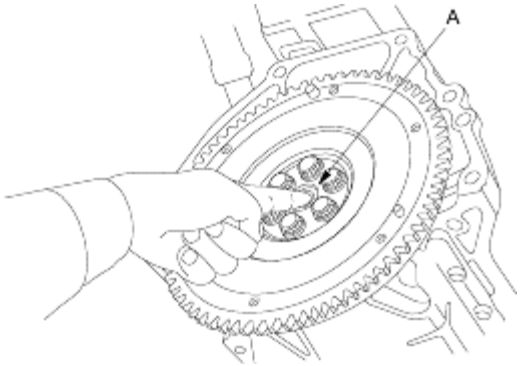
Flywheel Inspection

1. 1. Inspect the ring gear teeth for wear and damage.
   2. Inspect the clutch disc mating surface on the flywheel for wear, cracks and burning.
   3. With the engine installed measure the flywheel (A) runout using a dial indicator (B) through at least two full turns. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the runout is more than the service limit, replace the flywheel and recheck the runout. Resurfacing the flywheel is not recommended.

Standard (New):	0.06 mm (0.002 in.) max.
Service Limit:	0.15 mm (0.006 in.)



1. 4. Turn the inner race of the pilot bearing (A) with your finger. The bearing should turn smoothly and quietly. Check that the bearing outer race fits tightly in the flywheel. If the race does not turn smoothly, quietly or fit tight in the flywheel, replace the bearing.



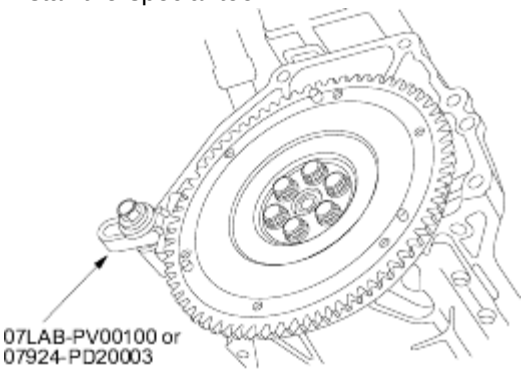
Clutch

Clutch Replacement (cont'd)

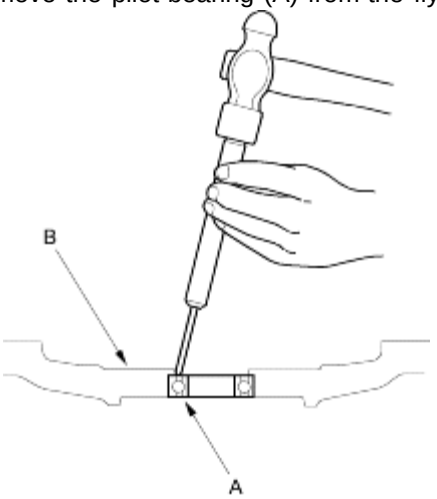
Flywheel Replacement

NOTE: Do not disassemble the flexible plate.

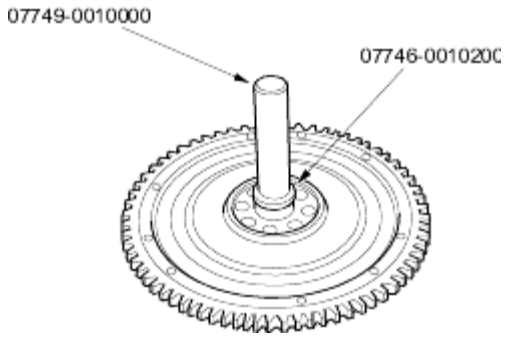
1. 1. Install the special tool.



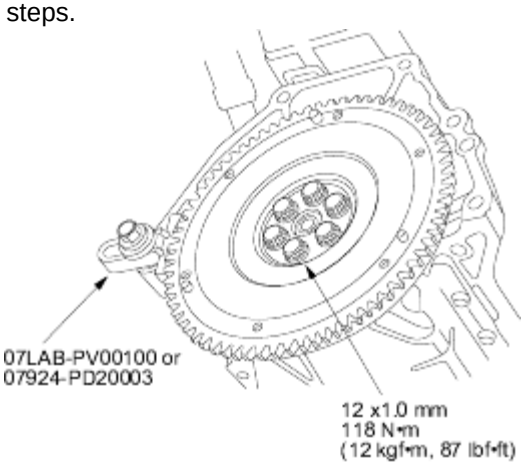
2. 2. Remove the flywheel mounting bolts in a criss-cross pattern in several steps, then remove the flywheel.
3. 3. Remove the pilot bearing (A) from the flywheel (B).



1. 4. Drive the new bearing into the flywheel using the special tools as shown. Apply a light coat of oil to the bearing surface.



2. 5. Align the hole in the flywheel with the crankshaft dowel pin and install the flywheel. Install the washer and mounting bolts finger-tight.
3. 6. Install the special tool, then torque the flywheel mounting bolts in a criss-cross pattern in several steps.

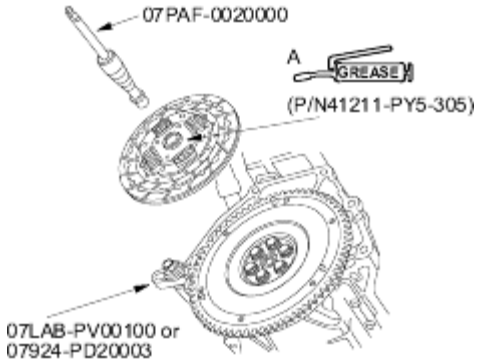


Clutch

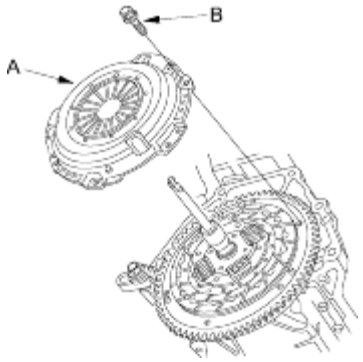
Clutch Replacement (cont'd)

Clutch Disc and Pressure Plate Installation

1. 1. Install the ring gear holder.

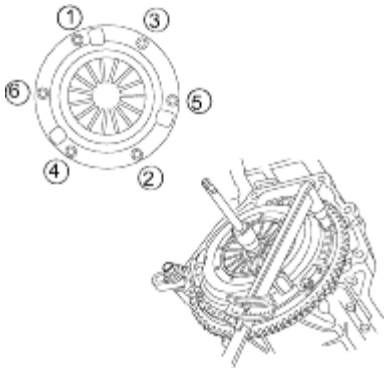


2. 2. Apply Urea Grease UM264 (P/N 41211-PY5-305 to the splines (A) of the clutch disc (B), then install the clutch disc using the special tools.
3. 3. Install the pressure plate (A) and the mounting bolts (B) finger-tight.



1. 4. Torque the mounting bolts in a criss-cross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

PRESSURE PLATE MOUNTING BOLT TORQUE:
25 Nm (2.6 kgf/m, 19 lbf/ft)



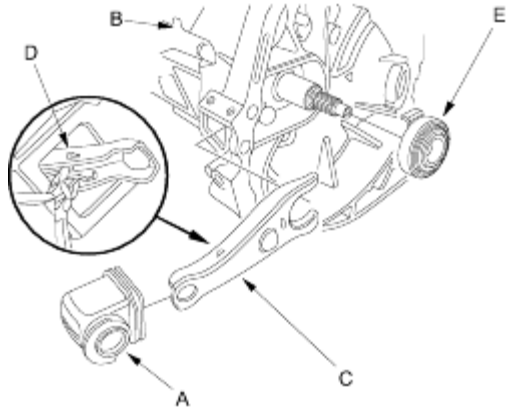
2. 5. Remove the special tools.
3. 6. Check the diaphragm spring fingers for height.

Clutch

Clutch Replacement (cont'd)

Release Bearing Replacement

1. 1. Remove the release fork boot (A) from the clutch housing (B).

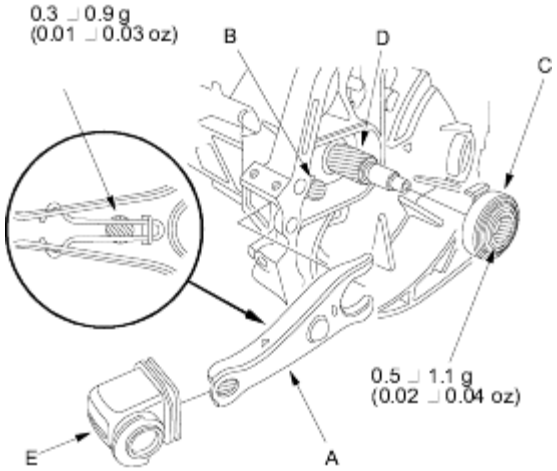


2. 2. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).
3. 3. Check the release bearing for play by spinning it by hand. If there is excessive play, replace the release bearing with a new one.

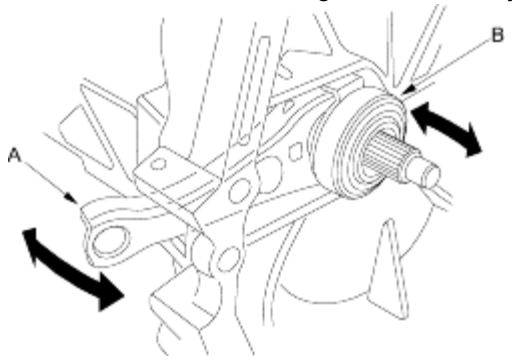
NOTE: The release bearing is packed with grease. Do not wash it in solvent.



1. 4. Apply Urea Grease UM264 (P/N 41211-PY5-305) to the release fork (A), the release fork bolt (B), the release bearing (C) and the release bearing guide (D) in the shaded areas.



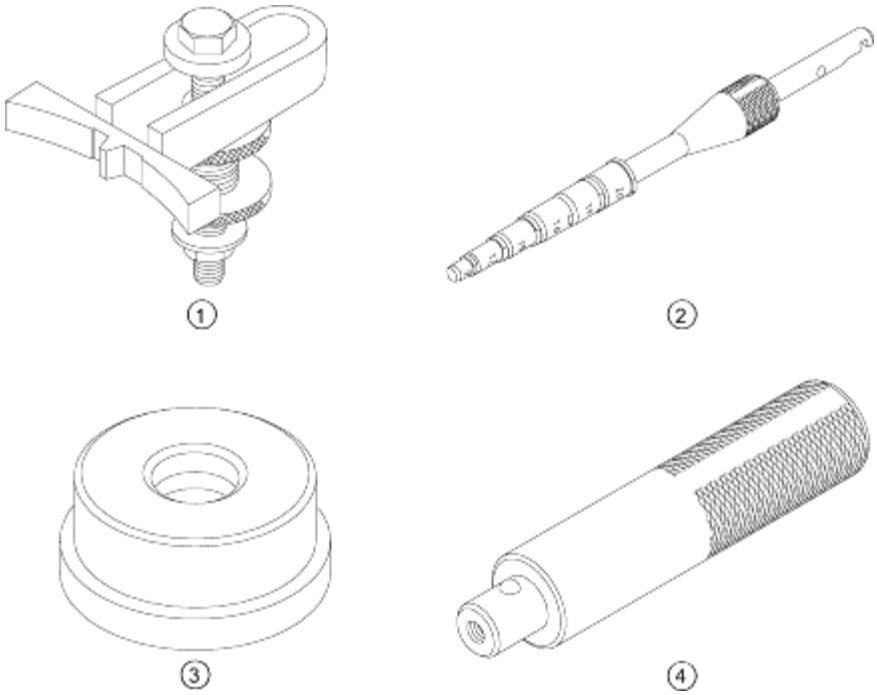
2. 5. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.
3. 6. Align the detent of the release fork with the release fork bolt, then press the release fork over the release fork bolt squarely.
   7. Install the release for boot (E), make sure the boot seals around the release fork and clutch housing.
   8. Move the release for (A) right and left to make sure that it fits properly against the release bearing (B) and that the release bearing slides smoothly.



Clutch
Special Tools

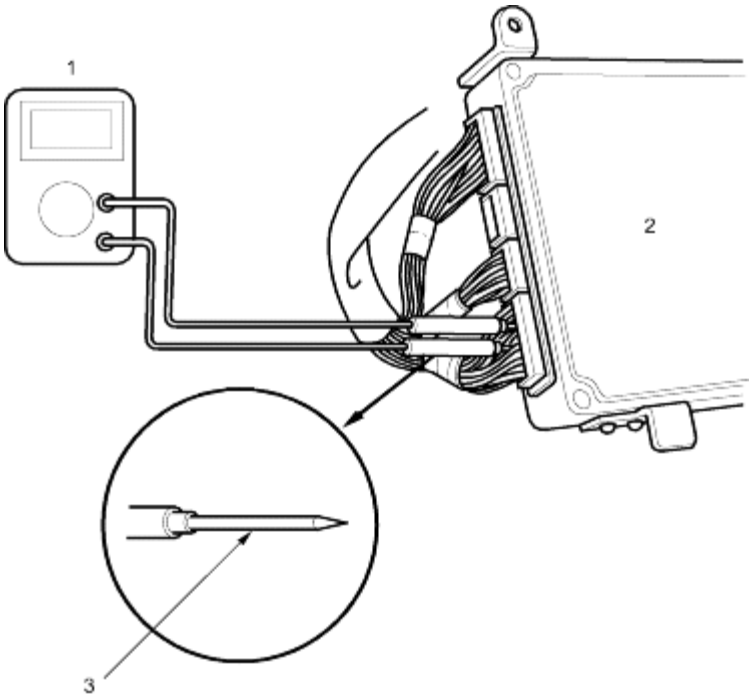
12-2

Ref. No	Tool Number	Description	Qty
1	07LAB-PV00100 or 07924-PD20003	Ring Gear Holder	1
2	07PAF-0020000	Clutch Alignment Tool Set	1
3	07746-0010200	Attachment, 37 x 40 mm	1
4	07749-0010000	Driver	1



General Information
Service Precautions (cont'd)

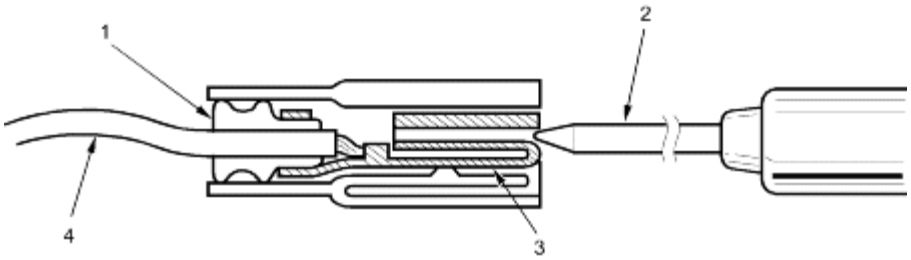
When checking any control module(s) or unit(s) connector terminals, gently slide the sharp tester probe from the wire side into the connector until it comes in contact with the terminal end of the wire.



1. DIGITAL CIRCUIT TESTER (Commercially available) or 07411-0020000
2. Any CONTROL MODULE or UNIT
3. SHARP TESTER PROBE

⚠ CAUTION

- Puncturing the insulation on a wire can cause poor or intermittent electrical connections.
- For testing at connectors, bring the tester probe into contact with the terminal from the connector side of wire harness connectors in the engine compartment. For female connectors, just touch lightly with the tester probe and do not insert the probe.

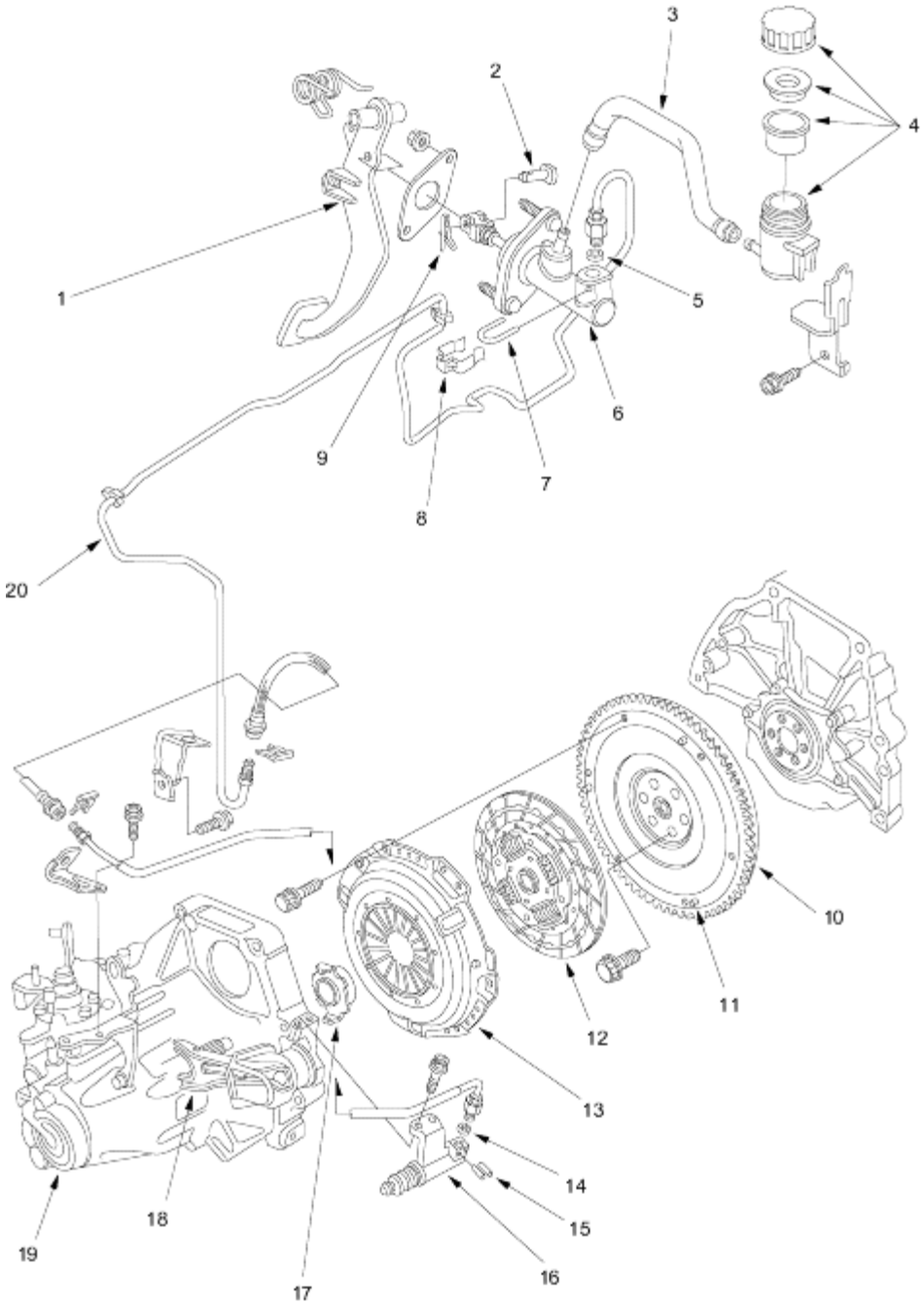


1. RUBBER SEAL
2. TESTER PROBE
3. TERMINAL
4. WIRE HARNESS

Clutch

Component Location Index

NOTE: LHD type is shown, RHD type is similar.



1. CLUTCH PEDAL
   Adjustment, page 12-4
2. PEDAL PIN
3. RESERVOIR HOSE
4. RESERVOIR
5. O-RING
   Replace
6. CLUTCH MASTER CYLINDER
   Removal, page 12-5a
   Installation, page 12-5b
7. RETAINING CLIP
8. RETAINING CLIP HOLDER
   (LHD type only)
9. LOCK PIN
10. FLYWHEEL
    Inspection, page 12-13
    Replacement, page 12-14
11. DOWEL PIN
12. CLUTCH DISC
    Removal, page 12-11
    Installation, page 12-5
13. PRESSURE PLATE
    Removal, page 12-11
    Installation, page 12-15
14. O-RING
15. ROLL PIN
16. SLAVE CYLINDER
    Replacement, page 12-8
17. RELEASE BEARING
    Replacement, 12-16
18. RELEASE FORK
19. M/T ASSEMBLY
20. CLUTCH LINE
21. CLIP

General Information

Service Precautions (cont'd)

5-step Troubleshooting

1. 1. Verify The Complaint
   Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.
2. 2. Analyse The Schematic
   Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or ground is a likely cause.

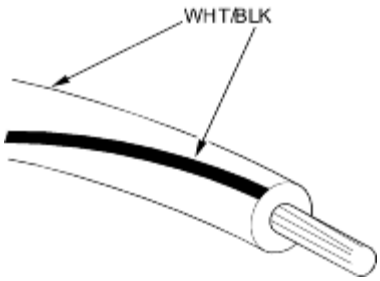
   Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.
3. 3. Isolate The Problem By Testing The Circuit
   Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.
4. 4. Fix The Problem
   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.
5. 5. Make Sure The Circuit Works
   Turn on all components in the repaired circuit in all modes to make sure you have fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

Wire Colour Codes

The following abbreviations are used to identify wire colours in the circuit schematics:

WHT.....	White
YEL.....	Yellow
BLK.....	Black
BLU.....	Blue
GRN.....	Green
RED.....	Red
ORN.....	Orange
PNK.....	Pink
BRN.....	Brown
GRY.....	Grey
PUR.....	Purple
LT BLU.....	Light Blue
LT GRN.....	Light Green

The wire insulation has one colour or one colour with another colour stripe. The second colour is the stripe.



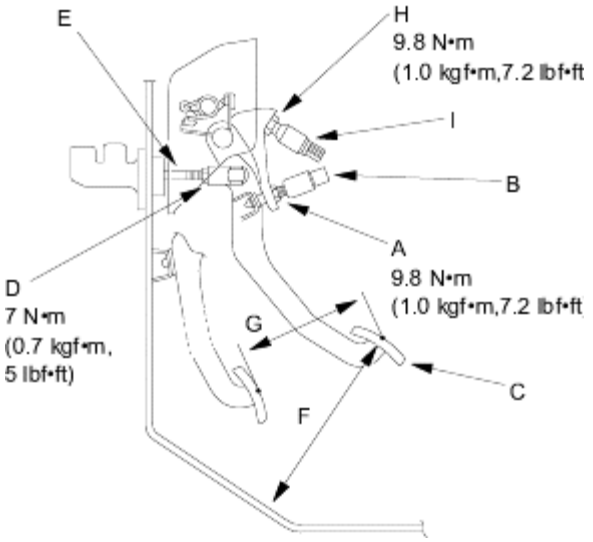
Clutch

Clutch Pedal and Clutch Pedal Position Switch Adjustment

NOTE:

- To check the clutch pedal position switch (see page 4-49).
- To check the clutch interlock switch (see page 4-7).
- Remove the driver's side floor mat before adjusting the clutch pedal.
- The clutch is self-adjusting to compensate for wear.
- If there is no clearance between the master cylinder piston and push rod, the release bearing is held against the diaphragm spring, which can result in clutch slippage or other clutch problems.

1. 1. Loosen locknut (A) and back off the clutch pedal position switch (B) (or adjusting bolt) until it no longer touches the clutch pedal (C).



2. 2. Loosen locknut (D) and turn the push rod (E) in or out to get the specified height (F) and stroke (G) at the clutch pedal.

Clutch Pedal Stroke:	130 - 140 mm (5.1 - 5.5 in.)
Clutch Pedal Height:	198 mm (7.8 in.)

3. 3. Tighten locknut (D).
   4. With the clutch pedal released, turn the clutch pedal position switch (B) in until it contacts the clutch pedal (C).

1. 5. Turn the clutch pedal position switch (B) by an additional 3/4 to 1 turn.

2. 6. Tighten locknut (A).
   7. Loosen locknut (H) and the clutch interlock switch (I).
   8. Press the clutch pedal to the floor.
   9. Release the clutch pedal 15 - 20 mm (0.59 - 0.79 in.) from the fully depressed position and hold it there. Adjust the position of the clutch interlock switch (I) so that the engine will start with the clutch pedal in this position.
   10. Tighten locknut (H).

General Information
Abbreviations

List of automotive abbreviations, which may be used in shop manual.

ABS	Anti-lock Brake System
A/C	Air Conditioning, Air Conditioner
ACL	Air Cleaner
A/F	Air Fuel Ratio
ALR	Automatic Locking Retractor
ALT	Alternator
AMP	Ampere(s)
ANT	Antenna
API	American Petroleum Institute
APPROX.	Approximately
ASSY	Assembly
A/T	Automatic Transmission
ATDC	After Top Dead Centre
ATF	Automatic Transmission Fluid
ATT	Attachment
ATTS	Active Torque Transfer System
AUTO	Automatic
AUX	Auxiliary
BARO	Barometric
BAT	Battery
BDC	Bottom Dead Centre
BTDC	Before Top Dead Centre
CARB	Carburettor
CAT or CATA	Catalytic Converter
CHG	Charge
CKF	Crankshaft Speed Fluctuation
CKP	Crankshaft Position
CO	Carbon Monoxide
COMP	Complete
CPB	Clutch Pressure Back up
CPC	Clutch Pressure Control
CPU	Central Processing Unit
CVT	Continuously Variable Transmission
CYL	Cylinder
CYP	Cylinder Position
DI	Distributor Ignition
DIFF	Differential
DLC	Data Link Connector
EPR	Evaporator Pressure Regulator
EPS	Electrical Power Steering
EVAP	Evaporative
EX	Exhaust
F	Front
FIA	Fuel Injection Air
FL	Front Left
FP	Fuel Pump
FR	Front Right
FSR	Fail Safe Relay
FWD	Front Wheel Drive
GAL	Gallon
GND	Ground
GPS	Global Positioning System
H/B	Hatchback
HC	Hydrocarbons
HID	High Intensity Discharge
HO2S	Heated Oxygen Sensor
IAB	Intake Air Bypass
IAC	Idle Air Control
IACV	Idle Air Control Valve
IAR	Intake Air Resonator
IAT	Intake Air Temperature
ICM	Ignition Control Module
ID	Identification
ID or I.D.	Inside Diameter
IG or IGN	Ignition
IMA	Idle Mixture Adjustment Integrated Motor Assist
IMMOBI.	Immobilizer (Immobiliser)
IN	Intake
INJ	Injection
INT	Intermittent
KS	Knock Sensor
L	Left
L/C	Lock-up Clutch
LCD	Liquid Crystal Display
LED	Light Emitting Diode

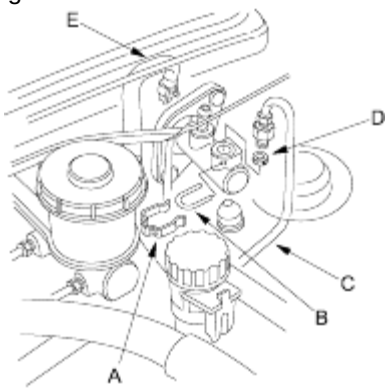
DOHC	Double Overhead Camshaft
DPI	Dual Point Injection
DTC	Diagnostic Trouble Code
EBD	Electronic Brake Distribution
ECM	Engine Control Module
ECT	Engine Coolant Temperature
EGR	Exhaust Gas Recirculation
ELD	Electrical Load Detector
LEV	Low Emission Vehicle
LF	Left Front
LH	Left Handle
LHD	Left Handle Drive
LR	Left Rear
LSD	Limited Slip Differential
L-4	In-line Four Cylinder (engine)

Clutch

Clutch Master Cylinder Replacement

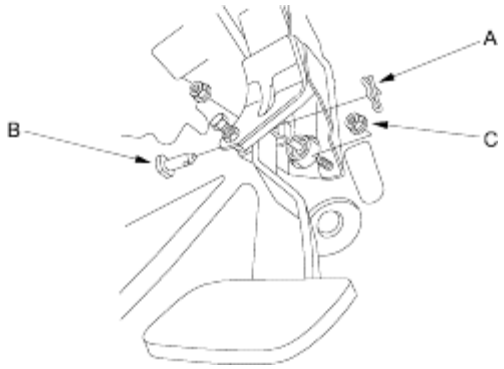
NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. 1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.
   2. Remove the retaining clip holder (A) and the retaining clip (B). Disconnect the clutch line (C) and remove the O-ring (D). Plug the end of the clutch line with a shop towel to prevent brake fluid from coming out.

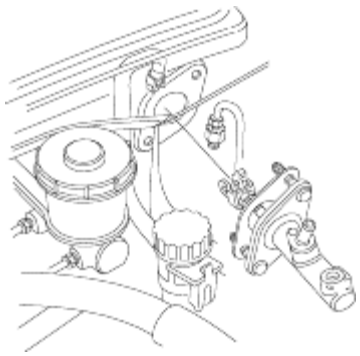


2. 3. Disconnect the reservoir hose (E) from the clutch master cylinder reservoir. Plug the end of the reservoir hose with a shop towel to prevent brake fluid from coming out.

1. 4. Pry out the lock pin (A) and pull the pedal pin (B) out of the yoke. Remove the nuts (C).



2. 5. Remove the clutch master cylinder.



3. 6. Install the clutch master cylinder in the reverse order of removal. Install the new O-ring. Tighten the master cylinder mounting nuts to 13 Nm (1.3 kgf/m, 9.4 lbf/ft).
4. 7. Bleed the clutch hydraulic system (see step 6 on page 12-9).

General Information
Abbreviations (cont'd)

MAP	Manifold Absolute Pressure
MAX.	Maximum
MBS	Mainshaft Brake System
MCK	Motor Check
MCU	Moment Control Unit
MIL	Malfunction Indicator Lamp
MIN.	Minimum
MPI	Multi Point Injection
M/S	Manual Steering
M/T	Manual Transmission
N	Neutral
Nox	Oxides of Nitrogen
OBD	On-board Diagnostic
O2S	Oxygen Sensor
OD or O.D.	Outside Diameter
P	Park
PAIR	Pulsed Secondary Air Injection
PCM	Powertrain Control Module
PCV	Positive Crankcase Ventilation Proportioning Control Valve
PDU	Power Drive Unit
PGM-FI	Programmed-fuel Injection
PGM-IG	Programmed Ignition
PH	Pressure High
PL	Pilot Light or Pressure Low
PMR	Pump Motor Relay
P/N	Part Number
PRI	Primary
P/S	Power Steering
PSF	Power Steering Fluid
PSP	Power Steering Pressure
PSW	Pressure Switch
Qty	Quantity
R	Right
REF	Reference
RGB	Red, Green, Black
RH	Right Hand
RHD	Right Hand Drive
RL	Rear Left
SPEC	Specification
S/R	Sun Roof
SRS	Supplemental Restraint System
STD	Standard
SW	Switch
T	Torque
TB	Throttle Body
T/B	Timing Belt
TC	Torque Converter
TCM	Transmission Control Module
TCS	Traction Control System
TDC	Top Dead Centre
TFT	Thin Film Transistor
T/N	Tool Number
TP	Throttle Position
TWC	Three Way Catalytic Converter
VC	Viscous Coupling
VIN	Vehicle Identification Number
VSS	Vehicle Speed Sensor
VTEC	Variable Valve Timing & Lift Valve Electronic Control
VVIS	Variable Volume Intake System
W	With
W/O	Without
WOT	Wide Open Throttle
2WD	Two Wheel Drive
4WD	Four Wheel Drive
2WS	Two Wheel Steering
4WS	Four Wheel Steering
4AT	4-speed Automatic Transmission
5MT	5-speed Manual Transmission
6MT	6-speed Manual Transmission
P	Park
R	Reverse
N	Neutral
D4	Drive (1st through 4th gear)
D3	Drive (1st through 3rd gear)
2	Second
1	First
D	Drive

RON	Research Octane Number
RR	Rear Right
SAE	Society of Automotive Engineers
SCS	Service Check Signal
SEC	Second Secondary
SOHC	Single Overhead Camshaft
SOL	Solenoid

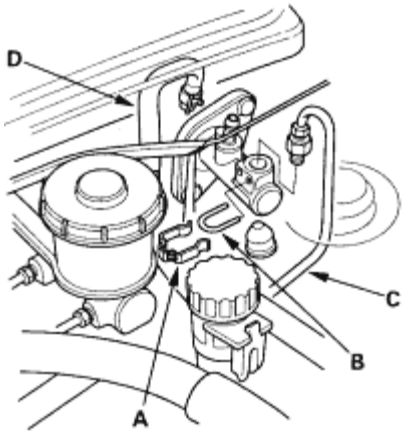
S	Second
L	Low
O/D	Over Drive
1ST	Low (gear)
2ND	Second (gear)
3RD	Third (gear)
4TH	Fourth (gear)
5TH	Fifth (gear)
6TH	Sixth (gear)

Clutch

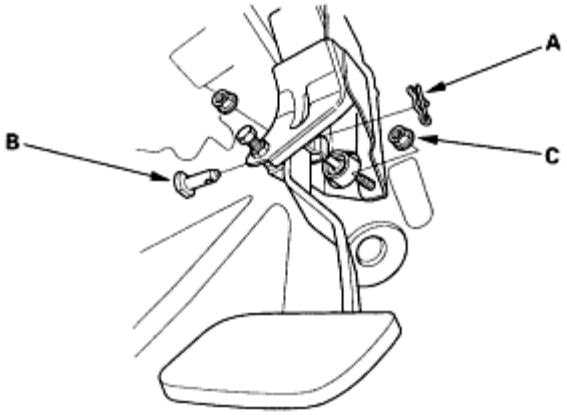
Clutch Master Cylinder Removal

NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

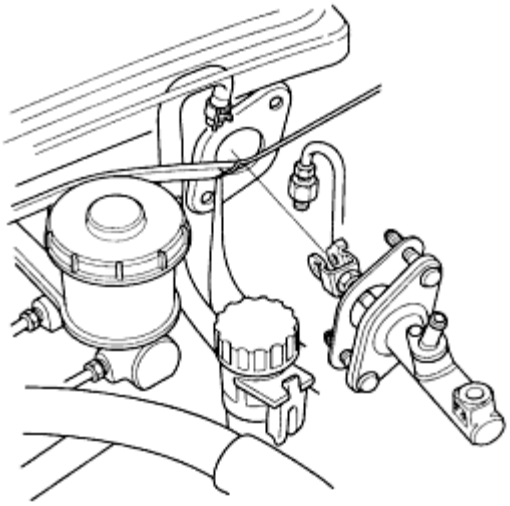
1. 1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.
   2. For the left-side steering vehicles with retaining clip holder (A) remove the retaining clip (B) after removing the retaining clip holder.



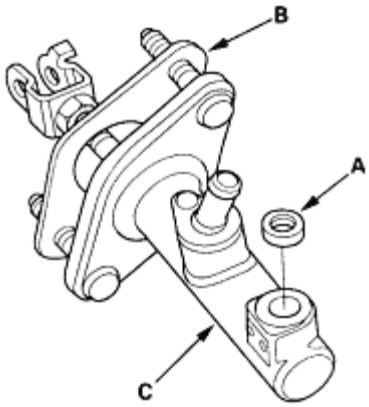
2. 3. Disconnect the clutch line (C) and reservoir hose (D). Plug the end of the clutch line and reservoir hose with a shop towel to prevent brake fluid from coming out.
   4. Pry out the lock pin (A) and pull the pedal pin (B) out from the yoke. Remove the nuts (C).



1. 5. Remove the clutch master cylinder.



2. 6. Remove the O-ring (A) and the clutch master cylinder seal (B) from the master cylinder (C).

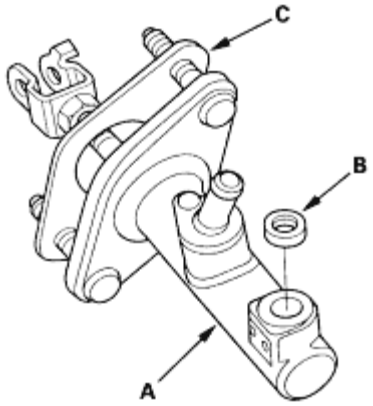


Clutch

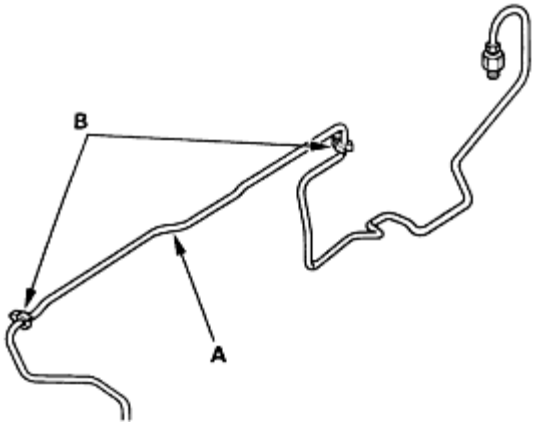
Clutch Master Cylinder Installation

NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

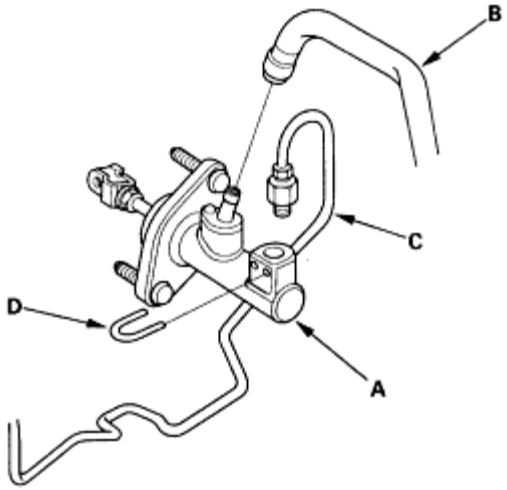
1. 1. Fit to the clutch master cylinder (A) a new O-ring (B) and a clutch master cylinder seal (C).



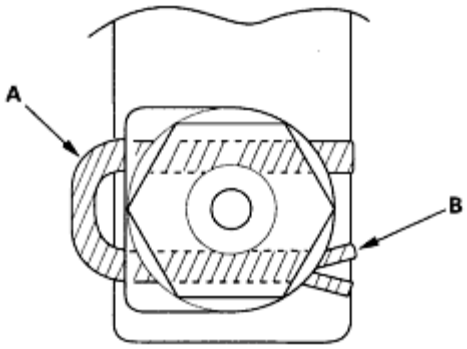
2. 7. For the left-side steering vehicles, remove the clutch line (A) from the clutch line clip (B) (2 places).



1. 8. Fit to the master cylinder (A) the reservoir hose (B), the clutch line (C) and a new retaining clip (D).
   - For the left-side steering vehicle, it is not necessary to use the retaining clip holder that was removed when removing the clutch master cylinder.



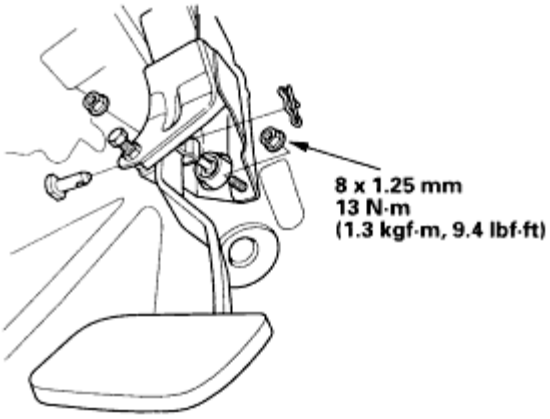
2. 9. To prevent the retaining clip (A) from coming off, pry open the tip of the retaining clip (B) with a screwdriver.
   - For the left-side steering vehicles, pry it open from the inside of the left front wheelhouse with a screwdriver.



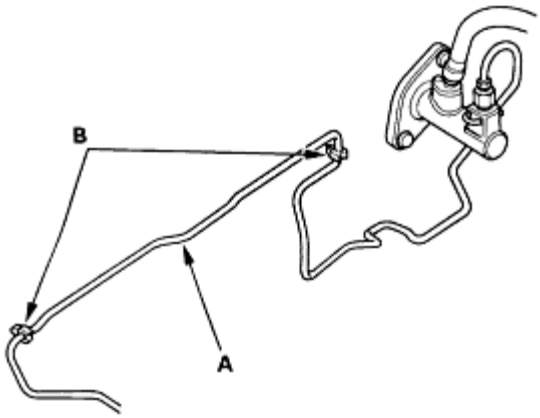
Clutch

Clutch Master Cylinder Installation (cont'd)

1. 10. Install the clutch master cylinder.



2. 11. For the left-side steering vehicles attach the clutch line (A) to the clutch line clip (B).

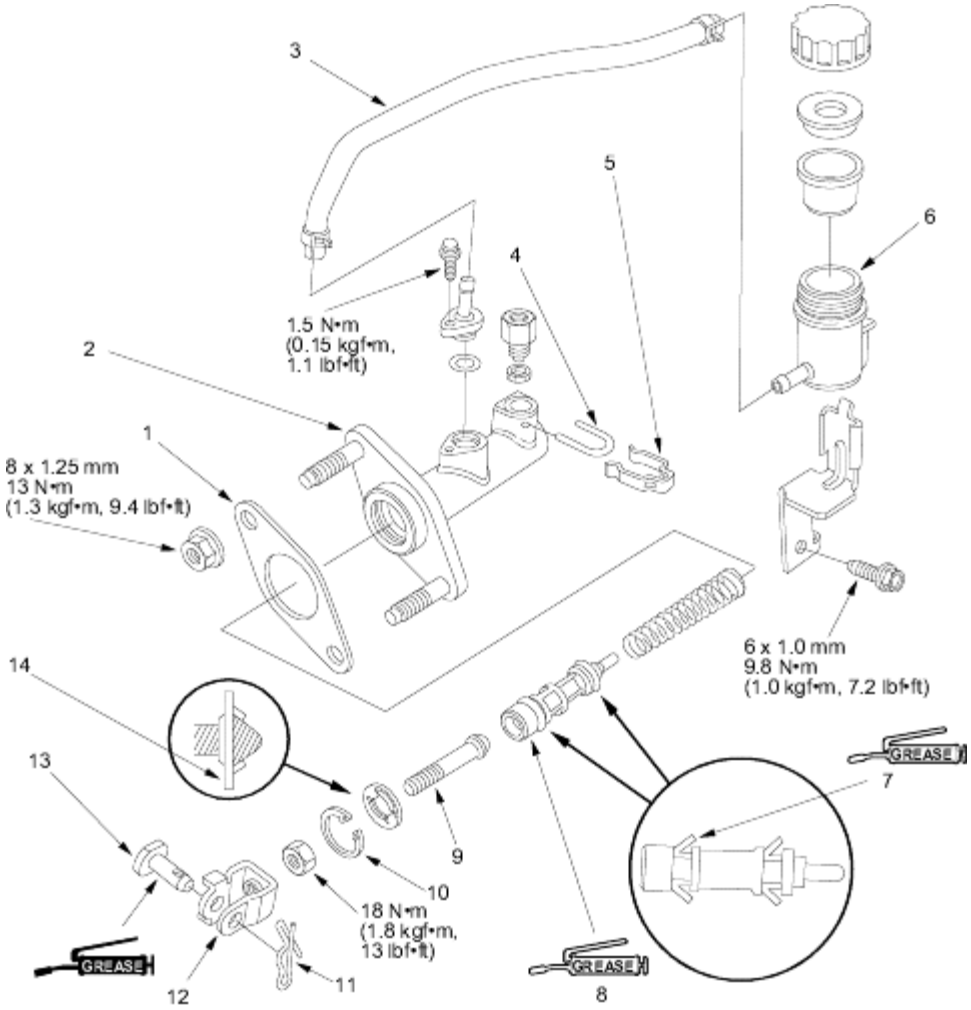


1. 12. Bleed the clutch hydraulic system.
13. Fill brake fluid up to the MAX line on the reservoir. Push back the diaphragm in the reservoir to the initial condition and after fitting it, attach the cap.

Clutch

Clutch Master Cylinder Overhaul

Exploded View



1. CLUTCH MASTER CYLINDER SEAL
2. MASTER CYLINDER BODY
   Check the cylinder wall for scoring and wear.
3. RESERVOIR HOSE
   Inspect for damage, leaks, interference and twisting.
4. RETAINING CLIP
   Replace.
5. RETAINING CLIP HOLDER (LHD type only)
6. RESERVOIR
7. (Brake Assembly Lube)
8. (Brake Assembly Lube)
9. PUSH ROD
10. CIRCLIP
11. LOCK PIN
    Replace.
12. YOKE
13. PEDAL PIN
14. STOPPER
    Check for damage and bending.
15. CLIP CATCHES ARE ON THE SIDE MARKED WITH A SMALL ARROW

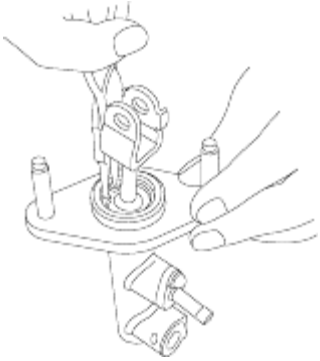
Clutch

Clutch Master Cylinder Overhaul (cont'd)

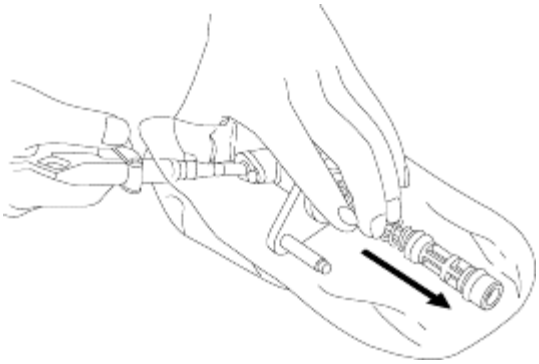
NOTE

- Refer to the Exploded View as needed during this procedure.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid. Use only clean DOT 3 brake fluid.

1. 1. Pry the circlip off the clutch master cylinder.



2. 2. Carefully remove the piston by applying air pressure through the clutch line hole.



1. 3. Slide the piston assembly into the clutch master cylinder.



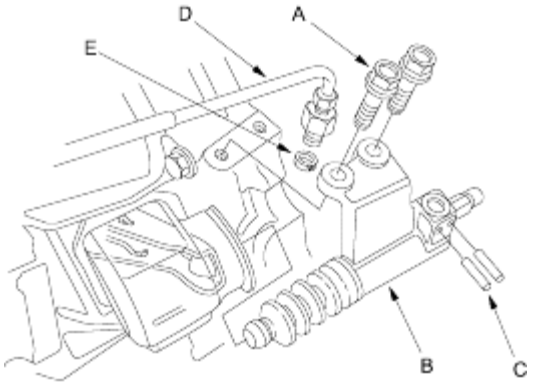
4. 4. Install the circlip in the groove of the clutch master cylinder.

Clutch

Slave Cylinder Replacement

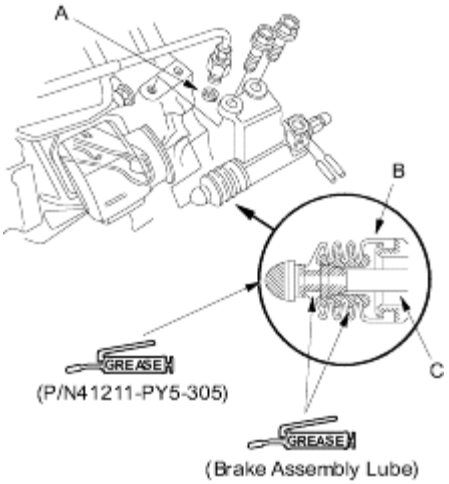
NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. 1. Remove the mounting bolts (A) and the slave cylinder (B).



2. 2. Remove the roll pins (C). Disconnect the clutch line (D) and remove the O-ring (E). Plug the end of the clutch line with a shop towel to prevent brake fluid coming out.

1. 3. Install the slave cylinder in the reverse order of removal. Install the new O-ring (A).



2. 4. Pull the boot (B) back and apply grease to the boot and slave cylinder rod (C). Reinstall the boot.
3. 5. Apply Urea Grease UM264 (P/N 41211-PY5-305) to the push rod of the slave cylinder. Tighten the slave cylinder mounting bolts to 22 Nm (2.2 kgf/m, 1.6 lbf/ft).

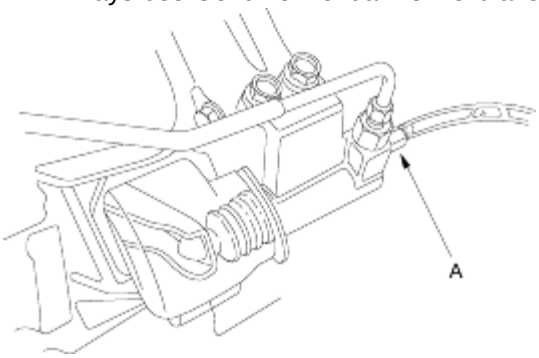
Clutch

Slave Cylinder Replacement (cont'd)

1. 6. Bleed the clutch hydraulic system.

NOTE: Be careful not to damage the slave cylinder by over-tightening the bleeder screw.

- Attach a hose to the bleeder screw (A) and suspend the hose in a container of brake fluid.
- Make sure there is an adequate supply of fluid at the clutch master cylinder, then slowly pump the clutch pedal until no more bubbles appear at the bleeder hose.
- Refill the clutch master cylinder with fluid when done.
- Always use Genuine Honda DOT 3 brake fluid.



General Information

Chassis and Engine Numbers (cont'd)

Applicable Area Code/VIN/Engine Number/Transmission Number List

MODEL	APPLICABLE AREA CODE	GRADE NAME	TRANSMISSION TYPE	VEHICLE IDENTIFICATION NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
CIVIC	KE	1.4S	5MT	JHMES45301S200001-	D14Z5-1000001-	SLW-1000001-
			4AT	JHMES46301S200001-	D14Z5-1000001-	SLXA-1000001-
		1.6SE	5MT	JHMES55401S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56401S200001-	D16W7-1000001-	SLXA-1000001-
	KG	1.4S	5MT	JHMES45301S200001-	D14Z5-1000001-	SLW-1000001-
			4AT	JHMES46301S200001-	D14Z5-1000001-	SLXA-1000001-
		1.6LS	5MT	JHMES55401S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56401S200001-	D16W7-1000001-	SLXA-1000001-
			5MT	JHMES55501S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56501S200001-	D16W7-1000001-	SLXA-1000001-
		1.6ES	5MT	JHMES55701S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56701S200001-	D16W7-1000001-	SLXA-1000001-
			5MT	JHMES55901S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56901S200001-	D16W7-1000001-	SLXA-1000001-
	KQ	GLI	5MT	JHMES15501S200001-	D17Z1-1000001-	SLW-1000001-
			4AT	JHMES16501S200001-	D17Z1-1000001-	SLXA-1000001-
		VTI	5MT	JHMES15901S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMES16901S200001-	D17A2-1000001-	SLXA-1000001-
			5MT	JHMES15001S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMES16001S200001-	D17A2-1000001-	SLXA-1000001-

Manual Transmission

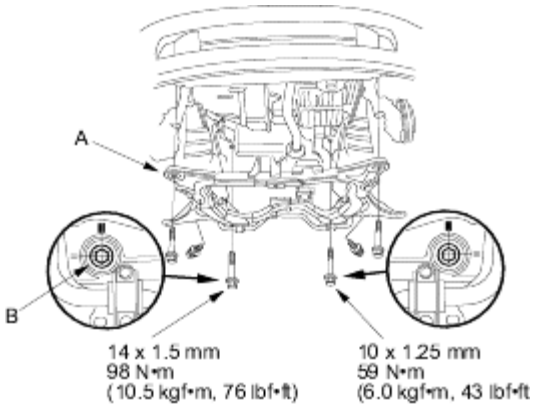
Special Tools	13-2
Transmission Fluid Inspection and Replacement	13-3
Back-Up Light Switch Test	13-3
Transmission Removal	13-4
Transmission Installation	13-9
Transmission Disassembly	13-15
Reverse Shift Fork Clearance Inspection	13-20
Shift Lever Clearance Inspection	13-20
Shift Lever Assembly Disassembly/Reassembly	13-21
Shift Forks Clearance Inspection	13-22
Shift Forks Disassembly/Reassembly	13-23
Mainshaft Assembly Clearance Inspection	13-24
Mainshaft Disassembly	13-26
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Countershaft Assembly Clearance Inspection	13-30
Countershaft Disassembly	13-32
Countershaft Inspection	13-33
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Mainshaft Bearing and Oil Seal Replacement	13-39
Countershaft Bearing Replacement	13-40
Mainshaft Thrust Clearance Adjustment	13-40
Transmission Reassembly	13-43
Gearshift Mechanism Replacement	13-48

M/T Differential

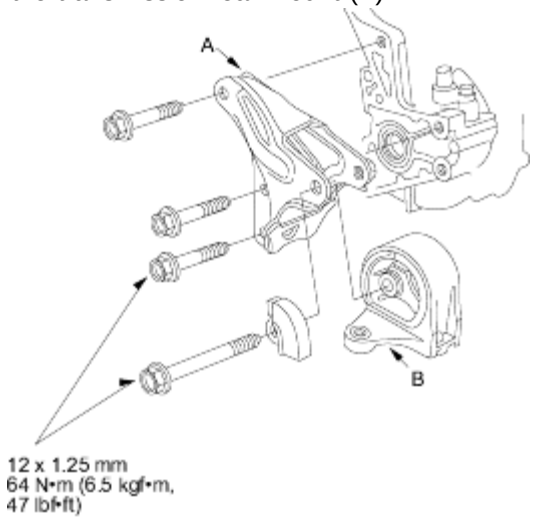
Component Location Index	13-50
Backlash Inspection	13-51
Final Driven Gear/Carrier Replacement	13-51
Carrier Bearings Replacement	13-52
Oil Seal Replacement	13-53
Differential Thrust Clearance Adjustment	13-54

Manual Transmission
Transmission Installation (cont'd)

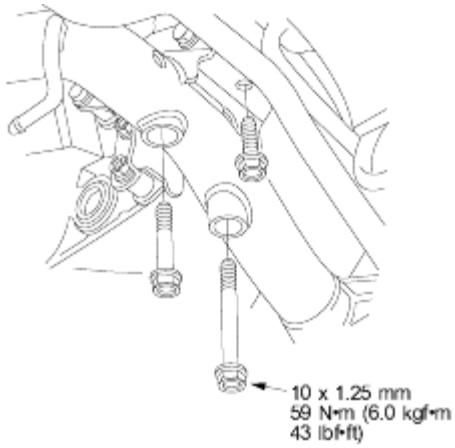
1. 6. Install the front suspension sub frame (A) in its original position by aligning the marks (B) you made in the removal procedure.



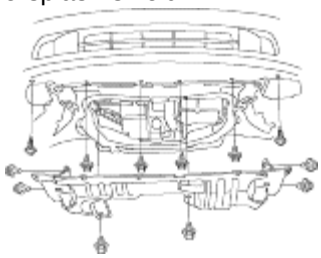
2. 7. Install the transmission rear mount bracket (A) and the transmission rear mount (B).



1. 8. Install the three mounting bolts for the transmission rear mount.



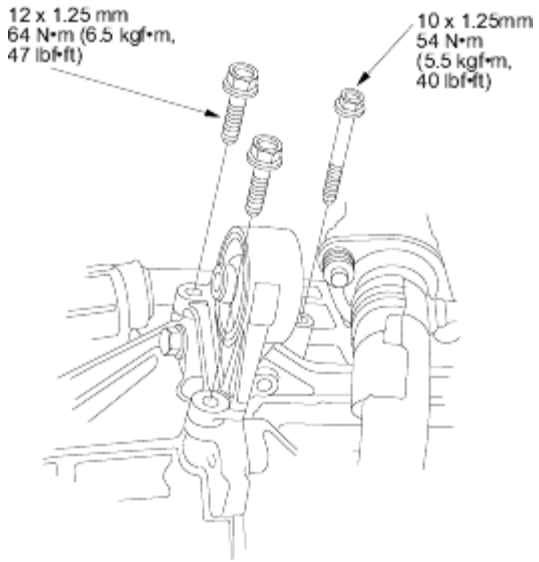
2. 9. Install the driveshafts (see page 16-18).
10. Install exhaust pipe A (see step 14 on page 5-16).
11. Install the splash shield.



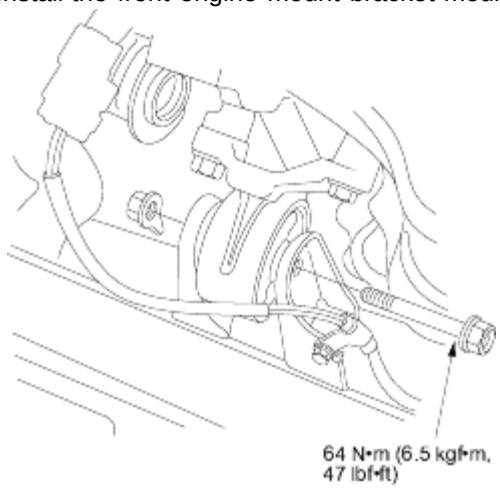
Manual Transmission

Transmission Installation (cont'd)

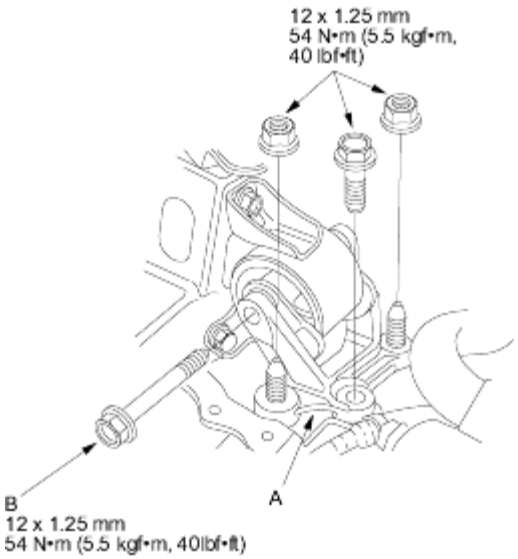
1. 12. Install the front engine mount.



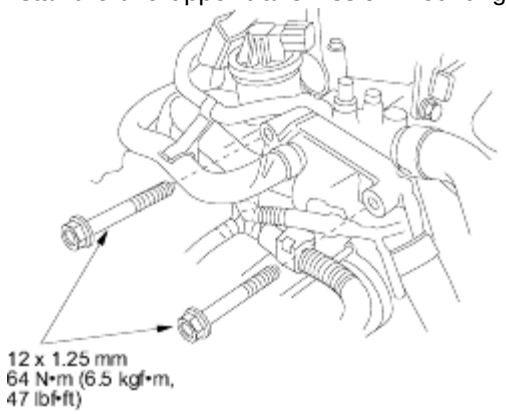
2. 13. Install the front engine mount bracket mounting bolt.



1. 14. Install the transmission mount bracket (A) and the transmission mounting bolts (B).



2. 15. Install the two upper transmission mounting bolts.



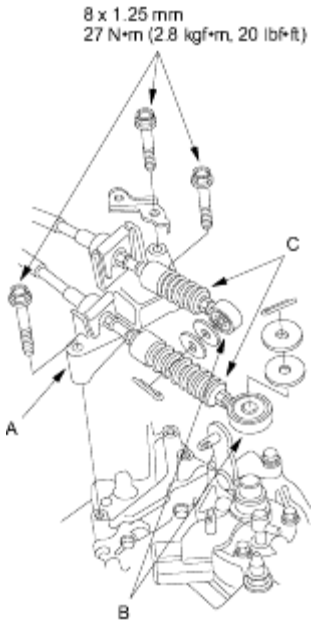
Manual Transmission

Transmission Installation (cont'd)

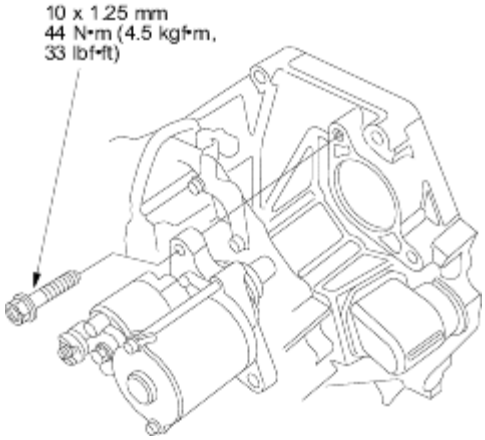
1. 16. Remove the chain hoist.
2. 17. Connect the vehicle speed sensor (VSS) connector.



1. 18. Install the cable bracket (A) and cables (B). Turn the shift lever boot (C) so the hole is facing down.



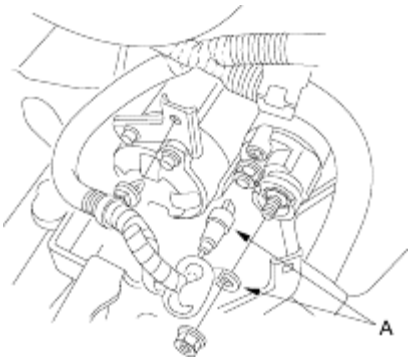
2. 19. Install the starter motor.



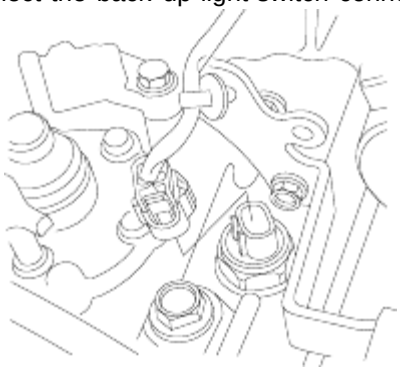
Manual Transmission

Transmission Installation (cont'd)

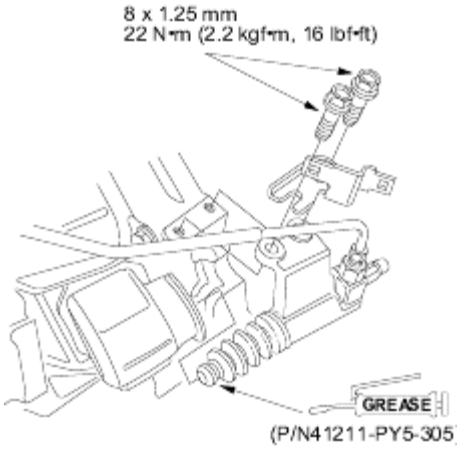
1. 20. Connect the starter cables (A) to the starter. Make sure that the crimped side of the ring terminal is facing out.



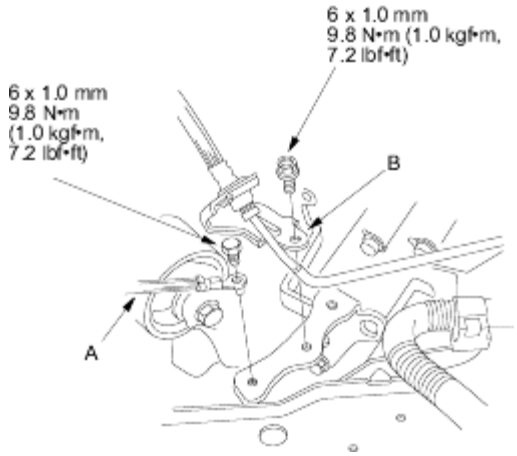
2. 21. Connect the back-up light switch connector.



1. 22. Apply Urea Grease UM264 (P/N 41211-PY5-305) to the end of the slave cylinder rod. Install the slave cylinder. Take care not to bend the clutch line.



2. 23. Connect the transmission ground cable (A), then install the clutch line bracket (B).



3. 24. Install the intake air duct (A) and the air cleaner housing (see page 11-146).

Manual Transmission

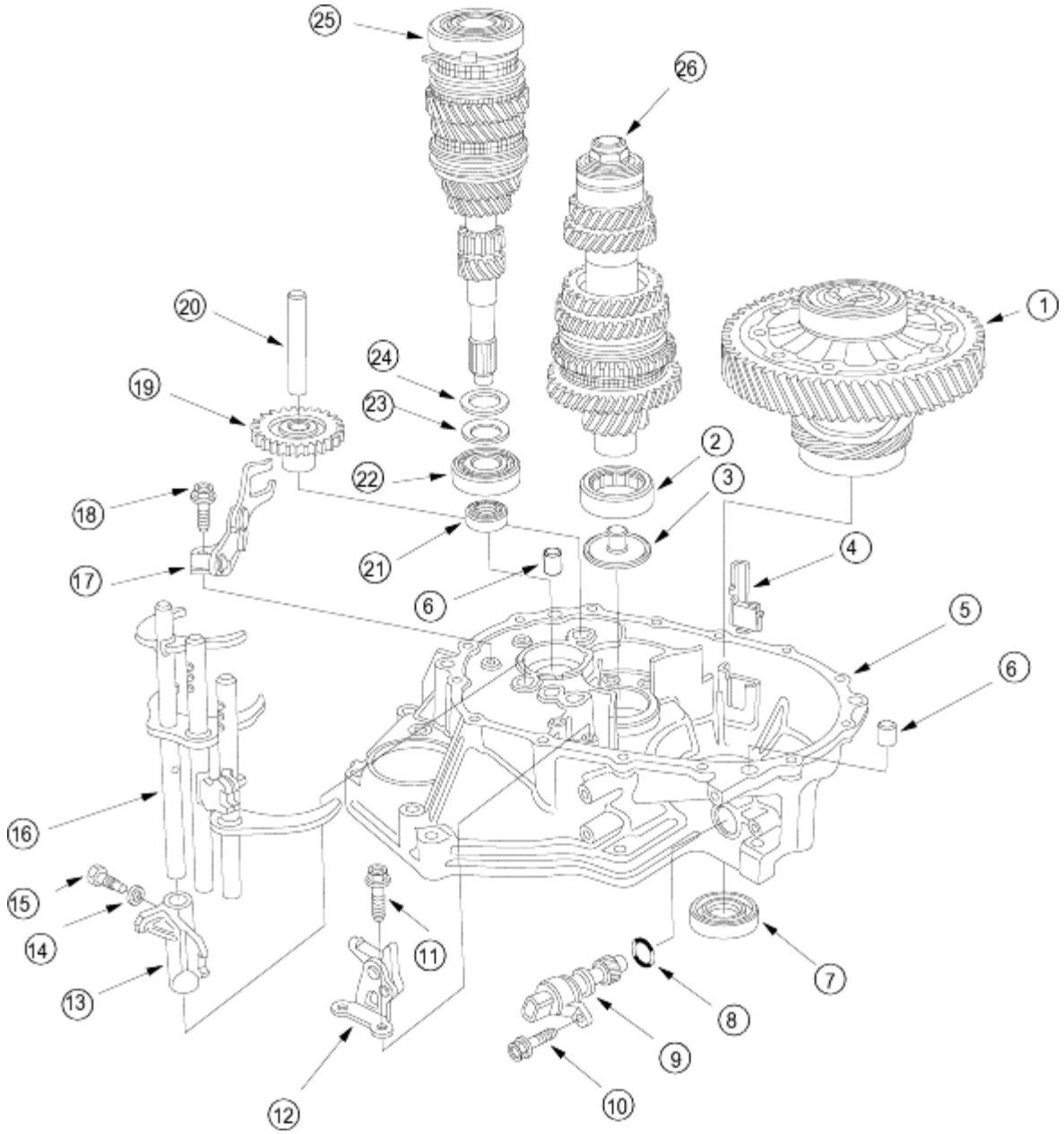
Transmission Installation (cont'd)

1. 25. Install the intake air duct (see step 39 on page 5-20).
2. 26. Install the battery. Connect the positive (+) cable first, then the negative (-) cable to the battery.
   27. Refill the transmission fluid (see page 13-3).
   28. Test-drive the vehicle.
   29. Check the clutch operation.
   30. Check the transmission for noise and smooth operation.
   31. Check the front wheel alignment (see page 18-4).
   32. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Manual Transmission

Transmission Disassembly

Exploded View – Clutch Housing



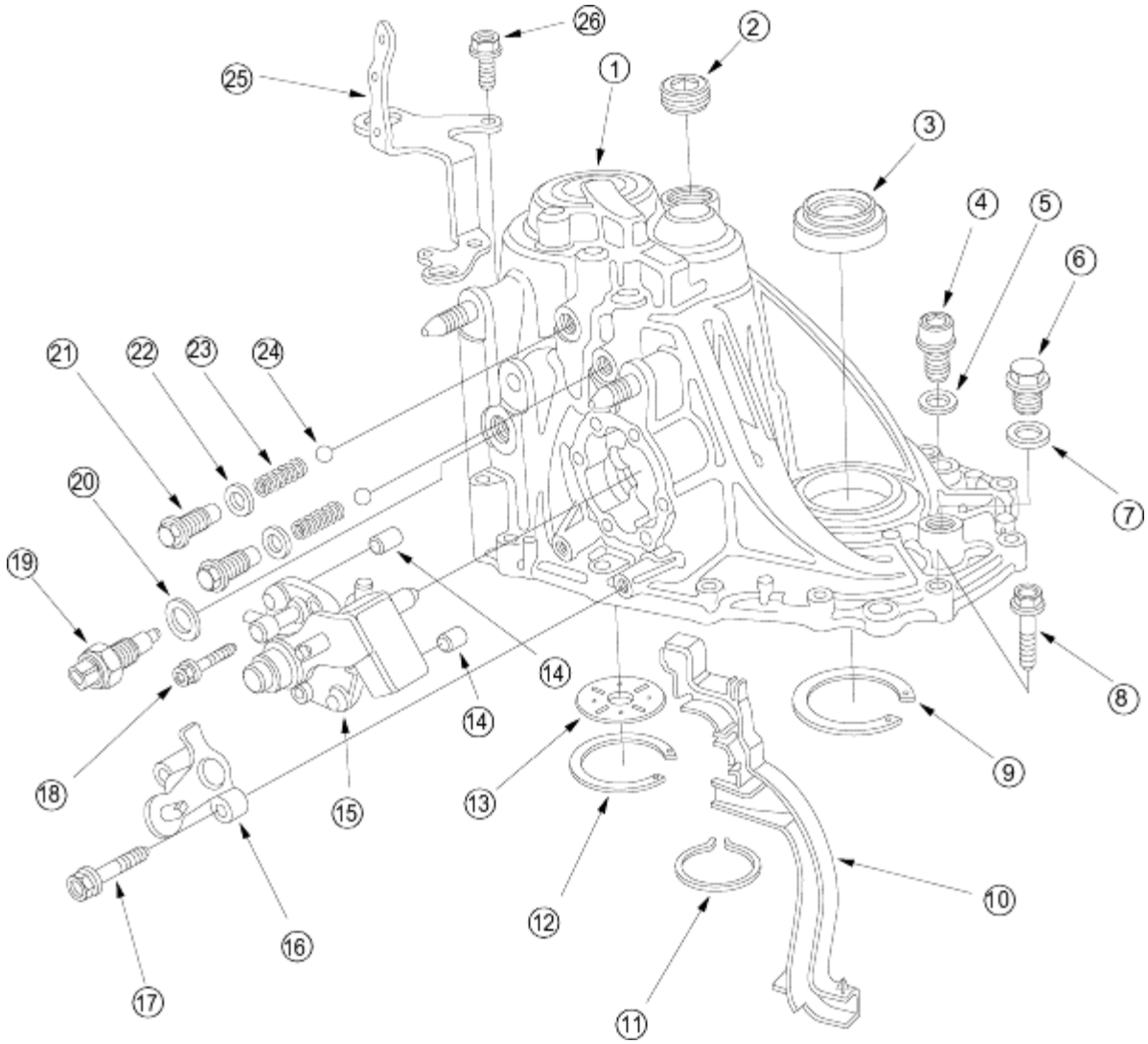
1	DIFFERENTIAL ASSEMBLY	10	6 mm FLANGE BOLT	18	6 mm FLANGE BOLT
2	NEEDLE BEARING		9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)		15 Nm (1.5 kgf/m, 11 lbf/ft)
3	OIL GUIDE PLATE C	11	6 mm FLANGE BOLT	19	REVERSE IDLER GEAR
4	MAGNET		15 Nm (1.5 kgf/m, 11 lbf/ft)	20	REVERSE GEAR SHAFT
5	CLUTCH HOUSING	12	REVERSE LOCK CAM	21	26 x 42 x 7 mm OIL SEAL
6	14 x 20 mm DOWEL PIN	13	5-R SHIFT PIECE		Replace.
7	35 x 56 x 8 mm OIL SEAL	14	8 mm SPRING WASHER	22	BALL BEARING
	Replace.	15	8 mm SPECIAL BOLT	23	36 mm SPRING WASHER
8	O-RING		31 Nm (3.2 kgf/m, 23 lbf/ft)	24	26 mm WASHER

	Replace.	16	SHIFT FORK ASSEMBLY	25	MAINSHAFT ASSEMBLY
9	VEHICLE SPEED SENSOR (VSS)	17	REVERSE SHIFT FORK	26	COUNTERSHAFT ASSEMBLY

Manual Transmission

Transmission Disassembly (cont'd)

Exploded View – Transmission Housing



1	TRANSMISSION HOUSING	9	72 mm SHIM (Turkey-produced D14Z6 engine transmission)	18	6 mm FLANGE BOLT 12 Nm (1.2 kgf/m, 9 lbf/ft)
2	32 mm SEALING CAP 25 Nm (2.5 kgf/m, 18 lbf/ft)			19	BACK-UP LIGHT SWITCH 25 Nm (2.5 kgf/m, 18 lbf/ft)
3	35 x 58 x 8 mm OIL SEAL Replace		80 mm SHIM (Except Turkey-produced D14Z6 engine transmission)	20	18 mm WASHER Replace
4	DRAIN PLUG 39 Nm (4.0 kgf/m, 29 lbf/ft)	10	OIL GUTTER PLATE	21	DETENT BOLTS 22 Nm (2.2 kgf/m, 16 lbf/ft)
5	14 mm WASHER Replace	11	SNAP RING	22	12 mm WASHER Replace
6	FILLER PLUG 44 Nm (4.5 kgf/m, 33 lbf/ft)	12	72 mm SHIM	23	SPRING L. 23.6 mm (0.93 in.)
7	20 mm WASHER	13	OIL GUIDE PLATE M	24	STEEL BALL
		14	8 x 10 mm DOWEL PIN		
		15	SHIFT LEVER ASSEMBLY		

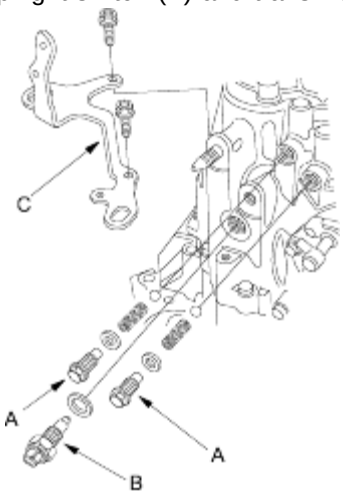
	Replace	16	SELECT LEVER ASSEMBLY	25	TRANSMISSION HANGER
8	8 mm FLANGE BOLT 27 Nm (2.8 kgf/m, 20 lbf/ft)	17	8 mm FLANGE BOLT 27 Nm (2.8 kgf/m, 20 lbf/ft)	26	8 mm FLANGE BOLT 27 Nm (2.8 kgf/m, 20 lbf/ft)

Manual Transmission

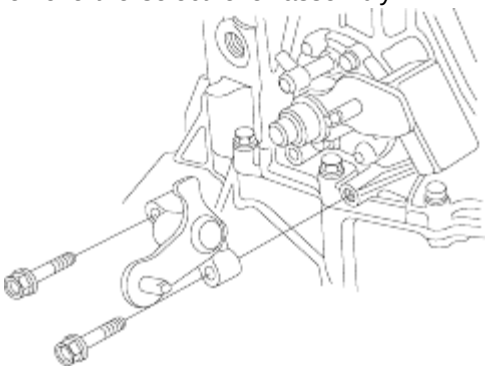
Transmission Disassembly (cont'd)

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

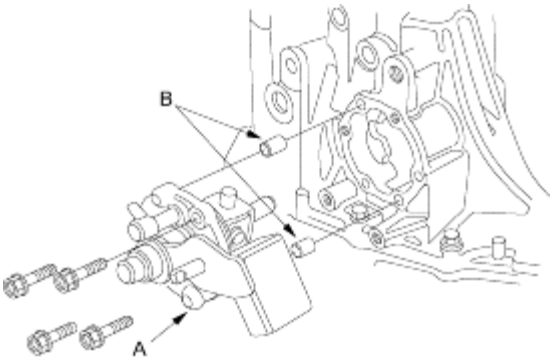
1. 1. Remove the detent bolts (A), springs, steel balls, back-up light switch (B) and transmission hanger (C).



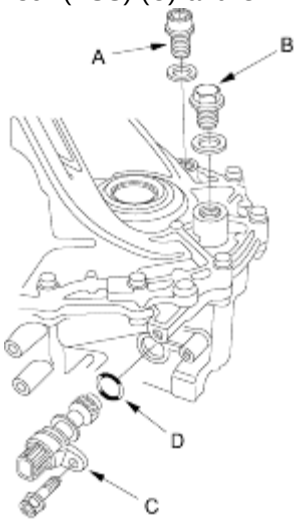
2. 2. Remove the select lever assembly.



1. 3. Remove the shift lever assembly (A) and 8 x 10 mm dowel pins (B).



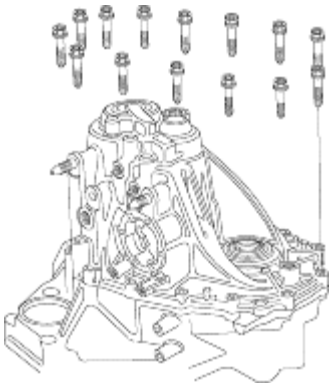
2. 4. Remove the drain plug (A), filler plug (B), vehicle speed sensor (VSS) (C) and O-ring (D).



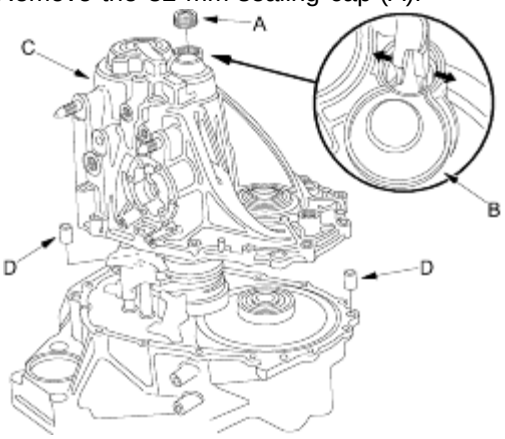
Manual Transmission

Transmission Disassembly (cont'd)

1. 5. Remove the 8 mm flange bolts in a criss-cross pattern in several steps.

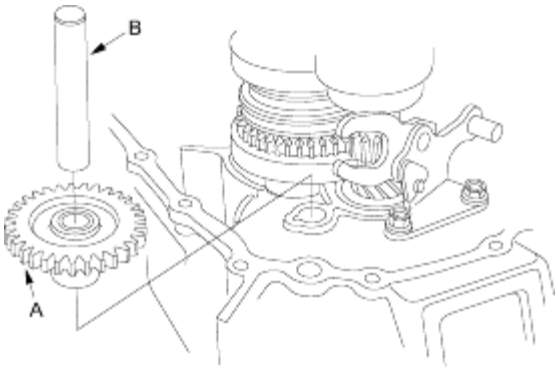


2. 6. Remove the 32 mm sealing cap (A).

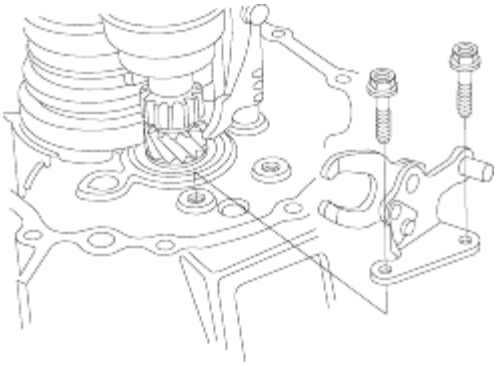


3. 7. Expand the 52 mm snap ring (B) on the countershaft ball bearing and remove it from the groove using a pair of snap ring pliers.
8. Remove the transmission housing (C) and 14 x 20 mm dowel pins (D).

1. 9. Remove the reverse idler gear (A) and reverse gear shaft (B).



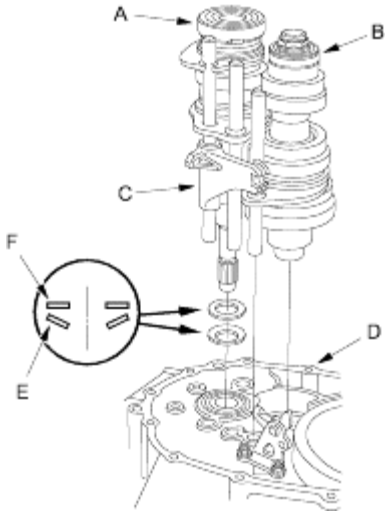
2. 10. Remove the reverse shift fork.



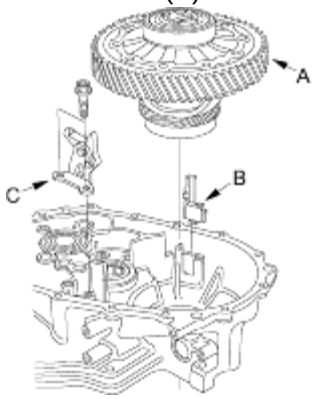
Manual Transmission

Transmission Disassembly (cont'd)

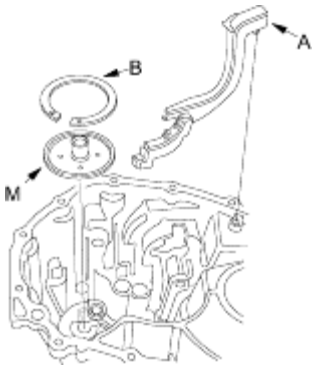
1. 11. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).



2. 12. Remove the 36 mm spring washer (E) and 26 mm washer (F).
   13. Remove the differential assembly (A), magnet (B) and reverse lock cam (C).



1. 14. Remove the oil gutter plate (A), oil guide plate (M) and 72 mm shim (B).

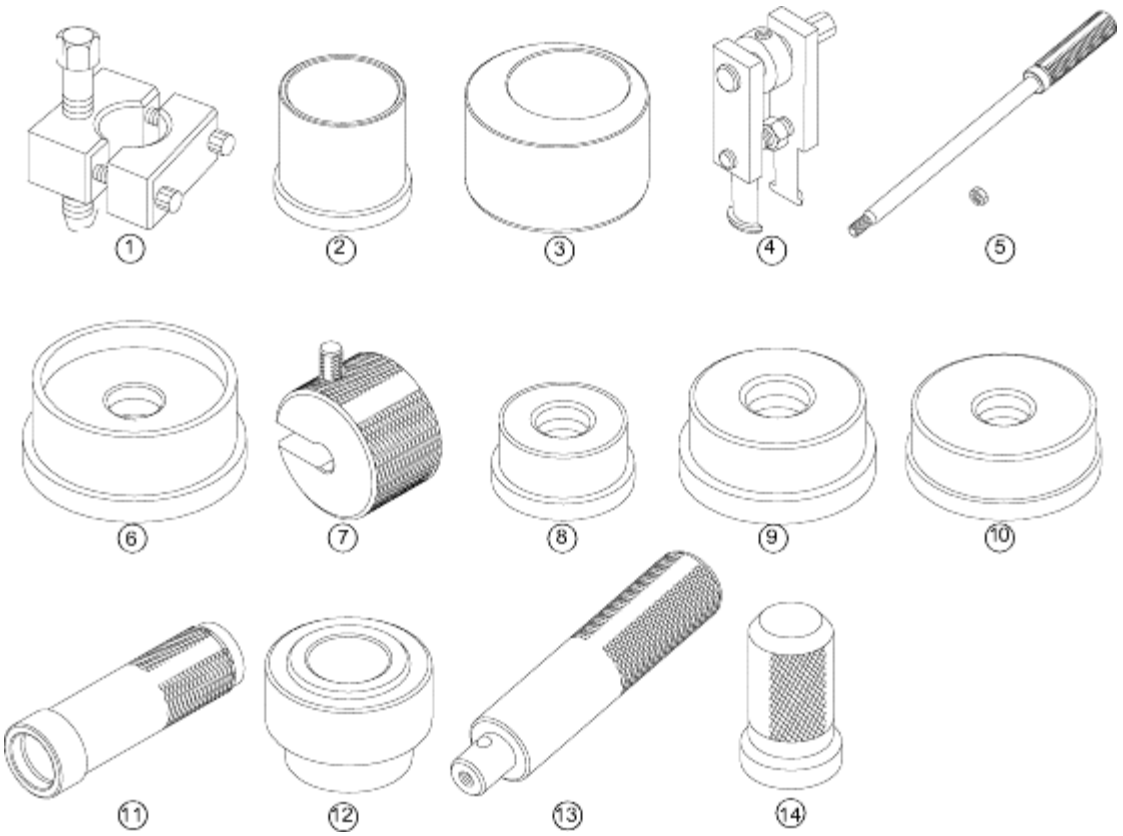


Manual Transmission Special Tools	13-2

Ref. No	Tool Number	Description	Qty
* 1	07GAJ-PG20110	Mainshaft Holder	1
* 2	07GAJ-PG20120	Base Collar	1
* 3	07GAJ-PG20130	Mainshaft Base	1
** 4	07JAC-PH80100	Adjustable Bearing Puller, 25 – 40 mm	1
** 5	07JAC-PH80200	Bearing Remover Shaft	1
6	07NAD-P200100	Oil Seal Driver Attachment	1
** 7	07741-0010201	Slide Hammer	1
8	07746-0010200	Attachment, 37 x 40 mm	1
9	07746-0010300	Attachment, 42 x 47 mm	1
10	07746-0010400	Attachment, 52 x 55 mm	1
11	07746-0030100	Driver, 40 mm I.D.	1
12	07746-0030300	Driver, 30 mm I.D.	1
13	07749-0010000	Driver	1
14	07947-6890100	Oil Seal Driver	1

* Part of Mainshaft Inspection Tool Set, 07GAJ-PG2010A.

** Part of Adjustable Bearing Remover Set, 07JAC-PH80000.



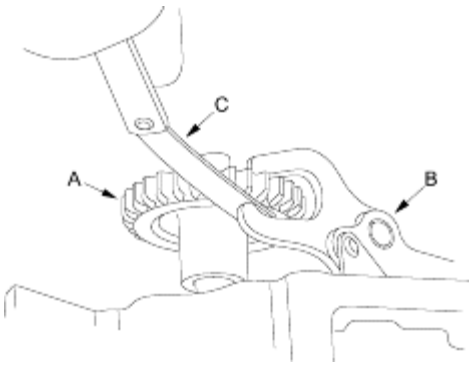
Manual Transmission

Reverse Shift Fork Clearance

1. 1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 1.6 – 2.2 mm (0.063 – 0.087 in.)

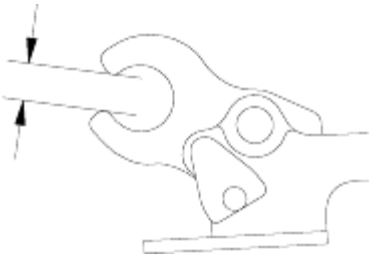
   Service Limit: 2.8 mm (0.110 in.)



2. 2. Measure the width of the reverse shift fork.
   - If distance is less than the service limit, replace the reverse shift fork with a new one.
   - If distance is within the service limit, replace the reverse gear with a new one.

   Standard: 13.8 – 14.1 mm (0.543 – 0.555 in.)

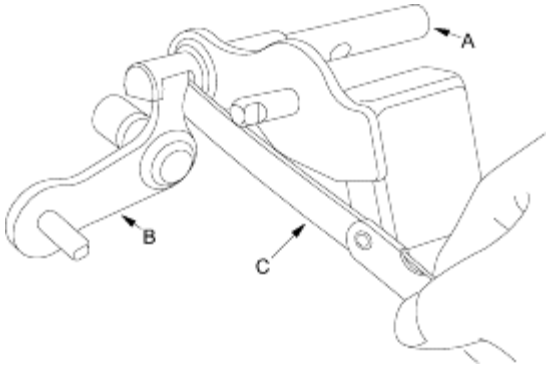
   Service Limit: 15.5 mm (0.610 in.)



1. 1. Measure the clearance between shift lever (A) and the select lever (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

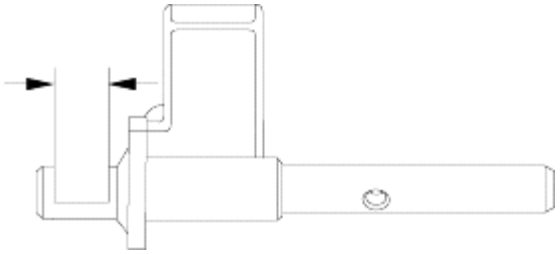
   Standard: 0.-05 – 0.40 mm (0.002 – 0.016 in.)

   Service Limit: 0.6 mm (0.024 in.)



2. 2. Measure the groove of the shift lever.
   - If distance is not within the standard, replace the shift lever with a new one.
   - If distance is not within the standard, replace the select lever with a new one.

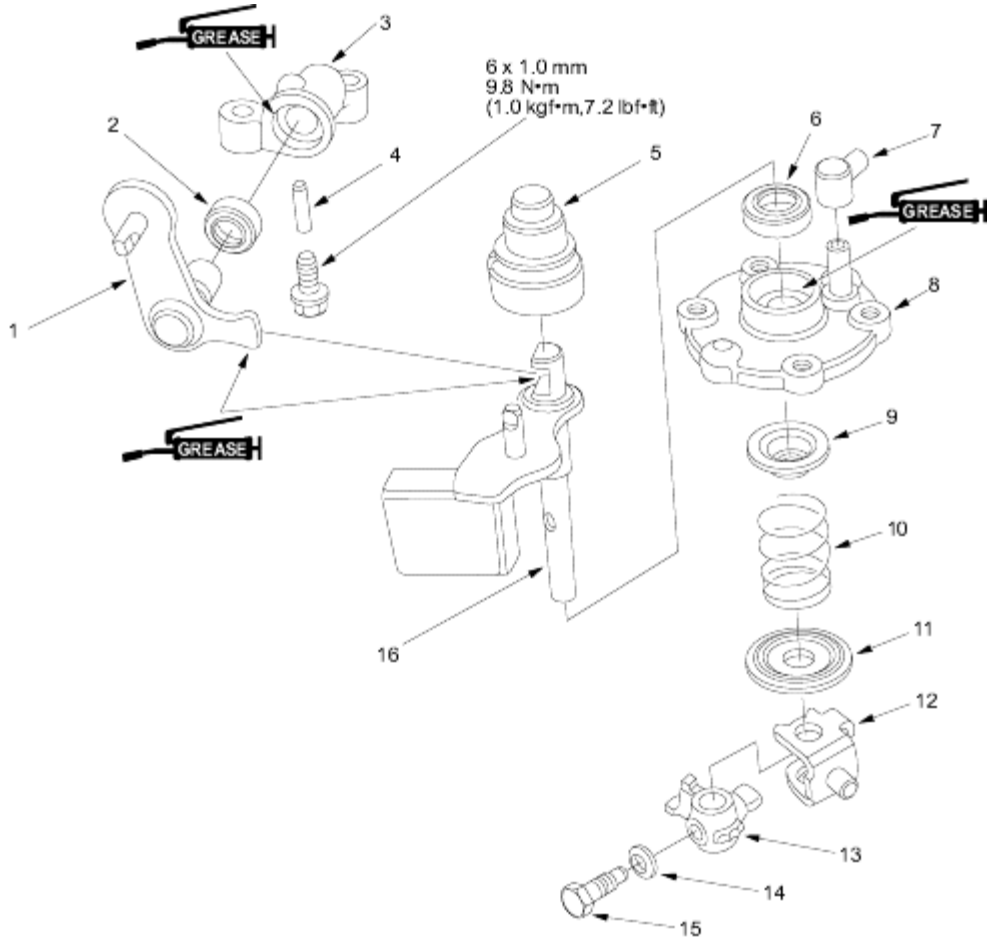
   Standard: 15.00 – 15.15 mm (0.591 – 0.596 in.) max.



Manual Transmission

Shift Lever Assembly/Disassembly/Reassembly

Prior to reassembling, clean all the parts in solvent, dry them and then apply lubricant to any contact surface.



1. SELECT LEVER
2. DUST SEAL
   Replace.
3. SELECT LEVER COVER
4. ROLLER
5. DUST COVER
6. OIL SEAL
   Replace.
7. BREATHER CAP
8. SHIFT ARM COVER
9. SELECT SPRING COLLAR
10. SELECT SPRING
11. SELECT SPRING PLATE
12. INTERLOCK
13. SHIFT ARM
14. 8 mm SPRING WASHER
15. 8 mm SPECIAL BOLT
    31 Nm (3.2 kgf/m, 23 lbf/ft)
16. SHIFT LEVER

Manual Transmission

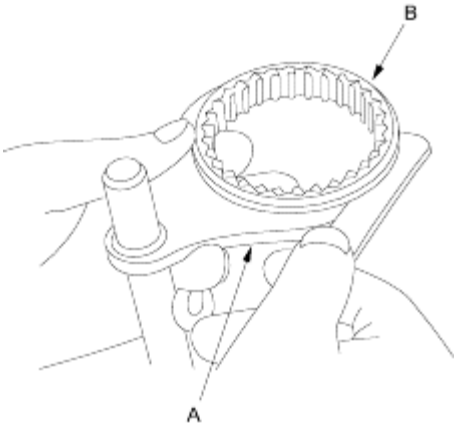
Shift Forks Clearance Inspection

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

1. 1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.-35 – 0.65 mm (0.014 – 0.026 in.)

   Service Limit: 1.0 mm (0.039 in.)

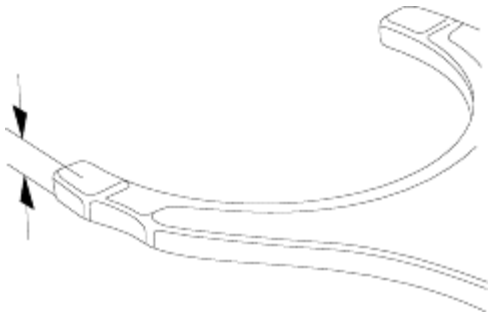


2. 2. Measure the thickness of the shift fork fingers.
   - If the thickness of the shift fork finger is less than the standard, replace the shift fork with a new one.
   - If the thickness of the shift fork finger is within the standard, replace the synchro sleeve with a new one.

   Standard:

   1st/2nd, 3rd /4th, shift forks: 7.4 – 7.6 mm (0.29 – 0.30 in.)

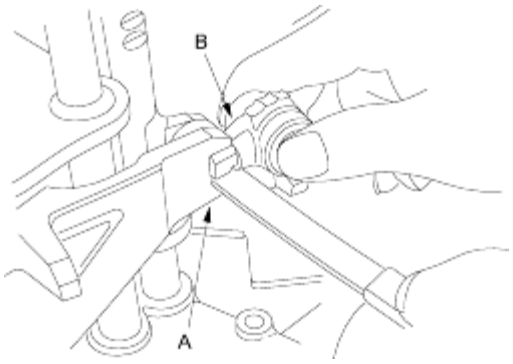
   5th shift forks: 6.7 – 6.9 mm (0.26 – 0.27 in.)



1. 3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

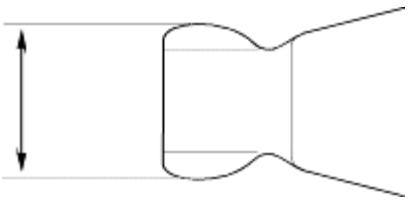
   Standard: 0.-2 – 0.5 mm (0.008 – 0.020 in.)

   Service Limit: 0.62 mm (0.024 in.)



2. 4. Measure the width of the shift arm.
   - If the width of the shift arm is less than the standard, replace the shift arm with a new one.
   - If the width of the shift arm is within the standard, replace the shift fork or shift piece with a new one.

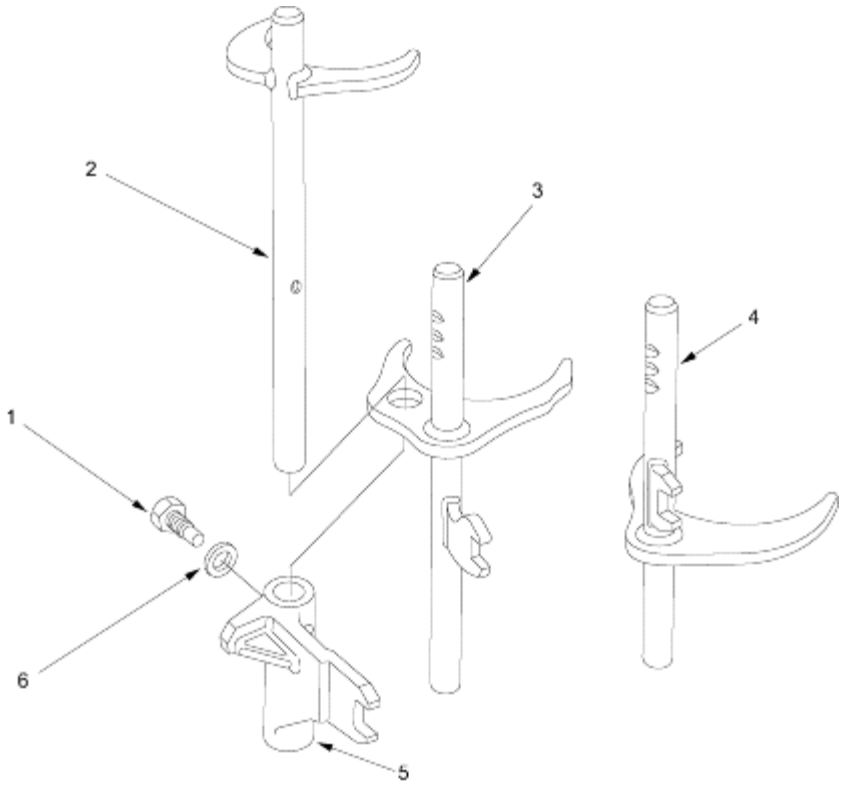
   Standard: 12.9 – 13.0 mm (0.508 – 0.512 in.)



Manual Transmission

Shift Forks Disassembly/Reassembly

Prior to reassembling, clean all the parts in solvent, dry them and then apply lubricant to any contact surface.



1. 8 mm SPECIAL BOLT
   31 Nm (3.2 kgf/m, 23 lbf/ft)
2. 5TH SHIFT FORK
3. 3-4 SHIFT FORK
4. 1-2 SHIFT FORK
5. 5-R SHIFT FORK
6. 8 mm SPRING WASHER

Manual Transmission

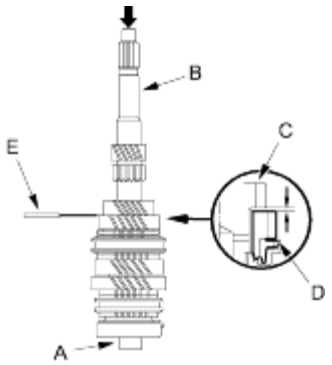
Mainshaft Assembly Clearance Inspection

NOTE: If replacement is required, always replace the synchro sleeve and hub as a set.

1. 1. Support the bearing inner race with a socket (A) and push down on the mainshaft (B).

   Standard: 0.06 – 0.21 mm (0.002 – 0.008 in.)

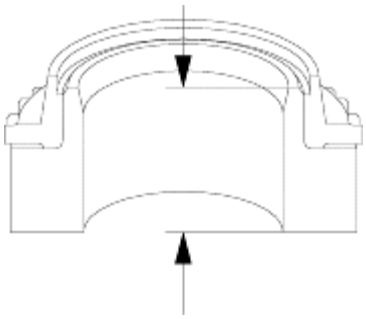
   Service Limit: 0.3 mm (0.1 in.)



2. 2. Measure the clearance between 2nd (C) and 3rd (D) gears with a feeler gauge (E).
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.
3. 3. Measure the thickness of 3rd gear
   - If the thickness of 3rd gear is less than the service limit, replace 3rd gear with a new one.
   - If the thickness of 3rd gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

   Standard: 27.92 – 27.97 mm (1.099 – 1.101 in.)

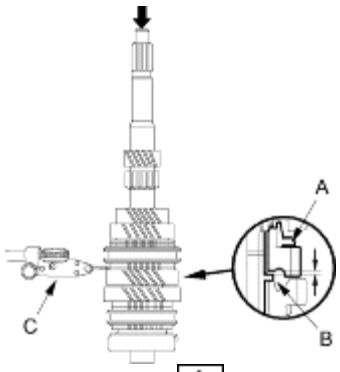
   Service Limit: 27.85 mm (1.096 in.)



1. 4. Measure the clearance between 4th gear (A) and the spacer collar (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 5.

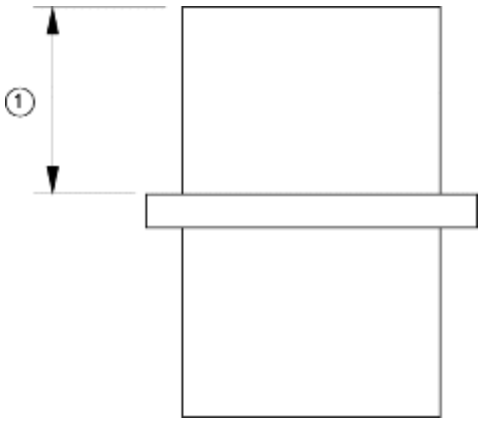
   Standard: 0.-06 – 0.19 mm (0.002 – 0.007 in.)

   Service Limit: 0.3 mm (0.01 in.)



2. 5. Measure the distance [1] on the spacer collar.
   - If distance [1] is less than the standard, replace the spacer collar with a new one.
   - If distance [1] is within the standard, go to step 6.

   Standard: 24.03 – 24.06 mm (0.946 – 0.947 in.)



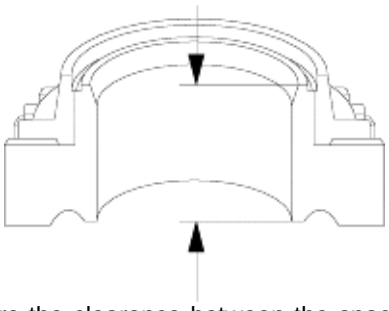
Manual Transmission

Mainshaft Assembly Clearance Inspection (cont'd)

1. 6. Measure the thickness of 4th gear.
   - If the thickness of 4th gear is less than the service limit, replace 4th gear with a new one.
   - If the thickness of 4th gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

   Standard: 27.02 – 27.07 mm (1.063 – 1.066 in.)

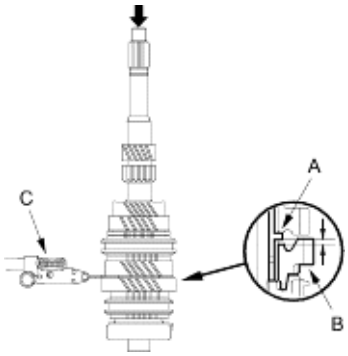
   Service Limit: 26.95 mm (1.061 in.)



2. 7. Measure the clearance between the spacer collar (A) and 5th gear (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 8.

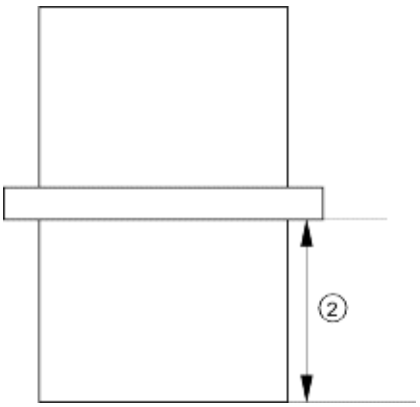
   Standard: 0.06 – 0.19 mm (0.002 – 0.007 in.)

   Service Limit: 0.3 mm (0.01 in.)



1. 8. Measure the distance 2 on the spacer collar.
   - If distance 2 is less than the standard, replace the spacer collar with a new one.
   - If distance 2 is within the standard, go to step 9.

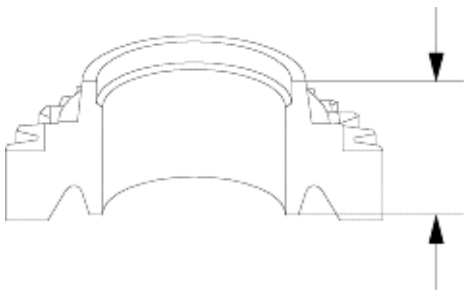
   Standard: 24.03 – 24.06 mm (0.946 – 0.947 in.)



2. 9. Measure the thickness of 5th gear.
   - If the thickness of 5th gear is less than the service limit, replace 5th gear with a new one.
   - If the thickness of 5th gear is within the service limit, replace the 5th synchro hub with a new one.

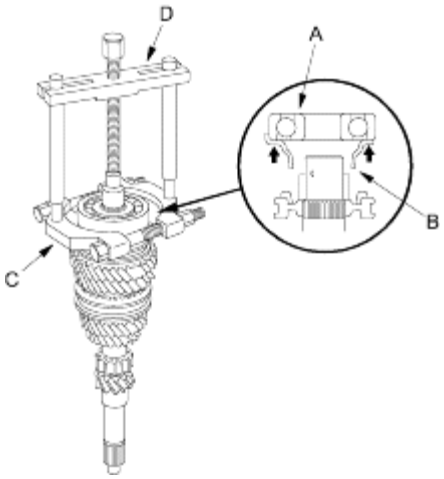
   Standard: 28.92 – 28.97 mm (1.139 – 1.141 in.)

   Service Limit: 28.85 mm (1.136 in.)

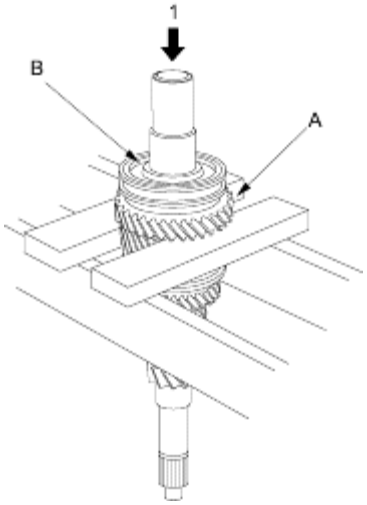


Manual Transmission
Mainshaft Disassembly

1. 1. Remove the angular ball bearing (A) and the tapered cone ring (B) using a commercially available bearing separator (C) and a commercially available bearing puller (D). Make sure the bearing separator is under the tapered cone ring.

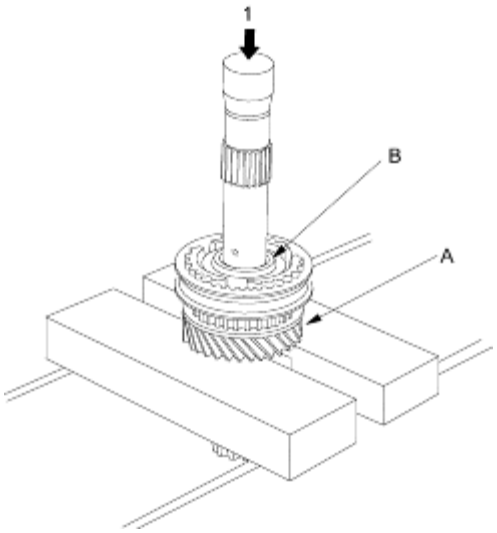


2. 2. Support 5th gear (A) on steel blocks and press the mainshaft out of the 5th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



3. 1. PRESS

1. 3. Support the 3rd gear (A) on steel blocks and press the mainshaft out of the 3rd/4th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



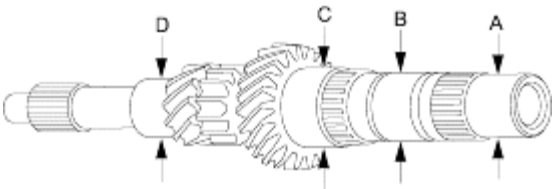
2. 1. PRESS

Manual Transmission
Mainshaft Inspection

1. 1. Inspect the gear surface and bearing surface for wear and damage, then measure the mainshaft at points A, B and C. If any part of the mainshaft is less than the service limit, replace it with a new one.

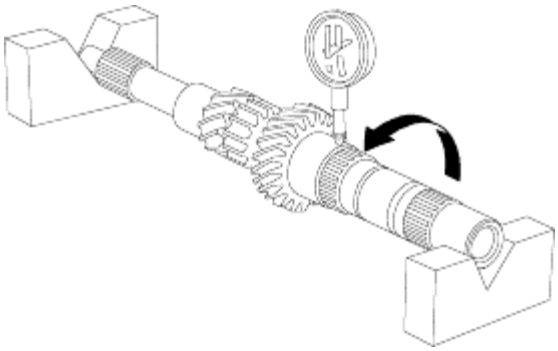
Standard:

A (Ball bearing surface):	25.987 - 26.000 mm (1.0231 - 1.0236 in.)
B (Spacer collar surface):	28.980 - 28.993 mm (1.1409 - 1.1415 in.)
C (Needle bearing surface):	34.984 - 35.000 mm (1.3773 - 1.3780 in.)
D (Ball bearing surface):	25.977 - 25.990 mm (1.0223 - 1.0232 in.)
Service Limit:	A: 25.93 mm (1.021 in.)
	B: 28.93 mm (1.139 in.)
	C: 34.93 mm (1.375 in.)
	D: 25.92 mm (1.020 in.)



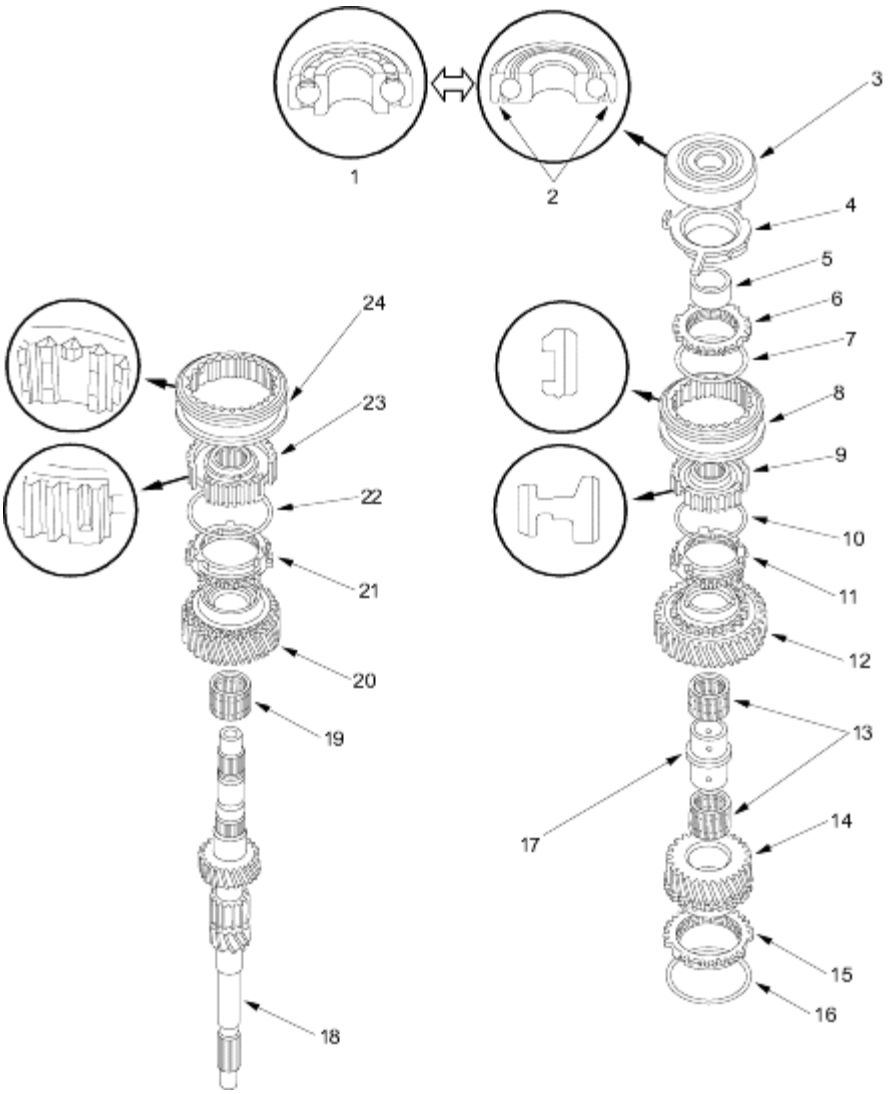
2. 2. Inspect the runout by supporting both ends of the mainshaft. Rotate the mainshaft two complete revolutions when measuring the runout. If the runout is more than the service limit, replace the mainshaft with a new one.

Standard:	0.02 mm (0.001 in.) max.
Service Limit:	0.05 mm (0.002 in.)



Manual Transmission
Mainshaft Reassembly

Exploded View



1. Turkey-produced D14Z6 engine transmission
2. Thin-edged outer race faces down.
3. ANGULAR BALL BEARING
   Check for wear and operation. Note the direction of installation
4. TAPERED CONE RING
5. SPACER
6. SYNCHRO RING
7. SYNCHRO SPRING
8. 5TH SYNCHRO SLEEVE
9. 5TH SYNCHRO HUB
10. SYNCHRO SPRING
11. SYNCHRO RING
12. 5TH GEAR
13. NEEDLE BEARING
    Check for wear and operation.
14. 4TH GEAR
15. SYNCHRO RING
16. SYNCHRO SPRING
17. SPACER COLLAR
18. MAINSHAFT
19. NEEDLE BEARING
    Check for wear and operation
20. 3RD GEAR
21. SYNCHRO RING
22. SYNCHRO SPRING
23. 3RD/4TH SYNCHRO HUB
24. 3RD/4TH SYNCHRO SLEEVE

Manual Transmission

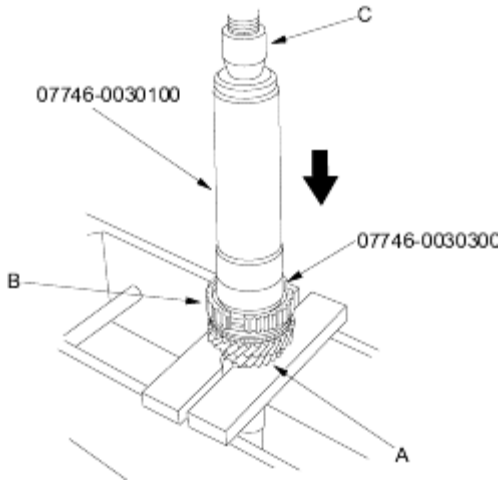
Mainshaft Reassembly (cont'd)

Special Tools Required

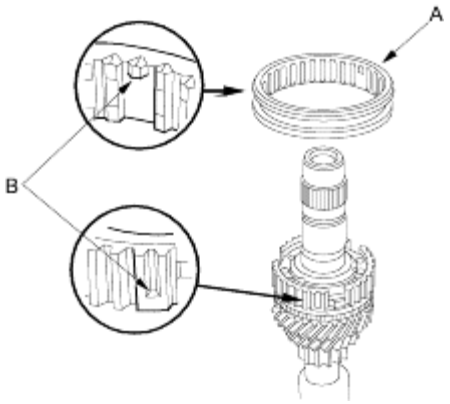
- Driver, 40 mm I.D., 07746-0030100
- Attachment, 30 mm I.D., 07746-0030300

NOTE: Refer to the Exploded View as needed during this procedure.

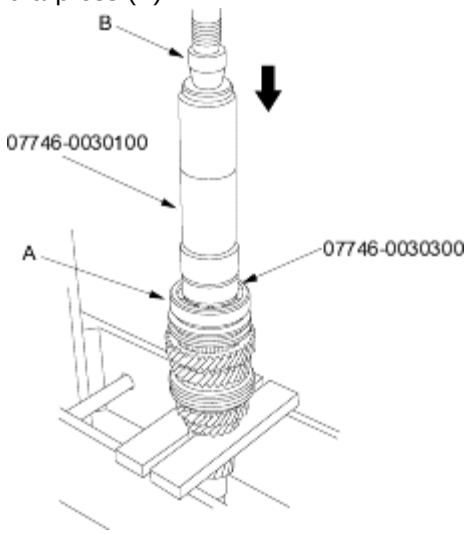
1. 1. Clean all parts in solvent, dry them and apply lubricant to all contact surfaces except the 3rd/4th and 5th synchro hubs.
   2. Install the 3rd gear, its bearing and the 3rd gear synchro ring and synchro spring on the shaft.
   3. Support 2nd gear(A) on steel blocks, then install the 3rd/4th synchro hubs (B) using the special tools and a press (C).



1. 4. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and hub. After installing, check the operation of the 3rd/4th synchro hub set.



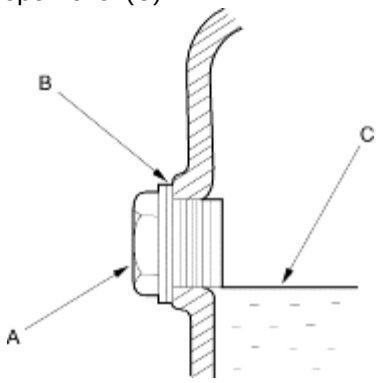
2. 5. Install the 4th gear synchro spring and ring, 4th gear and its bearings, the spacer collar and 5th gear and its bearing on the shaft.
   6. Install the 5th synchro hub (A) using the special tools and a press (B).



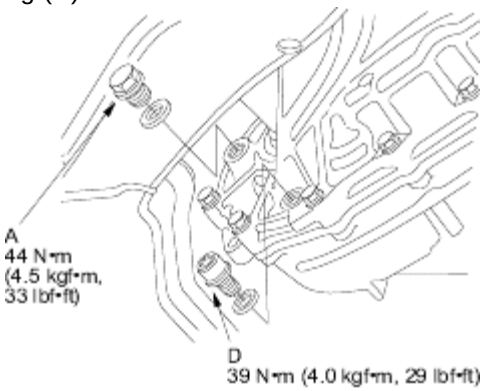
Manual Transmission

Transmission Fluid Inspection and Replacement

1. 1. Park the vehicle on level ground and turn the engine OFF.
2. 2. Remove the oil filler plug (A) and washer (B), check the condition of the fluid and make sure the fluid is at the proper level (C).



3. 3. If the transmission fluid is dirty, remove the drain plug (D) and drain the fluid.



4. 4. Reinstall the drain plug with a new washer and refill the transmission fluid to the proper level.

Oil Capacity

1.5 *l* (1.6 Us qt, 1.3 Imp qt) at fluid change

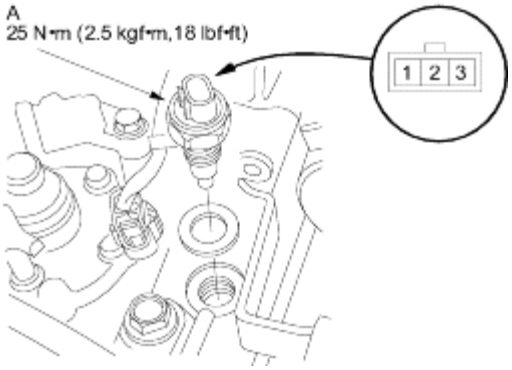
1.6 *l* (1.7 US qt, 1.4 Imp qt) at overhaul

Always use Genuine Honda Manual Transmission Fluid (MTF). Using motor oil cause stiffer shifting because it does not contain the proper additives.

5. 5. Reinstall the oil filler plug with a new washer.

Back-Up Light Switch Test

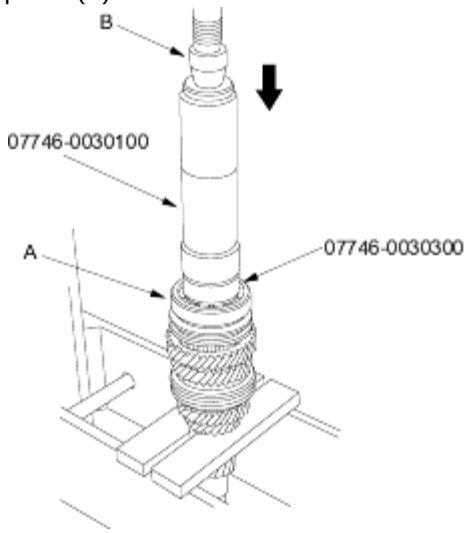
1. 1. Disconnect the back-up light switch (A) connector.



2. 2. Check for continuity between the back-up light switch 3P connector No. 1 and No. 2 terminals. There should be continuity when the shift lever is in reverse.
3. If necessary, replace the switch.

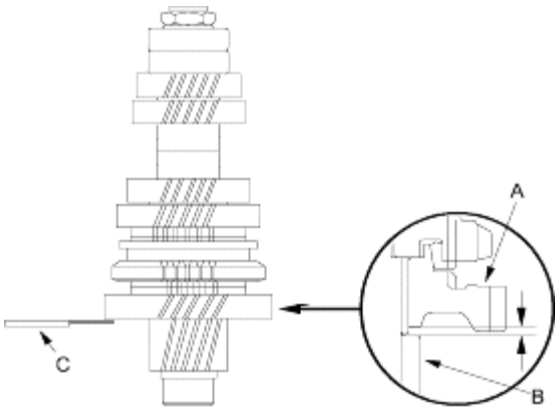
Manual Transmission
Mainshaft Reassembly (cont'd)

7. Install the 5th synchro sleeve.
8. Install the ball bearing (A) using the special tools and a press (B).



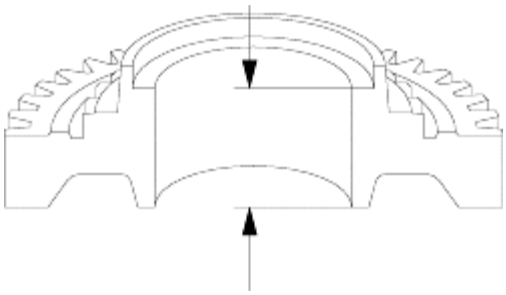
1. Measure the clearance between 1st gear (A) and the countershaft (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

Standard:	0.03 - 0.12 mm (0.001 - 0.005 in.)
Service Limit:	0.22 mm (0.009 in.)



2. Measure the thickness of 1st gear.
   - If the thickness of 1st gear is less than the service limit, replace 1st gear with a new one.
   - If the thickness of 1st gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

Standard:	26.91 – 26.94 mm (1.059 – 1.061 in.)
Service Limit:	26.86 mm (1.057 in.)



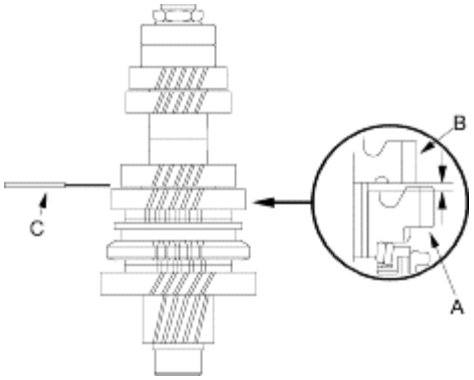
Manual Transmission

Countershaft Assembly Clearance Inspection (cont'd)

1. 3. Measure the clearance between the 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 4.

   Standard: 0.04 - 0.12 mm (0.002 - 0.005 in.)

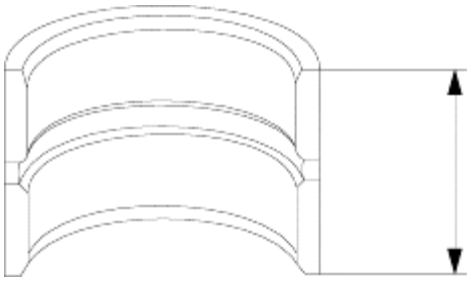
   Service Limit: 0.24 mm (0.009 in.)



2. 4. Measure the thickness of the spacer collar.
   - If the thickness is less than the service limit, replace the spacer collar with a new one.
   - If the thickness is within the service limit, go to step 5.

   Standard: 27.53 - 27.56 mm (1.084 - 1.085 in.)

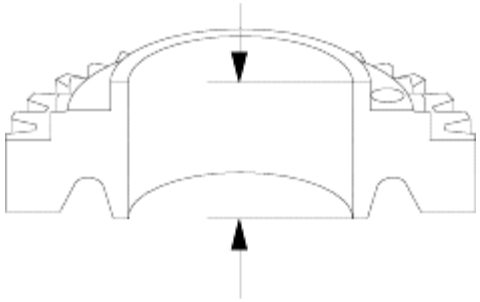
   Service Limit: 27.51 mm (1.083 in.)



1. 5. Measure the thickness of 2nd gear.
   - If the thickness of 2nd gear is less than the service limit, replace 2nd gear with a new one.
   - If the thickness of 2nd gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

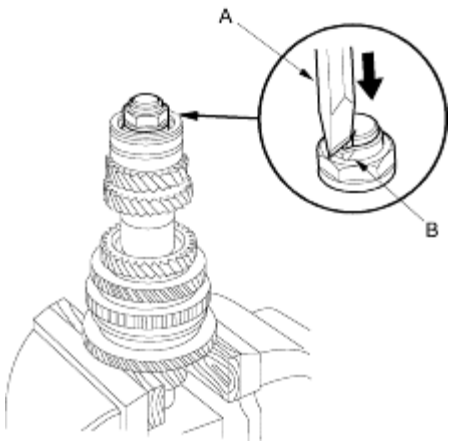
   Standard: 27.41 – 27.46 mm (1.079 – 1.081 in.)

   Service Limit: 27.36 mm (1.077 in.)

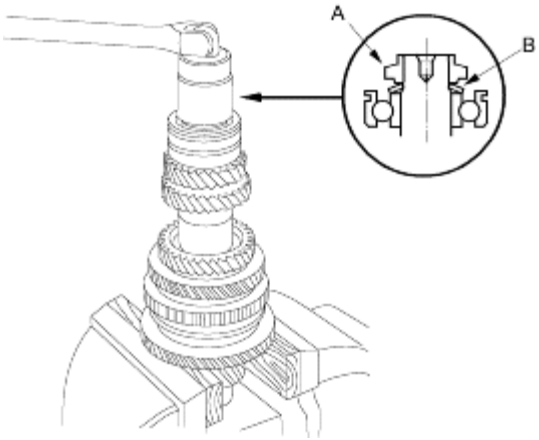


Manual Transmission
Countershaft Disassembly

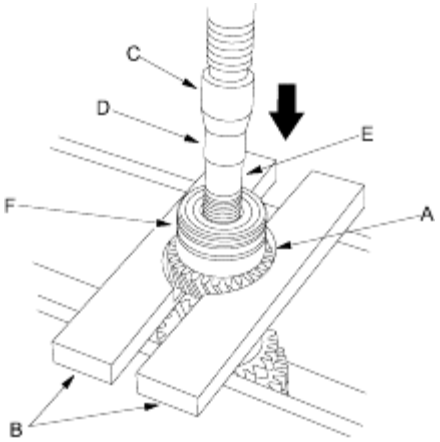
1. 1. Securely clamp the countershaft assembly in a bench vice with wood blocks.



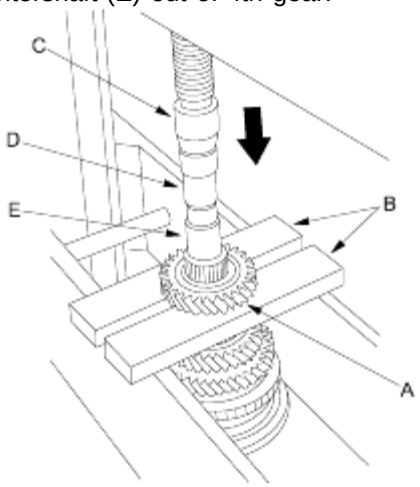
2. 2. Use a chisel (A) to raise the locknut tab (B) from the groove in the countershaft.
   3. Remove the locknut (A) and the spring washer (B).



1. 4. Support 5th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the ball bearing (F).



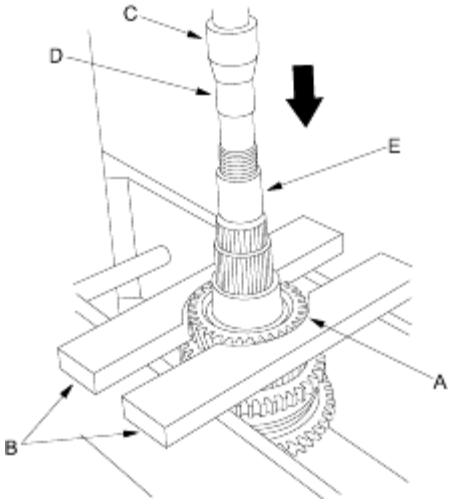
2. 5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 4th gear.



Manual Transmission

Countershaft Disassembly (cont'd)

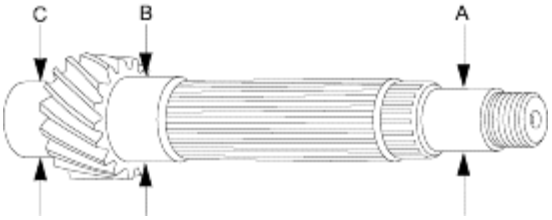
1. 6. Support 3rd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 3rd gear.



1. 1. Inspect the gear surface and bearing surface for wear and damage, then measure the countershaft at points A, B and C. If any part of the countershaft is less than the service limit, replace it with a new one.

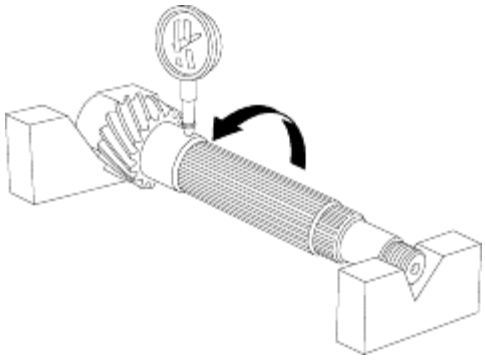
Standard:

A (Ball bearing surface):	24.980 - 24.993 mm 0.9835 - 0.9840 in.)
B Needle bearing surface):	37.984 - 38.000 mm 1.4954 - 1.4961 in.)
D (Ball bearing surface):	34.000 - 34.015 mm 1.3386 - 1.3392 in.)
Service Limit:	A: 24.93 mm (0.981 in.) B: 37.934 mm (1.493 in.) C: 33.95 mm (1.337 in.)



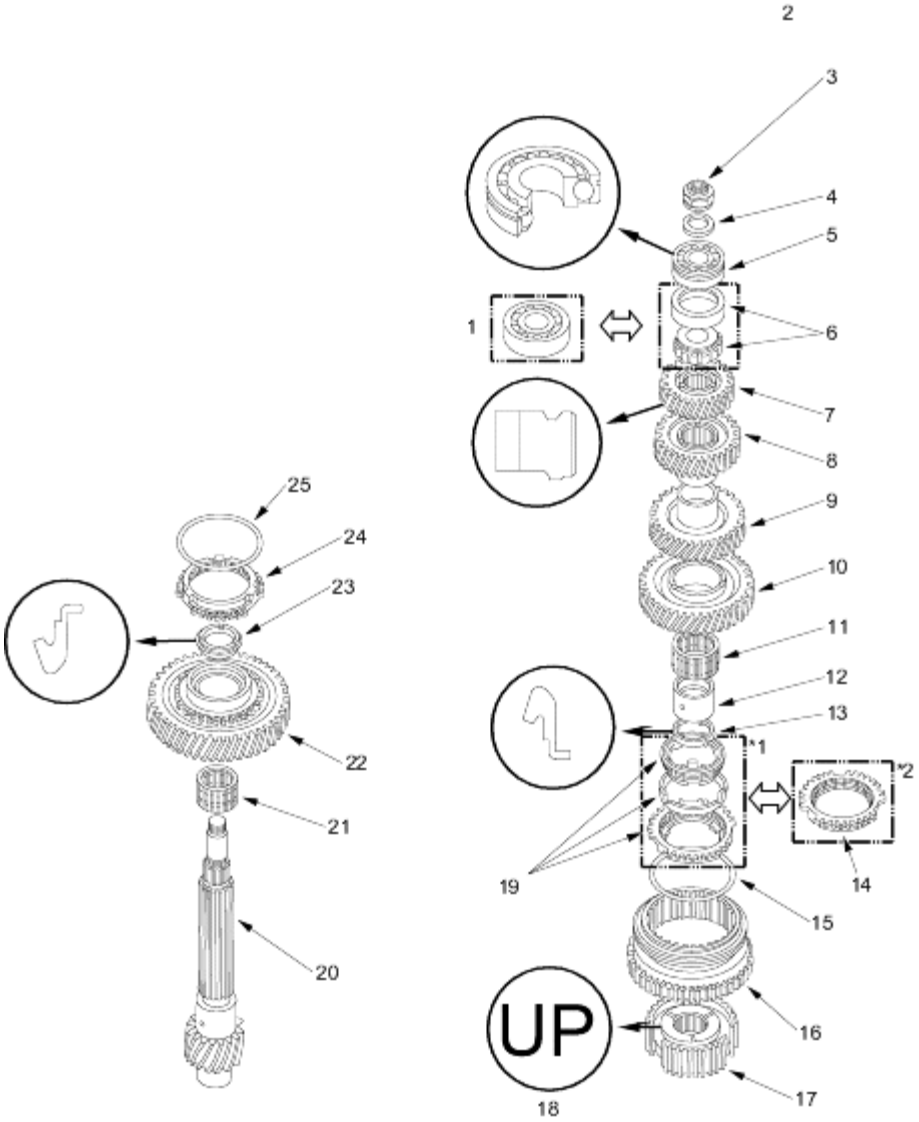
2. 2. Inspect the runout by supporting both ends of the countershaft. Rotate the countershaft two complete revolutions when measuring the runout. If the runout exceeds the service limit, replace the countershaft with a new one.

Standard:	0.02 mm (0.001 in.)
Service Limit:	0.05 mm (0.002 in.)



Manual Transmission
Countershaft Reassembly

Exploded View



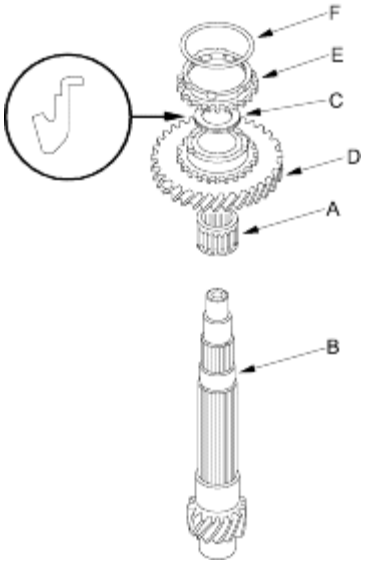
1. Turkey-produced D14Z6 engine transmission
2. *1: DOUBLE CONE SYNCHRO TYPE
   *2: SINGLE CONE SYNCHRO TYPE
3. LOCKNUT
   Replace.
   127 to 0 to 127 Nm
   13 to 0 to 13 kgf/m,
   94 to 0 to 94 lbf/ft
4. SPRING WASHER
5. BALL BEARING
   Check for wear and operation.
6. NEEDLE BEARING
   Check for wear and operation.
7. 5TH GEAR
8. 4TH GEAR
9. 3RD GEAR
10. 2ND GEAR
11. NEEDLE BEARING
    Check for wear and operation.
12. SPACER
13. FRICTION DAMPER
    Check for wear and damage.
14. SYNCHRO RING
15. SYNCHRO SPRING
16. REVERSE GEAR
17. 1ST/2ND SYNCHRO HUB
18. UP
19. DOUBLE CONE SYNCHRO
20. COUNTERSHAFT
21. NEEDLE BEARING
    Check for wear and operation.
22. 1ST GEAR
23. FRICTION DAMPER
    Check for wear and damage.
24. SYNCHRO RING
25. SYNCHRO SPRING

Manual Transmission
Countershaft Reassembly (cont'd)

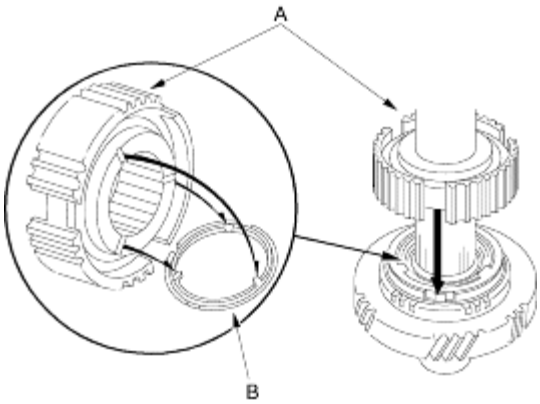
Special Tools Required
- Driver, 07749-0010000
- Attachment, 42 x 47 mm, 07746-0010300
- Seal driver, 07947-6890100

NOTE: Refer to the Exploded View as needed during this procedure.

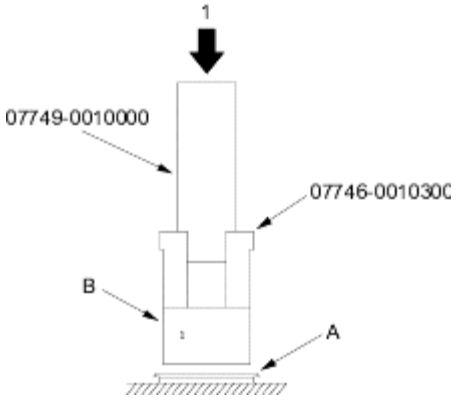
1. 1. Clean all parts in solvent, dry them and apply lubricant to all contact surfaces except the 3rd/4th and 5th synchro hubs.
   2. Install the needle bearing (A) onto the countershaft (B). Assemble the friction damper (C) and 1st gear (D) together and install them on the countershaft, then install the synchro ring (E) and the synchro spring (F).



1. 3. Install the 1st/2nd synchro hub (A) by aligning the fingers on the friction damper (B) with 1st/2nd synchro hub grooves.



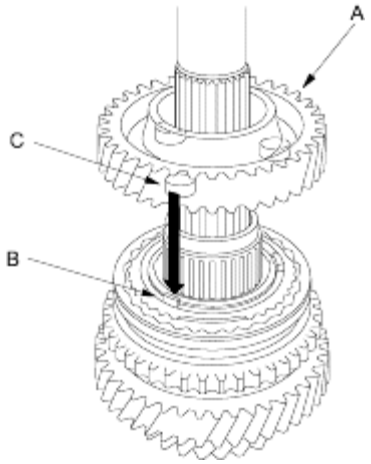
2. 4. Install reverse gear, 2nd gear synchro spring and the synchro ring (single cone synchro type) or the double cone synchro assembly (double cone synchro type).
   5. Install the friction damper (A) on the spacer (B) using the special tools and a press.



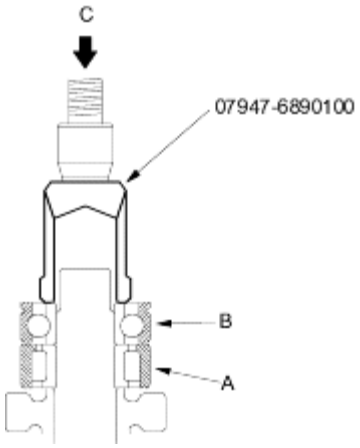
3. 1. PRESS

Manual Transmission
Countershaft Reassembly (cont'd)

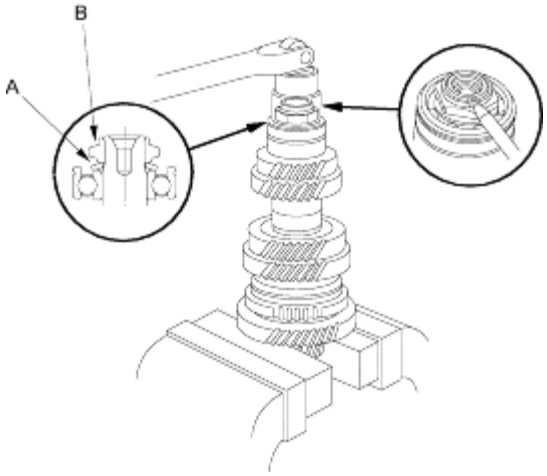
1. 6. Install the friction damper and spacer and the 2nd gear bearing.
2. 7. Install 2nd gear (A) by aligning the synchro cone fingers (B) with 2nd gear grooves (C) (double cone synchro type).



3. 8. Install 3rd gear, 4th gear and 5th gear.
   9. Install the needle bearing (A) and the ball bearing (B) using the special tool and a press (C).



1. 10. Install the spring washer (A) and loosely install the new locknut (B).



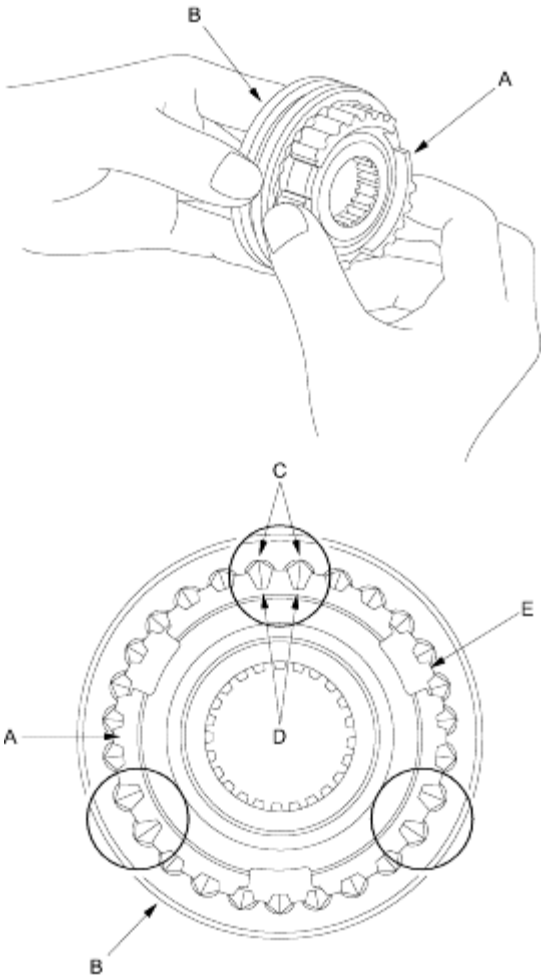
2. 11. Securely clamp the countershaft assembly in a bench vice with wood blocks.
   12. Torque the new locknut to 108 Nm (11 kgf/m, 79 lbf/ft), then loosen it and torque it again to the same value. Stake the locknut tab into the groove.

Manual Transmission

Synchro Sleeve and Hub Inspection and Reassembly

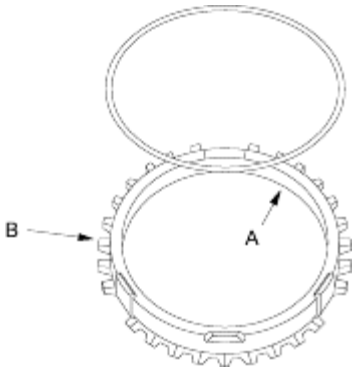
1. 1. Inspect gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.
2. 2. Install each synchro hub (A) in its mating synchro sleeve (B) and check for freedom of movement. Be sure to match the 3 sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the 3 sets of deeper grooves (D) in the synchro hub. Do not install the synchro sleeve with its longer teeth in the 1st/2nd synchro hub slots (E) because it will damage the spring ring.

NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.



1. 1. Inspect the inside of each synchro ring (A) for wear.M

Inspect the teeth (B) on each synchro ring for wear (rounded off).



Example of synchro ring teeth



2. 1. GOOD
   2. WORN

3. 2. Inspect the teeth (C) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



Example of synchro sleeve teeth and gear teeth

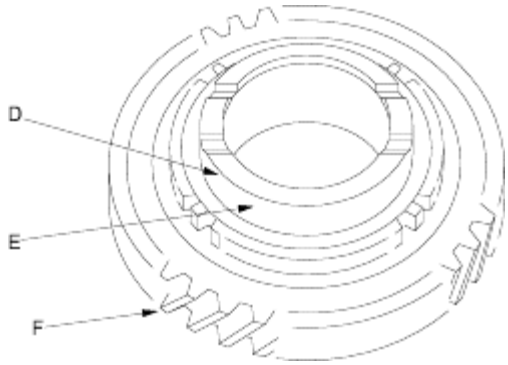


4. 1. GOOD
   2. WORN

Manual Transmission

Synchro Ring and Gear inspection (cont'd)

1. 3. Inspect the thrust surface (D) on each gear hub for wear.



2. 4. Inspect the cone surface (E) on each gear hub for wear and roughness.
5. Inspect the teeth on all gears (F) for uneven wear, scoring, galling and cracks.
6. Coat the cone surface of each gear (E) with oil, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

1. 7. Measure the clearance between each gear (A) and its synchro ring (B) all the way around. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance

Standard:	0.85 - 1.10 mm (0.033 - 0.043 in.)
Service Limit:	0.4 mm (0.016 in.)

Double Cone Synchro-to-Gear Clearance Standard:

1: Outer Synchro Ring (B) to Synchro Cone (C)

0.5 - 1.0 mm (0.02 - 0.04 in.)

2: Synchro Cone (C) to Gear (A)

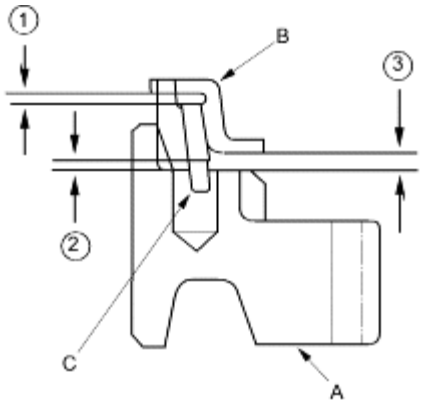
0.5 - 1.0 mm (0.02 - 0.04 in.)

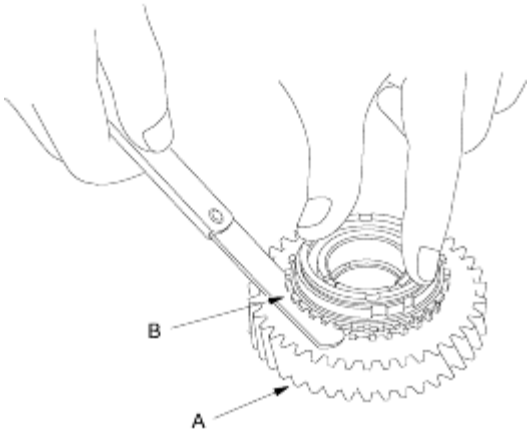
3: Outer Synchro Ring (B) to Gear (A)

0.95 - 1.68 mm (0.037 - 0.066 in.)

Service Limit:

1:	0.3 mm (0.01 in.)
2:	0.3 mm (0.01 in.)
3:	0.6 mm (0.02 in.)


1
B
3
2
C
A


B
A

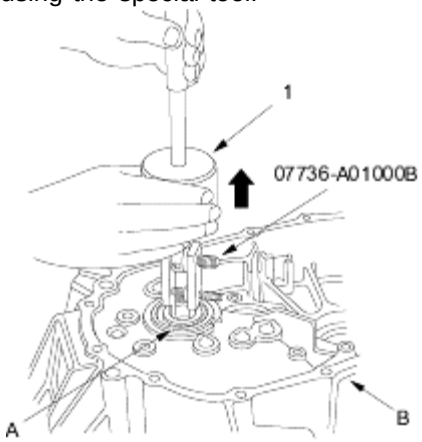
Manual Transmission

Mainshaft Bearing and Oil Seal Replacement

Special Tools Required

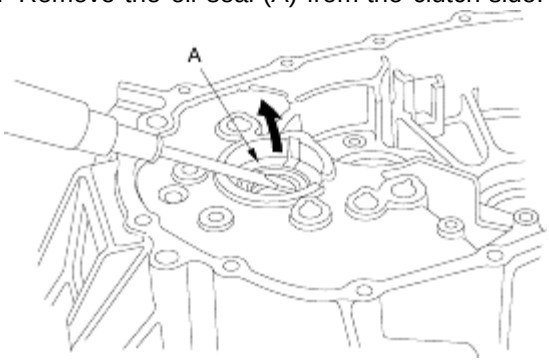
- Adjustable bearing puller, 25 - 40 mm, 07736-A01000B
- Driver, 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 52 x 55 mm 07746-0010400

1. 1. Remove the differential assembly.
   2. Remove the ball bearing (A) from the clutch housing (B) using the special tool.

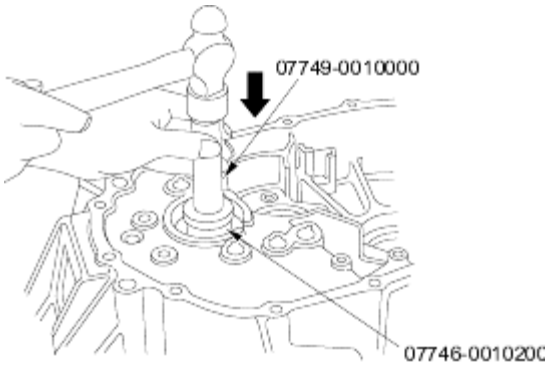


2. 1. 3/8" -16
   SLIDE HAMMER
   (commercially available)

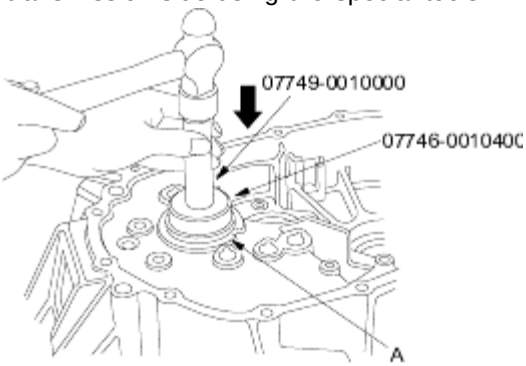
3. 3. Remove the oil seal (A) from the clutch side.



1. 4. Drive the new oil seal in from the transmission side using the special tools.



2. 5. Drive the new ball bearing (A) in from the transmission side using the special tools.

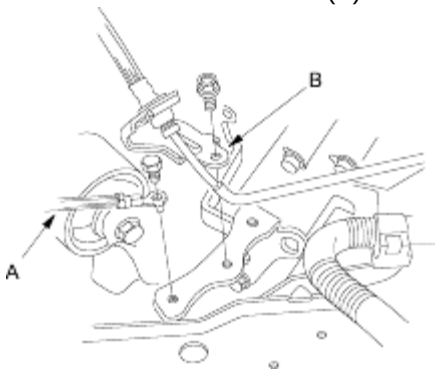


Manual Transmission

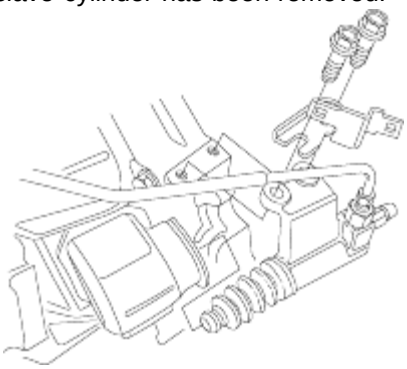
Transmission Removal

NOTE: Use fender covers to avoid damaging painted surfaces.

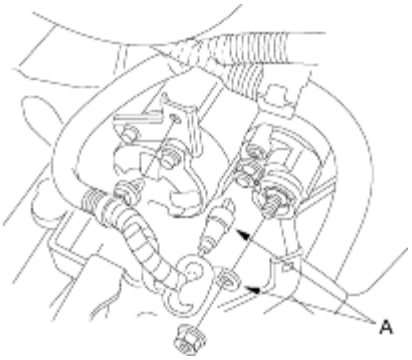
1. 1. Write down the frequencies for the radio's preset buttons. Disconnect the negative (-) cable first, then the positive (+) cable from the battery. Remove the battery.
   2. Remove the intake air duct (see page 5-3).
   3. Remove the air cleaner housing (see page 5-3).
   4. Disconnect the transmission ground cable (A), then remove the clutch line bracket (B).



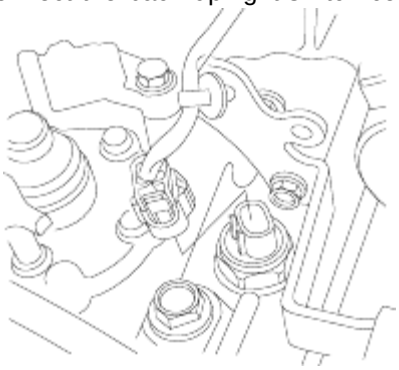
2. 5. Carefully remove the slave cylinder so as not to bend the clutch line. Do not operate the clutch pedal once the slave cylinder has been removed.



1. 6. Disconnect the starter motor cables (A).



2. 7. Disconnect the back-up light switch connector.



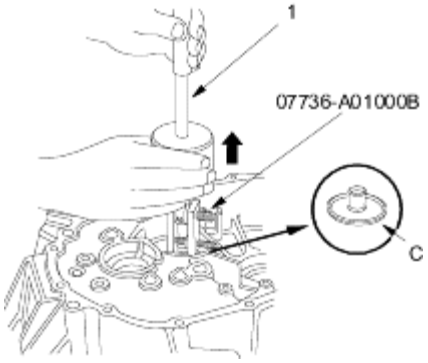
Manual Transmission

Countershaft Bearing Replacement

Special Tools Required

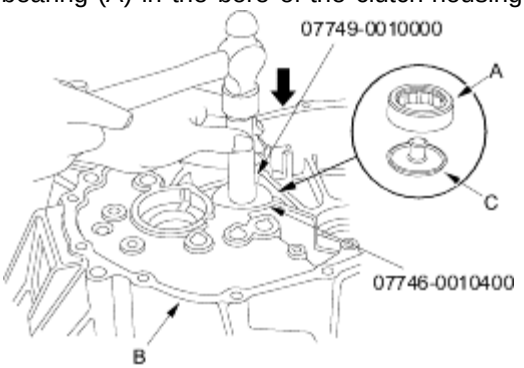
- Adjustable bearing puller, 25 - 40 mm, 07736-A01000B
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. 1. Remove the needle bearing using the special tool, then remove the oil guide plate (C).



2. 1. 3/8" -16
SLIDE HAMMER
(commercially available)

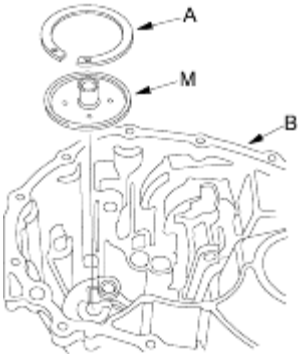
3. 2. Position the oil guide plate (C) and new needle bearing (A) in the bore of the clutch housing (B).



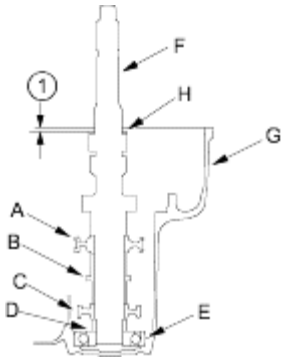
Special Tools Required

- Mainshaft base 07GAJ-PG20130
- Base collar 07GAJ-PG20120
- Mainshaft holder 07GAJ-PG20110

1. 1. Remove the 72 mm shim (A) and oil guide plate (M) from the transmission housing (B).



2. 2. Install the 3rd/4th synchro hub (A), the spacer collar (B), the 5th synchro hub (C), the spacer (D) and ball bearing (E) on the mainshaft (F), then install the assembled mainshaft in the transmission housing (G).

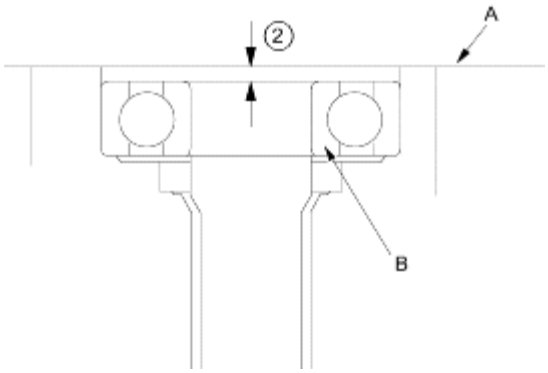


3. 3. Install the washer (H) on the mainshaft.
4. Measure distance 1 between the end of the transmission housing and washer with a straight edge and vernier caliper. Measure at three locations and average the reading.

Manual Transmission

Mainshaft Thrust Clearance Adjustment (cont'd)

1. 5. Measure distance 2 between the end of the clutch housing (A) and bearing inner race (B) with a straight edge and depth gauge. Measure at three locations and average the readings.



Shim Selection Formula:

2. 6. Select the proper 72 mm shim from the chart. Follow the example below, and use the measurements you made in steps 4 and 5:
   - Add distance 2 (step 5) to distance 1 (step 4).
   - From this number, subtract 0.95 (which is the midpoint of the flex range of the clutch housing bearing spring washer).
   - Take this number and compare it to the available shim sizes in the chart.
   - Try the 1.68 mm (0.0661 in.) shim.

(For example)

1: 2.41	2.63
+2: 0.22	-0.95
----------	----------
= 2.63	= 1.68

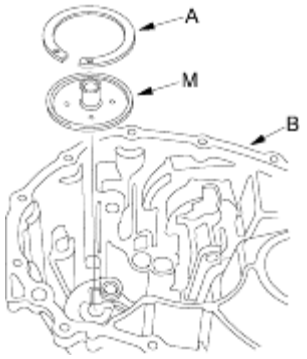
72 mm Shim

	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.0236 in.)
B	23932-P21-000	0.63 mm (0.0248 in.)
C	23933-P21-000	0.66 mm (0.0260 in.)
D	23934-P21-000	0.69 mm (0.0271 in.)
E	23935-P21-000	0.72 mm (0.0283 in.)
F	23936-P21-000	0.75 mm (0.0295 in.)
G	23937-P21-000	0.78 mm (0.0307 in.)
H	23938-P21-000	0.81 mm (0.0319 in.)
I	23939-P21-000	0.84 mm (0.0331 in.)
J	23940-P21-000	0.87 mm (0.0343 in.)
K	23941-P21-000	0.90 mm (0.0354 in.)
L	23942-P21-000	0.93 mm (0.0366 in.)
M	23943-P21-000	0.96 mm (0.0378 in.)
N	23944-P21-000	0.99 mm (0.0390 in.)
O	23945-P21-000	1.02 mm (0.0402 in.)
P	23946-P21-000	1.05 mm (0.0413 in.)
Q	23947-P21-000	1.08 mm (0.0425 in.)
R	23948-P21-000	1.11 mm (0.0437 in.)
S	23949-P21-000	1.14 mm (0.0449 in.)
T	23950-P21-000	1.17 mm (0.0461 in.)
U	23951-P21-000	1.20 mm (0.0472 in.)
V	23952-P21-000	1.23 mm (0.0484 in.)
W	23953-P21-000	1.26 mm (0.0496 in.)
X	23954-P21-000	1.29 mm (0.0508 in.)
Y	23955-P21-000	1.32 mm (0.0520 in.)
Z	23956-P21-000	1.35 mm (0.0531 in.)
AA	23957-P21-000	1.38 mm (0.0543 in.)
AB	23958-P21-000	1.41 mm (0.0555 in.)
AC	23959-P21-000	1.44 mm (0.0567 in.)
AD	23960-P21-000	1.47 mm (0.0579 in.)
AE	23961-P21-000	1.50 mm (0.0591 in.)
AF	23962-P21-000	1.53 mm (0.0602 in.)
AG	23963-P21-000	1.56 mm (0.0614 in.)
AH	23964-P21-000	1.59 mm (0.0626 in.)
AI	23965-P21-000	1.62 mm (0.0638 in.)
AJ	23966-P21-000	1.65 mm (0.0650 in.)
AK	23967-P21-000	1.68 mm (0.0661 in.)
AL	23968-P21-000	1.71 mm (0.0673 in.)
AM	23969-P21-000	1.74 mm (0.0685 in.)
AN	23970-P21-000	1.77 mm (0.0697 in.)
AO	23971-P21-000	1.80 mm (0.0709 in.)

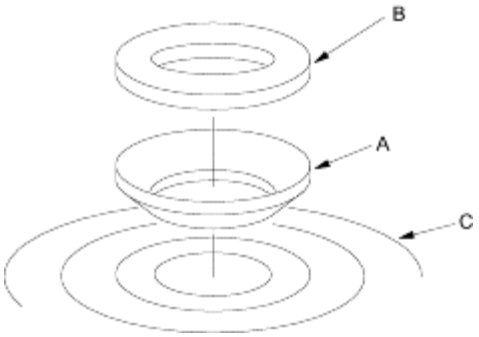
Manual Transmission

Mainshaft Thrust Clearance Adjustment (cont'd)

1. 7. Install the 72 mm shim (A) selected and oil guide plate (M) in the transmission housing (B).



2. 8. Thoroughly clean the spring washer (A) and washer (B) before installing them on the ball bearing (C). Note the installation direction of the spring washer.

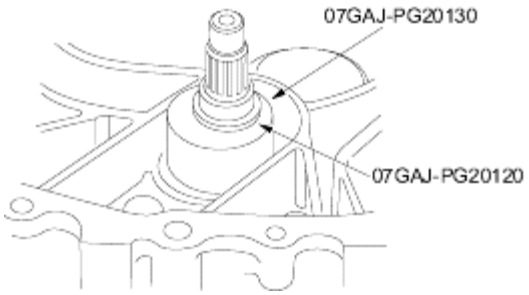


3. 9. Install the mainshaft in the clutch housing.
   10. Place the transmission housing over the mainshaft and onto the clutch housing.
   11. Tighten the clutch and transmission housings with several 8 mm bolts.

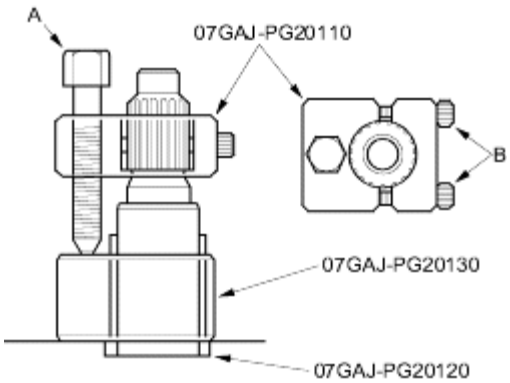
   NOTE: It is not necessary to use sealing agent between the housings.

4. 10. Tap the mainshaft with a plastic hammer.

1. 13. Slide the special tools over the mainshaft (A).



2. 14. Attach the special tool to the mainshaft as follows:
   - Back-out the mainshaft holder bolt (A) and loosen the two hex bolts (B).
   - Fit the holder over the mainshaft so its lip is toward the transmission.
   - Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

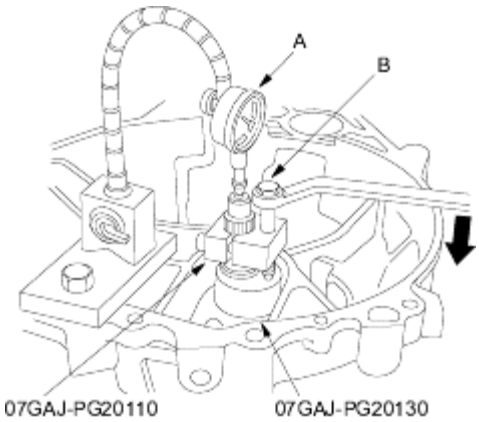


3. 15. Seat the mainshaft fully by tapping its end with a plastic hammer.
   16. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.

Manual Transmission

Mainshaft Thrust Clearance Adjustment (cont'd)

1. 17. Zero a dial gauge (A) on the end of the mainshaft.

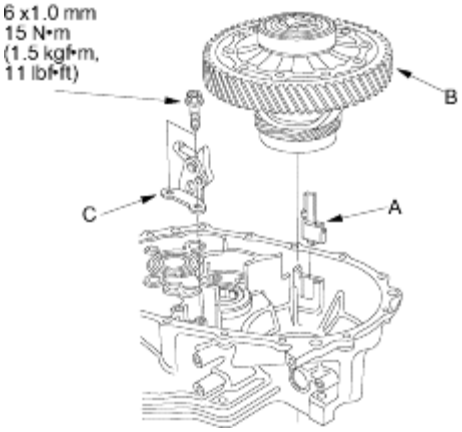


2. 18. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge (A) has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft end play.
   Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving, this may damage the transmission.
   19. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, recheck the shim thickness.

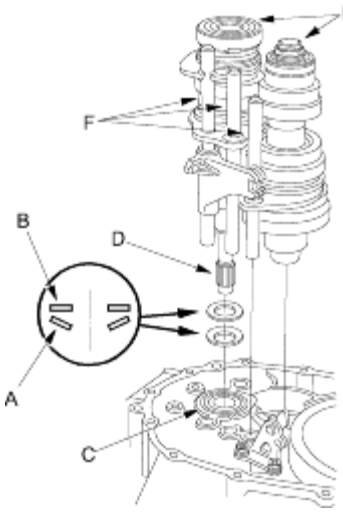
Standard:	0.11 - 0.18 mm (0.004 - 0.007 in.)

NOTE: Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact surfaces.

1. 1. Install the magnet (A), differential assembly (B) and reverse lock cam (C).



2. 2. Install the 36 mm spring washer (A) and 26 mm washer (B) over the ball bearing (C). Note the installation direction of the spring washer (A).

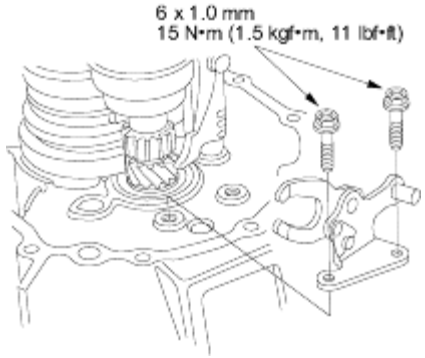


3. 3. Apply vinyl tape to the mainshaft splines (D) to protect the seal. Install the mainshaft and countershaft (E) into the shift forks (F) and install them as an assembly.

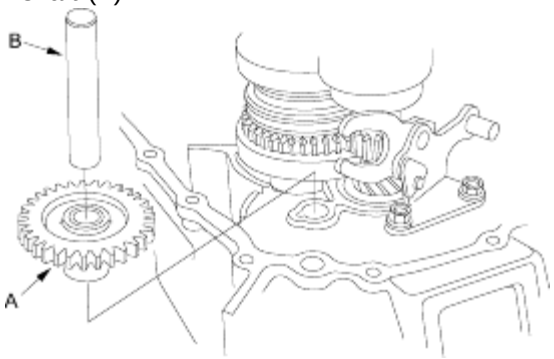
Manual Transmission

Transmission Reassembly (cont'd)

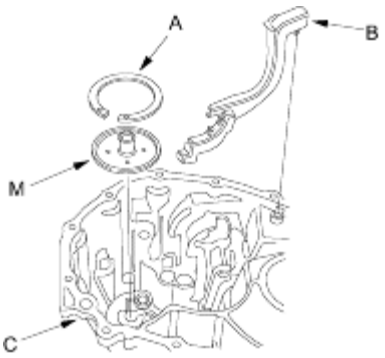
1. 4. Install the reverse shift fork.



2. 5. Install the reverse idler gear (A) and reverse gear shaft (B).

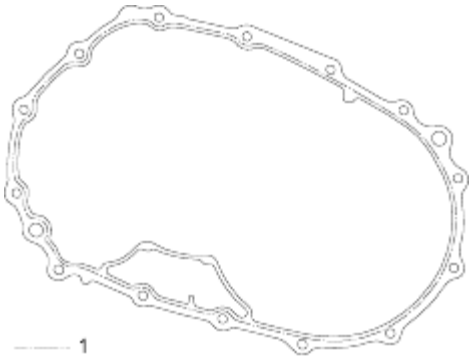


1. 6. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-40). Install the oil gutter plate (B), oil guide plate (M) and 72 mm shim into the transmission housing (C).



2. 7. Remove any dirt and oil from the transmission housing sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Be sure to seal the entire circumference of the bolt holes to prevent oil leakage.

NOTE: If 5 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.

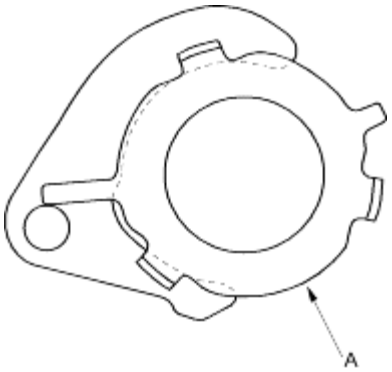


3. 1. Liquid gasket

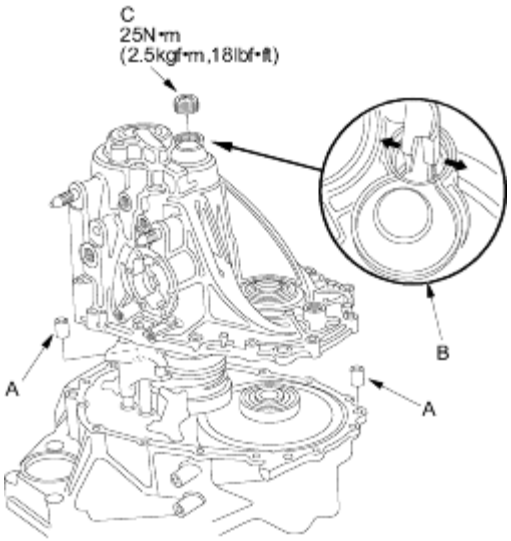
Manual Transmission

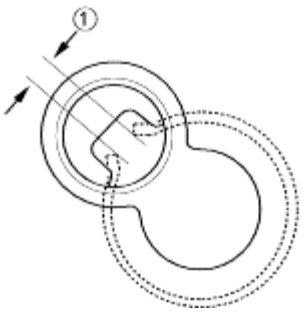
Transmission Reassembly (cont'd)

1. 8. Set the tapered cone ring (A) as shown. Place the transmission housing over the clutch housing, being careful to line up the shafts.



1. 9. Install the 14 x 20 mm dowel pins (A).





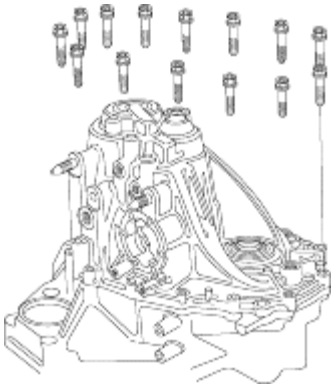
2. 10. Lower the transmission housing the rest of the way as you expand the 52 mm snap ring (B). Release the snap ring so it seats in the groove of the countershaft bearing.
11. Check that the 52 mm snap ring is securely seated in the groove of the countershaft bearing.

Dimension 1 as installed:	4.6 - 8.3 mm (0.18 - 0.33 in.)

12. Apply liquid gasket (P/N 08718-0001) to the threads of the 32 mm sealing cap (C), and install it on the transmission housing.

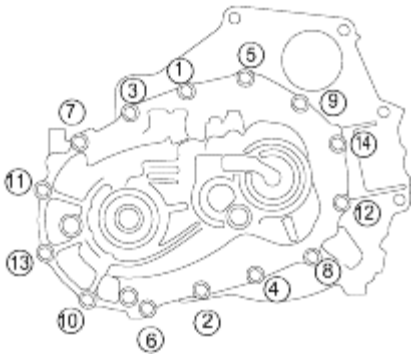
Manual Transmission
Transmission Reassembly (cont'd)

1. 13. Install the 8 mm flange bolts finger-tight.

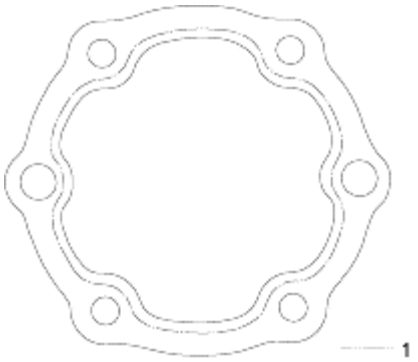


2. 14. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

8 x 1.25 mm
27 N•m (2.8 kgf•m, 20 lbf•ft)

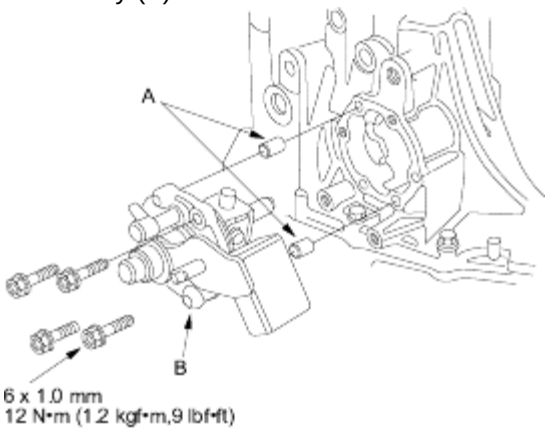


1. 15. Remove any dirt and oil from the shift lever cover sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface.



2. 1. Liquid gasket

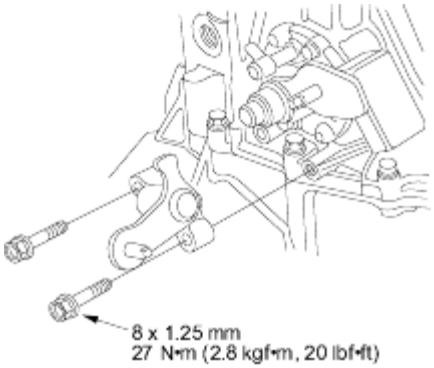
3. 16. Install the 8 x 10 mm dowel pins (A) and shift lever assembly (B).



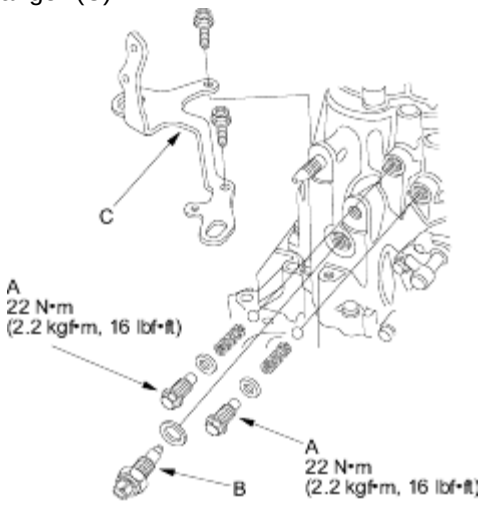
6 x 1.0 mm
12 N•m (1.2 kgf•m,9 lbf•ft)

Manual Transmission
Transmission Reassembly (cont'd)

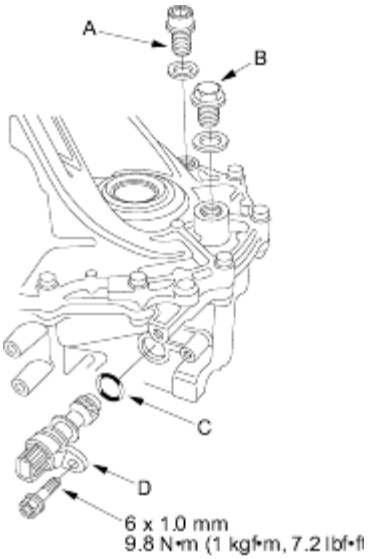
1. 17. Install the select lever assembly.



2. 18. Install the detent bolts (A), back-up light switch (B) with new washers, then install the transmission hanger (C).



1. 19. Install the drain plug (A) and the filler plug (B) with new washers.

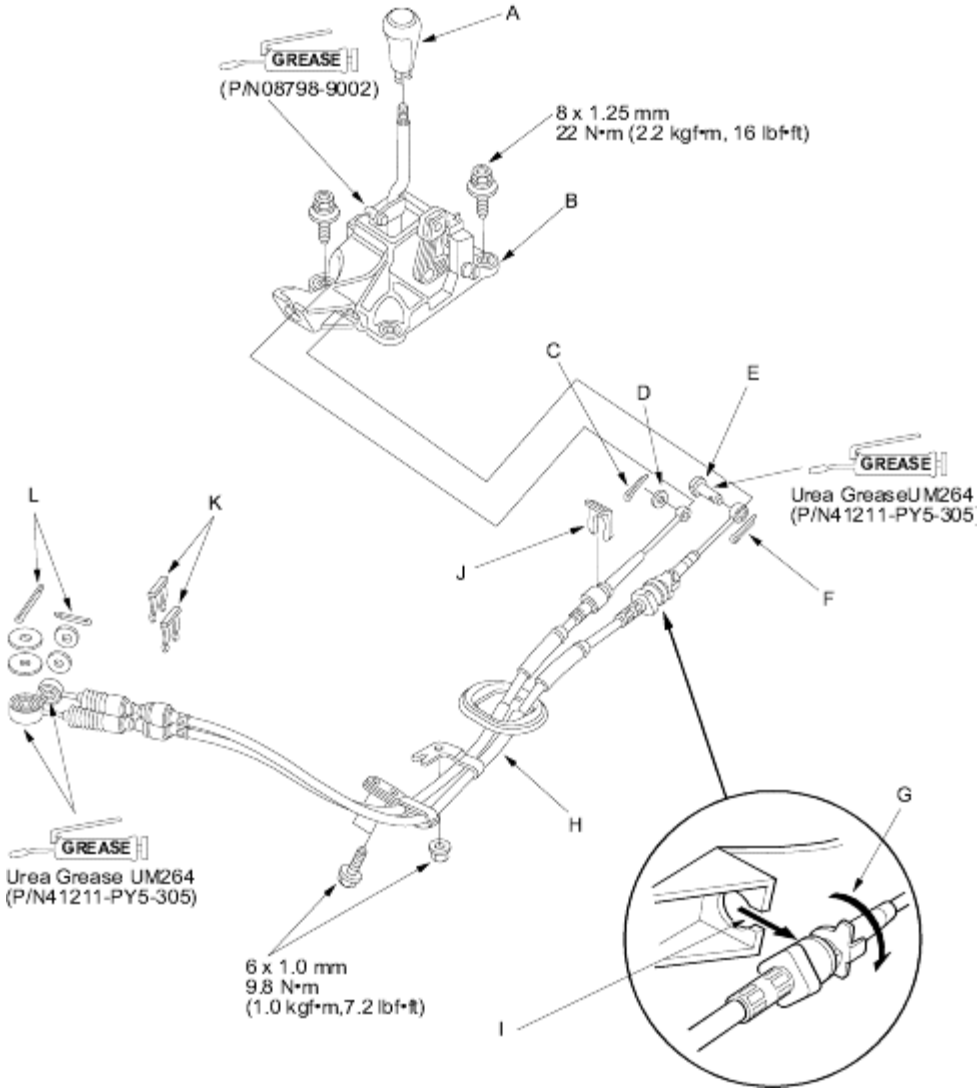


2. 20. Install the O-ring (C) and the vehicle speed sensor (VSS)(D).

Manual Transmission

Gearshift Mechanism Replacement

4-door model:

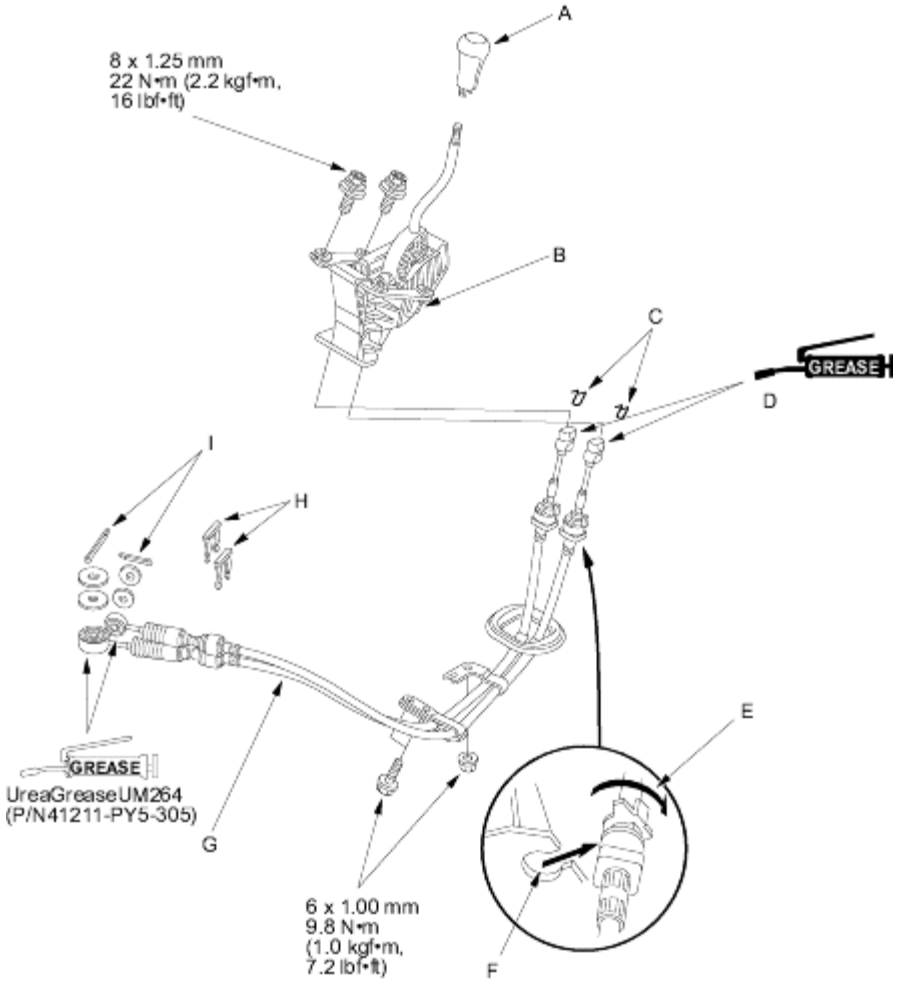


A. A. SHIFT LEVER KNOB
8 Nm (0.8 kgf/m, 5.8 lbf/ft)
B. SHIFT LEVER HOUSING
C. COTTER PIN
Replace.
D. WASHER
E. SELECT LOCK PIN
F. COTTER PIN
Replace.
G. 1 Rotate the shift cable toward the opening.
H. SHIFT CABLE
I. 2 Remove the shift cable from the shift lever bracket.
J. SHIFT CABLE CAP
Replace.
K. SHIFT CABLE CLIP
Replace.
L. COTTER PINS
Replace.

Manual Transmission

Gearshift Mechanism Replacement

5-door model:



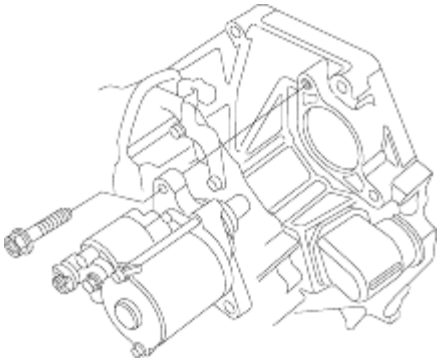
A.

A. SHIFT LEVER CABLE
8 Nm (0.8 kgf/m, 5.8 lbf/ft)
B. SHIFT LEVER HOUSING
C. CLAMP
D. (SILICONE GREASE)
E. 1 Rotate the shift cable toward the opening.
F. 2 Remove the shift cable from the shift lever bracket.
G. SHIFT CABLE
H. SHIFT CABLE CLIP
Replace.
I. COTTER PINS
Replace.

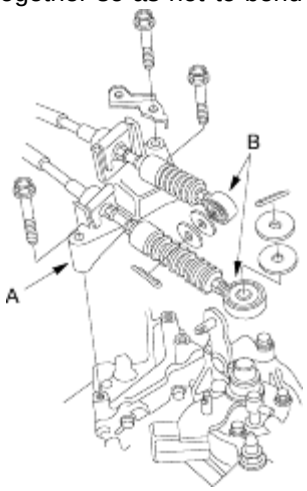
Manual Transmission

Transmission Removal (cont'd)

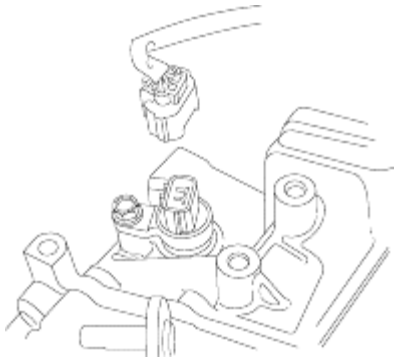
1. 8. Remove the starter motor.



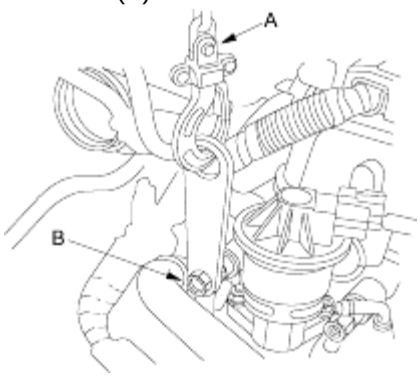
2. 9. First remove the cable bracket (A), then disconnect the cables (B) from the top of the transmission housing. Carefully remove both cables and the bracket together so as not to bend the cables.



1. 10. Disconnect the vehicle speed sensor (VSS) connector.

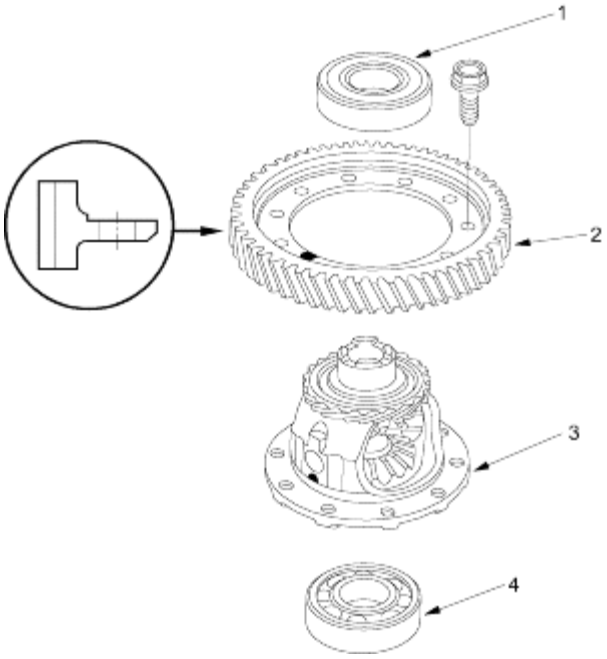


2. 11. Attach the chain hoist (A) to the engine using the 8 x 1.25 mm bolt (B).



M/T Differential

Component Location Index

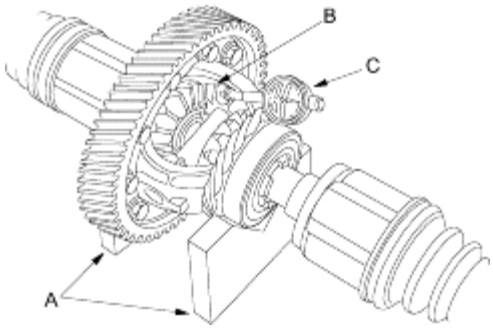


1. BALL BEARING
   Replacement, page 13-52
2. FINAL DRIVE GEAR
   Replacement, page 13-51
3. DIFFERENTIAL CARRIER
   Backlash Inspection, page 13-51
   Replacement, page 13-51
4. BALL BEARING
   Replacement, page 13-52

M/T Differential

Backlash Inspection

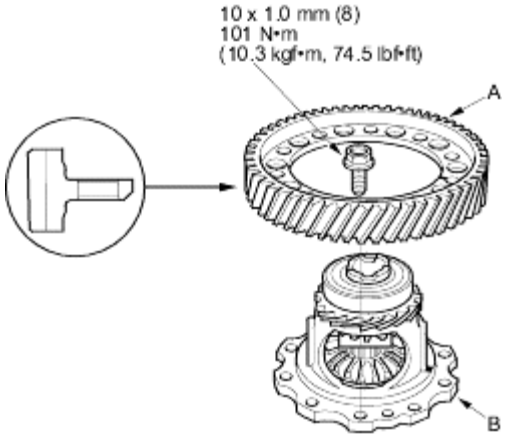
1. 1. Place the differential assembly on V-blocks (A) and install both axles.



2. 2. Measure the backlash of both pinion gears (B) with a dial indicator (C). If the backlash is not within the standard, replace the differential carrier.

Standard (New):	0.05 - 0.15 mm (0.002 - 0.006 in.)

1. 1. Remove the bolts (left-hand threads) in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier(B).



2. 2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

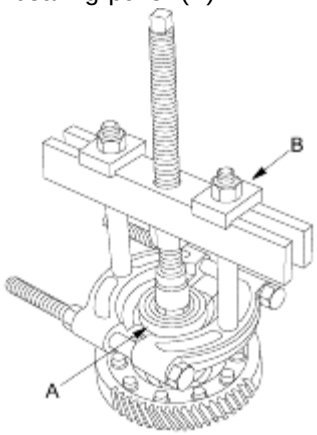
M/T Differential

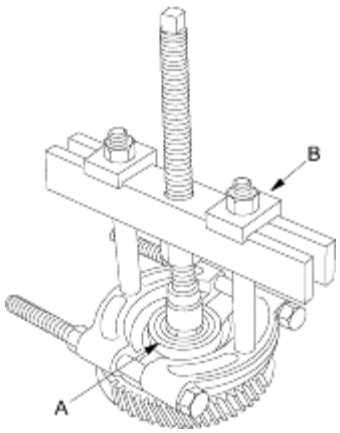
Carrier Bearings Replacement

Special Tool Required

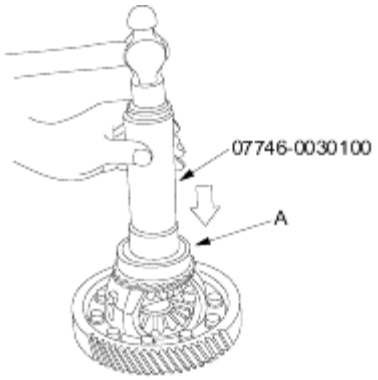
Driver, 40 mm I.D. 07746-0030100

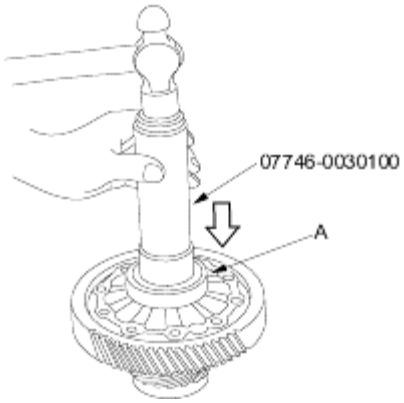
1. 1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
   2. Remove the carrier bearing (A) with a commercially-available bearing puller (B).





1. 3. Install the new bearings (A) with the special tool and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

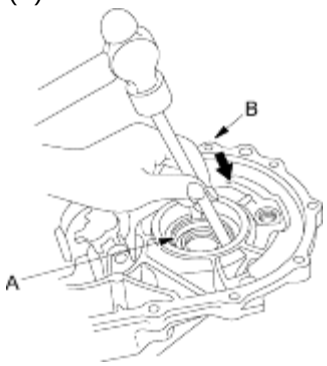




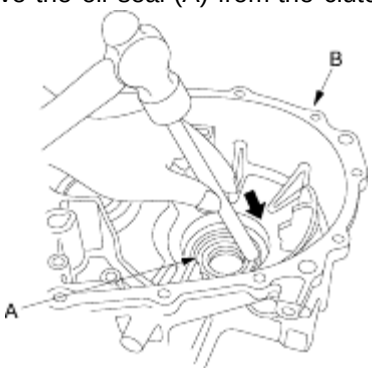
M/T Differential
Oil Seal Replacement

Special Tools Required
- Driver, 07749-0010000
- Oil seal driver attachment, 07NAD-P200100

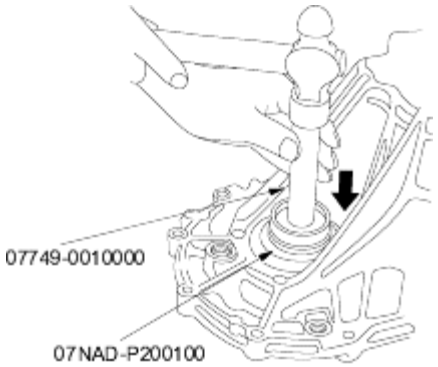
1. 1. Remove the differential assembly.
   2. Remove the oil seal (A) from the transmission housing (B).



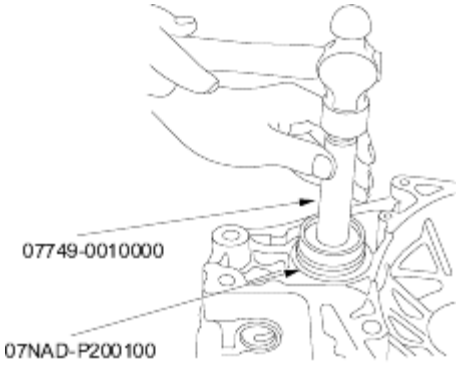
2. 3. Remove the oil seal (A) from the clutch housing (B).



1. 4. Install the new oil seal in the transmission housing with the special tools.



2. 5. Install the new oil seal in the clutch housing with the special tools.



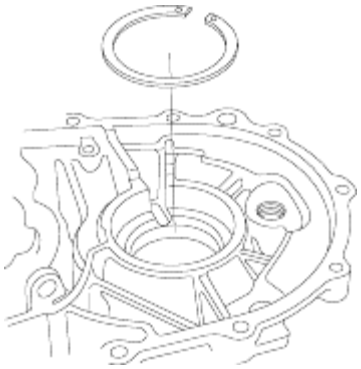
M/T Differential

Differential Thrust Clearance Adjustment

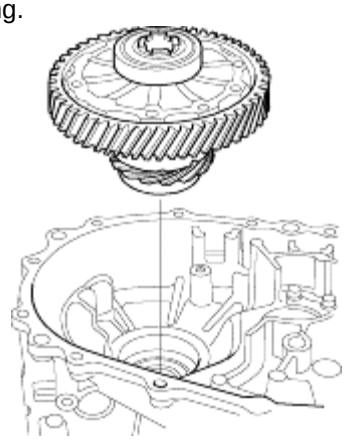
Special Tool Required

Driver, 40 mm I.D. 07746-0030100

1. 1. Install the 80 mm shim that's the same size as the one you removed.



2. 2. Install the differential assembly into the clutch housing.

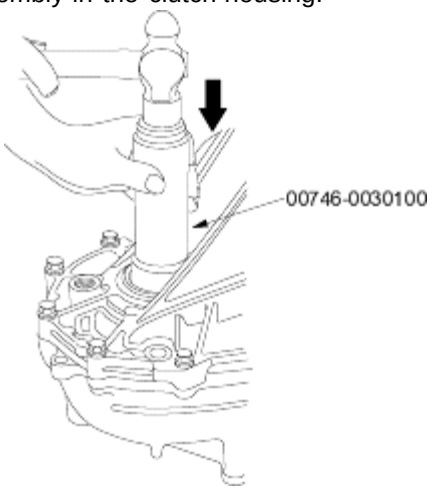


1. 3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps.

   8 x 1.25 mm

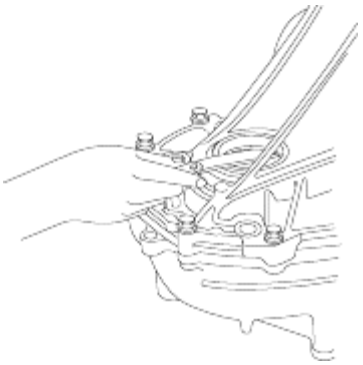
   27 Nm (2.8 kgf/m, 20 lbf/ft)

2. 4. Use the special tool to bottom the differential assembly in the clutch housing.



3. 5. Measure clearance between 80 mm shim and bearing outer race in transmission housing.

   Standard: 0 - 0.10 mm (0 - 0.004 in.)



M/T Differential

Differential Thrust Clearance Adjustment (cont'd)

6. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

Turkey-produced D14Z6 engine transmission:

72 mm Shim

	Part Number	Thickness
A	41441-PL3-A001	1.0 mm (0.0394 in.)
B	41442-PL3-A001	1.1 mm (0.0433 in.)
C	41443-PL3-A001	1.2 mm (0.0472 in.)
D	41444-PL3-A001	1.3 mm (0.0512 in.)
E	41445-PL3-A001	1.4 mm (0.0551 in.)
F	41446-PL3-A001	1.5 mm (0.0591 in.)
G	41447-PL3-A001	1.6 mm (0.0630 in.)
H	41448-PL3-A001	1.7 mm (0.0669 in.)
J	41449-PL3-A001	1.8 mm (0.0709 in.)
K	41450-PL3-A001	1.05 mm (0.0413 in.)
L	41451-PL3-A001	1.15 mm (0.0453 in.)
M	41452-PL3-A001	1.25 mm (0.0492 in.)
N	41453-PL3-A001	1.35 mm (0.0531 in.)
P	41454-PL3-A001	1.45 mm (0.0571 in.)
Q	41455-PL3-A001	1.55 mm (0.0610 in.)
R	41456-PL3-A001	1.65 mm (0.0650 in.)
S	41457-PL3-A001	1.75 mm (0.0689 in.)

Except Turkey-produced D14Z6 engine transmission:

80 mm Shim

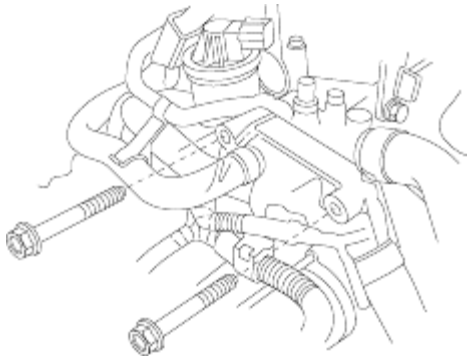
	Part Number	Thickness
A	41441-PL3-B001	1.0 mm (0.0394 in.)
B	41442-PL3-B001	1.1 mm (0.0433 in.)
C	41443-PL3-B001	1.2 mm (0.0472 in.)
D	41444-PL3-B001	1.3 mm (0.0512 in.)
E	41445-PL3-B001	1.4 mm (0.0551 in.)
F	41446-PL3-B001	1.5 mm (0.0591 in.)
G	41447-PL3-B001	1.6 mm (0.0630 in.)
H	41448-PL3-B001	1.7 mm (0.0669 in.)
J	41449-PL3-B001	1.8 mm (0.0709 in.)
K	41450-PL3-B001	1.05 mm (0.0413 in.)
L	41451-PL3-B001	1.15 mm (0.0453 in.)
M	41452-PL3-B001	1.25 mm (0.0492 in.)
N	41453-PL3-B001	1.35 mm (0.0531 in.)
P	41454-PL3-B001	1.45 mm (0.0571 in.)
Q	41455-PL3-B001	1.55 mm (0.0610 in.)
R	41456-PL3-B001	1.65 mm (0.0650 in.)
S	41457-PL3-B001	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.
8. Replace the thrust shim selected in step 7, then recheck the clearance.
9. Reinstall the transmission.

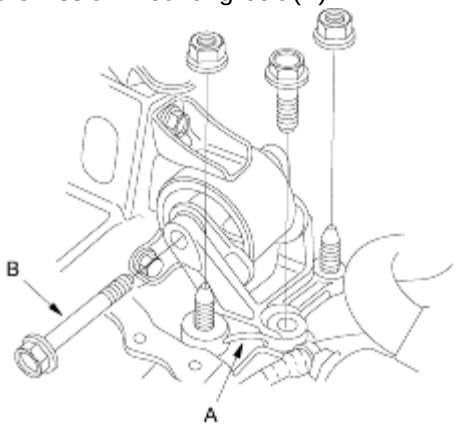
Manual Transmission

Transmission Removal (cont'd)

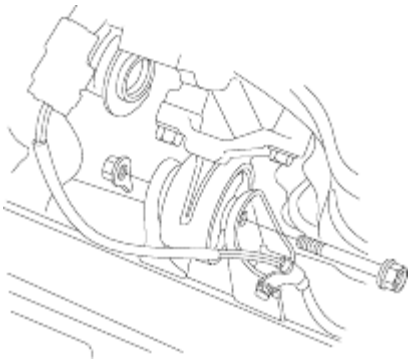
1. 12. Remove the 2 upper transmission mounting bolts.



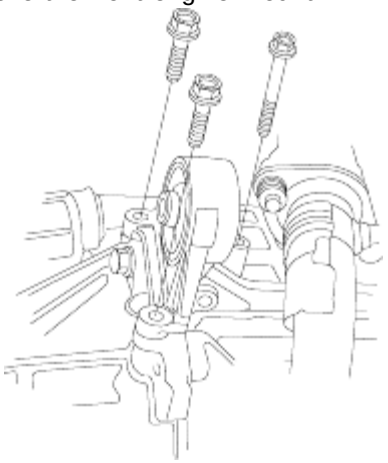
2. 13. Remove the transmission mount bracket (A) and transmission mounting bolt (B).



1. 14. Remove the front engine mount bracket mounting bolt.

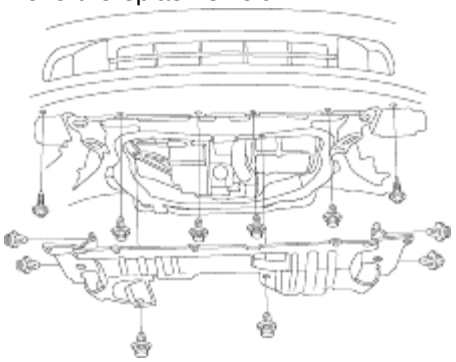


2. 15. Remove the front engine mount.

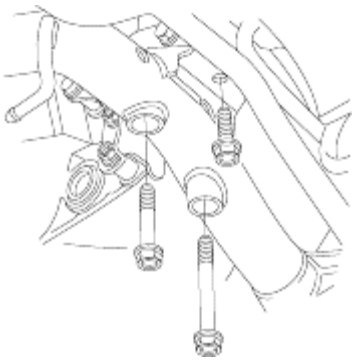


Manual Transmission
Transmission Removal (cont'd)

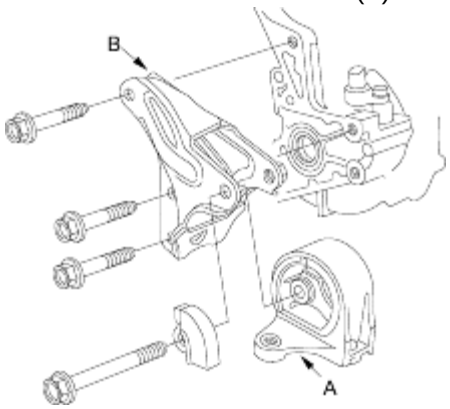
16. Raise vehicle and make sure it is securely supported.
17. Drain transmission fluid with shop towel covering the front and rear beams to catch any spilled fluid (see page 13-3).
18. Remove the splash shield.



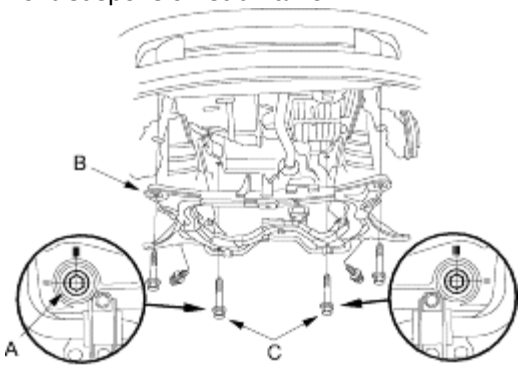
19. Remove exhaust pipe A (see step 28 on page 5-7).
20. Remove the driveshafts (see page 16-3).
21. Remove the three bolts securing the transmission rear mount.



22. Remove the transmission rear mount (A) and the transmission rear mount bracket (B).



23. Make reference marks (A) front suspension sub frame (B) and mounting bolts (C), then remove the front suspension sub frame.

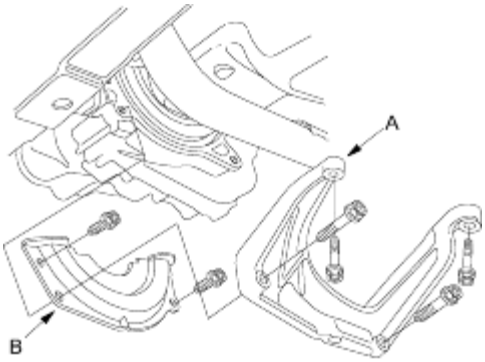


Manual Transmission

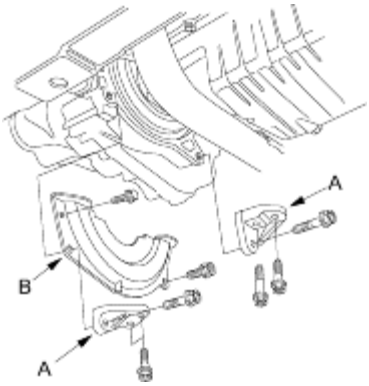
Transmission Removal (cont'd)

1. 24. Remove the engine stiffener (A) and clutch cover (B).

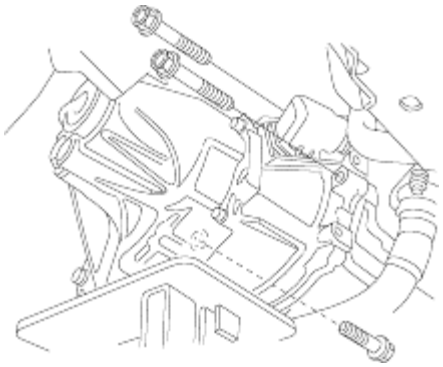
Steel oil pan type:



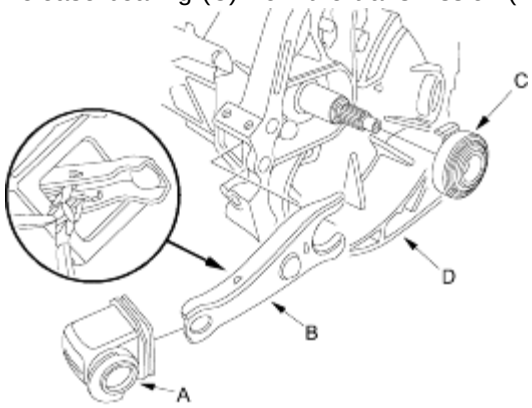
Aluminium oil pan type:



1. 25. Place the transmission jack under the transmission and remove the three lower transmission mounting bolts.



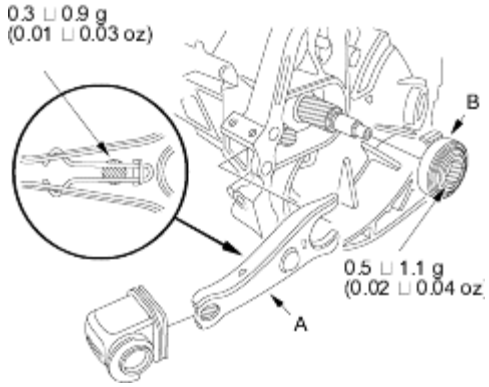
2. 26. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate, then lower the transmission on the transmission jack.
   27. Remove the boot (A), the release fork (B) and the release bearing (C) from the transmission (D).



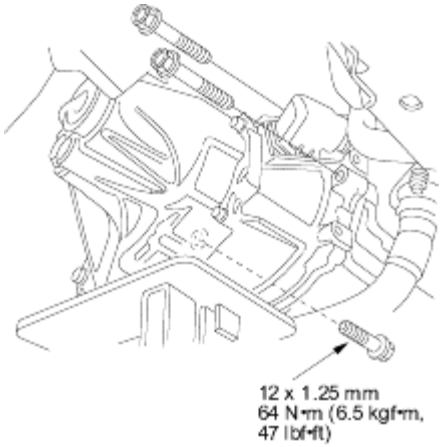
Manual Transmission

Transmission Installation

1. 1. Check the two dowel pins are installed in the clutch housing.
2. 2. Apply Super High Temp Urea Grease (P/N 08798-9002) to the release fork (A) and the release bearing (B). Install the release fork and the release bearing.

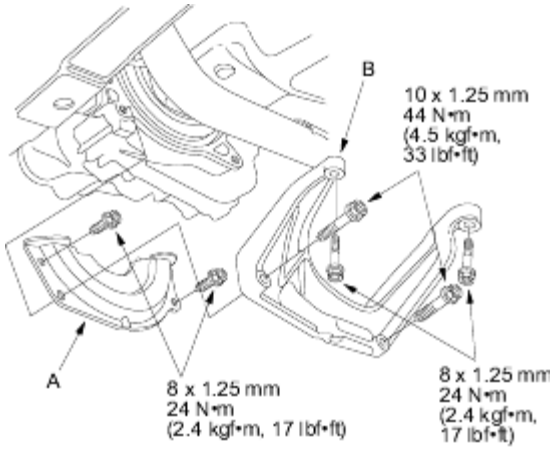


3. 3. Place the transmission on the transmission jack and raise it to the engine level.
   4. Install the three lower transmission mounting bolts.

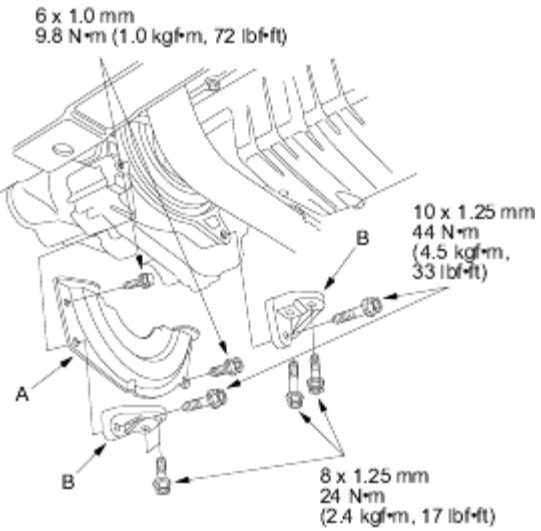


1. 5. Install the clutch cover (A) and engine stiffener (B).

Steel oil pan type:



Aluminium oil pan type:



General Information

Chassis and Engine Numbers (cont'd)

4-Door KK, KM, KP, KX Models

Vehicle Identification Number

JHM ES1 5 5 0 1 S 200001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD.
HONDA Passenger vehicle
1HG: HONDA OF AMERICA MFG., INC., U.S.A.
HONDA Passenger vehicle
2HG: HONDA OF CANADA MFG.,
HONDA CANADA INC.,
HONDA Passenger vehicle
93H: HONDA OF BRAZIL MFG., INC.
HONDA Passenger vehicle

b. Line, Body and Engine Type
ES1: CIVIC/D17A1 (KK model),
D17A2 (KK model),
D17A3, D17A4
ES8: CIVIC/D15Y5 (KK model)

c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual
6: 4-door Sedan/4-speed Automatic

d. Vehicle Grade (Series)
1: DX (KK model)
2: DX (KK model)
5: LX
7: EX

e. Fixed Code or Check Digit

f. Model Year
1: 2001

g. Factory Code
H: Ontario Factory in Canada
L: East Liberty, Ohio Plant, U.S.A.
S: Suzuka Factory in Japan (Mie)
Z: Sao Paulo factory BRAZIL

h. Serial Number
KK model: 200001 - (Suzuka)
500001 - (East Liberty)
750001 - (Ontario)
KX model: 900001 -
KM and KP models: 000001 -

Engine Number

D17A2 - 1000001

a b

a. Engine Type
D15Y5: 1.5 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A1: 1.7 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A2: 1.7 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A3: 1.7 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A4: 1.7 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter

b. Serial Number
D15Y5, D17A1, D17A2: 1000001 -
D17A3, D17A4: 1400001 -

Transmission Number

BMXA - 5000001

a b

a. Transmission Type
SLXA: 4-speed Automatic
BMXA: 4-speed Automatic
SLW: 5-speed Manual

b. Serial Number
SLXA and SLW: 1000001 -
BMXA: 5000001 -

Automatic Transmission

Automatic Transmission

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Automatic Transmission
Symptom Troubleshooting Index

These symptoms DO NOT trigger Diagnostic Trouble Codes (DTCs) or cause the D indicator light to blink. If the Malfunction Indicator Lamp (MIL) was reported ON or the * indicator light has been blinking, check for DTCs. But if the vehicle has one of the symptoms in the following chart, check the probable cause(s) for it, in the sequence listed, until you find the problem.

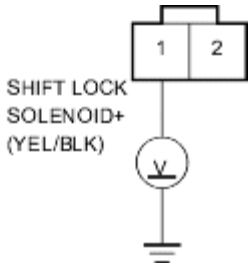
Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator light comes on and stays on or never comes on at all D3, 2 or 1 indicator light does not indicate while the shift lever is in that position	1. Communication line betweeNmultiplex control unit and gauge assembly defective 2. Blown indicator light bulb	Check that the MIL indicates code for communication line between the multiplex control unit and the gauge assembly (see page 22-273). If the MIL does not indicate code, replace the indicator light bulb (see page 22-87).
Shift lever cannot be moved from P position while you're pushing on the brake pedal	A problem in the shift lock system (interlock system)	Check the interlock system-shift lock system circuit: 4-door model: • KQ, KM and KX models (see page 14-97). • KH model (see page 14-99). 5-door model (see page 14-101).
Ignition key cannot be moved from ACC (I) position to LOCK (0) position when you're pushing it with the shift lever in P position	A problem in the key interlock system (interlock system)	Check the interlock system-key interlock system circuit (see page 14-105).
Shift lever cannot pass through R position from N position	A problem in the reverse lock system of interlock system	Check the interlock system-reverse lock system circuit (see page 14-107).

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

7. Turn the ignition switch OFF.
8. Install the shift lock relay.
9. Remove the centre console (see page 20-73).
10. Disconnect shift lock solenoid connector.
11. Turn the ignition switch ON (II).
12. Press the brake pedal and measure the voltage between the No. 1 terminal of the shift lock solenoid connector and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

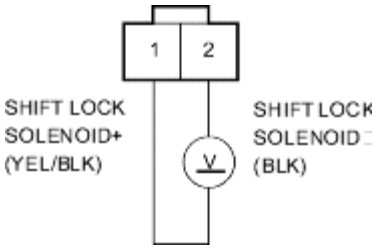
Is there battery voltage when pressing the brake pedal?

YES - Go to step 13.

NO - Repair open or short in the wire between the No. 1 terminal of the shift lock solenoid and the shift lock relay. ■

13. Measure the voltage at shift lock solenoid connector terminals when pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage when pressing the brake pedal?

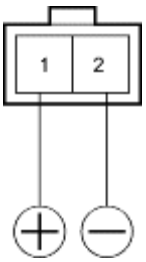
YES - Go to step 14.

NO - Repair open in the wire between the No. 2 terminal of the shift lock solenoid connector and ground, or repair poor ground (G451). ■

14. Connect the No. 1 terminal of the shift lock solenoid connector to the battery positive terminal and connect the No. 2 terminal to the battery negative terminal. Check that the shift lock solenoid operates.

NOTE: Do not connect the No. 2 terminal to the battery positive terminal or you will damage the diode inside the shift lock solenoid.

SHIFT LOCK SOLENOID CONNECTOR



Terminal side male terminals

Dose the shift lock solenoid operate properly?

YES - Check for shift lever shift lock mechanism. If necessary, substitute a known-good multiplex control unit and recheck. ■

NO - Replace the shift lock solenoid. ■

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

5-door Model

1. 1. Press the brake pedal.

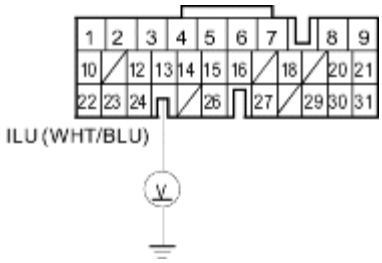
Are the brake lights ON?

YES - Go to step 2.

NO - Repair faulty brake light circuit. ■

2. 2. Turn the ignition switch ON (II).
   3. With the accelerator pedal released, press the brake pedal.
   4. Measure the voltage between PCM connector terminal E13 and body ground.

PCM CONNECTOR E (31P)



Wire side of feale terminals

Is there battery voltage?

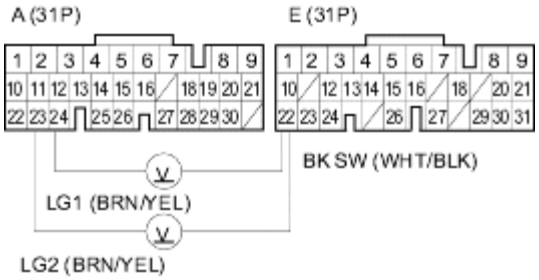
YES - Check for an open in the wire between PCM connector terminal E13 and the multiplex control unit. If the wire is OK, check for a loose terminal fit it the multiplex control unit connectors. If necessary, substitute a known-good multiplex control unit and recheck. ■

NO - Go to step 5.

3. 5. Turn the ignition switch OFF.

1. 6. Disconnect PCM connectors A (31P) and E (31P).
2. 7. Press the brake pedal and measure the voltage between PCM connector terminals E22 and A23 or A24.

PCM CONNECTORS



Is there battery voltage?

YES - Release the brake pedal and go to step 8.

NO - Repair open in the wire between PCM connector terminal E22 and the brake pedal position switch. ■

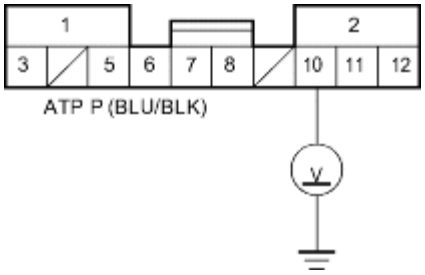
3. 8. Reconnect PCM connectors A (31P) and E (31P).

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting

1. 9. Disconnect the under-dash fuse/relay box No. 9 connector (12P).
2. 10. Turn the ignition switch ON (II).
   11. Measure the voltage between the No. 10 terminal of the No. 9 connector (12P) and body ground. (The shift lever is in [P] position.)

UNDER-DASH FUSE/RELAY BOX No. 9 CONNECTOR (12P)



Wire side of female terminals

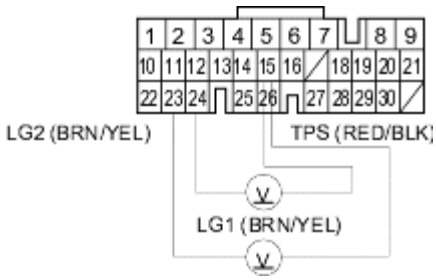
Is there voltage?

YES - Repair open in ATP P wire between the transmission range switch and the multiplex control unit. ■

NO - Go to step 12.

3. 12. Turn the ignition switch OFF.
   13. Reconnect the No. 9 connector (12P).
   14. Turn the ignition switch ON (II).
2. 15. Measure the voltage between PCM connector terminals A15 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 0.5 V?

YES - Go to step 20.

NO - Go to step 16.

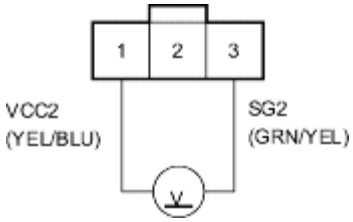
3. 16. Turn the ignition switch OFF.

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

1. 17. Disconnect the TPS (throttle position sensor) connector.
2. 18. Turn the ignition switch ON (II).
   19. Measure the voltage between the No. 1 and No. 3 terminals of the TPS connector.

TPS CONNECTOR



Wire side of female terminals

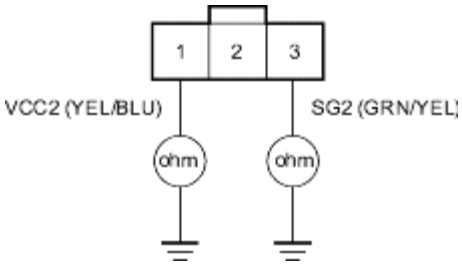
Is there about 5 V?

YES - Check for an open or a short in the wire between PCM connector terminal A15 and the TPS. If wire is OK, replace the TPS. ■

NO - Go to step 20.

3. 20. Turn the ignition switch OFF.
   21. Disconnect PCM connector A (31P).
   22. Check for continuity between the No. 1 terminal of TPS connector and body ground and between the No. 3 terminal and body ground.

TPS CONNECTOR



Wire side of female terminals

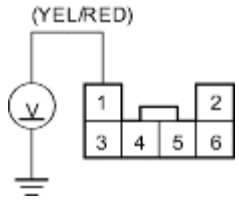
Is there continuity?

YES - Check for a short to ground in the wires between the No. 1 and No. 3 terminals of TPS connector and ground. If the wires are OK, replace the PCM. ■

NO - Go to step 23.

1. 23. Reconnect the PCM connector A (31P) and TPS connector.
   24. Disconnect the shift lock solenoid/D3 switch connector.
   25. Turn the ignition switch ON (II).
   26. Press the brake pedal and measure the voltage between No. 1 terminal of the shift lock solenoid/D3 switch connector and body ground.

SHIFT LOCK SOLENOID/D3 SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage when pressing the brake pedal?

YES - Go to step 27.

NO - Repair open or short in the wire between the No. 1 terminal of the shift lock solenoid/D3 switch connector and the multiplex control unit. ■

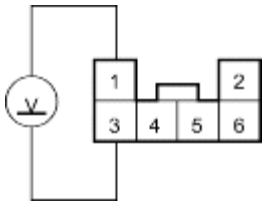
Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

1. 27. Measure the voltage between the No. 1 and No.3 terminals of the shift lock solenoid/D3 switch connector with pressing the brake pedal.

SHIFT LOCK SOLENOID/D3 SWITCH CONNECTOR

SHIFT LOCK SOLENOID + (YEL/RED)



SHIFT LOCK SOLENOID – (YEL/BLK)

Wire side of female terminals

Is there battery voltage with pressing the brake pedal?

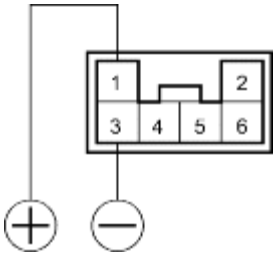
YES - Go to step 28.

NO - Check for an open in shift lock solenoid ground wire between the No. 3 terminal of the shift lock solenoid/D3 switch connector and the multiplex control unit. If the wire is OK, check for an opeNmultiplex control unit ground wire and poor ground. ■

1. 28. Connect the No. 1 terminal of the shift lock solenoid/D3 switch connector to the battery positive terminal and connect the No. 3 terminal to the battery negative terminal. Check that the shift lock solenoid operates.

NOTE: Do not connect the No. 3 terminal to the battery positive terminal or you will damage the diode inside the shift lock solenoid.

SHIFT LOCK SOLENOID/D3 SWITCH CONNECTOR



Terminal side of male terminals

Does the shift lock solenoid operate properly?

YES - Check for shift lever shift lock mechanism. If necessary, substitute a known-good multiplex control unit and recheck. ■

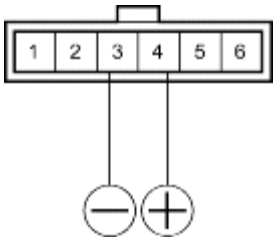
NO - Replace the shift lock solenoid. ■

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting

1. 1. Disconnect steering lock assembly connector (6P).
2. 2. Turn the ignition key to ACC (I) or ON (II).
   3. Connect the No. 4 terminal of steering lock assembly connector (6P) to the battery positive terminal and connect the No. 3 terminal to the battery negative terminal.

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Terminal side of male terminals

3. 4. Check the key interlock solenoid operation. A clicking sound should be heard while the ignition key stays in ACC (I) or ON (II) and you should not be able to turn it to OFF (0) position.

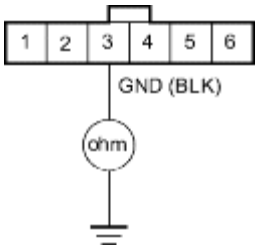
Does the key interlock solenoid operate properly?

YES - Go to step 5.

NO - Faulty key interlock solenoid/switch. Replace the ignition key cylinder/steering lock assembly. ■

1. 5. Check for continuity No. 3 of the steering lock assembly connector (6P) and ground.

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Wire side of female terminals

Is there continuity?

YES - Go to step 6.

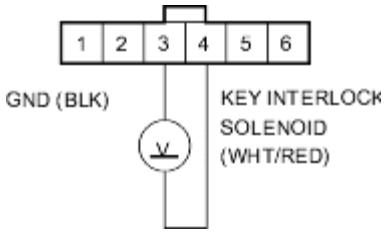
NO - Repair open in the wire between the No. 3 terminal of the steering lock assembly connector (6P) and ground (G401), or repair poor ground (G401). ■

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

1. 6. Turn the ignition switch ON (II) and measure the voltage between the No. 3 and No. 4 terminals of the steering lock assembly connector (6P).

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Wire side of female terminals

Is there battery voltage?

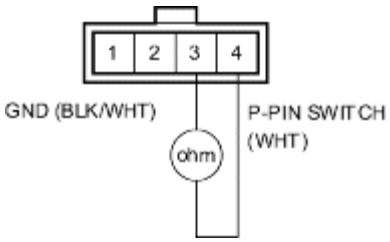
YES - Except for KH model; Faulty key interlock solenoid/switch. Replace the ignition key cylinder/steering lock assembly. ■

For KH model; Go to step 7.

NO - Check for open or short in the wire between the No. 4 terminal of steering lock assembly connector and the multiplex control unit or key interlock relay. If the wire is OK, check for loose terminal fit in the multiplex control unit connectors, or replace the key interlock relay. ■

1. 7. Turn the ignition switch OFF.
2. 8. Disconnect the park pin switch connector (4P).
9. Check for continuity between the No. 3 and No. 4 terminals of the park pin switch connector (4P) while you move the shift lever in and out of the P position.

PARK PIN SWITCH CONNECTOR (4P)



Terminal side of male terminals

Is there no continuity with the shift lever in P *position and continuity with the shift lever in any position other than* P *?*

YES - Repair open or short in the wires between the park pin switch connector and the key interlock relay and ground. If wires are OK, replace the key interlock relay. ■

NO - Inspect the park pin linkage. If the linkage is OK, replace the park pin switch. ■

Automatic Transmission

Interlock System - Reverse Lock System Circuit Troubleshooting

1. 1. Check whether the DTC P1705, 5-1, 5, or P1706, 6-1, 6 is indicated.

Is either DTC indicated?

YES - Perform the Troubleshooting Flowchart for the indicated Code (s). ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF.
3. Shift the shift lever to P position while pushing the shift lock release.
4. Turn the ignition switch ON (II).
5. Press the brake pedal and release the accelerator pedal, shift the shift lever out of P position and check that the shift lock solenoid operates.

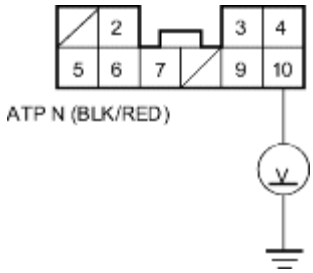
Does the shift lever out of P position?

YES - Go to step 6.

NO - Perform the Troubleshooting Flowchart for the Interlock System-Shift Lock System Circuit for 5-door model (see page 14-101). ■

1. 6. Shift to N position.
2. 7. Turn the ignition switch OFF.
8. Disconnect under-dash fuse/relay box No. 5 connector (10P).
9. Turn the ignition switch ON (II).
10. Measure the voltage between the No. 10 terminal of the No. 5 connector (10P) and body ground.

UNDER-DASH FUSE/RELAY BOX No. 5 CONNECTOR (10P)



Wire side of female terminals

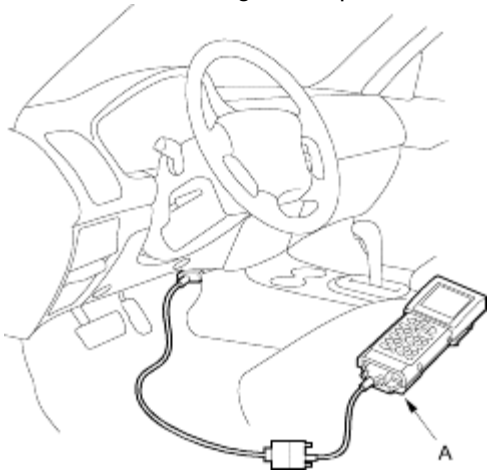
Is there voltage?

YES - Repair open in ATP N wire between the transmission range switch and the multiplex control unit. ■

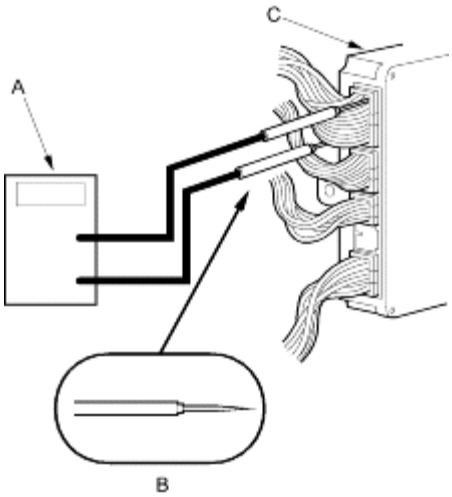
NO - Check for loose fit in the multiplex control unit connectors and check the reverse lock mechanism. ■

Automatic Transmission
Road Test

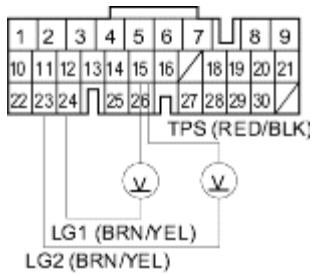
1. 1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. 2. Apply the parking brake and block rear wheels. Start the engine, then shift to D position while pressing the brake pedal. Press the accelerator pedal and release it suddenly. The engine should not stall.
   3. Repeat the same test in D3 position.
   4. Connect the Honda PGM Tester (A) and go to the PGM-FI Data List; then go to step 9. If you don't have a PGM Tester, go to step 5.



1. 5. Remove the PCM and lower it (see page 14-6).
2. 6. Connect a digital multitester (A) and tapered tip probe (B) to check voltage between the A15 (+) terminal and A23 (-) or A24 (-) terminal of the PCM (C).



PCM CONNECTOR A (31P)



Wire side of female terminals

Automatic Transmission

Road Test (cont'd)

D14Z5 and D16W7 engines (on 4-door model):

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	29-34	14-18
	km/h	15-19	30-35	47-54	23-28
Throttle position sensor voltage: 2.25 V	mph	22-26	42-48	60-66	68-74
	km/h	36-42	68-76	96-105	110-119
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	31-37	63-71	96-107	96-107
	km/h	50-58	101-114	155-172	155-172

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	85-95	54-61	23-29
	km/h	150-166	136-152	87-98	37-45

D14Z5, D16W7 and D16V2 engines (on 5-door model):

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	29-34	14-18
	km/h	15-19	30-35	47-54	23-28
Throttle position sensor voltage: 2.25 V	mph	22-26	42-48	60-66	68-74
	km/h	36-42	68-76	96-105	110-119
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	34-40	63-71	96-107	96-107
	km/h	55-63	101-114	155-172	155-172

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	85-95	54-61	23-29
	km/h	150-166	136-152	87-98	37-45

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Measure line pressure. • If the strainer is clogged, find the damaged components that caused debris. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission and flush the torque converter, cooler and lines. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.
Vehicle moves in 2 and R, but not in *, D3 or D position	1. Shift cable broken or out of adjustment 2. 1st gear one-way clutch defective 3. 1st accumulator defective 4. 1st gears worn or damaged 5. 1st clutch defective 6. Foreign material in 1st orifice	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Inspect the mainshaft and 1st clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Automatic Transmission
Road Test (cont'd)

D15Y2, D15Y3 and D15Y5 engines:

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	29-34	14-18
	km/h	15-19	30-35	47-54	23-28
Throttle position sensor voltage: 2.25 V	mph	22-26	42-48	60-66	68-74
	km/h	36-42	68-76	96-105	110-119
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	32-38	64-73	98-109	98-109
	km/h	52-60	103-116	158-175	158-175

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	85-96	55-62	25-30
	km/h	150-166	137-153	89-100	40-48

D15Y6 engine:

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	27-31	14-18
	km/h	15-19	30-35	43-50	23-28
Throttle position sensor voltage: 2.25 V	mph	24-28	42-48	59-65	75-81
	km/h	39-45	67-75	94-103	120-129
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	35-40	69-78	105-116	105-116
	km/h	56-64	111-124	169-186	169-186

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	87-98	59-66	27-32
	km/h	150-166	140-156	95-106	43-51

Automatic Transmission
Road Test (cont'd)

D16W8 engine:

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	29-34	14-18
	km/h	15-19	30-35	47-54	23-28
Throttle position sensor voltage: 2.25 V	mph	22-26	42-48	60-66	68-74
	km/h	36-42	68-76	96-105	110-119
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	34-40	67-76	103-114	103-114
	km/h	55-63	108-121	166-183	166-183

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	85-96	55-62	25-30
	km/h	150-166	137-153	89-100	40-48

D17A1, D17A2, D17A3, D17A4, D17A5 and D17Z1 engines:

D position

Upshift

Throttle Opening	Unit of Speed	1st-2nd	2nd-3rd	3rd-4th	Lock-up ON
Throttle position sensor voltage: 0.75 V	mph	9-12	19-22	29-34	14-18
	km/h	15-19	30-35	47-54	23-28
Throttle position sensor voltage: 2.25 V	mph	22-26	42-48	60-66	68-74
	km/h	36-42	68-76	96-105	110-119
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	34-40	67-76	103-114	103-114
	km/h	55-63	108-121	166-183	166-183

Downshift

Throttle Opening	Unit of Speed	Lock-up OFF	4th-3rd	3rd-2nd	2nd-1st
Throttle position sensor voltage: 0.5 V	mph	13-17	17-20	6-10 (3rd-1st)	
	km/h	21-26	27-32	10-15 (3rd-1st)	
Fully-opened throttle, Throttle position sensor voltage: 4.5 V	mph	93-104	85-96	55-62	25-30
	km/h	150-166	137-153	89-100	40-48

Automatic Transmission
Road Test (cont'd)

1. 7. Accelerate to about 35 mph (57 km/h) so the transmission is in 4th, then shift from D position to 2 position. The vehicle should immediately begin slowing down from engine braking.
2. 8. Check for abnormal noise and clutch slippage in the following positions.

   1 (1st Gear) Position (7-position)
   - Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
   - Upshifts should not occur with the shift lever in this position.

   2 (2nd Gear) Position
   - Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
   - Upshifts and downshifts should not occur with the shift lever in this position.

   R (Reverse) Position
   - Accelerate from a stop at full throttle and check for abnormal noise and clutch slippage.
3. 9. Test in P (Parking) Position.

   Park the vehicle on a slope (about 16°), apply the parking brake and shift into P position. Release the brake; the vehicle should not move.

Automatic Transmission
Stall Speed Test

1. 1. Set the parking brake and block the front wheels.
2. 2. Connect a tachometer to the engine and start the engine.
   3. Make sure the A/C switch is OFF.
   4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to 2.gif position.
   5. Fully press the brake pedal and accelerator for 6 to 8 seconds and note engine speed. Do not move the shift lever while raising engine speed.
   6. Allow 2 minutes for cooling, then repeat the test in D, 1 and R positions.

NOTE:

- Do not test stall speed for more than 10 seconds at a time.
- Stall speed tests should be used for diagnostic purposes only.
- Stall speed should be the same in D, 2, 1 and R positions.
- Do not test stall speed with the A/T pressure gauges installed.
- 1 position is applied to 7-position transmission.

Stall Speed rpm:

D14Z5 engine:

Specification: 2,550 rpm (min $^{-1}$)

Service Limit: 2,400-2,700 rpm (min $^{-1}$)

D15Y2, D15Y3, D15Y5 and D15Y6 engines:

Specification: 2,650 rpm (min $^{-1}$)

Service Limit: 2,500-2,800 rpm (min $^{-1}$)

D16W7, D16W8, D16V2, D17A1, D17A2, D17A3, D17A4, D17A5 and D17Z1 engines:

Specification: 2,800 rpm (min $^{-1}$)

Service Limit: 2,650-2,950 rpm (min $^{-1}$)

1. 7. If the measurements are out of the service limit, problems and probable causes are listed in the table below:

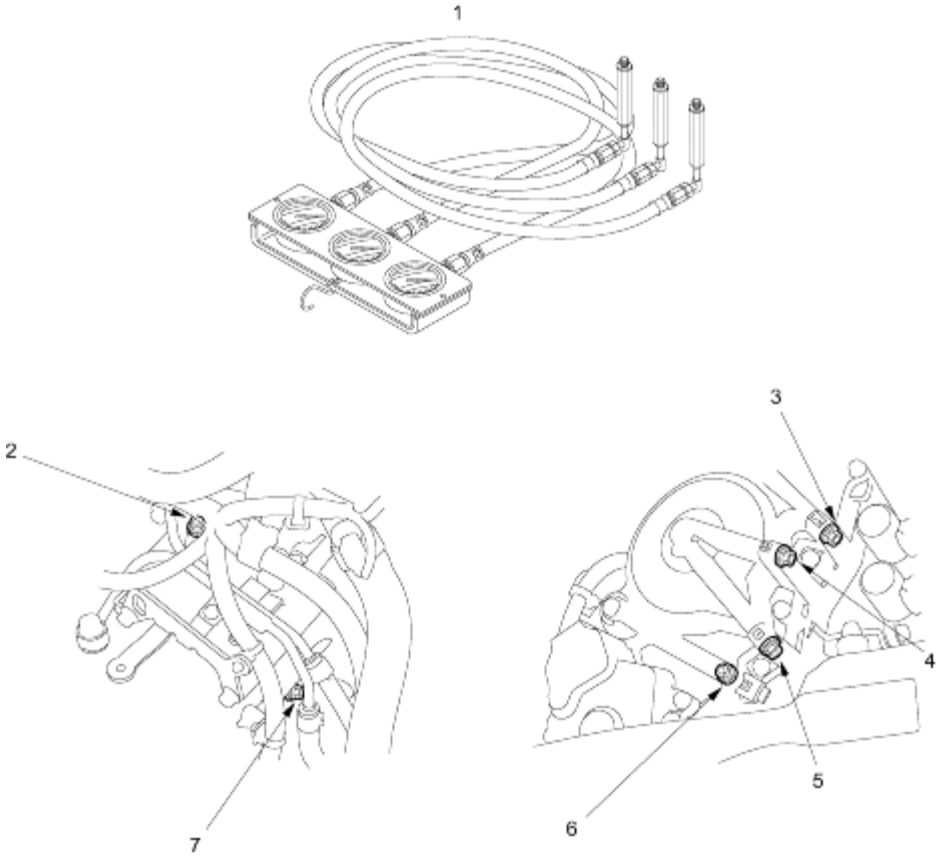
Problem	Probable cause
Stall speed rpm high in D, 2, 1 and R positions	• Low fluid level or ATF pump output low • Clogged ATF strainer • Pressure regulator valve stuck closed • Slipping clutch
Stall speed rpm high in 1 position	Slippage of 1st clutch
Stall speed rpm high in 2 position	Slippage of 2nd clutch
Stall speed rpm high in R position	Slippage of 4th clutch
Stall speed rpm low in D, 2, 1 and R positions	• Engine output low • Torque converter one-way clutch slipping

Automatic Transmission
Pressure Tests

Special Tools Required

A/T oil pressure gauge set, 07406-0020004

1. 1. Before testing, be sure the transmission fluid is filled to the proper level.
   2. Raise the front of the vehicle and make sure it is securely supported.
   3. Set the parking brake and block rear wheels securely.
   4. Allow the front wheels to rotate freely.
   5. Warm up the engine (the radiator fan comes on), then stop it and connect the tachometer.
   6. Connect the oil pressure gauges to each inspection hole and do not allow dust or other foreign particles to enter the holes while connecting the gauges.
      TORQUE: 18 Nm (1.8 kgf/m, 13 lbf/ft)



1. A/T OIL PRESSURE GAUGE SET 07406-0020004
2. A
   LINE PRESSURE INSPECTION HOLE
3. F
   1ST-HOLD CLUTCH PRESSURE INSPECTION HOLE
   (7-position transmission)
4. E
   4TH CLUTCH PRESSURE INSPECTION HOLE
5. B
   1ST CLUTCH PRESSURE INSPECTION HOLE
6. D
   3RD CLUTCH PRESSURE INSPECTION HOLE
7. C
   2ND CLUTCH PRESSURE INSPECTION HOLE

Automatic Transmission
Pressure Test (cont'd)

1. 7. Start the engine and run it at 2,000 rpm (min $^{-1}$)
   8. Shift to N or P position and measure line pressure at the line pressure inspection hole (A).
      NOTE: Higher pressure may be indicated if measurements are made in shift lever positions other than N.gif or P
   9. Shift to D position and measure 1st clutch pressure at the 1st clutch pressure inspection hole (B).
   10. Shift to 2 position and measure 2nd clutch pressure at the 2nd clutch pressure inspection hole (C).
   11. Shift to D3 position and measure 3rd clutch pressure at the 3rd clutch pressure inspection hole (D).
   12. Shift to D position and measure 4th clutch pressure at the 4th clutch pressure inspection hole (E).
   13. Shift to R position and measure 4th clutch pressure at the 4th clutch pressure inspection hole (E).
   14. For 7-position transmission; shift to 1 position and measure 1st-hold clutch pressure at the 1st-hold clutch pressure inspection hole (F).

PRESSURE	SHIFT LEVER POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Line (A)	N or P	No (or low) line pressure	Torque converter, ATF pump, pressure regulator valve, torque converter check valve	880-930 kPa (9.0-9.5 kgf/cm^2, 130-140 psi)	830 kPa (8.5 kgf/cm^2, 120 psi)
1st clutch (B)	D	No or low 1st clutch pressure	1st clutch		
2nd clutch (C)	2	No or low 2nd clutch pressure	2nd clutch	850-900 kPa (8.7-9.2 kgf/cm^2, 120-130 psi)	800 kPa (8.2 kgf/cm^2, 120 psi)
3rd clutch (D)	D3	No or low 3rd clutch pressure	3rd clutch		
4th clutch (E)	D	No or low 4th clutch pressure	4th clutch		
	R		Servo valve or 4th clutch		
1st-hold clutch (F) (7-position)	1	No or low 1st-hold clutch pressure	1st-hold clutch	880-930 kPa (9.0-9.5 kgf/cm^2, 130-140 psi)	830 kPa (8.5 kgf/cm^2, 120 psi)

   15. Install the sealing bolt with a new sealing washers and tighten the bolts to the specified torque.
       TORQUE: 18 Nm (1.8 kgf/m,13 lbf/ft)
       NOTE: Do not reuse old sealing washers.

Automatic Transmission

Torque Converter Clutch Solenoid Valve Test

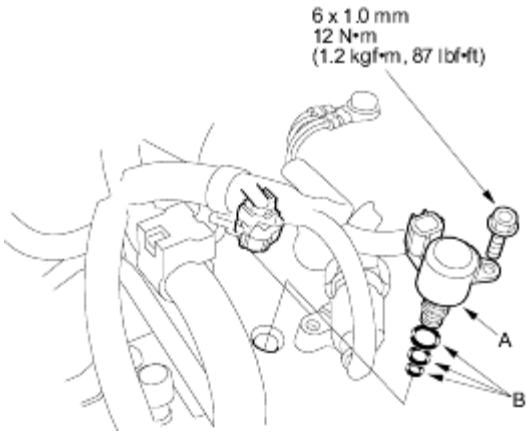
1. 1. Disconnect the torque converter clutch solenoid valve connector.



2. 2. Measure the resistance between the No. 1 and No. 2 terminals of the torque converter solenoid valve connector.
   STANDARD: 12-25 ohm;
   3. Replace the torque converter clutch solenoid valve if the resistance is out of standard.
   4. If the resistance is within the standard, connect the No. 2 terminal to the battery positive terminal and connect the No. 1 terminal to the battery negative terminal. A clicking sound should be heard. Replace the torque converter clutch solenoid valve if no sound is heard when connecting the battery positive terminal.

14-116 Torque Converter Clutch Solenoid Valve Replacement

1. 1. Remove the mounting bolt and the torque converter clutch solenoid valve (A).

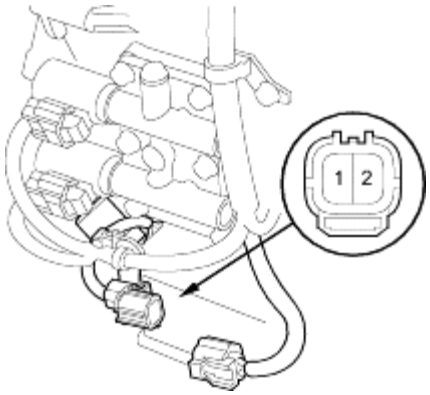


2. 2. Install a new torque converter clutch solenoid valve with new O-rings (B). While installing the valve, do not allow dust or other foreign particles to enter the transmission.
   3. Check the connector for rust, dirt, or oil, then connect the connector securely.

Automatic Transmission

Shift Solenoid Valves A and B Test

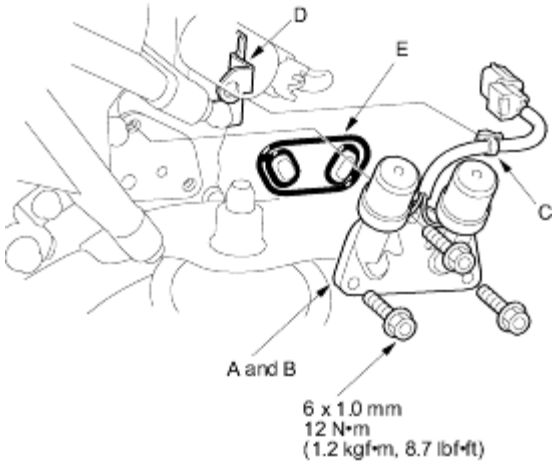
1. 1. Disconnect the shift solenoid valves A and B connector.



2. 2. Measure shift solenoid valve A resistance between the No. 1 terminal of the shift solenoid valves A and B connector and body ground and measure shift solenoid valve B resistance between the No. 2 terminal and body ground.
   STANDARD: 12-25 ohm;
   3. Replace the shift solenoid valves A and B if either resistance is out of standard.
   4. If the resistance is within the standard, connect the No. 1 terminal of the shift solenoid valve A to the battery positive terminal. A clicking sound should be heard. Connect the No. 2 terminal to the battery positive terminal. A clicking sound should be heard. Replace the shift solenoid valves A and B if no clicking sound is heard when either terminal is connected to the battery terminal.

NOTE: Shift solenoid valves A and B must be removed/replaced as an assembly.

1. 1. Remove the harness clamp (C) form the clamp bracket (D).
   2. Remove the mounting bolts and the shift solenoid valves A and B.

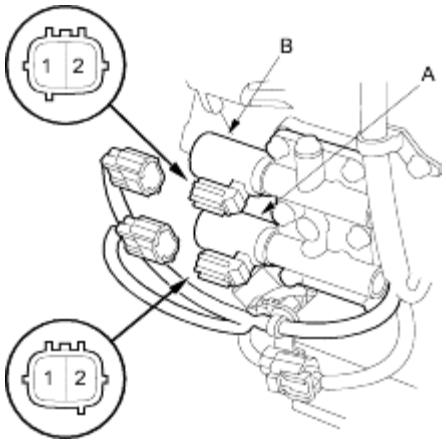


2. 3. Clean the mounting surface and fluid passage.
   4. Install new shift solenoid valves A and B with a new filter/gasket (E) and install the harness clamp on the clamp bracket.
   5. Check the connector for rust, dirt, or oil, then reconnect the connector securely.

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valves A and B Test

1. 1. Disconnect the connectors from the A/T clutch pressure control solenoid valves A and B.

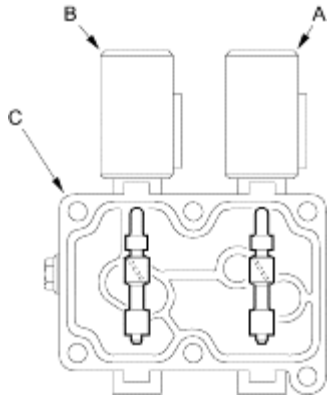


2. 2. Measure the resistance of the A/T clutch pressure control solenoid valves A and B between the No. 1 and No. 2 terminals of each connector.

   STANDARD: About 5.0 ohm;

   3. If the resistance of either A/T clutch pressure control solenoid is out of standard, replace the A/T clutch pressure control solenoid valves A and B.
   4. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valve A (and B) to the battery positive terminal and connect the No. 2 terminal to the battery negative terminal. A clicking sound should be heard.
   5. If no sound is heard, remove the A/T clutch pressure control solenoid valves A and B.

1. 6. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust and dirt.
2. 7. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valves A and B to the battery positive terminal and connect the No. 2 terminal to the battery negative terminal. Make sure the A/T clutch pressure control solenoid valves A and B move.



3. 8. Disconnect one of the battery terminal and check valve movement.

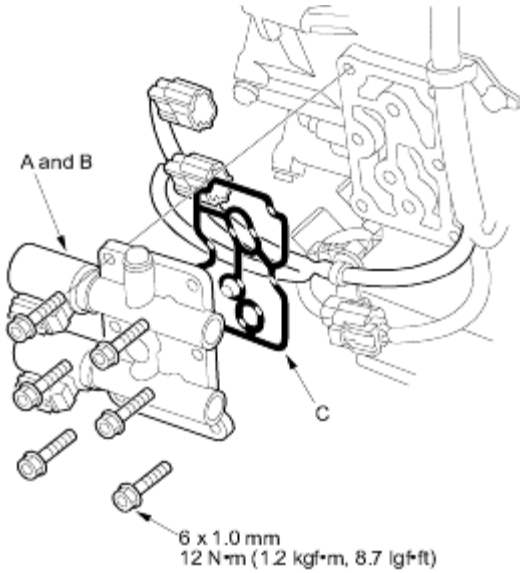
NOTE: You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valves A and B body (C).

4. 9. If either valve binds or moves sluggishly, or if the A/T clutch pressure control solenoid does not operate, replace the A/T clutch pressure control solenoid valves A and B.

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valves A and B Replacement

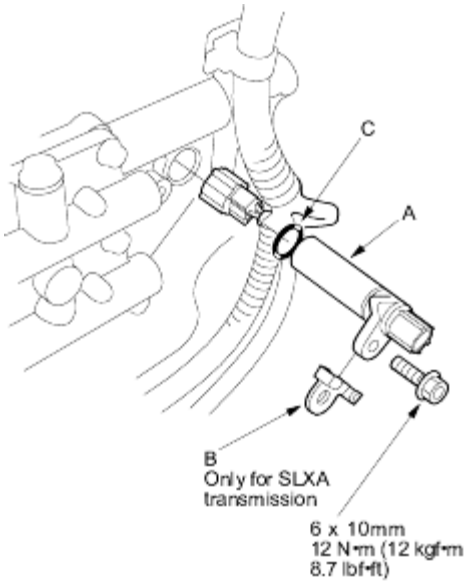
1. 1. Remove the mounting bolts and the A/T clutch pressure control solenoid valves A and B.



2. 2. Clean the mounting surface and fluid passage of the A/T clutch pressure control solenoid valves A and B and the transmission housing.
   3. Install the new filter/gasket (C) in the solenoid valve assembly body groove.
   4. Install the new A/T clutch pressure control solenoid valves A and B. Do not pinch the filter/gasket.
   5. Check the A/T clutch pressure control solenoid valve connectors for rust, dirt, or oil, then connect them securely.

1. 1. Disconnect the mainshaft speed sensor connector.
2. 2. Remove the mainshaft speed sensor (A) and sensor washer (B).

   NOTE: The mainshaft speed sensor washer is equipped on the SLXA transmission; the BMXA transmission does not have it.



3. 3. Install the new mainshaft speed sensor with the new O-ring (C) and mainshaft speed sensor washer (SLXA transmission).
   4. Check the mainshaft speed sensor connector for rust, dirt, or oil, then connect the connector securely.

Automatic Transmission

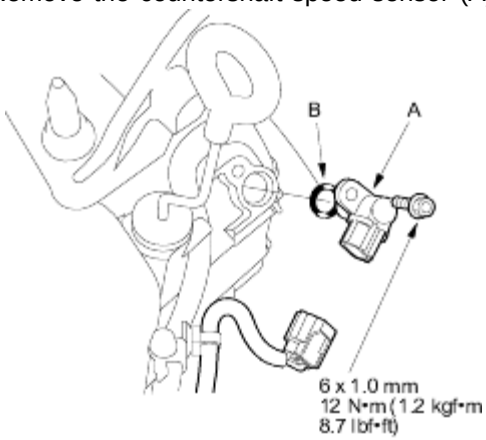
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D, D3, 1, R, but not in 2 position	1. Shift cable broken or out of adjustment 2. 2nd accumulator defective 3. 2nd gears worn or damaged 4. 2nd clutch defective	• Check for a loose shift cable on the shift lever and transmission control shaft. • Check the 2 indicator light indication and check for loose connectors. Inspect the O-rings and check the shift solenoid valve for seizure. • Inspect the mainshaft and 2nd clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.
Vehicle moves in D, D3, 2, 1, but not in R position	1. Shift fork shaft stuck 2. Shift cable broken or out of adjustment 3. 4th clutch defective 4. Reverse gears worn or damaged	• Measure line pressure and 4th clutch pressure. • Check for a missing shift fork bolt on the shift fork shaft. • Check for a loose shift cable on the shift lever and transmission control shaft. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter. • Inspect the reverse selector gear teeth chamfers and inspect engagement teeth chamfers of the countershaft 4th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmissioNmakes clicking, grinding, or whirring noises, also replace the mainshaft 4th gear, reverse idler gear and countershaft 4th gear. • If the 4th clutch feed pipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If the ball bearing is OK, replace the end cover as it is dented. The O-ring under the guide is probably worn. • Replace the mainshaft if the bushing for the 1st and 4th clutch feed pipes are loose or damaged. If the 4th clutch feed pipe is damaged or out of round, replace the end cover. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn and damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Automatic Transmission

Countershaft Speed Sensor Replacement

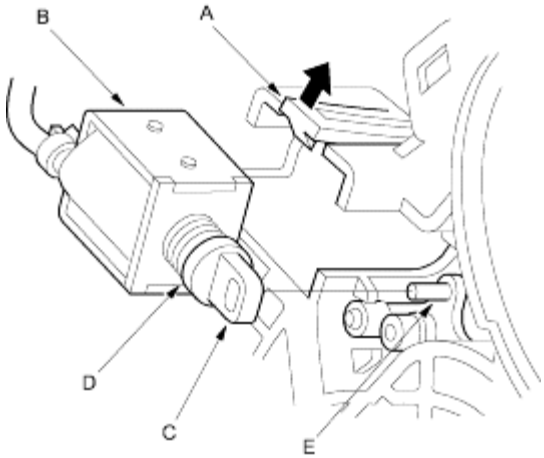
1. Disconnect the countershaft speed sensor connector.
2. Remove the countershaft speed sensor (A).



3. Install the new countershaft speed sensor with the new O-ring (B).
4. Check the countershaft speed sensor connector for rust, dirt, or oil, then connect the connector securely.

5-door Model

1. Remove the shift lever assembly (see page 14-138).
2. Remove the D3 switch and A/T gear position indicator panel light socket, then remove the indicator light bulb from the socket.
3. Pull the lock tab (A) up, then remove the shift lock solenoid (B).



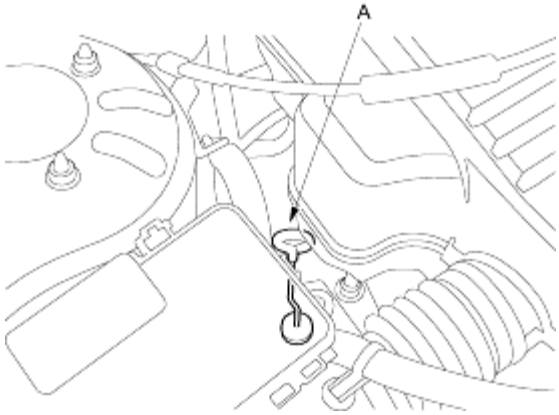
4. Install the shift lock solenoid plunger (C) and plunger spring (D) in the new shift lock solenoid.
5. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip (E) of the shift lock/reverse lock stop.
6. Install the D3 switch in the shift lever bracket base (see page 14-144).
7. Install the A/T gear position indicator panel light bulb in the socket, then install the indicator panel light socket in the indicator panel.
8. Install the shift lever assembly (see page 14-141).

Automatic Transmission

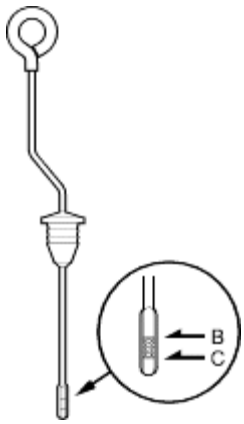
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

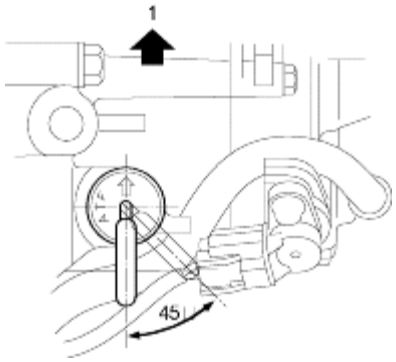
1. 1. Warm up the engine to normal operating temperature (the radiator fan comes on).
   2. Park the vehicle on level ground and turn the engine off.
   3. Remove the dipstick (yellow loop) (A) from the transmission and wipe it with a clean cloth.



2. 4. Insert the dipstick into the transmission.
   5. Remove the dipstick and check the fluid level. It should be between the upper mark (B) and lower mark (C).



1. 6. If the level is below the lower mark, pour the recommended fluid into the dipstick hole to bring it to the upper mark. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.
2. 7. Insert the dipstick back into the transmission in the direction shown.

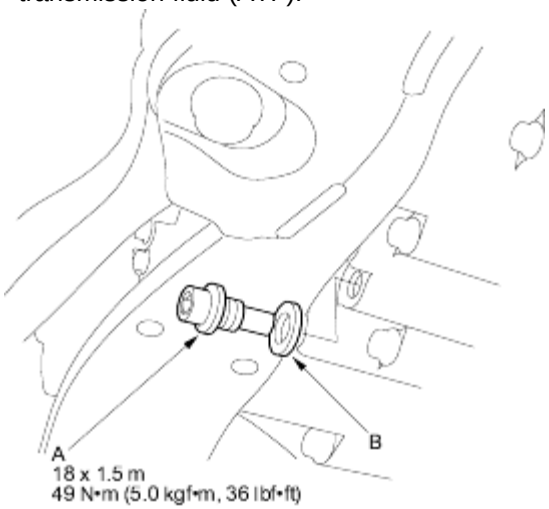


3. 1. Front

Automatic Transmission
ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

1. 1. Bring the transmission up to operating temperature (the radiator fan comes on) by driving the vehicle.
   2. Park the vehicle on level ground and turn the engine off.
   3. Remove the drain plug (A) and drain the automatic transmission fluid (ATF).



1. 4. Reinstall the drain plug with a new sealing washer (B).
2. 5. Refill transmission with the recommended fluid into dipstick hole to the upper mark on the dipstick. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

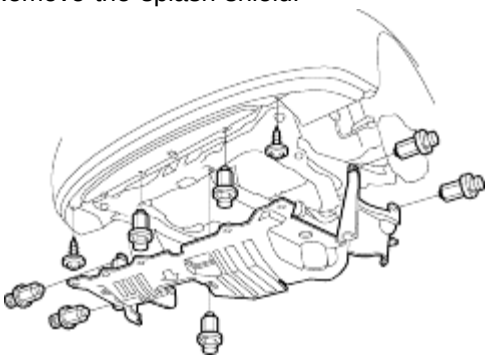
   Automatic Transmission Fluid Capacity:

   2.7 **/** (2.9 US qt, 2.4 Imp qt) at change

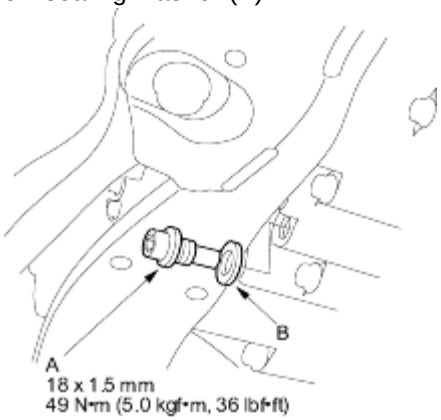
   6.0 **/** (6.3 US qt, 5.3 Imp qt) at overhaul

Automatic Transmission
Transmission Removal

1. 1. Raise the vehicle and make sure it is securely supported.
2. 2. Remove the splash shield.

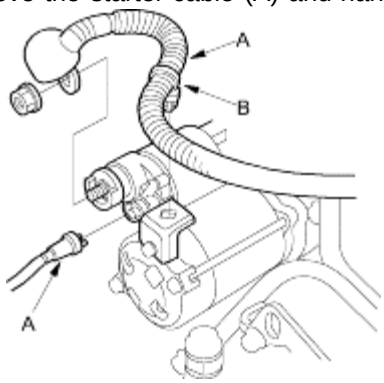


3. 3. Remove the drain plug (A) and drain the automatic transmission fluid (ATF). Reinstall the drain plug with a new sealing washer (B).

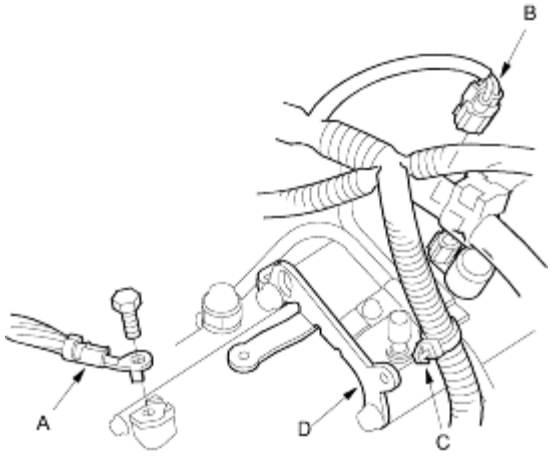


4. 4. Secure the hood in a vertical position with the support strut.

1. 5. Disconnect the battery negative terminal, then remove the positive terminal.
2. 6. Remove the battery hold-down bracket, then remove the battery and battery tray.
   7. Remove the intake air duct and resonator.
   8. Remove the harness clamp from the battery base, then remove the battery base.
   9. Remove the starter cable (A) and harness clamp (B).

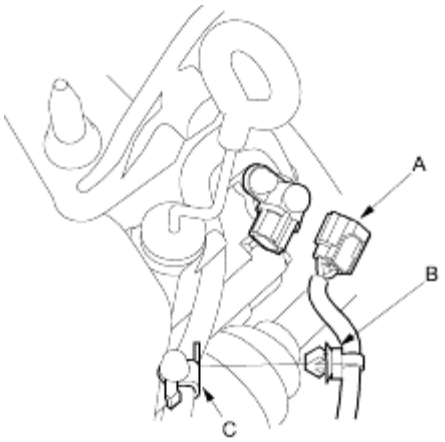


3. 10. Remove the transmission ground cable (A), disconnect the torque converter clutch solenoid valve connector (B) and remove the harness clamp (C) from the transmission hanger (D).

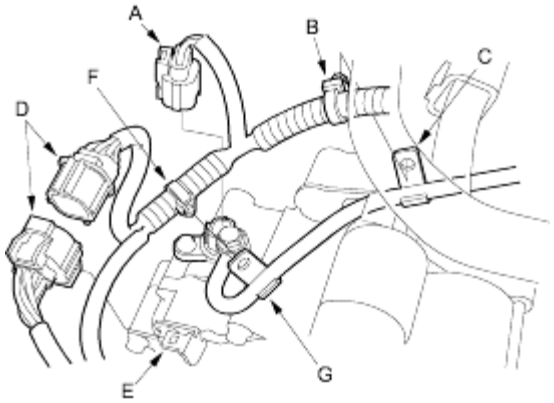


Automatic Transmission
Transmission Removal (cont'd)

1. 11. Disconnect the mainshaft speed sensor connector (A) and remove the harness clamp (B) from its bracket (C).



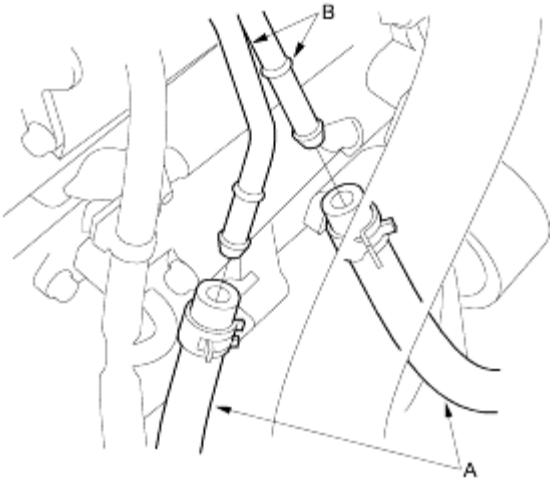
2. 12. Disconnect the VSS connector (A) and remove the harness clamp (B) its bracket (C).



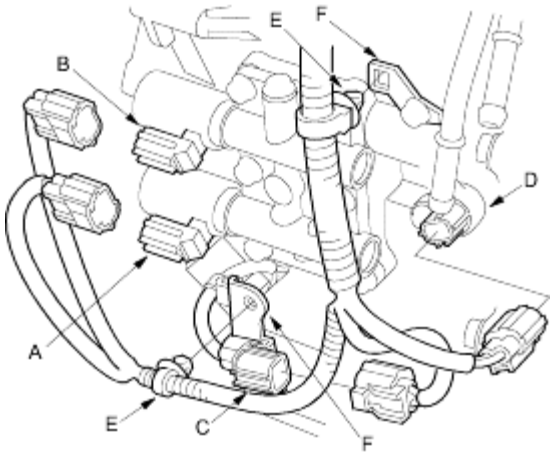
3. 13. Remove the transmission range switch connector (D) from its bracket (E), disconnect the connector and remove the harness clamp (F) from its bracket (G).

1. 14. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the ATF cooler hoses up to prevent ATF from flowing out, then plug the ATF cooler hoses and lines.

NOTE: Check for any signs of leakage at the hose joints.



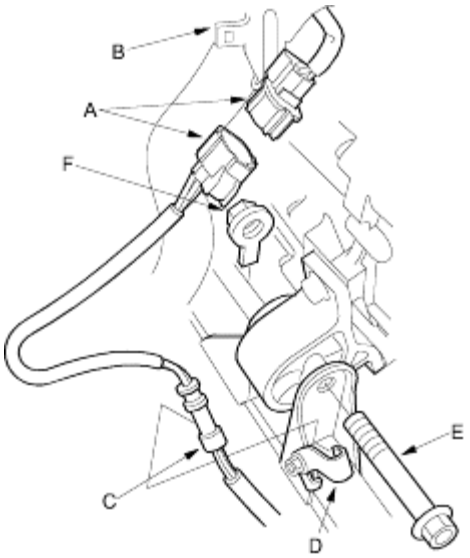
2. 15. Disconnect connectors from the A/T clutch pressure control solenoid valves A and B, shift solenoid valves A and B (C) and mainshaft speed sensor (D) and remove the harness clamps (E) from the clamp brackets (F).



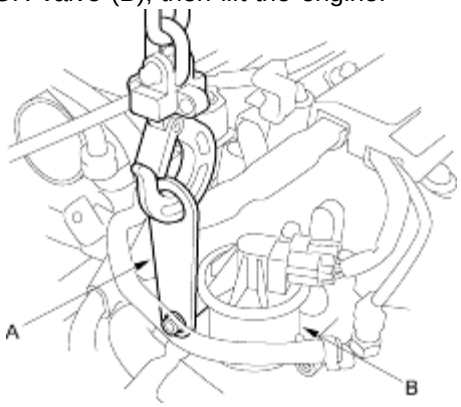
Automatic Transmission

Transmission Removal (cont'd)

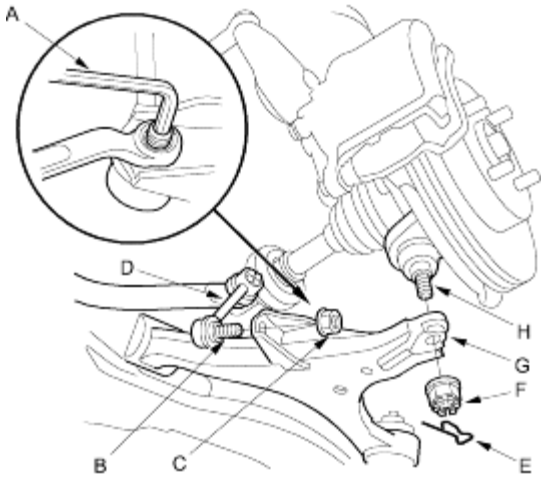
1. 16. Remove the primary HO2S connector (A) from its bracket (B) and disconnect it. Remove the primary HO2S harness (C) from its clamp (D).



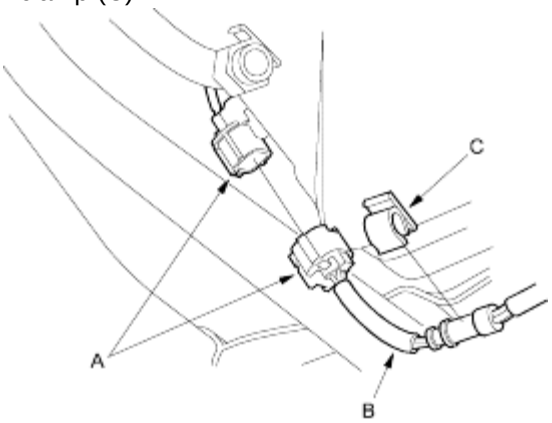
2. 17. Remove the front mount bolt (E) and nut (F).
   18. Attach a hoisting bracket (A) to the stud next to the EGR valve (B), then lift the engine.



1. 19. Insert a 5 mm Allen wrench (A) in the top of the ball joint pin (B) and remove the nut (C), then separate the stabiliser link (D) from the lower arm.

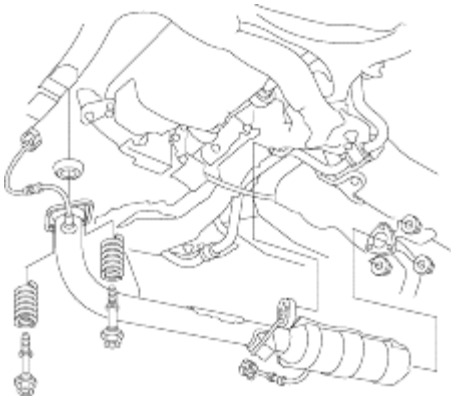


2. 20. Remove the spring clips (E) and castle nuts (F) and separate the lower arms (G) from the knuckles (H) (see page 18-11).
   21. Pry the driveshafts out of the differential (see page 16-3).
   22. Disconnect the secondary HO2S connector (A) and remove the secondary HO2S harness (B) from its clamp (C).

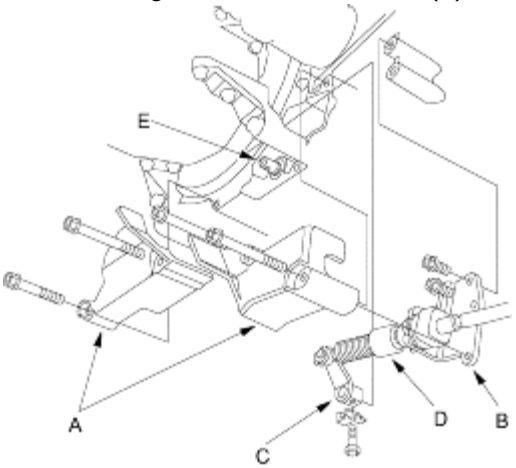


Automatic Transmission
Transmission Removal (cont'd)

1. 23. Remove exhaust pipe A.

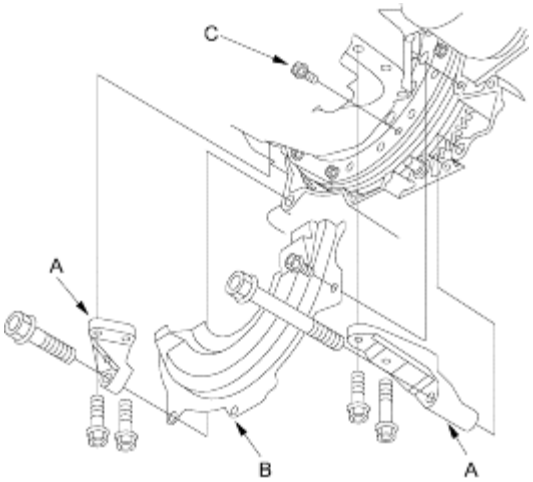


2. 24. Remove the shift cable covers (A), then remove the bolts securing the shift cable holder (B).

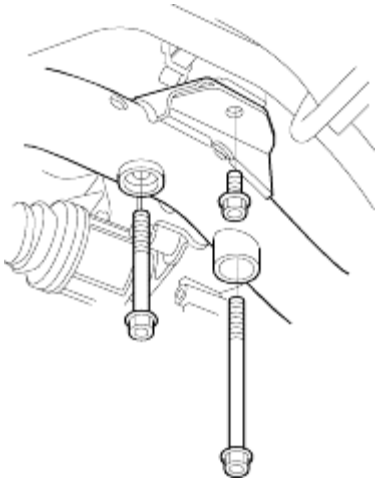


3. 25. Remove the lock bolt securing the control lever (C), then remove the shift cable (D) with the control lever from the control shaft (E). Do not bend the shift cable excessively.

1. 26. Remove the engine stiffeners (A) and torque converter cover (B).



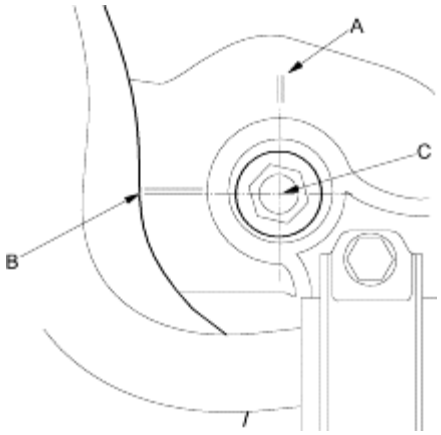
2. 27. Remove the 8 drive plate bolts (C) one at a time while rotating the crankshaft pulley.
28. Remove the rear mount bolts.



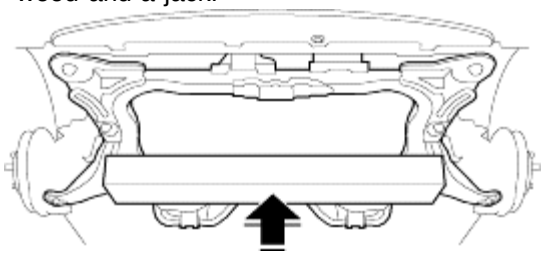
Automatic Transmission

Transmission Removal (cont'd)

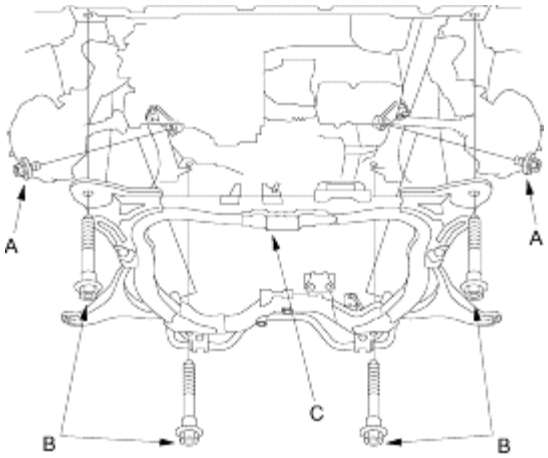
1. 29. Make the appropriate reference lines at positions A and B that line up with the centre of the sub-frame mounting bolts (C).



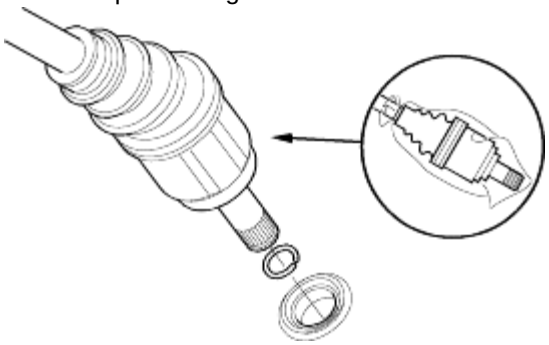
2. 30. Support the sub-frame with a 4 x 4 x 40 in. piece of wood and a jack.



1. 31. Remove the 10 x 1.25 mm bolts (A) and 4 sub-frame mounting bolts (B), then lower the sub-frame (C).



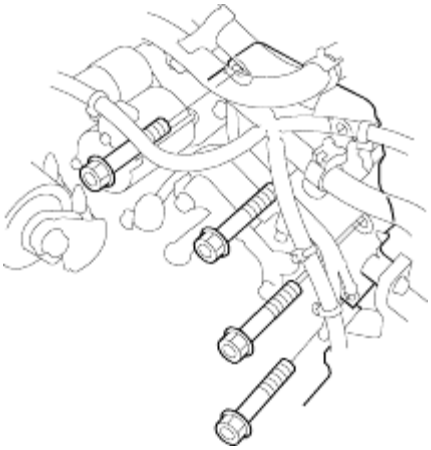
2. 32. Remove the driveshafts from the differential. Coat all precision finished surfaces with clean engine oil, then tie plastic bags over the driveshaft ends.



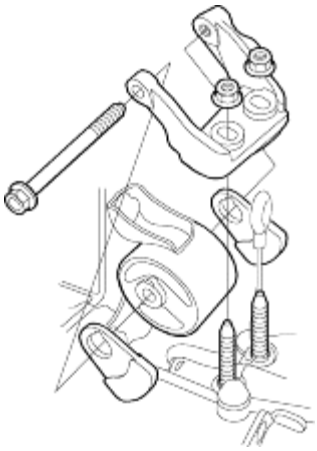
Automatic Transmission

Transmission Removal (cont'd)

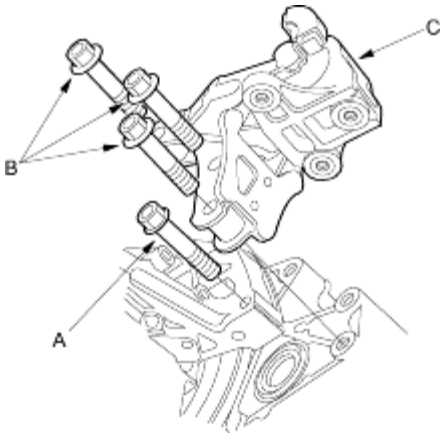
1. 33. Remove the transmission housing mounting bolts.



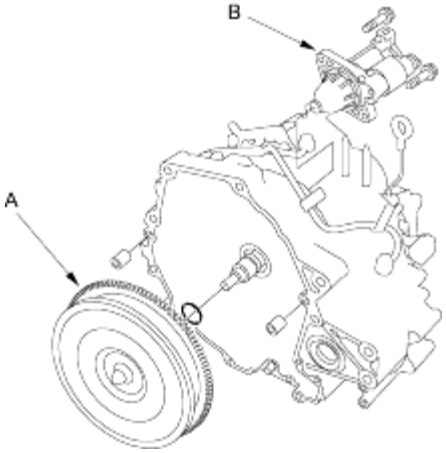
2. 34. Remove the transmissioNmount bracket.



1. 35. Remove the transmission housing mounting bolt (A), rear mount bracket bolts (B) and rear mount/bracket (C).



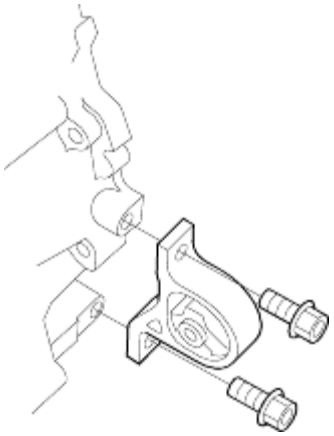
2. 36. Place a jack under the transmission.
   37. Pull the transmission away from the engine until it clears the dowel pins, then lower it on the jack.
   38. Remove the torque converter assembly (A).



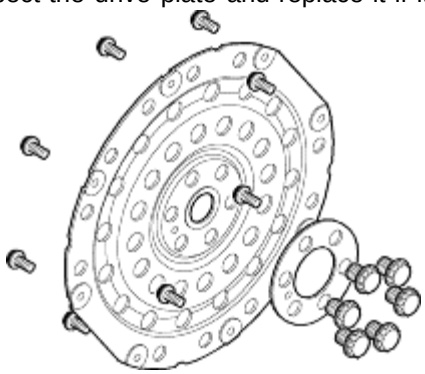
3. 39. Remove the starter (B) from the torque converter housing.

Automatic Transmission
Transmission Removal (cont'd)

1. 40. Remove the front mount bracket from the engine.



2. 41. Inspect the drive plate and replace it if it's damaged.

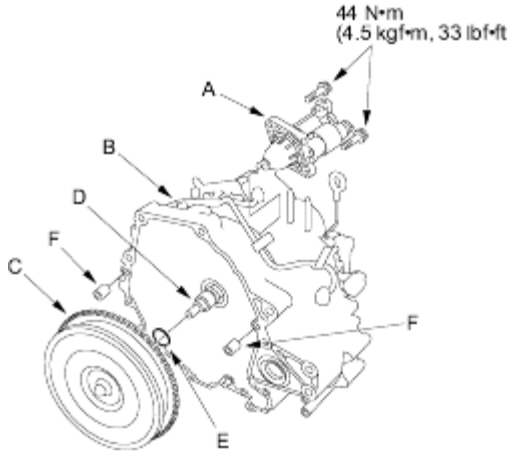


Automatic Transmission
Symptom Troubleshooting Index (cont'd)

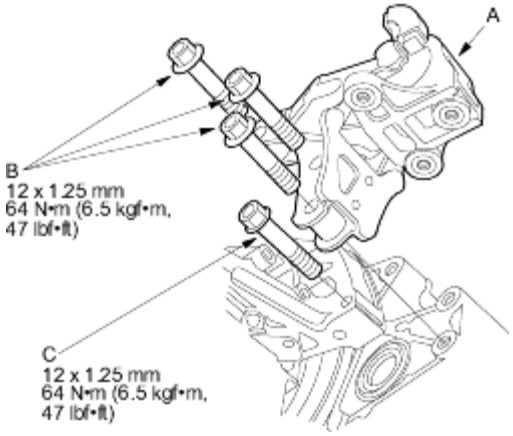
Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in D and D3 positions: Stall speed high in D, D3, 2 and 1 positions	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.
Poor acceleration; flares on starting off in D and D3 positions: Stall speed high in D, D3 and 1 positions	1. Shift cable broken or out of adjustment 2. 1st gear one-way clutch defective 3. 1st clutch defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in D and D3 positions: Stall speed high in 2 position	1. Shift cable broken or out of adjustment 2. 2nd clutch defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in D and D3 positions: Stall speed is in specification in D, D3, 2 and 1 positions, but high in R position	1. Shift cable broken or out of adjustment 2. 4th clutch defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check 4th clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Automatic Transmission
Transmission Installation

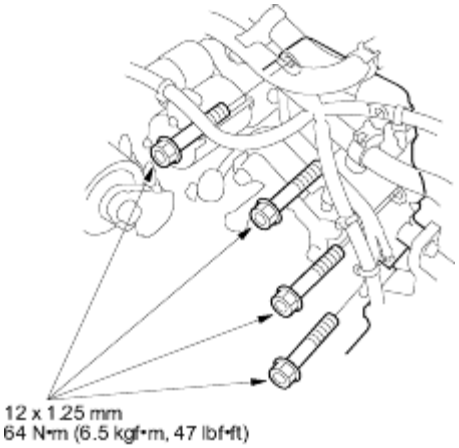
1. 1. Install the starter (A) on the torque converter housing (B).



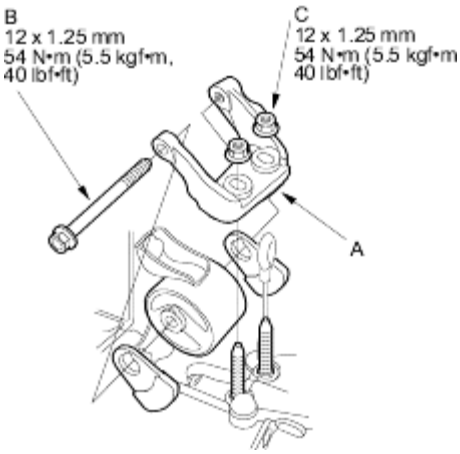
2. 2. Install the torque converter assembly (C) on the mainshaft (D) with a new O-ring (E).
   3. Install the 14 mm dowel pins (F) in the torque converter housing.
   4. Place the transmission on a jack and raise it to the engine level.
   5. Attach the transmission to the engine, then install the rear mount/bracket (A) with the mount/bracket bolts (B) and the transmission housing mounting bolt (C).



1. 6. Install the transmission housing mounting bolts.

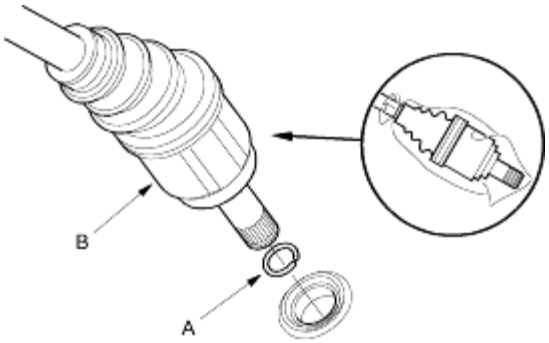


2. 7. Install the transmissioNmount bracket (A). Tighten the bolt (B) loosely and tighten the nuts (C) to the specified torque, then tighten the bolt to the specified torque.



Automatic Transmission
Transmission Installation (cont'd)

1. 8. Install new set rings (A) on the left and right driveshafts (B).

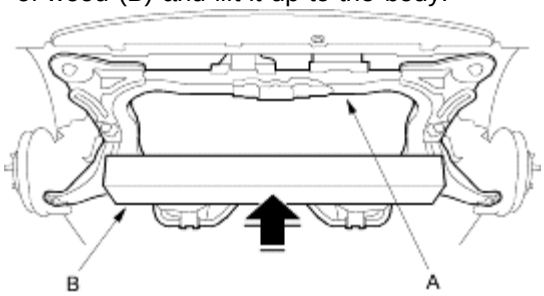


2. 9. Install the right and left driveshafts (see page 16-18). While installing the driveshafts in the differential, be sure not to allow dust or other foreign particles to enter the transmission.

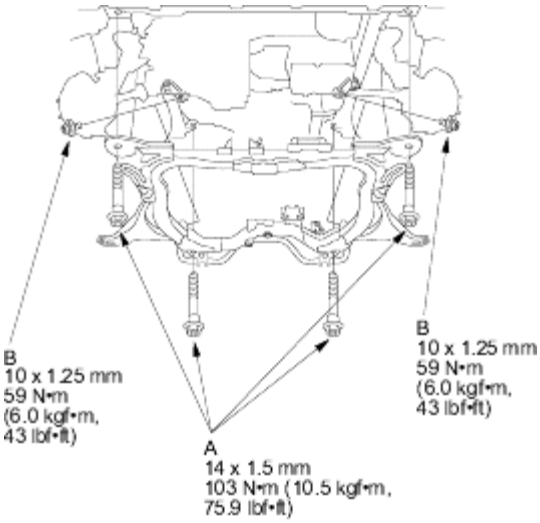
NOTE:

- Clean the areas where the driveshafts contact the transmission (differential) with solvent or carburettor cleaner and dry with compressed air.
- Turn the right and left steering knuckle fully outward and slide the driveshafts into the differential until you feel its set ring engage the side gear.

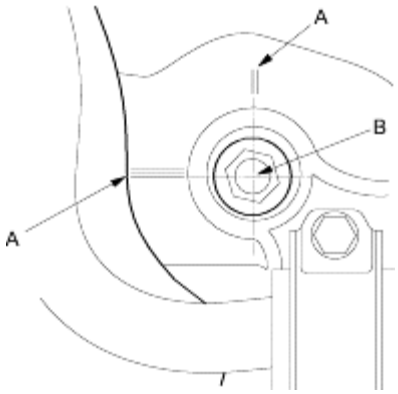
3. 10. Support the sub-frame (A) with a 4 x 4 x 40 in. piece of wood (B) and lift it up to the body.



1. 11. Loosely install the 4 sub-frame mounting bolts (A) and the 10 x 1.25 mm bolts (B).

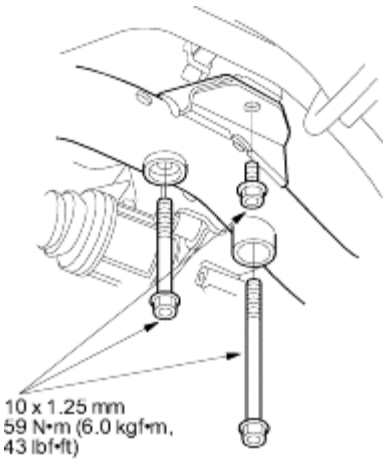


2. 12. Align the reference marks (A) with the centre of the bolt heads (B), then tighten the bolts to the specified torque.

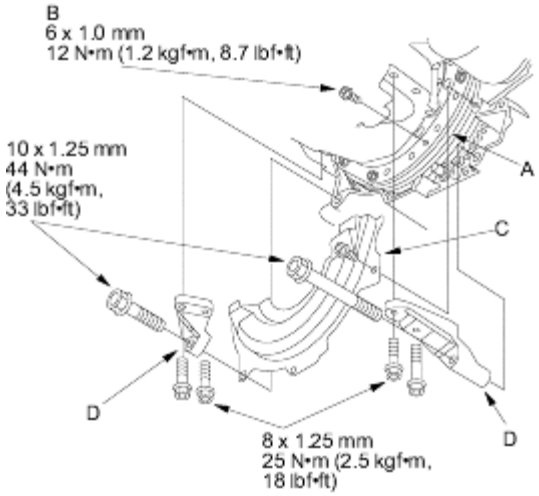


Automatic Transmission
Transmission Installation (cont'd)

1. 13. Install the rear mount bracket bolts.

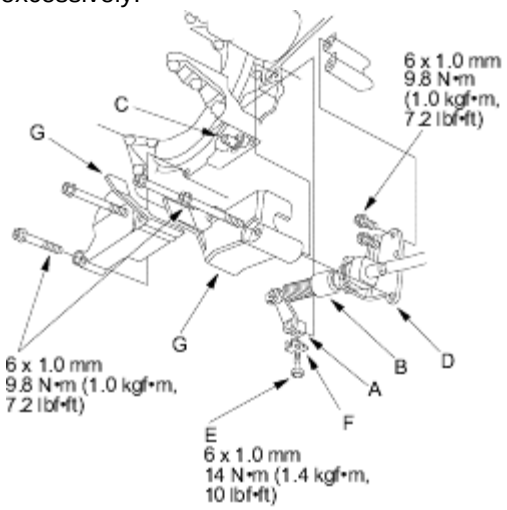


2. 14. Remove the transmission jack from the transmission.
   15. Attach the torque converter to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a criss-cross pattern. After installing the last bolt, check that the crankshaft rotates freely.



3. 16. Install the torque converter cover (C) and engine stiffeners (D).

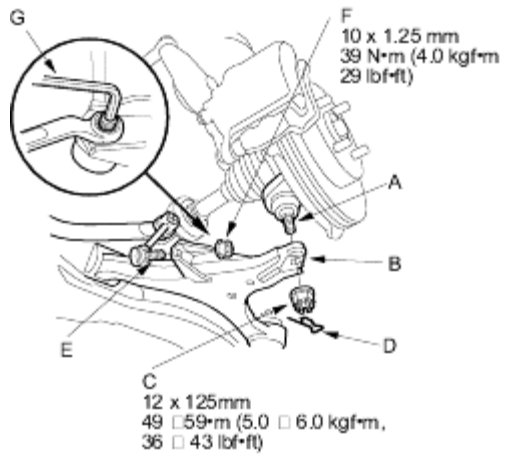
1. 17. Tighten the crankshaft pulley bolt as necessary (see page 6-16).
2. 18. Install the control lever (A) with the shift cable (B) on the control shaft (C). Do not bend the shift cable excessively.



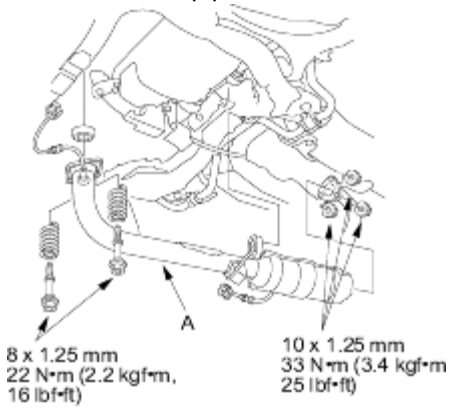
3. 19. Secure the shift cable holder (D) with the bolts on the transmission.
   20. Install the lock bolt (E) with a new lock washer (F), then bend the lock washer tab against the bolt head.
   21. Install the shift cable covers (G).

Automatic Transmission
Transmission Installation (cont'd)

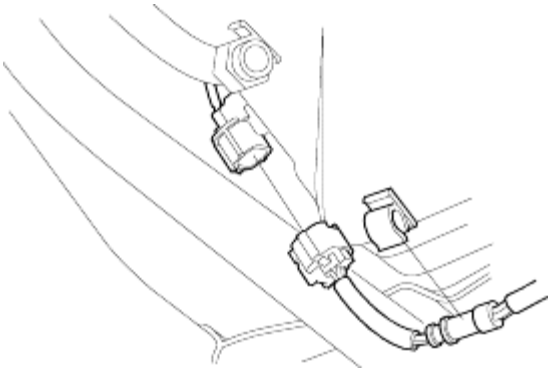
1. 22. Connect the ball joints (A) to the lower arms (B) and install the castle nuts (C) and spring clips (D).



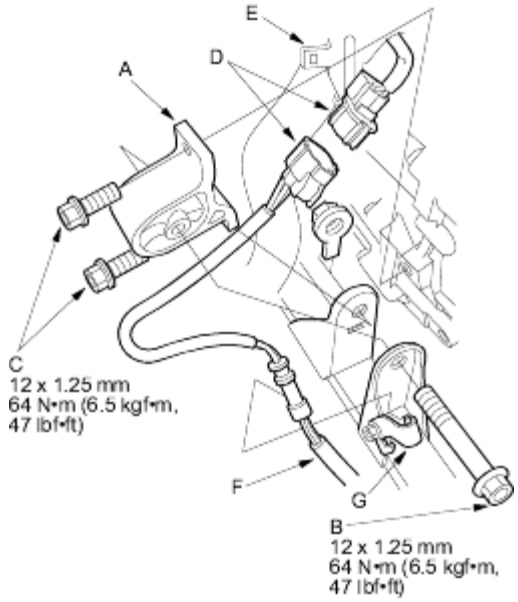
2. 23. Connect the ball joint pins (E) to the lower arms and install the nuts (F). Insert a 5 mm Allen wrench (G) in the top of the ball joint pins and tighten the nuts.
24. Install the exhaust pipe A.



1. 25. Connect the secondary HO2S connector and install the harness on its clamp.



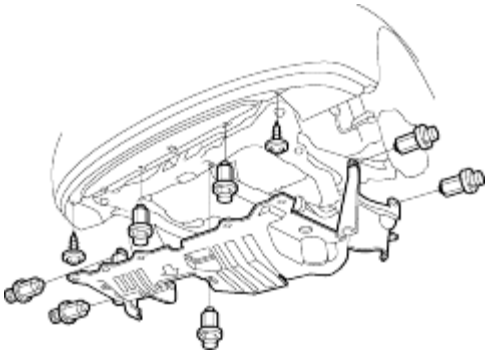
2. 26. Install the front mount (A). Tighten the mount bolt (B) loosely and tighten the mounting bolts (C) to the specified torque, then tighten the mount bolt to the specified torque.



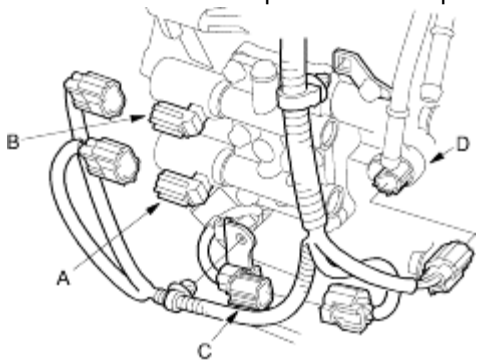
3. 27. Connect the primary HO2S connector (D) and install it on its bracket (E). Install the harness (F) on its clamp (G).

Automatic Transmission
Transmission Installation (cont'd)

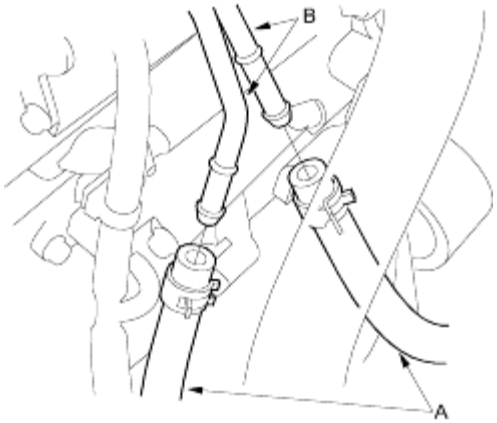
1. 28. Install the splash shield.



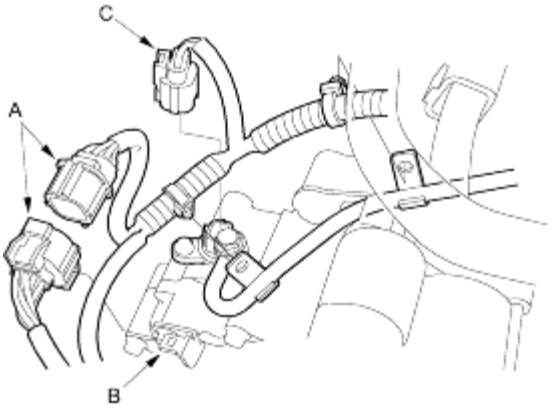
2. 29. Connect the connectors to the A/T clutch pressure control solenoid valves A and B, shift solenoid valves A and B (C) and countershaft speed sensor (D), then install the harness clamps on the clamp brackets.



1. 30. Connect the ATF cooler hoses (A) to the ATF cooler lines (B) (see page 14-136).



2. 31. Connect the transmission range switch connector (A) and install it on its bracket (B). Install the harness clamp on the clamp bracket.



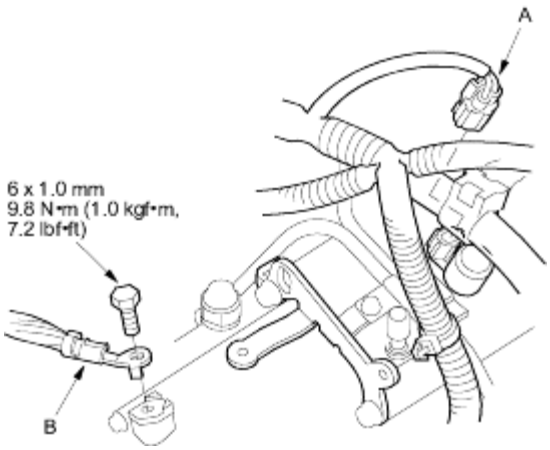
3. 32. Install the VSS connector (C), then install the harness clamp on the clamp bracket.

Automatic Transmission
Transmission Installation (cont'd)

1. 33. Connect the countershaft speed sensor connector and install the harness clamp on the clamp bracket.

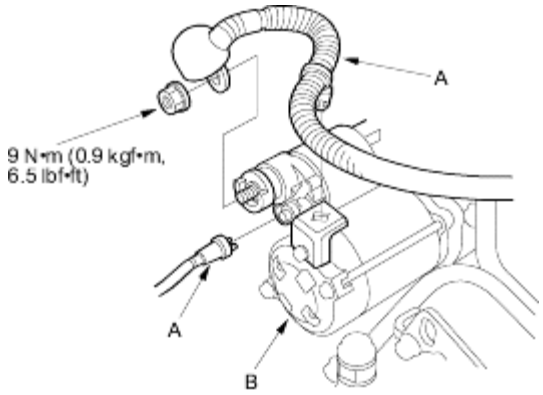


2. 34. Connect the torque converter clutch solenoid valve connector (A), then install the harness clamp on the transmission hanger.



3. 35. Install the transmission ground cable (B).

1. 36. Connect the starter cables (A) to the starter (B) and install the harness clamp on the clamp bracket. Make sure the crimped side of the starter cable ring terminal is facing out.

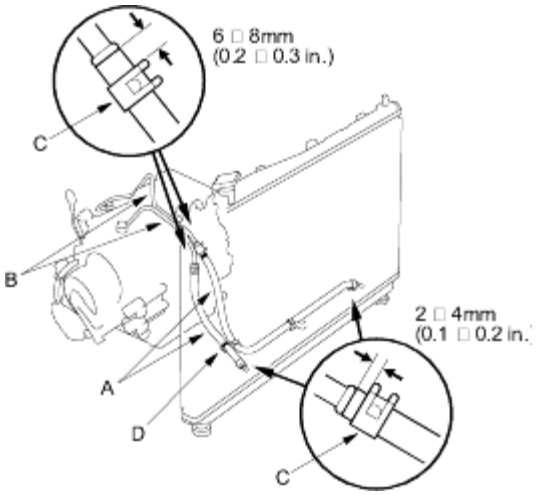


2. 37. Install the battery base, then install the harness clamp on the battery base.
38. Install the resonator and intake air duct.
39. Refill the transmission with ATF (see page 14-122).
40. Install the battery tray and battery, then secure the battery with its hold-down bracket.
41. Connect the battery positive terminal, then connect the negative terminal.
42. Set the parking brake. Start the engine and shift the transmission through all gears three times.
43. Check the shift lever operation, A/T gear position indicator operation and shift cable adjustment.
44. Check and adjust the front wheel alignment (see page 18-4).
45. Start the engine and let it reach normal operating temperature (the radiator fan comes on) with the transmission in P.gif or N.gif position, then turn if off and check the ATF level (see page 14-121).
46. Perform a road test (see page 14-108).
47. Enter the radio station presets and set the clock.

Automatic Transmission

ATF Cooler Hoses Replacement

1. 1. Connect the cooler hoses (A) to the lines (B) and the ATF cooler and secure them with the clips (C) as shown.

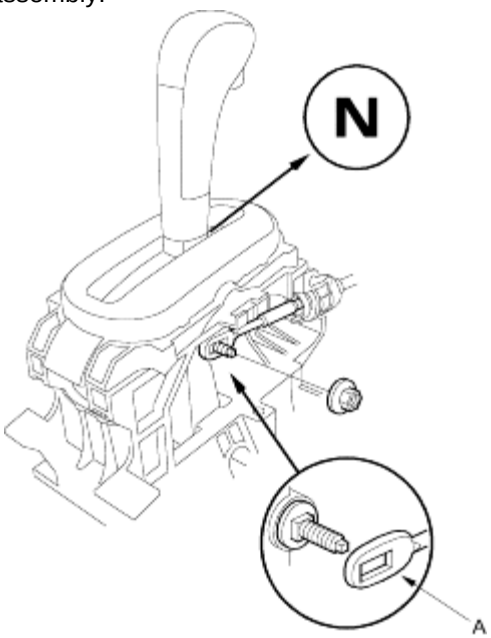


2. 2. Install the clamp (D) on the cooler hoses.

Automatic Transmission
Shift Lever Removal

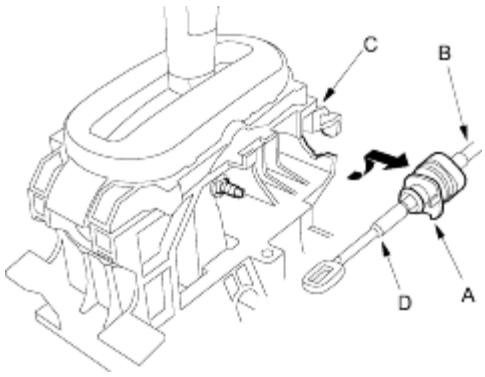
4-door Model

1. Shift the transmission into [N] position.
2. Remove the centre console panel and centre console (see page 20-73).
3. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

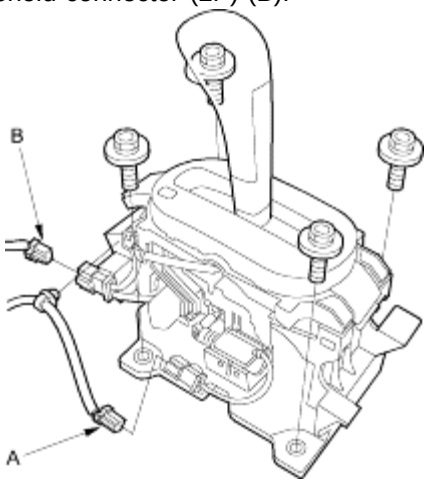


4. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



5. Disconnect the A/T gear position indicator panel light/park pin switch connector (4P) (A) and shift lock solenoid connector (2P) (B).

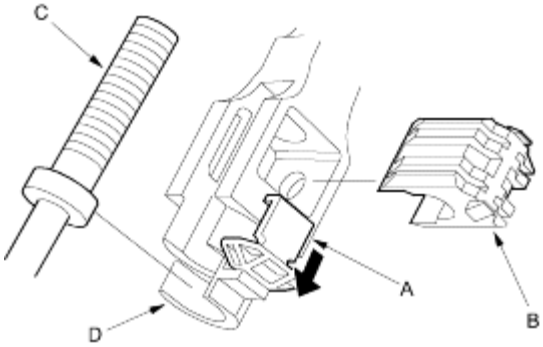


6. Remove the four bolts, then remove the shift lever assembly.

Automatic Transmission
Shift Lever Removal (cont'd)

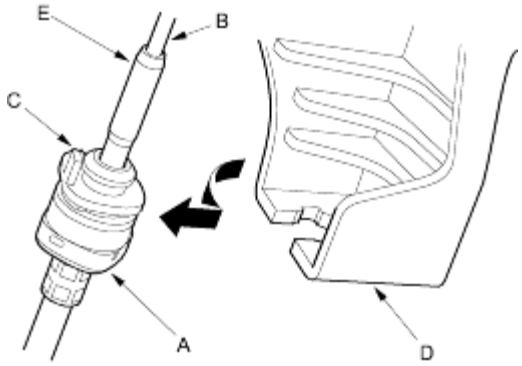
5-door Model

1. 1. Remove the ash tray, then remove the centre console lower cover.
   2. Remove the shift lever console panel.
   3. Shift the shift lever to R position.
   4. Slide the lock tab (A) down, then pull the shift cable lock (B) at the joint in the shift cable end and shift cable end holder.

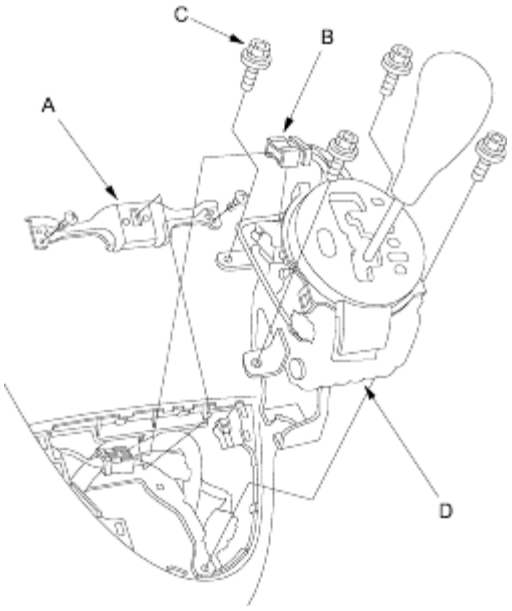


2. 5. Shift the shift lever to N position, then separate the shift cable end (C) from the shift cable end holder (D).
   6. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder faces the direction to remove. Then slide the holder to remove the shift cable from the shift cable bracket base (D).

NOTE: Do not remove the shift cable by twisting the shift cable guide (E).



1. 7. Remove the bracket (A).

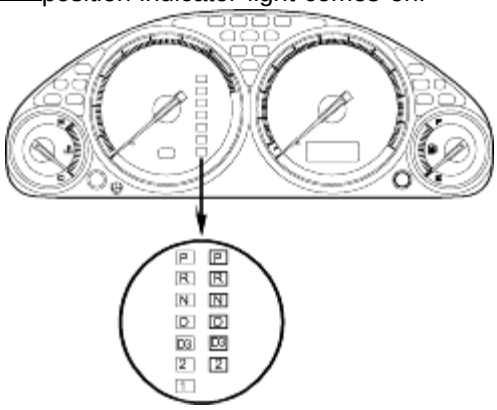


2. 8. Disconnect the shift lock solenoid connector (B).
   9. Cover around the opening of the console with tape to prevent damage to the console.
   10. Remove the four bolts (C), then remove the shift lever assembly (D); lift it up slightly, clear the harnesses, rotate counter-clockwise a quarter turn, then lift up and remove.

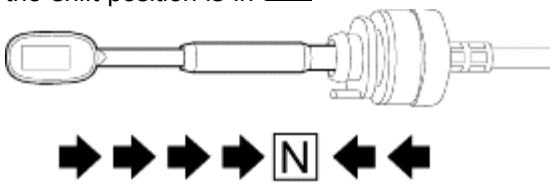
Automatic Transmission
Shift Lever Installation

4-door Model

1. 1. Install the shift lever assembly.
   2. Turn the ignition switch ON (II) and verify that the [N] position indicator light comes on.

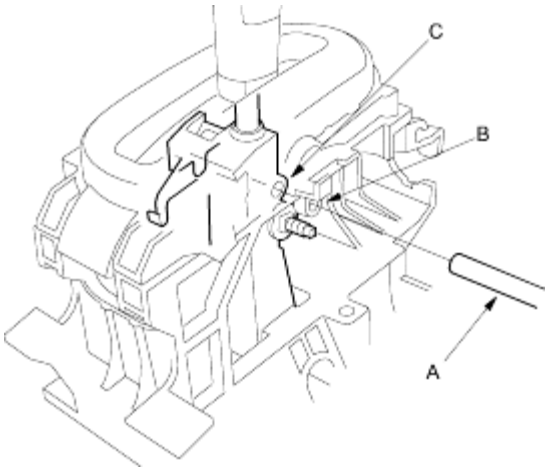


2. 3. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back 2 steps so that the shift position is in [N]



   4. Turn the ignition switch OFF.

1. 5. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.



Automatic Transmission

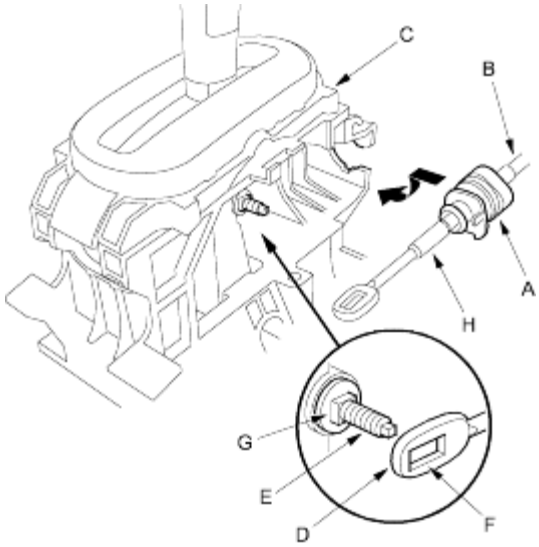
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in D and D3 positions: Stall speed low	1. Torque converter one-way clutch defective 2. Engine output low 3. Lock-up shift valve defective 4. Lock-up clutch piston defective 5. Shift solenoid valve A defective 6. Restricted ATF cooler	• Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve A for seizure. • Check ATF cooling system for restriction.
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve A defective 3. A/T clutch pressure control solenoid valve A defective 4. Drive plate defective or transmission misassembled 5. Engine output low, low idle speed 6. Lock-up clutch piston defective 7. ATF pump worn or binding 8. Lock-up shift valve defective 9. Restricted ATF cooler 10. Misadjusted engine mounts	• Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine mounts as outlined in the engine section of this shop manual. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve A for seizure. • Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve A is stuck, inspect the CPC valve. • Check ATF cooling system for restriction.
Vehicle moves in N position	1. Excessive ATF 2. 1st clutch defective 3. 2nd clutch defective 4. 3rd clutch defective 5. 4th clutch defective 6. Foreign material in main orifice 7. Clutch clearance incorrect 8. Needle bearing seized up, worn, or damaged 9. Thrust washer seized up, worn, or damaged	• Check ATF level and drain ATF. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check for clutch pressure in neutral.

Automatic Transmission
Shift Lever Installation (cont'd)

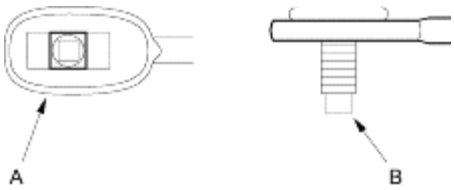
1. 6. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



2. 7. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

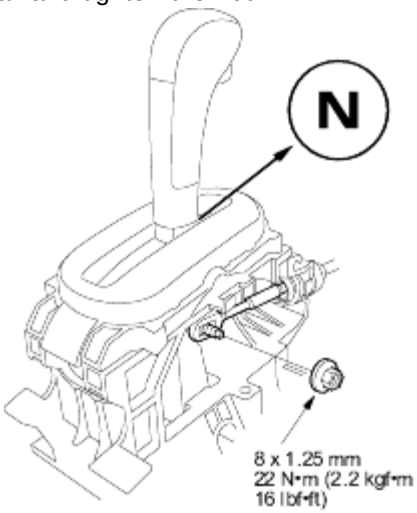


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

1. 8. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
2. 9. Install and tighten the nut.

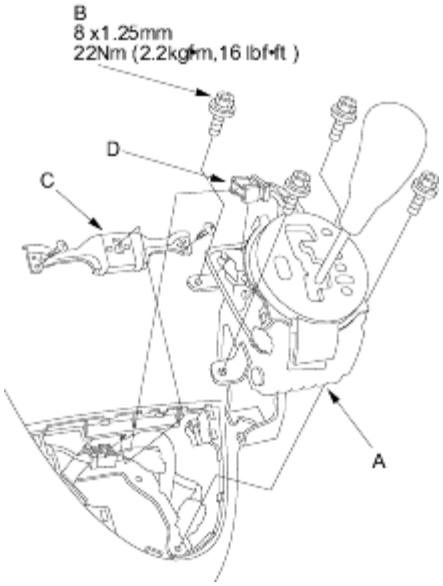


3. 10. Remove the 6.0 mm (0.24 in) pin that aligned the shift lever.
11. Connect the A/T gear position indicator panel light/park pin switch connector (4P) and the shift lock solenoid connector (2P).
12. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
13. Push the shift lock release and verify that the shift lever releases.
14. Reinstall the centre console, console panel and related parts (see page 20-73).

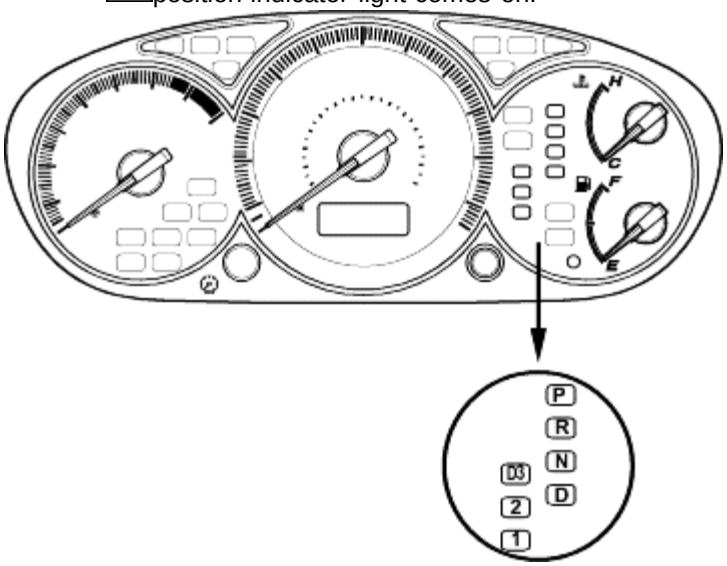
Automatic Transmission
Shift Lever Installation (cont'd)

5-door Model

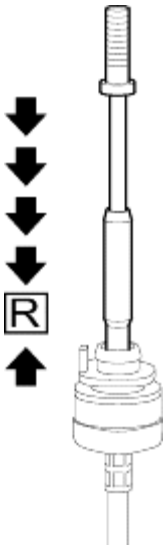
1. 1. Cover around the opening of the console with tape or equivalent to prevent damage to the console.
   2. Install the shift lever assembly (A) in the console and secure it with the bolts (B).



2. 3. Install the bracket (C).
   4. Connect the shift lock solenoid connector (D) and install it on its connector bracket.
   5. Turn the ignition switch ON (II) and verify that the R position indicator light comes on.



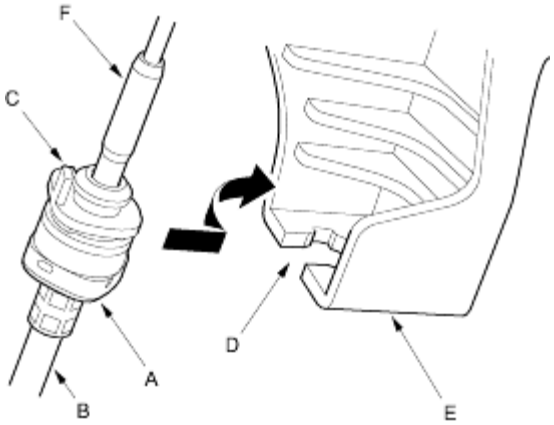
1. 6. If necessary, push down the shift cable until it stops, then release your hand. Pull the shift cable back 1 step so that the shift cable is in R



2. 7. Turn the ignition switch OFF.
   8. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder is directed opposite the opening (D) of the shift lever bracket base (E).

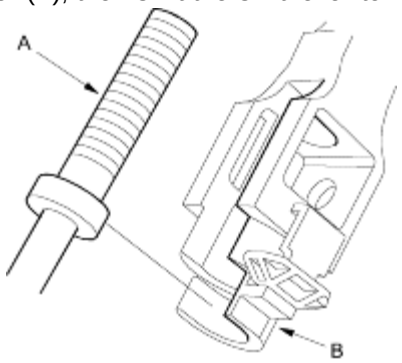
Slide the holder to the shift cable bracket base and rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (F).

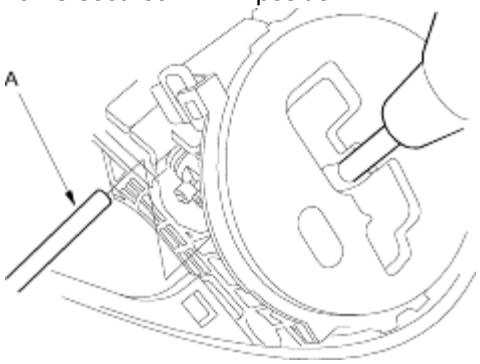


Automatic Transmission
Shift Lever Installation (cont'd)

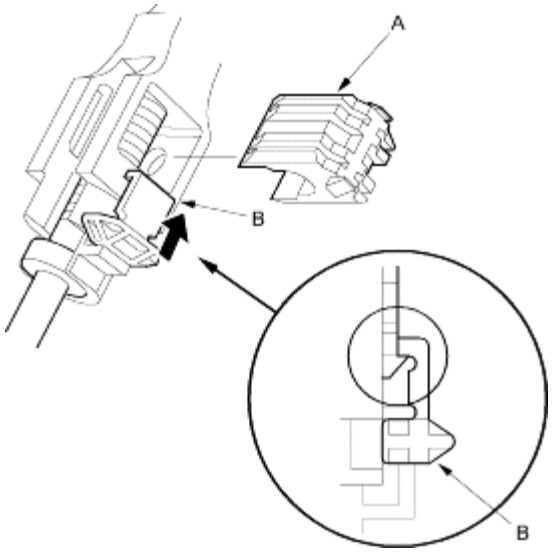
1. 9. Shift the shift lever to [N] position.
2. 10. Install the shift cable end (A) in the shift cable end holder (B), then shift the shift lever to [R] position.



3. 11. Insert a 6.0 mm (0.24 in.) pin (A) into the positioning hole on the shift lever bracket base through the positioning hole on the shift lever assembly. The shift lever is secured in [R] position.



1. 12. Install the shift cable lock (A) to secure the shift cable end and shift cable end holder, then push the lock tab (B) up until it stops to lock the joint.

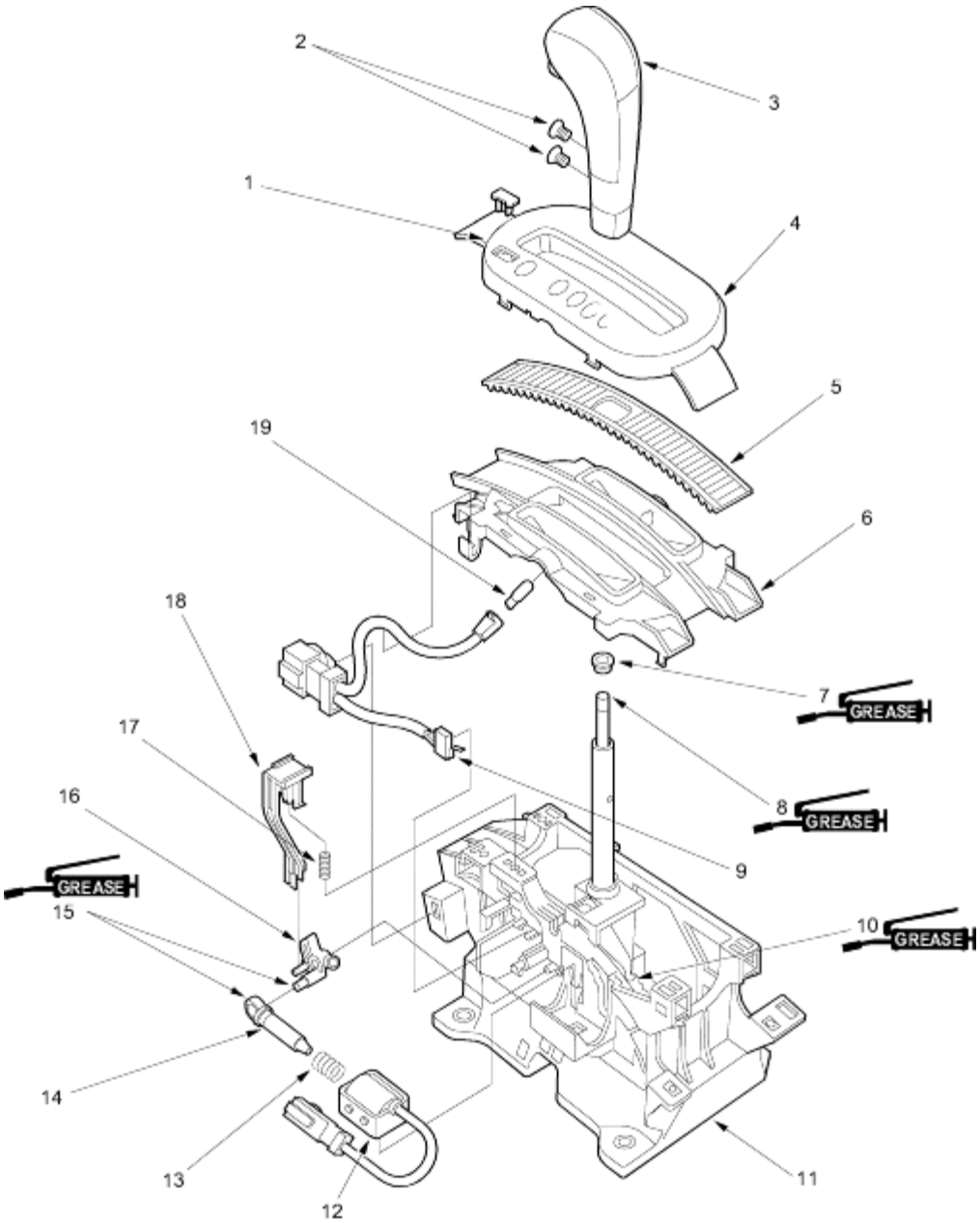


2. 13. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
   14. Move the shift lever to each gear and verify that the A/T gear position indicator follows the transmission range switch.
   15. Push the shift lock release and verify that the shift lever releases.
   16. Reinstall the console panel and related parts.

Automatic Transmission
Shift Lever Disassembly/Reassembly

4-door Model

NOTE: The illustration shows the LHD with interlock system model; the other models are similar.

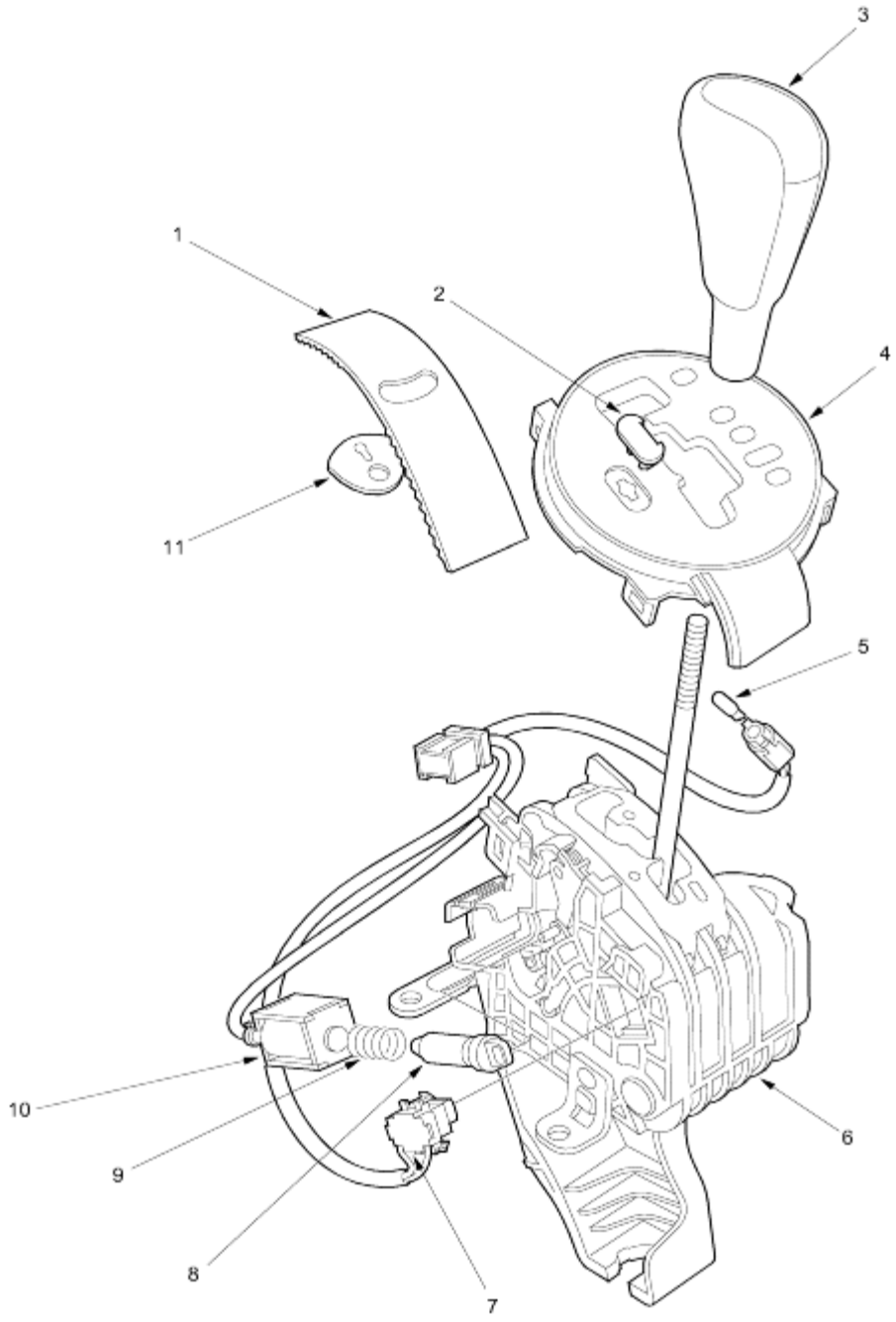


1. A/T GEAR POSITION INDICATOR PANEL LID
2. SCREW
   3 Nm (0.3 kgf/m, 2 lbf/ft)
   Apply non-hardening thread lock sealant.
3. SHIFT LEVER KNOB
4. A/T GEAR POSITION INDICATOR PANEL
5. SHIFT LEVER COVER
6. A/T GEAR POSITION INDICATOR PANEL BRACKET
7. BUSHING
   SILICONE GREASE
8. SILICONE GREASE
9. PARK PIN SWITCH
10. SILICONE GREASE
11. SHIFT LEVER BRACKET BASE
12. SHIFT LOCK SOLENOID
13. PLUNGER SPRING
14. SHIFT LOCK SOLENOID PLUNGER
15. SILICONE GREASE
16. SHIFT LOCK STOP
17. SHIFT LOCK RELEASE SPRING
18. SHIFT LOCK RELEASE
19. A/T GEAR POSITION INDICATOR PANEL LIGHT BULB

Automatic Transmission

Shift Lever Disassembly/Reassembly (cont'd)

5-door Model

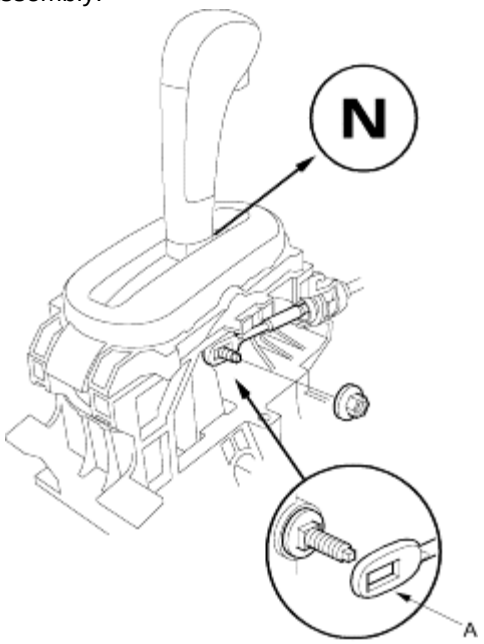


1. SHIFT LEVER COVER
2. A/T GEAR POSITION INDICATOR PANEL LID
3. SHIFT LEVER KNOB
   8 Nm (0.8 kgf/m, 6 lbf/ft)
4. A/T GEAR POSITION INDICATOR PANEL
5. A/T GEAR POSITION INDICATOR PANEL LIGHT BULB
6. SHIFT LEVER BRACKET BASE
7. D3 SWITCH
8. SHIFT LOCK SOLENOID PLUNGER
9. PLUNGER SPRING
10. SHIFT LOCK SOLENOID
11. SHIFT LEVER COVER SLIDER

Automatic Transmission
Shift Cable Replacement

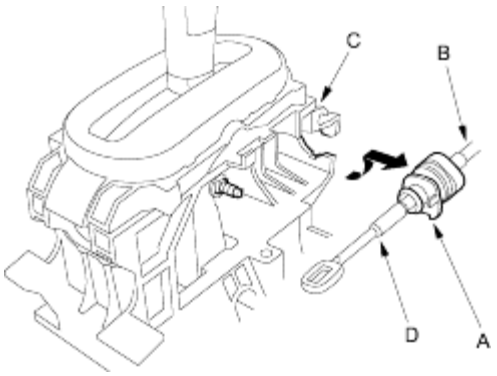
4-door Model

1. Raise the vehicle and make sure it is securely supported (see page 1-15).
2. Shift the transmission into N position.
3. Remove the centre console panel and centre console (see page 20-73).
4. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

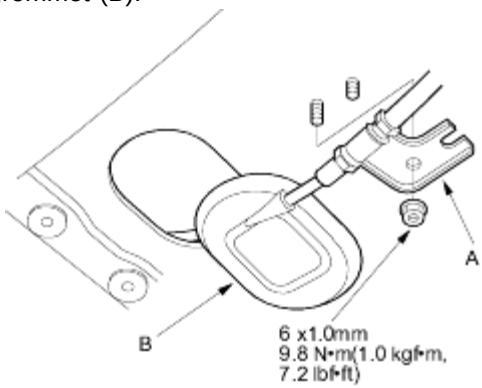


5. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



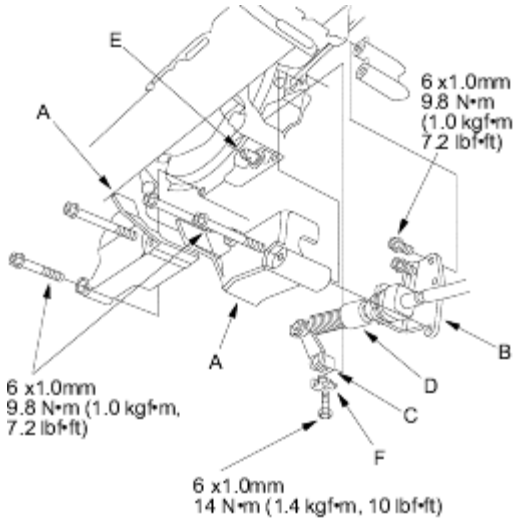
6. Remove the shift cable guide bracket (A) and grommet (B).



Automatic Transmission

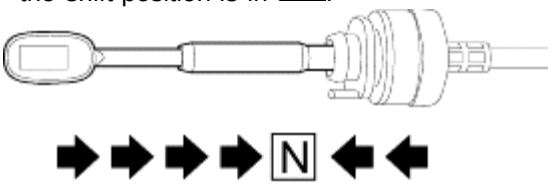
Shift Cable Replacement (cont'd)

1. 7. Remove the shift cable covers (A), then remove the bolts securing the shift cable holder (B).

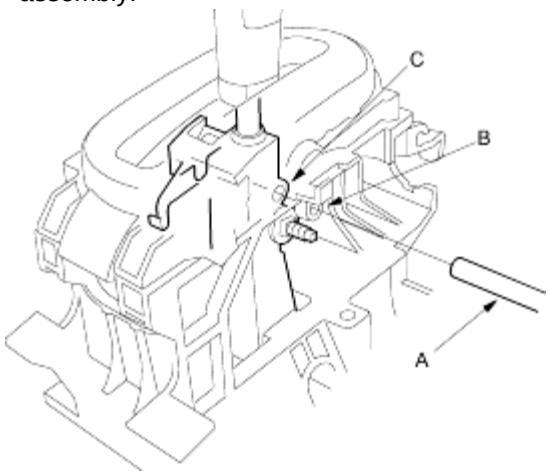


2. 8. Remove the lock bolt securing the control lever (C), then remove the shift cable (D) with the control lever from the control shaft (E).
   9. Insert the new shift cable through the grommet hole, then install the shift cable guide bracket.
   10. Verify that the transmission is in N.gif position on the control shaft.
   11. Install the control lever with the shift cable on the control shaft. Do not bend the shift cable excessively.
   12. Secure the shift cable holder with the bolts on the transmission.
   13. Install the lock bolt with a new lock washer (F), then bend the lock washer tab against the bolt head.
   14. Install the shift cable covers.

1. 15. Turn the ignition switch ON (II) and verify that the N position indicator light comes on.
2. 16. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back 2 steps so that the shift position is in N.



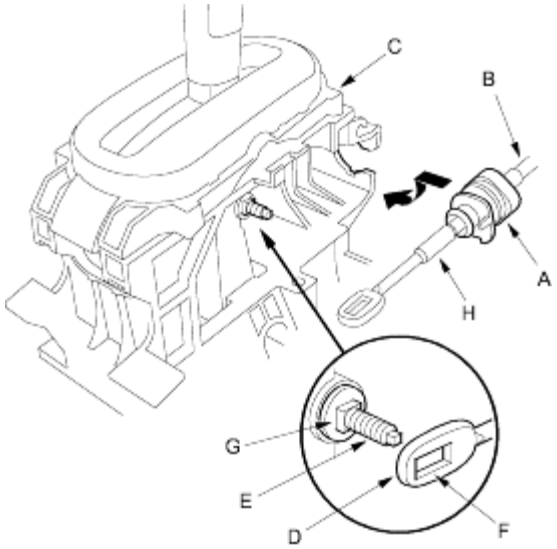
3. 17. Turn the ignition switch OFF.
   18. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.



Automatic Transmission
Shift Cable Replacement (cont'd)

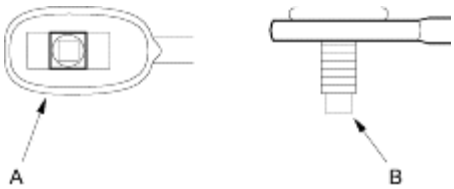
1. 19. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



2. 20. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

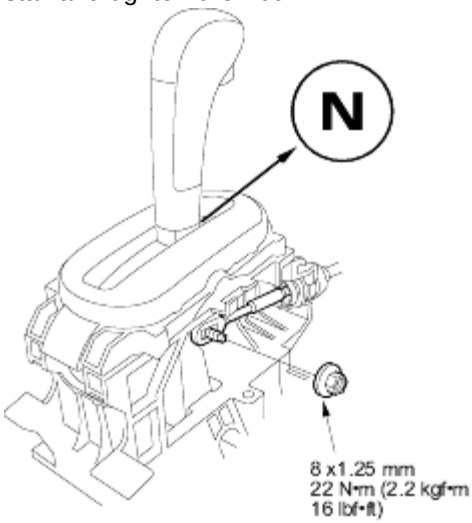


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

1. 21. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
2. 22. Install and tighten the nut.

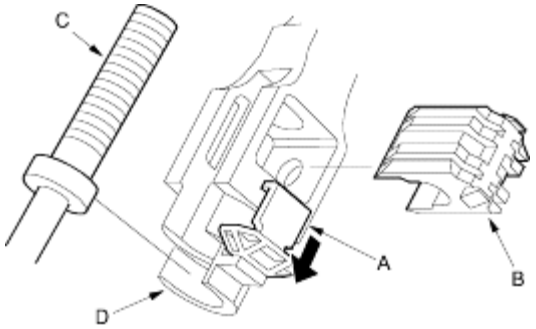


3. 23. Remove the 6.0 mm (0.24 in.) pin that aligned the shift lever.
24. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
25. Allow the wheels to rotate freely.
26. Start the engine and check the shift lever operation in all gears.
27. Reinstall the centre console, console panel and related parts (see page 20-73).

Automatic Transmission
Shift Cable Replacement (cont'd)

5-door Model

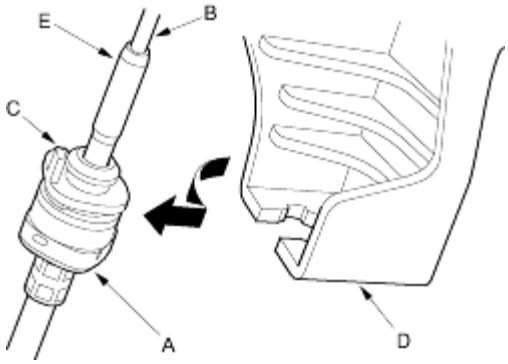
1. 1. Raise the vehicle and make sure it is securely supported (see page 1-15).
   2. Remove the ash tray, then remove the centre console lower cover.
   3. Remove the shift lever console panel.
   4. Shift the shift lever to R position.
   5. Slide the lock tab (A) down, then pull the shift cable lock (B) at the joint in the shift cable end and shift cable end holder.



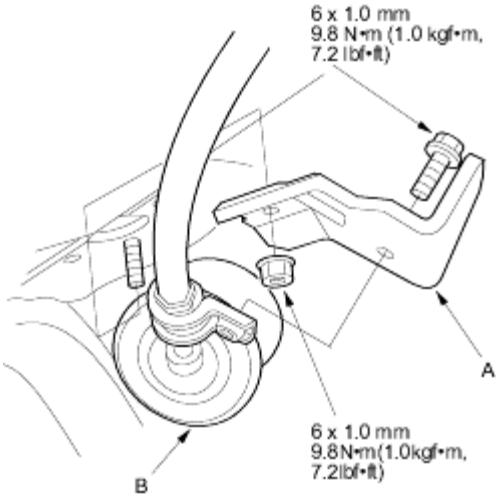
2. 6. Shift the shift lever to N position, then separate the shift cable end (C) from the shift cable end holder (D).

1. 7. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder faces direction to remove. Then slide the holder to remove the shift cable from the shift cable bracket base (D).

NOTE: Do not remove the shift cable by twisting the shift cable guide (E).



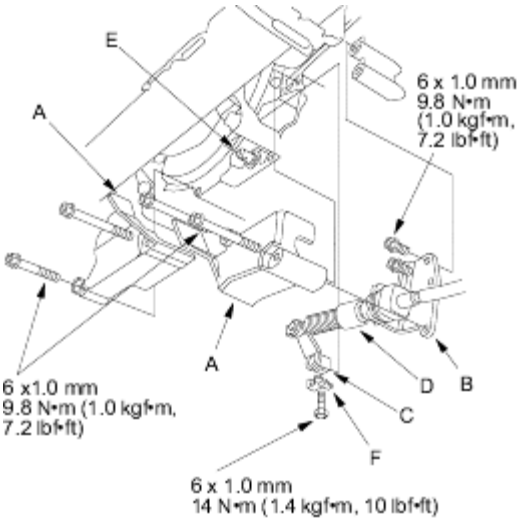
2. 8. Remove the shift cable guide bracket (A) and grommet (B), then remove the guide bracket from the cable.



Automatic Transmission

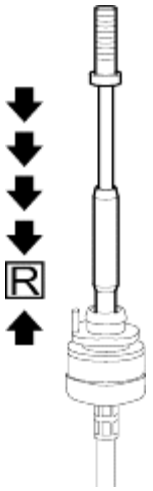
Shift Cable Replacement (cont'd)

1. 9. Remove the shift cable covers (A), then remove the bolts securing the shift cable holder (B).



2. 10. Remove the lock bolt securing the control lever (C), then remove the shift cable (D) with the control lever from the control shaft (E).
11. Insert the new shift cable through the grommet hole.
12. Install the shift cable guide bracket on the shift cable, then install the shift cable guide bracket to the body.
13. Verify that the transmission is in R position on the control shaft.
14. Install the control lever with the shift cable on the control shaft. Do not bend the shift cable excessively.
15. Secure the shift cable holder with the bolts on the transmission.
16. Install the lock bolt with a new lock washer (F), then bend the lock washer tab against the bolt head.
17. Install the shift cable covers.

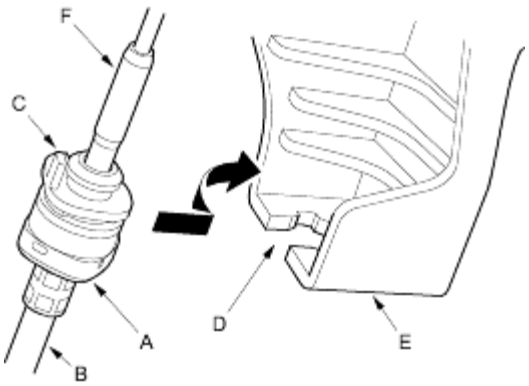
1. 18. Turn the ignition switch ON (II) and verify that the R position indicator light comes on.
2. 19. If necessary, push down the shift cable until it stops, then release your hand. Pull the shift cable back 1 step so that the shift cable is in R



3. 20. Turn the ignition switch OFF.
21. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder is directed opposite the opening (D) of the shift lever bracket base (E).

Slide the holder to the shift cable bracket base and rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (F).

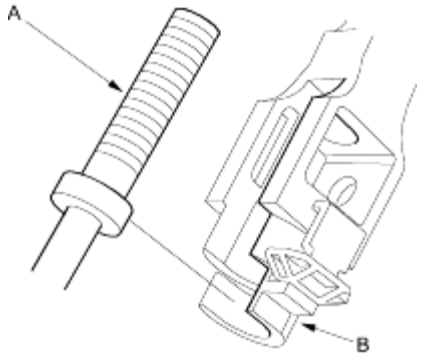


Automatic Transmission
Symptom Troubleshooting Index (cont'd)

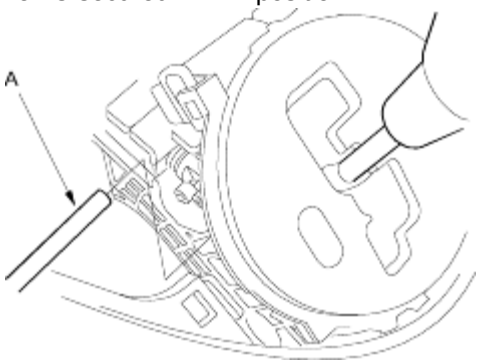
Symptom	Probable cause(s)	Notes
Late shift from N position to D and D3 positions	1. 1st clutch defective 2. Foreign material in 1st orifice	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 1st clutch pressure.
Late shift from N position to R position	1. Shift fork shaft stuck 2. 4th clutch defective 3. 1-2 shift valve defective 4. Servo control valve defective	• Check for a missing shift fork bolt on the shift fork shaft. • Inspect the servo valve and the O-ring. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 4th clutch pressure.
No shift	1. A/T clutch pressure control solenoid valve A defective 2. CPC valve defective 3. Modulator valve defective 4. Shift solenoid valve A defective 5. Shift solenoid valve B defective	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve A is stuck, inspect the CPC valve. • Check the * indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valves A and B for seizure. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.
Erratic shifting gears: Fails to shift in D and D3 positions; shifts from 1st to 3rd gear	1. 2-3 shift valve defective 2. Shift solenoid valve B defective	Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve B for seizure.
Erratic shifting gears: Fails to shift in D and D3 positions; shifts from 1st to 4th gear	1. 2-3 shift valve defective 2. 3-4 shift valve defective 3. Shift solenoid valve A defective	Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve A for seizure.

Automatic Transmission
Shift Cable Replacement (cont'd)

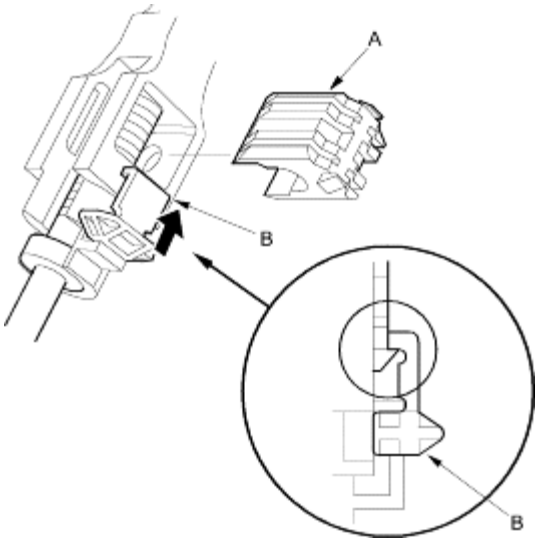
1. 22. Shift the shift lever to [N] position.
2. 23. Install the shift cable end (A) in the shift cable end holder (B), then shift the shift lever to [R] position.



3. 24. Insert a 6.0 mm (0.24 in.) pin (A) into the positioning hole on the shift lever bracket base through the positioning hole on the shift lever assembly. The shift lever is secured in [R] position.



1. 25. Install the shift cable lock (A) to secure the shift cable end and shift cable end holder, then push the lock tab (B) up until it stops to lock the joint.

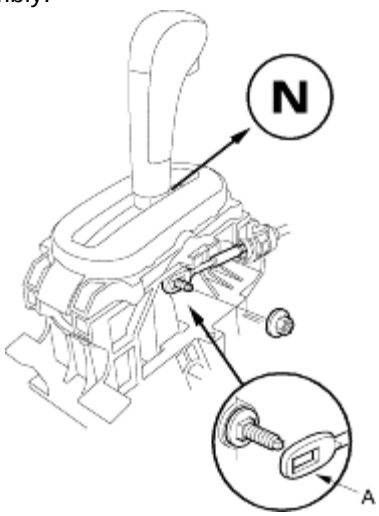


2. 26. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
   27. Move the shift lever to each gear and verify that the A/T gear position indicator follows the transmission range switch.
   28. Allow the wheels to rotate freely.
   29. Start the engine and check the shift lever operation in all gears.
   30. Reinstall the console panel and related parts.

Automatic Transmission
Shift Cable Adjustment

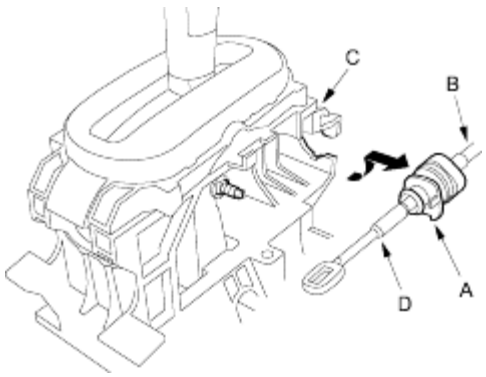
4-door Model

1. 1. Shift the transmission into [N] position.
   2. Remove the centre console panel and centre console (see page 20-73).
   3. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

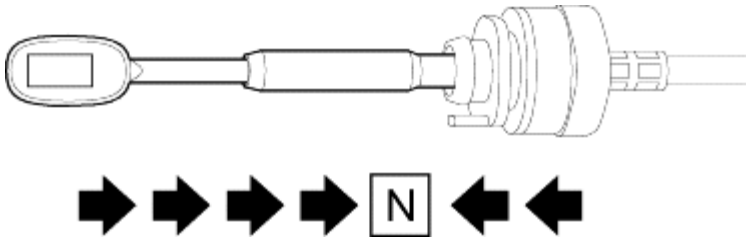


2. 4. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

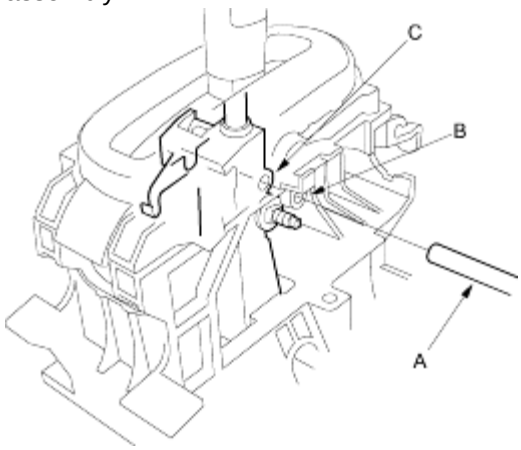
NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



1. 5. Push the shift cable until it stops, then release it. Pull the shift cable back 2 steps so that the shift position is in [N]



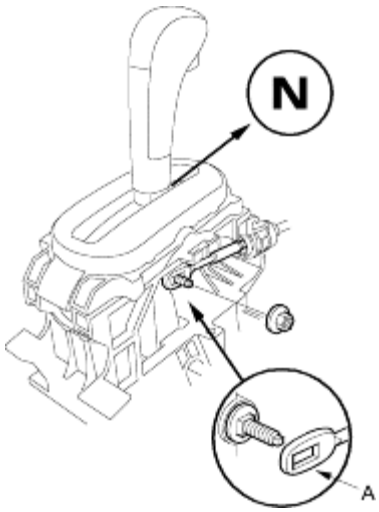
2. 6. Turn the ignition switch ON (II) and verify that the [N] position indicator light comes on.
   7. Turn the ignition switch OFF.
   8. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.



Automatic Transmission
Shift Cable Adjustment (cont'd)

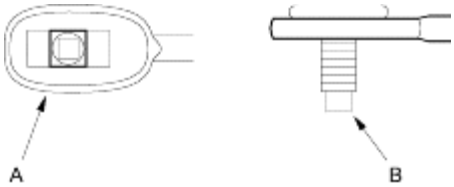
1. 9. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



2. 10. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

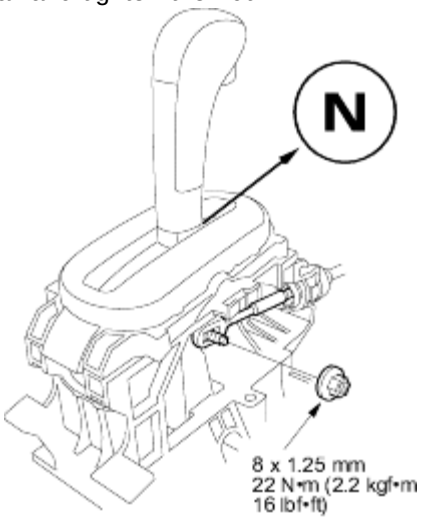


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

1. 11. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
2. 12. Install and tighten the nut.

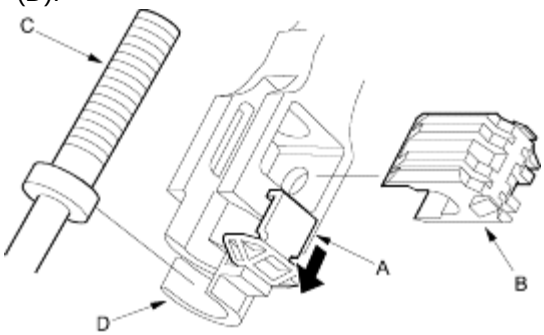


3. 13. Remove the 6.0 mm (0.24 in.) pin that aligned the shift lever.
14. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
15. Push the shift lock release and verify that the shift lever releases.
16. Reinstall the centre console, console panel and related parts (see page 20-73).

Automatic Transmission
Shift Cable Adjustment (cont'd)

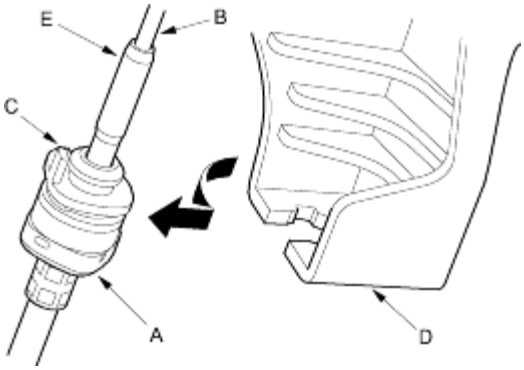
5-door Model

1. 1. Remove the ash tray, then remove the centre console lower cover.
   2. Remove the shift lever console panel.
   3. Shift the shift lever to R position.
   4. Slide the lock tab (A) down, then pull the shift cable lock (B) at the joint in the shift cable end and shift cable end holder.
   5. Shift the shift lever to N position, then separate the shift cable end (C) from the shift cable end holder (D).

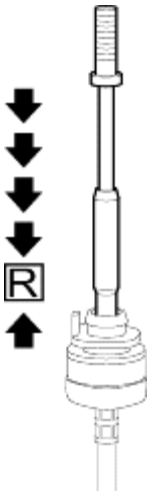


2. 6. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder faces direction to remove. Then slide the holder to remove the shift cable from the shift cable bracket base (D).

NOTE: Do not remove the shift cable by twisting the shift cable guide (E).



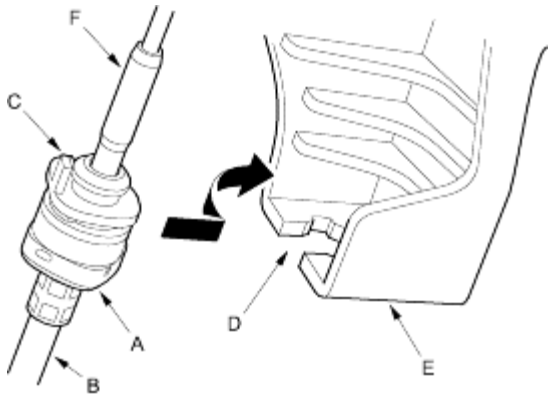
1. 7. Push down the shift cable until it stops, then release your hand. Pull the shift cable back 1 step so that the shift cable is in R



2. 8. Turn the ignition switch ON (II) and verify that the R position indicator light comes on.
   9. Turn the ignition switch OFF.
   10. Rotate the socket holder (A) on the shift cable (B) counter-clockwise a quarter turn; the projection (C) on the socket holder is directed opposite the opening (D) of the shift lever bracket base (E).

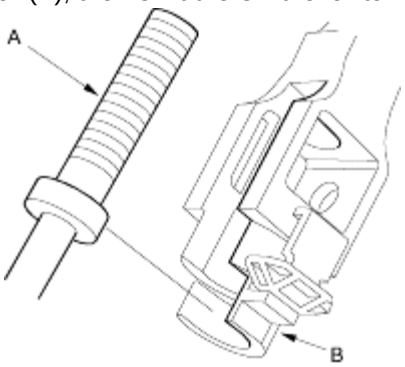
Slide the holder to the shift cable bracket base and rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (F).

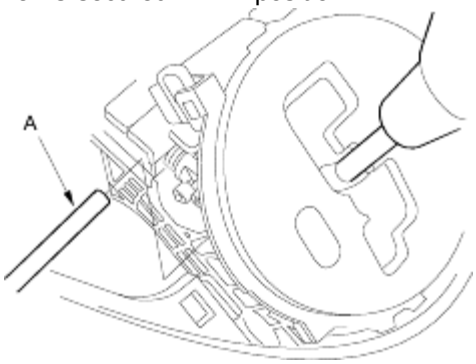


Automatic Transmission
Shift Cable Adjustment (cont'd)

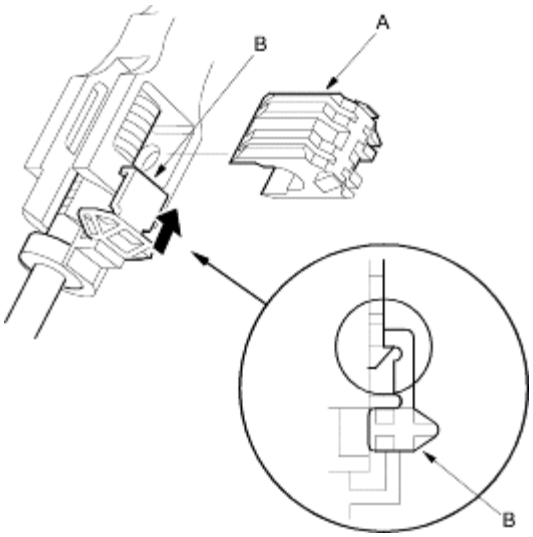
1. 11. Shift the shift lever to [N] position.
2. 12. Install the shift cable end (A) in the shift cable end holder (B), then shift the shift lever to [R] position.



3. 13. Insert a 6.0 mm (0.24 in.) pin (A) into the positioning hole on the shift lever bracket base through the positioning hole on the shift lever assembly. The shift lever is secured in [R] position.



1. 14. Install the shift cable lock (A) to secure the shift cable end and shift cable end holder, then push the lock tab (B) up until it stops to lock the joint.



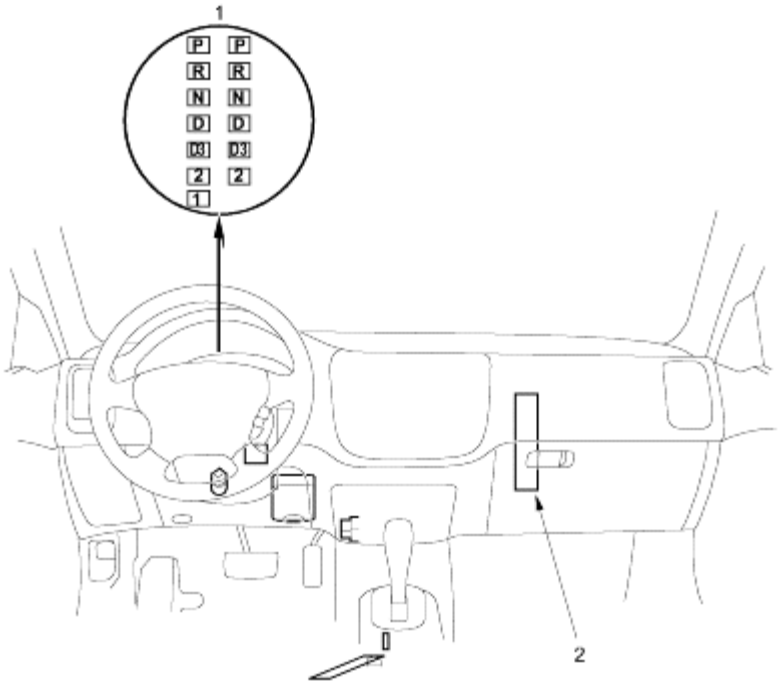
2. 15. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
   16. Move the shift lever to each gear and verify that the A/T gear position indicator follows the transmission range switch.
   17. Push the shift lock release and verify that the shift lever releases.
   18. Reinstall the console panel and related parts.

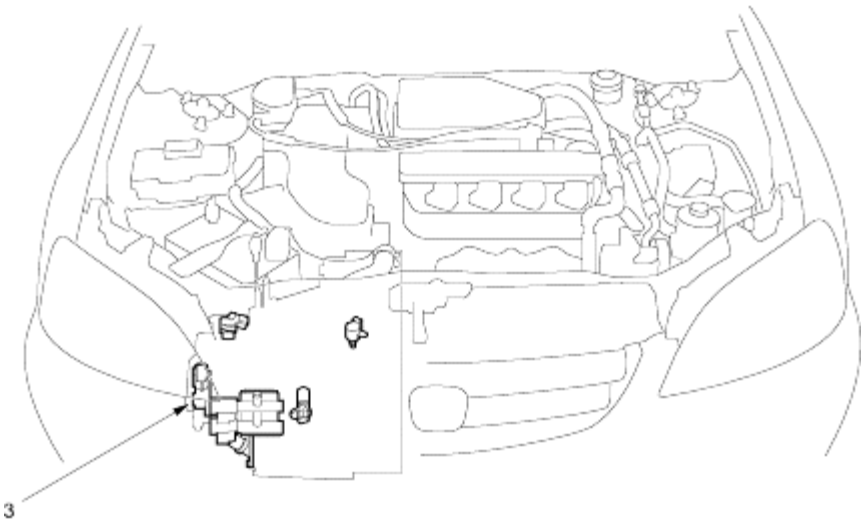
A/T Gear Position Indicator

Component Location Index

4-door Model

NOTE: The illustration shows LHD model;
RHD is symmetrical.



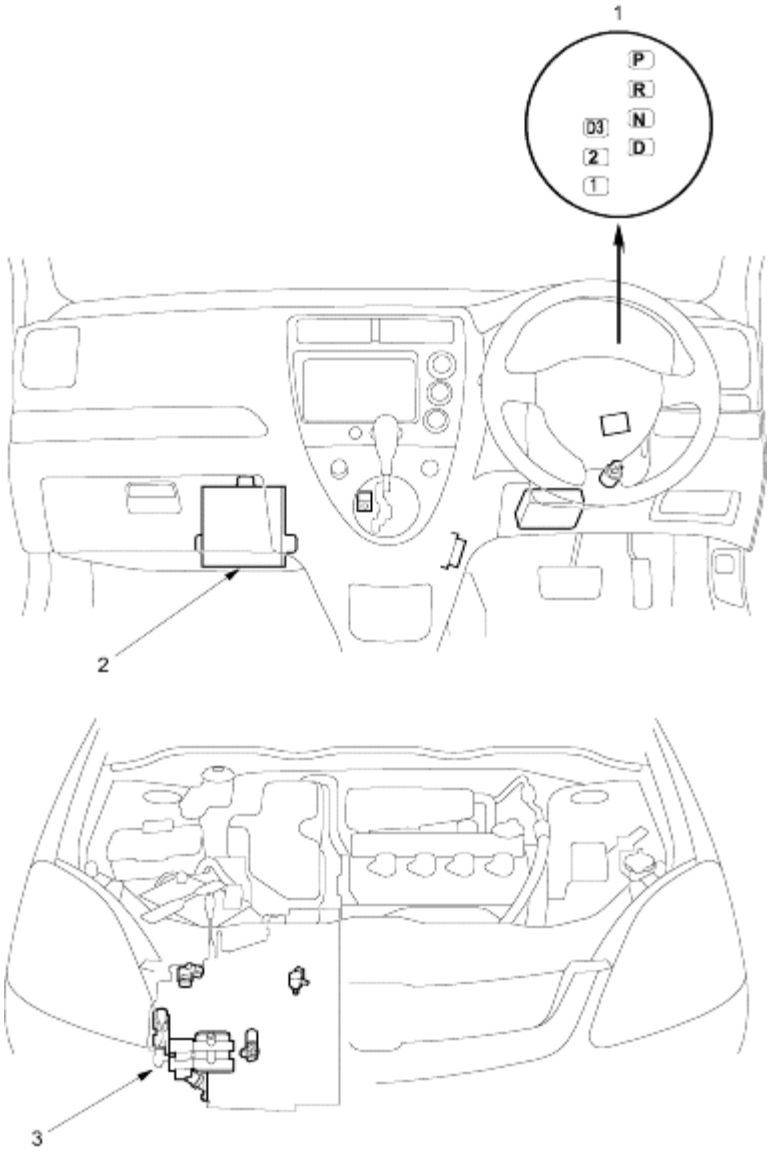


1. A/T GEAR POSITION INDICATOR
   Indicator Input Test, page 14-163
   Indicator Bulb Replacement, page 14-164
2. POWERTRAIN CONTROL MODULE (PCM)
3. TRANSMISSION RANGE SWITCH
   Test, page 14-159
   Replacement, page 14-161

A/T Gear Position Indicator

Component Location Index (cont'd)

5-door Model

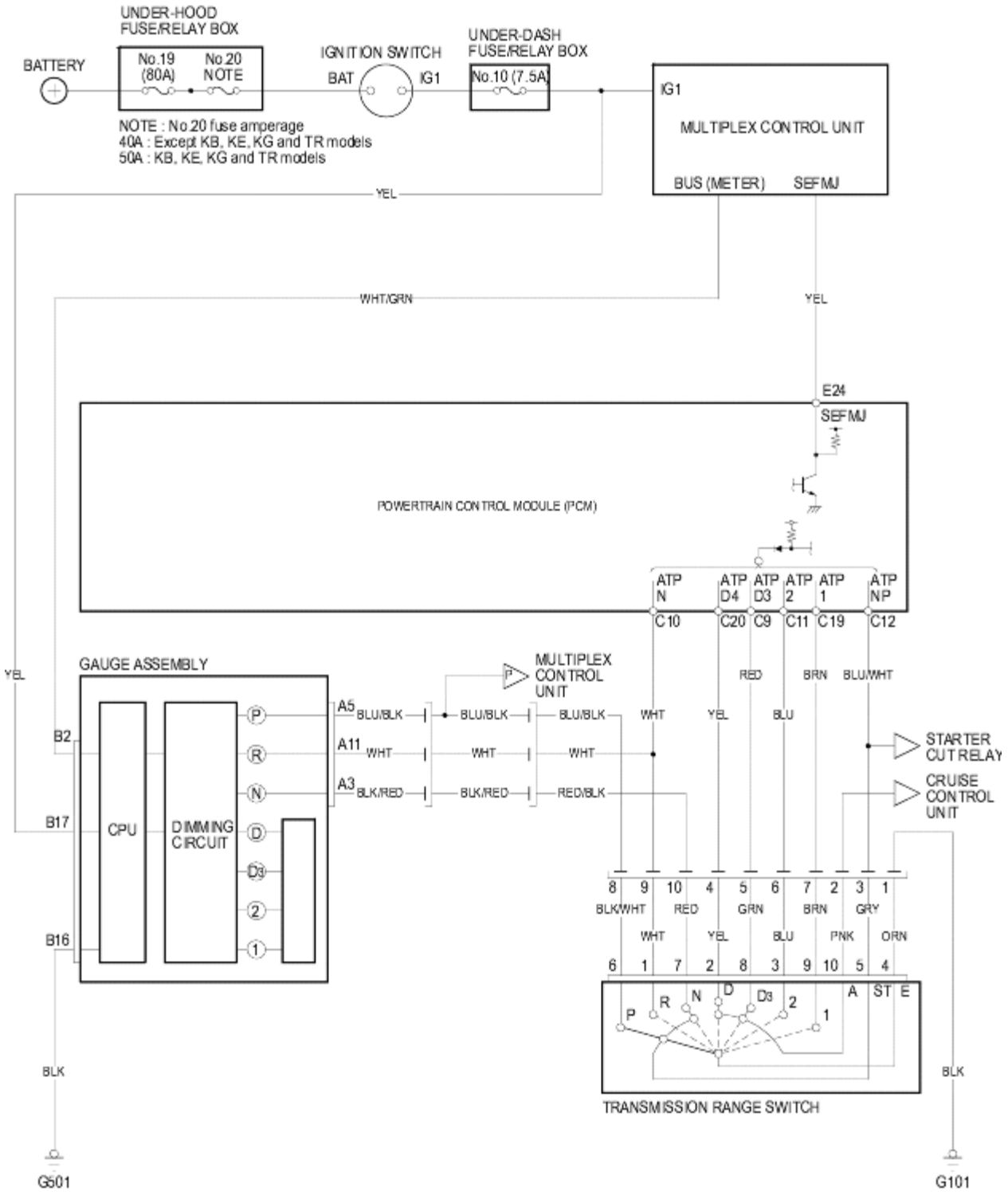


1. A/T GEAR POSITION INDICATOR
   Indicator Input Test, 14-163
   Indicator Bulb Replacement, page 14-164
2. POWERTRAIN CONTROL MODULE (PCM)
3. TRANSMISSION RANGE SWITCH
   Test, page 14-160
   Replacement, page 14-161

A/T Gear Position Indicator

Circuit Diagram

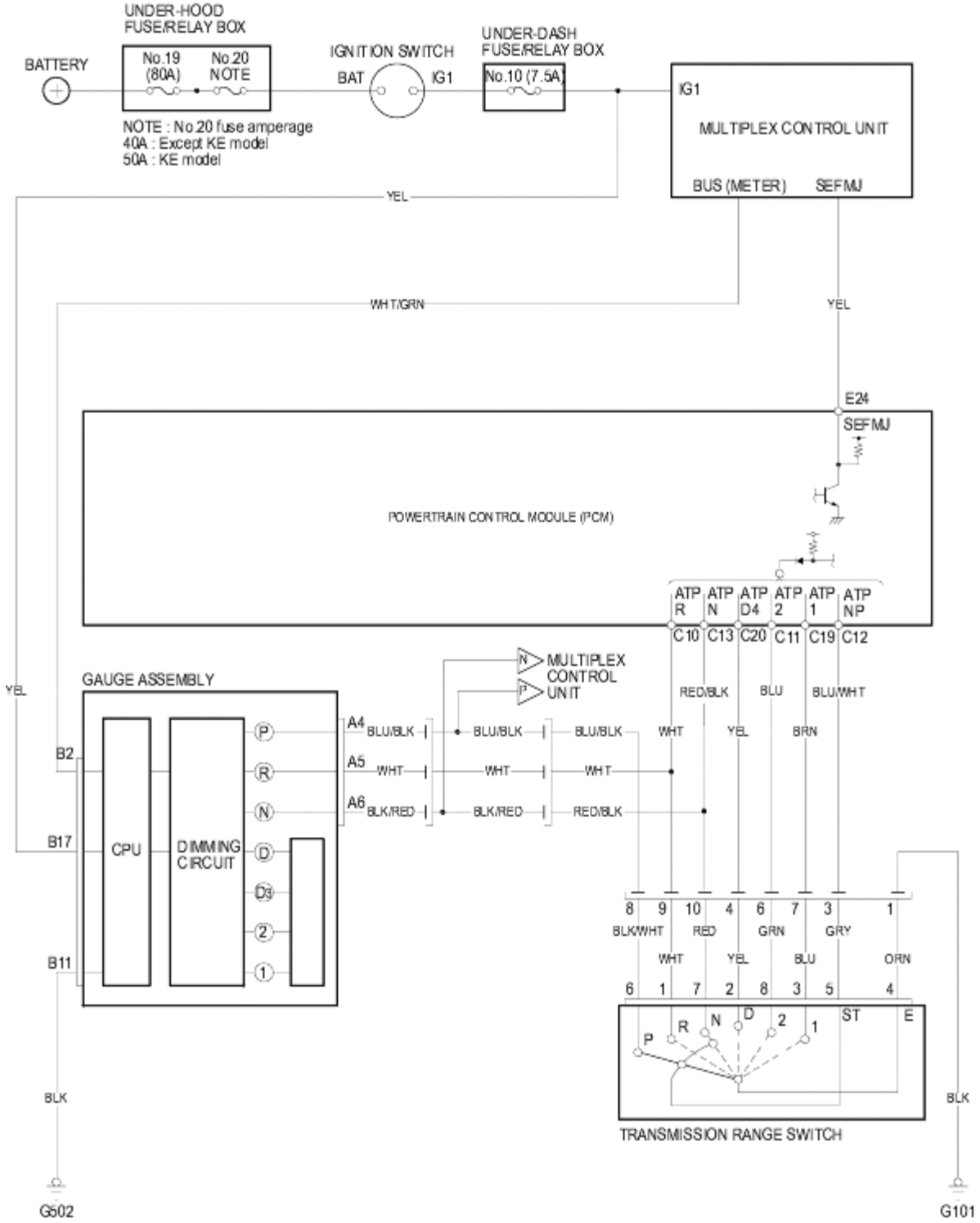
4-door Model



A/T Gear Position Indicator

Circuit Diagram (cont'd)

5-door Model

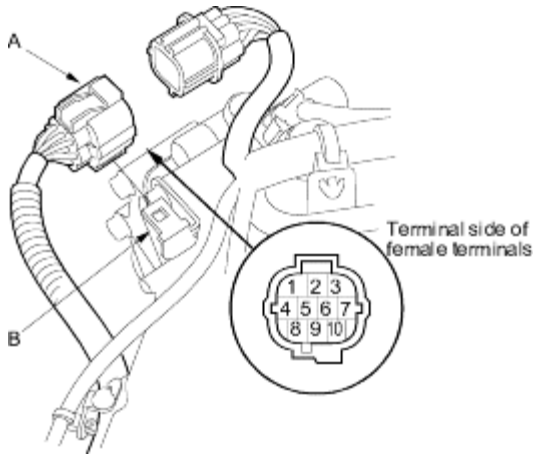


A/T Gear Position Indicator

Transmission Range Switch Test

4-door Model

1. 1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.



Connector Terminal Description

No.	Description	No.	Description
1	GND	6	2
2	S	7	1
3	ATP NP	8	P
4	D	9	R
5	D3	10	N

2. 2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals listed for each switch position.

In P position, between terminals:

- No. 1 and No. 3
- No. 1 and No. 8
- No. 3 and No. 8

In R position, between terminals:

- No. 1 and No. 9

In N position, between terminals:

- No. 1 and No. 3
- No. 1 and No. 10
- No. 3 and No. 10

In D position, between terminals:

- No. 1 and No. 2
- No. 1 and No. 4
- No. 2 and No. 4

In D3 position, between terminals:

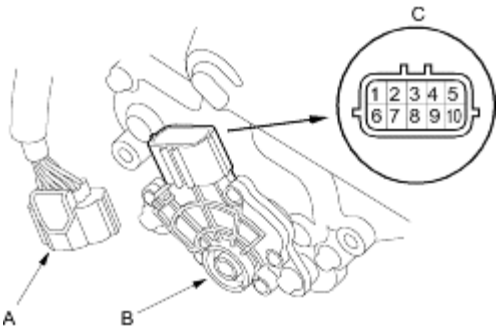
- No. 1 and No. 2
- No. 1 and No. 5
- No. 2 and No. 5

In 2 position, between terminals:

- No. 1 and No. 6

In 1 position, between terminals (7-position):

1. 3. If there is no continuity between any terminal, remove the transmission range switch cover and disconnect the connector (A) at the switch (B).



Connector Terminal Description

No.	Description	No.	Description
1	R	6	P
2	D	7	N
3	2	8	D3
4	GND	9	1
5	ATP NP	10	S

2. 4. Check for continuity between terminals at the switch connector (C). There should be continuity between the terminals listed for each position.

In P position, between terminals:

- No. 4 and No. 5
- No. 4 and No. 6
- No. 5 and No. 6

In R position, between terminals:

- No. 1 and No. 4

In N position, between terminals:

- No. 4 and No. 5
- No. 4 and No. 7
- No. 5 and No. 7

In D position, between terminals:

- No. 2 and No. 4
- No. 2 and No. 10
- No. 4 and No. 10

In D3 position, between terminals:

- No. 4 and No. 8
- No. 4 and No. 10
- No. 8 and No. 10

In 2 position, between terminals:

- No. 3 and No. 4

In 1 position, between terminals (7-position):

- No. 4 and No. 9
- If there is no continuity between any terminals, check the transmission range switch installation. If the transmission range switch installation is OK,

- No. 1 and No. 7

replace the switch.

- If the transmission range switch continuity check was OK, replace the faulty transmission range switch harness.

Automatic Transmission
Symptom Troubleshooting Index (cont'd)

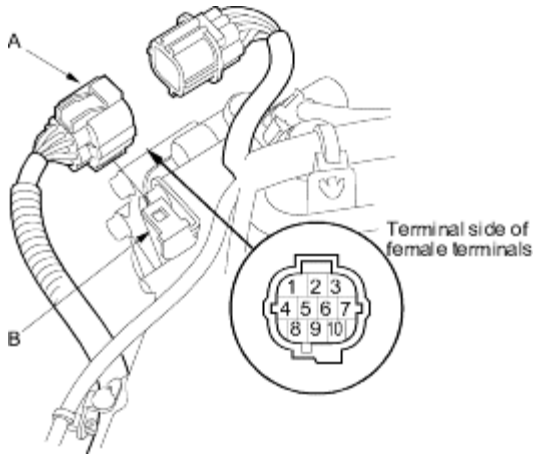
Symptom	Probable cause(s)	Notes
Erratic upshift: 1st to 2nd, 2nd to 3rd and 3rd to 4th gears	Countershaft speed sensor defective	Check the D indicator light indication and check for loose connectors. Check the countershaft speed sensor installation.
Erratic upshift: 1st to 2nd gear	1. 1-2 shift valve defective 2. Shift solenoid valve A defective	Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve A for seizure.
Erratic upshift: 2nd to 3rd gear	1. 2-3 shift valve defective 2. Shift solenoid valve B defective	Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve B for seizure.
Erratic upshift: 3rd to 4th gear	1. 3-4 shift valve defective 2. Shift solenoid valve A defective	Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valve A for seizure.
Harsh upshift: 1st to 2nd gear	1. 2nd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. Foreign material in main orifice 6. Torque converter clutch solenoid valve defective 7. Mainshaft speed sensor defective 8. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 2nd clutch pressure. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation.

A/T Gear Position Indicator

Transmission Range Switch Test (cont'd)

5-door Model

1. 1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.



Connector Terminal Description

No.	Description	No.	Description
1	GND	6	2
2	Not used	7	1
3	ATP NP	8	P
4	D	9	R
5	Not used	10	N

2. 2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals listed for each switch position.

In P position, between terminals:

- No. 1 and No. 3
- No. 1 and No. 8
- No. 3 and No. 8

In R position, between terminals:

- No. 1 and No. 9

In N position, between terminals:

- No. 1 and No. 3
- No. 1 and No. 10
- No. 3 and No. 10

In D position, between terminals:

- No. 1 and No. 4

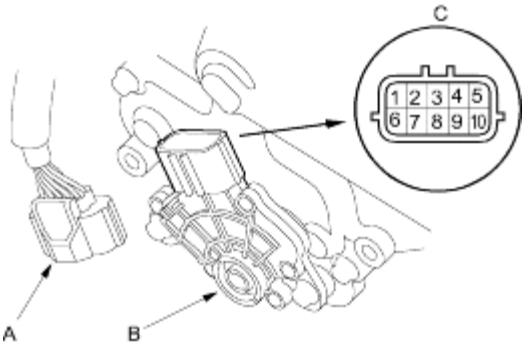
In 2 position, between terminals:

- No. 1 and No. 6

In 1 position, between terminals:

- No. 1 and No. 7

1. 3. If there is no continuity between any terminal, remove the transmission range switch cover and disconnect the connector (A) at the switch (B).



Connector Terminal Description

No.	Description	No.	Description
1	R	6	P
2	D	7	N
3	2	8	D3
4	GND	9	Not used
5	ATP NP	10	Not used

2. 4. Check for continuity between terminals at the switch connector (C). There should be continuity between the terminals listed for each position.

In P position, between terminals:

- No. 4 and No. 5
- No. 4 and No. 6
- No. 5 and No. 6

In R position, between terminals:

- No. 1 and No. 4

In N position, between terminals:

- No. 4 and No. 5
- No. 4 and No. 7
- No. 5 and No. 7

In D position, between terminals:

- No. 2 and No. 4

In 2 position, between terminals:

- No. 4 and No. 8

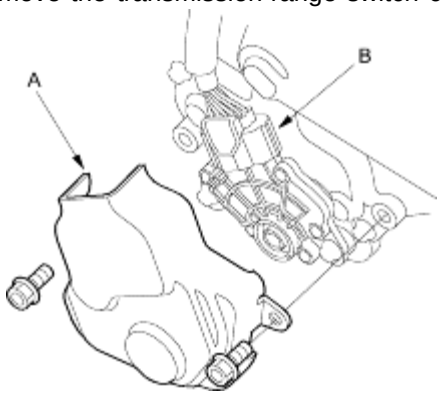
In 1 position, between terminals:

- No. 3 and No. 4
- If there is no continuity between any terminals, check the transmission range switch installation. If the transmission range switch installation is OK, replace the switch.
- If the transmission range switch continuity check was OK, replace the faulty transmission range switch harness.

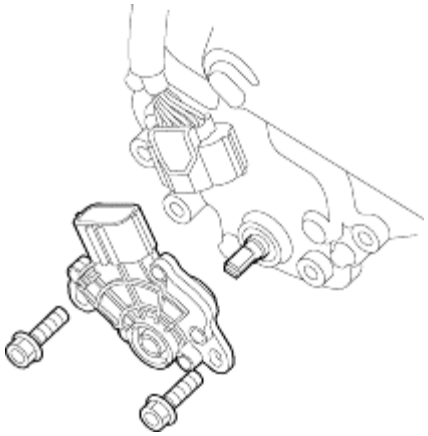
A/T Gear Position Indicator

Transmission Range Switch Replacement

1. 1. Raise the vehicle and make sure it is securely supported (see page 1-15).
2. 2. Shift to N position.
   3. Remove the transmission range switch cover (A).

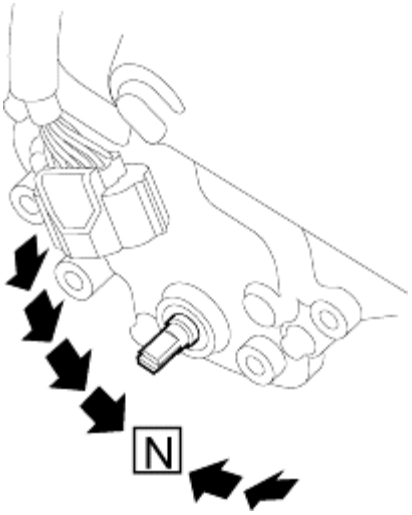


3. 4. Disconnect the transmission range switch connector (B).
   5. Remove the old transmission range switch and install the new switch.



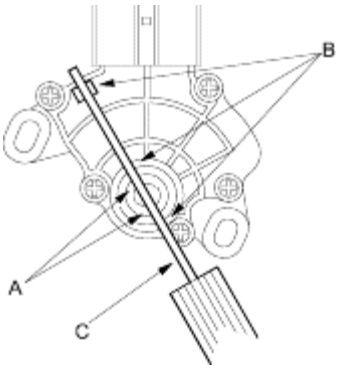
1. 6. Make sure that the control shaft is in N position.

   If necessary, move the shift lever to N position.



2. 7. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch, then put a 2.0 mm (0.08 in.) feeler gauge blade (C) in the cutouts to hold it in the N position.

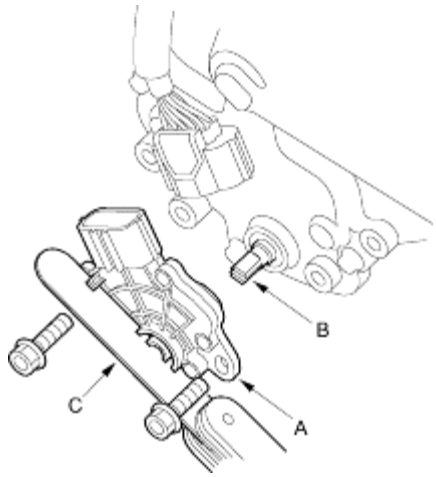
   NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



A/T Gear Position Indicator

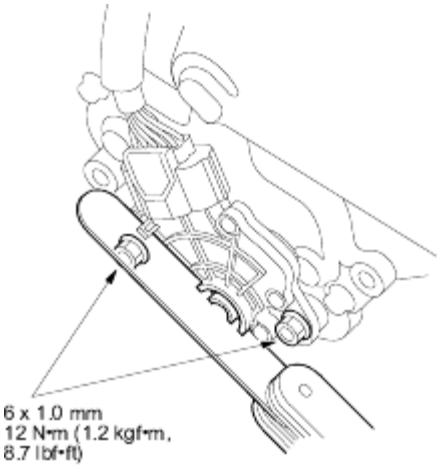
Transmission Range Switch Replacement (cont'd)

8. Install the transmission range switch (A) gently on the control shaft (B) while holding the N position with the 2.0 mm (0.08 in.) blade (C).

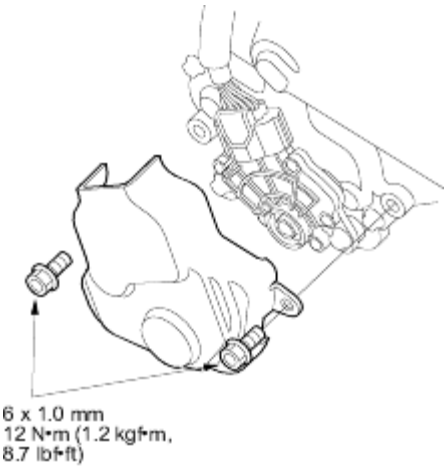


9. Tighten the bolts on the transmission range switch while you continue to hold the N position.

Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



10. Connect the connector securely, then install the transmission range switch cover.



11. Turn the ignition switch ON (II). Move the shift lever through all gear positions and check the transmission range switch synchronisation with the A/T gear position indicator.
12. Allow the wheels to rotate freely, then start the engine.
13. Move the shift lever through all gear positions and verify the following:
    - The engine will not start in any position other than N or P
    - The back-up lights come on when the shift lever is in R position.

A/T Gear Position Indicator

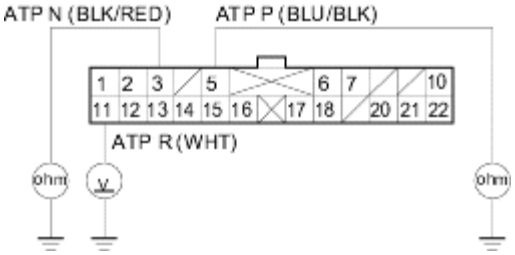
Indicator Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. If the MIL has been reported, check for a DTC and repair the system as indicated by DTC.
   2. If the MIL does not come on and the A/T gear position indicator P, N, or R.gif light does not come on, remove the gauge assembly from the dashboard (see page 22-93), then disconnect gauge assembly connector A (22P) and B (22P).
   3. Inspect the connectors and connector terminals to be sure they are making good contact.
   4. If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   5. Shift to P position and check for continuity between A5 terminal (BLU/BLK) and ground.

      There should be continuity in P position and no continuity in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

1. 6. Shift to N position and check for continuity between A3 terminal (BLK/RED) and ground.

   There should be continuity in N position and no continuity in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.

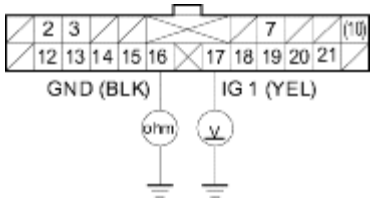
2. 7. Turn the ignition switch ON (II), shift to R position and check for voltage between A11 terminal (WHT) and ground.

   There should be 0 V in R position. There should be 5 V in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.

3. 8. Check for voltage between B17 terminal (YEL) and ground with the ignition switch ON (II).

   There should be battery voltage. If your test results are different, check for a blown No. 10 (7.5A) fuse in the under-dash fuse/relay box or an open in the wire.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

4. 9. Turn the ignition switch OFF and check for continuity between B16 terminal (BLK) and ground under all conditions.

   There should be continuity. If your test results are different, check for a poor ground (G501: 4-door, G502: 5-door) or an open in the wire.

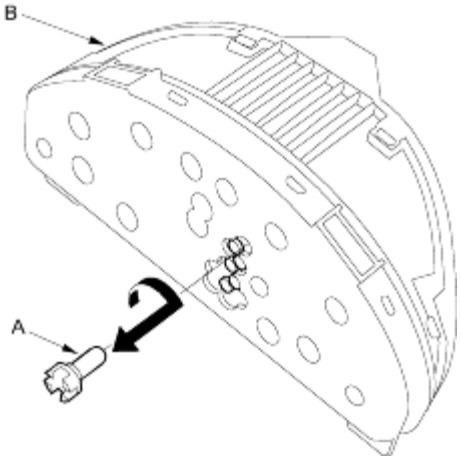
5. 10. If all input tests prove OK, but the indicator is faulty, replace the printed circuit board.

A/T Gear Position Indicator

Indicator Bulb Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. Remove the gauge assembly (see page 22-93).
   2. Replace the bulb (A) at the gauge assembly (B).

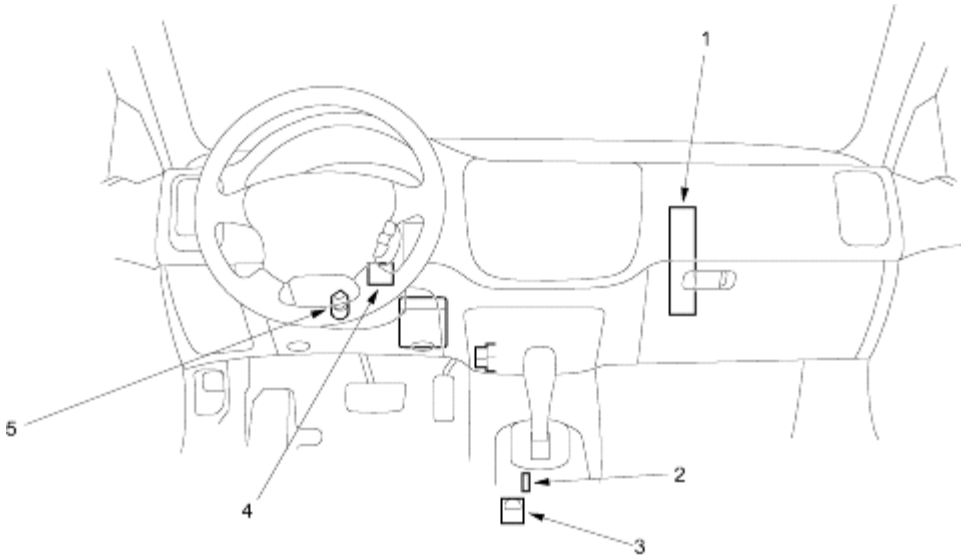


A/T Interlock System

Component Location Index

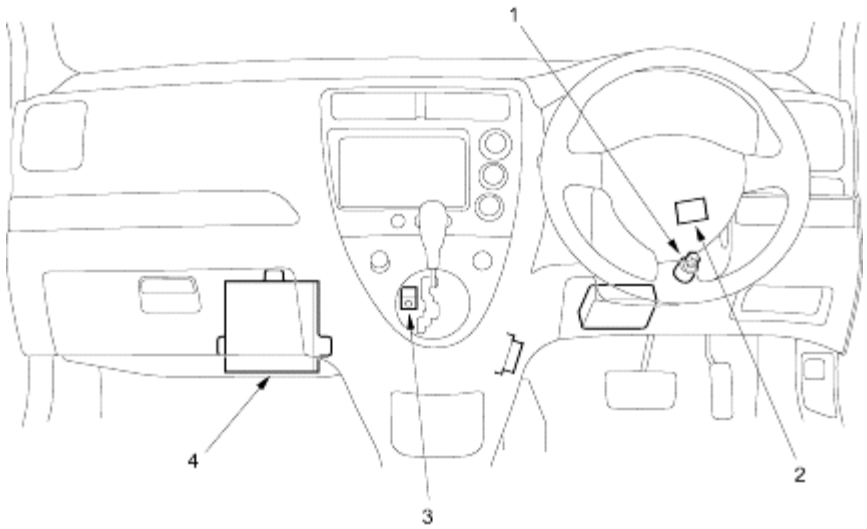
4-door Model:

NOTE: The illustration shows LHD model; RHD is symmetrical.



1. POWERTRAIN CONTROL MODULE (PCM)
2. PARK PIN SWITCH (KH model)
   Test, page 14-170
   Replacement, page 14-171
3. SHIFT LOCK SOLENOID
   Test, page 14-168
   Replacement, page 14-169
4. STEERING LOCK ASSEMBLY
   KEY INTERLOCK SOLENOID
   KEY INTERLOCK SWITCH
   Test, page 14-168
5. BRAKE PEDAL POSITION SWITCH

5-door model

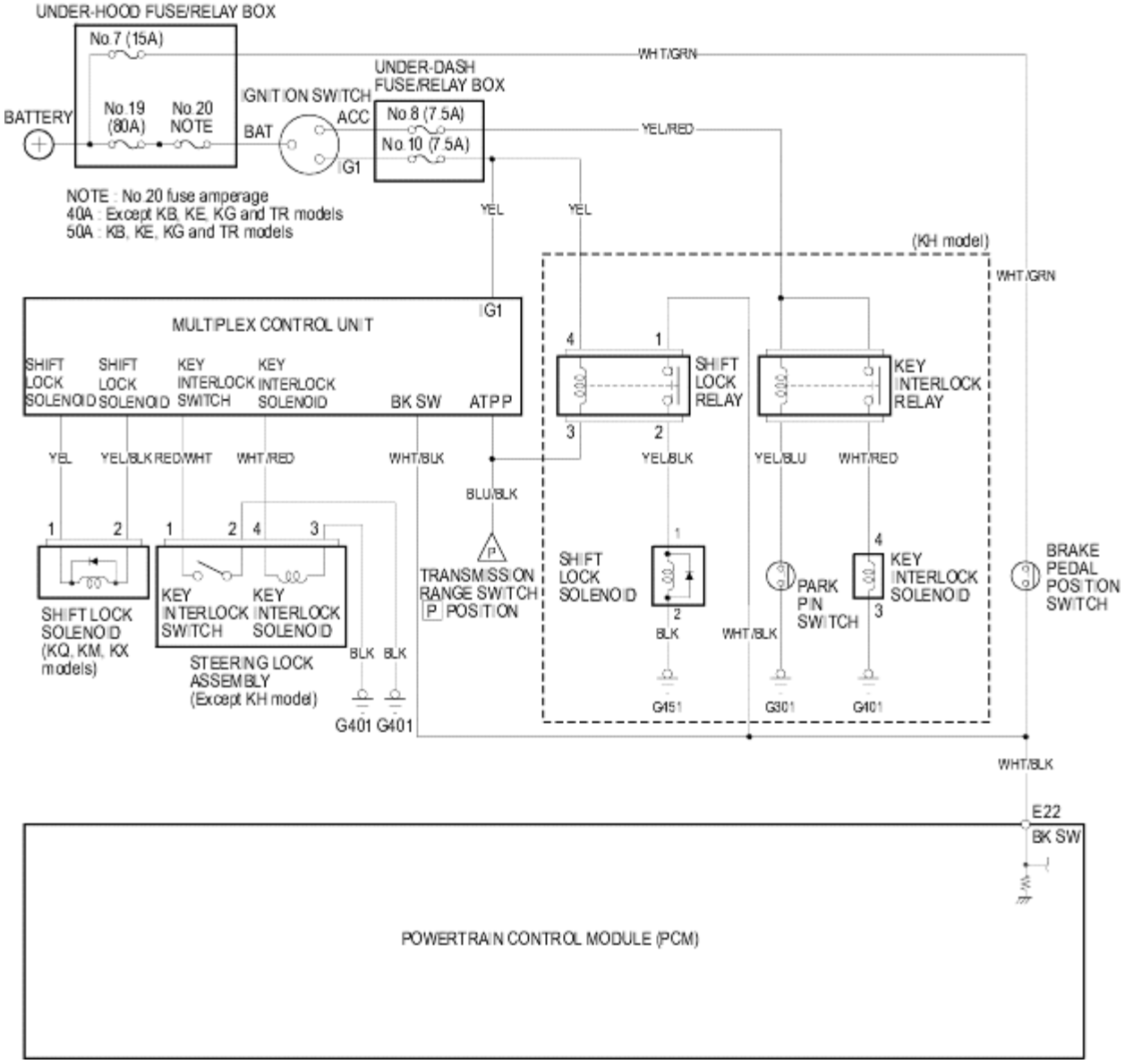


1. BRAKE PEDAL POSITION SWITCH
2. STEERING LOCK ASSEMBLY
   KEY INTERLOCK SOLENOID
   KEY INTERLOCK SWITCH
   Test, page 14-168
3. SHIFT LOCK SOLENOID
   Test, page 14-169
   Replacement, page 14-170
4. POWERTRAIN CONTROL MODULE (PCM)

A/T Interlock System

Circuit Diagram

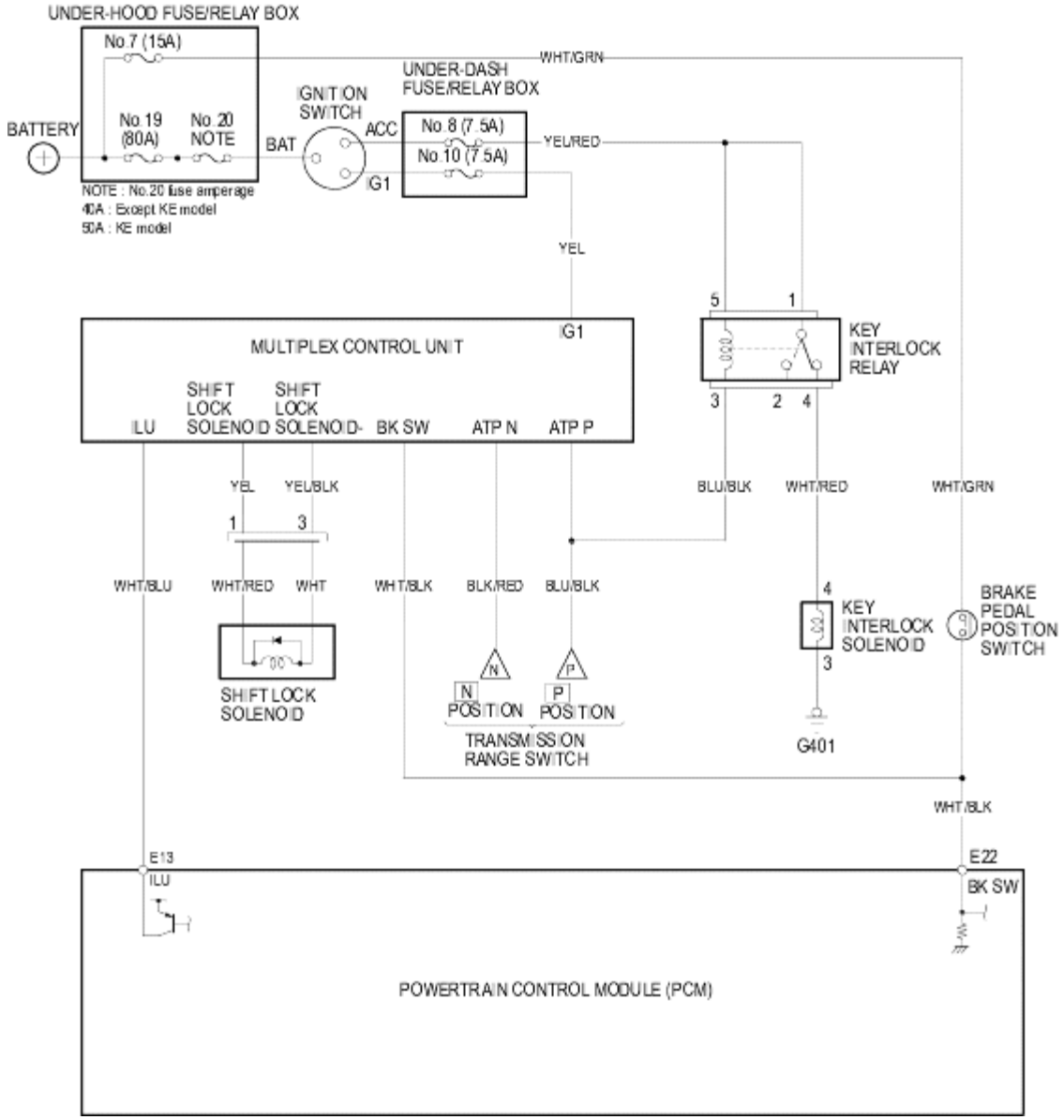
4-door Model



A/T Interlock System

Circuit Diagram (cont'd)

5-door Model



A/T Interlock System

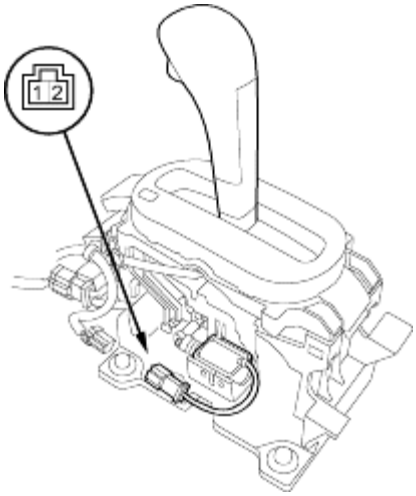
Key Interlock Solenoid Test

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. Remove the driver's dashboard lower cover (see page 20-75).
   2. Remove the lower steering column cover.
   3. Turn the ignition switch ON (II) and measure the voltage between the No. 4 terminal (WHT/RED) of the steering lock assembly connector and body ground while pulling up on the shift lock lever. There should be battery voltage.
      - If there is no battery voltage, go to step 4.
      - If there is no battery voltage, disconnect the steering lock assembly connector. Check the BLK wire for continuity to ground. If there is no continuity to ground, repair the open in the BLK wire. If there is continuity to ground, replace the key interlock solenoid.
2. 4. Turn the ignition switch OFF.
   5. Remove the under-dash fuse/relay box and disconnect the multiplex control unit 8P connector.
   6. Check for continuity on the WHT/RED wire between the No. 4 terminal of the steering lock assembly connector and the No. 1 terminal of the multiplex control unit 8P connector. There should be continuity.
      - If there is continuity, go to step 7.
      - If there is no continuity, repair the open in the WHT/RED wire.
3. 7. Check for continuity between the WHT/RED wire and body ground. There should be no continuity.
      - If there is continuity, go to step 8.
      - If there is continuity, repair the short in the WHT/RED wire.
4. 8. Test the park pin switch (see page 14-170).
      - If the park pin switch is OK, inspect the related multiplex control unit(under-dash fuse/relay box) connectors. If they are OK, substitute a known-good multiplex control unit and recheck.
      - If the park pin switch is faulty, replace it.

4-door Model (KQ, KM KX and KH Models)

1. 1. Remove the centre console panel and centre console (see page 20-73).
   2. Disconnect the shift lock solenoid connector (2P).



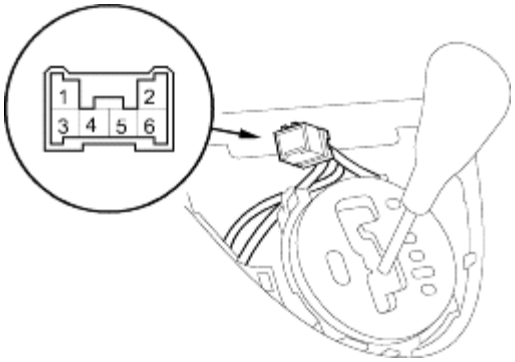
2. 3. Connect the No. 1 terminal of the shift lock solenoid connector (2P) to the battery positive terminal and connect the No. 2 terminal to the battery negative terminal.
   4. Check that the shift lever can be moved from the P position. Release the battery terminals from the shift lock solenoid connector. Move the shift lever back to the P position and make sure it locks.
      NOTE: Do not connect power to the No. 2 terminal (reverse polarity) or you will damage the diode inside the solenoid.
   5. Check that the shift lock releases when the shift lock release is pushed and check that it locks when the shift lock release is released.
   6. If the shift lock solenoid does not work properly, replace it.

A/T Interlock System

Shift Lock Solenoid Test (cont'd)

5-door Model

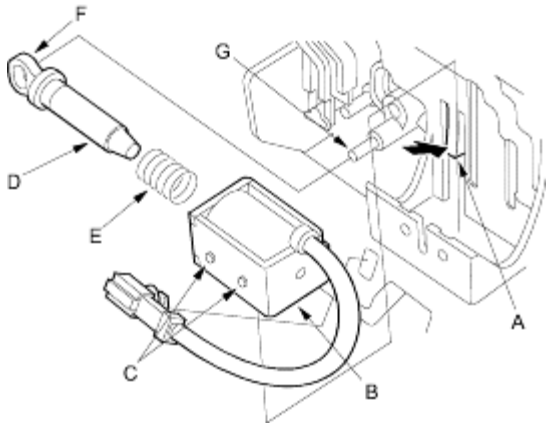
1. 1. Remove the shift lever console panel.
   2. Remove the shift lock solenoid connector from the shift lever bracket base, then disconnect the shift lock solenoid connector.



2. 3. Connect the No. 1 terminal of the shift lock solenoid connector to the battery positive terminal and connect the No. 3 terminal to the battery negative terminal.
   4. Check that the shift lever can be moved from the P position. Release the battery terminals from the shift lock solenoid connector. Move the shift lever back to the P position and make sure it locks.
   NOTE: Do not connect power to the No. 3 terminal (reverse polarity) or you will damage the diode inside the solenoid.
   5. Check that the shift lock releases when the shift lock release is pushed and check that it locks when the shift lock release is released.
   6. If the shift lock solenoid does not work, replace it.

4-door Model (KQ, KM, KX and KH Models)

1. 1. Remove the centre console panel and centre console (see page 20-73).
   2. Disconnect the shift lock solenoid connector (2P) and remove it from the shift lever bracket base.
   3. Push the lock tab (A), pry the shift lock solenoid (B) to clear the projected tips (C) with a screwdriver and remove the shift lock solenoid.



2. 4. Install the shift lock solenoid plunger (D) and plunger spring (E) in the new shift lock solenoid.
   5. Install the shift lock solenoid by aligning the joint (F) of the shift lock solenoid plunger with the tip (G) of the shift lock stop.
   6. Connect the shift lock solenoid connector and install it on the shift lever bracket base.
   7. Install the centre console and console panel (see page 20-73).

Automatic Transmission
Symptom Troubleshooting Index (cont'd)

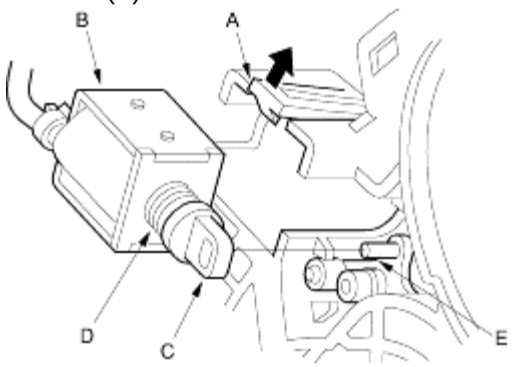
Symptom	Probable cause(s)	Notes
Harsh upshift: 2nd to 3rd gear	1. 3rd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 2nd accumulator defective 6. 2nd orifice control valve defective 7. Foreign material in main orifice 8. Torque converter clutch solenoid valve defective 9. Mainshaft speed sensor defective 10. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 2nd and 3rd clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.
Harsh upshift: 3rd to 4th gear	1. 4th clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 3rd accumulator defective 6. 3-4 orifice control valve defective 7. Foreign material in main orifice 8. Torque converter clutch solenoid valve defective 9. Mainshaft speed sensor defective 10. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 3rd and 4th clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.

A/T Interlock System

Shift Lock Solenoid Replacement (cont'd)

5-door Model

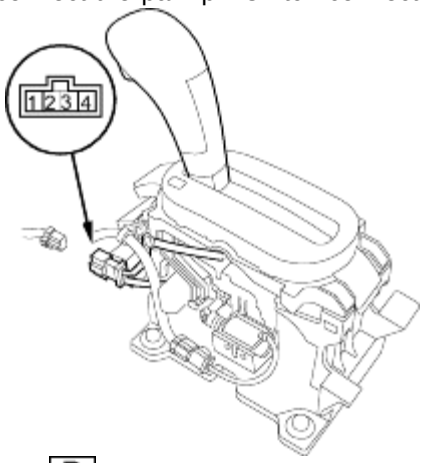
1. 1. Remove the shift assembly (see page 14-138).
   2. Remove the D3 switch and A/T gear position indicator panel light socket, then remove the indicator light bulb from the socket.
   3. Pull the lock tab (A) up, then remove the shift lock solenoid (B).



2. 4. Install the shift lock solenoid plunger (C) and plunger spring (D) in the new shift lock solenoid.
   5. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip (E) of the shift lock/reverse lock stop.
   6. Install the D3 switch in the shift lever bracket base.
   7. Install the A/T gear position indicator panel light bulb in the socket, then install the indicator panel light socket in the indicator panel.
   8. Install the shift lever assembly (see page 14-141).

KH Model

1. 1. Remove the centre console panel and centre console (see page 20-73).
   2. Disconnect the park pin switch connector (4P).



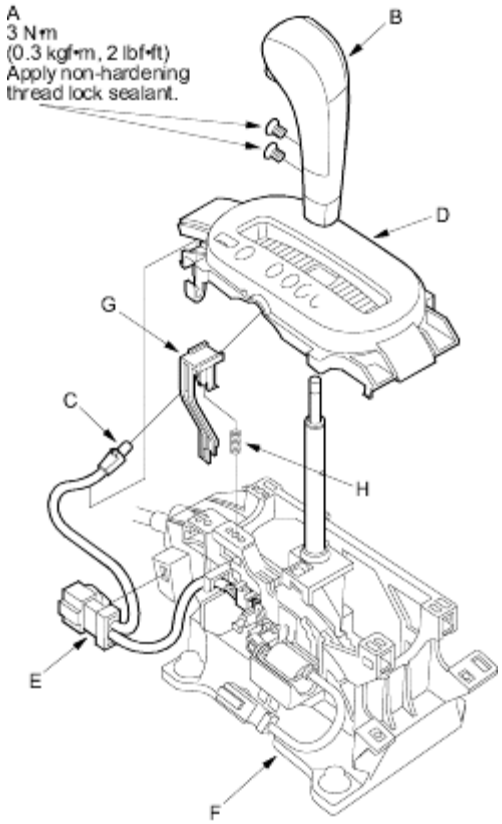
2. 3. Shift to P position, then check for continuity between the No. 3 and No. 4 terminals. There should be no continuity.
   4. Shift out of P position and check for continuity between terminals No. 3 and No. 4. There should be continuity.
   5. If the park pin switch is faulty, replace it.

A/T Interlock System

Park Pin Switch Replacement

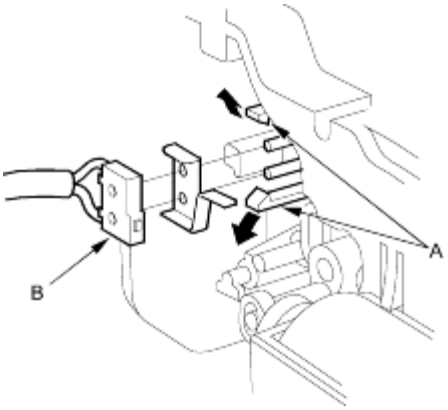
KH Model

1. 1. Remove the centre console panel and centre console (see page 20-73).
   2. Remove the screws (A), then remove the shift lever knob (B).



2. 3. Remove the A/T gear position indicator panel light (C) from the A/T gear position indicator panel.
   4. Remove the A/T gear position indicator panel and panel bracket as an assembly (D).
   5. Disconnect the park pin switch connector (4P) (E) and remove it from the shift lever bracket base (F).
   6. Remove the shift lock release (G) and spring (H).

1. 7. Open the lock tabs (A) on the shift lever bracket base, then remove the park pin switch (B).

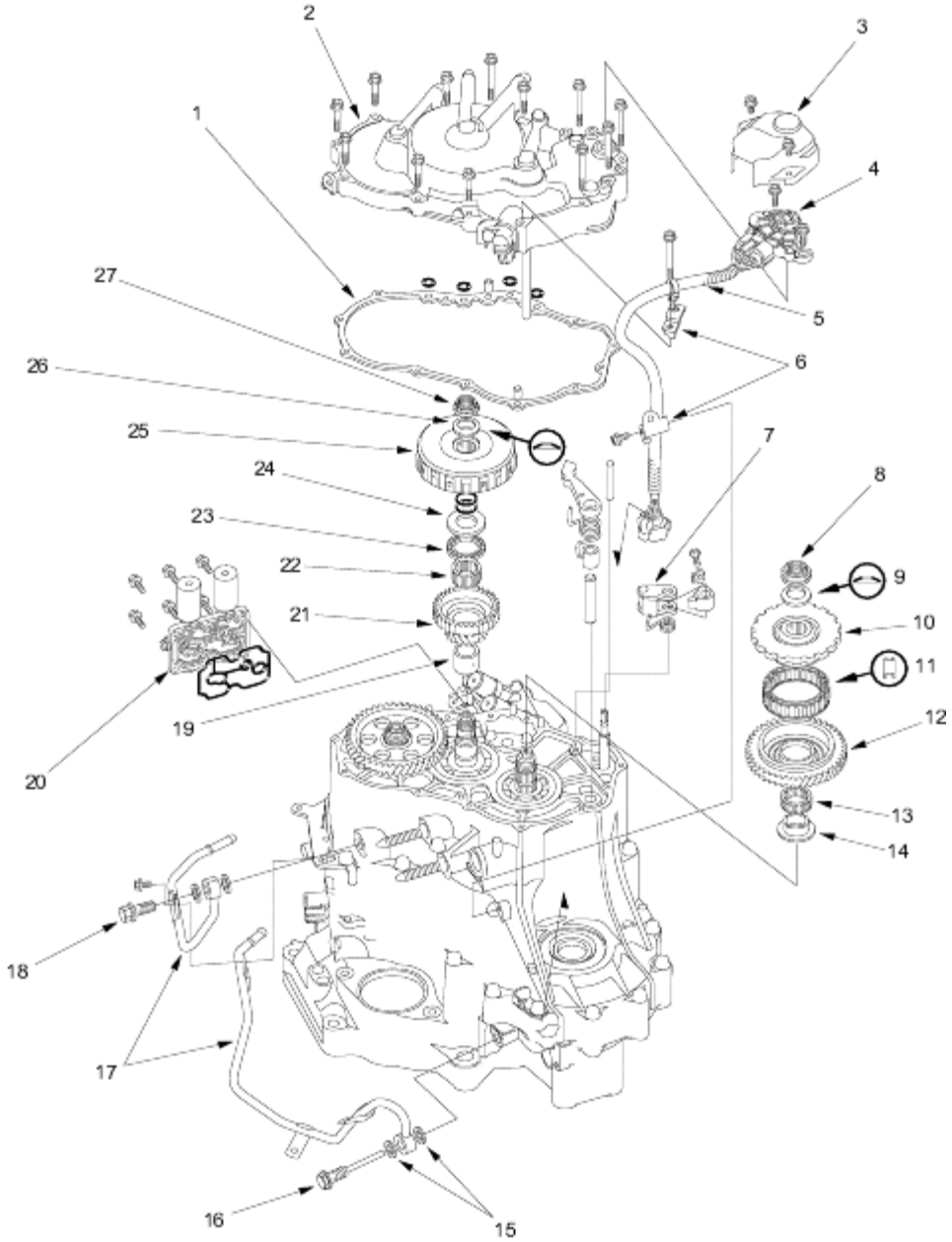


2. 8. Install the new park pin switch.
   9. Install the removed parts in the reverse order of removal.

Transmission End Cover

End Cover, 1st Gears and 1st Clutch Removal

Exploded View



1. END COVER GASKET Replace.
2. END COVER
3. TRANSMISSION RANGE SWITCH COVER
4. TRANSMISSION RANGE SWITCH
5. TRANSMISSION RANGE SWITCH HARNESS
6. HARNESS CLAMPS
7. PARK LEVER
8. COUNTERSHAFT Replace.
9. CONICAL SPRING WASHER Replace
10. PARK GEAR
11. ONE-WAY CLUTCH
12. COUNTERSHAFT 1ST GEAR
13. NEEDLE BEARING
14. COUNTERSHAFT 1ST GEAR COLLAR
15. SEALING WASHERS Replace.
16. LINE BOLT
17. ATF COOLER LINES
18. LINE BOLT
19. MAINSHAFT 1ST GEAR COLLAR
20. A/T CLUTCH PRESSURE CONTROL SOLENOID VALVES A and B
21. MAINSHAFT 1ST GEAR
22. NEEDLE BEARING
23. THRUST NEEDLE BEARING
24. THRUST WASHER
25. 1ST CLUTCH ASSEMBLY
26. CONICAL SPRING WASHER Replace.
27. MAINSHAFT LOCKNUT Replace.

Transmission End Cover

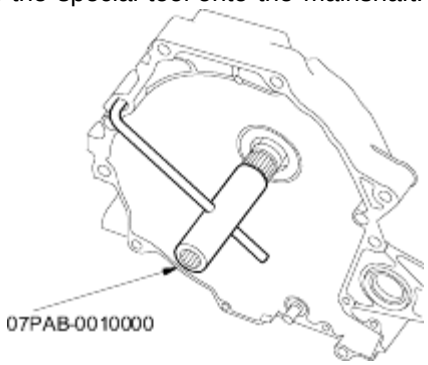
End Cover, 1st Gears and 1st Clutch Removal (cont'd)

Special Tools Required

Mainshaft holder set, 07PAB-0010000

NOTE: Refer to the Exploded View as needed during the following procedure.

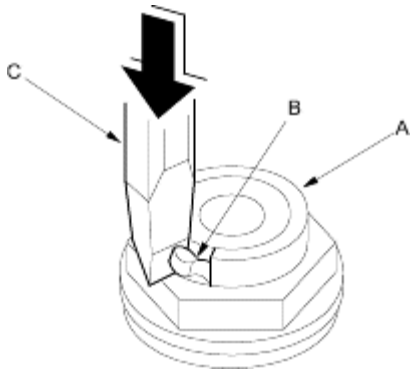
1. 1. Remove the transmission range switch cover.
   2. Remove the transmission range switch harness clamps, then remove the transmission range switch.
   3. Remove the 12 bolts securing the end cover, then remove the end cover.
   4. Slip the special tool onto the mainshaft.



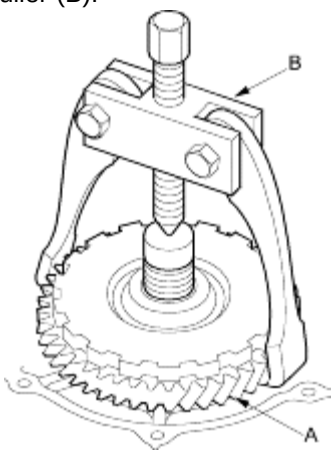
2. 5. Engage the park pawl with the park gear.
   6. Cut the lock tabs (A) of the mainshaft and countershaft locknuts (B) using a chisel (C). Then remove the locknuts and conical spring washers from both shafts.

NOTE:

- Mainshaft and countershaft locknuts have left-hand threads.
- Clean the old countershaft locknut; it is used to install the press fit park gear on the countershaft.
- Keep all of the chiselled particles out of the transmission.



1. 7. Remove the special tool from the mainshaft.
2. 8. Remove the 1st clutch and mainshaft 1st gear as an assembly and remove the 1st gear collar.
   9. Remove the park pawl, park pawl spring, park pawl shaft and stop shaft.
   10. Remove the park lever from the control shaft.
   11. Remove the park gear, one-way clutch and countershaft 1st gear assembly (A) using a universal 2 jaw puller (B).



3. 12. Remove the needle bearing and countershaft 1st gear collar.
   13. Remove the ATF cooler lines.
   14. Remove the A/T clutch pressure control solenoid valves A and B, if necessary.

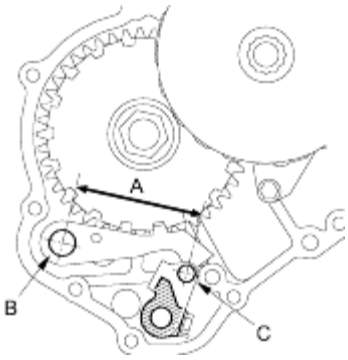
Transmission End Cover

Park Lever Stop Inspection and Adjustment

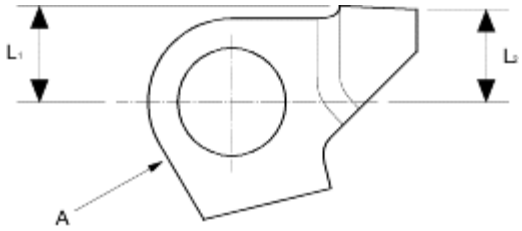
1. 1. Set the park lever in the P position.
2. 2. Measure the distance (A) between the park pawl shaft (B) and the park lever roller pin (C).

STANDARD:

72.9-73.9 mm (2.87-2.91 in.)



1. 3. If the measurement is out of tolerance, select and install the appropriate park lever stop (A) from the table below.



PARK LEVER STOP

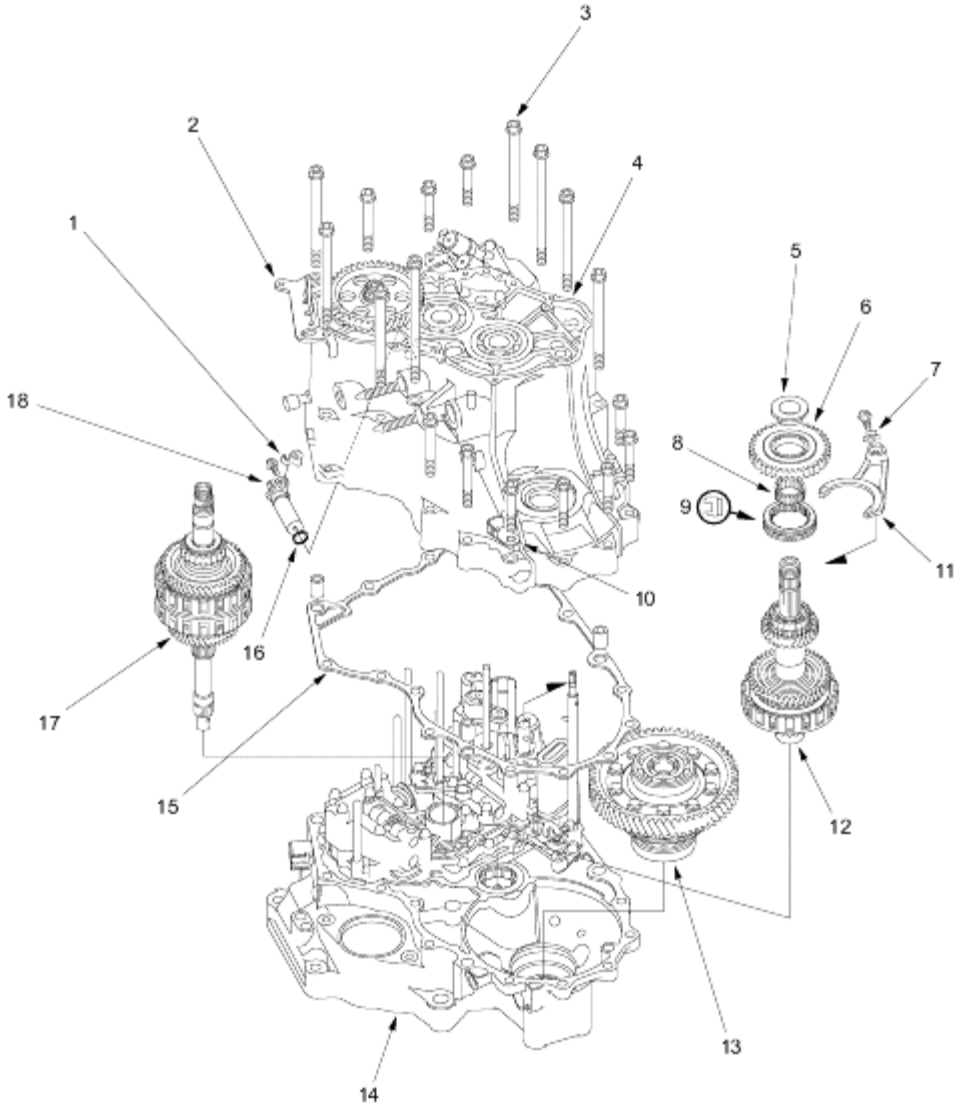
Mark	Part Number	L1	L2
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

2. 4. After replacing the park lever stop, make sure the distance is within tolerance.

Transmission Housing

Housing and Shaft Assemblies Removal

Exploded View



1. MAINSHAFT SPEED SENSOR WASHER
   (equipped on SLXA transmission)
2. TRANSMISSION HANGER
3. TRANSMISSION HOUSING MOUNTING BOLT, 10 x 1.5 mm
4. TRANSMISSION HOUSING
5. REVERSE GEAR COLLAR
6. COUNTERSHAFT REVERSE GEAR
7. LOCK WASHER
   Replace.
8. NEEDLE BEARING
9. REVERSE SELECTOR
10. CONNECTOR BRACKET
11. REVERSE SHIFT FORK
12. COUNTERSHAFT SUB-ASSEMBLY
13. DIFFERENTIAL ASSEMBLY
14. TORQUE CONVERTER HOUSING
15. TRANSMISSION HOUSING GASKET
    Replace.
16. O-RING
    Replace.
17. MAINSHAFT SUB-ASSEMBLY
18. MAINSHAFT SPEED SENSOR

Transmission Housing

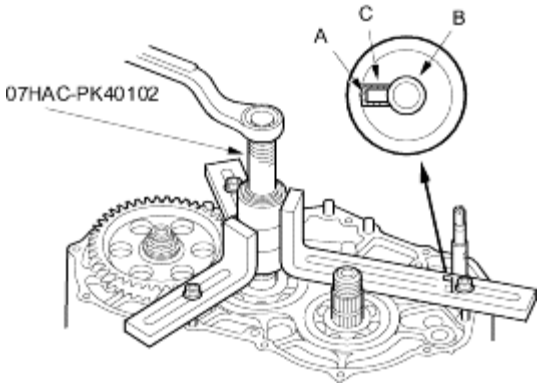
Housing and Shaft Assemblies Removal (cont'd)

Special Tools Required

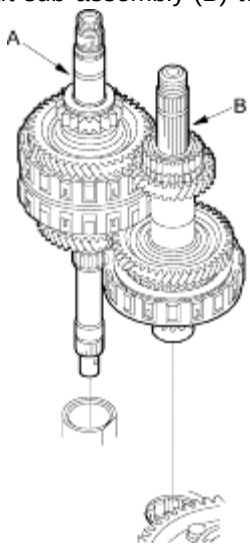
Housing puller, 07HAC-PK40102

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the mainshaft speed sensor and sensor washer.
   NOTE: The mainshaft speed sensor washer is equipped on the SLXA transmission; the BMXA transmission does not have the washer.
2. Remove the transmission housing mounting bolts, transmission hanger and connector bracket.
3. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.
   NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.



4. Install the special tool over the mainshaft, then remove the transmission housing.
   NOTE: If the top arm of your housing puller is too short, replace it with Housing Puller Arm, 205 mm, 07SAC-P0Z0101.
5. Remove the countershaft reverse gear collar, countershaft reverse gear and needle bearing.
6. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.
7. Remove the mainshaft sub-assembly (A) and countershaft sub-assembly (B) together.



8. Remove the differential assembly.

Transmission Housing

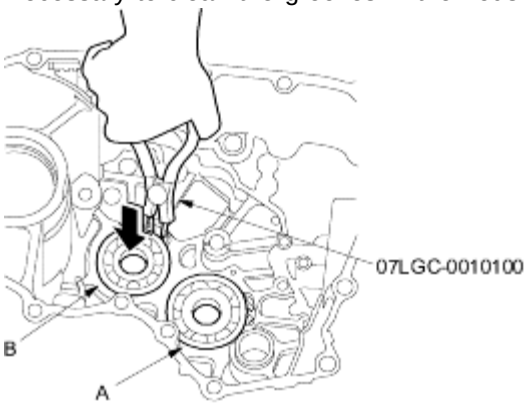
Bearing Removal and Installation

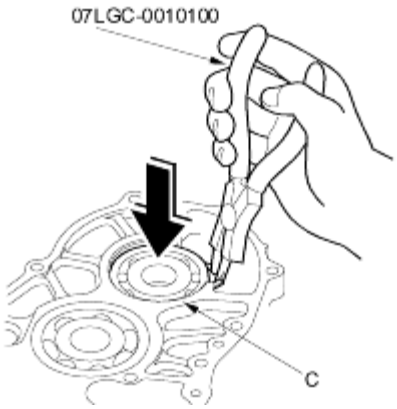
Special Tools Required

- Snap ring pliers, 07LGC-0010100
- Handle driver, 07949-3710001
- Handle driver, 07749-0010000
- Driver attachment, 62 x 68 mm, 07746-0010500
- Driver attachment, 72 x 75 mm, 07746-0010600

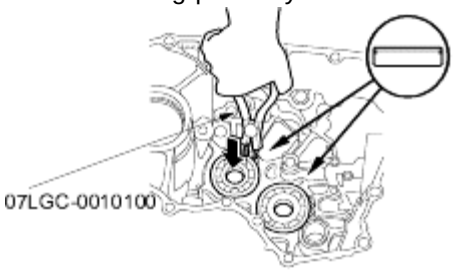
NOTE: Coat all parts with ATF before assembly.

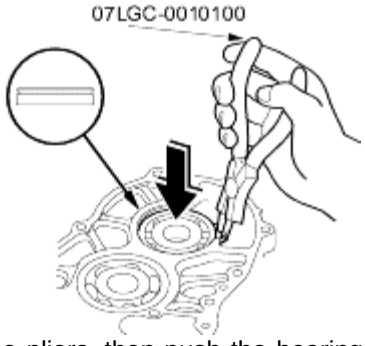
1. 1. To remove the mainshaft bearing (A), countershaft bearing (B) and sub-shaft bearing (C) from the transmission housing, expand each snap ring with the snap ring pliers, then push the bearing out.
   NOTE: Do not remove the snap ring unless it's necessary to clean the grooves in the housing.



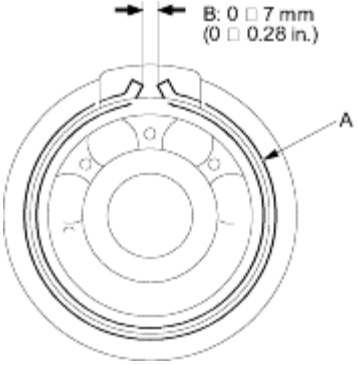


1. 2. Install the bearings in the direction shown.
2. 3. Expand each snap ring with the snap ring pliers and install the bearing part-way into the housing.





3. 4. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.
   5. After installing the bearings verify that the snap rings (A) are seated in the bearing and housing grooves and that the ring end gaps (B) are correct.

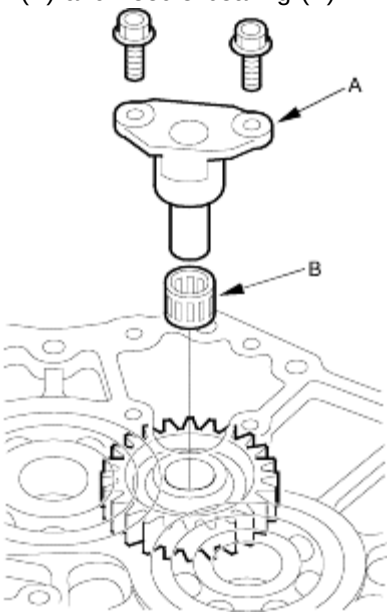


Transmission Housing

Reverse Idler Gear Removal and Installation

Removal

1. 1. Remove the two bolts securing the reverse idler gear shaft holder, then remove the reverse idler gear shaft holder (A) and needle bearing (B).

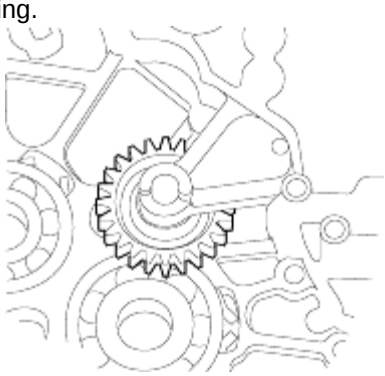


2. 2. Remove the reverse idler gear.

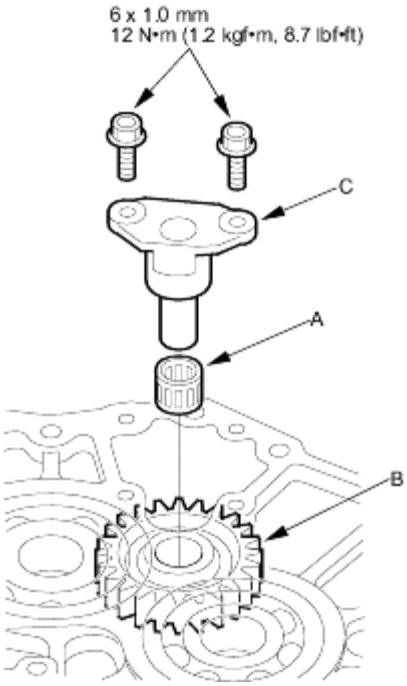


Installation

1. 1. Install the reverse idler gear in the transmission housing.



2. 2. Install the needle bearing (A) in the reverse idler gear (B).

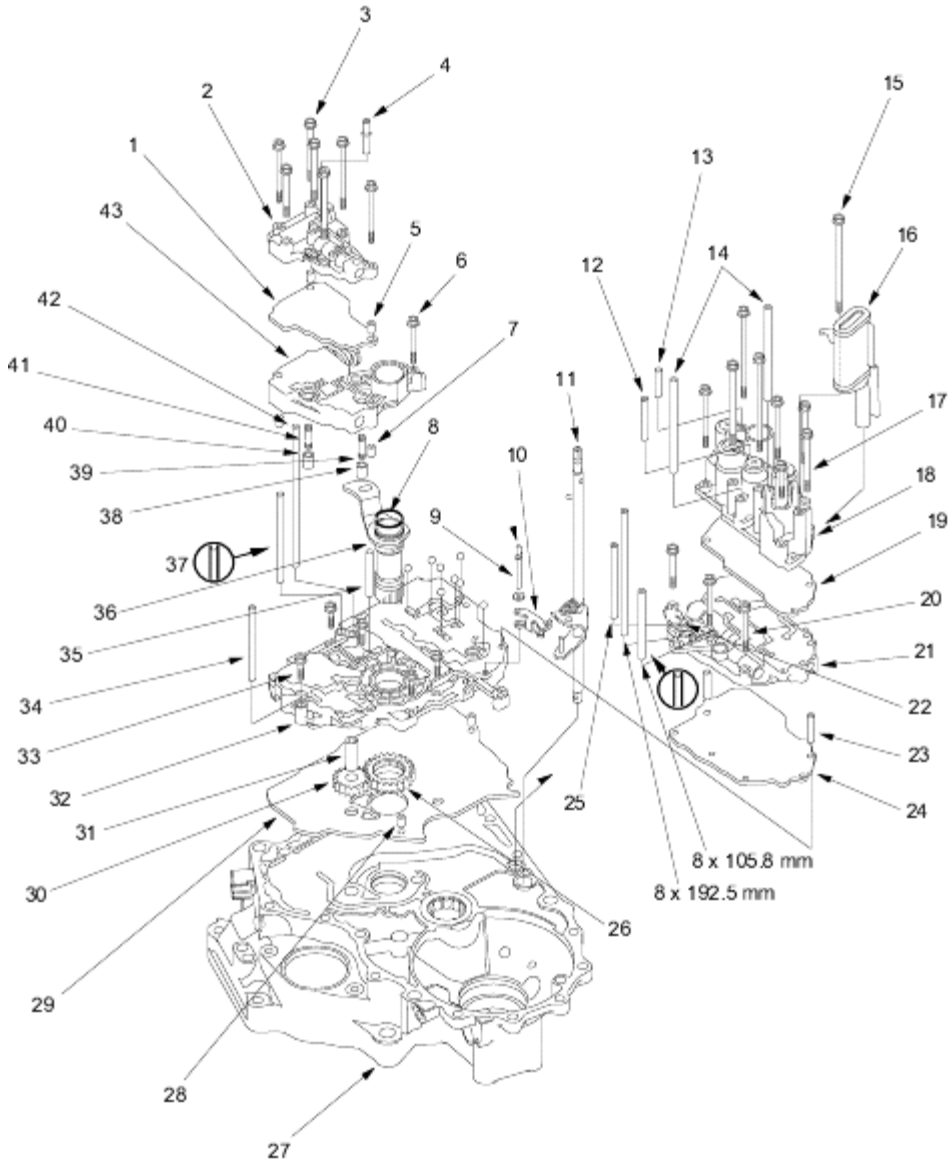


3. 3. Install the reverse idler gear shaft holder (C) into the transmission housing, then tighten the bolts.

Valve Body

Valve Bodies and ATF Strainer Removal

Exploded View



1. LOCK-UP SEPARATOR PLATE
2. LOCK-UP VALVE BODY
3. 6 x 1.0 mm, 7 Bolts
4. ATF FEED PIPE (7-position)
5. DOWEL PIN
6. 6 X 1.0 mm, 1 Bolt
7. DOWEL PIN
8. O-RING Replace.
9. DETENT ARM SHAFT
10. WASHER
11. DETENT ARM
12. CONTROL SHAFT
13. ATF FEED PIPE 8 x 62 mm
14. ATF FEED PIPE 8 x 40 mm
15. ATF FEED PIPE 8 x 145 mm
16. 6 x 1.0 mm, 1 Bolt
17. ATF STRAINER
18. 6 x 1.0 mm, 8 Bolts
19. SERVO BODY
20. SERVO SEPARATOR PLATE
21. 6 x 1.0 mm, 3 Bolts
22. SECONDARY VALVE BODY
23. STOP SHAFT BRACKET
24. DOWEL PIN, 8 x 40 mm
25. SECONDARY SEPARATOR PLATE
26. ATF FEED PIPE, 8 x 118 mm
27. ATF PUMP DRIVE GEAR
28. TORQUE CONVERTER HOUSING
29. DOWEL PIN
30. MAIN SEPARATOR PLATE
31. ATF PUMP DRIVEN GEAR
32. ATF PUMP DRIVEN GEAR SHAFT
33. MAIN VALVE BODY
34. 6 x 1.0 mm, 5 Bolts
35. ATF FEED PIPE, 8 x 112 mm
36. STATOR SHAFT STOP
37. STATOR SHAFT
38. ATF FEED PIPE, 8 x 138.8 mm
39. TORQUE CONVERTER CHECK VALVE
40. TORQUE CONVERTER CHECK VALVE SPRING
41. COOLER RELIEF
42. COOLER RELIEF VALVE SPRING
43. ATF FEED PIPE, 8 x 220 mm, (7-position)
44. REGULATOR VALVE BODY

Automatic Transmission
Symptom Troubleshooting Index (cont'd)

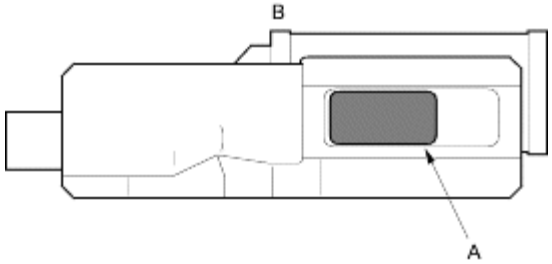
Symptom	Probable cause(s)	Notes
Harsh downshift: 2nd to 1st gear	1. A/T clutch pressure control solenoid valve A defective 2. CPC valve defective 3. 2nd accumulator defective 4. CPB valve defective 5. Foreign material in 2nd exhaust orifice 6. Mainshaft speed sensor defective 7. Countershaft speed sensor defective	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the 2nd clutch pressure. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation.
Harsh downshift: 3rd to 2nd gear	1. 2nd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. CPC valve defective 4. 3rd accumulator defective 5. Foreign material in separator plate orifice 6. CPB valve defective 7. Foreign material in 3rd exhaust orifice 8. Mainshaft speed sensor defective 9. Countershaft speed sensor defective 10. 3rd sub accumulator defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 2nd clutch pressure. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation.
Harsh downshift: 4th to 3rd gear	1. 3rd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. CPC valve defective 4. 4th accumulator defective 5. Foreign material in separator plate orifice 6. CPB valve defective 7. Foreign material in 4th exhaust orifice 8. Mainshaft speed sensor defective 9. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 3rd clutch pressure. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation.

Valve Body

Valve Bodies and ATF Strainer Removal (cont'd)

NOTE: Refer to the Exploded View as needed during the following procedure:

1. Remove the ATF feed pipes from the main valve body, secondary valve body, servo body and lock-up valve body.
2. Remove the ATF strainer (one bolt).
3. Remove the servo body (eight bolts), then remove the separator plate.
4. Remove the secondary valve body (three bolts) and stop shaft bracket, then remove the separator plate and dowel pins (two).
5. Remove the lock-up valve body (seven bolts), then remove the separator plate and dowel pins (two).
6. Remove the regulator valve body (one bolt) and dowel pins (two).
7. Remove the torque converter check valve and spring.
8. Remove the cooler relief valve spring and cooler relief valve.
9. Remove the stator shaft and stator shaft stop.
10. Unhook the detent spring from the detent arm, then remove the detent arm shaft,detent arm and control shaft.
11. Remove the main valve body (five bolts).
12. Remove the ATF pump driven gear shaft, then remove the ATF pump gears.
13. Remove the main separator plate and dowel pins (two).
14. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



15. Test the ATF strainer by pouring clean ATF through the inlet opening and replace it if it is clogged or damaged.
16. Clean the filter part on the 105.8 mm ATF feed pipe and the 138.8 mm pipe thoroughly with compressed air.
17. Check that the filters are not clogged and that the opening is not damaged. Replace the feed pipe if the filter is clogged or damaged.

Valve Body

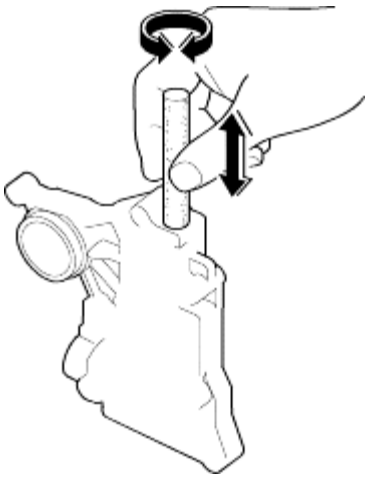
Valve Body Repair

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

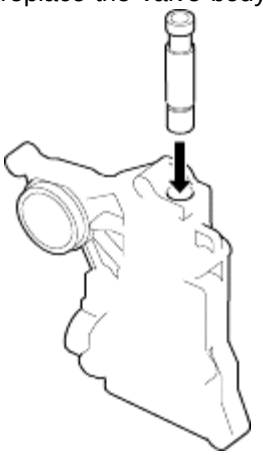
1. 1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.
   2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
   3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
   4. Roll up half a sheet of ATF-soaked #600 paper and insert it in the valve bore of the sticking valve.

   Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminium and doesn't require much polishing to remove any burrs.



1. 5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
2. 6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest. If the valve still sticks, replace the valve body.

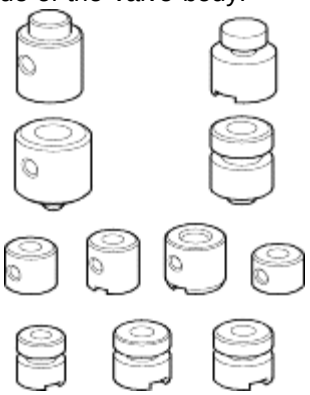


3. 7. Remove the valve and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

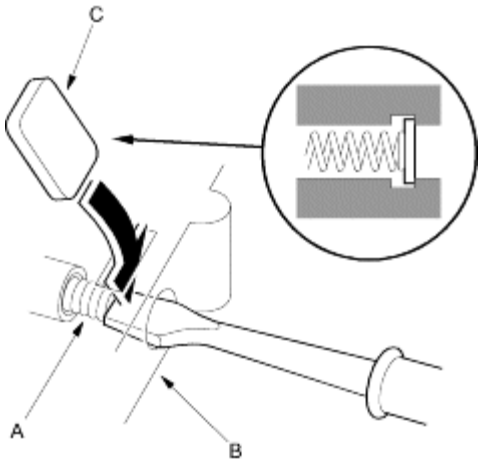
Valve Body

Valve Body Valve Installation

1. 1. Coat all parts with ATF before assembly.
2. 2. Install the valves and springs in the sequence shown for the main valve body (see page 14-183), regulator valve body (see page 14-186), secondary valve body (see page 14-187), servo body (see page 14-188) and lock-up valve body (see page 14-189. Refer to the following valve cap illustrations and install each valve cap so the end shown facing up will be facing the outside of the valve body.



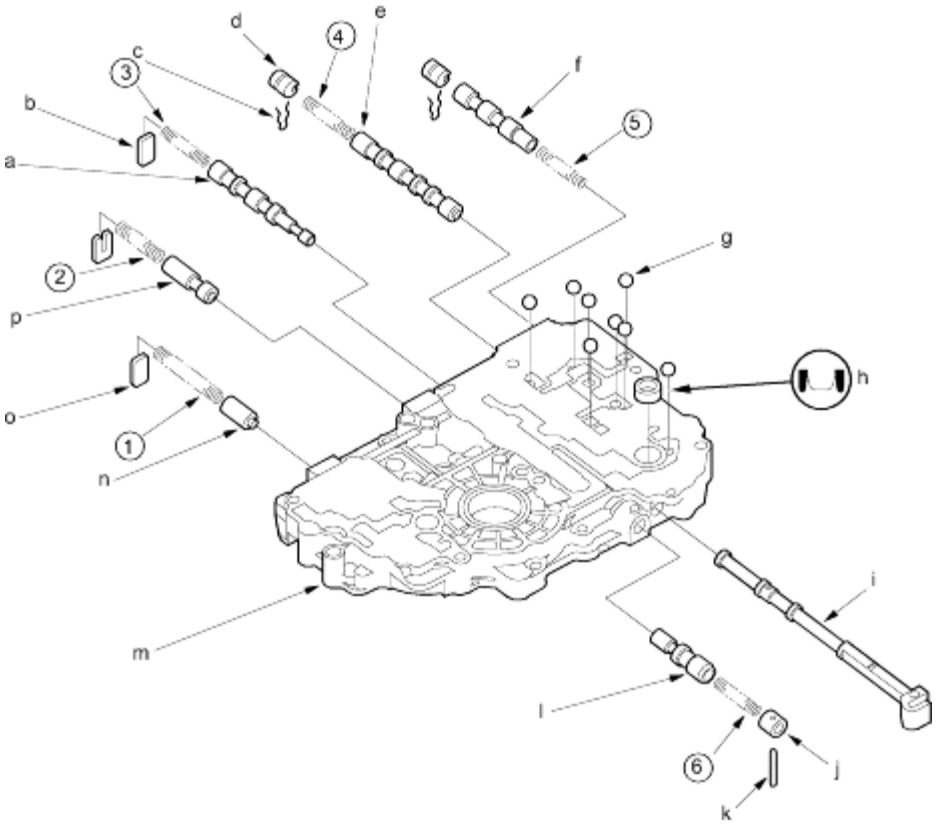
3. 3. Install all the springs and seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



Valve Body

Main Valve Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air. Blow out all passages.
   2. Do not use a magnet to remove the check balls, it may magnetise the balls.
   3. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see page 14-181).
   4. Replace the valve body as an assembly if any parts are worn or damaged.
   5. Coat all parts with ATF during assembly.
   6. Install the filter in the direction shown.

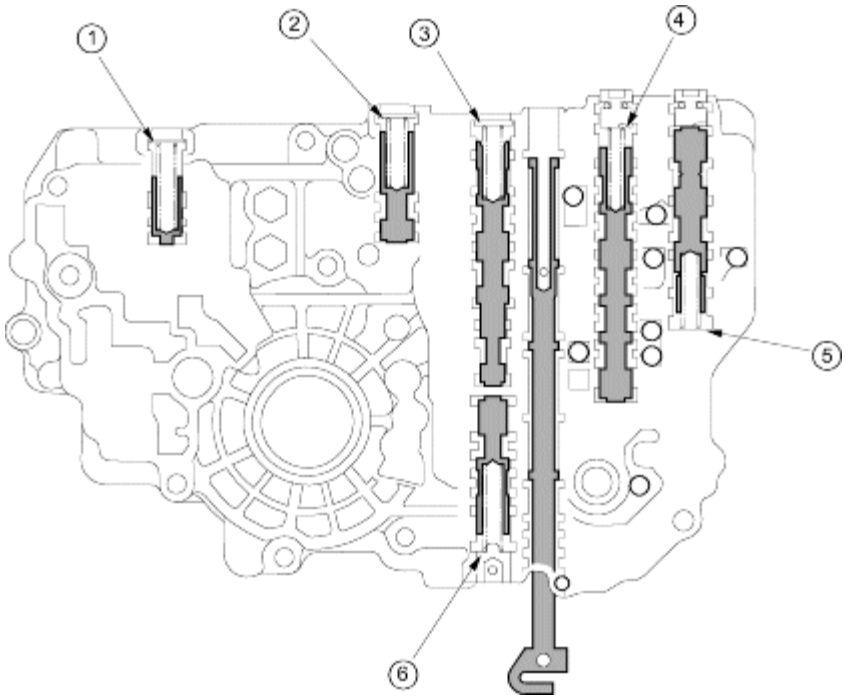


G.
- A. CPB VALVE
- B. SPRING SEAT
- C. VALVE CAP CLIP
- D. VALVE CAP
- E. 1-2 SHIFT VALVE
- F. 2ND ORIFICE CONTROL VALVE
- G. CHECK BALLS, 8
- H. FILTER
  Replace.
  Install in this direction.
- I. MANUAL VALVE
- J. VALVE CAP
- K. ROLLER
- L. SERVO CONTROL VALVE
- M. MAIN VALVE BODY
  Inspect for scoring and damage.
- N. RELIEF VALVE
- O. SPRING SEAT
- P. MODULATOR

Valve Body

Main Valve Body Disassembly, Inspection and Reassembly (cont'd)

Sectional View



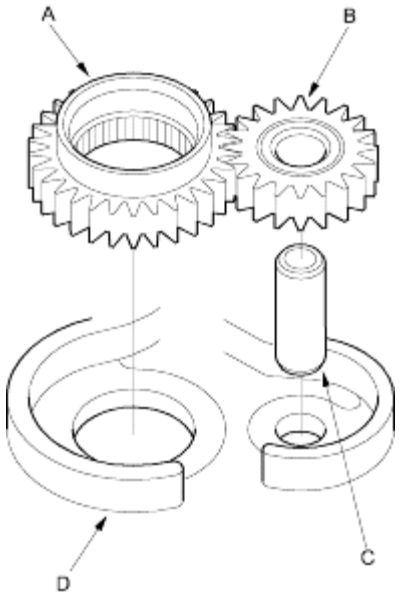
SPRING SPECIFICATIONS

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
(1)	Relief valve spring	1.1 (0.043)	8.6 (0.339)	37.1 (1.461)	13.4
(2)	Modulator valve spring	1.4 (0.055)	9.4 (0.370)	33.8 (1.331)	10.9
(3)	CPB valve spring	1.0 (0.039)	8.1 (0.319)	40.9 (1.610)	16.2
(4)	1-2 shift valve spring	0.9 (0.035)	7.6 (0.299)	41.3 (1.626)	16.3
(5)	2nd orifice control valve spring	0.7 (0.028)	6.6 (0.260)	34.8 (1.370)	22.0
(6)	Servo control valve spring	1.0 (0.039)	8.1 (0.319)	52.1 (2.051)	20.8

Valve Body

ATF Pump Inspection

1. 1. Install the ATF pump drive gear (A), driven gear (B) and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF and install the ATF pump driven gear with its grooved and chamfered side facing up.



1. 2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance:

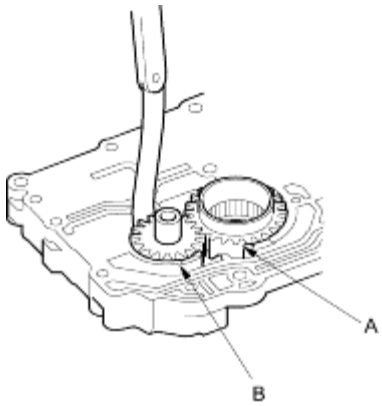
Standard (New):

ATF Pump Drive Gear

0.105-0.1325 mm (0.004-0.005 in.)

ATF Pump Driven Gear

0.035-0.0625 mm (0.0014-0.0025 in.)



2. 3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial)

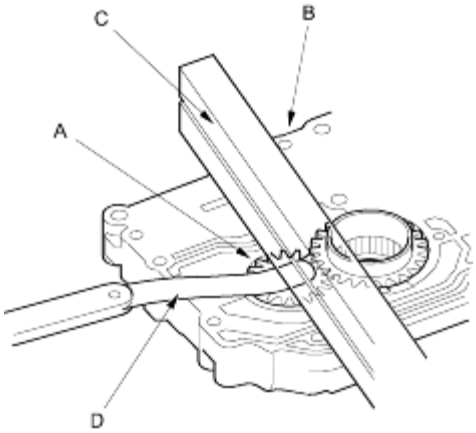
Clearance:

Standard (New):

0.03-0.06 mm (0.001-0.002 in.)

Service Limit:

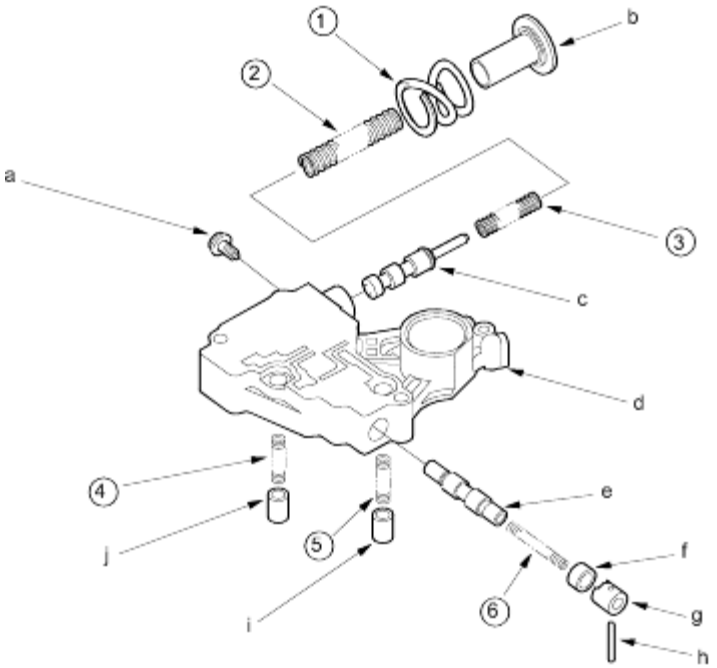
0.07 mm (0.003 in.)



Valve Body

Regulator Valve Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air. Blow out all passages.
   2. Do not use a magnet to remove the cooler relief valve (ball), it may magnetise the valve (ball).
   3. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see page 14-181).
   4. Replace the valve body as an assembly if any parts are worn or damaged.
   5. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
   6. Reassembly is the reverse of the disassembly.
   7. Coat all parts with ATF during assembly.
   8. Align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body and tighten the stop bolt.



I.
- A. STOP BOLT 6 x 1.0 mm, 12 Nm (1.2 kgf/m, 8.7 lbf/ft)
- B. REGULATOR SPRING CAP
- C. REGULATOR VALVE
- D. REGULATOR VALVE BODY Inspect for scoring and damage)
- E. LOCK-UP CONTROL VALVE
- F. VALVE SLEEVE
- G. VALVE CAP
- H. ROLLER
- I. TORQUE CONVERTER CHECK VALVE
- J. COOLER RELIEF VALVE (BALL)

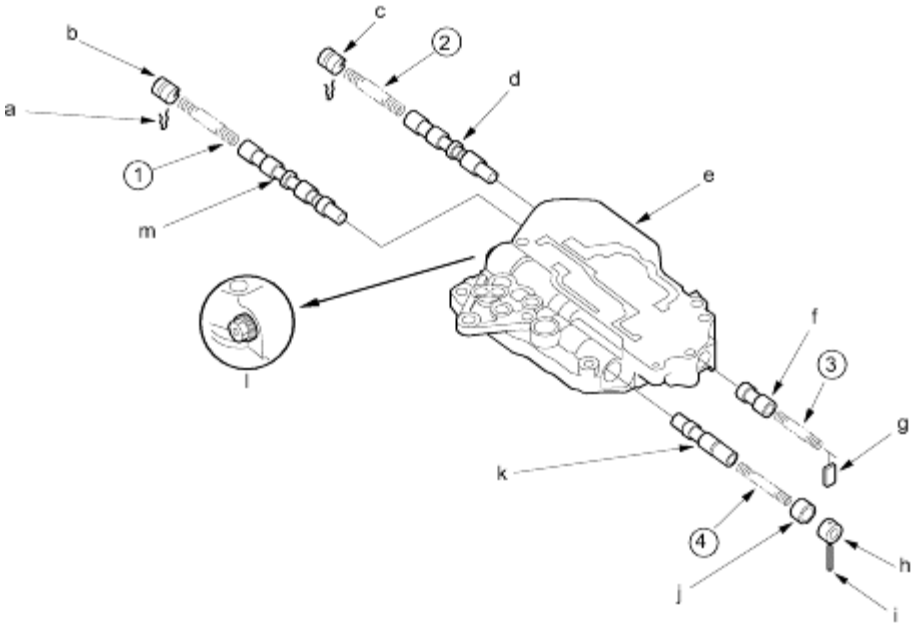
SPRING SPECIFICATIONS

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
(1)	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.9
(2)	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	77.4 (3.047)	15.2
(3)	Regulator valve spring B	1.8 (0.071)	9.6 (0.378)	44.0 (1.732)	12.6
(4)	Cooler relief valve spring	1.0 (0.039)	8.4 (0.331)	33.8 (1.331)	8.2
(5)	Torque converter check valve spring	1.0 (0.039)	8.4 (0.331)	33.8 (1.331)	8.2
(6)	Lock-up control valve spring	0.8 (0.031)	6.0 (0.236)	38.4 (1.512)	30.3

Valve Body

Secondary Valve Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air. Blow out all passages.
   2. Do not move the lock bolt of the CPC valve adjusting screw.
   3. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see page 14-181).
   4. Replace the valve body as an assembly if any parts are worn or damaged.
   5. Coat all parts with ATF during assembly.



F.
A. VALVE CAP CLIP
B. VALVE CAP
C. VALVE CAP
D. 2-3 SHIFT VALVE
E. SECONDARY VALVE BODY
Inspect for scoring and damage.
F. 4TH EXHAUST VALVE
G. SPRING SEAT
H. VALVE CAP
I. ROLLER
J. VALVE SLEEVE
K. 3-4 ORIFICE CONTROL VALVE
L. LOCK BOLT
Do not move
M. 3-4 SHIFT VALVE

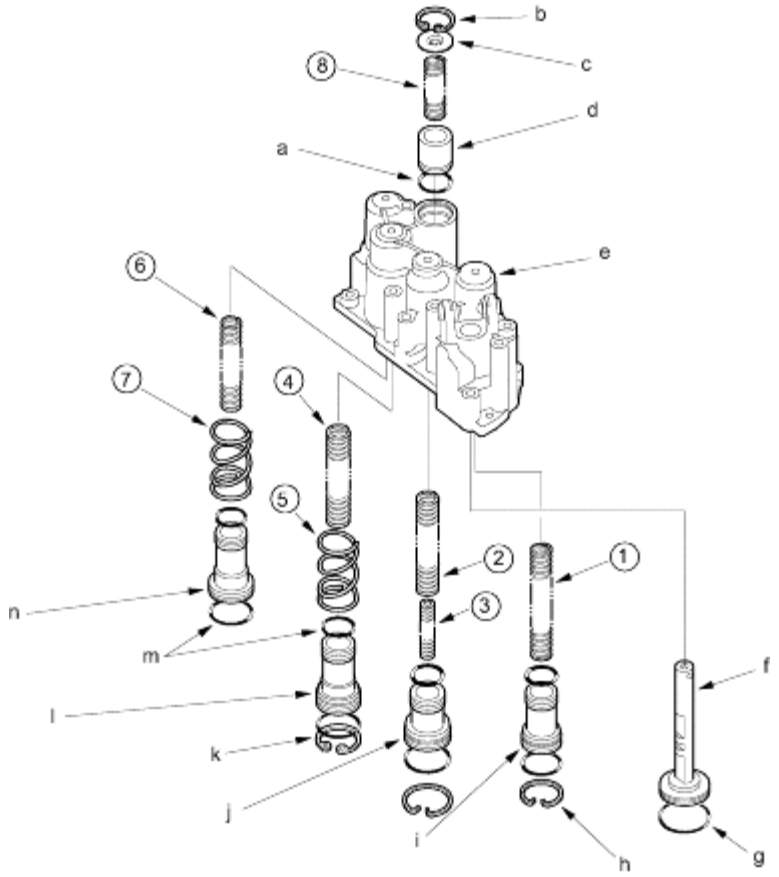
SPRING SPECIFICATIONS

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
(1)	3-4 shift valve spring	0.9 (0.035)	7.6 (0.299)	57.0 (2.244)	26.8
(2)	2-3 shift valve spring	0.9 (0.035)	7.6 (0.299)	57.0 (2.244)	26.8
(3)	4th exhaust valve spring	0.9 (0.035)	6.1 (0.240)	36.4 (1.433)	19.5
(4)	3-4 orifice control valve spring	0.7 (0.028)	6.6 (0.260)	37.5 (1.476)	24.6

Valve Body

Servo Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air. Blow out all passages.
   2. Replace the valve body as an assembly if any parts are worn or damaged.
   3. Coat all parts with ATF during assembly.
      NOTE: The 3rd sub accumulator is equipped on some types.



D.
A. O-RING, Replace
B. SNAP RING
C. ACCUMULATOR COVER
D. 3RD SUB ACCUMULATOR PISTON
E. SERVO BODY
Inspect for scoring and damage.
F. SERVO VALVE/SHIFT FORK SHAFT
G. O-RING, Replace
H. SNAP RING
I. 1ST ACCUMULATOR PISTON
J. 4TH ACCUMULATOR PISTON
K. SNAP RING
L. 3RD ACCUMULATOR PISTON
M. O-RING, Replace
N. 2ND ACCUMULATOR PISTON

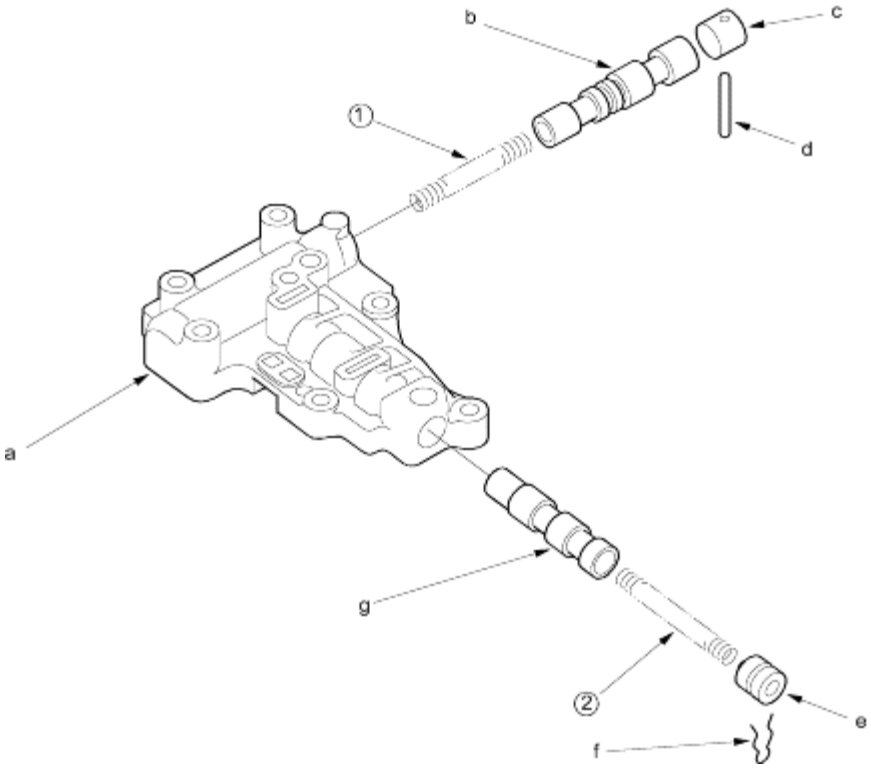
SPRING SPECIFICATIONS

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
(1)	1st accumulator spring	2.1 (0.083)	16.0 (0.630)	89.1 (3.508)	16.2
(2)	4th accumulator spring A	2.6 (0.102)	17.0 (0.669)	88.4 (3.480)	14.2
(3)	4th accumulator spring B	2.3 (0.091)	10.2 (0.402)	51.6 (2.031)	13.8
(4)	3rd accumulator spring A	2.8 (0.110)	17.5 (0.689)	94.3 (3.713)	15.6
(5)	3rd accumulator spring B	2.1 (0.083)	31.0 (1.220)	38.2 (1.504)	2.4
(6)	2nd accumulator spring C	2.2 (0.087)	14.5 (0.571)	68.0 (2.677)	13.9
(7)	2nd accumulator spring A	2.4 (0.094)	29.0 (1.142)	39.0 (1.535)	2.9
(8)	3rd sub accumulator spring	2.7 (0.106)	17.0 (0.669)	39.0 (1.535)	6.3

Valve Body

Lock-up Valve Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air. Blow out all passages.
   2. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see page 14-181).
   3. Replace the valve body as an assembly if any parts are worn or damaged.
   4. Coat all parts with ATF during assembly.



E.
A. LOCK-UP VALVE BODY
Inspect for scoring and damage.
B. LOCK-UP SHIFT VALVE
C. VALVE CAP
D. ROLLER
E. VALVE CAP
F. VALVE CAP CLIP
G. LOCK-UP TIMING VALVE

SPRING SPECIFICATIONS

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
(1)	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	73.7 (2.902)	32.0
(2)	Lock-up timing valve spring	0.9 (0.035)	8.1 (0.319)	80.7 (3.177)	54.2

Automatic Transmission
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Flares on upshifting: 2nd to 3rd gear	1. 3rd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 2nd accumulator defective 6. 2nd orifice control valve defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 2nd and 3rd clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.
Flares on upshifting: 3rd to 4th gear	1. 4th clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 3rd accumulator defective 6. 3-4 orifice control valve defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 3rd and 4th clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.

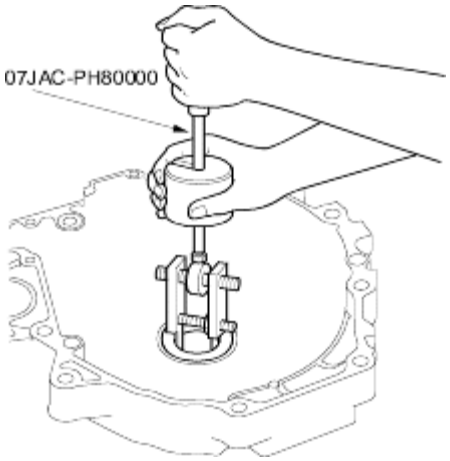
Torque Converter Housing

Mainshaft Bearing and Oil Seal Replacement

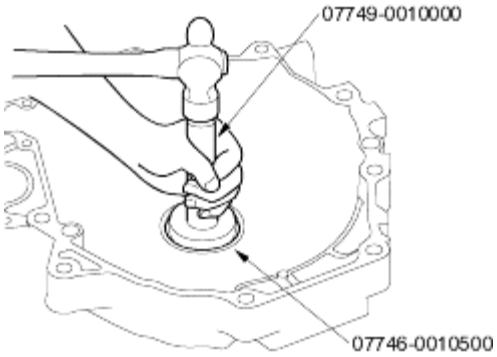
Special Tools Required

- Adjustable bearing remover set, 07JAC-PH80000
- Handle driver, 07749-0010000
- Driver attachment, 62 x 68 mm, 07746-0010500
- Driver attachment, 72 x 75 mm, 07746-0010600

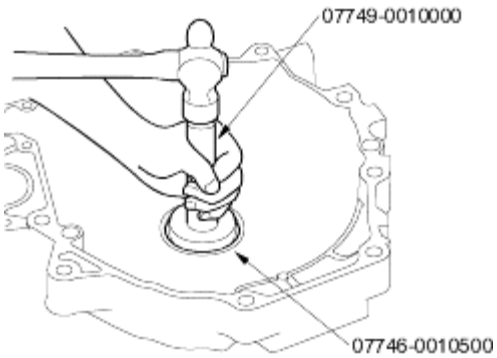
1. 1. Remove the mainshaft bearing and oil seal with the special tool.



2. 2. Install the new mainshaft bearing until it bottoms in the housing with the special tools.



1. 3. Install the new oil seal flush with the housing using special tools.



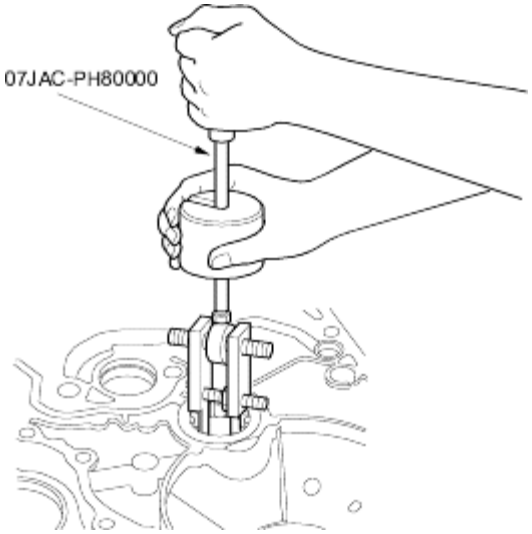
Torque Converter Housing

Countershaft Bearing Replacement

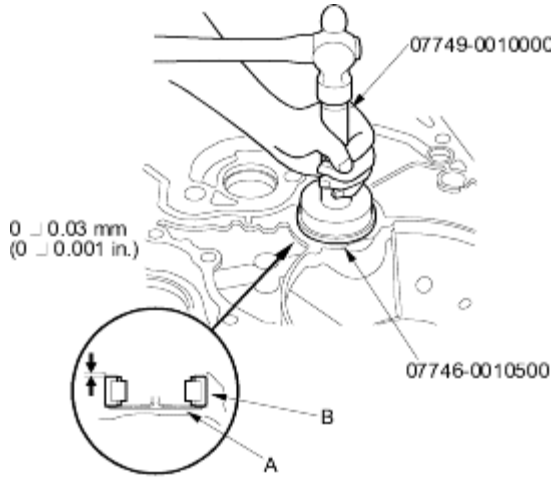
Special Tools Required

- Adjustable bearing remover set, 07JAC-PH80000
- Handle driver, 07749-0010000
- Driver attachment, 62 x 68 mm, 07746-0010500

1. 1. Remove the countershaft bearing with the special tool.



1. 2. Install the ATF guide plate (A).

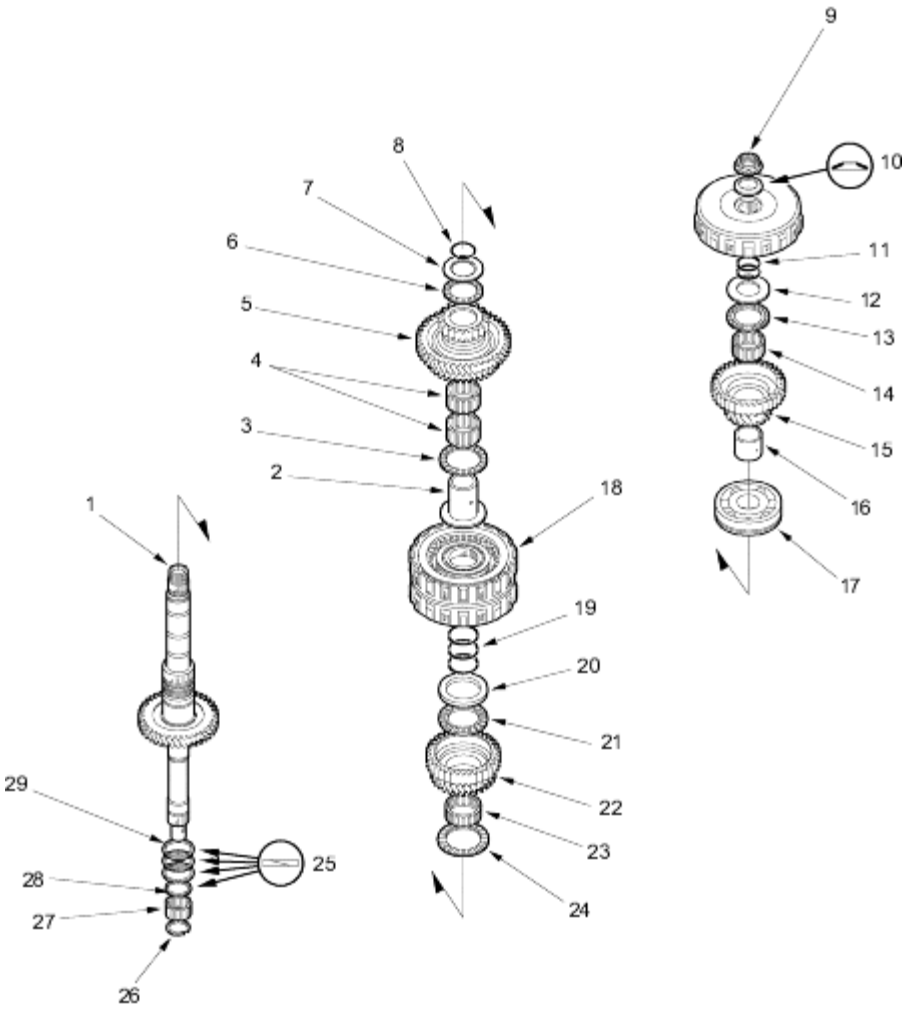


2. 3. Install the new countershaft bearing (B) in the housing with the special tools.

Shafts and Clutches

Mainshaft Disassembly, Inspection and Reassembly

1. 1. Lubricate all parts with ATF during assembly.



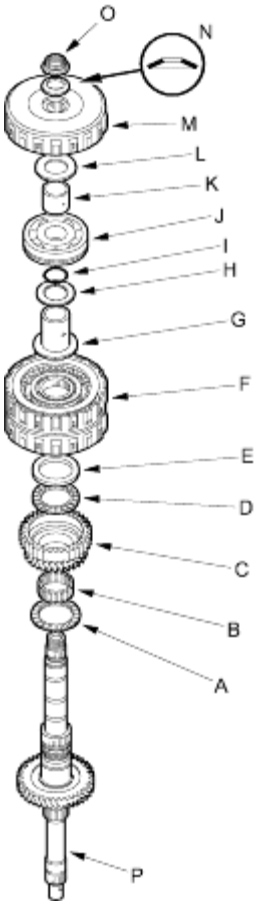
1. MAINSHAFT
2. 4TH GEAR COLLAR
3. THRUST NEEDLE BEARING
4. NEEDLE BEARING
5. 4TH GEAR
6. THRUST NEEDLE BEARING
7. THRUST WASHER
8. SNAP RING
9. LOCKNUT (FLANGE NUT)
   21 x 1.25 mm, 79 Nm (8.0 kgf/m, 58 lbf/ft)
   Replace.
   Left-hand threads.
10. CONICAL SPRING WASHER, Replace.
11. O-RINGS, Replace.
12. THRUST WASHER
13. THRUST NEEDLE BEARING
14. NEEDLE BEARING
15. 1ST GEAR
16. 1ST GEAR COLLAR
17. TRANSMISSION HOUSING BEARING
18. 2ND/4TH CLUTCH
19. O-RING, Replace
20. THRUST WASHER
    36.5 x 55 mm
    Selective part.
21. THRUST NEEDLE BEARING
22. 2ND GEAR
23. NEEDLE BEARING
24. THRUST NEEDLE BEARING
25. Install sealing ring mating surface as shown.
26. SET RING
27. NEEDLE BEARING
28. SEALING RING, 29 mm
29. SEALING RINGS, 35 mm

2. Check the clearance of the 2nd gear.
3. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
7. Install the conical spring washer in the direction shown.
8. Inspect the condition of the sealing rings. If the sealing rings are worn, distorted, or damaged, replace them (see page 14-194).

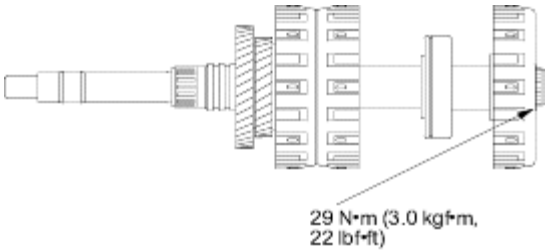
Shafts and Clutches

Mainshaft 2nd Gear Clearance Inspection

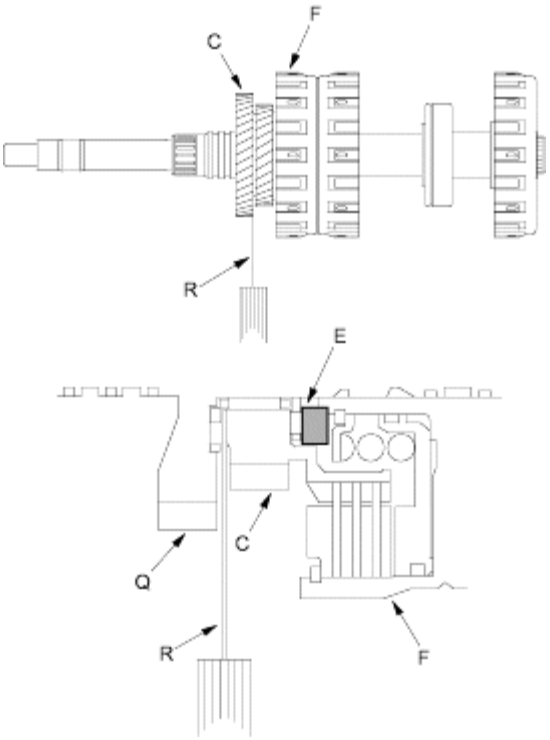
1. 1. Remove the mainshaft transmission housing bearing (see page 14-177).
2. 2. Assemble the thrust needle bearing (A), needle bearing (B), 2nd gear (C), thrust needle bearing (D), 36.5 x 55 mm thrust washer (E), 2nd/4th clutch (F), 4th gear collar (G), thrust washer (H), snap ring (I), transmission housing mainshaft bearing (J), 1st gear collar (K), thrust washer (L), 1st clutch (M), conical spring washer (N) and locknut (O) on the mainshaft (P).



1. 3. Tighten the locknut (A) to 29 Nm (3.0 kgf/m, 22 lbf/ft). The locknut has left-hand threads.



2. 4. Hold the 2nd gear (A) against the 2nd clutch (B), theNmeasure the clearance between the 2nd gear and 3rd gear (C) with a feeler gauge (D), in at least 3 places. Use the average as the actual clearance.
   STANDARD: 0.05-0.13 mm (0.002-0.005 in.)



Shafts and Clutches

Mainshaft 2nd Gear Clearance Inspection (cont'd)

1. 5. If the clearance is out of standard, remove the 36.5 x 55 mm thrust washer and measure its thickness.
2. 6. Select and install a new thrust washer, then recheck.

THRUST WASHER, 36.5 x 55 mm

No.	Part Number	Thickness
1	90441-P4P-000	4.00 mm (0.157 in.)
2	90442-P4P-000	4.05 mm (0.159 in.)
3	90443-P4P-000	4.10 mm (0.161 in.)
4	90444-P4P-000	4.15 mm (0.163 in.)
5	90445-P4P-000	4.20 mm (0.165 in.)
6	90446-P4P-000	4.25 mm (0.167 in.)
7	90447-P4P-000	4.30 mm (0.169 in.)
8	90448-P4P-000	4.35 mm (0.171 in.)
9	90449-P4P-000	4.40 mm (0.173 in.)
10	90450-P4P-000	4.45 mm (0.175 in.)

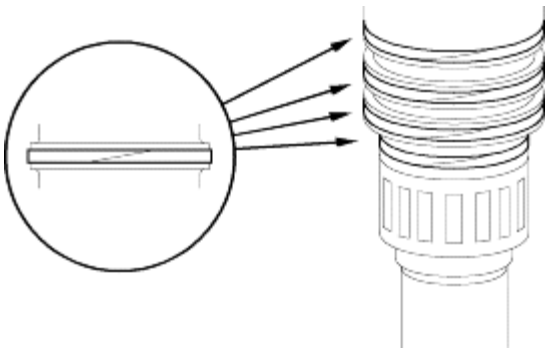
7. After replacing the thrust washer, make sure the clearance is within standard.
8. Disassemble the shaft and gears.
9. Reinstall the bearing in the transmission housing (see page 14-177).

The sealing rings on the mainshaft are synthetic resin with chamfered ends. Check the condition of the sealing rings and replace them only if they are worn, distorted, or damaged.

1. 1. For a better fit, squeeze the sealing rings together slightly before installing them.



2. 2. Apply ATF to the new sealing rings, then install them on the mainshaft.

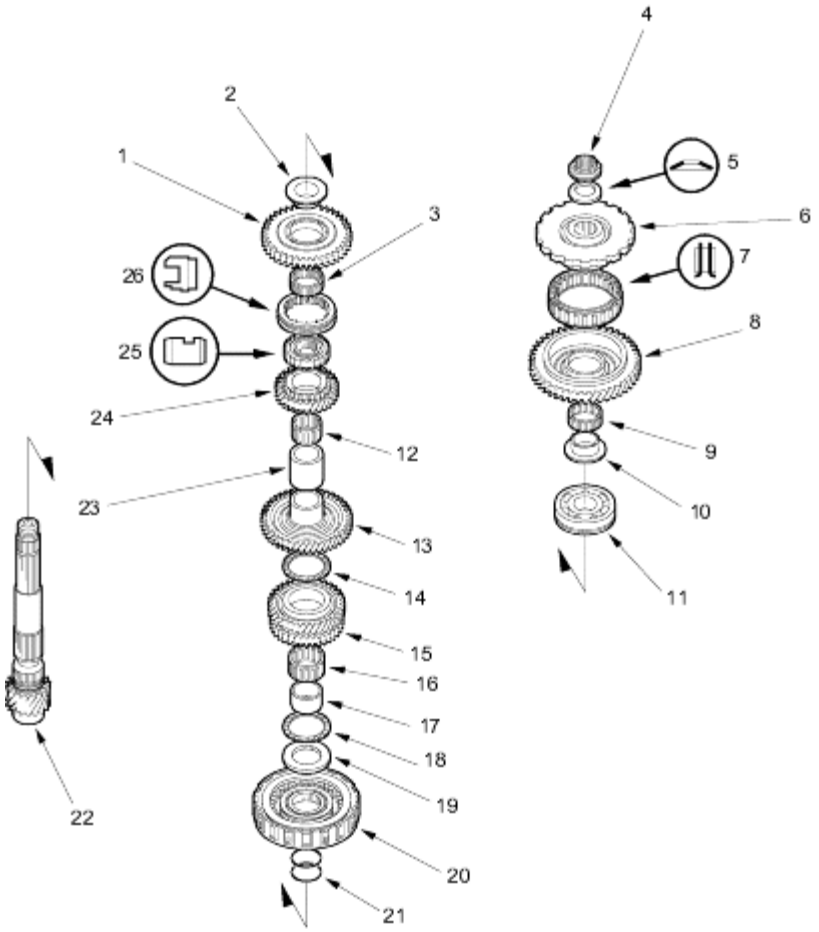


3. 3. After installing the sealing rings, verify the following:
   - The rings are fully seated in the groove.
   - The ring are not twisted.
   - The chamfered ends of the ring are properly joined.

Shafts and Clutches

Countershaft Disassembly, Inspection and Reassembly

1. 1. Remove the locknut and take off components down to the reverse selector hub.



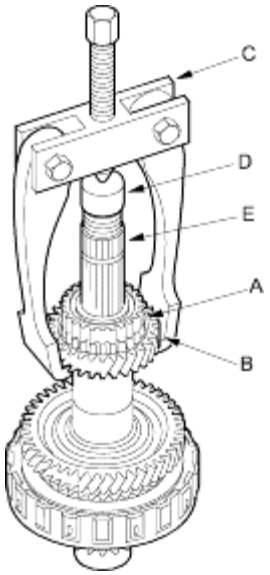
1. REVERSE GEAR
2. REVERSE GEAR COLLAR
3. NEEDLE BEARING
4. LOCKNUT (FLANGE NUT)
   23 x 1.25 mm, 103 Nm (10.5 kgf/m, 75.9 lbf/ft) – 0-103 Nm (10.5 kgf/m, 75.9 lbf/ft)
5. CONICAL SPRING WASHER
   Replace
6. PARK GEAR
7. ONE-WAY CLUTCH
8. 1ST GEAR
9. NEEDLE BEARING
10. 1ST GEAR COLLAR
11. TRANSMISSION HOUSING COUNTERSHAFT BEARING
12. NEEDLE BEARING
13. 2ND GEAR
14. THRUST NEEDLE BEARING
15. 3RD GEAR
16. NEEDLE BEARING
17. 3RD GEAR COLLAR
18. THRUST NEEDLE BEARING
19. SPLINED WASHER
20. 3RD CLUTCH
21. O-RINGS, Replace
22. COUNTERSHAFT
23. DISTANCE COLLAR, 28 mm
    Selective part
24. 4TH GEAR
25. REVERSE SELECTOR HUB
26. REVERSE SELECTOR

2. Remove the reverse selector hub and 4th gear (see page 14-196).
3. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Lubricate all parts with ATF during assembly.
7. Check the clearance of the 4th gear.
8. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
9. Install the reverse selector hub, reverse selector, one-way clutch and conical spring washer in the direction shown.

Shafts and Clutches

Countershaft Reverse Selector Hub Removal

Remove the reverse selector hub (A) and the 4th gear (B) with a universal 2-jaw (or 3-jaw) puller (C). Place a shaft protector (D) between the puller and countershaft (E) to prevent countershaft damage.



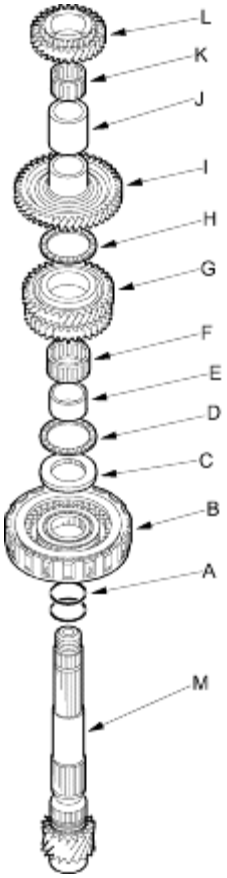
Shafts and Clutches

Countershaft Reverse Selector Hub Installation

Special Tools Required

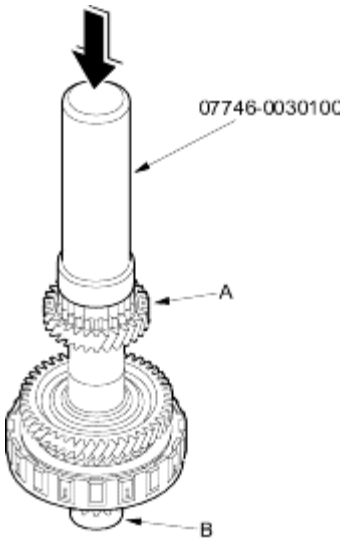
Driver 40 mm I.D., 07746-0030100

1. 1. Wrap the countershaft splines with tape to prevent O-ring damage.
   2. Install the new O-rings (A), then remove the tape on the shaft splines.



2. 3. Install the 3rd clutch (B), splined washer (C), thrust needle bearing (D), 3rd gear collar (E), needle bearing (F), 3rd gear (G), thrust needle bearing (H), 2nd gear (I), 28 mm distance collar (J), needle bearing (K) and 4th gear (L) on the countershaft (M).

1. 4. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the special tool and a press.



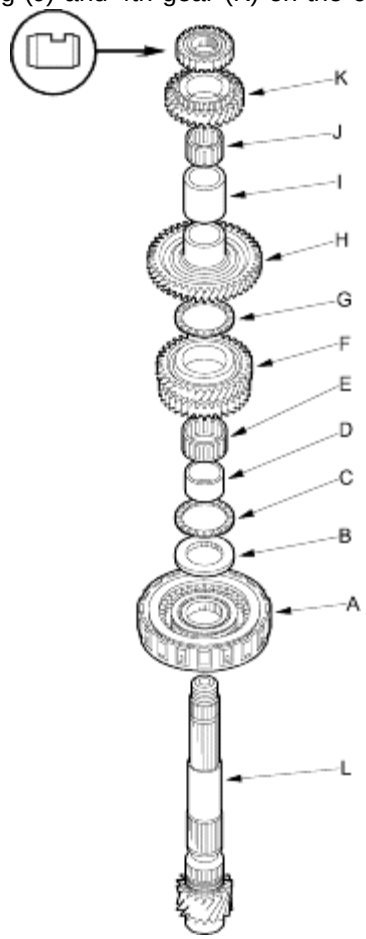
Shafts and Clutches

Countershaft 4th Gear Clearance Inspection

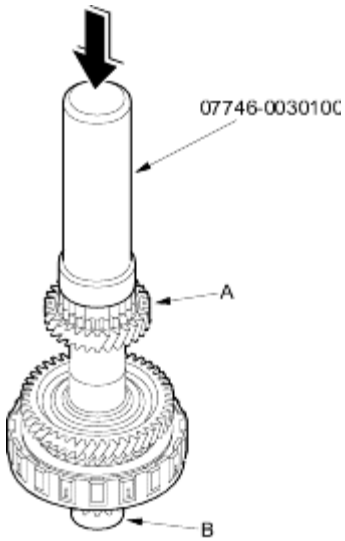
Special Tools Required

Driver 40 mm I.D., 07746-0030100

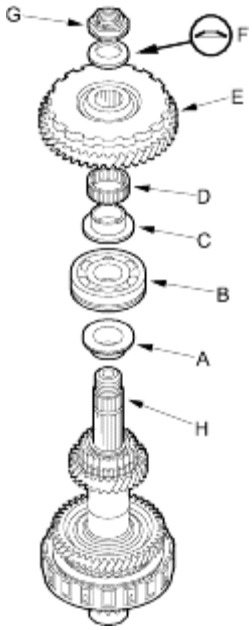
1. 1. Remove the countershaft transmission housing bearing (see page 14-177).
   2. Remove the O-rings from the countershaft.
   3. Install the 3rd clutch (A), splined washer (B), thrust needle bearing (C), 3rd gear collar (D), needle bearing (E), 3rd gear (F), thrust needle bearing (G), 2nd gear (H), 28 mm distance collar (I), needle bearing (J) and 4th gear (K) on the countershaft (L).



1. 4. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the special tool and a press.



2. 5. Install the reverse gear collar (A), transmission housing bearing (B), 1st gear collar (C), needle bearing (D), 1st gear/one-way clutch/park gear (E) and conical spring washer (F) on the countershaft sub-assembly (H).

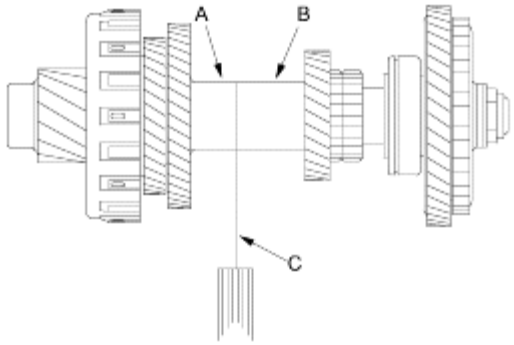


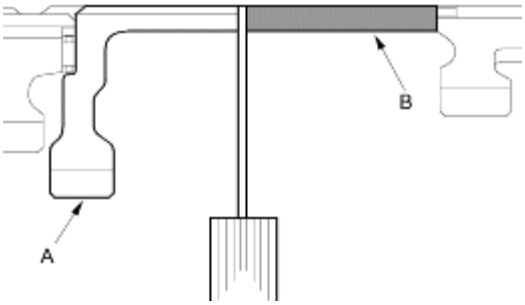
Shafts and Clutches

Countershaft 4th Gear Clearance Inspection (cont'd)

6. Tighten the locknut (G) to 29 Nm (3.0 kgf/m, 22 lbf/ft). The locknut has left-hand threads.
7. Measure the clearance between the 2nd gear (A) and 28 mm distance collar (B) with a feeler gauge (C) in at least 3 places. Use the average as the actual clearance.

   STANDARD: 0.10-0.18 mm (0.004-0.007 in.)





8. If the clearance is out of standard, disassemble the countershaft. Remove the 28 mm distance collar and measure its length.
9. Select and install a new distance collar, assemble the countershaft, then recheck.

   DISTANCE COLLAR, 28 mm

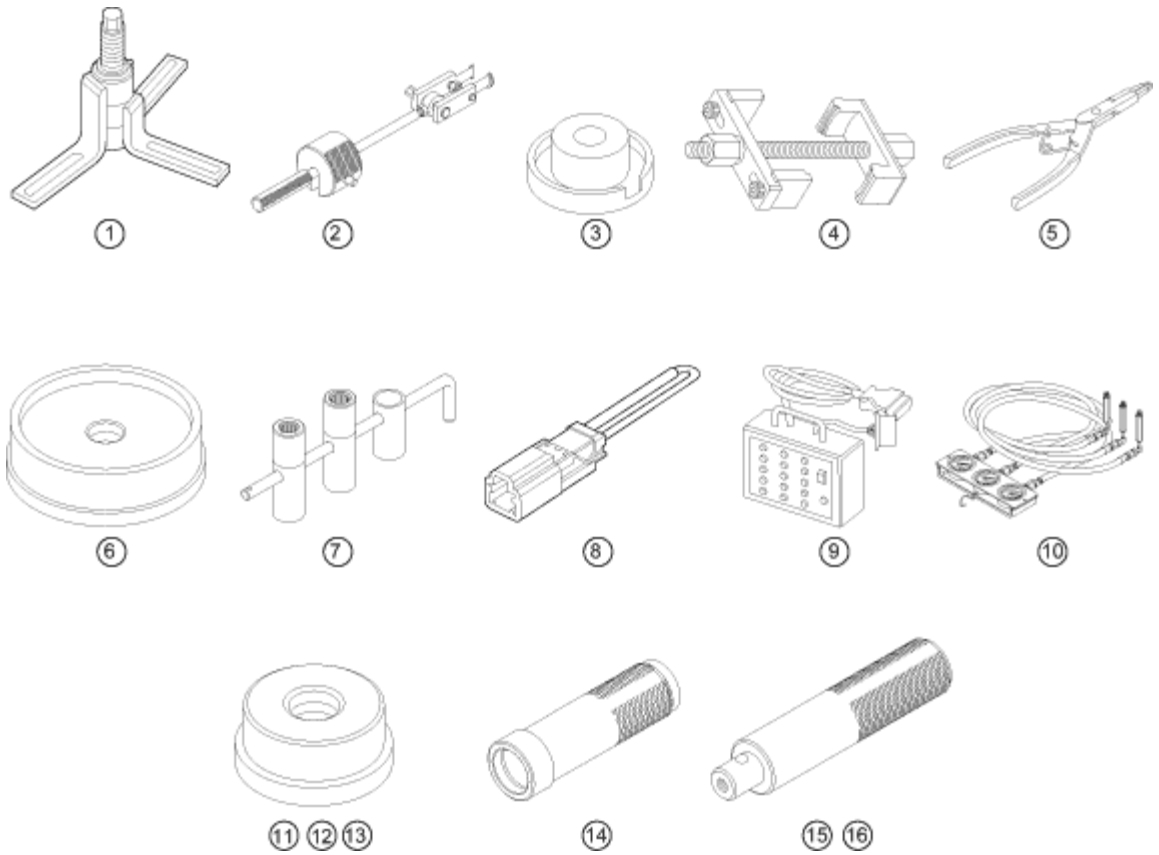
No.	Part Number	Thickness
1	90503-PC9-000	39.00 mm (1.535 in.)
2	90504-PC9-000	39.10 mm (1.539 in.)
3	90505-PC9-000	39.20 mm (1.543 in.)
4	90507-PC9-000	39.30 mm (1.547 in.)
5	90508-PC9-000	39.05 mm (1.537 in.)
6	90509-PC9-000	39.15 mm (1.541 in.)
7	90510-PC9-000	39.25 mm (1.545 in.)
8	90511-PC9-000	38.90 mm (1.531 in.)
9	90512-PC9-000	38.95 mm (1.533 in.)

10. After replacing the distance collar, make sure the clearance is within standard.
11. Disassemble the shaft and gears.
12. Reinstall the bearing in the transmission housing (see page 14-177).

Automatic Transmission

Special Tools

Ref. No.	Tool Number	Description	Qty
1	07HAC-PK40102	Housing Puller	1
2	07JAC-PH80000	Adjustable Bearing Remover Set	1
2-1	07JAC-PH80100	Bearing Remover Attachment	1
2-2	07JAC-PH80200	Remover Handle Assembly	1
2-3	07741-0010201	Remover Weight	1
3	07JAD-PH80101	Driver Attachment	1
4	07LAE-PX40000	Clutch Spring Compressor Set	1
4-1	07LAE-PX40100	Clutch Spring Compressor Attachment	1
4-2	07HAE-PL50101	Clutch Spring Compressor Attachment	1
4-3	07GAE-PG40200	Clutch Spring Compressor Bolt Assembly	1
5	07LGC-0010100	Snap Ring Pliers	1
6	07NAD-PX40100	Driver Attachment	1
7	07PAB-0010000	Mainshaft Holder Set	1
8	07PAZ-0010100	SCS Short Connector	1
9	07WAJ-0010100	DLC Terminal Box	1
10	07406-0020004	A/T Oil Pressure Gauge Set	1
11	07746-0010100	Driver Attachment, 32 x 35 mm	1
12	07746-0010500	Driver Attachment, 62 x 68 mm	1
13	07746-0010600	Driver Attachment, 72 x 75 mm	1
14	07746-0030100	Driver 40 mm I.D.	1
15	07749-0010000	Handle Driver	1
16	07949-3710001	Handle Driver	1



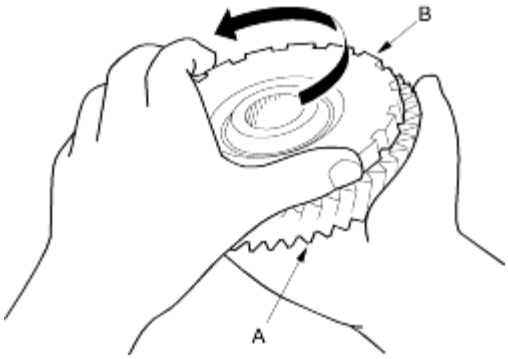
Automatic Transmission
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock on upshifting: 2nd to 3rd gear	1. 3rd clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 2nd accumulator defective 6. 2nd orifice control valve defective 7. CPB valve defective 8. Torque converter clutch solenoid valve defective 9. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 2nd and 3rd clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the countershaft speed sensor installation. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.
Excessive shock on upshifting: 3rd to 4th gear	1. 4th clutch defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. CPC valve defective 5. 3rd accumulator defective 6. 3-4 orifice control valve defective 7. CPB valve defective 8. Torque converter clutch solenoid valve defective 9. Countershaft speed sensor defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the 3rd and 4th clutch pressures. • Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the countershaft speed sensor installation. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.

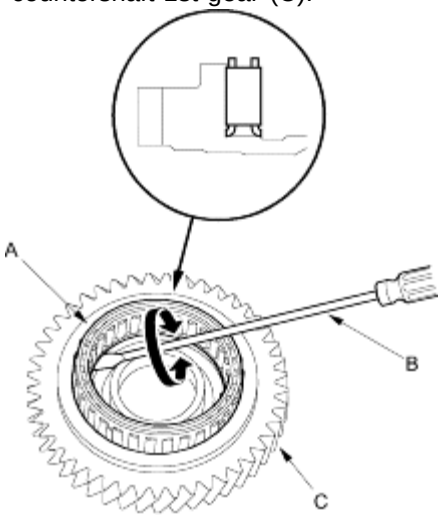
Shafts and Clutches

1st Gear One-way Clutch Disassembly, Inspection and Reassembly

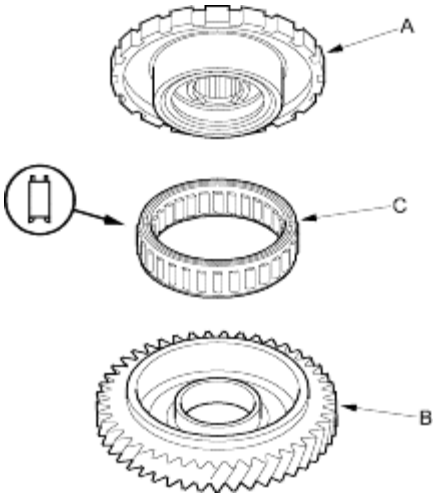
1. 1. Separate countershaft 1st gear (A) from the park gear (B) by turning the park gear in the direction shown.



2. 2. Pry the one-way clutch (A) up with tip of a screwdriver (B) and remove the one-way clutch from the countershaft 1st gear (C).

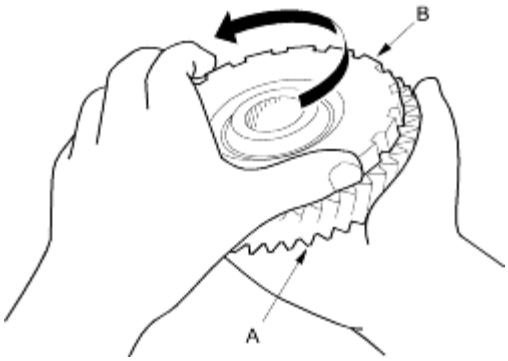


1. 3. Inspect the park gear (A) and 1st gear (B) for wear and scoring. Inspect the one-way clutch (C) for damage and faulty movement.



2. 4. Assemble the 1st gear, one-way clutch and park gear.
   5. Hold the 1st gear (A) and turn the park gear (B) in the direction shown to be sure it turns freely.

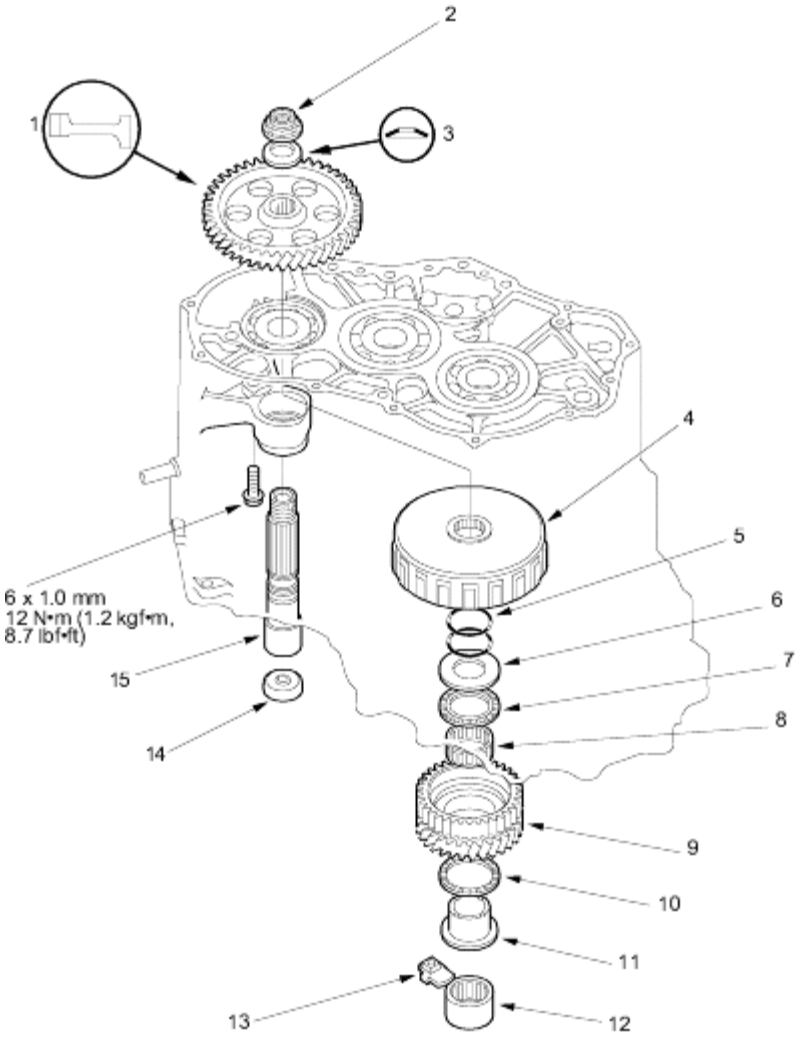
Also make sure the park gear does not turn in the opposite direction.



Shafts and Clutches

Sub-shaft Disassembly, Inspection and Reassembly

1. 1. Remove the 1st gear (see page 14-202).



1. 1ST GEAR
2. LOCK NUT (FLANGE NUT) 19 x 1.25 mm, 93 Nm (9.5 kgf/m, 69 lbf/ft), Replace
3. CONICAL SPRING WASHER Replace
4. 1ST-HOLD CLUTCH
5. O-RING, Replace
6. THRUST WASHER
7. THRUST NEEDLE BEARING
8. NEEDLE BEARING
9. 4TH GEAR
10. THRUST NEEDLE BEARING
11. 4TH GEAR COLLAR
12. NEEDLE BEARING
13. NEEDLE BEARING STOP
14. ATF GUIDE CAP, Replace
15. SUB-SHAFT

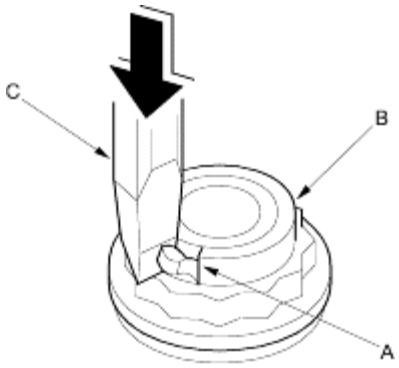
2. Lubricate all parts with ATF during assembly.
3. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
7. Install the 1st gear and conical spring washer in the direction shown.

Shafts and Clutches

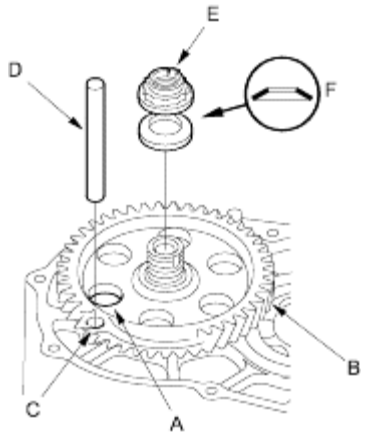
Sub-shaft 1st Gear Removal

1. 1. Cut the lock tab (A) of the locknut (B) using a chisel (C).

   NOTE: Keep all of the chiselled particles out of the transmission.



2. 2. Align the hole (A) of the sub-shaft 1st gear (B) with the hole (C) of the transmission housing, then inset a 8.0 mm (0.31 in.) pin (D) to hold the sub-shaft while removing the sub-shaft locknut.



3. 3. Remove the locknut (E) and conical spring washer (F).
   4. Remove the ATF guide cap by pushing the sub-shaft inside the transmission housing.
   5. Remove the 1st-hold clutch assembly by pulling and removing the sub-shaft.

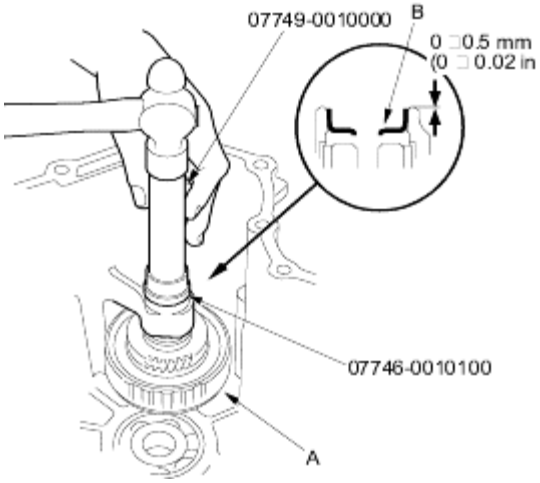
Shafts and Clutches

Sub-shaft 1st Gear Installation

Special Tools Required

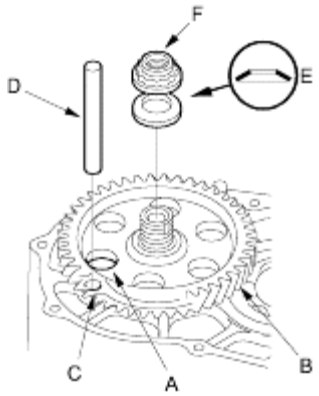
- Handle driver, 07749-0010000
- Driver attachment, 32 x 35 mm, 07746-0010100

1. 1. Wrap the sub-shaft splines with tape to prevent O-ring damage. Install new O-rings in the sub-shaft grooves, then remove the tape.
   2. Install new O-rings on the sub-shaft.
   3. Assemble the 1st-hold clutch with the related parts.
   4. Place the sub-shaft in the transmission housing and install the 1st-hold clutch assembly (A)

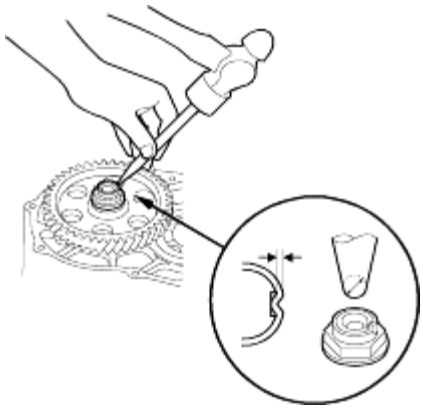


2. 5. Install the new ATF guide cap (B) in the direction shown using the special tools as shown.

1. 6. Align the hole (A) of the 1st gear (B) with the hole (C) of the transmission housing, then insert a 8.0 mm (0.31 in.) pin (D) to hold the sub-shaft while tightening the sub-shaft locknut.



2. 7. Install the new conical spring washer (E) in the direction shown and install the new locknut (F).
   8. Tighten sub-shaft locknut to 93 Nm (9.5 kgf/m, 69 lbf/ft).
      NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.
   9. Remove the 8.0 mm (0.31 in.) pin to hold the sub-shaft.
   10. Stake the locknut into its shaft using a 3.5 mm punch.



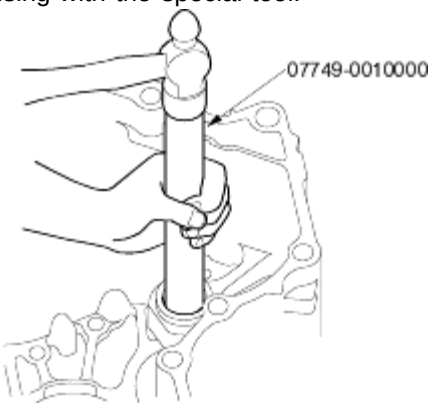
Shafts and Clutches

Sub-shaft Transmission Housing Needle Bearing Replacement

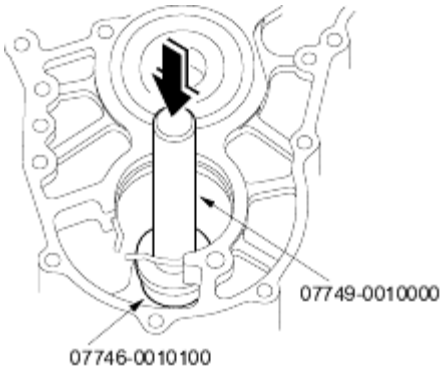
Special Tools Required

- Handle driver, 07749-0010000
- Driver attachment, 32 x 35 mm, 07746-0010100

1. 1. Remove the sub-shaft transmission housing bearing (see page 14-177).
   2. Remove the needle bearing stop.
   3. Remove the needle bearing from the transmission housing with the special tool.



1. 4. Install the new needle bearing in the transmission housing with the special tools and a press.



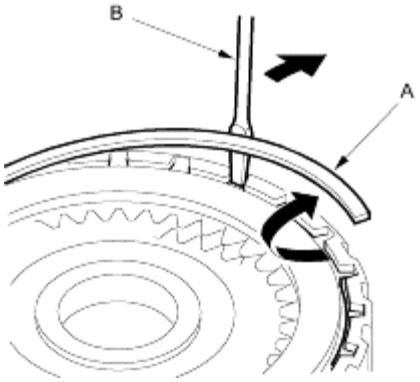
2. 5. Install the sub-shaft transmission housing bearing (see page 14-177).

Shafts and Clutches
Clutch Disassembly

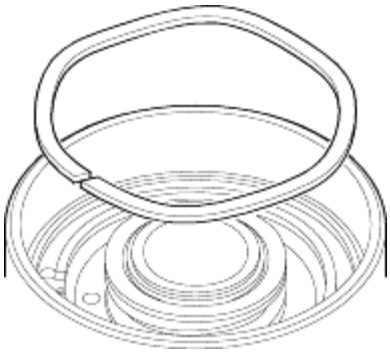
Special Tools Required

- Clutch spring compressor set, 07LAE-PX40000
    - Clutch spring compressor attachment, 07LAE-PX40100
    - Clutch spring compressor attachment, 07HAE-PL50101
    - Clutch spring compressor bolt assembly, 07GAE-PG40200
- Snap ring pliers, 07LGC-0010100

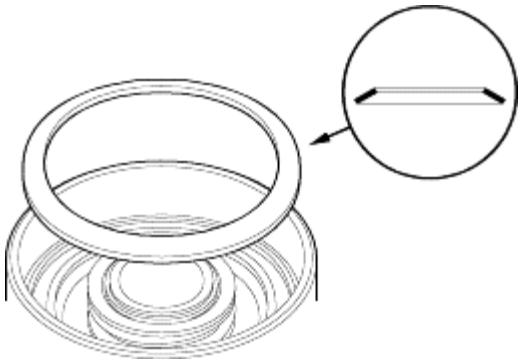
1. 1. Remove the snap ring (A), then remove the clutch end plate, the clutch discs and the plates with a screwdriver (B).



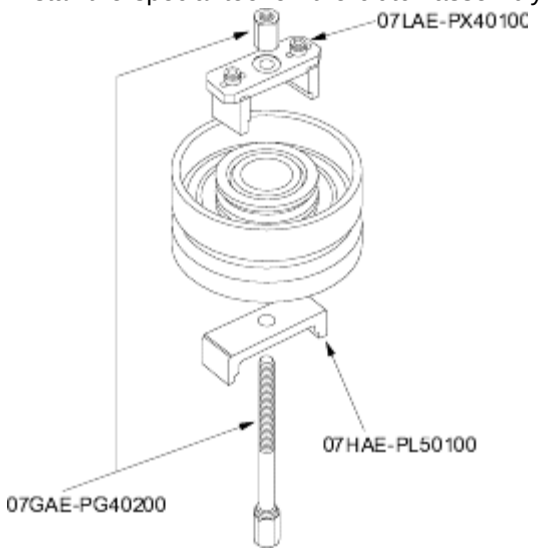
2. 2. Remove the wave spring from the 1st, 3rd and 4th clutches.



1. 3. Remove the disc spring from the 1st-hold clutch (7-position).

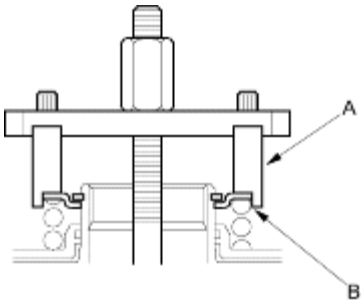


2. 4. Install the special tool on the clutch assembly.

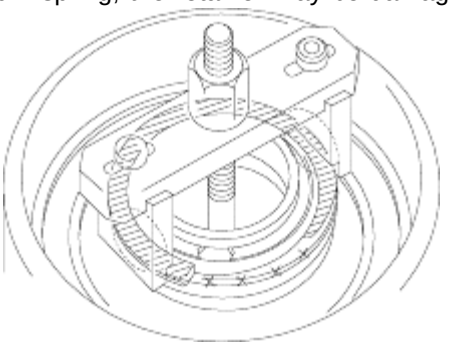


Shafts and Clutches
Clutch Disassembly (cont'd)

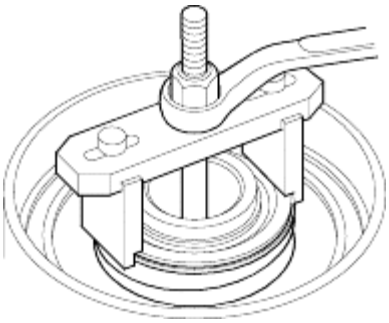
1. 5. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutches.



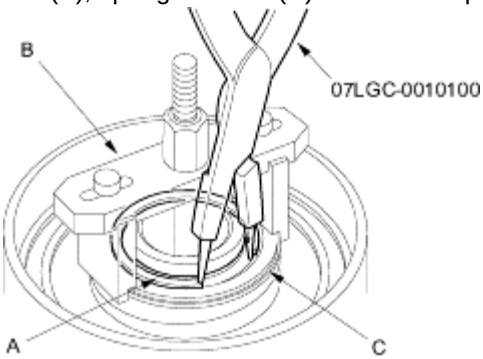
2. 6. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



1. 7. Compress the spring until the snap ring can be removed.

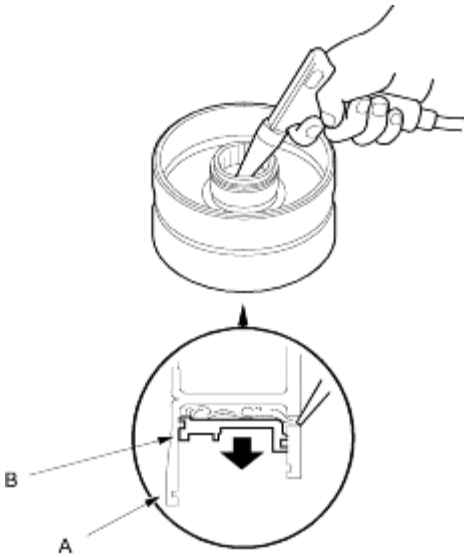


2. 8. Remove the snap ring (A). Then remove the special tools (B), spring retainer (C) and return spring.



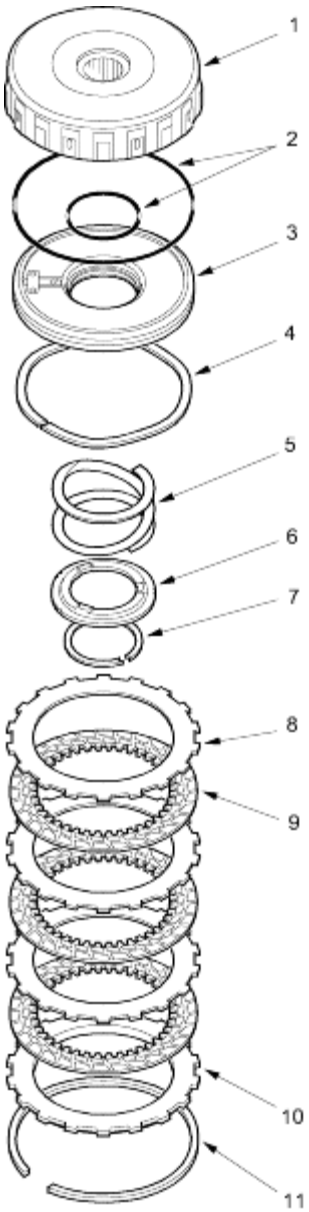
Shafts and Clutches
Clutch Disassembly (cont'd)

1. 9. Wrap a shop rag around the clutch drum (A) and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other end while applying air pressure.



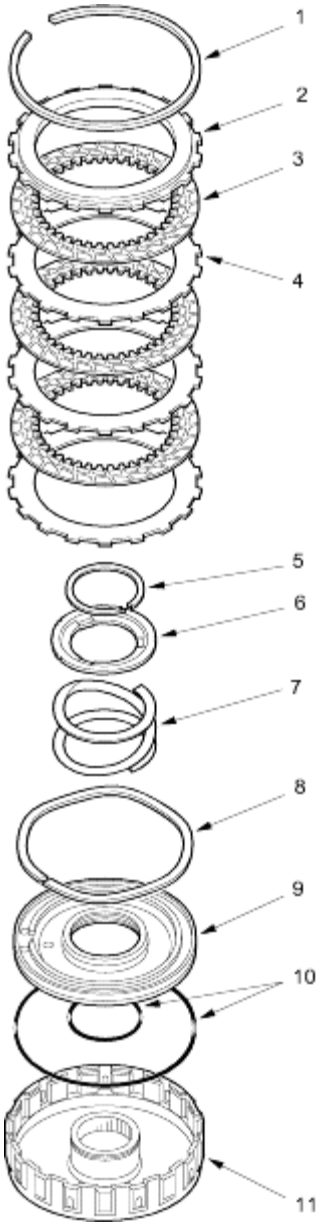
Shafts and Clutches
Clutch Inspection

1ST CLUTCH



1. 1ST CLUTCH DRUM
2. O-RING, Replace
3. CLUTCH PISTON
4. WAVE SPRING
5. RETURN SPRING
6. SPRING RETAINER
7. SNAP RING
8. CLUTCH PLATES, 3
   Standard thickness:
   1.6 mm (0.06 in.)
9. CLUTCH DISCS, 3
   Standard thickness:
   1.94 mm (0.076 in.)
10. CLUTCH END PLATE
11. SNAP RING

3RD CLUTCH

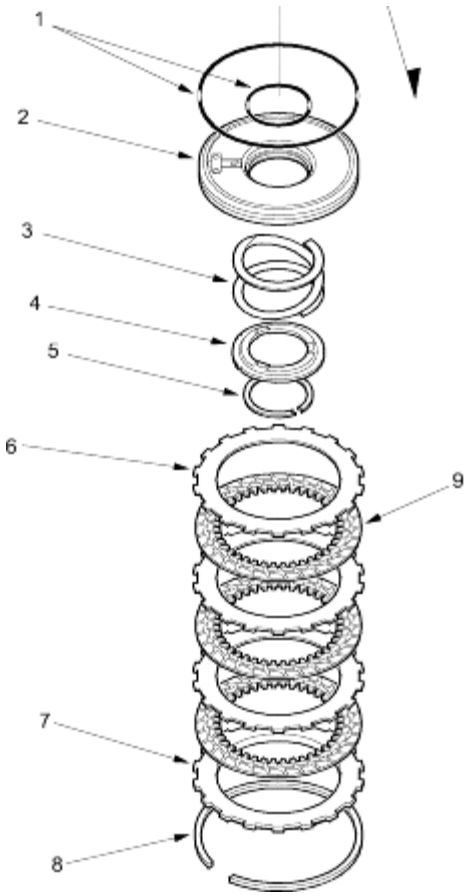


1. SNAP RING
2. CLUTCH END PLATE
3. CLUTCH DISCS, 3
   Standard thickness:
   1.94 mm (0.076 in)
4. CLUTCH PLATES, 4
   Standard thickness:
   2.00 mm (0.079 in)
5. SNAP RING
6. SPRING RETAINER
7. RETURN SPRING
8. WAVE WASHER
9. CLUTCH PISTON
10. O-RING, Replace
11. 3RD CLUTCH DRUM

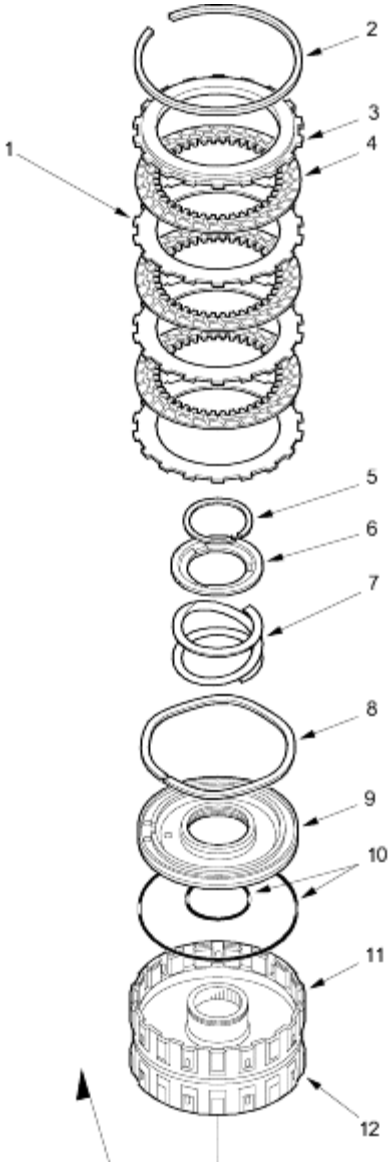
Shafts and Clutches

Clutch Inspection (cont'd)

2ND/4TH CLUTCH



1. O-RING, Replace
2. CLUTCH PISTON
3. RETURN SPRING
4. SPRING RETAINER
5. SNAP RING
6. CLUTCH PLATES, 3 Standard thickness: 2.0 mm (0.079 in.)
7. CLUTCH END PLATE
8. SNAP RING
9. CLUTCH DISCS, 3 Standard thickness: 1.94 mm (0.076 in)



1. CLUTCH PLATES, 3 Standard thickness: 2.0 mm (0.079 in)
2. SNAP RING
3. CLUTCH END PLATES
4. CLUTCH DISCS, 3 Standard thickness: 1.94 mm (0.076 in.)
5. SNAP RING
6. SPRING RETAINER
7. RETURN SPRING
8. WAVE SPRING
9. CLUTCH PISTON
10. O-RING, Replace.
11. 4TH CLUTCH DRUM
12. 2ND CLUTCH DRUM

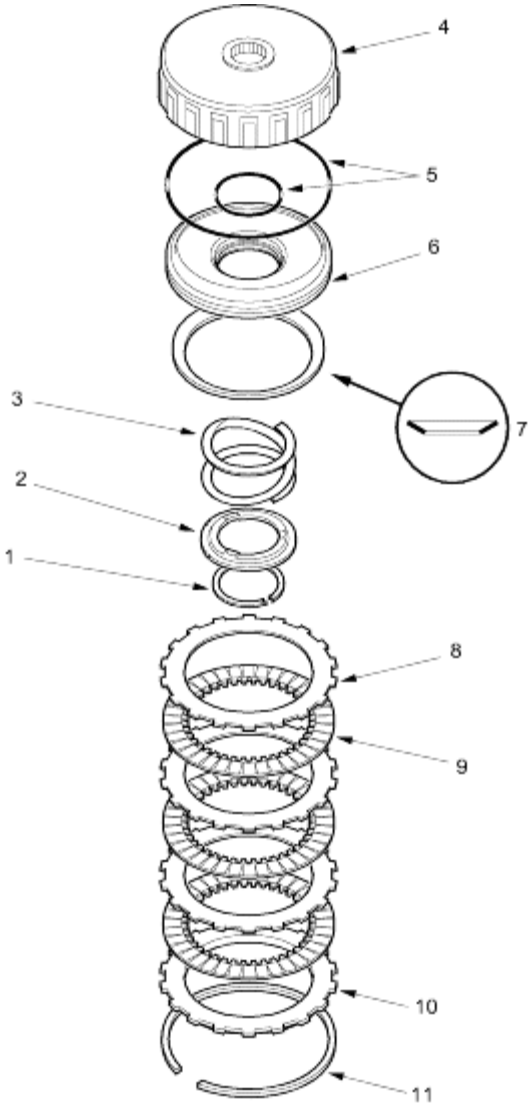
Automatic Transmission
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Torque converter housing and transmission housing bearings worn or damaged	• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Inspect the contact of the mainshaft and countershaft with the bearings. Check the ATF guide plate for damage and wear. Inspect the 1st clutch feed pipe for damage and out of round. If the 1st clutch feed pipe is damaged or out of round, replace it. Replace the mainshaft if the bushing of the 1st clutch feed pipe is damaged or out of round. • Inspect the reverse selector gear teeth chamfers and engagement teeth chamfers of the countershaft 4th gear and reverse gear. If they are worn or damaged, replace them. • Inspect the differential pinion shaft for wear under pinion gears. If the differential pinion shaft is worn, overhaul differential assembly, replace the ATF strainer, thoroughly clean transmission and flush transmission and cooler lines. • Inspect the bottom of the 3rd clutch for swirl marks. If the bottom of the 3rd clutch is swirled, replace the countershaft and final driven gear.
Vehicle does not accelerate more than 31 mph (50 km/h).	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	1. Low idle speed 2. Misadjusted engine mounts 3. Drive plate defective or transmission misassembled	• Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine mounts as outlined in the engine section of this shop manual. • Check the stall speed. • Check for a misinstalled/damaged drive plate.
Shift lever does not operate smoothly.	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn	Check for loose shift cable on the shift lever and the transmission control shaft.
Fails to shift: stuck in 4th gear	1. A/T clutch pressure control solenoid valve A defective 2. Shift solenoid valve A defective 3. Shift solenoid valve B defective	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the shift solenoid valve filter/gasket and the shift solenoid valves A and B for seizure.

Shafts and Clutches

Clutch Inspection (cont'd)

1ST-HOLD CLUTCH



1. SNAP RING
2. SPRING RETAINER
3. RETURN SPRING
4. 1ST-HOLD CLUTCH DRUM
5. O-RING, Replace
6. CLUTCH PISTON
7. DISC SPRING
8. CLUTCH PLATES, 3
   Standard thickness:
   1.6 mm (0.06 in.)
9. CLUTCH DISCS, 3
   Standard thickness:
   1.94 mm (0.076 in.)
10. CLUTCH END PLATE
11. SNAP RING

Shafts and Clutches

Clutch Reassembly

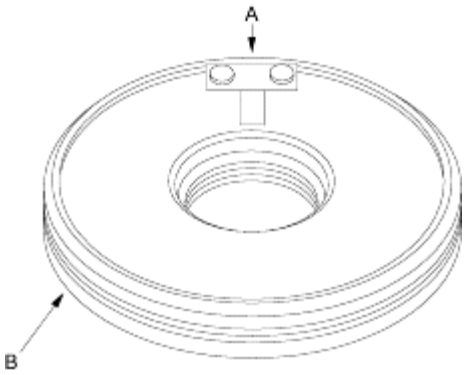
Special Tools Required

- Clutch spring compressor set, 07LAE-PX40000
  - Clutch spring compressor attachment, 07LAE-PX40100
  - Clutch spring compressor attachment, 07HAE-PL50101
  - Clutch spring compressor bolt assembly, 07GAE-PG40200
- Snap ring pliers, 07LAC-0010100

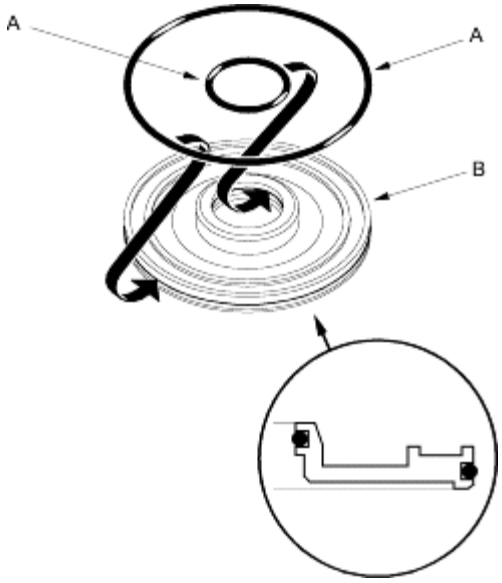
NOTE:

- Clean all parts thoroughly in solvent or carburettor cleaner and dry them with compressed air.
- Blow out all passages.
- Apply ATF to all parts before assembly.

1. 1. Inspect the check valve (A); if it's loose, replace the piston (B).



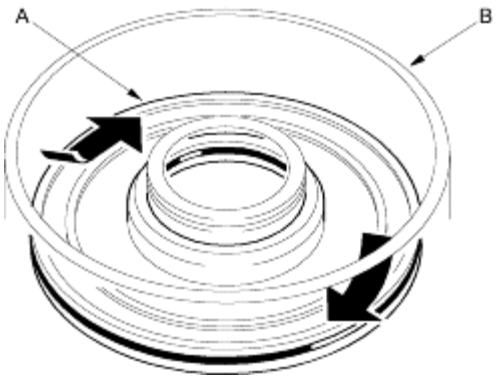
1. 2. Install new O-rings (A) on the piston (B).



2. 3. Install the piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating.

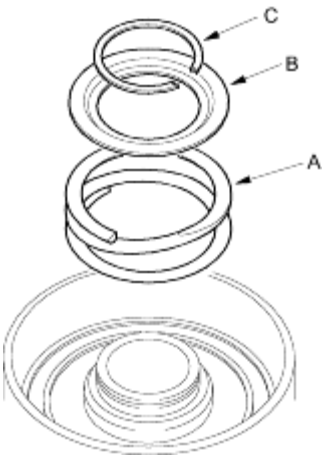
Lubricate the piston O-ring with ATF before installing.

NOTE: Do not pinch the O-ring by installing the piston with too much force.

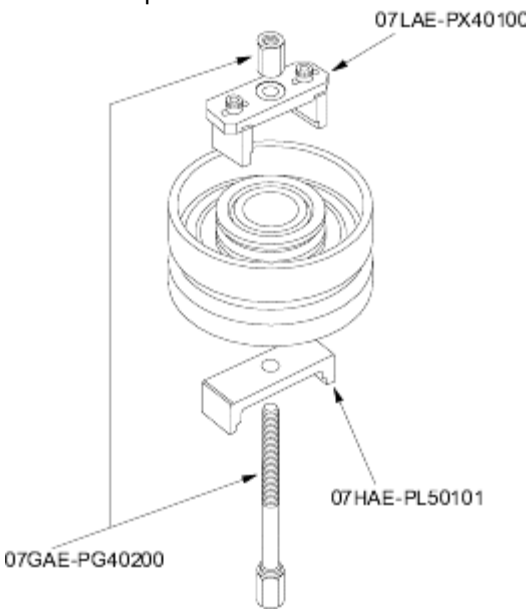


Shafts and Clutches
Clutch Reassembly (cont'd)

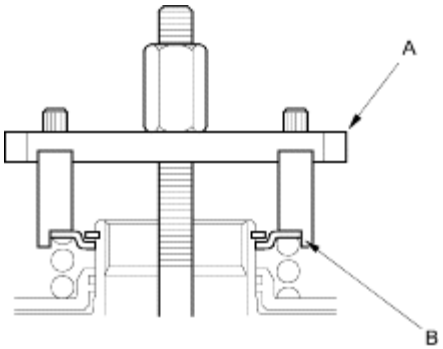
1. 4. Install the return spring (A) and spring retainer (B) and position the snap ring (C) on the retainer.



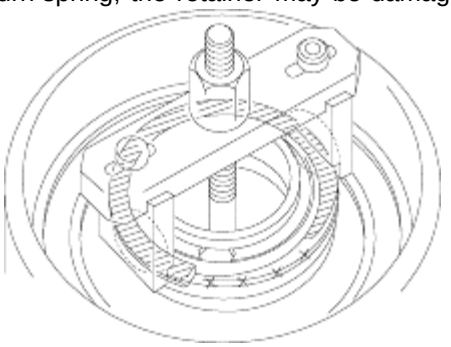
2. 5. Install the special tools on the clutch assembly.



1. 6. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutches.

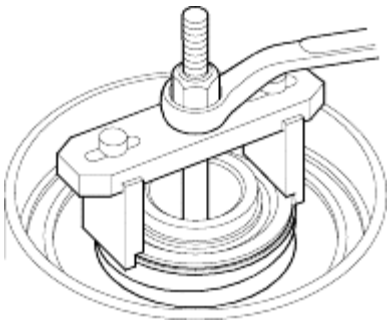


2. 7. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.

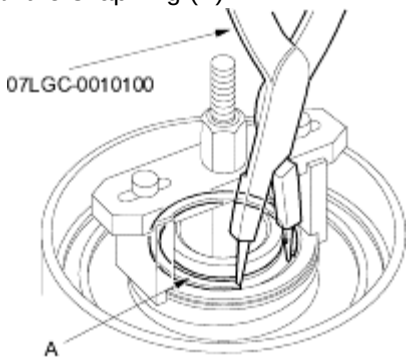


Shafts and Clutches
Clutch Reassembly (cont'd)

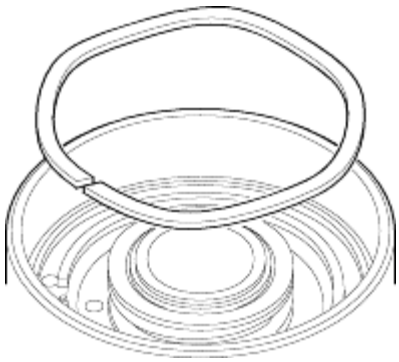
1. 8. Compress the return spring.



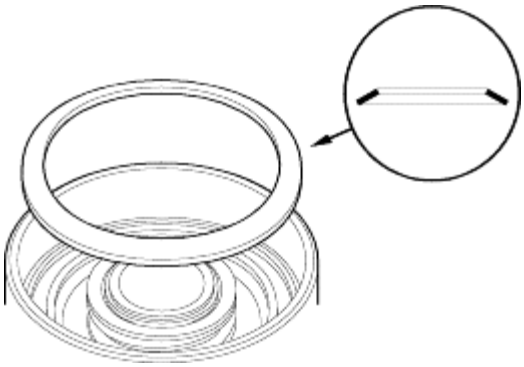
2. 9. Install the snap ring (A).



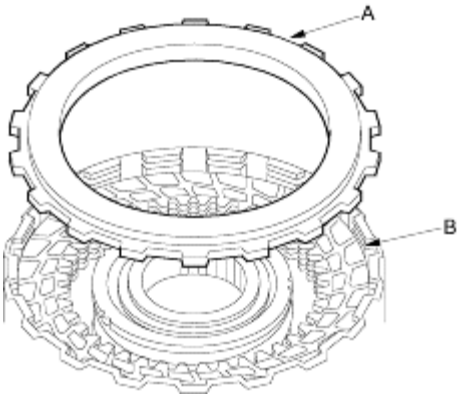
3. 10. Remove the special tools.
11. Install the wave spring in the 1st, 3rd and 4th clutches.



1. 12. Install the disc spring in the 1st-hold clutch in the direction shown (7-position).

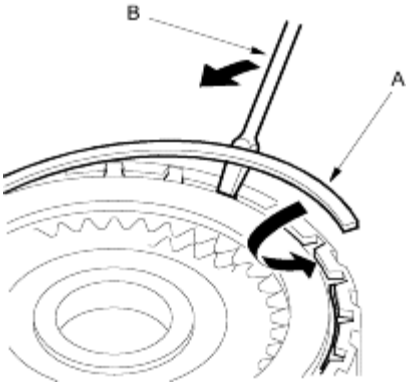


2. 13. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes. Before installing the plates and discs, make sure the inside of the clutch drum is free of dirt and other foreigNmatter.
14. Starting with a clutch plate, alternately install the clutch plates and discs. Install the clutch end plate (A) with the flat side toward the disc (B).



Shafts and Clutches
Clutch Reassembly (cont'd)

1. 15. Install the snap ring (A) with a screwdriver (B).



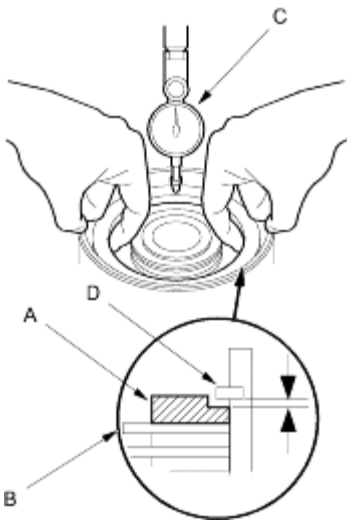
2. 16. Measure the clearance between the clutch end plate (A) and top disc (B) with a dial indicator (C). Zero the dial indicator with the clutch end plate lowered and lift it up to the snap ring (D). The distance that the clutch end plate moves is the clearance between the clutch end plate and top disc.

NOTE: Take measurements in at least 3 places and use the average as the actual clearance.

Clutch End Plate-to-Top Disc Clearance:

Service Limit

1st Clutch:	0.65-0.85 mm (0.026-0.033 in.)
2nd Clutch:	0.65-0.85 mm (0.026-0.033 in.)
3rd Clutch:	0.4-0.6 mm (0.016-0.024 in.)
4th Clutch:	0.4-0.6 mm (0.016-0.024 in.)
1st-hold Clutch:	0.5-0.8 mm (0.020-0.031 in.)



1. 17. If the clearance is not within the service limits, select a new clutch end plate from the following table.

NOTE: If the thickest clutch end plate is installed, but the clearance is still over the standard, replace the clutch discs and clutch plates.



1ST, 2ND, 3RD and 4TH CLUTCH END PLATES

Mark	Part Number	Thickness
1	22551-P4R-003	2.1 mm (0.083 in.)
2	22552-P4R-003	2.2 mm (0.087 in.)
3	22553-P4R-003	2.3 mm (0.091 in.)
4	22554-P4R-003	2.4 mm (0.094 in.)
5	22555-P4R-003	2.5 mm (0.098 in.)
6	22556-P4R-003	2.6 mm (0.102 in.)
7	22557-P4R-003	2.7 mm (0.106 in.)
8	22558-P4R-003	2.8 mm (0.110 in.)
9	22559-P4R-003	2.9 mm (0.114 in.)

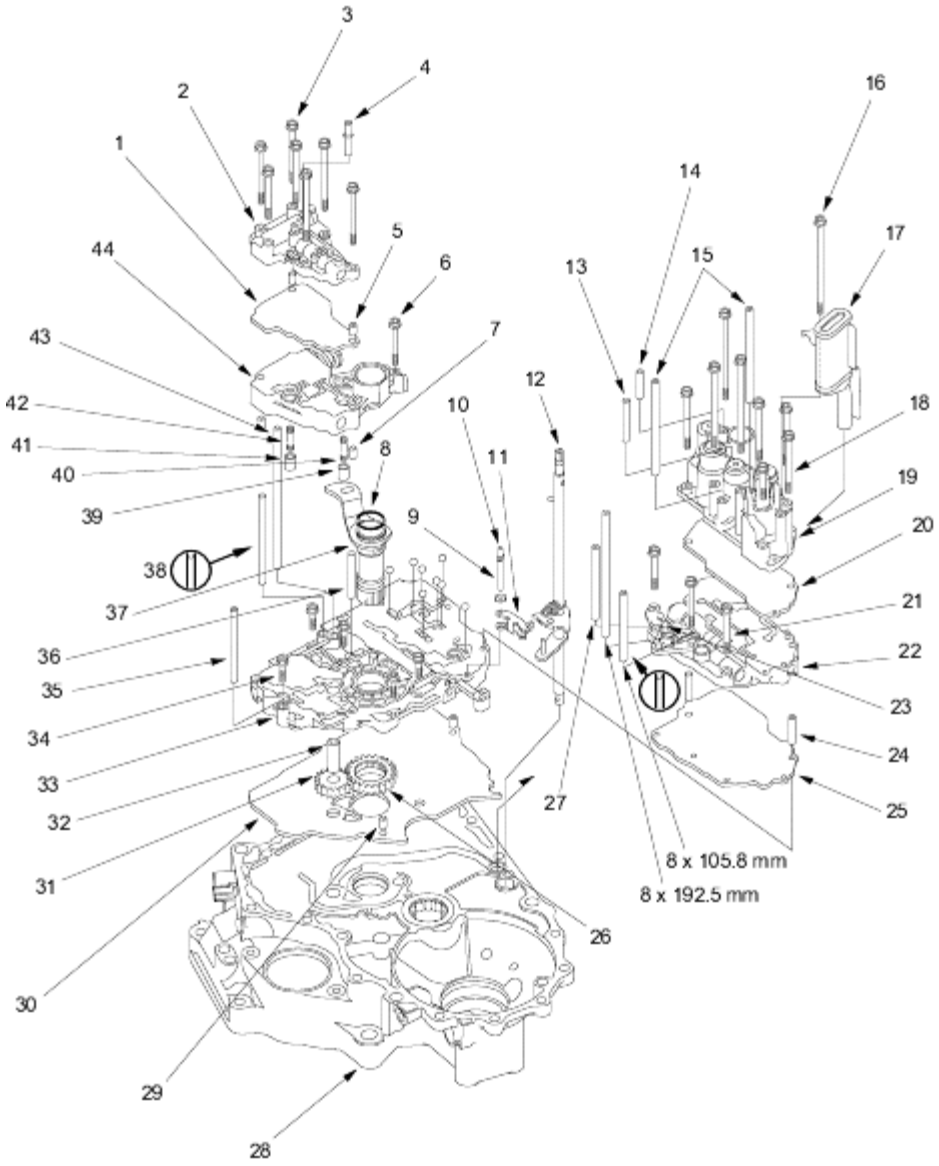
1ST-HOLD CLUTCH END PLATES

Mark	Part Number	Thickness
1	22551-PS5-003	2.1 mm (0.083 in.)
2	22552-PS5-003	2.2 mm (0.087 in.)
3	22553-PS5-003	2.3 mm (0.091 in.)
4	22554-PS5-003	2.4 mm (0.094 in.)
No mark	22555-PS5-003	2.5 mm (0.098 in.)
6	22556-PS5-003	2.6 mm (0.102 in.)
7	22557-PS5-003	2.7 mm (0.106 in.)

Valve Body

Valve Bodies and ATF Strainer Installation

Exploded View



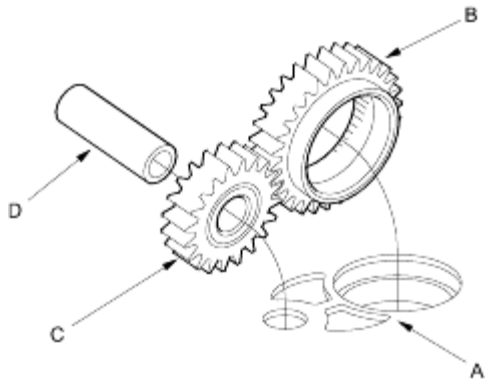
1. LOCK-UP SEPARATOR PLATE
2. LOCK-UP VALVE BODY
3. 6 x 1.0 mm, 7 Bolts
4. ATF FEED PIPE (7-position)
5. DOWEL PIN
6. 6 x 1.0 mm, 1 Bolt
7. DOWEL PIN
8. O-RING, Replace
9. DETENT ARM SHAFT
10. WASHER
11. DETENT ARM
12. CONTROL SHAFT
13. ATF FEED PIPE, 8 x 62 mm
14. ATF FEED PIPE, 8 x 40 mm
15. ATF FEED PIPE, 8 X145 mm
16. 6 x 1.0 mm, 1 Bolt
17. ATF STRAINER
18. 6 x 1.0 mm, 8 Bolts
19. SERVO BODY
20. SERVO SEPARATOR PLATE
21. 6 x 1.0 mm, 3 Bolts
22. SECONDARY VALVE BODY
23. STOP SHAFT BRACKET
24. DOWEL PIN, 8 x 40 mm
25. SECONDARY SEPARATOR PLATE
26. ATF PUMP DRIVE GEAR
27. ATF FEED PIPE, 8 x 118 mm
28. TORQUE CONVERTER HOUSING
29. DOWEL PIN
30. MAIN SEPARATOR PLATE
31. ATF PUMP DRIVEN GEAR
32. ATF PUMP DRIVEN GEAR SHAFT
33. MAIN VALVE BODY
34. 6 x 1.0 mm, 5 Bolts
35. ATF FEED PIPE, 8 x 112 mm
36. STATOR SHAFT STOP
37. STATOR SHAFT
38. ATF FEED PIPE, 8 x 138.8 mm
39. TORQUE CONVERTER CHECK VALVE
40. TORQUE CONVERTER CHECK VALVE SPRING
41. COOLER RELIEF VALVE
42. COOLER RELIEF VALVE SPRING
43. ATF FEED PIPE, 8 x 220 mm, Replace.
44. REGULATOR VALVE BODY

Valve Body

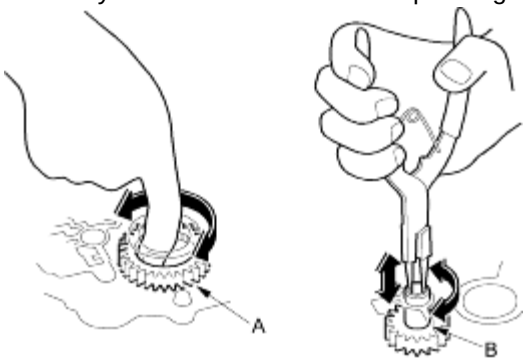
Valve Bodies and ATF Strainer Installation (cont'd)

NOTE: Refer to the Exploded View as needed during the following procedure.

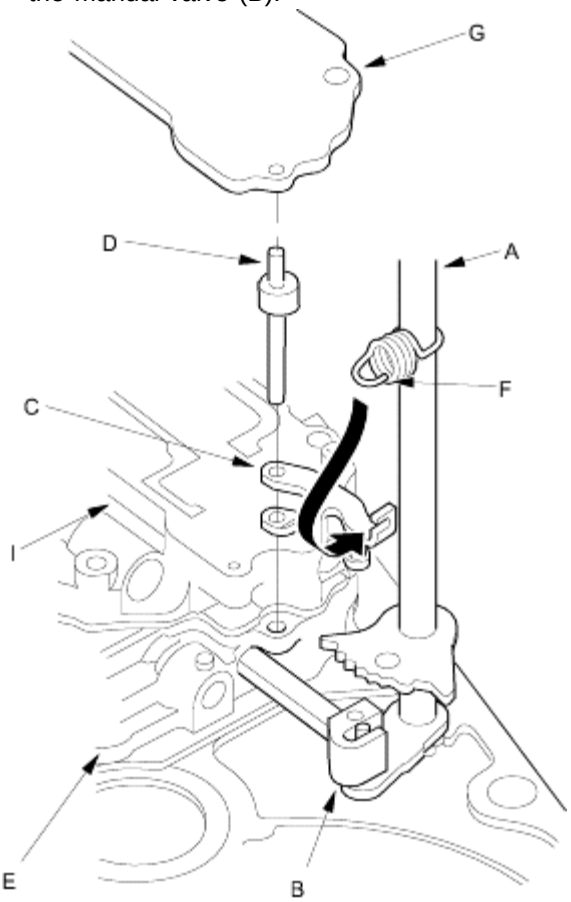
1. 1. Install the suction pipe collar in the torque converter housing, if necessary.
   2. Install the main separator plate (A) and two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), driven gear (C) and ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.



2. 3. Install the main valve body and loosely tighten the five bolts. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction and the ATF pump driven gear shaft (B) moves smoothly in the axial and normal operating direction.



1. 4. Install the two dowel pins and the secondary separator plate on the main valve body, then install the secondary valve body. Do not install the bolts on the secondary valve body (three bolts).
2. 5. Install the control shaft (A) in the housing along with the manual valve (B).



3. 6. Install the detent arm (C) and arm shaft (D) in the main valve body (E), then hook the detent arm spring (F) to the detent arm.
   7. Install the servo body separator plate (H) on the secondary valve body (I), then install the servo body (eight bolts).
   8. Install the ATF strainer (one bolt).

Valve Body

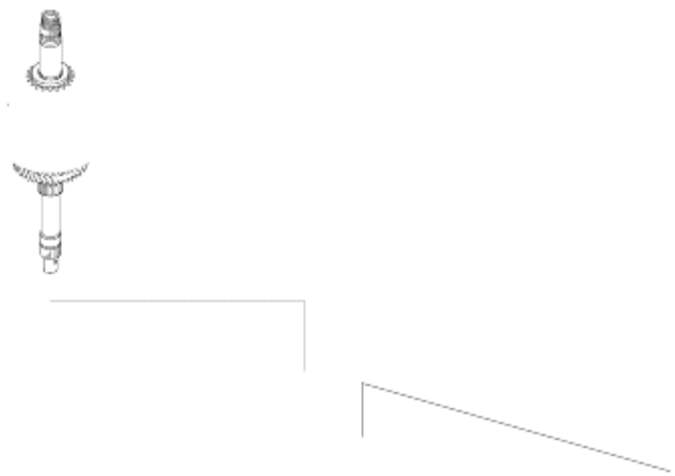
Valve Bodies and ATF Strainer Installation (cont'd)

9. Tighten the five bolts on the main valve body to 12 Nm (1.2 kgf/m, 8.7 lbf/ft).
10. Make sure the ATF pump drive gear and ATF pump driven gear shaft move smoothly. If they don't move smoothly, disassemble the valve bodies and loosen the main valve body bolts.
    Realign the ATF pump driven gear shaft, reassemble the valve bodies and retighten the bolts to the specified torque, then recheck.
    Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
11. Install the stator shaft and stator shaft stop.
12. Install the three bolts and stop shaft bracket on the secondary valve body.
13. Install the torque converter check valve, valve spring, cooler relief valve and valve spring in the regulator valve body, then install the regulator valve body with two dowel pins on the main valve body (one bolt).
14. Install the lock-up separator plate and two dowel pins on the regulator valve body.
15. Install the lock-up valve body (seven bolts).
16. Install the four ATF feed pipes in the servo body.
17. Install the three ATF feed pipes in the secondary valve body; install the 105.8 mm feed pipe with its filter side away from the secondary valve body.
18. Install the two ATF feed pipes in the main valve body; install the 138.8 mm feed pipe with its filter side away from the main valve body.
19. Install the 220 mm ATF feed pipe in the main valve body and the ATF feed pipe in the lock-up valve body (7-position).

Transmission Housing

Shaft Assemblies and Housing Installation

Exploded View



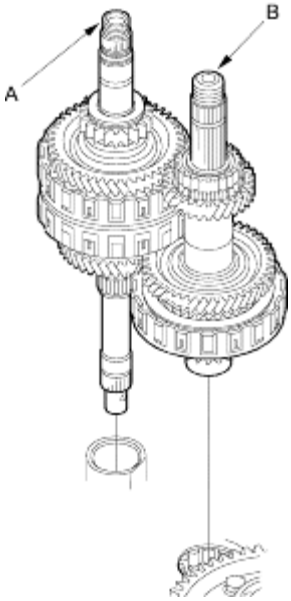
1. MAINSHAFT SPEED SENSOR
2. MAINSHAFT SPEED SENSOR WASHER (equipped on SLXA transmission)
3. TRANSMISSION HANGER
4. TRANSMISSION HOUSING MOUNTING BOLT
   10 x 1.25 mm, 44 Nm (4.5 kgf/m, 33 lbf/ft)
5. TRANSMISSION HOUSING
6. COUNTERSHAFT REVERSE GEAR
7. REVERSE GEAR COLLAR
8. LOCK WASHER, Replace
9. REVERSE SHIFT FORK
10. NEEDLE BEARING
11. REVERSE SELECTOR
12. CONNECTOR BRACKET
13. DOWEL PINS
14. COUNTERSHAFT SUB-ASSEMBLY
15. DIFFERENTIAL ASSEMBLY
16. TORQUE CONVERTER HOUSING
17. TRANSMISSION HOUSING GASKET, Replace
18. MAINSHAFT SUB-ASSEMBLY
19. O-RING, Replace
20. DOWEL PIN

Transmission Housing

Shaft Assemblies and Housing Installation (cont'd)

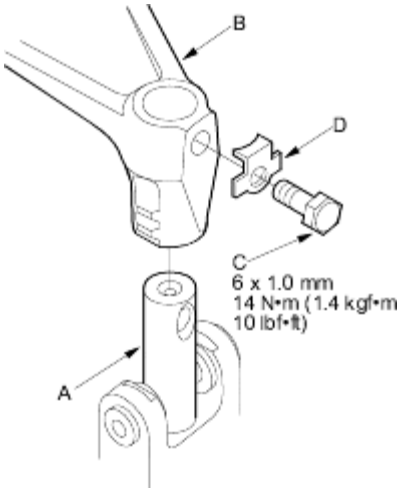
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Install the sub-shaft in the transmission housing, if necessary (7-position) (see page 14-203).
2. Install the reverse idler gear in the transmission housing (see page 14-178).
3. Assemble the mainshaft sub-assembly (see page 14-192) and countershaft sub-assembly (see page 14-195).
4. Install the differential assembly in the torque converter housing.
5. Install the mainshaft sub-assembly (A) and countershaft sub-assembly (B) together in the torque converter housing.



6. Turn the shift fork shaft (A) so the large chamfered hole is facing the fork bolt hole. Then install the shift fork (B) and reverse selector together on the shift fork shaft and countershaft.

Secure the shift fork to the shift fork shaft with the lock bolt (C) and a new lock washer (D), then bend the lock washer against the bolt head.



7. Install the countershaft reverse gear, needle bearing and countershaft reverse gear collar on the countershaft.

Automatic Transmission
Symptom Troubleshooting Index (cont'd)

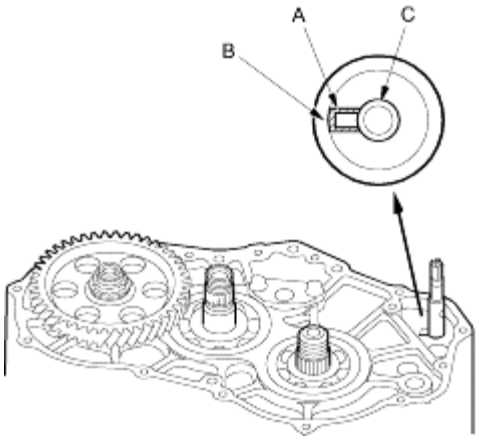
Symptom	Probable cause(s)	Notes
Transmission does not shift into P position	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn 3. Parking mechanism defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Stall speed high, but all clutch pressures are in specification	Torque converter check valve defective	• Inspect the clutch assemblies for seizure and wear. If the clutch assembly is seized or excessively worn, repair it and inspect the CPC valve and A/T clutch pressure solenoid valves for free movement. • If the ATF strainer is clogged with particles of steel or aluminium, inspect the ATF pump. If the ATF pump is OK and no cause for the contamination is found, replace the torque converter.
Lock-up clutch does not disengage	1. Lock-up timing valve defective 2. Lock-up shift valve defective 3. Lock-up control valve defective 4. Lock-up clutch piston defective 5. Torque converter clutch solenoid valve defective 6. A/T clutch pressure control solenoid valve B defective 7. Countershaft speed sensor defective. 8. Restricted ATF cooler	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the countershaft speed sensor installation. • Check ATF cooling system for restriction.
No engine braking in 1 position	1st-hold clutch defective	• Check 1st-hold clutch pressure. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Transmission Housing

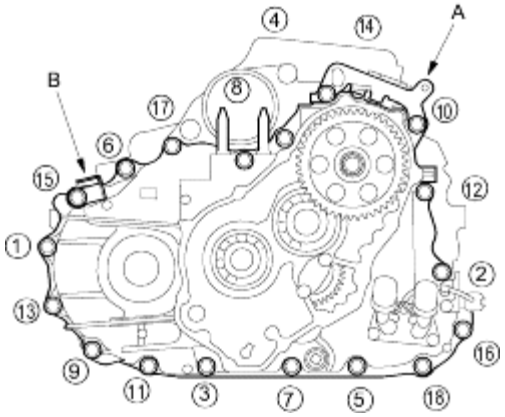
Shaft Assemblies and Housing Installation (cont'd)

1. 8. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.



1. 9. Install the three dowel pins and a new gasket on the torque converter housing.
2. 10. Place the transmission housing on the torque converter housing. Do not install the mainshaft speed sensor before installing the transmission housing on the torque converter housing.
11. Install the housing bolts along with the transmission hanger (A) and connector bracket (B), tighten the bolts in two or more steps in the sequence shown to 44 Nm (4.5 kgf/m, 33 lbf/ft).



3. 12. Install the mainshaft speed sensor with sensor washer (SLXA transmission).

NOTE: The mainshaft speed sensor washer is equipped on the SLXA transmission; the BMXA transmission does not have the washer.

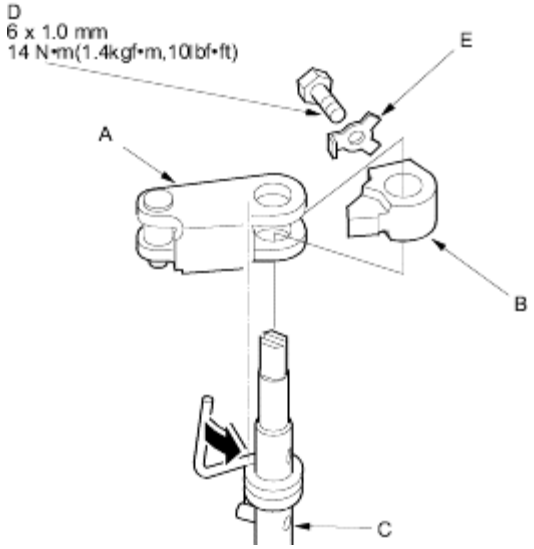
Transmission End Cover

End Cover, 1st Gears and 1st Clutch Installation

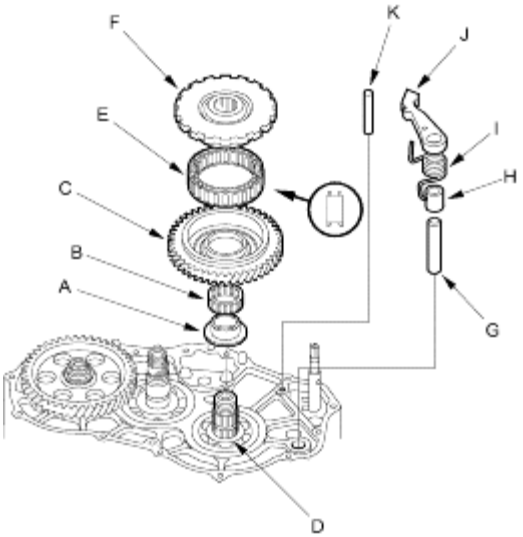
Special Tools Required

Mainshaft Holder set, 07PAB-0010000

1. 1. Install the park lever (A) and park lever stop (B) on the control shaft (C), then install the lock bolt (D) with a new lock washer (E). Do not bend the lock tab of the lock washer until step 19.



1. 2. Lubricate the following parts with ATF:
   - Splines of the countershaft and park gear.
   - Threads of the countershaft and old locknut.
   - Old conical spring washer and areas where the park gear contacts the conical spring washer.
2. 3. Install the countershaft 1st gear collar (A), needle bearing (B) and countershaft 1st gear (C) on the countershaft (D).



3. 4. Install the one-way clutch (E) in the direction shown in the countershaft 1st gear.
   5. Align the park gear splines with those on the countershaft, then push the park gear (F) onto the countershaft by hand.
   6. Install the park pawl shaft (G), pawl shaft collar (H), park pawl spring (I), park pawl (J) and stop shaft (K) on the transmission housing, then engage the park pawl with the park gear.

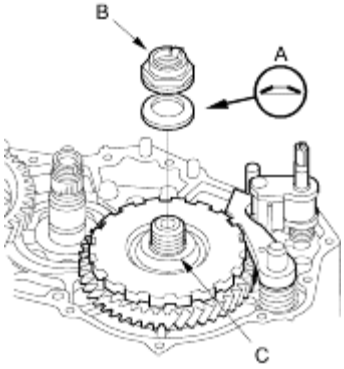
Transmission End Cover

End Cover, 1st Gears and 1st Clutch Installation (cont'd)

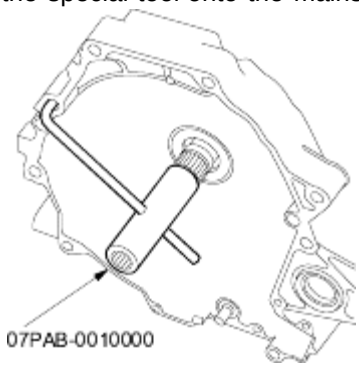
7. Install the old conical spring washer (A) and old locknut (B) on the countershaft (C). Tighten the old locknut to 103 Nm (10.5 kgf/m, 75.9 lbf/ft), then remove the old locknut and conical spring washer.

NOTE:

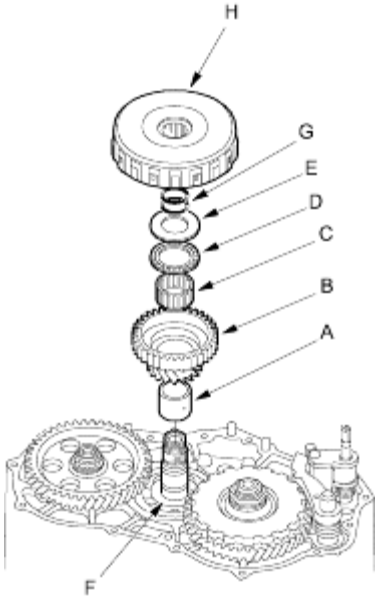
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- Countershaft locknut has left-hand threads.



8. Install the special tool onto the mainshaft.



9. Install the mainshaft 1st gear collar (A), mainshaft 1st gear (B), needle bearing (C), thrust needle bearing (D) and thrust washer (E) on the mainshaft (F).

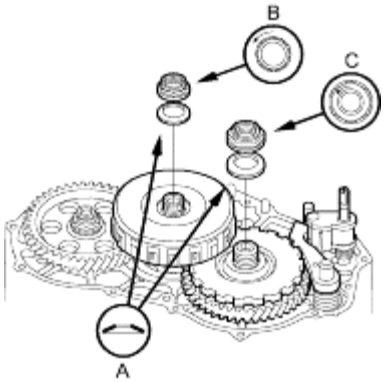


10. Wrap the mainshaft splines with tape to prevent O-ring damage. Install new O-rings (G) in the mainshaft grooves, then remove the tape.
11. Install the 1st clutch assembly (H) on the mainshaft.

Transmission End Cover

End Cover, 1st Gears and 1st Clutch Installation (cont'd)

1. 12. Lubricate the threads of both shafts, the new locknuts and the new conical spring washers with ATF.
2. 13. Install the new conical spring washers (A) in the direction shown and install the new mainshaft locknut (B) and the new countershaft locknut (C).



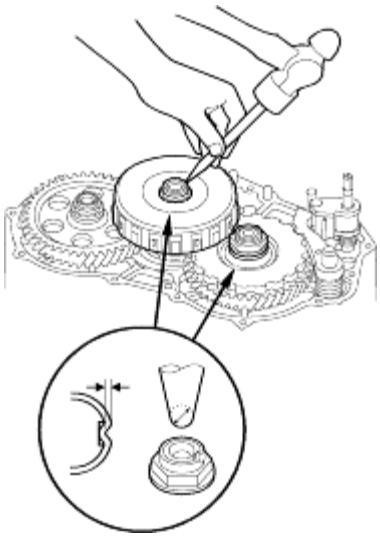
3. 14. Tighten the countershaft locknut to 103 Nm (10.5 kgf/m, 75.9 lbf/ft) and tighten the mainshaft locknut to 78 Nm (8.0 kgf/m, 58 lbf/ft).

NOTE:

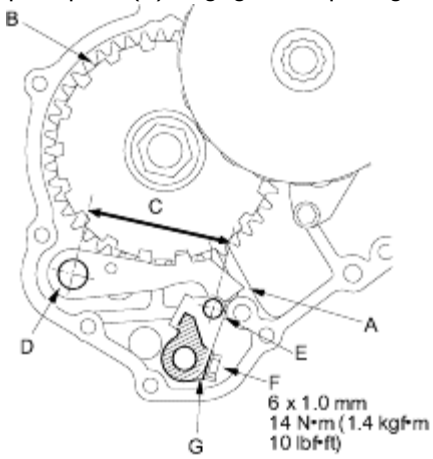
- Use a torque wrench to tighten the locknuts. Do not use an impact wrench.
- Countershaft and mainshaft locknuts have left-hand threads.

4. 15. Remove the special tool from the mainshaft.

1. 16. Stake both locknuts into the shafts with a 3.5 mm punch.



2. 17. Set the park lever in P.gif position, then verify that the park pawl (A) engages the park gear (B).

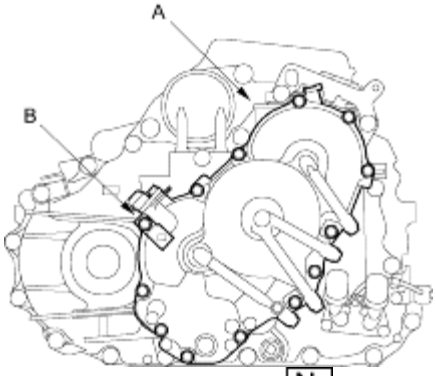


3. 18. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park level roller pin (E) (see page 14-174).
19. Tighten the lock bolt (F) and bend the lock tab of the lock washer (G) against the bolt head.

Transmission End Cover

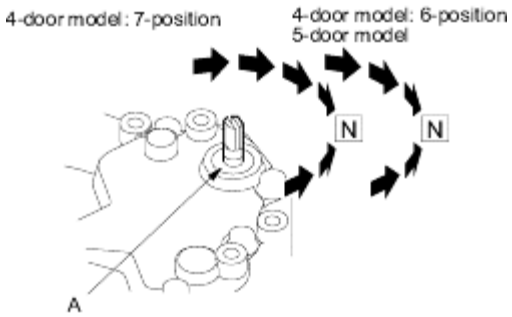
End Cover, 1st Gears and 1st Clutch Installation (cont'd)

1. 20. Install the end cover (A) with the two dowel pins, new O-rings, new gasket and connector bracket (B). Tighten the 12 bolts to 12 Nm (1.2 kgf/m, 8.7 lbf/ft).



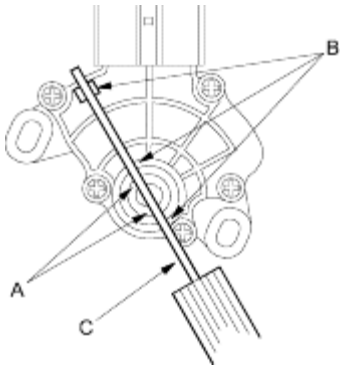
2. 21. Set the control shaft (A) to N position by turning it.

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

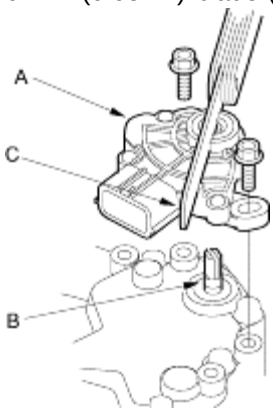


1. 22. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch, then put a 2.0 mm (0.08 in.) feeler gauge blade (C) in the cutouts to hold it in the N position.

NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



2. 23. Install the transmission range switch (A) gently on the control shaft (B) with holding the N position with the 2.0 mm (0.08 in.) blade (C).

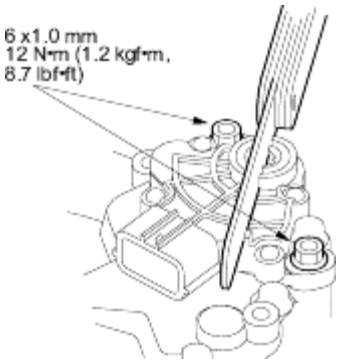


Transmission End Cover

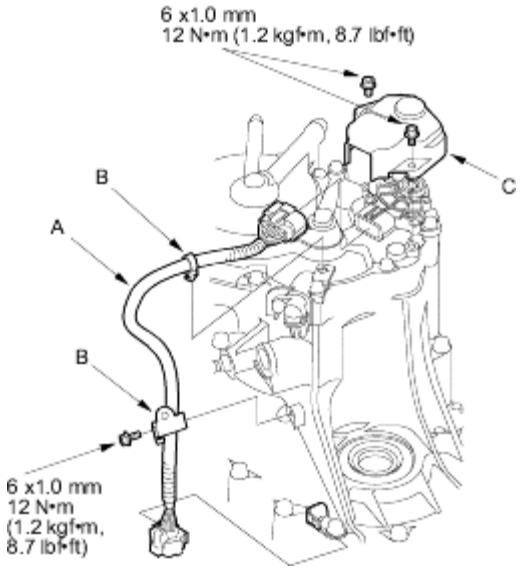
End Cover, 1st Gears and 1st Clutch Installation (cont'd)

1. 24. Tighten the bolts on the transmission range switch while you continue to hold the N position.

Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.

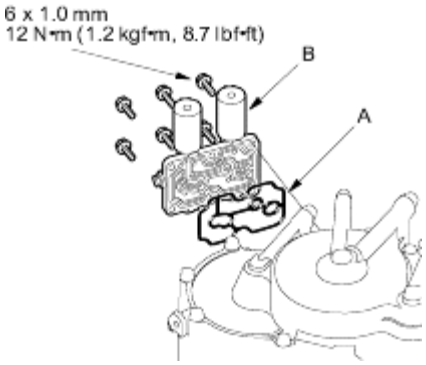


2. 25. Connect the switch harness connector securely, then secure the switch harness (A) with the clamps (B).



3. 26. Install the transmission range switch cover (C).

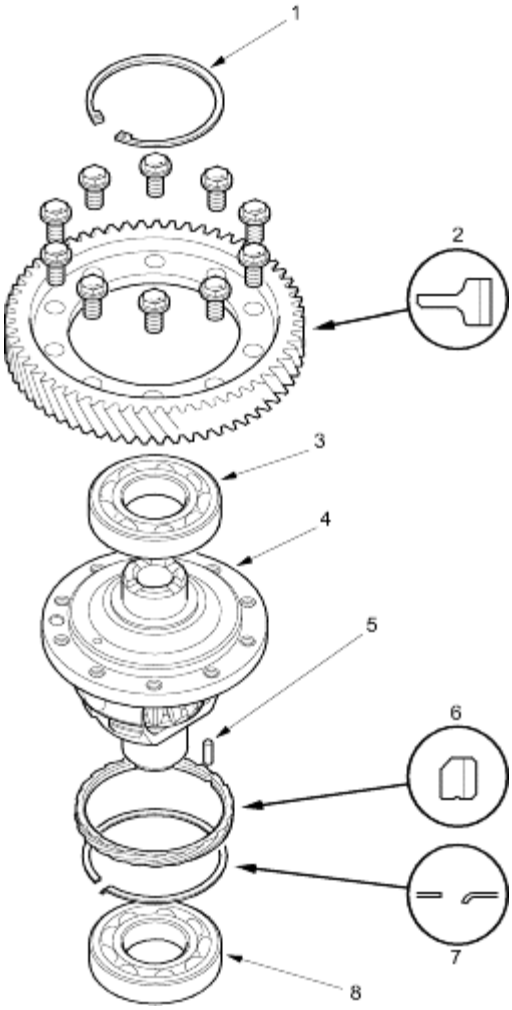
1. 27. Install the filter/gasket (A) in A/T clutch pressure control solenoid valve body groove, then install the A/T clutch pressure control solenoid valves A and B (B), if it was removed. Do not pinch the filter/gasket.



2. 28. Install the ATF cooler lines and new sealing washers. Tighten the line fittings to 28 Nm (2.9 kgf/m, 21 lbf/ft).
29. Install the ATF dipstick.

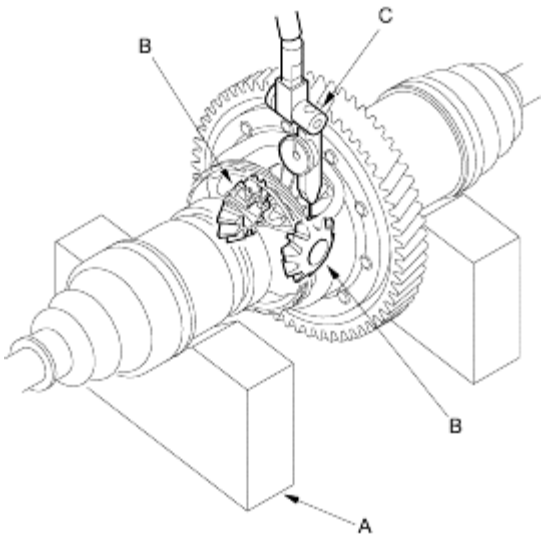
A/T Differential

Component Location Index



1. 1. SET RING, 80 mm
   Selection, page 14-230
2. FINAL DRIVEN GEAR
   Replacement, page 14-228
3. CARRIER BEARING
   Replacement, page 14-228
4. DIFFERENTIAL CARRIER
   Backlash Inspection, page 14-226
   Replacement, page 14-227
5. ROLLER, 5 x 10 mm
6. SPEEDOMETER DRIVE GEAR
7. SNAP RING
8. CARRIER BEARING
   Replacement, page 14-228

1. 1. Place the differential assembly on V-blocks (A) and install both axles.

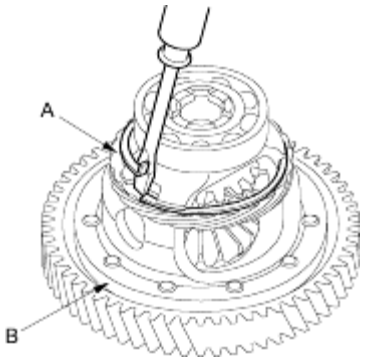


2. 2. Check the backlash of the pinion gears (B) with a dial indicator (C).
   STANDARD: 0.05-0.15 mm (0.002-0.006 in.)
   3. If the backlash is out of standard, replace the differential carrier.

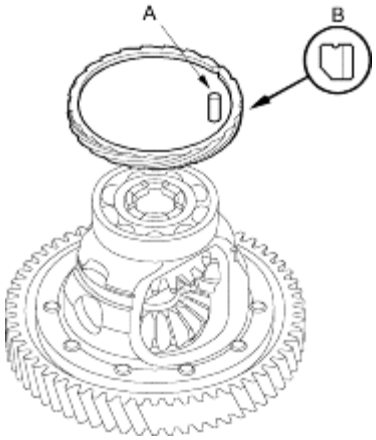
A/T Differential

Differential Carrier Replacement

1. 1. Remove the snap ring (A) from the differential assembly (B).

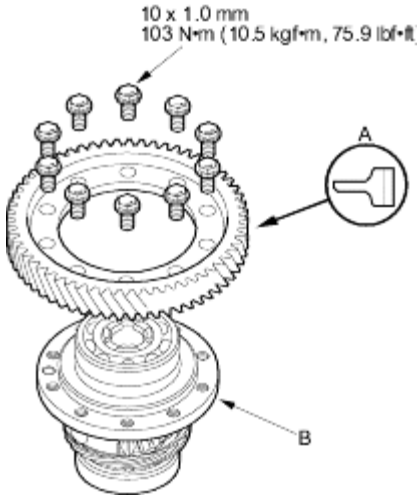


2. 2. Remove the 5 x 10 mm roller (A) and the speedometer drive gear (B).

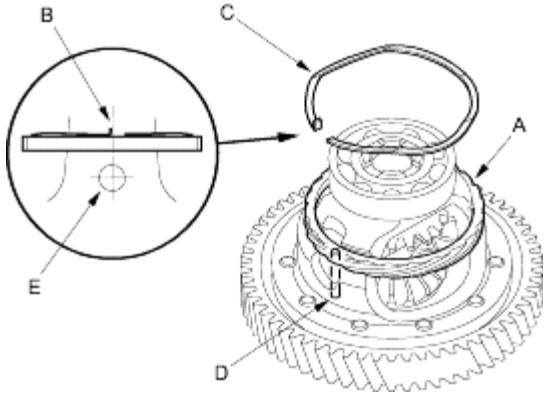


3. 3. Remove final driven gear bolts, then separate the final driven gear and the differential carrier. The final driven gear bolts have left-hand threads.

1. 4. Install the final driven gear (A) on the new differential carrier (B) with the chamfered side on the inner bore facing the differential carrier.



2. 5. Tighten the bolts to 103 Nm (10.5 kgf/m, 75.9 lbf/ft) in a criss-cross pattern.
   6. Install the speedometer drive gear (A) with its chamfered side facing the carrier. Align the cutout on the bore of the speedometer drive gear with the 5 x 10 mm roller hole, then install the 5 x 10 mm roller.

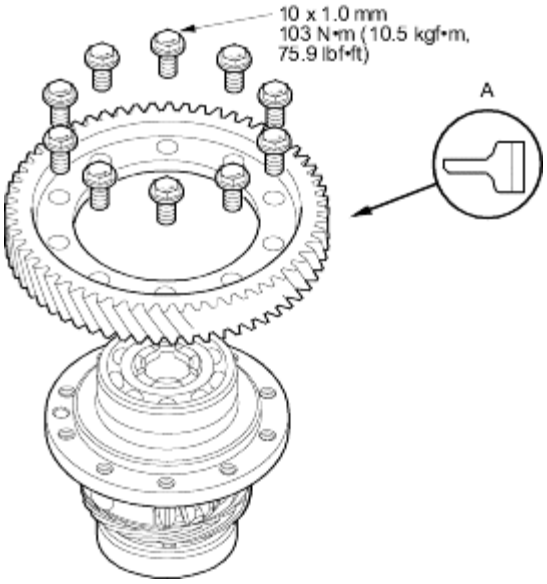


3. 7. Align the hooked end (B) of the snap ring (C) with the spring pin (D) in the pinion shaft (E), then install the snap ring in the differential carrier groove.

A/T Differential

Final Driven Gear Replacement

1. 1. Remove the final driven gear from the differential carrier. The final driven gear bolts have left-hand threads.

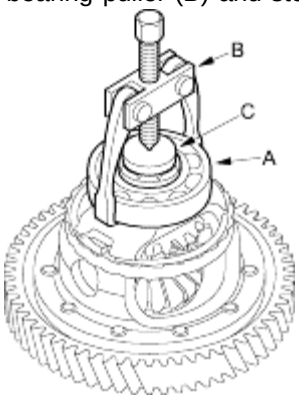


2. 2. Install the final driven gear with the chamfered side on the inner bore (A) facing the differential carrier.
   3. Tighten the bolts to 103 Nm (10.5 kgf/m, 75.9 lbf/ft) in a criss-cross pattern.

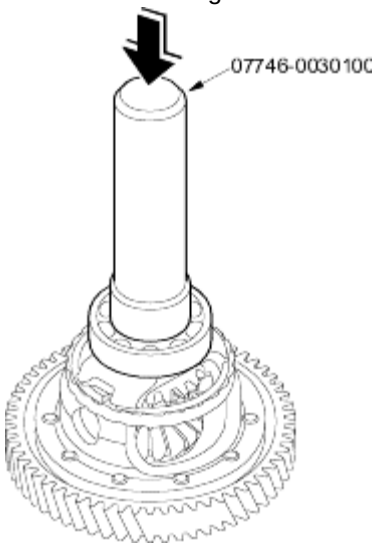
Special Tools Required

Driver 40 mm I.D., 07746-0030100

1. 1. Remove the bearings (A) with a commercially available bearing puller (B) and stepper adapter (C).



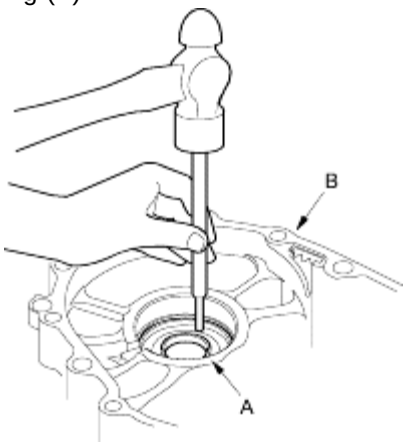
2. 2. Install the new bearings with the special tool and a press. Press the bearing on until it bottoms.



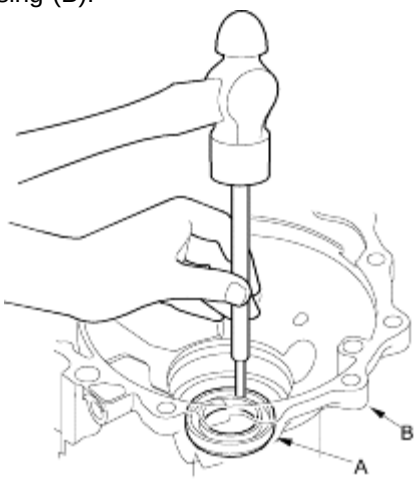
A/T Differential
Oil Seal Replacement

Special Tools Required
- Handle driver, 07749-0010000
- Driver attachment, 07NAD-PX40100
- Driver attachment, 07JAD-PH80101

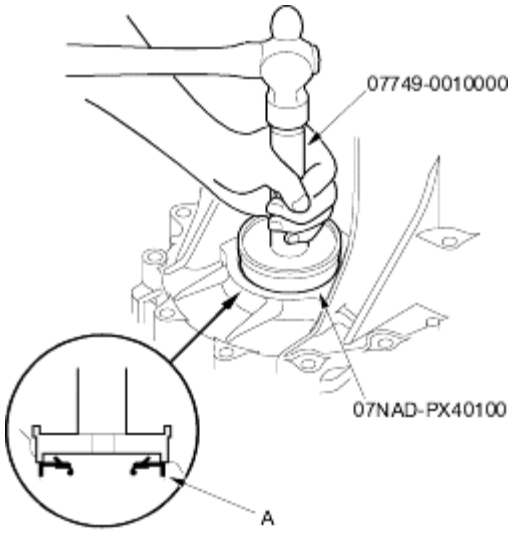
1. 1. Remove the oil seal (A) from the transmission housing (B).



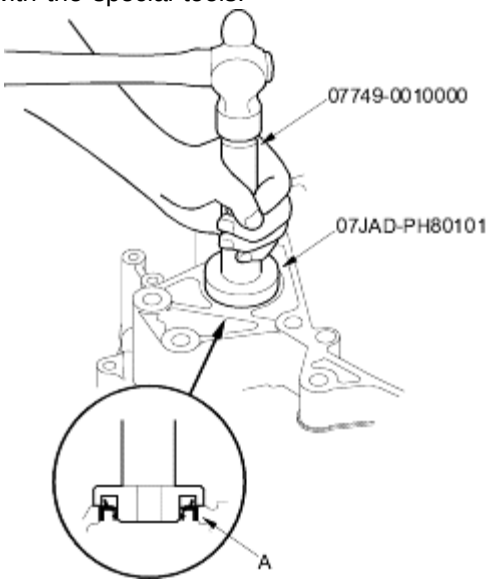
2. 2. Remove the oil seal (A) from the torque converter housing (B).



1. 3. Install the oil seal (A) in the transmission housing with the special tools.



2. 4. Install the oil seal (A) in the torque converter housing with the special tools.



Automatic Transmission
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Lock-up clutch does not operate smoothly	1. Torque converter check valve defective 2. Lock-up timing valve defective 3. Lock-up shift valve defective 4. Lock-up control valve defective 5. Lock-up clutch piston defective 6. Torque converter clutch solenoid valve defective 7. A/T clutch pressure control solenoid valve B defective 8. Countershaft speed sensor defective	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the countershaft speed sensor installation.
Look-up clutch does not engage	1. Torque converter check valve defective 2. Lock-up timing valve defective 3. Lock-up shift valve defective 4. Lock-up control valve defective 5. Lock-up clutch piston defective 6. Torque converter clutch solenoid valve defective 7. A/T clutch pressure control solenoid valve B defective 8. Mainshaft speed sensor defective 9. Countershaft speed sensor defective	• Check the D indicator light indication and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve filter/gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valve. • Check the D indicator light indication and check for loose connectors. Inspect the O-rings and check the torque converter clutch solenoid valve for seizure. • Check the mainshaft speed sensor installation. • Check the countershaft speed sensor installation.
A/T gear position indicator does not indicate shift lever positions	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn 3. Transmission range switch defective or out of adjustment	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the D indicator light indication and check for loose connectors. Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable.

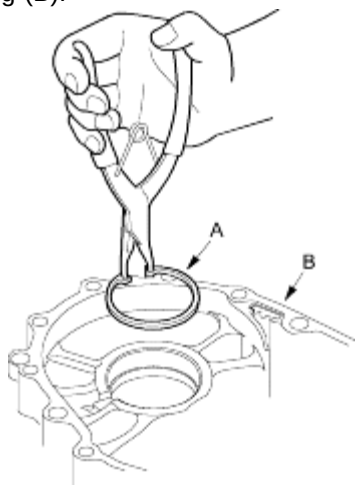
A/T Differential

Carrier Bearing Side Clearance Inspection

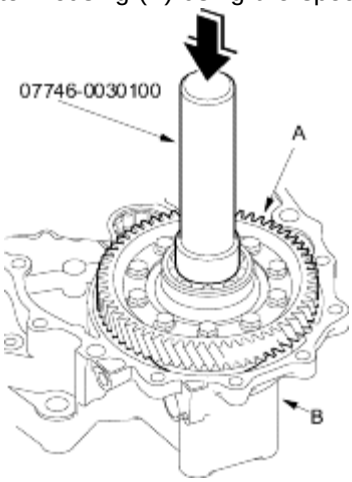
Special Tools Required

Driver 40 mm I.D., 07746-0030100

1. 1. Install the 80 mm set ring (A) in the transmission housing (B).



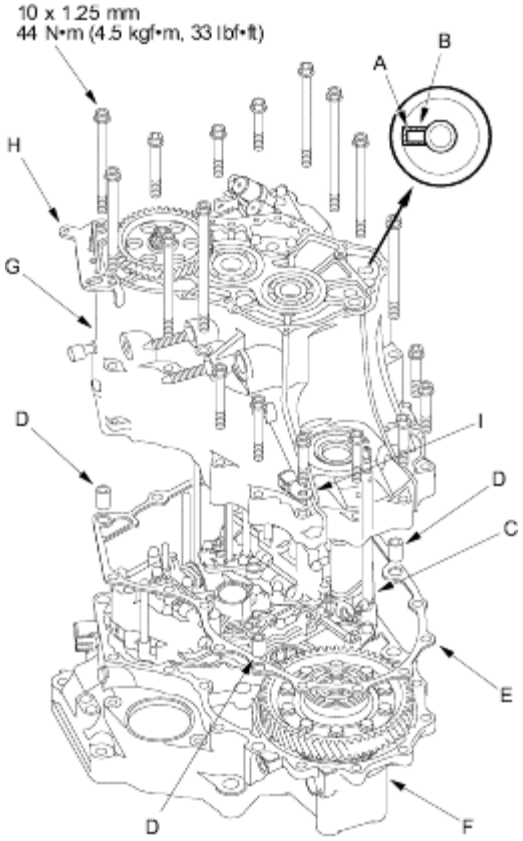
2. 2. Install the differential assembly (A) in the torque converter housing (B) using the special tool.



1. 3. Align the spring pin (A) on the control shaft with the transmission housing groove (B) by turning the control shaft (C).

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

2. 4. Install the three dowel pins (D) and the gasket (E) on the torque converter housing (F).



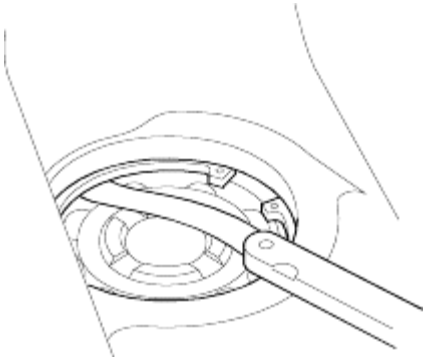
3. 5. Place the transmission housing (G) on the torque converter housing.
6. Install the housing bolts along with the transmission hanger (H) and connector bracket (I). Tighten the bolts in two or more steps to 44 Nm (4.5 kgf/m, 33 lbf/ft) in a criss-cross pattern.

A/T Differential

Carrier Bearing Side Clearance Inspection (cont'd)

1. 7. Measure the clearance between the 80 mm set ring and carrier bearing outer race with a feeler gauge.

STANDARD: 0-0.15 mm (0-0.006 in.)



2. 8. If the clearance is out of standard, remove the 80 mm set ring and measure its thickness.
9. Select and install a new set ring, then recheck the clearance and make sure it is within the standard.

SET RING, 80 mm

No.	Part Number	Thickness
1	90414-689-000	2.50 mm (0.098 in.)
2	90415-689-000	2.60 mm (0.102 in.)
3	90416-689-000	2.70 mm (0.106 in.)
4	90417-689-000	2.80 mm (0.110 in.)
5	90418-689-000	2.90 mm (0.114 in.)
6	90419-PH8-000	3.00 mm (0.118 in.)

Memo

Honda Multi Matic Transmission/Continuously Variable Transmission (CVT)

Honda Multi Matic Transmission/Continuously Variable Transmission (CVT)

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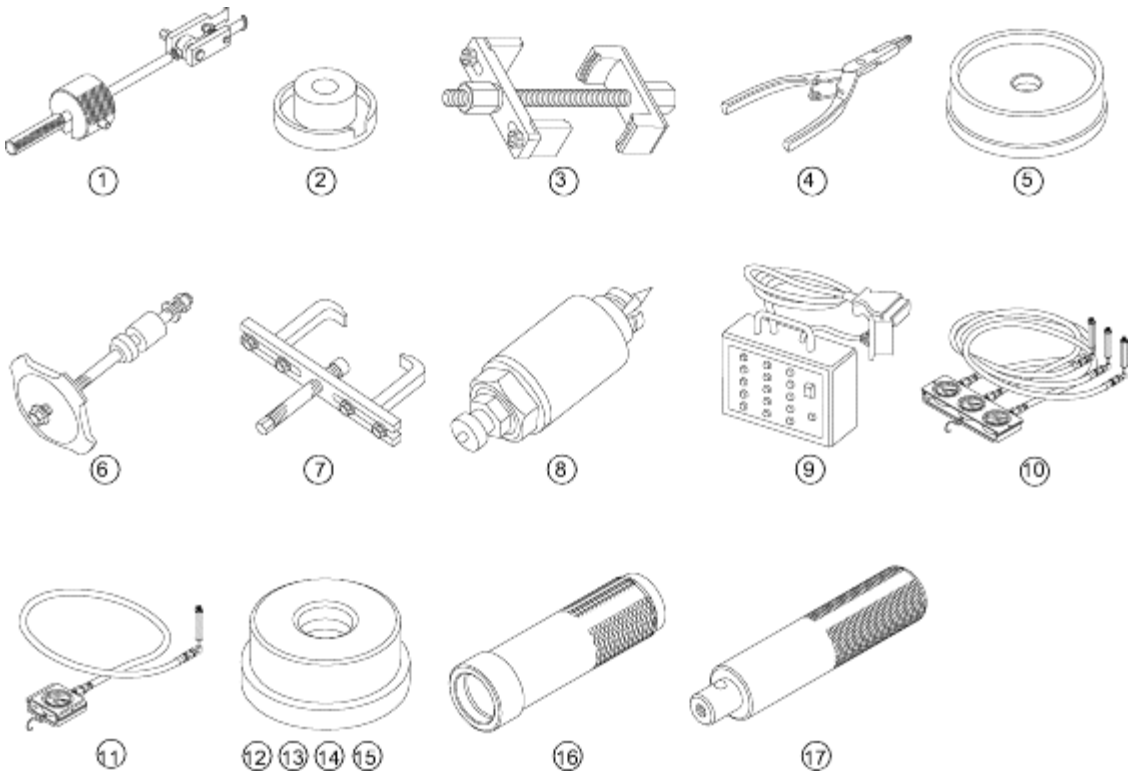
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Honda Multi Matic Transmission/CVT

Special Tools

Ref.No.	Tool Number	Description	Qty
1	07JAC-PH80000	Adjustable Bearing Remover Set	1
1-1	07JAC-PH80100	Bearing Remover Attachment	1
1-2	07JAC-PH80200	Remover Handle Assembly	1
1-3	07741-0010201	Remover Weight	1
2	07JAD-PH80101	Driver Attachment	1
3	07LAE-PX40000	Clutch Spring Compressor Set	1
3-1	07LAE-PX40100	Clutch Spring Compressor Attachment	1
3-2	07LAE-PL50101	Clutch Spring Compressor Attachment	1
3-3	07GAE-PG40200	Clutch Spring Compressor Bolt Assembly	1
4	07LGC-0010100	Snap Ring Pliers	1
5	07NAD-PX40100	Driver Attachment	1
6	07TAE-P4V0110	Reverse Brake Spring Compressor	1
7	07TAE-P4V0120	Start Clutch Remover	1
8	07TAE-P4V0130	Start Clutch Installer	1
9	07WAJ-0010100	DLC Terminal Box	1
10	07406-0020004	A/T Oil Pressure Gauge Set	1
11	07746-0070001	A/T Low Pressure Gauge	1
12	07746-0010100	Driver Attachment, 32 x 35 mm	1
13	07746-0010300	Driver Attachment, 42 x 47 mm	1
14	07746-0010500	Driver Attachment, 62 x 68 mm	1
15	07746-0010600	Driver Attachment, 72 x 75 mm	1
16	07746-0030100	Driver, 40 mm I.D.	1
17	07749-0010000	Handle Driver	1



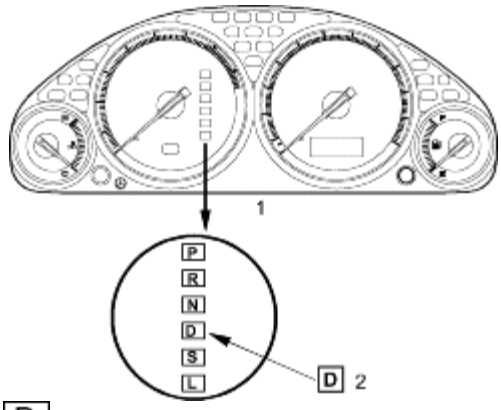
Honda Multi Matic Transmission/CVT
General Troubleshooting Information

How to Check for DTCs

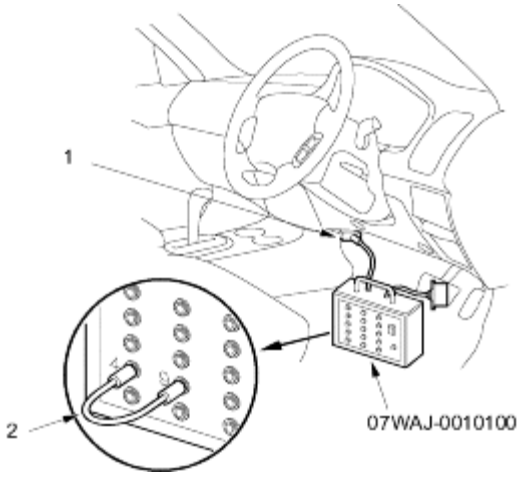
Special Tools Required

DLC terminal box, 07WAJ-0010100

When the PCM senses an abnormality in the input or output systems, the D indicator light in the gauge assembly will usually blink and/or the MIL may come on. When the Data Link Connector (located under the dash behind the centre console) is connected with the special tool (DLC Terminal Box) and the SCS signal terminal is connected to ground with the jumper wire at the special tool. The D indicator light will blink the Diagnostic Trouble Code (DTC) when the ignition switch is turned ON (II).

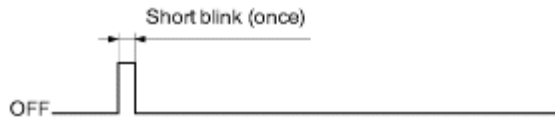


When the D indicator light has been reported on, connect the Data Link Connector (located under dash behind the centre console) with the special tool (DLC Terminal Box), then connect the jumper wire between the terminals 4 and 9 at the special tool. Turn the ignition switch ON (II), then observe the D indicator light.

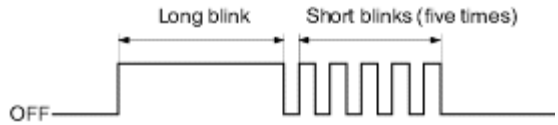


Codes 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code. After determining the code, refer to the DTC Troubleshooting Index.

Example: DTC 1



Example: DTC 15



If the D indicator light and the MIL (Malfunction Indicator Lamp) come on at the same time, or if a driveability problem is suspected, follow this procedure:

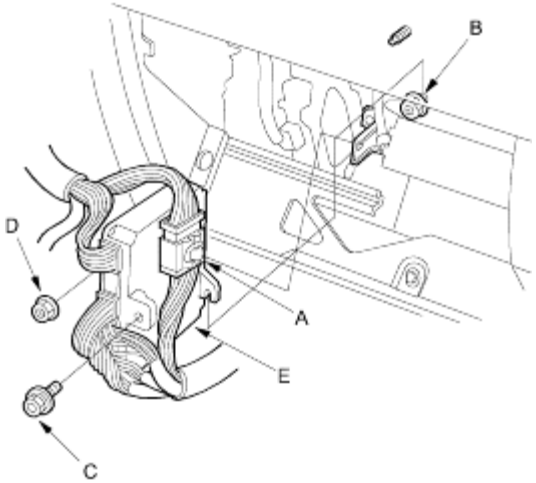
1. 1. Record all fuel and emission DTCs, A/T DTCs.
   2. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC 70, DTC 70 means there is one or more A/T DTCs and no problems were detected in the fuel and emissions circuit of the PCM).
   3. Write down the radio station presets.
   4. Reset the memory by removing NO.6 ECU (PCM) fuse in the under-hood fuse/relay box for more than 10 seconds.
   5. Drive the vehicle for several minutes at speeds over 30 mph (50 km/h) and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight and then go to step 6.
   6. Reset the radio preset stations and set the clock.

Honda Multi Matic Transmission/CVT

General Troubleshooting Information (cont'd)

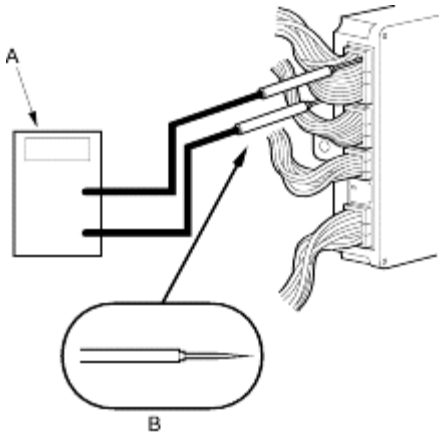
How to Troubleshoot Circuits at the PCM

1. 1. Remove the glove box stops, then open the glove box.
   2. Remove the harness connector clamp (A) from its bracket.
   3. Loosen the mounting nut (B) on the lower right of the PCM and remove the mounting bolt (C) and nut (D) on the left of the PCM.



2. 4. Lift the PCM up to clear the mounting nut on the lower right of the PCM, then pull out the PCM (E).

1. 5. Inspect the circuit on the PCM, according to the DTC troubleshooting, with a digital multitester (A) and tapered tip probe (B) as shown.



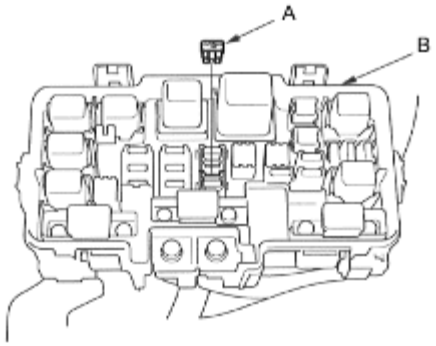
2. 6. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

Honda Multi Matic Transmission/CVT

General Troubleshooting Information (cont'd)

PCM Reset Procedures

1. 1. Write down the radio station presets.
   2. Turn the ignition switch OFF.
   3. Remove NO.6 ECU (PCM) fuse (15 A) (A) from the under-hood fuse/relay box (B) for more than 10 seconds.



How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

1. 1. Turn the ignition switch OFF.
   2. Disconnect the special tool from the 16P Data Link Connector.
   3. Reset the PCM.
   4. Turn the ignition switch ON (II).
   5. Reset the radio preset stations and set the clock.
   6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h).

Honda Multi Matic Transmission/CVT

DTC Troubleshooting Index

DTC	D Indicator Light	MIL	Detection Item	Page
5	Blinks	ON	Transmission range switch (short to ground)	(see page 14-290)
6	OFF	ON	Transmission range switch (open)	(see page 14-292)
30	Blinks	ON	CVT speed change control valve assembly	(see page 14-294)
31	Blinks	ON	CVT pulley pressure control valve assembly	(see page 14-295)
32	Blinks	ON	CVT start clutch pressure control valve assembly	(see page 14-296)
33	Blinks	ON	Inhibitor solenoid	(see page 14-297)
34	Blinks	ON	CVT drive pulley speed sensor	(see page 14-298)
35	Blinks	ON	CVT driven pulley speed sensor	(see page 14-301)
36	Blinks	ON	CVT speed sensor	(see page 14-304)
42	Blinks	ON	Shift control system	(see page 14-307)
43	Blinks	ON	Start clutch control system	(see page 14-308)
93	Blinks	ON	Vehicle speed sensor	(see page 14-309)

Honda Multi Matic Transmission/CVT

Symptom Troubleshooting Index

These symptoms DO NOT trigger Diagnostic Trouble Codes (DTCs) or cause the D indicator light to blink. If the MIL was reported ON or the D indicator light has been blinking, check for DTCs. But if the vehicle has one of the symptoms in the following chart, check the probable cause(s) for it, in the sequence listed, until you find the problem.

Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator light comes on and stays on or never comes on at all	1. Communication line between multiplex control unit and gauge assembly defective 2. Blown indicator light bulb	Check that the MIL indicates code for communication line between the multiplex control unit and the gauge assembly (see page 22-273. If the MIL does not indicate code, replace the indicator light bulb (see page 22-273).
S or L indicator light does not indicate while the shift lever is in that position	1. Communication line between multiplex control unit and gauge assembly defective 2. Blown indicator light bulb	Check that the MIL indicates code for communication line between the multiplex control unit and the gauge assembly (see page 22-273). If the MIL does not indicate code, replace the indicator light bulb (see page 22-87).
Engine does not start	1. Shift cable broken or out of adjustment 2. PCM defective 3. Transmission range switch defective 4. Flywheel assembly defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the D indicator light indication and check for loose transmission range switch connector.

Automatic Transmission
System Description

General Operation

The automatic transmission is a combination of a 3-element torque converter and electronically controlled automatic transmission that provides 4 speeds forward and 1 reverse. The 6-position transmission is dual-shaft automatic transmission and the 7-position is triple-shaft. The entire unit is positioned in line with the engine.

Torque Converter, Gears and Clutches

The torque converter consists of a pump, turbine and stator assembly in a single unit. They are connected to the engine crankshaft so they turn together as a unit as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion, when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmissioNmainshaft.

The 6-position transmission has two parallel shafts: the mainshaft and the countershaft. The 7-position transmission has three parallel shafts: the mainshaft, the countershaft and the sub-shaft. The mainshaft is in line with the engine crankshaft. The mainshaft includes the 1st, 2nd and 4th clutches and gears for 3rd, 2nd, 4th, reverse and 1st (3rd gear is integral with the mainshaft, while reverse gear is integral with the 4th gear). The countershaft includes the 3rd clutch and gears for 3rd, 2nd, 4th, reverse, 1st and park. Reverse and 4th gears can be locked to the countershaft at its centre, providing 4th gear or reverse, depending on which way the selector is moved. The sub-shaft includes the 1st-hold clutch and gears for 1st and 4th. The gears on the mainshaft are in constant mesh with those on the countershaft. When certain combinations of gears are engaged by the clutches, power is transmitted from the mainshaft to the countershaft to provide D, D3, 2 and R positions (6-position) and D, D3, 2, 1 and R positions (7-position).

Electronic Control

The electronic control system consists of the Powertrain Control Module (PCM), sensors and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, behind the glove box.

Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, the secondary valve body, the servo body and the lock-up valve body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the modulator valve, the 1-2 shift valve, the 2nd orifice control valve, the servo control valve, the Clutch Pressure Back-up (CPB) valve and the ATF pump gears. The regulator valve body contains the regulator valve, the lock-up control valve, the torque converter check valve and the cooler relief valve. The secondary valve body contains the 2-3 shift valve, the 3-4 shift valve, 3-4 orifice control valve, the 4th exhaust valve and the Clutch Pressure Control (CPC) valve. The servo body contains the servo valve and the 1st, 2nd, 3rd and 4th accumulators. The lock-up valve body contains the lock-up shift valve and the lock-up timing valve. Fluid from the regulator passed through the manual valve to the various control valves. The 1st, 3rd and 4th clutches receive fluid from their respective feed pipe and the 2nd clutch receives fluid from the internal hydraulic circuit.

Shift Control Mechanism

The PCM controls to shift gears the shift solenoid valves A and B and A/T clutch pressure control solenoid valve A, while receiving input signal from various sensors located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. The A/T clutch pressure control solenoid valve A controls the CPC valve to regulate the CPC pressure and to shift smoothly between lower gear and higher gear. This pressurises a line to one of the clutches, engaging the clutch and its corresponding gear.

Lock-up Mechanism

In D position (3rd and 4th) and D3 position (3rd), pressurised fluid is drained from the back of the torque converter through a fluid passage, causing the lock-up piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with hydraulic control, the PCM optimises the timing of the lock-up mechanism. When the torque converter clutch solenoid valve activates, modulator pressure changes to switch lock-up on and off. The lock-up control valve and the lock-up timing valve control the range of the lock-up according to A/T clutch pressure control solenoid valve B. The torque converter clutch solenoid valve is mounted on the torque converter housing and A/T clutch pressure control solenoid valve B is mounted on the transmission housing with solenoid valve A as an assembly. They are all controlled by the PCM.

Honda Multi Matic Transmission/CVT

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any position	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Start clutch defective 4. Start clutch feed pipe damaged or out of round 5. Input shaft worn or damaged 6. Secondary drive gear or secondary driven gear worn or damaged 7. Final driven gear worn or damaged 8. Sun gear worn or damaged 9. Detent lever assembly worn or damaged 10. Control lever worn or damaged 11. Park pawl and pawl shaft worn or damaged 12. ATF pump worn, binding, or foreign material in ATF pump 13. ATF pump chain or ATF pump sprocket worn or damaged 14. Low ATF level 15. ATF strainer or ATF filter clogged 16. Valve body assembly defective 17. CVT pulley pressure control valve assembly defective 18. CVT speed change control valve assembly defective 19. Start clutch pressure control valve assembly 20. Manual valve body defective 21. Manual valve lines worn or damaged 22. Solenoid harness worn or damaged 23. PCM defective 24. Transmission range switch defective 25. Flywheel drive plate worn or damaged 26. Flywheel assembly defective 27. Engine out put low	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission and flush the torque converter, cooler and lines. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • If the strainer is clogged, find the damaged components that caused debris. • Check the D indicator light indication and check for loose solenoid harness connector and transmission range switch connector.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle does not move in D, L and S positions	1. Forward clutch defective 2. Reverse brake piston stuck, worn, or damaged 3. Sun gear worn or damaged 4. Shift cable broken or out of adjustment 5. Manual valve lever and pin worn 6. Manual valve body defective 7. PCM defective 8. Transmission range switch defective 9. Engine output low	• Check the forward clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the D indicator light indication and check for loose transmission range switch connector.
Vehicle does not move in R position	1. Forward clutch defective 2. Reverse brake defective 3. Reverse brake piston stuck, worn, or damaged 4. Planetary carrier assembly worn or damaged 5. Sun gear worn or damaged 6. Ring gear worn or damaged 7. Input shaft needle bearing worn or damaged 8. Thrust needle bearing on planetary carrier seized up, worn or damaged 9. Thrust washer on planetary carrier seized up, worn or damaged 10. Shift cable broken or out of adjustment 11. Manual valve lever and pin worn 12. Valve body assembly defective 13. Pulley pressure control valve assembly defective 14. Manual valve body defective 15. Manual valve body line worn or damaged 16. Solenoid valve defective 17. Transmission range switch defective	• Check the forward clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the reverse brake pressure. • Inspect the brake piston and O-rings. Check the spring retainer for wear and damage. Inspect the brake end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the brake discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the brake end plate. • Check the needle bearing and thrust washers on the planetary carrier for wear and damage. If the needle bearing or thrust washer is worn or damaged, replace the bearing or washer and adjust the clearance with the thrust shim. • Check the D indicator light indication and check for loose solenoid harness connector and transmission range switch connector.

Honda Multi Matic Transmission/CVT

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Engine stops when shifted to D from N position	1. Intermediate housing assembly worn or damaged 2. Reverse brake defective 3. Reverse brake piston stuck, worn or damaged 4. Start clutch defective 5. Start clutch end plate clearance incorrect 6. ATF strainer or ATF filter clogged 7. CVT speed change control valve assembly defective 8. CVT start clutch pressure control valve assembly defective 9. Manual valve body defective 10. Solenoid harness worn or damaged 11. PCM defective 12. Start clutch control system memory in PCM defective 13. Engine out put low	• Check the reverse brake pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the D indicator light indication and check for loose solenoid harness connector and transmission range switch connector. • Calibrate start clutch control system.
Engine stops when shifted to R from N position	1. Intermediate housing assembly worn or damaged 2. Forward clutch defective 3. Start clutch defective 4. Start clutch end plate clearance incorrect 5. Planetary carrier worn or damaged 6. Thrust needle bearing on planetary carrier seized up, worn or damaged 7. Thrust washer on planetary carrier seized up, worn or damaged 8. Valve body assembly defective 9. CVT speed change control valve assembly defective 10. CVT start clutch pressure control valve assembly defective 11. Manual valve body defective 12. Solenoid harness worn or damaged 13. PCM defective 14. Start clutch control system memory in PCM defective 15. Engine out put low	• Check the forward clutch pressure. • Check the needle bearing and thrust washers on the planetary carrier for wear and damage. If the needle bearing or thrust washer is worn or damaged, replace the bearing or washer and adjust the clearance with the thrust shim. • Check the D indicator light indication and check for loose solenoid harness connector and transmission range switch connector. • Calibrate start clutch control system.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
No shift to higher ratio or lower ratio	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. ATF pump worn, binding, or foreign material in ATF pump 4. Low ATF level 5. ATF strainer or ATF filter clogged 6. Valve body assembly defective 7. CVT pulley pressure control valve assembly defective 8. CVT speed change control valve assembly defective 9. Solenoid harness worn or damaged 10. Drive and driven pulley speed sensors defective 11. CVT speed sensor or vehicle speed sensor defective 12. PCM defective	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission and flush the torque converter, cooler and lines. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • If the strainer is clogged, find the damaged components that caused debris. • Check the D indicator light indication and check for loose solenoid harness connector.
Poor acceleration	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. ATF strainer or ATF filter clogged 4. Valve body assembly defective 5. CVT pulley pressure control valve assembly defective 6. CVT speed change control valve assembly defective 7. CVT start clutch pressure control valve assembly defective 8. Manual valve lines worn or damaged 9. Solenoid valve defective 10. Solenoid harness worn or damaged 11. Drive and driven pulley speed sensors defective 12. CVT speed sensor or vehicle speed sensor defective 13. PCM defective 14. Engine out put low	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission and flush the torque converter, cooler and lines. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • If the strainer is clogged, find the damaged components that caused debris. • Check the D indicator light indication and check for loose solenoid harness connector.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Flares while driving	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Forward clutch defective 4. Reverse brake defective 5. Reverse brake piston stuck, worn or damaged 6. Start clutch defective 7. Start clutch end plate clearance incorrect 8. Start clutch feed pipe damaged or out of round 9. ATF deteriorated 10. Valve body assembly defective 11. CVT pulley pressure control valve assembly defective 12. CVT start clutch pressure control valve assembly defective 13. Manual valve body defective 14. Manual valve lines worn or damaged 15. Solenoid valve defective 16. Solenoid harness worn or damaged 17. Drive and driven pulley speed sensors defective 18. CVT speed sensor or vehicle speed sensor defective 19. PCM defective 20. Start clutch control system memory in PCM defective	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check the D indicator light indication and check for loose solenoid harness connector. • Calibrate start clutch control system.
Excessive shock when accelerating and decelerating	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Forward clutch defective 4. Reverse brake defective 5. Reverse brake piston stuck, worn or damaged 6. Start clutch defective 7. Start clutch end plate clearance incorrect	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock when accelerating and decelerating (cont'd)	8. Start clutch feed pipe damaged or out of round 9. Low ATF level 10. ATF deteriorated 11. Valve body assembly defective 12. CVT pulley pressure control valve assembly defective 13. CVT speed change control valve assembly defective 14. CVT start clutch pressure control valve assembly defective 15. Manual valve body defective 16. Manual valve lines worn or damaged 17. PCM defective 18. Start clutch control system memory in PCM defective 19. Flywheel assembly defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose solenoid harness connector. • Calibrate start clutch control system.
No engine braking	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Start clutch defective 4. Start clutch feed pipe damaged or out of round 5. Valve body assembly defective 6. CVT pulley pressure control valve assembly defective 7. CVT speed change control valve assembly defective 8. CVT start clutch pressure control valve assembly defective 9. Manual valve body defective 10. Manual valve lines worn or damaged 11. Solenoid valve defective 12. Solenoid harness worn or damaged 13. Drive and driven pulley speed sensors defective 14. CVT speed sensor or vehicle speed sensor defective 15. PCM defective 16. Start clutch control system memory in PCM defective	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the D indicator light indication and check for loose solenoid harness connector. • Calibrate start clutch control system.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle does not creep on a flat road in D, S and L positions	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Start clutch defective 4. Start clutch end plate clearance incorrect 5. Start clutch feed pipe damaged or out of round 6. Low ATF level 7. ATF deteriorated 8. Valve body assembly defective 9. CVT pulley pressure control valve assembly defective 10. CVT speed change control valve assembly defective 11. CVT start clutch pressure control valve assembly defective 12. Manual valve body defective 13. Manual valve lines worn or damaged 14. Solenoid harness worn or damaged 15. Drive and driven pulley speed sensors defective 16. CVT speed sensor or vehicle speed sensor defective 17. PCM defective 18. Start clutch control system memory in PCM defective 19. Engine out put low	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check ATF level and check ATF cooler lines for leakage and loose connectors. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose solenoid harness connector. • Calibrate start clutch control system.
Vehicle moves in N position; shift cable adjustment is proper	1. Intermediate housing assembly worn or damaged 2. Forward clutch defective 3. Reverse brake defective 4. Reverse brake piston stuck, worn or damaged 5. Input shaft worn or damaged 6. Input shaft needle bearing seized up, worn or damaged 7. Manual valve lever and pin worn 8. Manual valve body defective	• Check the forward clutch pressure. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Late shift to D from N position and return to N	1. Pulley pressure feed pipe damaged or out of round 2. Forward clutch defective 3. Start clutch defective 4. Start clutch end plate clearance incorrect 5. Start clutch feed pipe damaged or out of round 6. Shift cable broken or out of adjustment 7. Manual valve lever and pin worn 8. Low ATF level 9. ATF strainer or ATF filter clogged 10. ATF deteriorated 11. Valve body assembly defective 12. CVT pulley pressure control valve assembly defective 13. CVT speed change control valve assembly defective 14. CVT start clutch pressure control valve assembly defective 15. Manual valve body defective 16. Manual valve lines worn or damaged 17. PCM defective 18. Transmission range switch defective 19. Start clutch control system memory in PCM defective	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose transmission range switch connector. • Calibrate start clutch control system.
Late shift to R from N position and return to N	1. Pulley pressure feed pipe damaged or out of round 2. Forward clutch defective 3. Reverse brake defective 4. Reverse brake piston stuck, worn or damaged 5. Reverse brake return springs/retainer worn or damaged 6. Start clutch defective 7. Start clutch end plate clearance incorrect	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Late shift to R from N position and return to N (cont'd)	8. Start clutch feed pipe damaged or out of round 9. Shift cable broken or out of adjustment 10. Manual valve lever and pin worn 11. Low ATF level 12. ATF strainer or ATF filter clogged 13. ATF deteriorated 14. Valve body assembly defective 15. CVT pulley pressure control valve assembly defective 16. CVT speed change control valve assembly defective 17. CVT start clutch pressure control valve assembly defective 18. Manual valve body defective 19. Manual valve lines worn or damaged 20. Solenoid valve defective 21. PCM defective 22. Transmission range switch defective 23. Start clutch control system memory in PCM defective	• Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose transmission range switch connector. • Calibrate start clutch control system.
Hunting engine speed	1. Pulley pressure feed pipe damaged or out of round 2. Forward clutch defective 3. Reverse brake defective 4. Reverse brake piston stuck, worn or damaged 5. Reverse brake return springs/retainer worn or damaged 6. Start clutch defective 7. Start clutch end plate clearance incorrect 8. Start clutch feed pipe damaged or out of round 9. Shift cable broken or out of adjustment 10. Manual valve lever and pin worn 11. Low ATF level 12. ATF strainer or ATF filter clogged 13. ATF deteriorated	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check for a loose shift cable on the shift lever and the transmission control shaft. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Hunting engine speed (cont'd)	14. Valve body assembly defective 15. CVT pulley pressure control valve assembly defective 16. CVT speed change control valve assembly defective 17. CVT start clutch pressure control valve assembly defective 18. Manual valve body defective 19. Manual valve lines worn or damaged 20. Solenoid valve defective 21. PCM defective 22. Transmission range switch defective 23. Start clutch control system memory in PCM defective	• Check the D indicator light indication and check for loose transmission range switch connector. • Calibrate start clutch control system.
Excessive shock on starting off	1. Forward clutch defective 2. Reverse brake defective 3. Reverse brake piston stuck, worn or damaged 4. Start clutch defective 5. Start clutch end plate clearance incorrect 6. Start clutch feed pipe damaged or out of round 7. Low ATF level 8. ATF deteriorated 9. Valve body assembly defective 10. CVT pulley pressure control valve assembly defective 11. CVT speed change control valve assembly defective 12. CVT start clutch pressure control valve assembly defective 13. Solenoid harness worn or damaged 14. PCM defective 15. Start clutch control system memory in PCM defective 16. Engine out put low	• Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Calibrate start clutch control system.

Automatic Transmission
System Description (cont'd)

Gear Selection

6-position transmission

The shift lever has 6 positions: P PARK, R REVERSE, N NEUTRAL, D DRIVE 1st through 4th gear ranges, D3 DRIVE 1st through 3rd gear ranges and 2 SECOND.

7-position transmission

The shift lever has 7 positions: P PARK, R REVERSE, N NEUTRAL, D DRIVE 1st through 4th gear ranges, D3 DRIVE 1st through 3rd gear ranges, 2 SECOND and 1 FIRST.

Position	Description
P PARK	Front wheels locked; park pawl engaged with the park gear on the countershaft. All clutches released.
R REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 4th clutch engaged.
N NEUTRAL	All clutches released.
D DRIVE (1st through 4th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, then 4th, depending on vehicle speed and throttle position. Downshift through 3rd, 2nd and 1st on deceleration to stop. The lock-up mechanism operates in 3rd and 4th gears.
D3 DRIVE (1st through 3rd)	For rapid acceleration at highway speeds and general driving; up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 3rd gear.
2 SECOND	Driving in 2nd gear; stays in 2nd gear, does not shift up and down. For engine braking or better traction starting off on loose or slippery surface.
1 FIRST	Driving in 1st gear; stays in 1st gear, does not shift up. For engine braking.

Starting is possible only in P and N positions through the use of a slide-type, neutral-safety switch.

Automatic Transaxle (A/T) Gear Position Indicator

The A/T gear position indicator in the instrument panel shows what gear has been selected without looking down at the console.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive vibration in D, S, L and R positions	1. Intermediate housing assembly worn or damaged 2. Forward clutch defective 3. Reverse brake defective 4. Reverse brake piston stuck, worn or damaged 5. Start clutch defective 6. Start clutch end plate clearance incorrect 7. Start clutch feed pipe damaged or out of round 8. Input shaft worn or damaged 9. ATF deteriorated 10. Valve body assembly defective 11. CVT pulley pressure control valve assembly defective 12. CVT speed change control valve assembly defective 13. CVT start clutch pressure control valve assembly defective 14. Solenoid valve defective 15. Solenoid harness worn or damaged 16. Drive and driven pulley speed sensors defective 17. PCM defective 18. Start clutch control system memory in PCM defective 19. Flywheel drive plate worn or damaged 20. Flywheel assembly defective 21. Engine out put low	• Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Calibrate start clutch control system.

Honda Multi Matic Transmission/CVT

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive idle vibration in N and P positions	1. Intermediate housing assembly worn or damaged 2. Input shaft worn or damaged 3. Flywheel drive plate worn or damaged 4. Flywheel assembly defective 5. Engine out put low	Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmissioNmounts.
Noise from transmission in N and P positions	1. Intermediate housing assembly worn or damaged 2. Input shaft worn or damaged 3. Planetary carrier worn or damaged 4. Input shaft needle bearing seized up, worn or damaged 5. Thrust needle bearing on planetary carrier seized up, worn or damaged 6. Thrust washer on planetary carrier seized up, worn or damaged 7. ATF pump worn, binding, or foreign material in ATF pump 8. ATF pump chain or ATF pump sprocket worn or damaged 9. Flywheel assembly defective	Check the needle bearing and thrust washers on the planetary carrier for wear and damage. If the needle bearing or thrust washer is worn or damaged, replace the bearing or washer and adjust the clearance with the thrust shim.
Vibration in all positions	1. Flywheel drive plate worn or damaged 2. Flywheel assembly defective	

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Stall speed high	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out of round 3. Forward clutch defective 4. Reverse brake defective 5. Reverse brake piston stuck, worn or damaged 6. Start clutch defective 7. Start clutch end plate clearance incorrect 8. Start clutch feed pipe damaged or out of round 9. ATF pump worn, binding, or foreigNmaterial in ATF pump 10. Low ATF level 11. ATF deteriorated 12. Valve body assembly defective 13. CVT pulley pressure control valve assembly defective 14. CVT speed change control valve assembly defective 15. CVT start clutch pressure control valve assembly defective 16. Manual valve body defective 17. Manual valve lines worn or damaged 18. Solenoid harness worn or damaged 19. Drive and driven pulley speed sensors defective 20. CVT speed sensor or vehicle speed sensor defective 21. PCM defective 22. Transmission range switch defective 23. Start clutch control system memory in PCM defective	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the forward clutch pressure. • Check the D indicator light indication and check for loose solenoid harness connector. • Inspect the clutch piston, clutch piston check valve and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Check the D indicator light indication and check for loose transmission range switch connector. • Calibrate start clutch control system.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Stall speed low	1. Intermediate housing assembly worn or damaged 2. Pulley pressure feed pipe damaged or out or round 3. Start clutch defective 4. Valve body assembly defective 5. CVT speed change control valve assembly defective 6. CVT start clutch pressure control valve assembly defective 7. Drive and driven pulley speed sensors defective 8. CVT speed sensor or vehicle speed sensor defective 9. PCM defective 10. Transmission range switch defective 11. Start clutch control system memory in PCM defective 12. Engine out put low	• Check the drive and driven pulley pressure and lubrication pressure. Measurement of the pressure is low or no pressure, check the ATF pump, chain and sprocket. • Check the D indicator light indication and check for loose solenoid harness connector. • Check the D indicator light indication and check for loose transmission range switch connector. • Calibrate start clutch control system.
Judder on starting off	1. Start clutch defective 2. ATF deteriorated 3. Valve body assembly defective 4. CVT start clutch pressure control valve assembly defective 5. Drive and driven pulley speed sensors defective 6. CVT speed sensor or vehicle speed sensor defective 7. PCM defective 8. Start clutch control system memory in PCM defective	• Check the D indicator light indication and check for loose solenoid harness connector. • Check ATF level and check ATF cooler lines for leakage and loose connections. If necessary, flush ATF cooler lines. • Calibrate start clutch control system.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Noise from transmission in [R] position	1. Reverse brake defective 2. Reverse brake piston stuck, worn or damaged 3. Reverse brake return springs/retainer worn or damaged 4. Input shaft worn or damaged 5. Planetary carrier worn or damaged 6. Sun gear worn or damaged 7. Ring gear worn or damaged 8. Input shaft needle bearing seized up, worn or damaged 9. Thrust needle bearing on planetary carrier seized up, worn or damaged 10. Thrust washer on planetary carrier seized up, worn or damaged 11. Detent lever assembly worn or damaged 12. Park pawl and pawl shaft worn or damaged 13. Park pawl spring worn or damaged	• Check the reverse brake pressure. • Inspect the brake piston and O-rings. Check the spring retainer for wear and damage. Inspect the brake end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the brake discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the brake end plate. • Check the needle bearing and thrust washers on the planetary carrier for wear and damage. If the needle bearing or thrust washer is worn or damaged, replace the bearing or washer and adjust the clearance with the thrust shim.
Shift lever does not operate smoothly	1. Detent lever assembly worn or damaged 2. Control lever worn or damaged 3. Park pawl and pawl shaft worn or damaged 4. Park gear worn or damaged 5. Park pawl spring worn or damaged 6. Shift cable broken or out of adjustment 7. Manual valve lever and pin worn 8. Manual valve body defective 9. Transmission range switch defective	Check for loose shift cable on the shift lever and the transmission control shaft.

Honda Multi Matic Transmission/CVT
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Transmission will not shift into P position, or transmission cannot shift out of P position	1. Detent lever assembly worn or damaged 2. Control lever worn or damaged 3. Park pawl and pawl shaft worn or damaged 4. Park gear worn or damaged 5. Park pawl spring worn or damaged 6. Shift cable broken or out of adjustment 7. Manual valve lever and pin worn 8. Manual valve body defective 9. PCM defective 10. Transmission range switch defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the park pawl spring installation. • Check the D indicator light indication and check for loose transmission range switch connector.
A/T gear position indicator does not indicate shift lever positions	1. Detent lever assembly worn or damaged 2. Shift cable broken or out of adjustment 3. Transmission range switch defective	• Check for a loose shift cable on the shift lever and the transmission control shaft. • Check the D indicator light indication and check for loose transmission range switch connector.

Honda Multi Matic Transmission/CVT

System Description

General Operation

The Honda Multi Matic; continuously variable transmission (CVT) is an electronically controlled automatic transmission with drive and driven pulleys and steel belt. The Honda Multi Matic provides non-stage speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

Transmission

Around the outside of the flywheel is a ring gear which meshes with the starter pinion when the engine is being started. The transmission has 4 parallel shaft: the input shaft, the drive pulley shaft, the driven pulley shaft and the secondary gear shaft. The input shaft is in line with the engine crankshaft. The drive pulley shaft and driven pulley shaft consist of movable and fixed face pulleys. Both pulleys are linked by the steel belt.

The input shaft includes the sun gear and planetary gears with carrier. The drive pulley shaft includes the drive pulley and forward clutch. The driven pulley shaft includes the driven pulley, start clutch and the secondary drive gear which is integral with the park gear. The secondary gear shaft is positioned between the secondary drive gear and the final driven gear. The secondary gear shaft includes the secondary driven gear and the final drive gear which serves to change the rotation direction, because the drive pulley shaft and driven pulley shaft rotate the same direction. When certain conditions of the planetary gears in the transmission are engaged by the clutch and the reverse brake, power is transmitted from the drive pulley shaft to the driven pulley shaft to provide L, S, D and R positions.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors and solenoid valves. Shifting is electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, behind the glove box.

Hydraulic Control

The lower valve body assembly includes the main valve body, the secondary valve body, the CVT pulley pressure control valve assembly, the CVT speed change control valve assembly and the CVT start clutch pressure control valve assembly. They are positioned on the lower portion of the transmission housing.

The main valve body contains the PHC (pressure high control) valve, the lubrication check valve, the cooler relief valve and the CPC (clutch pressure control) valve. The secondary valve body contains the start clutch accumulator valve, the shift inhibitor valve, the clutch pressure reducing valve, PH (pressure high) regulator valve and the lubrication regulator valve. The CVT pulley pressure control valve assembly contains the PL (pressure low) regulator valve and the HLC (high and low pressure control) valve which is joined with the HLC solenoid. The shift inhibitor solenoid valve is positioned on the CVT pulley pressure control valve assembly. The CVT speed change control valve assembly contains the pulley control valve and the shift control valve which is joined with the shift control solenoid. The CVT start clutch pressure control valve assembly contains the start clutch control valve which is joined with the start clutch control solenoid. The solenoids are controlled by the PCM. The manual valve body is bolted on the intermediate housing and contains the manual valve and the reverse inhibitor valve.

The ATF pump is located on the transmission housing and it is linked with the input shaft by the sprockets and the sprocket chain. The pulleys and clutches receive fluid from their respective feed pipes and the reverse brake receives fluid from internal hydraulic circuit.

Shift Control

The PCM controls to shift pulley ratio the solenoids, while receiving input signal from the various sensors and switches located throughout the vehicle. The PCM actuates the shift control solenoid and the shift control valve to change the shift control pressure. The shift control pressure is applied to the drive and driven pulleys and pulley ratio is changed to their effective ratio.

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Gear Selection

The shift lever has 6 positions: P PARK, R REVERSE, N NEUTRAL, D DRIVE, S SECOND and L LOW.

Position	Description
P PARK	Front wheels locked; park pawl engaged with the park gear on the driven pulley shaft. The start clutch and forward clutch released.
R REVERSE	Reverse; reverse brake engaged.
N NEUTRAL	Neutral; the start clutch and forward clutch released.
D DRIVE	General driving; the transmission automatically adjusts to keep the engine at the best speed for driving under all conditions.
2 SECOND	For rapid acceleration; the transmission selects a wider range of ratios to give better acceleration.
L LOW	For engine braking and power for climbing; the transmission shifts into the lowest range of the ratios.

Starting is possible only in P and N positions through the use of a slide-type, neutral-safety switch.

Automatic Transaxle (A/T) Gear Position Indicator

The A/T gear position indicator in the instrument panel shows what gear has been selected without looking down at the console.

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Clutches/Reverse Brake/Planetary Gear/Pulleys

Clutches/Reverse Brake

The Multi Matic uses the hydraulic-actuated clutches and brake to engage and disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum and the reverse brake piston cavity, the clutch piston and the reverse brake piston move. This presses the friction discs and steel plate together, locking them so they do not slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear and through engaged ring gear to pinion gears.

Likewise, when the hydraulic pressure is bled from the clutch pack and reverse brake piston cavity, the piston releases the friction discs and the steel plates and they are free to slid past each other. This allows the gear to spin independently on its shaft, transmitting no power.

Start Clutch

The start clutch engages/disengages the secondary drive gear and is located at the end of the driven pulley shaft. The start clutch is supplied hydraulic pressure by its ATF feed pipe within the driven pulley shaft.

Forward Clutch

The forward clutch engages/disengages the sun gear and is located at the end of the drive pulley shaft. The forward clutch is supplied hydraulic pressure by its ATF feed pipe within the drive pulley shaft.

Reverse Brake

The reverse brake locks the planetary carrier in R position and is located inside the intermediate housing around the planetary carrier. The reverse brake discs are mounted to the planetary carrier and the reverse brake plates are mounted on the intermediate housing. The reverse brake is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

Planetary Gear

The planetary gear consists of the sun gear, planetary pinion gears and ring gear. The sun gear is connected to the input shaft with splines. The pinion gears are mounted on the planetary carrier. The planetary carrier is located on the end of the input shaft, over the sun gear. The ring gear is located in the planetary carrier and connected to the forward clutch drum. The sun gear inputs the engine power via the input shaft to the planetary gears and the carrier outputs the engine power. The planetary gear mechanism is only used for switching the rotation direction of the pulley shafts.

In D, S and L position (forward range), the pinion gears do not rotate and revolve around the sun gear, so the carrier rotates.

In R position (reverse range), the reverse brake locks the planetary carrier and the sun gear drives the pinion gears to rotate. The pinion gears rotate, but don't revolve around the sun gear. The pinion gears drive the ring gear in the opposite direction from the rotation direction of the sun gear.

Pulleys

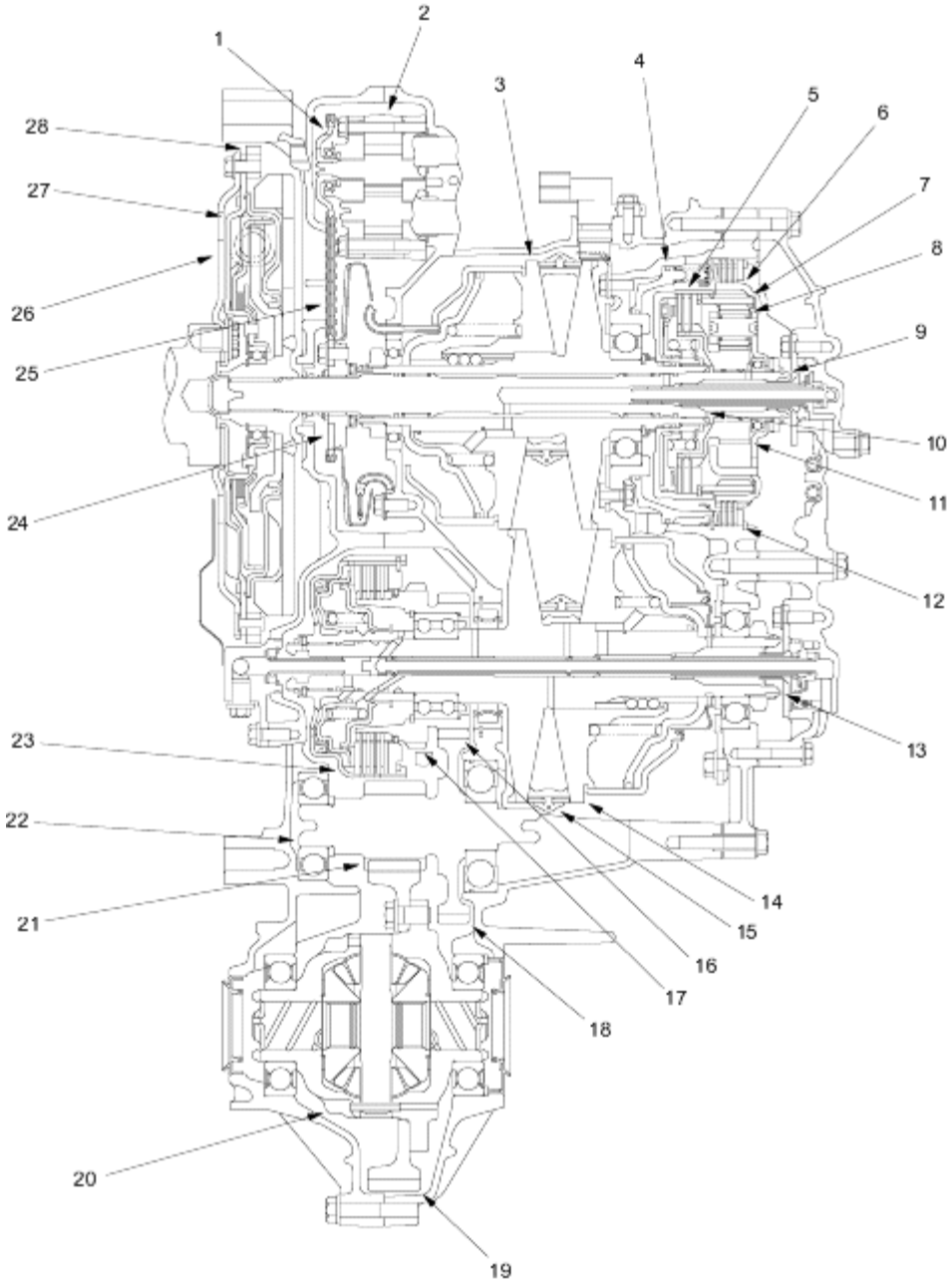
Each pulley consists of a movable face and a fixed face and the effective pulley ratio changes with engine speed. The drive pulley and the driven pulley are linked by the steel belt.

To achieve a low pulley ratio, high hydraulic pressure works on the movable face of the driven pulley and reduces the effective diameter of the drive pulley and a lower hydraulic pressure works on the movable face of the driven pulley to eliminate the steel belt slippage. To achieve a high pulley ratio, high hydraulic pressure works on the movable face of the drive pulley and reduces the effective diameter of the driven pulley and low hydraulic pressure works on the movable face of the driven pulley to eliminate the steel belt slippage.

Honda Multi Matic Transmission/CVT

System Description (cont'd)

Transmission Cutaway View



1. ATF PUMP DRIVEN SPROCKET
2. ATF PUMP
3. DRIVE PULLEY
4. REVERSE BRAKE PISTON
5. FORWARD CLUTCH
6. PLANETARY CARRIER
7. RING GEAR
8. PLANETARY PINION GEAR
9. INPUT SHAFT
10. DRIVE PULLEY SHAFT
11. SUN GEAR
12. REVERSE BRAKE
13. DRIVEN PULLEY SHAFT
14. DRIVEN PULLEY
15. STEEL BELT
16. SECONDARY DRIVE GEAR
17. PARK GEAR
18. SECONDARY DRIVEN GEAR
19. FINAL DRIVEN GEAR
20. DIFFERENTIAL ASSEMBLY
21. FINAL DRIVE GEAR
22. SECONDARY GEAR SHAFT
23. START CLUTCH
24. ATF PUMP DRIVE SPROCKET
25. ATF PUMP DRIVE CHAIN
26. DRIVE PLATE
27. FLYWHEEL
28. RING GEAR

Automatic Transmission
System Description (cont'd)

Clutches

The 4-speed automatic transmission uses hydraulically-actuated clutches to engaged or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch pistoNmoves. This presses the friction discs and steel plates together, locking them so they do not slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch

The 1st clutch engages/disengages 1st gear and is located at the end of the mainshaft, behind the end cover. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

2nd Clutch

The 2nd clutch engages/disengages 2nd gear and is located at the middle of the mainshaft. The 2nd clutch is joined back-to-back to the 4th clutch. The 2nd clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch

The 3rd clutch engages/disengages 3rd gear and is located at the end of the countershaft, opposite the end cover.

The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the countershaft.

4th Clutch

The 4th clutch engages/disengages 4th gear, as well as reverse gear and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 2nd clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

1st-hold Clutch (7-position)

The 1st-hold clutch engages/disengages 1st-hold or 1 position and is located at the middle of the sub-shaft. The 1st-hold clutch is supplied hydraulic pressure by its ATF feed pipe within the sub-shaft.

One-way Clutch

The one-way clutch is positioned between the countershaft 1st gear and the park gear. The park gear is splined with the countershaft and rotates with the countershaft. The countershaft 1st gear provides the outer race surface of the one-way clutch and the park gear provides the inner race surface.

The one-way clutch locks up when power is transmitted from the mainshaft 1st gear to the countershaft 1st gear. The 1st clutch and gear remain engaged in the 1st, 2nd, 3rd and 4th gear ranges in the D, D3, or 2 position. However, the one-way clutch disengages when the 2nd, 3rd and 4th clutches and gears are applied in the D, D3 or 2 position. This is because the increased rotational speed of the gears on the countershaft overrides the locking "speed range" of the one-way clutch. The one-way clutch free-wheels when the 1st clutch is engaged.

Honda Multi Matic Transmission/CVT
System Description (cont'd)

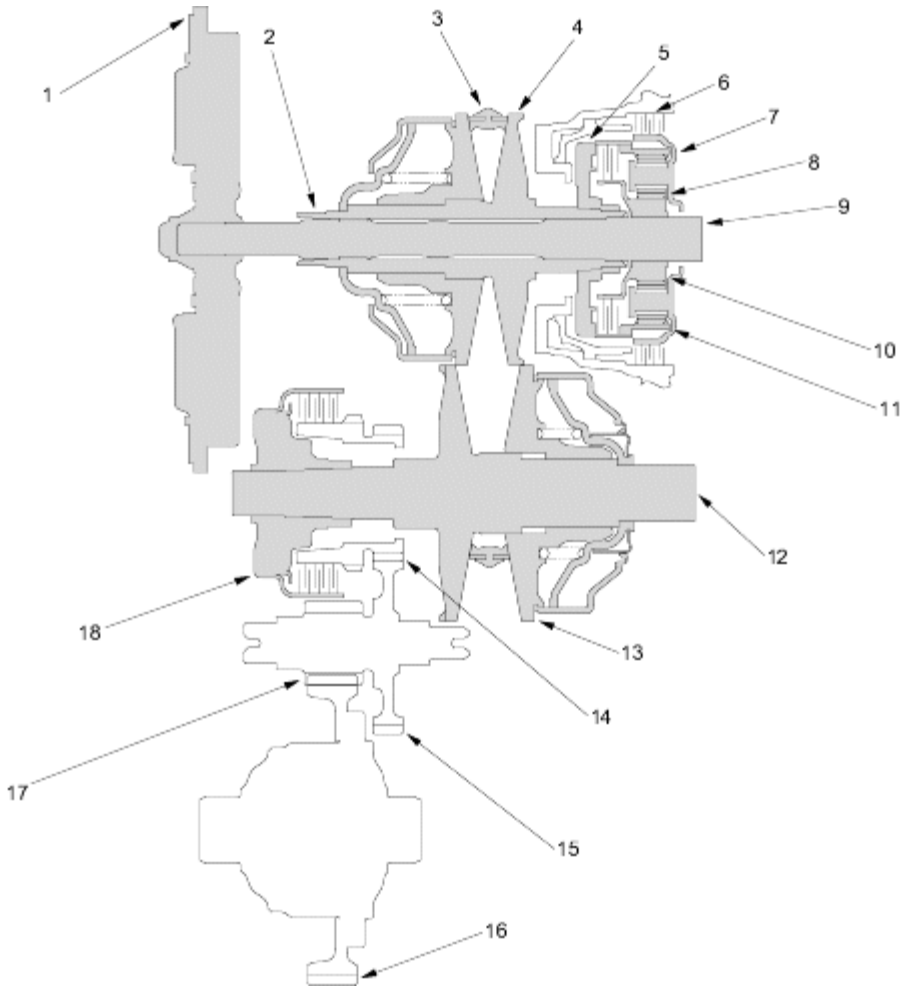
Power Flow

P Position

Hydraulic pressure is not applied to the start clutch, forward clutch and the reverse brake. Power is not transmitted to the secondary drive gear. The secondary drive gear is locked by the park pawl interlocking the park gear.

N Position

Engine power transmitted from the flywheel drives the input shaft, but the hydraulic pressure is not applied to the forward clutch and reverse brake. Power is not transmitted to the drive pulley shaft. Also hydraulic pressure is not applied to the start clutch.



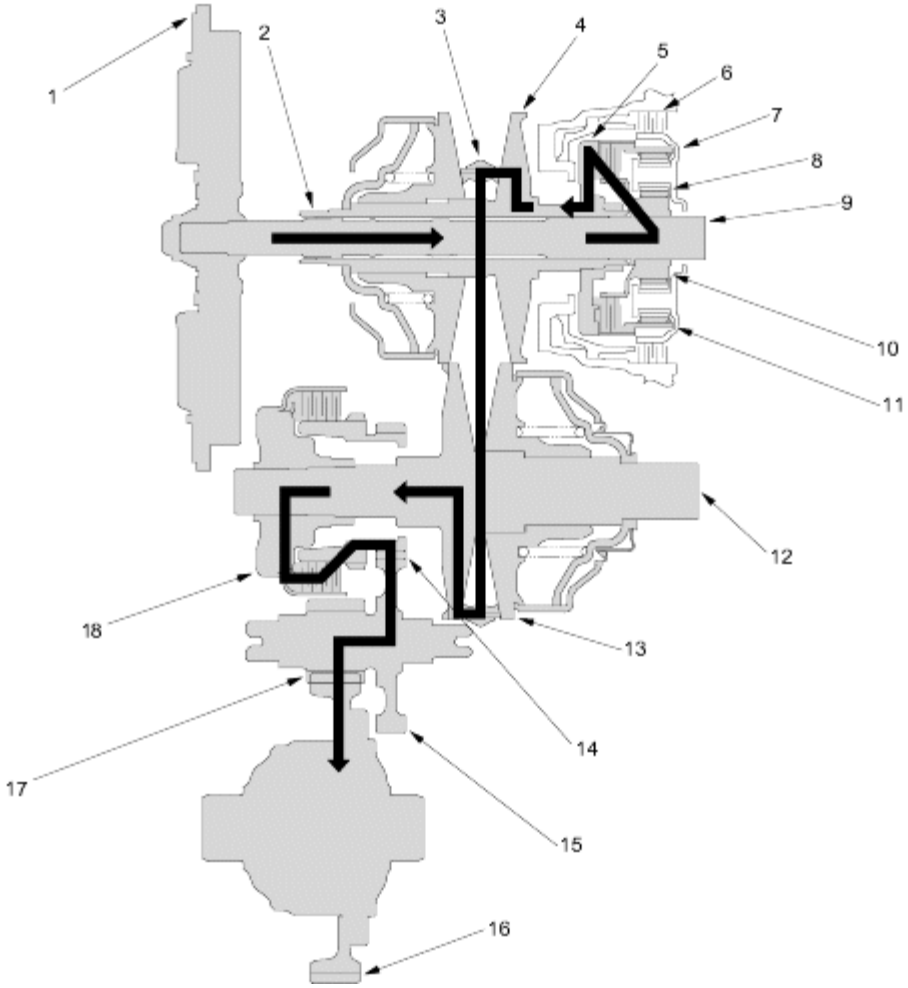
1. FLYWHEEL
2. DRIVE PULLEY SHAFT
3. STEEL BELT
4. DRIVE PULLEY
5. FORWARD CLUTCH
6. REVERSE BRAKE
7. PLANETARY CARRIER
8. PINION GEAR
9. INPUT SHAFT
10. SUN GEAR
11. RING GEAR
12. DRIVEN PULLEY SHAFT
13. DRIVEN PULLEY SHAFT
14. SECONDARY DRIVE GEAR
15. SECONDARY DRIVEN GEAR
16. FINAL DRIVEN GEAR
17. FINAL DRIVE GEAR
18. START CLUTCH

Honda Multi Matic Transmission/CVT

System Description (cont'd)

D, S and L Position (Forward Range)

- Forward clutch: engaged
- Reverse brake: released
- Start clutch: engaged
- Hydraulic pressure is applied to the forward clutch and the start clutch and the sun gear drives the forward clutch.
- The forward clutch drives the drive pulley shaft, which drives the driven pulley shaft linked by the steel belt.
- The driven pulley shaft drives the secondary drive gear via the start clutch.
- Power is transmitted the secondary driven gear and final drive gear, which in turn drives the final driven gear.



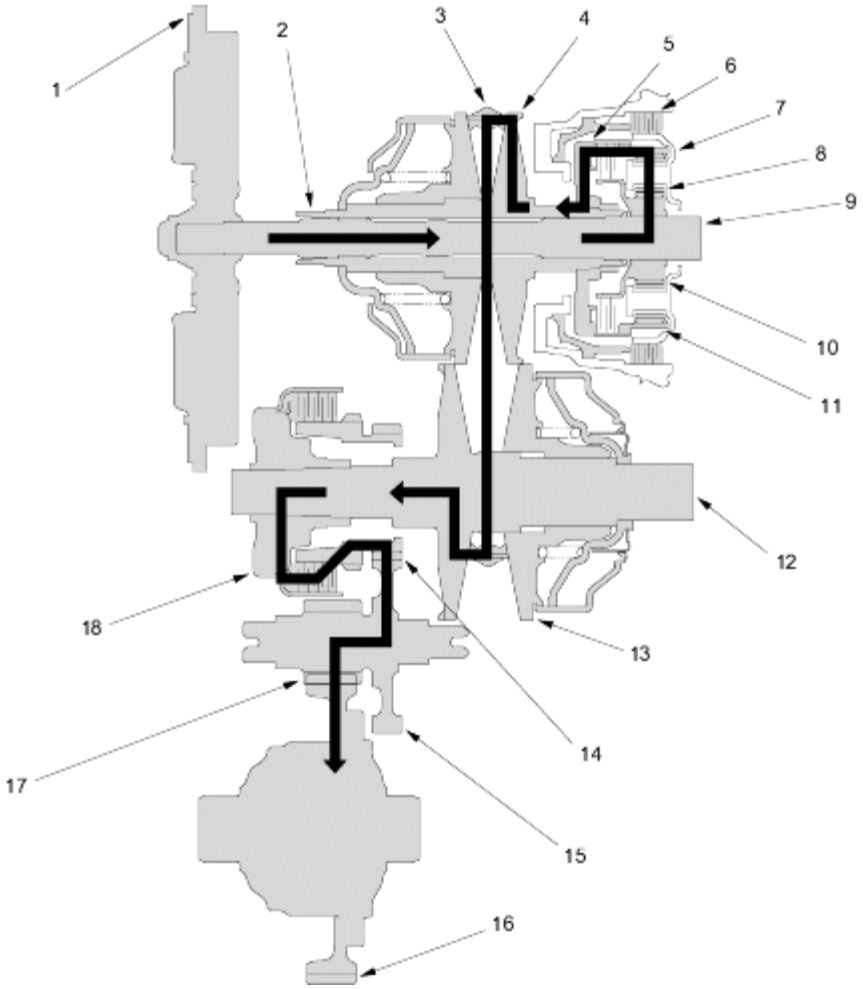
1. FLYWHEEL
2. DRIVE PULLEY SHAFT
3. STEEL BELT
4. DRIVE PULLEY
5. FORWARD CLUTCH
6. REVERSE BRAKE
7. PLANETARY CARRIER
8. PINION GEAR
9. INPUT SHAFT
10. SUN GEAR
11. RING GEAR
12. DRIVEN PULLEY GEAR
13. DRIVEN PULLEY
14. SECONDARY DRIVE GEAR
15. SECONDARY DRIVEN GEAR
16. FINAL DRIVEN GEAR
17. FINAL DRIVE GEAR
18. START CLUTCH

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Power Flow (cont'd)

R Position (Reverse Range)

- Forward clutch: released
- Reverse brake: engaged
- Start clutch: engaged
- Hydraulic pressure is applied to the reverse brake and the start clutch and the planetary carrier locks with the reverse brake.
- The sun gear drives the pinion gears to rotate and the pinion gears drive the ring gear in the opposite direction from the rotation direction of the sun gear.
- The ring gear drives the drive pulley shaft via the forward clutch drum and drive pulley shaft drives the driven pulley shaft linked by the steel belt.
- The driven pulley shaft drives the secondary drive gear via the start clutch.
- Power is transmitted to the secondary driven gear and final drive gear, which in turn drives the final driven gear.



1. FLYWHEEL
2. DRIVE PULLEY SHAFT
3. STEEL BELT
4. DRIVE PULLEY
5. FORWARD CLUTCH
6. REVERSE BRAKE
7. PLANETARY CARRIER
8. PINION GEAR
9. INPUT SHAFT
10. SUN GEAR
11. RING GEAR
12. DRIVEN PULLEY SHAFT
13. DRIVEN PULLEY
14. SECONDARY DRIVE GEAR
15. SECONDARY DRIVEN GEAR
16. FINAL DRIVEN GEAR
17. FINAL DRIVE GEAR
18. START CLUTCH

Honda Multi Matic Transmission/CVT

System Description (cont'd)

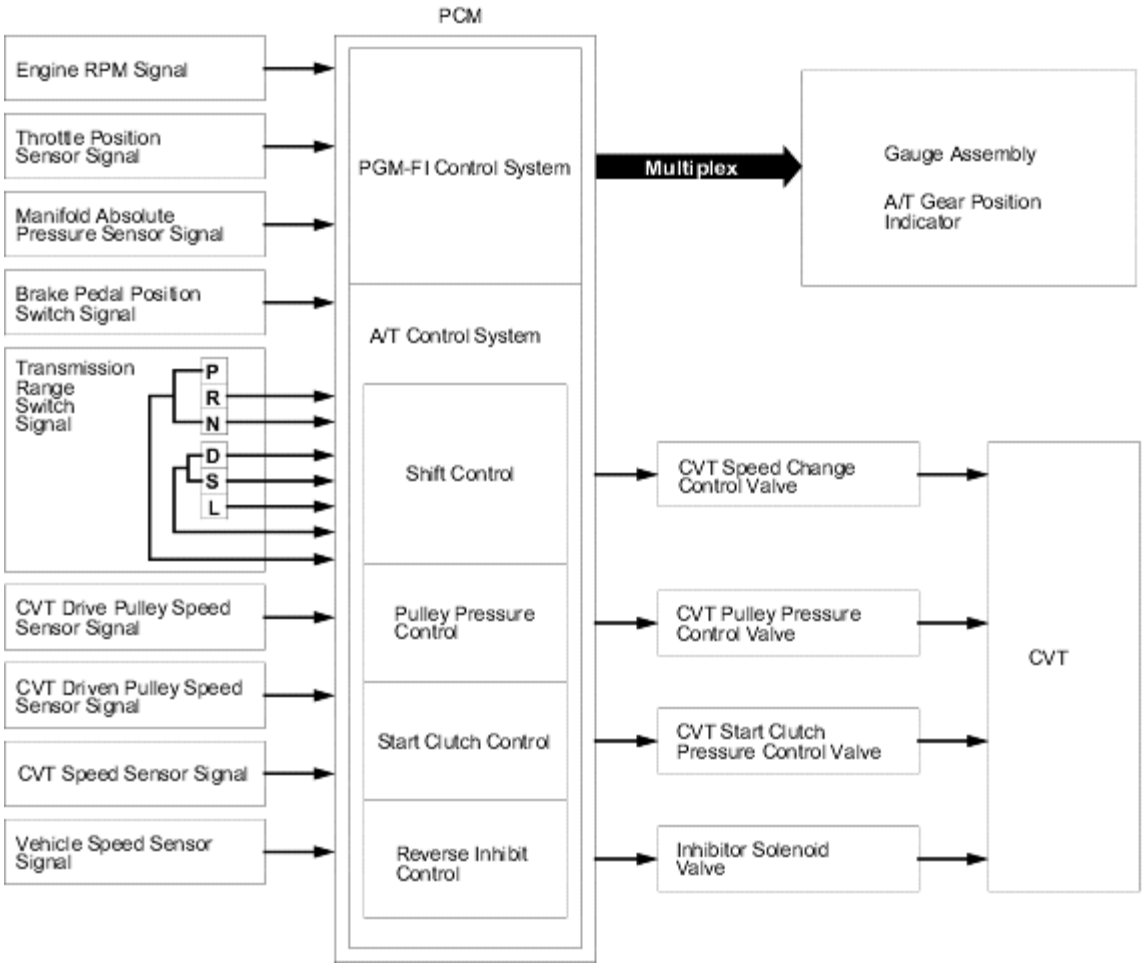
Electronic Control System

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, switches and solenoid valves. Shifting is electronically controlled for comfortable driving under all conditions.

The PCM inputs signals from the sensors and switches, perform processing data and outputs signals for engine control system and A/T control system. The A/T control system includes shift control, pulley pressure control, start clutch pressure control and reverse inhibit control, is stored in the PCM.

The PCM actuates the solenoid valves to control shifting transmission pulley ratios.

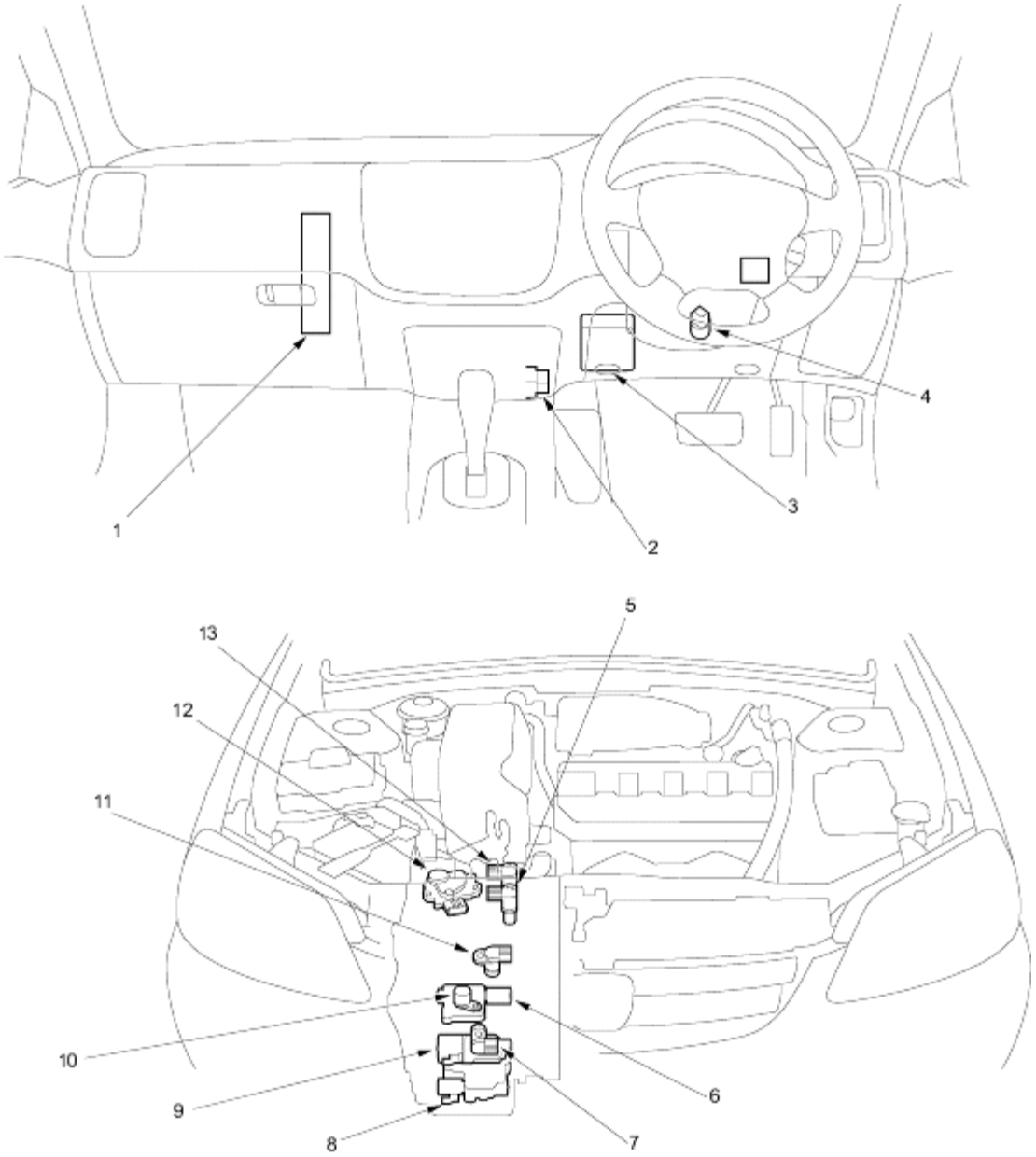


Honda Multi Matic Transmission/CVT

System Description (cont'd)

Electronic Control System (cont'd)

Electronic Controls Location



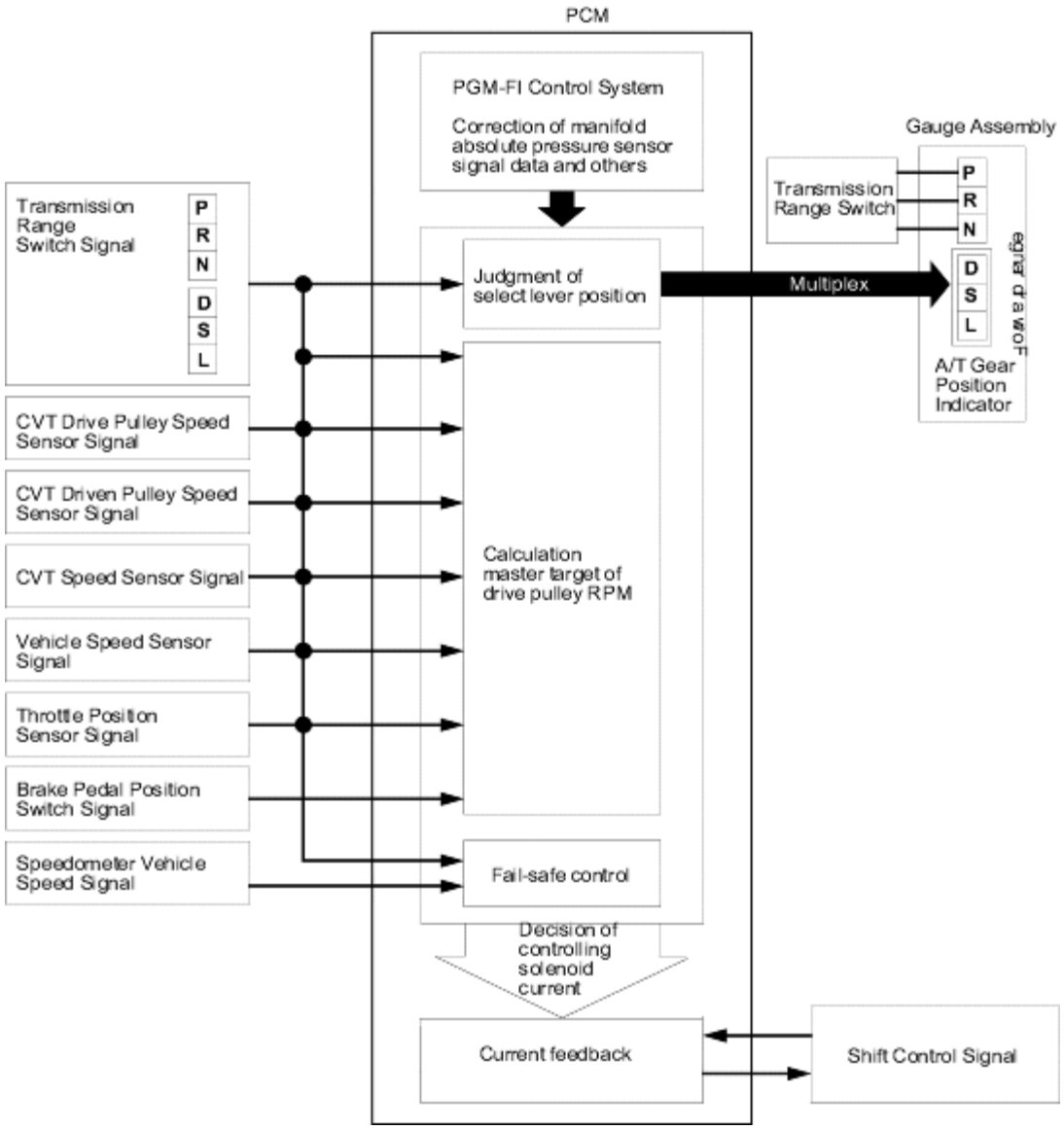
1. POWERTRAIN CONTROL MODULE
2. DATA LINK CONNECTOR (16P)
3. UNDER-DASH FUSE/RELAY BOX MULTIPLEX CONTROL UNIT
4. BRAKE PEDAL POSITION SWITCH
5. VEHICLE SPEED SENSOR
6. CVT PULLEY PRESSURE CONTROL VALVE ASSEMBLY
7. CVT DRIVE PULLEY SPEED SENSOR
8. CVT SPEED CHANGE CONTROL VALVE ASSEMBLY
9. CVT START CLUTCH PRESSURE CONTROL VALVE ASSEMBLY
10. INHIBITOR SOLENOID
11. CVT DRIVEN PULLEY SPEED SENSOR
12. TRANSMISSION RANGE SWITCH
13. CVT SPEED SENSOR

Honda Multi Matic Transmission/CVT

System Description (cont'd)

Shift Control

The PCM compares actual driving conditions with memorised driving conditions to control shifting and instantly determines a ratio of drive pulley and driven pulley by various signals sent from sensors and switches. The PCM actuates the CVT speed change control valve assembly to control pulley pressure to the pulleys. The drive pulley drives the driven pulley by the steel belt at a ratio between 2.466 and 0.407 in non-stage in the D position. In the R position, the ratio is set to 1.300 when pressing the accelerator and to 2.466 when the accelerator released.



Honda Multi Matic Transmission/CVT
System Description (cont'd)

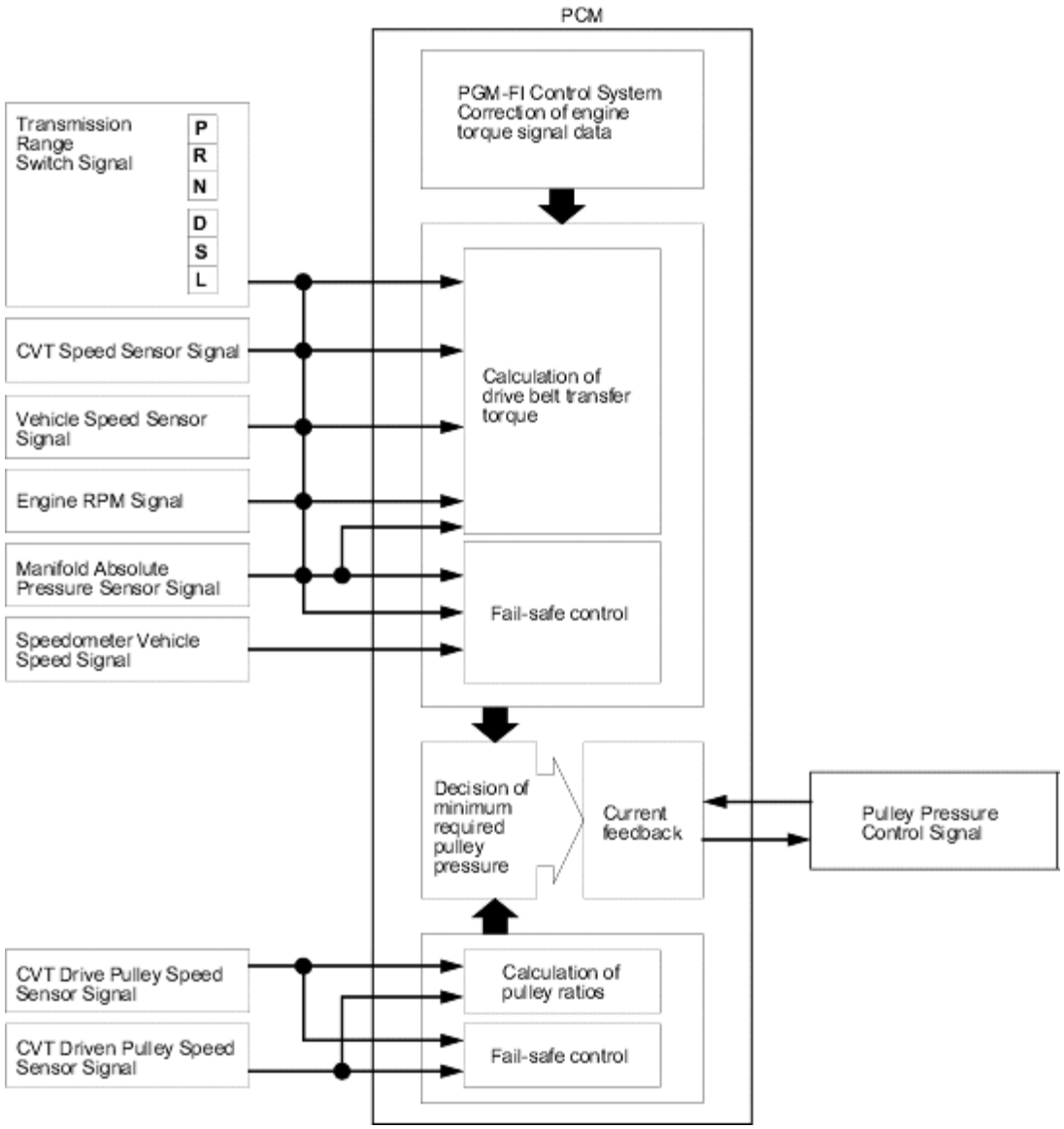
Electronic Control System (cont'd)

Pulley Pressure Control

For reducing belt slippage and long belt life, the PCM inputs signals from the sensors and switches and actuates the pulley pressure control valve assembly to regulate optimum pulley pressure to the pulleys.

When the pulley ratio is low (vehicle is driven in low speed), the driven pulley receives high pulley pressure to hold large diameter and the drive pulley receives low pressure to hold diameter of proportion to the driven pulley.

When the pulley ratio is high, the driven pulley receives low pressure and drive pulley receives high.

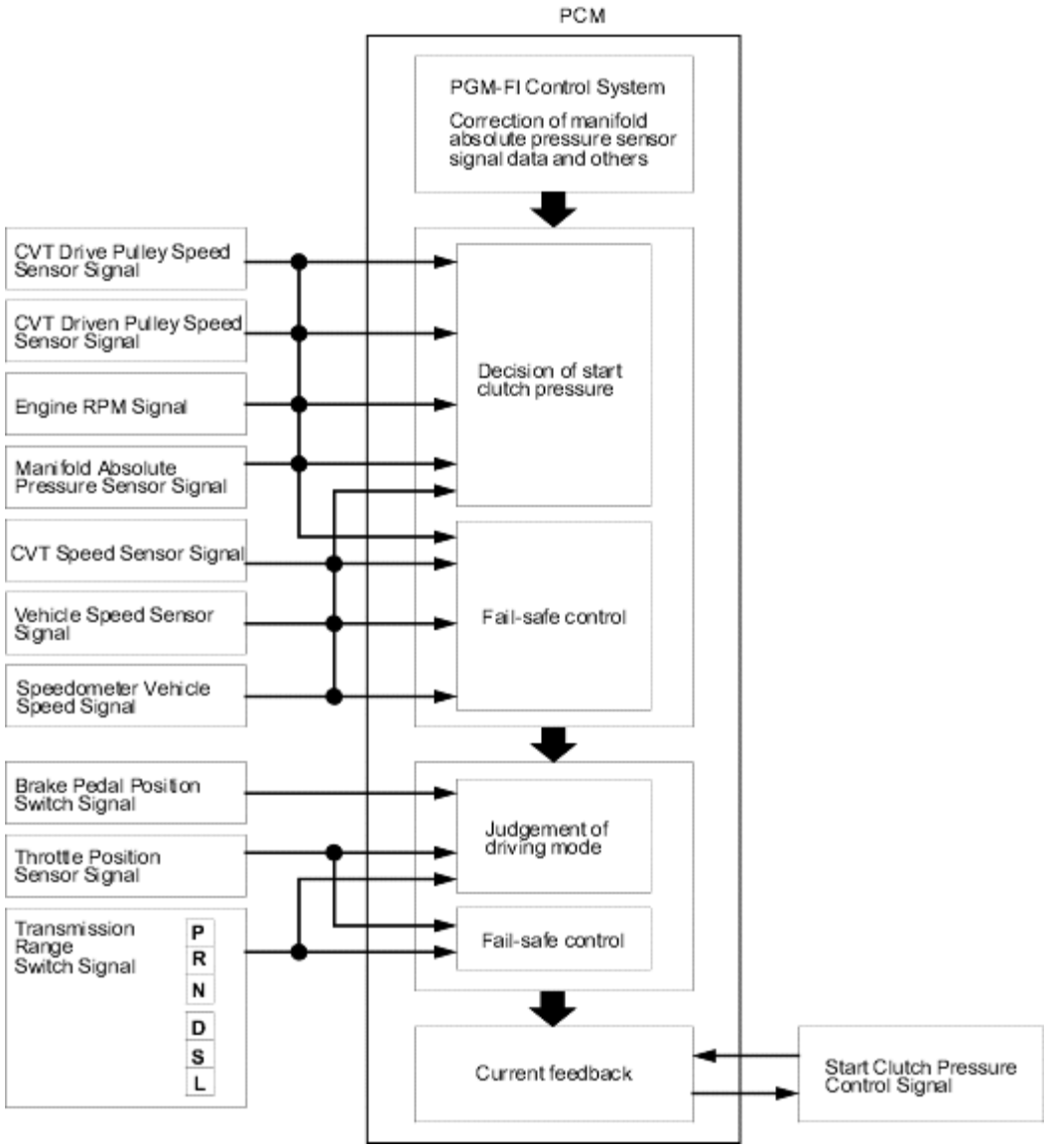


Honda Multi Matic Transmission/CVT

System Description (cont'd)

Start Clutch Pressure Control

Hydraulic-controlled start clutch works smooth starting-off and creeping in D, S, L and R positions like the torque converter. The PCM inputs signals from the sensors and switches and actuates the start clutch pressure control valve assembly to regulate the clutch reducing pressure and the clutch reducing pressure controls the start clutch engagement.

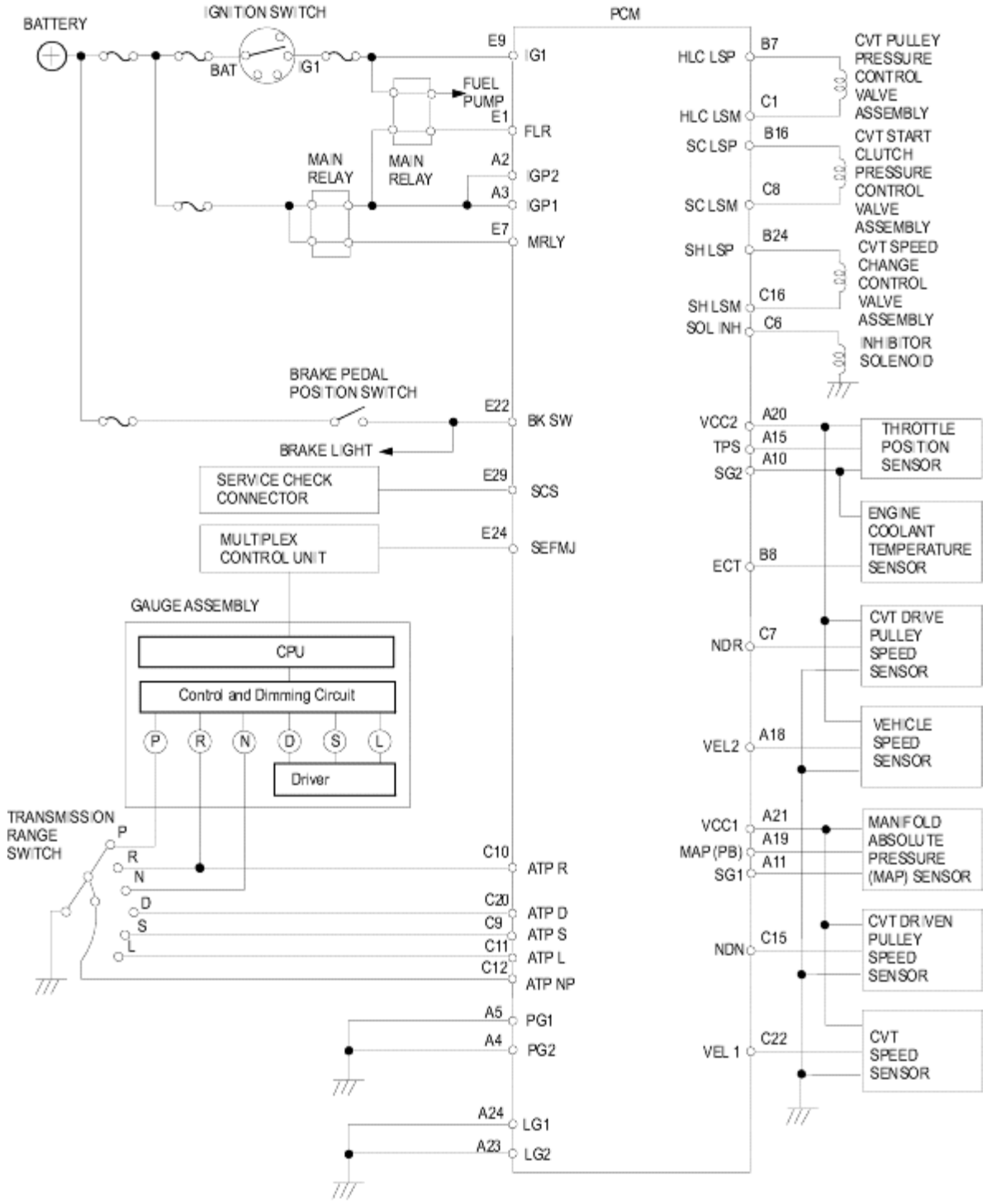


Honda Multi Matic Transmission/CVT

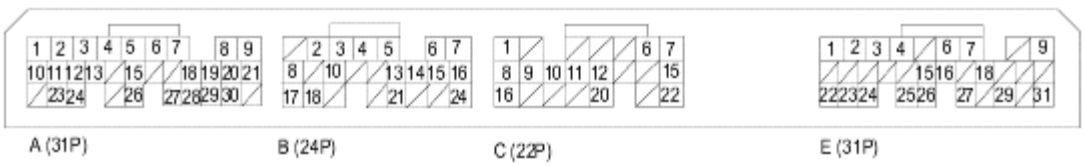
System Description (cont'd)

Electronic Control System (cont'd)

PCM Electrical Connections



PCM Connector Terminal Locations



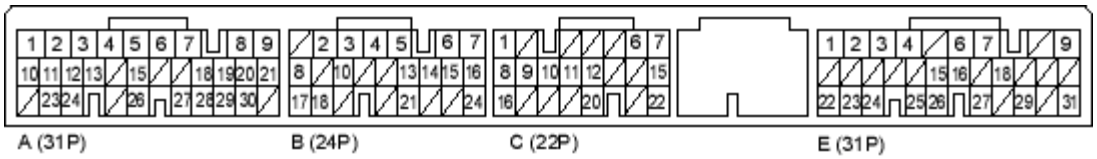
Honda Multi Matic Transmission/CVT

System Description (cont'd)

PCM Inputs and Outputs

The PCM terminal voltage and measuring conditions are shown for the connector terminals that are related to the A/T control system. The other PCM terminal voltage and measuring conditions are described in section 11.

PCM Connector Terminal Locations



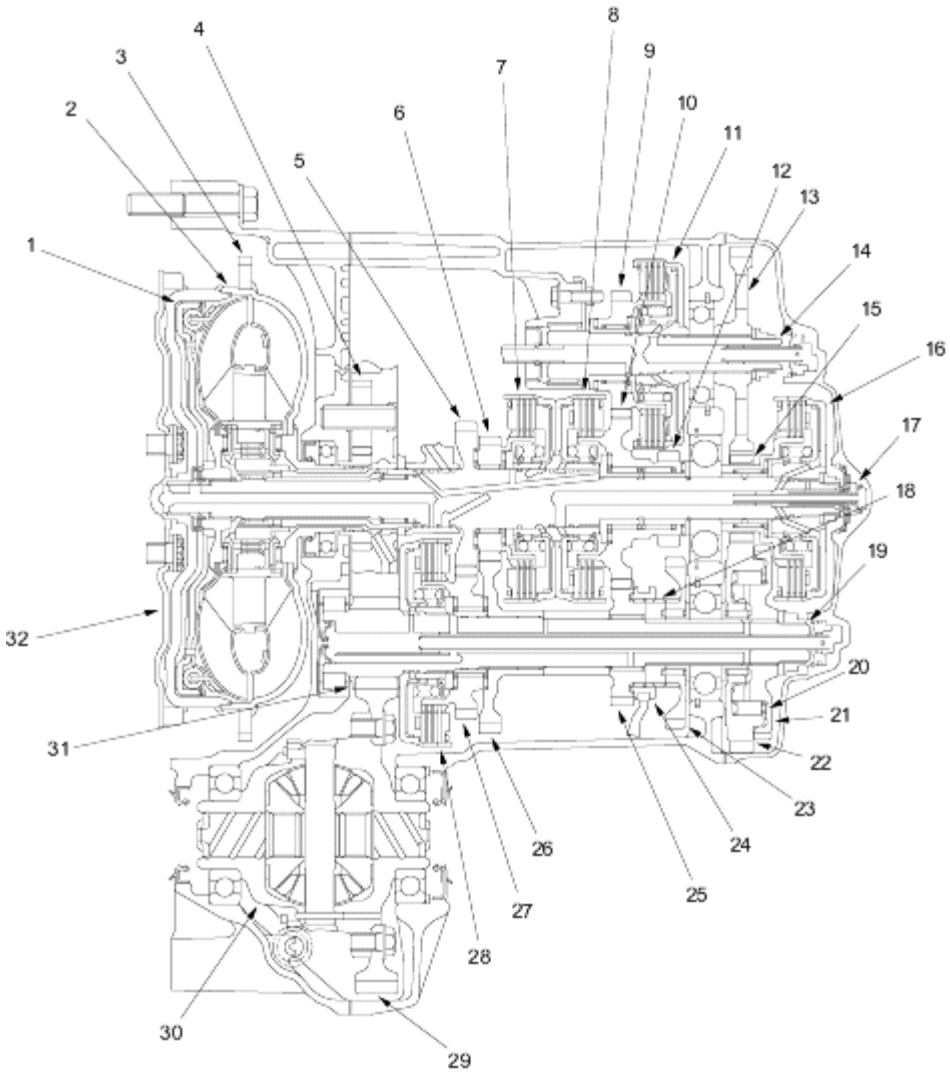
PCM CONNECTOR A (31P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
A2	YEL/BLK	IGP2	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A3	YEL/BLK	IGP1	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A4	BLK	PG2	Ground	
A5	BLK	PG1	Ground	
A10	GRN/YEL	SG2	Sensor ground	
A11	GRN/YEL	SG1	Sensor ground	
A18	BLU/WHT	VEL2	Vehicle speed sensor signal input	Depending on vehicle speed: Pulsing signal When vehicle is stopped: About 0 V
A20	YEL/BLU	VCC2	Power supply for sensors	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
A21	YEL/RED	VCC1	Power supply for sensors	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
A23	BRN/YEL	LG2	Ground	
A24	BRN/YEL	LG1	Ground	

Automatic Transmission
System Description (cont'd)

Transmission Cutaway View

NOTE: The illustration shows the 7-position transmission; the 6-position transmission does not have the sub-shaft and the related parts to the sub-shaft.



1. LOCK-UP CLUTCH PISTON
2. TORQUE CONVERTER
3. RING GEAR
4. ATF PUMP DRIVER GEAR
5. MAINSHAFT 3RD GEAR
6. MAINSHAFT 2ND GEAR
7. 2ND CLUTCH
8. 4TH CLUTCH
9. SUB-SHAFT 4TH GEAR
10. MAINSHAFT 4TH GEAR
11. 1ST-HOLD CLUTCH
12. MAINSHAFT REVERSE GEAR
13. SUB-SHAFT 1ST GEAR
14. SUB-SHAFT
15. MAINSHAFT 1ST GEAR
16. 1ST CLUTCH
17. MAINSHAFT
18. REVERSE SELECTOR HUB
19. COUNTERSHAFT
20. ONE-WAY CLUTCH
21. PARK GEAR
22. COUNTERSHAFT 1ST GEAR
23. COUNTERSHAFT REVERSE GEAR
24. REVERSE SELECTOR
25. COUNTERSHAFT 4TH GEAR
26. COUNTERSHAFT 2ND GEAR
27. COUNTERSHAFT 2ND GEAR
28. 3RD CLUTCH
29. FINAL DRIVEN GEAR
30. DIFFERENTIAL ASSEMBLY
31. FINAL DRIVE GEAR
32. DRIVE PLATE

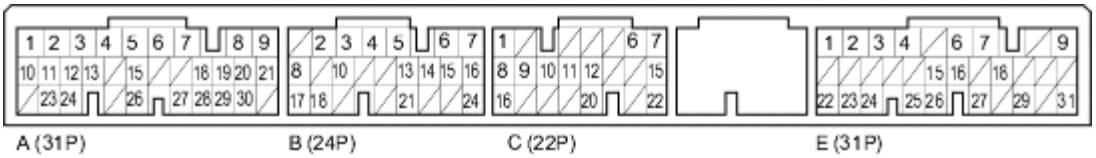
Honda Multi Matic Transmission/CVT

System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs

PCM Connector Terminal Location



PCM CONNECTOR B (24P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
B7	GRN/WHT	HLC LSP	CVT pulley pressure control valve assembly power supply positive electrode	With ignition switch ON (II): Pulsing signal
B16	YEL/GRN	SC LSP	CVT start clutch pressure control valve assembly power supply positive electrode	With ignition switch ON (II): Pulsing signal
B24	BLU/WHT	SH LSP	CVT speed change control valve assembly power supply positive electrode	With ignition switch ON (II): Pulsing signal

PCM CONNECTOR C (22P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
C1	BLK/RED	HLC LSM	CVT pulley pressure control valve assembly power supply negative electrode	
C6	GRN/RED	SOL INH	Inhibitor solenoid control	With inhibitor solenoid ON: Battery voltage With inhibitor solenoid OFF: 0 V
C7	RED/BLU	NDR	CVT drive pulley speed sensor signal input	In other than P and N position: Pulsing signal
C8	BLU/RED	SC LSM	CVT start clutch pressure control valve assembly power supply negative electrode	
C9	RED	ATP S	Transmission range switch S position input	In S position: 0 V In other than S position: 5 V
C10	WHT	ATP R	Transmission range switch R position input	In R position: 0 V In other than R position: Battery voltage
C11	BLU	ATP L	Transmission range switch L position input	In L position: 0 V In other than L position: 5 V

Honda Multi Matic Transmission/CVT
System Description (cont'd)

PCM CONNECTOR C (22P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
C12	BLU/WHT	ATP NP	Transmission range switch P and N positions input	In P and N positions: 0 V In other than P and N positions: 5 V
C15	WHT/GRN	NDN	CVT driven pulley speed sensor signal input	In other than P and N position: Pulsing signal
C16	GRN/YEL	SH LSM	CVT speed change control valve assembly power supply negative electrode	
C20	YEL	ATP D	Transmission range switch D position input	In D position: 0 V In other than D position: 5 V
C22	WHT/RED	VEL1	CVT speed sensor signal input	Depending on vehicle speed: Pulsing signal When vehicle is stopped: About 0 V

PCM CONNECTOR E (31P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
E1	GRN/YEL	FLR	PGM-FI main relay control	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
E7	RED/YEL	MRLY	PGM-FI main relay control	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
E9	YEL/BLK	IG1	Power supply circuit	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
E22	WHT/BLK	BK SW	Brake pedal position switch signal output	Brake pedal pressed: Battery voltage Brake pedal released: 0 V
E24	YEL	SEFMJ	Communication line between PCM and multiplex control unit	With ignition switch ON (II): Battery voltage
E29	BRN	SCS	Timing and adjustment service check signal	With ignition switch ON (II) and service check signal terminal on 16P data link connector open: 5 V With ignition switch ON (II) and service check signal terminal connected to ground with special tool: 0 V

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Hydraulic Control

The hydraulic control system is controlled by the ATF pump, the valves and the solenoids. The ATF pump is driven by the input shaft. The ATF pump and the input shaft are linked by the ATF pump drive chain and the sprockets. Fluid from the ATF pump flows through the PH regulator valve to maintain specified pressure to the drive pulley, the driven pulley and the manual valve.

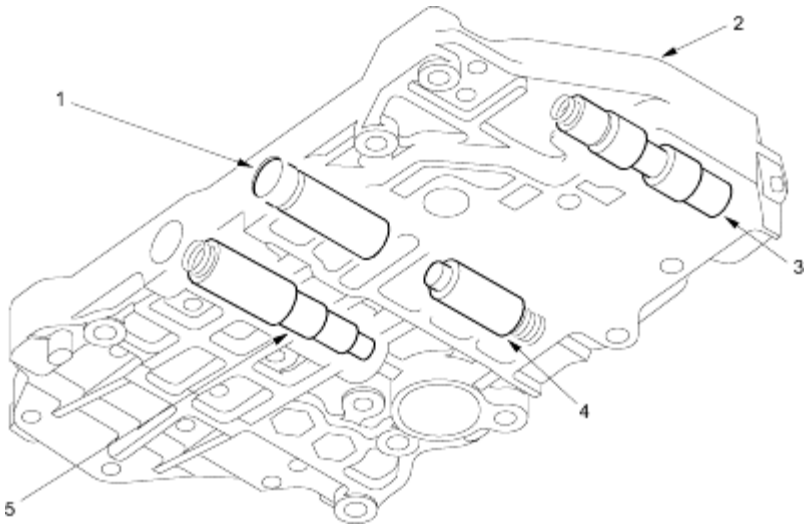
The lower valve body assembly includes the main valve body, the secondary valve body, the CVT pulley pressure control valve assembly, the CVT start clutch pressure control valve assembly and the CVT speed change control valve assembly.

The manual valve body is bolted on the intermediate housing and housed manual valve. The manual valve switch hydraulic pressure to meet with the shift lever position.

Main Valve Body

The main valve body contains the PH control valve, the CPC valve, the cooler relief valve and the lubrication check valve.

- PH Control Valve
  The PH control valve supplies PH control pressure (PHC) to the PH regulator valve to regulate PH pressure in accordance with the PH-PL control pressure (HLC). At kick-down, it increases PH control pressure which increases the PH pressure.
- Lubrication Check Valve
  The lubrication check valve stabilises the lubrication pressure to the internal circuit.
- Cooler Relief Valve
  The cooler relief valve regulates ATF cooler pressure to the ATF cooler and drain to the internal circuit.
- CPC Valve
  The CPC valve regulates clutch pressure to the start clutch.



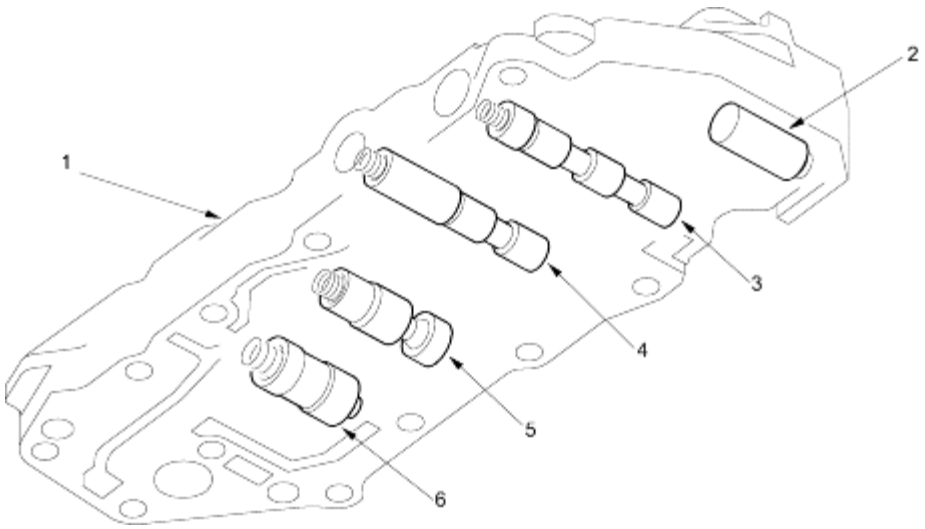
1. LUBRICATION CHECK VALVE
2. MAIN VALVE BODY
3. CPC VALVE
4. COOLER RELIEF VALVE
5. PH CONTROL VALVE

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Secondary Valve Body

The secondary valve body contains the PH regulator valve, the lubrication regulator valve, the clutch reducing valve, the start clutch accumulator valve and the shift inhibitor valve.

- PH Regulator Valve
  The PH regulator valve maintains hydraulic pressure supplied from the ATF pump and supplies PH pressure to the hydraulic control circuit and the lubrication circuit. PH pressure is regulated at the PH regulator valve by the PH control pressure (PHC) from the PH control valve.
- Lubrication Regulator Valve
  The lubrication regulator valve regulates lubrication pressure to the hydraulic circuit.
- Clutch Reducing Valve
  The clutch reducing valve receives PH pressure from the PH regulator valve and regulates the clutch reducing pressure (CR).
- Start Clutch Accumulator Valve
  The start clutch accumulator valve stabilises the hydraulic pressure that is supplied to the start clutch.
- Shift Inhibitor Valve
  The shift inhibitor valve switches the fluid passage to switch the start clutch control from electronic control to hydraulic control when the electronic control system is faulty.



1. SECONDARY VALVE BODY
2. START CLUTCH ACCUMULATOR VALVE
3. SHIFT INHIBITOR VALVE
4. CLUTCH REDUCING VALVE
5. LUBRICATION REGULATOR VALVE
6. PH REGULATOR VALVE

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Hydraulic Control (cont'd)

CVT Pulley Pressure Control Valve Assembly

The CVT pulley pressure control valve assembly contains the PL regulator valve and the HLC valve which is joined with the linear solenoid. The PL regulator valve supplies low pressure to the pulley to eliminate steel belt slippage. The HLC valve controls the PL regulator valve according to the engine torque. The HLC valve supplies PH-PL control pressure (HLC) to the PH control valve to regulate PH pressure higher than PL pressure. The HLC valve is controlled by the linear solenoid which is controlled by the PCM.

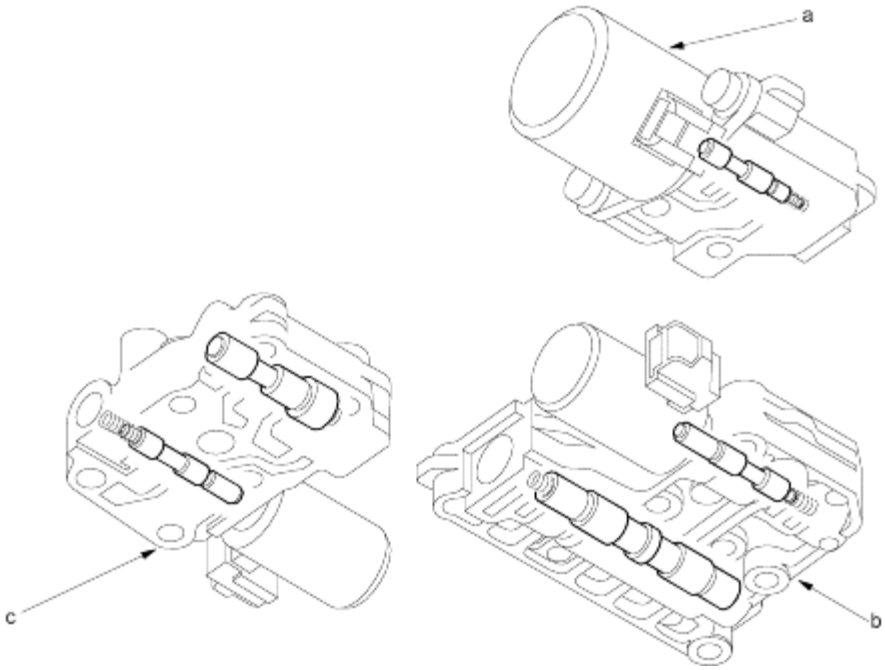
The inhibitor solenoid is bolted on the CVT pulley pressure control valve assembly and supplies the SH-A pressure to the reverse inhibitor valve to control forward range and reverse range.

CVT Start Clutch Pressure Control Valve Assembly

The CVT start clutch pressure control valve assembly contains the start clutch control valve joined with the linear solenoid. The start clutch pressure control valve controls start clutch engagement according to the throttle opening. The start clutch control valve is controlled by the linear solenoid, which is controlled by the PCM.

CVT Speed Change Control Valve Assembly

The CVT speed change control valve assembly contains the pulley control valve and the SHC valve joined with the linear solenoid. The pulley control valve distributes PH pressure and PL pressure to the drive pulley and driven pulley, to shift the transmission. The SHC valve controls the pulley control valve by SHC pressure in accordance with the throttle opening and vehicle speed. The SHC valve is controlled by the linear solenoid, which is controlled by the PCM.



1. CVT START CLUTCH PRESSURE CONTROL VALVE ASSEMBLY
2. CVT SPEED CHANGE CONTROL VALVE ASSEMBLY
3. CVT PULLEY PRESSURE CONTROL VALVE ASSEMBLY

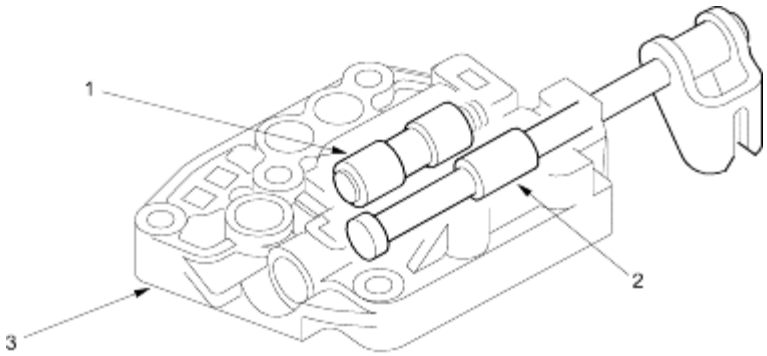
Honda Multi Matic Transmission/CVT

System Description (cont'd)

Manual Valve Body

The manual valve body contains the manual valve and the reverse inhibitor valve. The manual valve body in bolted on the intermediate housing.

- Manual Valve
  The manual valve mechanically uncovers/covers the fluid passage according to the shift lever position.
- Reverse Inhibitor Valve
  The reverse inhibitor is controlled by the SH-A pressure from the reverse inhibitor solenoid. The reverse inhibitor valve intercepts the hydraulic circuit to the reverse brake while the vehicle is moving forward at speeds over about 6 mph (10 km/h).



1. REVERSE INHIBITOR VALVE
2. MANUAL VALVE
3. MANUAL VALVE BODY

Honda Multi Matic Transmission/CVT
System Description (cont'd)

Hydraulic Flow

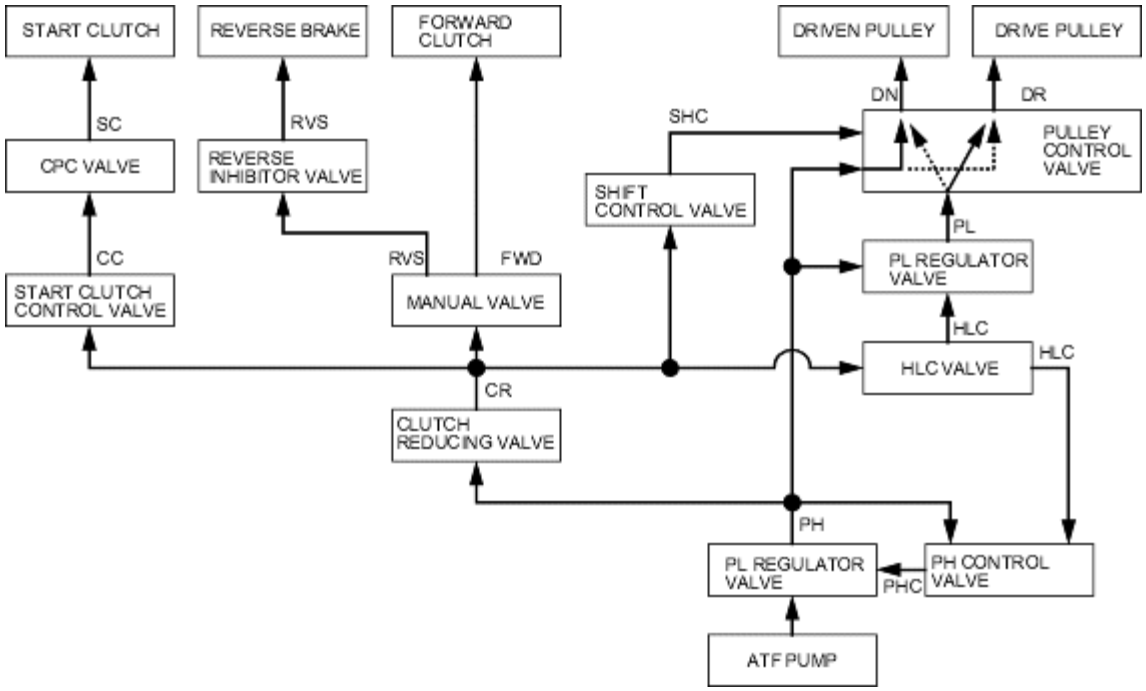
As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn though the ATF strainer and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump flows the PH regulator valve and becomes the PH pressure. The PH pressure flows to the pulley control valve and then to the pulleys.

The PCM actuates the solenoids to control hydraulic pressure shifting pulley ratios and engaging start clutch.

Hydraulic pressure at the port is as follows:

PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE
PH	PRESSURE HIGH	SC	START CLUTCH
DN	DRIVEN PULLEY	CC	SC CONTROL
DR	DRIVE PULLEY	HLC	PH-PL CONTROL
PHC	PH CONTROL	SHC	SHIFT CONTROL
PL	PRESSURE LOW	PP	PITOT PIPE
CR	CLUTCH REDUCING	PP'	PITOT PIPE
FWD	FORWARD CLUTCH	95	LUBRICATION
RVS	REVERSE BRAKE	93	ATF COOLER
RVS'	REVERSE BRAKE	99	SUCTION
SA	SH-A	X	DRAIN
SI	SHIFT INHIBITOR	AX	AIR DRAIN

General Chart of Hydraulic Pressure



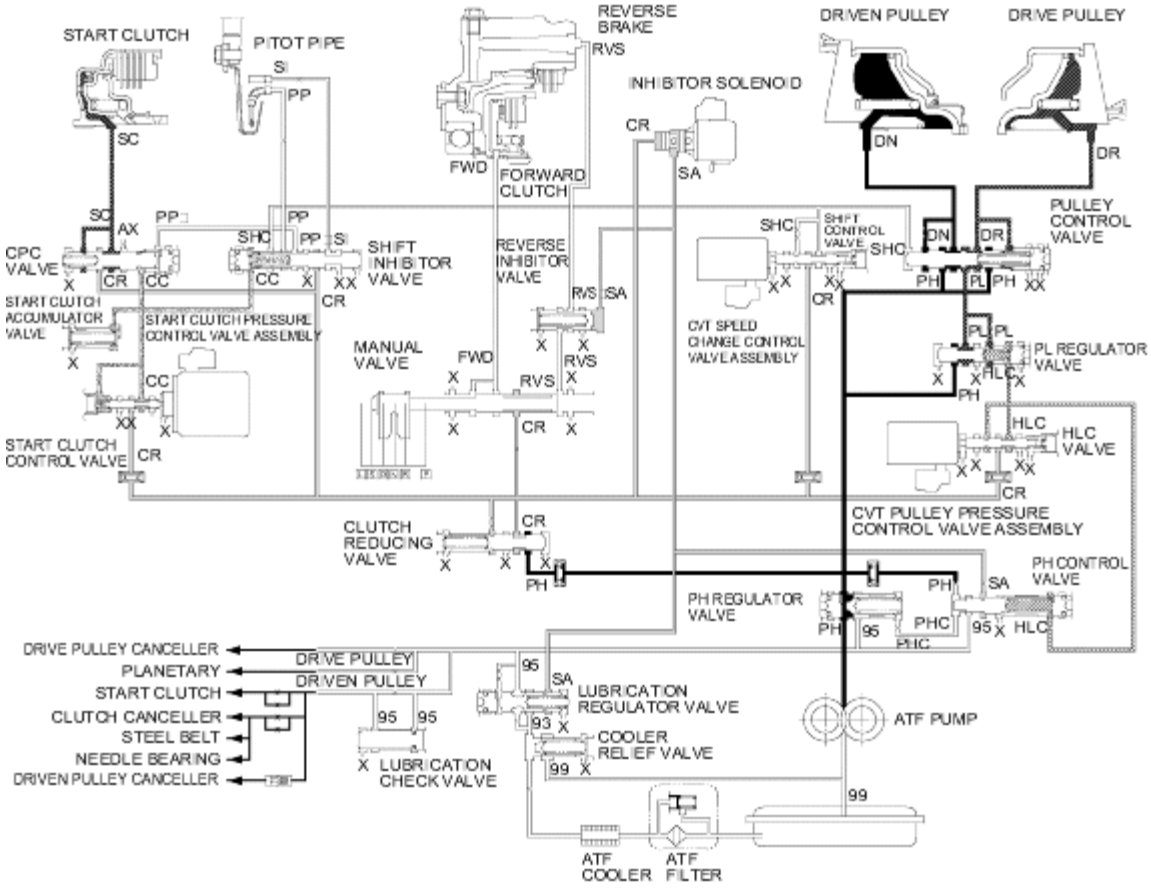
Honda Multi Matic Transmission/CVT

System Description (cont'd)

N Position

Fluid from the ATF pump regulates high pressure (PH) at the PH regulator valve and flows to the movable face of the driven pulley via the pulley control valve. The high pressure (PH) also flows to the PL regulator valve and becomes to low pressure (PL). The low pressure (PL) flows to the movable face of the drive pulley via the pulley control valve. At this time, the pulley ratio remains low.

The start clutch receives very low pressure from the CPC valve. The manual valve intercepts the FWD pressure to the forward clutch. Under this condition, hydraulic pressure is not applied to the forward clutch and reverse brake.



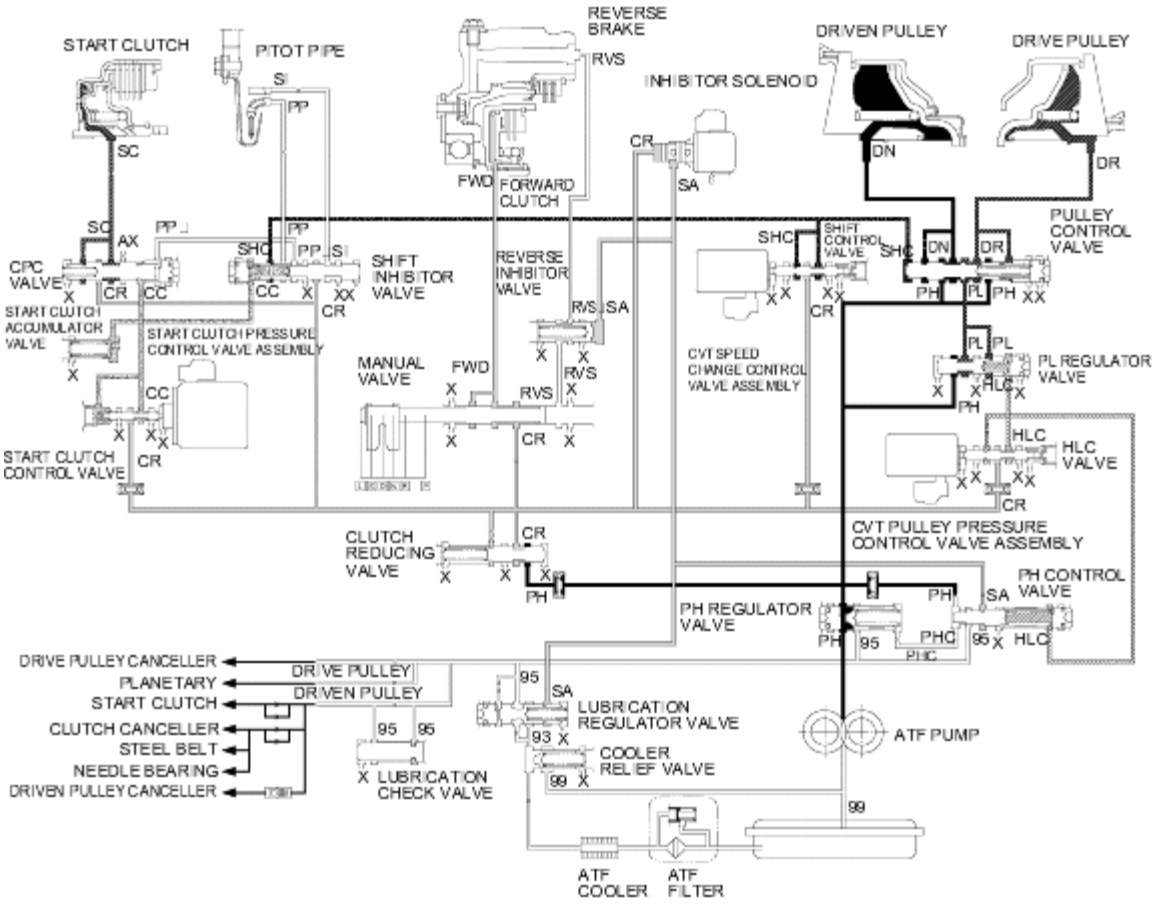
Honda Multi Matic Transmission/CVT

System Description (cont'd)

Hydraulic Flow (cont'd)

D Position, at low speed range

The manual valve is shifted into **D** position and uncovers the port leading forward clutch pressure (FWD) to the forward clutch. The forward clutch pressure (FWD) flows to the forward clutch, the forward clutch is engaged and drives the input shaft and drive pulley. The drive pulley receives low pressure and driven pulley receives high pressure. So, the pulley ratio is low at this time. The PCM actuates the start clutch pressure control valve assembly to control start clutch pressure. The start clutch control pressure (SC) from the start clutch pressure control valve assembly becomes the start clutch pressure (SC) at the CPC valve and flows to the start clutch. The start clutch is engaged and the vehicle moves.



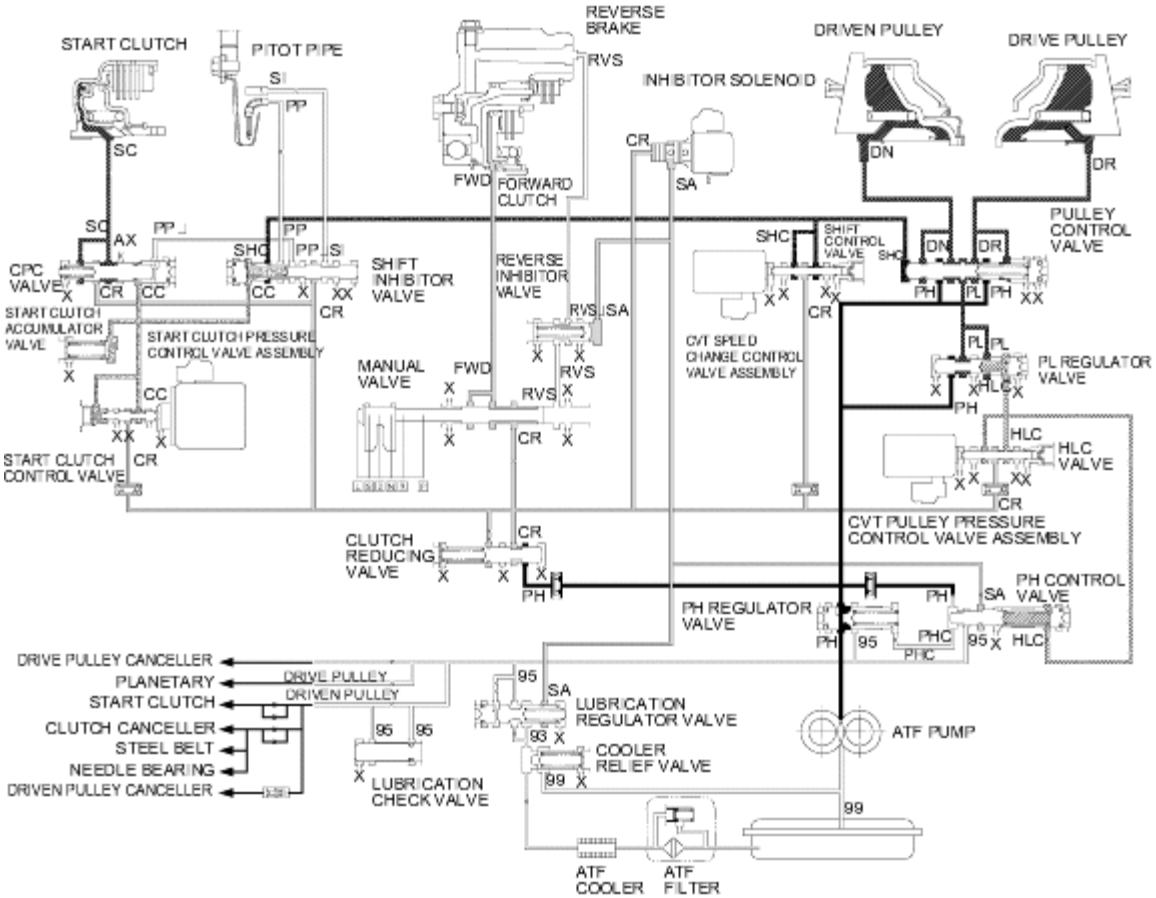
Honda Multi Matic Transmission/CVT

System Description (cont'd)

D Position, at middle speed range

As the speed of the vehicle reaches the prescribed value, the CVT speed change control valve assembly is activated by the PCM. The CVT speed change control valve assembly controls the pulley control valve to activate shift control pressure (SHC). Clutch reducing pressure (CR) from the clutch reducing valve becomes shift control pressure (SHC) at the SHC valve and shift control pressure (SHC) flows to the left end of the pulley control valve. The pulley control valve is moved to the right side positioning it in the middle of its travel and covers the port to stop high pressure (PH) to the pulleys and uncovers the port leading low pressure (PL) to the pulleys. The drive pulley and the driven pulley receive low pressure (PL) and the pulley ratio is in the middle. Hydraulic pressure remains to apply the forward clutch and the start clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Automatic Transmission
System Description (cont'd)

Power Flow

POSITION		PART								
		TORQUE CONVERTER	1ST-HOLD CLUTCH	1ST GEAR 1ST CLUTCH	2ND GEAR 2ND CLUTCH	3RD GEAR 3RD CLUTCH	4TH		REVERSE GEAR	PARK GEAR
							GEAR	CLUTCH		
P		O	X	X	X	X	X	X	X	O
R		O	X	X	X	X	X	O	O	X
N		O	X	X	X	X	X	X	X	X
D and D3	1st	O	X	O*2	X	X	X	X	X	X
	2nd	O	X	O*1	O	X	X	X	X	X
	3rd	O	X	O*1	X	O	X	X	X	X
D	4th	O	X	O*1	X	X	O	O	X	X
2		O	X	O*1	O	X	X	X	X	X
1		O	O	O*2	X	X	X	X	X	X

O : Operates

x : Does not operate

*1: Although the 1st clutch engages, driving power is not transmitted as the one-way clutch slips.

*2: The one-way clutch engages when accelerating and slips when decelerating.

NOTE: 1 position is applied to 7-position transmission.

Gear Operation

Gears on the mainshaft

- The 1st gear engages/disengages with the mainshaft by the 1st clutch.
- The 2nd gear engages/disengages with the mainshaft by the 2nd clutch.
- The 3rd gear is integral with the mainshaft.
- The 4th gear engages/disengages with the mainshaft by the 4th clutch.
- The reverse gear engages/disengages with the mainshaft by the 4th clutch.

Gears on the countershaft

- The park gear, 1st gear, 2nd gear, 4th gear are splined with the countershaft and rotate with the countershaft.
- The 3rd gear engages/disengages with the countershaft by the 3rd clutch.
- The final drive gear is integral with the countershaft.
- The 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages the 4th gear or the reverse gear with the reverse selector hub. The reverse selector hub is splined with the countershaft so that the 4th gear or reverse gear engage with the countershaft.

Gears on the sub-shaft (7-position)

- The 1st gear is splined with the sub-shaft and rotate with the sub-shaft.
- The 4th gear engages/disengages with the sub-shaft by the 1st-hold clutch.

Honda Multi Matic Transmission/CVT

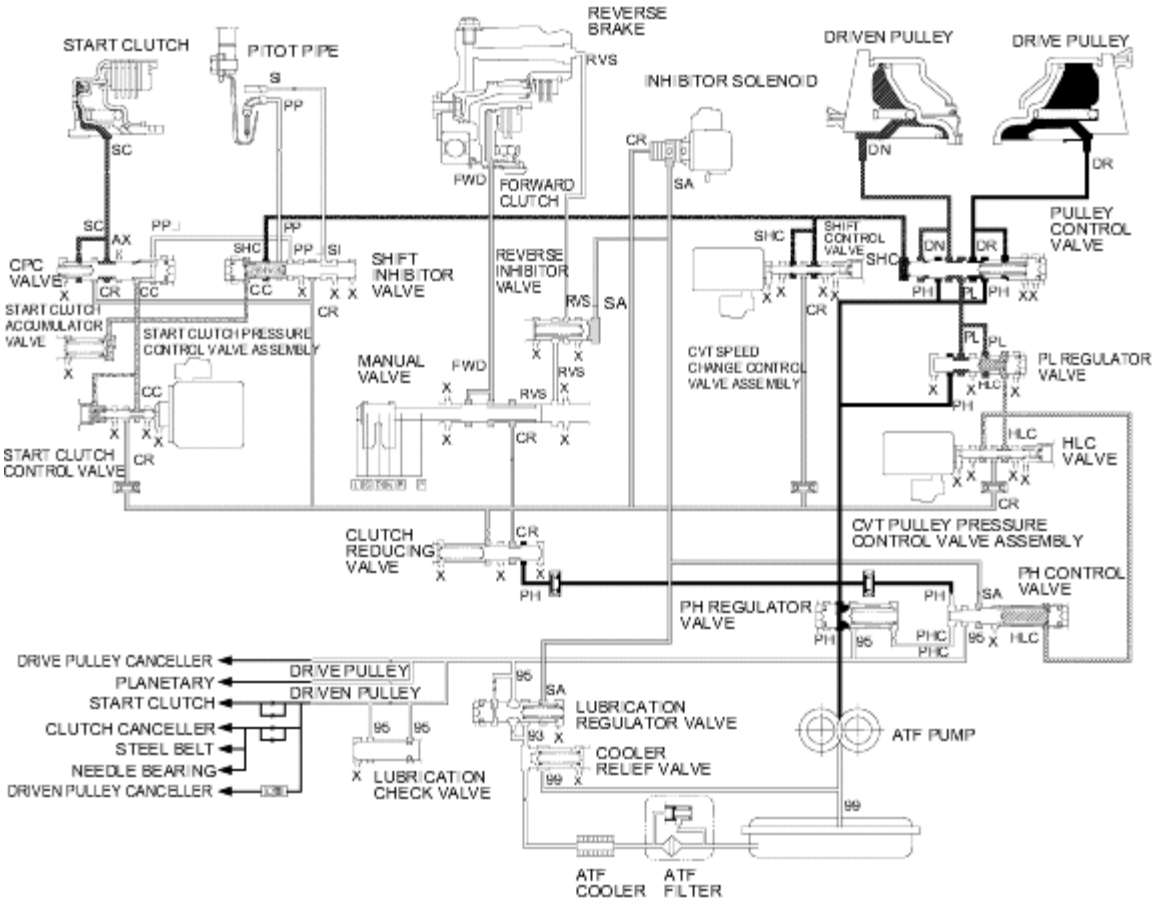
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position, at high speed range

Vehicle speed is further increased, the CVT speed change control valve assembly moves the SHC valve to increase shift control pressure (SHC) at the left end of the pulley control valve. The pulley control valve is moved to right side compared to its position at middle pulley ratio. The pulley control valve uncovers the port leading high pressure (PH) to the drive pulley and uncovers the port leading low pressure (PL) to the driven pulley. The drive pulley receives high pressure (PH) and the driven pulley receives low pressure (PL) and the pulley ratio is in the high. Hydraulic pressure remains to apply the forward clutch and the start clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



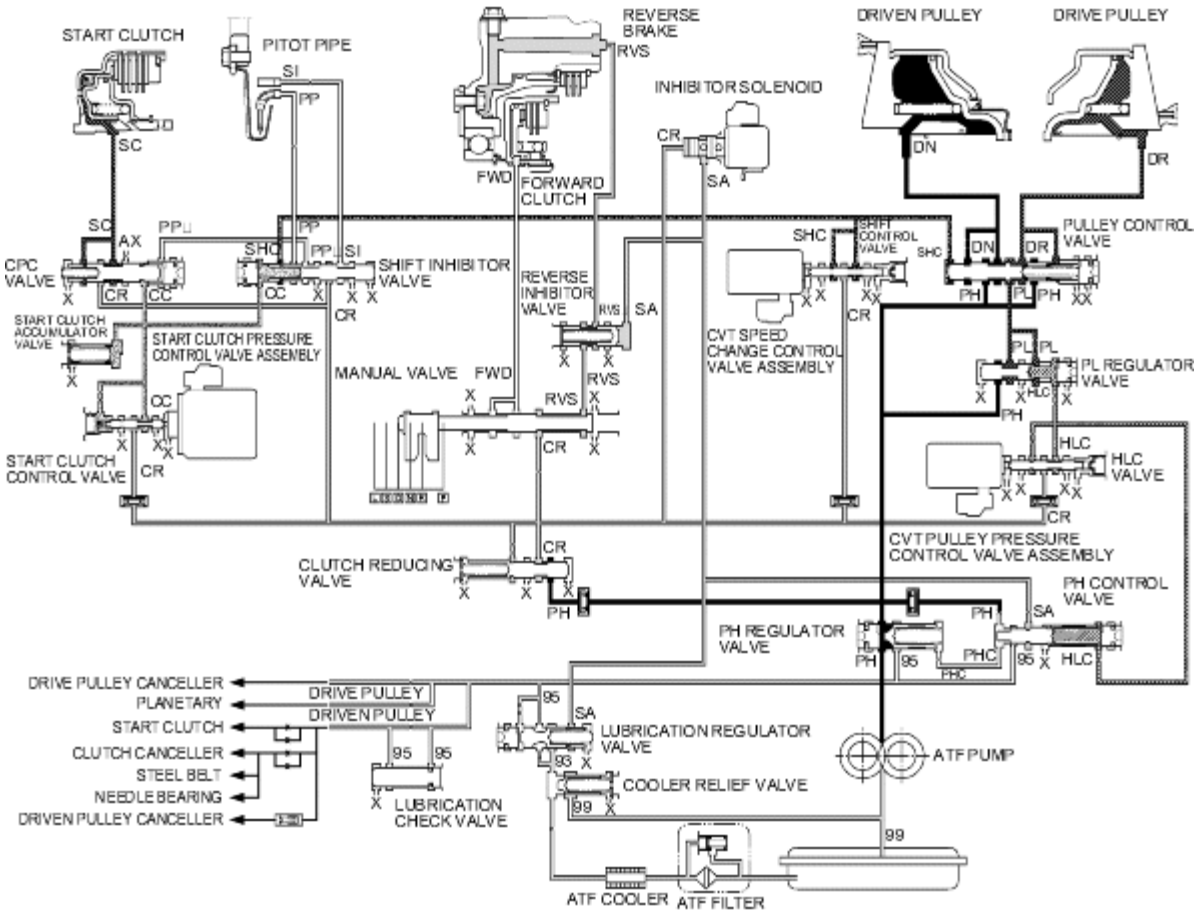
Honda Multi Matic Transmission/CVT

System Description (cont'd)

R Position

The manual valve is shifted in the R position and uncovers the port leading reverse brake pressure (RVS) to the reverse inhibitor valve. The inhibitor solenoid is turned OFF by the PCM and SH-A pressure (SA) is applied to the right end of the reverse inhibitor valve. The reverse inhibitor valve is moved to the left side and uncovers the port leading reverse brake pressure (RVS') to the reverse brake. Clutch reducing pressure (CR) becomes reverse brake pressure (RVS) and flows to the reverse brake via the reverse inhibitor valve. The reverse brake is engaged and it locks the planetary carrier.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Honda Multi Matic Transmission/CVT

System Description (cont'd)

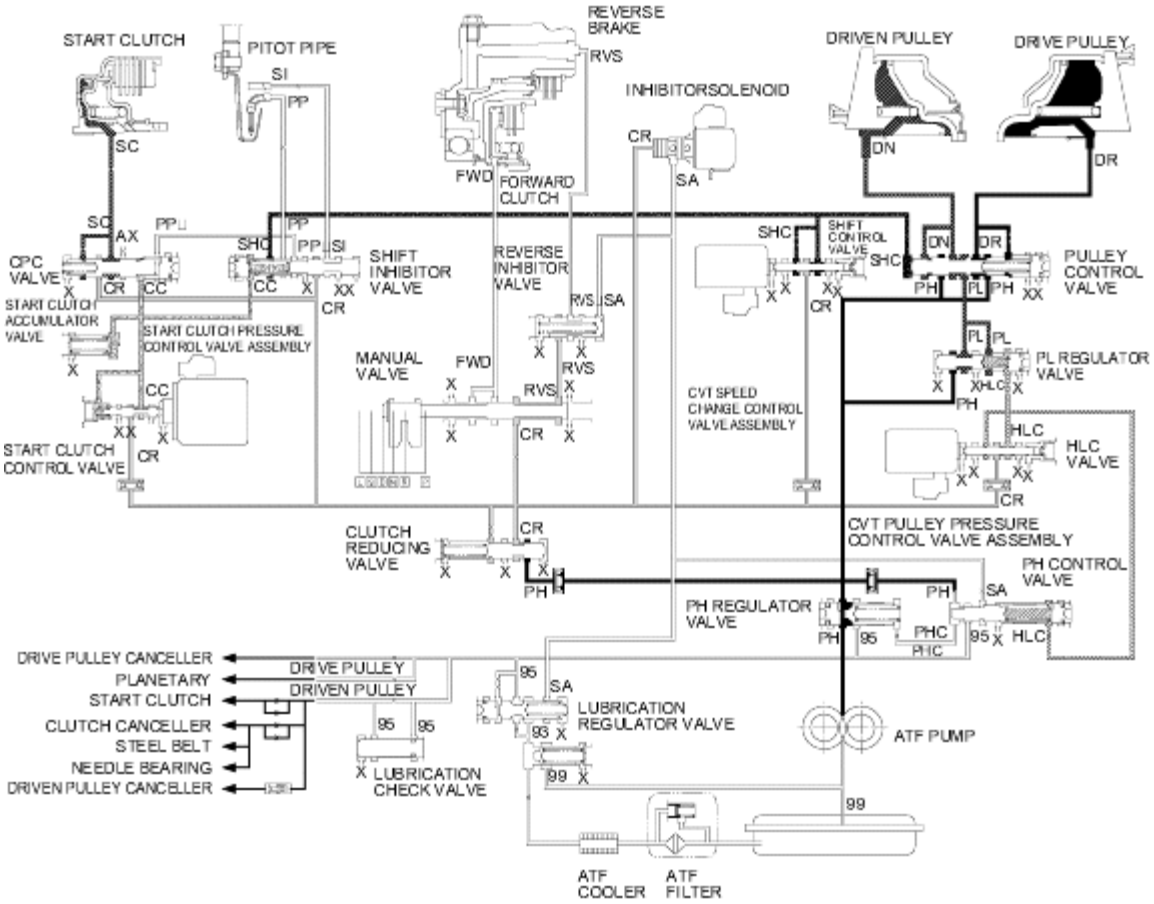
Hydraulic Flow (cont'd)

[R] Position

Reverse Inhibitor Control

If the [R] position is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h), the PCM outputs the signal to turn ON the inhibitor solenoid and the SH-A pressure (SA) in the right end of the reverse inhibitor valve is released. The reverse inhibitor valve is moved to the left side and covers the port to stop reverse brake pressure to the reverse brake from the manual valve. Reverse brake pressure (RVS) is not applied to the reverse brake and power is not transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

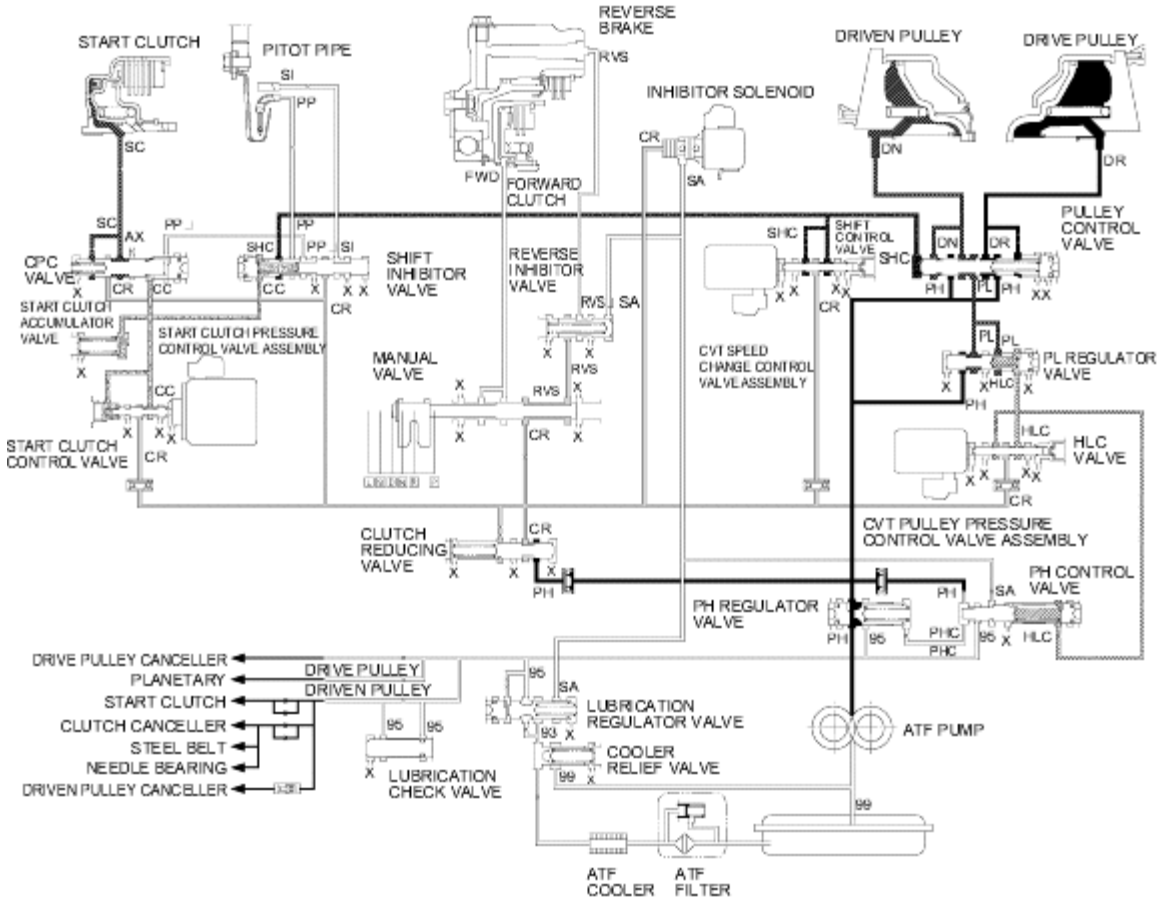


Honda Multi Matic Transmission/CVT

System Description (cont'd)

P Position

The manual valve is shifted in P position, clutch reducing pressure (CR) is intercepted at the manual valve. Hydraulic pressure is not applied to the forward clutch and power is not transmitted to the drive pulley shaft.



Honda Multi Matic Transmission/CVT

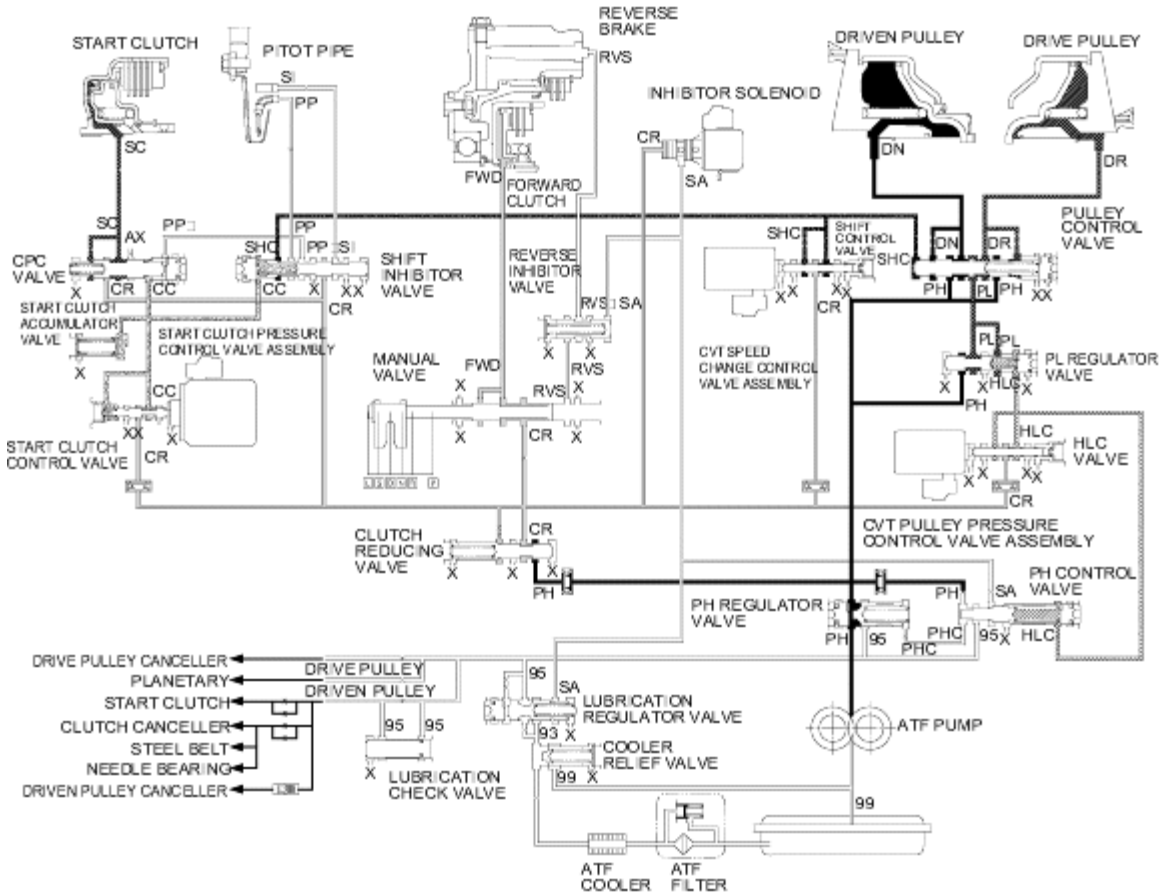
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position

Pulley pressure control when decelerating with applying brake

When the vehicle needs to accelerate after the vehicle decelerated with applying the brakes, the PCM turns inhibitor solenoid ON. The inhibitor solenoid is turned ON and SH-A pressure (SA) in the PH control valve is released. Then high pressure (PH) increases at the PH regulator valve and higher pressure flows to the driven pulley. The driven pulley receives high pressure and the pulley ratio is in low. The vehicle can accelerate in low pulley ratio.



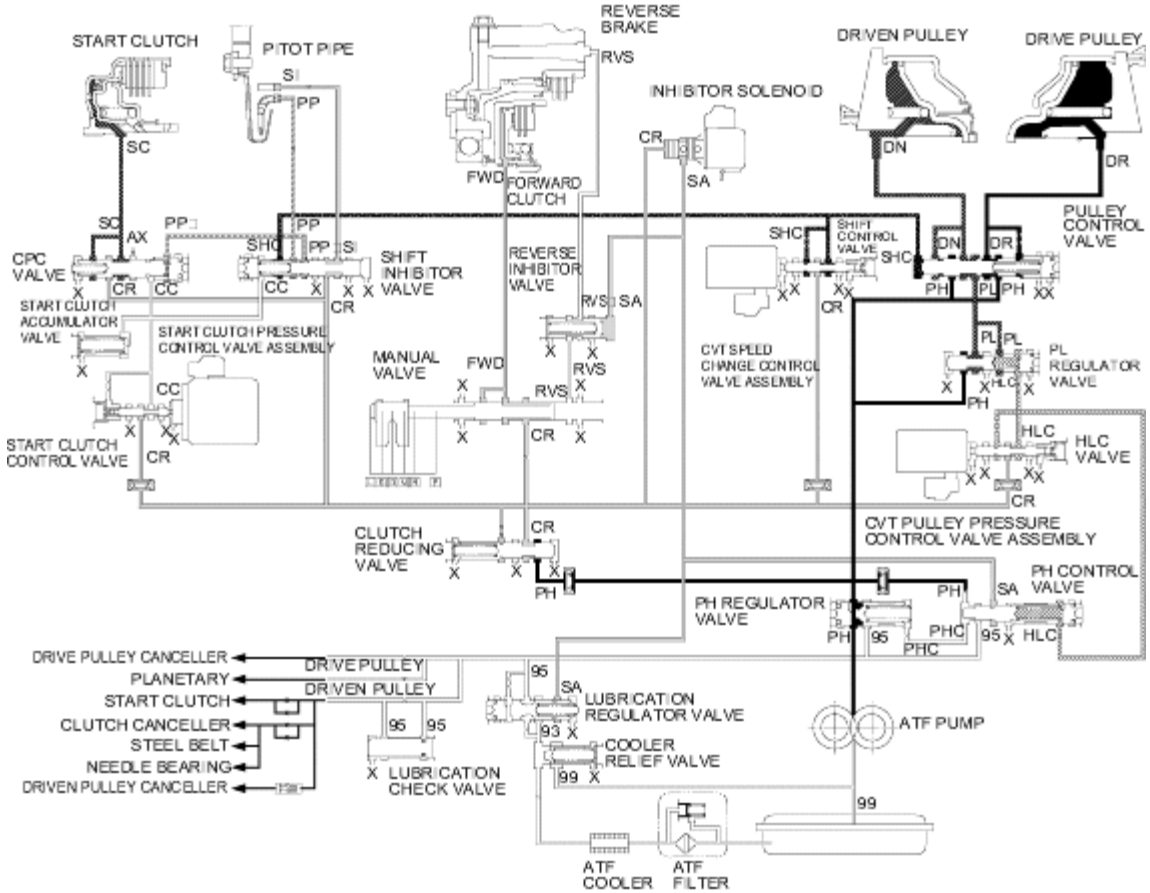
Honda Multi Matic Transmission/CVT
System Description (cont'd)

D Position, when an electronic control system breakdown occurs.

When an electronic control system breakdown occurs, the transmission uses the pitot pipe pressure (PP) to allow the vehicle to drive.

When all solenoids and sensors are off because of an electronic control system breakdown, shift inhibitor valve is moved to left side and uncovers the port leading shift inhibitor pressure (SI) to the pitot lubrication pipe. The pitot lubrication pipe discharges fluid inside of the pitot flange and discharged fluid enters into the pitot pipe and it is applied to the right end of the CPC valve via the shift inhibitor valve. The pitot pressure (PP) is increased, the CPC valve is moved to left side and the start clutch pressure (SC) is increased. The start clutch pressure (SC) is applied to the start clutch and the start clutch is engaged. At this time, the drive pulley receives high pressure and the driven pulley receives low pressure, the pulley ration is in high.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Honda Multi Matic Transmission/CVT

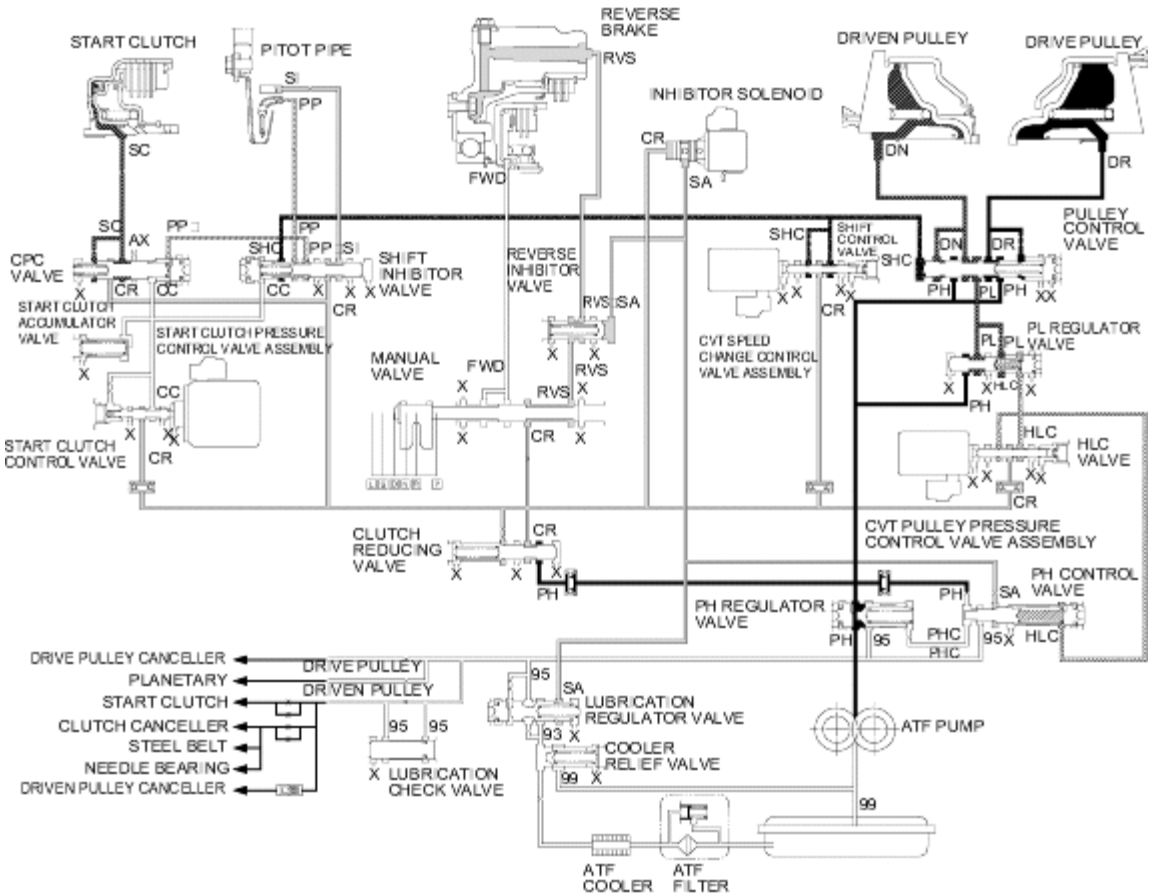
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position, when an electronic control system breakdown occurs.

The manual valve is shifted in the R position and uncovers the port leading reverse brake pressure (RVS) to the reverse inhibitor valve. All solenoids and sensors are off because of an electronic control system breakdown the inhibitor solenoid is faulty OFF and SH-A pressure (SA) is applied to the right end of the reverse inhibitor valve. The reverse inhibitor valve is moved to the left side and uncovers the port leading reverse brake pressure (RVS') to the reverse brake. The reverse brake pressure (RVS) flows to the reverse brake and the reverse brake is engaged to drive in reverse. The shift inhibitor valve is moved by the electronic control system breakdown to left side and uncovers the port leading shift inhibitor pressure (SI) to the pitot lubrication pipe. The pitot lubrication pipe discharges fluid inside of the pitot flange and discharged fluid enters into the pitot pipe and it is applied to the right end of the CPC valve via the shift inhibitor valve. The pitot pressure (PP) is increased, the CPC valve is moved to left side and the start clutch pressure (SC) is increased. The start clutch pressure (SC) is applied to the start clutch and the start clutch is engaged. At this time, the drive pulley receives high pressure and the driven pulley receives low pressure, the pulley ration is in high.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



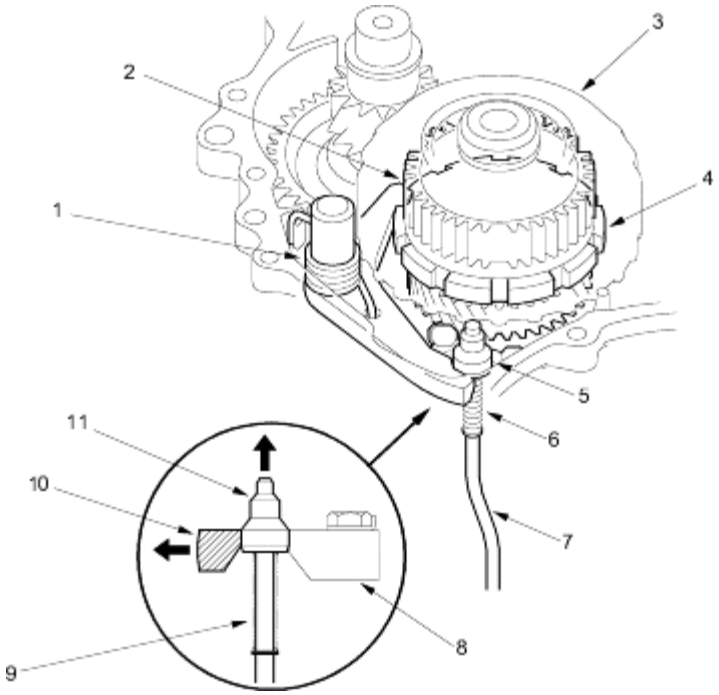
Honda Multi Matic Transmission/CVT

System Description (cont'd)

Park Mechanism

The park mechanism locks the transmission by engaging the park pawl with the park gear which is integral with the secondary drive gear. The secondary drive gear engages with the secondary driven gear which is integral with the final drive gear and the final drive gear engages the final driven gear.

Shifting to [P] position causes the park cone (installed at the end of the park rod) to press the park pawl onto the park gear. Even if the end of the park pawl rides on the top of the park gear teeth, slight movement of the vehicle will cause the park pawl and park gear to mesh with each other completely because the park cone receives the tension from the park rod spring. The park pawl receives the tension (which acts to separate the park pawl from the park gear) from the park pawl spring.

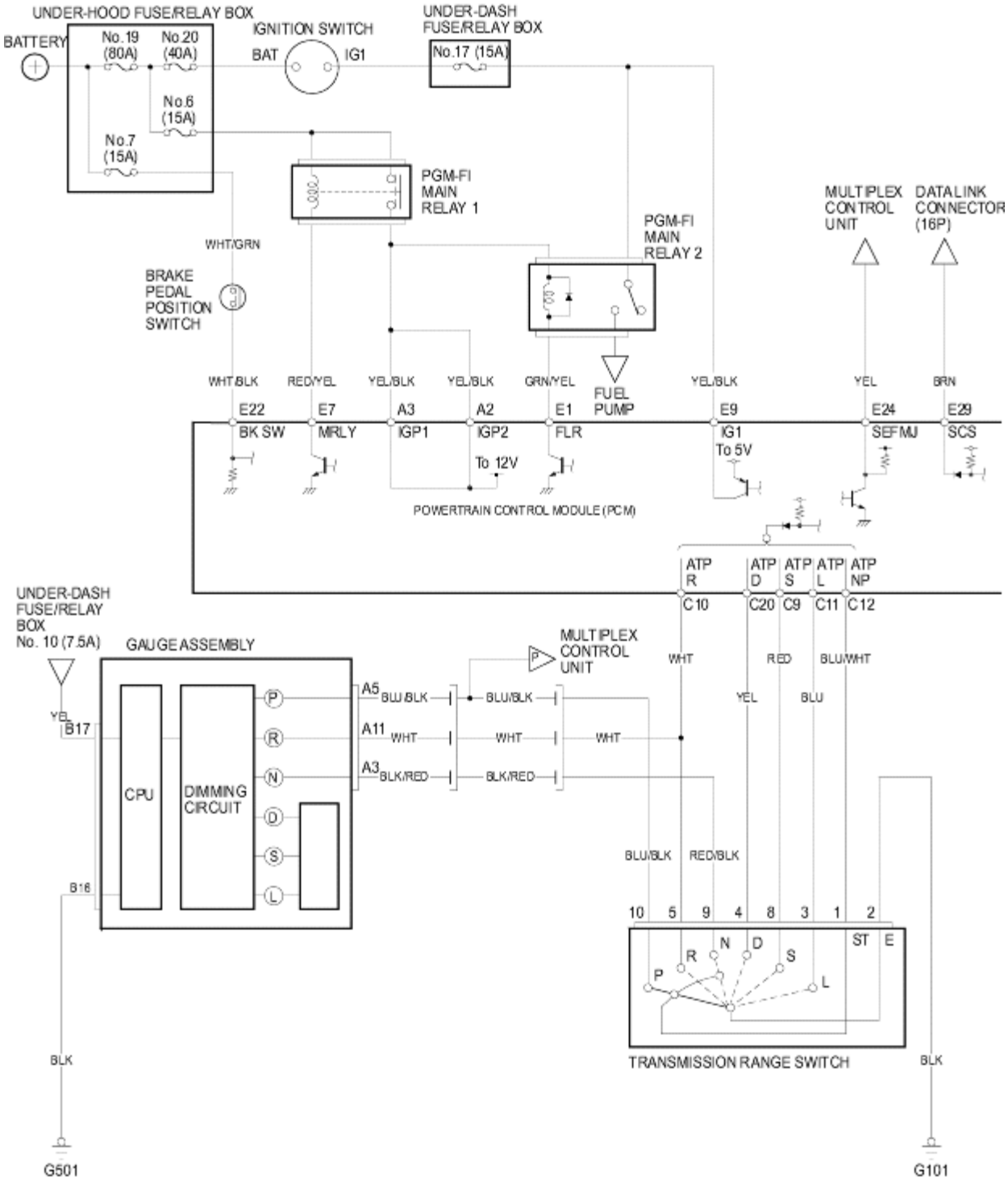


1. PARK PAWL SPRING
2. PARK PAWL
3. START CLUTCH
4. PARK GEAR
5. PARK CONE
6. PARK ROD SPRING
7. PARK ROD
8. PARK ROD HOLDER
9. PARK ROD SPRING
10. PARK PAWL
11. PARK CONE

Honda Multi Matic Transmission/CVT

System Description (cont'd)

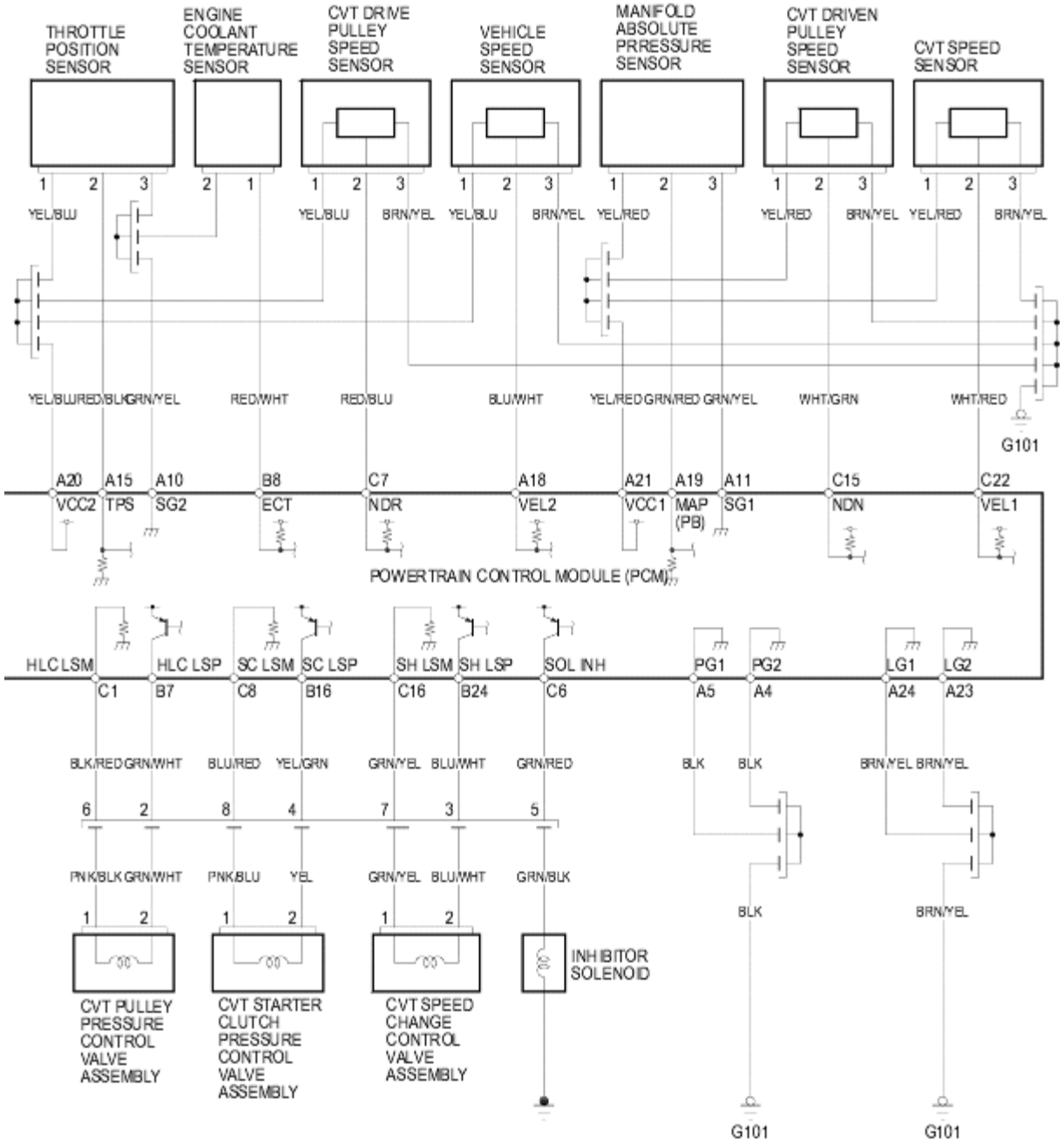
Circuit Diagram

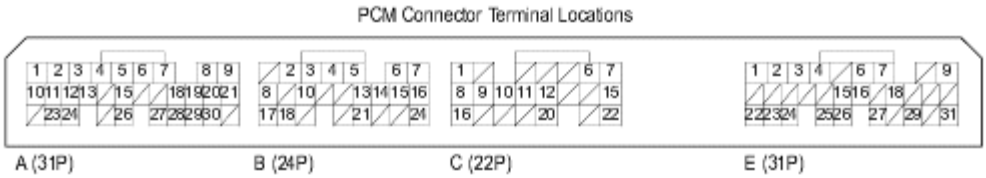


Honda Multi Matic Transmission/CVT

System Description (cont'd)

Circuit Diagram (cont'd)





Automatic Transmission
System Description (cont'd)

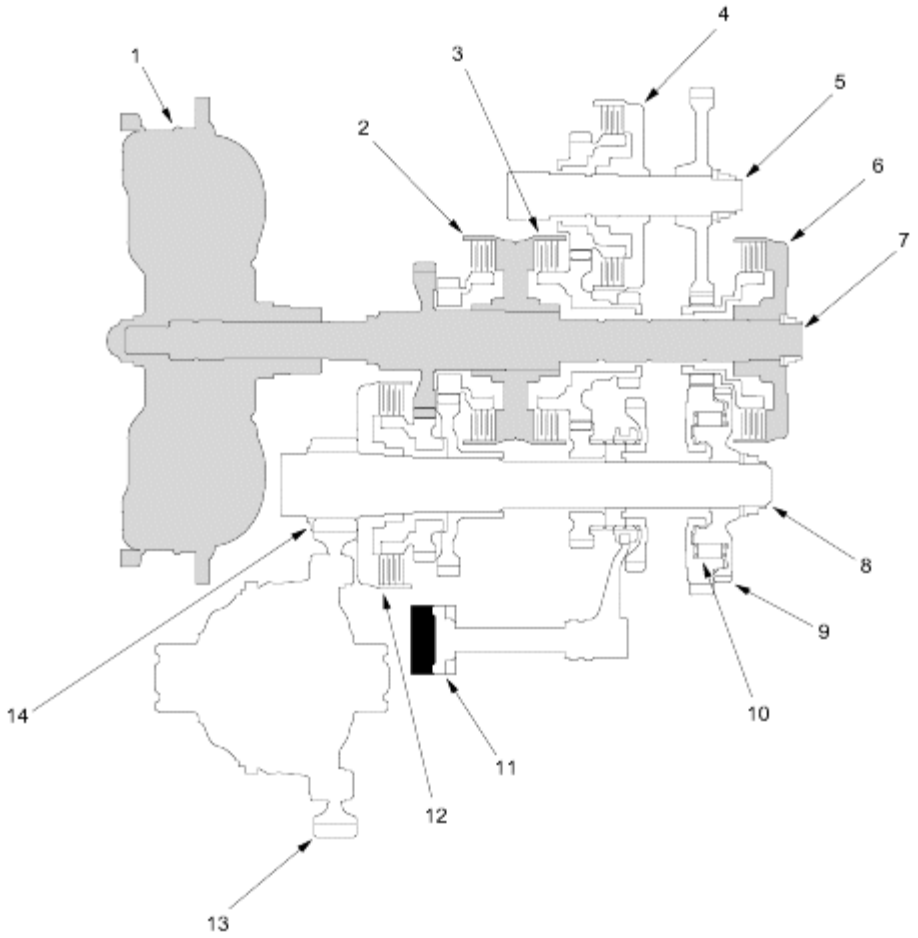
[P] Position

Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

[N] Position

Engine power transmitted from the torque converter drives the mainshaft, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft 4th gear is engaged with the reverse selector hub and the countershaft by the reverse selector when the shift lever is shifted in [N] position from * position. The countershaft reverse gear is engaged when shifted from [R] position.

NOTE: The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.



1. TORQUE CONVERTER
2. 2ND CLUTCH
3. 4TH CLUTCH
4. 1ST-HOLD CLUTCH
5. SUB-SHAFT
6. 1ST CLUTCH
7. MAINSHAFT
8. COUNTERSHAFT
9. PARK GEAR
10. ONE-WAY CLUTCH
11. SERVO VALVE
12. 3RD CLUTCH
13. FINAL DRIVEN GEAR
14. FINAL DRIVE GEAR

DTC 5: Short in Transmission Range Switch Circuit (short to ground)

1. 1. Turn the ignition switch ON (II).
   2. Observe the A/T gear position indicator and shift each position separately.

   Do any indicators stay on when the shift lever is not in that position?

   YES - Go to step 3.

   NO - Turn the ignition switch OFF, then go to step 4.
2. 3. Disconnect the transmission range switch connector.

   Do all gear position indicators go out?

   YES - Replace the transmission range switch. ■

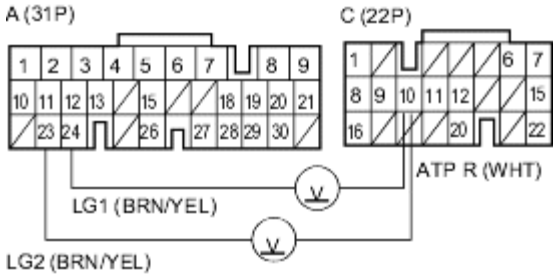
   NO - Turn the ignition switch OFF, then go to step 5.
3. 4. Test the transmission range switch (see page 14-350).

   Is the switch OK?

   YES - Go to step 5.

   NO - Replace the transmission range switch. ■
4. 5. Connect the transmission range switch connector.
1. 6. Turn the ignition switch ON (II).
2. 7. Shift to any position other than R
   8. Measure the voltage between PCM connector terminals C10 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

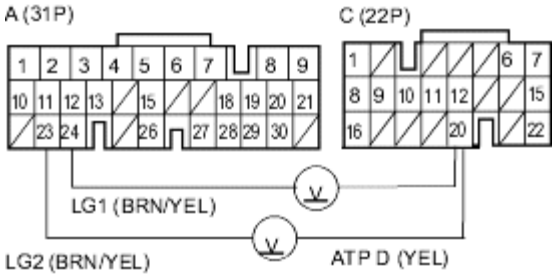
YES - Go to step 9.

NO - Check for short in the wire between PCM connector terminal C10 and the transmission range switch or A/T gear position indicator and check for an open in the wires between PCM connector terminals A23 and A24 and body ground (G101). If the wires are OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 9. Shift to any position other than D
2. 10. Measure the voltage between PCM connector terminals C13 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

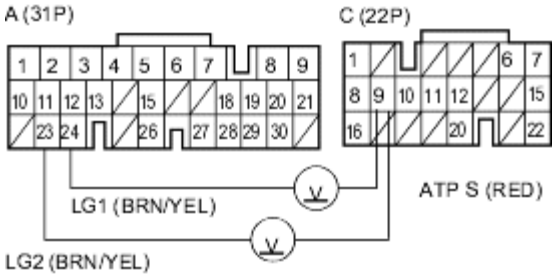
Is there about 5 V?

YES - Go to step 11.

NO - Check for short in the wire between PCM connector terminal C20 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

3. 11. Shift to any position other than S
   12. Measure the voltage between PCM connector terminals C9 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

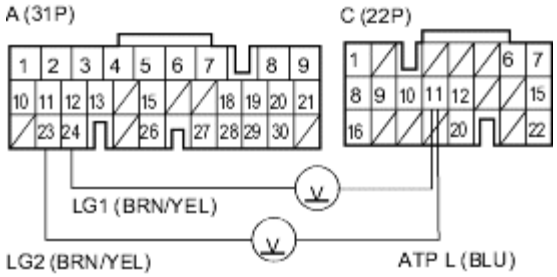
Is there about 5 V?

YES - Go to step 13.

NO - Check for short in the wire between PCM connector terminal C9 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 13. Shift to any position other than L
2. 14. Measure the voltage between PCM connector terminals C11 and A23 or A24.

PCM CONNECTOR



Wire side of female terminals

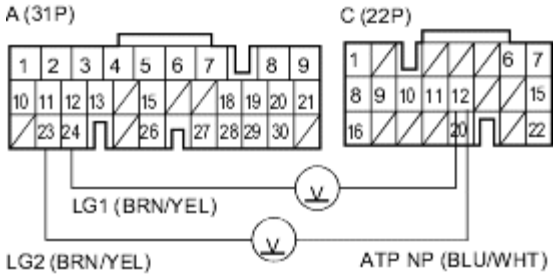
Is there about 5 V?

YES - Go to step 15.

NO - Check for short in the wire between PCM connector terminal C11 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

3. 15. Shift to any position other than P and N.
   16. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Check for short in the wire between PCM connector terminal C12 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 6: Open in Transmission Range Switch Circuit

1. 1. Test the transmission range switch (see page 14-350).

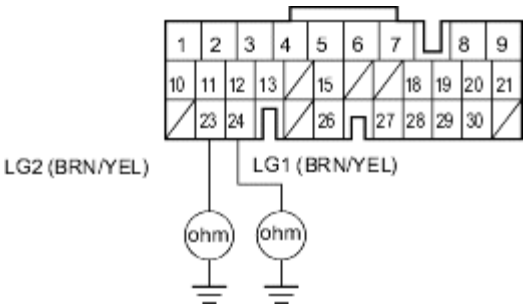
Is the switch OK?

YES - Go to step 2.

NO - Replace the transmission range switch. ■

2. 2. Connect the transmission range switch connector.
   3. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

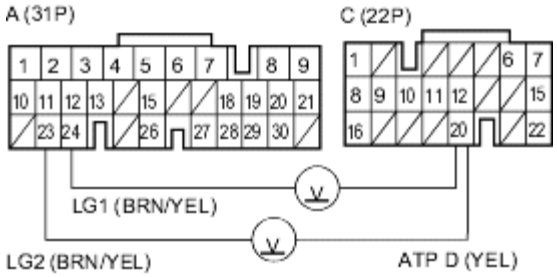
YES - Go to step 4.

NO - Repair open in the wires between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

3. 4. Turn the ignition switch ON (II).

1. 5. Shift to D position.
2. 6. Measure the voltage between PCM connector terminals C20 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

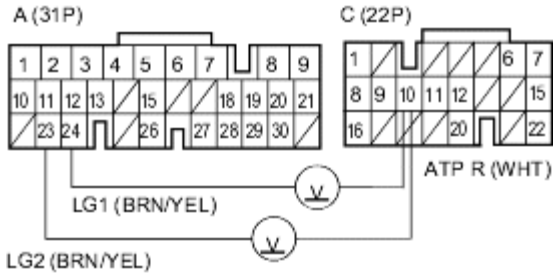
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C20 and the transmission range switch. ■

NO - Go to step 7.

3. 7. Shift to R position.
   8. Measure the voltage between PCM connector terminals C10 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

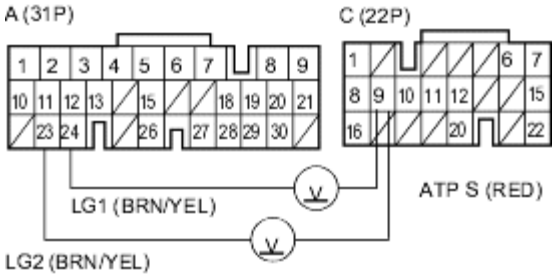
YES - Repair open in the wire between PCM connector terminal C21 and the transmission range switch. ■

NO - Go to step 9.

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 9. Shift to S position.
2. 10. Measure the voltage between PCM connector terminals C9 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

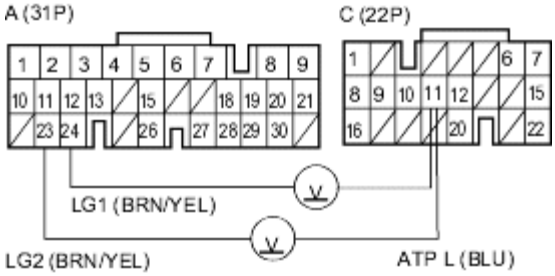
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C9 and the transmission range switch. ■

NO - Go to step 11.

3. 11. Shift to L position.
   12. Measure the voltage between PCM connector terminals C11 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

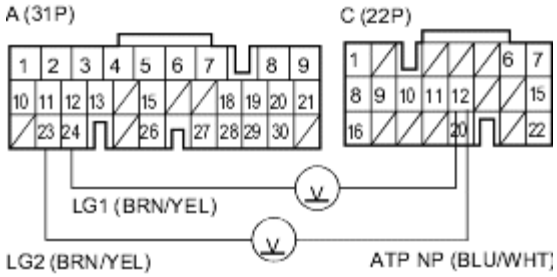
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C11 and the transmission range switch. ■

NO - Go to step 13.

1. 13. Shift to P or N position.
2. 14. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES - Repair open in the wire between PCM connector terminal C12 and the transmission range switch. ■

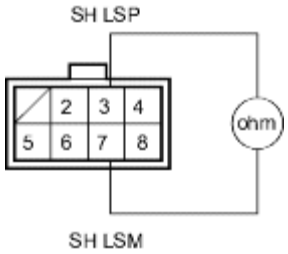
NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 30: Problem in CVT Speed Change Control Valve Assembly Circuit

1. 1. Turn the ignition switch OFF.
   2. Disconnect the solenoid harness connector (8P).
   3. Measure the resistance between solenoid harness connector terminals No. 3 and No. 7.

SOLENOID HARNESS CONNECTOR (8P)



Terminal side of male terminals

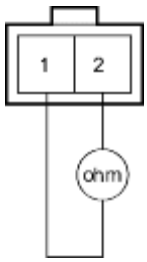
Is the resistance 3.8-6.8 ohm;?

YES - Go to step 7.

NO - Go to step 4.

2. 4. Remove the lower valve body assembly.
   5. Disconnect the solenoid harness from CVT speed change control valve assembly connector (2P).
   6. Measure the resistance between connector terminals at the solenoid connector (2P).

CVT SPEED CHANGE CONTROL VALVE ASSEMBLY CONNECTOR (2P)



Terminal side of male terminals

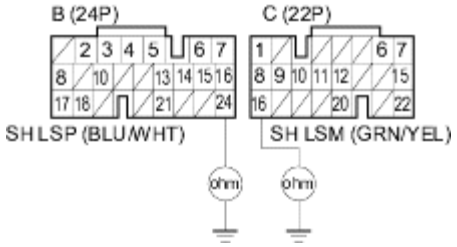
Is the resistance 3.8-6.8 ohm;?

YES - Replace the solenoid harness. ■

NO - Replace the CVT speed change control valve assembly. ■

1. 7. Disconnect PCM connectors B (24P) and C (22P).
2. 8. Check for continuity between PCM connector terminal B24 and body ground and between C16 and body ground.

PCM CONNECTORS



Wire side of female terminals

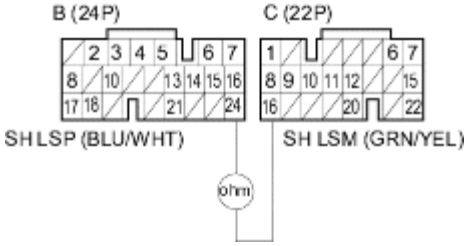
Is there continuity?

YES - Repair short in the wire between PCM connector terminal B24 and solenoid harness connector (8P), or between C16 and solenoid harness connector (8P). ■

NO - Go to step 9.

3. 9. Reconnect solenoid harness connector (8P).
   10. Measure the resistance between PCM connector terminals B24 and C16.

PCM CONNECTORS



Wire side of female terminals

Is the resistance 3.8-6.8 ohm;?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

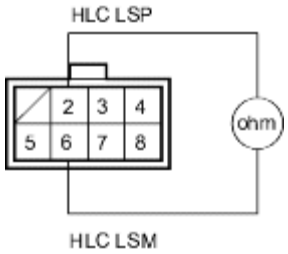
NO - Repair loose terminals or open in the wires between PCM connector terminals B24 and C16 and the CVT speed change control valve assembly. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 31: Problem in CVT Pulley Pressure Control Valve Assembly Circuit

1. 1. Turn the ignition switch OFF.
   2. Disconnect the solenoid harness connector (8P).
   3. Measure the resistance between solenoid harness connector terminals No. 2 and No. 6.

SOLENOID HARNESS CONNECTOR (8P)



Terminal side of male terminals

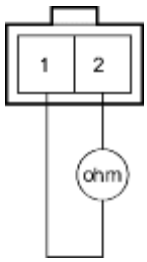
Is the resistance 3.8-6.8 ohm;?

YES - Go to step 7.

NO - Go to step 4.

2. 4. Remove the lower valve body assembly.
   5. Disconnect the solenoid harness from CVT pulley pressure control valve assembly connector (2P).
   6. Measure the resistance between connector terminals at the solenoid connector (2P).

CVT PULLEY PRESSURE CONTROL VALVE ASSEMBLY CONNECTOR (2P)



Terminal side of male terminals

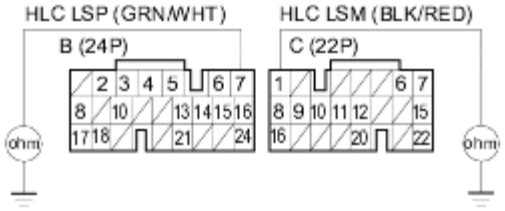
Is the resistance 3.8-6.8 ohm;?

YES - Replace the solenoid harness. ■

NO - Replace the lower valve body assembly. ■

1. 7. Disconnect PCM connectors B (24P) and C (22P).
2. 8. Check for continuity between PCM connector terminal B7 and body ground and between C1 and body ground.

PCM CONNECTORS



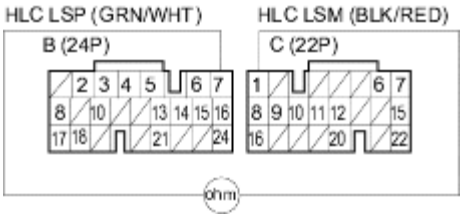
Wire side of female terminals

YES - Repair short in the wire between PCM connector terminal B7 and solenoid harness connector (8P), or between C1 and solenoid harness connector (8P). ■

NO - Go to step 9.

3. 9. Reconnect solenoid harness connector (8P).
   10. Measure the resistance between PCM connector terminals B7 and C1.

PCM CONNECTORS



Wire side of female terminals

Is the resistance 3.8-6.8 ohm;?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

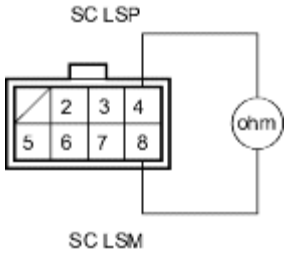
NO - Repair loose terminals or open in the wires between PCM connector terminals B7 and C1 and the CVT pulley pressure control valve assembly. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 32: Problem in CVT Start Clutch Pressure Control Valve Assembly Circuit

1. 1. Turn the ignition switch OFF.
   2. Disconnect the solenoid harness connector (8P).
   3. Measure the resistance between solenoid harness connector terminals No. 4 and No. 8.

SOLENOID HARNESS CONNECTOR (8P)



Terminal side of male terminals

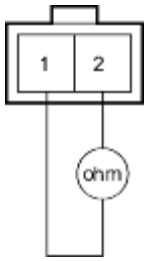
Is the resistance 3.8-6.8 ohm;?

YES - Go to step 7.

NO - Go to step 4.

2. 4. Remove the lower valve body assembly.
   5. Disconnect the solenoid harness from CVT start clutch pressure control valve assembly connector (2P).
   6. Measure the resistance between connector terminals at the solenoid connector (2P).

CVT START CLUTCH PRESSURE CONTROL VALVE ASSEMBLY CONNECTOR (2P)



Terminal side of male terminals

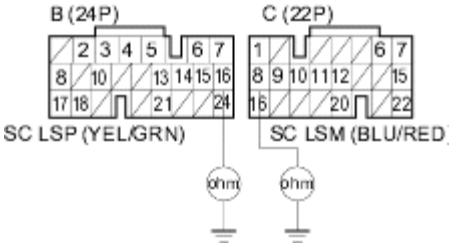
Is the resistance 3.8-6.8 ohm;?

YES - Replace the solenoid harness. ■

NO - Replace the CVT start clutch pressure control valve assembly. ■

1. 7. Disconnect PCM connectors B (24P) and C (22P).
2. 8. Check for continuity between PCM connector terminal B16 and body ground and between C8 and body ground.

PCM CONNECTORS



Wire side of female terminals

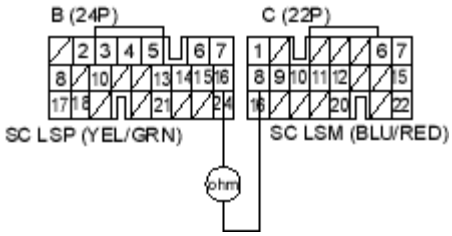
Is there continuity?

YES - Repair short in the wire between PCM connector terminal B16 and solenoid harness connector (8P), or between C8 and solenoid harness connector (8P). ■

NO - Go to step 9.

3. 9. Reconnect solenoid harness connector (8P).
   10. Measure the resistance between PCM connector terminals B16 and C8.

PCM CONNECTORS



Wire side of female terminals

Is the resistance 3.8-6.8 ohm;?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

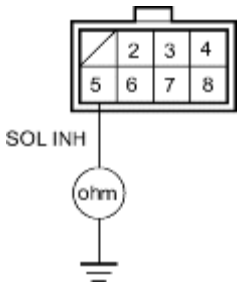
NO - Repair loose terminals or open in the wires between PCM connector terminals B16 and C8 and the CVT start clutch pressure control valve assembly. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 33: Problem in Inhibitor Solenoid Circuit

1. 1. Turn the ignition switch OFF.
   2. Disconnect the solenoid harness connector (8P).
   3. Measure the resistance between solenoid harness connector terminal No. 5 and body ground.

SOLENOID HARNESS CONNECTOR (8P)



Terminal side of male terminals

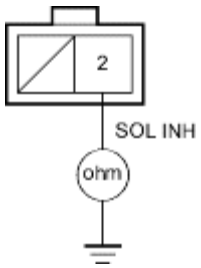
Is the resistance 11.7-21.0 ohm;?

YES - Go to step 7.

NO - Go to step 4.

2. 4. Remove the lower valve body assembly.
   5. Disconnect the solenoid harness from inhibitor solenoid connector (2P).
   6. Measure the resistance between No. 2 terminal and body ground.

INHIBITOR SOLENOID CONNECTOR (2P)



Terminal side of male terminals

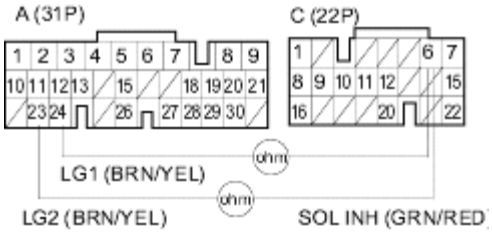
Is the resistance 11.7-21.0 ohm;?

YES - Replace the solenoid harness. ■

NO - Replace the lower valve body assembly. ■

1. 7. Disconnect PCM connectors A (31P) and C (22P).
2. 8. Check for continuity between PCM connector terminal C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

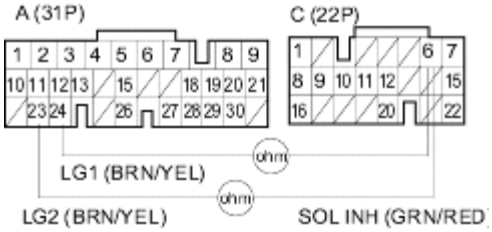
Is there continuity?

YES - Repair short in the wire between PCM connector terminal C6 and solenoid harness connector (8P). ■

NO - Go to step 9.

3. 9. Reconnect solenoid harness connector (8P).
   10. Measure the resistance between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is the resistance 11.7-21.0 ohm;?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair loose terminals or open in the wire between PCM connector terminal C6 and the inhibitor solenoid. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 34: Problem in CVT Drive Pulley Speed Sensor Circuit

1. 1. Turn the ignition switch ON (II).
   2. Check whether the MIL indicates code for the TPS (throttle position sensor).

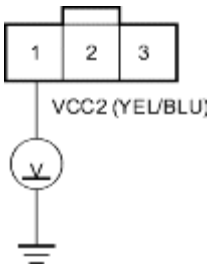
Does the MIL indicate code for TPS?

YES - Perform the Troubleshooting Flowchart for the TPS (see page 11-65). Recheck for DTC 34 after troubleshooting. ■

NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect CVT drive pulley speed sensor connector.
   5. Turn the ignition switch ON (II).
   6. Measure the voltage between CVT drive pulley speed sensor connector terminal No. 1 and body ground.

CVT DRIVE PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

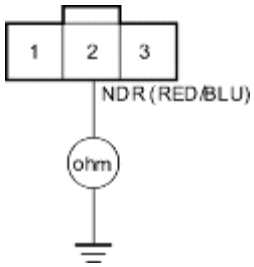
Is there about 5 V?

YES - Go to step 7.

NO - Go to step 13.

1. 7. Turn the ignition switch OFF.
2. 8. Check for continuity between CVT drive pulley speed sensor connector terminal No. 2 and body ground.

CVT DRIVE PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

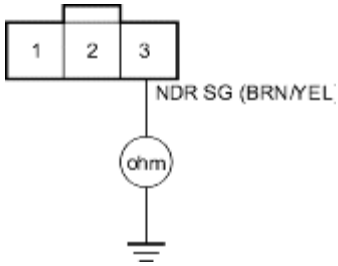
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C7 and the CVT drive pulley speed sensor. ■

NO - Go to step 9.

3. 9. Check for continuity between CVT drive pulley speed sensor connector terminal No. 3 and body ground.

CVT DRIVE PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

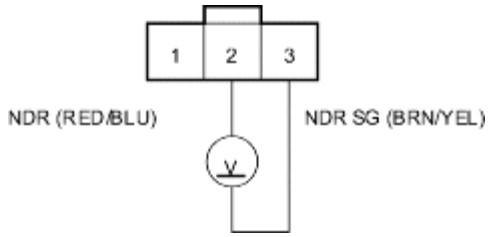
YES - Go to step 10.

NO - Repair loose connector or open in the wire between the CVT drive pulley speed sensor connector terminal No. 3 and ground (G101), or repair poor ground (G101). ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 10. Turn the ignition switch ON (II).
2. 11. Measure the voltage between CVT drive pulley speed sensor connector terminals No. 2 and No. 3.

CVT DRIVE PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

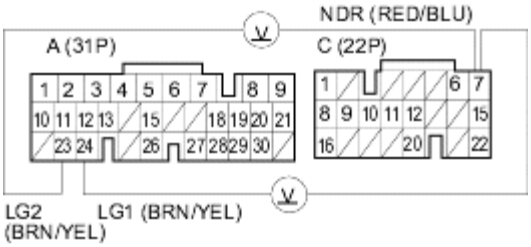
Is there about 5 V?

YES - Go to step 17.

NO - Go to step 12.

3. 12. Measure the voltage between PCM connector terminals C7 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

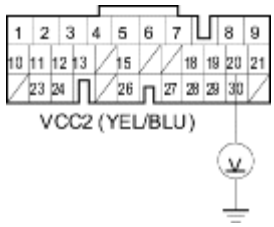
Is there about 5 V?

YES - Repair open in the wire between PCM connector terminal C7 and the CVT drive pulley speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 13. Measure the voltage between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

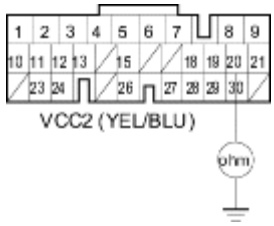
Is there 4.75-5.25 V?

YES - Repair open in the wire between PCM connector terminal A20 and the CVT drive pulley speed sensor. ■

NO - Go to step 14.

2. 14. Turn the ignition switch OFF.
   15. Disconnect PCM connector C (22P).
   16. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal A20 and the CVT drive pulley speed sensor. ■

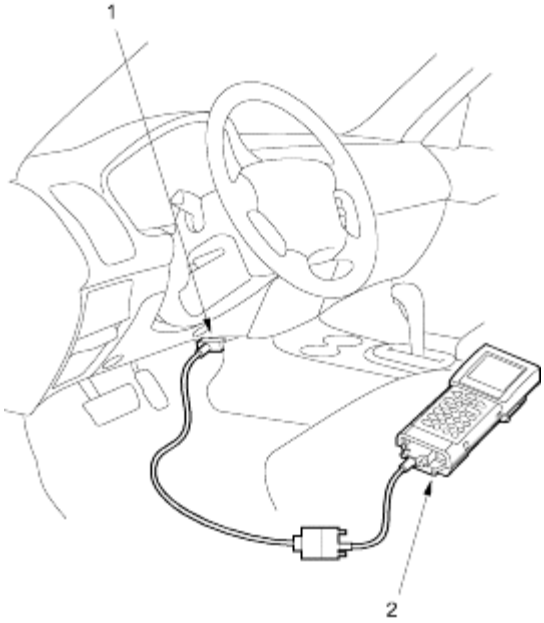
NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Automatic Transmission
General Troubleshooting Information

How to Check for DTCs with the Honda PGM Tester or an OBD Scan Tool (KE and KG Models)

When the PCM senses an abnormality in the input or output systems, the D indicator light in the gauge assembly will blink. When the 16P Data Link Connector (DLC) (located under the dash behind the centre console) is connected to the OBD Scan Tool or Honda PGM Tester as shown, it will indicate the Diagnostic Trouble Code (DTC) when the ignition switch is turned ON (II).

NOTE: The illustration shows LHD model; RHD is symmetrical.



If the D indicator light or MIL (Malfunction Indicator Lamp) has been reported on, or if a driveability problem is suspected, follow this procedure.

1. 1. Connect the OBD Scan Tool or Honda PGM Tester to the 16P DLC. (See the OBD Scan Tool or Honda PGM Tester user's manual for specific instructions. If you are using the Honda PGM Tester, make sure it is to the SAE DTC type.)
   2. Turn the ignition switch ON (II) and observe the DTC on the screen.
   3. Record all fuel and emission DTCs, A/T DTCs and freeze data.
   4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700. DTC P0700 means there is one or more A/T DTCs and no problems were detected in the fuel and emissions circuit of the PCM.)
   5. Write down the radio station presets.
   6. Reset the memory with the PGM Tester or by removing the No. 6 ECU (PCM) fuse in the under-hood fuse/relay box for more than 10 seconds.
   7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight and then go to step 8.
   8. Reset the radio preset stations and set the clock.

Automatic Transmission
System Description (cont'd)

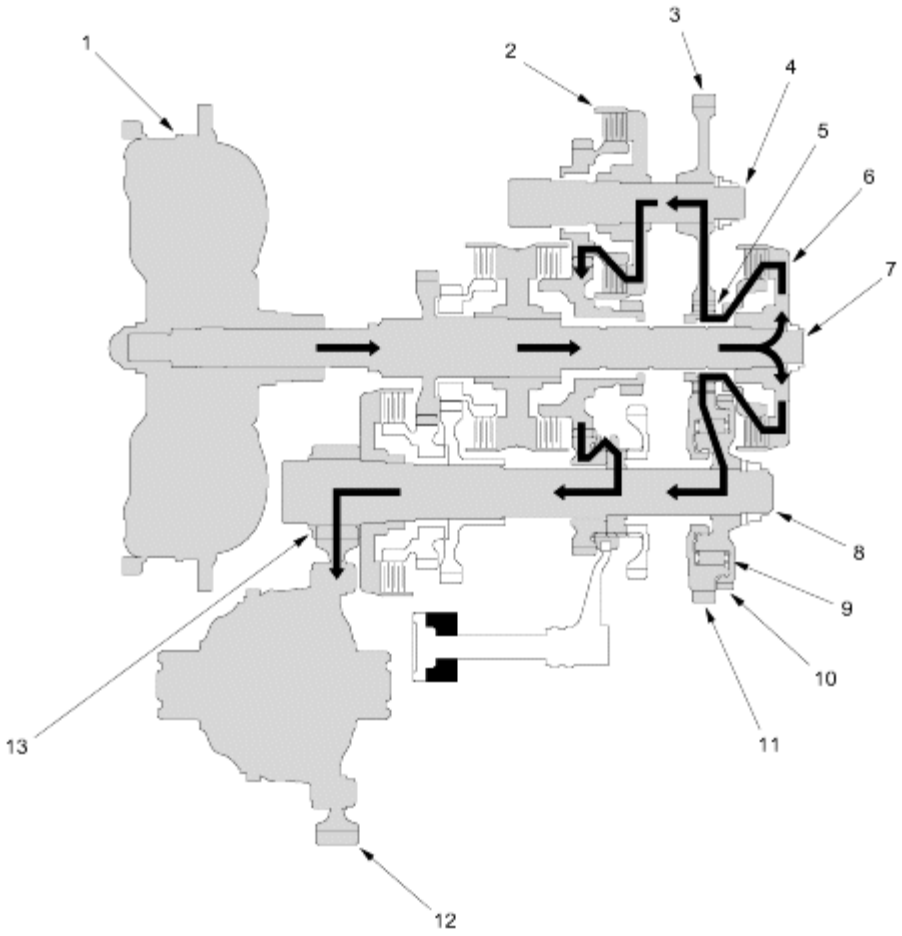
Power Flow (cont'd)

1 Position (7-position)

In 1 position, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch.

The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the mainshaft 1st gear with the mainshaft.
- The mainshaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

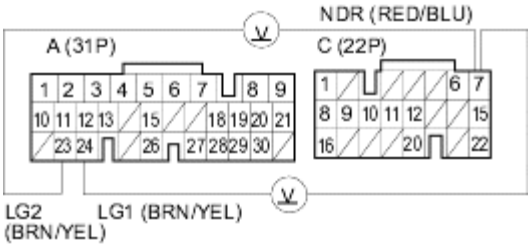


1. TORQUE CONVERTER
2. 1ST-HOLD CLUTCH
3. SUB-SHAFT 1ST GEAR
4. SUB-SHAFT
5. MAINSHAFT 1ST GEAR
6. 1ST CLUTCH
7. MAINSHAFT
8. COUNTERSHAFT
9. ONE-WAY CLUTCH
10. PARK GEAR
11. COUNTERSHAFT 1ST GEAR
12. FINAL DRIVEN GEAR
13. FINAL DRIVE GEAR

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 17. Connect CVT drive pulley speed sensor connector.
2. 18. Measure the voltage between PCM connector terminals C7 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

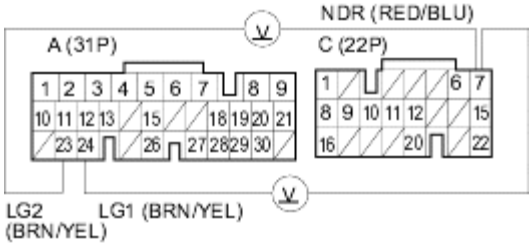
Is there about 0-5 V?

YES - Go to step 19.

NO - Replace the CVT drive pulley speed sensor. ■

1. 19. Raise the front of the vehicle and make sure it is securely supported.
2. 20. Set the parking brake and block both rear wheels securely.
21. Start the engine, then shift to D position and drive the vehicle.
22. Measure the voltage between PCM connector terminals C7 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there 1.5-3.5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Replace the CVT drive pulley speed sensor. ■

Honda Multi Matic Transmission/CVT

DTC Troubleshooting (cont'd)

DTC 35: Problem in CVT Driven Pulley Speed Sensor Circuit

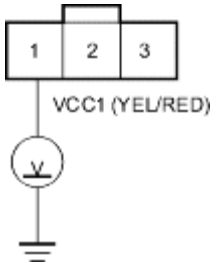
1. 1. Turn the ignition switch ON (II).
   2. Check whether the MIL indicates code for the MAP (manifold absolute pressure) sensor.

   Does the MIL indicate code for MAP sensor?

   YES - Perform the Troubleshooting Flowchart for the MAP sensor (see page 11-59). Recheck for DTC 35 after troubleshooting. ■

   NO - Go to step 3.
2. 3. Turn the ignition switch OFF.
   4. Disconnect CVT driven pulley speed sensor connector.
   5. Turn the ignition switch ON (II).
   6. Measure the voltage between CVT driven pulley speed sensor connector terminal No. 1 and body ground.

CVT DRIVEN PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

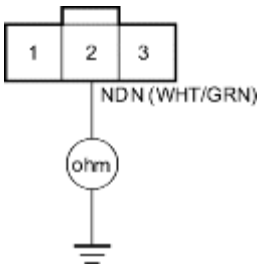
Is there about 5 V?

YES - Go to step 7.

NO - Go to step 13.

1. 7. Turn the ignition switch OFF.
2. 8. Check for continuity between CVT driven pulley speed sensor connector terminal No. 2 and body ground.

CVT DRIVEN PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

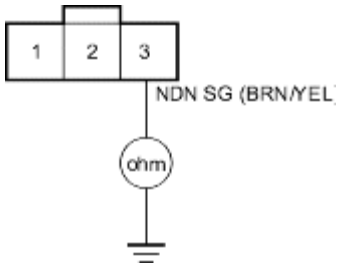
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C15 and the CVT driven pulley speed sensor. ■

NO - Go to step 9.

3. 9. Check for continuity between CVT driven pulley speed sensor connector terminal No. 3 and body ground.

CVT DRIVEN PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

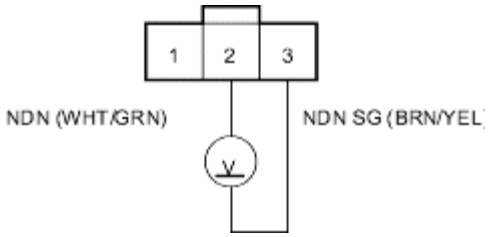
YES - Go to step 10.

NO - Repair loose connector or open in the wire between the CVT driven pulley speed sensor connector terminal No. 3 and ground (G101), or repair poor ground (G101). ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 10. Turn the ignition switch ON (II).
2. 11. Measure the voltage between CVT driven pulley speed sensor connector terminals No. 2 and No. 3.

CVT DRIVEN PULLEY SPEED SENSOR CONNECTOR



Wire side of female terminals

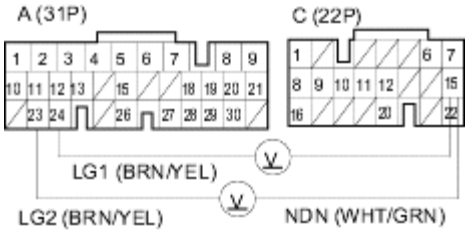
Is there about 5 V?

YES - Go to step 17.

NO - Go to step 12.

3. 12. Measure the voltage between PCM connector terminals C15 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

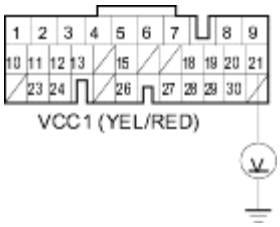
Is there about 5 V?

YES - Repair open in the wire between PCM connector terminal C15 and the CVT driven pulley speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 13. Measure the voltage between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

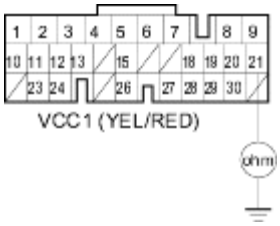
Is there 4.75-5.25 V?

YES - Repair open in the wire between PCM connector terminal A21 and the CVT driven pulley speed sensor. ■

NO - Go to step 14.

2. 14. Turn the ignition switch OFF.
   15. Disconnect PCM connector C (22P).
   16. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

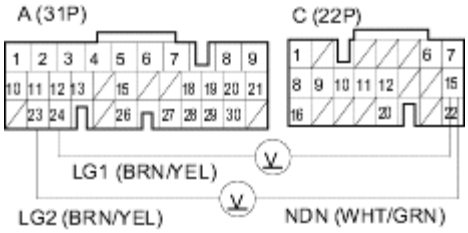
YES - Repair short to ground in the wire between PCM connector terminal A21 and the CVT driven pulley speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 17. Connect CVT driven pulley speed sensor connector.
2. 18. Measure the voltage between PCM connector terminals C15 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

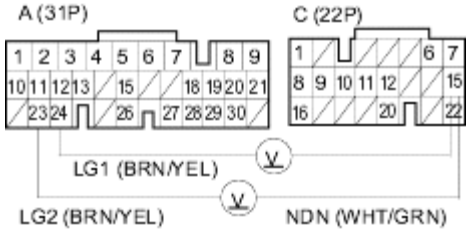
Is there about 0-5 V?

YES - Go to step 19.

NO - Replace the CVT driven pulley speed sensor. ■

1. 19. Raise the front of the vehicle and make sure it is securely supported.
2. 20. Set the parking brake and block both rear wheels securely.
21. Start the engine, then shift to D position and drive the vehicle.
22. Measure the voltage between PCM connector terminals C15 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there 1.5-3.5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Replace the CVT driven pulley speed sensor. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 36: Problem in CVT Speed Sensor Circuit

1. 1. Turn the ignition switch ON (II).
   2. Check whether the MIL indicates code for the MAP (manifold absolute pressure) sensor.

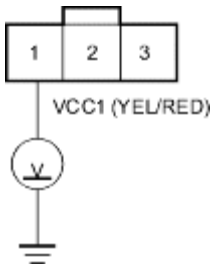
Does the MIL indicate code for MAP sensor?

YES - Perform the Troubleshooting Flowchart for the MAP sensor (see page 11-59). Recheck for DTC 36 after troubleshooting. ■

NO - Go to step 3.

2. 3. Turn the ignition switch OFF.
   4. Disconnect CVT speed sensor connector.
   5. Turn the ignition switch ON (II).
   6. Measure the voltage between CVT speed sensor connector terminal No. 1 and body ground.

CVT SPEED SENSOR CONNECTOR



Wire side of female terminals

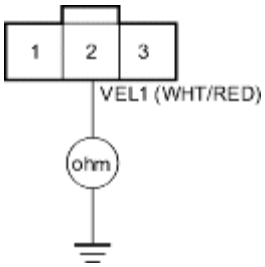
Is there about 5 V?

YES - Go to step 7.

NO - Go to step 13.

1. 7. Turn the ignition switch OFF.
2. 8. Check for continuity between CVT speed sensor connector terminal No. 2 and body ground.

CVT SPEED SENSOR CONNECTOR



Wire side of female terminals

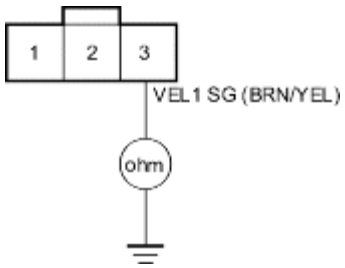
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C22 and the CVT speed sensor. ■

NO - Go to step 9.

3. 9. Check for continuity between CVT speed sensor connector terminal No. 3 and body ground.

CVT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

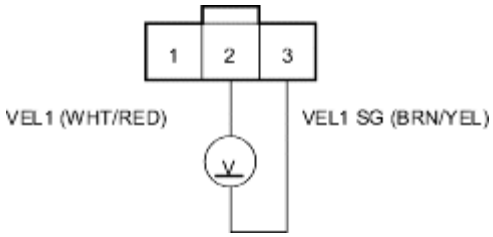
YES - Go to step 10.

NO - Repair loose connector or open in the wire between the CVT speed sensor connector terminal No. 3 and ground (G101), or repair poor ground (G101). ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 10. Turn the ignition switch ON (II).
2. 11. Measure the voltage between CVT speed sensor connector terminals No. 2 and No. 3.

CVT SPEED SENSOR CONNECTOR



Wire side of female terminals

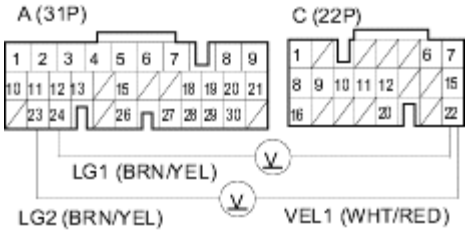
Is there about 5 V?

YES - Go to step 17.

NO - Go to step 12.

3. 12. Measure the voltage between PCM connector terminals C22 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

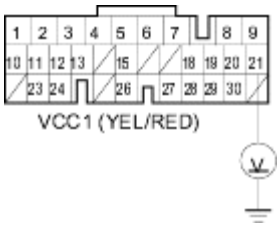
Is there about 5 V?

YES - Repair open in the wire between PCM connector terminal C22 and the CVT speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 13. Measure the voltage between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

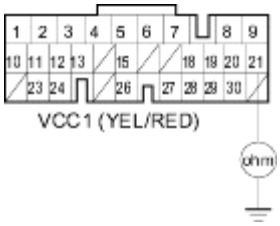
Is there 4.75-5.25 V?

YES - Repair open in the wire between PCM connector terminal A21 and the CVT speed sensor. ■

NO - Go to step 14.

2. 14. Turn the ignition switch OFF.
   15. Disconnect PCM connector C (22P).
   16. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

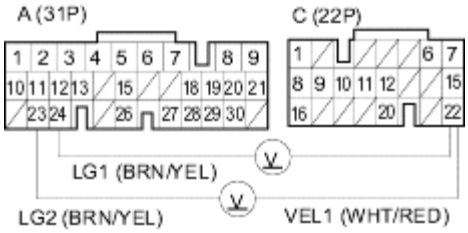
YES - Repair short to ground in the wire between PCM connector terminal A21 and the CVT speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 17. Connect CVT speed sensor connector.
2. 18. Measure the voltage between PCM connector terminals C22 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

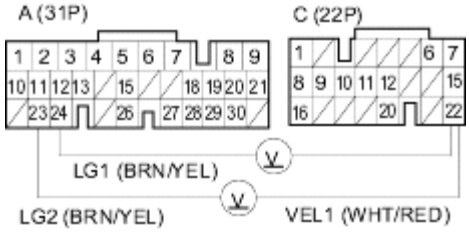
Is there about 0-5 V?

YES - Go to step 19.

NO - Replace the CVT speed sensor. ■

1. 19. Raise the front of the vehicle and make sure it is securely supported.
2. 20. Set the parking brake and block both rear wheels securely.
   21. Start the engine, then shift to D position and drive the vehicle.
   22. Measure the voltage between PCM connector terminals C22 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there 1.5-3.5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Replace the CVT speed sensor. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 42: Problem in Shift Control System

1. 1. Check whether the D indicator light indicates another code.

Does the D indicator light indicate another code?

YES - Perform the Troubleshooting Flowchart for the indicated Code(s). Recheck for DTC 42 after troubleshooting. ■

NO - Go to step 2.

2. 2. Check for deterioration in the quality of ATF.

Does ATF have deteriorated?

YES - Replace ATF (see page 14-320). Test-drive the vehicle under the same conditions the code was appeared, then recheck. ■

NO - Go to step 3.

3. 3. Measure the stall speed RPM in D position (see page 14-315).

Is the stall speed over 3,500 rpm (min^{-1})?

YES - Replace the transmission. ■

NO - If the stall speed is below 2,000 rpm (min^{-1}), replace the lower valve body assembly. If the stall speed is 2,000-3,500 rpm (min^{-1}), go to step 4.

4. 4. Drive the vehicle at 30 mph (50 km/h) constantly for several minutes.
5. Check the engine speed with respect to vehicle speed (see page 14-312).

Is the engine speed within the specification?

YES - Replace the lower valve body assembly. ■

NO - Replace the transmission. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 43: Problem in Start Clutch System

1. 1. Check whether the D indicator light indicates another code.

Does the D indicator light indicate another code?

YES - Perform the Troubleshooting Flowchart for the indicated Code(s). Recheck for DTC 43 after troubleshooting. ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF.
3. Disconnect solenoid harness connector (8P).
4. Start the engine and shift to D position.
5. Check whether the vehicle moves.

Does the vehicle move?

YES - Go to step 6.

NO - The start clutch is faulty, replace the transmission. ■

3. 6. Turn the ignition switch OFF.
7. Reconnect solenoid harness connector (8P).
8. Start the engine and shift to D position.
9. Check whether the vehicle creeps and check the creeping speed.

Does the vehicle creep and is the creeping speed about 3 mph (5 km/h)?

YES - Go to step 10.

NO - Replace the lower valve body. ■

4. 10. Measure the stall speed (see page 14-315).

Is the stall speed over 3,500 rpm (min^{-1})?

YES - The start clutch is faulty, replace the transmission. ■

NO - Go to step 11.

1. 11. Warm up the engine to normal operating temperature (the radiator fan comes on), if necessary.
2. 12. Check whether the start clutch problem appears again.

Does the problem appears again?

YES - The start clutch is faulty, replace the transmission. ■

NO - The system is OK at this time. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

DTC 93: Problem in Vehicle Speed Sensor Circuit

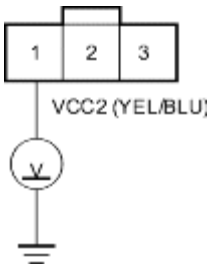
1. 1. Turn the ignition switch ON (II).
   2. Check whether the MIL indicates code for the TPS (throttle position sensor).

   Does the MIL indicate code for TPS?

   YES - Perform the Troubleshooting Flowchart for the TPS (see page 11-65). Recheck for DTC 93 after troubleshooting. ■

   NO - Go to step 3.
2. 3. Turn the ignition switch OFF.
   4. Disconnect vehicle speed sensor connector.
   5. Turn the ignition switch ON (II).
   6. Measure the voltage between vehicle speed sensor connector terminal No. 1 and body ground.

   VEHICLE SPEED SENSOR CONNECTOR



   Wire side of female terminals

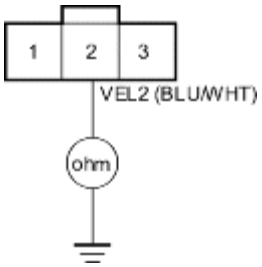
   Is there about 5 V?

   YES - Go to step 7.

   NO - Go to step 13.

1. 7. Turn the ignition switch OFF.
2. 8. Check for continuity between vehicle speed sensor connector terminal No. 2 and body ground.

   VEHICLE SPEED SENSOR CONNECTOR



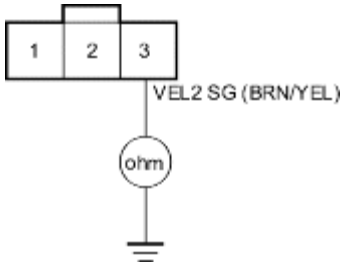
   Wire side of female terminals

   Is there continuity?

   YES - Repair short to ground in the wire between PCM connector terminal A18 and the vehicle speed sensor. ■

   NO - Go to step 9.
3. 9. Check for continuity between vehicle speed sensor connector terminal No. 3 and body ground.

   VEHICLE SPEED SENSOR CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES - Go to step 10.

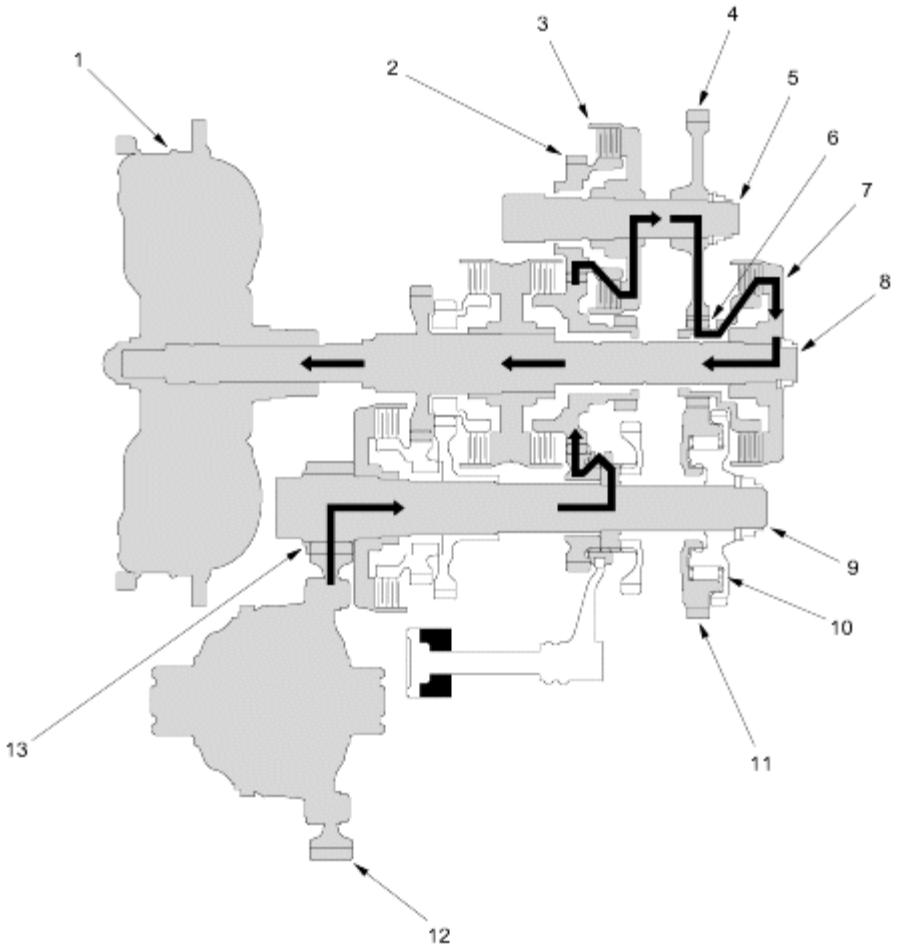
   NO - Repair loose connector or open in the wire between the vehicle speed sensor connector terminal No. 3 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission
System Description (cont'd)

[1] Position (7-position)

The power flow when decelerating is as follows:

- Rolling resistance from the road surface goes through the front wheels to the final drive gear, then to the sub-shaft 1st gear via the 4th gear and 1st-hold clutch which is applied during deceleration in [1] position.
- The one-way clutch becomes free at this time because the application of torque is reversed.
- The counterforce conveyed to the countershaft 4th gear turns the sub-shaft 4th gear via the mainshaft 4th gear.
- Hydraulic pressure is applied to the 1st-hold clutch and 1st clutch, then the 1st-hold clutch engages the sub-shaft 4th gear with the sub-shaft.
- The sub-shaft 1st gear drives the mainshaft 1st gear and the mainshaft and counterforce is transmitted to the mainshaft. Engine braking can be obtained with 1st gear.

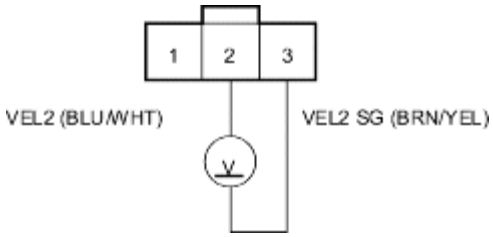


1. TORQUE CONVERTER
2. SUB-SHAFT 4TH GEAR
3. 1ST-HOLD CLUTCH
4. SUB-SHAFT 1ST GEAR
5. SUB-SHAFT
6. MAINSHAFT 1ST GEAR
7. 1ST CLUTCH
8. MAINSHAFT
9. COUNTERSHAFT
10. ONE-WAY CLUTCH
11. COUNTERSHAFT 1ST GEAR
12. FINAL DRIVEN GEAR
13. FINAL DRIVE GEAR

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 10. Turn the ignition switch ON (II).
2. 11. Measure the voltage between vehicle speed sensor connector terminals No. 2 and No. 3.

VEHICLE SPEED SENSOR CONNECTOR



Wire side of female terminals

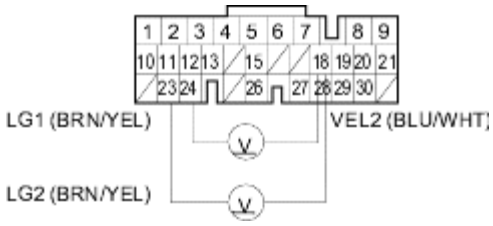
Is there about 5 V?

YES - Go to step 17.

NO - Go to step 12.

3. 12. Measure the voltage between PCM connector terminals A18 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

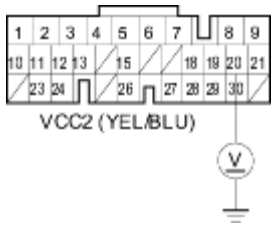
Is there about 5 V?

YES - Repair open in the wire between PCM connector terminal A18 and the vehicle speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 13. Measure the voltage between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

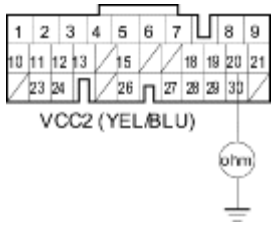
Is there 4.75-5.25 V?

YES - Repair open in the wire between PCM connector terminal A20 and the vehicle speed sensor. ■

NO - Go to step 14.

2. 14. Turn the ignition switch OFF.
   15. Disconnect PCM connector C (22P).
   16. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

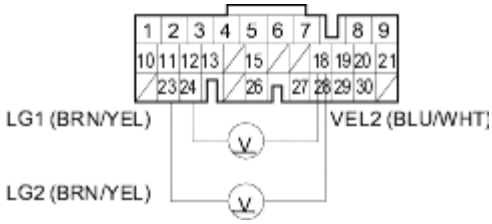
YES - Repair short to ground in the wire between PCM connector terminal A20 and the vehicle speed sensor. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Honda Multi Matic Transmission/CVT
DTC Troubleshooting (cont'd)

1. 17. Connect vehicle speed sensor connector.
2. 18. Measure the voltage between PCM connector terminals A18 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

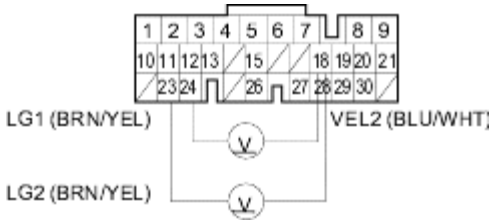
Is there about 0-5 V?

YES - Go to step 19.

NO - Replace the vehicle speed sensor. ■

1. 19. Raise the front of the vehicle and make sure it is securely supported.
2. 20. Set the parking brake and block both rear wheels securely.
   21. Start the engine, then shift to D position and drive the vehicle.
   22. Measure the voltage between PCM connector terminals A18 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 1.5-3.5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

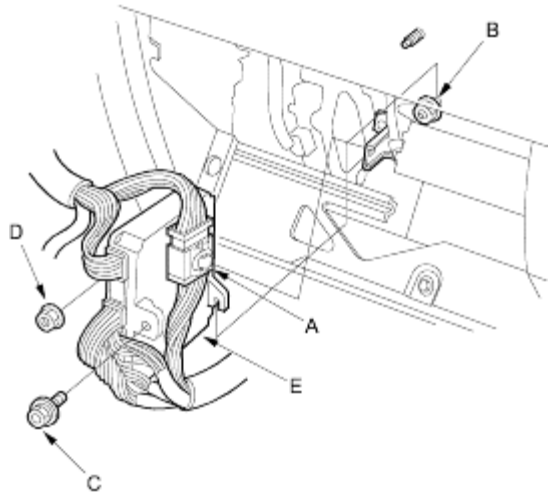
NO - Replace the vehicle speed sensor. ■

Honda Multi Matic Transmission/CVT

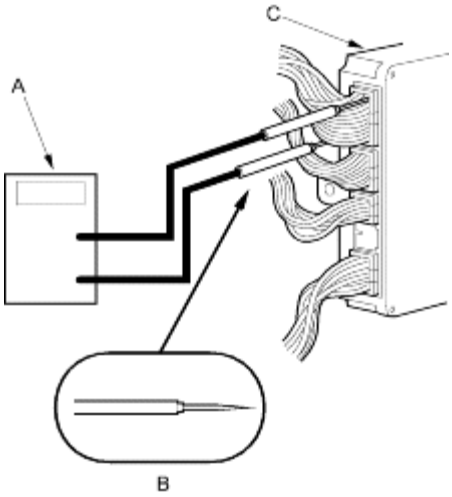
Road Test

1. 1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. 2. Apply the parking brake and block rear wheels. Start the engine, then shift to [D] position while pressing the brake pedal. Press the accelerator pedal and release it suddenly. The engine should not stall.
   3. Test in [P] position:

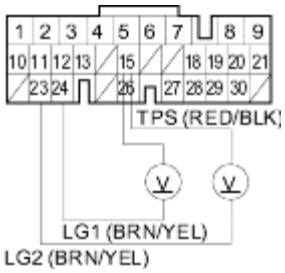
      Park the vehicle in a slope about 16° apply parking brake and shift into [P] position. Release the brake; the vehicle should not move.
   4. Test-drive the vehicle on a flat road in the position shown in the table. Check that the engine speeds meet the approximate vehicle speeds shown in the table.
      1. Remove the glove box stop, then open the glove box.
      2. Remove the harness connector clamp (A) from its bracket.
      3. Loosen the mounting nut (B) on the lower right of the PCM and remove the mounting bolt (C) and nut (D) on the left of the PCM.
      4. Lift the PCM up to clear the mounting nut on the lower right of the PCM, then pull out the PCM (E).



1. 5. Set the digital multitester (A) to check voltage between PCM connector terminals A15 (+) and A23 (-) or A24 (-) for throttle position sensor with tapered tip probe (B).



PCM CONNECTOR A (31P)



Wire side of female terminals

Honda Multi Matic Transmission/CVT

Road Test (cont'd)

D15Y4 Engine

D Position: Engine Speed rpm (min^{-1})

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	950-1,350	-	-
Throttle position sensor voltage: 2.0 V	2,300-2,900	2,500-3,100	2,700-3,300
Throttle position sensor voltage: 4.5 V Fully-throttle position	3,700-4,300	4,300-4,900	5,400-6,000

S Position: Engine Speed rpm (min^{-1})

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	1,800-2,400	2,250-2,850	3,300-3,900
Throttle position sensor voltage: 2.0 V	2,600-3,200	3,000-3,600	3,800-4,400
Throttle position sensor voltage: 4.5 V Fully-throttle position	4,100-4,700	5,100-5,700	6,200-6,800

L Position: Engine Speed rpm (min^{-1})

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	3,100-3,700	3,650-4,250	4,000-4,600
Throttle position sensor voltage: 2.0 V	3,350-3,950	3,900-4,500	4,700-5,300
Throttle position sensor voltage: 4.5 V Fully-throttle position	4,100-4,700	5,100-5,700	6,200-6,800

Honda Multi Matic Transmission/CVT

Road Test (cont'd)

D17A2 Engine

D Position: Engine Speed rpm (min $^{-1}$)

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	950-1,350	-	-
Throttle position sensor voltage: 2.0 V	2,300-2,900	2,500-3,100	2,700-3,300
Throttle position sensor voltage: 4.5 V Fully-throttle position	3,700-4,300	4,300-4,900	5,400-6,000

S Position: Engine Speed rpm (min $^{-1}$)

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	1,800-2,400	2,250-2,850	3,300-3,900
Throttle position sensor voltage: 2.0 V	2,600-3,200	3,000-3,600	3,800-4,400
Throttle position sensor voltage: 4.5 V Fully-throttle position	4,450 – 5,050	5,350-5,950	6,000-6,600

L Position: Engine Speed rpm (min $^{-1}$)

Throttle Opening	Vehicle Speed		
	25 mph (40 km/h)	37 mph (60 km/h)	62 mph (100 km/h)
Throttle position sensor voltage: 0.75 V	3,100-3,700	3,650-4,250	4,000-4,600
Throttle position sensor voltage: 2.0 V	3,350-3,950	3,900-4,500	4,700-5,300
Throttle position sensor voltage: 4.5 V Fully-throttle position	4,450 – 5,050	5,350-5,950	6,000-6,600

Honda Multi Matic Transmission/CVT

Stall Speed Test

1. 1. Set the parking brake and block the front wheels.
2. 2. Connect a tachometer to the engine and start the engine.
   3. Make sure the A/C switch is OFF.
   4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to D.gif position.
   5. Fully press the brake pedal and accelerator for 6 to 8 seconds and note engine speed. Do not move the shift lever while raising engine speed.
   6. Allow 2 minutes for cooling, then repeat the test in S, L and R positions.

NOTE:

- Do not test stall speed for more than 10 seconds at a time.
- Stall speed tests should be used for diagnostic purposes only.
- Stall speed should be the same in D, S, L and R positions.
- Do not test stall speed with the A/T pressure gauges installed.

D15Y4 Engine

Stall Speed rpm in D position:

Specification: 2,500 rpm (min $^{-1}$)

Service Limit: 2,350-2,650 rpm (min $^{-1}$)

Stall Speed rpm in S, L and R positions:

Specification: 3,000 rpm (min $^{-1}$)

Service Limit: 2,800-3,100 rpm (min $^{-1}$)

D17A2 Engine

Stall Speed rpm in D position:

Specification: 2,500 rpm (min $^{-1}$)

Service Limit: 2,350-2,650 rpm (min $^{-1}$)

Stall Speed rpm in S, L and R positions:

Specification: 2,800 rpm (min $^{-1}$)

Service Limit: 2,600-2,900 rpm (min $^{-1}$)

1. 7. If the measurements are out of the service limit, problems and probable causes are listed in the table below.

Problem	Probable cause
Stall speed rpm high in D, S, L and R positions	• Low fluid level or ATF pump output low • Clogged ATF strainer • PH regulator valve stuck closed • Slipping forward clutch • Faulty start clutch
Stall speed rpm high in R position	• Slippage of reverse clutch • Faulty start clutch
Stall speed rpm low in D, S, L and R positions	• Engine output low • Faulty start clutch • Stuck pulley control valve

Honda Multi Matic Transmission/CVT

Pressure Tests

Special Tools Required

- A/T oil pressure gauge set, 07406-0020004
- A/T low pressure gauge, 07406-0070001

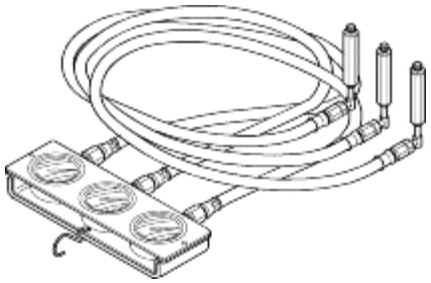
1. 1. Before testing, be sure the transmission fluid is filled to the proper level.
   2. Raise the front of the vehicle and make sure it is securely supported.
   3. Set the parking brake and block rear wheels securely.
   4. Allow the front wheels to rotate freely.
   5. Warm up the engine (the radiator fan comes on), then stop it and connect the tachometer.
   6. Connect the oil pressure gauges to each inspection hole and do not allow dust or other foreign particles to enter the holes.

TORQUE: 18 Nm (1.8 kgf/m, 13 lbf/ft)

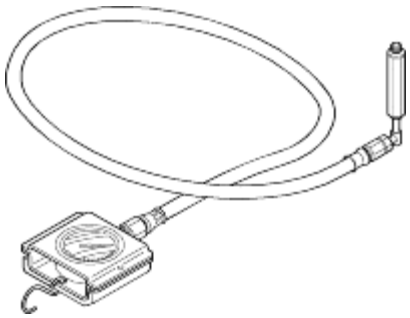
NOTE:

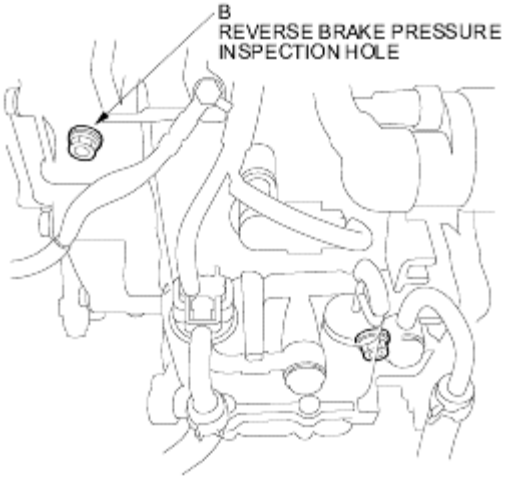
- Drive pulley pressure may be above 3,430 kPa (3.43 MPa, 35.0 kgf/cm^2, 498 psi) when there is a transmission problem that causes the PCM to go into the fail-safe mode.
- Use a commercially available oil pressure gauge that measures 4,900 kPa (4.90 MPa, 50.0 kgf/cm^2, 711 psi) or more and use the A/T oil pressure gauge set and the A/T low pressure gauge.

A/T OIL PRESSURE GAUGE SET, 07406-0020004



A/T LOW PRESSURE GAUGE, 07406-0070001







Honda Multi Matic Transmission/CVT
Pressure Tests

7. Start the engine.
8. Shift to [D] position and measure the forward clutch pressure at 1,700 rpm (min $^{-1}$).
9. Shift to [R] position and measure the reverse brake pressure at 1,700 rpm (min $^{-1}$).
10. Shift to [N] position and measure the drive pulley pressure and driver pulley pressure at 1,700 rpm (min $^{-1}$).
11. Measure the lubrication pressure at 3,000 rpm (min $^{-1}$) in [N] position.

PRESSURE	SHIFT LEVER POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE Service Limit
Forward Clutch (A)	[D]	No or low forward clutch pressure	Forward clutch	1.57-1.84 MPa (16.0-18.8 kgf/cm^2, 228 -267 psi)
Reverse Brake (B)	[R] .	No or low reverse brake pressure	Reverse brake	1.57-1.84 MPa (16.0-18.8 kgf/cm^2, 228-267 psi)
Drive Pulley (C)	[N] .	No or low drive pulley pressure	ATF pump, PH regulator valve, Pulley control valve	0.35-0.45 MPa (3.6-4.6 kgf/cm^2, 51-65 psi)
		Drive pulley pressure too high	PH regulator valve, Pulley control valve, CVT speed change control valve assembly	
Driven Pulley (D)		No or low driven pulley pressure	ATF pump, PH regulator valve, Pulley control valve, CVT speed change control valve assembly	1.40-1.64 MPa (14.3-16.7 kgf/cm^2, 203-237 psi)
		Driven pulley pressure too high	PH regulator valve	
Lubrication (E)		No or low lubrication pressure	ATF pump, Lubrication regulator valve	0.30-0.35 MPa (3.1-3.6 kgf/cm^2, 44-51 psi)

12. Disconnect the special tools after pressure testing.
13. Install the sealing bolt with a new sealing washers and tighten the bolts to the specified torque.

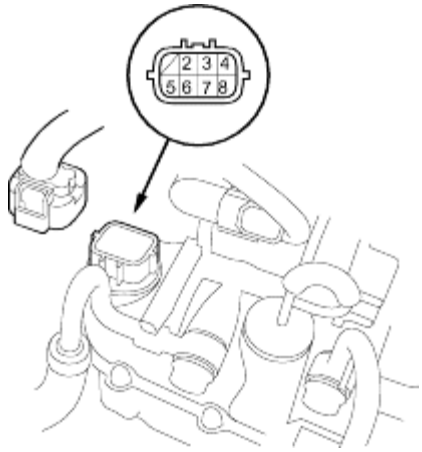
TORQUE: 18 Nm (1.8 kgf/m,13 lbf/ft)

NOTE: Do not reuse old sealing washers.

Honda Multi Matic Transmission/CVT

Solenoid Test

1. 1. Disconnect solenoid harness connector (8P).



2. 2. Measure CVT speed change control valve assembly resistance between solenoid harness connector terminals No. 3 and No. 7.
   STANDARD: 3.8-6.8 ohm;
   3. Measure CVT pulley pressure control valve assembly resistance between terminals No. 2 and No. 6.
   STANDARD: 3.8-6.8 ohm;
   4. Measure CVT start clutch pressure control valve assembly resistance between terminals No. 4 and No. 8.
   STANDARD: 3.8-6.8 ohm;
   5. Measure the inhibitor solenoid resistance between terminal No. 5 and body ground.
   STANDARD: 11.7-21.0 ohm;
   6. Replace the CVT speed change control valve assembly or CVT start clutch pressure control valve assembly, if the measurements are out of standard. Replace the lower valve body assembly, if the measurements of CVT pulley pressure control valve assembly or inhibitor solenoid are out of standard.

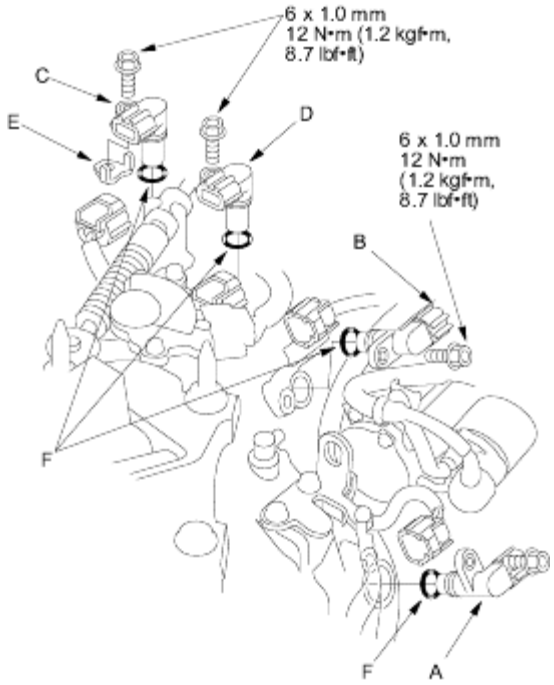
1. 7. If all of the resistance are within the standard, a clicking sound should be heard when connecting the battery terminals to the solenoid harness connector terminals below.
   - CVT speed change control valve assembly
     No. 3 to battery positive terminal
     No. 7 to battery negative terminal
   - CVT pulley pressure control valve assembly
     No. 2 to battery positive terminal
     No. 6 to battery negative terminal
   - CVT start clutch pressure control valve assembly
     No. 4 to battery positive terminal
     No. 8 to battery negative terminal
   - Inhibitor solenoid
     No.5 to battery positive terminal and body ground to negative terminal

2. 8. If no clicking sound is heard, remove the lower valve body assembly and check the solenoid.

Honda Multi Matic Transmission/CVT

Speed Sensors Replacement

1. 1. Disconnect connectors from the drive pulley speed sensor (A), driven pulley speed sensor (B), CVT speed sensor (C) and vehicle speed sensor (D).



2. 2. Remove the 6 mm bolts, then remove the speed sensors. Remove the sensor washer (E) from the CVT speed sensor (C).
   3. Replace the O-rings (F) with new ones before installing the speed sensors.
   4. Install the sensor washer on the CVT speed sensor and install them.
   5. Install the drive pulley speed sensor, driven pulley speed sensor and vehicle speed sensor.
   6. Check the speed sensor connectors for rust, dirt, or oil, then connect the connectors securely.

When the following the parts are replaced, the PCM must memorise the feedback signal for the start clutch control.

- PCM
- Transmission assembly
- Lower valve body assembly
- Engine assembly replacement or overhaul

1. 1. Start the engine and warm up to normal operating temperature (the radiator fan comes on).
   2. Shift to D position.
   3. Drive the vehicle on a flat road.
   4. Accelerate to the speed 37 mph (60 km/h), then release the accelerator and decelerate for 5 seconds. Do not press the brake pedal to decelerate. The start clutch feedback control signal have beeNmemorised in the PCM.
   5. Test-drive the vehicle and check the engine does not stall and the vehicle can start off smoothly.
   6. If the engine stalls or any shifting failure occurs at starting off, re-calibrate the start clutch feedback control signal.

Automatic Transmission
System Description (cont'd)

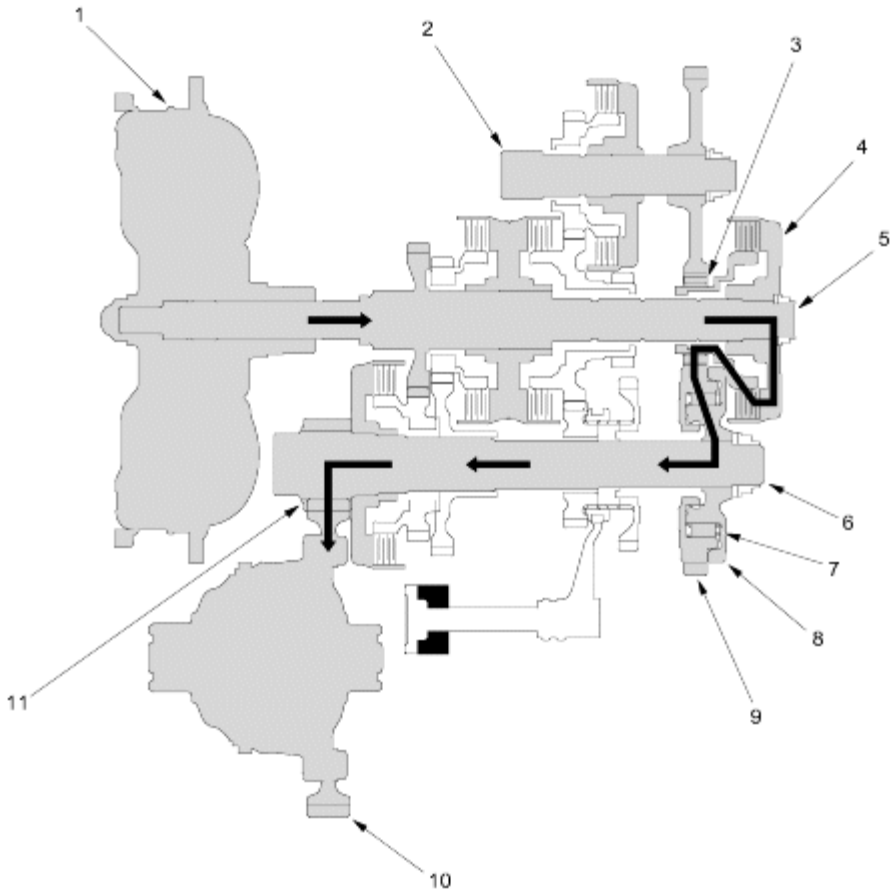
Power Flow (cont'd)

In D or D3 position, the optimum gear is automatically selected from the 1st, 2nd, 3rd and 4th gears, according to conditions such as the balance between the throttle opening (engine loading) and vehicle speed.

D or D3 Position in 1st gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the mainshaft 1st gear with the mainshaft.
- The mainshaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

NOTE: The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.



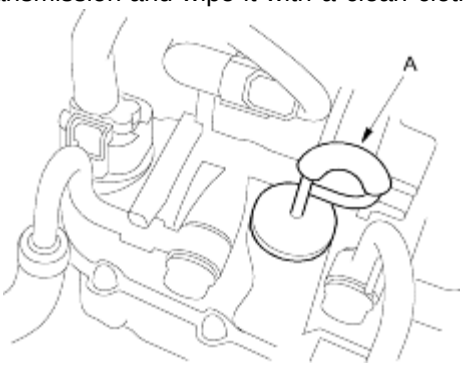
1. TORQUE CONVERTER
2. SUB-SHAFT
3. MAINSHAFT 1ST GEAR
4. 1ST CLUTCH
5. MAINSHAFT
6. COUNTERSHAFT
7. ONE-WAY CLUTCH
8. PARK GEAR
9. COUNTERSHAFT 1ST GEAR
10. FINAL DRIVEN GEAR
11. FINAL DRIVE GEAR

Honda Multi Matic Transmission/CVT

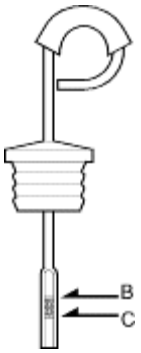
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

1. 1. Warm up the engine to normal operating temperature (the radiator fan comes on).
   2. Park the vehicle on level ground and turn the engine off.
   3. Remove the dipstick (yellow loop) (A) from the transmission and wipe it with a clean cloth.



2. 4. Insert the dipstick into the transmission.
   5. Remove the dipstick and check the fluid level. It should be between the upper mark (B) and lower mark (C).



3. 6. If the level is below the lower mark, pour the recommended fluid into the dipstick hole to bring it to the upper mark. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.
   7. Insert the dipstick back into the transmission.

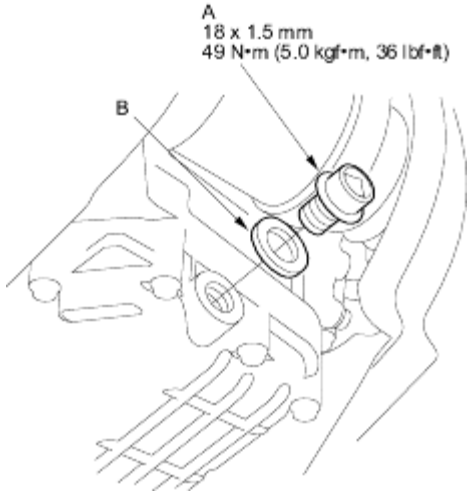
NOTE: Keep all foreign particles out of the transmission.

Change Intervals:

Replace at 80,000 km (48,000 miles) or 48 months, thereafter every 60,000 km (36,000 miles) or 36 months in normal conditions.

Replace every 40,000 km (24,000 miles) or 24 months in severe conditions.

1. 1. Bring the transmission up to operating temperature (the radiator fan comes on) by driving the vehicle.
   2. Park the vehicle on level ground and turn the engine off.
   3. Remove the drain plug (A) and drain the automatic transmission fluid (ATF).



2. 4. Reinstall the drain plug with a new sealing washer (B).
   5. Refill the transmission with the recommended fluid into dipstick hole to the upper mark on the dipstick. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

      Automatic Transmission Fluid Capacity:

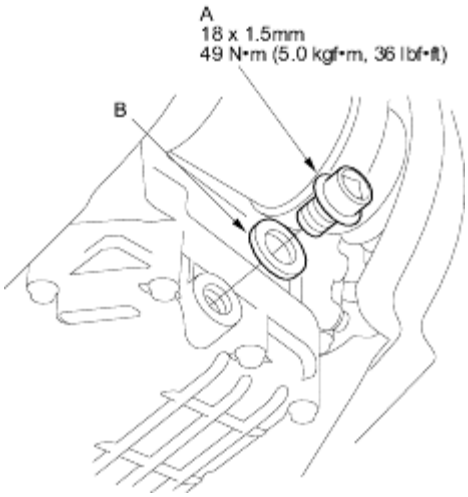
      3.1 *l* (3.3 US qt, 2.7 Imp qt) at change

      5.6 *l* (5.9 US qt, 4.9 Imp qt) at overhaul

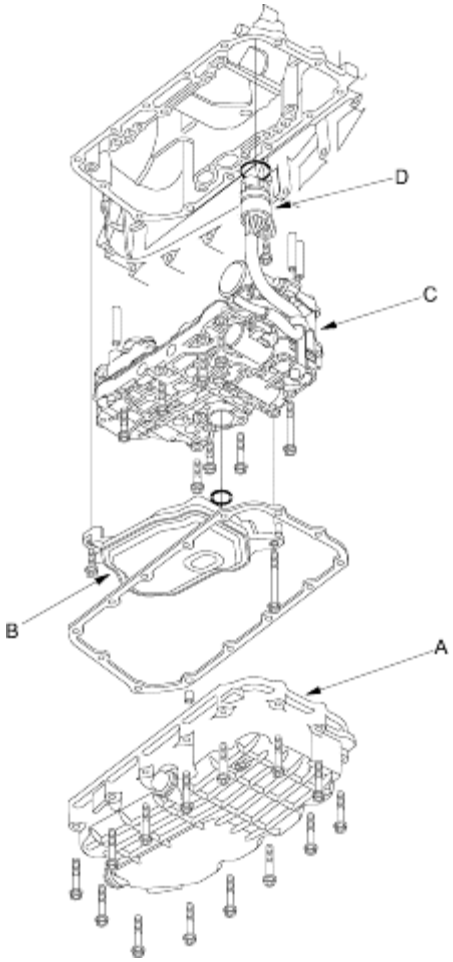
Honda Multi Matic Transmission/CVT

Lower Valve Body Assembly Removal

1. 1. Raise the front of the vehicle and make sure it is securely supported.
2. 2. Set the parking brake and block rear wheels securely.
   3. Disconnect the solenoid harness connector (8P).
   4. Remove the drain plug (A) and drain the automatic transmission fluid (ATF). Reinstall the drain plug with a new sealing washer (B).



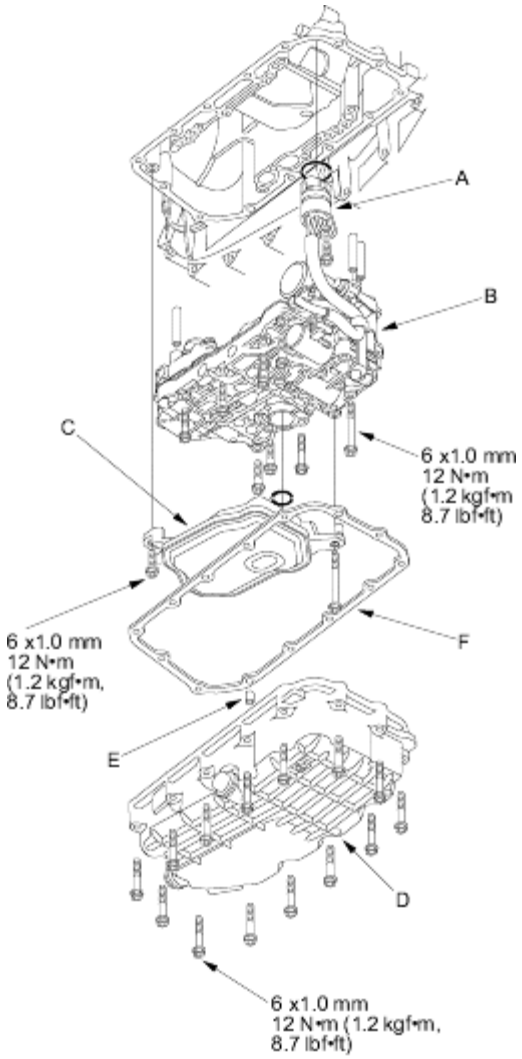
1. 5. Remove the ATF pan (A) (14 bolts).



2. 6. Remove the ATF strainer (B) (two bolts).
   7. Remove the lower valve body assembly (C) (eight bolts).
   8. Remove the bolt securing the solenoid harness connector (D) with holding the lower valve body assembly and remove the connector and valve body assembly.

Honda Multi Matic Transmission/CVT
Lower Valve Body Assembly Installation

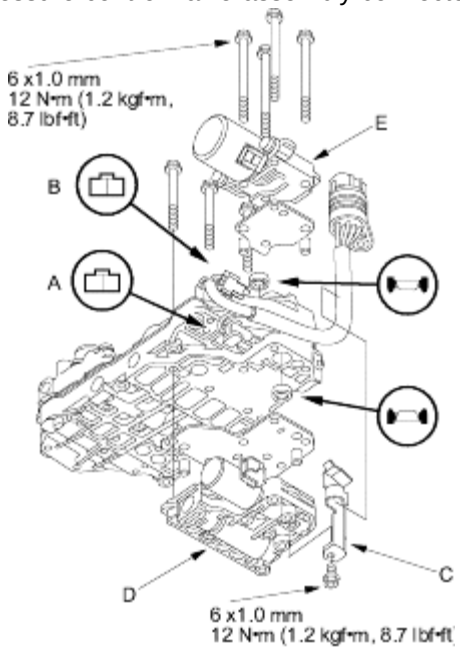
1. 1. Install the solenoid harness connector (A) with holding the lower valve body assembly (B).



2. 2. Install the lower valve body assembly (eight bolts).
   3. Install the ATF strainer (C) (two bolts).
   4. Install the ATF pan (D) with the two dowel pins (E) and new gasket (F).

1. 5. Check the solenoid harness connector for rust, dirt, or oil, then connect the connector securely.
2. 6. Refill the transmission with ATF (see page 14-320).
   7. Perform the start clutch calibration procedure (see page 14-319).

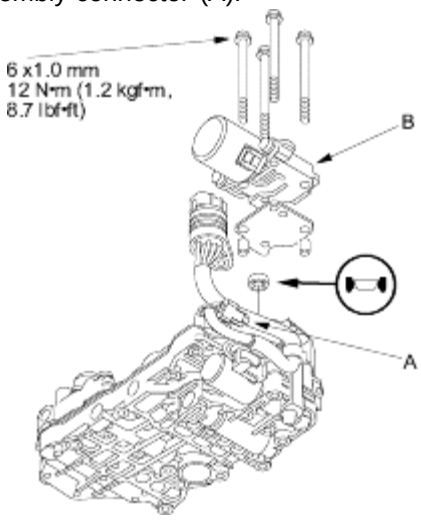
1. 1. Remove the lower valve body assembly (see page 14-321).
2. 2. Disconnect CVT speed change control valve assembly connector (A) and CVT start clutch pressure control valve assembly connector (B).



3. 3. Remove the solenoid harness clamp (C).
   4. Remove the seven bolts and remove the CVT speed change control valve assembly (D).
   5. Install the new valve assembly with the CVT start clutch pressure control valve assembly (E) (seven bolts). Replace the CVT start clutch pressure control valve assembly, when replacing the valve assemblies at a same time.
   6. Install the solenoid harness clamp and route the harness in it.
   7. Connect CVT speed change control valve assembly connector and CVT start clutch pressure control valve assembly connector, be sure to connect them correctly.
   8. Install the lower valve body assembly to the transmission (see page 14-322).

NOTE: If the CVT start clutch pressure control valve assembly and the CVT speed change control valve assembly at a same time, refer to CVT Speed Change Control Valve Assembly Replacement.

1. 1. Remove the lower valve body assembly (see page 14-321).
   2. Disconnect CVT start clutch pressure control valve assembly connector (A).

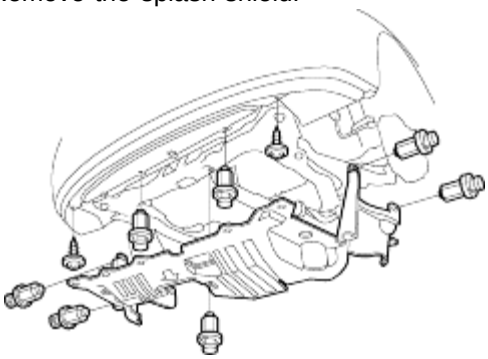


2. 3. Remove the four bolts and remove the CVT start clutch pressure control valve assembly (B).
   4. Install the new valve assembly (four bolts).
   5. Connect CVT start clutch pressure control valve assembly connector.
   6. Install the lower valve body assembly to the transmission (see page 14-322).

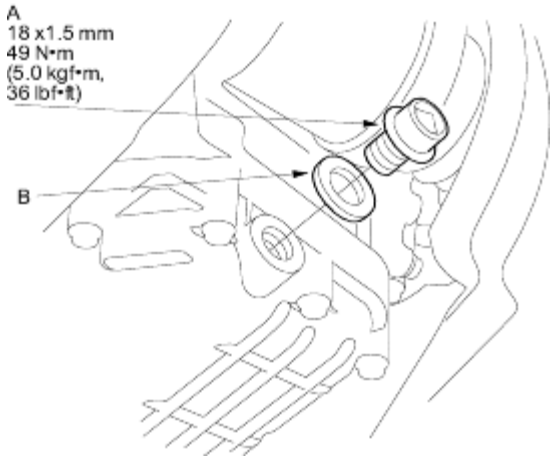
Honda Multi Matic Transmission/CVT

Transmission Removal

1. 1. Raise the vehicle and make sure it is securely supported.
2. 2. Remove the splash shield.

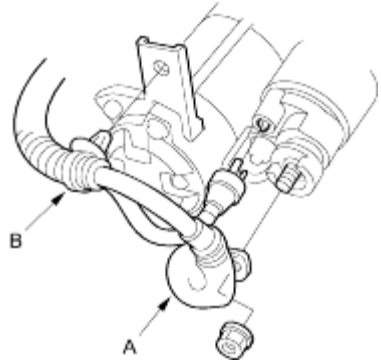


3. 3. Remove the drain plug (A) and drain the automatic transmission fluid ATF. Reinstall the drain plug with a new sealing washer (B).

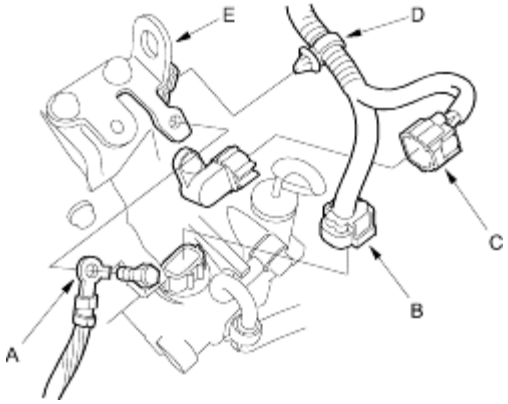


4. 4. Secure the hood in a vertical position with the support strut.

1. 5. Disconnect the battery negative terminal, then remove the positive terminal.
2. 6. Remove the battery hold-down bracket, then remove the battery and battery tray.
   7. Remove the intake air duct and resonator.
   8. Remove the harness clamp from the battery base, then remove the battery base.
   9. Remove the starter cable (A) and harness clamp (B).



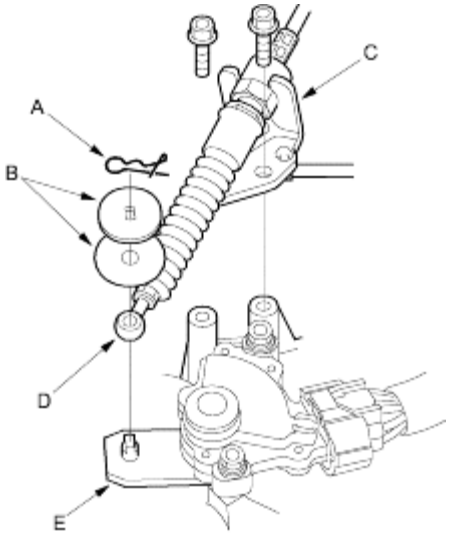
3. 10. Remove the transmission ground cable (A), disconnect the solenoid harness connector (8P) (B) and CVT drive pulley speed sensor connector (C) and remove the harness clamp (D) from the transmission hanger (E).



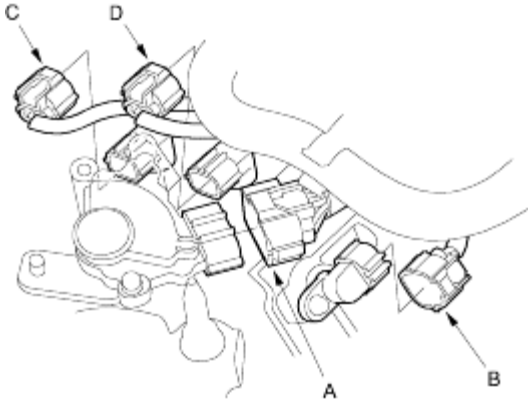
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

1. 11. Remove the spring clip (A) and washers (B).

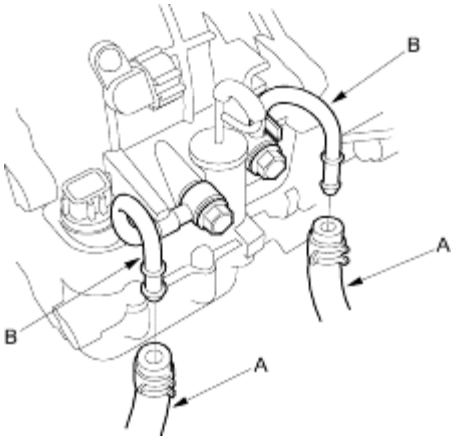


2. 12. Remove the two bolts securing the shift cable bracket (C), then separate the shift cable (D) from the control lever (E). Do not bent the shift cable excessively.
   13. Disconnect the transmission range switch connector (A), CVT driven speed sensor connector (B), CVT speed sensor connector (C) and vehicle speed sensor connector (D).

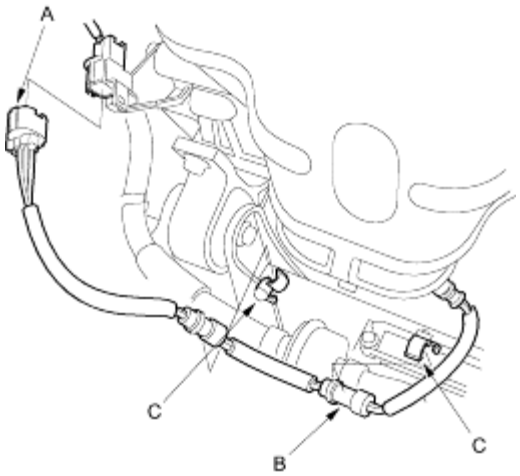


1. 14. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the ATF cooler hoses up to prevent ATF from flowing out, then plug the ATF cooler hoses and lines.

NOTE: Check for any signs of leakage at the hose joints.



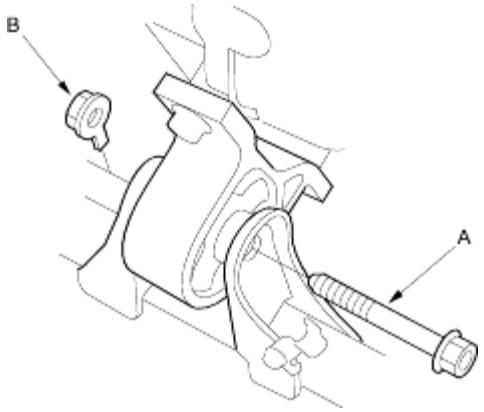
2. 15. Disconnect the primary HO2S connector (A) and remove its harness (B) from the clamps (C).



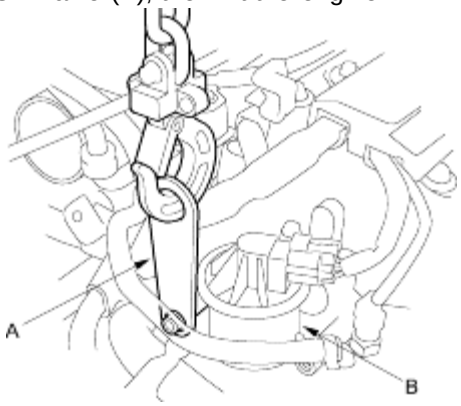
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

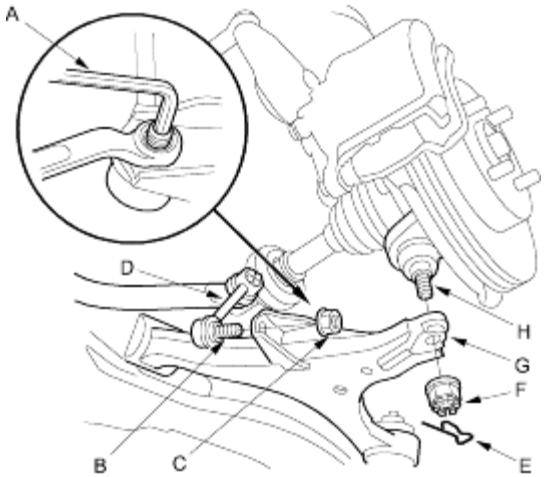
1. 16. Remove the front mount bolt (A) and nut (B).



2. 17. Attach a hoisting bracket (A) to the stud next to the EGR valve (B), then lift the engine.



1. 18. Insert a 5 mm Allen wrench (A) in the top of the ball joint pin (B) and remove the nut (C), then separate the stabiliser link (D) from the lower arm.

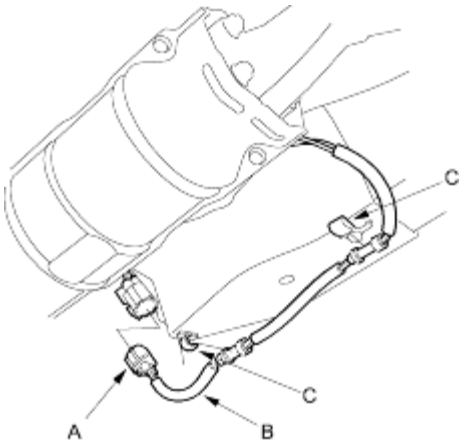


2. 19. Remove the spring clips (E) and castle nuts (F) and separate the lower arms (G) from the knuckles (H) (see page 18-11).
   20. Pry the driveshafts out of the differential (see page 16-3).

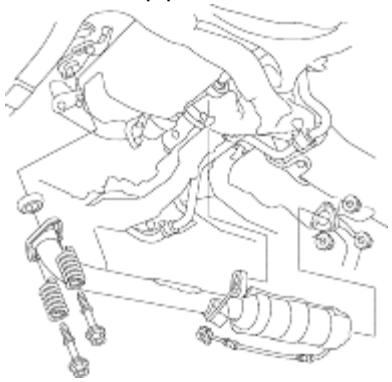
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

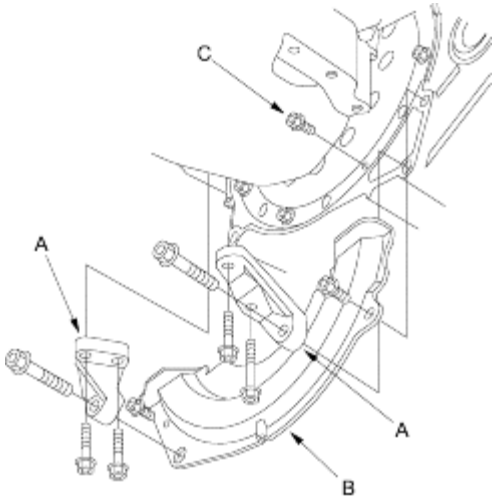
1. 21. Disconnect the secondary HO2S connector (A) and remove the secondary HO2S harness (B) from its clamps (C).



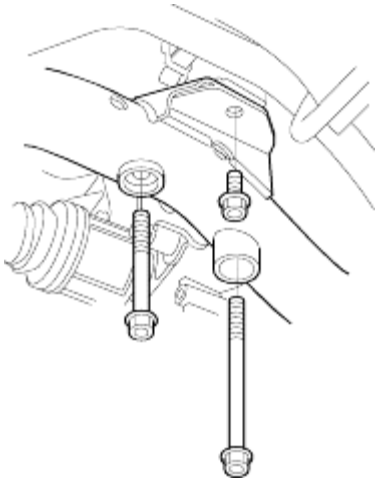
2. 22. Remove exhaust pipe A.



1. 23. Remove the engine stiffeners (A) and flywheel cover (B).



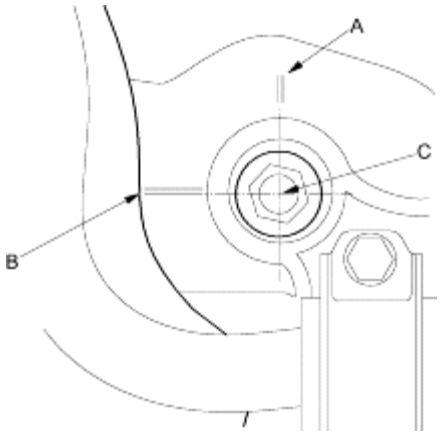
2. 24. Remove the eight drive plate bolts (C) one at a time while rotating the crankshaft pulley.
25. Remove the rear mount bolts.



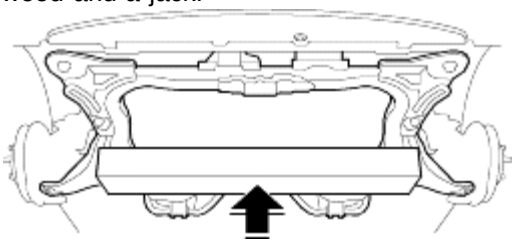
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

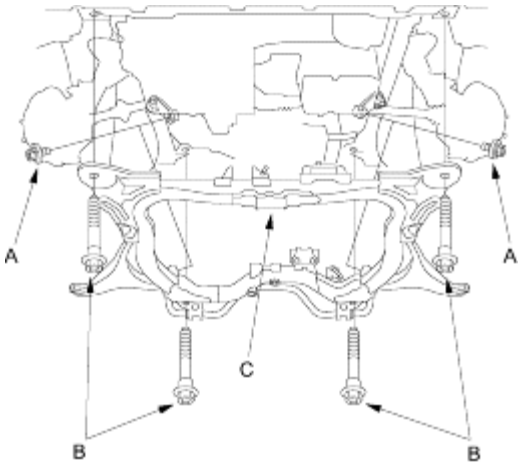
1. 26. Make the appropriate reference lines at positions A and B that line up with the centre of the sub-frame mounting bolts (C).



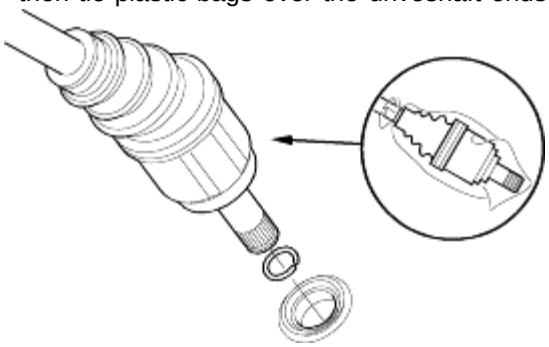
2. 27. Support the sub-frame with a 4 x 4 x 40 in. piece of wood and a jack.



1. 28. Remove the 10 x 1.25 mm bolts (A) and four sub-frame mounting bolts (B), then lower the sub-frame (C).



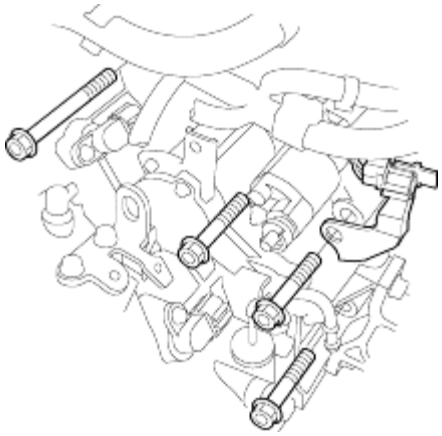
2. 29. Remove the driveshafts from the differential. Coat all precision finished surfaces with clean engine oil, then tie plastic bags over the driveshaft ends.



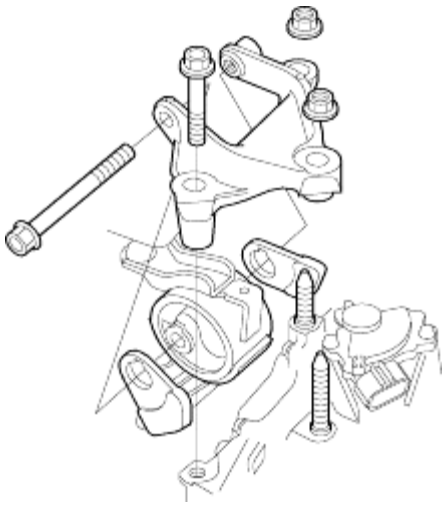
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

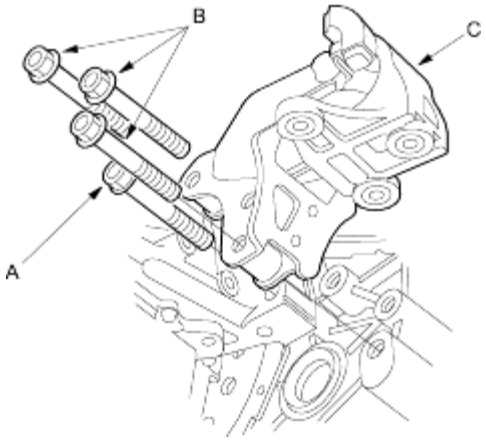
1. 30. Remove the transmission housing mounting bolts.



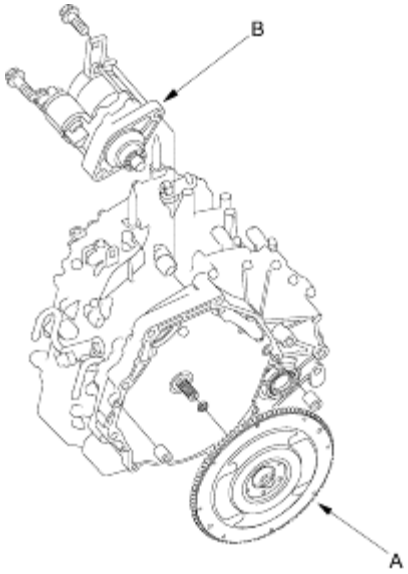
2. 31. Place a jack under the transmission.
   32. Remove the transmission mount bracket.



1. 33. Remove the transmission housing mounting bolt (A), rear mount bracket bolts (B) and rear mount/bracket (C).



2. 34. Pull the transmission away from the engine until it clears the dowel pins, then lower it on the jack.
   35. Remove the flywheel (A) and starter (B) from the transmission.



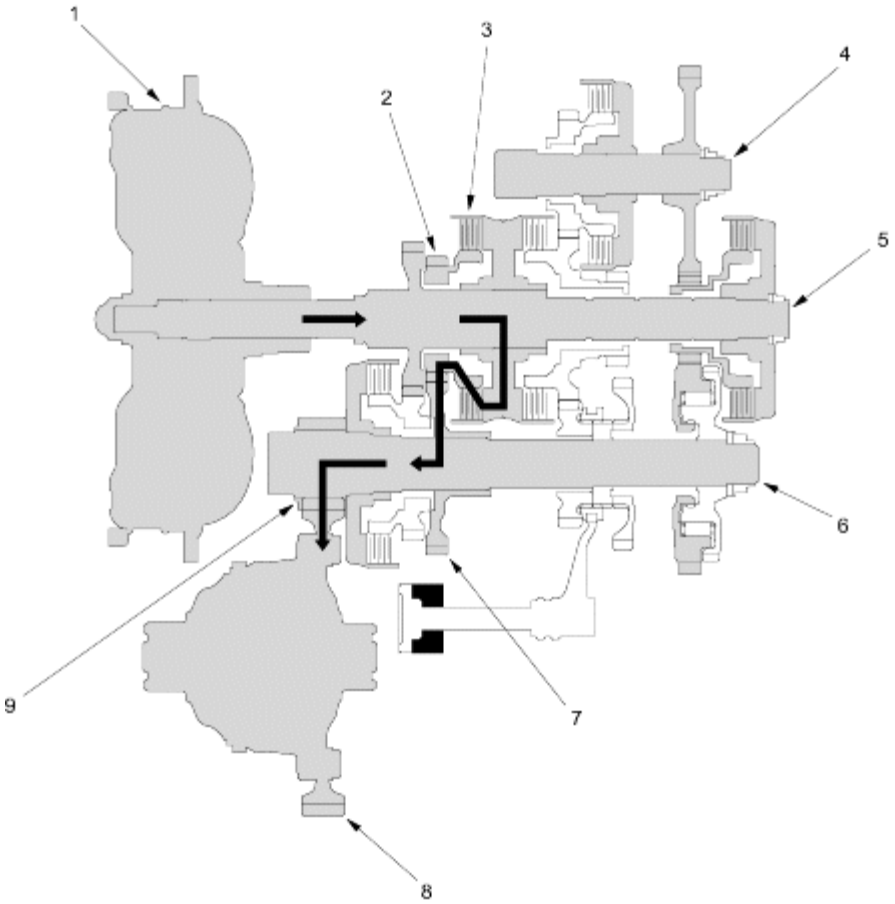
Automatic Transmission
System Description (cont'd)

D or D3 Position in 2nd gear and 2 Position

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the mainshaft 2nd gear with the mainshaft.
- The mainshaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

NOTE:

- Hydraulic pressure is applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.
- The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.

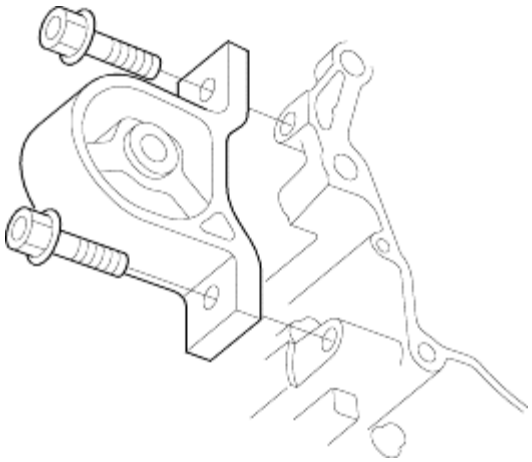


1. TORQUE CONVERTER
2. MAINSHAFT 2ND GEAR
3. 2ND CLUTCH
4. SUB-SHAFT
5. MAINSHAFT
6. COUNTERSHAFT
7. COUNTERSHAFT 2ND GEAR
8. FINAL DRIVEN GEAR
9. FINAL DRIVE GEAR

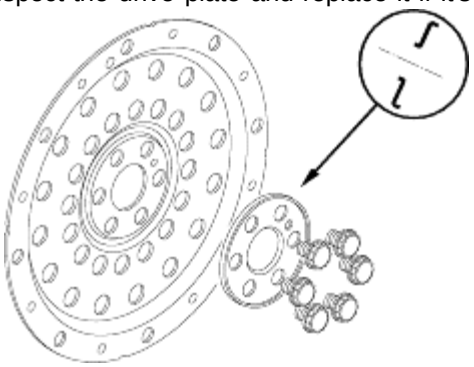
Honda Multi Matic Transmission/CVT

Transmission Removal (cont'd)

1. 36. Remove the front mount from the transmission.



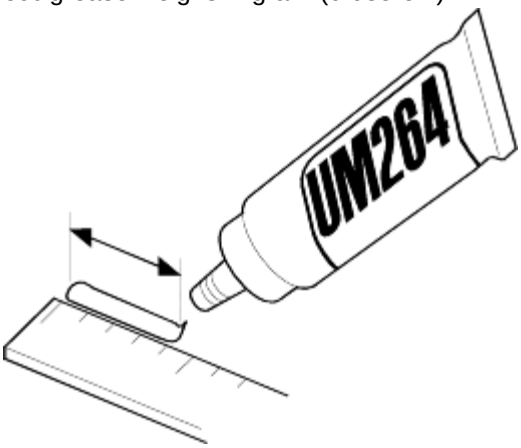
2. 37. Inspect the drive plate and replace it if it's damaged.



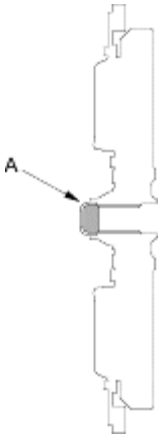
Honda Multi Matic Transmission/CVT

Transmission Installation

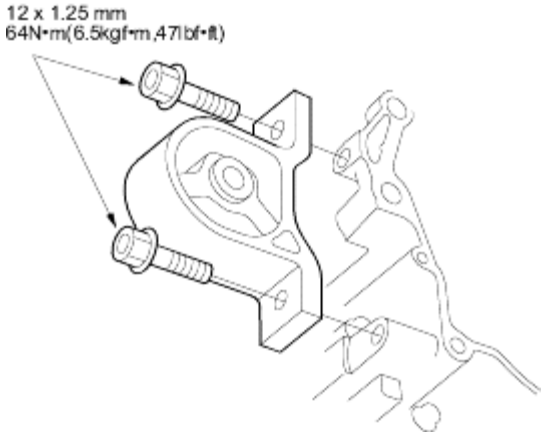
1. 1. Remove the used grease in the flywheel hub cap and flywheel splines.
2. 2. Push out Super High Temp Urea Grease (P/N 41211-PY5-305) in weight about 2.5 grams (0.086 oz.) using a ruler. Length of 40 mm (1.57 in.) pushed out grease weighs 1 gram (0.035 oz.)



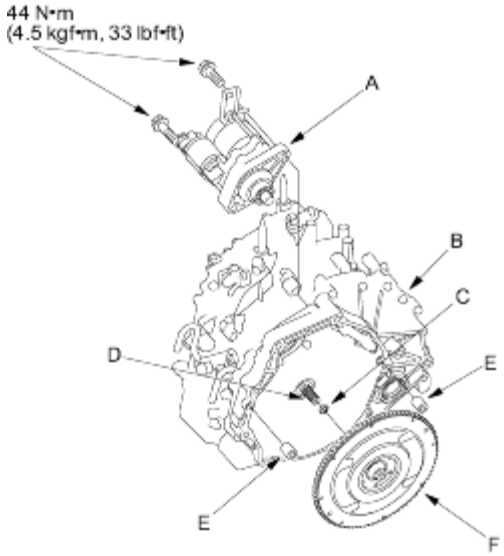
3. 3. Fill the inside of the flywheel hub cap (A) with measured Super High Temp Urea Grease. Do not fill over 2.5 grams (0.086 oz.), it may damage the transmission.



1. 4. Install the front mount on the flywheel housing.



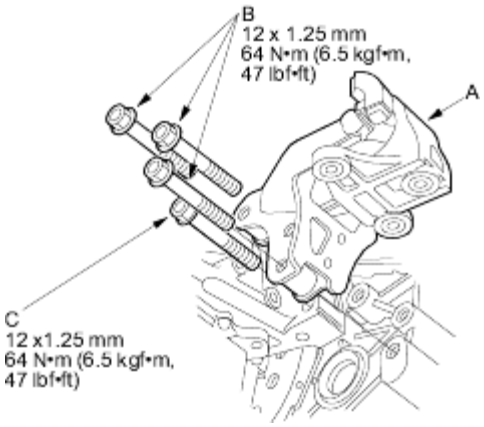
2. 5. Install the starter (A) on the flywheel housing (B).



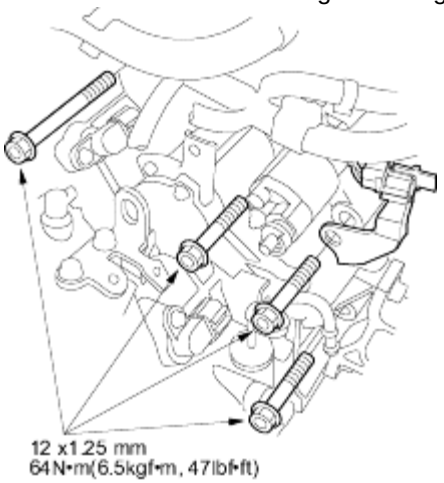
3. 6. Install a new rubber sealing ring (C) on the input shaft (D) and install the 14 mm dowel pins (E) in the flywheel housing.
   7. Install the flywheel (F) on the input shaft.
   8. Place the transmission on a jack and raise it to the engine level.

Honda Multi Matic Transmission/CVT
Transmission Installation (cont'd)

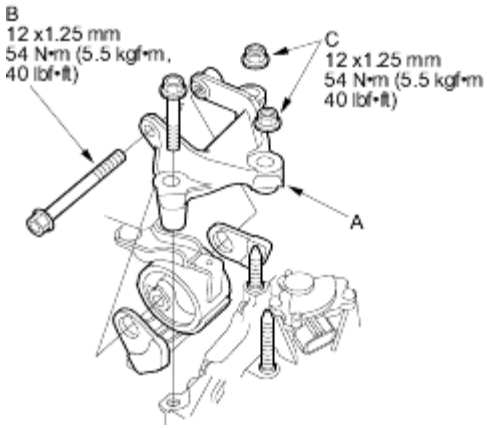
1. 9. Attach the transmission to the engine, then install the rear mount/bracket (A) with the mount bracket bolts (B) and the transmission housing mounting bolt (C).



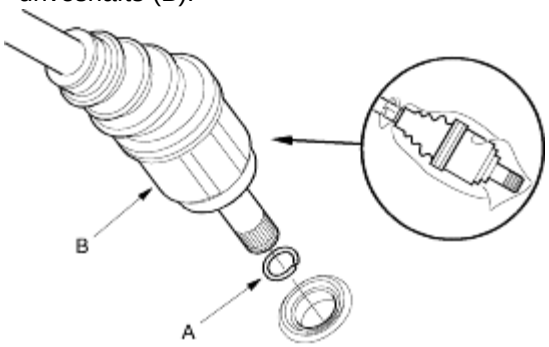
2. 10. Install the transmission housing mounting bolts.



1. 11. Install the transmission mount bracket (A). Tighten the bolt (B) loosely and tighten the nuts (C) to the specified torque, then tighten the bolt to the specified torque.



2. 12. Install new set rings (A) on the left and right driveshafts (B).



3. 13. Install the right and left driveshafts (see page 16-18). While installing the driveshafts in the differential, be sure not to allow dust or other foreign particles to enter the transmission.

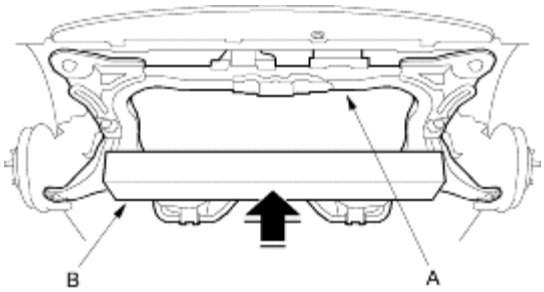
NOTE:

- Clean the areas where the driveshafts contact the transmission (differential) with solvent or carburettor cleaner and dry with compressed air.
- Turn the right and left steering knuckle fully outward and slide the driveshafts into the differential until you feel its set ring engage the side gear.

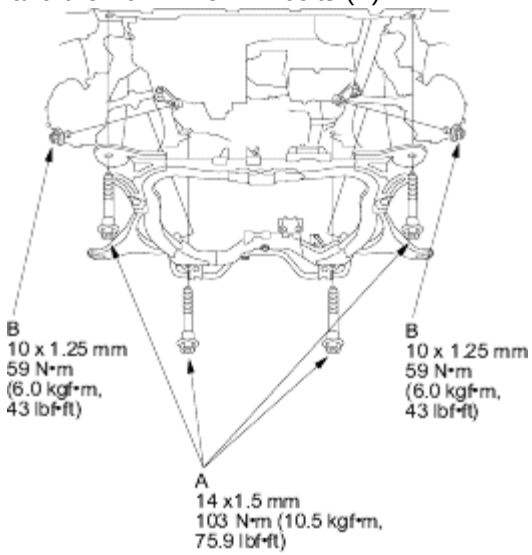
Honda Multi Matic Transmission/CVT

Transmission Installation (cont'd)

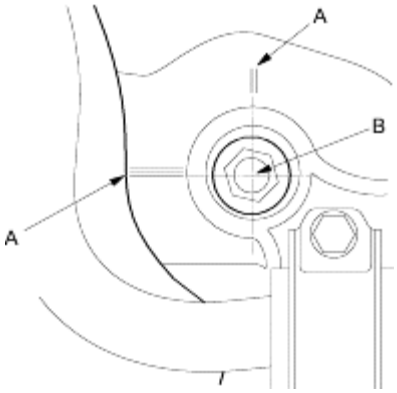
1. 14. Support the sub-frame (A) with a 4 x 4 x 40 in. piece of wood (B) and lift it up to the body.



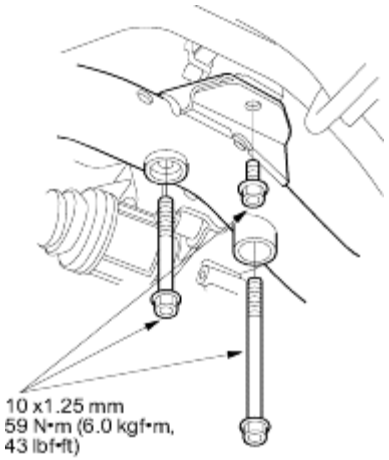
2. 15. Loosely install the four sub-frame mounting bolts (A) and the 10 x 1.25 mm bolts (B).



1. 16. Align the reference marks (A) with the centre of the bolts heads (B), then tighten the bolts to the specified torque.



2. 17. Install the rear mount bolts.

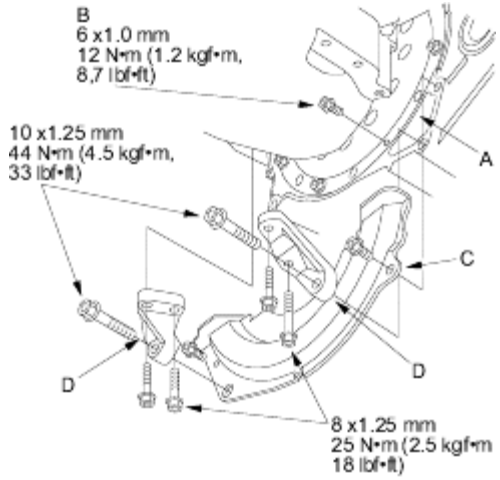


3. 18. Remove the transmission jack from the transmission.

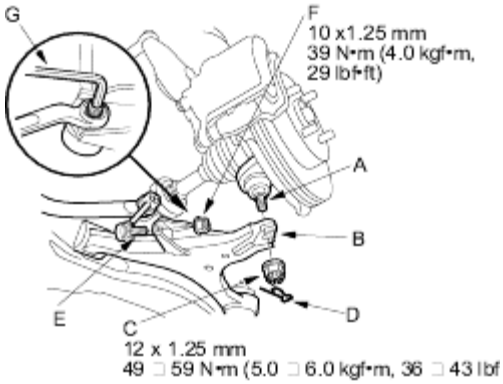
Honda Multi Matic Transmission/CVT

Transmission Installation (cont'd)

1. 19. Attach the flywheel to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a criss-cross pattern. After installing the last bolt, check that the crankshaft rotates freely.

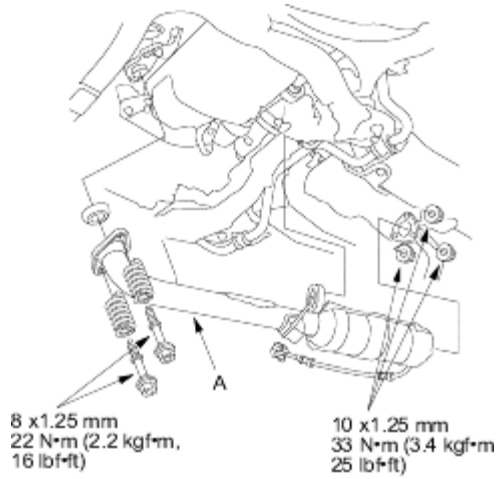


2. 20. Install the flywheel cover (C) and engine stiffeners (D).
   21. Connect the ball joints (A) to the lower arms (B) and install the castle nuts (C) and spring clips (D).

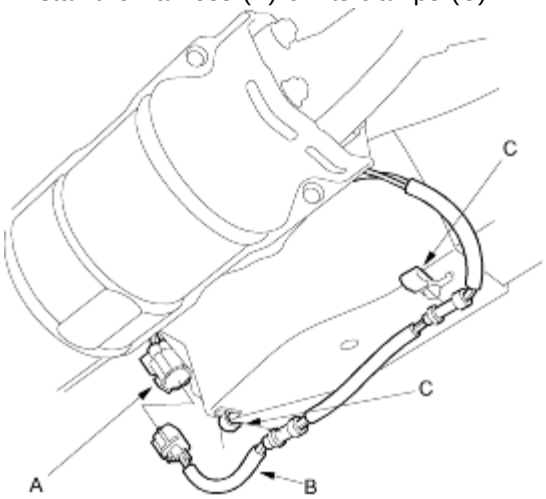


3. 22. Connect the ball joint pins (E) to the lower arms and install the nuts (F). Insert a 5 mm Allen wrench (G) in the top of the ball joint pins and tighten the nuts.

1. 23. Install the exhaust pipe A.



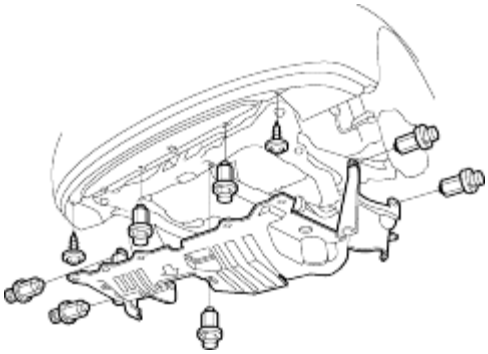
2. 24. Connect the secondary HO2S connector (A) and install the harness (B) on its clamps (C).



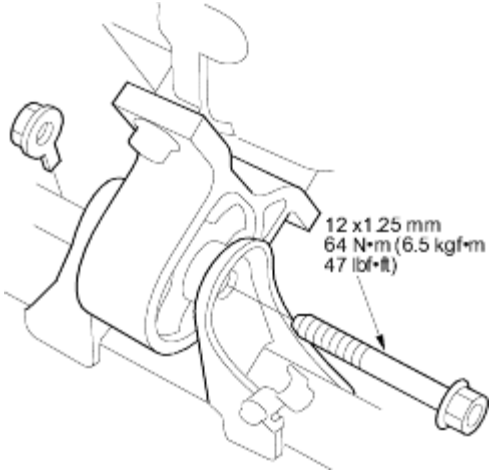
Honda Multi Matic Transmission/CVT

Transmission Installation (cont'd)

1. 25. Install the splash shield.

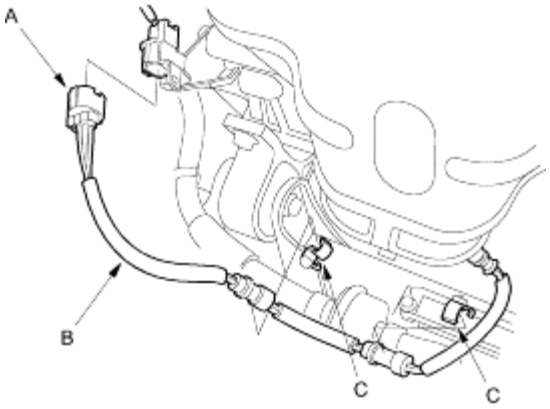


2. 26. Install the front mount bolt.

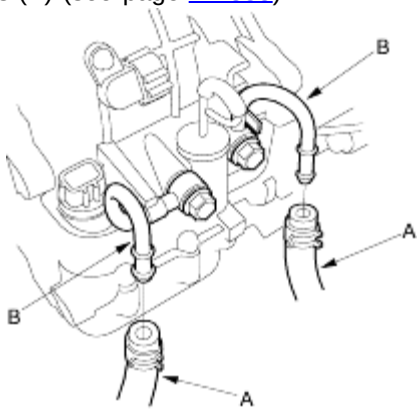


3. 27. Remove the hoist and remove the hoisting bracket from the engine.

1. 28. Connect the primary HO2S connector (A) and install the harness (B) on its clamps (C).



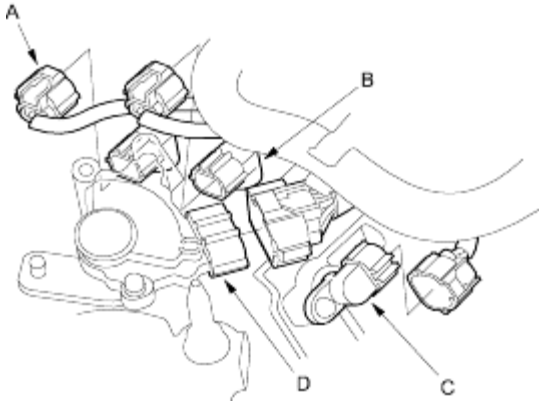
2. 29. Connect the ATF cooler hoses (A) to the ATF cooler lines (B) (see page 14-338).



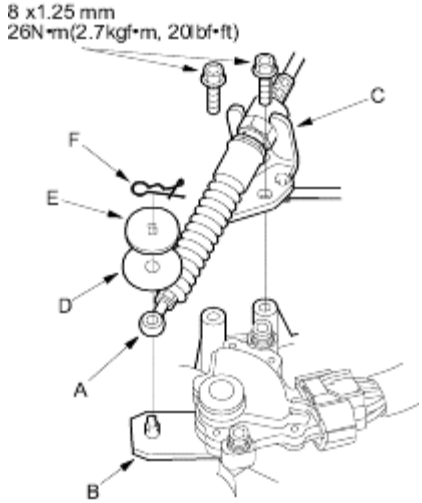
Honda Multi Matic Transmission/CVT

Transmission Installation (cont'd)

1. 30. Connect the connectors to the CVT speed sensor connector (A), vehicle speed sensor (B), CVT driven pulley speed sensor (C) and transmission range switch (D).

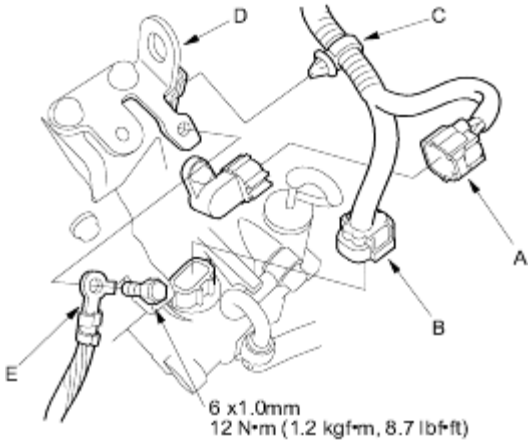


2. 31. Install the shift cable end (A) on the control lever (B) and install the shift cable bracket (C) on the transmission. Do not bend the shift cable excessively.

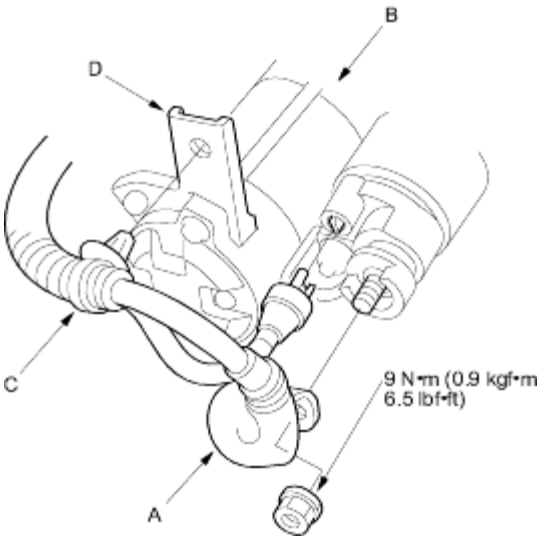


3. 32. Install the plastic washer (D) then the steel washer (E) and install the spring clip (F) in the direction shown.

1. 33. Connect the CVT drive pulley speed sensor connector (A) and solenoid harness connector (8P) (B) and install the harness clamp (C) on the transmission hanger (D).



2. 34. Install the transmission ground cable (E) on the transmission hanger.
   35. Connect the starter cable (A) to the starter (B) and install the harness clamp (C) on the clamp bracket (D). Make sure the crimped side of the starter cable ring terminal is facing out.



Honda Multi Matic Transmission/CVT

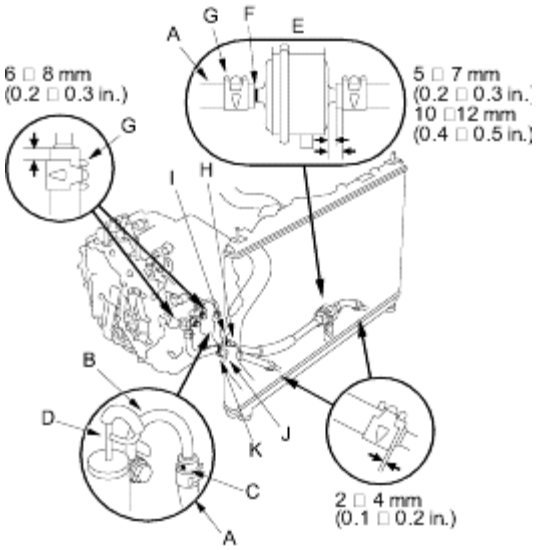
Transmission Installation (cont'd)

1. 36. Install the battery base, then install the harness clamp on the battery base.
   37. Install the resonator and intake air duct.
   38. Refill the transmission with ATF (see page 14-320).
   39. Install the battery tray and battery, then secure the battery with its hold-down bracket.
   40. Connect the battery positive terminal, then connect the negative terminal.
   41. Set the parking brake. Start the engine and shift the transmission through all gears three times.
   42. Check the shift lever operation, A/T gear position indicator operation and shift cable adjustment.
   43. Check and adjust the front wheel alignment (see page 18-4).
   44. Start the engine and let it reach normal operating temperature (the radiator fan comes on) with the transmission in P or N position, then turn if off and check the ATF level (see page 14-320).
   45. Perform the start clutch calibration procedure (see page 14-319).
   46. Perform a road test (see page 14-312).
   47. Enter the radio station presets and set the clock.

Honda Multi Matic Transmission/CVT

ATF Cooler Hoses Replacement

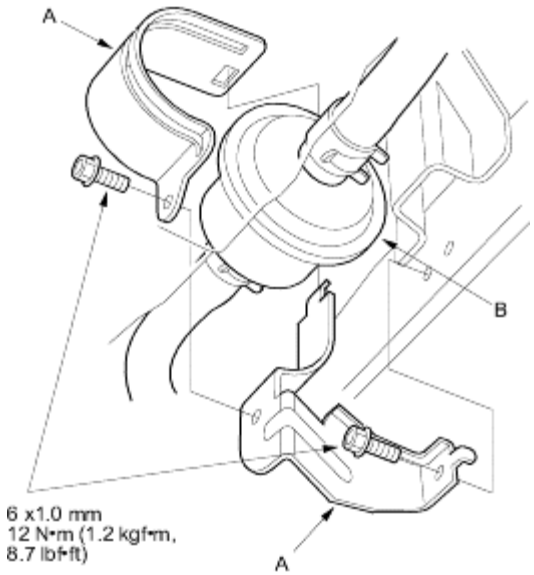
1. 1. Connect the ATF cooler inlet hose (A) to the cooler inlet line (B) with facing the dot (C) on the hose to the dipstick (D).



2. 2. Connect the inlet hose to the ATF filter (E) until its end aligns with the white line (F).
   3. Connect the cooler hoses to the line, ATF filter and ATF cooler and secure them with the clips (G) as shown.
   4. Install the cooler hose clamp (H) on the white line (I) on the cooler inlet hose and clamp the outlet hose.
   5. Install the radiator hose/ATF cooler hose clamp (J) on the white line (K) on the cooler inlet hose.

ATF Filter Installation

1. 1. Install the ATF filter brackets (A) on the ATF filter (B).

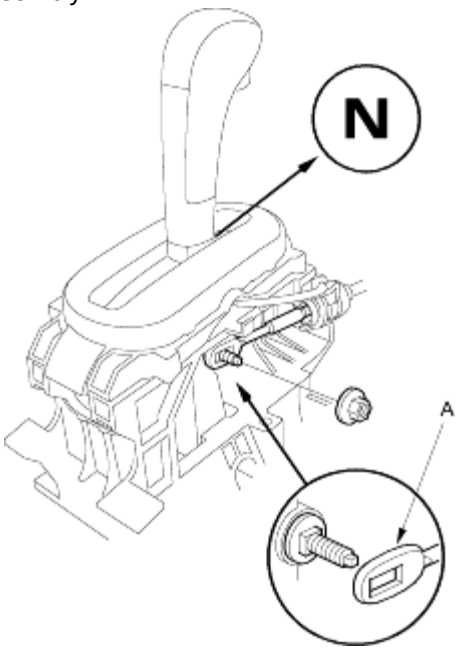


2. 2. Install the ATF filter and bracket on the body.

Honda Multi Matic Transmission/CVT

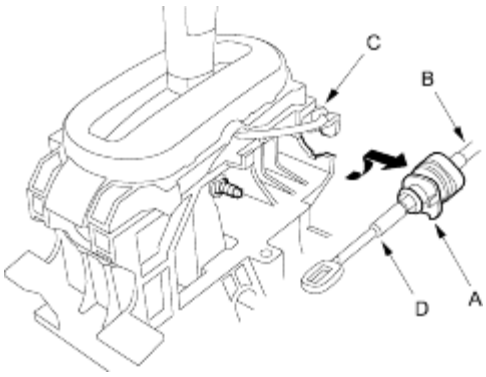
Shift Lever Removal

1. 1. Shift the transmission into [N] position.
2. 2. Remove the centre console panel and centre console (see page 20-73).
   3. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

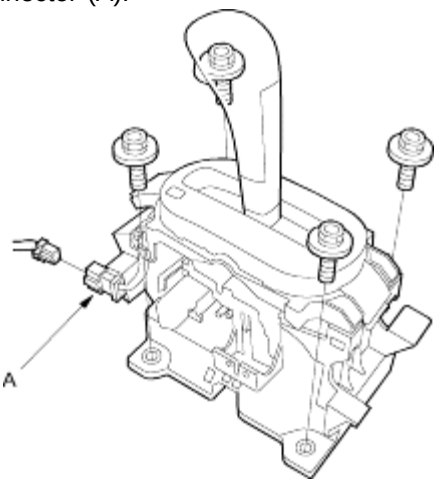


1. 4. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



2. 5. Disconnect the A/T gear position indicator panel light connector (A).



3. 6. Remove the four bolts, then remove the shift lever assembly.

Automatic Transmission
System Description (cont'd)

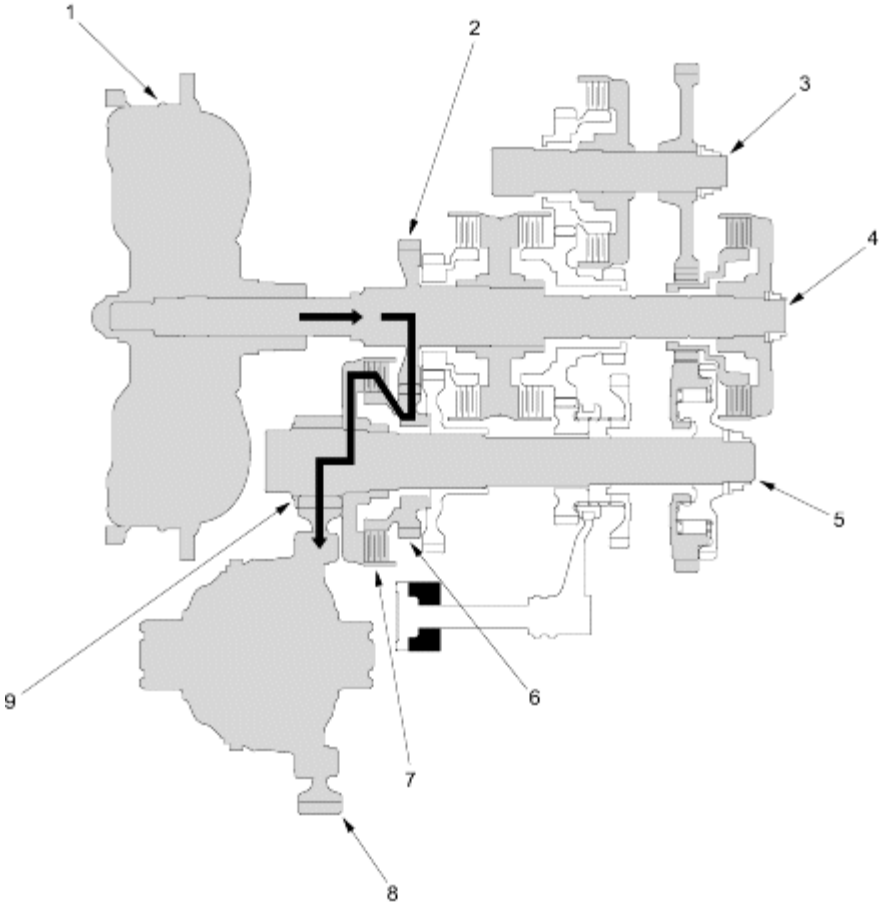
Power Flow (cont'd)

D or D3 Position in 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the countershaft 3rd gear with the mainshaft.
- The mainshaft 3rd gear drives the countershaft 3rd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

NOTE:

- Hydraulic pressure is applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.
- The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.

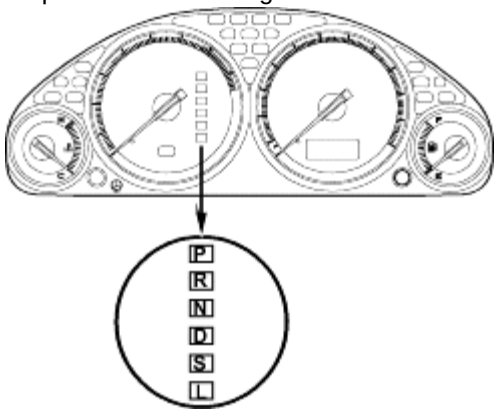


1. TORQUE CONVERTER
2. MAINSHAFT 3RD GEAR
3. SUB-SHAFT
4. MAINSHAFT
5. COUNTERSHAFT
6. COUNTERSHAFT 3RD GEAR
7. 3RD CLUTCH
8. FINAL DRIVEN GEAR
9. FINAL DRIVE GEAR

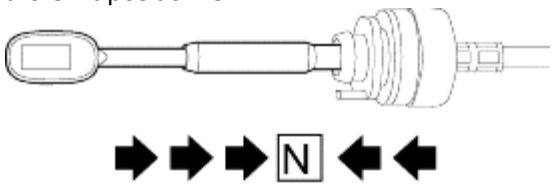
Honda Multi Matic Transmission/CVT

Shift Lever Installation

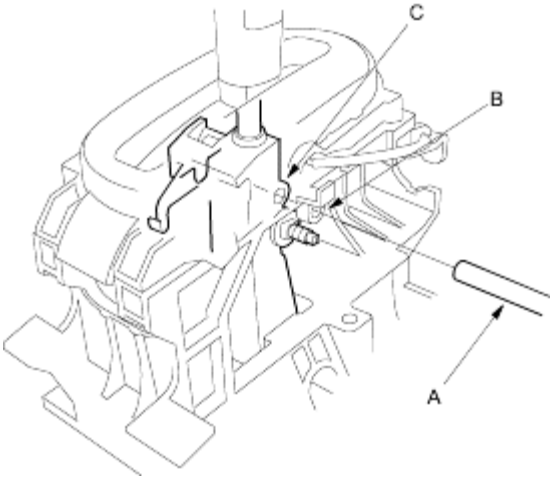
1. Install the shift lever assembly.
2. Turn the ignition switch ON (II) and verify that the N position indicator light comes on.



3. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back two steps so that the shift position is in N



4. Turn the ignition switch OFF.
5. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.

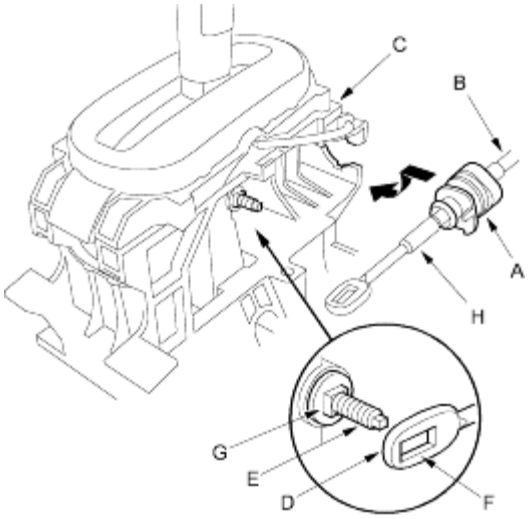


Honda Multi Matic Transmission/CVT

Shift Lever Installation (cont'd)

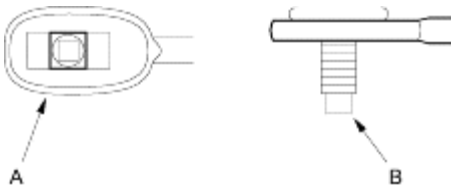
1. 6. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



2. 7. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

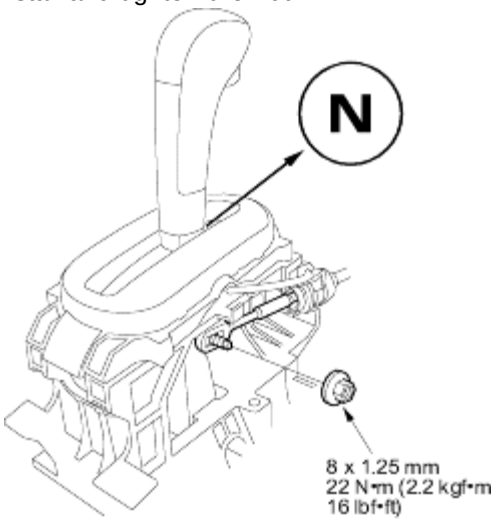


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

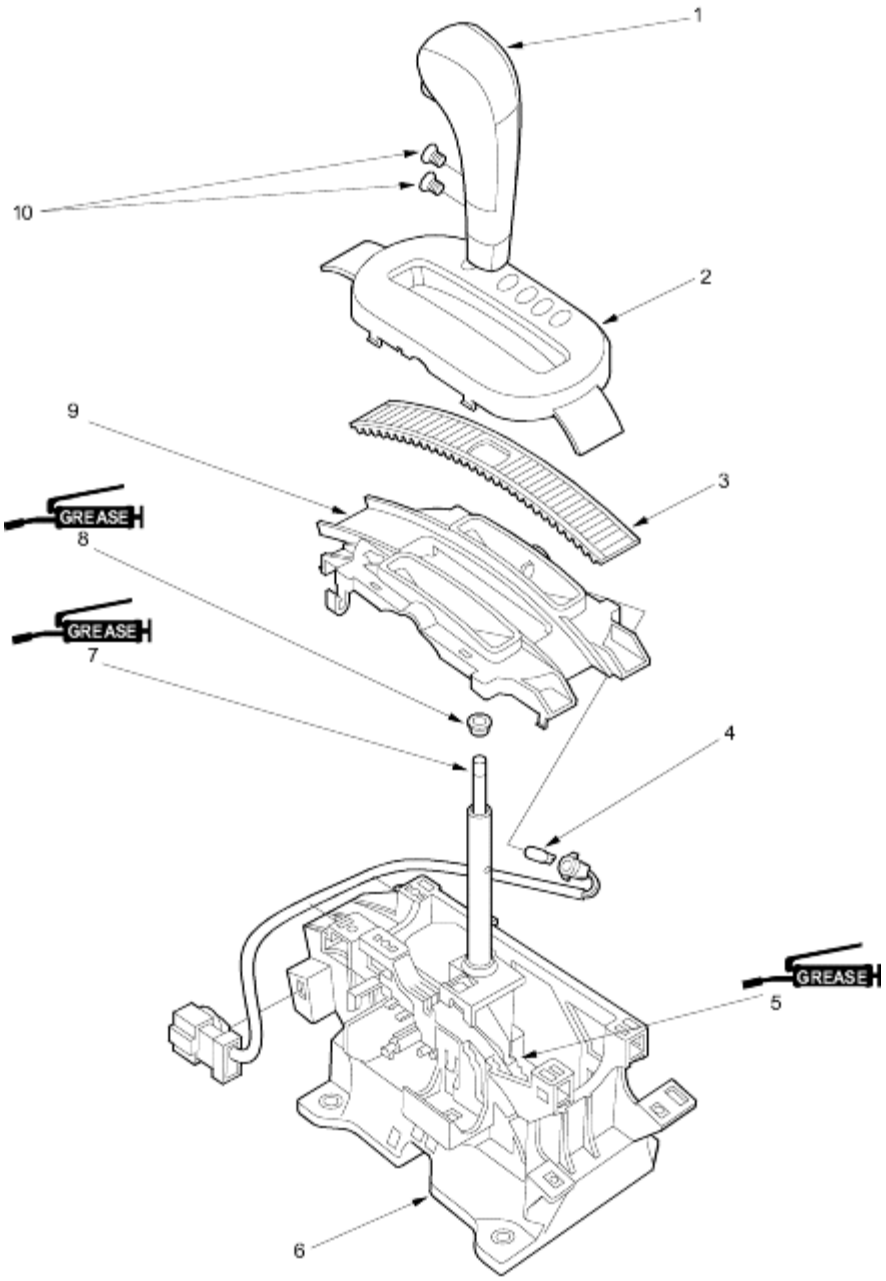
1. 8. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
2. 9. Install and tighten the nut.



3. 10. Remove the 6.0 mm (0.24 in) pin that aligned the shift lever.
11. Connect the A/T gear position indicator panel light connector.
12. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
13. Reinstall the centre console, console panel and related parts (see page 20-73).

Honda Multi Matic Transmission/CVT

Shift Lever Disassembly/Reassembly

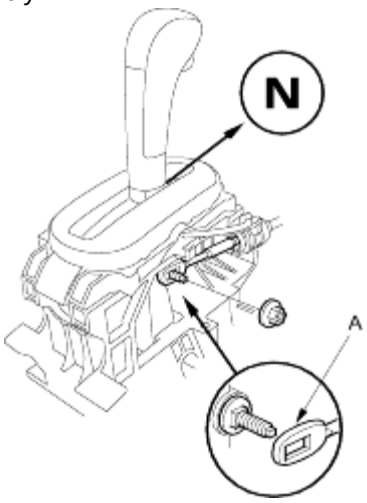


1. SHIFT LEVER KNOB
2. A/T GEAR POSITION INDICATOR PANEL
3. SHIFT LEVER COVER
4. A/T GEAR POSITION INDICATOR PANEL LIGHT BULB
5. SILICONE GREASE
6. SHIFT LEVER BRACKET BASE
7. SILICONE GREASE
8. BUSHING
   SILICONE GREASE
9. A/T GEAR POSITION INDICATOR PANEL BRACKET
10. SCREW
    3 Nm (0.3 kgf/m, 2 lbf/ft)
    Apply non-hardening thread lock sealant.

Honda Multi Matic Transmission/CVT

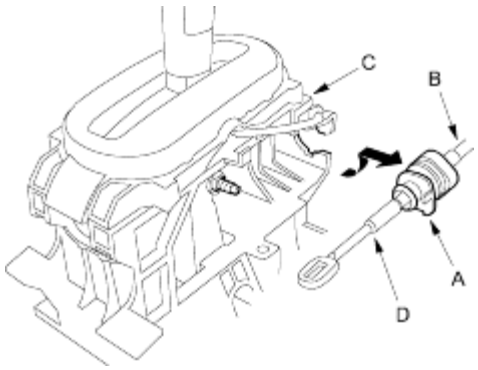
Shift Cable Replacement

1. Raise the vehicle and make sure it is securely supported (see page 1-15).
2. Shift the transmission into N position.
3. Remove the centre console panel and centre console (see page 20-73).
4. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

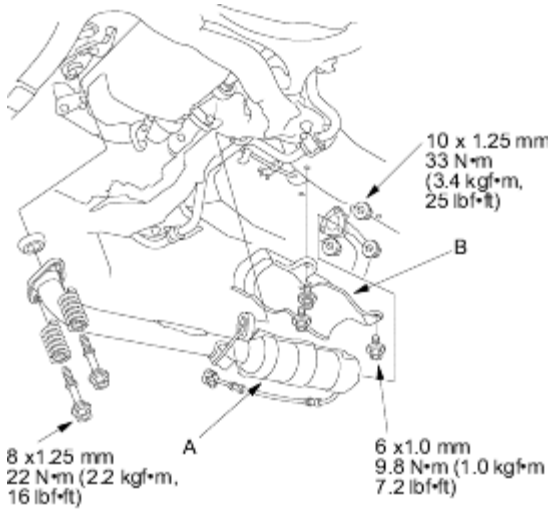


5. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

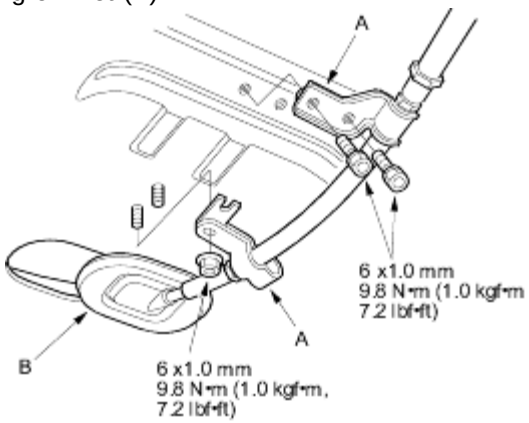
   NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



6. Disconnect the secondary HO2S connector and remove the exhaust pipe A and the heat shield (B).



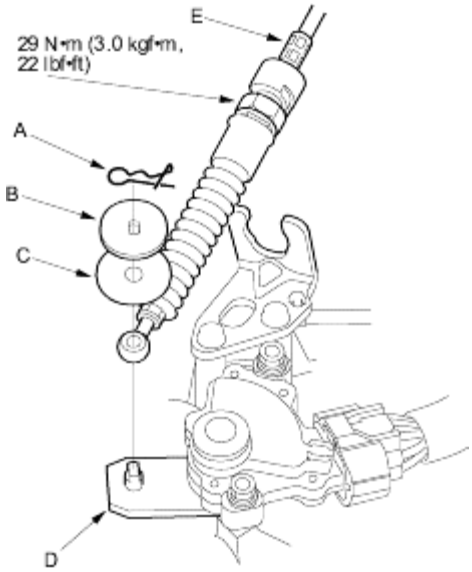
7. Remove the shift cable guide brackets (A) and grommet (B).



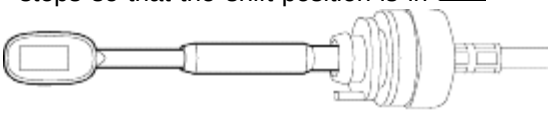
Honda Multi Matic Transmission/CVT

Shift Cable Replacement (cont'd)

8. Remove the spring clip (A), washer (B) and plastic washer (C) from the control lever (D).

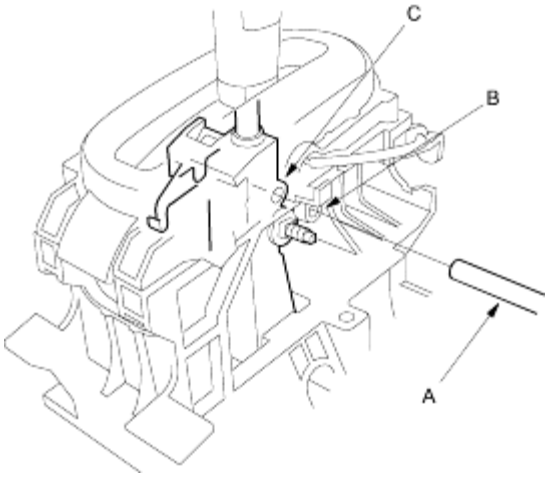


9. Loosen the locknut, then remove the shift cable (E).
10. Insert the new shift cable through the grommet hole, then install the shift cable guide brackets and grommet.
11. Verify that the transmission is in [N] position on the control lever.
12. Align the socket on the shift cable with the slot in the shift cable bracket, then install the socket in the bracket and shift cable end to the control lever. Do not bend the shift cable excessively.
13. Tighten the locknut.
14. Install the plastic washer then the steel washer and install the spring clip (H) in the direction shown.
15. Install the heat shield and the exhaust pipe A, then connect the secondary HO2S connector.
16. Turn the ignition switch ON (II) and verify that the [N] position indicator light comes on.
17. If necessary, push the shift cable until it stops, then release your hand. Pull the shift cable back two steps so that the shift position is in [N]





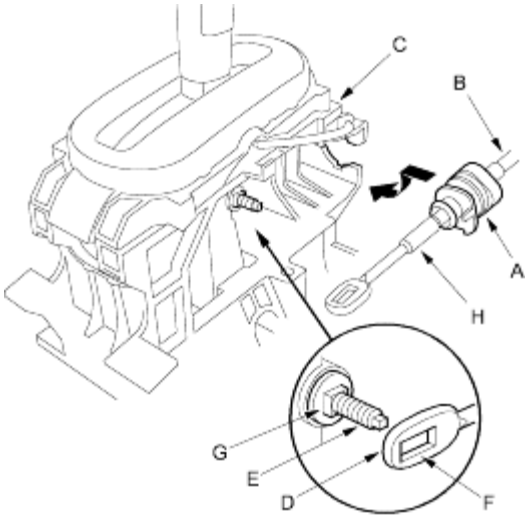
18. Turn the ignition switch OFF.
19. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.



Honda Multi Matic Transmission/CVT
Shift Cable Replacement (cont'd)

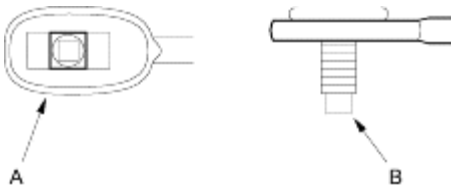
1. 20. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



2. 21. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

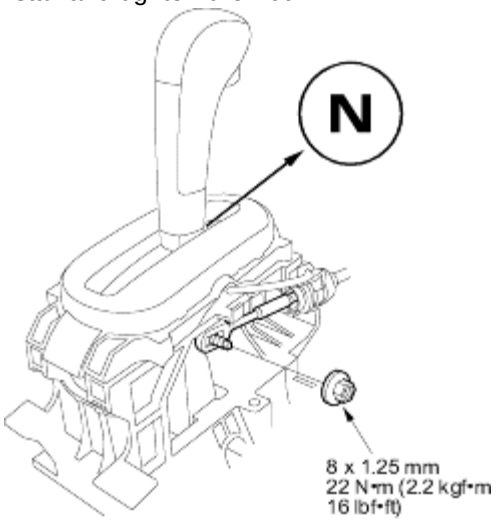


Improperly Installed:



Cable end rides on the bottom of the mounting stud

1. 22. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
2. 23. Install and tighten the nut.

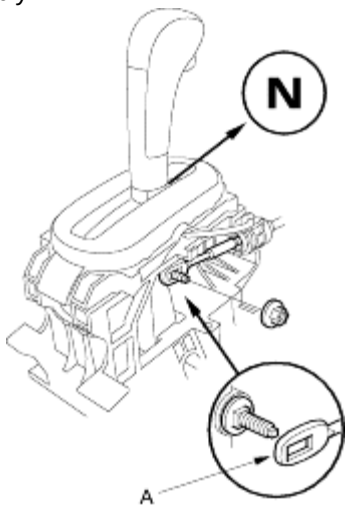


3. 24. Remove the 6.0 mm (0.24 in) pin that aligned the shift lever.
25. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
26. Allow the wheels to rotate freely.
27. Start the engine and check the shift lever operation in all gears.
28. Reinstall the centre console, console panel and related parts (see page 20-73).

Honda Multi Matic Transmission/CVT

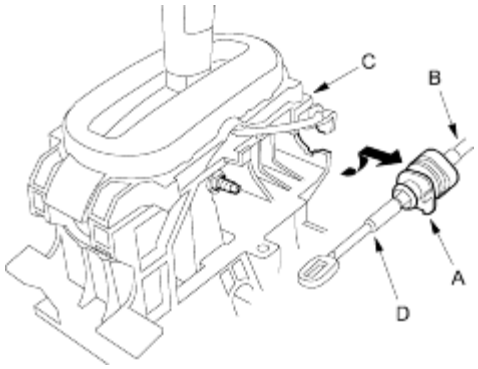
Shift Cable Adjustment

1. 1. Shift the transmission into [N] position.
2. 2. Remove the centre console panel and centre console (see page 20-73).
   3. Remove the nut securing the shift cable end (A), then separate the cable end from the shift lever assembly.

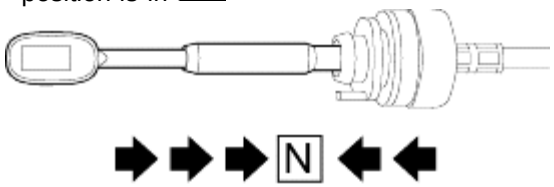


3. 4. Rotate the socket holder (A) on the shift cable (B) toward the shift lever a quarter turn, then slide the holder out to remove the shift cable from the shift cable bracket base (C).

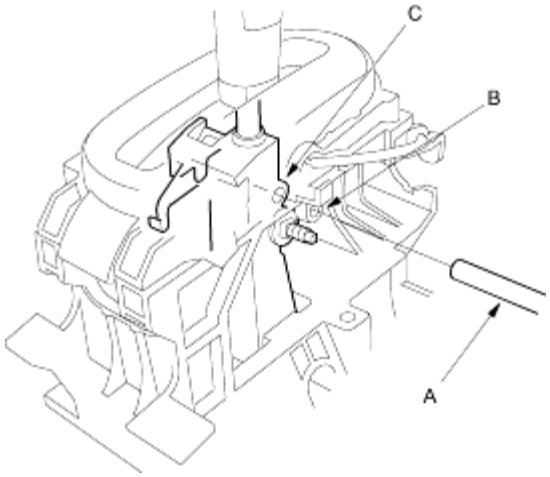
   NOTE: Do not remove the shift cable by twisting the shift cable guide (D).



1. 5. Push the shift cable until it stops, then release it. Pull the shift cable back two steps so that the shift position is in [N]



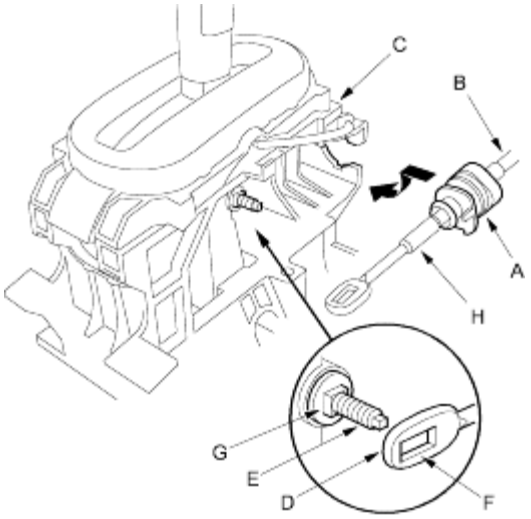
2. 6. Turn the ignition switch ON (II) and verify that the [N] position indicator light comes on.
   7. Turn the ignition switch OFF.
   8. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever assembly.



Honda Multi Matic Transmission/CVT
Shift Cable Adjustment (cont'd)

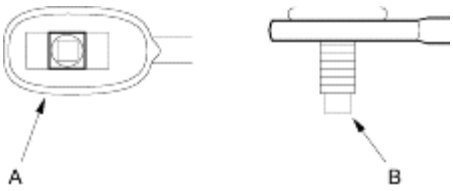
9. Align the socket holder (A) on the shift cable (B) with the slot in the cable bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder clockwise a quarter turn to secure the shift cable.

NOTE: Do not install the shift cable by twisting the shift cable guide (H).



10. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

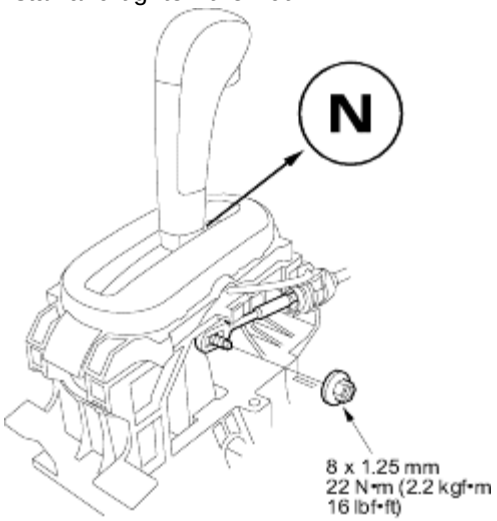


Improperly Installed



Cable end rides on the bottom of the mounting stud.

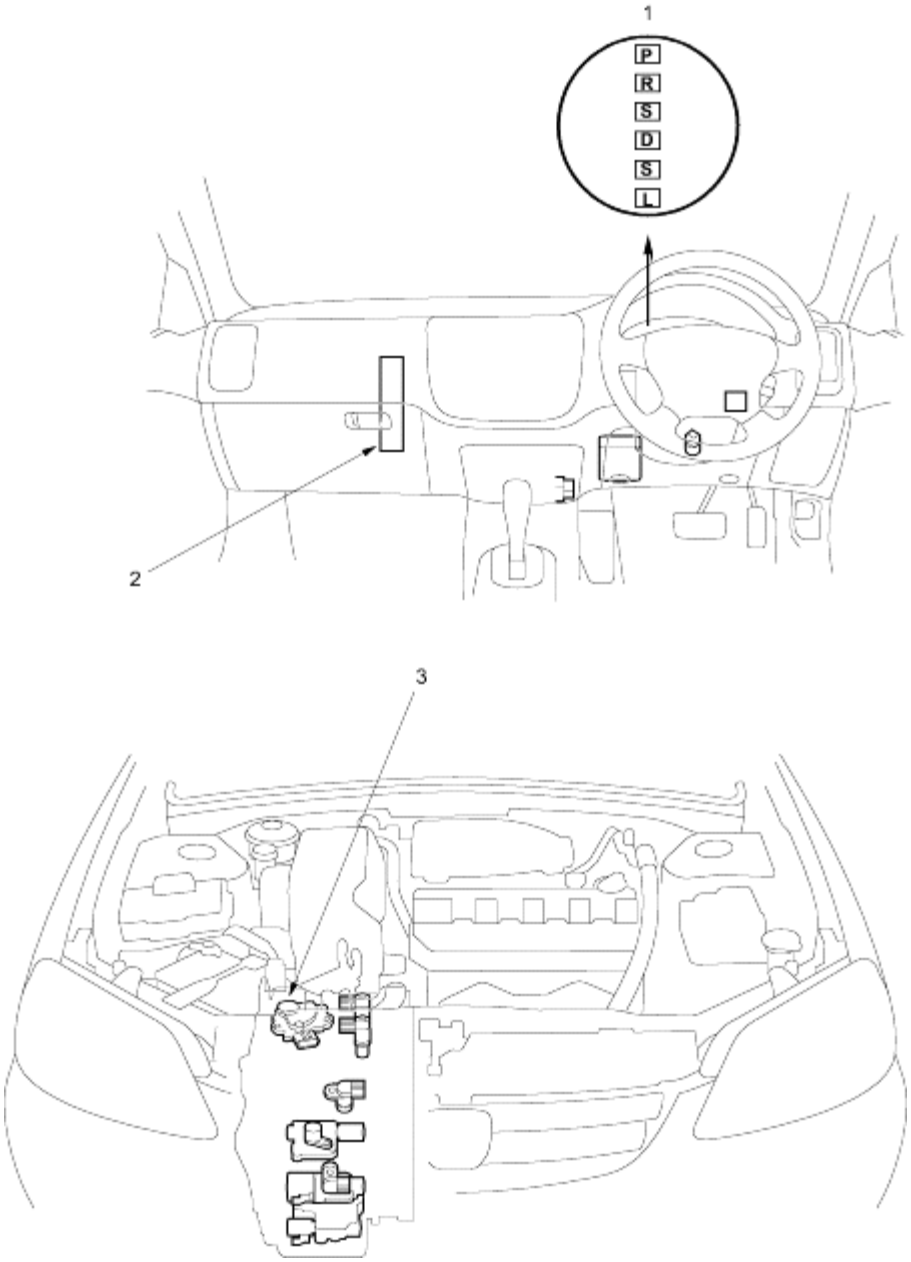
11. If improperly installed, remove the shift cable from the shift cable bracket base and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket base.
12. Install and tighten the nut.



13. Remove the 6.0 mm (0.24 in.) pin that aligned the shift lever.
14. Move the shift lever to each position and verify that the A/T gear position indicator follows the transmission range switch.
15. Reinstall the centre console, console panel and related parts (see page 20-73).

A/T Gear Position Indicator

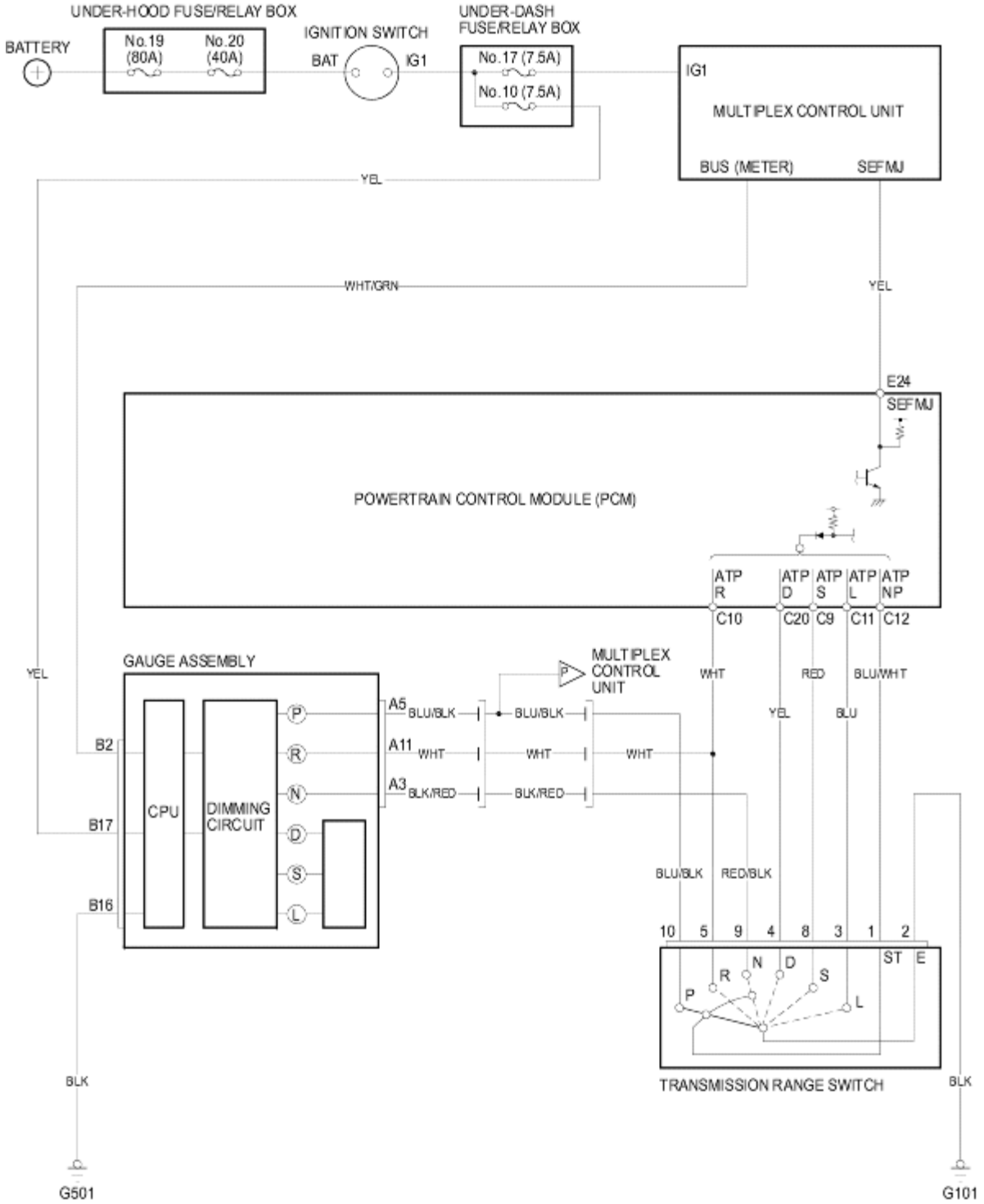
Component Location Index



1. A/T GEAR POSITION INDICATOR
   Indicator Input Test, page 14-353
   Indicator Bulb Replacement, page 14-354
2. POWERTRAIN CONTROL MODULE (PCM)
3. TRANSMISSION RANGE SWITCH
   Test, page 14-350
   Replacement, page 14-351

A/T Gear Position Indicator

Circuit Diagram



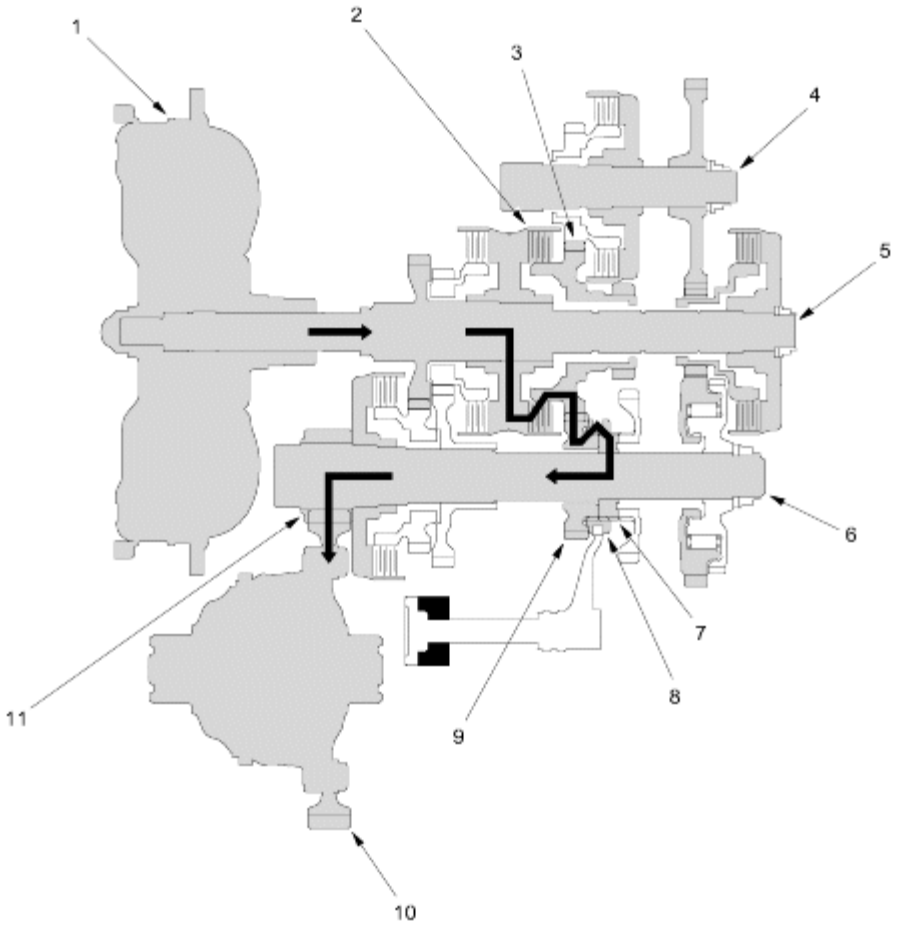
Automatic Transmission
System Description (cont'd)

D Position in 4th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear while the shift lever is in the forward range (D, D3, 2 and 1 positions).
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

NOTE:

- Hydraulic pressure is applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.
- The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.

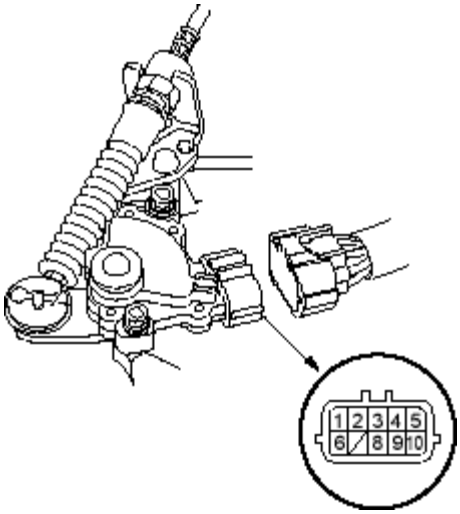


1. TORQUE CONVERTER
2. 4TH CLUTCH
3. MAINSHAFT 4TH GEAR
4. SUB-SHAFT
5. MAINSHAFT
6. COUNTERSHAFT
7. REVERSE SELECTOR HUB
8. REVERSE SELECTOR
9. COUNTERSHAFT 4TH GEAR
10. FINAL DRIVEN GEAR
11. FINAL DRIVE GEAR

A/T Gear Position Indicator

Transmission Range Switch Test

1. 1. Disconnect the transmission range switch connector.



Connector Terminal Description

No.	Description	No.	Description
1	ATP NP	6	Not connected
2	GND	7	Not used
3	L	8	S
4	D	9	N
5	R	10	P

1. 2. Check for continuity between terminals at the switch connector. There should be continuity between terminals below listed for each switch position.

In P position, between terminals:

- No. 1 and No. 2
- No. 1 and No. 10
- No. 2 and No. 10

In R position, between terminals:

- No. 2 and No. 5

In N position, between terminals:

- No. 1 and No. 2
- No. 1 and No. 9
- No. 2 and No. 9

In D position, between terminals:

- No. 2 and No. 4

In S position, between terminals:

- No. 2 and No. 8

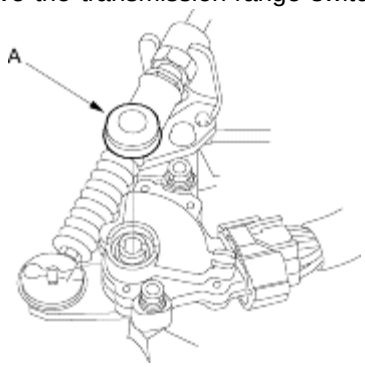
In L position, between terminals:

- No. 2 and No. 3
- If there is no continuity between any terminals, adjust the transmission range switch installation. If the transmission range switch installation is OK, replace the transmission range switch.
- If the transmission range switch continuity check was OK, replace the faulty transmission harness.

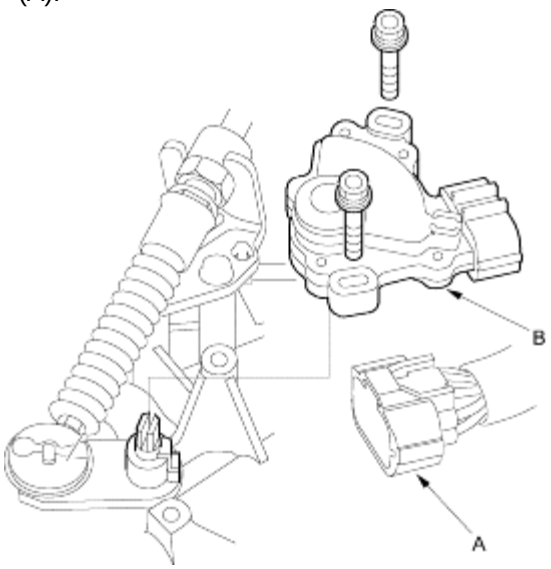
A/T Gear Position Indicator

Transmission Range Switch Replacement

1. 1. Remove the intake air duct and resonator.
2. 2. Shift to N position.
   3. Remove the transmission range switch shaft cap (A).



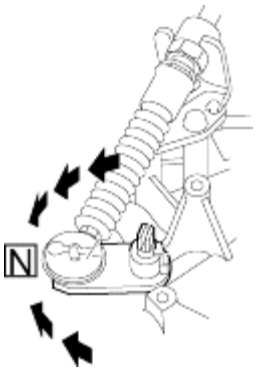
3. 4. Disconnect the transmission range switch connector (A).



4. 5. Remove the old transmission range switch and replace the new switch (B).

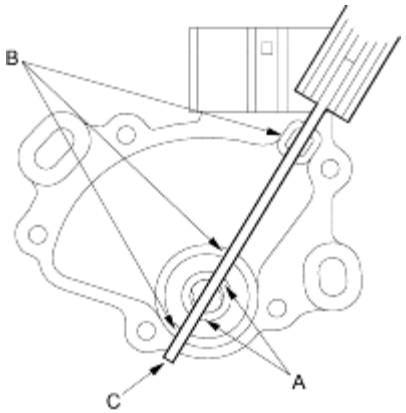
1. 6. Make sure that the control shaft is in N position.

   If necessary, move the control lever to N position.



2. 7. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch, then put a 2.0 mm (0.08 in.) feeler gauge blade (C) in the cutouts to hold it in the N position.

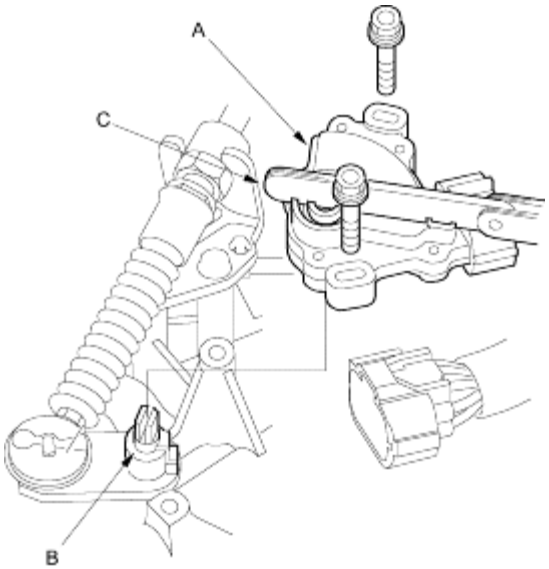
   NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



A/T Gear Position Indicator

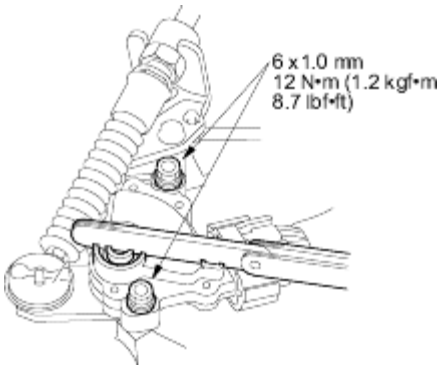
Transmission Range Switch Replacement (cont'd)

8. Install the transmission range switch (A) gently on the control shaft (B) with holding the N position with the 2.0 mm (0.08 in.) blade (C).

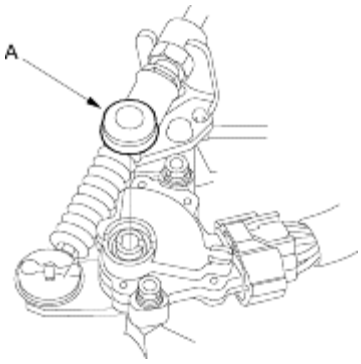


9. Tighten the bolts on the transmission range switch while you continue to hold the N position.

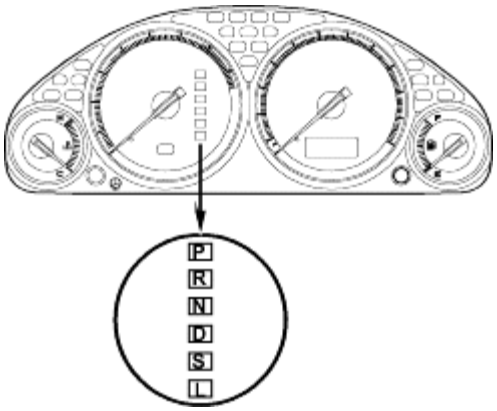
   Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



10. Connect the connector securely, then install the transmission range switch shaft cap (A).



11. Turn the ignition switch ON (II). Move the shift lever through all gear positions and check the transmission range switch synchronisation with the A/T gear position indicator.



12. Allow the wheels to rotate freely, then start the engine.
13. Move the shift lever through all gear positions and verify the following:
    - The engine will not start in any position other than N or P.
    - The back-up lights come on when the shift lever is in R position.

A/T Gear Position Indicator

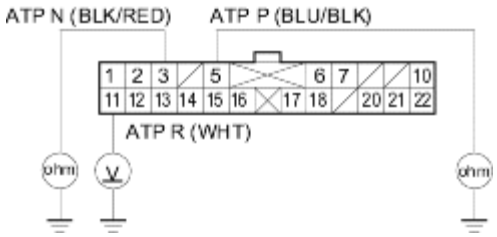
Indicator Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. If the MIL has been reported, check for a DTC and repair the system as indicated by DTC.
   2. If the MIL does not come on and the A/T gear position indicator P, N, or R light does not come on. Turn the ignition switch off, remove the gauge assembly from the dashboard (see page 22-93), then disconnect gauge assembly connector A (22P) and B (22P).
   3. Inspect the connectors and connector terminals to be sure they are making good contact.
   4. If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   5. Shift to P position and check for continuity between A5 terminal (BLU/BLK) and ground.

   There should be continuity in P position and no continuity in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

1. 6. Shift to N position and check for continuity between A3 terminal (BLK/RED) and ground.

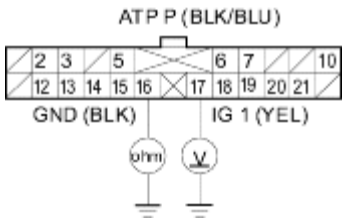
   There should be continuity in N position and no continuity in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.

2. 7. Turn the ignition switch ON (II), shift to R position and check for voltage between A11 terminal (WHT) and ground.

   There should be 0 V in R position. There should be about 5 V in any other shift lever position. If your test results are different, check for a faulty transmission range switch or an open in the wire.
   8. Check for voltage between B17 terminal (YEL) and ground with the ignition switch ON (II).

   There should be battery voltage. If your test results are different, check for a blown No. 10 (7.5A) fuse in the under-dash fuse/relay box or an open in the wire.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

3. 9. Turn the ignition switch OFF and check for continuity between B16 terminal (BLK) and ground under all conditions.

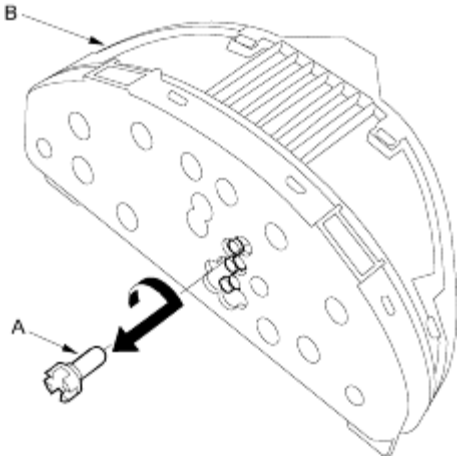
   There should be continuity. If your test results are different, check for a poor ground (G501) or an open in the wire.
   10. If all input tests prove OK, but the indicator is faulty, replace the printed circuit board.

A/T Gear Position Indicator

Indicator Bulb Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

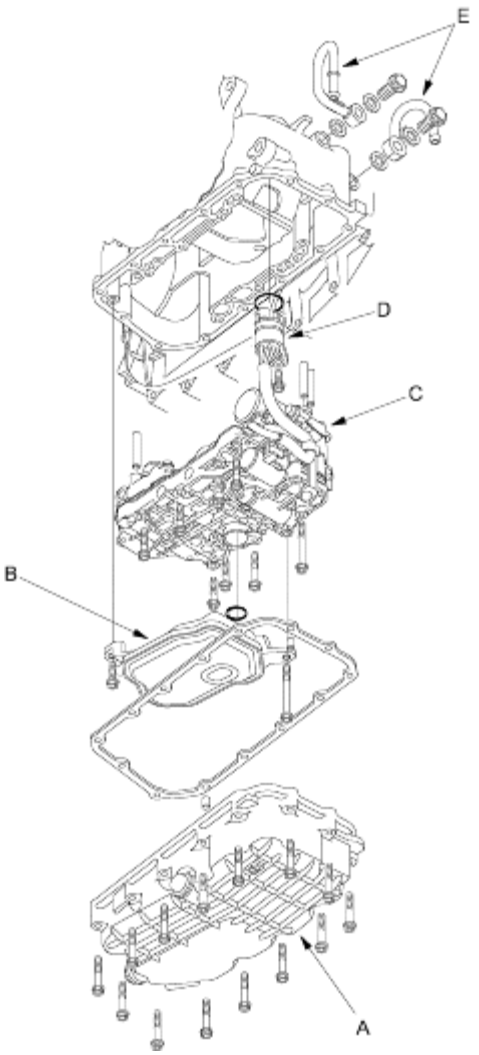
1. 1. Remove the gauge assembly (see page 22-93).
   2. Replace the bulb (A) at the gauge assembly (B).



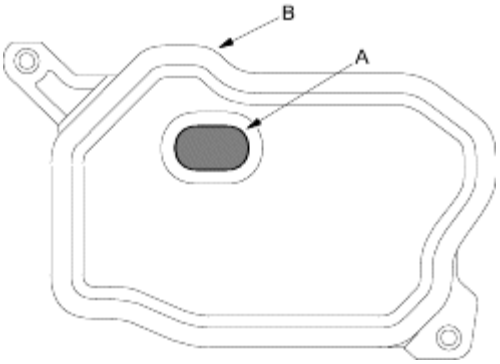
Transmission Lower Valve Body

ATF Pan, ATF Strainer and Lower Valve Body Assembly Removal

1. 1. Remove the ATF pan (A) (14 bolts).



1. 2. Remove the ATF strainer (B) (two bolts).
2. 3. Remove the lower valve body assembly (C) (eight bolts).
   4. Remove the bolt securing the solenoid harness connector (D) with holding the lower valve body assembly and remove the connector and valve body assembly.
   5. Remove the ATF cooler lines (E).
   6. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.

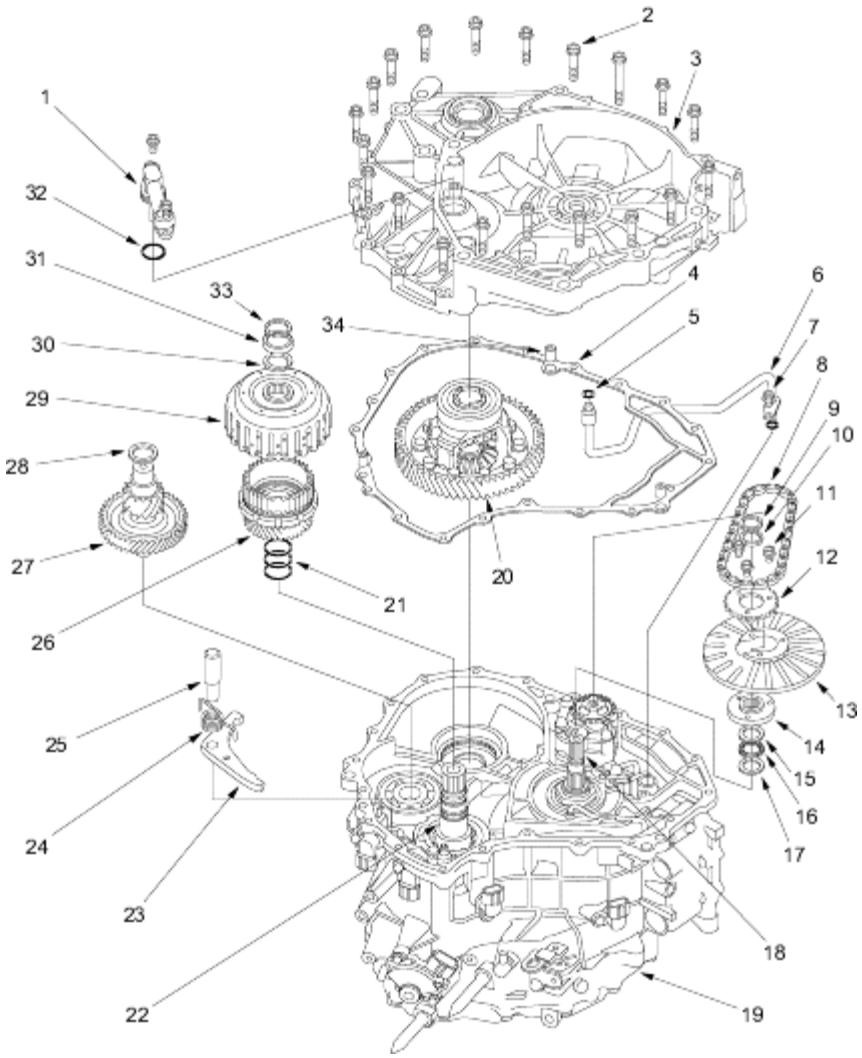


3. 7. Test the ATF strainer by pouring clean ATF through the inlet opening and replace it if it is clogged or damaged.

Transmission Housing/Flywheel Housing

Flywheel Housing and Start Clutch Removal

Exploded View



1. ATF PASSAGE LINE HOLDER ASSEMBLY
2. 8 x 1.25 mm BOLTS
3. FLYWHEEL HOUSING
4. FLYWHEEL HOUSING GASKET, Replace
5. O-RING, Replace
6. ATF PASSAGE LINE ASSEMBLY
7. 6 X 1.0 MM BOLT
8. ATF PUMP DRIVE CHAIN
9. SNAP RING
10. THRUST SHIM, 22 x 28 mm Selective part
11. 6 x 1.0 mm BOLT
12. ATF PUMP DRIVE SPROCKET
13. PITOT FLANGE
14. ATF PUMP DRIVE SPROCKET HUB
15. THRUST WASHER
16. THRUST NEEDLE BEARING
17. THRUST WASHER
18. INPUT SHAFT
19. TRANSMISSION HOUSING
20. DIFFERENTIAL ASSEMBLY
21. O-RING, Replace
22. DRIVEN PULLEY SHAFT
23. PARK PAWL
24. PARK PAWL SPRING
25. PARK PAWL SHAFT
26. SECONDARY DRIVE GEAR ASSEMBLY
27. SECONDARY DRIVE SHAFT
28. THRUST SHIM, 25 x 35 mm Selective part
29. START CLUTCH ASSEMBLY
30. COTTERS, 25.5 mm Selective parts
31. COTTER RETAINER
32. O-RING, Replace
33. SNAP RING
34. DOWEL PIN, 3

Transmission Housing/Flywheel Housing

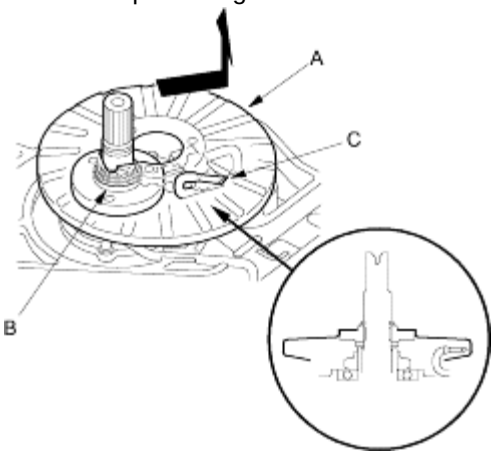
Flywheel Housing and Start Clutch Removal (cont'd)

Special Tools Required

Start clutch remover, 07TAE-P4V0120

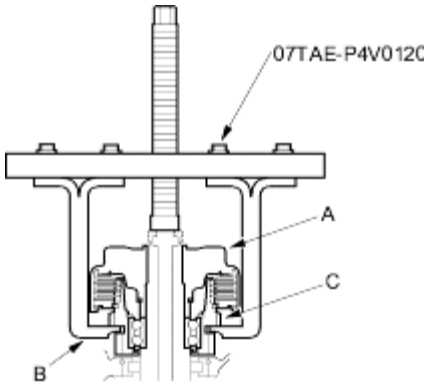
NOTE: Refer to the Exploded View as needed during the following procedure.

1. 1. Remove the ATF passage line holder.
   2. Remove the flywheel housing (20 bolts).
   3. Remove the ATF passage line (one bolt).
   4. Remove the ATF pump drive sprocket (three bolts) and remove the ATF pump drive chain.
   5. Move the pitot flange (A) toward its cutout (B) to clear the pitot pipe (C) under the pitot flange and remove the pitot flange.

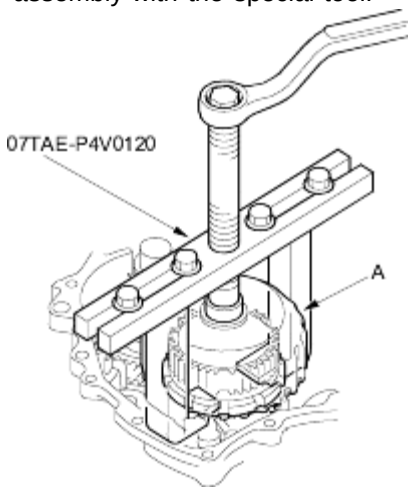


2. 6. Remove the snap ring securing the ATF pump drive sprocket hub and remove the 22 x 28 mm thrust shim, ATF pump drive sprocket hub, thrust washers and thrust needle bearing.
   7. Remove the differential assembly.
   8. Remove the park pawl shaft, park pawl spring and park pawl.
   9. Remove the snap ring securing the start clutch and remove the cotter retainer and the cotters.

1. 10. Set the special tool on the start clutch (A) and attach the pawl (B) of the special tool to the park gear (C) securely. Do not place the pawl of the special tool on the start clutch guide. If the pawl contacts the start clutch guide, the clutch guide may be damaged. Be sure not to allow dust and other foreign particles to enter into the driven pulley shaft.



2. 11. Remove the start clutch (A) and the secondary drive gear assembly with the special tool.



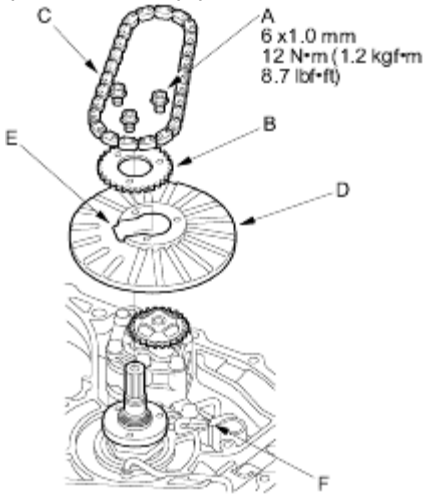
3. 12. Remove the secondary gear shaft.

Transmission Housing/Flywheel Housing
ATF Pump Replacement

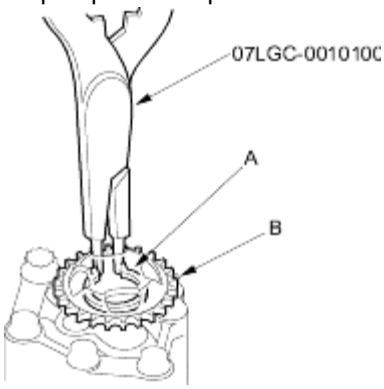
Special Tools Required

Snap ring pliers, 07LGC-0010100

1. 1. Remove the ATF pump drive sprocket bolts (A) and remove the ATF pump drive sprocket (B) and ATF pump drive chain (C).

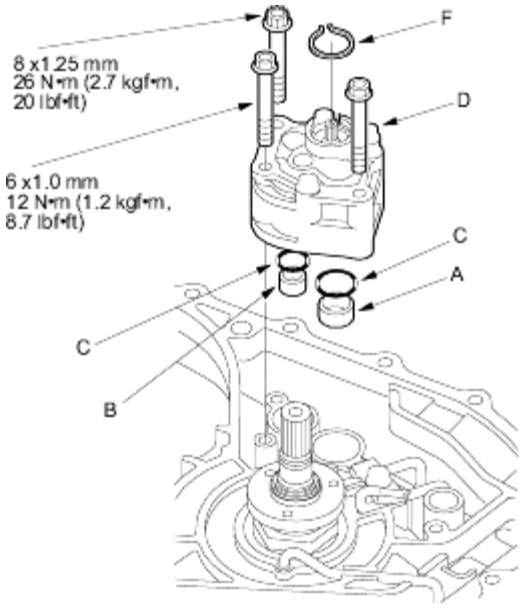


2. 2. Move the pitot flange (D) toward its cutout (E) to clear the pitot pipe (F) under the pitot flange and remove the pitot flange.
   3. Expand the snap ring (A) under the ATF pump driven sprocket (B) with the special tool, then remove the ATF pump driven sprocket.



3. 4. Remove the old ATF pump body from the transmission housing.

1. 5. Install the 22 x 10 mm ATF pipe (A) and 18 x 10 mm pipe (B) in the transmission housing, then install the new O-rings (C) over the ATF pipes.



2. 6. Install the new ATF pump body (D). Do not pinch the O-rings.
   7. Install the snap ring (F) in the snap ring groove.
   8. Install the ATF pump driven sprocket.
   9. Install the pitot flange using its cutout to clear the pitot pipe.
   10. Install the ATF drive chain and ATF drive sprocket.

Transmission Housing/Flywheel Housing

Driven Pulley Shaft Bearing

Removal/Installation

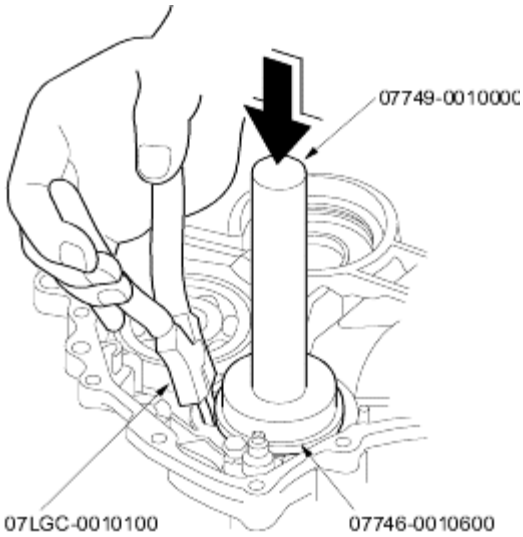
Special Tools Required

- Snap ring pliers, 07LGC-0010100
- Handle driver, 07749-0010000
- Driver attachment, 72 x 75 mm, 07746-0010600

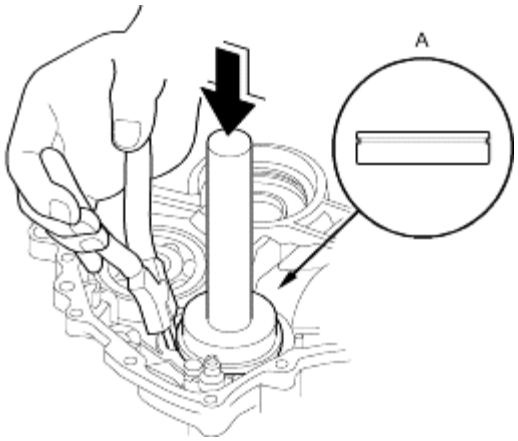
NOTE: Coat all parts with ATF before assembly.

1. 1. To remove the driven pulley shaft bearing from the transmission housing, expand the snap ring with the special tool, then push the bearing out.

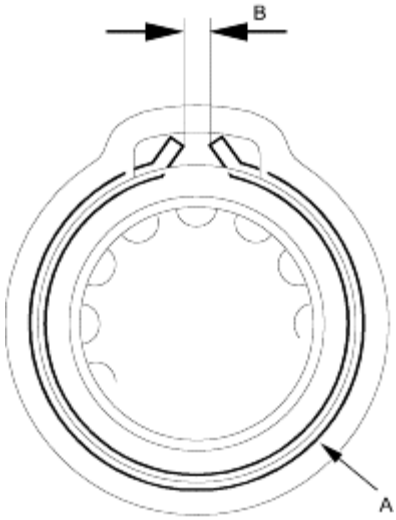
   NOTE: Do not remove the snap ring unless it's necessary to clean the groove in the housing.



1. 2. Install the bearing (A) in the direction shown.



2. 3. Expand the snap ring with the special tool and install the bearing part-way into the housing.
   4. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.
   5. After installing the bearing verify that the snap ring (A) is seated in the bearing and housing grooves and that the ring end gap (B) is correct.



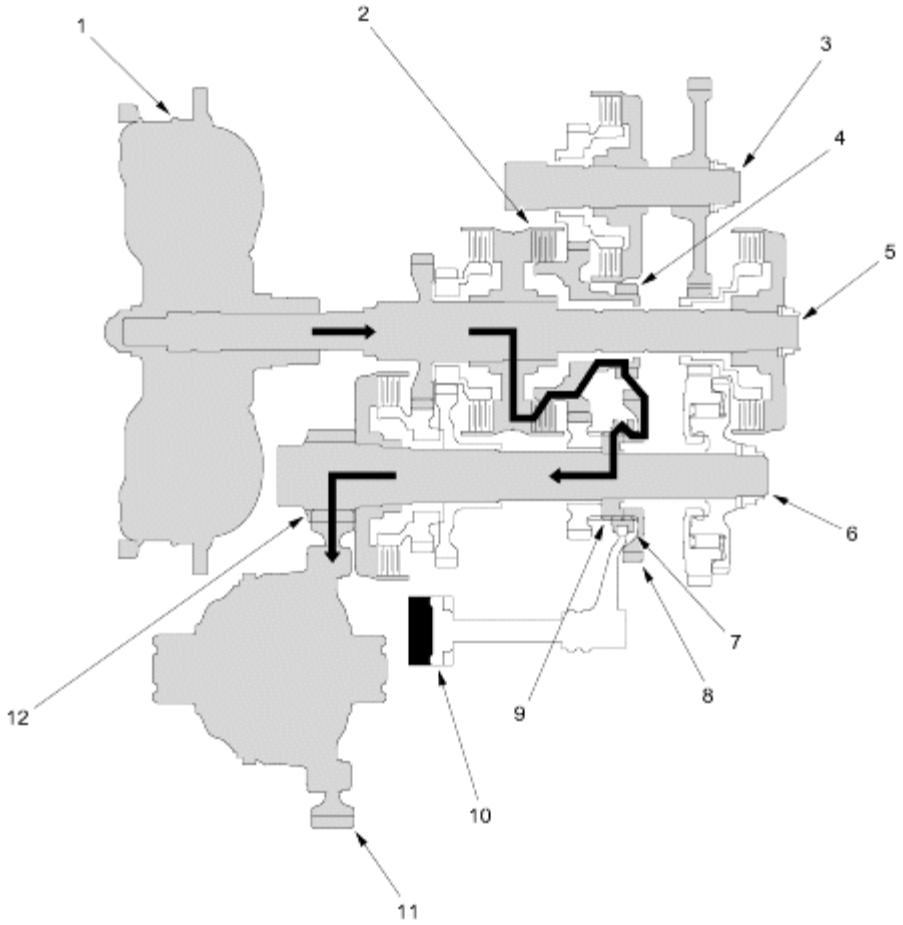
Automatic Transmission
System Description (cont'd)

Power Flow (cont'd)

[R] Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear while the shift lever is in the [R] position.
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear. The countershaft reverse gear drives the reverse selector, reverse selector hub and the countershaft.
- The rotation direction of the countershaft reverse gear is changed via the reverse idler gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

NOTE: The illustration shows the 7-position transmission; 6-position does not have the sub-shaft and related parts.



1. TORQUE CONVERTER
2. 4TH CLUTCH
3. SUB-SHAFT
4. MAINSHAFT REVERSE GEAR
5. MAINSHAFT
6. COUNTERSHAFT
7. REVERSE SELECTOR
8. COUNTERSHAFT REVERSE GEAR
9. REVERSE SELECTOR HUB
10. SERVO VALVE
11. FINAL DRIVEN GEAR
12. FINAL DRIVE GEAR

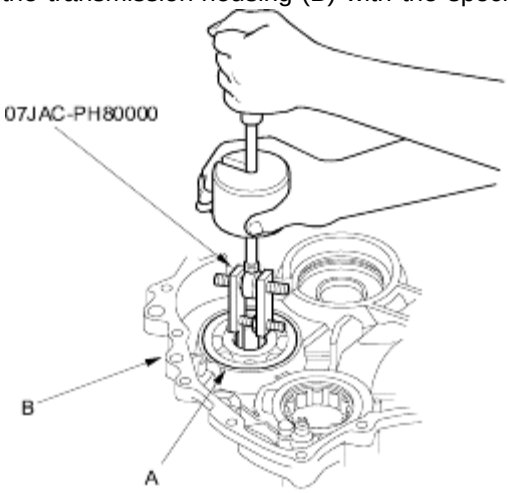
Transmission Housing/Flywheel Housing

Secondary Gear Shaft Transmission Housing Bearing Replacement

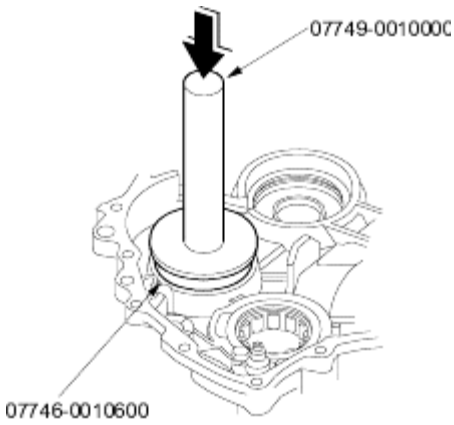
Special Tools Required

- Adjustable bearing remover set, 07JAC-PH80000
- Handle driver, 07749-0010000
- Driver attachment, 72 x 75 mm, 07746-0010600

1. 1. Remove the secondary gear shaft bearing (A) from the transmission housing (B) with the special tool.



2. 2. Install the new secondary gear shaft bearing until it bottoms in the transmission housing with the special tools.

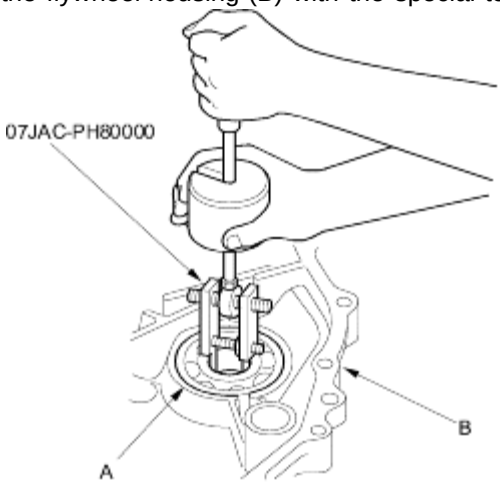


Secondary Gear Shaft Flywheel Housing Bearing Replacement

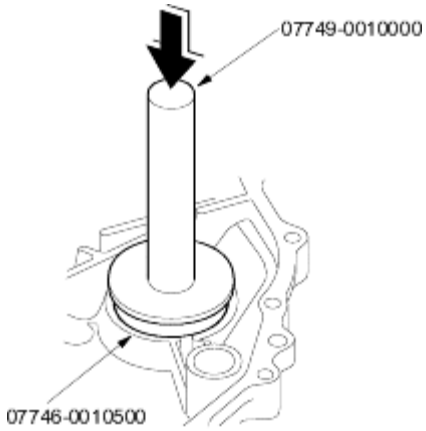
Special Tools Required

- Adjustable bearing remover set, 07JAC-PH80000
- Handle driver, 07749-0010000
- Driver attachment, 62 x 68 mm, 07746-0010500

1. 1. Remove the secondary gear shaft bearing (A) from the flywheel housing (B) with the special tool.



2. 2. Install the new secondary gear shaft bearing until it bottoms in the flywheel housing with the special tools.



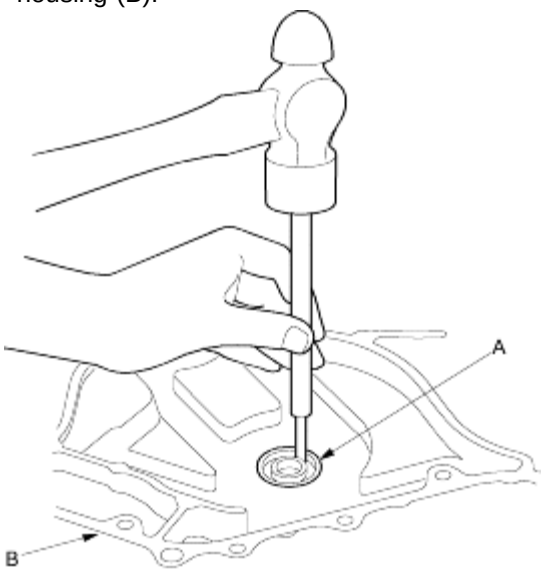
Transmission Housing/Flywheel Housing

Flywheel Housing Input Shaft Oil Seal Replacement

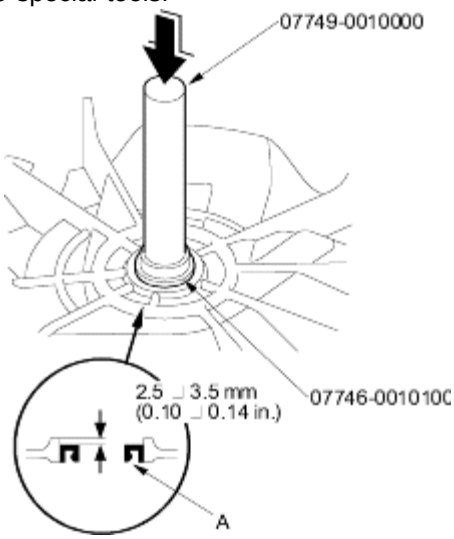
Special Tools Required

- Handle driver, 07749-0010000
- Driver attachment, 32 x 35 mm, 07746-0010100

1. 1. Remove the input shaft oil seal (A) from the flywheel housing (B).

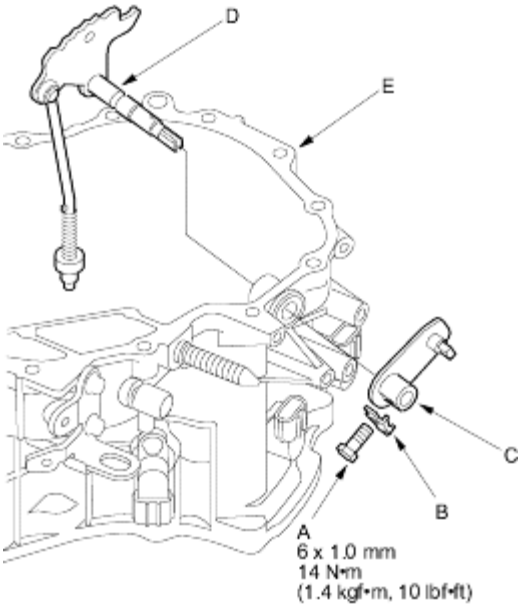


2. 2. Install the oil seal (A) in the flywheel housing (B) with the special tools.



Control Shaft Assembly Removal/Installation

1. 1. Remove the bolt (A) and lock washer (B).

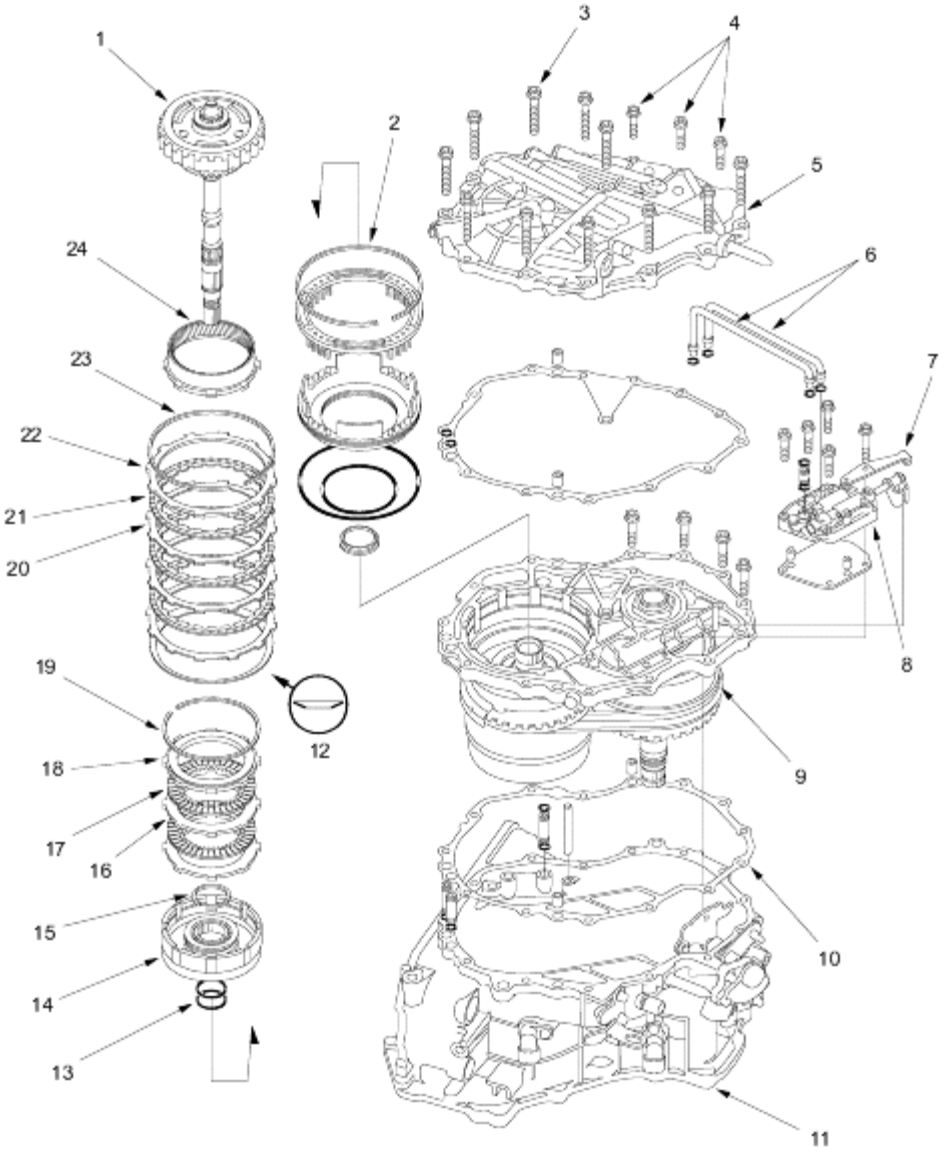


2. 2. Remove the control lever (C) from the control shaft (D).
   3. Remove the control shaft assembly from the transmission housing (E).
   4. Install the control shaft assembly in the transmission housing.
   5. Install the control lever to the control shaft.
   6. Install and tighten the bolt with the new lock washer.

End Cover/Intermediate Housing

Forward Clutch, Reverse Brake and Intermediate Housing Removal

Exploded View



1. INPUT SHAFT/PLANETARY CARRIER ASSEMBLY
2. SNAP RING RETAINER
3. 8 x 1.25 mm, 11 Bolts
4. 6 x 1.0 mm, 3 Bolts
5. END COVER
6. MANUAL VALVE BODY LINES
7. DETENT SPRING
8. MANUAL VALVE BODY
9. INTERMEDIATE HOUSING ASSEMBLY
10. TRANSMISSION HOUSING GASKET
    Replace
11. TRANSMISSION HOUSING
12. DISC SPRING
13. O-RINGS
14. FORWARD CLUTCH
15. SNAP RING
16. PLATE (2)
17. DISCS (2)
18. FORWARD CLUTCH END PLATE
19. SNAP RING
20. PLATES (3)
21. DISC (3)
22. REVERSE BRAKE END PLATE
23. SNAP RING
24. RING GEAR

End Cover/Intermediate Housing

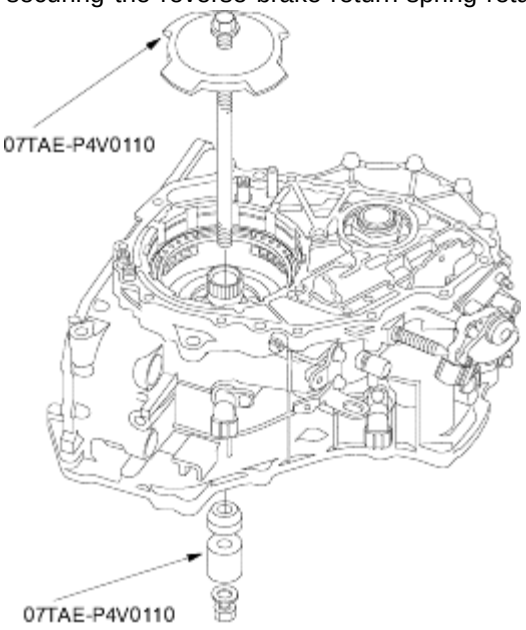
Forward Clutch, Reverse Brake and Intermediate Housing Removal (cont'd)

Special Tools Required

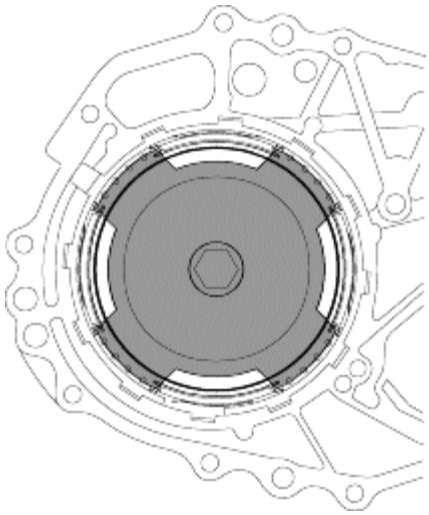
Reverse brake spring compressor, 07TAE-P4V0110

NOTE: Refer to the Exploded View as needed during the following procedure.

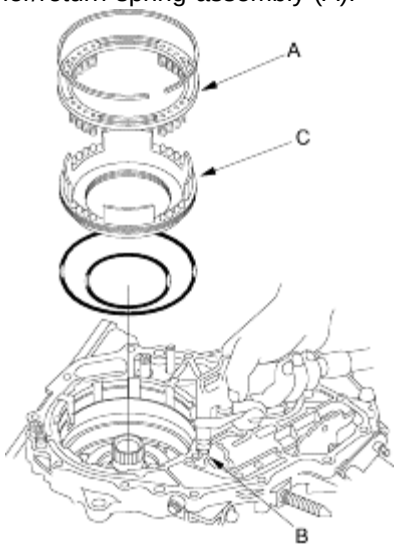
1. 1. Remove the end cover (three; 6 mm bolts and 11; 8 mm bolts).
   2. Remove the manual valve body lines A and B.
   3. Remove the planetary carrier/input shaft assembly and ring gear.
   4. Remove the snap ring securing the reverse brake discs and plates, then remove the reverse brake and plate, discs, plates and disc spring.
   5. Remove the snap ring securing the forward clutch end plate, then remove the forward clutch end plate, discs and plates.
   6. Remove the snap ring securing the forward clutch to the drive pulley shaft, then remove the forward clutch.
   7. Install the special tool to remove the snap ring securing the reverse brake return spring retainer.



1. 8. Compress the return spring with the special tool, then remove the snap ring. Be sure the special tool set over the reverse brake return springs.



2. 9. Remove the special tool, then remove the spring retainer/return spring assembly (A).



3. 10. Apply air pressure to reverse brake pressure circuit hole (B) to remove the reverse brake piston (C).
   11. Remove the snap ring retainer from the drive pulley shaft.
   12. Remove the manual valve body (five bolts) and separator plate.
   13. Remove the roller and push the control shaft toward the outside of the transmission housing, then remove the intermediate housing (four bolts).

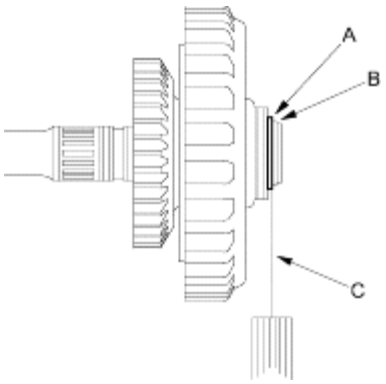
End Cover/Intermediate Housing

Input Shaft and Planetary Carrier Clearance Inspection

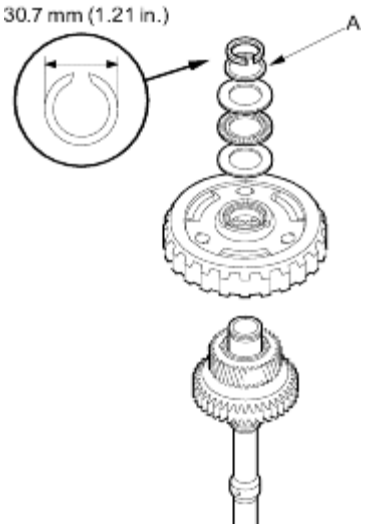
1. 1. Measure the clearance between the 25 x 31 mm thrust shim (A) and the snap ring (B) with a feeler gauge (C).

NOTE: Take measurements in at least 3 places and use the average as the actual clearance.

STANDARD: 0.05-0.115 mm (0.018-0.030 in.)



2. 2. If the clearance is out of standard, remove the 25 x 31 mm thrust shim (A) and measure its thickness.



1. 3. Select and install the new thrust shim and secure them with the snap ring, then recheck.

THRUST SHIM, 25 x 31 mm

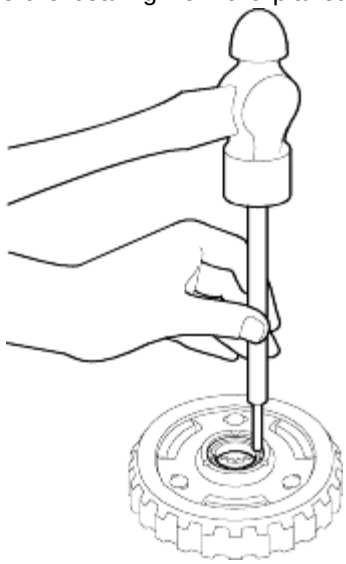
No.	Part Number	Thickness
A	90451-P4V-000	1.05 mm (0.041 in.)
B	90452-P4V-000	1.12 mm (0.044 in.)
C	90453-P4V-000	1.19 mm (0.047 in.)
D	90454-P4V-000	1.26 mm (0.050 in.)
E	90455-P4V-000	1.33 mm (0.052 in.)
F	90456-P4V-000	1.40 mm (0.055 in.)
G	90457-P4V-000	1.47 mm (0.058 in.)
H	90458-P4V-000	1.54 mm (0.061 in.)
I	90459-P4V-000	1.61 mm (0.063 in.)
J	90460-P4V-000	1.68 mm (0.066 in.)
K	90461-P4V-000	1.75 mm (0.069 in.)
L	90462-P4V-000	1.82 mm (0.072 in.)
M	90480-P4V-000	1.085 mm (0.0427 in.)
N	90481-P4V-000	1.155 mm (0.0454 in.)
O	90482-P4V-000	1.225 mm (0.0482 in.)
P	90483-P4V-000	1.295 mm (0.0510 in.)
Q	90484-P4V-000	1.365 mm (0.0537 in.)
R	90485-P4V-000	1.435 mm (0.0565 in.)
S	90486-P4V-000	1.505 mm (0.0593 in.)
T	90487-P4V-000	1.575 mm (0.0620 in.)
U	90488-P4V-000	1.645 mm (0.0648 in.)
V	90489-P4V-000	1.715 mm (0.0675 in.)
W	90490-P4V-000	1.785 mm (0.0703 in.)

2. 4. After replacing the 25 x 31 mm thrust shim, make sure that the clearance is within tolerance.
5. Verify that the snap ring outside diameter is 30.7 mm (1.21 in.) or less.

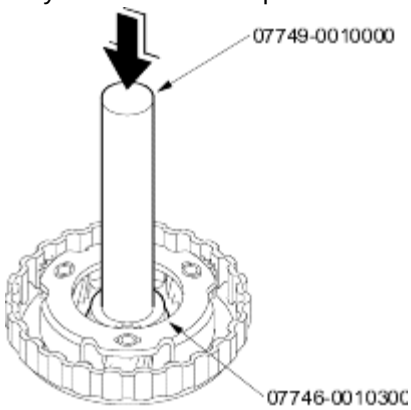
End Cover/Intermediate Housing
Planetary Carrier Bearing Replacement

Special Tools Required
- Handle driver, 07749-0010000
- Driver attachment, 42 x 47 mm, 07746-0010300

1. 1. Remove the bearing from the planetary carrier.

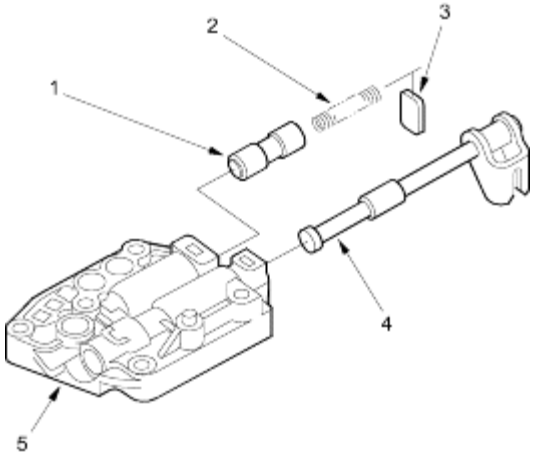


2. 2. Install the new bearing until it bottoms in the planetary carrier with the special tools.



14-365 Manual Valve Body Disassembly, Inspection and Reassembly

1. 1. Clean all parts thoroughly in solvent or carburettor cleaner and dry with compressed air. Blow out all passages.
2. 2. Coat all parts with ATF during assembly.



3. 1. REVERSE INHIBITOR VALVE
   2. REVERSE INHIBITOR VALVE SPRING
   3. VALVE SPRING SEAT
   4. MANUAL VALVE
   5. MANUAL VALVE BODY

   Inspect for wear, scratches and scoring.

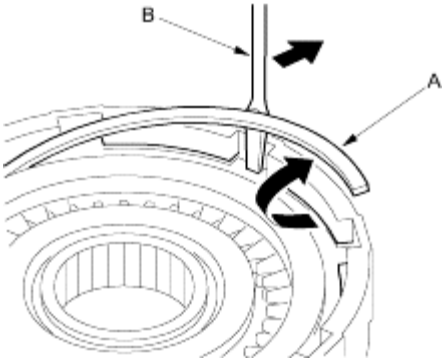
Forward Clutch

Clutch Disassembly

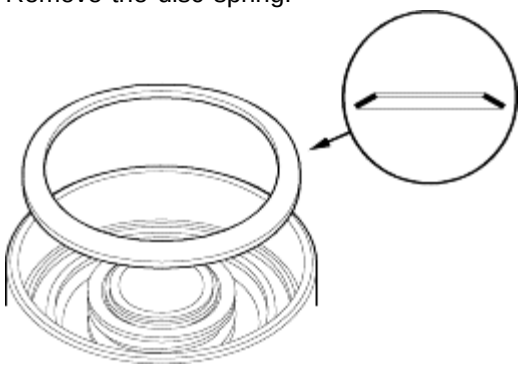
Special Tools Required

- Clutch spring compressor set, 07LAE-PX40000
  - Clutch spring compressor attachment, 07LAE-PX40100
  - Clutch spring compressor attachment, 07HAE-PL50101
  - Clutch spring compressor bolt assembly, 07GAE-PG40200
- Snap ring pliers, 07LGC-0010100

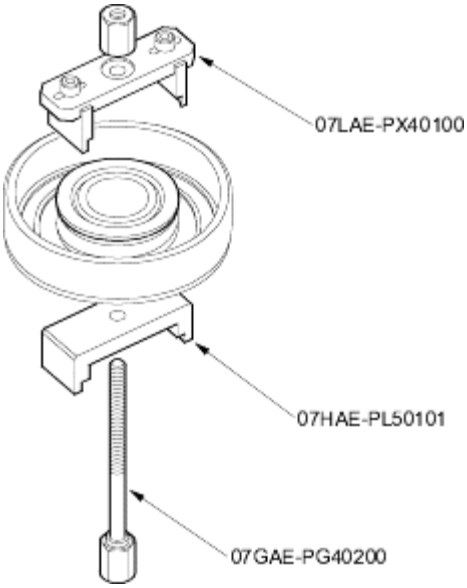
1. 1. Remove the snap ring (A), then remove the clutch end plate, the clutch discs and the plates with a screwdriver (B).



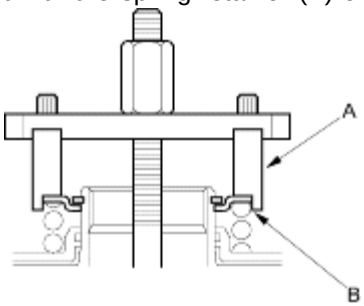
2. 2. Remove the disc spring.



1. 3. Install the special tool on the clutch assembly.



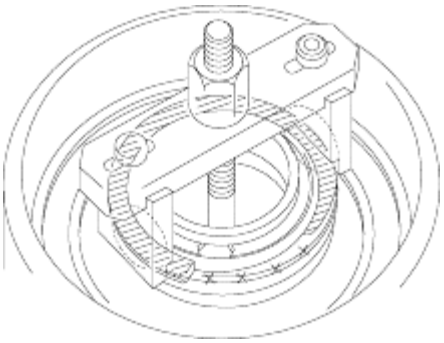
2. 4. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutch.



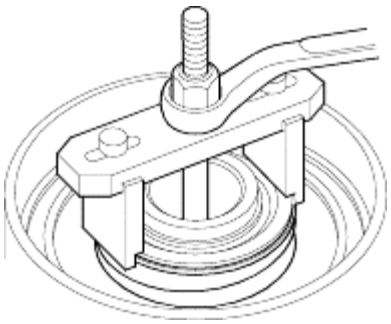
Forward Clutch

Clutch Disassembly (cont'd)

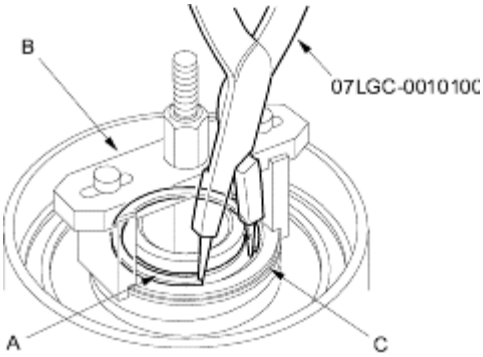
1. 5. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



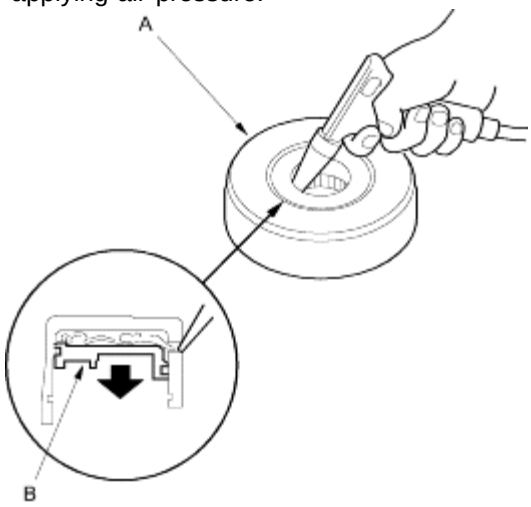
2. 6. Compress the spring until the snap ring can be removed.



1. 7. Remove the snap ring (A). Then remove the special tools (B), spring retainer (C) and return spring.

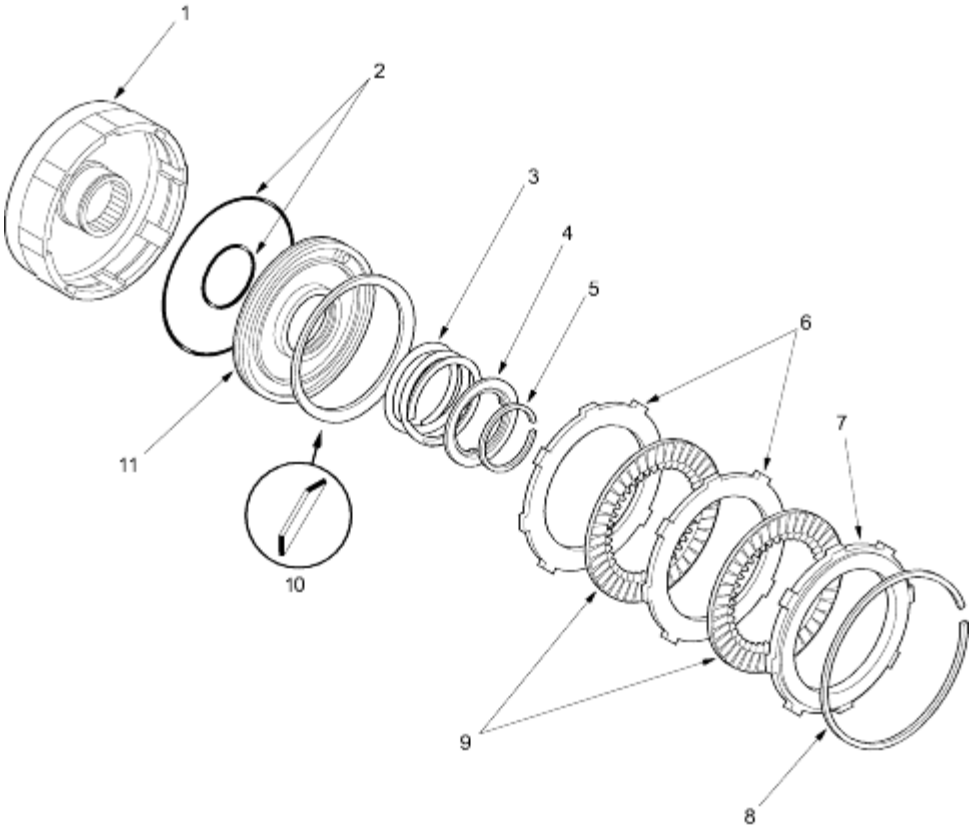


2. 8. Wrap a shop rag around the clutch drum (A) and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other end while applying air pressure.



Forward Clutch

Clutch Inspection



1. CLUTCH DRUM
2. O-RINGS, Replace
3. RETURN SPRING
4. SPRING RETAINER
5. SNAP RING
6. CLUTCH PLATES, 2
7. CLUTCH END PLATE
8. SNAP RING
9. CLUTCH DISC, 2
10. DISC SPRING
11. CLUTCH PISTON

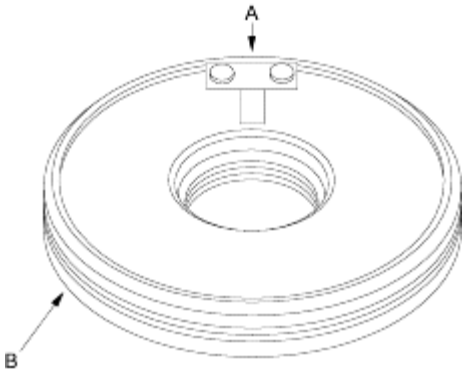
Forward Clutch

Clutch Reassembly

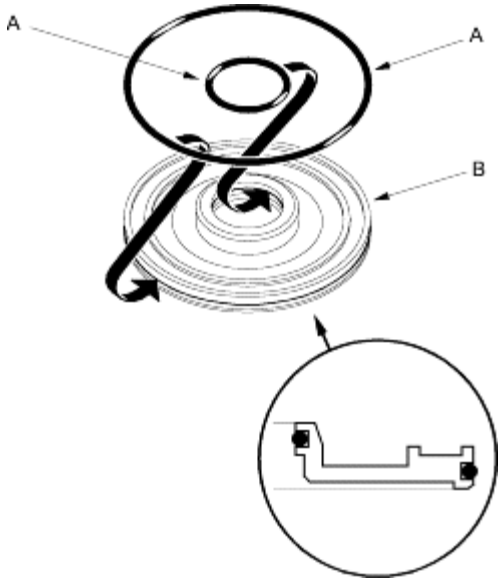
Special Tools Required

- Clutch spring compressor set, 07LAE-PX40000
  - Clutch spring compressor attachment, 07LAE-PX40100
  - Clutch spring compressor attachment, 07HAE-PL50101
  - Clutch spring compressor bolt assembly, 07GAE-PG40200
- Snap ring pliers, 07LGC-0010100

1. 1. Inspect the check valve (A); if it's loose, replace the piston (B).

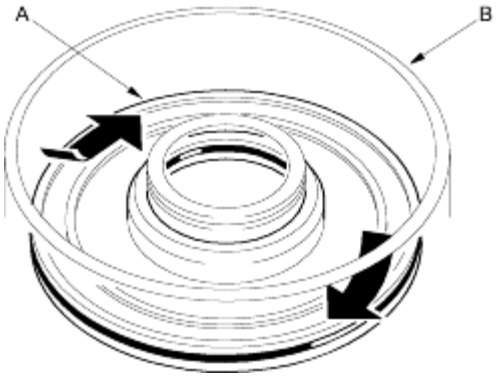


1. 2. Install new O-rings (A) on the piston (B).



2. 3. Install the piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating.

Lubricate the piston O-ring with ATF before installing. Do not pinch the O-ring by installing the piston with too much force.



Automatic Transmission
System Description (cont'd)

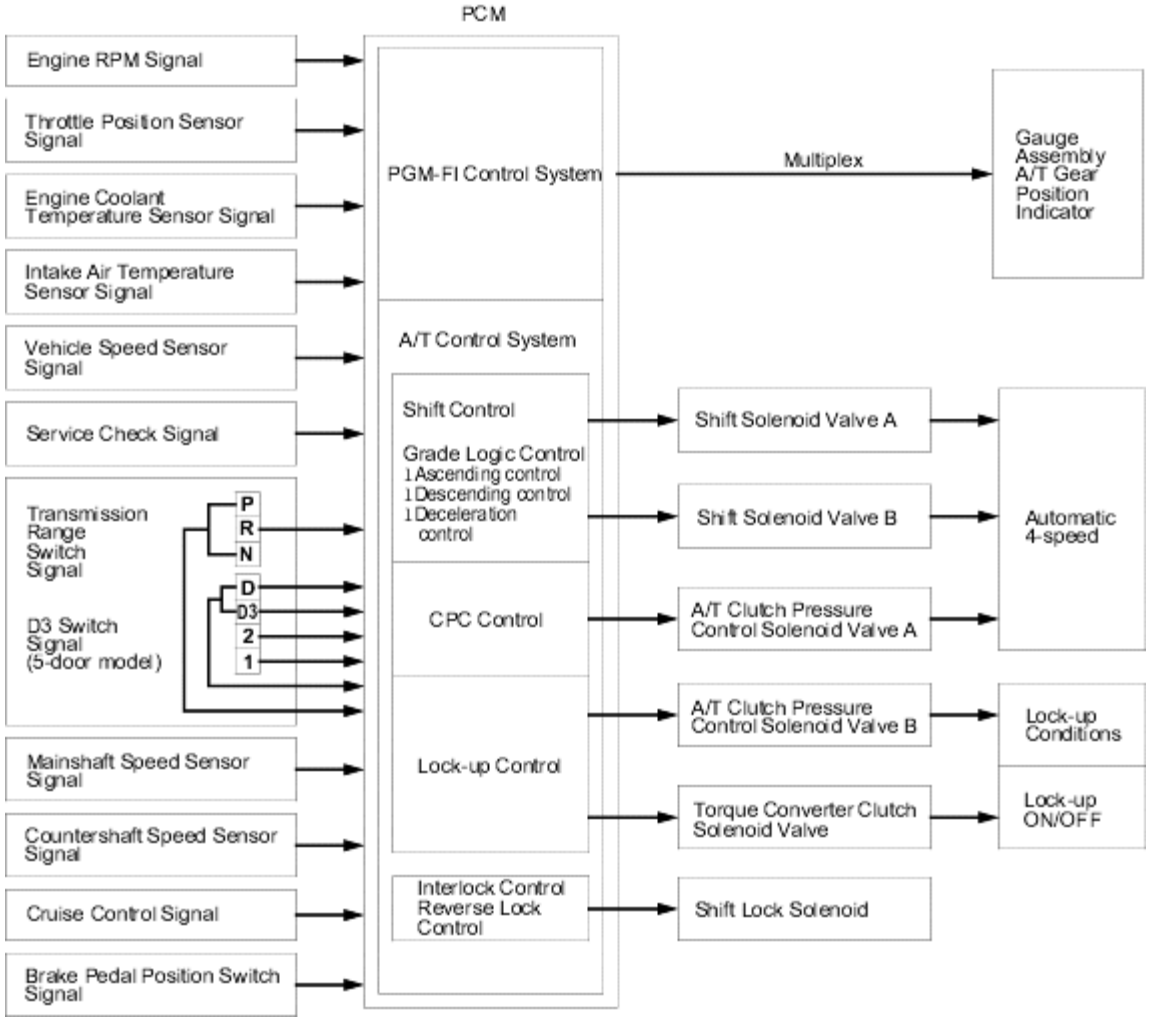
Electronic Control System

Functional Diagram

The electronic control system consists of the Powertrain Control Module (PCM), sensors, switches and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM inputs signals from the sensors, switches and other control units, perform processing data and outputs signals for engine control system and A/T control system. The A/T control system includes shift control, grade logic control, CPC control and lock-up control is stored in the PCM.

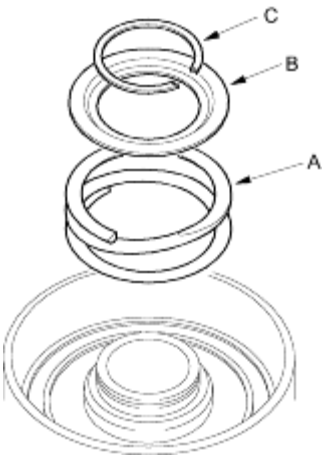
The PCM switches the shift solenoid valves, A/T clutch pressure control solenoid valves and torque converter clutch solenoid valve on hydraulic circuit to control shifting transmission gears and lock-up torque converter clutch.



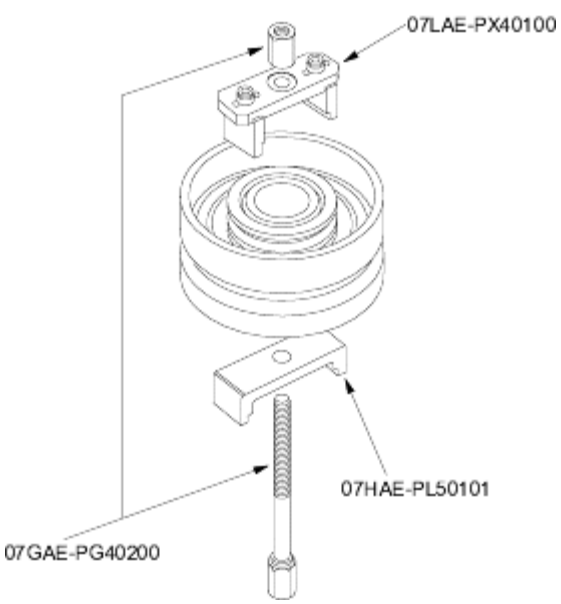
Forward Clutch

Clutch Reassembly (cont'd)

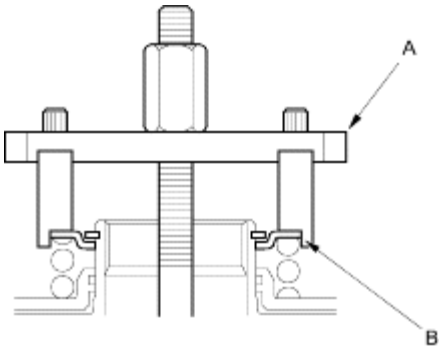
1. 4. Install the return spring (A) and spring retainer (B) and position the snap ring (C) on the retainer.



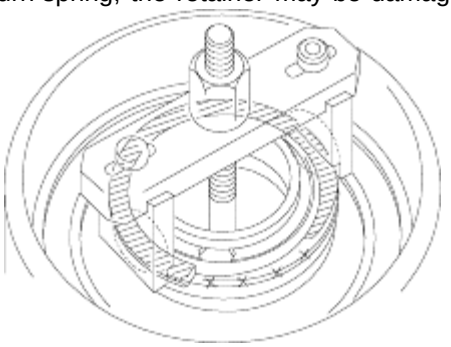
2. 5. Install the special tool.



1. 6. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutches.

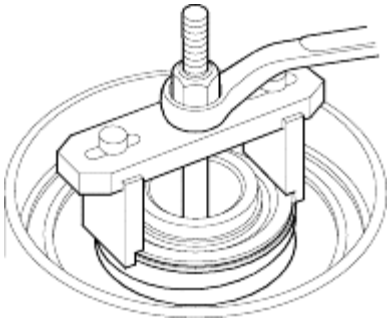


2. 7. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.

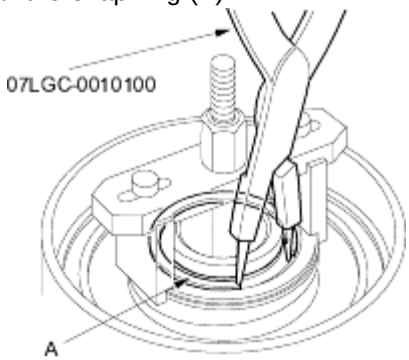


Forward Clutch
Clutch Reassembly (cont'd)

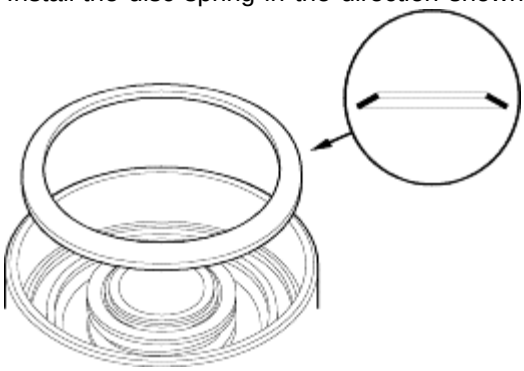
1. 8. Compress the return spring.



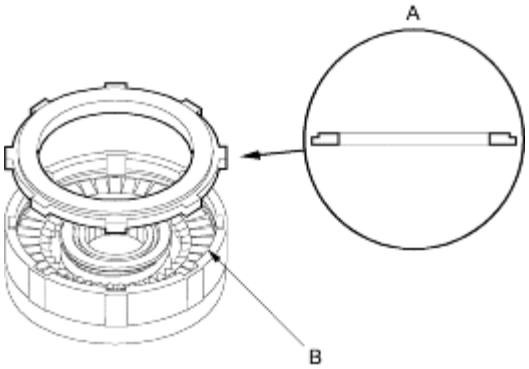
2. 9. Install the snap ring (A).



1. 10. Remove the special tools.
2. 11. Install the disc spring in the direction shown.



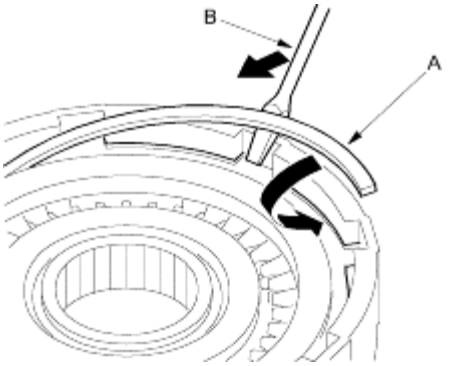
3. 12. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes. Before installing the plates and discs, make sure the inside of the clutch drum is free of dirt and other foreigNmatter.
   13. Starting with a clutch plate, alternately install the clutch plates and discs. Install the clutch end plate (A) with the flat side toward the disc (B).



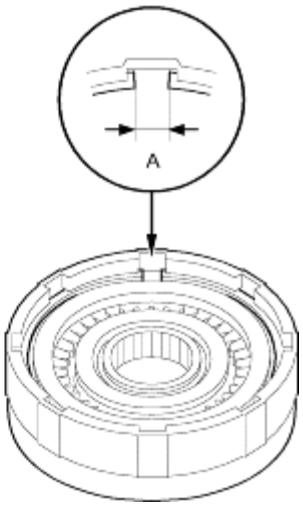
Forward Clutch

Clutch Reassembly (cont'd)

1. 14. Install the snap ring (A) with a screwdriver (B).



2. 15. Verify that the snap ring end gap (A) is 7.9 mm (0.31 in.) and above.

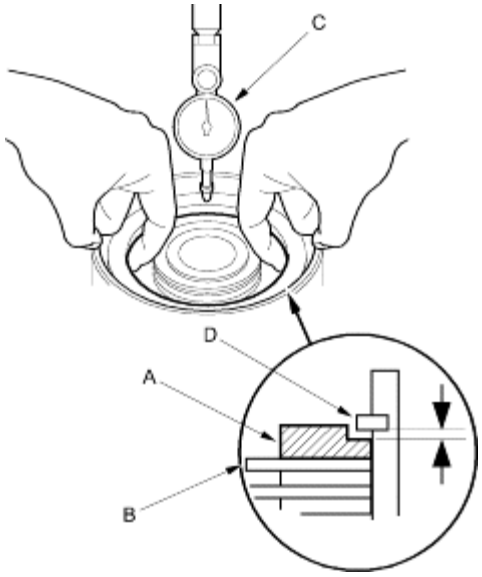


1. 16. Measure the clearance between the clutch end plate (A) and top disc (B) with a dial indicator (C). Zero the dial indicator with the clutch end plate lowered and lift it up to the snap ring (D). The distance that the clutch end plate moves is the clearance between the clutch end plate and top disc.

NOTE: Take measurements in at least three places and use the average as the actual clearance.

Clutch End Plate-to-Top Disc Clearance:

Service Limit: 0.6-0.8 mm (0.024-0.031 in.)



Forward Clutch
Clutch Reassembly (cont'd)

1. 17. If the clearance is out of the service limit, select a new clutch end plate from following table, then recheck.

NOTE: If the thickest clutch end plate is installed, but the clearance is still over the standard, replace the clutch discs and clutch plates.



FORWARD CLUTCH END PLATE

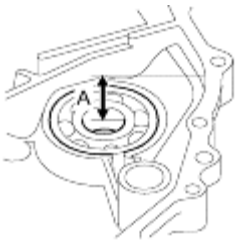
Mark	Part Number	Thickness
15	22561-P4V-003	3.5 mm (0.138 in.)
16	22562-P4V-003	3.6 mm (0.142 in.)
17	22563-P4V-003	3.7 mm (0.146 in.)
18	22564-P4V-003	3.8 mm (0.150 in.)
19	22565-P4V-003	3.9 mm (0.154 in.)
20	22566-P4V-003	4.0 mm (0.157 in.)
21	22567-P4V-003	4.1 mm (0.161 in.)
22	22568-P4V-003	4.2 mm (0.165 in.)
23	22569-P4V-003	4.3 mm (0.169 in.)
24	22570-P4V-003	4.4 mm (0.173 in.)
25	22571-P4V-003	4.5 mm (0.177 in.)
26	22572-P4V-003	4.6 mm (0.181 in.)
27	22573-P4V-003	4.7 mm (0.185 in.)
14	22574-P4V-003	3.4 mm (0.134 in.)

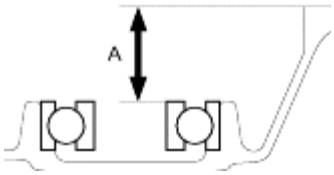
2. 18. After replacing the clutch end plate, make sure that the clearance is within tolerance.

Secondary Gear Shaft

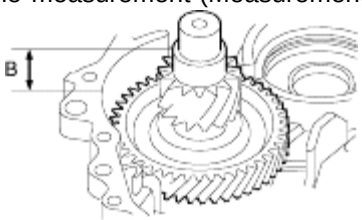
25 x 35 mm Thrust Shim Selection

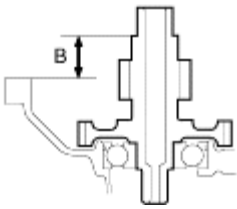
1. 1. Measure the distance between the flywheel housing surface and the ball bearing as shown, then note the measurement (Measurement A).





2. 2. Install the secondary gear shaft on the transmission housing.
   3. Measure the distance between the transmission housing surface and the thrust shim mounting surface of the secondary gear shaft as shown, then note the measurement (Measurement B).





1. 4. Calculate 25 x 35 mm thrust shim thickness by following formula so that the secondary gear shaft thrust clearance comes into the tolerance.

Secondary Gear Shaft Thrust Clearance:

STANDARD: 0-0.15 mm (0-0.006 in.)

FORMULA:

25 x 35 mm Thrust Shim Thickness:

= Measurement A-Measurement B + Flywheel Housing Gasket Thickness: 0.5 mm (0.020 in.)

Example:

Measurement A: 32.7 mm (1.287 in.)

Measurement B: 30.1 mm (1.185 in.)

25 x 35 mm Thrust Shim Thickness

= 32.7 mm (1.287 in.)-30.1 mm (1.185 in.) + 0.5 mm (0.020 in.)

= 3.1 mm (0.122 in.)

You can select the thickness between 3.1 mm (0.122 in.) and 2.95 mm (0.116 in.).

The thrust shim can be used C or D in this case.

2. 5. Select the 25 x 35 mm thrust shim from the following table.

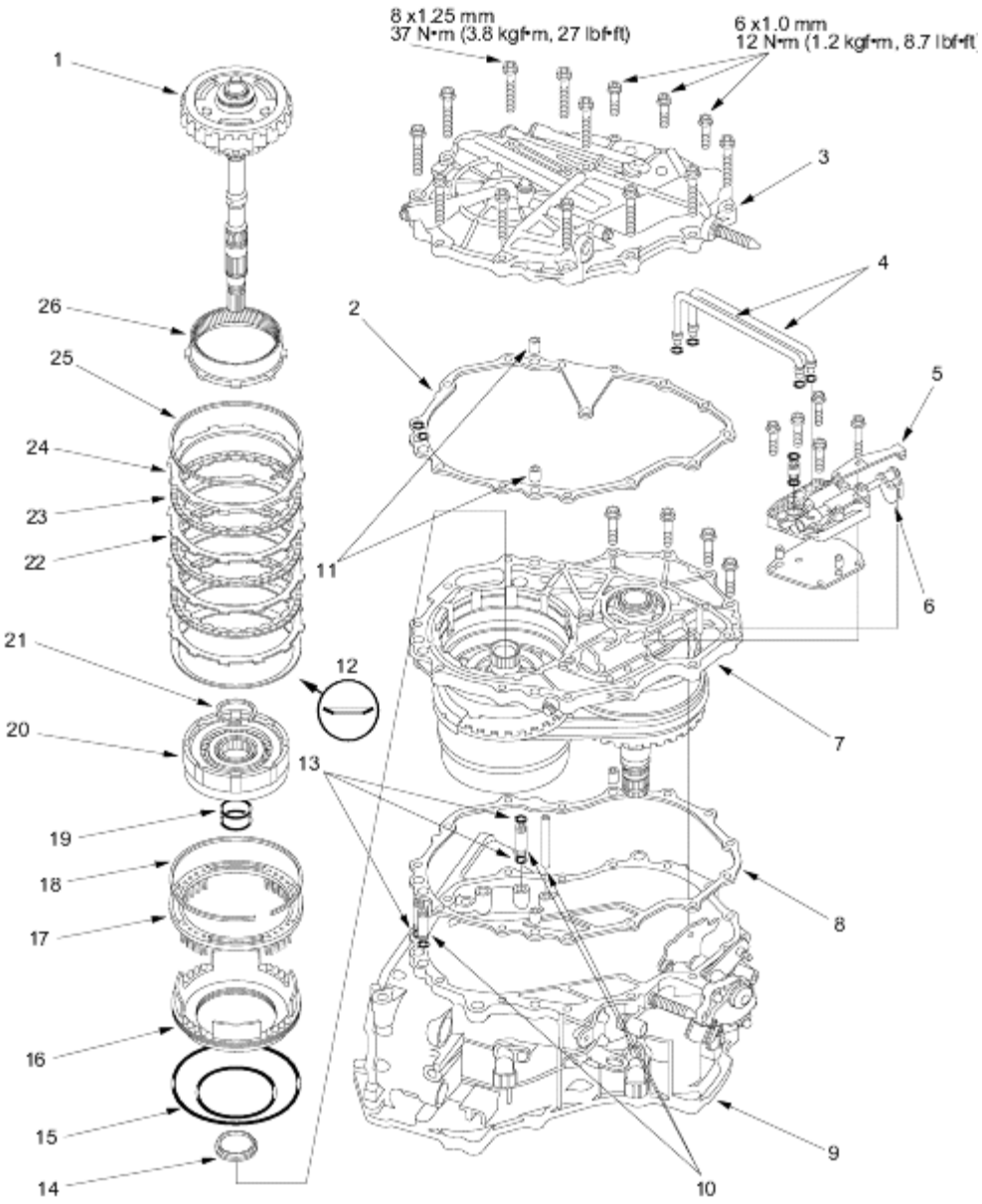
THRUST SHIM, 25 x 35 mm

No.	Part Number	Thickness
A	90551-P4V-000	2.8 mm (0.110 in.)
B	90552-P4V-000	2.9 mm (0.114 in.)
C	90553-P4V-000	3.0 mm (0.118 in.)
D	90554-P4V-000	3.1 mm (0.122 in.)
E	90555-P4V-000	3.2 mm (0.126 in.)
F	90556-P4V-000	3.3 mm (0.130 in.)
G	90557-P4V-000	3.4 mm (0.134 in.)
H	90558-P4V-000	3.5 mm (0.138 in.)
I	90559-P4V-000	3.6 mm (0.142 in.)
J	90560-P4V-000	3.7 mm (0.146 in.)
K	90561-P4V-000	3.8 mm (0.150 in.)

End Cover/Intermediate Housing

Intermediate Housing, Reverse Brake and Forward Clutch Installation

Exploded View



1. INPUT SHAFT/PLANETARY CARRIER ASSEMBLY
2. END COVER GASKET
3. END COVER
4. MANUAL VALVE BODY LINES
5. DETENT SPRING
6. MANUAL VALVE BODY
7. INTERMEDIATE HOUSING ASSEMBLY
8. TRANSMISSION HOUSING GASKET
   Replace
9. TRANSMISSION HOUSING
10. ATF FEED PIPES
11. DOWEL PINS
12. DISC SPRING
13. O-RINGS
14. SNAP RING RETAINER
15. O-RINGS
16. REVERSE BRAKE PISTON
17. REVERSE BRAKE RETURN SPRING/RETAINER
18. SNAP RING
19. O-RINGS
20. FORWARD CLUTCH END PLATE
21. SNAP RING
22. PLATES (3)
23. DISCS (3)
24. REVERSE BRAKE END PLATE
25. SNAP RING
26. RING GEAR

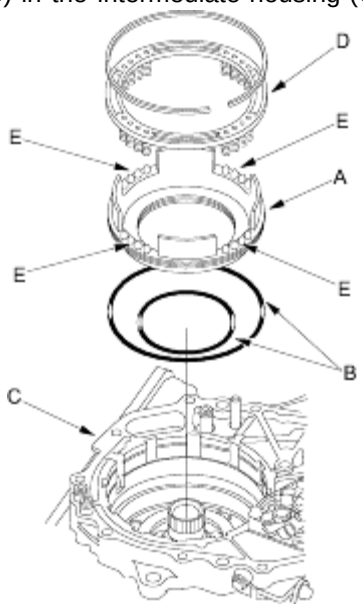
End Cover/Intermediate Housing

Intermediate Housing, Reverse Brake and Forward Clutch Installation (cont'd)

Special Tools Required

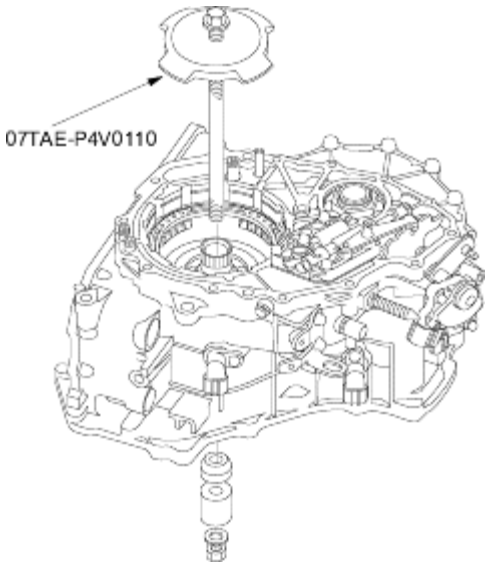
Reverse brake spring compressor, 07TAE-P4V0110

1. 1. Install the ATF feed pipe in the transmission housing and install the three ATF feed pipes with the new O-rings in the transmission housing.
   2. Install the two dowel pins and new transmission gasket on the transmission housing.
   3. Push the control shaft toward the outside of the transmission housing, then install the intermediate housing (four bolts).
   4. Install the manual valve body separator plate and two dowel pins on the intermediate housing and install the manual valve body with the detent spring (five bolts).
   5. Put the control shaft back, then install the roller in the intermediate housing with aligning the groove on the control shaft.
   6. Install the reverse brake piston (A) with the new O-ring (B) in the intermediate housing (C).

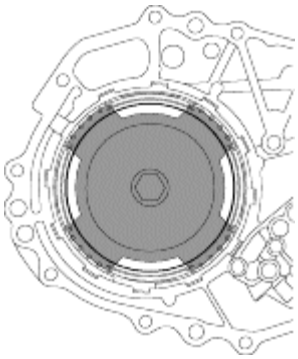


2. 7. Install the spring retainer/return spring assembly (D); Install the return springs on the spring guides (E) on the reverse brake piston.

1. 8. Install the special tool through the drive pulley shaft to compress the return spring. Be sure the special tool (spring compressor attachment) is set over the return springs, not over the reverse brake piston.



2. 9. Compress the return springs with making sure that the special tool set over the return springs and the spring retainer tabs does not ride on the reverse brake piston.

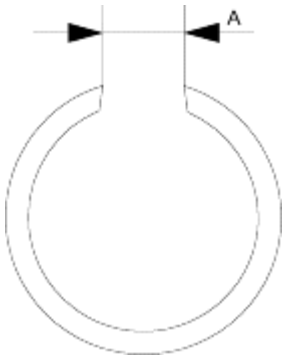


3. 10. Install the snap ring in the intermediate housing above the spring retainer.

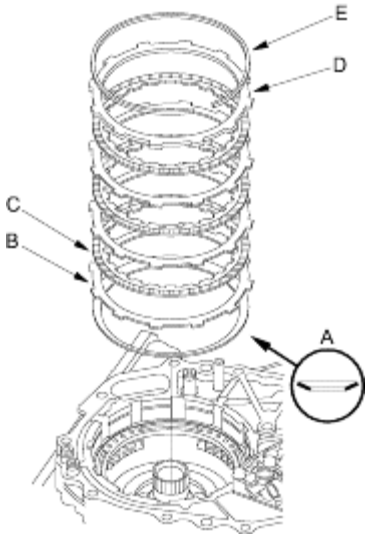
End Cover/Intermediate Housing

Intermediate Housing, Reverse Brake and Forward Clutch Installation (cont'd)

1. 11. Verify that the snap ring end gap (A) is 15 mm (0.59 in.) and above.

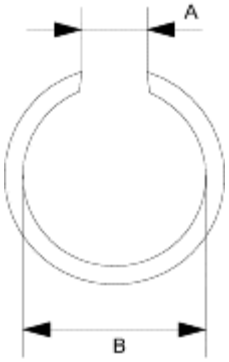


2. 12. Soak the reverse brake discs thoroughly in ATF for a minimum of 30 minutes. Before installing the plates and discs, make sure the inside of the clutch drum is free of dirt and other foreign matter.
   13. Install the disc spring (A) in the direction shown.



3. 14. Starting with a reverse brake plate (B), alternately install the plates and discs (C). Install the reverse brake end plate (D) and snap ring (E).

1. 15. Verify that the snap ring end gap (A) is 18 mm (0.71 in.) and above and the inside diameter (B) of the snap ring is 143.5 mm (5.65 in.) and above.

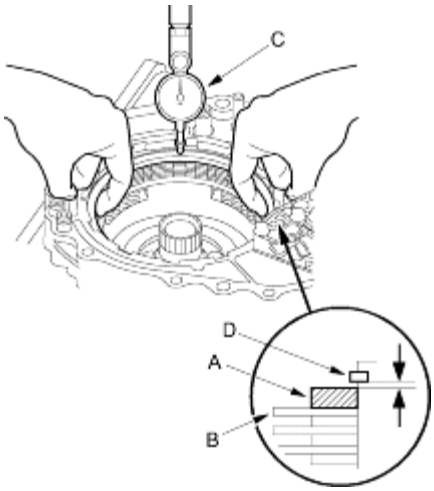


2. 16. Measure the clearance between the reverse brake end plate (A) and top disc (B) with a dial indicator (C). Zero the dial indicator with the reverse brake end plate lowered and lift it up to the snap ring (D). The distance that the end plate moves is the clearance between the end plate and top disc.

NOTE: Take measurements in at least three places and use the average as the actual clearance.

Reverse Brake End Plate-to-Top Disc Clearance:

Service Limit: 0.45-0.75 mm (0.018-0.030 in.)



End Cover/Intermediate Housing

Intermediate Housing, Reverse Brake and Forward Clutch Installation (cont'd)

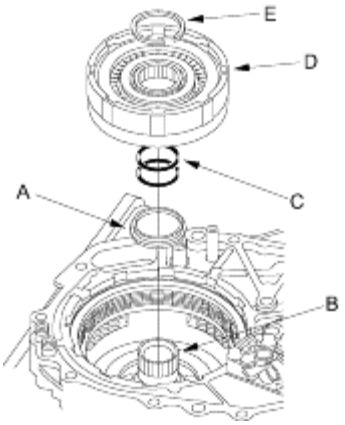
1. 17. If the clearance is out of the service limit, select a new reverse brake end plate from following table, then recheck.

NOTE: If the thickest end plate is installed, but the clearance is still over the standard, replace the reverse brake discs and plates.

REVERSE BRAKE END PLATE

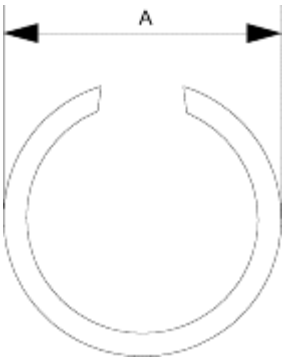
Plate No.	Part Number	Thickness
1	22551-P4V-003	3.6 mm (0.142 in.)
2	22552-P4V-003	3.8 mm (0.150 in.)
3	22553-P4V-003	4.0 mm (0.157 in.)
4	22554-P4V-003	4.2 mm (0.165 in.)
5	22555-P4V-003	4.4 mm (0.173 in.)
6	22556-P4V-003	4.6 mm (0.181 in.)
7	22557-P4V-003	4.8 mm (0.189 in.)
8	22558-P4V-003	5.0 mm (0.200 in.)

2. 18. After replacing the reverse brake end plate, make sure that the clearance is within tolerance.
19. Install the snap ring retainer (A) over the drive pulley shaft (B).

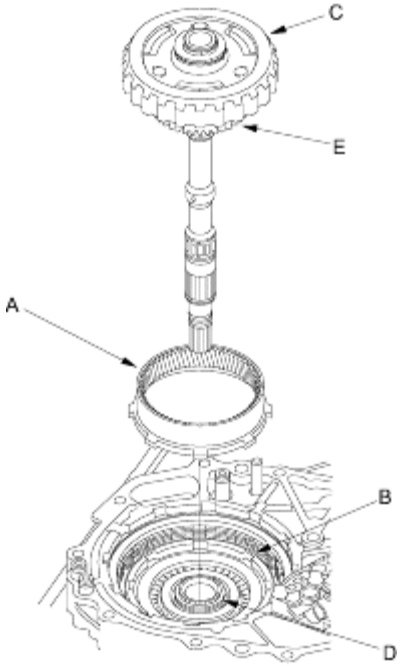


3. 20. Wrap the drive pulley shaft splines with tape to prevent O-ring damage. Install new O-ring (C) in the drive pulley shaft O-ring grooves, then remove the tape.
21. Install the forward clutch (D) on the drive pulley shaft, then install the snap ring (E) to secure the forward clutch.

1. 22. Verify that the snap ring outside diameter is 41.4 mm (1.63 in.) or less.



2. 23. Install the ring gear (A) on the forward clutch (B).

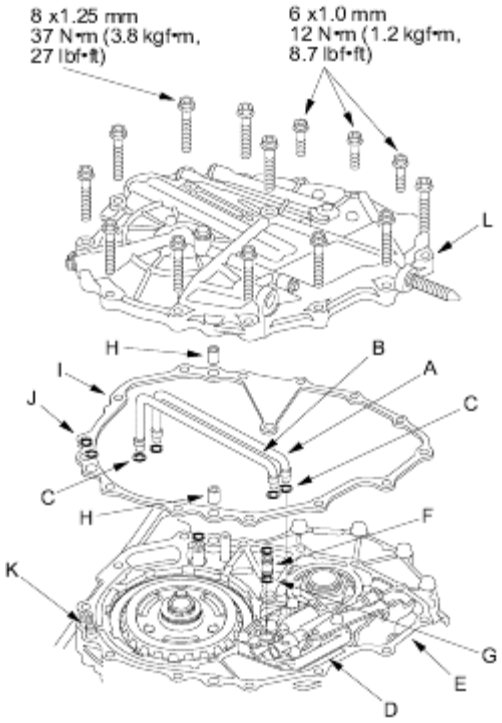


3. 24. Install the input shaft/planetary carrier assembly (C) through the drive pulley shaft (D) with aligning the sun gear (E) to the clutch discs and aligning the planetary carrier to the reverse brake discs.

End Cover/Intermediate Housing

Intermediate Housing, Reverse Brake and Forward Clutch Installation (cont'd)

1. 25. Install the manual valve body lines A and B with the new O-rings (C) on the manual valve body (D) and the intermediate housing (E).

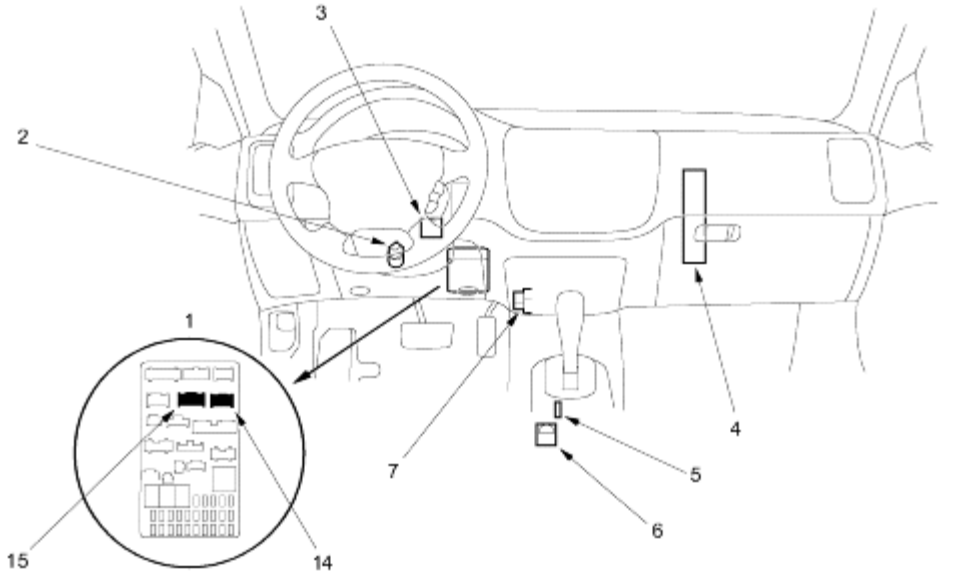


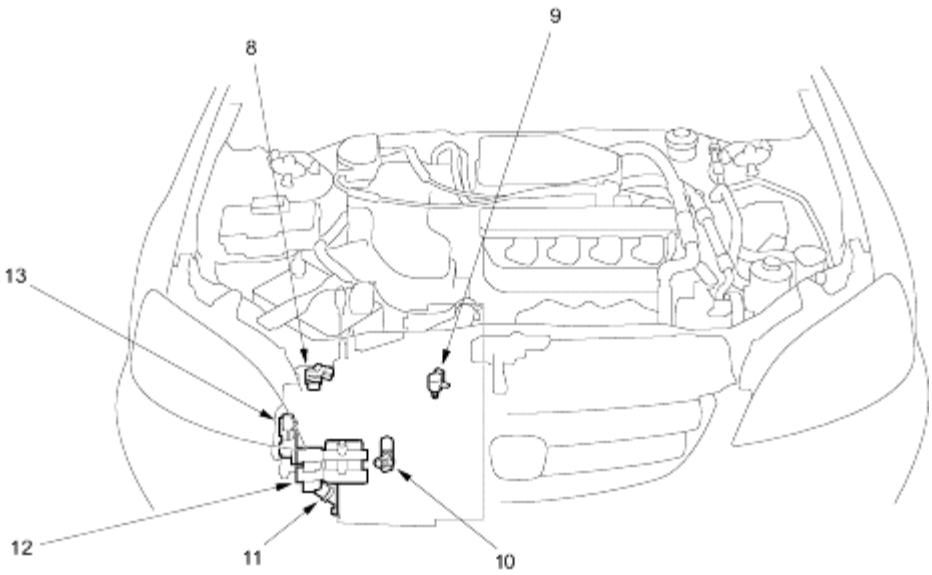
2. 26. Install the ATF feed pipe (F) with the new O-rings (G).
   27. Install the two dowel pins (H) and the new end cover gasket (I) on the intermediate housing, then install the new O-rings (J) over the ATF feed pipes (K).
   28. Install the end cover (L) (three; 6 mm bolts and 11; 8 mm bolts).

Automatic Transmission
System Description (cont'd)

Electronic Control System (cont'd)

Electronic Controls Location: 4-door Model





1. UNDER-DASH FUSE/RELAY BOX MULTIPLEX CONTROL UNIT
2. BRAKE PEDAL POSITION SWITCH
3. KEY INTERLOCK SOLENOID
4. POWERTRAIN CONTROL MODULE (PCM)
5. PARK PIN SWITCH
6. SHIFT LOCK SOLENOID
7. DATA LINK CONNECTOR (16P)
8. COUNTERSHAFT SPEED SENSOR
9. TORQUE CONVERTER CLUTCH SOLENOID VALVE
10. MAINSHAFT SPEED SENSOR
11. SHIFT SOLENOID VALVES A and B
12. A/T CLUTCH PRESSURE CONTROL SOLENOID VALVES A and B
13. TRANSMISSION RANGE SWITCH
14. No. 10 CONNECTOR (12P)
15. No. 9 CONNECTOR (10P)

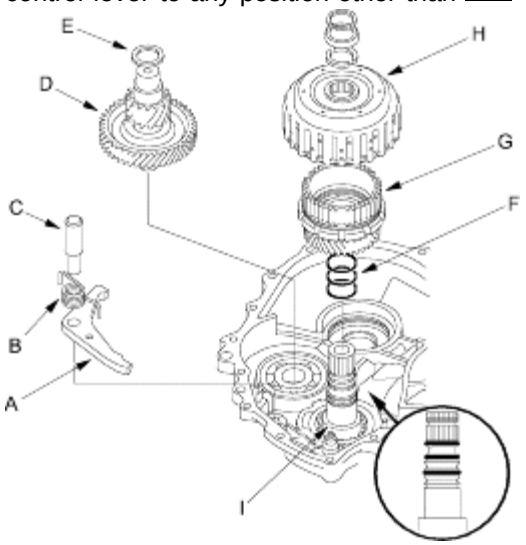
Transmission Housing/Flywheel Housing

Start Clutch and Flywheel Housing Installation

Special Tools Required

Start clutch installer, 07TAE-P4V0130

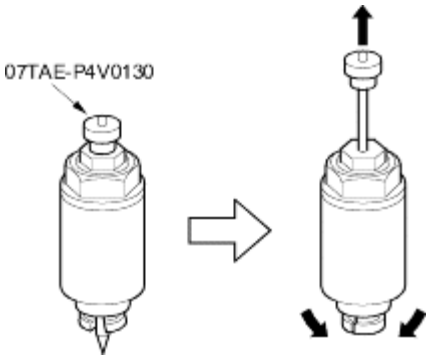
1. 1. Install the park pawl (A), pawl spring (B) and pawl shaft (C) in the transmission housing, theNmove the control lever to any position other than P



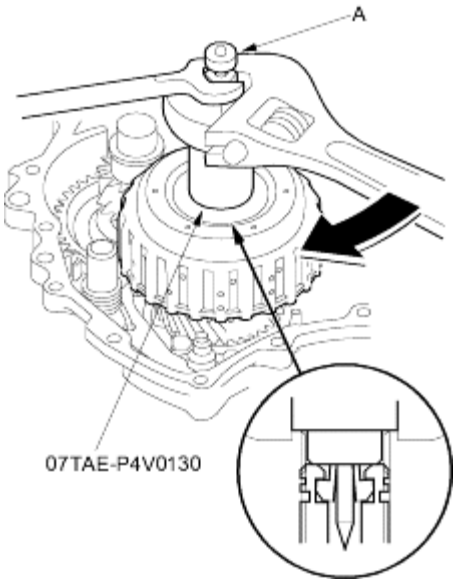
2. Install the secondary gear shaft (D) with selected 25 x 35 thrust shim (E) (see page 14-374).
3. Wrap the driven pulley shaft splines with tape to prevent O-ring damage, install the new O-rings (F) in the shaft O-ring grooves and remove the tape.
4. Install the secondary drive gear assembly (G) in the start clutch (H), then install them on the driven pulley shaft (I).

1. 5. Pull the handle of the special tool up, then install the tip of it into the driven pulley shaft feed pipe hole and set the special tool on the start clutch.

Do not allow dirt or other foreign particles to enter into the transmission.



2. 6. Push the handle (A) of the special tool, then tighten the nut to seat the secondary drive gear assembly on the drive pulley shaft.



3. 7. Pull the handle of the special tool up and remove the special tool.

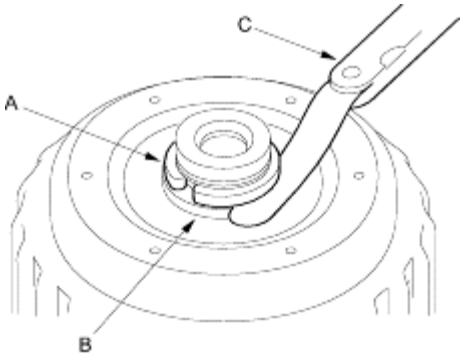
Transmission Housing/Flywheel Housing

Start Clutch and Flywheel Housing Installation (cont'd)

1. 8. Install the 25.5 mm cotters to the cotter groove on the driven pulley shaft, theNmeasure the clearance between the cotters (A) and the start clutch guide (B) with a feeler gauge (C).

NOTE: Take measurements in at least three places and use the average as the actual clearance.

STANDARD: 0-0.13 mm (0-0.005 in.)



2. 9. If the clearance is out of standard, remove the cotters and measure their thickness.

10. Select and install the new 25.5 mm cotters, then recheck.

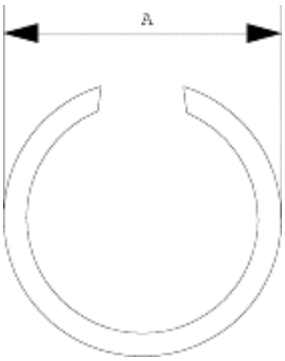
COTTERS, 25.5 mm

No.	Part Number	Thickness
A	90429-P4V-000	2.9 mm (0.114 in.)
B	90430-P4V-000	3.0 mm (0.118 in.)
C	90431-P4V-000	3.1 mm (0.122 in.)
D	90432-P4V-000	3.2 mm (0.126 in.)

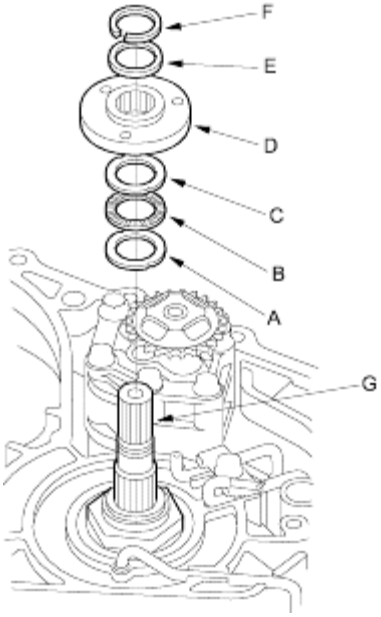
11. After replacing the cotters, make sure that the clearance is within the tolerance.

12. Install the cotter retainer and snap ring.

1. 13. Verify that the snap ring outside diameter (A) is 33.9 mm (1.33 in.) or less.



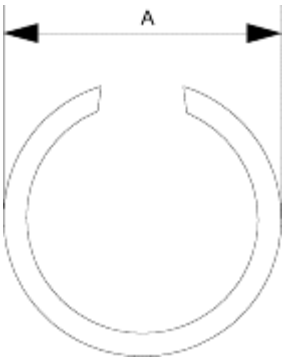
2. 14. Install the thrust washer (A), thrust needle bearing (B), thrust washer (C), ATF pump drive sprocket hub (D), 22 x 28 mm thrust shim (E) and snap ring (F) on the input shaft (G).



Transmission Housing/Flywheel Housing

Start Clutch and Flywheel Housing Installation (cont'd)

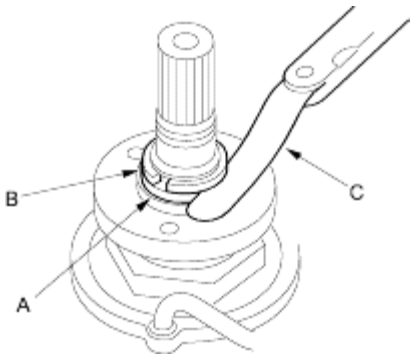
1. 15. Verify that snap ring outside diameter (A) is 26.3 mm (1.04 in.) or less.



2. 16. Measure the clearance between the 22 x 28 mm thrust shim (A) and snap ring (B) with a feeler gauge (C).

NOTE: Take measurements in at least three places and use the average as the actual clearance.

STANDARD: 0.37-0.65 mm (0.015-0.026 in.)



3. 17. If the clearance is out of standard, remove the 22 x 28 mm thrust shim and measure its thickness.

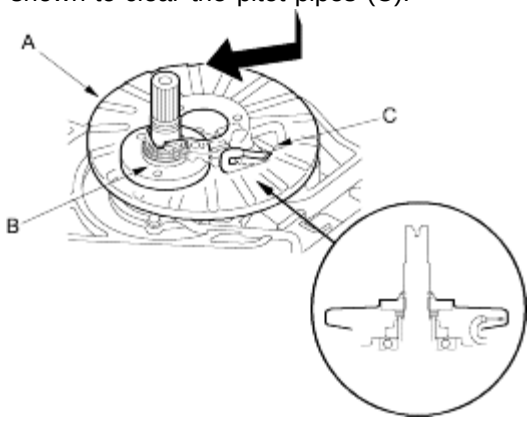
1. 18. Select and install the new 22 x 28 mm thrust shim, then recheck.

THRUST SHIM, 22 x 28 mm

No.	Part Number	Thickness
C	90573-P4V-000	1.15 mm (0.045 in.)
D	90574-P4V-000	1.40 mm (0.055 in.)
E	90575-P4V-000	1.65 mm (0.065 in.)
F	90576-P4V-000	1.90 mm (0.075 in.)
G	90577-P4V-000	2.15 mm (0.085 in.)
H	90578-P4V-000	2.40 mm (0.095 in.)

2. 19. After replacing the 22 x 28 mm thrust shim, make sure that the clearance is with in the tolerance and the snap ring outside diameter is correct.

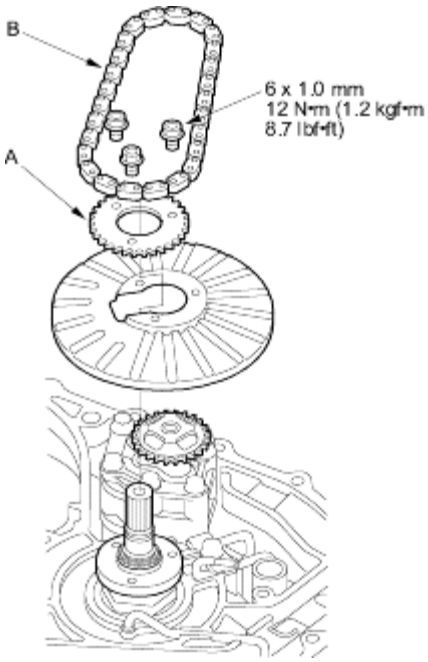
20. Install the pitot flange (A) using its cutout (B) as shown to clear the pitot pipes (C).



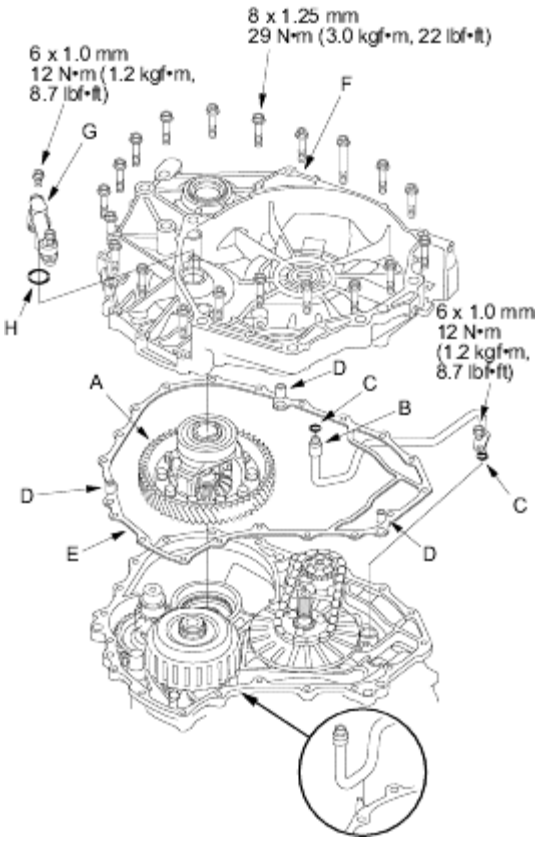
Transmission Housing/Flywheel Housing

Start Clutch and Flywheel Housing Installation (cont'd)

1. 21. Install the ATF pump drive sprocket (A) and put the ATF pump drive chain (B) on the ATF pump drive and driven sprockets, then install and tighten the three bolts.



1. 22. Install the differential assembly (A).

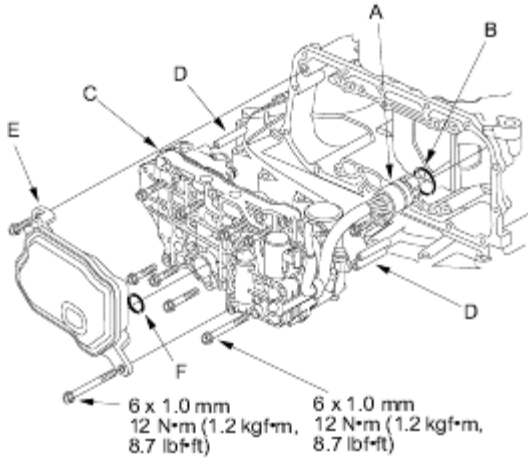


2. 23. Install the ATF passage line assembly (B) with the new O-rings (C).
   24. Install the three dowel pins (D) and new flywheel gasket (E) on the transmission housing.
   25. Install the flywheel housing (F) (20 bolts).
   26. Install the ATF passage line holder assembly (G) with the new O-ring (H) (two bolts).

Transmission Lower Valve Body

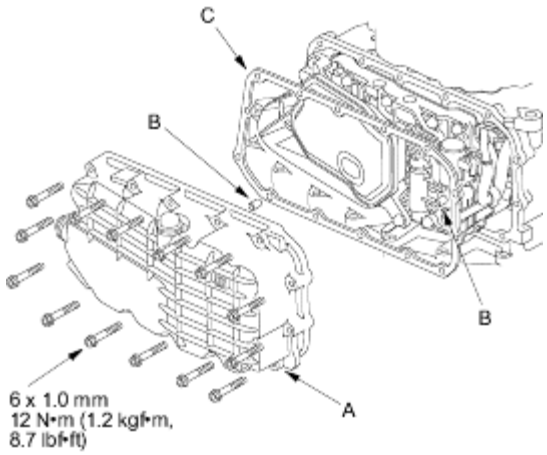
Lower Valve Body Assembly, ATF Strainer and ATF Pan Installation

1. 1. Install the solenoid harness connector (A) with the new O-ring (B) (one bolt) and install the lower valve body assembly (C) with three ATF feed pipes (D) (eight bolts).

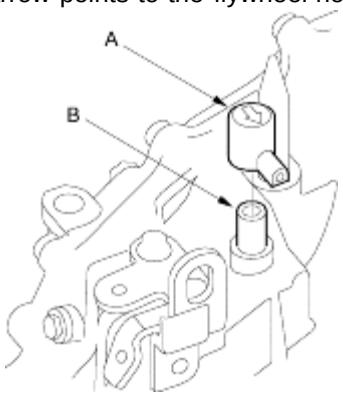


2. 2. Install the ATF strainer (E) with the new O-ring (F) (two bolts).

1. 3. Install the ATF pan (A) with the two dowel pins (B) and new ATF pan gasket (C) (14 bolts).



2. 4. Install the breather cap (A) on the breather pipe (B) so its arrow points to the flywheel housing.

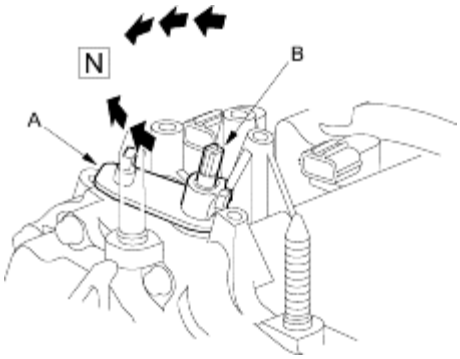


Transmission Range Switch

Transmission Range Switch Installation

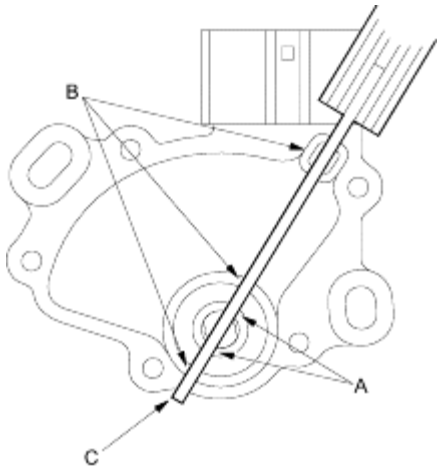
1. 1. Set the control lever (A) to [N] position by turning it.

NOTE: Do not squeeze the end of the control shaft tips (B) together when turning into position. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

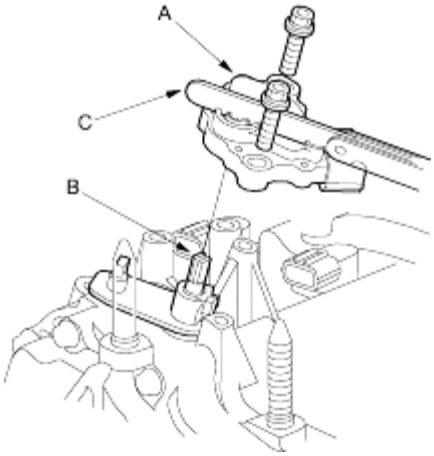


2. 2. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch, then put a 2.0 mm (0.08 in.) feeler gauge blade (C) in the cutouts to hold it in the [N] position.

NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the [N] position.

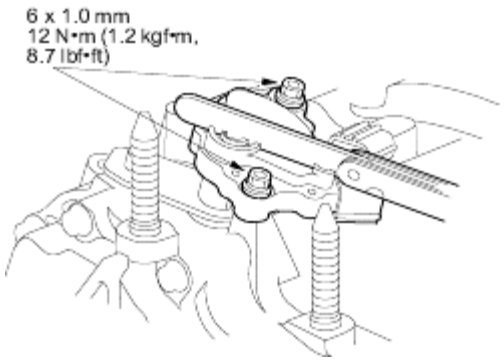


1. 3. Install the transmission range switch (A) gently on the control shaft (B) with holding the [N] position with the 2.0 mm (0.08 in.) blade (C).



2. 4. Tighten the bolts on the transmission range switch while you continue to hold the [N] position.

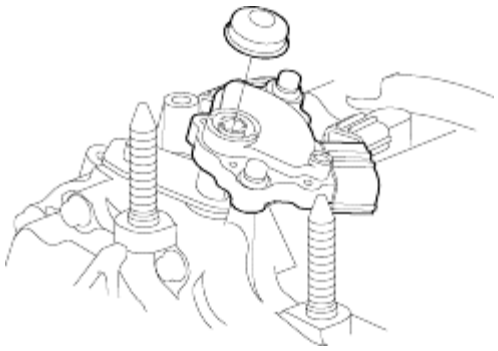
Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



Transmission Range Switch

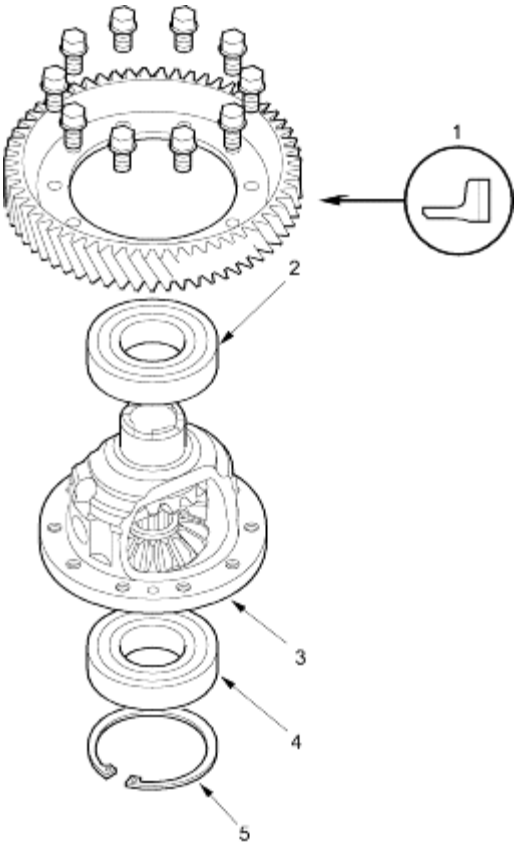
Transmission Range Switch Installation (cont'd)

1. 5. Install the transmission range switch shaft cap.



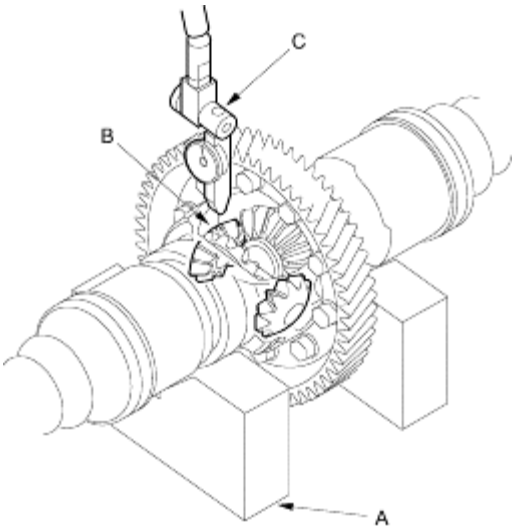
Honda Multi Matic Transmission/CVT Differential

Component Location Index



1. 1. FINAL DRIVEN GEAR
   Replacement, page 14-388
2. CARRIER BEARING
   Replacement, page 14-388
3. DIFFERENTIAL CARRIER
   Backlash Inspection, page 14-387
   Replacement, page 14-388
4. CARRIER BEARING
   Replacement, page 14-388
5. SET RING, 80 mm
   Selection, page 14-390

1. 1. Place the differential assembly on V-blocks (A) and install both axles.

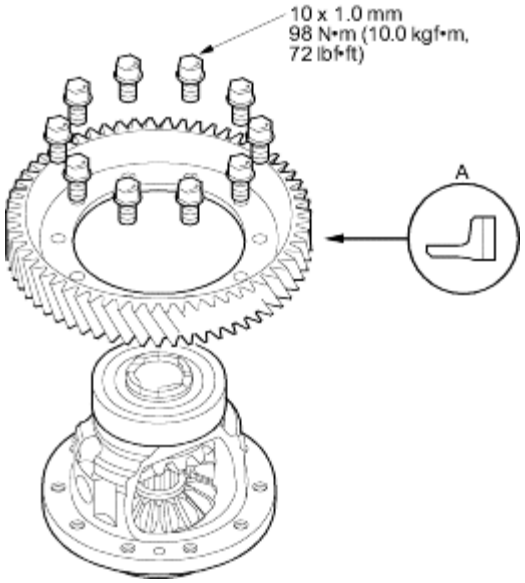


2. 2. Check the backlash of the pinion gears (B) with a dial indicator (C).
   STANDARD: 0.05-0.15 mm (0.002-0.006 in.)
3. If the backlash is out of standard, replace the differential carrier.

Honda Multi Matic Transmission/CVT Differential

Differential Carrier/Final Driven Gear Replacement

1. 1. Remove the final driven gear from the differential carrier. The final driven gear bolts have left-hand threads.

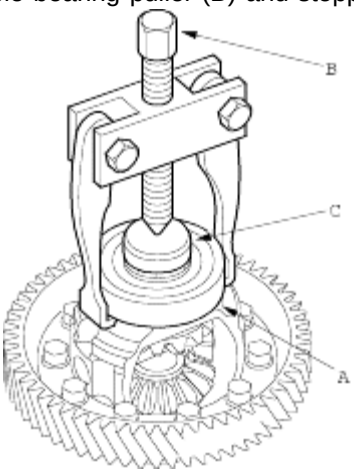


2. 2. Install the final driven gear with the chamfered side on the inner bore (A) facing the differential carrier.
   3. Tighten the bolts to 98 Nm (10.0 kgf/m, 72 lbf/ft) in a criss-cross pattern.

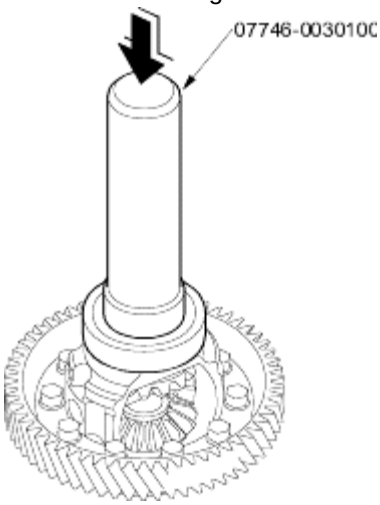
Special Tools Required

Driver 40 mm I.D., 07746-0030100

1. 1. Remove the bearings (A) with a commercially available bearing puller (B) and stepper adapter (C).



2. 2. Install the new bearings with the special tool and a press. Press the bearing on until it bottoms.



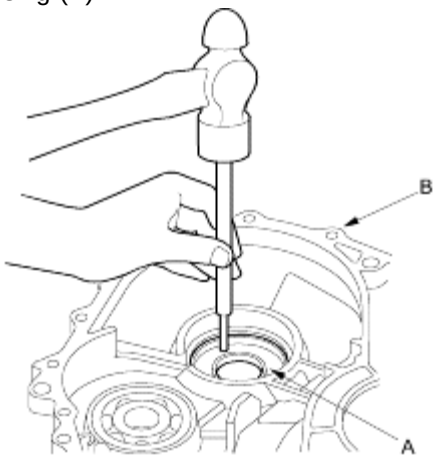
Honda Multi Matic Transmission/CVT Differential

Oil Seal Replacement

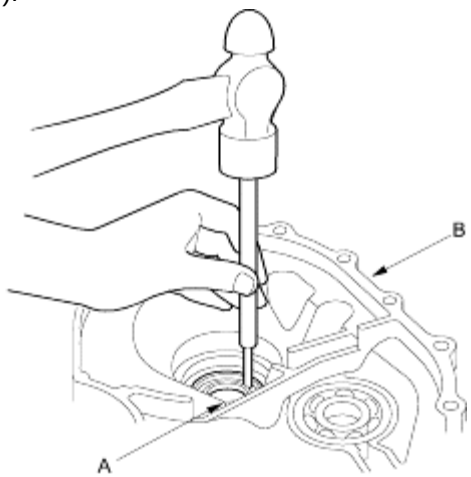
Special Tools Required

- Handle driver, 07749-0010000
- Driver attachment, 78 x 80 mm, 07NAD-PX40100
- Driver attachment, 58 mm, 07JAD-PH80101

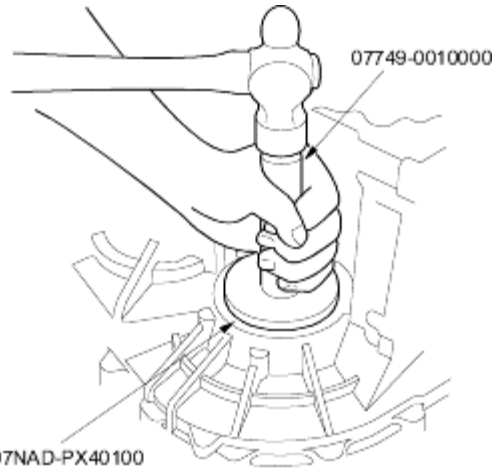
1. 1. Remove the oil seal (A) from the transmission housing (B).



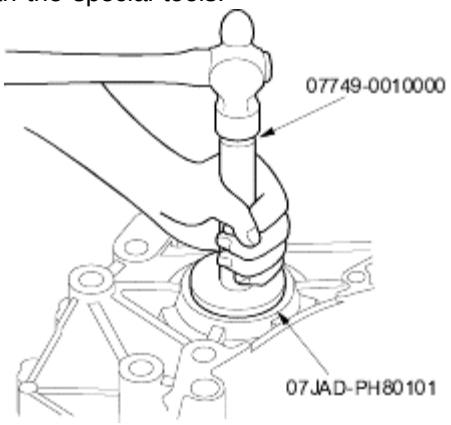
2. 2. Remove the oil seal (A) from the flywheel housing (B).



1. 3. Install the oil seal in the transmission housing with the special tools.

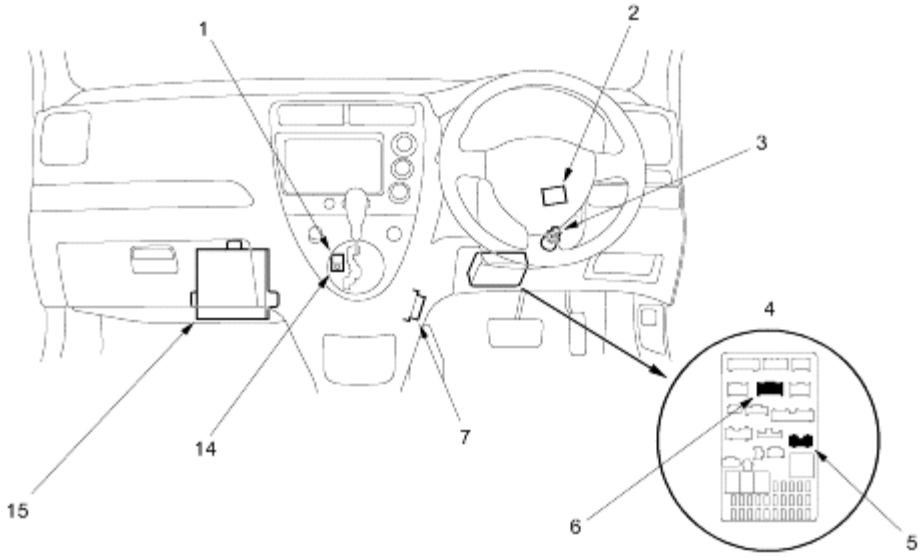


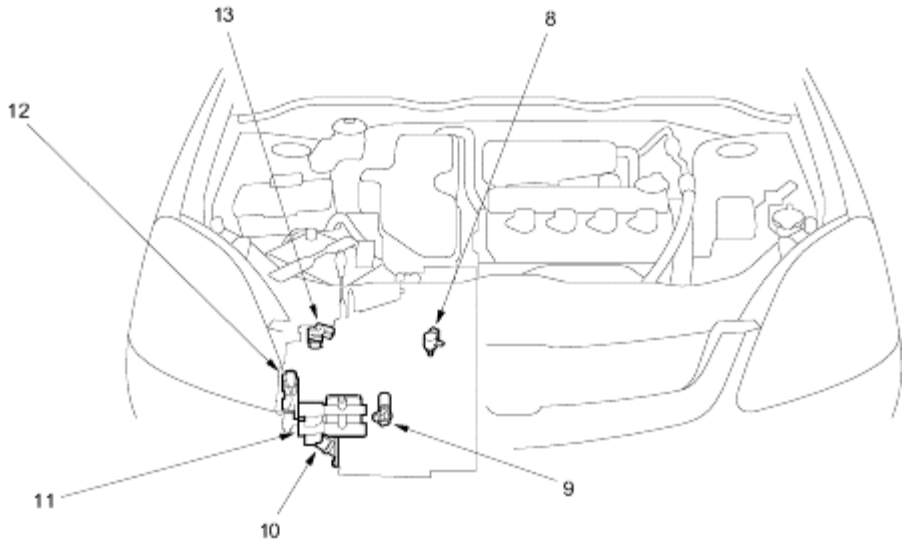
2. 4. Install the oil seal (A) in the torque converter housing with the special tools.



Automatic Transmission
System Description (cont'd)

Electronic Controls Location: 5-door Model





1. SHIFT LOCK SOLENOID
2. KEY INTERLOCK SOLENOID
3. BRAKE PEDAL POSITION SWITCH
4. UNDER-DASH FUSE/RELAY BOX MULTIPLEX CONTROL UNIT
5. No. 5 CONNECTOR (10P)
6. No. 9 CONNECTOR (12P)
7. DATA LINK CONNECTOR (16P)
8. TORQUE CONVERTER CLUTCH SOLENOID VALVE
9. MAINSHAFT SPEED SENSOR
10. SHAFT SOLENOID VALVES A and B
11. A/T CLUTCH PRESSURE CONTROL SOLENOID VALVES A and B
12. TRANSMISSION RANGE SWITCH
13. COUNTERSHAFT SPEED SENSOR
14. D3 SWITCH
15. POWERTRAIN CONTROL MODULE (PCM)

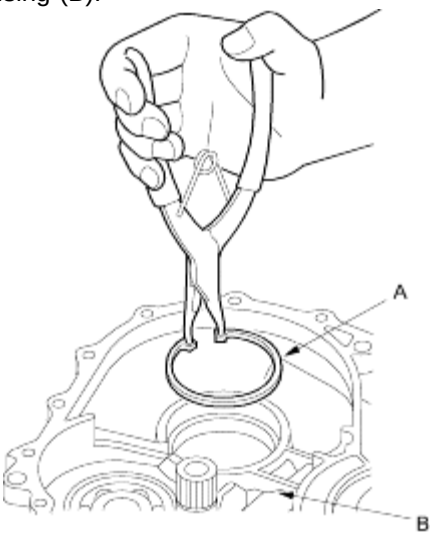
Honda Multi Matic Transmission/CVT Differential

Carrier Bearing Side Clearance Inspection

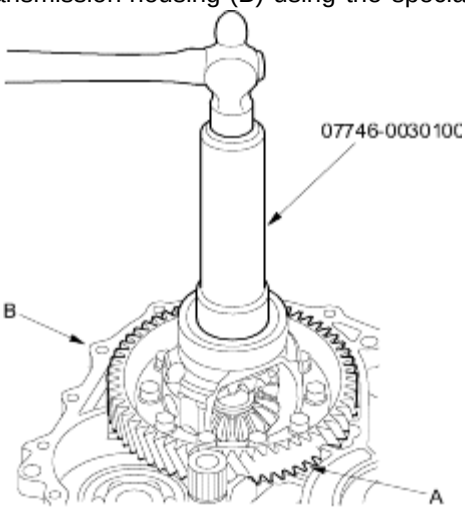
Special Tools Required

Driver 40 mm I.D., 07746-0030100

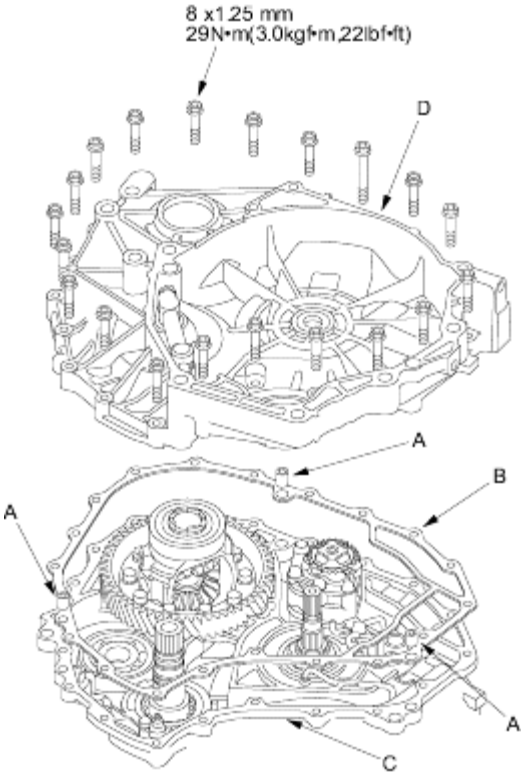
1. 1. Install the 80 mm set ring (A) in the transmission housing (B).



2. 2. Install the differential assembly (A) in the transmission housing (B) using the special tool.



1. 3. Install the three dowel pins (A) and the gasket (B) on the transmission housing (C).



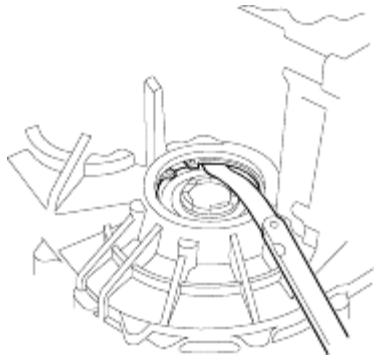
2. 4. Place the flywheel housing (D) on the transmission housing.
   5. Install the housing bolts (20 bolts) and tighten the bolts in two or more steps to 29 Nm (3.0 kgf/m, 22 lbf/ft) in a criss-cross pattern.

Honda Multi Matic Transmission/CVT Differential

Carrier Bearing Side Clearance Inspection (cont'd)

1. 6. Measure the clearance between the 80 mm set ring and carrier bearing outer race with a feeler gauge.

STANDARD: 0-0.15 mm (0-0.006 in.)



2. 7. If the clearance is out of standard, remove the 80 mm set ring and measure its thickness.
8. Select and install a new set ring, then recheck the clearance and make sure it is within the standard.

SET RING, 80 mm

No.	Part Number	Thickness
1	90414-689-000	2.50 mm (0.098 in.)
2	90415-689-000	2.60 mm (0.102 in.)
3	90416-689-000	2.70 mm (0.106 in.)
4	90417-689-000	2.80 mm (0.110 in.)
5	90418-689-000	2.90 mm (0.114 in.)
6	90419-PH8-000	3.00 mm (0.118 in.)

Automatic Transmission

General Troubleshooting Information (cont'd)

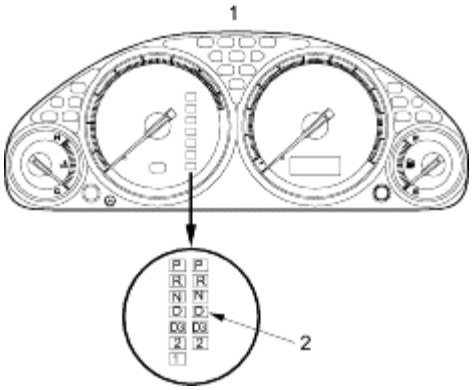
How to Check for DTCs

Special Tools Required

- DLC terminal box, 07WAJ-0010100
- SCS short connector, 07PAZ-0010100

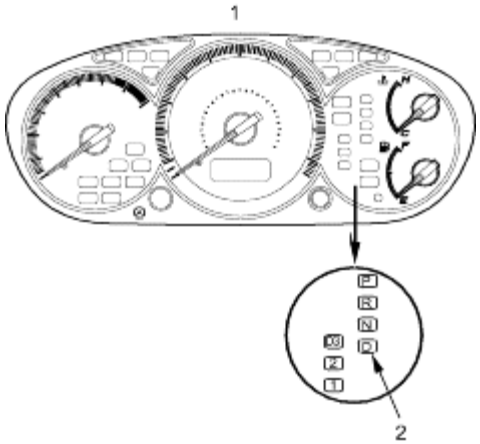
When the PCM senses an abnormality in the input or output systems, the D indicator light in the gauge assembly will usually blink and/or the MIL may come on. When the 16P Data Link Connector (DLC) (located under the dash behind the centre console) is connected with the special tool (DLC terminal box), or when the Service Check Connector (2P) (located under the dash behind the centre console) is connected with the special tool (SCS Short Connector), the D indicator light will blink the Diagnostic Trouble Code (DTC) when the ignition switch is turned ON (II).

4-door Model:



1. 1. GAUGE ASSEMBLY
   2. D INDICATOR LIGHT

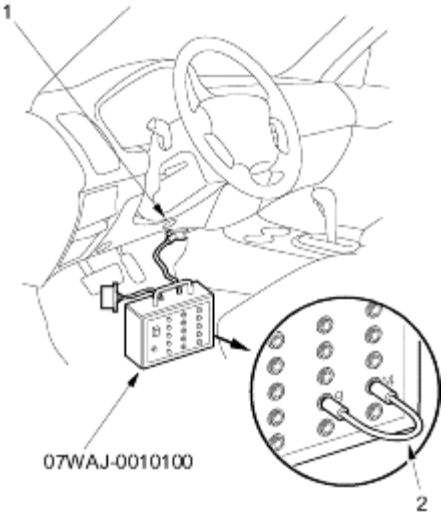
5-door Model:



2. 1. GAUGE ASSEMBLY
   2. D INDICATOR LIGHT

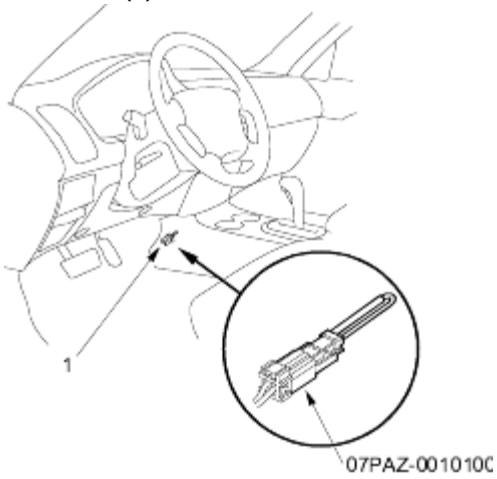
When the D indicator light has been reported on;

- Connect the 16P Data Link Connector with the special tool (DLC terminal box), then connect the jumper wire between the terminals 4 and 9 at the special tool. Turn the ignition switch ON (II), then observe the D indicator light.



1. 1. 16P DATA LINK CONNECTOR
   2. JUMPER WIRE

- Connect the Service Check Connector (2P) with the special tool (SCS Short Connector). Turn the ignition switch ON (II), then observe the D indicator light.



2. 1. SERVICE CHECK CONNECTOR

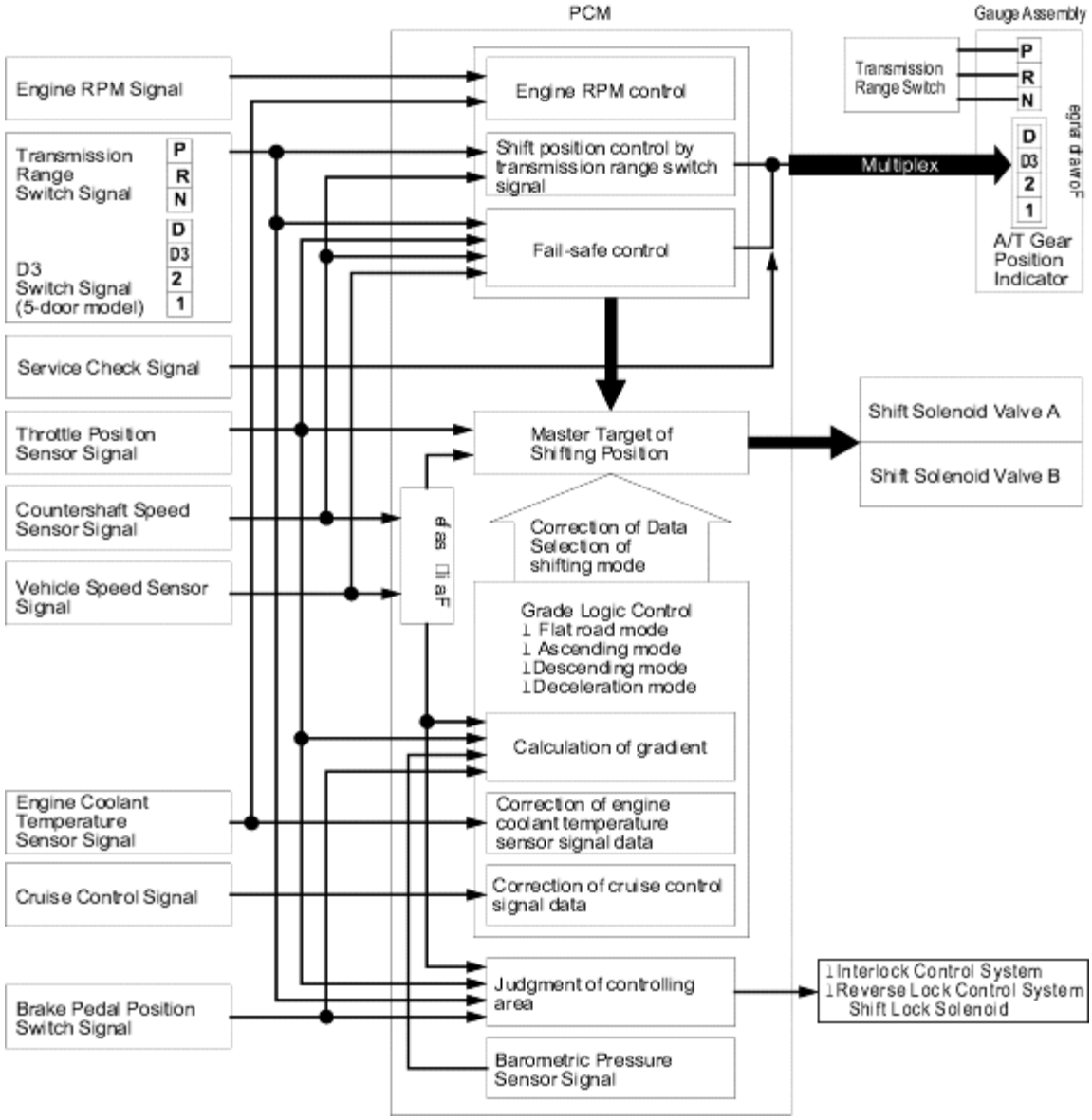
Automatic Transmission
System Description (cont'd)

Electronic Control System (cont'd)

Shift Control

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches and it actuates the shift solenoid valves A and B to control shifting.

Also, a Grade Logic Control System has been adopted to control shifting in D and D3 positions. The PCM compares actual driving conditions with memorised driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, cruise control signal and the shift lever position signal, to control shifting while vehicle is ascending or descending a slope, or reducing speed.



Automatic Transmission
Symptom Description (cont'd)

The PCM turns the shift solenoid valves A and B ON and OFF to control shifting transmission gear. The combination of driving signals to shift solenoid valves A and B are shown in table below.

Position	Gear	Shift solenoid valve A	Shift solenoid valve B
D and D3	1st	OFF	ON
	2nd	ON	ON
	3rd	ON	OFF
D	4th	OFF	OFF
2	2nd	ON	ON
1	1st	OFF	ON
R	Reverse	ON	OFF
	Reverse inhibit	OFF	ON
N	-	OFF	OFF
P	-	OFF	OFF

NOTE:

- For a description of the reverse inhibit mode, refer to page 14-63.
- 1 position is applied to 7-position transmission.

Automatic Transmission
System Description (cont'd)

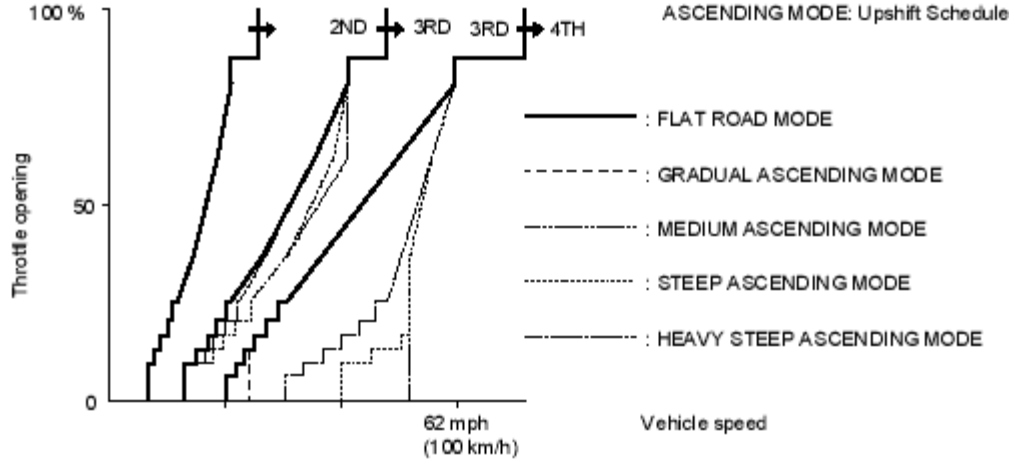
Electronic Control System (cont'd)

Grade Logic Control System

Ascending Control

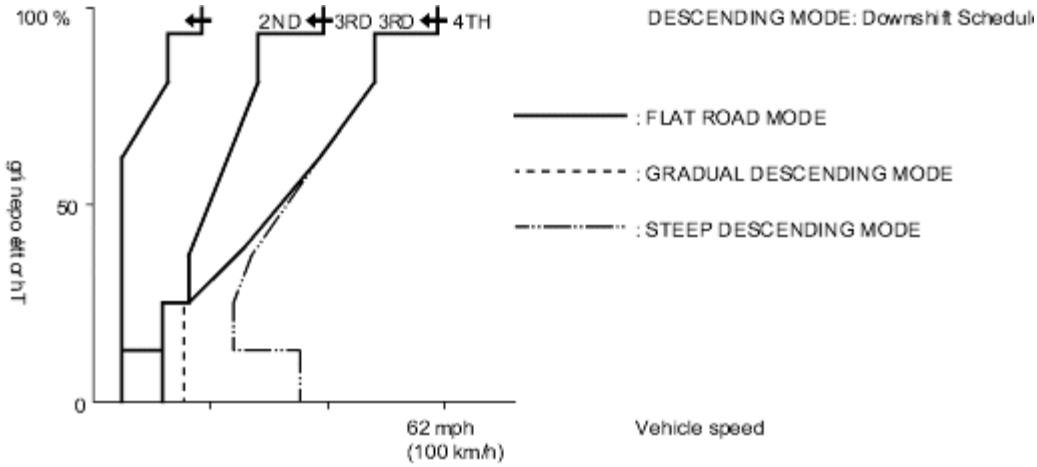
When the PCM determines that the vehicle is climbing a hill in D and D3 positions, the system extends the engagement area of 2nd and 3rd gear to prevent the transmission from frequently shifting between 2nd and 3rd gears and between 3rd and 4th gears, so the vehicle can run smooth and have more power when needed.

Shift schedules stored in the PCM between 2nd and 3rd gears and between 3rd and 4th gears, enable it to automatically select most suitable gear according to the magnitude of a gradient.



Descending Control

When the PCM determines that the vehicle is going down a hill in D and D3 positions, the shift-up speed from 3rd to 4th gear and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to widen the 3rd gear and 2nd gear driving areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are two descending modes with different 3rd gear driving areas and 2nd gear driving areas to suit the magnitude of the gradients stored in the PCM. When the vehicle is in 4th gear and you are decelerating when you are applying the brakes on a steep hill, the transmission will downshift to 3rd gear. When you accelerate, the transmission will then return to higher gear.



Deceleration Control

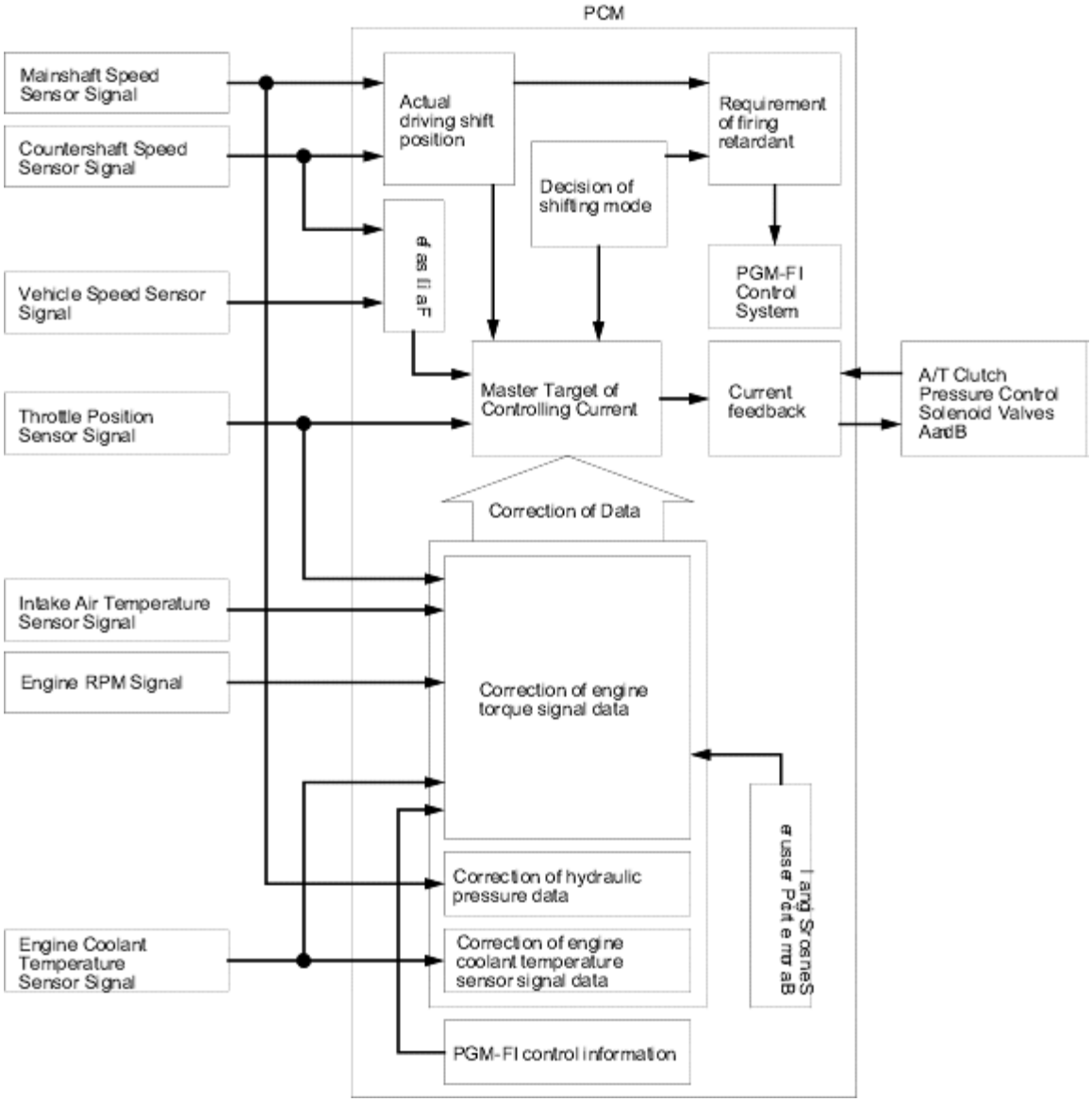
When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 27 mph (43 km/h), the PCM shifts the transmission from 4th to 2nd earlier than normal to cope with upcoming acceleration.

Automatic Transmission
System Description (cont'd)

CPC (Clutch Pressure Control)

The PCM actuates the A/T clutch pressure control solenoid valve A to control CPC pressure. When shifting between lower gear and upper gear, CPC pressure regulated by the A/T clutch pressure control solenoid valve A engages and disengages the clutches smoothly.

The PCM inputs signals from the various sensors, perform processing data and outputs a current to the A/T clutch pressure control solenoid valve A.



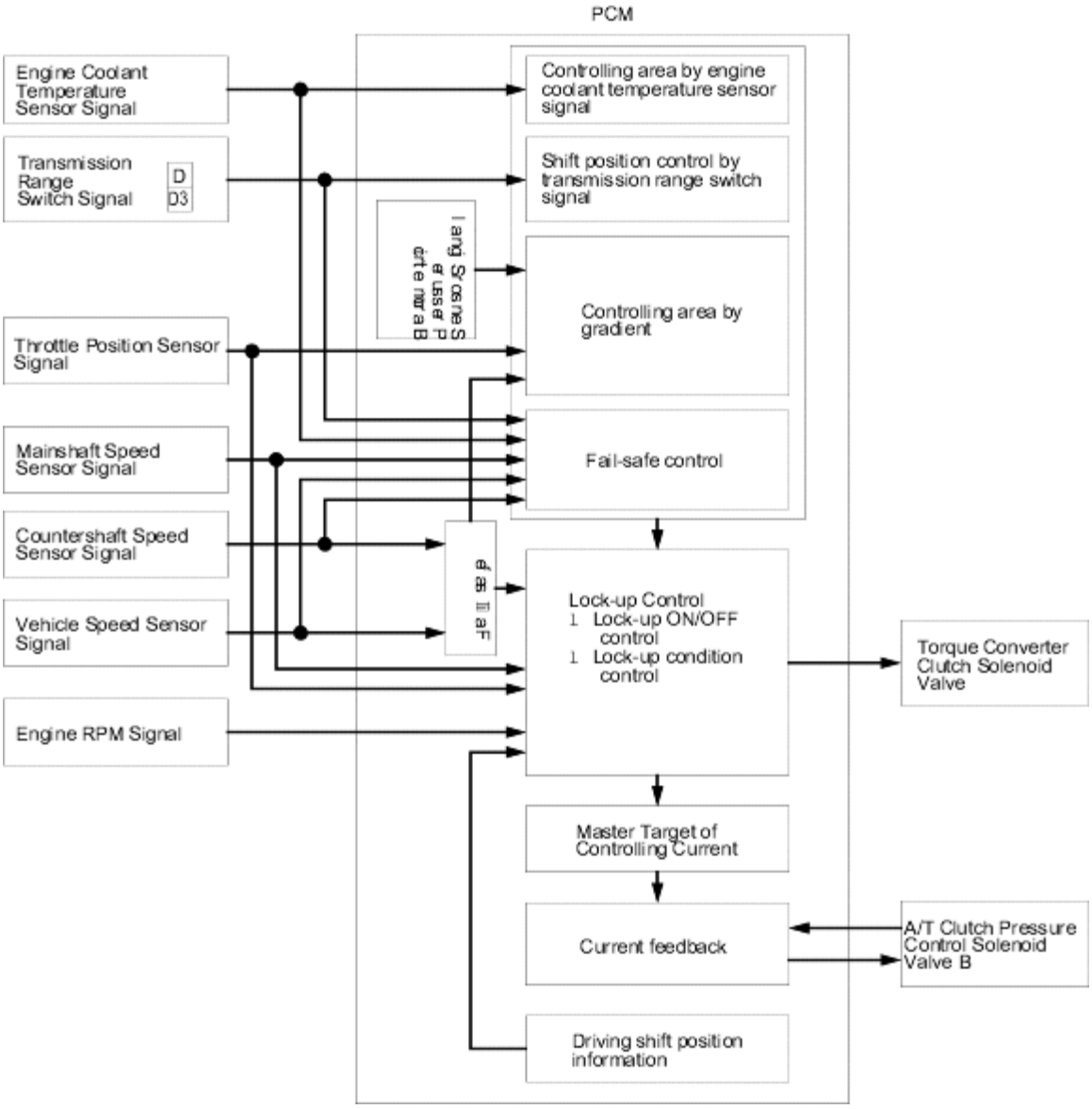
Automatic Transmission
System Description (cont'd)

Electronic Control System (cont'd)

Lock-up Control System

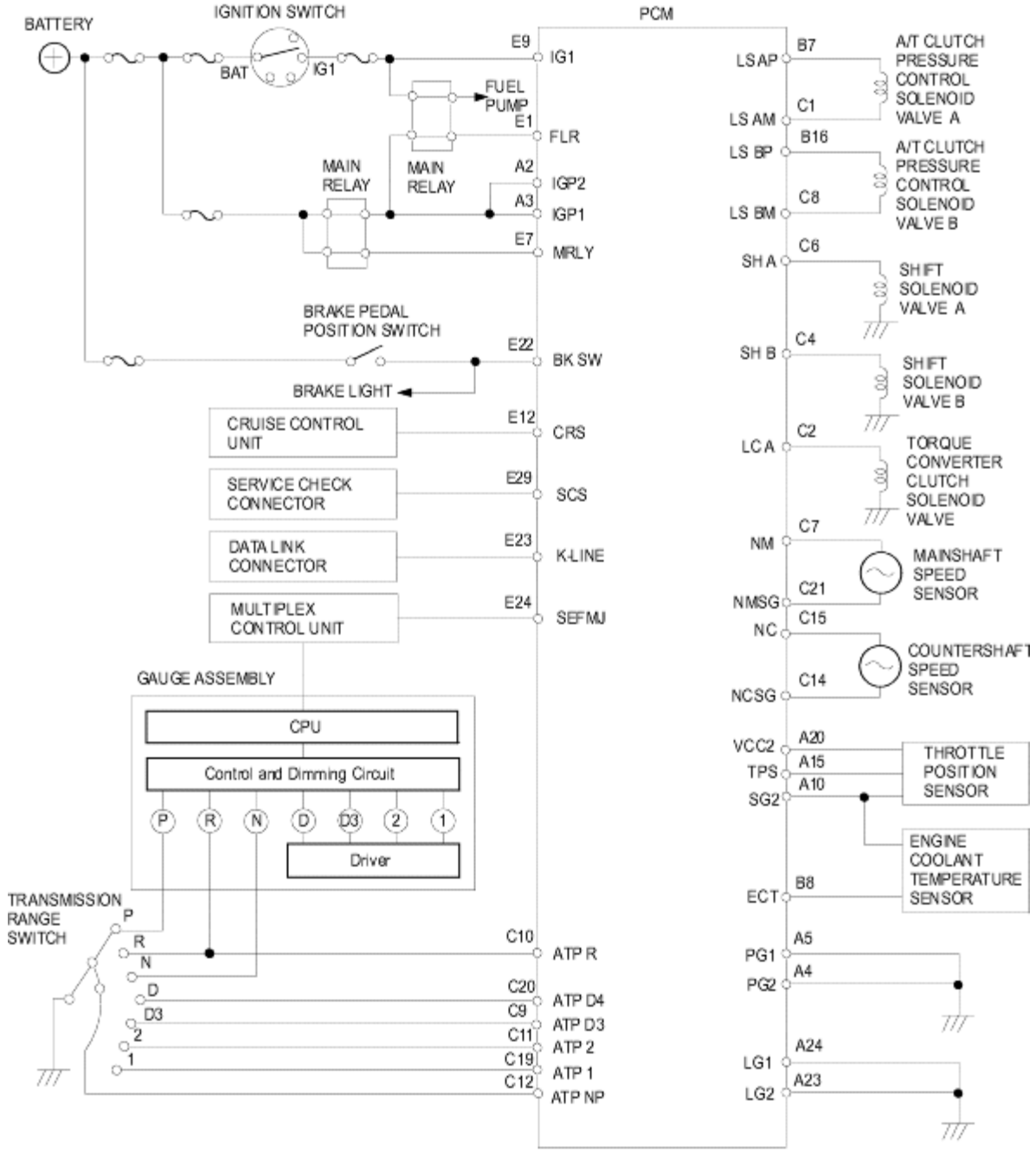
The torque converter clutch solenoid valve controls modulator pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM controls the torque converter clutch solenoid valve and the A/T clutch pressure control solenoid valve B. When the torque converter clutch solenoid valve is turned ON, the condition of the lock-up starts.

The A/T clutch pressure control solenoid valve B regulates A/T clutch pressure control solenoid B pressure and apply pressure to the lock-up control valve and the lock-up timing valve. The lock-up control mechanism operates in 3rd and 4th gears in D position and in 3rd gear in D3 position.

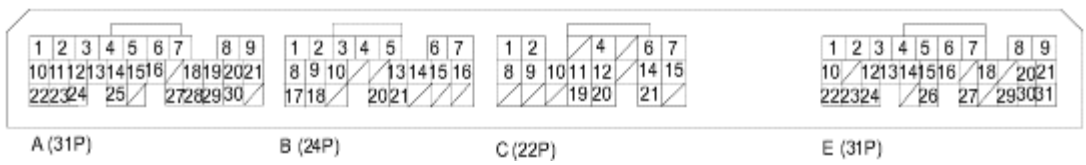


Automatic Transmission
System Description (cont'd)

PCM Electrical Connections: 4-door Model



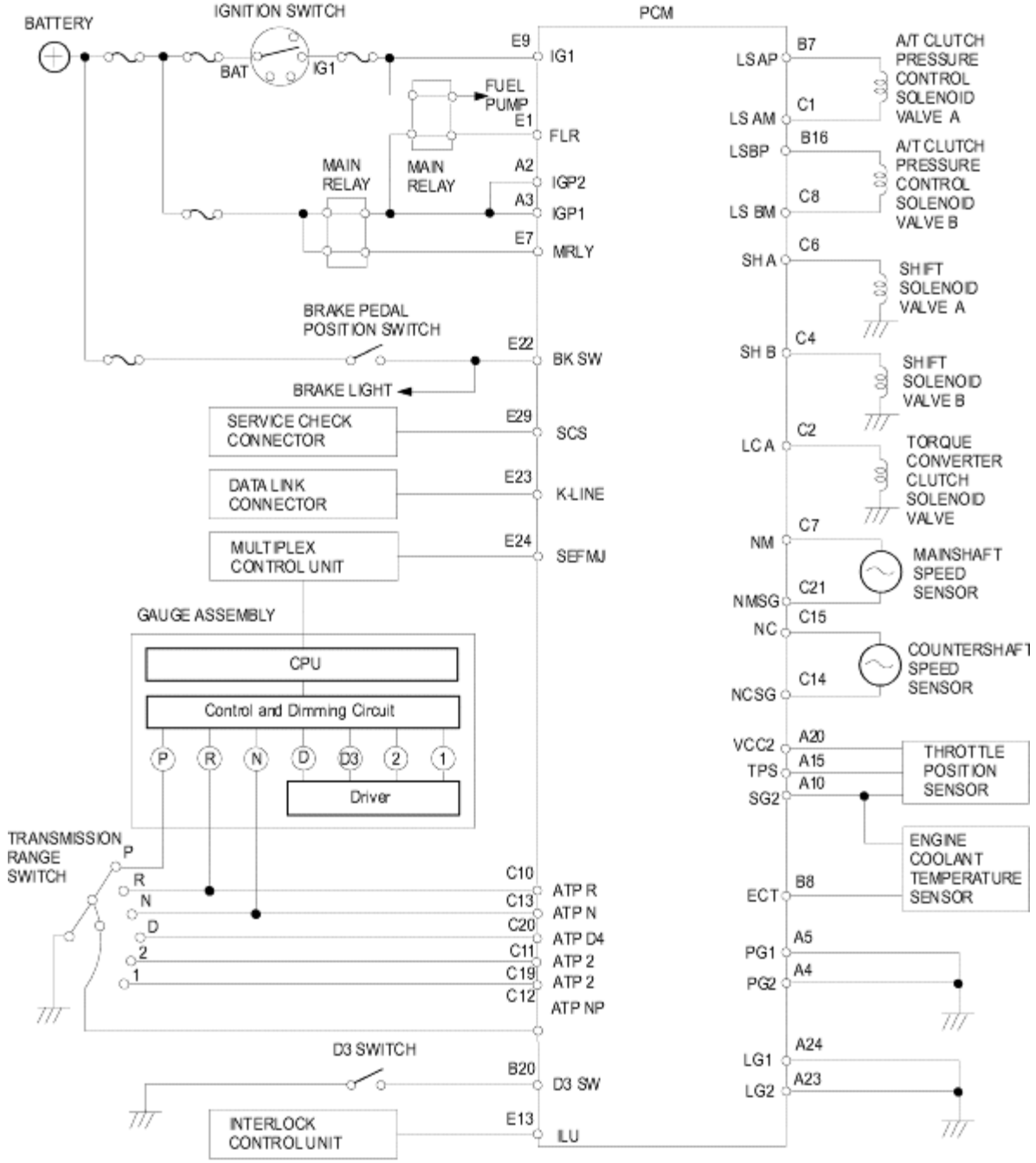
PCM Connector Terminal Locations



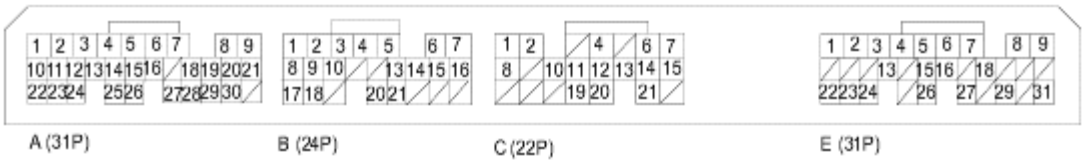
Automatic Transmission
System Description (cont'd)

Electronic Control System (cont'd)

PCM Electrical Connections: 5-door Model



PCM Connector Terminal Locations

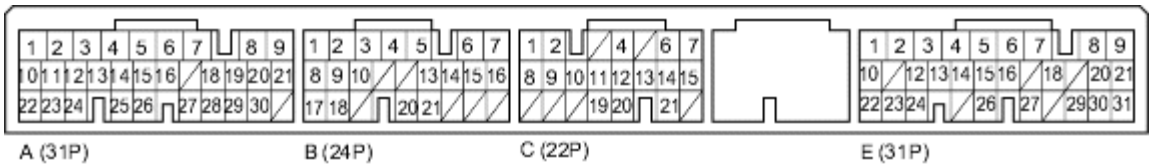


Automatic Transmission
System Description (cont'd)

PCM Inputs and Outputs

The PCM terminal voltage and measuring conditions are shown for the connector terminals that are related to the A/T control system. The other PCM terminal voltage and measuring conditions are described in section 11.

PCM Connector Terminal Locations



NOTE: The illustration shows example of connector terminal arrangement; connector terminal arrangement varies with models.

PCM CONNECTOR A (31P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
A2	YEL/BLK	IGP2	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0V
A3	YEL/BLK	IGP1	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A4	BLK	PG2	Ground	
A5	BLK	PG1	Ground	
A23	BRN/YEL	LG2	Ground	
A24	BRN/YEL	LG1	Ground	

PCM CONNECTOR B (24P)

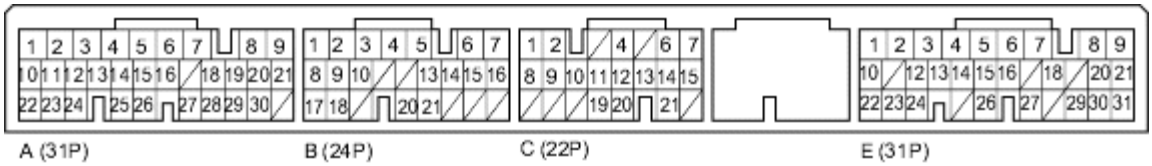
Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
B7	RED/BLK	LS A+	A/T clutch pressure control solenoid valve A power supply positive electrode	With ignition switch ON (II): Pulsing signal
B16	BLK/RED	LS B+	A/T clutch pressure control solenoid valve B power supply positive electrode	With ignition switch ON (II): Pulsing signal
B20 (5-door)	PNK	D3 SW	D3 switch D3 position input	In D3, 2 and 1 positions: About 2.5 V Other than D3, 2 and 1 positions: 0 V

Automatic Transmission
System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs

PCM Connector Terminal Locations



NOTE: The illustration shows example of connector terminal arrangement; connector terminal arrangement varies with models.

PCM CONNECTOR C (22P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
C1	WHT/BLK	LS A-	A/T clutch pressure control solenoid valve A power supply negative electrode	
C2	YEL/BLU	LC	Torque converter clutch solenoid valve control	During lock-up condition: Battery voltage During no lock-up condition: 0 V
C4	GRN/WHT	SH B	Shift solenoid valve B control	Battery voltage in these positions: • 1 and 2 • D and D3 in 1st and 2nd gears 0 V in these positions: • D and D3 in 3rd gear • D in 4th gear • P, R and N
C6	BLU/BLK	SH A	Shift solenoid valve A control	Battery voltage in these positions: • 2 • D and D3 in 2nd and 3rd gears R 0 V in these positions: • 1 D and D3 in 1st gear • D in 4th gear • P and N
C7	WHT/RED	NM	Mainshaft speed sensor input	Depending on vehicle speed: Pulsing signal When engine stopped: About 0 V
C8	BRN/WHT	LS B-	A/T clutch pressure control solenoid valve B power supply negative electrode	
C9 (4-door)	RED	ATP D3	Transmission range switch D3 position input	In D3 position: 0 V In other than D3 position: 5 V
C10	WHT	ATP R	Transmission range switch R position input	In R position: 0 V In other than R position: Battery voltage

Automatic Transmission
System Description (cont'd)

PCM CONNECTOR C (22P)

Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
C11	BLU	ATP 2	Transmission range switch [2] position input	In [2] position: 0 V In other than [2] position: 5 V
C12	BLU/WHT	ATP NP	Transmission range switch [P] and [N] positions input	In [P] and [N] positions: 0 V In other than [P] and [N] positions: 5 V
C13 (5-door)	RED/BLK	ATP N	Transmission range switch [N] position input	In [N] position: 0 V In other than [N] position: Battery voltage
C14	GRN	NC SG	Countershaft speed sensor ground	
C15	BLU	NC	Countershaft speed sensor input	Depending on vehicle speed: Pulsing signal When vehicle stopped: About 0 V
C19	BRN	ATP 1	Transmission range switch [1] position input	In [1] position: 0 V In other than [1] position: 5 V
C20	YEL/BLK	ATP D4	Transmission range switch [D] position input	In [D] position: 0 V In other than [D] position: 5 V
C21	WHT	NM SG	Mainshaft speed sensor ground	

PCM CONNECTOR E (31P)

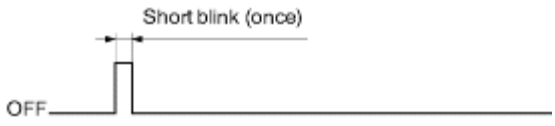
Terminal Number	Wire Colour	Signal	Description	Measuring Conditions/Terminal Voltage
E9	YEL/BLK	IG1	Power supply for solenoid valve assemblies	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
E12	BLU/ORN	CCS	Downshift signal input from cruise control unit	When cruise control is used: About 1 V
E13	WHT/BLU	ILU	Interlock control	With ignition switch ON (II), brake pedal pressed and accelerator pedal released: Battery voltage
E22	WHT/BLK	BK SW	Brake pedal position switch signal output	Brake pedal pressed: Battery voltage Brake pedal released: 0 V
E23	LT BLU	K-LINE	Communication line between PCM and scan tool	With ignition switch ON (II): Battery voltage
E29	BRN	SCS	Timing and adjustment service check signal	With ignition switch ON (II) and service check connector open: 5 V With ignition switch ON (II) and service check connector connected with special tool: 0 V

Automatic Transmission

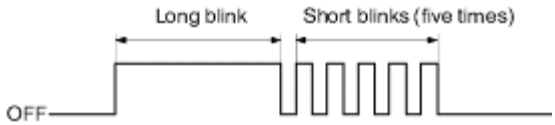
General Troubleshooting Information (cont'd)

Codes 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code. After determining the code, refer to the DTC Troubleshooting Index.

Example: DTC 1



Example: DTC 15



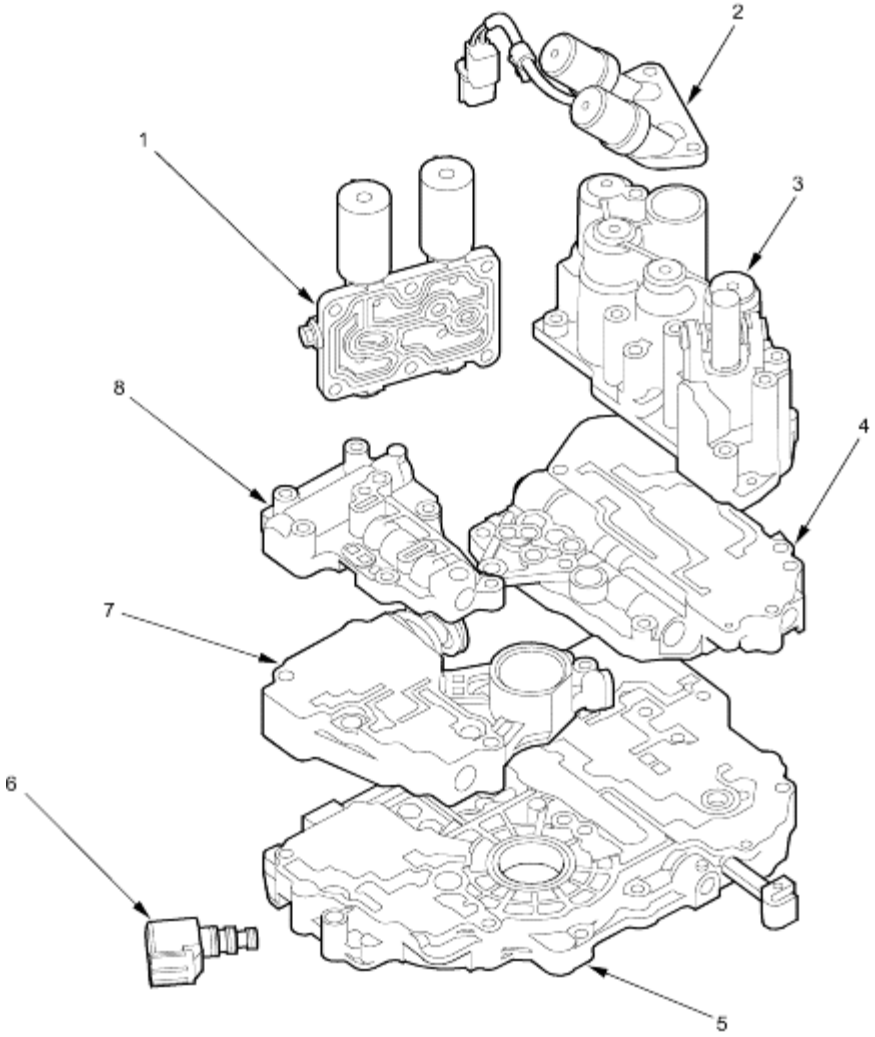
If the D indicator light and the MIL (Malfunction Indicator Lamp) come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. 1. Record all fuel and emission DTCs, A/T DTCs and freeze data.
   2. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC 70, DTC 70 means there is one or more A/T DTCs and no problems were detected in the fuel and emissions circuit of the PCM.
   3. Write down the radio station presents.
   4. Reset the memory by removing the No. 6 ECU (PCM) fuse in the under-hood fuse/relay box for more than 10 seconds.
   5. Drive the vehicle for several minutes at speeds over 30 mph (50 km/h) and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight and then go to step 6.
   6. Reset the radio preset stations and set the clock.

Automatic Transmission
System Description (cont'd)

Hydraulic Control

The valve body includes the main valve body, the regulator valve body, the secondary valve body, the servo body and the lock-up valve body. The ATF pump is driven by splines on the right end of the torque converter that is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure, though the manual valve, directing pressure to each of the clutches. The shift solenoid valves A and B and the A/T clutch pressure control solenoid valves A and B are mounted on the outside of the transmission housing. The torque converter clutch solenoid valve is mounted on the outside of the torque converter housing.



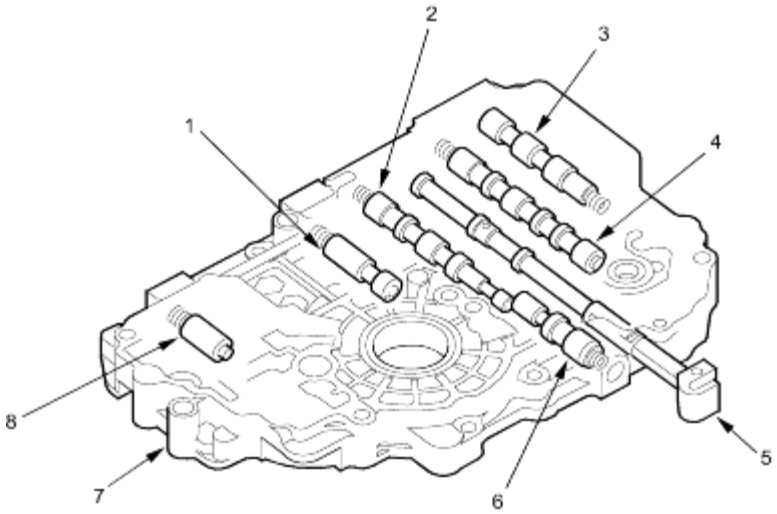
1. A/T CLUTCH PRESSURE CONTROL SOLENOID VALVES A and B
2. SHIFT SOLENOID VALVES A and B
3. SERVO BODY
4. SECONDARY VALVE BODY
5. MAIN VALVE BODY
6. TORQUE CONVERTER CLUTCH SOLENOID VALVE
7. REGULATOR VALVE BODY
8. LOCK-UP VALVE BODY

Automatic Transmission
System Description (cont'd)

Main Valve Body

The main valve body contains the manual valve, the modulator valve, the 1-2 shift valve, the 2nd orifice control valve, the servo control valve, the CPB (Clutch Pressure Back-up) valve, the relief valve and the ATF pump gears.

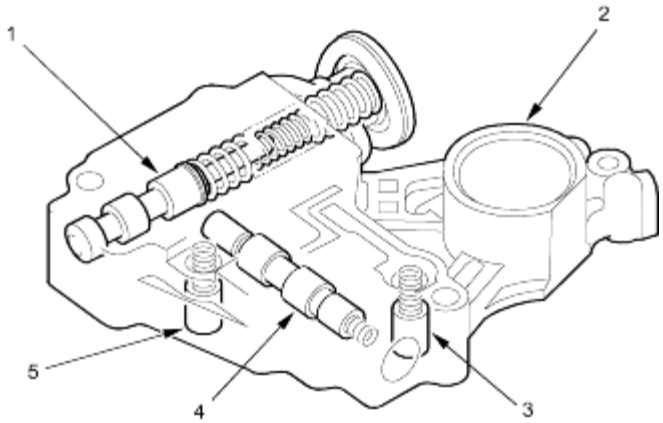
The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.



1. MODULATOR VALVE
2. CPB VALVE
3. 2ND ORIFICE CONTROL VALVE
4. 1-2 SHIFT VALVE
5. MANUAL VALVE
6. SERVO CONTROL VALVE
7. MAIN VALVE BODY
8. RELIEF VALVE

Regulator Valve Body

The regulator valve body contains the regulator valve, the lock-up control valve, the torque converter check valve and the cooler relief valve.



1. REGULATOR VALVE
2. REGULATOR VALVE BODY
3. TORQUE CONVERTER CHECK VALVE
4. LOCK-UP CONTROL VALVE
5. COOLER RELIEF VALVE

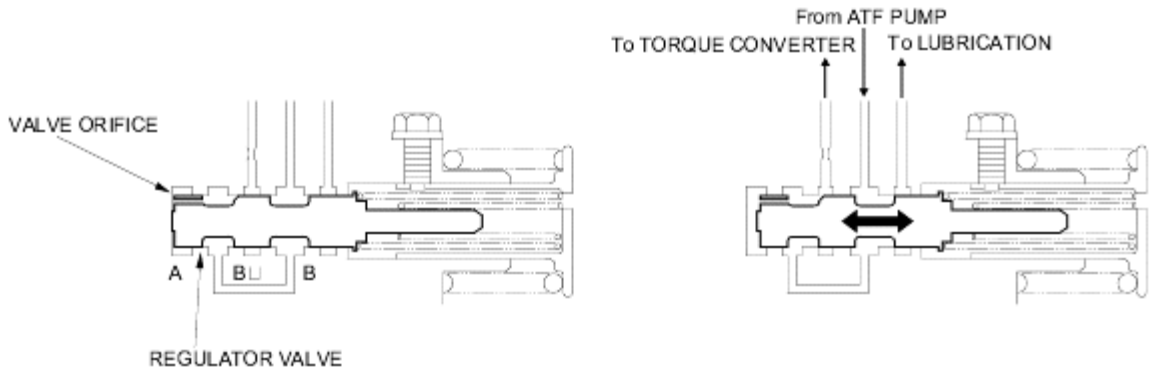
Automatic Transmission
System Description (cont'd)

Hydraulic Control (cont'd)

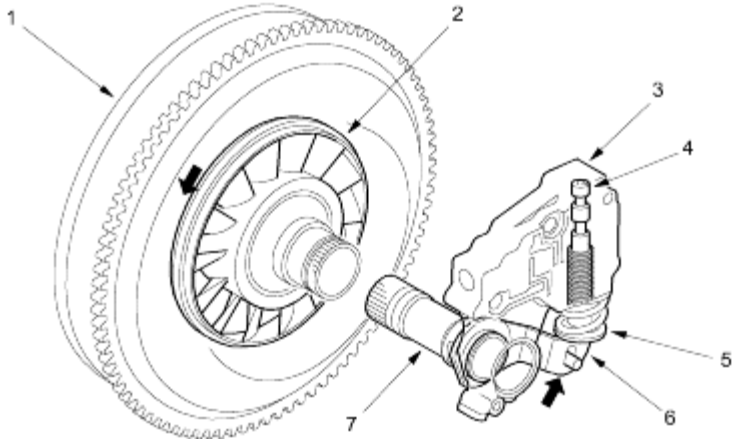
Regulator Valve

The regulator valve maintains a constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and torque converter. The fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve and the regulator valve moves to the left side. According to the level of the hydraulic pressure through B, the position of the regulator valve changes and the amount of fluid from B' through torque converter also changes. This operation is continued, maintaining the line pressure.

NOTE: When used, "left" or "right" indicates direction on the illustration below.



Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (Torque Converter Range), stator torque reaction acts on the stator shaft and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

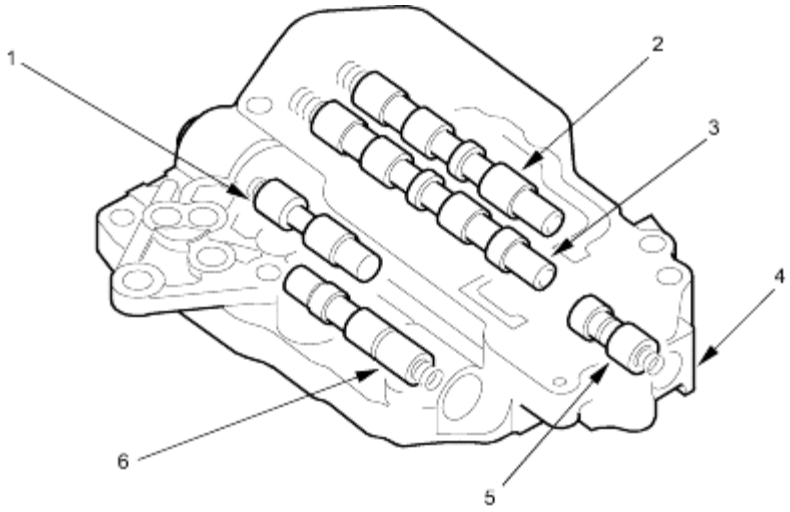


1. TORQUE CONVERTER
2. STATOR
3. REGULATOR VALVE BODY
4. REGULATOR VALVE
5. REGULATOR SPRING CAP
6. STATOR SHAFT ARM
7. STATOR SHAFT

Automatic Transmission
System description (cont'd)

Secondary Valve Body

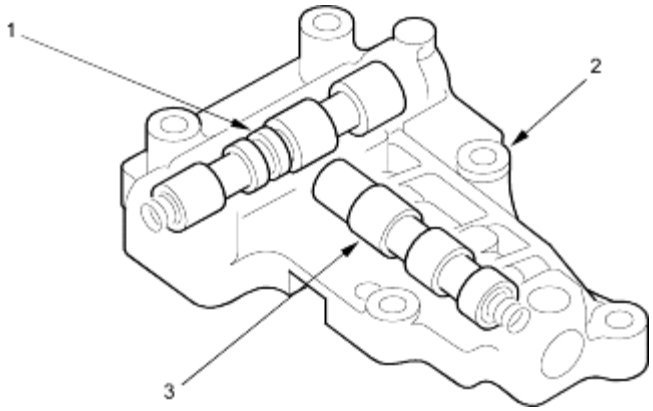
The secondary valve body contains the 2-3 shift valve, the 3-4 shift valve, 3-4 orifice control valve, the 4th exhaust valve and the CPC valve.



1. CPC VALVE
2. 2-3 SHIFT VALVE
3. 3-4 SHIFT VALVE
4. SECONDARY VALVE BODY
5. 4TH EXHAUST VALVE
6. 3-4 ORIFICE CONTROL VALVE

Lock-up Valve Body

The lock-up valve body contains the lock-up shift valve and the lock-up timing valve.



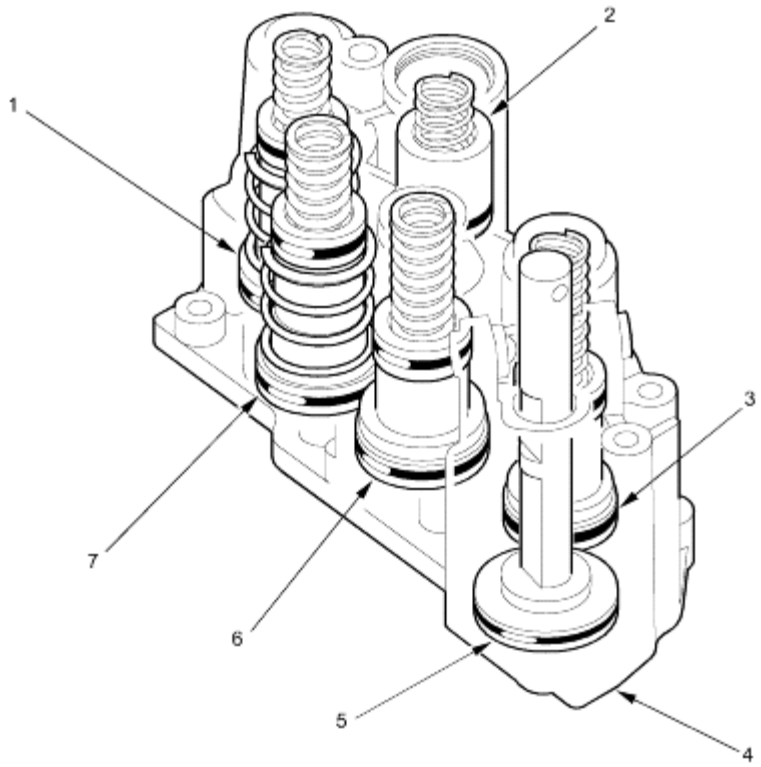
1. LOCK-UP SHIFT VALVE
2. LOCK-UP VALVE BODY
3. LOCK-UP TIMING VALVE

Automatic Transmission
System description (cont'd)

Hydraulic Control (cont'd)

Servo Body

The servo body contains the servo valve and the 1st, 2nd, 3rd and 4th accumulators.



1. 2ND ACCUMULATOR
2. 3RD SUB ACCUMULATOR
3. 1ST ACCUMULATOR
4. SERVO BODY
5. SERVO VALVE/SHIFT FORK SHAFT
6. 4TH ACCUMULATOR
7. 3RD ACCUMULATOR

Automatic Transmission
System description (cont'd)

Hydraulic Flow

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves A and B ON and OFF and shift solenoid valves A and B apply modulator pressure to the shift valves. Applying modulator pressure to the shift valves moves the position of the shift valve and switches the port of hydraulic pressure. The PCM also controls the A/T clutch pressure control solenoid valves A and B. The A/T clutch pressure control solenoid valve A regulates linear solenoid pressure and applies linear solenoid pressure to the CPC valves. The CPC valve regulates CPC pressure and controls to shift smoothly between upper and lower gears.

Hydraulic pressure at the port is as follows:

PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE
1	LINE	15	1ST-HOLD CLUTCH
1'	LINE	16	1ST-HOLD CLUTCH
1"	LINE	17	1ST-HOLD CLUTCH
2	LINE	18	1ST-HOLD CLUTCH
3	LINE	20	2ND CLUTCH
3'	LINE	20A	2ND ACCUMULATOR
3"	LINE	30	3RD CLUTCH
4	LINE	40	4TH CLUTCH
4'	LINE	41	4TH CLUTCH
4"	LINE	56	LINEAR SOL A
5	CPC	90	TORQUE CONVERTER
6	MODULATOR	91	TORQUE CONVERTER
6A	MODULATOR (SH A)	92	TORQUE CONVERTER
6B	MODULATOR (SH B)	93	ATF COOLER
6C	MODULATOR (LC A)	94	TORQUE CONVERTER
6E	LINEAR SOL B	95	LUBRICATION
6E'	LINEAR SOL B	96	TORQUE CONVERTER
7	LINE	97	TORQUE CONVERTER
8	LINE/CPC	99	SUCTION
9	LINE	X	DRAIN
10	1ST CLUTCH	HIX	HIGH POSITION DRAIN

Key to abbreviations:

- CPC: Clutch pressure control
- SH A: Shift solenoid valve A
- SH B: Shift solenoid valve B
- LC A: Torque converter clutch solenoid valve
- LINEAR SOL A: A/T clutch pressure control solenoid valve A
- LINEAR SOL B: A/T clutch pressure control solenoid valve B

Automatic Transmission
System description (cont'd)

Hydraulic Flow (cont'd)

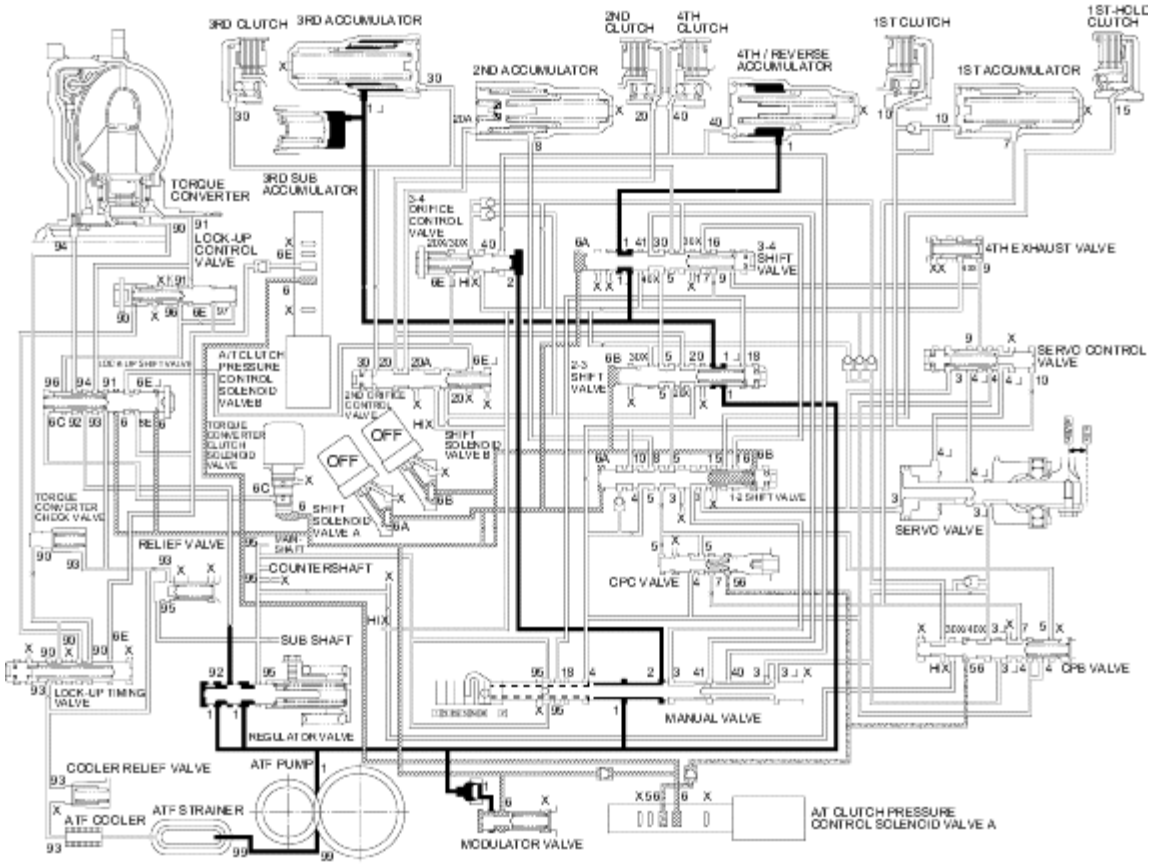
N Position

The PCM turns the shift solenoid valve A and B OFF. Line pressure (1) passes through the manual valve, but it does not flow to the clutches. Line pressure (1) also flows to the modulator valve and becomes to modulator pressure (6). Modulator pressure (6) flows to the shift valves by means of the shift solenoid valves A and B OFF.

Under this condition, hydraulic pressure is not applied to the clutches.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



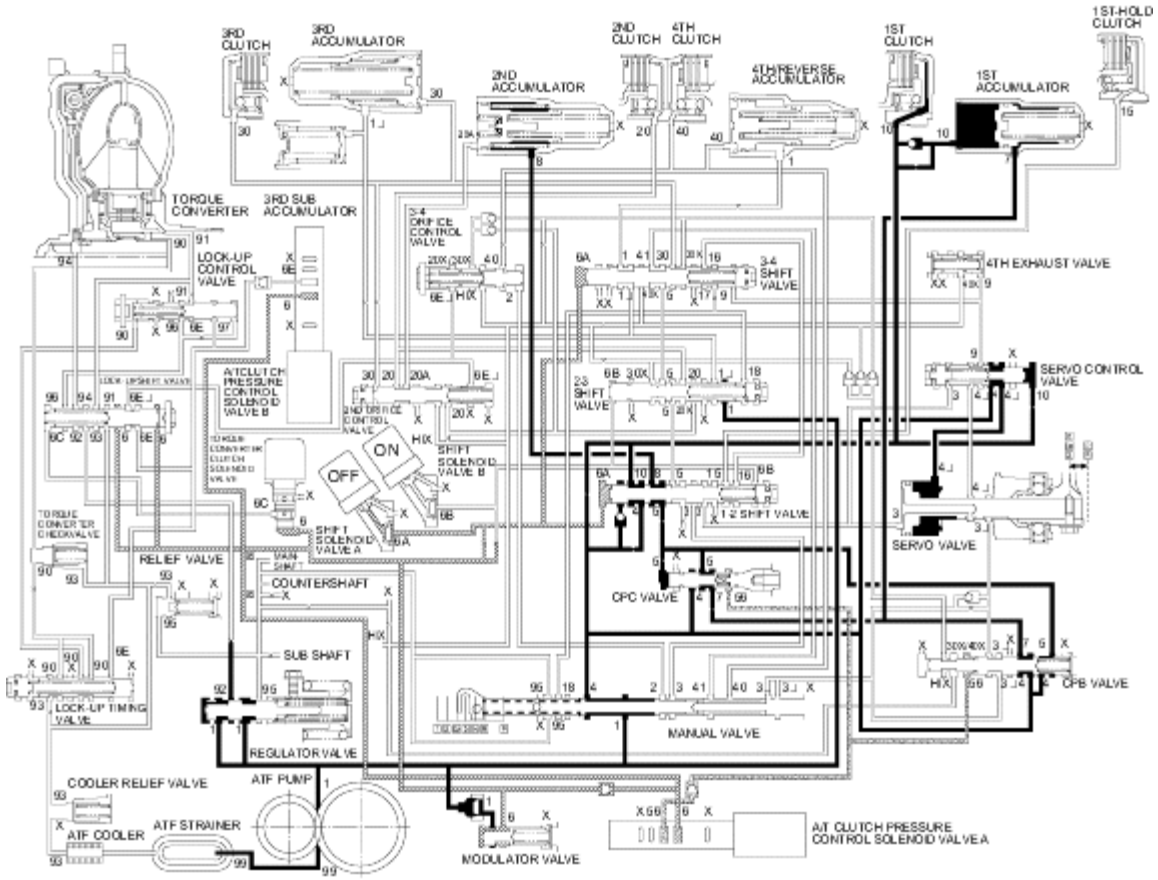
Automatic Transmission
System description (cont'd)

D or D3 Position in 1st gear

When shifting to D or D3 position from N, the manual valve uncovers the port leading line pressure (4) to the 1st clutch and the PCM turns the shift solenoid valve B ON, but shift solenoid valve A remains OFF. Modulator (SH B) pressure (6B) in the right side of the 1-2 shift valve and in the left side of the 2-3 shift valve is released, then 1-2 shift valve is moved to the right side and 2-3 shift valve is moved to the left side. The 1-2 shift valve creates 1st clutch circuit bypass to reduce engaging shock of the 1st clutch. The 1st clutch pressure (10) is applied to the 1st clutch and the 1st clutch is engaged.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

Hydraulic Flow (cont'd)

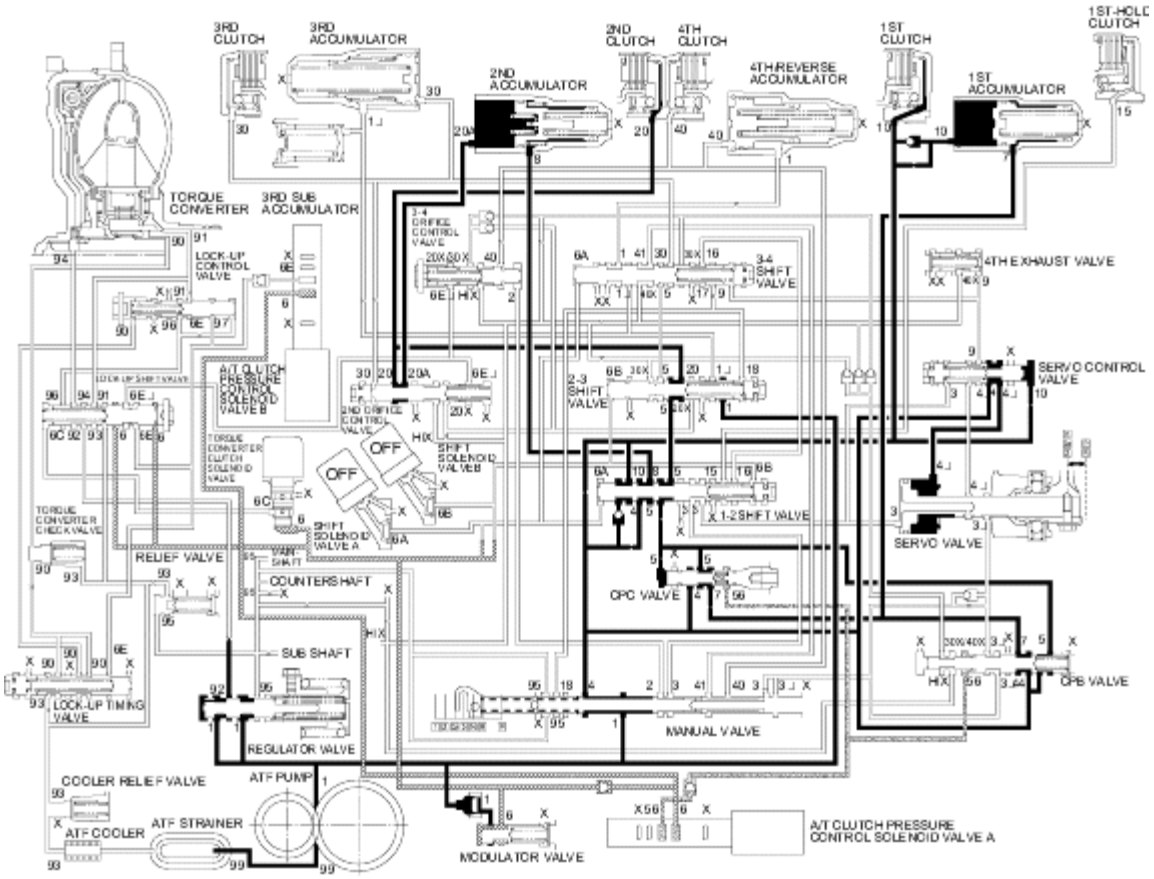
D or **D3** Position in 2nd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns the shift solenoid valve A ON. Shift solenoid valve B remains ON and modulator (SH A) pressure (6A) in the left side of the 1-2 shift valve and 3-4 shift valve is released. The 1-2 and 3-4 shift valves are moved to the left side and the 1-2 shift valve uncovers the port leading CPC pressure (5) to the 2-3 shift valve. CPC pressure (5) becomes 2nd clutch pressure (20) at the 2-3 shift valve. The 2nd clutch pressure (20) is applied to the 2nd clutch and the 2nd clutch is engaged.

Line pressure (4) also flows to the 1st clutch and the 1st clutch is engaged. However, no power is transmitted because of the one-way clutch.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

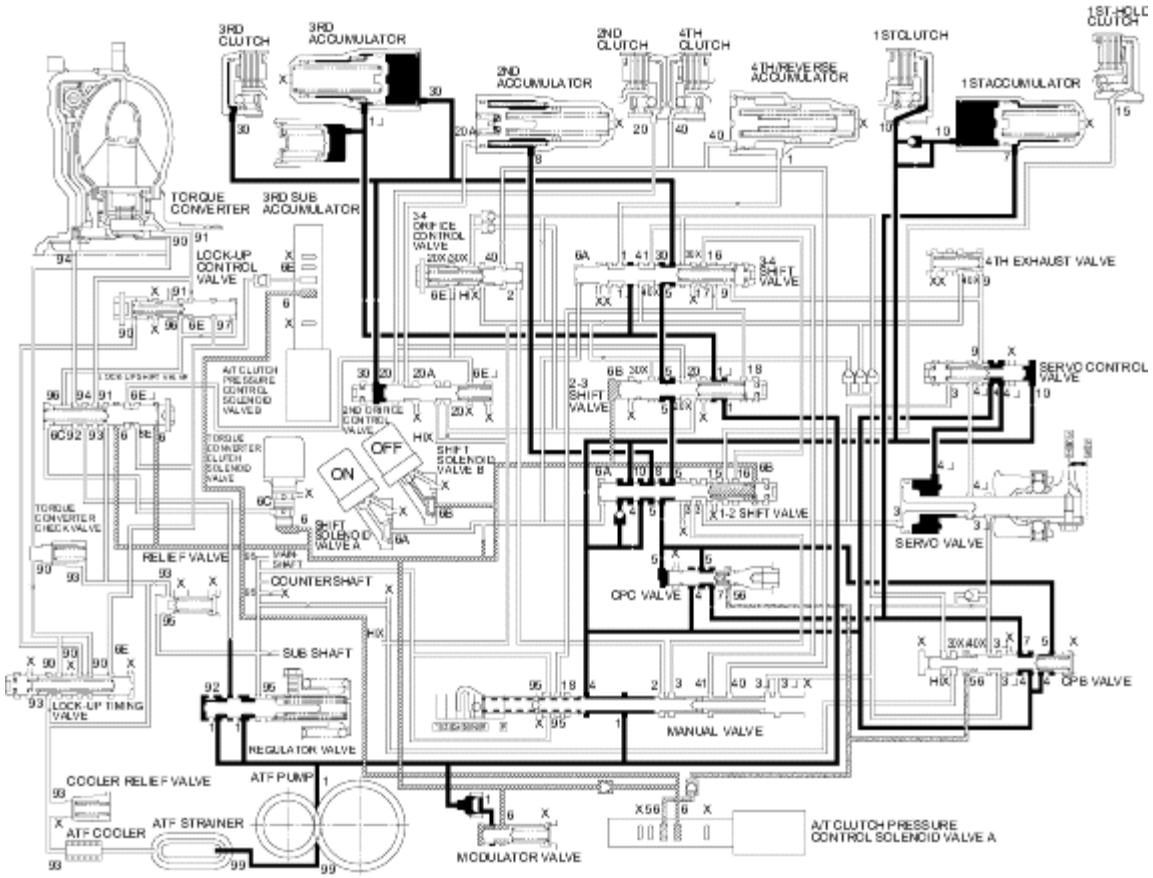
D or D3 Position in 3rd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns the shift solenoid valve B OFF. Shift solenoid valve A remains ON and modulator (SH B) pressure (6B) is applied to the right side of the 1-2 shift valve and to the left side of the 2-3 shift valve. The 2-3 shift valve is moved to the right side to switch the port leading CPC pressure (5) to the 3-4 shift valve, then CPC pressure (5) becomes the 3rd clutch pressure (30) at the 3-4 shift valve. The 3rd clutch pressure (30) is applied to the 3rd clutch and the 3rd clutch is engaged.

Line pressure (4) also flows to the 1st clutch and the 1st clutch is engaged. However, no power is transmitted because of the one-way clutch.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission

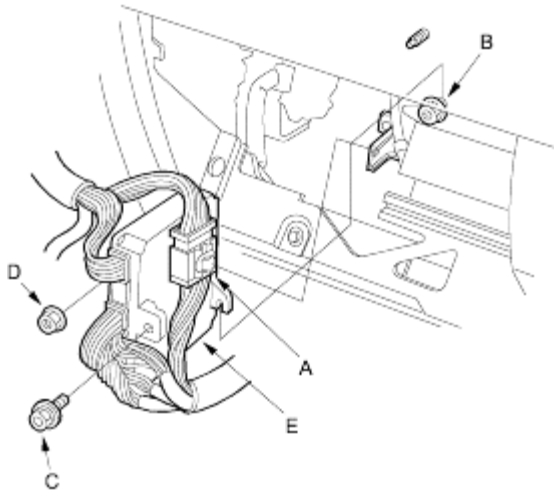
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM

4-door Model

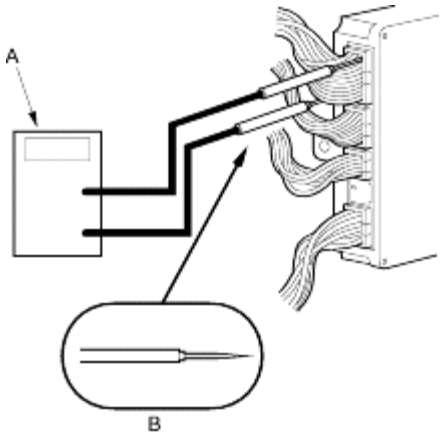
SRS components are located in the area. Review the SRS components locations, precautions and procedures in the SRS section before performing repairs or service.

1. 1. Remove the glove box stops, then open the glove box.
   2. Remove the harness connector clamp (A) from its bracket.
   3. Loosen the mounting nut (B) on the lower right of the PCM and remove the mounting bolt (C) and nut (D) on the left of the PCM.



2. 4. Lift the PCM up to clear the mounting nut on the lower right of the PCM, then pull out the PCM (E).

1. 5. Inspect the circuit on the PCM, according to the DTC troubleshooting, with a digital multitester (A) and tapered tip probe (B) as shown.



2. 6. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

Automatic Transmission
System description (cont'd)

Hydraulic Flow (cont'd)

D Position in 4th gear

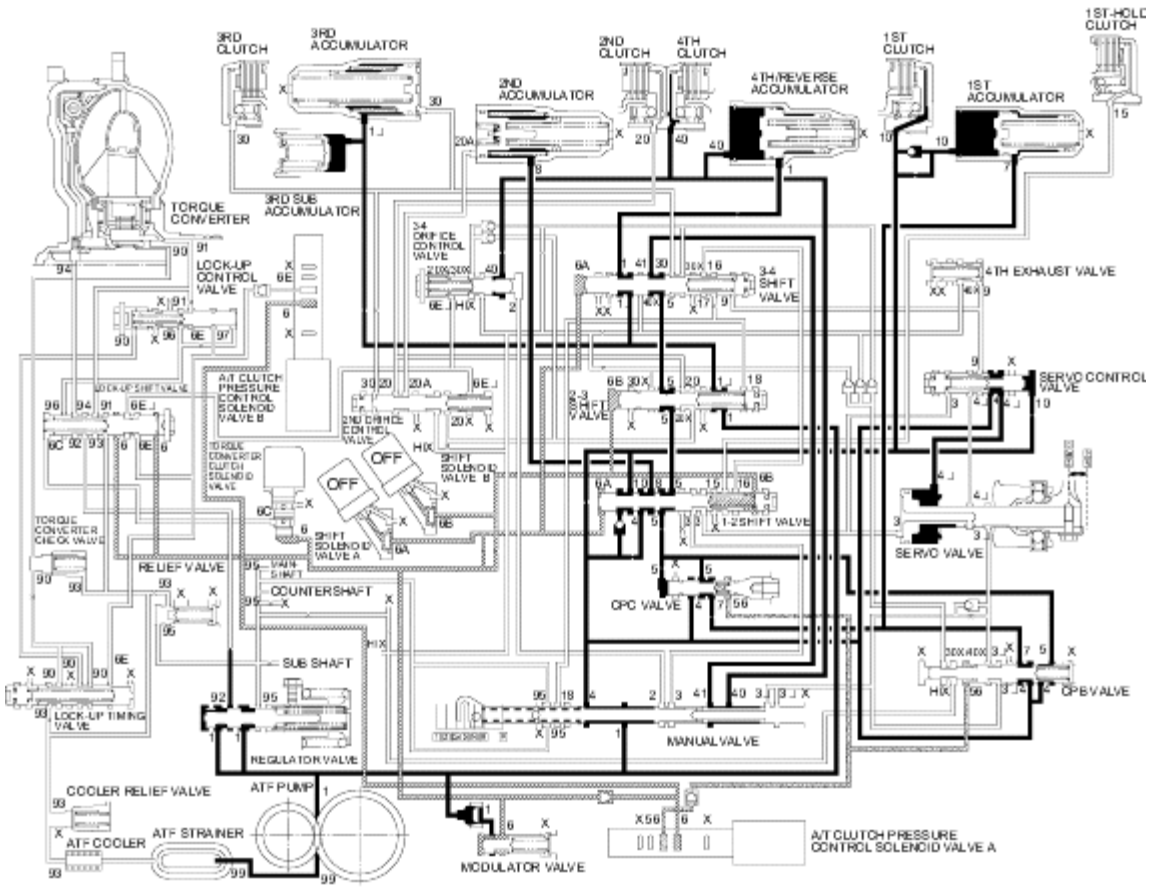
As the speed of the vehicle reaches the prescribed value, the PCM turns the shift solenoid valve A OFF. Shift solenoid valve B remains OFF and modulator (SH A) pressure (6A) is applied to the left side of the 3-4 shift valve.

The 3-4 shift valve is moved to the right side to switch the port CPC pressure (5) to the 4th clutch pressure (41), the 4th clutch pressure (41) becomes the 4th clutch pressure (40) at the manual valve. The 4th clutch pressure (40) is applied to the 4th clutch and the 4th clutch is engaged.

Line pressure (4) also flows to the 1st clutch and the 1st clutch is engaged. However, no power is transmitted because of the one-way clutch.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

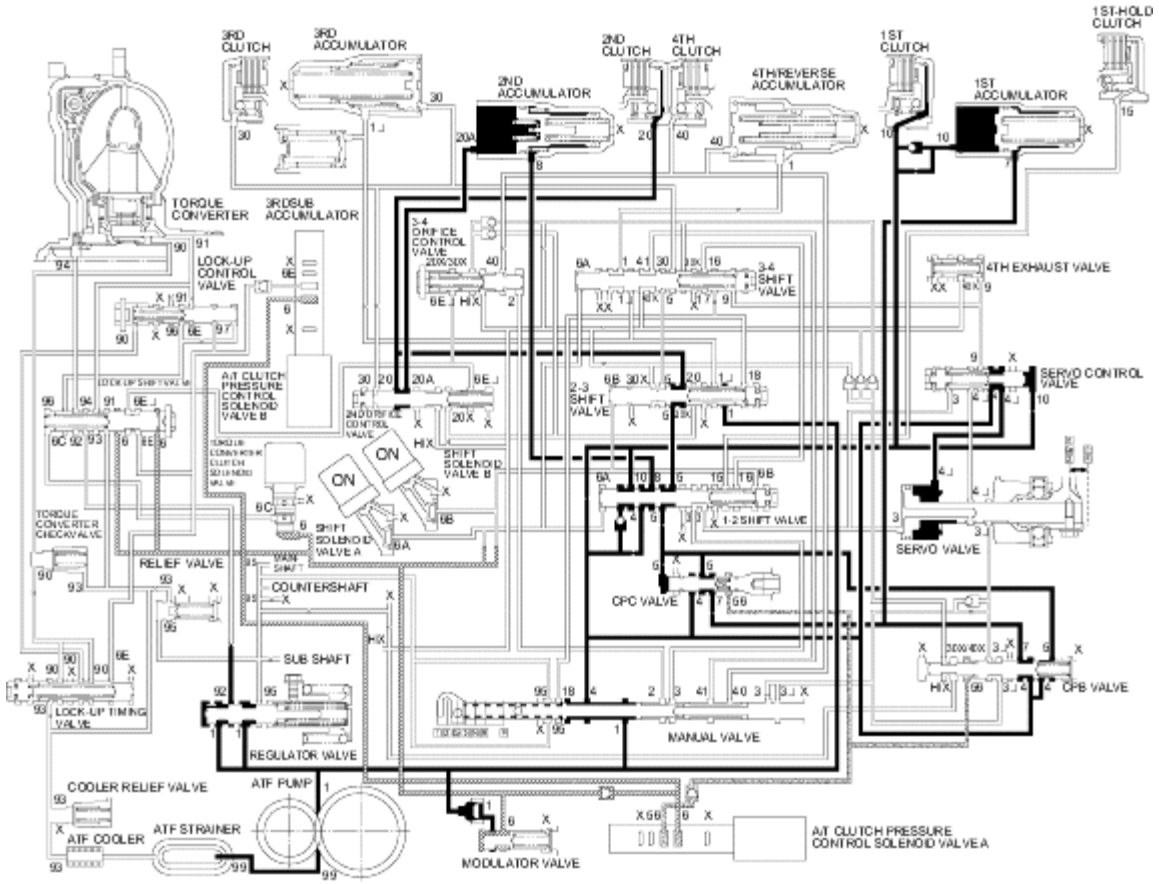
2 Position

The PCM turns the shift solenoid valves A and B ON. The 1-2 shift valve and 2-3 shift valve uncover the ports leading CPC pressure (5) to the 2nd clutch, CPC pressure (5) becomes the 2nd clutch pressure (20) at the 2-3 shift valve. The 2nd clutch pressure (20) is applied to the 2nd clutch and the 2nd clutch is engaged.

Line pressure (4) passed through the manual valve also flows to the 1st clutch and the 1st clutch is engaged. However, no power is transmitted because of the one-way clutch.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

Hydraulic Flow (cont'd)

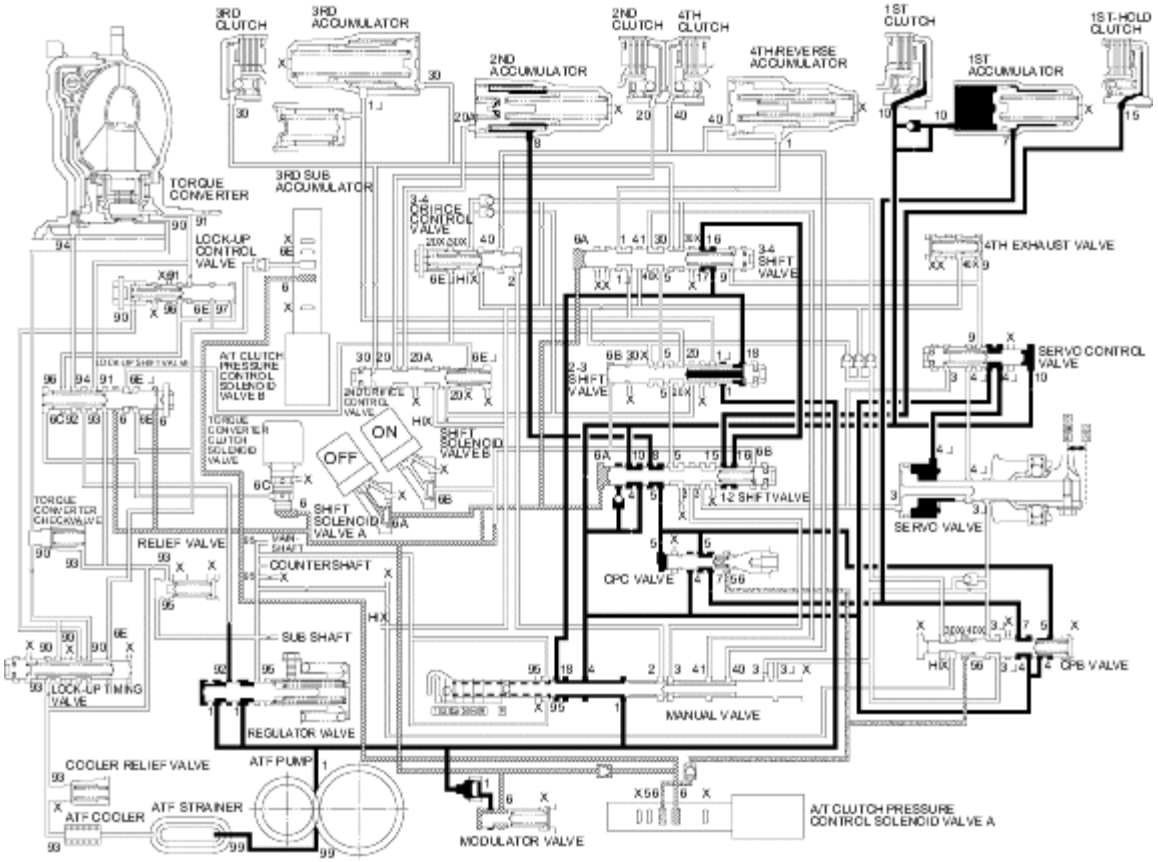
1 Position

Line pressure (1) changes the line pressure (4) and 1st-hold clutch pressure (18) at the manual valve. Line pressure (4) becomes the 1st clutch pressure (10) and flows to the 1st clutch and the 1st clutch is engaged.

The PCM controls the shift solenoid valve A OFF and B ON. Modulator pressure (6A) applies the left side of the 1-2 shift valve and 3-4 shift valve and the valves uncover the port leading 1st-hold clutch pressure to the 1st-hold clutch. The 1st-hold clutch pressure (18) passes through the 3-4 shift valve and the 1-2 shift valve and becomes the 1st-hold clutch pressure (15). The 1st-hold clutch pressure (15) flows to the 1st-hold clutch and the 1st-hold clutch is engaged.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- 1 position is applied to the 7-position transmission.



Automatic Transmission
System description (cont'd)

R Position

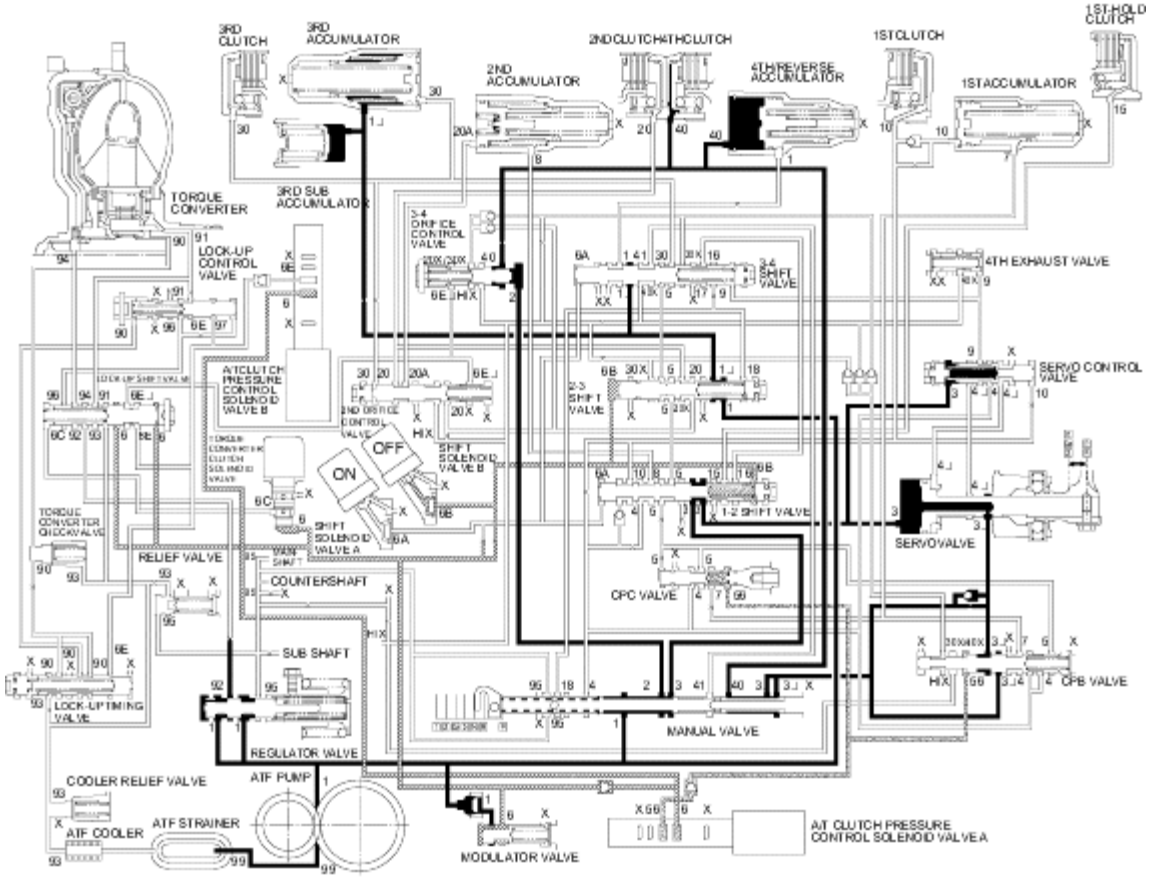
The PCM turns the shift solenoid valves A ON and B OFF and modulator (SH B) pressure (6B) is applies to the right side of the 1-2 shift valve and to the left side of the 2-3 shift valve. Line pressure (3) passed through the manual valve flows to the 1-2 shift valve and changed to line pressure (3'). Line pressure (3') pushes the servo valve to the reverse/park position, passes through the servo valve and flows to the manual valve. Line pressure (3') becomes the 4th clutch pressure (40) at the manual valve. The 4th clutch pressure (40) is applied to the 4th clutch and the 4th clutch is engaged.

Reverse Inhibitor Control

When the R position is selected while the vehicle is moving forward at speed over 6 mph (10 km/h), the PCM outputs the 1st speed signal to shift solenoid valves A and B; shift solenoid valve A is OFF and shift solenoid valve B is turned ON. The 1-2 shift valve is moved to the right side and covers the port to stop line pressure (3') to the servo valve. Line pressure (3') is not applied to the servo valve and the 4th clutch pressure (40) is not applied to the 4th clutch. Power is not transmitted to the reverse direction.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

Hydraulic Flow (cont'd)

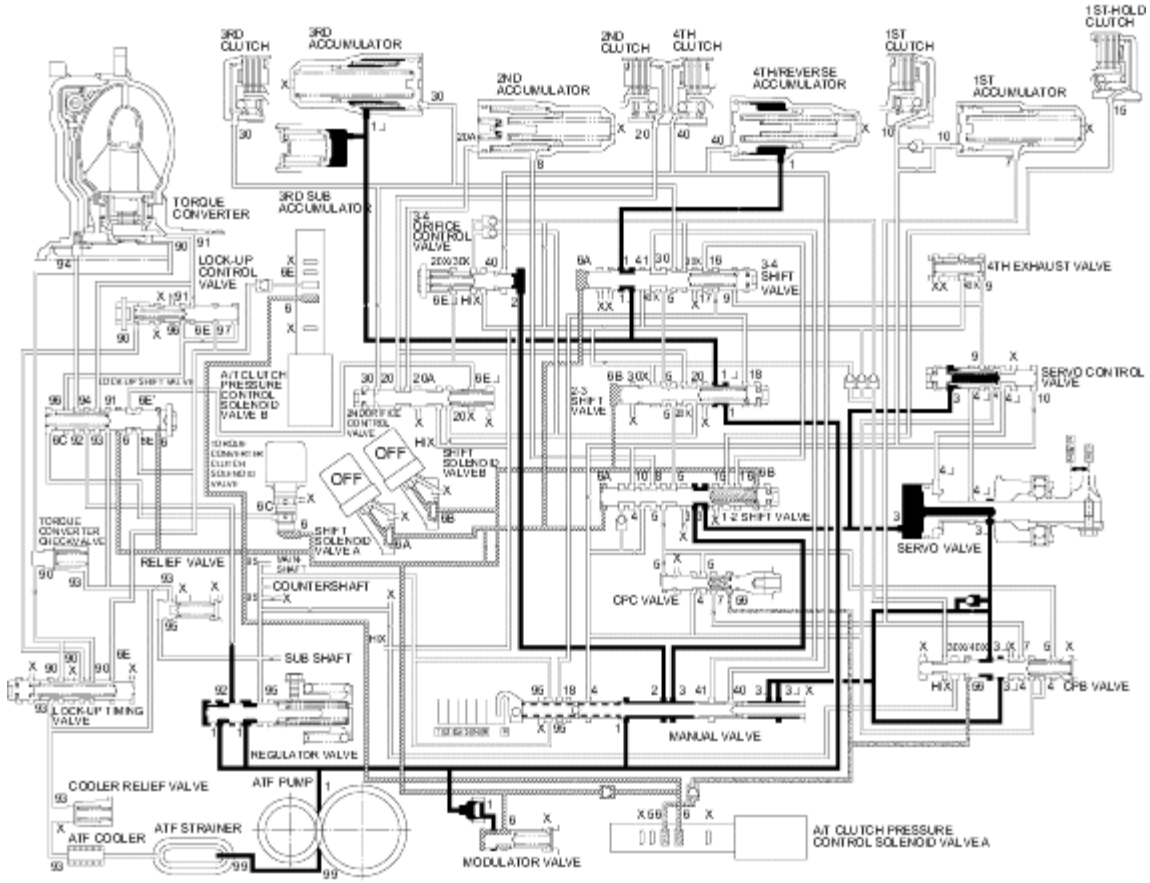
P Position

Line pressure (3) passed through the manual valve flows to the 1-2 shift valve and changed to line pressure (3').

Line pressure (3') pushes the servo valve to the reverse/park position, passes through the servo valve and flows to the manual valve. Line pressure (3') is intercepted at the manual valve and hydraulic pressure is not applied to the clutches.

NOTE:

- When used, "left" or "right" indicates direction on the hydraulic circuit.
- There are 4 hydraulic circuits; 6-position, 6-position with the 3rd sub accumulator, 7-position and 7-position with the 3rd sub accumulator. The illustration shows the 7-position transmission circuit; 6-position circuit does not include 1st-hold clutch line.



Automatic Transmission
System description (cont'd)

Lock-up System

In [D] position (3rd and 4th) and [D3] position (3rd), pressurised fluid is drained from the back of the torque converter through a fluid passage, causing the lock-up piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with hydraulic control, the PCM optimises the timing of the lock-up mechanism. When the torque converter clutch solenoid valve activates, modulator pressure changes to switch lock-up on and off. The lock-up control valve and the lock-up timing valve control the range of the lock-up according to A/T clutch pressure control solenoid valve B. The torque converter clutch solenoid valve is mounted on the torque converter housing and A/T clutch pressure control solenoid valve B is mounted on the transmission housing with solenoid valve A as an assembly. They are all controlled by the PCM.

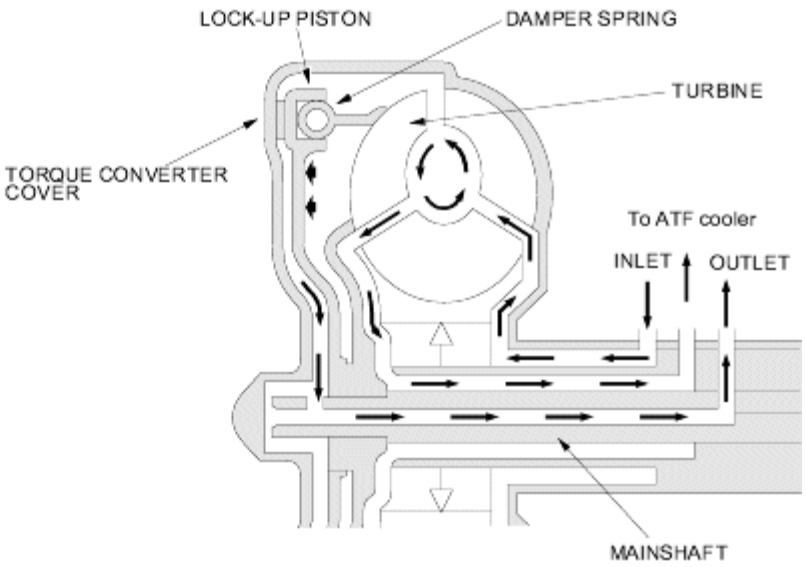
Lock-up Clutch ON (Engaging Lock-up Clutch)

Fluid in the camber between the torque converter cover and the lock-up clutch piston is drained off and fluid entered from the chamber between the pump and stator exerts pressure through the lock-up clutch piston against the torque converter cover. The lock-up clutch piston engages with the torque converter cover (lock-up clutch ON) and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Lock-up piston
↓
Damper spring
↓
Turbine
↓
Mainshaft

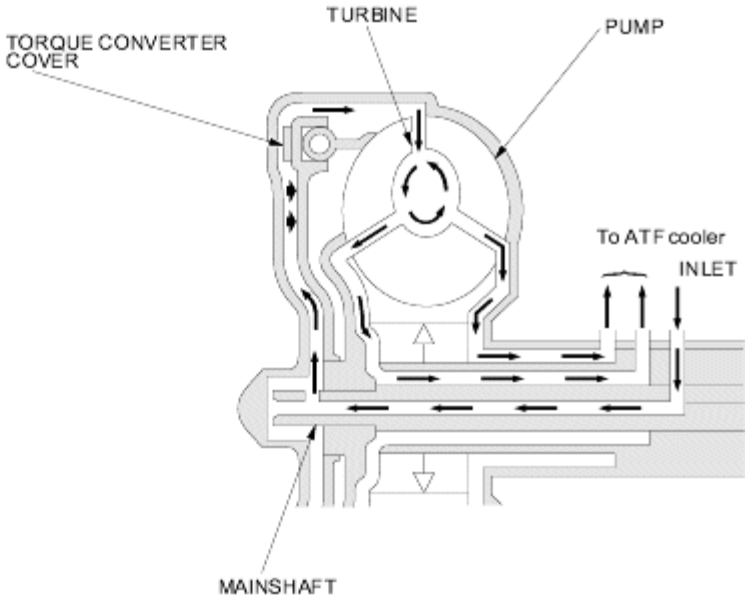


Lock-up Clutch OFF (Disengaging Lock-up Clutch)

Fluid entered from the chamber between the torque converter cover and the lock-up clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator and between the pump and the stator. As a result, the lock-up clutch pistoNmoves away from the torque converter cover and the lock-up clutch is released (lock-up clutch OFF).

Power flow

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



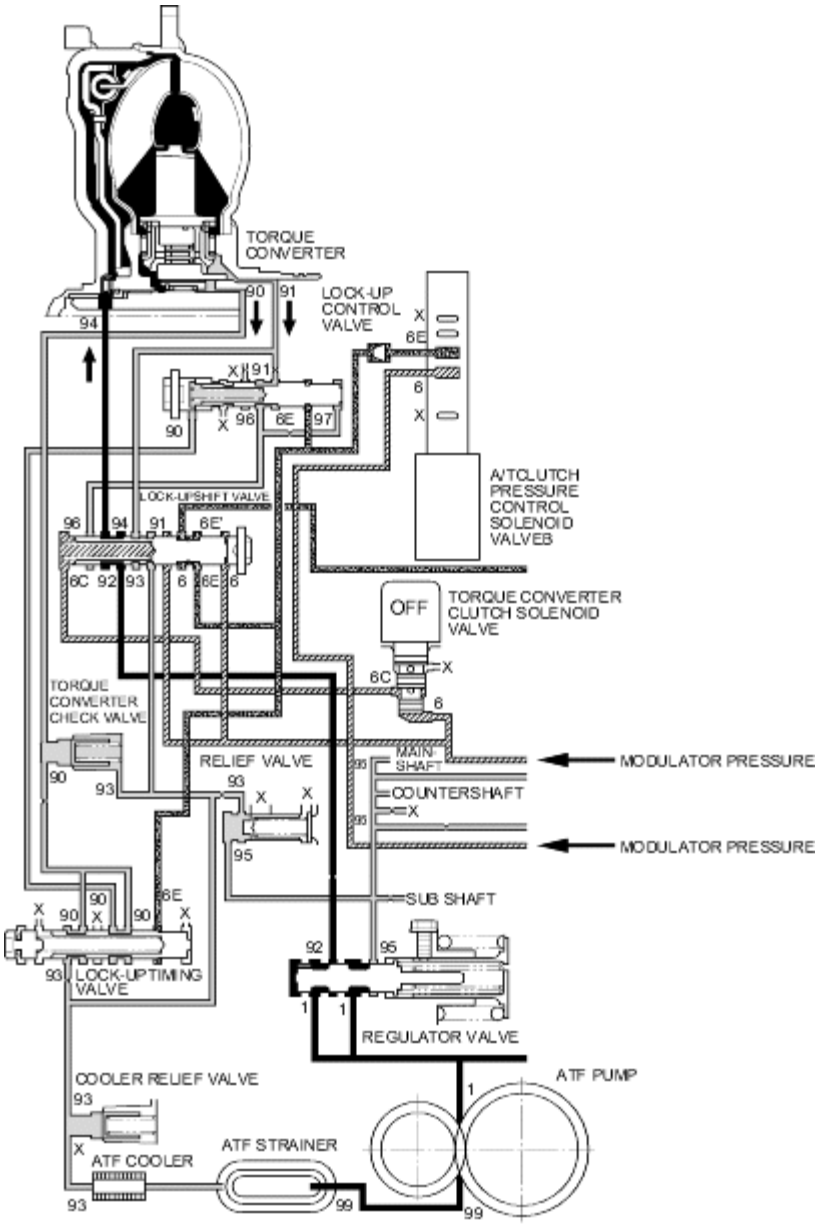
Automatic Transmission
System description (cont'd)

Lock-up System (cont'd)

No Lock-up

The torque converter clutch solenoid valve is turned OFF by the PCM. The lock-up shift valve receives modulator (LC A) pressure (6C) on the left side and stays in the right side to uncover the port leading torque converter pressure (94) to the left side of the torque converter. Torque converter pressure (94) enters into the left side of the torque converter to disengage the lock-up clutch. The lock-up clutch piston keeps away from the torque converter cover; the lock-up clutch is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

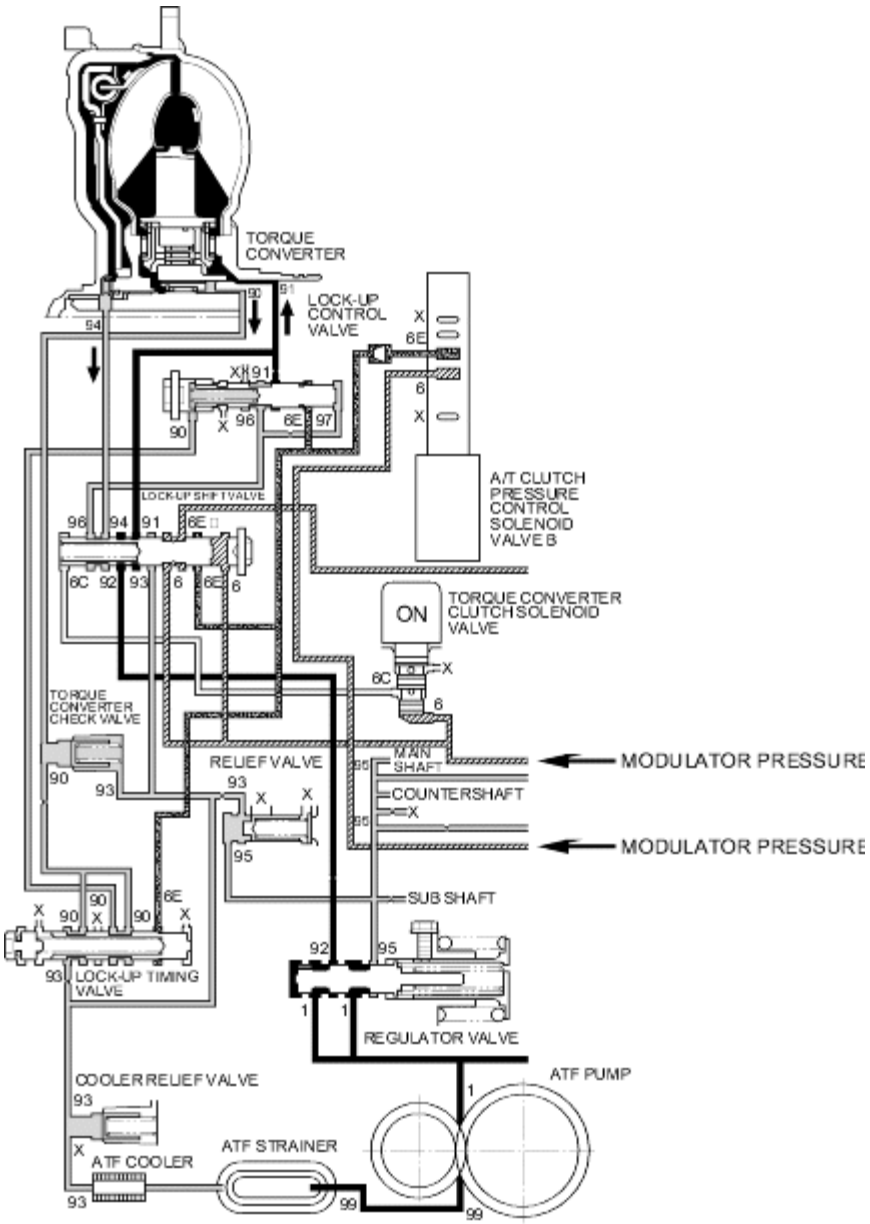


Automatic Transmission
System description (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the prescribed value, the torque converter clutch solenoid valve is turned ON by the PCM. Modulator (LC A) pressure (6C) in the left side of the lock-up shift valve is released and the lock-up shift valve is moved to the left side to switch the port leading torque converter pressure (91) to the right side of the torque converter. Torque converter pressure (91) flows to the right side of the torque converter to engage the lock-up clutch. The PCM also controls the A/T clutch pressure control solenoid valve B and linear sol B pressure (6E) is applied to the lock-up control valve and the lock-up timing valve. The positions of the lock-up control valve and lock-up timing valve depend on torque converter pressure and linear sol B pressure. When linear sol B pressure (6E) is low, torque converter pressure (91) from the lock-up shift valve to the right side of the torque converter is low, because torque converter pressure (91) leaks at the lock-up control valve. The lock-up clutch is engaged partially. Linear solenoid B pressure (6E) increases, the lock-up control valve is moved to the left side to cover the port draining torque converter pressure (91) and torque converter pressure (91) to torque converter is increased. The engagement of the lock-up clutch depends on torque converter pressure (91).

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



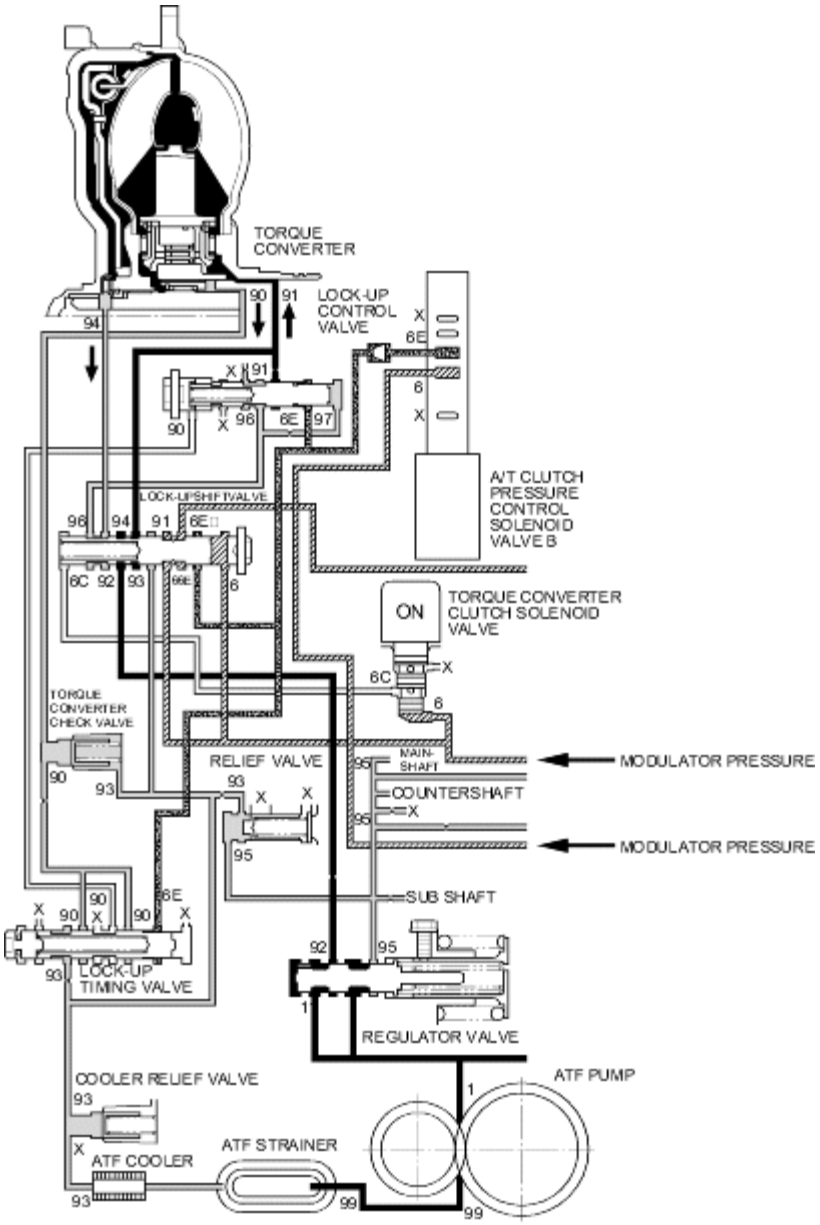
Automatic Transmission
System description (cont'd)

Lock-up System (cont'd)

Full Lock-up

When the vehicle speed further increases, the PCM controls the A/T clutch pressure control solenoid valve B to increase linear solenoid B pressure (6E). Linear solenoid B pressure (6E) is applied to the lock-up control valve and the lock-up timing valve and moves them to the left side. Torque converter pressure (94) from the left side of the torque converter is drained at the lock-up control valve and torque converter pressure (91) engages the lock-up clutch securely.

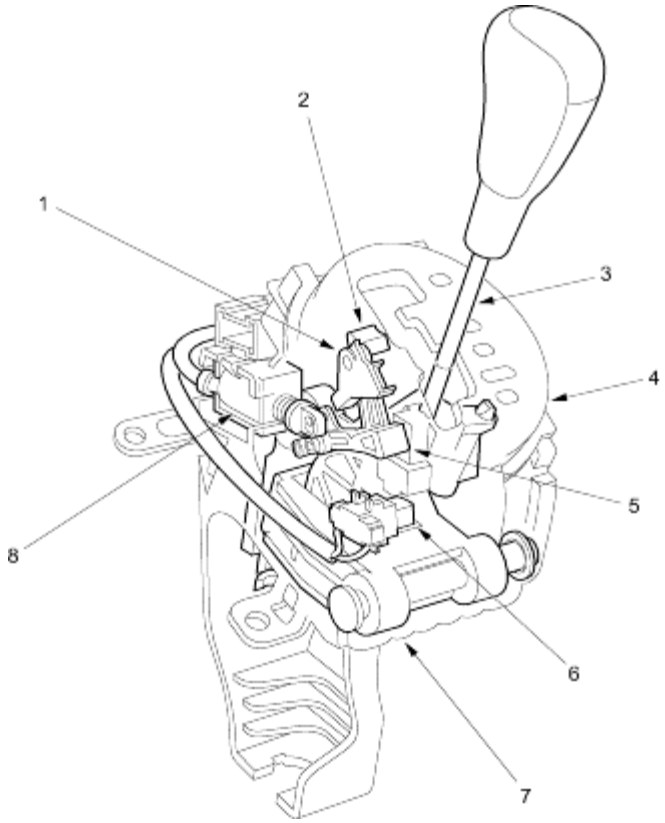
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Automatic Transmission
System description (cont'd)

Shift Lever Mechanism: 5-door Model

The shift lever has 7 positions: P, R, N, D, D3, 2 and 1 and shifts between positions along the gate in the A/T gear position indicator panel. The shift lever can shift out of P position and into R position from N without pressing or pulling the shift lever. The shift lock/reverse lock mechanism is an additional shift lever lockout mechanism. The shift lever sifts the transmission into P, R, N, D, 2 and 1 positions using the shift cable connected between the shift lever and the transmission control shaft. When the shift lever shifts into D3 position, the shift lever is moved to left from D position and it pushes the D3 switch to turn ON. Then the transmission shifts into D3 positioNmode, but the shifting position in the transmission is held in D position.



1. SHIFT LOCK RELEASE
2. SHIFT LOCK STOP
3. SHIFT LEVER
4. A/T GEAR POSITION INDICATOR PANEL
5. REVERSE LOCK STOP
6. D3 SWITCH
7. SHIFT LEVER BRACKET BASE
8. SHIFT LOCK SOLENOID

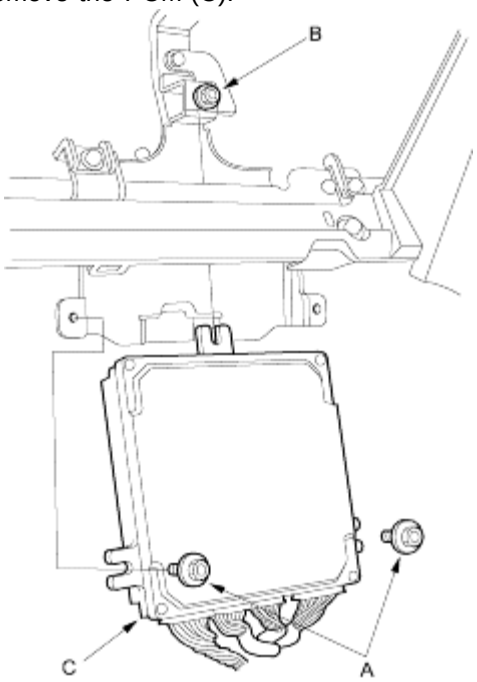
Automatic Transmission

General Troubleshooting Information (cont'd)

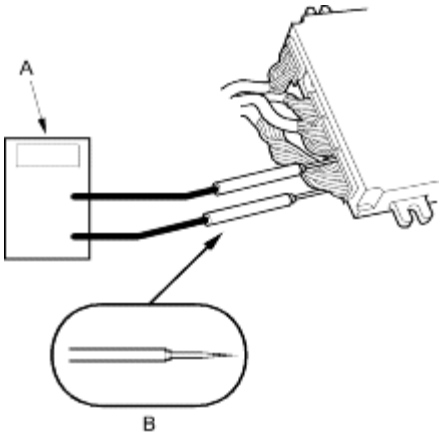
5-door Model

SRS components are located in this area. Review the SRS components locations, precautions and procedures in the SRS section before performing repairs or service.

1. 1. Remove the screws securing the bottom of the glove box, then remove the glove box with removing the stops.
   2. Remove the lower cover.
   3. Remove the mounting bolts (A) on both sides of the PCM and loosen upper mounting bolt (B), then remove the PCM (C).



1. 4. Inspect the circuit on the PCM, according to the DTC troubleshooting, with a digital multitester (A) and tapered tip probe (B) as shown.



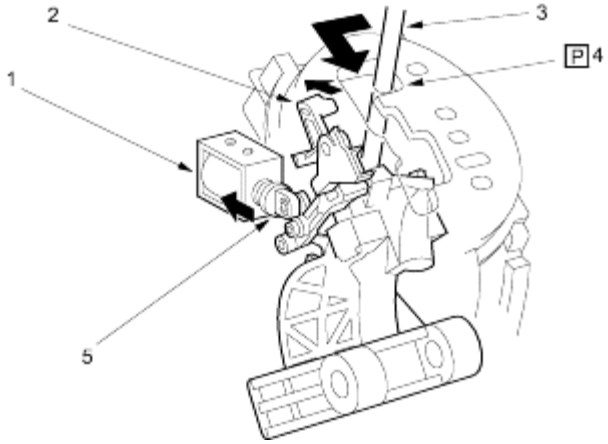
2. 5. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

Automatic Transmission
System description (cont'd)

Shift Lock/Reverse Lock Mechanism

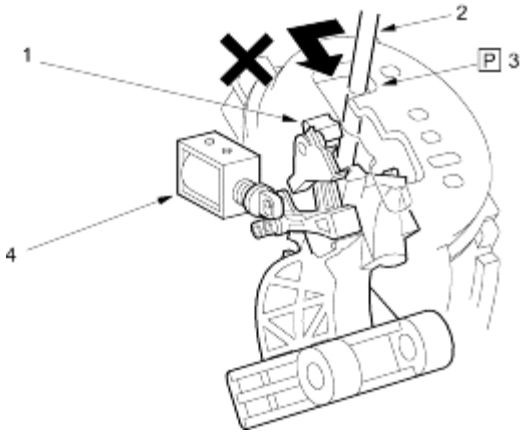
The shift lock system reduces the risk of unintentional engine starting. Starting the engine possible only in [P] and [N] positions. The shift lock mechanism consists of the shift lock solenoid, shift lock stop, shift lock release and related parts. The reverse lock mechanism shares with the shift lock mechanism. The shift lock solenoid is electronically controlled by these shift lock/reverse lock control system signals. If the shift lock solenoid does not operate, the shift lock/reverse lock mechanism can be released by pressing the shift lock release.

In [P] position while pressing the brake pedal and releasing the accelerator, the shift lock solenoid is turned ON and the shift lock solenoid plunger is retracted to release the shift lock stop. This allows the shift lever to be moved.



1. SHIFT LOCK STOP
2. SHIFT LOCK STOP
3. SHIFT LEVER
4. [P] POSITION
5. SHIFT LOCK SOLENOID PLUNGER

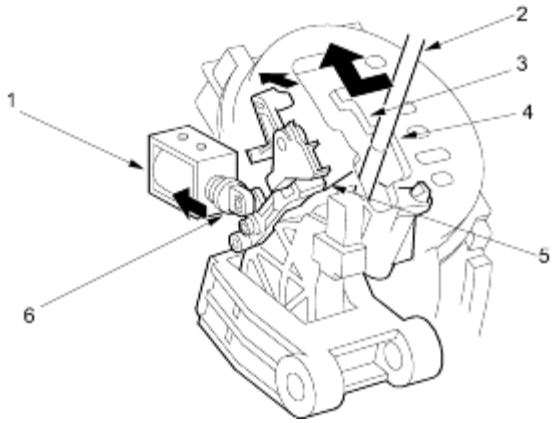
When the brake pedal is released, the shift lock solenoid remains OFF and the shift lock stop locks the shift lever in [P] position.



1. SHIFT LOCK STOP
2. SHIFT LEVER
3. [P] POSITION
4. SHIFT LOCK SOLENOID

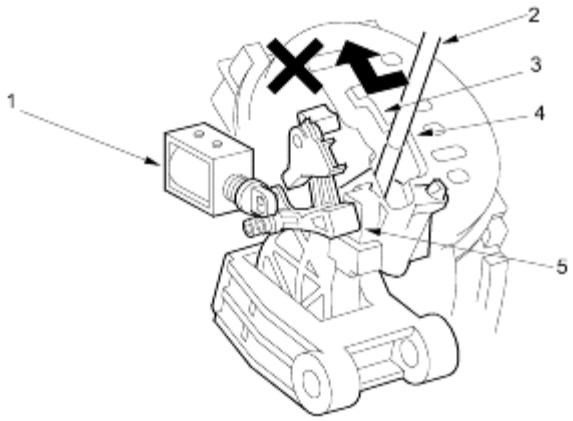
Automatic Transmission
System description (cont'd)

When the shift lever is shifted to [R] position from [N] position, the shift lock solenoid is turned ON and the shift lock solenoid plunger is retracted to release the reverse lock stop. This allows the shift lever to be moved to [R] position.



1. SHIFT LOCK SOLENOID
2. SHIFT LEVER
3. [R] POSITION
4. [N] POSITION
5. REVERSE LOCK STOP
6. SHIFT LOCK SOLENOID PLUNGER

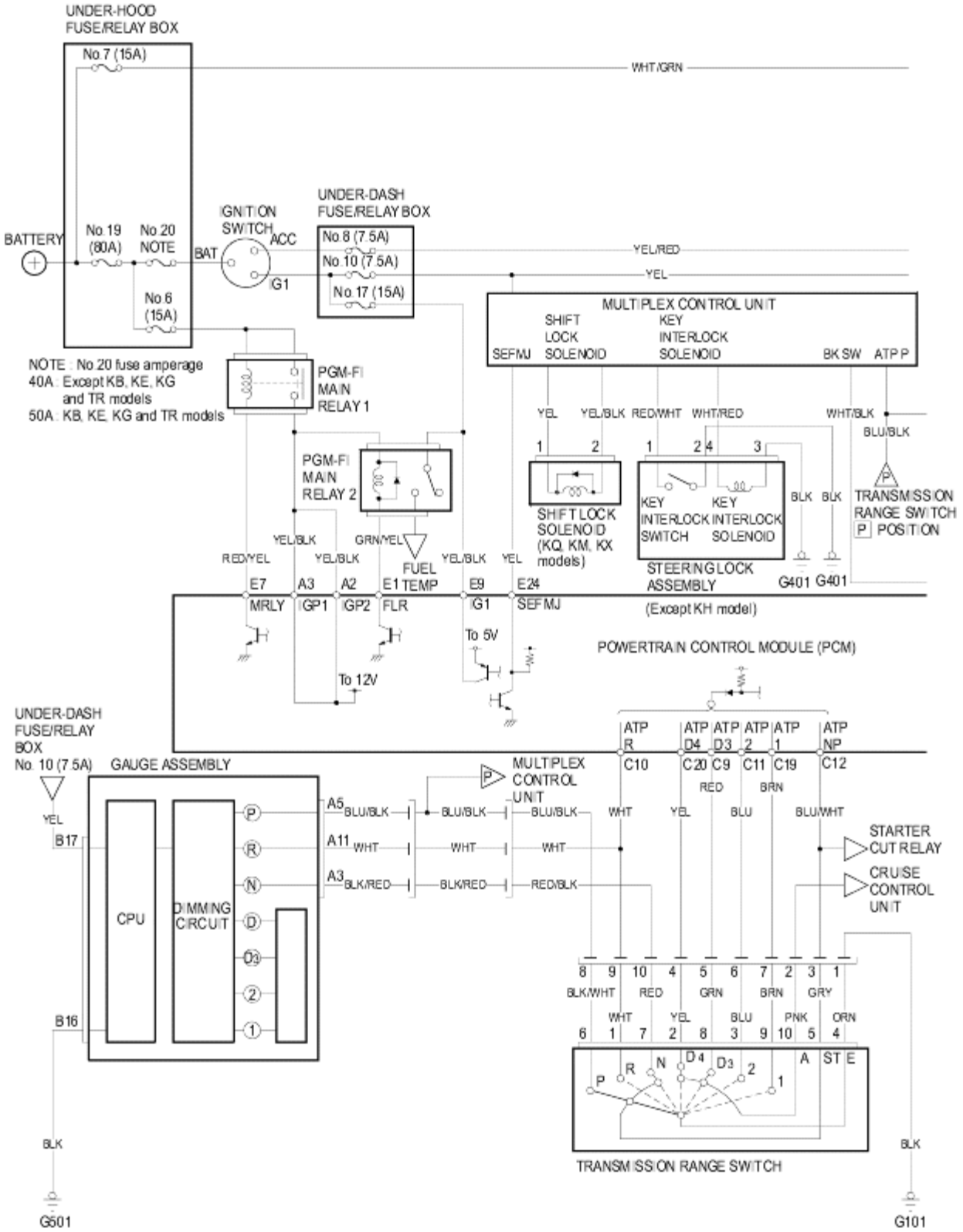
In the allowable conditions of turning ON the solenoid are not met, the shift lock solenoid remains OFF and the reverse lock stop locks the shift lever in the [N] position.



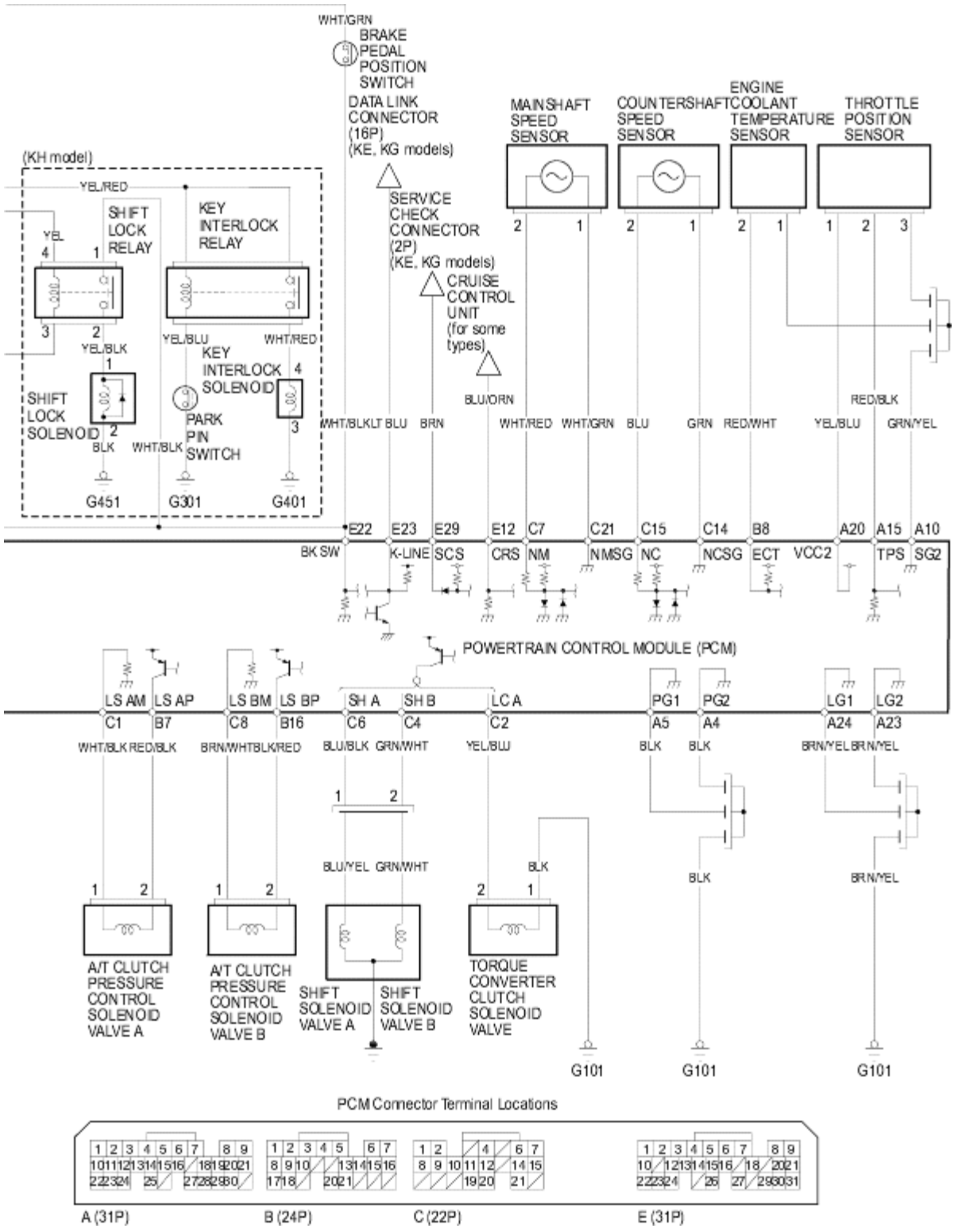
1. SHIFT LOCK SOLENOID
2. SHIFT LEVER
3. [P] POSITION
4. [N] POSITION
5. REVERSE LOCK STOP

Automatic Transmission
System description (cont'd)

Circuit Diagram - PCM A/T Control System: 4-door Model

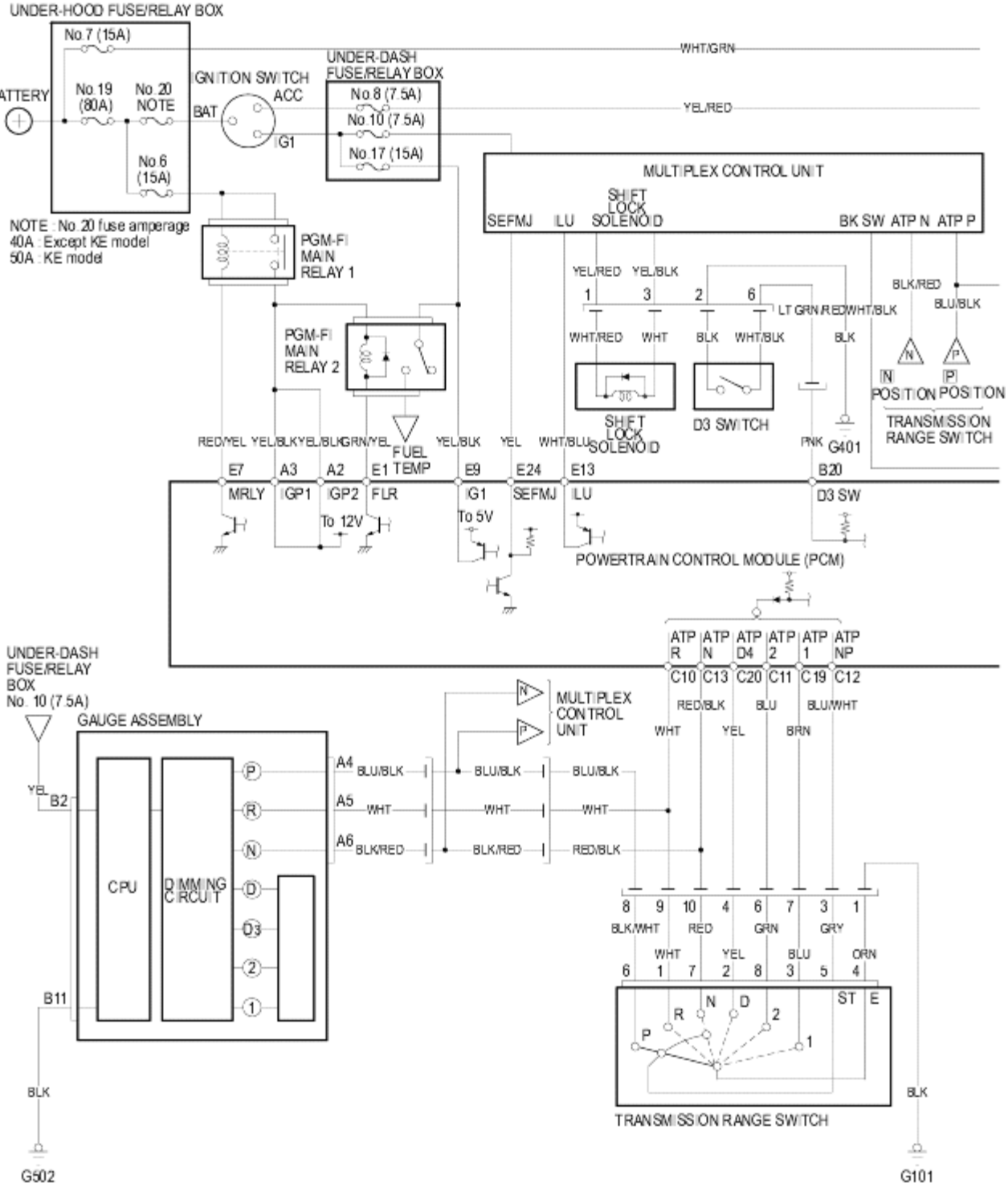


Automatic Transmission
System description (cont'd)

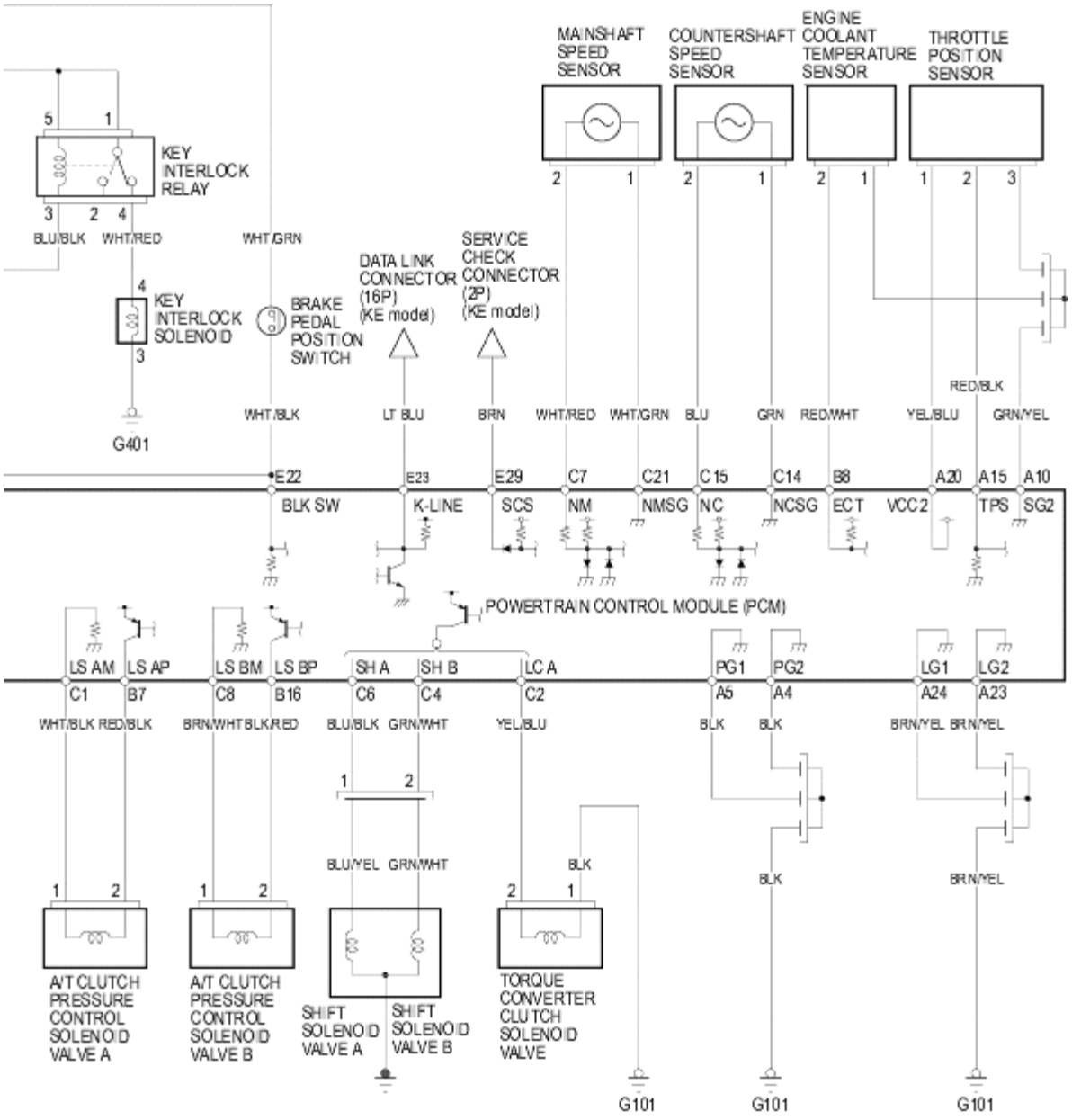


Automatic Transmission
System description (cont'd)

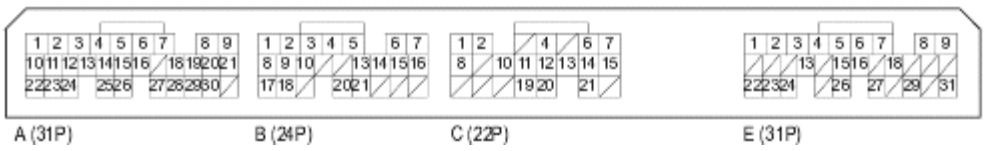
Circuit Diagram - PCM A/T Control System: 5-door Model



Automatic Transmission
System description (cont'd)



PCM Connector Terminal Locations



DTC P0715: Problem in mainshaft Speed Sensor Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

Code 15, 15-1, P0715 on the PCM doesn't always mean there's an electrical problem in the mainshaft or countershaft speed sensor circuit; code 15, 15-1, P0715 may also indicate a mechanical problem in the transmission. Any problem causing irregular countershaft to mainshaft speed difference can cause this code.

1. 1. Check the mainshaft and countershaft speed sensor installation.

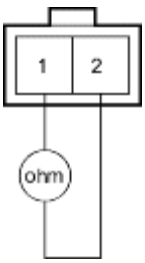
Are the mainshaft and countershaft speed sensor installed properly?

YES - Go to step 2.

NO - Reinstall and recheck. ■

2. 2. Disconnect mainshaft speed sensor connector (2P).
   3. Measure mainshaft speed sensor resistance at the sensor connector.

MAINSHAFT SPEED SENSOR CONNECTOR



Terminal side of male terminals

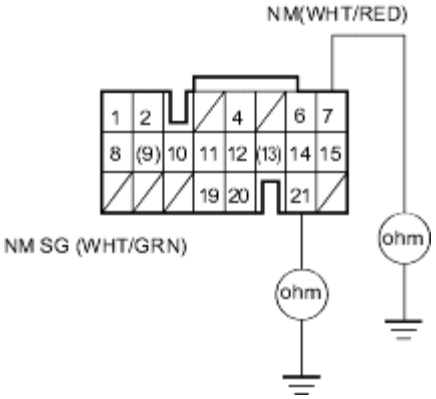
Is there 400-600 ohm?

YES - Go to step 4.

NO - Replace the mainshaft speed sensor. ■

1. 4. Disconnect PCM connector C (22P).
2. 5. Check for continuity between PCM connector terminal C7 and body ground and between terminal C21 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

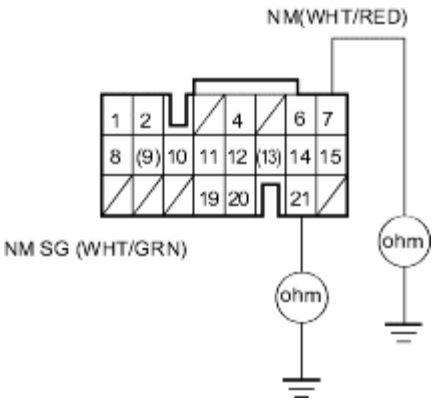
Is there continuity?

YES - Repair short to ground in the wires between PCM connector terminals C7 and C21 and the mainshaft speed sensor. ■

NO - Go to step 6.

3. 6. Connect mainshaft speed sensor connector.
   7. Measure the resistance between PCM connector terminals C7 and C21.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there 400-600 ohm?

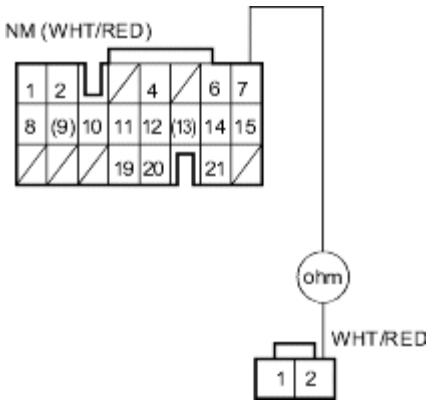
YES - Run the Electrical Troubleshooting Flowchart for code P0720 (code 9). Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Go to step 8.

Automatic Transmission
DTC troubleshooting (cont'd)

8. Disconnect mainshaft speed sensor connector (2P).
9. Check for continuity between PCM connector terminal C7 and the No. 2 terminal of the mainshaft speed sensor connector.

PCM CONNECTOR C (22P)



MAINSHAFT SPEED SENSOR CONNECTOR

Wire side of female terminals

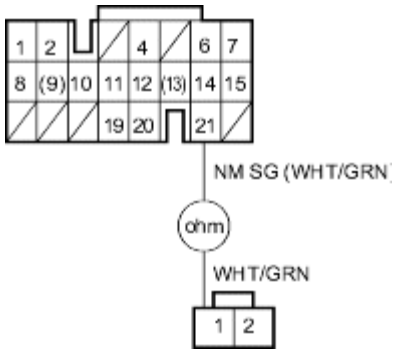
Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between PCM connector terminal C7 and the mainshaft speed sensor. ■

10. Check for continuity between PCM connector terminal C21 and the No. 1 terminal of the mainshaft speed sensor connector.

PCM CONNECTOR C (22P)



MAINSHAFT SPEED SENSOR CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair open in the wire between PCM connector terminal C21 and the mainshaft speed sensor. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

DTC P0720: Problem in Countershaft Speed Sensor Circuit

NOTE:

- Record all freeze date before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Check the countershaft speed sensor installation.

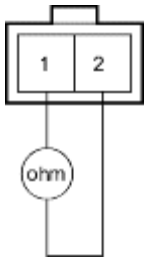
Is the countershaft speed sensor installed properly?

YES - Go to step 2.

NO - Reinstall and recheck. ■

2. 2. Disconnect countershaft speed sensor connector (2P).
   3. Measure countershaft speed sensor resistance at the sensor connector.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Terminals side of male terminals

Is there 400-600 ohm?

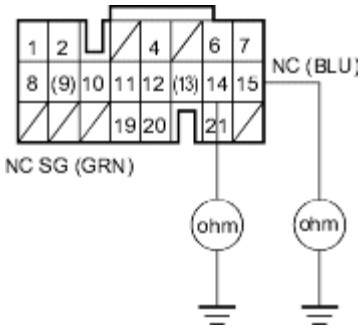
YES - Go to step 4.

NO - Replace the countershaft speed sensor. ■

3. 4. Disconnect PCM connector C (22P).

1. 5. Check for continuity between PCM connector terminal C14 and body ground and between terminal C15 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

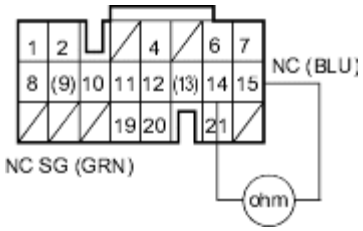
Is there continuity?

YES - Repair short to ground in the wires between PCM connector terminals C14 and C15 and the countershaft speed sensor. ■

NO - Go to step 6.

2. 6. Connect countershaft speed sensor connector.
   7. Measure the resistance between PCM connector terminals C14 and C15.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there 400-600 ohm?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair loose terminal or open in the wires between PCM connector terminals C14 and C15 and the countershaft speed sensor. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

DTC P0730: Problem in Shift Control System

NOTE: Record all freeze data before you troubleshoot.

1. 1. Check whether the OBD scan tool, PGM Tester or D indicator light indicates another code.

Does the OBD scan tool, PGM Tester or D.gif *indicator light indicate another code?*

YES - Perform the troubleshooting Flowchart for the indicated Code(s). Recheck for code P0730 after troubleshooting. ■

NO - Go to step 2.

NOTE: Do not continue with this troubleshooting until the causes of any other DTCs have been corrected.

2. 2. Measure the 1st, 2nd, 3rd and 4th clutch pressure (see page 14-114).

Is each clutch pressure within the service limit?

YES - Go to step 3.

NO - Repair the hydraulic system as necessary. ■

3. 3. Replace the shift solenoid valves A and B (see page 14-117).
   4. Replace the A/T clutch pressure control solenoid valves A and B (see page 14-119).

1. 5. Turn the ignition switch OFF and reset the PCM memory by removing No.6 ECU (PCM) fuse in the under-hood fuse/relay box for more than 10 seconds.

2. 6. Warm up the engine to normal operating temperature (the radiator fan comes on). If a scan tool or the PGM Tester is available, check to be sure that the engine coolant temperature is 176°F (80 dig C) or above using the scan tool or the PGM Tester.
   7. Drive the vehicle at speeds over 12 mph (20 km/h) in 1st, 2nd, 3rd and 4th gears in D position for more than 30 seconds.
   8. Recheck for code P0730, 41-1, or 41.

Does the code P0730, 41-1, or 41 return?

YES - Overhaul the transmission. ■

NO - The system is OK at this time. ■

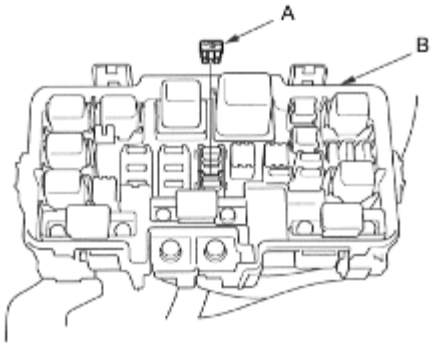
Automatic Transmission

General Troubleshooting Information (cont'd)

PCM Reset Procedures

1. 1. Write down the radio station presets.
   2. Turn the ignition switch OFF.
   3. Remove No.6 ECU (PCM) fuse (15 A) (A) from the under-hood fuse/relay box (B) for more than 10 seconds.

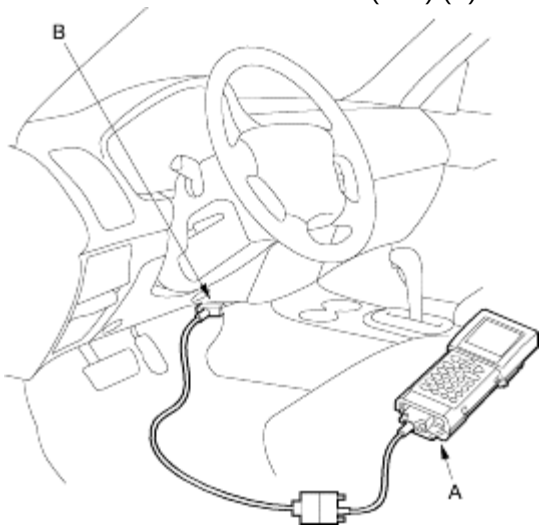
NOTE: You can reset the PCM using the Honda PGM Tester, if the PGM Tester is available.



How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

1. 1. Turn the ignition switch OFF.
   2. Disconnect the special tool from the service Check Connector, or disconnect the Honda PGM Tester (A) from the Data Link Connector (16P) (B).



2. 3. Reset the PCM.
   4. Turn the ignition switch ON (II).
   5. Reset the radio preset stations and set the clock.
   6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h).

Automatic Transmission
DTC Troubleshooting (cont'd)

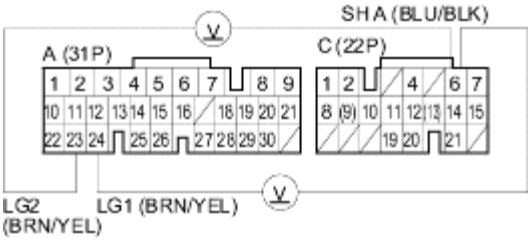
DTC P0753: Problem in Shift Solenoid Valve A Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Turn the ignition switch OFF.
   2. Disconnect PCM connectors A (31P) and C (22P).
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

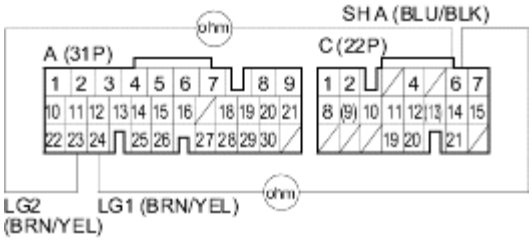
Is there voltage?

YES - Repair short to power in the wire between PCM connector terminal C6 and the shift solenoid valve A. ■

NO - Go to step 5.

1. 5. Turn the ignition switch OFF.
2. 6. Measure the resistance between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

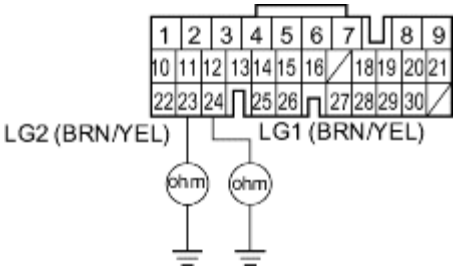
Is there 12 – 25 ohm?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Go to step 7.

3. 7. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (13P)



Wire side of female terminals

Is there continuity?

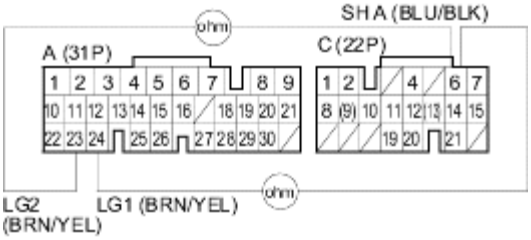
YES - Go to step 8.

NO - Repair open in the wires between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 8. Disconnect shift solenoid valves A and B connector (2P).
2. 9. Check for continuity between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

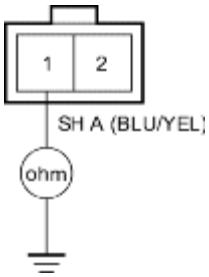
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C6 and the shift solenoid valve A. ■

NO - Go to step 10.

1. 10. Measure the resistance between the No. 1 terminal of the shift solenoid valves A and B connector and body ground.

SHIFT SOLENOID VALVES A and B CONNECTORS (2P)



Terminal side of male terminals

Is there 12-25 ohm?

YES - Check for an open in the wire between PCM connector terminal C6 and the shift solenoid valve A. ■

NO - Replace the shift solenoid valves A and B. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

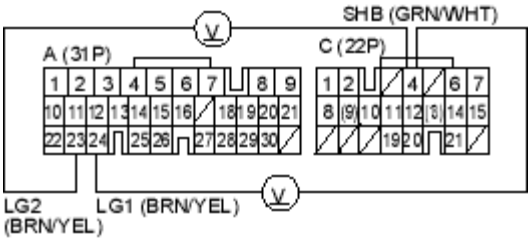
DTC P0758: Problem in Shift Solenoid Valve B Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Turn the ignition switch OFF.
   2. Disconnect PCM connectors A (31P) and C (22P).
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

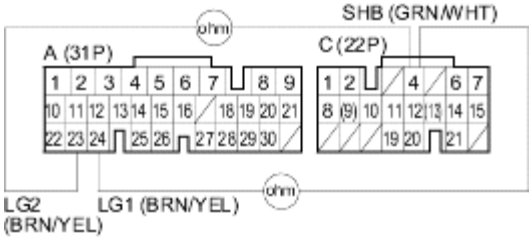
Is there voltage?

YES - Repair short to power in the wire between PCM connector terminal C4 and the shift solenoid valve B. ■

NO - Go to step 5.

1. 5. Turn the ignition switch OFF.
2. 6. Measure the resistance between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

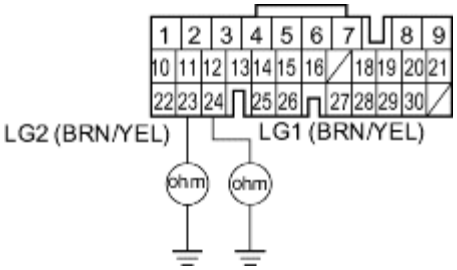
Is there 12-25 ohm?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Go to step 7.

3. 7. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (13P)



Wire side of female terminals

Is there continuity?

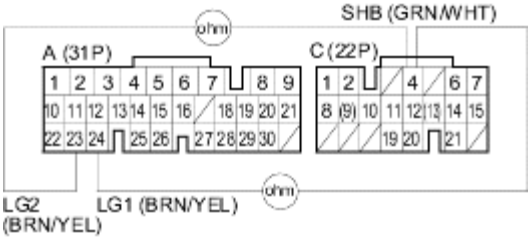
YES - Go to step 8.

NO - Repair open in the wires between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 8. Disconnect shift solenoid valves A and B connector (2P).
2. 9. Check for continuity between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

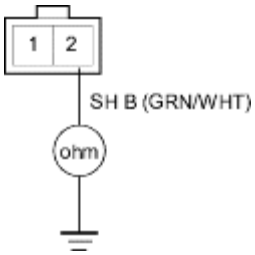
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C4 and the shift solenoid valve B. ■

NO - Go to step 10.

1. 10. Measure the resistance between the No. 2 terminal of the shift solenoid valves A and B connector and body ground.

SHIFT SOLENOID VALVES A and B CONNECTOR (2P)



Terminal side of male terminals

Is there 12-25 ohm?

YES - Check for an open in the wire between PCM connector terminal C4 and the shift solenoid valve B. ■

NO - Replace the shift solenoid valves A and B. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

DTC P1705: Short in Transmission Range Switch Circuit (short to ground)

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Turn the ignition switch ON (II).
   2. Observe the A/T gear position indicator and shift each position separately.

   Do any indicators stay on when the shift lever is not in that position?

   YES - Go to step 3.

   NO - Turn the ignition switch OFF, then go to step 4.
2. 3. Clear the DTC and test-drive the vehicle.

   Is DTC P1705 indicated?

   YES - Review the freeze data. If the freeze data indicates more than one gear position indicator on at one time, go to step 4.

   NO - Intermittent failure; wiggle the wire harness and check for an intermittent short to ground.
3. 4. Disconnect the transmission range switch connector.

   Do all gear position indicators go out?

   YES - Replace the transmission range switch. ■

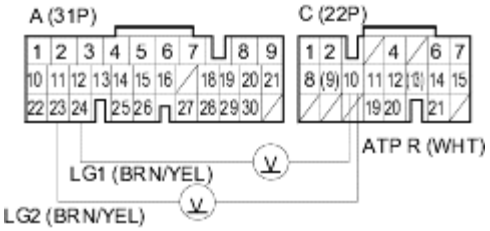
   NO - Turn the ignition switch OFF, then go to step 6.
4. 5. Test the transmission range switch (4-door model (see page 14-159) 5-door model (see page 14-160)).

   Is the switch OK?

   YES - Go to step 6.

   NO - Replace the transmission range switch. ■
5. 6. Connect the transmission range switch connector.
1. 7. Turn the ignition switch ON (II).
2. 8. Shift to any position other than R.
   9. Measure the voltage between PCM connector terminals C10 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES - 4-door model; Go to step 12.

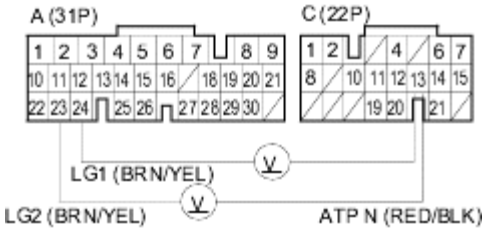
5-door model; Go to step 10.

NO - Check for short in the wire between PCM connector terminal C10 and the transmission range switch or A/T gear position indicator and check for an open in the wires between PCM connector terminals A23 and A24 and body ground (G101). If the wires are OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 10. Shift to any position other than N
2. 11. Measure the voltage between PCM connector terminals C13 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

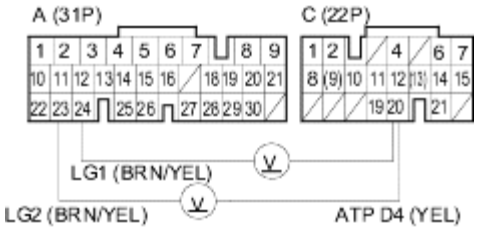
Is there battery voltage?

YES - Go to step 12.

NO - Check for short in the wire between PCM connector terminal C13 and the transmission range switch or A/T gear position indicator. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

3. 12. Shift to any position other than D
   13. Measure the voltage between PCM connector terminals C20 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

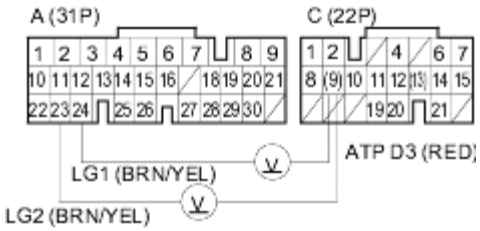
YES - 4-door model; Go to step 14.

5-door model; Go to step 16.

NO - Check for short in the wire between PCM connector terminal C20 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 14. Shift to any position other than D3
2. 15. Measure the voltage between PCM connector terminals C9 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

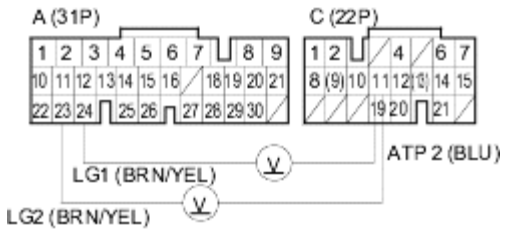
Is there about 5 V?

YES - Go to step 16.

NO - Check for short in the wire between PCM connector terminal C9 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

3. 16. Shift to any position other than 2
   17. Measure the voltage between PCM connector terminals C11 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES - 7-position; Go to step 18.

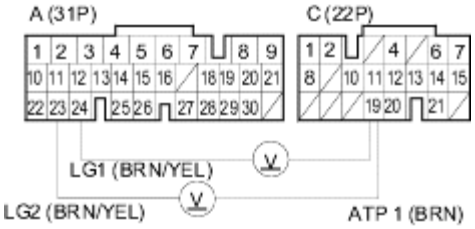
6-position; Go to step 20.

NO - Check for short in the wire between PCM connector terminal C11 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 18. Shift to any position other than 1
2. 19. Measure the voltage between PCM connector terminals C19 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

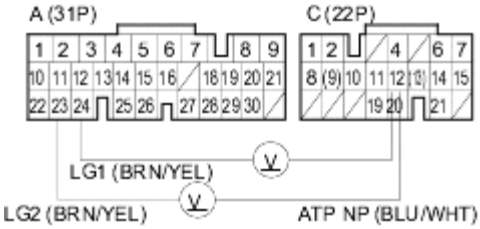
YES - 4 door model; Go to step 20.

5-door model; Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Check for short in the wire between PCM connector terminal C19 and the transmission range switch. If the wire is OK, check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

1. 20. Shift to any position other than P and N
2. 21. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Check for short in the wire between PCM connector terminal C12 and the transmission range switch. If wire is OK, check for loose terminal fit in the PCM connectors. If necessary substitute a known-good PCM and recheck. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

DTC P1706: Short in Transmission Range Switch Circuit (open)

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Test the transmission range switch (see page 14-159).

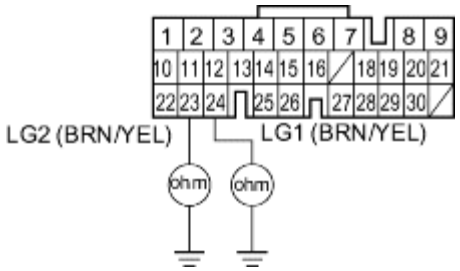
Is the switch OK?

YES - Go to step 2.

NO - Replace the transmission range switch. ■

2. 2. Connect the transmission range switch connector.
   3. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (13P)



Wire side of female terminals

Is there continuity?

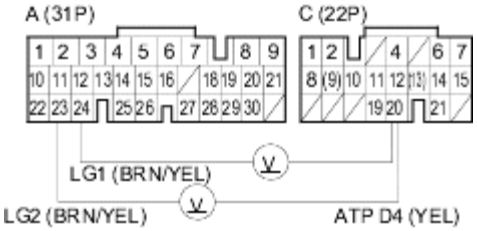
YES - Go to step 4.

NO - Repair open in the wires between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

3. 4. Turn the ignition switch ON (II).

1. 5. Shift to D position.
2. 6. Measure the voltage between PCM connector terminals C20 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

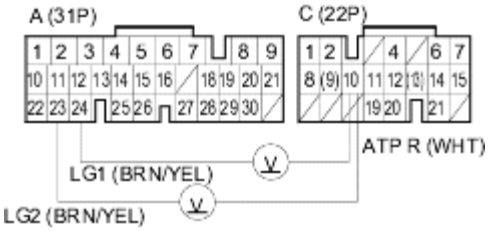
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C20 and the transmission range switch. ■

NO - Go to step 7.

3. 7. Shift to R position.
   8. Measure the voltage between PCM connector terminals C10 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES - Repair open in the wire between PCM connector terminal C10 and the transmission range switch. ■

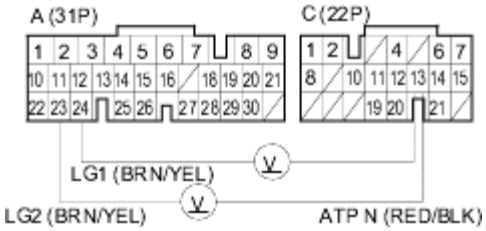
NO - 4-door model; Go to step 11.

5-door model; Go to step 9.

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 9. Shift to N position.
2. 10. Measure the voltage between PCM connector terminals C13 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

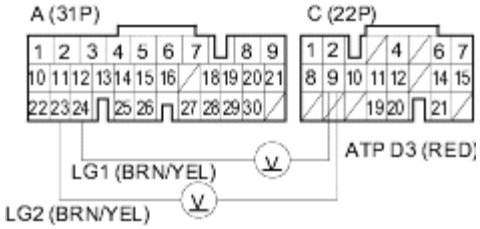
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C13 and the transmission range switch. ■

NO - Go to step 13.

3. 11. Shift to D3 position.
   12. Measure the voltage between PCM connector terminals C9 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

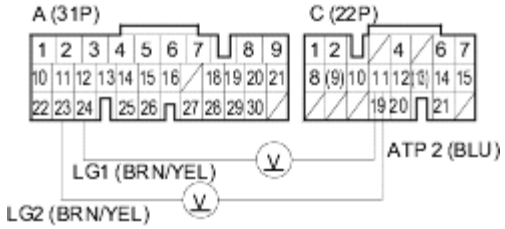
Is there voltage?

YES - Repair open in the wire between PCM connector terminal C9 and the transmission range switch. ■

NO - Go to step 13.

1. 13. Shift to 2 position.
2. 14. Measure the voltage between PCM connector terminals C11 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

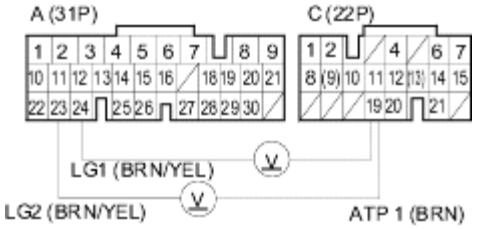
YES - Repair open in the wire between PCM connector terminal C11 and the transmission range switch. ■

NO - 7-position; Go to step 15.

6-position; Go to step 17.

3. 15. Shift to 1 position.
   16. Measure the voltage between PCM connector terminals C19 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES - Repair open in the wire between PCM connector terminal C19 and the transmission range switch. ■

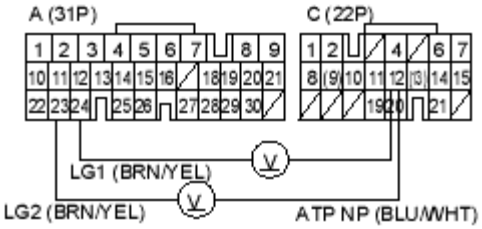
NO - 4-door model; Go to step 17.

5-door model; Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 17. Shift to P or N position.
2. 18. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES - Repair open in the wire between PCM connector terminal C12 and the transmission range switch. ■

NO - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Automatic Transmission

DTC Troubleshooting Index

DTC			D Indicator Light	MIL	Detection Item	Page
OBD Scan Tool	PGM Tester	D Indicator Light				
P0715	15-1	15	Blinks	ON	Mainshaft speed sensor	(see page 14-76)
P0720	9-1	9	Blinks	ON	Countershaft speed sensor	(see page 14-78)
P0730	41-1	41	OFF	ON	Shift control system	(see page 14-79)
P0753	7-1	7	Blinks	ON	Shift solenoid valve A	(see page 14-80)
P0758	8-1	8	Blinks	ON	Shift solenoid valve B	(see page 14-82)
P1705	5-1	5	Blinks	ON	Transmission range switch (short to ground)	(see page 14-84)
P1706	6-1	6	OFF	ON	Transmission range switch (open)	(see page 14-87)
P1713	21-1	21	OFF	OFF	D3 switch	(see page 14-90)
P1753	1-1	1	Blinks	ON	Torque converter clutch solenoid valve	(see page 14-91)
P1768	16-1	16	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-93)
P1773	23-1	23	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-95)

NOTE: The function of detecting the D3 switch problem is applied to only the 5-door model.

Automatic Transmission
DTC Troubleshooting (cont'd)

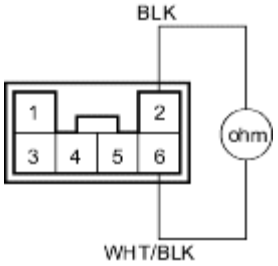
DTC P1713: Problem in D3 Switch Circuit

NOTE:

- This DTC is applied to 5-door model.
- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Remove the console panel (see page 20-74).
   2. Disconnect the D3 switch connector (6P) on the front of the shift lever bracket.
   3. Check for continuity between the No. 2 and No.6 terminals of the D3 switch connector (6P) when the shift lever is in D3 position, then when the shift lever out of D3 position.

D3 SWITCH CONNECTOR (6P)



Terminal side of male terminals

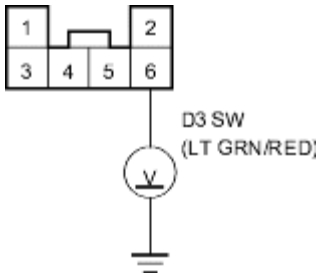
Is there continuity when the shift lever is in D3 position and no continuity when the shift lever out of D3?

YES - Go to step 4.

NO - Faulty the D3 switch. Replace the switch. ■

1. 4. Turn the ignition switch ON (II).
2. 5. Measure the voltage between the No. 6 terminal of the D3 switch connector (6P) and body ground.

D3 SWITCH CONNECTOR (6P)



Wire side of female terminals

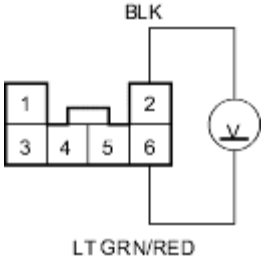
Is there 5 V?

YES - Go to step 6.

NO - Repair open or short in the wire between PCM connector terminal B20 and D3 switch connector (6P). ■

3. 6. Measure the voltage between the No. 2 and No. 6 terminals.

D3 SWITCH CONNECTOR (6P)



Wire side of female terminals

Is there 5 V?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair open in the wire between the No. 2 terminal of D3 switch connector (6P) and ground, or repair poor ground (G401). ■

Automatic Transmission
DTC Troubleshooting (cont'd)

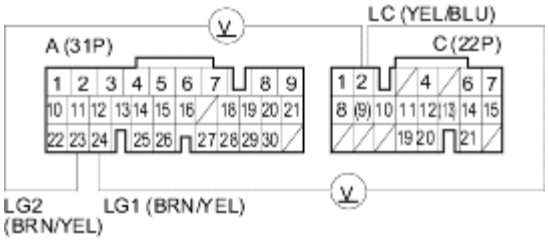
DTC P1753: Problem in Torque Converter Clutch Solenoid Valve Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Turn the ignition switch OFF.
   2. Disconnect PCM connectors A (31P) and C (22P).
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

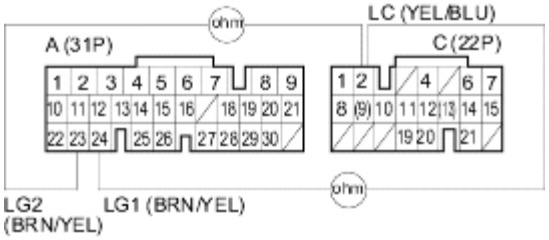
Is there voltage?

YES - Repair short to power in the wire between PCM connector terminal C2 and the torque converter clutch solenoid valve. ■

NO - Go to step 5.

1. 5. Turn the ignition switch OFF.
2. 6. Measure the resistance between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

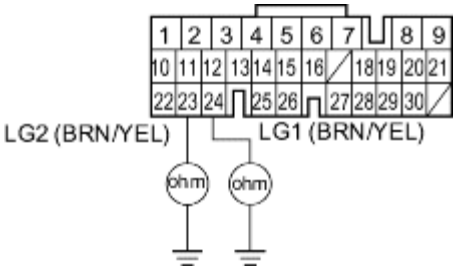
Is the resistance 12-25 ohm?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Go to step 7.

3. 7. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

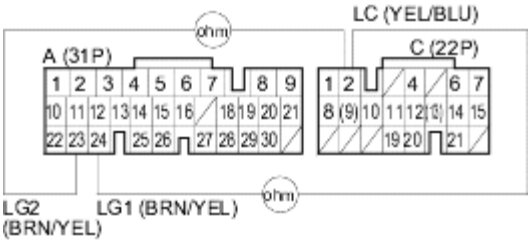
YES - Go to step 8.

NO - Repair open in the wires between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission
DTC Troubleshooting (cont'd)

1. 8. Disconnect torque converter clutch solenoid valve connector (2P).
2. 9. Check for continuity between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

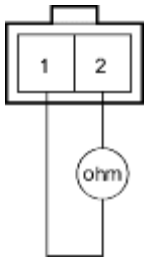
Is there continuity?

YES - Repair short to ground in the wire between PCM connector terminal C2 and the torque converter clutch solenoid valve. ■

NO - Go to step 10.

1. 10. Measure torque converter clutch solenoid valve resistance at the solenoid valve connector.

TORQUE CONVERTER CLUTCH SOLENOID VALVE CONNECTOR (2P)



Wire side of male terminals

Is the resistance 12-25 ohm?

YES - Check for an open in the wire between PCM connector terminal C2 and the torque converter clutch solenoid valve. ■

NO - Replace the torque converter clutch solenoid valve. ■

Automatic Transmission
DTC Troubleshooting (cont'd)

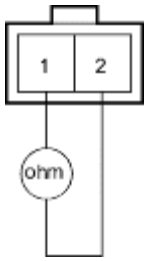
DTC P1768: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Disconnect A/T clutch pressure control solenoid valve A connector (2P).
   2. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid valve connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is the resistance about 5 ohm?

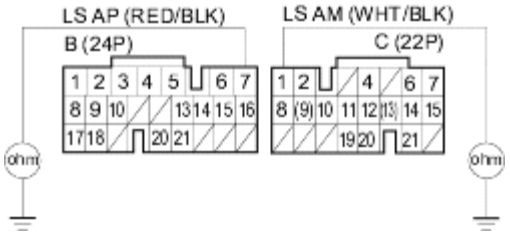
YES - Go to step 3.

NO - Replace the A/T clutch pressure control solenoid valves A and B. ■

2. 3. Disconnect PCM connectors B (24P) and C (22P).

1. 4. Check for continuity between PCM connector terminal B7 and body ground and between terminal C1 and body ground.

PCM CONNECTORS



Wire side of female terminals

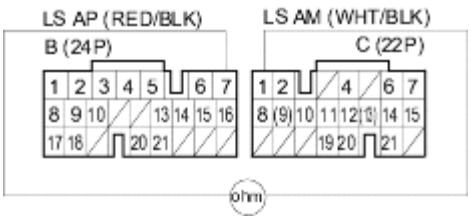
Is there continuity?

YES - Repair short to ground in the wires between PCM connector terminals B7 and C1 and the A/T clutch pressure control solenoid valve A. ■

NO - Go to step 5.

2. 5. Connect A/T clutch pressure control solenoid valve A connector.
   6. Measure the resistance between PCM connector terminals B7 and C1.

PCM CONNECTORS



Wire side of female terminals

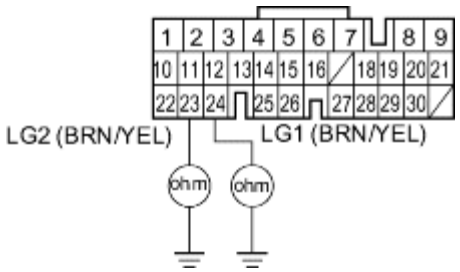
Is the resistance about 5 ohm?

YES - Go to step 7.

NO - Repair loose terminal or open in the wires between PCM connector terminals B7 and C1 and the A/T clutch pressure control solenoid valve A. ■

1. 7. Disconnect PCM connector A (31P).
2. 8. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair open in the wire between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission
DTC Troubleshooting (cont'd)

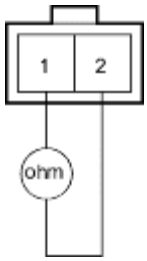
DTC P1773: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:

- Record all freeze data before you troubleshoot.
- The illustration shows the example of connector terminal arrangement; connector terminal arrangement varies with the models.

1. 1. Disconnect A/T clutch pressure control solenoid valve B connector (2P).
   2. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid valve connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is the resistance about 5 ohm?

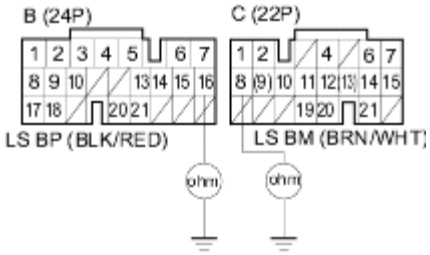
YES - Go to step 3.

NO - Replace the A/T clutch pressure control solenoid valves A and B. ■

2. 3. Disconnect PCM connectors B (24P) and C (22P).

1. 4. Check for continuity between PCM connector terminal B16 and body ground and between terminal C8 and body ground.

PCM CONNECTORS



Wire side of female terminals

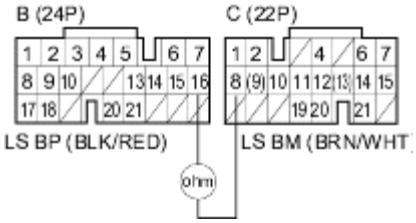
Is there continuity?

YES - Repair short to ground in the wires between PCM connector terminals B16 and C8 and the A/T clutch pressure control solenoid valve B. ■

NO - Go to step 5.

2. 5. Connect A/T clutch pressure control solenoid valve B connector.
   6. Measure the resistance between PCM connector terminals B16 and C8.

PCM CONNECTORS



Wire side of female terminals

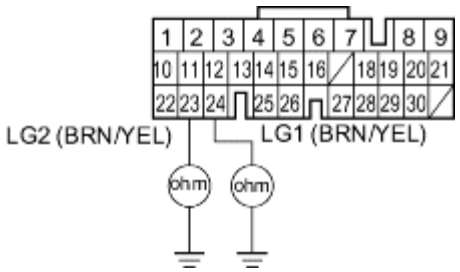
Is the resistance about 5 ohm?

YES - Go to step 7.

NO - Repair loose terminal or open in the wires between PCM connector terminals B16 and C8 and the A/T clutch pressure control solenoid valve B. ■

1. 7. Disconnect PCM connector A (31P).
2. 8. Check for continuity between PCM connector terminal A23 and body ground and between terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES - Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

NO - Repair open in the wire between PCM connector terminals A23 and A24 and ground (G101), or repair poor ground (G101). ■

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting

4-door Model (KQ, KM and KX Models)

1. 1. Press the brake pedal.

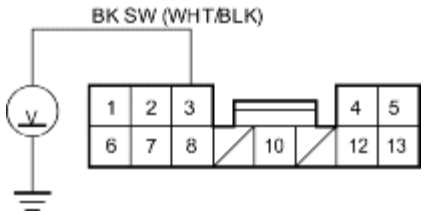
Are the brake lights ON?

YES - Go to step 2.

NO - Repair faulty brake light circuit. ■

2. 2. Disconnect under-dash fuse/relay box No. 10 connector (13P).
   3. Measure the voltage between the No. 3 terminal of the No. 10 connector (13P) and body ground when pressing the brake pedal and when it released.

UNDER-DASH FUSE/RELAY BOX No. 10 CONNECTOR (13P)



Wire side of female terminals

Is there battery voltage when pressing the brake pedal and no voltage when it released?

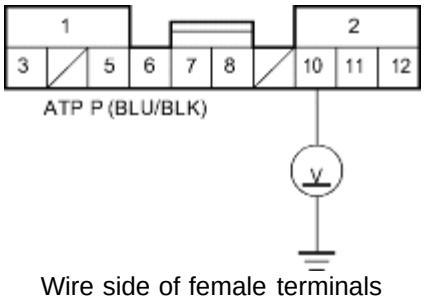
YES - Go to step 4.

NO - Repair open or short in brake pedal position switch wire between the brake pedal position switch and the multiplex control unit. ■

3. 4. Reconnect the No. 10 connector (13P) and disconnect under-dash fuse/relay box No. 9 connector (12P).
   5. Turn the ignition switch ON (II).

1. 6. Measure the voltage between the No. 10 terminal of the No. 9 connector (12P) and body ground. (The shift lever is in P position.)

UNDER-DASH FUSE/RELAY BOX No. 9 CONNECTOR (12P)



Wire side of female terminals

Is there voltage?

YES - Repair open in ATP P wire between the transmission range switch and the multiplex control unit. ■

NO - Go to step 7.

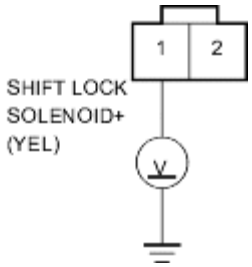
2. 7. Turn the ignition switch OFF.
   8. Reconnect the No. 9 connector (12P).
   9. Disconnect the centre console (see page 20-73).
   10. Disconnect the shift lock solenoid connector.
   11. Turn the ignition switch ON (II).

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

1. 12. Press the brake pedal and measure the voltage between No. 1 terminal of the shift lock solenoid connector and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

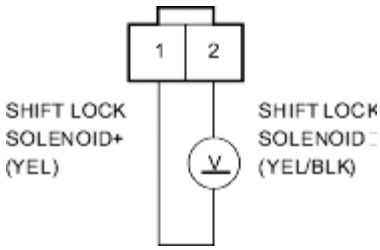
Is there battery voltage when pressing the brake pedal?

YES - Go to step 13.

NO - Repair open or short in the wire between the No. 1 terminal of the shift lock solenoid connector and the multiplex control unit. ■

2. 13. Measure the voltage at the shift lock solenoid connector terminals with pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage when pressing the brake pedal?

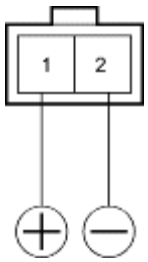
YES - Go to step 14.

NO - Check for an open in shift lock solenoid ground wire between the No. 2 terminal of the shift lock solenoid connector and the multiplex control unit. If the wire is OK, check for an opeNmultiplex control unit ground wire and poor ground. ■

1. 14. Connect the No. 1 terminal of the shift lock solenoid connector to the battery positive terminal and connect the No. 2 terminal to the battery negative terminal. Check that the shift lock solenoid operates.

NOTE: Do not connect the No. 2 terminal to the battery positive terminal or you will damage the diode inside the shift lock solenoid.

SHIFT LOCK SOLENOID



Terminal side of female terminals

Does the shift lock solenoid operate properly?

YES - Check for shift lever shift lock mechanism. If necessary, substitute a known-good multiplex control unit and recheck. ■

NO - Replace the shift lock solenoid. ■

Automatic Transmission

Interlock System - Shift Lock System Circuit Troubleshooting (cont'd)

4-door Model (KH Model)

1. 1. Press the brake pedal.

Are the brake lights ON?

YES - Go to step 2.

NO - Repair faulty brake light circuit. ■

2. 2. Remove the shift lock relay and check for continuity between the relay terminals (see page 22-80).

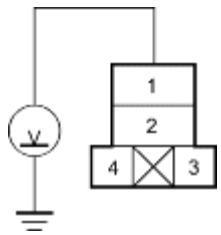
Is the shift lock relay OK?

YES - Go to step 3.

NO - Replace the shift lock relay. ■

3. 3. Measure the voltage between the No. 1 terminal of the shift lock relay and body ground when pressing the brake pedal and when it released.

SHIFT LOCK RELAY CONNECTOR



Terminal side of female terminals

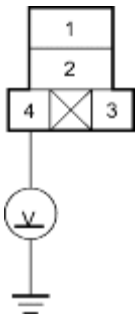
Is there battery voltage when pressing the brake pedal and no voltage when it released?

YES - Go to step 4.

NO - Repair open or short in the wire between the No. 3 terminal of the shift lock relay and the brake pedal position switch. ■

1. 4. Turn the ignition switch ON (II).
2. 5. Measure the voltage between the No. 4 terminal of the shift lock relay and body ground.

SHIFT LOCK RELAY CONNECTOR



Terminal side of female terminals

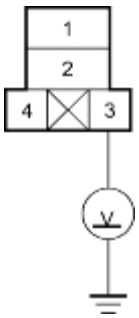
Is there battery voltage?

YES - Go to step 6.

NO - Check for blown No. 10 (7.5A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open or short in the wire between the No. 4 terminal of the shift lock relay and the under-dash fuse/relay box. ■

3. 6. Measure the voltage between the No. 3 terminal of the shift lock relay and body ground. (The shift lever is P position.)

SHIFT LOCK RELAY CONNECTOR



Terminal side of female terminals

Is there voltage?

YES - Repair open in ATP P wire between the No. 3 terminal of the shift lock relay and the transmission range switch. ■

NO - Go to step 7.

General Information

Chassis and Engine Numbers (cont'd)

Applicable Area Code/VIN/Engine Number/Transmission Number List

MODEL	APPLICABLE AREA CODE	GRADE NAME	TRANSMISSION TYPE	VEHICLE IDENTIFICATION NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
CIVIC	KK	DX	5MT	JHMES85101S200001-	D15Y5-1000001-	SLW-1000001-
			4AT	JHMES86101S200001-	D15Y5-1000001-	SLXA-1000001-
			5MT	JHMES85201S200001-	D15Y5-1000001-	SLW-1000001-
			4AT	JHMES86201S200001-	D15Y5-1000001-	SLXA-1000001-
		LX	5MT	JHMES15501S200001-	D17A1-1000001-	SLW-1000001-
			4AT	JHMES16501S200001-	D17A1-1000001-	SLXA-1000001-
			5MT	1HGES15501L500001-	D17A3-1400001-	SLW-1000001-
			4AT	1HGES16501L500001-	D17A3-1400001-	BMXA-5000001-
			5MT	2HGES155*1H750001-	D17A3-1400001-	SLW-1000001-
			4AT	2HGES165*1H750001-	D17A3-1400001-	BMXA-5000001-
		EX	5MT	JHMES15701S200001-	D17A2-1000001-	SLW-1000001-
			4AT	JHMES16701S200001-	D17A2-1000001-	SLXA-1000001-
			5MT	1HGES15701L500001-	D17A4-1400001-	SLW-1000001-
			4AT	1HGES16701L500001-	D17A4-1400001-	BMXA-5000001-
			5MT	2HGES157*1H750001-	D17A4-1400001-	SLW-1000001-
			4AT	2HGES167*1H750001-	D17A4-1400001-	BMXA-5000001-
	KM	LX-B	5MT	93HES15301Z000001-	D17A3-1400001-	SLW-1000001-
		LX	5MT	93HES15501Z000001-	D17A3-1400001-	SLW-1000001-
			4AT	93HES16501Z000001-	D17A3-1400001-	BMXA-5000001-
		EX	5MT	93HES15801Z000001-	D17A4-1400001-	SLW-1000001-
			4AT	93HES16801Z000001-	D17A4-1400001-	BMXA-5000001-
	KP	LX	5MT	93HES15501Z000001-	D17A3-1400001-	SLW-1000001-
			4AT	93HES16501Z000001-	D17A3-1400001-	BMXA-5000001-
		EX	5MT	93HES15801Z000001-	D17A4-	SLW-1000001-

					1400001-	
			4AT	93HES16801Z000001-	D17A4-1400001-	BMXA-5000001-
	KX	LX	5MT	IHGES15501L900001-	D17A3-1400001-	SLW-1000001-
			4AT	IHGES16501L900001-	D17A3-1400001-	BMXA-5000001-
		EX	5MT	IHGES15701L900001-	D17A4-1400001-	SLW-1000001-
			4AT	IHGES16701L900001-	D17A4-1400001-	BMXA-5000001-

General Information

Chassis and Engine Numbers (cont'd)

4-Door KB, KH, KU, KV, KW, KY Models

Vehicle Identification Number

JHM ES1 5 9 0 1 S 200001
a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD.
HONDA Passenger vehicle

b. Line, Body and Engine Type
ES1: CIVIC/D17A2 (KU model),
D17A5 (KV, KY models),
ES4: CIVIC/D14Z5 (KB model)
ES5: CIVIC/D16W8 (KH model)
D16W7 (KB model)
ES8: CIVIC/D15Y2 (KH model),
D15Y3 (KV, KW, KY models),
D15Y4 (KU model),
D15Y6 (KU model)

c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual
6: 4-door Sedan/4-speed Automatic

d. Vehicle Grade (Series)
0: VTI-S (KU model)
3: LXI (KV, KY models)
1.4S (KB model)
4: LXI (KY model)
7: EXI (KV, KY models),
16ES (KB model)
8: EXI (KH, KU, KW, KY models),
EXI-H (KU model),
VTI (KV, KY models)
9: VTI (KU, KY models),
VTI-S (KU model),
VHI-H (KU model)

e. Fixed Code or Check Digit

f. Model Year
1: 2001

g. Factory Code
S: Suzuka Factory in Japan (Mie)

h. Serial Number
KV and KY models: 400001-
other model: 200001-

Engine Number

D17A2 - 1000001
a b

a. Engine Type

D14Z5:	1.4 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D15Y2:	1.5 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D15Y3:	1.5 L SOHC Sequential Multiport Fuel-injected engine without three way catalytic converter
D15Y4:	1.5 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D15Y6:	1.5 L SOHC Sequential Multiport Fuel-injected engine with three way catalytic converter
D16W7:	1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D16W8:	1.6 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A2:	1.7 L SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
D17A5:	1.7 L SOHC VTEC Sequential Multiport Fuel-injected engine without three way catalytic converter

b. Serial Number

Transmission Number

BMXA - 5000001
a b

a. Transmission Type
SLXA: 4-speed Automatic
SLW: 5-speed Manual
MLYA: Honda Multi Matic

b. Serial Number

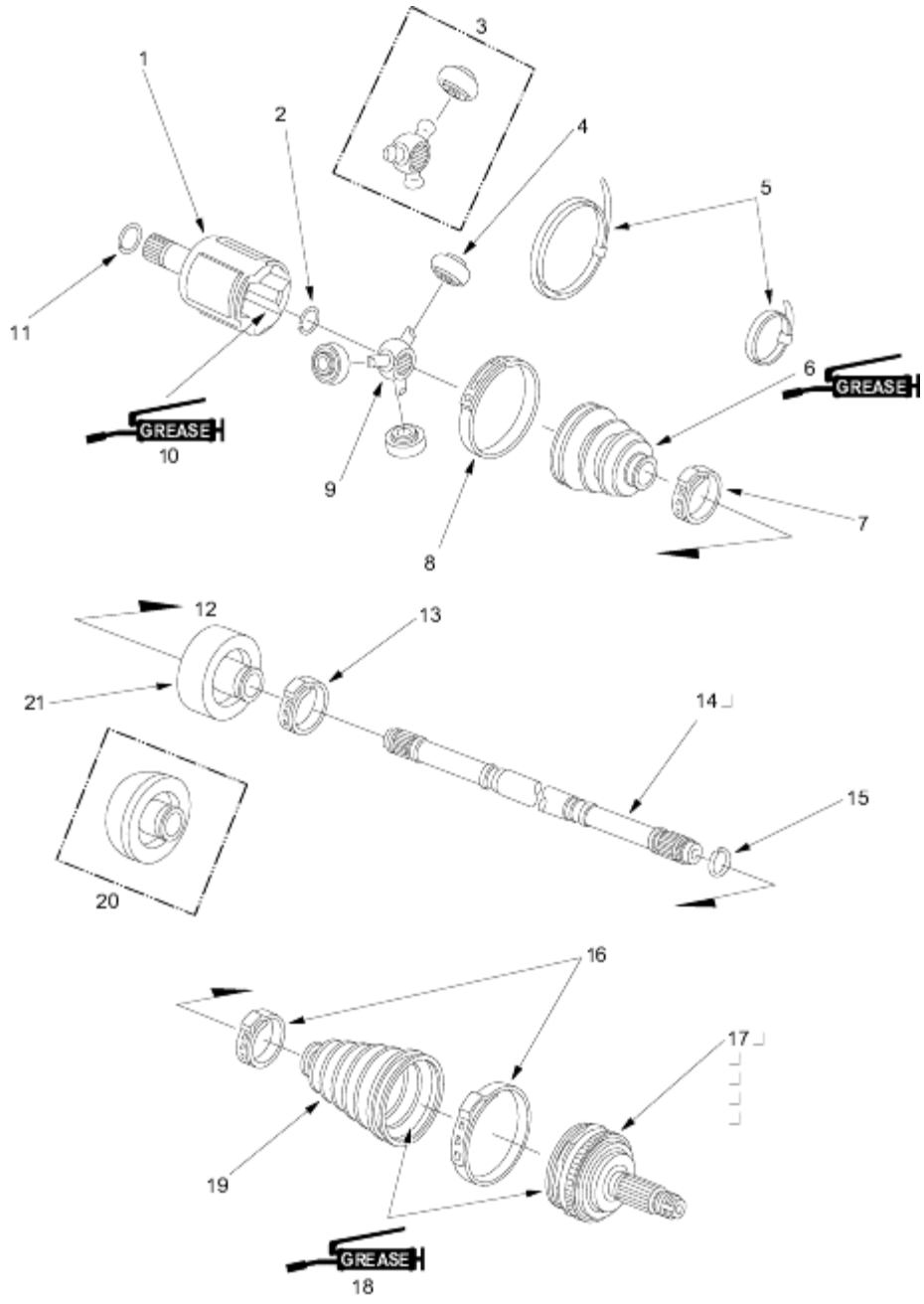
Driveline/Axle

Special Tools	16-2
Driveshaft Inspection	16-3
Driveshaft Removal	16-3
Driveshaft Disassembly	16-5
Driveshaft Reassembly	16-9
Driveshaft Installation	16-18

Driveline/Axle

Driveshaft Reassembly (cont'd)

U.S. and Canada produced models:



1. INBOARD JOINT
2. CIRCLIP
3. (Right driveshaft)
4. ROLLER
5. DOUBLE LOOP BAND
   Replace.
   (Replacement parts only)
6. INBOARD BOOT
   Pack cavity with grease.
7. EAR CLAMP BAND
   Replace.
8. LOW PROFILE BAND
   Replace.
9. SPIDER
10. Pack cavity with grease.
11. SET RING
    Replace.
12. Left driveshaft
13. EAR CLAMP BAND
    Replace.
14. DRIVESHAFT
15. STOP RING
    Replace.
16. EAR CLAMP BANDS
    Replace.
17. OUTBOARD JOINT
18. Pack cavity with grease.
19. OUTBOARD BOOT
20. Right driveshaft
    (Except SOHC engine A/T models)
21. DYNAMIC DAMPER
    (Undirectional)

Driveline/Axle

Driveshaft Reassembly (cont'd)

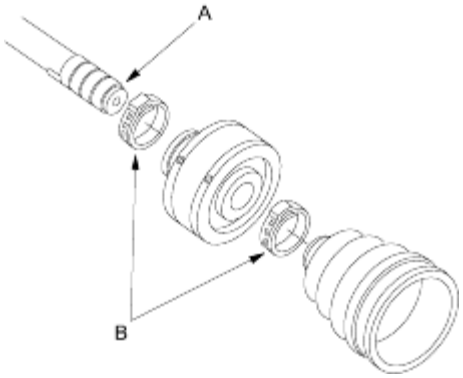
Special Tools Required

- Boot band tool, KD-3191 or equivalent commercially available
- Boot band pincers, KENT-MOORE J-35910 or equivalent commercially available
- Boot band pincers, commercially available

NOTE: Refer to the Exploded View as needed during this procedure.

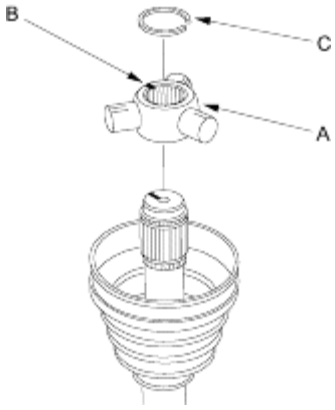
Inboard Joint Side

1. 1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot and dynamic damper.

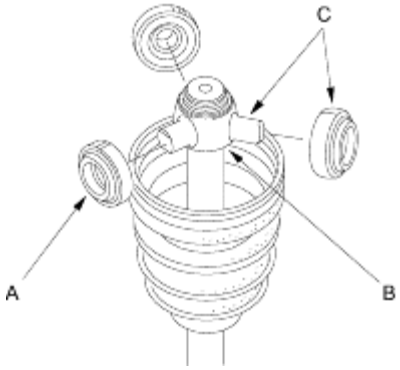


2. 2. Install the dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape. Take care not to damage the inboard boot and dynamic damper.
   - Install the ear clamp bands (B) for U.S. and Canada produced models.

1. 3. Install the spider (A) onto the driveshaft by aligning the marks (B) on the spider and the end of the driveshaft.



2. 4. Fit the circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.
   5. Fit the rollers (A) onto the spider (B) with their high shoulders facing outward, note the following items:
      - Reinstall the rollers in their original positions on the spider by aligning the marks (C).
      - Hold the driveshaft pointed upward to prevent the rollers from falling off.



Driveline/Axle

Driveshaft Reassembly (cont'd)

1. 6. Pack the inboard joint with the joint grease included in the new driveshaft set.

Grease quantity

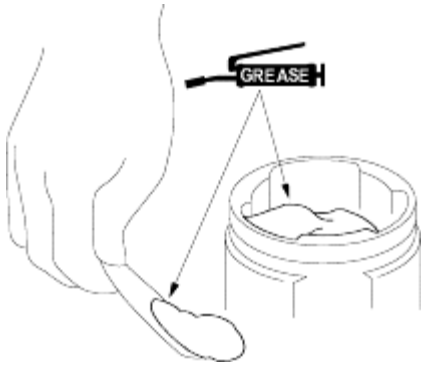
Inboard joint

Japan produced models:

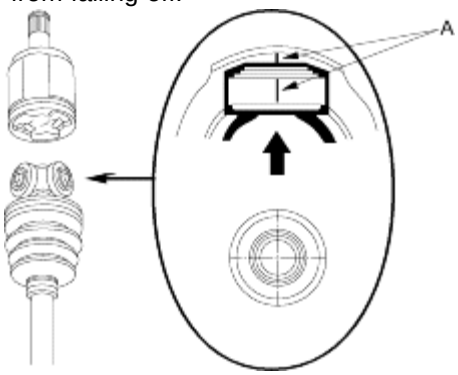
130 – 140 g (4.6 – 4.9 oz)

U.S. and Canada produced models:

115 – 135 g (4.1 – 4.8 oz)



2. 7. Fit the inboard joint onto the driveshaft and note the following items:
   - Reinstall the inboard joint onto the driveshaft by aligning the marks (A) on the inboard joint and the rollers.
   - Hold the driveshaft pointed upward to prevent it from falling off.



1. 8. Adjust the length of the driveshaft to the figure below, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the grooves of the driveshaft and joint.

Left driveshaft:

Japan produced models:

M/T: 788 – 793 mm (31.0 – 31.2 in.)

A/T: 792 – 797 mm (31.2 – 31.4 in.)

U.S. and Canada produced models:

M/T: 788.2 – 793.2 mm (31.0 – 31.2 in.)

A/T: 791.7 – 796.7 mm (31.2 – 31.4 in.)

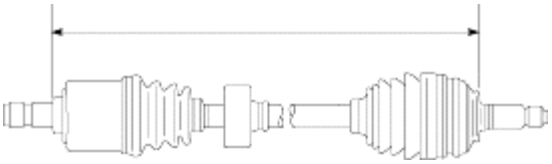
Right driveshaft: 511 – 516 mm (20.1 – 20.3 in.)

Japan produced models:

502 – 507 mm (19.8 – 20.0 in.)

U.S. and Canada produced models:

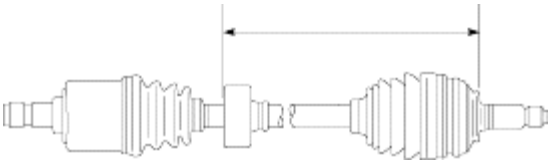
501.2 – 506.7 mm (19.7 – 29.9 in.)



2. 9. Position the dynamic damper as shown below (for left driveshaft on A/T models).

Left driveshaft: 478 – 482 mm (18.8 – 19.0 in.)

Right driveshaft (Except right driveshaft on SOHC engines A/T models): 261.5 – 266.5 mm (10.3 – 10.5 in.)

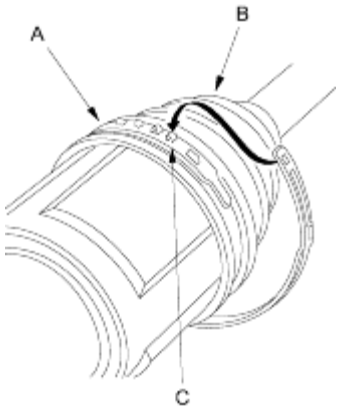


3. 10. Install the boot bands.
   - For the low profile type, go to step 11.
   - For the double loop type, go to step 13.
   - For the ear clamp type, go to step 21.

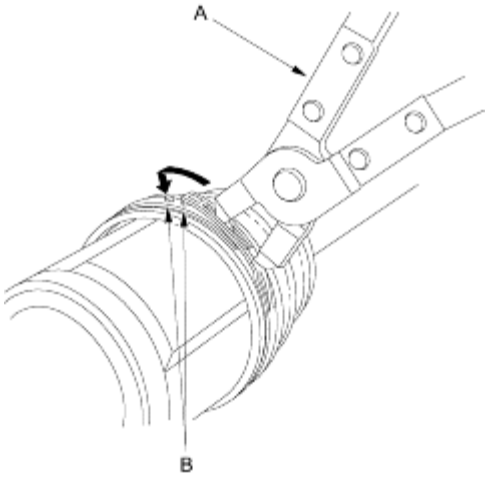
Driveline/Axle

Driveshaft Reassembly (cont'd)

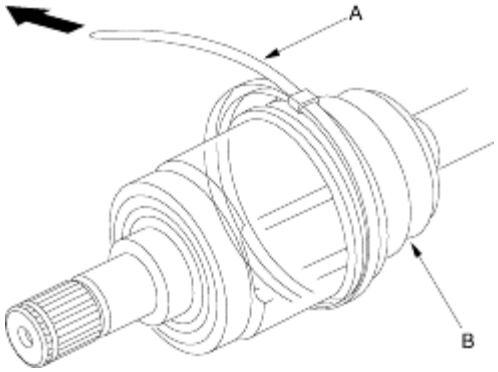
1. 11. Set the new low profile band (A) onto the boot (B) and dynamic damper, then hook the tab (C) on the band.



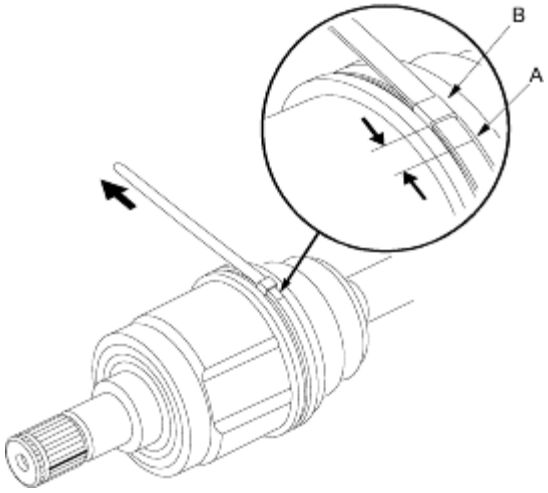
2. 12. Close the hook portion of the band with a commercially available boot band pincer (A), then hook the tabs (B) on the band.



1. 13. Fit the boot ends onto the driveshaft and the inboard joint, then install the band (A) onto the boot (B).



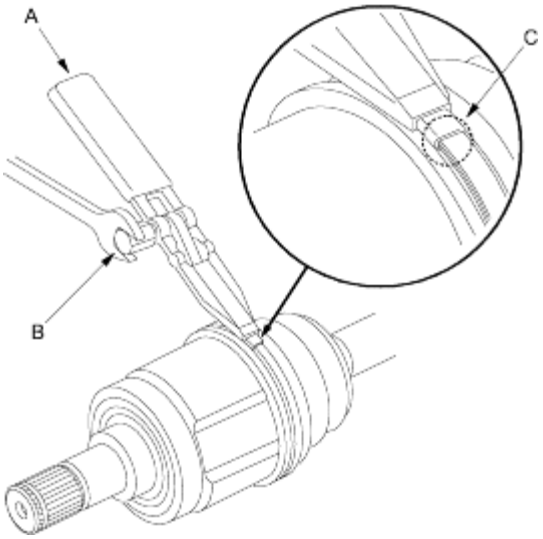
2. 14. Pull up the slack in the band by hand.
15. Mark a position (A) on the band 10 - 14 mm (0.4 – 0.6 in.) from the clip (B).



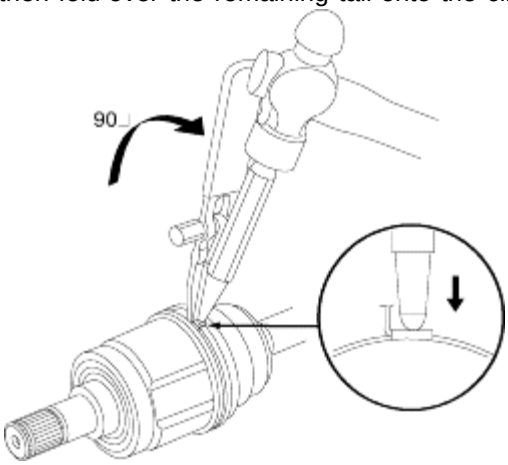
Driveline/Axle

Driveshaft Reassembly (cont'd)

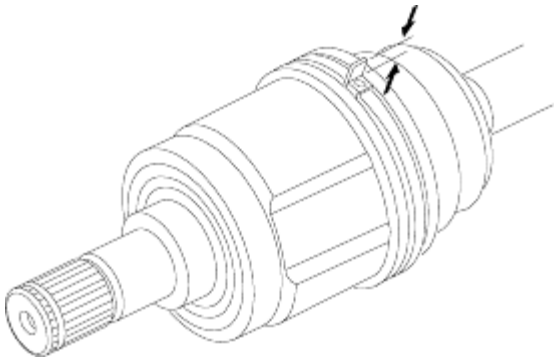
1. 16. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A) and into the slot on the winding mandrel (B).



2. 17. Place a wrench on the winding mandrel of the boot band tool and tighten the band until the marked spot (C) on the band meets the edge of the clip.
   18. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Centre punch the clip, then fold over the remaining tail onto the clip.



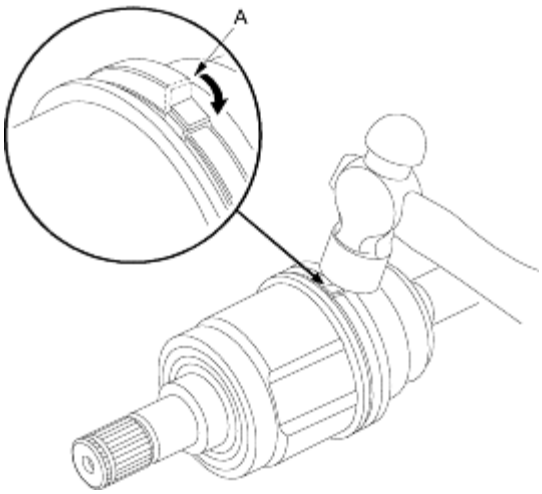
1. 19. Unwind the boot band too and cut off the excess free end of the band to leave a 5 – 10 mm (0.2 – 0.4 in.) tail protruding from the clip.



2. 20. Bend the band end (A) by tapping it down with a hammer.

NOTE:

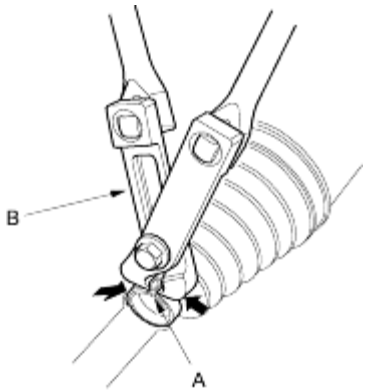
- Make sure the band and clip do not interfere with anything and the band does not move.
- Remove any grease remaining on the surrounding surfaces.



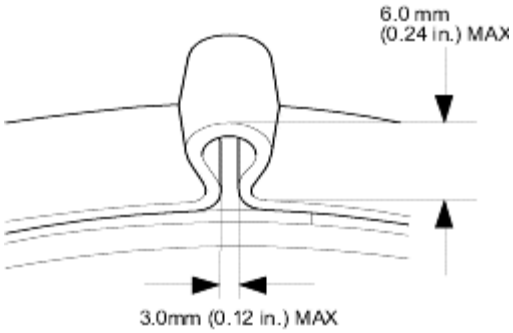
Driveline/Axle

Driveshaft Reassembly (cont'd)

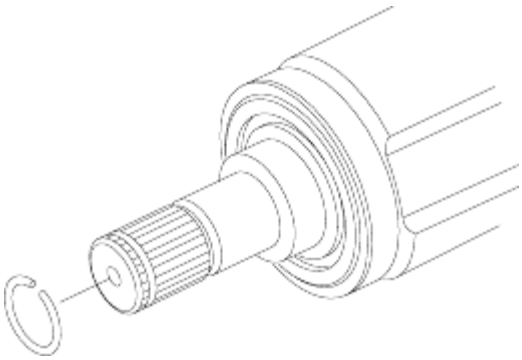
1. 21. Close the ear portion (A) of the band with a commercially available boot band pincer (B).



2. 22. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band further.



1. 23. Install the new set ring.

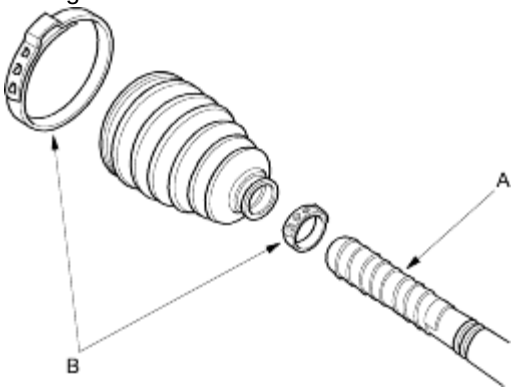


Driveline/Axle

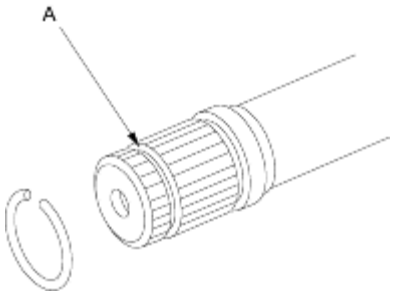
Driveshaft Reassembly (cont'd)

Outboard Joint Side:

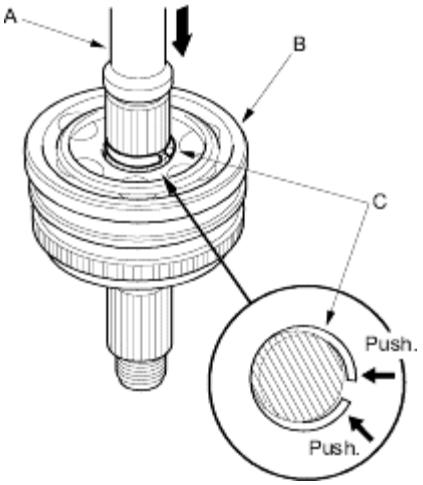
1. 1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot.



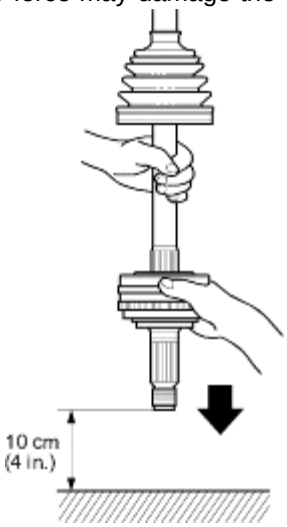
2. 2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Take care not to damage the outboard boot.
   3. Install the new stop ring into the driveshaft groove (A).



1. 4. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.



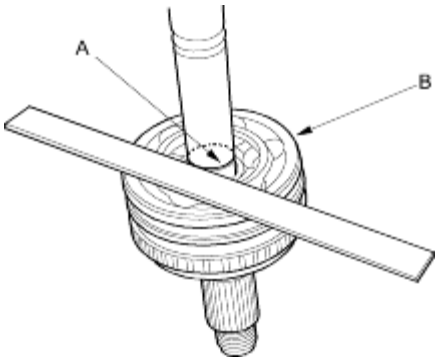
2. 5. To completely seat the outboard joint, pick up the driveshaft and joint and drop them from about 10 cm (4 in.) onto a hard surface. Do not use a hammer as excessive force may damage the driveshaft.



Driveline/Axle

Driveshaft Reassembly (cont'd)

1. 6. Check the alignment of the paint mark (A) with the outboard joint end (B).



2. 7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

Grease quantity

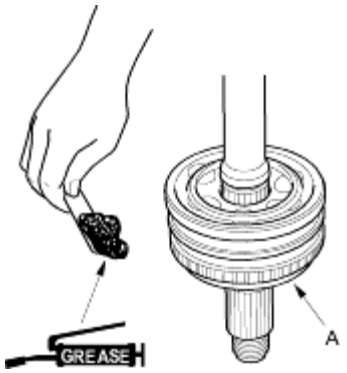
Outboard joint:

Japan produced models:

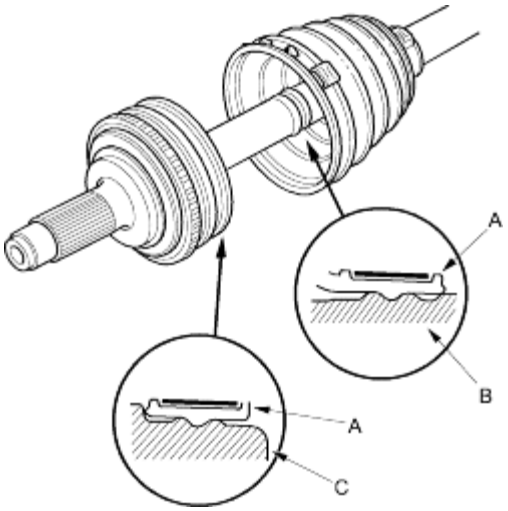
105 – 115 g (3.7 – 4.1 oz)

U.S. and Canada produced models:

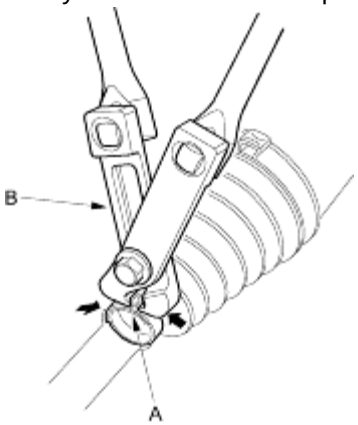
90 – 110 g (3.2 – 3.9 oz)



1. 8. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).



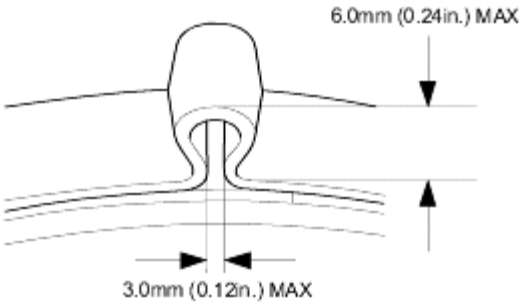
2. 9. Close the ear portion (A) of the band with a commercially available boot band pincer (B).



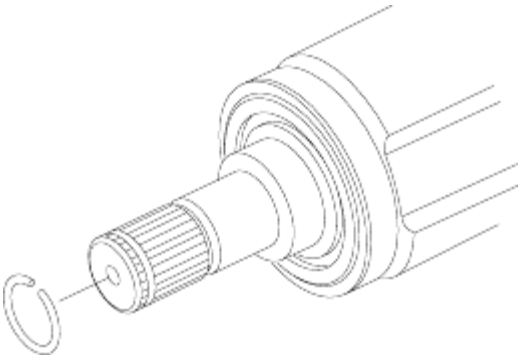
Driveline/Axle

Driveshaft Reassembly (cont'd)

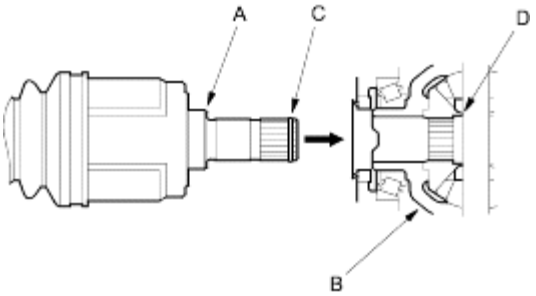
1. 10. Check the clearance between the closed ear portion of the bands. If the clearance is not within the standard, close the ear portion of the bands further.



1. 1. Install a new set ring onto the set ring groove of the driveshaft.



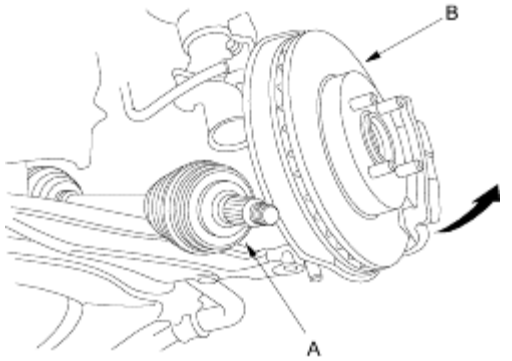
2. 2. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or carburettor cleaner and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) until the set ring (C) locks in the groove (D).



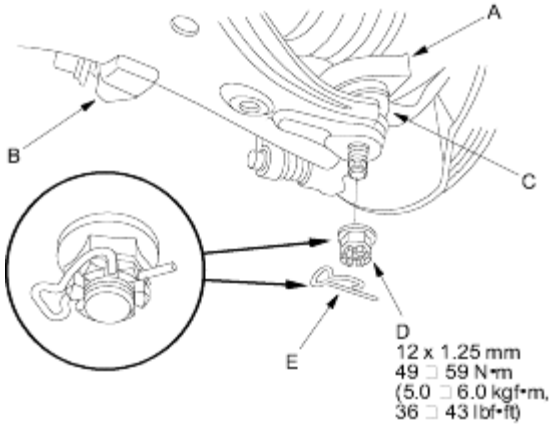
Driveline/Axle

Driveshaft Installation (cont'd)

3. Install the outboard joint (A) into the front hub (B).

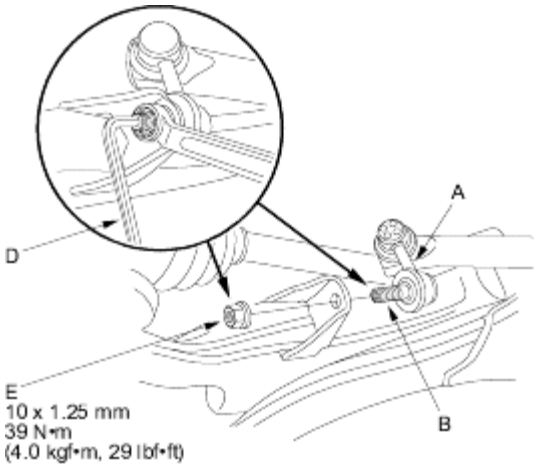


4. Install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot (C). Wipe off the grease before tightening the nut at the ball joint. Torque the castle nut (D) to the lower torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the nut by loosening.

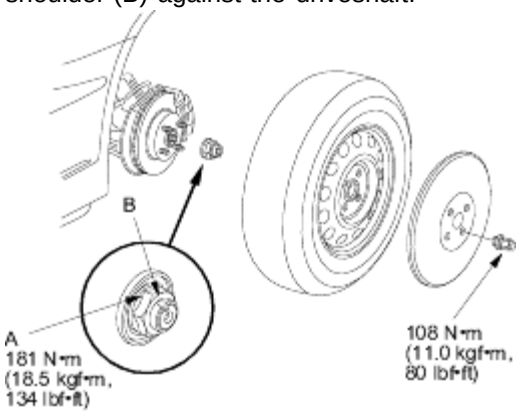


5. Install the new lock pin (E) into the pin hole.

6. Connect the front stabiliser link (A) to the lower arm. Hold the stabiliser link ball joint pin (C) with a hex wrench (D) and tighten the new flange nut (E).



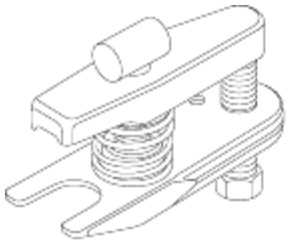
7. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.

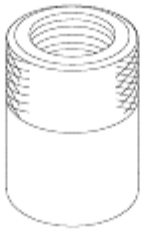


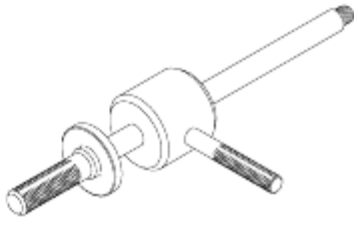
8. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.

Driveline/Axle Special Tools	16-2

Ref. No	Tool Number	Description	Qty
1	07MAC-SL00200	Ball Joint Remover, 28 mm	1
2	07XAC-0010100	Threaded Adapter, 22 x 1.5 mm	1
3	07936-5790001	Sliding Hammer Set	1







Driveline/Axle

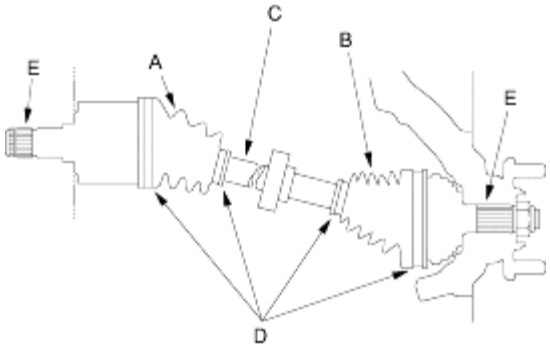
Driveshaft Installation (cont'd)

9. Refill the transmission with recommended MTF (see page 13-3) or ATF (see page 14-122).
10. Check the front wheel alignment and adjust it if necessary (see page 18-4).

Driveline/Axle

Driveshaft Inspection

1. 1. Check the inboard boot (A) and the outboard boot (B) on the driveshaft (C) for cracks, damage, leaking grease and loose boot bands (D). If any damage is found, replace the boot and boot bands.



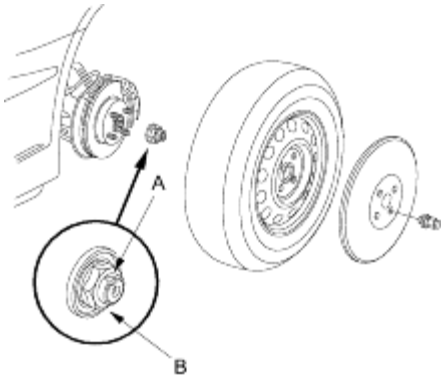
2. 2. Turn the driveshaft by hand and make sure the splines (E) and joint are not excessively loose.
   3. Make sure the driveshaft is not twisted or cracked; if it is, replace it.

Driveshaft Removal

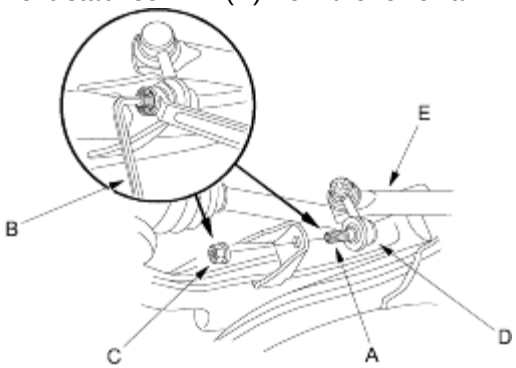
Special Tool Required

Ball joint remover, 28 mm, 07MAC-SL00200

1. 1. Loosen the wheel nuts slightly.
   2. Raise the front of the vehicle and support it with safety stands in the proper locations (see page 1-15).
   3. Remove the wheel nuts and front wheels.



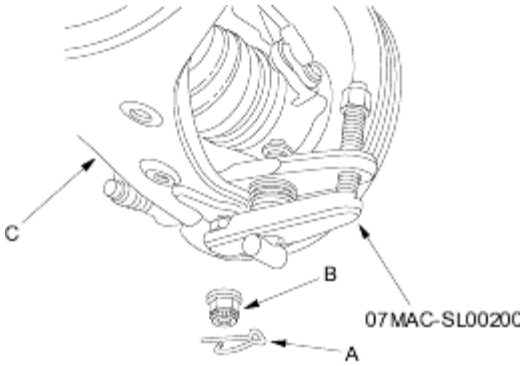
2. 4. Lift up the locking tab (A) on the spindle nut (B), and then remove the nut.
   5. If the driveshaft is removed, drain the MTF (see page 13-3) or the ATF (see page 14-122).
   6. Hold the stabiliser ball joint pin (A) with a hex wrench (B) and remove the flange nut (C). Separate the front stabiliser link (D) from the lower arm.



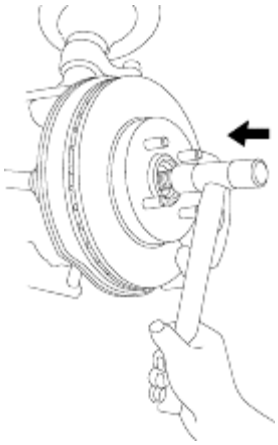
Driveline/Axle

Driveshaft Removal (cont'd)

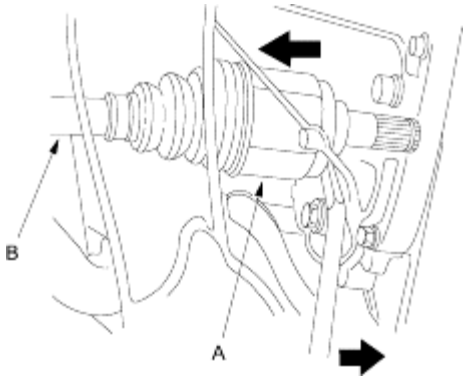
1. 7. Remove the cotter pin (A) from the lower arm ball joint castle nut (B) and remove the nut.



2. 8. Separate the ball joint from the lower arm (C) with the special tool (see page 18-9).
   9. Pull the knuckle outward and remove the driveshaft outboard joint from the front wheel hub using a plastic hammer.



1. 10. Pry the inboard joint (A) with a prybar and remove the driveshaft from the differential case or bearing support as an assembly. Do not pull on the driveshaft (B), because the inboard joint may come apart. Draw the driveshaft straight out to avoid damaging the differential oil seal.



Driveline/Axle

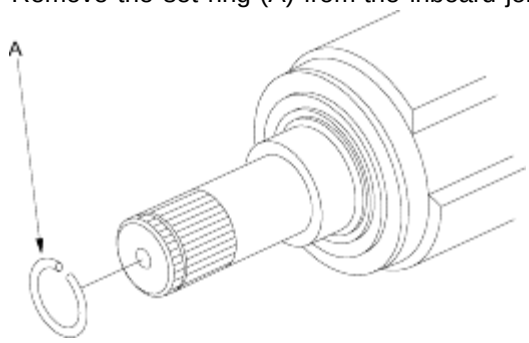
Driveshaft Disassembly

Special Tools Required

- Threaded adapter, 22 x 1.5 mm, 07XAC-0010100
- Slide hammer, 07936-5790001
- Boot band pincer, commercially available

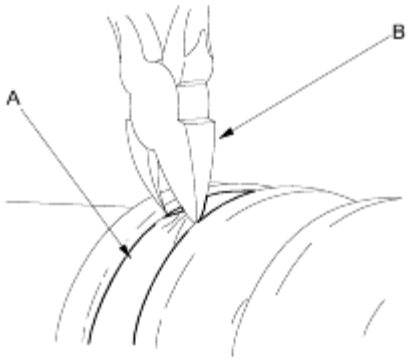
Inboard Joint Side:

1. 1. Remove the set ring (A) from the inboard joint.

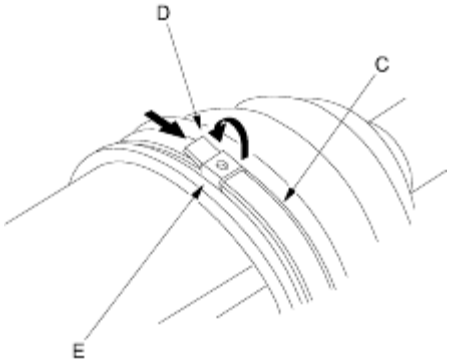


2. 2. Remove the boot bands. Take care not to damage the boot and dynamic damper.
   - If the boot band is welded type (A), cut the boot band (B).
   - If the boot band is a double loop type (C), lift up the band bend (D) and push it into the clip (E).
   - If the boot band is a low profile type (F), pinch the boot band using the commercially available boot band pincer (G).
   - If the boot band is an ear clamp type (H), lift up the three tabs (I) with a screwdriver.

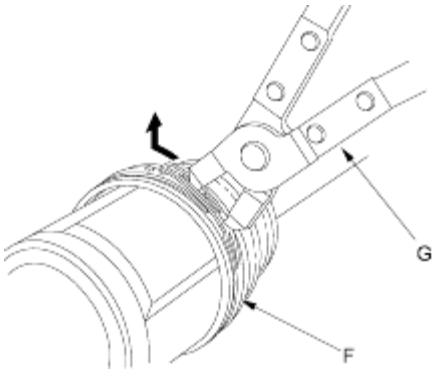
Welded Type



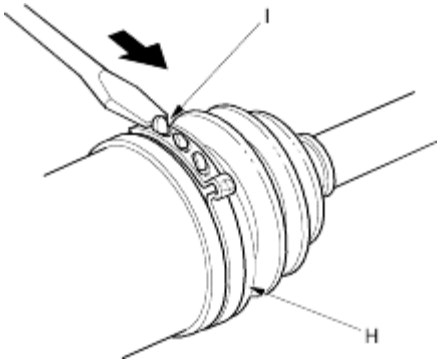
Double Loop Type



Low Profile Type



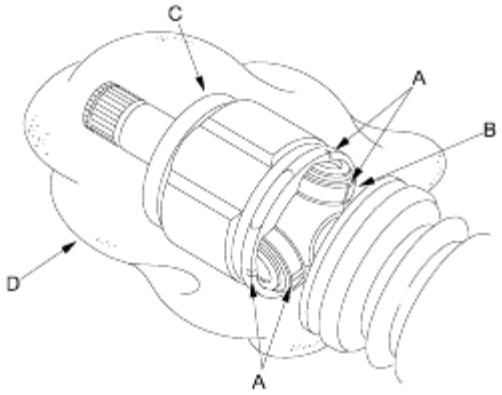
Ear Clamp Type



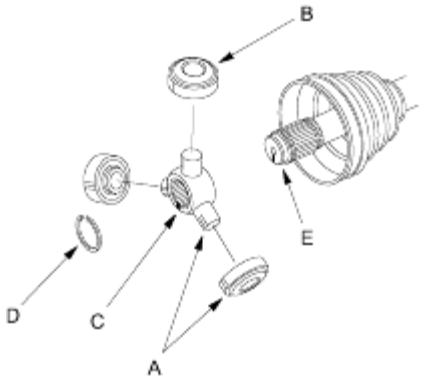
Driveline/Axle

Driveshaft Disassembly (cont'd)

1. 3. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.



1. 4. Make a mark (A) on the rollers (B) and spider (C) to identify the locations of rollers on the spider, then remove the rollers.

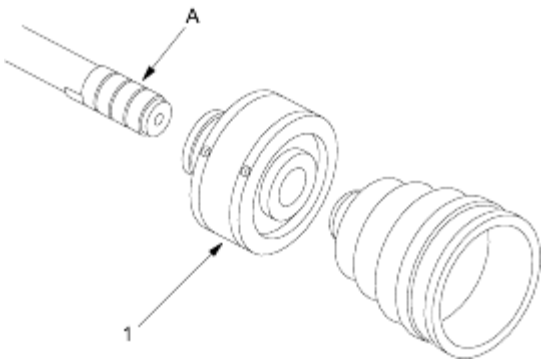


2. 5. Remove the circlip (D).
   6. Mark the spider (C) and driveshaft (E) to identify the position of the spider on the shaft.
   7. Remove the spider (C).

Driveline/Axle

Driveshaft Disassembly (cont'd)

1. 8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot and dynamic damper.



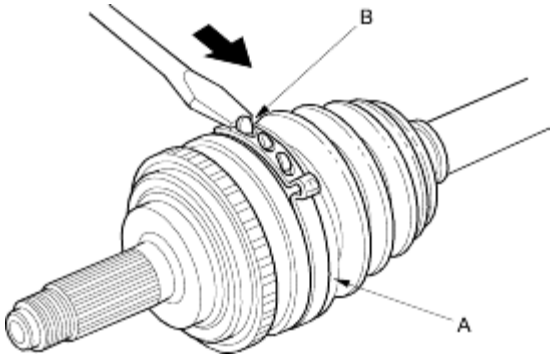
2. 1. (Except right driveshaft on SOHC engines A/T models)

3. 9. Remove the inboard boot and dynamic damper. Take care not to damage the boot and dynamic damper.
10. Remove the vinyl tape.

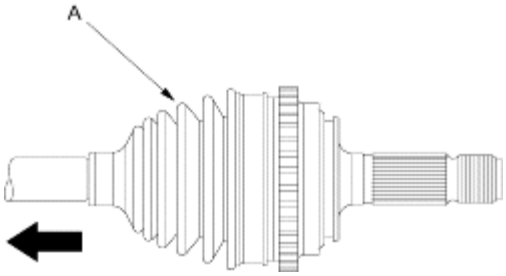
Outboard Joint Side:

1. 1. Remove the boot bands. Take care not to damage the boot and dynamic damper.
   - If the boot band is an ear clamp type (A), lift up the three tabs (B) with a screwdriver.

Ear Clamp Type



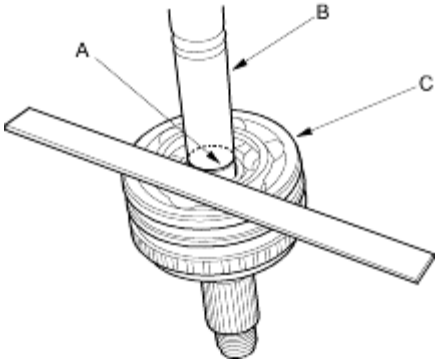
2. 2. Slide the outboard boot (A) to the inboard joint side. Take care not to damage the boot.



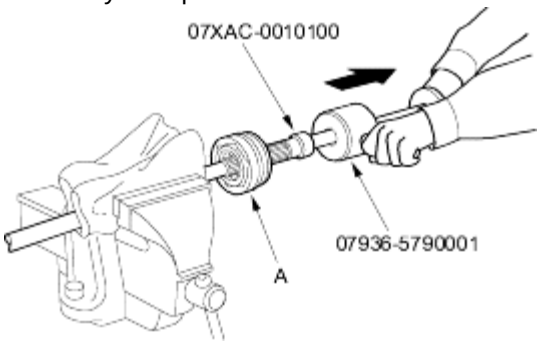
Driveline/Axle

Driveshaft Disassembly (cont'd)

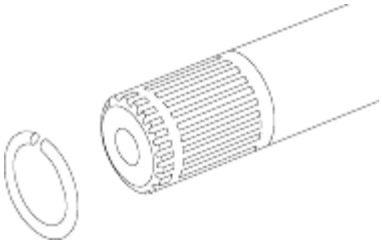
1. 3. Wipe off the grease to expose the driveshaft and outboard joint inner race.
2. 4. Make a mark (A) on the driveshaft (B) at the same position of the outboard joint end (C).



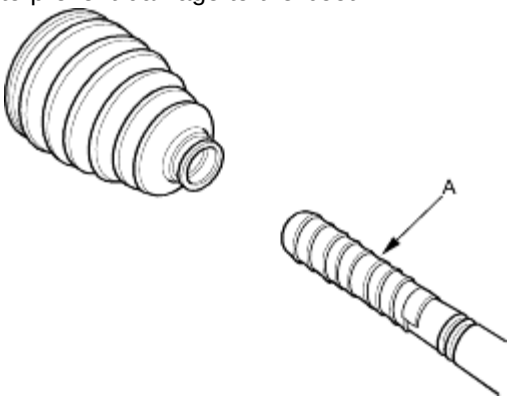
3. 5. Carefully clamp the driveshaft in a vice.



4. 6. Remove the outboard joint (A) using the special tools.
   7. Remove the driveshaft from the vice.
1. 8. Remove the stop ring from the driveshaft.



2. 9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



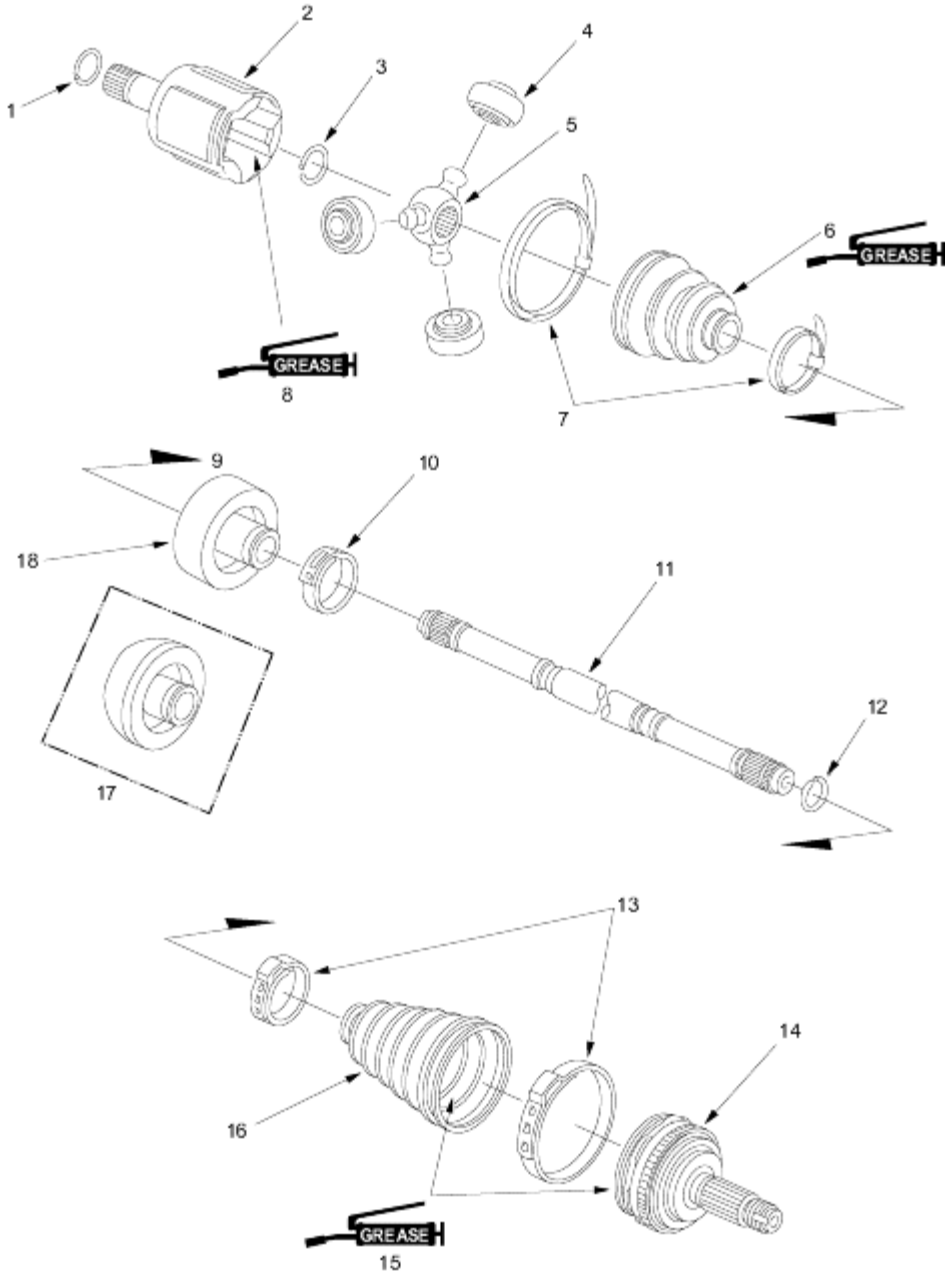
3. 10. Remove the outboard boot. Take care not to damage the boot.
    11. Remove the vinyl tape.

Driveline/Axle

Driveshaft Reassembly

Exploded View

Japan produced models:



1. SET RING
   Replace.
2. INBOARD JOINT
3. CIRCLIP
4. ROLLER
5. SPIDER
6. INBOARD BOOT
   Pack cavity with grease.
7. DOUBLE LOOP BAND
   Replace.
8. Pack cavity with grease.
9. Left driveshaft
10. DYNAMIC DAMPER BAND
    Replace.
11. DRIVESHAFT
12. STOP RING
    Replace.
13. BOOT BANDS
    Replace.
14. OUTBOARD JOINT
15. Pack cavity with grease.
16. OUTBOARD BOOT (TYPE)
17. Right driveshaft
    (Except SOHC engine A/T models)
18. DYNAMIC DAMPER
    (Undirectional)

General Information

Chassis and Engine Numbers (cont'd)

Applicable Area Code/VIN/Engine Number/Transmission Number List

MODEL	APPLICABLE AREA CODE	GRADE NAME	TRANSMISSION TYPE	VEHICLE IDENTIFICATION NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
CIVIC	KB	1.4S	5MT	JHMES45301S200001-	D14Z5-1000001-	SLW-1000001-
			4AT	JHMES46301S200001-	D14Z5-1000001-	SLXA-1000001-
		1.6ES	5MT	JHMES55701S200001-	D16W7-1000001-	SLW-1000001-
			4AT	JHMES56701S200001-	D16W7-1000001-	SLXA-1000001-
	KH	EXI VTI	4AT	JHMES86801S200001-	D15Y2-1000001-	SLXA-1000001-
				JHMES56801S200001-	D16W8-1000001-	SLXA-1000001-
	KU	EXI	5MT	JHMES85801S200001-	D15Y6-1000001-	SLW-1000001-
			4AT	JHMES86801S200001-	D15Y6-1000001-	SLXA-1000001-
		EXI-H	5MT	JHMES85801S200001-	D15Y6-1000001-	SLW-1000001-
			4AT	JHMES86801S200001-	D15Y6-1000001-	SLXA-1000001-
		VHI-H	5MT	JHMES85901S200001-	D15Y4-1000001-	SLW-1000001-
			HMM	JHMES86901S200001-	D15Y4-1000001-	MLXA-1000001-
		VTI	5MT	JHMES85901S200001-	D15Y4-1000001-	SLW-1000001-
			HMM	JHMES86901S200001-	D15Y4-1000001-	MLYA-1000001-
		VTI-S	5MT	JHMES15901S200001-	D17A2-1000001-	SLW-1000001-
			HMM	JHMES16901S200001-	D17A2-1000001-	MLYA-1000001-
			5MT	JHMES15001S200001-	D17A2-1000001-	SLW-1000001-
			HMM	JHMES16001S200001-	D17A2-1000001-	MLYA-1000001-
	KV	LXI	5MT	JHMES853*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES863*1S400001-	D15Y3-1000001-	SLXA-1000001-
		EXI	5MT	JHMES857*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES867*1S400001-	D15Y3-1000001-	SLXA-1000001-
		VTI	5MT	JHMES158*1S400001-	D17A5-1000001-	SLW-1000001-
			4AT	JHMES168*1S400001-	D17A5-	SLXA-1000001-

					1000001-	
	KW	EXI	5MT	JHMES85801S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86801S200001-	D15Y3-1000001-	SLXA-1000001-
	KY	LXI	5MT	JHMES853*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES863*1S400001-	D15Y3-1000001-	SLXA-1000001-
			5MT	JHMES854*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES864*1S400001-	D15Y3-1000001-	SLXA-1000001-
		EXI	5MT	JHMES857*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES867*1S400001-	D15Y3-1000001-	SLXA-1000001-
			5MT	JHMES858*1S400001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES868*1S400001-	D15Y3-1000001-	SLXA-1000001-
		VTI	5MT	JHMES158*1S400001-	D17A5-1000001-	SLW-1000001-
			4AT	JHMES168*1S400001-	D17A5-1000001-	SLXA-1000001-
			5MT	JHMES159*1S400001-	D17A5-1000001-	SLW-1000001-
			4AT	JHMES169*1S400001-	D17A5-1000001-	SLXA-1000001-

Steering

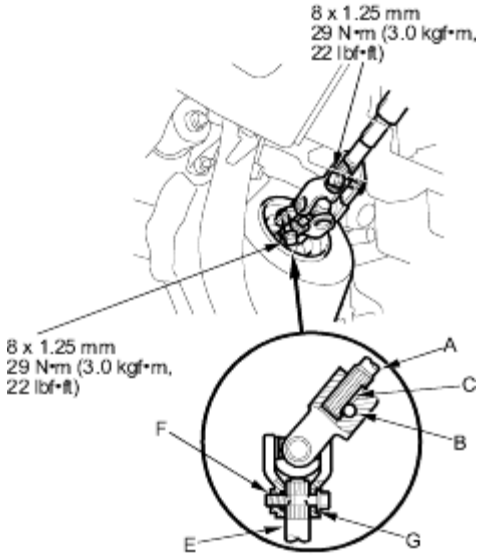
Special Tools	17-2
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Power Assist Check	17-4
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Steering

Steering Column Removal and Installation (cont'd)

Installation

1. 1. Install the steering column, and make sure the wires are not caught or pinched by any parts.
   2. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft).



2. 3. Slip the lower end of the steering joint onto the pinion shaft (E) (line up the bolt hole (F) with the groove (G) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.
   4. Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten it.
   5. Finish the installation, and note these items:
      - Make sure the wire harness is routed and fastened properly.
      - Make sure the connectors are properly connected.
      - Reinstall the steering wheel (see page 17-8).
      - Reconnect the battery.
      - Verify horn and turn signal switch operation.
      - Check wheel alignment, if necessary (see page 18-4).

EPS Components

Steering Gearbox Overhaul (cont'd)

Special Tools Required

- Locknut wrench, 07ZAA-S5A0100
- Pincers, Oetiker 1098 or equivalent, commercially available.

NOTE:

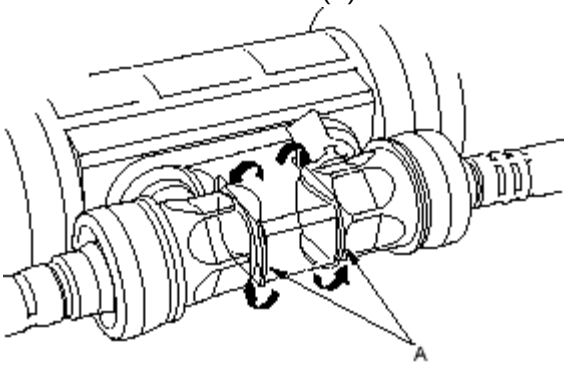
- Refer to the Exploded View as needed during this procedure.
- Do not allow dust, dirt, or other foreign materials to enter the gearbox.
- RHD type is shown, LHD type is symmetrical.

Removal

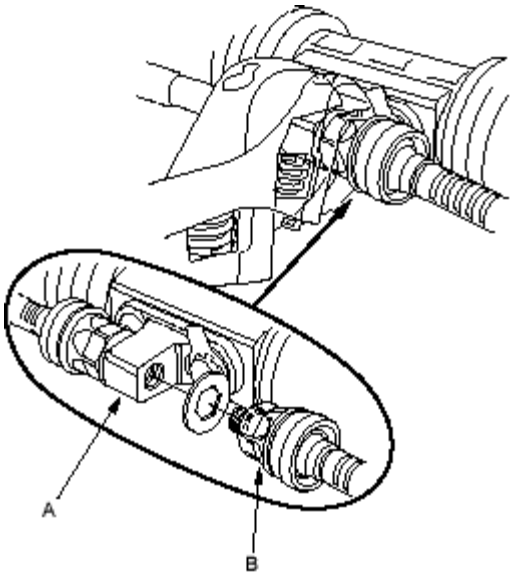
1. 1. Remove the steering gearbox (see page 17-96).

Disassembly

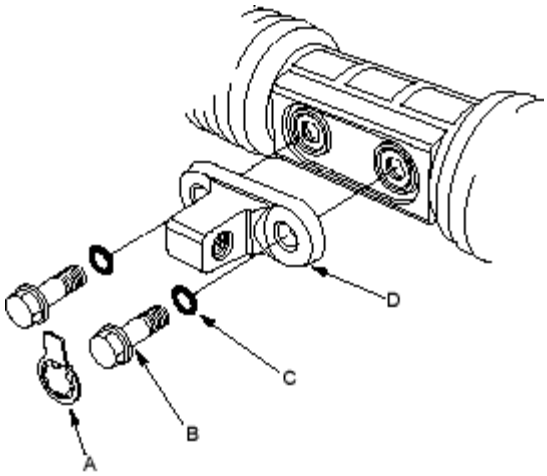
2. 2. Unbend the lock washer (A).



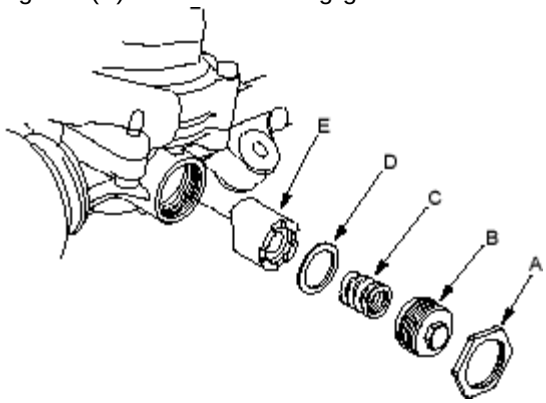
3. 3. Hold the bracket (A) with one wrench, and unscrew the both rack ends (B) with another wrench. Remove the lock washers.



1. 4. Remove the stop plate (A), the 12 mm flange bolts (B), O-rings (C), bracket (D) from the steering gearbox.



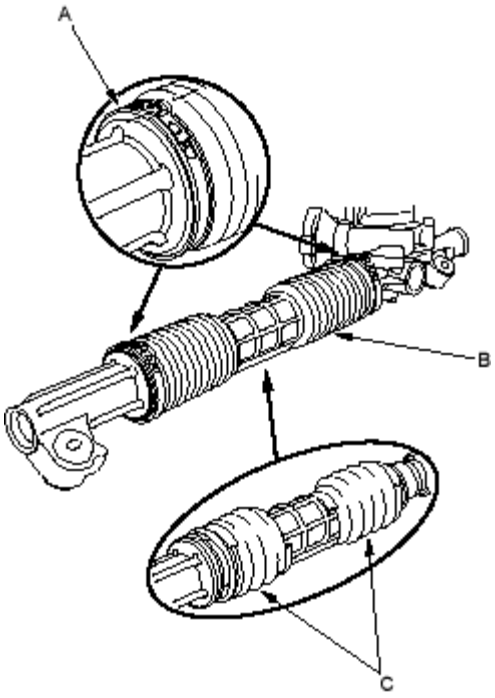
2. 5. Loosen the locknut (A), then remove the rack guide screw (B), spring (C), disc washer (D), and rack guide (E) from the steering gearbox.



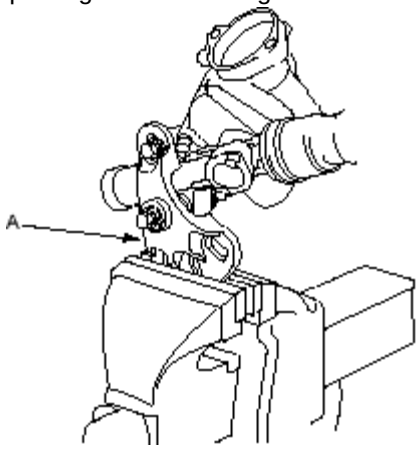
EPS Components

Steering Gearbox Overhaul (cont'd)

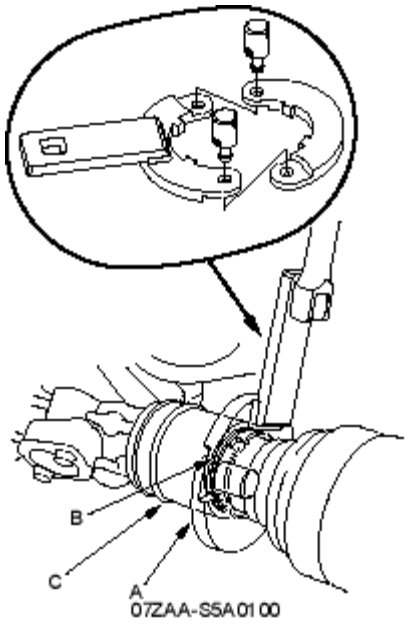
1. 6. Remove the two boot bands (A) from boot (B). Compress the boot by hand, and apply vinyl tape (C) so the boot stay collapsed and pulled back.



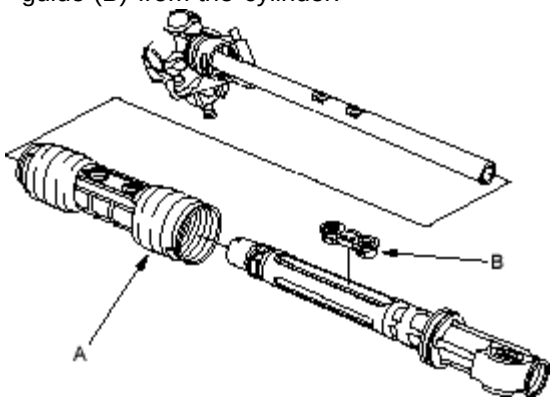
2. 7. Attach the yoke (A) of a universal puller to the steering gearbox mounts with bolts. Securely clamp the yoke in a vice with soft jaws as shown. Do not clamp the gearbox housing in the vice.



1. 8. Set the special tool (A) on the lock screw (B) securely, then loosen and remove the lock screw from inner of the gearbox housing (C).



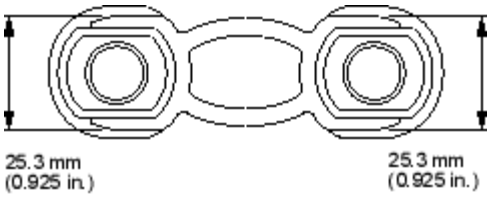
2. 9. Remove the special tool.
10. Pull on the rack housing to remove it from the gearbox housing. Remove the boot (A) and slider guide (B) from the cylinder.



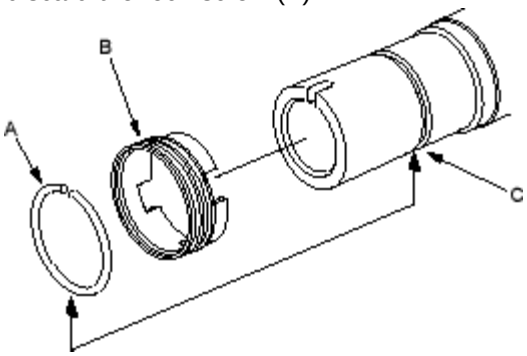
EPS Components

Steering Gearbox Overhaul (cont'd)

11. Check the slider guide for damage and cracks. Using vernier callipers to measure the thickness of the slider guide. If the thickness is less than service limit, replace the slider guide.

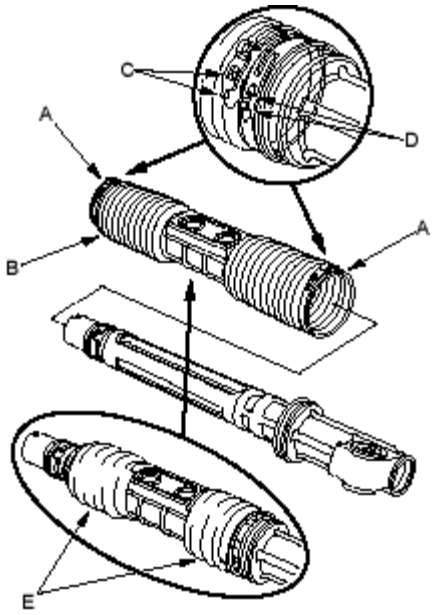


12. Remove and discard the stop ring (A) on the cylinder by expanding it using a snap ring pliers. Remove and discard the lock screw (B).

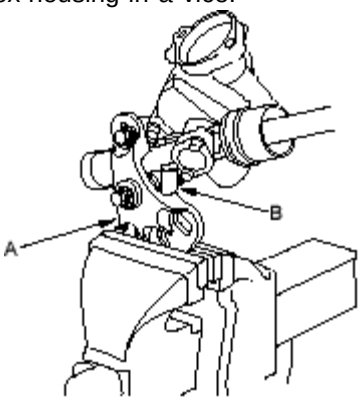


13. Install the new lock screw on the rack housing.
14. Install the new stop ring in the groove (C) on the cylinder by expanding it using a snap ring pliers. Be careful not scratched damage on the housing surface with the stop ring edges.

15. Set the new boot bands (A) on the band installation grooves of the boot (B) by aligning the tabs (C) with the holes (D) of the band. Do not close the ear of the boot band in this step.



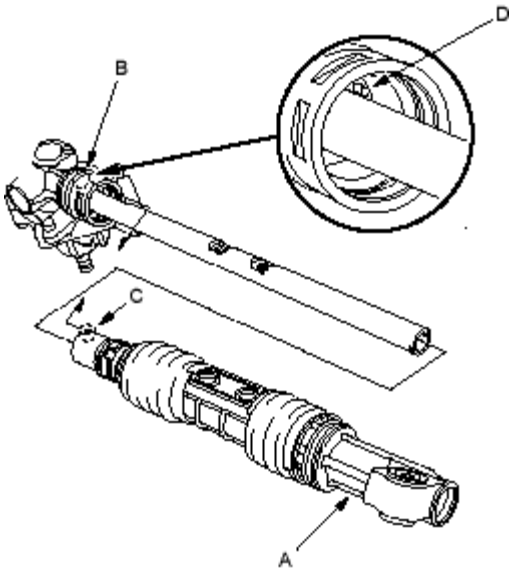
16. Compress the boot by hand, and apply vinyl tape (E) to the bellows so the boots stay collapsed and pulled back.
    Pass the boot over the rack housing so the smaller diameter end of the boot faces the gearbox housing.
17. Attach the yoke (A) of a universal puller to the gearbox housing mounts (B) with bolts, then securely clamp the yoke in a vice with jaws. Do not clamp the gearbox housing in a vice.



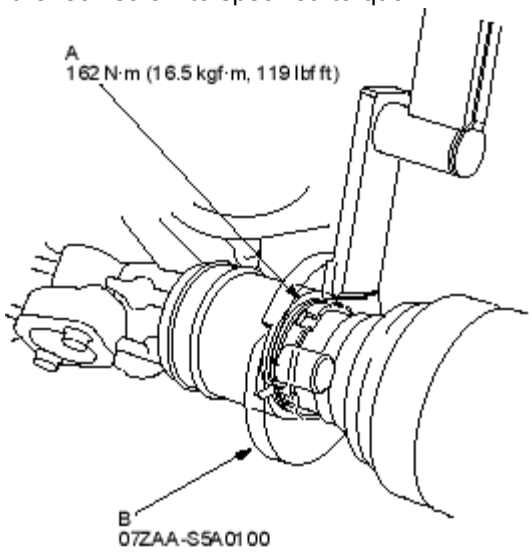
EPS Components

Steering Gearbox Overhaul (cont'd)

1. 18. Push the rack housing (A) into the gearbox housing (B) so the notch (C) is aligned with the pin (D) on bottom of the gearbox housing inside.

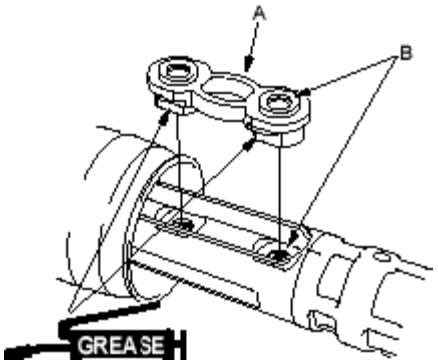


2. 19. Tighten the lock screw (A) by hand first, then set the special tool (B) on the lock screw securely. Tighten the lock screw to specified torque.

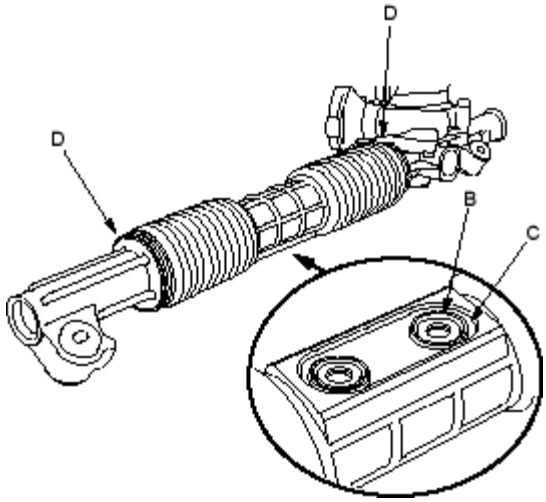


3. 20. Remove the special tool.

1. 21. Apply multipurpose grease to the sliding surface of the slider guide (A). Slide the steering rack all the way to left by turning the pinion shaft, and place the slider guide on the steering rack by aligning the bolt holes (B).



2. 22. Centre the steering rack within its stroke, and align the slider guide (B) with the holes (C) of the boot. Fit the slider guide to boot by pressing the around edges of the holes securely.

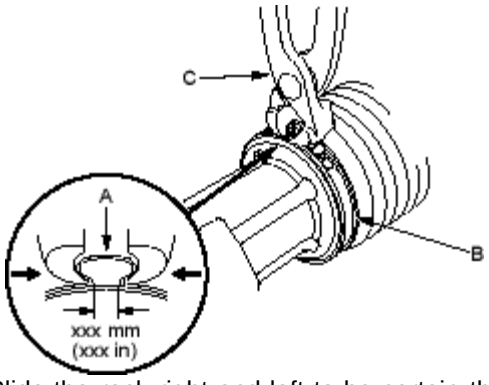


3. 23. Clean off any grease or contamination from the boot installation grooves around on the housing.
   24. Expand boot by removing the vinyl tape and fit the boot both ends (D) in the installation grooves on the rack housing.

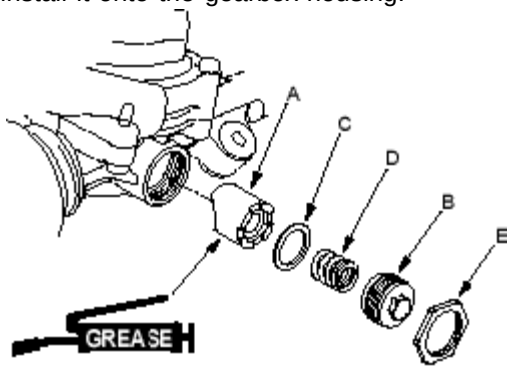
EPS Components

Steering Gearbox Overhaul (cont'd)

1. 25. Close the ear portion (A) of the bands (B) with a commercially available pincers, Oetiker 1098 or equivalent (C).

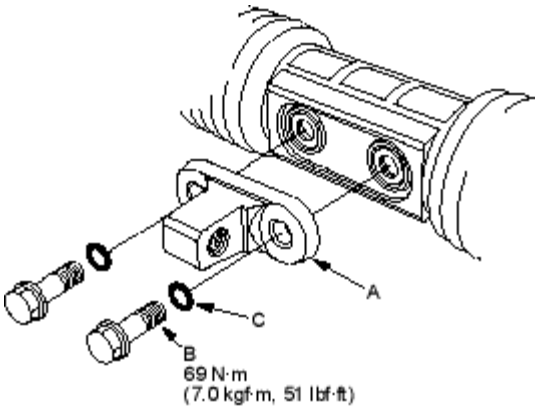


2. 26. Slide the rack right and left to be certain that the boots are not deformed or twisted.
   27. Grease the sliding surface of the rack guide (A), and install it onto the gearbox housing.

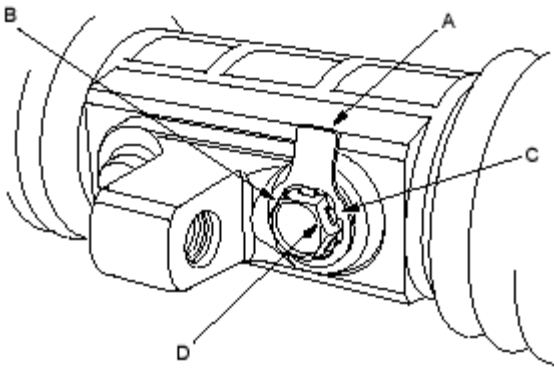


3. 28. Apply sealant to the all around threads on the rack guide screw (B), then install the disc washer (C), spring (D), rack guide screw and locknut (E).
   29. Adjust rack guide screw (see page 17-13). After adjusting, check that the rack moves smoothly by sliding it right and left.

1. 30. Before installing the bracket (A), clean the mating surface of the 12 mm flange bolts (B) and bracket. Then install the new O-rings (C) on the 12 mm flange bolts.



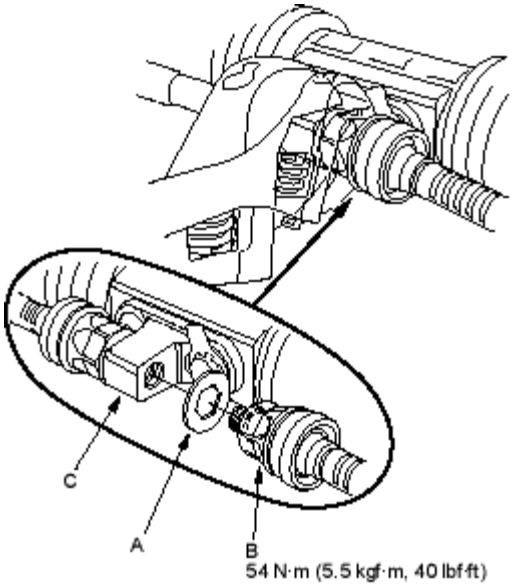
2. 31. Install the bracket on the steering rack with 12 mm flange bolts.
   32. After tightening the 12 mm flange bolts, install the stop plate (A) over the one side of bolt head (B). Be sure fit the tabs of the stop plate with flat surfaces (C) of the hexagonal bolt head.



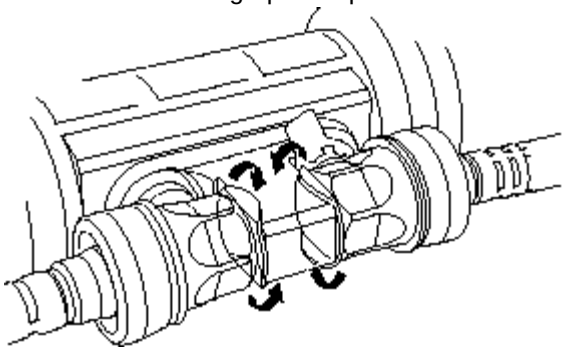
EPS Components

Steering Gearbox Overhaul (cont'd)

1. 33. Install the new lock washer (A) on the tie-rod (B), and screw the tie-rod on the bracket (C). Repeat this step for the other side of the tie-rod. Hold the bracket with one wrench and tighten the tie-rods to the specified torque with another wrench.



2. 34. Bend the lock washer against the flat spots on the bracket with a large pair of pliers.

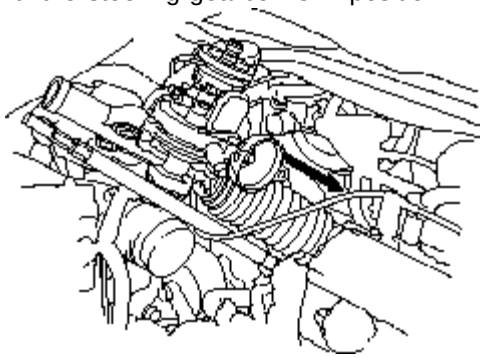


EPS Components

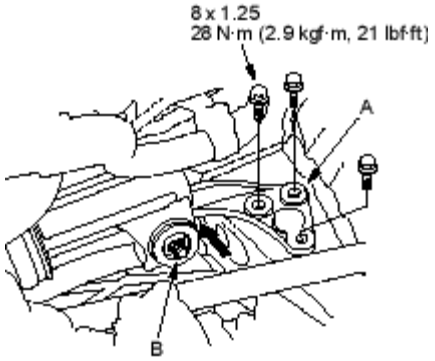
Steering Gearbox Installation

NOTE: RHD type is shown, LHD type is symmetrical.

1. 1. Before installing the gearbox, slide the rack all the way to the passenger's side (RHD: left direction, LHD: right direction).
   2. Pass the passenger's side of the steering gearbox together with the tie-rods through the wheel well opening on the passenger's side. Continue moving the steering gearbox toward the passenger's side until the driver's side rack end clears the master cylinder. Lower the driver's side (pinion side) of the steering gearbox, and back it toward the driver's side until the steering gearbox is in position.

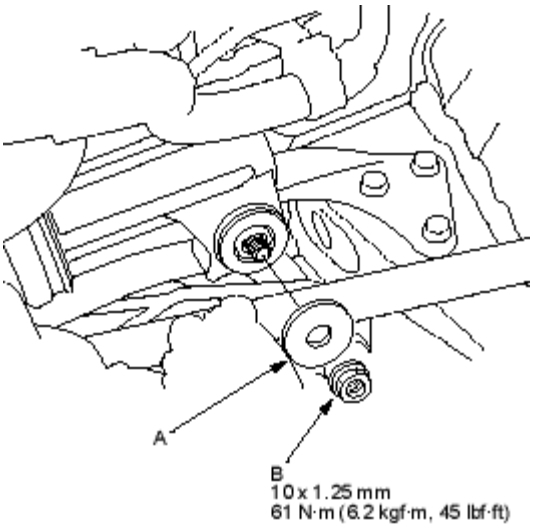


2. 3. Install the pinion shaft grommet.
   4. Install the left gearbox mounting bracket (A) on the frame.

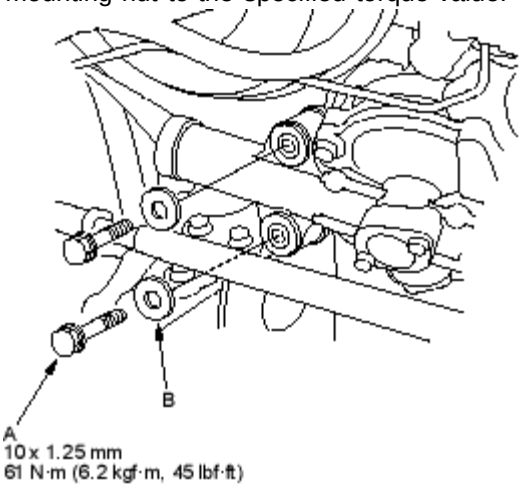


3. 5. Slip the left side of the steering gearbox over the mounting stud (B) on the left gearbox mounting bracket.

1. 6. Install the washer (A) and the gearbox mounting nut (B) and lightly tighten.



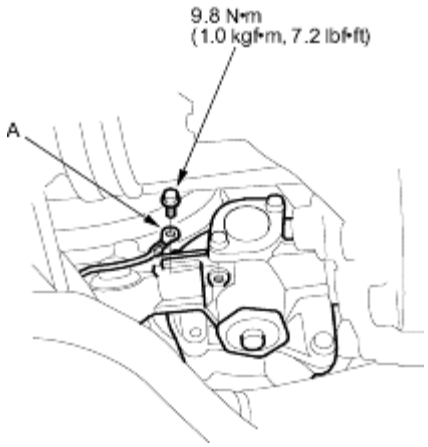
2. 7. Insert the pinion shaft up through the bulkhead, and install the left gearbox mounting bolts (A) and washers (B), and tighten them to the specified torque. Then tighten the right side of the gearbox mounting nut to the specified torque value.



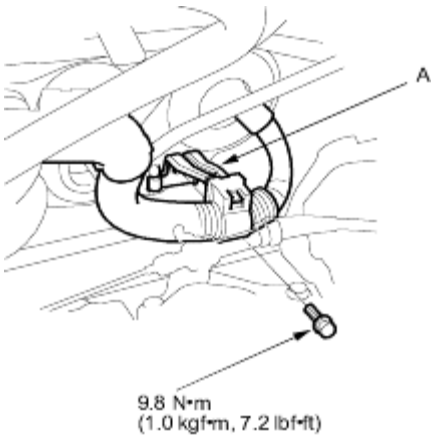
EPS Components

Steering Gearbox Installation (cont'd)

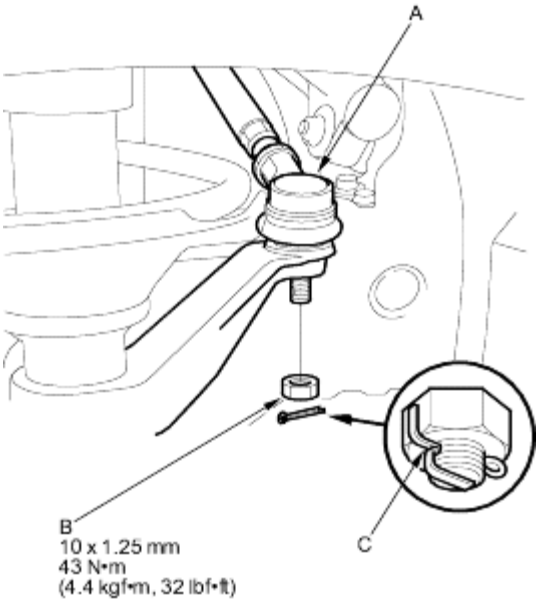
1. 8. Under the steering gearbox, install the ground cable terminal (A) on the gearbox housing.



2. 9. Install the engine wire harness bracket (A) on the bulkhead.



1. 10. Install the driver's side tie-rod end.
2. 11. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the damper steering arms. Install the 10 mm nut (B) and tighten it.

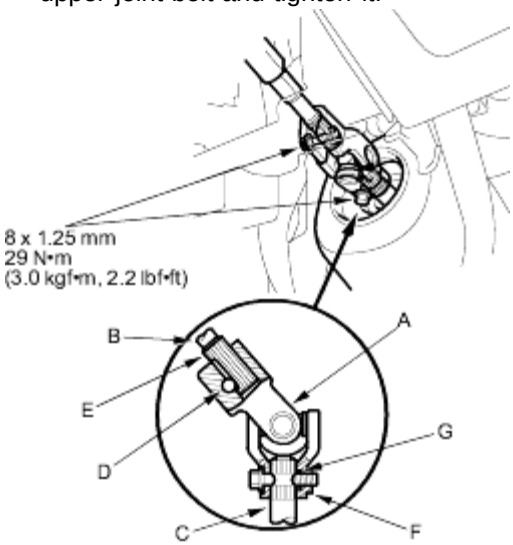


3. 12. Install the new cotter pin (C), and bend it as shown.
   13. For RHD vehicle's with CVT; connect the shift cable to the transmission (see step 31 on page 14-336). For RHD vehicle's with M/T; install the clutch reservoir and reservoir bracket (see page 12-6). For LHD vehicle's with M/T; connect the shift cable to the transmission (see step 18 on page 13-12).

EPS Components

Steering Gearbox Installation (cont'd)

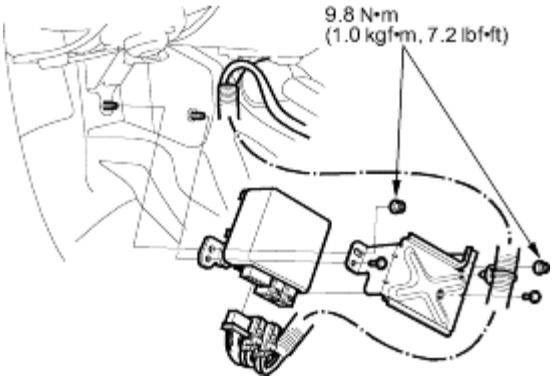
1. 14. Install the steering joint (A), and reconnect the steering shaft (B) and pinion shaft (C). Make sure the steering joint is connected as follows:
    - Insert the upper end of the steering joint onto the steering shaft (line up the bolt hole (D) with the flat portion (E) on the shaft).
    - Slip the lower end of the steering joint onto the pinion shaft (line up the bolt hole (F) with the groove (G) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.
    - Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten it.



2. 15. Install the driver's dashboard lower covers.
16. Centre the cable reel by first rotating it clockwise until it stops. Then rotate it counter-clockwise (about 2 and half turns) until the arrow mark on the label points straight up.
Reinstall the steering wheel (see page 17-8).
17. Install the front wheels.
18. Install the motor on the steering gearbox (see page 17-95).
19. After installation, perform the following checks.
    - Perform the front toe inspection (see page 18-4).
    - Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods equally, if necessary.

NOTE: RHD type is shown, LHD type is symmetrical.

1. 1. Disconnect the negative cable from the battery.
2. Remove the passenger's under panel.
3. Turn up the floor carpet, remove the EPS control unit.



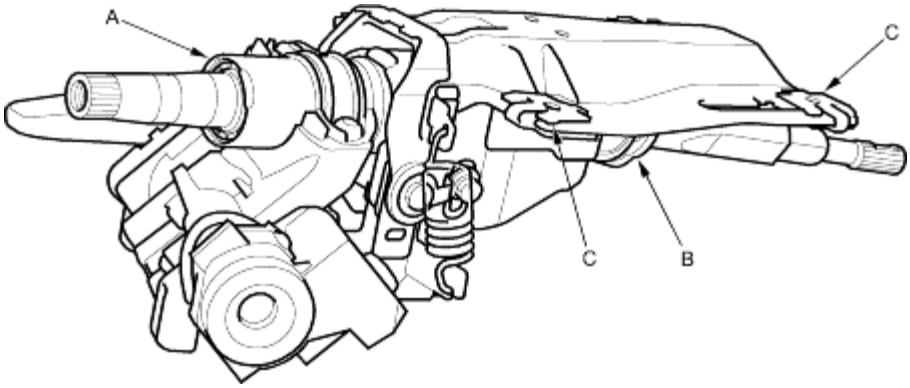
2. 4. Disconnect the EPS control unit connectors.
5. Install the EPS control unit in the reverse order of removal.
6. After installation, start the engine and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

Steering

Steering Column Inspection

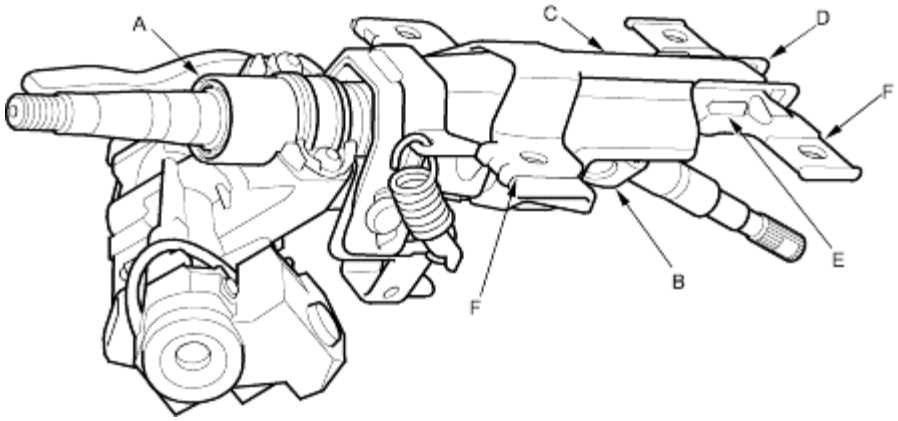
Except KX Model:

- Check the steering column ball bearing (A) and the steering joint bearing (B) for play and proper movement. If any bearing is noisy or has is excessive play, replace the steering column as an assembly.
- Check the sliding capsules (C) for distortion and breakage. If there is distortion or breakage replace the steering column as an assembly.



KX Model:

- Check the steering column ball bearing (A) and the steering joint bearing (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the absorbing plate's (C), absorbing plate guides (D), stop (E) and coating plate's (F) for distortion or breakage. If there is distortion or breakage replace the steering column as an assembly.

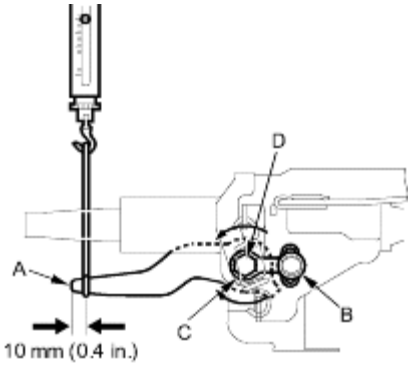


Steering

Steering Column/Tilt Lever Inspection/Adjustment

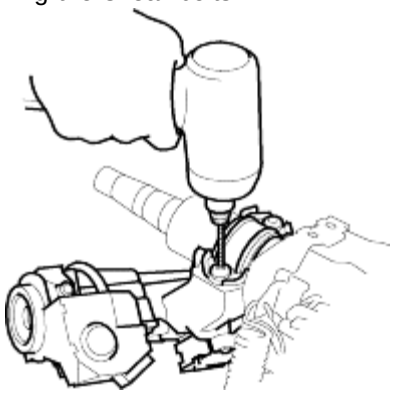
Except KX Model:

1. Move the tilt lever (A) from the loose position to the lock position 3 to 5 times; then measure the tilt lever preload 10 mm (0.4 in.) from the end of the tilt lever.
   Preload: 70 - 90 N (7 - 9 kgf, 15 - 20 lbf)

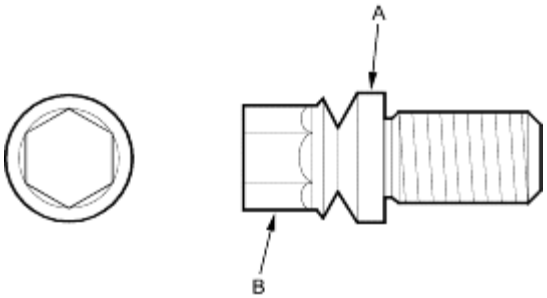


2. If the measurement is out of the specification, adjust the preload using the following procedures.
   - Loosen the tilt lever, and set the steering column in the neutral position.
   - Remove the 6 mm lock bolt (B), and remove the stop (C). Be careful not to loosen the tilt lever when installing the stop or tightening the 6 mm lock bolt.
   - Adjust the preload by turning the tilt lock bolt (D) left or right.
   - Pull up the tilt lever to the uppermost position, and install the stop. Check the preload again If the measurement is still out of specification, repeat the above procedures to adjust.

1. Remove the steering column (see page 17-9).
2. Centre punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



Steering
Rack Guide Adjustment

Special Tools Required

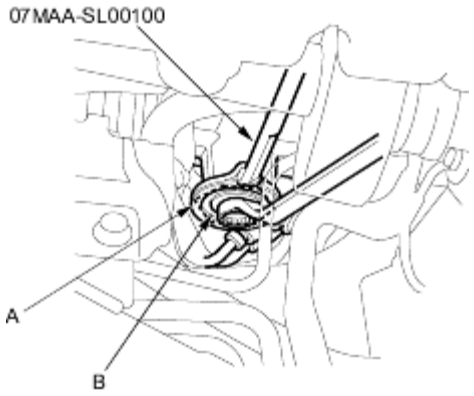
Locknut wrench, 40 mm, 07MAA-SL00100

Locknut wrench, 43 mm, 07MAA-SL00200

1. 1. Set the wheels in the straight ahead position.
   2. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).

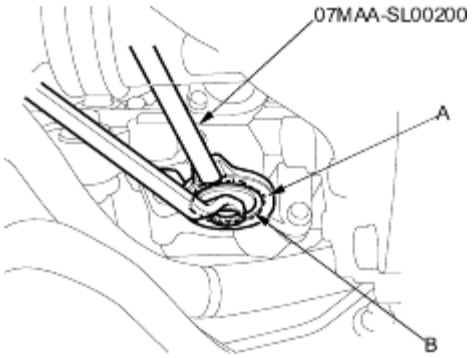
Power Steering:

NOTE: LHD type is shown, RHD type is symmetrical.

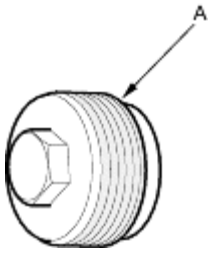


EPS:

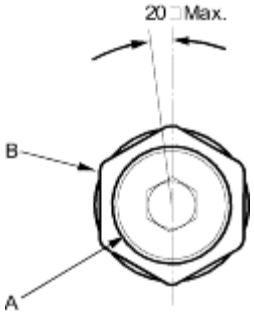
NOTE: RHD type is shown, LHD is symmetrical.



1. 3. Remove the old sealant from rack guide screw, and apply new sealant all around the threads (A).



2. 4. Loosely install the rack guide screw (A) on the steering gearbox.



3. 5. Tighten the rack guide screw to 25 Nm (2.5 kgf/m, 18 lbf/ft), then loosen it.
   6. Retighten the rack guide screw to 3.9 Nm (0.4 kgf/m, 2.9 lbf/ft) then back it off to specified angle.

      Specified Return Angle: 20° Max.

   7. Tighten the locknut (B) to HPS Model: 25 Nm (2.5 kgf/m, 18 lbf/ft), EPS Model: 44 Nm (4.5 kgf/m, 33 lbf/ft) while holding the rack guide screw.
   8. Check for unusual steering effort through the complete turning travel.
   9. Check the steering wheel rotational play and the power assist (see page 17-4).

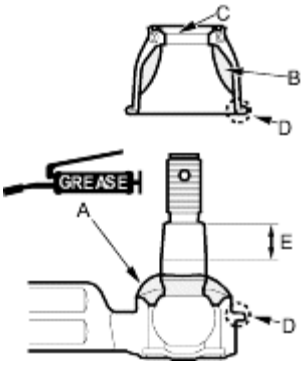
Steering

Tie-rod Ball Joint Boot Replacement

Special Tools Required

Attachment, 42 mm, 07QAD-P0A0100

1. 1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
   2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

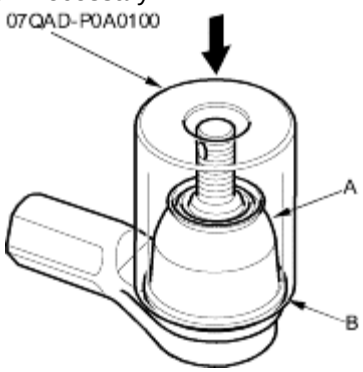


2. 3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:

   - Keep grease off the boot installation section (D) and the tapered section (E) if the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.

3. 4. Install the new boot (A) using the special tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

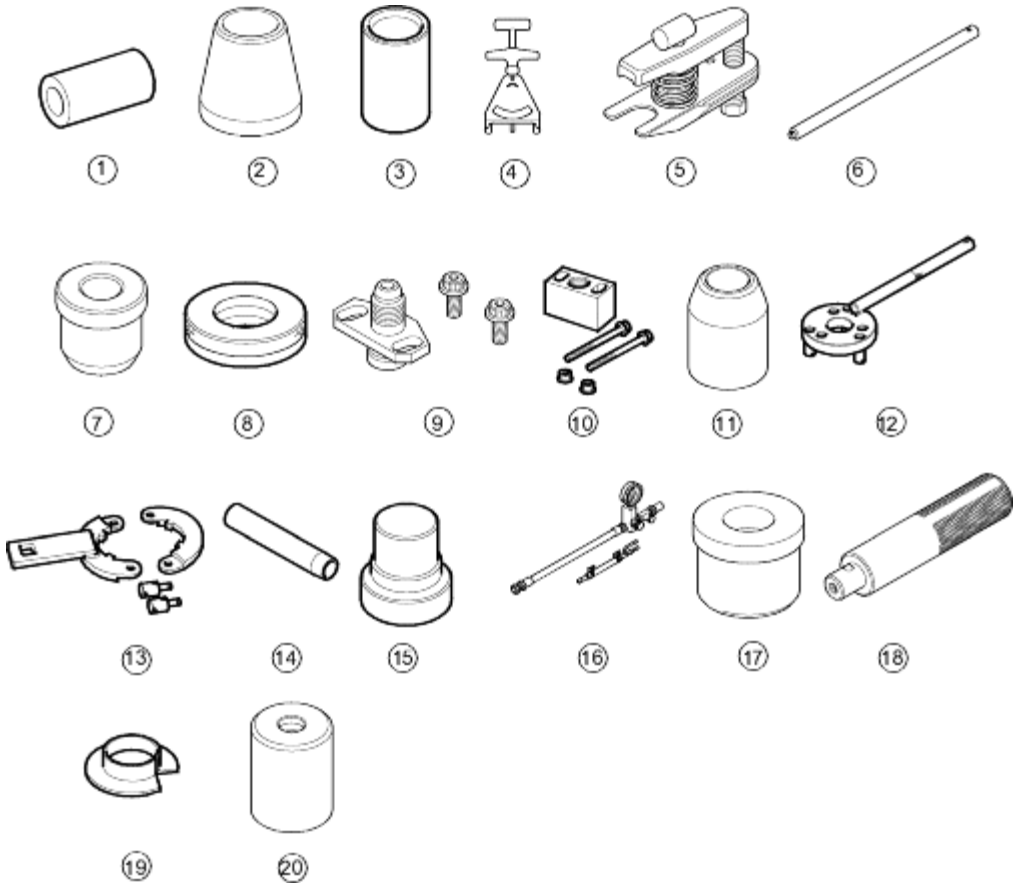


Power Steering

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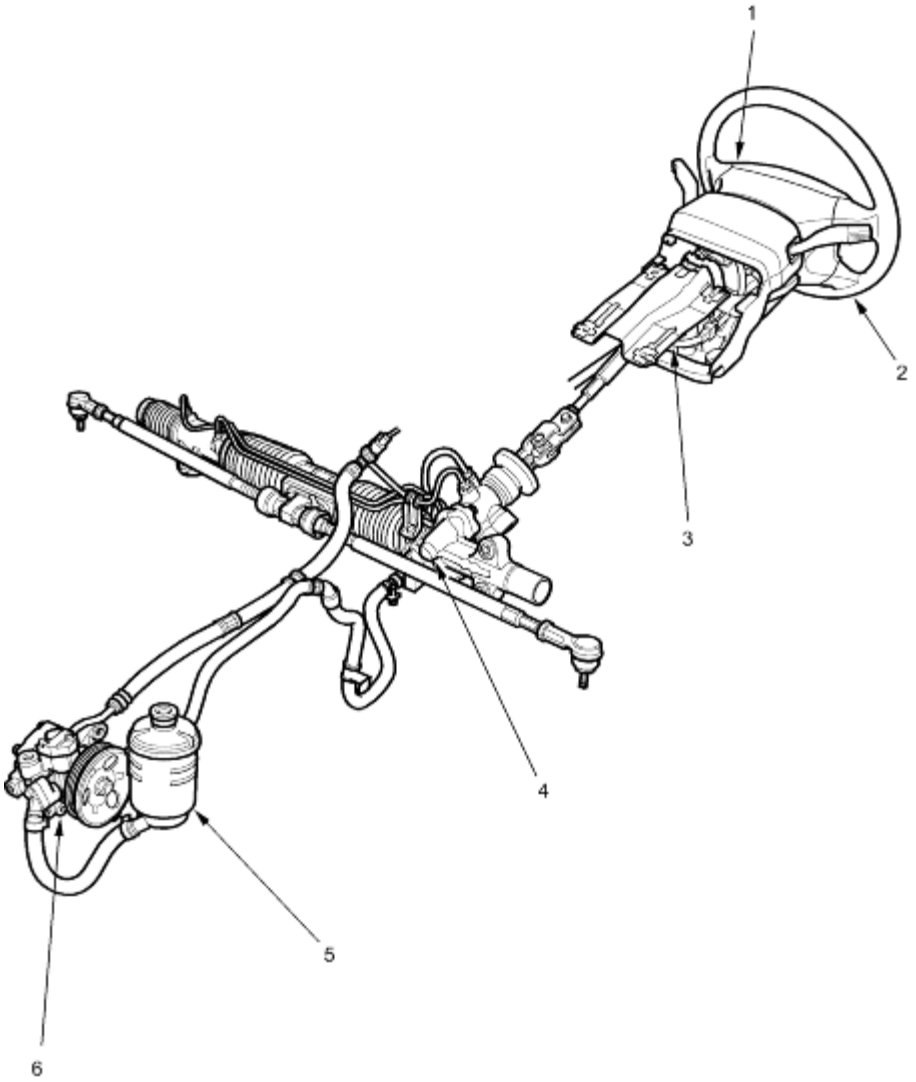
Power Steering Special Tools	17-16

Ref. No.	Tool Number	Description	Qty
1	07GAF-PH70100	Pilot Collar	1
2	07GAG-SD40100	Piston Seal Ring Guide	1
3	07GAG-SD40200	Piston Seal Ring Sizing Tool	1
4	07JGG-0010100	Belt Tension Gauge	1
5	07MAC-SL00200	Ball Joint Remover, 28 mm	1
6	07NAD-SR30101	Driver Handle	1
7	07NAD-SR30200	Cylinder End Seal Remover Attachment	1
8	07NAG-SR30900	Valve Seal Ring Sizing Tool	1
9	07RAK-S040111	P/S Joint Adapter (Pump)	1
10	07RAK-S040122	P/S Joint Adapter (Hose)	1
11	07YAG-S2X0100	Sleeve Seal Ring Guide	1
12	07ZAB-S5A0100	Pulley Holder	1
13	07ZAA-S5A0100	Locknut Wrench	1
14	07ZAG-S5A0200	Valve Seal Ring Guide	1
15	07ZAF-S5A0100	Driver, 27 mm	1
16	07406-0010001	P/S Pressure Gauge	1
17	07406-0010100	Attachment, 32 x 35 mm	1
18	07749-0010000	Driver	1
19	07974-6890801	Cylinder End Seal Slider	1
20	07ZAG-SA50100	Sleeve Seal Ring Sizing Tool, 36 mm	1


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Power Steering

Component Location Index



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Power Steering

Symptom Troubleshooting Index

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Hard Steering	Troubleshoot the system (see page 17-20).	• Modified suspension • Tyre sizes, tyre varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see page 17-13).	Front wheel alignment (see page 18-4).
Shock or vibration when the wheel is turned to full lock	1. 1. Check the rack guide adjustment (see page 17-13). 2. Check the power steering pump belt for slippage and adjust as necessary (see page 17-23). 3. Overhaul the steering gearbox (see page 17-39).	
Steering wheel will not return smoothly	1. 1. Check cylinder lines for deformation. 2. Check wheel alignment (see page 18-4). 3. Overhaul the steering gearbox (see page 17-39).	
Uneven or rough steering	1. 1. Check the rack guide adjustment (see page 17-13). 2. Check power steering pump belt adjustment (see page 17-23). 3. Check low or erratic engine idle speed: • 4-door (KB, KE, KG, TR models) (see page 11-125). • 4-door (except KB, KE, KG, TR models) (see page 11-285). • 5-door (KE model) (see page 11-425). • 5-door (except KE model) (see page 11-560). 2. 4. Check for air in the power steering system due to low fluid level. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system. 6. Overhaul the steering gearbox (see page 17-39).	
Steering wheel kicks back during wide turns	1. 1. Check power steering pump belt adjustment (see page 17-23). 2. Check the power steering pump fluid pressure (see page 17-25).	
Humming	1. 1. Check when the noise occurs • If the noise is heard 2 - 3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turn with the vehicle stopped, this is normal due to the fluid pulsation. 2. 2. Check for the high-pressure hose touching the sub-frame or body. 3. Check for automatic transmission converter noise. Remove the power steering belt, and recheck.	Pump pressure

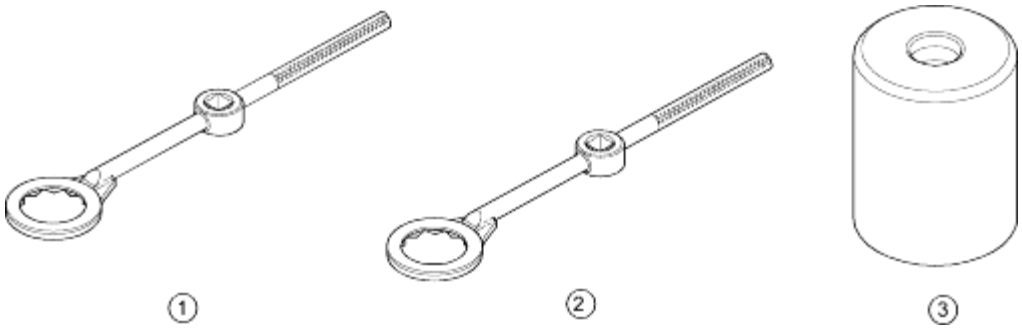
Power Steering Symptom Troubleshooting Index (cont'd)	17-19

Symptom	Procedure(s)	Also check for:
Rattle or chattering (Rack rattle)	• Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. • Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see page 17-9). • Check the rack guide adjustment (see page 17-13). • Check the power steering pump pulley. • If the pulley is loose, tighten it (see step 46 on page 17-34). • If the pump shaft is loose, replace the pump (see page 17-27).	
Hissing	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks. • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system. • Check the power steering pump shaft oil seal for leaks.	
Pump noise	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise up to 2 - 3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see page 17-28).	
Squeaking	Check the power steering belt tension and adjust as necessary (see page 17-23).	
Fluid Leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit: • Overhaul the valve body unit. • Fluid leaks from the boot A: Replace the valve oil seal on the pinion shaft. • Replace the cylinder end seal on the gearbox side. • Fluid leaks from the boot B: Replace the left cylinder end seal. • Fluid leaks from pinion shaft near the lower steering joint bolt: Overhaul the valve body unit.	
Fluid leaks from line	• Fluid leaks from the cylinder line connections (flare nuts): Tighten the connection and retest. • Fluid leaks from a damaged cylinder lines: Replace the cylinder line. • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flair nuts): Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from pump	• Fluid leaks from the front oil seal: Replace the front oil seal. • Fluid leaks from the power steering pump housing: Replace the power steering pump the leaking O-rings or seals (see page 17-28), and if necessary replace (see page 17-27).	
Fluid leaks from reservoir	• Fluid leaks from around the reservoir cap: Fluid level is too high: drain the reservoir to the proper level. Aerated fluid: check for an air leak on the inlet side of pump. • Fluid leaks from reservoir: Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from pump	• Check the fitting for loose bolts. If the bolts are tight, replace	

outlet hose (high-pressure)	the fitting O-ring. • Fluid leaks at the swagged joint: Replace the outlet hose.	
Fluid leaks from pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

Steering Special Tools	17-2

Ref. No.	Tool Number	Description	Qty
1	07MAA-SL00100	Locknut Wrench, 40 mm	1
2	07MAA-SL00200	Locknut Wrench, 43 mm	1
3	07QAD-P0A0100	Attachment, 42 mm	1



Power Steering
Symptom Troubleshooting

Hard Steering

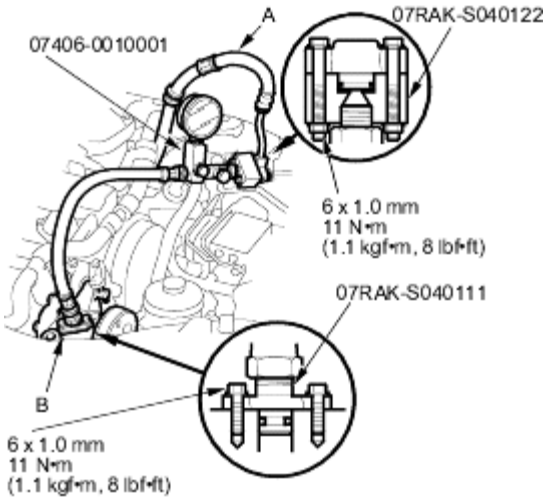
1. 1. Check the power assist (see page 17-4).
   Is the power assist more than 29 N (3.0 kgf, 6.6 lbf)?
   YES - Go to step 2.
   NO - Power assist is OK. ■
2. 2. Measure steady-state fluid pressure from the pump at idle (see page 17-21).
   Is the pressure 1,500 kPa (15 kgf/cm^2, 213 psi) or less?
   YES - Go to step 3.
   NO - Go to step 7.
3. 3. Measure the pump relief pressure at idle (see page 17-21).
   Is the pressure 7,600 - 8,300 kPa (78 - 85 kgf/cm^2, 1,110 - 1,210 psi) or less?
   YES - Go to step 4.
   NO - Go to step 8.
4. 4. With a spring scale, measure the power assist in both directions, to the left and to the right.
   Are the two measurements within 2.9 N (0.3 kgf, 0.66 lbf) of each other?
   YES - Go to step 5.
   NO - Go to step 9.
5. 5. Measure the fluid pressure (see page 17-21) with shut-off and pressure gauge valves open, while turning the steering wheel fully to the left and fully to the right.
   Is the pressure 7,600 - 8,300 kPa (78 - 85 kgf/cm^2, 1,110 - 1,210 psi) or less?
   YES - Go to step 6.
   NO - Faulty gearbox. ■
1. 6. Adjust the rack guide (see page 17-13), and retest.
   Is the steering OK?
   YES - Repair is completed. ■
   NO - Faulty gearbox. ■
2. 7. Check for feed and return lines between the pump and the gearbox for clogging and deformation.
   Are the lines clogged or deformed?
   YES - Repair or replace the lines. ■
   NO - Faulty valve body unit. ■
3. 8. Check the pressure control valve (see page 17-29).
   Is the pressure control valve OK?
   YES - Faulty pump assembly. ■
   NO - Faulty pressure control valve. ■
4. 9. Check the cylinder lines for deformation (see page 17-22).
   Are the lines deformed?
   YES - Replace the lines. ■
   NO - Go to step 10.
5. 10. Check for a bent rack shaft or misadjusted rack guide (too tight).
   Is the rack shaft bent or the rack guide adjusted too tight?
   YES - Replace the rack shaft or readjust the rack guide. ■
   NO - Faulty valve body unit. ■

Power Steering
Pump Pressure Test

Special Tools Required
- P/S joint adapter (pump), 07RAK-S040111
- P/S joint adapter (hose), 07RAK-S040122
- P/S pressure gauge, 07406-0010001

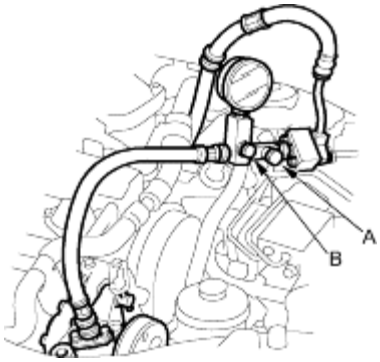
Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. 1. Check the power steering fluid level (see page 17-25) and pump belt tension (see page 17-23).
   2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).



2. 3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).
   4. Install the P/S pressure gauge to the P/S joint adapter (pump).

1. 5. Fully open the shut-off valve (A).



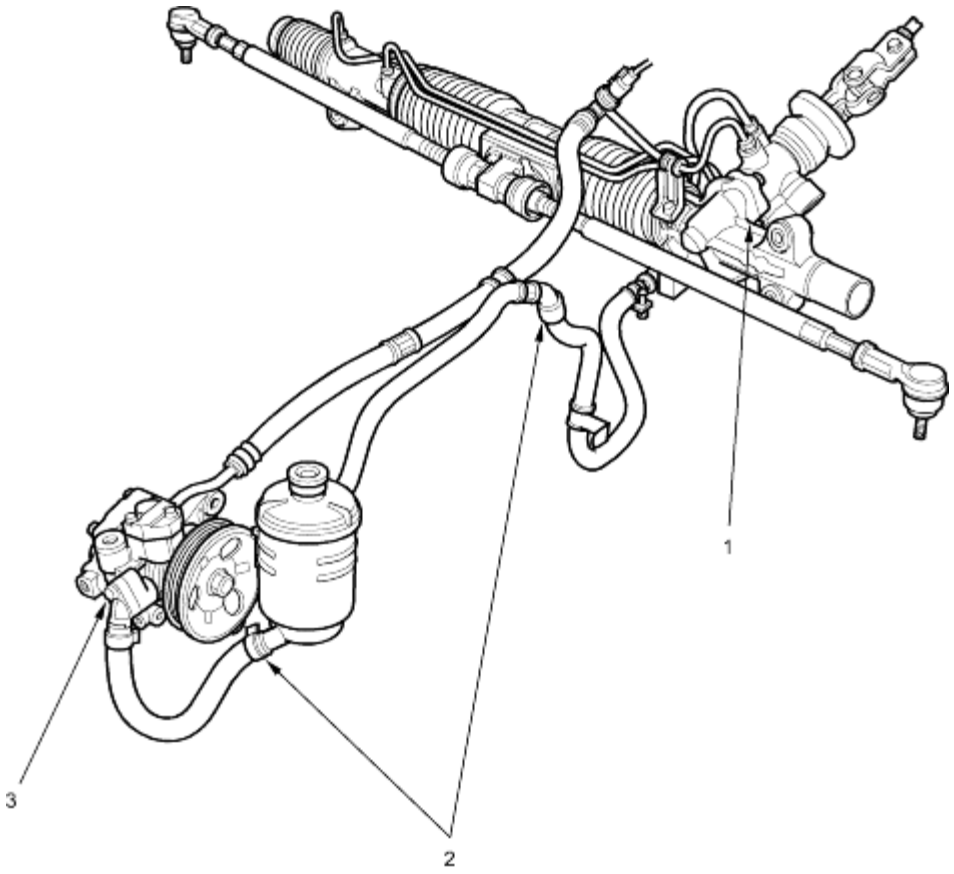
2. 6. Fully open the pressure control valve (B).
   7. Start the engine and let it idle.
   8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 70°C (158°F).
   9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read at least 690 - 1,500 kPa (7 - 15 kgf/cm^2, 100 - 214 psi). If it reads high, check the outlet hose or valve body unit (see Steering System Troubleshooting).
      Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the gauge should read at least 290 - 1,100 kPa (3 - 11 kgf/cm^2, 43 - 156 psi). If it reads high, repair or replace the pump.
   10. Lower the engine speed and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

       NOTICE

       Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.
   11. Immediately open the pressure control valve fully. If the pump is in good condition, the gauge should read at least 7,600 - 8,300 kPa (78 - 85 kgf/cm^2, 1,110 - 1,210 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

Power Steering
Fluid Leakage Inspection

NOTE: LHD type is shown, RHD type is symmetrical.



1. GEARBOX and VALVE BODY UNIT
   Check for leaks at the mating surface and flare nut connections.
2. HOSES and LINES
   Inspect hoses for damage, leaks, interference and twisting.
   Inspect fluid lines for damage, rusting and leakage.
   Check for leaks at hose and line joints and connections.
3. PUMP ASSEMBLY
   Check for leaks at the pump seal, inlet and outlet fittings.

Power Steering

Pump Belt Inspection and Adjustment

Special Tools Required

- Belt tension gauge set, 07JGG-0010000
- Belt tension gauge, 07JGG-0010100

Belt Tension Gauge Method

Inspection

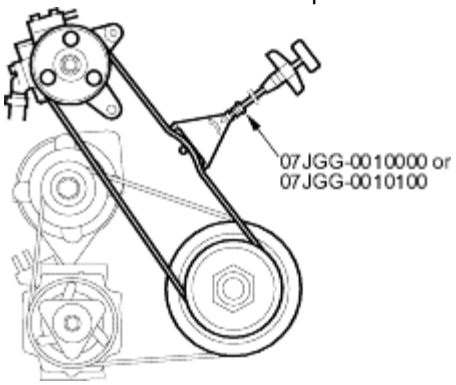
1. 1. Remove the P/S reservoir from the bracket and set it aside.
   2. Attach the belt tension gauge to the belt and measure the tension of the belt. Follow the gauge manufacturer's instructions. If the belt is worn or damaged, replace it.

      NOTE: Remove the belt tension gauge carefully to avoid hitting the gauge reset lever.

      Tension:

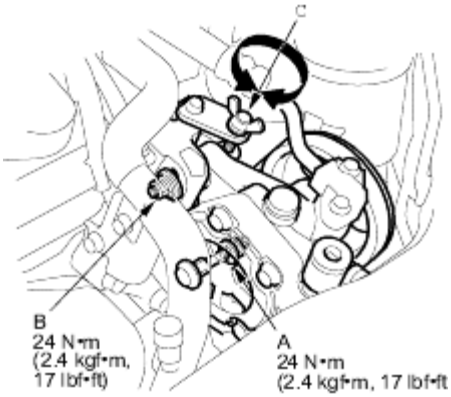
Used Belt:	390 - 540 N (40 - 55 kgf, 88 - 121 lbf)
New Belt:	740 - 880 N (75 - 90 kgf, 165 – 198 lbf)

   3. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.



Adjustment

1. 4. Loosen the power steering pump mounting nut (A) and pump locknut (B).



2. 5. Turn the adjusting bolt (C) to get the proper belt tension, then retighten the mounting nut and locknut.
   6. Start the engine and turn the steering wheel from lock-to-lock several times, then stop the engine and recheck the tension of the belt.

Power Steering

Pump Belt Inspection and Adjustment (cont'd)

Deflection Method

Inspection

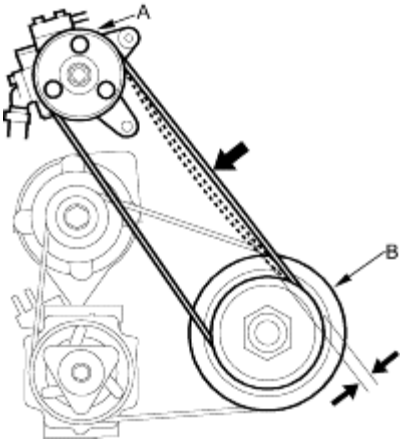
1. 1. Apply a force of 98 N (10 kgf, 22 lbf) and measure the deflection between the power steering pump pulley (A) and the crankshaft pulley (B). If the belt is worn or damaged, replace it.

   Deflection:

   Used Belt: 13.0 - 16.5 mm (0.51 – 0.65 in.)

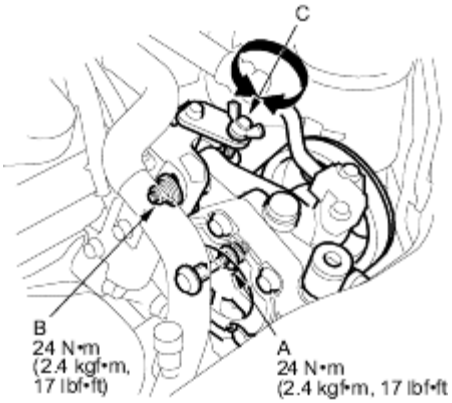
   New Belt: 9.0 - 11.0 mm (0.35 - 0.43 in.)

   2. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.



Adjustment

1. 3. Loosen the power steering pump mounting nut (A) and pump locknut (B).



2. 4. Turn the adjusting bolt (C) to get the proper belt tension, then retighten the mounting nut and locknut.

   5. Start the engine and turn the steering wheel from lock-to-lock several times, then stop the engine and recheck the tension of the belt.

Power Steering
Fluid Replacement

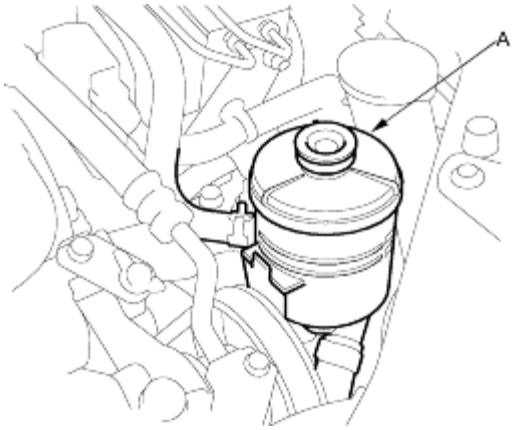
1. 1. Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Genuine Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

SYSTEM CAPACITY:

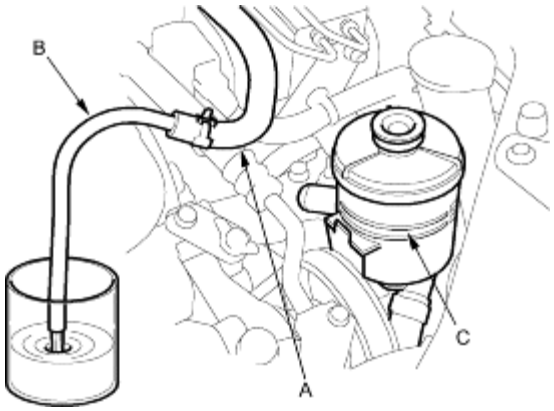
0.6 *l* (0.63 US. qt, 0.53 lmp.qt.) at disassembly

RESERVOIR CAPACITY:

0.3 *l* (0.32 US. qt, 0.26 lmp.qt.)



1. 1. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.



2. 2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add more if necessary. Do not fill the reservoir beyond the upper level line.

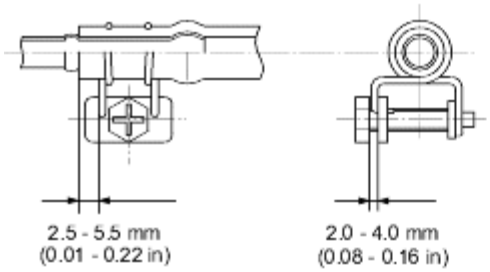
Power Steering

Hoses and Lines Replacement

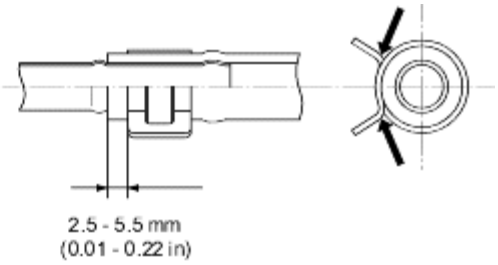
Note these items during installation:

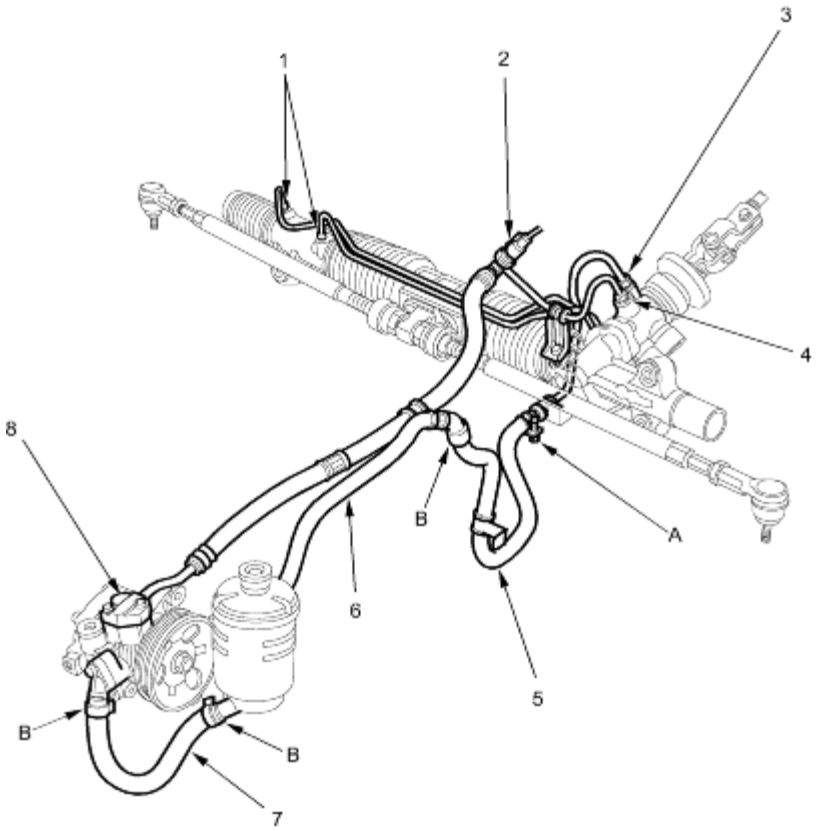
- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace with the clamps new ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.
- LHD type is shown, RHD type is symmetrical.

ADJUSTABLE HOSE CLAMP (A)



HOSE CLAMP (B)

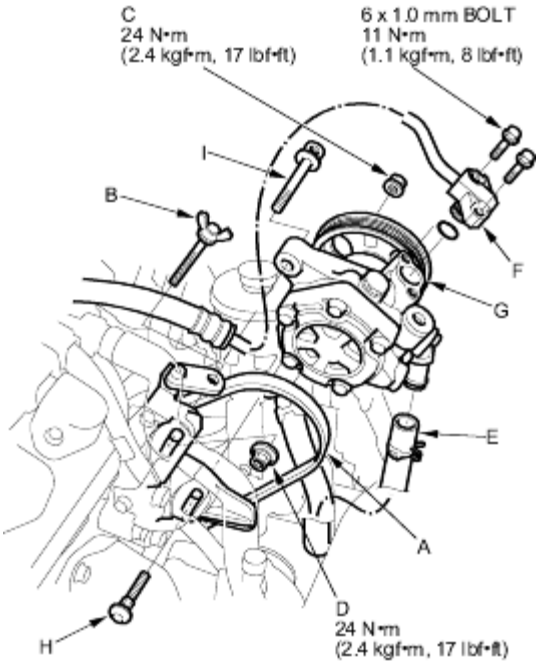




1. CYLINDER LINE FLARE NUTS
   17 Nm (1.7 kgf/m, 12 lbf/ft)
2. POWER STEERING PRESSURE SWITCH
   12 Nm (1.2 kgf/m, 8.7 lbf/ft)
3. RETURN LINE FLARE NUTS
   16 x 1.5 mm
   28 Nm (2.9 kgf/m, 21 lbf/ft)
4. FEED HOSE FLARE NUTS
   14 x 1.5 mm
   37 Nm (3.8 kgf/m, 27 lbf/ft)
5. RETURN LINE
6. RETURN HOSE
7. PUMP INLET HOSE
8. PUMP OUTLET HOSE
   11 Nm (1.1 kgf/m, 8.0 lbf/ft)

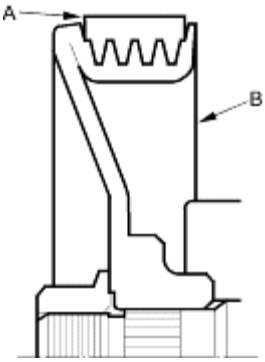
Power Steering
Pump Replacement

1. 1. Place a suitable container under the vehicle.
2. 2. Drain the power steering fluid from the reservoir (see page 17-25).
   3. Remove the belt (A) by loosening the adjusting bolt (B), pump mounting nut (C), and pump locknut (D).



3. 4. Cover the A/C compressor with several shop towels to protect it from spilled power steering fluid. Disconnect the pump inlet hose (E) and pump outlet hose (F) from the pump (G), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once.
   5. Remove the adjusting bolt, pump mounting bolt, pump locknut and lock bolt (H), then remove the pump from the pump bracket. Do not turn the steering wheel with the pump removed.
   6. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.

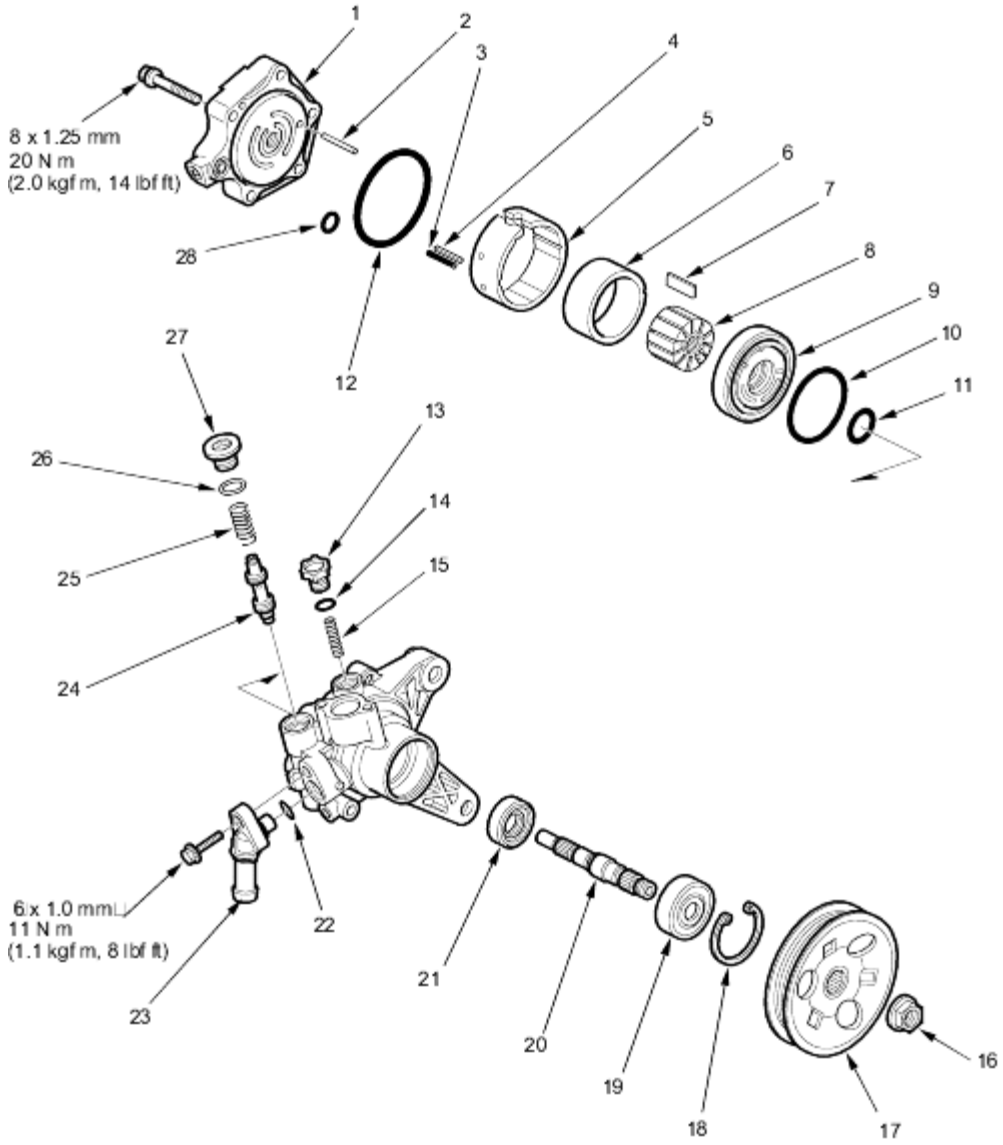
1. 7. Connect the pump inlet hose and pump outlet hose. Tighten the pump fittings securely.
2. 8. Loosely install the pump in the pump bracket with the mounting bolt and lock bolt.
   9. Install the pump belt.
      Note these item during belt installation:
      - Make sure that the power steering belt (A) is properly positioned on the pulleys (B).
      - Do not get power steering fluid or grease on the power steering belt or pulley faces. Clean off any fluid or grease before installation.



3. 10. Adjust the pump belt adjustment (see page 17-23).
   11. Fill the reservoir to the upper level line (see page 17-25).

Power Steering
Pump Overhaul

Exploded View



1. *COVER
2. *ROLL PIN
3. RUBBER SEAL
   (Black colour)
   Replace.
4. SLIPPER SEAL
   (White colour)
   Replace.
5. *OUTER CASE
6. *CAM RING
7. *VANES
   (11 Plates)
8. *ROTOR
9. *SIDE PLATE
10. O-RING
    Replace.
11. 23.8 x 2.4 mm O-RING
    Replace.
12. PUMP COVER SEAL
    Replace.
13. *PUMP HOUSING CAP
    29 Nm (3.0 kgf/m, 22 lbf/ft)
14. 12.7 x 1.8 mm O-RING
    Replace.
15. *PUMP PRELOAD SPRING
16. PULLEY NUT
    64 Nm (6.5 kgf/m, 47 lbf/ft)
17. PULLEY
18. 40 mm SNAP RING
19. BALL BEARING
20. *DRIVE SHAFT
21. PUMP COVER SEAL
    Replace.
22. 13 x 1.9 mm O-RING
    Replace.
23. INLET JOINT
24. *PRESSURE CONTROL
    VALVE
25. *PRESSURE CONTROL
    VALVE SPRING
26. 16.7 x 1.8 mm O-RING
    Replace.
27. *PRESSURE CONTROL
    VALVE CAP
    49 Nm (5.0 kgf/m, 36 lbf/ft)
28. 13 x 1.9 mm O-RING
    Replace.

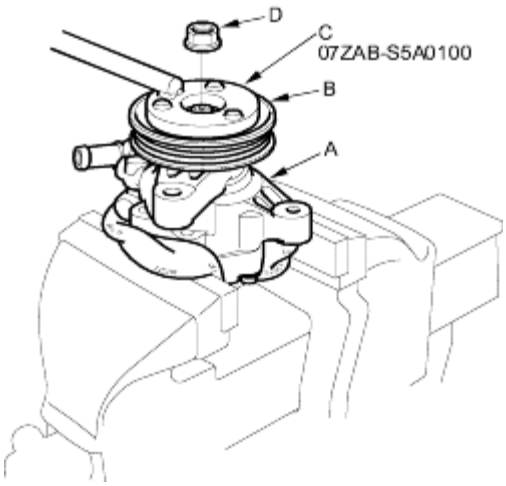
Power Steering
Pump Overhaul (cont'd)

Special Tools Required
- Attachment, 32 x 35 mm, 07746-0010100
- Driver, 07749-0010000
- Pulley holder, 07ZAB-S5A0100

Disassembly

NOTE: Refer to the Exploded View as needed during the following procedure.

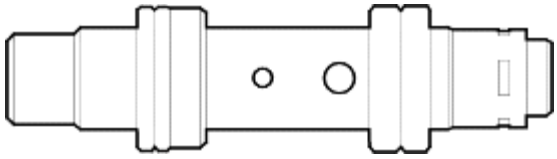
1. 1. Remove the power steering pump (see page 17-27).
   2. Drain the fluid from the pump.
   3. Hold the steering pump (A) a vice with soft jaws, hold the pulley (B) with the special tool (C), and remove the pulley nut (D) and pulley. Be careful not to damage the pump housing with the jaws of the vice.



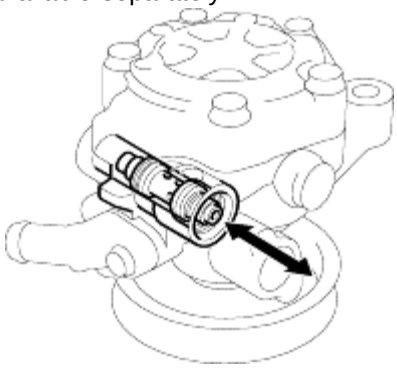
2. 4. Remove the inlet joint and O-ring.
   5. Remove the flow control valve cap, O-ring, valve spring, and pressure control valve.
   6. Remove the pump housing cap, O-ring, and pump preload spring.
   7. Remove the pump cover, pump cover seal and O-ring.
   8. Pull out the roll pin.
   9. Remove the outer case, cam ring, rotor, vanes and side plate.
   10. Remove the rubber seal and slipper seal from the outer case.
   11. Remove the O-rings from the bottom of the housing.
   12. Remove the circlip, then remove the drive shaft by tapping the shaft end with the plastic hammer.
   13. Remove the seal from the pump housing.

Inspection

1. 14. Check the pressure control valve for wear, burrs, and other damage to the edges of the grooves in the valve.

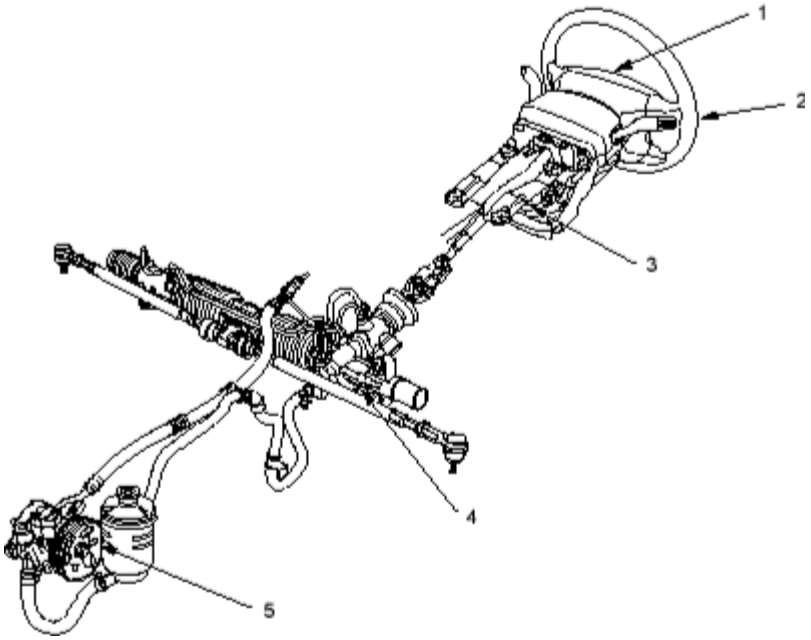


2. 15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.
   16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.



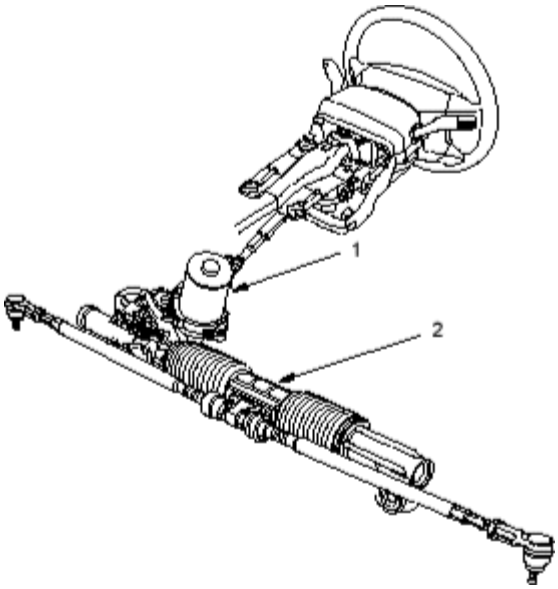
Steering
Component Location Index

Power Steering



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   Tie Rod Ball Joint Replacement, page 17-14
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   Power Steering Component, page 17-17

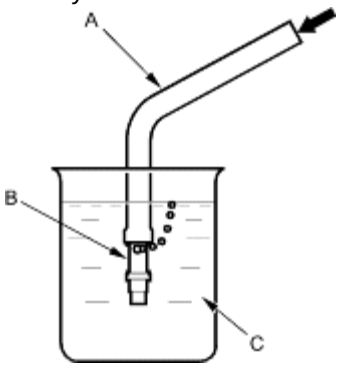
EPS



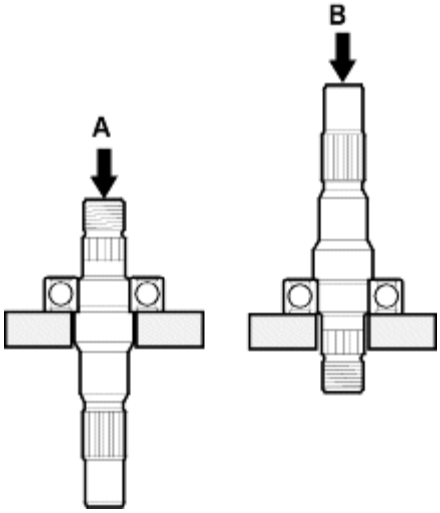
1. MOTOR
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2. POWER STEERING GEARBOX
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   Tie Rod Ball Joint Boot Replacement, page 17-14
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Power Steering
Pump Overhaul (cont'd)

1. 17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C) and blow in the hose.
   - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2, 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.
   - If the pressure control valve is OK, set it aside for reassembly later.



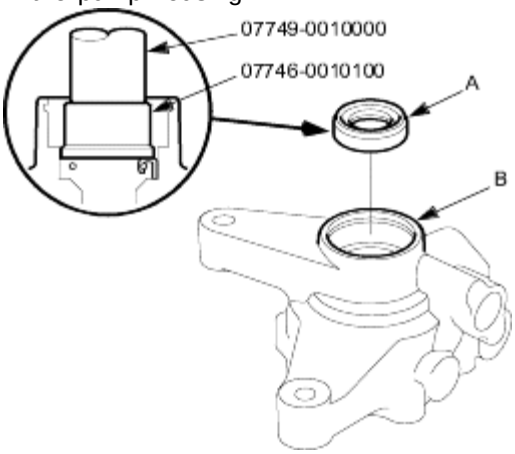
2. 18. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a new one (B).



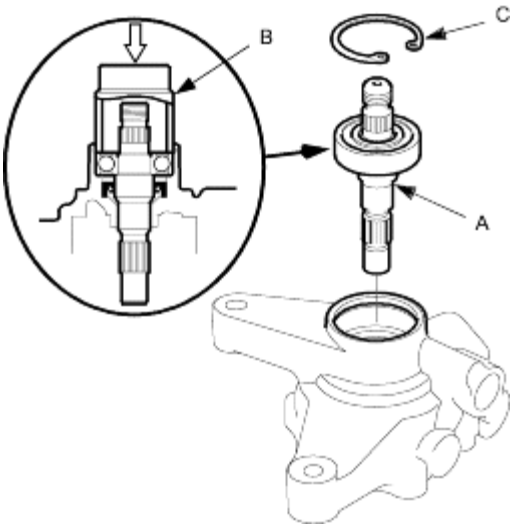
3. 19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn damaged, replace the pump as an assembly.

Reassembly

1. 20. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the special tools with until there is no step at the top of the pump seal is fully seated in the pump housing.



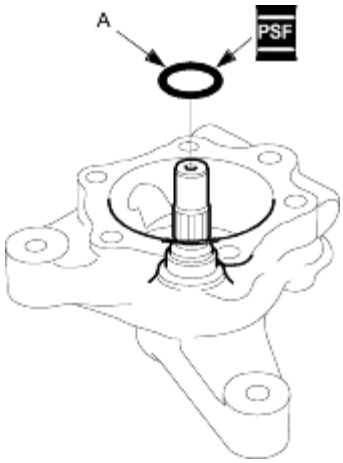
2. 21. Position the pump drive shaft (A) in the pump housing, then drive it in with the appropriate size socket wrench (B) as shown.



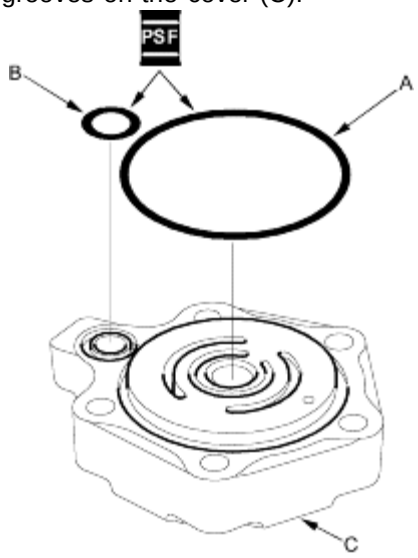
3. 22. Install the 40 mm circlip (C) with its radiused side facing out.

Power Steering
Pump Overhaul (cont'd)

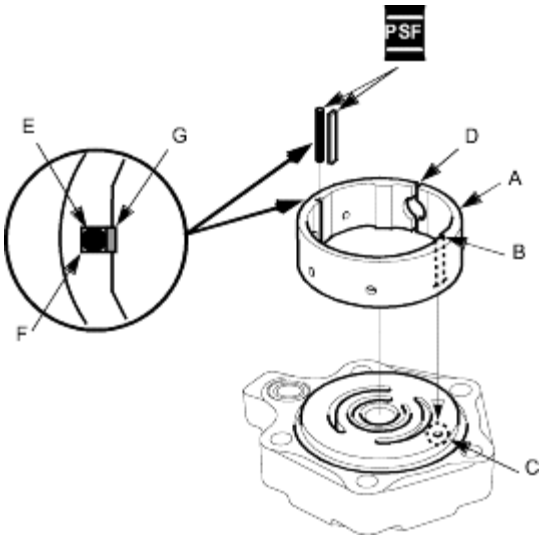
1. 23. Coat the new 23.8 mm O-ring (A) with the power steering fluid, then position it into the groove on the bottom of the pump housing.



2. 24. Coat the new cover seal (A) and 13 mm O-ring (B) with the power steering fluid, then position them into the grooves on the cover (C).



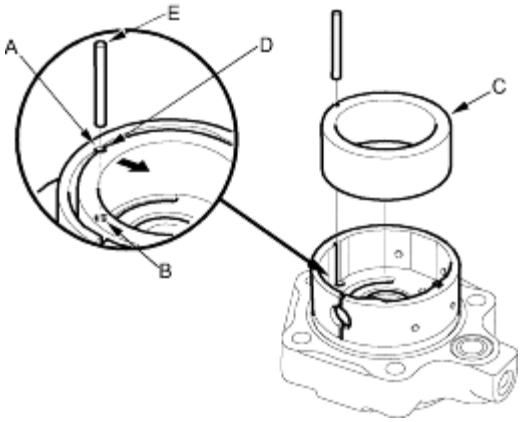
1. 25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the slit (D) on the outer case is to direction shown.



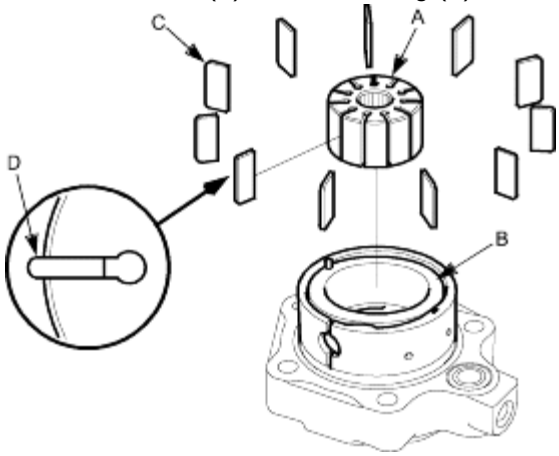
2. 26. Apply the power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.

Power Steering
Pump Overhaul (cont'd)

1. 28. Align the slot (A) in the outer case with the roll pin hole (B) on the cover.

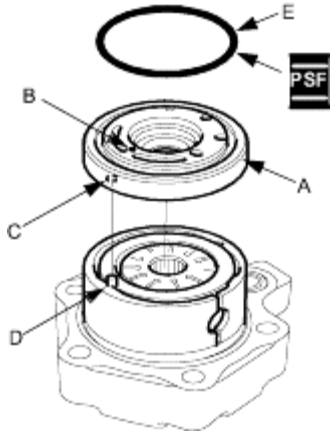


2. 29. Install the cam ring (C) by aligning the slot (D) with the slot (A) in the outer case.
   30. Insert the roll pin (E) into the slots between the cam ring and outer case, then push roll pin the set hole.
   31. Install the rotor (A) in the cam ring (B).

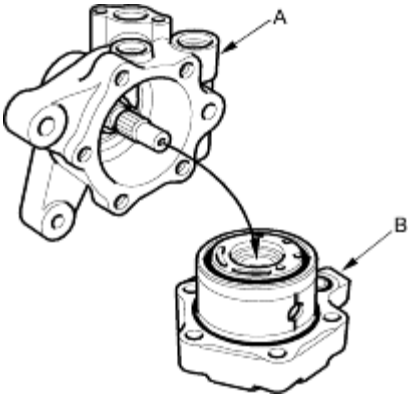


3. 32. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.

1. 33. Place the side plate (A) on the cam ring with its "." mark (B) facing upward, and aligning the roll pin set hole (C) in the side plate with the roll pin end (D).

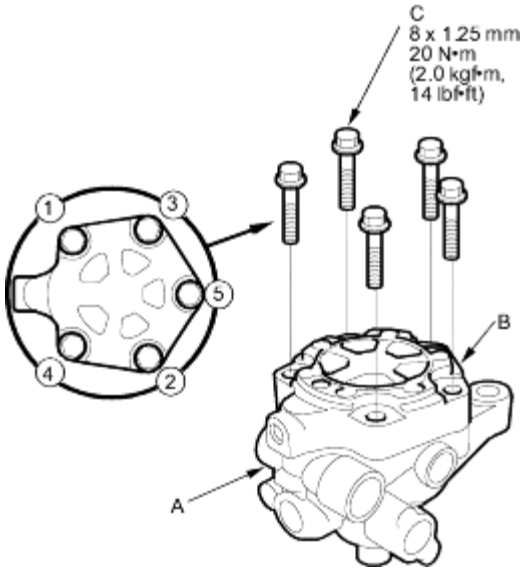


2. 34. Coat the new O-ring (E) with the power steering fluid, then position it into the groove on the side plate.
   35. Install the pump housing (A) over the cover assembly (B).

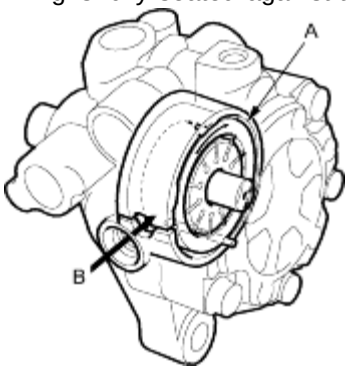


Power Steering
Pump Overhaul (cont'd)

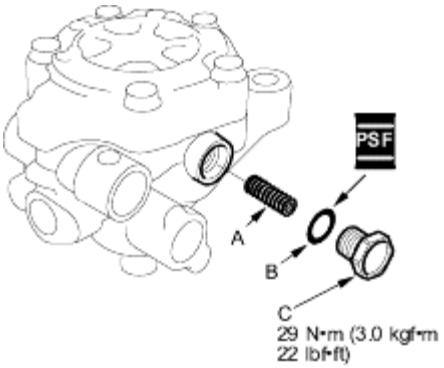
1. 36. Align the bolt holes in the cover (B) with the threaded holes in the pump housing. Install the five flange bolts (C) loosely first, then torque the flange bolts in 2 or more steps with sequence shown.



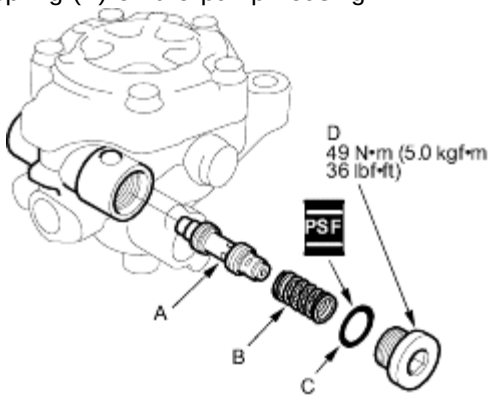
2. 37. Push in the cam ring (A) from the pump housing cap hole (B) with a flat blade screwdriver, to make sure the cam ring is fully seated against the outer case.



1. 38. Install the pump preload spring (A) in the pump housing.



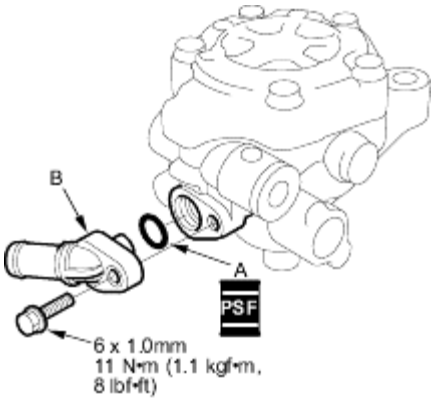
2. 39. Coat the new 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).
   40. Install the pump housing cap (C) on the pump housing, and tighten it to specified torque.
   41. Coat the pressure control valve (A) with power steering fluid, and install pressure control valve and spring (B) on the pump housing.



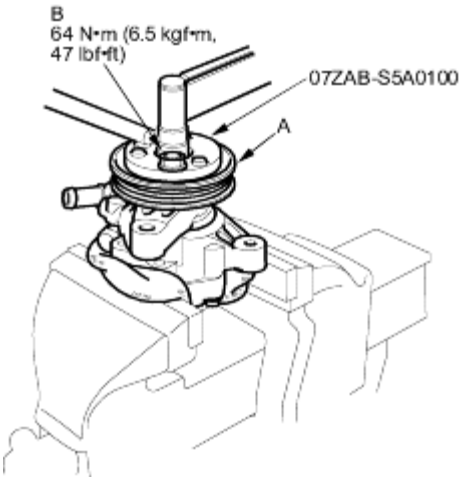
3. 42. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D).
   43. Install the flow control valve cap (D) on the pump housing, and tighten it to the specified torque.

Power Steering
Pump Overhaul (cont'd)

1. 44. Coat the new O-ring (A) with power steering fluid, and install it on the inlet joint (B).



2. 45. Install the inlet joint (B) on the pump housing.
   46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vice with soft jaws. Be careful not to damage the pump housing with the jaws of the vice.



3. 47. Hold the pulley with the special tool, and tighten the pulley nut.
   48. Check that the pump turns smoothly by turning the pulley. If hard turns, loosen the five flange bolts on the cover, then retightening them try again in the same manner as in the step 36.

Power Steering

Steering Gearbox Removal

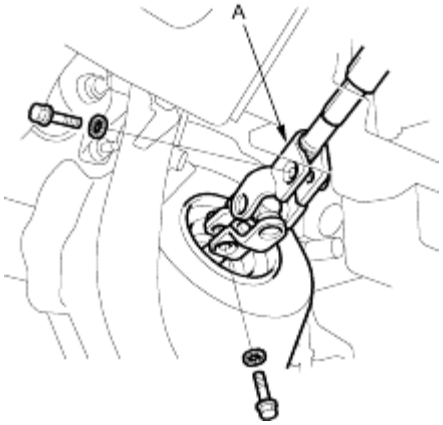
Special Tools Required

Ball joint remover, 28 mm, 07MAC-SL00200

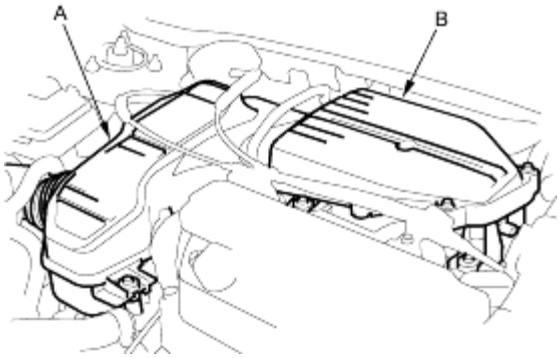
Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit its lines and the end of the gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.
- LHD type is shown, RHD type is symmetrical.

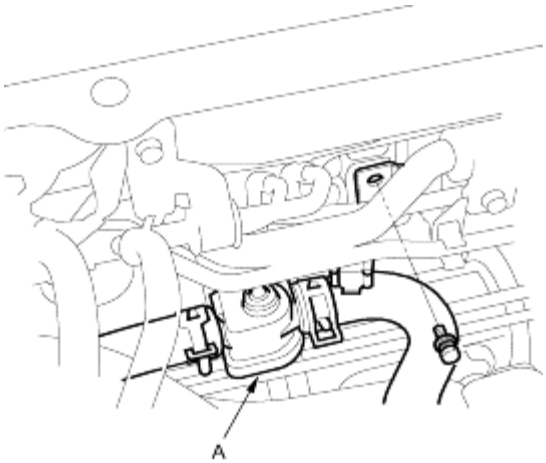
1. 1. Raise the front of vehicle, and make sure it is securely supported.
2. Remove the front wheels.
3. Remove the driver's airbag and the steering wheel (see page 17-6).
4. Remove the driver's dashboard lower covers.
5. Remove the steering joint bolts, disconnect the steering joint by moving the steering joint (A) toward the column.



1. 6. Remove the air cleaner (A) and resonator (B).



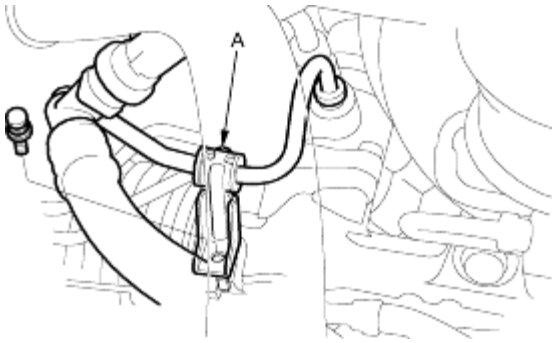
2. 7. Open the heater valve cable clamp, and disconnect the heater valve cable. Remove the heater valve (A) from the bulkhead and move it aside.



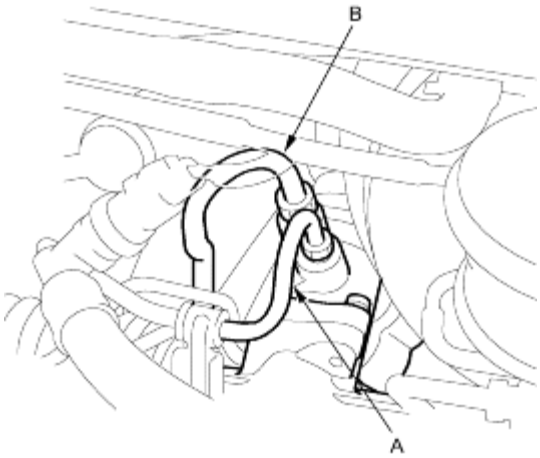
Power Steering

Steering Gearbox Removal

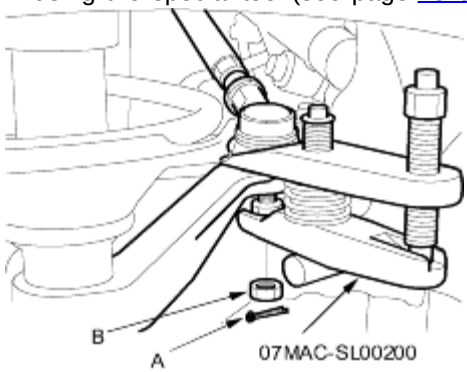
1. 8. Above the steering gearbox, remove the feed line clamp (A).



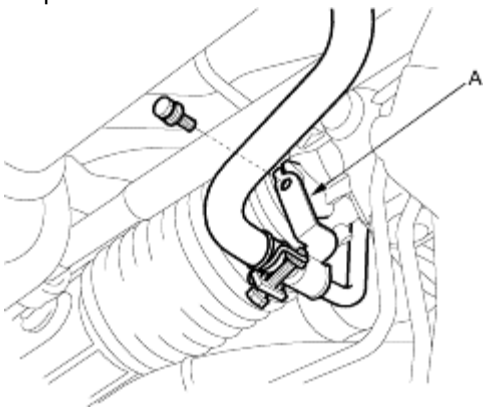
2. 9. Disconnect the feed line (A) and return line (B) from the valve body unit.



1. 10. Remove the cotter pin (A) from the 10 mm nut (B) and loosen the nut.
2. 11. Separate the tie-rod ball joint and damper steering arm using the special tool (see page 18-9).



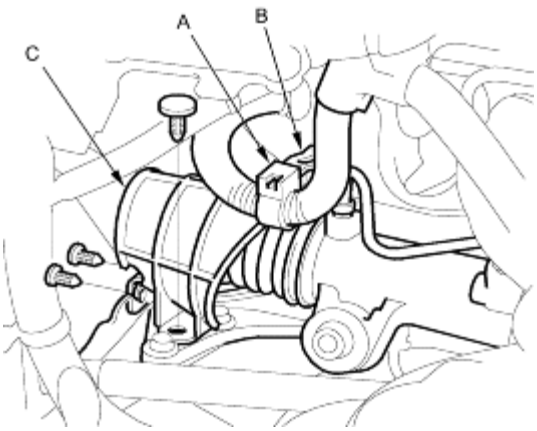
3. 12. Under the steering gearbox, remove the return hose clamp.



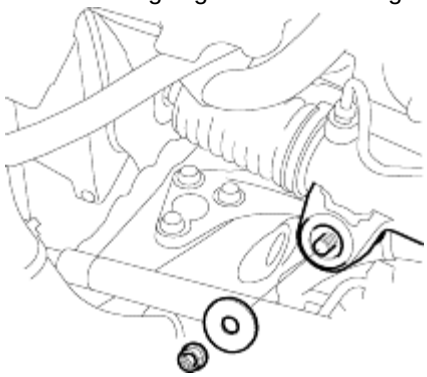
Power Steering

Steering Gearbox Removal (cont'd)

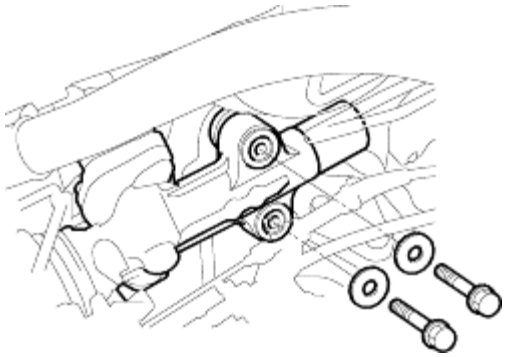
1. 13. Remove the engine wire harness (A) from the harness bracket (B).



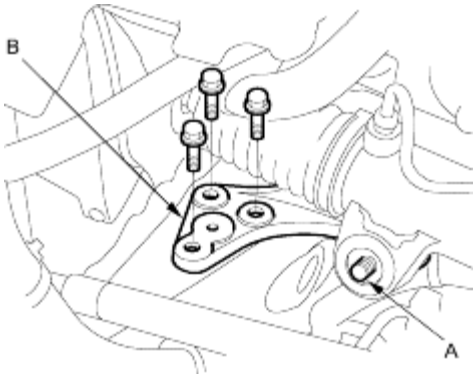
2. 14. Remove the steering rack guard (C) by removing the three clips.
   15. Remove the steering gearbox attaching nut and washer on the right gearbox mounting bracket.



1. 16. Remove the steering gearbox attaching bolts and washers on the left gearbox mounting bracket.



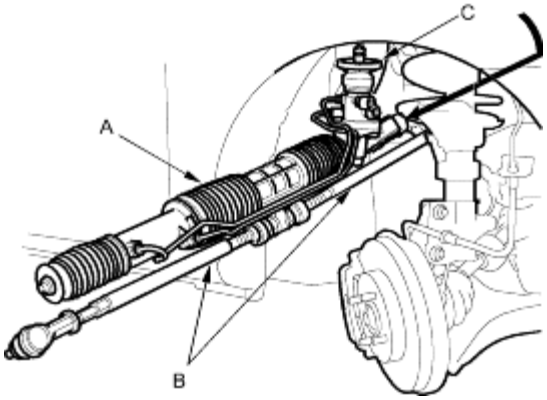
2. 17. Pull on the steering gearbox to free it from the mounting stud (A) on the right gearbox mounting bracket (B). Remove the three mounting bolts and bracket.



Power Steering

Steering Gearbox Removal (cont'd)

1. 18. Lower the steering gearbox, and rotate it so the pinion shaft points upward.
2. 19. Carefully move the steering gearbox (A) and tie-rods (B) as an assembly toward the passenger's side until the pinion shaft clears the heater hoses. Remove the steering gearbox through the wheel well opening on the passenger's side.

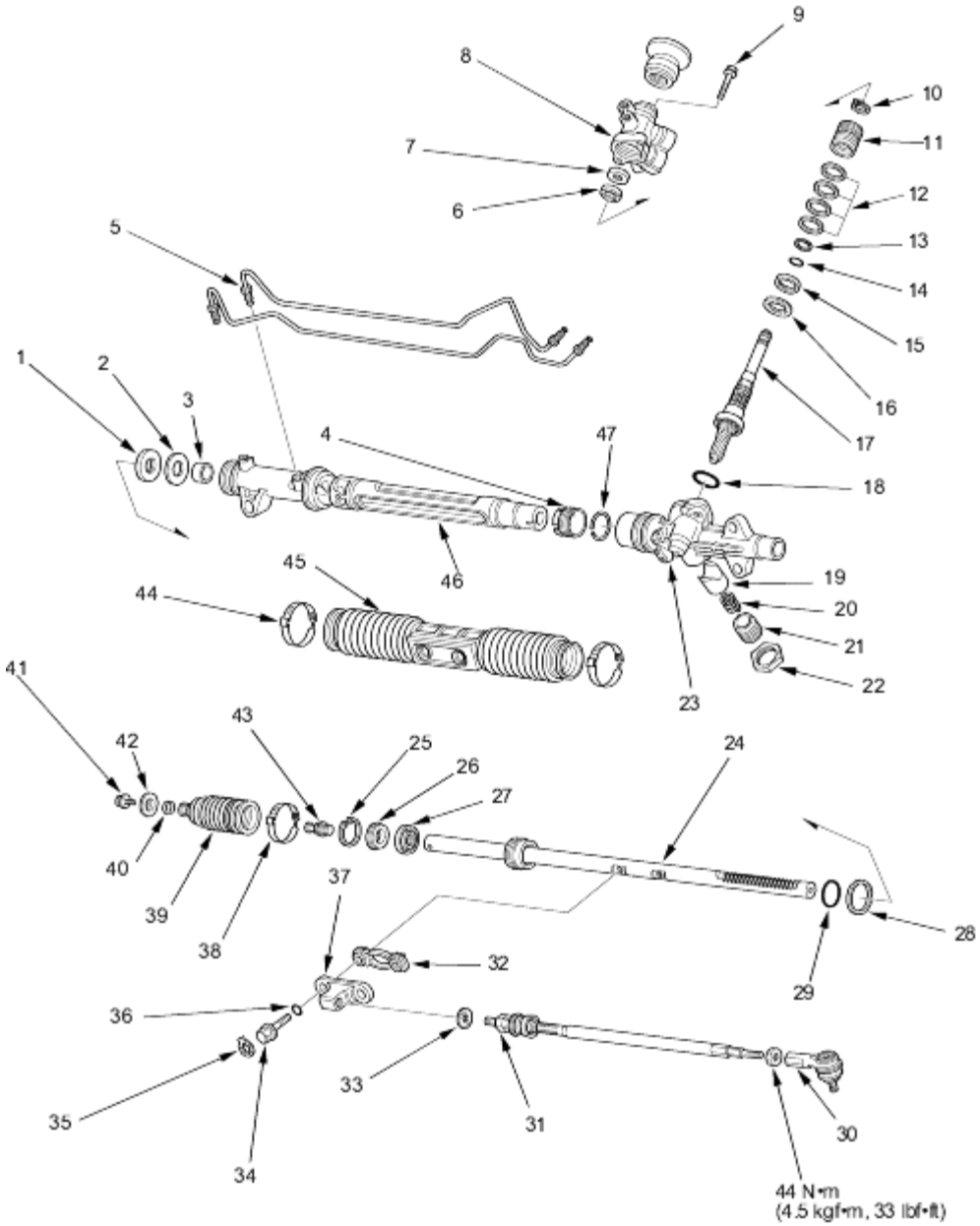


3. 20. Remove the pinion shaft grommet (C) from the top of the valve body unit.

Power Steering

Steering Gearbox Overhaul

Exploded View



1. CYLINDER END SEAL
   Replace.
2. BACKUP RING
3. BUSHING
   Replace.
4. LOCK SCREW
   Replace.
   162 Nm (16.5 kgf/m, 119 lbf/ft)
5. CYLINDER LINES
   17 Nm (1.7 kgf/m, 12 lbf/ft)
6. BUSHING
7. VALVE OIL SEAL
   Replace.
8. VALVE HOUSING
9. FLANGE BOLTS
   20 Nm (2.0 kgf/m, 14 lbf/ft)
10. SNAP RING
    Replace.
11. SLEEVE
12. SLEEVE SEAL RINGS
    Replace.
13. VALVE SEAL RING
    Replace.
14. O-RING
    Replace.
15. VALVE OIL SEAL
    Replace.
16. WAVE WASHER
17. PINION SHAFT
18. O-RING
    Replace.
19. RACK GUIDE
20. SPRING
21. RACK GUIDE SCREW
22. LOCKNUT
23. GEARBOX HOUSING
24. STEERING RACK
25. SNAP RING
26. BACKUP RING
27. CYLINDER END SEAL
    Replace.
28. O-RING
    Replace.
29. PISTON SEAL RING
    Replace.
30. TIE-ROD END
31. RACK END
    54 Nm (5.5 kgf/m, 40 lbf/ft)
32. SLIDER GUIDE
33. LOCK WASHER
    Replace.
34. 12mm FLANGE BOLTS
    69 Nm (7.0 kgf/m, 51 lbf/ft)
35. STOP WASHER
    Replace.
36. O-RINGS
    Replace.
37. BRACKET
38. BOOT BAND

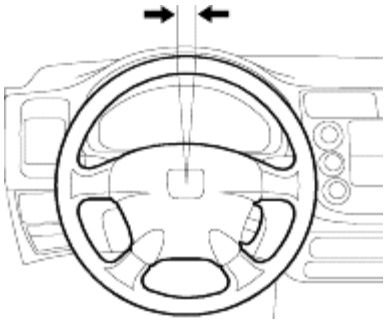
Replace.
39. BOOT B
40. CLIP
41. FLANGE BOLT
    20 Nm (2.0 kgf/m, 14 lbf/ft)
42. BOOT GUARD
43. RACK END PLUG
    29 Nm (3.0 kgf/m, 22 lbf/ft)
44. BOOT BANDS
    Replace.
45. BOOT A
46. CYLINDER HOUSING
47. STOP RING, Replace

Steering

Steering Wheel Rotational Play Check

1. 1. Turn the front wheels to the straight ahead position.
2. 2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the gearbox and linkage are OK.
   - If the play exceeds the limit, adjust the rack guide (see page 17-13). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see page 17-5).

ROTATIONAL PLAY: 0 - 10 mm (0 - 0.39 in.)



Power Steering:

1. 1. Check the power steering fluid level (see page 17-25) and pump belt tension (see page 17-23).
   2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
   3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tyres begin to turn.
      - If the scale reads no more than 29 N (3.0 kgf, 6.6 lbf) the gearbox and pump are OK.
      - If the scale reads more than 29 N (3.0 kgf, 6.6 lbf), check the gearbox and pump.



EPS:

2. 1. Start the engine, let it idle.
   2. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tyres begin to turn.
   3. If the scale reads no more than 29 N (3.0 kgf, 6.6 lbf). If it reads more, check for steering linkage (see page 17-5).

Power Steering

Steering Gearbox Overhaul (cont'd)

Special Tools Required

- Cylinder end seal remover attachment, 07NAD-SR30200
- Driver, 27 mm, 07ZAF-S5A0100
- Valve seal ring sizing tool, 07NAG-SR30900
- Sleeve seal ring guide, 07YAG-S2X0100
- Sleeve seal ring sizing tool, 07ZAG-SA50100
- Attachment, 32 x 35 mm, 07746-0010100
- Driver, 07749-0010000
- Piston seal ring guide, 07GAG-SD40100
- Piston seal ring sizing tool, 07GAG-SD40200
- Pincers, Oetiker 1098 or equivalent, commercially available.
- Pilot collar, 07GAF-PH70100
- Locknut wrench, 07ZAA-S5A0100
- Driver handle, 07NAD-SR30101
- Seal slider, 07974-6890801
- Valve seal ring guide, 07ZAG-S5A0200

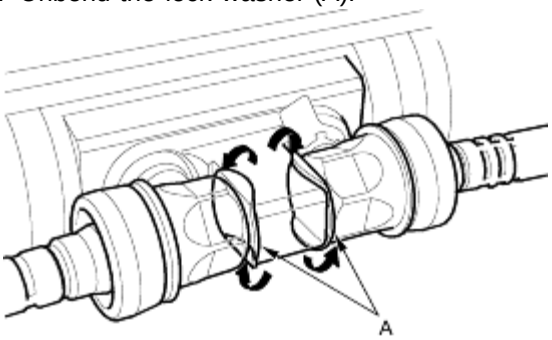
NOTE: Refer to the Exploded View as needed during this procedure.

Removal

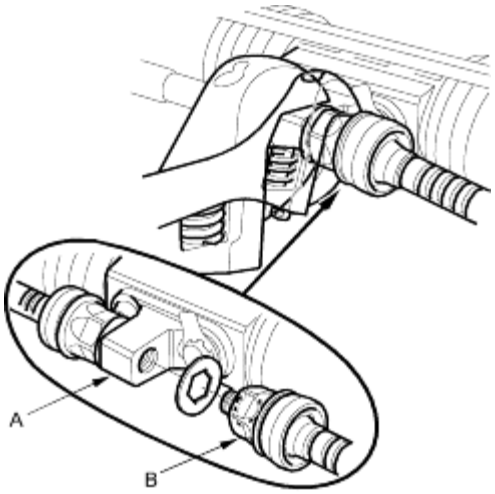
1. 1. Remove the steering gearbox (see page 17-35).

Disassembly

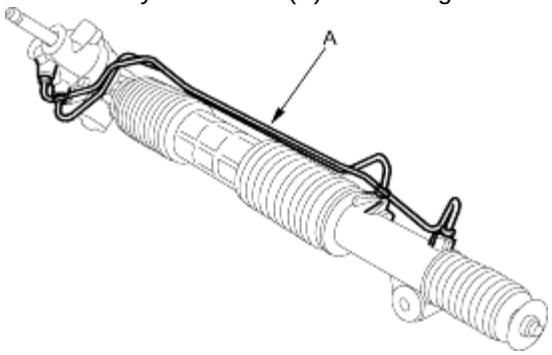
2. 2. Unbend the lock washer (A).



1. 3. Hold the bracket (A) with one wrench, and unscrew both rack ends (B) with another wrench. Remove the lock washers.



2. 4. Remove cylinder lines (A) from the gearbox.

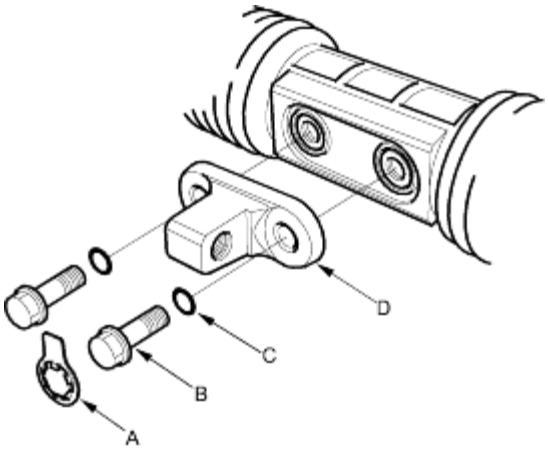


3. 5. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

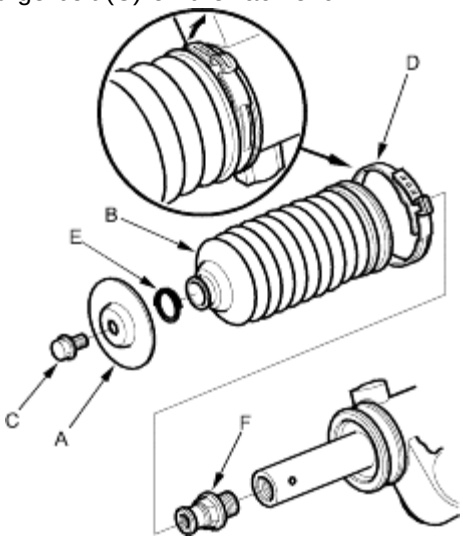
Power Steering

Steering Gearbox Overhaul (cont'd)

1. 6. Remove the stop washer (A), the 12 mm flange bolts (B), O-rings (C), and bracket (D) from the steering gearbox.

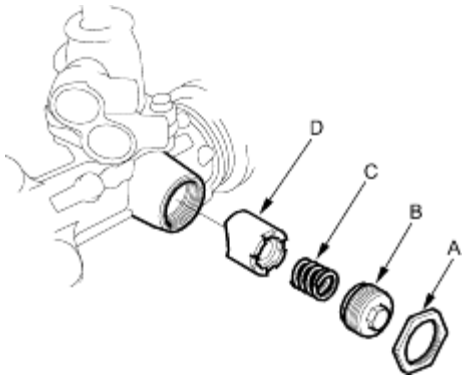


2. 7. Remove the boot guard (A) by removing the 8 mm flange bolt (C) on the rack end.

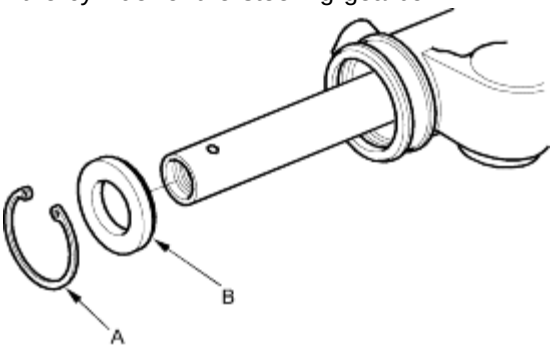


3. 8. Remove the boot band (D) and clip (E). Pull the boot B and away from the end of the steering gearbox. Remove the rack end plug (F).

1. 9. Loosen the locknut (A), then remove the rack guide screw (B), spring (C) and rack guide (D) from the steering gearbox.



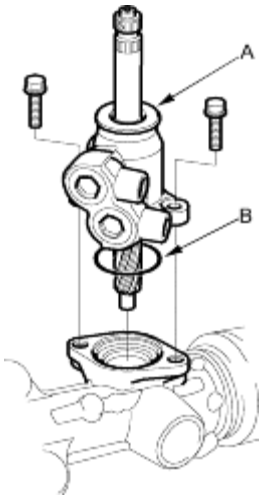
2. 10. Remove the snap ring (A) and backup ring (B) from the cylinder of the steering gearbox.



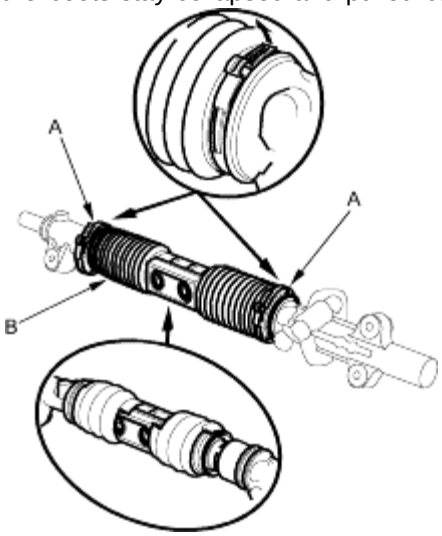
Power Steering

Steering Gearbox Overhaul (cont'd)

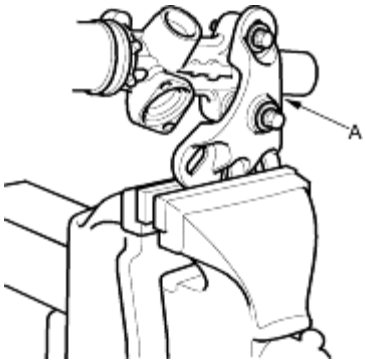
1. 11. Remove the valve body unit (A) from the steering gearbox. Remove the O-ring (B) and discard it.



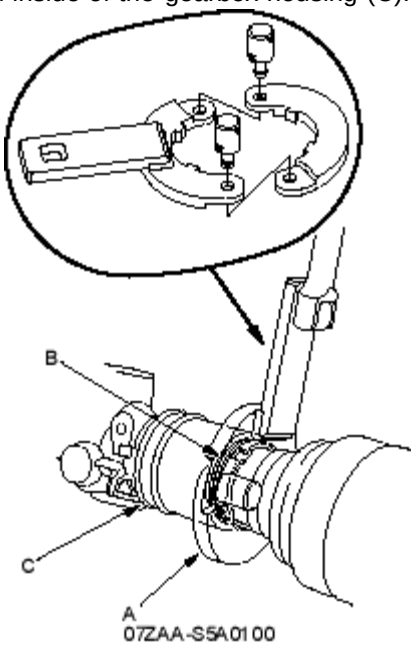
2. 12. Remove the two boot bands (B) from boot A. Compress boot A by hand, and apply vinyl tape (C) so the boots stay collapsed and pulled back.



1. 13. Attach the yoke (A) of a universal puller to the steering gearbox mounts with bolts. Securely clamp the yoke in a vice with jaws as shown. Do not clamp the gearbox housing in the vice.



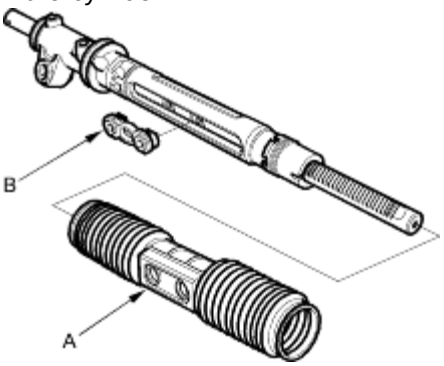
2. 14. Set the special tool (A) on the lock screw (B) securely, then loosen and remove the lock screw from inside of the gearbox housing (C).



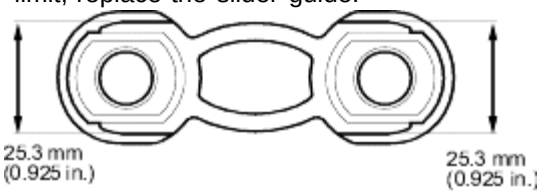
Power Steering

Steering Gearbox Overhaul (cont'd)

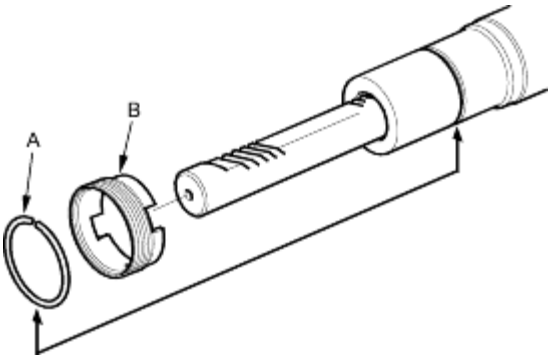
15. Remove the special tool.
16. Pull on the cylinder to remove it from the gearbox housing. Remove boot A and the slider guide (B) from the cylinder.



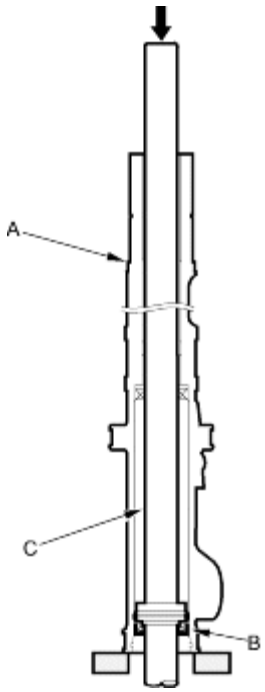
17. Check the slider guide for damage and cracks. Using vernier callipers to measure the thickness of the slider guide. If the thickness is less than the service limit, replace the slider guide.



18. Remove and discard the stop ring (A) on the cylinder by expanding it with snap ring pliers. Remove and discard the lock screw (B).



19. Set the cylinder housing (A) in a press so the cylinder side points downward, then press the cylinder end seal (B) and steering rack (C) out of the cylinder. Hold the rack to keep it from falling when pressed clear.

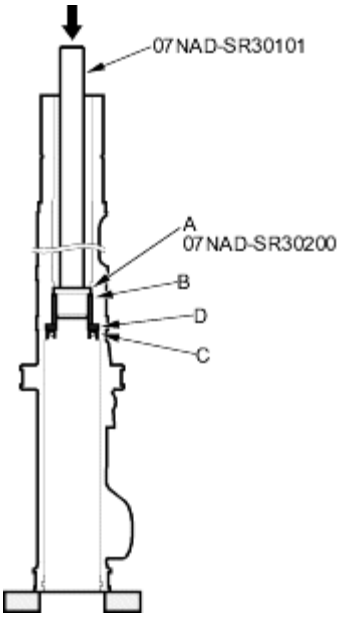


20. Remove the cylinder end seal from the steering rack.

Power Steering
Steering Gearbox Overhaul (cont'd)

1. 21. Insert the special tools into the cylinder.

Make sure the attachment (A) of the special tools is securely positioned on the bushing edges (B).

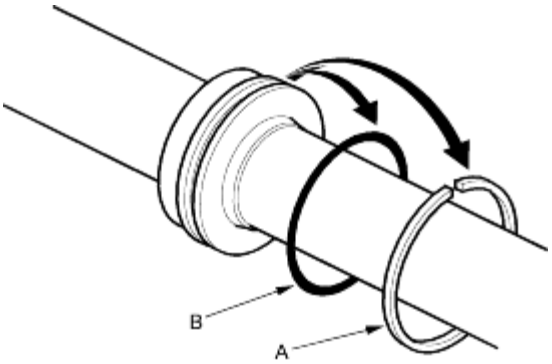


2. 22. Place the cylinder in a press, then remove the cylinder end seal (C), backup ring (D), and bushing (B) from the cylinder by pressing on the special tool end.

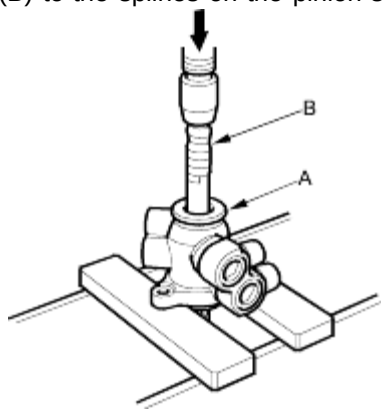
Note the items when pressing the cylinder end seal:

- Keep tool straight to avoid damaging the cylinder wall. Check the tool angle and correct it if necessary, when removing the cylinder end seal.
- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the cylinder end seal, and the seal would remain in the cylinder.

1. 23. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



2. 24. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.



3. 25. Separate the valve housing from the pinion shaft/valve using a press.

Power Steering

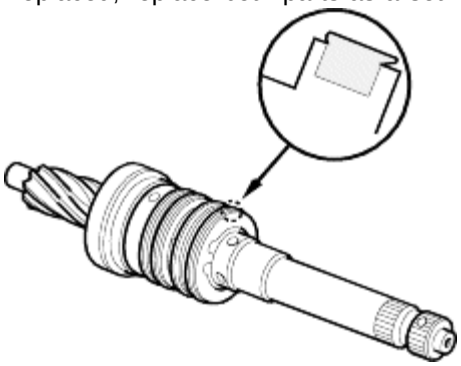
Steering Gearbox Overhaul (cont'd)

1. 26. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

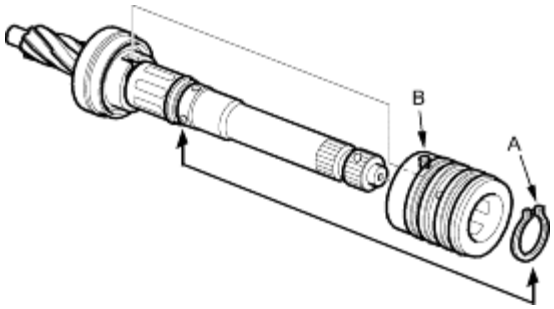
NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.



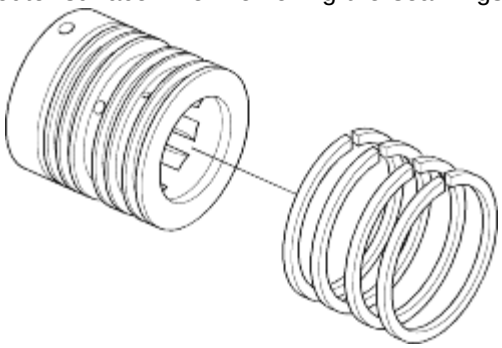
2. 27. Check for wear, burrs and other damage to the edges of the grooves in the sleeve.
NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.



1. 28. Remove the snap ring (A) and sleeve (B) from the pinion shaft.



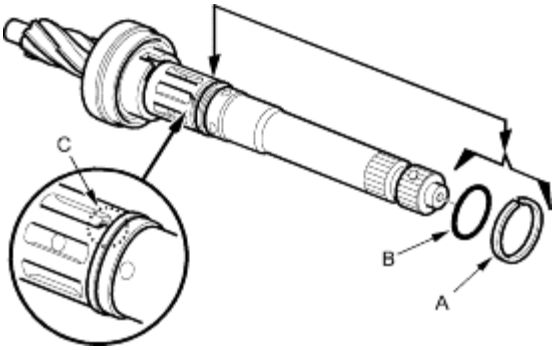
2. 29. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and the outer surface when removing the seal rings.



Power Steering

Steering Gearbox Overhaul (cont'd)

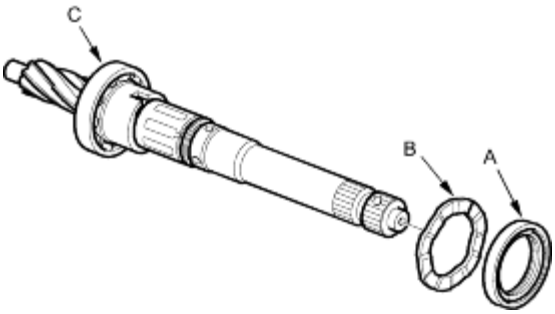
1. 30. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the groove (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.



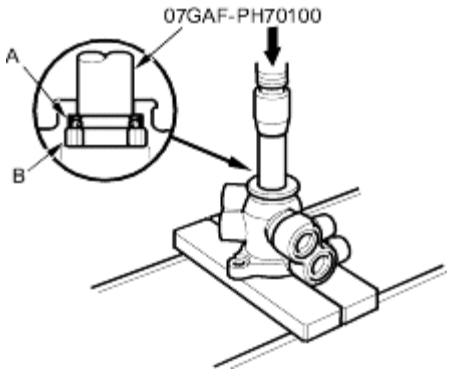
2. 31. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

Note these items during disassembly:

- Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play, replace the pinion shaft and sleeve as an assembly.
- The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.

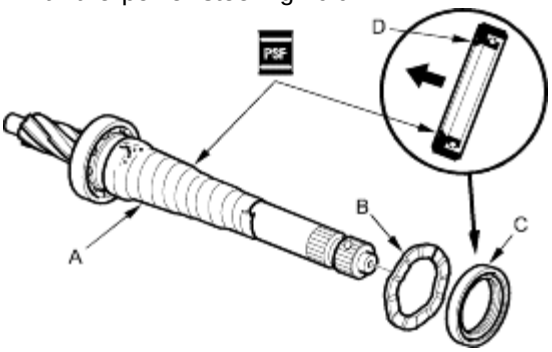


1. 32. Press the valve oil seal (A) and bushing (B) out of the valve housing using a hydraulic press and special tool.



Reassembly

2. 33. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with the power steering fluid.

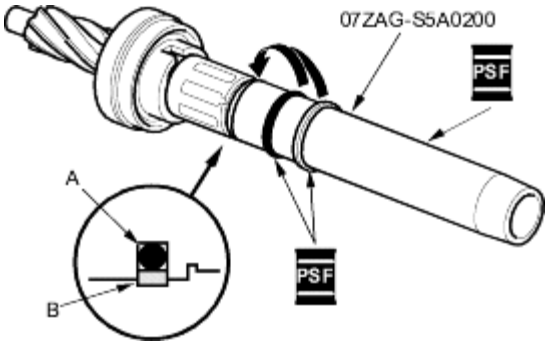


3. 34. Install the wave washer (B). Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D). Remove the vinyl tape.

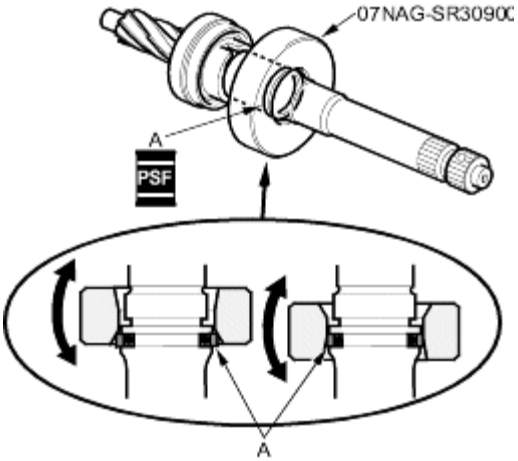
Power Steering

Steering Gearbox Overhaul (cont'd)

1. 35. Install the special tool over the pinion, and coat the surface of the tool with the power steering fluid. Slip the new O-ring (A) and new valve seal ring (B) over the special tool and expand them.



2. 36. Fit the O-ring and in the groove of the pinion shaft. Then slide the valve seal ring over the shaft and in the groove on the pinion shaft.
   37. Remove the special tool, and apply power steering fluid to the surface of the valve seal ring (A).

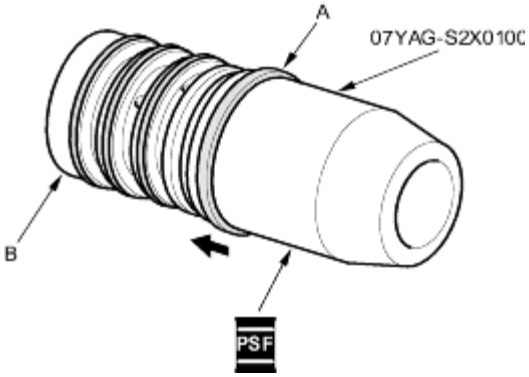


3. 38. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
   39. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fit snugly in the pinion shaft groove.

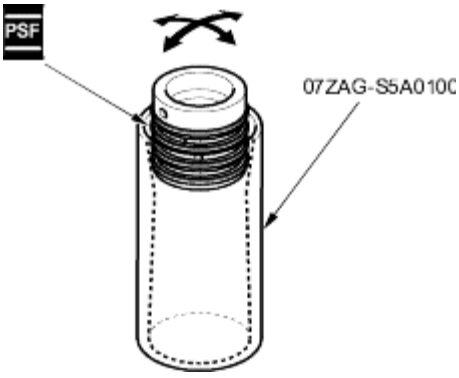
1. 40. Apply power steering fluid to the surface of the special tool. Slip two new seal rings (A) over the special tool from the smaller diameter end and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

Note these items when installing the seal ring:

- Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, be sure to contract the seal rings using the special tool (sizing tool).
- There are two types of sleeve seal rings: black and brown. Do not mix the different types of rings as they are not compatible.



2. 41. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
   42. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the special tool, then slowly insert the sleeve into the special tool.

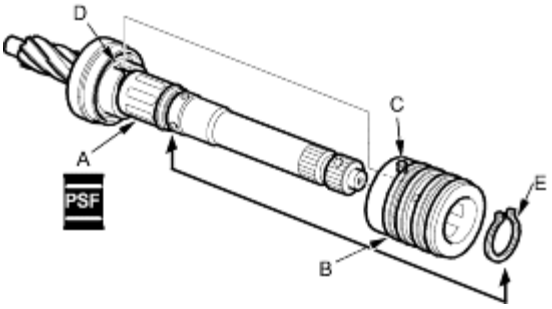


3. 43. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Be sure that the seal rings are not twisted.

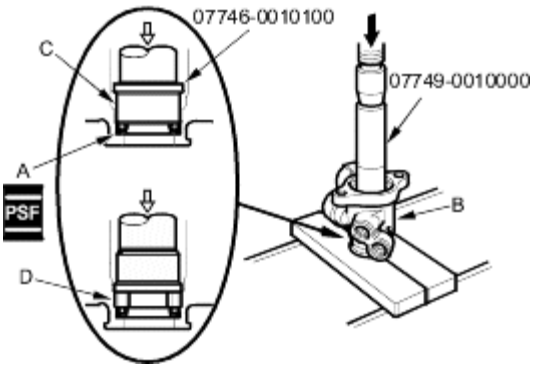
Power Steering

Steering Gearbox Overhaul (cont'd)

1. 44. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

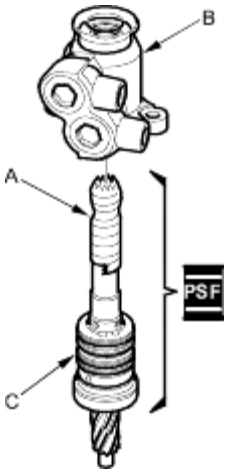


2. 45. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side (C) facing the tool.

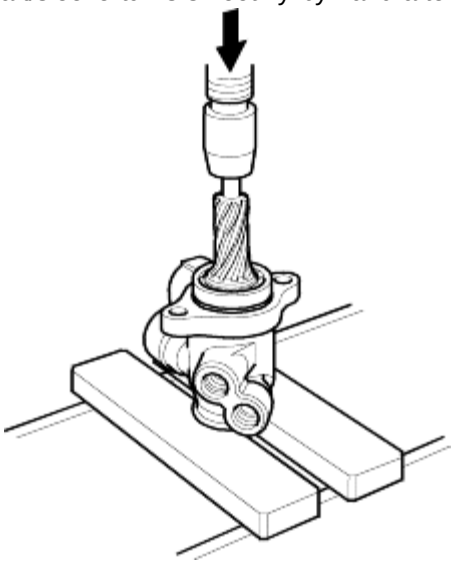


3. 46. Press the bushing (D) into the valve housing with a hydraulic press and special tool.

1. 47. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.



2. 48. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C).
   49. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
   50. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.



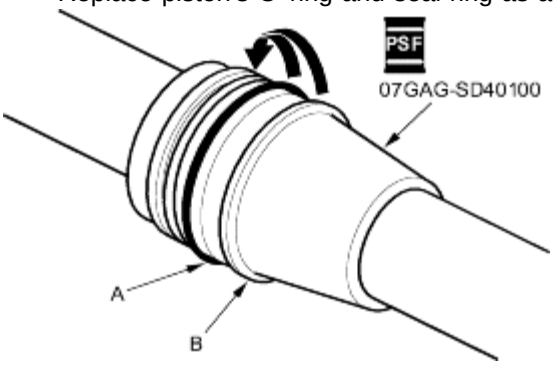
Power Steering

Steering Gearbox Overhaul (cont'd)

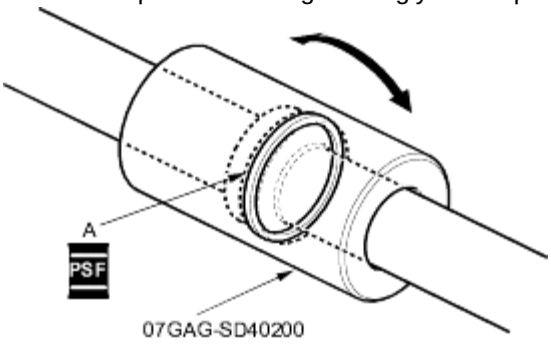
1. 51. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.
2. 52. Position the new O-ring (A) and new piston seal ring (B) on the special tool, then slide them down toward the big end of the tool.

Note these items during reassembly:

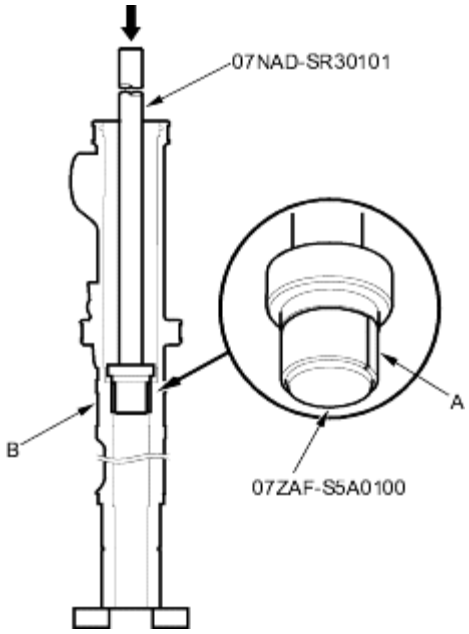
- Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, be sure to contract the seal ring using the special tool (sizing tool).
- Replace piston's O-ring and seal ring as a set.



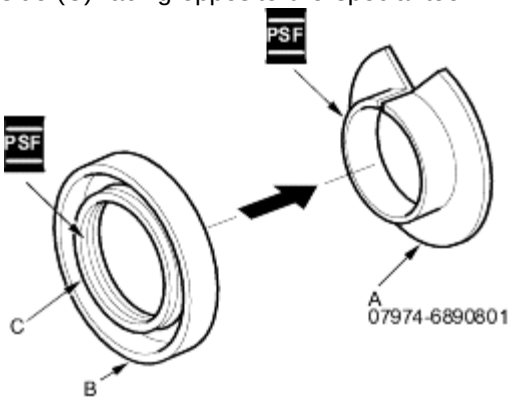
3. 53. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.
   54. Coat the piston seal ring (A) and the inside of the special tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.
   55. Move the special tool back and forth several times to make the piston seal ring fit snugly in the piston.



1. 56. Set the new bushing (A) on the special tool, and insert the special tools into the cylinder housing (B).



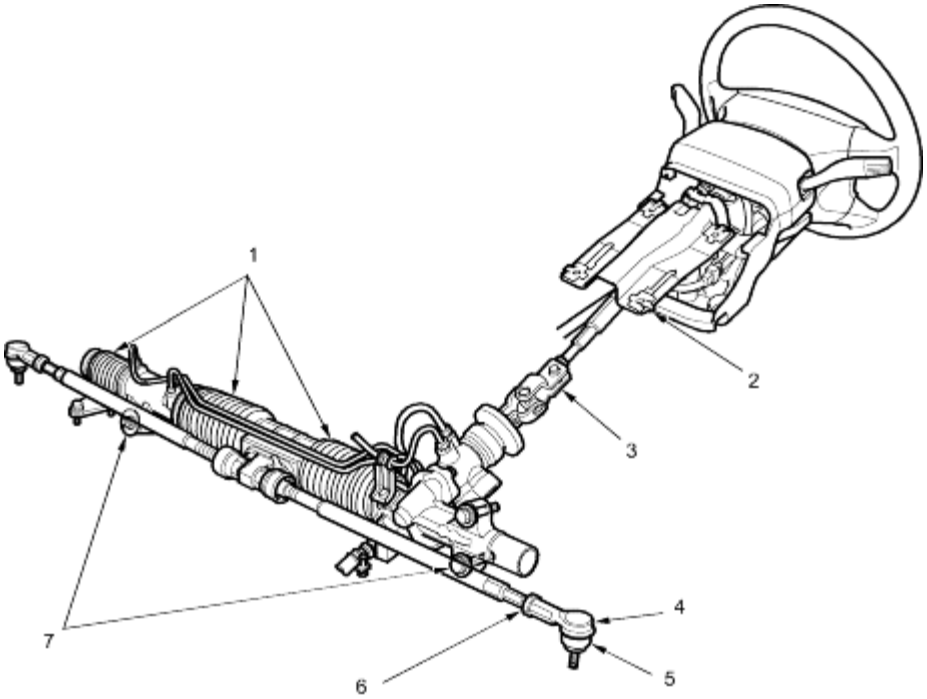
2. 57. Set the cylinder in a press, and install the bushing (A) into the bottom of the cylinder by pressing on the tool with press. Do not push on the tool with excessive force as it may damage the new bushing.
   58. Coat the sliding surface of the special tool (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.



Steering

Steering Linkage and Gearbox Inspection

NOTE: LHD type is shown, RHD type is symmetrical.

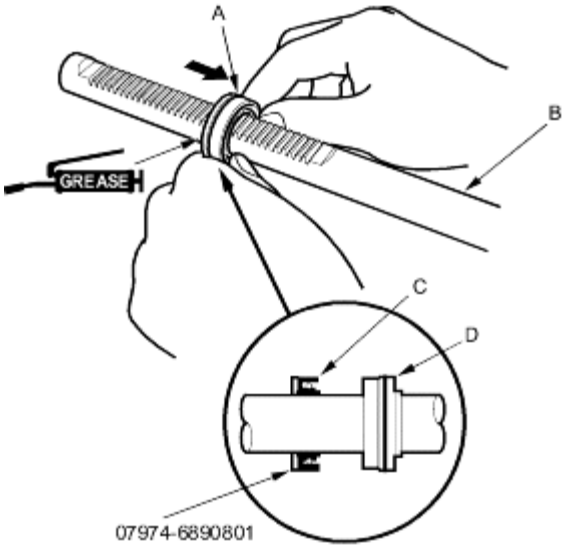


1. BOOTS
   Inspect for damage and deterioration.
2. STEERING COLUMN
   Inspect for loose column mounting nuts and bolts.
3. STEERING JOINTS
   Check for loose joint bolts.
4. TIE-ROD END BALL JOINT
   Inspect for faulty movement and damage.
5. BALL JOINT BOOT
   Inspect for damage and deterioration.
6. TIE-ROD LOCKNUTS
   Check for loose locknut.
7. STEERING GEARBOX
   Inspect for loose mounting nuts and bolts.
   GEARBOX MOUNTING CUSHIONS
   Inspect for deterioration.

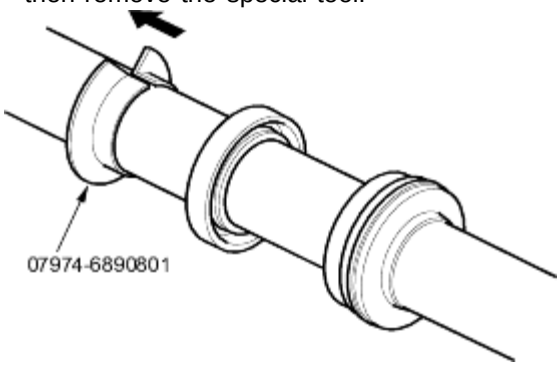
Power Steering

Steering Gearbox Overhaul (cont'd)

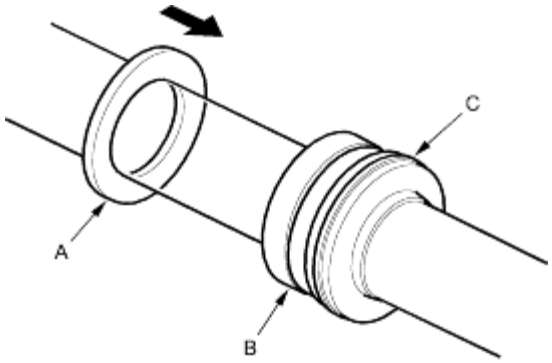
1. 59. Apply a thin coat of grease to the inside of the special tool.
2. 60. Install the cylinder end seal (A) onto the steering rack (B) with its grooved side (C) toward the piston (D). Make sure the gap is special tool is opposite of rack teeth.



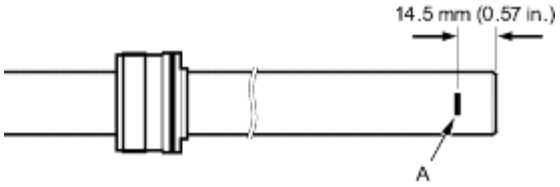
3. 61. Separate the cylinder end seal from the special tool, then remove the special tool.



1. 62. Install the new backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).



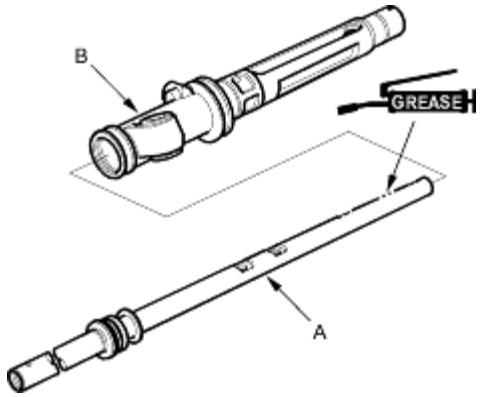
2. 63. Mark (A) a position on the steering rack surface with a felt-tip marker, 14.5 mm (0.57 in.) from the rack end edges.



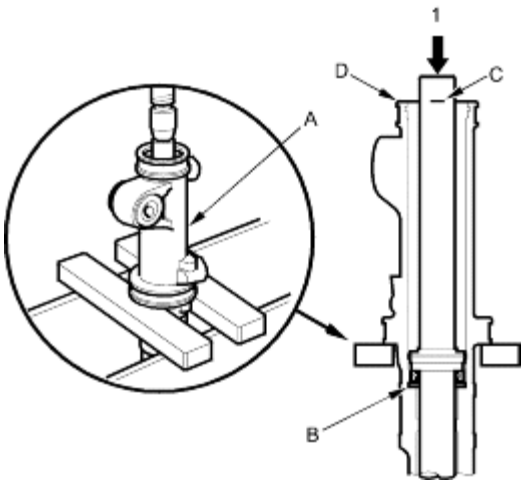
Power Steering

Steering Gearbox Overhaul (cont'd)

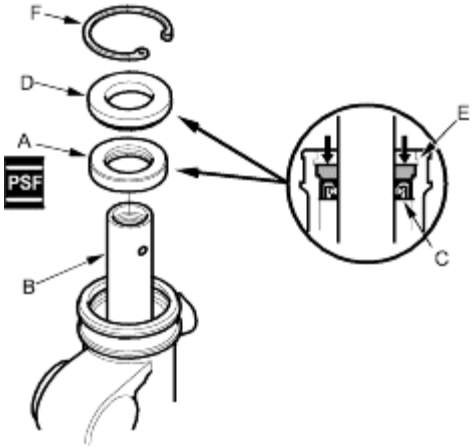
1. 64. Grease the steering rack teeth, then insert the steering rack (A) into the cylinder (B). Be careful not to damage to inner surface of the cylinder wall and bushing with the rack edges.



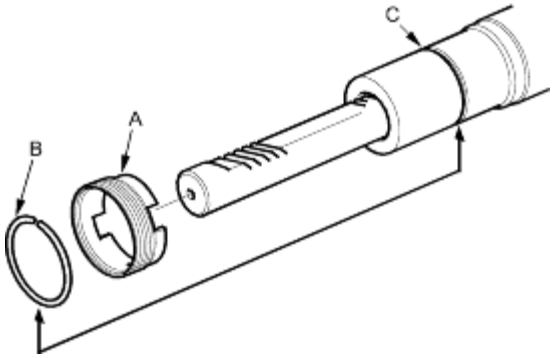
2. 65. Set the cylinder (A) in a press, then press the cylinder end seal (B) into the bottom of the cylinder until the mark (C) on the rack meets the edges (D) of the cylinder.



1. 66. Coat the inside and outside surfaces of the new cylinder end seal (A) with power steering fluid.



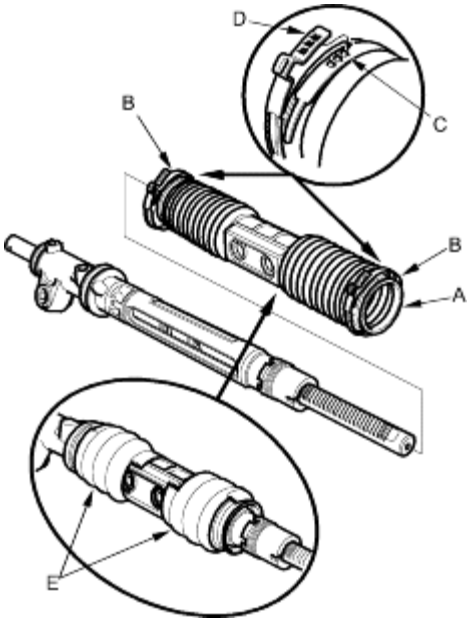
2. 67. Install the cylinder end seal onto the steering rack (B) with its grooved side (C) toward the piston. Push in the cylinder end seal with your finger.
   68. Place the backup ring (D) on the cylinder end seal with its flat side facing upward. Then drive the backup ring in with the appropriate size socket wrench until its surface is below the circlip groove (E). Install the snap ring (F) in the groove.
   69. Install the new lock screw (A) on the cylinder.



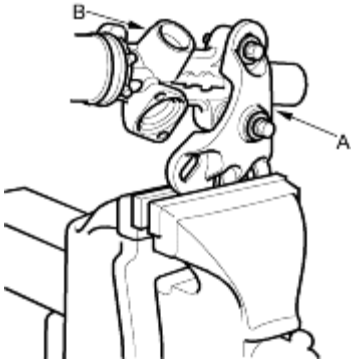
3. 70. Install the new stop ring (B) in the groove (C) on the cylinder by expanding it with snap ring pliers. Be careful not to scratch or damage on the cylinder surface with the stop ring edges.

Power Steering
Steering Gearbox Overhaul (cont'd)

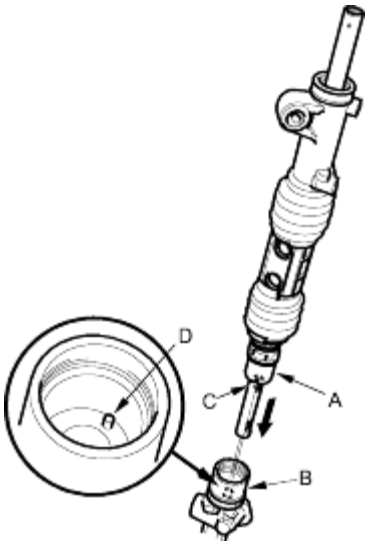
1. 71. Set the new boot bands (B) on the band installation grooves of the boot A by aligning the tabs (C) with the holes (D) of the band. Do not close the ear portion of the boot band in this step.



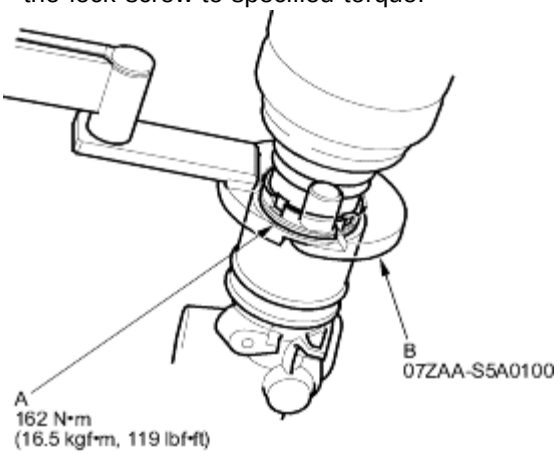
2. 72. Compress the boot A by hand, and apply vinyl tape (E) to the bellows so the boots stay collapsed and pulled back. Pass boot A over the cylinder so the smaller diameter end of the boot faces the gearbox housing.
   73. Attach the yoke (A) of a universal puller to the gearbox housing (B) with bolts, then securely clamp the yoke in a vice with jaws. Do not clamp the gearbox housing in a vice.



1. 74. Push the cylinder (A) into the gearbox housing (B) so the notch (C) is aligned with the pin (D) inside of the gearbox housing.



2. 75. Tighten the lock screw (A) by hand first, then set the special tool (B) on the lock screw securely. Tighten the lock screw to specified torque.

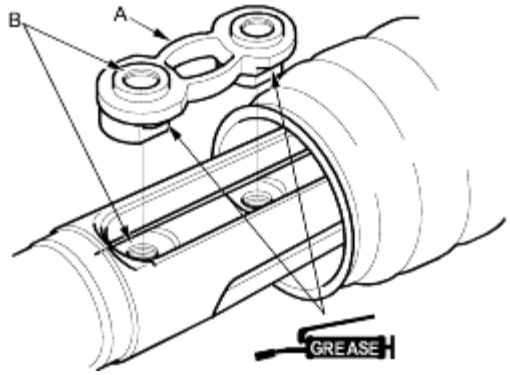


3. 76. Remove the special tool.

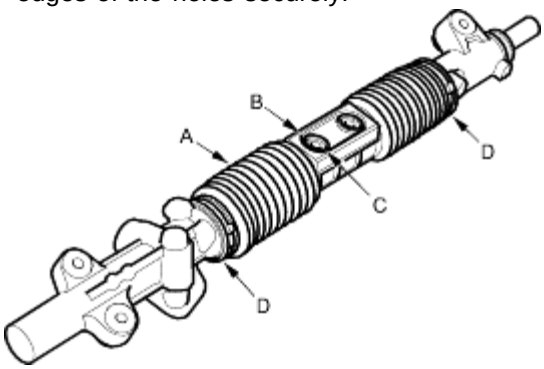
Power Steering
Steering Gearbox Overhaul (cont'd)

1. 77. Apply multipurpose grease to the sliding surface of the slider guide (A).

Slide the steering rack all the way to left, and place the slider guide on the steering rack by aligning the bolt holes (B).

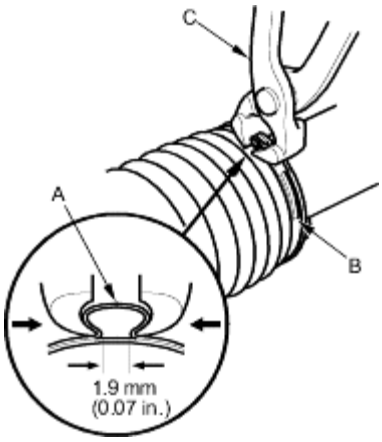


2. 78. Centre the steering rack within its stroke, and align the slider guide (B) with the holes (C) in boot A. Fit the slider guide to boot A by pressing around the edges of the holes securely.

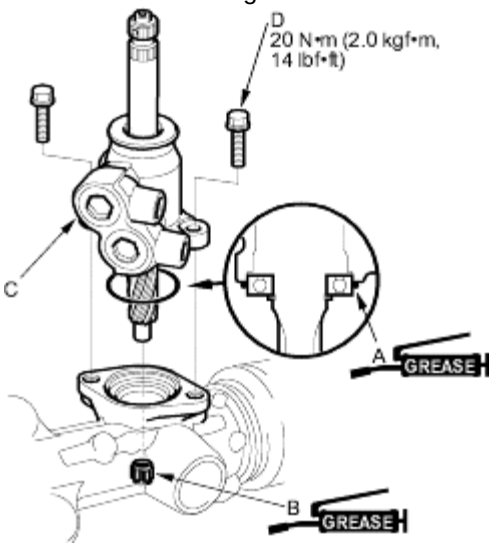


3. 79. Clean off any grease or contamination from the boot installation grooves around on the housing.
   80. Expand boot A by removing the vinyl tape, and fit the boot both ends (D) in the installation grooves on the cylinder housing.

1. 81. Close the ear portion (A) of the bands (B) with a commercially available pincers, Oetiker 1098 or equivalent (C).



2. 82. Coat the new O-ring (A) with grease, and carefully fit it on the valve housing.

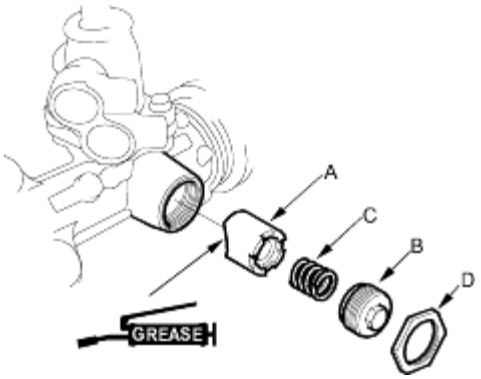


3. 83. Apply grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
   84. Tighten the flange bolts (D) to the specified torque.

Power Steering

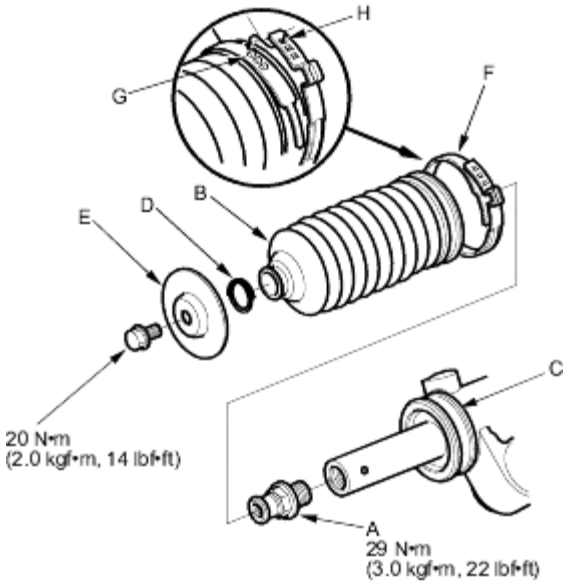
Steering Gearbox Overhaul (cont'd)

1. 85. Grease the sliding surface of the rack guide (A), and install it onto the gearbox housing.



2. 86. Apply sealant all around the threads on the rack guide screw (B), then install the spring (C), rack guide screw and locknut (D). Adjust the rack guide screw (see page 17-13). After adjusting, check that the rack moves smoothly by sliding it right and left.

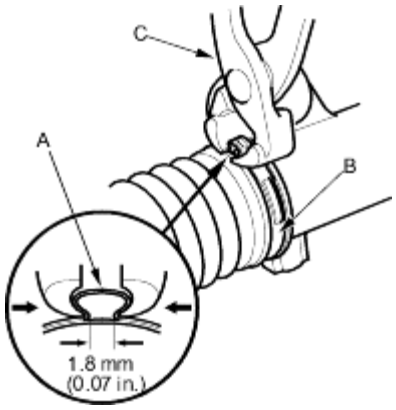
1. 87. Install the rack end plug (A).



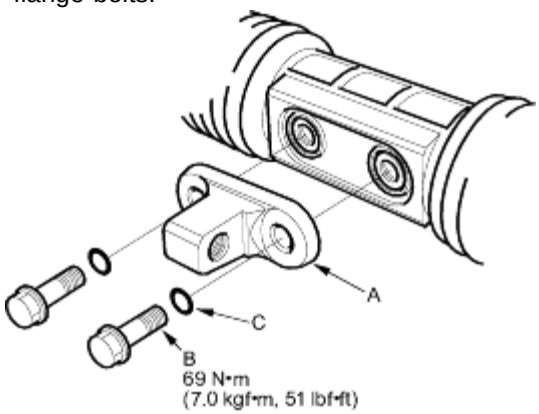
2. 88. Clean off any grease or contamination from the boot installation grooves (C) around on the housing.
   89. Install boot B, and set the boot end in the installation grooves in the cylinder housing and rack end plug properly.
   90. Install the clip (D) and boot guard (E).
   91. Install the new boot band (F) in the band grooves of boot B by aligning the tabs (G) with the holes (H) in the band.

Power Steering
Steering Gearbox Overhaul (cont'd)

1. 92. Close the ear portion (A) of the band (B) with a commercially available pincers, Oetiker 1098 or equivalent (C).

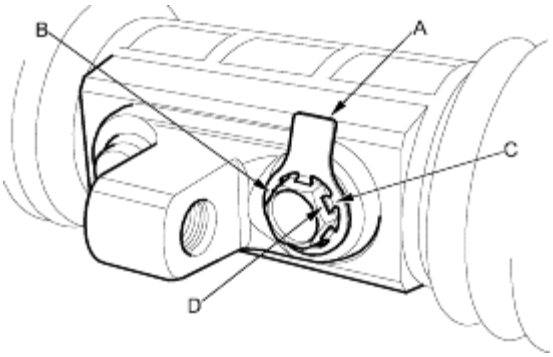


2. 93. Slide the rack right and left to be certain that the boots are not deformed or twisted.
   94. Before installing the bracket (A), clean the mating surface of the 12 mm flange bolts (B) and bracket. Then install the new O-rings (C) on the 12 mm flange bolts.

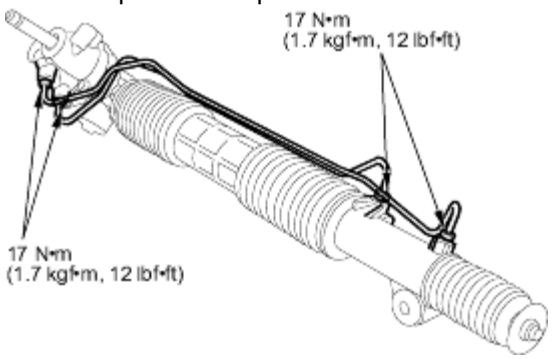


3. 95. Install the bracket on the steering rack with 12 mm flange bolts.

1. 96. After tightening the 12 mm flange bolts, install the lock washer (A) over one of bolt the heads (B). Be sure the tabs (C) of the lock washer with the flat surfaces (D) of the bolt head.



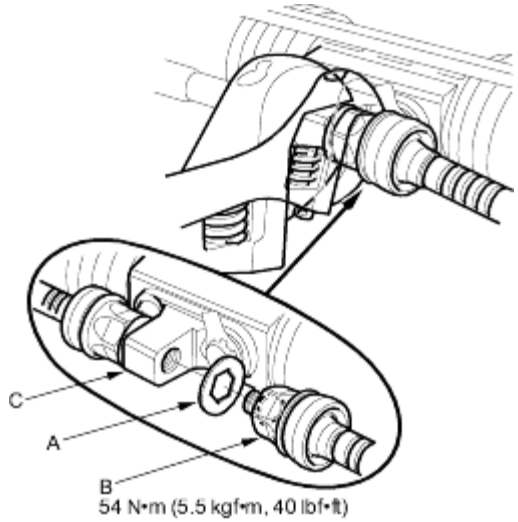
2. 97. Install the cylinder lines.
   Note these items during reassembly:
   - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
   - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.



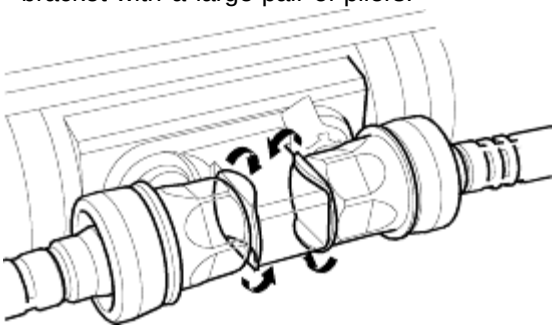
Power Steering

Steering Gearbox Overhaul (cont'd)

1. 98. Install the new lock washer (A) on the tie-rod (B) with the radiused side of the washer toward the tie-rod, and screw the tie-rod on the bracket (C). Repeat this step for the other tie-rod. Hold the bracket with one wrench, and tighten both tie-rods to the specified torque with another wrench.



2. 99. Bend the lock washer against the flat spots on the bracket with a large pair of pliers.

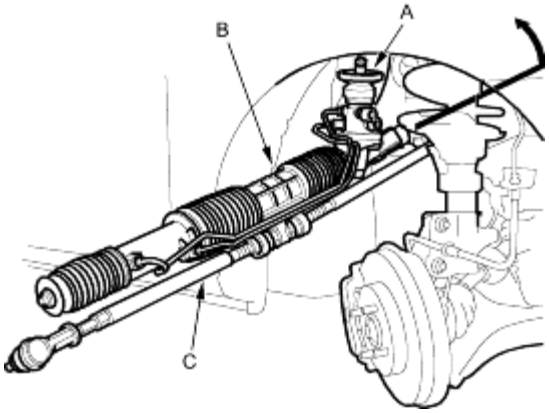


Power Steering

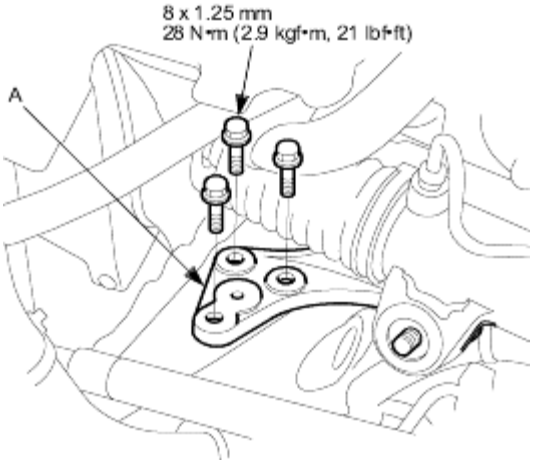
Steering Gearbox Installation

NOTE: LHD type is shown, RHD type is symmetrical.

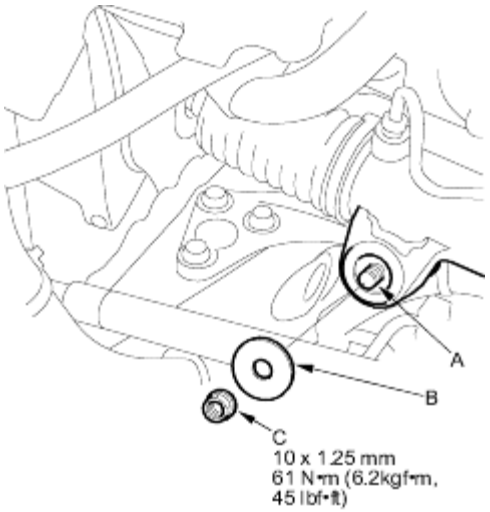
1. 1. Install the pinion shaft grommet (A).



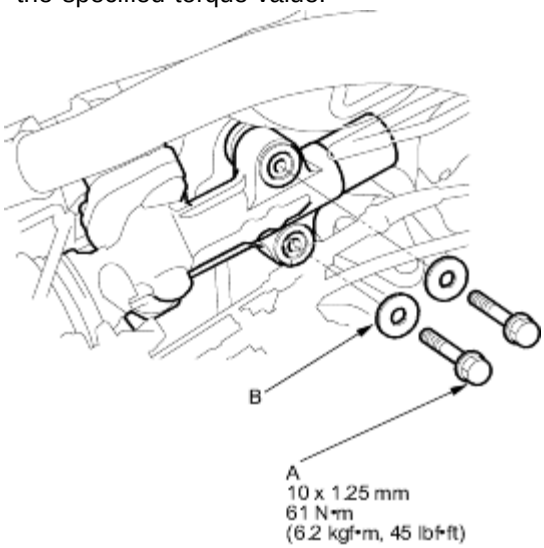
2. 2. Pass the valve body unit side of the steering gearbox (B) together with the tie-rods (C) through the wheel well opening on the passenger's side.
   3. Carefully move the steering gearbox toward the driver's side until the pinion shaft clears the heater hoses. Continue moving the gearbox toward the driver's side until the steering gearbox is in position.
   4. Install the right gearbox mounting bracket (A) on the frame.



1. 5. Slip the right side of the steering gearbox over the mounting stud (A) on the right gearbox mounting bracket. Install the washer (B) and the gearbox mounting nut (C) and lightly tighten.



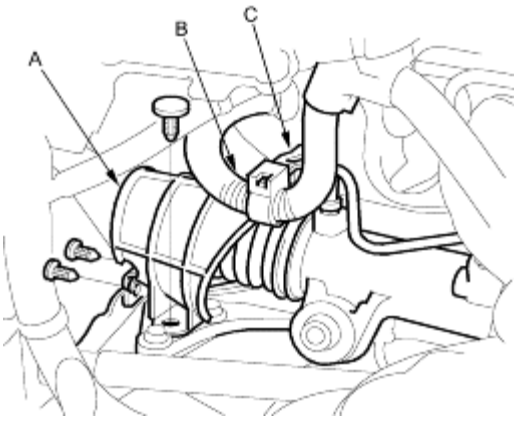
2. 6. Insert the pinion shaft up through the bulkhead, and install the left gearbox mounting bolts (A) and washer (B), and tighten them to the specified torque. Then tighten the right side of the gearbox mounting nut to the specified torque value.



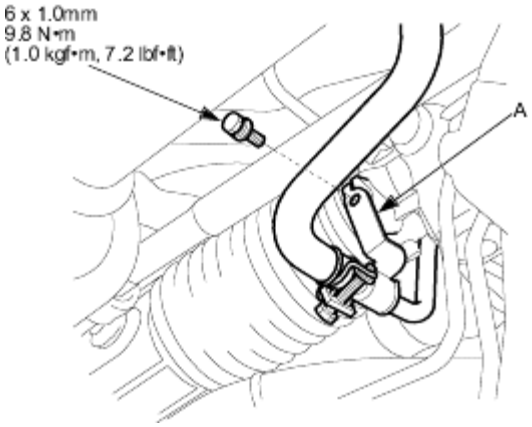
Power Steering

Steering Gearbox Installation (cont'd)

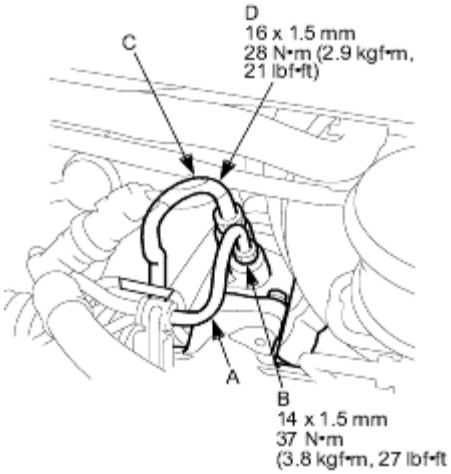
1. 7. Install the steering rack guard (A).



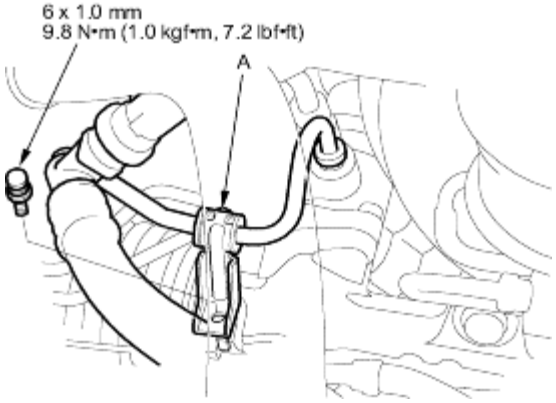
2. 8. Install the engine wire harness (B) on the harness bracket (C).
   9. Under the steering gearbox, install the return hose clamp (A) on the gearbox.



1. 10. Above the steering gearbox, connect the feed line (A) securely, and tighten the 14 mm flare nut (B).



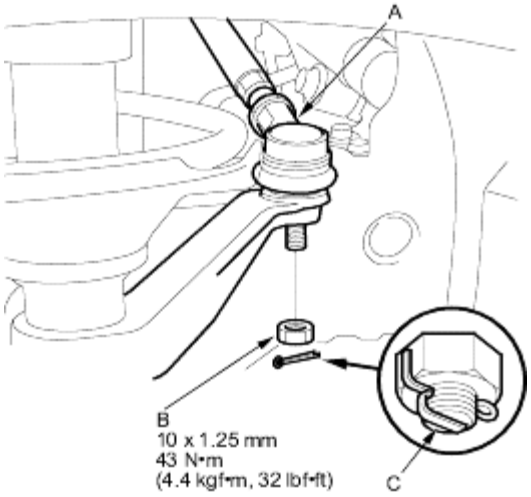
2. 11. Connect the return line (C) securely, and tighten the 16 mm flare nut (D).
   12. Install the feed line clamp (A) on the gearbox. Make sure that there is no interference between the feed and return lines with any other parts.



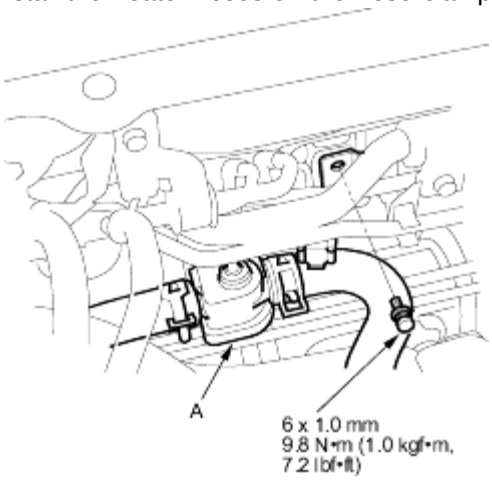
Power Steering

Steering Gearbox Installation (cont'd)

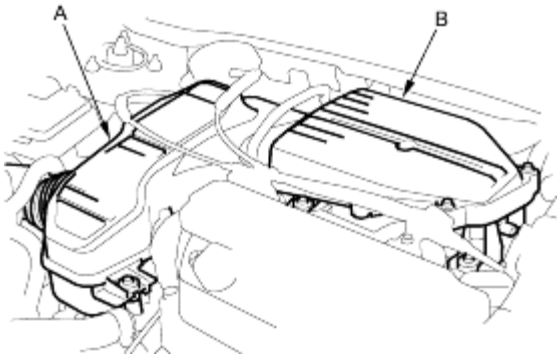
1. 13. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the damper steering arms. Install the 10 mm nut (B) and tighten it.



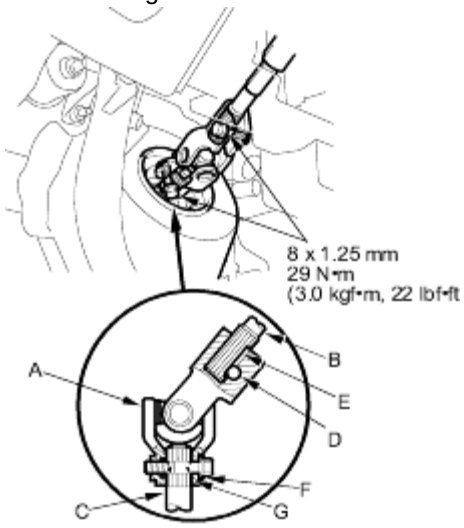
2. 14. Install the new cotter pin (C), and bend it as shown.
   15. Reinstall the heater valve (A) in its original position, and connect the heater valve cable to the valve arm. Install the heater hoses on the hose clamps securely.



1. 16. Install the air cleaner (A) and resonator (B).



2. 17. Install the steering joint (A), and reconnect the steering shaft (B) and pinion shaft (C). Make sure the steering joint is connected as follows:
   - Insert the upper end of the steering joint onto the steering shaft (line up the bolt hole (D) with the flat portion (E) on the shaft).
   - Slip the lower end of the steering joint onto the pinion shaft (line up the bolt hole (F) with the groove (G) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.
   - Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten it.



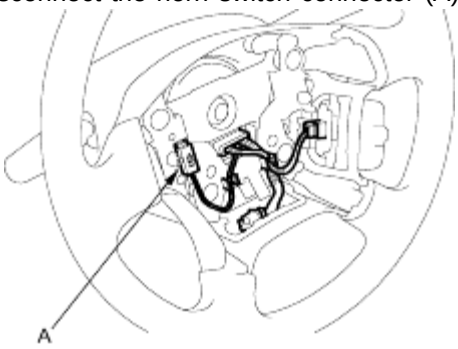
3. 18. Install the driver's dashboard lower covers.
   19. Centre the cable reel by first rotating it clockwise until it stops. Then rotate it counter-clockwise (about 2 and half turns) until the arrow mark on the label points straight up. Reinstall the steering wheel (see page 17-8).

Steering

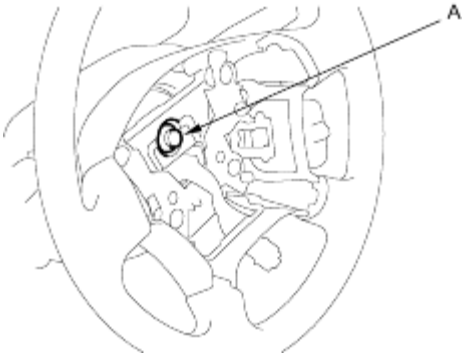
Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 23-165).
   2. Disconnect the horn switch connector (A).



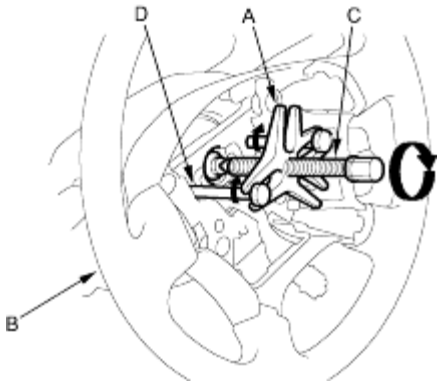
2. 3. Loosen the steering wheel bolt (A) or nut (KX model).



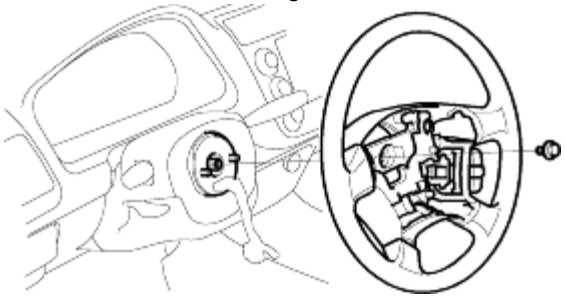
1. 4. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than 5 threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts 5 threads up on each puller bolt.



2. 5. Remove the steering wheel puller, then remove the steering wheel bolt or nut (KX model) and steering wheel from the steering column.



Power Steering

Steering Gearbox Installation (cont'd)

1. 20. Install the front wheels.
2. 21. Fill the system with power steering fluid, and bleed air from the system (see page 17-25).
   22. After installation, perform the following checks.
   - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid. Check the gearbox for leaks (see page 17-22).
   - Perform the front toe inspection (see page 18-7).
   - Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods equally, if necessary.

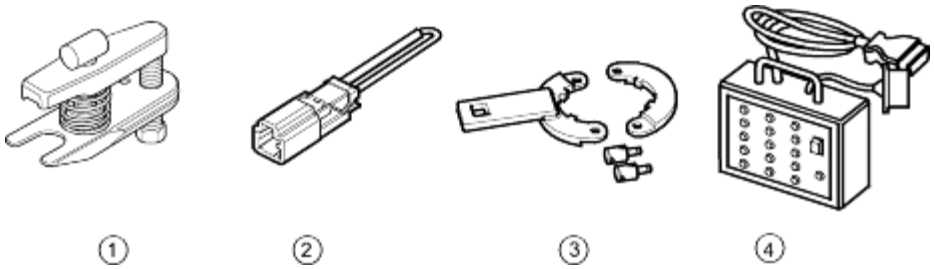
Electrical Power Steering (EPS)

Special Tools	17-62
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EPS Components
Special Tools

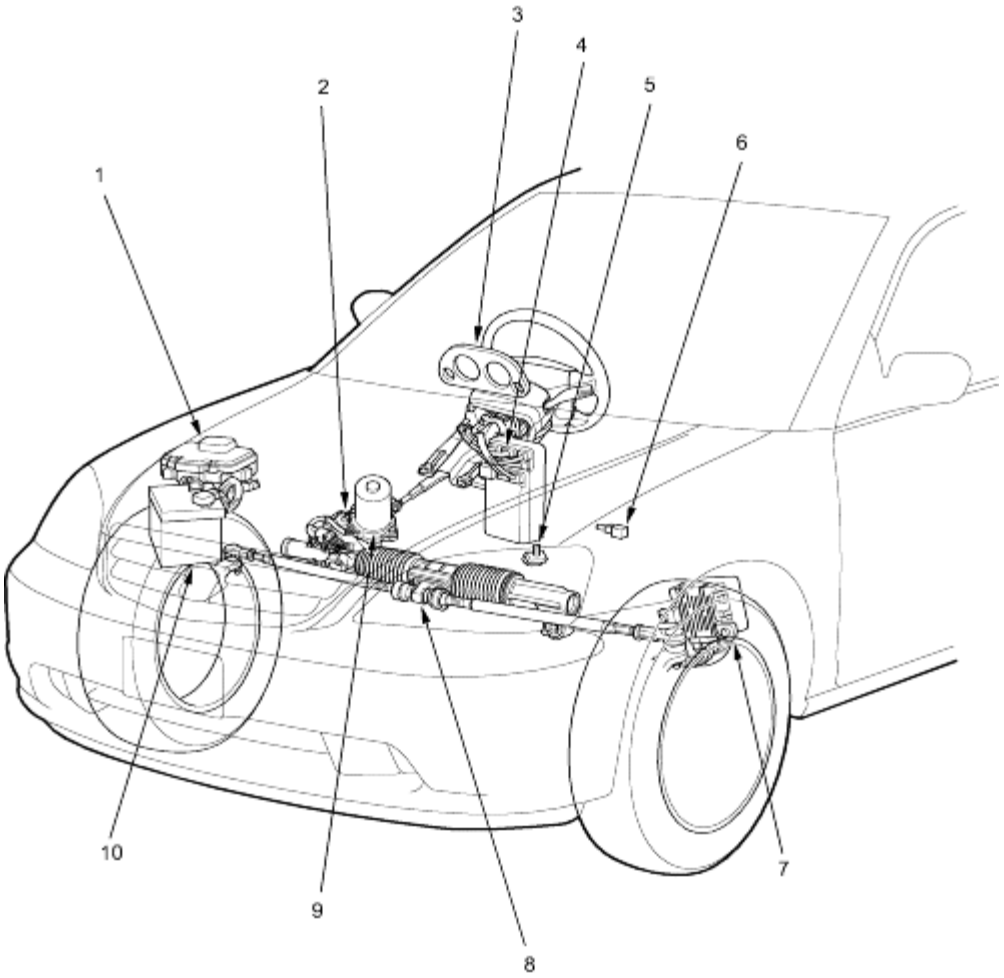
17-62

Ref. No.	Tool Number	Description	Qty
1	07MAC-SL00200	Ball Joint Remover, 28 mm	1
2	07PAZ-0010100	SCS Short Connector	1
3	07ZAA-S5A0100	Locknut Wrench	1
4	07WAJ-0010100	DLC Terminal Box	1



EPS Components

Component Location Index



1. UNDER-HOOD FUSE/RELAY BOX
2. TORQUE SENSOR
3. GAUGE ASSEMBLY
4. UNDER-DASH FUSE/RELAY BOX
5. DATA LINK CONNECTOR (16P)
   (Except KB, KE, KG, TR models)
6. SERVICE CHECK CONNECTOR (2P)
   (KB, KE, KG, TR models)
7. EPS CONTROL UNIT
   EPS Control Unit Removal/Installation, page 17-108
8. STEERING GEARBOX
   Rack Guide Removal, page 17-96
   Steering Gearbox Overhaul, page 17-99Steering Gearbox Installation, page 17-106
9. MOTOR
   Removal/Installation, page 17-95
10. BATTERY

EPS Components

General Troubleshooting Information

EPS Indicator

Under normal conditions, the EPS indicator comes on when the ignition switch is turned to the ON (II) position, then goes off after the engine is started. This indicates that the bulb and its circuit are operating correctly.

If there is any trouble in the system after the engine is started, the EPS indicator will stay on, and the power assist is turned off.

When EPS indicator light comes on, the control unit memorises the DTC. In this case, the control unit will not activate the EPS system after the engine starts again, but it keeps the EPS indicator on.

When DTC 16, 17, 18 or 67 is stored in the control unit, the EPS indicator will stay on until the DTC is erased. When a problem is detected and the EPS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system return to normal. Even though the system is operating normally, the EPS indicator will come on under the following conditions:

- When the vehicle is barely moving, 1 km/h (0.62 mph) or stopped, and the engine speed is 1,640 rpm (min^{-1}) or higher for approximately 90 seconds.
- When the engine speed is 280 rpm or less, and the vehicle is travelling at a speed of 10 km/h (6.2 mph) or more for 3 seconds.

To determine the actual cause of the problem, question the customer about the conditions during which the problem occurred, taking the above conditions into consideration.

Diagnostic Trouble Code (DTC)

- If the CPU cannot be activated, or it fails, the EPS indicator comes on, but the DTC is not memorised.
- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the most recent DTC is written over the prior DTC, therefore only one occurrence is memorised.
- The DTCs are indicated repeatedly until the ignition switch is turned OFF.
- If the DTC is not memorised, the EPS indicator will stay on.
- The DTCs are memorised in the EEPROM (non-volatile memory) therefore the memorised DTCs cannot be erased by disconnecting the battery. Perform the specified procedures to clear DTCs.

Self-diagnosis

Self-diagnosis can be classified into two categories:

- Initial diagnosis: performed right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: performed right after the initial diagnosis until the ignition switch is turned OFF.

The EPS control unit performs the following functions when a problem is detected by self-diagnosis:

1. 1. Turns on the EPS indicator.
   2. Memorises the DTC.
   3. Stops power assist and manual steering operation begins.

   NOTE:

   - When DTC 23 (a problem with the circuit for engine speed signal) is detected, the power assist will return to normal when the vehicle speed is 10 km/h (0.62 mph) or above.
   - For DTCs 22, 23, 37, 41, 42, 43, 45, 47, 50, 51, 62, 68 or 69 the EPS indicator goes off automatically when the system returns to normal. For all other codes, the EPS indicator goes off when the system is OK after the ignition switch is turned from OFF to ON (II).

Restriction on Power Assist Operation

Repeated extreme steering force, such as turning the steering wheel continuously back-and-forth with the vehicle stopped, causes an increase of power consumption in the EPS motor. The increase of electric current causes the motor to heat up. Because this heat adversely affects the system, the control unit monitors the electric current of the motor.

When the control unit detects heat build-up in the motor, it reduces the electric current to the motor gradually to protect the system, and it restricts the power assist operation. The EPS indicator does not come on during this function.

When steering torque is not applied to the steering wheel, or when the ignition is turned off, the control unit will restore the power assist gradually until it's fully restored (after approximately 12 minutes maximum).

EPS Components

General Troubleshooting Information (cont'd)

How to Troubleshoot EPS DTCs

Special Tools Required

- DLC terminal box, 07WAJ-0010100
- SCS short connector, 07PAZ-0010100

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the EPS indicator is still on. Following the flowchart when the EPS indicator does not come on can result in incorrect diagnosis.

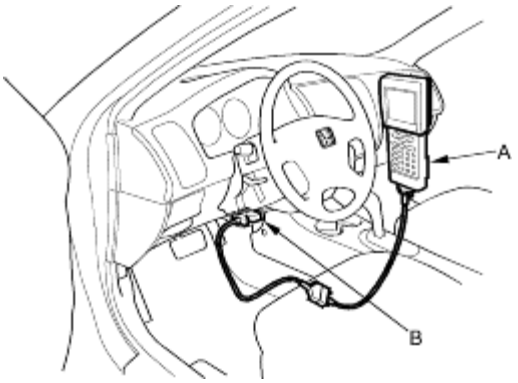
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. 1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the EPS indicator came on, such as while turning, after turning, when the vehicle was at a certain speed, etc.
   2. When the EPS indicator does not come on during the test drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., before you start troubleshooting.
   3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the EPS indicator does not come on.

How to Retrieve EPS DTCs

Honda PGM Tester Method:

2. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) located under the dash on the driver's side of the vehicle.



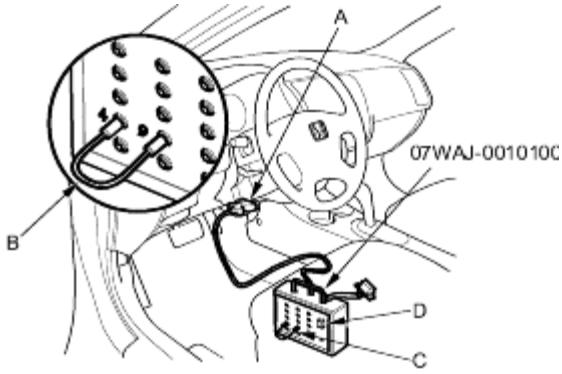
1. 2. Turn the ignition ON (II), and follow the prompts on the PGM Tester to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

NOTE: See the Honda PGM Tester user's manual for specific instructions.

Service Check Signal Circuit Method:

Except KB, KE, KG, TR models:

2. 1. With the ignition switch OFF, connect the DLC terminal box (A) to the Data Link Connector (DLC) (B) located under the dash on the driver's side of the dashboard.

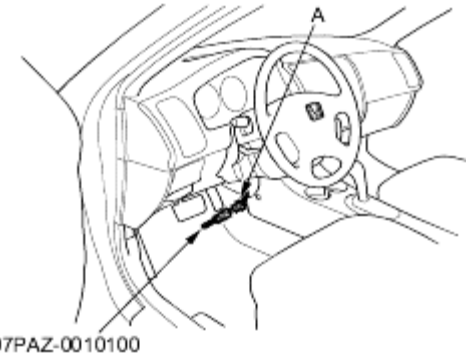


*: The illustration shows LHD model.

3. 2. Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire (C), then push the switch (D).
   3. Turn the ignition switch ON (II).

KB, KE, KG, TR models:

4. 4. With the ignition switch OFF, connect the SCS short connector to the service check connector (2P) (A) located under the dash on the driver's side of the dashboard.



*: The illustration shows LHD model.

EPS Components

General Troubleshooting Information (cont'd)

1. 5. Turn the ignition switch ON (II).

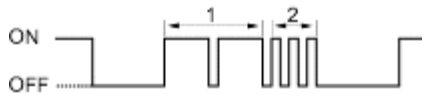
All models:

2. 6. The blinking frequency indicates the DTC. DTCs are indicated by a series of long and short blinks. Add the long and short blinks together to determine the DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

The system will not indicate the DTC unless these conditions are met:

- Set the front wheels in the straight ahead driving position.
- The ignition switch is turned ON (II).
- The engine is stopped.
- The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC 23



Except KB, KE, KG, TR models:

3. 7. Turn the ignition switch OFF.
8. Disconnect the DLC terminal box from the DLC.

KB, KE, KG, TR models:

4. 9. Turn the ignition switch OFF, and remove the SCS short connector.
10. Perform the DTC erasure.

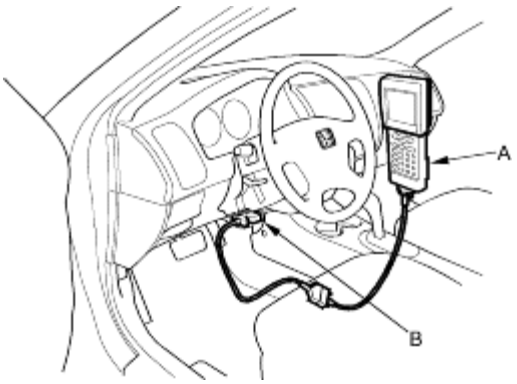
NOTE:

- The Malfunction Indicator Lamp (MIL) will stay on after the engine is started if the SCS short connector (DLC terminal box terminals No. 4 and No. 9) is connected.
- If the EPS indicator does not come on, always check for an open or a short to ground in the SCS circuit before troubleshooting the system.

How to Clear EPS DTCs

Honda PGM Tester Method:

1. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) located under the dash on the driver's side of the vehicle.



*: The illustration shows LHD model.

2. 2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the PGM Tester. NOTE: See the Honda PGM Tester user's manual for specific instructions.

EPS Components

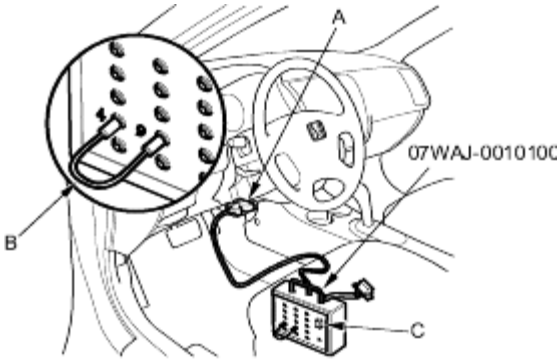
General Troubleshooting Information (cont'd)

Service Check Signal Circuit Method:

Except KB, KE, KG, TR models:

NOTE: Use this procedure when the PGM Tester software does not match the year/model vehicle you are working on.

1. 1. With the ignition switch OFF, connect the DLC terminal box (A) to the 16P Data Link Connector (DLC) (B) located under the dash on the driver's side of the dashboard.

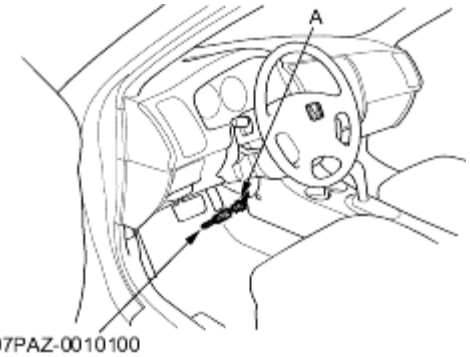


*: The illustrstion shows LHD model.

2. 2. With the vehicle on the ground, set the front wheels in the straight ahead driving position.
   3. Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire (C), then push the switch (D).

KB, KE, KG, TR models:

3. 4. With the ignition switch OFF, connect the SCS short connector to the service check connector (2P) (A) located under the dash on the driver's side of the vehicle.

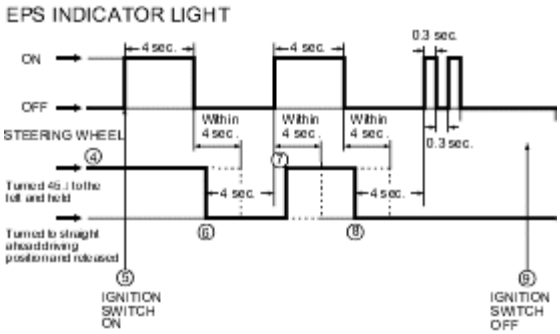


*: The illustrstion shows LHD model.

4. 5. With the vehicle on the ground, set the front wheels in the straight ahead driving position.

All model:

1. 6. Turn the steering wheel 45 degrees to the left from the straight ahead driving position, and hold the steering wheel in that position.
   7. Turn the ignition switch ON (II). The EPS indicator comes on, then it goes off after 4 seconds.
   8. Within 4 seconds after the EPS indicator goes off, return the steering wheel to the straight ahead driving position and release the steering wheel.
      The EPS indicator comes on again 4 seconds after releasing the steering wheel.
   9. Within 4 seconds after the EPS indicator comes on, turn the steering wheel 45 degrees to the left again and hold it in that position.
      The EPS indicator goes off after 4 seconds.
   10. Within 4 seconds after the EPS indicator goes off, return the steering wheel to the straight ahead driving position again and release the steering wheel.
       The EPS indicator blinks twice 4 seconds after releasing the steering wheel, indicating that the DTC was erased.
       NOTE: If the EPS indicator does not blink twice, an error was made in the procedure and the DTC was not erased. Turn the ignition switch OFF, and repeat the operation from the step 3.
   11. Turn the ignition switch OFF after the EPS indicator blinks twice.
   12. Disconnect the DLC terminal box or SCS short connector from the DLC.
   13. Perform the DTC code output operation, and be sure that the code has been erased.



EPS Components
DTC Troubleshooting Index

DTC	Detection Item	Note
DTC: 12	A problem with voltage for torque sensor T/SIG	(see page 17-74)
DTC: 16	A problem with average of voltage for torque sensor VT3 and VT6	(see page 17-76)
DTC: 17	A problem with the voltage for torque sensor 12 V power source Vcc 1	(see page 17-78)
DTC: 18	A problem with the voltage for torque sensor 5 V power source Vcc 2	(see page 17-78)
DTC: 22	A problem with the average for vehicle speed and engine speed	(see page 17-80)
	Excessive change of the vehicle speed sensor signal	(see page 17-80)
DTC: 23	A problem with the engine speed signal circuit	(see page 17-80)
DTC: 37	A problem with the circuit for input motor voltage in the EPS control unit	(see page 17-81)
DTC: 41	A problem with the motor voltage	(see page 17-82)
DTC: 42	A problem with the motor driven current	(see page 17-84)
DTC: 43	A problem with the motor driven current	(see page 17-87)
DTC: 45	A problem with the motor driven current	(see page 17-84)
DTC: 47	A problem with the motor relay in the EPS control unit	(see page 17-88)
DTC: 50	A problem with the CPU in the EPS control unit	(see page 17-89)
DTC: 51	A problem with E2PROM in the EPS control unit	(see page 17-89)
DTC: 62	Fail-safe relay stuck ON	(see page 17-90)
DTC: 64	A problem with low battery voltage	(see page 17-90)
	Fail-safe relay contact failure	(see page 17-90)
DTC: 66	A problem with the motor driven voltage	(see page 17-91)
DTC: 67	A problem with the torque sensor I/F circuit	(see page 17-91)
DTC: 68	A problem with the interlock circuit	(see page 17-91)
DTC: 69	A problem with the interlock circuit	(see page 17-92)

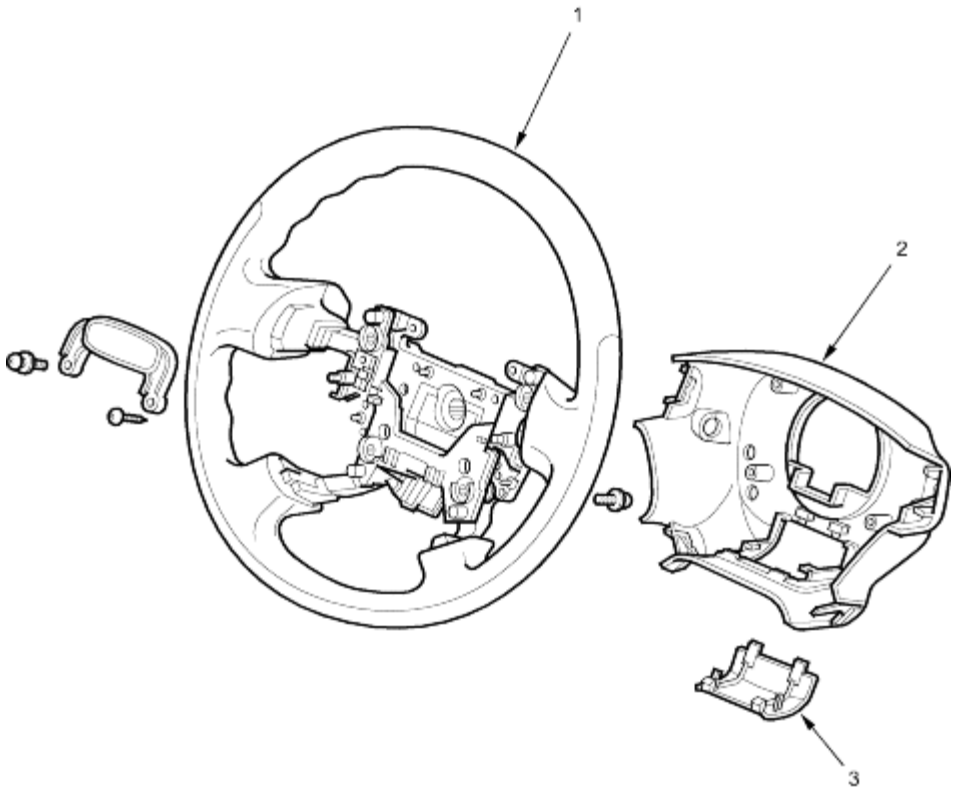
EPS Components Symptom Troubleshooting Index	17-69

Symptom	Diagnostic procedure	Also check for
EPS indicator does not come on	EPS Indicator Circuit Troubleshooting (see page 17-93)	
EPS indicator does not go off and no DTC is stored	EPS Indicator Circuit Troubleshooting (see page 17-93)	
EPS indicator does not stay on, no DTC is stored, and there is no power assist	1. 1. Check the motor wires between the EPS control unit and the motor for a short to ground. Repair as needed. 2. If the motor wires are OK, replace the steering gearbox (short in the motor).	

Steering

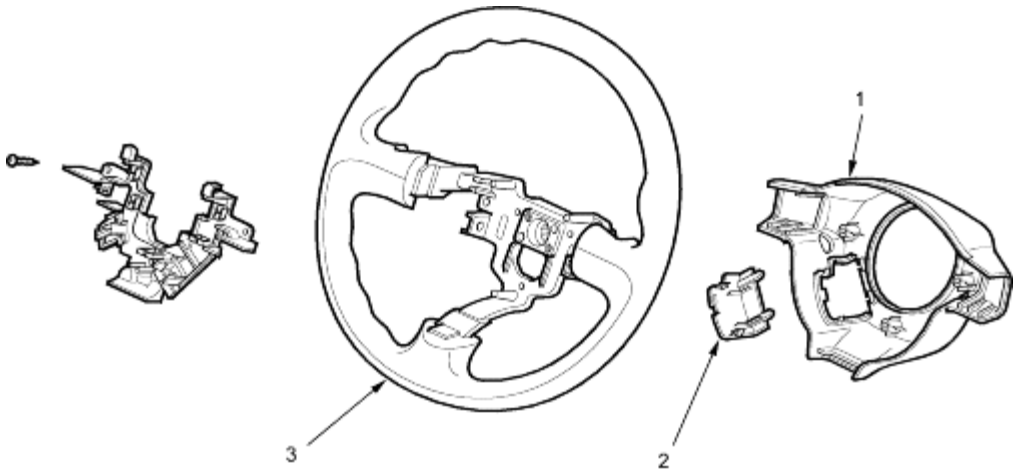
Steering Wheel Disassembly/Reassembly

4-door



1. STEERING WHEEL
2. STEERING REAR COVER
3. ACCESS PANEL

5-door



1. STEERING REAR COVER
2. ACCESS PANEL
3. STEERING WHEEL

EPS Components
System Description

EPS Control Unit Inputs and Outputs at Connector A (2P)

EPS CONTROL UNIT CONNECTOR A (2P)

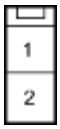


Wire side of female terminals

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions Ignition switch ON (II)	Voltage
1	WHT/BLU	+ BAT (Plus battery)	Power source for the actuator motor	1-Ground	Every time	Battery voltage
2	BLK	PG (Power ground)	Ground for the actuator motor	2-Ground	-	-

EPS Control Unit Inputs and Outputs at Connector B (2P)

EPS CONTROL UNIT CONNECTOR B (2P)



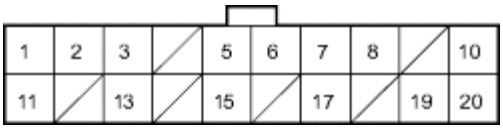
Wire side of female terminals

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions Ignition switch ON (II)	Voltage
1	RED	M1 (Motor 1)	Drives the actuator motor	1-Ground	-	-
2	GRN	M2 (Motor 2)	Drives the actuator motor	2-Ground	-	-

EPS Components
System Description (cont'd)

EPS Control Unit Inputs and Outputs at Connector C (14P)

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions Ignition switch ON (II)	Voltage
1*-1	YEL/RED	VT6 (Voltage torque 6)	Detects torque sensor signal	1-Ground	Start the engine and turn the steering wheel	About 5 - 0V
2	PNK	T/S GND (Torque sensor ground)	Ground for the torque sensor	-	-	-
3	ORN	VCC1 (Voltage common 1)	Power source for torque sensor	3-Ground	Start the engine	Battery voltage
					Ignition switch OFF	0V
5*-2	YEL/RED	VT6 (Voltage torque 6)	Detects torque sensor signal	5-Ground	Start the engine and turn the steering wheel	About 5 - 0V
6	YEL/BLU	WLP (Warning lamp)	Drives the EPS indicator light	6-Ground	EPS indicator ON	Battery voltage
					EPS indicator OFF	0V
7	BLU/WHT	VSP (Vehicle speed pulse)	Detects the vehicle speed signal for the speed sensor or the ECM/PCM (4 pulse/Rev).	7-Ground	Raise the vehicle off the ground and spin the front wheel	Alternating voltage about 0V - 5V - 0V - 5V
8	BRN	SCS (Service check signal)	Detects service check connector signal	-	-	-
10	YEL	IG1 (Ignition 1)	Power source for activating the system	10-Ground	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	0V
11	GRN/YEL	VCC2 (Voltage common 2)	Drives the torque sensor	11-Ground	Start the engine	About 5V
					Ignition switch OFF	0V
13	BLU/ORN	VT3 (Voltage torque 3)	Detects torque sensor signal	13-Ground	Start the engine and turn the steering wheel	About 5 - 0V
15	YEL/BLK	T/SIG (Torque sensor F/S signal)	Detects torque sensor signal	15-Ground	Start the engine	Momently 5V
17	LT GRN/BLK	PSW (Power steering switch)	Provides power steering switch signal	17-Ground	Start the engine and turn the steering wheel	0 - 12V
19	BLU	NEP (Engine pulse)	Detects the engine pulse	19-Ground	Start the engine, and let it idle	About 0 - 12V

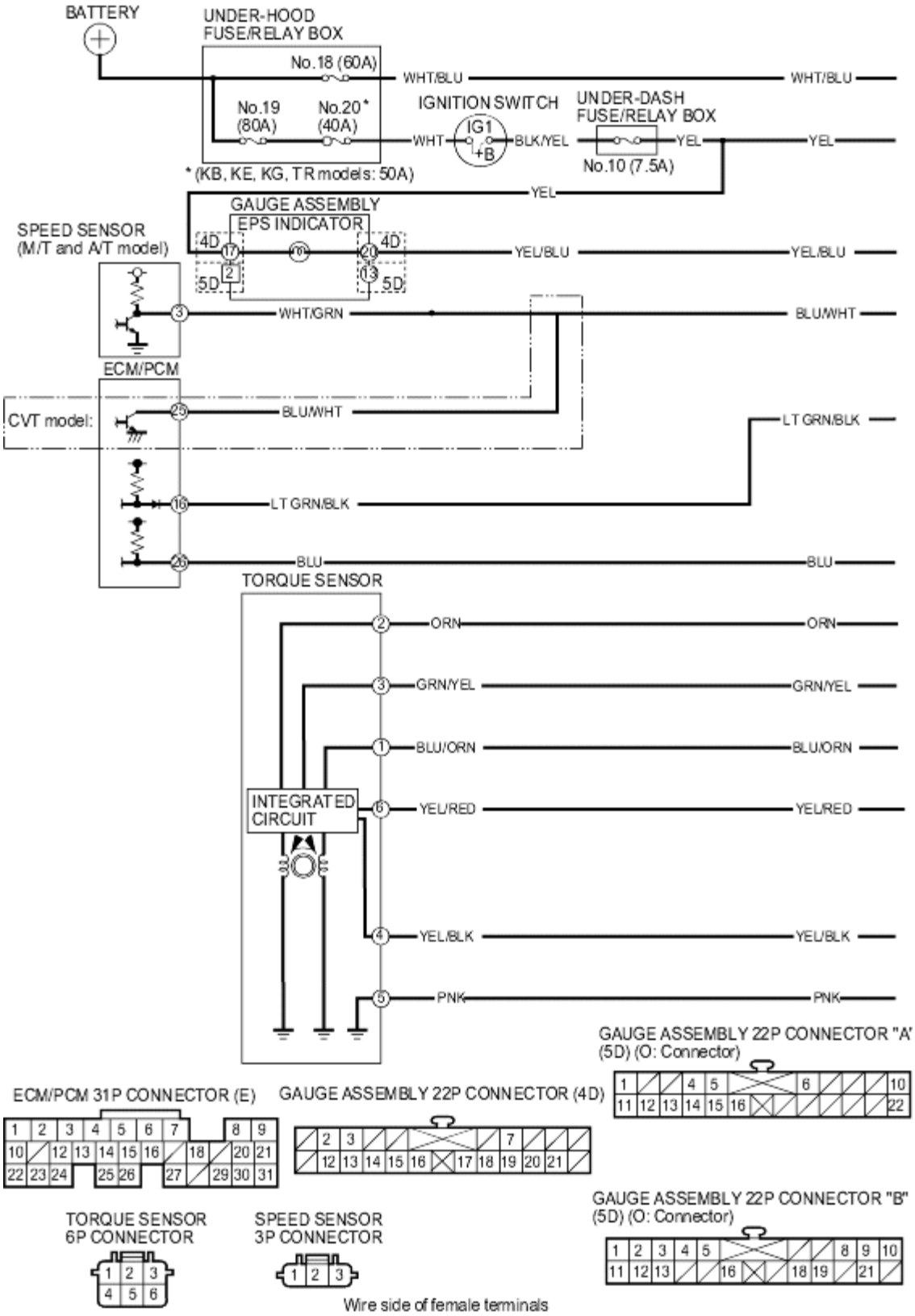
20	GRY	DIAG-H (Diagnosis-H)	Communications with Honda PGM Tester	-	-	-

*1: KU model

*2: Except KU model

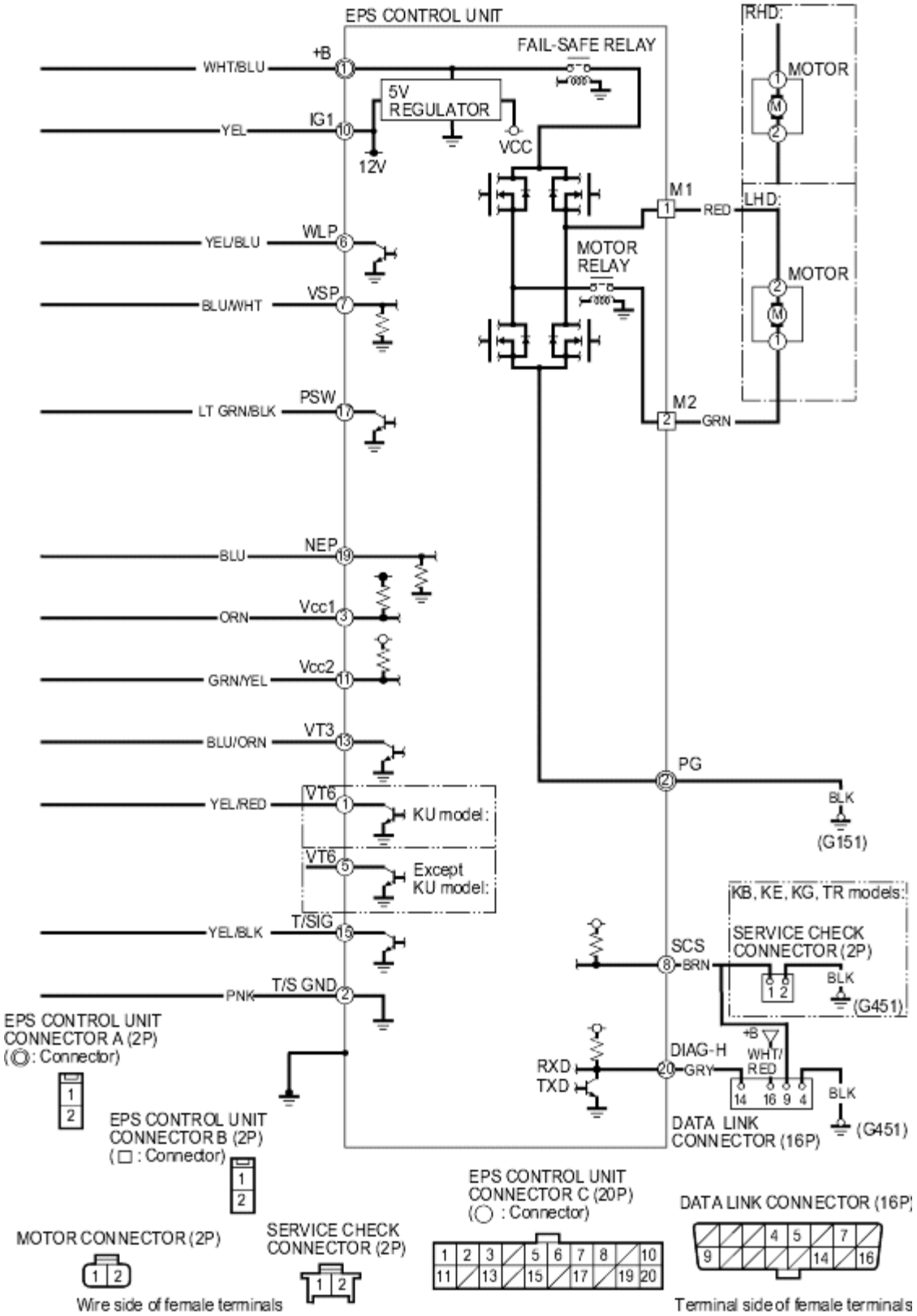
EPS Components

Circuit Diagram



EPS Components

Circuit Diagram (cont'd)



EPS Components
DTC Troubleshooting

DTC 12: Torque Sensor T/SIG

1. 1. Clear the DTC.
   2. Start the engine.
   3. Wait at least 10 seconds.

   Does the EPS indicator come on?

   YES - Go to step 4.

   NO - The system is OK at this time. ■
2. 4. Stop the engine, and verify the DTC.

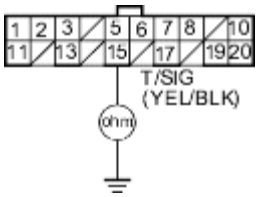
   Is DTC12 indicated?

   YES - Go to step 5.

   NO - Perform the appropriate troubleshooting for the code indicated. ■

1. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit connector C (20P) and the torque sensor 6P connector.

   EPS CONTROL UNIT CONNECTOR C (20P)



   Wire side of female terminals

2. 6. Check for continuity between the EPS control unit connector C (20P) terminal No. 15 and body ground.

   Is there continuity?

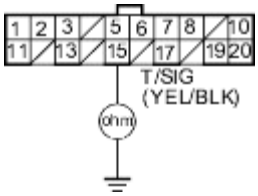
   YES - Repair short to body ground in the wire between the torque sensor and EPS control unit. ■

   NO - Go to step 7.

EPS Components
DTC Troubleshooting (cont'd)

1. 7. Turn the ignition switch ON (II).
2. 8. Measure the voltage between the EPS control unit connector C (20P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there battery voltage?

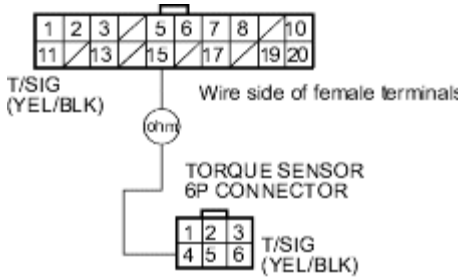
YES - Repair short to power in the + circuit wire between the torque sensor and EPS control unit. ■

NO - Go to step 9.

3. 9. Turn the ignition switch OFF.

1. 10. Check for continuity between the EPS control unit connector C (20P) terminal No. 15 and the torque sensor 6P connector terminal No. 4.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the torque sensor and the EPS control unit. ■

EPS Components
DTC Troubleshooting (cont'd)

1. 11. Substitute a known-good EPS control unit, and connect the all disconnected connectors.
2. 12. Start the engine.

Does the EPS indicator come on?

YES - Go to step 13.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

3. 13. Stop the engine, and verify the DTC.

Is DTC12 indicated?

YES - Check for loose torque sensor connectors. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

DTC 16: Torque Sensor VT3 and VT6

NOTE: Information marked with an asterisk (*) applies to KU model.

1. 1. Clear the DTC.
   2. Start the engine.
   3. Wait at least 10 seconds.

Does the EPS indicator come on?

YES - Go to step 4.

NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

Is DTC16 indicated?

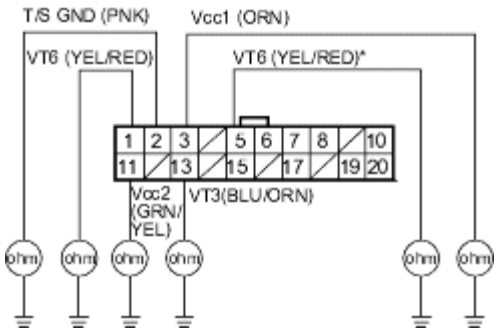
YES - Go to step 5.

NO - Perform the appropriate troubleshooting for the code indicated. ■

3. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit connector C (20P) and the torque sensor 6P connector.
   6. Check for continuity between the appropriate EPS control unit connector C (20P) terminal and body ground (see table).

Terminal name	EPS control unit connector C terminal No.
Vcc1	3
Vcc2	11
VT3	13
VT6	1 (5)*
T/S GND	2

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the appropriate sensor circuit between the torque sensor and EPS control unit. ■

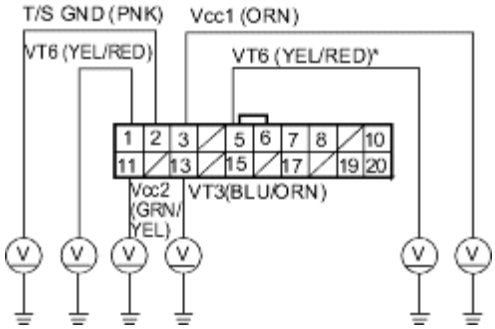
NO - Go to step 7.

EPS Components
DTC Troubleshooting (cont'd)

7. Turn the ignition switch ON (II).
8. Measure the voltage between the appropriate EPS control unit connector C (20P) terminal and body ground (see table).

Terminal name	EPS control unit connector C terminal No.
Vcc1	3
Vcc2	11
VT3	13
VT6	1 (5)*
T/S GND	2

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there battery voltage?

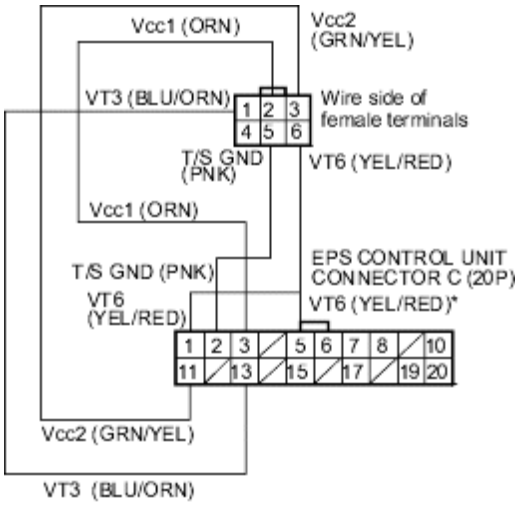
YES - Repair short to power in the + circuit wire between the EPS control unit and torque sensor. ■

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between the appropriate EPS control unit connector C (20P) terminal and the torque sensor terminal (see table).

Terminal name	Torque Sensor Terminal No.	EPS control unit connector C terminal No.
Vcc1	2	3
Vcc2	3	11
VT3	1	13
VT6	6	1 (5)*
T/S GND	5	2

TORQUE SENSOR 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 11.

NO - Repair open in the appropriate torque sensor wire circuit between the EPS control unit and the torque sensor. ■

EPS Components
DTC Troubleshooting (cont'd)

1. 11. Substitute a know-good EPS control unit, and connect the all disconnected connectors.
2. 12. Start the engine.

Does the EPS indicator come on?

YES - Go to step 13.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

3. 13. Stop the engine, and verify the DTC.

Is DTC16 indicated?

YES - Check for loose torque sensor connectors. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated ■

DTC 17: Torque Sensor Vcc1

DTC 18: Torque Sensor Vcc2

1. 1. Clear the DTC.
   2. Start the engine.
   3. Wait at least 10 seconds.

Does the EPS indicator come on?

YES - Go to step 4.

NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

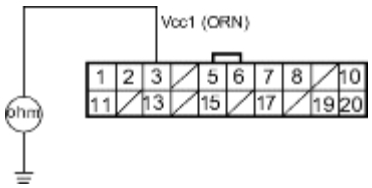
Is DTC17 or DTC18 indicated?

YES - Go to step 5.

NO - The system is OK at this time. ■

3. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit connector C (20P) and torque sensor 6P connector.
   6. Check for continuity between the EPS control unit connector C (20P) terminal No. 3 and body ground.

EPS CONTROL UNIT CONNECTOR C (20)



Wire side of female terminals

Is there continuity?

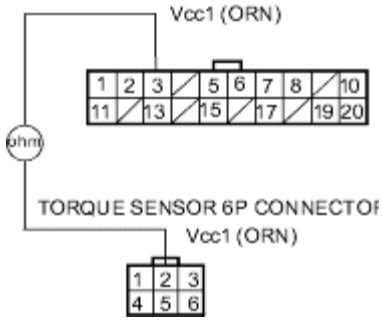
YES - Repair short to body ground in the wire between the torque sensor and EPS control unit. ■

NO - Go to step 7.

EPS Components
DTC Troubleshooting (cont'd)

1. 7. Check for continuity between the EPS control unit connector C (20P) terminal No. 3 and the torque sensor 6P connector terminal No. 2.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

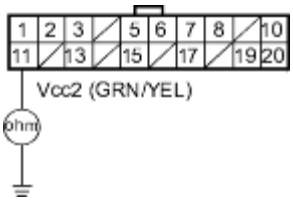
Is there continuity?

YES - Go to step 8.

NO - Repair open in the wire between the torque sensor and EPS control unit. ■

2. 8. Check for continuity between the EPS control unit connector C (20P) terminal No. 11 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

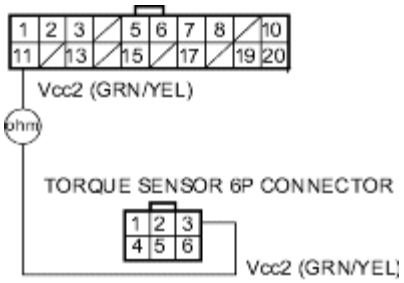
Is there continuity?

YES - Repair short to body ground in the wire between the torque sensor and EPS control unit. ■

NO - Go to step 9.

1. 9. Check for continuity between the EPS control unit connector C (20P) terminal No. 11 and the torque sensor 6P connector terminal No. 3.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the torque sensor and EPS control unit. ■

2. 10. Substitute a known-good EPS control unit, and connect the all disconnected connectors.
11. Start the engine.

Does the EPS indicator come on?

YES - Go to step 12.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

3. 12. Stop the engine, and verify the DTC.

Is DTC17 or DTC18 indicated?

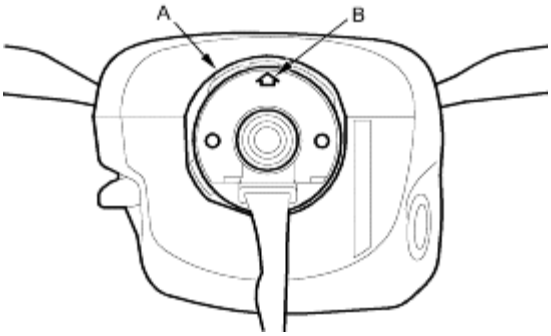
YES - Check for loose torque sensor connectors. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

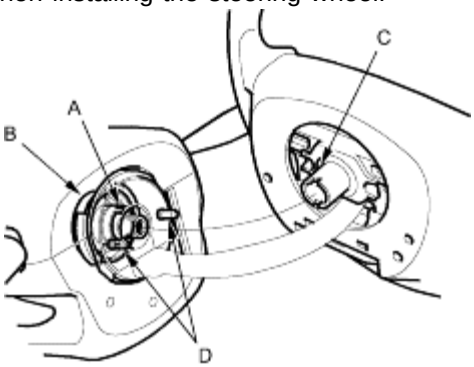
Steering

Steering Wheel Installation

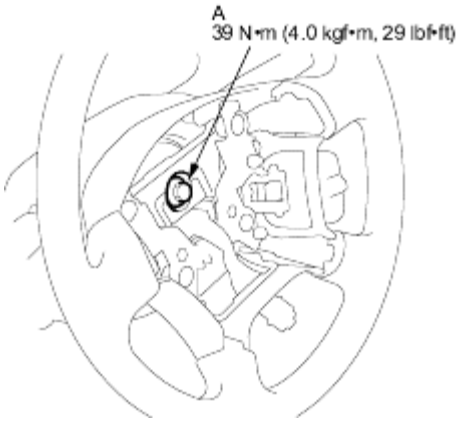
1. 1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then centre the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counter-clockwise about 2 and a half turns. The arrow mark (B) on the cable reel label point should point straight up.



2. 2. Position the 2 tabs (A) of the turn signal cancelling sleeve (B) as shown, and install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the cancelling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



1. 3. Install the steering wheel bolt (A) or nut and tighten it.



2. 4. Connect the horn switch connector.
5. Install the driver's airbag, and confirm that the system is operating properly (see page 23-165).
6. Check the horn and turn signal cancelling for proper operation.

EPS Components
DTC Troubleshooting (cont'd)

DTC 22: Vehicle Speed Sensor Signal

DTC 23: Engine Speed Signal

NOTE:

- Information marked with an asterisk (*) applies to CVT model.
- If the MIL indicator is ON, troubleshoot the PGM-FI system first.
- When the engine is running at 2,000 rpm (min^{-1}) or above and the vehicle speed is 1 km/h (0. 62 mph) or below for 6 minutes the EPS indicator comes on.
- When the vehicle speed is 10 km/h (6.2 mph) or above and the engine is running at 280 rpm (min^{-1}) or below for 3 seconds, the EPS indicator comes on.

1. 1. Start the engine and check the tachometer.

Is the tachometer working correctly?

YES - Go to step 2.

NO - Go to step 10.

2. 2. Test-drive the vehicle above 15 km/h (9.3 mph).

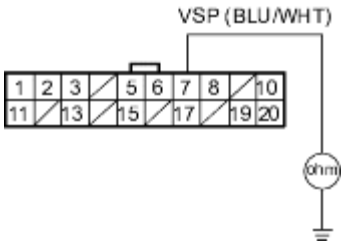
Is the speedometer working correctly?

YES - Go to step 3.

NO - Perform the speedometer system troubleshooting (see page 22-94). ■

3. 3. Turn the ignition switch OFF.
4. Disconnect the VSS 3P connector (ECM/PCM connector E, 31P)* and EPS control unit connector C (20P).
5. Check for continuity between the EPS control unit connector C (20P) terminal No. 7 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

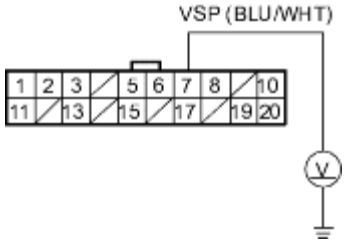
Is there continuity?

YES - Repair short to body ground in the wire between the VSS (ECM/PCM)* and EPS control unit. ■

NO - Go to step 6.

1. 6. Connect the VSS 3P connector (ECM/PCM connector E, 31P)*.
2. 7. Block the rear wheels and raise the vehicle, and make sure it is securely supported.
8. Turn the ignition switch ON (II).
9. Block the right front wheel, and slowly rotate the left front wheel, and measure the voltage between the EPS control unit connector C (20P) terminal No. 7 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

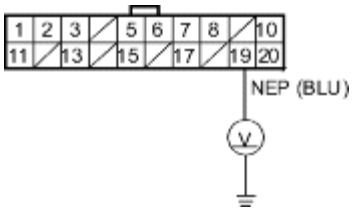
Does the voltage pulse 0 V and 5 V?

YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO - Repair open in the wire between the EPS control unit and VSS (ECM/PCM)* or faulty the VSS (ECM/PCM)*. ■

3. 10. Turn the ignition switch OFF, and disconnect the EPS control unit connector C (20P).
11. Start the engine, and let it idle.
12. Measure the voltage between the EPS control unit connector C (20P) terminal No. 19 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there about 6 V at idle?

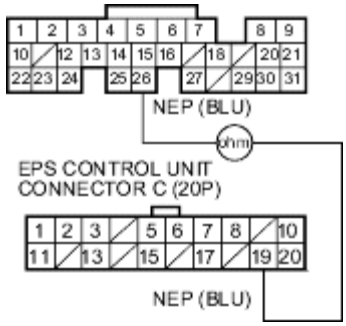
YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO - Go to step 13.

EPS Components
DTC Troubleshooting (cont'd)

1. 13. Turn the ignition switch OFF.
2. 14. Disconnect the ECM/PCM connector E (31P) connector.
   15. Check for continuity between the EPS control unit connector C (20P) terminal No. 19 and the ECM/PCM connector E (31P) terminal No. 26.

ECM/PCM CONNECTOR E (31P)



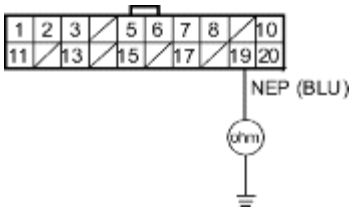
Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the EPS control unit and ECM/PCM. ■

3. 16. Disconnect the gauge assembly 22P connector.
   17. Check for continuity between the EPS control unit connector C (20P) terminal No. 19 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the EPS control unit and the ECM/PCM. ■

NO - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

DTC 37: EPS Control Unit Internal Circuit (Input Circuit For Motor Voltage)

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

Does the EPS indicator come on?

YES - Go to step 4.

NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

Is DTC 37 indicated?

YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 41: Voltage for Motor

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

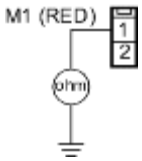
   NO - The system is OK at this time. ■
2. 4. Stop the engine and verify the DTC.

   Is DTC 41 indicated?

   YES - Go to step 5.

   NO - Perform the appropriate troubleshooting for the code indicated. ■
3. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit connector B (2P) and motor 2P connector.
   6. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

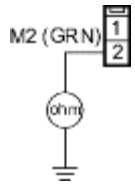
Is there continuity?

YES - Repair short to body ground in the RED wire between the EPS control unit and motor. ■

NO - Go to step 7.

1. 7. Check for continuity between the EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

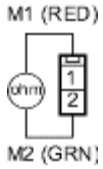
Is there continuity?

YES - Repair short to body ground in the GRN wire between the EPS control unit and motor. ■

NO - Go to step 8.

2. 8. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and No. 2.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

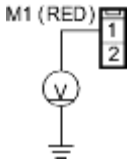
YES - Repair short between the RED and GRN wires in the motor circuit between the EPS control unit and motor. ■

NO - Go to step 9.

EPS Components
DTC Troubleshooting (cont'd)

1. 9. Turn the ignition switch ON (II), and measure the voltage between the EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

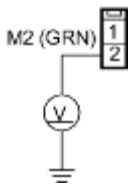
Is there battery voltage?

YES - Repair short to power in the + circuit wire between the EPS control unit and motor. ■

NO - Go to step 10.

2. 10. Measure the voltage between the EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the - circuit wire between the EPS control unit and motor. ■

NO - Go to step 11.

1. 11. Turn the ignition switch is OFF.
2. 12. Substitute a known-good EPS control unit, and connect the all disconnected connectors.
13. Start the engine.

Does the EPS indicator come on?

YES - Go to step 14.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

3. 14. Stop the engine, and verify the DTC.

Is DTC 41 indicated?

YES - Check for loose EPS control unit connectors and motor connector. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 42, 45: Motor Driven Current

NOTE: Information marked with an asterisk (*) applies to RHD model.

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

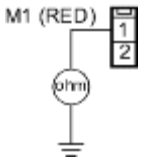
   NO - The system is OK at this time. ■
2. 4. Stop the engine, and verify the DTC.

   Is DTC 42 or 45 indicated?

   YES - Go to step 5.

   NO - Perform the appropriate troubleshooting for the code indicated. ■
3. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit B connector (2P) and motor 2P connector.
   6. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

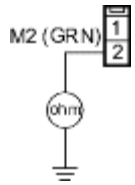
Is there continuity?

YES - Repair short to body ground in the RED wire between the EPS control unit and motor. ■

NO - Go to step 7.

1. 7. Check for continuity between the EPS control unit connector B (2P) terminal No. 2 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

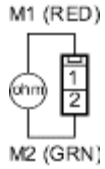
Is there continuity?

YES - Repair short to body ground in the GRN wire between the EPS control unit and motor. ■

NO - Go to step 8.

2. 8. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and No. 2.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

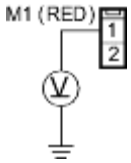
YES - Repair short between the RED and GRN wires in the motor circuit between the EPS control unit and motor. ■

NO - Go to step 9.

EPS Components
DTC Troubleshooting (cont'd)

1. 9. Turn the ignition switch ON (II), and measure the voltage between the EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

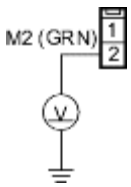
Is there battery voltage?

YES - Repair short to power in the + circuit wire between the EPS control unit and motor. ■

NO - Go to step 10.

2. 10. Measure the voltage between the EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there battery voltage?

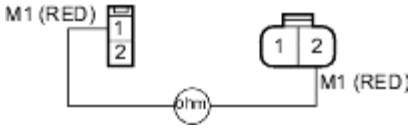
YES - Repair short to power in the + circuit wire between the EPS control unit and motor. ■

NO - Go to step 11.

1. 11. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and the motor 2P connector terminal No. 2 (No. 1)*.

LHD:

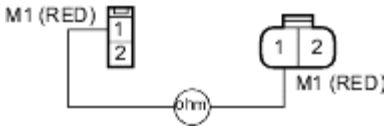
EPS CONTROL UNIT CONNECTOR B (2P)	MOTOR CONNECTOR (2P)



Wire side of female terminals

RHD*:

EPS CONTROL UNIT CONNECTOR B (2P)	MOTOR CONNECTOR (2P)



Wire side of female terminals

Is there continuity?

YES - Go to step 12.

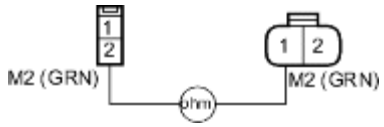
NO - Repair open in the RED wire between the EPS control unit and motor. ■

EPS Components
DTC Troubleshooting (cont'd)

1. 12. Check for continuity between the EPS control unit connector B (2P) terminal No. 2 and the motor 2P connector terminal No. 1 (No. 2)*.

LHD:

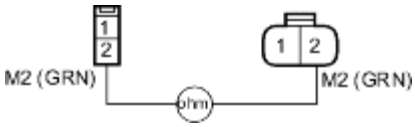
EPS CONTROL UNIT CONNECTOR B (2P)	MOTOR CONNECTOR (2P)



Wire side of female terminals

RHD*:

EPS CONTROL UNIT CONNECTOR B (2P)	MOTOR CONNECTOR (2P)



Wire side of female terminals

Is there continuity?

YES - Go to step 13.

NO - Repair open in the GRN wire between the EPS control unit and motor. ■

2. 13. Substitute a known-good EPS control unit, and connect the all disconnected connectors.
14. Start the engine.

Does the EPS indicator come on?

YES - Go to step 15.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

1. 15. Stop the engine, and verify the DTC.

Is DTC 42 or 45 indicated?

YES - Check for loose EPS control unit connectors and motor connector. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 43: Motor Driven Current is Excessively High

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

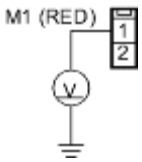
   NO - The system is OK at this time. ■
2. 4. Stop the engine, and verify the DTC.

   Is DTC 43 indicated?

   YES - Go to step 5.

   NO - Perform the appropriate troubleshooting for the code indicated. ■
3. 5. Make sure the ignition switch is OFF, then disconnect the EPS control unit connector B (2P) and the motor 2P connector.
   6. Turn the ignition switch ON (II).
   7. Measure the voltage between the EPS control unit connector B (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

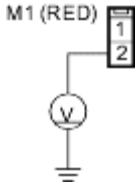
Is there battery voltage?

YES - Repair short to power in the + circuit wire between the EPS control unit and motor. ■

NO - Go to step 8.

1. 8. Measure the voltage between the EPS control unit connector B (2P) terminal No. 2 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

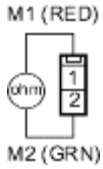
Is there battery voltage?

YES - Repair short to power in the - circuit wire between the EPS control unit and motor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch is OFF.
   10. Check for continuity between the EPS control unit connector B (2P) terminal No. 1 and No. 2.

   EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

YES - Repair short between the GRN and RED wires in the motor circuit between the EPS control unit and motor. ■

NO - Go to step 11.

EPS Components
DTC Troubleshooting (cont'd)

1. 11. Substitute a known-good EPS control unit, and connect the all disconnected connectors.
2. 12. Start the engine.

Does the EPS indicator come on?

YES - Go to step 13.

NO - Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest. ■

3. 13. Stop the engine, and verify the DTC.

Is DTC 43 indicated?

YES - Check for loose EPS control unit connectors and motor connector. If necessary, substitute a known-good steering gearbox and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

DTC 47: EPS Control Unit Internal Circuit (Power Relay)

1. 1. Clear the DTC.
   2. Start the engine.

Does the EPS indicator come on?

YES - Go to step 3.

NO - The system is OK at this time. ■

2. 3. Stop the engine, and verify the DTC.

Is DTC 47 indicated?

YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 50: EPS Control Unit Internal Circuit(CPU or Microcomputer)

1. 1. Clear the DTC.
   2. Start the engine.

   Does the EPS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. ■

2. 3. Stop the engine, and verify the DTC.

   Is DTC 50 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

DTC 51: EPS Control Unit Internal Circuit (E2PROM)

1. 1. Clear the DTC.
   2. Start the engine.

   Does the EPS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. ■

2. 3. Stop the engine, and verify the DTC.

   Is DTC 51 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

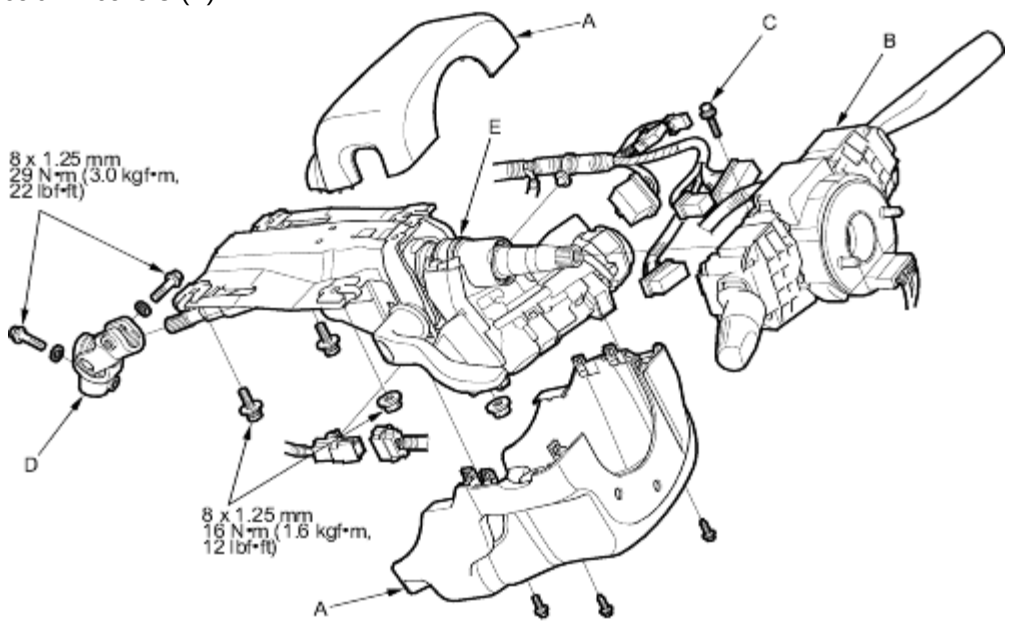
Steering

Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-23), precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

Removal

1. Disconnect the negative cable form the battery.
2. Remove the driver's airbag and the steering wheel (see page 17-6).
3. Remove the column covers (A).



4. Remove the combination switch assembly (B) from the steering column shaft by loosening a screw (C) on the top of the combination switch.
5. Disconnect the 2P, 6P, and 7P connectors from the ignition switch.
6. Disconnect the steering joint (D), and remove it from the column shaft.
7. Remove the steering column (E) by removing the attaching nuts and bolts.

EPS Components
DTC Troubleshooting (cont'd)

DTC 62: EPS Control Unit Internal Circuit (Fail-safe Relay Stuck ON)

1. 1. Clear the DTC.
   2. Start the engine.

   Does the EPS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. ■

2. 3. Stop the engine, and verify the DTC.

   Is DTC 62 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

DTC 64: Battery Voltage is Excessively Low (Fail-safe Relay Contact Failure and Motor Voltage Fall Off)

1. 1. Clear the DTC.
   2. Start the engine.

   Does the EPS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. ■

2. 3. Stop the engine, and verify the DTC.

   Is DTC 64 indicated?

   YES - Go to step 4.

   NO - Perform the appropriate troubleshooting for the code indicated.

3. 4. Check the No. 18 (60A) fuse in the under-hood fuse/relay box, and reinstall the fuse if it is OK.

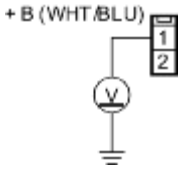
   Is the fuse OK?

   YES - Go to step 5.

   NO - Replace the fuse and recheck. ■

4. 5. Disconnect the EPS control unit connector A (2P).
   6. Measure the voltage between the EPS control unit connector A (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR A (2P)

   Wire side of female terminals

   Is there battery voltage?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck.

   NO - Repair open in the WHT/BLU wire between the No. 18 (60A) fuse and EPS control unit. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 66, 68: EPS Control Unit Internal Circuit

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several time, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

   NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

   Is DTC 66 or 68 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

DTC 67: Torque Sensor I/F Circuit

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several time, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

   NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

   Is DTC 67 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components
DTC Troubleshooting (cont'd)

DTC 69: EPS Control Unit Internal Circuit

1. 1. Clear the DTC.
   2. Start the engine.
   3. Turn the steering wheel from lock-to-lock several time, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES - Go to step 4.

   NO - The system is OK at this time. ■

2. 4. Stop the engine, and verify the DTC.

   Is DTC 69 indicated?

   YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO - Perform the appropriate troubleshooting for the code indicated. ■

EPS Components

EPS Indicator Circuit Troubleshooting

NOTE: Information marked with an asterisk (*) applies to 5 door model.

1. 1. Turn the ignition switch ON (II), start the engine, and watch the EPS indicator.

   Does the EPS indicator come on?

   YES - If the EPS indicator comes on and goes off, it's OK. If the EPS indicator stays on or blinks, go to step 9. ■

   NO - Go to step 2.

2. 2. Turn the ignition switch OFF, then ON (II) again, and watch the brake system indicator.

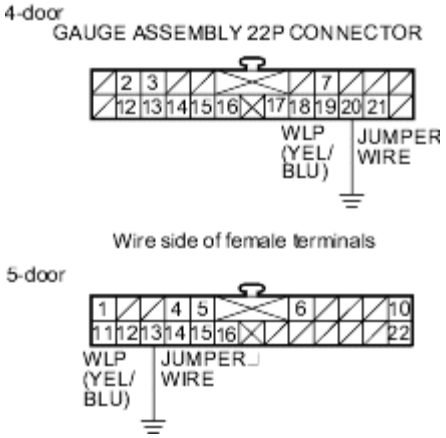
   Does the brake system indicator come on?

   YES - Go to step 3.

   NO - Repair open in the indicator power source circuit. ■

   - Blown No. 10 (7.5A) fuse.
   - Open in the wire between the No. 10 (7.5A) fuse and gauge assembly.
   - Open circuit inside the under-dash fuse/relay box.

3. 3. Turn the ignition switch OFF.
   4. Connect a jumper wire between the gauge assembly 22P connector terminal No. 20 (No. 13)* and body ground, then turn the ignition switch ON (II).



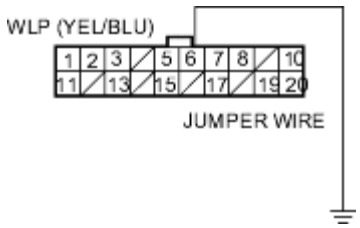
   Does EPS indicator come on?

   YES - Go to step 5.

   NO - Inspect the EPS indicator bulb, if the bulb is OK, replace the bulb circuit board in the gauge assembly. ■

1. 5. Turn the ignition switch OFF.
2. 6. Disconnect the EPS control unit connector C (20P).
   7. Turn the ignition switch ON (II).
   8. Connect the EPS control unit connector C (20P) terminal No. 6 to body ground with a jumper wire.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Does EPS indicator come on?

YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and retest. ■

NO - Repair open in the wire between the gauge assembly and EPS control unit. ■

EPS Components

EPS Indicator Circuit Troubleshooting (cont'd)

1. 9. Turn the ignition switch OFF.
2. 10. Disconnect the EPS control unit connector C (20P).
   11. Turn the ignition switch ON (II).

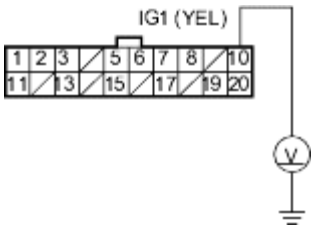
Does EPS indicator come on?

YES - Repair short to ground in the YEL/BLU wire between the gauge assembly and the EPS control unit, or replace the bulb circuit board in the gauge assembly. ■

NO - Go to step 12.

3. 12. Measure the voltage between the EPS control unit connector C (20P) terminal No. 10 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

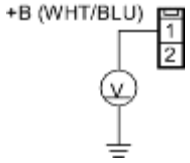
Is there battery voltage?

YES - Go to step 13.

NO - Repair open in the wire between the EPS control unit connector C (20P) and No. 10 (7.5A) fuse. ■

1. 13. Measure the voltage between the EPS control unit connector A (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

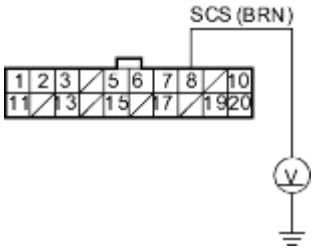
Is there battery voltage?

YES - Go to step 14.

NO - Check for a blown No. 18 (60A) fuse in the under-hood fuse/relay box or open/short in the WHT/BLU wire between the under-hood fuse/relay box and the EPS control unit. ■

2. 14. Turn the ignition switch OFF.
   15. Reconnect the EPS control unit connector A (2P).
   16. Turn the ignition switch ON (II).
   17. Measure the voltage between the EPS control unit connector C (20P) terminal No. 8 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there battery voltage?

YES - Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and retest. ■

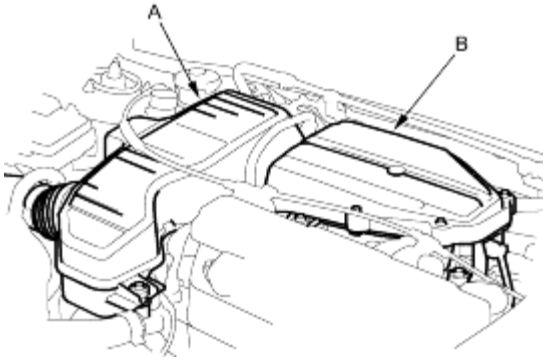
NO - Repair short to ground in the BRN wire between the data link connector (KB, KE, KG, TR models: service check connector) and the EPS control unit. ■

EPS Components

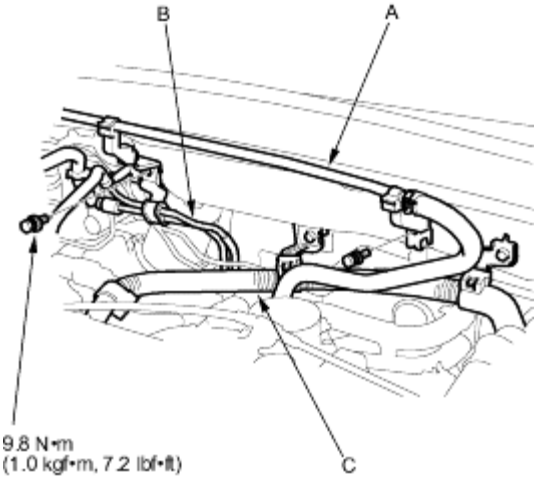
Motor Removal/Installation

NOTE: RHD type is shown, LHD type is symmetrical.

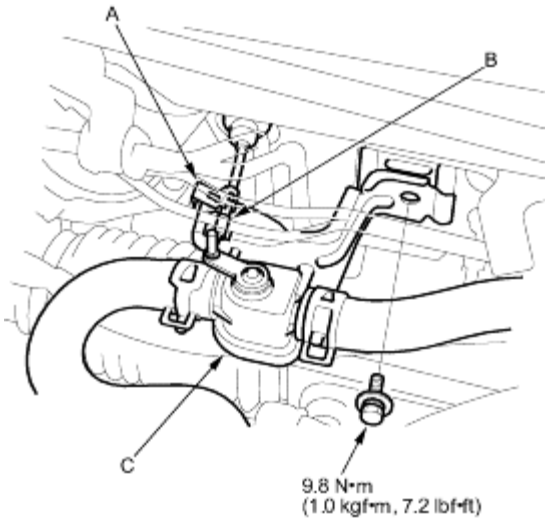
1. Disconnect the negative cable from the battery.
2. Remove the air cleaner (A) and resonator (B).



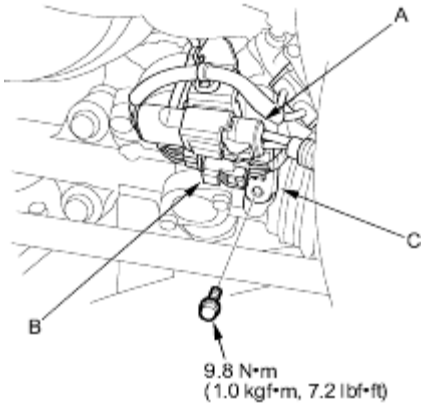
3. For RHD models only: under the hood, remove the clamps of the brake booster vacuum line (A) and brake lines (B) on the bulkhead.



4. Remove the engine wire harness (C) from the harness bracket.
5. Open the heater valve cable clamp (A), and disconnect the heater valve cable (B). Remove the heater valve (C) from the bulkhead and move it aside.



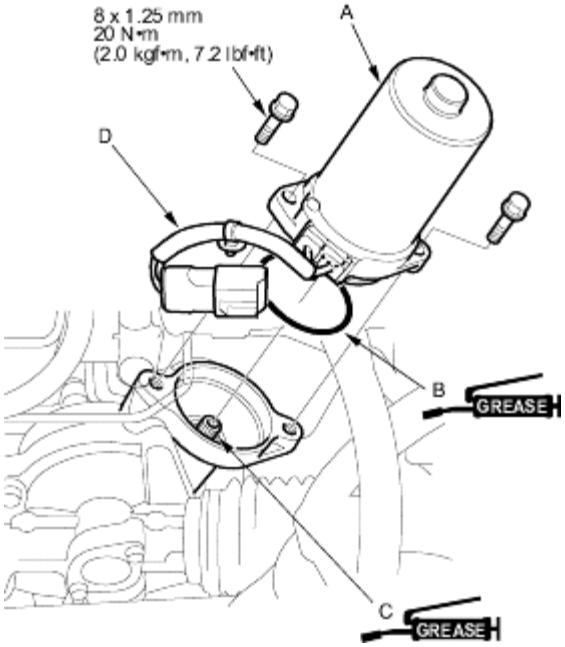
6. Disconnect the motor 2P connector (A) and EPS wire harness 6P connector (B) by removing the connector stay (C) on the gearbox housing. Remove the motor 2P connector from the connector stay.



EPS Components

Motor Removal/Installation (cont'd)

7. Remove the motor (A) from the gearbox housing.
8. Remove the O-ring and discard it.
9. Clean the mating surface of the motor and gearbox.



10. Apply a thin coat of silicone grease to the new O-ring (B), and carefully fit it on the motor.
11. Apply steering gear grease around the worm shaft (C).
12. Install the motor on the gearbox by engaging the motor shaft and worm shaft. Note the motor installation position (direction of motor wires (D)).
13. Install the removed parts in the reverse order of removal, and note these item:
    - Make sure the motor 2P connector and EPS wire harness 6P connector properly connected.
    - Make sure the motor and EPS wires are not caught or pinched by any parts.
14. After installation, start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

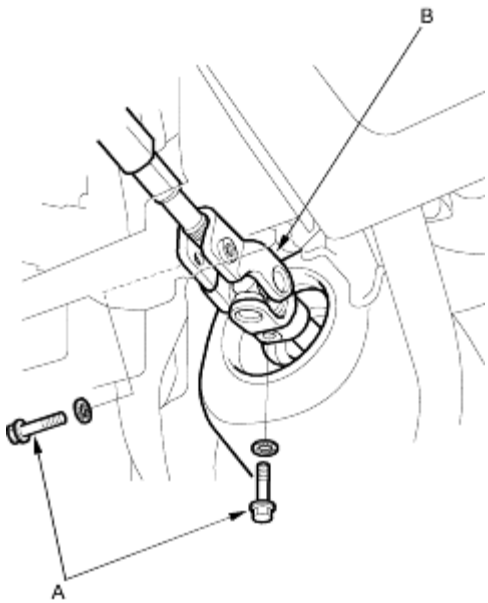
Special Tools Required

Ball joint remover, 28 mm, 07MAC-SL00200

Note these items during removal:

- RHD type is shown, LHD type is symmetrical.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

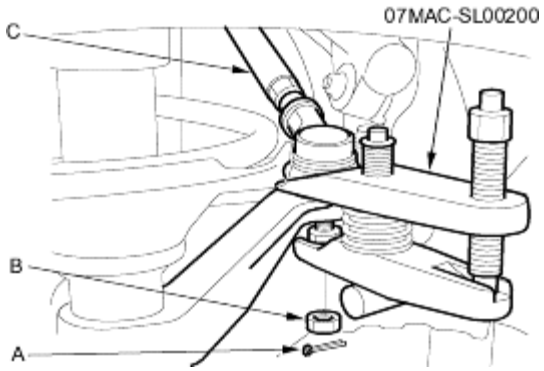
1. Remove the motor on the steering gearbox (see page 17-95).
2. Raise the front of vehicle, and make sure it is securely supported.
3. Remove the front wheels.
4. Remove the driver's airbag and the steering wheel (see page 17-6).
5. Remove the driver's dashboard lower covers.
6. Remove the steering joint bolts (A), disconnect the steering joint by moving the steering joint (B) toward the column.



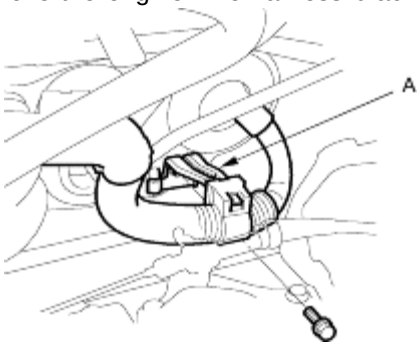
EPS Components

Steering Gearbox Removal (cont'd)

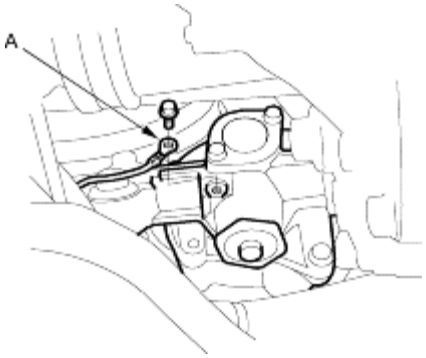
7. Remove the cotter pin (A) from the 10 mm nut (B), and loosen the nut.



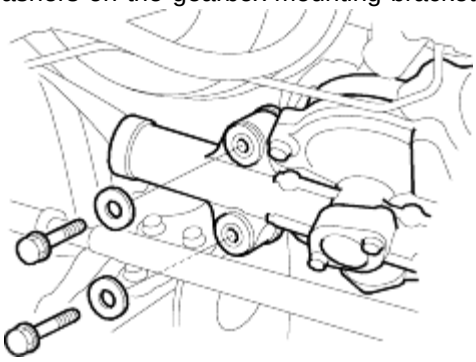
8. Separate the tie-rod ball joint and damper steering arm using the special tool.
9. Grasp the passenger's side tie-rod (C) and pull the rack all the way to the passenger's side (RHD: left direction, LHD: right direction), then remove the driver's side tie-rod end.
10. For RHD vehicle's with CVT; disconnect the shift cable from the transmission (see step 11 on page 14-325). For RHD vehicle's with M/T; remove the clutch reservoir and reservoir bracket. Do not disconnect the clutch hose from reservoir (see page 12-6). For LHD vehicle's with M/T; disconnect the shift cable from the transmission (see step 8 on page 13-5).
11. Remove the engine wire harness bracket (A).



12. Under the steering gearbox, remove the ground cable terminal (A).



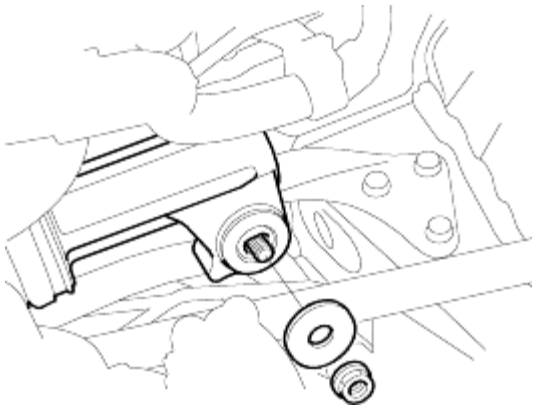
13. Remove the steering gearbox attaching bolts and washers on the gearbox mounting bracket.



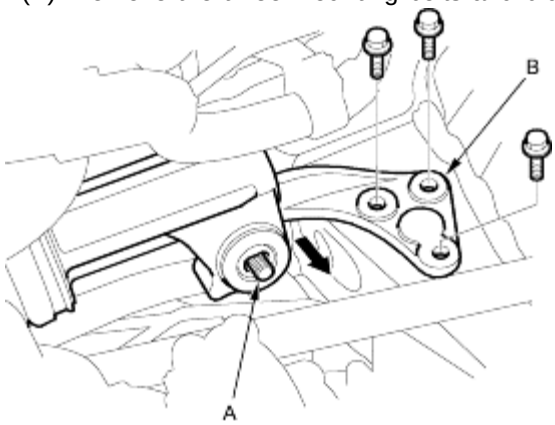
EPS Components

Steering Gearbox Removal (cont'd)

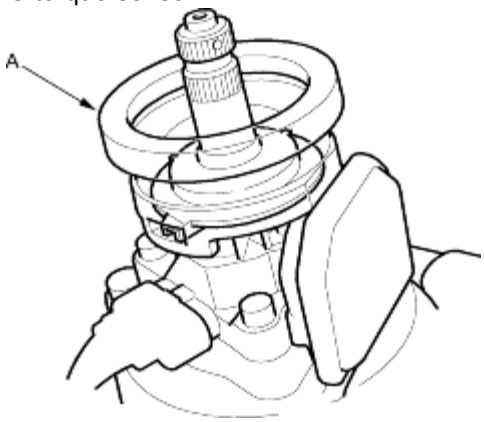
1. 14. Remove the steering gearbox attaching nut and washer on the gearbox mounting bracket.



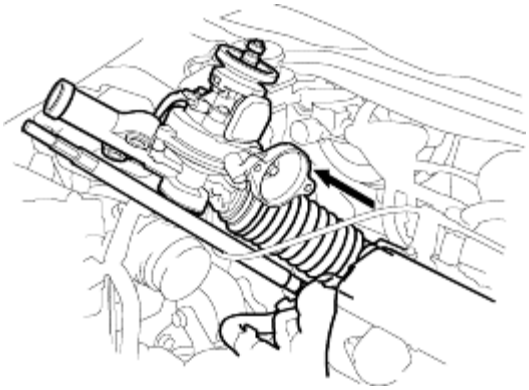
2. 15. Pull on the steering gearbox to free it from the mounting stud (A) on the gearbox mounting bracket (B). Remove the three mounting bolts and bracket.



1. 16. Lower the steering gearbox, and rotate it so the pinion shaft points upward.
2. 17. Remove the pinion shaft grommet (A) from the top of the torque sensor.



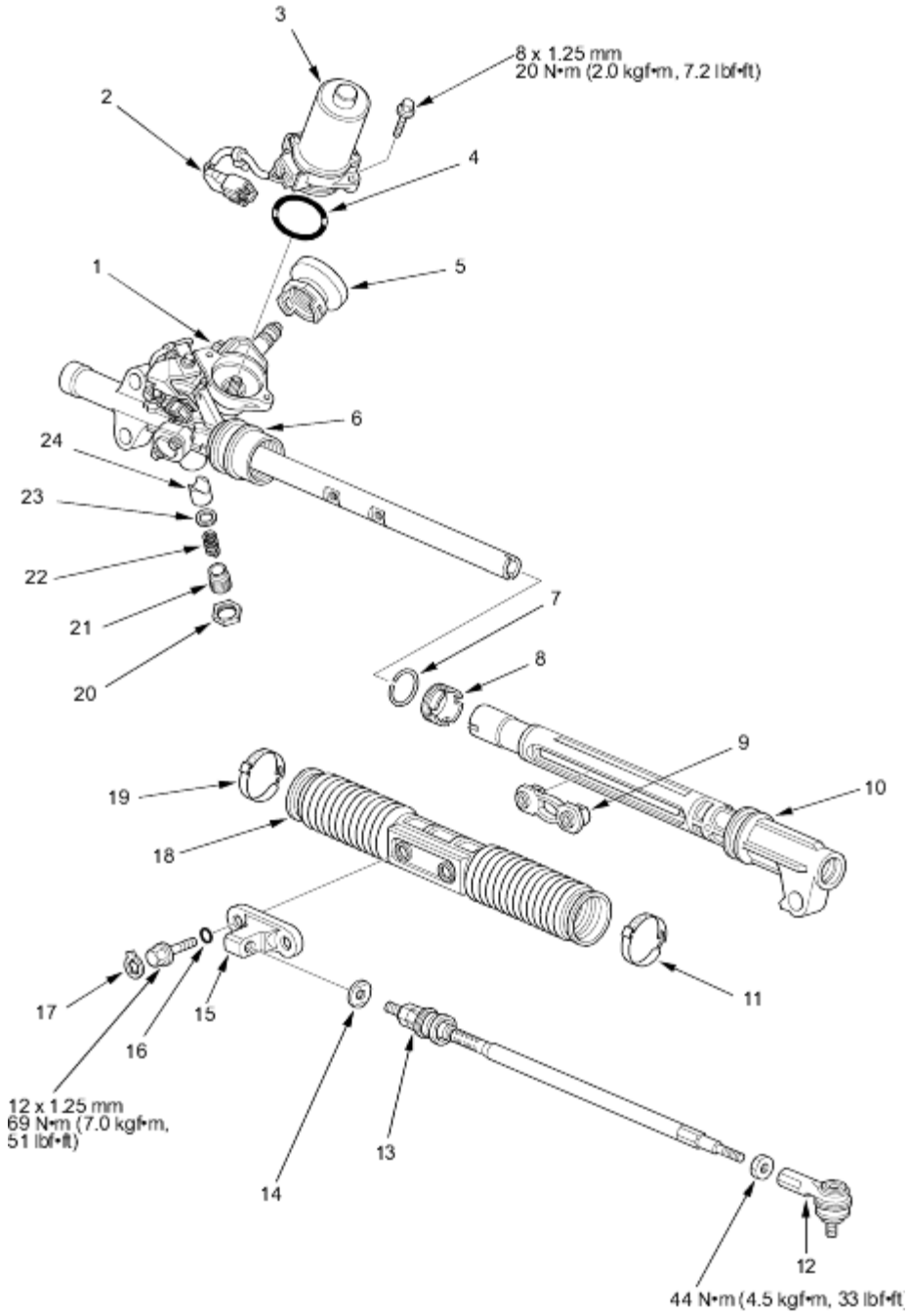
3. 18. Carefully move the steering gearbox to the wheel well opening on the passenger's side. Raise the driver's side (pinion side) of the steering gearbox, and remove it.



EPS Components

Steering Gearbox Overhaul

Exploded View



1. TORQUE SENSOR
2. MOTOR CONNECTOR
3. MOTOR
4. O-RINGS
   Replace.
5. PINION SHAFT GROMMET
6. GEARBOX HOUSING
7. STOP RING
   Replace.
8. LOCK SCREW
   162 Nm (16.5 kgf/m, 119 lbf/ft)
   Replace.
9. SLIDER GUIDE
10. RACK HOUSING
11. BOOT BAND
    Replace.
12. TIE-ROD END
13. TIE ROD
    54 Nm (5.5 kgf/m, 40 lbf/ft)
14. LOCK WASHER
    Replace.
15. BRACKET
16. O-RINGS
    Replace.
17. STOP PLATE
    Replace.
18. BOOT
19. BOOT BAND
    Replace.
20. LOCKNUT
21. RACK GUIDE SCREW
22. SPRING
23. DISC WASHER
24. RACK GUIDE

General Information

Chassis and Engine Numbers (cont'd)

4-Door KF, KN, KT Models

Vehicle Identification Number

JHM ES1 5 9 0 1 S 200001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD.
HONDA Passenger vehicle
b. Line, Body and Engine Type
ES1: CIVIC//D17A5 (KN model)
ES8: CIVIC/D15Y3
c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual
6: 4-door Sedan/4-speed Automatic
d. Vehicle Grade (Series)
3: LXI (KF, KT models)
4: 150I (KN model)
7: EXI (KT model)
9: 170I (KN model)
e. Fixed Code
f. Model Year
1: 2001
g. Factory Code
S: Suzuka Factory in Japan (Mie)
h. Serial Number

Engine Number

D17A5 - 1000001

a b

a. Engine Type
D15Y3: 1.5 l SOHC Sequential Multiport Fuel-injected engine without three way catalytic converter
D17A5: 1.7 l SOHC VTEC Sequential Multiport Fuel-injected engine without three way catalytic converter
b. Serial Number

Transmission Number

BMXA - 5000001

a b

a. Transmission Type
SLXA: 4-speed Automatic
SLW: 5-speed Manual
b. Serial Number

Suspension

Front and Rear Suspension

Special Tools	18-2
Component Location Index	18-3
Wheel Alignment	18-4
Wheel Bearing End Play Inspection	18-8
Wheel Runout Inspection	18-9
Ball Joint Removal	18-9
Damper Disposal	18-10

Front Suspension

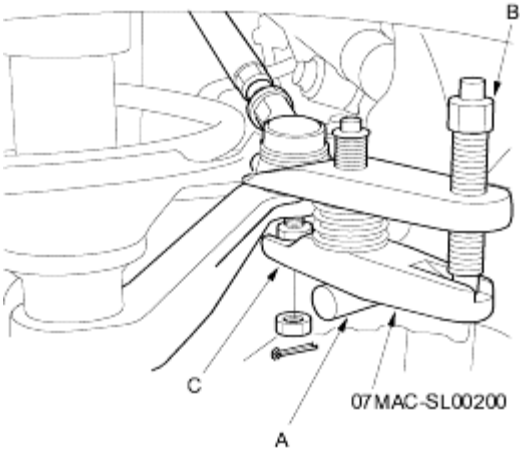
Knuckle/Hub/Wheel Bearing Replacement	18-11
Ball Joint Boot Replacement	18-16
Stabiliser Bar Replacement	18-17
Stabiliser Link Replacement	18-18
Lower Arm Replacement	18-19
Damper/Spring Replacement	18-20

Rear Suspension

Hub Bearing Unit Replacement-Drum Brake	18-24
Hub Bearing Unit Replacement-Disc Brake	18-26
Knuckle Replacement	18-28
Stabiliser Bar Replacement	18-32
Stabiliser Link Replacement	18-33
Upper Arm Replacement	18-34
Trailing Arm Replacement	18-35
Damper/Spring Replacement	18-36

Front and Rear Suspension
Ball Joint Removal (cont'd)

1. 3. Install the special tool as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the pressure bolt (B).



2. 4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt (A) is in the position shown to allow the jaw (C) to pivot.
   5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the steering arm or knuckle. If necessary, apply penetrating type lubricant to loosen the ball joint pin.
   6. Remove the tool, then remove the nut from the end of the ball joint pin and pull the ball joint out of the steering arm or knuckle. Inspect the ball joint boot and replace it if damaged.

⚠ WARNING

The dampers contain nitrogen gas and oil under pressure.

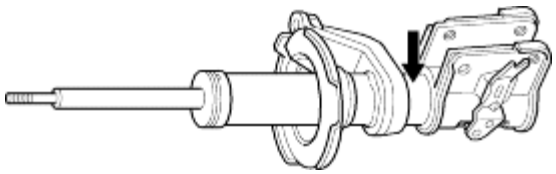
The pressure must be relieved before disposal to prevent explosion and possible injury when scrapping.

WARNING

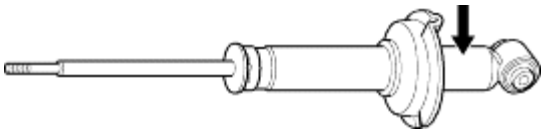
Always wear eye protection to avoid getting metal shavings in your eyes when the damper pressure is relieved.

Place the damper on a level surface with its shaft extended and drill a hole of 2 – 3 mm (0.078 – 0.118 in) diameter in the body to release the gas.

Front damper:



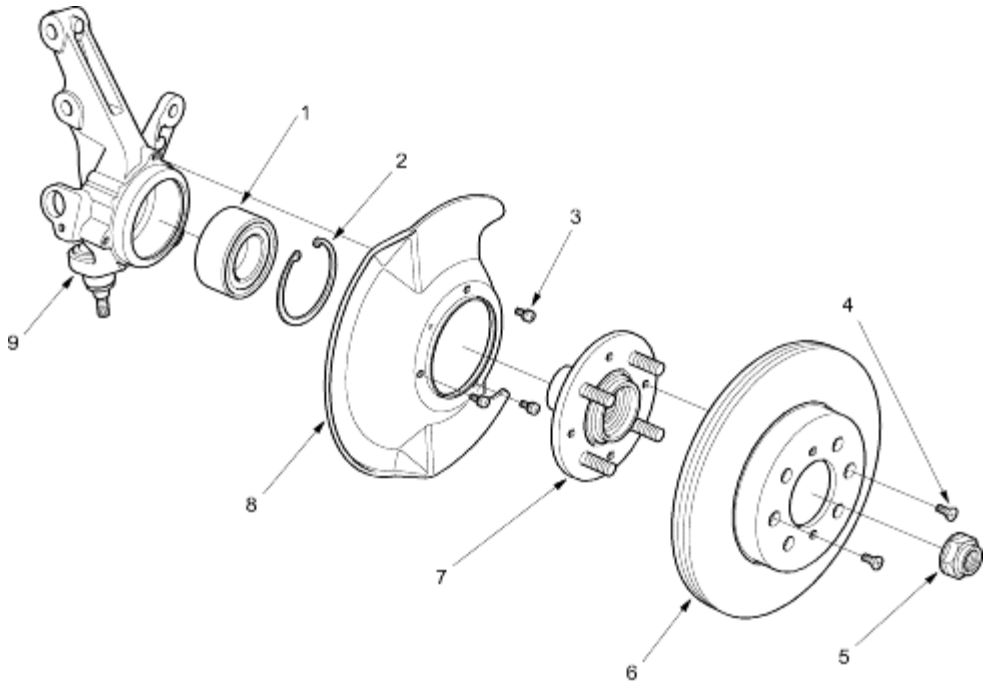
Rear damper:



Front Suspension

Knuckle/Hub/Wheel Bearing Replacement

Exploded View



1. WHEEL BEARING, Replace.
2. SNAP RING
3. 6 mm FLAT WASHER, Replace.
4. FLAT SCREW, 6 x 1.0 mm, 9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
5. SPINDLE NUT, 22 x 1.5 mm, 181Nm (18.5kgf/m, 134 lbf/ft), Replace.
6. BRAKE DISC
7. HUB
   Check for deformation, damage and cracks.
8. SPLASH GUARD
   Check for corrosion, deformation and damage. Replace if rusted.
9. KNUCKLE
   Check for deformation and damage.

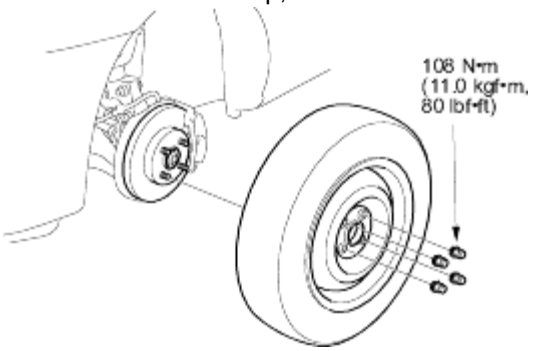
Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

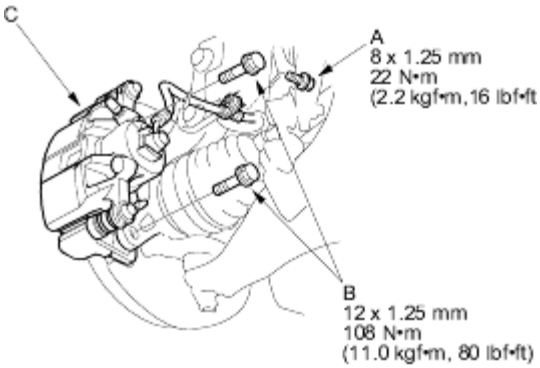
Special Tools Required

- Hub dis/assembly tool, 07GAF-SE00100
- Ball joint remover, 28 mm, 07MAC-SL00200
- Attachment 62 x 68 mm, 07746-0010500
- Driver, 07749-0010000
- Support base, 07965,-SD90100

1. 1. Raise the front of the vehicle and make sure it is securely supported.
   2. Remove the wheel cap, wheel nuts and front wheel.

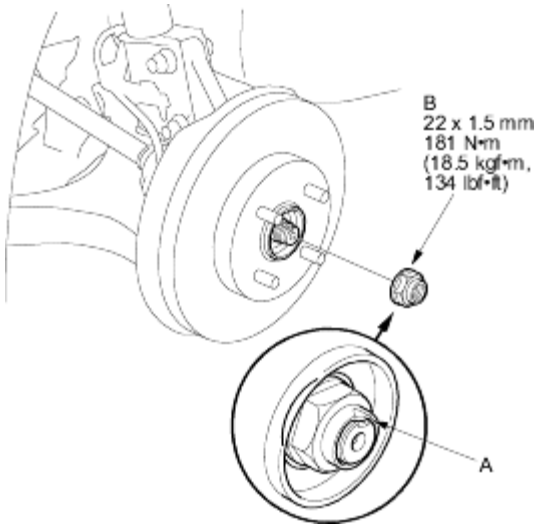


2. 3. Remove the brake hose bracket mounting bolt (A).

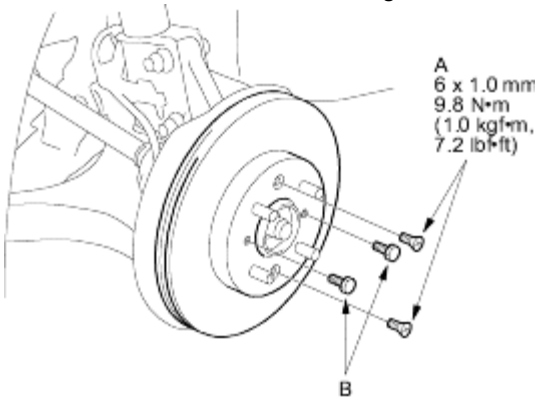


3. 4. Remove the calliper bracket mounting bolts (B) and remove the calliper assembly (C) from the knuckle. To prevent damage to the calliper assembly or brake hose, use a short piece of wire to hang the calliper assembly from the undercarriage. Do not twist the brake hose with force.

1. 5. Raise the stake (A) and remove the spindle nut (B).



2. 6. Remove the brake disc retaining flat screws (A).

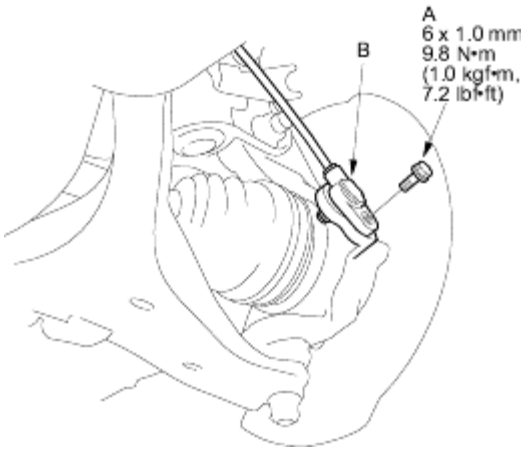


3. 7. Screw two 8 x 1.25 mm bolts (B) into the disc to push it away from the hub. Turn each bolt 2 turns at a time to prevent cocking the disc excessively.

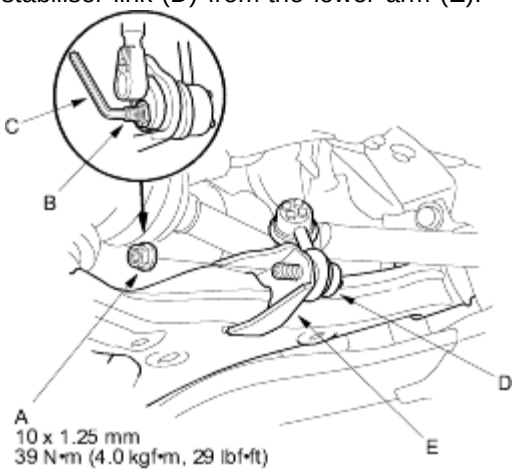
Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

8. Remove the flange bolt (A) and wheel sensor (B) from the knuckle. Do not disconnect the wheel sensor connector.

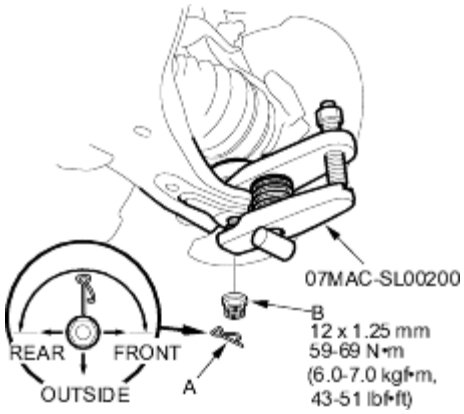


9. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C) and disconnect the stabiliser link (D) from the lower arm (E).

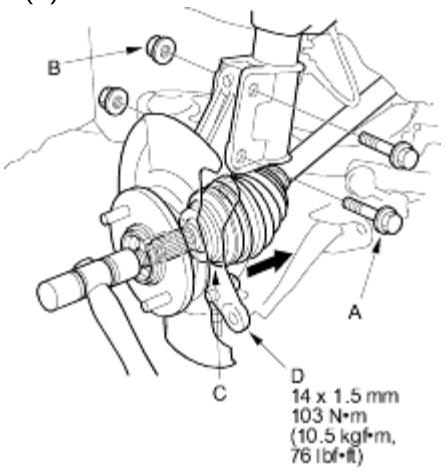


10. Remove the clip (A) from the lower arm ball joint and remove the castle nut (B).

NOTE: During installation, insert the clip into the ball joint pin in the range of 180 degrees or below from the inside of the vehicle. Insert the clip from the inside to the outside of the vehicle.



11. Disconnect the lower arm from the knuckle using the special tool (see page 18-9).
12. Loosen the damper pinch bolts (A) while holding the nuts (B) and remove the bolts and nuts.



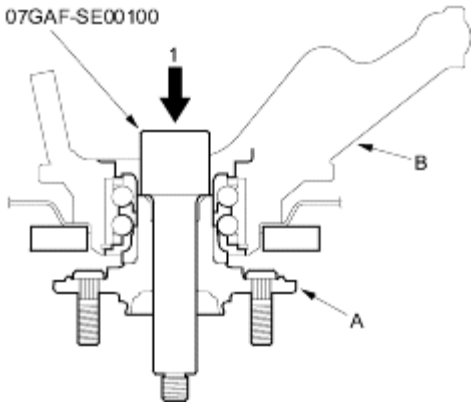
13. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end with a plastic hammer while pulling the knuckle outward, then remove the knuckle.

NOTE: Do not pull the driveshaft end outward. The driveshaft joint may come off.

Front Suspension

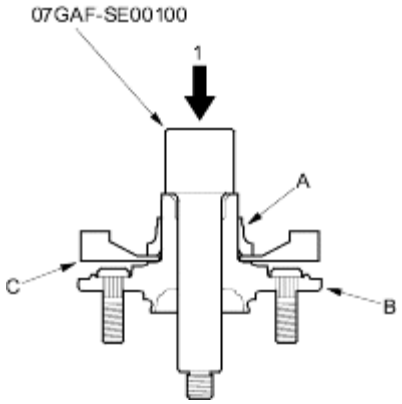
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

1. 14. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Take care not to deform the splashguard. Hold onto the hub to keep it from falling when pressed clear.



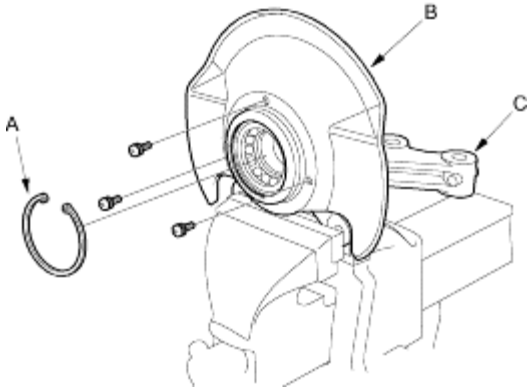
2. 1. Press

3. 15. Press the wheel bearing inner race (A) out of the hub (B) using the special tool, a commercially available bearing separator (C) and a press.

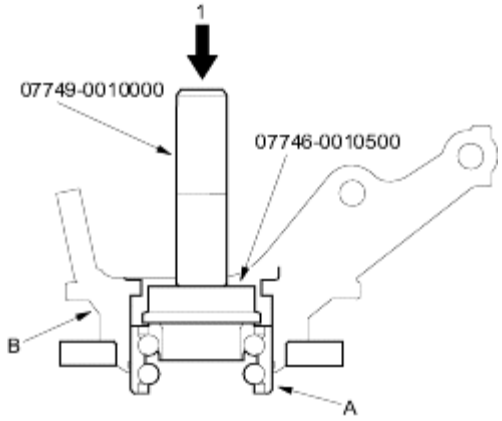


4. 1. Press

1. 16. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).



2. 17. Press the wheel bearing (A) out of the knuckle (B) using the special tool and a press.

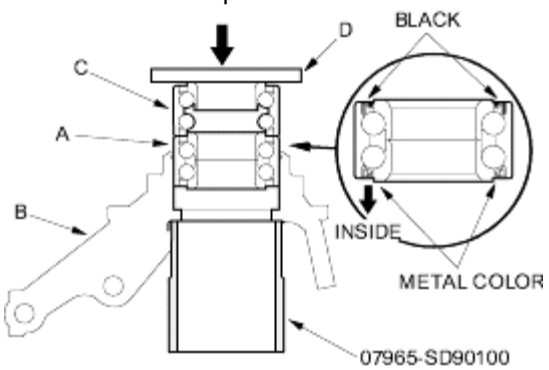


3. 1. Press

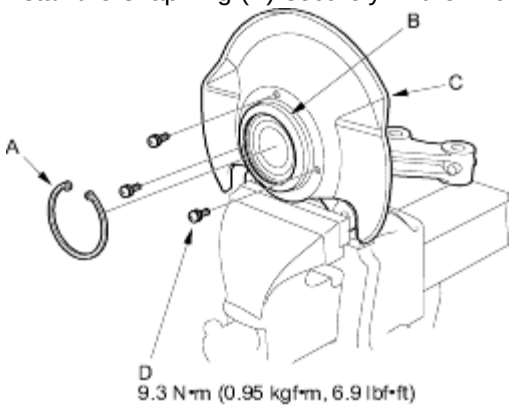
Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

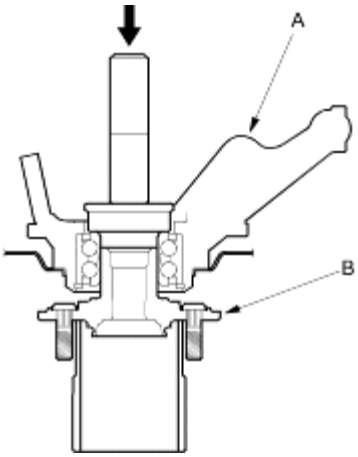
18. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.
19. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C) a steel plate (D), the special tool and a press. Place the wheel bearing on the knuckle with the pack seal side facing (metal colour) toward the inside. Be careful not to damage the sleeve of the pack seal.



20. Install the snap ring (A) securely in the knuckle (B).



21. Install the splash guard (C) and tighten the screws (D) to the specified torque.
22. Press a new hub bearing unit (A) into the hub (B) using the special tools and a press.



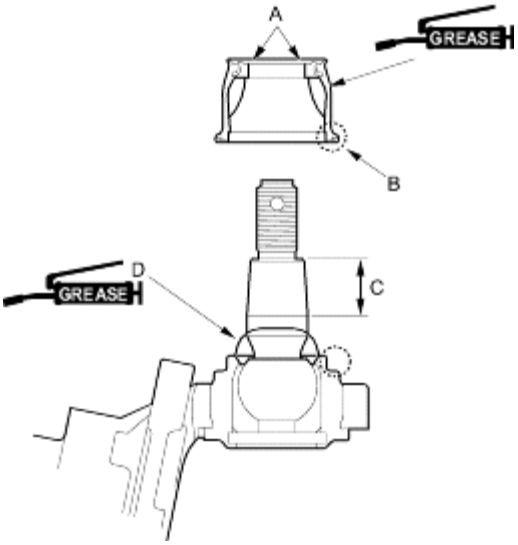
23. Install the knuckle/hub/hub bearing unit in the reverse order of removal and note these items:
    - Be careful not to damage the ball joint boot when installing the knuckle. Check the ball joint boot for dent and other deformation before connecting the lower arm.
    - Tighten all mounting hardware to the specified torque values.
    - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the clip hole. Do not align the castle nut by loosening it.
    - Install a new clip on the castle nut after torquing.
    - Use a new spindle nut on reassembly.
    - Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
    - Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
    - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
    - Check the front wheel alignment and adjust it if necessary (see page 18-4).

Front Suspension
Ball Joint Boot Replacement

Special Tools Required

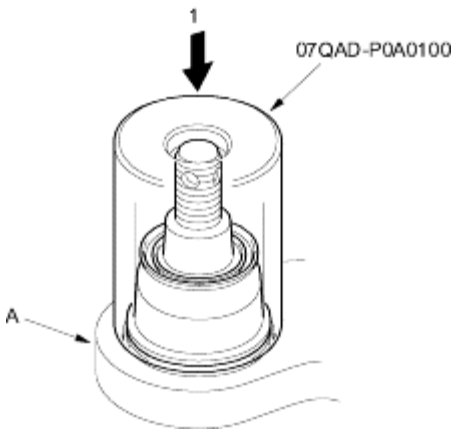
Driver attachment, 07QAD-P0A0100

1. 1. Remove the boot.
   2. Pack the interior and lip (A) of a new boot with fresh grease. Do not contaminate the lower collar of the boot (B) with grease.



2. 3. Wipe the grease off the tapered section of the pin (C) and pack fresh grease onto the base (D).
   4. Install the boot onto the ball joint pin, then squeeze it gently to force out any air. Do not let dirt or other foreign materials get into the boot.

1. 5. Press the boot with the special tool until the bottom seats on the knuckle (A) evenly around.



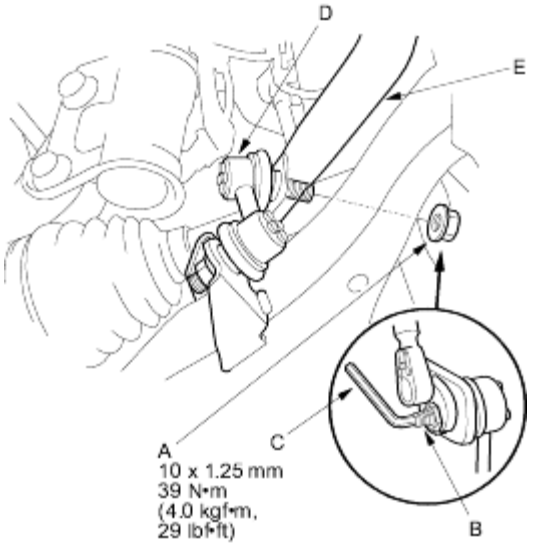
2. 1. Press

3. 6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.
   Release air little from the boot by lightly pushing the belly of the boot. Do not push the boot firmly as the boot gets deformed and stays deformed by the vacuum. Be sure to correct the dent or other deformation before connection.

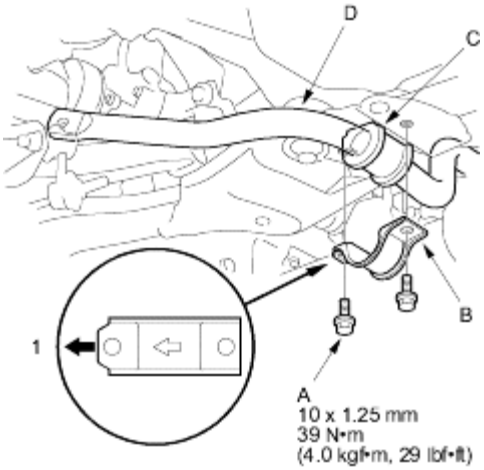
Front Suspension

Stabiliser Bar Replacement

1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
2. 2. Remove the self-locking nuts (A) while holding the joint pin (B) with a hex wrench (C) and disconnect the stabiliser links (D) from the stabiliser bar (E) on the right and left.

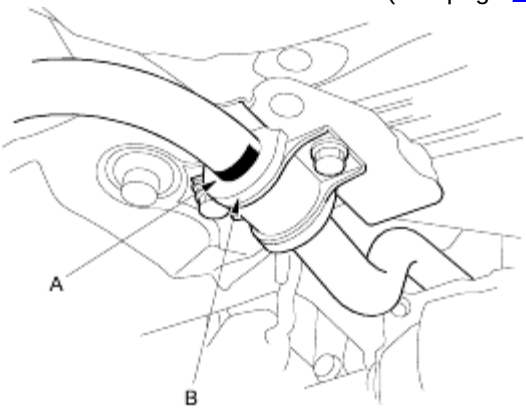


3. 3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabiliser bar (D).



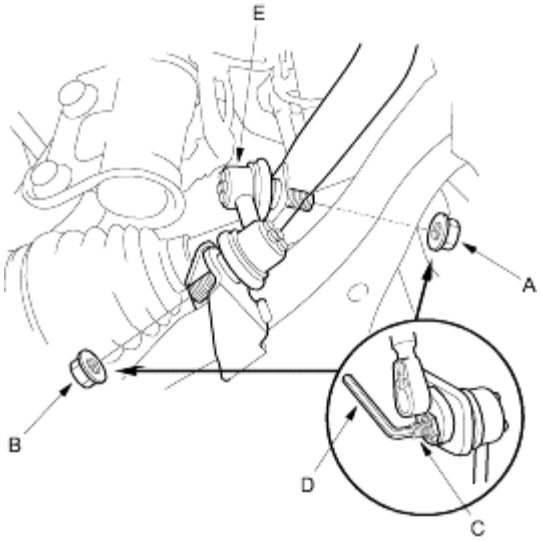
4. 1. FORWARD

1. 4. Install the stabiliser bar in the reverse order of removal and note these items:
   - Use new self-locking nuts on reassembly.
   - Note the right and left direction of the stabiliser bar.
   - Align the ends of the paint marks (A) on the stabiliser bar with each end of the bushings (B).
   - Note the fore/aft direction of the bushing holders.
   - Refer to Stabiliser Link Replacement to connect the stabiliser bar to the links (see page 18-18).

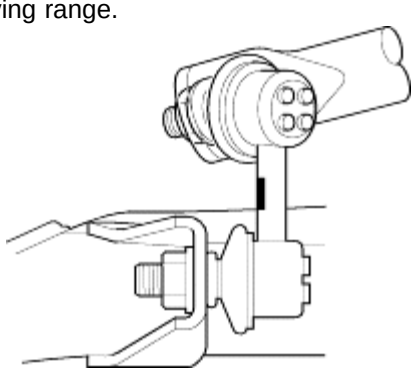


Front Suspension
Stabiliser Link Replacement (cont'd)

1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
2. 2. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D) and remove the stabiliser link (E).



3. 3. Install the stabiliser link on the stabiliser bar and lower arm with the joint pins set at the centre of each moving range.



1. 4. Install the self-locking nut and flange nut and lightly tighten them.

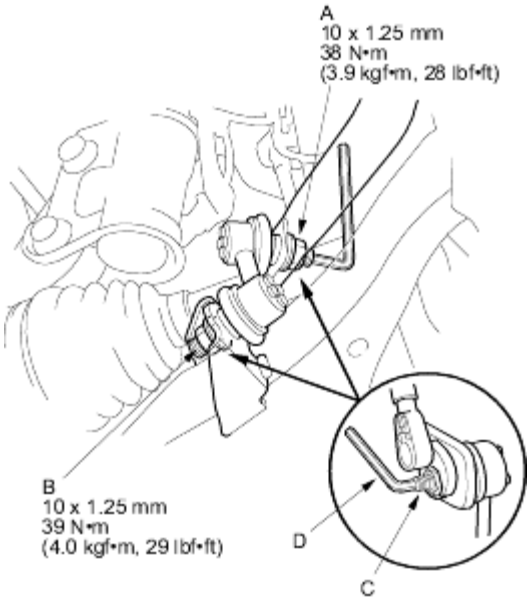
NOTE: Use a new self-locking nut on reassembly.

2. 5. Place the floor jack under the lower arm ball joint and raise the suspension to load it with the vehicle's weight.

NOTICE

Do not place the jack against the flat section of the lower arm. Lifting the arm in this area might bend it.

3. 6. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).



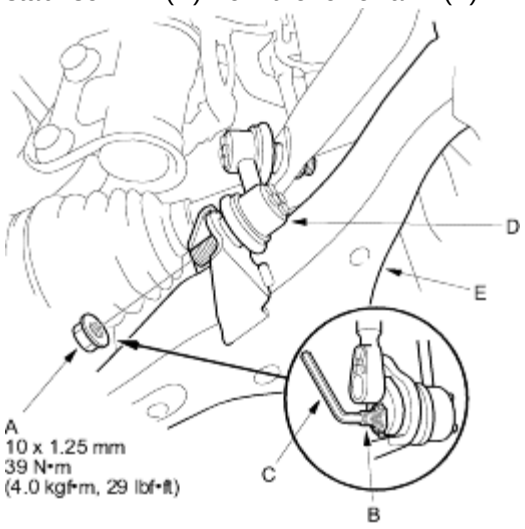
4. 7. After 5 minutes, re-tighten the self-locking nut again with the specified torque.

Front Suspension
Lower Arm Replacement

Special Tools Required

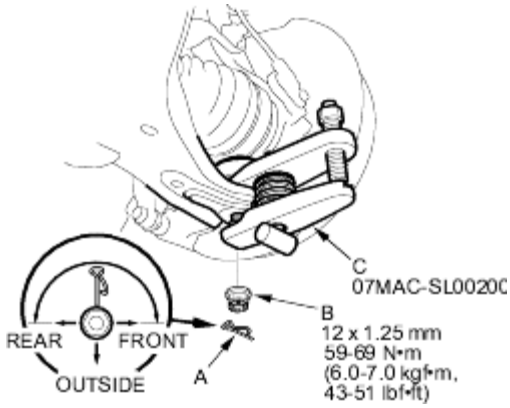
Ball joint remover, 28 mm, 07MAC-SL00200

1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C) and disconnect the stabiliser link (D) from the lower arm (E).



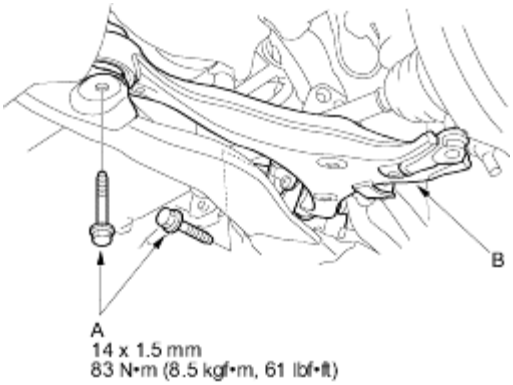
2. 3. Remove the clip (A) from the lower arm ball joint and remove the castle nut (B).

NOTE: During installation, insert the clip into the ball joint pin the range of 180 degrees or below from the inside of the vehicle. Insert the clip from the inside to the outside of the vehicle.



3. 4. Disconnect the lower arm from the knuckle using the special tool (see page 18-9).

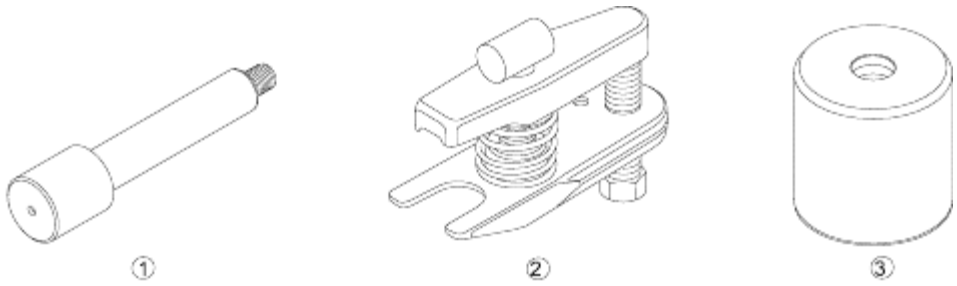
1. 5. Remove the flange bolts (A) and remove the lower arm (B).

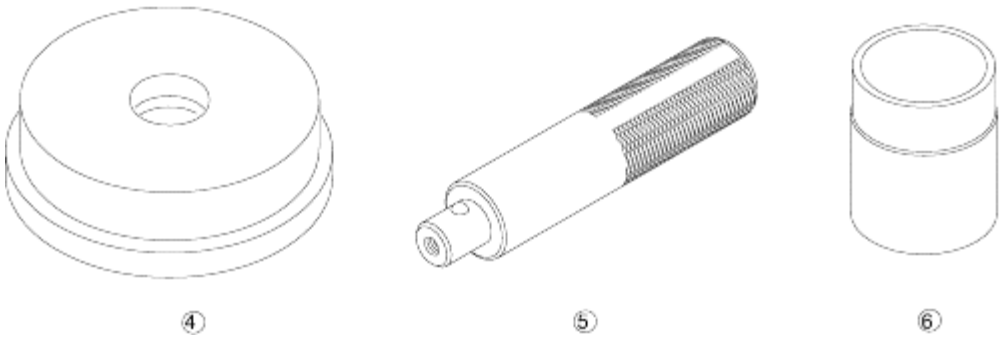


2. 6. Install the lower arm in the reverse order of removal and note these items:
   - Be careful not to damage the ball joint boot when connecting the lower arm to the knuckle. Check the ball joint boot for dent and other deformation before connecting the lower arm.
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torques.
   - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the clip hole. Do not align the castle nut by loosening it.
   - Install a new clip on the castle nut after torquing.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment and adjust it if necessary (see page 18-4).

Front and Rear Suspension Special Tools	18-2

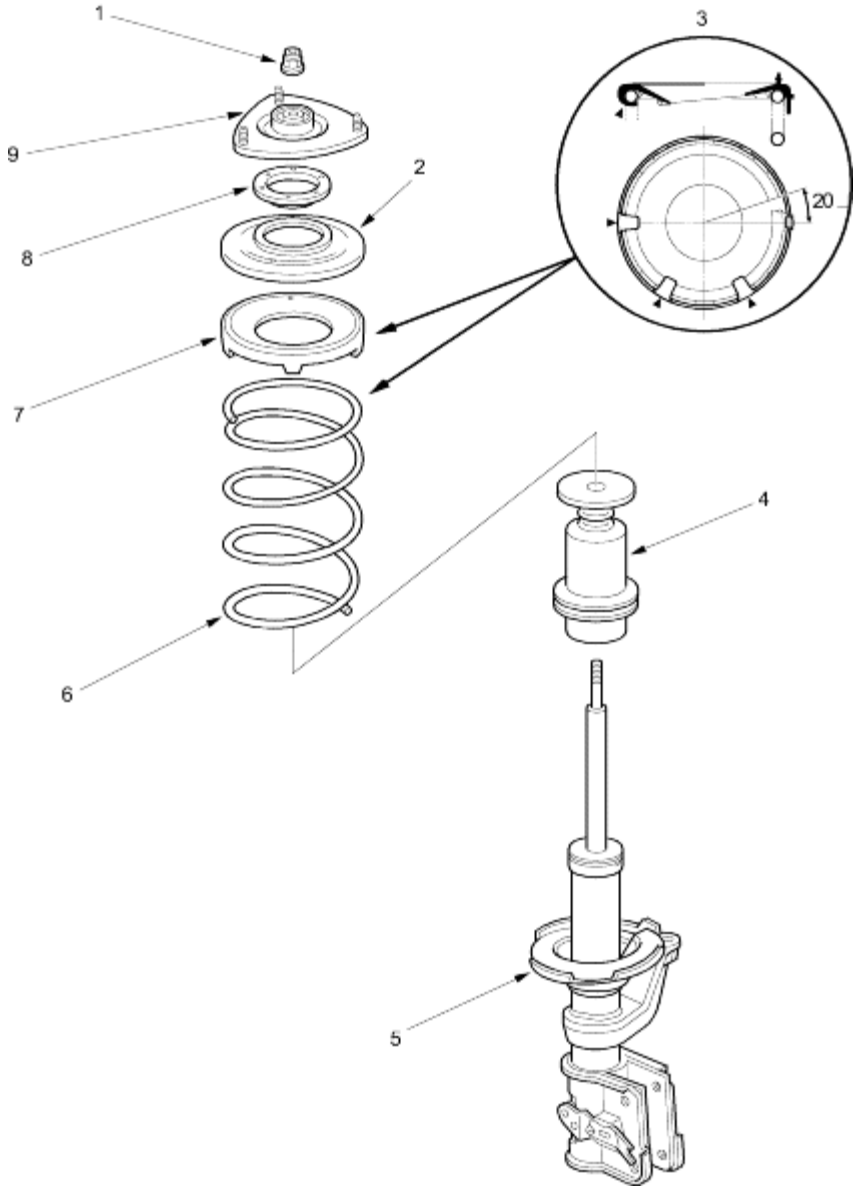
Ref. No.	Tool Number	Description	Qty
1	07GAF-SE00100	Hub Dis/Assembly Tool	1
2	07MAC-SL00200	Ball Joint Remover, 28 mm	1
3	07QAD-P0A0100	Driver Attachment	1
4	07746-0010500	Attachment, 62 x 68 mm	1
5	07749-0010000	Driver	1
6	07965-SD90100	Support Base	1





Front Suspension 20
Damper/Spring Replacement

Exploded View



1. SELF-LOCKING NUT
   12 x 1.25 mm, 44 Nm (4.5kgf/m, 33 lbf/ft), Replace.
2. UPPER SPRING SEAT
3. UPPER SPRING MOUNTAIN CUSHION
   NOTE: Do not remove the cushion from the spring. Replace it with a new one if it was removed from the spring.
   Set the new cushion on the spring with the projection of the cushion and the upper end of the spring in the position shown. The cushion has the six claws. Secure the cushion against the spring by bending the three claws (marked with ▼) out of six securely.
4. BUMP STOP
   Check for weakness and damage.
5. DAMPER UNIT
   Check for oil leak, gas leak and smooth operation.
6. DAMPER SPRING
   Check for free length.
7. UPPER SPRING MOUNTING CUSHION
   Check for deterioration and damage.
8. DAMPER MOUNTING BEARING
   Check for smooth operation.
9. DAMPER MOUNTING BASE
   Check for deformation.

Front Suspension

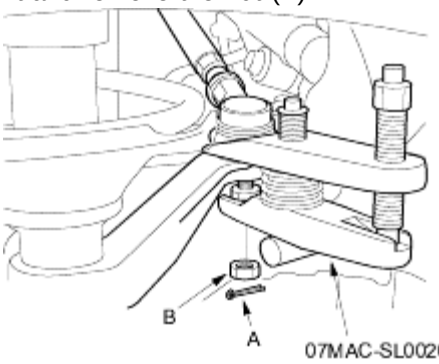
Damper/Spring Replacement (cont'd)

Special Tools Required

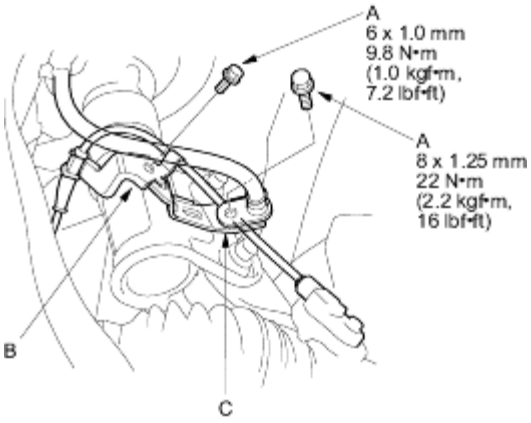
Strut spring compressor, Branick MST-580A or Model 7200 or equivalent, commercially available

Removal

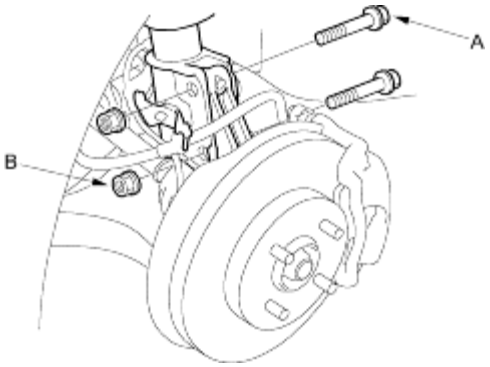
1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Remove the cotter pin (A) from the tie-rod end ball joint and remove the nut (B).



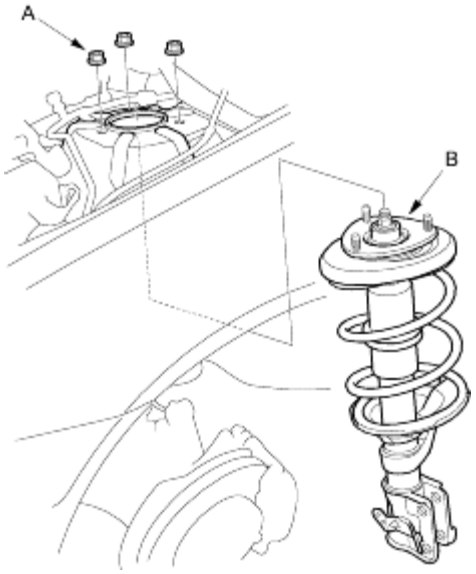
2. 3. Disconnect the tie-rod end from the steering arm on the damper using the special tool (see page 18-9).
   4. Remove the bolts (A) and remove the wheel sensor harness bracket (B) and brake hose bracket (C) from the damper. Do not disconnect the wheel sensor connector.



1. 5. Remove the damper pinch bolts (A) while holding the nuts (B).



2. 6. Remove the flange nuts (A) from the top of the damper.



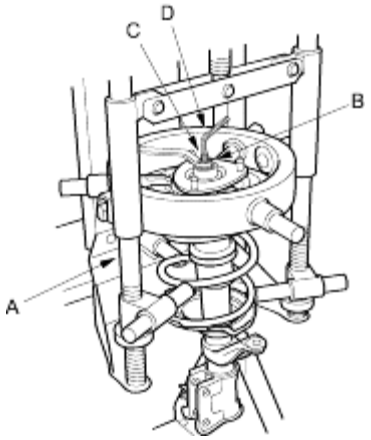
3. 7. Lower the lower arm and remove the damper assembly (B).

Front Suspension

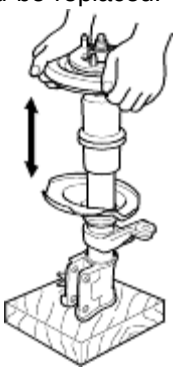
Damper/Spring Replacement (cont'd)

Disassembly/Inspection

1. 1. Compress the damper spring with the commercially available strut compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



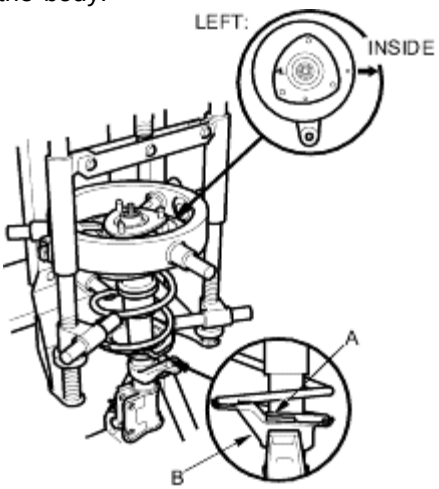
2. 2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.
   3. Reassemble all the parts, except for the spring.
   4. Compress the damper assembly by hand and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



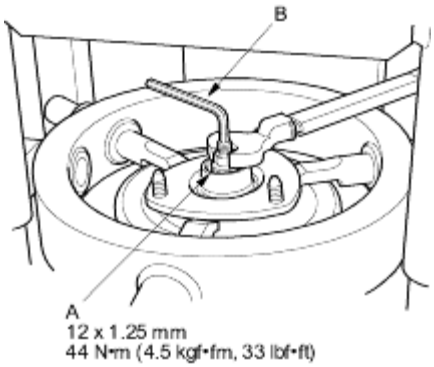
3. 5. Check for oil leaks, abnormal noises and binding during these tests.

Reassembly

1. 1. Install all the parts except the self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B) as illustrated. Align the upper spring seat so that the small hole in it is on the engine compartment side when it is installed in the body.



2. 2. Install the damper assembly on a commercially available strut spring compressor (C).
   3. Compress the damper spring with the spring compressor.
   4. Install a new self-locking nut (A) on the damper shaft.



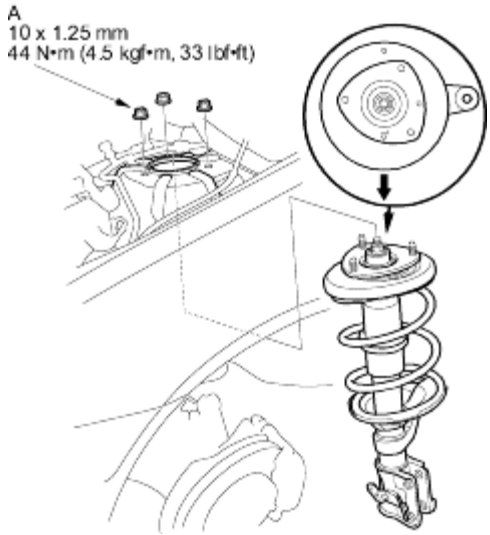
3. 5. Hold the damper shaft with a hex wrench (B) and tighten the self-locking nut to the specified torque.

Front Suspension

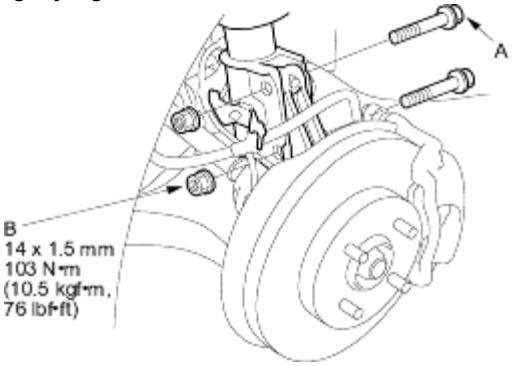
Damper/Spring Replacement (cont'd)

Installation

1. Lower the lower arm and position the damper assembly in the body.
2. Loosely install flange nuts (A) onto the top of the damper.



3. Position the damper bottom on the knuckle and install the damper pinch bolts (A) and nuts (B) and lightly tighten the nuts.

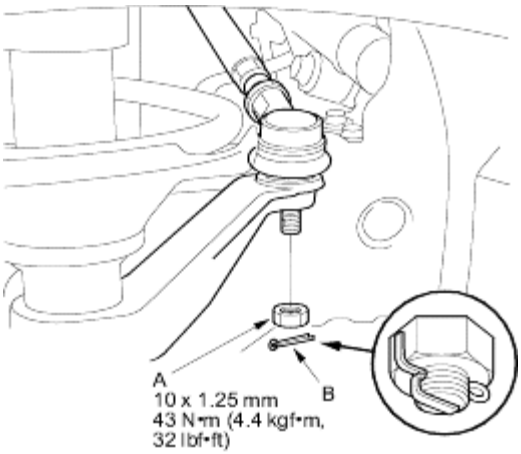


4. Place the floor jack under the lower arm ball joint and raise the suspension to load it with the vehicle's weight.

NOTICE

Do not place the jack against the flat section of the lower arm. Lifting the arm in this area might bend it.

5. Tighten the flange nuts on the top of the damper to the specified torque.
6. Tighten the damper pinch nuts to the specified torque.
7. Connect the tie-rod end to the steering arm and tighten the nut (A) to the specified torque. Install the cotter pin (B) after tightening and bend its end as shown.



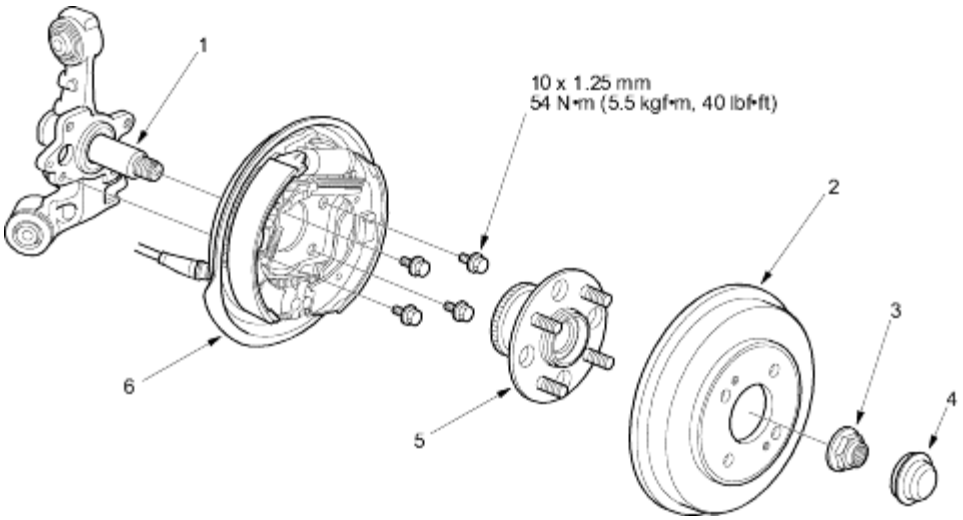
8. Install the brake hose bracket and the flange bolt onto the damper and tighten the bolt to the specified torque.
9. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.
10. Check the wheel alignment and adjust it if necessary (see page 18-4).

Rear Suspension

Hub Bearing Unit Replacement – Drum Brake

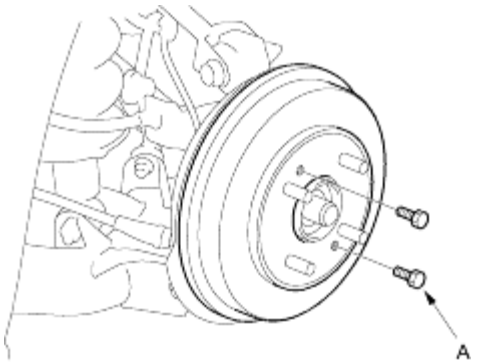
Exploded View

4-door



1. SPINDLE
   Check for bend and deformation.
2. BRAKE DRUM
   Check for wear and damage.
3. SPINDLE NUT
   22 x 1.5 mm, 181 Nm (18.5 kgf/m, 134 lbf/ft), Replace.
4. HUB CAP, Replace.
5. HUB BEARING UNIT
   Check for faulty movement and wear.
6. REAR BRAKE ASSY

5-door:



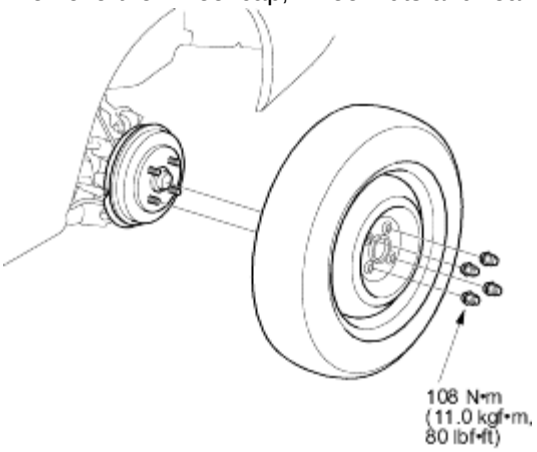
1. SPINDLE
   Check for bend and deformation.
2. BRAKE DRUM
   Check for wear and damage.
3. SPINDLE NUT
   22 x 1.5 mm, 181 N m (18.5 kgf/m 134 lbf/ft), Replace.
4. HUB CAP, Replace.
5. HUB BEARING UNIT
   Check for faulty movement and wear.
6. REAR BRAKE ASSY

Rear Suspension

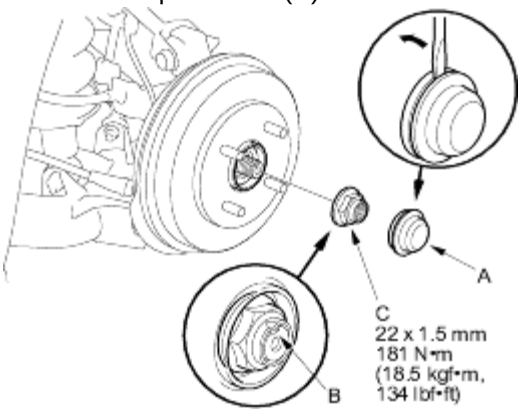
Hub Bearing Unit Replacement - Drum Brake (cont'd)

Drum Brake Type (4-door/5-door):

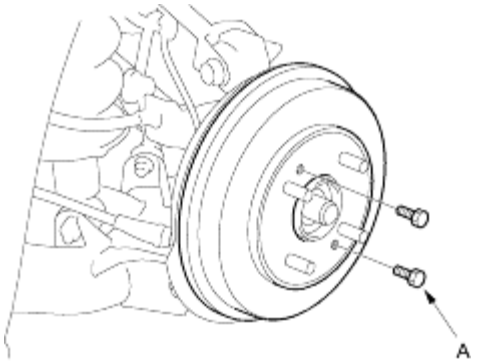
1. 1. Raise the rear of the vehicle and make sure it is securely supported.
   2. Remove the wheel cap, wheel nuts and rear wheel.



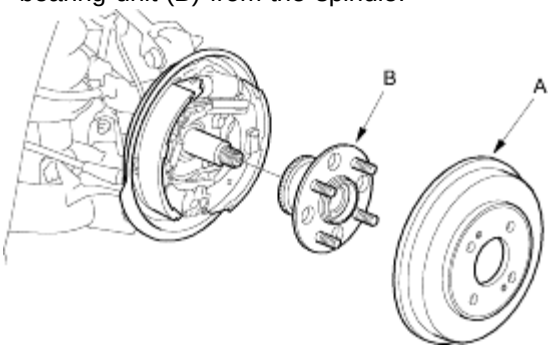
2. 3. Remove the hub cap (A), raise the stake (B) and remove the spindle nut (C).



1. 4. Screw two 8 x 1.25 mm bolts (A) into the drum to push it away from the hub. Turn each bolt 2 turns at a time to prevent cocking the drum excessively.



2. 5. Remove the brake drum (A), and remove the hub bearing unit (B) from the spindle.

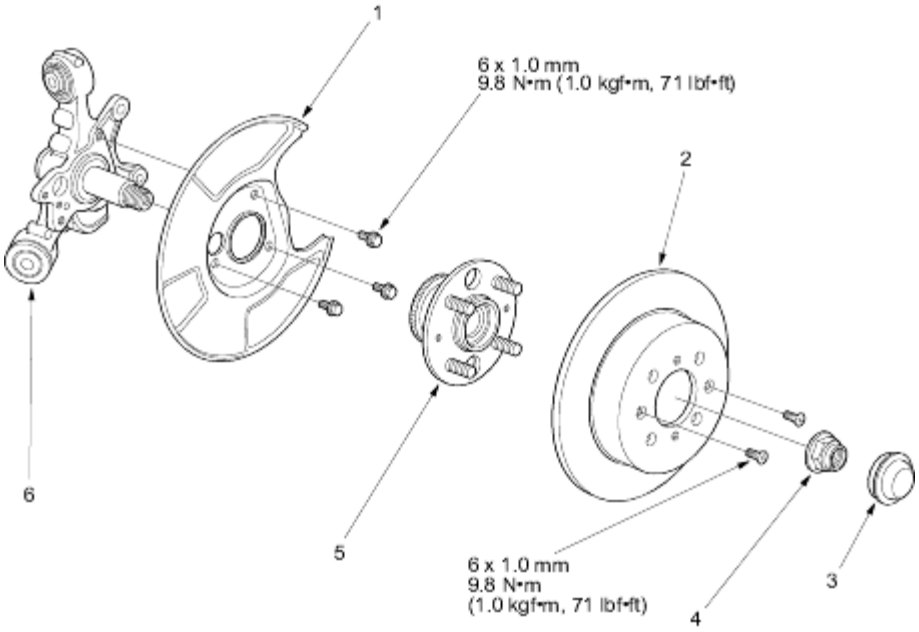


3. 6. Install the hub bearing unit in the reverse order of removal and note these items:
   - Tighten all mounting hardware to the specified torque values.
   - Before installing the brake drum, clean the mating surface of the hub and the inside of the brake drum.
   - Use a new spindle nut on reassembly.
   - After tightening the spindle nut, use a drift to stake the spindle nut shoulder against the spindle.
   - Use a new hub cap on reassembly.
   - Before installing the wheel, clean the mating surface of the brake drum and the inside of the wheel.

Rear Suspension

Hub Bearing Unit Replacement - Disc Brake

Exploded View



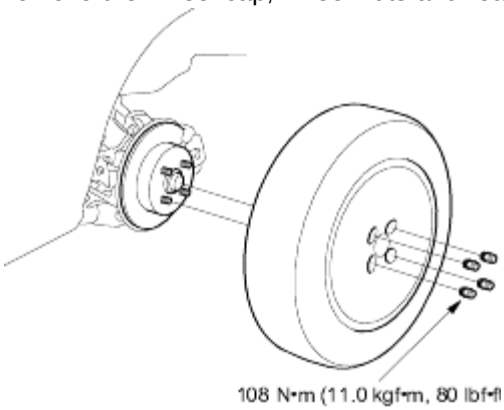
1. SPLASH GUARD
   Check for deformation.
2. BRAKE DISC
   Check for wear and damage.
3. HUB CAP, Replace.
4. SPINDLE NUT
   22 x 1.5 mm, 181 Nm (18.5kgf/m, 134 lbf/ft), Replace.
5. HUB BEARING UNIT
   Check for faulty movement and wear.
6. KNUCKLE
   Check for deformation.

Rear Suspension

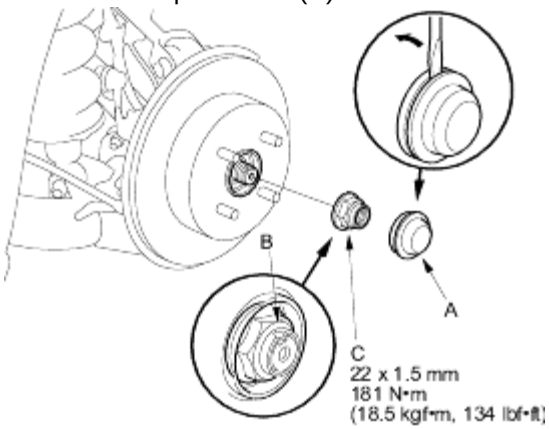
Hub Bearing Unit Replacement - Disc Brake (cont'd)

Disc Brake Type:

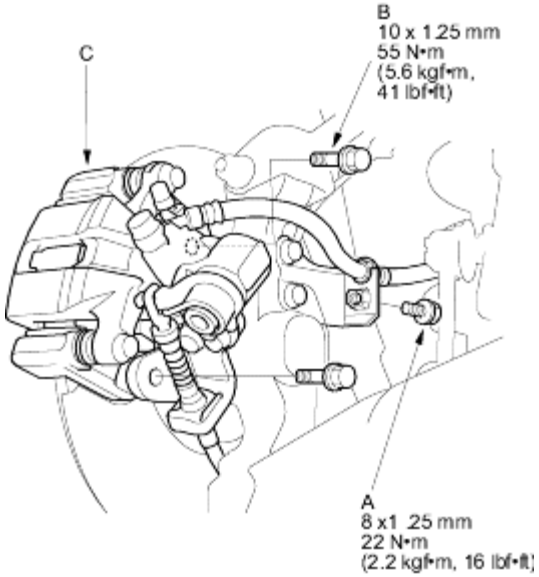
1. 1. Raise the rear of the vehicle and make sure it is securely supported.
   2. Remove the wheel cap, wheel nuts and rear wheel.



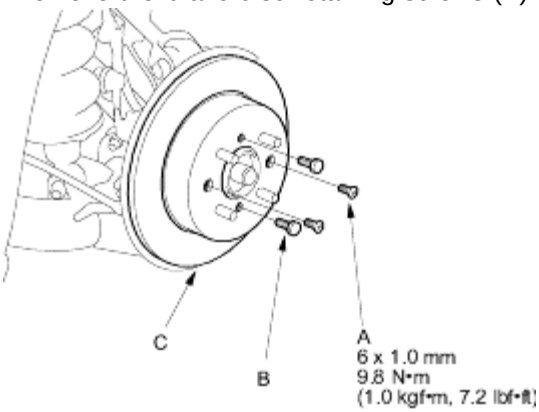
2. 3. Remove the hub cap (A), raise the stake (B) and remove the spindle nut (C).



1. 4. Release the parking brake lever.
2. 5. Remove the brake hose mounting bolt (A).



3. 6. Remove the calliper bracket mounting bolts (B) and hang the calliper (C) to one side. To prevent damage to the calliper or brake hose, use a short piece of wire to hang the calliper from the undercarriage.
   7. Remove the brake disc retaining screws (A).

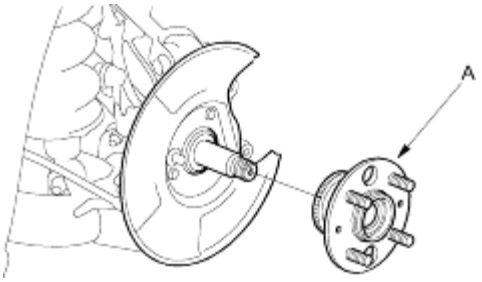


4. 8. Screw 8 x 1.25 mm bolts (B) into the disc (C) to push it away from the hub. Turn each bolt 2 turns at a time to prevent cocking the disc excessively. Remove the brake disc.

Rear Suspension

Hub Bearing Unit Replacement - Disc Brake (cont'd)

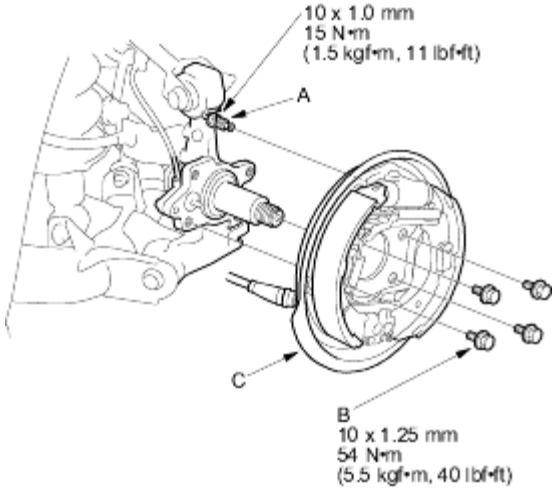
1. 9. Remove the hub bearing unit (A) from the spindle.



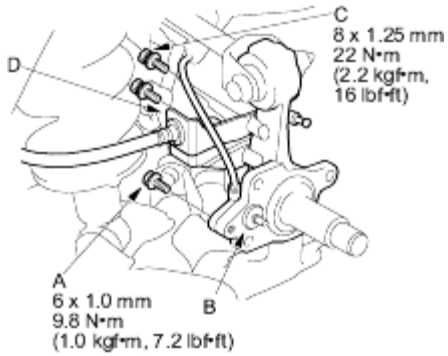
2. 10. Install the hub bearing unit in the reverse order of removal and note these items:
   - Tighten all mounting hardware to the specified torque values.
   - Before installing the brake disc, clean the mating surface of the hub and the inside of the brake disc.
   - Use a new spindle nut on reassembly.
   - After tightening the spindle nut, use a drift to stake the spindle nut shoulder against the spindle.
   - Use a new hub cap on reassembly.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.

Drum Brake Type

1. 1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
   2. Remove the brake drum and hub bearing unit (see step 1 on page 18-25).
   3. Disconnect the brake pipe (A) from the wheel cylinder.



2. 4. Remove the flange bolts (B) and drum brake assembly (C) from the knuckle.
   5. Remove the flange bolt (A) and wheel sensor (B) from the knuckle. Do not disconnect the wheel sensor connector.



3. 6. Remove the flange bolts (C) and brake hose bracket (D).

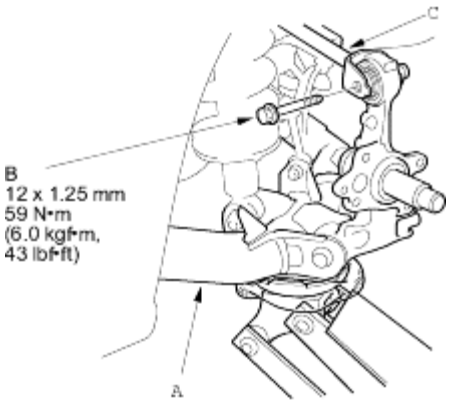
Rear Suspension

Knuckle Replacement (cont'd)

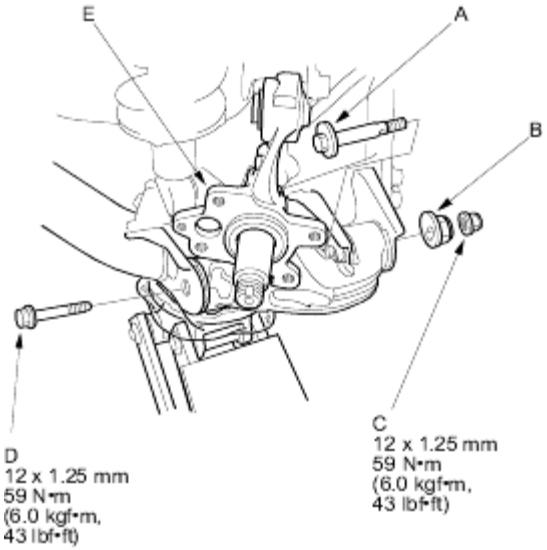
1. 7. Place the floor jack under the trailing arm (A) and support the suspension to load it with the vehicle weight.

NOTICE

Do not place the jack against the plate section of the trailing arm. Be careful not to give an impact on the suspension.



2. 8. Remove the flange bolt (B), and disconnect the upper arm (C) from the knuckle.
   9. Mark the cam positions of the adjusting bolt (A) and adjusting cam (B), then remove the self-locking nut (C), adjusting cam and adjusting bolt. Discard the self-locking nut.



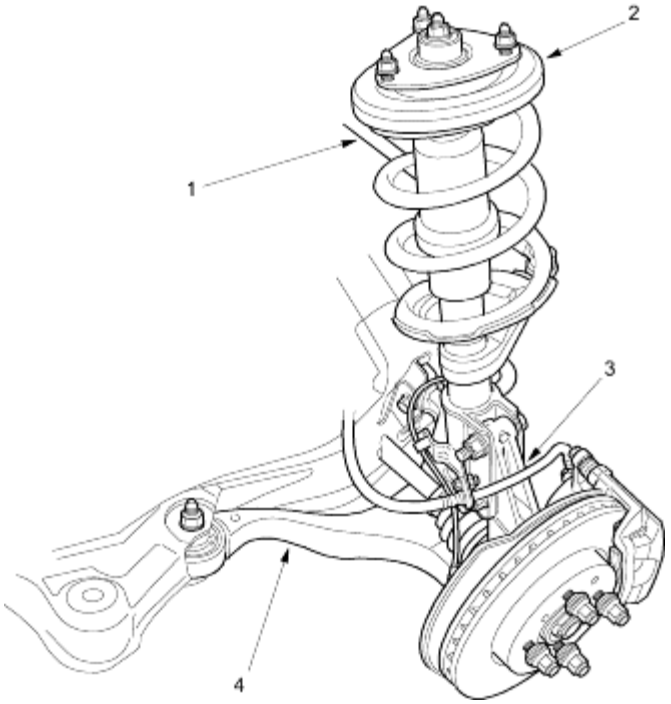
3. 10. Remove the flange bolt (D) and remove the knuckle (E).

1. 11. Install the knuckle in the reverse order of removal and note these items:
   - First install all the suspension components, and lightly tighten bolts and nuts, then place a floor jack under the trailing arm and raise the suspension to load it with the vehicle's weight before fully tightening bolts and nuts to the specified torque values.
   - Align the cam positions of the adjusting bolt (A) and adjusting cam (B) with the marked positions when tightening.
   - Use a new self-locking nut on reassembly.
   - Tighten all the mounting hardware to the specified torque values.
   - Use a new spindle nut on reassembly.
   - After tightening the spindle nut, use a drift to stake the spindle nut shoulder against the spindle.
   - Before installing the brake drum, clean the mating surface of the hub and the inside of the brake drum.
   - Use a new hub cap on reassembly.
   - Before installing the wheel, clean the mating surface of the brake drum and the inside of the wheel.
   - Check the wheel alignment and adjust it if necessary (see page 18-4).

Front and Rear Suspension

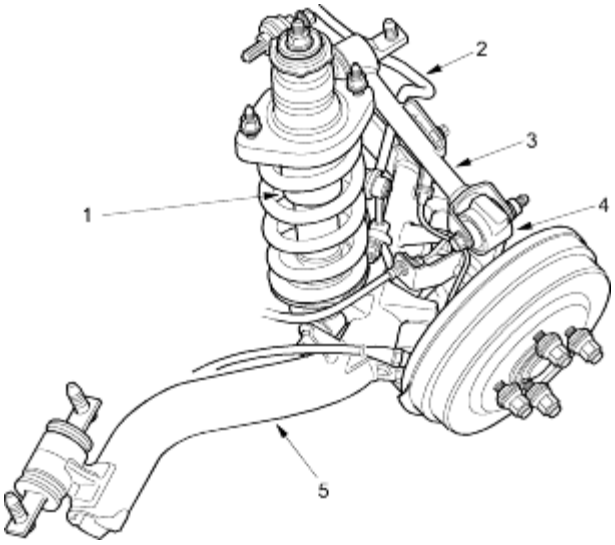
Component Location Index

Front Suspension:



1. STABILISER BAR
2. FRONT DAMPER
3. KNUCKLE
4. LOWER ARM

Rear Suspension:

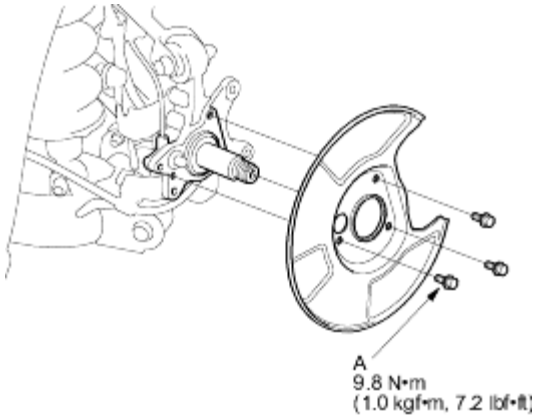


1. REAR DAMPER
2. STABILISER BAR
3. UPPER ARM
4. KNUCKLE
5. TRAILING ARM

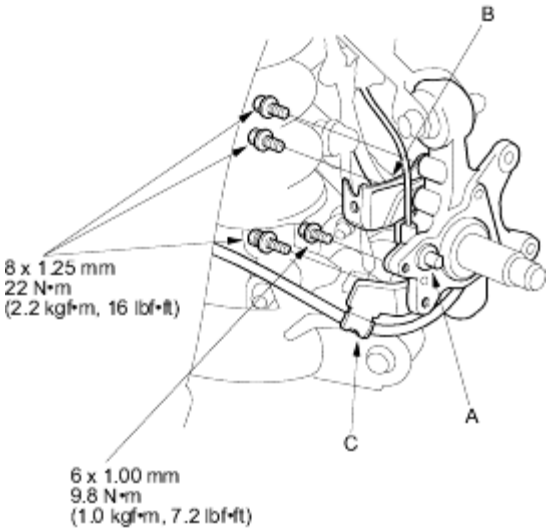
Rear Suspension 30

Knuckle Replacement (cont'd)

1. 1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
2. 2. Remove the brake disc and hub bearing unit (see step 1 on page 18-27).
   3. Remove the flange bolts (A) and splash (B) from the knuckle.



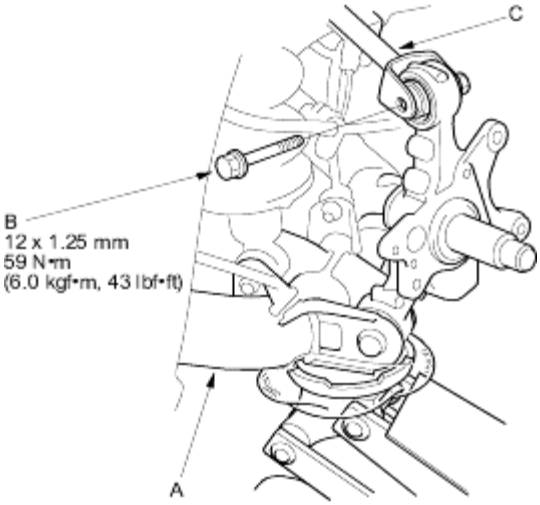
3. 4. Remove the wheel sensor (A), brake hose mounting bracket (B) and parking cable mounting bracket (C) from the knuckle. Do not disconnect the wheel sensor connector.



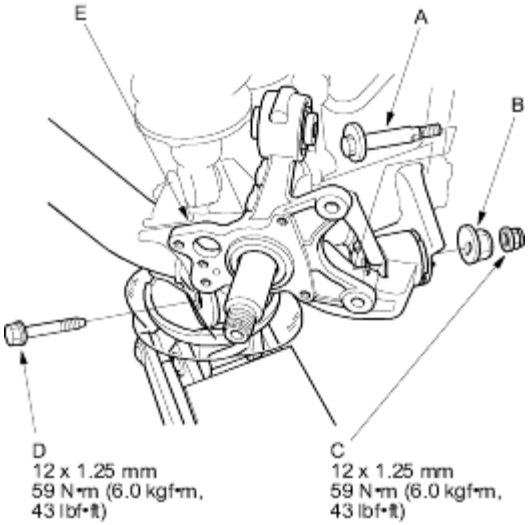
1. 5. Place the floor jack under the trailing arm (A) and support the suspension.

NOTICE

Do not place the jack against the plate section of the trailing arm. Be careful not to give an impact on the suspension.



2. 6. Remove the flange bolts (B) and disconnect the upper arm (C) from the knuckle.
   7. Mark the cam position of the adjusting bolt (A) and adjusting cam (B), the remove the self-locking nut (C), adjusting cam and adjusting bolt. Discard the self-locking nut.



3. 8. Remove the flange bolt (D) and remove the knuckle (E).

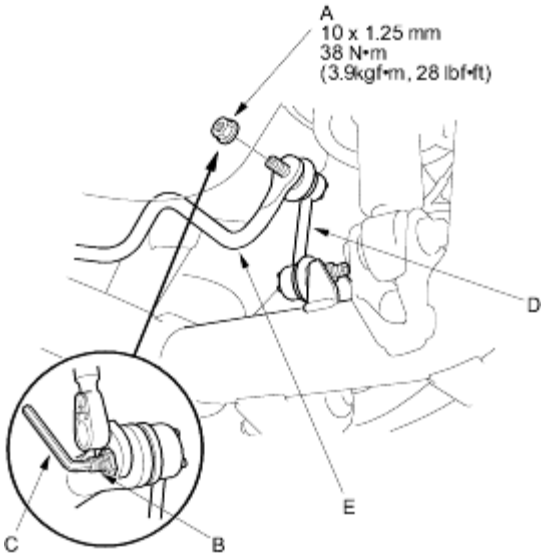
Rear Suspension
Knuckle Replacement (cont'd)

1. 9. Install the knuckle in the reverse order of removal and note these items:
   - First install all the suspension components, and lightly tighten bolts and nuts, then place a floor jack under the trailing arm and raise the suspension to load it with the vehicle's weight before fully tightening bolts and nuts to the specified torque values.
   - Align the cam positions of the adjusting bolt (A) and adjusting cam (B) with the marked positions when tightening.
   - Use a new self-locking nut on reassembly.
   - Tighten all the mounting hardware to the specified torque values.
   - Use a new spindle nut on reassembly.
   - After tightening the spindle nut, use a drift to stake the spindle nut shoulder against the spindle.
   - Before installing the brake disc, clean the mating surface of the hub and the inside of the brake disc.
   - Use a new hub cap on reassembly.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment and adjust it if necessary (see page 18-4).

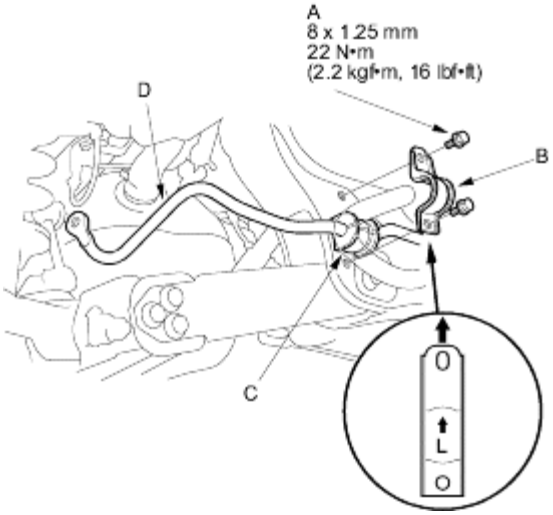
Rear Suspension

Stabiliser Bar Replacement

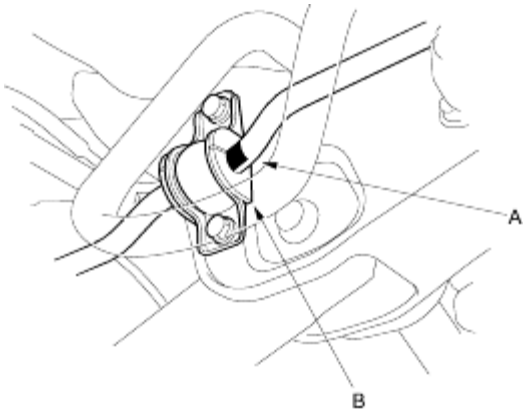
1. 1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
2. 2. Remove the self-locking nuts (A) while holding the joint pins (B) with a hex wrench (C) and disconnect the stabiliser links (D) from the stabiliser bar (E) on the right and left.



3. 3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabiliser bar (D).



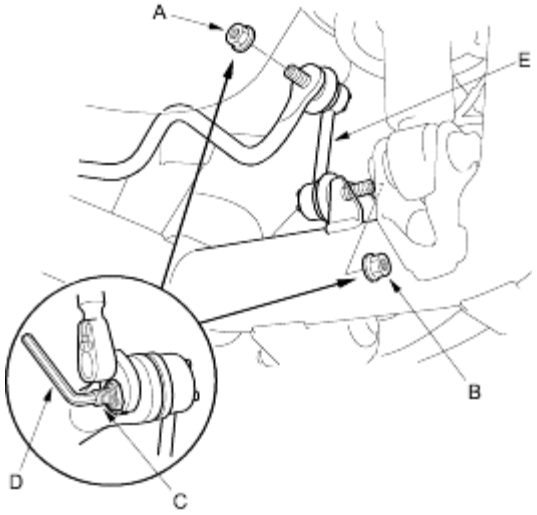
1. 4. Install the stabiliser bar in the reverse order of removal and note these items:
   - Use new self-locking nuts on reassembly.
   - Make sure the right and left ends of the stabiliser bar are installed on their respective sides of the vehicle .
   - Align the ends of the paint marks (A) on the stabiliser bar with the bushings (B).
   - Refer to Stabiliser Link Replacement to connect the stabiliser bar to the links.



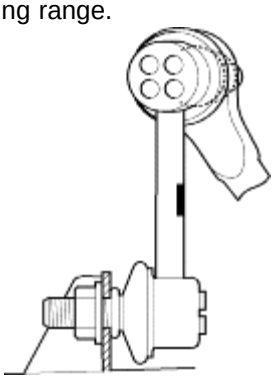
Rear Suspension

Stabiliser Link Replacement

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
2. 2. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D) and remove the stabiliser link (E).



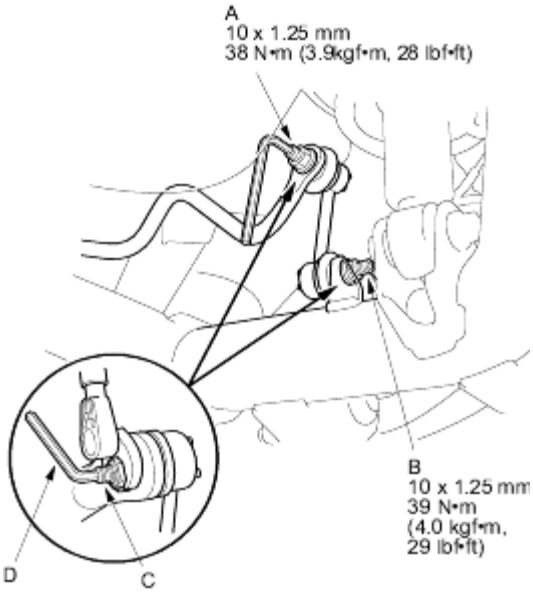
3. 3. Install the stabiliser link on the stabiliser bar and trailing arm with the joint pins set at the centre of each moving range.



1. 4. Install the self-locking nut and flange nut and lightly tighten them.

NOTE: Use a new self-locking nut on reassembly.

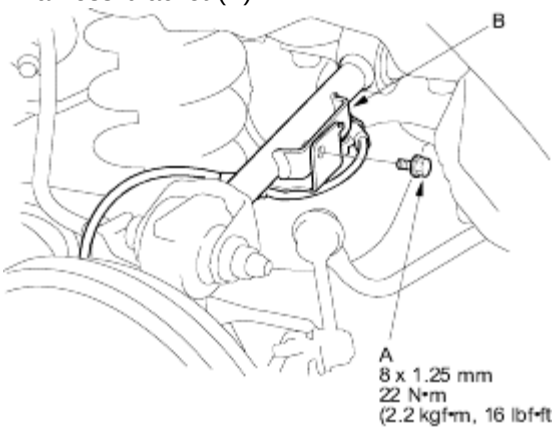
2. 5. Place a jack under the trailing arm at the knuckle side end and raise the suspension to load it with the vehicle's weight.
   6. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).



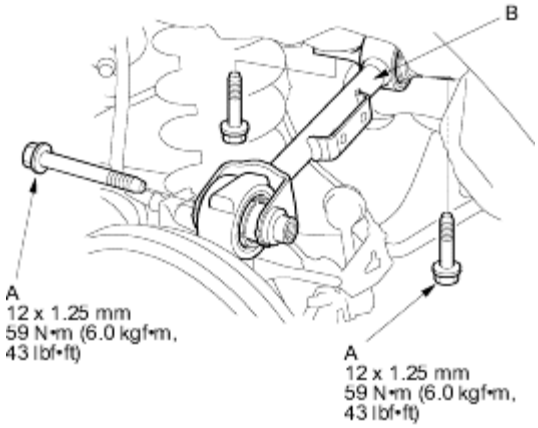
3. 7. After 5 minutes, re-tighten the self-locking nut again to the specified torque.

Rear Suspension
Upper Arm Replacement

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
2. 2. Place a floor jack under the trailing arm and support the suspension.
   3. Remove the flange bolt (A) and wheel sensor harness bracket (B).



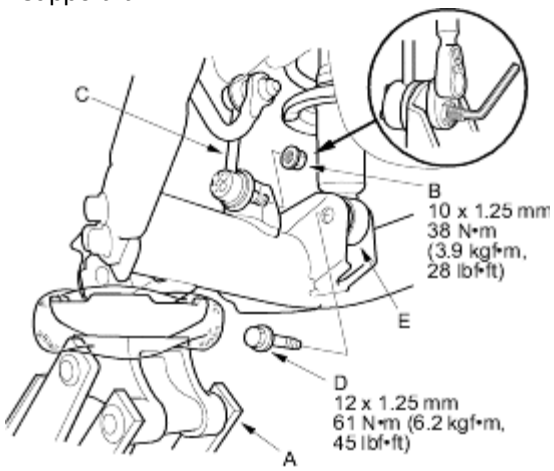
3. 4. Remove the flange bolts (A) and remove the upper arm (B).



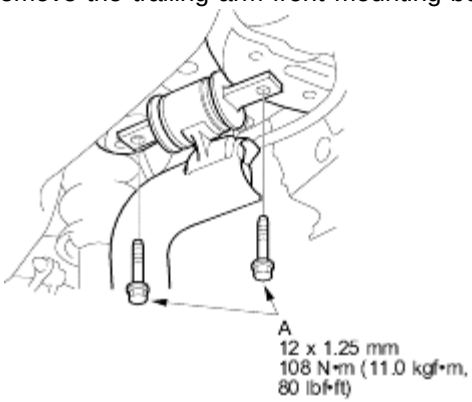
1. 5. Install the upper arm in the reverse order of removal and note these items:
   - First install all the suspension components and lightly tighten bolts and nuts, then place a jack under the trailing arm and raise the suspension to load it with the vehicle's weight before fully tightening bolts and nuts to the specified torque values.
   - Tighten all the mounting hardware to the specified torque values.
   - Before installing the wheel, clean the mating surface of the brake drum or disc and the inside of the wheel.
   - Check the wheel alignment and adjust it if necessary (see page 18-4).

Rear Suspension
Trailing Arm Replacement

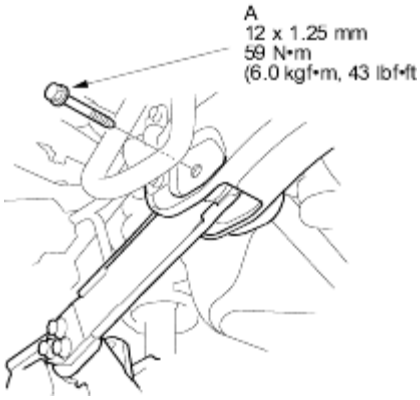
1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
2. 2. Remove the knuckle (see page 18-26).
   3. Place the floor jack under the trailing arm (A) to support it.



3. 4. Remove the flange nut (B) and disconnect the stabiliser link (C) from the trailing arm.
   5. Remove the flange bolt (D) and disconnect the damper (E) from the trailing arm.
   6. Remove the trailing arm front mounting bolts (A).



1. 7. Remove the trailing arm rear mounting bolt (A).

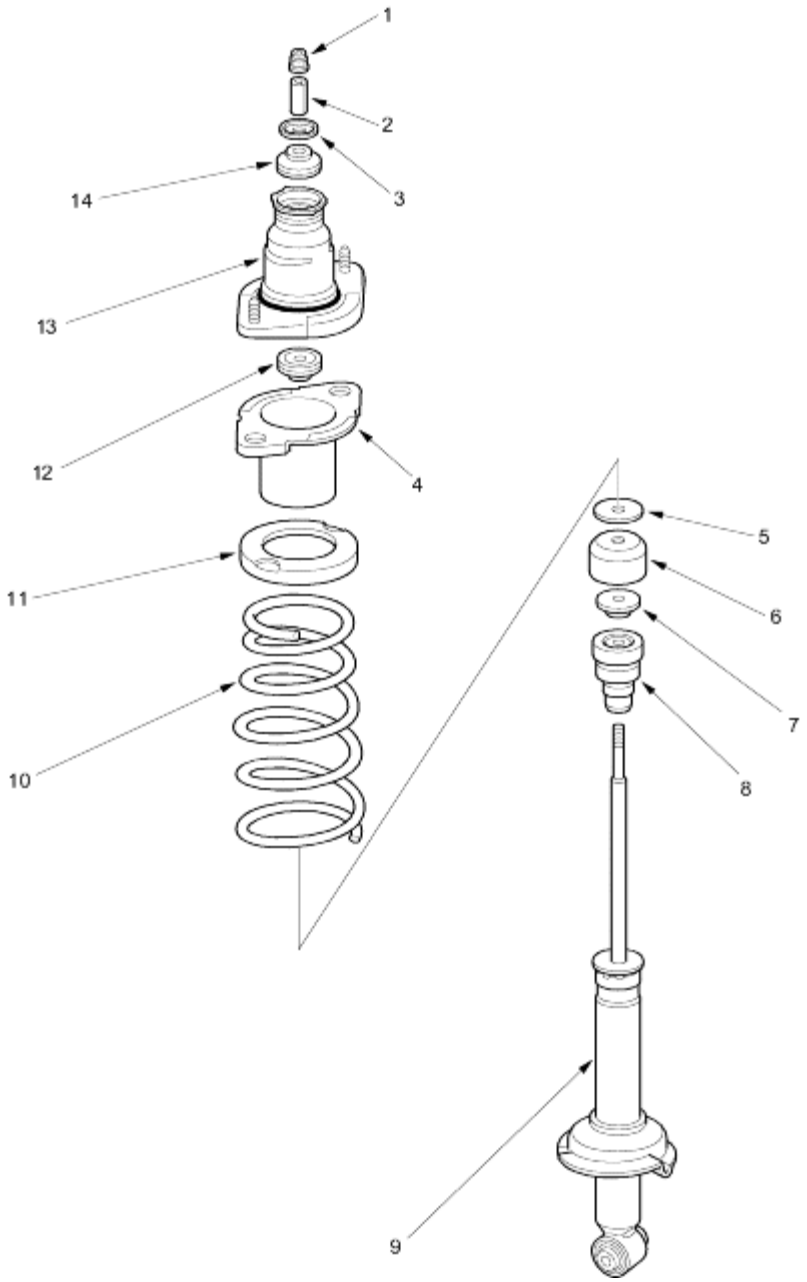


2. 8. Lower the jack and remove the trailing arm.
   9. Install the trailing arm in the reverse order of removal and note these items:
      - First install all the suspension components and lightly tighten bolts and nuts, then place a jack under the trailing arm and raise the suspension to load it with the vehicle's weight before fully tightening bolts and nuts to the specified torque values.
      - Tighten all the mounting hardware to the specified torque values.
      - Before installing the wheel, clean the mating surface of the brake drum or disc and the inside of the wheel.
      - Check the wheel alignment and adjust it if necessary (see page 18-4).

Rear Suspension

Damper/Spring Replacement

Exploded View



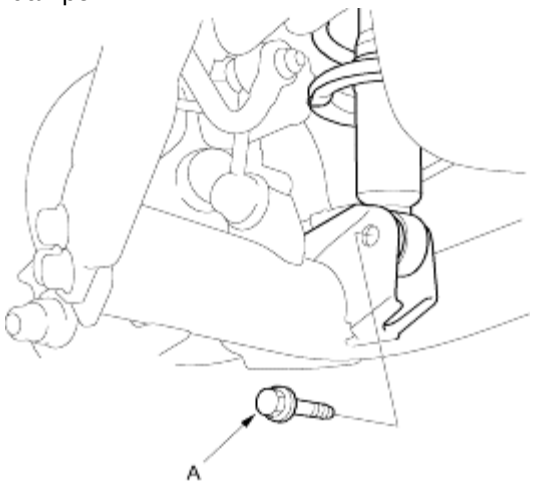
1. SELF-LOCKING NUT
   10 x 1.25 mm, 29 Nm (3.0 kgf/m, 22 lbf/ft), Replace.
2. DAMPER MOUNTING COLLAR
3. DAMPER MOUNTING WASHER
   Check for weakness.
4. DUST COVER
5. DAMPER MOUNTING PLATE
6. BUMP STOP COVER
   Check for vending and damage.
7. BUMP STOP PLATE
8. BUMP STOP
   Check for weakness and damage.
9. DAMPER UNIT
   Check for oil leak, gas leak and smooth operation.
10. DAMPER SPRING
    Check for weakened compression and damage.
11. SPRING MOUNTING CUSHION
    Check for deterioration and damage.
12. DAMPER MOUNTING BUSHING
13. DAMPER MOUNTING BASE
14. DAMPER MOUNTING BUSHING

Rear Suspension

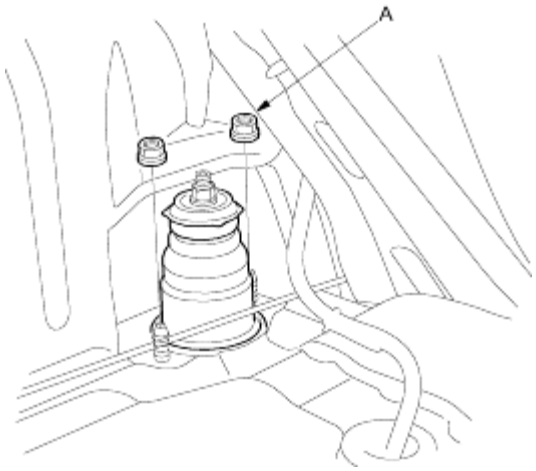
Damper/Spring Replacement (cont'd)

Removal

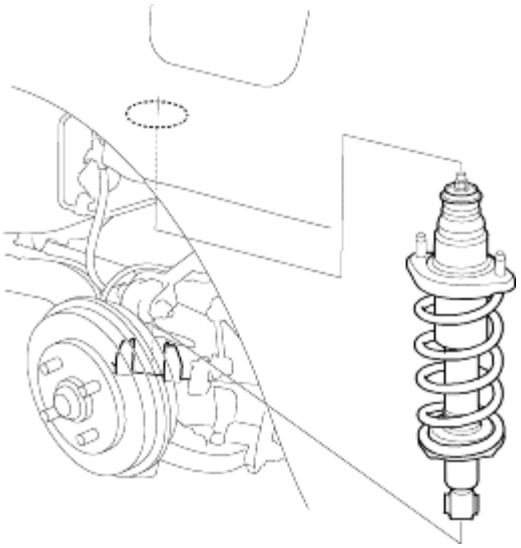
1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Remove the flange bolt (A) from the bottom of the damper.



2. 3. Remove the flange nuts (A) from the top of the damper in the trunk.



1. 4. Remove the damper assembly from the body.

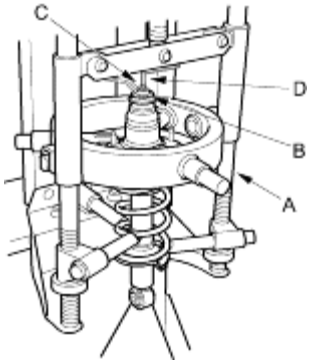


Rear Suspension

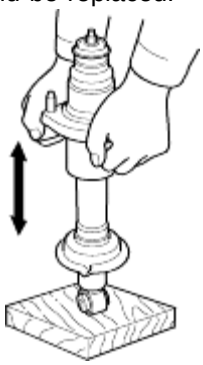
Damper/Spring Replacement (cont'd)

Disassembly/Inspection

1. 1. Compress the damper spring with the commercially available strut compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



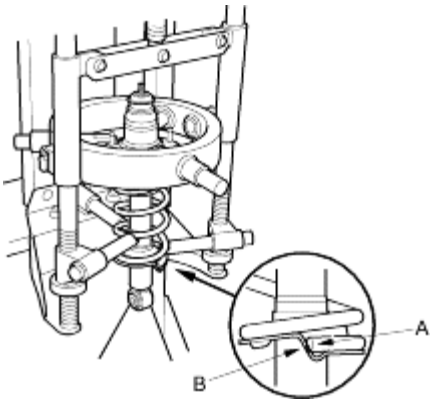
2. 2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.
   3. Reassemble all the parts, except for the spring.
   4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



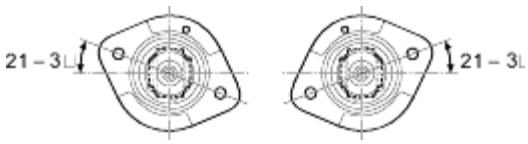
3. 5. Check for oil leaks, abnormal noises or binding during these tests.

Reassembly

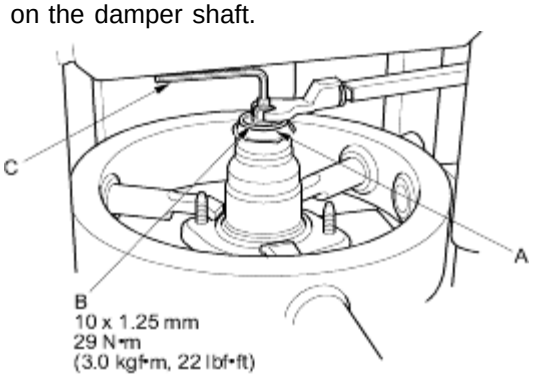
1. 1. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B) and align the damper mounting base as shown.



LEFT RIGHT



2. 2. Install the damper assembly on a commercially available strut spring compressor (C).
   3. Compress the damper spring with the spring compressor.
   4. Install the washer (A) and a new self-locking nut (B) on the damper shaft.



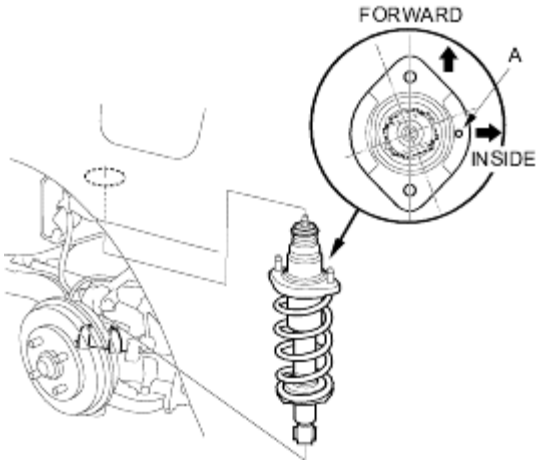
3. 5. Hold the damper shaft with a hex wrench (C) and tighten the self-locking nut to the specified torque.

Rear Suspension

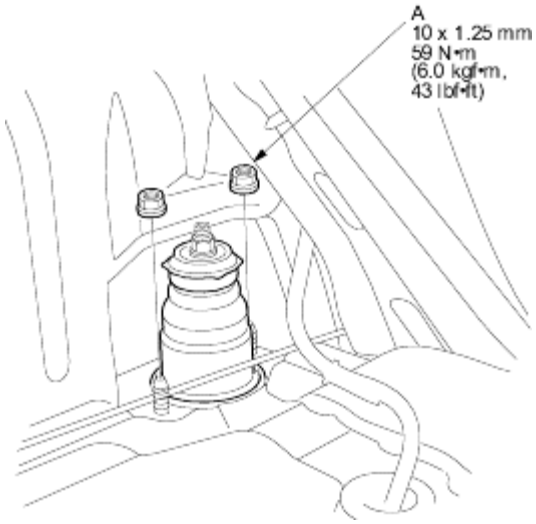
Damper/Spring Replacement (cont'd)

Installation

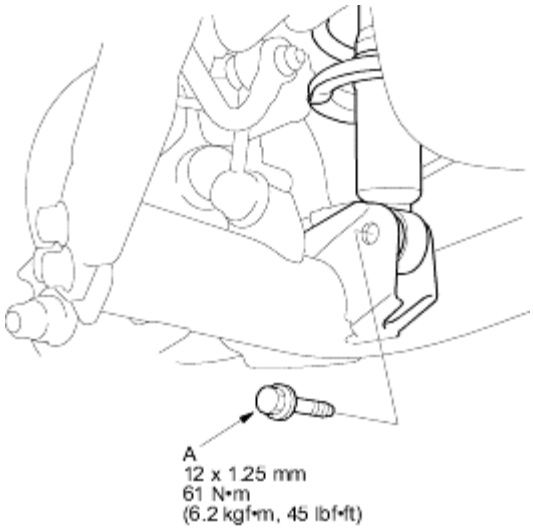
1. Position the damper assembly in the body. Note the direction of the damper mounting base so that the small hole dot (A) on it is toward the inside of the vehicle.



2. Loosely install the flange nuts (A) onto the top of the damper.



3. Loosely install the flange bolt (A) on the bottom of the damper.



4. Raise the suspension with a floor jack to load the vehicle weight and tighten the nuts and bolt to the specified torque values.
5. Clean the mating surface of the brake drum and the inside of the wheel, then install the rear wheel.
6. Check the wheel alignment and adjust it if necessary (see page 18-4).

Front and Rear Suspension

Wheel Alignment

The suspension can be adjusted for front camber, front toe and rear toe. However, each of these adjustments are interrelated to each other. For example, when you adjust toe, the camber changes. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

1. 1. Release the parking brake to avoid an incorrect measurement.
   2. Make sure the suspension is not modified.
   3. Check the Tyre sizeand Tyre pressure.

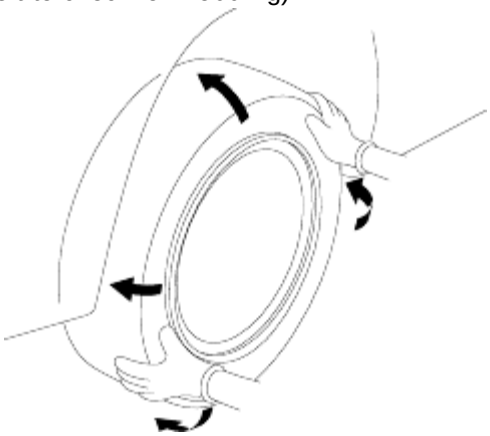
Tyre size

Front/rear	: 185/70 R14
	: 185/65 R15
	: 195/60 R15

Tyre pressure

Front/rear	210 kPa (2.1kgf/cm²,30psi)

2. 4. Check the runout of the wheels and tyres.
   5. Check the suspension ball joints. (Hold a wheel with your hands and move it up and down and right and left to check for wobbling).



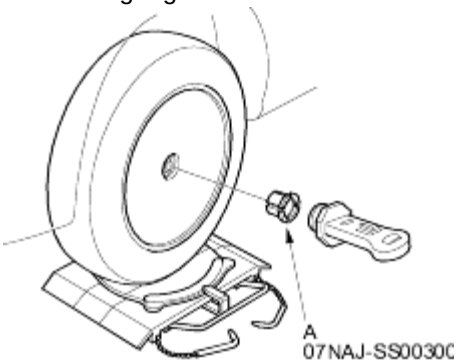
3. 6. Bounce the vehicle up and down several times to stabilise the suspension.

Front Caster Inspection

1. 1. Raise the vehicleand set the turning radius gauges beneath the front wheels and place boards under the rear wheels the same thickness as the turning radius gauges, then lower the vehicle.

   NOTE: Be sure that the vehicle is level with the wheels on the turning radius gauges and boards.

2. Remove the wheel cap and install the wheel alignment gauge attachment (A) and camber/caster gauge on the wheel hub and apply the front brake.



3. Turn the front wheel 20 outward, then turn the adjusting screw of the camber/caster gauge to set the bubble at 0.
   3. Turn the wheel 20; inward and read the caster on the gauge with the bubble at the centre of the gauge. If the caster angle is not within the specification, check for bent or damaged suspension components.

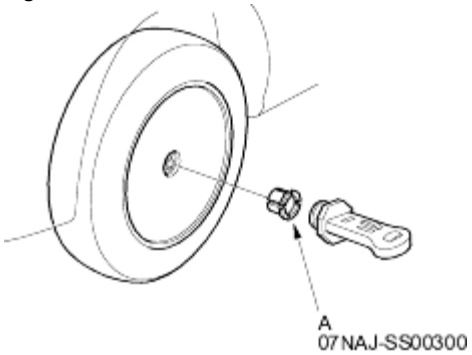
Front Caster angle: 133' 1

Front and Rear Suspension

Wheel Alignment (cont'd)

Front Camber Inspection

1. 1. Turn the front wheels to the straight ahead position.
   2. Remove the wheel cap and install the wheel alignment gauge attachment (A) and camber/caster gauge on the wheel hub.



2. 3. Read the camber angle on the gauge with the bubble at the centre of the gauge. If the camber angle is not within the specification, adjust the camber (see the right column).

Front camber angle: 0°00' ±45'

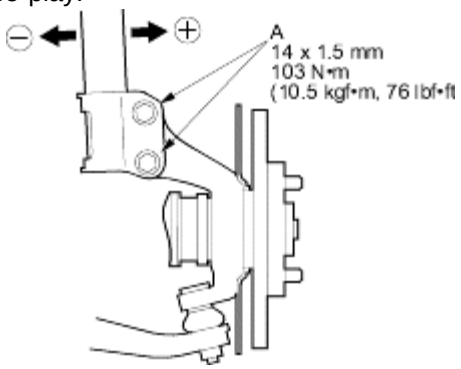
Front Camber Adjustment

The front camber can be adjusted by exchanging one or both of the damper pinch bolts with the smaller diameter adjusting bolt (s). The difference between the adjusting bolt diameter and the pinch bolt hole diameter allow a small range of adjustment.

Damper Pinch Bolt: Adjusting bolt: (P/N 90188-S5A-000)



1. 1. Raise the front of the vehicle, and make sure it is securely supported. Remove the front wheels.
   2. Loosen the damper pinch nuts and bolts (A), and adjust the camber by moving the bottom of the damper within the range of the damper pinch bolt free play.

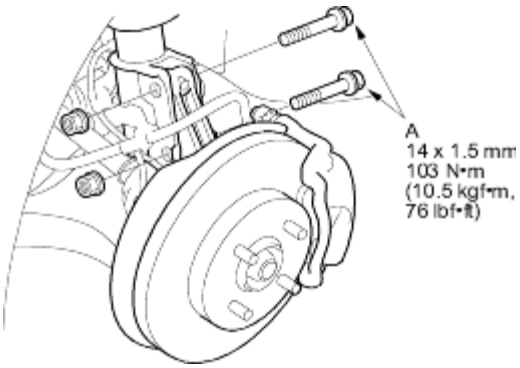


2. 3. Tighten the bolts to the specified torque.
   4. Reinstall the front wheels. Lower the front of the vehicle to the ground and bounce the vehicle several times to stabilise the suspension.
   5. Check the camber angle. If it is within the specification, check the front toe. If it is not within the specification, go to step 6.

Front and Rear Suspension

Wheel Alignment (cont'd)

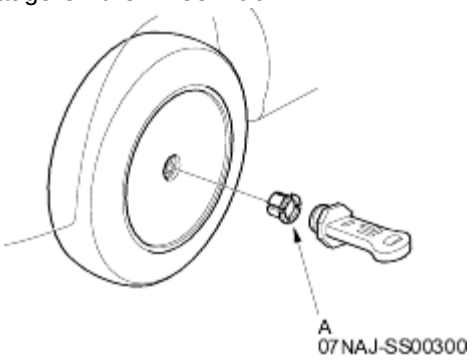
1. 6. Raise the front of the vehicle, and make sure it is securely supported. Remove the front wheels.
2. 7. Replace the damper pinch bolts with the adjusting bolts (A) and adjust the camber angle.
   NOTE: The camber angle can be adjusted up to ± 15' (centre of tolerance) by replacing one damper pinch bolt with the adjusting bolt. The camber angle can be adjusted up to ± 30' by replacing both upper and lower damper pinch bolts with the adjusting bolts.



3. 8. Tighten the bolts to the specified torque.
   9. Reinstall the front wheel. Lower the front of the vehicle to the ground and bounce the vehicle several times to stabilise the suspension.
   10. Check the camber angle. If it is within the specification, check the front toe and adjust if necessary. If it is not within the specification, readjust and recheck. If the camber angle cannot be adjusted to the specification, check for bent or damaged suspension components.

Rear Camber Inspection

1. 1. Remove the wheel cap, and install the wheel alignment gauge attachment (A) and camber/caster gauge on the wheel hub.



2. 2. Read the camber angle on the gauge with the bubble at the centre of the gauge. If the camber angle is not within the specification, check for bent or damaged suspension components.

Rear camber angle: - 0°45' ± 45'

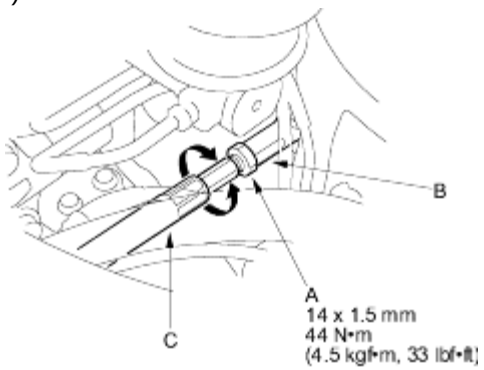
Front and Rear Suspension

Wheel Alignment (cont'd)

Front Toe Inspection/Adjustment

1. 1. Turn the front wheels to the straight ahead position.
   2. Check the toe. If it is not within the specification, go to step 3.

   Front toe-in: 0 ± 3 mm (0 ± 0.12 in.)
2. 3. Loosen the locknut (A) while holding the tie-rod end (B).



3. 4. Turn the tie-rod (C) until the toe is correct.

   NOTE: Adjust both the right and left wheels at the same time by the same amount in opposite directions to obtain the correct toe.
4. 5. After adjusting, tighten the locknut while holding the tie-rod end. Make sure the toe setting does not change.

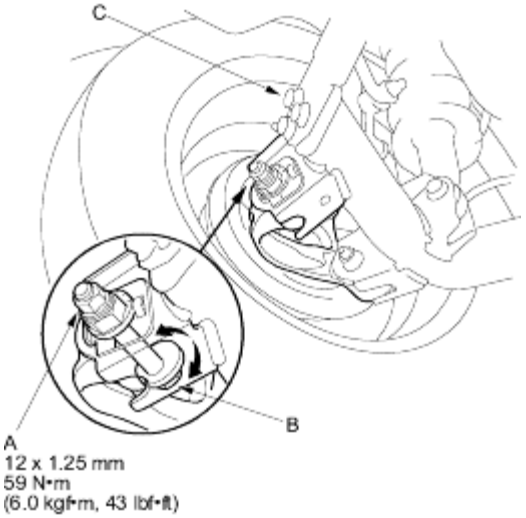
Rear Toe Inspection/Adjustment

1. 1. Release the parking brake.
   2. Check the toe. If it is not within the specification, go to step 3.

   Rear toe-in: 2 ± 3mm (0.08 ± 0.12 in.)
2. 3. Loosen the self-locking nut (A) while holding the adjusting bolt (B).

   NOTICE

   Do not loosen the special bolts (C) on the lower arm to adjust the alignment.



3. 4. Replace the self-locking nut with a new one and lightly tighten it.

   NOTE: Always use a new self-locking nut whenever you loosened it.
4. 5. Turn the adjusting bolt until the toe is correct.

   Rear toe-in: 2+²-1 mm (0.08 +0.08-0.04 in.)
5. 6. Tighten the self-locknut to the specified torque while holding the adjusting bolt.

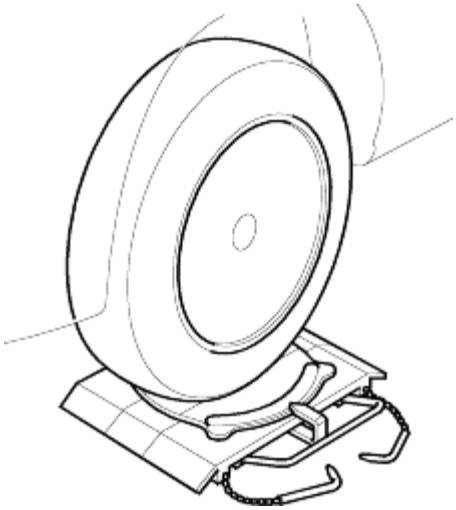
Front and Rear Suspension

Wheel Alignment (cont'd)

Turning Angle Inspection

1. 1. Raise the vehicle and set the turning radius gauges beneath the front wheels and place boards under the rear wheels the same thickness as the turning radius gauges, then lower the vehicle.

NOTE: Be sure that the vehicle is level with the wheels on the turning radius gauges and boards.



2. 2. Turn the steering wheel fully to the right and left while applying the brake and check the turning angles of both front wheels. If the turning angle is not within the specification or the inward turning angles differ between the right and left, go to step 3.

Turning angle:

D15B engine:

Inward:	40°00' ± 2°
Outward:	31°00' (reference)

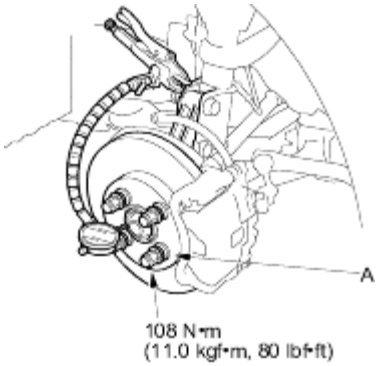
D17A engine:

Inward:	38°00' ± 2°
Outward:	30°00' (reference)

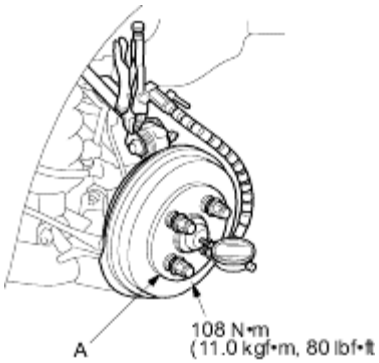
3. 3. Check the toe. If it is correct but the turning angle is not within the specification, check for bent or damaged suspension components.

1. 1. Raise the vehicle and make sure it is securely supported. Remove the wheels.
2. 2. Install suitable flat washers (A) and wheel nuts and tighten the nuts to the specified torque to hold the brake disc or drum securely against the hub.

Front:



Rear:



3. 3. Set up the dial gauge against the hub flange as shown and measure the bearing end play moving the brake disc or drum inward and outward.

Bearing end play:

Standard:

Front/Rear:	0 – 0.05 mm (0 – 0.002 in.)

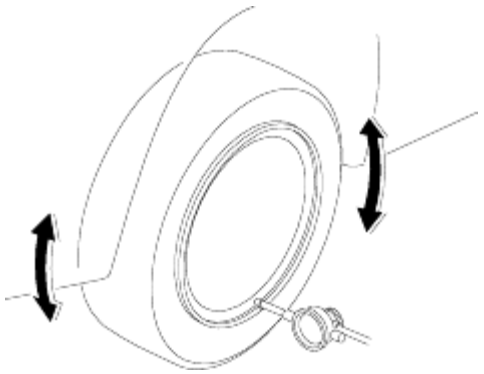
4. 4. If the bearing end play is more than the standard, replace the wheel bearing.

1. 1. Raise the vehicle and make sure it is securely supported.
2. 2. Check for a bent or deformed wheel.
   3. Set up the dial gauge as shown and measure the axial runout by turning the wheel.

Front and Rear Wheel axial runout:

Standard:

Aluminium Wheel:	0 – 0.7 mm (0 – 0.03 in.)
Steel Wheel:	0 – 1.0 mm (0 – 0.04 in.)
Service limit:	2.0 mm (0.08 in.)

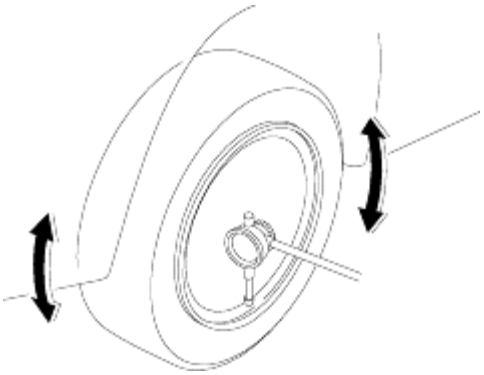


3. 4. Reset the dial gauge to the position shown and measure the radial runout.

Front and Rear Wheel radial runout:

Standard:

Aluminium Wheel:	0 – 0.7 mm (0 – 0.03 in.)
Steel Wheel:	0 – 1.0 mm (0 – 0.04 in.)
Service limit:	1.5 mm (0.06 in.)



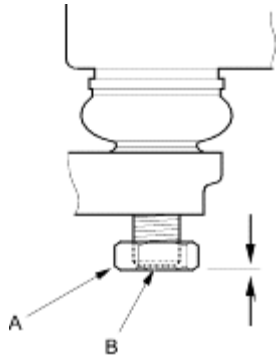
4. 5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-8).
   6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Special Tools Required

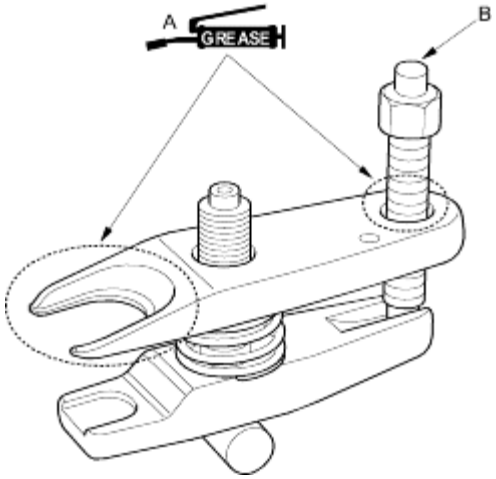
Ball joint remover, 28 mm, 07MAC-SL00200

NOTE: Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

1. 1. Install a hex nut (A) onto the threads of the ball joint (B). Be sure the nut is flush with the ball joint pin end to prevent damage to the thread end of the ball joint pin.



2. 2. Apply grease to the special tool on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



General Information

Chassis and Engine Numbers (cont'd)

Applicable Area Code/VIN/Engine Number/Transmission Number List

MODEL	APPLICABLE AREA CODE	GRADE NAME	TRANSMISSION TYPE	VEHICLE IDENTIFICATION NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
CIVIC	KF	LXI	5MT	JHMES85301S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86301S200001-	D15Y3-1000001-	SLXA-1000001-
		EXI	5MT	JHMES85701S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86701S200001-	D15Y3-1000001-	SLXA-1000001-
	KN	150I	5MT	JHMES85401S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86401S200001-	D15Y3-1000001-	SLXA-1000001-
		170I	5MT	JHMES15901S200001-	D17A5-1000001-	SLW-1000001-
			4AT	JHMES16901S200001-	D17A5-1000001-	SLXA-1000001-
	KT	LXI	5MT	JHMES85301S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86301S200001-	D15Y3-1000001-	SLXA-1000001-
		EXI	5MT	JHMES85701S200001-	D15Y3-1000001-	SLW-1000001-
			4AT	JHMES86701S200001-	D15Y3-1000001-	SLXA-1000001-

Brakes

Conventional Brake Components	19-1
ABS Components (U.K. Manufacturing)	19-53
ABS Components (Suzuka Factory)	19-85

Brakes

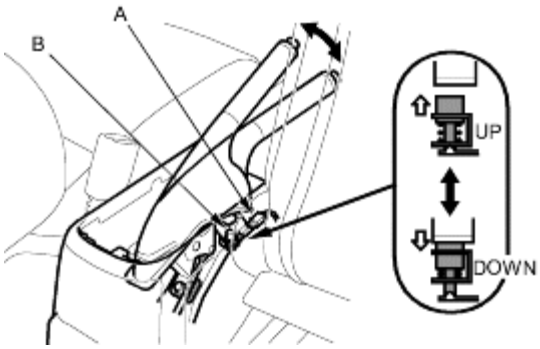
Conventional Brake Components

Special Tools	19-2
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Brake Pedal and Brake Pedal Position Switch Adjustment	19-5
Parking Brake Inspection and Adjustment	19-6
Brake System Bleeding	19-7
Brake System Indicator Circuit Diagram	19-9
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Brake Fluid Level Switch Test	19-10
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Brake Booster Pushrod Clearance Adjustment	19-29
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Brake Hoses and Lines Inspection	19-48
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Parking Brake Cable Replacement	19-50

Conventional Brake Components

Parking Brake Switch Test

1. 1. Remove the console and disconnect the connector (A) from the switch (B).

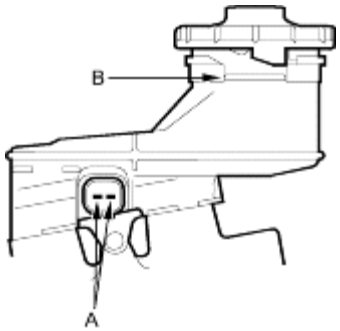


2. 2. Check for continuity between the positive terminal and body ground:
   - With the brake lever up, there should be continuity.
   - With the brake lever down, there should be no continuity.

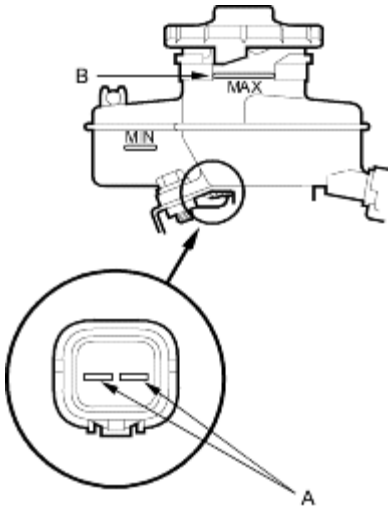
Check for continuity between the terminals (A) with the float in the down position and the up position

- Remove the brake fluid completely from the reservoir.
  With the float down, there should be continuity.
- File the reservoir with brake fluid to MAX (upper) level (B). With the float up, there should be no continuity.

4-door:



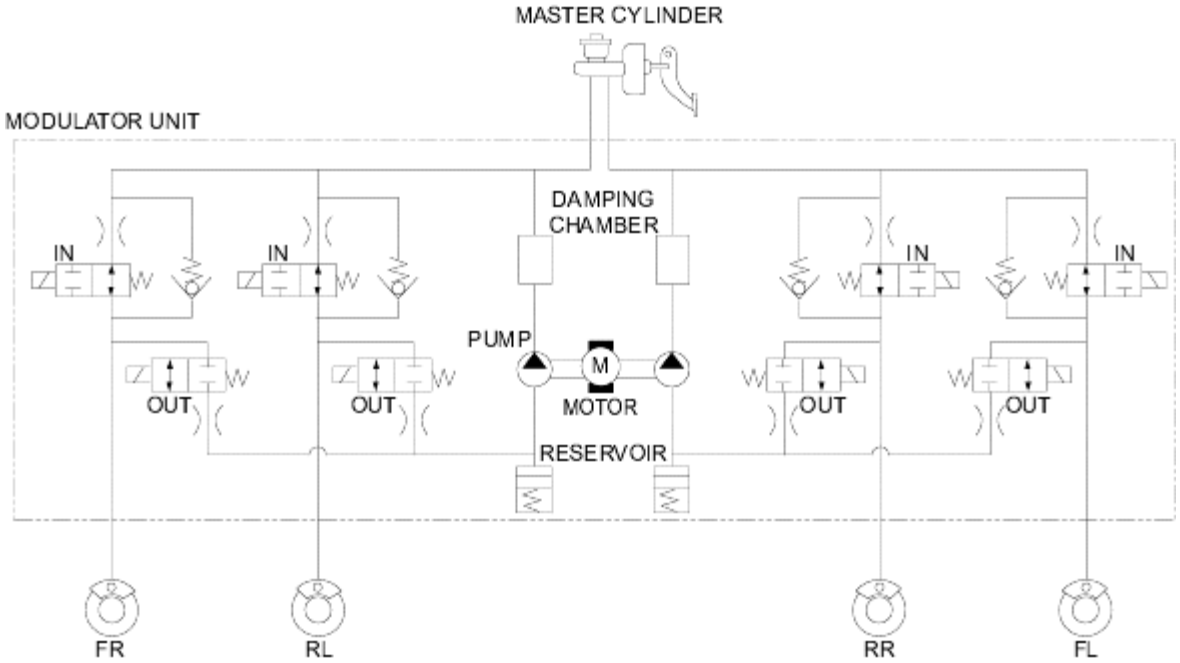
5-door:



ABS Components
System Description (cont'd)

ABS Modulator

The ABS modulator consists of the inlet solenoid valve, outlet solenoid valve, reservoir, pump, pump motor and the damping chamber. The modulator reduces the calliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the calliper, reservoir and the master cylinder. The hydraulic control has three modes: pressure intensifying, pressure retaining and pressure reducing. The hydraulic circuit is an independent four channel-type, one channel for each wheel.



IN: INLET VALVE (NORMALLY OPEN)

OUT: OUTLET VALVE (NORMALLY CLOSED)

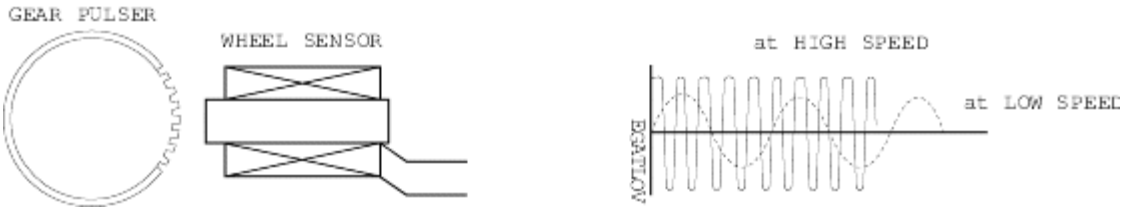
Pressure intensifying mode:	Inlet valve open, outlet valve closed
	Master cylinder fluid is pumped out to the calliper.
Pressure retaining mode:	Inlet valve closed, outlet valve closed
	Calliper fluid is retained by the inlet valve and outlet valve.
Pressure reducing mode:	Inlet valve closed, outlet valve open
	Calliper fluid flows through the outlet valve to the reservoir.
Motor operation mode:	When starting the pressure reducing mode, the pump motor is ON.
	When stopping ABS operation, the pump motor is OFF.
	The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

ABS Components

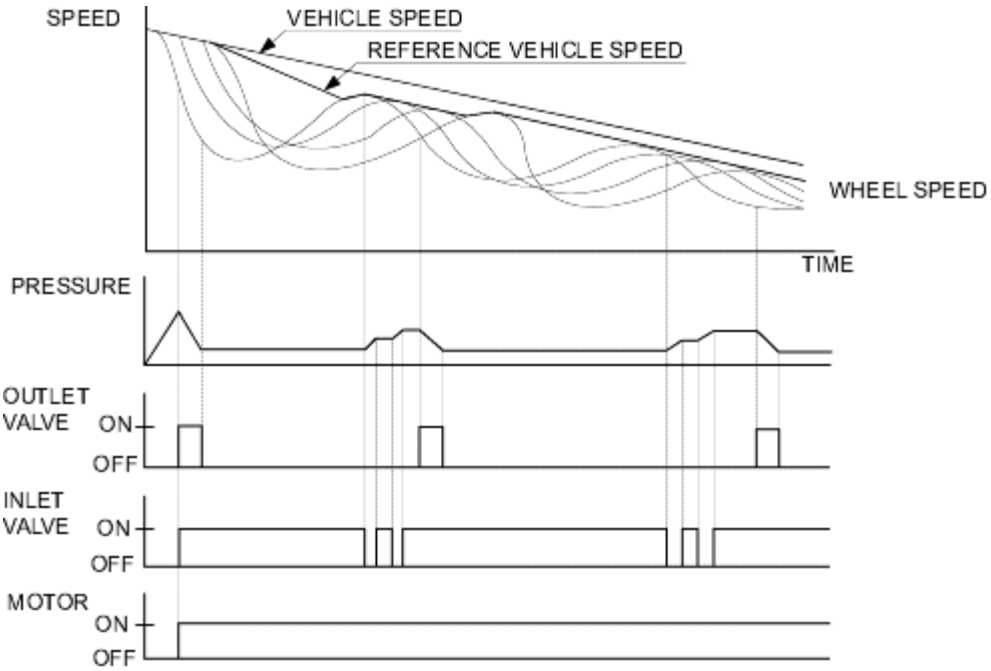
System Description (cont'd)

Wheel Sensors

The wheel sensors are the magnetic contactless type. As the gear pulsar teeth rotate past the wheel sensor's magnetic coil, AC current is generated. The AC frequency changes in accordance with the wheel speed. The ABS control unit detects the wheel sensor signal frequency and thereby detects the wheel speed.



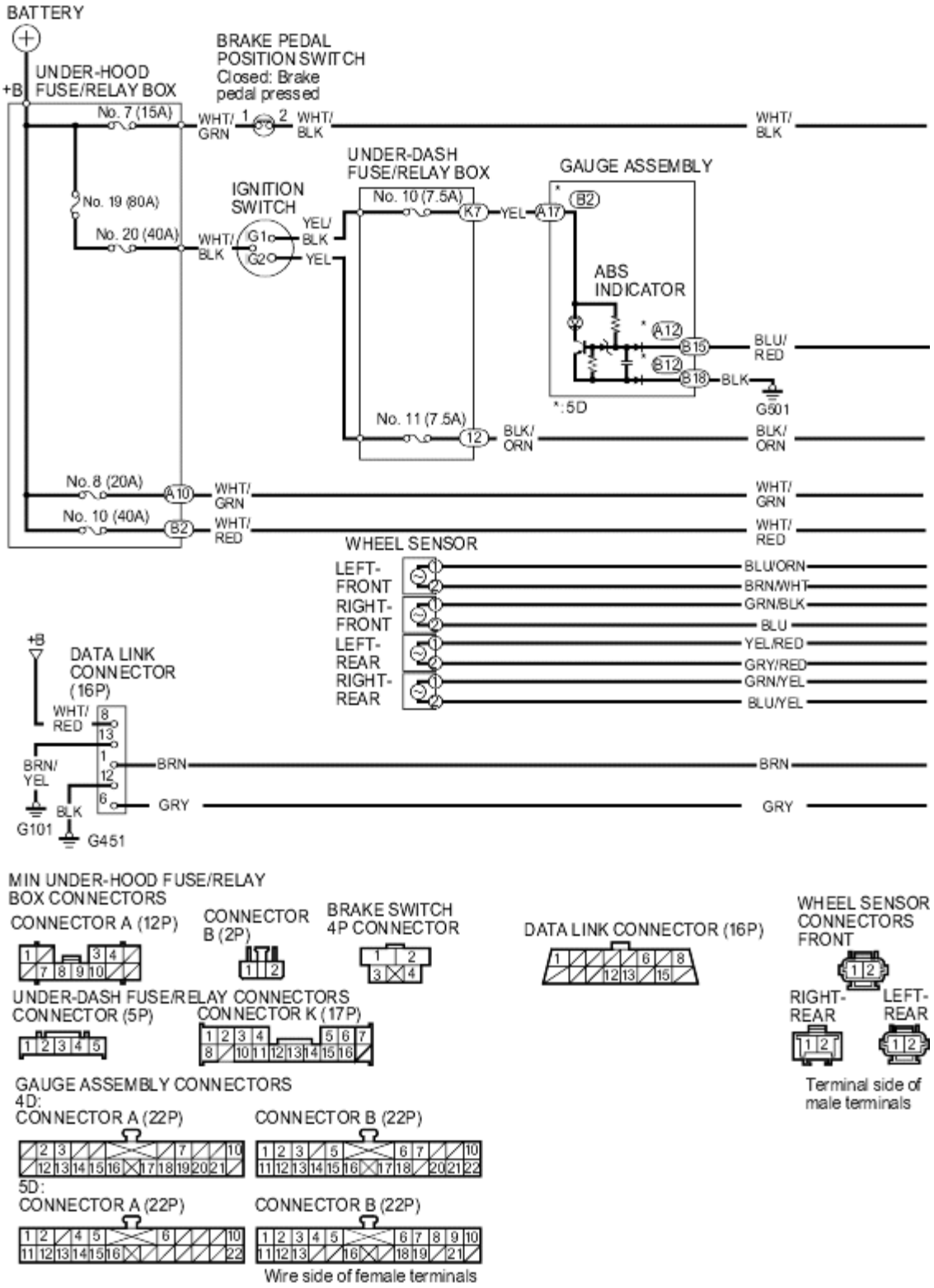
Wheel Speed and Modulator Control



When the wheel speed drops sharply below the vehicle speed, the outlet valve opens momentarily to reduce the calliper fluid pressure. The pump motor starts at this time. As the wheel speed is restored, the inlet valve opens momentarily to increase the calliper fluid pressure.

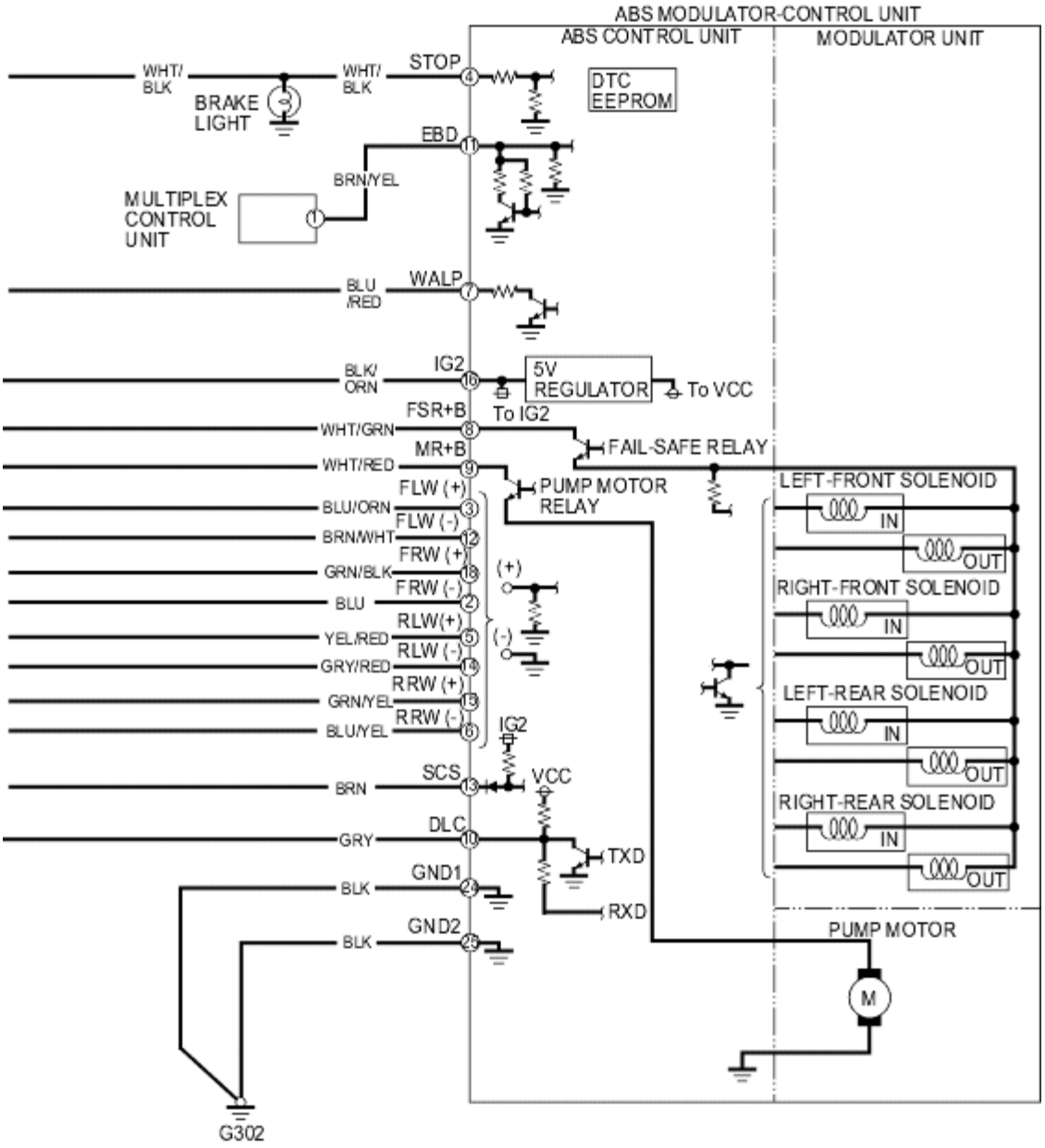
ABS Components

Circuit Diagram



ABS Components

Circuit Diagram



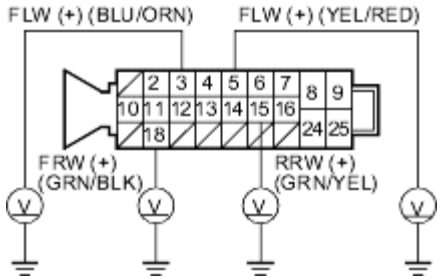
ABS Components
DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. 1. Disconnect the ABS control unit 25P connector.
   2. Start the engine.
   3. Measure the voltage between the appropriate wheel sensor (+) circuit terminal and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 18: FRW (+)
13 (Left-front)	No. 3: FLW (+)
15 (Right-rear)	No. 15: RRW (+)
17 (Left-rear)	No. 5: RLW (+)

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the (+) circuit wire between the ABS control unit and the appropriate wheel sensor. ■

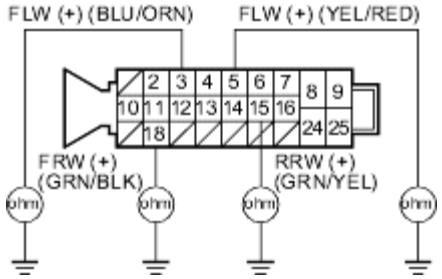
NO - Go to step 4.

2. 4. Turn the ignition switch OFF.

1. 5. Check for continuity between the appropriate wheel sensor (+) circuit terminal and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 18: FRW (+)
13 (Left-front)	No. 3: FLW (+)
15 (Right-rear)	No. 15: RRW (+)
17 (Left-rear)	No. 5: RLW (+)

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 6.

NO - Go to step 7.

2. 6. Disconnect the harness 2P connector from the appropriate wheel sensor, then check for continuity between the (+) and (-) terminals of the harness and body ground.

Is there continuity?

YES - Repair short to body ground in the (+) or (-) circuit wire between the ABS control unit and the wheel sensor. ■

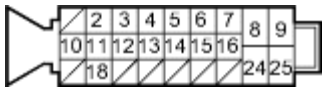
NO - Replace the wheel sensor. ■

ABS Components
DTC Troubleshooting (cont'd)

1. 7. Check the resistance between the appropriate wheel sensor (+) and (-) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(-) Side
11 (Right-front)	No. 18: FRW (+)	No. 2: FRW (+)
13 (Left-front)	No. 3: FLW (+)	No. 12: FLW (+)
15 (Right-rear)	No. 15: RRW (+)	No. 6: RRW (+)
17 (Left-rear)	No. 5: RLW (+)	No. 14: RLW (+)

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is the resistance between 450 - 2,000 ohms?

YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 8.

2. 8. Disconnect the harness 2P connector from the appropriate wheel sensor, and check the resistance between the (+) and (-) terminals of the wheel sensor.

Is the resistance between 450 - 2,000 ohms?

YES - Repair open in the (+) or (-) circuit wire, or short between the (+) circuit wire and the (-) circuit wire between the ABS control unit and the wheel sensor. ■

NO - Replace the wheel sensor. ■

DTC 12, 14, 16, 18: Wheel Sensor (Electrical Noise/Intermittent Interruption)

NOTE: If the ABS indicator comes on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. 1. Visually check for appropriate wheel sensor and pulsar installation (see table). Measure pulsar-to-sensor clearance. Inspect the pulsars for damage (see page 19-118).

DTC	Appropriate Terminal
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are the wheel sensors and pulsars OK?

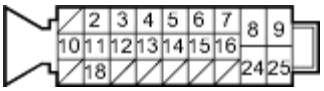
YES - Go to step 2.

NO - Reinstall or replace the appropriate wheel sensor or pulsar. ■

2. 2. Disconnect the ABS control unit 25P connector.
3. Measure the resistance between the appropriate wheel sensor (+) and (-) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(-) Side
12 (Right-front)	No. 18: FRW (+)	No. 2: FRW (+)
14 (Left-front)	No. 3: FLW (+)	No. 12: FLW (+)
16 (Right-rear)	No. 15: RRW (+)	No. 6: RRW (+)
18 (Left-rear)	No. 5: RLW (+)	No. 14: RLW (+)

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there less than 450 ohms?

YES - Repair short to wire between the appropriate wheel sensor (+) and (-) circuits. ■

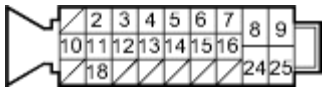
NO - Go to step 4.

ABS Components
DTC Troubleshooting (cont'd)

1. 4. Check for continuity between the appropriate wheel sensor (+) circuit terminal and other wheel sensor (+) circuit terminals (see table).

DTC	Appropriate Terminal	Other Terminal		
12	No. 18 FRW (+)	No. 3 FLW (+)	No. 15 RRW (+)	No. 5 RLW (+)
14	No. 3 FLW (+)	No. 18 FRW (+)	No. 15 RRW (+)	No. 5 RLW (+)
16	No. 15 RRW (+)	No. 18 FRW (+)	No. 3 FLW (+)	No. 5 RLW (+)
18	No. 5 RLW (+)	No. 18 FRW (+)	No. 3 FLW (+)	No. 15 RRW (+)

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short in the wires between the appropriate wheel sensor and the other wheel sensor harnesses. ■

NO - Clear the DTC and test-drive the vehicle. If the ABS indicator comes on and the same DTC is indicated, replace the ABS modulator-control unit. ■

DTC 21, 22, 23, 24: Pulsar

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on and are DTCs 21, 22, 23, 24 indicated?

YES - Go to step 3.

NO - The system is OK at this time. ■

2. 3. Check the appropriate pulsar gear for a chipped tooth (see table).

DTC	Appropriate Terminal
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

Is the pulsar OK?

YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator control unit and recheck. ■

NO - Replace the driveshaft or the hub unit (Chipped tooth on pulsar gear). ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 31, 32, 33, 34, 35, 36, 37, 38: Solenoid

1. 1. Clear the DTC (see page 19-90).
   2. Turn the ignition switch ON (II).
   3. Verify the DTC.

   Does the ABS indicator come on and are DTCs 31, 32, 33, 34, 35, 36, 37, 38 indicated?

   YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

   NO - The system is OK at this time. ■

DTC 41, 42, 43, 44: Wheel Lock

1. 1. Check for brake drag.

   Do the brakes drag?

   YES - Repair the brake drag. ■

   NO - Go to step 2.

2. 2. Check the installation of the appropriate wheel sensor (see table).

DTC	Appropriate Terminal
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

   Is it correct?

   YES - The probable cause was the vehicle spun during cornering. If the problem recurs, check the modulator using the Honda PGM Tester. ■

   NO - Reinstall the wheel sensor correctly. ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 51: Motor Lock

1. 1. Check the No. 10 (40 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

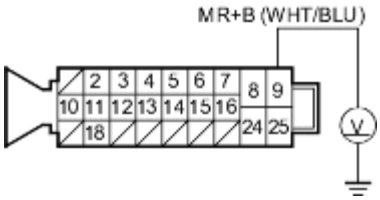
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the ABS control unit 25P connector.
   3. Measure the voltage between the No. 9 terminal and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 4.

NO - Repair open in the wire between the No. 10 (40 A) fuse and the ABS control unit. ■

3. 4. Connect the ABS control unit 25P connector.
   5. Clear the DTC.
   6. Test-drive the vehicle at 6 mph (10 km/h) or more.

Does the ABS indicator come on and is DTC 51 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - The system is OK at this time. ■

DTC 52: Motor Stuck OFF

1. 1. Check the No. 10 (40 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

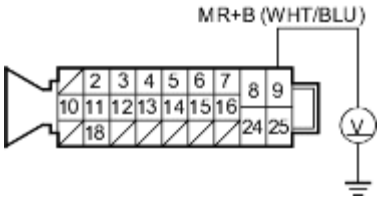
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the ABS control unit 25P connector.
   3. Measure the voltage between the No. 9 terminal and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Repair open in the wire between the No. 10 (40 A) fuse and the ABS control unit. ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 53: Motor Stuck ON

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle.

Does the ABS indicator come on and is DTC 53 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - The system is OK at this time. ■

DTC 54: ABS Fail-safe Relay

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle.

Does the ABS indicator come on and is DTC 54 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - Intermittent failure; the vehicle is OK at this time. ■

Conventional Brake Components

Front Brake Pads Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

Inspection (Except KX Model)

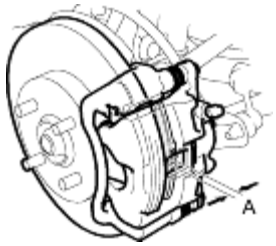
1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the backing plate.

   Brake pad thickness:

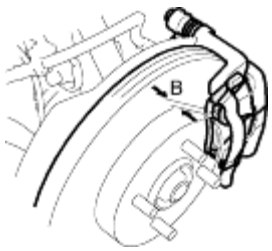
   Standard: 9.0 – 10.0 mm (0.35 – 0.39 in.)

   Service limit: 1.6 mm (0.06 in.)

Inner pad:



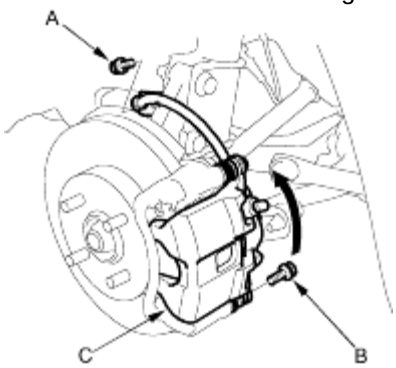
Outer pad:



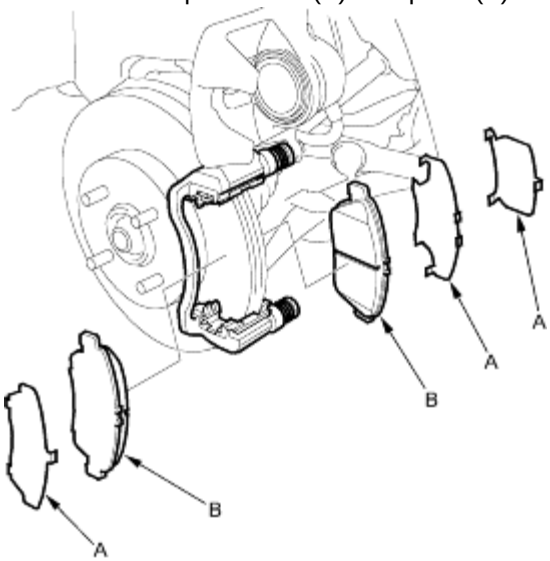
2. 3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

Replacement (Except KX Model)

1. 1. Remove the brake hose mounting bolt (A).



2. 2. Remove the bolt (B) and pivot the calliper (C) up out of the way. Check the hose and pin boots for damage and the deterioration.
   3. Remove the pad shims (A) and pads (B).



ABS Components
DTC Troubleshooting (cont'd)

DTC 61, 62: FSR +B Voltage

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle at 6 mph (10 km/h) or more.

   Does the ABS indicator come on?

   YES - Go to step 3.

   NO - The system is OK at this time. ■

2. 3. Verify the DTC.

   Is DTC 61 or 62 indicated?

   YES - Check the charging system. ■

   NO - Perform the appropriate troubleshooting for the code. ■

DTC 71: Different Diameter Tyre

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle.

   Does the ABS indicator come on and is DTC 71 indicated?

   YES - Make sure all four tyres are the specified size and are inflated to proper specification. ■

   NO - Intermittent failure; the vehicle is OK at this time. ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 81: Central Processing Unit (CPU) Diagnosis, and ROM/RAM Diagnosis

1. 1. Clear the DTC (see page 19-90).
   2. Test-drive the vehicle.

Does the ABS indicator come on and is DTC 81 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - Intermittent failure; the vehicle is OK at this time. ■

ABS indicator does not come on

1. 1. Turn the ignition switch ON (II) and watch the ABS indicator.

Does the ABS indicator come on?

YES - The system is OK at this time.

NO - Go to step 2.

2. 2. Turn the ignition switch OFF then ON (II) again.

Does the brake system indicator come on?

YES - Go to step 3.

NO - Repair open in the indicator power source circuit. ■

- Blown No. 10 (7.5 A) fuse.
- Open in the wire between the No. 10 (7.5 A) fuse and the gauge assembly.
- Open circuit inside the fuse box.

3. 3. Turn the ignition switch OFF.
   4. Disconnect the ABS control unit 25P connector.
   5. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 6.

4. 6. Turn the ignition switch OFF.
   7. Remove the gauge assembly (see page 22-93).
   8. Check the ABS indicator bulb in the gauge assembly.

Is the bulb OK?

YES - Go to step 9.

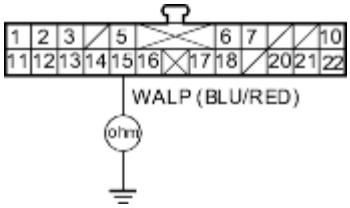
NO - Replace the ABS indicator bulb. ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

1. 9. Disconnect the gauge assembly connector B (22P), and go to step 10 for 4-door model. Disconnect the gauge assembly connector A (22P) and go to step 12 for 5-door model.
2. 10. Check for continuity between the gauge assembly connector B (22P) terminal No. 15 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

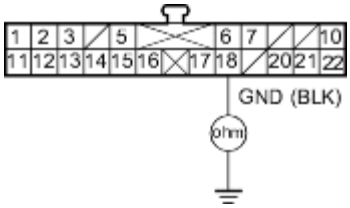
Is there continuity?

YES - Repair short to body ground in the wire between the gauge assembly and the ABS control unit. ■

NO - Go to step 11.

3. 11. Check for continuity between the gauge assembly connector B (22P) terminal No. 18 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

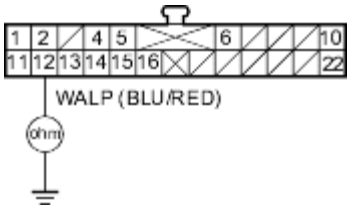
Is there continuity?

YES - Check for loose terminals in the gauge assembly connectors. If the connectors are OK, replace the gauge assembly. ■

NO - Repair open in the wire between the gauge assembly and body ground (G501). ■

1. 12. Check for continuity between the gauge assembly connector A (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

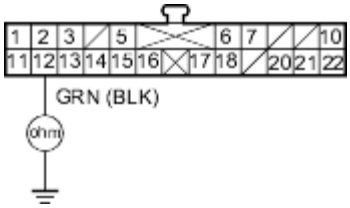
Is there continuity?

YES - Repair short to body ground in the wire between the gauge assembly and the ABS control unit. ■

NO - Go to step 13.

2. 13. Check for continuity between the gauge assembly connector B (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Check for loose terminals in the gauge assembly connectors. If the connectors are OK, replace the gauge assembly. ■

NO - Repair open in the wire between the gauge assembly and body ground (G501). ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

ABS indicator does not go off

1. 1. Check the No. 8 (20 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS modulator-control unit. ■

2. 2. Check the No. 11 (7.5 A) fuse in the under-dash fuse/relay box and reinstall the fuse if it is OK.

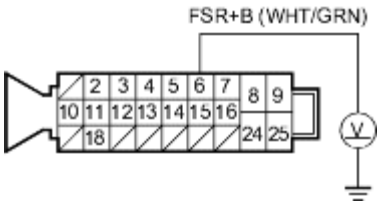
Is the fuse OK?

YES - Go to step 3.

NO - Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. ■

3. 3. Disconnect the ABS control unit 25P connector.
   4. Measure the voltage between terminal No. 8 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

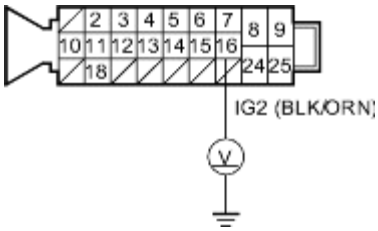
YES - Go to step 5.

NO - Repair open in the wire between the No. 8 (20 A) fuse and the ABS control unit. ■

4. 5. Turn the ignition switch ON (II).

1. 6. Measure the voltage between the ABS control unit 25P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

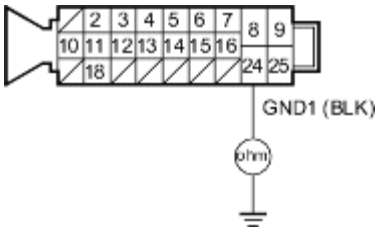
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the No. 11 (7.5 A) fuse and the ABS control unit. ■

2. 7. Turn the ignition switch OFF.
   8. Check for continuity between the ABS control unit 25P connector terminal No. 24 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 9.

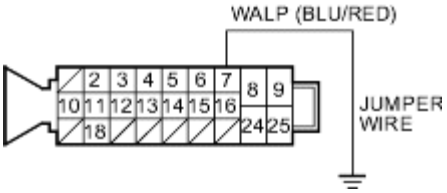
NO - Repair open in the wire between the ABS control unit and body ground (G302). ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

1. 9. Turn the ignition switch ON (II).
2. 10. Connect the ABS control unit 25P connector terminal No. 7 and body ground with a jumper wire.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

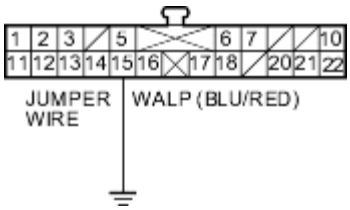
Does the ABS indicator go off?

YES - Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 11 for 4-door model. Go to step 12 for 5-door model.

3. 11. Connect the gauge assembly connector B (22P) terminal No. 15 and body ground with a jumper wire.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

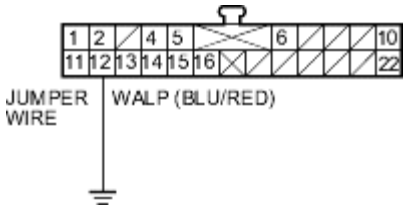
Does the ABS indicator go off?

YES - Repair open in the wire between the gauge assembly and the ABS control unit. ■

NO - Check for a loose gauge assembly connector B (22P). If the connector is OK, replace the printed circuit board in the gauge assembly. ■

1. 12. Connect the gauge assembly connector A (22P) terminal No. 12 and body ground with a jumper wire.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Does the ABS indicator go off?

YES - Repair open in the wire between the gauge assembly and the ABS control unit. ■

NO - Check for loose gauge assembly connector A (22P). If the connector is OK, replace the gauge assembly. ■

ABS Components

Brake System Indicator Circuit Troubleshooting

Brake System indicator does not come on

1. 1. Turn the ignition switch ON (II) and watch the brake system indicator.

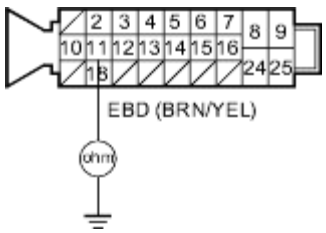
Does the brake system indicator come on?

YES - The system is OK at this time. ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF.
3. Disconnect the multiplex control unit 13P connector and the ABS control unit 13P connector.
4. Check for continuity between the ABS control unit 25P connector terminal No. 11 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the multiplex control unit and the ABS control unit. ■

NO - Go to multiplex control system troubleshooting (see page 22-273). ■

Brake system indicator does not go off

1. 1. Release the parking brake.
2. Start the engine.

Does the brake system indicator go off?

YES - The system is OK at this time. ■

NO - Go to step 3.

2. 3. Check the brake fluid level.

Is the level OK?

YES - Go to step 4.

NO - Refill the brake fluid and recheck. ■

3. 4. Check the ABS indicator.

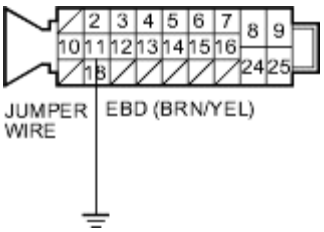
Does the ABS indicator stay on?

YES - Read the ABS DTC (see page 19-88), and do applicable troubleshooting for the DTC. ■

NO - Go to step 5.

4. 5. Turn the ignition switch OFF.
6. Disconnect the ABS control unit 25P connector.
7. Connect the ABS control unit 25P connector terminal No. 11 and body ground with a jumper wire.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

ABS Components

Brake System Indicator Circuit Troubleshooting (cont'd)

1. 8. Start the engine
2. 9. Check the brake system indicator.

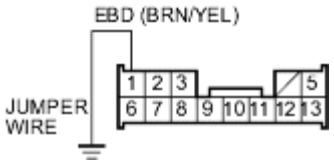
Does the brake system indicator go off?

YES - Replace the ABS modulator-control unit. ■

NO - Go to step 10.

3. 10. Turn the ignition switch OFF.
   11. Connect the multiplex control unit 13P connector terminal No. 1 and body ground with a jumper wire.

MULTIPLEX CONTROL UNIT 13P CONNECTOR



Wire side of female terminals

4. 12. Start the engine.
   13. Check the brake system indicator.

Does the brake system indicator go off?

YES - Repair open in the wire between the multiplex control unit and the ABS control unit. ■

NO - Go to multiplex control system troubleshooting (see page 22-273). ■

ABS Components

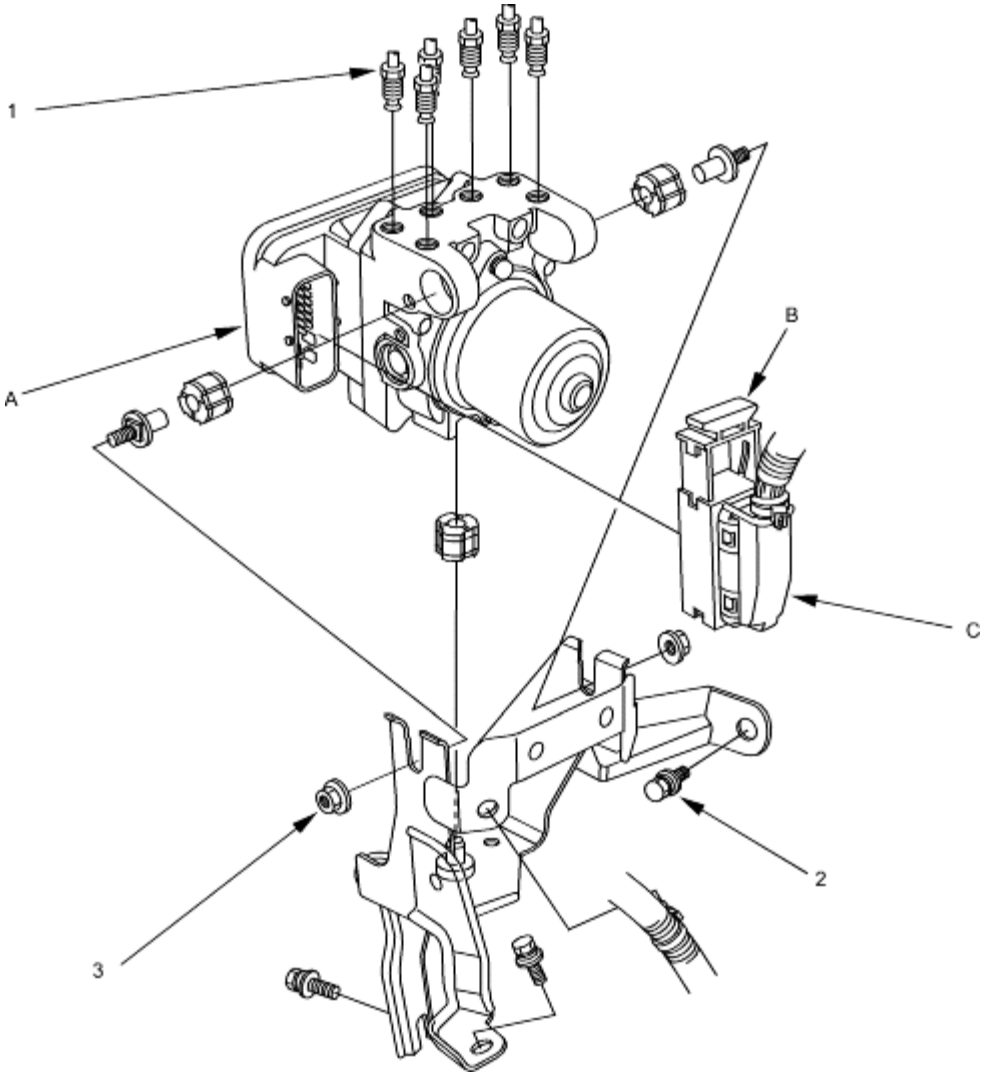
ABS Modulator-Control Unit Removal and Installation

NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Take care not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. 1. Pull up the lock (B) of the ABS control unit 25P connector (C), then disconnect the connector.



1. FLARE NUT
   15 Nm (1.5 kgf/m, 11 lbf/ft)
2. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
3. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)

   2. Disconnect the six brake lines.
   3. Remove the two 6 mm nuts.
   4. Remove the ABS modulator-control unit (A).

Installation

2. 1. Install the ABS modulator-control unit, then tighten the two 6 mm nuts.
   2. Align the connecting surface of the ABS control unit 25P connector.
   3. Push in the lock of the ABS control unit 25P connector until you hear it click into place, then connect the connector.
   4. Bleed the brake system, starting with the front wheels.
   5. Start the engine and check that the ABS indicator goes off.
   6. Test-drive the vehicle and check that the ABS indicator does not come on.

ABS Components

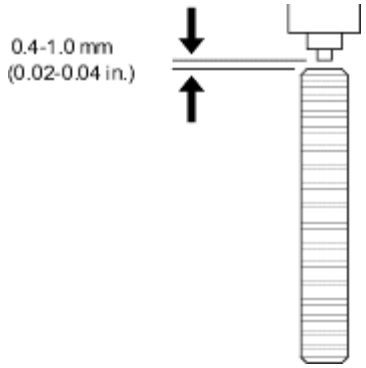
Wheel Sensor Inspection

1. 1. Inspect the front and rear pulsars for chipped or damaged teeth.
2. 2. Measure the air gap between the wheel sensor and the pulsar all the way around while rotating the pulsar. Remove the rear brake disc to measure the gap on the rear wheel sensor. If the gap exceeds 1.0 mm (0.04 in.), check for a bent suspension arm.

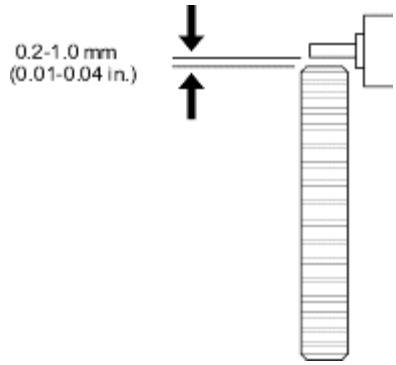
Standard:

Front:	0.4 - 1.0 mm (0.02 - 0.04 in.)
Rear:	0.2 - 1.0 mm (0.01 - 0.04 in.)

Front:

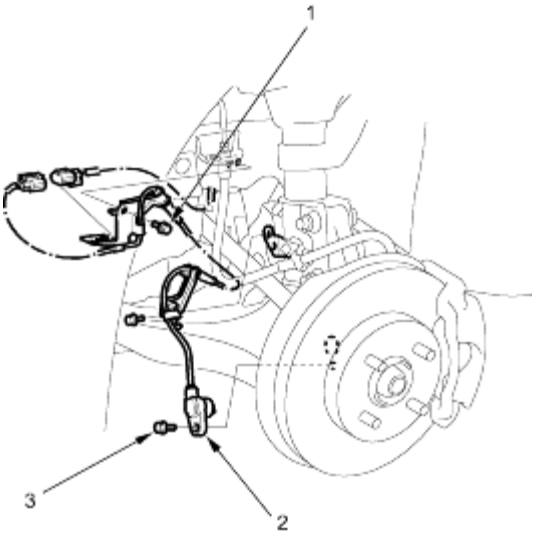


Rear:



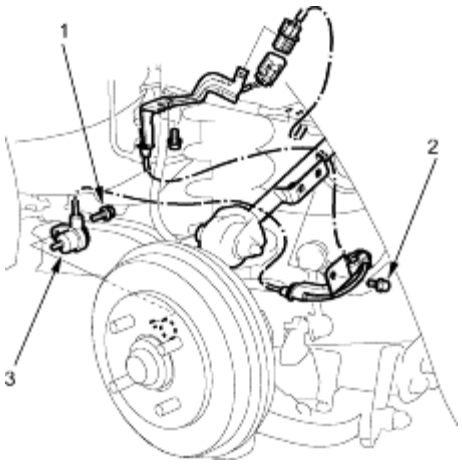
NOTE: Install the sensors carefully to avoid twisting the wires.

Front:



1. 1. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   2. WHEEL SENSOR
   3. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)

Rear:

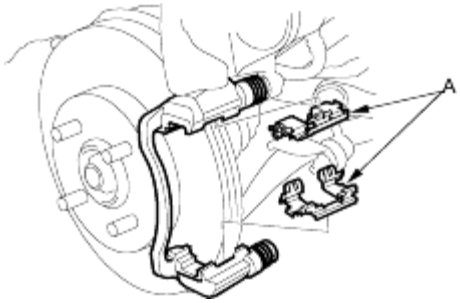


2. 1. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   2. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   3. WHEEL SENSOR

Conventional Brake Components

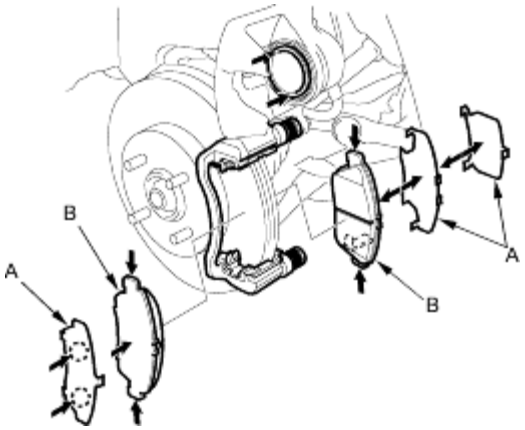
Front Brake Pads Inspection and Replacement (cont'd)

1. 4. Remove the pad retainers (A).



2. 5. Clean the calliper thoroughly; remove any rust and check for grooves and cracks.
   6. Check the brake disc for damage and cracks.
   7. Apply Dow Corning Molykote M77 grease to the retainers on their mating surfaces against the calliper bracket.
   8. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.
   9. Apply Dow Corning Molykote M77 or Daikalub 528D grease to both sides of the pad shims (A), the back of the pads (B) and the other areas indicated by the arrows.

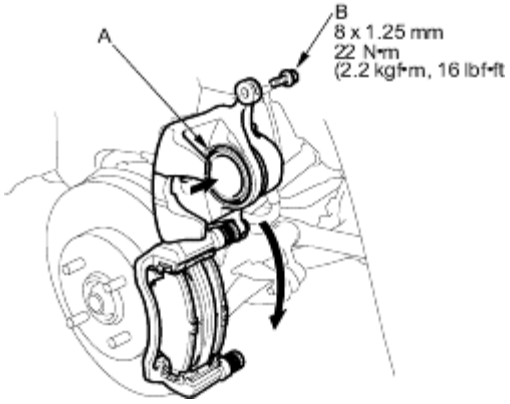
   Wipe excess grease off the shims. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.



3. 10. Install the brake pads and pad shims correctly. Install the pads with the wear indicators (C) on the inside.

   If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

1. 11. Push in the piston (A) so the calliper will fit over the pads. Make sure the piston boot is in position to prevent damaging it when pivoting the calliper down.



2. 12. Pivot the calliper down into position. Being careful not to damage the pin boots, install the bolt (B) and tighten it to the specified torque.
   13. Install the brake hose bracket onto the dampers.
   14. Press the brake pedal several times to make sure the brake works, then test-drive.

   NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

3. 15. After installation, check for leaks at hose and line joints or connections and retighten if necessary.

Conventional Brake Components

Front Brake Pads Inspection and Replacement (cont'd)

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

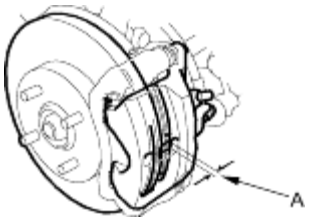
Inspection (KX Model)

1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the backing plate.

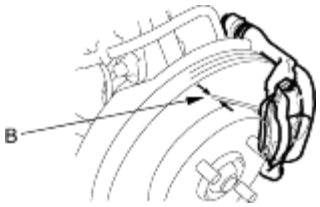
Brake pad thickness:

Standard:	9.5 – 10.5 mm (0.37 – 0.41 in.)
Service limit:	1.6 mm (0.06 in.)

Inner pad:



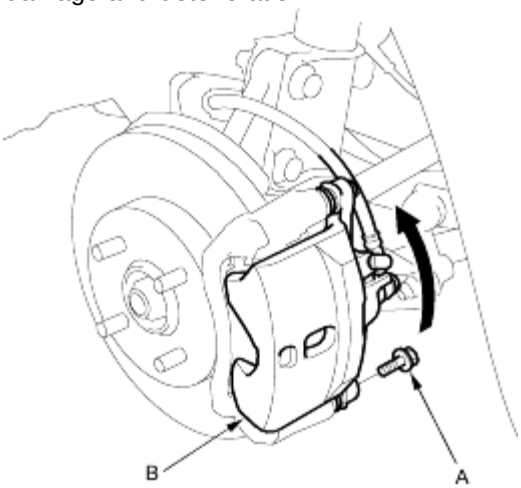
Outer pad:



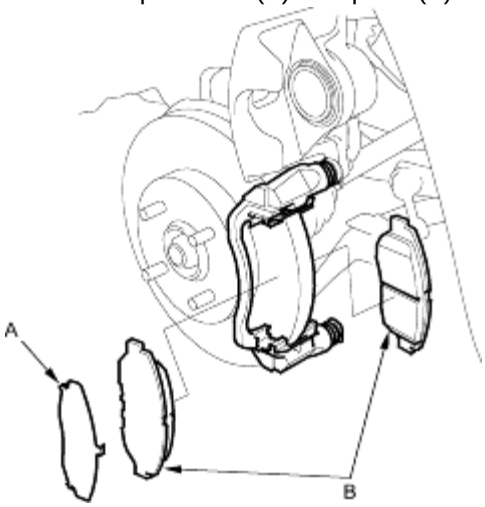
2. 3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

Replacement (KX Model)

1. 1. Remove the bolt (A) and pivot the calliper (B) up out of the way. Check the hose and pin boots for damage and deterioration.



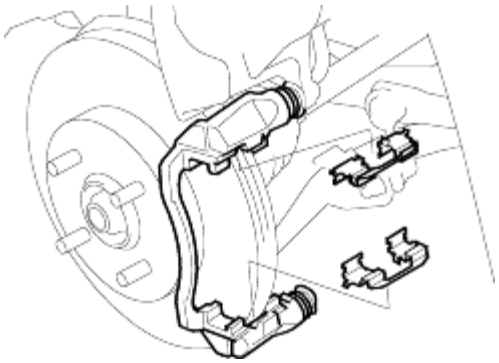
2. 2. Remove the pad shim (A) and pads (B).



Conventional Brake Components

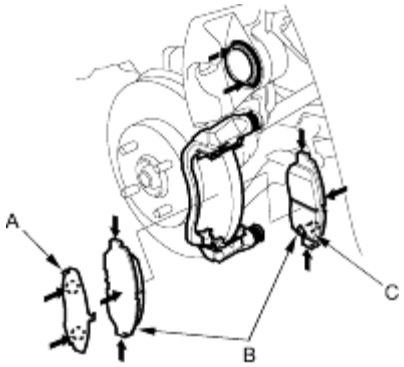
Front Brake Pads Inspection and Replacement (cont'd)

1. 3. Remove the pad retainers.



2. 4. Clean the calliper thoroughly; remove any rust and check for grooves and cracks.
   5. Check the brake disc for damage and cracks.
   6. Apply Dow Corning Molykote M77 grease to the retainers on their mating surfaces against the calliper bracket.
   7. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.
   8. Apply Dow Corning Molykote M77 or Daikalub 528D grease to both sides of the pad shim (A), the back of the pads (B) and the other areas indicated by the arrows.

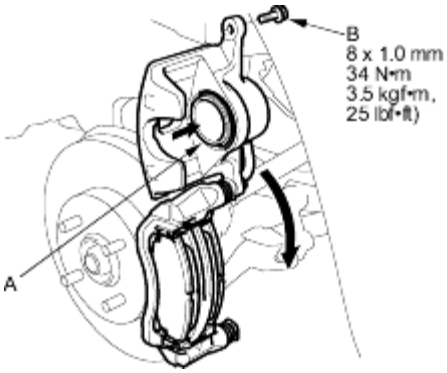
   Wipe excess grease off the shim. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.



3. 9. Install the brake pads and pad shim correctly. Install the pads with the wear indicators (C) on the inside.

   If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

1. 10. Push in the piston (A) so the calliper will fit over the pads. Make sure the piston boot is in position to prevent damaging it when pivoting the calliper down.



2. 11. Pivot the calliper down into position. Being careful not to damage the pin boots, install the bolt (B) and tighten it to the specified torque.
   12. Press the brake pedal several times to make sure the brake works, then test-drive.

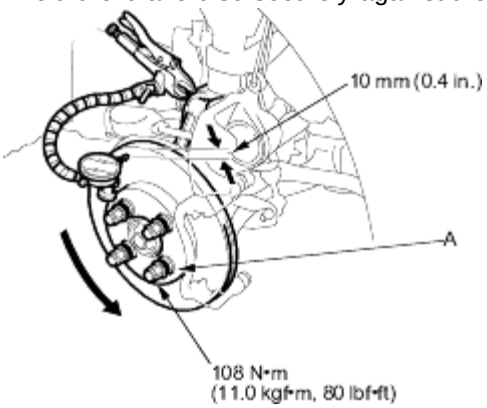
   NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

3. 12. After installation, check for leaks at hose and line joints or connections and retighten if necessary.

Conventional Brake Components
Front Brake Disc Inspection

Runout

1. 1. Raise the front of the vehicle, and make sure it is securely supported. Remove the front wheels.
   2. Remove the brake pads (see page 19-11).
   3. Inspect the disc surface for damage and cracks. Clean the disc thoroughly and remove all rust.
   4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



2. 5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.4 in.) from the outer edge of the disc.

   Brake Disc Runout:

   Service Limit: 0.10 mm (0.004 in.)

3. 6. If the disc is beyond the service limit, refinish the brake disc.

   Max. Refinish Limit: 19.0 mm (0.75 in.)

   NOTE:

   - If the brake disc is beyond the service limit for refinishing, replace it (see page 18-11).
   - A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

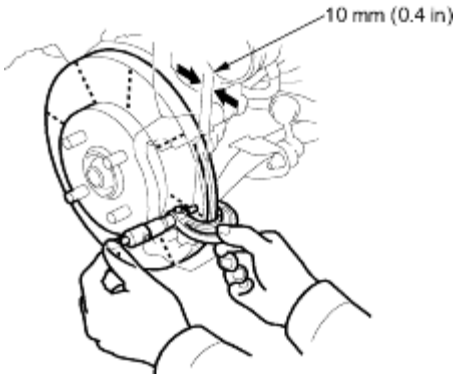
Thickness and Parallelism

1. 1. Raise the front of the vehicle and make sure it is securely supported. Remove the front wheels.
   2. Remove the brake pads (see page 19-11).
   3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.4 in.) in from the outer edge of the disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

      Brake Disc Thickness:

Standard:	20.9 – 21.8 mm (0.823 – 0.858 in.)
Max. Refinishing Limit:	19.0 mm (0.75 in.)
Brake Disc Parallelism:	0.015 mm (0.0006 in.) max.

      NOTE: This is the maximum allowable difference between the thickness measurements.



2. 4. If the disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe.

   The Kwik-Lathe produced by Kwik-way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 18-11).

Conventional Brake Components Front Brake Calliper Overhaul	19-16

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

Remove, disassemble, inspect, reassemble and install the calliper and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- When reusing pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid.
- Use only clean Genuine Honda DOT 3 brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove and calliper bore with clean brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the calliper, check the brake hose and line for leaks, interference and twisting.

Except KX Model

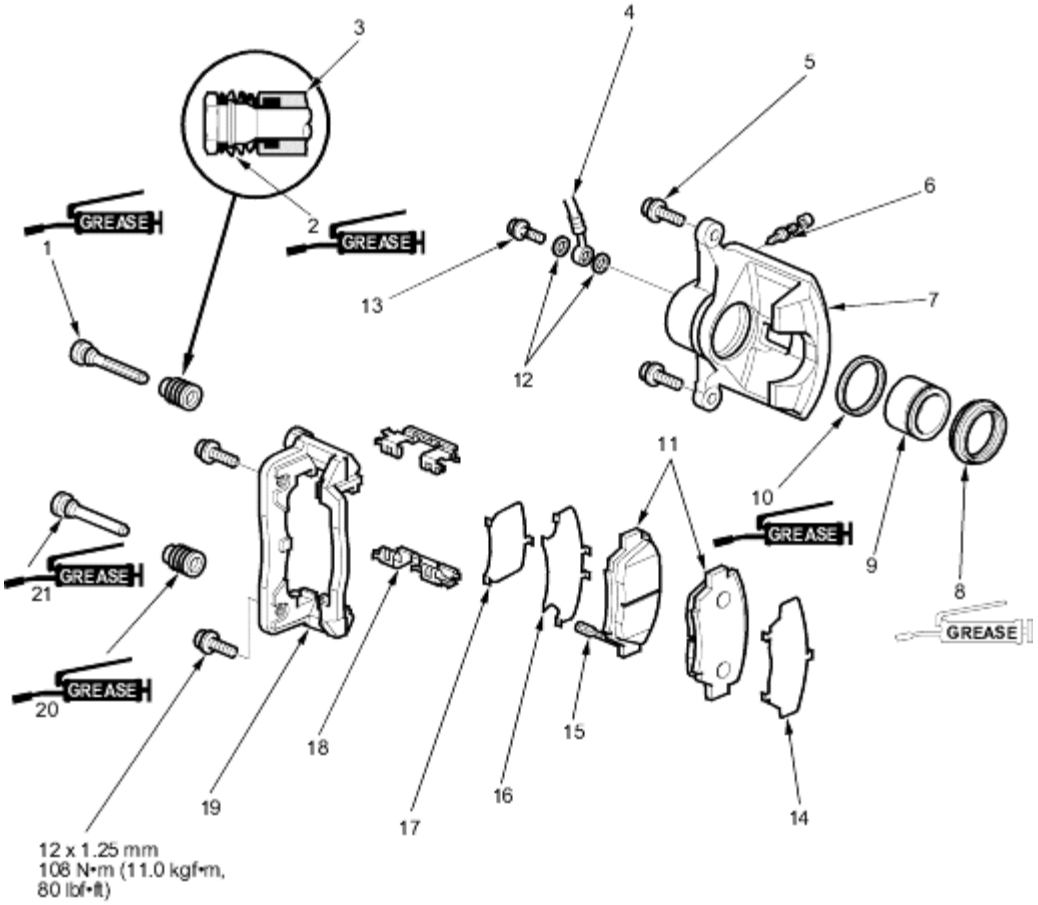


: Rubber grease



: Silicone grease

1. CALLIPER PIN
2. PIN BOOT
   Replace.
3. CALLIPER BRACKET
4. BRAKE HOSE
5. CALLIPER BOLTS
   22 Nm (2.2 kgf/m, 16 lbf/ft)
6. BLEED SCREW
   9 Nm (0.9 kgf/m, 7 lbf/ft)
7. CALLIPER BODY
8. PISTON BOOT
   Replace.
9. PISTON
10. PISTON SEAL
    Replace.
11. BRAKE PADS
12. SEALING WASHERS
    Replace.
13. BANJO BOLT
    34 Nm (3.5 kgf/m, 25 lbf/ft)
14. OUTER PAD SHIM
15. WEAR INDICATOR
    Install inner pad with its wear indicator downward
16. INNER PAD SHIM B
17. INNER PAD SHIM A



18. PAD RETAINERS
19. CALLIPER BRACKET
20. PIN BOOTS
    Replace.
21. CALLIPER PIN

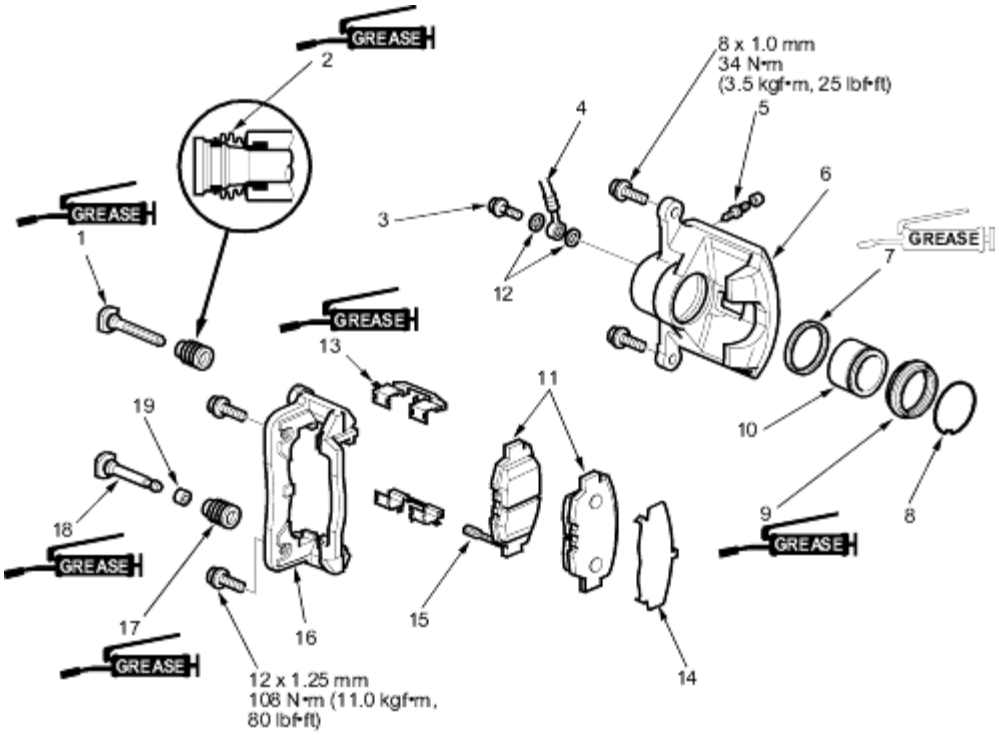
Conventional Brake Components

Front Brake Calliper Overhaul (cont'd)

KX Model

GREASE : Use recommended rubber grease in the calliper seal set.

GREASE : Use recommended seal grease in the calliper seal set.



1. CALLIPER PIN A
2. BOOTS
3. BANJO BOLT
   3.4 Nm (3.5 kgf/m, 25 lbf/ft)
4. BRAKE HOSE
5. BLEED SCREW
   9 Nm (0.9 kgf/m, 7 lbf/ft)
6. CALLIPER BODY
7. PISTON SEAL
   replace.
8. BOOT CLIP
   Replace.
9. PISTON BOOT
   Replace.
10. PISTON
11. BRAKE PADS
12. SEALING WASHERS
    Replace.
13. PAD RETAINERS
14. OUTER PAD SHIM
15. WEAR INDICATOR
    Install inner pad with its wear indicator downward
16. CALLIPER BRACKET
17. PISTON BOOT
    Replace.
18. CALLIPER PIN B
19. BUSHING

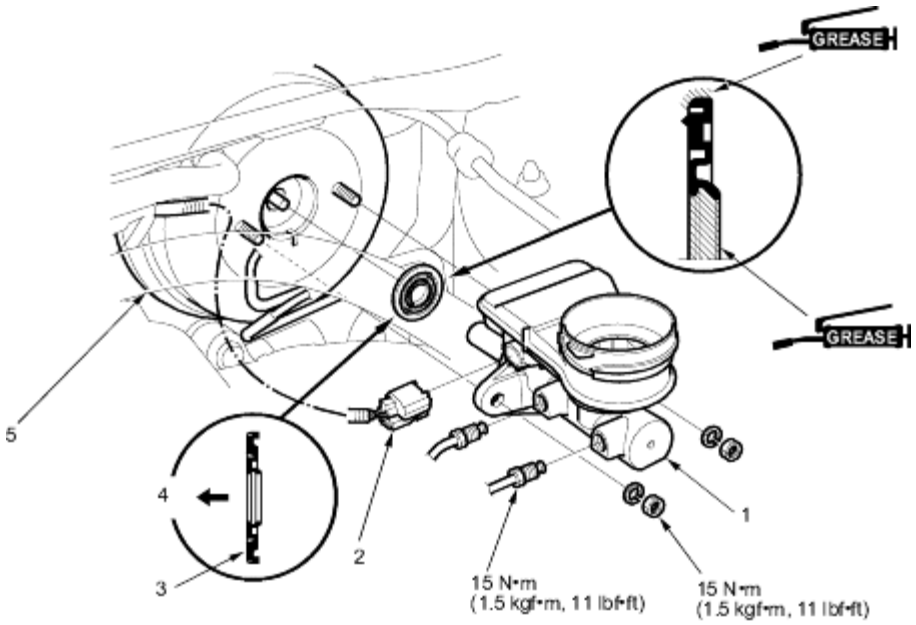
Conventional Brake Components
Master Cylinder Removal/Installation

NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. Remove the reservoir cap and brake fluid from the reservoir tank.
2. Remove the brake fluid level sensor connector.
3. Disconnect the brake lines from the master cylinder. To prevent spills, cover the hose joints with rags or shop towels.
4. Remove the master cylinder mounting nuts and washers.
5. Remove the master cylinder from the brake booster. Be careful not to bend or damage the brake pipes when removing the master cylinder.
6. Remove the rod seal from the brake booster (single brake booster type) or master cylinder (dual brake booster type).

7. Install the master cylinder in the reverse order of removal and note these items:
   - Replace all the rubber parts with new ones whenever the master cylinder is removed.
   - Check the pushrod clearance before installing the master cylinder and adjust it if necessary (see page 19-29).
   - Use a new rod seal on reassembly.
   - Coat the inner bore lip and outer circumference of the new rod seal with the recommended seal grease in the master cylinder set.
   - Install the rod seal onto the brake booster with its grooved side toward the master cylinder.
   - Check the brake pedal height and free play after installing the master cylinder and adjust it if necessary (see page 19-5).

4-door

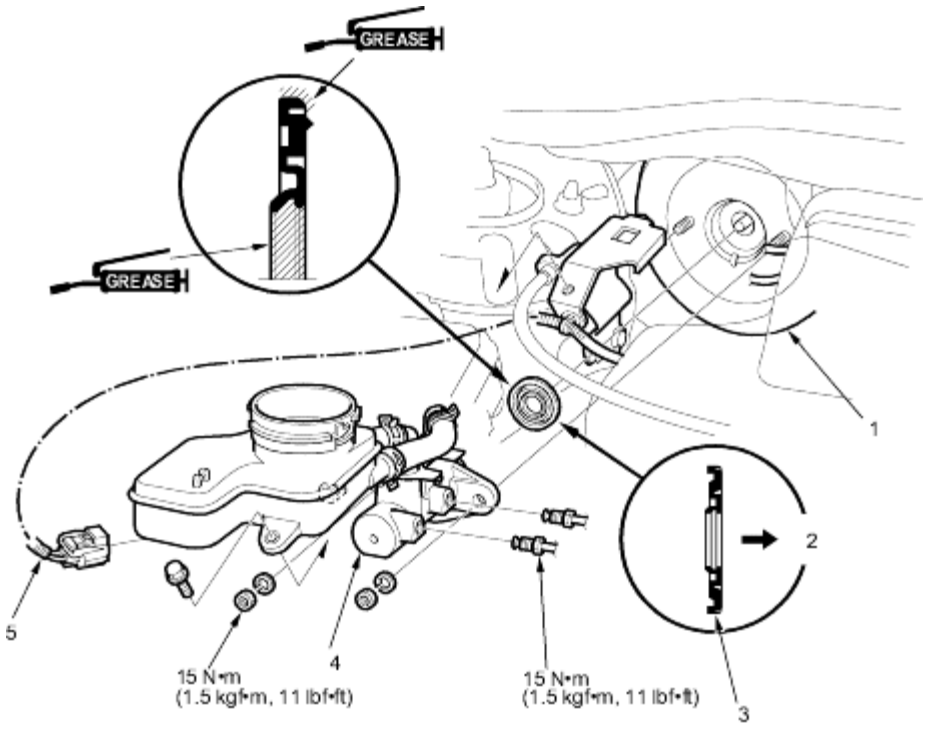


1. MASTER CYLINDER
2. BRAKE FLUID LEVEL SWITCH CONNECTOR
3. ROD SEAL
4. BRAKE BOOSTER SIDE
5. BRAKE BOOSTER

Conventional Brake Components

Master Cylinder Removal/Installation (cont'd)

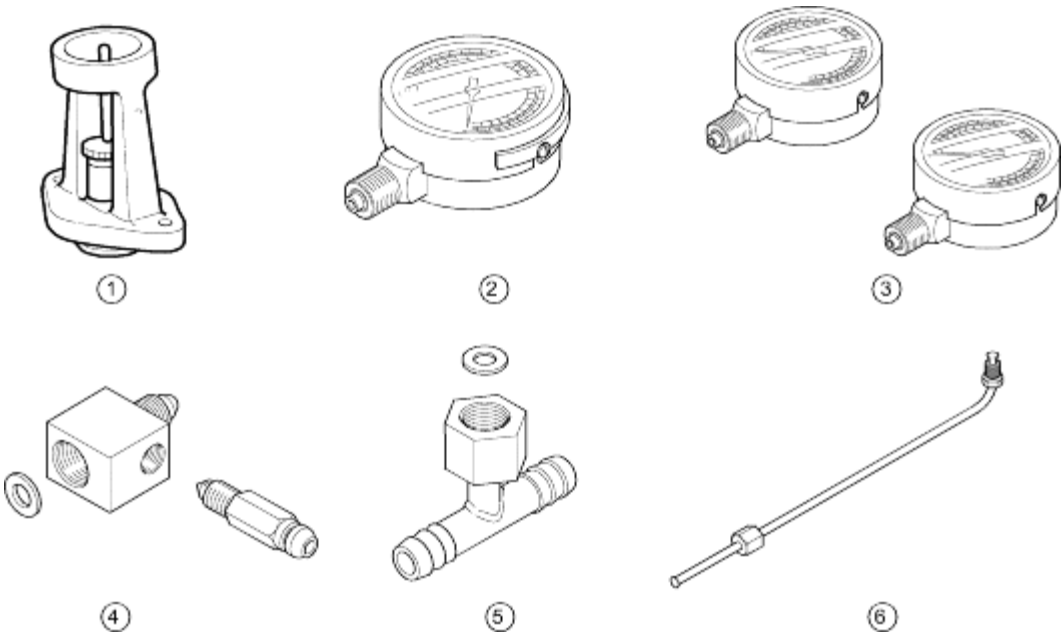
5-door



1. BRAKE BOOSTER
2. BRAKE BOOSTER SIDE
3. ROD SEAL
4. MASTER CYLINDER
5. BRAKE FLUID LEVEL SWITCH CONNECTOR

Conventional Brake Components
Special Tools

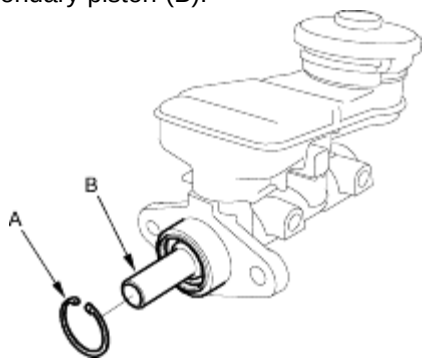
Ref. No.	Tool Number	Description	Qty
1	07JAG-SD40100	Pushrod Adjustment Gauge	1
2	07404-5790301	Vacuum Gauge	1
3	07406-5790201	Pressure Gauges	2
4	07410-5790101	Attachment	1
5	07410-5790501	Tube Joint Adapter	1
6	07510-6340101	Pressure Gauge Joint Pipes	2



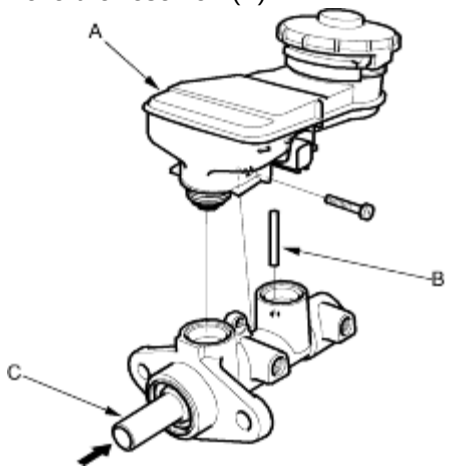
Conventional Brake Components
Master Cylinder Disassembly

4-door

1. 1. Remove the rod seal from the master cylinder (dual brake booster type) or brake booster (single brake booster type).
   2. Remove the circlip (A) while pushing in the secondary piston (B).

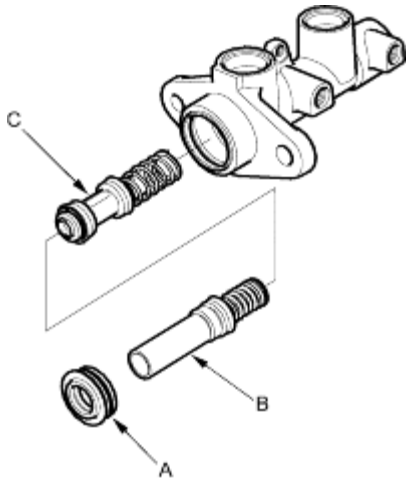


2. 3. Remove the reservoir (A).

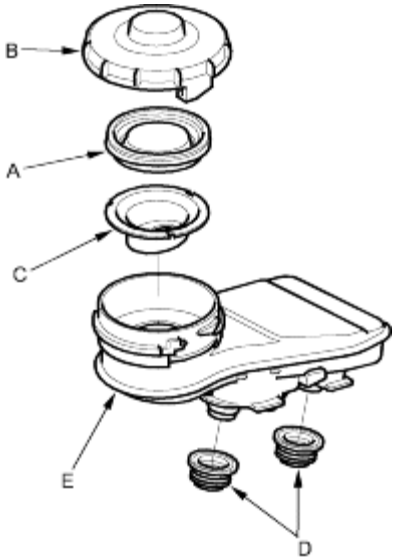


3. 4. On vehicle's with ABS, remove the stop pin (B) while pushing in the secondary piston (C).

1. 5. Remove the piston guide (A) (dual brake booster type only), secondary piston (B) and primary piston (C).



2. 6. Remove the reservoir seal (A) from the reservoir cap (B).



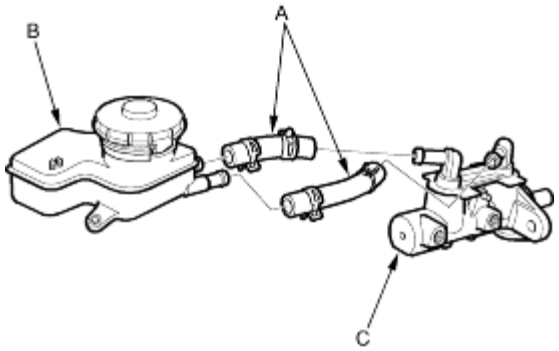
3. 7. Remove the strainer (C) and grommets (D) from the reservoir (E).

NOTE: When the reservoir and master cylinder body are separated, replace the grommets with new ones.

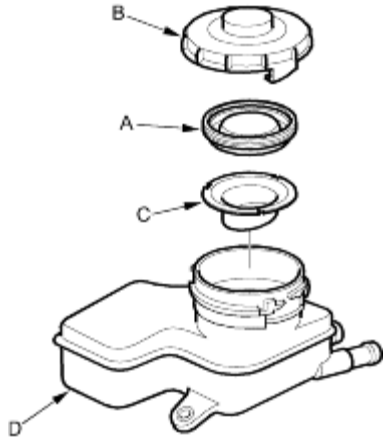
Conventional Brake Components
Master Cylinder Disassembly (cont'd)

5-door

1. 1. Remove the rod seal from the master cylinder (dual brake booster type) or brake booster (single brake booster type).
   2. Remove the hoses (A) from the reservoir (B) and master cylinder (C).

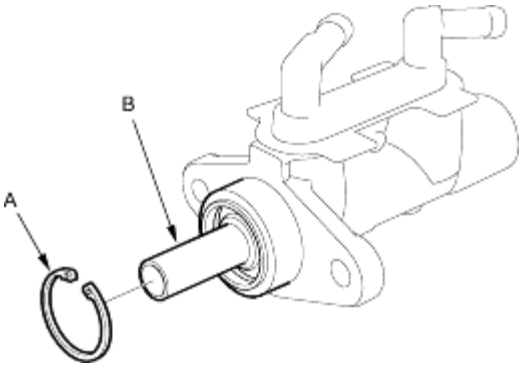


2. 3. Remove the reservoir seal (A) from the reservoir cap (B).



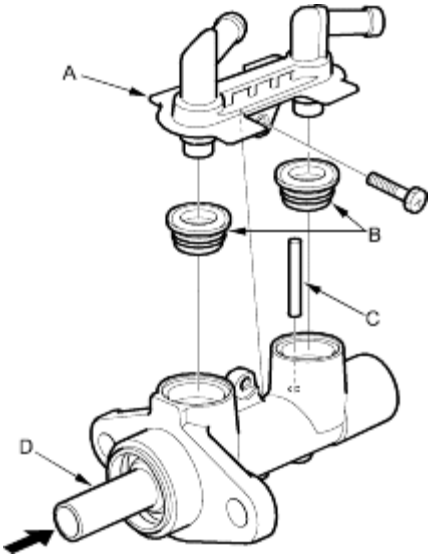
3. 4. Remove the strainer (C) from the reservoir (D).

1. 5. Remove the circlip (A) while pushing in the secondary piston (B).



2. 6. Remove the reservoir union (A) and remove the grommets (B) from the reservoir union.

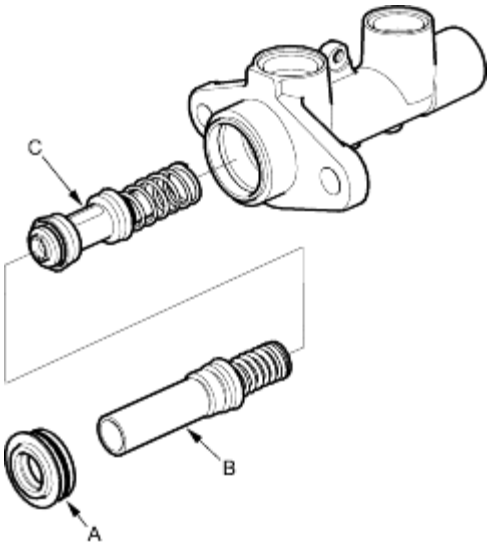
NOTE: When reservoir union and master cylinder body are separated, replace the grommets with new ones.



3. 7. On vehicle's with ABS, remove the stop pin (C) while pushing in the secondary piston (D).

Conventional Brake Components
Master Cylinder Disassembly (cont'd)

1. 8. Remove the piston guide (A) (dual brake booster type only), secondary piston (B) and primary piston (C).



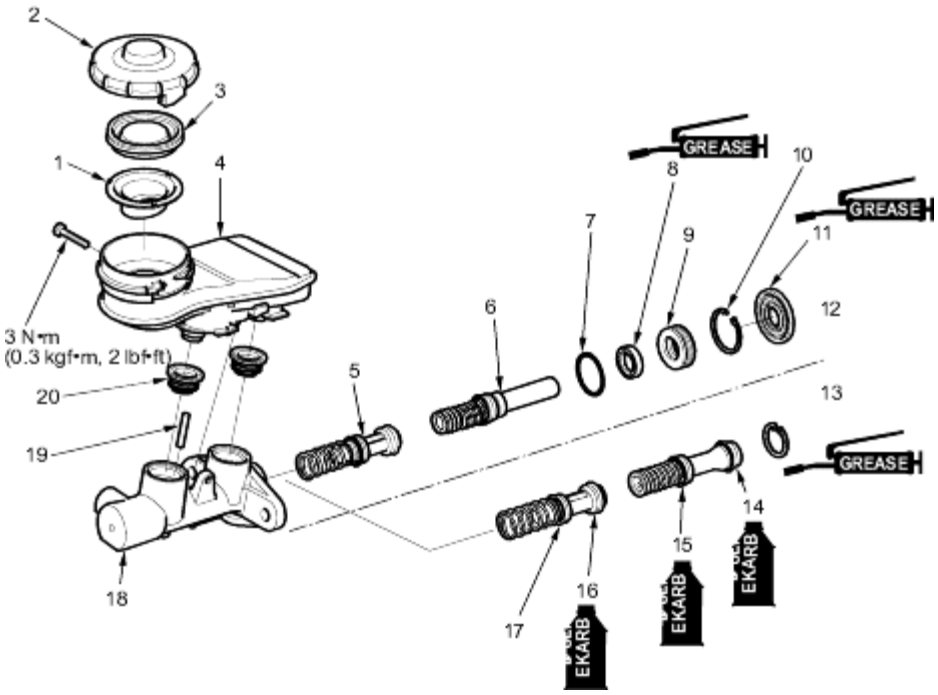
Conventional Brake Components
Master Cylinder Reassembly

4-door

NOTE:

- If replacing the primary piston, secondary piston, or master cylinder body, check and adjust the pushrod clearance before installing the master cylinder (see page 19-29).
- Clean all the parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all the parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Use only genuine DOT3 Honda brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may no be compatible.
- Replace the master cylinder if the bore is damaged or worn. Do not hone or attempt to refinish the bore.
- Coat the piston cups, pressure cup and master cylinder bore with clean brake fluid.
- Use recommended greases in the master cylinder seal set.

1. 1. Install the reservoir seal in the groove of the reservoir cap.
   2. Install the strainer, assembled reservoir cap, and new grommets on the reservoir.



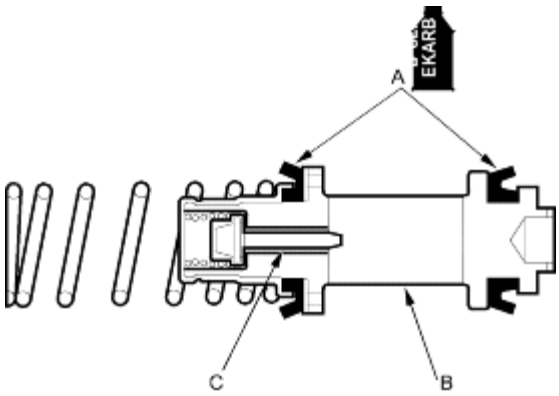
1. STRAINER
2. RESERVOIR CAP
3. RESERVOIR SEAL
4. RESERVOIR
5. PRIMARY PISTON
6. SECONDARY PISTON
7. O-RING
   Replace.
8. SECONDARY CUP
   Replace.
9. PISTON GUIDE
10. CIRCLIP
    Replace.
11. ROD SEAL
    Replace.
12. DUAL BRAKE BOOSTER
    (7 + 8 in.) TYPE
13. SINGLE BRAKE BOOSTER
    (9 in.) TYPE
14. SECONDARY CUP
    Replace.
15. PISTON CUP
    Replace.
16. PRESSURE CUP
    Replace.
17. PISTON CUP
    Replace.
18. MASTER CYLINDER
19. STOP PIN
    (ABS only)
20. GROMMETS
    Replace.

Conventional Brake Components
Master Cylinder Reassembly (cont'd)

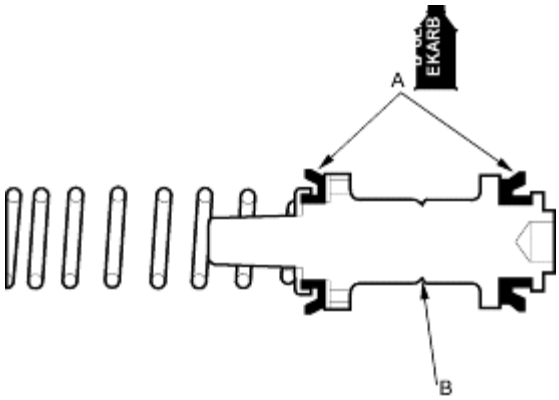
1. 3. Coat the cups (A) of a new primary piston (B) with clean brake fluid, then install the primary piston into the master cylinder.

NOTE: On vehicle's with ABS, check that the valve stem (C) moves smoothly by lightly pushing it through the slot in the piston. Install the piston so the slot in the piston aligns with the stop pin hole in the master cylinder.

With ABS

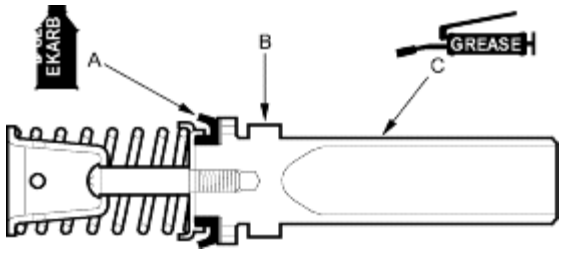


Without ABS

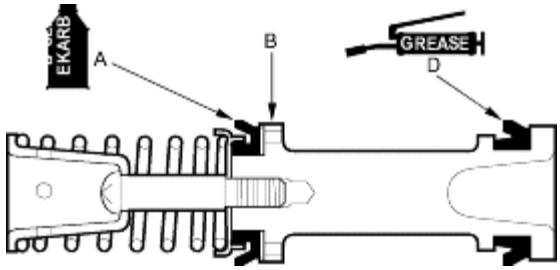


1. 4. Coat the cup (A) of a new secondary piston (B) with clean brake fluid.

Dual Brake Booster (7 + 8 in.) Type

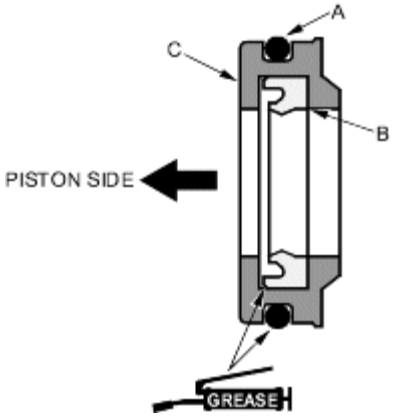


Single Brake Booster (9 in.) Type



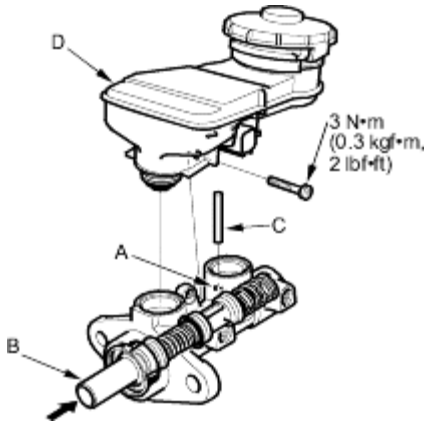
2. 5. Apply recommended seal grease in the master cylinder seal set to the piston surface (C) (dual brake booster type) or secondary cup (D) (single brake booster type), then install the secondary piston into the master cylinder.

6. For dual brake booster type only; apply recommended seal grease in the master cylinder seal set to a new O-ring (A) and the secondary cup (B) in a new piston guide (C), then install the piston guide into the master cylinder. Note the direction.

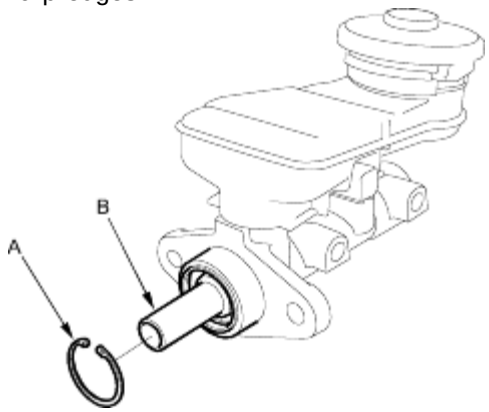


Conventional Brake Components
Master Cylinder Reassembly (cont'd)

1. 7. On vehicle's with ABS; align the slot in the primary piston with the stop pin hole (A) by pushing the secondary piston (B) in and install the stop pin (C).



2. 8. Install the reservoir (D) to the master cylinder.
   9. Install the new circlip (A) while pushing in the secondary piston (B). Be careful not to scratched damage on the piston surface with the circlip the circlip edges.



3. 10. Adjust the pushrod clearance (see page 19-29).
   11. Apply recommended seal grease in the master cylinder seal set to a new rod seal, and install the seal onto the master cylinder (dual brake booster type) or brake booster (single brake booster type) (see page 19-18).

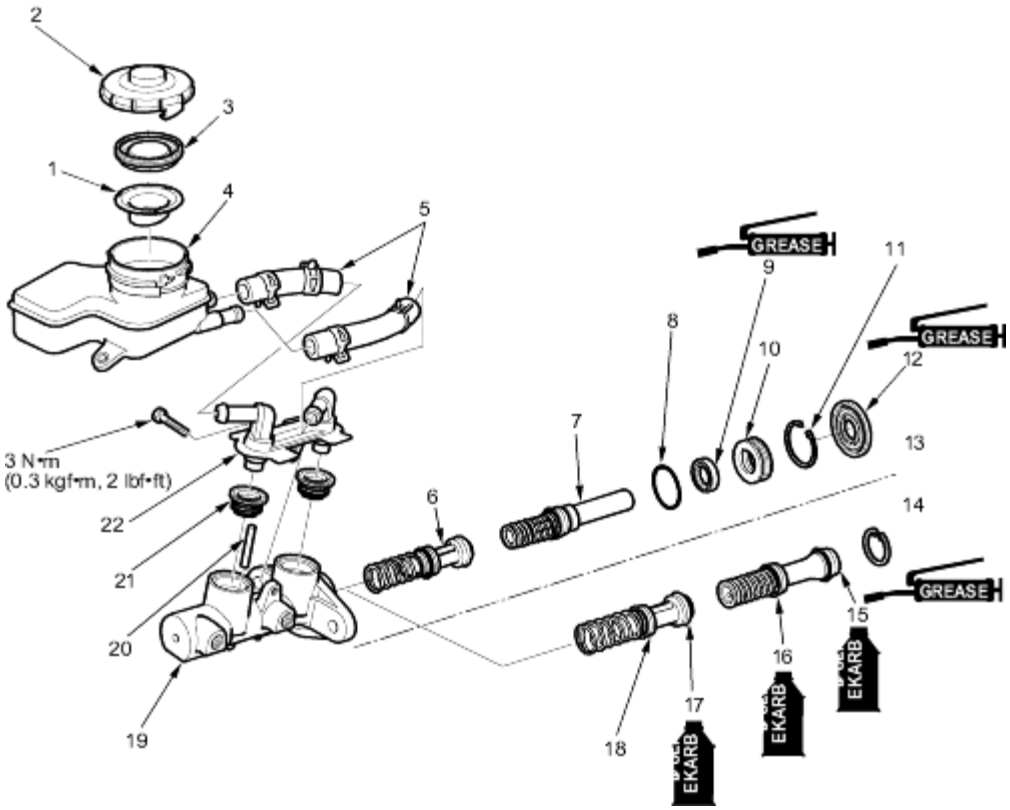
Conventional Brake Components
Master Cylinder Reassembly (cont'd)

5-door

NOTE:

- If replacing the primary piston, secondary piston or master cylinder body, check and adjust the pushrod clearance before installing the master cylinder (see page 19-29).
- Clean all the parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all the parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Use only genuine DOT3 Honda brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may no be compatible.
- Replace the master cylinder if the bore is damaged or worn. Do not hone or attempt to refinish the bore.
- Coat the piston cups, pressure cup and master cylinder bore with clean brake fluid.
- Use recommended greases in the master cylinder seal set.

1. 1. Install the reservoir seal in the groove of the reservoir cap.
   2. Install the strainer, assembled reservoir cap.



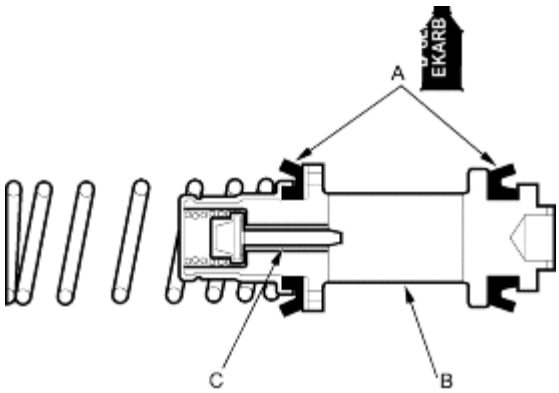
1. STRAINER
2. RESERVOIR CAP
3. RESERVOIR SEA
4. RESERVOIR
5. RESERVOIR HOSES
6. PRIMARY PISTON
7. SECONDARY PISTON
8. O-RING
   Replace.
9. SECONDARY CUP
   Replace.
10. PISTON GUIDE
11. CIRCLIP
    Replace.
12. ROD SEAL
    Replace.
13. DUAL BRAKE BOOSTER
    (7 + 8 in.) TYPE
14. SINGLE BRAKE BOOSTER
    (9 in.) TYPE
15. SECONDARY CUP
    Replace.
16. PISTON CUP
    Replace.
17. PRESSURE CUP
    Replace.
18. PISTON CUP
    Replace.
19. MASTER CYLINDER
20. STOP PIN
    (ABS Only)
21. GROMMETS
    Replace.
22. RESERVOIR UNION

Conventional Brake Components
Master Cylinder Reassembly (cont'd)

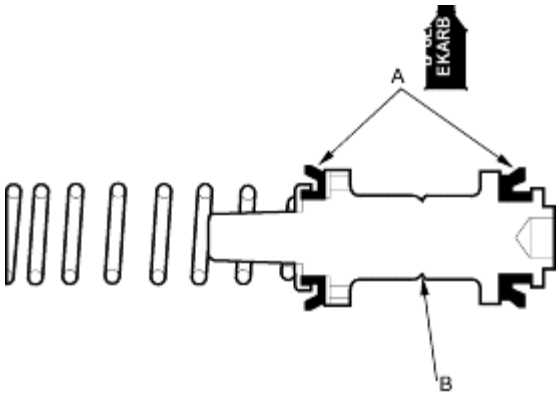
1. 3. Coat the cups (A) of a new primary piston (B) with clean brake fluid, then install the primary piston into the master cylinder.

NOTE: On vehicle's with ABS, check that the valve stem (C) moves smoothly by lightly pushing it through the slot in the piston. Install the piston so the slot in the piston aligns with the stop pin hole in the master cylinder.

With ABS

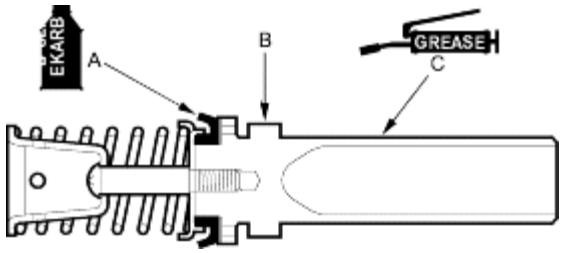


Without ABS

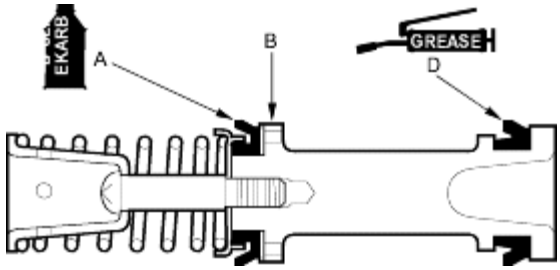


1. 4. Coat the cup (A) of a new secondary piston (B) with clean brake fluid.

Dual Brake Booster (7 + 8 in.) Type

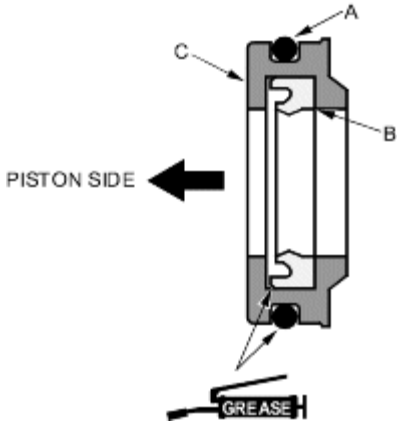


Single Brake Booster (9 in.) Type



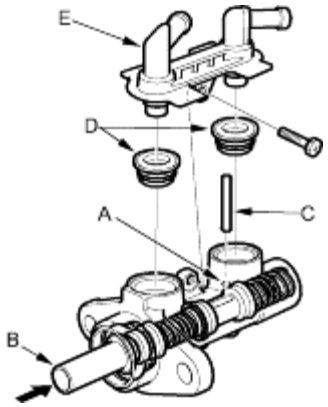
2. 5. Apply recommended seal grease in the master cylinder seal set to the piston surface (C) (dual brake booster type) or secondary cup (D) (single brake booster type), then install the secondary piston into the master cylinder.

6. For dual brake booster type only; apply recommended seal grease in the master cylinder seal set to a new O-ring (A) and the secondary cup (B) in a new piston guide (C), then install the piston guide into the master cylinder. Note the direction.

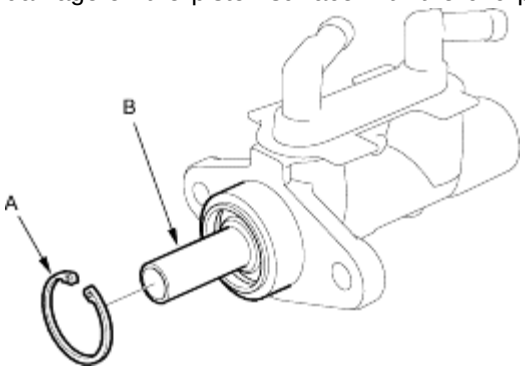


Conventional Brake Components
Master Cylinder Reassembly (cont'd)

1. 7. On vehicle's with ABS; align the slot in the primary piston with the stop pin hole (A) by pushing the secondary piston (B) in and install the stop pin (C).

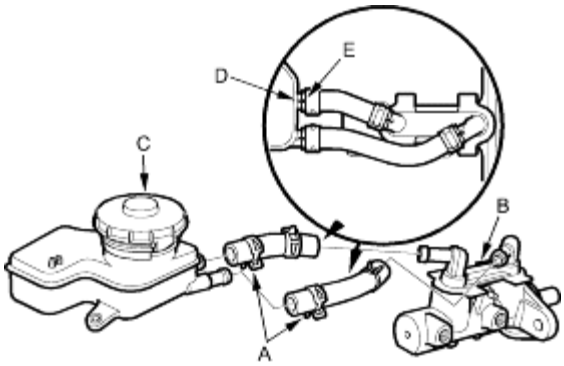


2. 8. Install the new grommets (D) on the reservoir union (E).
9. Install the reservoir union to the master cylinder.
10. Install the new circlip (A) while pushing in the secondary piston (B). Be careful not to scratched damage on the piston surface with the circlip edges.



3. 11. Adjust the pushrod clearance (see page 19-29).

1. 12. Connect the hoses (A) to the reservoir union (B) and reservoir (C) by aligning the marks (D) on the hose joints and marks (E) on the hoses as shown.



2. 13. Apply recommended seal grease in the master cylinder seal set to a new rod seal, and install the seal onto the master cylinder (dual brake booster type) or brake booster (single brake booster type) (see page 19-18).

Conventional Brake Components

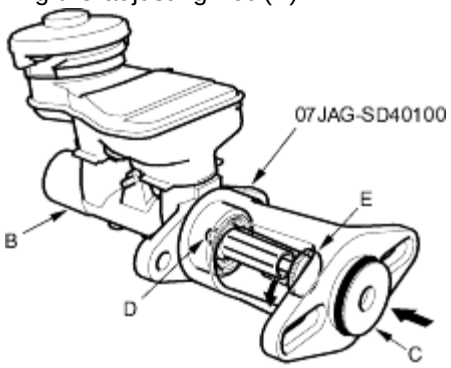
Brake Booster Pushrod Clearance Adjustment

Special Tools Required

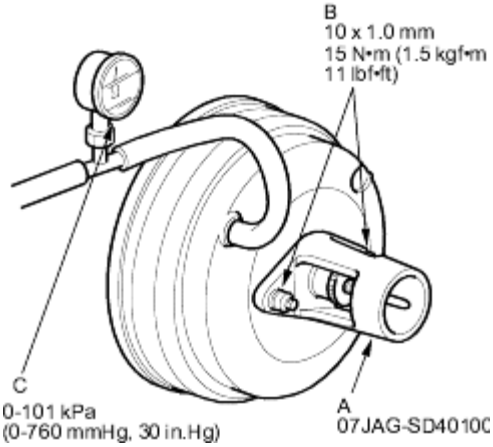
Pushrod adjustment gauge, 07JAG-SD40100

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary before installing the master cylinder.

1. 1. Set the special tool (A) on the master cylinder body (B), push in the centre shaft (C) until the top of it contacts the end of the secondary piston (D) by turning the adjusting nut (E).



2. 2. Without disturbing the centre shaft's position, install the special tool (A) backwards on the booster.

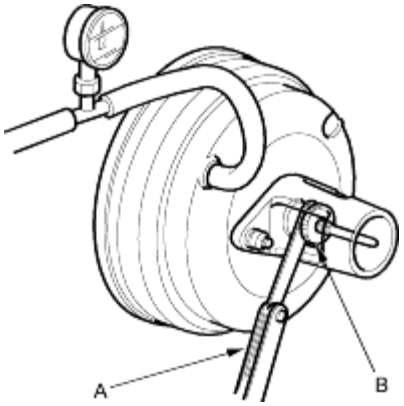


3. 3. Install the master cylinder nuts (B) and tighten to the specified torque.
   4. Connect the booster in-line with a vacuum gauge (C) 0 – 101 kPa (0 – 760 mmHg, 30 in.Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 66 kPa (500 mmHg, 20 in.Hg) vacuum.

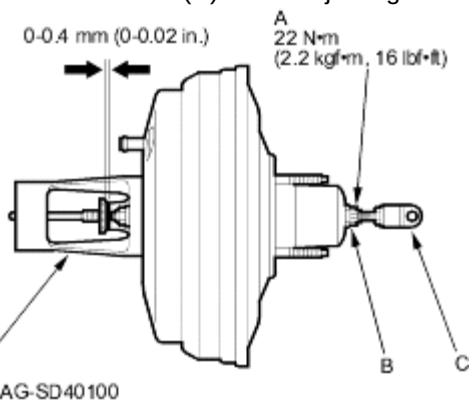
1. 5. With a feeler gauge (A), measure the clearance between the gauge body and the adjusting nut (B) as shown.

   If the clearance between the gauge body and adjusting nut is 0.4 mm (0.02 in.), the pushrod-to-piston clearance is 0 mm. However, if the clearance between the gauge body and adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm (0.02 in.) or more. Therefore it must be adjusted and rechecked.

   Clearance: 0 – 0.4 mm (0 – 0.02 in.)



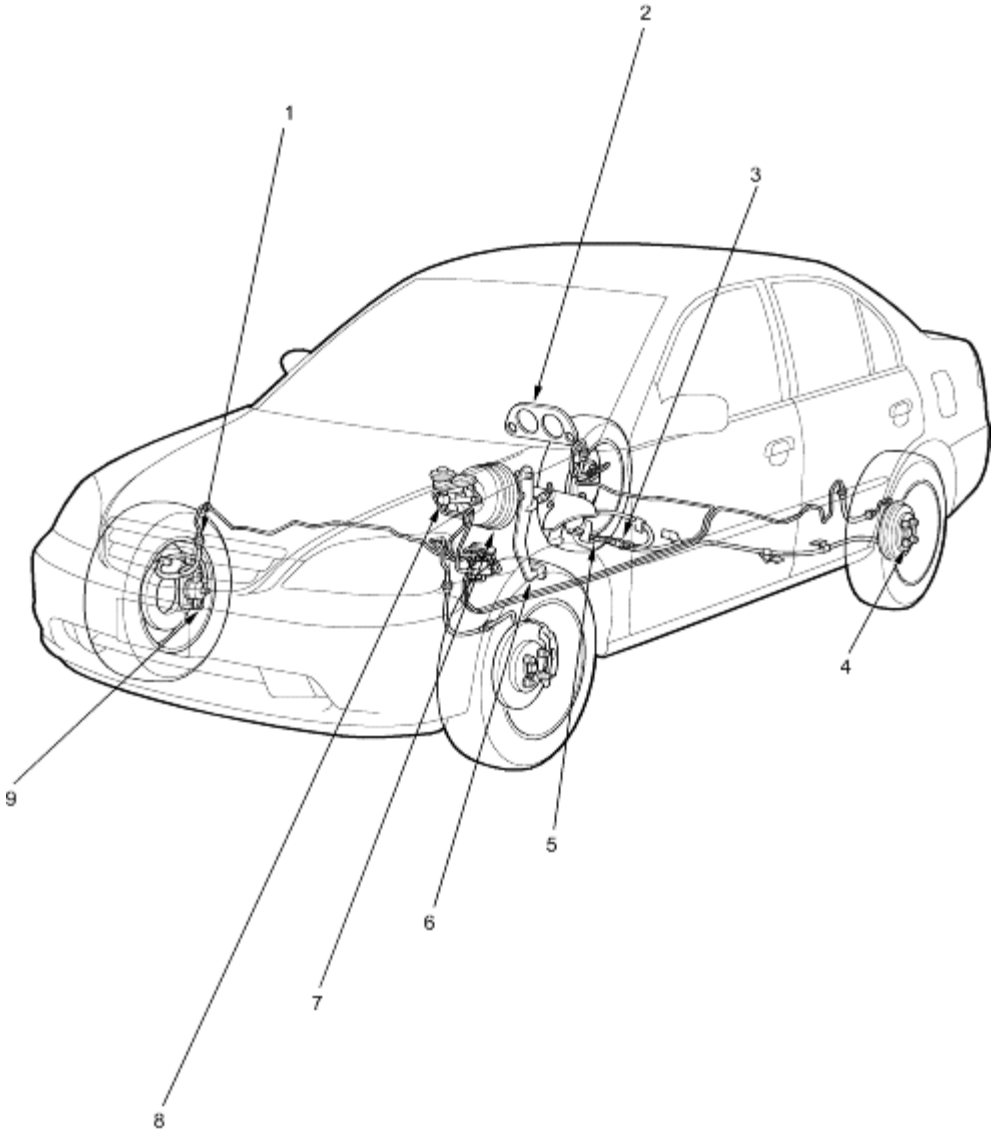
2. 6. If the clearance is incorrect, loosen the star locknut (A) and turn the adjuster (B) in or out to adjust.
   - Adjust the clearance while the specified vacuum is applied to the booster.
   - Hold the clevis (C) while adjusting.



3. 7. Tighten the star locknut securely.
   8. Remove the special tool (D).

Conventional Brake Components
Component Location Index

NOTE: LHD type is shown, RHD type is symmetrical.

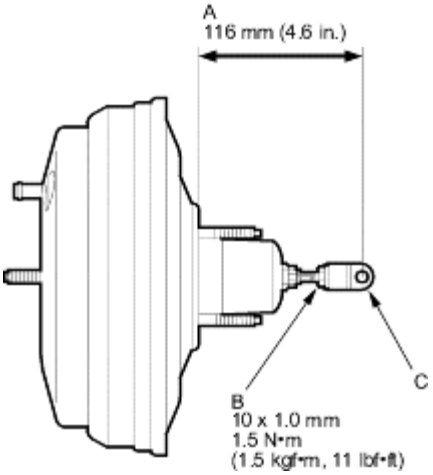


1. BRAKE HOSES and LINES
   Brake Hoses and Lines
   Inspection, page 19-48
   Brake Hoses
2. Replacement, page 19-49INDICATOR
   Brake System Indicator Circuit
   Diagram, page 19-9
   Parking Brake Switch
   Test, page 19-10
   Brake Fluid Level Switch
   Test, page 19-10
3. PARKING BRAKE CABLE
   Parking Brake Cable
4. Replacement, page 19-50 REAR BRAKES
   REAR DRUM BRAKE:
   Rear Drum Brake
   Inspection, page 19-35Rear Brake Shoes
   Replacement, page 19-38Rear Wheel
   Cylinder Disassembly
   and Inspection, page 19-43
   REAR DISC BRAKE:
   Rear Brake Pads Inspection and
   Replacement, page 19-44Rear Brake Disc
   Inspection, page 19-46Rear Brake
   Calliper
5. Overhaul, page 19-47PARKING BRAKE
   LEVER
   Parking Brake Check and
   Adjustment, page 19-6
6. BRAKE PEDAL
   Brake Pedal and Brake Pedal Position
   Switch
   Adjustment, page 19-5
7. BRAKE BOOSTER
   Brake Booster
   Inspection, page 19-30Brake Booster
   Replacement, page 19-33
8. MASTER CYLINDER
   Master Cylinder Removal/Installation,
   page 19-18
   Disassembly, page 19-20Reassembly,
   page 19-23
   Brake Booster Pushrod Clearance
   Adjustment, page 19-29Brake System
   Bleeding, page 19-7
9. FRONT BRAKES
   Front Brake Pads, Inspection and
   Replacement, page 19-11
   Front Brake Disc
   Inspection, page 19-15
   Front Brake Calliper
   Overhaul, page 19-16

Conventional Brake Components

Brake Booster Pushrod Clearance Adjustment (cont'd)

1. 9. Check the pushrod length (A) as shown if the booster is removed. If the length is incorrect, loosen the pushrod locknut (B) and turn the clevis (C) in or out to adjust.



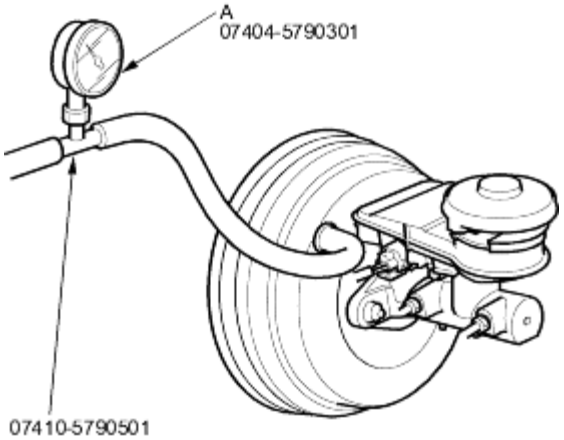
2. 10. Install the master cylinder (see page 19-18).

Special Tools Required

- Vacuum gauge, 07404-5790301
- Pressure gauge, 07406-5790201
- Attachment, 07410-5790101
- Tube joint adapter, 07410-5790501
- Pressure gauge joint pipe, 07510-6340101

Leak Test

1. 1. Install the vacuum gauge (A) between the brake booster and check valve.



2. 2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 40.0 – 66.7 kPa (300 – 500 mmHg, 11.8 – 19.7 in.Hg), then stop the engine.
   3. Read the vacuum gauge.

   If the vacuum reading decreases 2.7 kPa (20 mmHg, 0.8 in.Hg) or more after 30 seconds, check following parts for leaks.

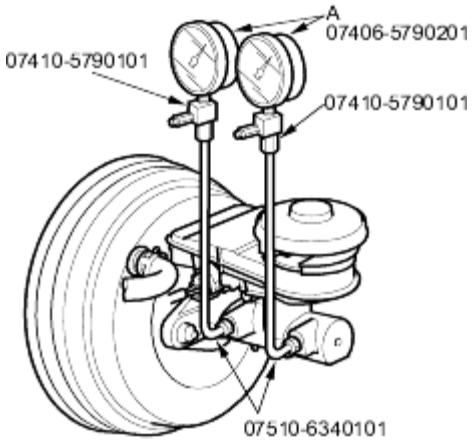
   - Check valve
   - Vacuum hose, pipe
   - Seals
   - Brake booster
   - Master cylinder

   NOTE: Do not try to disassemble the brake booster. Replace the brake booster as an assembly with a new one.

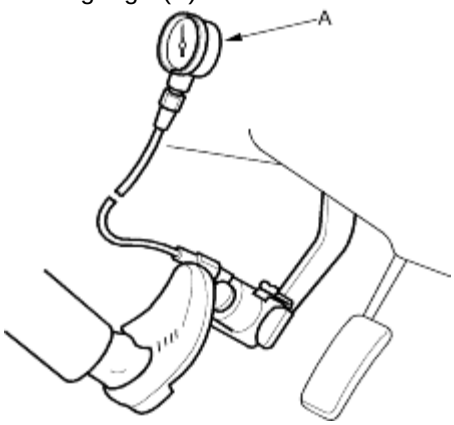
Conventional Brake Components
Brake Booster Inspection (cont'd)

Function Test

1. 1. Install the vacuum gauge as same as the leak test.
   2. Connect the oil pressure gauges (A) to the master cylinder using the attachments (special tools) as shown.
   3. Bleed air through the valves.



2. 4. Start the engine and let it idle.
   5. Have an assistant depress the brake pedal with a 98 N (10 kgf, 22 lbf) and 294 N (30 kgf, 66 lbf) of pressure measuring with a commercially available pressure gauge (A).



1. 6. The following pressures should be observed at the pressure gauges in each vacuum.

Vehicles With ABS

Vacuum kPa (mm Hg, in.Hg)	N (kgf, lbf)	kPa (kgf/cm², psi)
0 (0, 0)	98 (10, 22)	0 (0, 0)
	294 (30, 66)	1,700 (17, 240) *: 1,600 (16, 230)
66.7 (500, 19.7)	98 (10, 22)	4,600 (46, 670) *: 4,200 (43, 610)
	294 (30, 66)	10,500 (107, 1,500) *: 10,300 (105, 1,500)

*: 4-door KQ Model

Vehicles Without ABS

Vacuum kPa(mm Hg, in.Hg)	N (kgf, lbf)	kPa (kgf/cm^2, psi)
0 (0, 0)	98 (10, 22)	0 (0, 0)
	294 (30, 66)	1,700 (17, 240) *1: 1,600 (16, 230) *2: 1,800 (18, 260)
66.7 (500, 19.7)	98 (10, 22)	4,400 (45, 640) *1: 4,100 (42, 600) *2: 4,800 (49, 700)
	294 (30, 66)	10,500 (107, 1,500) *1: 10,300 (105, 1,500) *2: 9,800 (100, 1,400)

*1: 4-door KQ Models and KK (VN) Models

*2: 4-door PA Models

2. 7. Inspect the master cylinder for leaks if the readings do not fall within the limits shown above.

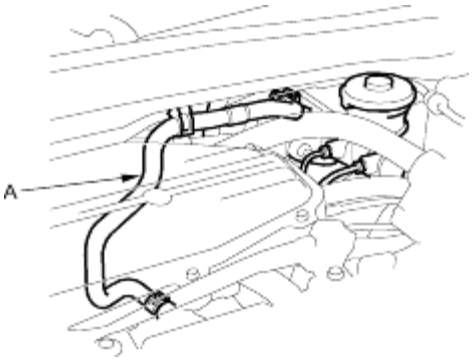
Conventional Brake Components

Brake Booster Inspection (cont'd)

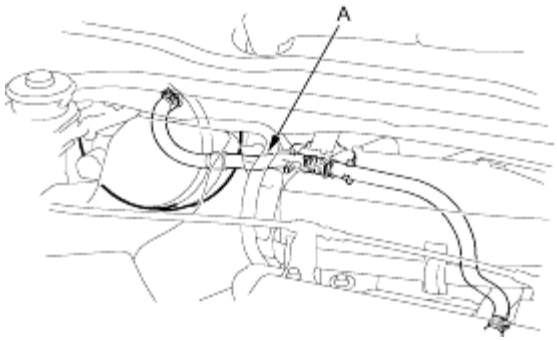
Booster Check Valve Test

1. 1. Disconnect the brake booster vacuum hose (check valve built in) (A) at the booster side (B).

4-door



5-door

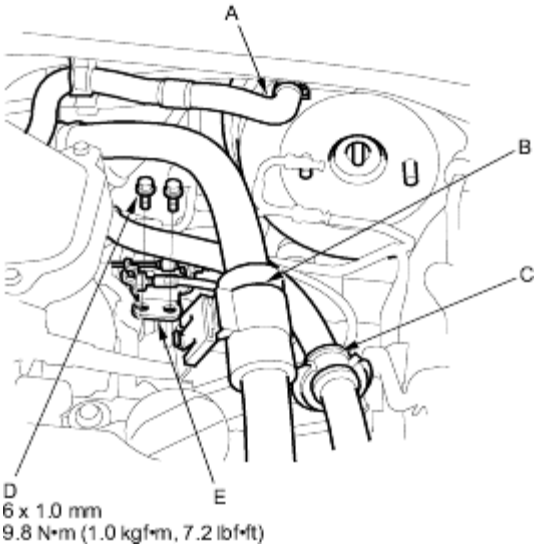


2. 2. Start the engine and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve and retest.

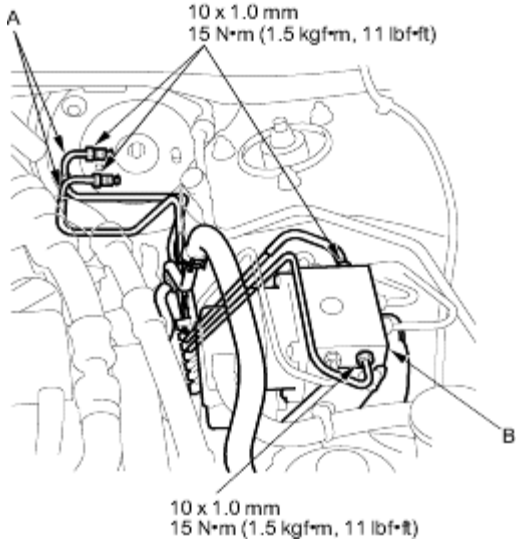
Conventional Brake Components
Brake Booster Replacement

4-door

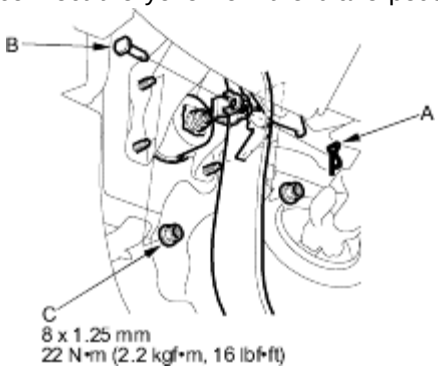
1. 1. Remove the master cylinder (see page 19-18).
   2. Disconnect the vacuum hose (A) from the brake booster.



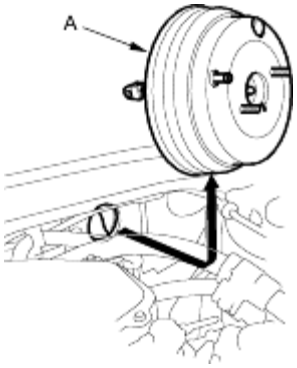
2. 3. Remove the air conditioner hose (B) and power steering hose (C) from their respective holders.
   4. Remove the flange bolts (D) and throttle cable holder (E).
   5. Remove the brake pipes (A) from the ABS modulator (B).



1. 6. Remove the under-dash cover and fuse/relay box in the passenger compartment.
2. 7. Remove the clip (A) and the joint pin (B) and disconnect the yoke from the brake pedal.



3. 8. Remove the brake booster mounting flange nuts (C).
   9. Remove the brake booster (A) from the engine compartment.

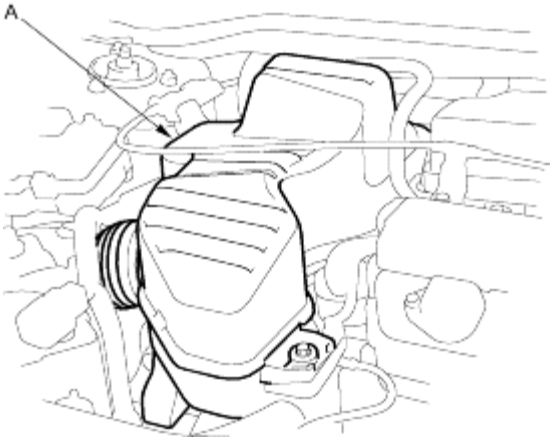


4. 10. Install the brake booster in the reverse order of removal and note these items:
   - Adjust the pushrod clearance before installing the brake booster (see page 19-29).
   - Use a new clip whenever installing.
   - After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-7), and adjust the brake pedal height and free play (see page 19-5).

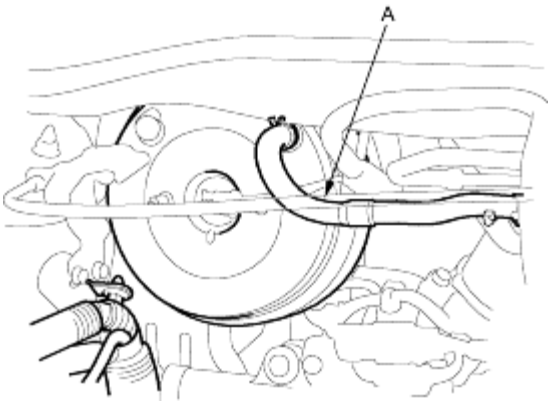
Conventional Brake Components
Brake Booster Replacement (cont'd)

5-door

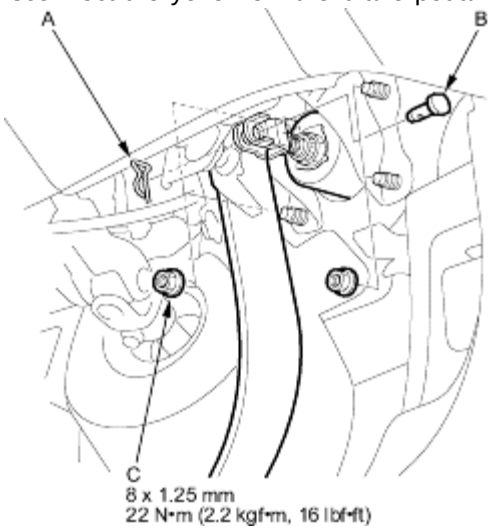
1. 1. Remove the master cylinder (see page 19-18).
   2. Remove the air cleaner (A).



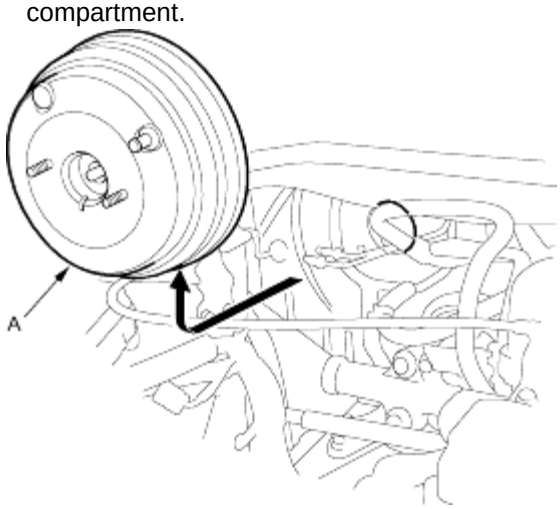
2. 3. Disconnect the vacuum hose (A) from the brake booster.



1. 4. Remove the under-dash cover and fuse/relay box in the passenger compartment.
2. 5. Remove the clip (A) and the joint pin (B) and disconnect the yoke from the brake pedal.



3. 6. Remove the brake booster mounting flange nuts (C).
   7. Remove the brake booster (A) from the engine compartment.



4. 8. Install the brake booster in the reverse order of removal and note these items:
   - Adjust the pushrod clearance before installing the brake booster (see page 19-29).
   - Use a new clip whenever installing.
   - After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-7), and adjust the brake pedal height and free play (see page 19-5).

Conventional Brake Components Rear Drum Brake Inspection	19-35

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

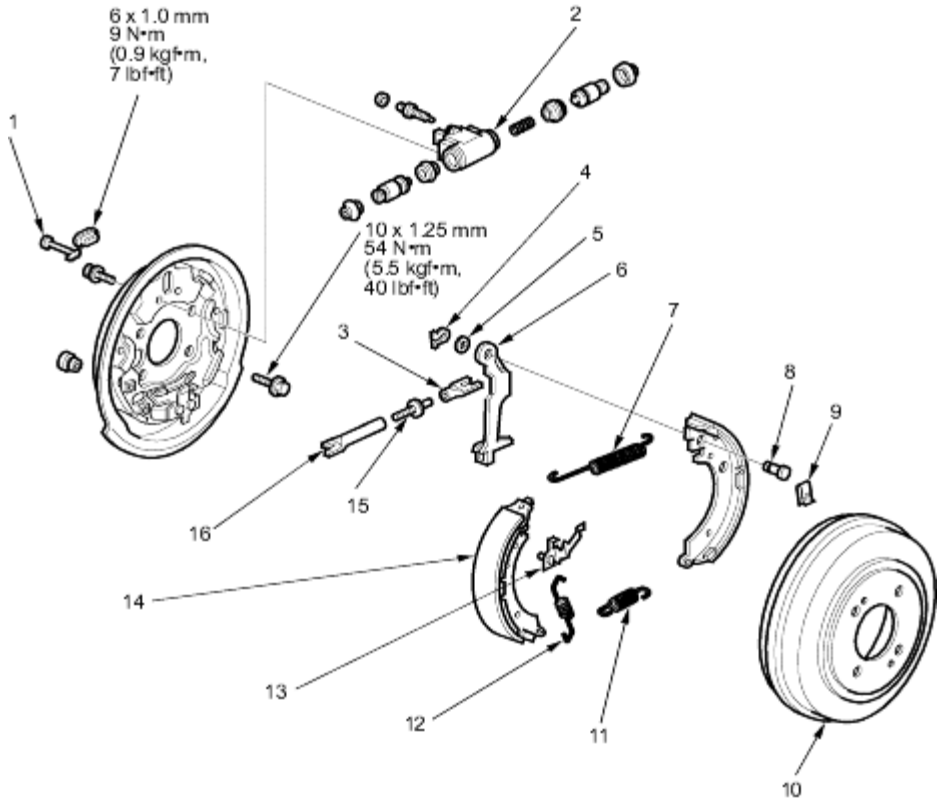
- Avoid breathing dust particles
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

NOTE:

- Contaminated brake linings or drums reduce stopping ability.
- Block the front wheels before jacking up the rear of the vehicle.

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
   2. Release the parking brake and remove the rear brake drum (see page 18-24).

4-door

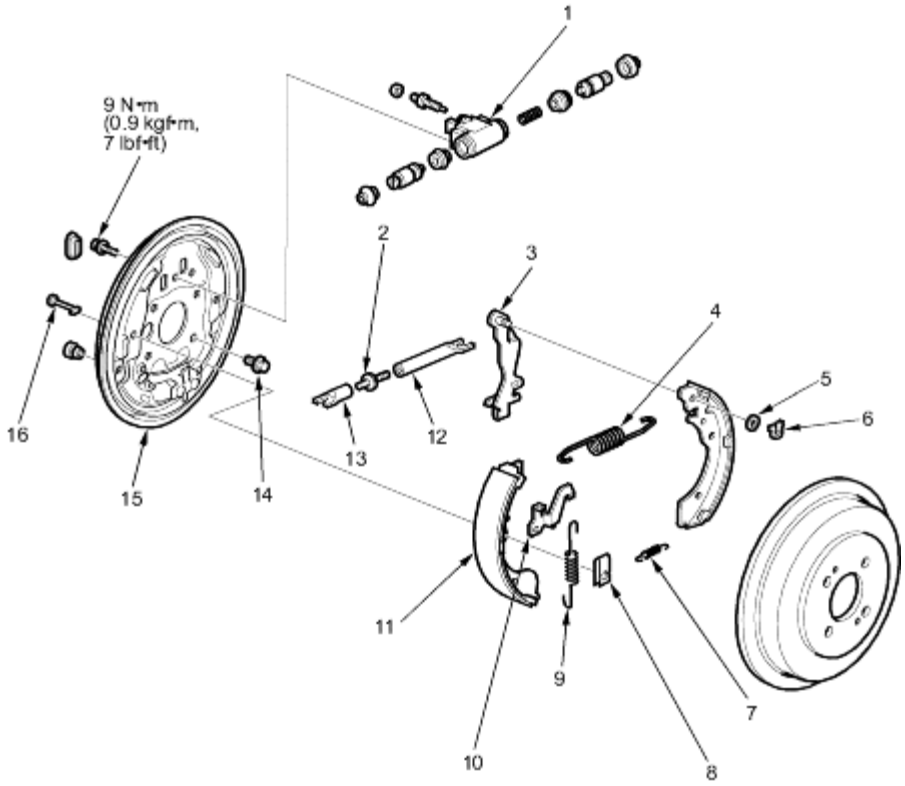


1. TENSION PIN
2. WHEEL CYLINDER
   Inspect for leakage.
3. CLEVIS B
4. U-CLIP
   Replace.
5. WAVE WASHER
6. PARKING BRAKE LEVER
   Marked left and right.
7. UPPER RETURN SPRING
   Check for weakness and damage.
8. PIVOT PIN
9. RETAINER SPRING
   Check for weakness and damage.
10. BRAKE DRUM
    Check for wear and damage.
11. LOWER RETURN SPRING
    Check for weakness and damage.
12. SELF-ADJUSTER SPRING
    Check for weakness and damage.
13. SELF-ADJUSTER LEVER
14. BRAKE SHOE
    If brake shoes are to be reused, mark and reassemble in the same position.
15. ADJUSTER BOLT
    Check ratchet teeth for wear and damage.
16. CLEVIS A

Conventional Brake Components

Rear Drum Brake Inspection (cont'd)

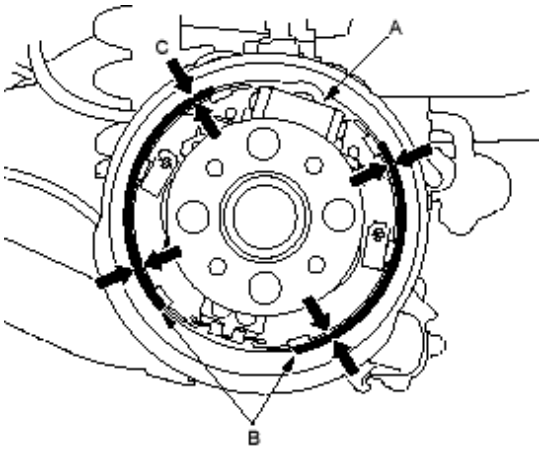
5-door



1. WHEEL CYLINDER
   Inspect for leakage.
2. ADJUSTER BOLT
   Check ratchet teeth for wear and damage.
3. PARKING BRAKE LEVE,
   Marked left and right.
4. UPPER RETURN SPRING
   Check for weakness and damage.
5. WAVE WASHER
6. U-CLIP
   Replace.
7. LOWER RETURN SPRING
   Check for weakness and damage.
8. RETAINER SPRING
   Install securely on tension pin.
9. SELF-ADJUSTER SPRING
   Check for weakness and damage.
10. SELF-ADJUSTER LEVER
11. BRAKE SHOE
    If brake shoes are to be reused, mark and reassemble in the same position.
12. CLEVIS A
13. CLEVIS B
14. 10 mm BOLT
    64 Nm (6.5 kgf/m, 47 lbf/ft)
15. BACKING PLATE
    Marked left and right.
16. TENSION PIN

Conventional Brake Components
Rear Drum Brake Inspection (cont'd)

1. 3. Check the wheel cylinder (A) for leakage.



2. 4. Check the brake linings (B) for cracking, glazing, wear and contamination.
   5. Measure the brake lining thickness (C). Measurement does not include brake shoe thickness.

   4-door:

   Brake Lining Thickness:

Standard:	4.0 mm (0.16 in.)
Service Limit:	2.0 mm (0.08 in.)

   5-door:

   Brake Lining Thickness:

Standard:	4.5 mm (0.18 in.)
Service Limit:	2.0 mm (0.08 in.)

3. 6. If the brake lining thickness is less than the service limit, replace the brake shoes as a set.
   7. Check the hub bearing for smooth operation. If it requires servicing, replace it (see page 18-24).

1. 8. Measure the inside diameter of the brake drum with inside vernier callipers.

   4-door:

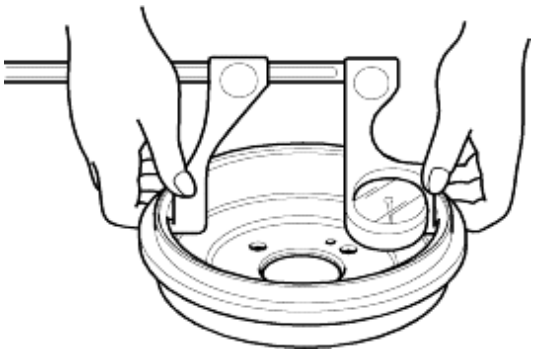
   Drum Inside Diameter:

Standard:	199.9 – 200 mm (7.870 – 7.874 in.)
Service Limit:	201 mm (7.91 in.)

   5-door:

   Drum Inside Diameter:

Standard:	219.9 – 220 mm (8.657 – 8.661 in.)
Service Limit:	221 mm (8.701 in.)



2. 9. If the inside diameter of the brake drum is more than the service limit, replace the brake drum.
   10. Check the brake drum for scoring, grooves, corrosion and cracks.

Conventional Brake Components

Rear Brake Shoes Replacement

CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

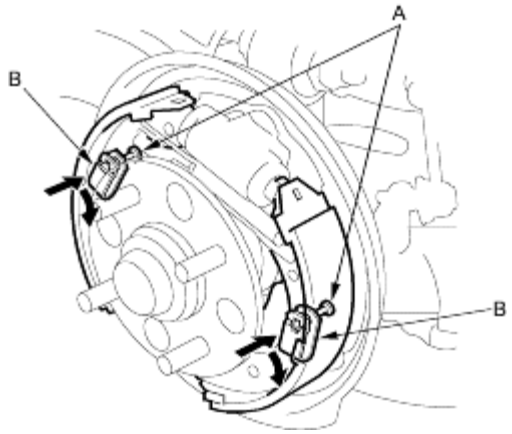
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an approved vacuum cleaner.

NOTE:

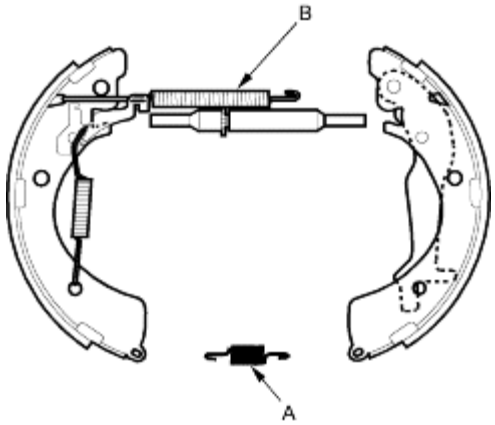
- Contaminated brake linings or drums reduce stopping ability.
- Block the front wheels before jacking up the rear of the vehicle.

Removal/Disassembly (4-door)

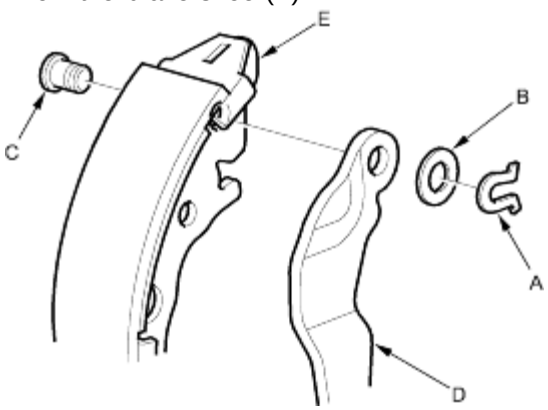
1. Remove the brake drum (see page 18-24).
2. Remove the tension pins (A) by pushing each retainer spring (B) and turning the pins.



1. 3. Remove the lower return spring (A) and remove the shoe assembly over the hub.



2. 4. Remove the upper return spring (B) and disassemble the brake shoe assembly.
5. Disconnect the parking brake cable from the parking brake lever and remove the brake shoe.
6. Remove the U-clip (A), wave washer (B) and pivot pin (C) and separate the parking brake lever (D) from the brake shoe (E).



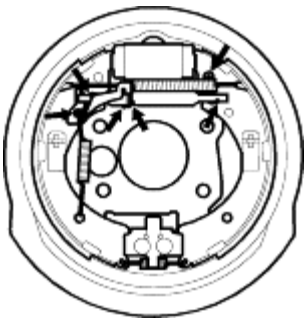
Conventional Brake Components

Rear Brake Shoes Replacement (cont'd)

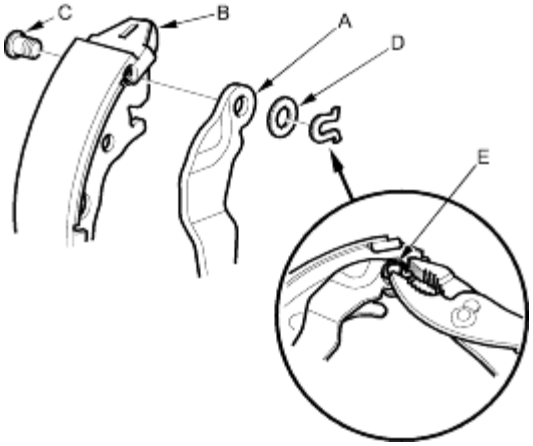
Reassembly (4-door)

1. 1. Connect the parking brake cable to the parking brake lever.
   2. Apply rubber grease (Solvest 113 or equivalent) on the sliding surfaces as illustrated. Wipe off any excess. Do not get grease on the brake linings.

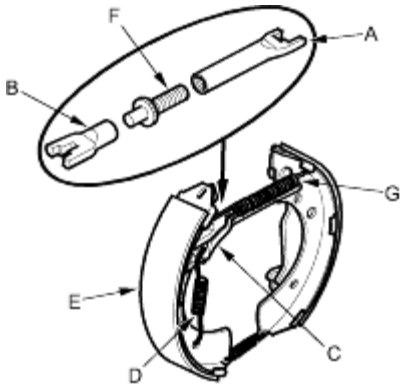
➡● Sliding surfaces



2. 3. Install the parking brake lever (A) on the rear brake shoe (B) and secure it with the pivot pin (C), wave washer (D) and a new U-clip (E). Pinch the U-clip securely to prevent it from coming off.



1. 4. Install the self-adjuster (C) and self-adjuster spring (D) on the front brake shoe (E).



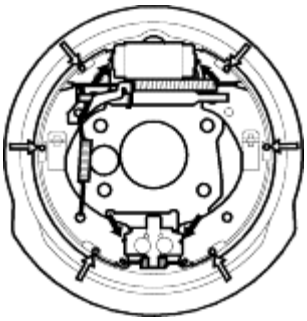
2. 5. Assemble the brake shoes with clevis A, adjuster bolt (F), clevis B and the upper return spring (G).

NOTE: Thread the adjuster bolt fully into clevis A.

3. 6. Apply Molykote 44MA grease onto the sliding surfaces as illustrated. Wipe off any excess. Do not get grease on the brake linings.

➡● Sliding surfaces

⇨O Backside edge of the shoe



4. 7. Install the shoe assembly on the backing plate by fitting the top of the shoes onto the wheel cylinder pistons and the bottom of the shoes onto the locating plate.

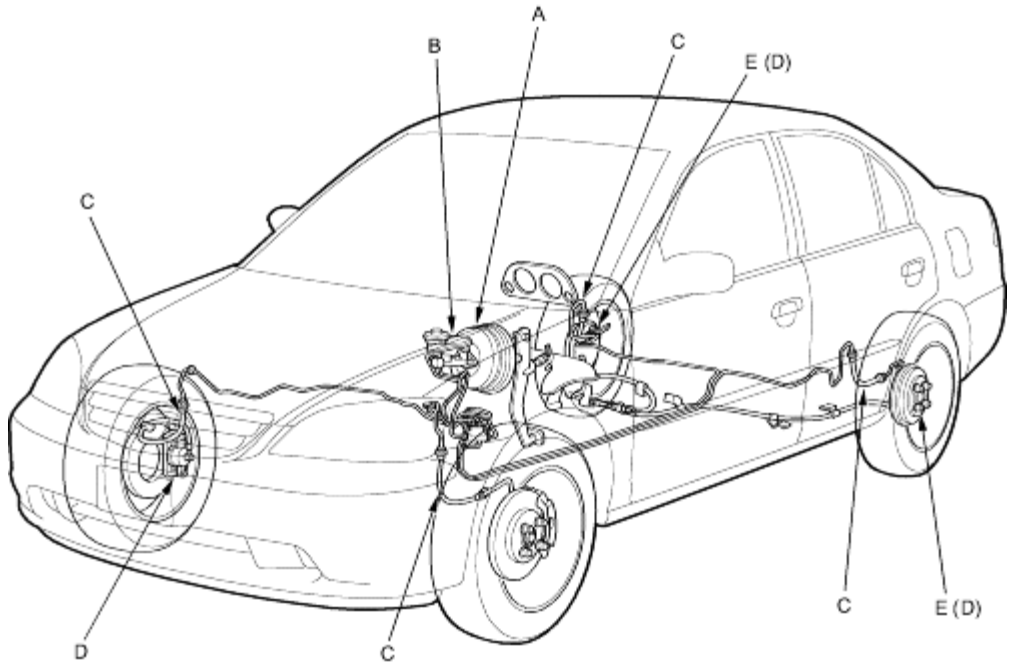
Conventional Brake Components

Brake System Operation and Leakage Check

Check all of the following items:

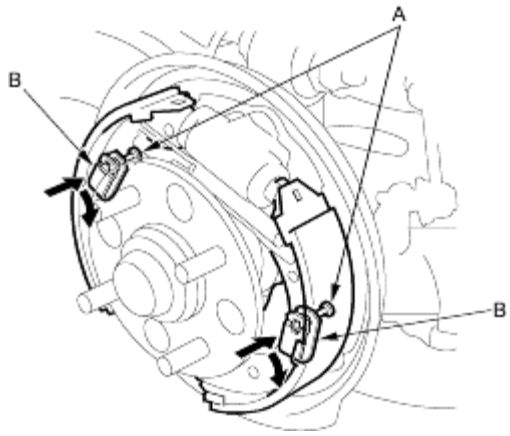
Component	Procedure
Brake Booster (A)	Check brake operation by applying the brakes during a test drive. If the brakes do not work properly, check the brake booster. Replace the brake booster as an assembly if it does not work properly or if there are signs of leakage.
Piston Cup and Pressure Cup Inspection (B)	• Check brake operation by applying the brakes. Look for damage or signs of fluid leakage. Disassemble and inspect the master cylinder if the pedal does not work properly or if there is damage or signs of fluid leakage. Replace the secondary piston and primary piston as an assembly whenever the master cylinder is disassembled. • Check for a difference in brake pedal stroke between quick and slow brake applications. Disassembly and inspect the master cylinder if there is a difference in pedal stroke. Replace the secondary piston and primary piston as an assembly whenever the master cylinder is disassembled.
Brake Hoses (C)	Look for damage or signs of fluid leakage. Replace the brake hose with a new one if it is damaged or leaking
Calliper Piston Seal and Piston Boots (D)	Check brake operation by applying the brakes. Look for damage or signs of fluid leakage. If the pedal does not work properly, the brakes drag, or there is damage or signs of fluid leakage, disassemble and inspect the brake calliper. Replace the boots and seals with new ones whenever the brake calliper is disassembled.
Wheel Cylinder Piston Cup and Dust Cover (E)	Check brake operation by applying the brakes. Look for damage or signs of fluid leakage. Disassemble and inspect the wheel cylinder if the pedal does not work properly, the brakes drag, or there is damage or signs of fluid leakage. Replace the piston cups and dust covers with new ones whenever the wheel cylinder is disassembled.

NOTE: LHD type is shown, RHD type is symmetrical.



Conventional Brake Components
Rear Brake Shoes Replacement (cont'd)

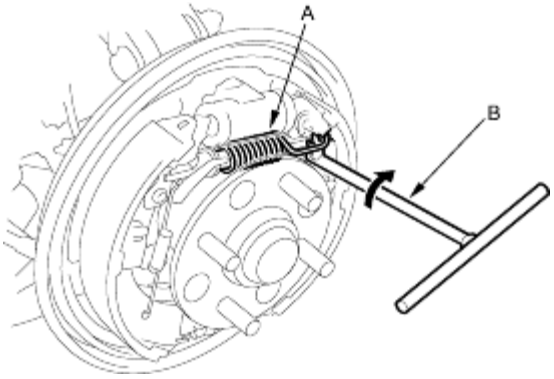
1. 8. Install the tension pins (A) and the retainer springs (B) by pushing in on each spring and turning each pin.



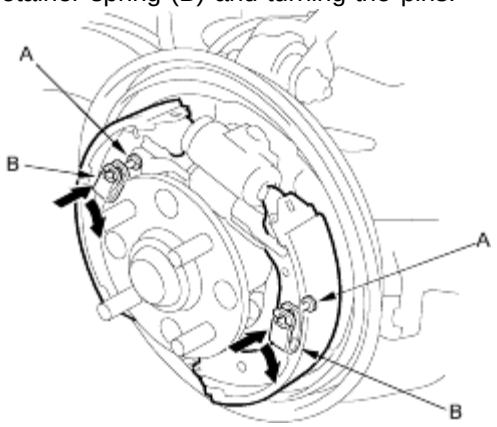
2. 9. Install the lower return spring.
10. Install the brake drum and rear wheel.
11. If the wheel cylinder has been removed, bleed the brake system (see page 19-7).
12. Press the brake pedal several times to set the self-adjusting brake.
13. Adjust the parking brake (see page 19-5).

Removal/Disassembly (5-door)

1. 1. Remove the brake drum (see page 18-24).
2. Unhook the upper return spring (A) from the rearward shoe using a tool (B).

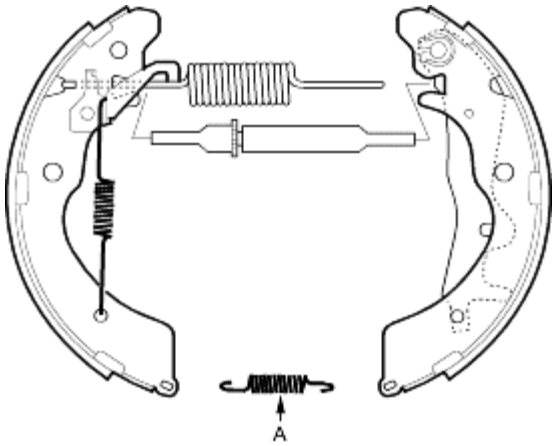


2. 3. Remove the tension pins (A) by pushing each retainer spring (B) and turning the pins.

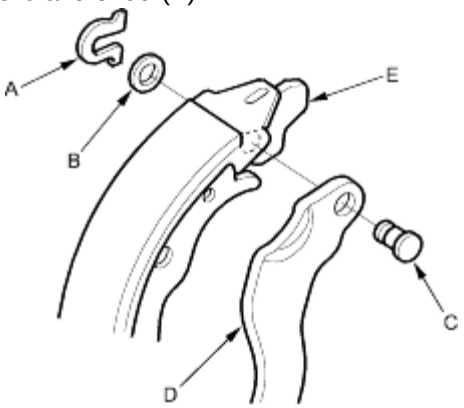


Conventional Brake Components
Rear Brake Shoes Replacement (cont'd)

1. 4. Lower the brake shoe assembly and remove the lower return spring (A). Be careful not to damage the dust cover of the wheel cylinder.



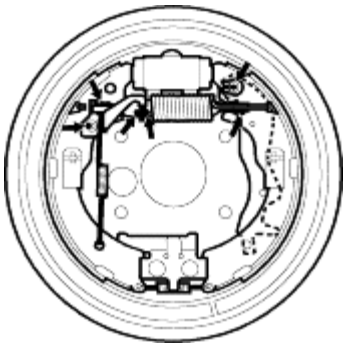
2. 5. Remove the brake shoe assembly from the backing plate and disassemble the shoe assembly.
   6. Disconnect the parking brake cable from the parking brake lever and remove the brake shoe.
   7. Remove the U-clip (A), wavy washer (B) and pivot pin (C) and separate the parking brake lever (D) from the brake shoe (E).



Reassembly (5-door)

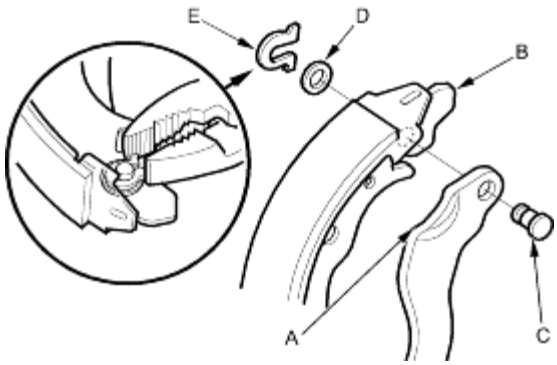
1. 1. Apply rubber grease (Solvest 113) on to the sliding surfaces as illustrated. Wipe off any excess. Do not get grease on the brake linings.

➡● Sliding surfaces



2. 2. Install the parking brake lever (A) to the backward brake shoe (B) and secure with the pivot pin (C), wavy washer (D) and a new U-clip (E). Pinch the U-clip securely to prevent from coming off.

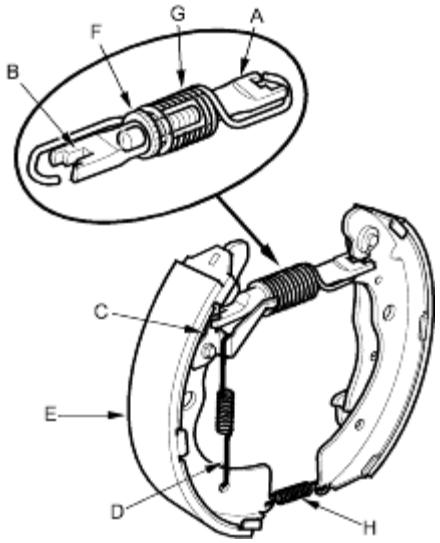
NOTE: Install the wavy washer with its convex side facing outside.



3. 3. Connect the parking brake cable to the backward brake shoe.

Conventional Brake Components
Rear Brake Shoes Replacement (cont'd)

4. Install the self-adjuster lever (C) and self-adjuster spring (D) on the front side brake shoe (E).



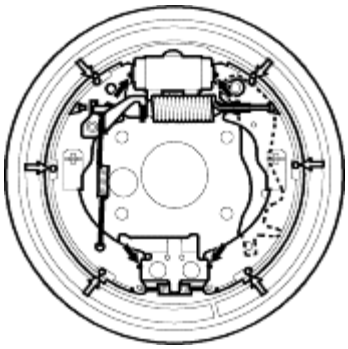
5. Assemble the brake shoes with the clevis A, adjuster bolt (F), clevis B, upper return spring (G), and lower return spring (H).

NOTE: Fully turn the adjuster bolt into the clevis A.

6. Apply Molykote 44MA grease onto the sliding surfaces as illustrated. Wipe off any excess. Do not get grease on the brake linings.

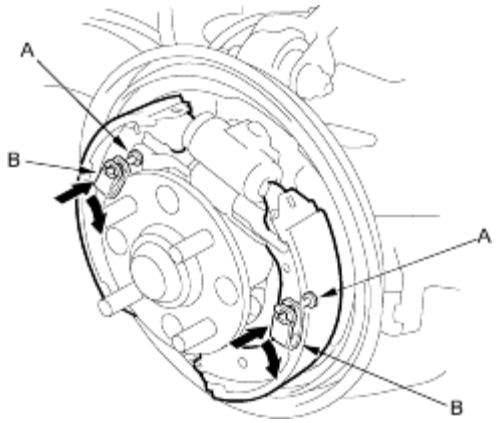
➡● Sliding surfaces

➪O Backside edge of the shoe

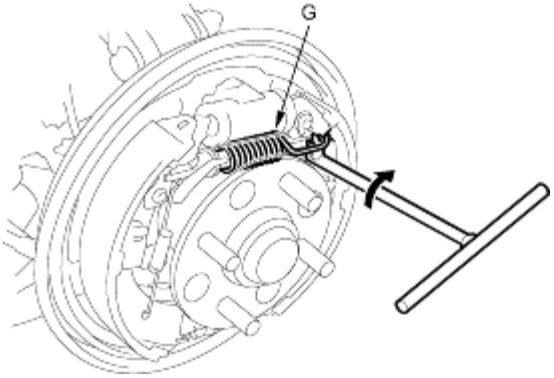


7. Install the shoe assembly on the backing plate fitting the top of the shoes onto the wheel cylinder pistons and the bottom of the shoes onto the locating plate.

8. Install the tension pins (A), and secure with the retainer springs (B) by pushing it and turning each pin.



9. Hook the upper return spring (G) with a tool.



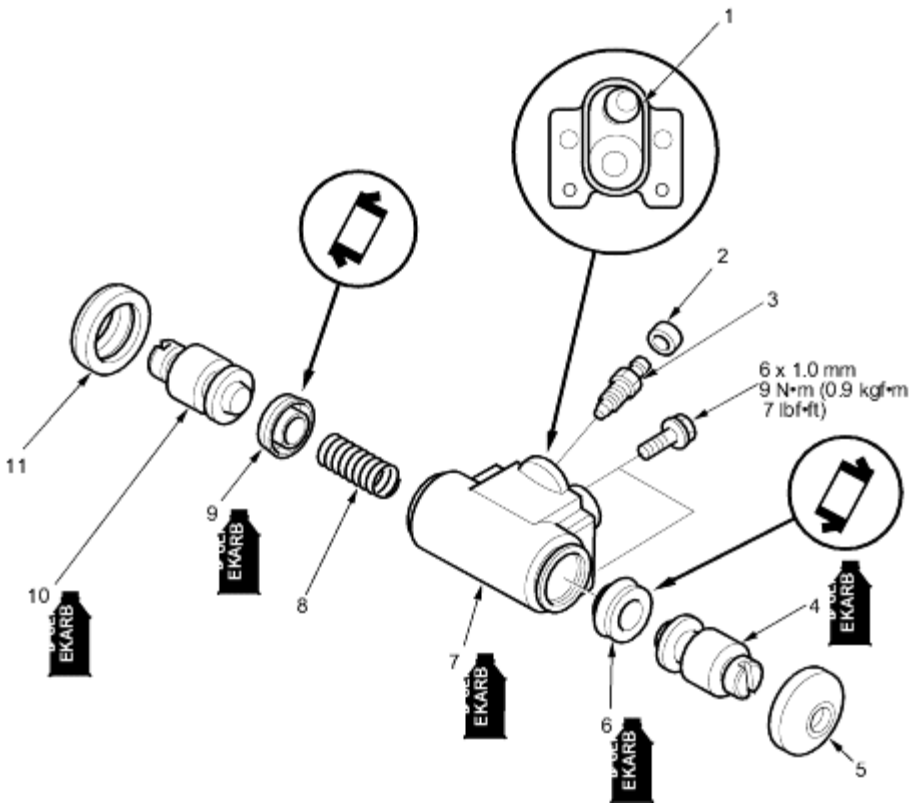
10. Install the brake drum and rear wheel.
11. If the wheel cylinder has been removed, bleed the brake system (see page 19-7).
12. Press the brake pedal several times to set the self-adjusting brake.
13. Adjust the parking brake (see page 19-5).

Conventional Brake Components

Rear Wheel Cylinder Disassembly/Inspection

NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not reuse the drained brake fluid.
- Use only clean Genuine DOT 3 Honda brake fluid. Non- Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston cup and wheel cylinder bore with clean brake fluid.
- Make sure no grease or oil gets on the linings or drums.
- Replace all rubber parts with new ones whenever disassembled.



1. Apply sealant to this area when installing the wheel cylinder onto backing plate.
   NOTE: Do not apply sealant to the threads.
2. BLEED SCREW CAP
3. BLEED SCREW
   7 Nm (0.7 kgf/m, 5 lbf/ft)
4. PISTON
   Inspect for scoring and grooving.
5. DUST COVER
   Replace.
6. PISTON CUP
   Replace.
   NOTE: Install with the lip facing in.
7. WHEEL CYLINDER
   Check the bore for scratches and scoring.
8. WHEEL CYLINDER SPRING
   Check for weakness and damage.
9. PISTON CUP
   Replace.
   NOTE: Install with the lip facing in.
10. PISTON
    Inspect for scoring and grooving.
11. DUST COVER
    Replace.

Conventional Brake Components

Rear Brake Pads Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

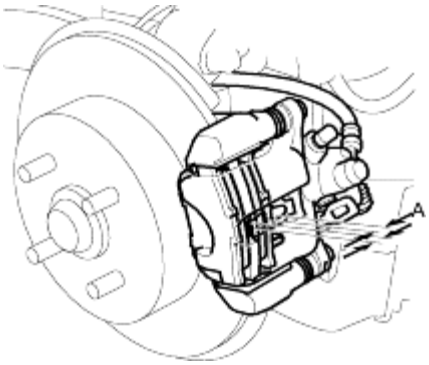
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

Inspection

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
   2. Check the thickness of the inner and outer pads (A). Do not include the thickness of the backing plate.

      Brake pad thickness:

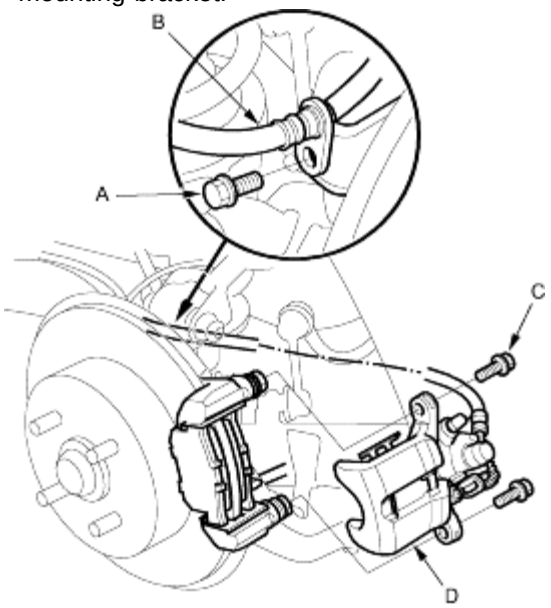
Standard:	8.5 – 9.5 mm (0.33 – 0.37 in.)
Service limit:	1.6 mm (0.06 in.)



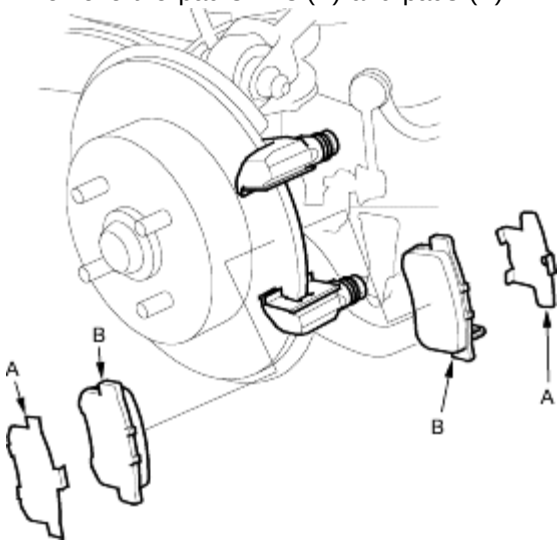
2. 3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

Replacement

1. 1. Remove the bolt (A) and brake hose (B) from the mounting bracket.



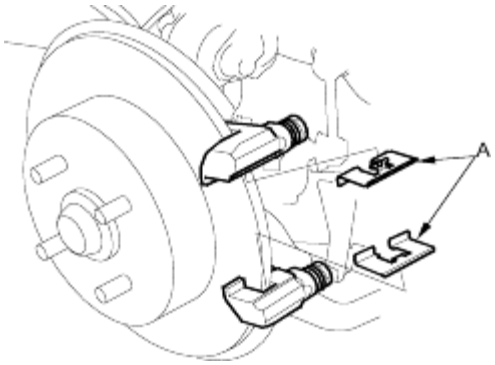
2. 2. Remove the calliper bolts (C) and remove the calliper (D) from the calliper bracket.
   3. Remove the pad shims (A) and pads (B).



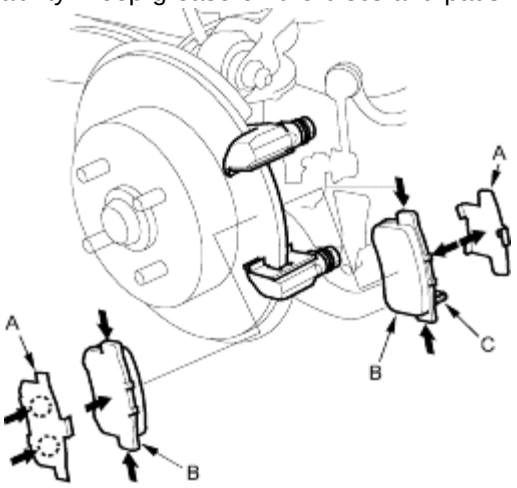
Conventional Brake Components

Rear Brake Pads Inspection and Replacement (cont'd)

1. 4. Remove the pad retainers (A).



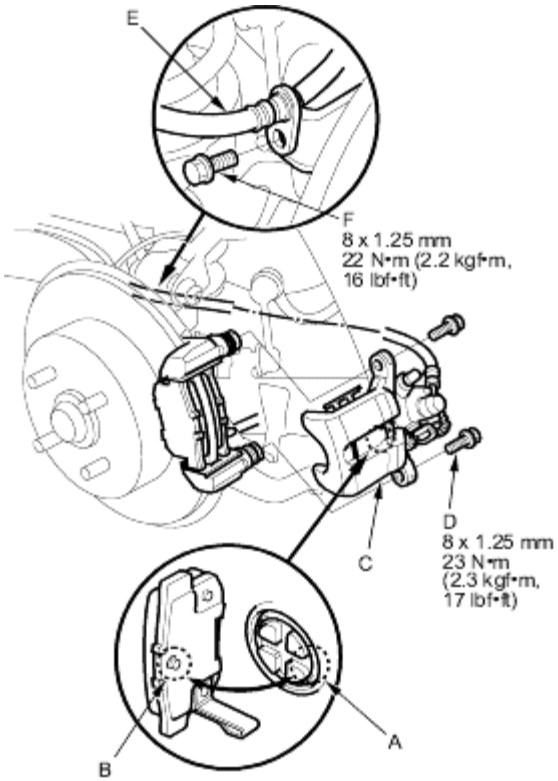
2. 5. Clean the calliper thoroughly; remove any rust and check for grooves and cracks.
6. Check the brake disc for damage and cracks.
7. Apply Dow Corning Molykote M77 grease to the retainers on their mating surfaces against the calliper bracket.
8. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.
9. Apply Dow Corning Molykote M77 or Daikalub 528D grease to both sides of the pad shims (A), the back of the pads (B) and the other areas indicated by the arrows. Wipe excess grease off the shim. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.



3. 10. Install the brake pads and pad shims correctly. Install the pads with the wear indicators (C) on the inside.

If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

1. 11. Rotate the calliper piston clockwise into the cylinder, then align the cut-out (A) in the piston with the tab (B) on the inner pad by turning the piston back so that the calliper can be installed on the pad. Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.



2. 12. Install the brake calliper (C) and calliper bolts (D) and tighten the bolts to the specified torque.
13. Install the brake hose (E) and the bolt (F) and tighten the bolt to the specified torque.
14. Press the brake pedal several times to make sure the brake works then test-drive.

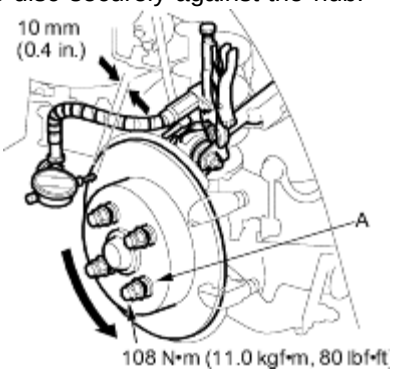
NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

3. 15. After installation, check for leaks at hose and line joints or connections and retighten if necessary.

Conventional Brake Components
Rear Brake Disc Inspection

Runout

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
   2. Remove the brake pads (see page 19-44).
   3. Inspect the disc surface for damage and cracks. Clean the disc thoroughly and remove all rust.
   4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



2. 5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.4 in.) from the outer edge of the disc.

   Brake Disc Runout:

   Service Limit: 0.10 mm (0.004 in.)

3. 6. If the disc is beyond the service limit, refinish the brake disc.

   Max. Refinish Limit: 8.0 mm (0.31 in.)

   NOTE:

   - If the brake disc is beyond the service limit for refinishing, replace it (see page 18-26).
   - A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

Thickness and Parallelism

1. 1. Raise the rear of the vehicle and make sure it is securely supported. Remove the rear wheels.
   2. Remove the brake pads (see page 19-44).
   3. Using a micrometer, measure disc thickness at eight points, approximately 45º apart and 10 mm (0.4 in.) in from the outer edge of the disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

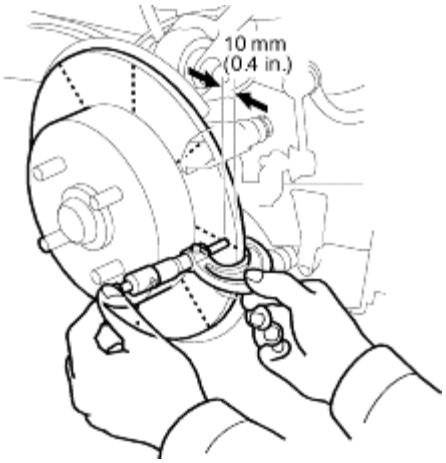
      Brake Disc Thickness:

      Standard: 8.9 – 9.1 mm (0.350 – 0.358 in.)

      Max. Refinishing Limit: 8.0 mm (0.31 in.)

      Brake Disc Parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



2. 4. If the disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe.

   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 18-26).

Conventional Brake Components Rear Brake Calliper Overhaul	19-47

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an appropriate vacuum cleaner.

Remove, disassemble, inspect, reassemble and install the calliper and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- When reusing pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid.
- Use only clean Genuine Honda DOT 3 brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove and calliper bore with clean brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the calliper, check the brake hose and line for leaks, interference and twisting.

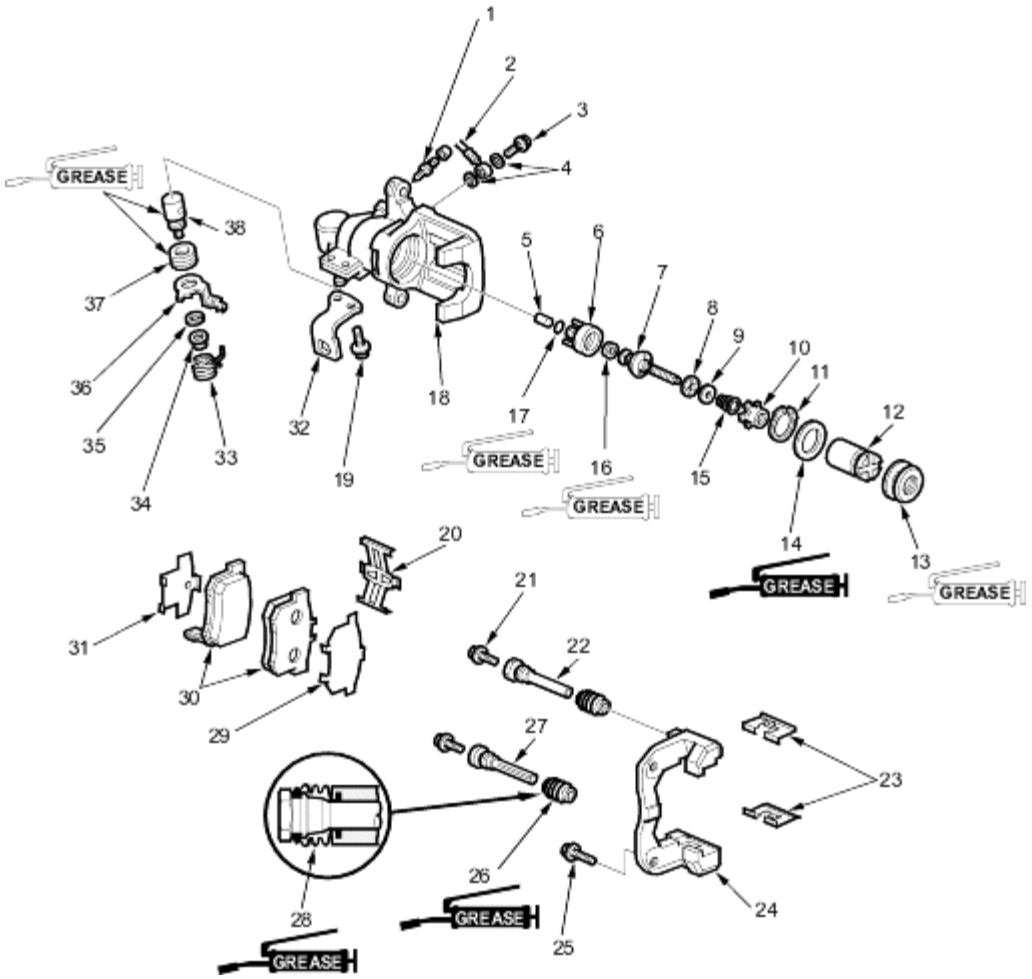


: Rubber grease



: Silicone grease

1. BLEED SCREW
   9 Nm (0.9 kgf/m, 7 lbf/ft)
2. BRAKE HOSE
3. BANJO BOLT
   34 Nm (3.5 kgf/m, 25 lbf/ft)
4. SEALING WASHERS
   Replace.
5. PIN
6. SLEEVE PISTON
7. ADJUSTING BOLT
8. BEARING A
9. SPACER
10. SPRING COVER
11. CIRCLIP
12. PISTON
13. PISTON BOOT
    Replace.
14. PISTON SEAL
    Replace.
15. ADJUSTING SPRING B
16. CUP
    Replace.
17. O-RING
    Replace.
18. CALLIPER BODY
19. 10mm FLANGE BOLTS
    22 Nm (2.2 kgf/m, 16

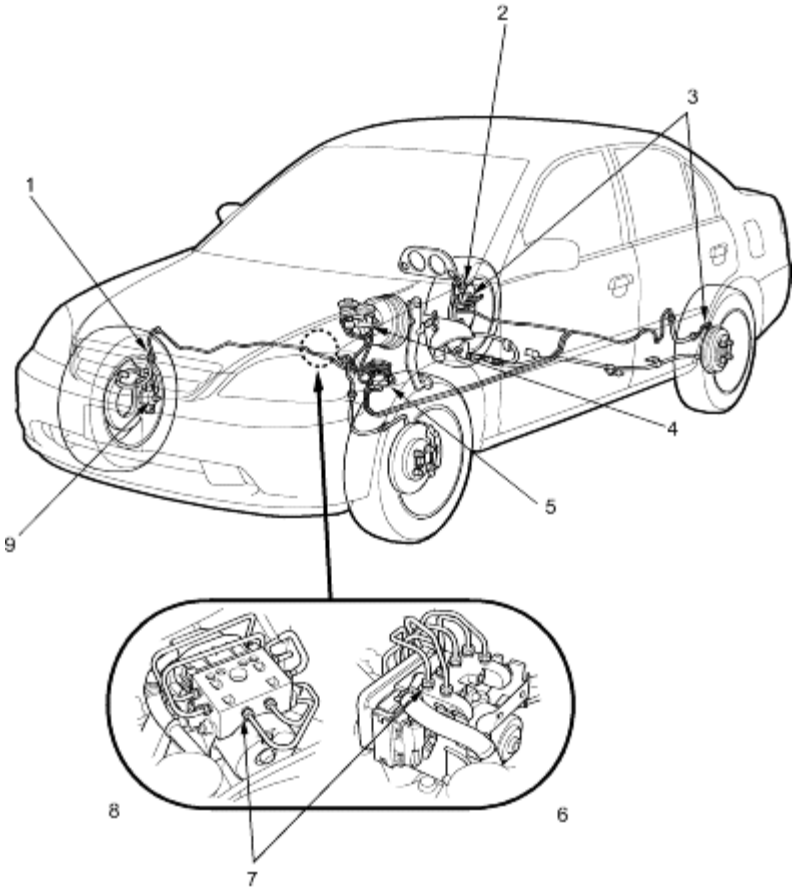


lbf/ft)
20. PAD SPRING
21. CALLIPER BOLTS
23 Nm (2.3 kgf/m, 17 lbf/ft)
22. PIN B
23. RETAINER
24. CALLIPER BRACKET
25. 10 mm FLANGE BOLTS
55 Nm (5.6 lbf/m, 41 lbf/ft)
26. PIN BOOTS
Replace.
27. PIN A
28. PIN BOOT
29. OUTER PAD SHIM
30. BRAKE PADS
31. INNER PAD SHIM
32. ARM
33. RETURN SPRING
34. PARKING NUT
27 Nm (2.8 kgf/m, 20 lbf/ft)
35. SPRING WASHER
36. LEVEL
37. CAM BOOT
Replace.
38. CAM

Conventional Brake Components

Brake Hoses and Lines Inspection

1. 1. Inspect the brake hoses, for damage, deterioration, leaks, interference and twisting.
   2. Check the brake lines for damage, rusting and leakage. Also check for bent brake lines.
   3. Check for leaks at hose and line joints or connections and retighten if necessary.
   4. Check the master cylinder and ABS modulator unit (if equipped) for damage and leakage.
      NOTE: Replace the brake hose clip whenever the brake hose is serviced.



1. BRAKE LINE-to-BRAKE HOSE
   15 Nm (1.5 kgf/m, 11 lbf/ft)
2. BRAKE LINE-to-BRAKE HOSE
   15 Nm (1.5 kgf/m, 11 lbf/ft)
3. BRAKE LINE-to-WHEEL CYLINDER
   15 Nm (1.5 kgf/m, 11 lbf/ft)
   BLEED SCREW
   7 Nm (0.7 kgf/m, 5 lbf/ft)
4. MASTER CYLINDER-to-BRAKE LINE
   15 Nm (1.5 kgf/m, 11 lbf/ft)
5. PROPORTIONING CONTROL VALVE-to-BRAKE LINE
   15 Nm (1.5 kgf/m, 11 lbf/ft)
6. On Vehicles Manufactured in Suzuka Plant
7. ABS MODULATOR UNIT-to-BRAKE LINE
   15 Nm (1.5 kgf/m, 11 lbf/ft)
8. On Vehicles Manufactured in Other Plants
9. BRAKE HOSE-to-CALLIPER, (BANJO BOLT)
   34 Nm (3.5 kgf/m, 25 lbf/ft)
   BLEED SCREW
   9 Nm (0.9 kgf/m, 7 lbf/ft)

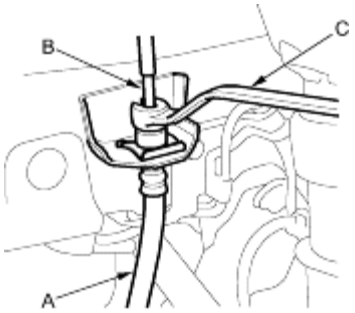
Conventional Brake Components

Brake Hose Replacement

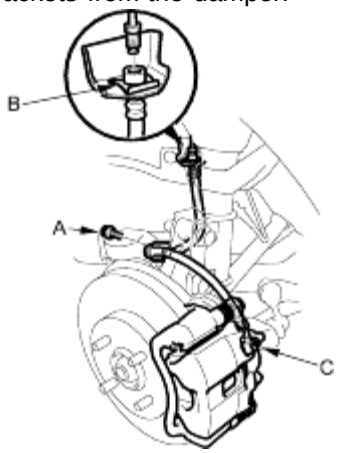
NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected pipe joints with rags or shop towels.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.

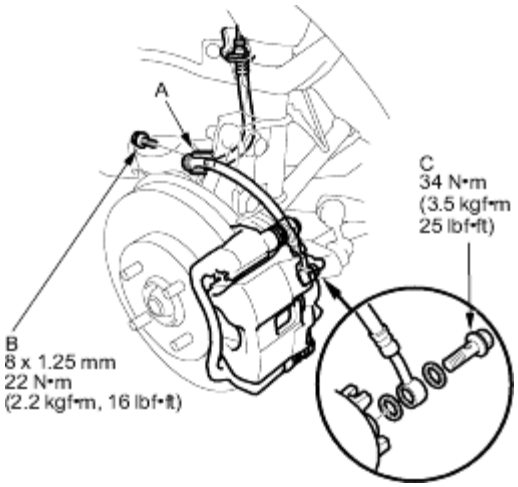
1. Replace the brake hose (A) if the hose is twisted, cracked or if it leaks.



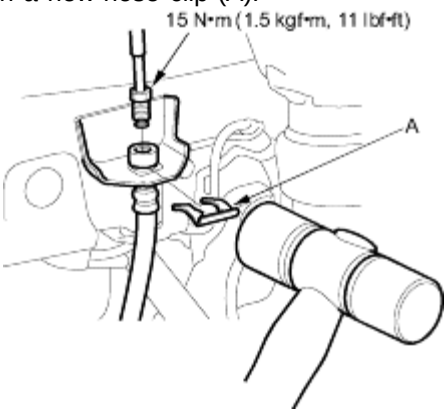
2. Disconnect the brake hose from the brake line (B) using a 10 mm flare-nut wrench (C).
3. Remove the flange bolt (A) and remove the brake hose brackets from the damper.



4. Remove and discard the hose clip (B).
5. Remove the banjo bolt (C) and remove the brake hose from the calliper.
6. Install the brake hose bracket (A) on the damper with the flange bolt (B) first, then connect the brake hose to the calliper with the banjo bolt (C) and new sealing washers (D).



7. Install the hose onto the hose bracket on the body with a new hose clip (A).



8. Connect the brake line to the brake hose.
9. After installing the brake hose, bleed the brake system (see page 19-7).
10. Perform the following checks:
    - Check the brake hose and line joint for leaks and tighten if necessary.
    - Check the brake hoses for interference and twisting.

Conventional Brake Components

Brake Pedal Adjustment

Pedal Height

1. 1. Turn the brake pedal position switch (A) counter-clockwise, and pull back it until it is no longer touching the brake pedal.
   2. Lift up the carpet. At the insulator cut-out, measure the pedal height (B) from the middle of the right side (RHD: left side) of the pedal pad (C).

Standard Pedal Height (with carpet removed):

4-door:

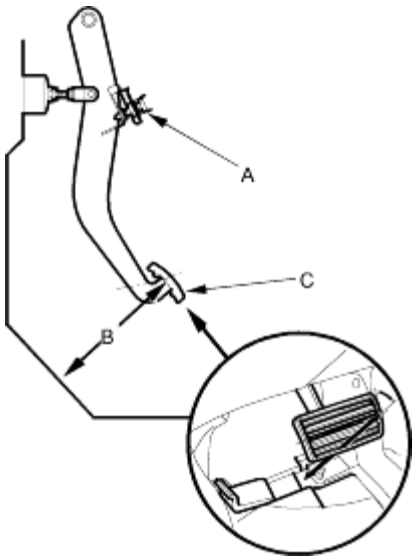
A/T: 188 mm (7.40 in.)

M/T: 184 mm (7.24 in.)

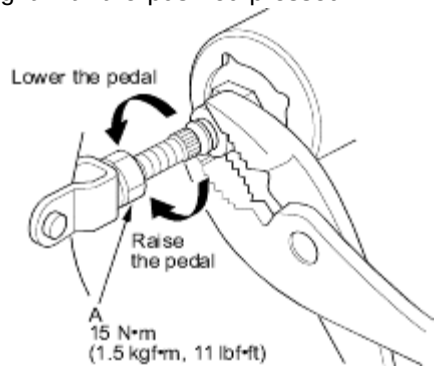
5-door:

A/T: 184 mm (7.24 in.)

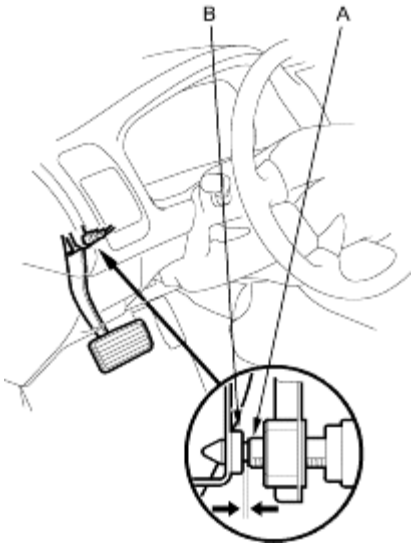
M/T: 180 mm (7.09 in.)



2. 3. Loosen the pushrod locknut (A), and screw the pushrod in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.



1. 4. Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Then turn the brake pedal position switch clockwise to lock it.

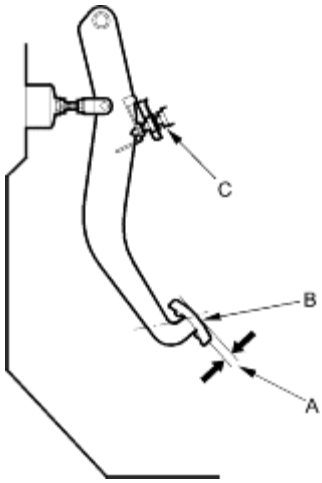


2. 5. Check the brake pedal free play as described below.

Pedal Free Play

3. 1. With the engine off, inspect the play (A) on the pedal pad (B) by pushing the pedal by hand.

Free Play: 0.4 – 3.0 mm (0.016 – 0.118 in.)

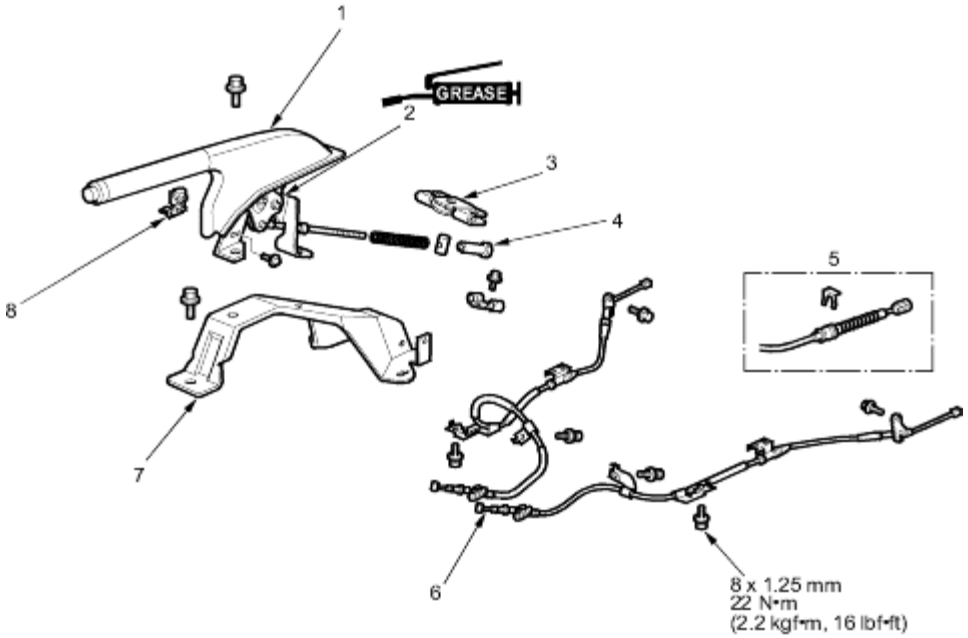


4. 2. If the pedal free play is out of specification, adjust the brake pedal position switch (C). If the pedal free play is insufficient, it may result in brake drag.

Conventional Brake Components

Parking Brake Cable Replacement

Exploded View

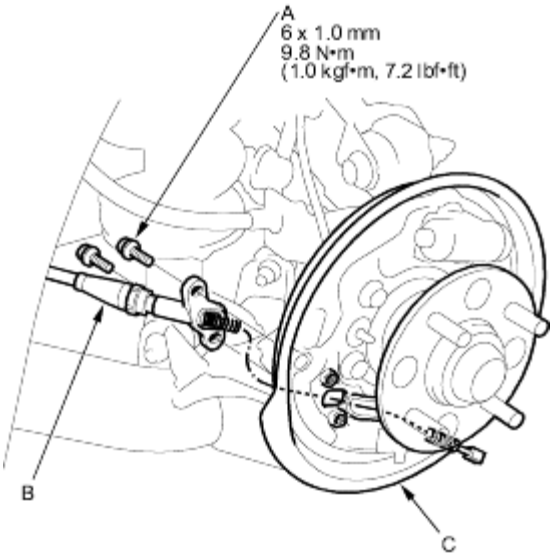


1. PARKING BRAKE LEVER
   Check for smooth operation.
2. (Sliding surface)
3. EQUALISER
4. ADJUSTING NUT
5. REAR DISC BRAKE
6. PARKING BRAKE CABLE,
   Check for faulty movement.
7. PARKING BRAKE LEVER
   BRACKET
8. PARKING BRAKE SWITCH

Conventional Brake Components
Parking Brake Cable Replacement (cont'd)

Drum Brake:

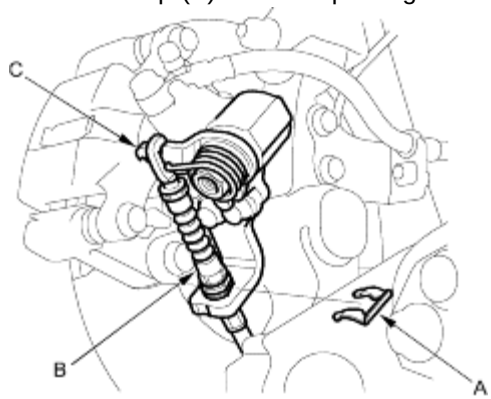
1. 1. Remove the brake drum (see page 18-24) and shoes, and disconnect the parking brake cable from the brake shoe (see page 19-38).
   2. Remove the flange bolts (A) and parking brake cable (B) from the backing plate (C).



2. 3. Reinstall the parking brake cable in the reverse order of removal and note these items:
   - Before installing the brake drum, clean the mating surface of the rear hub and the inside of the brake drum.
   - Before installing the wheel, clean the mating surfaces on the brake drum and inside of the wheel.
   - Adjust the parking brake (see page 19-6).

Disc Brake:

1. 1. Release the parking brake lever fully and remove the brake hose clip (A) from the parking brake cable.



2. 2. Disconnect the parking brake cable (B) from the lever (C).

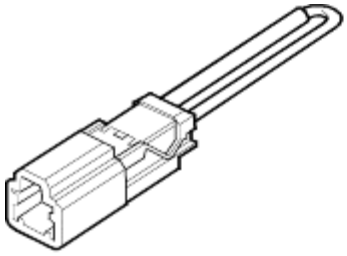
Memo

ABS Components (U.K. Manufacturing)

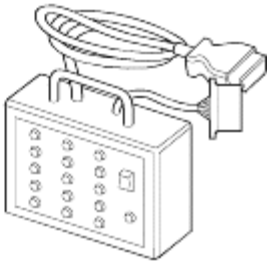
Special Tools	19-54
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ABS Modulator-Control Unit Removal and Installation	19-82
Wheel Sensor Inspection	19-83
Wheel Sensor Replacement	19-83

ABS Components Special Tools	19-54

Ref. No.	Tool Number	Description	Qty
1	07PAZ - 0010100	SCS Short Connector (Except KK, KX models)	1
1	07WAJ - 0010100	DLC Terminal Box (KK, KX models)	1



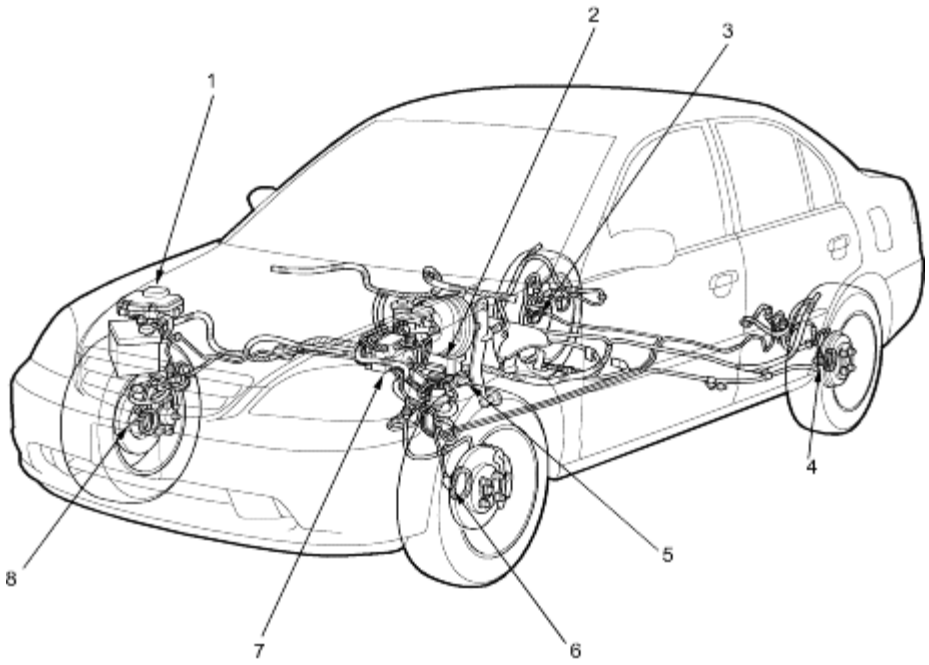
①



②

ABS Components

Component Location Index



1. UNDER-HOOD FUSE/RELAY BOX
2. UNDER-DASH FUSE/RELAY BOX
3. RIGHT-REAR WHEEL SENSOR
   Inspection, page 19-83
   Replacement, page 19-83
4. LEFT-REAR WHEEL SENSOR
   Inspection, page 19-83
   Replacement, page 19-83
5. DATA LINK CONNECTOR (16P)
   (KK, KX, models)
   SERVICE CHECK CONNECTOR (2P)
   (Except KK, KX models)
6. LEFT-FRONT WHEEL SENSOR
   Inspection, page 19-83
   Replacement, page 19-83
7. ABS MODULATOR-CONTROL UNIT
   Removal and Installation, page 19-82
8. RIGHT - FRONT WHEEL SENSOR
   Inspection, page 19-83
   Replacement, page 19-83

ABS Components
General Troubleshooting Information

ABS Indicator

- If the system is OK, the ABS indicator goes off 2 seconds after turning the ignition switch ON (II) without starting the engine and then comes on again and goes off 2 seconds later after starting the engine. This occurs because the ABS control unit is turned on by the IG2 power source.
- The ABS indicator comes on when the ABS control unit detects a problem in the system. However, even though the system is operating properly, the indicator will come on under these conditions:
  - Only the drive wheels rotate.
  - One drive wheel is stuck.
  - The vehicle goes into a spin.
  - The ABS continues to operate for a long time.
  - The vehicle is subjected to an electrical signal disturbance.

To determine the actual cause of the problem, question the customer about the problem, taking the above conditions into consideration.

- When a problem is detected and the ABS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF and cases when the indicator goes off automatically when the system returns to normal.
  - DTC 61: The ABS indicator goes off automatically when the system returns to normal.
  - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 54, or 81: The ABS indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.
  - DTC 12, 14, 16, 18, 21, 51, 52, or 53: The ABS indicator goes off when the vehicle is driven again and the system is OK after the ignition switch is turned from OFF to ON (II).

Diagnostic Trouble Code (DTC)

- The memory can hold three DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one.
- Therefore, when the same problem is detected repeatedly, it is memorised as a single DTC.
- The DTCs are indicated in the order they occurred, beginning with the most recent.
- The DTCs are memorised in the EEPROM (non-volatile memory). Therefore, the memorised DTCs are not cleared when the battery is disconnected, the ignition switch is turned off, or the system returns to normal. Perform the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis:
  - Done right after the engine starts and until the ABS indicator goes off
  - Regular diagnosis:
  - Done right after the initial diagnosis until the ignition switch is turned OFF
- When a problem is detected by self-diagnosis, the system does the following:
  - Turns the ABS indicator on
  - Memorises the DTC
  - Stops ABS control

Kickback

The pump motor operates when the ABS is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the ABS is functioning.
- The ABS control unit checks the pump motor operation when the vehicle is started the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

ABS Components

General Troubleshooting Information (cont'd)

How to Troubleshoot ABS DTCs

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the ABS indicator is still on. Following the flowchart when the ABS indicator does not come on can result in incorrect diagnosis.

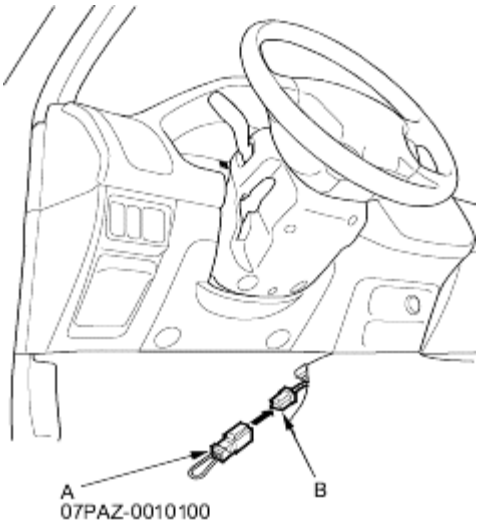
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. 1. Question the customer about the conditions when the problem occurred and try to reproduce the same conditions for troubleshooting. Find out when the ABS indicator came on, such as during ABS control after ABS control, when the vehicle was at a certain speed, etc.
   2. When the ABS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., before you start troubleshooting.
   3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the ABS indicator does not come on.

How to Retrieve ABS DTCs (Except KK, KX, Models)

NOTE: This operation can also be done with the Honda PGM Tester.

2. 1. With the ignition switch OFF, connect the SCS short connector (A) to the service check connector (2P) (B) under the driver's side of the dashboard.



1. 2. Turn the ignition switch ON (II).
2. 3. The blinking frequency indicates the DTC. DTCs are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

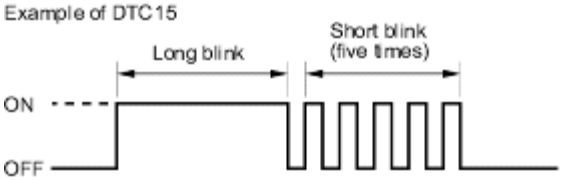
NOTE:

- If the DTC is not memorised, the ABS indicator will go off for 3.6 seconds and then come back on.
- If the ABS indicator continues on, troubleshoot for "ABS indicator does not go off" (see step 1 on page 19-78).

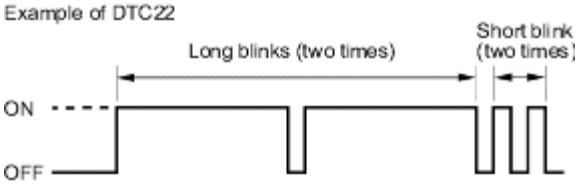
The system will not indicate the DTC unless these conditions are met:

- The ignition switch is turned ON (II).
- The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC15



Example of DTC22



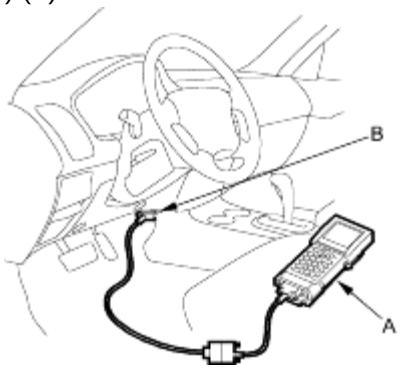
3. 4. Turn the ignition switch OFF.
   5. Disconnect the SCS short connector from the service check connector.

ABS Components
General Troubleshooting Information (cont'd)

How to Retrieve ABS DTCs (KK, KX Models)

Honda PGM Tester Method:

1. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.

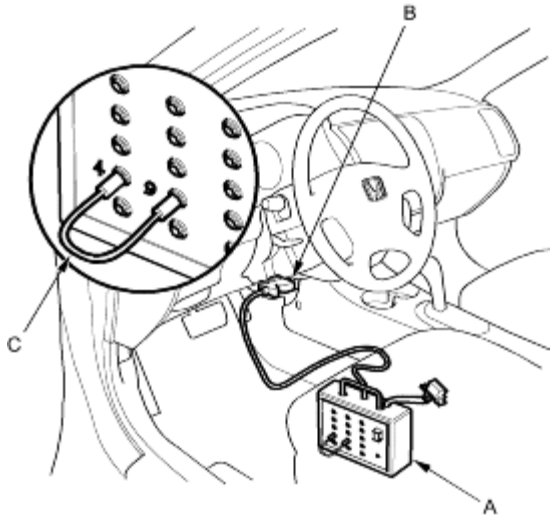


2. 2. Turn the ignition switch ON (II) and follow the prompts on the PGM Tester to display the DTC (s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

NOTE: See the Honda PGM Tester user's manual for specific instructions.

DLC Terminal Box Method:

1. 1. With the ignition switch OFF, connect the DLC terminal box (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.



2. 2. Insert the plugs of the jumper wire (C) to No. 1 and No. 12 plug holes of the DLC terminal box, then push the switch.
   3. Turn the ignition switch ON (II).

ABS Components
General Troubleshooting Information (cont'd)

1. 4. The blinking frequency indicates the DTC. DTCs are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

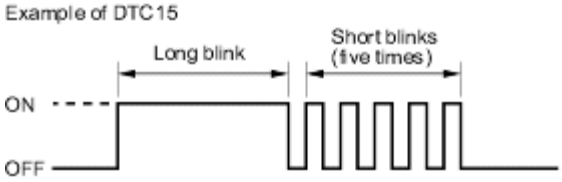
NOTE:

- If the DTC is not memorised, the ABS indicator will go off for 3.6 seconds and then come back on.
- If the ABS indicator stays on, troubleshoot for "ABS indicator does not go off" (see page 19-76).

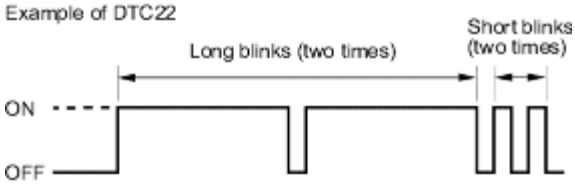
The system will not indicate the DTC unless these conditions are met:

- The ignition switch is turned ON (II).
- The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC 15



Example of DTC 22

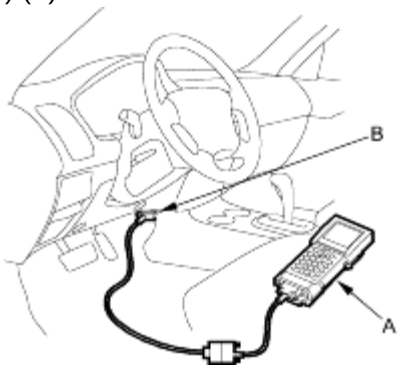


2. 5. Turn the ignition switch OFF.
6. Disconnect the DLC terminal box from the DLC.

How to Clear ABS DTCs

Honda PGM Tester Method:

1. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.



2. 2. Turn the ignition switch ON (II) and clear the DTC(s) by following the screen prompts on the PGM Tester.

NOTE: See the Honda PGM Tester user's manual for specific instructions.

Cycling the Ignition Switch Method:

Clear the DTC by turning the ignition switch ON (II) then OFF at least 20 times.

Conventional Brake Components
Parking Brake Check and Adjustment

Inspection

1. 1. Pull the parking brake lever (A) with 196 N (20 kgf, 44 lbf) of force to fully apply the parking brake. The parking brake lever should be locked within the specified number of clicks (B).

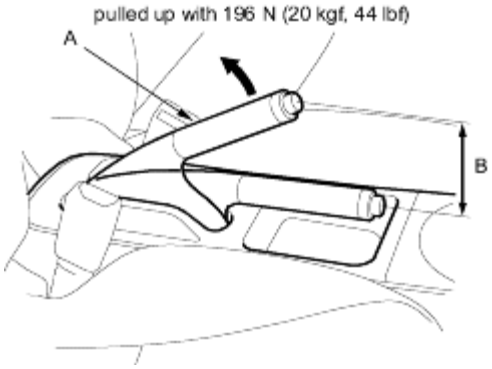
Lever locked clicks:

4-door:

Rear Drum Brake: 6 – 7

Rear Disc Brake: 7 – 8

5-door: 8 – 9

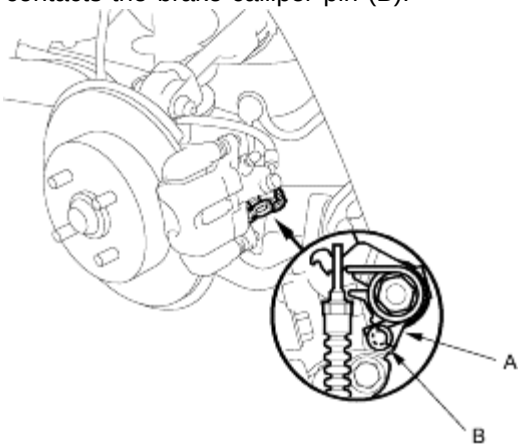


2. 2. Adjust the parking brake if the lever clicks are not within the specification.

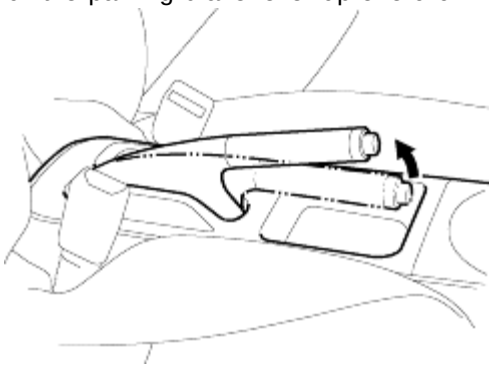
Adjustment

NOTE: After servicing the rear brake pads or callipers, or the rear brake shoe, loosen the parking brake adjusting nut, start the engine and depress the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.

1. 1. Block the front wheels, then raise the rear of the vehicle and make sure it is securely supported.
   2. On vehicles with rear disc brakes, make sure the parking brake arm (A) on the rear brake calliper contacts the brake calliper pin (B).



2. 3. Remove the console cover.
   4. Pull the parking brake lever up one click.



ABS Components
DTC Troubleshooting Index

DTC	Detection Item	Note
11	Right-front wheel sensor (open/short to body ground/short to power)	(see page 19-70)
12	Faulty right-front wheel sensor pulse signal	(see page 19-71)
13	Left-front wheel sensor (open/short to body ground/short to power)	(see page 19-70)
14	Faulty left-front wheel sensor pulse signal	(see page 19-71)
15	Right-rear wheel sensor (open/short to body ground/short to power)	(see page 19-70)
16	Faulty right-rear wheel sensor pulse signal	(see page 19-71)
17	Left-rear wheel sensor (open/short to body ground/short to power)	(see page 19-70)
18	Faulty left-rear wheel sensor pulse signal	(see page 19-71)
21	Continuous operation (chipped pulsar)	(see page 19-72)
31	Solenoid	(see page 19-73)
32	Solenoid	(see page 19-73)
33	Solenoid	(see page 19-73)
34	Solenoid	(see page 19-73)
35	Solenoid	(see page 19-73)
36	Solenoid	(see page 19-73)
37	Solenoid	(see page 19-73)
38	Solenoid	(see page 19-73)
51	Motor lock	(see page 19-73)
52	Motor stuck off	(see page 19-74)
53	Motor stuck on	(see page 19-74)
54	Main relay stuck off	(see page 19-75)
61	Ignition voltage	(see page 19-75)
81	CPU (Central Processing Unit)	(see page 19-76)

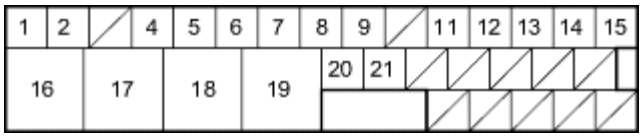
ABS Components

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting (see page 19-76)	
ABS indicator does not go off and no DTC is stored	ABS Indicator Circuit Troubleshooting (see step 1 on page 19-78)	
Brake system indicator does not move on	Brake system indicator circuit troubleshooting (see page 19-80)	
Brake system indicator does not go off and no DTC is stored	Brake system indicator circuit troubleshooting (see step 1 on page 19-80)	

ABS Components
System Description

ABS Control Unit Inputs and Outputs for 31P Connector



Wire side of female terminals

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement			
				Terminals	Conditions (Ignition switch ON (II))		Voltage
1	BLU/YEL	RRS (-) Rear-right signal negative)	Detects right-rear wheel sensor signal	1 – 2	Wheel	Spin wheel at 1 turn/second	AC: 0.053V or above Oscilloscope 0.15 Vp-p or above
2	GRN/YEL	RRS (+) (Rear-right signal positive)					
4	BLU	FRS (-) (Front-right signal negative)	Detects right-front wheel sensor signal	4 – 5			
5	GRN/DLK	FRS (+) (Front-right signal positive)					
6	BRN/WHT	FLS (-) (Front-left signal negative)	Detects left-front wheel sensor signal	6 – 7			
7	BLU/ORN	FLS (+) (Front-left signal positive)					
8	GRY/RED	RLS (-) (Rear-left signal positive)	Detects left-rear wheel sensor signal	8 – 9			
9	YEL/RED	RLS (+) (Rear-Left signal positive)				Stops	About 2.5 V
11	LT BLU	DIAG – K (Diagnosis K)	Communicates with the Honda PGM Tester	———	———		———
12	BRN	DIAG – (Diagnosis L)	DTC indication	———	———		———

ABS Components
System Description (cont'd)

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement			
				Terminals	Conditions (Ignition switch ON (II))		Voltage
14	WHT/BLK	STOP	Detects brake switch signal	14-GND	Brake pedal	Pressed	Battery voltage
						Released	0 V
15	BLK/ORN	IG2	Power source for activating the system	15-GND	———		Battery voltage
16	BLK	M – GND (Motor ground)	Ground for the pump motor	16-GND	———		Below 0.3 V
17	WHT/RED	+ B – MR (+ B motor relay)	Power source for the pump motor	17-GND	At all times		Battery voltage
18	WHT/GRN	+B-FSR (+B fail-safe relay)	Power source for the valve relay	18-GND	At all times		Battery voltage
19	BLK	GND	Ground for the modulator assembly	19-GND	———		Below 0.3 V
20	BLU/RED	ABS	Drives ABS indicator	20-GND	ABS indicator	ON	About 11 V
						OFF	Below 1 V
21	BRN/YEL	EBD (Electronic brake distribution)	Drives brake system indicator	21-GND	Engine running, parking brake	Pulled	Below 0.3 V
						Released	Battery voltage

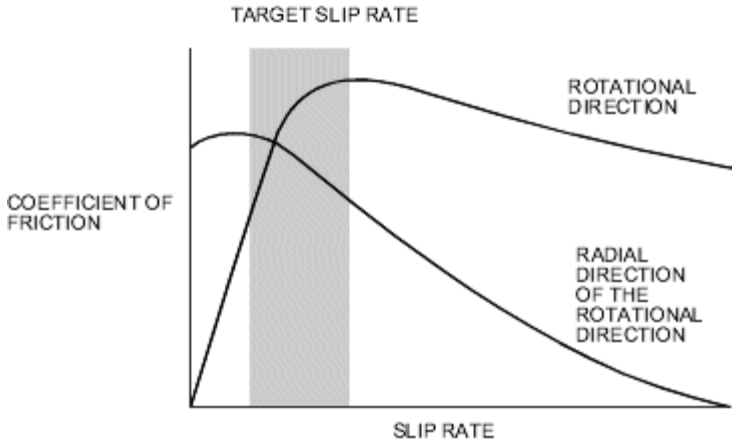
ABS Components
System Description (cont'd)

Features

When the brake pedal is pressed during driving, the wheels can lock before the vehicle comes to a stop. In such an event, the manoeuvrability of the vehicle is reduced if the front wheels are locked and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, thereby ensuring the manoeuvrability and stability of the vehicle.

The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

Grip Force of Tyre and Road Surface



ABS Components
System Description (cont'd)

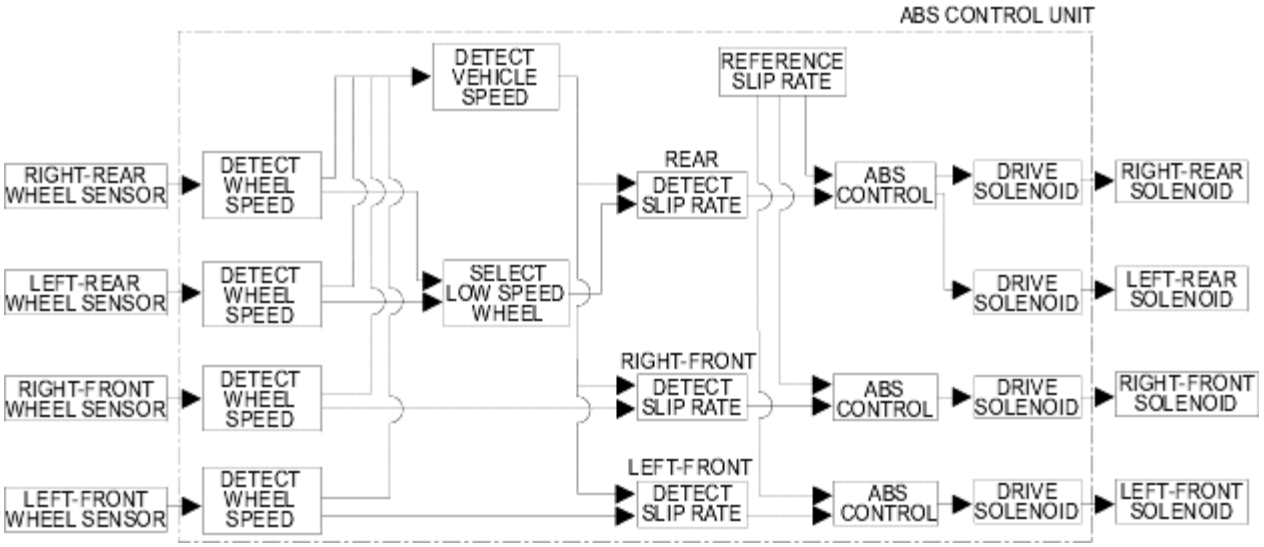
ABS Control Unit

Main Control

The ABS control unit detects the wheel speed based on the wheel sensor signal it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

The ABS control unit calculates the slip rate of each wheel and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The pressure reduction control has three modes: pressure reducing, pressure retaining, and pressure intensifying.



Electronic Brake Distribution (EBD) Control

The electronic brake distribution (EBD) function helps control vehicle braking by adjusting the rear brake force before the ABS operates. Based on wheel sensor signals, the ABS control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the ABS control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, there is kickback at the brake pedal.

During self-diagnosis, if the ABS control unit detects a problem that affects the EBD, it turns on the brake system indicator and the ABS indicator.

Self-diagnosis Function

1. The ABS control unit is equipped with a main CPU and a sub-CPU. Each CPU checks the other for problems.
2. The CPUs check the circuit of the system.
3. The ABS control unit turns on the ABS indicator when the unit detects a problem and the unit stops the system.
4. The self-diagnosis can be classified into these two categories:

- Initial diagnosis
- Regular diagnosis

On-board Diagnosis Function

The ABS can be diagnosed with the Honda PGM Tester.

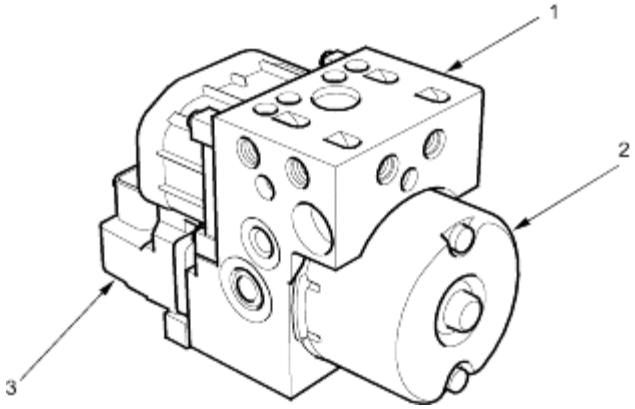
The ALB Checker cannot be used with this system. For air bleeding and checking wheel sensor signals, use the Honda PGM Tester. See the Honda PGM Tester user's manual for specific operating instructions.

ABS Components
System Description (cont'd)

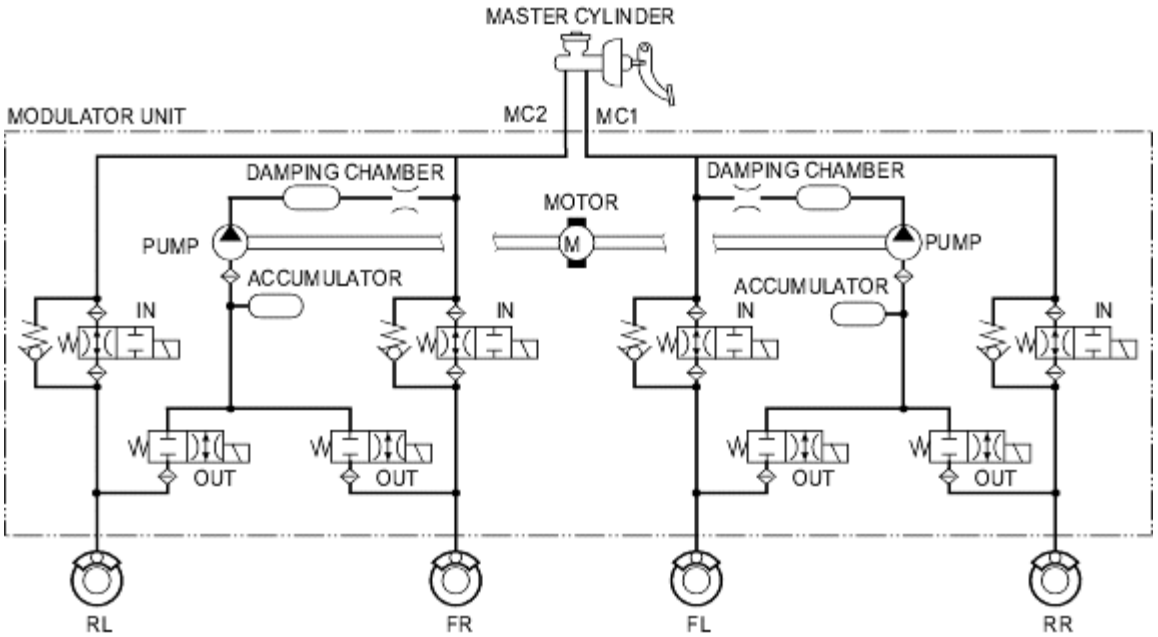
ABS Modulator

The ABS modulator consists of the inlet solenoid valve, outlet solenoid valve, reservoir, pump, pump motor and the damping chamber. The modulator reduces the calliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the calliper, reservoir and the master cylinder. The hydraulic control has three modes: pressure intensifying, pressure retaining and pressure reducing. The hydraulic circuit is an independent four-channel type, one channel for each wheel.

ABS MODULATOR-CONTROL UNIT



1. MODULATOR UNIT
2. PUMP MOTOR
3. ABS CONTROL UNIT



IN: INLET VALVE (NORMALLY OPEN)

OUT: OUTLET VALVE (NORMALLY CLOSED)

Pressure intensifying mode:	Inlet valve open, outlet valve closed
	Master cylinder fluid is pumped out to the calliper.
Pressure retaining mode:	Inlet valve closed, outlet valve closed
	Calliper fluid is retained by the inlet valve and outlet valve.
Pressure reducing mode:	Inlet valve closed, outlet valve open
	Calliper fluid flows through the outlet valve to the reservoir.
Motor operation mode:	When starting the pressure reducing mode, the pump motor is ON.
	When stopping ABS operation, the pump motor is OFF.
	The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

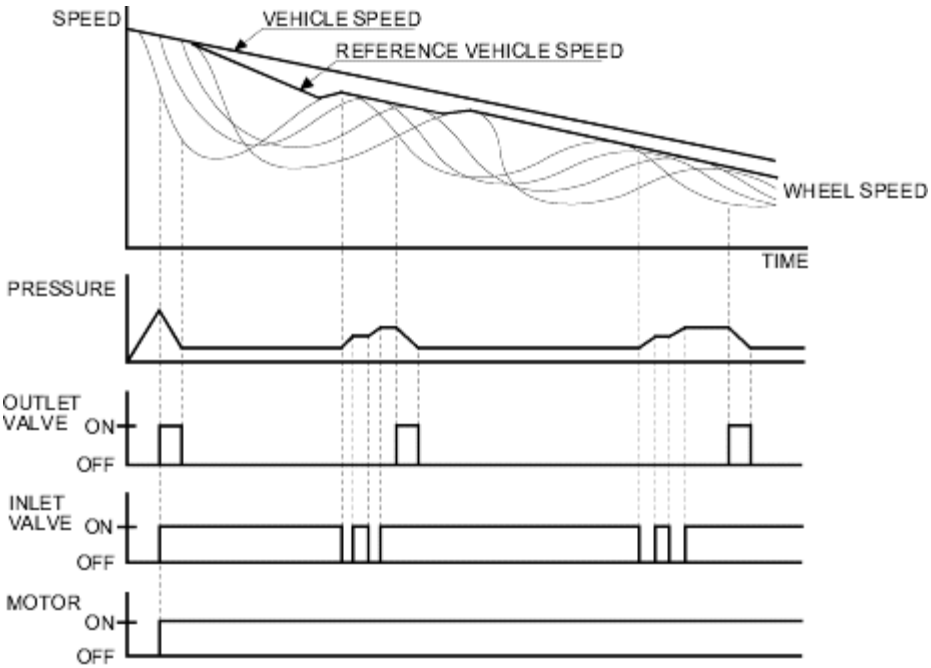
ABS Components
System Description (cont'd)

Wheel Sensors

The wheel sensors are the magnetic contactless type. As the gear pulsar teeth rotate past the wheel sensor's magnetic coil, AC current is generated. The AC frequency changes in accordance with the wheel speed. The ABS control unit detects the wheel sensor signal frequency and thereby detects the wheel speed.



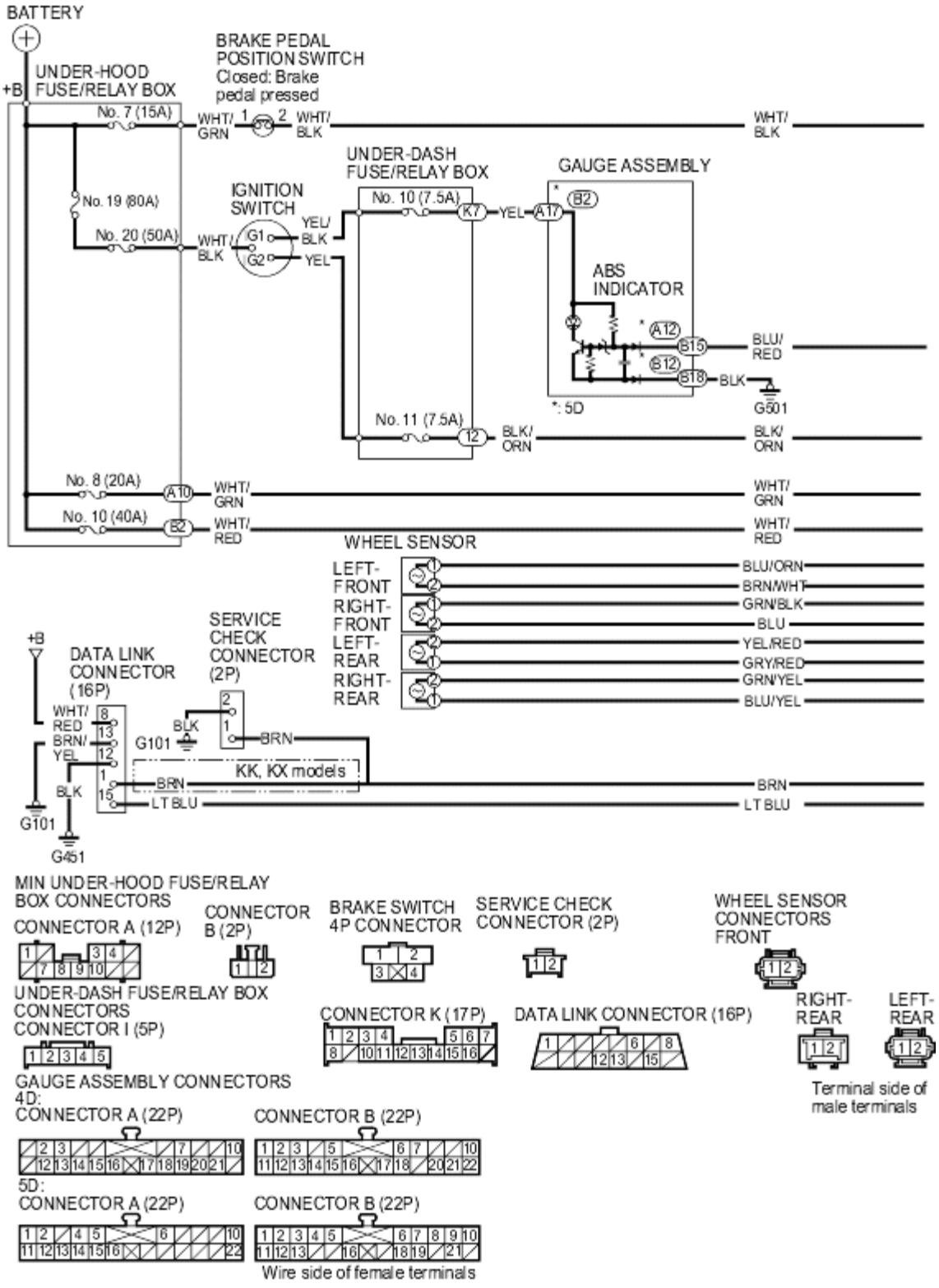
Wheel Speed and Modulator Control



When the wheel speed drops sharply below the vehicle speed, the outlet valve opens momentarily to reduce the calliper fluid pressure. The pump motor starts at this time. As the wheel speed is restored, the inlet valve opens momentarily to increase the calliper fluid pressure.

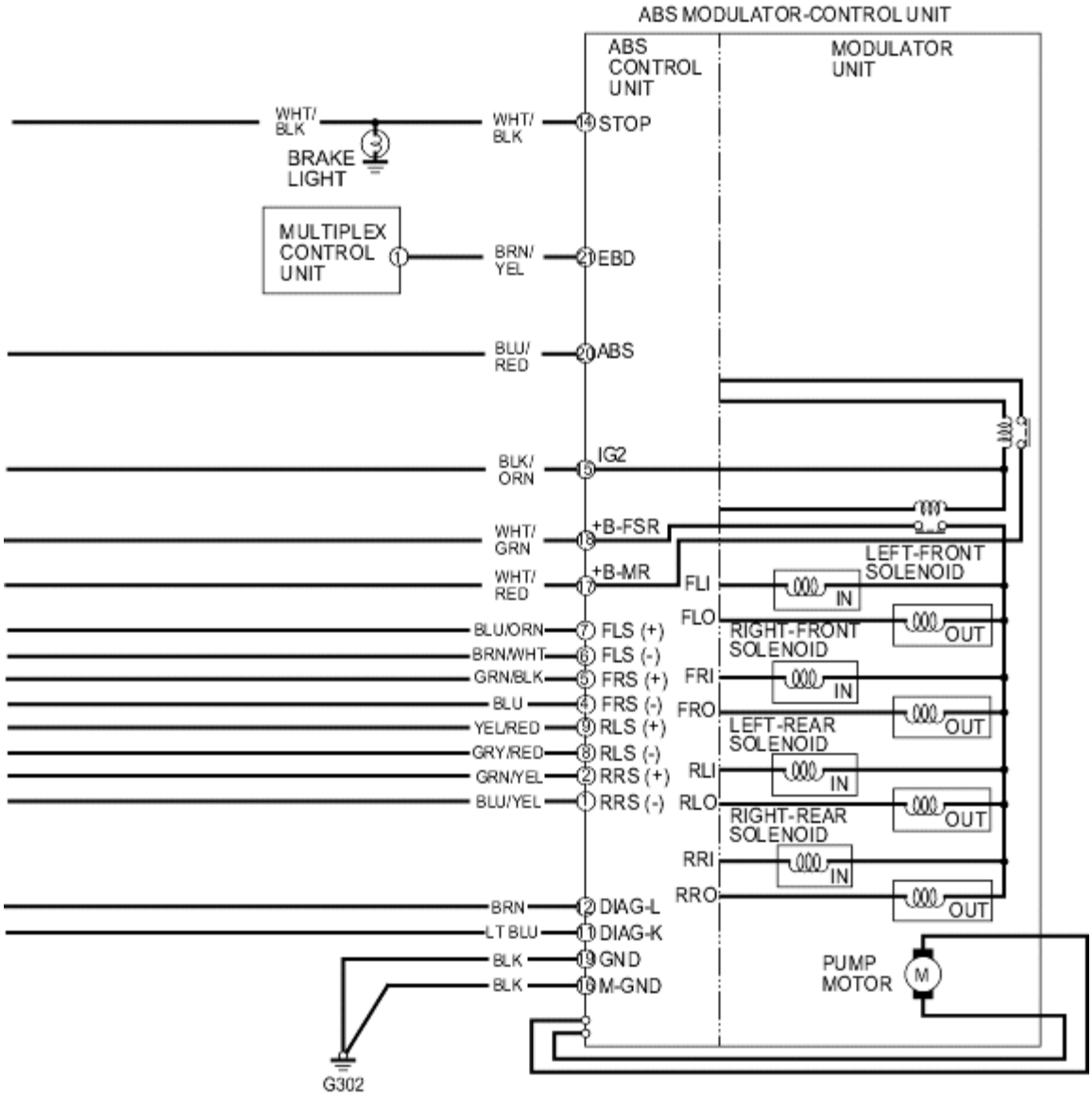
ABS Components

Circuit Diagram

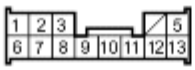


ABS Components

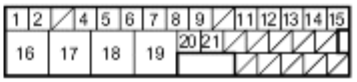
Circuit Diagram (cont'd)



MULTIPLEX CONTROL UNIT 13P CONNECTOR



ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Conventional Brake Components

Parking Brake Check and Adjustment (cont'd)

5. Tighten the adjusting nut (A) until the parking brakes drag slightly when the rear wheels are turned.



6. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
7. Make sure the parking brakes are fully applied when the parking brake lever is pulled up fully.
8. Reinstall the console cover.

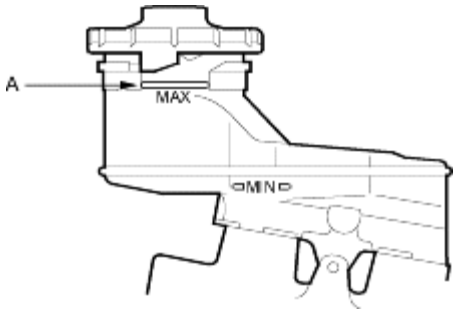
NOTE:

- Do not reuse the drained fluid.
- Always use Genuine Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The reservoir on the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake calliper. Add fluid as required.

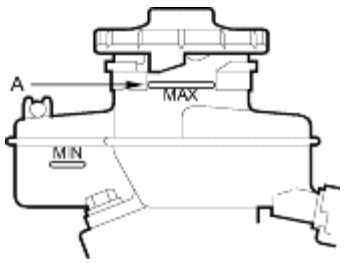
Conventional Method

1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).

4-door



5-door



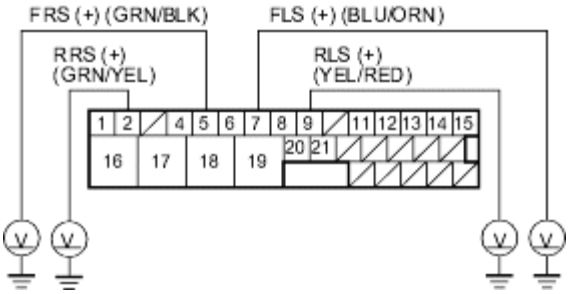
ABS Components
DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. 1. Disconnect the ABS control unit 31P connector.
   2. Start the engine.
   3. Measure the voltage between the appropriate wheel sensor (+) circuit terminal of the ABS control unit 31P connector and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 5: FRS (+)
13 (Left-front)	No. 7: FLS (+)
15 (Right-rear)	No. 2: RRS (+)
17 (Left-rear)	No. 9: RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Repair short to power in the (+) circuit wire between the ABS modulator-control unit and the appropriate wheel sensor. ■

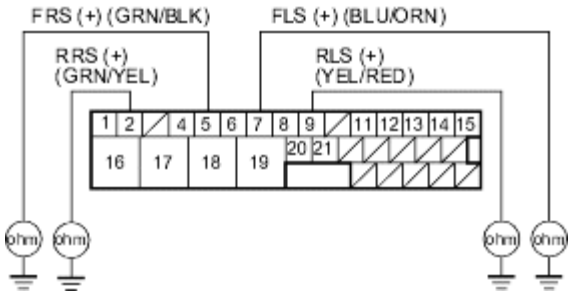
NO - Go to step 4.

2. 4. Turn the ignition switch OFF.

1. 5. Check for continuity between the appropriate wheel sensor (+) circuit terminal and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 5: FRS (+)
13 (Left-front)	No. 7: FLS (+)
15 (Right-rear)	No. 2: RRS (+)
17 (Left-rear)	No. 9: RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 6.

NO - Go to step 7.

2. 6. Disconnect the harness 2P connector from the appropriate wheel sensor, then check for continuity between the (+) and (-) terminals of the harness and body ground.

Is there continuity?

YES - Repair short to body ground in the (+) or (-) circuit wire between the ABS modulator-control unit and the wheel sensor. ■

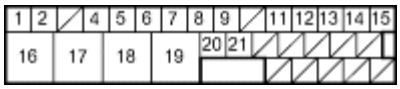
NO - Replace the wheel sensor.

ABS Components
DTC Troubleshooting (cont'd)

1. 7. Check the resistance between the appropriate wheel sensor (+) and (-) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(-) Side
11 (Right-front)	No. 5: FRS (+)	No. 4: FRS (+)
13 (Left-front)	No. 7: FLS (+)	No. 6: FLS (+)
15 (Right-rear)	No. 2: RRS (+)	No. 1: RRS (+)
17 (Left-rear)	No. 9: RLS (+)	No. 8: RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is the resistance between 450 - 2,000 ohms?

YES - Check for loose ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 8.

2. 8. Disconnect the harness 2P connector from the appropriate wheel sensor and check the resistance between the (+) and (-) terminals of the wheel sensor.

Is the resistance between 450 - 2,000 ohms?

YES - Repair open in the (+) or (-) circuit wire, or short between the (+) circuit wire and the (-) circuit wire between the ABS modulator-control unit and the wheel sensor. ■

NO - Replace the wheel sensor. ■

DTC 12, 14, 16, 18: Wheel Sensor Pulse Signal

NOTE: If the ABS indicator comes on for the reasons described below, the indicator goes off when you test-drive the vehicle at 31 mph (50 km/h).

- Only the drive wheel rotated
- The vehicle spun
- Electrical noise

1. 1. Visually check for appropriate wheel sensor and pulsar installation and condition (see table).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are they installed correctly and not damaged?

YES - Go to step 2.

NO - Reinstall or replace the appropriate wheel sensor or pulsar. ■

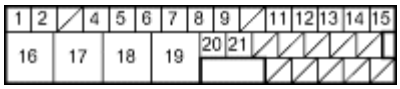
2. 2. Disconnect the ABS control unit 31P connector.

ABS Components
DTC Troubleshooting (cont'd)

1. 3. Measure the resistance between the appropriate wheel sensor (+) and (-) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(-) Side
12 (Right-front)	No. 5: FRS (+)	No. 4: FRS (+)
14 (Left-front)	No. 7: FLS (+)	No. 6: FLS (+)
16 (Right-rear)	No. 2: RRS (+)	No. 1: RRS (+)
18 (Left-rear)	No. 9: RLS (+)	No. 8: RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there less than 450 ohms?

YES - Repair short to wire between the appropriate wheel sensor (+) and (-) circuits. ■

NO - Go to step 4.

2. 4. Check for continuity between the appropriate wheel sensor (+) circuit terminal and other wheel sensor (+) circuit terminals (see table).

DTC	Appropriate Terminal	Other Terminal		
12	No. 5: FRW (+)	No. 7	No. 2	No. 9
14	No. 7: FLW (+)	No. 5	No. 2	No. 9
16	No. 2: RRW (+)	No. 5	No. 7	No. 9
18	No. 9: RLW (+)	No. 5	No. 7	No. 2

Is there continuity?

YES - Repair short in the wire between the appropriate wheel sensor and the other wheel sensor harnesses. ■

NO - Clear the DTC, and test-drive the vehicle. If the ABS indicator comes on and the same DTC is indicated, replace the ABS modulator-control unit. ■

DTC 21: Continuous Operation (Chipped pulsar)

1. 1. Clear the DTC.
2. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on and is DTC 21 indicated?

YES - Go to step 3.

NO - The system is OK at this time. ■

2. 3. Check the pulsar gear for a chipped tooth.

Is the pulsar OK?

YES - Check for loose ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Replace the driveshaft or hub unit. (Chipped pulsar gear). ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 31, 32, 33, 34, 35, 36, 37, 38: Solenoid

1. 1. Clear the DTC.
   2. Test-drive the vehicle.

Does the ABS indicator come on and are DTCs 31, 32, 33, 34, 35, 36, 37, 38 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - The system is OK at this time. ■

DTC 51: Motor Lock

1. 1. Clear the DTC.
   2. Test-drive the vehicle

Does the ABS indicator come on and is DTC 51 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - The system is OK at this time. ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 52: Motor Stuck OFF

1. 1. Check the No. 10 (40 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

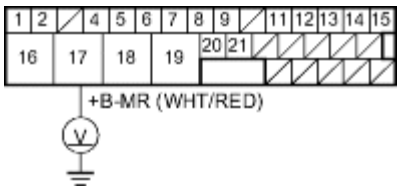
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the ABS control unit 31P connector.
   3. Measure the voltage between the ABS control unit 31P connector terminal No. 17 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the ABS modulator-control unit. ■

NO - Repair open in the wire between the ABS control unit and the under-hood fuse/relay box. ■

DTC 53: Motor Stuck ON

1. 1. Clear the DTC.
   2. Test-drive the vehicle.

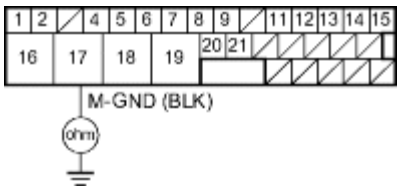
Does the ABS indicator come on and is DTC 53 indicted?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. ■

2. 3. Disconnect the ABS control unit 31P connector.
   4. Check for continuity between the ABS control unit 31P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the ABS modulator-control unit. ■

NO - Repair open in the wire between the ABS control unit and body ground (G302). ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 54: Main Relay Stuck OFF

1. 1. Check the No. 8 (20 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

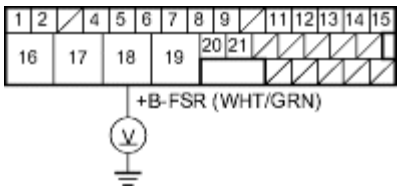
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the ABS control unit 31P connector.
   3. Measure the voltage between the ABS control unit connector terminal No. 18 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the ABS modulator-control unit. ■

NO - Repair open in the wire between the ABS control unit and the under-hood fuse/relay box. ■

DTC 61: Ignition Voltage

NOTE: Check the No. 11 (7.5 A) fuse in the under-dash fuse/relay box before troubleshooting.

1. 1. Clear the DTC.
   2. Test-drive the vehicle.

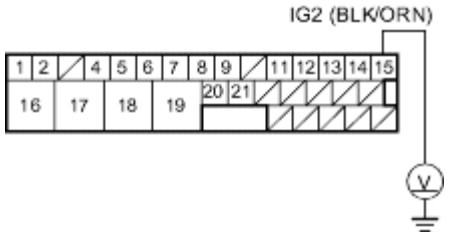
Does the ABS indicator come on and is DTC 61 indicted?

YES - Go to step 3.

NO - The system is OK at this time. ■

2. 3. Disconnect the ABS control unit 31P connector.
   4. Turn the ignition switch ON (II).
   5. Measure the voltage between the ABS control unit 31P connector terminal No. 15 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the ABS modulator-control unit. ■

NO - Repair open in the wire between the ABS control unit and the under-hood fuse/relay box. ■

ABS Components
DTC Troubleshooting (cont'd)

DTC 81: CPU (Central Processing Unit)

1. 1. Clear the DTC.
   2. Test-drive the vehicle.

Does the ABS indicator come on and is DTC 81 indicated?

YES - Replace the ABS modulator-control unit. ■

NO - The system is OK at this time. ■

ABS indicator does not come on

1. 1. Turn the ignition switch ON (II) and watch the ABS indicator.

Does the ABS indicator come on?

YES - The system is OK at this time. ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF then ON (II) again.

Does the brake system indicator come on?

YES - Go to step 3.

NO - Repair open in the indicator power source circuit. ■

- Blown No. 10 (7.5 A) fuse.
- Open in the wire between the No. 10 (7.5 A) fuse and the gauge assembly.
- Open circuit inside the fuse box.

3. 3. Turn the ignition switch OFF.
   4. Disconnect the ABS control unit 31P connector.
   5. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES - Check for loose terminals in the ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 6.

4. 6. Turn the ignition switch OFF.
   7. Remove the gauge assembly (see page 22-93).
   8. Check the ABS indicator bulb in the gauge assembly.

Is the bulb OK?

YES - Go to step 9.

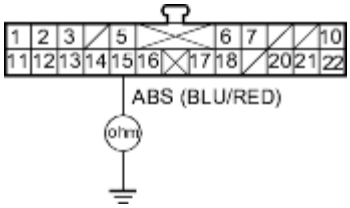
NO - Replace the ABS indicator bulb. ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

1. 9. Disconnect the gauge assembly connector B (22P) and go to step 10 for 4-door model. Disconnect the gauge assembly connector A (22P), and go to step 12 for 5-door model.
2. 10. Check for continuity between the gauge assembly connector B (22P) terminal No. 15 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

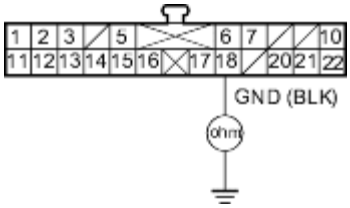
Is there continuity?

YES - Repair short to body ground in the wire between the gauge assembly and the ABS control unit. ■

NO - Go to step 11.

3. 11. Check for continuity between the gauge assembly connector B (22P) terminal No. 18 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

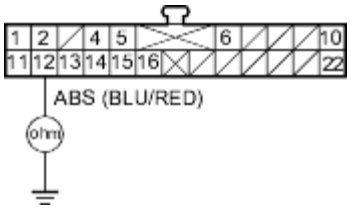
Is there continuity?

YES - Check for loose terminals in the gauge assembly connectors. If the connectors are OK, replace the printed circuit board in the gauge assembly. ■

NO - Repair open in the wire between the gauge assembly and body ground (G501). ■

1. 12. Check for continuity between the gauge assembly connector A (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

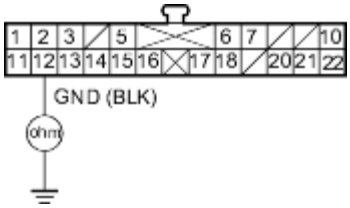
Is there continuity?

YES - Repair short to body ground in the wire between the gauge assembly and the ABS control unit. ■

NO - Go to step 13.

2. 13. Check for continuity between the gauge assembly connector B (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Check for loose terminals in the gauge assembly connectors. If the connectors are OK, replace the gauge assembly. ■

NO - Repair open in the wire between the gauge assembly and body ground (G501). ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

ABS indicator does not go off

1. 1. Check the No. 8 (20 A) fuse in the under-hood fuse/relay box and reinstall the fuse if it is OK.

Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS modulator-control unit. ■

2. 2. Check the No. 11 (7.5 A) fuse in the under-dash fuse/relay box and reinstall the fuse if it is OK.

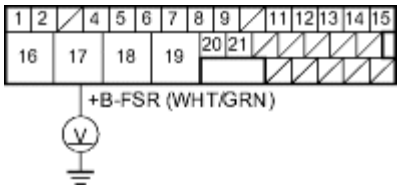
Is the fuse OK?

YES - Go to step 3.

NO - Replace the fuse and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. ■

3. 3. Disconnect the ABS control unit 31P connector.
   4. Measure the voltage between terminal No. 18 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

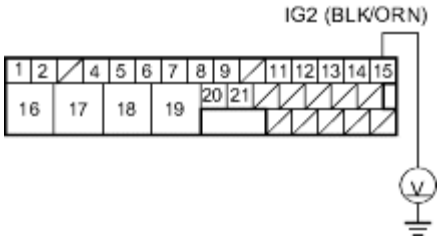
YES - Go to step 5.

NO - Repair open in the wire between the No. 8 (20 A) fuse and the ABS control unit. ■

4. 5. Turn the ignition switch ON (II).

1. 6. Measure the voltage between the ABS control unit 31P connector terminal No. 15 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

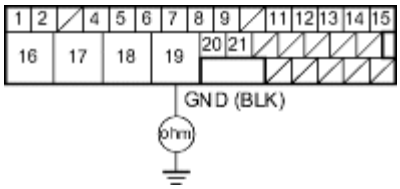
Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the No. 11 (7.5 A) fuse and the ABS control unit. ■

2. 7. Turn the ignition switch OFF.
   8. Check for continuity between the ABS control unit 31P connector terminal No. 19 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 9.

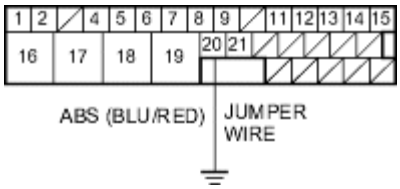
NO - Repair open in the wire between the ABS control unit and body ground (G302). ■

ABS Components

ABS Indicator Circuit Troubleshooting (cont'd)

1. 9. Turn the ignition switch ON (II).
2. 10. Connect the ABS control unit 31P connector terminal No. 20 and body ground with a jumper wire.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

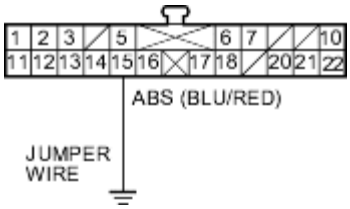
Does the ABS indicator go off?

YES - Check for loose terminals in the ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit and recheck. ■

NO - Go to step 11 for 4-door model. Go to step 12 for 5-door model.

3. 11. Connect the gauge assembly connector B (22P) terminal No. 15 and body ground with a jumper wire.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

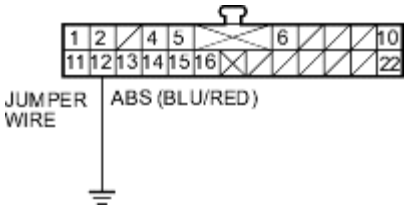
Does the ABS indicator go off?

YES - Repair open in the wire between the gauge assembly and the ABS control unit. ■

NO - Check for a loose gauge assembly connector B (22P). If the connector is OK, replace the printed circuit board in the gauge assembly. ■

1. 12. Connect the gauge assembly connector A (22P) terminal No. 12 and body ground with a jumper wire.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Does the ABS indicator go off?

YES - Repair open in the wire between the gauge assembly and the ABS control unit. ■

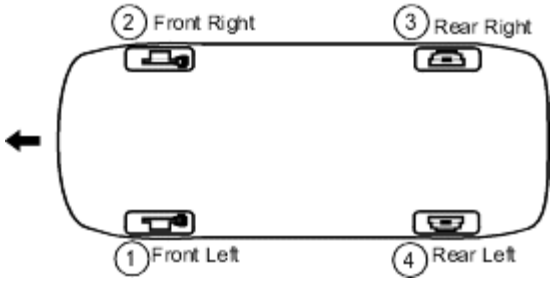
NO - Check for loose gauge assembly connector A (22P). If the connector is OK, replace the gauge assembly. ■

Conventional Brake Components

Brake System Bleeding (cont'd)

1. 2. Slide a piece of clear plastic hose over the first bleed screw and submerge the other end in a container of new brake fluid.
2. 3. Have someone slowly pump the brake pedal several times, then apply steady pressure.
   4. Loosen the left-front brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
   5. Repeat the procedure for each wheel in the sequence shown below until air bubbles no longer appear in the fluid.

BLEEDING SEQUENCE:



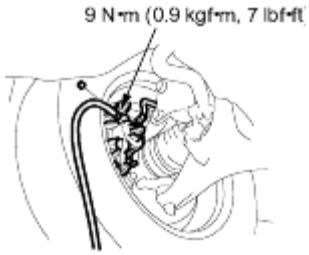
3. 6. Refill the master cylinder reservoir to the MAX (upper) level line.

Pressure Bleeding

1. 1. Install the appropriate power probe pressure bleeder adapter onto the master cylinder.
   2. Use the bleeding sequence below, and follow the bleeding instructions that come with your pressure bleeder.

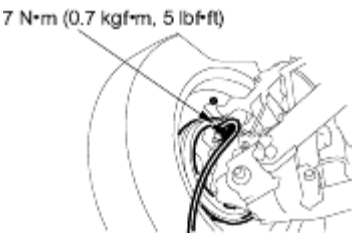
Bleed Screw Locations

FRONT:

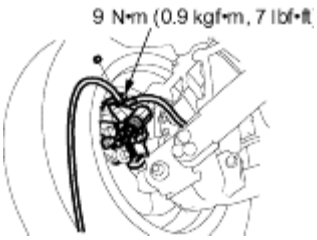


REAR:

Drum Brake



Disc Brake



ABS Components

Brake System Indicator Circuit Troubleshooting

ABS System indicator does not come on

1. 1. Turn the ignition switch ON (II) and watch the brake system indicator.

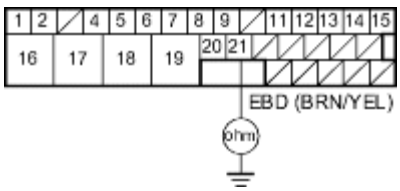
Does the brake system indicator come on?

YES - The system is OK at this time. ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF.
   3. Disconnect the multiplex control unit 13P connector and the ABS control unit 13P connector.
   4. Check for continuity between the ABS control unit 31P connector terminal No. 21 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the multiplex control unit and the ABS control unit. ■

NO - Go to multiplex control system troubleshooting (see page 22-273). ■

Brake system indicator does not go off

1. 1. Release the parking brake.
   2. Start the engine.

Does the brake system indicator go off?

YES - The system is OK at this time. ■

NO - Go to step 3.

2. 3. Check the brake fluid level.

Is the level OK?

YES - Go to step 4.

NO - Refill the brake fluid and recheck. ■

3. 4. Check the ABS indicator.

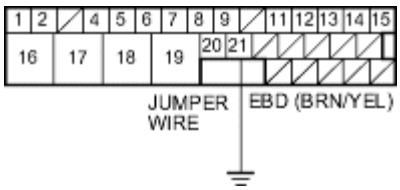
Does the ABS indicator stay on?

YES - Read the ABS DTC (see page 19-56), and do applicable troubleshooting for the DTC. ■

NO - Go to step 5.

4. 5. Turn the ignition switch OFF.
   6. Disconnect the ABS control unit 31P connector.
   7. Connect the ABS control the ABS control terminal No. 21 and body ground with a jumper wire.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

ABS Components

Brake System Indicator Circuit Troubleshooting (cont'd)

1. 8. Start the engine
2. 9. Check the brake system indicator.

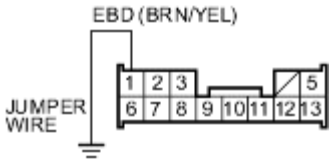
Does the brake system indicator go off?

YES - Replace the ABS modulator-control unit. ■

NO - Go to step 10.

3. 10. Turn the ignition switch OFF.
   11. Connect the multiplex control unit 13P connector terminal No. 1 and body ground with a jumper wire.

MULTIPLEX CONTROL UNIT 13P CONNECTOR



Wire side of female terminals

4. 12. Start the engine.
   13. Check the brake system indicator.

Does the brake system indicator go off?

YES - Repair open in the wire between the multiplex control unit and the ABS control unit. ■

NO - Go to multiplex control system troubleshooting (see page 22-273). ■

ABS Components

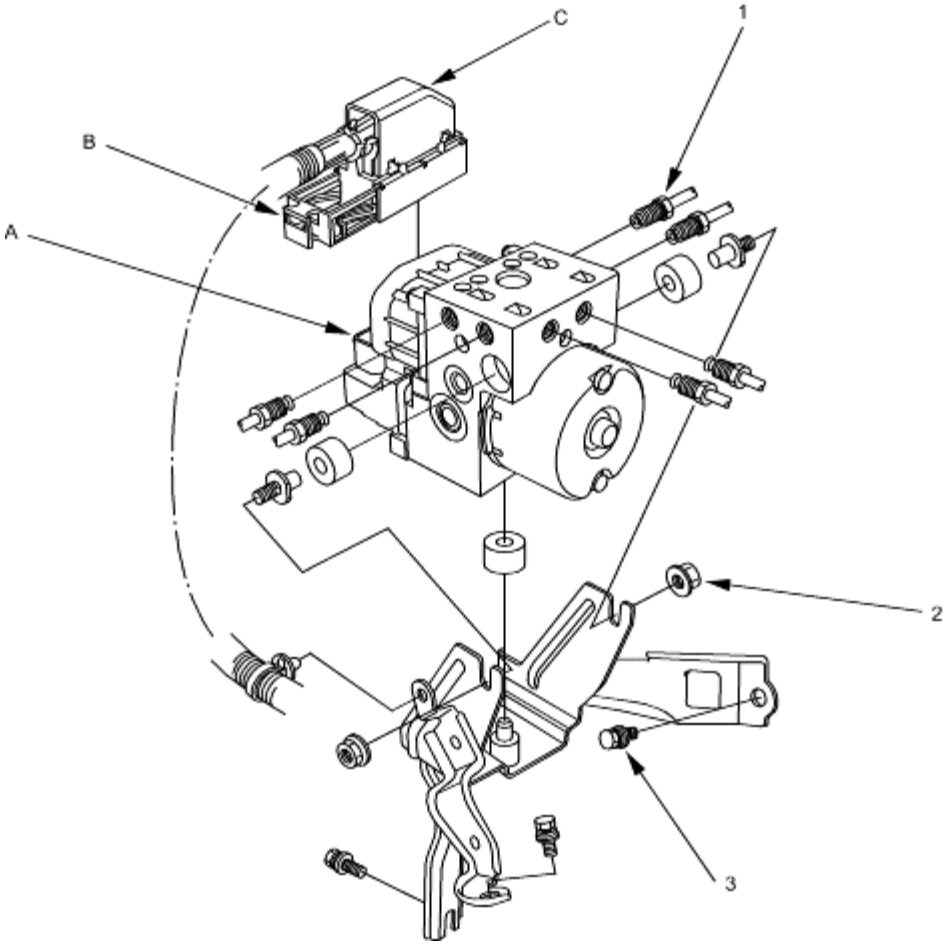
ABS Modulator-Control Unit Removal and Installation

NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Take care not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. 1. Pull up the lock (C) of the ABS control unit 31P connector (B), then disconnect the connector.



1. FLARE NUT
   15 Nm (1.5 kgf/m, 11 lbf/ft)
2. 8 mm NUT
   9 Nm (0.9 kgf/m, 7 lbf/ft)
3. 6 mm NUT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)

2. Disconnect the six brake lines.
3. Remove the two 8 mm nuts.
4. Remove the ABS modulator-control unit (A).

Installation

2. 1. Install the ABS modulator-control unit, then tighten the two 8 mm nuts.
2. Align the connecting surface of the ABS control unit 31P connector.
3. Push in the lock of the ABS control unit 31P connector until you hear it click into place, then connect the connector.
4. Bleed the brake system, starting with the front wheels.
5. Start the engine and check that the ABS indicator and the brake system indicator go off.
6. Test-drive the vehicle and check that the ABS indicator and the brake system indicator does not come on.

ABS Components

Wheel Sensor Inspection

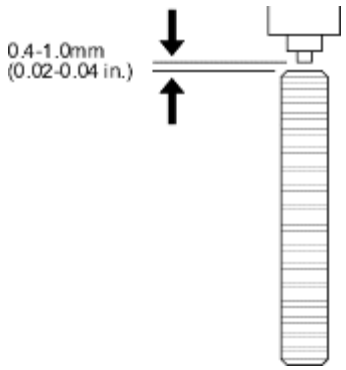
1. 1. Inspect the front and rear pulsars for chipped or damaged teeth.
2. 2. Measure the air gap between the wheel sensor and the pulsar all the way around while rotating the pulsar. Remove the rear brake disc to measure the gap on the rear wheel sensor. If the gap exceeds 1.0 mm (0.04 in.), check for a bent suspension arm.

Standard:

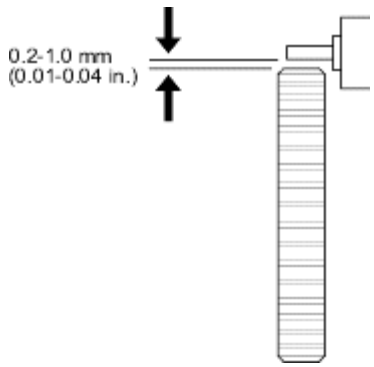
Front: 0.4 - 1.0 mm (0.02 - 0.04 in.)

Rear: 0.2 - 1.0 mm (0.01 - 0.04 in.)

Front:

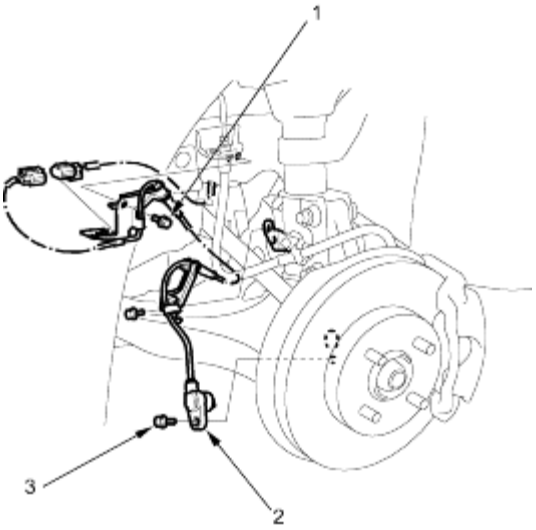


Rear:



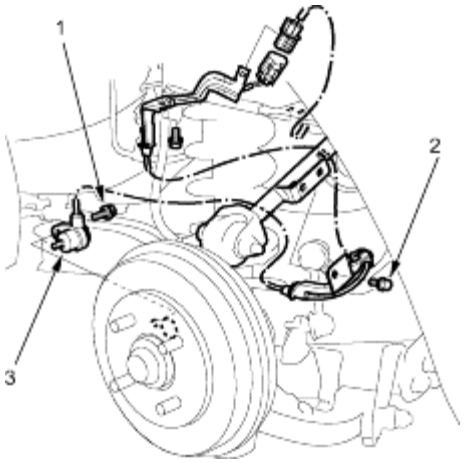
NOTE: Install the sensors carefully to avoid twisting the wires.

Front:



1. 1. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   2. WHEEL SENSOR
   3. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)

Rear:



2. 1. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   2. 6 mm BOLT
   9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
   3. WHEEL SENSOR

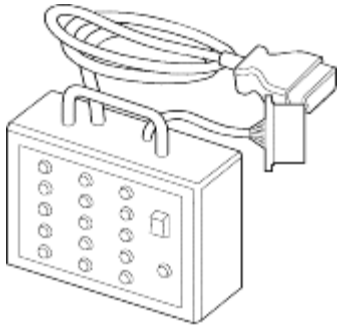
Brakes

ABS Components (Suzuka Factory)

Special Tools	19-86
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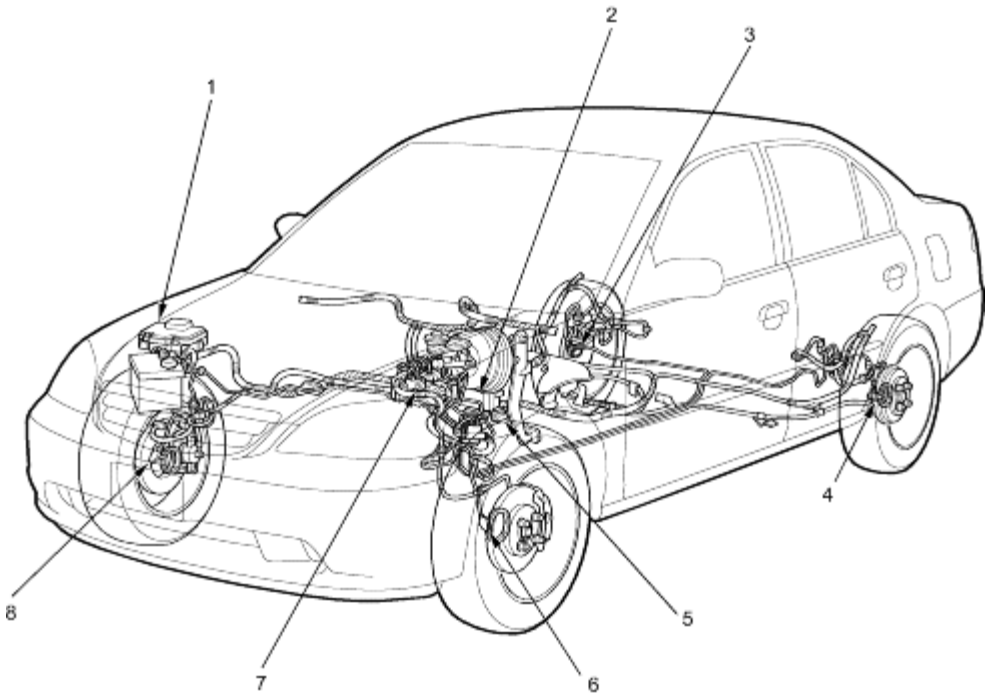
Ref. No.	Tool Number	Description	Qty
1	07WAJ-0010100	DLC Terminal Box	1



①

ABS Components

Component Location Index



1. MAIN UNDER-HOOD FUSE/RELAY BOX
2. UNDER-DASH FUSE/RELAY BOX
3. RIGHT-REAR WHEEL SENSOR
   Inspection, page 19-118
   Replacement, page 19-118
4. LEFT-REAR WHEEL SENSOR
   Inspection, page 19-118
   Replacement, page 19-118
5. DATA LINK CONNECTOR (16P)
6. LEFT-FRONT WHEEL SENSOR
   Inspection, page 19-118
   Replacement, page 19-118
7. ABS MODULATOR-CONTROL UNIT
8. Removal and Installation, page 19-117RIGHT-FRONT WHEEL SENSOR
   Inspection, page 19-118
   Replacement, page 19-118

ABS Components

General Troubleshooting Information

ABS Indicator

- If the system is OK, the ABS indicator goes off 2 seconds after turning the ignition switch ON (II) without starting the engine and then comes on again and goes off 2 seconds later after starting the engine. This occurs because the ABS control unit is turned on by the IG2 power source.
- The ABS indicator comes on when the ABS control unit detects a problem in the system. However, even though the system is operating properly, the indicator will come on under these conditions:
  - Only the drive wheels rotate
  - One drive wheel is stuck
  - The vehicle goes into a spin
  - The ABS continues to operate for a long time.
  - The vehicle is subjected to an electrical signal disturbance

To determine the actual cause of the problem, question the customer about the problem, taking the above conditions into consideration.

- When a problem is detected and the ABS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF and cases when the indicator goes off automatically when the system returns to normal.
  - DTC 61 or 62: The ABS indicator goes off automatically when the system returns to normal.
  - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 54, 71, or 81: The ABS indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.
  - DTC 12, 14, 16, 18, 21, 51, 52, or 53: The ABS indicator goes off when the vehicle is driven again and the system is OK after the ignition switch is turned from OFF to ON (II).

Diagnostic Trouble Code (DTC)

- The memory can hold three DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one.
- Therefore, when the same problem is detected repeatedly, it is memorised as a single DTC.
- The DTCs are in the order they occurred, beginning with the most recent.
- The DTCs are memorised in the EEPROM (non-volatile memory). Therefore, the memorised DTCs are not cleared when the battery is disconnected, the ignition switch is turned off, or the system returns to normal. Perform the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis:
    Done right after the engine starts and until the ABS indicator goes off
  - Regular diagnosis:

Done right after the initial diagnosis until the ignition switch is turned OFF

- When a problem is detected by self-diagnosis, the system does the following:
  - Turns the ABS indicator on
  - Memorises the DTC
  - Stops ABS control

Kickback

The pump motor operates when the ABS is functioning and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the ABS is functioning.
- The ABS control unit checks the pump motor operation when the vehicle is started the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

ABS Components

General Troubleshooting Information (cont'd)

How to Troubleshoot ABS DTCs

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the ABS indicator is still on. Following the flowchart when the ABS indicator does not come on can result in incorrect diagnosis.

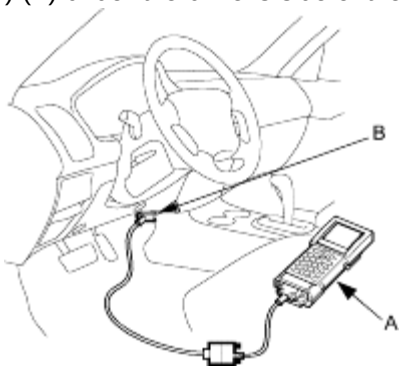
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. 1. Question the customer about the conditions when the problem occurred and try to reproduce the same conditions for troubleshooting. Find out when the ABS indicator came on, such as during ABS control, after ABS control, when the vehicle was at a certain speed, etc.
   2. When the ABS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., before you start troubleshooting.
   3. After troubleshooting, clear the DTC,and test-drive the vehicle. Make sure the ABS indicator does not come on.

How to Retrieve ABS DTCs

Honda PGM Tester Method:

2. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.

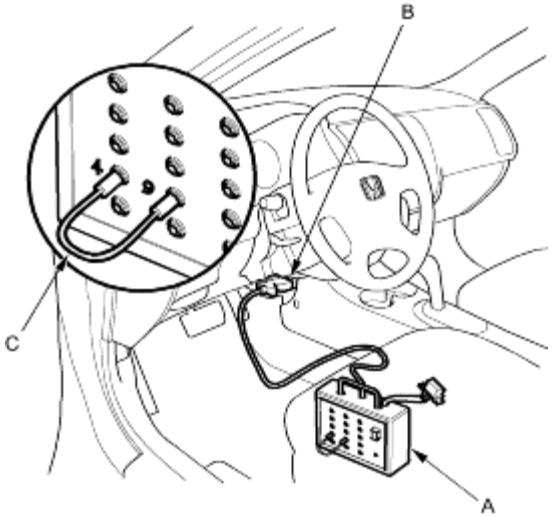


1. 2. Turn the ignition switch ON (II) and follow the prompts on the PGM Tester to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

NOTE: See the Honda PGM Tester user's manual for specific instructions.

DLC Terminal Box Method:

2. 1. With the ignition switch OFF, connect the DLC terminal box (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.

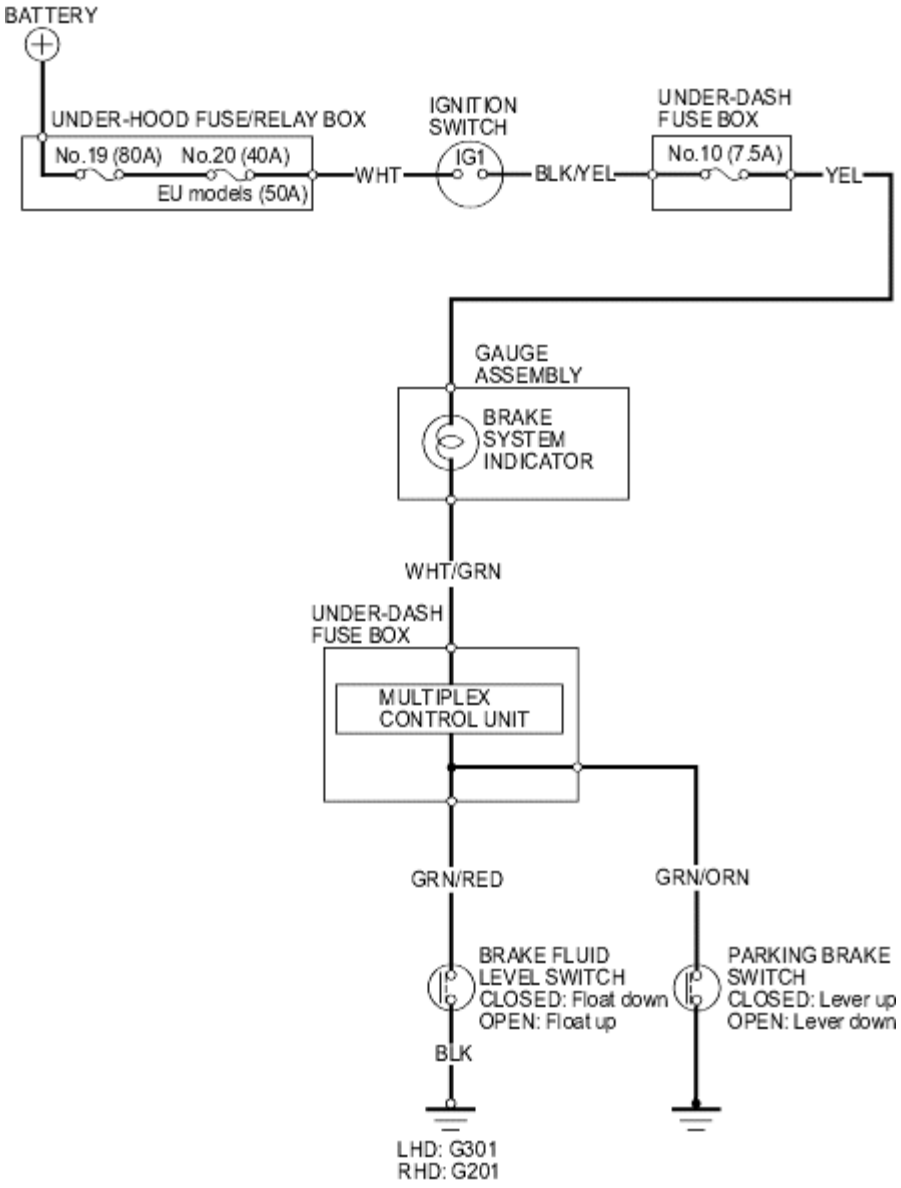


3. 2. Insert the plugs of the jumper wire (C) to No. 1 and No. 12 plug holes of the DLC terminal box, then push the switch.
   3. Turn the ignition switch ON (II) without pressing the brake pedal.

NOTE: If you press the brake pedal when turning the ignition switch ON (II), the system shifts to the DTC clearing mode.

Conventional Brake Components

Brake System Indicator Circuit Diagram



ABS Components

General Troubleshooting Information (cont'd)

1. 4. The blinking frequency indicates the DTC. DTCs are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

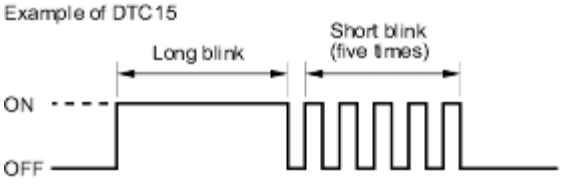
NOTE:

- If the DTC is not memorised, the ABS indicator will go off for 3.6 seconds and then come back on.
- If the ABS indicator stays on, troubleshoot for "ABS indicator does not go off" (see step 1 on page 19-113).

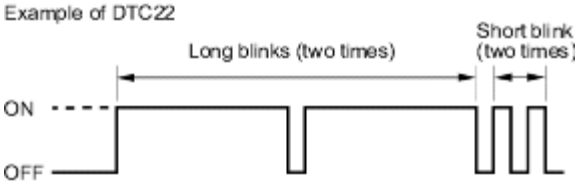
The system will not indicate the DTC unless these conditions are met:

- The brake pedal is not pressed.
- The ignition switch is turned ON (II).
- The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC 15



Example of DTC 22

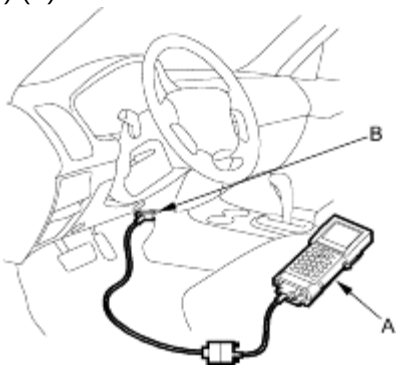


2. 5. Turn the ignition switch OFF.
6. Disconnect the DLC terminal box from the DLC.

How to Clear ABS DTCs

Honda PGM Tester Method:

1. 1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.



2. 2. Turn the ignition switch ON (II) and clear the DTC(s) by following the screen prompts on the PGM Tester.

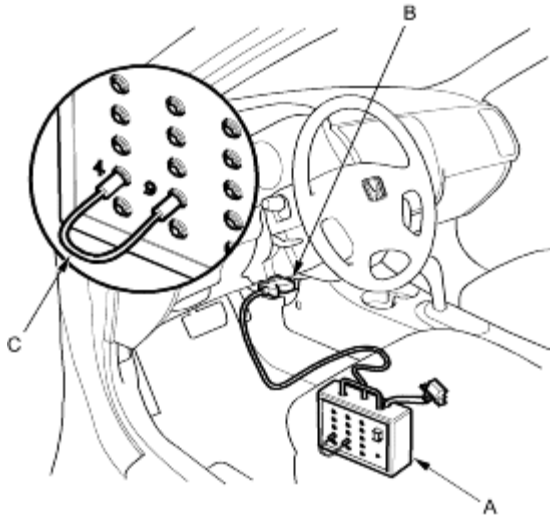
NOTE: See the Honda PGM Tester user's manual for specific instructions.

ABS Components

General Troubleshooting Information (cont'd)

DLC Terminal Box Method:

1. 1. With the ignition switch OFF, connect the DLC terminal box (A) to the 16P Data Link Connector (DLC) (B) under the driver's side of the dashboard.



2. 2. Insert the plugs of the jumper wire (C) to No. 1 and No. 12 plug holes of the DLC terminal box, then push the switch.
   3. Press the brake pedal.
   4. Turn the ignition switch ON (II) while continuing to press the brake pedal.
   5. After the ABS indicator goes off, release the brake pedal.
   6. After the ABS indicator comes on, press the brake pedal again.
   7. After the ABS indicator goes off, release the brake pedal.

You cannot clear the DTC unless these conditions are met:

- The vehicle speed is 6 mph (10 km/h) or less.
- The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).
- The brake pedal is pressed before the ignition switch is turned ON (II).

1. 8. After a few seconds, the ABS indicator blinks twice and the DTC is cleared. If the indicator does not blink twice, repeat steps 1 thru 7. If the ABS indicator stays on after it blinks twice, check the DTC, because a problem was detected during initial diagnosis before shifting to DTC clearing mode.
2. 9. Turn the ignition switch OFF.
   10. Disconnect the DLC terminal box from the DLC.

ABS Components DTC Troubleshooting Index	19-92

DTC	Detection Item	Note
DTC: 11	Right-front wheel sensor (open/short to body ground/short to power)	(see page 19-104)
DTC: 12	Right-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-105)
DTC: 13	Left-front wheel sensor (open/short to body ground/short to power)	(see page 19-104)
DTC: 14	Left-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-105)
DTC: 15	Right-rear wheel sensor (open/short to body ground/short to power)	(see page 19-104)
DTC: 16	Right-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-105)
DTC: 17	Left-rear wheel sensor (open/short to body ground/short to power)	(see page 19-104)
DTC: 18	Left-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-105)
DTC: 21	Right-front pulsar	(see page 19-106)
DTC: 22	Left-front pulsar	(see page 19-106)
DTC: 23	Right-rear pulsar	(see page 19-106)
DTC: 24	Left-rear pulsar	(see page 19-106)
DTC: 31	Solenoid	(see page 19-107)
DTC: 32	Solenoid	(see page 19-107)
DTC: 33	Solenoid	(see page 19-107)
DTC: 34	Solenoid	(see page 19-107)
DTC: 35	Solenoid	(see page 19-107)
DTC: 36	Solenoid	(see page 19-107)
DTC: 37	Solenoid	(see page 19-107)
DTC: 38	Solenoid	(see page 19-107)
DTC: 41	Right-front wheel lock	(see page 19-107)
DTC: 42	Left-front wheel lock	(see page 19-107)
DTC: 43	Right-rear wheel lock	(see page 19-107)
DTC: 44	Left-rear wheel lock	(see page 19-107)
DTC: 51	Motor lock	(see page 19-108)
DTC: 52	Motor stuck OFF	(see page 19-108)
DTC: 53	Motor stuck ON	(see page 19-109)
DTC: 54	ABS fail-safe relay	(see page 19-109)
DTC: 61	Low FSR +B voltage	(see page 19-110)
DTC: 62	High FSR +B voltage	(see page 19-110)
DTC: 71	Different diameter tyre	(see page 19-110)
DTC: 81	Central Processing Unit (CPU) diagnosis, and ROM/RAM diagnosis	(see page 19-111)

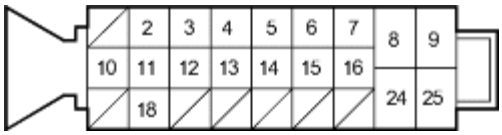
ABS Components

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting (see page 19-111)	
ABS indicator does not go off and no DTC is stored	ABS Indicator Circuit Troubleshooting (see step 1 on page 19-113)	
Brake system indicator does not come on	Brake system indicator circuit troubleshooting (see page 19-115)	
Brake system indicator does not go off and no DTC is stored	Brake system indicator circuit troubleshooting (see page 19-117)	

ABS Components
System Description

ABS Control Unit Inputs and Outputs for 25P Connector



Wire side of female terminals

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement (Disconnect the ABS control unit connector)			
				Terminals	Conditions		Voltage
2	BLU	FWR (-) (Front-right wheel negative)	Detects right-front wheel sensor signal	2 – 18	Wheel	Spin wheel at 1 turn/ second	AC: 0.053V or above Oscilloscope 0.15 Vp-p or above
3	BLU/ORN	FLW (+) (Front-left wheel positive)	Detects left-front wheel sensor signal	3 - 12			
4	WHT/BLK	STOP	Detects brake switch signal	4 – GND	Brake pedal	Pressed	Battery Voltage
						Released	Below 0.3V
5	YEL/RED	RLW (+) (Rear-left wheel positive)	Detects left-rear wheel sensor signal	5 - 14	Wheel	Spin wheel at 1 turn/ second	AC: 0.053V or above Oscilloscope 0.15 Vp-p or above
6	BLU/YEL	RRW (-) (Right-rear wheel negative)	Detects right-rear wheel sensor signal	6 – 15			
7	BLU/RED	WALP (Warning lamp)	Drives ABS indicator	7 - GND	ABS indicator (Ignition switch ON (II))	ON	About 6V
						OFF	Below 0.3V *1
8	WHT/GRN	FSR + B (ABS fail-safe relay battery)	Power source for the ABS fail-safe relay	8 – GND	At all times		Battery voltage
9	WHT/RED	MR + B (Motor relay battery)	Power source for the motor relay	9 - GND	At all times		Battery voltage
10	LT BLU	DLC (Data link connector)	Communicates with the Honda PGM Tester	———	———		———

ABS Components

System Description (cont'd)

Terminal number	Wire colour	Terminal sign (Terminal name)	Description	Measurement (Disconnect the ABS control unit connector			
				Terminals	Conditions		Voltage
11	BRN/YEL	EBD (Electronic brake distribution)	Drives brake system indicator	11 - GND	Engine running, parking brake	Pressed	Below 0.3V
						Released	Battery voltage
12	BRN/WHT	FLW (-) (Front-left wheel negative)	Detects left-front wheel sensor signal	12 - 3	Wheel	Spin wheel at 1 turn/ second	AC: 0.053V or above Reference Oscilloscope 0.15 Vp-p or above
13	BRN	SCS (Service check signal)	Detects service check connector signal (DTC indication or DTC clearing)	———	———		———
14	GRY/RED	RLW (-) (Rear-left wheel negative)	Detects left-rear wheel sensor signal	14-5	Wheel	Spin wheel at 1 turn/ second	AC: 0.053V or above Reference Oscilloscope 0.15 Vp-p or above
15	GRN/WHT	RRW (+) (Rear-right wheel positive)	Detects right-rear wheel sensor signal	15-6			
16	BLK/ORN	IG2 (Ignition 2)	Power source for activating the system	16-GND	———		Battery voltage
18	GRN/BLK	FRW (+) (Front-right wheel positive)	Detects right-front wheel sensor signal	18-2	Wheel	Spin wheel at 1 turn/ second	AC: 0.053V or above Reference Oscilloscope 0.15 Vp-p or above
24	BLK	GND1 (Ground 1)	Ground	———	———		———
25	BLK	GND2 (Ground 2)	Ground	———	———		———

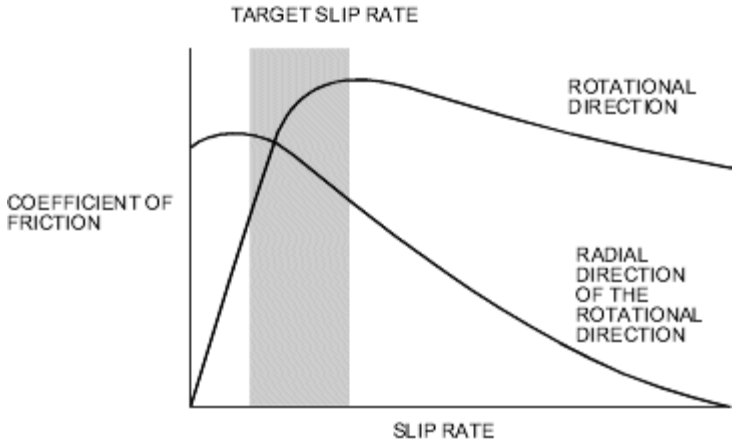
ABS Components
System Description (cont'd)

Features

When the brake pedal is pressed during driving, the wheels can lock before the vehicle comes to a stop. In such an event, the manoeuvrability of the vehicle is reduced if the front wheels are locked and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tyres, thereby ensuring the manoeuvrability and stability of the vehicle.

The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

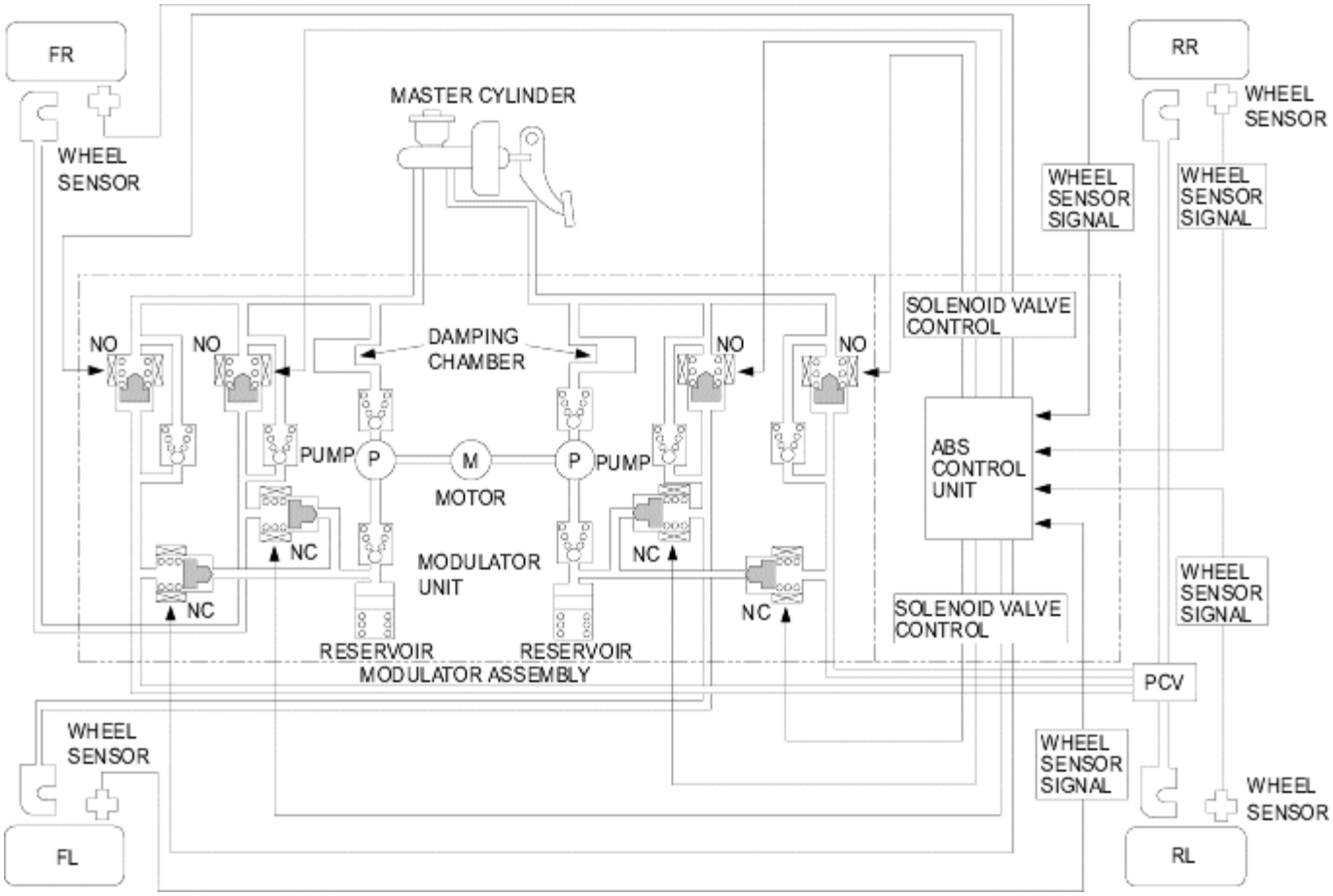
Grip Force of Tire and Road Surface



ABS Components

System Description (cont'd)

COMPONENTS		MAIN FUNCTION
Wheel sensor		The wheel sensor outputs the speed signal to the ABS control unit according to the pulsar's rotation speed.
Modulator-control unit	ABS control unit	The ABS control unit processes the signal from the wheel sensor, then outputs the ABS control signal to the modulator unit.
	Modulator unit	The modulator unit receives the control signal, then controls brake fluid pressure for each wheel.
Motor relay (inside of the ABS control unit)		The motor relay drives the ABS pump motor.
ABS fail-safe relay (inside of the ABS control unit)		The ABS fail-safe relay cuts the power to the solenoid valve when the problem is detected.



NO: Normally Open

NC: Normally Closed

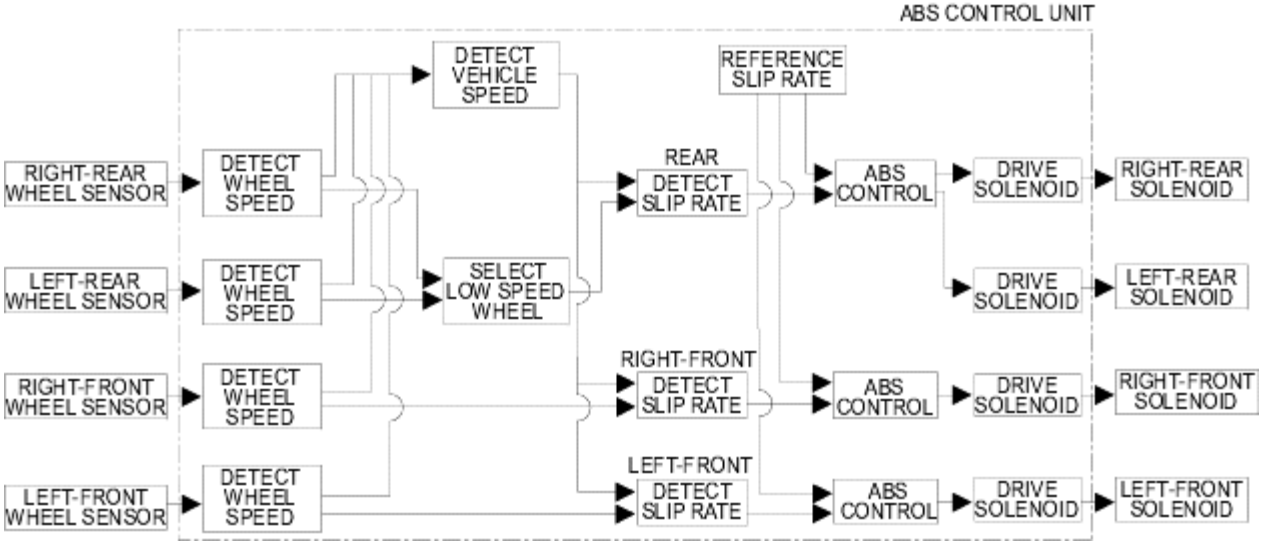
ABS Components
System Description (cont'd)

Main Control

The ABS control unit detects the wheel speed based on the wheel sensor signal it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

The ABS control unit calculates the slip rate of each wheel and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The pressure reduction control has three modes: pressure reducing, pressure retaining and pressure intensifying.



Electronic Brake Distribution (EBD) Control

The electronic brake distribution (EBD) function helps control vehicle braking by adjusting the rear brake force before the ABS operates. Based on wheel sensor signals, the ABS control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the ABS control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, there is kickback at the brake pedal.

During self-diagnosis. if the ABS control unit detects a problem that affects the EBD, it turns on the brake system indicator and the ABS indicator.

ABS Components
System Description (cont'd)

Self-diagnosis Function

1. The ABS control unit is equipped with a main CPU and a sub-CPU. Each CPU checks the other for problems.
2. The CPUs check the circuit of the system.
3. The ABS control unit turns on the ABS indicator when the unit detects a problem and the unit stops the system.
4. The self-diagnosis can be classified into these two categories:

- Initial diagnosis
- Regular diagnosis

On-board Diagnosis Function

The ABS can be diagnosed with the Honda PGM Tester.

The ALB Checker cannot be used with this system. For air bleeding and checking wheel sensor signals, use the Honda PGM Tester. See the Honda PGM Tester user's manual for specific operating instructions.

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4-door Body

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Doors

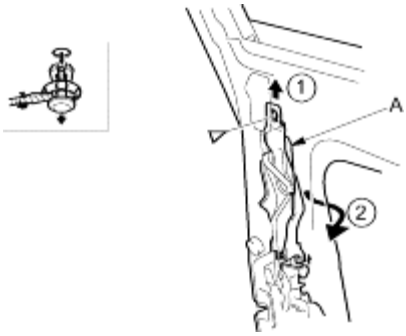
Front Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. 1. Raise the glass fully.
   2. Remove these items:
      - Door panel (see page 20-7)
      - Plastic cover, as necessary (see page 20-3)
2. 3. Disconnect the cylinder rod from the lock cylinder (see step 3 on page 20-8), and disconnect the outer handle rod from the outer handle (see step 6 on page 20-9).
   4. If applicable, remove the clip, and remove the lock rod protector (A) in the numbered sequence.

Fastener Location

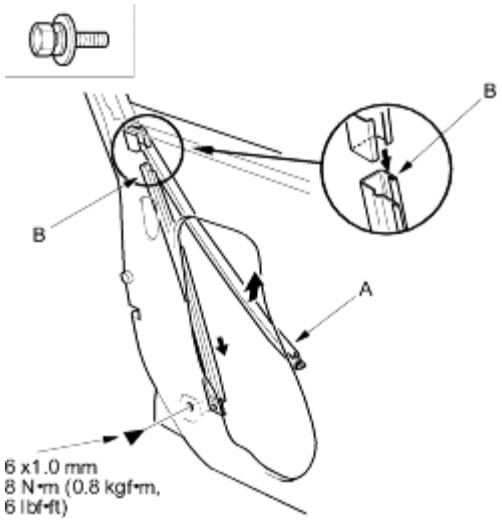
▷: Clip, 1



3. 5. Pull the glass run channel (A) away as necessary, and remove the bolts, then remove the centre lower channel (B) by pulling it downward.

Fastener Location

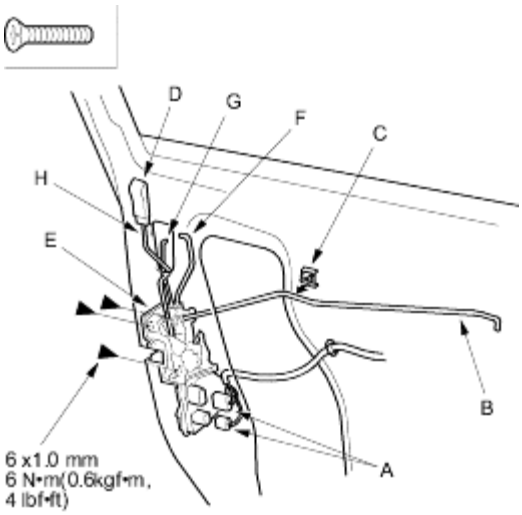
▶: Bolt, 1



1. 6. Disconnect the actuator connectors (A) (for some models), and detach the inner handle rod (B) from the rod holder (C). Remove the lock knob (D).

Fastener Locations

▶: Screw, 3

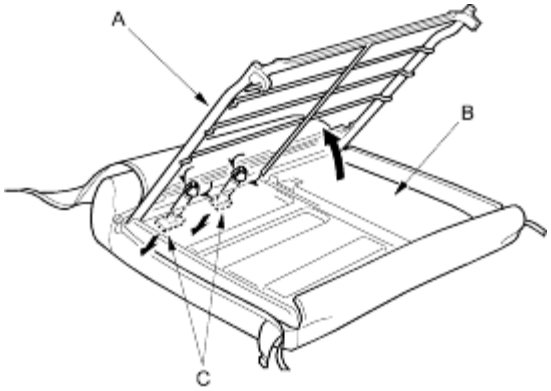


2. 7. Remove the screws, then remove the latch (D) through the hole in the door. Take care not to bend the outer handle rod (E), cylinder rod (F), lock rod (G), and inner handle rod.
   8. Install the latch in the reverse order of removal, and note these items:
      - Make sure the actuator connectors are plugged in properly (with power door lock), and each rod is connected securely.
      - Make sure the door locks and opens properly.

Seats

Rear Seat-back Cover Replacement – Folding Type (cont'd)

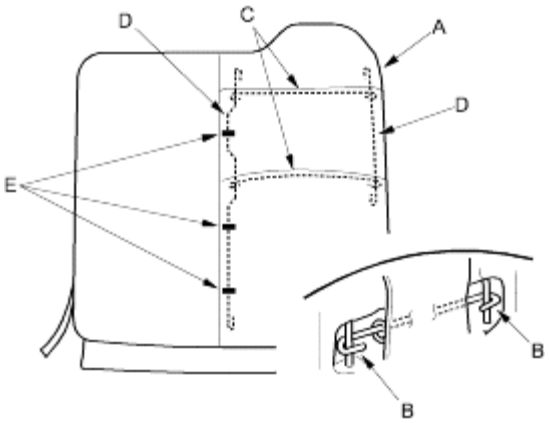
1. 5. If equipped with a headrest, pull out the seat-back frame (A) from the pad (B), then pull out the headrest guides (C) while pinching the end of the guides, and remove them. The left seat-back is shown, the right seat-back is similar.



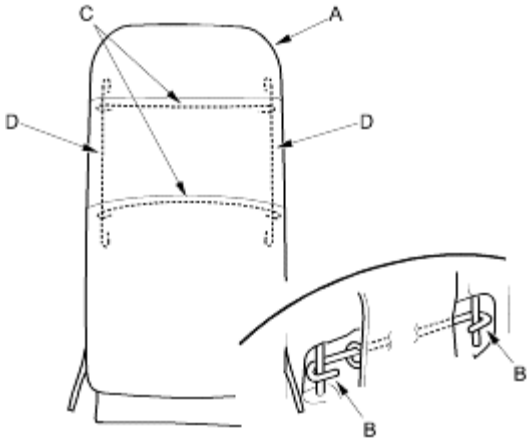
2. 6. Remove the seat-back cover and pad from the seat-back frame.

1. 7. Pull back the edge of the seat-back cover (A) all the way around, and release the hooks (B) of the horizontal wires (C) from the vertical wires (D) on the pad, and on the left seat-back, remove the clips (E), then remove the seat-back cover.

Left seat-back:



Right seat-back:

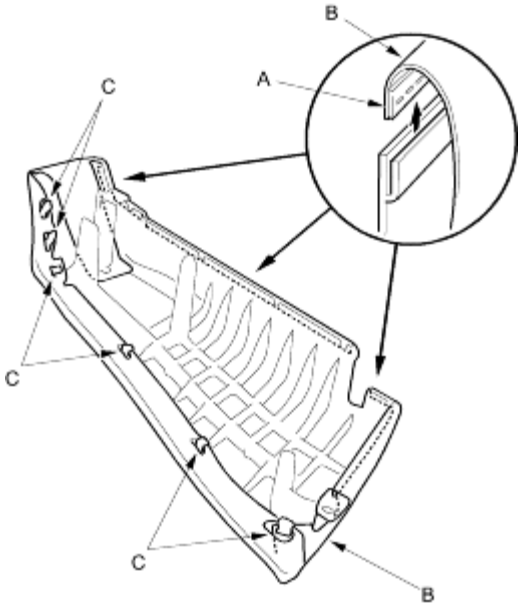


2. 8. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and clips.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

Seats

Rear Seat Side Bolster Cover Replacement - Folding Type

1. Remove the seat side bolster (see page 20-95).
2. Release all the hook strips (A), and fold back the seat side bolster cover (B), and release the cover from the hooks (C), to remove it.



3. Install the cover in the reverse order of removal, and to prevent wrinkles, make sure the material is stretched evenly over the pad before securing the hook strips.

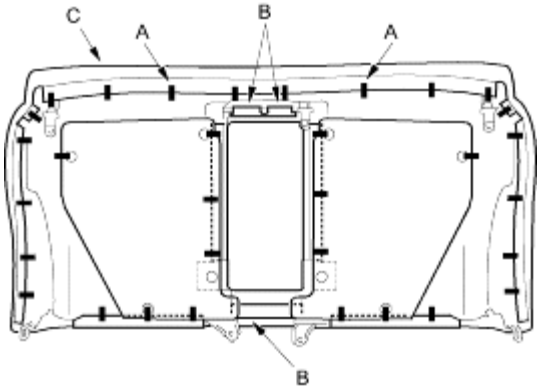
Seats

Rear Seat-back Cover Replacement - Fixed Type

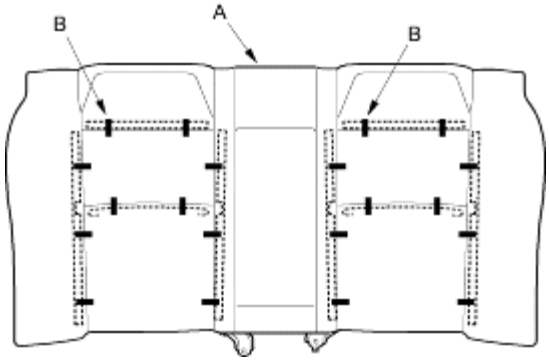
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the seat-back (see page 20-96).
2. If equipped, remove the armrest (see page 20-98).
3. Release all the clips (A) and hook strips (B) (with armrest), and fold back the seat-back cover (C).



4. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.

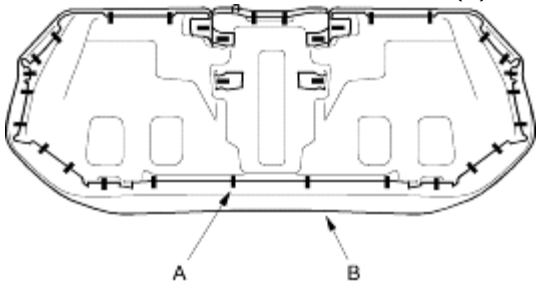


5. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and clips.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

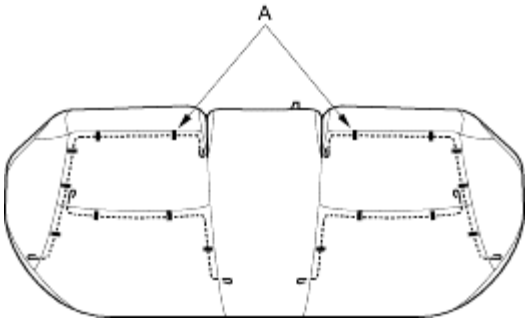
Seats

Rear Seat Cushion Cover Replacement

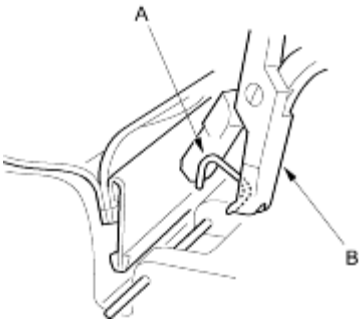
1. 1. Remove the rear seat cushion, folding type rear seat (see page 20-95), fixed type rear seat (see page 20-96).
2. 2. Release all the clips (A) from under the seat cushion, and fold back the seat cushion cover (B).



3. 3. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.



1. 4. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).



Bumpers

Front Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

Remove the front bumper as shown.

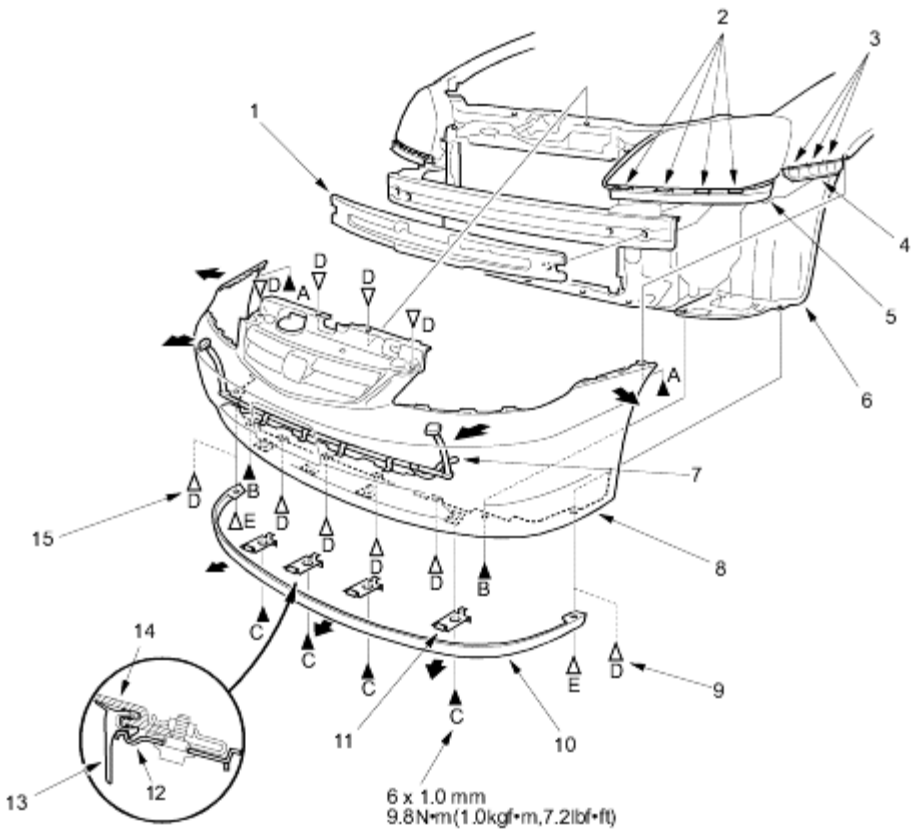
Install the bumper in the reverse order of removal, and note these items:

- If equipped, make sure the front fog light connector is plugged in properly, and the headlight washer tube is connected properly.
- Make sure the front bumper engages the hooks of the side spacers and upper beams on both sides securely.
- Replace any damaged clips.

Fastener Locations

A ▶: Screw, 2 B ▶: Screw, 2 C ▶: Bolt, 4 D ▷: Clip, 10 8 or E ▷: Clip, 2





1. ABSORBER
   (For some models)
2. HOOKS
3. HOOKS
4. SIDE SPACER
5. UPPER BEAM
6. FRONT INNER FENDER
7. WASHER TUBE
   (For some models)
8. FRONT BUMPER
   If equipped, disconnect the front fog light connector and the headlight washer tube.
9. Without front air spoiler.
10. FRONT AIR SPOILER
    (For some models)
11. AIR SPOILER PLATE
12. PLATE
13. SPOILER
14. BUMPER
15. Without front air spoiler

Bumpers

Rear Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper and body.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Put on gloves to protect your hands.

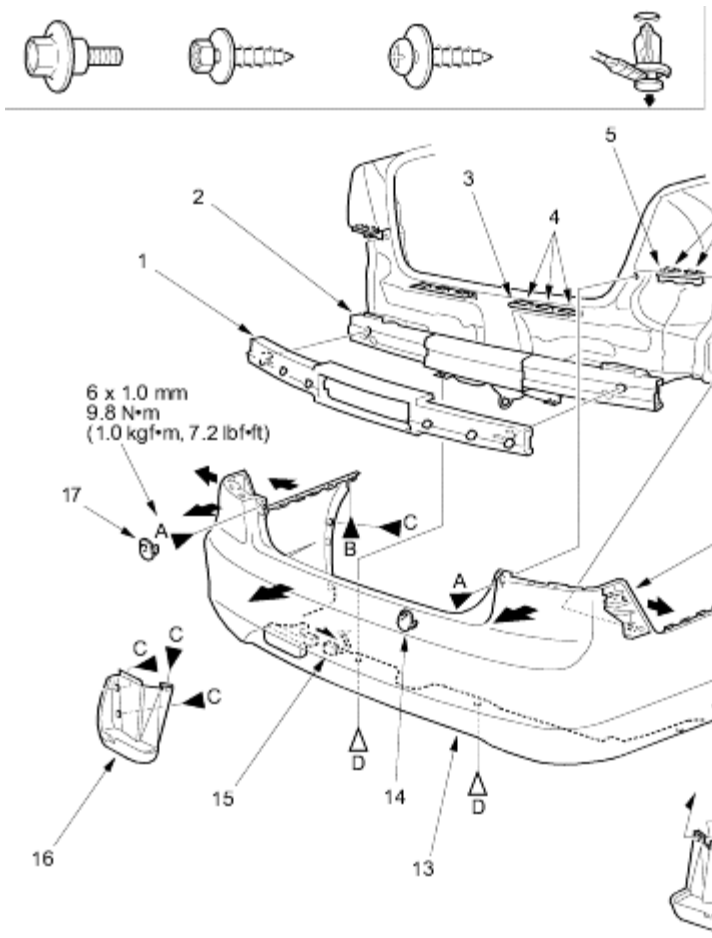
Remove the rear bumper as shown. LHD with rear fog light is shown, RHD with rear fog light is symmetrical.

Install the bumper in the reverse order of removal, and note these items:

- If equipped, make sure the rear fog light connector is plugged in properly.
- Make sure the rear bumper engages the hooks of the side spacers, side brackets and upper brackets on both sides securely.
- Make sure the side spacers of the rear bumper engage the clips on the body securely.
- Replace any damaged clips.

Fastener Locations

A ▶: Bolt, 2 B ▶: Screw, 2 C ▶: Screw, 2 or 6 D ▷: Clip, 2

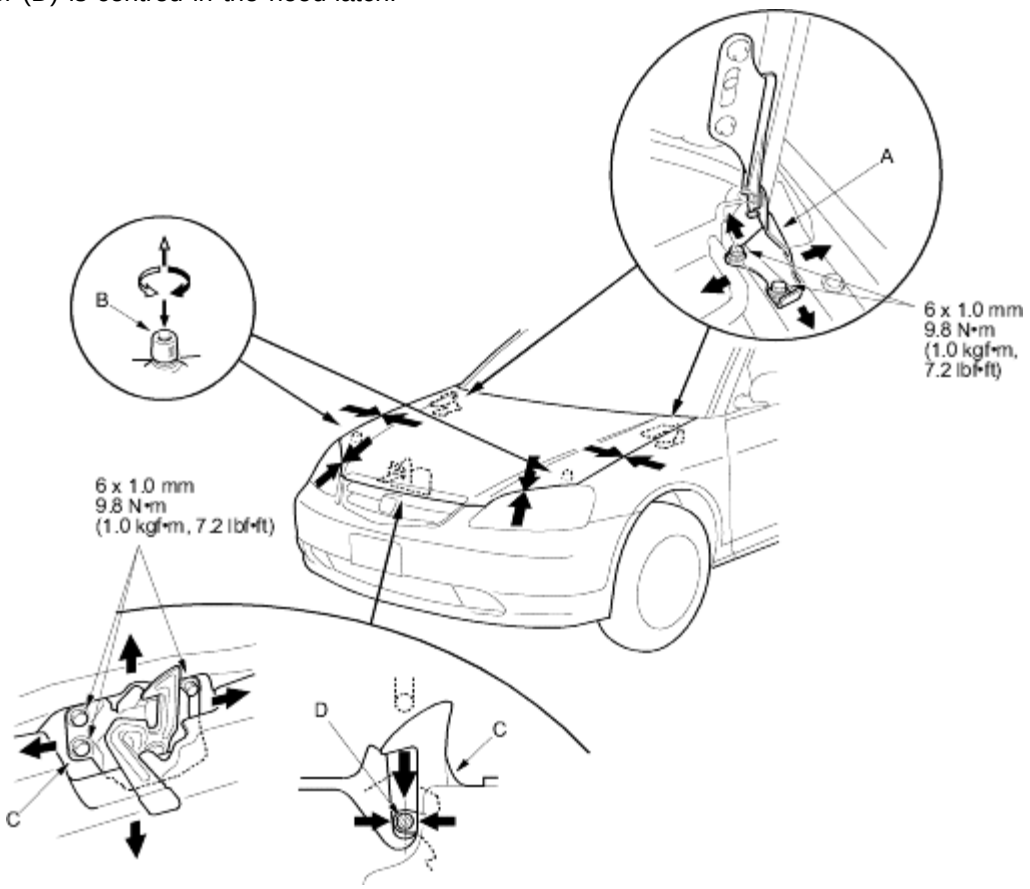


1. ABSORBER
   (For some models)
2. REAR BUMPER BEAM
   (For some models)
3. UPPER BRACKET
4. HOOKS
5. SIDE BRACKET
6. HOOKS
7. CLIPS
8. HOOK
   (Six places)
9. SIDE SPACER
10. SIDE SPACER
11. Without rear splash guard only
    (both sides)
12. RIGHT REAR SPLASH GUARD
    (For some models)
13. REAR BUMPER
    If equipped, disconnect the rear fog light connector.
14. CAP
15. REAR FOG LIGHT CONNECTOR
    (For some models)
16. LEFT REAR SPLASH GUARD
    (For some models)
17. CAP

Hood

Adjustment

1. 1. Slightly loosen each hood hinge bolt.
   2. Adjust the hood alignment in this sequence.
      - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinge (A).
      - Turn the hood edge cushions (B), as necessary, to make the hood fit flush with the body at the front and side edges.
      - Adjust the hood latch (C) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (D) is centred in the hood latch.

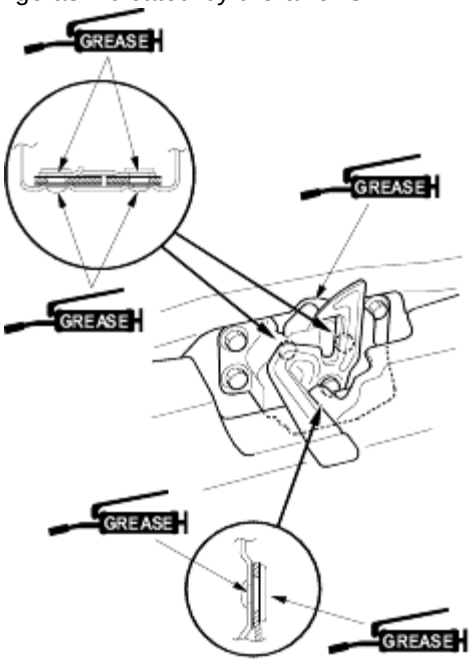


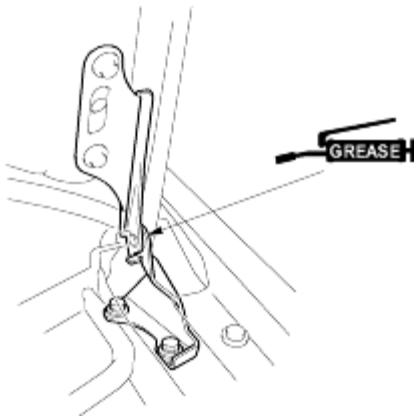
2. 3. Tighten each bolt securely.

Hood

Adjustment (cont'd)

1. 4. Check that the hood opens properly and locks securely.
2. 5. Apply touch-up paint to the hinge mounting bolts and around the hinges.
   6. Grease each location of the hood latch and hood hinge as indicated by the arrows.



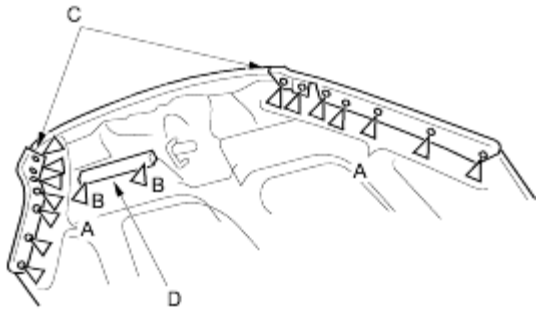


1. 1. Using a clip remover, detach the clips (A, B), then remove the hood seal (C) and hood sub-seal (D). Take care not to scratch the hood.

Fastener Locations

A ▷: Clip, B ▷: Clip,
14 2





2. 2. Install the seals in the reverse order of removal, and replace any damaged clips.

Hood

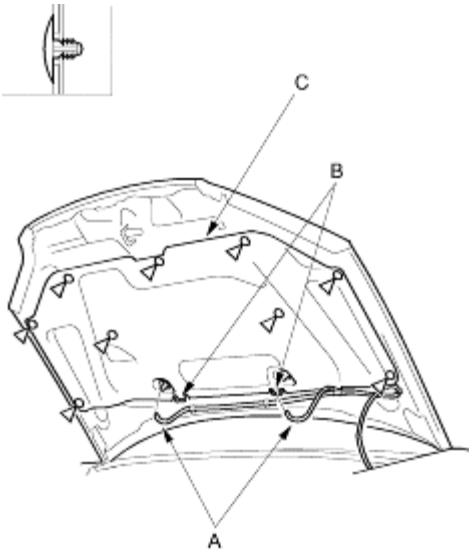
Hood Insulator Replacement

For Some Models

1. 1. Disconnect the windshield washer tubes (A).

Fastener Locations

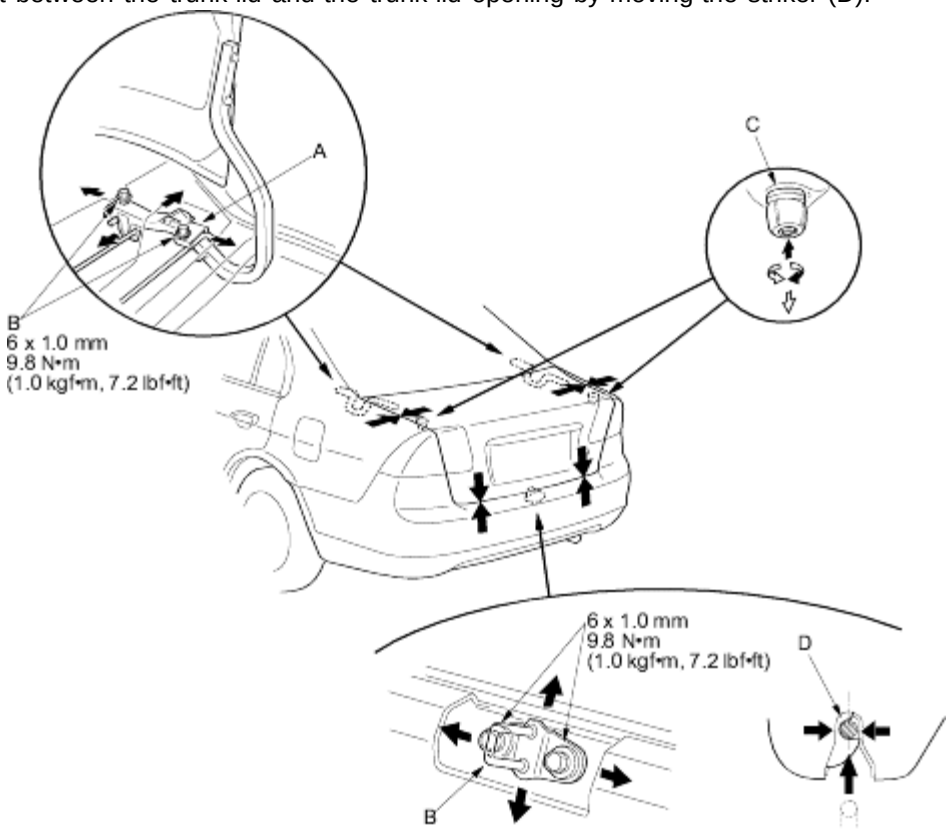
▷: Clip, 9



2. 2. Using a clip remover, detach the clips. Release the hooks (B), then remove the hood insulator (C). Take care not to scratch the hood.
3. Install the insulator in the reverse order of removal, and replace any damaged clips.

Trunk Lid
Adjustment

1. 1. Remove these items:
   - Rear shelf, folding type rear seat (see page 20-65), fixed type rear seat (see page 20-66)
   - Trunk rear trim panel (see page 20-67)
2. 2. Slightly loosen each bolt.
   3. Adjust the trunk lid alignment in the following sequence.
      - Adjust the trunk lid hinges (A) right and left, as well as forward and rearward, by using the elongated holes. Take care not to hit the rear window when loosening the bolts (B).
      - Turn the trunk lid edge cushions (C), in or out as necessary, to make the trunk lid fit flush with the body at the rear and side edges.
      - Adjust the fit between the trunk lid and the trunk lid opening by moving the striker (D).



3. 4. Tighten each bolt securely.
   5. Make sure the trunk lid opens properly and locks securely.
   6. Reinstall all remaining removed parts.

Doors

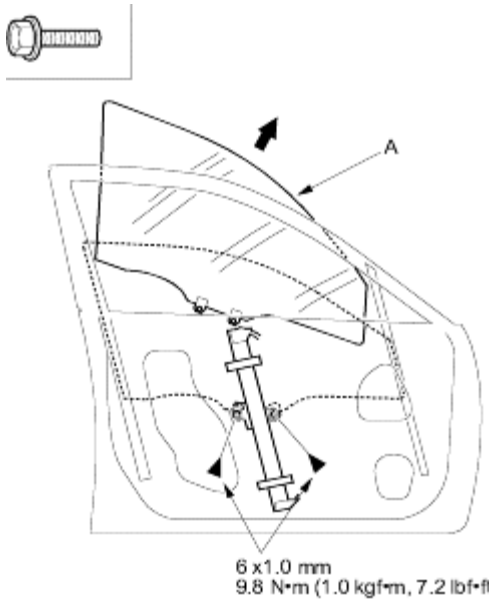
Front Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   - Door panel (see page 20-7)
   - Plastic cover, as necessary (see page 20-3)
2. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

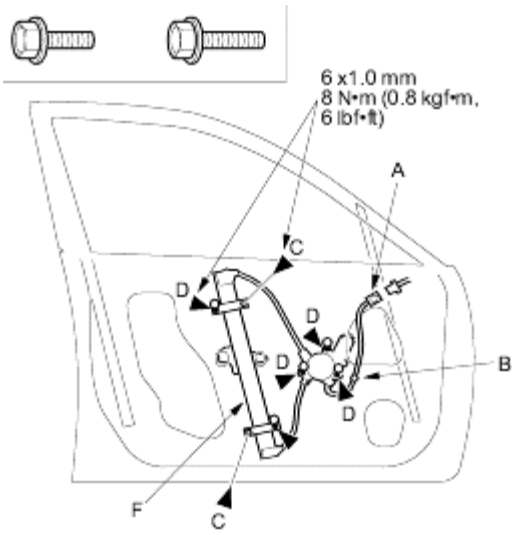
▶: Bolt, 2



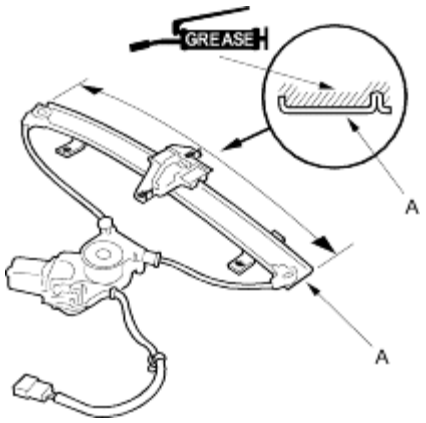
3. Power window: Disconnect and detach the connector (A) and harness clip (B) from the door.

Fastener Locations

C ▶: Bolt, 2 D ▶: Bolt, 4



4. Remove the bolts (C), and loosen the bolts (D), then remove the regulator (F) through the hole in the door. Power window is shown, manual window is similar.
5. Grease all the sliding surfaces of the regulator (A) where shown.



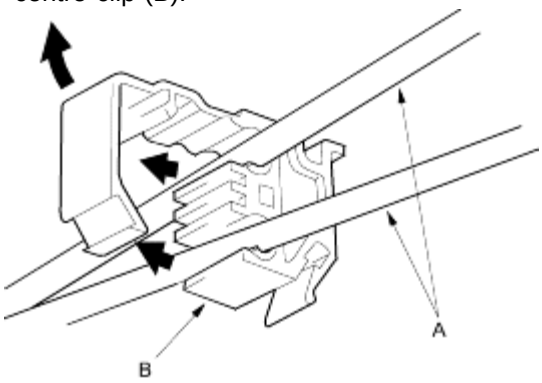
Trunk Lid

Trunk Lid Torsion Bar Replacement

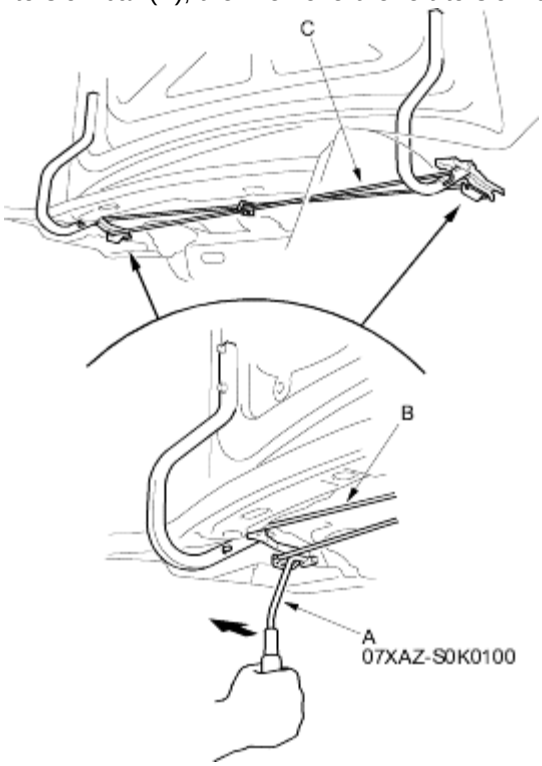
Special Tools Required

Torsion bar assembly tool, 07XAZ-S0K0100

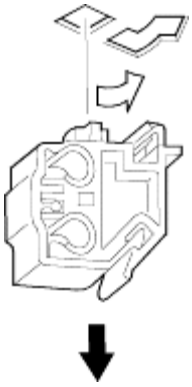
1. 1. Remove the torsion bars (A) from the torsion bar centre clip (B).



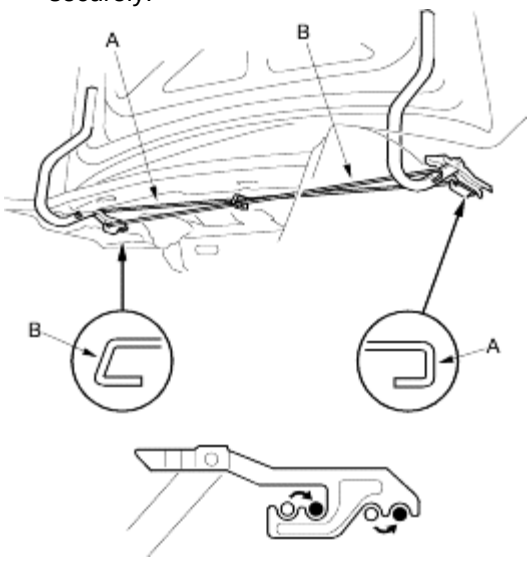
2. 2. Put on gloves to protect your hands. Remove the torsion bars with the torsion bar assembly tool (A) from both trunk lid hinges. First remove the right torsion bar (B), then remove the left torsion bar (C).



1. 3. Remove the torsion bar centre clip from the body.



2. 4. Install the torsion bars in the reverse order of removal, and note these items:
   - The shapes of the right torsion bar (A) and left torsion bar (B) are shown. Install the torsion bars properly.
   - Adjust the torsion bars forward or rearward with the torsion bar assembly tool.
   - Make sure the trunk lid opens properly and locks securely.



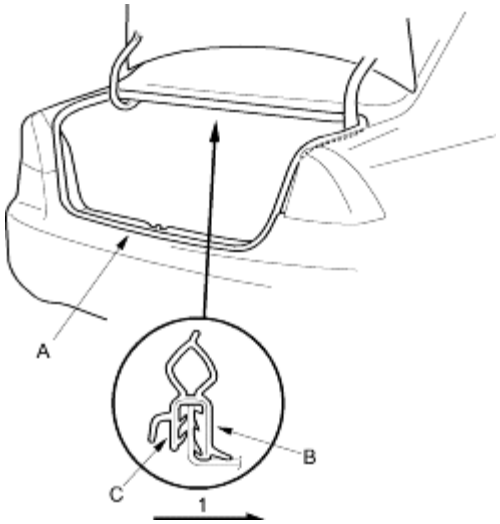
○ = Normal position

● = Higher position

Trunk Lid

Trunk Lid Weatherstrip Replacement

1. 1. Remove the trunk lid weatherstrip (A) by pulling it off.

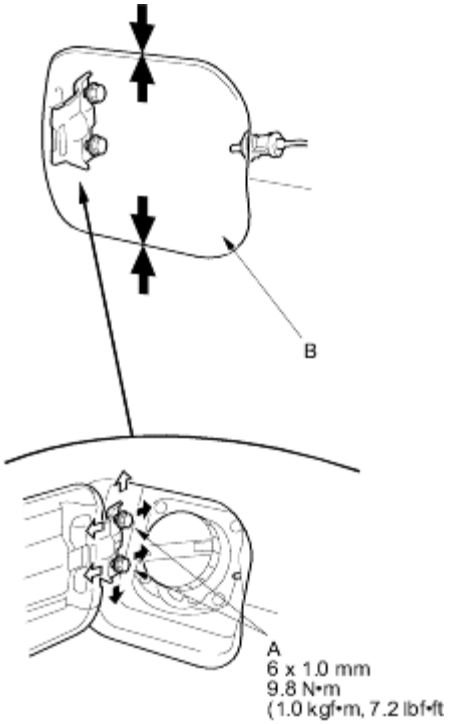


2. 1. Forward

3. 2. Locate the painted alignment mark (B or C) on the trunk lid weatherstrip. Align the painted mark with the alignment tab in the centre of the trunk, and install the weatherstrip. Make sure it's seated completely and facing in the direction shown. Make sure there are no wrinkles in the weatherstrip.
   3. Check for water leaks.

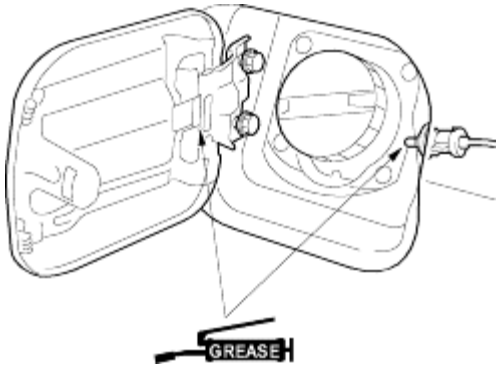
Fuel Fill Door
Adjustment

1. 1. Slightly loosen the hinge mounting bolts (A).



2. 2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalise the gaps.
   3. Tighten the hinge mounting bolts.
   4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.

1. 5. Grease each location indicated by the arrows.



2. 6. Apply touch-up paint to the hinge mounting bolts and around the hinges.

Exterior Trim

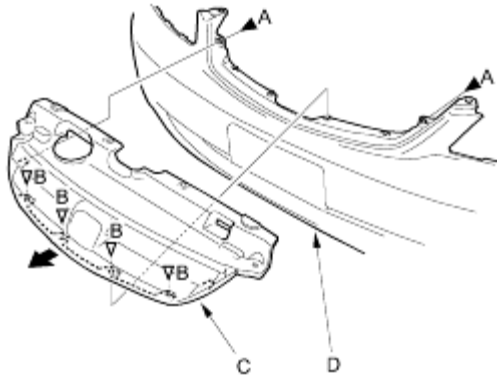
Front Grille Replacement

1. Remove the front bumper (see page 20-104).
2. Remove the screws (A) and clips (B), and remove the front grille (C) from the front bumper (D) by pulling it out. Take care not to scratch the front bumper.

Fastener Locations

A ▶: Screw, 2 B ▷: Clip, 4



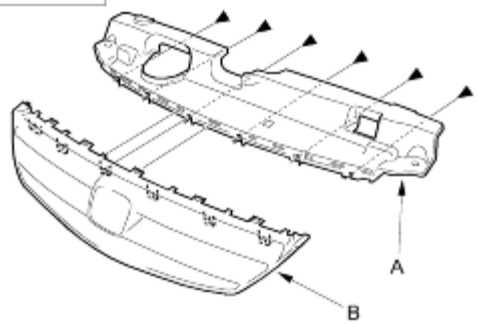


3. Remove the screws, then remove the front grille cover (A) from the front grille (B).

Fastener Locations

▶: Screw, 6



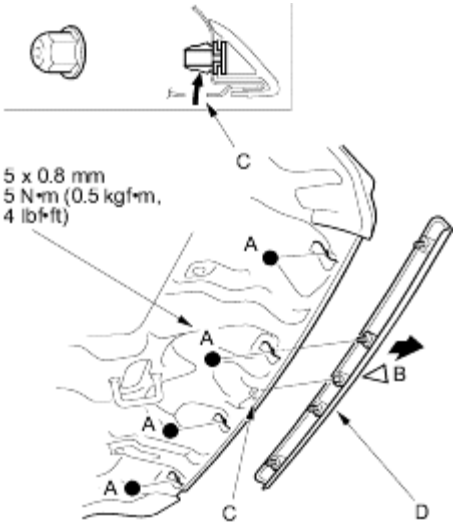


4. Install the grille in the reverse order of removal, and replace any damaged clips.

1. Remove the nuts (A), and detach the clip (B) by pushing it from the drain hole (C) in the hood, then remove the hood moulding (D). Take care not to scratch the hood.M

Fastener Locations

A ●: Nut, 4 B ▷: Clip, 1



2. Install the moulding in the reverse order of removal, and replace the clip if it's damaged.

Exterior Trim

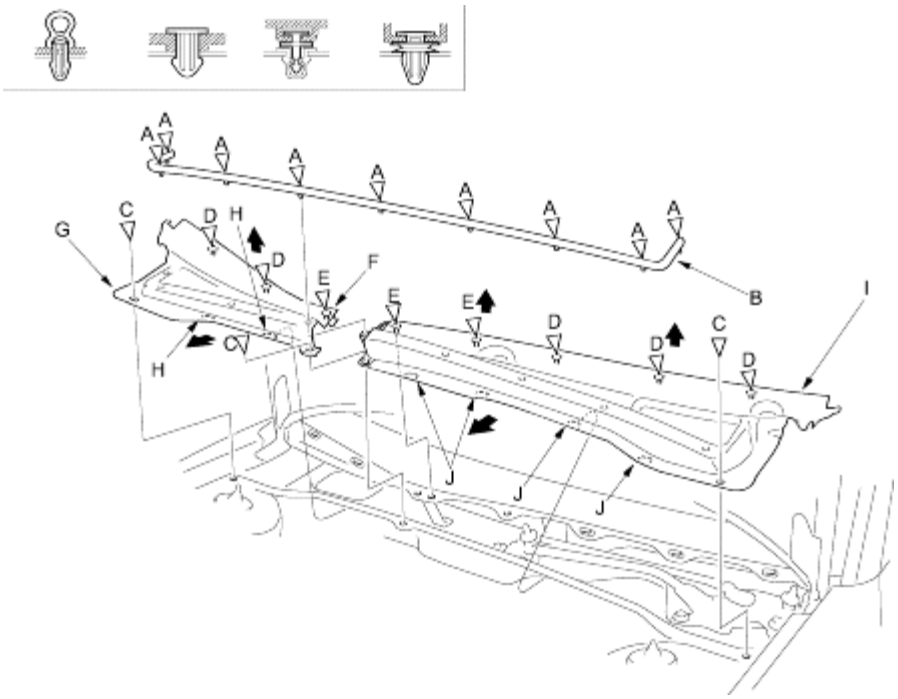
Cowl Covers Replacement

NOTE: LHD is shown, RHD is symmetrical.

1. 1. Remove the windshield wiper arms (see page 22-179.
   2. Using a clip remover, detach the clips (A), then remove the hood rear seal (B), and detach the clips (C) from the cowl covers. Take care not to scratch the cowl covers.

Fastener Locations

A ▷: Clip, 9	C ▷: Clip, 3	D ▷: Clip, 5	E ▷: 3

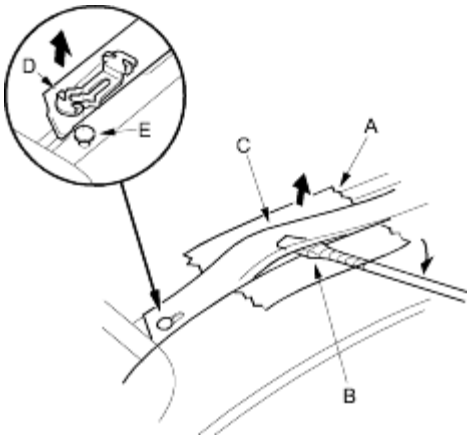


2. 3. Detach the clips (D, E) and release the hook (F) by carefully pulling the passenger's cowl cover (G) upward, and pull the cover forward to release the hooks (H), then remove the cover. Take care not to scratch the body.
   4. Detach the clips (D, E) by carefully pulling the driver's cowl cover (I) upward, and pull the cover forward to release the hooks (J), then remove the cover. Take care not to scratch the body.
   5. Install the cover in the reverse order of removal, and replace any damaged clips.

Exterior Trim

Roof Moulding Replacement

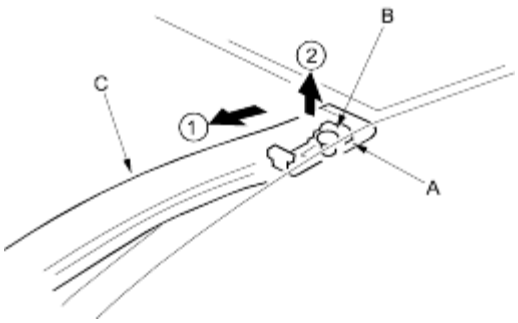
1. 1. Apply protective tape to the body (A). Using a flat-tip screwdriver wrapped with protective tape (B), pry up on the roof moulding (C). Take care not to scratch the body.



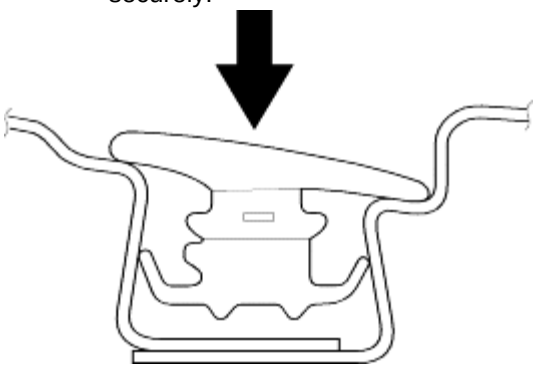
2. 2. Pull up and slide the roof moulding to release the front bracket (D) from the pin (E).
   3. Pull up the front portion of roof moulding.



1. 4. Pull up and release the rear bracket (A) from the pin (B), then remove the roof moulding (C).



5. 5. Install the moulding in the reverse order of removal, and note these items:
   - Take care not to damage the windshield moulding.
   - Make sure the roof moulding is installed securely.



Exterior Trim

Roof Drip and Rear Pillar Mouldings Replacement

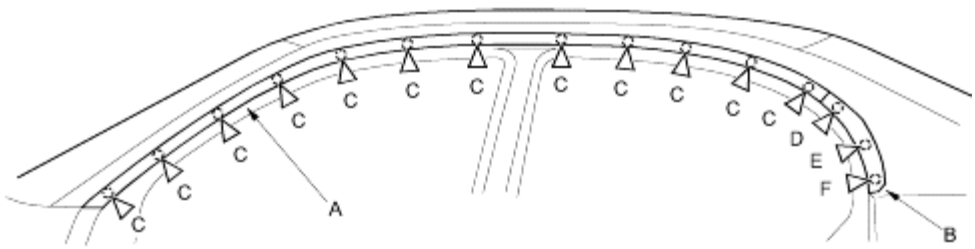
NOTE: Put on gloves to protect your hands.

1. 1. Detach the mouldings from each clip, then remove the roof drip moulding (A) and rear pillar moulding (B) as an assembly. Take care not to scratch the body.

Fastener Locations

C	D	E	F	Clip,
Clip, 12	Clip, 1	Clip, 1	1	





2. 2. Remove the clips (C, D, E, F), and replace any damaged clips.
3. Install the clips on the body.
4. Hold the moulding up, and starting at the rear, align the moulding to the body shape, then push on the clip portions of the moulding until the moulding snaps into place.

Exterior Trim

Door Mouldings Replacement

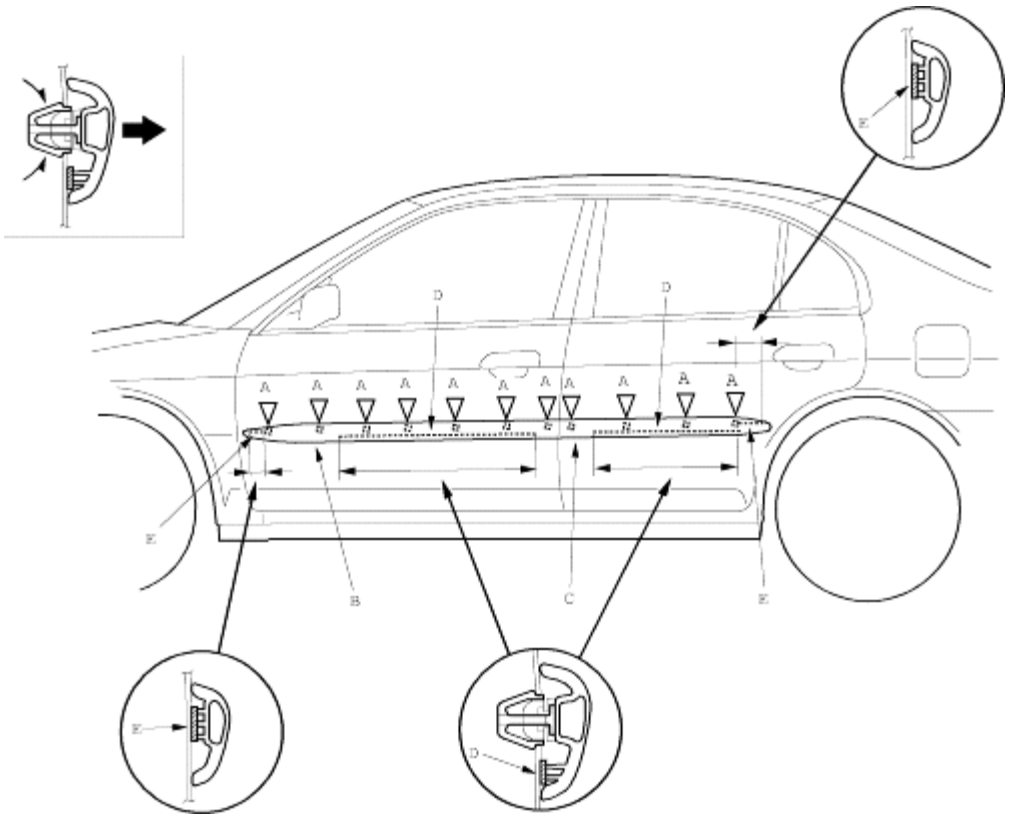
NOTE:

- Wrap the blade of your putty knife or flat-tip screwdriver with protective tape to prevent damage to the door.
- Be careful not to pry too far or you may bend the moulding.
- Put on gloves to protect your hands.

1. 1. Prepare to release the moulding clips from inside the vehicle.
   - To remove the front door moulding, remove the front door panel (see page 20-7) and plastic cover.
   - To remove the rear door moulding, remove the rear door panel (see page 20-15) and plastic cover.
2. 2. Release the clips (A) and gently pry the front door moulding (B) or rear door moulding (C) away from the door while removing the adhesive tape (D, E).

   Fastener Locations

   A ▷: Clip, 11



3. 3. Install the mouldings in the reverse order of removal, and replace any damaged clips and adhesive tape.

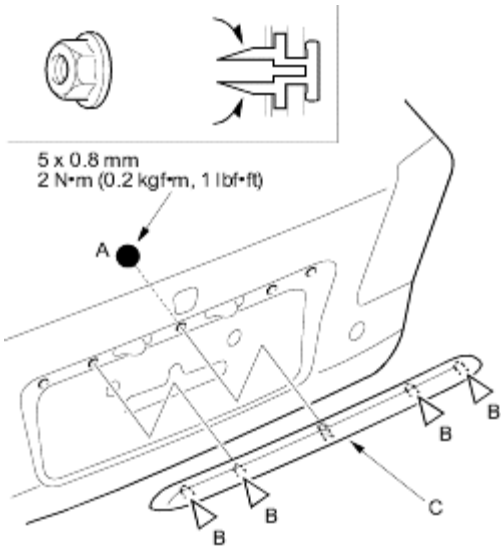
Exterior Trim

Rear License Trim Replacement

1. 1. On the inside the trunk lid, remove the nut (A), and release the clips (B), then remove the rear license trim (C). Take care not to scratch the trunk lid.

Fastener Locations

A ●: Nut, 1 B ▷: Clip, 4



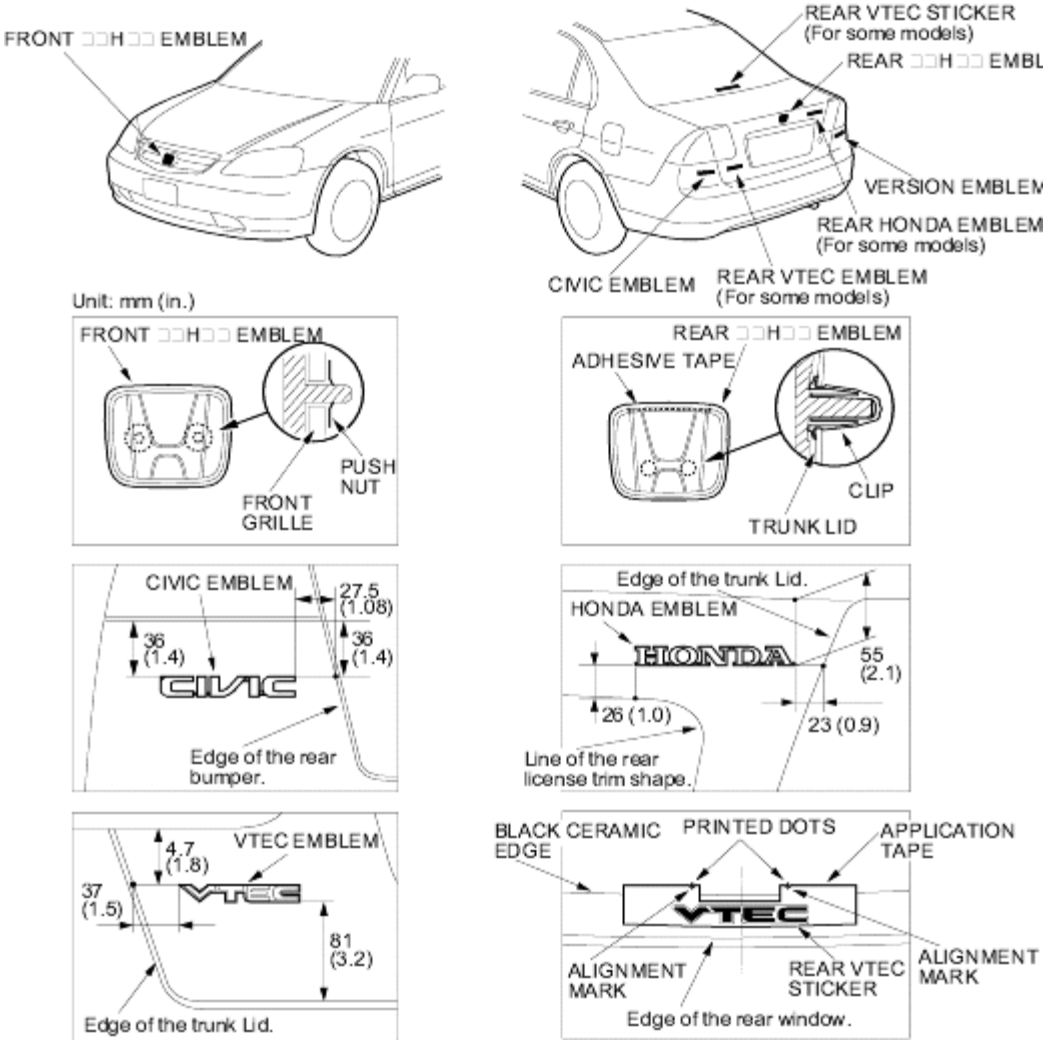
2. 2. Install the trim in the reverse order of removal, and replace any damaged clips.

Exterior Trim

Emblem/Sticker Replacement

NOTE: When removing the emblems/sticker, take care not to scratch the body.

1. 1. Clean the body surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
   2. Apply the emblem/sticker where shown. When installing the rear VTEC sticker on the rear window, align the application tape with the alignment marks of the rear window, then press the sticker into place, and remove the application tape.



Doors

Front Door Glass and Regulator Replacement (cont'd)

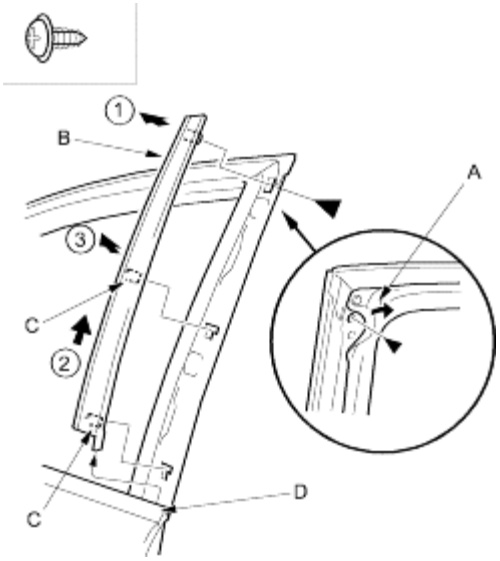
1. 6. Install the glass and regulator in the reverse order of removal, and note these items:
   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-24).

NOTE: Take care not to scratch the door.

1. 1. Turn the door weatherstrip (A) at the rear upper corner, and remove the screw.

Fastener Location

▶: Screw, 1

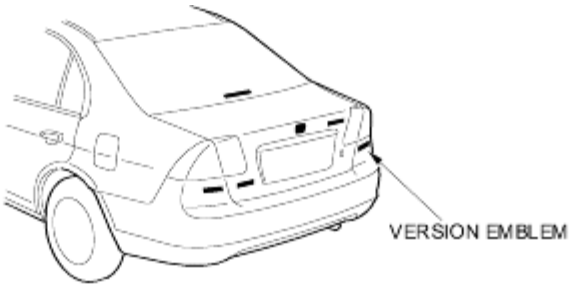


2. 2. Lift up the door sash trim (B) to release the hooks (C), then remove the trim. Take care not to damage the door glass outer weatherstrip (D).
   3. Install the trim in the reverse order of removal.

Exterior Trim

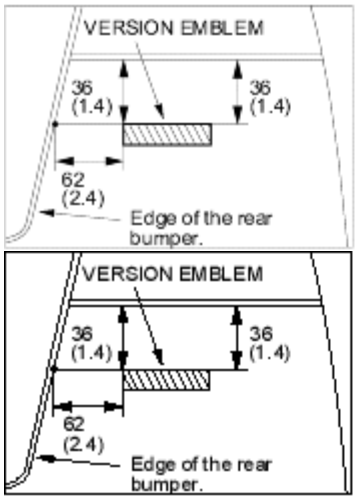
Emblem/Sticker Replacement

Version emblem:

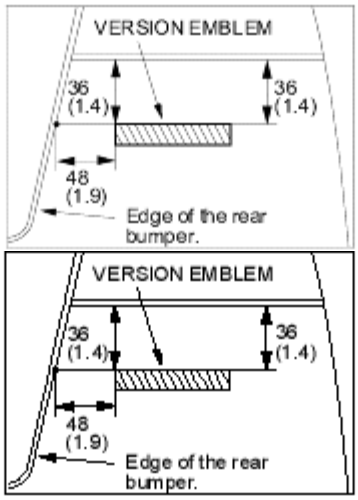


Unit:mm (in.)

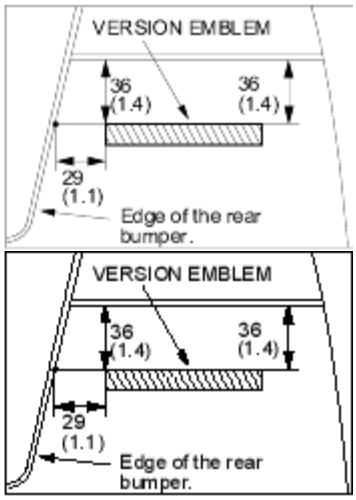
Version: DX, LX, EX, 1.4i



Version: VTi, LXi, EXi, 1.4S, GLi, 150i, 170i



Version: 1.6SE, 1.6ES, VTi-S, 1.6LS



Fenderwell

Front Inner Fender Replacement

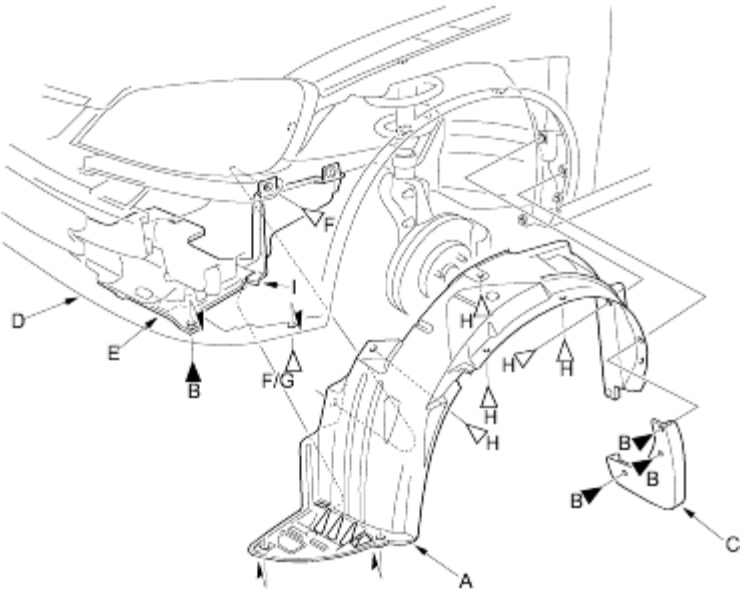
NOTE: Take care not to scratch the body.

1. 1. Remove the front inner fender (A).
    1. On the back of the wheel arch, remove the screws (B). If equipped, remove the front splash guard (C).
    2. From under the front bumper (D), remove the screw (B) securing the front bumper, splash shield (E), and front inner fender, and remove the clip (F) securing the front bumper and front inner fender. With front air spoiler, remove the clip (G) securing the front air spoiler, front bumper, and front inner fender.
    3. From the wheel arch, remove the clips (F, H) securing the front inner fender (and splash shield) on the body.
    4. Release the hook (I) of the splash shield, then remove the front inner fender.

Fastener Locations

B ▶: Screw, 4	F ▷: Clip, 2 or 1	G ▷: Clip, 1	H ▷: Clip, 5





2. 2. Install the inner fender in the reverse order of removal, and replace any damaged clips.

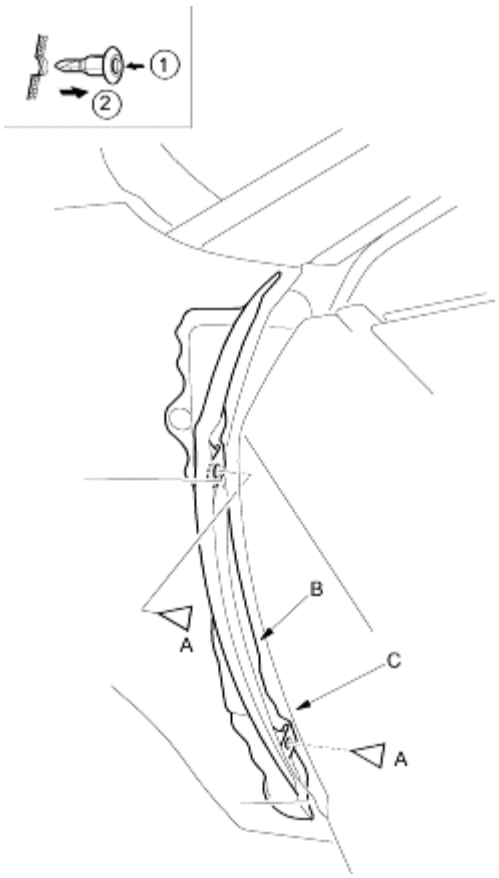
Fenderwell

Front Fender Fairing Replacement

1. 1. Remove the front inner fender as necessary (see page 20-121).
2. 2. Open the front door. From outside the door, remove the upper clip (A), and from inside the door, remove the lower clip (A) securing the front fender fairing (B) and front fender (C).

Fastener Locations

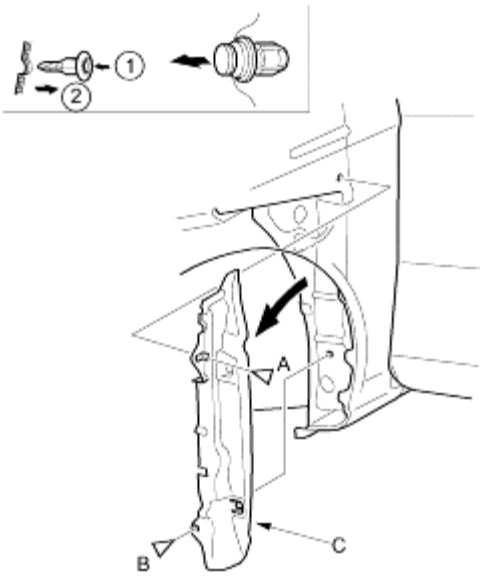
A ▷: Clip, 2



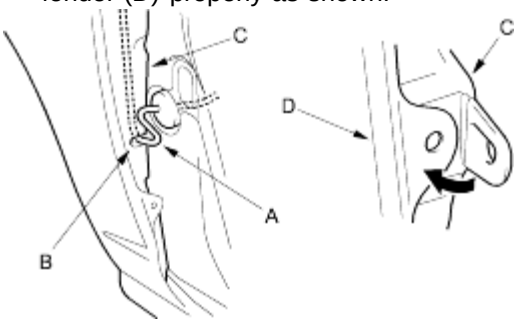
1. 3. From the wheel arch, remove the clip (A), and release the clip (B), then remove the front fender fairing (C).

Fastener Locations

A ▷: Clip, B ▷: Clip,1
1



2. 4. Install the fender fairing in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - If equipped, route the side turn signal light harness (A) through the slit (B) of the front fender fairing (C).
   - Before installing the clips in the door opening area, install the front fender fairing (C) to the front fender (D) properly as shown.



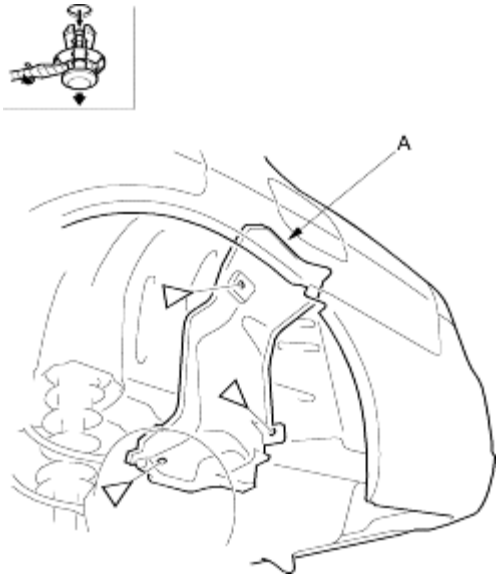
Fenderwell

Fuel Pipe Protector Replacement

1. 1. Remove the clips, then remove the fuel pipe protector (A). Take care not to scratch the body.

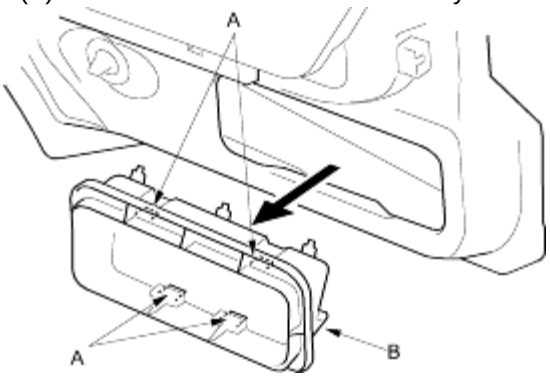
Fastener Locations

▷: Clip, 3



2. 2. Install the protector in the reverse order of removal, and replace any damaged clips.

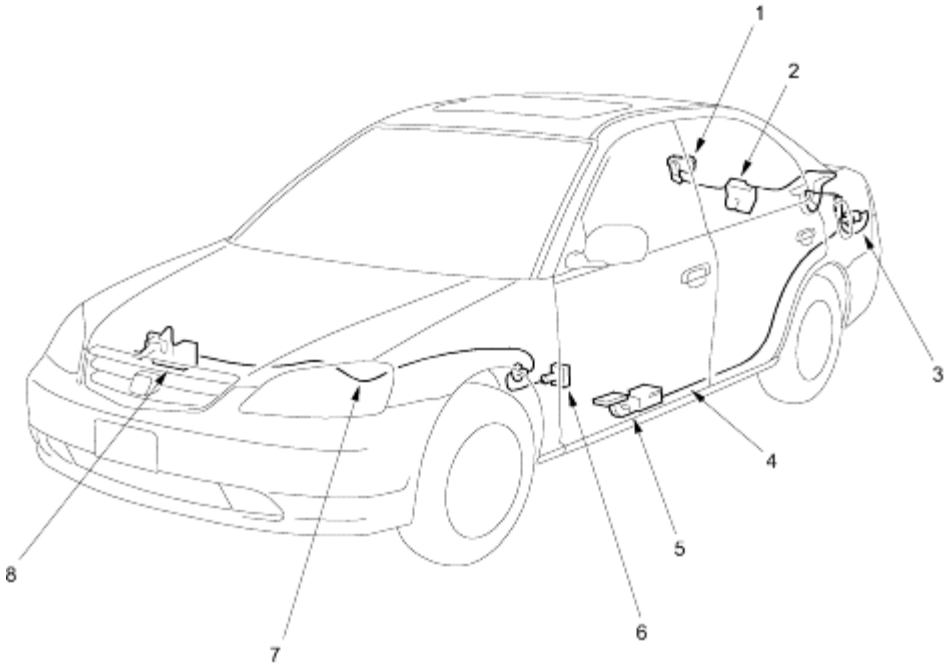
1. 1. Remove the rear bumper (see page 20-105).
2. 2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.



3. 3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Openers

Component Location Index



1. TRUNK LID LOCK CYLINDER
   Replacement, page 20-131
2. TRUNK LID LATCH
   Replacement, page 20-130
3. FUEL FILL DOOR LATCH
   step 5 on page 20-127
4. TRUNK LID OPENER/FUEL FILL DOOR OPENER CABLE
   Replacement, page 20-126
5. TRUNK LID OPENER/FUEL FILL DOOR OPENER
   Replacement, page 20-129
6. HOOD RELEASE HANDLE
   step 2 on page 20-125
7. HOOD OPENER CABLE
   Replacement, page 20-125
8. HOOD LATCH
   Replacement, page 20-128

Openers

Hood Opener Cable Replacement

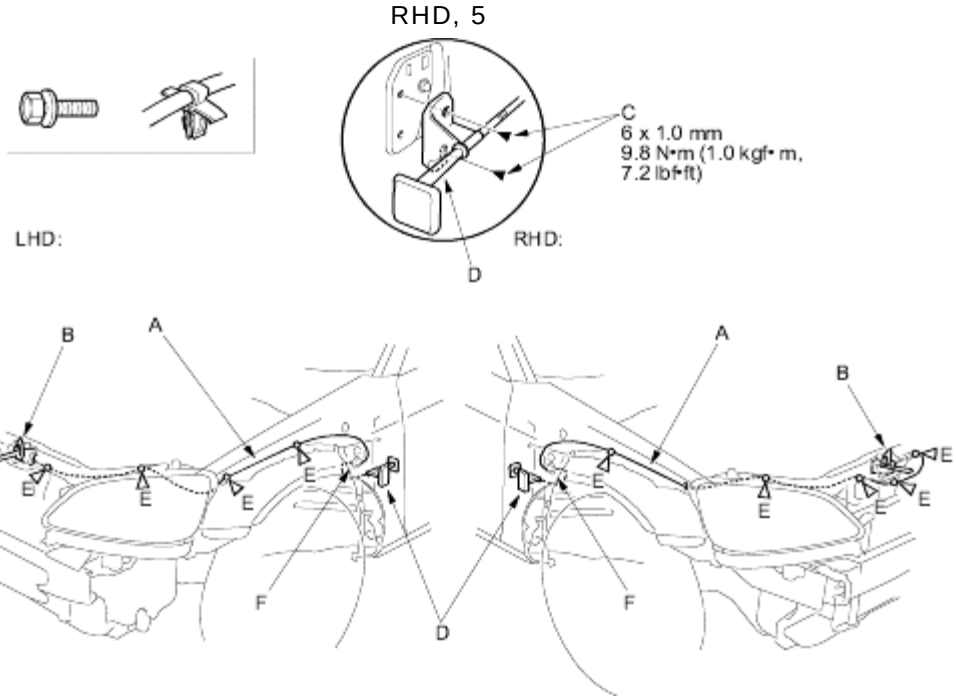
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. 1. Remove these items:
   - Front bumper (see page 20-104)
   - Inner fender (see page 20-121
   - Kick panel (see page 20-64)
2. 2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-128), and remove the bolts (C), then remove the hood release handle (D) from the body (LHD is shown, RHD is symmetrical).

Fastener Locations

C ▶: E ▷: LHD, 4
Bolt, 2 Clip



3. 3. Using a clip remover, detach the clips (E), and remove the grommet (F) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.
4. Install the cable in the reverse order of removal, and replace any damaged clips.

Openers

Trunk Lid Opener/Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE:

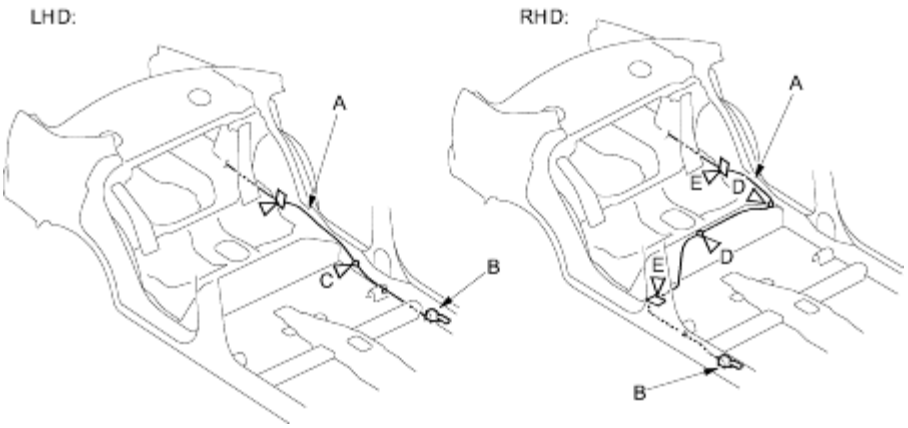
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove these items:
   - Front door sill trim (see page 20-64)
   - Seat side trim, left side (see page 20-64)
   - RHD: Seat side trim, right side as necessary (see page 20-64)
   - Trunk side trim panel, left side (see page 20-67)
2. Pull the carpet back as necessary (see page 20-70).
3. Disconnect the trunk lid opener/fuel fill door opener cable (A) from the opener (B) (see step 3 on page 20-129).

Fastener Locations

C ▷: Clip LHD, 1
D ▷: Clip RHD, 2
E ▷: Cushion tape LHD, 2 RHD, 3





4. LHD: Release the opener cable from the clip (C). RHD: Release the opener cable from the clips (D). Remove the cushion tape (E).

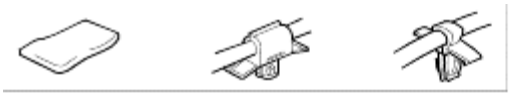
Openers

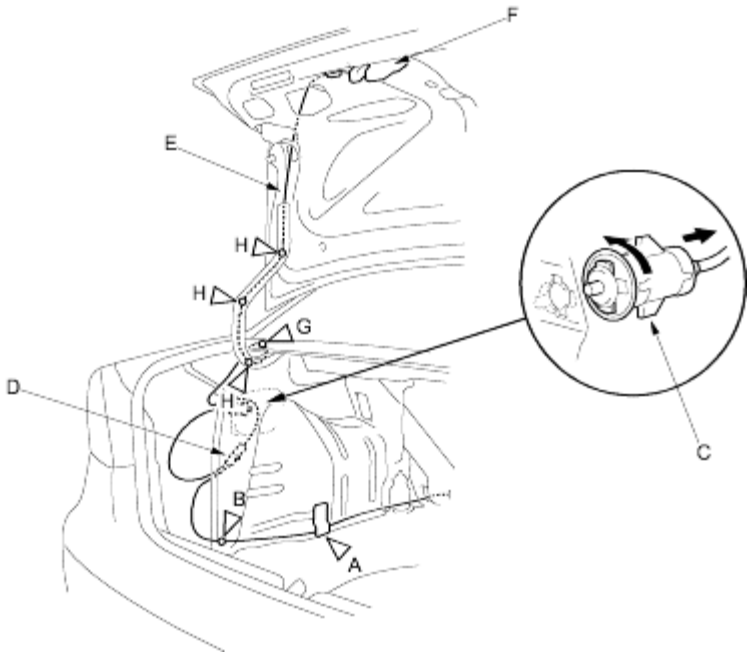
Trunk Lid Opener/Fuel Fill Door Opener Cable Replacement (cont'd)

1. 5. Remove the cushion tape (A), and detach the clip (B) with a clip remover. Remove the fuel fill door latch (C) by turning it 90°, and detach the opener cable junction box (D) from the body.

Fastener Locations

A▷: Cushion tape, 1	B and G ▷: Clip, 2	H▷: Clip, 3



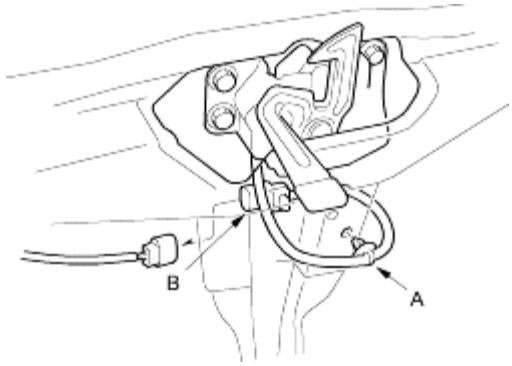


2. 6. Disconnect the trunk lid opener cable (E) from the trunk lid latch (F) (see page 20-130).
   7. Using a clip remover, detach the clip (G) from the body, and detach the clips (H) from the trunk lid hinge.
   8. Remove the trunk lid opener/fuel fill door opener cable from the vehicle. Take care not to bend the cable.
   9. Install the opener cable in the reverse order of removal, and note these items:
      - Align the mark on the cable with the clip on the bottom portion of the trunk lid hinge.
      - Replace any damaged clips.

Openers

Hood Latch Replacement

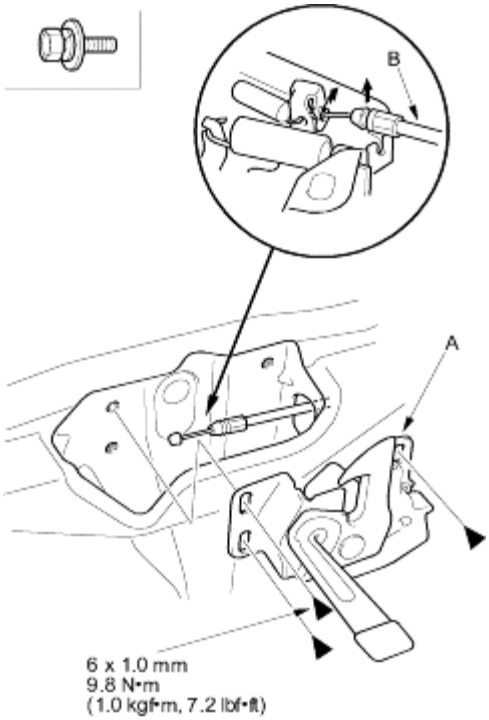
1. If necessary, remove the front bumper (see page 20-104).
2. If equipped, detach the harness clip (A) and the hood latch switch connector (B) from the body, and disconnect it.



3. Remove the bolts, then remove the hood latch (A) from the body.

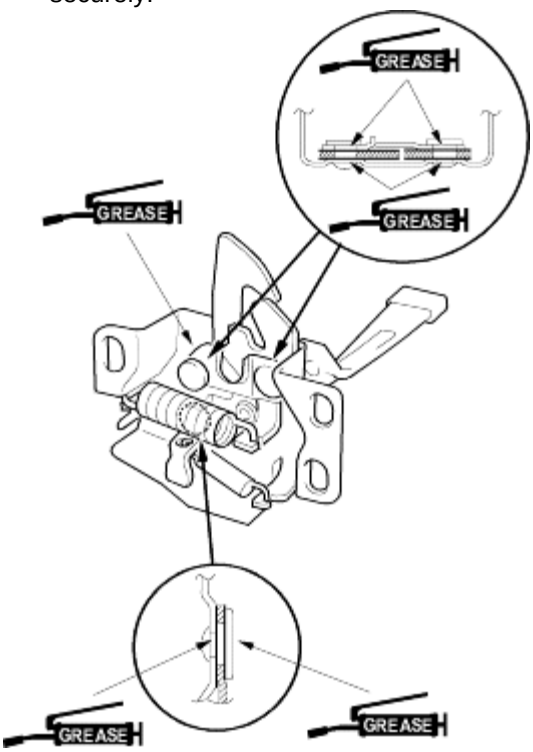
Fastener Locations

▶: Bolt, 3



4. Disconnect the hood opener cable (B) from the hood latch. Take care not to bend the cable.

5. Install the latch in the reverse order of removal, and note these items:
   - Grease each location of the hood latch indicated by the arrows.
   - Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly (for some models).
   - Adjust the hood latch alignment (see page 20-106).
   - Make sure the hood opens properly and locks securely.

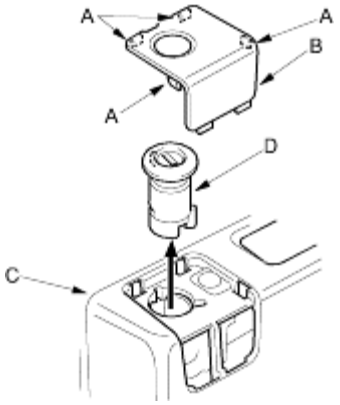


Openers

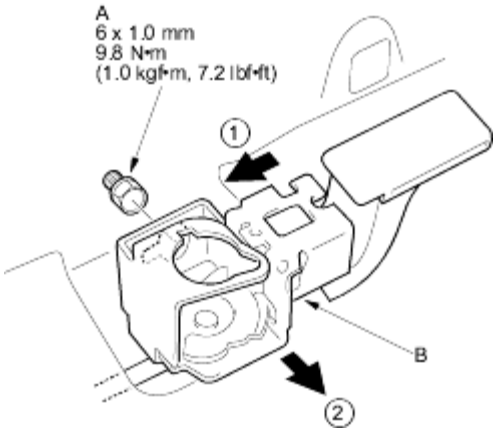
Trunk Lid Opener/Fuel Fill Door Opener Replacement

NOTE: LHD is shown, RHD is symmetrical.

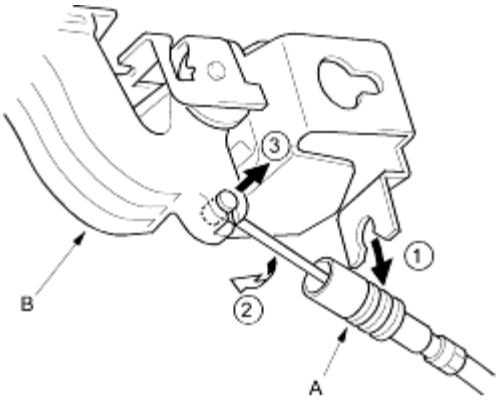
1. 1. Using a flat-tip screwdriver wrapped with protective tape, detach the hooks (A) by prying the front side cap (B), then remove it from the front door sill trim (C), and if equipped, remove the opener lock cylinder (D).



2. 2. Remove the front door sill trim (see page 20-64).
   3. Loosen the bolt (A), and remove the opener (B) from the bolt.



1. 4. Disconnect the trunk lid opener/fuel fill door opener cable (A), then remove the opener (B). Take care not to bend the cable.



2. 5. Install the opener in the reverse order of removal, and note these items:
   - Make sure the opener cable is connected properly.
   - Make sure the trunk lid and fuel fill door open properly and locks securely.

Doors

Front Door Glass Outer Weatherstrip Replacement

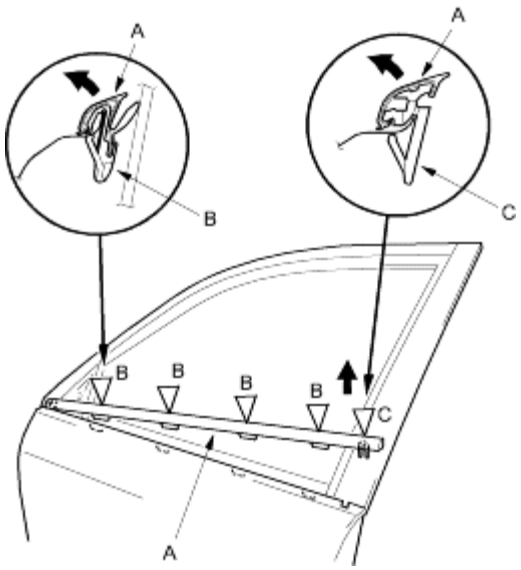
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. 1. Remove the power mirror/manual mirror (see page 20-33).
   2. Starting at the rear, pry the door glass outer weatherstrip (A) up to detach the clips (B, C), then remove the weatherstrip.

Fastener Locations

B ▷: Clip, 4 C ▷: Clip, 1



2. 3. Install the weatherstrip in the reverse order of removal, and replace any damaged clips.

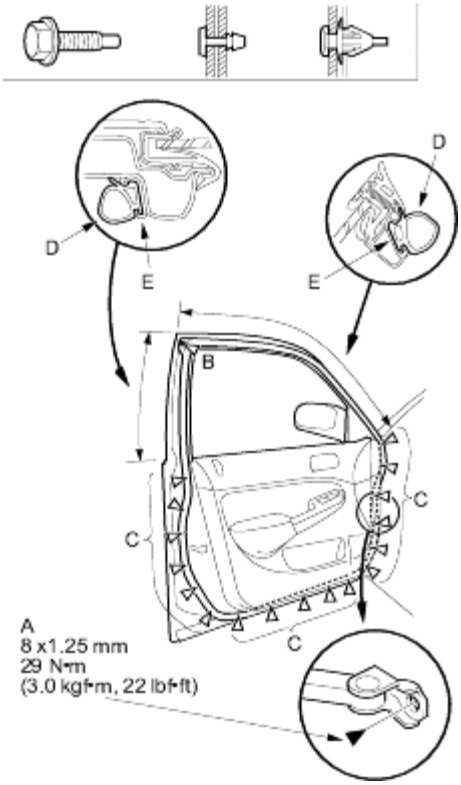
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. 1. At the front pillar, remove the door stop mounting bolt (A).

Fastener Locations

A ▶: Bolt, 1 B ▷: Clip, 1 C ▷: Clip, 17



2. 2. Detach the clips (B, C), then remove the door weatherstrip (D).
   3. Install the weatherstrip in the reverse order of removal and note these items:
      - Replace any damaged clips.
      - Make sure the weatherstrip is installed in the holder (D) securely.
      - Apply liquid thread lock to door stop mounting bolt before installation.
      - Check for water leaks (see step 7 on page 20-25).

Openers

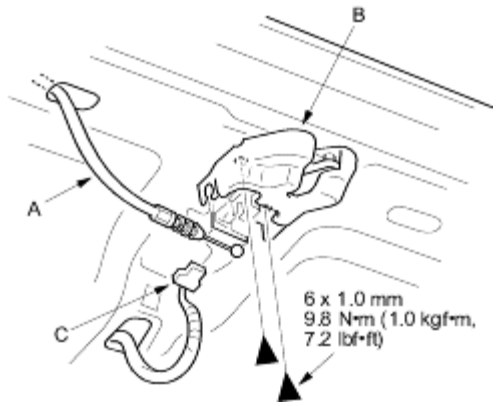
Trunk Lid Latch Replacement

1. 1. Disconnect the cylinder rod from the lock cylinder (see step 1 on page 20-131).
2. 2. Disconnect the trunk lid opener cable (A), and remove the bolts securing the trunk lid latch (B). Take care not to bend the opener cable.

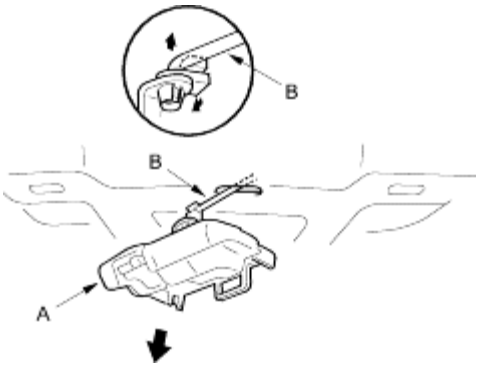
Fastener Locations

▶: Bolt, 2





3. 3. Disconnect the trunk lid latch switch connector (C).
1. 4. Pull the trunk lid latch (A) out with the cylinder rod (B), and disconnect the cylinder rod from the trunk lid latch. Take care not to bend the cylinder rod.

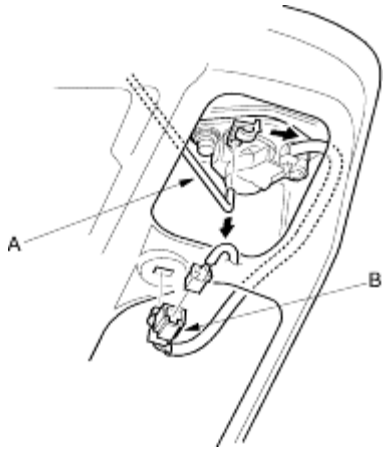


2. 5. Install the latch in the reverse order of removal, and note these items.
   - Make sure the connector is plugged in properly and the opener cable is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

Openers

Trunk Lid Lock Cylinder Replacement

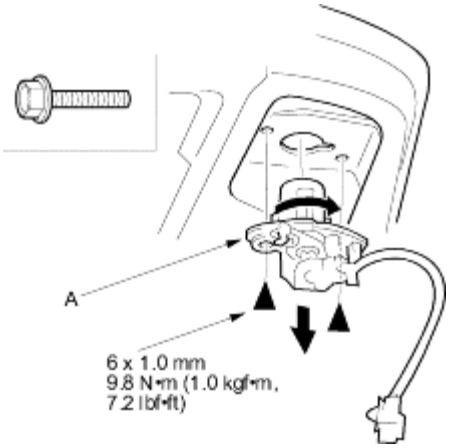
1. 1. Disconnect the cylinder rod (A), and if equipped, disconnect the cylinder switch connector (B), and detach it from the trunk lid.



2. 2. Remove the bolts securing the lock cylinder (A). Then turn the trunk lid lock cylinder 45°, and remove it.

Fastener Locations

▶: Bolt, 2



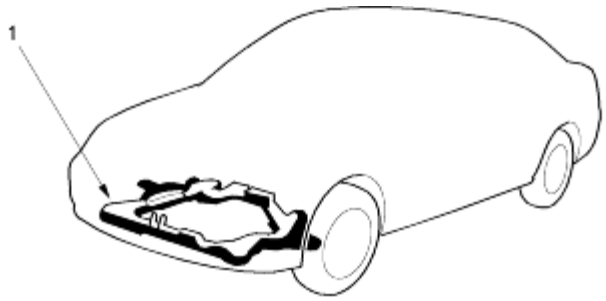
3. 3. Install the lock cylinder in the reverse order of removal, and note these items:
   - Make sure the cylinder switch connector is plugged in properly (if equipped) and the cylinder rod is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

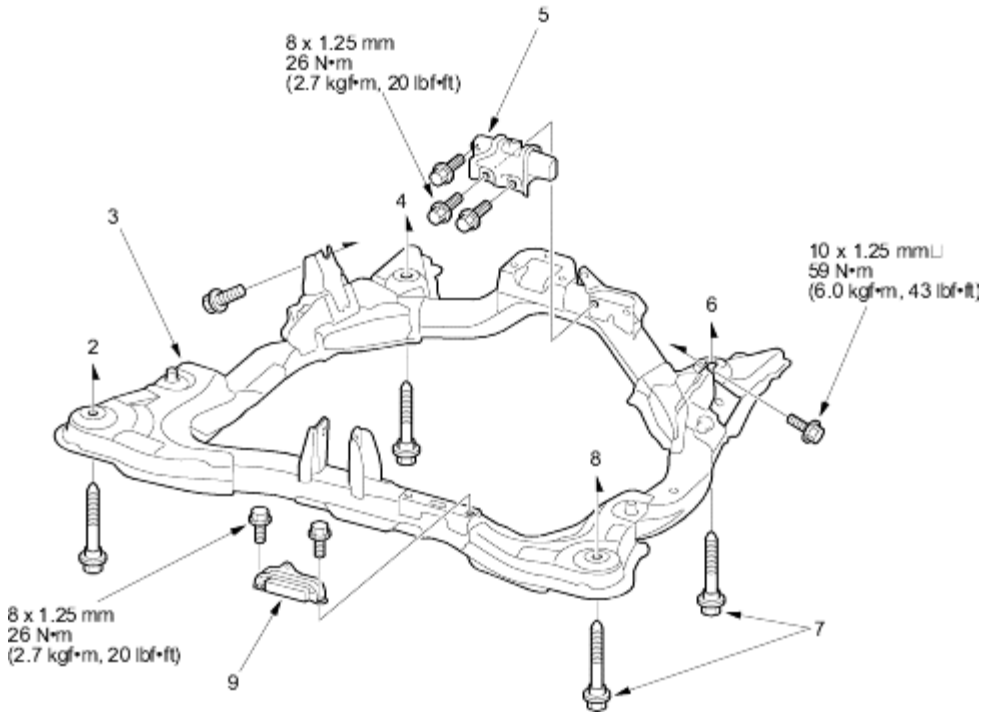
Frame

Sub-frame Replacement

Sub-frame Torque:

After loosening the sub-frame mounting bolts, be sure to replace them with new ones.





1. FRONT SUSPENSION SUB-FRAME
2. To body
3. FRONT SUSPENSION SUB-FRAME
4. To body
5. SUB-FRAME REAR DAMPER
6. To body
7. SPECIAL BOLTS
   14 x 1.5 mm, 103 Nm (10.5 kgf m, 76 lbf ft), Replace.
8. To body.
9. SUB-FRAME FRONT DAMPER

Memo

Frame

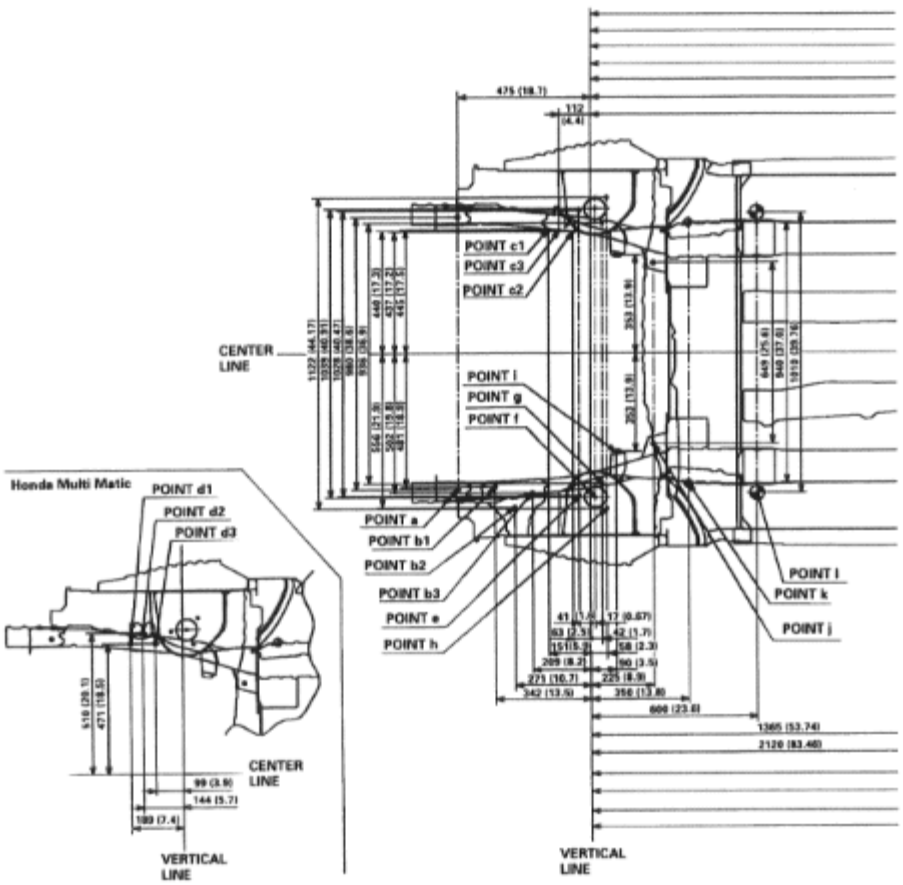
Frame Repair Chart

Top View

Unit: mm (in)

Ø: Inner diameter

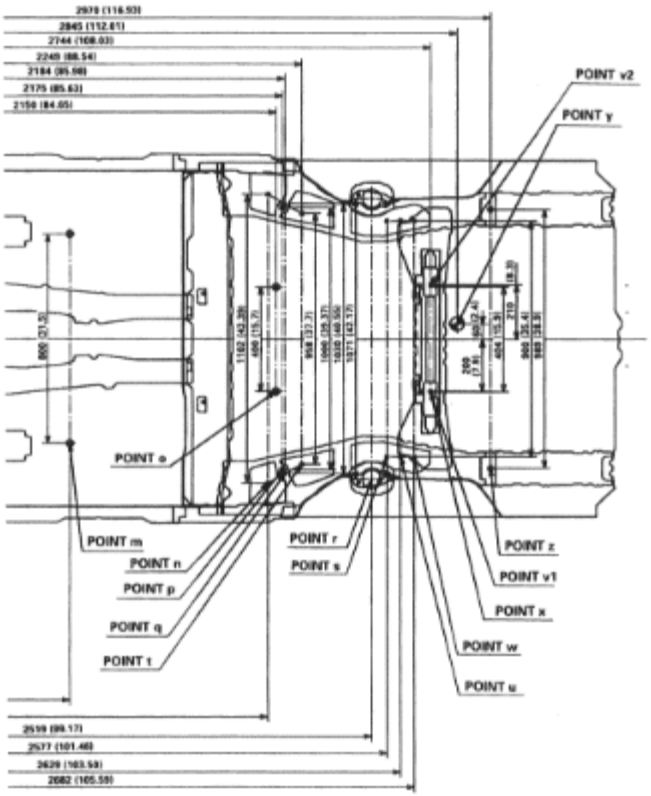
a	For sub-frame Ø15 (0.59)		e	For damper mount Ø11.5 (0.45)	
b1	For engine mount Ø13 (0.51)		f	Damper centre Ø78 (3.07)	
b2	For engine mount Ø13 (0.51)		g	For damper mount Ø11.5 (0.45)	
b3	For engine mount Ø13 (0.51)		h	For damper mount Ø11.5 (0.45)	
c1	For transmission mount Ø13 (0.51)		i	For sub-frame Ø11 (0.43)	
c2	For transmission mount Ø13 (0.51)		j	For sub-frame Ø15 (0.59)	
c3	For transmission mount Ø13 (0.51)		k	For sub-frame Ø25 (0.98)	
d1	For transmission mount Ø13 (0.51)		l	For sub-frame Ø50 (1.97)	
d2	For transmission mount Ø13 (0.51)				
d3	For transmission mount Ø13 (0.51)				



Frame

Frame Repair Chart (cont'd)

m	Locating holes Ø25 (0.98)	u	For upper arm bracket centre Ø15 (0.59)
n	For trailing arm Ø13 (0.51)	v1, v2	Locating hole Ø13 (0.51)
o	Locating holes Ø25 (0.98)	w	For upper arm Ø13 (0.51)
p	Locating holes Ø20 (0.79)	x	For lower arm centre
q	Trailing arm centre	y	Locating hole Ø50 (1.97)
r	Rear damper centre 73 x 68 (Slot)	z	Locating hole Ø20 (0.79)
s	For upper arm Ø13 (0.51)		
t	For trailing arm Ø13 (0.51)		



Frame

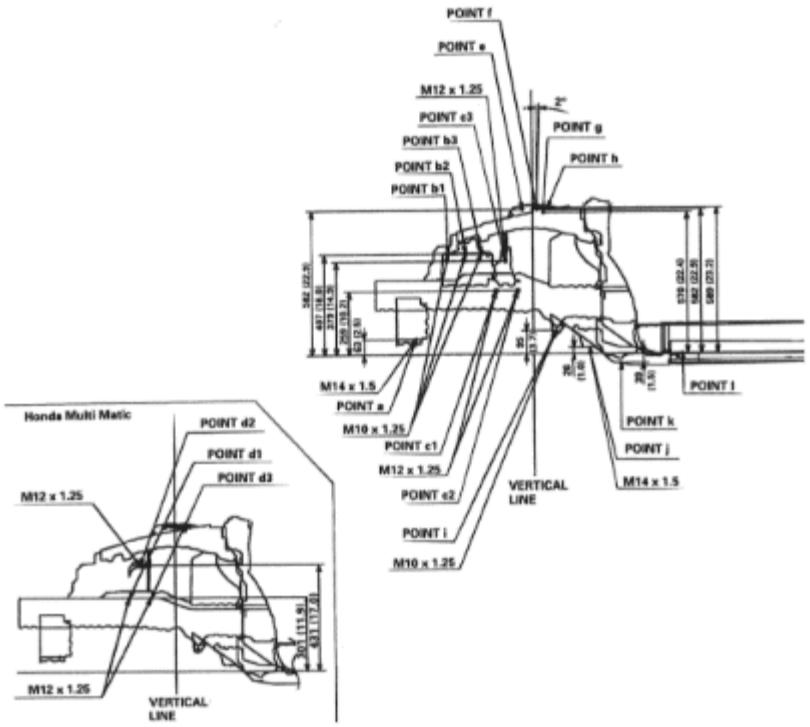
Frame Repair Chart (cont'd)

Side View

Unit: mm (in)

Ø: Inner diameter

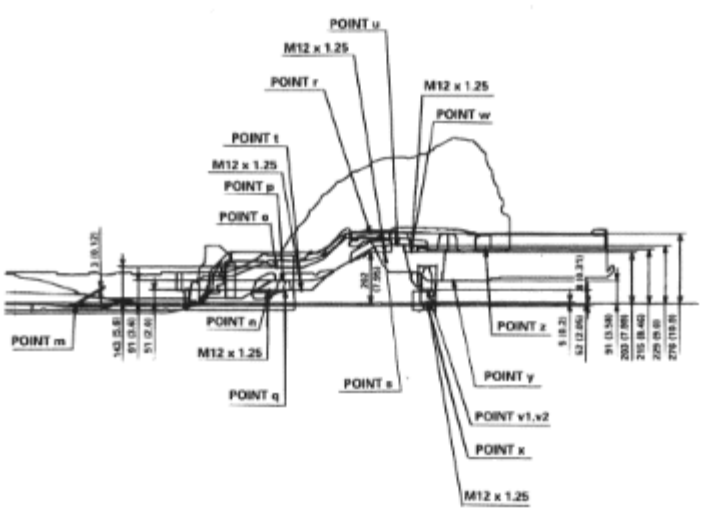
a	For sub-frame Ø15 (0.59)		e	For damper mount Ø11.5 (0.45)	
b1	For engine mount Ø13 (0.51)		f	Damper centre Ø78 (3.07)	
b2	For engine mount Ø13 (0.51)		g	For damper mount Ø11.5 (0.45)	
b3	For engine mount Ø13 (0.51)		h	For damper mount Ø11.5 (0.45)	
c1	For transmission mount Ø13 (0.51)		i	For sub-frame Ø11 (0.43)	
c2	For transmission mount Ø13 (0.51)		j	For sub-frame Ø15 (0.59)	
c3	For transmission mount Ø13 (0.51)		k	For sub-frame Ø25 (0.98)	
d1	For transmission mount Ø13 (0.51)		l	For sub-frame Ø50 (1.97)	
d2	For transmission mount Ø13 (0.51)				
d3	For transmission mount Ø13 (0.51)				



Frame

Frame Repair Chart (cont'd)

M	Locating holes Ø25 (0.98)	u	For upper arm bracket centre Ø15 (0.59)
N	For trailing arm Ø13 (0.51)	v1, v2	Locating hole Ø13 (0.51)
O	Locating holes Ø25 (0.98)	w	For upper arm Ø13 (0.51)
P	Locating holes Ø20 (0.79)	x	For lower arm centre
Q	Trailing arm centre	y	Locating hole Ø50 (1.97)
R	Rear damper centre 73 x 68 (Slot)	z	Locating hole Ø20 (0.79)
S	For upper arm Ø13 (0.51)		
T	For trailing arm Ø13 (0.51)		



5-Doors

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Doors

Front Door Upper Seal Replacement

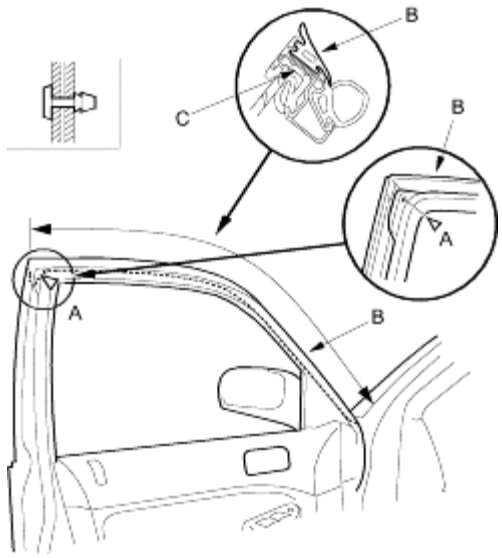
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Remove these items:
   - Power mirror/manual mirror, as necessary (see page 20-33)
   - Door sash trim (see page 20-12)
2. Detach the door weatherstrip clip (A), then remove the door upper seal (B).

   Fastener Location

   A ▷: Clip, 1



3. Install the seal in the reverse order of removal, and note these items:
   - Replace the clip if it's damaged.
   - Make sure the upper seal is installed in the holder (C) securely.
   - Check for water leaks (see step 7 on page 20-25).

NOTE:

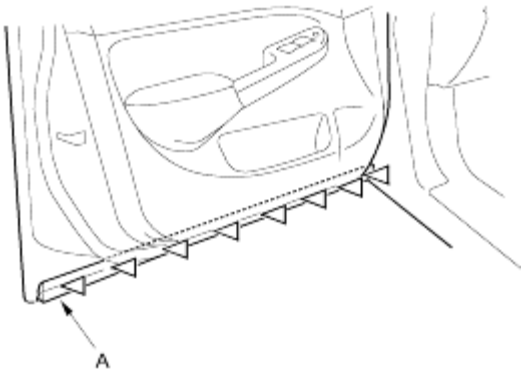
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Detach the clips, then remove the door side sill seal (A).

   Fastener Locations

   ▷: Clip, 8

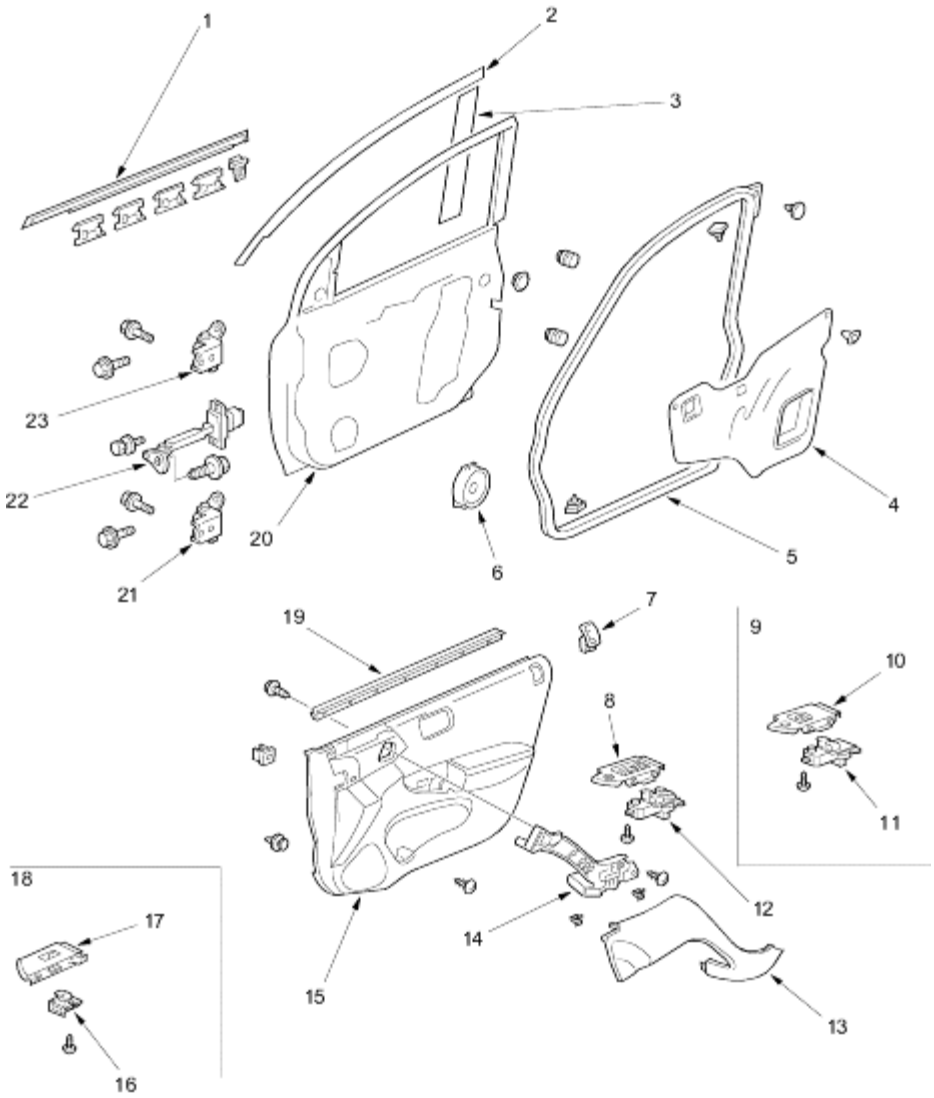




2. Install the seal in the reverse order of removal, and replace any damaged clips.

Doors

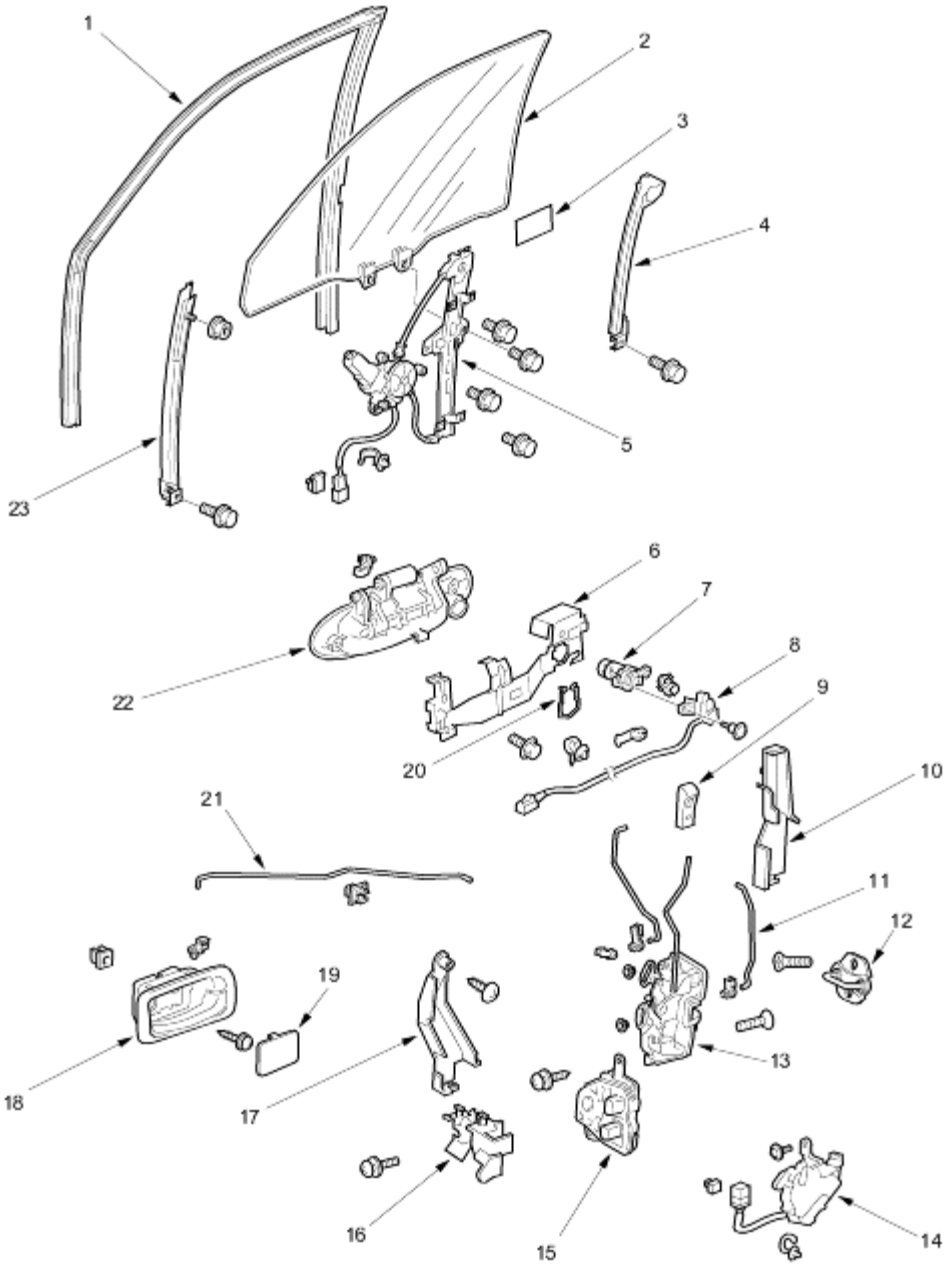
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8. SWITCH PANEL
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10. SWITCH PANEL
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21. HINGE
22. DETENT ROD
23. HINGE

Doors

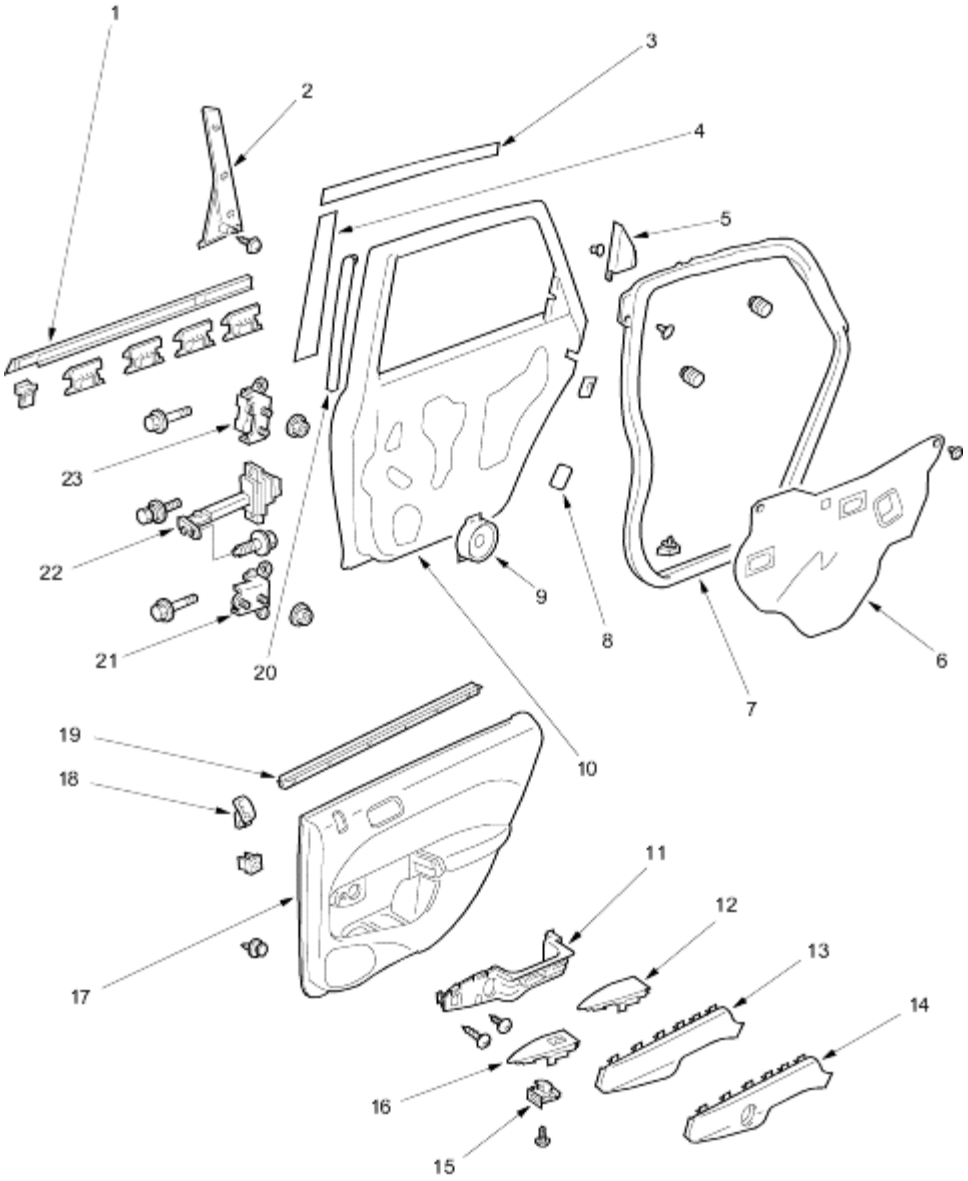
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2. GLASS
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   Adjustment, page 20-163
3. IMMOBILIZER LABEL
   (For some models)
4. CENTRE LOWER CHANNEL
5. REGULATOR
   Replacement, page 20-149
6. OUTER HANDLE PROTECTOR
   (For some models)
7. LOCK CYLINDER
8. CYLINDER SWITCH
   (For some models)
9. LOCK KNOB
10. CYLINDER ROD PROTECTOR
    (For some models)
11. CYLINDER ROD
12. STRIKER
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14. POWER DOOR LOCK ACTUATOR
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15. POWER DOOR LOCK ACTUATOR
    (Except european models)
16. LATCH PROTECTOR
    (For some models)
17. LOCK ROD PROTECTOR
    (For some models)
18. INNER HANDLE
19. COVER
20. RETAINER CLIP
21. INNER HANDLE ROD
22. OUTER HANDLE
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23. FRONT LOWER CHANNEL

Doors

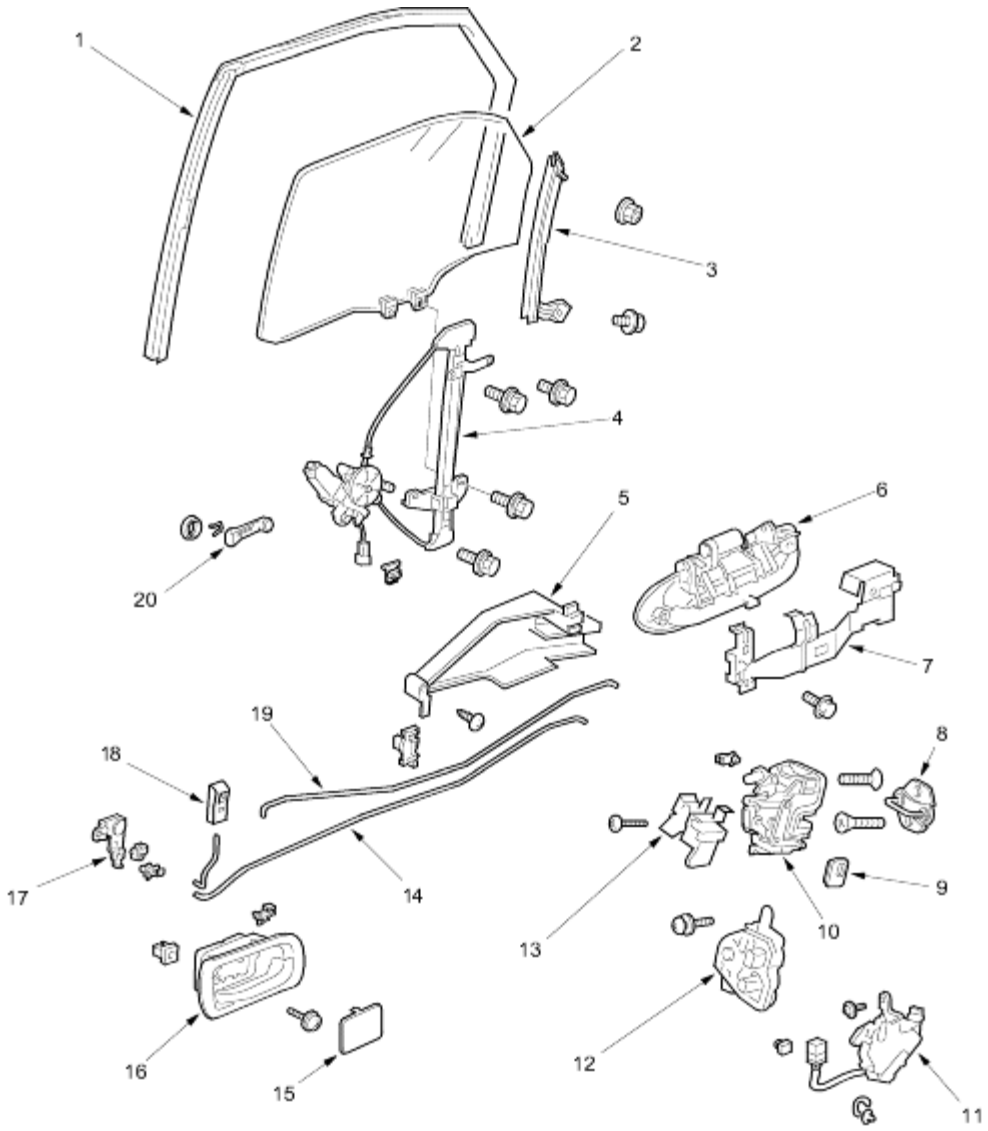
Component Location Index - Rear Door



1. DOOR GLASS OUTER WEATHER STRIP
   Replacement, page 20-160
2. DOOR REAR PILLAR TRIM
   Replacement, page 20-160
3. DOOR UPPER OUTER CHANNEL TAPE
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4. DOOR CENTRE OUTER CHANNEL TAPE
   Replacement Process, page 20-164
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5. QUARTER INNER TRIM
6. PLASTIC COVER
7. DOOR WEATHERSTRIP
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8. REFLECTOR TAPE
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9. SPEAKER
10. DOOR
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12. REGULATOR PANEL
    (Manual window)
13. GRIP COVER
14. GRIP COVER
    (manual window)
15. POWER WINDOW SWITCH
16. SWITCH PANEL
17. DOOR PANEL
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18. LOCK KNOB TRIM
19. DOOR GLASS INNER WEATHERSTRIP
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21. HINGE
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Doors

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3. REAR LOWER CHANNEL
4. REGULATOR
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5. ROD PROTECTOR
   (For some models)
6. OUTER HANDLE
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7. OUTER HANDLE PROTECTOR
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8. STRIKER
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9. CHILD LOCK CAP
10. LATCH
    Replacement, page 20-155
11. POWER DOOR LOCK ACTUATOR
    (European model)
12. POWER DOOR LOCK ACTUATOR
    (Except European models)
13. LATCH PROTECTOR
    (For some models)
14. LOCK ROD
15. COVER
16. INNER HANDLE
17. LOCK CRANK
18. LOCK KNOB
19. INNER HANDLE ROD
20. REGULATOR HANDLE
    (Manual window)

Doors

Front Door Panel Removal/Installation

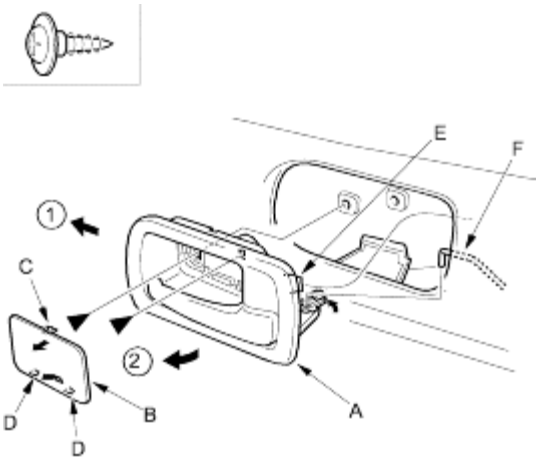
Special Tools Required

Trim pad remover, Snap-on # A 177 or equivalent, commercially available.

1. 1. Remove the mirror mount cover (see step 2 on page 20-170).
   2. Remove the inner handle (A). Take care not to scratch the door panel.
      1. Pry out on the upper portion of the cover (B) to release the hooks (C and D), then remove the cover.
      2. Remove the screws.
      3. Pull out the inner handle forward and out half-way to release the hook (E).
      4. Disconnect the inner handle rod (F).

Fastener Locations

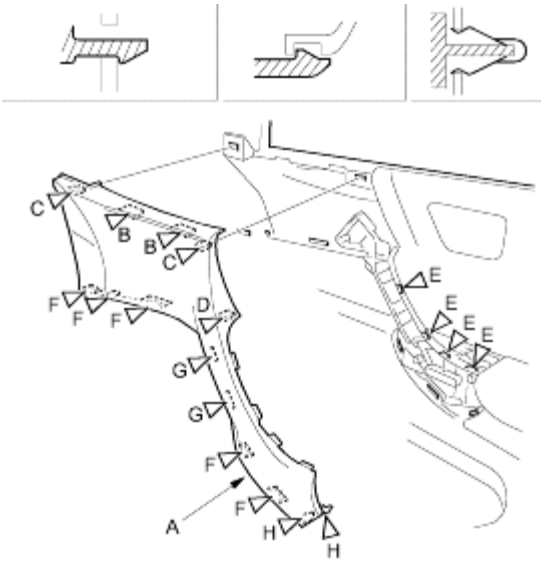
▶: Screw, 2



1. 3. Remove the grip cover (A).
      1. Pull out along the top to release the upper hooks (B), and the upper clip (C).
      2. Pry out along the top of the grip portion to release the hook (D) and tabs (E).
      3. Pry out the bottom and rear edge of the cover to release the hooks (F), tabs (G), and rear hooks (H).

Fastener Locations

B, D, F, I ▷: E, G, H ▷: C ▷ Clip, 2
Hook, 10 Tab, 6



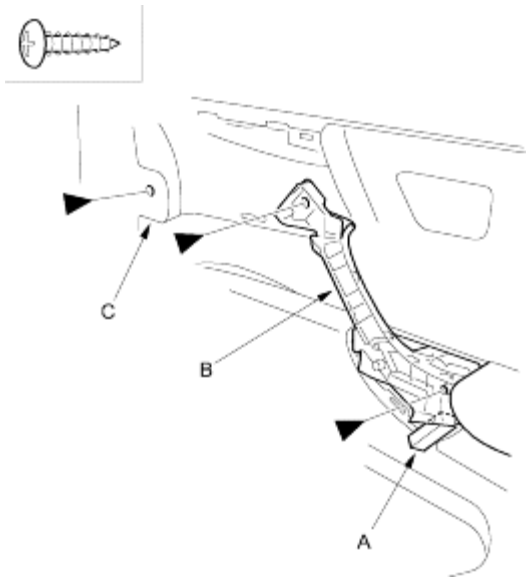
Doors

Front Door Panel Removal/Installation (cont'd)

1. 4. Disconnect the power window switch connector (A) and remove the screws from the grip base (B) and door panel (C).

Fastener Locations

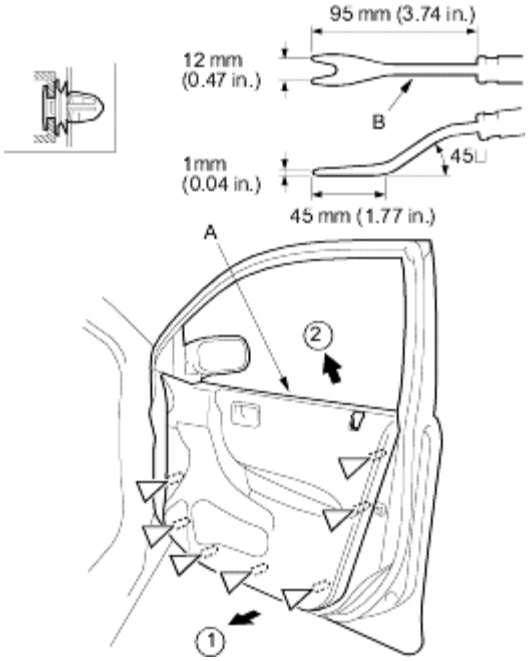
▶: Screw, 3



1. 5. Release the clips that hold the door panel (A) with a commercially available trim pad remover (B), then remove the door panel by pulling it upward. Remove the door panel with as little bending as possible to avoid creasing or breaking it.

Fastener Locations

▷: Clip, 7



2. 6. Install the door panel in the reverse order of removal and note these items:
   - Replace any damaged clips.
   - Make sure the connector is plugged in properly and the rod is connected properly.

Doors

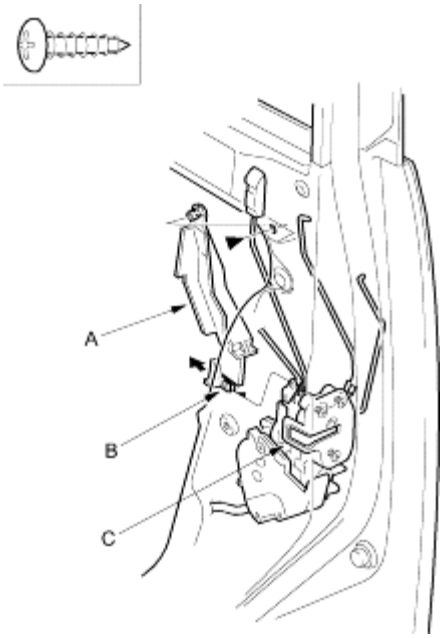
Front Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove these items:
   - Door panel (see page 20-144)
   - Plastic cover, as necessary (see page 20-140)
3. If equipped, remove the screw, pull out the lock rod protector (A) to release the hook (B) from the latch (C), then remove it.

Fastener Location

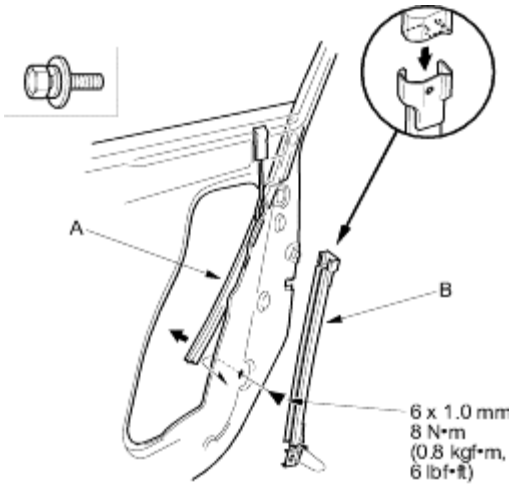
▶: Screw, 1



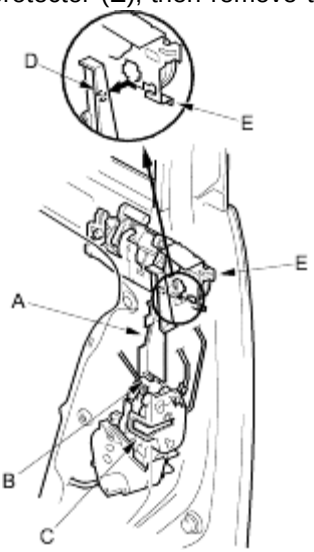
4. Pull the glass run channel (A) away as necessary and remove the bolts, then remove the centre lower channel (B) by pulling it downward.

Fastener Location

▶: Bolt, 1



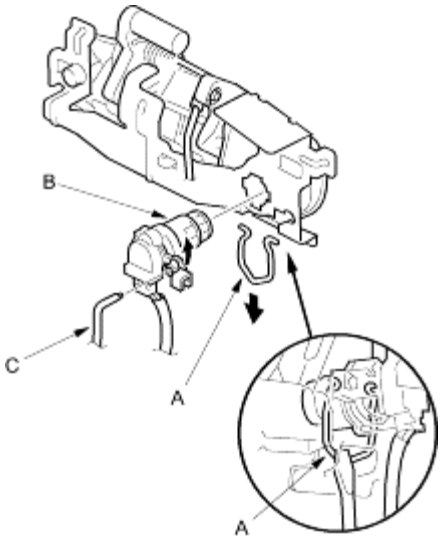
5. If equipped, pull out the bottom of the cylinder rod protector (A) to release the hook (B) from the latch (C) and release the upper hook (D) from the outer handle protector (E), then remove the protector.



Doors

Front Door Outer Handle Replacement

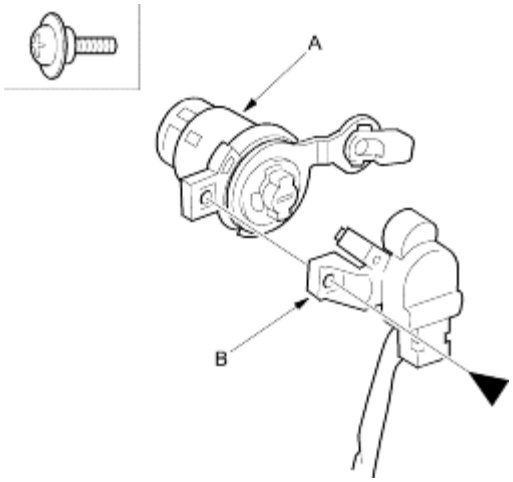
1. 6. On driver's and some passenger's: Release the retainer clip (A), then remove the lock cylinder (B). Disconnect the cylinder rod (C).



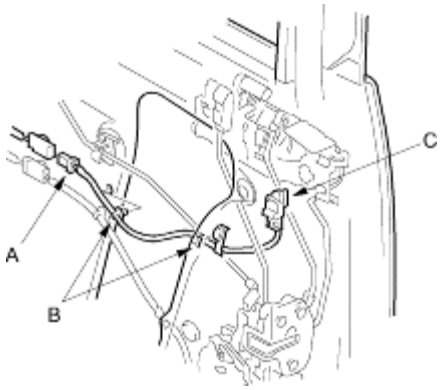
2. 7. With cylinder switch: Remove the screw, then separate the lock cylinder (A) and cylinder switch (B).

Fastener Location

▶: Screw, 1



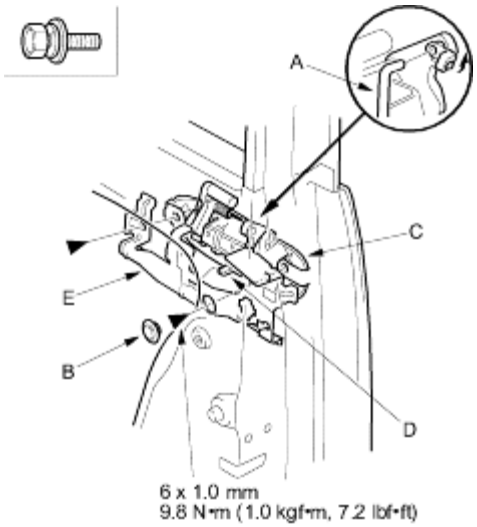
1. 8. With cylinder switch: Disconnect the cylinder switch connector (A) and detach the harness clips (B), then remove the cylinder switch (C).



2. 9. If equipped with a outer handle protector, disconnect the outer handle rod (A).

Fastener Locations

▶: Bolt, 2

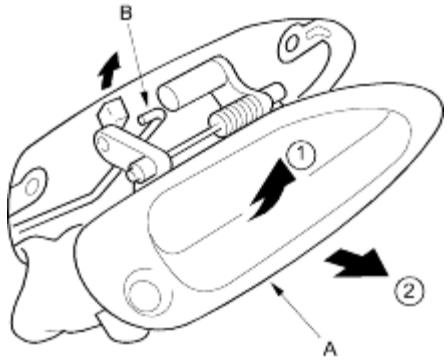


3. 10. Remove the maintenance cap (B), and remove the bolts securing the outer handle (C). If equipped, release the hook (D), then remove the outer handle protector (E).

Doors

Front Door Outer Handle Replacement (cont'd)

1. 11. With outer handle protector: Pull out the outer handle (A), then remove it.



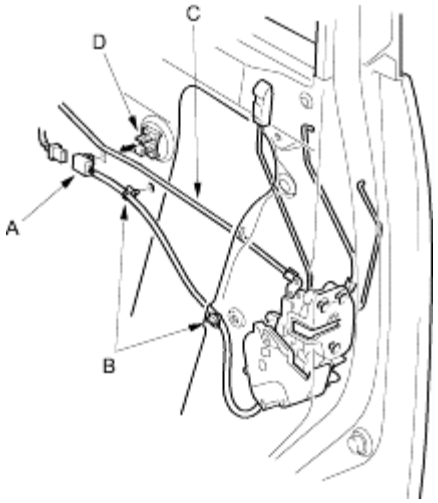
2. 12. Without outer handle protector: Pull out the outer handle (A), and disconnect the outer handle rod (B), then remove it.
13. Install the handle in the reverse order of removal and note these items:
- Make sure the cylinder switch harness is routed properly (for some models).
- Make sure the cylinder switch connector is plugged in properly (for some models) and each rod is connected securely.
- Make sure the door locks and opens properly.
- If equipped with a outer handle protector, when installing the lock cylinder, leave the outer door handle bolts loose so the inner protector does not interfere with the lock cylinder, then tighten the handle bolts.
- Install the lock cylinder retaining clip on the handle, then install the lock cylinder. Be sure the clip is fully seated in the slot on the lock cylinder.

NOTE: Put on gloves to protect your hands.

1. 1. Raise the glass fully.
2. Remove these items:
- Door panel (see page 20-144)
- Plastic cover, as necessary (see page 20-140)
- Lock rod protector, for some models (see step 3 on page 20-146)
- Centre lower channel (see step 4 on page 20-146)
- Cylinder rod protector, for some models (see step 5 on page 20-146)

2. 3. Disconnect the actuator connector(s) (A), and for some models, detach the harness clips (B) and actuator connector. Release the inner handle rod (C) from the rod holder (D).

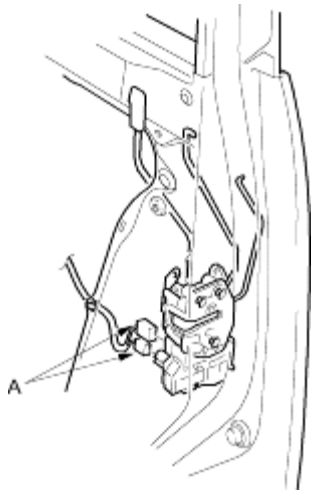
European models:



Doors

Front Door Latch Replacement

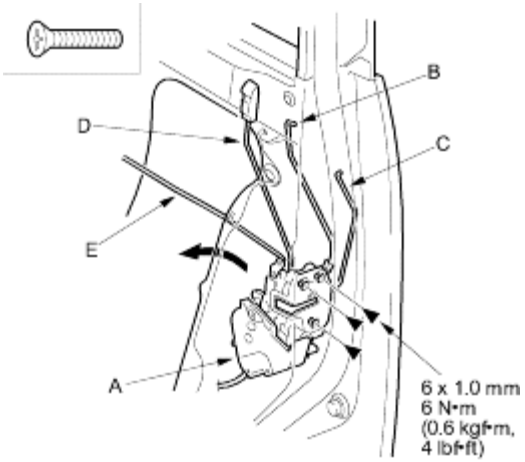
Except european models:



1. 4. Remove the screws, then remove the latch (A) through the hole in the door. Take care not to bend the outer handle rod (B), cylinder rod (C), lock rod (D) and inner handle rod (E).

Fastener Locations

▶: Screw, 3



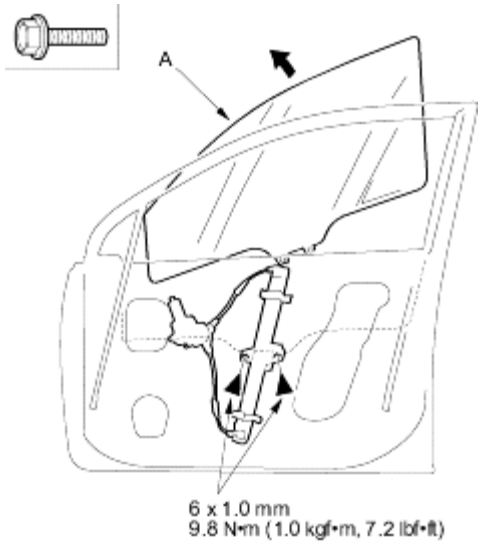
2. 5. Install the latch in the reverse order of removal and note these items:
   - Make sure the actuator connectors are plugged in properly, and each rod is connected securely.
   - Make sure the door locks and opens properly.

NOTE: Put on gloves to protect your hands.

1. 1. Remove these items:
   - Door panel (see page 20-144)
   - Plastic cover, as necessary (see page 20-140)
2. 2. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

▶: Bolt, 2



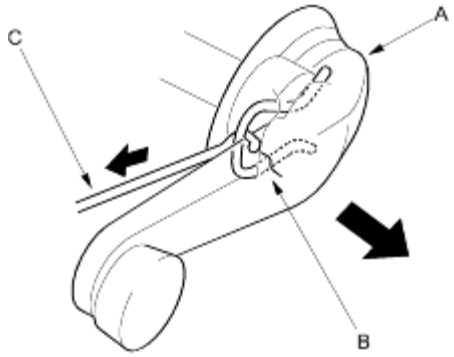
Doors

Rear Door Panel Removal/Installation

Special Tools Required

Trim pad remover, Snap-On # A 177 or equivalent, commercially available.

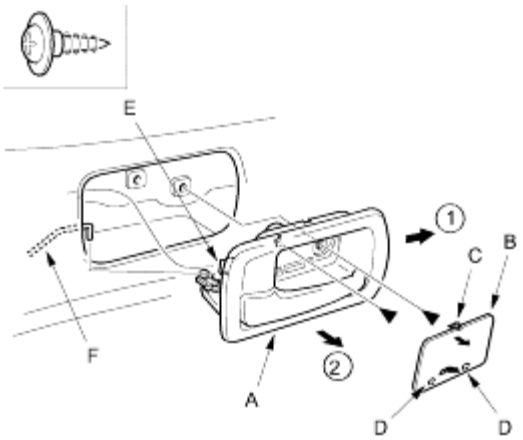
1. 1. If applicable, remove the regulator handle (A) by pulling the clip (B) out with a wire hook (C).



2. 2. Remove the inner handle (A). Take care not to scratch the door panel.
   1. Pry out on the upper portion of the cover (B) to release the hooks (C, D), then remove the cover.
   2. Remove the screws.
   3. Pull out the inner handle forward and out half-way to release the hook (E).
   4. Disconnect the inner handle rod (F).

Fastener Locations

▶: Screw, 2

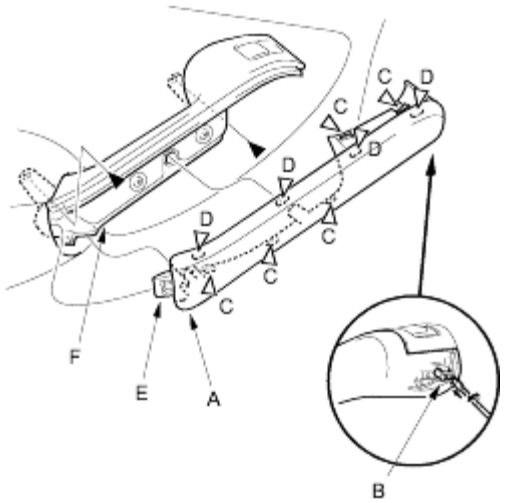


1. 3. Remove the grip cover (A).
   1. Using a flat-tip screwdriver wrapped with protective tape, pry out the front edge of the cover to release the clip (B).
   2. Pry out along the bottom to release the lower hooks (C).
   3. Pry out along the top to release the upper hooks (D), and release the clip (E) while pulling the cover forward.

Fastener Locations

C ▷: Hook, 5	D ▷: Hook, 4	▶: Screw, 2





2. 4. Remove the screws from the grip base (F).

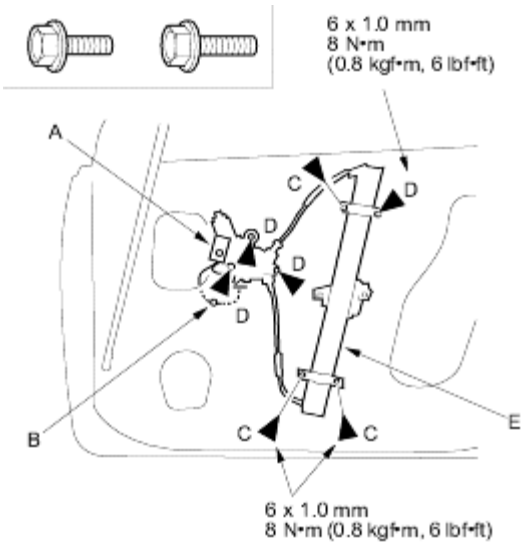
Doors

Front Door Glass and Regulator Replacement

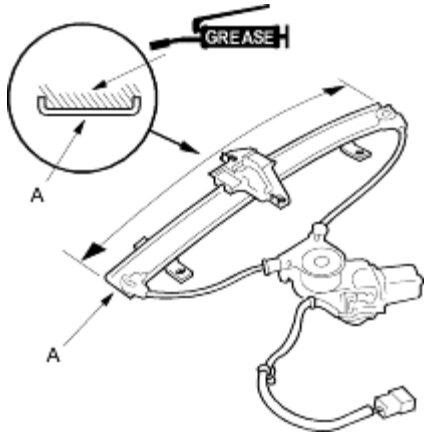
1. 3. Disconnect and detach the connector (A) and harness clip (B) from the door.

Fastener Locations

C ▶: Bolt, 3
D ▶: Bolt, 4



2. 4. Remove the bolts (C) and loosen the bolts (D), then remove the regulator (E) through the hole in the door.
5. Grease all the sliding surfaces of the regulator (A) where shown.



1. 6. Install the glass and regulator in the reverse order of removal and note these items:
   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-162).

Doors

Front Door Glass Outer Weatherstrip Replacement

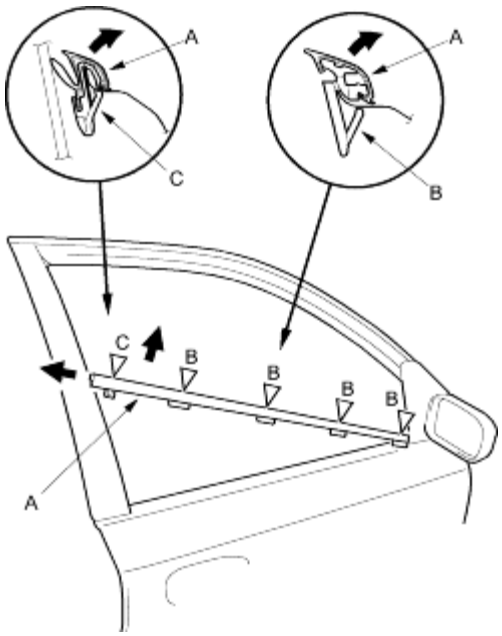
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. 1. Starting at the rear, pry the door glass outer weatherstrip (A) up to detach the clips (B, C) and pull the weatherstrip rearward, then remove the weatherstrip.

Fastener Locations

B ▷: Clip, 4 C ▷: Clip, 1



2. 2. Install the weatherstrip in the reverse order of removal and replace any damaged clips.

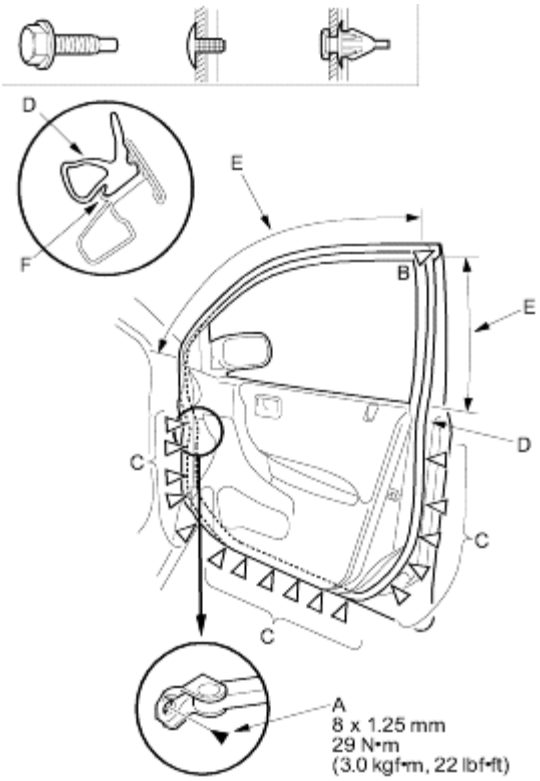
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. 1. At the front pillar, remove the door stop mounting bolt (A).

Fastener Locations

A ▶: Bolt, 1 B ▷: Clip, 1 C ▷: Clip, 17



2. 2. Detach the clips (B, C) and pull out the door weatherstrip (D) from the holder areas (E), then remove it.
3. Install the weatherstrip in the reverse order of removal and note these items:
   - Replace any damaged clips.
   - Make sure the weatherstrip is installed in the holder (F) securely.
   - Apply liquid thread lock to the door stop mounting bolt before installation.
   - Check for water leaks (see step 7 on page 20-163).

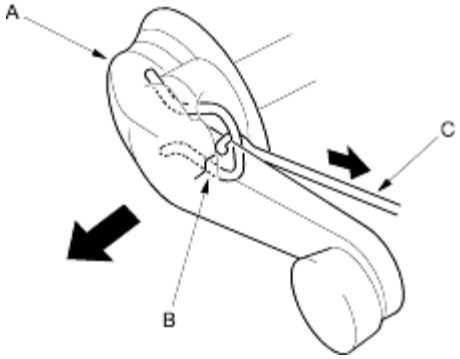
Doors

Rear Door Panel Removal/Installation

Special Tools Required

Trim pad remover, Snap-on # A 177 or equivalent, commercially available.

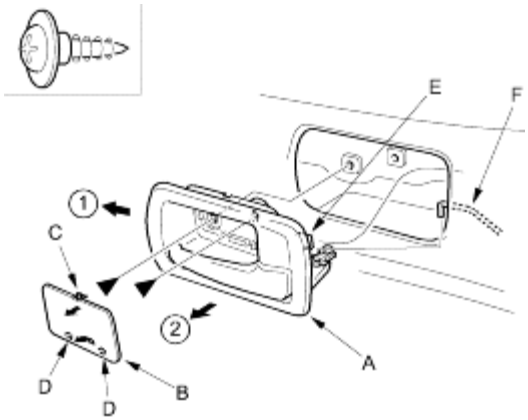
1. 1. Lower the glass fully.
   2. If applicable, remove the regulator handle (A) by pulling the clip (B) out with a wire hook (C).



2. 3. Remove the inner handle (A). Take care not to scratch the door panel.
      1. Pry out on the upper portion of the cover (B) to release the hooks (C and D), then remove the cover.
      2. Remove the screws.
      3. Pull out the inner handle forward and out half-way to release the hook (E).
      4. Disconnect the inner handle rod (F).

Fastener Locations

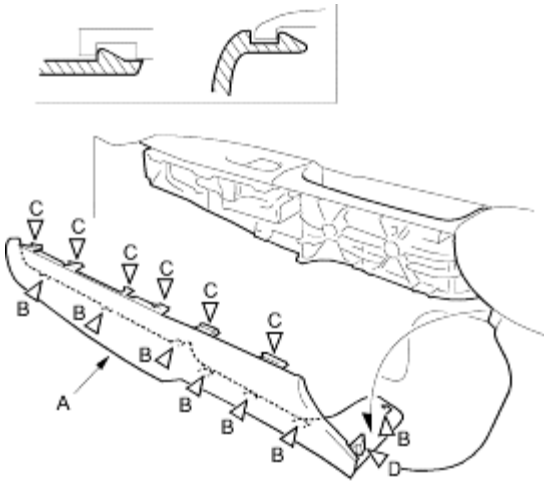
▶: Screw, 2



1. 4. Remove the grip cover (A).
      1. Using a flat-tip screwdriver wrapped with protective tape, insert a flat-tip screwdriver between the cover and door panel at the front edge, then pry out the cover.
      2. Pry out along the bottom to release the lower tabs (B).
      3. Pry out along the top to release the upper hooks (C), and rear hook (D).

Fastener Locations

B ▷: Tab, C, D ▷: Hook, 7 7



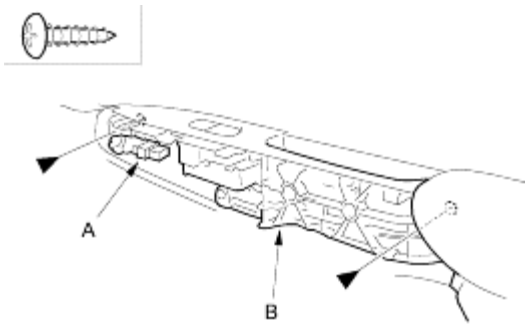
Doors

Rear Door Panel Removal/Installation (cont'd)

1. 5. Disconnect the power window switch connector (A) (for some models) and remove the screws from the grip base (B).

Fastener Locations

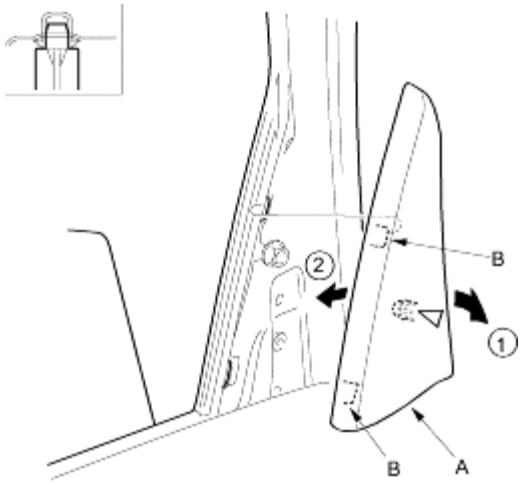
▶: Screw, 2



2. 6. Pull out the rear edge on the quarter inner trim (A) to release the clip and pull out the front edge forward to release the hooks (B), then remove the trim.

Fastener Location

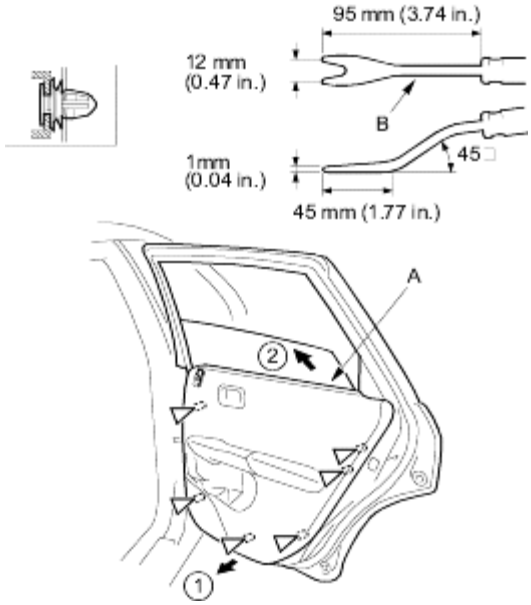
▷: Clip, 1



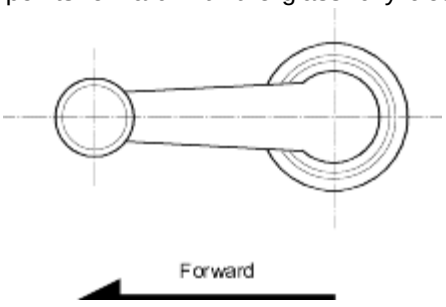
1. 7. Release the clips that hold the door panel (A) with a commercially available trim pad remover (B), then remove the door panel by pulling it upward. Remove the door panel with as little bending as possible to avoid creasing or breaking it.

Fastener Locations

▷: Clip, 6



2. 8. Install the door panel in the reverse order of removal and note these items:
   - Replace any damaged clips.
   - Make sure the connector is plugged in properly (for some models) and the rod is connected properly.
   - If applicable, install the regulator handle so it points forward with the glass fully closed.



Doors

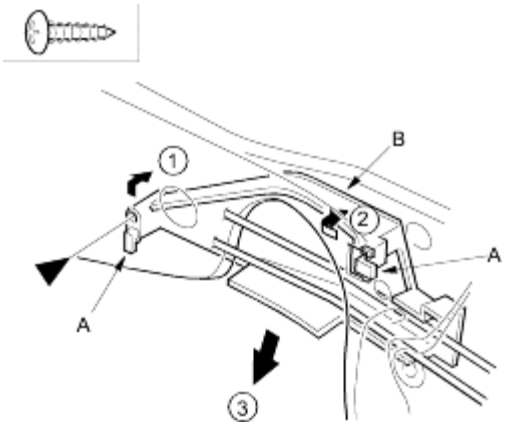
Rear Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. 1. Raise the glass fully.
   2. Remove these items:
      - Door panel (see page 20-152)
      - Plastic cover, as necessary (see page 20-142)
2. 3. If equipped, remove the screw and release the hooks (A), then remove the rod protector (B).

Fastener Location

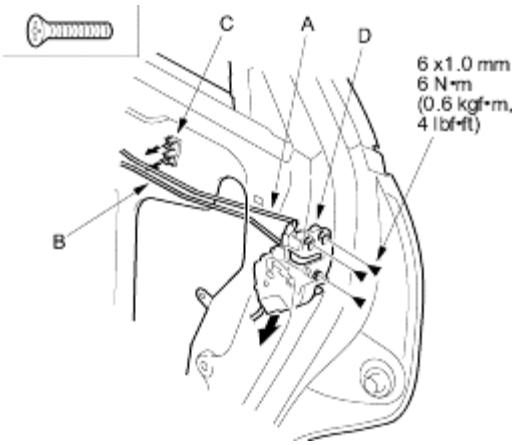
▶: Screw, 1



1. 4. Release the inner handle rod (A) and lock rod (B) from the rod holder (C), and remove the screws securing the latch (D), then move the latch down. Take care not to bend any of the rods.

Fastener Locations

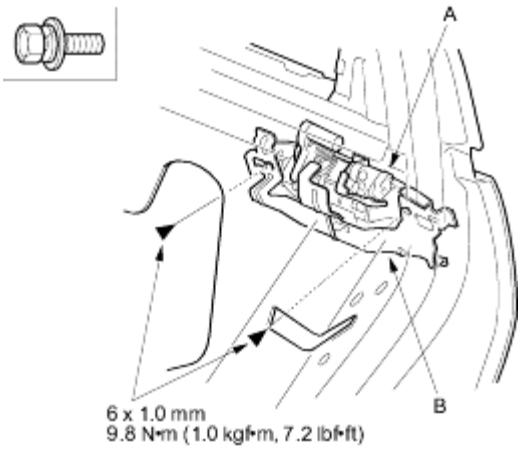
▶: Screw, 3



2. 5. Remove the bolts securing the outer handle (A) and outer handle protector (B) (for some models).

Fastener Locations

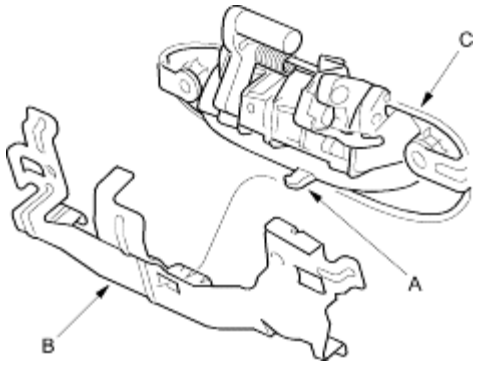
▶: Bolt, 2



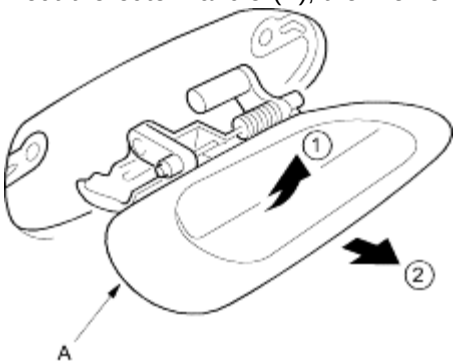
Doors

Rear Door Outer Handle Replacement (cont'd)

6. If equipped, release the hook (A), then remove the outer handle protector (B) from the outer handle (C).



7. Pull out the outer handle (A), then remove it.

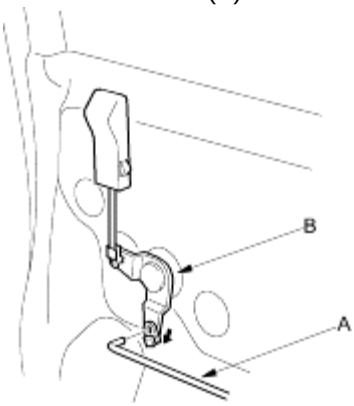


8. Install the handle in the reverse order of removal and make sure the door locks and opens properly.

Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove these items:
   - Door panel (see page 20-152)
   - Plastic cover, as necessary (see page 20-142)
   - Rod protector, for some models (see step 3 on page 20-154)
3. Disconnect the lock rod (A) from the lock crank (B).



Doors

Rear Door Latch Replacement (cont'd)

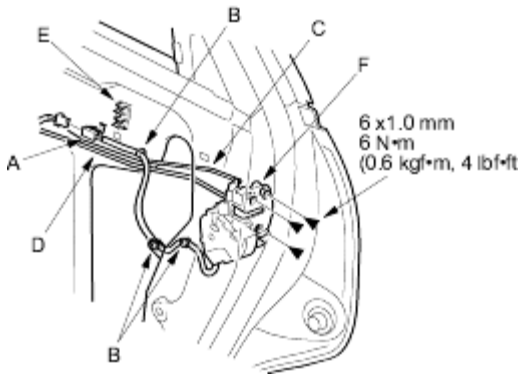
1. 4. Disconnect the actuator connector(s) (A) and for some models, detach the harness clips (B) and actuator connector. Release the inner handle rod (C) and lock rod (D) from the rod holder (E) and remove the screws securing the latch (F). Take care not to bend any of the rods.

Fastener Locations

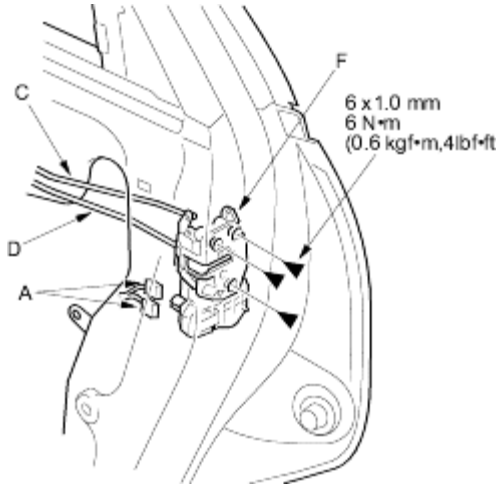
▶: Bolt, 3



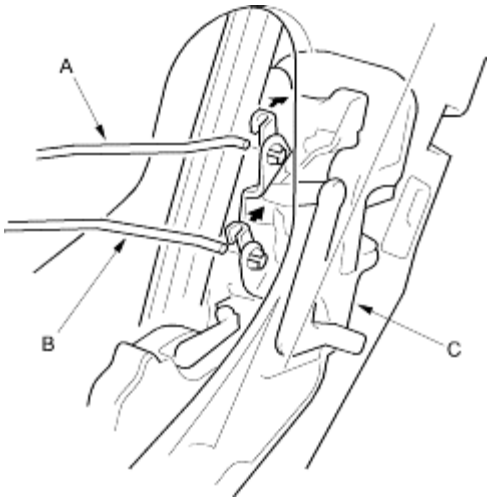
European models:



Except european models:



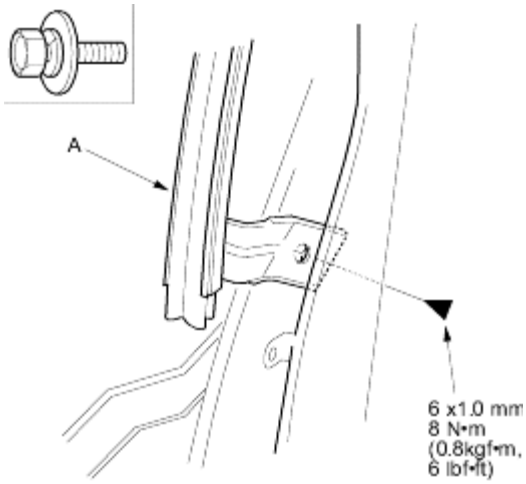
1. 5. Disconnect the inner handle rod (A) and lock rod (B) from the latch (C).



2. 6. Remove the bolt securing the rear lower channel (A).

Fastener Location

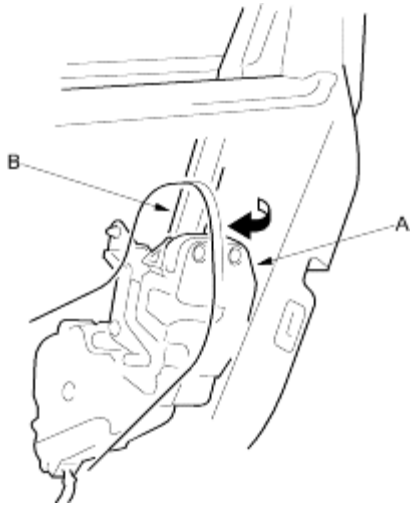
▶: Bolt, 1



Doors

Rear Door Latch Replacement (cont'd)

1. 7. Move the latch (A) through the gap between the rear lower channel (B) and door, then remove it.



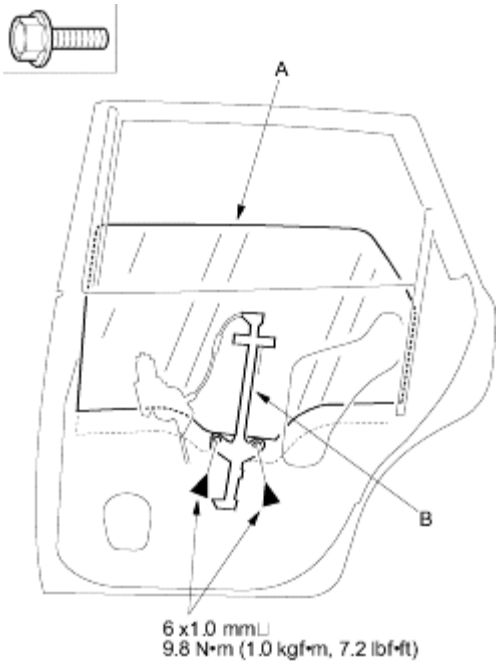
2. 8. Install the latch in the reverse order of removal and note these items:
   - Make sure the connector(s) is plugged in properly and each rod is connected securely.
   - Make sure the door locks and opens properly.

NOTE: Put on gloves to protect your hands.

1. 1. Remove these items:
   - Door panel (see page 20-152)
   - Plastic cover, as necessary (see page 20-142)
   - Rear pillar trim (see page 20-160)
2. 2. Carefully move the glass (A) until you can see the bolts, then remove them. Remove the glass from the regulator (B) and carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

▶: Bolt, 2



Doors

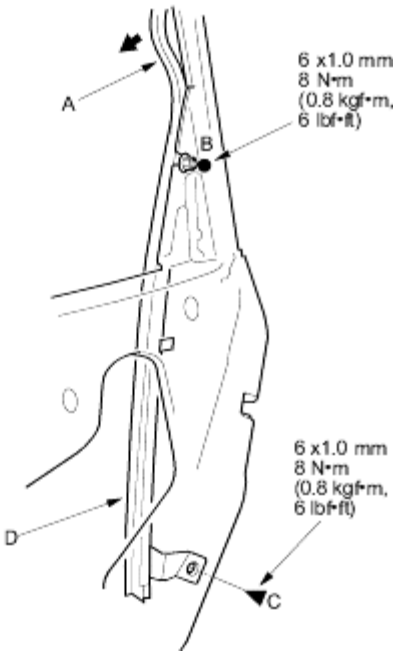
Rear Door Glass and Regulator Replacement (cont'd)

1. 3. Pull the glass run channel (A) away as needed. Loosen the nut (B) and remove the bolt (C) securing the rear lower channel (D).

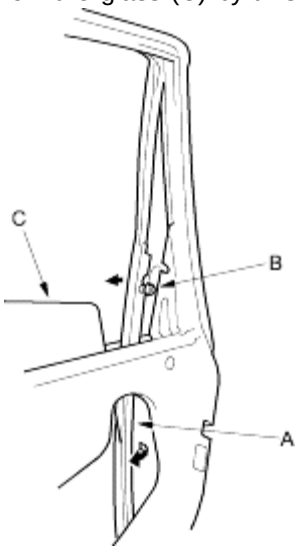
Fastener Locations

B ●: Nut, C ▶:
1 Bolt,1

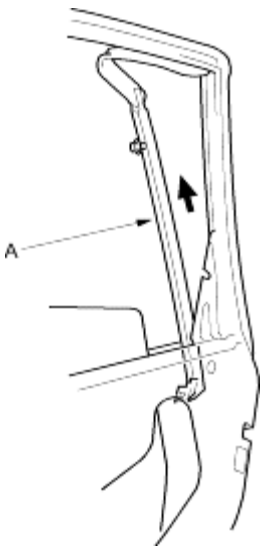




1. 4. Pull the rear lower channel (A) forward, then remove the nut portion (B) from the door and release the channel from the glass (C) by twisting the channel.



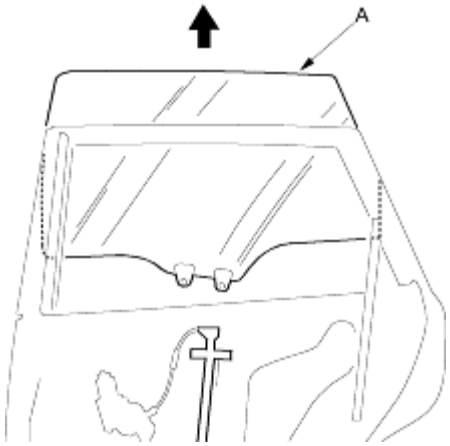
2. 5. Pull up the rear lower channel (A), then remove it out through the window slot.



Doors

Rear Door Glass and Regulator Replacement (cont'd)

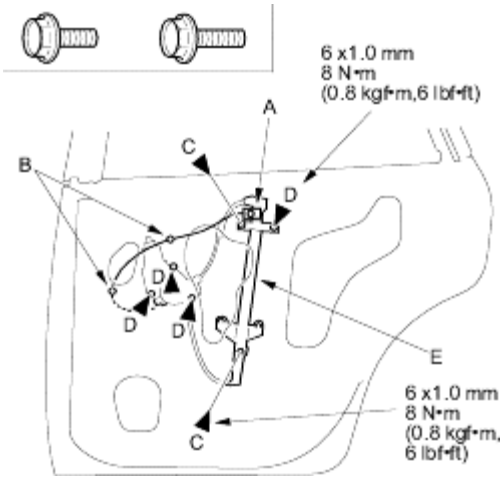
6. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.



7. Power window: Disconnect and detach the connector (A) and harness clips (B) from the door.

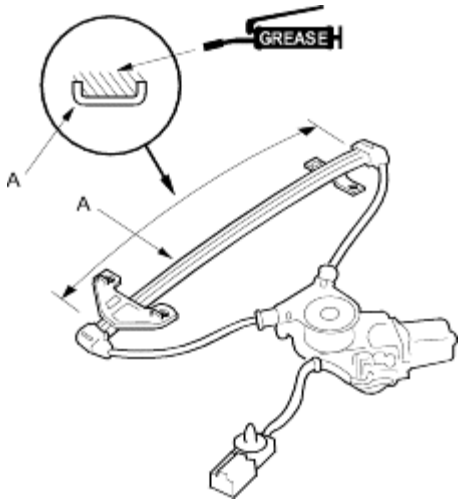
Fastener Locations

C ▶: Bolt, 2 D ▶: Bolt, 4



8. Remove the bolts (C) and loosen the bolts (D), then remove the regulator (E) through the hole in the door. Power window is shown, manual window is similar.

9. Grease all the sliding surfaces of the regulator (A) where shown.



10. Install the glass and regulator in the reverse order of removal, and note these items:
    - Roll the glass up and down to see if it moves freely without binding.
    - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
    - Adjust the position of the glass as necessary (see page 20-162).

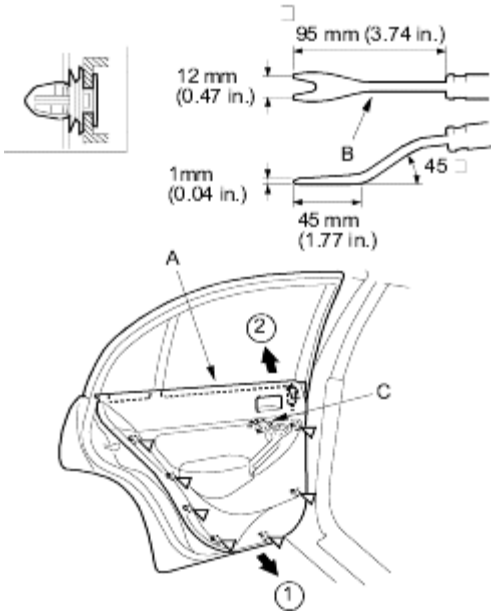
Doors

Rear Door Panel Removal/Installation (cont'd)

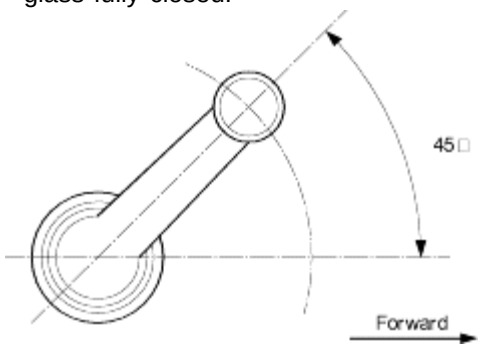
1. 5. Release the clips hold the door panel (A) with a commercially available trim pad remover (B), then remove the door panel by pulling it upward, and disconnecting the power window switch connector (C) (for some models). Remove the door panel with as little bending as possible to avoid creasing or breaking it.

   Fastener Locations

   ▷: Clip, 7



2. 6. Install the door panel in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the connectors are plugged in properly, and the rod is connected properly.
   - If applicable, install the regulator handle so it points forward and up at a 45° angle with the glass fully closed.

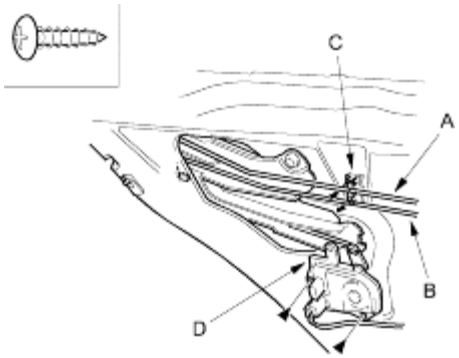


NOTE: Put on gloves to protect your hands.

1. 1. Raise the glass fully.
   2. Remove these items:
      - Door panel (see page 20-15)
      - Plastic cover, as necessary (see page 20-5)
2. 3. Release the inner handle rod (A) and lock rod (B) from the rod holder (C), and with power door lock, remove the screws, then remove the actuator (D) from the door.

   Fastener Locations

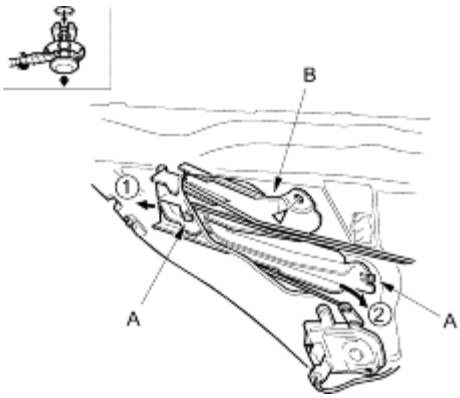
   ▶: Screw, 2



3. 4. If applicable, remove the clip, and release the hooks (A), then remove the rod protector (B).

   Fastener Location

   ▷: Clip, 1



Doors

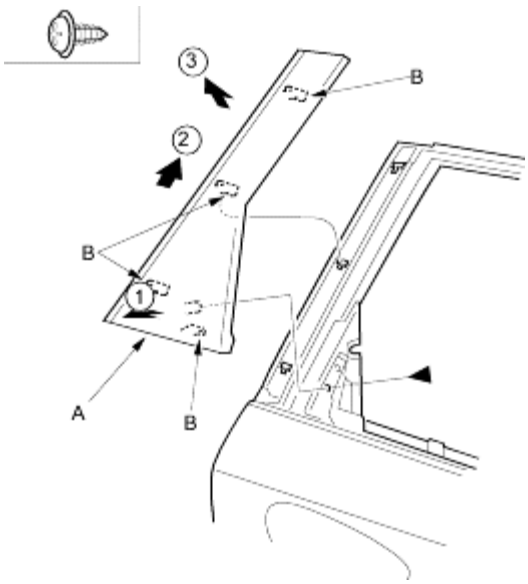
Rear Door Rear Pillar Trim Replacement

NOTE: Take care not to scratch the door.

1. 1. Remove the door glass outer weatherstrip.
   2. Lower the glass fully.
   3. Remove the quarter inner trim (see step 6 on page 20-153).
   4. Remove the screw, pull up the rear pillar trim (A) to release the hooks (B), then remove the trim.

Fastener Location

▶: Screw, 1



2. 5. Install the trim in the reverse order of removal.

20-160 Rear Door Glass Outer Weatherstrip Replacement

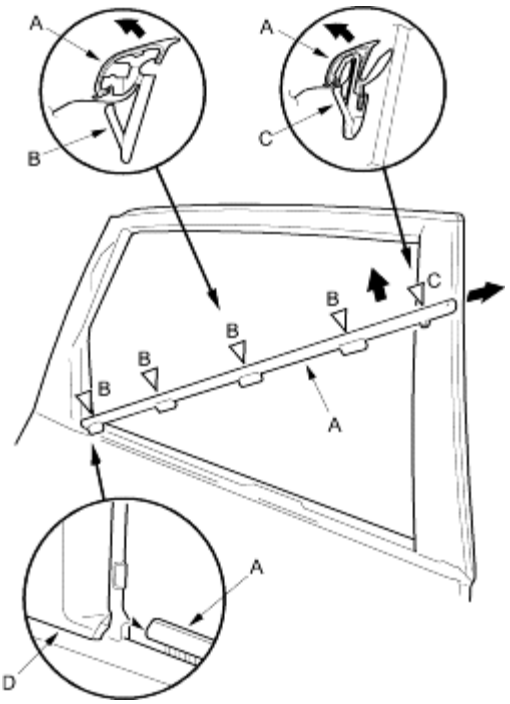
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. 1. Starting at the front, pry the door glass outer weatherstrip (A) up to detach the clips (B, C), and pull the weatherstrip forward to release it from the rear pillar trim (D), then remove the weatherstrip.

Fastener Location

B ▷: Clip, 4 C ▷: Clip, 1



2. 2. Install the weatherstrip in the reverse order of removal and replace any damaged clips.

Doors

Rear Door Weatherstrip Replacement

NOTE:

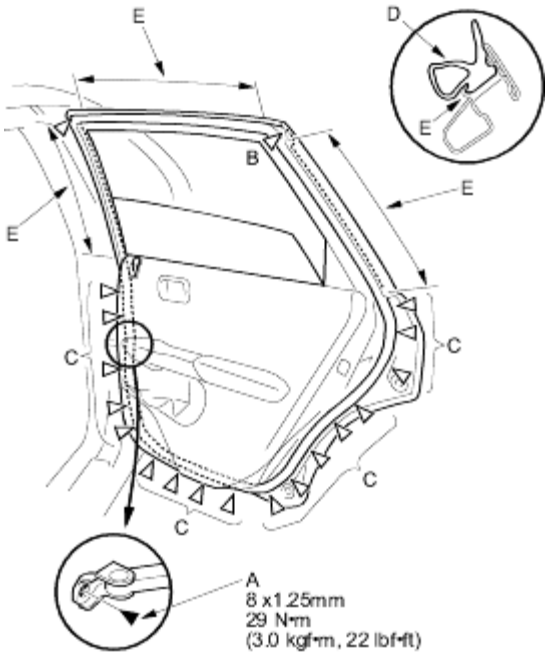
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. 1. At the centre pillar, remove the door stop mounting bolt (A).

Fastener Location

A ▶: Bolt, B ▷: Clip, C ▷: Clip, 17
1 1

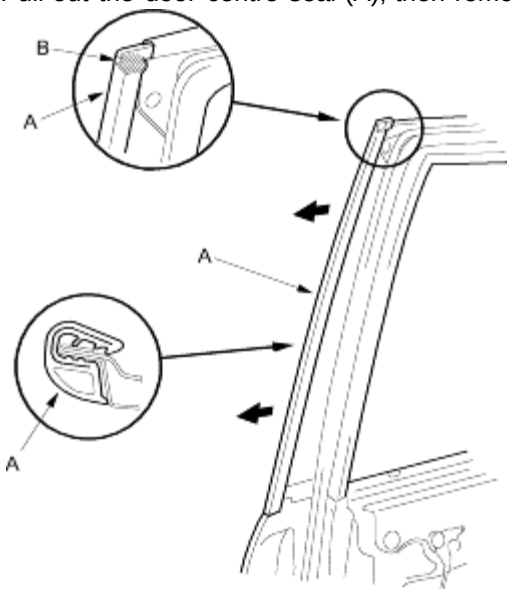




2. 2. Detach the clips (C), and pull out the door weatherstrip (D) from the holder areas (E), then remove it.
   3. Install the weatherstrip in the reverse order of removal and note these items:
      - Replace any damaged clips.
      - Make sure the weatherstrip is installed in the holder (F) securely.
      - Apply liquid thread lock to the door stop mounting bolt before installation.
      - Check for water leaks (see step 7 on page 20-163).

NOTE: Take care not to scratch the door.

1. 1. Pull out the door centre seal (A), then remove it.



2. 2. Clean the top edge of the door with a sponge dampened in alcohol.
   3. Apply clear sealant (B) (Cemedine P/N 08712-0004, or equivalent) to the into the top edge of the seal as shown.
   4. Align the seal with the top edge of the door, then install the seal securely.

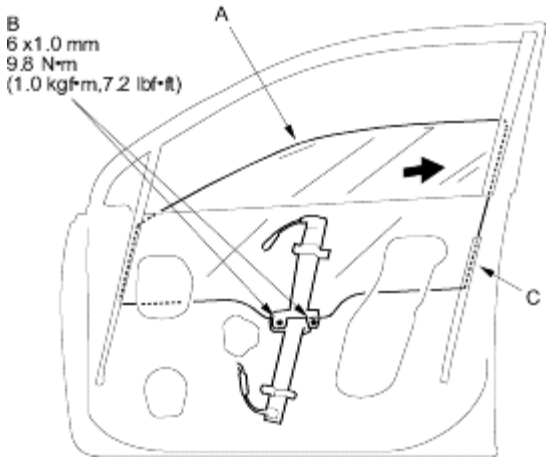
Doors

Front and Rear Door Glass Adjustment

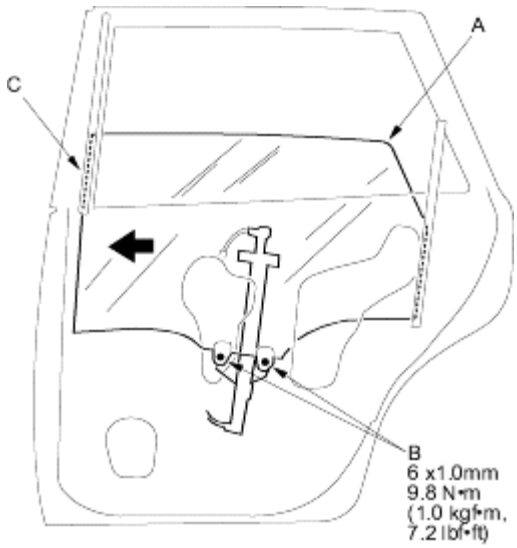
NOTE: Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.

1. Place the vehicle on a firm, level surface.
2. Remove these items:
   - Door panel, front door (see page 20-144), rear door (see page 20-152)
   - Plastic cover, front door (see page 20-140), rear door (see page 20-142)
3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

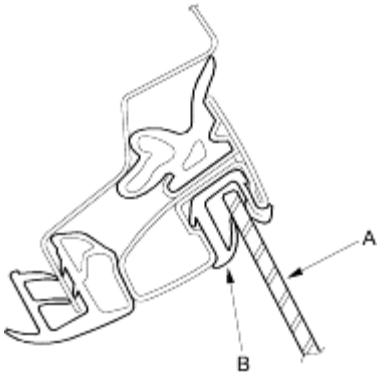
Front:



Rear:



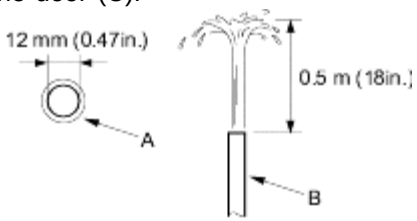
4. Push the glass (A) against the channel (C), then tighten the glass mounting bolts.
5. Check that the glass moves smoothly.
6. Raise the glass fully and check for gaps. Also check that the glass (A) contacts the glass run channel (B) evenly.

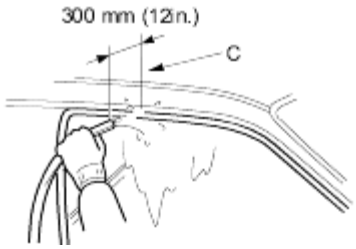


Doors

Front and Rear Door Glass Adjustment (cont'd)

1. 7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:
   - Use a 12 mm (1/2 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door (C).





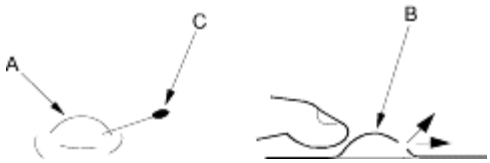
2. 8. Attach the plastic cover and install the door panel, front door (see page 20-144), rear door (see page 20-152).

Doors

Door Channel Tape Replacement Process

NOTE:

- This procedure is a general description of the door channel tape replacement process. For details about installation, front door outer channel tape (see page 20-165) and rear door outer channel tape (see page 20-166).
- Keep dust away from the working area.
- When working at lower temperatures, heat the door channel and door channel tape with a hair dryer.
- Door channel: about 15°C (59° F).
- Door channel tape: about 30°C (86°F).
- When heating the door channel tape, heat it evenly and gradually to prevent deformation.
- When pressing the door channel tape, slowly press it from the corner to prevent air bubbles and wrinkles.
- If there are air bubbles (A) in the door channel tape (B), prick them with a pin (C), then release the air with your finger or a plastic squeegee.
- If the air bubble is more than 10 mm (0.4 in.) in diameter, peel up the door channel tape, then reapply it.



1. 1. The following tools are required to replace the door channel tape:
   - Plastic squeegee
   - Alcohol
   - Sponge or Shop towel
   - Hair dryer
   - Pin
   2. Remove these items:

   Front door outer channel tape replacement
   - Power mirror (see page 20-170)
   - Door glass outer weatherstrip (see page 20-151)
   - Glass run channel, as necessary (see page 20-140)
   - weatherstrip (see page 20-151)

   Rear door outer channel tape replacement
   - Rear pillar trim (see page 20-160)
   - Glass run channel, as necessary (see page 20-142)
   - Door weatherstrip (see page 20-161)
   - Centre seal (see page 20-161)
2. 3. Slowly peel up the old door channel tape while heating it with a hair dryer.
   4. Clean the door channel bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
   5. Attach the door channel tape:
      1. Peel the edge of the adhesive backing from the channel tape.
      2. Fit the door channel tape to the door channel.
      3. Apply the door channel tape to the door channel while peeling the adhesive backing from it a little at a time. Check that the channel tape is parallel with the door channel.
      4. Push firmly on the door channel tape with a plastic squeegee (felt side).

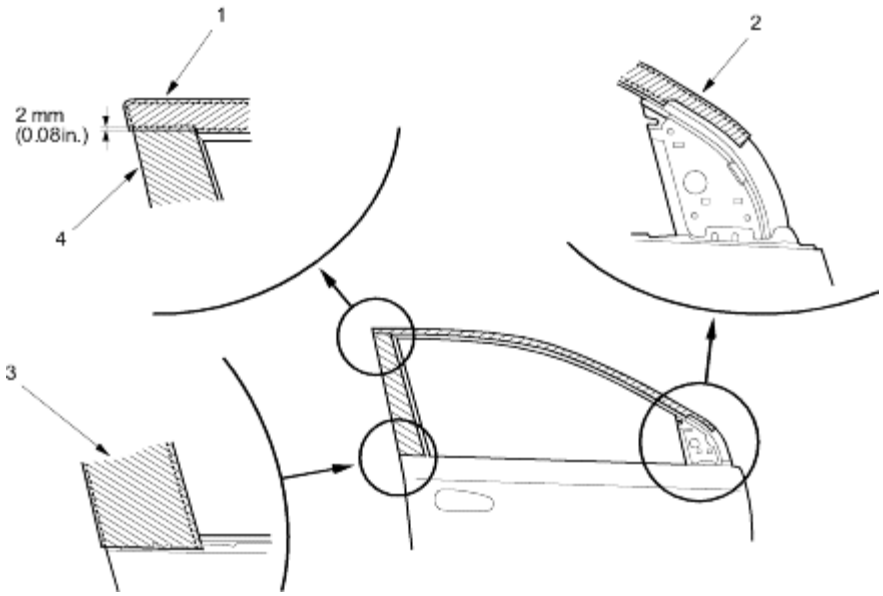
   NOTE: To prevent air bubbles, slowly press the door channel tape around the door frame corner.
3. 6. As necessary, repeat the preceding steps.
   7. Reinstall all remaining removed parts.
   8. Check that the body colour on the door channel is covered by the door channel tape.
   9. Check for water leaks (see step 7 on page 20-163).

Doors

Front Door Upper and Centre Outer Channel Tape Installation

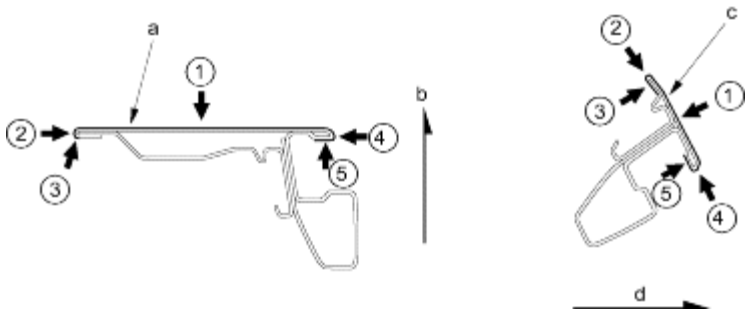
NOTE: Familiarise yourself with the channel tape replacement process (see page 20-164).

Attachment Point (Reference):



1. FRONT DOOR UPPER OUTER CHANNEL TAPE
2. FRONT DOOR UPPER OUTER CHANNEL TAPE
3. FRONT DOOR CENTRE OUTER CHANNEL TAPE
4. FRONT DOOR CENTRE OUTER CHANNEL TAPE

NOTE: Press in numbered sequence:



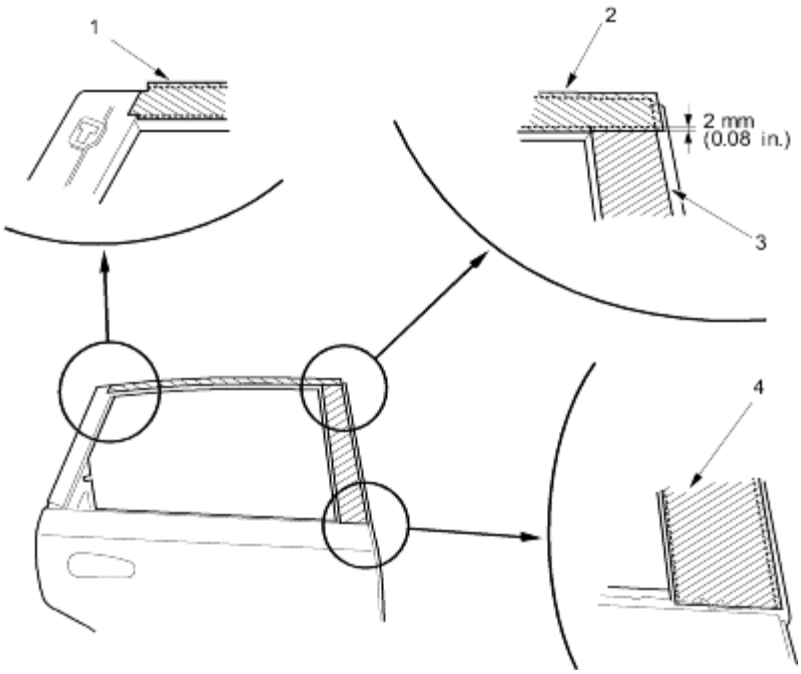
A.
A. FRONT DOOR CENTRE OUTER CHANNEL TAPE
B. Outside
C. FRONT DOOR UPPER OUTER CHANNEL TAPE
D. Outside

Doors

Rear Door Roof and Centre Outer Channel Tape Installation

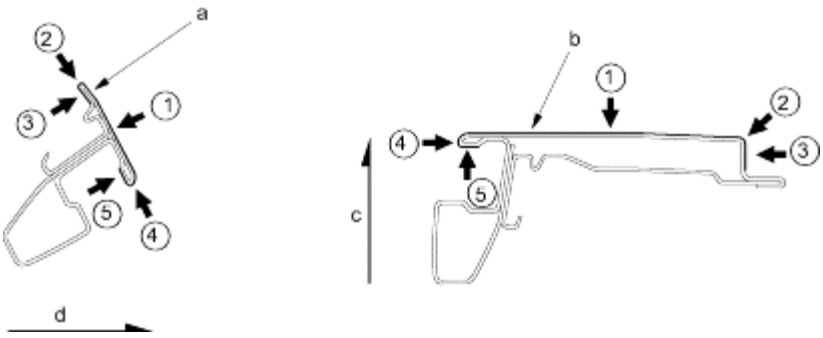
NOTE: Familiarise yourself with the glass replacement process (see page 20-164).

Attachment Point (Reference):



1. REAR DOOR ROOF OUTER CHANNEL TAPE
2. REAR DOOR ROOF OUTER CHANNEL TAPE
3. REAR DOOR CENTRE OUTER CHANNEL TAPE
4. REAR DOOR CENTRE OUTER CHANNEL TAPE

NOTE: Press in numbered sequence:



a.
a. REAR DOOR ROOF OUTER CHANNEL TAPE
b. REAR DOOR CENTRE OUTER CHANNEL TAPE
c. Outside
d. Outside

Doors

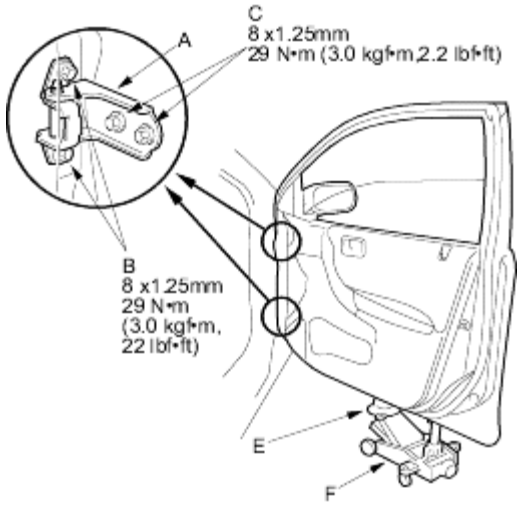
Front and Rear Door Position Adjustment

SRS components are located in the centre pillar bottom area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

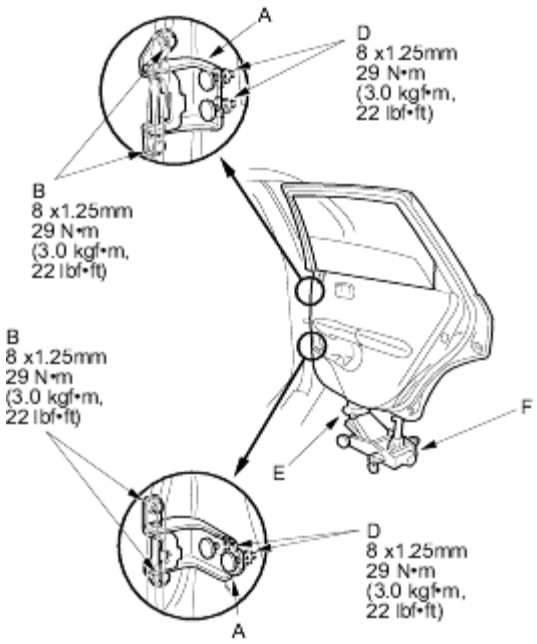
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear and bottom door edges and the body. Check that the door and body edges are parallel. Before adjusting, replace the mounting bolts.

1. 1. Place the vehicle on a firm, level surface when adjusting the doors.
   2. Adjust at the hinges (A):
      - Loosen the door mounting bolts (B) slightly and move the door in or out until it's flush with the body.
      - On the front door: Remove the front inner fender (see page 20-259) and front fender fairing (see page 20-260). Loosen the hinge mounting bolts (C) slightly and move the door backward or forward, up or down as necessary to equalise the gaps.
      - On the rear door: Remove the centre pillar lower trim (see page 20-206) and remove the front seat belt and retractor (see page 23-15) and the plug seal from the body. Loosen the hinge mounting nuts (D) slightly and move the door backward or forward, up or down as necessary to equalise the gaps.
      - Place a shop towel (E) on the jack (F) to prevent damage to the door when adjusting the door.

Front door:



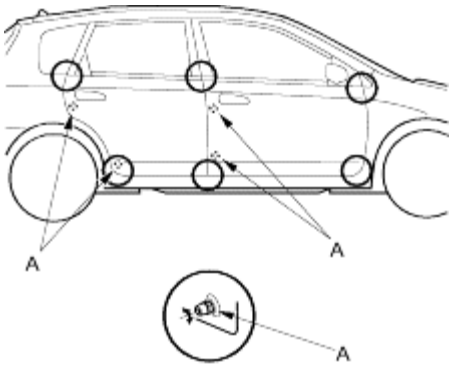
Rear door:



Doors

Front and Rear Door Position Adjustment (cont'd)

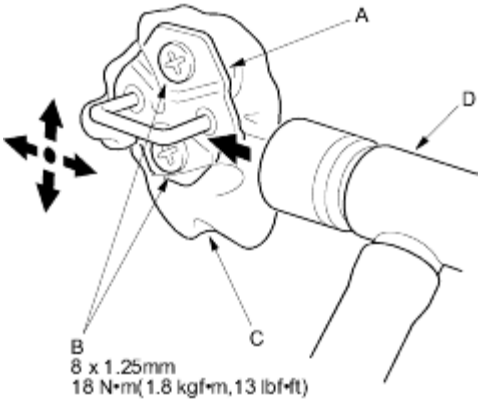
1. 3. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.



2. 4. Apply touch-up paint to the hinge mounting bolts and around the hinges.
   5. Check for water leaks (see step 7 on page 20-163).

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker nuts are fixed, but the striker can be adjusted slightly up or down and in or out.

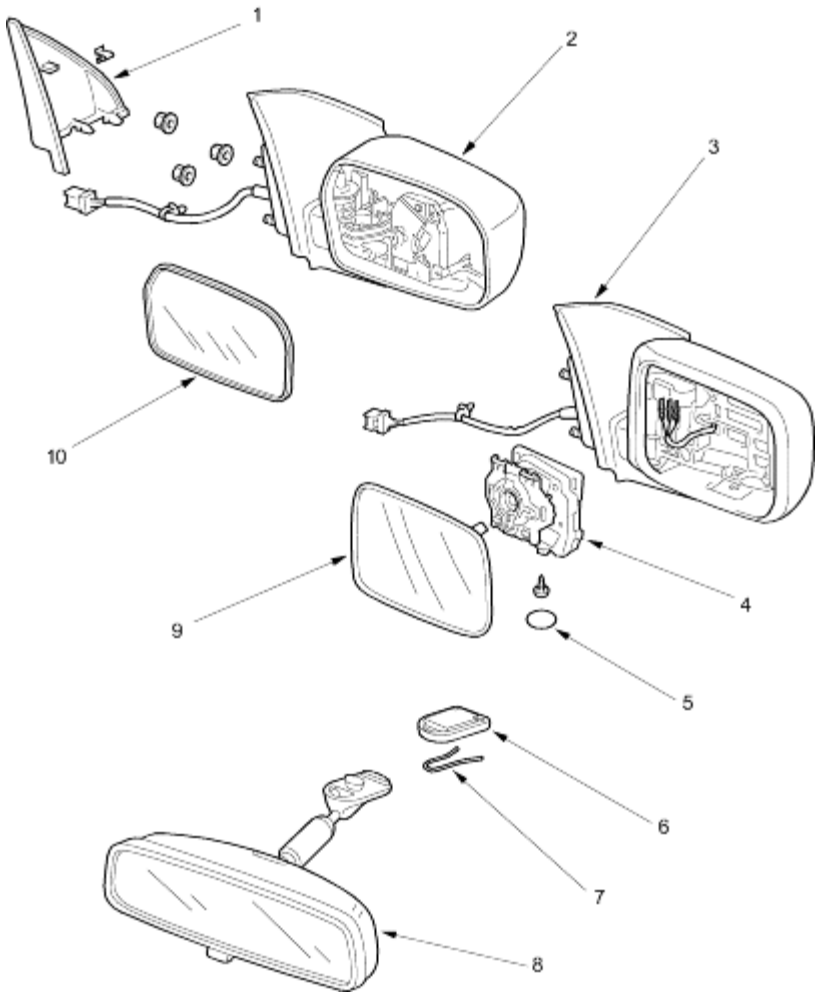
1. 1. Loosen the screws (B), then insert a shop towel (C) between the body and striker.



2. 2. Lightly tighten the screws.
   3. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (D). Do not tap the striker too hard.
   4. Loosen the screws and remove the shop towel.
   5. Lightly tighten the screws.
   6. Hold the outer handle out and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws and recheck.

Mirrors

Component Location Index



1. MIRROR MOUNT COVER
2. POWER MIRROR
   Replacement, page 20-170
3. POWER MIRROR
   (Large type)
   Replacement, page 20-170
4. ACTUATOR
5. HOSE SEAL
6. MOUNT
7. SPRING
8. REARVIEW MIRROR
   Replacement, page 20-173
9. MIRROR HOLDER
   (Large type mirror)
   Replacement, page 20-172
10. MIRROR HOLDER
    Replacement, page 20-171

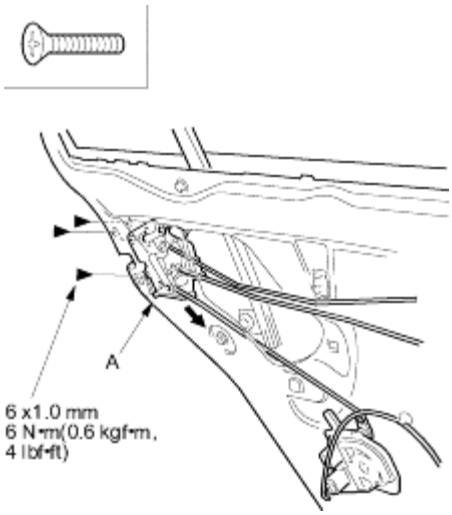
Doors

Rear Door Outer Handle Replacement (cont'd)

1. 5. Remove the screws securing the latch (A), then move the latch down. Take care not to bend any of the rods.

Fastener Locations

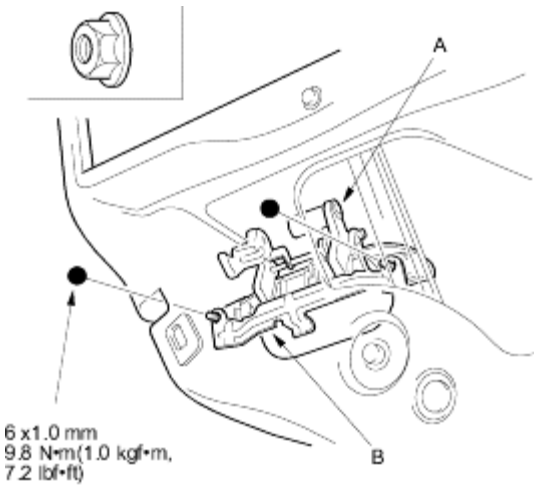
▶: Screw, 3



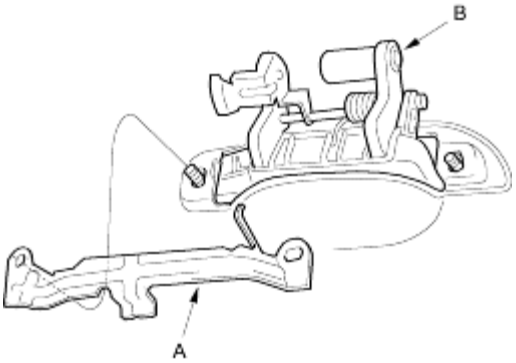
2. 6. Remove the nuts securing the outer handle (A) and outer handle protector (B) (for some models).

Fastener Locations

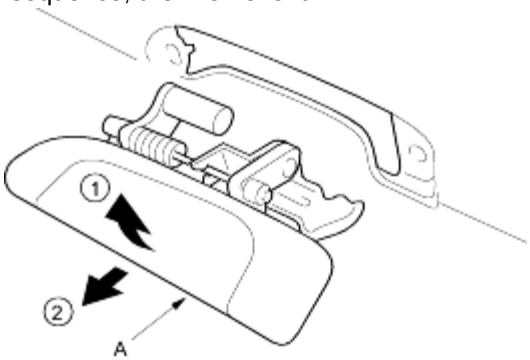
●: Nut, 2



1. 7. For some models: Remove the outer handle protector (A) from the outer handle (B).



2. 8. Pull out the outer handle (A) in the numbered sequence, then remove it.



3. 9. Install the handle in the reverse order of removal, and note these items:
   - Make sure each rod is connected securely.
   - Make sure the door locks and opens properly.

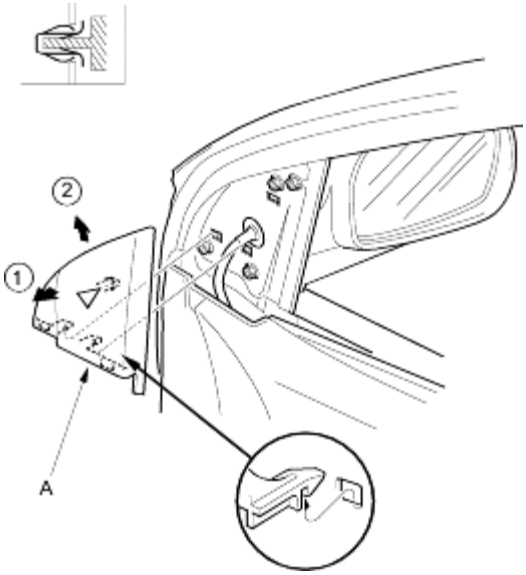
Mirrors

Power Mirror Replacement

1. 1. Lower the door glass fully.
2. 2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown.

Fastener Location

▷: Clip, 1

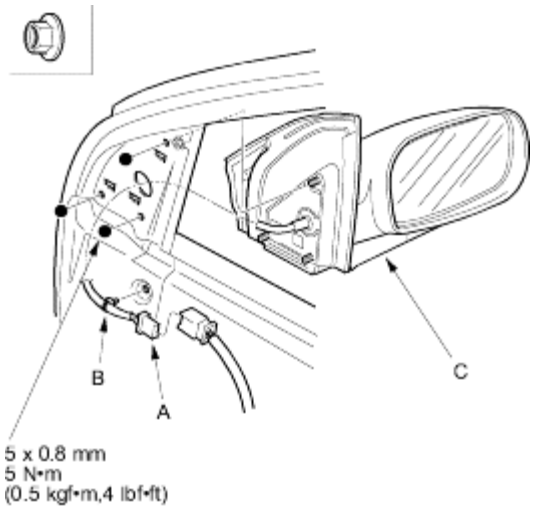


3. 3. Remove the door panel (see page 20-144).

1. 4. Disconnect the connector (A), and detach the harness clip (B). While holding the mirror (C), remove the nuts, then remove the mirror. Take care not to scratch the door.

Fastener Locations

●: Nut, 3



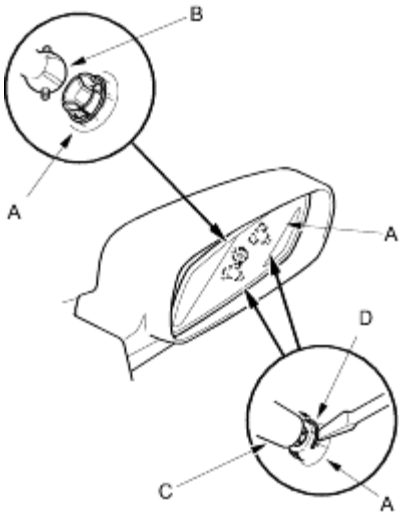
2. 5. Install the mirror in the reverse order of removal and note these items:
   - Make sure the connector is plugged in properly.
   - Attach the harness clip.

Mirrors

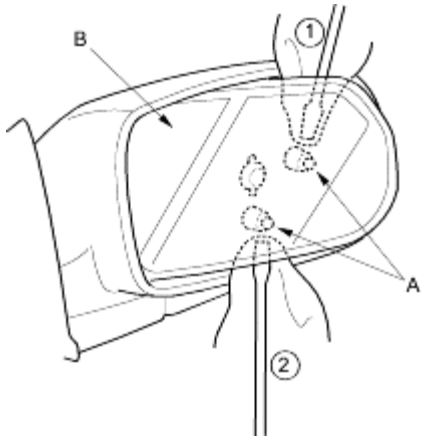
Mirror Holder Replacement

1. 1. Pry the mirror holder (A) out from the top, and detach the pivot (B).

   Carefully move the mirror holder until you can see the joint pins (C), then release the retainer springs (D) using a flat tip screwdriver.

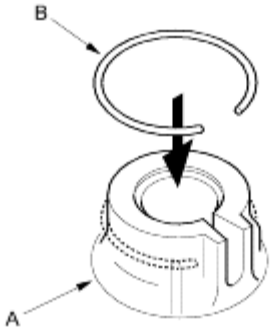


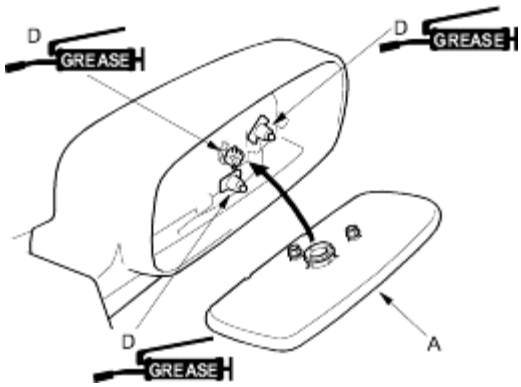
2. 2. Detach the joint pins (A) from the mirror holder (B), then remove the mirror holder.



3. 3. If equipped, disconnect the mirror defogger connector.

1. 4. Install the mirror holder in the reverse order of removal, and note these items:
   - Before installing the mirror holder (A), install the retainer spring (B) on the mirror holder.
   - If equipped, make sure the mirror defogger connector is plugged in properly.
   - Grease the pivot (C) and joint pins (D).
   - Reattach the mirror holder (A) to the pivot and joint pin of the actuator, then carefully push the pivot and joint pin portions of the mirror holder until the mirror holder locks into place.
   - Check the operation of the actuator.

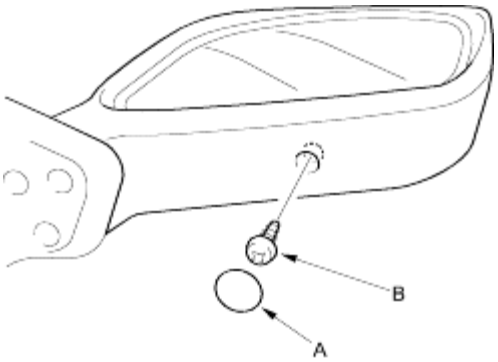




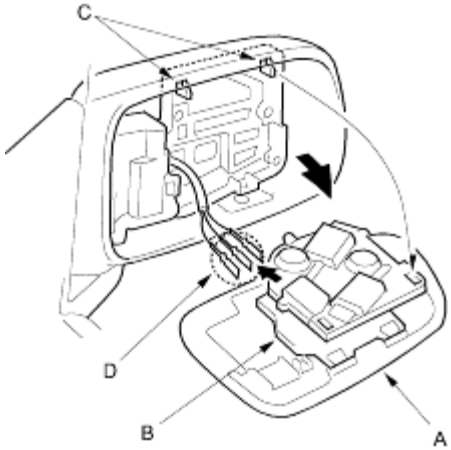
Mirrors

Mirror Holder Replacement - Large Type Mirror

1. 1. From under the mirror, remove the hole seal (A) and remove the screw (B).



2. 2. Pull out the mirror holder (A) and actuator (B) by releasing the hooks (C).



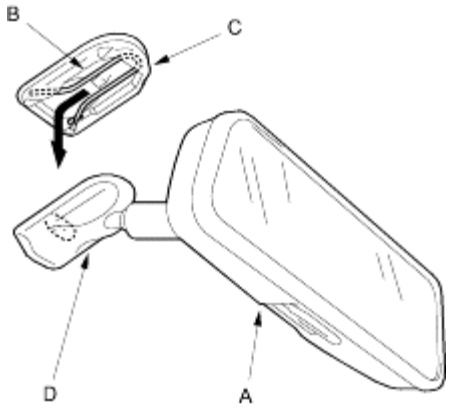
3. 3. Record the wire colours and connecting positions of the terminals (D) and disconnect the terminals from the actuator, then remove the mirror holder with the actuator.

1. 4. Install the mirror holder in the reverse order of removal and note these items:
   - Make sure the terminals are plugged in properly.
   - Check the operation of the actuator.

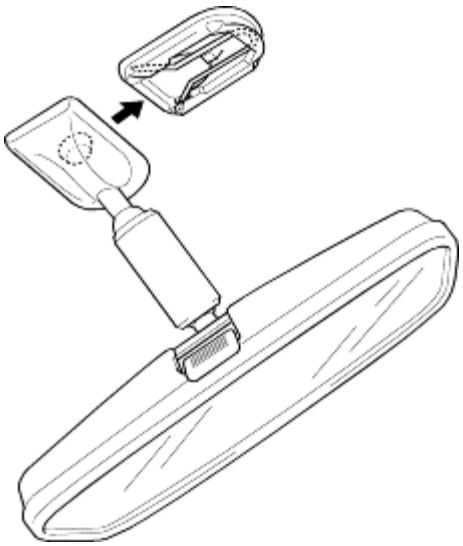
Mirrors

Rearview Mirror Replacement

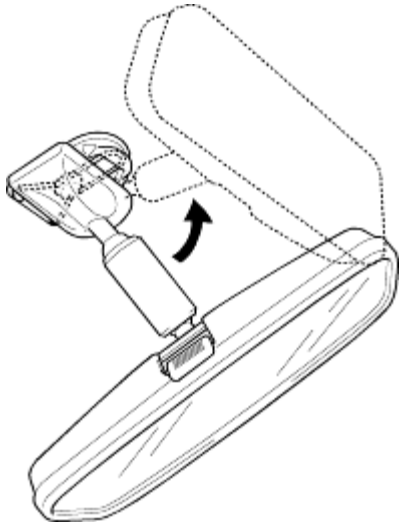
1. 1. Slide the rearview mirror (A) down toward the bottom of the windshield, then detach it from the spring (B) in the mount (C) and remove the rearview mirror. Take care not to scratch the mirror base (D).



2. 2. If necessary, remove the spring from the mount.
3. Fit the mirror base over the mount.

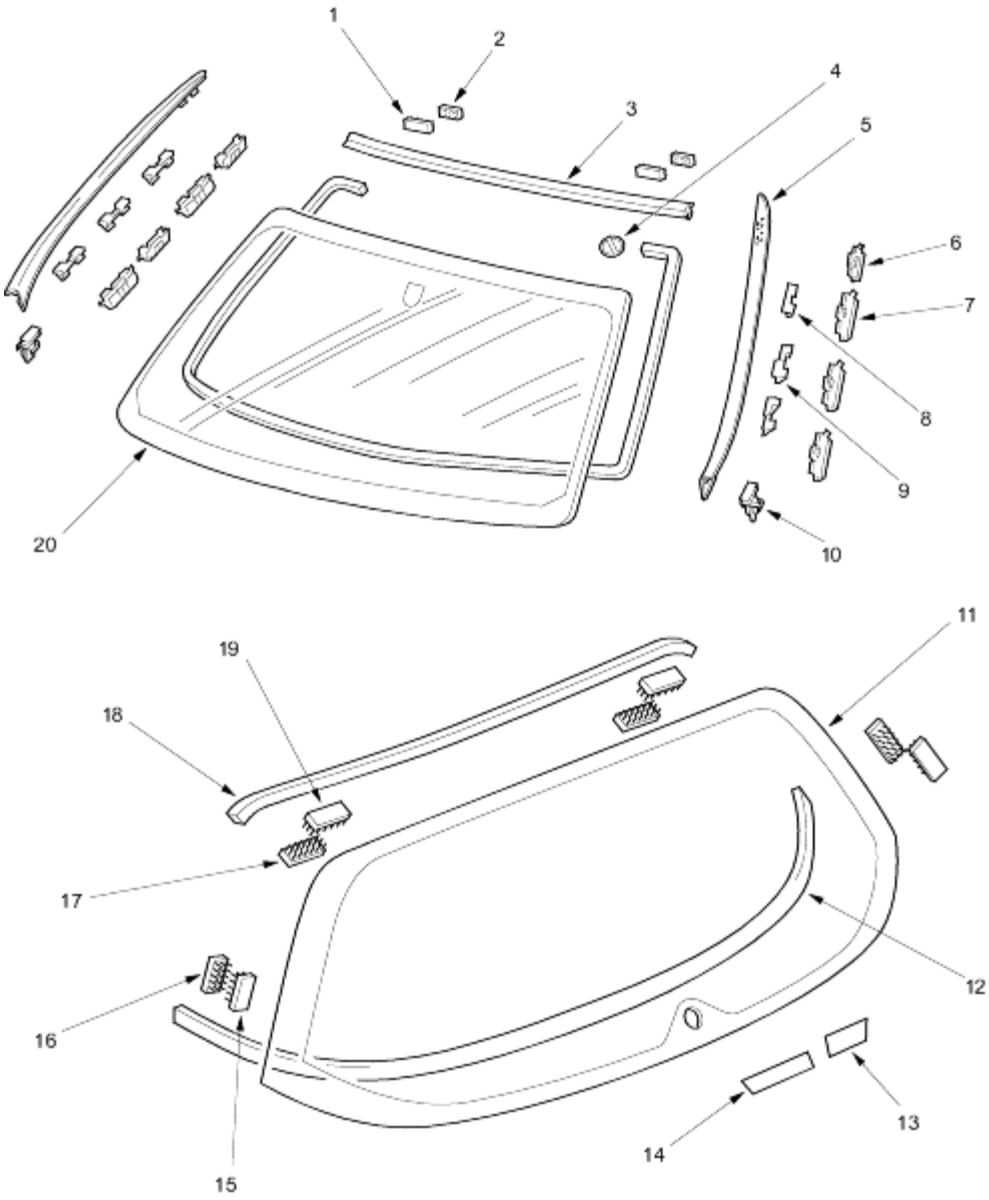


1. 4. Secure the mirror by turning the base 90°.



Glass

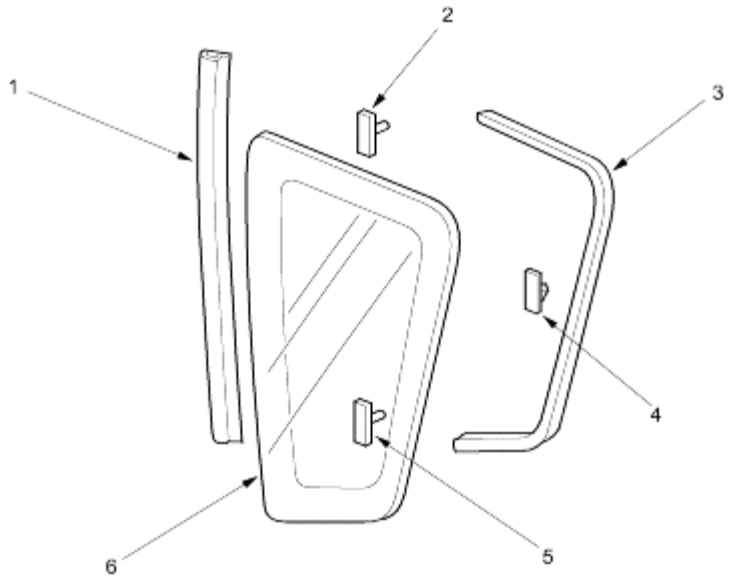
Component Location Index



1. FASTENER, 2
   (Self-adhesive-type, glass side)
2. FASTENER, 2
   (Clip-type, body side)
3. WINDSHIELD MOULDING
4. PASSENGER'S AIRBAG CAUTION LABEL
   (For some models)
5. WINDSHIELD SIDE TRIM
6. RETAINER, 2
   Orange
7. RETAINER, 6
   Black
8. CLIP, 2
   Grey
9. CLIP, 4
   Blue
10. CLIP
11. REAR WINDOW
    Replacement, page 20-182
12. LOWER RUBBER DAM
13. LEV STICKER
    (For some models)
    Replacement, page 20-257
14. REAR VTEC STICKER
    (For some models)
    Replacement, page 20-257
15. FASTENER, 2
    (Self-adhesive-type, glass side)
16. FASTENER, 2
    (Self-adhesive-type, tailgate side)
17. FASTENER, 2
    (Self-adhesive-type, tailgate side)
18. UPPER RUBBER DAM
19. FASTENER, 2
    (Self-adhesive-type, glass side)
20. WINDSHIELD
    Replacement, page 20-176

Glass

Component Location Index (cont'd)



1. QUARTER GLASS SEAL
2. UPPER CLIP
3. RUBBER DAM
4. REAR CLIP
5. LOWER CLIP
6. QUARTER GLASS
   Replacement, page 20-186

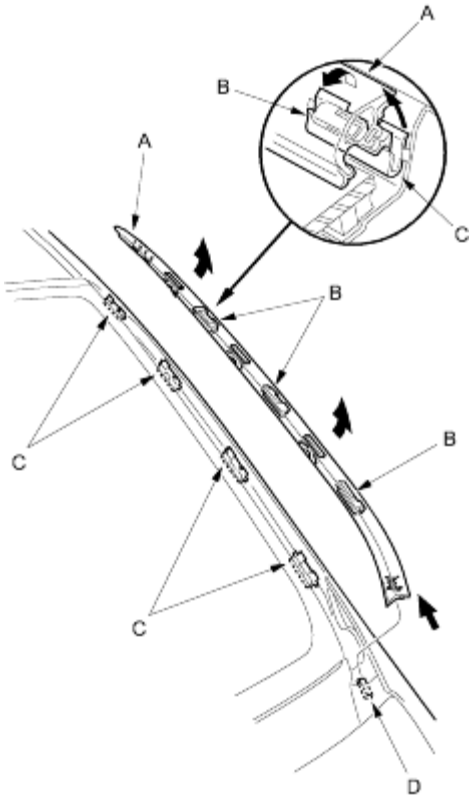
Glass

Windshield Replacement

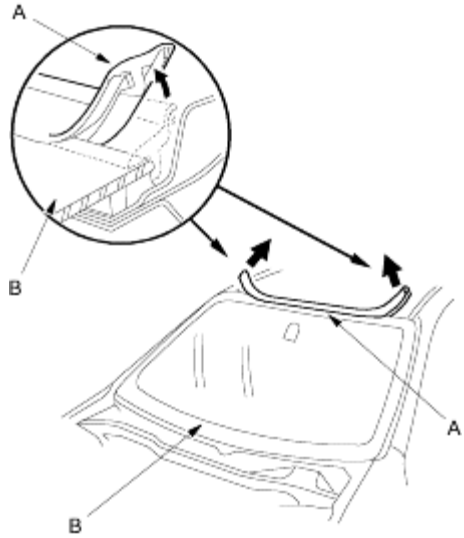
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging the seat.
- Use glass adhesive set P/N. 08C73-X0230N.

1. Remove these items:
   - Rearview mirror (see page 20-173)
   - Windshield wiper arms (see page 22-179)
2. Pull up the side trim (A) to release the clips (B) from the retainers (C) and pull the trim rearward to release it from the clip (D) then remove the trim from each side of the windshield.



3. Remove the cowl covers (see page 20-252).
4. Remove the moulding (A) from the upper edge of the windshield (B). If necessary, cut the moulding with a utility knife.

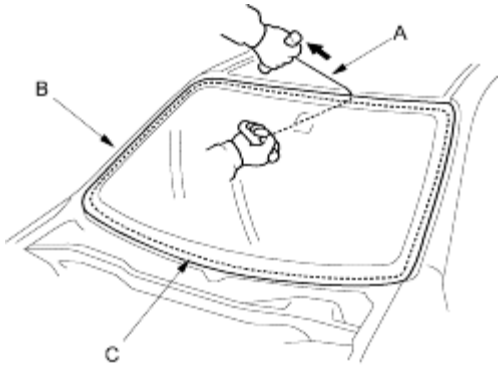


5. If the old windshield is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
6. Pull down the front portion of the headliner (see page 20-210). Take care not to bend the headliner excessively, or you may crease or break it.
7. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam, adhesive and dashboard seal from inside the vehicle at the corner portion of the windshield. Push a piece of piano wire through the hole and wrap each end around a piece of wood.

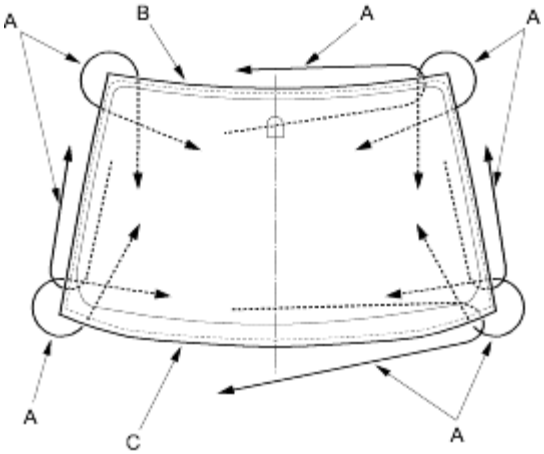
Glass

Windshield Replacement (cont'd)

1. 8. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



Cutting portions:



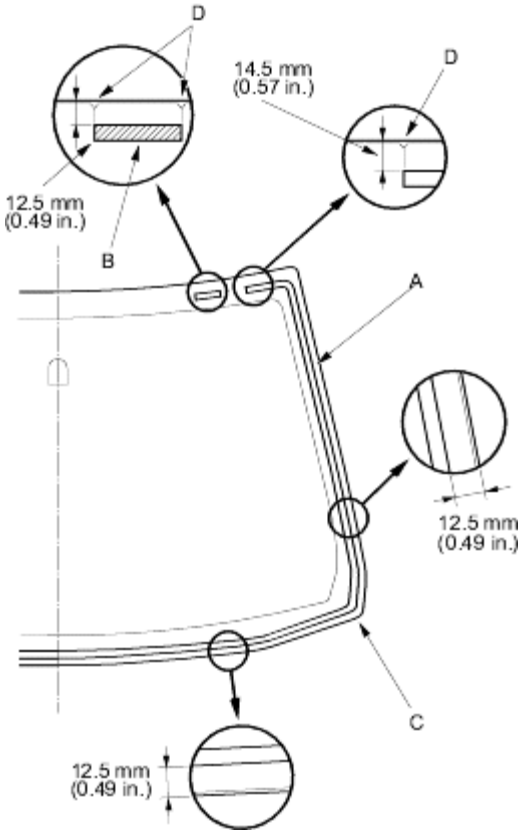
2. 9. Carefully remove the windshield.

1. 10. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the rubber dam and fasteners from the body.
2. 11. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.
   12. If the old windshield is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

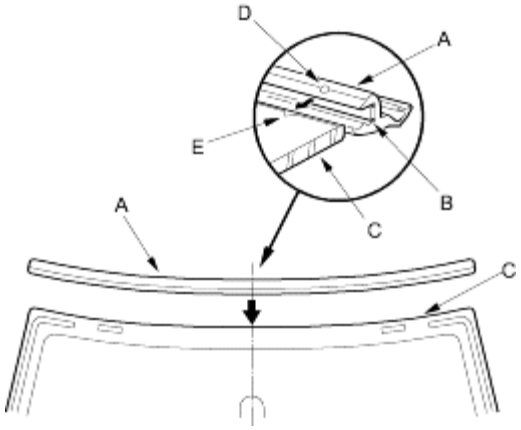
Glass

Windshield Replacement (cont'd)

1. 13. Glue the rubber dams (A), fasteners (B) to the inside face of the windshield (C) as shown:
   - Be sure the rubber dam and fasteners line up with the alignment marks (D).
   - Be careful not to touch the windshield where adhesive will be applied.



1. 14. Glue the moulding (A) with adhesive tape (B) to the upper edge of the windshield (C):
   - Be sure the alignment mark (D) of the moulding lines up with the alignment mark (E) of the windshield.
   - Be careful not to touch the windshield where adhesive will be applied.



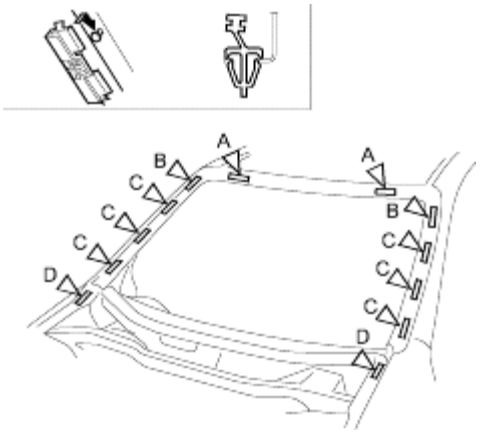
2. 15. Install the fasteners (A), retainers (B, C) and clips (D) to the body.

Fastener Locations

A ▷: Fastener, 6 B ▷: Retainer, 2



C ▷: Retainer, 6 D ▷: Clip, 2

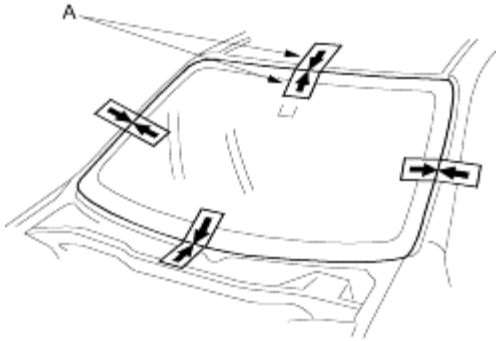


Glass

Windshield Replacement (cont'd)

1. 16. Set the windshield in the opening and centre it.

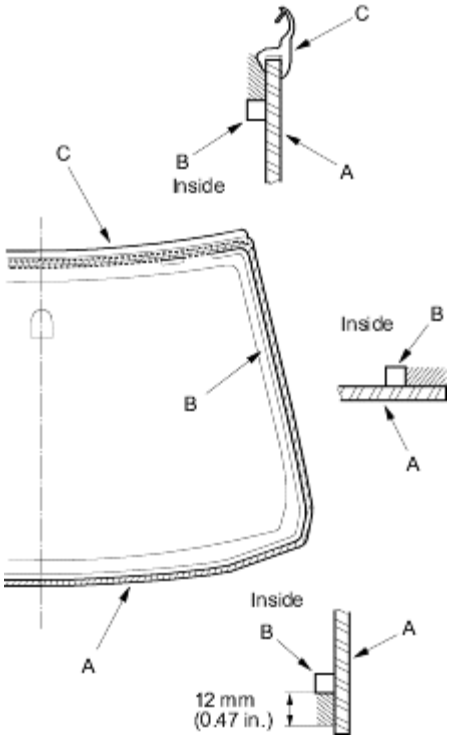
   Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Be careful not to touch the windshield where adhesive will be applied.



2. 17. Remove the windshield.

1. 18. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the dams (B) and moulding (C) as shown, then lightly wipe it off with gauze or cheesecloth:
   - Apply glass primer to the moulding.
   - Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
   - Keep water, dust and abrasive materials away from the primed surface.

Hatched area: Apply glass primer here.

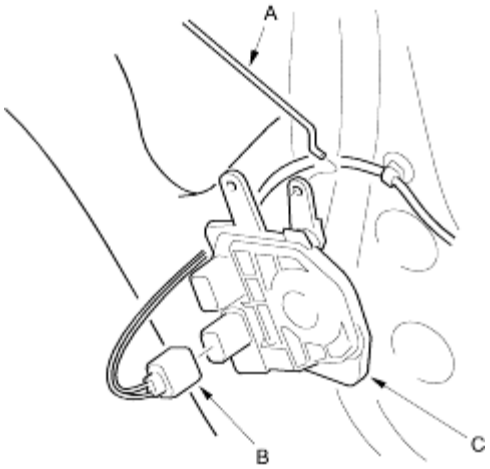


Doors

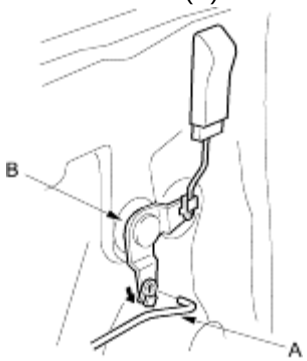
Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove these items:
   - Door panel (see page 20-15)
   - Plastic cover, as necessary (see page 20-5)
   - Rod protector, for some models (see step 3 on page 20-16)
3. Remove the screws securing the latch (see step 5 on page 20-17).
4. With power door lock, disconnect the actuator rod (A) and connector (B), then remove the actuator (C).



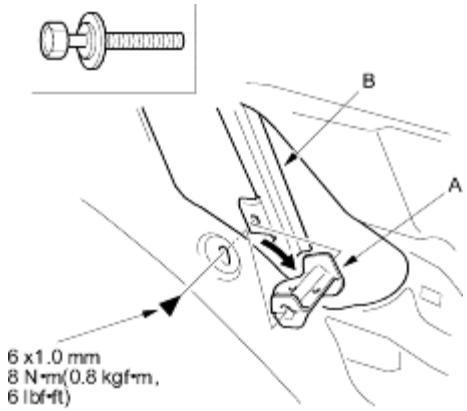
5. Disconnect the lock rod (A) from the lock crank (B).



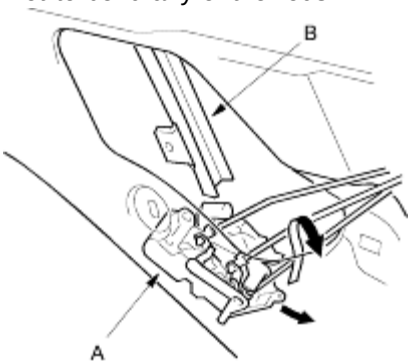
6. Remove the bolt, then remove the collar (A) from the centre channel (B).

Fastener Location

▶: Bolt, 1



7. Move the latch (A) through the gap between the centre channel (B) and door, then remove it. Take care not to bend any of the rods.



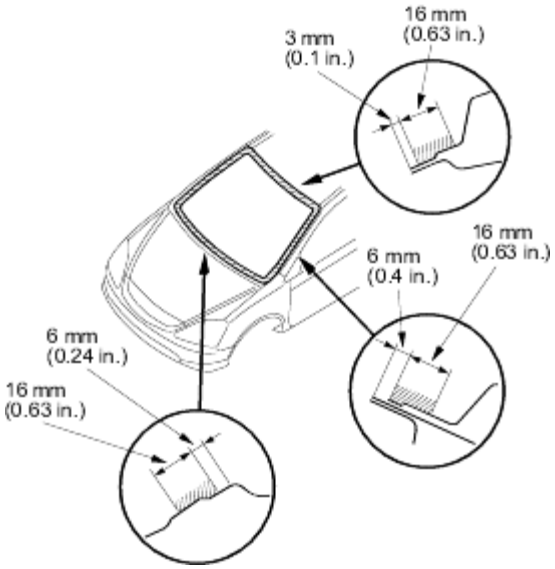
8. If necessary, remove any of the rods from the latch.
9. Install the latch in the reverse order of removal, and note these items:
   - Make sure the connector is plugged in properly (with power door lock), and each rod is connected securely.
   - Make sure the door locks and opens properly.

Glass

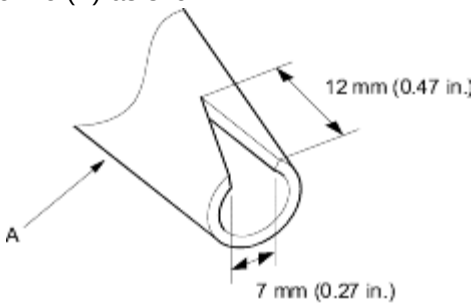
Windshield Replacement (cont'd)

1. 19. With a sponge, apply a light coat of body primer to the original adhesive remaining around the windshield opening flange. Let the body primer dry for at least 10 minutes:
   - Do not apply glass primer to the body and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.
   - Mask off the dashboard before painting the flange.

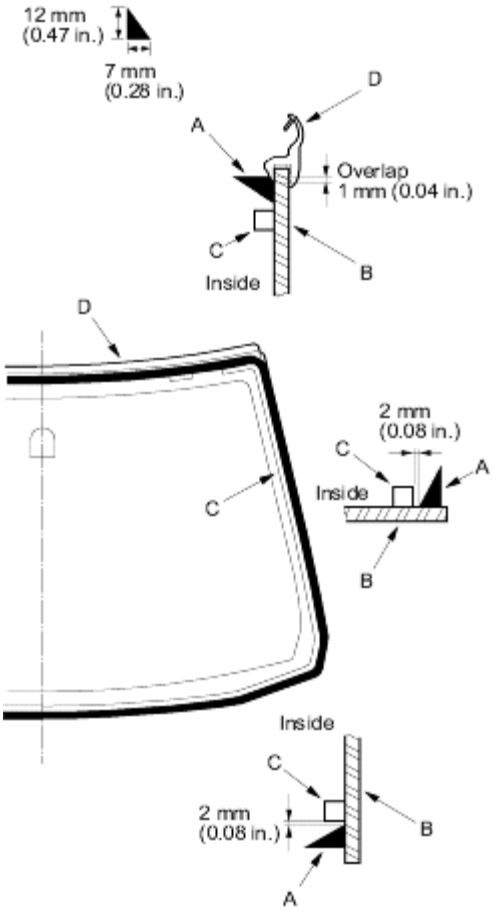
Hatched area: Apply body primer here.



2. 20. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



1. 21. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun and run a bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and moulding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



2. 22. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 16 and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.

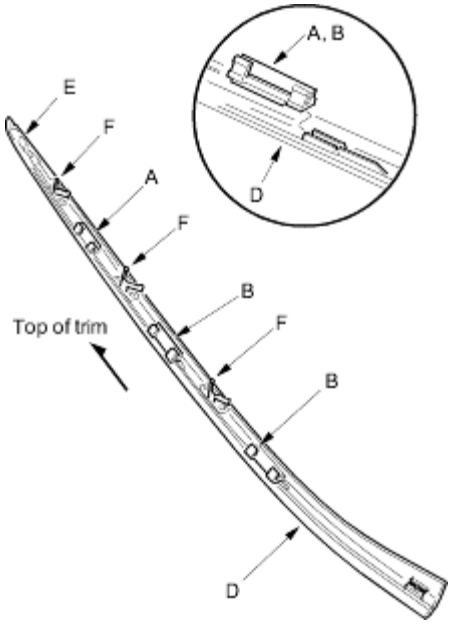
Glass

Windshield Replacement (cont'd)

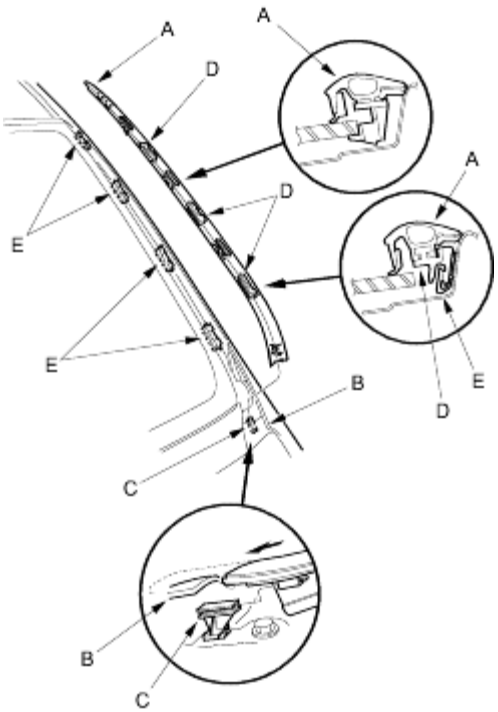
1. 23. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.
2. 24. Let the adhesive dry for at least 1 hour, then spray water over the windshield and check for leaks. Mark leaking areas and let the windshield dry, then seal with sealant:
   - Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
   - Keep the windshield dry for the first hour after installation.
3. 25. Reinstall the cowl covers (see page 20-252).
   26. Install the clips (A, B) on both side trim (D). If the clips (E, F) are damaged, replace the side trim and clips as an assembly.

   A: Grey

   B: Blue



1. 27. On both sides of the windshield, install the trim to the clip (C), then set the bottom edge of the side trim (A) over the cowl cover (B) and align the clips (D) with the retainers (E), and push on the clip portions of the trim until the trim is fully seated on the windshield.



2. 28. Reinstall all remaining removed parts. Install the rearview mirror after the adhesive has dried thoroughly. Advise the customer not to do the following things for 2 to 3 days:
   - Slam the doors with all the windows rolled up.
   - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

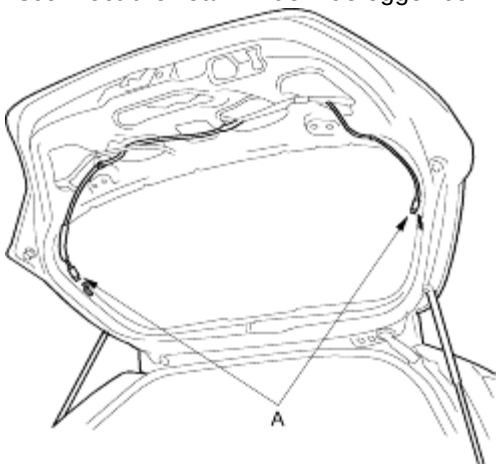
Glass

Rear Window Replacement

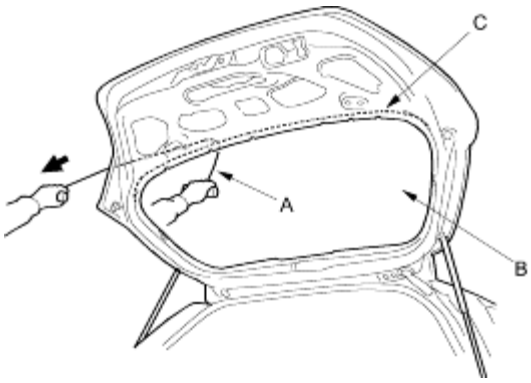
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines, window antenna grid lines and terminals.
- Use glass adhesive set P/N. 08C73-X0230N.

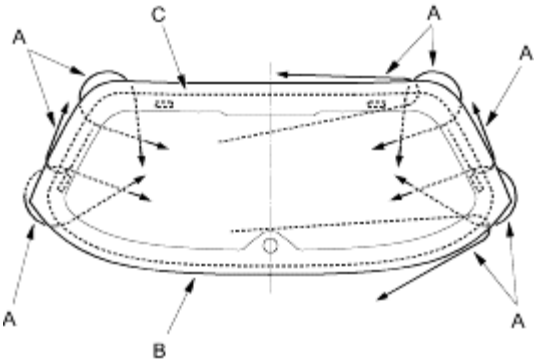
1. Remove these items:
   - Tailgate lower trim panel (see page 20-209)
   - High mount brake light (see page 22-120)
   - Rear window wiper motor (see page 22-181)
2. Disconnect the rear window defogger connectors (A).



3. If the old rear window is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
4. Apply protective tape along the inside and outside edges of the tailgate. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push the piano wire through the hole and wrap each end around a piece of wood.
5. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the tailgate and carefully cut through the adhesive (C) around the entire rear window.



Cutting positions:



6. Carefully remove the rear window.

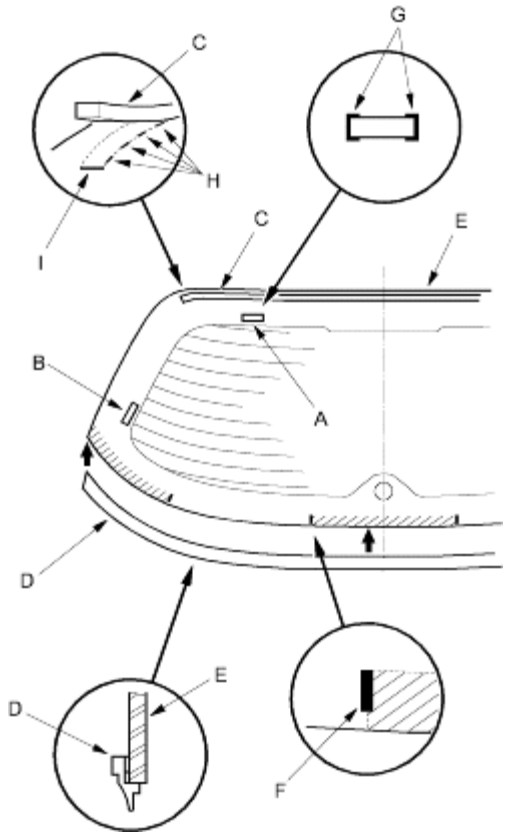
Glass

Rear Window Replacement (cont'd)

1. 7. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding
   - Remove the fasteners from the tailgate.
2. 8. Clean the tailgate bonding surface with a sponge dampened in alcohol. After cleaning keep oil, grease and water from getting on the surface.
   9. If the old rear window is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners and the rubber dams from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

1. 10. Glue the upper fasteners (A), side fasteners (B), upper rubber dam (C) and lower rubber dam (D) to the inside face of the rear window (E) as shown. Before installing the lower rubber dam, apply primer (3M M200, or equivalent) to the areas between the alignment marks (F), then glue the rubber dam on:
   - Be sure the fasteners and upper rubber dam line up with alignment marks (G, H and I).
   - Be sure both ends of the lower rubber dam line up with the edge of the glass.
   - Be careful not to touch the rear window where adhesive will be applied.

Hatched area: Apply primer here.



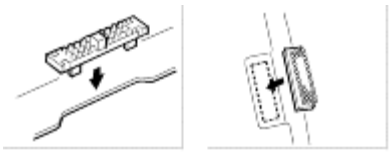
Glass

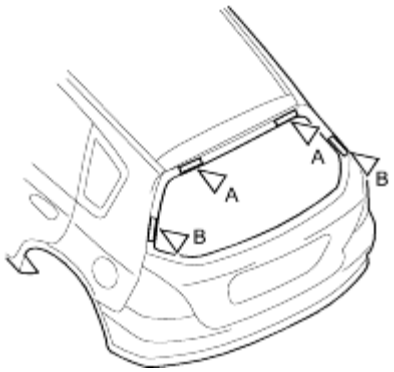
Rear Window Replacement (cont'd)

1. 11. Glue the upper fasteners (A) and side fasteners (B) to the tailgate as shown.

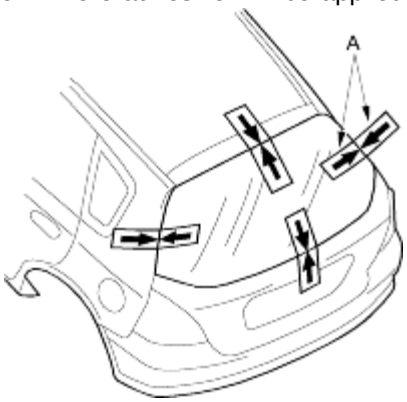
   Fastener Locations

   A ▷: Fastener, B ▷: 2 Fastener, 2





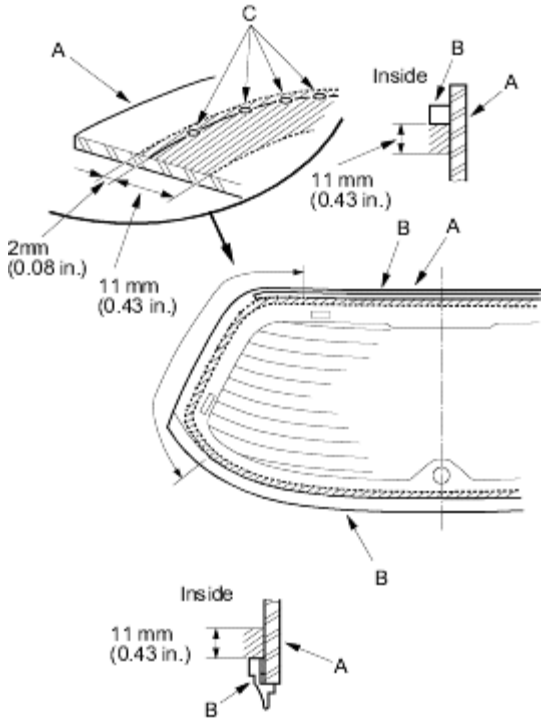
2. 12. Set the rear window in the opening and centre it. Make alignment marks (A) across the rear window, tailgate and body with a grease pencil at the four points shown. Be careful not to touch the rear window where adhesive will be applied.



3. 13. Remove the rear window.

1. 14. With a sponge, apply a light coat of glass primer along the edge of the rear window (A) and rubber dams (B) as shown, then lightly wipe it off with gauze or cheesecloth:
   - With the printed dots (C) on the rear window as a guide, apply the glass primer to both side portions of the rear window.
   - Do not apply body primer to the rear window and do not get tailgate and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
   - Keep water, dust and abrasive materials away from the primed surface.

   Hatched area: Apply glass primer here.

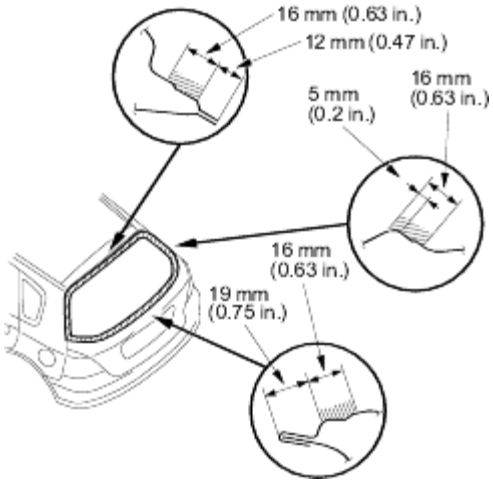


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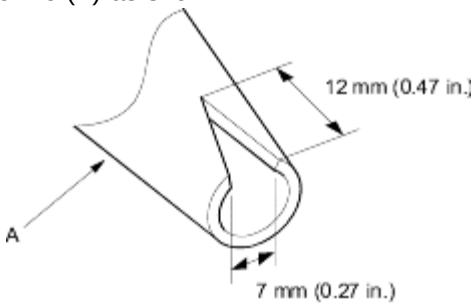
Rear Window Replacement (cont'd)

1. 15. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes:
   - Do not apply glass primer to the body and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.

Hatched area: Apply body primer here



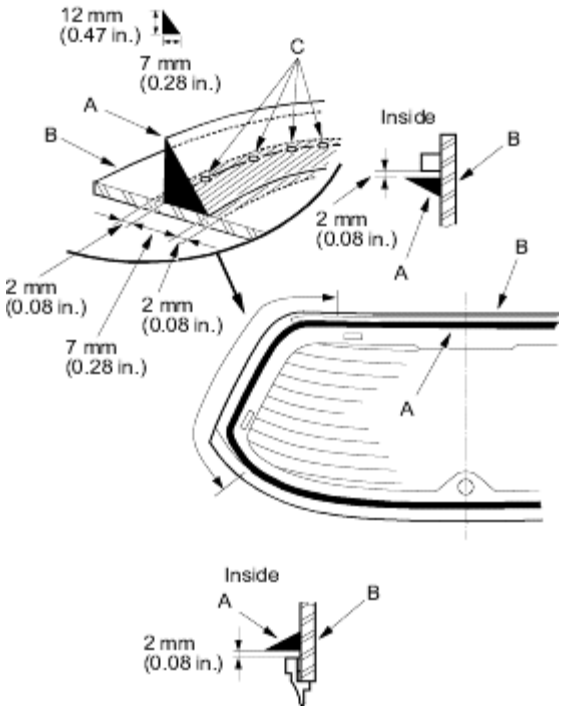
2. 16. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



1. 17. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun and run a bead of adhesive (A) around the edge of the rear window (B) as shown.

With the printed dots (C) on the rear window as a guide, apply the adhesive to both side portions of the rear window.

Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



Glass

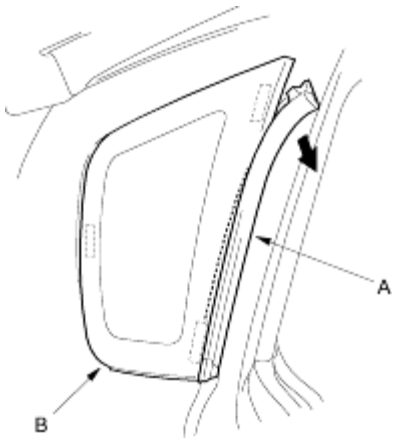
Rear Window Replacement (cont'd)

1. 18. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 12 and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.
2. 19. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
   20. Let the adhesive dry for at least 1 hour, then spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
   21. Reinstall all remaining removed parts. Advise the customer not to do the following things for 2 to 3 days:
       - Slam the doors with all the windows rolled up.
       - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

NOTE:

- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Use glass adhesive set P/N. 08C73-X0230N.

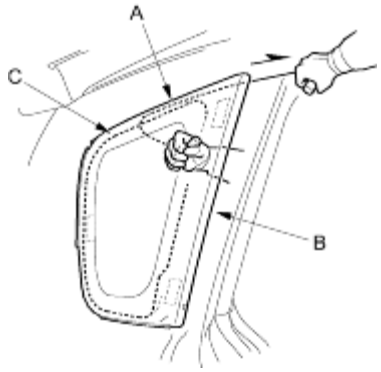
1. 1. Remove the quarter pillar trim (see page 20-207)
   2. Remove the front seal (A) from the front edge of the glass (B). If necessary, cut the seal with a utility knife.



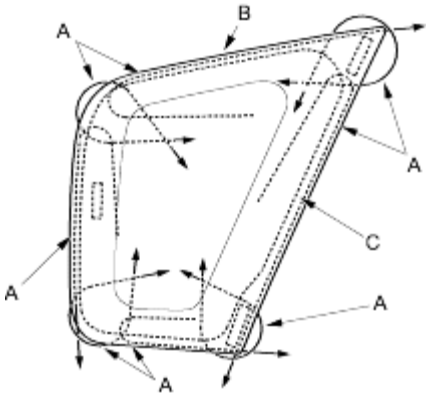
Glass

Quarter Glass Replacement (cont'd)

3. Apply protective tape to along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
4. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the quarter glass (B) as possible to prevent damage to the body and carefully cut through the adhesive (C) around the entire quarter glass.



Cutting positions:



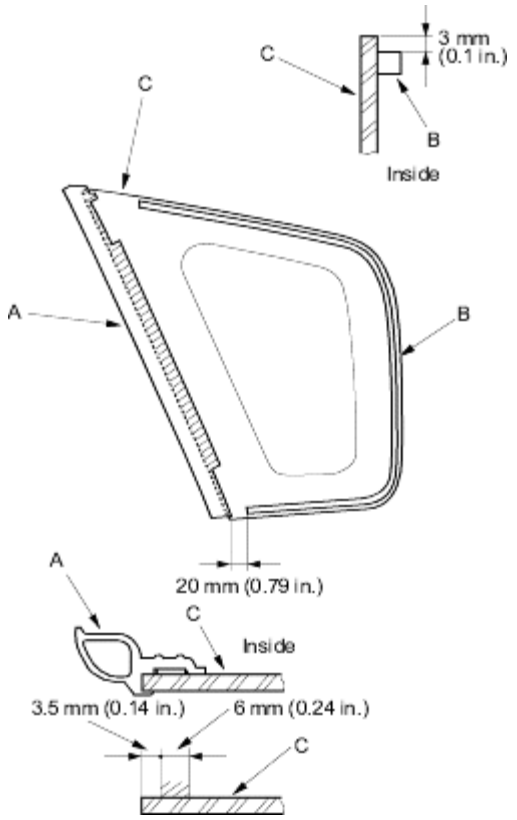
5. Carefully remove the quarter glass.
6. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire quarter glass opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding
   - Remove the clips from the body.
7. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning keep oil, grease and water from getting on the surface.
8. If the old quarter glass is to be reinstalled, use a putty knife to scrape off all of the old adhesive and the rubber dam from the glass. Clean the inside face and the edge of the glass with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

Glass

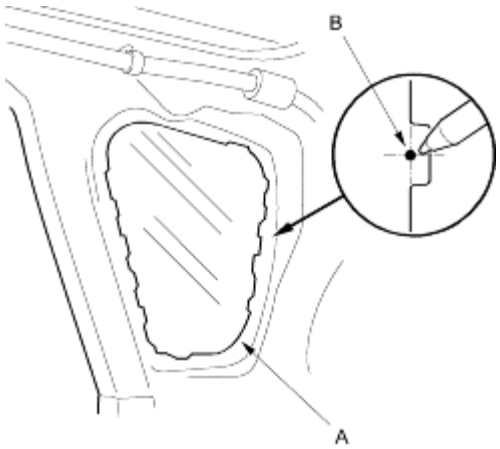
Quarter Glass Replacement (cont'd)

1. 9. First glue the front seal (A) and glue the rubber dam (B) to the inside face of the quarter glass (C) as shown. Before installing the front seal, apply primer (3M N-200 or equivalent) to the inside face of the glass, then glue the seal on:
   - Be sure the front seal lines up with the bottom and front edges of the glass.
   - Be careful not to touch the glass where adhesive will be applied.

Hatched area: Apply body primer here



1. 10. Set the quarter glass (A) in the opening, and centre it. From inside the vehicle, make alignment mark (B) to the quarter glass where the rear clip will be installed with a grease pencil. Be careful not to touch the glass where adhesive will be applied.

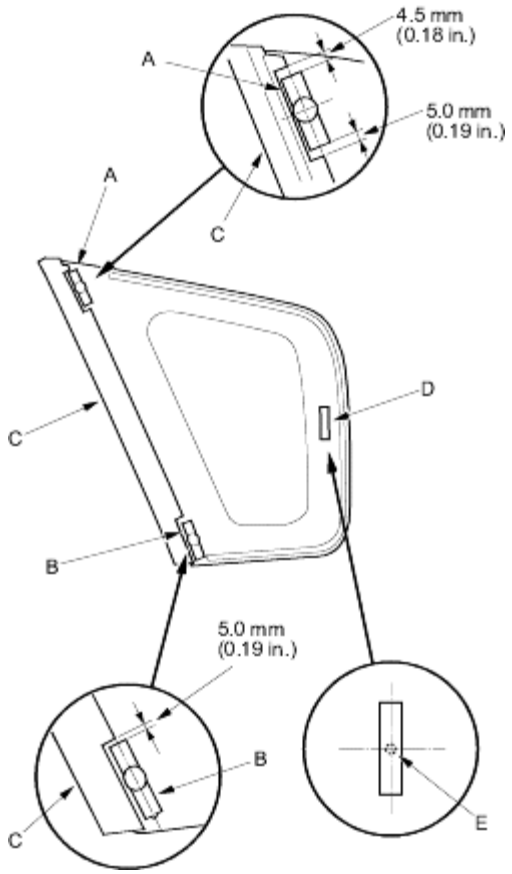


2. 11. Remove the quarter glass.

Glass

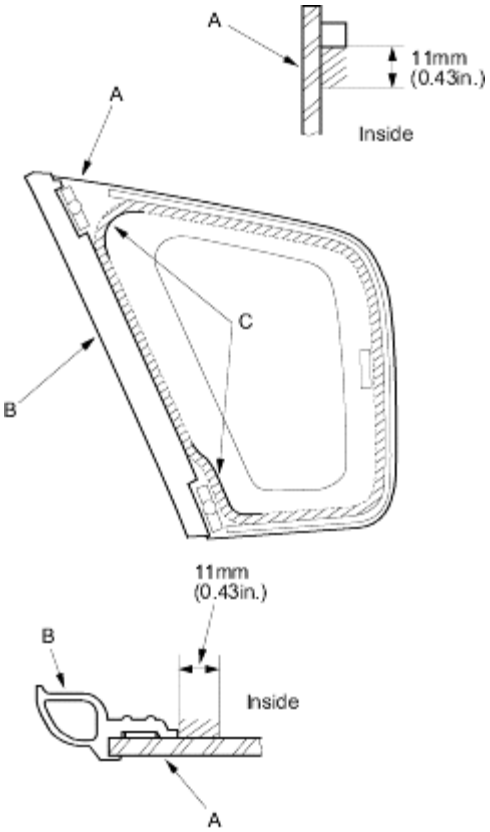
Quarter Glass Replacement (cont'd)

1. 12. Align the upper clip (A) and lower clip (B) with the front seal (C), then glue them to the inside face of the quarter glass and align the centre of the rear clip (D) with the alignment mark (E) you made in step 10 and glue it to the inside face of the quarter glass as shown. Be careful not to touch the glass where adhesive will be applied.



1. 13. With a sponge, apply a light coat of glass primer along the edge of the glass (A) and seal (B) as shown, then lightly wipe it off with gauze or cheesecloth:
   - With the alignment lines (C) on the quarter glass as a guide, apply the glass primer to the upper and lower corner portions of the quarter glass.
   - Do not apply body primer to the quarter glass and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the quarter glass properly, causing a leak after the quarter glass is installed.
   - Keep water, dust and abrasive materials away from the primed surface.

Hatched area: Apply body primer here



Doors

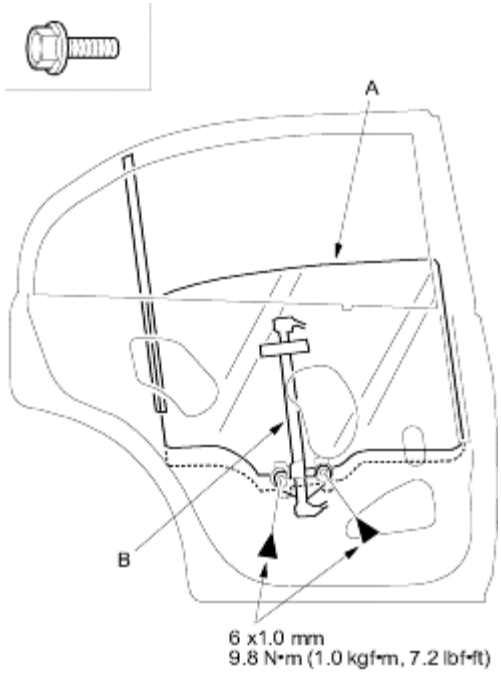
Rear Door Glass, Quarter Glass, and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. 1. Raise the glass fully.
   2. Remove these items:
      - Door panel (see page 20-15)
      - Plastic cover, as necessary (see page 20-5)
      - Rod protector, for some models (see step 3 on page 20-16)
2. 3. Carefully move the glass (A) until you can see the bolts, then remove them. Remove the glass from the regulator (B), and carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

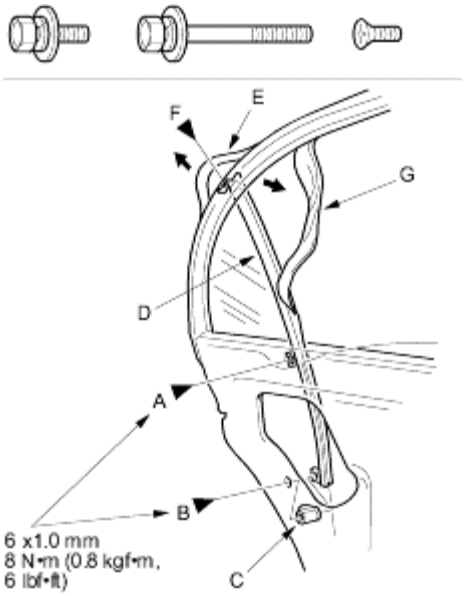
▶: Bolt, 2



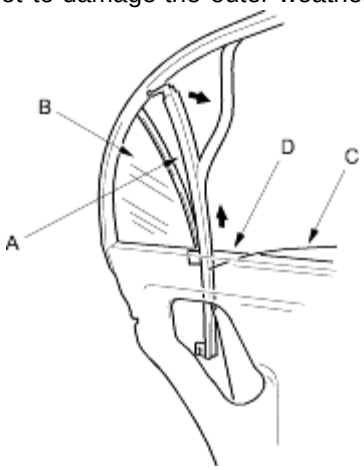
1. 4. Remove the bolts (A, B) and collar (C) from the centre channel (D). Pull the upper seal (E) away as needed, and remove the screw (F). Pull the glass run channel (G) away as needed from the centre channel.

Fastener Locations

A ▶: Bolt, 1 B ▶: Bolt, 1 F ▶: Screw,1



2. 5. Move the centre channel (A) away from the quarter glass (B), and the rear door glass (C), and remove the centre channel out through the window slot. Take care not to damage the outer weatherstrip (D).

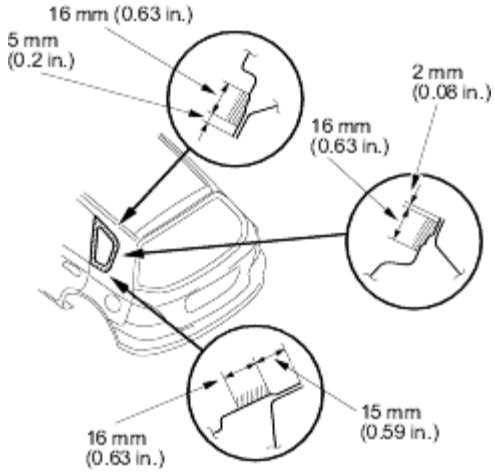


Glass

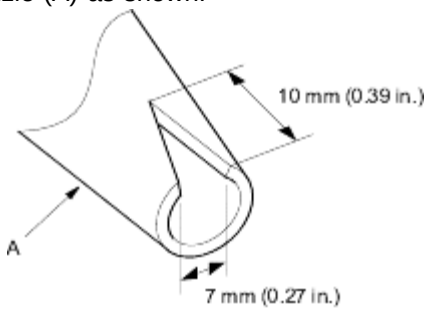
Quarter Glass Replacement (cont'd)

1. 14. With a sponge, apply a light coat of body primer to the original adhesive remaining around the quarter glass opening flange. Let the body primer dry for at least 10 minutes:
   - Do not apply glass primer to the body and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.

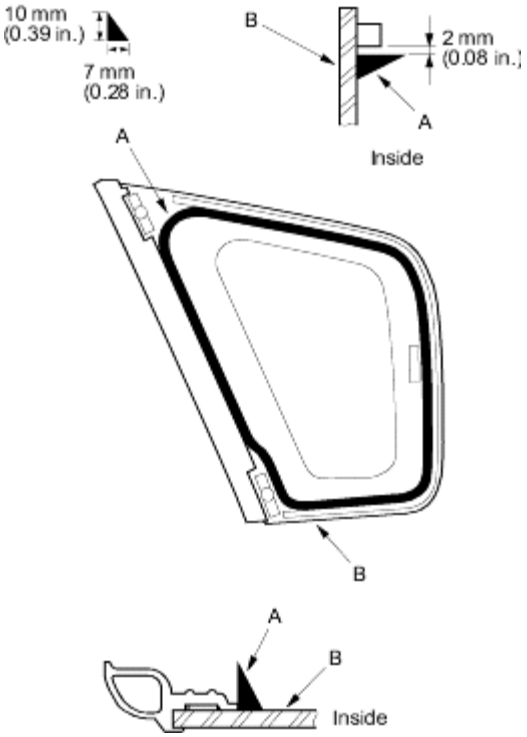
Hatched area: Apply body primer here.



2. 15. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



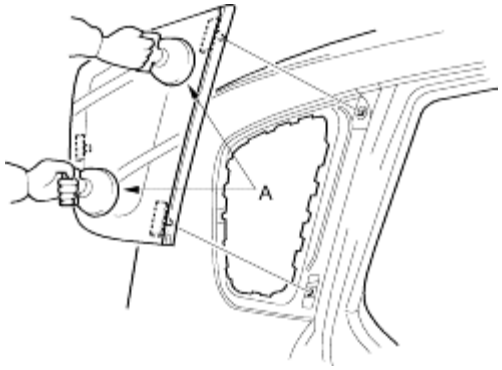
1. 16. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun and run a bead of adhesive (A) around the edge of the glass (B) as shown. With the alignment lines (C) on the quarter glass as a guide, apply the adhesive to the upper and lower corner portions of the quarter glass. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



Glass

Quarter Glass Replacement (cont'd)

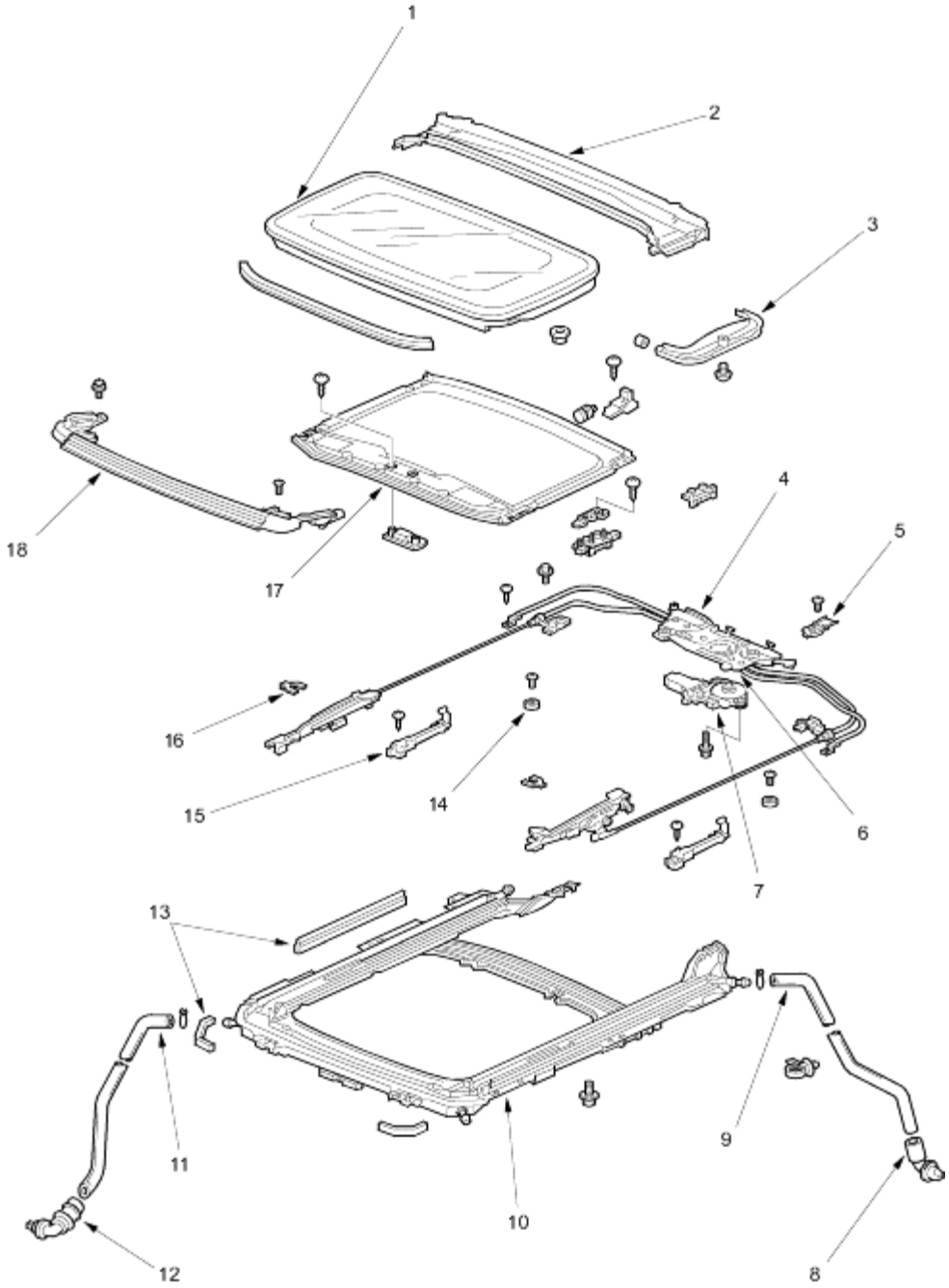
1. 17. Use suction cups (A) to hold the quarter glass over the opening, align it with the clips (B) and set it down on the adhesive. Lightly push on the quarter glass until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.



2. 18. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the quarter glass, use a soft shop towel dampened with alcohol.
   19. Let the adhesive dry for at least 1 hour, then spray water over the quarter glass and check for leaks. Mark the leaking areas, let the quarter glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after quarter glass installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
   20. Reinstall all remaining removed parts. Advise the customer not to do the following things for 2 to 3 days:
       - Slam the doors with all the windows rolled up.
       - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Sunroof

Component Location Index



1. GLASS
   Height Adjustment, page 20-194
   Replacement, page 20-194
   Closing Force and Opening Drag Check, page 20-204
2. DRAIN CHANNEL
   Replacement, page 20-196
3. BRACKET COVER
4. POSITION SWITCH
   Adjustment, page 20-203
5. CABLE TUBE REAR BRACKET
6. CABLE ASSEMBLY
   Replacement, page 20-201
7. MOTOR
   Replacement, page 20-198
8. REAR DRAIN VALVE
9. REAR DRAIN TUBE
   Replacement, page 20-199
10. FRAME
    Replacement, page 20-199
11. FRONT DRAIN TUBE
    Replacement, page 20-199
12. FRONT DRAIN VALVE
13. FRAME SEALS
14. SLIDE STOP
15. DRAIN CHANNEL SLIDER
    Replacement, page 20-201
16. SHIM
17. SUNSHADE
    Replacement, page 20-197
18. WIND DEFLECTOR
    Replacement, page 20-195

Sunroof

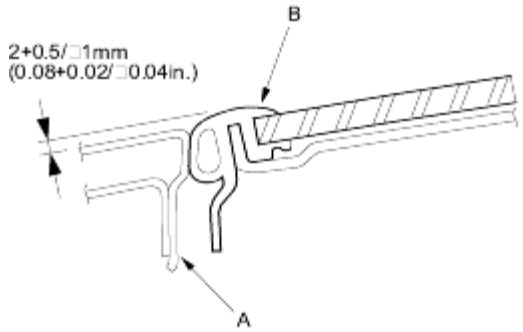
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Water leaks	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel. 3. Check for a defective or an improperly installed glass weatherstrip or drain channel. 4. Check for a gap between the drain seal and the roof panel.	
Wind noise	1. Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	
Glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign matter stuck between the guide rail and the slider. 3. Check for a loose inner cable. 4. Make sure the cable assembly is attached properly.	
Glass does not move and motor does not turn (glass can be moved with sunroof wrench)	1. Check for a blown fuse. 2. Check for a faulty sunroof switch. 3. Check the limit switch. 4. Check for a run down battery. 5. Check for a defective motor. 6. Check for a faulty relay.	

Sunroof

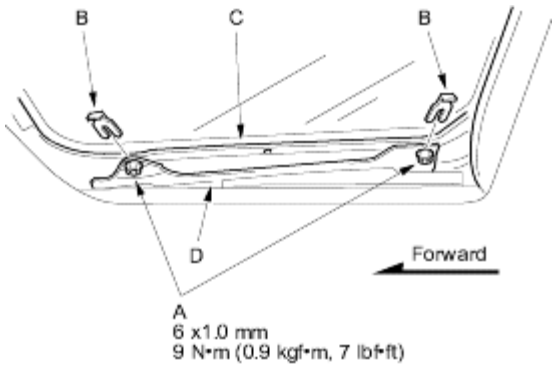
Glass Height Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within 2 + 0.5/ - 1 mm (0.08+0.02/ - 0.04 in.) all the way around. If not, make the following adjustment:



1. 1. Remove the bracket cover from each side.
   2. Loosen the nuts (A) and install the shims (B) between the glass frame (C) and glass bracket (D) on each side.

      Shim thickness: Front and rear max. 2 mm (0.08 in.)

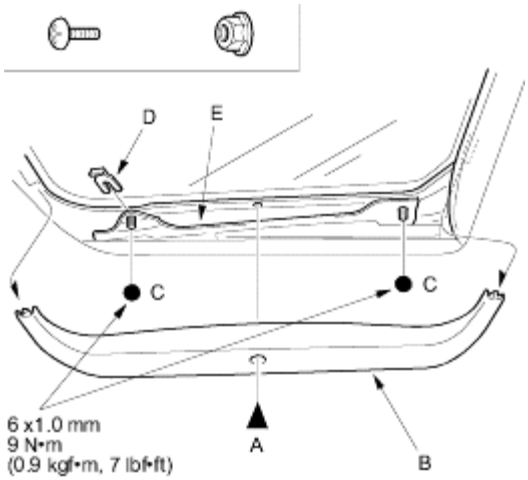


2. 3. If necessary, repeat on the opposite side.

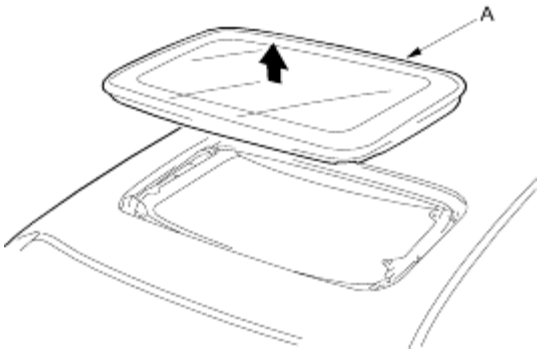
1. 1. Close the glass fully.
2. 2. Slide the sunshade all the way back.
   3. Remove the screws (A), then remove both bracket covers (B). Remove the nuts (C) and shims (D) from both glass brackets (E).

      Fastener Locations

      A ▶: C ●: Nut, Screw, 2 4



3. 4. Remove the glass (A) by lifting it up. Do not damage the roof panel.



4. 5. Install the glass in the reverse order of the removal and adjust the glass height alignment.
   6. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

Sunroof

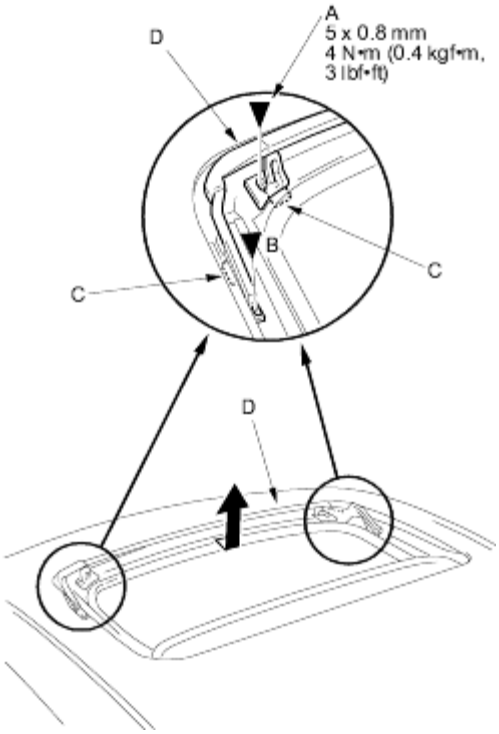
Wind Deflector Replacement

1. 1. Open the glass fully.
2. 2. Remove the screws (A, B) and release the hooks (C), then remove the wind deflector (D).

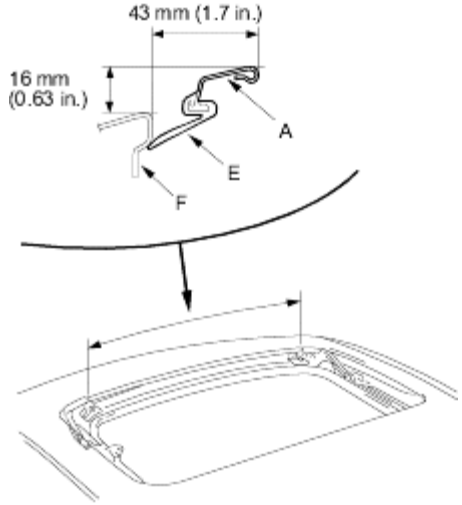
Fastener Locations

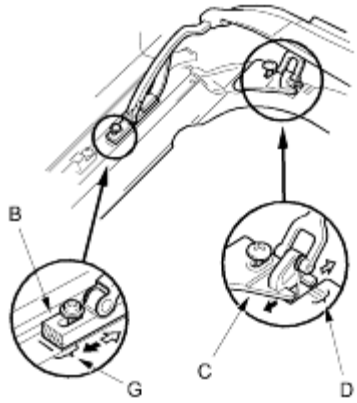
A ▶: Screw, 2
B ▶: Screw, 2





1. 3. Install the deflector (A) in the reverse order of removal and check that the deflector arm base (B) and deflector link pivot base (C) line up with same alignment lines (D). If necessary, adjust them forward or backward so the edge of the deflector seal (E) touches the roof panel (F) evenly. Each base must be moved the same amount for adjustment.





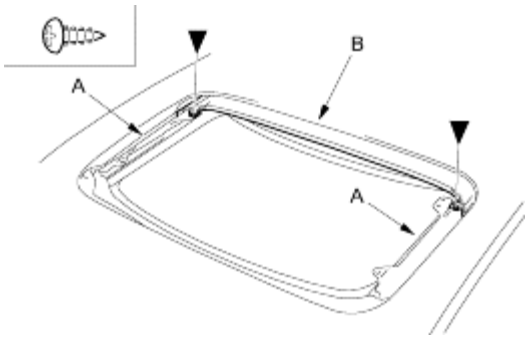
Sunroof

Drain Channel Replacement

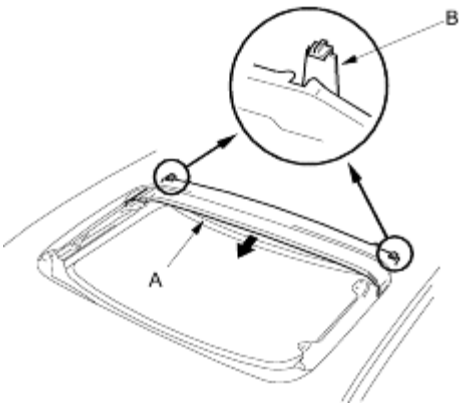
1. Remove the glass (see page 20-194).
2. With the sunroof wrench, move both glass brackets (A) to the position where the sunroof normally pivots down and remove the screws securing the drain channel (B).

Fastener Locations

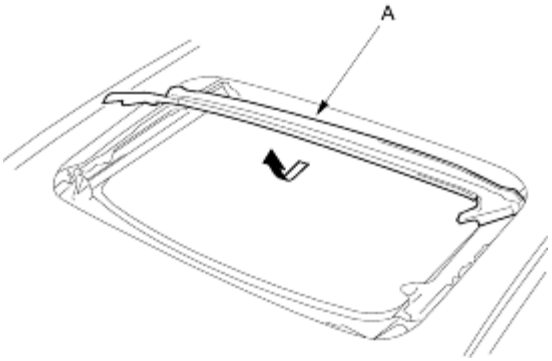
▶: Screw, 2



3. Release the drain channel (A) from both hooks (B) of the drain channel slider by pulling the drain channel forward.



4. Remove the drain channel (A).



5. Install the channel in the reverse order of removal and note these items:
   - Push the drain channel onto the hooks until a faint click is heard.
   - Check the glass height adjustment (see page 20-194).
6. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

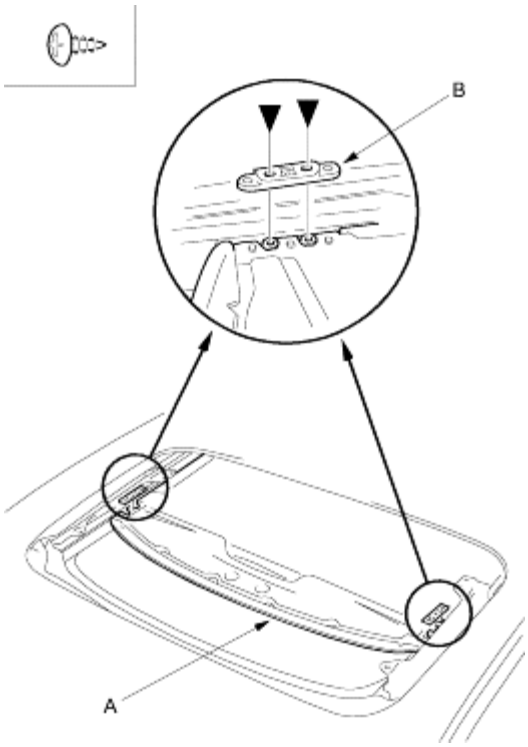
Sunroof

Sunshade Replacement

1. 1. Remove the drain channel.
2. 2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

Fastener Locations

▶: Screw, 4

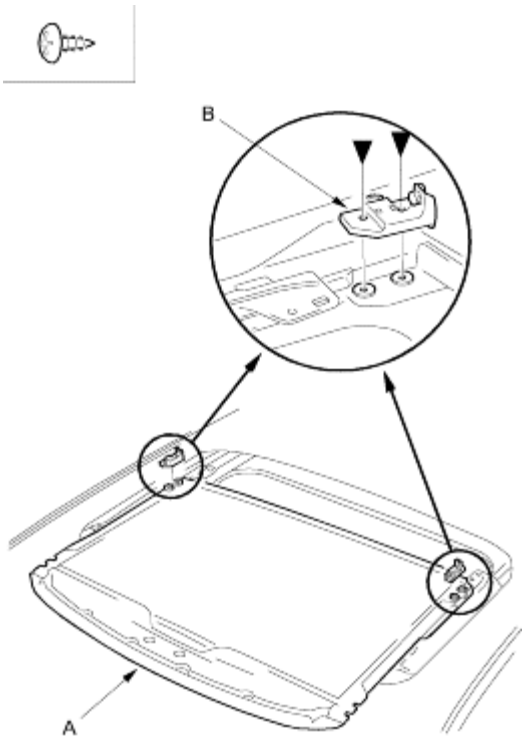


3. 3. Remove the screws, then remove both spacers.

1. 4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade and hooks.

Fastener Location

▶: Screw, 4

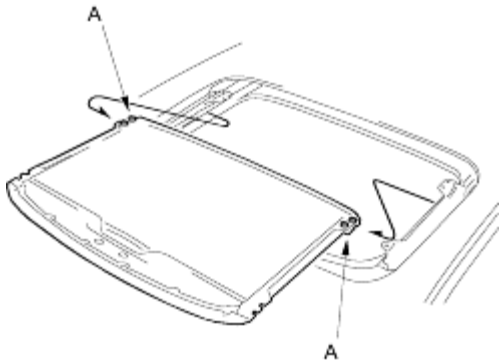


2. 5. Remove the screws, then remove both hooks.

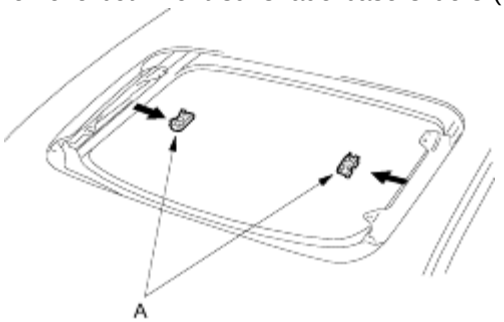
Sunroof

Sunshade Replacement (cont'd)

6. Release both rear sunshade base sliders (A) from the guide rail portions of the frame, then remove the sunshade.



7. Remove both front sunshade base sliders (A).

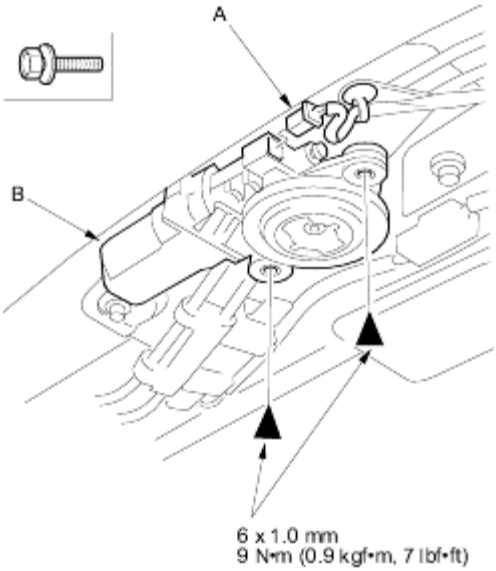


8. Install the sunshade in the reverse order of removal, and check the glass height adjustment (see page 20-194).
9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

1. Remove the headliner (see page 20-210).
2. Put on gloves to protect your hands. Disconnect the connector (A) and remove the bolts, then remove the motor (B).

Fastener Locations

▶: Bolt, 2



3. Install the motor in the reverse order of removal and note these items:
   - Make sure the connector is plugged in properly.
   - Check the motor operation.

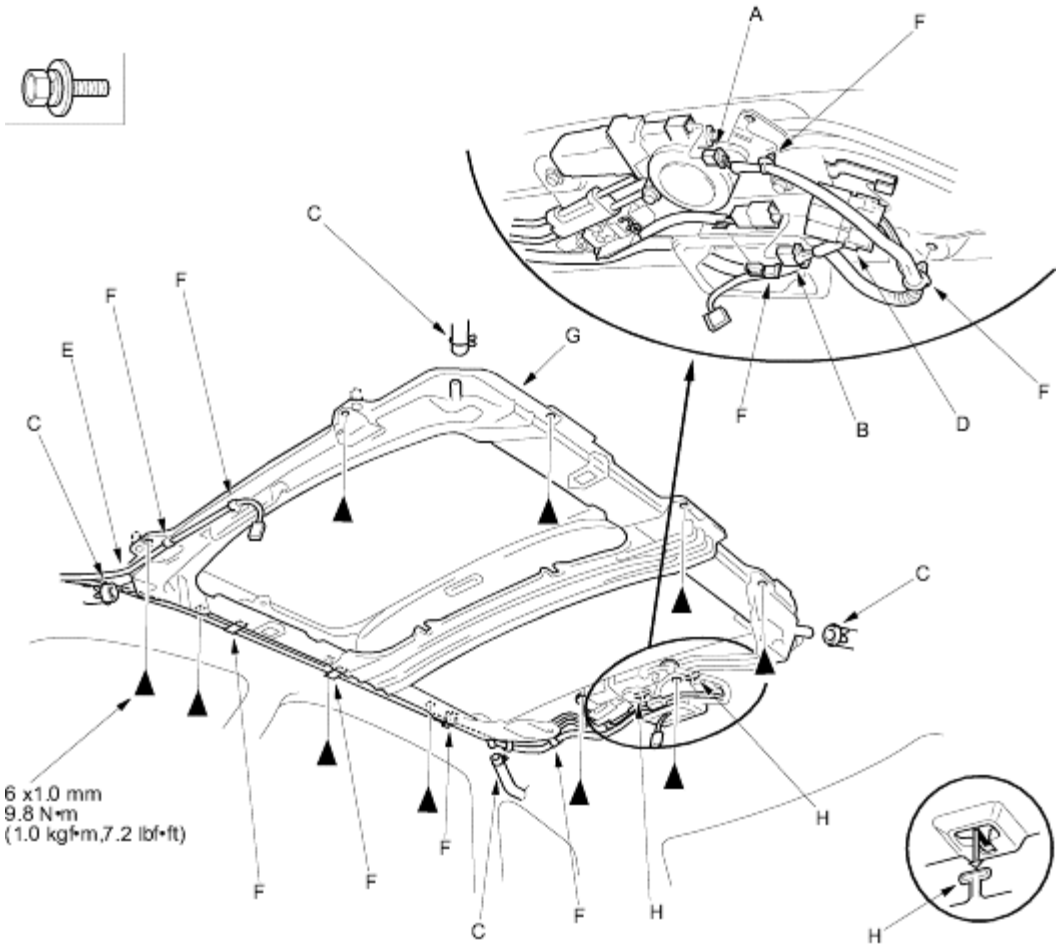
Sunroof

Frame and Drain Tube Replacement

1. 1. Remove these items:
   - Headliner (see page 20-210)
   - Sunroof glass (see page 20-194)
2. 2. Put on gloves to protect your hands. Disconnect the motor connector (A), open/close-tilt/close switch connector (B) and the drain tubes (C), and remove the sunroof relays (D).

   Fastener Location

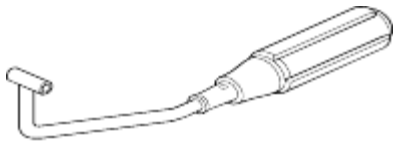
   ▶: Bolt, 10



3. 3. Remove the interior harness (E) by detaching the harness clips (F).
   4. With an assistant holding the frame (G), remove the bolts, starting at the rear and release the rear hooks (H) by moving the frame forward, then remove the frame.
   5. With the help of an assistant, carefully remove the frame through the front door opening. Take care not to scratch the interior trim and body, or tear the seat covers.

Body Special Tools	20-2

Ref. No.	Tool Number	Description	Qty
1	07XAZ-S0K0100	Torsion Bar Assembly Tool	1

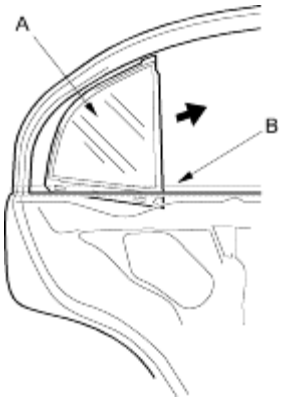


①

Doors

Rear Door Glass, Quarter Glass and Regulator Replacement (cont'd)

1. 6. Remove the quarter glass (A). Take care not to damage the outer weatherstrip (B).



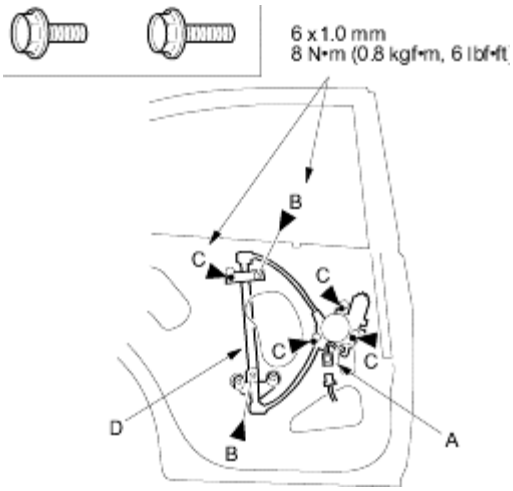
2. 7. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.



1. 8. Power window: Disconnect and detach the connector (A) from the door.

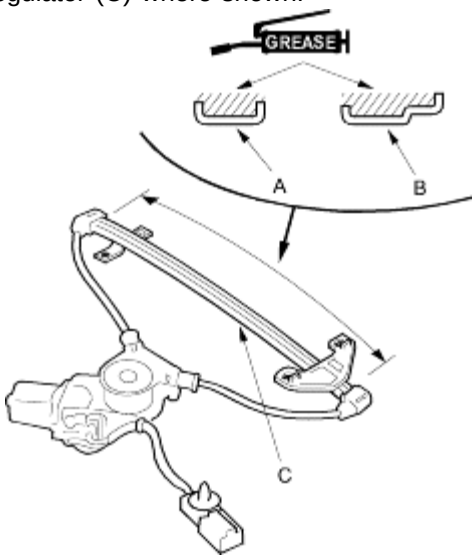
Fastener Locations

B ▶: C ▶: Bolt, Bolt, 2 4



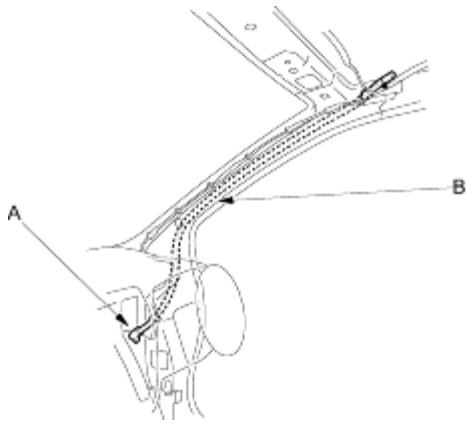
2. 9. Remove the bolts (B), and loosen the bolts (C), then remove the regulator (D) through the hole in the door. Power window is shown, manual window is similar.

10. Grease all the sliding surfaces, Japan-produced shape (A), except Japan-produced shape (B) of the regulator (C) where shown.



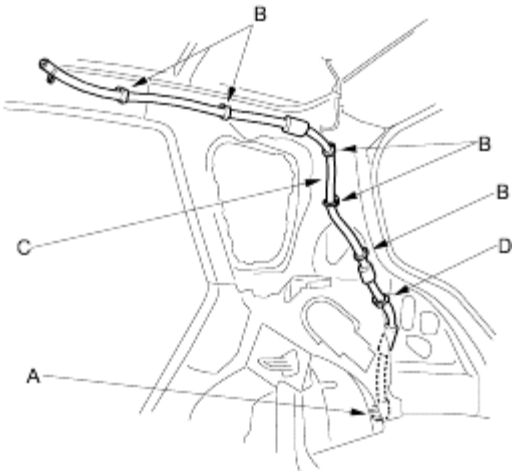
Sunroof
Frame and Drain Tube Replacement

1. 6. To remove a front drain valve (A) from the body, remove the kick panel, left or right (see page 20-206). Tie a string to the end of the drain tube, then pull the front drain tube (B) down out of the front pillar.

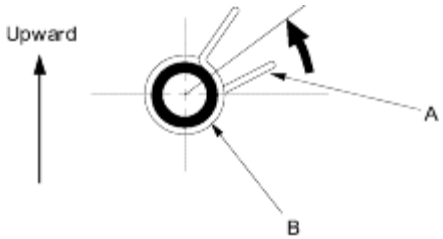


2. 7. To remove a rear drain valve (A) from the trunk compartment, remove these parts:
   - Quarter pillar trim (see page 20-207)
   - Trunk side trim panel (see page 20-208)

   Detach the clips (B) and release the rear drain tube (C) from the clip (D), then remove the drain tube.



1. 8. Install the frame and drain tube in the reverse order of removal and note these items:
   - Before installing the frame, clear the drain tubes and drain valves using compressed air.
   - Check the frame seal.
   - Clean the surface of the frame.
   - When installing the frame, first attach the rear hooks into the body holes.
   - Make sure the connectors are plugged in properly.
   - When connecting the drain tube, slide it over the frame nozzle at least 10 mm (0.39 in.).
   - Install the tube clip (A) on the drain tube (B) as shown.



2. 9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Sunroof

Drain Channel Slider and Cable Assembly Replacement

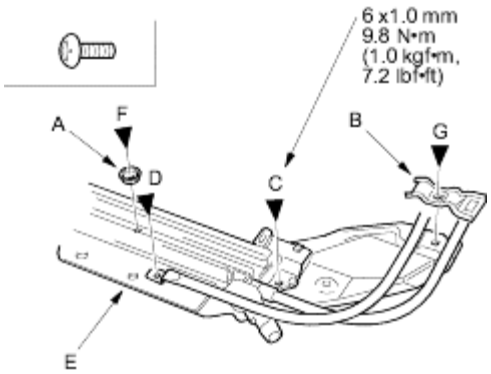
1. 1. Remove the frame (see page 20-199).
2. 2. Remove these parts from the frame:
   - Sunshade (see page 20-197)
   - Sunroof motor (see page 20-198)
3. 3. Put on gloves to protect your hands. Remove the slide stops (A), cable tube rear brackets (B), cable tube side bracket mounting bolts (C) and the cable tube mounting screws (D) from both sides of the frame (E).

Fastener Locations

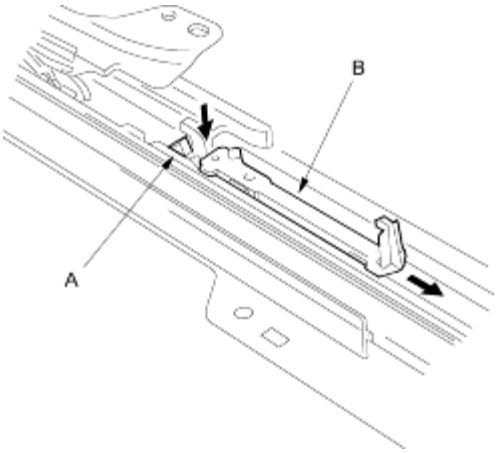
C ▶: Bolt, 2 D ▶: Screw, 2 F ▶: Screw, 2



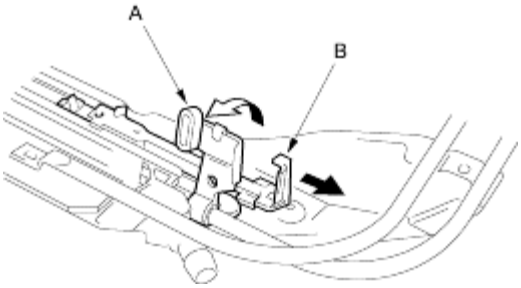
G ▶: Screw, 2



1. 4. While pushing down on the hook (A), slide the drain channel sliders (B) back on both sides.



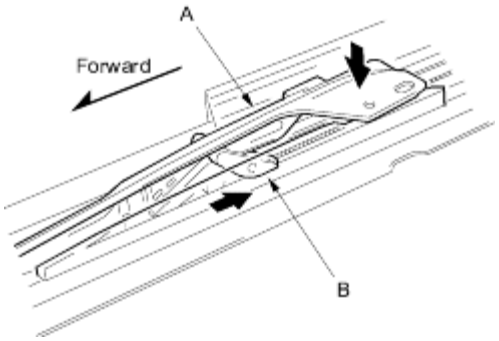
2. 5. Turn both cable tube side brackets (A) up and remove the drain channel sliders (B).



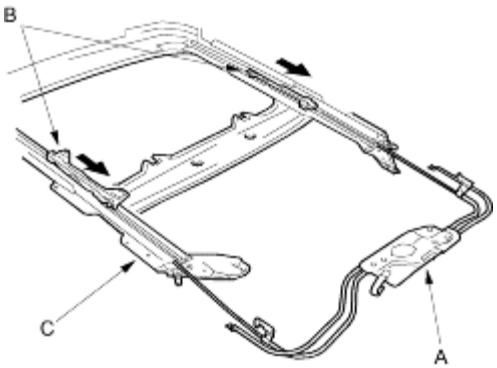
Sunroof

Drain Channel Slider and Cable Assembly Replacement (cont'd)

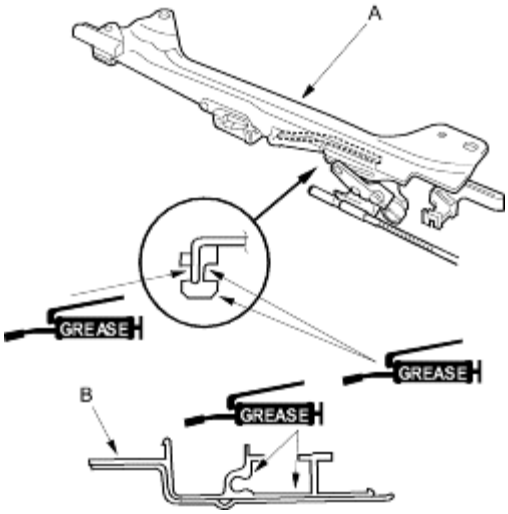
1. 6. Pivot the glass bracket (A) down by sliding the link lifter (B) back, then slide both glass brackets back with the link lifter.



2. 7. Slide the cable assembly (A) and both glass brackets (B) back, then remove them from the frame (C).



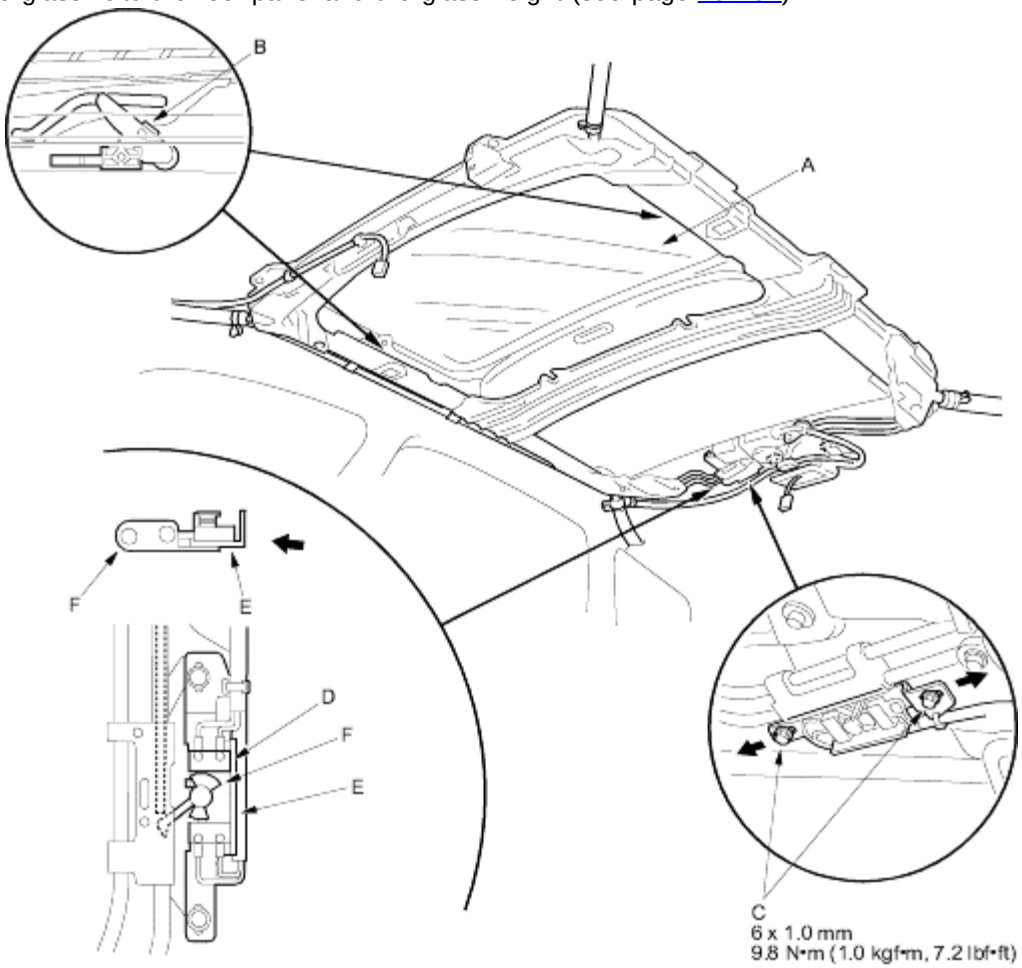
1. 8. Install the slider and cable assembly in the reverse order of removal, and note these items:
   - Damaged parts should be replaced.
   - Apply multipurpose grease to the glass bracket (A) and guide rail portion of the frame (B) indicated by the arrows.
   - Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.
   - Before reinstalling the motor, install the frame and glass, then check the opening drag (see page 20-204).



Sunroof

Position Switch Adjustment

1. 1. Remove the headliner (see page 20-210).
   2. With the sunroof wrench, close the glass (A) fully:
      - Make sure both link lifters (B) are parallel, and in the position shown.
      - Check the glass fit to the roof panel and the glass height (see page 20-194).



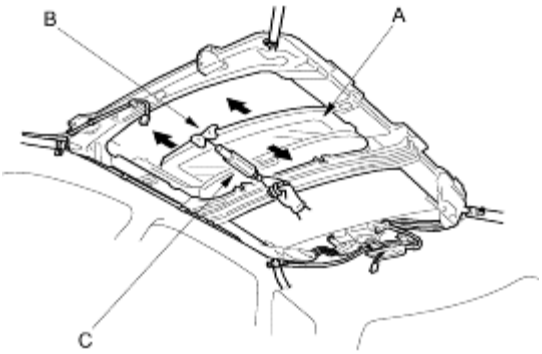
2. 3. With an open-end wrench, loosen the position switch mounting bolts (C).
   4. Adjust the position switch (D):
      - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the position switch (open/close).
      - Check that the switch plate contacts the switch bracket (F).
3. 5. Check the operation of the glass (from the tilt-up position to fully closed position, from the fully open position to the fully closed position) by operating the sunroof switch.

Sunroof

Closing Force and Opening Drag Check

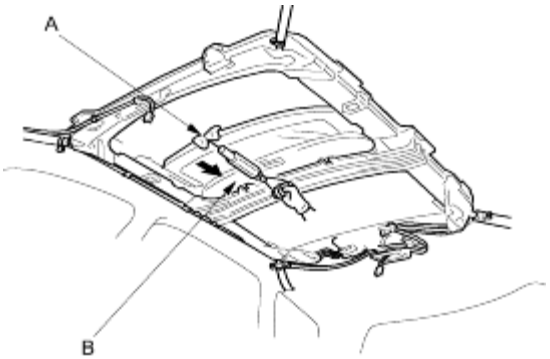
1. 1. Remove the headliner (see page 20-210).
2. 2. Closing force check:
   - With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
   - Have an assistant hold the switch to close the glass while you measure the force required to stop it.
   - Read the force as soon as the glass stops moving, then immediately release the switch and spring scale.

   Closing Force: 200 - 290 N (20 - 30 kgf, 44 - 66 lbf)



3. 3. If the force in not within specification, remove the sunroof motor (see page 20-198), then check:
   - The gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see page 20-199) and replace the cable assembly (see page 20-201).
   - The sunroof motor (see page 20-198). If the motor fails to run or does not turn smoothly, replace it.
   - The opening drag. Go to step 4.

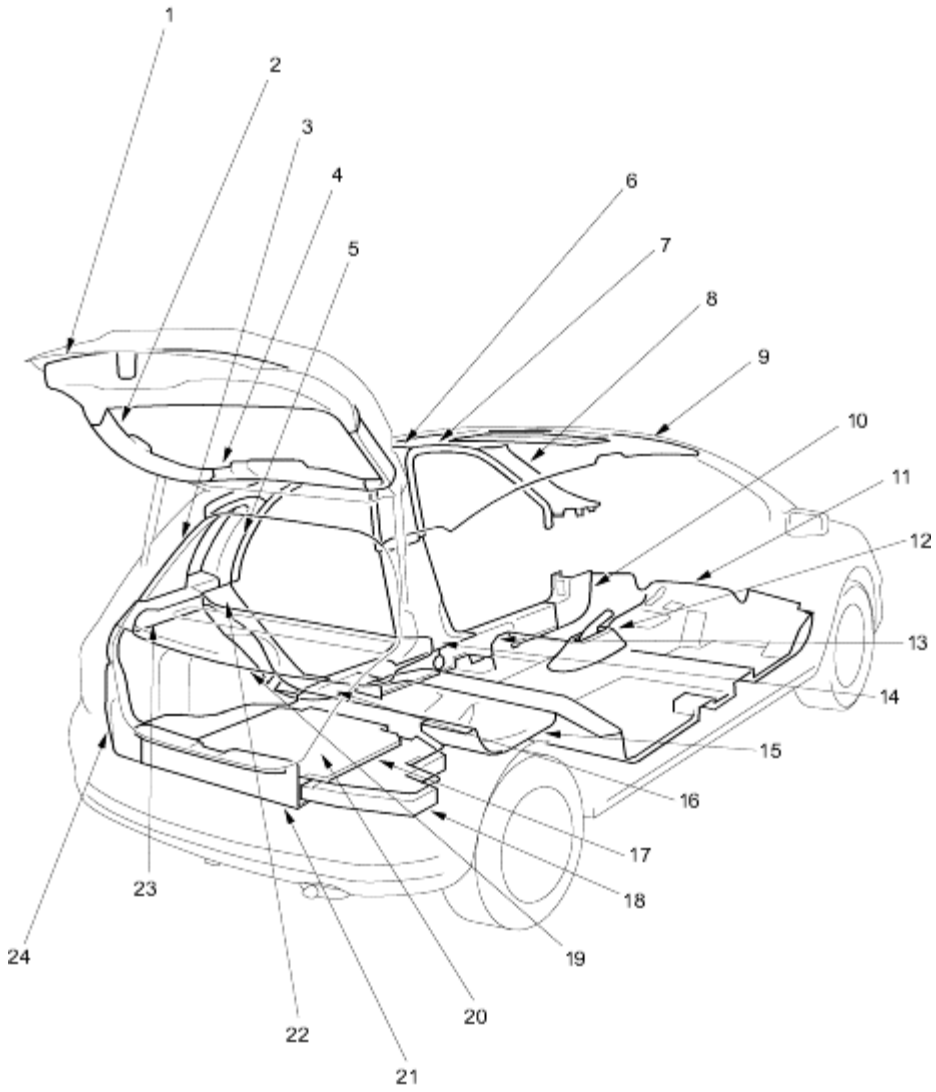
1. 4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



2. 5. If the load is over 40 N (4 kgf, 9 lbf), check:
   - The side clearance and glass height adjustment (see page 20-194).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Interior Trim

Component Location Index



1. TAILGATE LOWER TRIM PANEL
   page 20-209
2. TAILGATE SIDE TRIM
   page 20-209
3. QUARTER PILLAR TRIM
   page 20-207
4. TAILGATE UPPER TRIM PANEL
   page 20-209
5. REAR DOOR OPENING TRIM
   page 20-206
6. CENTRE PILLAR UPPER TRIM
   page 20-206
7. FRONT DOOR OPENING TRIM
   page 20-206
8. FRONT PILLAR TRIM
   page 20-206
9. HEADLINER
   Removal/Installation, page 20-210
10. KICK PANEL
    page 20-206
11. CARPET
    Replacement, page 20-212
12. PARKING BRAKE COVER
13. step 3 on page 20-213FRONT DOOR SILL TRIM
    page 20-206
14. CENTRE PILLAR LOWER TRIM
    page 20-206
15. REAR FLOOR CARPET
    page 20-212
16. REAR DOOR SILL TRIM
    page 20-206
17. SPARE TYRE LID
    page 20-208
18. TRUNK SIDE SPACER
    page 20-208
19. REAR CENTRE SHELF
    page 20-207
20. TRUNK FLOOR MAT
    page 20-208
21. REAR TRIM PANEL
    page 20-208
22. SEAT SIDE TRIM
    page 20-207
23. TRUNK SIDE UPPER TRIM
    page 20-207
24. TRUNK SIDE TRIM PANEL
    page 20-208

Interior Trim

Trim Removal/Installation - Door Area

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

Remove the trim as shown. To remove the rear door sill trim, remove the seat side trim (see page 20-207).

Install the trim in the reverse order of removal and note these items:

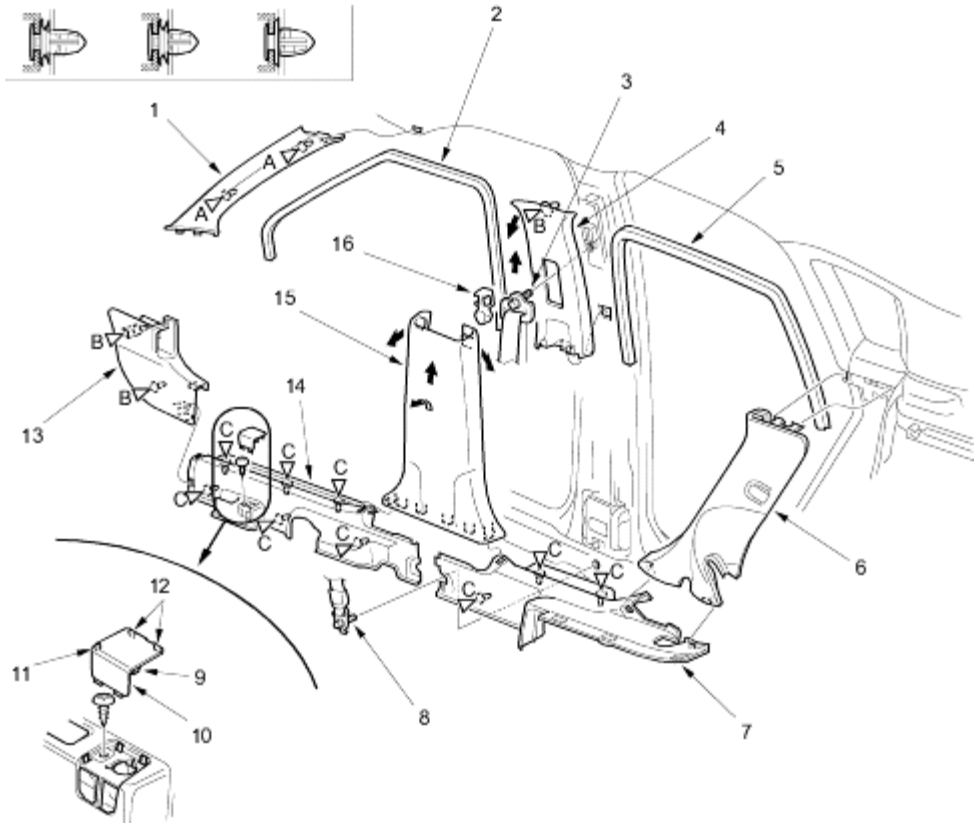
- Replace any damaged clips.
- Apply liquid thread lock to the front seat belt upper anchor bolt before installation.
- Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

Fastener Locations

A ▷: Clip, 2 (Black)

B ▷: Clip, 3 (White)

C ▷: Clip, 9



1. FRONT PILLAR TRIM
2. FRONT DOOR OPENING TRIM
3. FRONT SEAT BELT UPPER ANCHOR BOLT, 7/16-20 UNF, 32 Nm (3.3 kgf m, 24 lbf ft)
4. CENTRE PILLAR UPPER TRIM
5. REAR DOOR OPENING TRIM
6. SEAT SIDE TRIM
7. REAR DOOR SILL TRIM
8. FRONT SEAT BELT UPPER ANCHOR BOLT, 7/16-20 UNF, 32 Nm (3.3 kgf m, 24 lbf ft)
9. HOOK
10. FRONT SIDE CAP
11. HOOK
12. HOOKS
13. KICK PANEL
14. FRONT DOOR SILL TRIM
15. CENTRE PILLAR LOWER TRIM
16. UPPER ANCHOR COVER

Interior Trim

Trim Removal/Installation - Quarter Pillar Area

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

Remove the trim as shown.

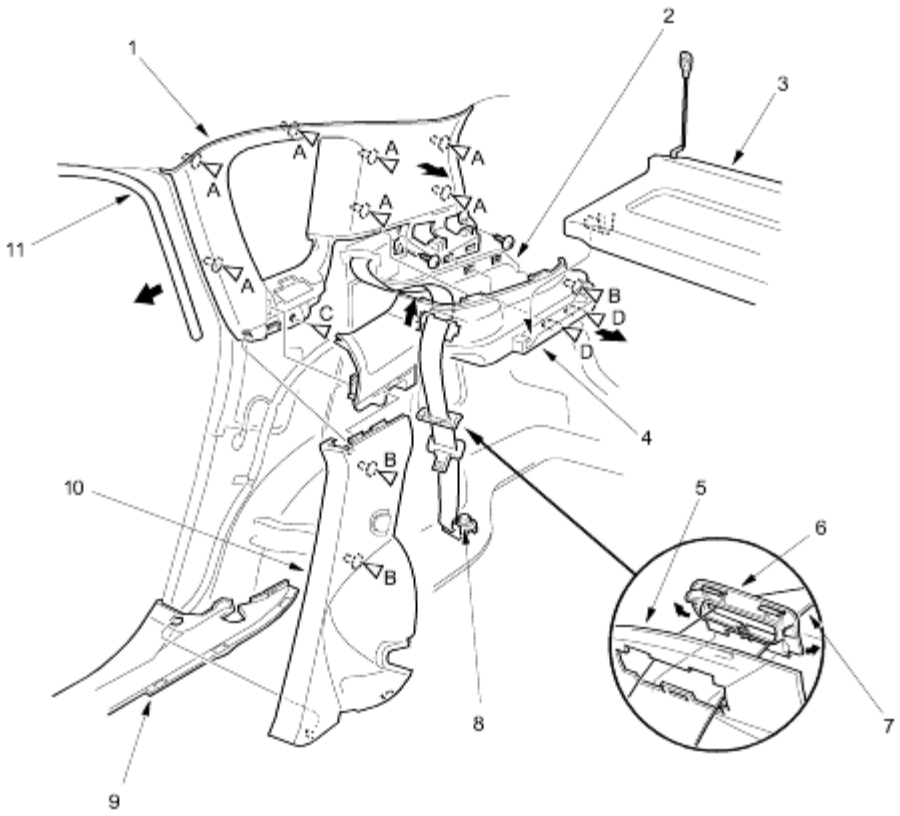
Install the trim in the reverse order of removal and note these items:

- Replace any damaged clips.
- When installing the trunk side upper trim, slip the rear seat belt through the hole in the trim.
- Before installing the anchor bolt, make sure there are no twists or kinks in the belt.

Fastener Locations

A ▷: Clip, 7 B ▷: Clip, 3 (White) C ▷: Clip, 1 D ▷: Clip, 2





1. QUARTER PILLAR TRIM
2. TRUNK SIDE TRIM PANEL
3. REAR CENTRE SHELF
4. TRUNK SIDE UPPER TRIM
5. TRUNK SIDE UPPER TRIM
6. BELT HOLE CAP
7. REAR SEAT BELT
8. REAR SEAT BELT LOWER ANCHOR BOLT, 7/16-20 UNF, 32 Nm (3.3 kgf m, 24 lbf ft)
9. REAR DOOR SILL TRIM
10. SEAT SIDE TRIM
11. REAR DOOR OPENING TRIM

Interior Trim

Trim Removal/Installation - Trunk Floor and Side Area

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

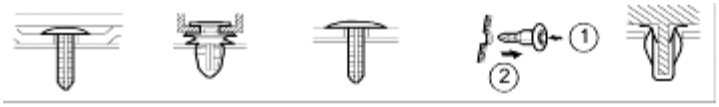
Remove the trim as shown. To remove the trunk side trim panel, remove the trunk side upper trim (see page 20-207).

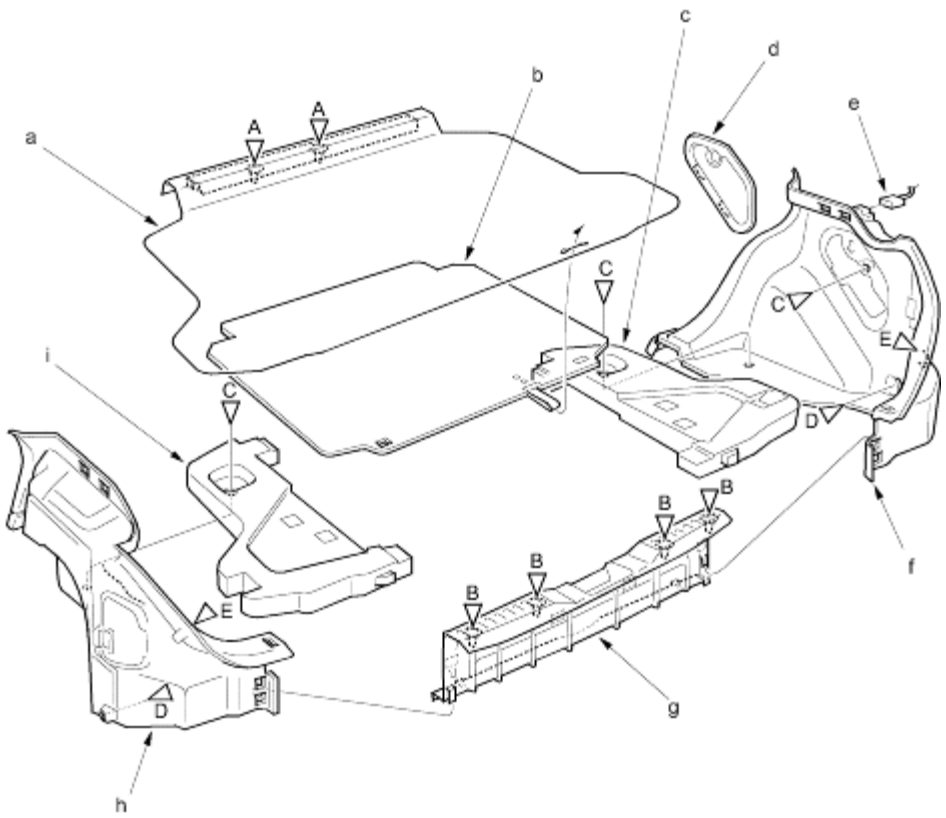
Install the trim in the reverse order of removal and note these items:

- Replace any damaged clips.
- Make sure the trunk compartment light connector is plugged in properly.

Fastener Locations

A ▷: Clip, 2 B ▷: Clip, 4 C ▷: Clip, 3 D ▷: Clip, 2 E ▷: Clip, 2 (White)





c.

a. TRUNK FLOOR MAT
b. SPARE TYRE LID
c. RIGHT TRUNK SIDE SPACER (For some models)
d. JACK COVER
e. TRUNK COMPARTMENT LIGHT CONNECTOR
f. RIGHT TRUNK SIDE TRIM PANEL
g. REAR TRIM PANEL
h. h. LEFT TRUNK SIDE TRIM PANEL
i. LEFT TRUNK SIDE SPACER (For some models)

Interior Trim

Trim Removal/Installation - Tailgate Area

NOTE:

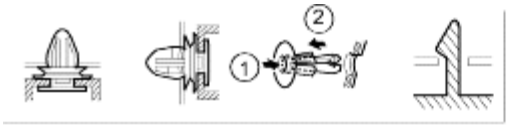
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

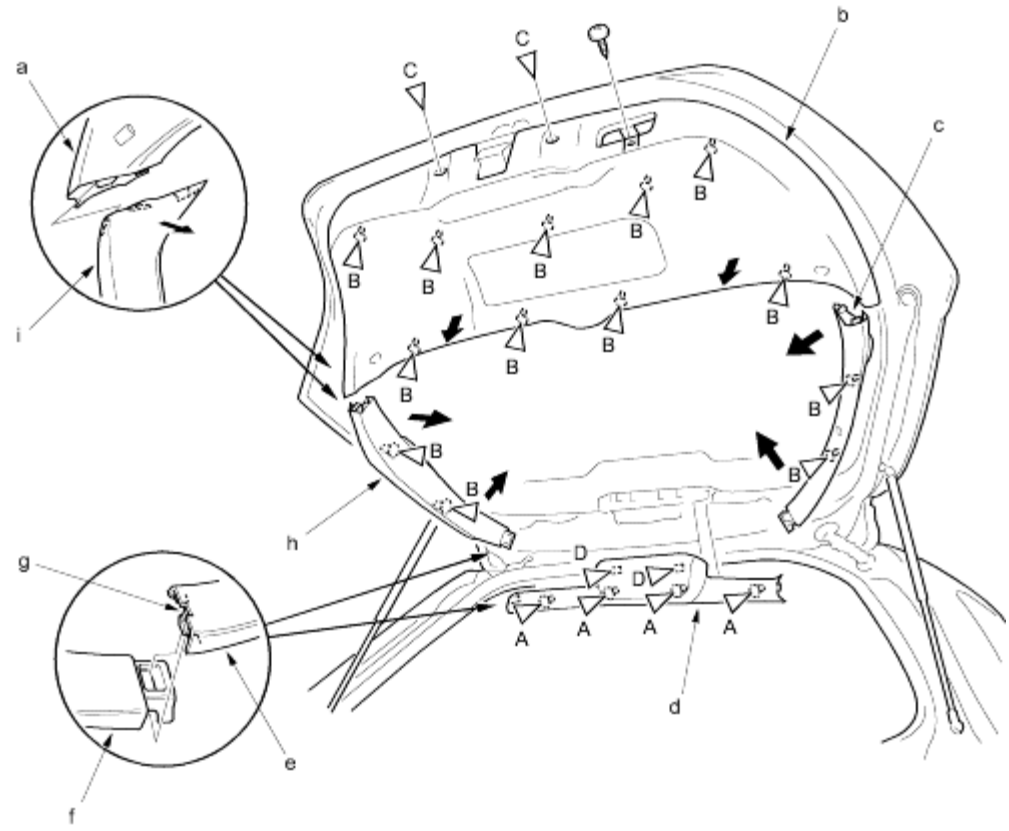
Remove the trim as shown.

Install the trim in the reverse order of removal and replace any damaged clips.

Fastener Locations

A ▷: Clip, 4 B ▷: Clip, 13 C ▷: Clip, 2 D ▷: Hook, 2





a.

a. TAILGATE LOWER TRIM PANEL
b. TAILGATE LOWER TRIM PANEL
c. RIGHT TAILGATE SIDE TRIM
d. TAILGATE UPPER TRIM PANEL
e. TAILGATE UPPER TRIM PANEL
f. TAILGATE SIDE TRIM
g. First pry out here.
h. LEFT TAILGATE SIDE TRIM
i. TAILGATE SIDE TRIM

Doors

Rear Door Glass, Quarter Glass and Regulator Replacement (cont'd)

1. 11. Install the glass and regulator in the reverse order of removal, and note these items:
   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-24).

Interior Trim

Headliner Removal/Installation

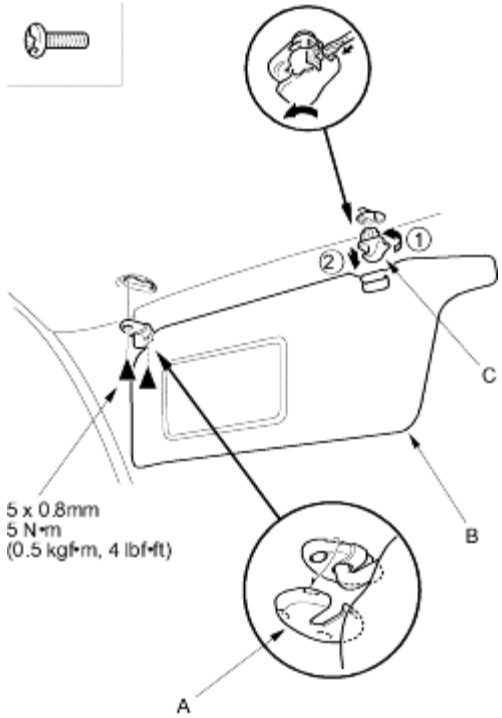
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

1. 1. Remove these items:
   - Front pillar trim, both sides (see page 20-206)
   - Centre pillar upper trim, both sides (see page 20-206)
   - Quarter pillar trim, one side (see page 20-207)
   - Sunroof switch, for some models (see page 22-157)
   - Spotlights, for some models (see page 22-138)
   - Ceiling light (see page 22-138)
2. 2. From both sides, remove the caps (A) and remove the screws, then remove the sunvisor (B) and holder (C).

Fastener Locations

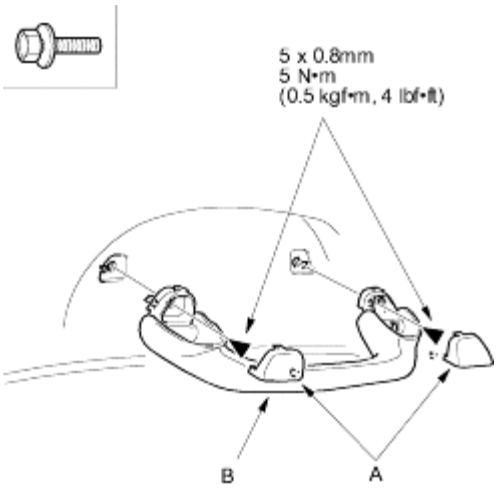
▶: Screw, 4



1. 3. Lower the grab handle, then remove the caps (A). Remove the bolts, then remove the grab handle (B). Remove the remaining grab handles.

Fastener Locations

▶: Bolt, 6



Interior Trim

Headliner Removal/Installation (cont'd)

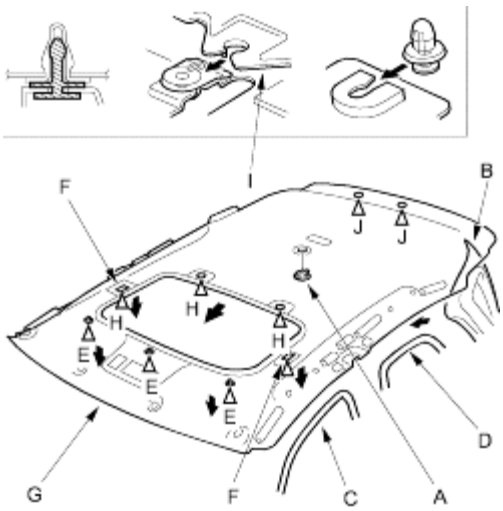
1. 4. Remove the headliner.

With sunroof:

1. Remove the socket plug (A).
2. Remove the upper portion of the remaining quarter pillar trim (B) (see page 20-207).
3. Remove the remaining front door opening trim (C) and rear door opening trim (D) from each roof portion.
4. Detach the clips (E) and release the fasteners (F) by pulling the front portion of the headliner (G) down.
5. With the help of an assistant, release the clips (H) of the headliner from the sunroof frame (I) and release the headliner from the clips (J) by sliding the headliner forward and lowering the headliner.
6. Disconnect the sunroof switch connector (K).
7. Remove the headliner through the tailgate opening.

Fastener Locations

E ▷: Clip, 3 H ▷: Clip, 2 J ▷: Clip, 2



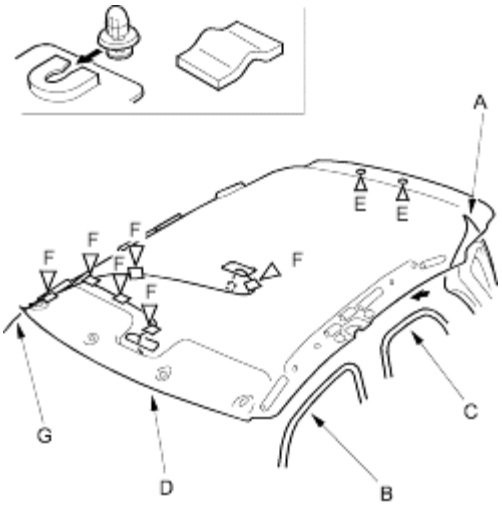
1. 5. Remove the headliner.

Without sunroof:

1. Remove the upper portion of the remaining quarter pillar trim (A) from each side (see page 20-207).
2. Remove the remaining front door opening trim (B) and rear door opening trim (C) from each roof portion.
3. With the help of an assistant, release the headliner (D) from the clips (E) by sliding the headliner forward and lowering the headliner.
4. Remove the cushion tape (F), then remove the roof harness (G) from the headliner.
5. Remove the headliner through the tailgate opening.

Fastener Locations

E ▷: Clip, 2 F ▷: Cushion tape, 6



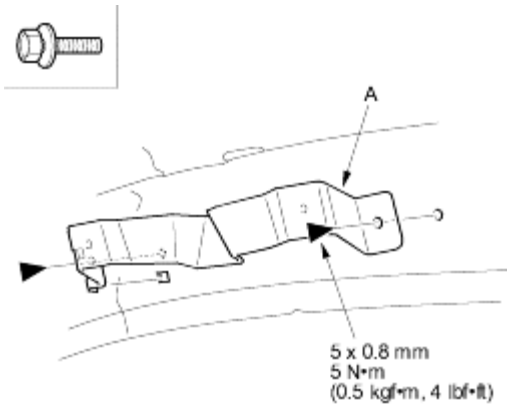
Interior Trim

Headliner Removal/Installation (cont'd)

1. 6. If necessary, remove the bolts, then remove the grab handle bracket (A). Remove the remaining grab handle brackets, as needed.

Fastener Locations

▶: Bolt, 6



2. 7. Install the headliner in the reverse order of removal and note these items:
   - When reinstalling the headliner through the door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
   - Check that both sides of the headliner are securely attached to the trim.

SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

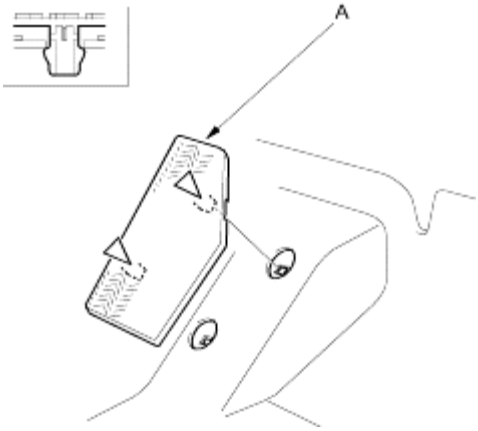
NOTE:

- Put on gloves to protect your hands.
- Take care not to damage, wrinkle or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. 1. Remove these items:
   - Front seats, both sides (see page 20-229)
   - Rear seat cushion, both sides (see page 20-237)
   - Kick panels, both sides (see page 20-206)
   - Front door sill trim, both sides (see page 20-206)
   - Rear door sill trim, both sides (see page 20-206)
   - Dashboard centre lower cover (see page 20-217)
   - Driver's dashboard under cover (see page 20-216)
   - Passenger's dashboard lower cover (see page 20-220)
2. 2. Detach the clips, then remove the footrest (A).

Fastener Locations

▷: Clip, 2



Interior Trim

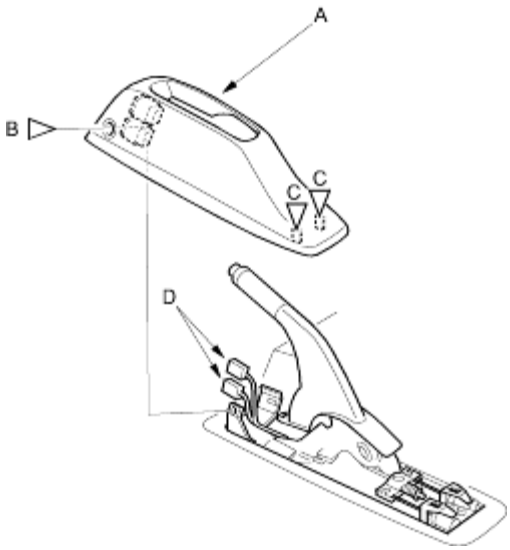
Carpet Replacement (cont'd)

1. 3. Remove the parking brake cover (A).
   - Remove the clip (B).
   - Pull up the rear portion on the cover to release the clips (C).
   - If equipped, disconnect the front seat heater switch connectors (D).

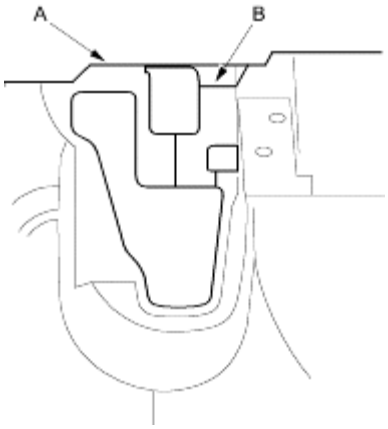
   Fastener Locations

   B ▷: Clip, C ▷: Clip, 2
   1





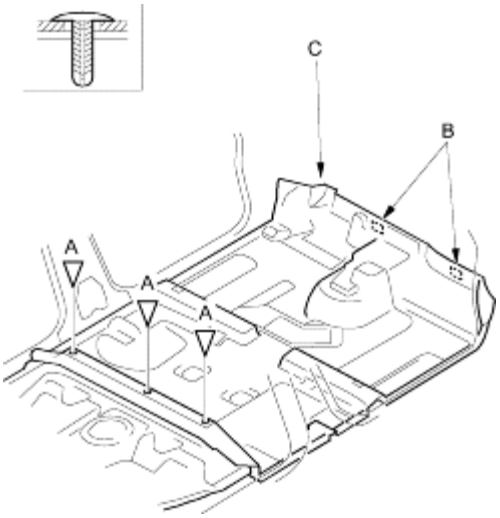
1. 4. Using a utility knife, cut the carpet (A) under the heater area (B) on the driver's side, then pull back the carpet.



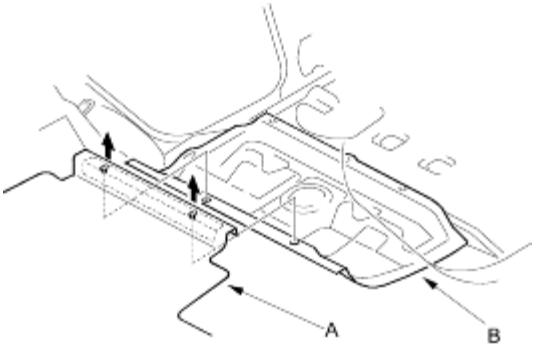
2. 5. Remove the clips (A) and release the fasteners (B), then remove the carpet (C).

   Fastener Locations

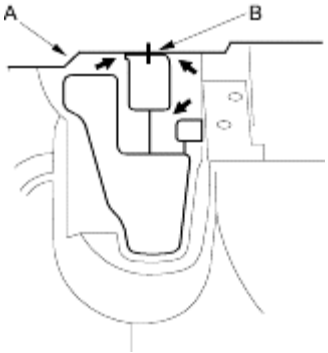
   A ▷: Clip, 3



1. 6. Remove the front edge of the trunk floor mat (A) (see page 20-208), then remove the rear floor carpet (B)



2. 7. Install the carpet in the reverse order of removal and note these items:
   - Take care not to damage, wrinkle or twist the carpet.
   - Make sure the seat harnesses are routed correctly.
   - Replace any damaged clips.
   - Reattach the cut areas under the heater with a wire tie.
   - When installing new carpet, cut the carpet (A) under the heater area (B). After installing new carpet, slip the carpet from the driver's and passenger's side through the space between the heater unit and body.



Dashboard

Instrument Panel Removal/Installation

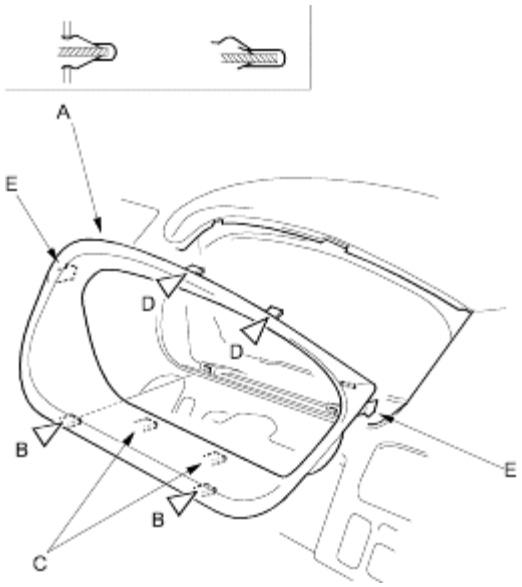
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. 1. Tilt the steering column down.
   2. Remove the steering column upper cover (see page 17-9).
   3. Remove the instrument panel (A).
      1. Gently pull out along the bottom to release the clips (B) and hooks (C).
      2. Gently pull out the upper portion to release the clips (D) and hooks (E).

Fastener Locations

B ▷: Clip, D ▷: Clip,2
2

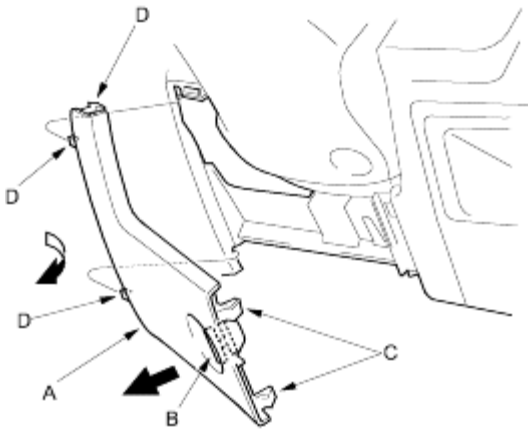


2. 4. Install the panel in the reverse order of removal.

20-215 Driver's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. 1. Remove the driver's dashboard lower cover (A).
      1. Turn the lock knobs (B) 45° on each side.
      2. Gently pull out the right side to release the hooks (C).
      3. Pull out the panel to release the hooks (D).



2. 2. Install the cover in the reverse order of removal.

Dashboard

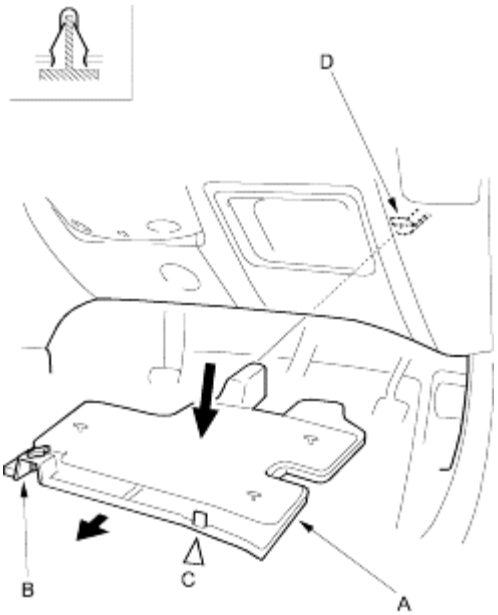
Driver's Dashboard Under Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. 1. Remove the driver's dashboard under cover (A).
    1. Turn the lock knob (B) 45°.
    2. Gently pull down the rear edge to release the clip (C).
    3. Pull the cover away to release it from the clip (D).

Fastener Location

C ▷: Clip, 1



2. 2. Install the cover in the reverse order of removal.

NOTE:

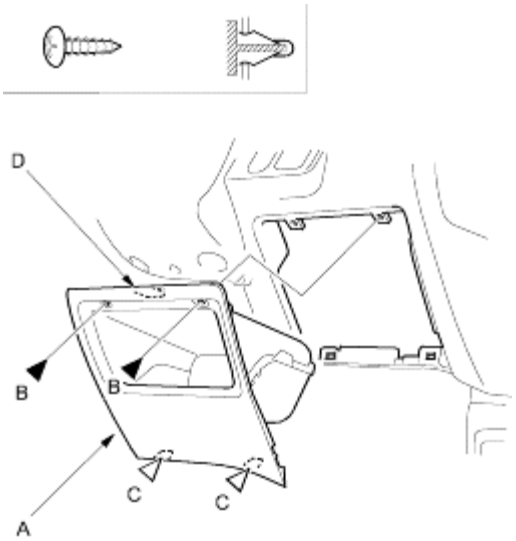
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. 1. Remove the driver's pocket (A).
    1. Remove the driver's dashboard under cover.
    2. Remove the screw (B).
    3. From behind the dashboard, push the pocket back by hand to release the clips (C).
    4. Release the hook (D).

Fastener Location

B ▶: C ▷: Clip 1

Screw 2



2. 2. Install the pocket in the reverse order of removal.

Dashboard

Dashboard Centre Lower Cover Removal/Installation

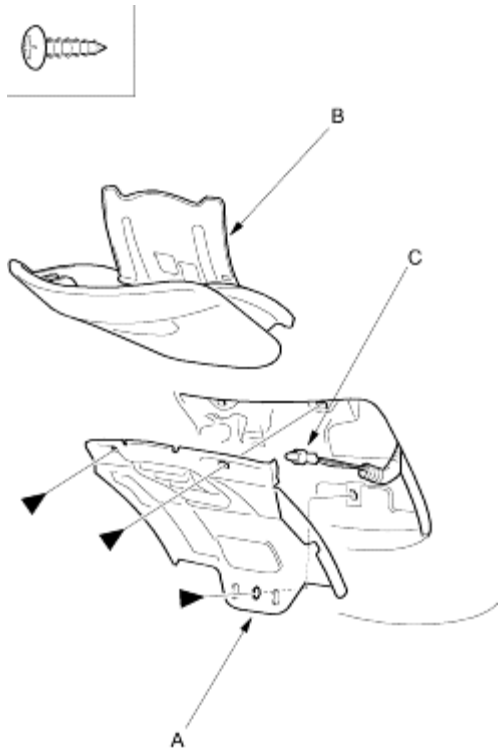
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. 1. Remove the ashtray holder (A).
   1. Remove the ashtray (B).
   2. Remove the screws, then remove the ashtray holder.
   3. Disconnect the ashtray light bulb socket (C).

Fastener Locations

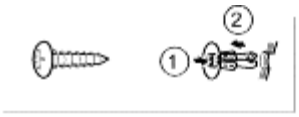
▶: Screw, 3

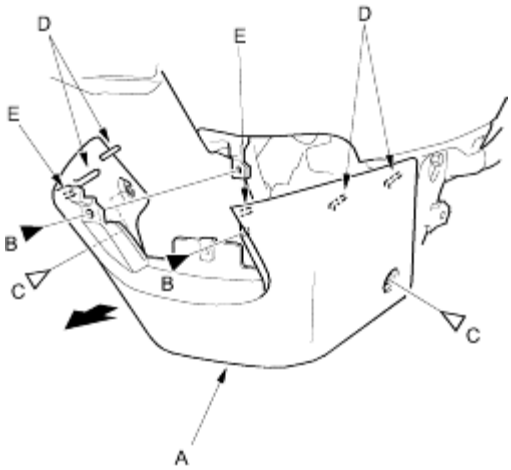


1. 2. Remove the dashboard centre lower cover (A).
   1. Remove the screws (B) and clips (C).
   2. Gently pull out the cover to release the hooks (D) and pins (E).

Fastener Locations

B	▶: Screw, 2	C	▷: Clip, 2





2. 3. Install the cover in the reverse order of removal and note these items:
   - Replace any damaged clips.
   - Make sure the ashtray light bulb socket is connected properly.

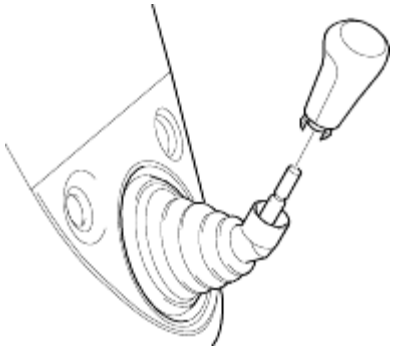
Dashboard

Shift Lever Trim Removal/Installation

NOTE:

- Take care not to scratch the dashboard and related parts.
- Put on gloves to protect your hands.

1. 1. Remove the glove box (see page 20-220).
   2. M/T: Remove the shift knob.

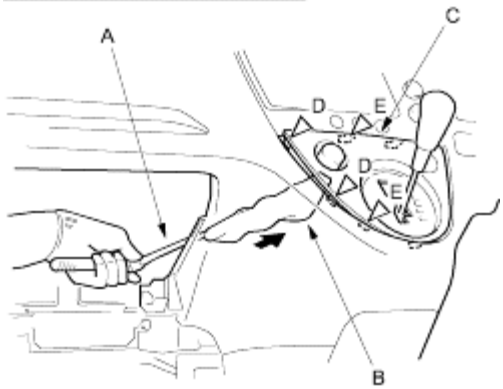


2. 3. Using a wrench (A) wrapped with shop towel (B), carefully insert a wrench from the glove box opening and push the shift lever trim (C) from under the trim to release the clips (D) and hooks (E) of the left side.

Fastener Locations

D ▷: Clip, E ▷: Hook, 2
2



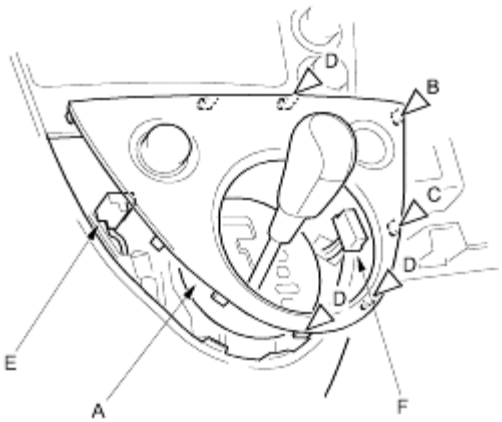


1. 4. Pull out the shift lever trim (A) by hand to release the remaining clips (B, C) and hooks (D) and disconnect the cigarette light connector (E) and hazard warning switch connector (F), then remove the trim.

Fastener Locations

B ▷: Clip, C ▷: Clip, D ▷: Hook,
1 1 3





2. 5. Install the trim in the reverse order of removal and make sure each connector is plugged in properly.

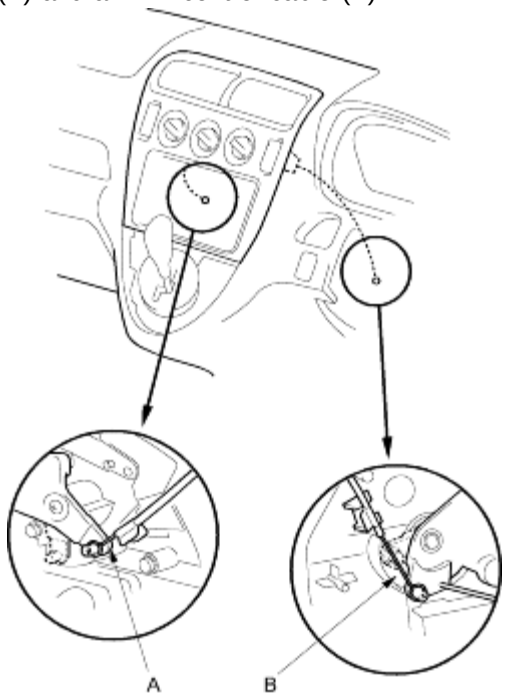
Dashboard

Centre Panel Removal/Installation

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

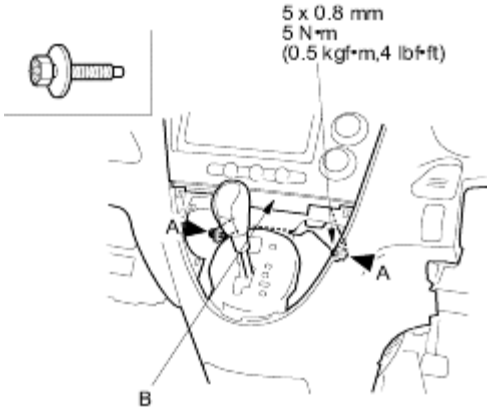
1. 1. Remove these items:
   - Driver's dashboard lower cover (see page 20-215)
   - Shift lever trim (see page 20-218).
2. 2. On manual A/C: Disconnect the mode control cable (A) and air mix control cable (B).



1. 3. From the glove box and driver's dashboard lower cover openings, loosen the bolts (A) securing the centre panel (B).

Fastener Locations

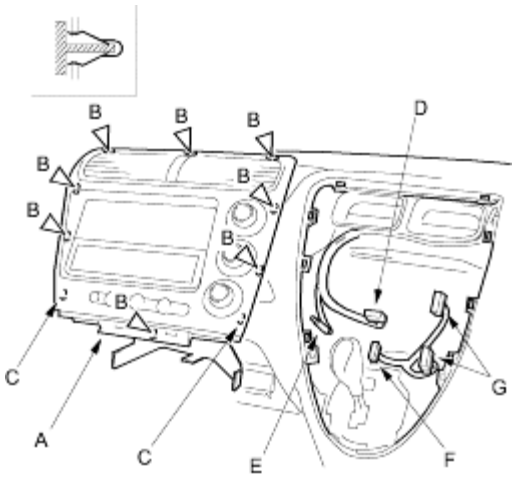
A ▷: Bolt, 2



2. 4. Pull out the centre panel (A) to release the clips (B) and hooks (C) and disconnect the audio unit connector (D), antenna lead (E), heater switch connector (F) and climate control unit connectors (G).

Fastener Locations

B ▷: Clip, 8



3. 5. Install the panel in the reverse order of removal and make sure each connector is plugged in properly and antenna lead and cables (manual A/C) are connected properly.

Doors

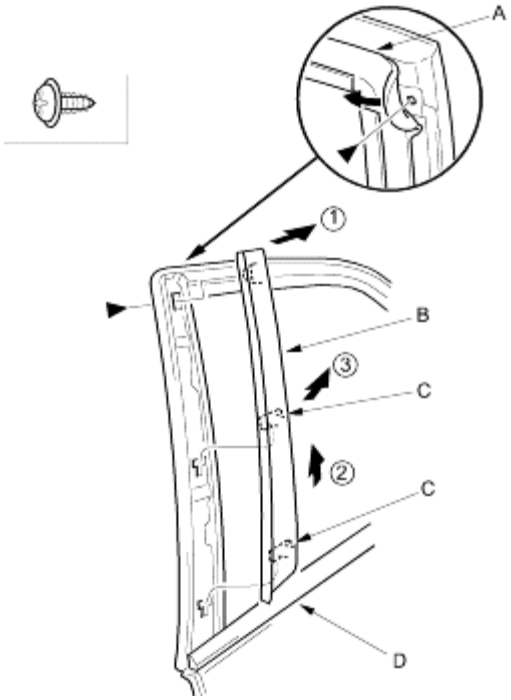
Rear Door Sash Trim Replacement

NOTE: Take care not to scratch the door.

1. 1. Pull back the door weatherstrip (A) at the front upper corner portion, and remove the screw.

Fastener Location

▶: Screw, 1



2. 2. Pull up the door sash trim (B) to release the hooks (C), then remove the trim. Take care not to damage the door glass outer weatherstrip (D).
3. Install the reverse order of removal.

20-22 Rear Door Glass Outer Weatherstrip Replacement

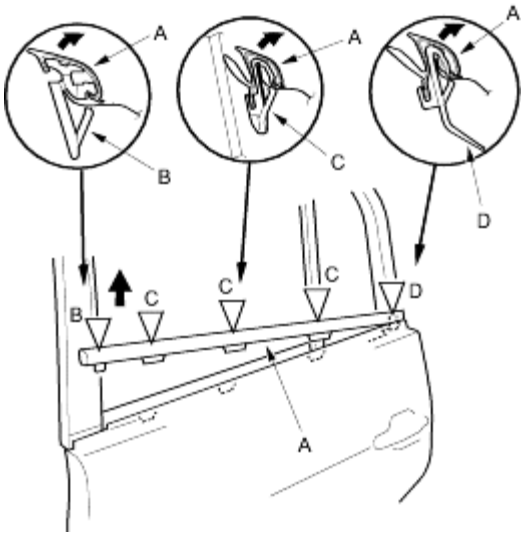
NOTE:

- Put on gloves to protect you hands.
- Take care not to scratch the door.

1. 1. Starting at the front, pry the door glass outer weatherstrip (A) up to detach the clips (B, C, D), then remove the weatherstrip.

Fastener Locations

B ▷: Clip, 1 C ▷: Clip, 3 D ▷: Clip, 1



2. 2. Install the weatherstrip in the reverse order of removal, and replace any damaged clips.

Dashboard

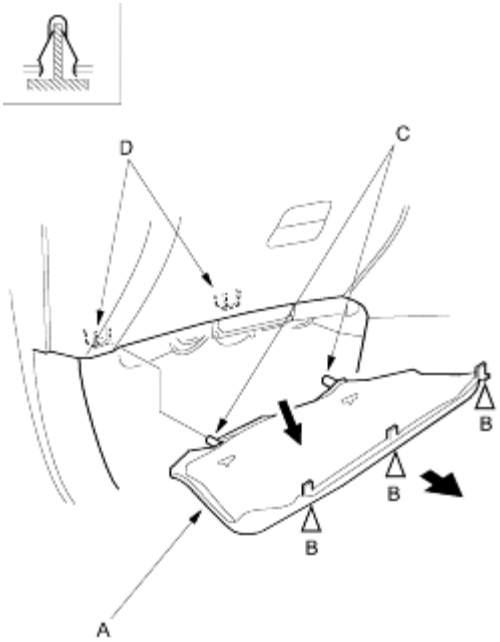
Passenger's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. 1. Remove the passenger's dashboard lower cover (A).
    1. Gently pull down the rear edge to release the clips (B).
    2. Pull the cover away to release the pins (C) from the holders (D).

Fastener Locations

B ▷: Clip, 3



2. 2. Install the under cover in the reverse order of removal.

SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

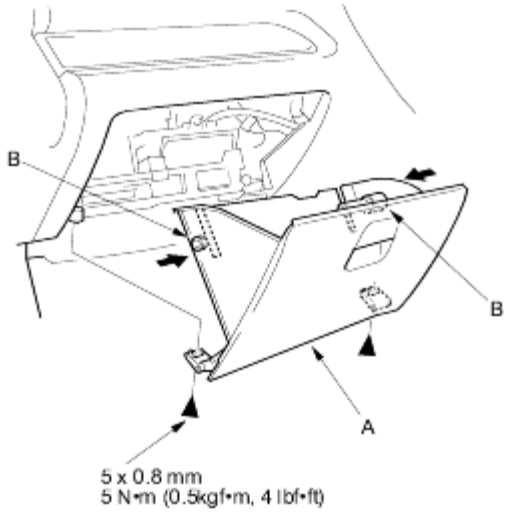
NOTE: Take care not to scratch the dashboard and related parts.

1. 1. Remove the passenger's dashboard lower cover.
    2. Remove the bolts securing the glove box (A).

Fastener Location:

▶: Bolt, 2





2. 3. While holding the glove box, release the glove box stop (B) on each side from the dashboard by pushing it inside, then remove the glove box.
    4. Install the glove box in the reverse order of removal.

Dashboard

Dashboard Side Vent Removal/Installation

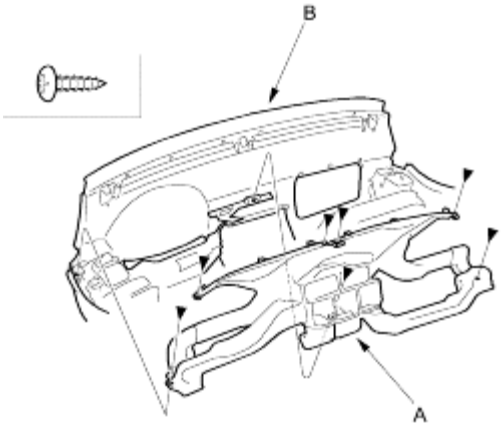
NOTE:

- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-223).
2. Remove the steering hanger beam from the dashboard (see page 20-226).
3. Remove the screws, then remove the air duct (A) from the dashboard (B).

Fastener Locations

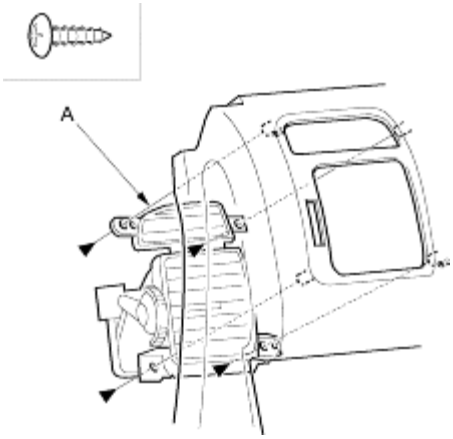
▶: Screw, 7



4. Remove the screws, then remove the side vent (A).

Fastener Locations

▶: Screw, 4



5. Install the side vent in the reverse order of removal.

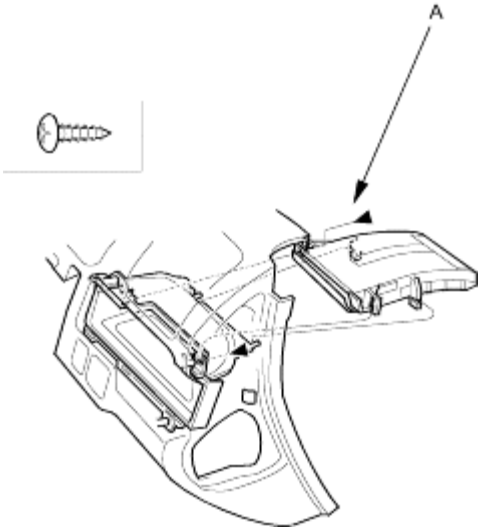
NOTE:

- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-223).
2. Remove the screws, then remove the beverage holder (A).

Fastener Locations

▶: Screw, 2



3. Install the beverage holder in the reverse order of removal.

Dashboard

Driver's Tray Removal/Installation

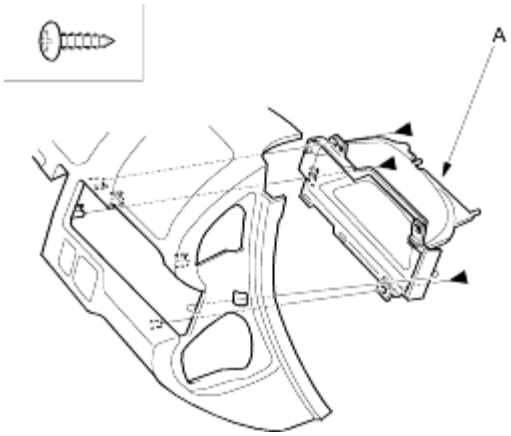
NOTE:

- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. 1. Remove the dashboard (see page 20-223).
   2. Remove the beverage holder (see page 20-221).
   3. Remove the screws, then remove the driver's tray (A).

Fastener Locations

▶: Screw, 3



2. 4. Install the tray in the reverse order of removal.

Passenger's Tray Removal/Installation

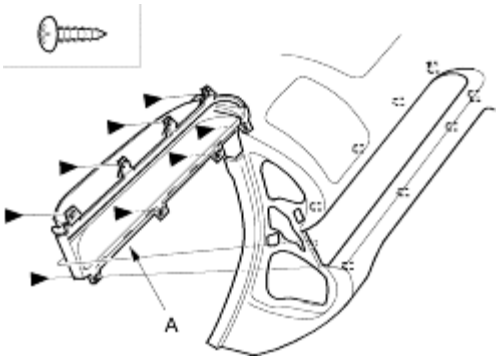
NOTE:

- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. 1. Remove the dashboard (see page 20-223).
   2. Remove the steering hanger beam from the dashboard (see page 20-226).
   3. Remove the air duct (see step 3 on page 20-221).
   4. Remove the screws, then remove the passenger's tray (A).

Fastener Locations

▶: Screw, 8



2. 5. Install the tray in the reverse order of removal.

Dashboard

Dashboard Removal/Installation

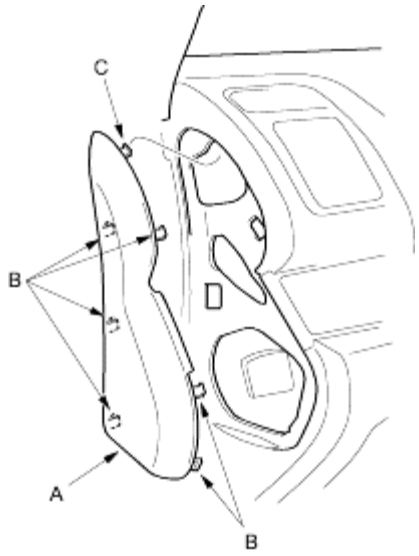
SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape and apply protective tape around the related parts to prevent damage.
- Have an assistant help you when removing and installing the dashboard.
- Take care not to scratch the dashboard, body and other related parts.
- Put on gloves to protect your hands.

1. 1. Disconnect the negative battery cable and wait at least three minutes before beginning work.
   2. Remove these items:
      - Driver's dashboard lower cover (see page 20-215)
      - Driver's dashboard under cover (see page 20-216)
      - Passenger's dashboard lower cover (see page 20-220)
      - Glove box (see page 20-220)
      - Dashboard centre lower cover (see page 20-217)
      - Shift lever trim (see page 20-218)
      - Kick panels, both sides (see page 20-206)
      - Front pillar trim, both sides (see page 20-206)
      - Steering column (see page 17-9)
      - Shift lever, M/T (see page 13-48), A/T (see page 14-137)

1. 3. From outside of the passenger's door, gently pull out along the edge of the dashboard side cover (A) to release the hooks (B), then release the upper hook (C), to remove the cover.

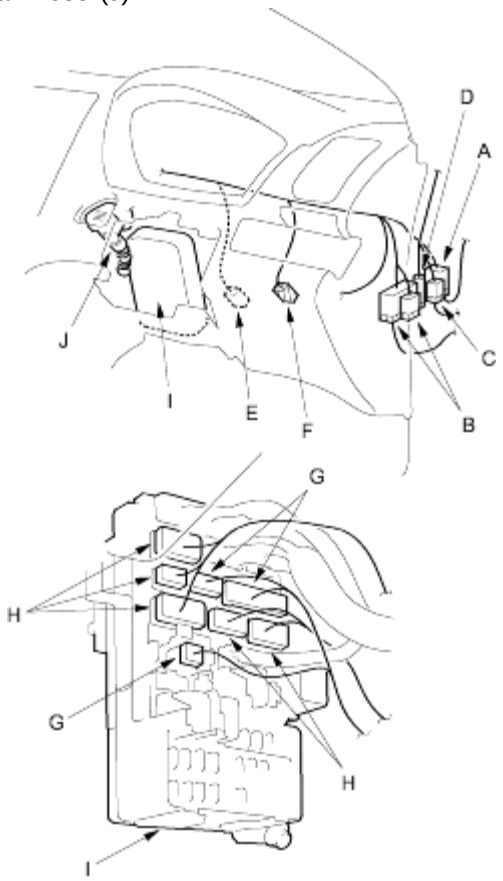


Dashboard

Dashboard Removal/Installation (cont'd)

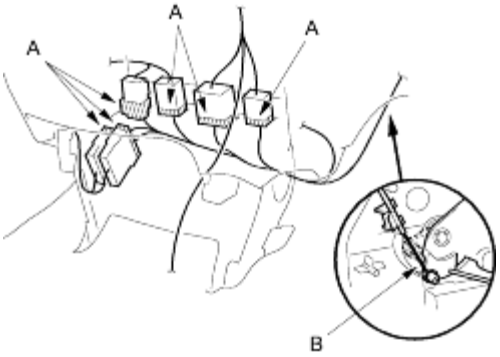
Driver's side:

1. 4. From under the dash, disconnect the interior wire harness connector (A), driver's door wire harness connectors (B), side turn signal light connector (C) (for some models), antenna lead (D) (pillar antenna), clutch switch connector (E) (on MT model) and brake switch connector (F) and disconnect the floor wire harness connectors (G) and engine compartment wire harness connectors (H) from the under-dash fuse/relay box (I). On auto A/C model, disconnect the air hose (J).

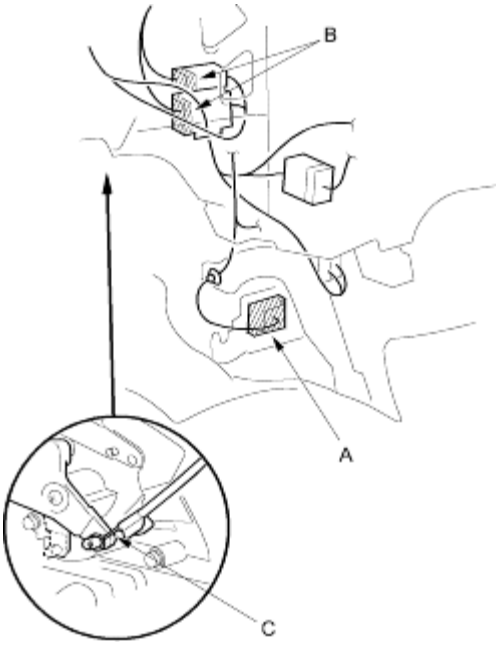


Middle portion:

1. 5. From the driver's side, disconnect the floor wire harness connectors (A) and on manual A/C, disconnect and detach the air mix control cable (B).



2. 6. From the passenger's side, disconnect the combination sub harness connector (A) and A/C sub wire harness connectors (B) and on manual A/C, disconnect and detach the mode control cable (C).

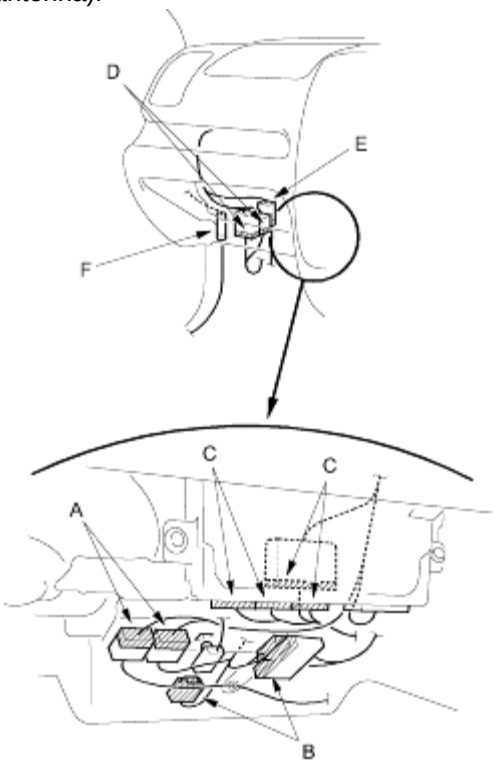


Dashboard

Dashboard Removal/Installation (cont'd)

Passenger's side:

1. 7. From under the dash, disconnect the dashboard wire harness connectors (A), EPS sub wire harness connectors (B), engine compartment wire harness connectors (C), passenger's door wire harness connectors (D), side turn signal light connector (E) (for some models) and antenna lead (F) (roof antenna).

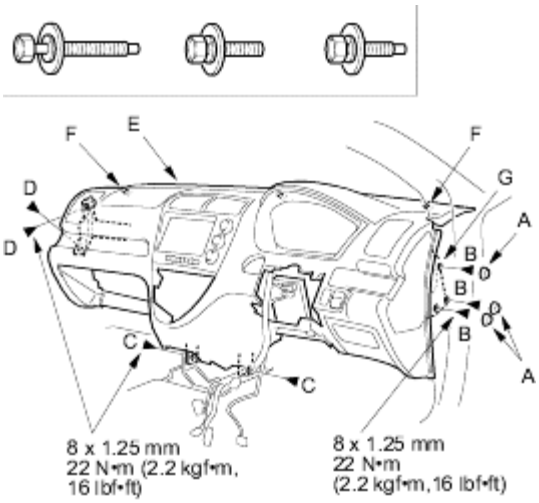


2. 8. Detach all of the harness and connector clips.

1. 9. From outside the driver's door, remove the caps (A), then remove the bolts (B, C, D) and lift up on the dashboard (E) to release it from the guide pins (F, G) on the body.

Fastener Locations

B ▶ 3: Bolt, C ▶ 2: Bolt, D ▶ 2: Bolt,



2. 10. Carefully remove the dashboard through the front door opening.
   11. Install the dashboard in the reverse order of removal and note these items:
   - Make sure the dashboard fits onto the guide pins correctly.
   - Apply liquid thread lock to the dashboard mounting bolts of the middle portion before reinstallation.
   - Before tightening the bolts, make sure the each wire harness and control cables (manual A/C) are not pinched.
   - Make sure the connectors are plugged in properly and the antenna lead, control cables (manual A/C) and air hose (auto A/C) are connected properly.
   - Reconnect the negative cable to the battery.

Dashboard

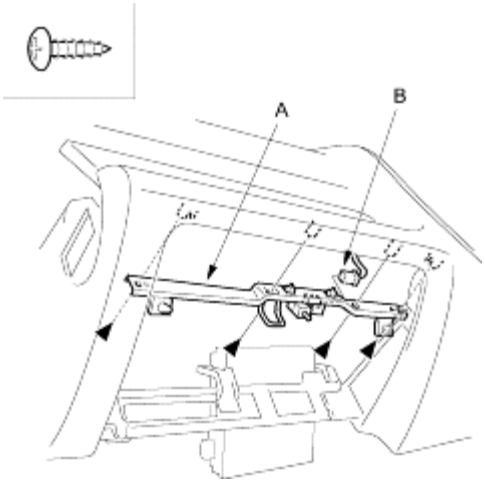
Steering Hanger Beam Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-223).
2. Remove the these items from the dashboard:
   - Instrument panel (see page 20-215)
   - Driver's pocket (see page 20-216)
   - Gauge assembly (see page 22-93)
   - Centre panel, auto A/C (see page 20-219)
   - Sunlight sensor, auto A/C (see page 21-152)
   - Passenger's airbag (see page 23-167)
2. 3. Remove the screws, then remove the glove box striker (A). If equipped, disconnect the glove box light connector (B).

Fastener Locations

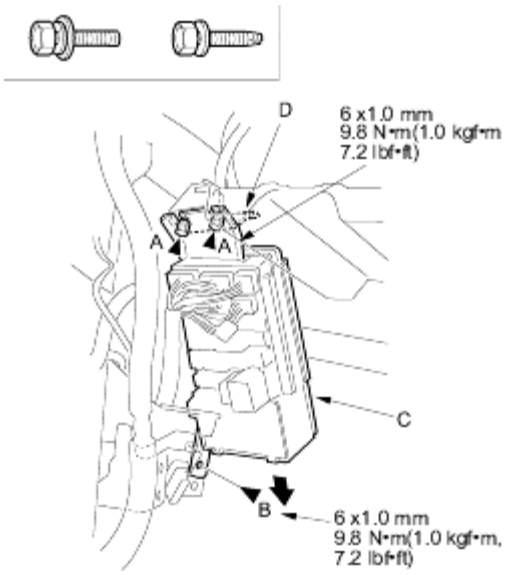
▶: Screw, 4



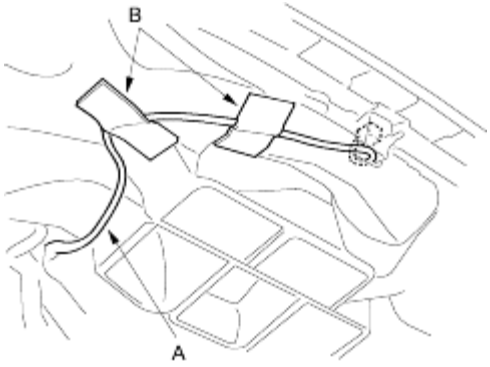
1. 4. Loosen the bolts (A) and remove the bolt (B) and pull down the under-dash fuse/relay box (C) to release the bracket (D).

Fastener Locations

A ▶: Bolt, 2
B ▶: Bolt, 1



2. 5. Remove the sunlight sensor wire harness (A) by removing the cushion tape (B).



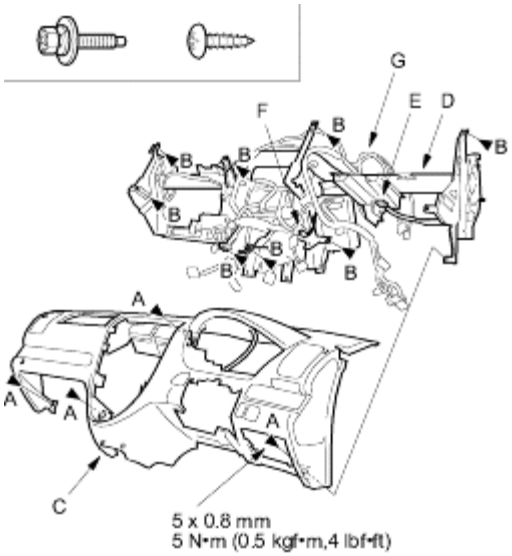
Dashboard

Steering Hanger Beam Replacement (cont'd)

1. 6. Remove the bolts (A) and screws (B) securing the dashboard (C) and steering hanger beam (D) and disconnect the power mirror switch connector (E). On auto A/C model, disconnect the in-car temperature sensor connector (F). Separate the dashboard and steering hanger beam.

Fastener Locations

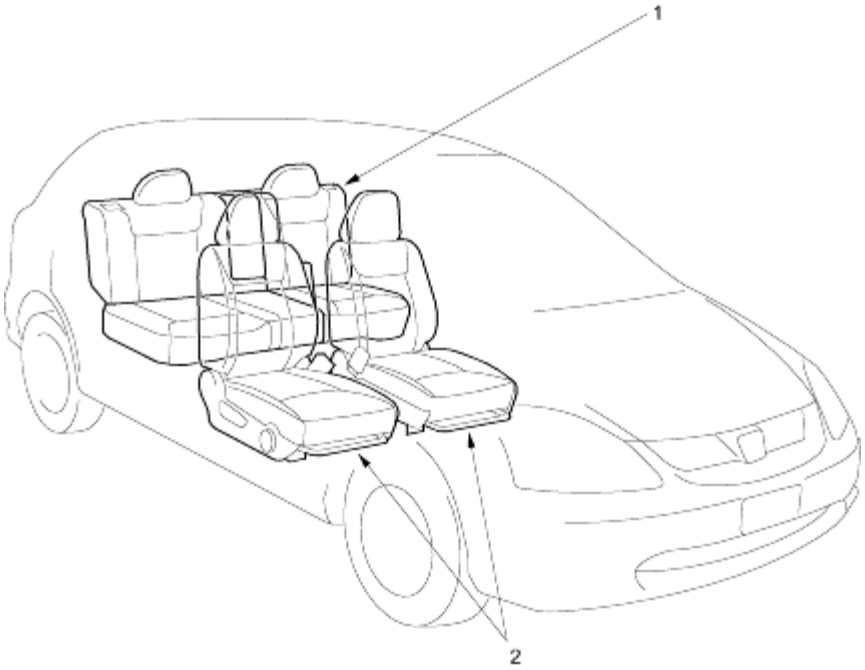
A ▶: Bolt, B ▶: 4 Screw. 8



1. 7. Install the beam in the reverse order of removal and note these items:
   - Make sure the dashboard wire harness (G) is not pinched.
   - Make sure the connectors are connected properly.

Seats

Component Location Index



1. REAR SEAT
   Removal/Installation, page 20-237
   Armrest Replacement, page 20-238
   Seat-back Latch Replacement, page 20-238
   Seat-back Striker Replacement, page 20-239
   Seat-back Cover Replacement, page 20-239
   Seat Cushion Cover Replacement, page 20-241
2. FRONT SEAT
   Removal/Installation 20-229
   Disassembly/Reassembly-Driver's page 20-231
   Disassembly/Reassembly-Passenger's, page 20-232
   Armrest Replacement, page 20-233
   Seat Cover Replacement, page 20-234

Seats

Front Seat Removal/Installation

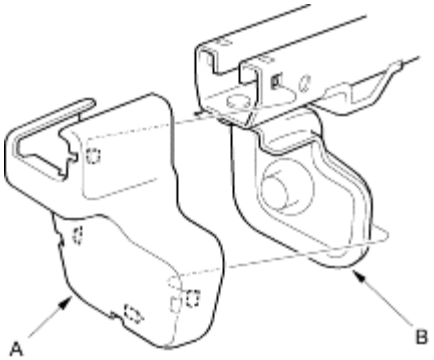
For some models: SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE

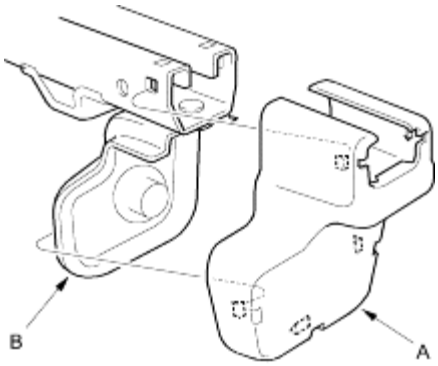
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

1. 1. With side airbag, disconnect the negative battery cable and wait at least three minutes before beginning work.
   2. Remove the seat track and covers (A) from the front of both seat tracks (B).

Outer:

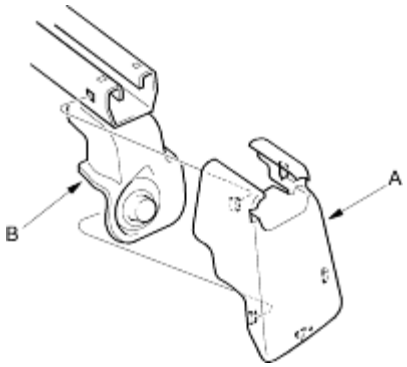


Inner:

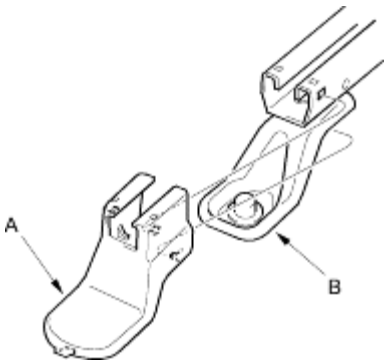


1. 3. Remove the seat track end cover (A) from the back of both seat tracks.

Outer:



Inner:



Doors

Rear Door Weatherstrip Replacement

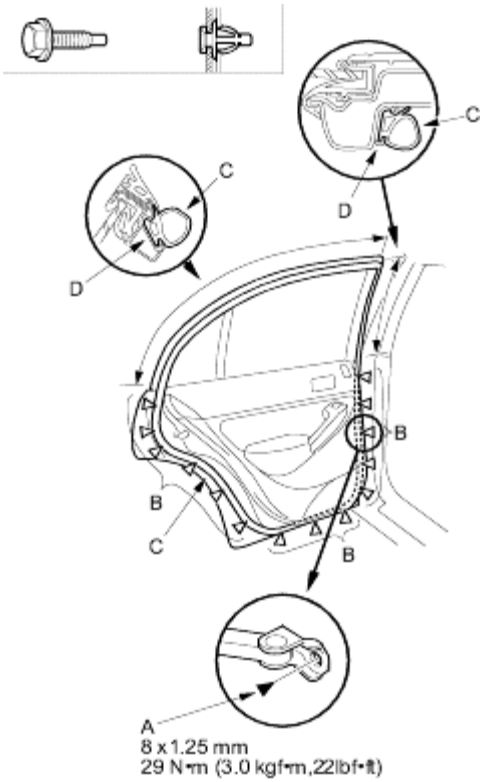
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. 1. At the centre pillar, remove the door stop mounting bolt (A).

Fastener Locations

A ▶: Bolt, 1 B ▷: Clip, 14



2. 2. Detach the clip (B), then remove the door weatherstrip (C).
3. Install the weatherstrip in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the weatherstrip is installed in the holder (D) securely.
   - Apply liquid thread lock to the door stop mounting bolt before installation.
   - Check for water leaks (see step 7 on page 20-25).

Rear Door Upper Seal Replacement

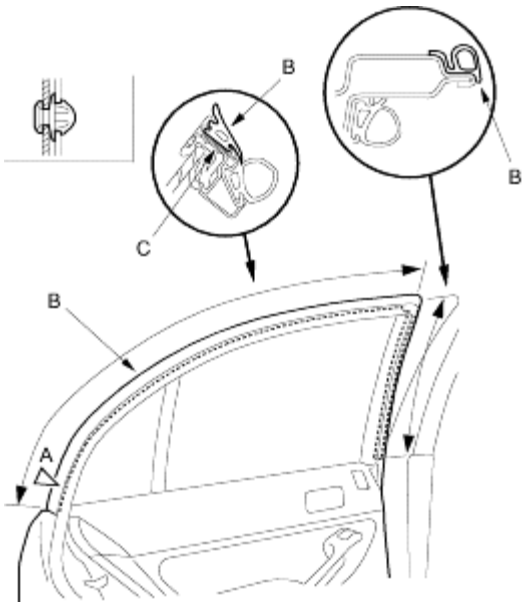
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. 1. Remove the door sash trim (see page 20-22).
2. Detach the door weatherstrip clip (A), then remove the door upper seal (B).

Fastener Location

A ▷: Clip, 1



2. 3. Install the seal in the reverse order of removal, and note these items:
   - Replace the clip if it's damaged.
   - Make sure the upper seal is installed in the holder (C) securely.
   - Check for water leaks (see step 7 on page 20-25).

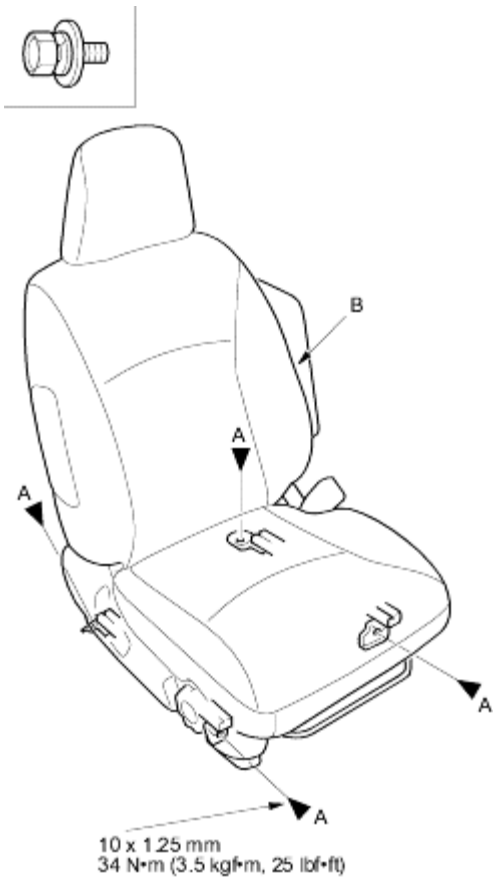
Seats

Front Seat Removal/Installation (cont'd)

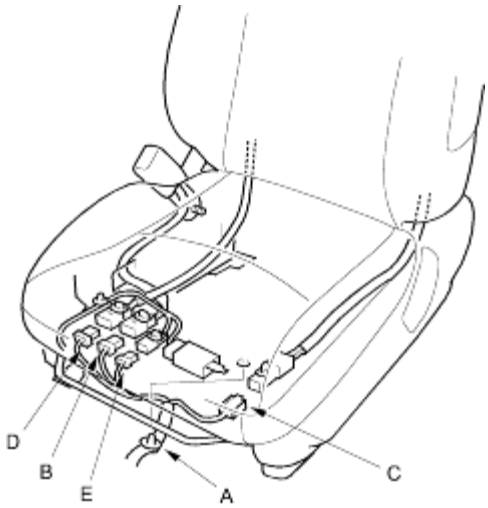
1. 4. Remove the bolts (A) securing the front seat (B).

Fastener Locations

A ▶: Bolt, 4



1. 5. Lift up the front seat, then detach the harness clip (A), and disconnect the seat belt switch connector (B). If equipped with a side airbag, disconnect the side airbag connector (C) and on some passenger's seat, disconnect the OPDS unit connector (D). If equipped with seat heaters, disconnect the seat heater connector (E). The passenger's seat is shown, the driver's seat is similar except it has no OPDS unit connector.



2. 6. With the help of an assistant, carefully remove the front seat through the front door opening.
7. Install the seat in the reverse order of removal and note these items:
   - Make sure each connector is plugged in properly.
   - If equipped with a side airbag, reconnect the negative cable to the battery.

Seats

Front Seat Disassembly/Reassembly - Driver's

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

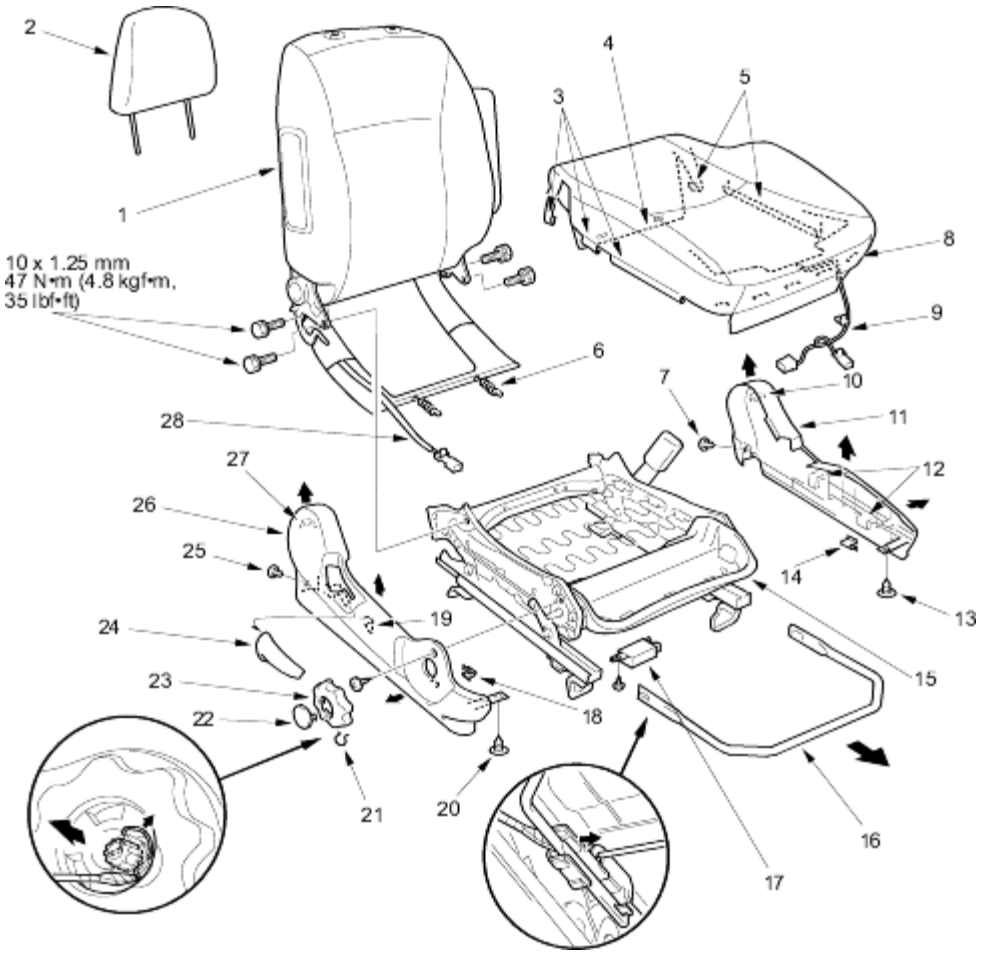
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.

Disassemble the seat as shown.

Reassemble the seat in the reverse order of disassembly and note these items:

- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.



1. SEAT-BACK
2. HEADREST
3. HOOKS
4. Release the seat cushion cover from the cushion frame spring.
5. HOOKS
6. HANGER SPRING (With side airbag)
7. CLIP
8. HOOKS (Five places)
9. SEAT HEATER HARNESS (For some models)
10. HOOK
11. CENTRE COVER
12. HOOKS
13. CLIP
14. CLIP
15. SEAT CUSHION FRAME/SEAT TRACKS
16. SLIDE LEVER
17. SEAT HEATER UNIT (For some models)
18. CLIP
19. HOOK
20. CLIP
21. CLIP
22. CAP
23. HEIGHT HANDLE
24. RECLINE KNOB
25. CLIP
26. RECLINE COVER
27. HOOK
28. SIDE AIRBAG HARNESS

Seats

Front Seat Disassembly/Reassembly - Passenger's

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

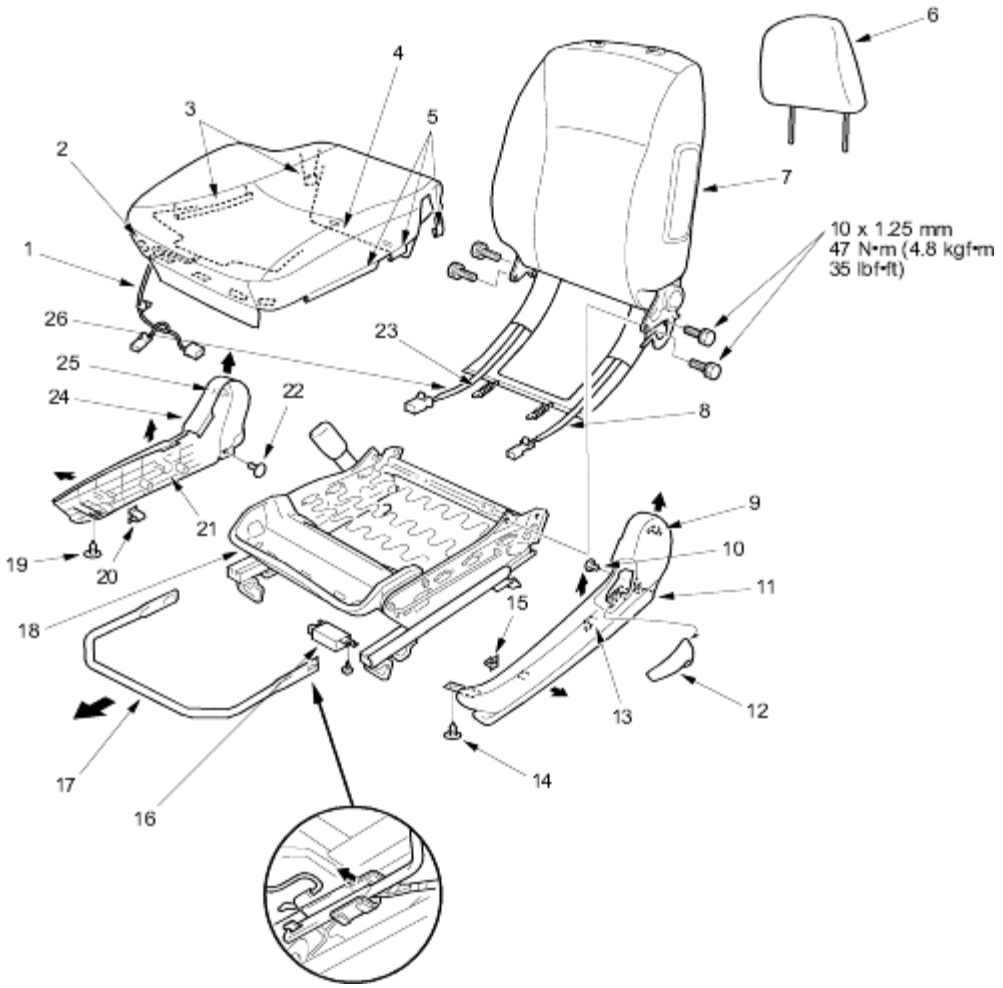
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.

Disassemble the seat as shown.

Reassemble the seat in the reverse order of disassembly and note these items:

- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.



1. SEAT HEATER HARNESS (For some models)
2. HOOKS (Five places)
3. HOOKS
4. Release the seat cushion cover from the cushion frame spring.
5. HOOK
6. HEADREST
7. SEAT-BACK
8. SIDE AIRBAG HARNESS
9. HOOK
10. CLIP
11. RECLINE COVER
12. RECLINE KNOB
13. HOOK
14. CLIP
15. CLIP
16. SEAT HEATER UNIT (For some models)
17. SLIDE LEVER
18. SEAT CUSHION FRAME/ SEAT TRACKS
19. CLIP
20. CLIP
21. HOOK
22. CLIP
23. HANGER SPRING (With side airbag)
24. CENTRE COVER
25. HOOK
26. OPDS HARNESS

Seats

Front Seat Armrest Replacement

For some models:

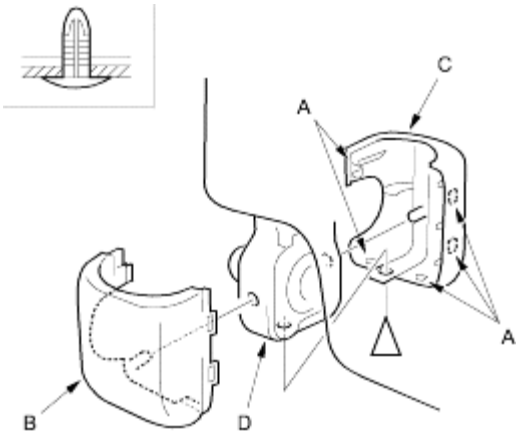
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to tear the seams or damage the seat covers.

1. 1. Release the tabs (A), then remove the front cover (B).
   Remove the clip, then remove the rear cover (C) from the armrest frame (D).

Fastener Location

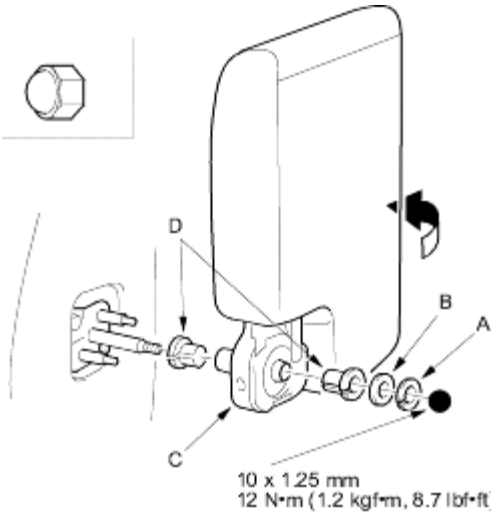
▷: Clip, 1



1. 2. Remove the nut, the spring washer (A) and the washer (B), then remove the armrest (C). If necessary, remove the bushings (D) from the armrest.

Fastener Location

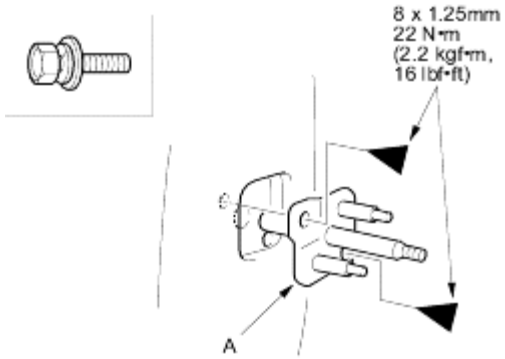
●: Nut, 1



2. 3. Remove the bolts, then remove the armrest pin (A).

Fastener Locations

▶: Bolt, 2



3. 4. Install the armrest in the reverse order of removal and replace the clip if it's damaged.

Seats

Front Seat Cover Replacement

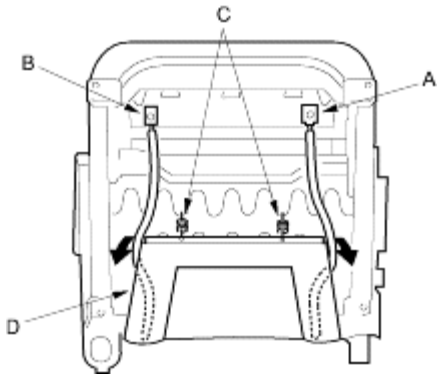
For some models: SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE:

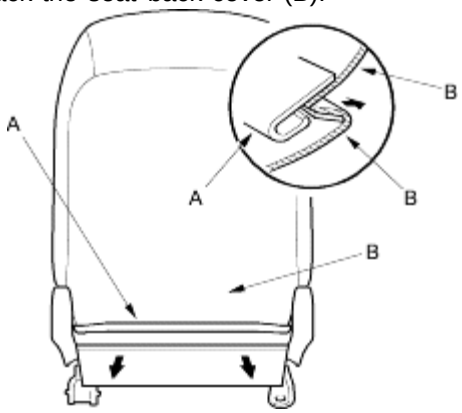
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat with side airbag, do not touch the OPDS sensor in the seat-back pad and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.

Seat-back Cover

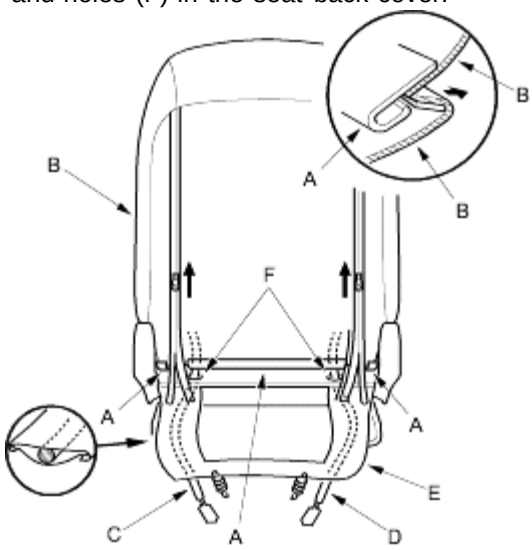
1. Remove the front seat (see page 20-229).
2. Remove the headrest.
3. Driver's seat: If equipped, remove the armrest (see page 20-233).
4. With side airbag: From under the seat cushion, detach the side airbag connector clip (A) and on the passenger's seat (for some models), detach the OPDS unit connector clip (B). Release the hook springs (C), then pull the harness guide (D) back. The passenger's seat is shown, the driver's seat is symmetrical except it has no OPDS unit connector.



5. Fold the seat-back forward.
6. Without side airbag: Release the hook (A) and fold back the seat-back cover (B).



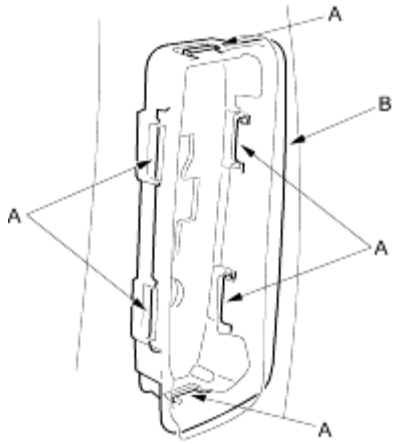
7. With side airbag: Release the hooks (A) and unzip the seat-back cover (B). Pull the side airbag harness (C) and the OPDS harness (D) (passenger's seat for some models) out through the harness guides (E) and holes (F) in the seat-back cover.



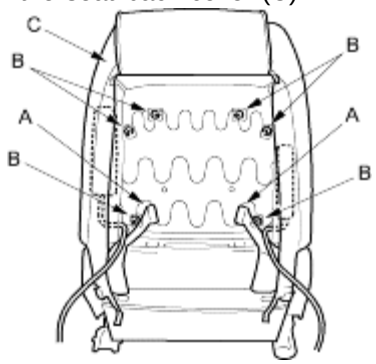
Seats

Front Seat Cover Replacement (cont'd)

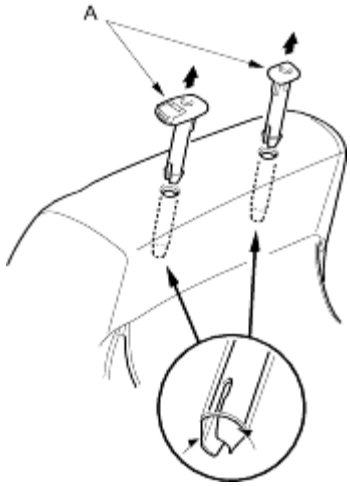
1. 8. With side airbag: Remove the side airbag (see page 23-169) and release the hooks (A) from the airbag module holder (B).



2. 9. Release the hooks (A) and hook springs (B), then loosen the seat-back cover (C).



1. 10. Pull out the headrest guides (A) while pinching the end of the guides and remove them.



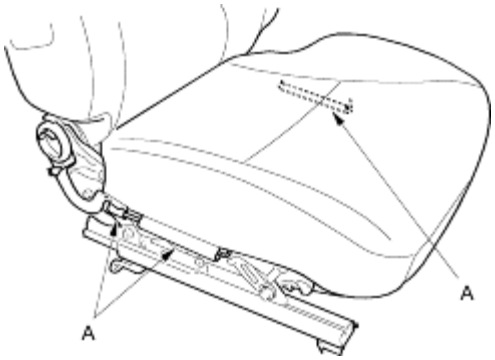
2. 11. Pull back the seat-back cover all the way around, then remove it.
12. Install the cover in the reverse order of removal and note these items:
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and hook springs.
    - Make sure the side airbag harness and OPDS harness (passenger's seat for some models) are routed properly.

Seat

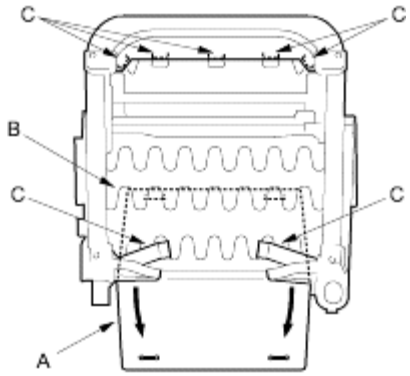
Front Seat Cover Replacement (cont'd)

Seat Cushion Cover

1. 1. Remove the front seat (see page 20-229).
   2. Remove the recline cover and centre cover, driver's seat (see page 20-231), passenger's seat (see page 20-232).
   3. With side airbag: From under the seat cushion, detach the side airbag connector clip and on the passenger's seat for some models, detach the OPDS unit connector clip. Release the hook springs.
   4. Release the hooks (A) from both sides the seat cushion.



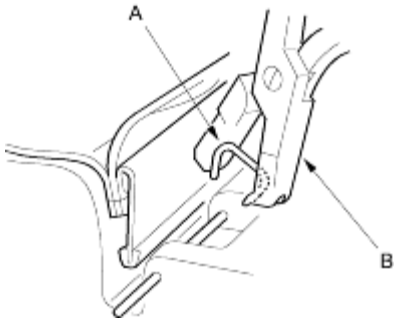
2. 5. Release the seat-back cover (A) from the cushion frame spring (B) and release the hooks (C) from under the seat cushion.



1. 6. Pull back the edge of the seat cushion cover all the way around and release the clips (A), then remove the seat cushion cover.



2. 7. Install the cover in the reverse order of removal and note these items:
   - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hooks.
   - Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).



Seats

Rear Seat Removal/Installation

NOTE: Take care not to scratch the body or tear the seat covers.

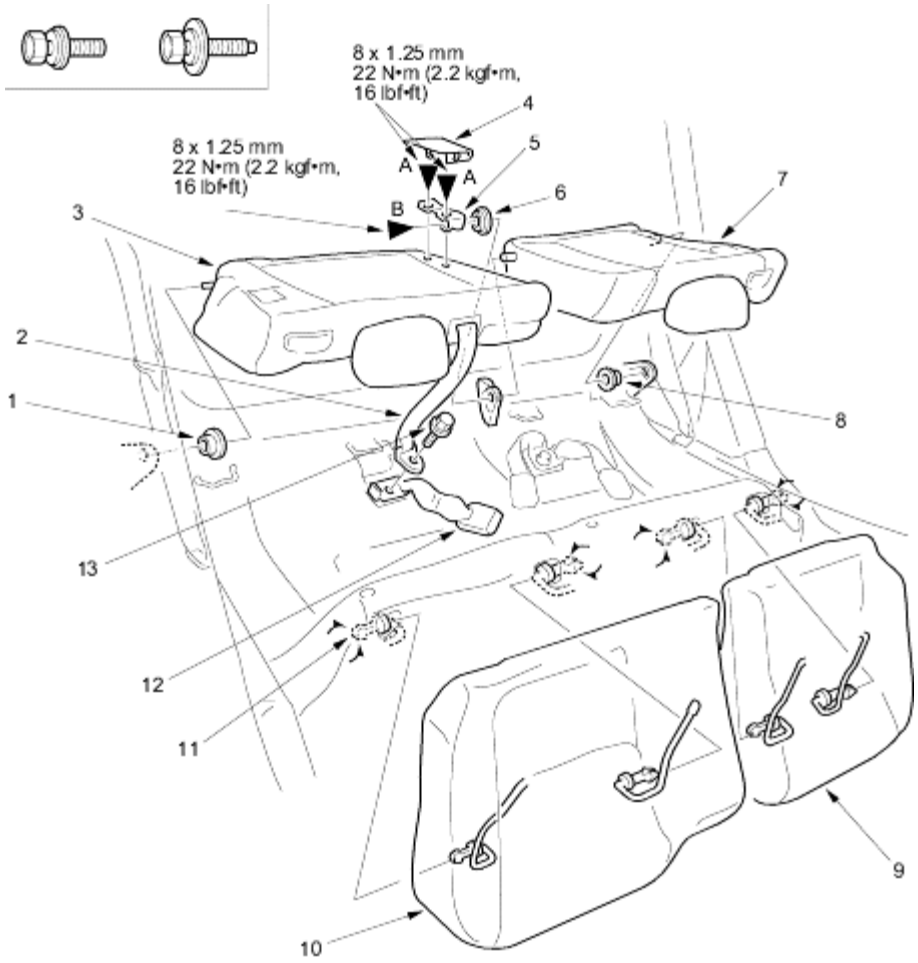
Remove the rear seat as shown.

Install the seat in the reverse order of removal and note these items:

- Before installing the centre anchor bolts on the seat-back with the centre shoulder belt, make sure there are no twists or kinks in the belt.
- Make sure the seat-backs lock securely.

Fastener Locations

A ▶: Bolt, 2 B ▶: Bolt, 1



1. PIVOT BUSHING
2. CENTRE BELT (For some models)
3. RIGHT SEAT-BACK
4. HINGE COVER
5. SEAT-BACK CENTRE HINGE
6. BUSHING
7. LEFT SEAT BACK
8. PIVOT BUSHING
9. LEFT SEAT CUSHION
10. RIGHT SEAT CUSHION
11. BUSHING
12. SEAT BELT BUCKLE
13. CENTRE ANCHOR BOLT 7/16-20 UNF, 32 Nm (3.3 kgf m, 24 lbf ft)

Seats

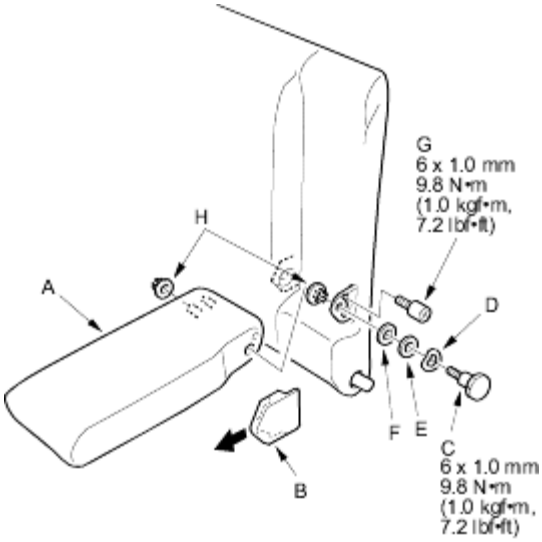
Rear Seat Armrest Replacement

For some models:

NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to tear the seams or damage the seat covers.

1. Remove the armrest (A).
   1. Pull out the pivot cover (B) forward, then remove it.
   2. Remove the pivot bolt (C), wave washer (D), washer (E), nylon washer (F) and pin bolt (G).
   3. Remove the armrest and bushing (H).

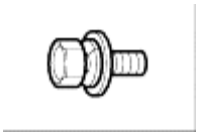


2. Install the armrest in the reverse order or removal.

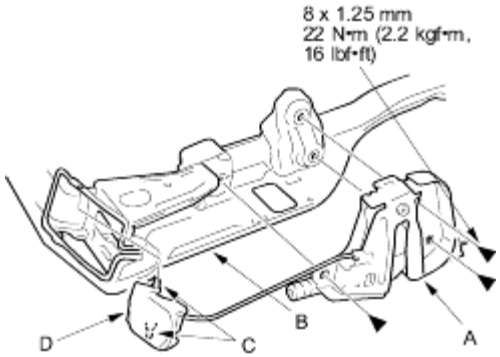
1. Remove the seat-back (see page 20-237).
2. Separate the seat-back frame and seat-back cover/pad (see page 20-239).
3. Remove the bolts, then remove the seat-back latch (A) from the seat-back frame (B) and release the pivot pin (C) of the latch lever (D) from the seat-back frame.

Fastener Locations

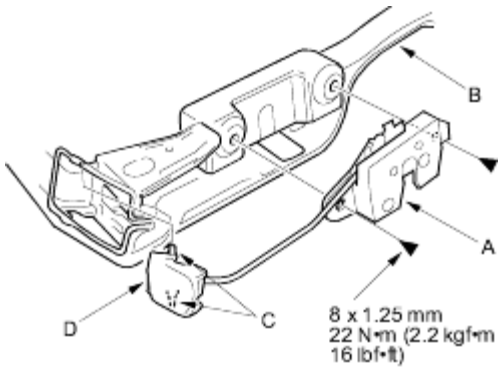
▶: Bolt, 3 or 2



With recline:



With recline:



3. Install the latch in the reverse order of removal and note these items:
   - Make sure the seat-back locks and unlocks properly.
   - Make sure the seat-back with recline adjusts properly.

Seats

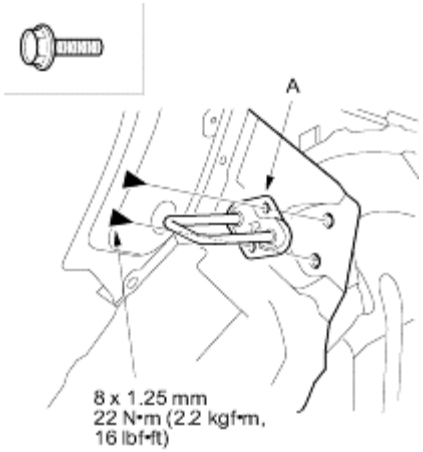
Rear Seat-back Striker Replacement

NOTE: Take care not to scratch the interior trim.

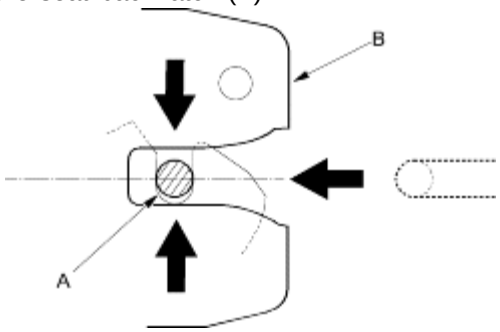
1. 1. Remove the trunk side trim panel (see page 20-208).
   2. Remove the bolts, then remove the seat-back striker (A).

Fastener Locations

▶: Bolt, 2



2. 3. Install the striker in the reverse order of removal and move the striker (A) up or down until it is centred in the seat-back latch (B).



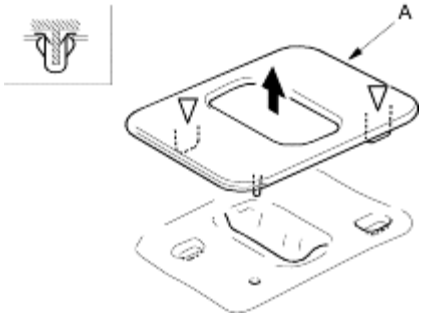
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. 1. Remove the seat-back (see page 20-237).
   2. Remove the headrest.
   3. On right seat-back: If equipped, remove the armrest (see page 20-238).
   4. Pull up the latch cover (A) to release the clips, then remove it.

Fastener Locations

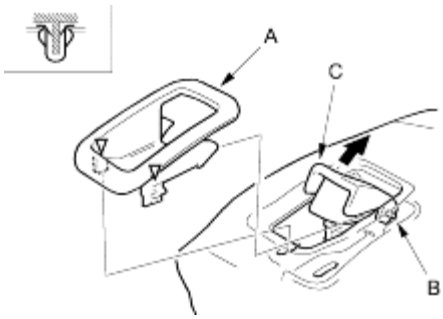
▷: Clip, 2



2. 5. Pull up the outside edge of the latch lever cover (A) to release the clips and release the cover from the pivot pins (B) of the latch lever (C) while pulling the latch lever.

Fastener Locations

▷: Clip, 2

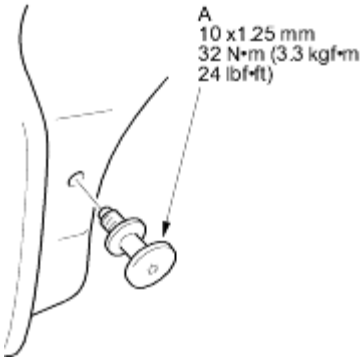


Doors

Rear Door Hook Pin and Catch Replacement

For Some Models

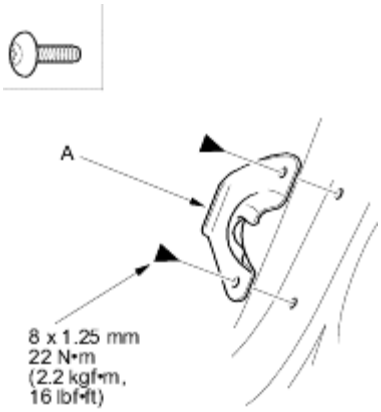
1. 1. With a Torx T40 bit, remove the door hook pin (A) from the door.



2. 2. With a Torx T40 bit, remove the bolts, then remove the door catch (A) from the body.

Fastener Locations

▶: Bolt, 2

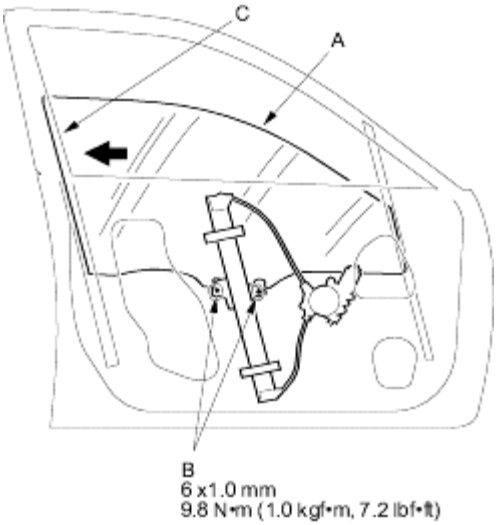


3. 3. Install the hook pin and catch in the reverse order of removal, and apply liquid thread lock to the threads of the door hook pin.

NOTE: Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.

1. 1. Place the vehicle on a firm, level surface.
   2. Remove these items:
      - Door panel, front door (see page 20-7), rear door (see page 20-15)
      - Plastic cover, front door (see page 20-3), rear door (see page 20-5)
2. 3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

Front:



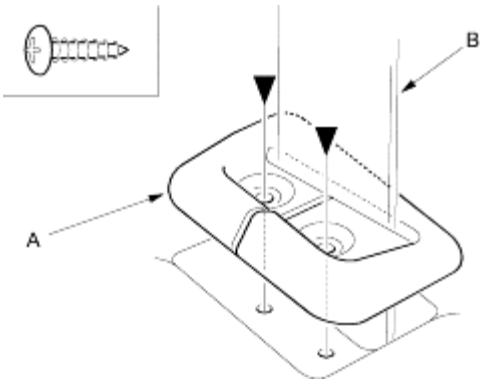
Seat

Rear Seat-back Cover Replacement (cont'd)

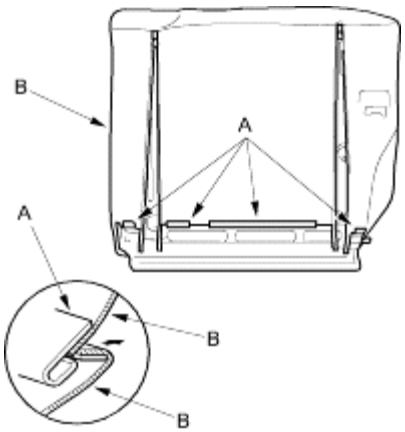
1. 6. On right seat-back: If equipped with a centre shoulder belt, remove the screws, then remove the belt holder trim (A) and remove the trim from the centre belt (B).

Fastener Locations

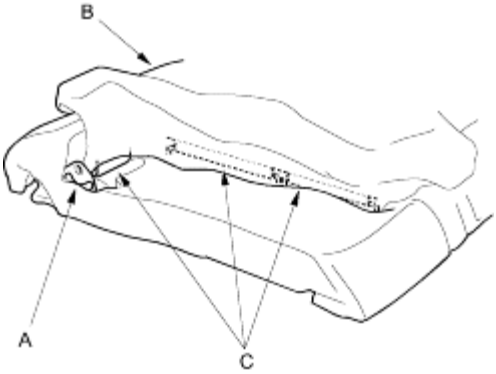
▶: Screw, 2



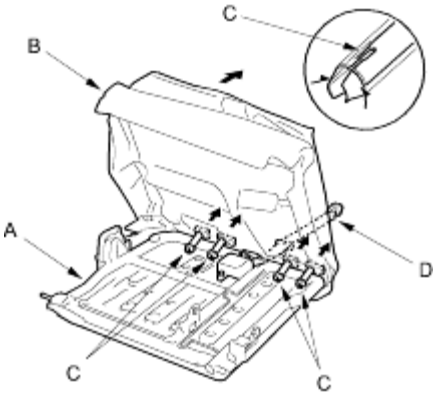
2. 7. Release the hooks (A) and unzip the seat-back cover (B). The right seat-back is shown, the left seat-back is similar.



1. 8. On right seat-back: If equipped with a armrest, pass the armrest pivot (A) through the slit in the seat-back cover (B), then pull back the cover and release the hook strips (C).



2. 9. Pull out the seat-back frame (A) from the pad (B), then pull out the headrest guides (C) while pinching the end of the guides and remove them. The right seat-back with middle headrest is shown, the right seat-back without middle headrest and the left seat-back are similar.

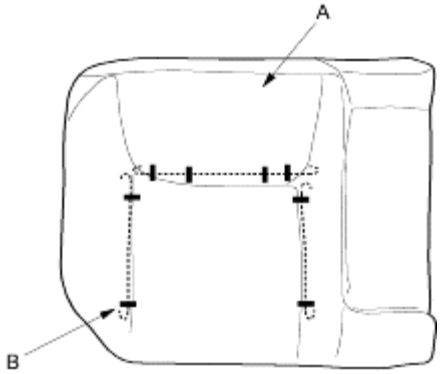


3. 10. Remove the seat-back cover and pad from the seat-back frame. On right seat-back with centre shoulder belt, pass the centre belt (D) through the hole in the seat-back cover and pad.

Seat

Rear Seat-back Cover Replacement (cont'd)

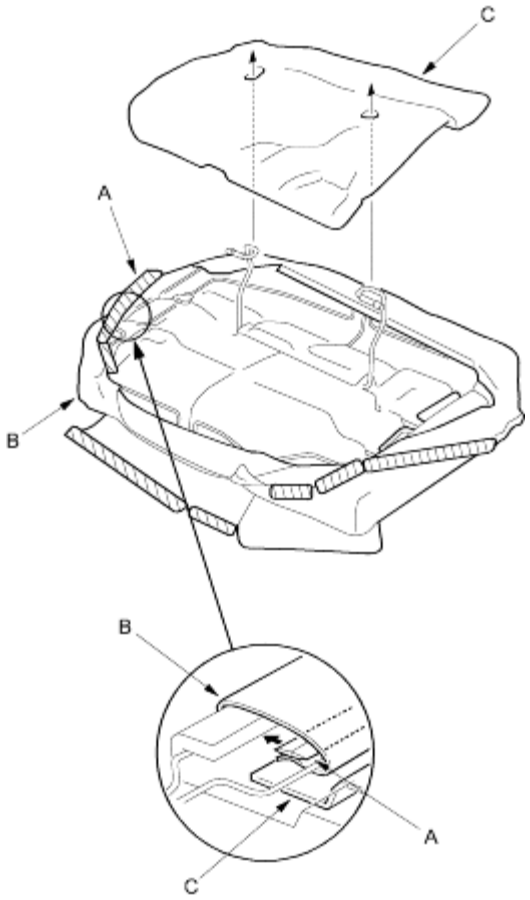
1. 11. Pull back the edge of the seat-back cover (A) all the way around and release the clips (B), then remove the seat-back cover. The right seat-back is shown, the left seat-back is similar.



2. 12. Install the cover in the reverse order of removal and note these items:
   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and clips.
   - On right seat-back with centre shoulder belt: When installing the seat-back frame to the pad, slip the centre belt through the hole in the seat-back cover and pad.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

NOTE: The right seat cushion is shown, the left seat cushion is similar.

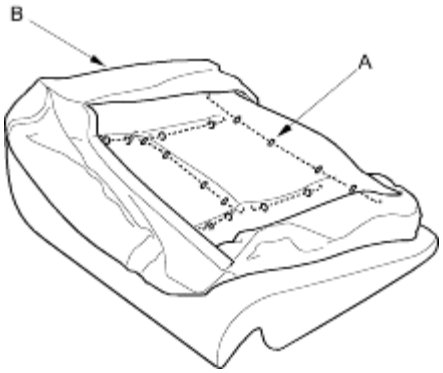
1. 1. Remove the rear seat cushion (see page 20-237).
   2. Release all the retainer strips (A) from under the seat cushion and fold back the seat cushion cover (B), then remove the cushion mat (C).



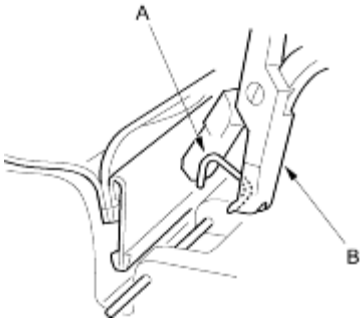
Seat

Rear Seat Cushion Cover Replacement (cont'd)

1. 3. Pull back the edge of the seat cushion cover (A) all the way around and release the clips (B), then remove the seat cushion cover.



2. 4. Install the cover in the reverse order of removal and note these items:
   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).



Bumpers

Front Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

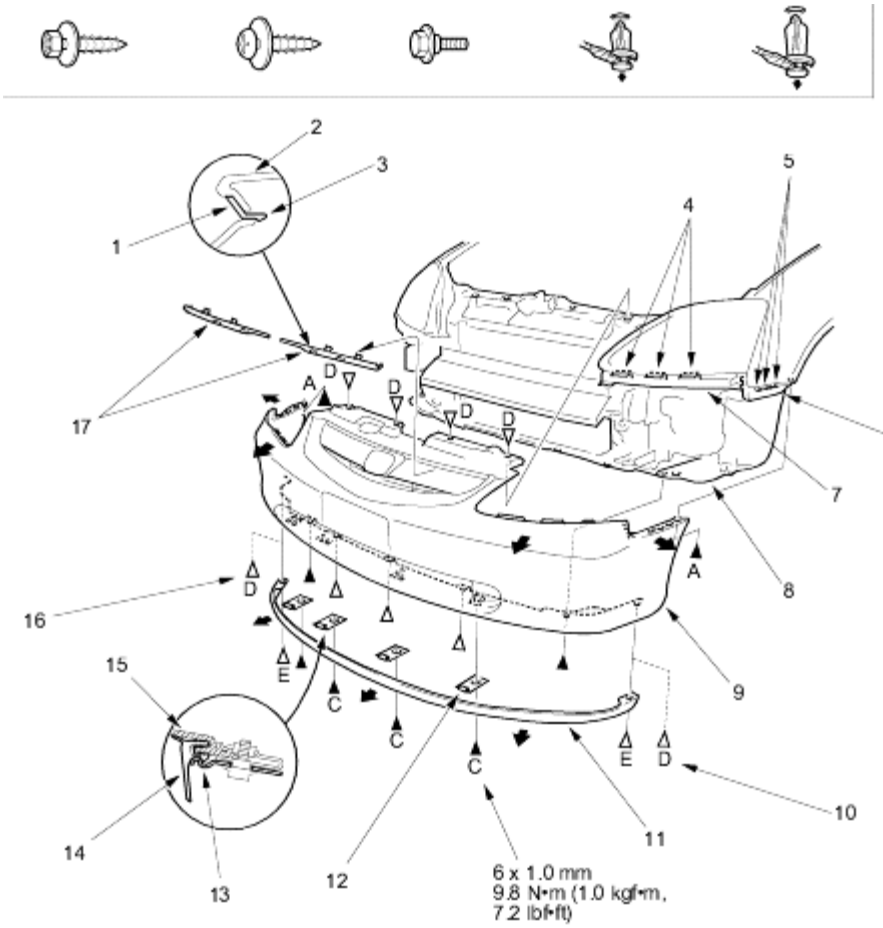
Remove the front bumper as shown.

Install the bumper in the reverse order of removal and note these items:

- Make sure the front bumper engages the hooks of the side spacers and upper beams on both sides securely.
- Replace any damaged clips.

Fastener Locations

A ▶: Screw, 2 B ▶: Screw, 2 C ▶: Bolt, 4 D ▷: Clip, 7 or E ▷: Clip, 2



1. COVER
2. BUMPER
3. HOOK (Six places)
4. HOOKS
5. HOOKS
6. SIDE SPACER
7. UPPER BEAM
8. FRONT INNER FENDER
9. FRONT BUMPER
10. Without front air spoiler
11. FRONT AIR SPOILER (For some models)
12. AIR SPOILER PLATE
13. PLATE
14. SPOILER
15. BUMPER
16. Without front air spoiler
17. FRONT BUMPER UPPER COVERS (For some models)

Bumpers

Rear Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper and body.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Put on gloves to protect your hands.

Remove the rear bumper as shown.

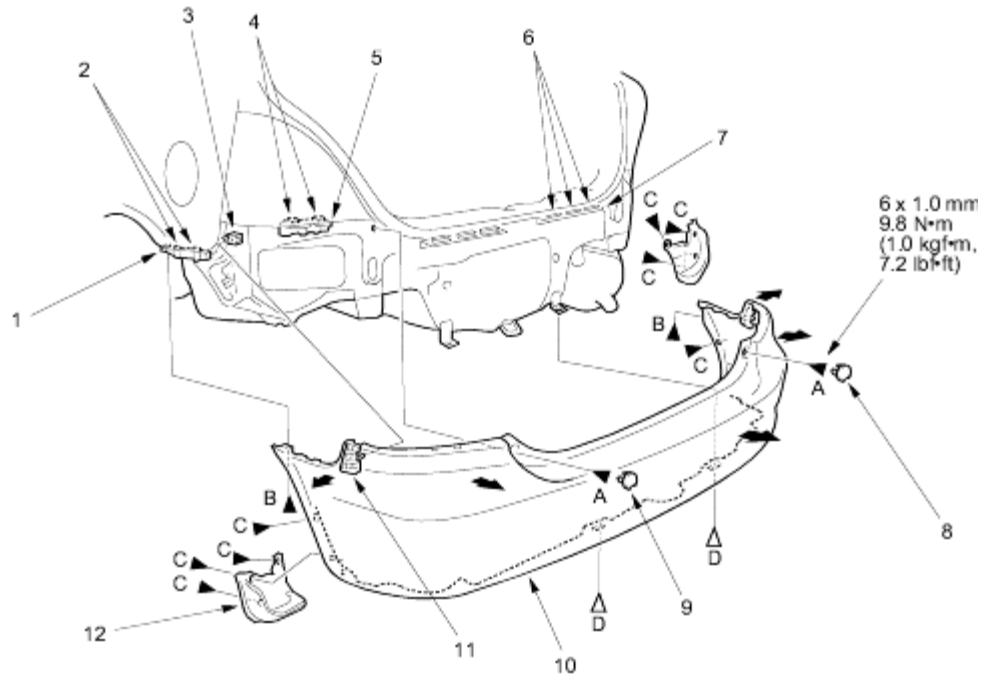
Install the bumper in the reverse order of removal and note these items:

- Make sure the rear bumper engages the hooks of the side spacers, side brackets and upper brackets on both sides securely.
- Make sure the upper spacers of the rear bumper engage the clips on the body securely.
- Replace any damaged clips.

Fastener Locations

A ▶: Bolt, 2 B ▶: Screw, 2 C ▶: Screw, 2 or 8 C ▷: Clip,2



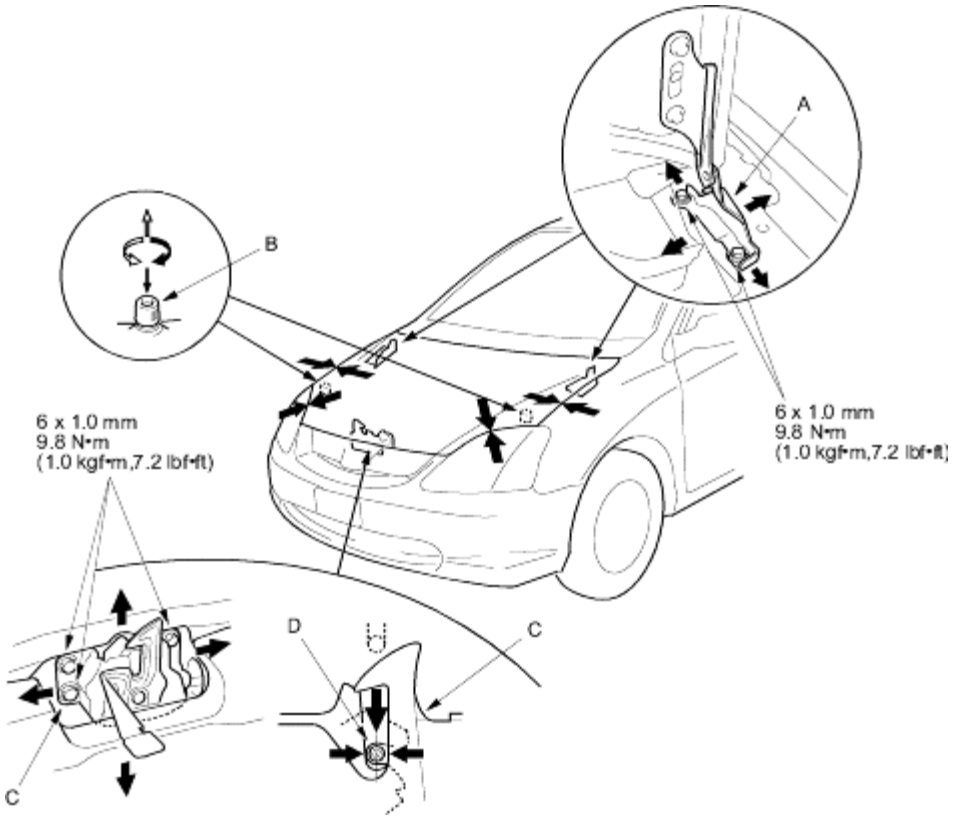


1. SIDE SPACER
2. HOOKS
3. CLIP
4. HOOKS
5. SIDE BRACKET
6. HOOKS
7. UPPER BRACKET
8. CAP
9. CAP
10. REAR BUMPER
11. UPPER SPACER
12. REAR SPLASH GUARD (For some models)`

Hood

Adjustment

1. 1. Slightly loosen each hood hinge bolt.
   2. Adjust the hood alignment in this sequence.
      - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinge(A).
      - Turn the hood edge cushions (B), as necessary, to make the hood fit flush with the body at the front and side edges.
      - Adjust the hood latch (C) to obtain the proper height at the forward edge and move the hood latch right or left until the striker (D) is centred in the hood latch.

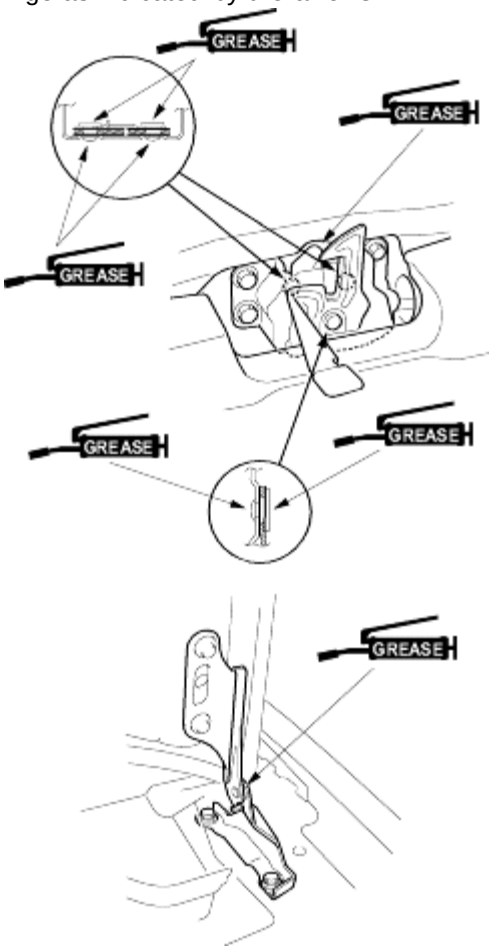


2. 3. Tighten each bolt securely.

Hood

Adjustment (cont'd)

1. 4. Check that the hood opens properly and locks securely.
2. 5. Apply touch-up paint to the hinge mounting bolts and around the hinges.
   6. Grease each location of the hood latch and hood hinge as indicated by the arrows.



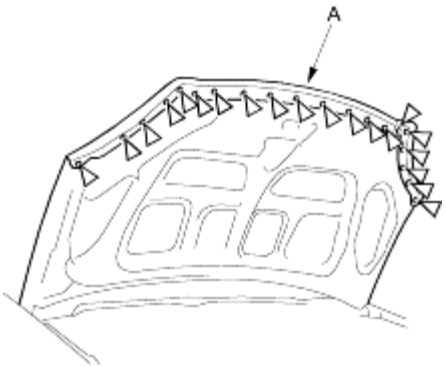
1. 1. Using a clip remover, detach the clips, then remove the hood seal (A). Take care not to scratch the hood.

Fastener Locations

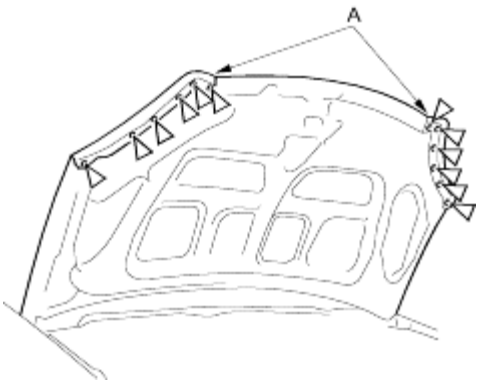
▷: Clip, 20 or 12



European model:



Except european model:



2. 2. Install the seal in the reverse order of removal and replace any damaged clips.

Hood

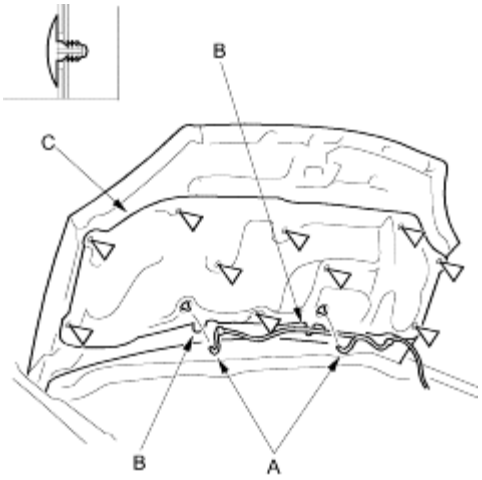
Hood Insulator Replacement

For Some Models

1. 1. Disconnect the windshield washer tubes (A).

Fastener Locations

▷: Clip, 10

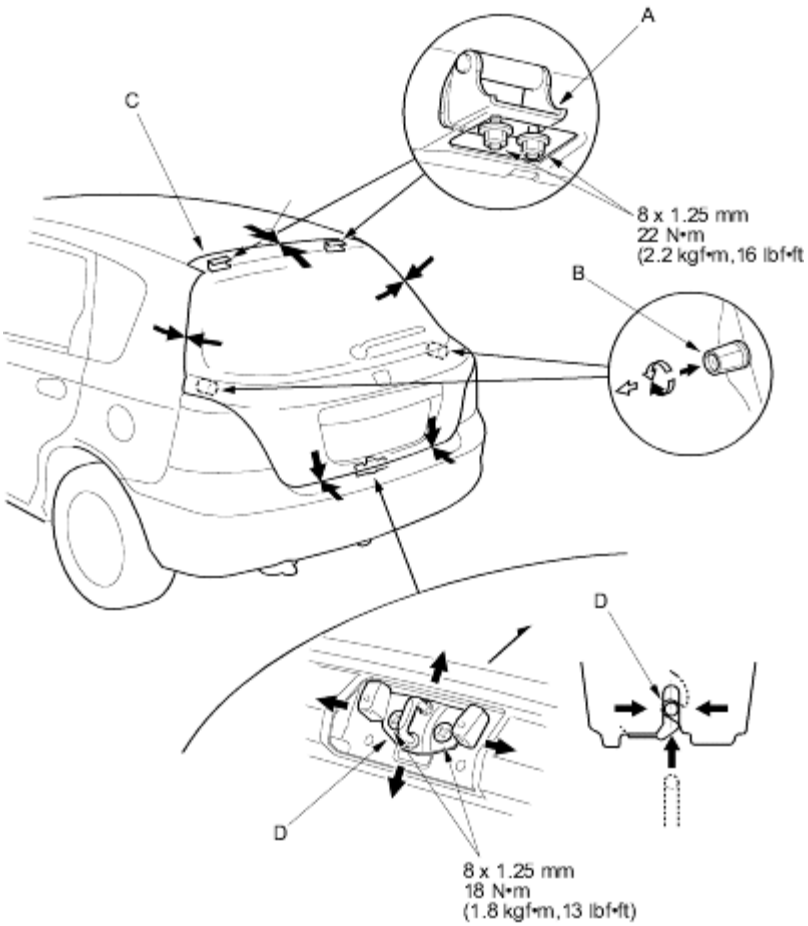


2. 2. Using a clip remover, detach the clips. Release the hooks (B), then remove the hood insulator (C). Take care not to scratch the hood.
3. Install the insulator in the reverse order of removal and replace any damaged clips.

Tailgate

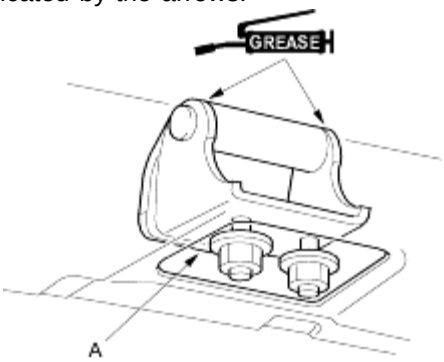
Adjustment

1. 1. Remove the support strut from each side (see page 20-249).
   2. Remove the quarter pillar trim from each side (see page 20-207) and pull down the rear portion of the headliner (see page 20-210). Take care not to bend the headliner excessively.
   3. Remove the rear trim panel (see page 20-208).
   4. Slightly loosen each bolt and nut.
   5. Adjust the tailgate alignment in the following sequence.
      - Adjust the tailgate hinges (A) right and left, as well as forward and rearward, using the elongated holes.
      - Turn the tailgate edge cushions (B), in or out as necessary, to make the tailgate (C), fit flush with the body at the side edges.
      - Adjust the fit between the tailgate and tailgate opening by moving the striker (D).

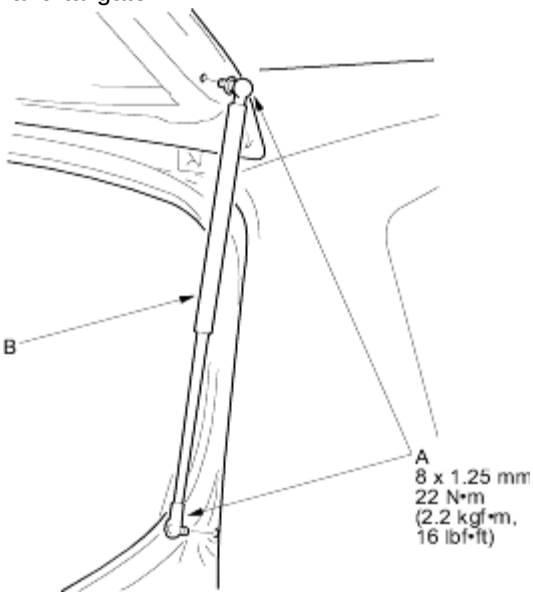


Tailgate
Adjustment (cont'd)

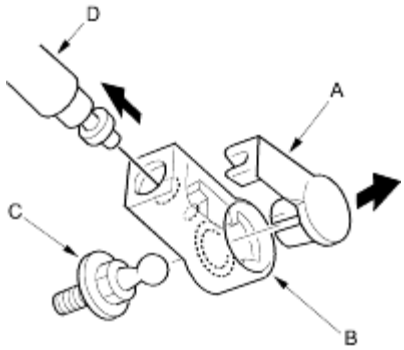
6. Tighten each bolt and nut securely.
7. Check that the tailgate opens properly and locks securely.
8. Reinstall the support struts securely.
9. Reinstall all remaining removed parts.
10. Grease the pivot portion of the tailgate hinges (A) as indicated by the arrows.



1. With the help of an assistant, remove the pivot bolts (A) from the body and tailgate, then remove the support strut (B). Take care not to scratch the body and tailgate.



2. If necessary, remove the pivot cap (A), then remove the pivot housing (B) and pivot bolt (C) from the support strut (D).

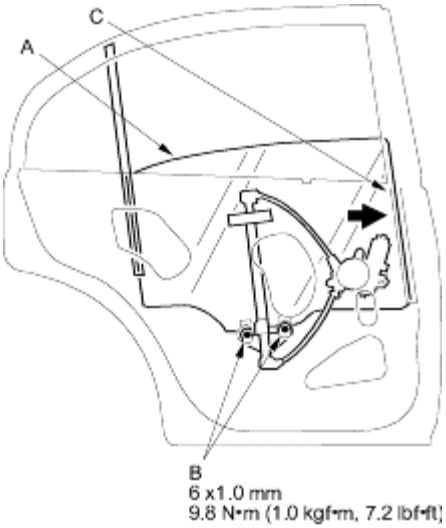


3. Install the support strut in the reverse order of removal and before reinstalling the pivot cap (A) and pivot housing (B), replace them with new ones.

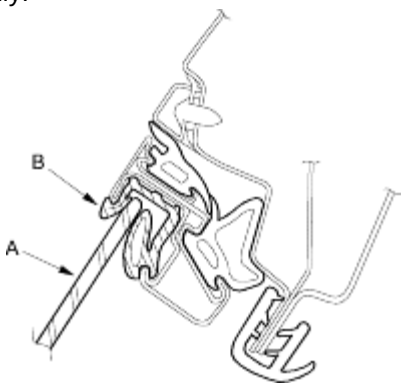
Doors

Front and Rear Door Glass Adjustment

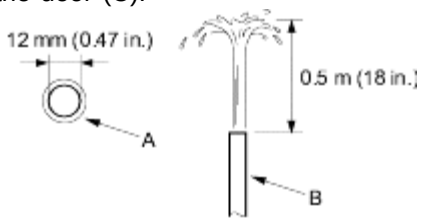
Rear:

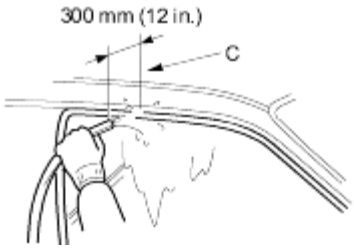


1. 4. Push the glass (A) against the channel (C), then tighten the glass mounting bolts.
   5. Check that the glass moves smoothly.
   6. Raise the glass fully, and check for gaps. Also check that the glass (A) contacts the glass run channel (B) evenly.



1. 7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:
   - Use a 12 mm (1/2 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door (C).



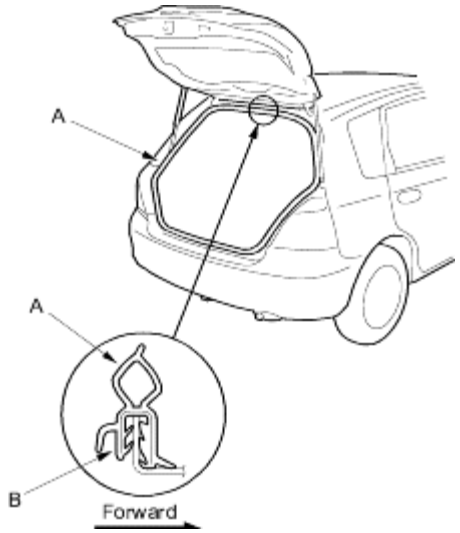


2. 8. Attach the plastic cover, and install the door panel, front door (see page 20-7), rear door (see page 20-15).

Tailgate

Tailgate Weatherstrip Replacement

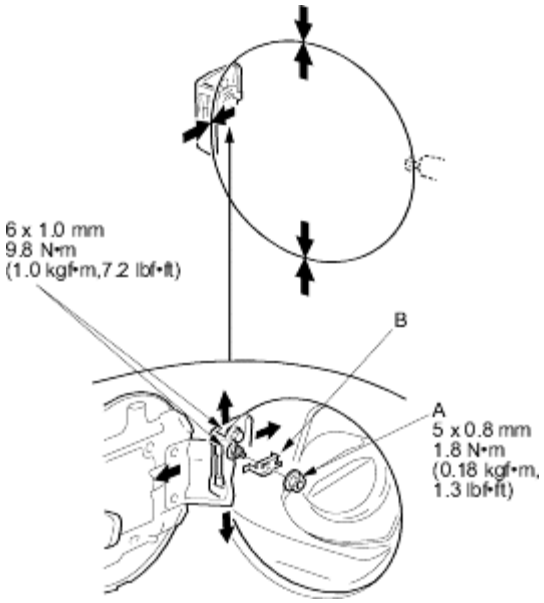
1. 1. Remove the tailgate weatherstrip (A) by pulling out on it.



2. 2. Locate the painted alignment mark (B) on the tailgate weatherstrip. Align the painted mark with the alignment tab in the centre of the tailgate opening and install the tailgate weatherstrip all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrip.
   3. Check for water leaks.

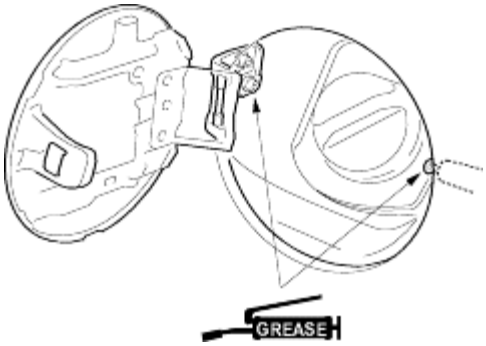
Fuel Fill Door
Adjustment

1. 1. Remove the nut (A) and remove the fuel fill door open spring (B).



2. 2. Slightly loosen the hinge mounting bolts (A).
   3. Adjust the fuel fill door (B) in or out until it's flush with the body and up or down as necessary to equalise the gaps.
   4. Tighten the hinge mounting bolts.
   5. Reinstall the fuel fill door spring.
   6. Check that the fuel fill door opens properly and locks securely and check that the rear of the door is flush with the body.

1. 7. Grease each location indicated by the arrows.



2. 8. Apply touch-up paint to the hinge mounting bolts and around the hinges.

Exterior Trim

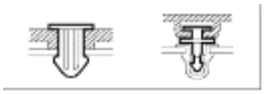
Cowl Covers Replacement

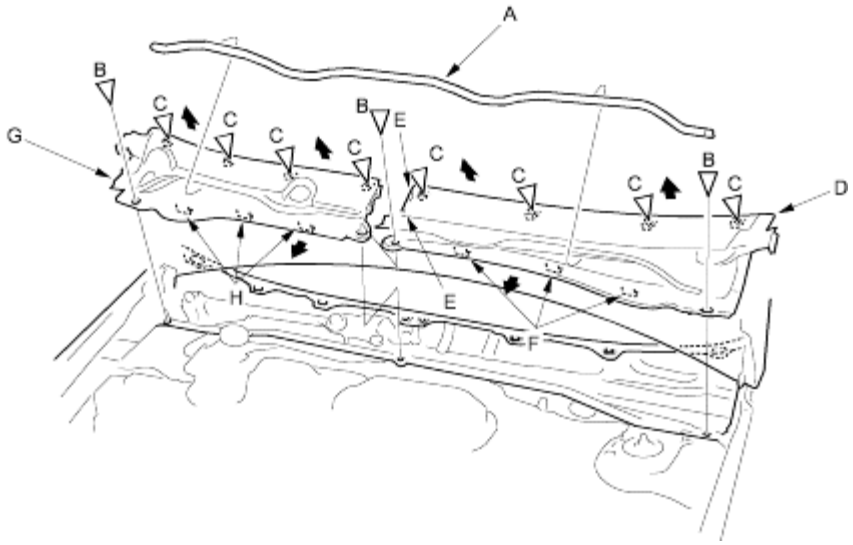
1. 1. Remove the windshield wiper arms (see page 22-179).
   2. Remove the windshield side trim from both sides (see step 1 on page 20-176).
   3. Pull the hood rear seal (A) away from the cowl covers, then remove it and using a clip remover, detach the clips (B) from the cowl covers. Take care not to scratch the cowl covers.

Fastener Locations

B ▷: Clip, C ▷: Clip, 8

3



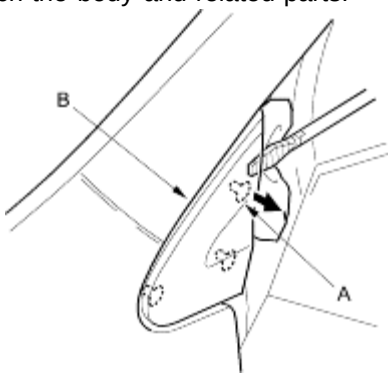


2. 4. Detach the clips (C) by carefully pulling the passenger's cowl cover (D) upward, to release the hooks (E) and pull out the cover forward to release the hooks (F), then remove the cover. Take care not to scratch the body.
   5. Detach the clips (C) by carefully pulling the driver's cowl cover (G) upward and pull out the cover forward to release the hooks (H), then remove the cover. Take care not to scratch the body.
   6. Install the covers in the reverse order of removal and note these items:
      - Replace any damaged clips.
      - Reinstall both windshield side trim properly (see step 24 on page 20-181).

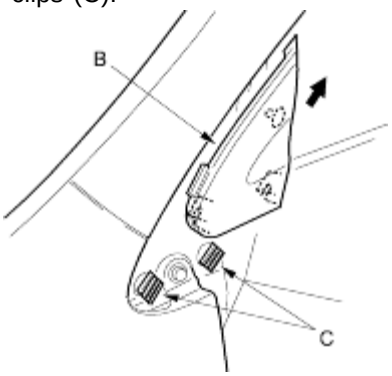
Exterior Trim

Front Pillar Corner Trim Replacement

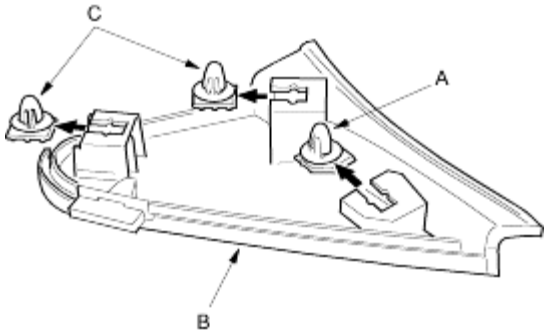
1. Open the front door.
2. Wrap a flat-tip screwdriver with protective tape, and apply protective tape around the body to prevent damage. Carefully insert a flat-tip screwdriver next to the upper clip (A) and detach the clip by prying on the front pillar corner trim (B). Take care not to scratch the body and related parts.



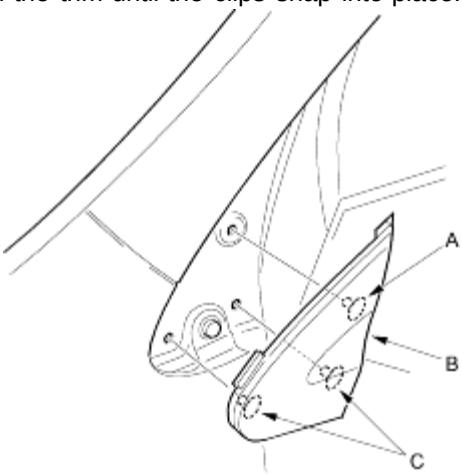
3. Gently slide the trim (B) to release the trim from the lower clips (C).



4. Remove the lower clips from the body.
5. Replace any damaged clips.
6. Install the upper clip (A) and lower clips (C) on the trim (B).



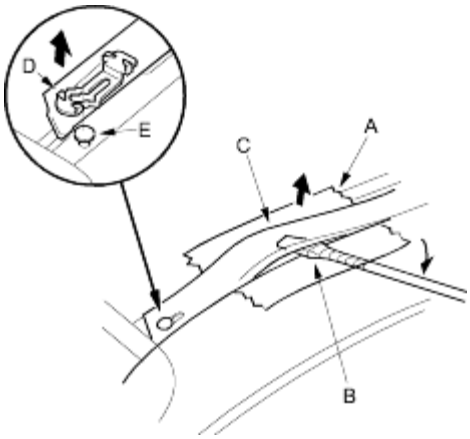
7. Hold the trim (B) up and fit the upper clip (A) and lower clips (C) into the holes in the body, then push on the trim until the clips snap into place.



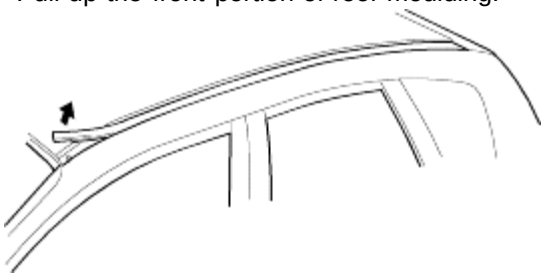
Exterior Trim

Roof Moulding Replacement

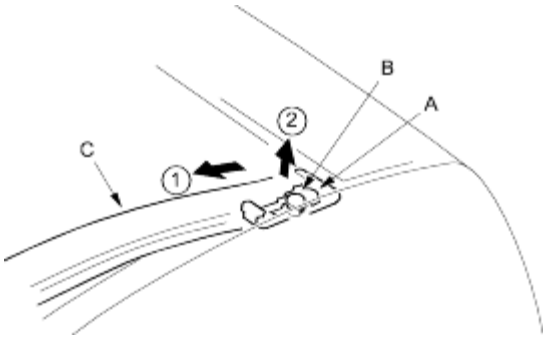
1. 1. Apply protective tape to the body (A). Using a flat-tip screwdriver wrapped with protective tape (B), pry up on the roof moulding (C). Take care not to scratch the body.



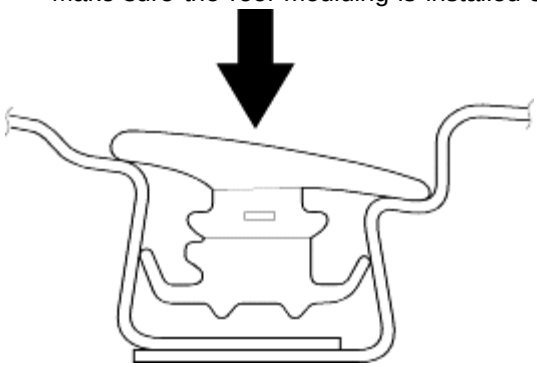
2. 2. Pull up and slide the roof moulding to release the front bracket (D) from the pin (E).
   3. Pull up the front portion of roof moulding.



1. 4. Pull up and release the rear bracket (A) from the pin (B), then remove the roof moulding (C).



2. 5. Install the moulding in the reverse order of removal and note these items:
   - Take care not to damage the windshield moulding.
   - Make sure the roof moulding is installed securely.



Exterior Trim

Rear License Trim Replacement

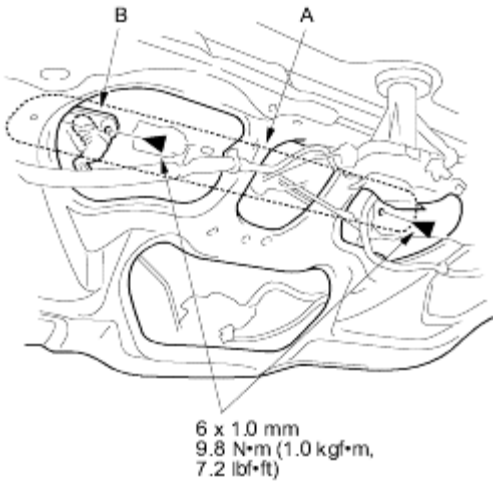
NOTE: Put on gloves to protect your hands.

1. Remove the tailgate lower trim panel (see page 20-209).
2. On inside the tailgate, remove the bolts securing the rear license trim (A) and tailgate lock cylinder (B).

Fastener Locations

▶: Bolt, 2



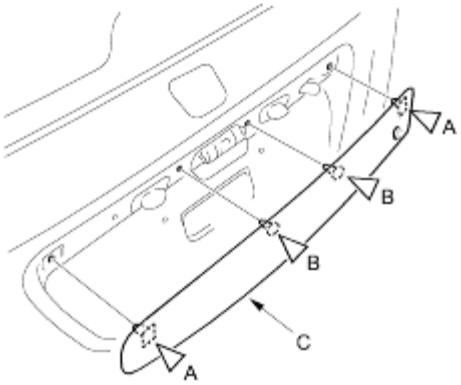


1. From inside the tailgate, release the clips (A, B) while holding the rear license trim (C), then remove the trim. Take care not to scratch the tailgate.

Fastener Locations

A ▶: Clip, 2 B ▶: Clip, 2



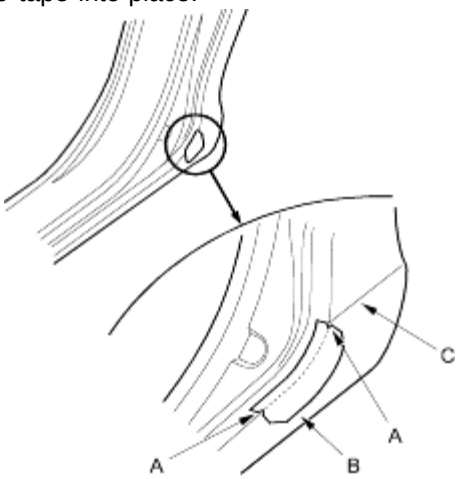


2. Install the trim in the reverse order of removal and replace any damaged clips.

Exterior Trim

Side Sill Protection Tape Replacement

1. 1. Slowly peel up the old side sill protection tape.
2. 2. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
   3. Peel the adhesive backing from the side sill protection tape.
   4. Align the alignment marks (A) of the side sill protection tape (B) with the body line (C), then press the tape into place.



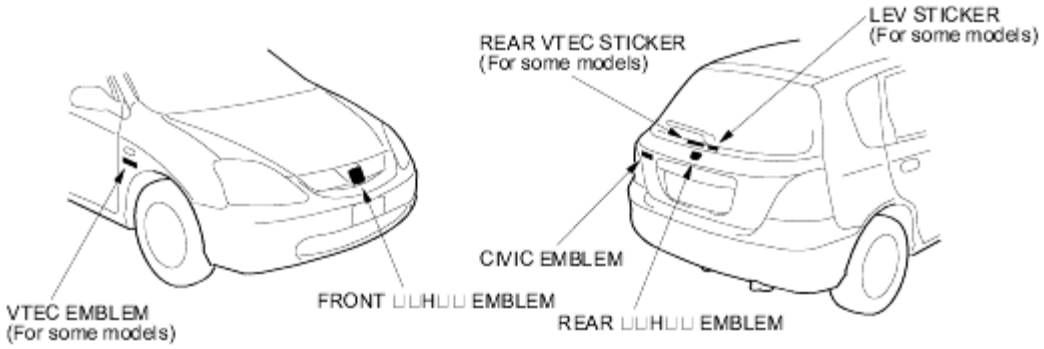
3. 5. Remove the application tape.

Exterior Trim

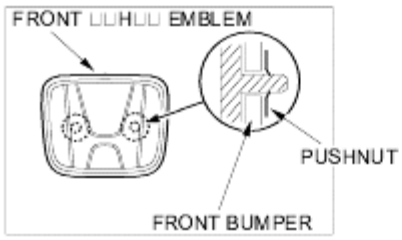
Emblem/Sticker Replacement

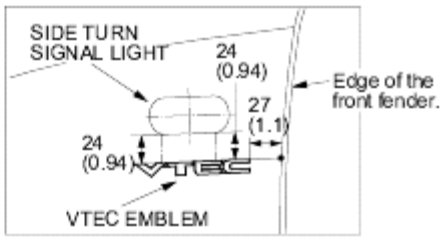
NOTE: When removing the emblem/sticker, take care not to scratch the body.

1. 1. Clean the body surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
   2. Apply the emblem/sticker, where shown. When installing the rear VTEC and LEV stickers on the rear window, align the application tape with the alignment marks of the rear window, then press the sticker into place and remove the application tape.

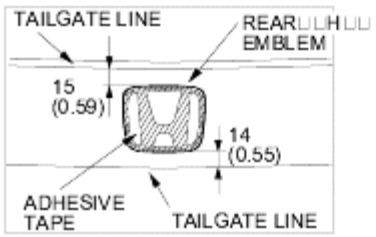


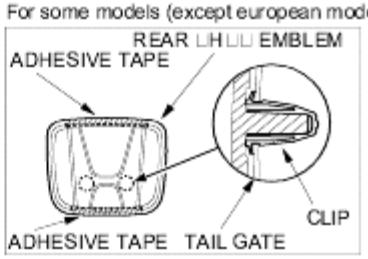
Unit: mm(in.)

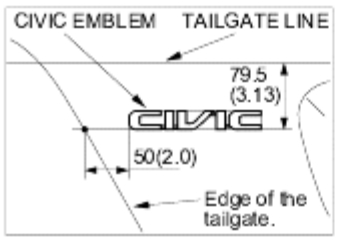


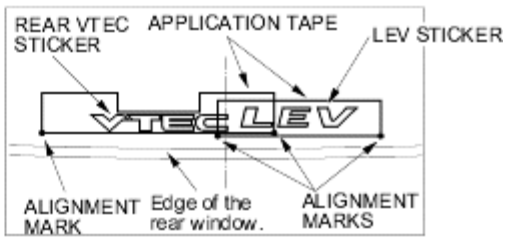


For some models (except european models):





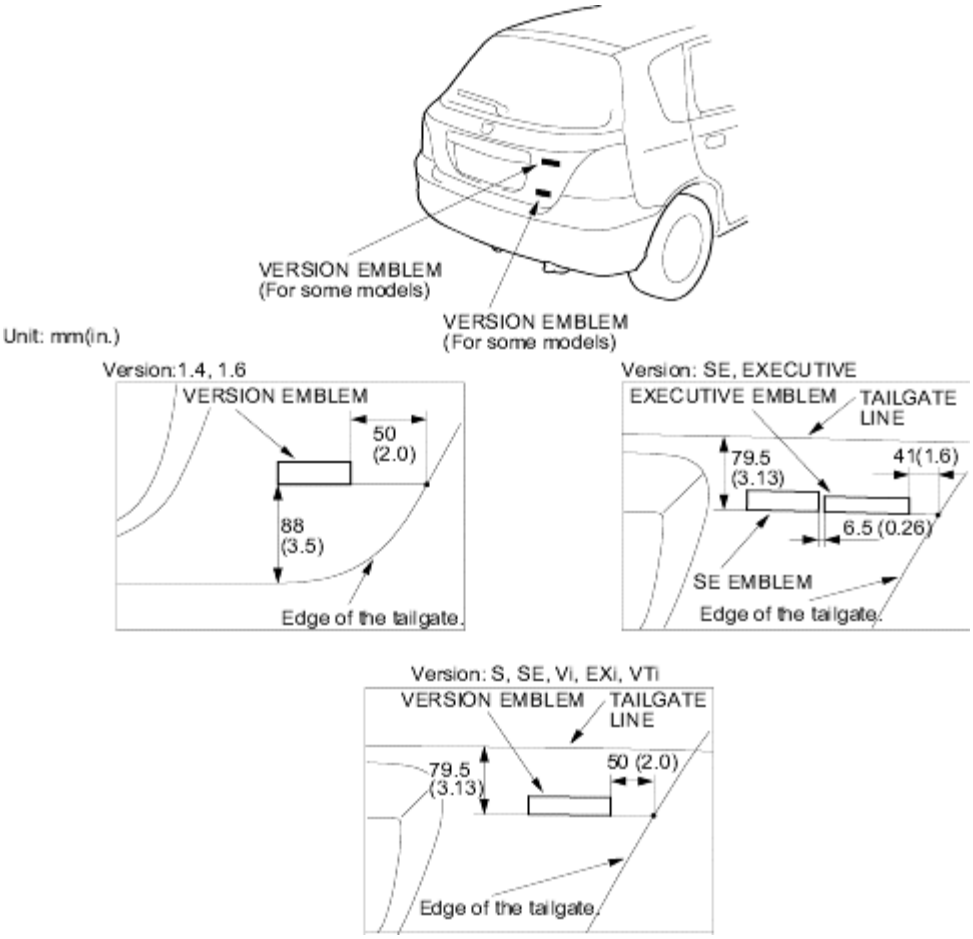




Exterior Trim

Emblem/Sticker Replacement (cont'd)

Version emblem:



Fenderwell

Front Inner Fender Replacement

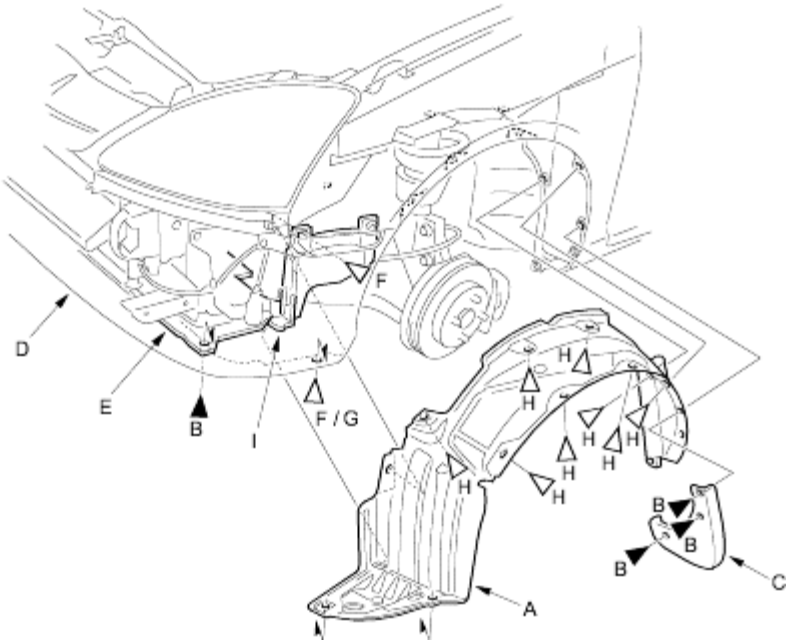
NOTE: Take care not to scratch the body.

1. 1. Remove the front inner fender (A).
    1. On the back of the wheel arch, remove the screws (B). If equipped, remove the front splash guard (C).
    2. From under the front bumper (D), remove the screw (B) securing the front bumper, splash shield (E) and front inner fender and remove the clip (F) securing the front bumper and front inner fender. With front air spoiler, remove the clip (G) securing the front air spoiler, front bumper and front inner fender.
    3. From the wheel arch, remove the clips (F, H) securing the front inner fender (and splash shield) on the body.
    4. Release the hook (I) of the splash shield, then remove the front inner fender.

Fastener Locations

B ▶: Screw, 4	F ▷: 2 or 1	G ▷: Clip, 1	H ▷: Clip, 8





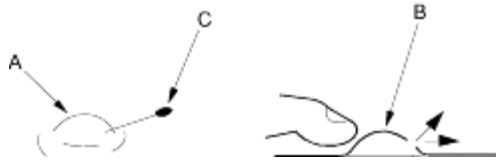
2. 2. Install the inner fender in the reverse order of removal and replace any damaged clips.

Doors

Door Channel Tape Replacement Process

NOTE:

- This procedure is a general description of the door channel tape replacement process. For details about installation, front door outer channel tape (see page 20-27) and rear door outer channel tape (see page 20-28).
- Keep dust away from the working area.
- When working at lower temperatures, heat the door channel and door channel tape with a hair dryer.
  Door channel: about 15°C (59°F).
  Door channel tape: about 30°C (86°F).
- When heating the door channel tape, heat it evenly and gradually to prevent deformation.
- When pressing the door channel tape, slowly press it from the corner to prevent air bubbles and wrinkles.
- If there are air bubbles (A) in the door channel tape (B), prick them with a pin (C), then release the air with your finger or a plastic squeegee.
- If the air bubble is more than 10 mm (0.4 in.) in diameter, peel up the door channel tape, then reapply it.



1. 1. The following tools are required to replace the door channel tape:
   - Plastic squeegee
   - Alcohol
   - Sponge or Shop towel
   - Hair dryer
   - Pin

1. 2. Remove these items:

   Front door outer channel tape replacement

   - Power mirror/manual mirror (see page 20-33)
   - Door glass outer weatherstrip (see page 20-13)
   - Glass run channel, as necessary (see page 20-3)
   - Sash trim (see page 20-12)
   - Upper seal (see page 20-14)

   Rear door outer channel tape replacement

   - Door glass outer weatherstrip (see page 20-22)
   - Quarter glass (see page 20-19)
   - Glass run channel, as necessary (see page 20-5)
   - Sash trim (see page 20-22)
   - Upper seal (see page 20-23)

2. 3. Slowly peel up the old door channel tape while heating it with a hair dryer.
   4. Clean the door channel bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
   5. Attach the door channel tape:
      1. Peel the edge of the adhesive backing from the channel tape.
      2. Fit the door channel tape to the door channel.
      3. Apply the door channel tape to the door channel while peeling the adhesive backing from it a little at a time. Check that the channel tape is parallel with the door channel.
      4. Push firmly on the door channel tape with a plastic squeegee (felt side).
         NOTE: To prevent air bubbles, slowly press the door channel tape around the door frame corner.

3. 6. As necessary, repeat the preceding steps.
   7. Reinstall all remaining removed parts.
   8. Check that the body colour on the door channel is covered by the door channel tape.
   9. Check for water leaks (see step 7 on page 20-25).

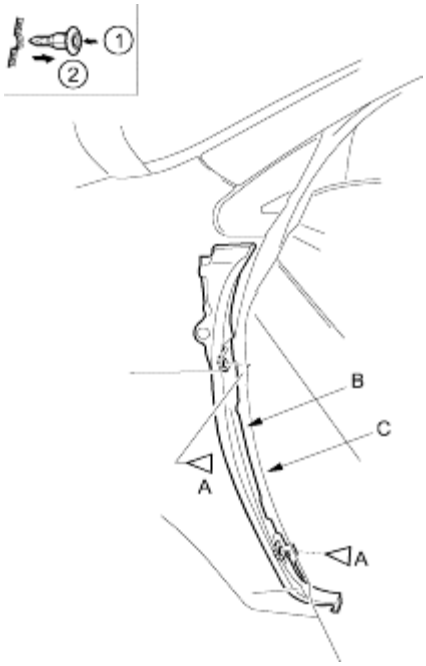
Fenderwell

Front Fender Fairing Replacement

1. 1. Remove the front inner fender as necessary (see page 20-259).
2. 2. Open the front door. From outside the door, remove the upper clip (A), and from inside the door, remove the lower clip (A) securing the front fender fairing (B) and front fender (C).

Fastener Locations

A ▷: Clip, 2



1. 3. From the wheel arch, remove the clip (A) and release the clip (B), then remove the front fender fairing (C).

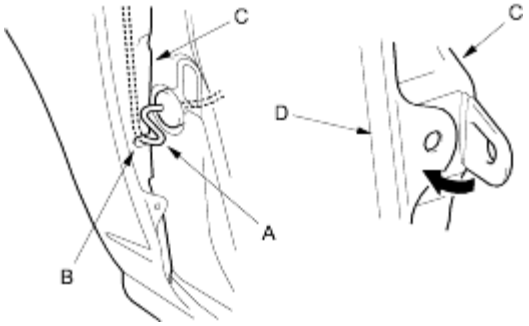
Fastener Locations

A ▷: Clip, B ▷: Clip, 1

1



2. 4. Install the fender fairing in the reverse order of removal and note these items:
   - Replace any damaged clips.
   - Route the side turn signal light harness (A) through the slit (B) of the front fender fairing (C).
   - Before installing the clips of the door upper and lower portions, install the front fender fairing (A) to the front fender (B) properly as shown.



Fenderwell

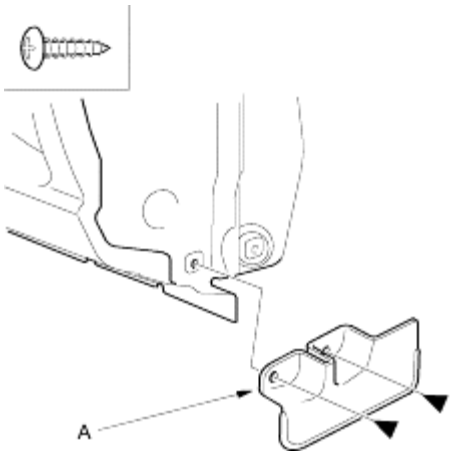
Rear Strake Replacement

For Some Model

1. 1. Remove the screws, then remove the rear strake (A). Take care not to scratch the body.

Fastener Locations

▶: Screw, 2

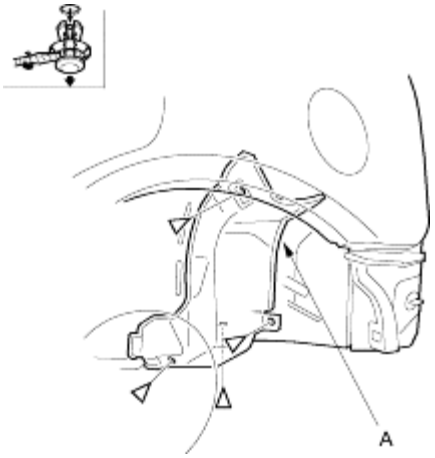


2. 2. Install the strake in the reverse order of removal.

1. 1. Remove the clips, then remove the fuel pipe protector (A). Take care not to scratch the body.

Fastener Locations

▷: Clip, 4



2. 2. Install the protector in the reverse order of removal and replace any damaged clips.

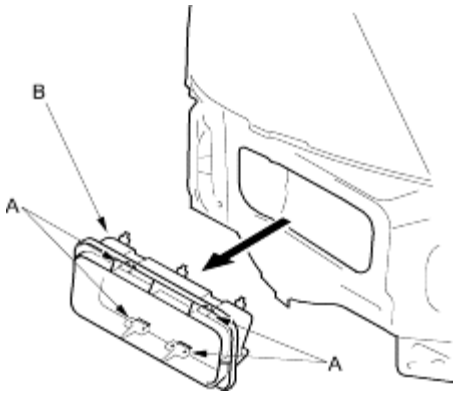
Fenderwell

Rear Air Outlet Replacement

1. 1. Remove the rear bumper (see page 20-244).
2. 2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.

   Fastener Locations

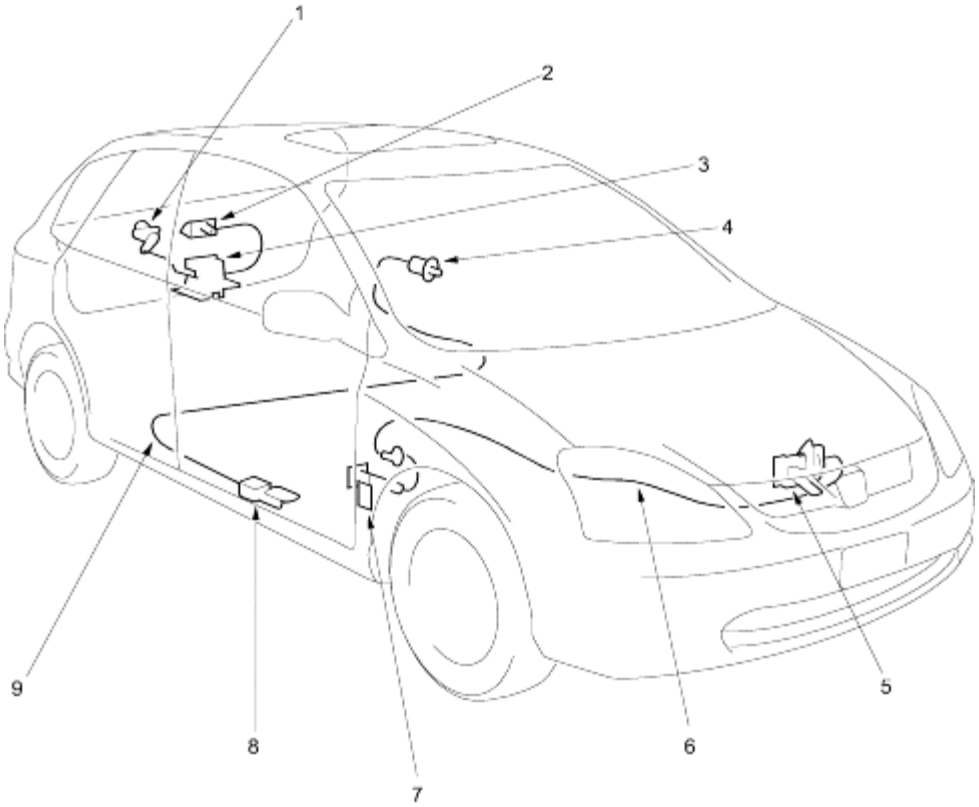
   ▶: Screw, 2



3. 3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Openers

Component Location Index



1. TAILGATE LOCK CYLINDER
   Replacement, page 20-270
2. TAILGATE HANDLE
   Replacement, page 20-268
3. TAILGATE LATCH
   Replacement, page 20-268
4. FUEL FILL DOOR LATCH
   step 3 on page 20-268
5. HOOD LATCH
   Replacement, page 20-266
6. HOOD OPENER CABLE
   Replacement, page 20-264
7. HOOD RELEASE HANDLE
   step 2 on page 20-264
8. FUEL FILL DOOR OPENER
   Replacement, page 20-267
9. FUEL FILL DOOR OPENER CABLE
   Replacement, page 20-265

Openers

Hood Opener Cable Replacement

NOTE:

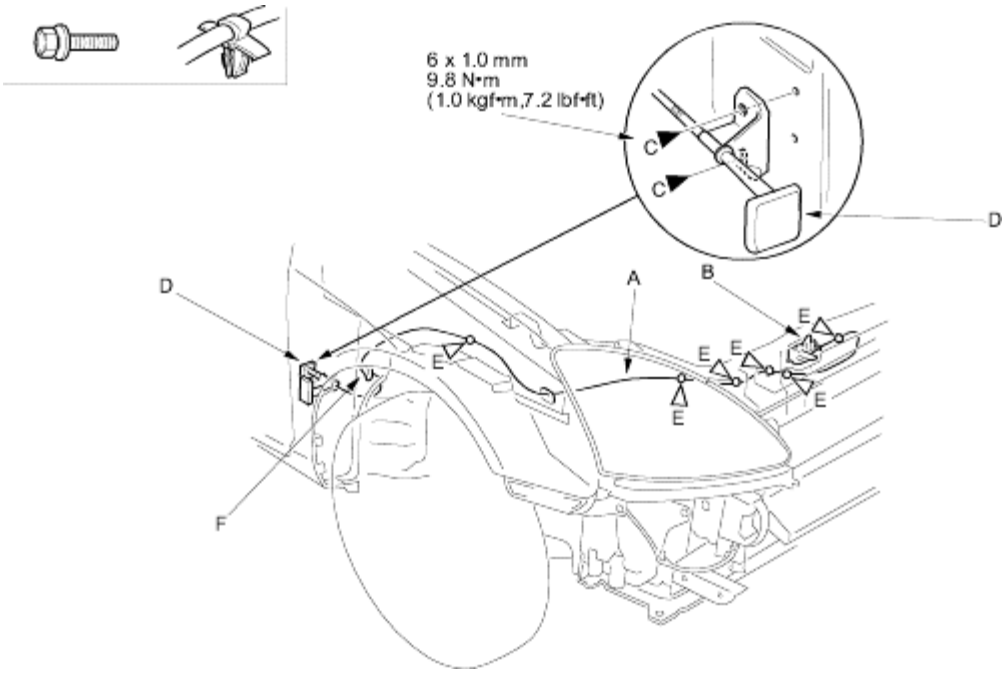
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. 1. Remove these items:
   - Front bumper (see page 20-243)
   - Front inner fender, right side (see page 20-259)
   - Kick panel, right side (see page 20-206)
2. 2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-266) and remove the bolts (C), then remove the hood release handle (D) from the body.

Fastener Locations

C ▶: Bolt, E ▷: Clip, 6

2



3. 3. Using a clip remover, detach the clips (E) and remove the grommet (F) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.
   4. Install the cable in the reverse order of removal and replace any damaged clips.

Openers

Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-24) and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

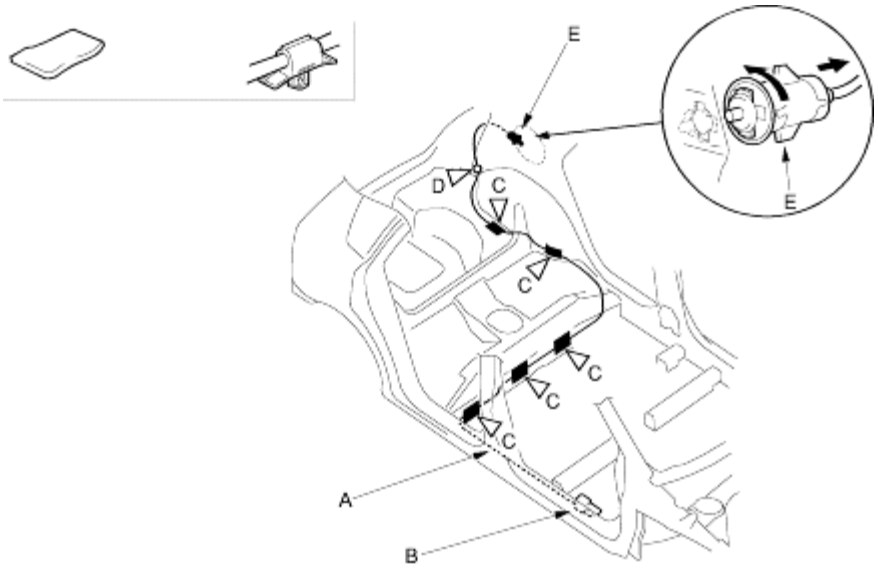
NOTE:

- Put on gloves to protect your hands.
- care not to scratch the body and related parts.

1. 1. Remove these items:
   - Front door sill trim, right side (see page 20-206)
   - Rear door sill trim, both sides (see page 20-206)
   - Trunk side trim panel, left side (see page 20-208)
2. 2. Pull the carpet and rear floor carpet back as necessary (see page 20-212).
   3. Disconnect the fuel fill door opener cable (A) from the opener (B) (see step 3 on page 20-267).

Fastener Locations

C ▷: D ▷: Clip, 1
Cushion tape, 5

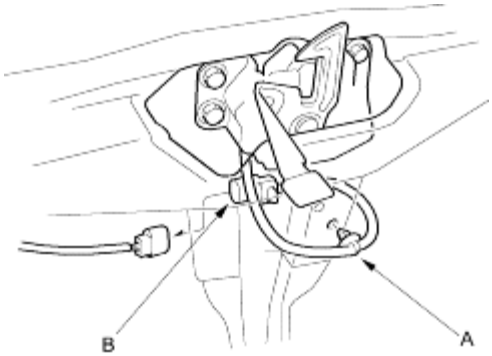


3. 4. Remove the cushion tape (C) and detach the clip (D) by using a clip remover.
   5. Remove the fuel fill door latch (E) from the body by turning it 90°.
   6. Remove the fuel fill door opener cable from the vehicle. Take care not to bend the cable.
   7. Install the opener cable in the reverse order of removal and replace the cushion tape and replace the clip if it damaged.

Openers

Hood Latch Replacement

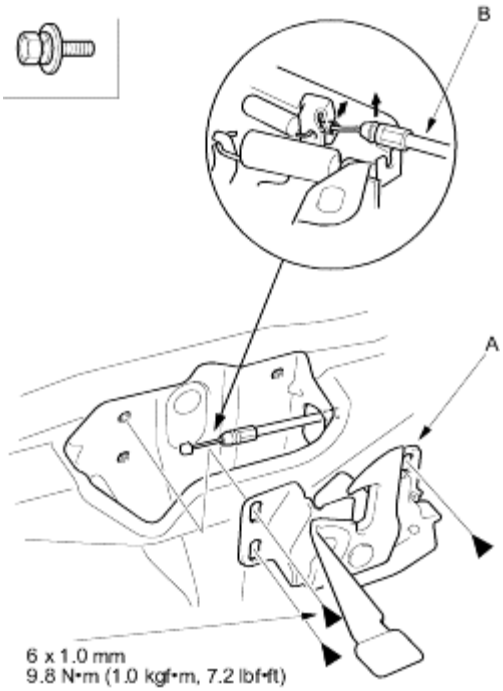
1. If necessary, remove the front bumper (see page 20-243).
2. If equipped, detach the harness clip (A) and the hood latch switch connector (B) from the body and disconnect it.



3. Remove the bolts, then remove the hood latch (A) from the body.

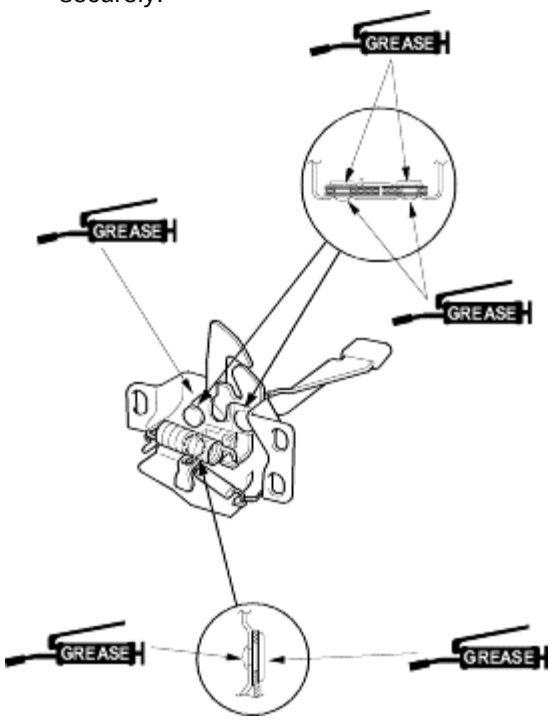
Fastener Location

▶: Bolt, 3



4. Disconnect the hood opener cable (B) from the hood latch. Take care not to bend the cable.

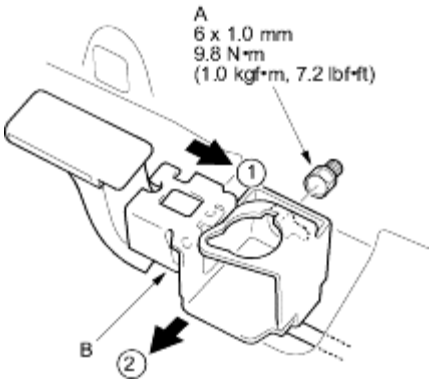
5. Install the hood latch in the reverse order of removal and note these items:
   - Grease each location of the hood latch indicated by the arrows.
   - Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly (for some models).
   - Adjust the hood latch alignment (see page 20-245).
   - Make sure the hood opens properly and locks securely.



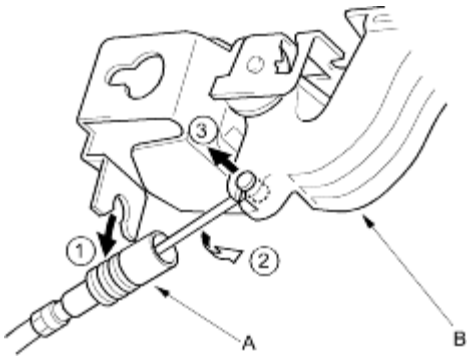
Openers

Fuel Fill Door Opener Replacement

1. 1. Remove the front door sill trim (see page 20-206).
2. 2. Loosen the bolt (A) and remove the opener (B) from the bolt.



3. 3. Disconnect the fuel fill door opener cable (A), then remove the opener (B). Take care not to bend the cable.



1. 4. Install the opener in the reverse order of removal and note these items:
   - Make sure the opener cable is connected properly.
   - Make sure the fuel fill door opens properly and locks securely.

Openers

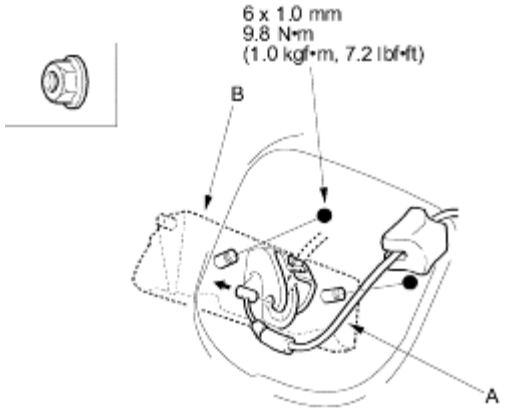
Tailgate Handle Replacement

NOTE: Put on gloves to protect your hands.

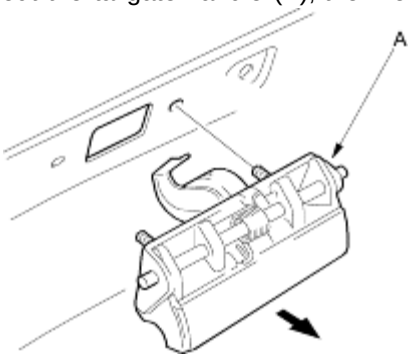
1. Remove the tailgate lower trim panel (see page 20-209).
2. Disconnect the tailgate opener cable (A) from the tailgate handle (B) and remove the nuts.

Fastener Locations

●: Nut, 2



3. Pull out the tailgate handle (A), then remove it.



4. Install the handle in the reverse order of removal and note these items:
   - Make sure the tailgate opener cable is connected securely.
   - Make sure the tailgate opens properly.

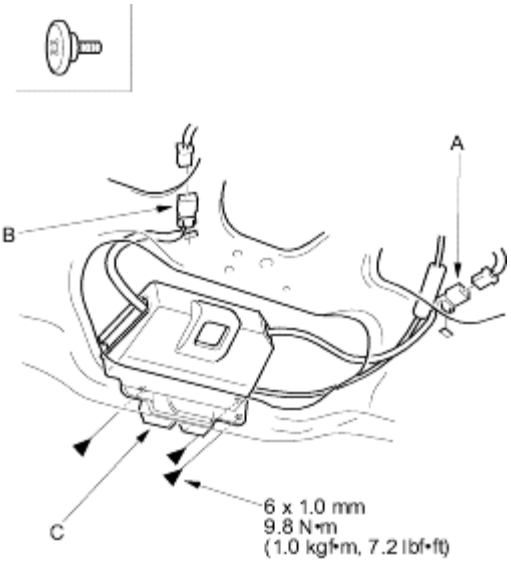
NOTE: Put on gloves to protect your hands.

With Security Switch

1. Remove the tailgate lower trim panel (see page 20-209).
2. Disconnect the tailgate opener cable from the tailgate handle.
3. Disconnect the tailgate latch switch connector (A) and tailgate actuator connector (B), and detach them from the tailgate.

Fastener Locations

▶: Bolt, 3



4. Remove the bolts and pull the tailgate latch (C) out, then remove it.

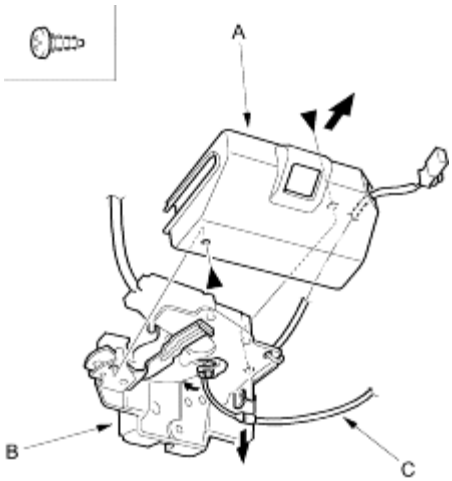
Openers

Tailgate Latch Replacement (cont'd)

1. 5. If necessary, remove the screw, then remove the protector cover (A) from the latch (B) and disconnect the tailgate opener cable (C) from the latch.

Fastener Locations

▶: Screw, 2



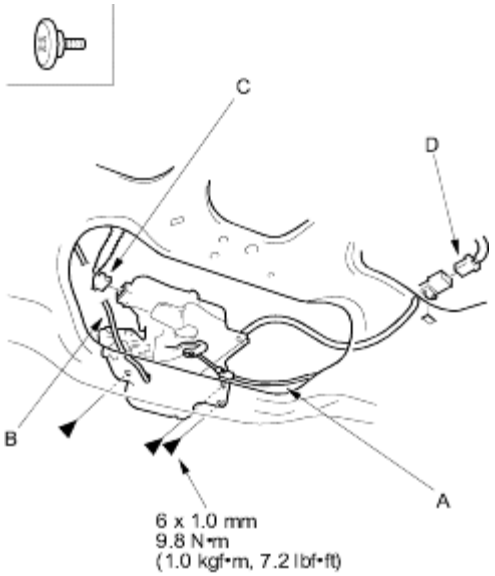
2. 6. Install the latch in the reverse order of removal and note these items:
   - Make sure each connector is plugged in properly, and the cable is connected properly.
   - Make sure the tailgate opens properly and locks securely.

Without Security Switch

1. 1. Remove the tailgate lower trim panel (see page 20-209).
   2. Disconnect the tailgate opener cable (A), cylinder rod (B), tailgate actuator connector (C) and tailgate latch switch connector (D) and detach the tailgate latch switch connector from the tailgate.

Fastener Locations

▶: Bolt, 3



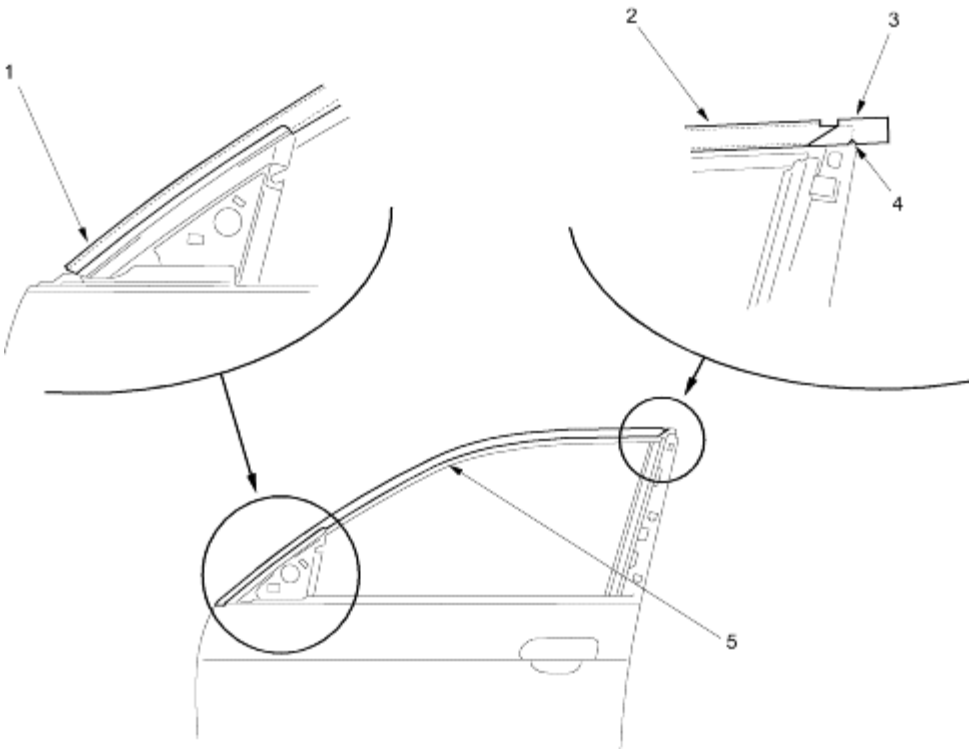
2. 3. Remove the bolts, then pull the tailgate latch (E) out, then remove it.
   4. Install the latch in the reverse order of removal and note these items:
      - Make sure each connector is plugged in properly and the rod and cable are connected properly.
      - Make sure the tailgate opens properly and locks securely.

Doors

Front Door Outer Channel Tape Installation

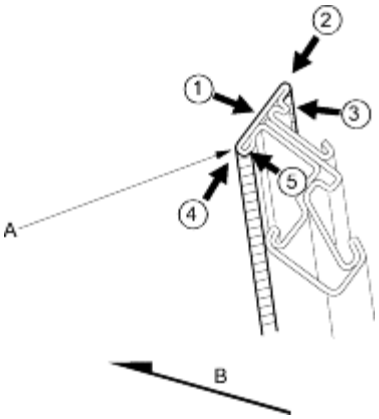
NOTE: Familiarise yourself with the channel tape replacement process (see page 20-26).

Attachment Point (Reference):



1. FRONT DOOR OUTER CHANNEL TAPE
2. FRONT DOOR OUTER CHANNEL TAPE
3. APPLICATION
4. Align
5. FRONT DOOR OUTER CHANNEL TAPE

NOTE: Press in numbered sequence:



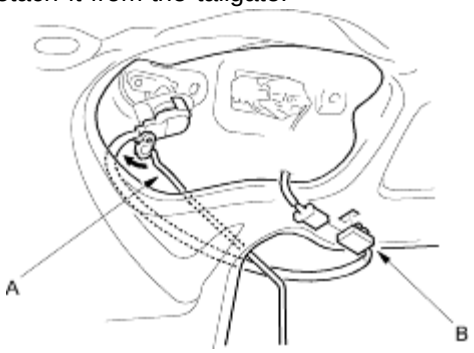
A. A. FRONT DOOR OUTER CHANNEL TAPE
B. Outside

Openers

Tailgate Lock Cylinder Replacement

NOTE: Put on gloves to protect your hands.

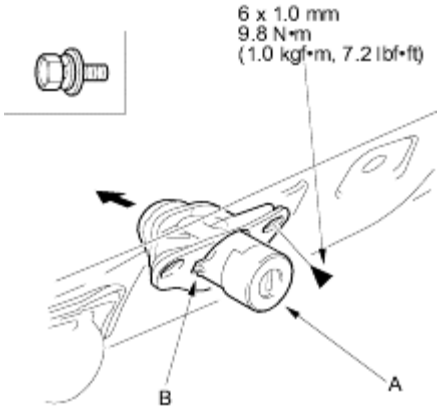
1. Remove these items:
   - Tailgate lower trim panel (see page 20-209).
   - Rear license trim (see page 20-255).
2. Disconnect the cylinder rod (A) and if equipped, disconnect the cylinder switch connector (B) and detach it from the tailgate.



3. From outside the tailgate, remove the bolt securing the lock cylinder (A). From inside the tailgate, pull the lock cylinder out by releasing the hook (B).

Fastener Location

▶: Bolt, 1



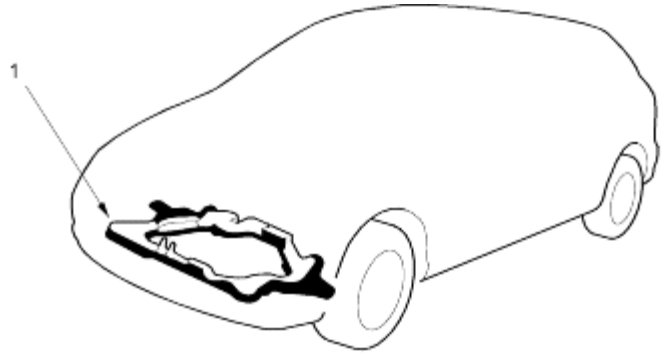
4. Install the lock cylinder in the reverse order of removal and note these items:
   - Make sure the connector is plugged in properly (for some models).
   - Make sure the tailgate opens properly and locks securely.

Frame

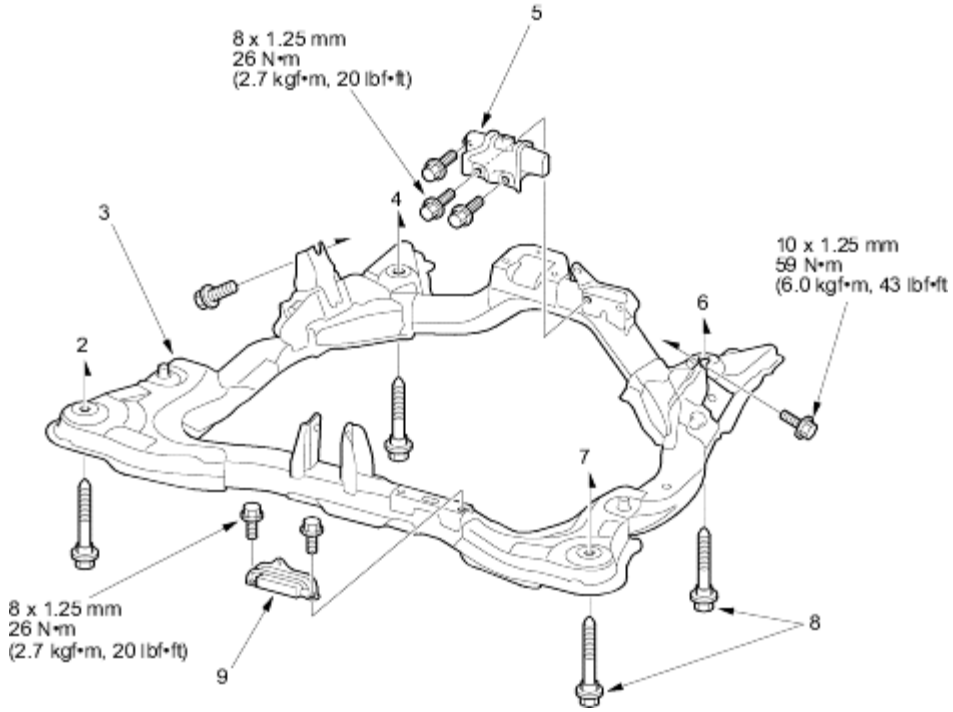
Sub-frame Replacement

Sub-frame Torque:

After loosening the sub-frame mounting bolts, be sure to replace them with new ones.



1. FRONT SUSPENSION SUB-FRAME
2. To body
3. FRONT SUSPENSION SUB-FRAME
4. To body
5. SUB-FRAME REAR DAMPER
6. To body
7. To body
8. SPECIAL BOLTS
   14 X 1.5 mm, 103 Nm (10.5 kgf m, 76 lbf ft), Replace.
9. SUB-FRAME FRONT DAMPER



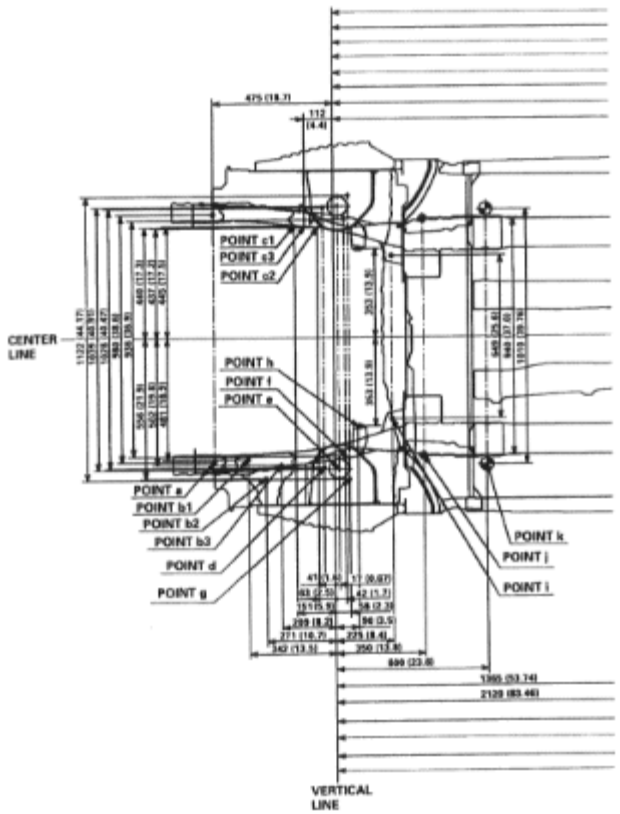
Frame

Frame Repair Chart

Top view:

Unit: mm (in)
Ø: Inner diameter

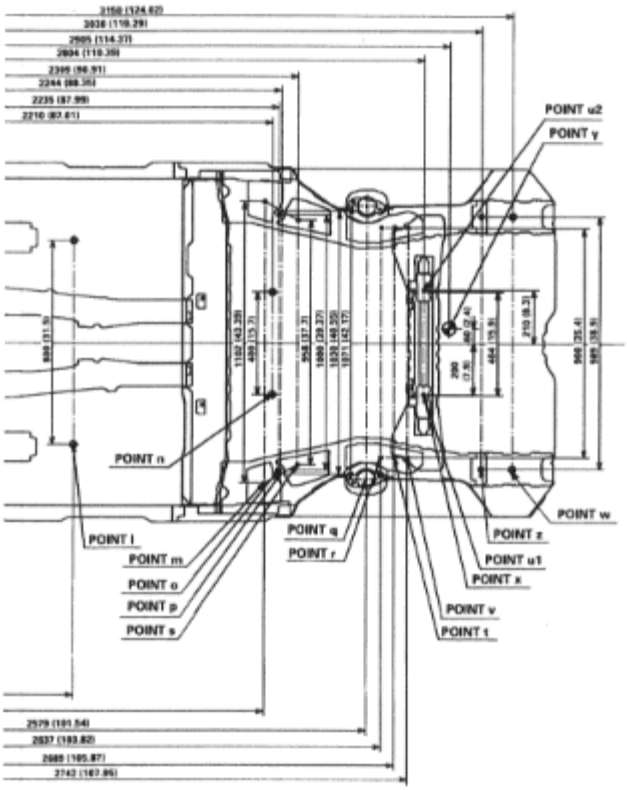
a	For sub-frame Ø15 (0.59)	e	Damper centre Ø78 (3.07)
b1	For engine mount Ø13 (0.51)	f	For damper mount Ø11.5 (0.45)
b2	For engine mount Ø13 (0.51)	g	For damper mount Ø11.5 (0.45)
b3	For engine mount Ø13 (0.51)	h	For sub-frame Ø11 (0.43)
c1	For transmission mount Ø13 (0.51)	i	For sub-frame Ø15 (0.59)
c2	For transmission mount Ø13 (0.51)	j	Locating hole Ø25 (0.98)
c3	For transmission mount Ø13 (0.51)	k	Locating hole Ø50 (1.97)
d	For damper mount Ø11.5 (0.45)		



Frame

Frame Repair Chart (cont'd)

l	Locating hole Ø25 (0.98)	T	For upper arm bracket centre Ø15 (0.98)
m	For trailing arm Ø13 (0.51)	U1, u2	Locating hole Ø13 (0.51)
n	Locating hole Ø25 (0.98)	V	For upper arm Ø13 (0.51)
o	Locating hole Ø20 (0.79)	W	Locating hole Ø25 (0.98)
p	Trailing arm centre	X	For rear lower arm centre
q	Rear damper centre 73 x 68 (Slot)	Y	Locating hole Ø50 (1.97)
r	For upper arm Ø13 (0.51)	Z	Locating hole Ø20 (0.79)
s	For trailing arm Ø23 (0.51)		



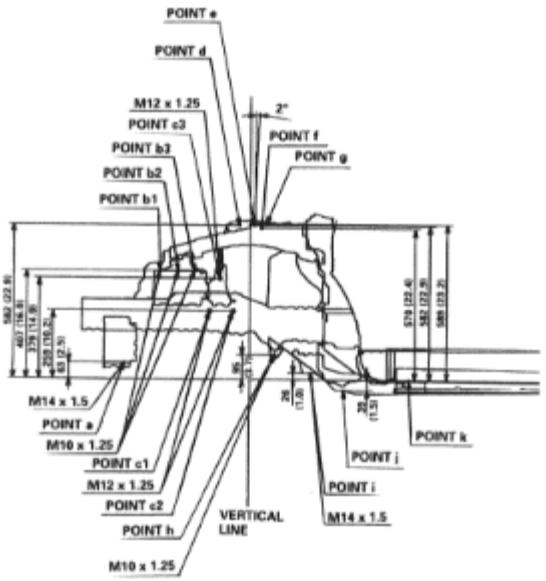
Frame

Frame Repair Chart (cont'd)

Side view:

Unit: mm (in)
Ø: Inner diameter

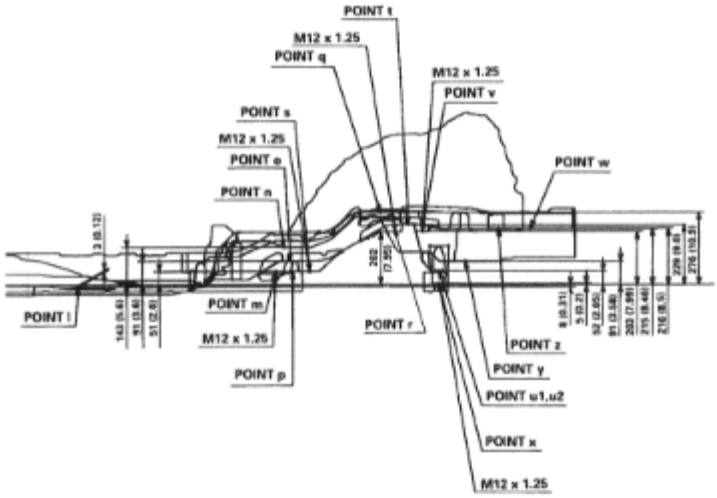
a	For sub-frame Ø15 (0.59)	e	Damper centre Ø78 (3.07)
b1	For engine mount Ø13 (0.51)	f	For damper mount Ø11.5 (0.45)
b2	For engine mount Ø13 (0.51)	g	For damper mount Ø11.5 (0.45)
b3	For engine mount Ø13 (0.51)	h	For sub-frame Ø11 (0.43)
c1	For transmission mount Ø13 (0.51)	i	For sub-frame Ø15 (0.59)
c2	For transmission mount Ø13 (0.51)	j	Locating hole Ø25 (0.98)
c3	For transmission mount Ø13 (0.51)	k	Locating hole Ø50 (1.97)
d	For damper mount Ø11.5 (0.45)		



Frame

Frame Repair Chart (cont'd)

l	Locating hole Ø25 (0.98)	T	For upper arm bracket centre Ø15 (0.98)
m	For trailing arm Ø13 (0.51)	U1, u2	Locating hole Ø13 (0.51)
n	Locating hole Ø25 (0.98)	V	For upper arm Ø13 (0.51)
o	Locating hole Ø20 (0.79)	W	Locating hole Ø25 (0.98)
p	Trailing arm centre	X	For rear lower arm centre
q	Rear damper centre 73 x 68 (Slot)	Y	Locating hole Ø50 (1.97)
r	For upper arm Ø13 (0.51)	Z	Locating hole Ø20 (0.79)
s	For trailing arm Ø23 (0.51)		

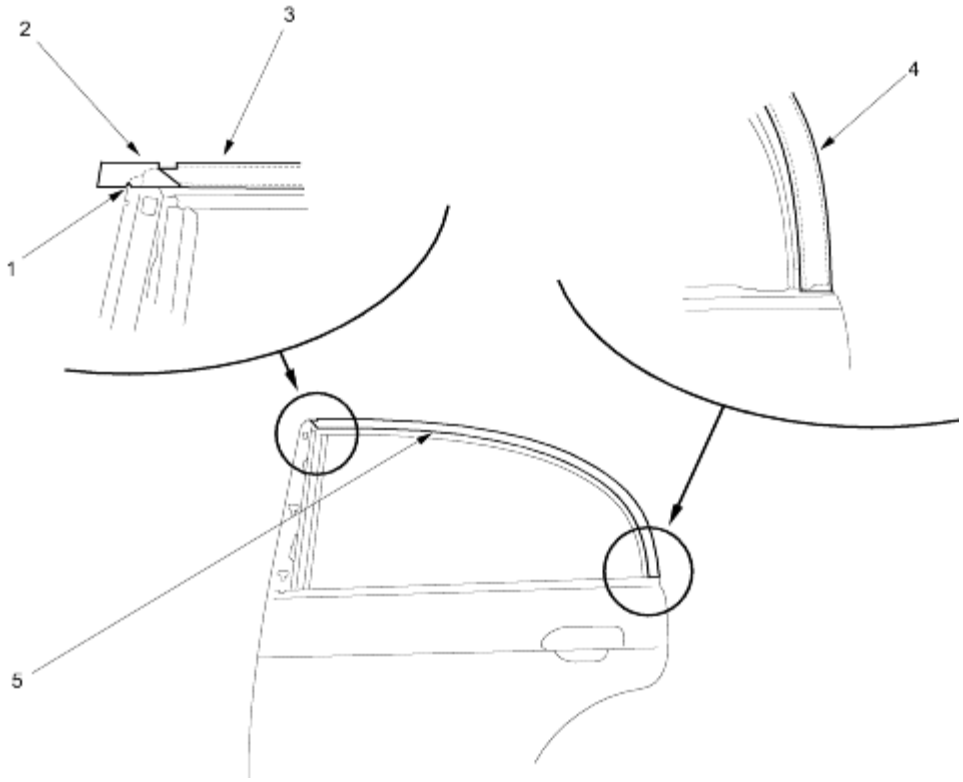


Doors

Rear Door Outer Channel Tape Installation

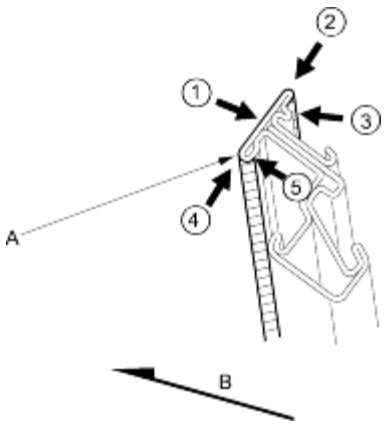
NOTE: Familiarise yourself with the glass replacement process (see page 20-26).

Attachment Point (Reference):



1. Align
2. APPLICATION TAPE
3. REAR DOOR OUTER CHANNEL TAPE
4. REAR DOOR OUTER CHANNEL TAPE
5. REAR DOOR OUTER CHANNEL TAPE

NOTE: Press in numbered sequence.



A. A. REAR DOOR OUTER CHANNEL TAPE
B. Outside

Doors

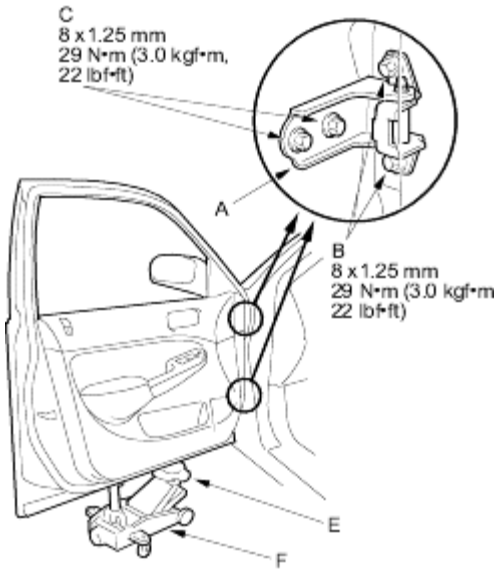
Front and Rear Door Position Adjustment

SRS components are located in the centre pillar bottom area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

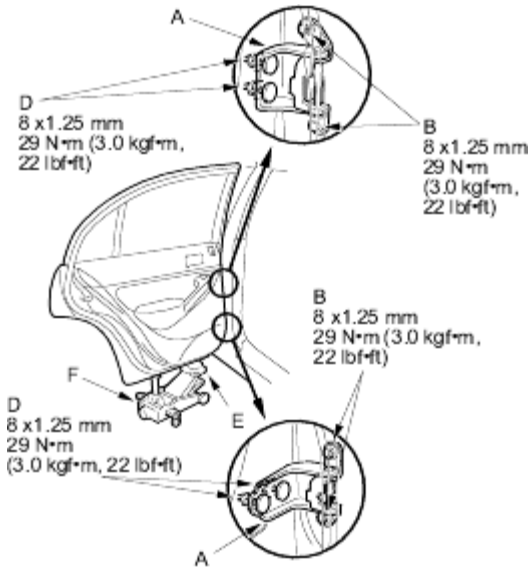
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel. Before adjusting, replace the mounting bolts.

1. 1. Place the vehicle on a firm, level surface when adjusting the doors.
   2. Adjust at the hinges (A):
      - Loosen the door mounting bolts (B) slightly, and move the door in or out until it's flush with the body.
      - On the front door: Remove the front inner fender (see page 20-121) and front fender fairing (see page 20-122. Loosen the hinge mounting bolts (C) slightly, and move the door backward or forward, up or down as necessary to equalise the gaps.
      - On the rear door: Remove the centre pillar lower trim (see page 20-64) and remove the front seat belt and retractor (see page 23-5), and the plug seal from the body. Loosen the hinge mounting nuts (D) slightly, and move the door backward or forward, up or down as necessary to equalise the gaps.
      - Place a shop towel (E) on the jack (F) to prevent damage to the door when adjusting the door.

Front door:

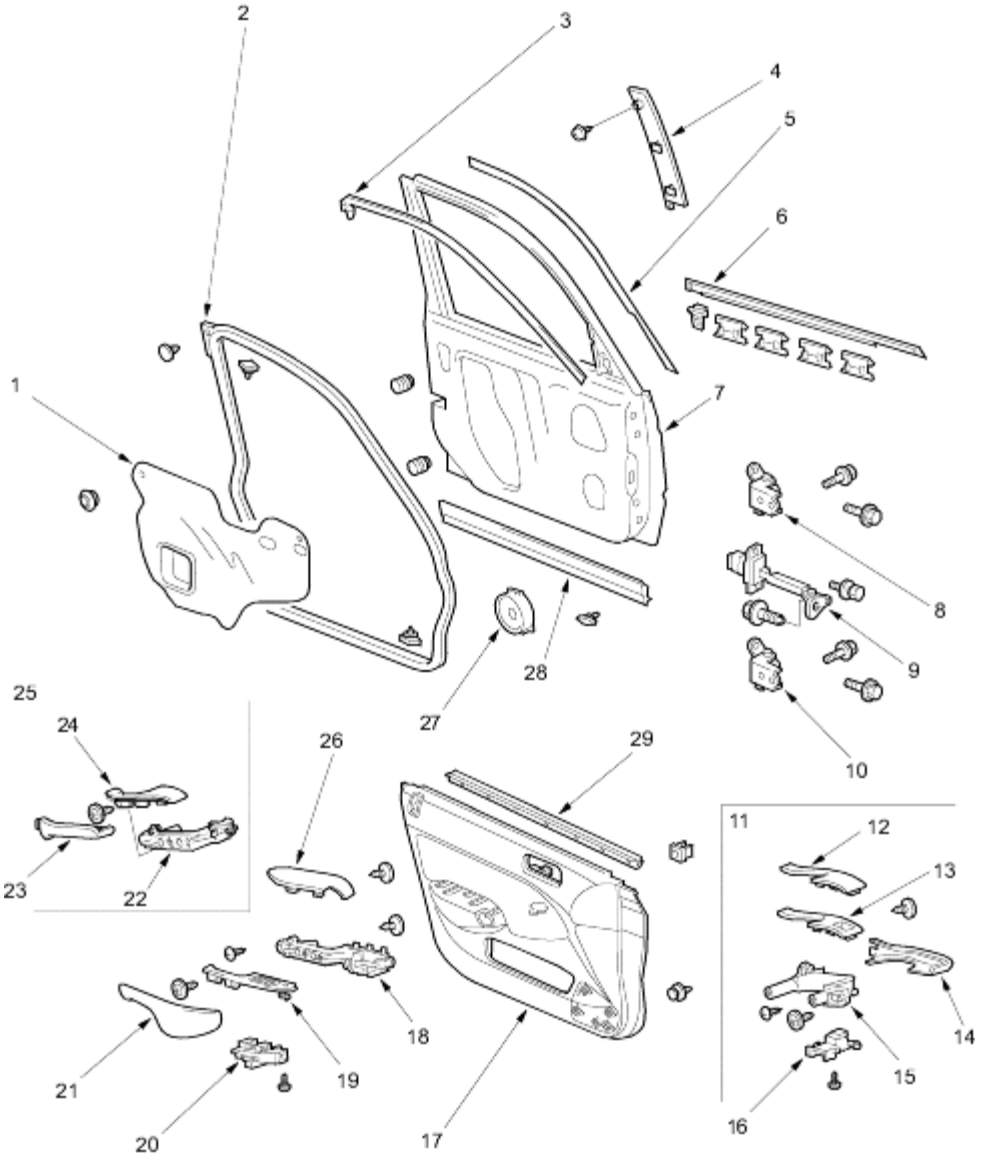


Rear door:



Doors

Component Location Index - Front Door

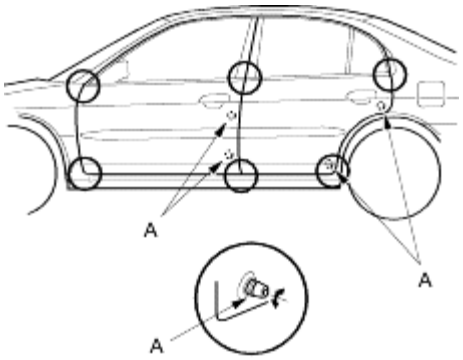


1. PLASTIC COVER
2. DOOR WEATHERSTRIP
   Replacement, page 20-13
3. DOOR UPPER SEAL
   Replacement, page 20-14
4. DOOR SASH TRIM
   Replacement, page 20-12
5. DOOR OUTER CHANNEL TAPE
   Replacement Process, page 20-26
6. Installation, page 20-27DOOR GLASS OUTER WEATHERSTRIP
   Replacement, page 20-13
7. DOOR
8. Position Adjustment, page 20-29HINGE
9. DETENT ROD
10. HINGE
11. Passenger's:
12. REGULATOR PANEL
    (Manual window)
13. SWITCH PANEL
14. GRIP COVER
15. GRIP BASE
16. POWER WINDOW SWITCH
17. DOOR PANEL
    Removal/Installation, page 20-7
18. GRIP BASE
19. SWITCH PANEL
20. POWER WINDOW SWITCH
21. GRIP COVER
22. GRIP BASE
23. GRIP COVER
24. REGULATOR PANEL
25. Manual Window:
26. ARMREST
27. SPEAKER
28. DOOR SIDE SILL SEAL
29. Replacement, page 20-14DOOR GLASS INNER WEATHERSTRIP

Doors

Front and Rear Door Position Adjustment (cont'd)

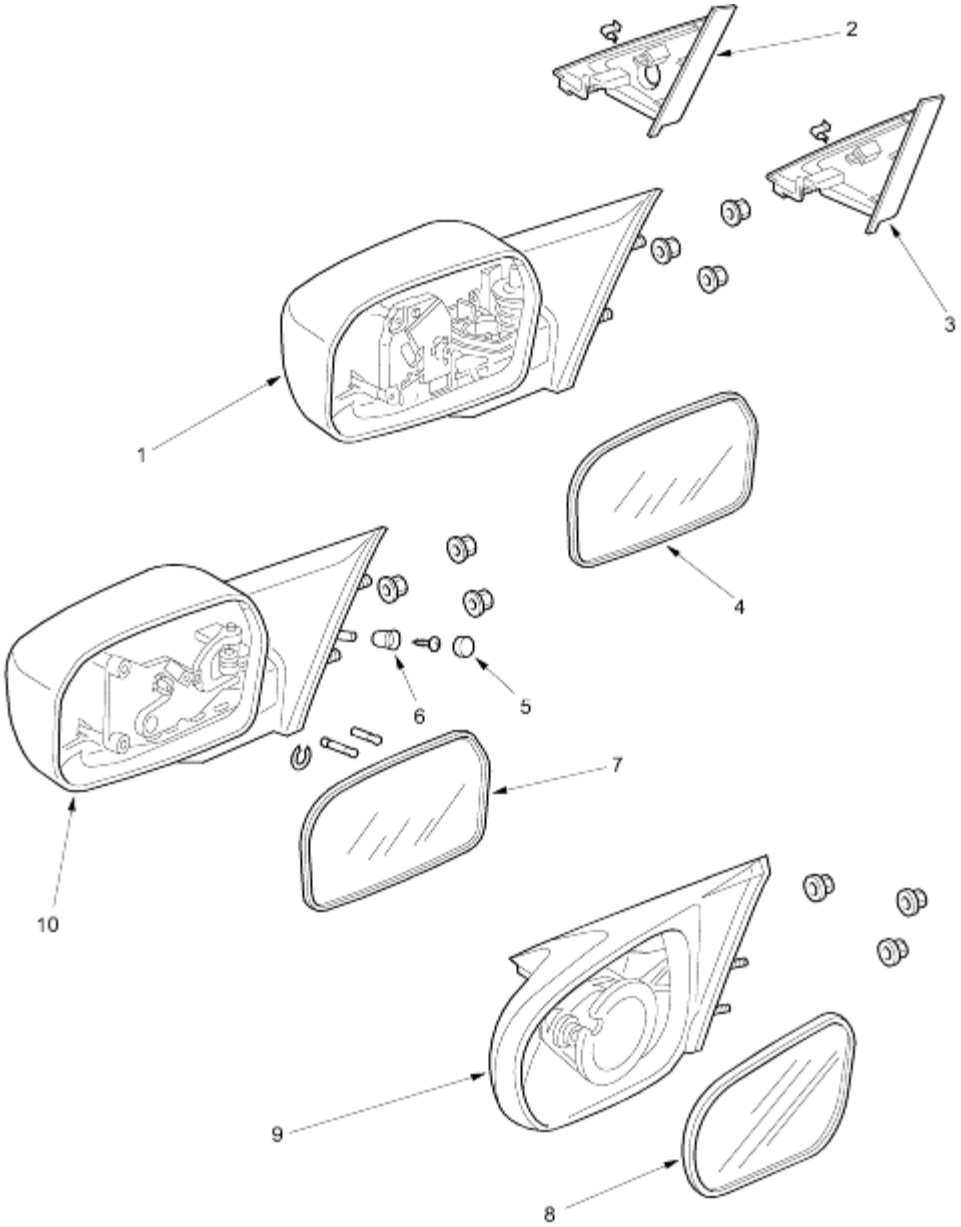
1. 3. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.



2. 4. Apply touch-up paint to the hinge mounting bolts, and around the hinges.
   5. Check for water leaks (see step 7 on page 20-25).

Mirrors

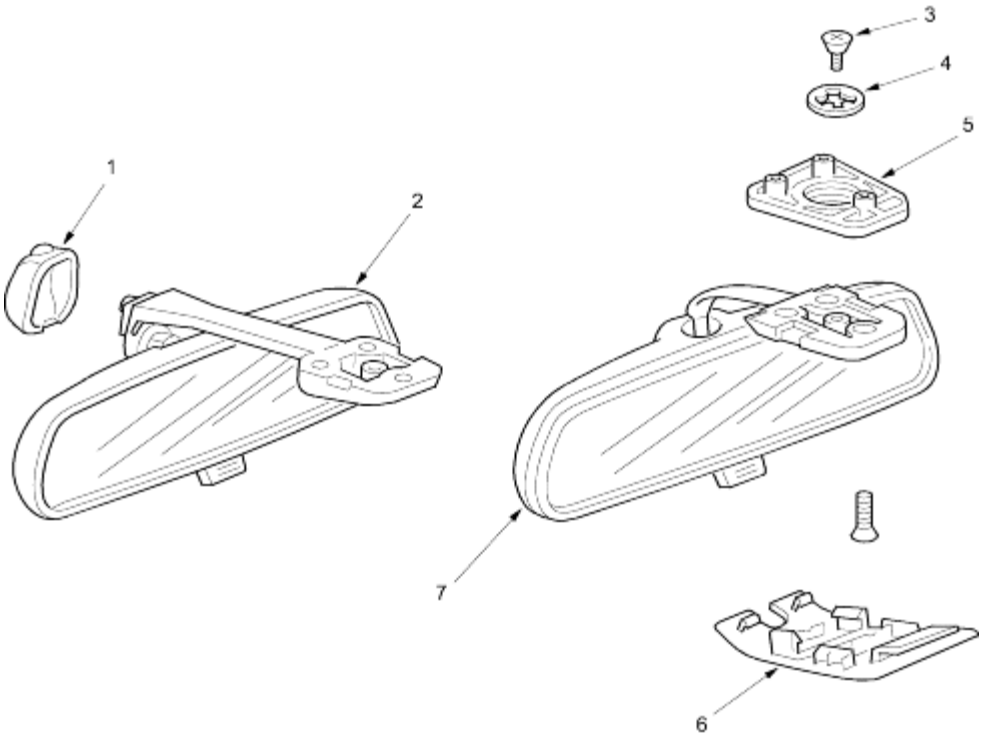
Component Location Index



1. POWER MIRROR
   (Folding type)
   Replacement, page 20-33
2. MIRROR MOUNT COVER
   (Manual mirror)
3. MIRROR MOUNT COVER
   (Power mirror)
4. MIRROR HOLDER
5. Replacement-Folding Type Power Mirror, page 20-34
6. CAP
7. KNOB
8. MIRROR HOLDER
   Replacement-Folding Type Manual Mirror, page 20-35
9. MIRROR HOLDER
   Replacement Fixed Type Power Mirror/Manual Mirror, page 20-35
10. POWER/MANUAL MIRROR
    (Fixed type)
    Replacement, page 20-33
11. MANUAL MIRROR
    (Folding type)
    Replacement, page 20-33

Mirrors

Component Location Index – (cont'd)



1. STAY CAP
2. REAR-VIEW MIRROR (Except Japan-produced) Replacement, page 20-36
3. LOCK BOLT
4. TOOTHED WASHER
5. STAY BASE
6. HEADLINER CAP
7. REAR-VIEW MIRROR (Japan-produced) Replacement, page 20-36

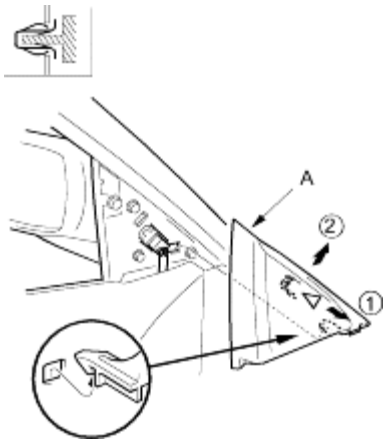
Mirrors

Power Mirror/Manual Mirror Replacement

1. 1. Lower the door glass fully.
2. 2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown.

   Fastener Location

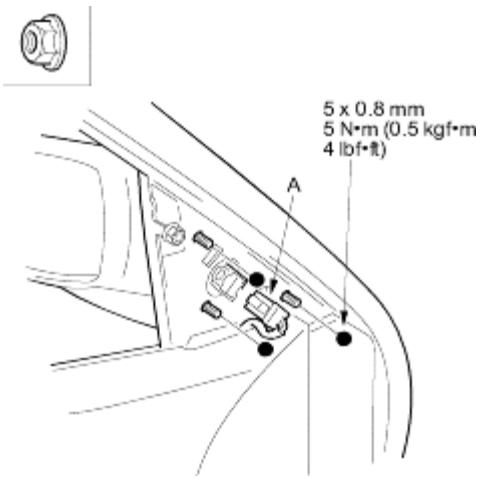
   ▷: Clip, 1



3. 3. On power mirror model: Disconnect the connector (A).

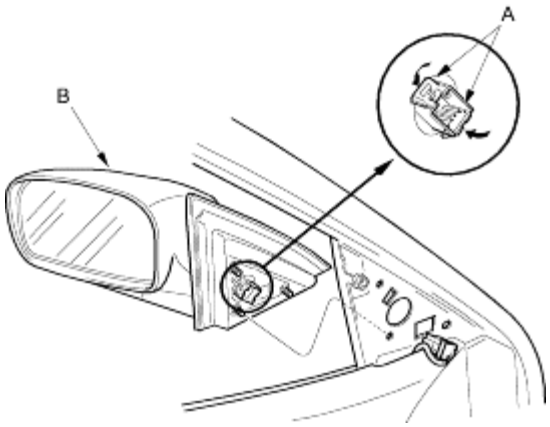
   Fastener Location

   ●: Nut, 3



4. 4. While holding the mirror, remove the nuts securing the mirror, and remove the mirror (manual mirror model).

1. 5. On power mirror model: While holding the mirror, push out the connector clip (A), and remove the mirror (B). Take care not to scratch the door.



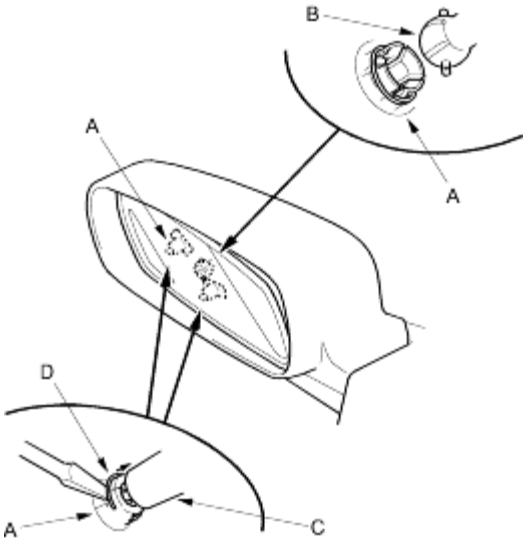
2. 6. Install the mirror in the reverse order of removal, and make sure the connector is plugged in properly (power mirror model).

Mirrors

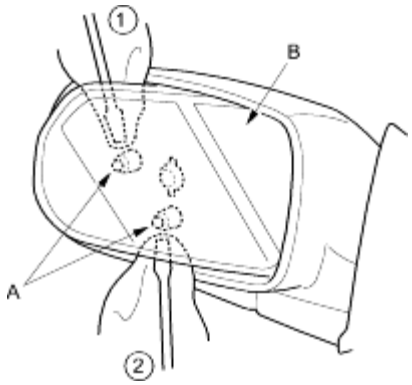
Mirror Holder Replacement - Folding Type Power Mirror

1. 1. Pry the mirror holder (A) out from the top, and detach the pivot (B).

   Carefully move the mirror holder until you can see the joint pins (C), then release the retainer springs (D) using a flat tip screwdriver.

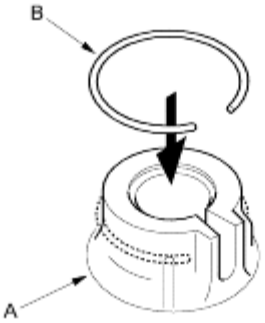


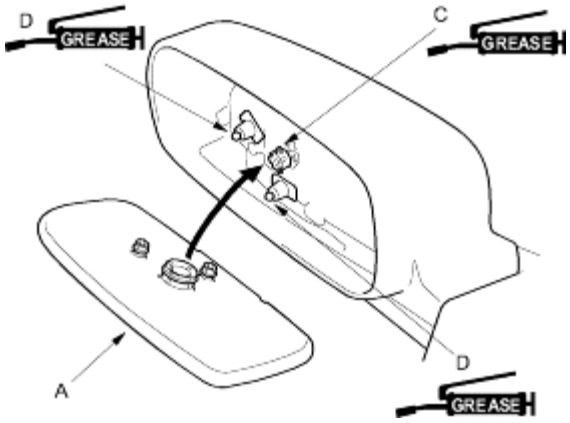
2. 2. Detach the joint pins (A) from the mirror holder (B), then remove the mirror holder.



3. 3. If equipped, disconnect the mirror defogger connector.

1. 4. Install the mirror holder in the reverse order of removal, and note these items:
   - Before installing the mirror holder (A), install the retainer spring (B) on the mirror holder.
   - If equipped, make sure the mirror defogger connector is plugged in properly.
   - Grease the pivot (C) and joint pins (D).
   - Reattach the mirror holder (A) to the pivot and joint pin of the actuator, then carefully push the pivot and joint pin portions of the mirror holder until the mirror holder locks into place.
   - Check the operation of the actuator.

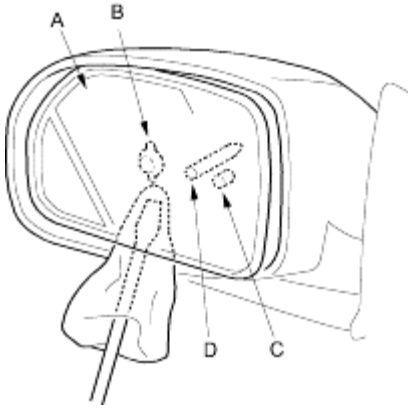




Mirrors

Mirror Holder Replacement - Folding Type Manual Mirror

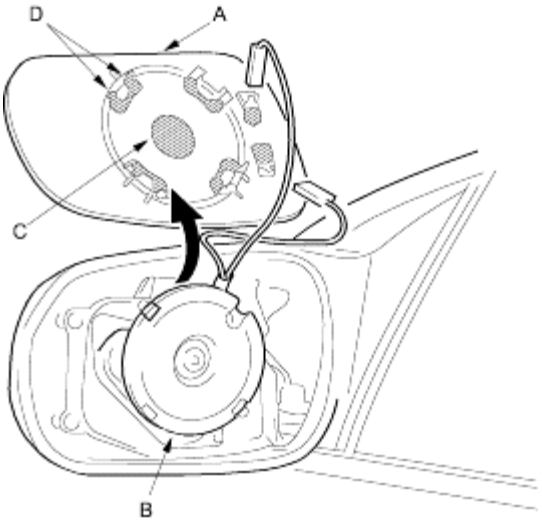
1. 1. Pry the mirror holder (A) out from the bottom until you can see the pivot (B) of the actuator, then detach the pivot using a flat tip screwdriver.



2. 2. Detach the joint pin (C) and stopper pin (D), then remove the mirror holder. If equipped, disconnect the mirror defogger connector.
   3. Grease the pivot, joint pin and stopper pin.
   4. If equipped, reconnect the mirror defogger connector.
   5. Reattach the mirror holder to the pivot, joint pin and stopper pin, then carefully push the pivot, joint pin and stopper pin portions of the mirror holder until the mirror holder locks into place. If necessary, before installing the mirror holder, heat the pivot, joint pin and stopper pin joint portions of the mirror holder.
   6. Check the operation of the actuator.

20-35 Mirror Holder Replacement – Fixed Type Power Mirror/Manual Mirror

1. 1. Carefully pull out the bottom edge of the mirror holder (A) by hand. Take care not to scratch the mirror.



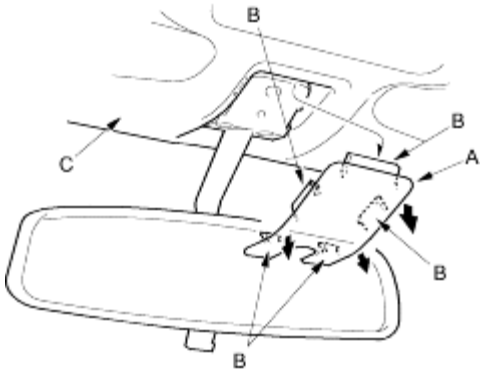
2. 2. Separate the mirror holder from the actuator (B) by slowly pulling them apart while removing the adhesive (C), and detaching the clips (D).
   3. Reattach the clips of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.
   4. Check the operation of the actuator.

Mirrors

Rear-view Mirror Replacement

NOTE: When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.

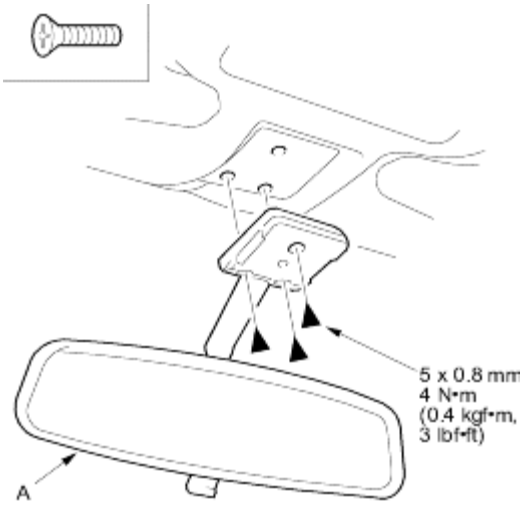
1. 1. Using a flat-tip screwdriver, carefully remove the headliner cap (A) by releasing the hooks (B). Take care not to scratch the cap and headliner (C).



2. 2. Remove the screws, then remove the rear-view mirror (A).

Fastener Locations

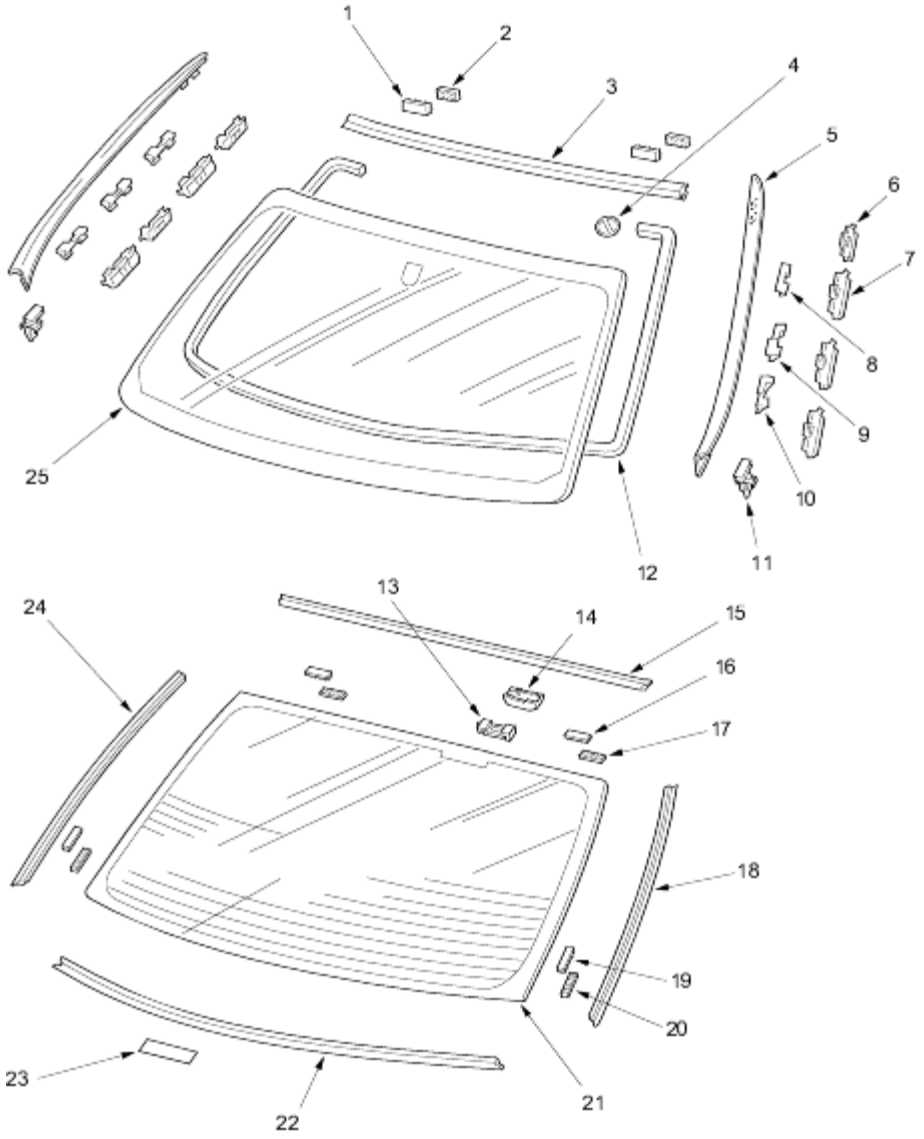
▶: Screw, 3



3. 3. Install the mirror in the reverse order of removal.

Glass

Component Location Index



1. FASTENER, 2
   (Self-adhesive-type, glass side)
2. FASTENER, 2
   (Clip-type, body side)
3. WINDSHIELD MOULDING
4. PASSENGER'S AIRBAG CAUTION LABEL
   (For some models)
5. WINDSHIELD SIDE TRIM
6. RETAINER, 2
   Black
7. RETAINER, 6
   White
8. CLIP, 2
   Left: White
   Right: Green
9. CLIP, 2
   Left: Green
   Right: White
10. CLIP, 2
    Left: Pink
    Right: Yellow
11. CLIP
12. RUBBER DAM
13. WINDOW ANTENNA TERMINAL BASE
14. WINDOW ANTENNA TERMINAL COVER
15. REAR WINDOW UPPER MOULDING
16. UPPER FASTENER, 2
    (Self-adhesive-type, glass side)
17. UPPER FASTENER, 2
    (Self-adhesive-type, body side)
18. RIGHT REAR WINDOW SIDE MOULDING
19. SIDE FASTENER, 2
    (Self-adhesive-type, glass body)
20. SIDE FASTENER, 2
    (Self-adhesive-type, body side)
21. REAR WINDOW
    Replacement, page 20-44
22. REAR WINDOW LOWER MOULDING
23. VTEC REAR STICKER
    (For some models)
    Replacement, page 20-119
24. LEFT REAR WINDOW SIDE MOULDING
25. WINDSHIELD
    Replacement, page 20-38

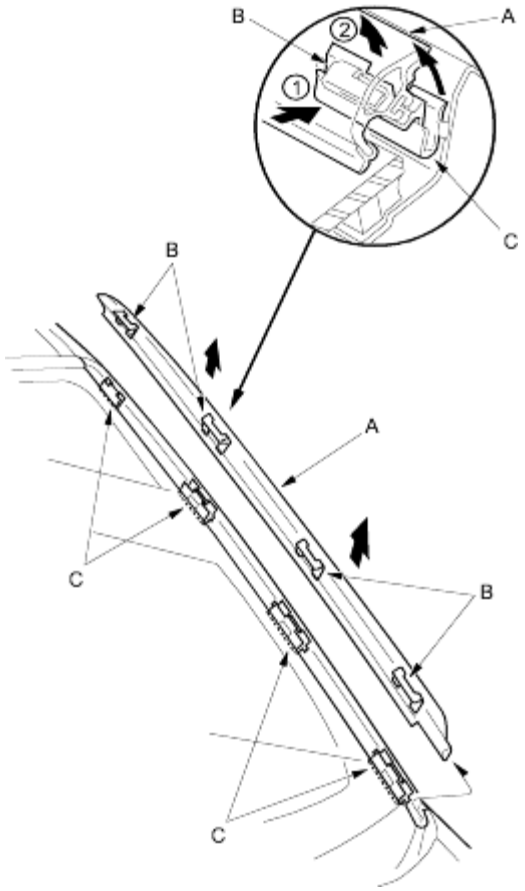
Glass

Windshield Replacement

NOTE:

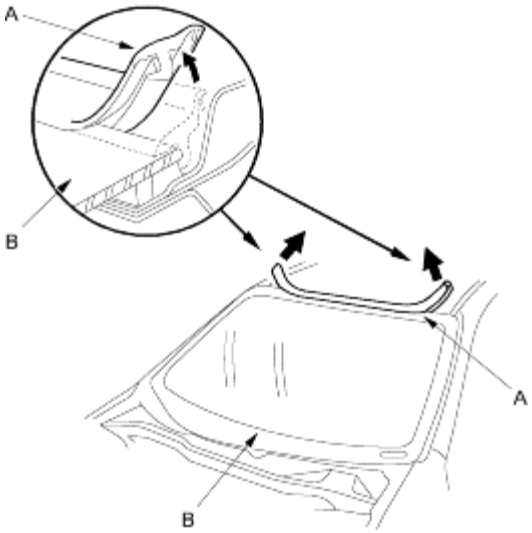
- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging the seat.
- Use glass adhesive set, P/N. 08C73-X0230N.

1. 1. Pull up the side trim (A) to release the clips (B) from the retainers (C), then remove the trim from each side of the windshield.



2. 2. Remove these items:
   - Windshield wiper arms (see page 22-179
   - Cowl covers (see page 20-114)

1. 3. Remove the moulding (A) from the upper edge of the windshield (B). If necessary, cut the moulding with a utility knife.



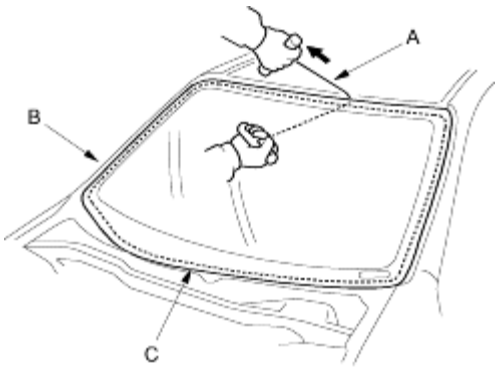
2. 4. If the old windshield is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
   5. Pull down the front portion of the headliner (see page 20-68). Take care not to bend the headliner excessively, or you may crease or break it.
   6. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam and adhesive from inside the vehicle at the corner portion of the windshield. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

Glass

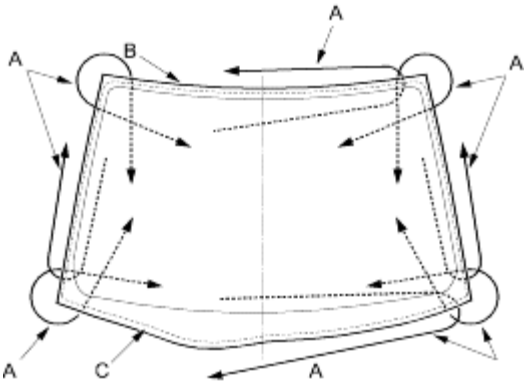
Windshield Replacement (cont'd)

1. 7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and dashboard.

   Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



   Cutting portions:

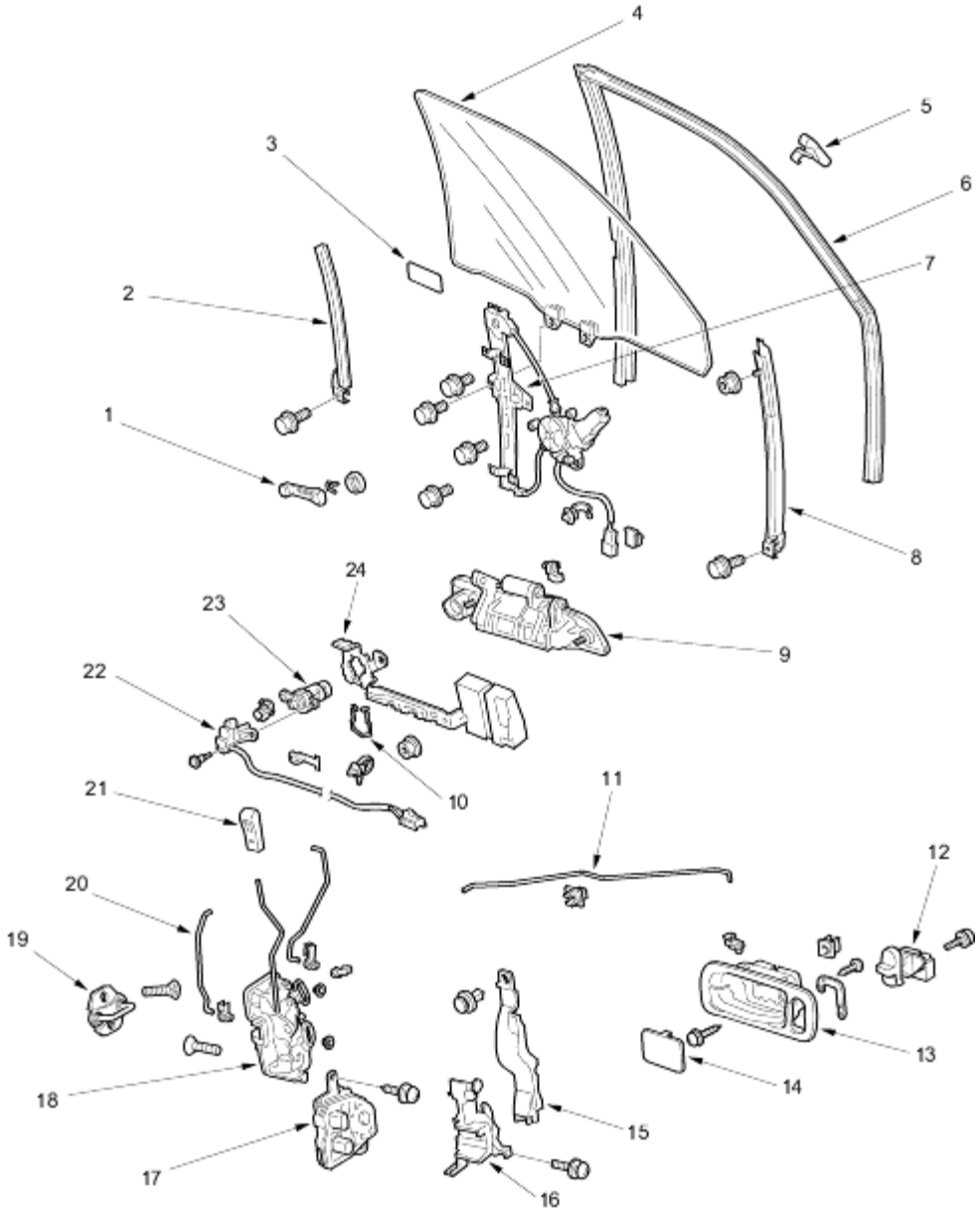


2. 8. Carefully remove the windshield.

1. 9. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the rubber dam and fasteners from the body.
2. 10. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.
   11. If the old windshield is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners, and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

Doors

Component Location Index – Front Door (cont'd)

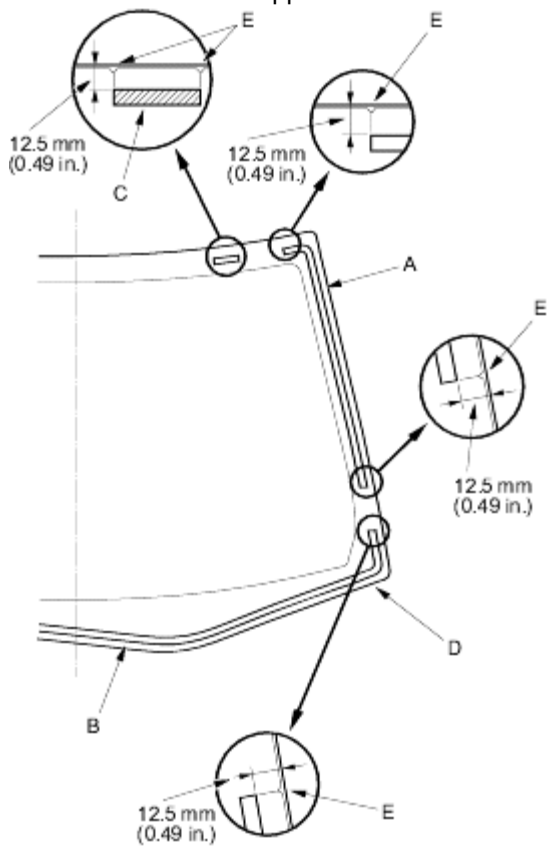


1. REGULATOR HANDLE
   (Manual window)
2. CENTRE LOWER CHANNEL
3. IMMOBILISER LABEL
   (For some models)
4. GLASS
   Replacement, page 20-11
   Adjustment, page 20-24
5. GLASS TOP
   (For some models)
6. GLASS RUN CHANNEL
7. REGULATOR
   Replacement, page 20-11
8. FRONT LOWER CHANNEL
9. OUTER HANDLE
   Replacement, page 20-8
10. RETAINER CLIP
11. INNER HANDLE ROD
12. POWER DOOR LOCK SWITCH
    (For some models)
13. INNER HANDLE
14. COVER
15. LOCK ROD PROTECTOR
    (For some models)
16. LATCH PROTECTOR
    (For some models)
17. POWER DOOR LOCK ACTUATOR
    (For some models)
18. LATCH
    Replacement, page 20-10
19. STRIKER
20. CYLINDER
21. LOCK KNOB
22. CYLINDER SWITCH
    (For some models)
23. LOCK CYLINDER
24. OUTER HANDLE PROTECTOR

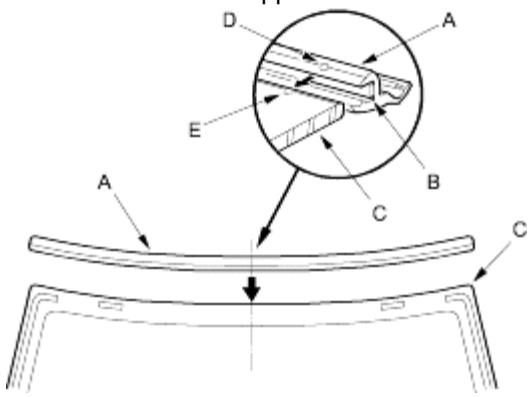
Glass

Windshield Replacement (cont'd)

1. 12. Glue the side rubber dams (A), lower rubber dam (B) and fasteners (C) to the inside face of the windshield (D) as shown:
   - Be sure the rubber dam and fasteners line up with the alignment marks (E).
   - Be careful not to touch the windshield where adhesive will be applied.



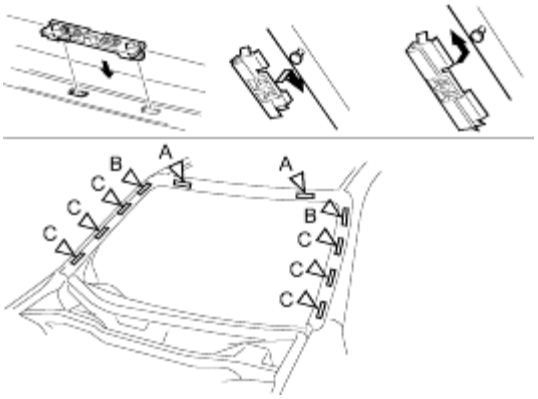
1. 13. Glue the moulding (A) with adhesive tape (B) to the upper edge of the windshield (C):
   - Be sure the alignment mark (D) of the moulding lines up with the alignment mark (E) of the windshield.
   - Be careful not to touch the windshield where adhesive will be applied.



2. 14. Install the fasteners (A) and retainers (B, C) to the body.

Fastener Locations

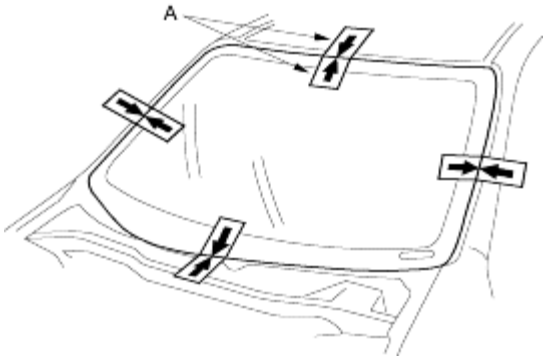
A▷: Fastener, 2 B▷ : Retainer, 2 C▷ : Retainer, 6



Glass

Windshield Replacement (cont'd)

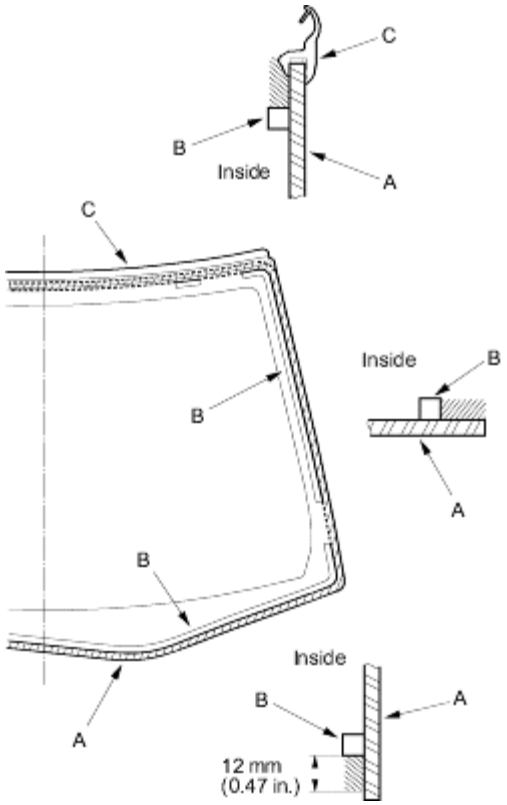
1. 15. Set the windshield in the opening, and centre it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Be careful not to touch the windshield where adhesive will be applied.



2. 16. Remove the windshield.

1. 17. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the dams (B) and moulding (C) as shown, then lightly wipe it off with gauze or cheesecloth:
   - Apply glass primer to the moulding.
   - Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.

Hatched area : Apply glass primer here

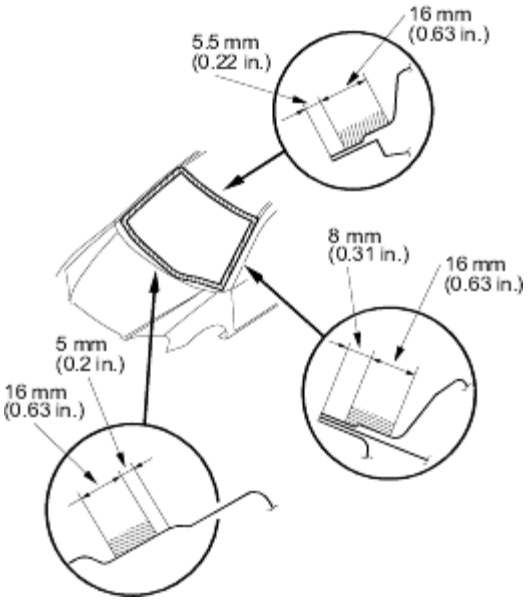


Glass

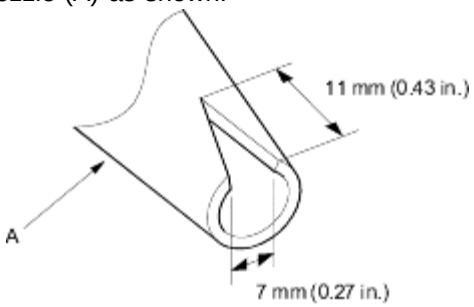
Windshield Replacement (cont'd)

1. 18. With a sponge, apply a light coat of body primer to the original adhesive remaining around the windshield opening flange. Let the body primer dry for at least 10 minutes:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.
   - Mask off the dashboard before painting the flange.

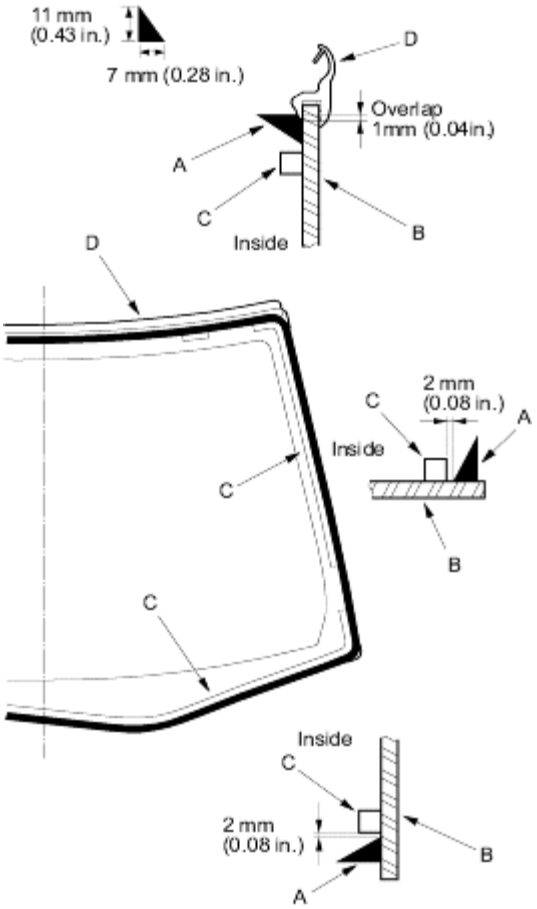
Hatched area: Apply body primer here.



2. 19. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



1. 20. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and moulding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



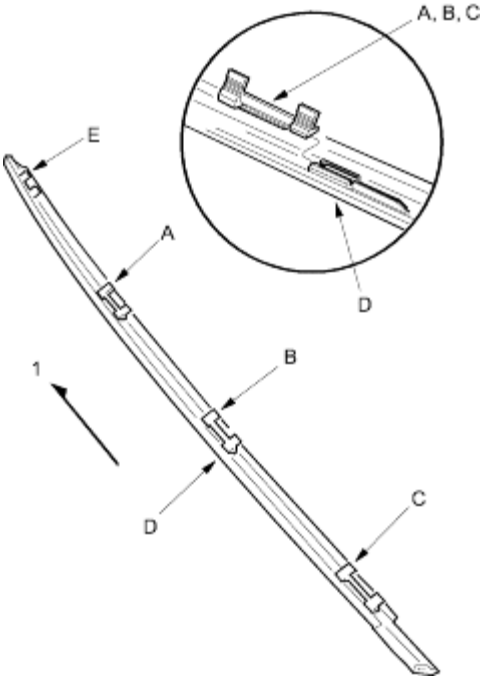
2. 21. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 15, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.

Glass

Windshield Replacement (cont'd)

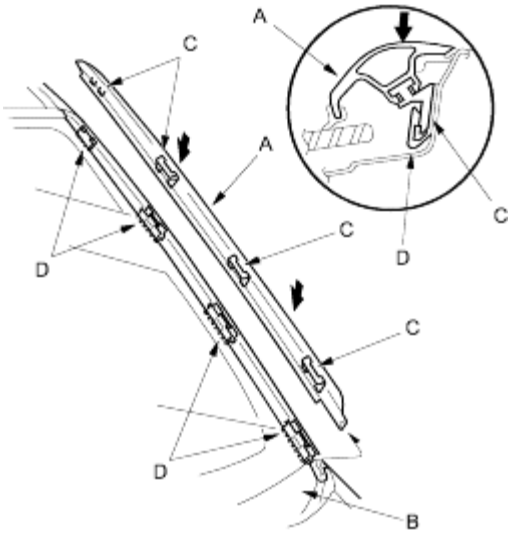
22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.
23. Let the adhesive dry for at least 1 hour, then spray water over the windshield and check for leaks. Mark leaking areas, and let the windshield dry, then seal with sealant:
    - Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
    - Keep the windshield dry for the first hour after installation.
24. Reinstall the cowl covers (see page 20-114).
25. Install the clips (A, B, C) on both side mouldings (D). If the clip (E) is damaged, replace the side moulding and clip as an assembly.

A	:Left, White
	:Right, Green
B	:Left, Green
	:Right, White
C	:Left, Pink
	:Right, Yellow



4. 1. Top of moulding

26. On both sides of the windshield, set the bottom edge of the side moulding (A) under the cowl cover (B), then align the clips (C) with the retainers (D), and push on the clip portions of the moulding until the moulding is fully seated on the windshield.



27. Reinstall all remaining removed parts. Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

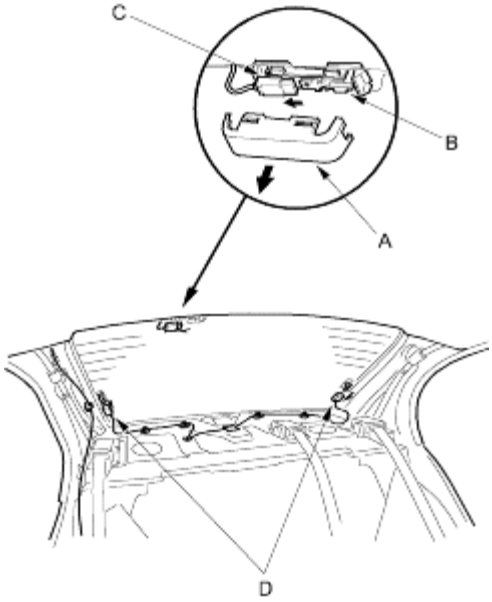
Glass

Rear Window Replacement

NOTE:

- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.
- Use glass adhesive set, P/N. 08C73-X0230N.

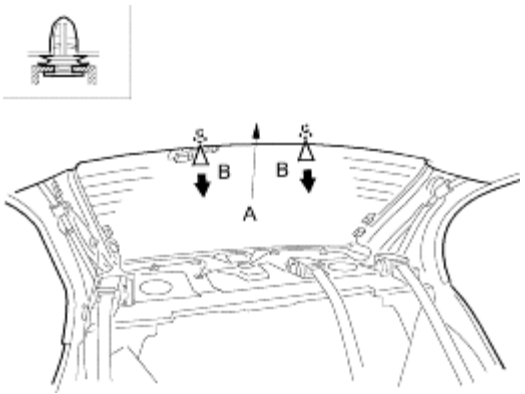
1. Remove these items:
   - Trunk lid
   - Rear shelf, folding type rear seat (see page 20-65), fixed type rear seat (see page 20-66)
2. Remove the window antenna terminal cover (A) from the window antenna terminal base (B), and disconnect the window antenna connector (C).



3. Disconnect the rear window defogger connectors (D).
4. If the old rear window is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
5. Pull down the rear portion of the headliner (A) by detaching the clips (B). Take care not to bend the headliner excessively, or you may crease or break it.

Fastener Locations

B▷: Clip, 2

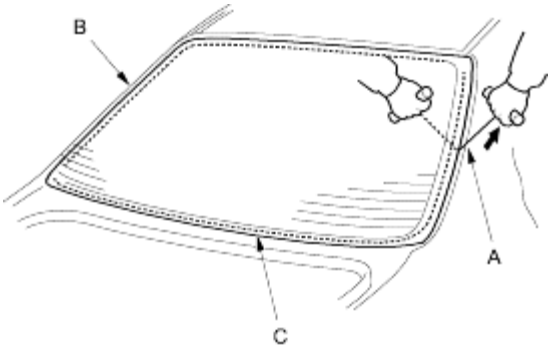


6. Apply protective tape along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

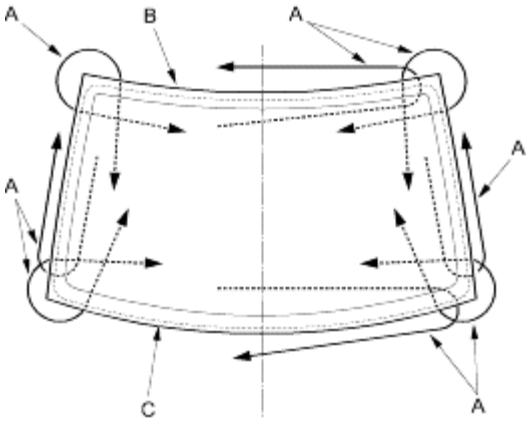
Glass

Rear Window Replacement (cont'd)

1. 7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire rear window.



Cutting positions:



2. 8. Carefully remove the rear window.

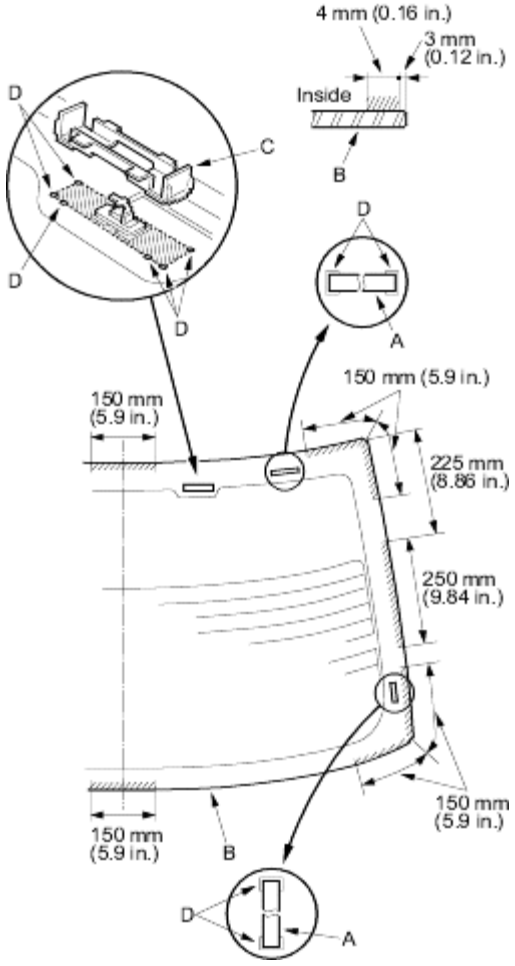
1. 9. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the fasteners from the body.
2. 10. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
   11. If the old rear window is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the mouldings, and the fasteners from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

Glass

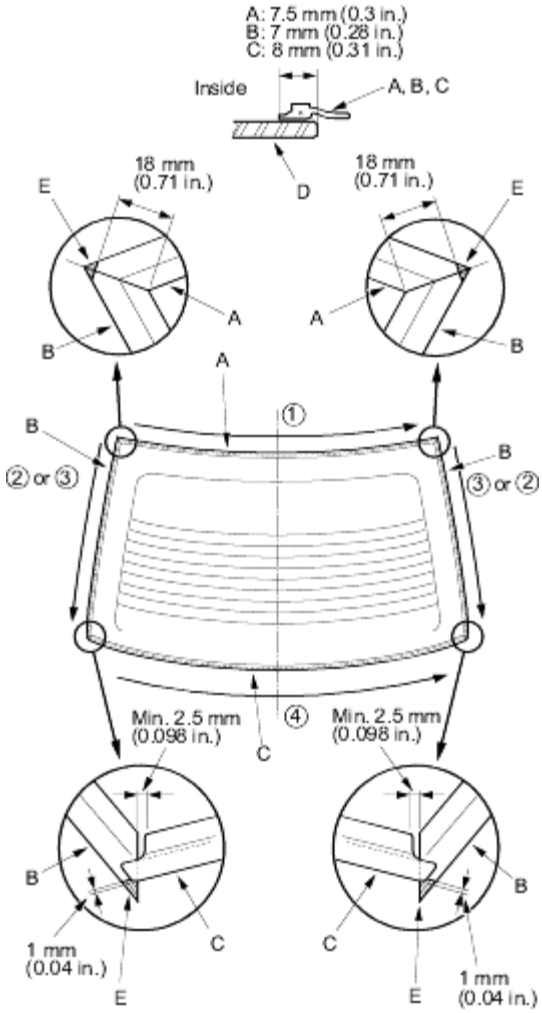
Rear Window Replacement (cont'd)

1. 12. Glue the fasteners (A) to the inside face of the rear window (B) as shown. Apply primer (3MN-200, or equivalent) to the inside face of the rear window as shown. If necessary, apply primer (3M N-200, or equivalent) to the areas where the window antenna terminal base (C) will be glued, then glue the base on:
   - Be sure the fasteners (and window antenna terminal base cover) line up with the alignment marks (D).
   - Be careful not to touch the rear window where adhesive will be applied.

Hatched area: Apply primer here



1. 13. Glue the upper moulding (A), side mouldings (B), and lower moulding (C) around the edge of the rear window (D):
   - Glue the mouldings in the numbered sequence.
   - After installing the mouldings, cut the corner edge areas (E) of the mouldings as shown.
   - Be careful not to touch the rear window where adhesive will be applied.



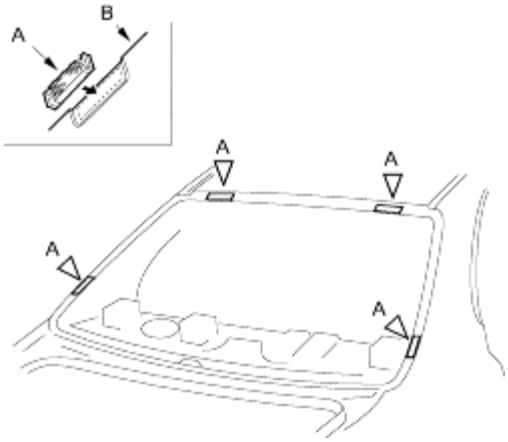
Glass

Rear Window Replacement (cont'd)

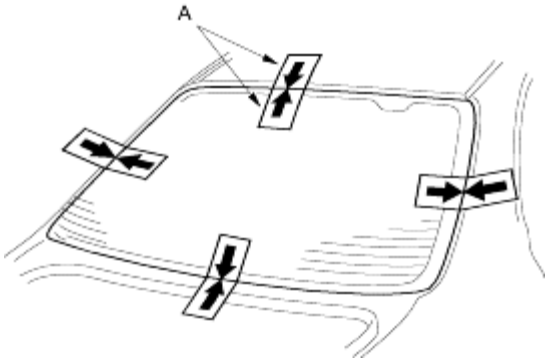
1. 14. Glue the fasteners (A) to the rear window opening flange (B) of the body.

Fastener Locations

A ▷: Fastener, 4



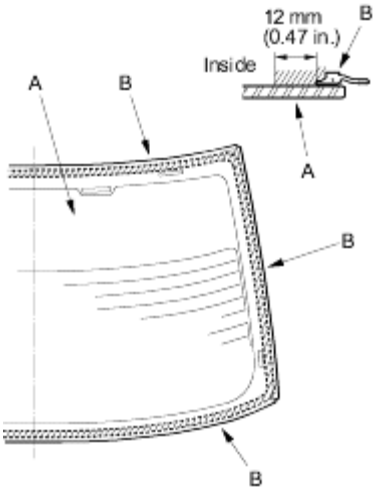
2. 15. Set the rear window in the opening, and centre it. Make alignment marks (A) across the rear window and body with a grease pencil at the 4 points shown. Be careful not to touch the rear window where adhesive will be applied.



3. 16. Remove the rear window.

1. 17. With a sponge, apply a light coat of glass primer along the edge of the rear window (A) and moulding (B) as shown, then lightly wipe it off with gauze or cheesecloth:
   - Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.

Hatched area: Apply glass primer here.

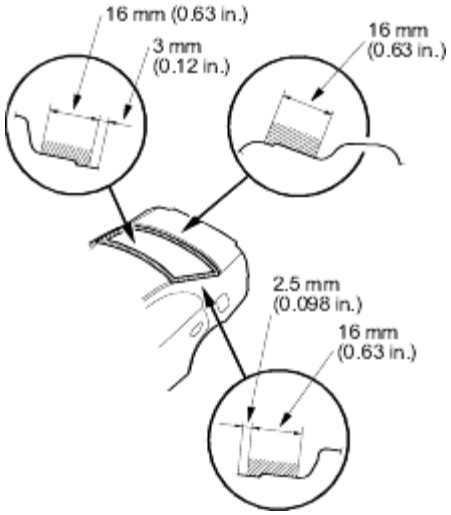


Glass

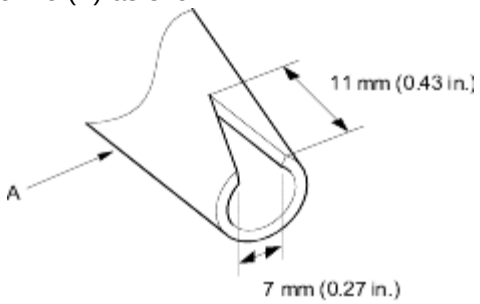
Rear Window Replacement (cont'd)

1. 18. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.

Hatched area: Apply body primer here.

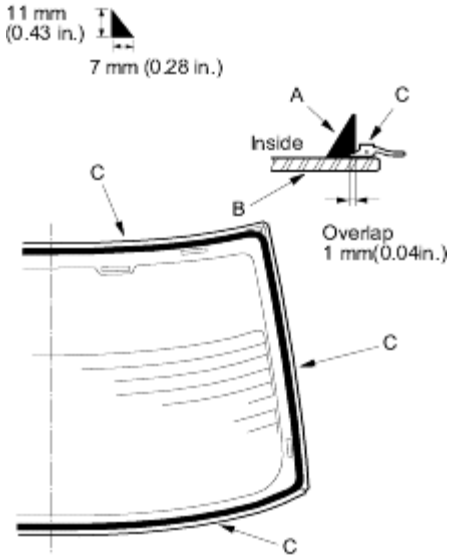


2. 19. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



1. 20. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window (B) and mouldings (C) as shown.

Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



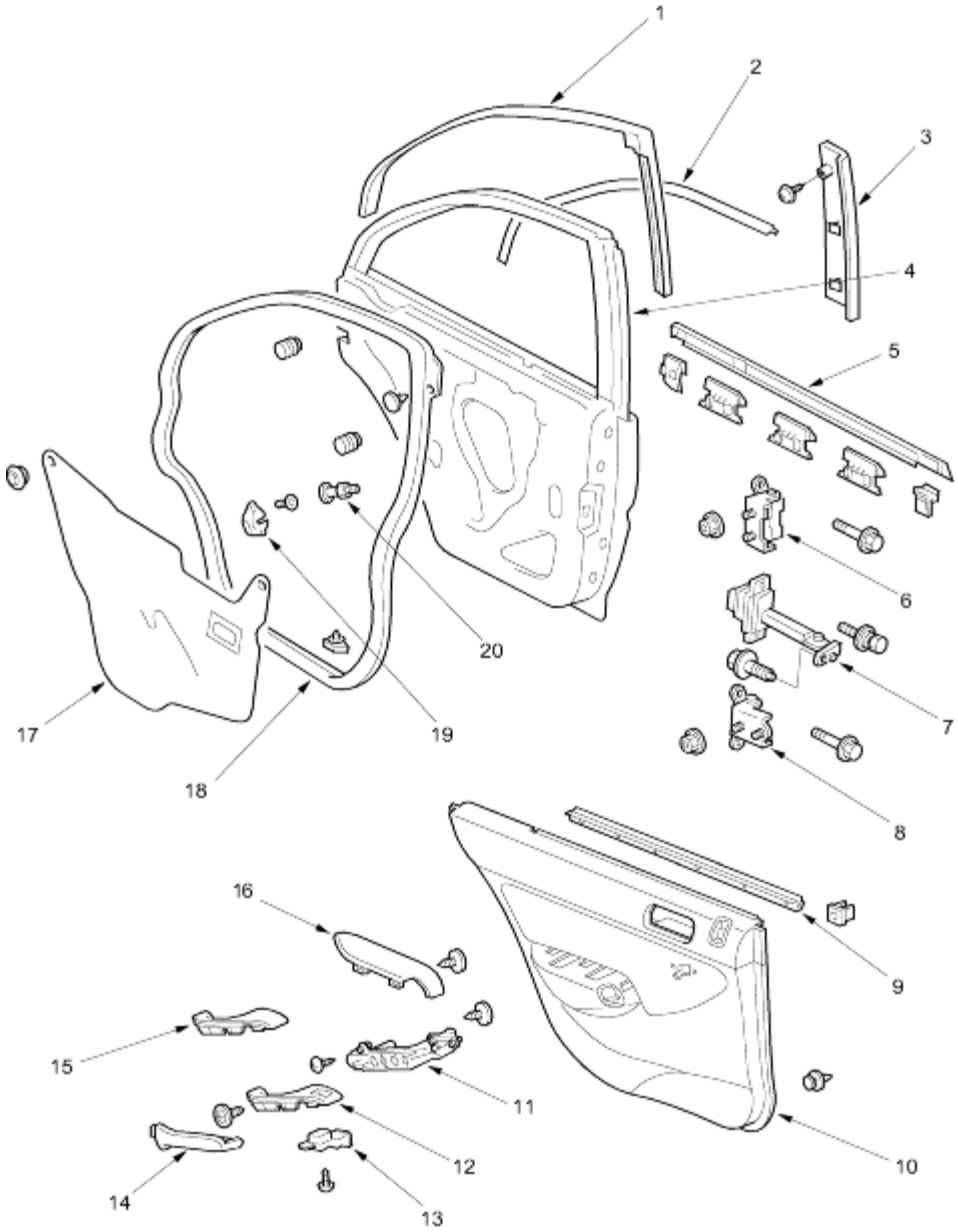
Glass

Rear Window Replacement (cont'd)

1. 21. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 15, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.
2. 22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
   23. Let the adhesive dry for at least 1 hour, then spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
   24. Reinstall all remaining removed parts. Advise the customer not to do the following things for 2 to 3 days:
       - Slam the doors with all the windows rolled up.
       - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Doors

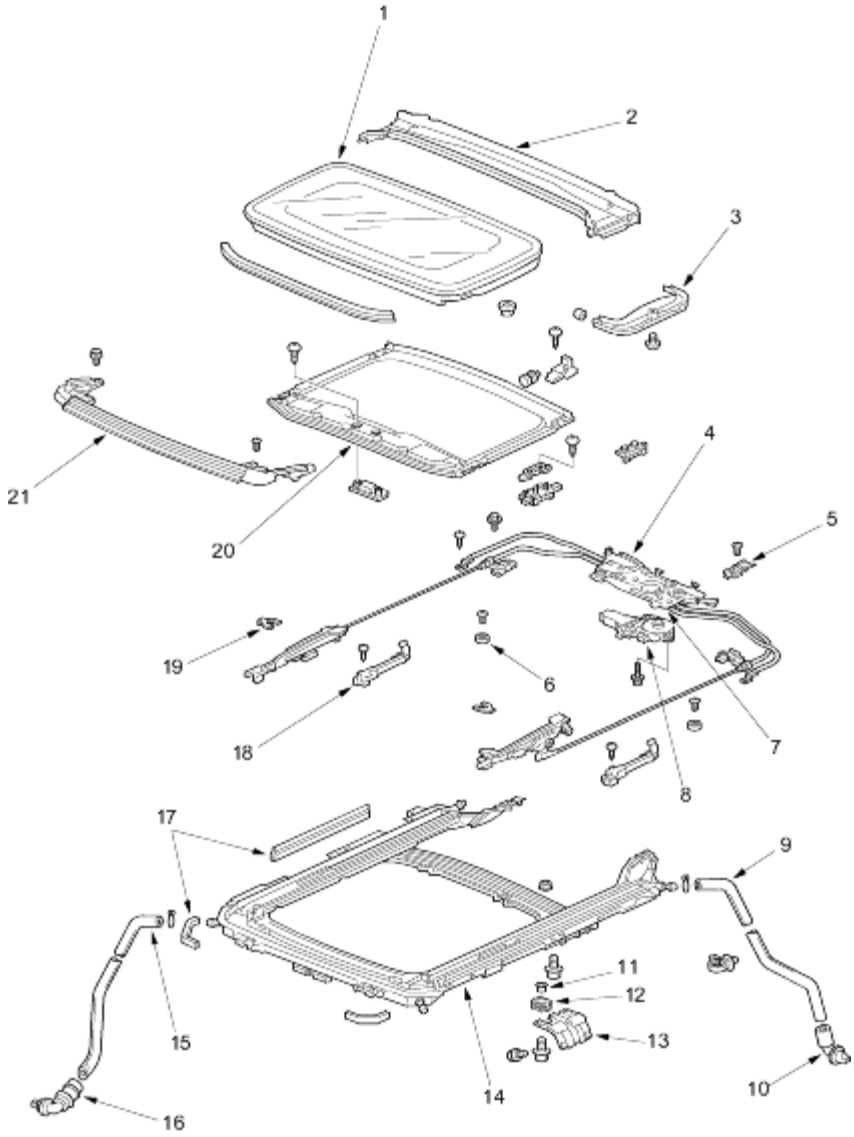
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Sunroof

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11. COLLAR
12. CUSHION
13. ROOF ARCH GUSSET
14. FRAME
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18. DRAIN CHANNEL SLIDER
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20. SUNSHADE
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    Replacement, page 20-5

Sunroof

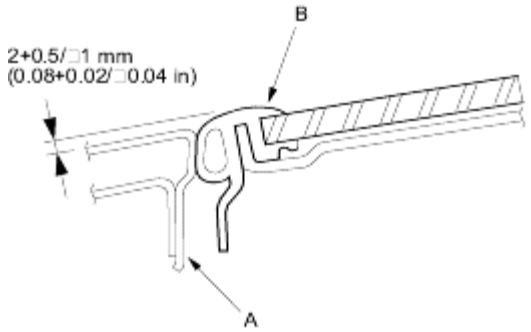
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Water leaks	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel. 3. Check for a defective or an improperly installed glass weatherstrip or drain channel. 4. Check for a gap between the drain seal and the roof panel.	
Wind noise	1. Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	
Glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign matter stuck between the guide rail and the slider. 3. Check for a loose inner cable. 4. Make sure the cable assembly is attached properly.	
Glass does not move and motor does not turn (glass can be moved with sunroof wrench)	1. Check for a blown fuse. 2. Check for a faulty sunroof switch. 3. Check the limit switch. 4. Check for a run down battery. 5. Check for a defective motor. 6. Check for a faulty relay.	

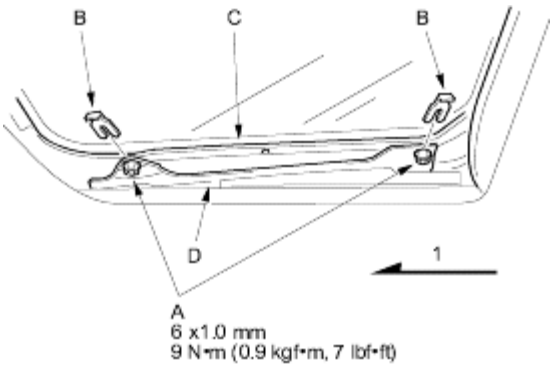
Sunroof

Glass Height Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within 2+0.5/−1 mm (0.08+0.02/−0.04 in.) all the way around. If not, make the following adjustment:



1. 1. Remove the bracket cover from each side.
   2. Loosen the nuts (A), and install the shims (B) between the glass frame (C) and glass bracket (D) on each side.
      Shim thickness: Front and rear max. 2 mm (0.08 in.)

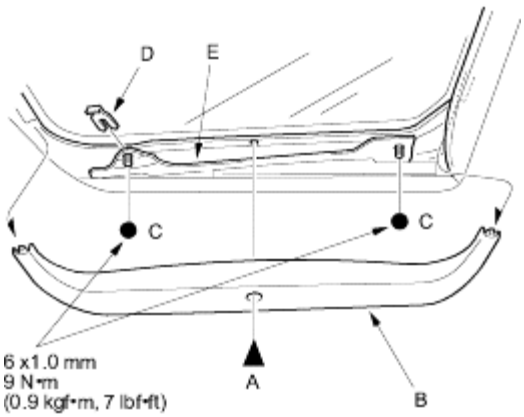


2. 1. Forward

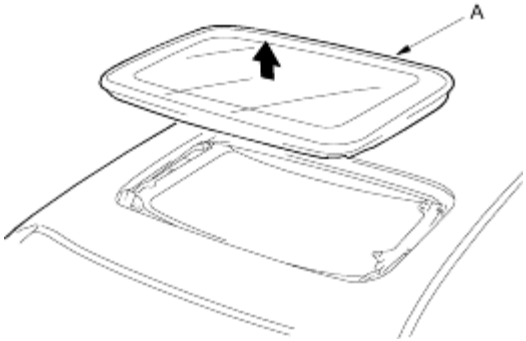
3. 3. If necessary, repeat on the opposite side.

1. 1. Close the glass fully.
2. 2. Slide the sunshade all the way back.
   3. Remove the screws (A), then remove both bracket covers (B). Remove the nuts (C) and shims (D) from both glass brackets (E).
      Fastener Locations
      A ▶: C ●: Nut, Screw, 2 4





3. 4. Remove the glass (A) by lifting it up. Do not damage the roof panel.



4. 5. Install the glass in the reverse order of the removal, and adjust the glass height alignment.
   6. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

Sunroof

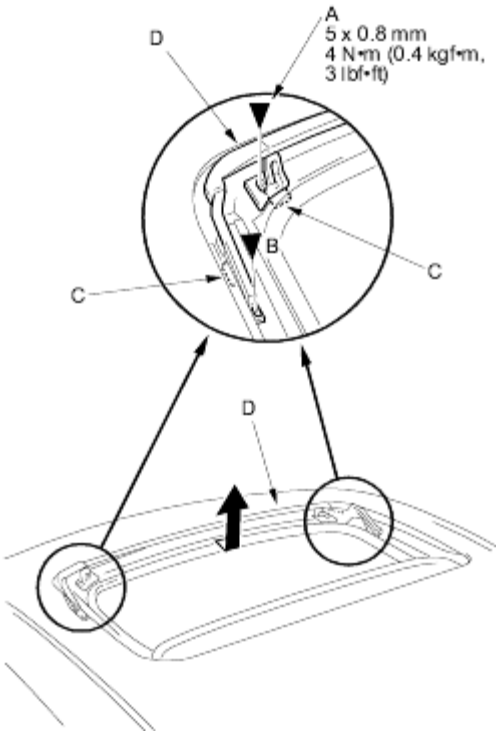
Wind Deflector Replacement

1. 1. Open the glass fully.
2. 2. Remove the screws (A, B) and release the hooks (C), then remove the wind deflector (D).

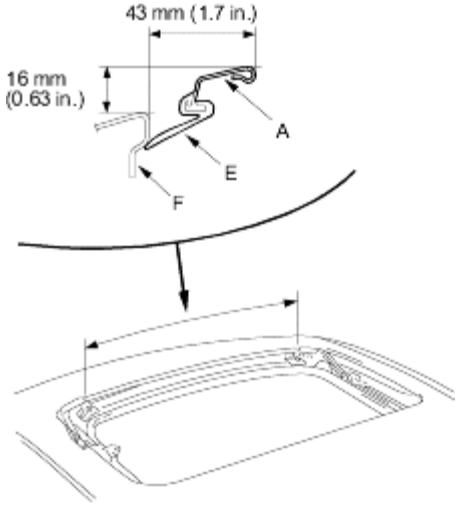
Fastener Locations

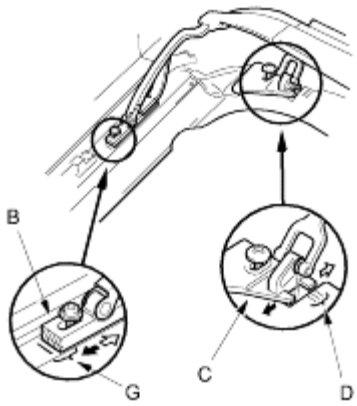
A ▶: Screw, 2
B ▶: Screw, 2





1. 3. Install the deflector (A) in the reverse order of removal, and check that the deflector arm base (B) and deflector link pivot base (C) line up with same alignment lines (D). If necessary, adjust them forward or backward so the edge of the deflector seal (E) touches the roof panel (F) evenly. Each base must be moved the same amount for adjustment.





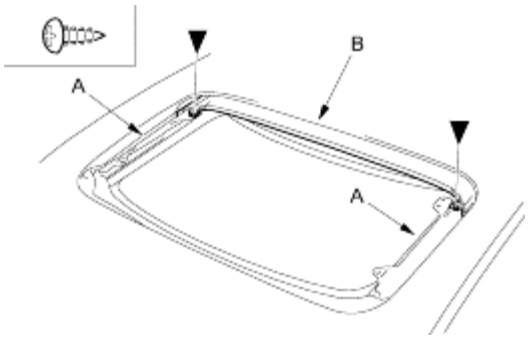
Sunroof

Drain Channel Replacement

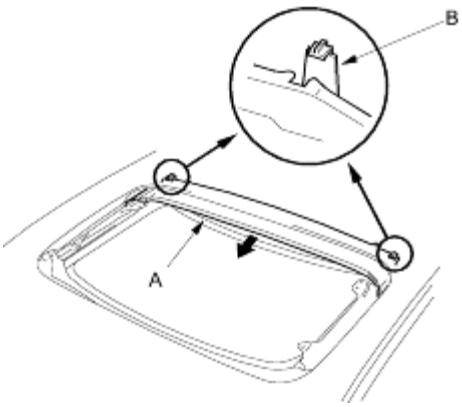
1. 1. Remove the glass (see page 20-52).
2. 2. With the sunroof wrench, move both glass brackets (A) to the position where the sunroof normally pivots down, and remove the screws securing the drain channel (B).

Fastener Locations

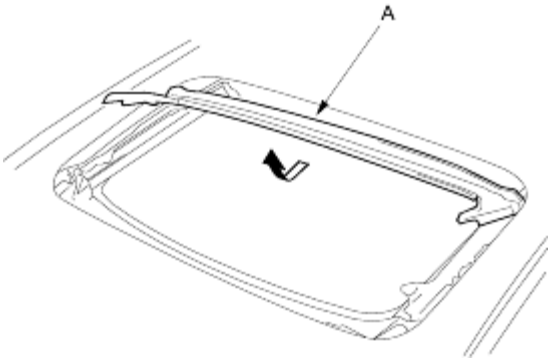
▶: Screw, 2



3. 3. Release the drain channel (A) from both hooks (B) of the drain channel slider by pulling the drain channel forward.



1. 4. Remove the drain channel (A).



2. 5. Install the channel in the reverse order of removal, and note these items:
   - Push the drain channel onto the hooks until a faint click is heard.
   - Check the glass height adjustment (see page 20-52).
3. 6. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

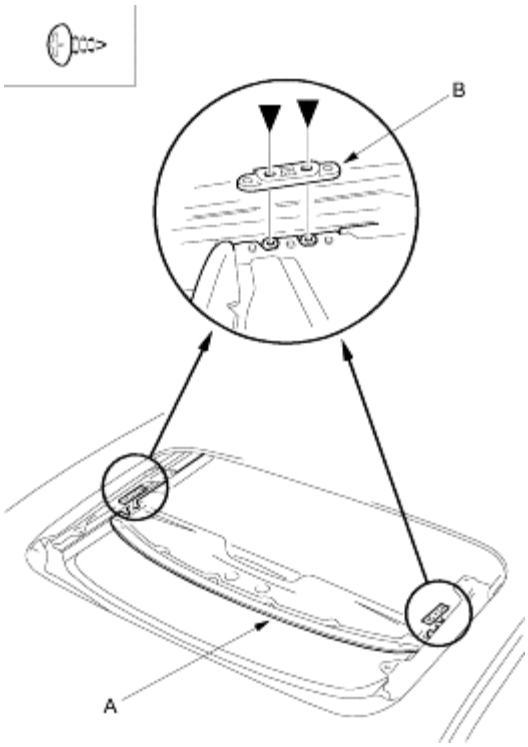
Sunroof

Sunshade Replacement

1. Remove the drain channel (see page 20-54).
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

Fastener Locations

▶: Screw, 4

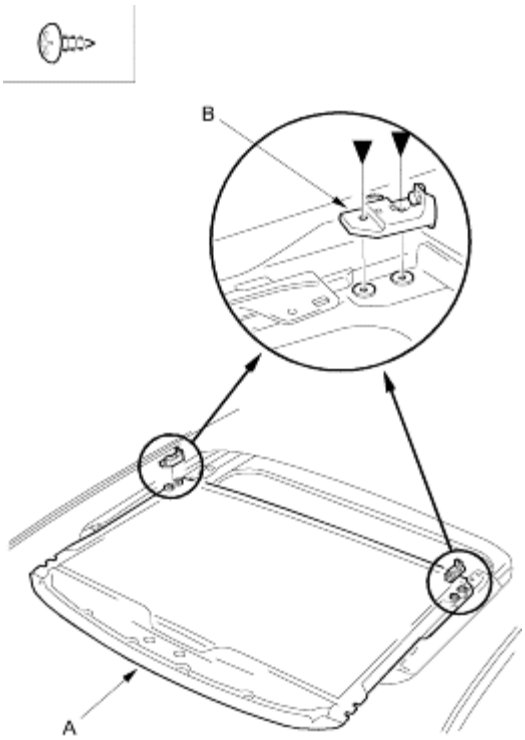


3. Remove the screws, then remove both spacers.

4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade and hooks.

Fastener Locations

▶: Screw, 4

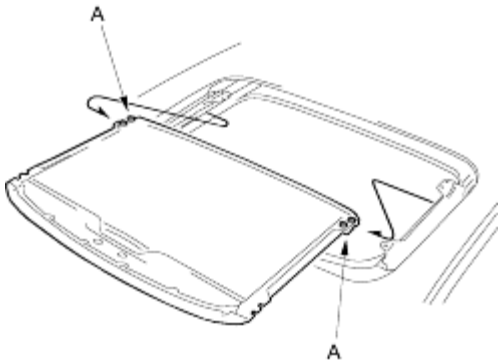


5. Remove the screws, then remove both hooks.

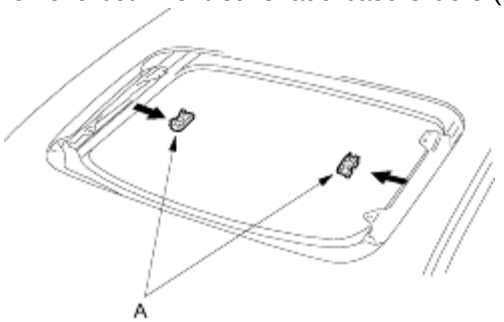
Sunroof

Sunshade Replacement (cont'd)

6. Release both rear sunshade base sliders (A) from the guide rail portions of the frame, then remove the sunshade.



7. Remove both front sunshade base sliders (A).

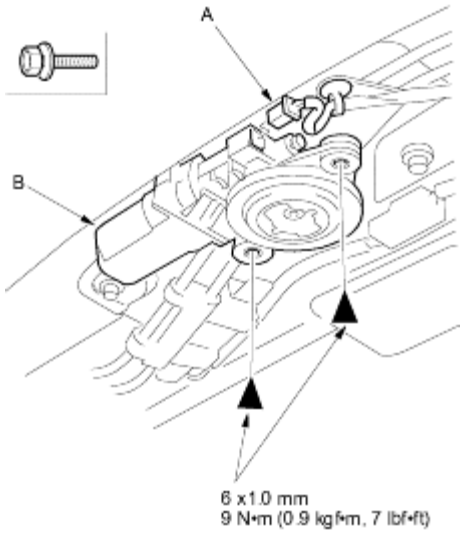


8. Install the sunshade in the reverse order of removal, and check the glass height adjustment (see page 20-52).
9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

1. Remove the headliner (see page 20-68).
2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).

Fastener Locations

▶: Bolt, 2



3. Install the motor in the reverse order of removal, and note these items:
   - Make sure the connector is plugged in properly.
   - Check the motor operation.

Sunroof

Frame and Drain Tube Replacement

1. 1. Remove these items:
   - Headliner (see page 20-68)
   - Sunroof glass (see page 20-52)
2. 2. Remove the bolts (A, B) and nuts (C), then remove the roof arch gussets (D) from both roof portions at the centre pillar. Put on gloves to protect your hands. Disconnect the motor connector (E), open/close-tilt/close switch connector (F), and the drain tubes (G), and remove the sunroof relays (H).

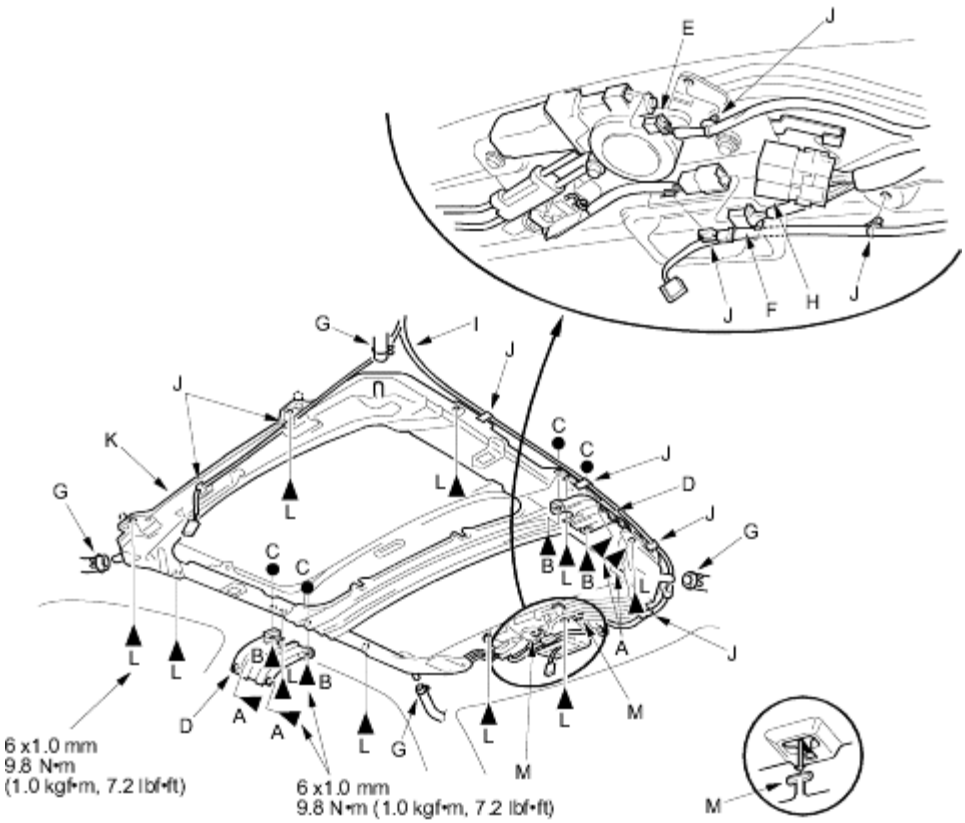
Fastener Locations

A ▶: Bolt, 4 B ▶: Bolt, 4 C ●: Nut, 4



L ▶: Bolt, 10



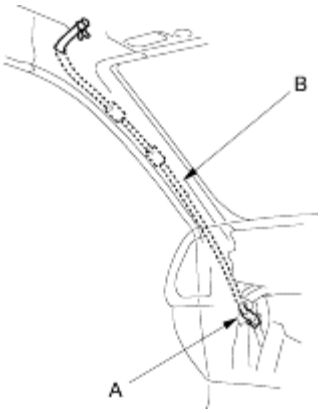


3. 3. Remove the interior harness (I) by detaching the harness clips (J). Routing the interior harness for LHD is shown, RHD is symmetrical.
   4. With an assistant holding the frame (K), remove the bolts (L), starting at the rear, and release the rear hooks (M) by moving the frame forward, then remove the frame.
   5. With the help of an assistant, carefully remove the frame through the front door opening. Take care not to scratch the interior trim and body, or tear the seat covers.

Sunroof

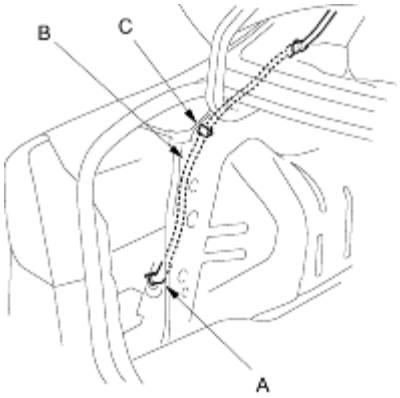
Frame and Drain Tube Replacement (cont'd)

1. 6. To remove a front drain valve (A) from the body, remove the kick panel, left or right (see page 20-64). Tie a string to the end of the drain tube, then pull the front drain tube (B) down out of the front pillar.

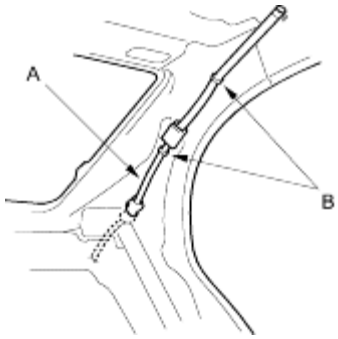


2. 7. To remove a rear drain valve (A) from the trunk compartment, remove these parts (see page 20-67):
   - Trunk floor mat and spare tire lid
   - Trunk rear trim panel

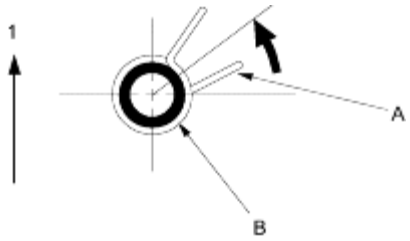
   Pull back the trunk side trim panel and release the rear drain tube (B) from the clip (C), and pull the drain tube out through the hole in the pillar.



1. 8. From inside: Release the rear drain tube (A) from the inside of the vehicle by releasing the clips (B). Remove the rear drain tube.



2. 9. Install the frame and drain tube in the reverse order of removal, and note these items:
   - Before installing the frame, clear the drain tubes and drain valves using compressed air.
   - Check the frame seal.
   - Clean the surface of the frame.
   - When installing the frame, first attach the rear hooks into the body holes.
   - Make sure the connectors are plugged in properly.
   - When installing the rear drain tube at the rear pillar, make sure the cushion on the tube align with the hole in the body, and that the alignment mark on the tube align with the upper clip.
   - When connecting the drain tube, slide it over the frame nozzle at least 10 mm (0.39 in.).
   - Install the tube clip (A) on the drain tube (B) as shown.



3. 1. Upward

4. 10. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Sunroof

Drain Channel Slider and Cable Assembly Replacement

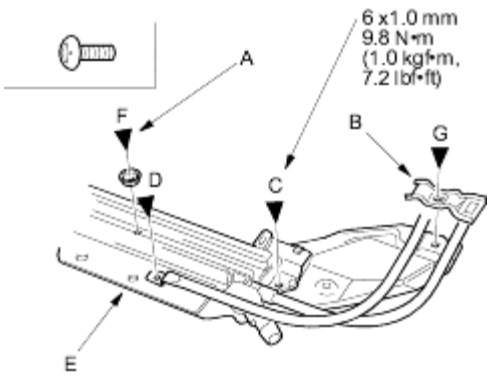
1. 1. Remove the frame (see page 20-57).
2. 2. Remove these parts from the frame:
   - Sunshade (see page 20-55)
   - Sunroof motor (see page 20-56)
3. 3. Put on gloves to protect your hands. Remove the slide stops (A), cable tube rear brackets (B), cable tube side bracket mounting bolts (C) and the cable tube mounting screws (D) from both sides of the frame (E).

Fastener Locations

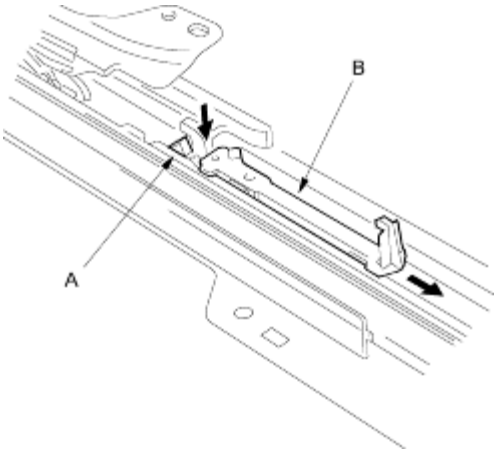
C ▶: Bolt, 2 D ▶: Screw, 2 F ▶: Screw, 2



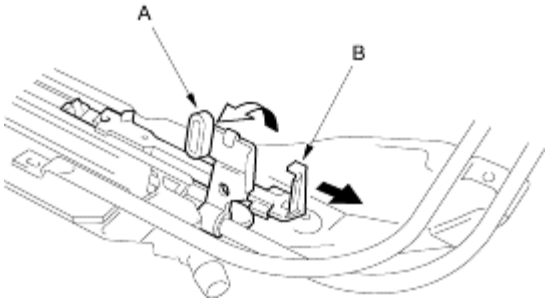
G ▶: Screw, 2



1. 4. While pushing down on the hook (A), slide the drain channel sliders (B) back on both sides.

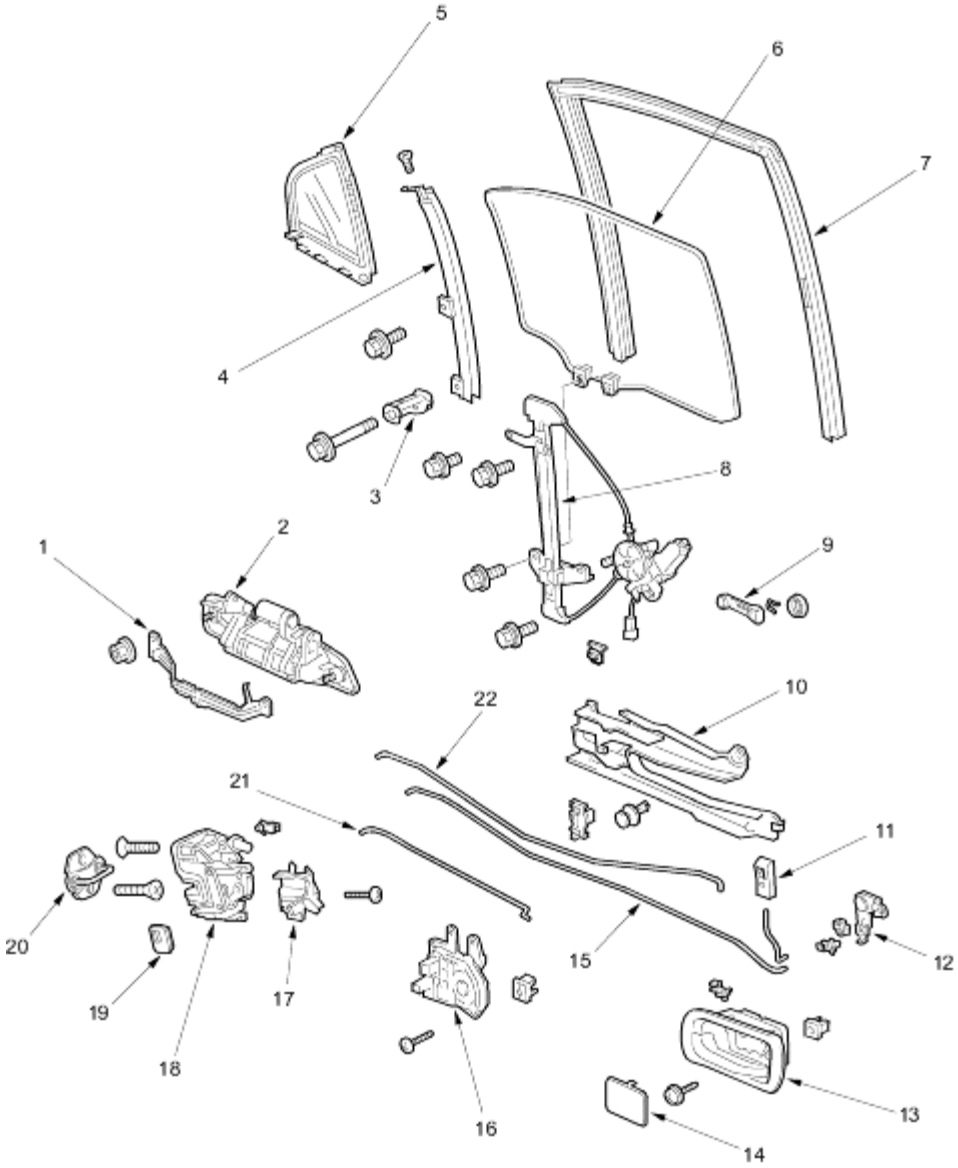


2. 5. Turn both cable tube side brackets (A) up, and remove the drain channel sliders (B).



Doors

Component Location Index – Rear Door (cont'd)

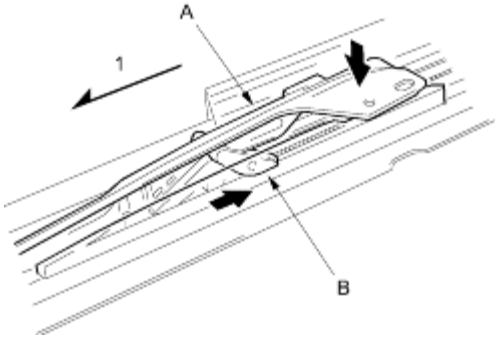


1. OUTER HANDLE PROTECTOR
   (For some models)
2. OUTER HANDLE
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4. CENTRE CHANNEL
5. QUARTER GLASS
   Replacement, page 20-19
6. GLASS
   Replacement, page 20-19
   Adjustment, page 20-24
7. GLASS RUN CHANNEL
8. REGULATOR
9. Replacement, page 20-19REGULATOR HANDLE
   (Manual window)
10. ROD PROTECTOR
    (For some models)
11. LOCK KNOB
12. LOCK CRANK
13. INNER HANDLE
14. COVER
15. LOCK ROD
16. POWER DOOR LOCK ACTUATOR
    (For some models)
17. LATCH PROTECTOR
    (For some models)
18. LATCH
    Replacement, page 20-18
19. CHILD LOCK CAP
20. STRIKER
21. ACTUATOR
    (For some models)
22. INNER HANDLE ROD

Sunroof

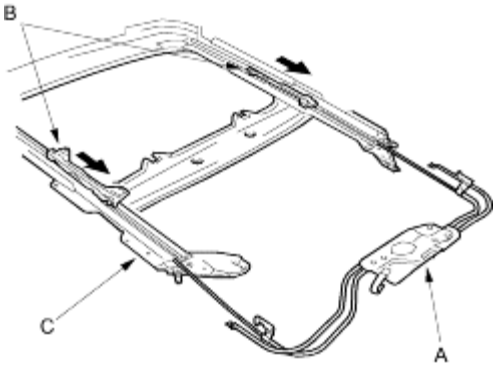
Drain Channel Slider and Cable Assembly Replacement (cont'd)

1. 6. Pivot the glass bracket (A) down by sliding the link lifter (B) back, then slide both glass brackets back with the link lifter.

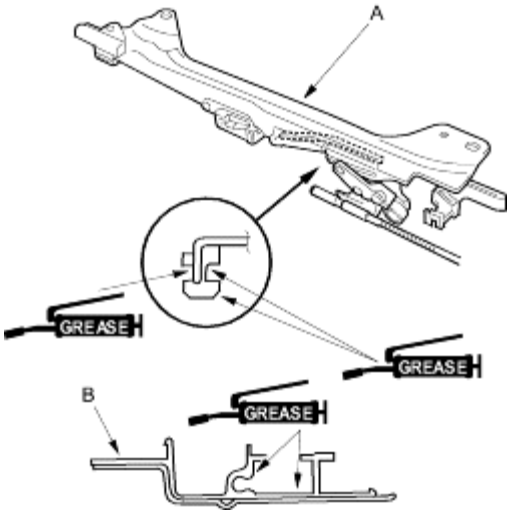


2. 1. Forward

3. 7. Slide the cable assembly (A) and both glass brackets (B) back, then remove them from the frame (C).



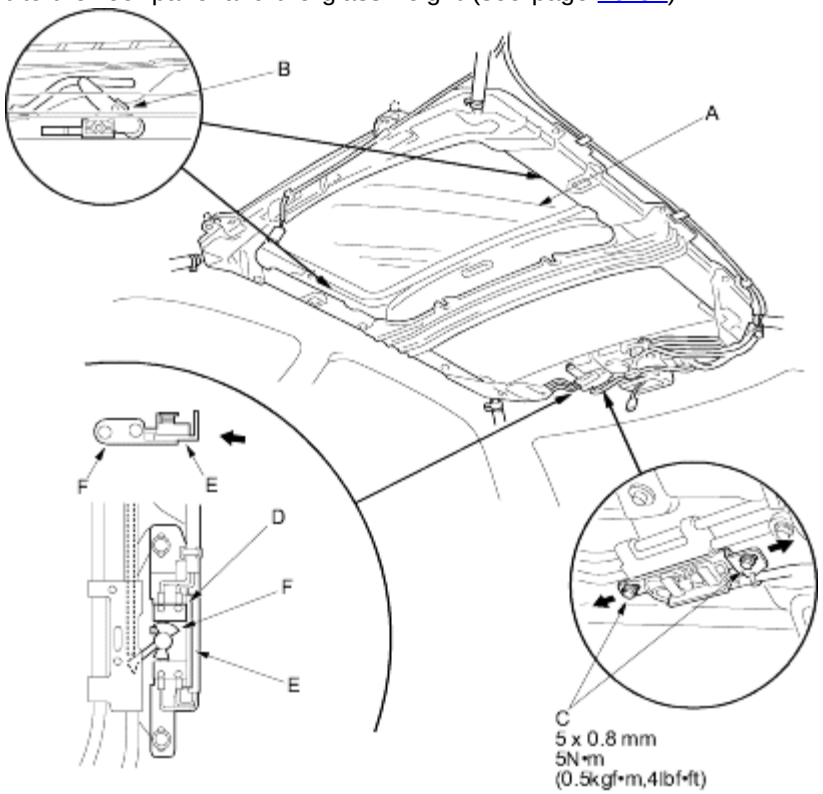
1. 8. Install the slider and cable assembly in the reverse order of removal, and note these items:
   - Damaged parts should be replaced.
   - Apply multipurpose grease to the glass bracket (A) and guide rail portion of the frame (B) indicated by the arrows.
   - Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.
   - Before reinstalling the motor, install the frame and glass, then check the opening drag (see page 20-62).



Sunroof

Position Switch Adjustment

1. 1. Remove the headliner (see page 20-68).
   2. With the sunroof wrench, close the glass (A) fully:
      - Make sure both link lifters (B) are parallel, and in the position shown.
      - Check the glass fit to the roof panel and the glass height (see page 20-52).



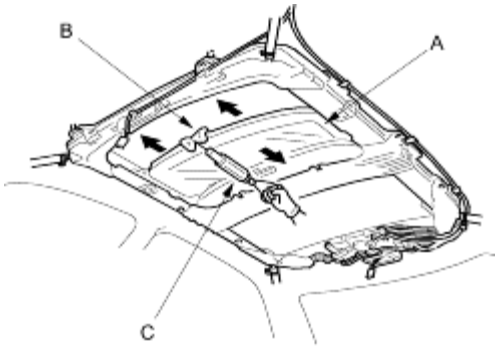
2. 3. With an open-end wrench, loosen the position switch mounting bolts (C).
   4. Adjust the position switch (D):
      - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the position switch (open/close).
      - Check that the switch plate contacts the switch bracket (F).
3. 5. Check the operation of the glass (from the tilt-up position to fully closed position, from the fully open position to the fully closed position) by operating the sunroof switch.

Sunroof

Closing Force and Opening Drag Check

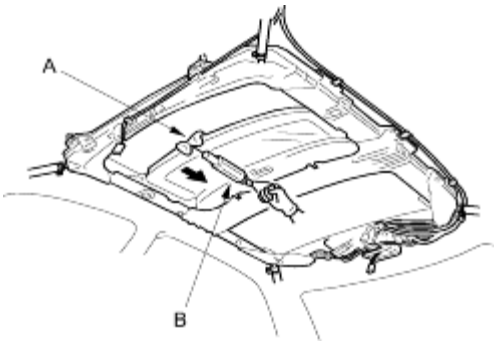
1. 1. Remove the headliner (see page 20-68).
2. 2. Closing force check:
   - With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
   - Have an assistant hold the switch to close the glass while you measure the force required to stop it.
   - Read the force as soon as the glass stops moving, then immediately release the switch and spring scale.

   Closing Force: 200 - 290 N (20 - 30 kgf, 44 - 66 lbf)



3. 3. If the force in not within specification, remove the sunroof motor (see page 20-56), then check:
   - The gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see page 20-57), and replace the cable assembly (see page 20-59).
   - The sunroof motor (see page 20-56). If the motor fails to run or doesn't turn smoothly, replace it.
   - The opening drag. Go to step 4.

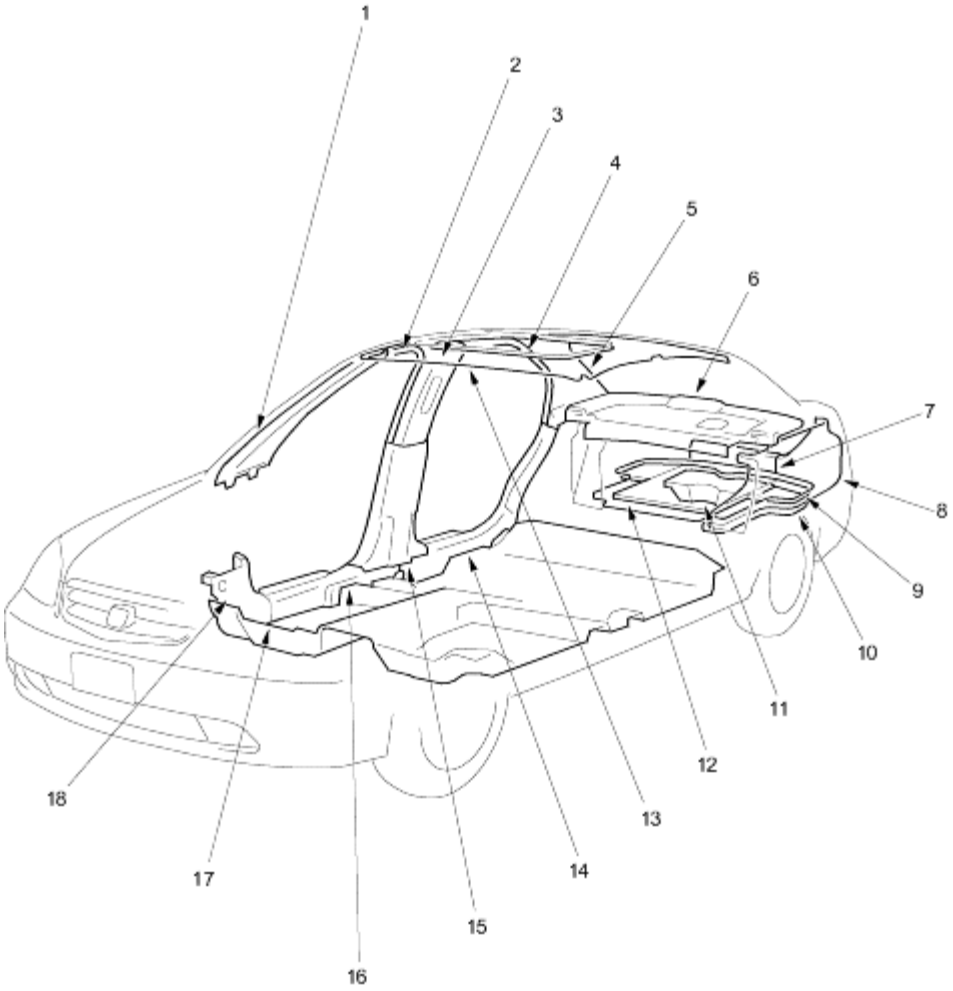
1. 4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



2. 5. If the load is over 40 N (4 kgf, 9 lbf), check:
   - The side clearance and glass height adjustment (see page 20-52).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Interior Trim

Component Location Index



1. FRONT PILLAR TRIM
   page 20-64
2. FRONT DOOR OPENING TRIM
   page 20-64
3. CENTRE PILLAR UPPER TRIM
   page 20-64
4. REAR DOOR OPENING TRIM
   page 20-64
5. REAR PILLAR TRIM
   Folding Type Rear Seat, page 20-65
   Fixed Type Rear Seat, page 20-66
6. REAR SHELF
   Folding Type Rear Seat, page 20-65
   Fixed Type Rear Seat, page 20-66
7. TRUNK REAR TRIM PANEL
   page 20-67
8. TRUNK SIDE TRIM PANEL
   page 20-67
9. TRUNK FLOOR MAT
   page 20-67
10. TRUNK FLOOR SIDE SPACER
    page 20-67
11. TRUNK FLOOR CENTRE SPACER
    page 20-67
12. SPARE TYRE LID
    page 20-67
13. HEADLINER
    Removal/Installation, page 20-68
14. SEAT SIDE TRIM
    page 20-64
15. CENTRE PILLAR LOWER TRIM
    page 20-64
16. FRONT DOOR SILL TRIM
    page 20-64
17. CARPET
18. Replacement, page 20-70KICK PANEL
    page 20-64

Interior Trim

Trim Removal/Installation - Door Area

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.
- LHD is shown, RHD is symmetrical.

Remove the trim as shown:

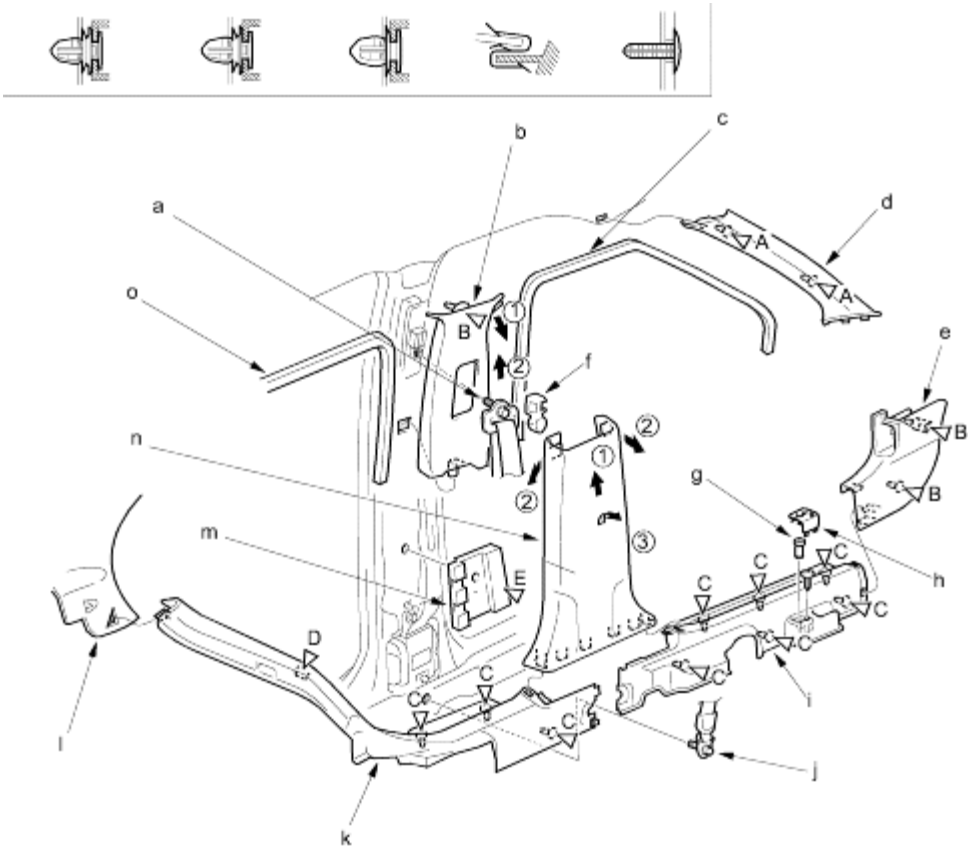
- To remove the driver's kick panel (LHD), remove the footrest (see step 2 on page 20-70).
- To remove the seat side trim, remove the rear seat side bolster, folding type rear seat (see page 20-95), or the rear seat-back, fixed type rear seat (see page 20-96).
- To remove the front side cap and opener lock cylinder (for some models), refer to trunk lid opener/fuel fill door opener replacement (see page 20-129.

Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Apply liquid thread lock to the front seat belt upper anchor bolt before installation.
- Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

Fastener Locations

A ▷: Clip,2 (Black) B ▷: Clip, 3 (White) C ▷: Clip, 9 D ▷: Clip, 1 E ▷: Clip, 1



D.

A. FRONT SEAT BELT UPPER ANCHOR BOLT 7/16-20 UNF 32 Nm (3.3 kgf m, 24 lbf ft)
B. CENTRE PILLAR UPPER TRIM
C. FRONT DOOR OPENING TRIM
D. FRONT PILLAR TRIM
E. KICK PANEL
F. UPPER ANCHOR COVER
G. OPENER LOCK CYLINDER (For some models)
H. FRONT SIDE CAP
I. FRONT DOOR SILL TRIM
J. FRONT SEAT BELT LOWER ANCHOR BOLT 7/16-20UNF 32 Nm (3.3 kgf m, 24 lbf ft)
K. SEAT SIDE TRIM
L. REAR PILLAR TRIM
M. CENTRE PILLAR LOWER PROTECTOR
N. CENTRE PILLAR LOWER TRIM
O. REAR DOOR OPENING TRIM

Interior Trim

Trim Removal/Installation - Rear Shelf Area - Folding Type Rear Seat

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

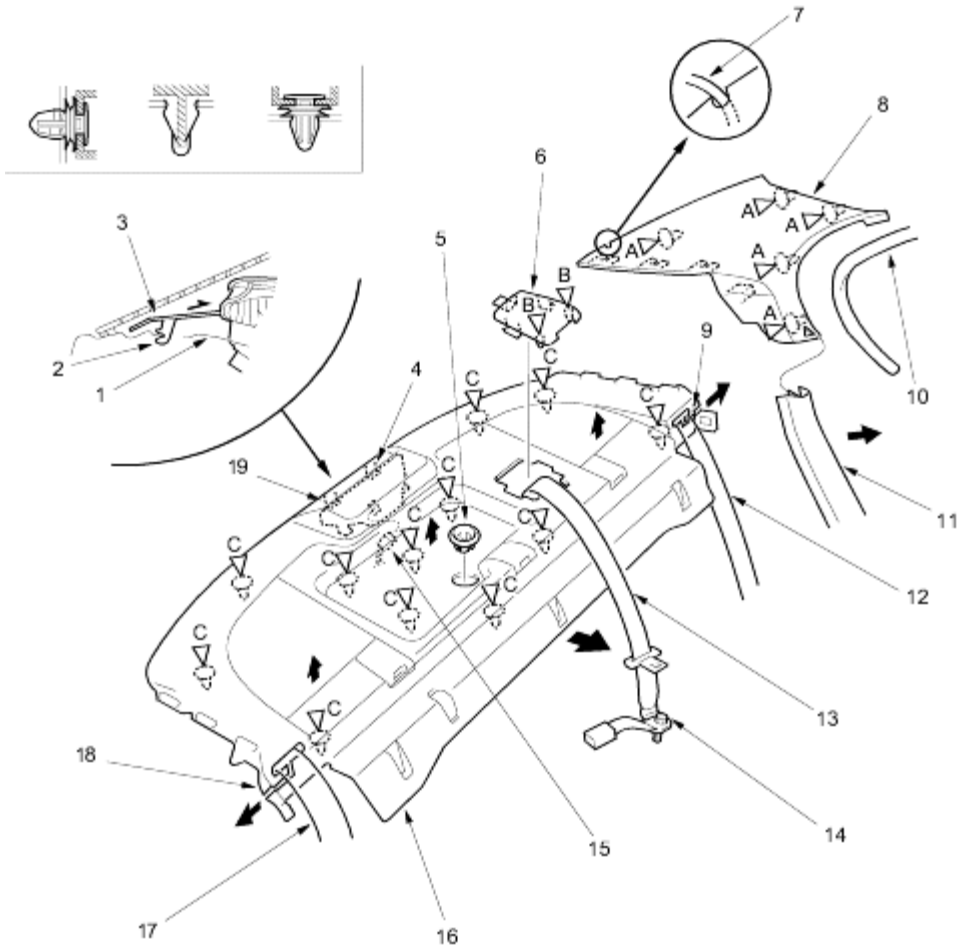
Remove the trim as shown. To remove the rear shelf, remove the rear seat side bolster from each side (see page 20-95), lock cylinder trim (see step 1 on page 20-97), and child seat tether anchor fitting (see page 23-12) (KQ model).

Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- When installing the rear shelf, slip the rear seat belts and centre belt through the slits and hole in the rear shelf.
- Make sure the high mount brake light connector is plugged in properly.

Fastener Locations

A ▷: Clip, 5 (White) B ▷: Clip, 2 C ▷: Clip, 12



1. BODY
2. HOOK
3. REAR SHELF
4. HOOK
5. LOCK CYLINDER TRIM
6. CENTRE RETRACTOR CAP
7. REAR WINDOW DEFOGGER HARNESS
8. REAR PILLAR TRIM
9. SLIT
10. REAR DOOR OPENING TRIM
11. SEAT SIDE TRIM
12. REAR SEAT BELT
13. REAR CENTRE BELT (For some models)
14. REAR CENTRE BELT CENTRE ANCHOR BOLT 7/16-20 UNF, 32 Nm (3.3 kgf m, 24 lbf ft)
15. HIGH MOUNT BRAKE LIGHT CONNECTOR
16. REAR SHELF
17. REAR SEAT BELT
18. SLIT
19. HOOK

Interior Trim

Trim Removal/Installation - Rear Shelf Area - Fixed Type Rear Seat

NOTE:

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

Remove the trim as shown. To remove the rear shelf, remove the rear seat (see page 20-96).

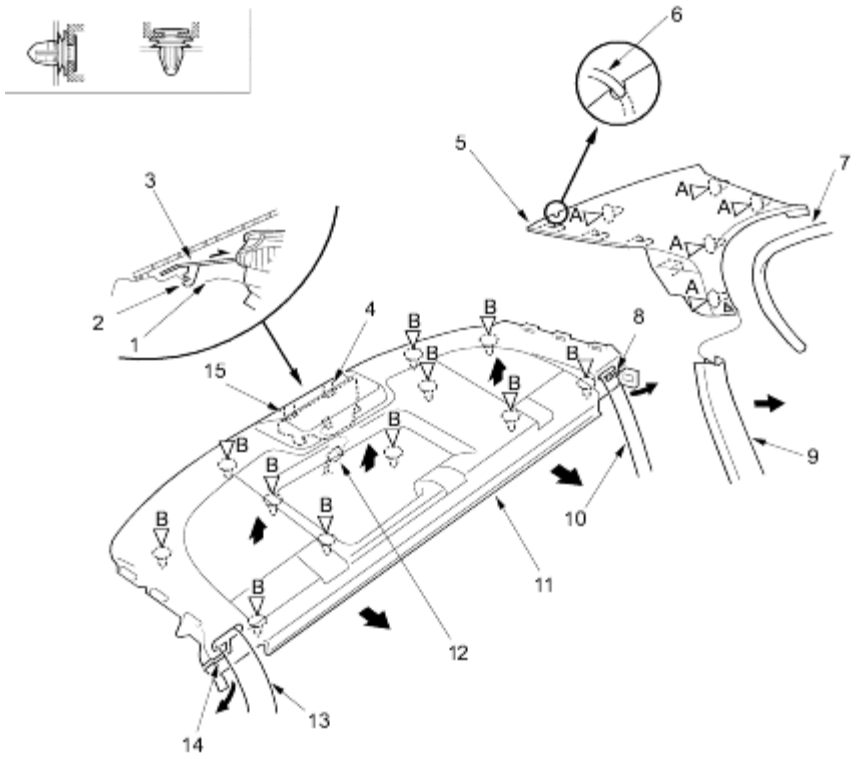
Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- When installing the rear shelf, slip the rear seat belts through the slits in the rear shelf.
- Make sure the high mount brake light connector is plugged in properly.

Fastener Locations

A ▷: Clip, 5 (White)

B ▷: Clip, 11



1. BODY
2. HOOK
3. REAR SHELF
4. HOOK
5. REAR PILLAR TRIM
6. REAR WINDOW DEFOGGER HARNESS
7. REAR DOOR OPENING TRIM
8. SLIT
9. SEAT SIDE TRIM
10. REAR SEAT BELT
11. REAR SHELF
12. HIGH MOUNT BRAKE LIGHT CONNECTOR
13. REAR SEAT BELT
14. SLIT
15. HOOK

Interior Trim

Trim Removal/Installation - Trunk Area

NOTE:

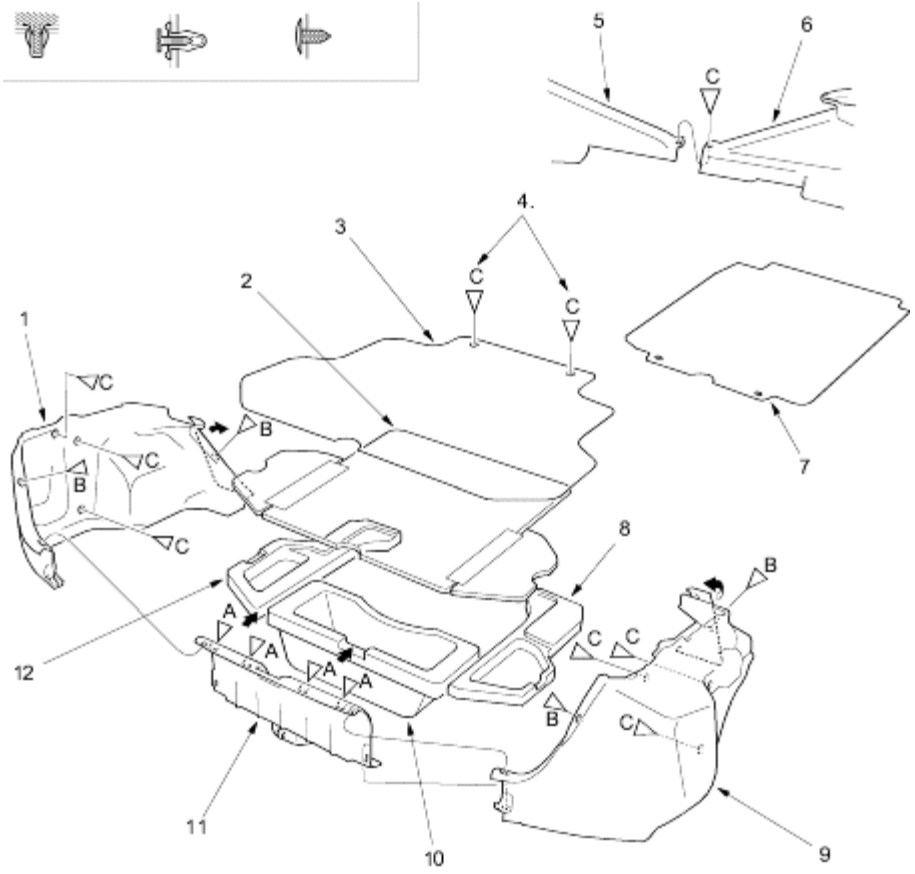
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

Remove the trim as shown.

Install the trim in the reverse order of removal, and replace any damaged clips.

Fastener Locations

A▷: Clip, 4 B▷: Clip, 4 C▷: Clip, 7 or 8



1. LEFT TRUNK SIDE TRIM PANEL
2. SPARE TYRE LID
3. TRUNK FLOOR MAT
4. Folding type rear seat only
5. LEFT TRUNK SIDE TRIM PANEL
6. RIGHT TRUNK SIDE TRIM PANEL
7. SPARE TYRE LID
   (Without trunk floor spacer)
8. RIGHT TRUNK FLOOR SIDE SPACER
9. RIGHT TRUNK SIDE TRIM PANEL
10. TRUNK FLOOR CENTRE SPACER
11. TRUNK REAR TRIM PANEL
12. LEFT TRUNK FLOOR SIDE SPACER

Interior Trim

Headliner Removal/Installation

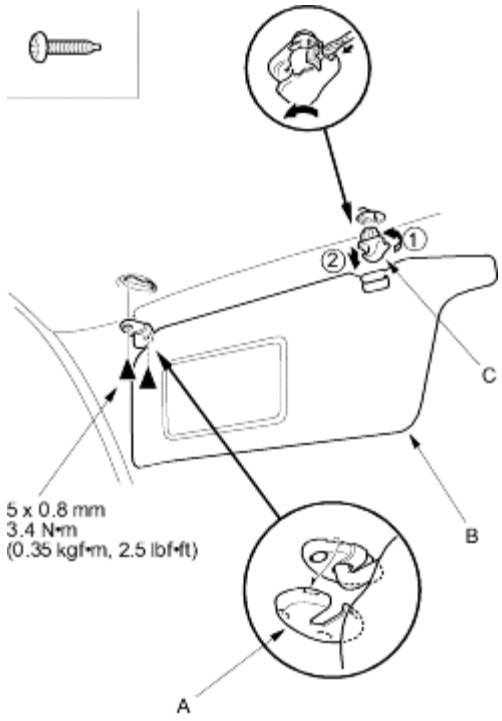
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

1. 1. Remove these items:
   - Front pillar trim, both sides (see page 20-64)
   - Centre pillar upper trim, both sides (see page 20-64)
   - Rear-view mirror (see page 20-36)
   - Ceiling light/spotlights, with sunroof (see page 22-137)
   - Spotlights, without sunroof (see page 22-138)
   - Ceiling light (see page 22-138)
2. 2. From both sides, remove the caps (A), and remove the self-tapping ET screws, then remove the sunvisor (B) and holder (C).

Fastener Locations

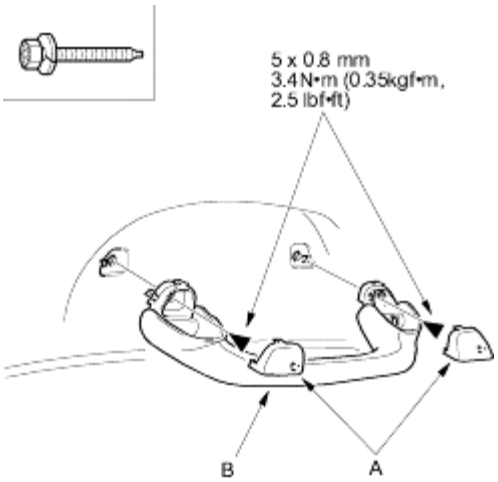
▶: Screw, 4



1. 3. Lower the grab handle, then remove the caps (A). Remove the self-tapping ET screws, then remove the grab handle (B). Remove the remaining grab handles.

Fastener Locations

▶: Screw, 6



Interior Trim

Headliner Removal/Installation (cont'd)

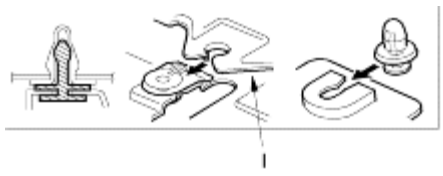
1. 4. Remove the headliner.

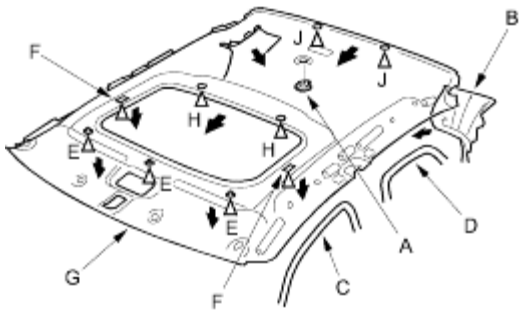
With sunroof:

1. Remove the socket plug (A).
2. Remove the upper portion of the rear pillar trim (B) from each side (see page 20-65).
3. Remove the remaining front door opening trim (C) and rear door opening trim (D) from each roof portion.
4. Detach the clips (E), and release the fasteners (F) by pulling the front portion of the headliner (G) down.
5. With the help of an assistant, release the clips (H) of the headliner from the sunroof frame (I), and release the headliner from the clips (J) by sliding the headliner forward, and lowering the headliner.
6. Remove the headliner through the front passenger's door opening.

Fastener Locations

E ▷: Clip, 3 H ▷: 2 J ▷: Clip, 2





1. 5. Remove the headliner.

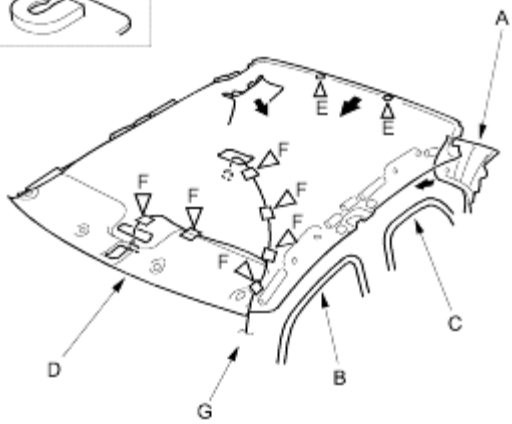
Without sunroof:

1. Remove the upper portion of the rear pillar trim (A) from each side (see page 20-65).
2. Remove the remaining front door opening trim (B) and rear door opening trim (C) from each roof portion.
3. With the help of an assistant, release the headliner (D) from the clips (E) by sliding the headliner forward, and lowering the headliner.
4. Remove the cushion tape (F), then remove the roof harness (G) from the headliner. LHD is shown, RHD is symmetrical.
5. Remove the headliner through the front passenger's door opening.

Fastener Locations

E ▷: Clip, 2 F ▷: Cushion Tape, 6





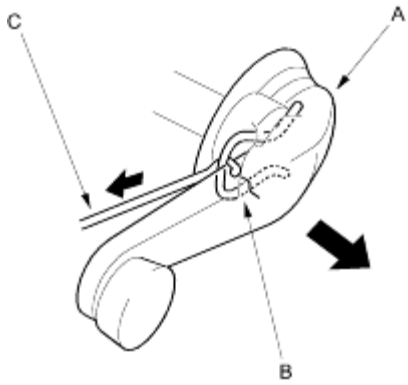
Doors

Front Door Panel Removal/Installation

Special Tools Required

Trim pad remover, Snap-On # A 177 or equivalent, commercially available.

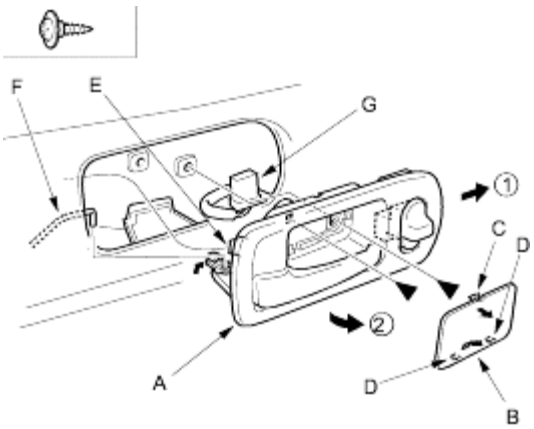
1. 1. If applicable, remove the regulator handle (A) by pulling the clip (B) out with a wire hook (C).



2. 2. Remove the inner handle (A). Take care not to scratch the door panel.
   1. Pry out on the upper portion of the cover (B) to release the hooks (C, D), then remove the cover.
   2. Remove the screws.
   3. Pull the inner handle forward and out half-way to release the hook (E).
   4. Disconnect the inner handle rod (F) and power door lock switch connector (G) (driver's for some models).

Fastener Locations

▶: Screw, 2

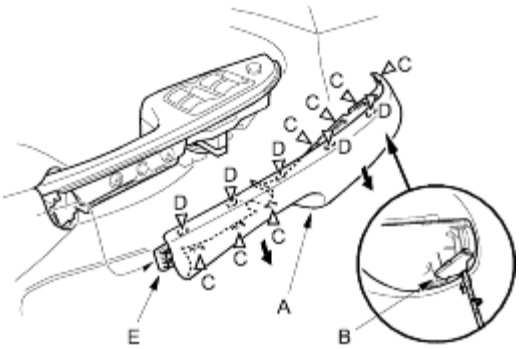


1. 3. Remove the grip cover (A). To remove the passenger's grip cover, refer to rear door panel removal and installation (see page 20-15).
   1. Using a flat-tip screwdriver wrapped with protective tape, pry out the front edge of the cover to release the clips (B).
   2. Pry out along the bottom to release the lower hooks (C).
   3. Pry out along the top to release the upper hooks (D), and release the clip (E) while pulling the cover forward.

Fastener Locations

C ▷: Hook, 7 D ▷: Hook, 5

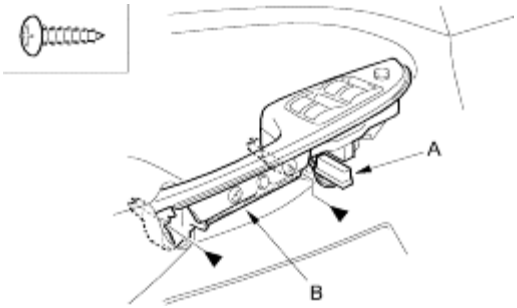




2. 4. Driver's door: Disconnect the power window switch connector (A) (for some models). Remove the screws from the grip base (B).

Fastener Locations

▶: Screw, 2



3. 5. Remove the mirror mount cover (see step 2 on page 20-33).

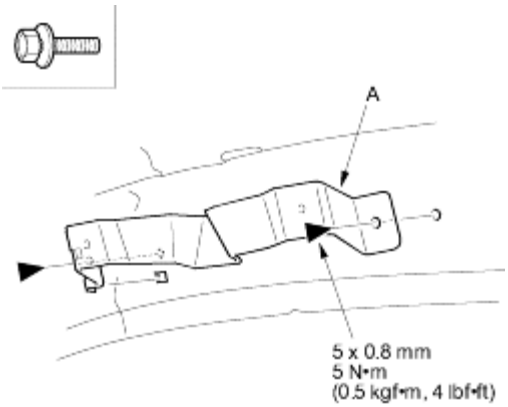
Interior Trim

Headliner Removal/Installation (cont'd)

6. If necessary, remove the bolts, then remove the grab handle bracket (A). Remove the remaining grab handle brackets, as needed.

Fastener Locations

▶: Bolt, 6



7. Install the headliner in the reverse order of removal, and note these items:
   - When reinstalling the headliner through the door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
   - If the threads on a visor and grab handle screws are worn out, use an oversized self-tapping ET screw made specifically for this application.
   - Check that both sides of the headliner are securely attached to the trim.

Carpet Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

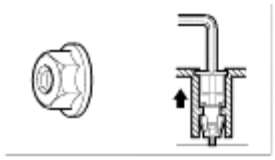
NOTE:

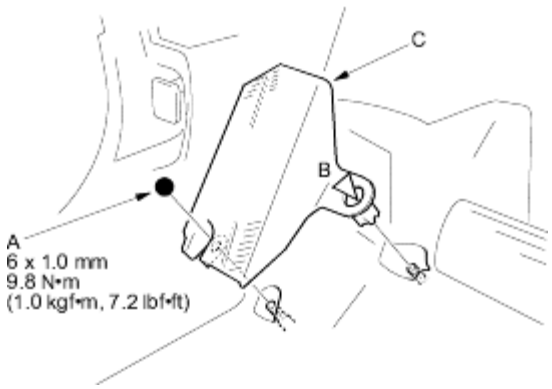
- Put on gloves to protect your hands.
- Take care not to damage, wrinkle or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. Remove these items:
   - Front seats, both sides (see page 20-87)
   - Rear seat cushion, folding type (see page 20-95), fixed type (see page 20-96)
   - Rear seat side bolsters, both sides, folding type (see page 20-95)
   - Kick panels, both sides (see page 20-64)
   - Front door sill trim, both sides (see page 20-64)
   - Seat side trim, both sides (see page 20-64)
   - Centre console (see page 20-73)
   - Driver's dashboard under cover (see page 20-76)
   - Passenger's dashboard lower cover (see page 20-78)
2. LHD: Remove the nut (A), and using a hex wrench, release the clip (B), then remove the footrest (C).

Fastener Locations

A ●: Nut, 1 B ▷: Clip, 1



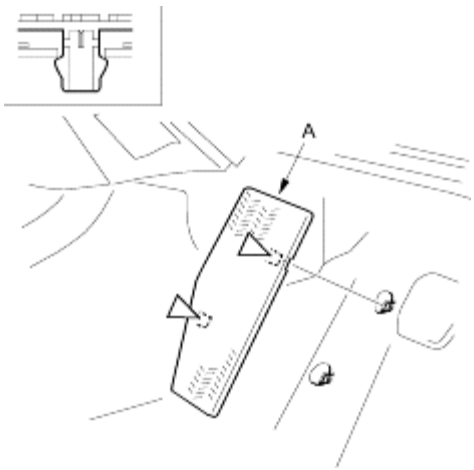


Interior Trim
Carpet Replacement (cont'd)

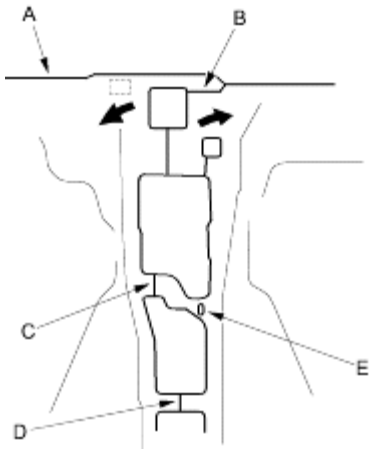
1. 3. RHD: Detach the clips, then remove the footrest (A).

Fastener Locations

▷: Clip, 2



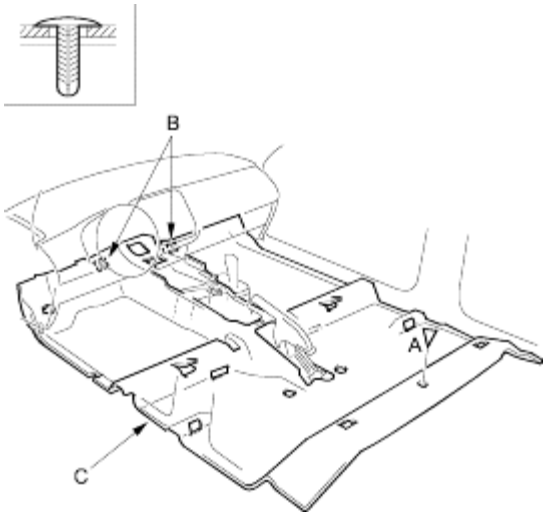
2. 4. Using a utility knife, cut the carpet (A) under the heater area (B) on the driver's side, and cut out the shift lever area (C) and parking brake lever area (D) as shown. Release the hook (E), then pull back the carpet.



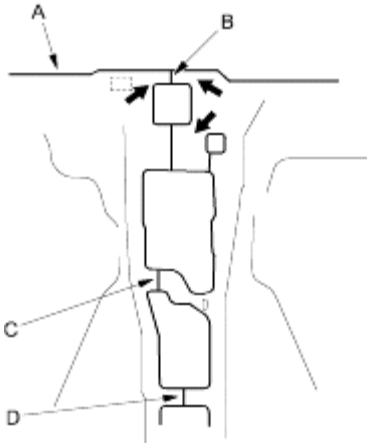
1. 5. Remove the clip (A), and release the fasteners (B), then remove the carpet (C).

Fastener Location

A▶: Clip, 1



1. 6. Install the carpet in the reverse order of removal, and note these items:
   - Take care not to damage, wrinkle or twist the carpet.
   - Make sure the seat harnesses are routed correctly.
   - Slip the slit in the carpet over the hook.
   - Replace the clip if it's damaged.
   - Reattach the cut areas under the heater around the shift lever and parking brake lever with a wire tie.
   - When installing new carpet, cut the carpet (A) under the heater area (B), and around the shift lever (C) and parking brake lever (D). After installing the new carpet, reattach the cut areas (C, D) with wire ties.



Console

Centre Console Removal/Installation

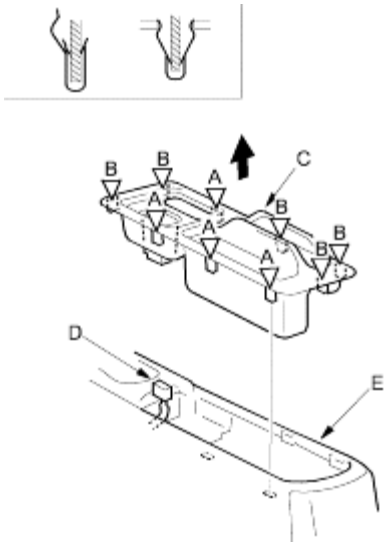
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the front seat, dashboard, and related parts.

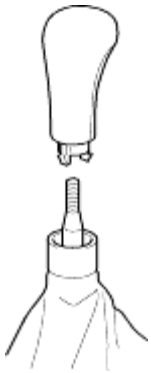
1. 1. Detach the clips (A, B) by pulling the centre console box (C) up, and if equipped, disconnect the seat heater switch connector (D), from the centre console (E).

Fastener Locations

A ▶: B ▶: Clip, 5
Clip, 4



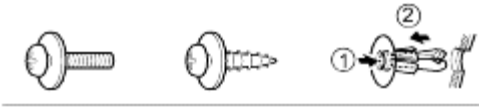
2. 2. M/T: Remove the shift knob.

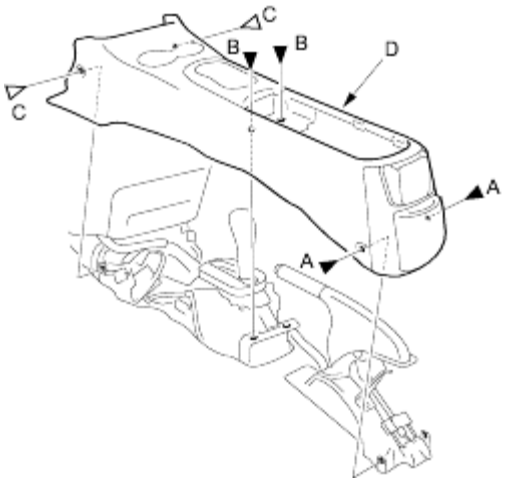


1. 3. Remove the screws (A, B) and clips (C), and remove the centre console (D).

Fastener Locations

A ▶: B Screw, 2 ▶: C Screw, 2 ▷: Clip, 2





2. 4. Install the console in the reverse order of removal, and replace any damaged clips.

Console

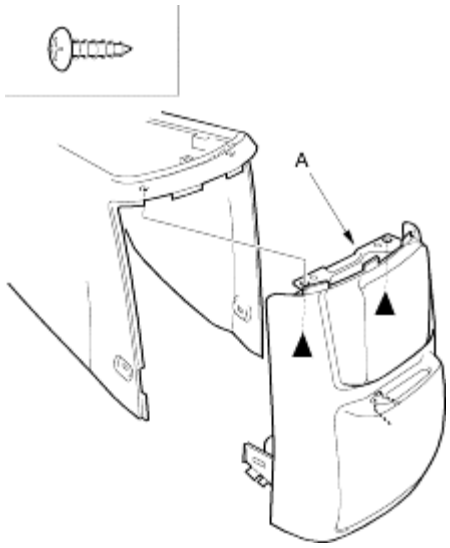
Centre Console Rear Cover Replacement

NOTE: Take care not to scratch the centre console.

1. Remove the centre console (see page 20-73).
2. Remove the screws, then remove the centre console rear cover (A).

Fastener Locations

▶: Screw, 2



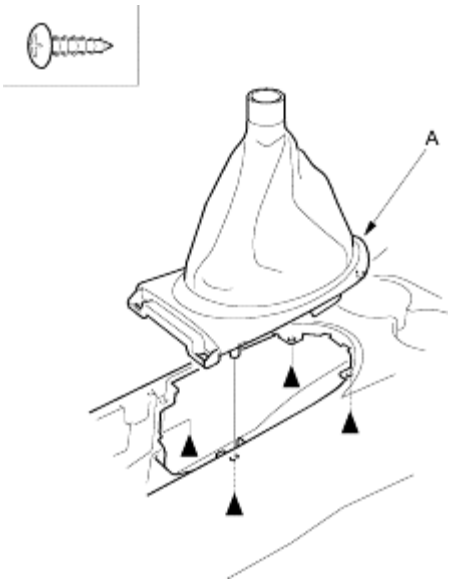
3. Install the cover in the reverse order of removal.

NOTE: Take care not to scratch the centre console.

1. Remove the centre console (see page 20-73).
2. Remove the screws, then remove the centre console trim (A). MT model is shown, AT model is similar.

Fastener Locations

▶: Screw, 4



3. Install the trim in the reverse order of removal.

Dashboard

Instrument Panel Removal/Installation

NOTE:

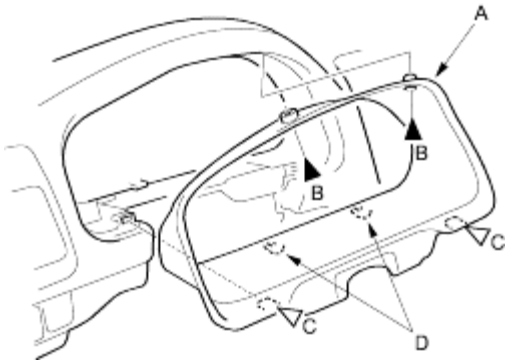
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.
- LHD is shown, RHD is symmetrical.

1. 1. Tilt the steering column down.
   2. Remove the steering column upper cover (see page 17-9).
   3. Remove the instrument panel (A).
      1. Remove the screws (B).
      2. Gently pull out along the bottom to release the clips (C) and hooks (D).
      3. Gently pull out the upper portion of the panel.

Fastener Locations

B ▶	C ▷	Clip,
Screw, 2	2	





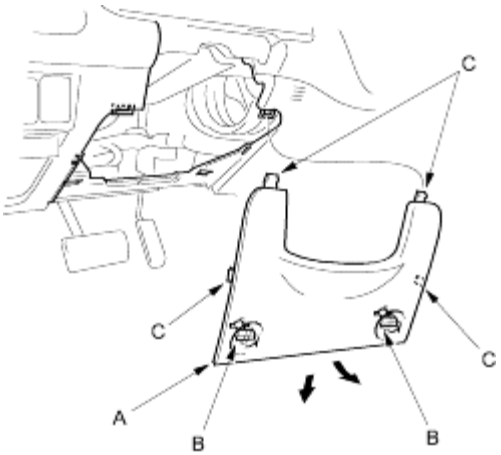
2. 4. Install the panel in the reverse order of removal.

20-75 Driver's Dashboard Under Cover Removal/Installation

NOTE:

- Take care not to scratch the dashboard and related parts.
- LHD is shown, RHD is symmetrical.

1. 1. Remove the driver's dashboard under cover (A).
      1. Adjust the steering column upward.
      2. Turn the lock knob (B) 45°.
      3. Gently pull down the rear edge to release the clip (C).
      4. Pull the cover away to release it from the clip (D).



2. 2. Install the cover in the reverse order of removal.

Dashboard

Driver's Dashboard Under Cover Removal/Installation

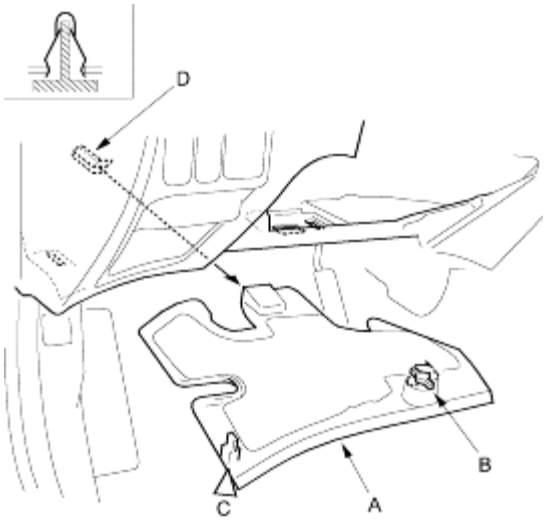
NOTE:

- Take care not to scratch the dashboard and related parts.
- LHD is shown, RHD is symmetrical.

1. 1. Remove the driver's dashboard under cover (A).
   1. Turn the lock knob (B) 45°.
   2. Gently pull down the rear edge to release the clip (C).
   3. Pull the cover away to release it from the clip (D).

Fastener Location

C ▷: Clip, 2



2. 2. Install the cover in the reverse order of removal.

NOTE:

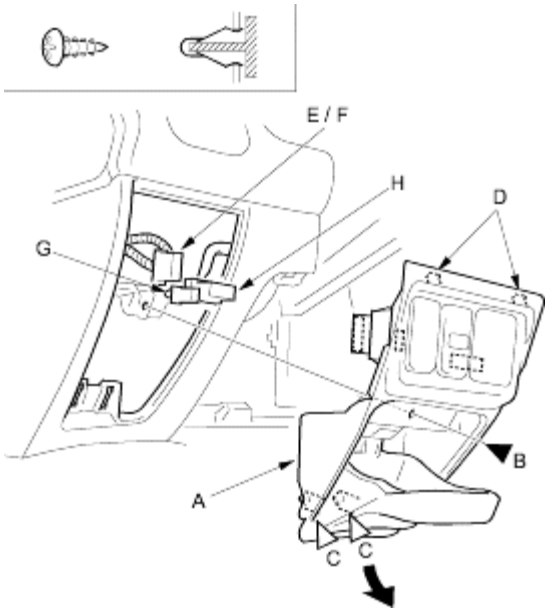
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. 1. Remove the driver's pocket (A).
   1. Remove the driver's dashboard under cover.
   2. Open the pocket (LHD), and remove the screw (B).
   3. From behind the dashboard, push the pocket back by hand to release the clips (C).
   4. Release the hooks (D).
   5. If equipped, disconnect the cruise control main switch connector (E) or headlight adjuster switch connector (F), sunroof switch connector (G), and power mirror switch connector (H).

LHD:

Fastener Locations

B ▶: Screw, 1 C ▷: Clip, 2



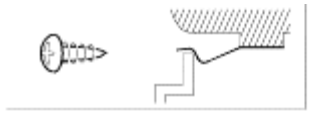
Dashboard

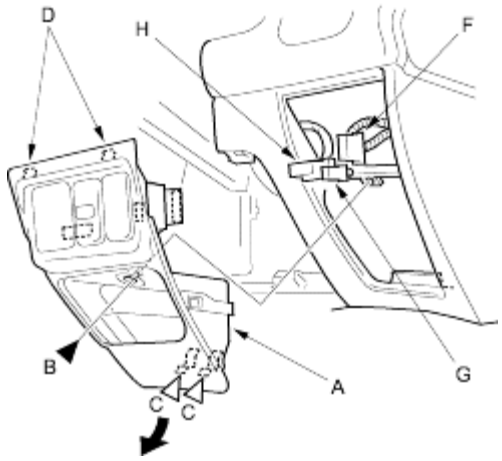
Driver's Pocket Removal/Installation (cont'd)

RHD:

Fastener Locations

B ▶: C▶: Clip, 2
Screw, 1





1. 2. Install the pocket in the reverse order of removal, and make sure each connector is plugged in properly (for some models).

20-77 Dashboard Centre Lower Cover Removal/Installation

NOTE:

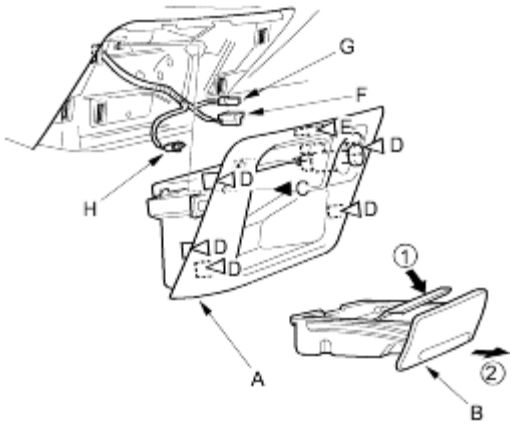
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. 1. Remove the dashboard centre lower cover (A).
   1. Remove the ashtray (B), and remove the screw (C).
   2. Gently pull out the cover to release the clips (D, E).
   3. Disconnect the cigarette lighter connector (F), cigarette light connector (G) and ashtray light bulb socket (H).

Fastener Locations

C ▶: D ▷: E ▷:
Screw, 1 Clip, 5 Clip,1





2. 2. Install the cover in the reverse order of removal, and make sure each connector is plugged in properly and bulb socket is connected properly.

Dashboard

Centre Panel Removal/Installation

NOTE:

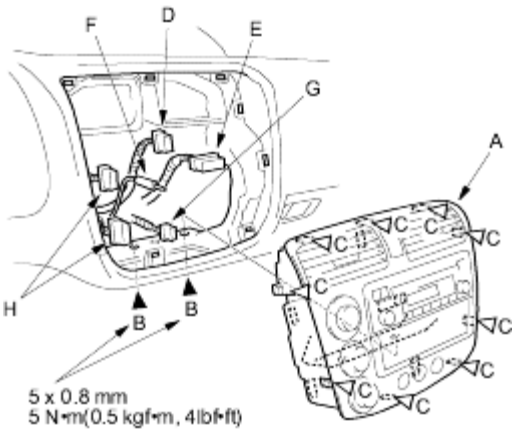
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. 1. Remove the dashboard centre lower cover (see page 20-77).
   2. If equipped, make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
   3. Remove the centre panel (A). LHD is shown, RHD is symmetrical.
      1. Remove the bolts (B) from the dashboard centre lower cover opening.
      2. Gently pull out along the bottom to release the lower clips (C), then along both sides and top to release the remaining clips (C).
      3. Disconnect the hazard warning switch connector (D), audio unit connector (E), antenna lead (F), heater switch connector (G), and climate control unit or heater control unit connectors (H).

Fastener Locations

B ▶: C ▷: Clip, Bolt, 2 9





2. 4. Install the panel in the reverse order of removal, and note these items:
   - Make sure each connector is plugged in properly and antenna lead is connected properly.
   - equipped, enter the anti-theft code for the radio, then enter the customer's radio station presets.

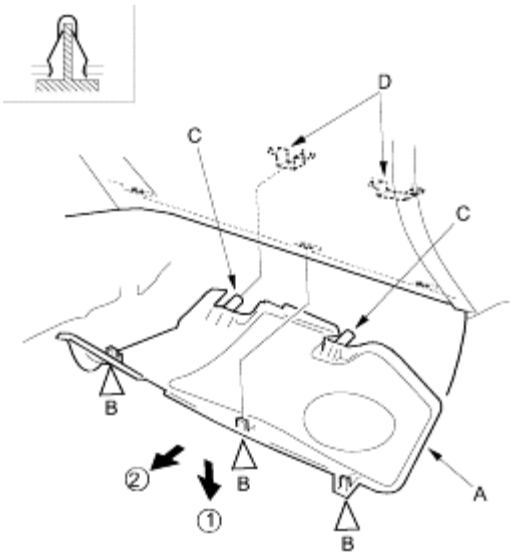
20-78 Passenger's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. 1. Remove the passenger's dashboard lower cover (A). LHD is shown, RHD is symmetrical.
      1. Gently pull down the edge nearest the glove box to release the clips (B).
      2. Pull the cover away to release the pins (C) from the holders (D).

Fastener Locations

B ▶: Clip,3



2. 2. Install the cover in the reverse order of removal.

Dashboard

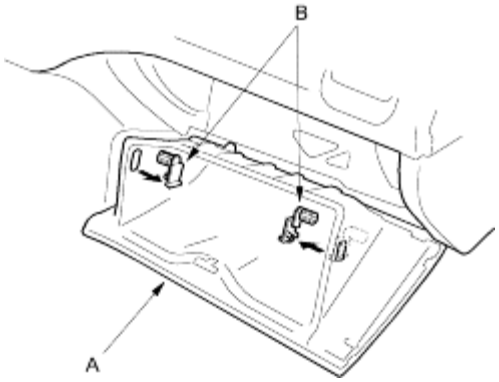
Glove Box Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-23, and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

LHD

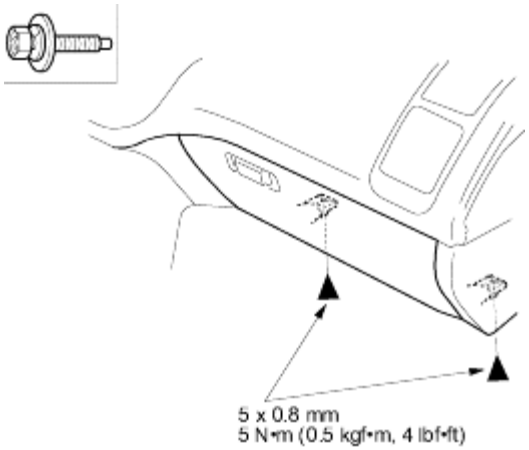
1. Remove the passenger's dashboard lower cover.
2. While holding the glove box (A), remove the glove box stop (B) on each side.



2. 3. Remove the bolts, then remove the glove box.

Fastener Locations

▶: Bolt, 2



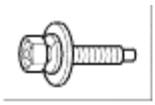
3. 4. Install the glove box in the reverse order of removal.

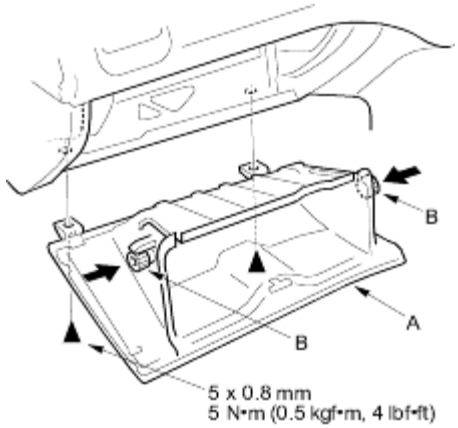
RHD

1. 1. Remove the passenger's dashboard lower cover.
2. Remove the bolts securing the glove box (A).

Fastener Locations

▶: Bolt, 2





2. 3. While holding the glove box, release the glove box stop (B) on each side from the dashboard by pushing it inside, then remove the glove box.
4. Install the glove box in the reverse order of removal.

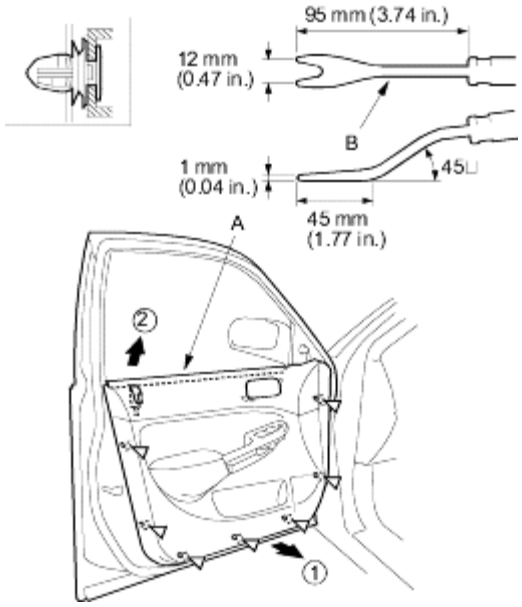
Doors

Front Door Panel Removal/Installation (cont'd)

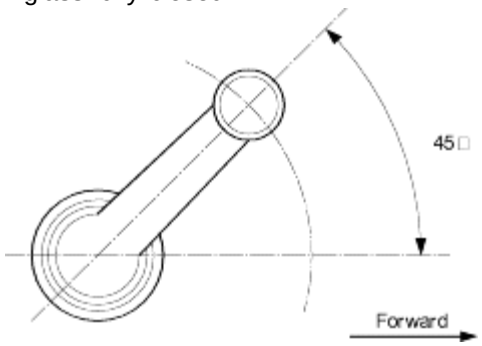
1. 6. Release the clips that hold the door panel (A) with a commercially available trim pad remover (B), then remove the door panel by pulling it upward. Passenger's door: Disconnect the power window switch connector (for some models). Remove the door panel with as little bending as possible to avoid creasing or breaking it.

Fastener Locations

▷: Clip, 7

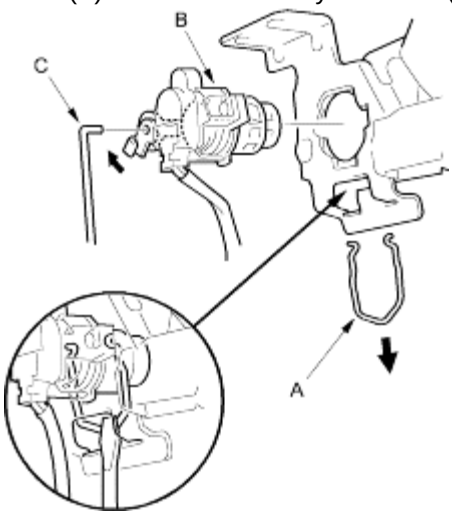


2. 7. Install the door panel in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the connectors are plugged in properly, and the rod is connected properly.
   - If applicable, install the regulator handle so it points forward and up at a 45° angle with the glass fully closed.



NOTE: Put on gloves to protect your hands.

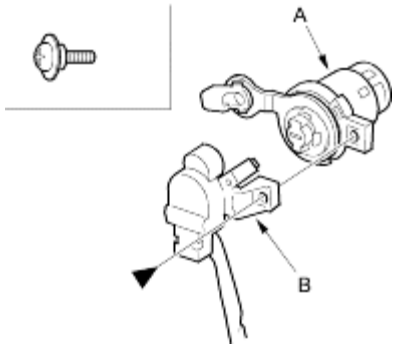
1. 1. Raise the glass fully.
   2. Remove these items:
      - Door panel (see page 20-7)
      - Plastic cover, as necessary (see page 20-3)
2. 3. Release the retainer clip (A), then remove the lock cylinder (B). Disconnect the cylinder rod (C).



3. 4. With cylinder switch: Remove the screw, then separate the lock cylinder (A) and cylinder switch (B).

Fastener Location

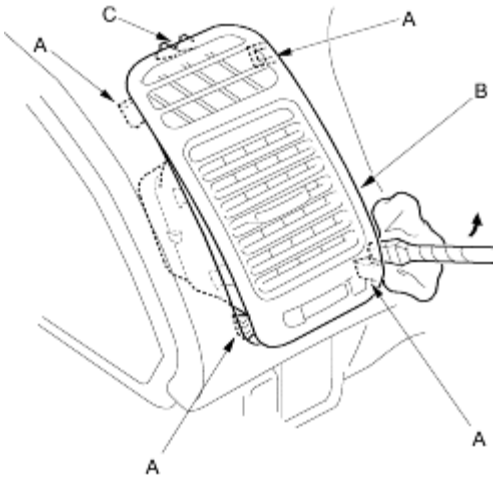
▶: Screw, 1



Dashboard

Dashboard Side Vent Removal/Installation

1. 1. Wrap a flat-tip screwdriver with protective tape, and apply protective tape around the related parts to prevent damage. Carefully insert a flat-tip screwdriver next to the clip (A), and detach the clips by prying on the side vent (B). Take care not to scratch the dashboard and related parts.



2. 2. Remove the vent by releasing the hooks (C).
   3. Reinstall the hook portions of the vent first, then push the clip portions into place securely.

Dashboard

Dashboard Removal/Installation

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts to prevent damage.
- Have an assistant help you when removing and installing the dashboard.
- Take care not to scratch the dashboard, body and other related parts.
- Put on gloves to protect your hands.

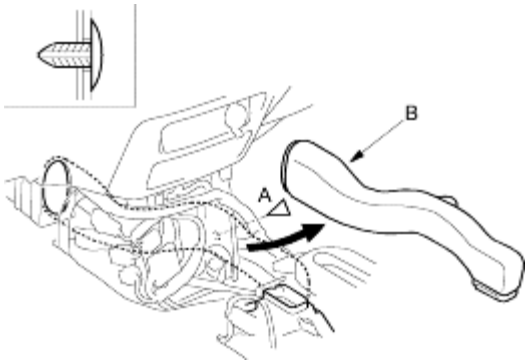
1. 1. If equipped, make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
   2. If equipped with airbags, disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
   3. Remove these items:
      - Centre console (see page 20-73)
      - Driver's dashboard lower cover (see page 20-75)
      - Driver's dashboard under cover (see page 20-76)
      - Passenger's dashboard lower cover (see page 20-78)
      - Glove box (see page 20-79)
      - Kick panels, both sides (see page 20-64)
      - Front pillar trim, both sides (see page 20-64)
      - Steering column (see page 17-9)

1. 4. From under the centre dash, remove the clip (A), then remove the rear vent duct (B).

LHD:

Fastener Locations

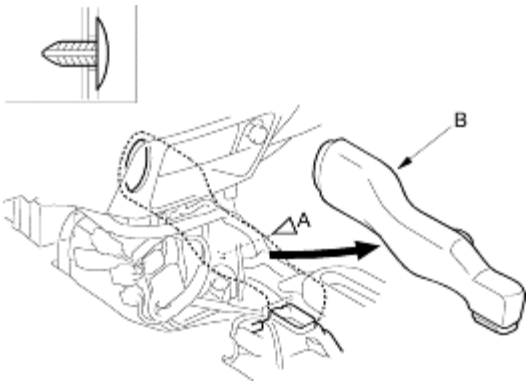
A ▷: Clip, 1



RHD:

Fastener Location

A ▷: Clip, 1



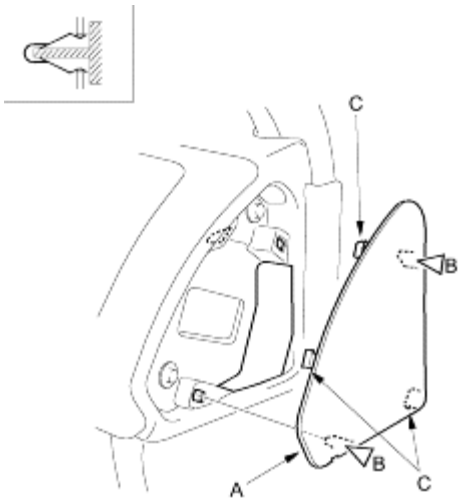
Dashboard

Dashboard Removal/Installation (cont'd)

1. 5. From outside of the passenger's door, gently pull out on the bottom of the dashboard side cover (A) to release the lower clip (B), then release the remaining clips (B) and hooks (C), to remove the cover.

Fastener Locations

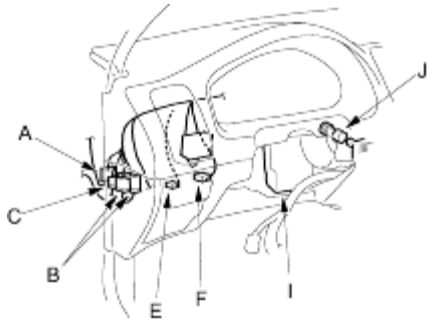
B ▷: Clip, 2



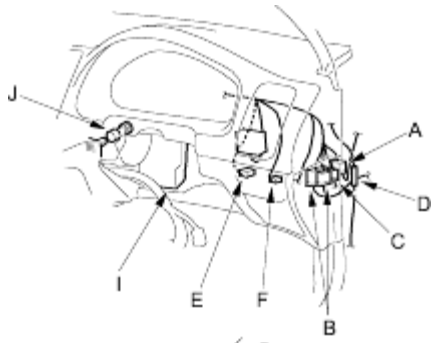
Driver's side:

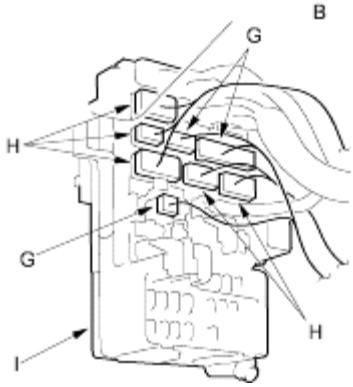
1. 6. From under the dash, disconnect the interior wire harness connector (A), driver's door wire harness connectors (B), side turn signal light connector (C) (for some models), antenna lead (D) (RHD), clutch switch connector (E) (on MT model), and brake switch connector (F), and disconnect the floor wire harness connectors (G) and engine compartment wire harness connectors (H) from the under-dash fuse/relay box (I). On auto A/C model, disconnect the air hose (J).

LHD:



RHD:



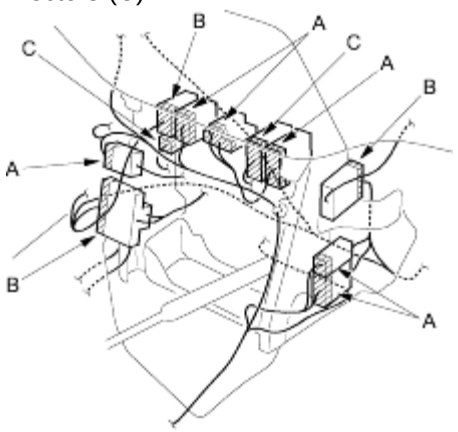


Dashboard

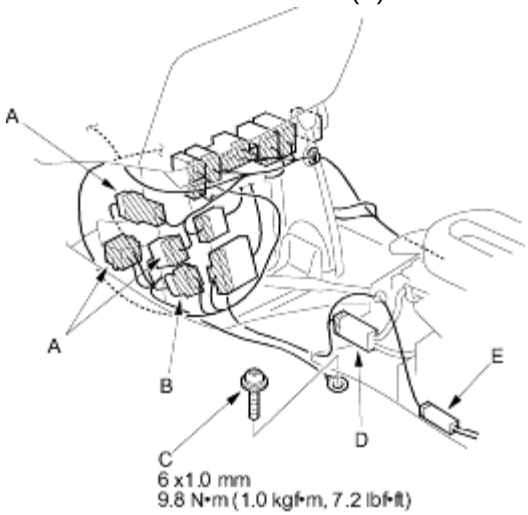
Dashboard Removal/Installation (cont'd)

Middle portion (LHD):

1. 7. From the passenger's side, disconnect the floor wire harness connectors (A), engine compartment wire harness connectors (B), and A/C sub wire harness connectors (C).

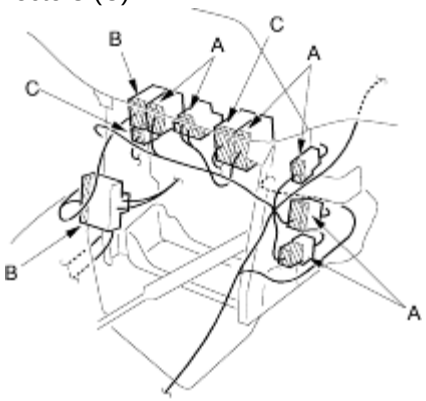


2. 8. On the driver's side, disconnect the floor wire harness connector (A) and engine compartment wire harness connector (B), and using a Torx T30 bit, remove the ground bolt (C). On AT model, disconnect the parking pin shift connector (D) and shift lock solenoid connector (E).

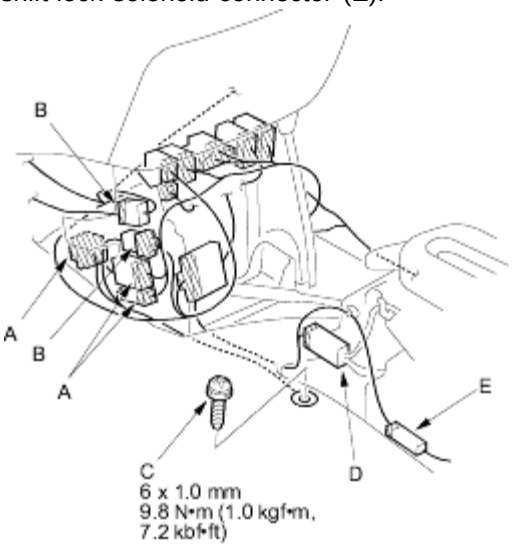


Middle portion (RHD):

1. 9. From the driver's side, disconnect the floor wire harness connectors (A), engine compartment wire harness connectors (B), and A/C sub wire harness connectors (C).



2. 10. On the passenger's side, disconnect the floor wire harness connector (A) and engine compartment wire harness connector (B), and using a Torx T30 bit, remove the ground bolt (C). On AT model, disconnect the parking pin shift connector (D) and shift lock solenoid connector (E).



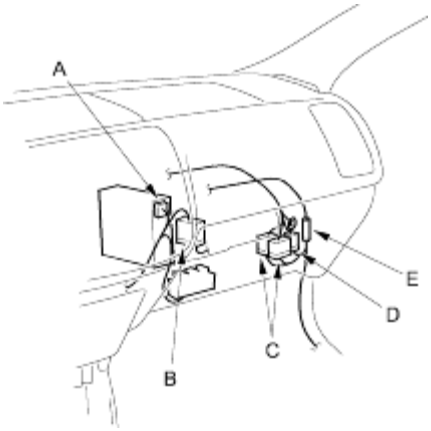
Dashboard

Dashboard Removal/Installation (cont'd)

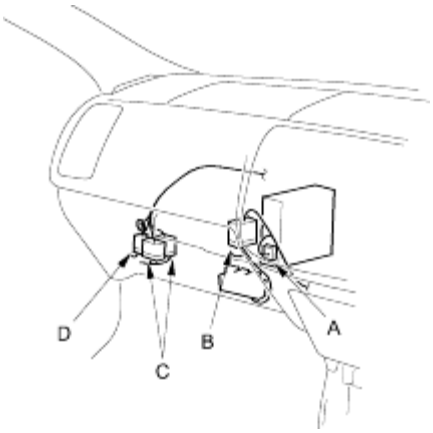
Passenger's side:

1. 11. From under the dash, disconnect the ECM/PCM connector (A), EPS sub wire harness connector (B), passenger's door wire harness connectors (C), side turn signal light connector (D) (for some models) and antenna lead (E) (LHD).

LHD:



RHD:

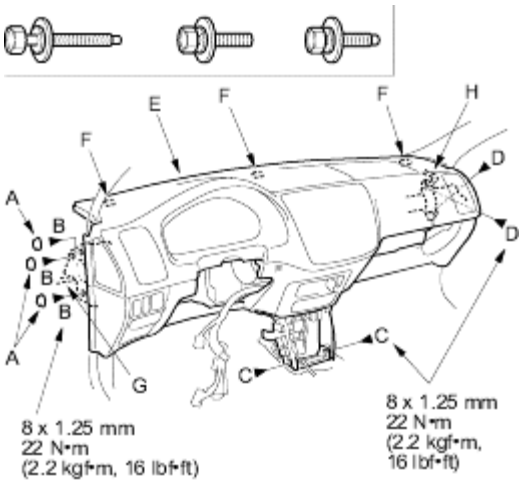


2. 12. Detach all of the harness and connector clips.

1. 13. From outside the driver's door, remove the caps (A), then remove the bolts (B, C, D), and lift up on the dashboard (E) to release it from the guide pins (F, G) and hook (H). LHD is shown, RHD is symmetrical.

Fastener Locations

B ▶: Bolt, 3	C ▶: Bolt, 2	D ▶: Bolt, 2



2. 14. Carefully remove the dashboard through the front door opening.
   15. Install the dashboard in the reverse order of removal, and note these items:
   - Make sure the dashboard fits onto the guide pins correctly.
   - Apply liquid thread lock to the dashboard mounting bolts of the middle portion before reinstallation.
   - Before tightening the bolts, make sure each wire harness is not pinched.
   - Make sure the connectors are plugged in properly, and the antenna lead and air hose (auto A/C) are connected properly.
   - If equipped with airbag, reconnect the negative cable to the battery.
   - If equipped, enter the anti-theft code for the radio, then enter the customer's radio station presets.

Dashboard

Steering Hanger Beam Replacement

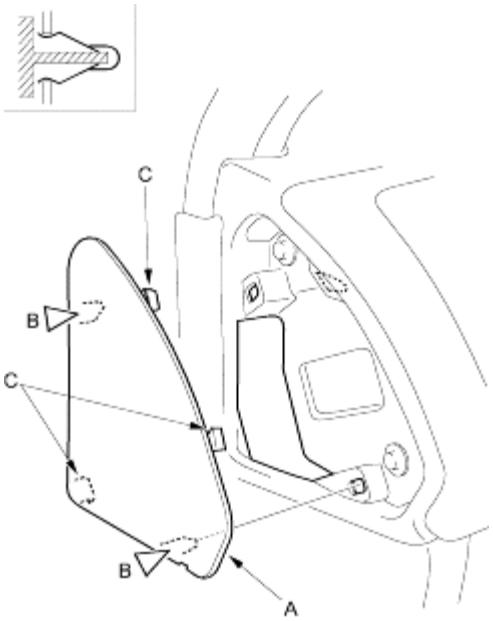
NOTE:

- Put on gloves to protect your hands.
- LHD is shown, RHD is symmetrical.

1. 1. Remove the dashboard (see page 20-81).
   2. Remove the these items from the dashboard:
      - Centre panel (see page 20-78)
      - Instrument panel (see page 20-75)
      - Gauge assembly (see page 22-93
      - Passenger's airbag (see page 23-167
      - Sunlight sensor, auto A/C (see page 21-152
2. 3. From outside of the driver's side, gently pull out on the bottom of the dashboard side cover (A) to release the lower clip (B), then release the remaining clips (B) and hooks (C), to remove the cover.

Fastener Locations

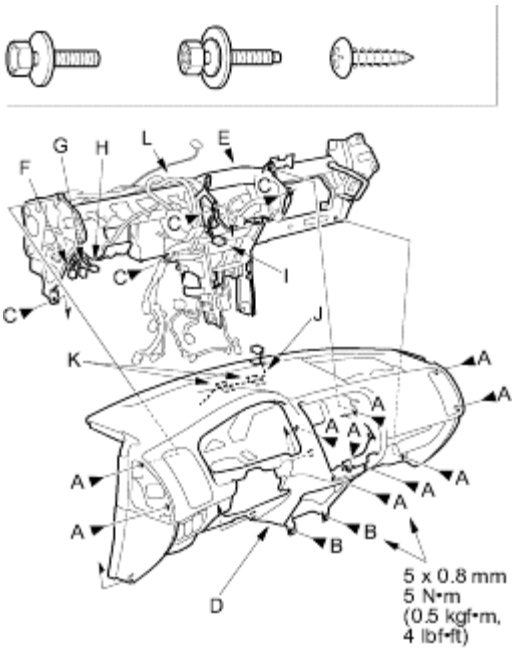
B ▷: Clip, 2



1. 4. Remove the bolts (A, B) and screws (C) securing the dashboard (D) and steering hanger beam (E), and if equipped, disconnect the cruise control main switch connector or headlight adjuster switch connector (F), sunroof switch connector (G), and power mirror switch connector (H). On auto A/C model, disconnect the in-car temperature sensor connector (I), and remove the sunlight sensor wire harness (J) by removing the cushion tape (K). Separate the dashboard and steering hanger beam.

Fastener Location

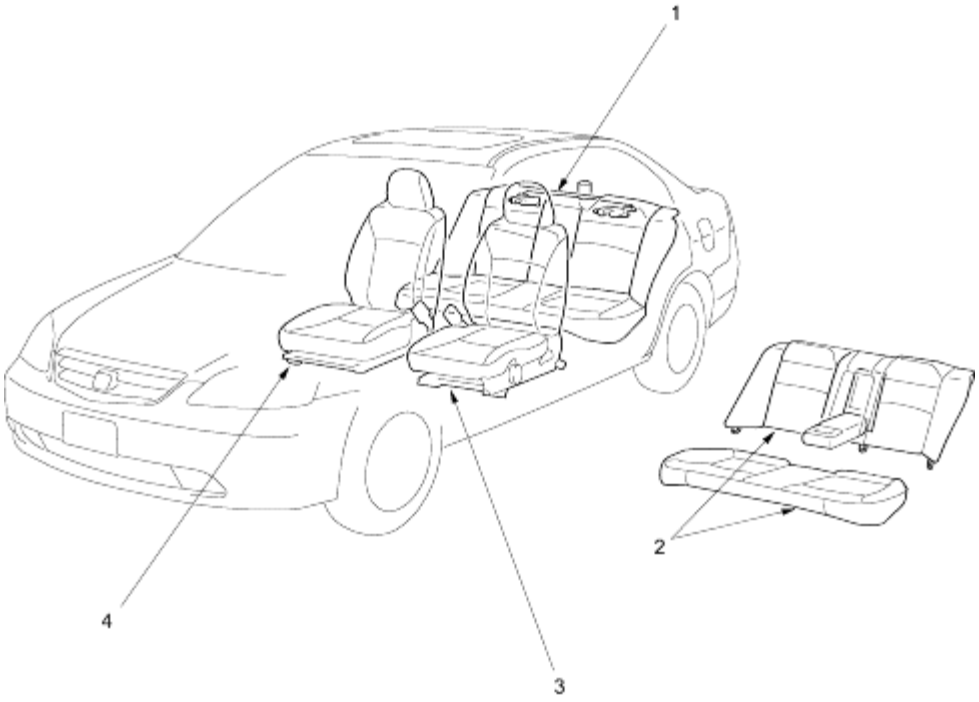
A ▶: Bolt, 10 B ▶: Bolt, 2 C ▶: Bolt, 4



2. 5. Install the beam in the reverse order of removal, and note these items:
   - Make sure the dashboard wire harness (L) is not pinched.
   - Make sure the connectors are connected properly (for some models).

Seats

Component Location Index



1. REAR SEAT
   (Folding type)
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   Seat-back Cover Replacement, page 20-99
   Seat Side Bolster Cover Replacement, page 20-101
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   Armrest Replacement, page 20-98
   Seat-back Cover Replacement, page 20-102
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   (Driver's)
   Removal/Installation, page 20-87Disassembly/Reassembly-With Manual Height Adjustable, page 20-89Armrest Replacement, page 20-91
   Seat Cover Replacement, page 20-92
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   (Passenger's)
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   Disassembly/Reassembly-Without Manual Height Adjustable, page 20-90
   Seat Cover Replacement, page 20-92

Seats

Front Seat Removal/Installation

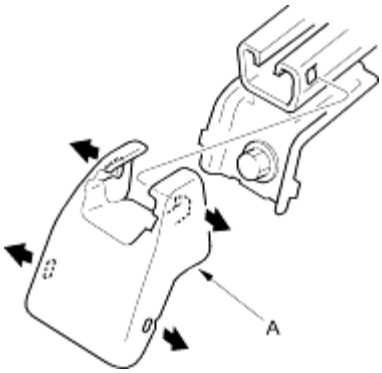
For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE

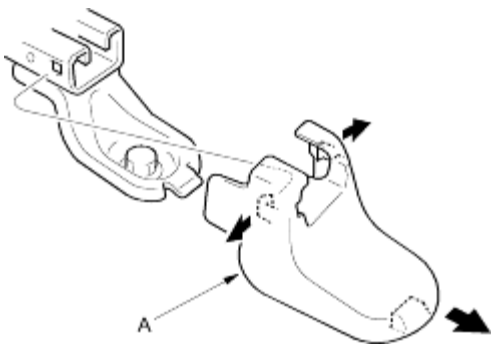
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

1. 1. If equipped, make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
   2. If equipped with a side airbag, disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
   3. Remove the seat track end covers (A) from the back of both seat tracks.

Outer:



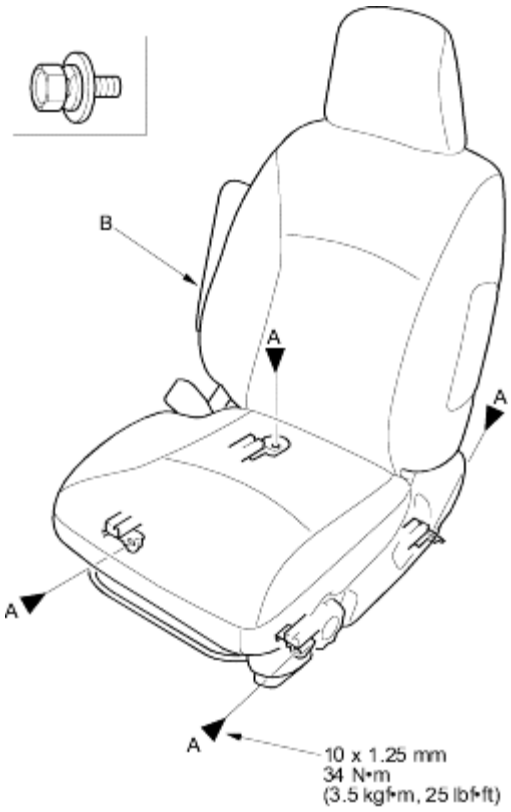
Inner:



1. 4. Remove the bolts (A) securing the front seat (B).

Fastener Locations

A▶: Bolt, 4

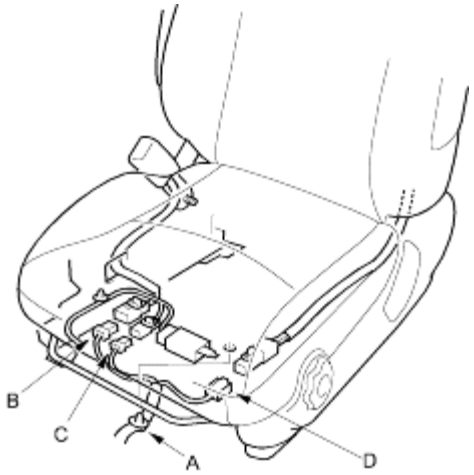


Seats

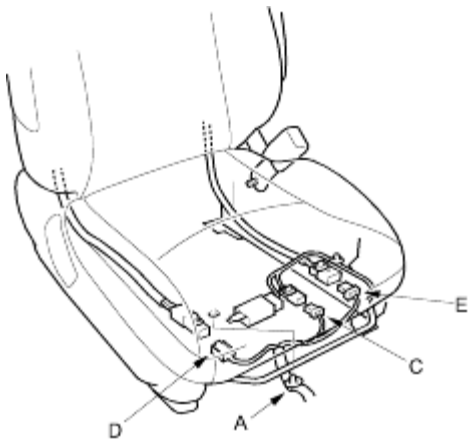
Front Seat Removal/Installation (cont'd)

1. 5. For some models: Lift up the front seat, then detach the harness clip (A), and disconnect the seat belt switch connector (B) on the driver's seat, the seat heater connector (C) on the driver's and passenger's seats, the side airbag connector (D) on the driver's and passenger's seat, and the OPDS unit connector (E) on the passenger's seat. LHD is shown, RHD is symmetrical.

Driver's:



Passenger's:



1. 6. With the help of an assistant, carefully remove the front seat through the front door opening.
2. 7. Install the seat in the reverse order of removal, and note these items:
   - Make sure each connector is plugged in properly.
   - If equipped with a side airbag, reconnect the negative cable to the battery.
   - If equipped, enter the anti-theft code for the radio, then enter the customer's radio station presets.

Seats

Front Seat Disassembly/Reassembly - With Manual Height Adjustable

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

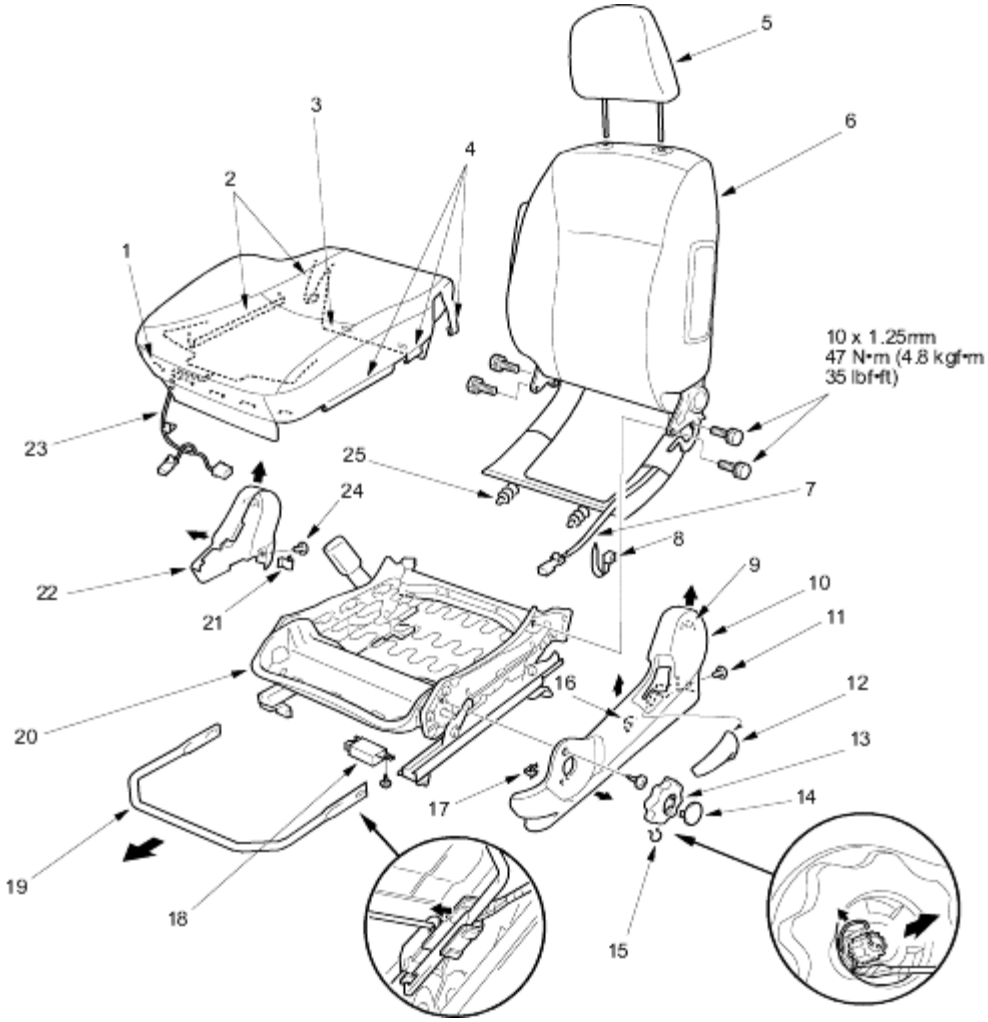
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- The left side seat is shown, the right side seat is symmetrical.

Disassemble the seat as shown.

Reassemble the seat in the reverse order of disassembly, and note these items:

- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.

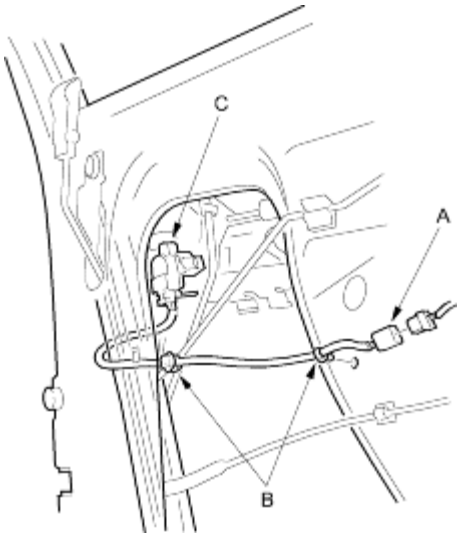


1. HOOKS (Five places)
2. HOOKS
3. Release the seat cushion cover from the cushion frame spring.
4. HOOKS
5. HEADREST
6. SEAT-BACK
7. SIDE AIRBAG HARNESS (For some models)
8. WIRE TIE
9. HOOK
10. RECLINE COVER
11. CLIP
12. RECLINE KNOB
13. HEIGHT HANDLE
14. CAP
15. CLIP
16. HOOK
17. CLIP
18. SEAT HEATER UNIT (For some models)
19. SLIDE LEVER
20. SEAT CUSHION FRAME/SEAT TRACKS
21. CLIP
22. CENTRE COVER
23. SEAT HEATER HARNESS (For some models)
24. CLIP
25. HANGER SPRING (With side airbag)

Doors

Front Door Outer Handle Replacement (cont'd)

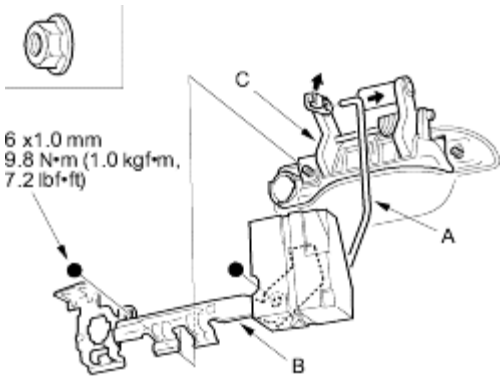
1. 5. With cylinder switch: Disconnect the cylinder switch connector (A), and detach the harness clips (B), then remove the cylinder switch (C).



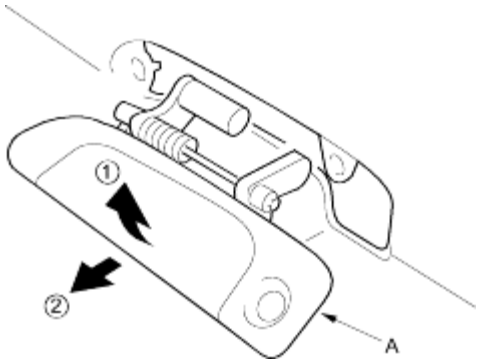
2. 6. Disconnect the outer handle rod (A), and remove the nuts, then remove the outer handle protector (B) from the outer handle (C).

Fastener Locations

●: Nut, 2



1. 7. Pull out the outer handle (A) in the numbered sequence, and remove it.



2. 8. Install the handle in the reverse order of removal, and note these items:
   - Make sure the cylinder switch harness is routed properly (for some models).
   - Make sure the cylinder switch connector is plugged in properly (for some models), and each rod is connected securely.
   - Make sure the door locks and opens properly.
   - When installing the lock cylinder, leave the outer door handle bolts loose so the inner protector does not interfere with the lock cylinder, then tighten the handle bolts.
   - Install the lock cylinder retaining clip on the handle, then install the lock cylinder. Be sure the clip is fully seated in the slot on the lock cylinder.

Seats

Front Seat Disassembly/Reassembly – Without Manual Height Adjustable

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

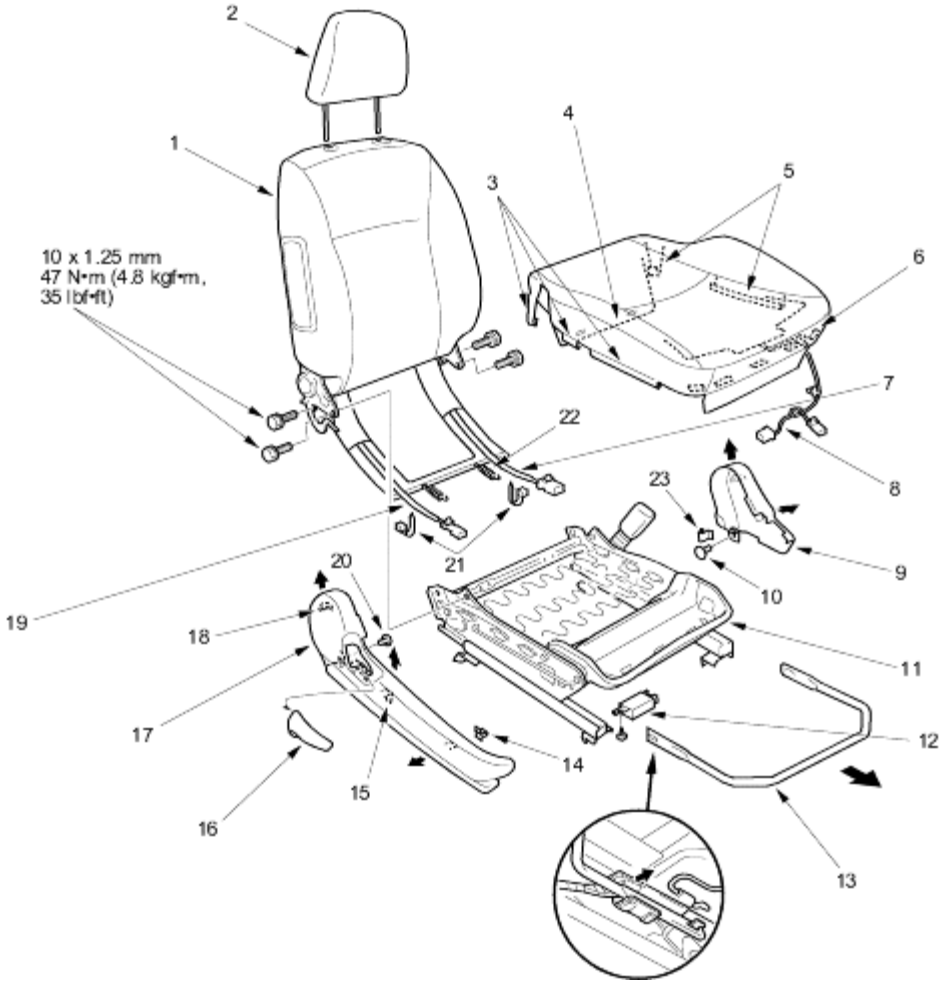
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- The right side seat is shown, the left side seat is symmetrical.

Disassemble the seat as shown.

Reassemble the seat in the reverse order of disassembly, and note these items:

- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.



1. SEAT-BACK
2. HEADREST
3. HOOKS
4. Release the seat cushion cover from the cushion frame spring
5. HOOKS
6. HOOKS (Five place)
7. OPDS HARNESS (For some passenger's seat with side airbag)
8. SEAT HEATER HARNESS (For some models)
9. CENTRE COVER
10. CLIP
11. SEAT CUSHION FRAME/SEAT TRACKS
12. SEAT HEATER UNIT (For some models)
13. SLIDE LEVER
14. CLIP
15. HOOK
16. RECLINE KNOB
17. RECLINE COVER
18. HOOK
19. SIDE AIRBAG HARNESS (For some models)
20. CLIP
21. WIRE TIES
22. CLIP
23. HANGER SPRING (With side airbag)

Seats

Front Seat Armrest Replacement

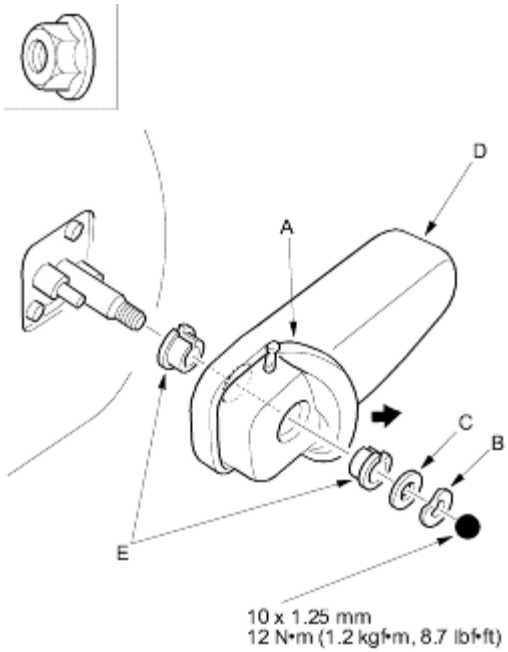
For some models:

NOTE: Take care not to tear the seams or damage the seat covers.

1. 1. Unzip the armrest cover (A), and pull back the armrest cover.

Fastener Location

●: Nut, 1

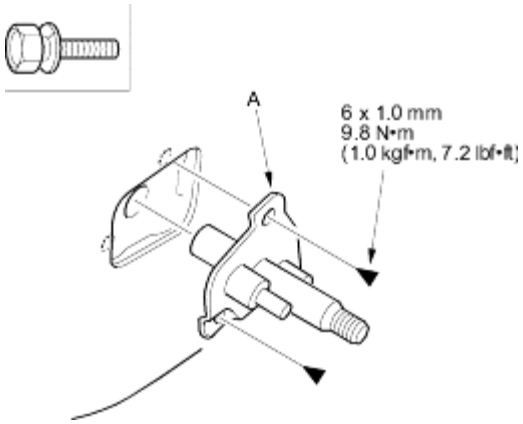


2. 2. Remove the nut, the wave washer (B), and the washer (C), then remove the armrest (D). If necessary, remove the bushings (E) from the armrest.

1. 3. Remove the bolts, then remove the armrest bracket (A).

Fastener Locations

▶: Bolt, 2



2. 4. Install the armrest in the reverse order of removal.

Seats

Front Seat Cover Replacement

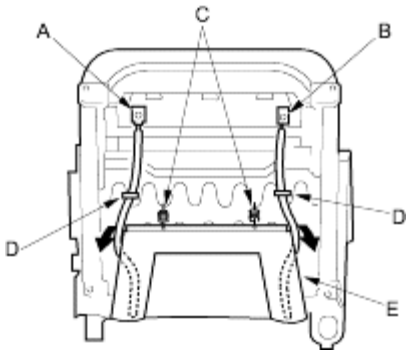
For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE:

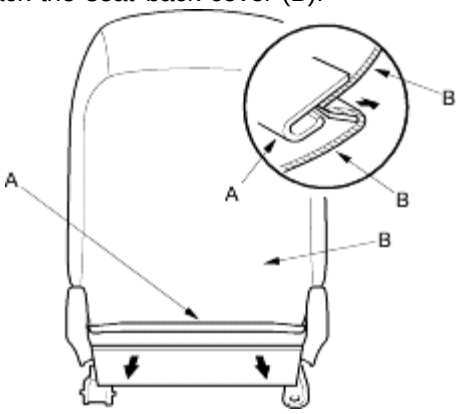
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat with side airbag, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.

Seat-back Cover

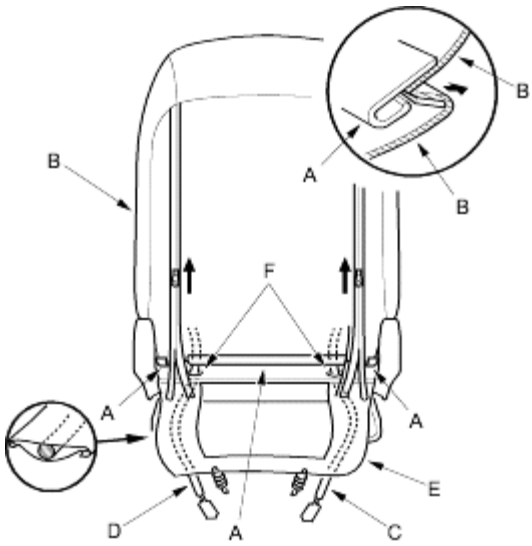
1. 1. Remove the front seat (see page 20-87).
   2. Remove the headrest.
   3. Driver's seat: If equipped, remove the armrest (see page 20-91).
   4. With side airbag: From under the seat cushion, detach the side airbag connector clip (A), and on the passenger's, detach the OPDS unit connector clip (B). Release the hook springs (C), and remove the wire ties (D), then pull the harness guide (E) back. The passenger's seat is shown, the driver's seat is symmetrical except it has no OPDS unit connector.



1. 5. Fold the seat-back forward.
2. 6. Without side airbag: Release the hook (A), and fold back the seat-back cover (B).



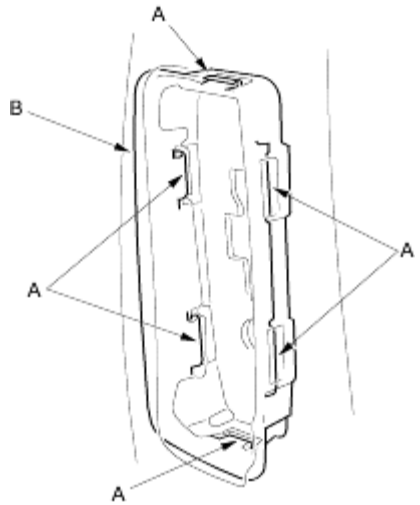
3. 7. With side airbag: Release the hooks (A), and unzip the seat-back cover (B). Pull the side airbag harness (C) and the OPDS harness (D) (passenger's seat) out through the harness guides (E) and holes (F) in the seat-back cover.



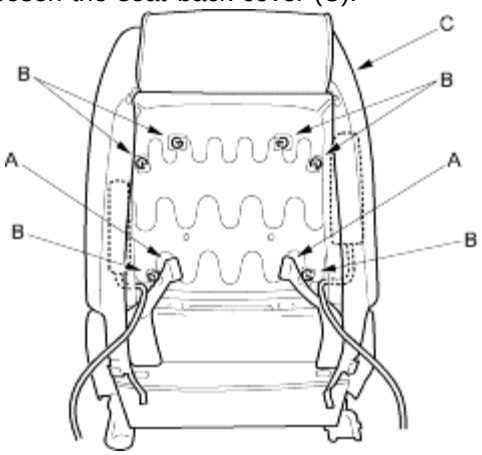
Seats

Front Seat Cover Replacement (cont'd)

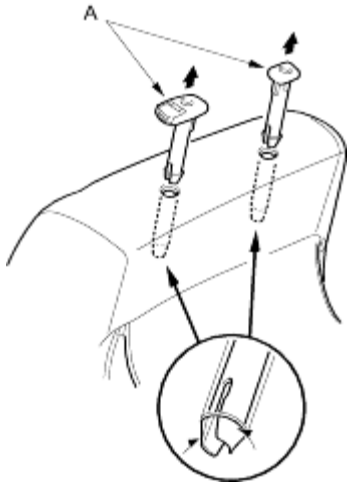
1. 8. With side airbag: Remove the side airbag (see page 23-169, and release the hooks (A) from the airbag module holder (B).



2. 9. Release the hooks (A) and hook springs (B), then loosen the seat-back cover (C).



1. 10. Pull out the headrest guides (A) while pinching the end of the guides, and remove them.



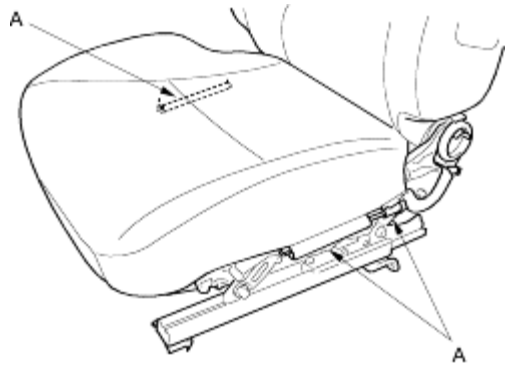
2. 11. Pull back the seat-back cover all the way around, then remove it.
12. Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and hook springs.
    - Make sure the side airbag harness and OPDS harness (passenger's seat) are routed properly.
    - If necessary, reinstall the OPDS control unit (see page 23-39).

Seats

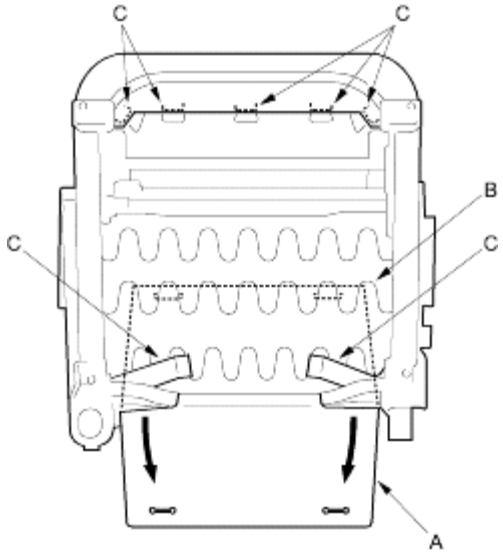
Front Seat Cover Replacement (cont'd)

Seat Cushion Cover

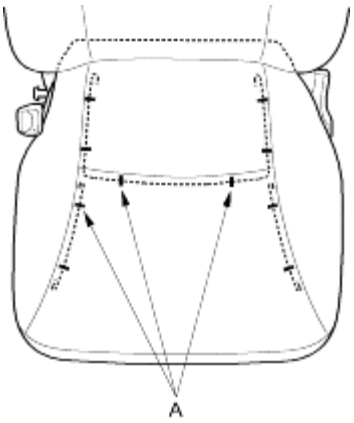
1. 1. Remove the front seat (see page 20-87).
   2. Remove the recline cover and centre cover, with manual height (see page 20-89), without manual height (see page 20-90).
   3. With side airbag: From under the seat cushion, detach the side airbag connector clip, and on the passenger's seat, detach the OPDS unit connector clip. Release the hook springs.
   4. Release the hooks (A) from both sides the seat cushion.



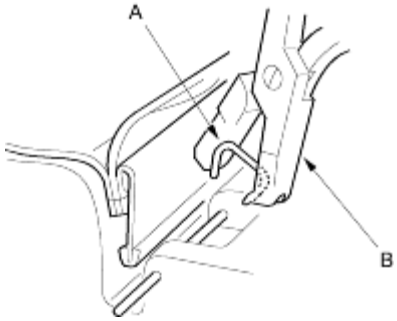
2. 5. Release the seat-back cover (A) from the cushion frame spring (B), and release the hooks (C) from under the seat cushion.



1. 6. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.



2. 7. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hooks.
   - Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).



Seats

Rear Seat Removal/Installation - Folding Type

NOTE: Take care not to scratch the body or tear the seat covers.

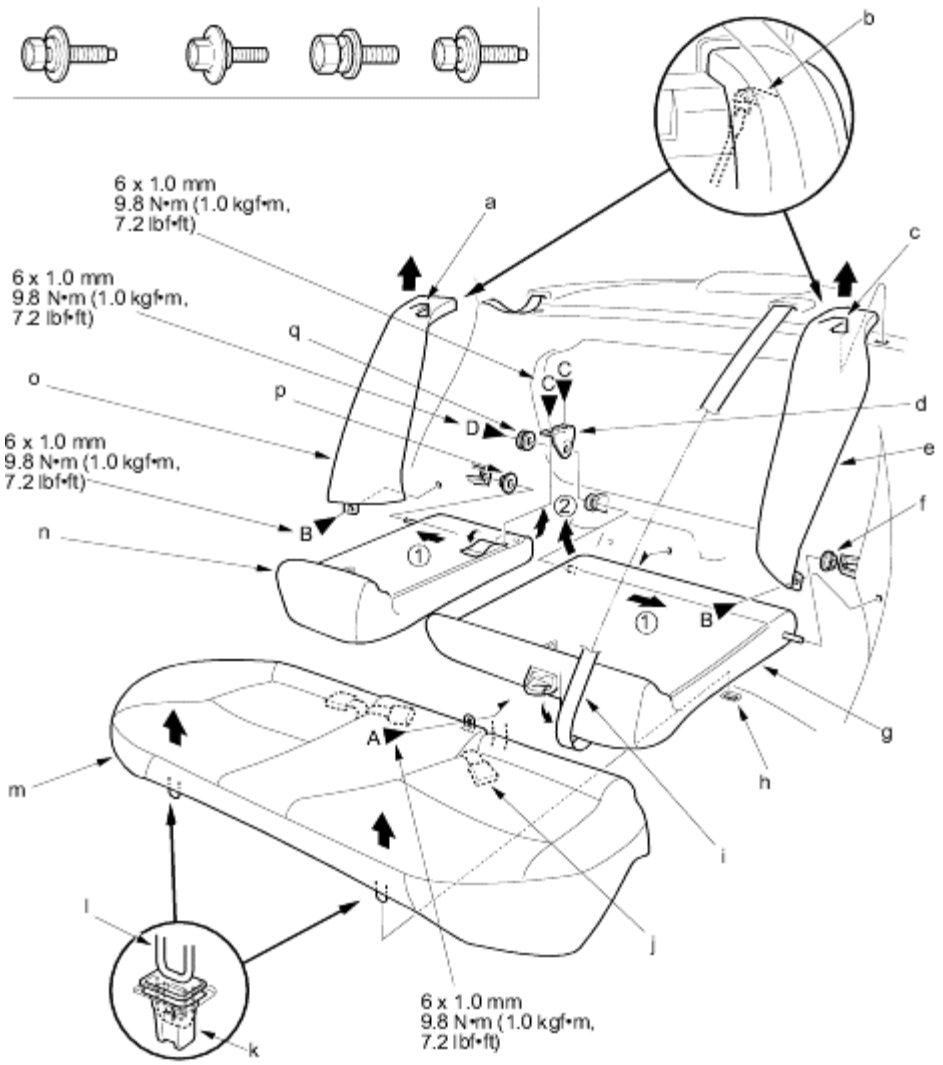
Remove the rear seat as shown.

Install the seat in the reverse order of removal, and note these items:

- Before attaching the rear seat-back and cushion, make sure there are no twists or kinks in the rear seat belts and centre belt.
- When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.
- Make sure the seat-back locks securely.

Fastener Locations

A ▶: Bolt, 1 B ▶: Bolt, 2 C ▶: Bolt, 2 D ▶: Bolt, 1



D.

A. HOOK
B. HOOK
Release it from trunk compartment
C. HOOK
D. PIVOT BRACKET
E. LEFT SEAT SIDE BOLSTER
F. BUSHING
G. CLIP
H. CENTRE BELT
(For some models)
Remove the belt from the centre belt guide.
I. SEAT BELT BUCKLE
J. CLIP
K. HOOK
L. SEAT CUSHION
M. RIGHT SEAT-BACK
N. RIGHT SEAT SIDE BOLSTER
O. BUSHING
P. BUSHING

Seats

Rear Seat Removal/Installation – Fixed Type

NOTE: Take care not to scratch the body or tear the seat covers.

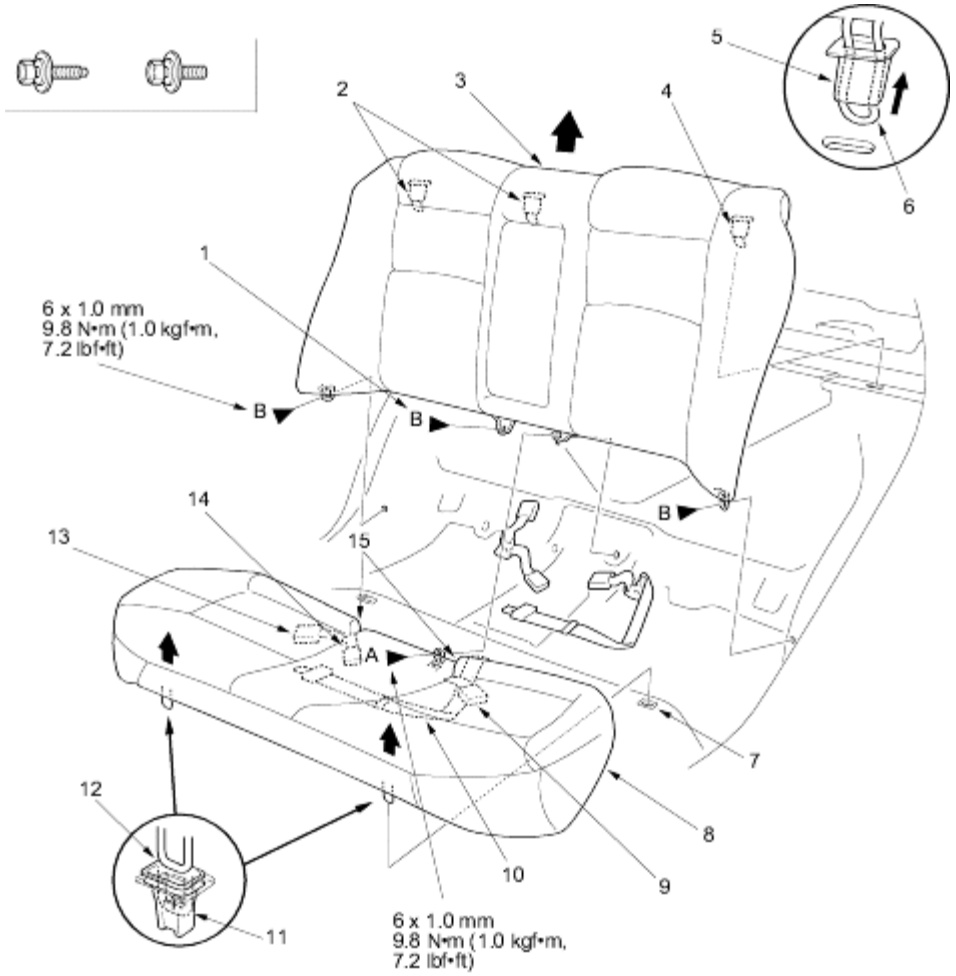
Remove the rear seat as shown.

Install the seat in the reverse order of removal, and note these items:

- Before attaching the rear seat-back and cushion, make sure there are no twists or kinks in the rear seat belts and centre belt.
- When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.

Fastener Locations

A ▶: Bolt, 1 B ▶: Bolt, 2 or 3



1. With armrest only
2. HOOKS
3. SEAT-BACK
4. HOOK
5. COLLAR
6. HOOK
7. CLIP
8. SEAT CUSHION
9. REAR SEAT BELT BUCKLE
10. CENTRE BELT
11. CLIP
12. HOOK
13. REAR SEAT BELT BUCKLE
14. CENTRE BELT BUCKLE
15. SLITS

Seats

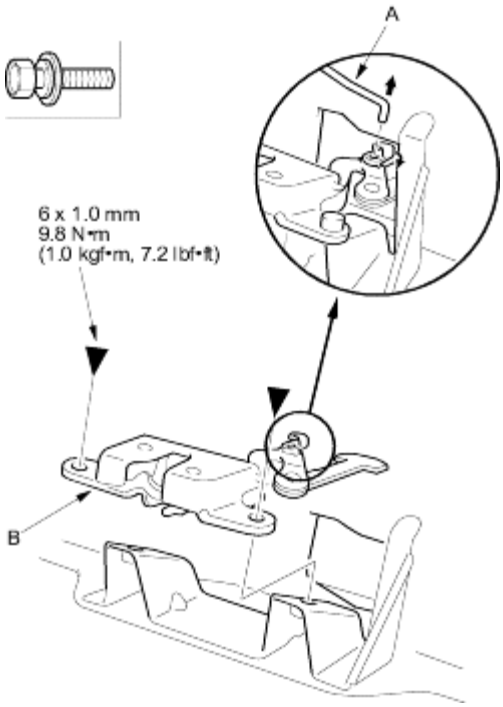
Rear Seat-back Latch Replacement – Folding Type

NOTE: Take care not to scratch the interior trim.

1. 1. Remove the rear shelf (see page 20-65).
   2. Disconnect the cylinder rod (A), and remove the bolts, then remove the seat-back latch (B).

Fastener Locations

▶: Bolt, 2



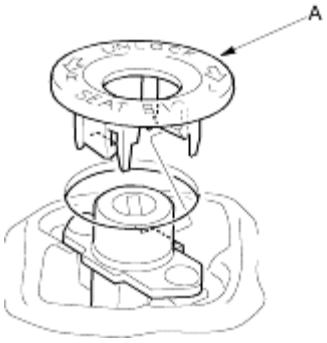
2. 3. Install the latch in the reverse order of removal, and note these items:
   - Make sure the cylinder rod is connected securely.
   - Make sure the seat-back locks securely and opens properly.

20-97 Rear Seat-back Lock Cylinder/Knob Replacement - Folding Type

NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the interior trim.
- The lock cylinder is shown, the knob is similar.

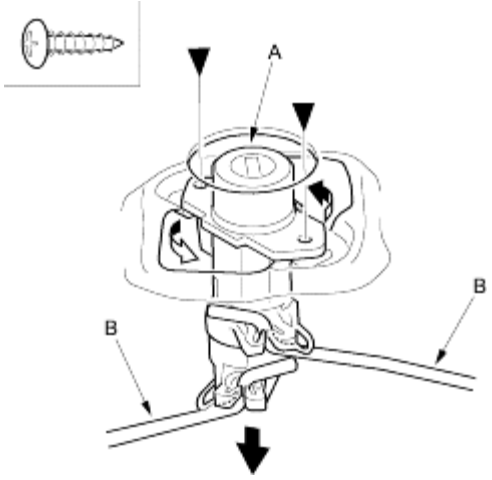
1. 1. Remove the lock cylinder trim (A).



2. 2. From trunk compartment, disconnect the cylinder rods from both seat-back latches.
   3. Remove the screws, then remove the seat-back lock cylinder/knob (A) and cylinder rods (B).

Fastener Locations

▶: Screw, 2



3. 4. Install the lock cylinder/knob in the reverse order of removal, and note these items:
   - Make sure the cylinder rod is connected securely.
   - Make sure the seat-back opens properly.

Seats

Rear Seat Armrest Replacement – Fixed Type

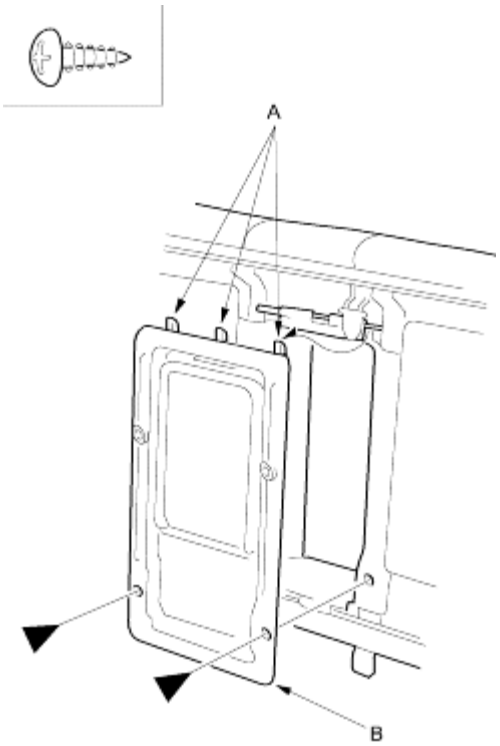
For some models:

NOTE: Take care not to tear the seams or damage the seat covers.

1. 1. Remove the seat-back (see page 20-96).
   2. Remove the screws, and release the hooks (A), then remove the trunk pass-through cover (B).

Fastener Locations

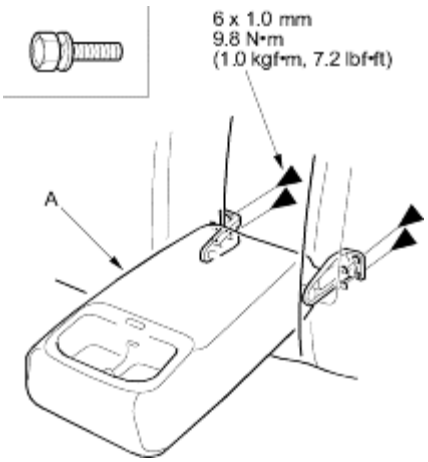
A ▶: Screw, 2



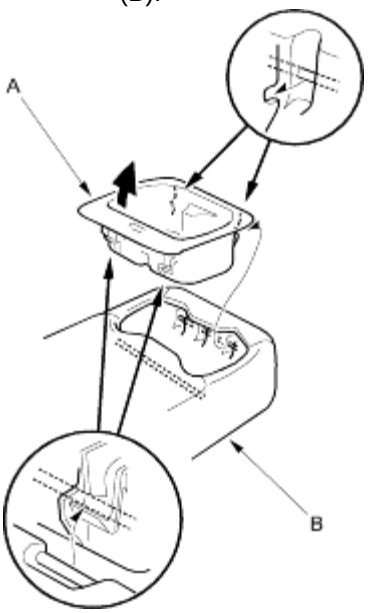
1. 3. Remove the bolts, then remove the armrest (A).

Fastener Locations

▶: Bolt, 4



2. 4. Remove the beverage holder (A) from the armrest (B).



3. 5. Install the armrest in the reverse order of removal.

Seats

Rear Seat-back Cover Replacement – Folding Type

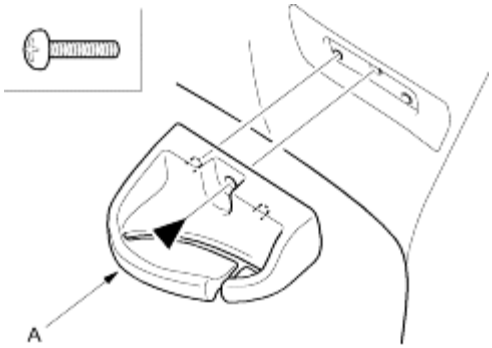
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

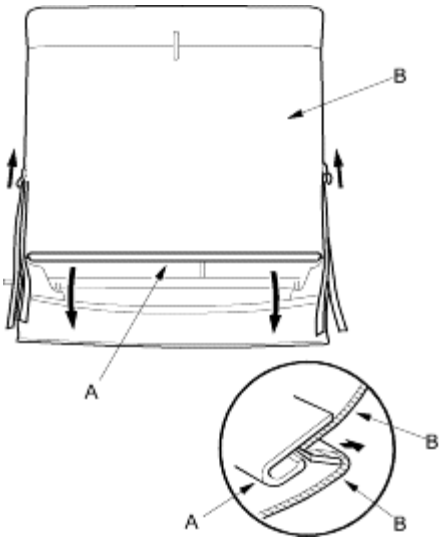
1. 1. Remove the seat-back (see page 20-95), and if equipped, remove the headrest.
   2. On the left seat-back for some models: Remove the screw, then remove the centre belt guide (A).

Fastener Location

▶: Screw, 1



2. 3. Release the hook (A), and unzip the seat-back cover (B). The left seat-back is shown, the right seat-back is similar.



1. 4. Pull back the seat-back cover (A), and remove the clips (B), and release the hooks (C).

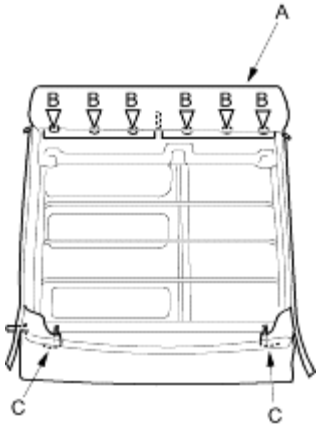
Fastener Location

B ▷: Clip Left, 6

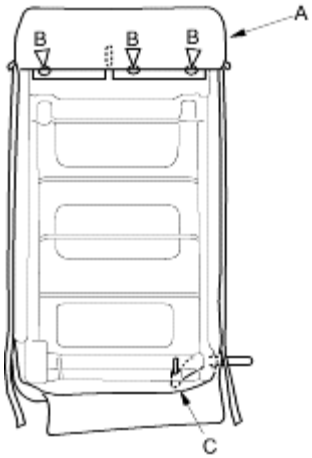
Right, 3



Left seat back:



Right seat back:



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Standards and Service Limits

Clutch

Item	Measurement	Qualification	Standard or New		Service Limit
Clutch pedal	Height from the floor		198 mm (7.8 in.)		-
	Stroke		130-140 mm (5.1-5.5 in.)		-
	Play		8-18 mm (0.3-0.7 in.)		-
	Disengagement height from the floor		113 mm (4.4 in.) min.		-
Flywheel	Runout on clutch mating surface		0.06 mm (0.002 in.) max.		0.15 mm (0.006 in.)
Clutch disc	Rivet head depth	D17A engine	1.65-2.25 mm (0.065-0.089 in.)		0.8 mm (0.03 in.)
		Except D17A engine	1.2-1.7 mm (0.047-0.067 in.)		0.2 mm (0.01 in.)
	Thickness		8.3-9.0 mm (0.33-0.35 in.)		5.7 mm (0.22 in.)
Pressure plate	Warpage		0.03 mm (0.001 in.) max.		0.15 mm (0.006 in.)
	Height of diaphragm spring fingers	Measure with feeler gauge and special tool	D16W7, D16W8, D16W9, D16V2 engines	0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)
			Except D16W7, D16W8, D16W9, D16V2 engines	0.6 mm (0.02 in.) max.	1.0 mm (0.04 in.)

HVAC (Heating, Ventilation and Air Conditioning)

Heating

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Standards and Service Limits

Manual Transmission and Differential

Item	Measurement	Qualification	Standard or New	Service Limit
Transmission oil	Capacity		For fluid change: 1.5 / (1.6 US qt, 1.3 Imp qt)	
			For overhaul: 1.6 / (1.7 US qt, 1.4 Imp qt)	
Mainshaft	End play		0.11-0.18 mm (0.004-0.007 in.)	Adjust
	Diameter of ball bearing contact area (clutch housing side)		25.977-25.990 mm (1.0227-1.0232 in.)	25.92 mm (1.021 in.)
	Diameter of spacer collar contact area		28.980-28.993 mm (1.1409-1.1415 in.)	28.930 mm (1.1390 in.)
	Diameter of needle bearing contact area		34.984-35.000 mm (1.3773-1.3780 in.)	34.93 mm (1.375 in.)
	Diameter of ball bearing contact area (transmission housing side)		25.987-26.000 mm (1.0231-1.0236 in.)	25.93 mm (1.020 in.)
	Run out		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd and 4th gears	I.D.		39.009-39.025 mm (1.5358-1.5364 in.)	39.070 mm (1.5382 in.)
	End play	3rd gear	0.06-0.21 mm (0.002-0.008 in.)	0.33 mm (0.013 in.)
		4th gear	0.06-0.19 mm (0.002-0.007 in.)	0.31 mm (0.012 in.)
	Thickness	3rd gear	27.92-27.97 mm (1.099-1.101 in.)	27.85 mm (1.096 in.)
		4th gear	27.02-27.07 mm (1.064-1.066 in.)	26.95 mm (1.061 in.)
Mainshaft 5th gear	I.D.		39.009-39.025 mm (1.5358-1.5364 in.)	39.070 mm (1.5382 in.)
	End play		0.06-0.19 mm (0.002-0.007 in.)	0.31 mm (0.012 in.)
	Thickness		28.92-28.97 mm (1.139-1.141 in.)	28.85 mm (1.136 in.)
Countershaft	Diameter of needle bearing contact area (clutch housing side)		34.000-34.015 mm (1.3386-1.3392 in.)	33.95 mm (1.337 in.)
	Diameter of ball bearing contact area (transmission housing side)		24.980-24.993 mm (0.9835-0.9840 in.)	24.93 mm (0.981 in.)
	Diameter of 1st gear contact area		37.984-38.000 mm (1.4954-1.4961 in.)	37.934 mm (1.493 in.)
	Run out		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Countershaft 1st gear	I.D.		43.009-43.025 mm (1.6932-1.6939 in.)	43.070 mm (1.6957 in.)
	Endplay		0.03-0.10 mm (0.001-0.039 in.)	0.22 mm (0.009 in.)
	Thickness		26.91-26.94 mm (1.059-1.061 in.)	-
Countershaft 2nd gear	I.D.		45.009-45.025 mm (1.7720-1.7726 in.)	45.070 mm (1.7744 in.)
	End play		0.04-0.12 mm (0.002-0.005	0.24 mm (0.009 in.)

			in.)	
	Thickness		27.41-27.46 mm (1.079-1.081 in.)	27.36 mm (1.077 in.)
Countershaft 2nd gear spacer collar	I.D.		34.000-34.010 mm (1.3386-1.3390 in.)	34.040 mm (1.3402 in.)
	O.D.		39.989-40.000 mm (1.5744-1.5748 in.)	39.930 mm (1.5720 in.)
	Length		27.53-27.56 mm (1.084-1.085 in.)	27.51 mm (1.083 in.)

Heating

Symptom Troubleshooting Index (cont'd)

5-door Except KE Model

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate.	Recirculation Control Motor Circuit Troubleshooting (see page 21-37)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
Blower motor runs, but one or more speeds are inoperative.	Blower Motor Circuit Troubleshooting (see page 21-39)	• Cleanliness and tightness of all connectors
Blower motor does not run at all.	Blower Motor Circuit Troubleshooting (see page 21-39)	• Blown fuse No. 12 (40A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 and G501 • Cleanliness and tightness of all connectors

Air Conditioning
A/C System Tests (cont'd)

Pressure Test

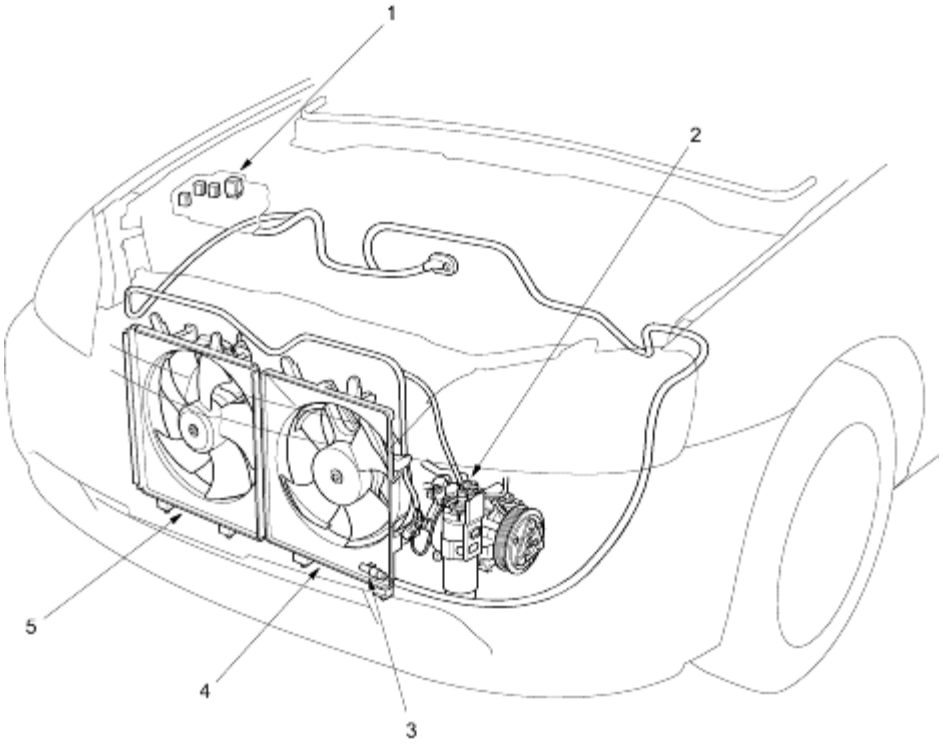
Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (2.0 kgf/cm{sup 2}, 28 psi) quickly and then falls gradually.	Air in system	Discharge, evacuate (see page 21-94) and recharge with specified amount (see page 21-96).
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge, evacuate and recharge with specified amount.
	Reduced or no air flow through condenser	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	Restricted lines
Discharge pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot.	Insufficient refrigerant in system	• Check for leak. • Charge system.
	High and low pressures are balanced soon after stopping compressor. Low side is higher than normal.	• Faulty compressor discharge valve • Faulty compressor seal	Replace the compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace • Discharge, evacuate and recharge with specified amount.
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot.	Insufficient refrigerant in system	• Repair the leaks. • Discharge, evacuate and recharge with specified amount. • Charge as required.
	Expansion valve is not frosted and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Discharge, evacuate and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low and the air flow from vents is restricted.	Frozen evaporator	Run the fan with compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
	Receiver/dryer outlet is cool and inlet is warm (should be warm during operation).	Clogged receiver/dryer	Replace
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when condenser is cooled by water.	Excessive refrigerant in system	Discharge, evacuate and recharge with specified amount.
	High and low-pressure are equalised as soon as the compressor is stopped and both gauges fluctuate while running.	• Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve	Replace the compressor.

Suction and discharge pressures abnormally high	Reduced air flow through condenser.	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge, evacuate and recharge with specified amount.
Suction and discharge pressure abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
Refrigerant leaks	Compressor clutch is dirty.	Compressor shaft seal leaking	Replace the compressor.
	Compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace compressor.
	Compressor gasket is wet with oil.	Gasket leaking	Replace the compressor.

Climate Control

Component Location Index

NOTE: LHD type is shown, RHD type is similar



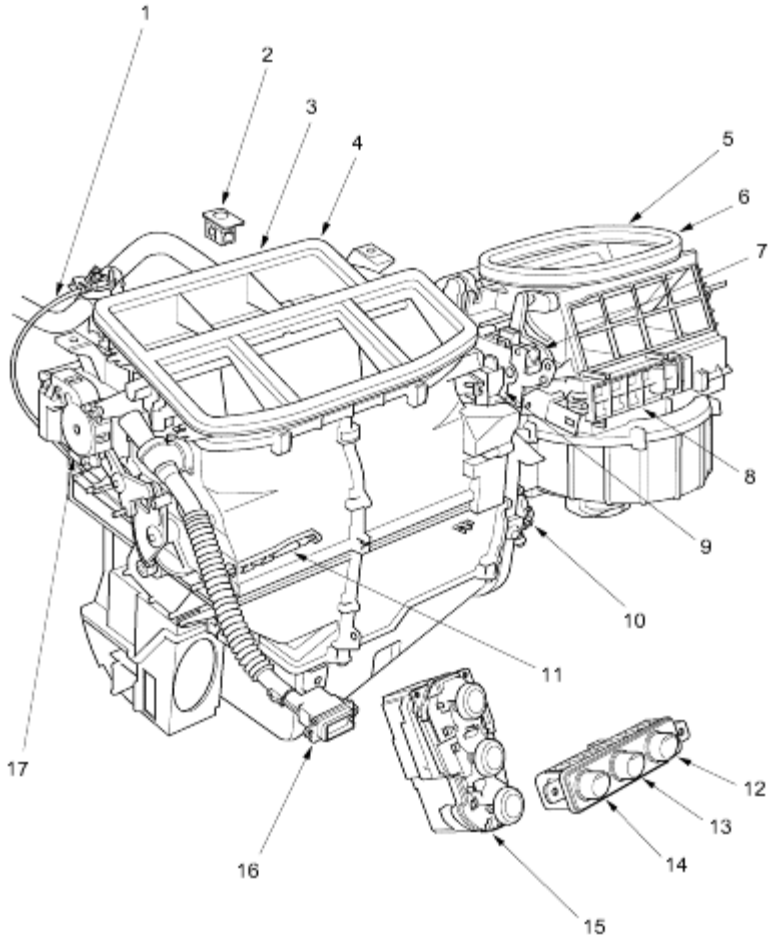
1. BLOWER MOTOR RELAY, RADIATOR FAN RELAY, CONDENSER FAN RELAY (Located in the under-hood fuse/relay box)
   Test, page 21-80
2. A/C PRESSURE SWITCH
3. OUTSIDE AIR TEMPERATURE
   4-door: Replacement, page 21-150
   5-door: Replacement, page 21-151
   Test, page 21-151
4. CONDENSER FAN
5. RADIATOR FAN

Climate Control

Component Location Index (cont'd)

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

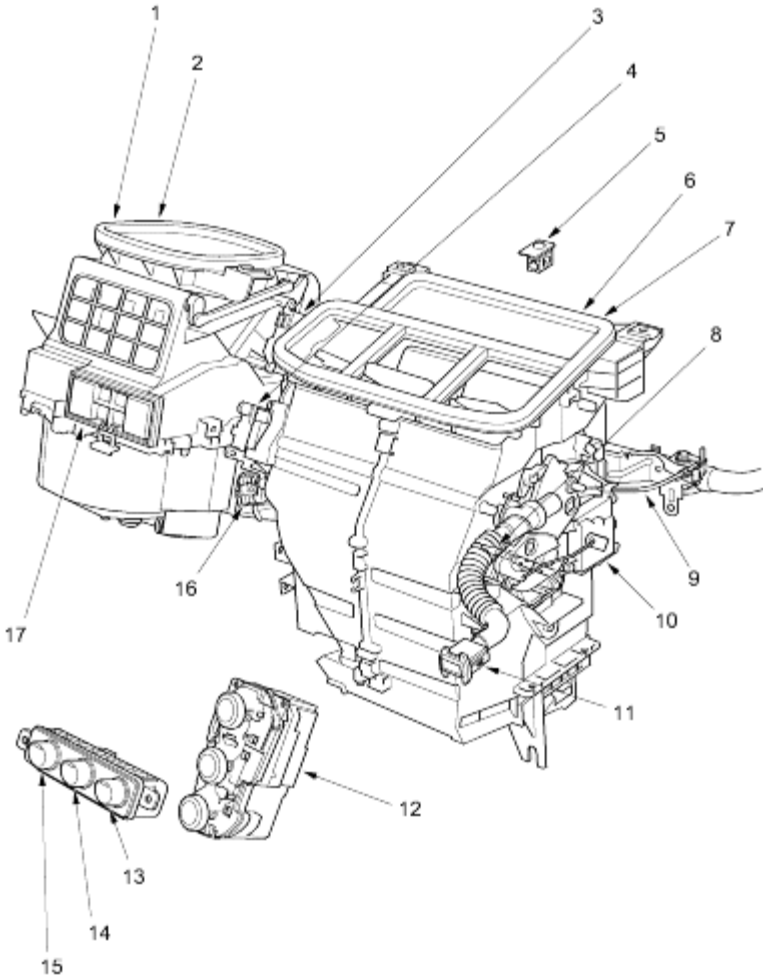


1. HEATER VALVE CABLE
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2. SUNLIGHT SENSOR
   Replacement, page 21-152
   Test, page 21-152
3. HEATER UNIT/CORE
   Replacement, page 21-58
4. EVAPORATOR CORE
   (Built-in the heater unit)
   Replacement, page 21-85
5. BLOWER UNIT
   Removal and installation, page 21-54
6. BLOWER UNIT COMPONENTS
   Replacement, page 21-56
7. RECIRCULATION CONTROL MOTOR
   Test, page 21-48
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8. DUST AND POLLEN FILTER
   Replacement, page 21-53
9. MODE CONTROL MOTOR
   Test, page 21-46
   Replacement, page 21-46
10. POWER TRANSISTOR
    Test, page 21-50
11. EVAPORATOR TEMPERATURE SENSOR
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12. REAR WINDOW DEFOGGER SWITCH
13. A/C SWITCH
14. RECIRCULATION CONTROL UNIT
15. CLIMATE CONTROL UNIT
    Removal and Installation, page 21-153
16. IN-CAR TEMPERATURE SENSOR
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17. AIR MIX CONTROL MOTOR
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Climate Control

Component Location Index (cont'd)

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2. Removal and Installation, page 21-55BLOWER UNIT COMPONENTS Replacement, page 21-57
3. RECIRCULATION CONTROL MOTOR Test, page 21-49 Replacement, page 21-49
4. MODE CONTROL MOTOR Test, page 21-47 Replacement, page 21-47
5. SUNLIGHT SENSOR Replacement, page 21-152Test, page 21-152
6. HEATER UNIT/CORE Replacement, page 21-60
7. EVAPORATOR CORE (Built-in the heater unit) Replacement, page 21-86
8. EVAPORATOR TEMPERATURE SENSOR Replacement, page 21-83 Test, page 21-84
9. HEATER VALVE CABLE Adjustment, page 21-62
10. AIR MIX CONTROL MOTOR Test, page 21-45 Replacement, page 21-45
11. IN-CAR TEMPERATURE SENSOR Replacement, page 21-149 Test, page 21-150
12. CLIMATE CONTROL UNIT
13. Removal and Installation, page 21-153RECIRCULATION CONTROL SWITCH
14. A/C SWITCH
15. REAR WINDOW DEFOGGER SWITCH
16. POWER TRANSISTOR Test, page 21-150
17. DUST AND POLLEN FILTER (With A/C) Replacement, page 21-53

Climate Control

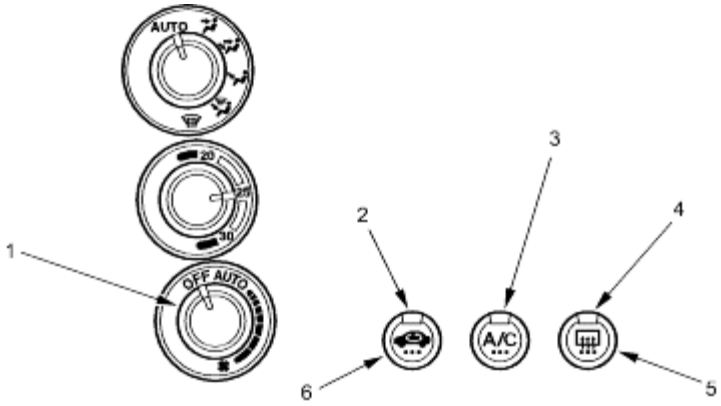
General Troubleshooting Information

How to Retrieve a DTC

The Climate Control Unit has a self-diagnosis function.

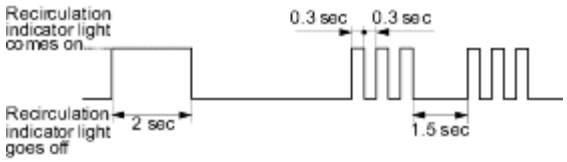
Running the Self-diagnosis Function

1. 1. Turn the fan switch OFF.
   2. Press the recirculation control switch and the rear window defogger switch.
   3. While holding the both switches down, turn the ignition switch ON (II), then release the both switches. The recirculation indicator light and the rear window defogger indicator light come on. The recirculation indicator light goes off 2 seconds later and the A/C indicator light comes on (if so equipped), then the self-diagnosis will begin. About 10 seconds later, the self-diagnosis will finish and the A/C indicator light goes off. The recirculation indicator light will blink the Diagnostic Trouble Code (DTC) to indicate a faulty component. If no DTC's are found, the indicator light will not blink.
   NOTE: LHD type is shown, RHD type is symmetrical.



1. FAN SWITCH
2. RECIRCULATION INDICATOR LIGHT
3. A/C INDICATOR LIGHT
4. REAR WINDOW DEFOGGER INDICATOR LIGHT
5. REAR WINDOW DEFOGGER SWITCH
6. RECIRCULATION CONTROL SWITCH

Example of DTC indication Pattern (DTC 3)



Resetting the Self-diagnosis Function

Turn the ignition switch OFF to cancel the self-diagnosis function. After completing repair work, run the self-diagnosis function again to make sure that there are no other malfunctions.

Climate Control
DTC Troubleshooting Index

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DTC (Recirculation Indicator Light Blinks)	Detection Item	Page
1	An open in the in-car temperature sensor circuit	(see page 21-114)
2	A short in the in-car temperature sensor circuit	(see page 21-115)
3	An open in the outside air temperature sensor circuit	(see page 21-115)
4	A short in the outside air temperature sensor circuit	(see page 21-117)
5	An open in the sunlight sensor circuit	(see page 21-117)
6	A short in the sunlight sensor circuit	(see page 21-118)
7	An open in the air mix control motor circuit	(see page 21-119)
8	A short in the air mix control motor circuit	(see page 21-119)
9	A problem in the air mix control linkage, door or motor	(see page 21-120)
10	An open or short in the mode control motor circuit	(see page 21-121)
11	A problem in the mode control linkage, doors or motor	(see page 21-122)
12	A problem in the blower motor circuit	(see page 21-123)
13	A problem in the EEPROM in the climate control unit; the control unit must be replaced.	(see page 21-153)
14	An open in the evaporator temperature sensor circuit	(see page 21-126)
15	A short in the evaporator temperature sensor circuit	(see page 21-127)

In case of multiple problems, the recirculation indicator light will indicate only the DTC with the least number of blinks.

Climate Control

DTC Troubleshooting Index (cont'd)

5-door

DTC (Recirculation Indicator Light Blinks)	Detection Item	Page
1	An open in the in-car temperature sensor circuit	(see page 21-128)
2	A short in the in-car temperature sensor circuit	(see page 21-129)
3	An open in the outside air temperature sensor circuit	(see page 21-129)
4	A short in the outside air temperature sensor circuit	(see page 21-131)
5	An open in the sunlight sensor circuit	(see page 21-131)
6	A short in the sunlight sensor circuit	(see page 21-132)
7	An open in the air mix control motor circuit	(see page 21-133)
8	A short in the air mix control motor circuit	(see page 21-133)
9	A problem in the air mix control linkage, door or motor	(see page 21-134)
10	An open or short in the mode control motor circuit	(see page 21-135)
11	A problem in the mode control linkage, doors or motor	(see page 21-136)
12	A problem in the blower motor circuit	(see page 21-137)
13	A problem in the EEPROM in the climate control unit; the control unit must be replaced.	(see page 21-153)
14	An open in the evaporator temperature sensor circuit	(see page 21-140)
15	A short in the evaporator temperature sensor circuit	(see page 21-141)

In case of multiple problems, the recirculation indicator light will indicate only the DTC with the least number of blinks.

Climate Control
Symptom Troubleshooting Index

4-door

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-142)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
The blower motor does not run immediately even through the engine is fully warmed up NOTE: The temperature control dial must be set between 18°C (64°F) and 32°C (90°F)	ECT Sensor Circuit Troubleshooting (see page 21-145)	Cleanliness and tightness of all connectors
Both heater and A/C do not work	Climate Control Power and Ground Circuits Troubleshooting (see page 21-146)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G502 • Cleanliness and tightness of all connectors
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-74)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-75)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Compressor clutch does not engage	Compressor Clutch Circuit Troubleshooting (see page 21-76)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
A/C System does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-147)	Cleanliness and tightness of all connectors

Climate Control
Symptom Troubleshooting Index (cont'd)

5-door

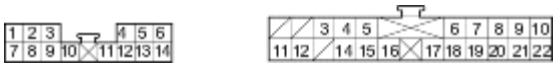
Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-144)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
The blower motor does not run immediately even through the engine is fully warmed up NOTE: The temperature control dial must be set between 18°C (64°F) and 32°C (90°F)	ECT Sensor Circuit Troubleshooting (see page 21-145)	Cleanliness and tightness of all connectors
Both heater and A/C do not work	Climate Control Power and Ground Circuits Troubleshooting (see page 21-146)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G501 • Cleanliness and tightness of all connectors
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-74)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-75)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Compressor clutch does not engage	Compressor Clutch Circuit Troubleshooting (see page 21-76)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
A/C System does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-147)	Cleanliness and tightness of all connectors

Climate Control
System Description

Climate Control Unit Inputs and Outputs

CLIMATE CONTROL UNIT CONNECTIONS

CONNECTOR A (14P) CONNECTOR B (22P)



Wire side of female terminals

CONNECTOR A (○ on Circuit Diagram)

Cavity	Wire colour	Signal	
1	GRY	AIR MIX POTENTIAL +5 V	OUTPUT
2	LT GRN	SENSOR COMMON GROUND	INPUT
3	PNK/BLU	AIR MIX HOT	OUTPUT
4	BLU	A/C PRESSURE SWITCH	INPUT
5	GRN/YEL	RECIRCULATE	INPUT
6	GRN/WHT	FRESH	INPUT
7	BLU/YEL	POWER TRANSISTOR	OUTPUT
8	BLU/RED	BLOWER FEEDBACK	INPUT
9	GRN	AIR MIX COOL	OUTPUT
10	YEL/RED	MODE DEF	OUTPUT
11	YEL/BLU	MODE VENT	OUTPUT
12	YEL/BLK	REAR WINDOW DEFOGGER RELAY	OUTPUT
13	BLK	GROUND	INPUT
14	BLK/YEL	IG2 (Power)	INPUT

CONNECTOR B (□ on Circuit Diagram)

Cavity	Wire colour	Signal	
1	-	-	-
2	-	-	-
3	BLK/RED	REAR WINDOW DEFOGGER SWITCH LED	INPUT
4	LT GRN	A/C SWITCH LED	INPUT
5	LT GRN/BLK	RECIRCULATION CONTROL SWITCH LED	INPUT
6	PNK/BLK	AIR MIX POTENTIAL	OUTPUT
7	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
8	PNK	OUTSIDE AIR TEMPERATURE SENSOR	OUTPUT
9	LT BLU	IN-CAR TEMPERATURE SENSOR	OUTPUT
10	ORN	SUNLIGHT SENSOR	OUTPUT
11	RED	GAUGE ASSEMBLY or UNDER-DASH FUSE/RELAY BOX	OUTPUT
12	RED/BLK	TAILLIGHTS RELAY	INPUT
13	-	-	-
14	BLU	REAR WINDOW DEFOGGER SWITCH	INPUT
15	LT GRN/RED	A/C SWITCH	INPUT
16	YEL/RED	RECIRCULATION CONTROL SWITCH	INPUT
17	YEL/GRN	MODE 4	OUTPUT
18	WHT/BLU	MODE 3	OUTPUT
19	RED/BLU	MODE 2	OUTPUT
20	RED/YEL	MODE 1	OUTPUT
21	BRN/WHT	IGN (Power)	OUTPUT

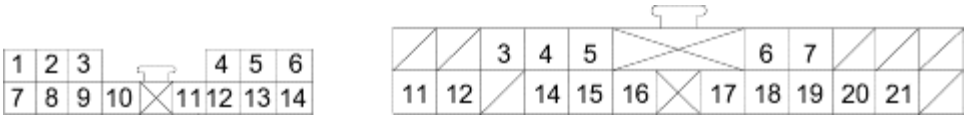
22	RED/WHT	ENGINE COOLANT TEMPERATURE (ECT) SENSOR	OUTPUT

Heating
System Description

Heater Control Panel Inputs and Outputs

HEATER CONTROL PANEL CONNECTORS

CONNECTOR A (14P) CONNECTOR B (22P)



Wire side of female terminals

CONNECTOR A (O on Circuit Diagram)

Cavity	Wire colour	Signal	
1	GRY	AIR MIX POTENTIAL +5V	OUTPUT
2	LT GRN	SENSOR COMMON GROUND	INPUT
3	PNK/BLU	AIR MIX HOT	OUTPUT
4	BLU	A/C PRESSURE SWITCH	INPUT
5	GRN/YEL	RECIRCULATE	INPUT
6	GRN/WHT	FRESH	INPUT
7	BLU/YEL	POWER TRANSISTOR	OUTPUT
8	BLU/RED	BLOWER FEEDBACK	INPUT
9	GRN	AIR MIX COOL	OUTPUT
10	YEL/RED	MODE DEF	OUTPUT
11	YEL/BLU	MODE VENT	OUTPUT
12	YEL/BLK	REAR WINDOW DEFOGGER RELAY	OUTPUT
13	BLK	GROUND	INPUT
14	BLK/YEL	IG2 (Power)	INPUT

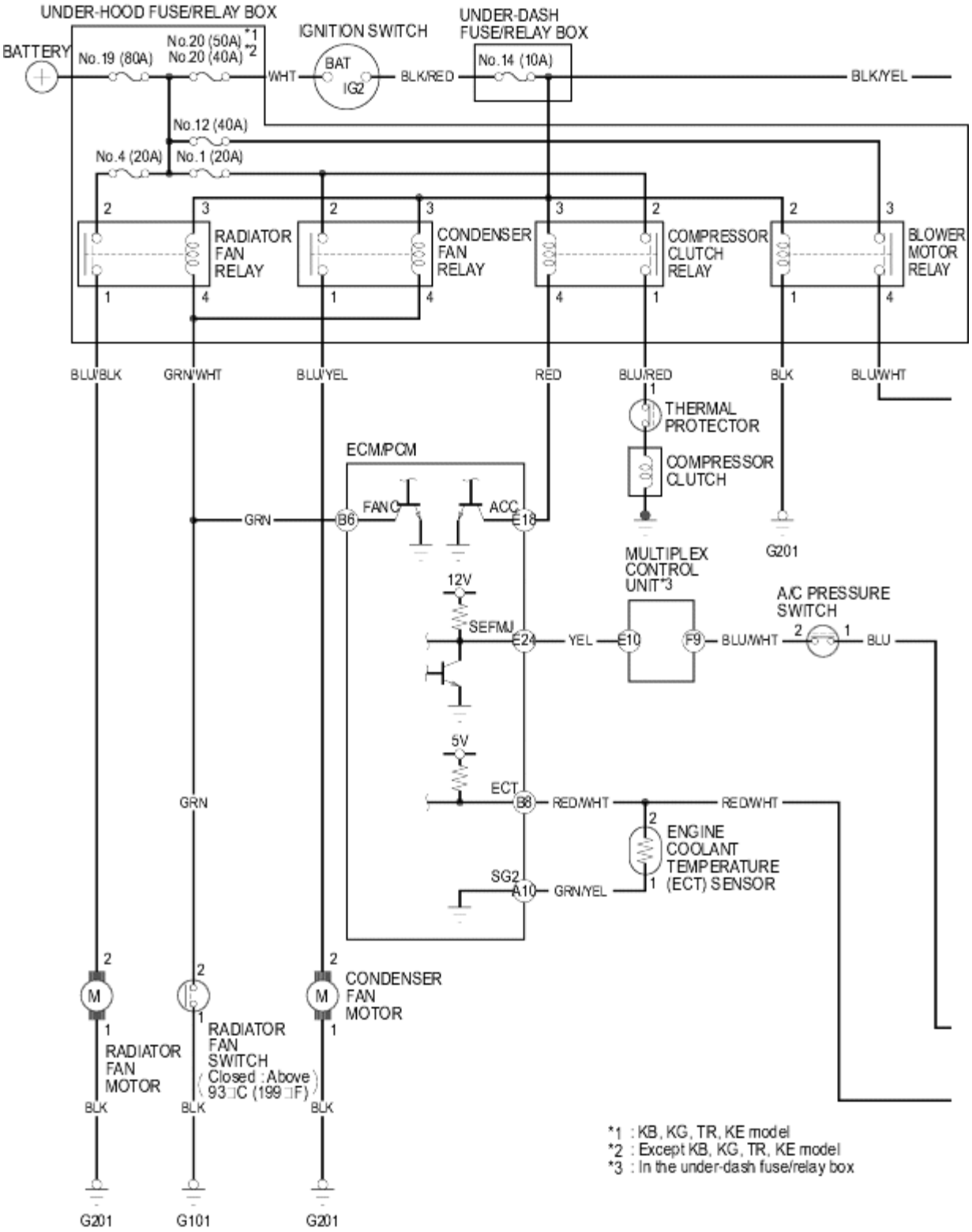
CONNECTOR B (■ on Circuit Diagram)

Cavity	Wire colour	Signal	
1	-	-	-
2	-	-	-
3	BLK/RED	REAR WINDOW DEFOGGER SWITCH LED	INPUT
4	LT GRN	A/C SWITCH LED	INPUT
5	LT GRN/BLK	RECIRCULATION CONTROL SWITCH LED	INPUT
6	PNK/BLK	AIR MIX POTENTIAL	OUTPUT
7 (With A/C)	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
8	-	-	-
9	-	-	-
10	-	-	-
11	RED	GAUGE ASSEMBLY or UNDER-DASH FUSE/RELAY BOX	OUTPUT
12	RED/BLK	TAILLIGHTS RELAY	INPUT
13	-	-	-
14	BLU	REAR WINDOW DEFOGGER SWITCH	INPUT
15	LT GRN/RED	A/C SWITCH	INPUT
16	YEL/RED	RECIRCULATION CONTROL SWITCH	INPUT
17	YEL/GRN	MODE 4	OUTPUT
18	WHT/BLU	MODE 3	OUTPUT
19	RED/BLU	MODE 2	OUTPUT

20	RED/YEL	MODE 1	OUTPUT
21	BRN/WHT	IGN (Power)	OUTPUT
22	-	-	-

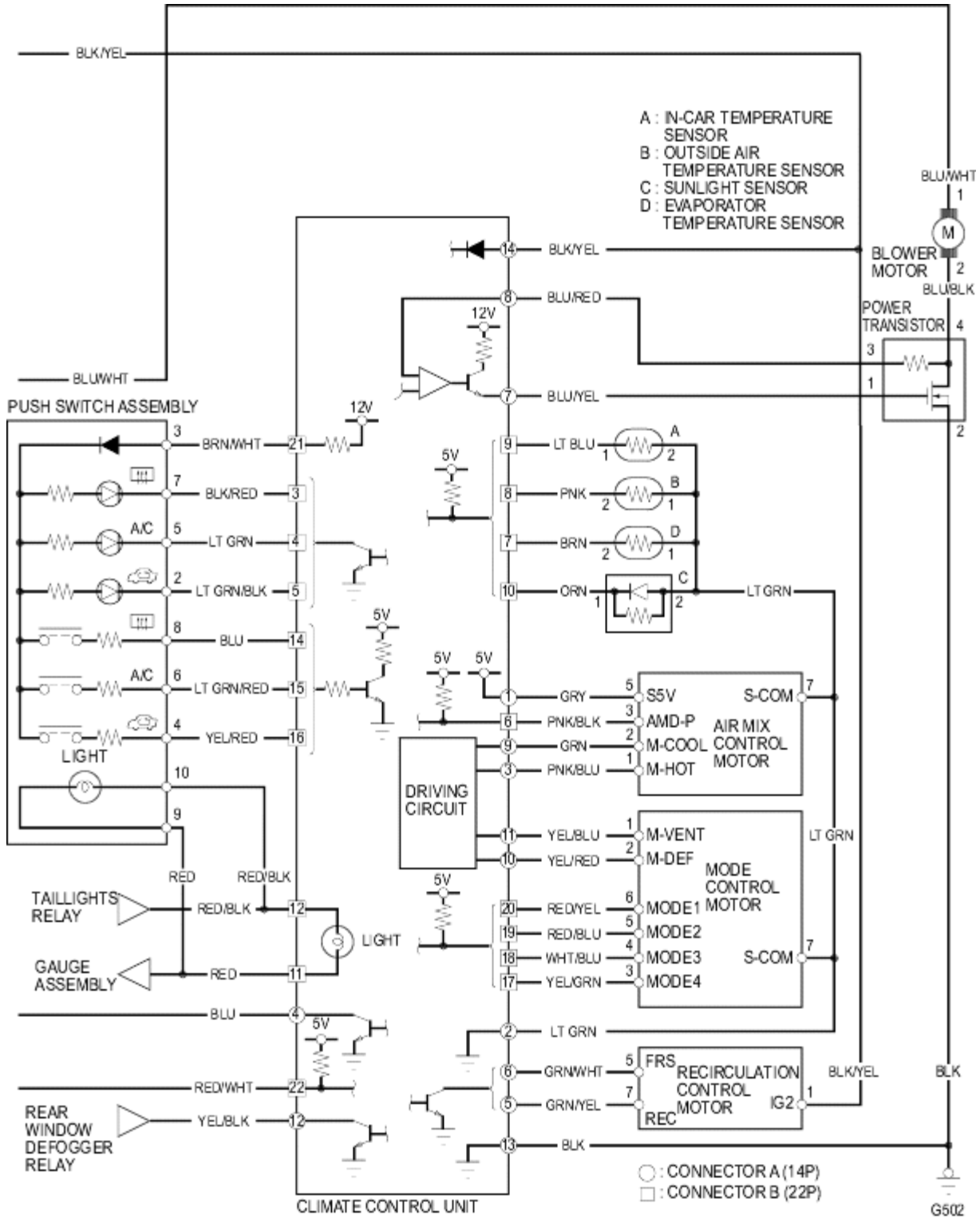
Climate Control
Circuit Diagram

4-door



Climate Control

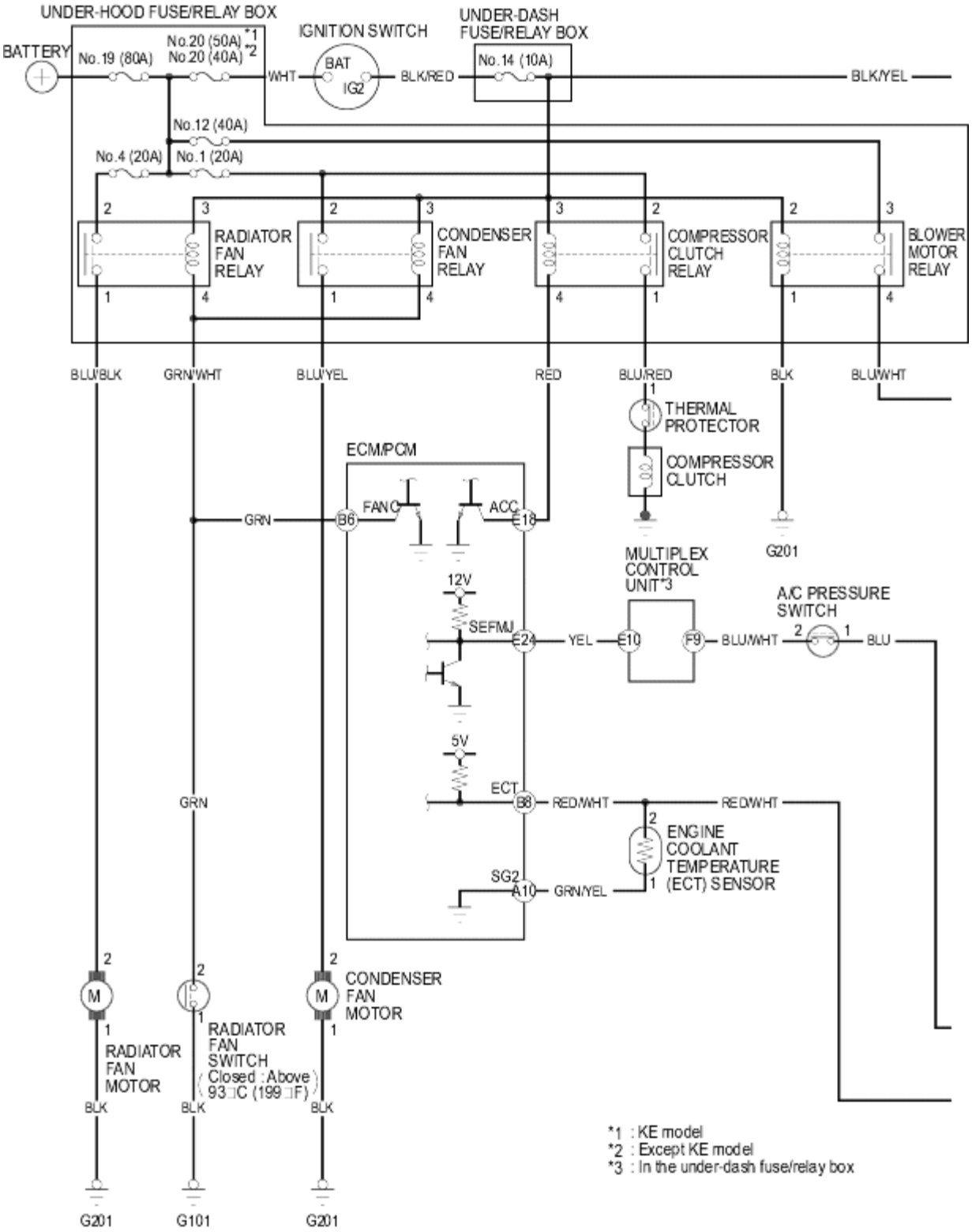
Circuit Diagram (cont'd)



Climate Control

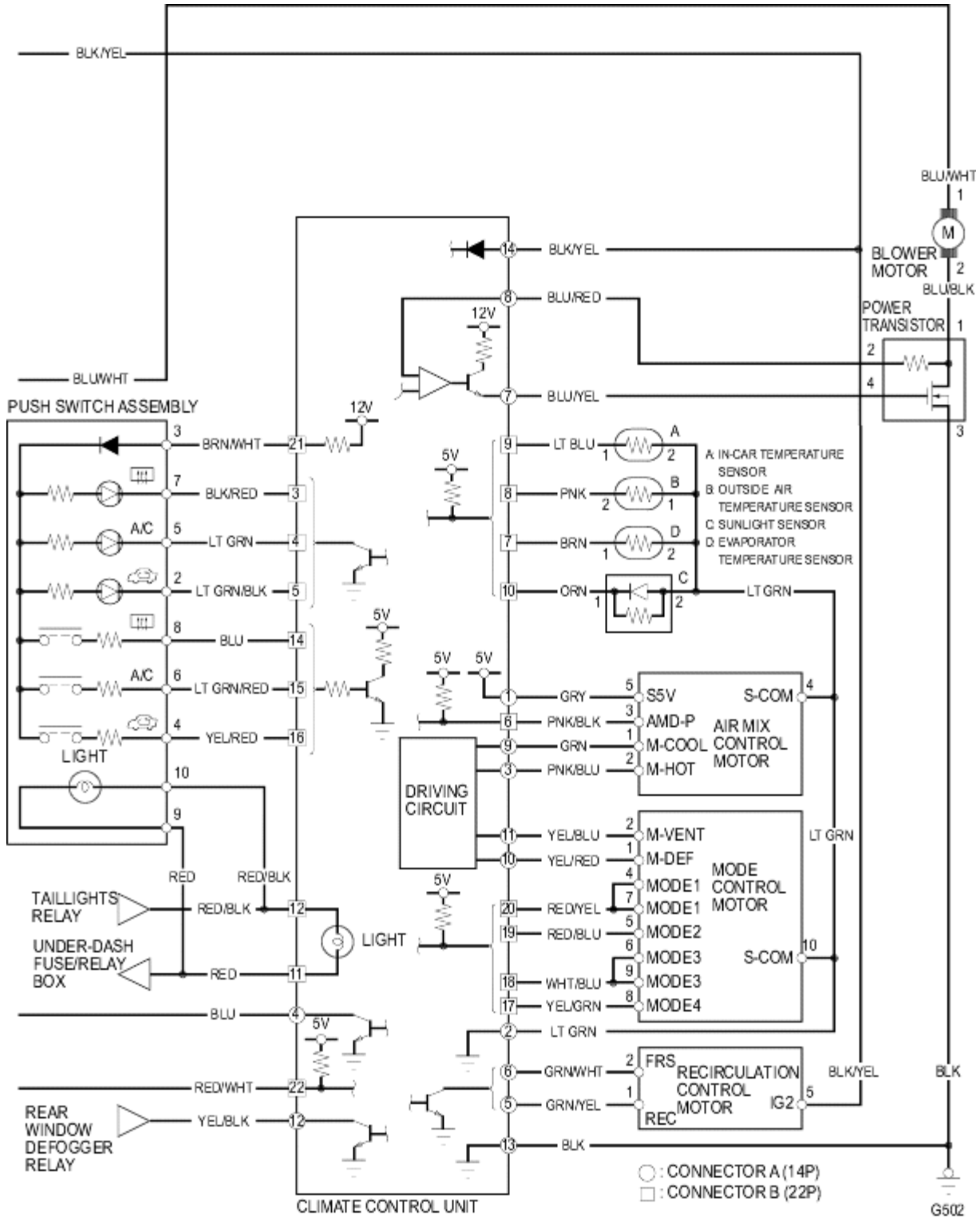
Circuit Diagram (cont'd)

5-door



Climate Control

Circuit Diagram (cont'd)

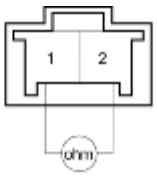


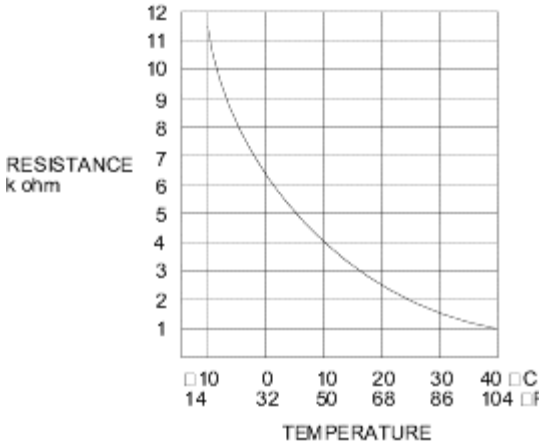
4-door

DTC 1: An Open in the In-car Temperature Sensor Circuit

1. 1. Remove the in-car temperature sensor (see page 21-149).
   2. Measure the resistance between the No. 1 and No. 2 terminals of the in-car temperature sensor.
      *Check for change in resistance by heating or cooling the sensor with a hair drier.

IN-CAR TEMPERATURE SENSOR





Is the resistance within the specifications shown on the graph?

YES -Go to step 3.

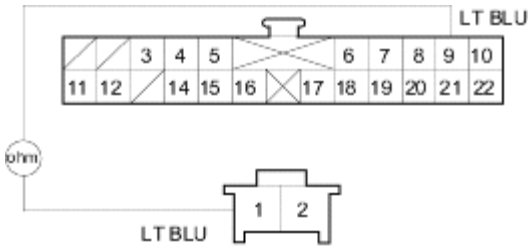
NO - Replace the in-car temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).

1. 4. Check for continuity between the No. 9 terminal of climate control unit connector B (22P) and the No. 1 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

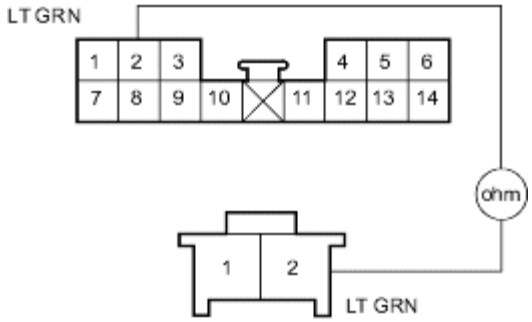
YES - Go to step 5.

NO -Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

2. 5. Disconnect climate control unit connector A (14P).
   6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 2 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO -Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

Climate Control
DTC Troubleshooting (cont'd)

4-door

DTC 2: A Short in the In-car Temperature Sensor Circuit

1. 1. Remove the in-car temperature sensor (see page 21-149).
   2. Test the in-car temperature sensor (see page 21-150).

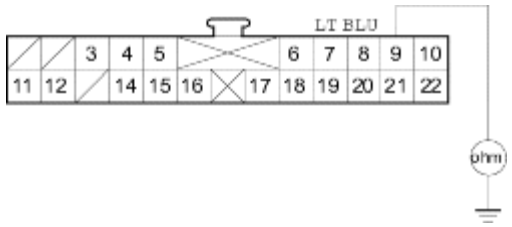
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the in-car temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 9 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

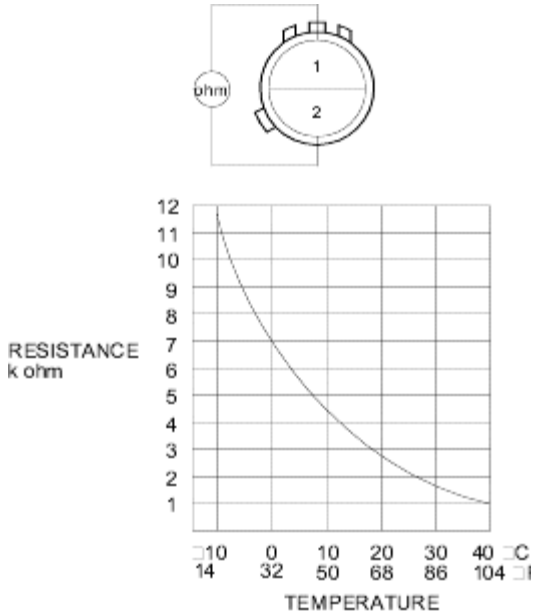
NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

4-door

DTC 3: An Open in the Outside Air Temperature Sensor Circuit

1. 1. Remove the outside air temperature sensor (see page 21-150).
   2. Measure the resistance between the No. 1 and No. 2 terminals of the outside air temperature sensor. *Dip the sensor in ice water and measure resistance. Then pour hot water on the sensor and check for change in resistance.

OUTSIDE AIR TEMPERATURE SENSOR



**Is the resistance within the specifications shown on the graph?*

YES - Go to step 3.

NO - Replace the outside air temperature sensor. ■

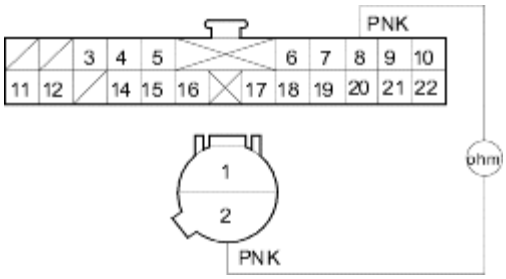
2. 3. Disconnect climate control unit connector B (22P).

Climate Control
DTC Troubleshooting (cont'd)

1. 4. Check for continuity between the No. 8 terminal of climate control unit connector B (22P) and the No. 2 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

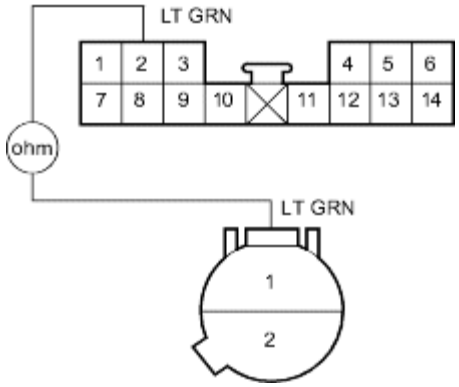
NO - Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

2. 5. Disconnect climate control unit connector A (14P).

1. 6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 1 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

4-door

DTC 4: A Short in the Outside Air Temperature Sensor Circuit

1. 1. Remove the outside air temperature sensor (see page 21-150).
   2. Test the outside air temperature sensor (see page 21-151).

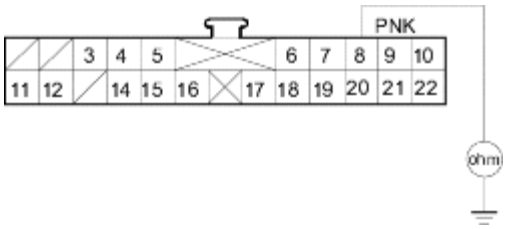
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the outside air temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 8 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the outside air temperature sensor. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

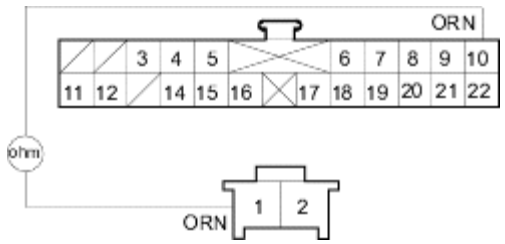
4-door

DTC 5: An Open in the Sunlight Sensor Circuit

1. 1. Disconnect the sunlight sensor 2P connector.
   2. Disconnect climate control unit connector B (22P).
   3. Check for continuity between the No. 10 terminal of climate control unit connector B (22P) and the No. 1 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 4.

NO - Repair open in the wire between the climate control unit and the sunlight sensor. ■

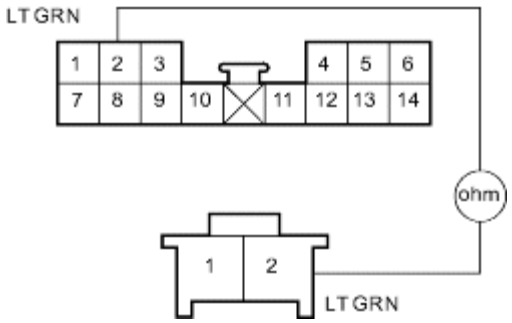
2. 4. Disconnect climate control unit connector A (14P).

Climate Control
DTC Troubleshooting (cont'd)

1. 5. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 2 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 6.

NO - Repair open in the wire between the climate control unit and the sunlight sensor. ■

2. 6. Reconnect the sunlight sensor 2P connector.
   7. Reconnect climate control unit connectors A (14P) and B (22P).
   8. Test the sunlight sensor (see page 21-152).

Is the sunlight sensor OK?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

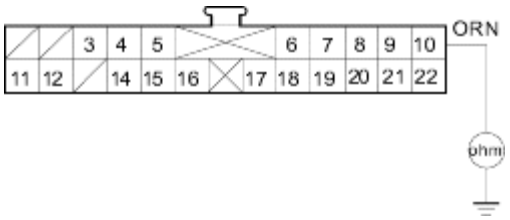
NO - Replace the sunlight sensor. ■

4-door

DTC 6: A Short in the Sunlight Sensor Circuit

1. 1. Disconnect the sunlight sensor 2P connector.
   2. Disconnect climate control unit connector B (22P).
   3. Check for continuity between the No. 10 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO - Go to step 4.

2. 4. Reconnect the sunlight sensor 2P connector.
   5. Reconnect climate control unit connector B (22P).
   6. Test the sunlight sensor (see page 21-152).

Is the sunlight sensor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Replace the sunlight sensor. ■

Climate Control
DTC Troubleshooting (cont'd)

4-door

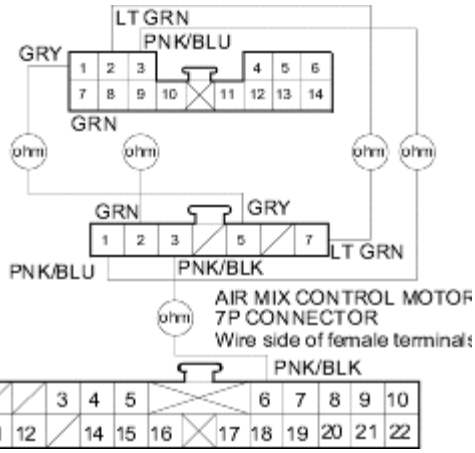
DTC 7: An Open in the Air Mix Control Motor Circuit

1. 1. Disconnect the air mix control motor 7P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between following terminals of climate control unit connectors A (14P) and B (22P) and the air mix control motor 7P connector.

14P:	7P:
No. 1	No. 5
No. 2	No. 7
No. 3	No. 1
No. 9	No. 2
22P:	7P:
No. 6	No. 3

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the air mix control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

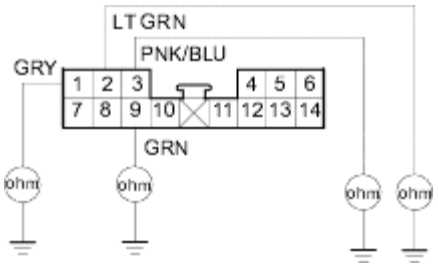
NO - Repair any open in he wire(s) between the climate control unit and the air mix control motor. ■

4-door

DTC 8: A Short in the Air Mix Control Motor Circuit

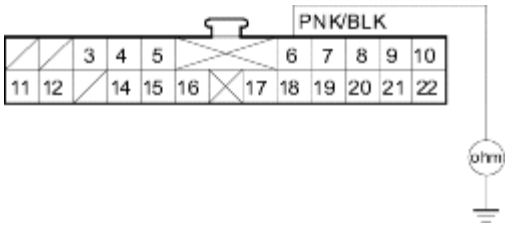
1. 1. Disconnect the air mix control motor 7P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between body ground and climate control unit connector A (14P) terminals No. 1, 2, 3 and 9 individually and between body ground and climate control unit connector B (22P) terminals No. 6.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminal

Is there continuity?

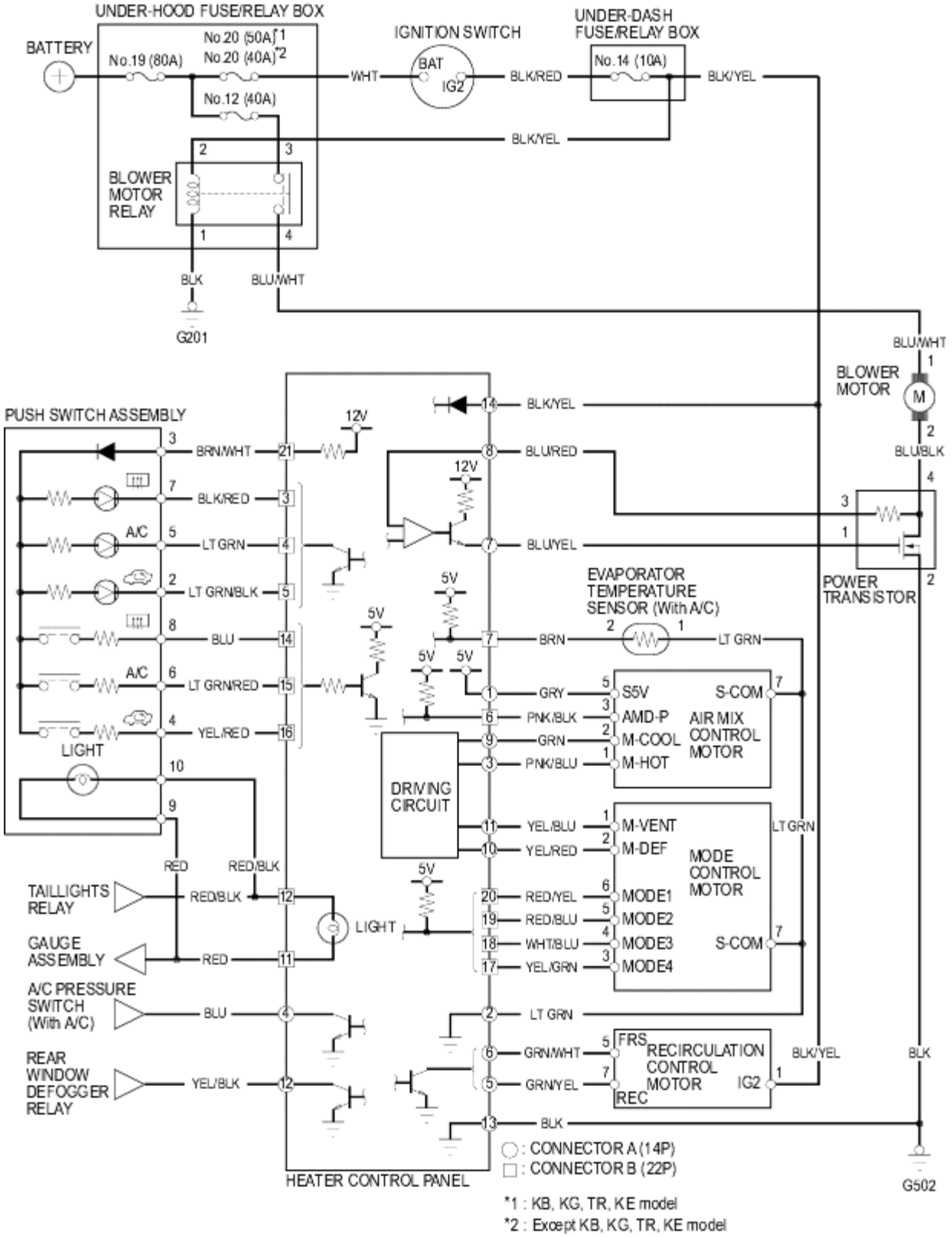
YES - Repair any short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO - Go to step 4.

Heating

Circuit Diagram

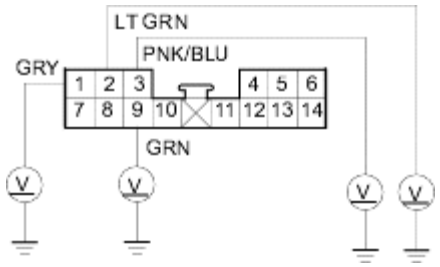
4-door



Climate Control
DTC Troubleshooting (cont'd)

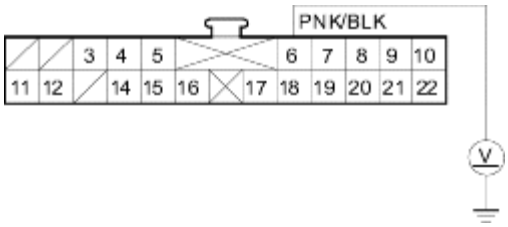
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the air mix control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

4-door

DTC 9: A Problem in the Air Mix Control Linkage, Door or Motor

1. 1. Test the air mix control motor (see page 21-44).

Is the air mix control motor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Go to step 2.

2. 2. Remove the air mix control motor (see page 21-44).
3. Check the air mix control linkage and door for smooth movement.

Do the air mix control linkage and door move smoothly?

YES - Replace the air mix control motor. ■

NO - Repair the air mix control linkage or door. ■

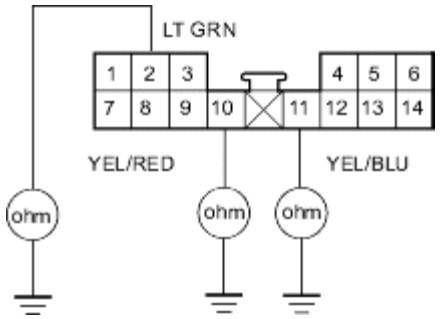
Climate Control
DTC Troubleshooting (cont'd)

4-door

DTC 10: An Open or Short in the Mode Control Motor Circuit

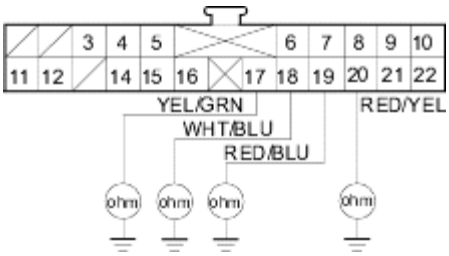
1. 1. Disconnect the mode control motor 7P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between body ground and climate control unit connector A (14P) terminals No. 2, 10 and 11 individually and between body ground and climate control unit connector B (22P) terminals No. 17, 18, 19 and 20 individually.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

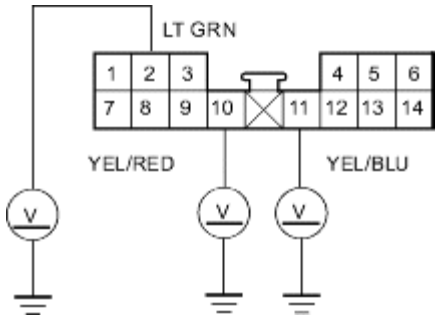
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO - Go to step 4.

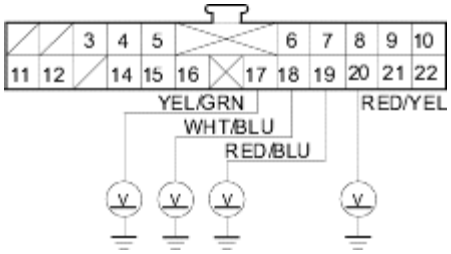
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the mode control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Go to step 5.

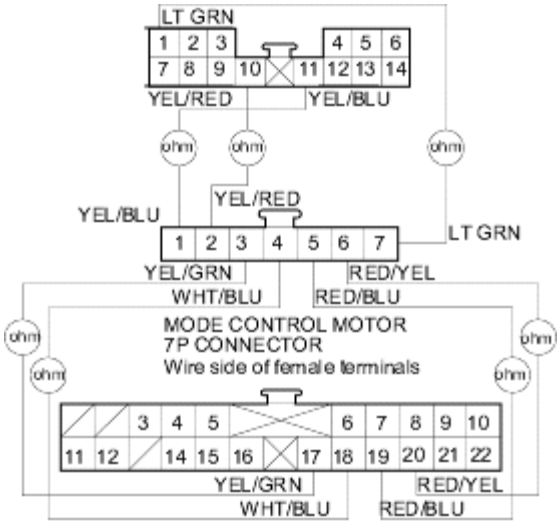
Climate Control
DTC Troubleshooting (cont'd)

1. 5. Turn the ignition switch OFF and check for continuity between following terminals of climate control unit connectors A (14P) and B (22P) and the mode control motor 7P connector.

14P:	7P:
No. 2	No. 7
No. 10	No. 2
No. 11	No. 1
22P:	7P:
No. 17	No. 3
No. 18	No. 4
No. 19	No. 5
No. 20	No. 6

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the mode control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair any open in the wire(s) between the climate control unit and the mode control motor. ■

4-door

DTC 11: A Problem in the Mode Control Linkage, Doors or Motor

1. 1. Test the mode control motor (see page 21-46).

Is the mode control motor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Go to step 2.

2. 2. Remove the mode control motor (see page 21-46).
3. Check the mode control linkage and doors for smooth movement.

Do the mode control linkage and doors move smoothly?

YES - Replace the mode control motor. ■

NO - Repair the mode control linkage or doors. ■

Climate Control
DTC Troubleshooting (cont'd)

4-door

DTC 12: A Problem in the Blower Motor Circuit

1. 1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

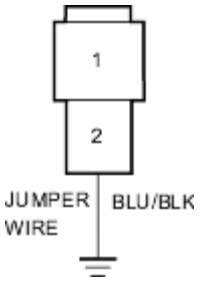
Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminal

3. 3. Turn the ignition switch ON (II).

Does the blower motor run?

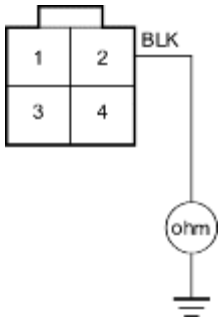
YES - Go to step 4.

NO - Go to step 17.

4. 4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.

1. 7. Check for continuity between the No. 2 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

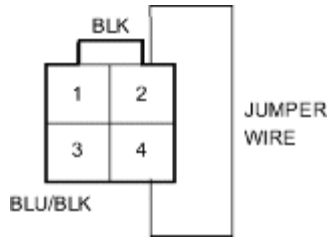
Is there continuity?

YES - Go to step 8.

NO - Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G502. ■

2. 8. Connect the No. 2 and No. 4 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

3. 9. Turn the ignition switch ON (II).

Does the blower motor run at high speed?

YES - Go to step 10.

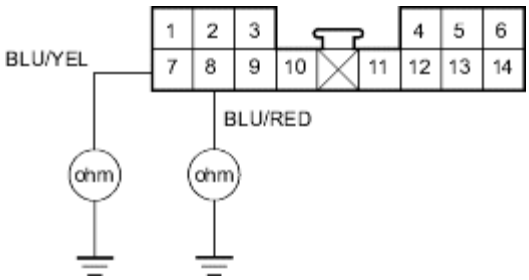
NO - Repair open in the wire between the power transistor and the blower motor. ■

4. 10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

Climate Control
DTC Troubleshooting (cont'd)

1. 12. Disconnect climate control unit connector A (14P).
2. 13. Check for continuity between the No. 7 and No. 8 terminals of climate control unit connector A (14P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTION A (14P)



Wire side of female terminals

Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the power transistor. ■

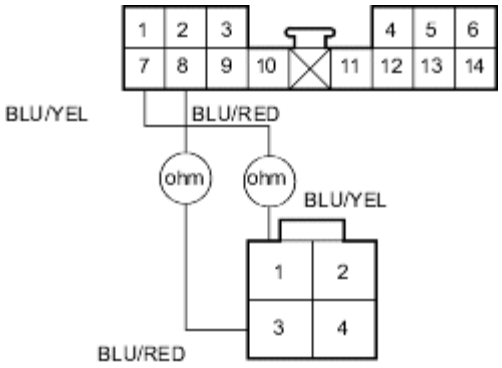
NO - Go to step 14.

3. 14. Check for continuity between the following terminals of climate control unit connector A (14P) and power transistor 4P connector.

14P:	4P:
No. 7	No. 1
No. 8	No. 3

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 15.

NO - Repair any open in the wire(s) between the climate control unit and the power transistor. ■

1. 15. Reconnect climate control unit connector A (14 P).
2. 16. Test the power transistor (see page 21-50).

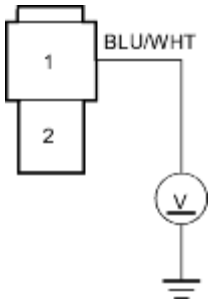
Is the power transistor OK?

YES - Check for loose wires or poor connections at climate control unit connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Replace the power transistor. ■

3. 17. Disconnect the jumper wire.
   18. Disconnect the blower motor 2P connector.
   19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the blower motor. ■

NO - Go to step 20.

4. 20. Turn the ignition switch OFF.
   21. Remove the blower motor relay from the under-hood fuse/relay box and test it (see page 22-80).

Is there relay OK?

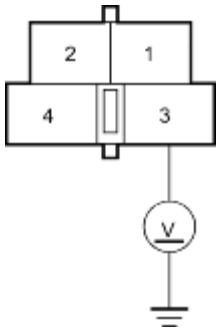
YES - Go to step 22.

NO - Replace the blower motor relay. ■

Climate Control
DTC Troubleshooting (cont'd)

1. 22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



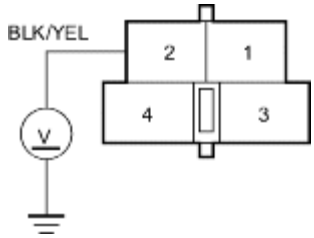
Is there battery voltage?

YES - Go to step 23.

NO - Replace the under-hood fuse/relay box. ■

2. 23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



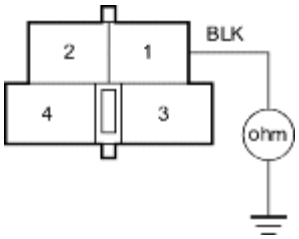
Is there battery voltage?

YES - Go to step 25.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

1. 25. Turn the ignition switch OFF.
26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES - Repair open in the wire between the blower motor relay and the blower motor. ■

NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■

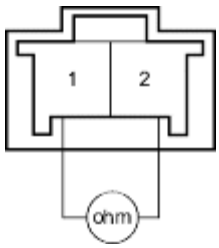
Climate Control
DTC Troubleshooting (cont'd)

4-door

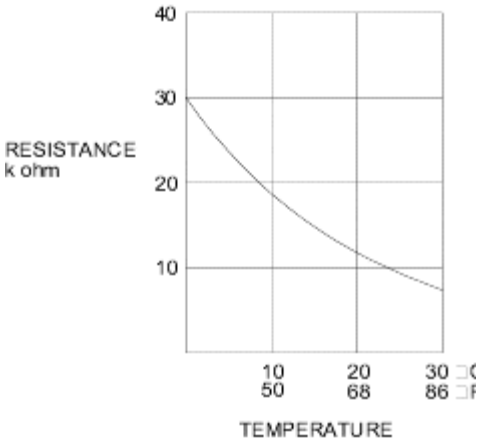
DTC 14: An Open in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

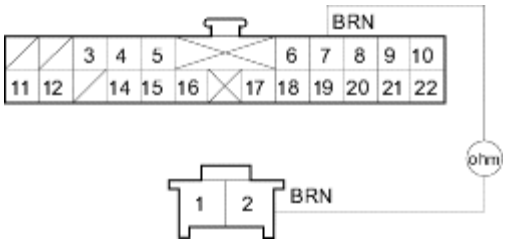
NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).

1. 4. Check for continuity between the No. 7 terminal of climate control unit connector B (22P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

NO - Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

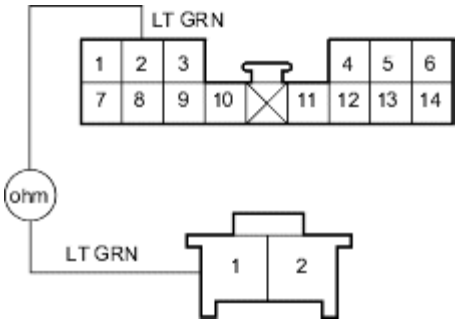
2. 5. Disconnect climate control unit connector A (14P).

Climate Control
DTC Troubleshooting (cont'd)

1. 6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

4-door

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Test the evaporator temperature sensor (see step 2 on page 21-126).

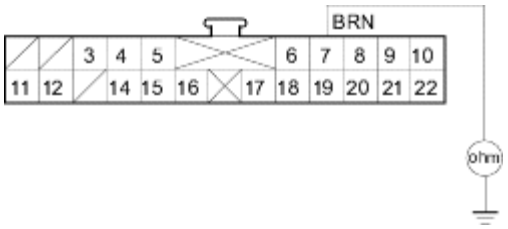
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 7 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the evaporator temperature sensor. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

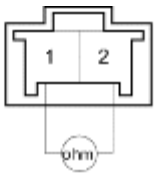
Climate Control
DTC Troubleshooting (cont'd)

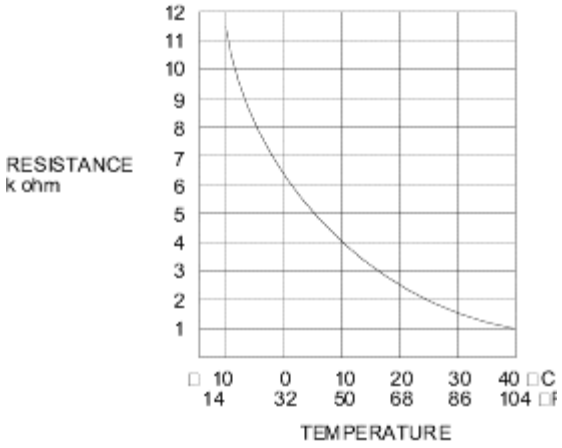
5-door

DTC 1: An Open in the In-car Temperature Sensor Circuit

1. 1. Remove the in-car temperature sensor (see page 21-149).
   2. Measure the resistance between the No. 1 and No. 2 terminals of the in-car temperature sensor.
      *Check for change in resistance by heating or cooling the sensor with a hair drier.

IN-CAR TEMPERATURE SENSOR





**Is the resistance within the specifications shown on the graph?*

YES - Go to step 3.

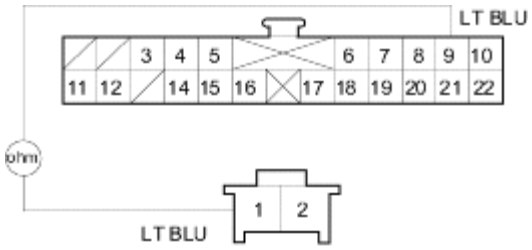
NO - Replace the in-car temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).

1. 4. Check for continuity between the No. 9 terminal of climate control unit connector B (22P) and the No. 1 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

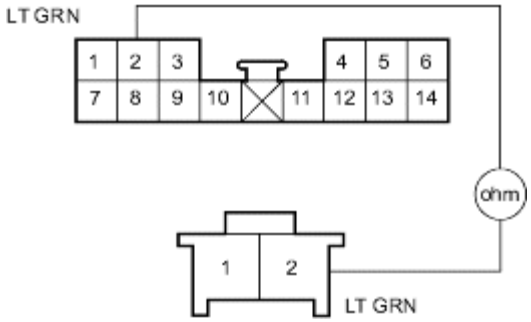
YES - Go to step 5.

NO - Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

2. 5. Disconnect climate control unit connector A (14P).
   6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 2 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL CONNECTOR A (14P)

Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

Climate Control
DTC Troubleshooting (cont'd)

5-door

DTC 2: A Short in the In-car Temperature Sensor Circuit

1. 1. Remove the in-car temperature sensor (see page 21-149).
   2. Test the in-car temperature sensor (see page 21-150).

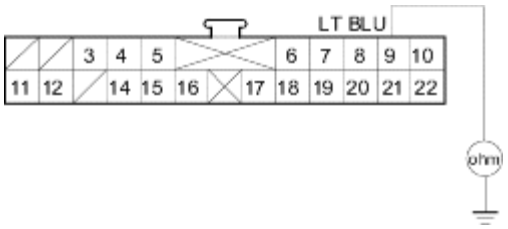
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the in-car temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 9 terminal of the climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

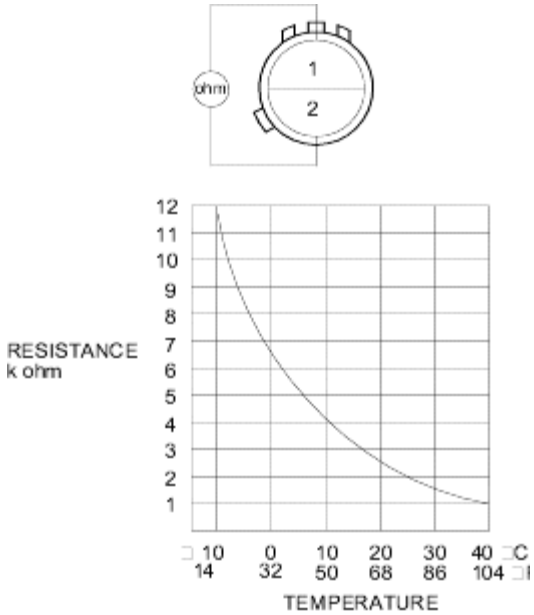
NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

5-door

DTC 3: An Open in the Outside Air Temperature Sensor Circuit

1. 1. Remove the outside air temperature sensor (see page 21-151).
   2. Measure the resistance between the No. 1 and No. 2 terminals of the outside air temperature sensor.
      *Dip the sensor in ice water and measure resistance. Then pour hot water on the sensor and check for change in resistance.

OUTSIDE AIR TEMPERATURE SENSOR



**Is the resistance within the specifications shown on the graph?*

YES - Go to step 3.

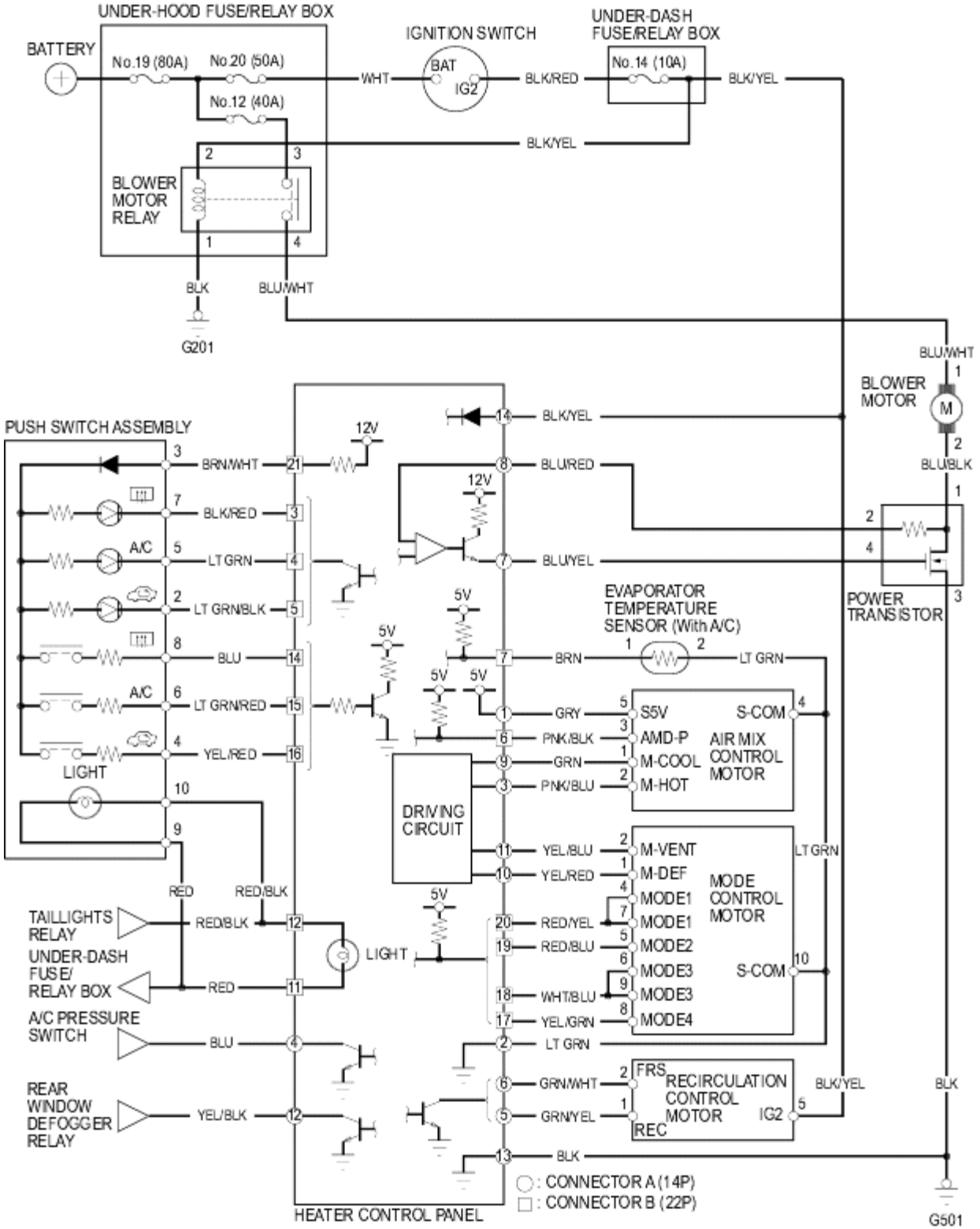
NO - Replace the outside air temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).

Heating

Circuit Diagram (cont'd)

5-door KE Model

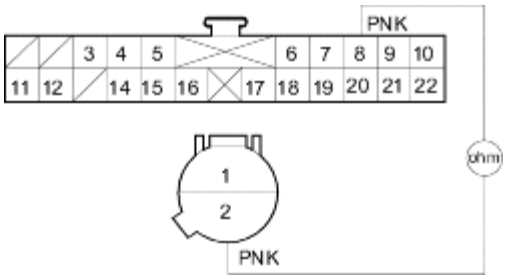


Climate Control
DTC Troubleshooting (cont'd)

1. 4. Check for continuity between the No. 8 terminal of climate control unit connector B (22P) and the No. 2 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

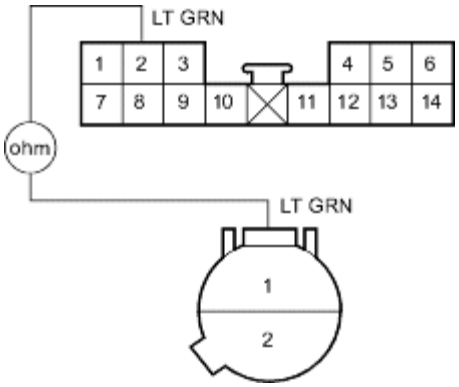
NO - Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

2. 5. Disconnect climate control unit connector A (14P).

1. 6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 1 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

Climate Control
DTC Troubleshooting (cont'd)

5-door

DTC 4: A Short in the Outside Air Temperature Sensor Circuit

1. 1. Remove the outside air temperature sensor (see page 21-151).
   2. Test the outside air temperature sensor (see page 21-151).

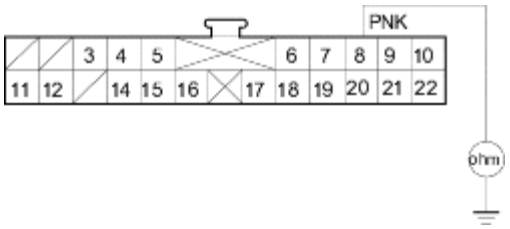
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the outside air temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 8 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the outside air temperature sensor. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

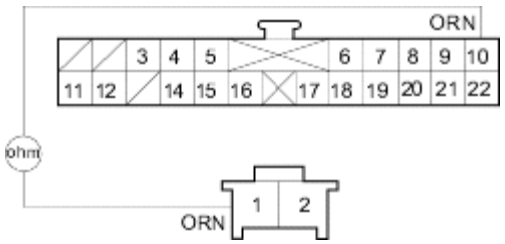
5-door

DTC 5: An Open in the Sunlight Sensor Circuit

1. 1. Disconnect the sunlight sensor 2P connector.
   2. Disconnect climate control unit connector B (22P).
   3. Check for continuity between the No. 10 terminal of climate control unit connector B (22P) and the No. 1 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 4.

NO - Repair open in the wire between the climate control unit and the sunlight sensor. ■

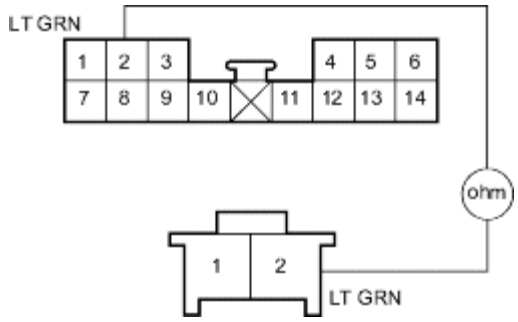
2. 4. Disconnect climate control unit connector A (14P).

Climate Control
DTC Troubleshooting (cont'd)

1. 5. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 2 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

NO - Repair open in the wire between the climate control unit and the sunlight sensor. ■

2. 6. Reconnect the sunlight sensor 2P connector.
7. Reconnect climate control unit connectors A (14P) and B (22P).
8. Test the sunlight sensor (see page 21-152).

Is the sunlight sensor OK?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

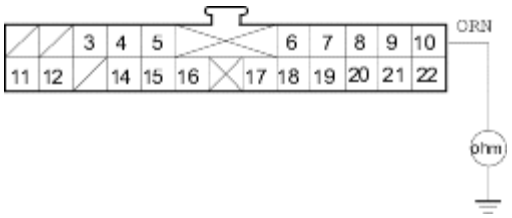
NO - Replace the sunlight sensor. ■

5-door

DTC 6: A Short in the Sunlight Sensor Circuit

1. 1. Disconnect the sunlight sensor 2P connector.
2. Disconnect climate control unit connector B (22P).
3. Check for continuity between the No. 10 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO - Go to step 4.

2. 4. Reconnect the sunlight sensor 2P connector.
5. Reconnect climate control unit connector B (22P).
6. Test the sunlight sensor (see page 21-152).

Is the sunlight sensor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Replace the sunlight sensor. ■

Climate Control
DTC Troubleshooting (cont'd)

5-door

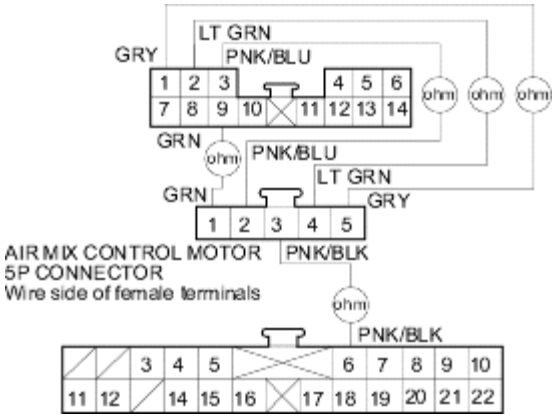
DTC 7: An Open in the Air Mix Control Motor Circuit

1. 1. Disconnect the air mix control motor 5P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between following terminals of climate control unit connectors A (14P) and B (22P) and the air mix control motor 5P connector.

14P:	5P:
No. 1	No. 5
No. 2	No. 4
No. 3	No. 2
No. 9	No. 1
22P:	5P:
No. 6	No. 3

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the air mix control motor 5P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

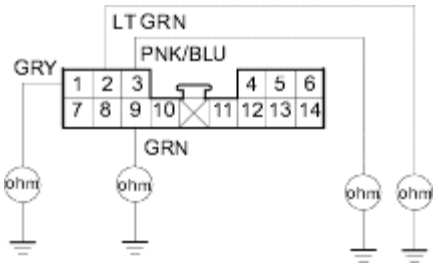
NO - Repair any open in the wire(s) between the climate control unit and the air mix control motor. ■

5-door

DTC 8: A Short in the Air Mix Control Motor Circuit

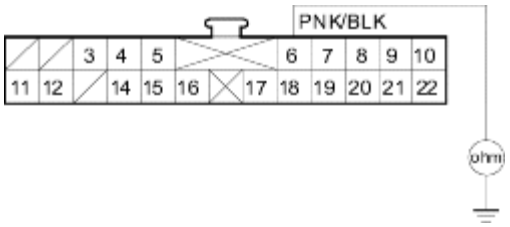
1. 1. Disconnect the air mix control motor 5P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between body ground and climate control unit connector A (14P) terminals No. 1, 2, 3 and 9 individually and between body ground and climate control unit connector B (22P) terminal No. 6.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

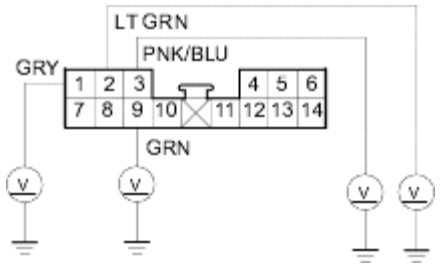
YES - Repair any short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO - Go to step 4.

Climate Control
DTC Troubleshooting (cont'd)

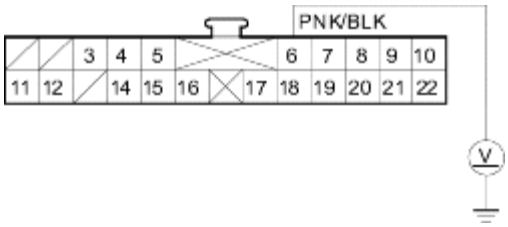
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the air mix control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

5-door

DTC 9: A Problem in the Air Mix Control Linkage, Door or Motor

1. 1. Test the air mix control motor (see page 21-45).

Is the air mix control motor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Go to step 2.

2. 2. Remove the air mix control motor (see page 21-45).
3. Check the air mix control linkage and door for smooth movement.

Do the air mix control linkage and door move smoothly?

YES - Replace the air mix control motor. ■

NO - Repair the air mix control linkage or door. ■

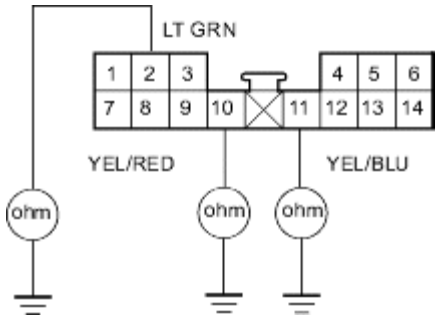
Climate Control
DTC Troubleshooting (cont'd)

5-door

DTC 10: An Open or Short in the Mode Control Motor Circuit

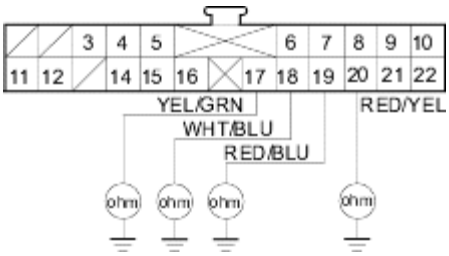
1. 1. Disconnect the mode control motor 10P connector.
   2. Disconnect climate control unit connectors A (14P) and B (22P).
   3. Check for continuity between body ground and climate control unit connector A (14P) terminals No. 2, 10 and 11 individually and between body ground and climate control unit connector B (22P) terminals No. 17, 18, 19 and 20 individually.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

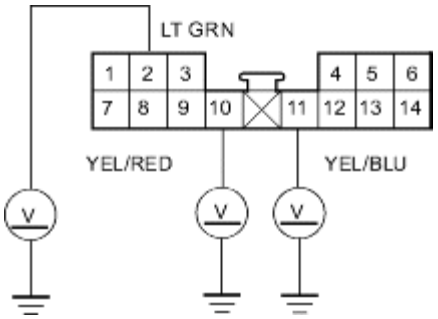
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO - Go to step 4.

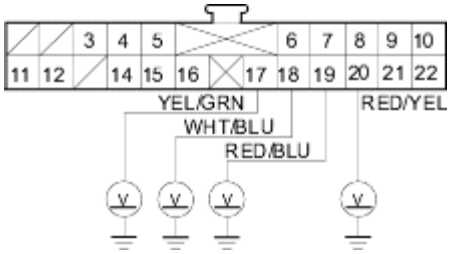
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the mode control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Go to step 5.

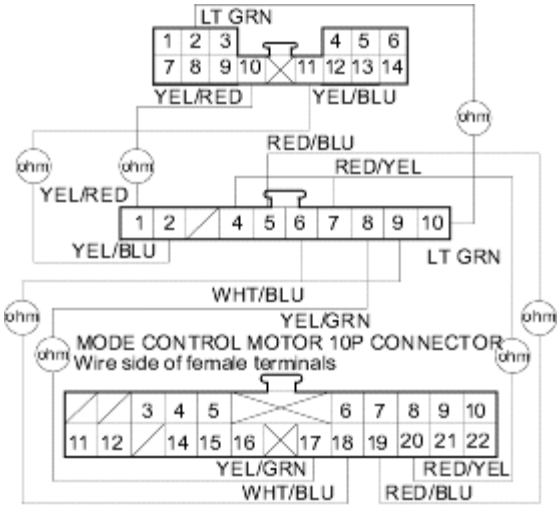
Climate Control
DTC Troubleshooting (cont'd)

1. 5. Turn the ignition switch OFF and check for continuity between following terminals of climate control unit connectors A (14P) and B (22P) and the mode control motor 10P connector.

14P:	10P:
No. 2	No. 10
No. 10	No. 1
No. 11	No. 2
22P:	10P:
No. 17	No. 8
No. 18	No. 6, 9
No. 19	No. 5
No. 20	No. 4, 7

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the mode control motor 10P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair any open in the wire(s) between the climate control unit and the mode control motor. ■

5-door

DTC 11: A Problem in the Mode Control Linkage, Doors or Motor

1. 1. Test the mode control motor (see page 21-47).

Is the mode control motor OK?

YES - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Go to step 2.

2. 2. Remove the mode control motor (see page 21-47).
3. Check the mode control linkage and doors for smooth movement.

Do the mode control linkage and doors move smoothly?

YES - Replace the mode control motor. ■

NO - Repair the mode control linkage or doors. ■

Climate Control
DTC Troubleshooting (cont'd)

5-door

DTC 12: A Problem in the Blower Motor Circuit

1. 1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

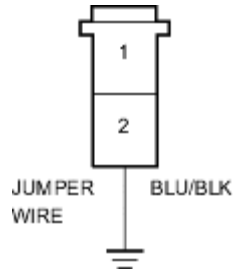
Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. 3. Turn the ignition switch ON (II).

Does the blower motor run?

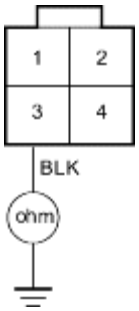
YES - Go to step 4.

NO - Go to step 17.

4. 4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.

1. 7. Check for continuity between the No. 3 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

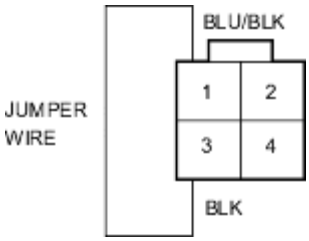
Is there continuity?

YES - Go to step 8.

NO - Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G501. ■

2. 8. Connect the No. 1 and No. 3 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

3. 9. Turn the ignition switch ON (II).

Does the blower motor run at high speed?

YES - Go to step 10.

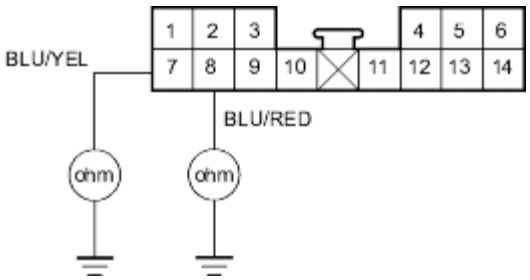
NO - Repair open in the wire between the power transistor and the blower motor. ■

4. 10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

Climate Control
DTC Troubleshooting (cont'd)

1. 12. Disconnect climate control unit connector A (14P).
2. 13. Check for continuity between the No. 7 and No. 8 terminals of climate control unit connector A (14P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the power transistor. ■

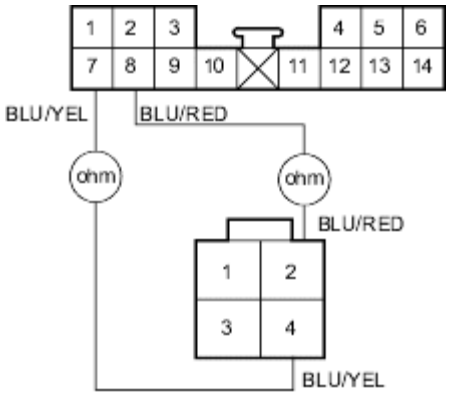
NO - Go to step 14.

3. 14. Check for continuity between the following terminals of climate control unit connector A (14P) and power transistor 4P connector.

14P:	4P:
No. 7	No. 4
No. 8	No. 2

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 15.

NO - Repair any open in the wire(s) between the climate control unit and the power transistor. ■

1. 15. Reconnect climate control unit connector A (14 P).
2. 16. Test the power transistor (see page 21-50).

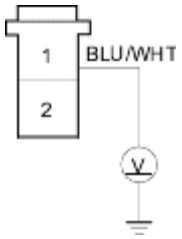
Is the power transistor OK?

YES - Check for loose wires or poor connections at climate control unit connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Replace the power transistor. ■

3. 17. Disconnect the jumper wire.
   18. Disconnect the blower motor 2P connector.
   19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the blower motor. ■

NO - Go to step 20.

4. 20. Turn the ignition switch OFF.
   21. Remove the blower motor relay from the under-hood fuse/relay box and test it (see page 22-80).

Is the relay OK?

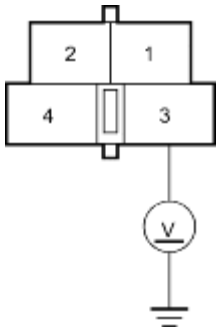
YES - Go to step 22.

NO - Replace the blower motor relay. ■

Climate Control
DTC Troubleshooting (cont'd)

1. 22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



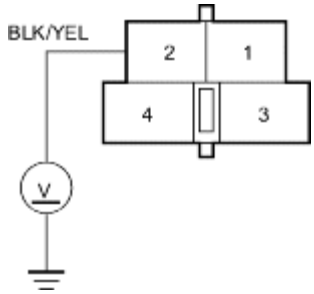
Is there battery voltage?

YES - Go to step 23.

NO - Replace the under-hood fuse/relay box. ■

2. 23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



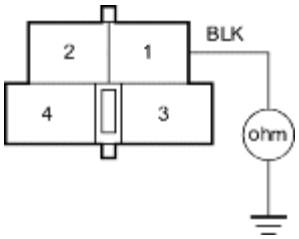
Is there battery voltage?

YES - Go to step 25.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

1. 25. Turn the ignition switch OFF.
2. 26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

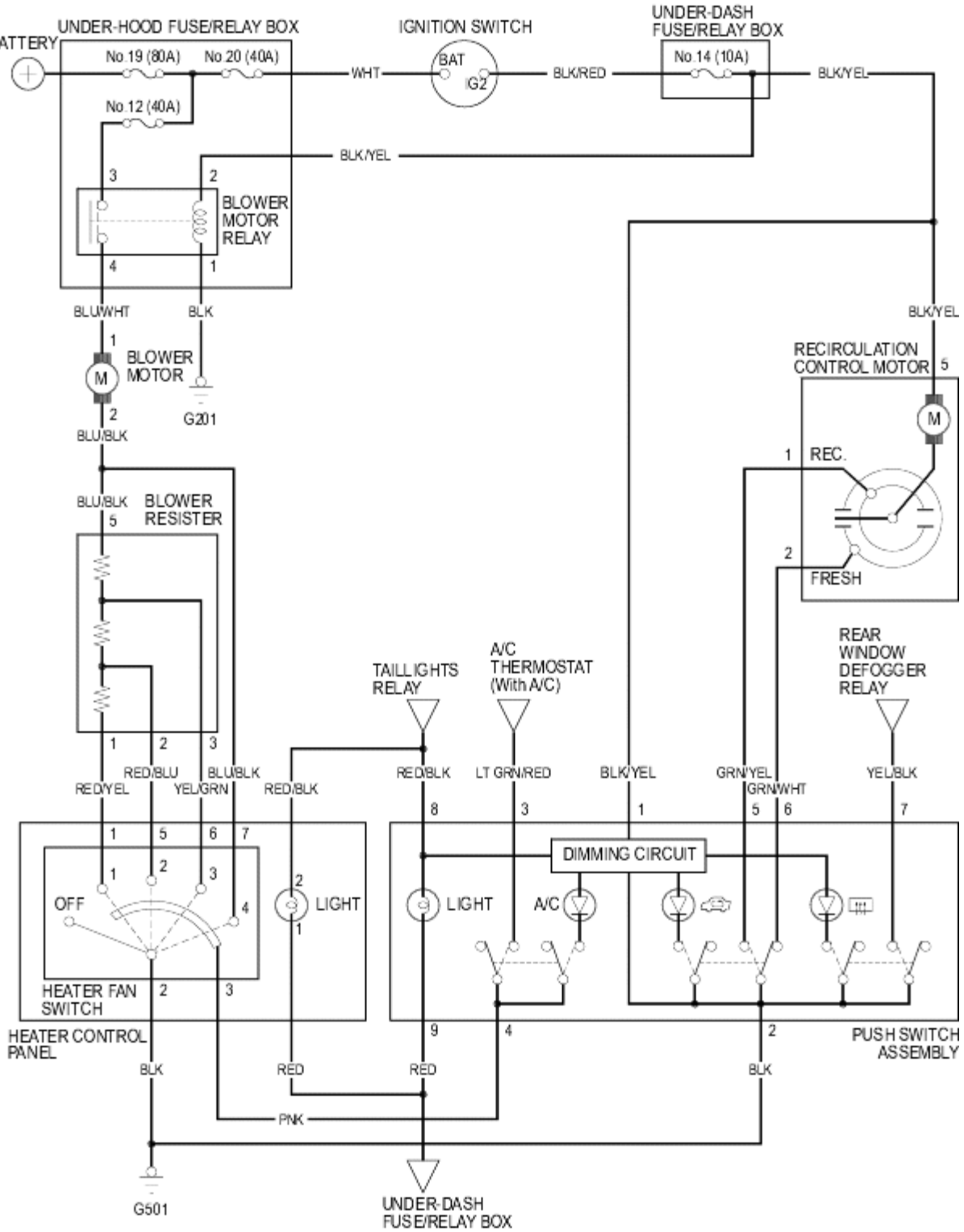
YES - Repair open in the wire between the blower motor relay and the blower motor. ■

NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■

Heating

Circuit Diagram (cont'd)

5-door Except KE Model



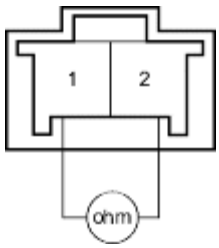
Climate Control
DTC Troubleshooting (cont'd)

5-door

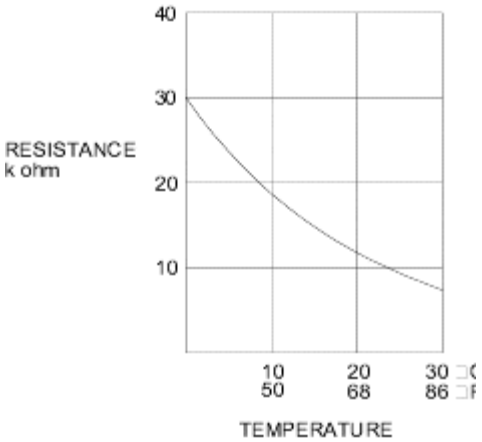
DTC 14: An Open in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

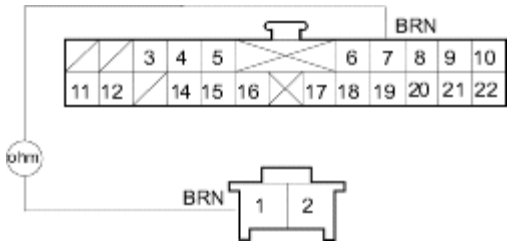
NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).

1. 4. Check for continuity between the No. 7 terminal of climate control unit connector B (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (22P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

NO - Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

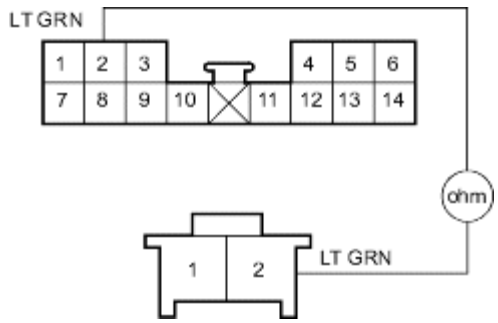
2. 5. Disconnect climate control unit connector A (14P).

Climate Control
DTC Troubleshooting (cont'd)

1. 6. Check for continuity between the No. 2 terminal of climate control unit connector A (14P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connectors A (14P) and B (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

5-door

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Test the evaporator temperature sensor (see step 2 on page 21-140).

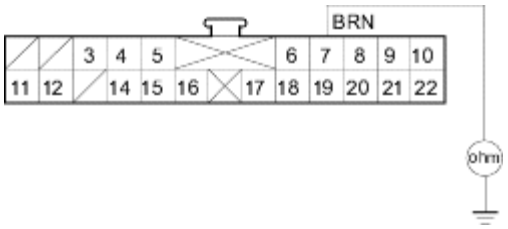
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect climate control unit connector B (22P).
   4. Check for continuity between the No. 7 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the climate control unit and the evaporator temperature sensor. ■

NO - Substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

Climate Control
DTC Troubleshooting (cont'd)

4-door

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

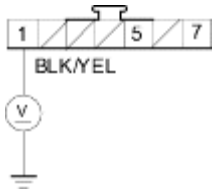
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the recirculation control motor 7P connector.
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between the No. 1 terminal of the recirculation control motor 7P connector and body ground.

RECIRCULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

3. 5. Turn the ignition switch OFF.
   6. Test the recirculation control motor (see page 21-48).

Is the recirculation control motor OK?

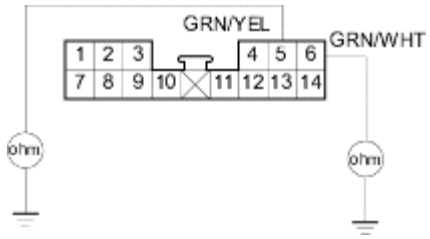
YES - Go to step 7.

NO - Go to step 12.

4. 7. Disconnect climate control unit connector A (14P).

1. 8. Check for continuity between the No. 5 and No. 6 terminals of climate control unit connector A (14P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

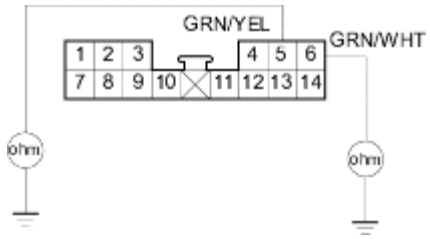
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch ON (II) and check the same wires for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the recirculation control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Go to step 10.

Climate Control

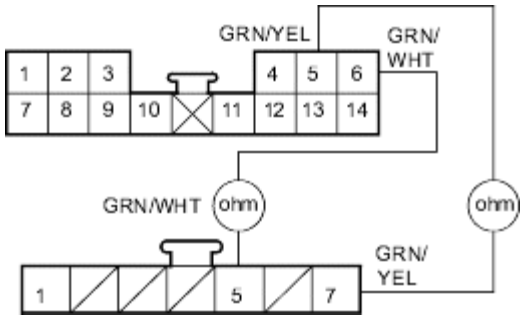
Recirculation Control Motor Circuit Troubleshooting (cont'd)

1. 10. Turn the ignition switch OFF.
2. 11. Check for continuity between the following terminals of climate control unit connector A (14P) and the recirculation control motor 7P connector.

14P:	7P:
No. 5	No. 7
No. 6	No. 5

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 5P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connector A (14P) and at recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair any open in the wire(s) between the climate control unit and the recirculation control motor. ■

1. 12. Remove the recirculation control motor (see page 21-48).
2. 13. Check the recirculation control linkage and doors for smooth movement.

Do the recirculation control linkage and doors move smoothly?

YES - Replace the recirculation control motor. ■

NO - Repair the recirculation control linkage or doors. ■

Climate Control

Recirculation Control Motor Circuit Troubleshooting (cont'd)

5-door

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

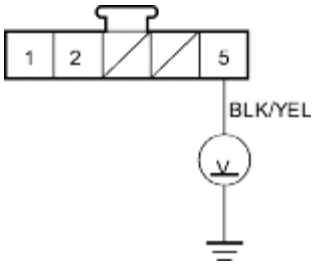
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 5 terminal of the recirculation control motor 5P connector and body ground.

RECIRCULATION CONTROL MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 3 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

3. 5. Turn the ignition switch OFF.
6. Test the recirculation control motor (see page 21-49).

Is the recirculation control motor OK?

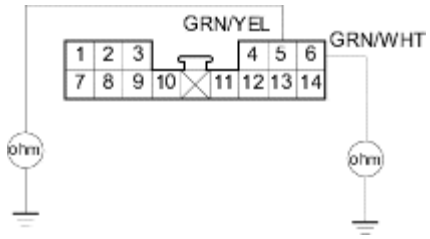
YES - Go to step 7.

NO - Go to step 12.

4. 7. Disconnect climate control unit connector A (14P).

1. 8. Check for continuity between the No. 5 and No. 6 terminals of climate control unit connector A (14P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

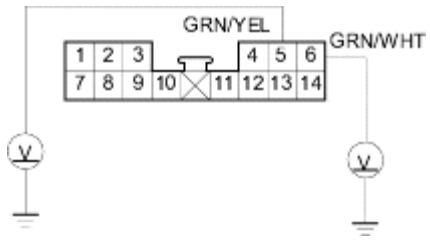
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch ON (II) and check the same wires for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the climate control unit and the recirculation control motor. This short also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO - Go to step 10.

Climate Control

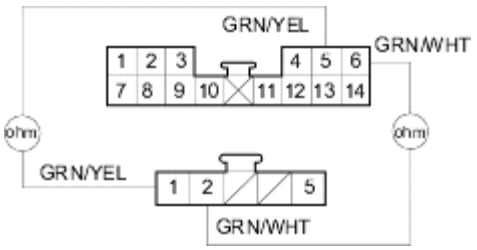
Recirculation Control Motor Circuit Troubleshooting (cont'd)

1. 10. Turn the ignition switch OFF.
2. 11. Check for continuity between the following terminals of climate control unit connector A (14P) and the recirculation control motor 5P connector.

14P:	5P:
No.	No.
5	1
No.	No.
6	2

CLIMATE CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 5P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at climate control unit connector A (14P) and at recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair any open in the wire(s) between the climate control unit and the recirculation control motor. ■

3. 12. Remove the recirculation control motor (see page 21-49).
   13. Check the recirculation control linkage and doors for smooth movement.

Do the recirculation control linkage and doors move smoothly?

YES - Replace the recirculation control motor. ■

NO - Repair the recirculation control linkage or doors. ■

1. 1. Check the malfunction indicator lamp (MIL).

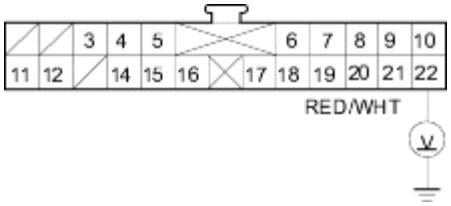
Does the malfunction indicator lamp come on?

YES - Refer to the fuel and emissions section (see page 11-3). ■

NO - Go to step 2.

2. 2. Turn the ignition switch OFF.
   3. Disconnect the ECT sensor 2P connector.
   4. Disconnect climate control unit connector B (22P).
   5. Turn the ignition switch ON (II).
   6. Measure the voltage between the No. 22 terminal of climate control unit connector B (22P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there about 5 V?

YES - Check for loose wires or poor connections at climate control unit connector B (22P) and at the ECT sensor 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO - Repair open in the wire between the climate control unit and the ECT sensor. ■

Climate Control

Climate Control Power and Ground Circuits Troubleshooting

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

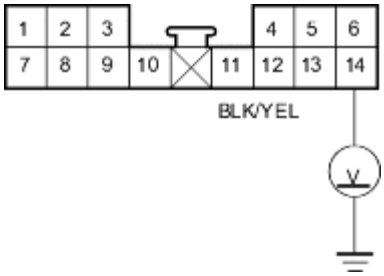
   Is the fuse OK?

   YES - Go to step 2.

   NO - Replace the fuse and recheck. ■

2. 2. Disconnect the climate control unit connector A (14P).
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between the No. 14 terminal of the climate control unit connector A (14P) and body ground.

   CLIMATE CONTROL UNIT CONNECTOR A (14P)



   Wire side of female terminals

   Is there battery voltage?

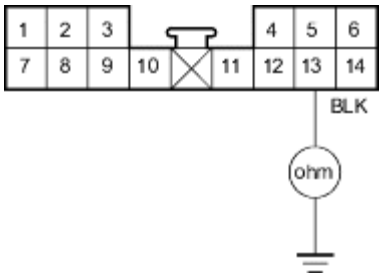
   YES - Go to step 5.

   NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the climate control unit. ■

3. 5. Turn the ignition switch OFF.

1. 6. Check for continuity between the No. 13 terminal of climate control unit connector A (14P) and body ground.

   CLIMATE CONTROL UNIT CONNECTOR A (14P)



   Wire side of female terminals

   Is there continuity?

   YES - Check for loose wires or poor connections at climate control unit connector A (14P). If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

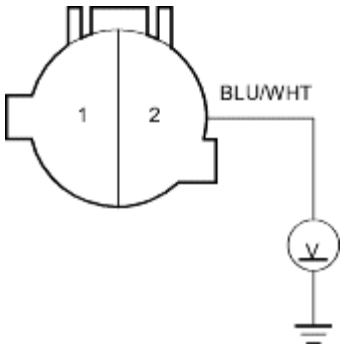
   NO - Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G501 (5-door) or G502 (4-door). ■

Climate Control

A/C Pressure Switch Circuit Troubleshooting

1. 1. Disconnect the A/C pressure switch 2P connector.
2. 2. Turn the ignition switch ON (II).
   3. Measure the voltage between the No. 2 terminal of the A/C pressure switch 2P connector and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

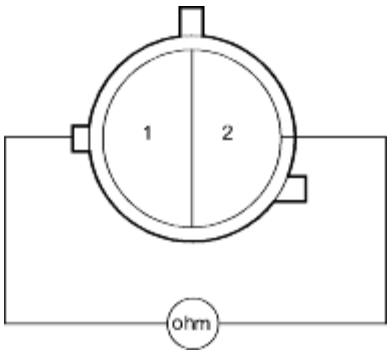
Is there battery voltage?

YES - Go to step 4.

NO - Go to step 10.

3. 4. Turn the ignition switch OFF.
   5. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



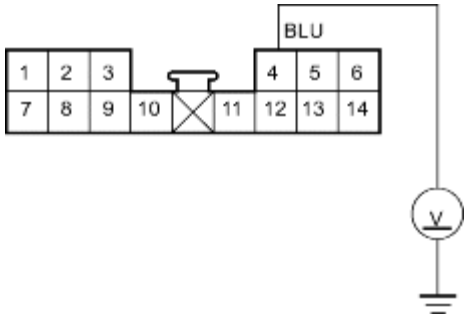
Is there continuity?

YES - Go to step 6.

NO - Go to step 12.

1. 6. Reconnect the A/C pressure switch 2P connector.
   7. Disconnect climate control unit connector A (14P).
   8. Turn the ignition switch ON (II).
   9. Measure the voltage between the No. 4 terminal of climate control unit connector A (14P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is battery voltage?

YES - Check for loose wires or poor connections at climate control unit connector A (14P) and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

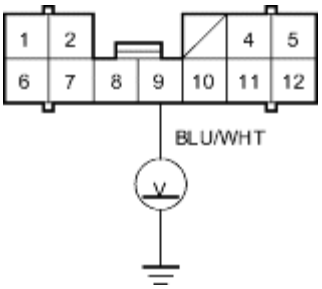
NO - Repair open in the wire between the climate control unit and the A/C pressure switch. ■

Climate Control

A/C Pressure Switch Circuit Troubleshooting (cont'd)

10. Make sure the A/C switch is OFF.
11. Measure the voltage between the No. 9 terminal of under-dash fuse/relay box connector F (12P) and body ground with the under-dash fuse/relay box connectors connected.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



Wire side of female terminals

Is there battery voltage?

YES - Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

NO - Refer to the multiplex control system (see page 22-268). ■

3. 605. Check for proper A/C system pressure.

Is the pressure within specifications?

YES - Replace the A/C pressure switch. ■

NO - Repair the A/C pressure problem. ■

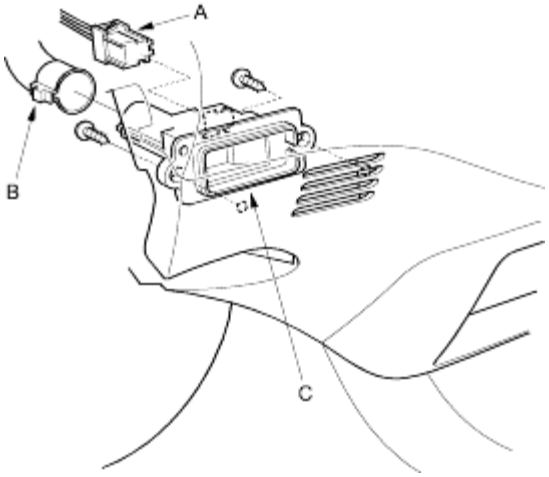
Climate Control

In-car Temperature Sensor Replacement

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

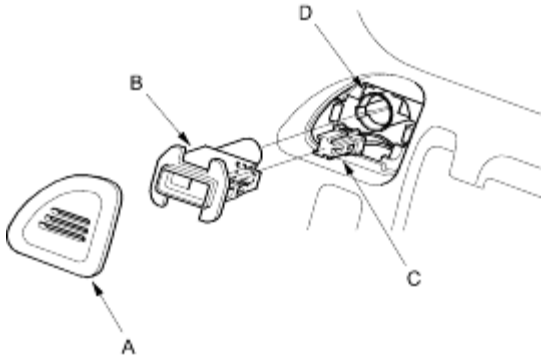
1. 1. Remove the driver's dashboard lower cover (see page 20-75).
   2. Disconnect the 2P connector (A) and the air hose (B), then remove the self-tapping screws and the in-car temperature sensor (C) from the dashboard.



2. 3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

5-door

1. 1. Remove the cover (A) and the in-car temperature sensor (B) from the dashboard, then disconnect the 2P connector (C) and the air hose (D). Be careful not to damage the cover and the dashboard.



2. 2. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

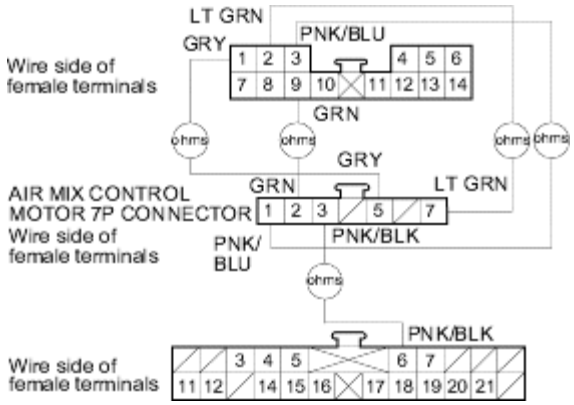
4-door

DTC 7: An Open in the Air Mix Control Motor Circuit

1. 1. Disconnect the air mix control motor 7P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the air mix control motor 7P connector.

14P:	7P:
No. 1	No. 5
No. 2	No. 7
No. 3	No. 1
No. 9	No. 2
22P:	7P:
No. 6	No. 3

HEATER CONTROL PANEL CONNECTOR A (14P)



HEATER CONTROL PANEL CONNECTOR (22P)

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the air mix control motor 7P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

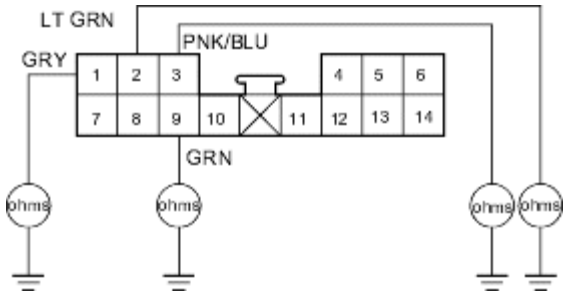
NO - Repair any open in the wire(s) between the heater control panel and the air mix control motor. ■

4-door

DTC 8: A Short in the Air Mix Control Motor Circuit

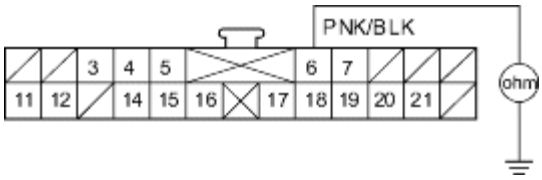
1. 1. Disconnect the air mix control motor 7P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 1, 2, 3 and 9 individually and between body ground and heater control panel connector B (22P) terminal No. 6.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the air mix control motor. ■

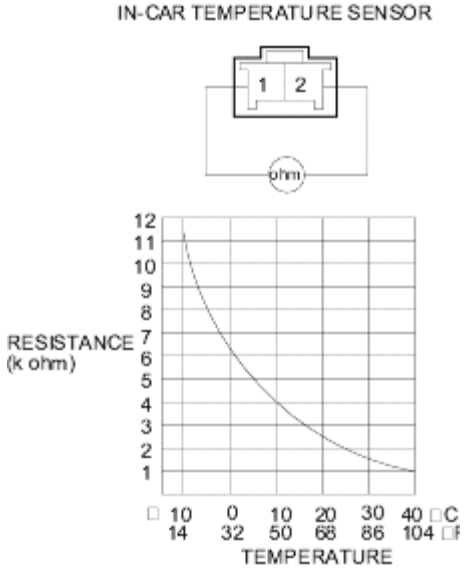
NO - Go to step 4.

Climate Control

In-car Temperature Sensor Test

Check for a change in resistance by heating or cooling the sensor with a hair drier.

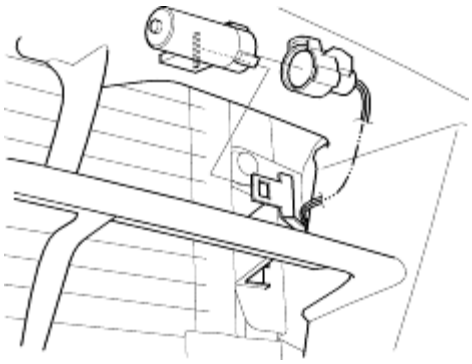
Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.



Outside Air Temperature Sensor Replacement

4-door

1. 1. Release the lock and remove the outside air temperature sensor, then disconnect the 2P connector.



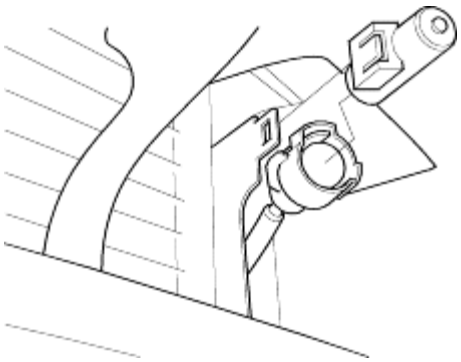
2. 2. Install the sensor in the reverse order of removal.

Climate Control

Outside Air Temperature Sensor Replacement (cont'd)

5-door

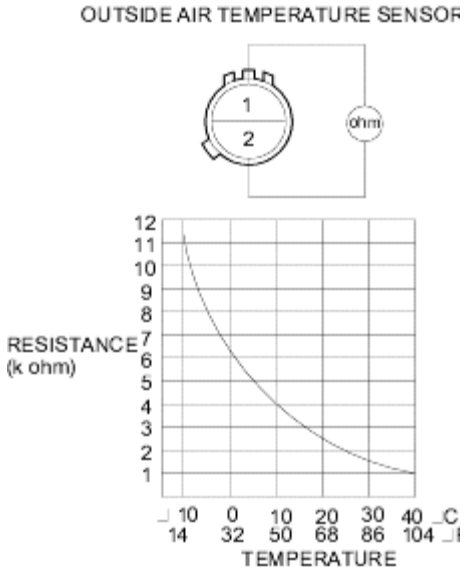
1. 1. Release the lock and remove the outside air temperature sensor, then disconnect the 2P connector.



2. 2. Install the sensor in the reverse order of removal.

Dip the sensor in ice water and measure the resistance. Then pour hot water on the sensor and check for a change in resistance.

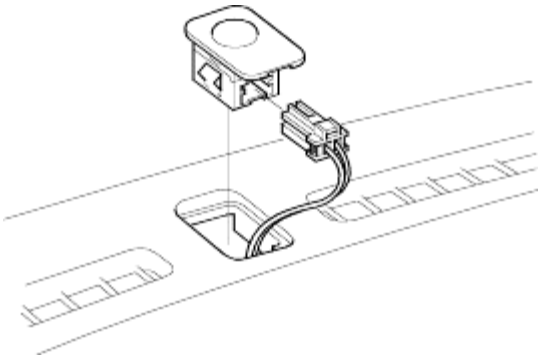
Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.



Climate Control

Sunlight Sensor Replacement

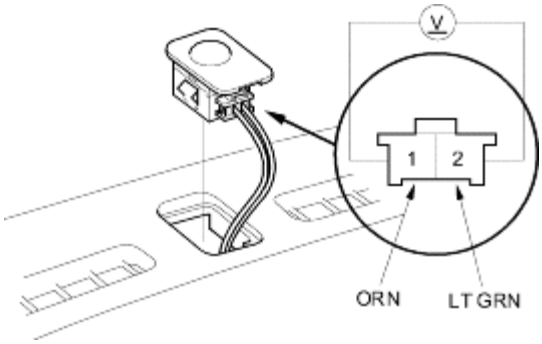
1. 1. Remove the sunlight sensor from the dashboard, then disconnect the 2P connector. Be careful not to damage the sensor and the dashboard.



2. 2. Install the sensor in the reverse order of removal.

Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 1 terminal and the (-) probe on the No. 2 terminal with the 2P connector connected. The voltage will not change under the light of a flashlight or a fluorescent lamp. Voltage should be:

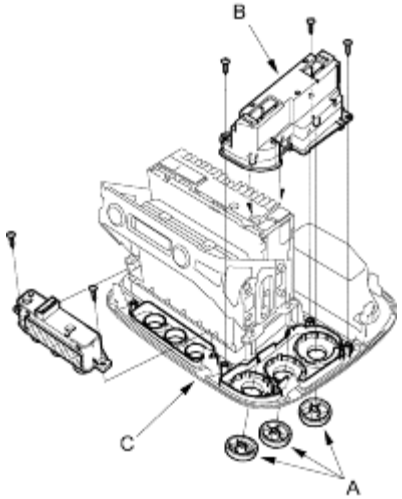
- 3.6 - 3.7 V or more with the sensor out of direct sunlight.
- 3.6 - 3.5 V or less with the sensor in direct sunlight.



Climate Control

Climate Control Unit Removal and Installation

1. 1. Remove the centre panel (see page 20-78).
2. 2. Remove the dials (A), then remove the self-tapping screws and the climate control unit (B) from the centre panel (C).

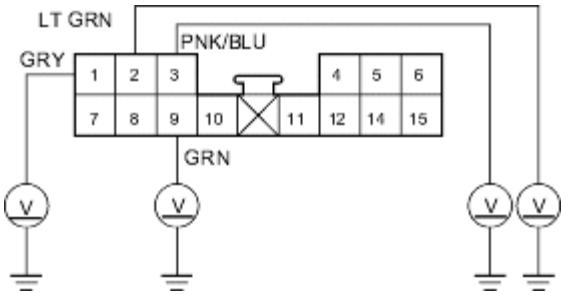


3. 3. Install the control unit in the reverse order of removal. After installation, operate the control unit controls to see whether it works properly.
   4. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-104).

Heating
DTC Troubleshooting (cont'd)

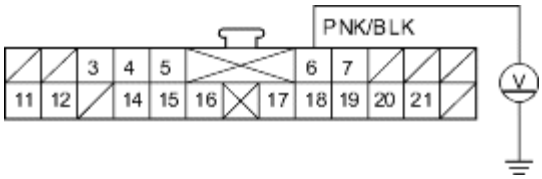
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the air mix control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

4-door

DTC 9: A Problem in the Air Mix Control Linkage, Door or Motor

1. 1. Test the air mix control motor (see page 21-44).

Is the air mix control motor OK?

YES - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Go to step 2.

2. 2. Remove the air mix control motor (see page 21-44).
3. Check the air mix control linkage and door for smooth movement.

Do the air mix control linkage and door move smoothly?

YES - Replace the air mix control motor. ■

NO - Repair the air mix control linkage or door. ■

Heating

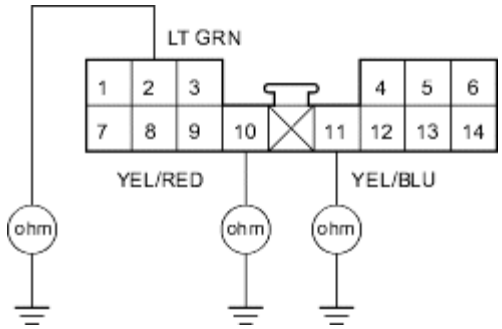
DTC Troubleshooting (cont'd)

4-door

DTC 10: An Open or Short in the Mode Control Motor Circuit

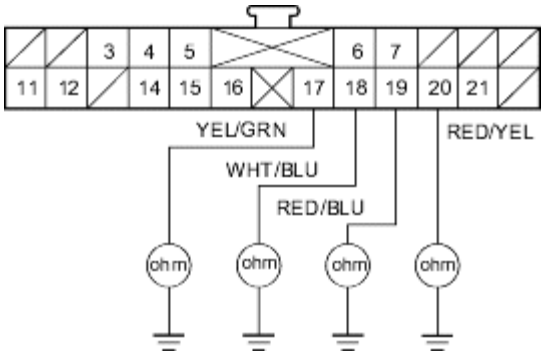
1. 1. Disconnect the mode control motor 7P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 2, 10 and 11 individually and between body ground and heater control panel connector B (22P) terminals No. 17, 18, 19 and 20 individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

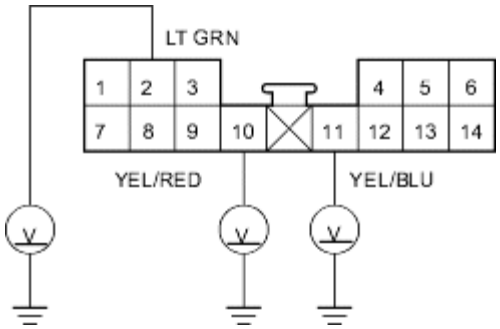
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the mode control motor. ■

NO - Go to step 4.

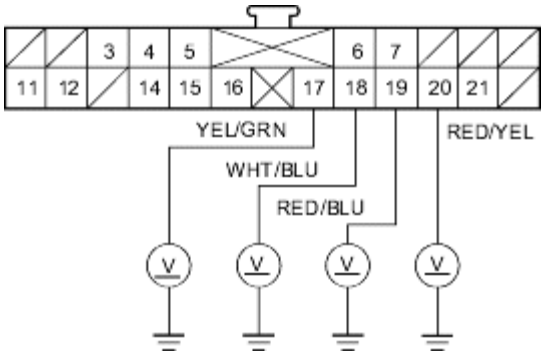
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the mode control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

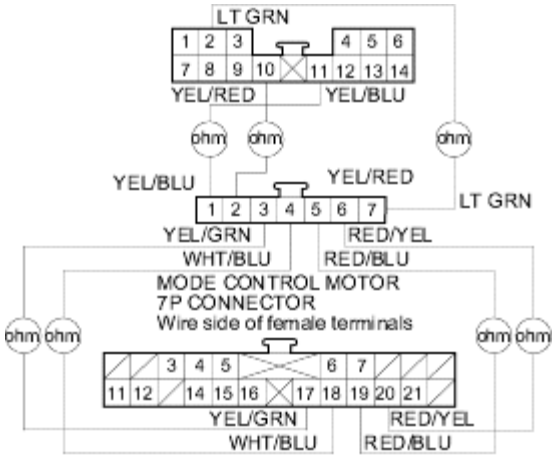
NO - Go to step 5.

1. 5. Turn the ignition switch OFF and check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the mode control motor 7P connector.

14P:	7P:
No. 2	No. 7
No. 10	No. 2
No. 11	No. 1
22P:	7P:
No. 17	No. 3
No. 18	No. 4
No. 19	No. 5
No. 20	No. 6

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



HEATER CONTROL PANEL CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the mode control motor 7P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair any open in the wire(s) between the heater control panel and the mode control motor. ■

4-door

DTC 11: A Problem in the Mode Control Linkage, Doors or Motor

1. 1. Test the mode control motor (see page 21-46).

Is the mode control motor OK?

YES - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Go to step 2.

2. 2. Remove the mode control motor (see page 21-46).
3. Check the mode control linkage and doors for smooth movement.

Do the mode control linkage and doors move smoothly?

YES - Replace the mode control motor. ■

NO - Repair the mode control linkage or doors. ■

Heating
DTC Troubleshooting (cont'd)

4-door

DTC 12: A Problem in the Blower Motor Circuit

1. 1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

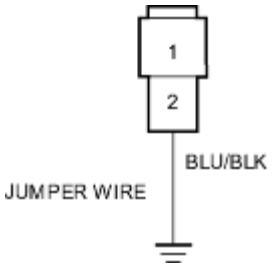
Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. 3. Turn the ignition switch ON (II).

Does the blower motor run?

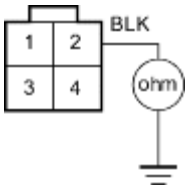
YES - Go to step 4.

NO - Go to step 17.

4. 4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.

1. 7. Check for continuity between the No. 2 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

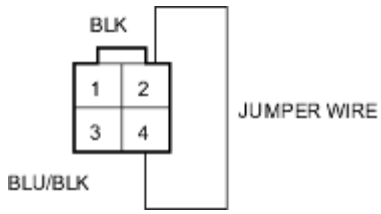
Is there continuity?

YES - Go to step 8.

NO - Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G502. ■

2. 8. Connect the No. 2 and No. 4 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

3. 9. Turn the ignition switch ON (II).

Does the blower motor run at high speed?

YES - Go to step 10.

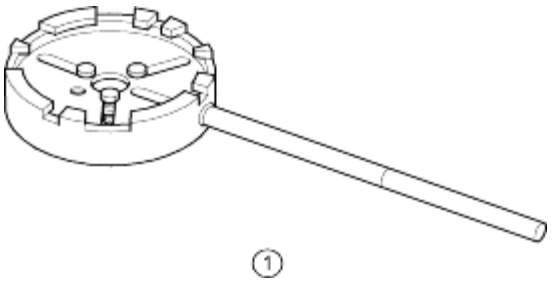
NO - Repair open in the wire between the power transistor and the blower motor. ■

4. 10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

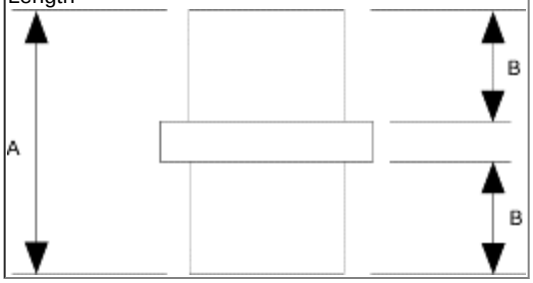
HVAC (Heating, Ventilation and Air Conditioning)

Special Tools

Ref. No.	Tool Number	Description	Qty
1	07NAB-HAC0100	A/C Clutch Holder	1



Standards and Service Limits
Manual Transmission and Differential (cont'd)

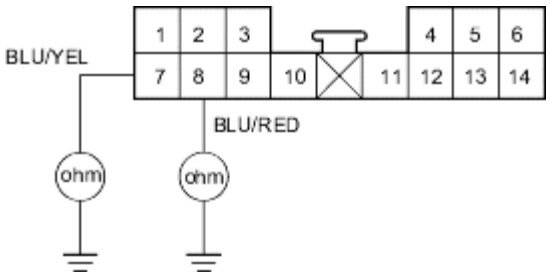
Item	Measurement	Qualification	Standard or New	Service Limit
Mainshaft 4th and 5th gears spacer collar	I.D.		29.002-29.012 mm (1.1418-1.1422 in.)	29.060 mm (1.1441 in.)
	O.D.		34.989-35.000 mm (1.3775-1.3780 in.)	34.930 mm (1.3752 in.)
	Length 	A	51.97-52.03 mm (2.046-2.048 in.)	-
		B	24.03-24.06 mm (0.946-0.947 in.)	-
Reverse idler gear	I.D.		15.016-15.043 mm (0.5912-0.5922 in.)	15.080 mm (0.5937 in.)
	Gear-to-reverse gear shaft clearance		0.032-0.077 mm (0.0012-0.0030 in.)	0.140 mm (0.0055 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.85-1.10 mm (0.033-0.043 in.)	0.4 mm (0.016 in.)
Dual cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.5-1.0 mm (0.02-0.04 in.)	0.3 mm (0.01 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.5-1.0 mm (0.02-0.04 in.)	0.3 mm (0.01 in.)
	Outer synchro ring-to-gear cone clearance	Ring pushed against gear	0.95-1.68 mm (0.037-0.066 in.)	0.6 mm (0.02 in.)
Shift fork	Finger thickness	1st-2nd and 3rd-4th forks	7.4-7.6 mm (0.29-0.30 in.)	-
		5th fork	6.7-6.9 mm (0.26-0.27 in.)	-
	Fork-to-synchro sleeve clearance		0.35-0.65 mm (0.014-0.026 in.)	1.00 mm (0.039 in.)
Reverse shift fork	Pawl groove width		13.8-14.1 mm (0.543-0.555 in.)	15.5 mm (0.610 in.)
	Fork-to-reverse idler gear clearance		1.6-2.2 mm (0.06-0.09 in.)	2.8 mm (0.11 in.)
Shift arm	I.D.		13.973-14.000 mm (0.5501-0.5512 in.)	-
	Shift fork diameter at contact area		12.9-13.0 mm (0.508-0.512 in.)	-
	Shift arm-to-shift lever clearance		0.2-0.5 mm (0.008-0.020 in.)	0.62 mm (0.024 in.)
Select lever	Finger width		14.75-14.95 mm (0.581-0.589 in.)	-
Shift lever	Shaft-to-select lever clearance		0.05-0.40 mm (0.002-0.016 in.)	0.6 mm (0.024 in.)
	Groove (to select lever)		15.00-15.15 mm (0.591-0.596 in.)	-
	Shaft-to-shift arm clearance		0.013-0.07 mm (0.0005-0.003 in.)	0.1 mm (0.004 in.)
M/T differential carrier	Pinion shaft contact area I.D.		18.010-18.028 mm (0.7091-0.7098 in.)	-

	Carrier-to-pinion shaft clearance		0.027-0.057 mm (0.0011-0.0022 in.)	0.100 mm (0.0039 in.)
	Driveshaft contact area I.D.		26.025-26.045 mm (1.0246-1.0254 in.)	-
M/T differential pinion gear	Backlash		0.05-0.15 mm (0.002-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.059-0.095 mm (0.0023-0.0037 in.)	0.150 mm (0.0059 in.)

Heating
DTC Troubleshooting (cont'd)

1. 12. Disconnect heater control panel connector A (14P).
2. 13. Check for continuity between the No. 7 and No. 8 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the power transistor. ■

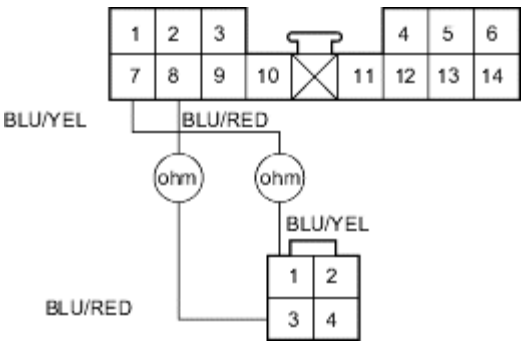
NO - Go to step 14.

3. 14. Check for continuity between the following terminals of heater control panel connector A (14P) and the power transistor 4P connector.

14P:	4P:
No. 7	No. 1
No. 8	No. 3

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 15.

NO - Repair any open in the wire(s) between the heater control panel and the power transistor. ■

1. 15. Reconnect the heater control panel connector A (14P).
2. 16. Test the power transistor (see page 21-50).

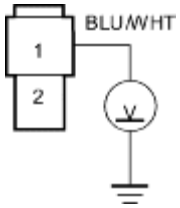
Is the power transistor OK?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Replace the power transistor. ■

3. 17. Disconnect the jumper wire.
   18. Disconnect the blower motor 2P connector.
   19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the blower motor. ■

NO - Go to step 20.

4. 20. Turn the ignition switch OFF.
   21. Remove the blower motor relay from the under-hood fuse/relay box and test it (see page 22-80).

Is the relay OK?

YES - Go to step 22.

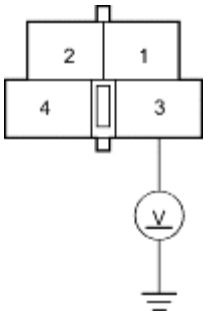
NO - Replace the blower motor relay. ■

Heating

DTC Troubleshooting (cont'd)

1. 22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



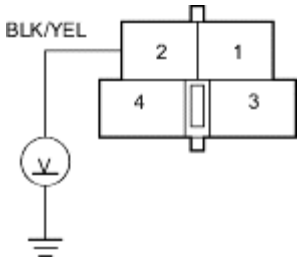
Is there battery voltage?

YES - Go to step 23.

NO - Replace the under-hood fuse/relay box. ■

2. 23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



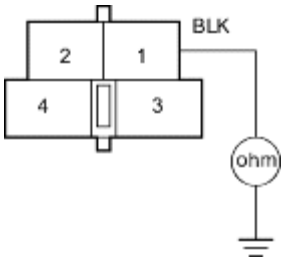
Is there battery voltage?

YES - Go to step 25.

NO -Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

1. 25. Turn the ignition switch OFF.
2. 26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES - Repair open in the wire between the blower motor relay and the blower motor. ■

NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■

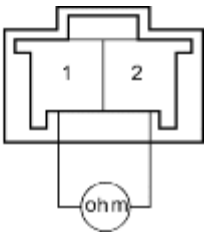
Heating
DTC Troubleshooting (cont'd)

4-door

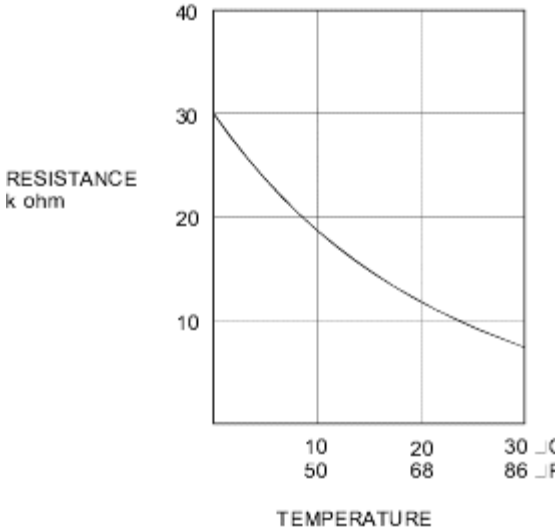
DTC 14: An Open in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

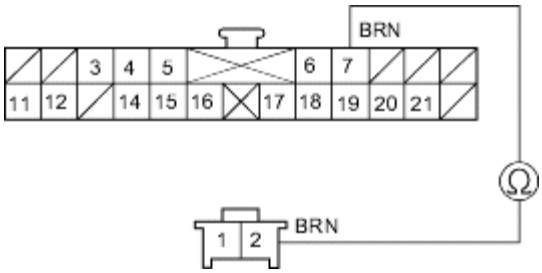
NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect heater control panel connector B (22P).

1. 4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR B (22P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

NO - Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

2. 5. Disconnect heater control panel connector A (14P).

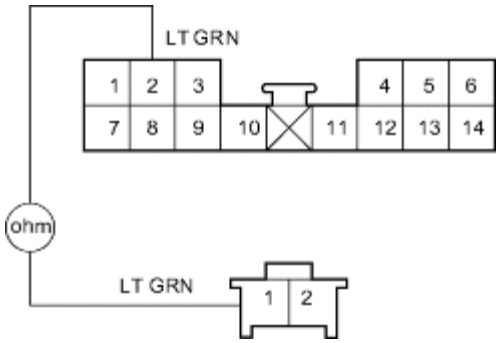
Heating

DTC Troubleshooting (cont'd)

1. 6. Check for continuity between the No. 2 terminal of heater control panel connector A (14P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

4-door

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Test the evaporator temperature sensor (see page 21-22).

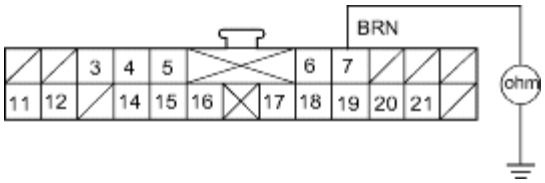
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect heater control panel connector B (22P).
   4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and body ground.

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the heater control panel and the evaporator temperature sensor. ■

NO - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

Heating
DTC Troubleshooting (cont'd)

5-door KE Model

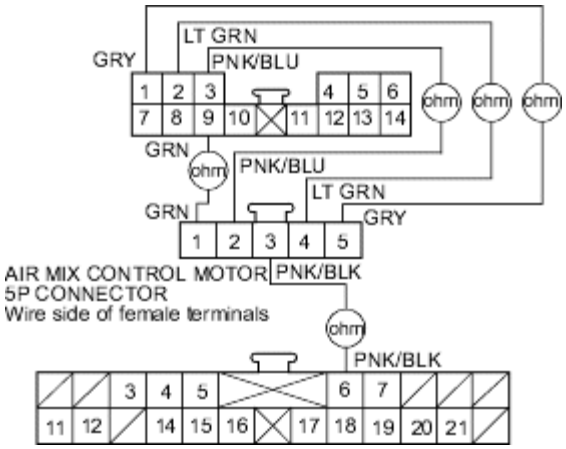
DTC 7: An Open in the Air Mix Control Motor Circuit

1. 1. Disconnect the air mix control motor 5P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between following terminals of heater control panel connectors A (14P) and B (22P) and the air mix control motor 5P connector.

14P:	5P:
No. 1	No. 5
No. 2	No. 4
No. 3	No. 2
No. 9	No. 1
22P:	5P:
No. 6	No. 3

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



HEATER CONTROL PANEL CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the air mix control motor 5P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

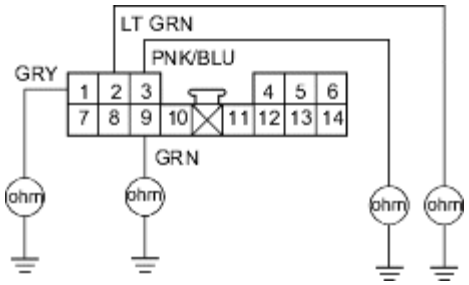
NO - Repair any open in the wire(s) between the heater control panel and the air mix control motor. ■

5-door KE Model

DTC 8: A Short in the Air Mix Control Motor Circuit

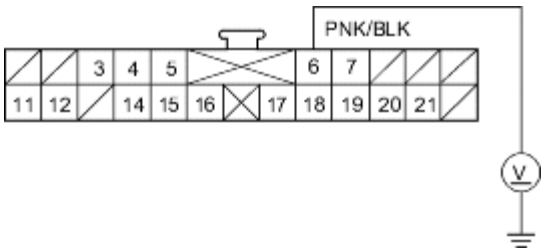
1. 1. Disconnect the air mix control motor 5P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 1, 2, 3 and 9 individually and between body ground and heater control panel connector B (22P) terminal No. 6.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

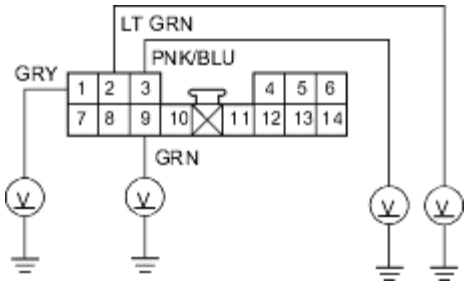
YES - Repair any short to body ground in the wire(s) between the heater control panel and the air mix control motor. ■

NO - Go to step 4.

Heating
DTC Troubleshooting (cont'd)

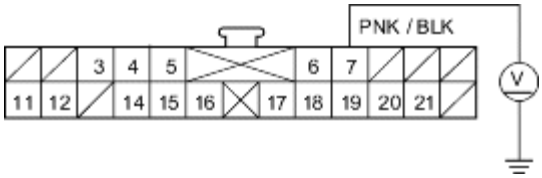
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the air mix control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

5-door KE Model

DTC 9: A Problem in the Air Mix Control Linkage, Door or Motor

1. 1. Test the air mix control motor (see page 21-45).

Is the air mix control motor OK?

YES - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Go to step 2.

2. 2. Remove the air mix control motor (see page 21-45).
3. Check the air mix control linkage and door for smooth movement.

Do the air mix control linkage and door move smoothly?

YES - Replace the air mix control motor. ■

NO - Repair the air mix control linkage or door. ■

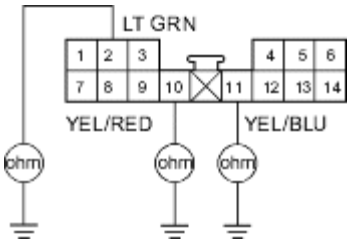
Heating
DTC Troubleshooting (cont'd)

5-door KE Model

DTC 10: An Open or Short in the Mode Control Motor Circuit

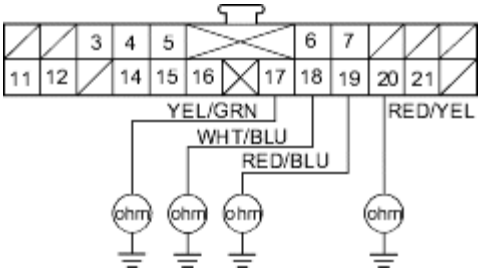
1. 1. Disconnect the mode control motor 10P connector.
   2. Disconnect heater control panel connectors A (14P) and B (22P).
   3. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 2, 10 and 11 individually and between body ground and heater control panel connector B (22P) terminals No. 17, 18, 19 and 20 individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

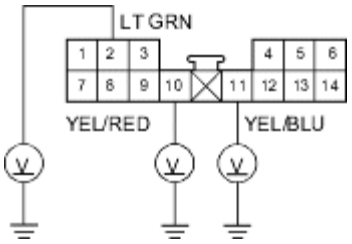
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the mode control motor. ■

NO - Go to step 4.

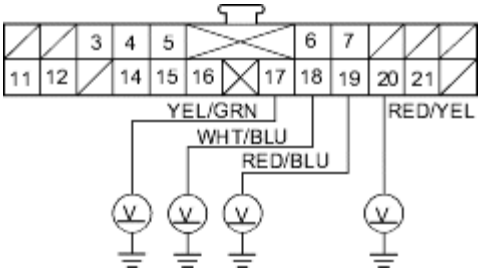
1. 4. Turn the ignition switch ON (II) and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the mode control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO -Go to step 5.

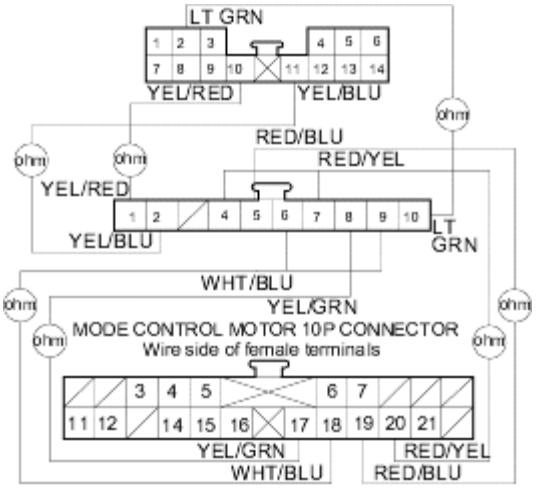
Heating
DTC Troubleshooting (cont'd)

1. 5. Turn the ignition switch OFF and check for continuity between following terminals of heater control panel connectors A (14P) and B (22P) and the mode control motor 10P connector.

14P:	10P:
No. 2	No. 10
No. 10	No. 1
No. 11	No. 2
22P:	10P:
No. 17	No. 8
No. 18	No. 6, 9
No. 19	No. 5
No. 20	No. 4, 7

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



HEATER CONTROL PANEL CONNECTOR B (22P)

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the mode control motor 10P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair any open in the wire(s) between the heater control panel and the mode control motor. ■

5-door KE Model

DTC 11: A Problem in the Mode Control Linkage, Doors or Motor

1. 1. Test the mode control motor (see page 21-47).

Is the mode control motor OK?

YES - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Go to step 2.

2. 2. Remove the mode control motor (see page 21-47).
3. Check the mode control linkage and doors for smooth movement.

Do the mode control linkage and doors move smoothly?

YES - Replace the mode control motor. ■

NO -Repair the mode control linkage or doors. ■

Heating
DTC Troubleshooting (cont'd)

5-door KE Model

DTC 12: A Problem in the Blower Motor Circuit

1. 1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

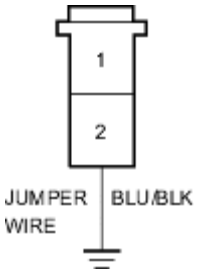
Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminal

3. 3. Turn the ignition switch ON (II).

Does the blower motor run?

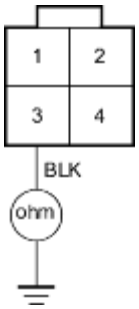
YES - Go to step 4.

NO - Go to step 17.

4. 4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.

1. 7. Check for continuity between the No. 3 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side female terminals

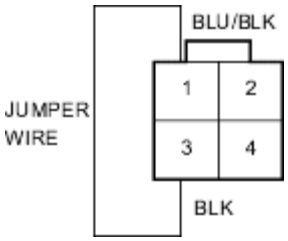
Is there continuity?

YES - Go to step 8.

NO - Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G501. ■

2. 8. Connect the No. 1 and No. 3 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

3. 9. Turn the ignition switch ON (II).

Does the blower motor run at high speed?

YES - Go to step 10.

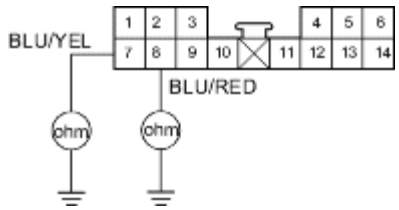
NO - Repair open in the wire between the power transistor and the blower motor. ■

4. 10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

Heating
DTC Troubleshooting (cont'd)

1. 12. Disconnect heater control panel connector A (14P).
2. 13. Check for continuity between the No. 7 and No. 8 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of terminal terminals

Is there continuity?

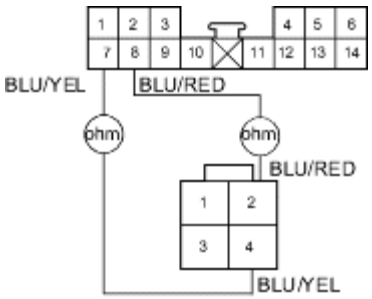
YES - Repair any short to body ground in the wire(s) between the heater control panel and the power transistor. ■

NO - Go to step 14.

3. 14. Check for continuity between the following terminals of heater control panel connector A (14P) and power transistor 4P connector.

14P:	4P:
No. 7	No. 4
No. 8	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES - Go to step 15.

NO - Repair any open in the wire(s) between the heater control panel and the power transistor. ■

1. 15. Reconnect heater control panel connector A (14P).
2. 16. Test the power transistor (see page 21-50).

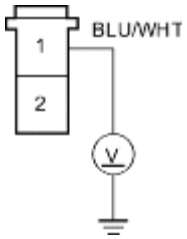
Is the power transistor OK?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Replace the power transistor. ■

3. 17. Disconnect the jumper wire.
   18. Disconnect the blower motor 2P connector.
   19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the blower motor. ■

NO - Go to step 20.

4. 20. Turn the ignition switch OFF.
   21. Remove the blower motor relay from the under-hood fuse/relay box and test it (see page 22-80).

Is the relay OK?

YES - Go to step 22.

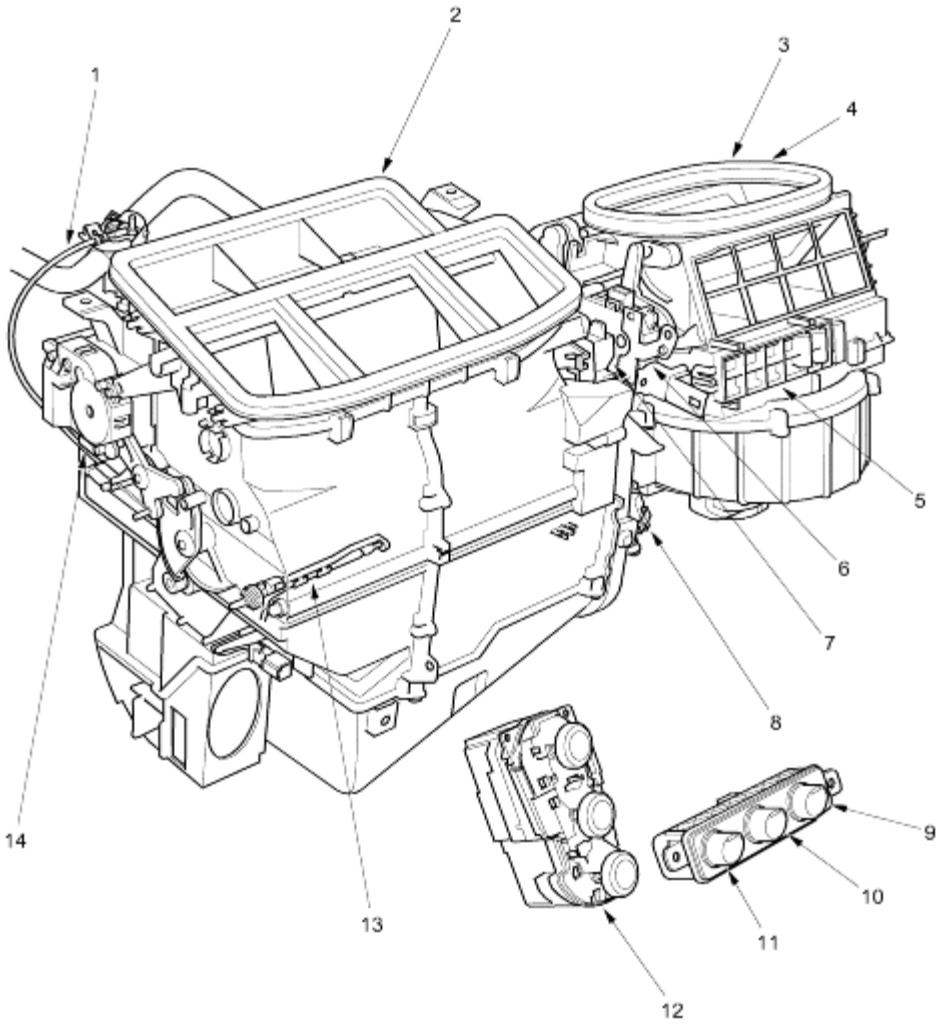
NO - Replace the blower motor relay. ■

Heating

Component Location Index

4-door

NOTE: LHD type is shown, RHD type is symmetrical.



1. HEATHER VALVE CABLE
   Adjustment, page 21-62
2. HEATER UNIT/CORE
   Replacement, page 21-58
3. BLOWER UNIT
4. Removal and Installation, page 21-54BLOWER UNIT COMPONENTS
   Replacement, page 21-56
5. DUST AND POLLEN FILTER (With A/C)
   Replacement, page 21-53
6. RECIRCULATION CONTROL MOTOR
   Test, page 21-48Replacement, page 21-46
7. MODE CONTROL MOTOR
   Test, page 21-48
   Replacement, page 21-46
8. POWER TRANSISTOR
9. Test, page 21-50REAR WINDOW DEFOGGER SWITCH
10. A/C SWITCH (With A/C)
11. RECIRCULATION CONTROL SWITCH
12. HEATER CONTROL PANEL
13. Removal and Installation, page 21-51EVAPORATOR TEMPERATURE SENSOR (With A/C)
    Replacement, page 21-83
14. Test, page 21-84AIR MIX CONTROL MOTOR
    Test, page 21-44
    Replacement, page 21-44

Standards and Service Limits

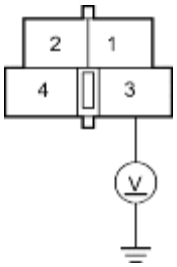
Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
ATF (Automatic Transmission Fluid)	Capacity	Use genuine Honda ATF-Z1	For fluid change: 2.7 *l* (2.9 US qt, 2.4 Imp qt)	
			For overhaul: 6.0 *l* (6.3 US qt, 5.3 Imp qt)	
ATF pressure	Line pressure	At 2,000 rpm (min-1) in P or N position	880-930 kPa (9.0-9.5 kgf/cm2, 120-130 psi)	830 kPa (8.5 kgf/cm2, 120 psi)
	4th clutch pressure	At 2,000 rpm (min-1) in D position	850-900 kPa (8.7-9.2 kgf/cm2, 120-130 psi)	800 kPa (8.2 kgf/cm2, 120 psi)
	3rd clutch pressure	At 2,000 rpm (min-1) in D3 position	850-900 kPa (8.7-9.2 kgf/cm2, 120-130 psi)	800 kPa (8.2 kgf/cm2, 120 psi)
	2nd clutch pressure	At 2,000 rpm (min-1) in s 2 position	850-900 kPa (8.7-9.2 kgf/cm2, 120-130 psi)	800 kPa (8.2 kgf/cm2 120 psi)
	1st clutch pressure	At 2,000 rpm (min-1) in D position	880-930 kPa (9.0-9.5 kgf/cm2, 120-130 psi)	830 kPa (8.5 kgf/cm2, 120 psi)
	1st-hold clutch pressure	At 2,000 rpm (min-1) in s 1 position	880-930 kPa (9.0-9.5 kgf/cm2, 120-130 psi)	830 kPa (8.5 kgf/cm2, 120 psi)
Torque converter	Stall speed Check with vehicle on level ground	D14Z5 engine	2,550 rpm (min-1)	2,400-2,700 rpm (min-1)
		D15Y2, D15Y3, D15Y5, D15Y6 engines	2,650 rpm (min-1)	2,500-2,800 rpm (min-1)
		D16W7 engine	2,800 rpm (min-1)	2,650-2,950 rpm (min-1)
		D16W8 engine	2,800 rpm (min-1)	2,650-2,950 rpm (min-1)
		D17A1, D17Z1 engine	2,800 rpm (min-1)	2,650-2,950 rpm (min-1)
		D17A2, D17Z5 engine	2,800 rpm (min-1)	2,650-2,950 rpm (min-1)
Valve body	Stator shaft needle bearing contact I.D.	Torque converter side	27.000-27.021 mm (1.063-1.064 in.)	When worn or damaged
		ATF pump side	29.000-29.013 mm (1.1417-1.1422 in.)	When worn or damaged
	ATF pump gear thrust clearance		0.03-0.06 mm (0.001-0.002 in.)	0.07 mm (0.003 in.)
	ATF pump gear-to-body clearance	Drive gear	0.105-0.1325 mm (0.004-0.005 in.)	-
		Driven gear	0.0350-0.0625 mm (0.001-0.002 in.)	-
	ATF pump driven gear I.D.		14.016-14.034 mm (0.5518-0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980-13.990 mm (0.5504-0.5508 in.)	When worn or damaged
Reverse shift fork	Fork finger thickness		5.90-6.00 mm (0.232-0.236 in.)	5.4 mm (0.213 in.)
Park gear and pawl				When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000-14.010 mm (0.5512-0.5516 in.)	-
	Shift fork shaft valve bore I.D.		37.000-37.039 mm (1.4567-1.4582 in.)	37.045 mm (1.4585 in.)

Regulator valve body	Sealing ring contact I.D.		35.000-35.025 mm (1.3780-1.3782 in.)	35.050 mm (1.3799 in.)
Stator shaft	Diameter of needle bearing contact area	ATF pump side	29.000-29.013 mm (1.1417-1.1422 in.)	When worn or damaged
		Torque converter side	27.000-27.021 mm (1.0630-1.0638 in.)	When worn or damaged

Heating
DTC Troubleshooting (cont'd)

1. 22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.
BLOWER MOTOR RELAY 4P SOCKET

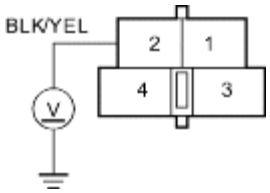


Is there battery voltage?

YES - Go to step 23.

NO - Replace the under-hood fuse/relay box. ■

2. 23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.
BLOWER MOTOR RELAY 4P SOCKET

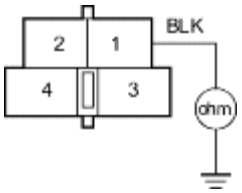


Is there battery voltage?

YES - Go to step 25.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

1. 25. Turn the ignition switch OFF.
2. 26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.
BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES - Repair open in the wire between the blower motor relay and the blower motor. ■

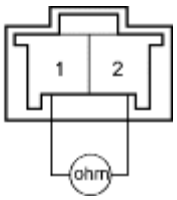
NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■

5-door KE Model

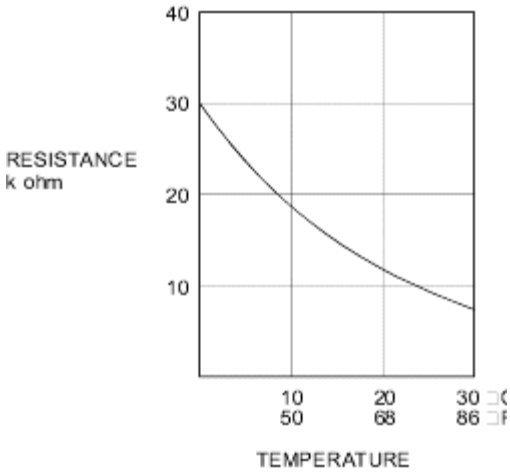
DTC 14: An Open in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

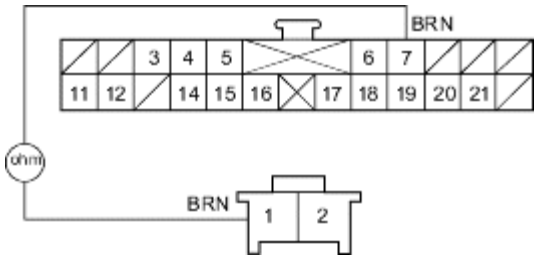
NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect heater control panel connector B (22P).

1. 4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR B (22P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Go to step 5.

NO - Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

2. 5. Disconnect heater control panel connector A (14P).

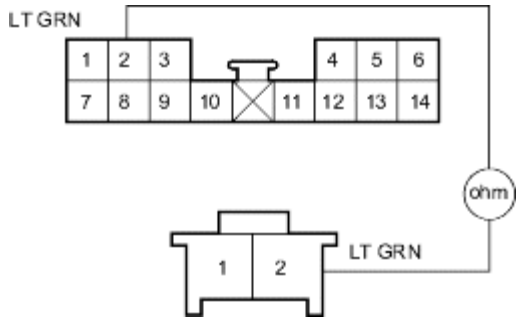
Heating

DTC Troubleshooting (cont'd)

1. 6. Check for continuity between the No. 2 terminal of heater control panel connector A (14P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and B (22P) at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

5-door KE Model

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. 1. Disconnect the evaporator temperature sensor 2P connector.
   2. Test the evaporator temperature sensor (see step 2 on page 21-31).

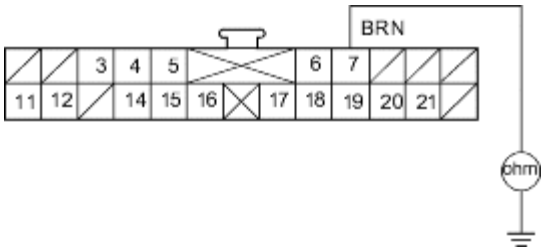
Is the resistance within the specifications shown on the graph?

YES - Go to step 3.

NO - Replace the evaporator temperature sensor. ■

2. 3. Disconnect heater control panel connector B (22P).
   4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and body ground.

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES - Repair short to body ground in the wire between the heater control panel and the evaporator temperature sensor. ■

NO - Substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

Heating
Recirculation Control Motor Circuit Troubleshooting

4-door

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

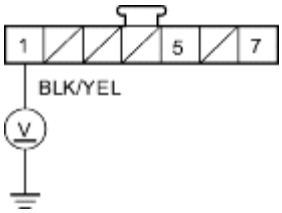
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 1 terminal of the recirculation control motor 7P connector and body ground.

RECIRULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

3. 5. Turn the ignition switch OFF.
6. Test the recirculation control motor (see page 21-48).

Is the recirculation control motor OK?

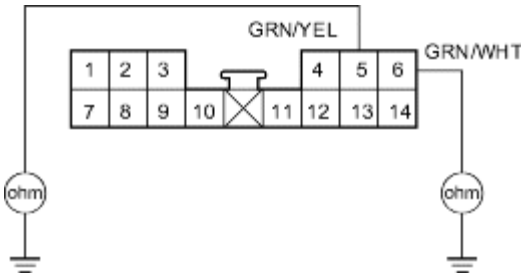
YES - Go to step 7.

NO - Go to step 12.

4. 7. Disconnect heater control panel connector A (14P).

1. 8. Check for continuity between the No. 5 and No. 6 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

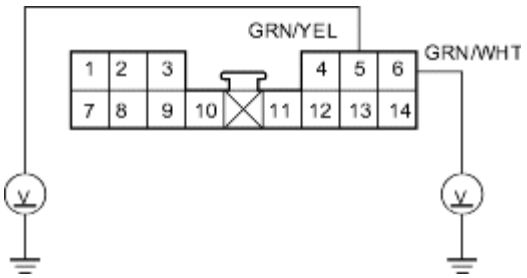
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the recirculation control motor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch ON (II) and check the same wires for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the recirculation control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO - Go to step 10.

Heating

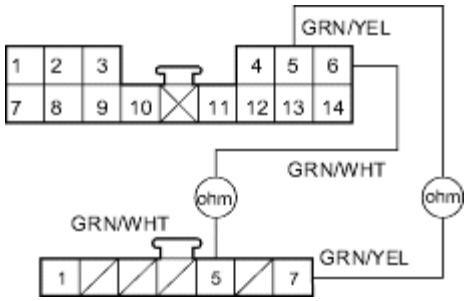
Recirculation Control Motor Circuit Troubleshooting (cont'd)

1. 10. Turn the ignition switch OFF.
2. 11. Check for continuity between the following terminals of heater control panel connector A (14P) and the recirculation control motor 7P connector.

14P:	7P:
No. 5	No. 7
No. 6	No. 5

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair any open in the wire(s) between the heater control panel and the recirculation control motor. ■

1. 12. Remove the recirculation control motor (see page 21-48).
2. 13. Check the recirculation control linkage and doors for smooth movement.

Does the recirculation control linkage and doors move smoothly?

YES - Replace the recirculation control motor. ■

NO - Repair the recirculation control linkage or doors. ■

Heating

Recirculation Control Motor Circuit Troubleshooting (cont'd)

5-door KE Model

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

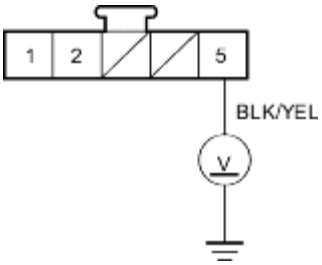
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the recirculation control motor 5P connector.
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between the No. 5 terminal of the recirculation control motor 5P connector and body ground.

RECIRCULATION CONTROL MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO -Repair open in the wire between the No. 3 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

3. 5. Turn the ignition switch OFF.
   6. Test the recirculation control motor (see page 21-49).

Is the recirculation control motor OK?

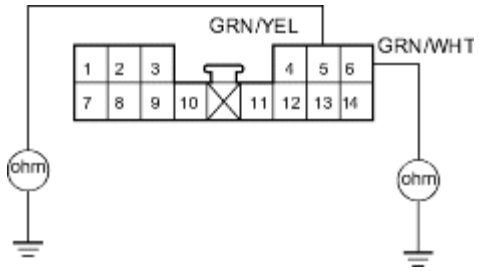
YES - Go to step 7.

NO -Go to step 12.

4. 7. Disconnect heater control panel connector A (14P).

1. 8. Check for continuity between the No. 5 and No. 6 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

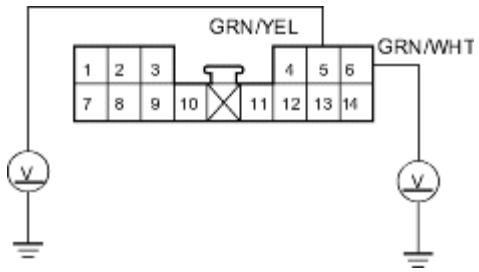
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the heater control panel and the recirculation control motor. ■

NO -Go to step 9.

2. 9. Turn the ignition switch ON (II) and check the same wires for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wide side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the heater control panel and the recirculation control motor. This short also damages the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO - Go to step 10.

Heating

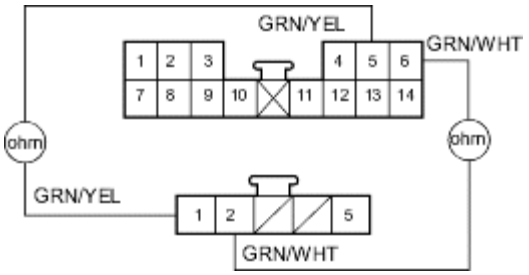
Recirculation Control Motor Circuit Troubleshooting (cont'd)

1. 10. Turn the ignition switch OFF.
2. 11. Check for continuity between the following terminals of heater control panel connector A (14P) and the recirculation control motor 5P connector.

14P:	5P:
No. 5	No. 1
No. 6	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 5P CONNECTOR

Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and at the recirculation control motor 5P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair any open in the wire(s) between the heater control panel and the recirculation control motor. ■

1. 12. Remove the recirculation control motor (see page 21-49).
2. 13. Check the recirculation control linkage and doors for smooth movement.

Do the recirculation control linkage and doors move smoothly?

YES - Replace the recirculation control motor. ■

NO - Repair the recirculation control linkage or doors. ■

Heating

Recirculation Control Motor Circuit Troubleshooting (cont'd)

5-door Except KE Model

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

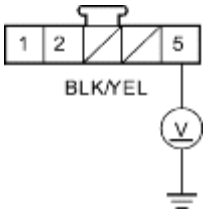
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the recirculation control motor 5P connector.
   3. Turn the ignition switch ON (II).
   4. Measure the voltage between the No. 5 terminal of the recirculation control motor 5P connector and body ground.

RECIRCULATION CONTROL MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

3. 5. Turn the ignition switch OFF.
   6. Test the recirculation control motor (see page 21-49).

Is the recirculation control motor OK?

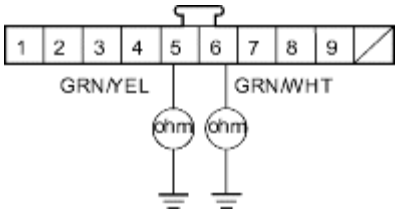
YES - Go to step 7.

NO - Go to step 13.

4. 7. Disconnect the push switch 10P connector.

1. 8. Check for continuity between the No. 5 and No. 6 terminals of the push switch 10P connector and body ground individually.

PUSH SWITCH 10P CONNECTOR



Wire side of female terminals

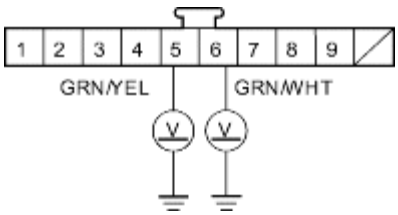
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the push switch and the recirculation control motor. ■

NO - Go to step 9.

2. 9. Turn the ignition switch ON (II) and check the same terminals for voltage.

PUSH SWITCH 10P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES - Repair any short to power in the wire(s) between the push switch and the recirculation control motor. This short also damages the push switch. Repair the short to power before replacing the push switch. ■

NO - Go to step 10.

Heating

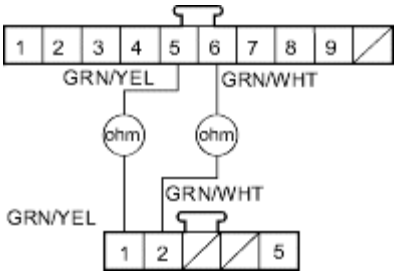
Recirculation Control Motor Circuit Troubleshooting (cont'd)

1. 10. Turn the ignition switch off.
2. 11. Check for continuity between the following terminals of the push switch 10P connector and the recirculation control motor 5P connector.

10P:	5P:
No. 5	No. 1
No. 6	No. 2

PUSH SWITCH 10P CONNECTOR

Wire side of female connector



RECIRCULATION CONTROL MOTOR 5P CONNECTOR

Wire side of female terminals

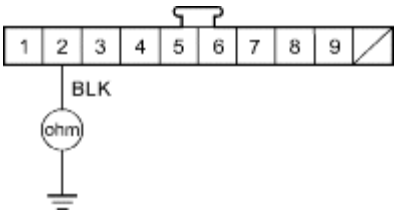
Is there continuity?

YES - Go to step 12.

NO - Repair any open in the wire(s) between the push switch 10P connector and body ground. ■

3. 12. Check for continuity between the No. 2 terminal of the push switch 10P connector and body ground.

PUSH SWITCH 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the push switch. ■

NO - Check for an open in the wire between the push switch and body ground. If the wire is OK, check for poor ground at G501. ■

1. 13. Remove the recirculation control motor (see page 21-49).
2. 14. Check the recirculation control linkage and doors for smooth movement.

Do the recirculation control linkage and doors move smoothly?

YES - Replace the recirculation control motor. ■

NO - Repair the recirculation control linkage or doors. ■

Heating

Blower Motor Circuit Troubleshooting

5-door Except KE Model

1. 1. Turn the ignition switch ON (II) and the heater fan switch ON.

Does the blower run?

YES - Go to step 2.

NO - Go to step 16.

2. 2. Turn the heater fan switch OFF.
   3. Make sure the ignition switch is ON (II).

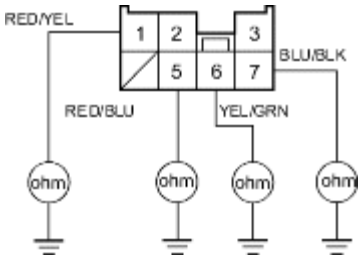
Does the blower motor run?

YES - Go to step 4.

NO -Go to step 9.

3. 4. Turn the ignition switch OFF.
   5. Disconnect the blower motor 2P connector.
   6. Disconnect the blower resistor 5P connector.
   7. Disconnect the heater fan switch 7P connector.
   8. Check for continuity between the No. 1, 5, 6 and 7 terminals of the heater fan switch 7P connector and body ground individually.

HEATER FAN SWITCH 7P CONNECTOR



Wire side of female terminals

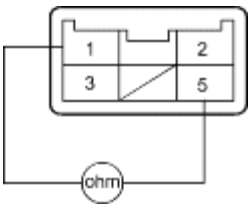
Is there continuity?

YES - Repair any short to body ground in the wire(s) between the blower motor, the blower resistor and the heater fan switch. ■

NO - Replace the heater fan switch. ■

1. 9. Turn the ignition switch OFF.
2. 10. Disconnect the blower resistor 5P connector.
   11. Measure the resistance between the No. 1 and No. 5 terminals of the blower resistor.

BLOWER RESISTOR



Is there about 2 - 3 ohm?

YES - Go to step 12.

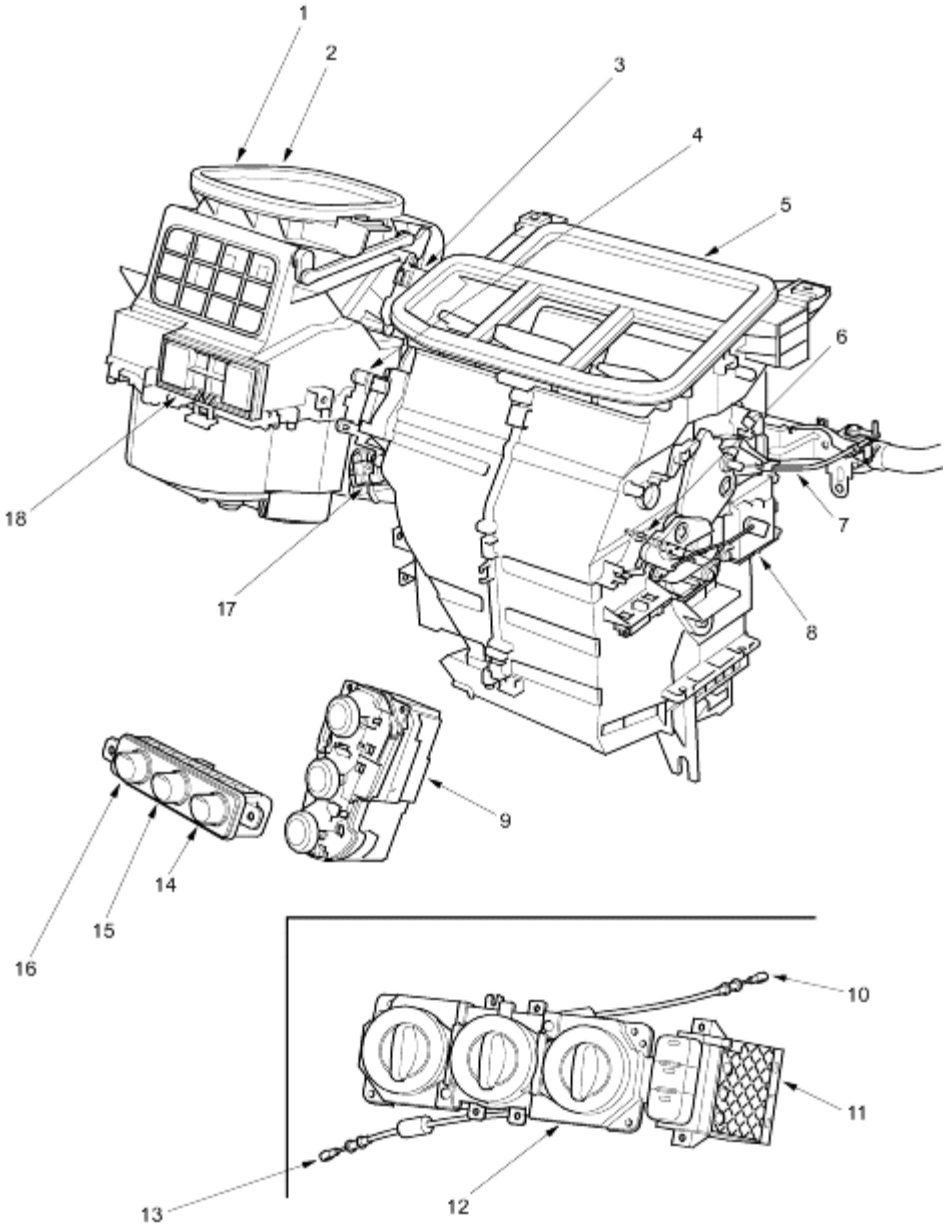
NO - Replace the blower resistor. ■

3. 12. Reconnect the blower resistor 5P connector.
   13. Disconnect the heater fan switch 7P connector.
   14. Turn the ignition switch ON (II).

Heating

Component Location Index (cont'd)

5-door



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2. Removal and Installation, page 21-55BLOWER UNIT COMPONENTS
   Replacement, page 21-57
3. RECIRCULATION CONTROL MOTOR
   Test, page 21-49
   Replacement, page 21-49
4. MODE CONTROL MOTOR
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5. HEATER UNIT/CORE
6. Replacement, page 21-60EVAPORATOR TEMPERATURE SENSOR (With A/C)
   Replacement, page 21-83
   Test, page 21-84
7. HEATER VALVE CABLE
8. Adjustment, page 21-62AIR MIX CONTROL MOTOR
   Test, page 21-45
   Replacement, page 21-45
9. HEATER CONTROL PANEL (KE model)
10. Removal and Installation, page 21-51AIR MIX CONTROL CABLE
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11. PUSH SWITCH ASSEMBLY
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12. HEATER CONTROL PANEL (Except KE model)
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13. MODE CONTROL CABLE
    Adjustment, page 21-63
14. RECIRCULATION CONTROL SWITCH
15. A/C SWITCH (With A/C)
16. REAR WINDOW DEFOGGER SWITCH
17. POWER TRANSISTOR (KE model)
    Test, page 21-50
    BLOWER RESISTER (Except KE model)
18. DUST AND POLLEN FILTER (With A/C)
    Replacement, page 21-53

Standards and Service Limits

Automatic Transmission and Differential

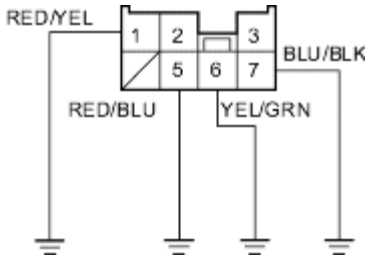
Item	Measurement	Qualification	Standard or New	Service Limit
Clutch	Clutch end plate-to-top disc clearance	1st and 2nd		0.65-0.85 mm (0.026-0.033 in.)
		3rd and 4th		0.4-0.6 mm (0.016-0.024 in.)
		1st-hold		0.5-0.8 mm (0.020-0.031 in.)
	Clutch return spring free length	1st, 2nd, 3rd and 4th	30.5 mm (1.20 in.)	28.5 mm (1.12 in.)
		1st-hold	34.6 mm (1.36 in.)	32.6 mm (1.28 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	-
	Clutch plate thickness	1st, 1st-hold	1.6 mm (0.06 in.)	When discoloured
		2nd, 3rd and 4th	2.0 mm (0.079 in.)	When discoloured
	1st, 2nd, 3rd and 4th clutches end plate thickness	Mark 1	2.1 mm (0.083 in.)	When discoloured
		Mark 2	2.2 mm (0.087 in.)	When discoloured
		Mark 3	2.3 mm (0.091 in.)	When discoloured
		Mark 4	2.4 mm (0.094 in.)	When discoloured
		Mark 5	2.5 mm (0.098 in.)	When discoloured
		Mark 6	2.6 mm (0.102 in.)	When discoloured
		Mark 7	2.7 mm (0.106 in.)	When discoloured
		Mark 8	2.8 mm (0.110 in.)	When discoloured
		Mark 9	2.9 mm (0.114 in.)	When discoloured
	1st-hold clutch end plate thickness	Mark 1	2.1 mm (0.083 in.)	When discoloured
		Mark 2	2.2 mm (0.087 in.)	When discoloured
		Mark 3	2.3 mm (0.091 in.)	When discoloured
		Mark 4	2.4 mm (0.094 in.)	When discoloured
		No Mark	2.5 mm (0.098 in.)	When discoloured
		Mark 6	2.6 mm (0.102 in.)	When discoloured
		Mark 7	2.7 mm (0.106 in.)	When discoloured

Heating

Blower Motor Circuit Troubleshooting (cont'd)

1. 15. Ground each of the heater fan switch 7P connector terminals individually in the following order: No. 1, 5, 6 and 7.

HEATER FAN SWITCH 7P CONNECTOR



Wire side of female terminals

Does the blower motor run at progressively higher speeds?

YES - Replace the heater fan switch. ■

NO - Repair any open or cause of excessive resistance in the appropriate wire(s) between the blower resistor and the heater fan switch. ■

2. 16. Turn the heater fan switch OFF and the ignition switch OFF.
17. Check the No. 12 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

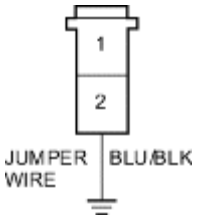
Are the fuses OK?

YES - Go to step 18.

NO - Replace the fuse(s) and recheck. ■

3. 18. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminal

1. 19. Turn the ignition switch ON (II).

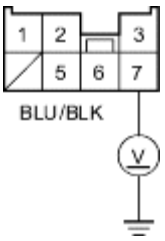
Does the blower motor run?

YES - Go to step 20.

NO -Go to step 27.

2. 20. Turn the ignition switch OFF.
21. Disconnect the jumper wire.
22. Disconnect the heater fan switch 7P connector.
23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 7 terminal of the heater fan switch 7P connector and body ground.

HEATER FAN SWITCH 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 25.

NO - Repair open in the wire between the blower motor and the heater fan switch. ■

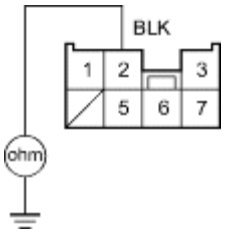
3. 25. Turn the ignition switch OFF.

Heating

Blower Motor Circuit Troubleshooting (cont'd)

1. 26. Check for continuity between the No. 2 terminal of the heater fan switch 7P connector and body ground.

HEATER FAN SWITCH 7P CONNECTOR



Wire side of female terminals

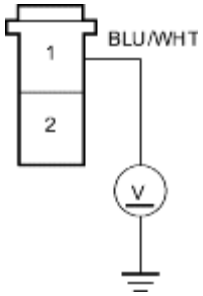
Is there continuity?

YES - Replace the heater fan switch. ■

NO - Check for an open in the wire between the heater fan switch and body ground. If the wire is OK, check for poor ground at G501. ■

2. 27. Disconnect the jumper wire.
28. Disconnect the blower motor 2P connector.
29. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Replace the blower motor. ■

NO - Go to step 30.

1. 30. Turn the ignition switch OFF.
31. Remove the blower motor relay from the under-hood fuse/relay box and test it (see page 22-80).

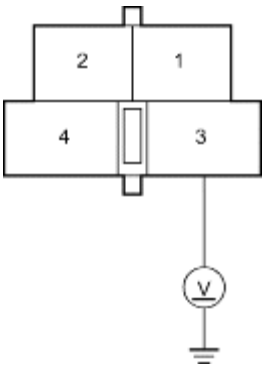
Is the relay OK?

YES - Go to step 32.

NO - Replace the blower motor relay. ■

2. 32. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

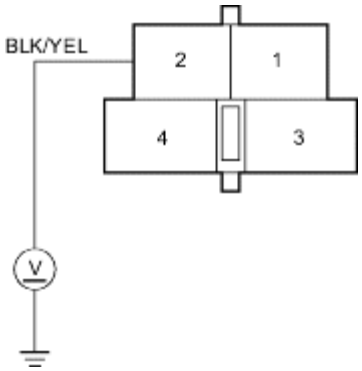
YES - Go to step 33.

NO - Replace the under-hood fuse/relay box. ■

3. 33. Turn the ignition switch ON (II).

1. 34. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



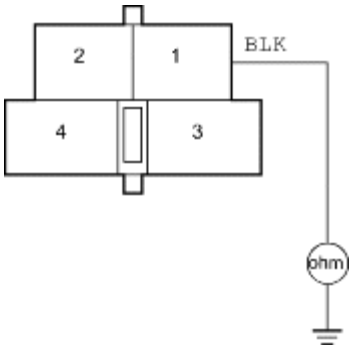
Is there battery voltage?

YES - Go to step 35.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

2. 35. Turn the ignition switch OFF.
36. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES - Repair open in the wire between the blower motor relay and the blower motor. ■

NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■

Heating

Heater Control Power and Ground Circuits Troubleshooting

1. 1. Check the No.14 (10A) fuse in the under-dash fuse/relay box.

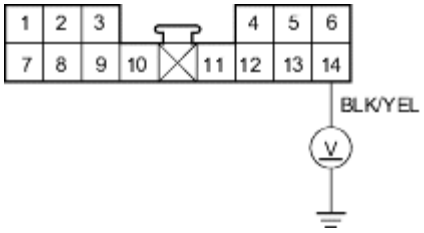
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect heater control panel connector A (14P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 14 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

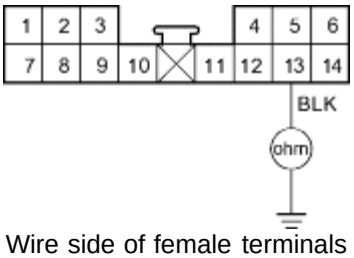
YES - Go to step 5.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the heater control panel. ■

3. 5. Turn the ignition switch OFF.

1. 6. Check for continuity between the No. 13 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES - Check for loose wires or poor connections at heater control panel connector A (14P). If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Check for an open in the wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G501 (5-door) or G502 (4-door). ■

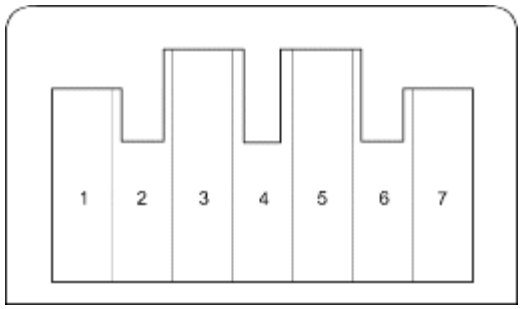
Heating

Air Mix Control Motor Test

4-door

1. 1. Disconnect the 7P connector from the air mix control motor.
   2. Connect battery power to the No. 1 terminal of the air mix control motor and ground the No. 2 terminal; the air mix control motor should run and stop at Max Hot. If it does not, reverse the connections; the air mix control motor should run and stop at Max Cool. If the air mix control motor does not run remove it, then check the air mix control linkage and door for smooth movement.
      - If the linkage and door move smoothly, replace the air mix control motor.
      - If the linkage or door sticks or binds, repair them as needed.

AIR MIX CONTROL MOTOR



2. 3. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 k to 7.8 kohm.
   4. Measure the resistance between the No. 3 and No. 7 terminals.

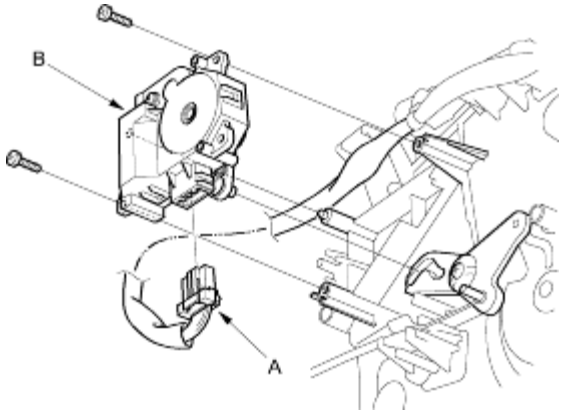
Max Cool - 0.84 k to 1.56 k ohm;

Max Hot - 3.36 k to 6.24 k ohm;

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. Remove the under-dash fuse/relay box (see page 22-78).
   2. Disconnect the 7P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

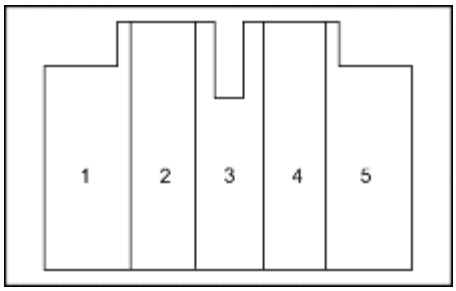
Heating

Air Mix Control Motor Test

5-door

1. 1. Disconnect the 5P connector from the air mix control motor.
   2. Connect battery power to the No.1 terminal of the air mix control motor and ground the No.2 terminal; the air mix control motor should run and stop at Max Cool. If it does not, reverse the connections; the air mix control motor should run and stop at Max Hot. If the air mix control motor does not run remove it, then check the air mix control linkage and door for smooth movement.
      - If the linkage and door move smoothly, replace the air mix control motor.
      - If the linkage or door sticks or binds, repair them as needed.

AIR MIX CONTROL MOTOR



2. 3. Measure the resistance between the No. 4 and No. 5 terminals. It should be between 2.1 k to 3.9 k ohm.
   4. Measure the resistance between the No. 3 and No. 4 terminals.

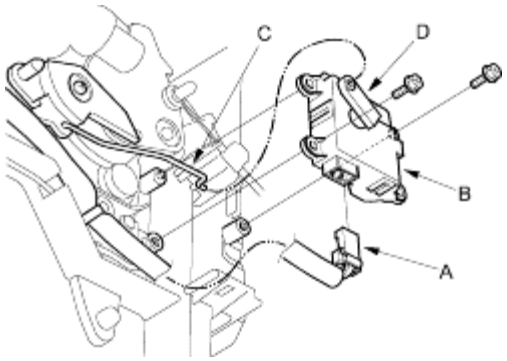
Max Cool - 0.35 k to 0.91 k ohm;

Max Hot - 1.56 k to 3.24 k ohm;

21-45 Air Mix Control Motor Replacement

5-door

1. 1. Remove the under-dash fuse/relay box (see page 22-78).
   2. Disconnect the 5P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit. Remove the rod (C) from the arm (D) of the air mix control motor.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

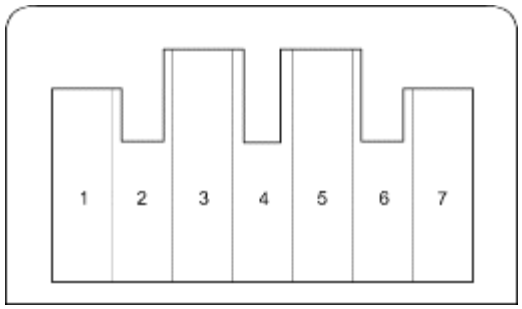
Heating

Mode Control Motor Test

4-door

1. 1. Disconnect the 7P connector from the mode control motor.
   2. Connect battery power to the No. 1 terminal and ground the No. 2 terminal; the mode control motor should run smoothly and stop at Vent. If it does not, reverse the connections; the mode control motor should run smoothly and stop at Defrost. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR



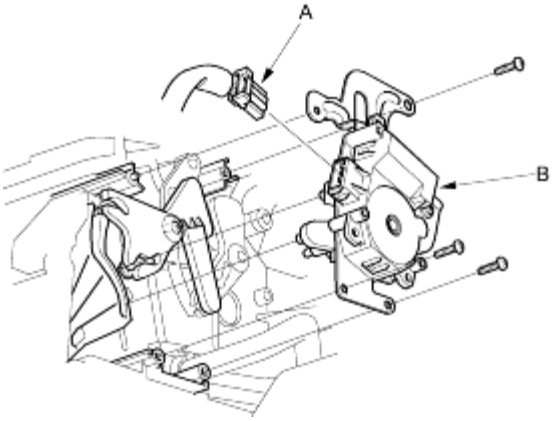
2. 3. Use a digital multimeter with an output of 1 mA or less at the 20 k ohm; range. With the mode control motor running as in step 2, check for continuity between the No. 3, 4, 5, 6 terminals and the No. 7 terminal individually. There should be continuity for a moment at each terminal.
   4. If the mode control motor does not run in step 2 remove it, then check the mode control linkage and doors for smooth movement.
      - If the linkage and doors move smoothly, replace the mode control motor.
      - If the linkage or doors stick or bind, repair them as needed.

21-46 Mode Control Motor Replacement

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. Remove the ECM/PCM (see page 11-3).
   2. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

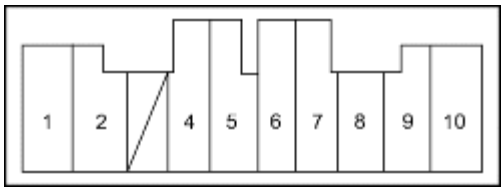
Heating

Mode Control Motor Test

5-door

1. 1. Disconnect the 10P connector from the mode control motor.
   2. Connect battery power to the No. 1 terminal and ground the No. 2 terminal; the mode control motor should run smoothly and stop at Defrost. If it does not, reverse the connections; the mode control motor should run smoothly and stop at Vent. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR

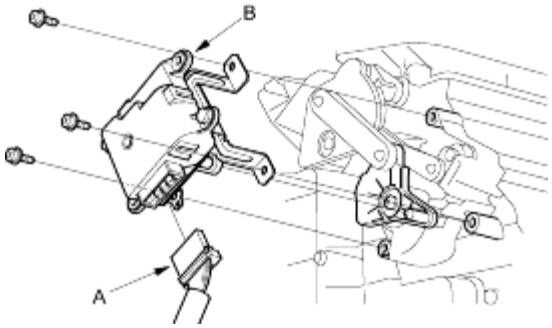


2. 3. Use a digital multimeter with an output of 1 mA or less at the 20 k ohm; range. With the mode control motor running as in step 2, check for continuity between the No. 4, 5, 6, 7, 8, 9, terminals and the No. 10 terminal individually. There should be continuity for a moment at each terminals.
   4. If the mode control motor does not run in step 2 remove it, then check the mode control linkage and doors for smooth movement.
      - If the linkage and doors move smoothly, replace the mode control motor.
      - If the linkage or doors stick or bind, repair them as needed.

21-47 Mode Control Motor Replacement

5-door

1. 1. Remove the ECM/PCM (see page 11-3).
   2. Disconnect the 10P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Heating

Recirculation Control Motor Test

4-door

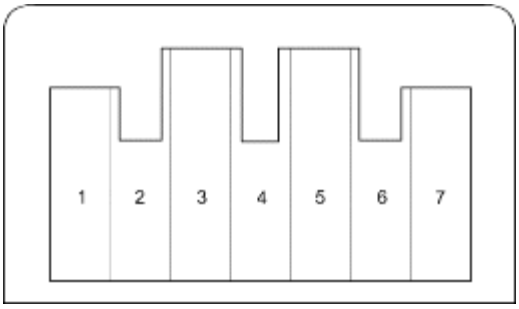
1. 1. Disconnect the 7P connector from the recirculation control motor.

NOTICE

Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. 2. Connect battery power to the No. 1 terminal and ground the No. 5 and No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the recirculation control motor should stop at Fresh or Recirculate. Do not cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR



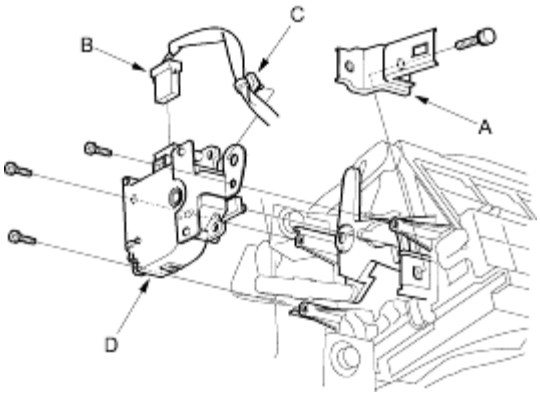
3. 3. If the recirculation control motor does not run in step 2 remove it, then check the recirculation control linkage and doors for smooth movement.
   - If the linkage and doors move smoothly, replace the recirculation control motor.
   - If the linkage or doors stick or bind, repair them as needed.

Recirculation Control Motor Replacement

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. Remove the ECM/PCM (see page 11-3).
   2. Remove the bolt and the bracket (A). Disconnect the 7P connector (B) and the harness clip (C) from the recirculation control motor (D). Remove the self-tapping screws and the recirculation control motor from the blower unit.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Heating

Recirculation Control Motor Test

5-door

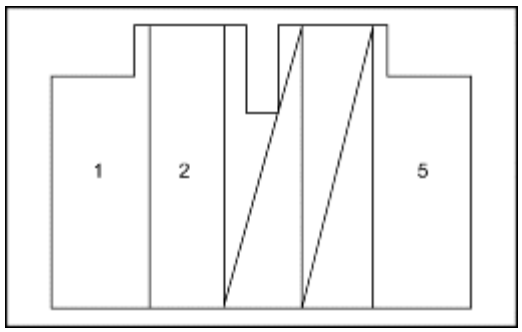
1. 1. Disconnect the 5P connector from the recirculation control motor.

   NOTICE

   Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. 2. Connect battery power to the No. 5 terminal and ground the No. 1 or No. 2 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No.1 and No.2 terminals from ground; the recirculation control motor should stop at Fresh or Recirculate. Do not cycle the recirculation control motor for a long time.

   RECIRCULATION CONTROL MOTOR

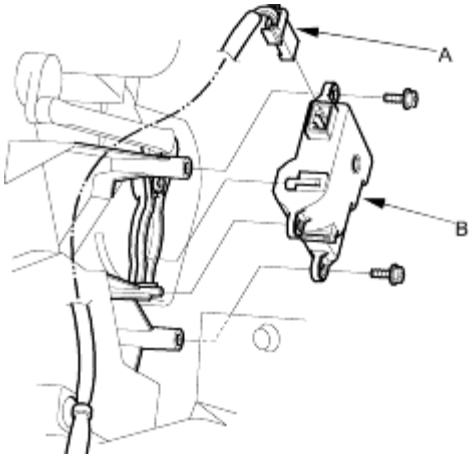


3. 3. If the recirculation control motor does not run in step 2 remove it, then check the recirculation control linkage and doors for smooth movement.
   - If the linkage and doors move smoothly, replace the recirculation control motor.
   - If the linkage or doors stick or bind, repair them as needed.

Recirculation Control Motor Replacement

5-door

1. 1. Remove the ECM/PCM (see page 11-3).
   2. Disconnect the 5P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



2. 3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Heating

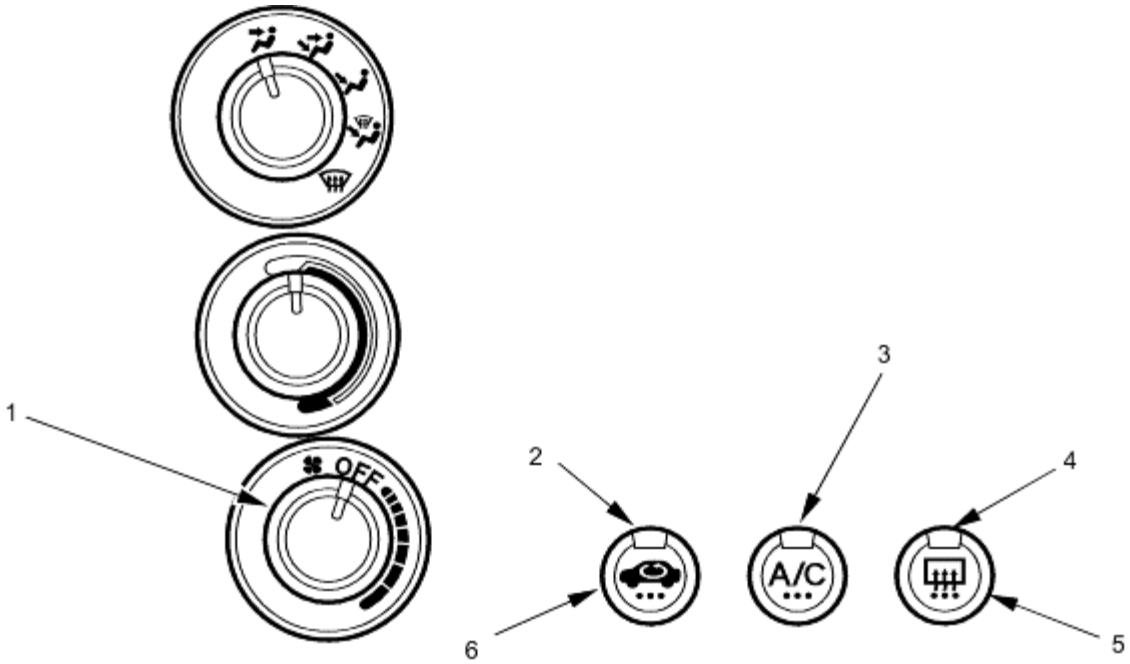
General Troubleshooting Information

How to Retrieve a DTC

The Heater Control Panel has a self-diagnosis function.

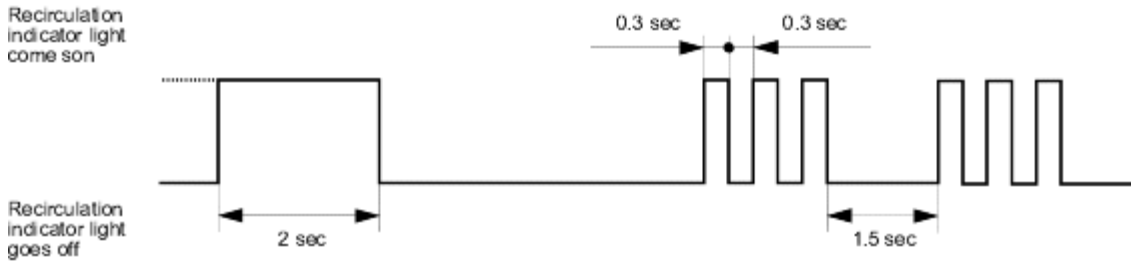
Running the Self-diagnosis Function

1. 1. Turn the fan switch OFF.
   2. Press the recirculation control switch and the rear window defogger switch.
   3. While holding both the switches down, turn the ignition switch ON (II), then release both the switches. The recirculation indicator light and the rear window defogger indicator light comes on. The recirculation indicator light goes off 2 seconds later and the A/C indicator light comes on (if so equipped), then the self-diagnosis will begin. About 10 seconds later, the self-diagnosis will finish and the A/C indicator light goes off. The recirculation indicator light will blink the Diagnostic Trouble Code (DTC) to indicate a faulty component. If no DTC's are found, the indicator light will not blink.
   NOTE: LHD type is shown, RHD type is symmetrical.



1. FAN SWITCH
2. RECIRCULATION INDICATOR LIGHT
3. A/C INDICATOR LIGHT
4. REAR WINDOW DEFOGGER INDICATOR LIGHT
5. REAR WINDOW DEFOGGER SWITCH
6. RECIRCULATION CONTROL SWITCH

Example of DTC indication Pattern (DTC 3)



Resetting the Self-diagnosis Function

Turn the ignition switch OFF to cancel the self-diagnosis function. After completing repair work, run the self-diagnosis function again to make sure that there are no other malfunctions.

Standards and Service Limits
Automatic Transmission and Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Mainshaft	Diameter of needle bearing contact area	at stator shaft	22.980-22.993 mm (0.9047-0.9052 in.)	When worn or damaged
		at 2nd gear	35.975-35.991 mm (1.4163-1.4169 in.)	When worn or damaged
		at 4th gear collar	31.975-31.991 mm (1.2589-1.2595 in.)	When worn or damaged
		at 1st gear collar	30.975-30.991 mm (1.2195-1.2201 in.)	When worn or damaged
	I.D. of gears	1st gear	35.000-35.016 mm (1.3780-1.3786 in.)	When worn or damaged
		2nd gear	41.000-41.016 mm (1.6142-1.6148 in.)	When worn or damaged
		4th gear	38.000-38.016 mm (1.4961-1.4967 in.)	When worn or damaged
	End play of gears	1st gear	0.08-0.19 mm (0.003-0.007 in.)	-
		2nd gear	0.05-0.13 mm (0.002-0.005 in.)	-
		4th gear	0.075-0.185 mm (0.003-0.007 in.)	-
	4th gear collar length		49.50-49.55 mm (1.9488-1.9508 in.)	-
	4th gear collar flange thickness		4.435-4.525 mm (0.1746-0.1781 in.)	-
	1st gear collar length		27.00-27.05 mm (1.063-1.065 in.)	-
	36.5 x 55 mm thrust washer thickness	No. 1	4.00 mm (0.157 in.)	When worn or damaged
		No. 2	4.05 mm (0.159 in.)	When worn or damaged
		No. 3	4.10 mm (0.161 in.)	When worn or damaged
		No. 4	4.15 mm (0.163 in.)	When worn or damaged
		No. 5	4.20 mm (0.165 in.)	When worn or damaged
		No. 6	4.25 mm (0.167 in.)	When worn or damaged
		No. 7	4.30 mm (0.169 in.)	When worn or damaged
		No. 8	4.35 mm (0.171 in.)	When worn or damaged
		No. 9	4.40 mm (0.173 in.)	When worn or damaged
		No. 10	4.45 mm (0.175 in.)	When worn or damaged
	Thrust washer thickness	26 x 45 x 3 mm	2.95-3.05 mm (0.116-0.120 in.)	When worn or damaged
		1st gear, 26 mm	2.43-2.50 mm (0.096-0.098 in.)	When worn or damaged

	Clutch feed pipe O.D.	1st clutch feed pipe at 15 mm (0.6 in.) from end	8.97-8.98 mm (0.535-0.354 in.)	8.95 mm (0.352 in.)
		4th clutch feed pipe at 30 mm (1.2 in.) from end	5.97-5.98 mm (0.2350-0.2354 in.)	5.95 mm (0.234 in.)
	Sealing ring thickness	35 mm sealing ring	1.87-1.97 mm (0.074-0.078 in.)	1.8 mm (0.071 in.)
		29 mm sealing ring	1.87-1.97 mm (0.074-0.078 in.)	1.8 mm (0.071 in.)
	Clutch feed pipe bushing I.D.	1st clutch	9.000-9.015 mm (0.3543-0.3549 in.)	9.03 mm (0.356 in.)
		4th clutch	6.018-6.030 mm (0.2369-0.2374 in.)	6.045 mm (0.2380 in.)
	Width of sealing ring groove		2.025-2.075 mm (0.0797-0.0811 in.)	2.095 mm (0.082 in.)

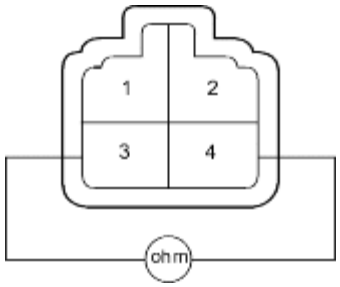
Heating

Power Transistor Test

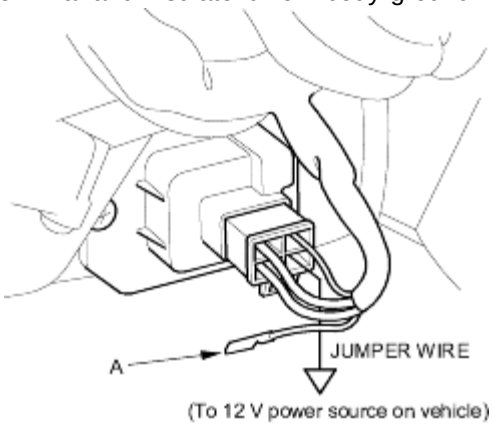
4-door

1. 1. Disconnect the 4P connector from the power transistor.
   2. Measure the resistance between the No. 3 and No. 4 terminals of the power transistor. It should be about 1.4 - 1.5 k ohm.
      - If the resistance is within the specifications, go to step 3.
      - If the resistance is not within the specifications, replace the power transistor.

POWER TRANSISTOR



2. 3. Carefully release the lock tab on the No. 1 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

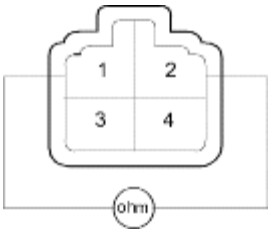


3. 4. Reconnect the 4P connector to the power transistor.
   5. Supply 12 volts to the No. 1 cavity with a jumper wire.
   6. Turn the ignition switch ON (II) and check that the blower motor runs.
      - If the blower motor does not run, replace the power transistor.
      - If the blower motor runs, the power transistor is OK.

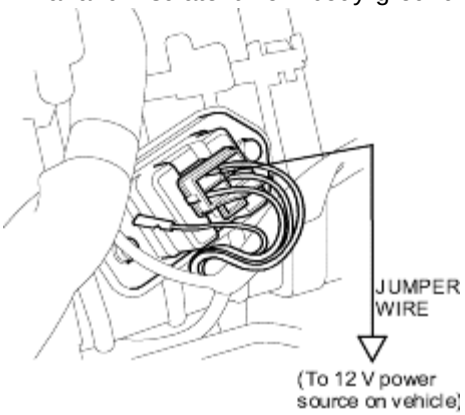
5-door KE Model

1. 1. Disconnect the 4P connector from the power transistor.
   2. Measure the resistance between the No. 1 and No. 2 terminals of the power transistor. It should be about 1.4 - 1.5 k ohm.
      - If the resistance is within the specifications, go to step 3.
      - If the resistance is not within the specifications, replace the power transistor.

POWER TRANSISTOR



2. 3. Carefully release the lock tab on the No. 4 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



3. 4. Reconnect the 4P connector to the power transistor.
   5. Supply 12 volts to the No. 4 cavity with a jumper wire.
   6. Turn the ignition switch ON (II) and check that the blower motor runs.
      - If the blower motor does not run, replace the power transistor.
      - If the blower motor runs, the power transistor is OK.

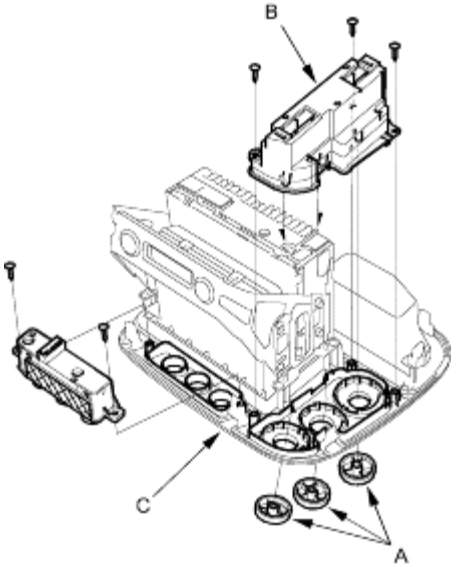
Heating

Heater Control Panel Removal and Installation

4-door, 5-door KE Model

NOTE: LHD type is shown, RHD type is symmetrical.

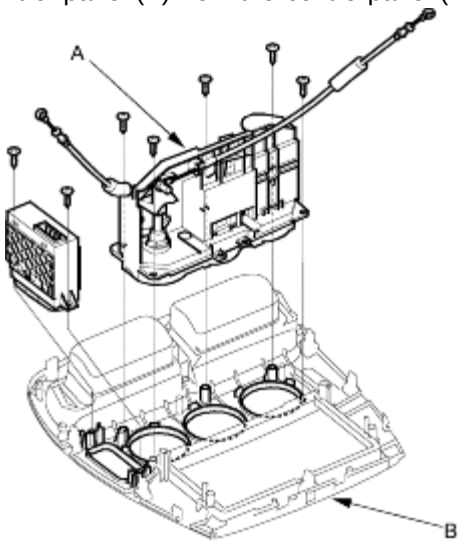
1. 1. Remove the centre panel (see page 20-78).
   2. Remove the dials (A), then remove the self-tapping screws and the heater control panel (B) from the centre panel (C).



2. 3. Install the control panel in the reverse order of removal. After installation, operate the control panel controls to see whether it works properly.
   4. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-5).

Except 4-door, 5-door KE Model

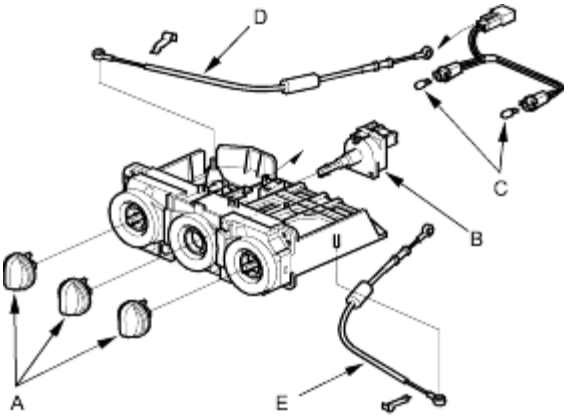
1. 1. Remove the centre panel (see page 20-219).
   2. Remove the self-tapping screws and the heater control panel (A) from the centre panel (B).



2. 3. Install the control panel in the reverse order of removal. After installation, operate the control panel controls to see whether it works properly.

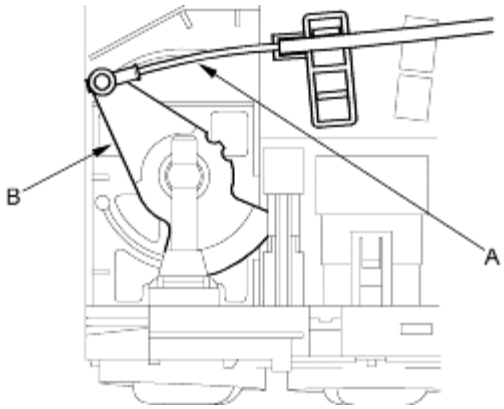
Except 4-door, 5-door KE Model

A. A. DIALS
B. HEATER FAN SWITCH
C. BULBS
D. AIR MIX CONTROL CABLE
E. MODE CONTROL CABLE

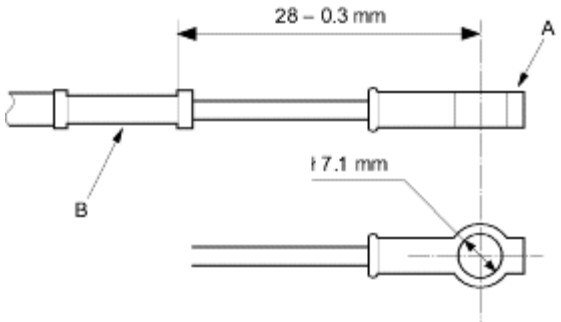


Air Mix and Mode Control Cables Replacement

2. 1. When installing the air mix control cable, set the temperature control dial to MAX COOL. When installing the mode control cable, set the mode control dial to VENT.
2. Attach the control cable (A) to the control lever (B) as shown.



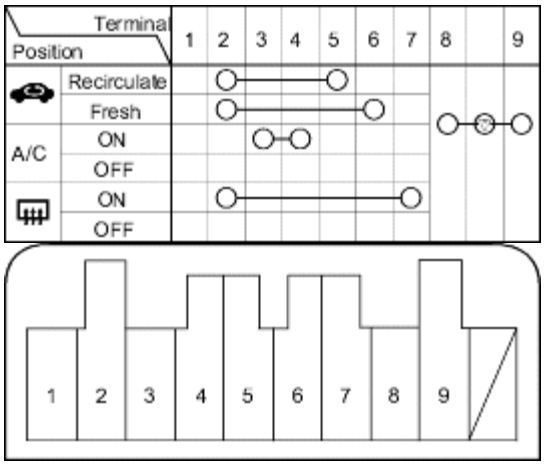
3. 3. Adjust the length between the inner cable (A) and the cable housing (B) of the heater unit side to 28 ±; 0.3 mm as shown.



4. 4. Keep the length of the control cable adjusted in step 3, hold the control cable with the cable clamp.

Except 4-door, 5-door KE Model

Check for continuity between the terminals in each switch position according to the table.



Heating

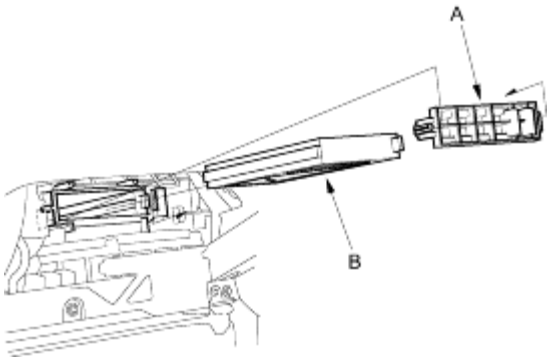
Dust and Pollen Filter Replacement (With Air Conditioning)

4-door

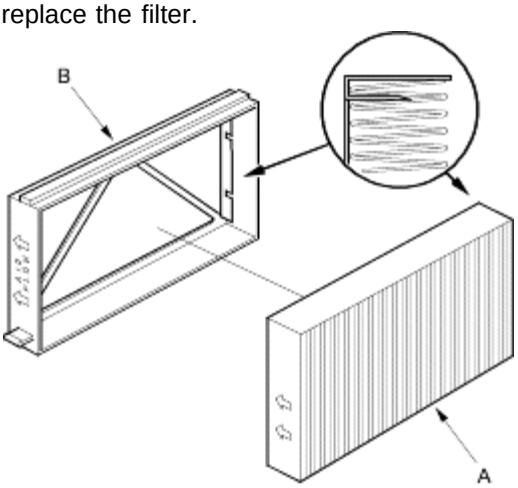
NOTE: LHD type is shown, RHD type is symmetrical.

The dust and pollen filters should be replaced every 48,000 km (30,000 miles) or 24 months whichever comes first. Replace the filters more often if the air flow is less than usual.

1. 1. Open the glove box. Remove the glove box stop on each side, then hang the glove box down (see page 20-79).
   2. Remove the filter lid (A) from the blower unit, then pull out the first dust and pollen filter (B). Slide the second filter to the left and pull it out.



2. 3. Remove the filter (A) from the housing (B) and replace the filter.

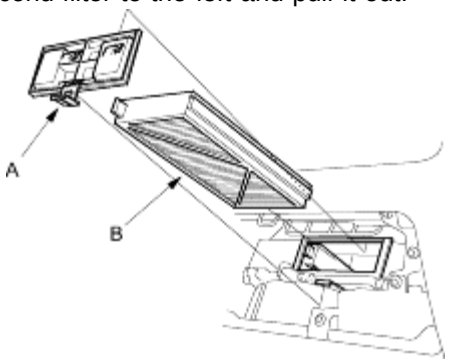


3. 4. Install the filters in the reverse order of removal.

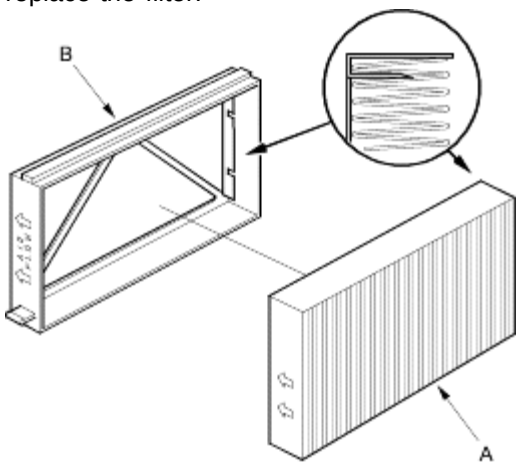
5-door

The dust and pollen filters should be replaced every 48,000 km (30,000 miles) or 24 months whichever comes first. Replace the filters more often if the air flow is less than usual.

1. 1. Open the glove box. Remove the glove box stop on each side, then hang the glove box down (see page 20-220).
   2. Remove the filter lid (A) from the blower unit, then pull out the first dust and pollen filter (B). Slide the second filter to the left and pull it out.



2. 3. Remove the filter (A) from the housing (B) and replace the filter.



3. 4. Install the filters in the reverse order of removal.

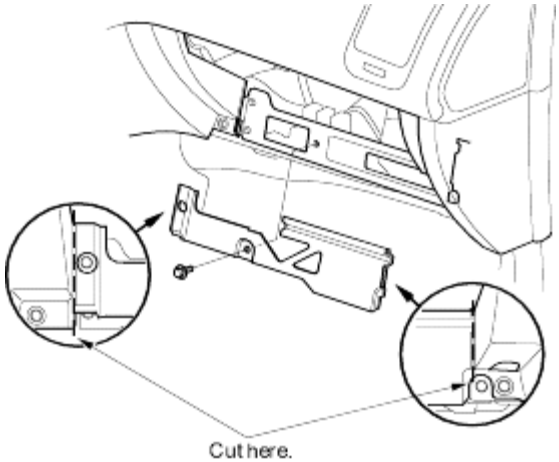
Heating

Blower Unit Removal and Installation

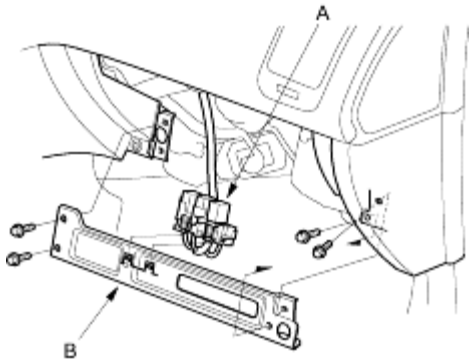
4-door

NOTE: LHD type is shown, RHD type is symmetrical.

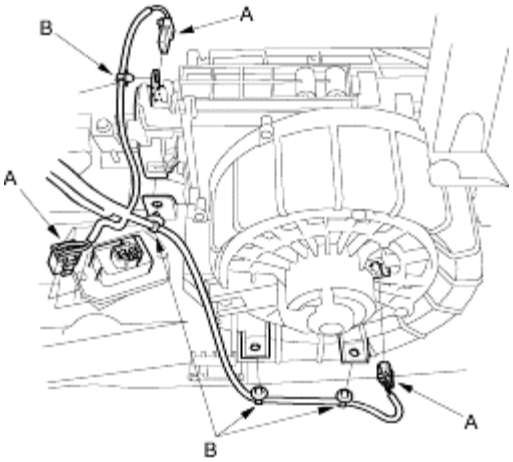
1. Remove the passenger's dashboard lower cover (see page 20-78), the right kick panel (see page 20-64) and the glove box (see page 20-79).
2. Remove the bolt, then cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown. Remove and discard the plastic cross brace.



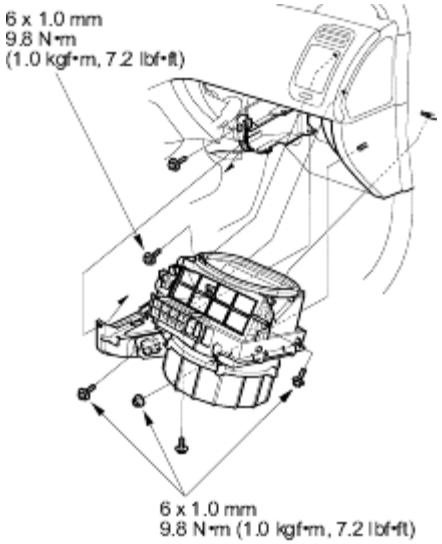
3. Remove the relays (A), then remove the bolts and the glove box frame (B).



4. Remove the ECM/PCM (see page 11-3).
5. Disconnect the connectors (A) from the blower motor, the power transistor and the recirculation control motor, then remove the wire harness clips (B).



6. Fold the carpet and pad back toward you. Remove the mounting bolts, the mounting nut and the blower unit.



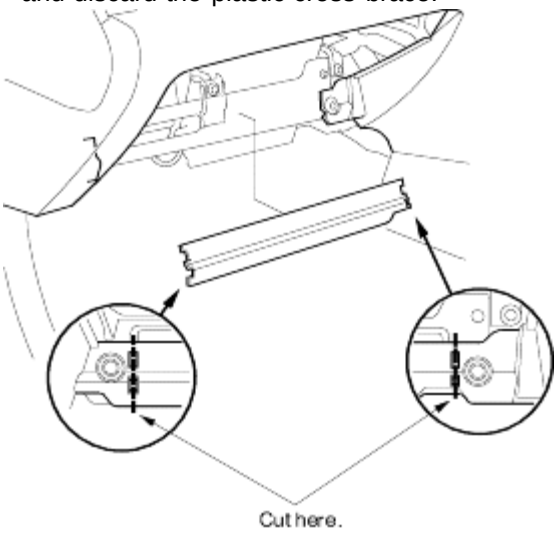
7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Heating

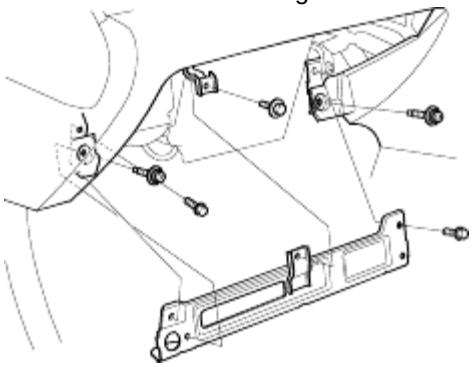
Blower Unit Removal and Installation (cont'd)

5-door

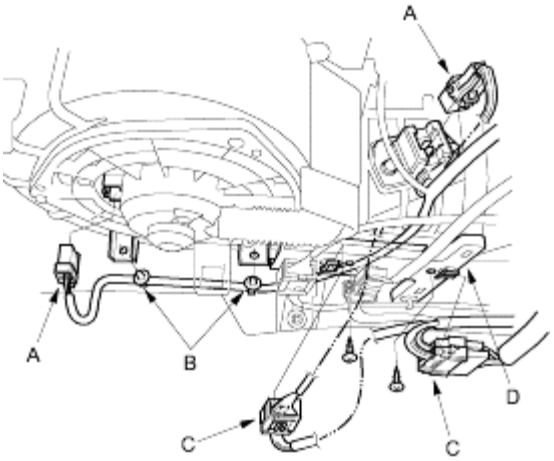
1. 1. Remove the passenger's dashboard lower cover (see page 20-206), the left kick panel (see page 20-220) and the glove box (see page 20-220).
   2. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown. Remove and discard the plastic cross brace.



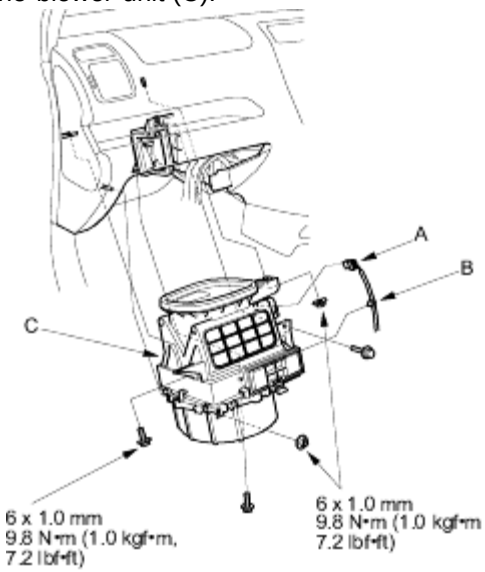
2. 3. Remove the bolts and the glove box frame.



1. 4. Remove the ECM/PCM (see page 11-3).
2. 5. Disconnect the connectors (A) from the blower motor and the power transistor or blower resister, then remove the wire harness clips (B) and the connectors (C). Remove the self-tapping screws and the bracket (D).



3. 6. Disconnect the connector (A) from the recirculation control motor, then remove the wire harness clip (B). Remove the mounting bolts, the mounting nuts and the blower unit (C).



4. 7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

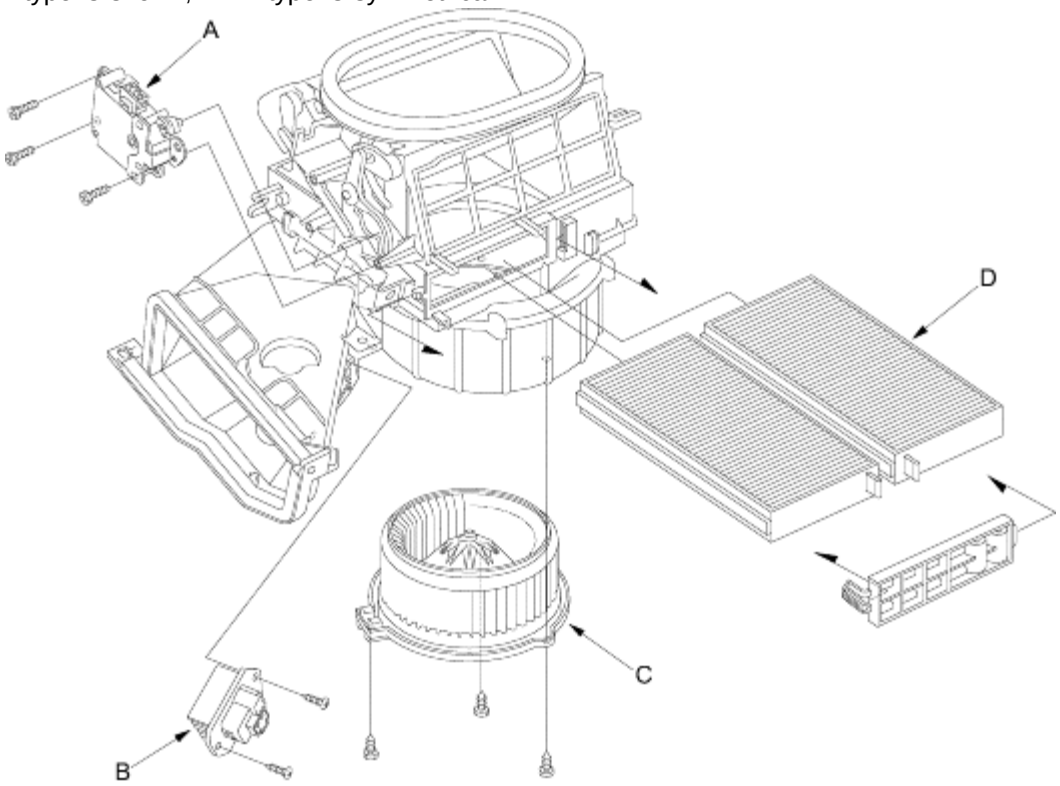
Heating

Blower Unit Components Replacement

4-door

Note these items when overhauling the blower unit:

- The recirculation control motor (A), the power transistor (B), the blower motor (C) and the dust and pollen filters (with A/C) (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-48).
  NOTE: LHD type is shown, RHD type is symmetrical.



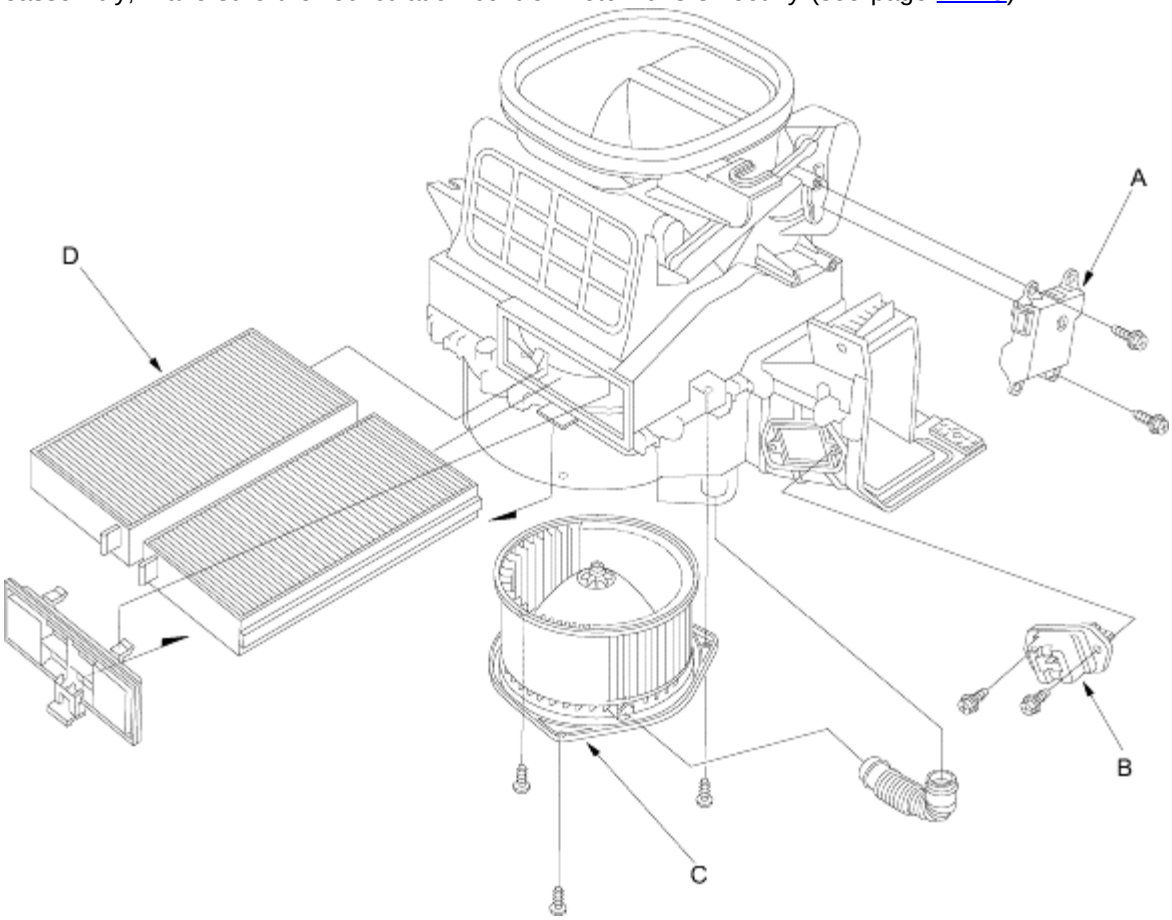
Heating

Blower Unit Components Removal (cont'd)

5-door

Note these items when overhauling the blower unit:

- The recirculation control motor (A), the power transistor or the blower resister (B), the blower motor (C) and the dust and pollen filters (with A/C) (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-49).

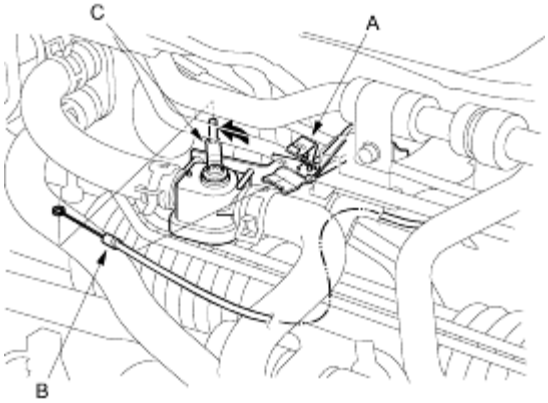


4-door

SRS components are located in this area. Review the SRS component locations (see page 23-23) and precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

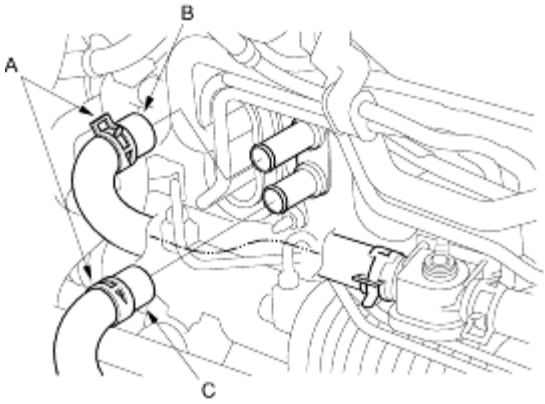
NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Disconnect the negative cable from the battery.
   3. With air conditioning; disconnect the suction and receiver lines from the evaporator core (see page 21-85).
   4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

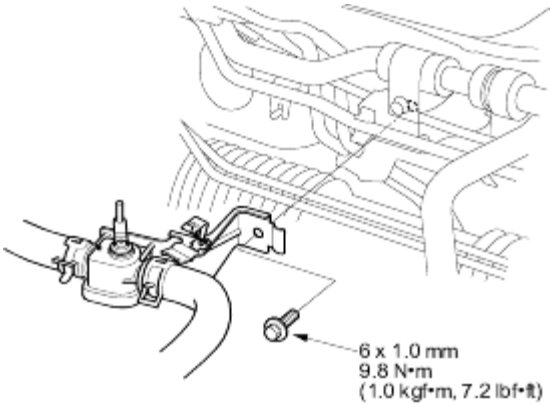


2. 5. When the engine is cool, drain the engine coolant from the radiator (see page 10-8).

1. 6. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater core. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



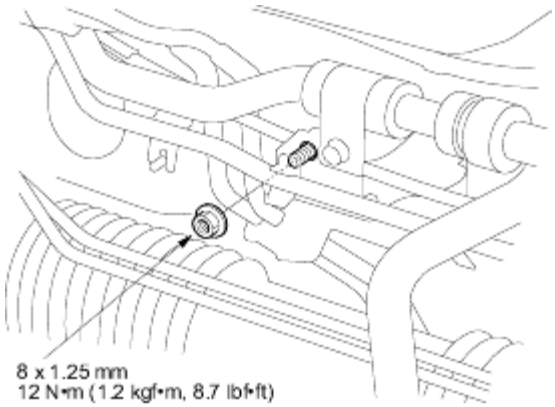
2. 7. Remove the mounting bolt and the heater valve as shown.



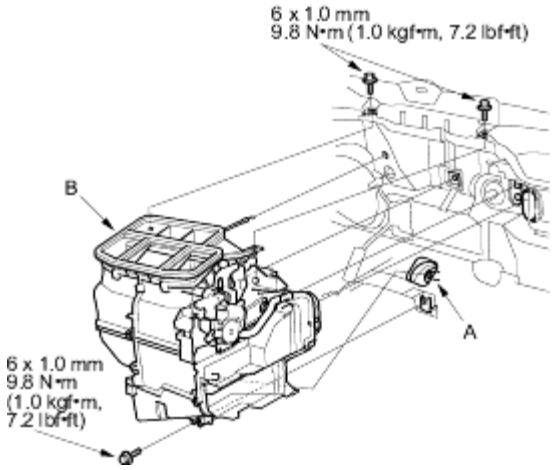
Heating

Heater Unit/Core Replacement (cont'd)

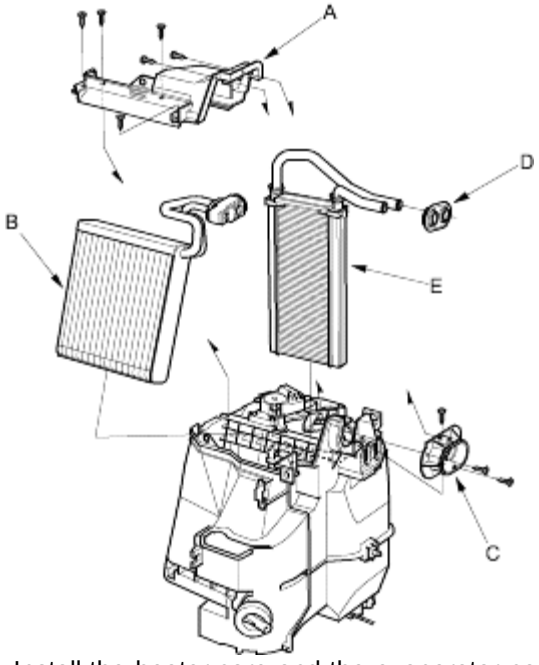
8. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.



9. Remove the dashboard (see page 20-75).
10. Remove the blower unit (see page 21-54).
11. Disconnect the drain hose (A), then remove the mounting bolts and the heater unit (B).



12. Remove the self-tapping screws and the expansion valve cover (A). With air conditioning; carefully pull out the evaporator core (B) so you do not bend the inlet and outlet pipes. Remove the self-tapping screws and the flange cover (C), then remove the grommet (D) and carefully pull out the heater core (E) so you do not bend the inlet and outlet pipes.



13. Install the heater core and the evaporator core (with A/C) in the reverse order of removal.
14. Install the heater unit in the reverse order of removal and note these items:
    - Do not interchange the inlet and outlet heater hoses and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-8).
    - Be sure to connect the drain hose securely.
    - Adjust the heater valve cable (see page 21-62).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
    - With air conditioning, refer to evaporator core replacement (see step 6 on page 21-85).

Heating
DTC Troubleshooting Index

4-door

DTC (Recirculation Indication Light Blinks)	Detection Item	Page
7	An open in the air mix control motor circuit	(see page 21-15)
8	A short in the air mix control motor circuit	(see page 21-15)
9	A problem in the air mix control linkage, door or motor	(see page 21-16)
10	An open or short in the mode control motor circuit	(see page 21-17)
11	A problem in the mode control linkage, doors or motor	(see page 21-18)
12	A problem in the blower motor circuit	(see page 21-19)
13	A problem in the EEPROM in the heater control panel; the control panel must be replaced	(see page 21-51)
14 (With A/C)	An open in the evaporator temperature sensor circuit	(see page 21-22)
15 (With A/C)	A short in the evaporator temperature sensor circuit	(see page 21-23)

In case of multiple problems, the recirculation indicator light will indicate only the DTC with the least number of blinks.

Standards and Service Limits

Automatic Transmission and Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter of needle bearing contact area	at left end	36.004-36.017 mm (1.4175-1.4180 in.)	When worn or damaged
		at 3rd gear	35.980-35.996 mm (1.4165-1.4172 in.)	When worn or damaged
		at 4th gear	27.980-27.993 mm (1.1016-1.1021 in.)	When worn or damaged
		at reverse gear collar	31.975-31.991 mm (1.2589-1.2595 in.)	When worn or damaged
		at 1st gear collar	31.975-31.991 mm (1.2589-1.2595 in.)	When worn or damaged
	I.D. of gears	1st gear	38.000-38.016 mm (1.4961-1.4967 in.)	When worn or damaged
		3rd gear	41.000-41.016 mm (1.6142-1.6148 in.)	When worn or damaged
		4th gear	33.000-33.016 mm (1.2992-1.2998 in.)	When worn or damaged
		Reverse gear	38.000-38.016 mm (1.4961-1.4967 in.)	When worn or damaged
	End play of gears	1st gear	0.1-0.5 mm (0.004-0.020 in.)	-
		3rd gear	0.05-0.17 mm (0.002-0.007 in.)	-
		4th gear	0.10-0.18 mm (0.004-0.007 in.)	-
		Reverse gear	0.10-0.25 mm (0.004-0.010 in.)	-
	28 mm distance collar length	No. 1	39.00 mm (1.535 in.)	-
		No. 2	39.10 mm (1.539 in.)	-
		No. 3	39.20 mm (1.543 in.)	-
		No. 4	39.30 mm (1.547 in.)	-
		No. 5	39.05 mm (1.537 in.)	-
		No. 6	39.15 mm (1.541 in.)	-
		No. 7	39.25 mm (1.545 in.)	-
		No. 8	38.90 mm (1.531 in.)	-
		No. 9	38.95 mm (1.533 in.)	-
	3rd gear collar length		20.65-20.70 mm (0.8130-0.8150 in.)	-
	Reverse gear collar length		14.5-14.6 mm (0.571-0.575 in.)	-
	Reverse gear collar flange thickness		2.4-2.6 mm (0.094-0.102 in.)	When worn or damaged
	1st gear collar length		14.5-14.6 mm (0.571-0.575 in.)	-
	1st gear collar flange thickness		2.4-2.6 mm (0.094-0.102 in.)	When worn or damaged
	3rd gear splined washer thickness		4.95-5.00 mm (0.195-0.197 in.)	When worn or damaged
	3rd clutch feed pipe O.D.	At 15 mm (0.6 in.) from end	7.97-7.98 mm (0.3138-0.3142 in.)	7.95 mm (0.313 in.)

	3rd clutch feed pipe bushing I.D.		8.000-8.022 mm (0.3150-0.3158 in.)	8.03 mm (0.316 in.)
	Reverse selector hub O.D.		51.87-51.90 mm (2.042-2.043 in.)	When worn or damaged
	1st gear I.D. of one-way clutch contact area		83.339-83.365 mm (3.2810-3.2821 in.)	When worn or damaged
	Park gear diameter of one-way clutch area		66.685-66.698 mm (2.6254-2.6259 in.)	When worn or damaged

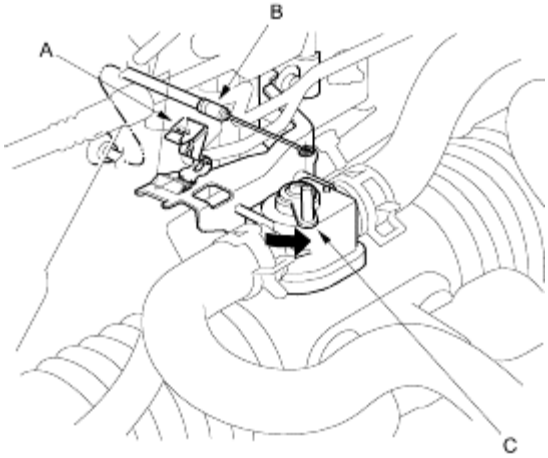
Heating

Heater Unit/ Core Replacement (cont'd)

5-door

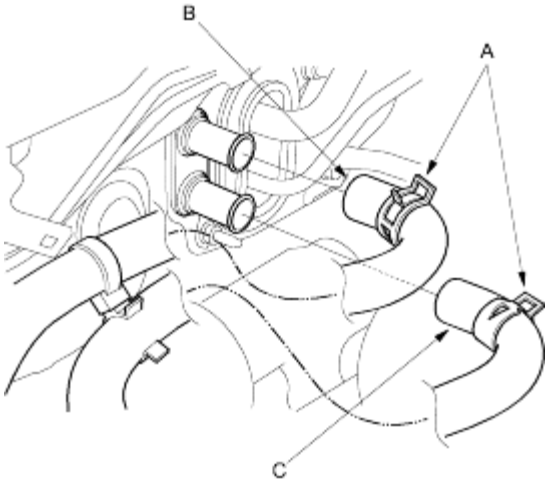
SRS components are located in this area. Review the SRS component locations (see page 23-23) and precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's pre-set buttons.
   2. Disconnect the negative cable from the battery.
   3. With air conditioning; disconnect the suction and receiver lines from the evaporator core (see page 21-86).
   4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

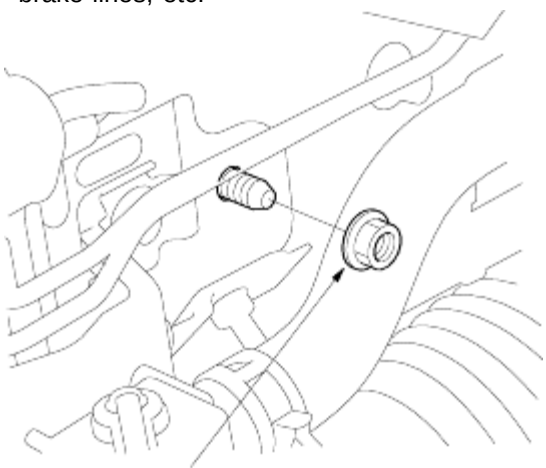


2. 5. When the engine is cool, drain the engine coolant from the radiator (see page 10-8).

1. 6. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater core. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



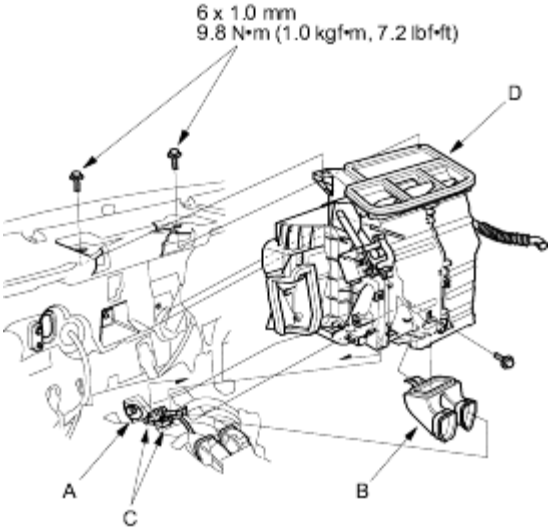
2. 7. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.



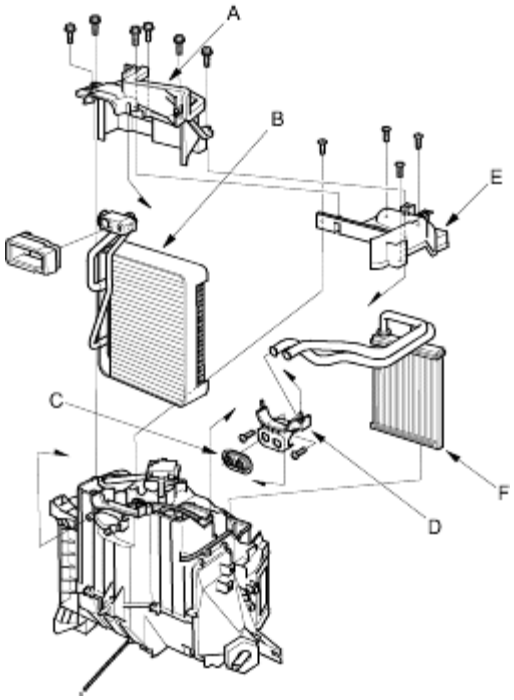
Heating

Heater Unit/ Core Replacement (cont'd)

1. 8. Remove the dashboard (see page 20-215).
2. 9. Remove the blower unit (see page 21-55).
10. Disconnect the drain hose (A), then remove the mounting bolts, the heater outlet (B), the connectors (C) and the heater unit (D).



1. 11. Remove the self-tapping screws and the expansion valve cover (A). With air conditioning; carefully pull out the evaporator core (B) so you do not bend the inlet and outlet pipes. Remove the grommet (C), then remove the self-tapping screws and the flange cover (D). Remove the self-tapping screws and the pipe cover (E), then carefully pull out the heater core (F) so you do not bend the inlet and outlet pipes.



2. 12. Install the heater core and the evaporator core (with A/C) in the reverse order of removal.
13. Install the heater unit in the reverse order of removal and note these items:
    - Do not interchange the inlet and outlet heater hoses and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-8).
    - Be sure to connect the drain hose securely.
    - Adjust the heater valve cable (see page 21-62).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
    - With air conditioning, refer to evaporator core replacement (see step 6 on page 21-86).

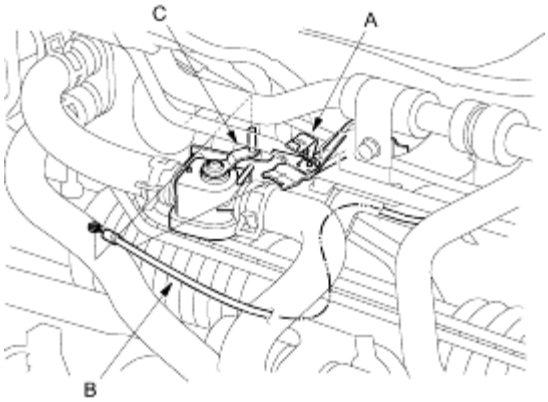
Heating

Heater Valve Cable Adjustment

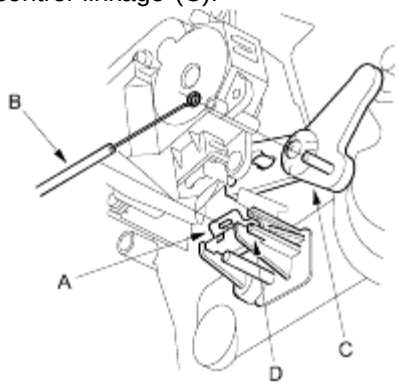
4-door, 5-door KE Model

NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).

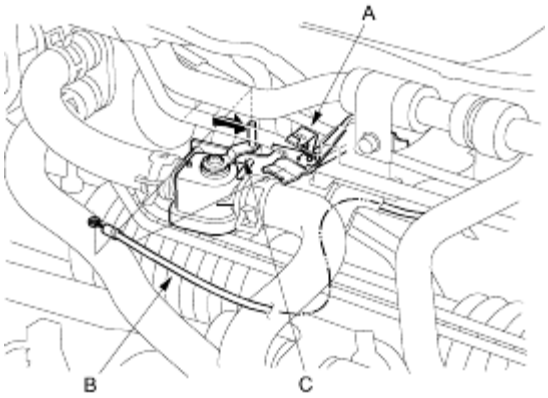


2. 2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A) and disconnect the heater valve cable (B) from the air mix control linkage (C).



3. 3. Set the temperature control dial on MAX COOL with the ignition switch ON (II).
   4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown above. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp (A).

1. 5. From under the hood, turn the heater valve arm (C) to the fully closed position as shown and hold it. Attach the heater valve cable (B) to the heater valve arm and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (A).

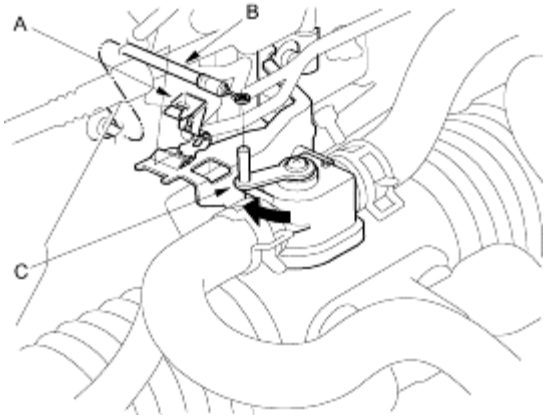


Heating

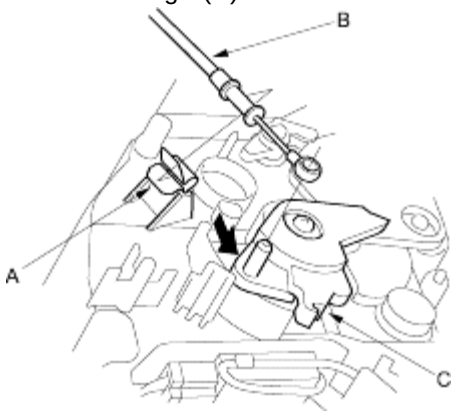
Air Mix Control Cable Adjustment

Except 4-door, 5-door KE Model

1. 1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



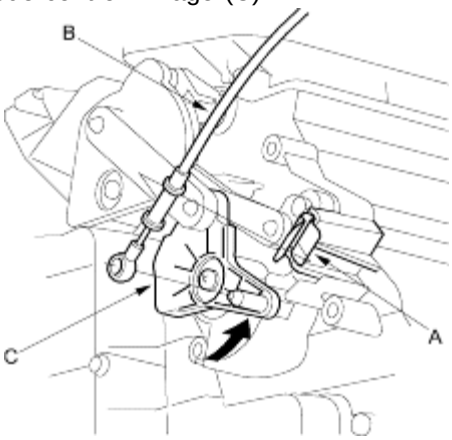
2. 2. From under the dash, disconnect the air mix control cable housing from the cable clamp (A) and disconnect the air mix control cable (B) from the air mix control linkage (C).



3. 3. Set the temperature control dial to MAX COOL.
   4. Turn the air mix control linkage fully counter-clockwise as shown above and hold it. Attach the air mix control cable to the air mix control linkage, then snap the air mix control cable housing into the cable clamp.
   5. From under the hood, turn the heater valve arm to the fully closed position as shown above and hold it. Attach the heater valve cable to the heater valve arm and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp.

Except 4-door, 5-door KE Model

1. 1. From under the dash, disconnect the mode control cable housing from the cable clamp (A) and disconnect the mode control cable (B) from the mode control linkage (C).

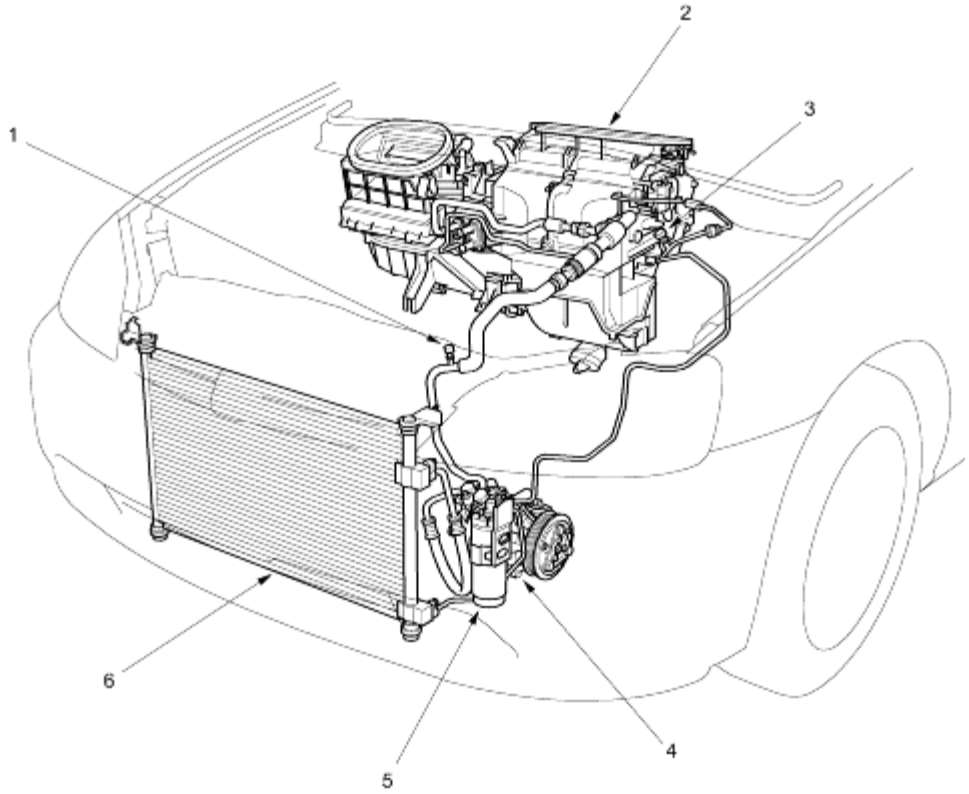


2. 2. Set the mode control dial to VENT.
   3. Turn the mode control linkage fully counter-clockwise as shown above and hold it. Attach the mode control cable to the mode control linkage, then snap the mode control cable housing into the cable clamp.

Air Conditioning

Component Location Index

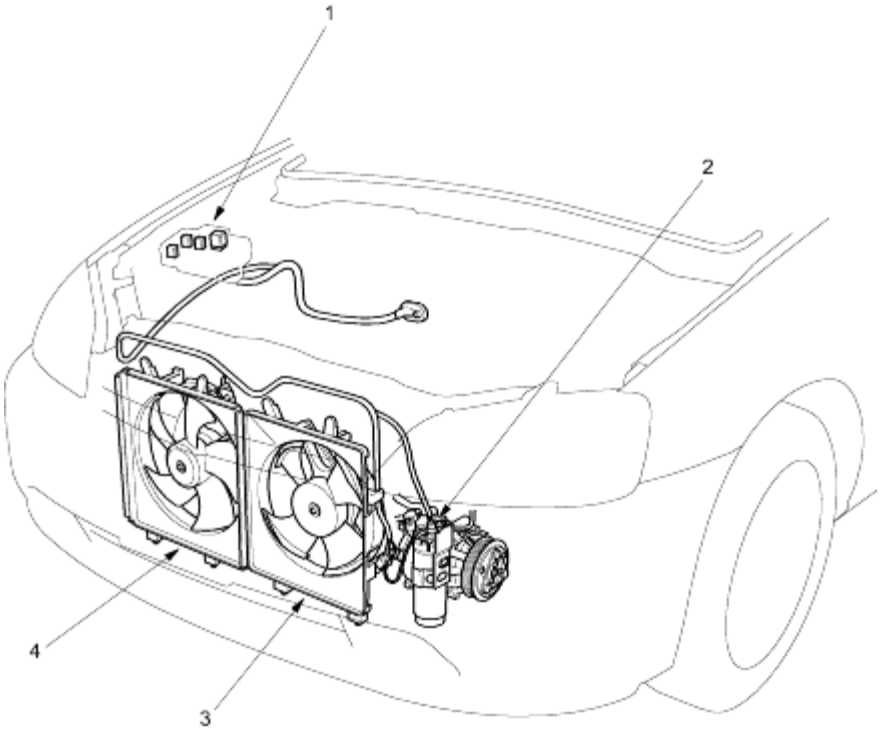
NOTE: LHD type is shown, RHD type is similar.



1. SERVICE VALVE (LOW PRESSURE SIDE)
2. EVAPORATOR CORE (Built-in heater unit)
   4-door: Replacement, page 21-85
   5-door: Replacement, page 21-86
3. SERVICE VALVE (HIGH PRESSURE SIDE)
4. COMPRESSOR
   Replacement, page 21-87Clutch Check, page 21-89
   Clutch Overhaul, page 21-90
   Thermal Protector Check, page 21-89Thermal Protector Replacement, page 21-92
5. Relief Valve Replacement, page 21-92RECEIVER/DRYER
6. CONDENSER
   Replacement, page 21-93

Air Conditioning
Component Location Index (cont'd)

NOTE: LHD type is shown, RHD type is similar.



1. BLOWER MOTOR RELAY, RADIATOR FAN RELAY, CONDENSER FAN RELAY, COMPRESSOR CLUTCH RELAY (Located in the under-hood fuse/relay box)
   Test, page 22-80
2. A/C PRESSURE SWITCH
3. CONDENSER FAN
4. RADIATOR FAN

Air Conditioning

A/C Service Tips and Precautions

WARNING

- Compressed air mixed with R-134a forms a combustible vapour.
- The vapour can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

CAUTION

- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result.

Separate the manifold gauge sets (pressure gauges, hoses, joints) for refrigerants R-12 and R-134a. Do not confuse them.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; do not remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, do not let refrigerant escape too fast; it will draw the compressor oil out of the system.

Recommended PAG oil: SANDEN SP-10:

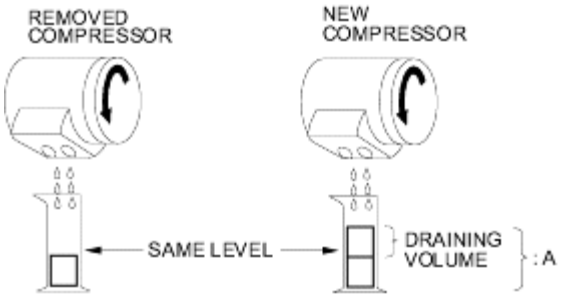
- P/N 38897-P13-003: 120 ml (4 fl oz, 4.2 lmp oz)
- P/N 38898-P13-003: 250 ml (8 1/3 fl oz, 8.8 lmp oz)
- P/N 38899-P13-A01: 40 ml (1 1/3 fl oz, 1.4 lmp oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

- To avoid contamination, do not return the oil to the container once dispensed and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

Condenser	25 ml (5/6 fl oz, 0.9 lmp oz)
Evaporator	45 ml (1 1/2 fl oz, 1.6 lmp oz)
Line or hose	10 ml (1/3 fl oz, 0.4 lmp oz)
Receiver/Dryer	10 ml (1/3 fl oz, 0.4 lmp oz)
Leakage repair	25 ml (5/6 fl oz, 0.9 lmp oz)
Compressor	For compressor replacement, subtract the volume of oil drained from the removed compressor from 130 ml (4 1/3 fl oz, 4.6 lmp oz) and drain the calculated volume of oil from the new compressor: 130 ml (4 1/3 fl oz, 4.6 lmp oz) – Volume of removed compressor = Volume to drain from new compressor.

NOTE: Even if no oil is drained from the removed compressor, do not drain more than 50 ml (1 2/3 fl oz, 1.8 lmp oz) from the new compressor.

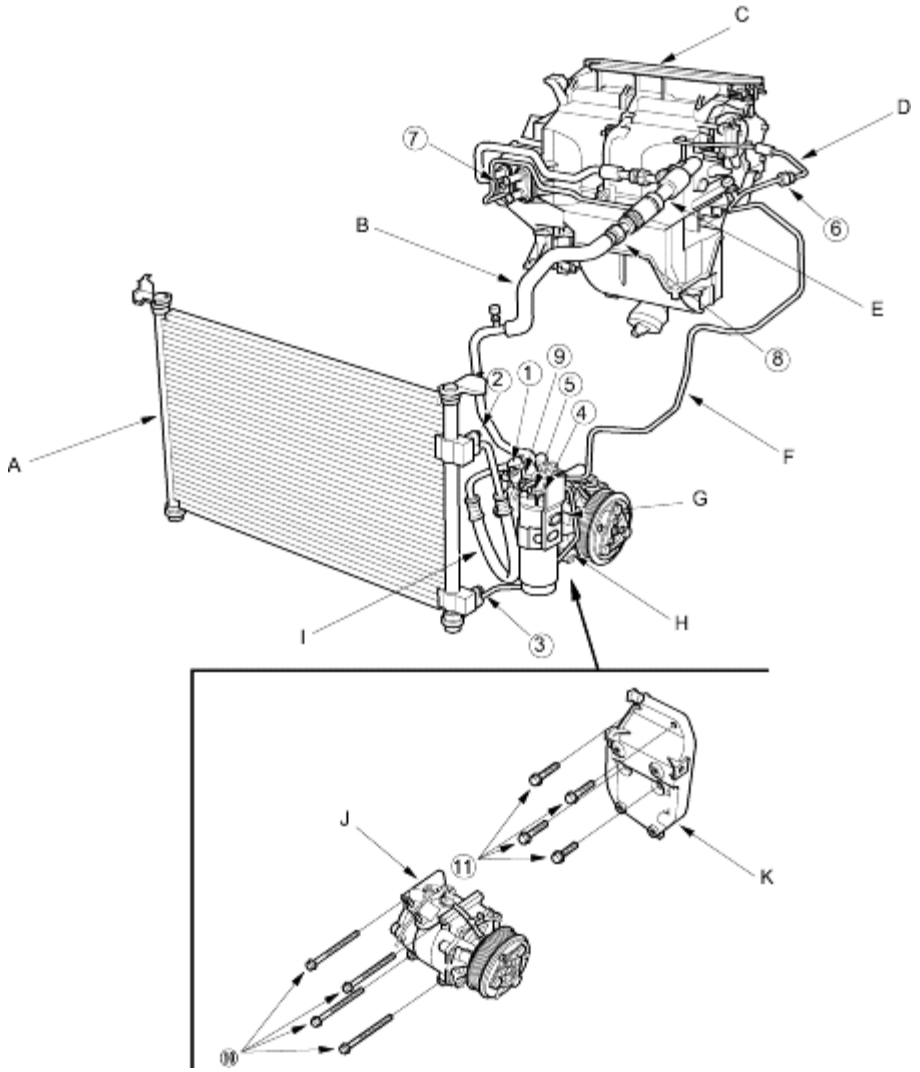


A: 130 ml (4 1/3 fl•oz, 4.6 lmp•oz)

Air Conditioning

A/C Refrigerant Oil Replacement

NOTE: LHD type is shown, RHD type is similar.



A. A. CONDENSER
B. SUCTION LINE
C. HEATER UNIT
D. RECEIVER LINE B
E. SUCTION HOSE
F. RECEIVER LINE A
G. RECEIVER/DRYER
H. CONDENSER LINE
I. DISCHARGE HOSE
J. COMPRESSOR
K. COMPRESSOR BRACKET

1. **Discharge hose to the compressor (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
2. **Discharge hose to the condenser (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
3. **Condenser line to the condenser (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
4. **Condenser line to the receiver/dryer (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
5. **Receiver line A to the receiver/dryer (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
6. **Receiver line A to the receiver line B : 13 N m (1.3 kgf/m, 9.4 lbf/ft)**
7. **Receiver line B and the suction hose to the evaporator (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
8. **Suction line to the suction hose : 31 N m (3.2 kgf/m, 23 lbf/ft)**
9. **Suction line to the compressor (6 x 10 mm) : 9.8 N m (1.0 kgf/m, 7.2 lbf/ft)**
10. **Compressor to the compressor bracket (8 x 1.25 mm) : 22 N m (2.2 kgf/m, 16 lbf/ft)**
11. **Compressor bracket to the engine block (10 x 1.25 mm) : 22 N m (4.5 kgf/m, 33 lbf/ft)**

Air Conditioning
Symptom Troubleshooting Index

4-door, 5-door KE Model

Symptom	Diagnostic procedure	Also check for
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-74)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-75)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Compressor clutch does not engage	Compressor Clutch Circuit Troubleshooting (see page 21-76)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
A/C System does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-78)	• Cleanliness and tightness of all connectors

Air Conditioning
Symptom Troubleshooting Index

Except 4-door, 5-door KE Model

Symptom	Diagnostic procedure	Also check for
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-74)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-75)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Compressor clutch does not engage	Compressor Clutch Circuit Troubleshooting (see page 21-76)	• Blown fuse No. 1 (20A) in the under-hood fuse/relay box and No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
A/C System does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-80)	• Cleanliness and tightness of all connectors

Heating
DTC Troubleshooting Index (cont'd)

5-door KE Model

DTC (Recirculation Indication Light Blinks)	Detection Item	Page
7	An open in the air mix control motor circuit	(see page 21-24)
8	A short in the air mix control motor circuit	(see page 21-24)
9	A problem in the air mix control linkage, door or motor	(see page 21-25)
10	An open or short in the mode control motor circuit	(see page 21-26)
11	A problem in the mode control linkage, doors or motor	(see page 21-27)
12	A problem in the blower motor circuit	(see page 21-28)
13	A problem in the EEPROM in the heater control panel; the control panel must be replaced	(see page 21-51)
14	An open in the evaporator temperature sensor circuit	(see page 21-31)
15	A short in the evaporator temperature sensor circuit	(see page 21-32)

In case of multiple problems, the recirculation indicator light will indicate only the DTC with the least number of blinks.

Standards and Service Limits
Automatic Transmission and Differential (cont'd)

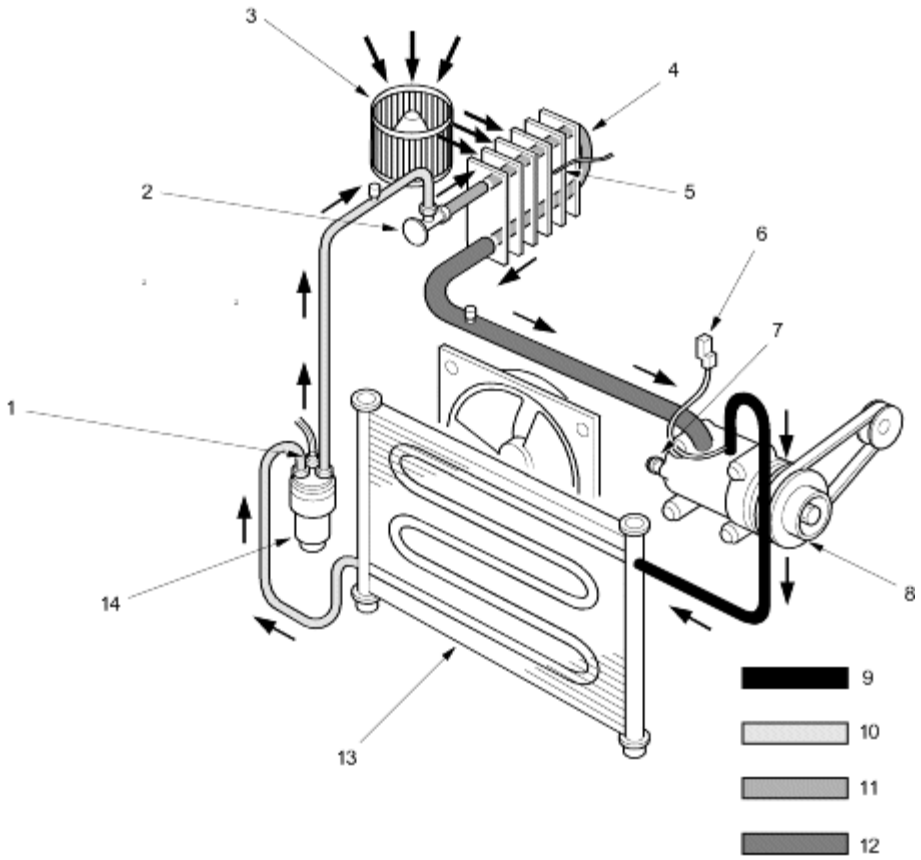
Item	Measurement	Qualification	Standard or New	Service Limit
Reverse idler gear	Reverse idler gear shaft diameter at needle bearing contact area		13.990-14.000 mm (0.5508-0.5512 in.)	When worn or damaged
	I.D.		18.007-18.020 mm (0.7089-0.7094 in.)	When worn or damaged
	End play		0.05-0.18 mm (0.002-0.007 in.)	-
	I.D. of reverse idler gear shaft holder		14.416-14.434 mm (0.5676-0.5683 in.)	When worn or damaged
Sub-shaft	Diameter of needle bearing contact area	at transmission housing	25.991-26.000 mm (1.023-1.024 in.)	When worn or damaged
		at 4th gear collar	23.9935-23.0065 mm (0.9446-0.9058 in.)	When worn or damaged
	4th gear I.D.		32.000-32.016 mm (1.2600-1.2605 in.)	When worn or damaged
	4th gear end play		0.05-0.17 mm (0.002-0.007 in.)	-
	4th gear collar length		24.0-24.1 mm (0.945-0.949 in.)	-
	4th gear collar flange thickness		2.95-3.10 mm (0.116-0.122 in.)	When worn or damaged
	4th gear thrust washer thickness		2.93-3.00 mm (0.115-0.118 in.)	When worn or damaged
	1st-clutch feed pipe O.D.	at 15 mm (0.6 in.) from end	7.97-7.98 mm (0.3138-0.3142 in.)	7.95 mm (0.313 in.)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body springs (see page 14-183)	Relief valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	37.1 mm (1.4161 in.)	13.4
	Modulator valve spring		1.4 mm (0.055 in)	9.4 mm (0.370 in.)	33.8 mm (1.331 in.)	10.9
	CPB valve spring		1.0 mm (0.039 in.)	8.1 mm (0.319 in.)	40.9 mm (1.610 in.)	16.2
	1-2 shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	41.3 mm (1.626 in.)	16.3
	2nd orifice control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	34.8 mm (1.370 in.)	22.0
	Servo control valve spring		1.0 mm (0.039 in.)	8.1 mm (0.319 in.)	52.1 mm (2.051 in.)	20.8
Regulator valve body springs (see page 14-186)	Stator reaction spring		4.5 mm (0.177 in.)	35.4 mm (1.394 in.)	30.3 mm (1.193 in.)	1.9
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	77.4 mm (3.047 in.)	15.2
	Regulator valve spring B		1.8 mm (0.071 in.)	9.6 mm (0.378 in.)	44.0 mm (1.732 in.)	12.6
	Cooler relief valve spring		1.0 mm (0.039 in.)	8.4 mm (0.331 in.)	33.8 mm (1.331 in.)	8.2
	Torque converter check valve spring		1.0 mm (0.039 in.)	8.4 mm (0.331 in.)	33.8 mm (1.331 in.)	8.2
	Lock-up control valve spring		0.8 mm	6.0 mm	38.4 mm	30.3

			(0.031 in.)	(0.236 in.)	(1.512 in.)	

Air Conditioning
System Description

The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system as shown below.



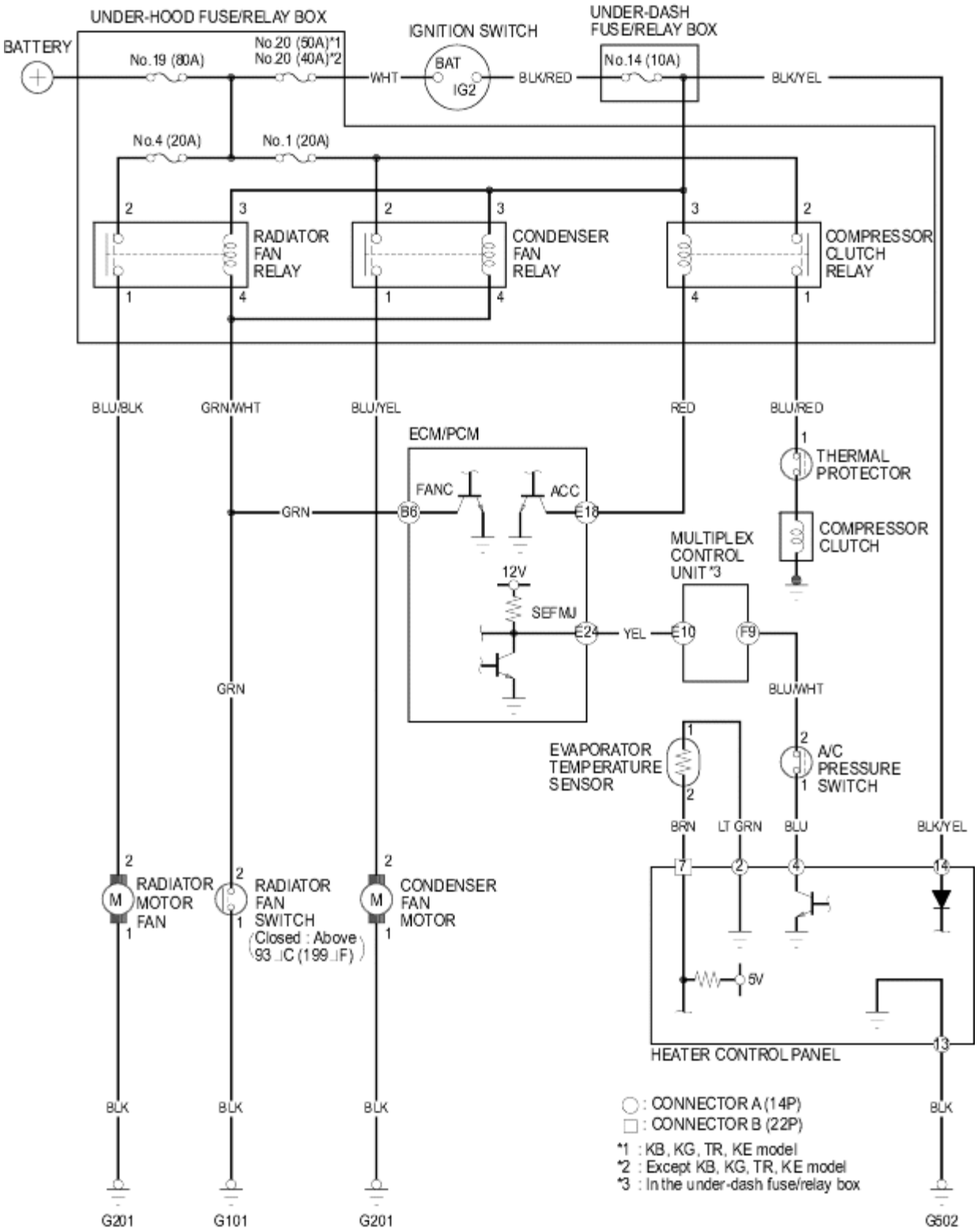
1. A/C PRESSURE SWITCH
   When the refrigerant is below 196 kPa (2.0 kgf/cm2, 28 psi) or above 3,140 kPa (32 kgf/cm2, 455 psi), the A/C pressure switch opens the circuit to the A/C switch and stops the air conditioning to protect the compressor.
2. EXPANSION VALVE
   (Meters the required amount of refrigerant into the evaporator)
3. BLOWER FAN
4. EVAPORATOR
   (Absorption of heat)
5. EVAPORATOR TEMPERATURE SENSOR
6. THERMAL PROTECTOR
   (Opens the compressor clutch circuit when the compressor temperature becomes too high)
7. RELIEF VALVE
   (Relieves pressure at the compressor when the pressure is too high)
8. COMPRESSOR
   (Suction and compression)
9. HIGH PRESSURE VAPOUR
10. HIGH PRESSURE LIQUID
11. LOW PRESSURE LIQUID
12. LOW PRESSURE VAPOUR
13. CONDENSER
    (Radiation of heat)
14. RECEIVER/DRYER
    (Traps debris and removes moisture)

This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (SANDEN SP-10) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in compressor failure.
- All A/C system parts (compressor, discharge line, suction line, evaporator, condenser, receiver/dryer, expansion valve, O-rings for joints) have to be proper for refrigerant R-134a. Do not confuse with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.
- Separate the manifold gauge sets (pressure gauges, hoses, joints) for refrigerants R-12 and R-134a. Do not confuse them.

Air Conditioning
Circuit Diagram

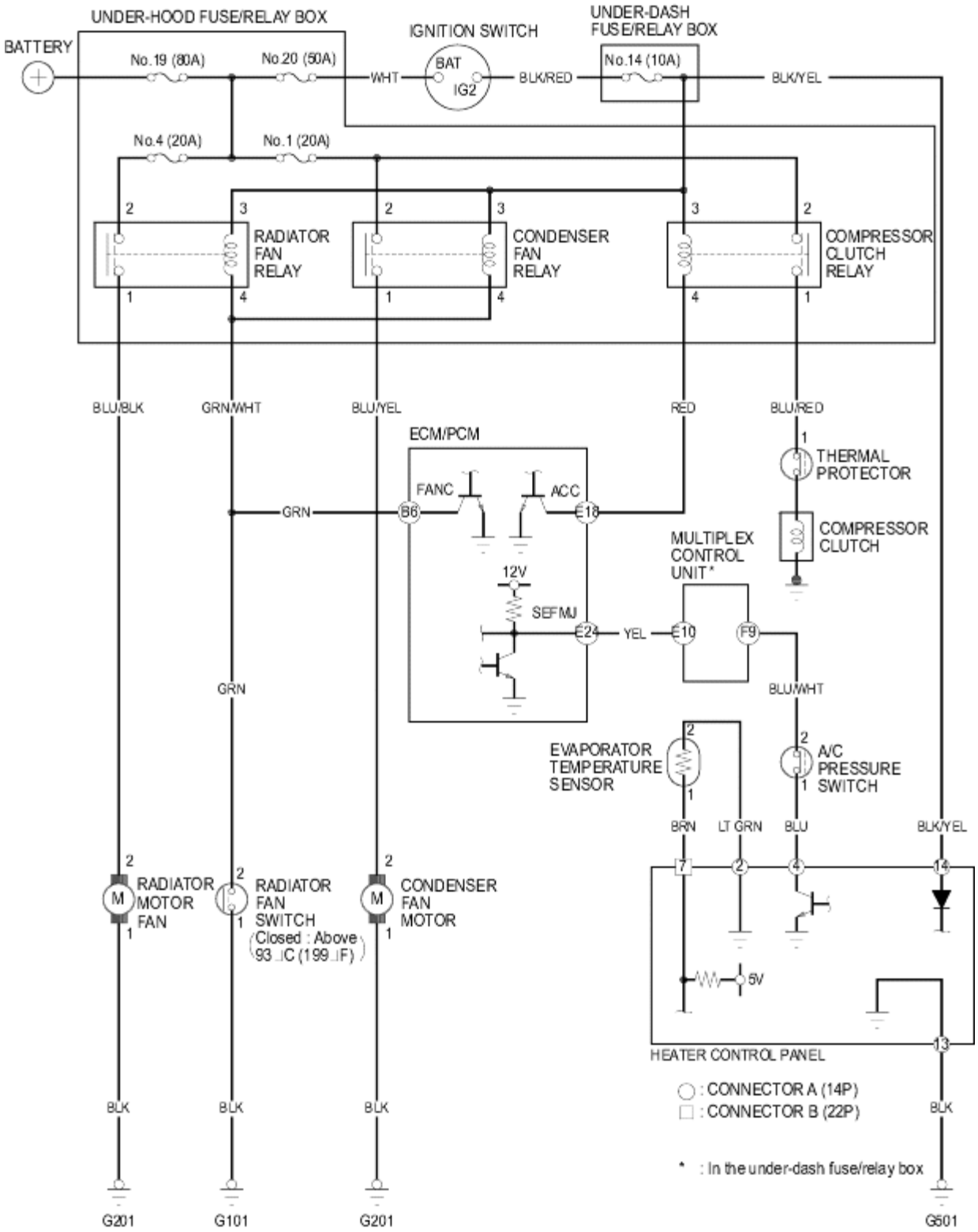
4-door



Air Conditioning

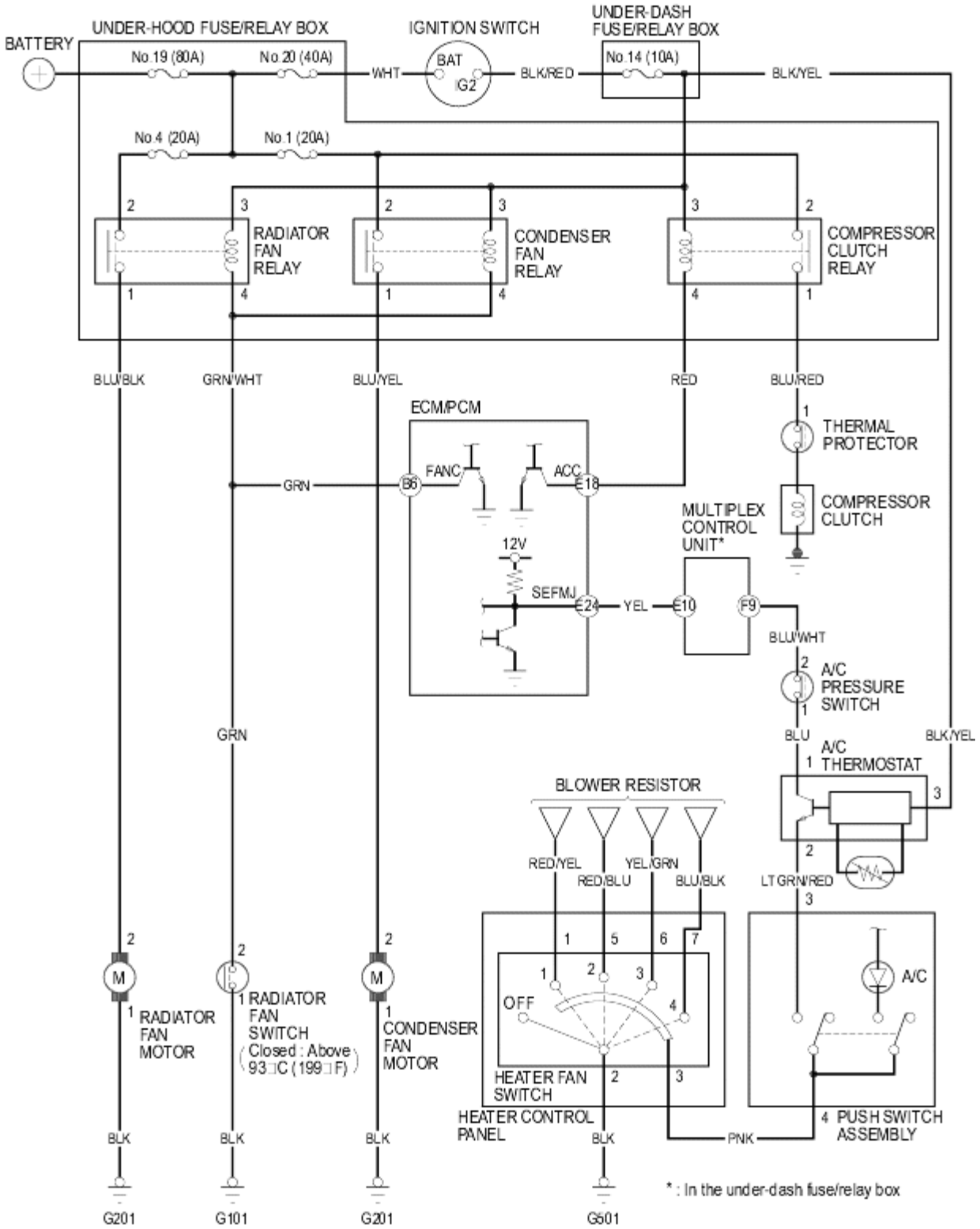
Circuit Diagram (cont'd)

5-door KE Model



Air Conditioning
Circuit Diagram (cont'd)

5-door Except KE Model



Air Conditioning
Condenser Fan Circuit Troubleshooting

1. 1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES - Go to step 2.

   NO - Replace the fuse(s) and recheck. ■

2. 2. Remove the condenser fan relay from the under-hood fuse/relay box and test it (see page 22-80).

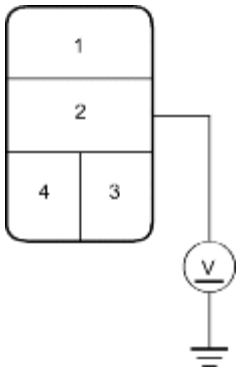
   Is the relay OK?

   YES - Go to step 3.

   NO - Replace the condenser fan relay. ■

3. 3. Measure the voltage between the No. 2 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



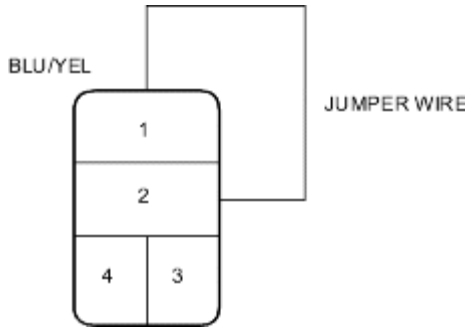
   Is there battery voltage?

   YES - Go to step 4.

   NO - Replace the under-hood fuse/relay box. ■

1. 4. Connect the No. 1 and No. 2 terminals of the condenser fan relay 4P socket with a jumper wire.

   CONDENSER FAN RELAY 4P SOCKET



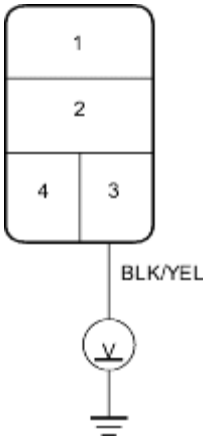
   Does the condenser fan run?

   YES - Go to step 5.

   NO - Go to step 8.

2. 5. Disconnect the jumper wire.
   6. Turn the ignition switch ON (II).
   7. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



   Is there battery voltage?

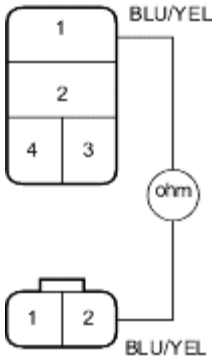
   YES - Replace the under-hood fuse/relay box. ■

   NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the condenser fan relay. ■

3. 8. Disconnect the jumper wire.

1. 9. Disconnect the condenser fan 2P connector.
2. 10. Check for continuity between the No. 1 terminal of the condenser fan relay 4P socket and the No. 2 terminal of the condenser fan 2P connector.

CONDENSER FAN RELAY 4P SOCKET



CONDENSER FAN 2P CONNECTOR

Wire side of female terminals

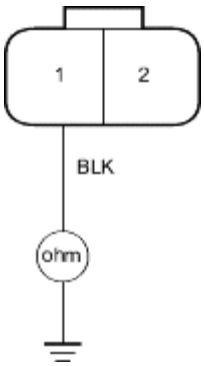
Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the condenser fan relay and the condenser fan. ■

3. 11. Check for continuity between the No. 1 terminal of the condenser fan 2P connector and body ground.

CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Replace the condenser fan motor. ■

NO - Check for an open in the wire between the condenser fan and body ground. If the wire is OK, check for poor ground at G201. ■

1. 1. Check the No. 1 (20A) and No. 4 (20A) fuses in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

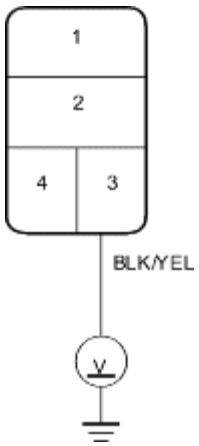
Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Remove the condenser fan relay from the under-hood fuse/relay box.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

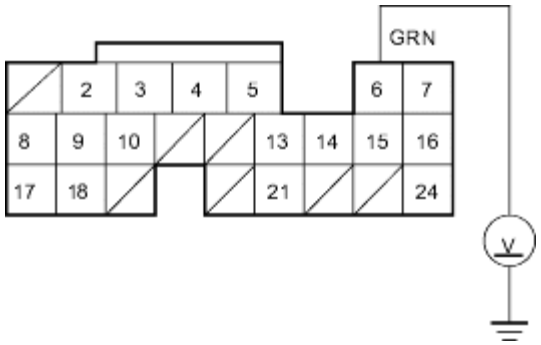
YES - Go to step 5.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the radiator fan relay and the condenser fan relay. ■

3. 5. Turn the ignition switch OFF.
6. Reinstall the condenser fan relay.
7. Make sure the A/C switch is OFF.
8. Turn the ignition switch ON (II).

1. 9. Measure the voltage between the No. 6 terminal of ECM/PCM connector B (24P) and body ground with the ECM/PCM connectors connected.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES - Check for loose wires or poor connections at ECM/PCM connector B (24P). If the connections are good, substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the radiator fan relay, the condenser fan relay and the ECM/PCM. ■

1. 1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuse(s) and recheck. ■

2. 2. Check the engine coolant temperature (use the Honda PGM Tester PGM-FI data list if possible).

Is the coolant temperature above normal?

YES - Troubleshoot and repair the cause of the high engine coolant temperature. ■

NO - Go to step 3.

3. 3. Remove the compressor clutch relay from the under-hood fuse/relay box and test it (see page 22-80).

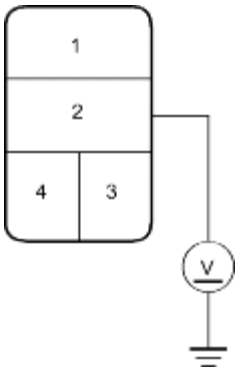
Is the relay OK?

YES - Go to step 4.

NO - Replace the compressor clutch relay. ■

4. 4. Measure the voltage between the No. 2 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

YES - Go to step 5.

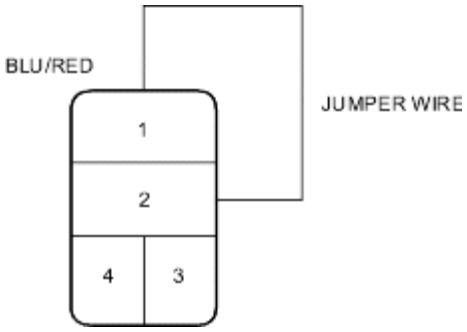
NO - Replace the under-hood fuse/relay box. ■

Air Conditioning

Compressor Clutch Circuit Troubleshooting (cont'd)

1. 5. Connect the No. 1 and No. 2 terminals of the compressor clutch relay 4P socket with a jumper wire.

COMPRESSOR CLUTCH RELAY 4P SOCKET



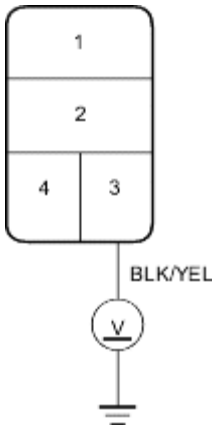
Does the compressor clutch click ?

YES - Go to step 6.

NO - Go to step 14.

2. 6. Disconnect the jumper wire.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the No. 3 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



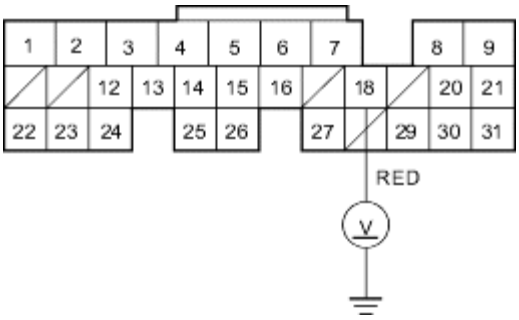
Is there battery voltage?

YES - Go to step 9. ■

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the compressor clutch relay. ■

1. 9. Turn the ignition switch OFF.
2. 10. Reinstall the compressor clutch relay.
11. Make sure the A/C switch is OFF.
12. Turn the ignition switch ON (II).
13. Measure the voltage between the No. 18 terminal of ECM/PCM connector E (31P) and body ground with the ECM/PCM connectors connected.

ECM/PCM CONNECTOR E (31P)



Is there battery voltage?

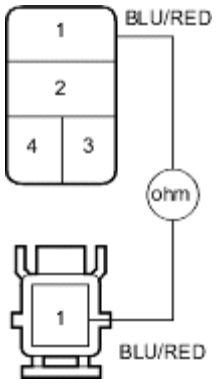
YES - Check for loose wires or poor connections at ECM/PCM connector E (31P). If the connections are good, substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

NO - Repair open in the wire between the compressor clutch relay and the ECM/PCM. ■

3. 14. Disconnect the jumper wire.
15. Disconnect the compressor clutch 1P connector.

1. 16. Check for continuity between the No. 1 terminal of the compressor clutch relay 4P socket and the No. 1 terminal of the compressor clutch 1P connector.

COMPRESSOR CLUTCH RELAY 4P SOCKET



COMPRESSOR CLUTCH 1P CONNECTOR

Terminal side of male terminals

Is there continuity?

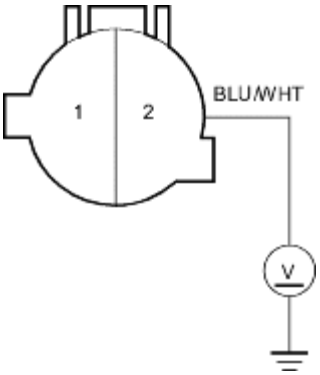
YES - Check the compressor clutch clearance, the thermal protector and the compressor clutch field coil (see page 21-89). ■

NO - Repair open in the wire between the compressor clutch relay and the compressor clutch. ■

4-door, 5-door KE Model

1. 1. Disconnect the A/C pressure switch 2P connector.
2. Turn the ignition switch ON (II).
3. Measure the voltage between the No. 2 terminal of the A/C pressure switch 2P connector and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

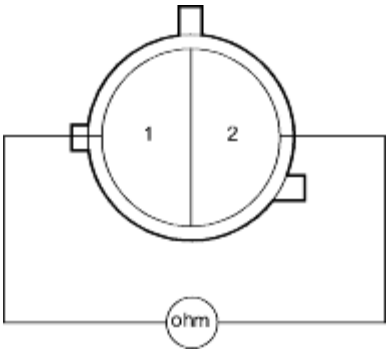
Is there battery voltage?

YES - Go to step 4.

NO - Go to step 10.

2. 4. Turn the ignition switch OFF.
5. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



Is there continuity?

YES - Go to step 6.

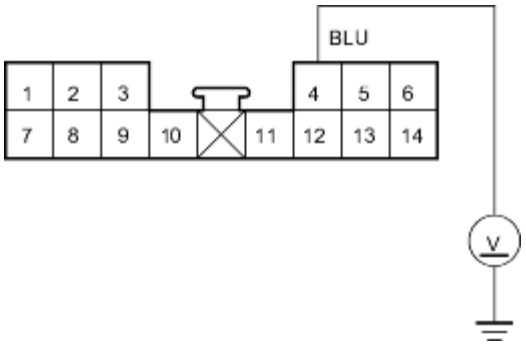
NO - Go to step 12.

Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

1. 6. Reconnect the A/C pressure switch 2P connector.
2. 7. Disconnect the heater control panel connector A (14P).
   8. Turn the ignition switch ON (II).
   9. Measure the voltage between the No. 4 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



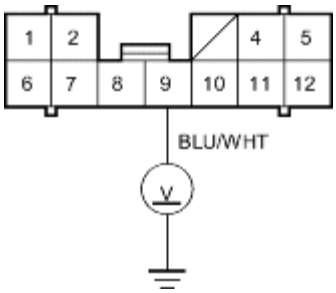
Is there battery voltage?

YES - Check for loose wires or poor connections at heater control panel connector A (14P) and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO - Repair open in the wire between the heater control panel and the A/C pressure switch. ■

1. 10. Make sure the A/C switch is OFF.
2. 11. Measure the voltage between the No. 9 terminal of under-dash fuse/relay box connector F (12P) and body ground with the under-dash fuse/relay box connectors connected.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



Wire side of female terminals

Is there battery voltage?

YES - Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

NO - Refer to the multiplex control system (see page 22-268). ■

3. 12. Check for proper A/C system pressure.

Is the pressure within specifications?

YES - Replace the A/C pressure switch. ■

NO - Repair the A/C pressure problem. ■

Heating
Symptom Troubleshooting Index

4-door

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-33)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
Both heater and A/C do not work	Heater Control Power and Ground Circuits Troubleshooting (see page 21-43)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G502 • Cleanliness and tightness of all connectors

Standards and Service Limits

Automatic Transmission and Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Secondary valve body springs (see page 14-187)	3-4 shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	57.0 mm (2.244 in.)	26.8
	2-3 shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	57.0 mm (2.244 in.)	26.8
	4th exhaust valve spring		0.9 mm (0.035 in.)	6.1 mm (0.240 in.)	36.4 mm (1.433 in.)	19.5
	3-4 orifice control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	37.5 mm (1.476 in.)	24.6
Servo body springs (see page 14-188)	1st accumulator spring		2.1 mm (0.083 in.)	16.0 mm (0.630 in.)	89.1 mm (3.508 in.)	16.2
	4th accumulator spring A		2.6 mm (0.102 in.)	17.0 mm (0.669 in.)	88.4 mm (3.480 in.)	14.2
	4th accumulator spring B		2.3 mm (0.091 in.)	10.2 mm (0.402 in.)	51.6 mm (2.031 in.)	13.8
	3rd accumulator spring A		2.8 mm (0.110 in.)	17.5 mm (0.689 in.)	94.3 mm (3.713 in.)	15.6
	3rd accumulator spring B		2.1 mm (0.083 in.)	31.0 mm (1.220 in.)	38.2 mm (1.504 in.)	2.4
	2nd accumulator spring C		2.2 mm (0.087 in.)	14.5 mm (0.571 in.)	68.0 mm (2.677 in.)	13.9
	2nd accumulator spring A		2.4 mm (0.094 in.)	29.0 mm (1.142 in.)	39.0 mm (1.535 in.)	2.9
	3rd sub accumulator spring		2.7 mm (0.106 in.)	17.0 mm (0.669 in.)	39.0 mm (1.535 in.)	6.3
Lock-up valve body springs (see page 14-189)	Lock-up shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	73.7 mm (2.902 in.)	32.0
	Lock-up timing valve spring		0.9 mm (0.035 in.)	8.1 mm (0.319 in.)	80.7 mm (3.177 in.)	54.2

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18-010-18.028 mm (0.709-0.710 in.)	-
	Carrier-to-pinion shaft clearance		0.023-0.057 mm (0.001-0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		26.025-26.045 mm (1.0246-1.0254 in.)	-
	Carrier-to-driveshaft clearance		0.045-0.086 mm (0.002-0.003 in.)	0.12 mm (0.005 in.)
	Set ring-to-carrier bearing outer race clearance		0-0.15 mm (0-0.006 in.)	Adjust
A/T differential pinion gear	Backlash		0.05-0.15 mm (0.002-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.055-0.095 mm (0.0022-0.0037 in.)	0.15 mm (0.006 in.)

Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

Except 4-door, 5-door KE Model

1. 1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

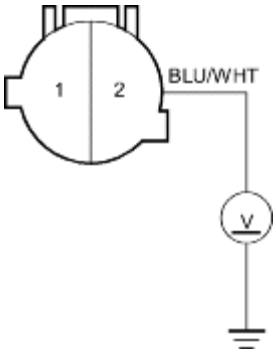
Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse and recheck. ■

2. 2. Disconnect the A/C pressure switch 2P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 2 terminal of the A/C pressure switch 2P connector and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

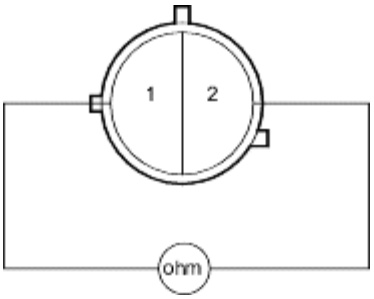
Is there battery voltage?

YES - Go to step 5.

NO - Go to step 26.

3. 5. Turn the ignition switch OFF.
6. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



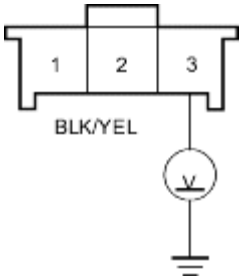
Is there continuity?

YES - Go to step 7.

NO - Go to step 28.

1. 7. Reconnect the A/C pressure switch 2P connector.
2. 8. Disconnect the A/C thermostat 3P connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the No. 3 terminal of the A/C thermostat 3P connector and body ground.

A/C THERMOSTAT 3P CONNECTOR



Wire side of female terminals

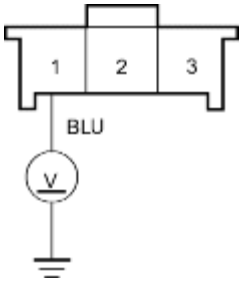
Is there battery voltage?

YES - Go to step 11.

NO - Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the A/C thermostat. ■

3. 11. Measure the voltage between the No. 1 terminal of the A/C thermostat 3P connector and body ground.

A/C THERMOSTAT 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 12.

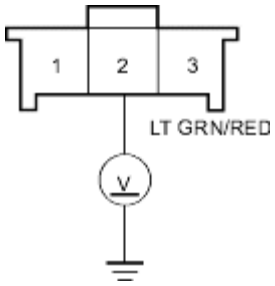
NO - Repair open in the wire between the A/C pressure switch and the A/C thermostat. ■

Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

1. 12. Turn the ignition switch OFF.
13. Reconnect the A/C thermostat 3P connector.
14. Make sure the A/C switch is OFF.
15. Turn the ignition switch ON (II).
16. Measure the voltage between the No. 2 terminal of the A/C thermostat 3P connector and body ground with the A/C thermostat 3P connector connected.

A/C THERMOSTAT 3P CONNECTOR



Wire side of female terminals

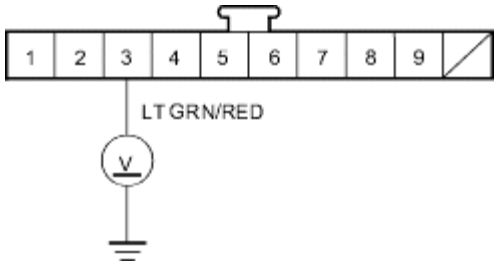
Is there battery voltage?

YES - Go to step 17.

NO - Replace the A/C thermostat. ■

2. 17. Turn the ignition switch OFF.
18. Disconnect the push switch 10P connector.
19. Turn the ignition switch ON (II).
20. Measure the voltage between the No. 3 terminal of the push switch 10P connector and body ground.

PUSH SWITCH 10P CONNECTOR



Wire side of female terminals

Is there battery voltage?

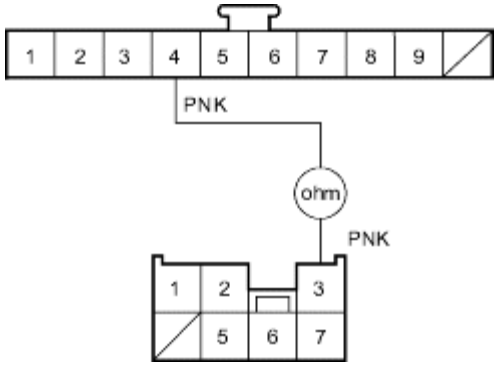
YES - Go to step 21.

NO - Repair open in the wire between the A/C thermostat and the push switch. ■

1. 21. Turn the ignition switch OFF.
22. Disconnect the heater fan switch 7P connector.
23. Check for continuity between the No. 4 terminal of the push switch 10P connector and the No. 3 terminal of the heater fan switch 7P connector.

PUSH SWITCH 10P CONNECTOR

Wire side of female terminals



HEATER FAN SWITCH 7P CONNECTOR

Wire side of female terminals

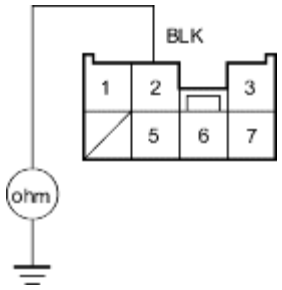
Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the push switch and the heater fan switch. ■

2. 24. Check for continuity between the No. 2 terminal of the heater fan switch 7P connector and body ground.

HEATER FAN SWITCH 7P CONNECTOR



Wire side of female terminals

Is there continuity?

YES - Go to step 25.

NO - Check for an open in the wire between the heater fan switch and body ground. If the wire is OK, check for poor ground at G502. ■

Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

1. 25. Test the A/C switch (see page 21-52).

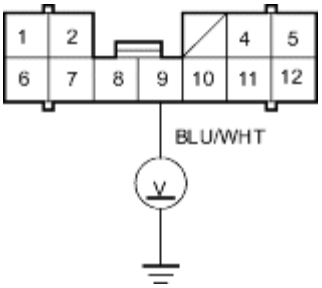
   Is the A/C switch OK?

   YES - Replace the heater fan switch. ■

   NO - Replace the push switch. ■

2. 26. Make sure the A/C switch is OFF.
   27. Measure the voltage between the No. 9 terminal of under-dash fuse/relay box connector F (12P) and body ground with the under-dash fuse/relay box connectors connected.

   UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



   Wire side of female terminals

   Is there battery voltage?

   YES - Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

   NO -Refer to the multiplex control system (see page 22-268). ■

3. 28. Check for proper A/C system pressure.

   Is the pressure within specifications?

   YES - Replace the A/C pressure switch. ■

   NO - Repair the A/C pressure problem. ■

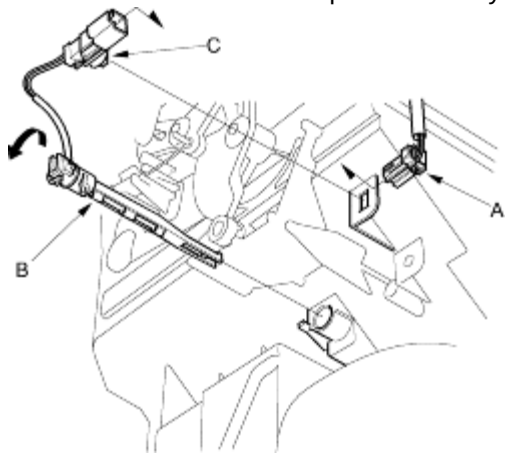
Air Conditioning

Evaporator Temperature Sensor Replacement

4-door

NOTE: LHD type is shown, RHD type is symmetrical.

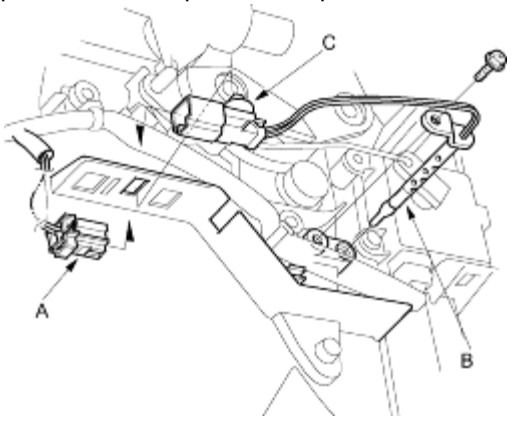
1. 1. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Turn the evaporator temperature sensor counter-clockwise to the stop and carefully pull out it.



2. 2. Install the sensor in the reverse order of removal.

5-door KE Model

1. 1. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw and carefully pull out the evaporator temperature.



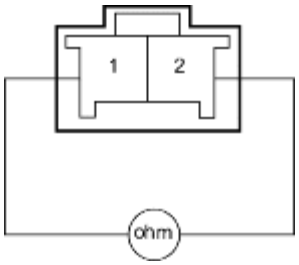
2. 2. Install the sensor in the reverse order of removal.

Air Conditioning

Evaporator Temperature Sensor Test

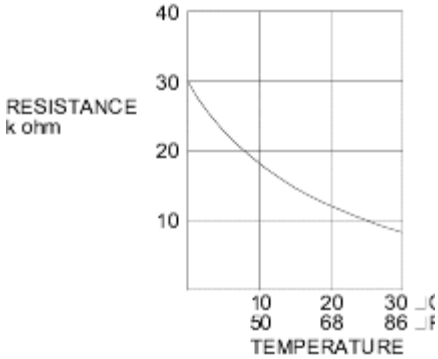
1. 1. Dip the sensor in ice water and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

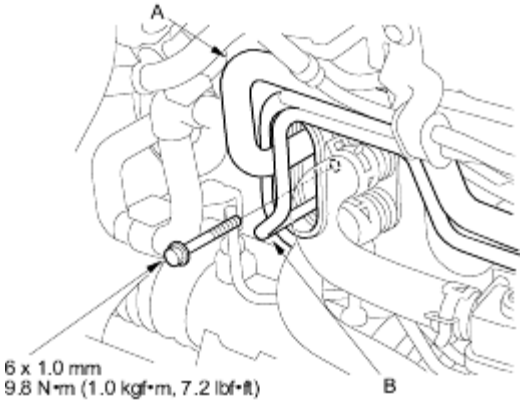
2. 2. Then pour hot water on the sensor and check for a change in resistance.
   3. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



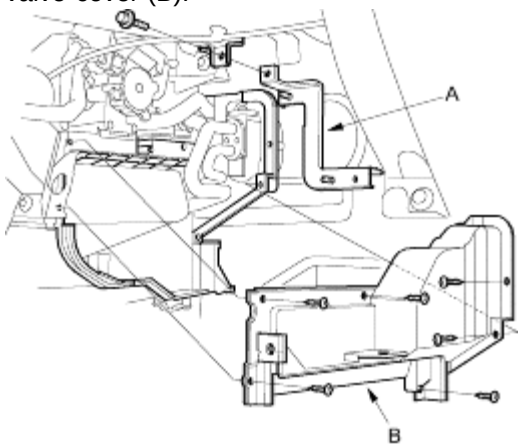
4-door

NOTE: LHD type is shown, RHD type is symmetrical.

1. 1. Discharge the refrigerant (see page 21-94).
   2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.



2. 3. Remove the blower unit (see page 21-54).
   4. Remove the bolt and the ECM/PCM bracket (A). Remove the self-tapping screws and the expansion valve cover (B).



1. 5. Carefully pull out the evaporator core without bending the pipes.

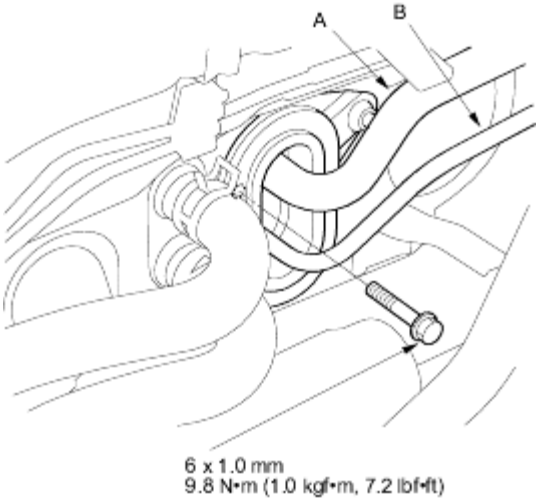


2. 6. Install the core in the reverse order of removal and note these items.
   - If you are installing a new evaporator core, add refrigerant oil (SANDEN SP-10) (see page 21-66).
   - Replace the O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-96).
   - Check for system performance (see page 21-98).

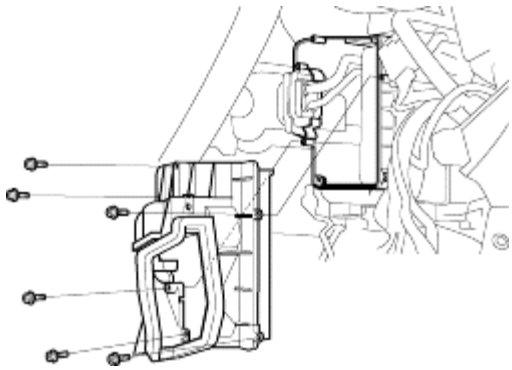
Air Conditioning
Evaporator Core Replacement (cont'd)

5-door

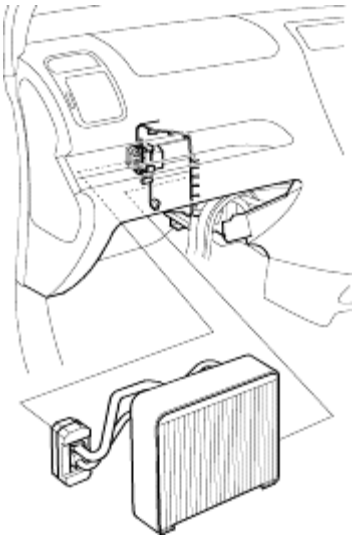
1. 1. Discharge the refrigerant (see page 21-94).
   2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.



2. 3. Remove the blower unit (see page 21-55).
   4. Remove the self-tapping screws and the expansion valve cover.



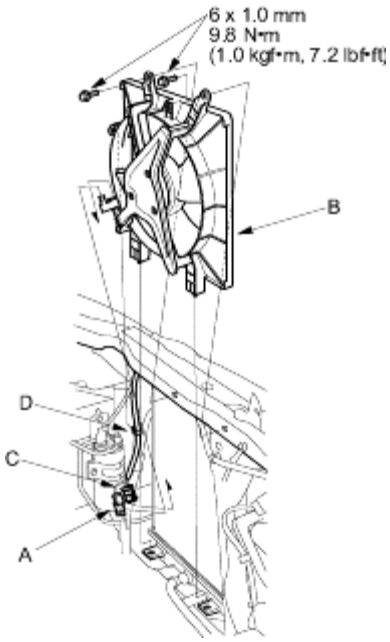
1. 5. Carefully pull out the evaporator core without bending the pipes.



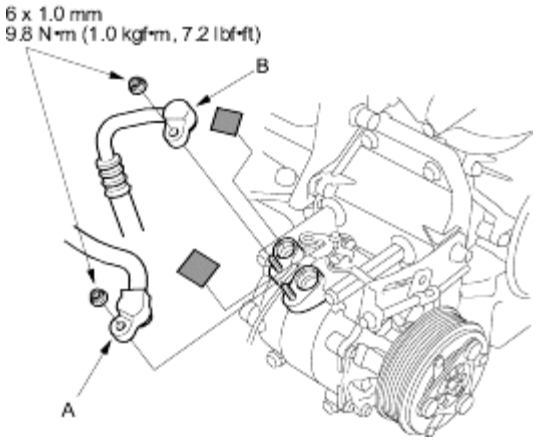
2. 6. Install the core in the reverse order of removal and note these items.
   - If you are installing a new evaporator core, add refrigerant oil (SANDEN SP-10) (see page 21-66).
   - Replace the O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 20-96).
   - Check for system performance (see page 20-98).

Air Conditioning
Compressor Replacement

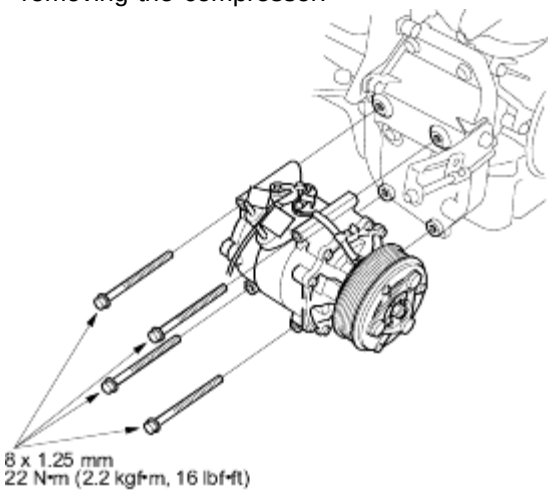
1. 1. If the compressor is marginally operable, run the engine at idle speed and let the air conditioning work for a few minutes, then shut the engine off.
2. 2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   3. Disconnect the negative cable from the battery.
   4. Discharge the refrigerant (see page 21-94).
   5. Remove the alternator (see page 4-31).
   6. Remove the compressor clutch connector (A) from the condenser fan shroud (B), then disconnect the compressor clutch connector. Disconnect the condenser fan connector (C), then remove the wire harness clip (D) from the condenser fan shroud. Remove the mounting bolts and the condenser fan shroud. Be careful not to damage the radiator fins when removing the condenser fan shroud.



1. 7. Remove the nuts, then disconnect the suction line (A) and the discharge line (B) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



2. 8. Remove the mounting bolts and the compressor. Be careful not to damage the radiator fins when removing the compressor.

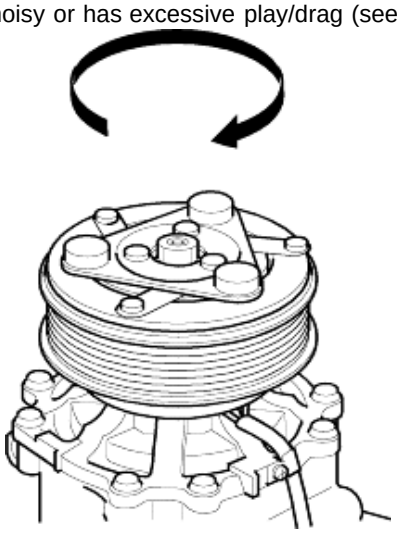


Air Conditioning
Compressor Replacement (cont'd)

1. 9. Install the compressor in the reverse order of removal and note these items:
   - If you are installing a new compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-66).
   - Replace the O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for HFC-134a (R-134a) to avoid leakage.
   - Use refrigerant oil (SANDEN SP-10) for HFC-134a SANDEN spiral type compressor only.
   - To avoid contamination, do not return the oil to the container once dispensed and never mix it with other refrigerant oils.
   - Immediately after using the oil, reinstall the cap on the container and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Be careful not to damage the radiator fins when installing the compressor and the condenser fan shroud.
   - Charge the system (see page 21-96).
   - Check for system performance (see page 20-98).
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Air Conditioning
Compressor Clutch Check

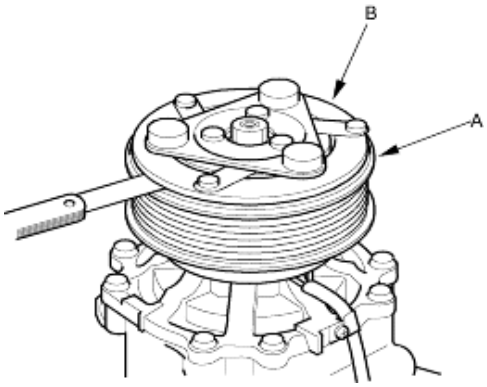
1. 1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-90).
2. 2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-90).



3. 3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see page 21-90) and add or remove shims as needed to increase or decrease clearance.

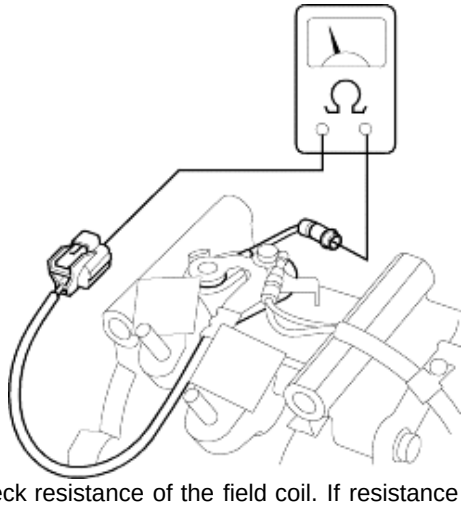
   Clearance: 0.5 ± 0.15 mm (0.020 ± 0.006 in.)

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



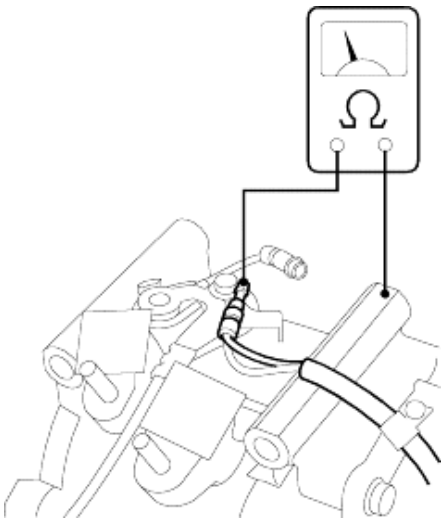
1. 4. Release the field coil connector from the holder, then disconnect it. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see page 21-92).

NOTE: The thermal protector will have no continuity above 122 to 128°C (252 to 262°F). When the temperature drops below 116 to 104°C (241 to 219°F), the thermal protector will have continuity.



2. 5. Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-90).

   Field Coil Resistance: 3.05 - 3.35 ohms at 20°C (68 °F)



Heating

Symptom Troubleshooting Index (cont'd)

5-door KE Model

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-35)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
Both heater and A/C do not work	Heater Control Power and Ground Circuits Troubleshooting (see page 21-43)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G501 • Cleanliness and tightness of all connectors

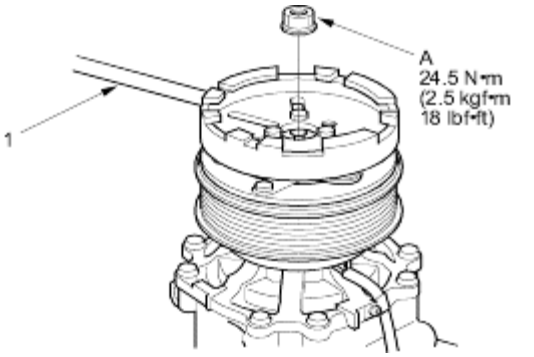
Standards and Service Limits

Honda Multi Matic Transmission and HMM Differential

Item	Measurement	Qualification	Standard or New	Service Limit
HMM Transmission Fluid	Capacity	Use genuine Honda ATF-Z1	For fluid change: 3.1 / (3.3 US qt, 2.7 Imp qt)	
			For overhaul: 5.6 / (5.9 US qt, 4.9 Imp qt)	
Hydraulic pressure	Forward clutch pressure	At 1,500 rpm (min-1) in D position	1.4-1.75 MPa (14.3-17.8 kgf/cm2, 203-253 psi)	
	Reverse brake pressure	At 1,500 rpm (min-1) in R position	1.4-1.75 MPa (14.3-17.8 kgf/cm2, 203-253 psi)	
	Drive pulley pressure	At 1,500 rpm (min-1) in N position	0.2-0.7 MPa (2.0-7.1 kgf/cm2, 28-101 psi)	
	Driven pulley pressure	At 1,500 rpm (min-1) in N position	1.5-2.3 MPa (15.3-23.5 kgf/cm2, 218-334 psi)	
	Lubrication pressure	At 3,000 rpm (min-1) in N position	Above 0.2 MPa (Above (0.2 kgf/cm2, 30 psi)	
Torque converter	Stall speed Check with vehicle on level ground	D15Y4 engine in D position	2,500 rpm (min-1)	2,350-2,650 rpm (min-1)
		D15Y4 engine in S, L and R positions	3,000 rpm (min-1)	2,800-3,100 rpm (min-1)
		D17A2 engine in D position	2,500 rpm (min-1)	2,350-2,650 rpm (min-1)
		D17A2 engine in S, L and R positions	2,800 rpm (min-1)	2,600-2,900 rpm (min-1)
ATF pump	ATF pump drive gear shaft O.D.		9.98-9.99 mm (0.3929-0.3933 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		9.98-9.99 mm (0.3929-0.3933 in.)	When worn or damaged
	ATF pump body bushing I.D.	Drive gear shaft	10.0-10.015 mm (0.3937-0.3944 in.)	When worn or damaged
		Driven gear shaft	10.0-10.015 mm (0.3937-0.3944 in.)	When worn or damaged
	ATF pump gear side clearance		0.015-0.035 mm (0.0006-0.0014 in.)	-
	ATF pump gear-to-body clearance	Drive gear	0.035-0.0505 mm (0.0014-0.0020 in.)	-
		Driven gear	0.035-0.0505 mm (0.0014-0.0020 in.)	-

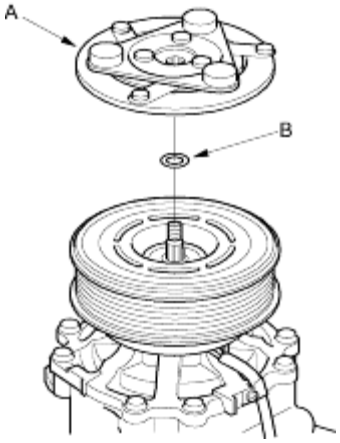
Air Conditioning
Compressor Clutch Overhaul

1. 1. Remove the centre nut (A) while holding the armature plate with the special tool (B).

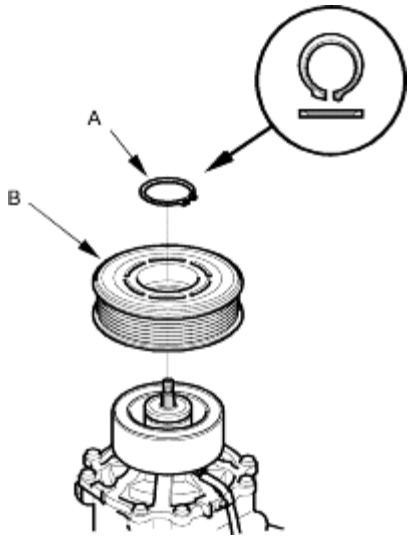


2. 1. B
A/C CLUTCH HOLDER
07NAB-HAC0100

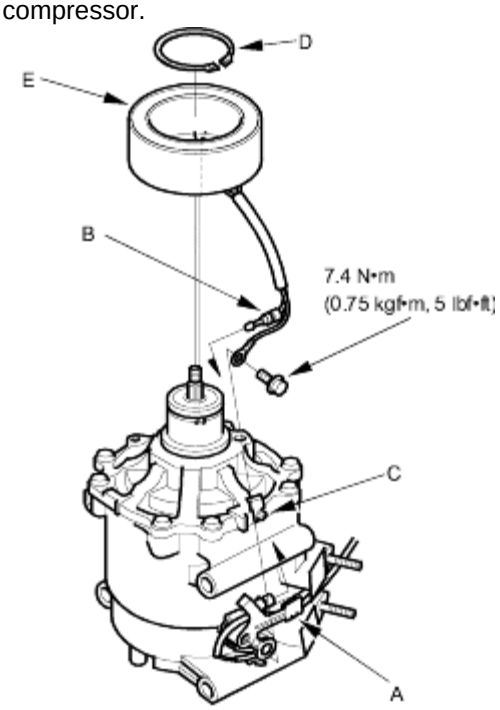
3. 2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate and recheck its clearance (see page 21-89).



1. 3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and compressor.



2. 4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Loosen the clamp screw (C) to free the field coil wire. Remove the snap ring (D) with snap ring pliers, then remove the field coil (E). Be careful not to damage the field coil and compressor.



Air Conditioning

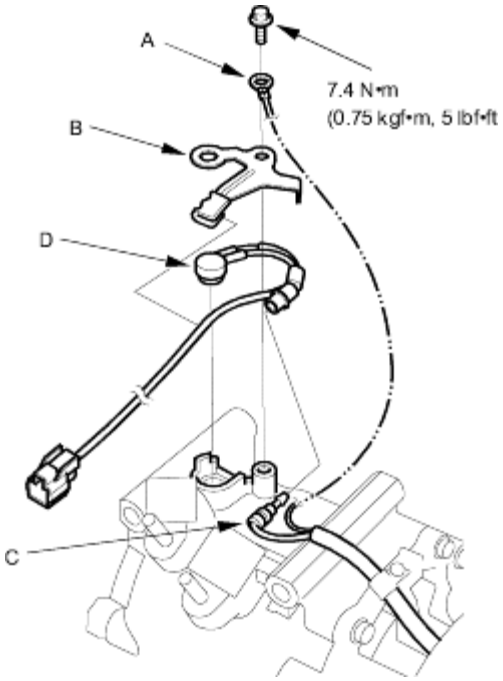
Compressor Clutch Overhaul (cont'd)

1. 5. Reassemble the clutch in the reverse order of disassembly and note these items:
   - Install the field coil with the wire side facing down and align the boss on the field coil with the hole in the compressor.
   - Clean the rotor pulley and compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction and make sure they are fully seated in the groove.
   - Make sure that the rotor pulley turns smoothly after it is reassembled.
   - Route and clamp the wires properly or they can be damaged by the rotor pulley.

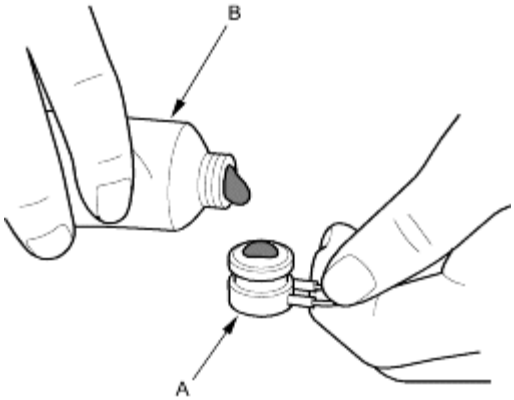
Air Conditioning

Compressor Thermal Protector Replacement

1. 1. Remove the bolt, the ground terminal (A) and the holder (B). Disconnect the field coil connector (C), then remove the thermal protector (D).

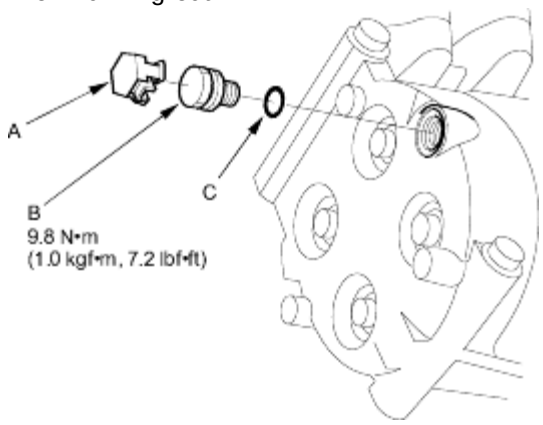


2. 2. Replace the thermal protector (A) with a new one and apply silicone sealant (B) to the bottom of the thermal protector.



3. 3. Install in the reverse order of removal.

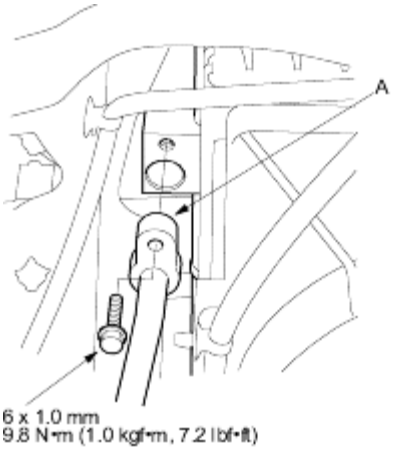
1. 1. Discharge the refrigerant (see page 21-94).
2. 2. Remove the cover (A), the relief valve (B) and the O-ring (C). Plug the opening to keep foreign matter from entering the system and the compressor oil from running out.

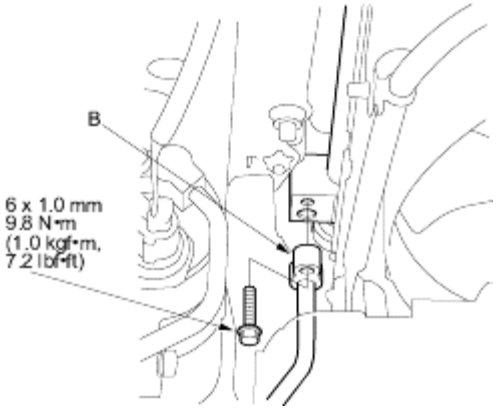


3. 3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug and install and tighten the relief valve.
6. Charge the system (see page 21-96) and check for system performance (see page 21-98).

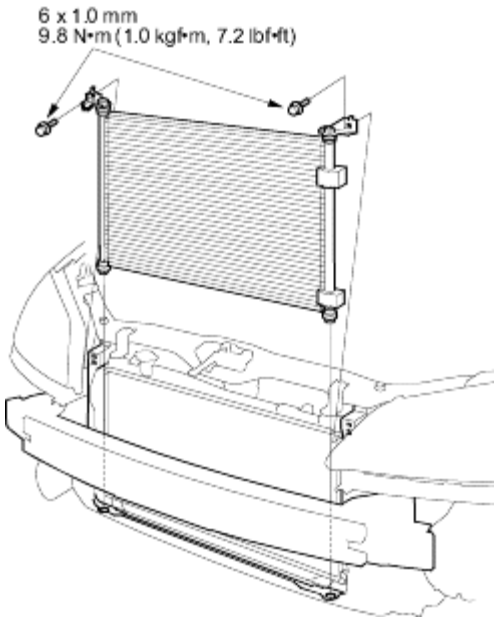
Air Conditioning
Condenser Replacement

1. 1. Discharge the refrigerant (see page 21-94).
2. 2. Remove the front bumper (see page 20-104).
   3. Remove the bolts, then disconnect the discharge line (A) and the condenser line (B) from the condenser. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.





1. 4. Remove the mounting bolts, then remove the condenser by lifting it up. Be careful not to damage the radiator and condenser fins when removing the condenser.



2. 5. Install the condenser in the reverse order of removal and note these items.
   - If you are installing a new condenser, add refrigerant oil (SANDEN SP-10) (see page 21-66).
   - Replace the O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Be careful not to damage the radiator and condenser fins when installing the condenser.
   - Charge the system (see page 21-96).
   - Check for system performance (see page 21-98).

Air Conditioning
Refrigerant Discharge

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.

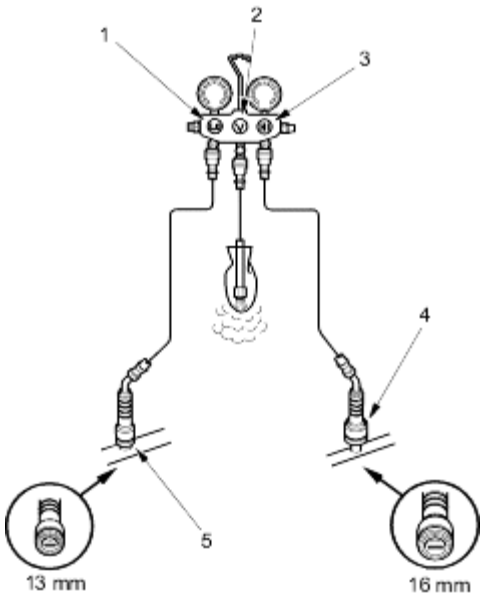
Use only a gauge set for refrigerant HFC-134a (R-134a).

If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

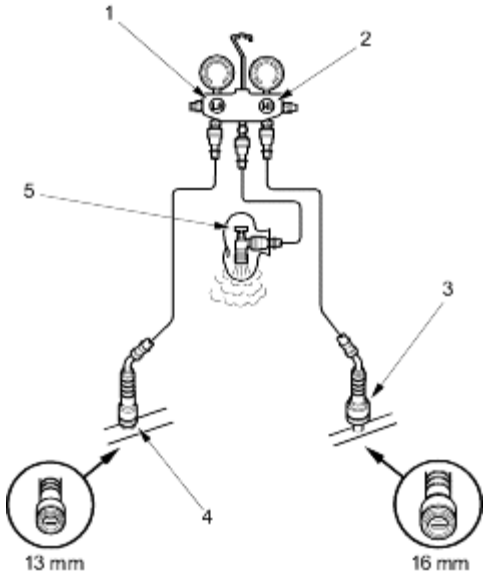
1. 1. Connect the R-134a gauge set as shown.

THREE VALVE GAUGE:



2. 1. LOW-PRESSURE VALVE
2. EVACUATION VALVE
3. HIGH-PRESSURE VALVE
4. HIGH-PRESSURE QUICK JOINT
5. LOW-PRESSURE QUICK JOINT

TWO VALVE GAUGE



1. 1. LOW-PRESSURE VALVE
2. HIGH-PRESSURE VALVE
3. HIGH-PRESSURE QUICK JOINT
4. LOW-PRESSURE QUICK JOINT

2. 2. Disconnect the centre hose of the gauge set and place the free end in a shop towel.
3. Open the evacuation valve (two valve gauge: evacuate stop valve).
4. Slowly open the high-pressure valve slightly to let refrigerant flow from the centre hose only. Do not open the valve too wide. Check the stop towel to make sure no oil is being discharged with the refrigerant.

NOTICE

If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.

3. 5. After the high-pressure gauge reading has dropped below 980 kPa (10 kgf/cm^2, 140 psi), open the low side valve to discharge both high and low sides of the system.
6. Note the gauge reading and as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 kgf/cm^2, 0 psi).

Air Conditioning
System Evacuation

CAUTION

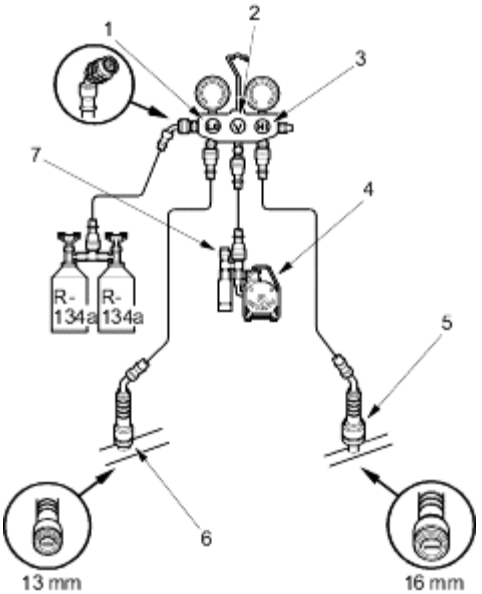
- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.
- Use only a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

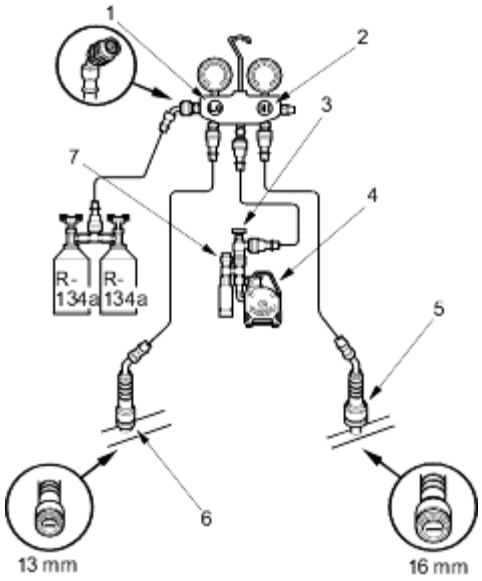
1. 1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a R-134a refrigerant vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced.)
   2. Connect the R-134a gauge set, pump and refrigerant containers (cans of R-134a) as shown. Do not open the cans.

THREE VALVE GAUGE:



2. 1. LOW-PRESSURE VALVE
   2. EVACUATION VALVE
   3. HIGH-PRESSURE VALVE
   4. VACUUM PUMP
   5. HIGH-PRESSURE QUICK JOINT
   6. LOW-PRESSURE QUICK JOINT
   7. CHECK VALVE

TWO VALVE GAUGE:



1. 1. LOW-PRESSURE VALVE
   2. HIGH-PRESSURE VALVE
   3. EVACUATION STOP VALVE
   4. VACUUM PUMP
   5. HIGH-PRESSURE QUICK JOINT
   6. LOW-PRESSURE QUICK JOINT
   7. CHECK VALVE

2. 3. Start the pump, then open both pressure valves and the evacuation valve (two valve gauge: evacuation stop valve). Run the pump for about 15 minutes.
   4. Close both pressure valves and the evacuation valve (two valve gauge: evacuation stop valve) and stop the pump. The low-pressure gauge should indicate above 93.3 kPa (700 mmHg, 27.6 in Hg) and remain steady with the valves closed.
   5. If the low pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in Hg) in 15 minutes, there is probably a leak in the system. Check for leaks and repair (see page 21-97).
   6. If there are no leaks, open the valves and continue pumping for at least another 15 minutes. Then close both valves and stop the pump.

Air Conditioning
System Charging

CAUTION

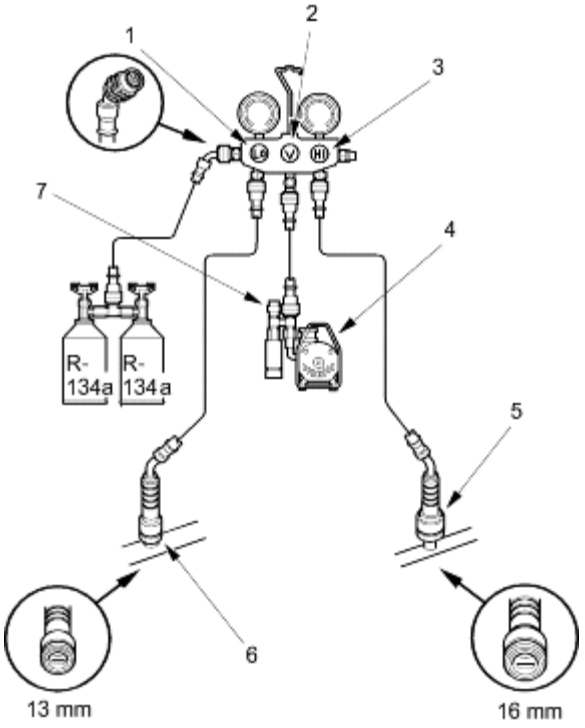
- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.
- Use only a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

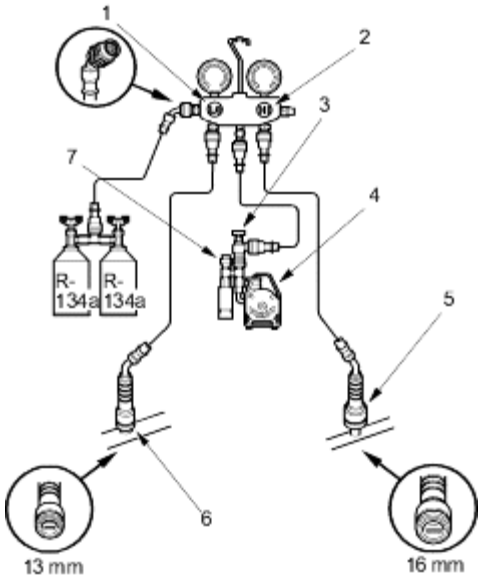
1. 1. After the leak test, check that the high-pressure valve is closed and start the engine. Run the engine below 1,500 rpm (min^{-1}).

THREE VALVE GAUGE



2. 1. LOW-PRESSURE VALVE
   2. EVACUATION VALVE
   3. HIGH-PRESSURE VALVE
   4. VACUUM PUMP
   5. HIGH-PRESSURE QUICK JOINT
   6. LOW-PRESSURE QUICK JOINT
   7. CHECK VALVE

TWO VALVE GAUGE



1. 1. LOW-PRESSURE VALVE
   2. HIGH-PRESSURE VALVE
   3. EVACUATION STOP VALVE
   4. VACUUM PUMP
   5. HIGH-PRESSURE QUICK JOINT
   6. LOW-PRESSURE QUICK JOINT
   7. CHECK VALVE

2. 2. Open the front doors.
   Turn the A/C switch ON.
   Set the temperature control dial on MAX COOL.
   Set the mode control switch on VENT.
   Turn the fan switch on MAX.

3. 3. Open the low-pressure valve and charge with R-134a refrigerant.

WARNING

- Do not open the high-pressure valve.
- Do not turn the cans upside down.

4. Charge the system with refrigerant capacity. Do not overcharge the system; the compressor will be damaged.

   Refrigerant capacity:

   500 to 550 g (17.6 to 19.4 oz)

5. When fully charged, close the low-pressure valve and the refrigerant cans. Check the system.
6. Stop the engine and disconnect the charge hose quickly.
7. Check the system for leaks using a leak detector proper to refrigerant R-134a. Particularly check for leaks around the compressor, condenser and receiver/dryer.

Air Conditioning

Refrigerant Leak Test

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.

⚠ WARNING

- Compressed air mixed with R-134a forms a combustible vapour.
- The vapour can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

- Use only a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

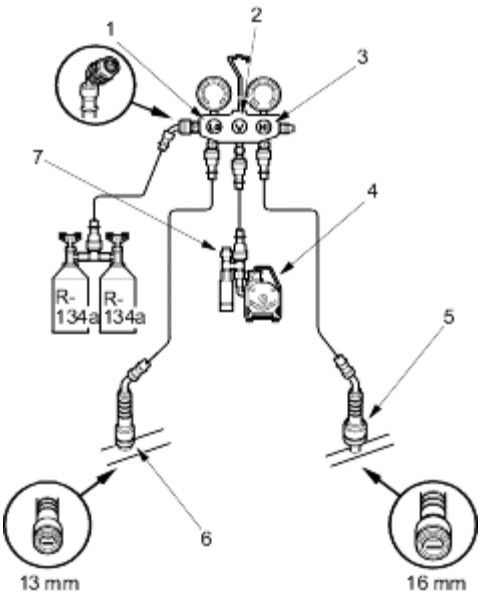
If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

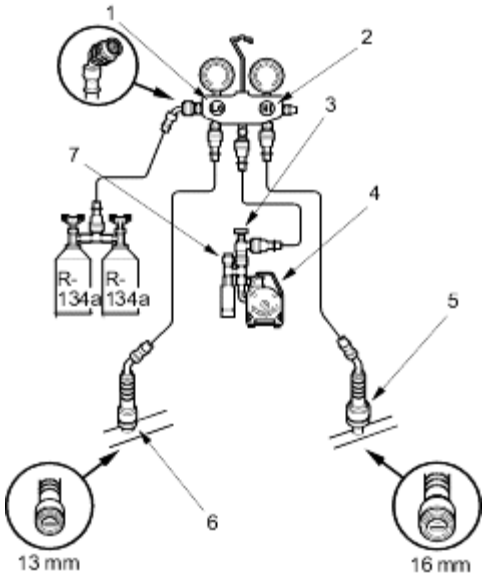
1. 1. Close the evacuation valve (two valve gauge: evacuation stop valve).

THREE VALVE GAUGE



2. 1. LOW-PRESSURE VALVE
2. EVACUATION VALVE
3. HIGH-PRESSURE VALVE

TWO VALVE GAUGE



1. 1. LOW-PRESSURE VALVE
2. HIGH-PRESSURE VALVE
3. EVACUATION STOP VALVE
4. VACUUM PUMP
5. HIGH-PRESSURE QUICK JOINT
6. LOW-PRESSURE QUICK JOINT
7. CHECK VALVE

2. 2. Open the cans.
3. Open the high-pressure valve to charge the system to about 98 kPa (1.0 kgf/cm^2, 14 psi), then close it. Close the low-pressure valve.
4. Check the system for leaks using a leak detector proper to refrigerant R-134a. Particularly check for leaks around the compressor, condenser and receiver/dryer.
5. If you find any leaks, tighten the joint nuts and bolts to the specified torque.
6. Recheck the system for leaks using a leak detector.
7. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system.
8. After checking and repairing leaks, the system must be evacuated (see page 21-95).

4. VACUUM PUMP
5. HIGH-PRESSURE QUICK JOINT
6. LOW-PRESSURE QUICK JOINT
7. CHECK VALVE

Air Conditioning
A/C System Tests

Performance Test

CAUTION

- Air conditioning refrigerant or lubricant vapour can irritate your eyes, nose or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapour.

WARNING

- Compressed air mixed with R-134a forms a combustible vapour.
- The vapour can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

The performance test will help determine if the air conditioner system is operating within specifications.

- Use only a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

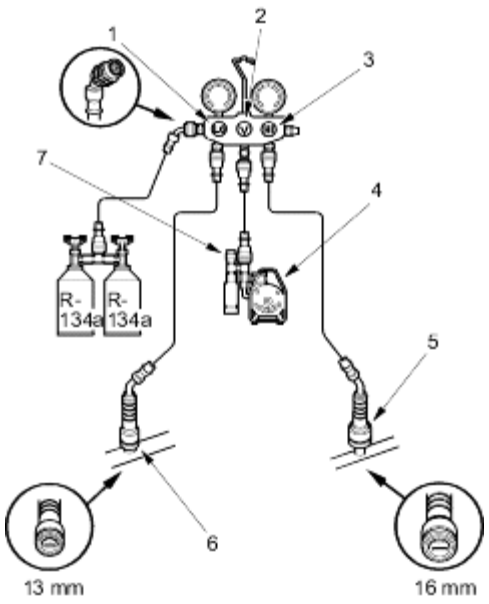
If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

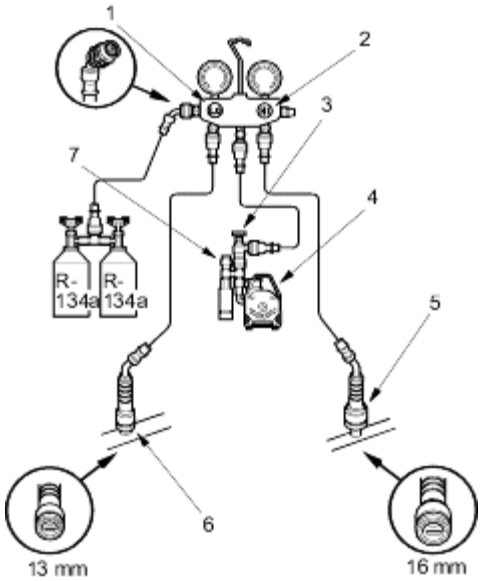
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. 1. Connect a R-134a gauge set as shown.

THREE VALVE GAUGE

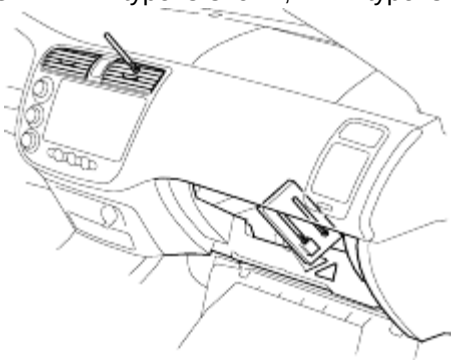


TWO VALVE GAUGE



1. 1. LOW-PRESSURE VALVE
   2. HIGH-PRESSURE VALVE
   3. EVACUATION STOP VALVE
   4. VACUUM PUMP
   5. HIGH-PRESSURE QUICK JOINT
   6. LOW-PRESSURE QUICK JOINT
   7. CHECK VALVE

2. 2. Insert a thermometer in the centre air vent. Determine the relative humidity and air temperature.
   NOTE: LHD type is shown, RHD type is symmetrical.



3. 3. Test conditions:
   - Avoid direct sunlight.
   - Open the hood.
   - Open the front doors.
   - Set the temperature control dial on MAX COOL, the mode control dial on VENT and the recirculation control switch on RECIRCULATE.
   - Turn the A/C switch on and the fan switch on MAX.
   - Run the engine at 1,500 (min^{-1}).
   - No driver or passengers in vehicle.
4. 4. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the centre air

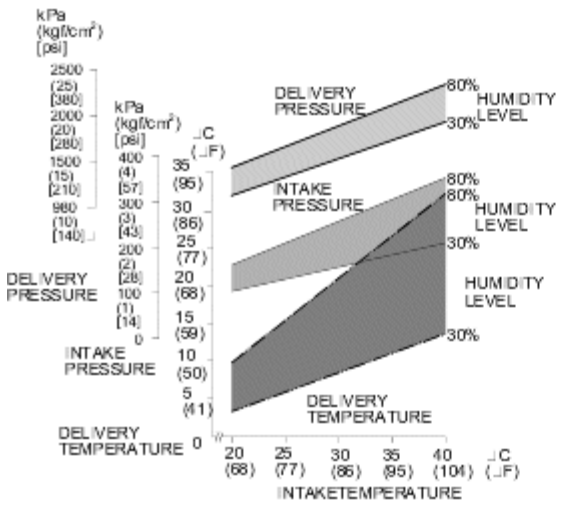
2.
1. LOW-PRESSURE VALVE
2. EVACUATION VALVE
3. HIGH-PRESSURE VALVE
4. VACUUM PUMP
5. HIGH-PRESSURE QUICK JOINT
6. LOW-PRESSURE QUICK JOINT
7. CHECK VALVE

vent, the intake temperature near the blower unit behind the glove box and the high and low system pressure from the A/C gauges.

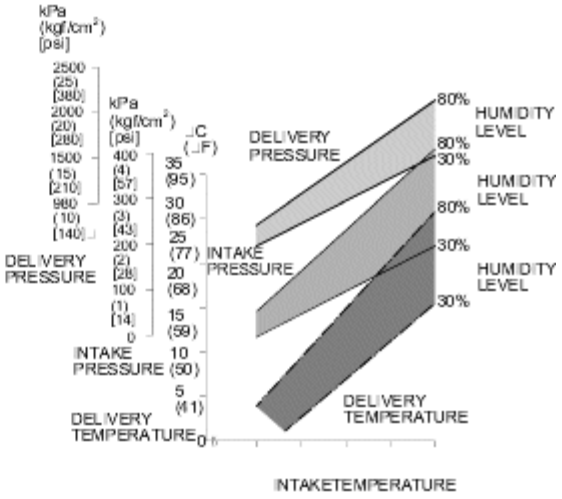
Air Conditioning
A/C System Tests (cont'd)

1. 5. To complete the charts:
   - Mark the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) along the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - Mark a point 10 % above and 10 % below the humidity level.
   - From each point, draw a horizontal line across the delivery temperature.
   - The delivery temperature should fall between the two lines.
   - Complete the low-side pressure test and high-side pressure test in the same way.
   - Any measurements outside the line may indicate the need for further inspection.

4-door:



5-door:



Standards and Service Limits

Engine Electrical

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1 - 3 – 4 - 2	
Spark plug	Type		D14Z5, D15Y6, D15Y4, D16W7 engines	NGK: ZFR5J-11 DENSO: KJ16CR-L11
			D17A1, D17A2, D17Z1, D17Z4 engines	NGK: ZFR6J-11 DENSO: KJ20CR-L11
			D17A5, D17Z5 engines	NGK: ZFR6J-11 DENSO: KJ20CR-L11
			D15Y2, D15Y3, D16W8, D16W9 engines	NGK: BKR5E-11 DENSO: K16CR-L11
			D17Z2, D17Z3 engines	NGK: ZFR6J-11, ZFR7J-11 DENSO: KJ20CR-L11, KJ22CR-L11
			D14Z6, D16V1 engines	NGK:ZFR5J-11, ZFR6J-11 DENSO: KJ16CR-L11, KJ20CR-L11
	Gap		1.0-1.1 mm (0.039-0.043 in.)	-
Ignition timing		At idle (check the red mark)	M/T (in neutral): 8±2° BTDC at 700±50 rpm (min-1)	
			A/T HONDA MULTI MATIC (in N or P): 8±2° BTDC at 700±50 rpm (min-1)	
Alternator belt NOTE: Adjust a new belt to the new belt spec., run the engine for 5 minutes, then readjust it to the used belt spec.	Deflection with 98 N (10 kgf, 22 lbs) applied midway between pulleys	Without A/C (with A/C, see "Compressor belt" in the A/C table)	Used belt: 8.5-11.0 mm (0.33-0.43 in.)	
			New belt: 6.5-8.5 mm (0.26-0.33 in.)	
	Tension (measured with belt tension gauge)	Without A/C (with A/C, see "Compressor belt" in the A/C table)	Used belt: 340-490 N (35-55 kgf, 77-110 lbs)	
			New belt: 540-740 N (55-75 kgf, 120-170 lbs)	
Alternator	Output	At 13.5 V and normal engine temperature	70 A	
	Coil (rotor) resistance	at 68°F (20°C)	1.84-2.10 ohms	
	Slip ring O.D.		22.7 mm (0.89 in.)	21.7 mm (0.85 in.)
	Brush length		19.0 mm (0.75 in.)	5 mm (0.20 in.)
	Brush spring tension		3.3-4.1 N (1.6-1.8 kgf, 3.5-4.0 lbs)	
Starter for D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines (DENSO)	Output		1.0 kW	
	Commutator mica depth		0.50-0.75 mm (0.020-0.030 in.)	0.2 mm (0.008 in)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in)
	Commutator O.D.		27.9-28.0 mm (1.098-1.102 in.)	27.0 mm (1.063 in.)
	Brush length		14.0-14.5 mm (0.55-0.57 in.)	9.0 mm (0.35 in)
	Brush spring tension		13.7-17.7 N (1.4-1.8 kgf, 3.09-4.00 lbf)	

Standards and Service Limits

Honda Multi Matic Transmission and HMM

Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch	Clutch end plate-to-top disc clearance	Forward clutch	0.6-0.8 mm (0.024-0.031 in.)	-
		Start clutch	0.5-0.7 mm (0.020-0.028 in.)	-
		Reverse brake	0.45-0.75 mm (0.018-0.030 in.)	-
	Clutch return spring free length	Forward clutch	30.5 mm (1.20 in.)	28.5 mm (1.12 in.)
		Start clutch	40.9 mm (1.61 in.)	38.9 mm (1.53 in.)
		Reverse brake	29.4 mm (1.16 in.)	27.4 mm (1.08 in.)
	Clutch disc thickness	Forward clutch	1.94 mm (0.076 in.)	-
		Start clutch	1.94 mm (0.076 in.)	-
		Reverse brake	2.00 mm (0.079 in.)	-
	Clutch plate thickness	Forward clutch	2.00 mm (0.079 in.)	When discoloured
		Start clutch	2.3 mm (0.091 in.)	When discoloured
		Reverse brake	1.35 mm (0.053 in.)	When discoloured
	Forward clutch end plate	Mark 14	3.4 mm (0.134 in.)	When discoloured
		Mark 15	3.5 mm (0.138 in.)	When discoloured
		Mark 16	3.6 mm (0.142 in.)	When discoloured
		Mark 17	3.7 mm (0.146 in.)	When discoloured
		Mark 18	3.8 mm (0.150 in.)	When discoloured
		Mark 19	3.9 mm (0.154 in.)	When discoloured
		Mark 20	4.0 mm (0.157 in.)	When discoloured
		Mark 21	4.1 mm (0.161 in.)	When discoloured
		Mark 22	4.2 mm (0.165 in.)	When discoloured
		Mark 23	4.3 mm (0.169 in.)	When discoloured
		Mark 24	4.4 mm (0.173 in.)	When discoloured
		Mark 25	4.5 mm (0.177 in.)	When discoloured
		Mark 26	4.6 mm (0.181 in.)	When discoloured
		Mark 27	4.7 mm (0.185 in.)	When discoloured
	Reverse brake end plate	Mark 1	3.6 mm (0.142 in.)	When discoloured
		Mark 2	3.8 mm (0.150 in.)	When discoloured
		Mark 3	4.0 mm (0.157 in.)	When discoloured
		Mark 4	4.2 mm (0.165 in.)	When discoloured
		Mark 5	4.4 mm (0.173 in.)	When discoloured
		Mark 6	4.6 mm (0.181 in.)	When discoloured
		Mark 7	4.8 mm (0.189 in.)	When discoloured
		Mark 8	5.0 mm (0.197 in.)	When discoloured

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Standards and Service Limits

Honda Multi Matic Transmission and HMM

Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Input shaft	Diameter of needle bearing contact area	Flywheel side	19.987-20.000 mm (0.7869-0.7874 in.)	When worn or damaged
		Forward clutch side	19.987-20.000 mm (0.7869-0.7874 in.)	When worn or damaged
	Thrust clearance	ATF pump driven sprocket hub	0.37-0.65 mm (0.015-0.026 in.)	-
		Planetary carrier	0.05-0.11 mm (0.002-0.0043 in.)	-
	Feed pipe O.D.	Drive pulley feed pipe	6.97-6.98 mm (0.274-0.275 in.)	6.95 mm (0.274 in.)
		Forward clutch feed pipe	11.47-11.48 mm (0.4516-0.4520 in.)	11.45 mm (0.451 in.)
	Feed pipe bushing I.D.	Drive pulley feed pipe	7.00-7.015 mm (0.2756-0.2762 in.)	7.030 mm (0.277 in.)
		Forward clutch feed pipe	11.5-11.518 mm (0.4528-0.4535 in.)	11.533 mm (0.454 in.)
	Sealing ring groove width		2.00-2.10 mm (0.079-0.083 in.)	2.105 mm (0.083 in.)
	Thrust shim, 22 x 28 mm thickness (ATF pump driven sprocket hub)	C	1.15 mm (0.045 in.)	When worn or damaged
		D	1.40 mm (0.055 in.)	When worn or damaged
		E	1.65 mm (0.065 in.)	When worn or damaged
		F	1.90 mm (0.075 in.)	When worn or damaged
		G	2.15 mm (0.085 in.)	When worn or damaged
		H	2.40 mm (0.095 in.)	When worn or damaged
	Thrust shim, 25 x 31 mm thickness (Planetary carrier)	A	1.050 mm (0.041 in.)	When worn or damaged
		B	1.12 mm (0.044 in.)	When worn or damaged
		C	1.19 mm (0.047 in.)	When worn or damaged
		D	1.26 mm (0.050 in.)	When worn or damaged
		E	1.33 mm (0.052 in.)	When worn or damaged
		F	1.40 mm (0.055 in.)	When worn or damaged
		G	1.47 mm (0.058 in.)	When worn or damaged
		H	1.54 mm (0.061 in.)	When worn or damaged
		I	1.61 mm (0.063 in.)	When worn or damaged
		J	1.68 mm (0.066 in.)	When worn or damaged

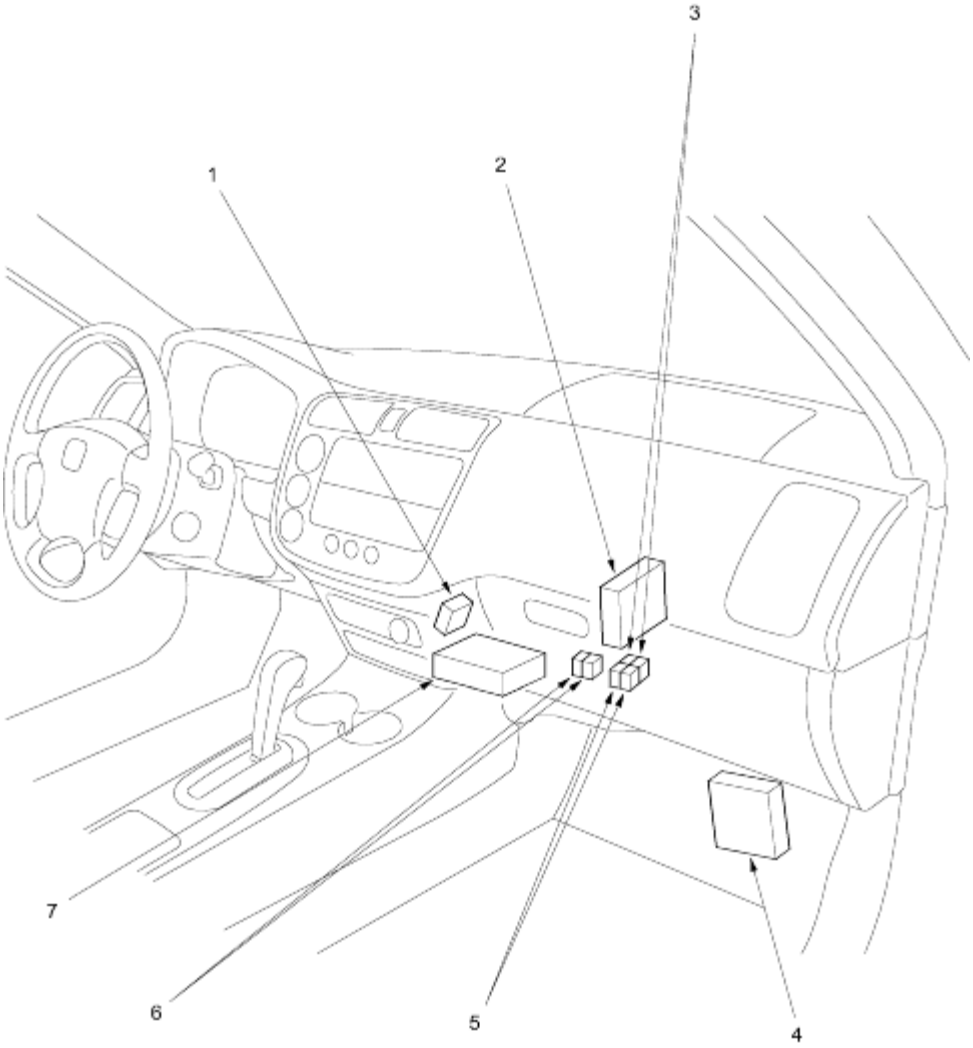
		K	1.75 mm (0.069 in.)	When worn or damaged
		L	1.82 mm (0.072 in.)	When worn or damaged
		M	1.085 mm (0.0427 in.)	When worn or damaged
		N	1.155 mm (0.0454 in.)	When worn or damaged
		O	1.225 mm (0.0482 in.)	When worn or damaged
		P	1.295 mm (0.0510 in.)	When worn or damaged
		Q	1.365 mm (0.0537 in.)	When worn or damaged
		R	1.435 mm (0.0565 in.)	When worn or damaged
		S	1.505 mm (0.0593 in.)	When worn or damaged
		T	1.575 mm (0.0620 in.)	When worn or damaged
		U	1.645 mm (0.0648 in.)	When worn or damaged
		V	1.715 mm (0.0675 in.)	When worn or damaged
		W	1.785 mm (0.0703 in.)	When worn or damaged

Relay and Control Unit Locations

Dashboard (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar.

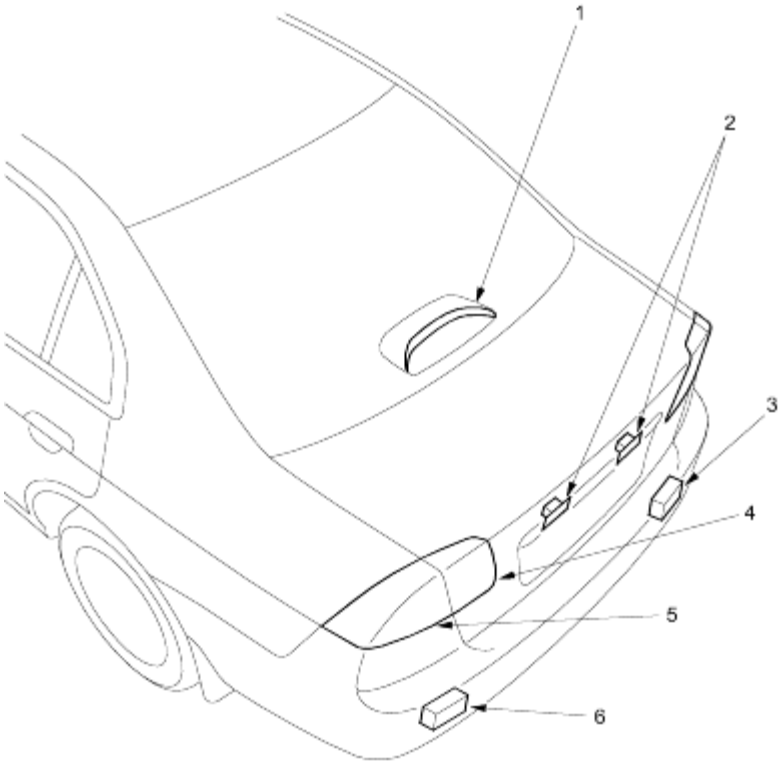


1. KEYLESS RECEIVER UNIT
2. ECM/PCM
3. SECURITY STARTER CUT RELAY (KH and KN models)
   [Wire colours: BLK/WHT, BLK/WHT, BLK/RED and RED/YEL]
   KEY INTERLOCK RELAY (KH model)
   [Wire colours: WHT/RED YEL/RED, YEL/RED and YEL/BLU]
   SEAT HEATER MAIN RELAY (KG model)
   [Wire colours: GRY/BLU RED/BLK, BLK/YEL and BLK]
4. EPS CONTROL UNIT
5. A/T REVERSE RELAY
   [Wire colours: GRN, YEL, YEL and WHT]
   SHIFT LOCK RELAY (KH model)
   [Wire colours: WHT/BLK YEL/BLK, YEL and BLU/BLK]
6. PGM-FI MAIN RELAY 1
   [Wire colours: YEL/BLK, WHT/BLK, WHT/BLK and RED/YEL]
   PGM - FI MAIN RELAY 2
   [Wire colours: YEL/BLK YEL/GRN, YEL/BLK and GRN/YEL]
7. SRS UNIT

Exterior Lights

Component Location Index (cont'd)

4-door:

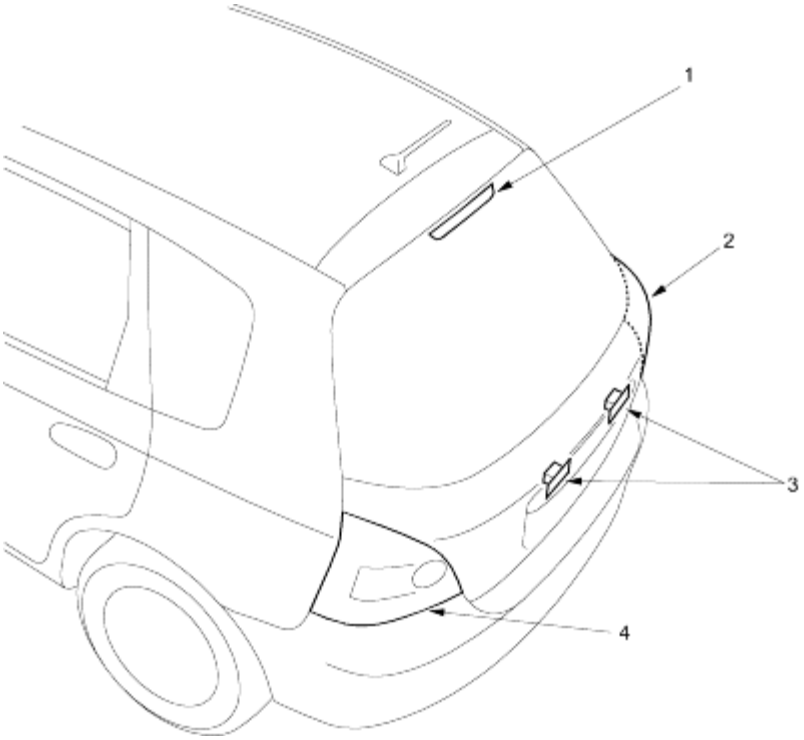


1. HIGH MOUNT BRAKE LIGHT
   Replacement, page 22-120
2. LICENSE PLATE LIGHTS
   Replacement, page 22-121
3. REAR FOG LIGHT (KE model)
   Replacement, page 22-122
4. INNER TAILLIGHT
   Replacement, page 22-118
   BACK - UP LIGHT
   Replacement, page 22-118
5. TAILLIGHTS and BRAKE LIGHTS
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   REAR TURN SIGNAL LIGHT
   Replacement, page 22-118
6. REAR FOG LIGHT (KG and KB models)
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Exterior Lights

Component Location Index (cont'd)

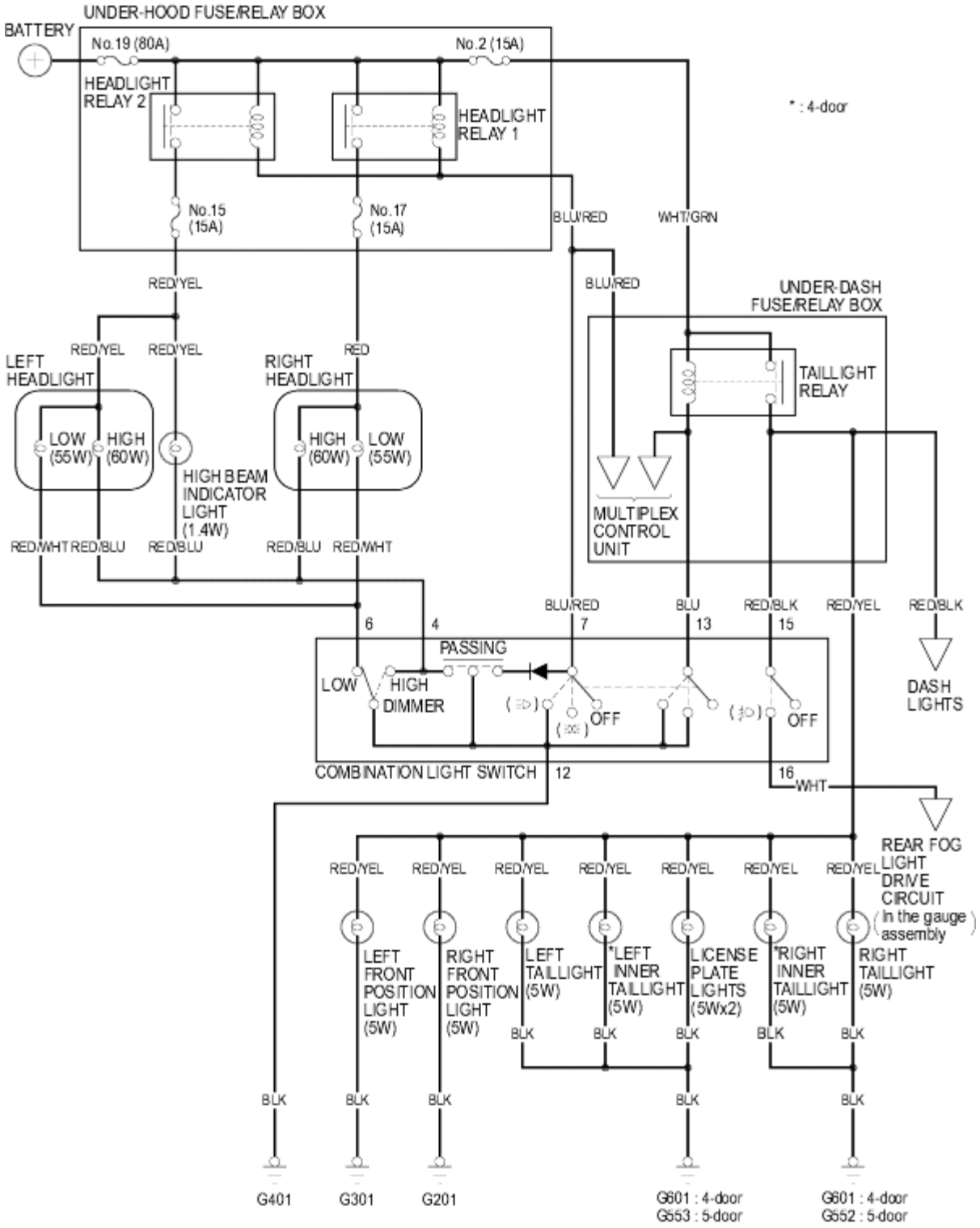
5-door:



1. HIGH MOUNT BRAKE LIGHT
   Replacement, page 22-120
2. REAR FOG LIGHT (located in the right taillight)
   Replacement, page 22-122
3. LICENSE PLATE LIGHTS
   Replacement, page 22-121
4. TAILLIGHTS and BRAKE LIGHTS
   Replacement, page 22-119
   REAR TURN SIGNAL LIGHTS
   Replacement, page 22-119
   BACK - UP LIGHT
   Replacement, page 22-119

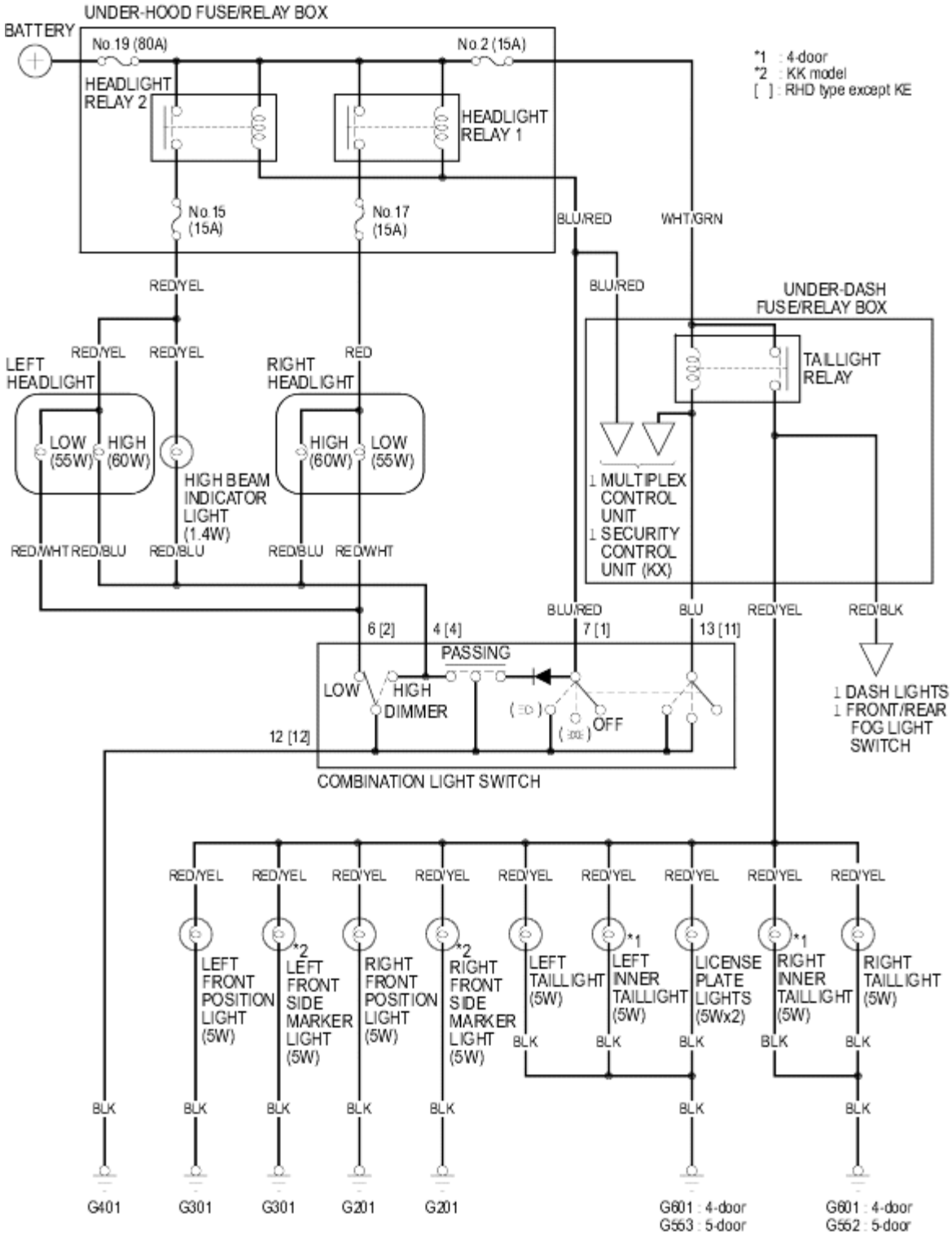
Exterior Lights

Circuit Diagram



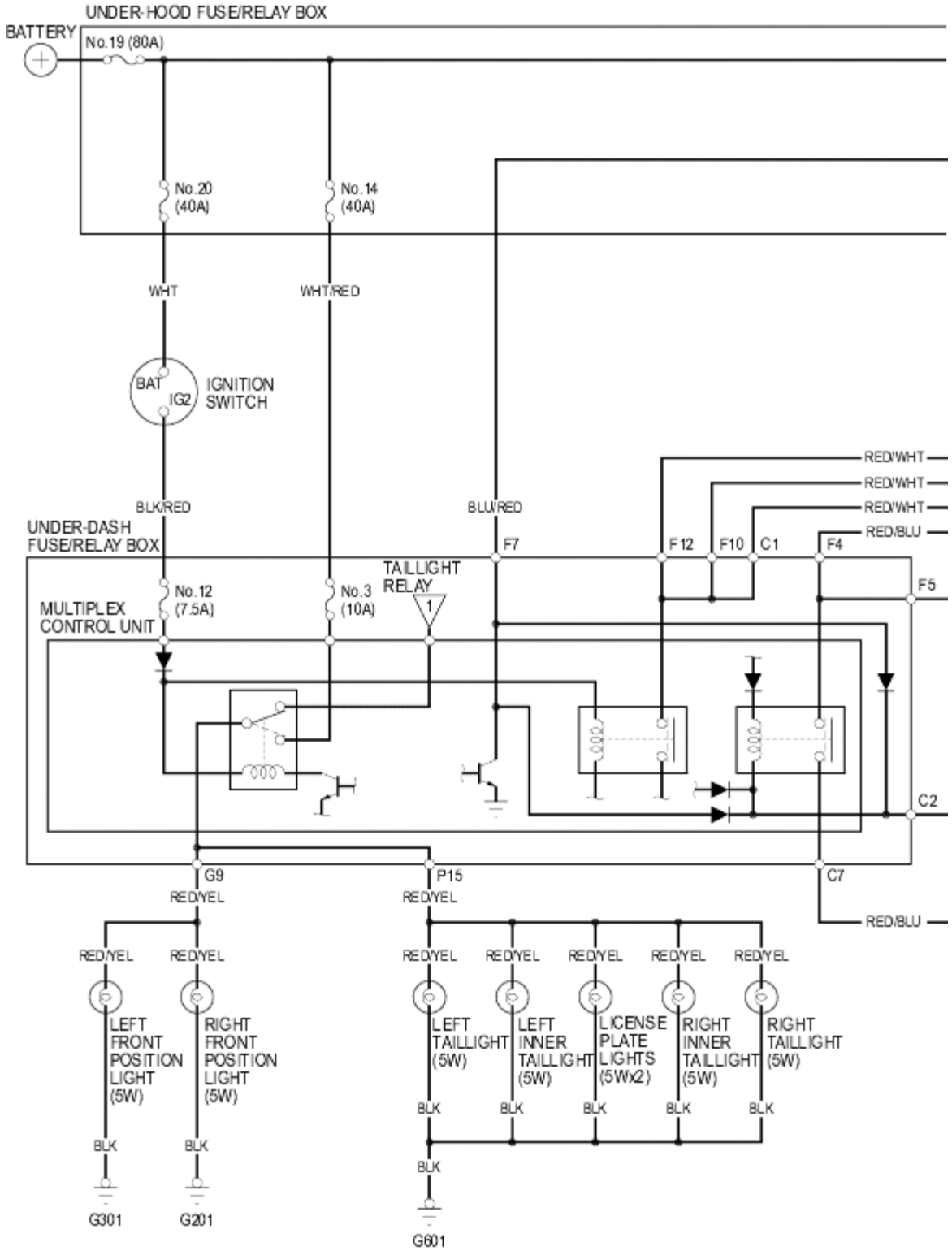
Exterior Lights

Circuit Diagram (cont'd)



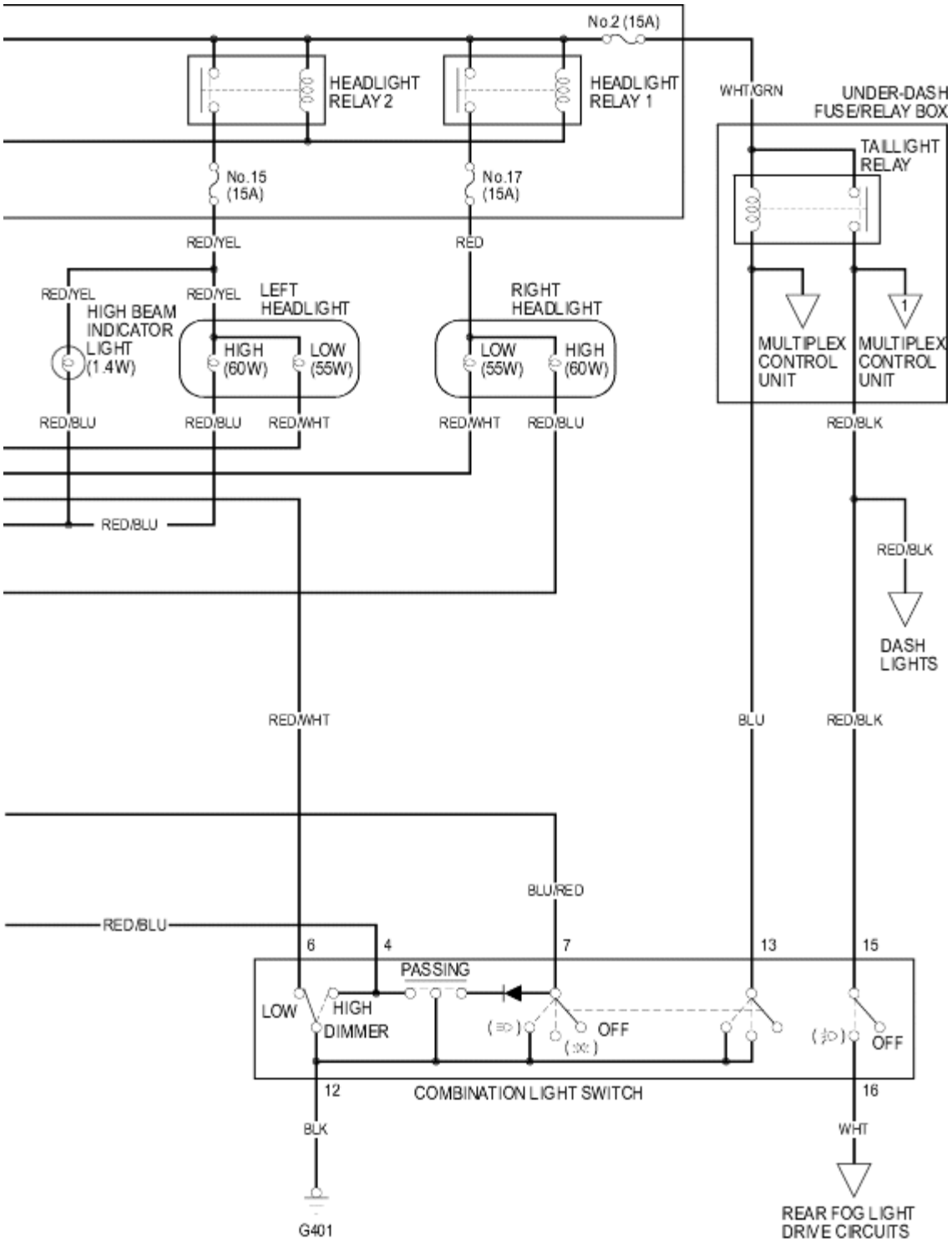
Exterior Lights

Circuit Diagram (cont'd)



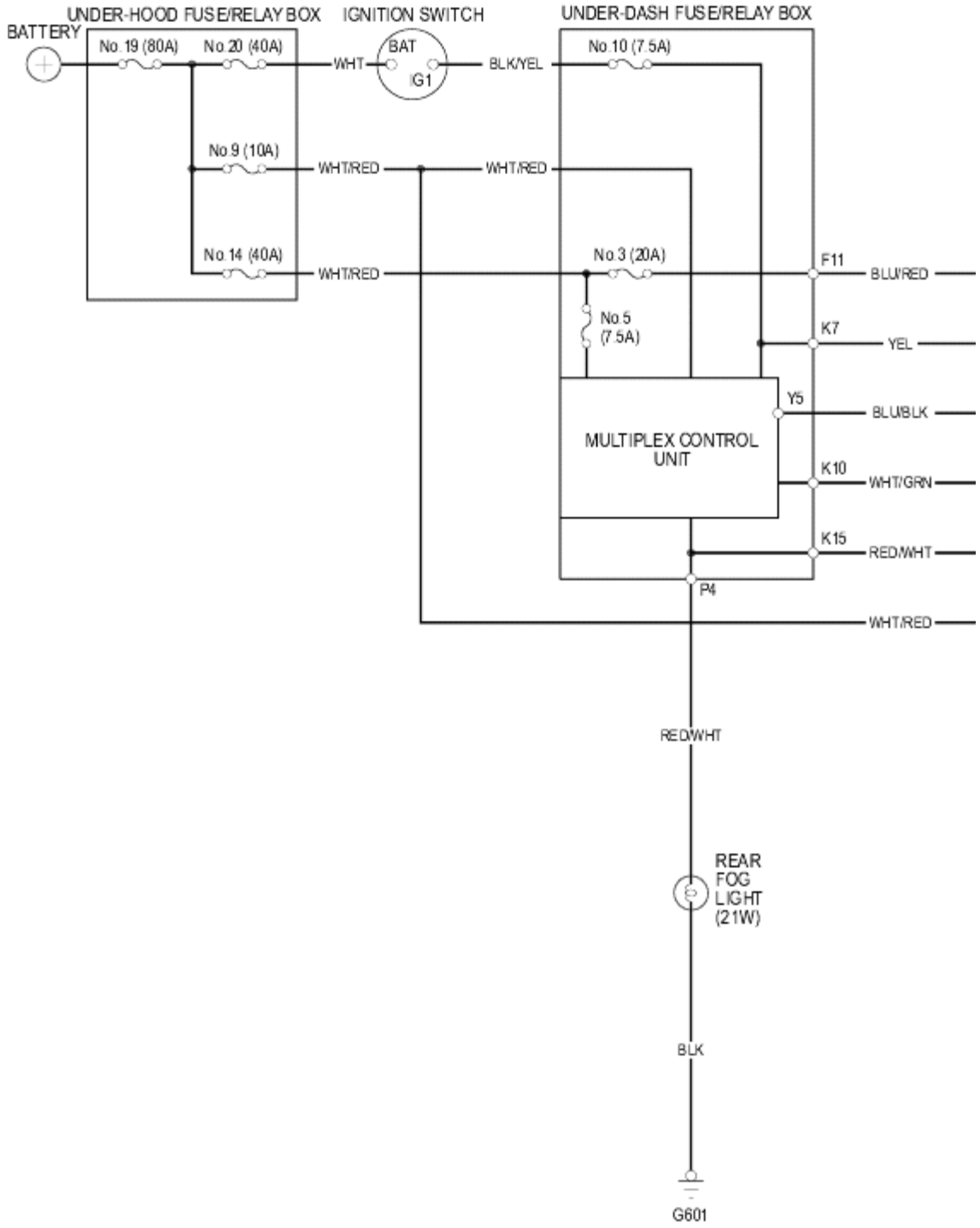
Exterior Lights

Circuit Diagram (cont'd)



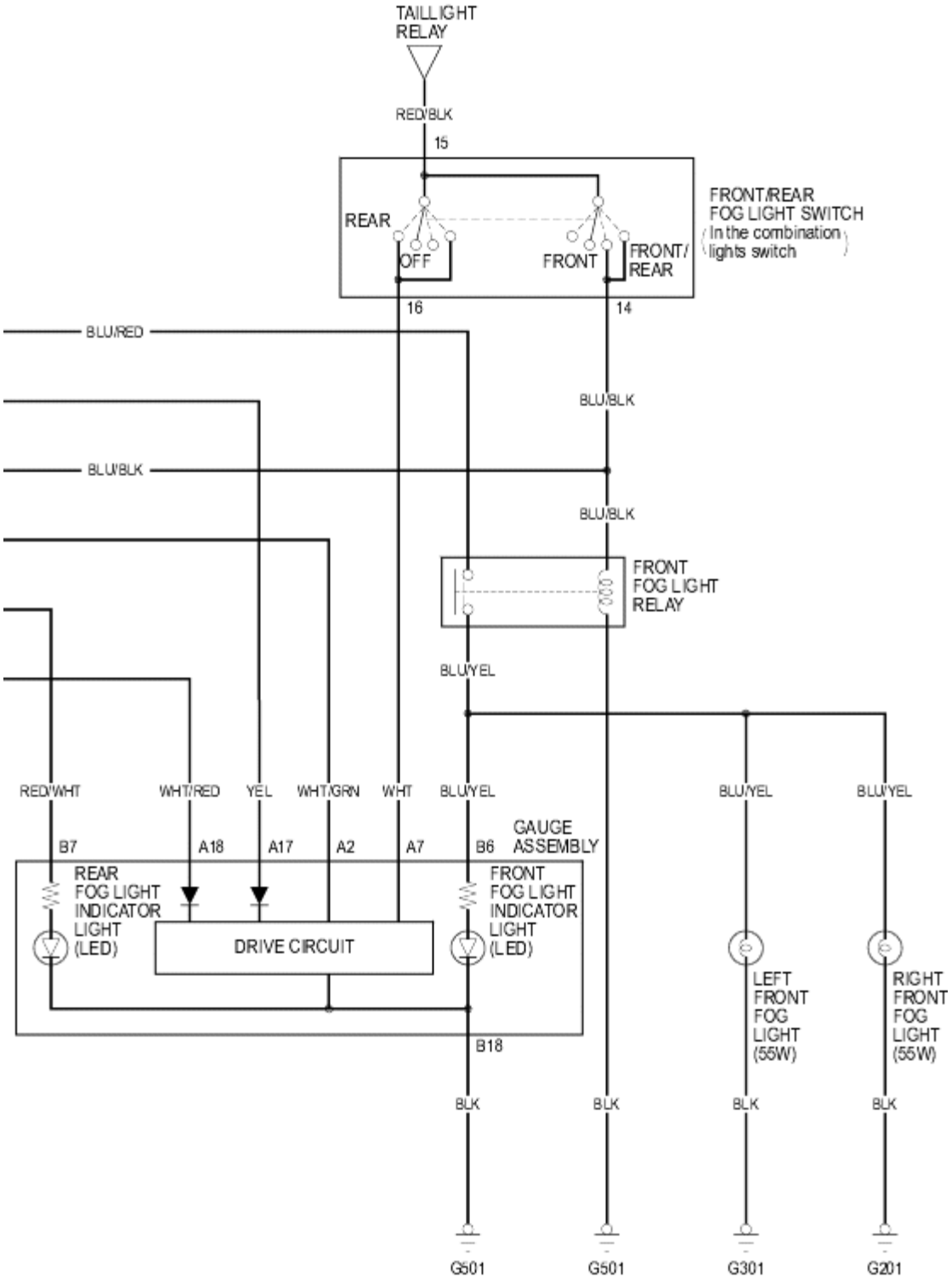
Exterior Lights

Circuit Diagram - Front/Rear Fog Lights

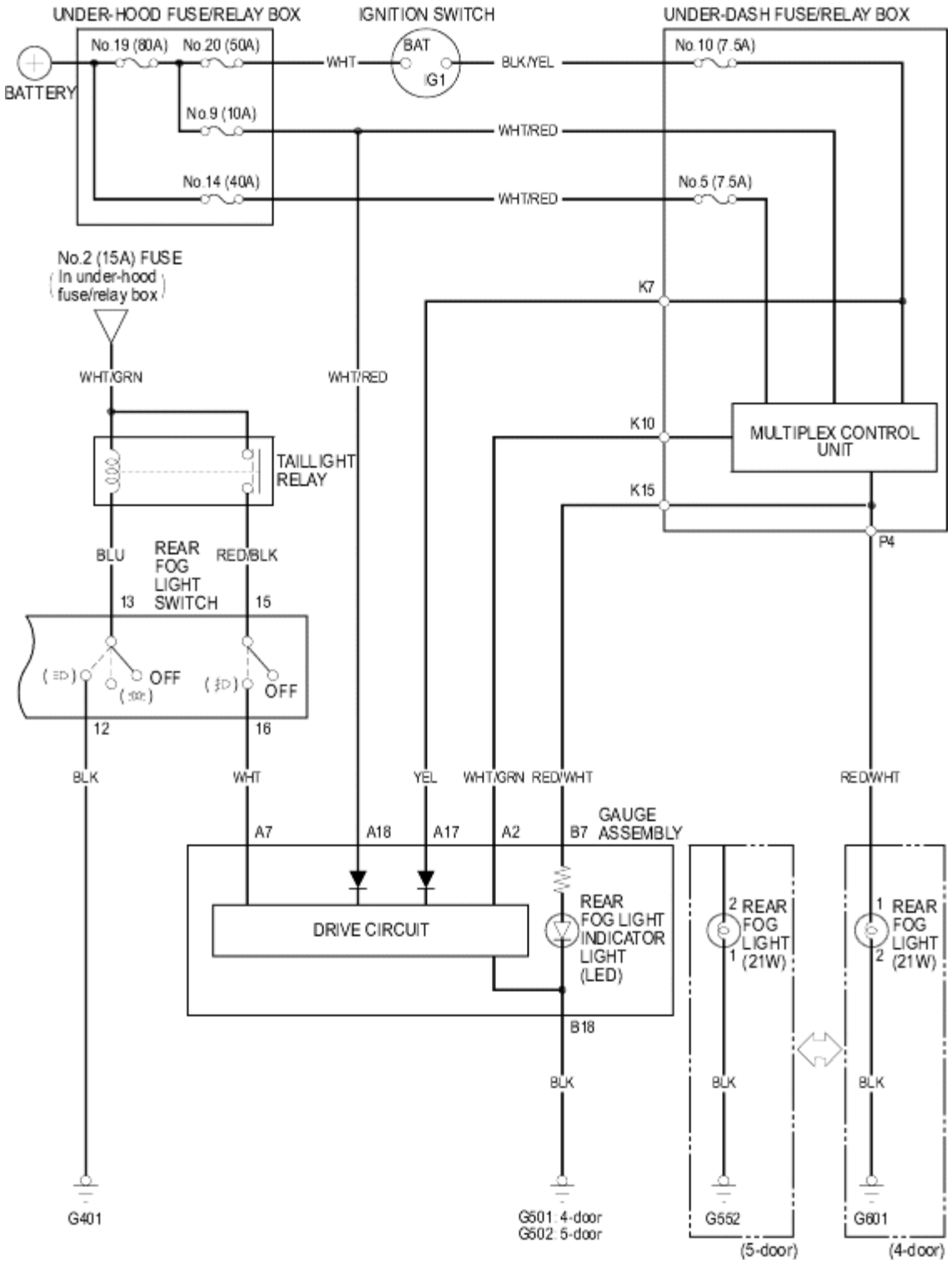


Exterior Lights

Circuit Diagram - Front/Rear Fog Lights

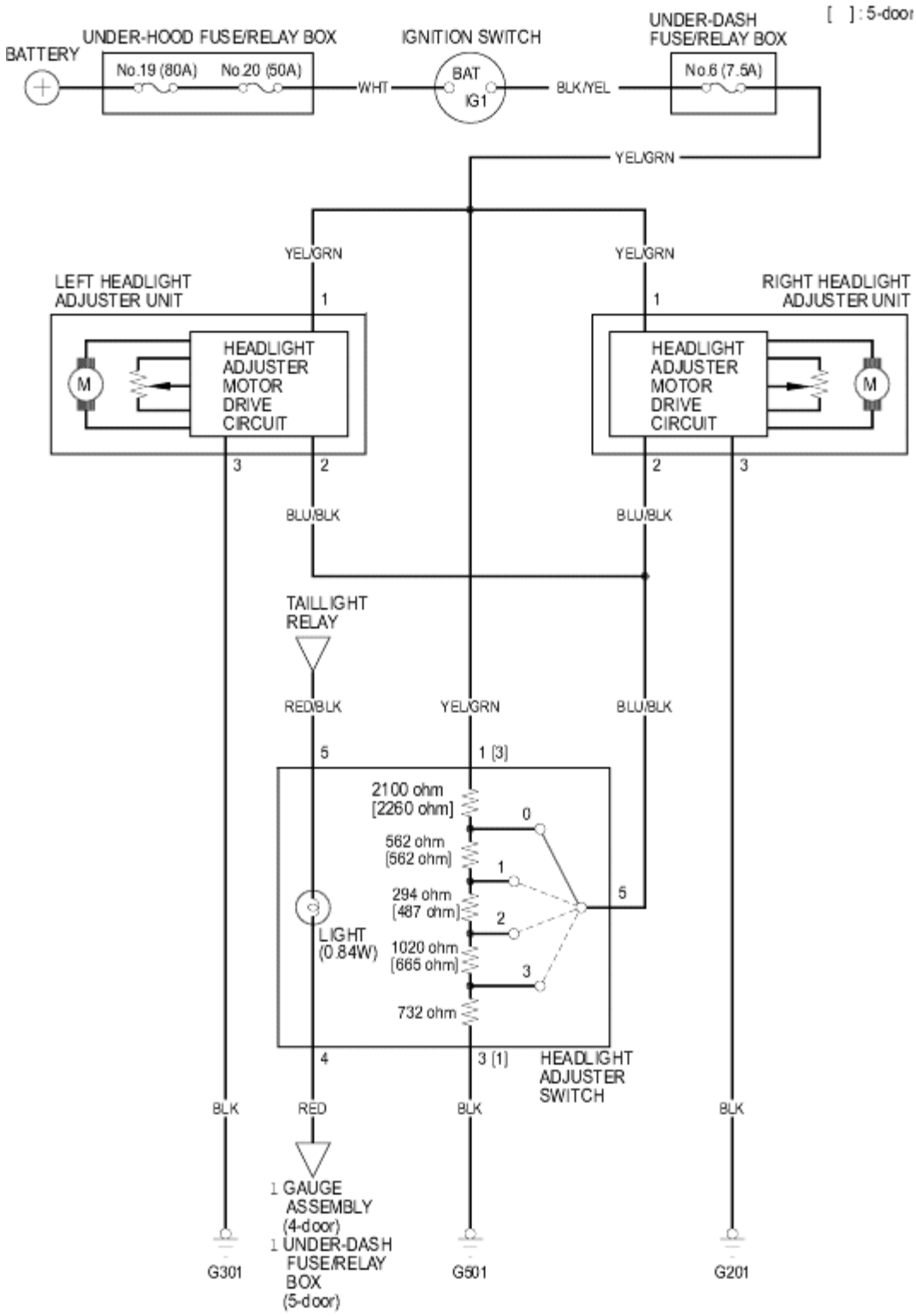


Exterior Lights
Rear Fog Lights



Exterior Lights

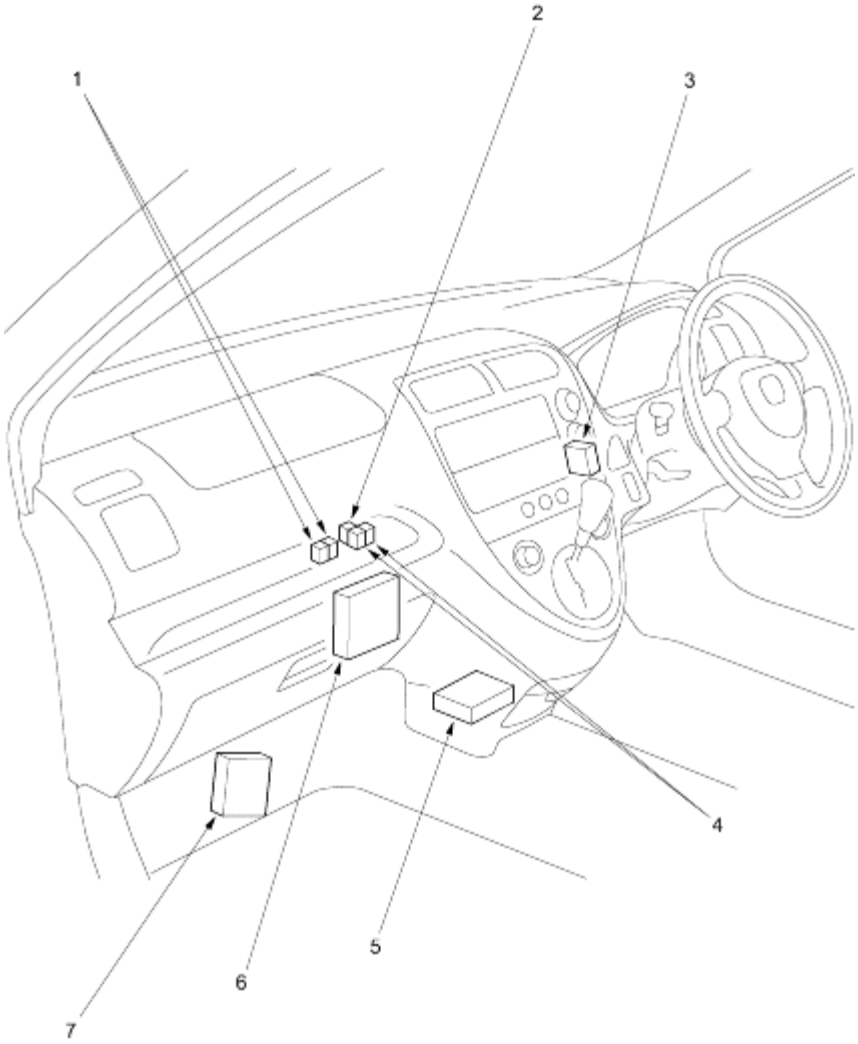
Circuit Diagram - Headlights Adjuster



Relay and Control Unit Locations

Dashboard (cont'd)

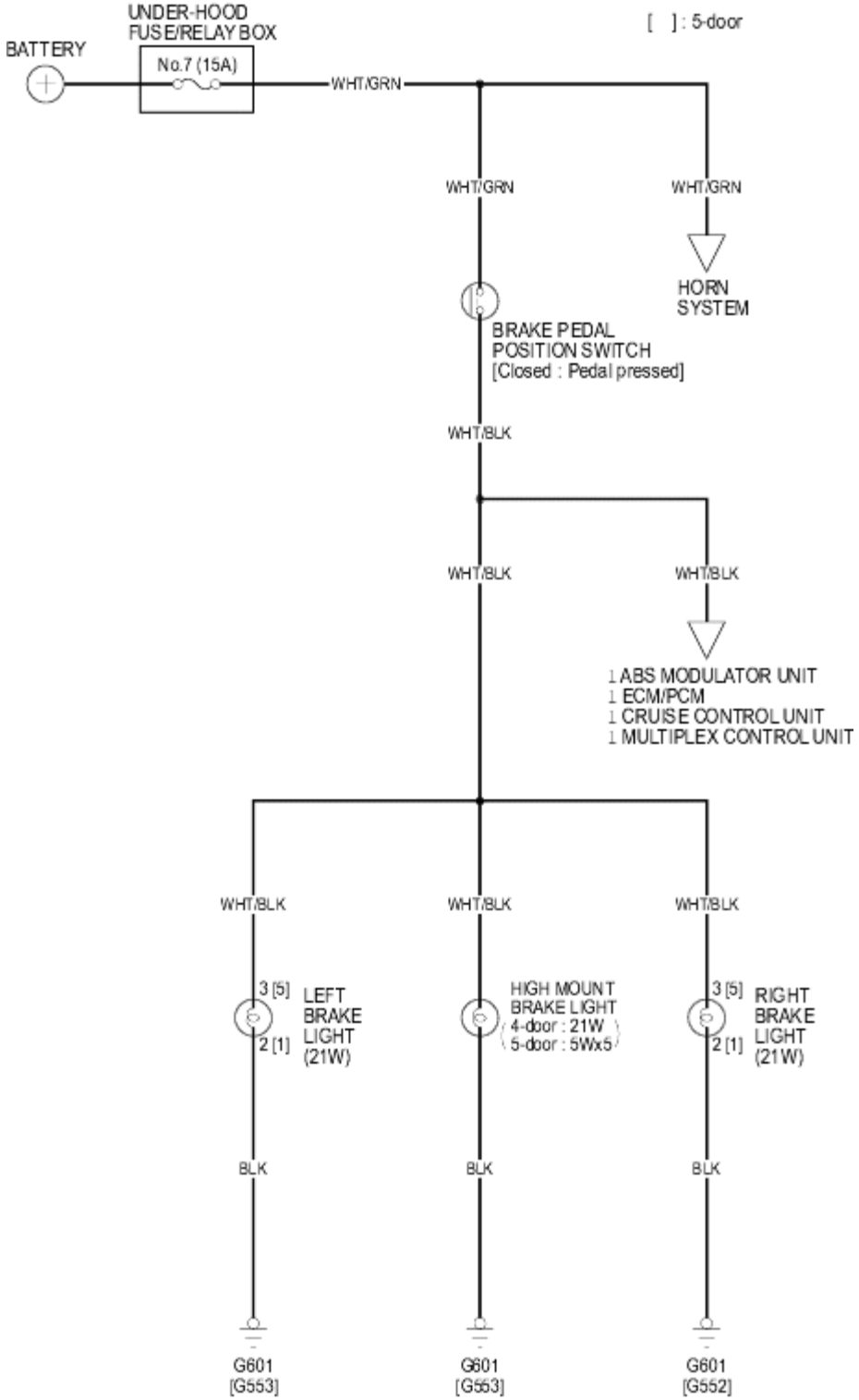
5 - door:



1. PGM - FI MAIN RELAY 1
   [Wire Colours: YEL/BLK
   WHT/BLK, WHT/BLK and RED/YEL]
   PGM - FI MAIN RELAY 2
   [Wire colours: YEL/BLK,
   YEL/GRN, YEL/BLK and GRN/YEL]
2. SHIFT LOOK RELAY (KE model)
   [Wire colours: YEL/RED,
   YEL/RED, WHT/RED and BLU/BLK]
3. KEYLESS RECEIVER UNIT
4. A/T REVERSE RELAY
   [Wire colours: GRN,
   YEL, YEL and WHT]
   SEAT HEATER MAIN RELAY
   (KE model and KQ model)
   [Wire colours: GRY/BLU,
   RED/BLK, BLK/YEL and BLK]
5. SRS UNIT
6. ECM/PCM
7. EPS CONTROL UNIT

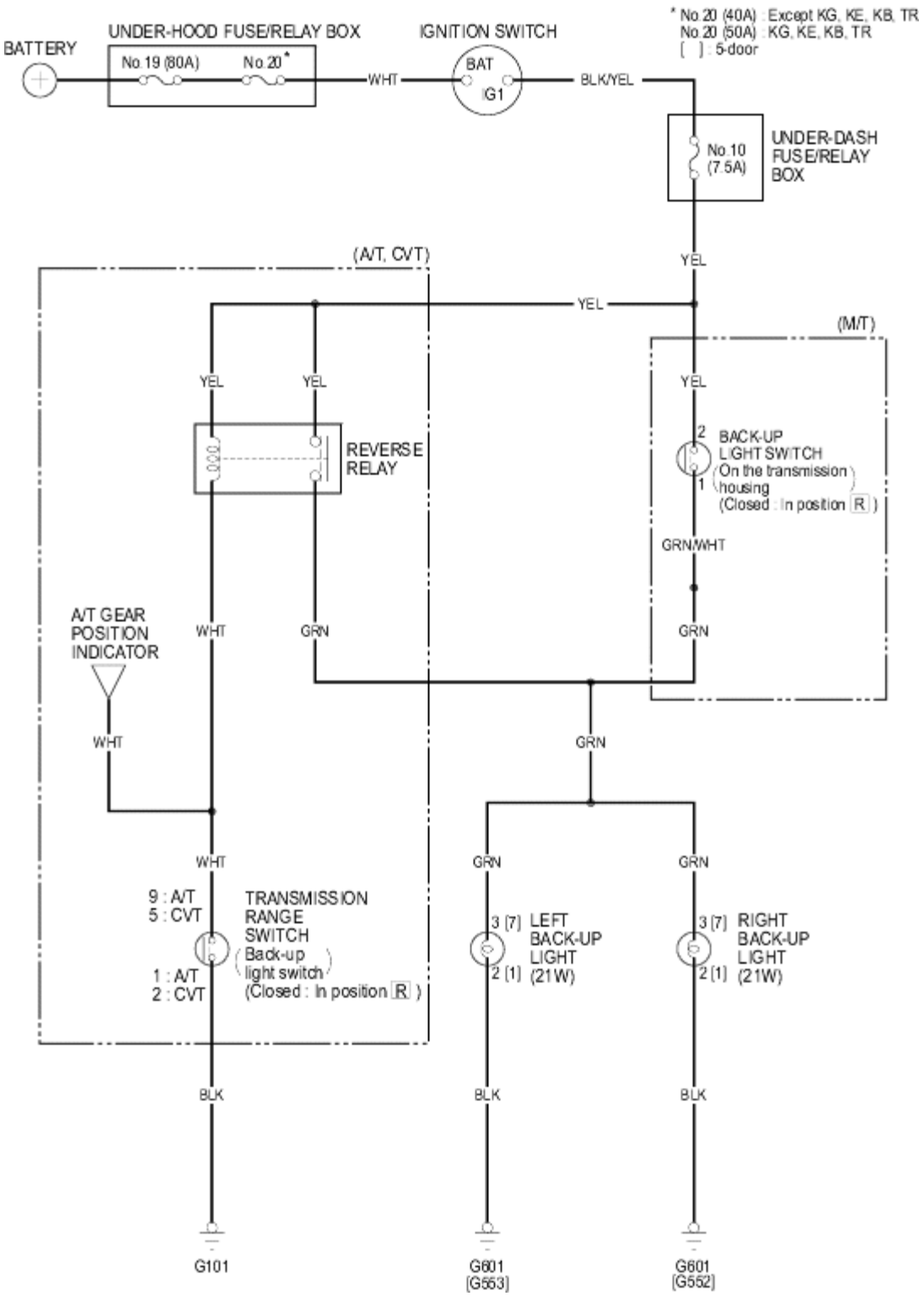
Exterior Lights

Circuit Diagram - Brake Lights



Exterior Lights

Circuit Diagram - Back-up Lights

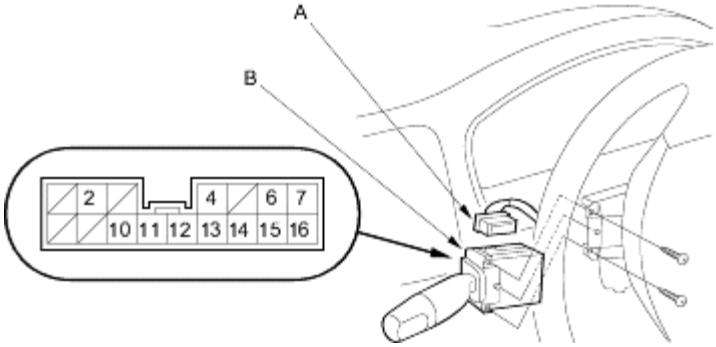


Exterior Lights

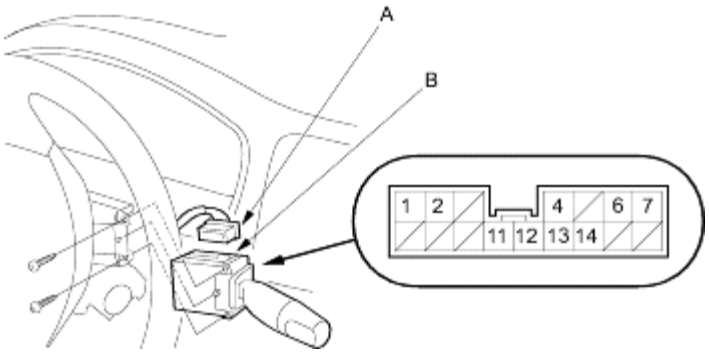
Combination Light Switch Test/Replacement

1. 1. Remove the dashboard lower cover (see page 20-76).
   2. Remove the steering column covers (see page 17-9).
   3. Disconnect the 16P connector (A) from the combination light switch (B).

LHD type and KE model:



RHD type and except KE model:



2. 4. Remove the two screws, then slide out the combination light switch.

Exterior Lights

Combination Light Switch Test/Replacement (cont'd)

1. 5. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.

– – If there is no continuity, replace the switch.

Light Switch:

Position \ Terminal			4	6 [2]	7 [1]		12	13 [11]
Headlight switch	OFF			○			○	
	≡D						○	○
		LOW		○	○		○	○
		HIGH	○		○		○	○
Passing switch	OFF				○	▶	○	
	ON		○				○	

Turn Signal Switch:

Position \ Terminal	2 [13]	10 [14]	11 [6]
LEFT	○	○	
NEUTRAL			
RIGHT		○	○

Front/Rear Fog Lights Switch (KH model):

Position \ Terminal	14	15	16
OFF			
Front ON	○	○	
Rear ON		○	○
Front/Rear ON	○	○	○

Rear Fog Light Switch (KG, KE and KB models):

Position \ Terminal	**15**	**16**
OFF		
ON	○	○

Exterior Lights
Headlight Replacement

1. 1. Remove the front bumper (see page 20-104).
2. 2. Disconnect the connectors (A) from the headlight (B).

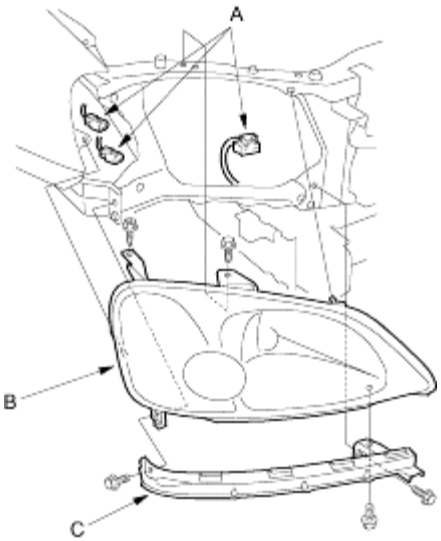
Headlight: 60/55 W

Front Position Light: 5 W

Front Turn Signal Light: 21 W (Except KK model)

Front Turn Signal/Side Marker Light:

21/5 W (KK model)



3. 3. Remove the 5 mounting bolts, then remove the corner upper beam (C) and headlight assembly.
4. Install in the reverse order of removal.
5. After replacement, adjust the headlights to local requirements.

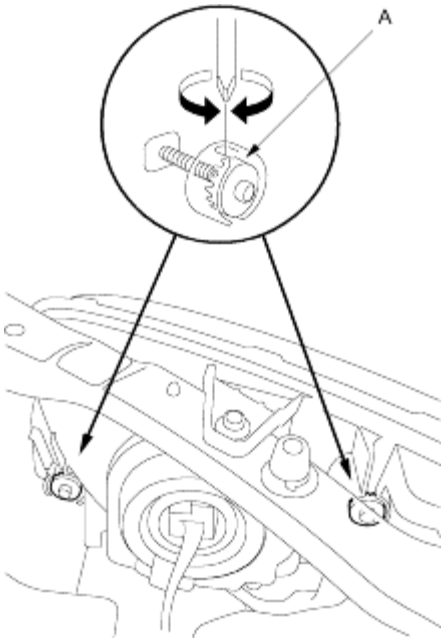
⚠ CAUTION

Headlights become very hot in use; do not touch them or any attaching hardware immediately after they have been turned off.

Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weights the same should sit in the driver's seat.

Adjust the headlights to local requirements by turning the adjusters (A).

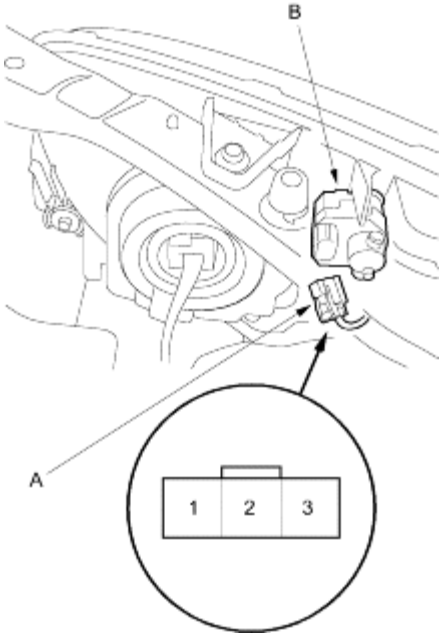


Exterior Lights

Headlight Adjuster Unit Troubleshooting

NOTE: Before testing, check for a blown No. 6 (7.5A) fuse in the under - dash fuse/relay box.

1. 1. Disconnect the 3P connector (A) from the headlight adjuster unit (B).



Wire side of female terminals

2. 2. Check for continuity between the No. 3 [No. 1] terminal and body ground.

Is there continuity?

YES – Go to step 3.

NO – Check for these problems: ■

- Repair open in the BLK wire between the headlight adjuster unit and body ground.
- Poor ground (G201, G301).

3. 3. Check for voltage between the No. 1 [No. 3] terminal and body ground.

Is there battery voltage?

YES – Go to step 4.

NO – Repair open in the YEL/GRN wire between the headlight adjuster unit and under - dash fuse/relay box. ■

1. 4. Using an ohmmeter, measure resistance between the No. 2 terminal and body ground in position 0 of the headlight adjuster switch.

Is there about 730 ohm?

YES – Check for frozen, stuck or improperly installed the headlight adjuster unit. If the mechanical check is OK, replace the headlight adjuster unit. ■

NO – Check for these problems: ■

- Poor ground (G501).
- An open in the BLU/BLK wire between the headlight adjuster unit and headlight adjuster switch.
- A faulty headlight adjuster switch.

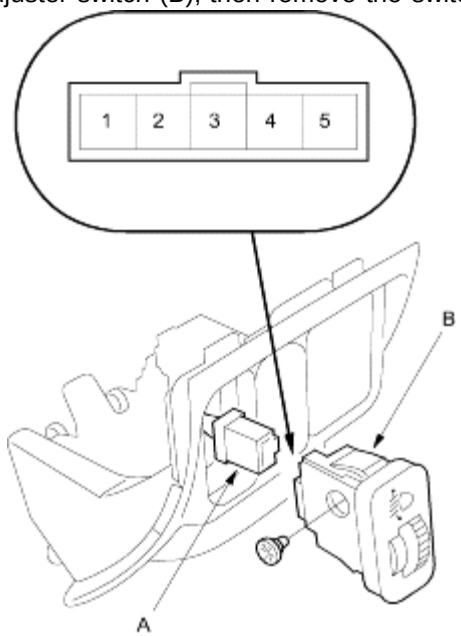
[ ]: 5-door

Exterior Lights

Headlight Adjuster Switch Test

4-door:

1. 1. Remove the driver's pocket (see page 20-76).
   2. Disconnect the 5 P connector (A) from the headlight adjuster switch (B), then remove the switch.



2. 3. Measure resistance between the No. 1 and No. 3 terminals and No. 2 and No. 3 terminals at positions 0, 1, 2, and 3 by moving the switch knob.

Between the No. 1 and No. 3 terminals:

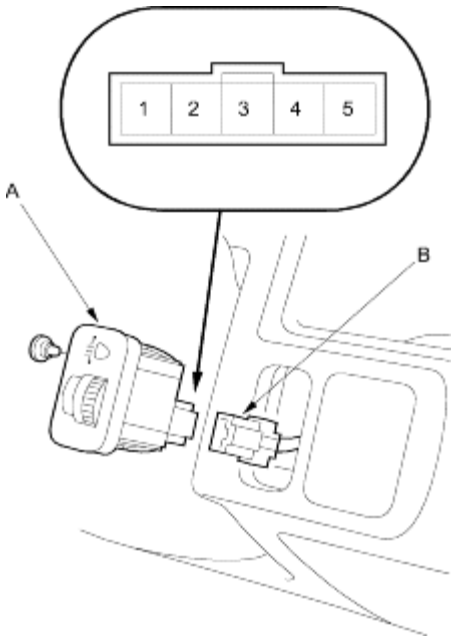
About 4.7 k ohms

Between the No. 2 and No. 3 terminals:

Knob position	0	1	2	3
Resistance [About (k ohms)]	0.7	1.7	2.0	2.6

5-door:

1. 1. Remove the driver's pocket (see page 20-216).
   2. Carefully push out the headlight adjuster switch (A) from behind the dashboard.



2. 3. Disconnect the 5P connector (B) from the switch.
   4. Measure resistance between the No. 1 and No. 3 terminals and No. 1 and No. 2 terminals at positions 0, 1, 2, and 3 by moving the switch knob.

Between the No. 1 and No. 3 terminals:

About 4.7 k ohms

Between the No. 1 and No. 2 terminals:

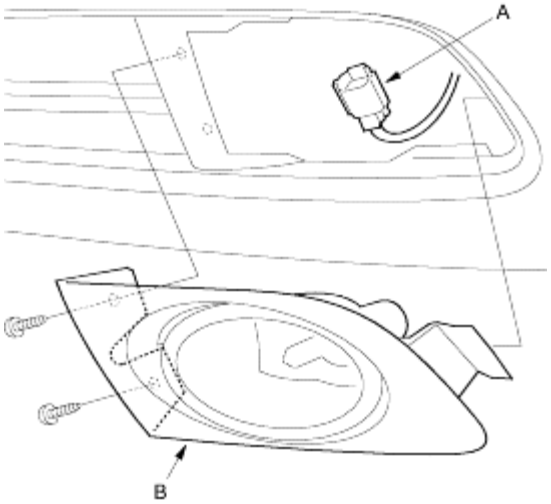
Knob position	0	1	2	3
Resistance [About (k ohms)]	0.7	1.4	1.9	2.4

Exterior Lights

Front Fog Lights Replacement

(KH model)

1. 1. Remove the two screws from the front fog light (A).
   FRONT FOG LIGHT: 55 W



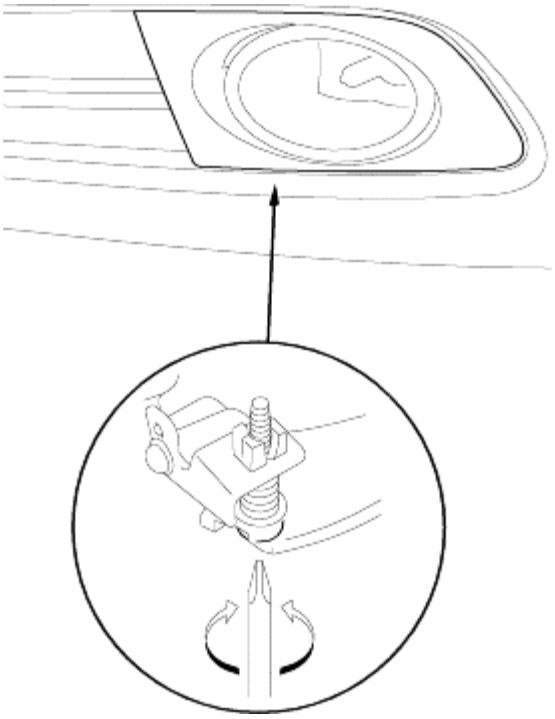
2. 2. Disconnect the 2P connector (B) from the fog light.

(KH model)

Before adjusting the fog lights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weights the same should sit in the driver's seat.

Adjust the fog lights to local requirements by turning the adjuster (A).

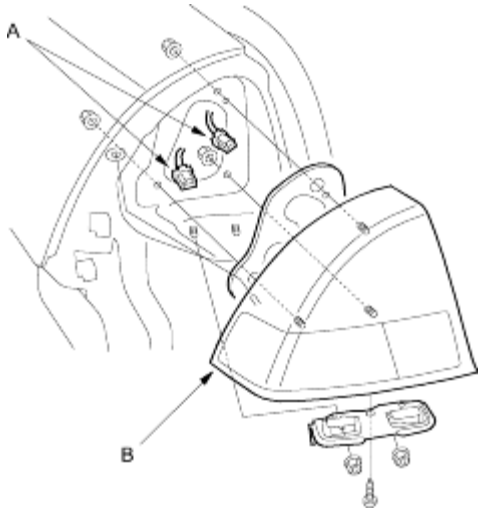


Exterior Lights
Taillight Replacement

Taillights (4-door):

1. 1. Remove the rear bumper (see page 20-105).
   2. Remove the trunk side trim panel (see page 20-67).
   3. Open the trunk lid and disconnect the connectors (A) from the taillight (B).

Brake/Taillight:	21/5 W
Turn Signal Light:	21 W

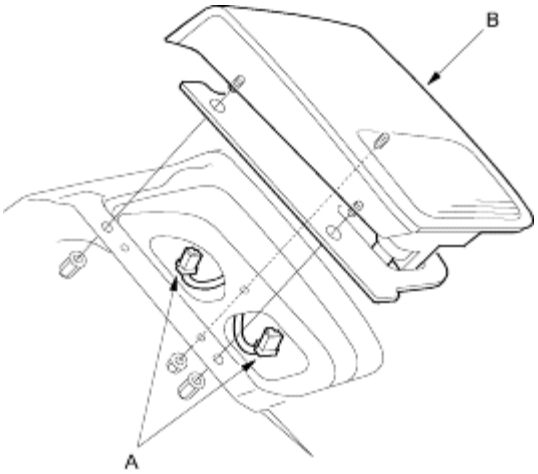


2. 4. Turn the bulb socket 45º counter-clockwise to remove the bulb socket.
   5. Remove the mounting nuts and bolts, then remove the taillight.
   6. When installing the taillight, check for the gasket; if it is distorted or stays compressed, replace it.
   7. After installing the taillight, run water over the taillight to make sure they do not leak.

Inner Taillights (4-door):

1. 1. Open the trunk lid and disconnect the connectors (A) from the inner taillight (B).

Back-up Light:	21 W
Inner Taillight:	5 W



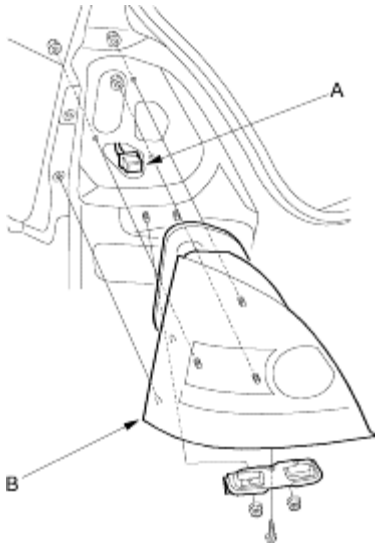
2. 2. Turn the bulb socket 45º counter-clockwise to remove the bulb socket.
   3. Remove the mounting nuts, then remove the taillight.
   4. When installing the taillight, check for the gasket; if it is distorted or stays compressed, replace it.
   5. After installing the taillight, run water over the taillight to make sure they do not leak.

Exterior Lights
Taillight Replacement (cont'd)

Taillights (5-door):

1. 1. Remove the rear bumper (see page 20-244).
   2. Open the tailgate and disconnect the connectors (A) from the taillight (B).

Brake/Taillight:	21/5 W
Turn Signal Light:	21 W
Back-Up Light:	21 W
Rear Fog Light:	21 W (KE model)



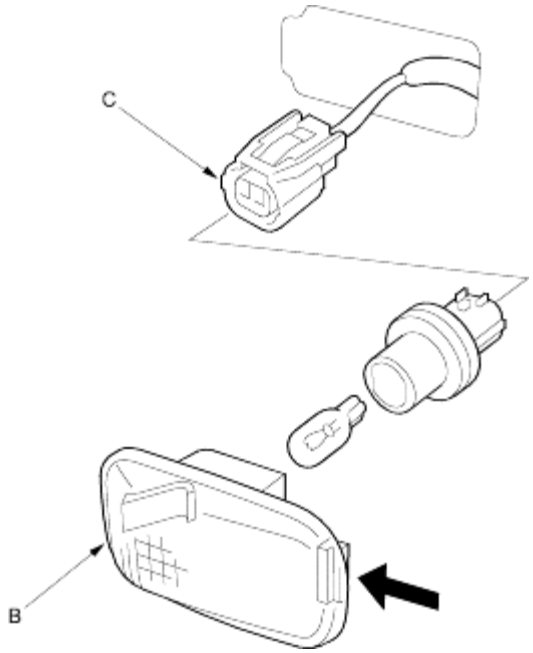
2. 3. Turn the bulb socket 45º counter-clockwise to remove the bulb socket.
   4. Remove the mounting nuts and bolts, then remove the taillight.
   5. When installing the taillight, check for the gasket; if it is distorted or stays compressed, replace it.
   6. After installing the taillight, run water over the taillight to make sure they do not leak.

Side Turn Signal Lights Replacement

NOTE: Be careful not to damage the fender.

1. 1. Push the retaining spring (A) and remove the side turn signal light (B).

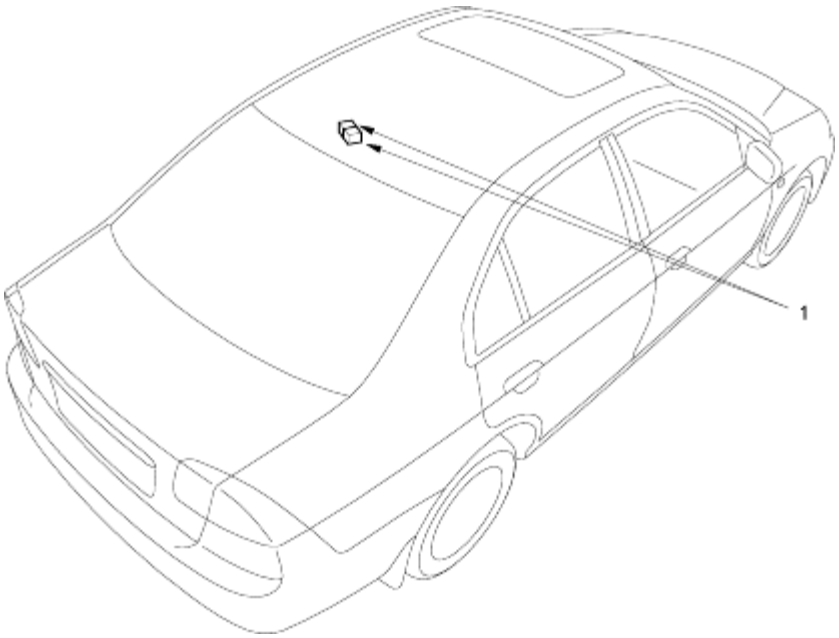
Side Turn Signal Light: 5W



2. 2. Disconnect the 2 P connector (C) from the light.

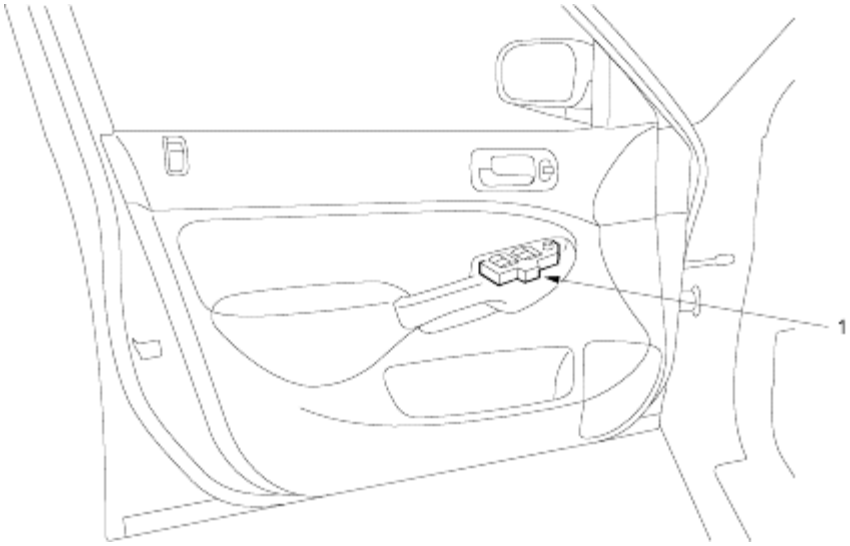
Relay and Control Unit Locations
Roof and Door

NOTE: LHD type is shown, RHD type is similar



1. SUNROOF OPEN RELAY
   [Wire colours: GRN/YEL, GRN, YEL/GRN, BLK and RED/YEL]
   SUNROOF CLOSE RELAY
   [Wire colours: GRN/BLK, GRN, YEL/GRN, BLK and GRN/WHT]

NOTE: LHD type is shown, RHD type is symmetrical



1. POWER WINDOW MASTER SWITCH
   (Has built in the control unit)

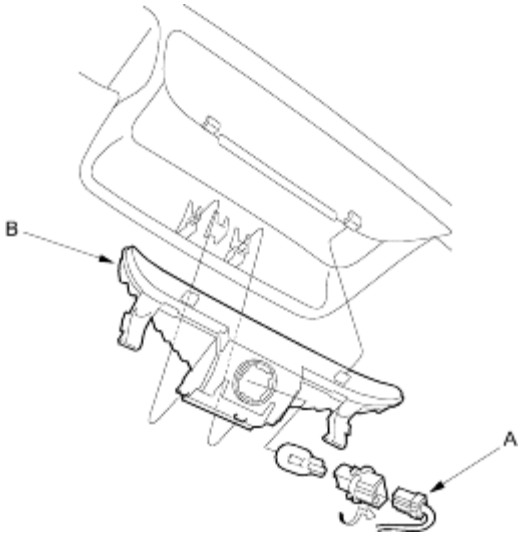
Exterior Lights

High Mount Brake Light Replacement

4-door

1. 1. Open the trunk lid and disconnect the 2P connector (A) from the high mount brake light (B).

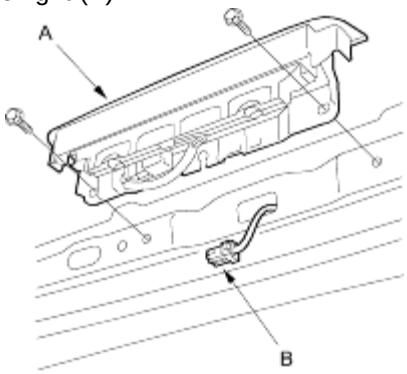
High Mount Brake Light: 21 W



2. 2. Carefully remove the rear shelf (see page 20-65) and the high mount brake light.
3. Install the light in the reverse order of removal.

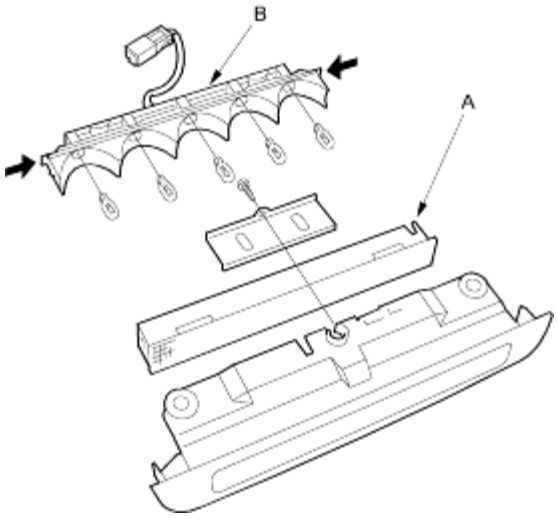
5-door

1. 1. Open the tailgate and remove the tailgate upper trim (see page 20-209).
2. Remove the two mounting bolts from the high mount brake light (A).



2. 3. Disconnect the 2P connector (B) from the light.
4. Remove the screw and separate the lens (A) and housing (B).

High Mount Brake Light: 5 W x 5



3. 5. Clean the rear window glass and install the light in the reverse order of removal.

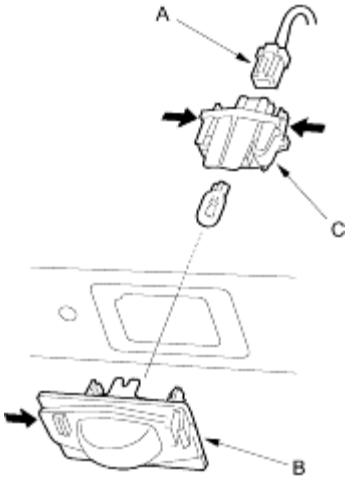
Exterior Lights

License Plate Light Replacement

4-door

1. 1. Remove the license plate cover (see page 20-118).
   2. Pull the license plate light assembly out and disconnect the 2P connector (A) from the light.

License Plate Light: 5 W x 2

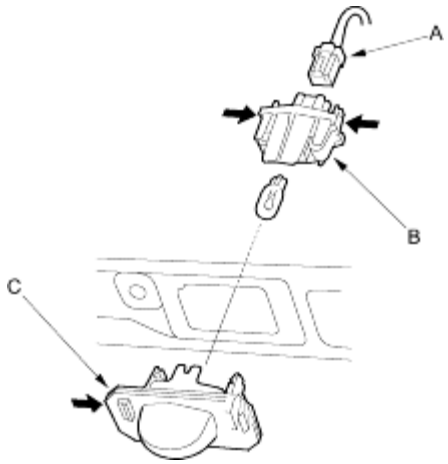


2. 3. Separate the lens (B) and housing (C) then remove the bulb.
   4. Install the light in the reverse order of removal.

5-door

1. 1. Open the tailgate and remove the maintenance lid (see page 20-255).
   2. Disconnect the 2P connector (A) from the light, then remove the housing (B).

License Plate Light: 5 W x 2



2. 3. Remove the lens (C) from the tailgate.
   4. Install the light in the reverse order of removal.

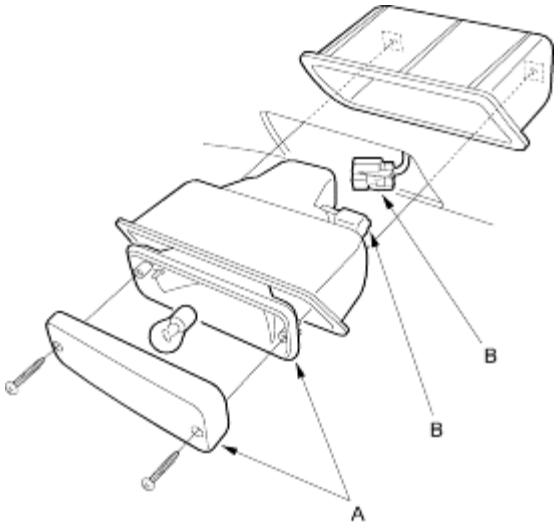
Exterior Lights

Rear Fog Lights Replacement

(KG, KE, KB and KH models)

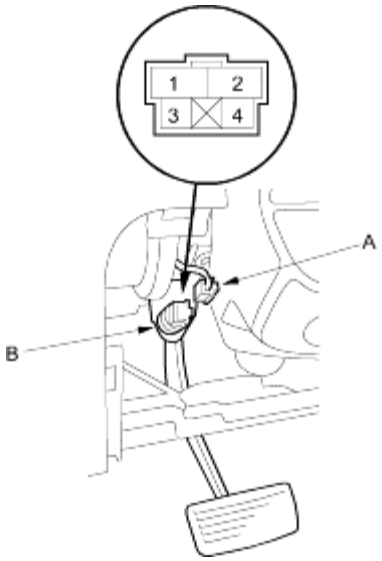
1. 1. Remove the two screws from the rear fog light (A).

Rear Fog Light: 21 W



2. 2. Disconnect the 2P connector (B) from the light.

1. 1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



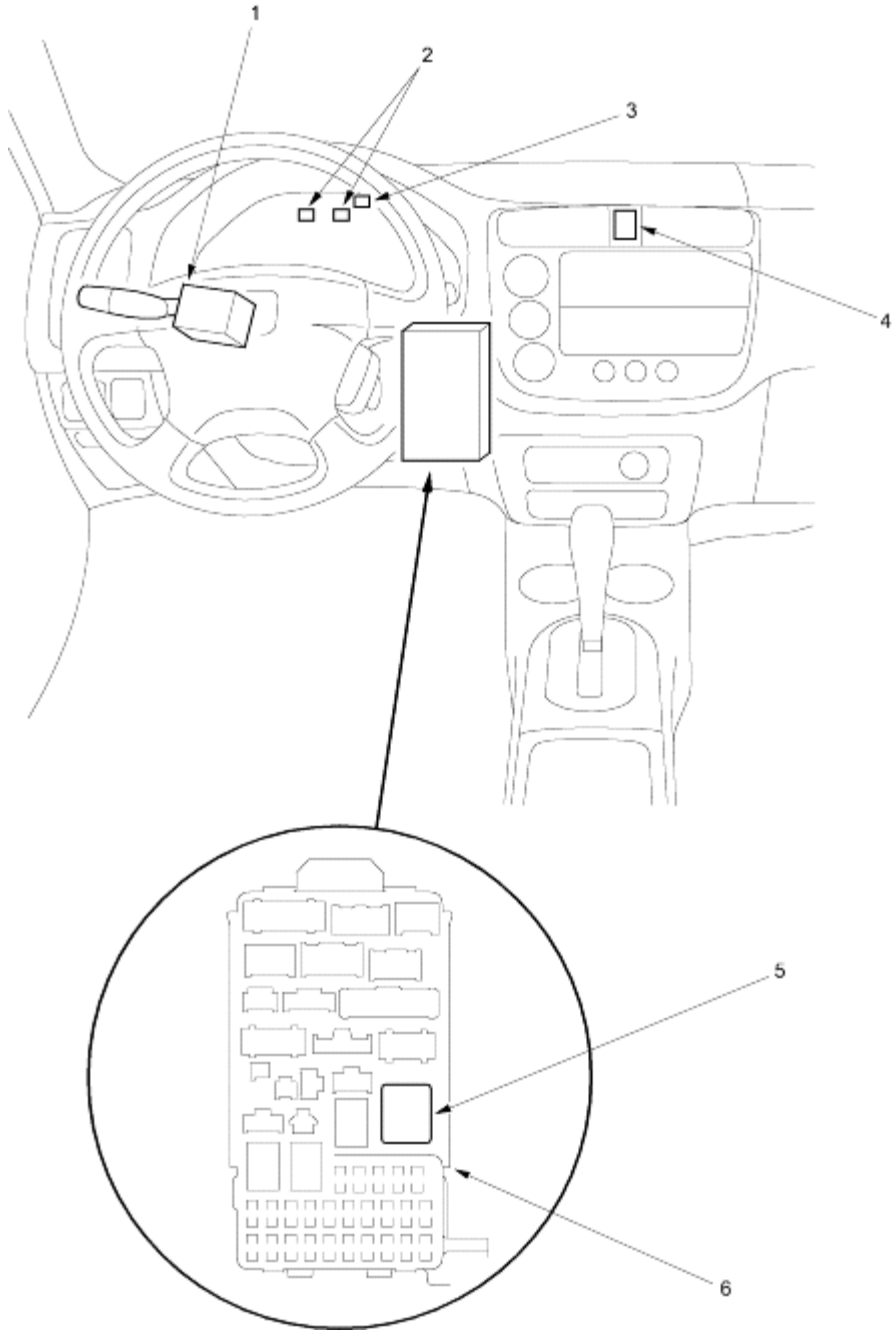
2. 2. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.
3. 3. Check for continuity between the No. 3 and No. 4 terminals (with cruise control).
   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.
4. 4. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-5).

Turn Signal/Hazard Flasher

Component Location Index

4-door:

NOTE: LHD type is shown, RHD type is similar

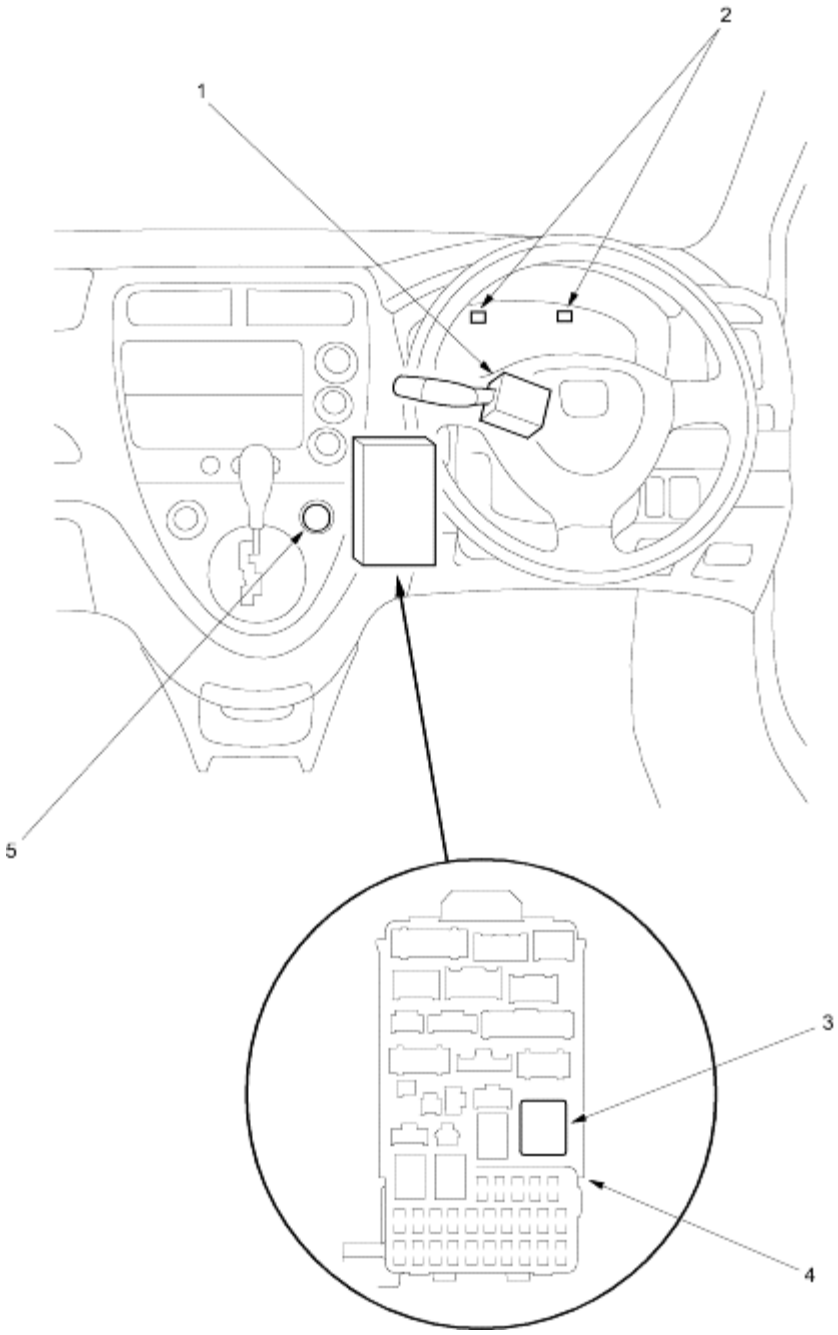


1. COMBINATION LIGHT/TURN SIGNAL SWITCH
   Test, page 22-112
2. TURN SIGNAL INDICATOR LIGHTS
   Bulb Replacement, page 22-87
3. HAZARD WARNING LIGHT (KM and KP models)
   Bulb Replacement, page 22-87
4. HAZARD WARNING SWITCH
   Test, page 22-127
5. TURN SIGNAL/HAZARD RELAY
   Input Test, page 22-126
6. UNDER - DASH FUSE/RELAY BOX

Turn Signal/Hazard Flasher

Component Location Index (cont'd)

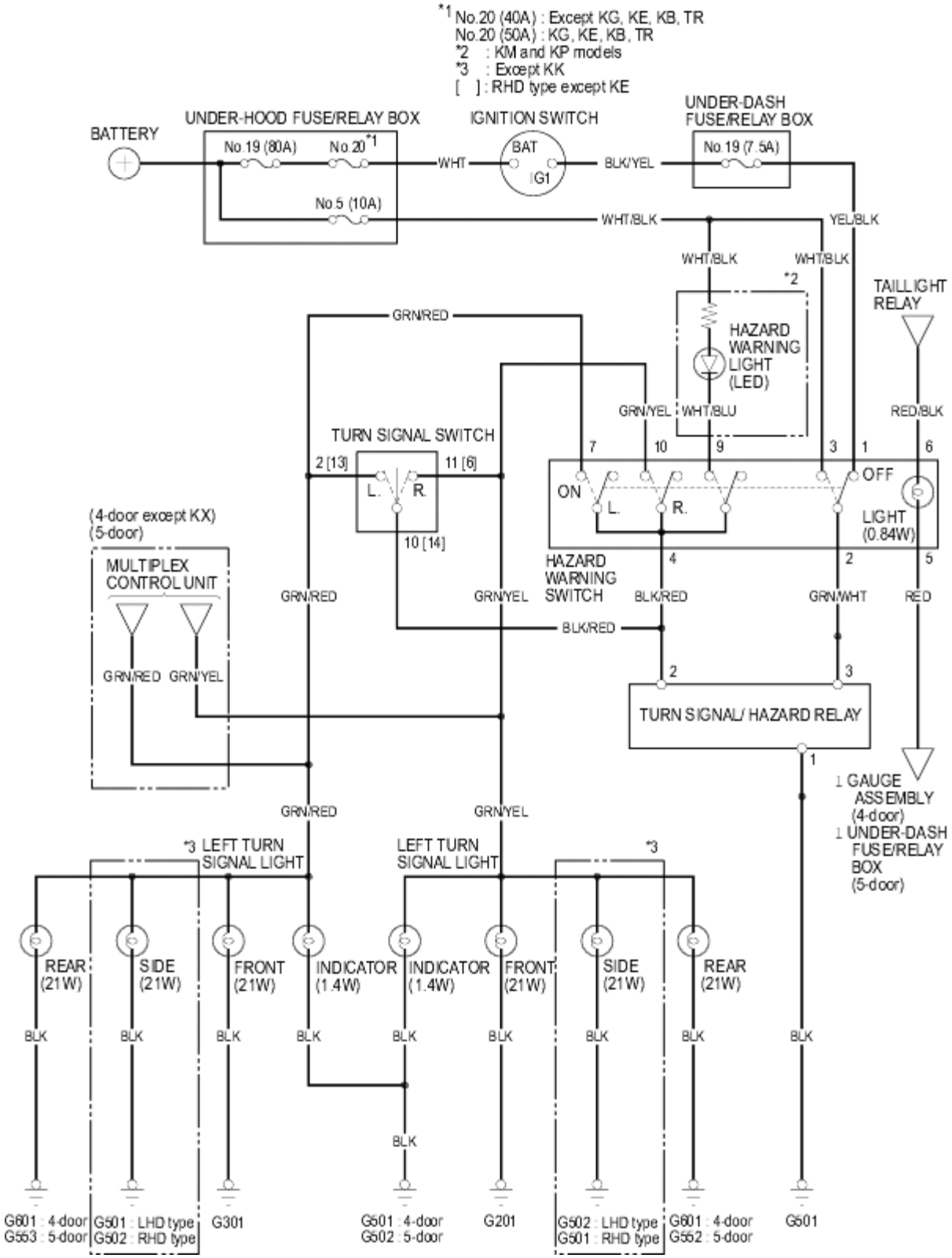
5-door:



1. COMBINATION LIGHT/TURN SIGNAL SWITCH
   Test, page 22-112
2. TURN SIGNAL INDICATOR LIGHTS
   Bulb Location, page 22-87
3. TURN SIGNAL/HAZARD RELAY
   Input Test, page 22-126
4. UNDER – DASH FUSE/RELAY BOX
5. HAZARD WARNING SWITCH
   Test, page 22-127

Turn Signal/Hazard Flasher

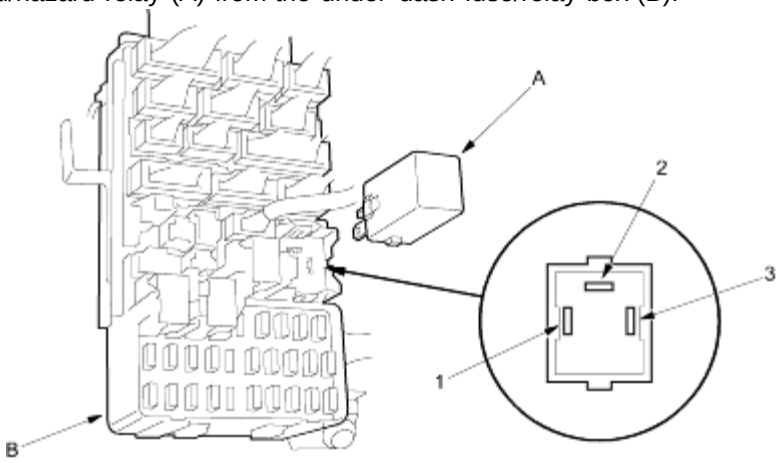
Circuit Diagram



Turn Signal/Hazard Flasher

Turn Signal/Hazard Relay Input Test

1. 1. Remove the turn signal/hazard relay (A) from the under-dash fuse/relay box (B).



2. 2. Inspect the relay and fuse/relay box socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 3.
3. 3. Make these input tests at the fuse/relay box.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the turn signal/hazard relay must be faulty; replace it.

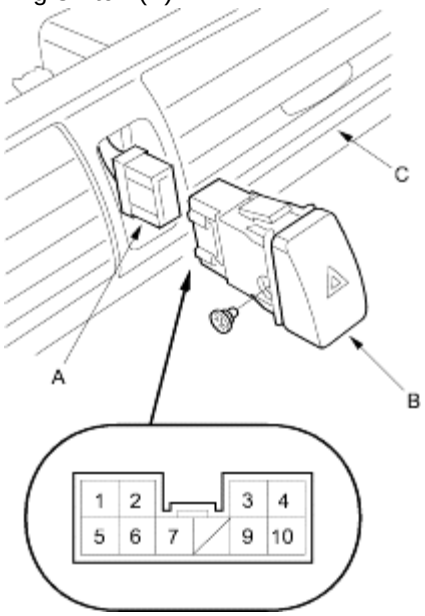
Cavity	Test condition	Test: Desired result	Possible cause if result is not obtained
1	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
2	Ignition switch ON (II) and turn signal switch in Right or Left position	Connect No. 2 terminal to No. 3 terminal: Right or left turn signal lights should come on.	• Poor ground (G201, G301, G501, G601) • Faulty turn signal switch • An open in the wire
	Hazard warning switch ON	Connect No. 2 terminal to No. 3 terminal: Hazard warning lights should come on	• Poor ground (G201, G301, G501, G601) • Faulty hazard warning switch • An open in the wire
3	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (7.5 A) fuse in the under-dash fuse/relay box • Faulty hazard warning switch • An open in the wire
	Hazard warning switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (10 A) fuse in the under - hood fuse/relay box • Faulty hazard warning switch • An open in the wire

Turn Signal/Hazard Flasher

Hazard Warning Switch Test

4-door:

1. 1. Remove the centre panel (see page 20-78).
   2. Disconnect the 10P connector (A) from the hazard warning switch (B).



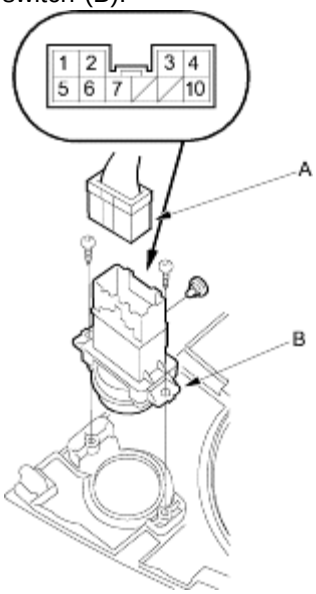
2. 3. Push out the hazard warning switch from behind the centre panel (C).
   4. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	5		6	1	2	3	4	7	9*	10
OFF	○	ⓐ	○	○	○					
ON	○	ⓐ	○		○	○	○	○	○	○

*: KM and KP models

5-door:

1. 1. Remove the shift lever panel (see page 20-220).
   2. Disconnect the 10P connector (A) from the hazard warning switch (B).



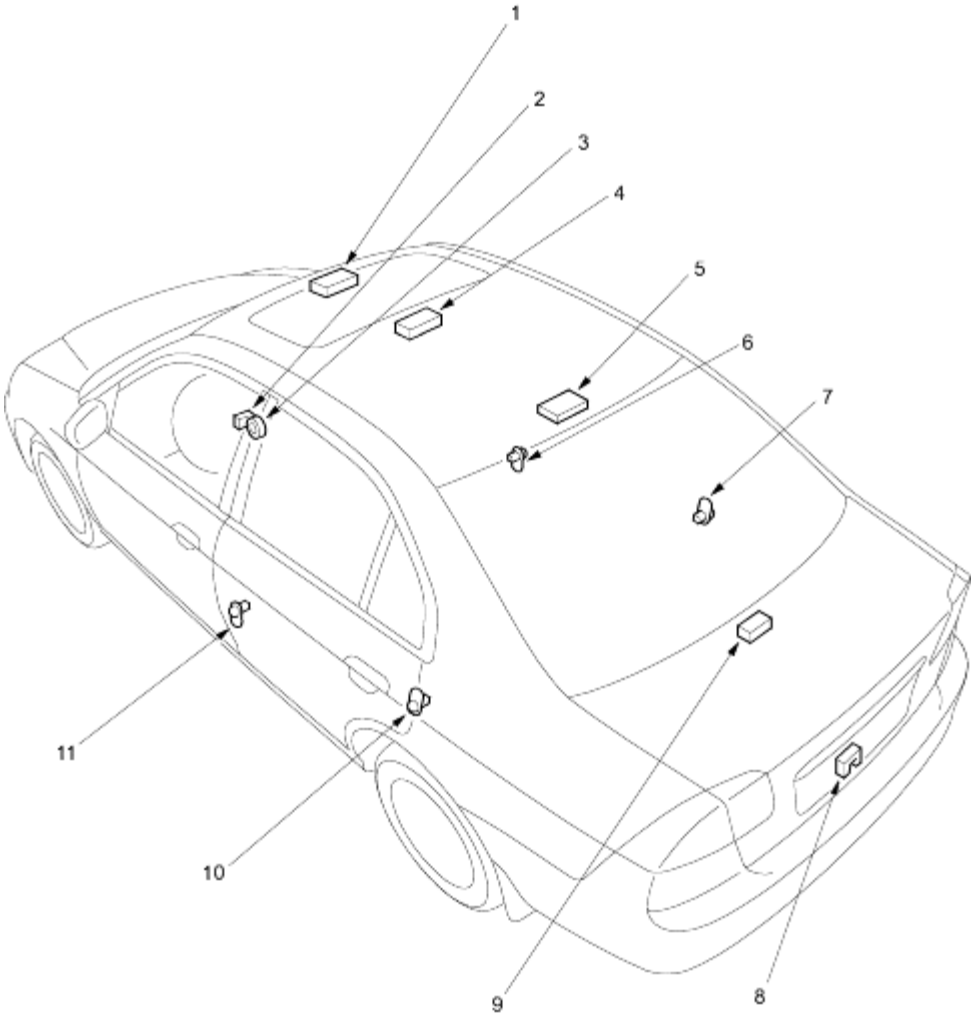
2. 3. Remove the two screws and the hazard warning switch.
   4. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	5		6	1	2	3	4	7	10
OFF	○	ⓐ	○	○	○				
ON	○	ⓐ	○		○	○	○	○	○

Entry Light Control System
Component Location Index

4 - door:

NOTE: LHD type is shown, RHD type is similar

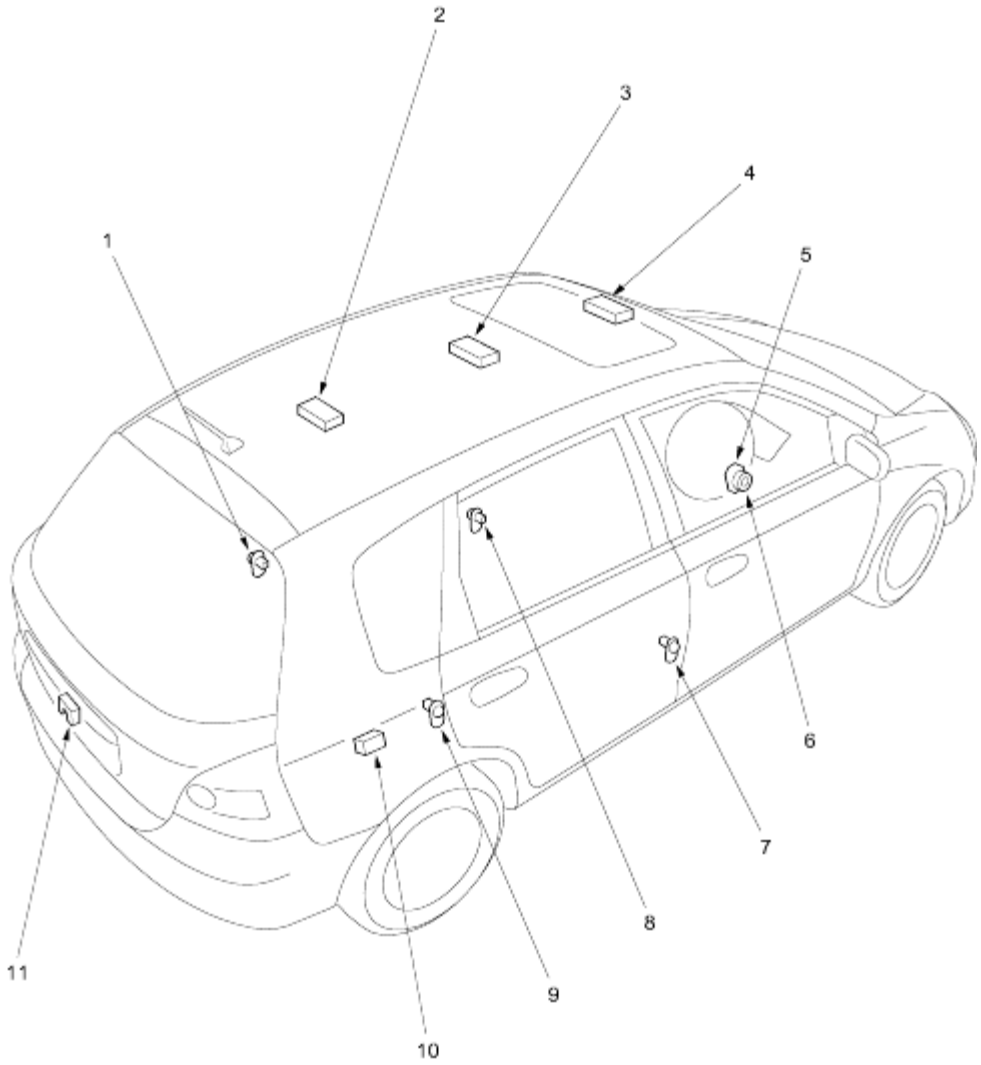


1. FRONT CEILING LIGHT/SPOTLIGHT (With sunroof)
   Test, page 22-137
   Replacement, page 22-137
2. IGNITION KEY SWITCH
   Test, page 22-131
3. IGNITION KEY LIGHT
   Test, page 22-131
4. FRONT CEILING LIGHT (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
5. REAR CEILING LIGHT (With sunroof)
   Test, page 22-138
   Replacement, page 22-138
6. FRONT PASSENGER'S DOOR SWITCH
7. RIGHT REAR DOOR SWITCH
8. TRUNK LID LATCH SWITCH
   Test, page 22-139
9. TRUNK LIGHT
   Test, page 22-139
   Replacement, page 22-139
10. LEFT REAR DOOR SWITCH
11. DRIVER'S DOOR SWITCH

Entry Light Control System

Component Location Index (cont'd)

5-door:

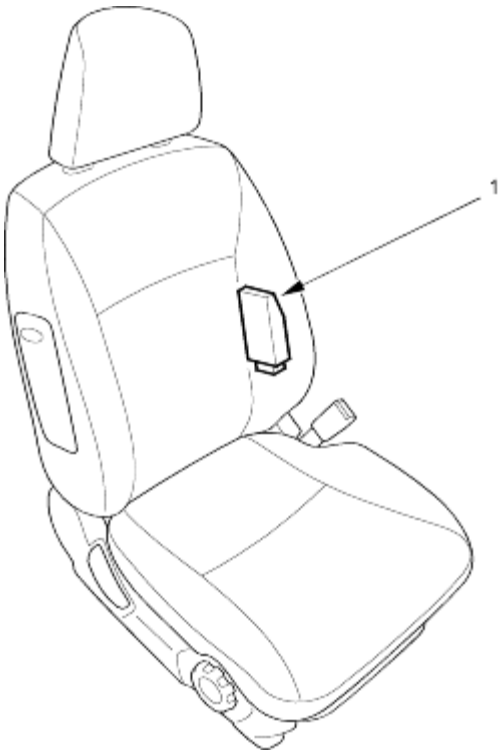


1. LEFT REAR DOOR SWITCH
2. REAR CEILING LIGHT
   Test, page 22-138
   Replacement, page 22-138
3. FRONT CEILING LIGHT (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
4. FRONT CEILING/SPOTLIGHTS (With sunroof)
   Test, page 22-137
   Replacement, page 22-137
5. IGNITION KEY SWITCH
   Test, page 22-131
6. IGNITION KEY LIGHT
   Test, page 22-131
7. DRIVER'S DOOR SWITCH
8. FRONT PASSENGER'S DOOR SWITCH
9. RIGHT REAR DOOR SWITCH
10. TAILGATE LIGHT
    Test, page 22-140Replacement, page 22-140
11. TAILGATE LATCH SWITCH
    Test, page 22-140

Relay and Control Unit Locations

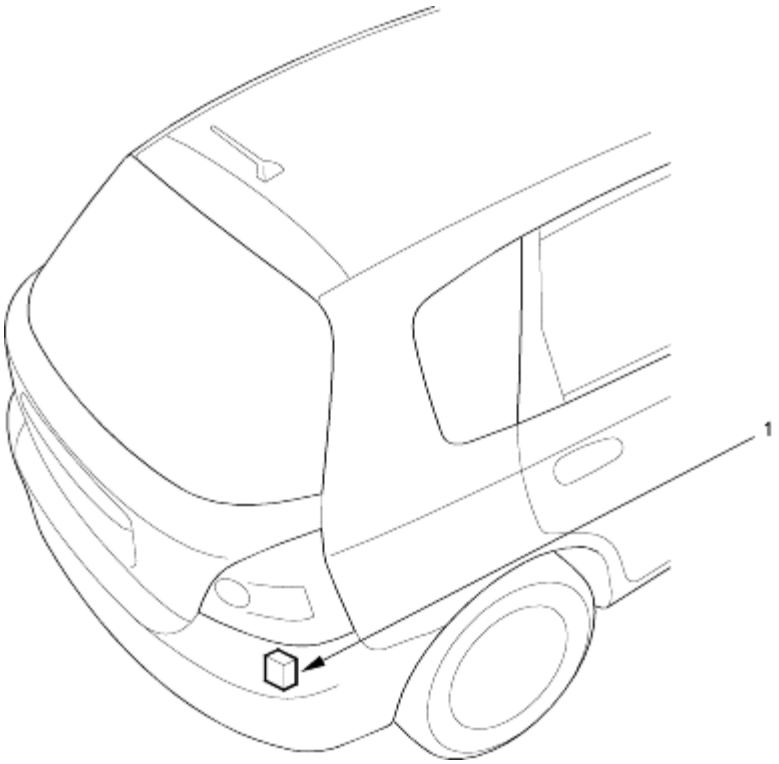
Seat and Rear

NOTE: LHD type is shown, RHD type is symmetrical



1. OPDS UNIT

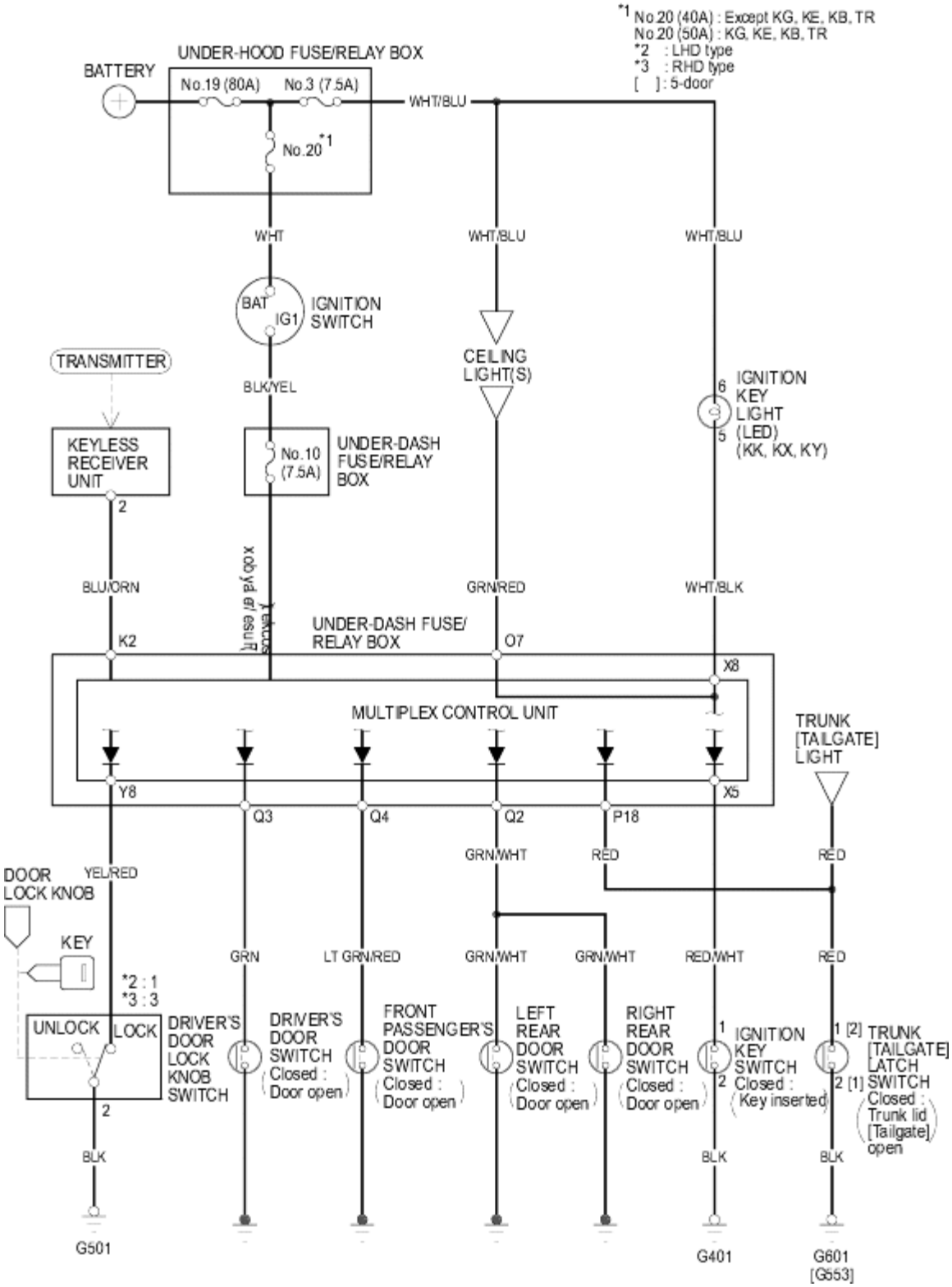
5 - door:



1. REAR WINDOW INTERMITTENT WIPER CONTROL UNIT

Entry Light Control System

Circuit Diagram

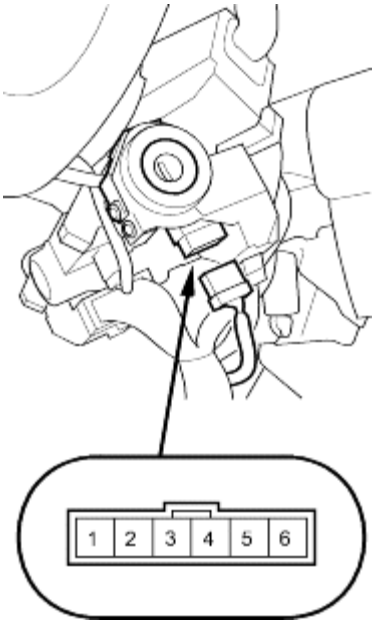


Entry Light Control System
Ignition Key Switch Test

NOTE: For more key-in beeper information, refer to the circuit diagram (see page 22-130) and input test (see page 22-132).

When the ignition key is not removed, the key-in beeper in the driver's multiplex control unit senses ground through the closed ignition key switch. When you open the driver's door, the beeper circuit senses ground through the closed door switch.

1. 1. Remove the steering column upper and lower covers (see page 17-9).
   2. Disconnect the 6P connector.



2. 3. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the key in the ignition switch.
   - There should be no continuity with the key removed.

1. 1. Remove the steering column upper and lower covers (see page 17-9).
2. 2. Disconnect the 6P connector.



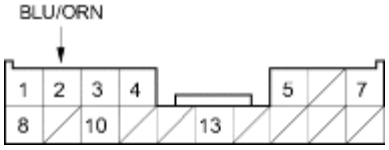
3. 3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.

Entry Light Control System
Control Unit Input Test

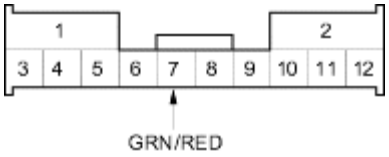
1. 1. Before testing, troubleshoot the multiplex control system (see page 22-273).
   2. Remove the dashboard lower cover.
   3. Disconnect the under-dash fuse/relay box connectors.

NOTE: All connectors are wire side of female terminals.

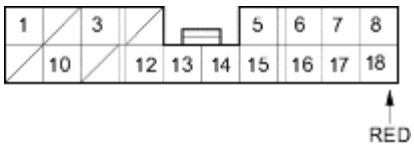
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



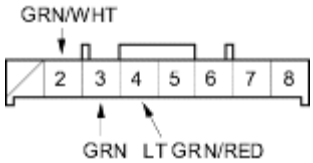
UNDER-DASH FUSE/RELAY BOX CONNECTOR O (12P)



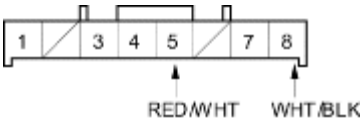
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



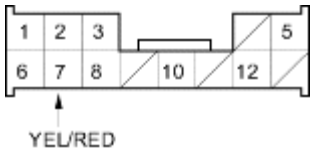
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



2. 4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

Entry Light Control System
Control Unit Input Test (cont'd)

1. 5. With the connectors still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector No. 2 terminal: There should be continuity	• An open in the wire
O7	GRN/RED	Ceiling light switch in middle position	Attach to ground: Ceiling light(s) should come on	• Blown No. 3 (7.5 A) fuse in the under-hood fuse/relay box • Blown bulb • Faulty ceiling light • An open in the wire
X8	WHT/BLK	Under all conditions	Attach to ground: Ignition key light should come on	• Blown No. 3 (7.5 A) fuse in the under-hood fuse/relay box • Faulty ignition key light • An open in the wire

2. 6. Reconnect the connectors to the under-dash fuse/relay box and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under-dash fuse/relay box assembly.

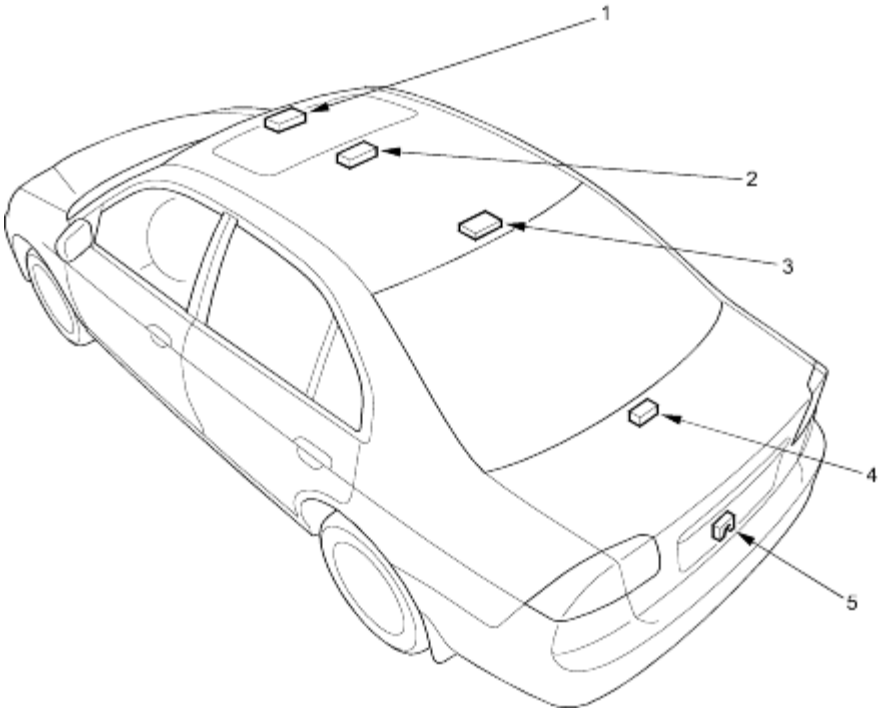
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P18	RED	Trunk lid [Tailgate] open	Check for voltage to ground: There should be 1 V or less	• Poor ground (G601,[G553]) • Faulty trunk [Tailgate] latch switch • An open in the wire
		Trunk lid [Tailgate] closed	Check for voltage to ground: There should be 5 V or more	• Faulty trunk latch switch • Short to ground
Q2	GRN/WHT	Left (right) rear door open	Check for voltage to ground: There should be 1 V or less	• Faulty left (right) rear door switch • An open in the wire
		Left (right) rear door closed	Check for voltage to ground: There should be 5 V or more	• Faulty left (right) rear door switch • Short to ground
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more	• Faulty driver's door switch • Short to ground
Q4	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more	• Faulty front passenger's door switch • Short to ground
X5	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be 1 V or less	• Poor ground (G401) • Faulty ignition key switch • An open in the wire

		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more	Faulty ignition key switch • Short to ground
Y8	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 5 V or more	• Faulty driver's door lock knob switch • Short to ground

Interior Lights

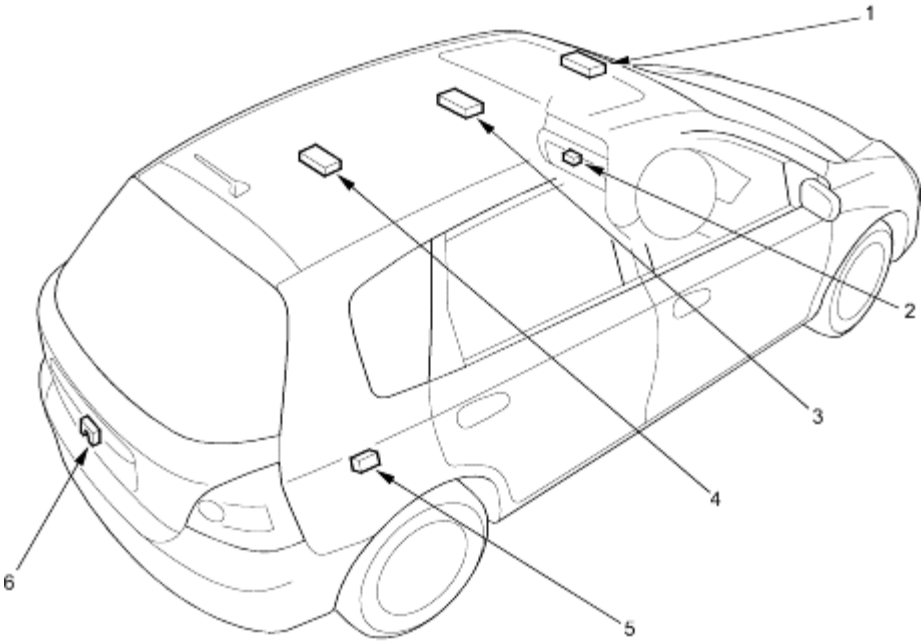
Component Location Index

4-door:



1. CEILING LIGHT/SPOTLIGHTS (With sunroof)
   Test, page 22-137
   Replacement, page 22-137
   SPOTLIGHTS (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
2. CEILING LIGHT (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
3. REAR CEILING LIGHT (With sunroof)
   Test, page 22-138
   Replacement, page 22-138
4. TRUNK LIGHT
   Test, page 22-139
   Replacement, page 22-139
5. TRUNK LID LATCH SWITCH
   Test, page 22-139

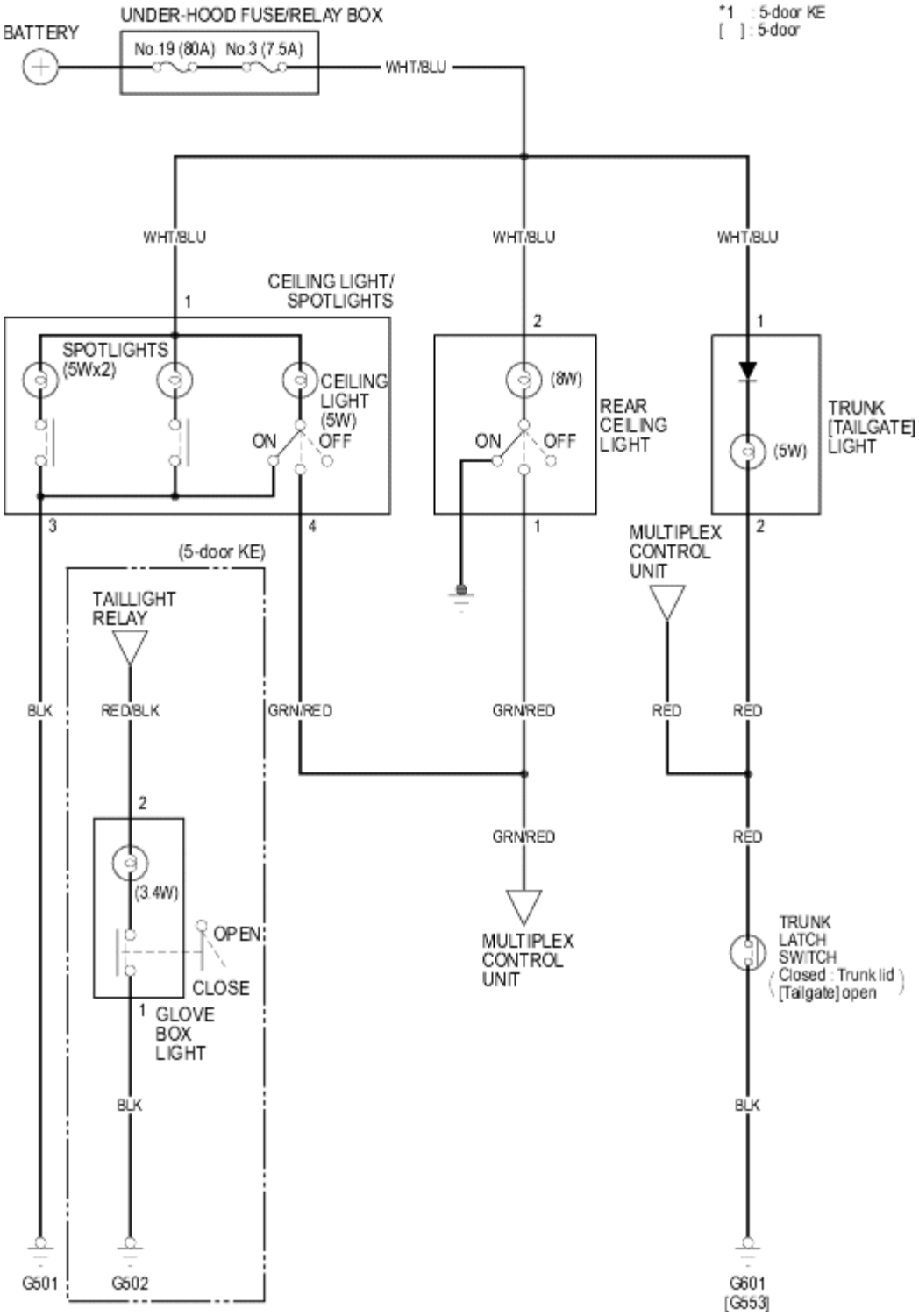
5-door:



1. CEILING LIGHT/SPOTLIGHT (With sunroof)
   Test, page 22-137
   Replacement, page 22-137
   SPOTLIGHT (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
2. GLOVE BOX LIGHT (KE model ES and KQ model)
   Test/Replacement, page 22-141
3. CEILING LIGHT (Without sunroof)
   Test, page 22-138
   Replacement, page 22-138
4. REAR CEILING LIGHT (With sunroof)
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   Replacement, page 22-138
5. TAILGATE LIGHT
   Test, page 22-140
   Replacement, page 22-140
6. TAILGATE LATCH SWITCH
   Test, page 22-140

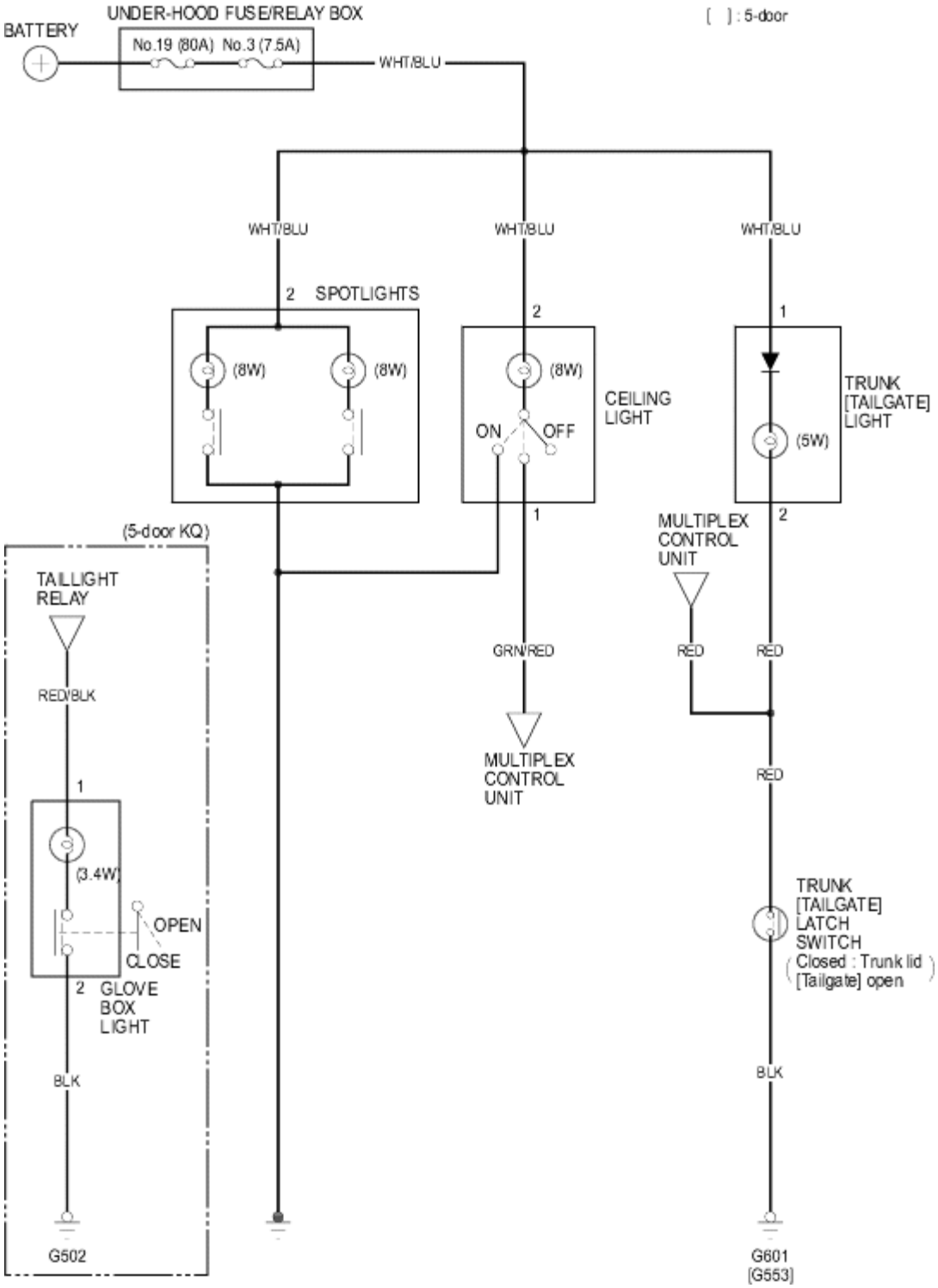
Interior Lights

Circuit Diagram - With Sunroof



Interior Lights

Circuit Diagram - Without Sunroof



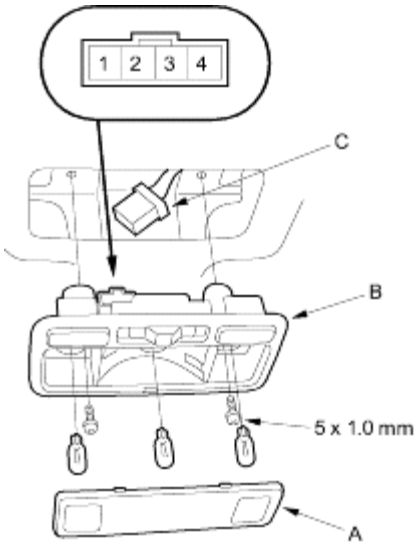
Interior Lights

Ceiling Light/Spotlights Test/ Replacement - With Sunroof

1. 1. Turn the ceiling light/spotlights switches OFF.
2. 2. Carefully pry off the lens (A) with a small screwdriver.

Ceiling Light: 5 W

Spotlight: 5 W x 2



3. 3. Remove the two screws and the housing (B).
   4. Disconnect the 4P connector (C) from the housing.

1. 5. Check the bulbs. If the bulbs are OK, check for continuity between the terminals in each switch position according to the table.

Position			Terminal 1		3	4
CEILING LIGHT	OFF					
	MIDDLE		○	ET		○
	ON		○	ET	○	
SPOTLIGHTS	R	ON	○	ET	○	
		OFF				
	L	ON	○	ET	○	
		OFF				

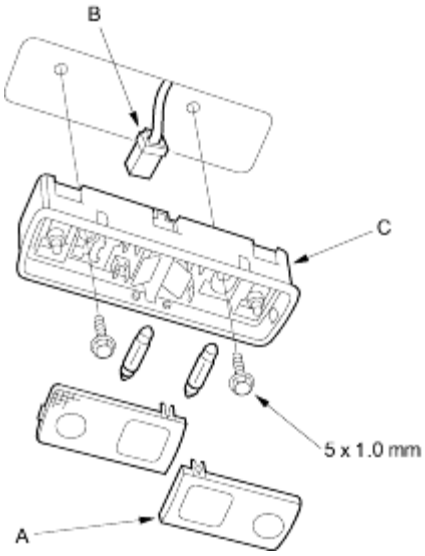
2. 6. When installing the ceiling/spotlights housing, if the threads in the ET screw are worn out, use an oversized ET screw made specifically for this application.

Interior Lights

Spotlights Test/ Replacement - Without Sunroof

1. 1. Turn the light switch OFF.
2. 2. Carefully pry off the lenses (A) with a small screwdriver.

Spotlight: 8 W x 2



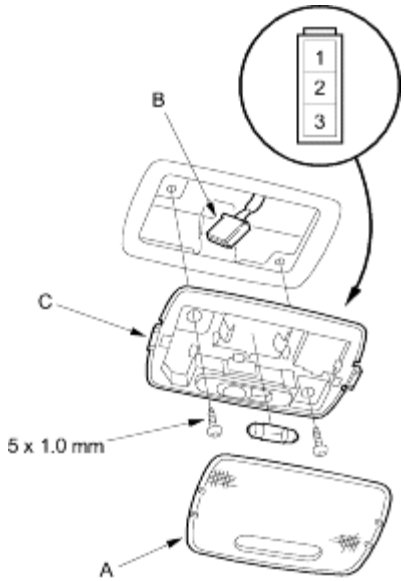
3. 3. Remove the two mounting screws.
   4. Disconnect the 2P connector (B) from the housing (C).
   5. Check for continuity between the terminals in each switch position according to the table.

Position		Terminal 1		Body ground
LEFT	ON	○	⊖	○
	OFF			
RIGHT	ON	○	⊖	○
	OFF			

4. 6. When installing the spotlights housing, if the threads in the ET screw are worn out, use an oversized ET screw made specifically for this application.

1. 1. Turn the light switch OFF.
2. 2. Carefully pry off the lens (A) with a small screwdriver.

Ceiling Light: 8 W



3. 3. Remove the two mounting screws.
   4. Disconnect the 3P connector (B) from the housing (C).
   5. Check for continuity between the terminals in each switch position according to the table.

Position	Terminal 1		2		Body ground
OFF					
MIDDLE	○	⊖	○		
ON			○	⊖	○

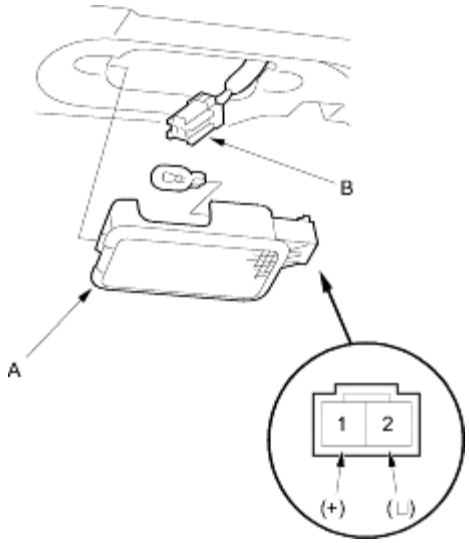
4. 6. When installing the ceiling light housing, if the threads in the ET screw are worn out, use an oversized ET screw made specifically for this application.

Interior Lights

Trunk Light Test/Replacement

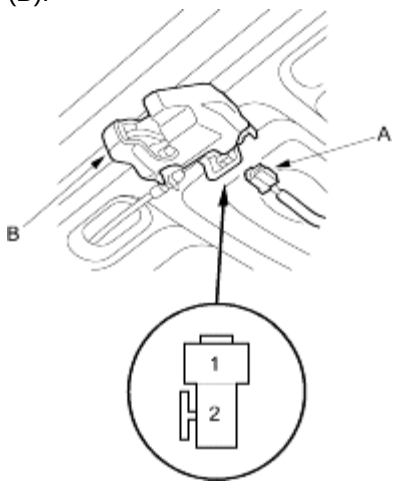
1. Open the trunk lid.
2. Carefully pry out the trunk light (A).

   Trunk Light: 5 W



3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between the No. 1 (+) and No. 2 (–) terminals. There should be continuity.
   If there is no continuity, check the bulb. If the bulb is OK, replace the trunk light.

1. Open the trunk lid.
2. Disconnect the 2P connector (A) from the trunk lid latch (B).

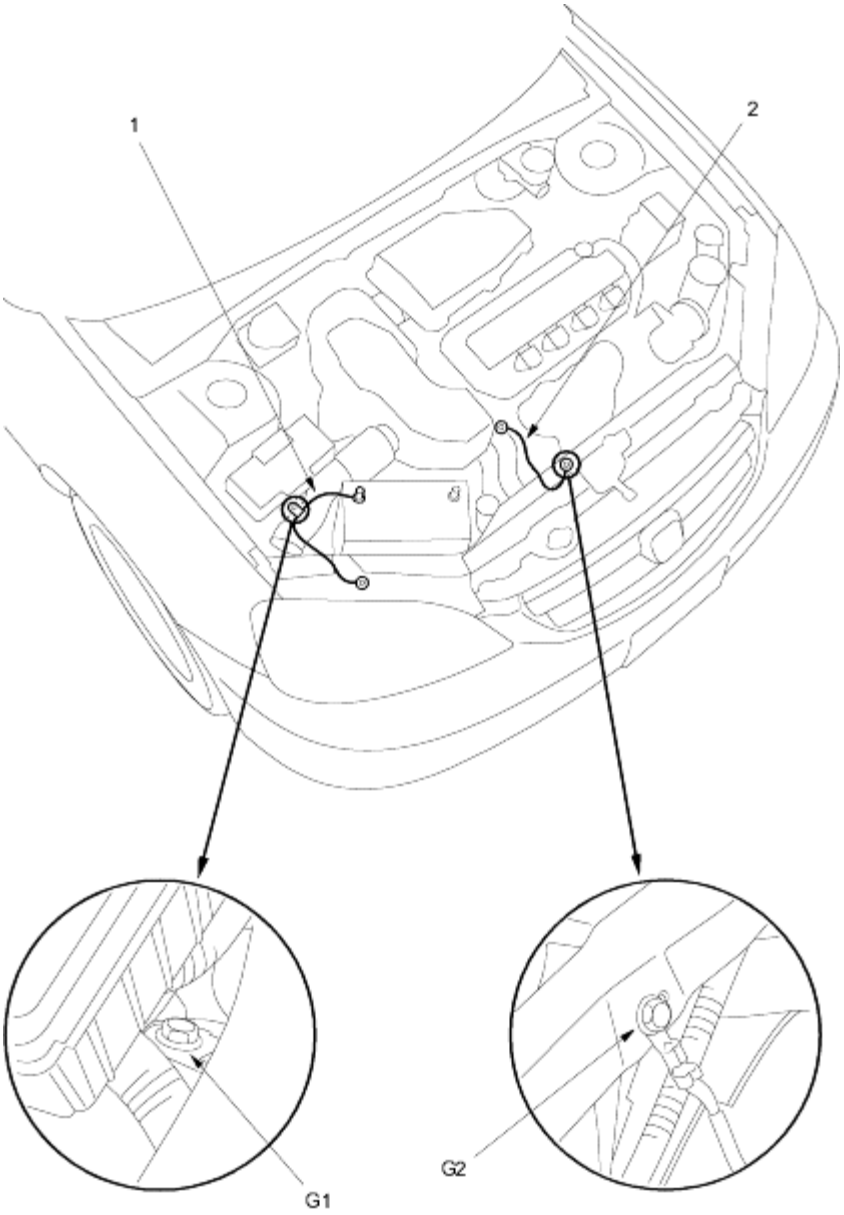


3. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the trunk lid open.
   - There should be no continuity with the trunk lid closed.

Wire Harness and Ground Locations

Engine Compartment

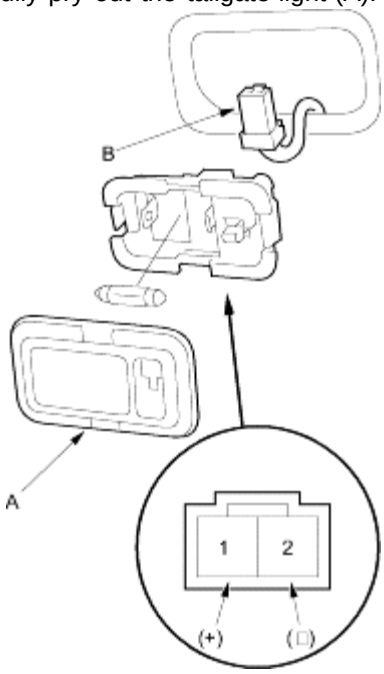
NOTE: LHD type is shown, RHD type is similar



1. BATTERY GROUND CABLE
2. ENGINE GROUND CABLE

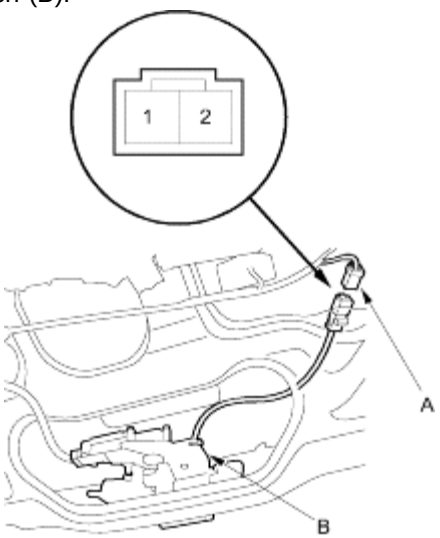
Interior Lights
Tailgate Light Test/Replacement

1. Open the tailgate.
2. Carefully pry out the tailgate light (A).



3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between the No. 1 (+) and No. 2 (–) terminals with the light switch ON. There should be continuity.
   - If there is no continuity, check the bulb. If the bulb is OK, replace the tailgate light.

1. Open the tailgate.
2. Remove the tailgate lower trim (see page 20-209).
3. Disconnect the 2P connector (A) from the tailgate latch (B).



4. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the tailgate open.
   - There should be no continuity with the tailgate closed.

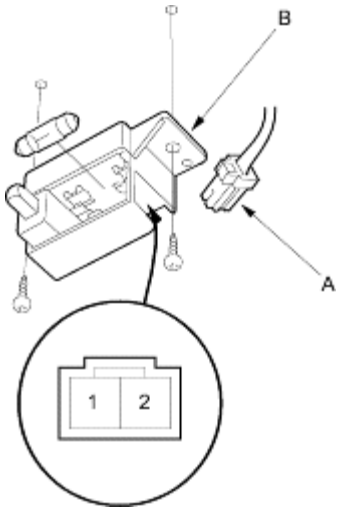
Interior Lights

Glove Box Light Test/Replacement

5-door:

1. 1. Remove the glove box (see page 20-220).
   2. Disconnect the 2P connector (A) from the glove box light (B).

      GLOVE BOX LIGHT: 3.4 W

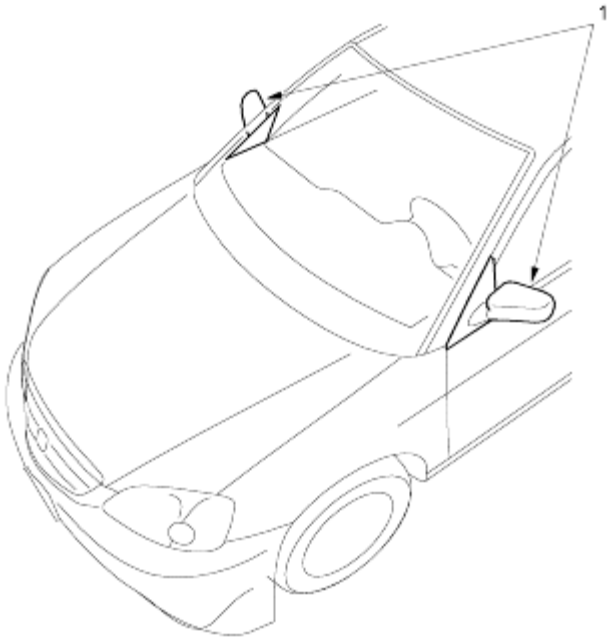


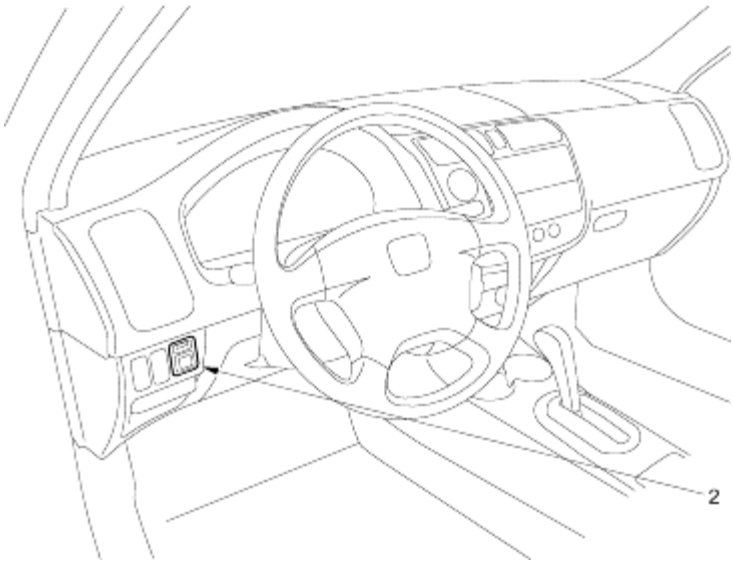
2. 3. Check for continuity between the No. 1 and No. 2 terminals.
      - If there is no continuity, check the bulb. If the bulb is OK, replace the glove box light.

Power Mirrors

Component Location Index

NOTE: LHD type is shown, RHD type is symmetrical

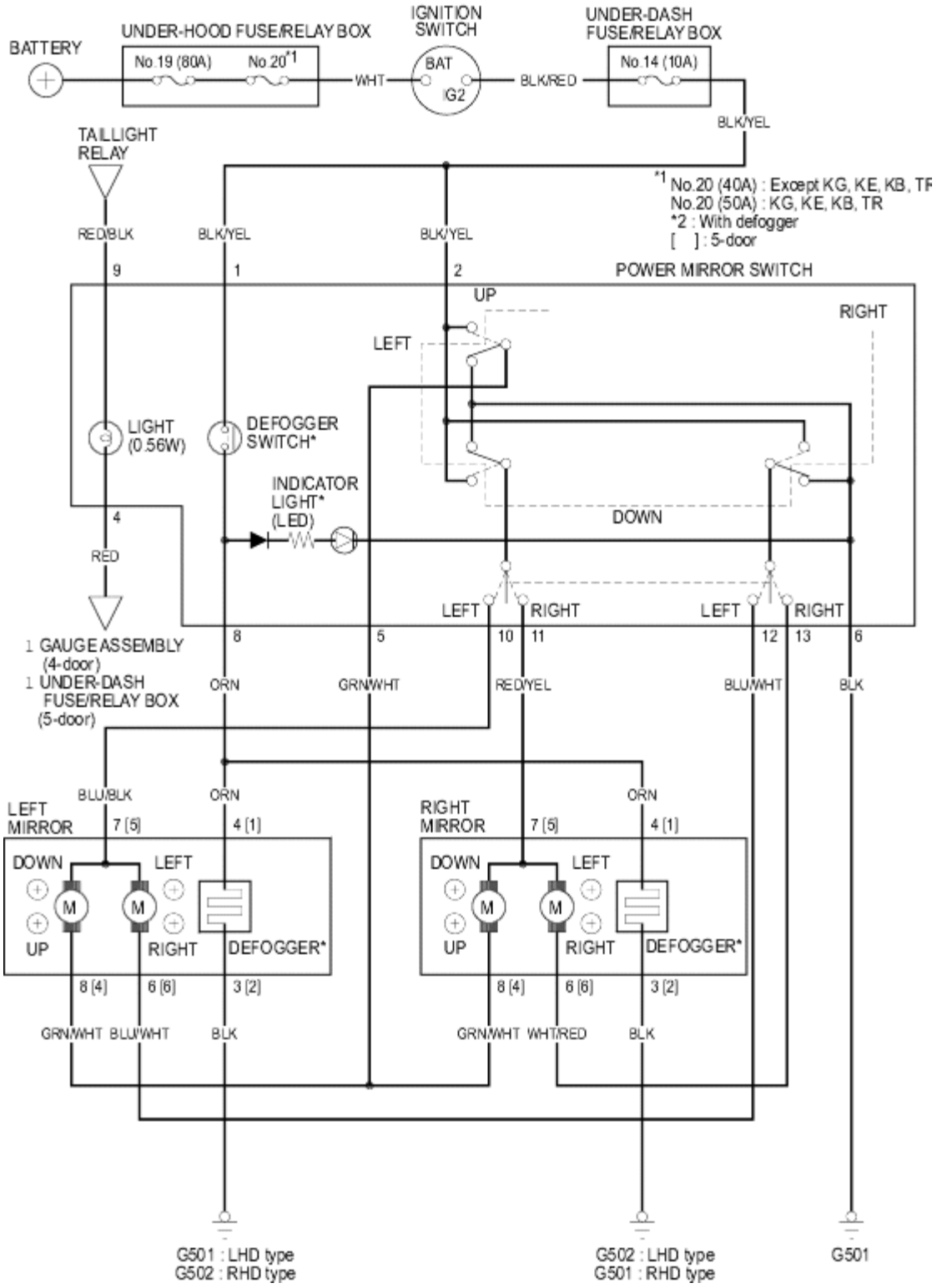




1. POWER MIRRORS
   Test, page 22-148
   Replacement, page 20-33
   Mirror Actuator Replacement, page 22-149
2. POWER MIRROR and MIRROR DEFOGGER SWITCH
   Test, page 22-147
   Replacement, page 22-147

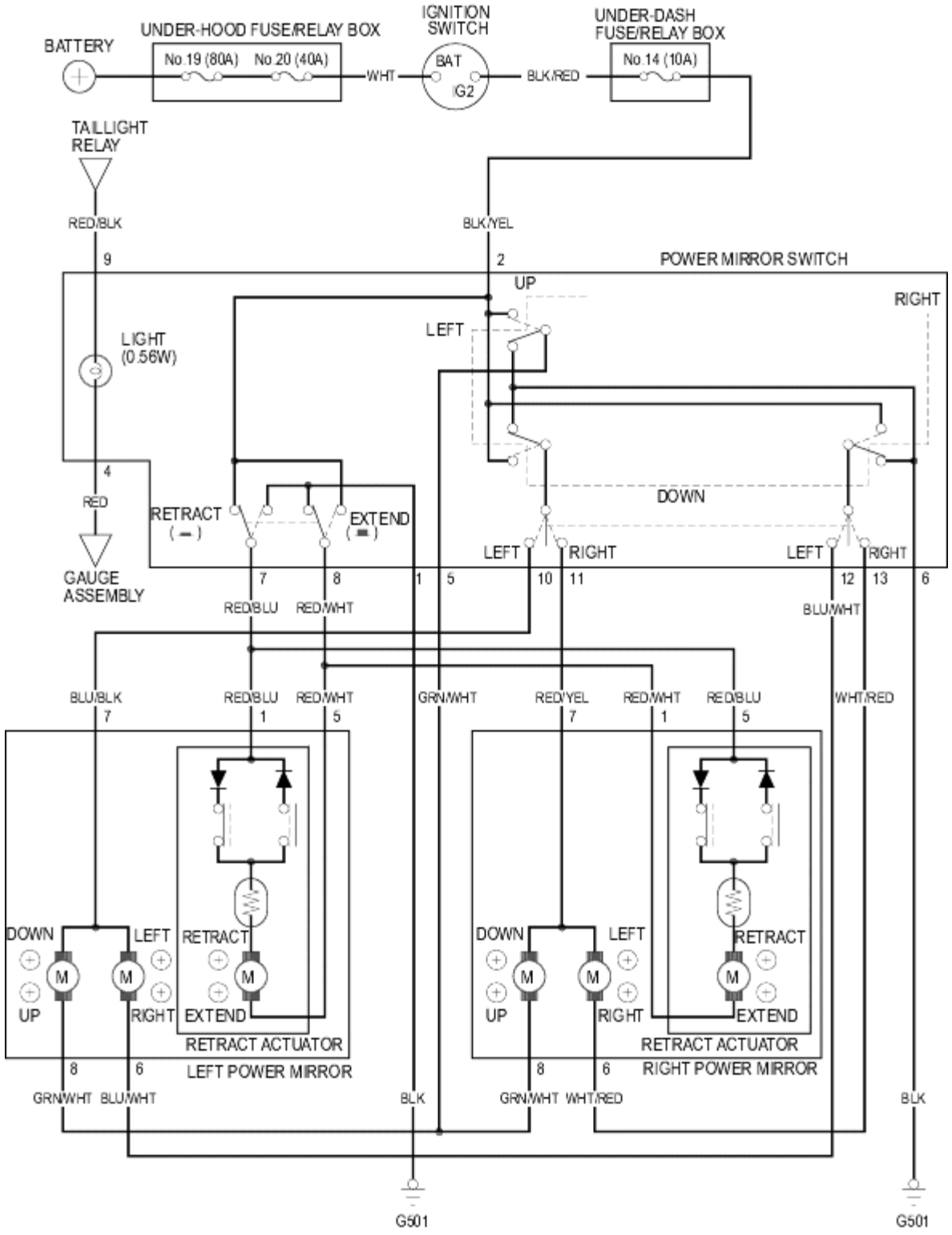
Power Mirrors

Circuit Diagram



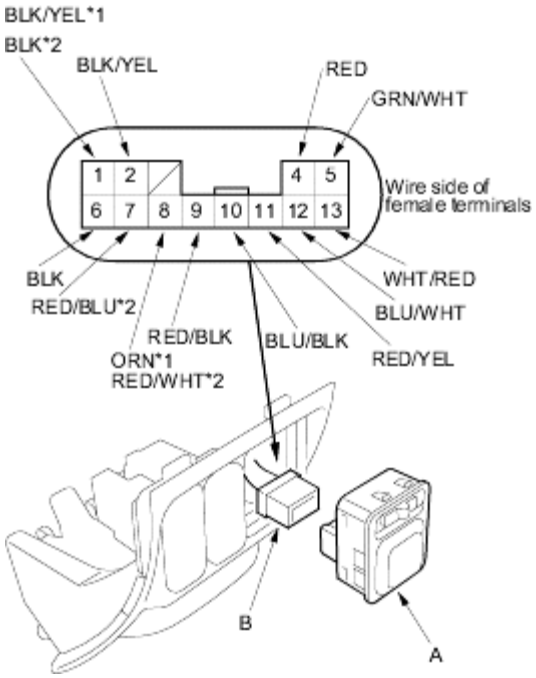
Power Mirrors

Circuit Diagram - With Retract Power Mirror



Power Mirrors
Function Test

1. 1. Remove the power mirror switch (A).



*1: With defogger

*2: With Retract Mirror

2. 2. Disconnect the 13P connector (B) from the switch.
3. Choose the appropriate test based on the symptom:
   - Both mirrors do not work, go to step 5.
   - Left mirror does not work, go to step 7.
   - Right mirror does not work, go to step 8.
   - Defogger does not work, go to step 9.
   - Retract actuators do not work, go to step 9.

Both mirrors

1. 4. Check for voltage between the No. 2 terminal and body ground with the ignition switch ON (II).

There should be battery voltage.

- If there is no battery voltage, check for:
  - blown No. 14 (10A) fuse in the under-dash fuse/relay box.
  - an open in the BLK/YEL wire.
- If there is battery voltage, go to step 6.

3. 5. Check for continuity between the No. 6 terminal and body ground.

There should be continuity.

- If there is no continuity, check for:
  - an open in the BLK wire.
  - poor ground (G501).
- If there is continuity, check both mirrors individually as described in the next column.

Left mirror

5. 6. Connect the No. 2 terminal to the No. 10 terminal and the No. 5 (or No. 12) terminal to body ground with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).
   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or BLU/WHT) wire between the left mirror and the 13P connector. If the wire is OK, check the left mirror actuator.
   - If the mirror neither tilts down nor swings left, repair the BLU/BLK wire.
   - If the mirror works properly, check the mirror switch.

Right mirror

6. 7. Connect the No. 2 terminal to the No. 11 terminal and the No. 5 (or No. 13) terminal to body ground with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or WHT/RED) wire between the right mirror and the 13P connector.
   - If the wire is OK, check the right mirror actuator.
   - If the mirror neither tilts down nor swings left, repair the RED/YEL wire.
   - If the mirror works properly, check the mirror switch.

Power Mirrors

Function Test (cont'd)

Defogger

1. 8. Connect the No. 1 and No. 8 terminals with a jumper wire and check for voltage between the No. 4 terminal of the mirror connector and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).
   - If there is no voltage or neither warms up, check for:
     - an open in the BLK/YEL or ORN wire.
     - blown No. 14 (10A) fuse in the under-dash fuse/relay box.
     - poor ground (G501, G502).
   - If only one fails to warm up, check its defogger.
   - If both warm up, check the defogger switch.

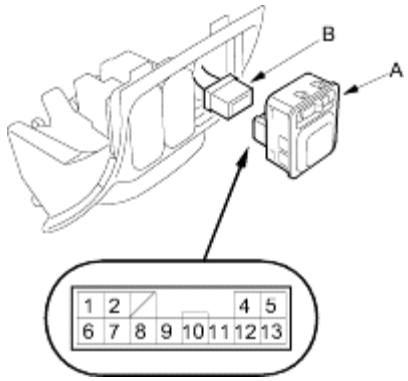
Retractable Mirror

3. 9. Connect the No. 1 terminal to the No. 5 terminal with a jumper wire. The mirrors should retract/extend when the ignition switch is turned back and forth between ON (II) and OFF.
   - Both mirrors do not work, go to step 4.
   - If the mirrors neither retract nor extend, perform the input test for the retractable power mirror control unit.
   - If one of the mirrors does not retract or extend, check the retractable mirror actuator.

Power Mirrors

Power Mirror Switch Test

1. 1. 4-door: Remove the driver's pocket (see page 20-76), then remove the power. Carefully pry the power mirror switch out (A).
   5-door: Carefully pry the power mirror switch out (A).



2. 2. Disconnect the 13P connector (B) from the switch.

1. 3. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch:

	Terminal / Position	2	5	6	10	11	12	13
L	UP	○	○		○			
	DOWN	○		○	○			
	LEFT	○			○		○	
	RIGHT	○		○	○		○	
R	UP	○	○			○		
	DOWN	○		○		○		
	LEFT	○		○		○		○
	RIGHT	○		○		○		○

Defogger Switch:

Terminal / Position	1	8
ON	○	○
OFF		

Retract switch:

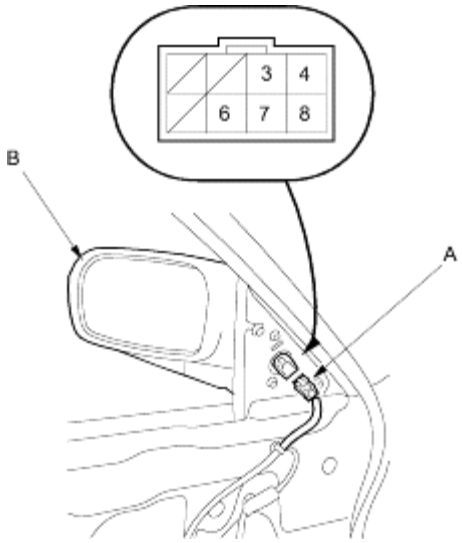
Terminal / Position	2	7	8
RETRACT	○		○
EXTEND	○	○	

Power Mirrors

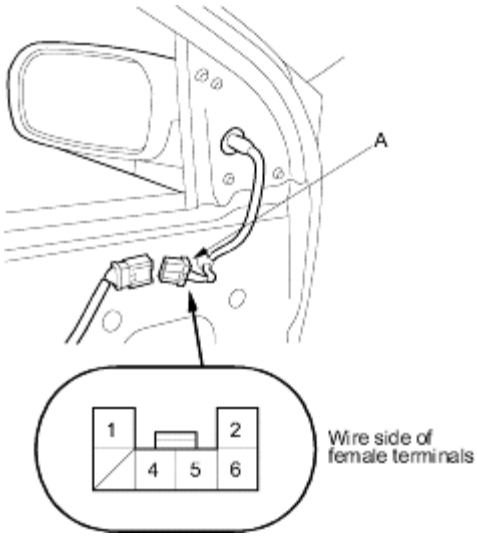
Power Mirror Actuator Test

1. 1. Remove the door panel (see page 20-142).
2. 2. Disconnect the 8P[6P]connector (A) from the power mirror actuator (B).

4-door:



5-door:



1. 3. Check actuator operation by connecting power and ground according to the table.

Terminal / Position	6	7	8
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

2. 4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test:

3. 5. Check for continuity between the No. 3 [No. 2] and No. 4 [No. 1] terminals of the 8P[6P]connector. There should be continuity.

[ ]: 5-door

Retract Switch:

4. 6. Check actuator operation by connecting battery power and ground according to the table.

Terminal / Position	1 [5]	5 [1]
Mirrors retracts from extend position.	⊕	⊖
Mirrors extends from retract position.	⊖	⊕

[ ] : Right Power Motor

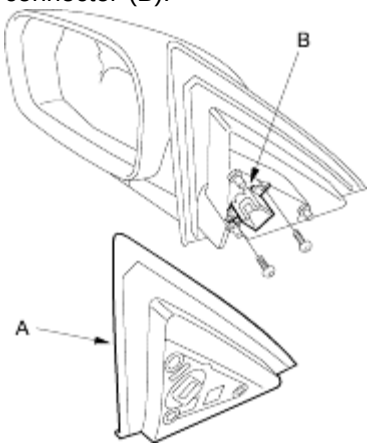
5. 7. If the retract actuator fails to work properly, replace the mirror.

Power Mirrors

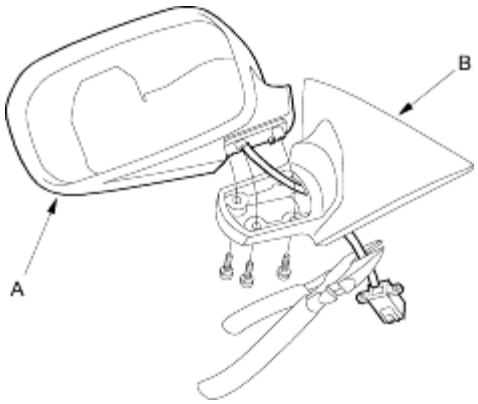
Power Mirror Actuator Replacement

4-door:

1. 1. Remove the mirror holder the power mirror (see page 20-33).
   2. Remove the power mirror (see page 20-33) and disconnect the connector.
   3. Remove the cover (A) and two screws from the mirror connector (B).

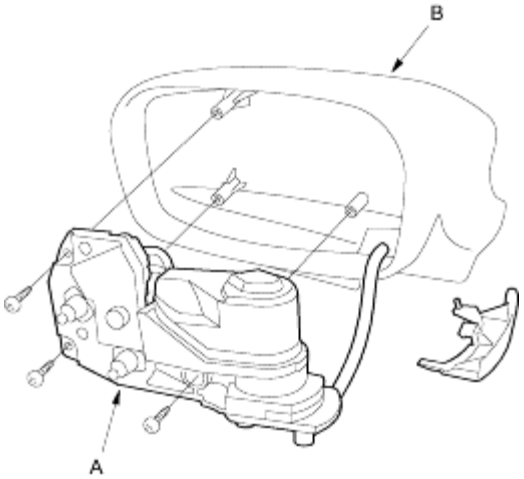


2. 4. Record the terminal locations and wire colours.
   5. Cut the wire harness with the wire cutter.

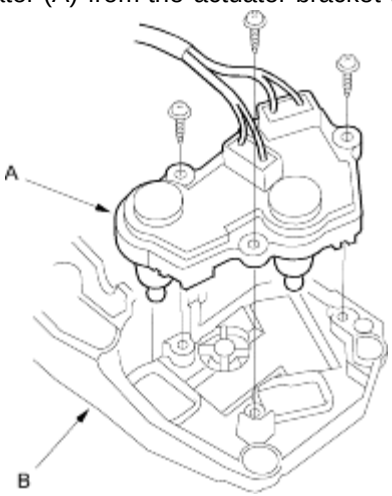


3. 6. Remove the three mounting screws and separate the mirror housing (A) from the bracket (B).

1. 7. Remove the three mounting screws and separate the actuator bracket (A) from the mirror housing (B).



2. 8. Remove the three mounting screws and separate the actuator (A) from the actuator bracket (B).

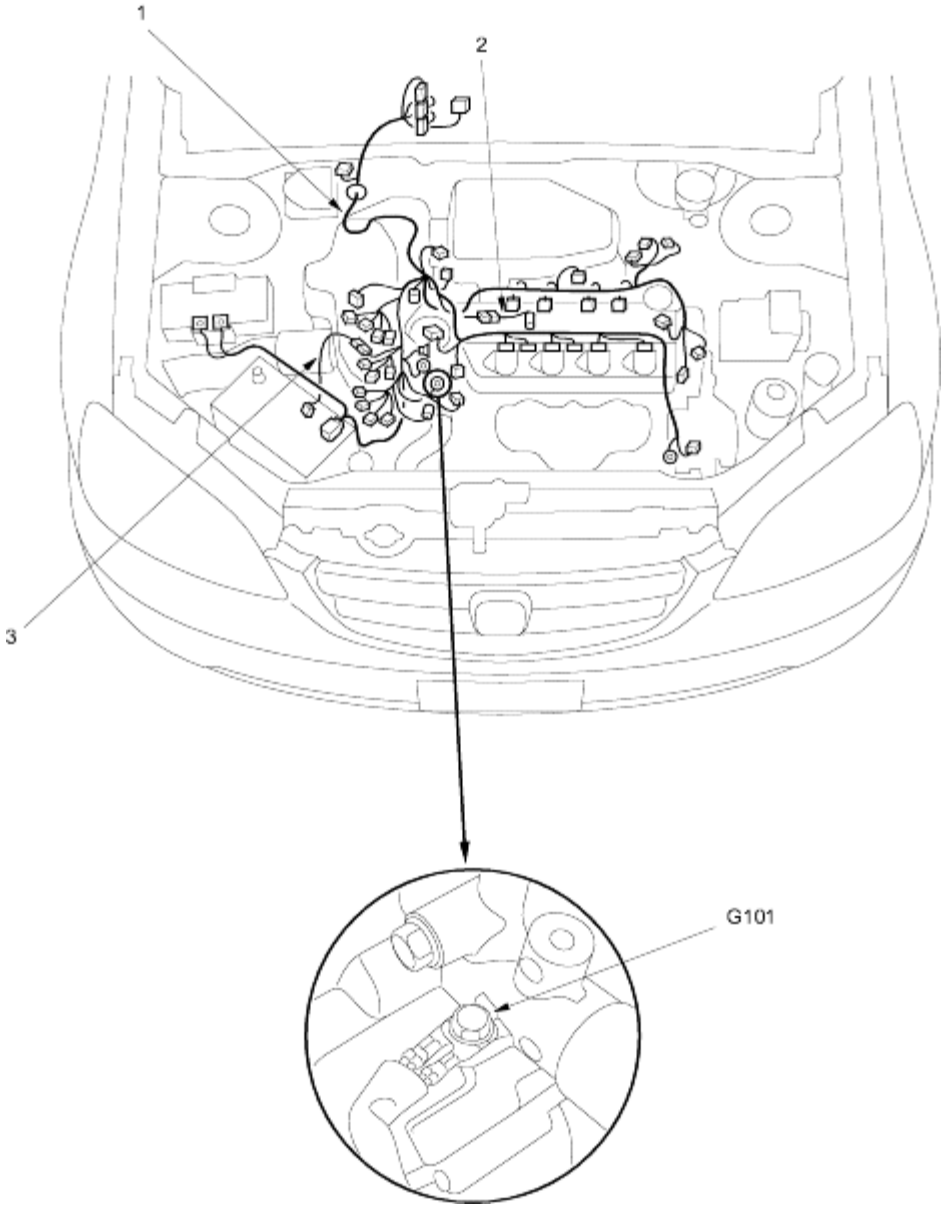


Wire Harness and Ground Locations

Engine Compartment (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar.

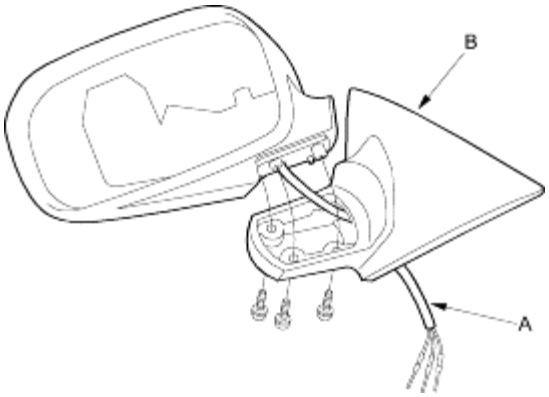


1. ENGINE WIRE HARNESS
2. ENGINE OIL PRESSURE SWITCH SUB - HARNESS
3. TRANSMISSION RANGE SWITCH SUB - HARNESS (A/T)

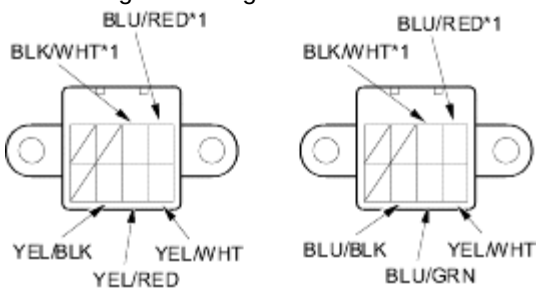
Power Mirrors

Power Mirror Actuator Replacement (cont'd)

1. 9. Route the wire harness (A) of the new actuator through the hole in the bracket (B).



2. 10. Insert the new actuator terminals into the connector in the original arrangement as shown below.



Terminal side of male terminals

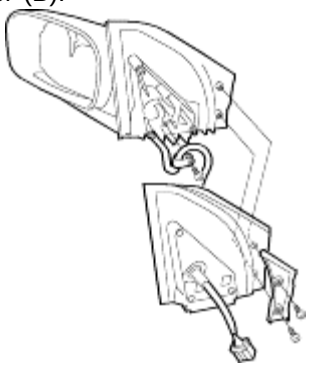
*1: With defogger

*2: With retract mirror

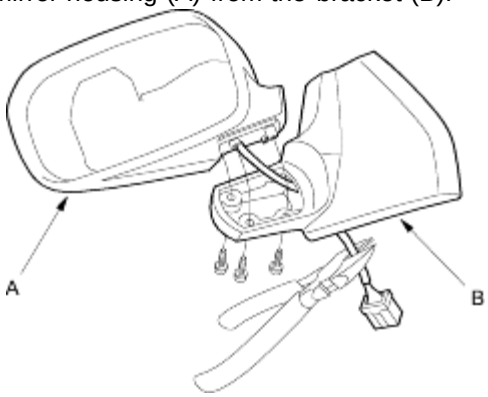
3. 11. Reassemble the mirror in the reverse order of disassembly. Be careful not to break in the mirror holder when installing it to the actuator.
   12. After installing, check the power mirror operation.

5-door:

1. 1. Remove the mirror holder the power mirror (see page 20-170).
   2. Remove the power mirror (see page 20-170) and disconnect the connector.
   3. Remove the cover (A) and screw from the mirror connector (B).



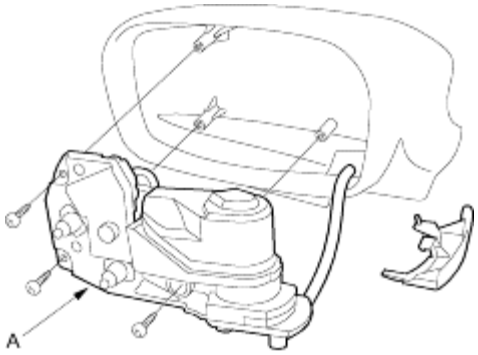
2. 4. Record the terminal locations and wire colours.
   5. Cut the wire harness with the wire cutter.
   6. Remove the three mounting screws and separate the mirror housing (A) from the bracket (B).



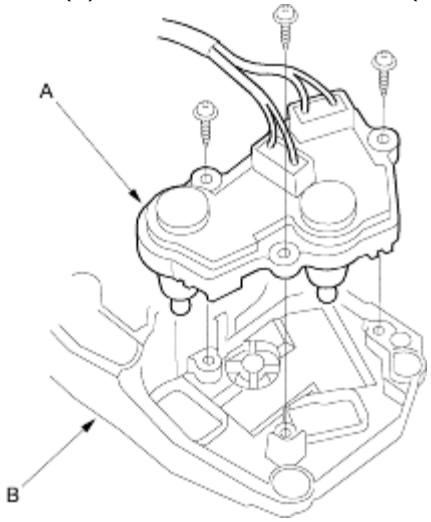
Power Mirrors

Power Mirror Actuator Replacement (cont'd)

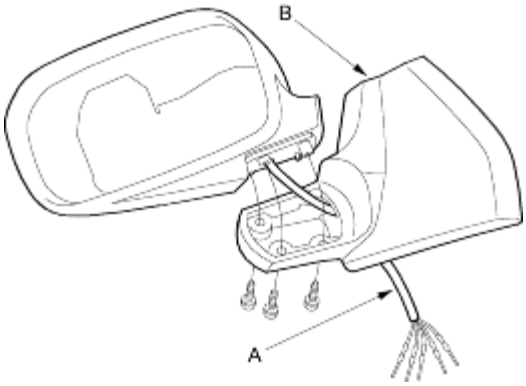
1. 7. Remove the three screws and the actuator (A).



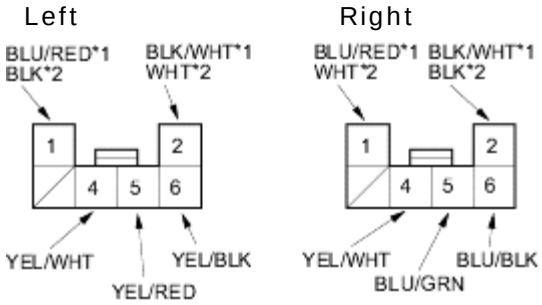
2. 8. Remove the three mounting screws and separate the actuator (A) from the actuator bracket (B).



1. 9. Route the wire harness (A) of the new actuator through the hole in the bracket (B).



2. 10. Insert the new actuator terminals into the connector in the original arrangement as shown below.



Wire side of female terminals

*1: With defogger

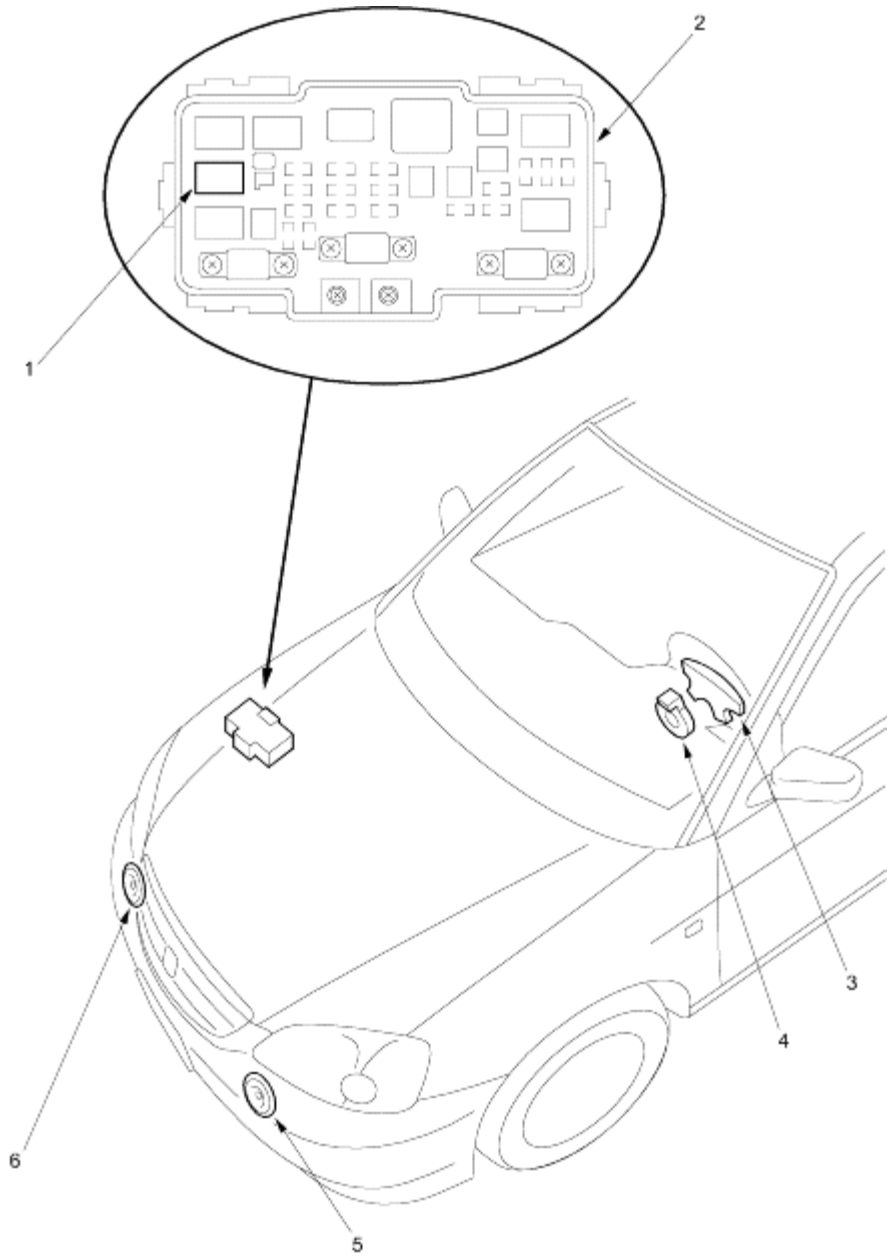
*2: With retract mirror

3. 11. Reassemble the mirror in the reverse order of disassembly.
Be careful not to break in the mirror holder when installing it to the actuator.
12. After installing, check the power mirror operation.

Horn

Component Location Index

NOTE: LHD type is shown, RHD type is similar

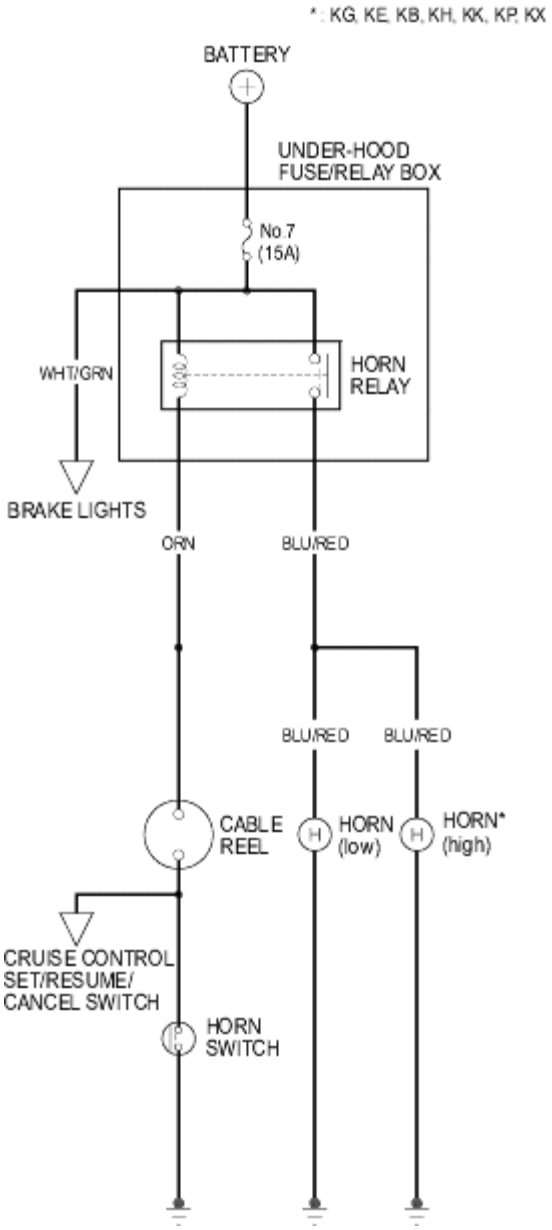


1. HORN RELAY
   Test, page 22-80
2. UNDER - HOOD FUSE/RELAY BOX
3. HORN SWITCH
   Test, page 22-154
4. CABLE REEL
5. page 23-173HORN (low)
   Test, page 22-153
   Replacement, page 22-153
6. HORN (HIGH)*
   Test, page 22-153
   Replacement, page 22-153

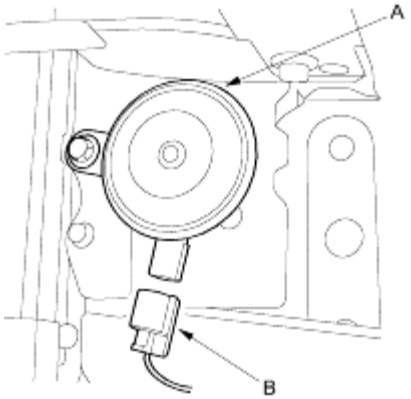
*: With double horn

Horn

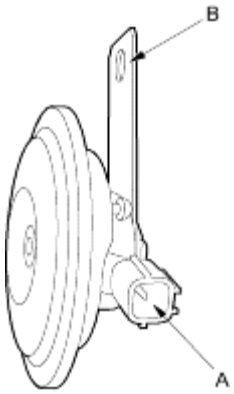
Circuit Diagram



1. 1. Remove the front bumper (see page 20-104).
2. 2. Disconnect the 1P connector (B) and remove the horn (A).



3. 3. Test the horn by connecting battery power to the terminal (A) and grounding to the bracket (B). The horn should sound.

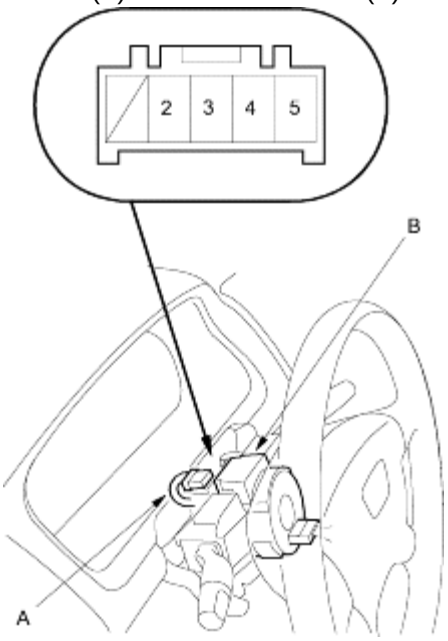


4. 4. If it fails to sound, replace it.

Horn

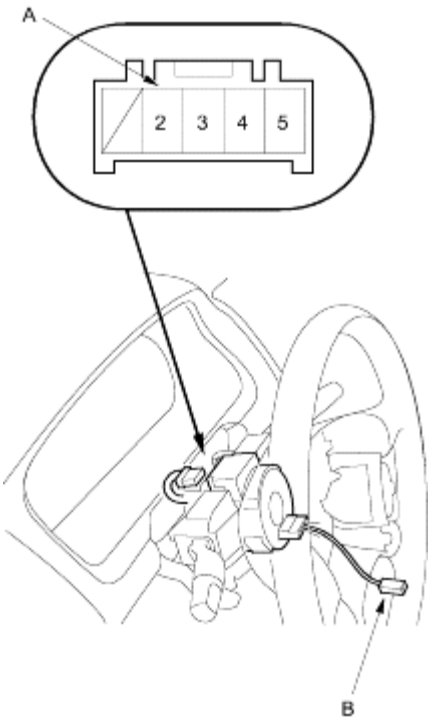
Horn Switch Test

1. 1. Remove the steering column covers (see page 17-9).
2. 2. Disconnect the dashboard wire harness B 5P connector (A) from the cable reel (B).



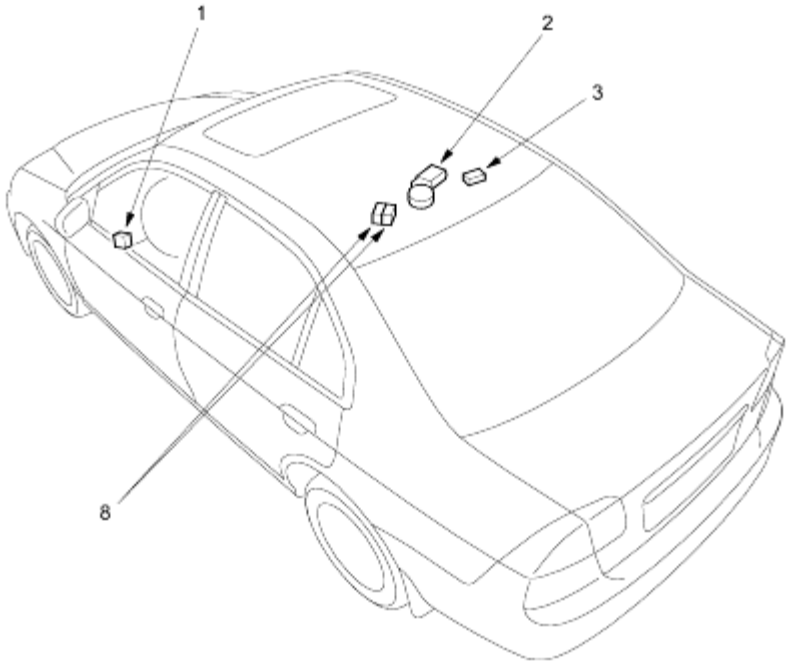
3. 3. Check for continuity between the cable reel No. 2 terminal and body ground with the horn switch pushed. There should be continuity. If there is no continuity, go to step 4.

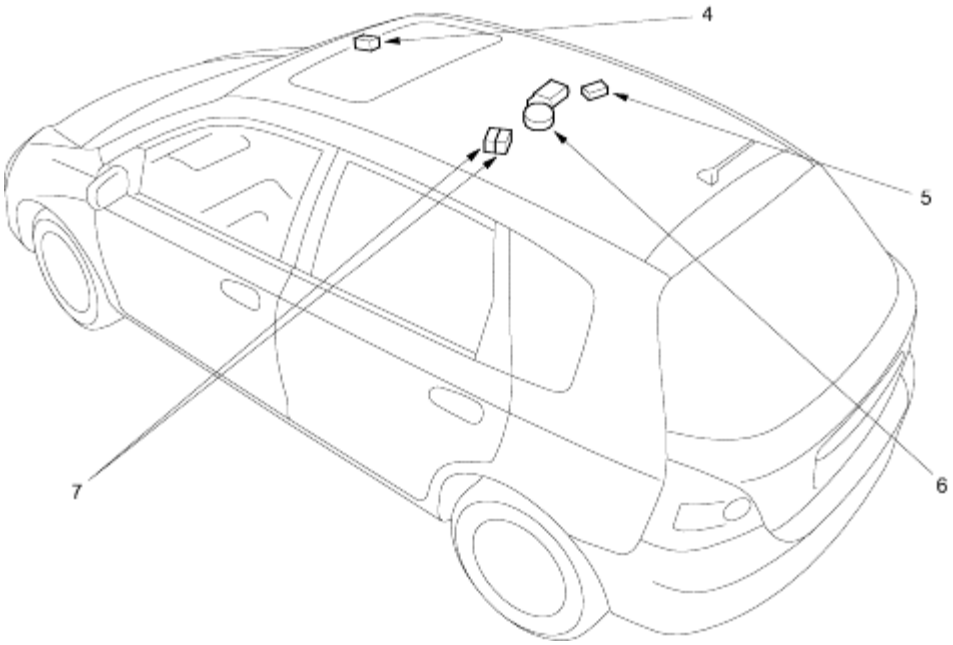
1. 4. Remove the driver's airbag assembly (see page 23-165).
2. 5. Disconnect the horn switch positive terminal 1P connector.
6. Check for continuity between the cable reel No. 2 terminal (A) and the horn switch positive terminal (B).
   - If there is no continuity, replace the cable reel (see page 23-173).
   - If there is continuity, check the contact between the horn plate and contact plate.



Sunroof

Component Location Index

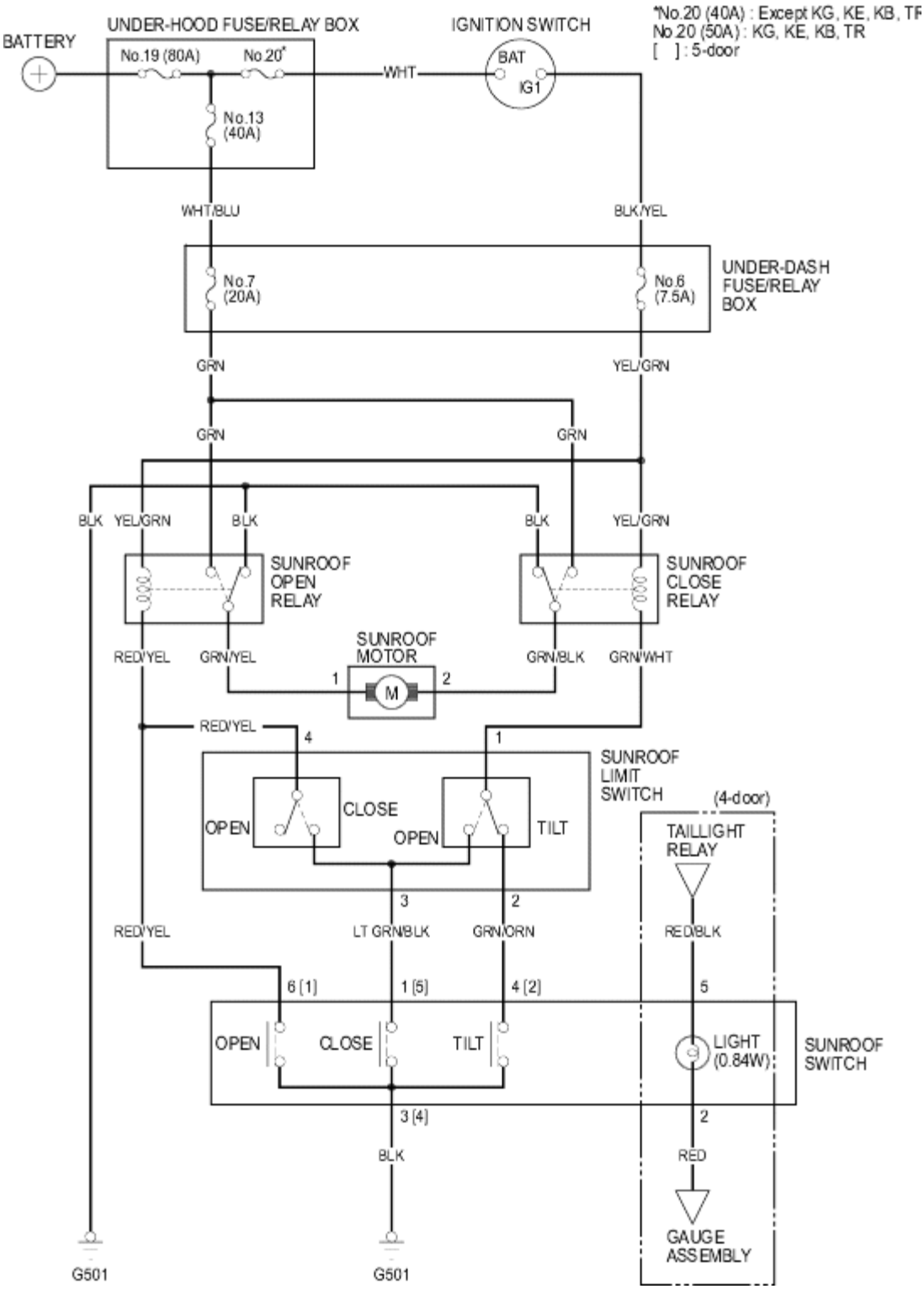




1. SUNROOF SWITCH
   Test/Replacement, page 22-157
2. SUNROOF MOTOR
   Test, page 22-158
3. SUNROOF LIMIT SWITCH
   Test, page 22-158
4. SUNROOF SWITCH
   Test/Replacement, page 22-157
5. SUNROOF LIMIT SWITCH
   Test, page 22-158
6. SUNROOF MOTOR
   Test, page 22-158
7. SUNROOF OPEN RELAY
   [Wire colours: GRN/YEL, GRN, RED/YEL, BLK and YEL/GRN]
   Test, page 22-80
   SUNROOF CLOSE RELAY
   [Wire colours: GRN/BLK, GRN, GRN/WHT, BLK and YEL/GRN]
   Test, page 22-80
8. SUNROOF OPEN RELAY
   [Wire colours: GRN/YEL, GRN, RED/YEL, BLK and YEL/GRN]
   Test, page 22-80
   SUNROOF CLOSE RELAY
   [Wire colours: GRN/BLK, GRN, GRN/WHT, BLK and YEL/GRN]
   Test, page 22-80

Sunroof

Circuit Diagram

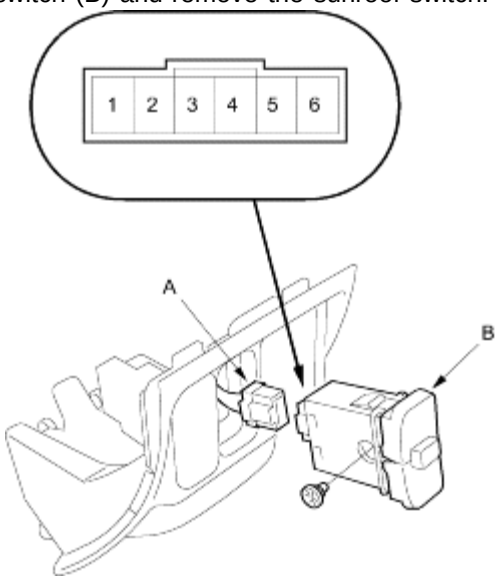


Sunroof

Switch Test/Replacement

4-door:

1. 1. Remove the driver's pocket (see page 20-76).
   2. Disconnect the 6P connector (A) from the sunroof switch (B) and remove the sunroof switch.

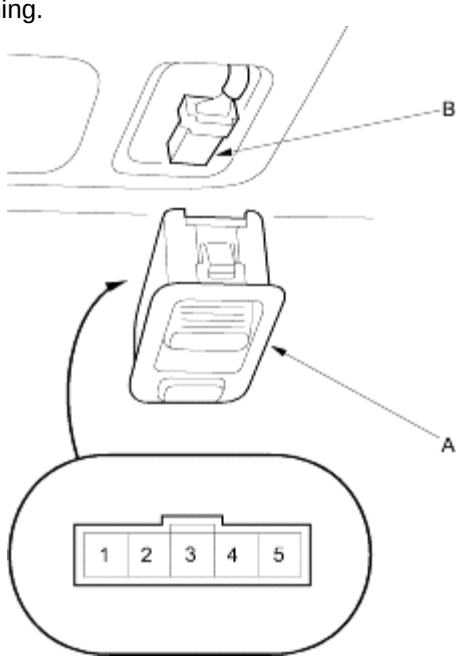


2. 3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	2		5	1	3	4	6
CLOSE				○	○		
TILT	○	(T)	○		○	○	
OPEN					○		○

5-door:

1. 1. Remove the spotlight (see page 22-137).
   2. Push the sunroof switch (A) out from behind the roof lining.

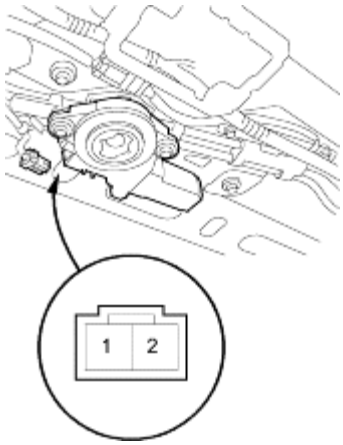


2. 3. Disconnect the 5P connector (B) from the sunroof switch and remove the sunroof switch.
   4. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	1	2	3	4	5
CLOSE				○	○
TILT		○		○	
OPEN	○			○	

Sunroof
Motor Test

1. Remove the headliner (see page 20-68).
2. Disconnect the 2P connector from the sunroof motor.



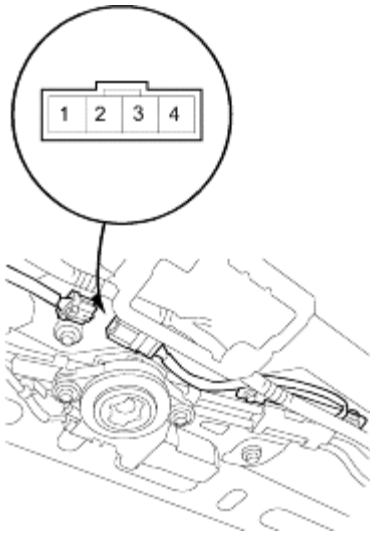
3. Check the motor by connecting power and ground according to the table.

Terminal / Position	1	2
OPEN	⊕	⊖
CLOSE	⊖	⊕

4. If the motor does not run, replace it.
NOTE: See closing force check (see page 20-62) for motor clutch test.

1. Remove the headliner (see page 20-68).
2. Disconnect the 4P connector from the sunroof limit switch.

Terminal side of male terminal



3. Check for continuity between the terminals in each switch position according to the table.
NOTE: Turn the motor by hand with the wrench.

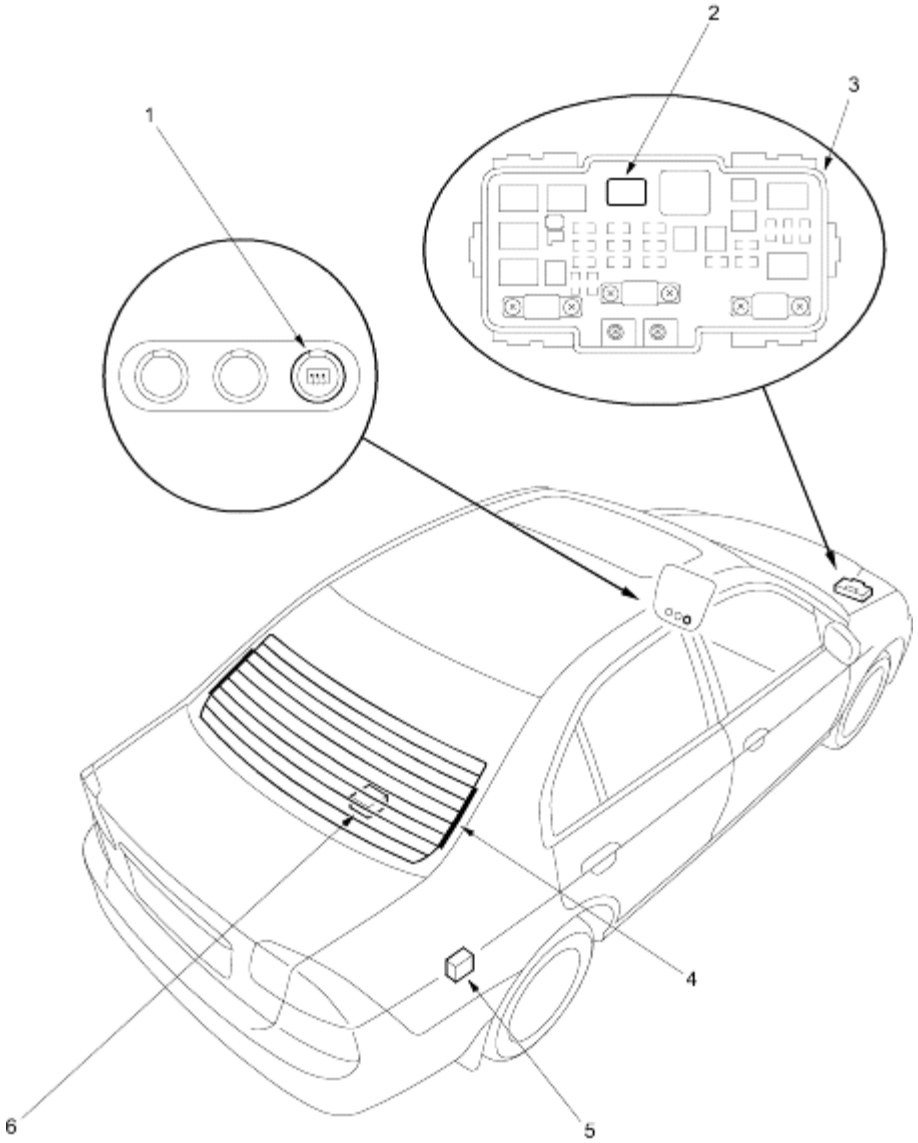
Terminal / Position	1	2	3	4
TILT	○	○	○	○
OPEN	○		○	
CLOSE	○	○	○	○

4. If there is no continuity, replace the cable assembly.

Rear Window Defogger

Component Location Index

*:Rear window defogger switch is built into the heater control panel (or the climate control unit).

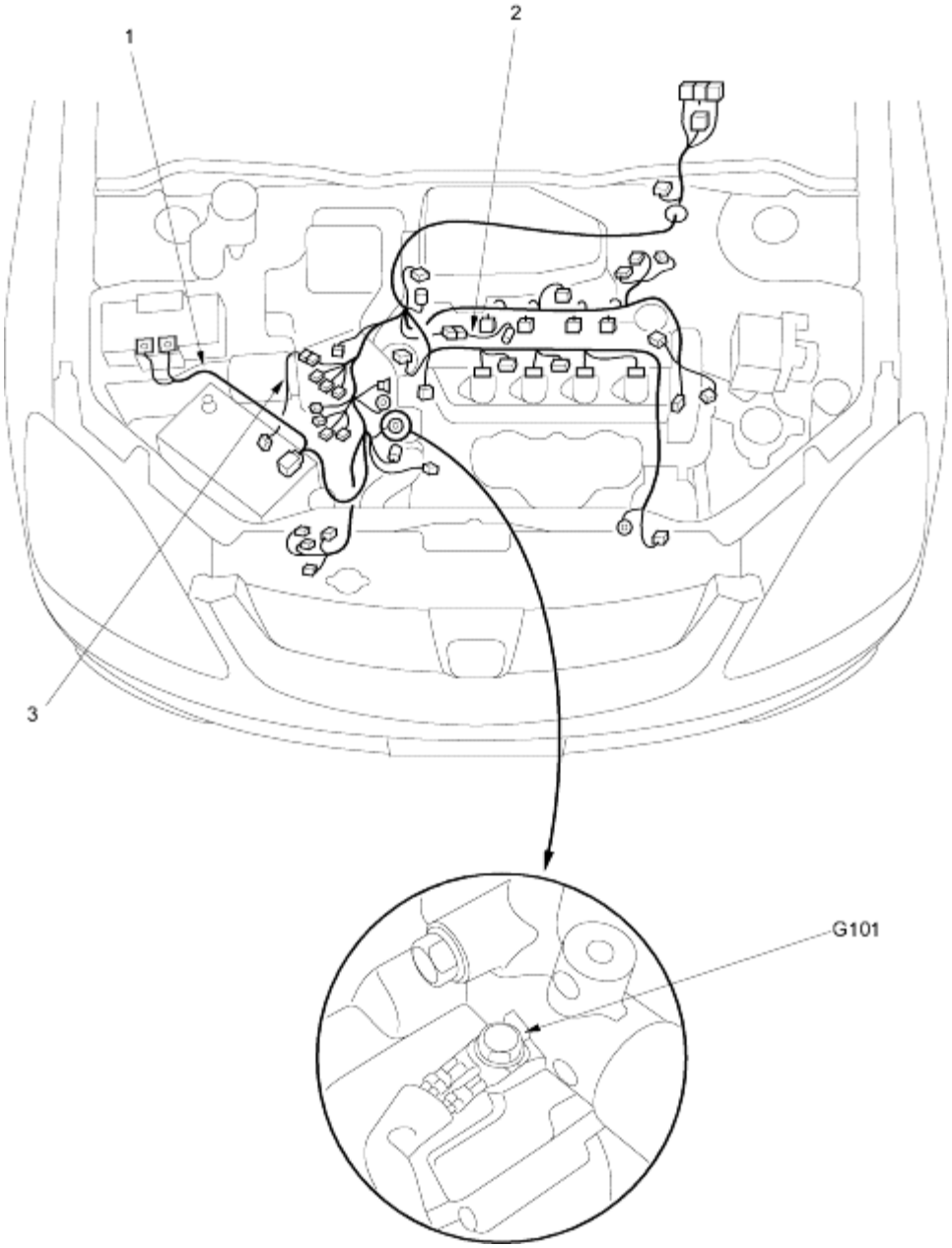


1. REAR WINDOW DEFOGGER SWITCH
2. REAR WINDOW DEFOGGER RELAY
   Test, page 22-80
3. UNDER - HOOD FUSE/RELAY BOX
4. REAR WINDOW DEFOGGER
   Function Test, page 22-162
   Defogger Wire Repair, page 22-212
5. SUB - WINDOW ANTENNA COIL (Sedan of KG and KE models)
   Test, page 22-163
6. WINDOW ANTENNA COIL
   Test, page 22-163

Wire Harness and Ground Locations

Engine Compartment (cont'd)

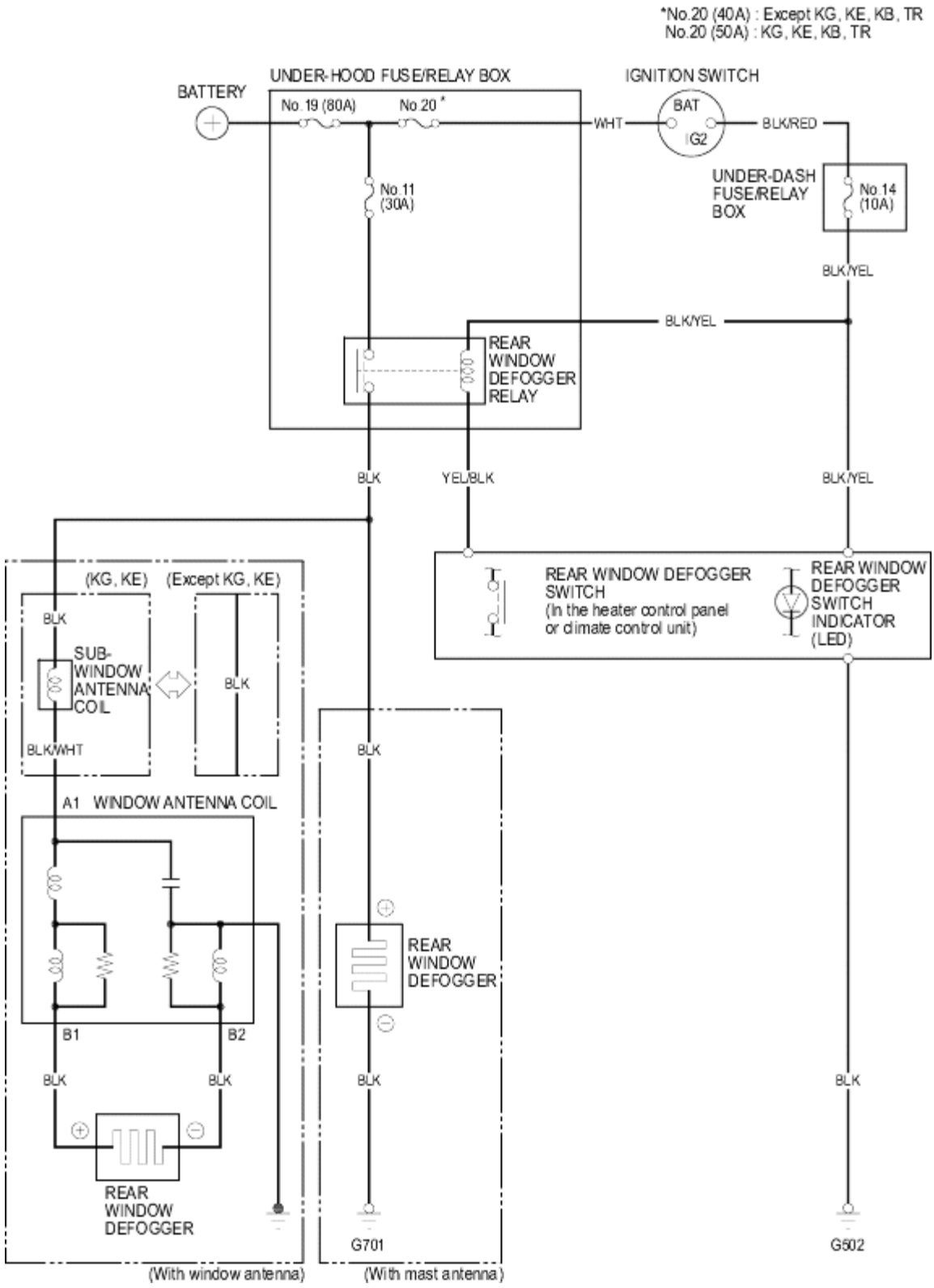
5 - door:



1. ENGINE WIRE HARNESS
2. ENGINE OIL PRESSURE SWITCH SUB - HARNESS
3. TRANSMISSION RANGE SWITCH SUB - HARNESS (A/T)

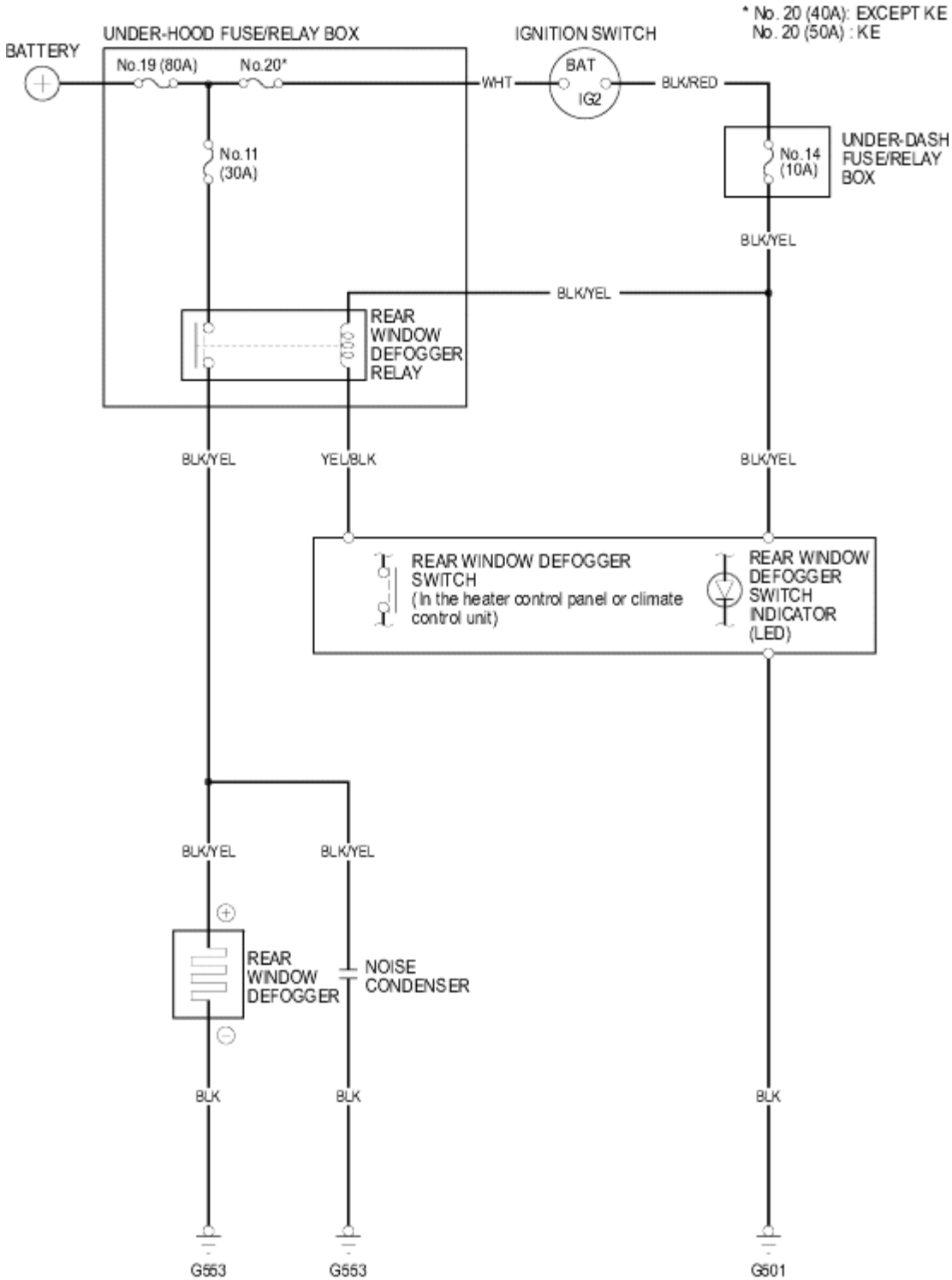
Rear Window Defogger

Circuit Diagram



Rear Window Defogger

Circuit Diagram (cont'd)



Rear Window Defogger

Function Test

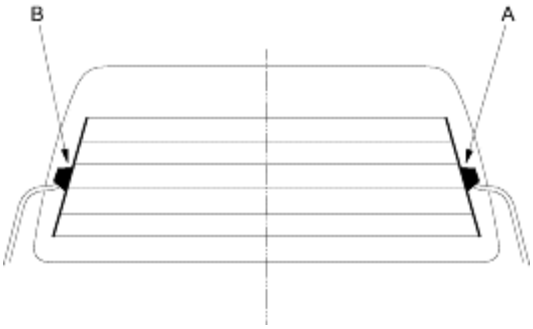
NOTE:

- Be careful not to scratch or damage the defogger wires with the tester probe.
- Before testing, check the No. 11 (30A) fuse in the under-hood fuse/relay box and No. 14 (10A) fuse in the under-dash fuse/relay box.

1. 1. Check for voltage between the positive terminal (A) and body ground with the ignition switch and defogger switch ON.

There should be battery voltage.

- If there is no voltage, check for:
  - faulty defogger relay.
  - faulty window antenna coil.
  - an open in the wire between the defogger relay and positive terminal.
  - faulty the defogger switch
- If there is battery voltage, go to step 2.



3. 2. Check for continuity between the negative terminal (B) and body ground.

If there is no continuity, check for:

- an open in the BLK wire.
- faulty window antenna coil.
- Poor body ground at the window antenna coil mounting bolt.
- Poor ground (G701, 5-door: G553)

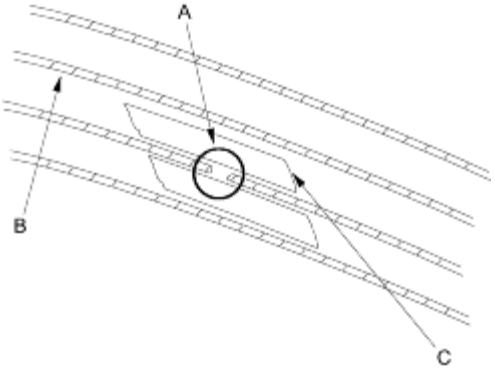
4. 3. Touch the voltmeter positive probe to the halfway point of each defogger wire and the negative probe to the negative terminal.

There should be about 6 V with the ignition switch and the defogger switch ON.

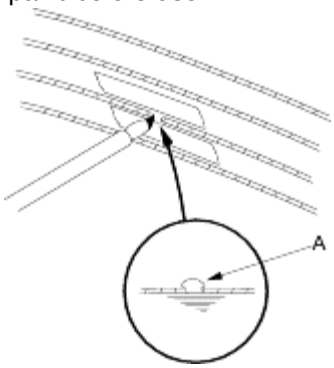
- If the voltage is as specified, the defogger wire is OK.
- If the voltage is not as specified, repair the defogger wire.
  - If it is more than 6 V, there is a break in the negative half of the wire.
  - If it is less than 6 V, there is a break in the positive half of the wire.

NOTE: To make an effective repair, the broken section must be no longer than one inch.

1. 1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



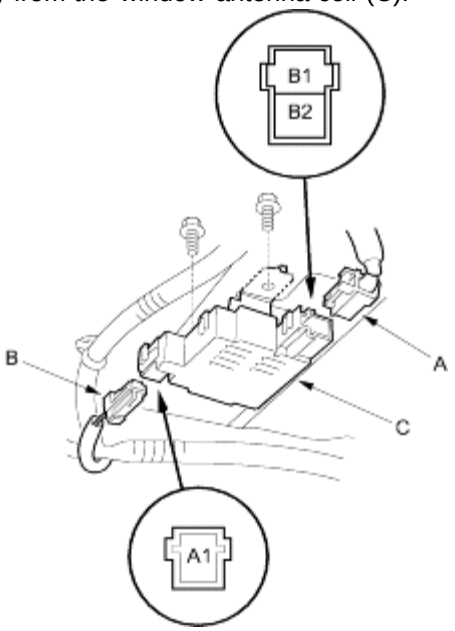
2. 2. Carefully mask above and below the broken portion of the defogger wire (B) with transparent tape (C).
3. Using a small brush, apply a heavy coat of silver conductive paint extending about 1/8" on both sides of the break. Allow 30 minutes to dry. Thoroughly mix the paint before use.



3. 4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

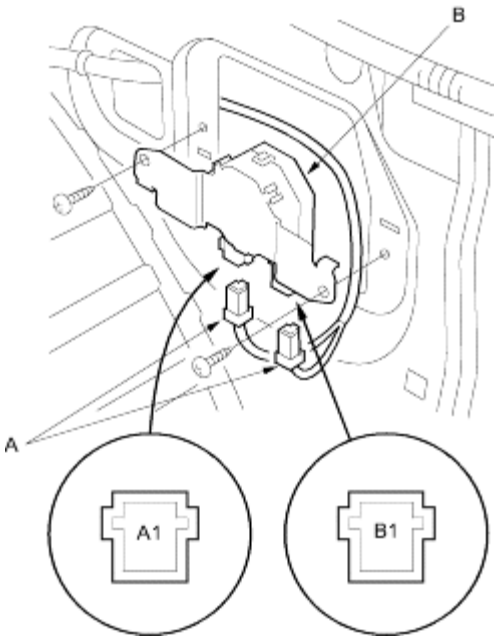
Window Defogger Rear
Window Antenna Coil Test

1. 1. Open the trunk lid.
2. 2. Disconnect the 2P connector (A) and 1P connector (B) from the window antenna coil (C).



3. 3. Check for continuity between the B2 terminal and body ground and between the A1 terminal and B1 terminal.
   There should be continuity.
   If there is no continuity, go to step 4.
4. 4. Remove the rear shelf (see page 20-65).
   5. Loosen the two bolts and remove the window antenna coil.

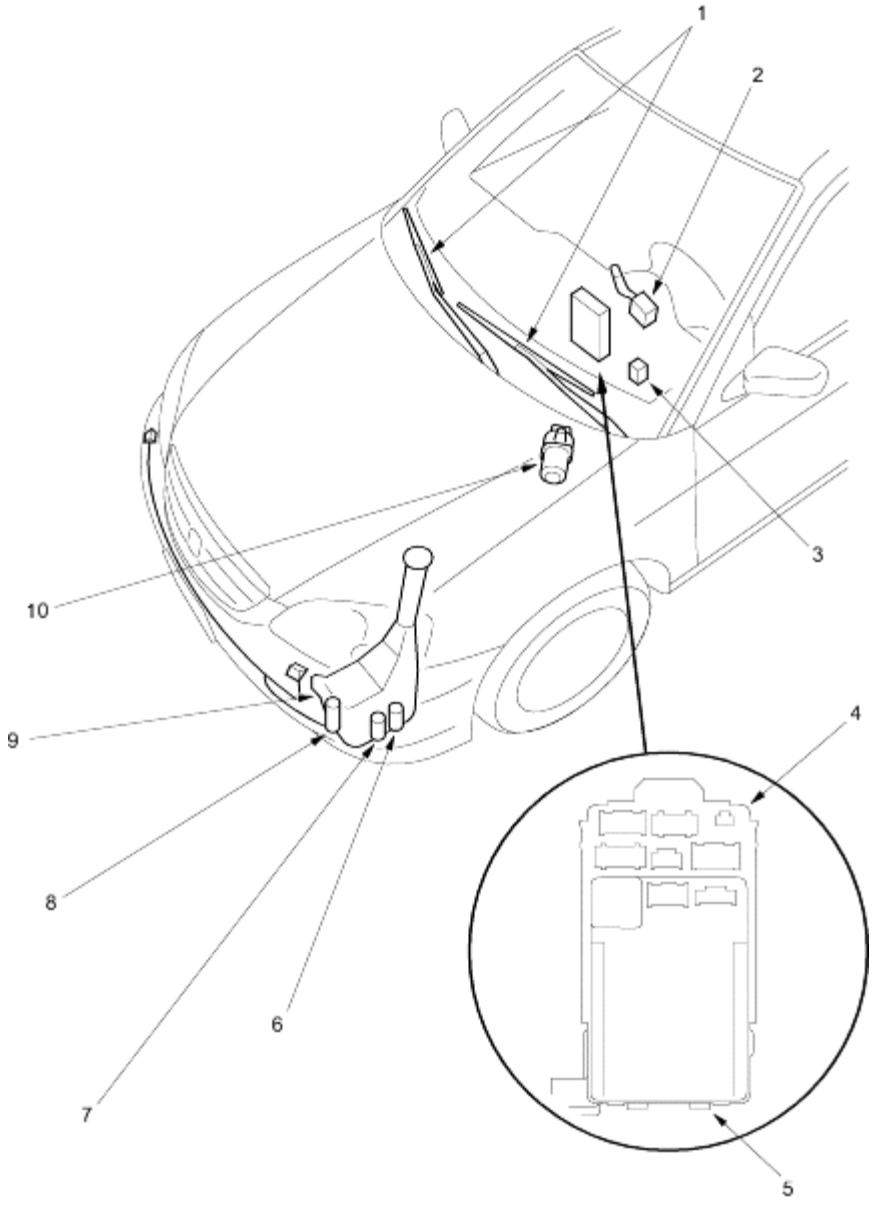
1. 1. Remove the right rear side trim panel (see page 20-67).
2. 2. Disconnect the 1P connectors (A) from the sub-window antenna coil (B).



3. 3. Check for continuity between the A1 and B1 terminals.
   There should be continuity.
   If there is no continuity, remove the two screws and replace the window antenna coil.

Wiper/Washers
Component Location Index

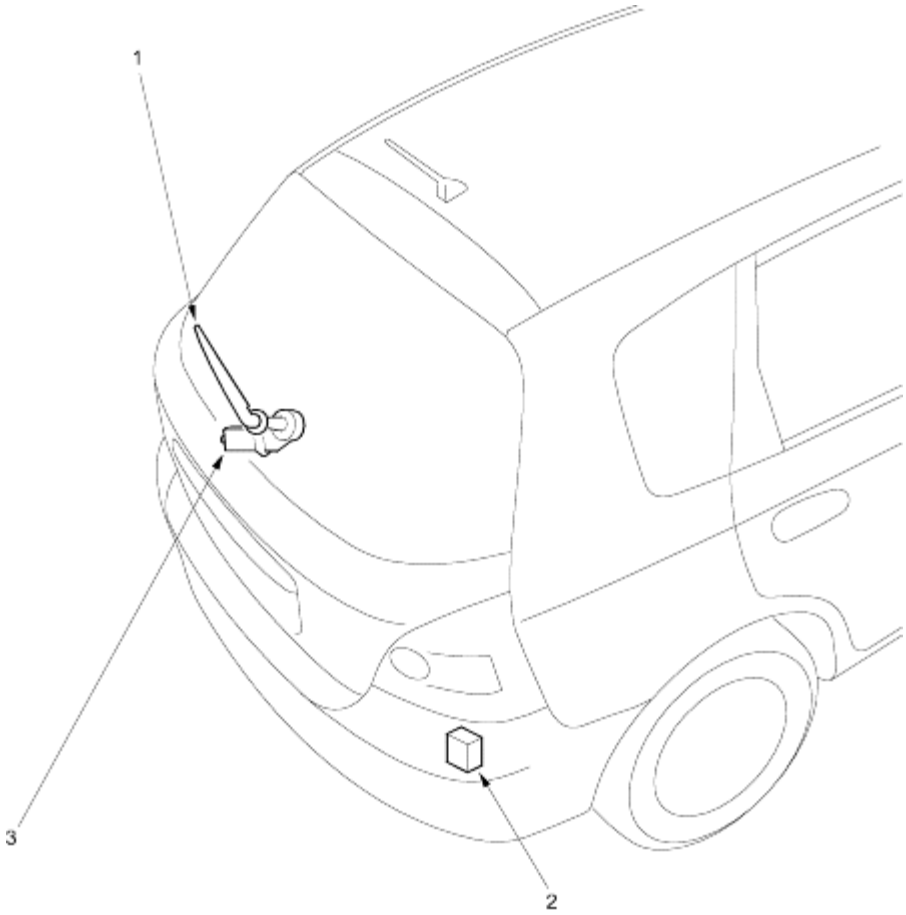
● WASHER TUBES
Replacement, page 22-183



1. WINDSHIELD WIPER ARMS and LINKAGE
   Replacement, page 22-179
2. WIPER/WASHER SWITCH
   Test, page 22-170
   Replacement, page 22-170
3. HEADLIGHT WASHER CONTROL UNIT (KG model),
   Input Test, page 22-176
4. UNDER - DASH FUSE/RELAY BOX
5. INTERMITTENT WIPER RELAY CIRCUIT
   (In the multiplex control unit)
   Input Test, page 22-172
6. REAR WINDOW WASHER MOTOR (5-door)
   Test, page 22-182
7. WINDSHIELD WASHER MOTOR
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8. HEADLIGHT WASHER MOTOR (KG model)
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9. WASHER RESERVOIR
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10. WINDSHIELD WIPER MOTOR
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Wiper/Washers

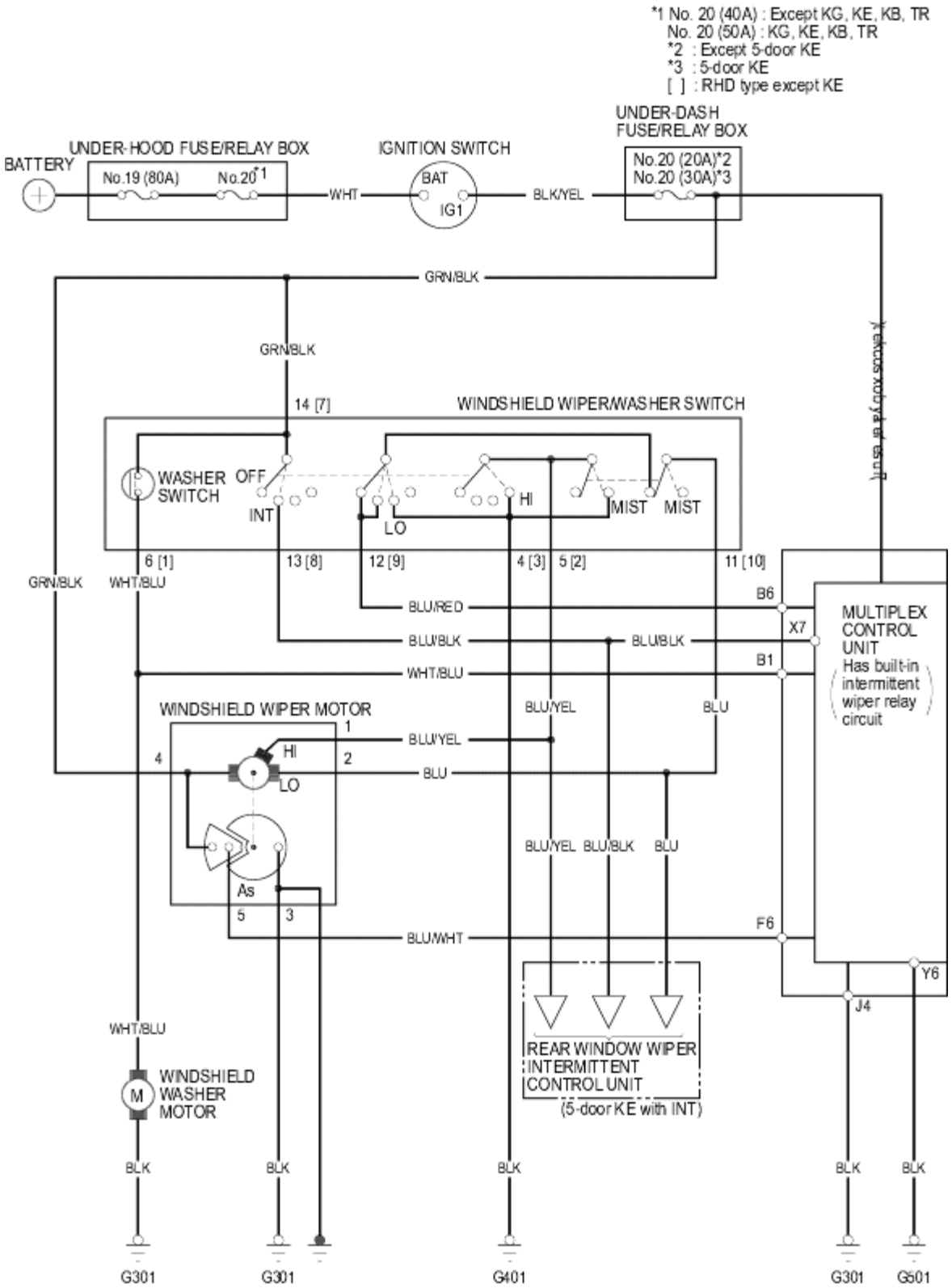
Component Location Index (cont'd)



1. REAR WIPER ARM/LINKAGE
   Replacement, page 22-181
2. REAR WINDOW WIPER INTERMITTENT CONTROL UNIT
   Input Test, page 22-174
3. REAR WINDOW WIPER MOTOR
   Test, page 22-178
   Replacement, page 22-181

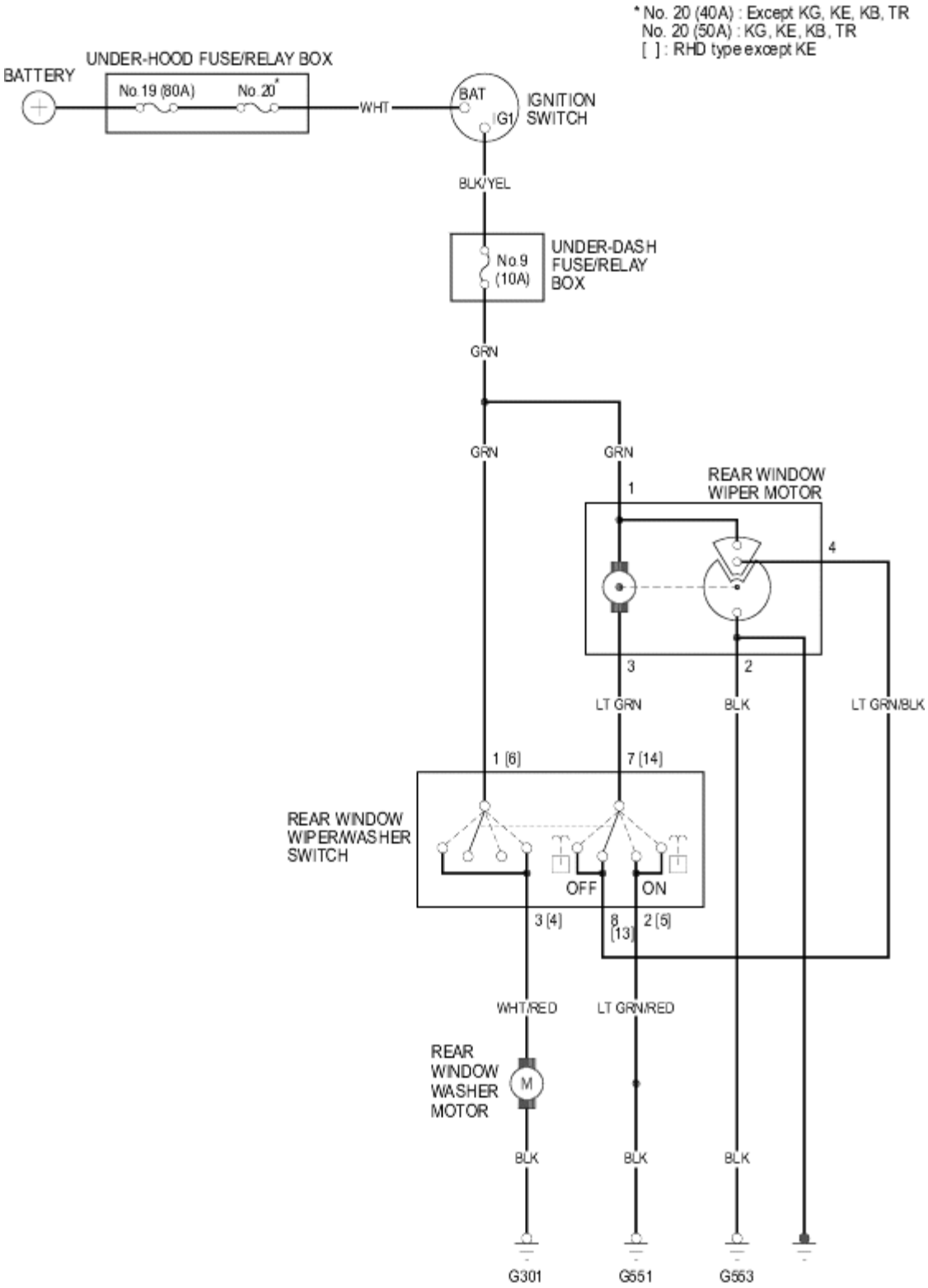
Wiper/Washers

Circuit Diagram - Windshield



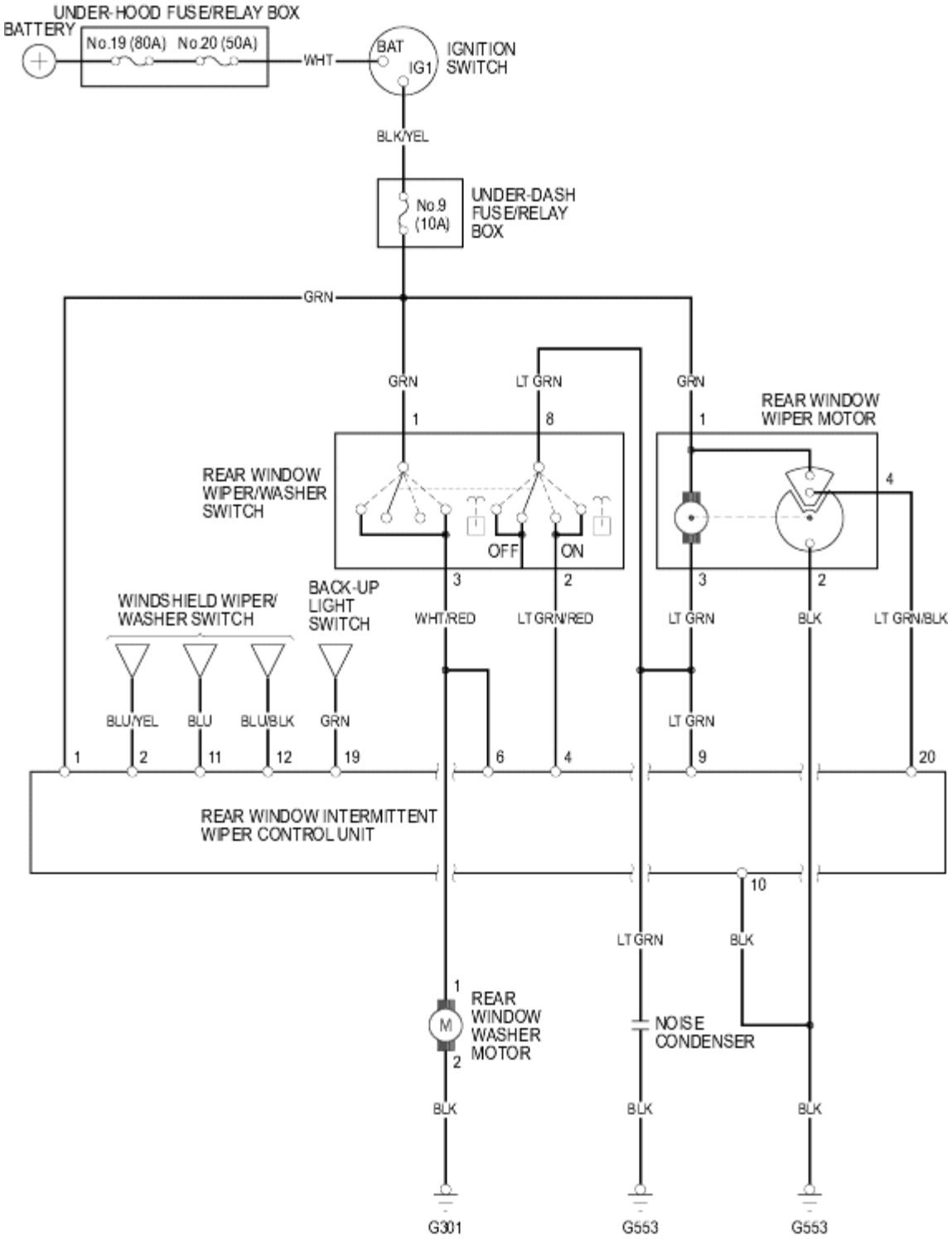
Wiper/Washers

Circuit Diagram - Rear Window



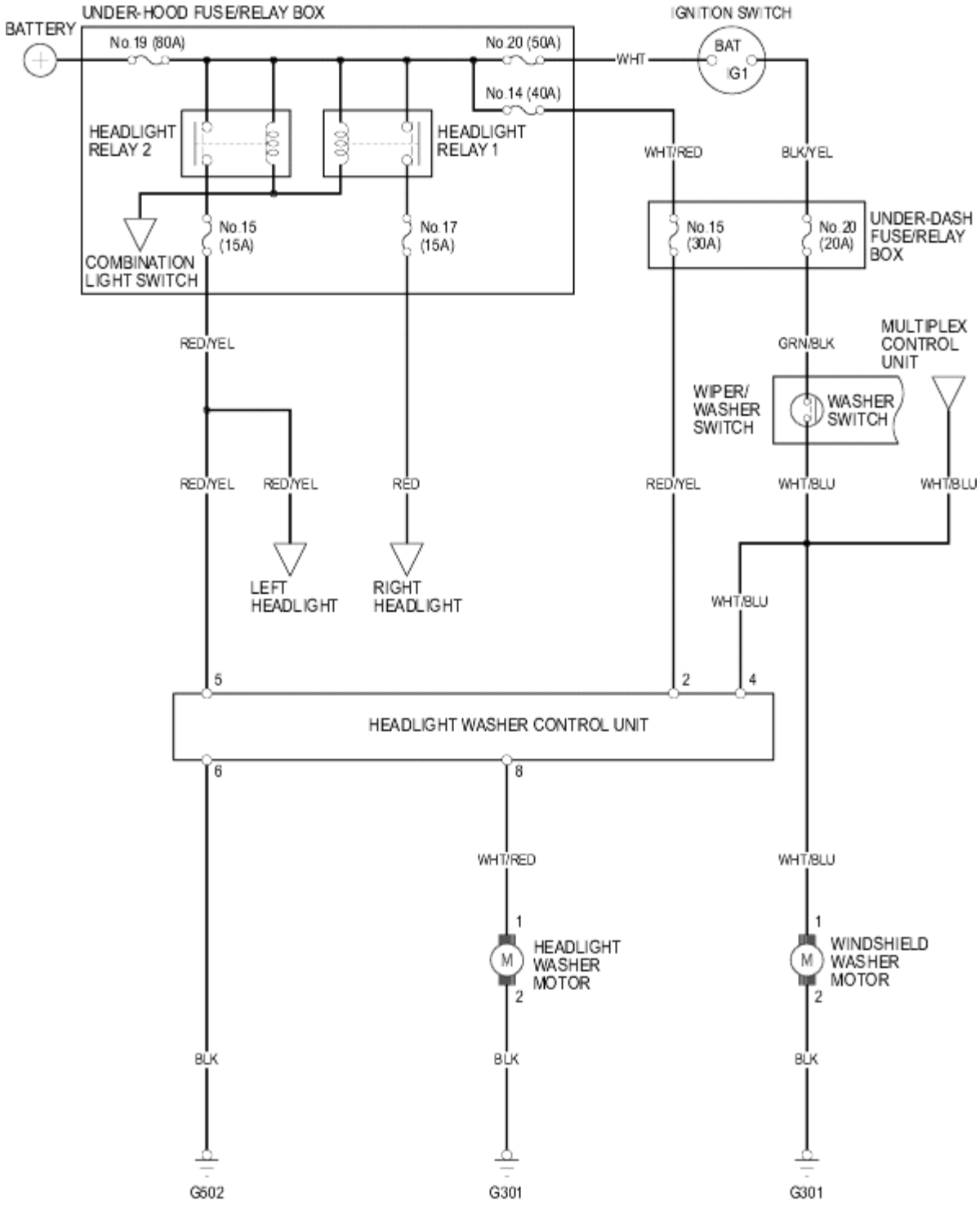
Wiper/Washers

Circuit Diagram - Rear Window with Intermittent Wiper



Wiper/Washers

Circuit Diagram - Headlight Washer

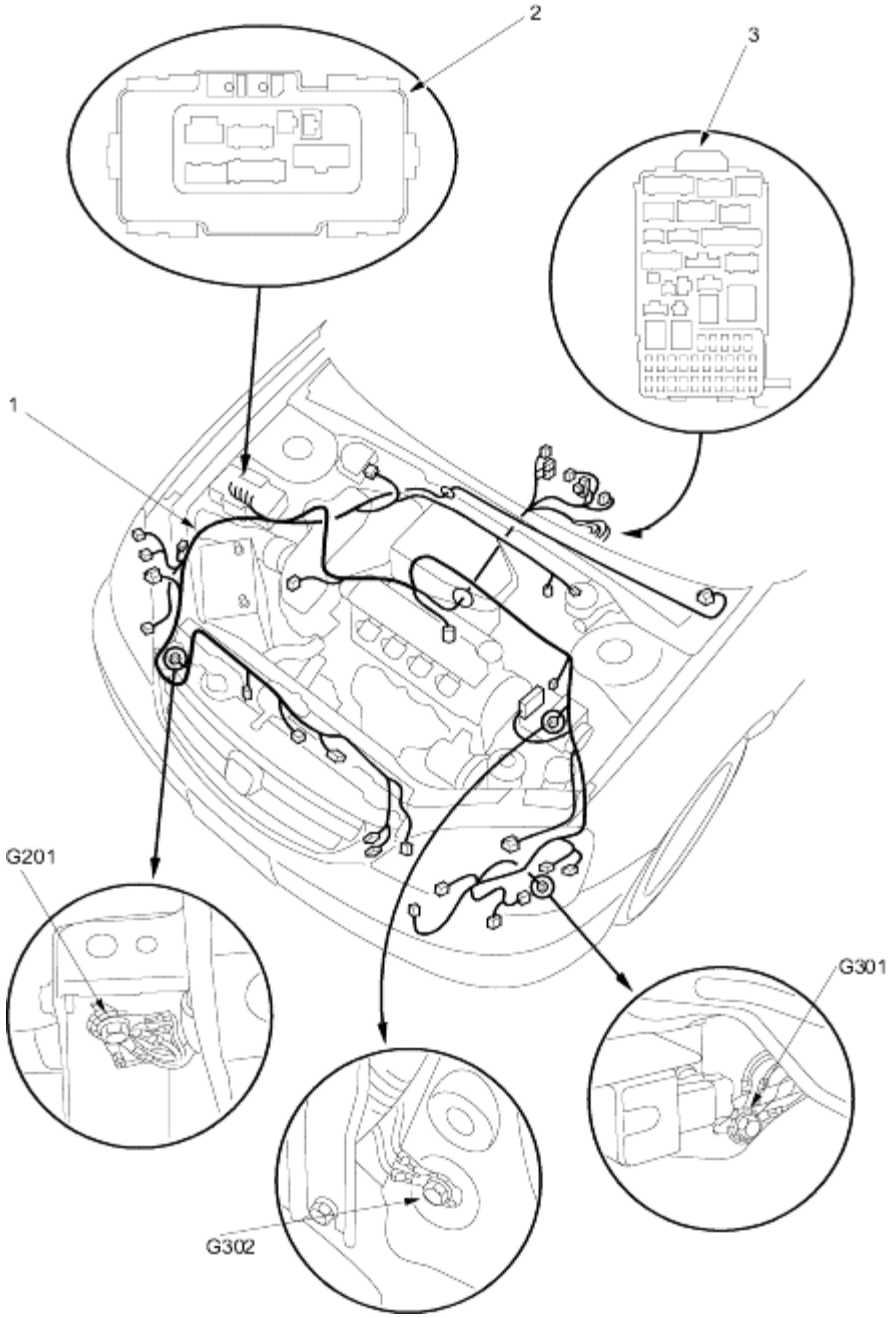


Wire Harness and Ground Locations

Engine Compartment (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar.



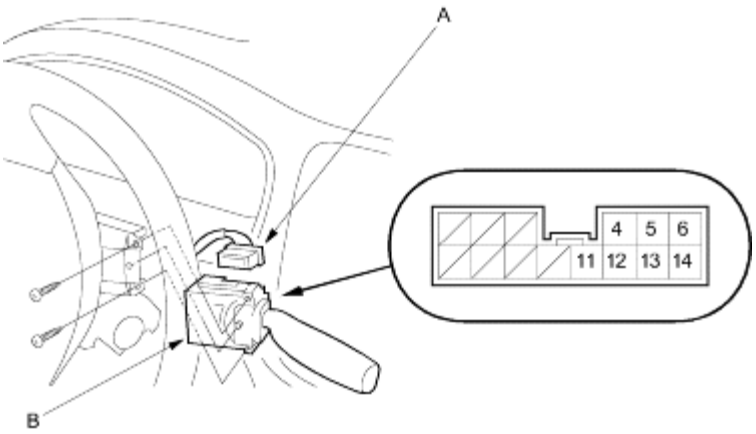
1. ENGINE COMPARTMENT WIRE HARNESS
2. UNDER - HOOD FUSE/RELAY BOX
3. UNDER - DASH FUSE/RELAY BOX

Wiper/Washers

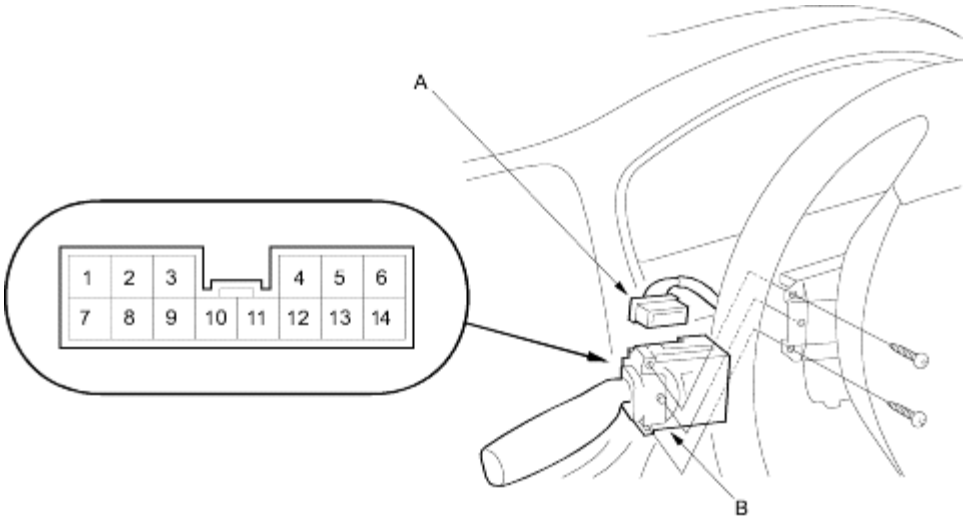
Wiper/Washer Switch Test/Replacement

1. 1. Remove the dashboard lower cover (see page 20-76).
   2. Remove the steering column covers (see page 17-9).
   3. Disconnect the 14P connector (A) from the wiper/washer switch (B).

LHD type and KE model:



RHD type except KE:



2. 4. Remove the two screws, then pull out the wiper/washer switch.

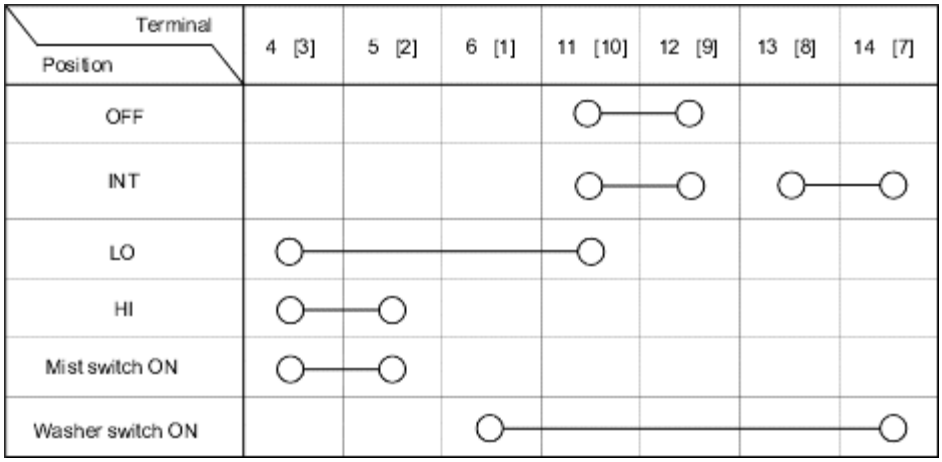
Wiper/Washers

Wiper/Washer Switch Test/Replacement (cont'd)

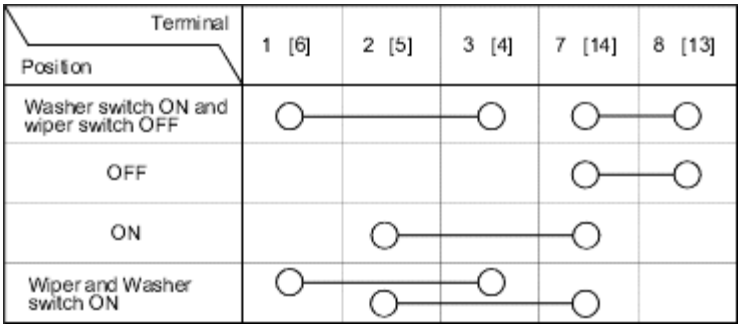
1. 5. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.

– – If there is no continuity, replace the switch.

Windshield:



Rear Window (5 - door):

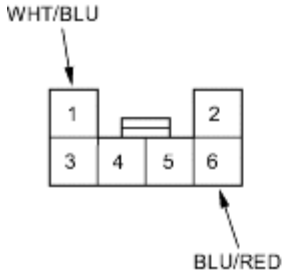


[ ] : RHD type except KE

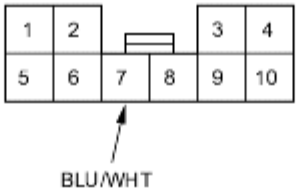
Wiper/Washers
Control Unit Input Test

1. 1. Before testing, troubleshoot the multiplex control system (see page 22-273).
   2. Remove the dashboard lower cover.
   3. Disconnect the under-dash fuse/relay box connectors B, F, J, X and Y.
      NOTE: All connectors are wire side of female terminals.

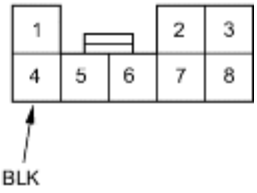
UNDER-DASH FUSE/RELAY BOX CONNECTOR B (6P)



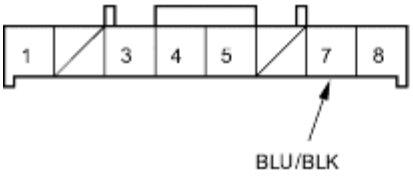
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (10P)



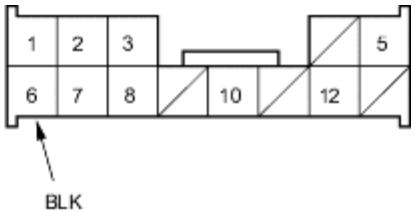
UNDER-DASH FUSE/RELAY BOX CONNECTOR J (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



2. 4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals are OK, go to step 5.

Wiper/Washers

Control Unit Input Test (cont'd)

1. 5. With the connectors still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty; replace the under-dash fuse/relay box assembly.

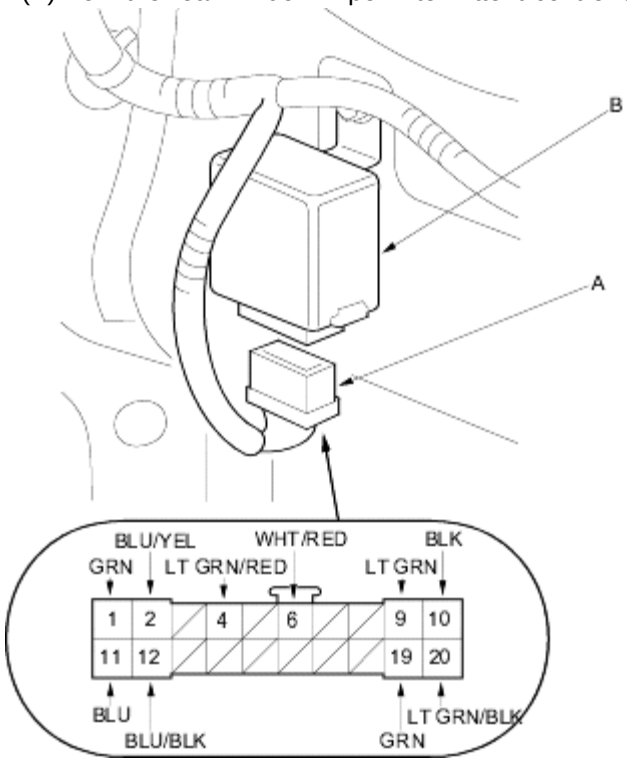
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for continuity to ground: There should be continuity	• Poor ground (G301) • An open in the wire
Y6	BLK	Under all conditions	Check for continuity to ground: There should be continuity	• Poor ground (G501) • An open in the wire
B1	WHT/BLU	Ignition switch ON (II) and washer switch ON	Check for voltage to ground: There should be battery voltage	• Blown No. 20 (20A)[No. 20 (30A)]fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire
B6	BLU/RED	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 20 (20A)[No. 20 (30A)]fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • Faulty windshield wiper motor • An open in the wire
F6	BLU/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A)[No. 20 (30A)]fuse in the under-dash fuse/relay box • Faulty windshield wiper motor • An open in the wire
X7	BLU/BLK	Ignition switch ON (II) and wiper switch in INT	Check for voltage to ground: There should be battery voltage	• Blown No. 20 (20A)[No. 20 (30A)]fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire

[ ]: 5-door KE model

Wiper/Washers

Rear Window Wiper Intermittent Control Unit Input Test

1. 1. Remove the right rear side trim panel (see page 20-65).
   2. Disconnect the 20P connector (A) from the rear window wiper intermittent control unit (B).



Wire side of female terminals

2. 3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

Wiper/Washers

Rear Window Wiper Intermittent Control Unit Input Test (cont'd)

1. 4. With the connector still disconnected, make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • An open in the wire
10	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G553) • An open in the wire
2	BLU/YEL	Ignition switch ON (II) and windshield wiper switch in HI	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) [No. 20 (30A)] fuse in the under-dash fuse/relay box • Faulty windshield wiper/washer switch • An open in the wire
11	BLU	Ignition switch ON (II) and windshield wiper switch in LO		
12	BLU/BLK	Ignition switch ON (II) and windshield wiper switch in INT		
19	GRN	Ignition switch ON (II) and shift lever position in [R]	Check for voltage to ground: There should be battery voltage	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • Faulty back-up light switch (M/T) • Faulty transmission range switch (A/T) • An open in the wire
6	WHT/RED	Ignition switch ON (II) and rear window washer switch ON	Check for voltage to ground: There should be battery voltage	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper/washer switch • An open in the wire
4	LT GRN/RED	Ignition switch ON (II) and rear window wiper switch ON	Attach to ground: The rear window wiper motor should run.	
9	LT GRN	Ignition switch ON (II)	Attach to ground: The rear window wiper motor should run	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper motor • An open in the wire
20	LT GRN/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper motor • An open in the wire

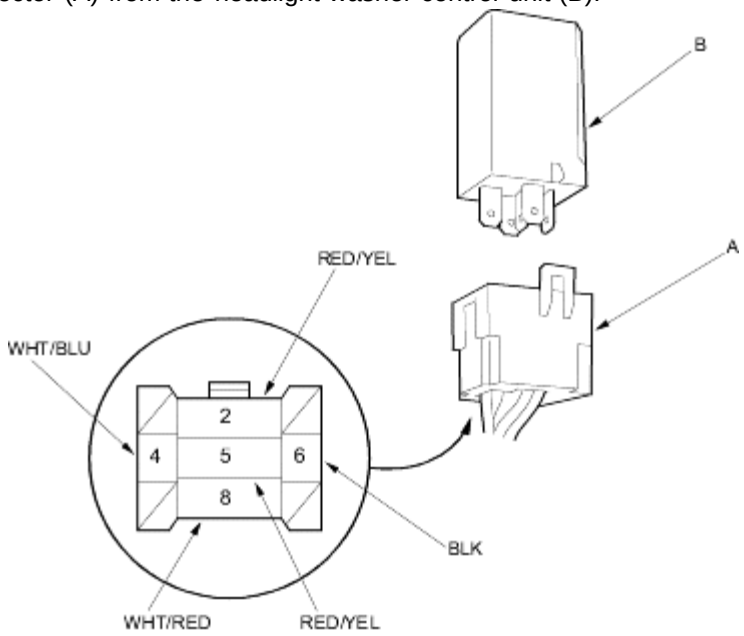
[ ]: 5 - door KE model

Wiper/Washers

Headlight Washer Control Unit Input Test

KG model

1. 1. Remove the dashboard lower cover.
   2. Disconnect the 9P connector (A) from the headlight washer control unit (B).



2. 3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

Wiper/Washers

Headlight Washer Control Unit Input Test (cont'd)

1. 4. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the headlight washer control unit.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	RED/YEL	Under all conditions	Check for voltage to ground: There should be battery voltage	• Blown No. 14 (40A) fuse in the under-hood fuse/relay box • Blown No. 15 (30A) fuse in the under-dash fuse/relay box • An open in the wire
4	WHT/BLU	Ignition switch ON (II) and washer switch ON	Check for voltage to ground: There should be battery voltage	• Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty washer switch • An open in the wire
5	RED/YEL	Headlight switch ON	Check for voltage to ground: There should be battery voltage	• Blown No. 15 (15A) fuse in the under-hood fuse/relay box • Faulty headlight relay 2 • Faulty combination light switch • An open in the wire
6	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502) • An open in the wire
8	WHT/RED	Connect the No. 2 terminal to the No. 8 terminal with a jumper wire.	Check motor operation: The headlight washer motor should run	• Faulty headlight washer motor • An open in the wire

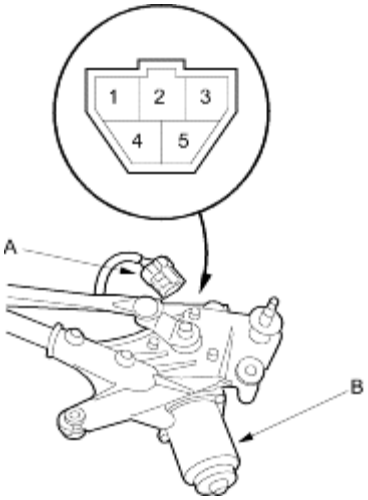
Wiper/Washers

Wiper Motor Test

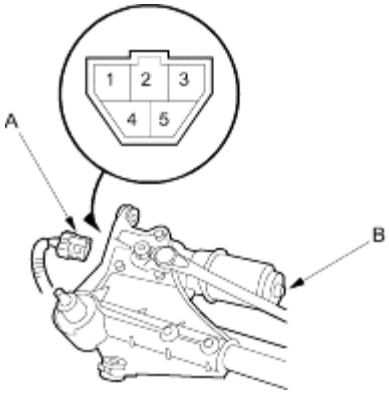
Windshield:

1. 1. Remove the wiper arms, hood seals and cowl covers (see page 22-179).
   2. Disconnect the 5P connector (A) from the wiper motor (B).

4-door:



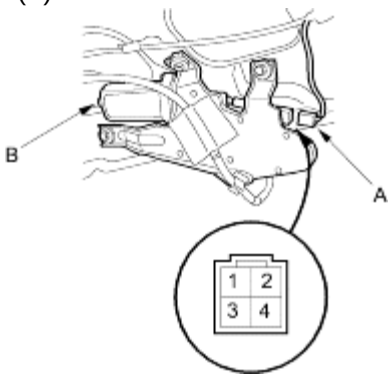
5-door:



2. 3. Test the motor by connecting battery power to the No. 4 terminal and ground the No. 2 terminal of the wiper motor 5P connector. The motor should run. If the motor does not run or fails to run smoothly, replace the motor.
   4. Connect an analogue voltmeter between the No. 5 (+) and No. 3 (–) terminals and run the motor at low or high speed. The voltmeter should indicate 0 V and 4 V or less alternately.

Rear Window (5-door):

1. 1. Open the tailgate and remove the tailgate lower panel (see page 20-209).
   2. Disconnect the 4P connector (A) from the wiper motor (B).



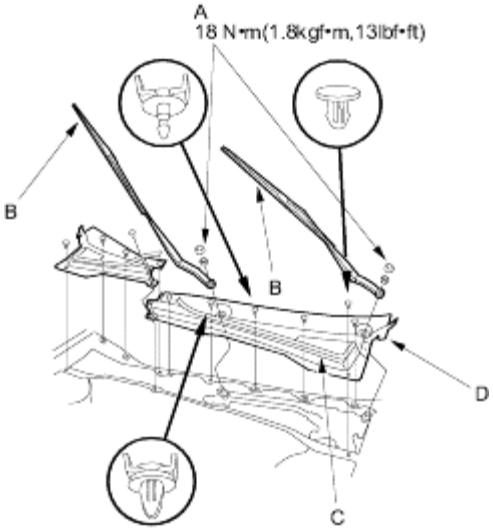
2. 3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 3 terminal of the wiper motor. The motor should run. If the motor does not run or fails to run smoothly, replace the motor.
   4. Connect an analogue voltmeter between the No. 4 (+) and No. 2 (–) terminals and run the motor. The voltmeter should indicate 0 V and 4 V or less alternately.

Wiper/Washers

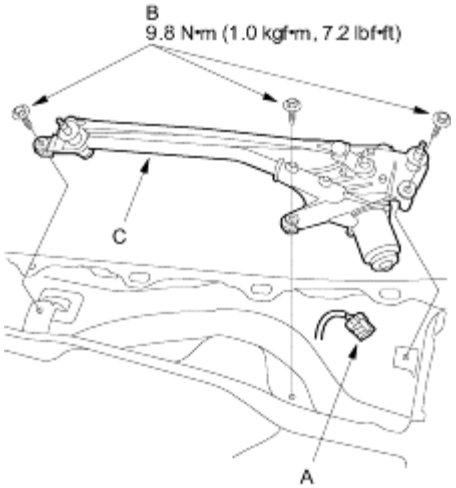
Wiper Motor Replacement

Windshield Wiper Motor (4-door):

1. 1. Open the hood. Remove the nut covers, nuts (A) and the windshield wiper arms (B).

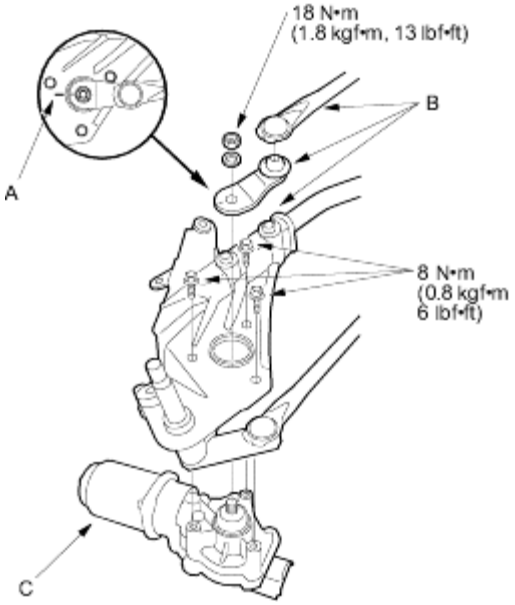


2. 2. Remove the hood seals (C) and cowl covers (D).
   3. Disconnect the 5P connector (A) from the wiper motor.



3. 4. Remove the three bolts (B) and wiper linkage assembly (C).

1. 5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjustment.
   Separate the windshield wiper linkage (B) from the wiper motor (C).

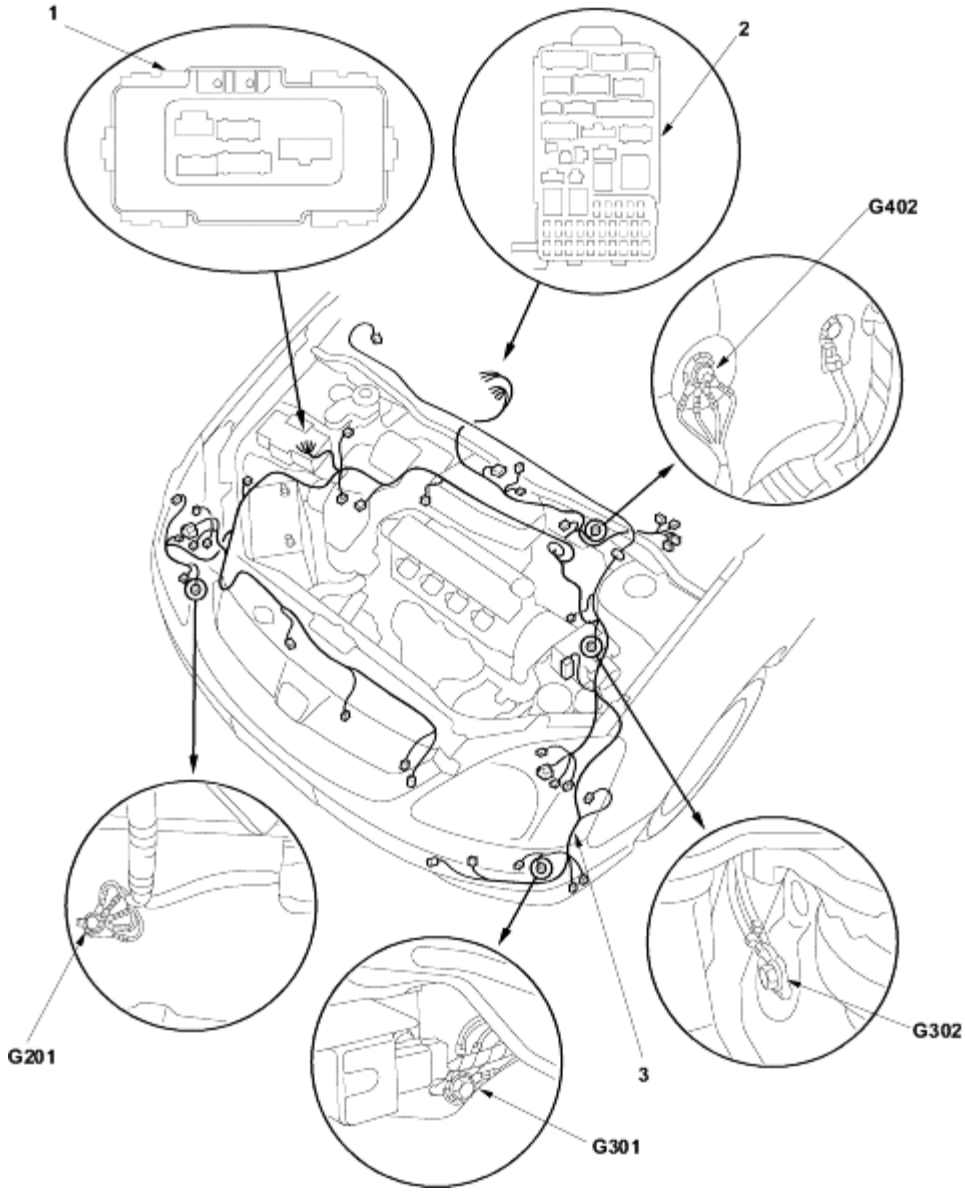


2. 6. Install in the reverse order of removal and note these items:
   - Grease the moving parts.
   - Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
   - Check the wiper motor operation.

Wire Harness and Ground Locations

Engine Compartment (cont'd)

5 - door:



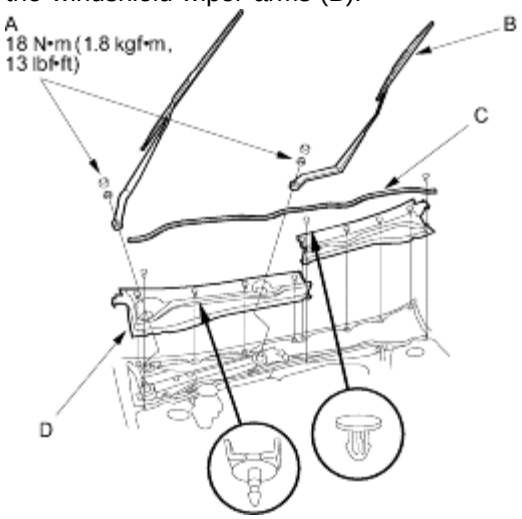
1. UNDER - HOOD FUSE/RELAY BOX
2. UNDER - DASH FUSE/RELAY BOX
3. ENGINE COMPARTMENT WIRE HARNESS

Wiper/Washers

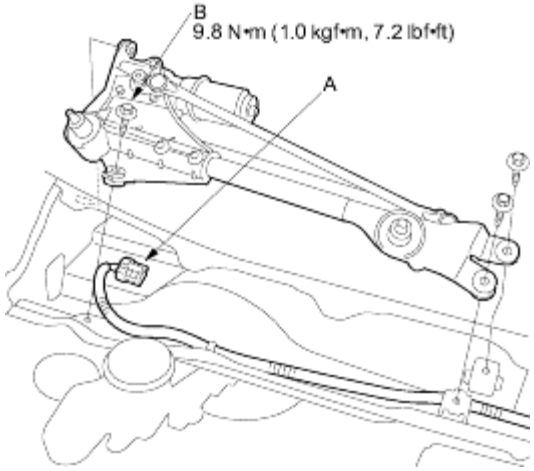
Wiper Motor Replacement (cont'd)

Windshield Wiper Motor (5-door):

1. 1. Open the hood. Remove the nut covers, nuts (A) and the windshield wiper arms (B).

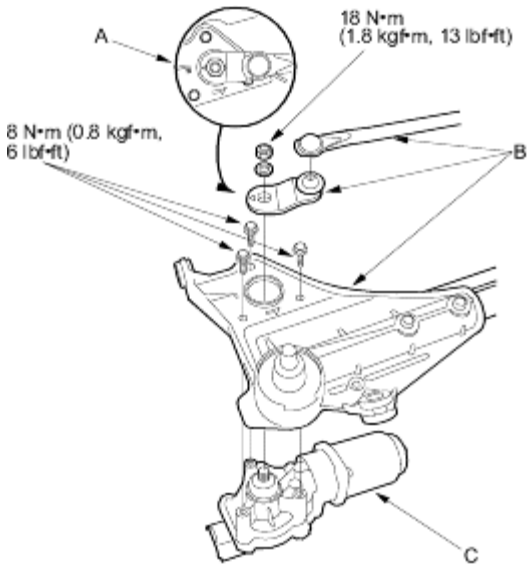


2. 2. Remove the hood seals (C) and cowl covers (D).
   3. Disconnect the 5P connector (A) from the wiper motor.



3. 4. Remove the three bolts (B) and wiper linkage assembly (C).

1. 5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjustment. Separate the windshield wiper linkage (B) from the wiper motor (C).

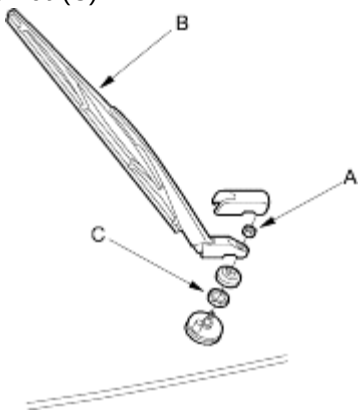


Wiper/Washers

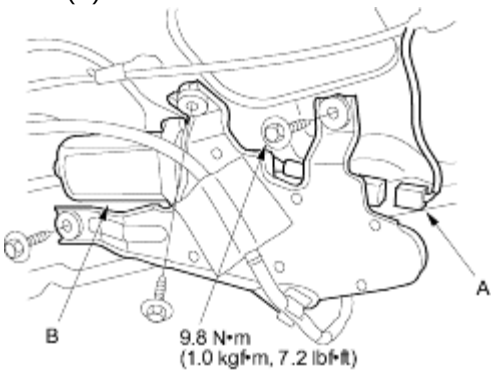
Wiper Motor Replacement (cont'd)

Rear Window Wiper Motor:

1. 1. Open the tailgate and remove the tailgate lower panel (see page 20-209).
   2. Remove the mounting nut (A), wiper arm (B) and special nut (C).



2. 3. Disconnect the 4P connector (A) from the wiper motor (B).



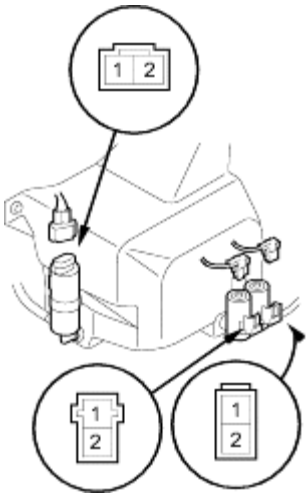
3. 4. Remove the three bolts and wiper motor.

Wiper/Washers

Washer Motor Test

1. 1. Remove the left inner fender (see page 20-121).
2. 2. Disconnect the 2P connector (A) from the washer motor (B).

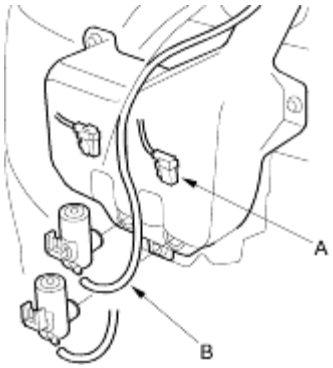
Headlight



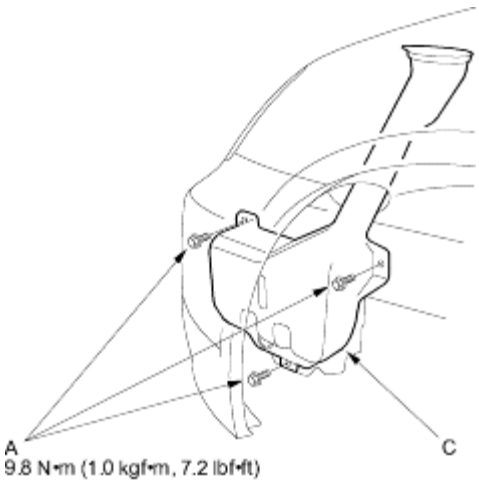
Windshield: Rear

3. 3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 2 terminal of the washer motor. The motor should run.
   - If the motor does not run or fails to run smoothly, replace it.
   - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged pump outlet in the motor.

1. 1. Remove the left inner fender (see page 20-121).
2. 2. Disconnect the 2P connector(s) (A) and washer tube (B).



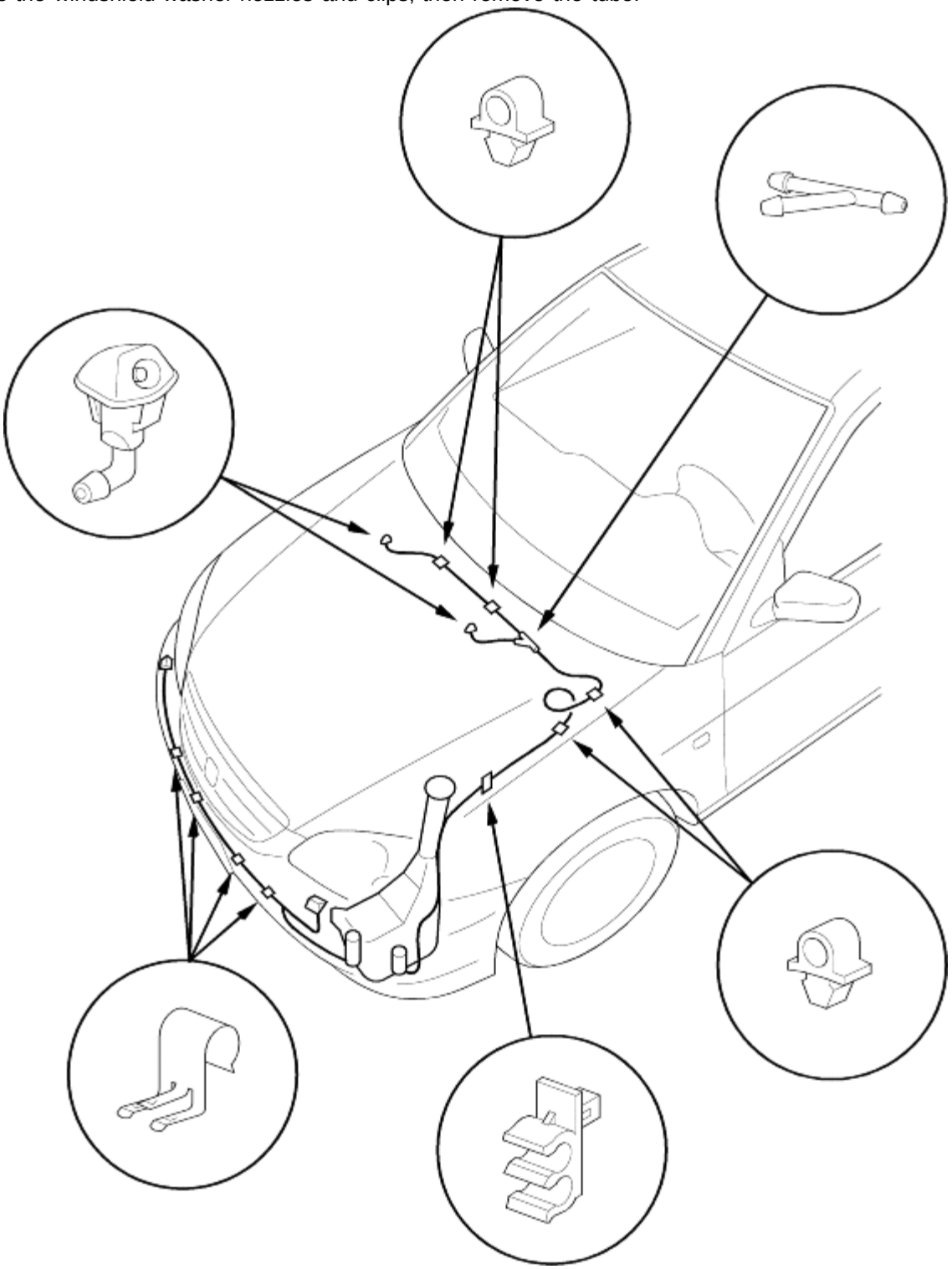
3. 3. Remove the three bolts and washer reservoir.



4. 4. Install the reservoir in the reverse order of removal. Check the washer motor operation.

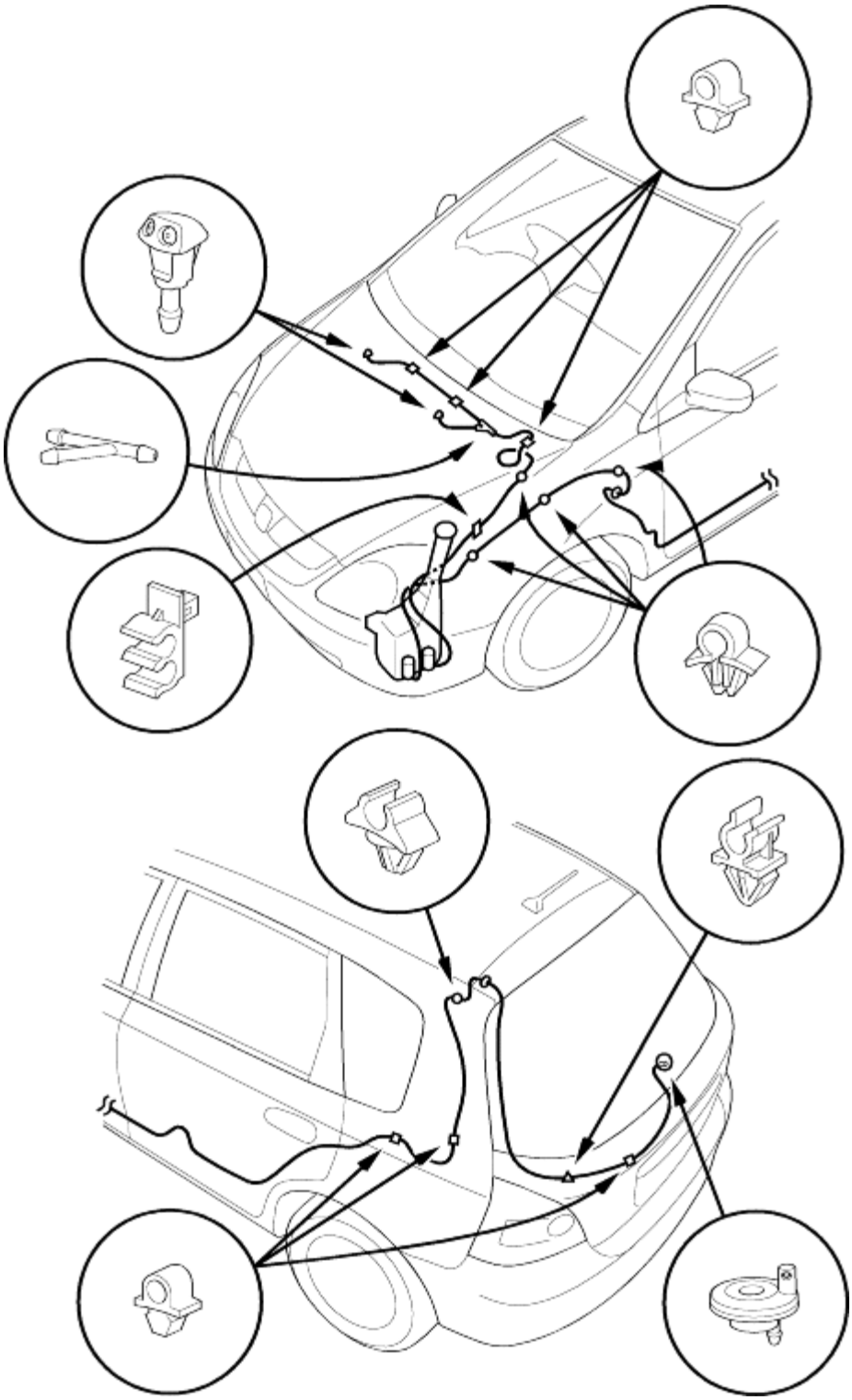
Wiper/Washers
Washer Tubes Replacement

1. 1. Remove the left inner fender (see page 20-114).
   2. Remove the windshield washer nozzles and clips, then remove the tube.



Wiper/Washers

Washer Tubes Replacement (cont'd)

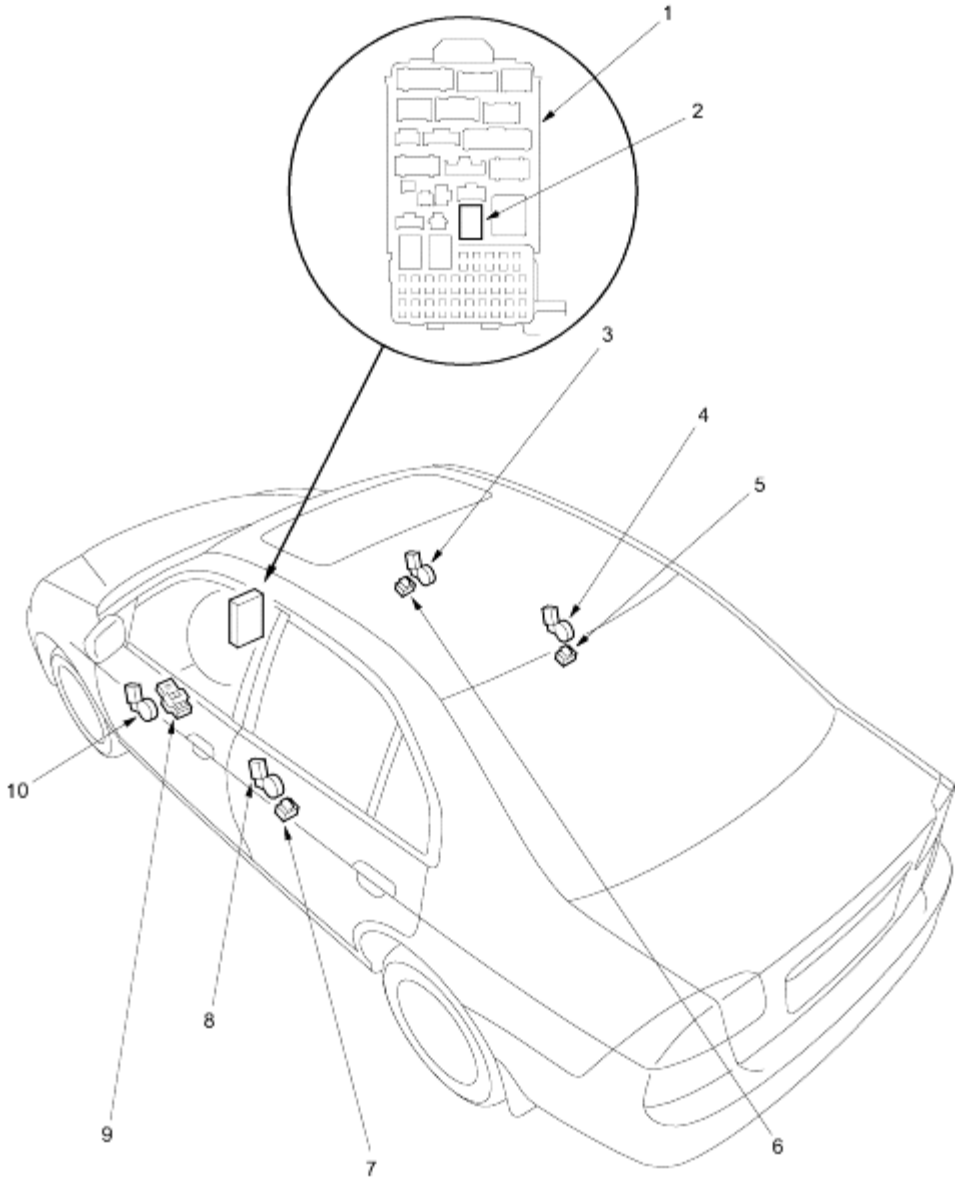


1. 3. Install in the reverse order of removal. Take care not to pinch the washer tube. Check the washer operation.

Power Windows

Component Location Index

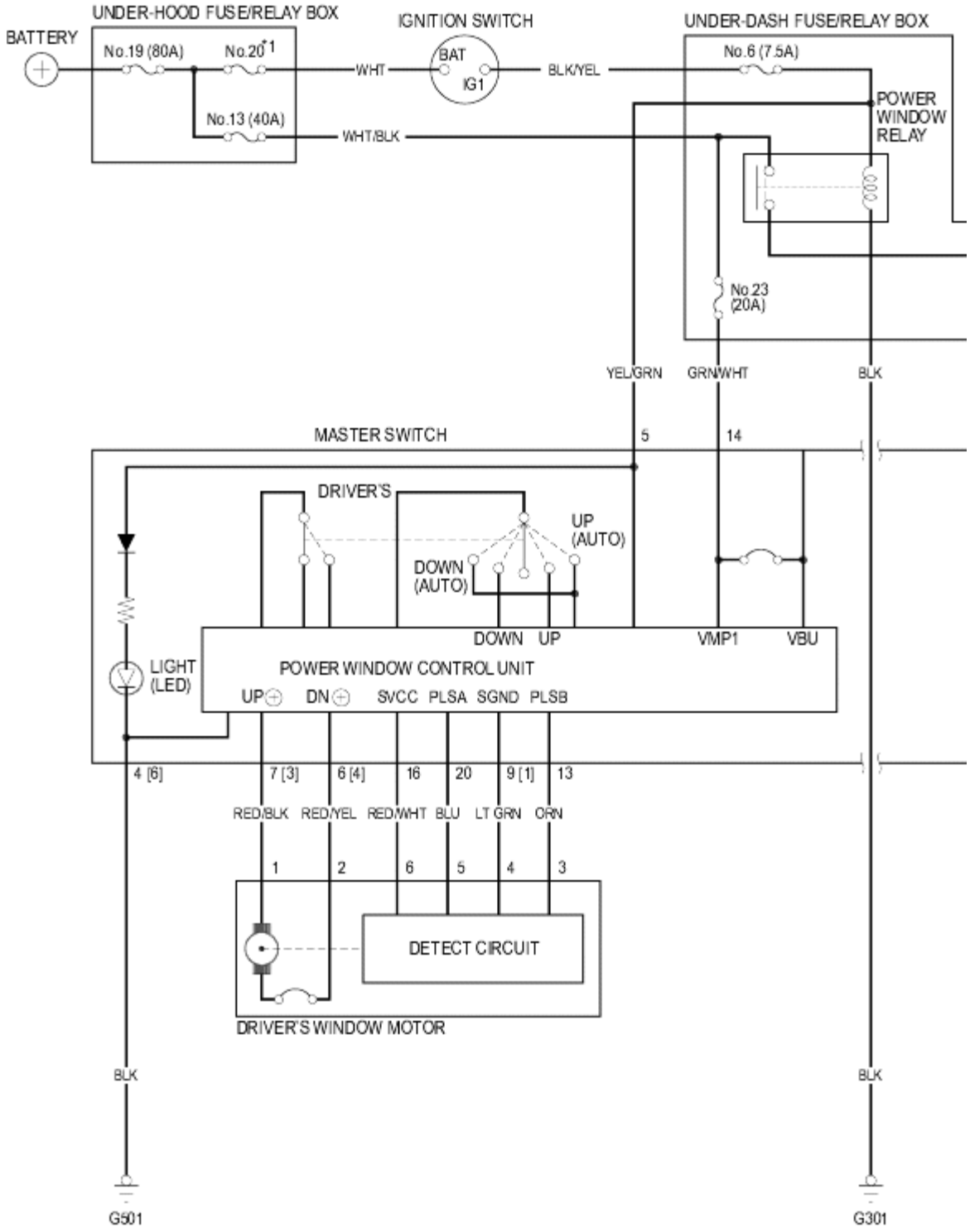
NOTE : LHD type is shown, RHD type is similar.



1. UNDER-DASH FUSE/RELAY BOX
2. POWER WINDOW RELAY
   Test, page 22-80
3. FRONT PASSENGER'S WINDOW MOTOR
   Test, page 22-198
4. RIGHT REAR WINDOW MOTOR
   Test, page 22-198
5. RIGHT REAR WINDOW SWITCH
   Test, page 22-195
   Replacement, page 22-201
6. FRONT PASSENGER'S WINDOW SWITCH
   Test, page 22-195
   Replacement, page 22-201
7. LEFT REAR WINDOW SWITCH
   Test, page 22-195
   Replacement, page 22-201
8. LEFT REAR WINDOW MOTOR
   Test, page 22-200
9. POWER WINDOW MASTER SWITCH
   Input Test, page 22-190
   Test, page 22-194
   Replacement, page 22-200
10. DRIVER'S WINDOW MOTOR
    Test, page 22-196

Power Windows

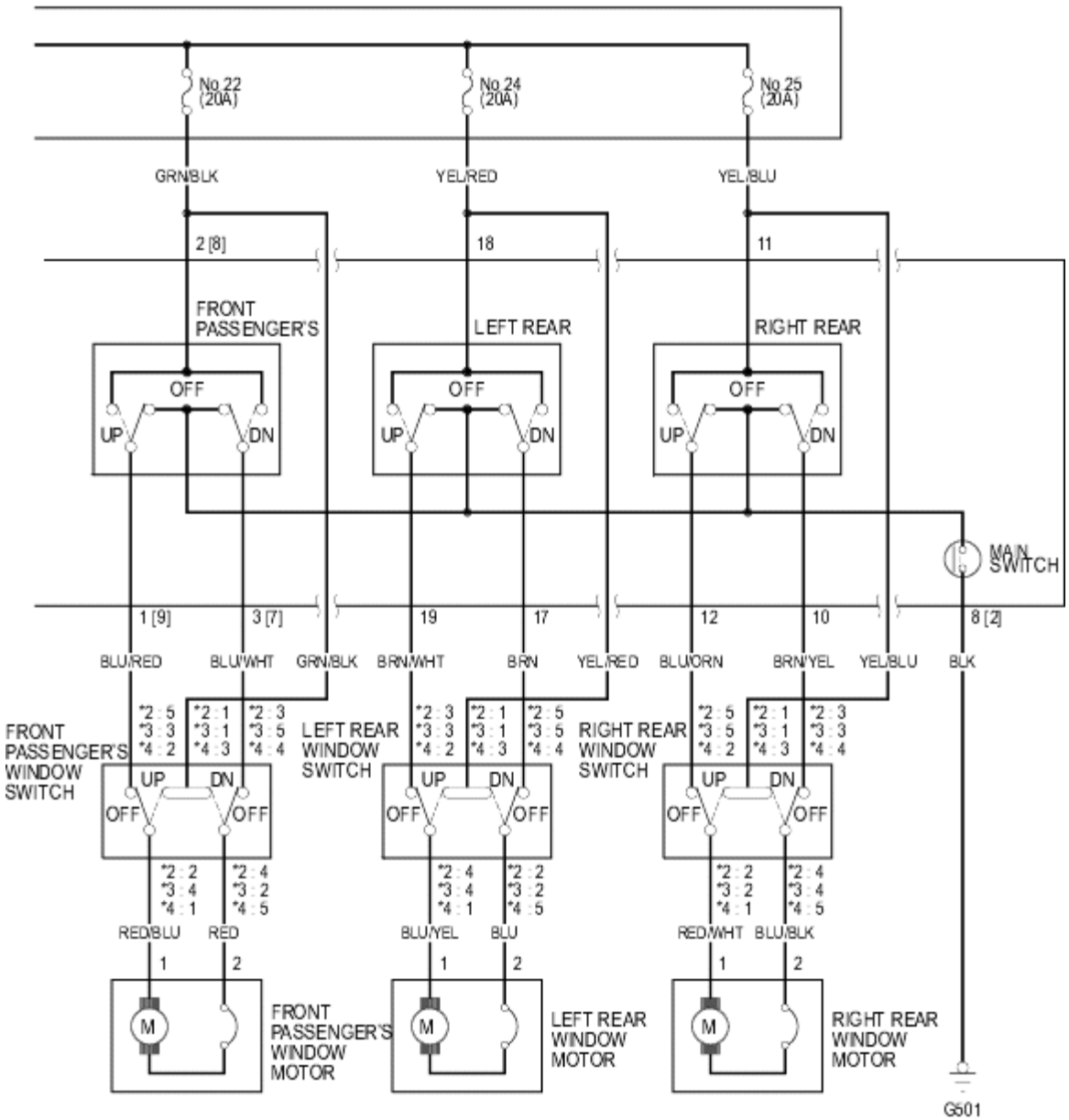
Circuit Diagram - With UP-AUTO Function



Power Windows

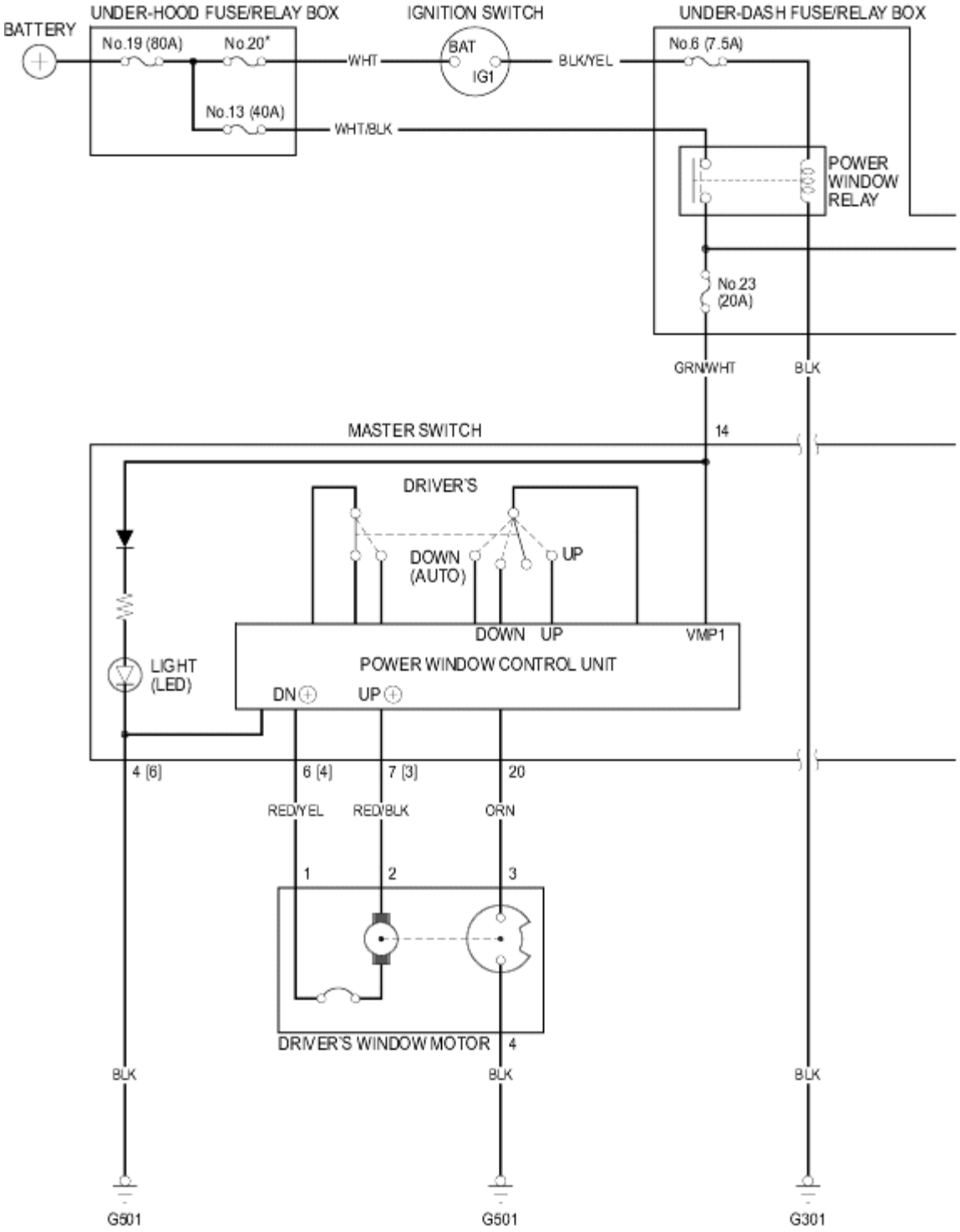
Circuit Diagram - With UP-AUTO Function (cont'd)

* No. 20 (40A) : Except KG, KE, KB, TR
No. 20 (50A) : KG, KE, KB, TR
*2 : 4-door LHD type
*3 : 4-door RHD type
*4 : 5-door
[ ] : RHD type
DN : DOWN



Power Windows

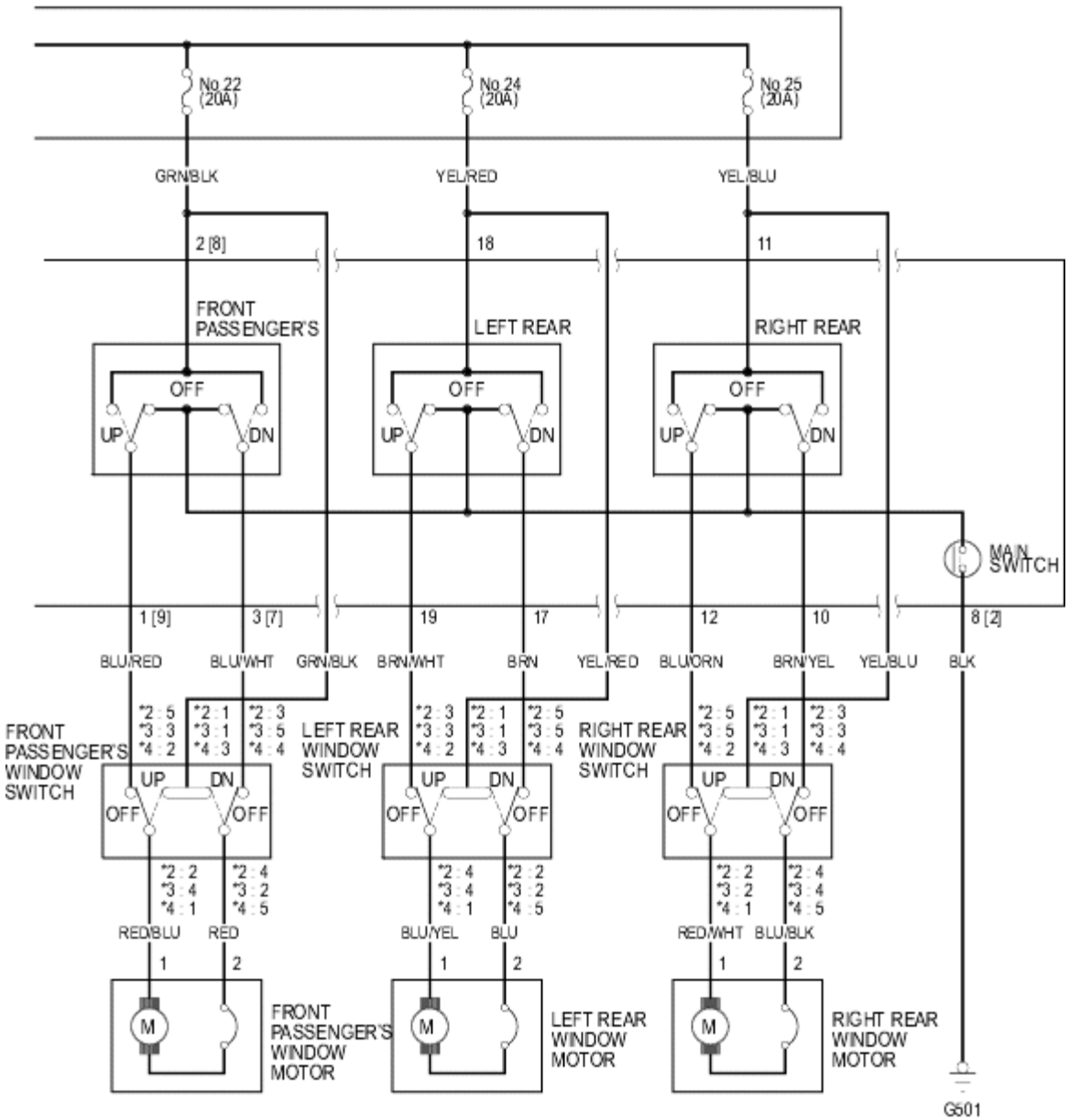
Circuit Diagram - With UP-AUTO Function (cont'd)



Power Windows

Circuit Diagram - With UP-AUTO Function (cont'd)

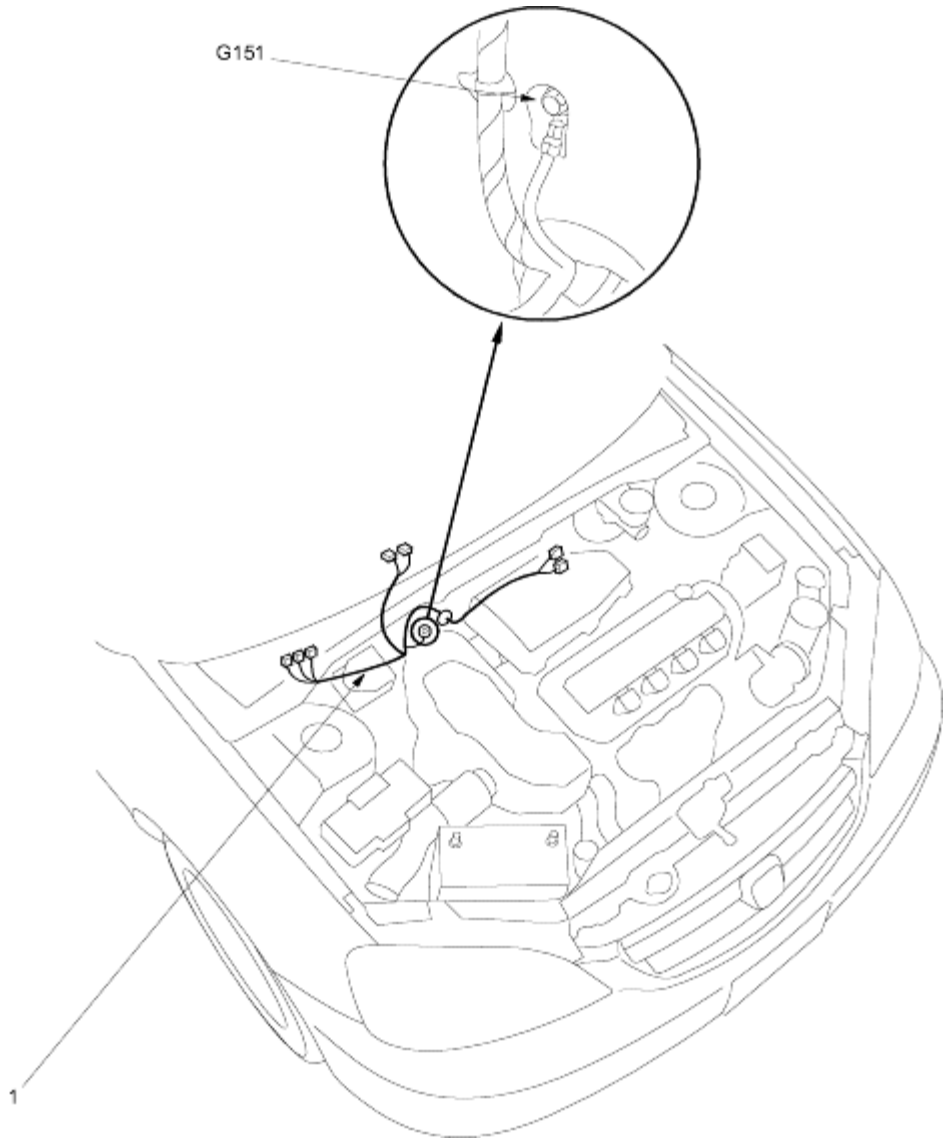
* No. 20 (40A) : Except KG, KE, KB, TR
No. 20 (50A) : KG, KE, KB, TR
*2 : 4-door LHD type
*3 : 4-door RHD type
*4 : 5-door
[ ] : RHD type
DN : DOWN



Wire Harness and Ground Locations

Engine Compartment (cont'd)

NOTE: LHD type is shown, RHD type is similar



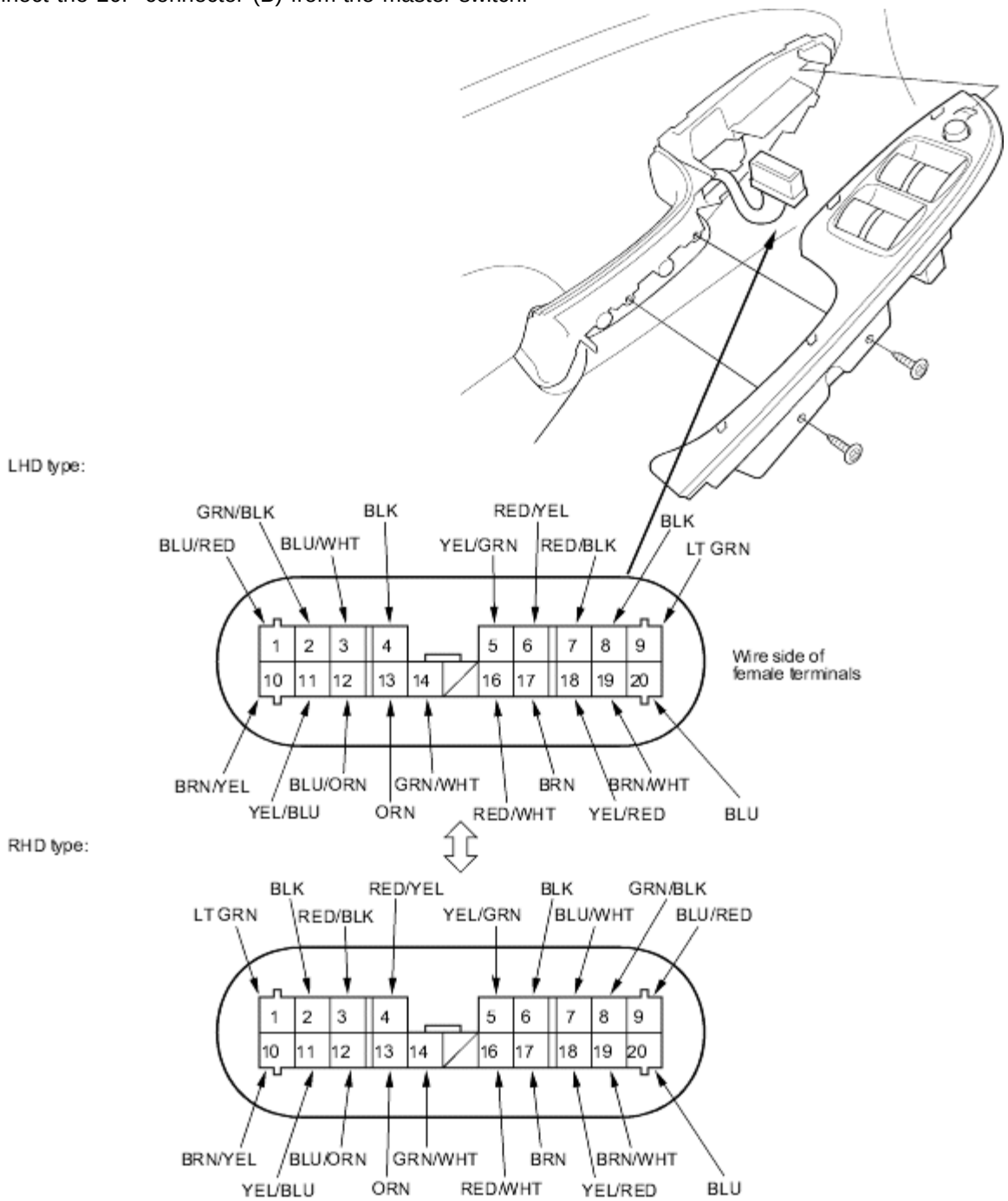
1. EPS WIRE HARNESS

Power Windows

Master Switch Input Test - With UP-AUTO Function

NOTE: The power window control unit is built into the power window master switch and it only controls the driver's window operations.

1. 1. Remove the power window master switch (A) (see page 22-200).
   2. Disconnect the 20P connector (B) from the master switch.



2. 3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, make the following input tests at the connector.

– – If a test indicates a problem, find and correct the cause, then recheck the system.
– If all the input tests prove OK, go to step 4.

Power Windows

Master Switch Input Test - With UP-AUTO Function (cont'd)

1. 4. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
4 [6] 8[2]	BLK	Under all condition	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
14	GRN/WHT	Under all conditions	Check for voltage to ground: there should be battery voltage	• Blown No. 23 (20A) fuse in the under-dash fuse/relay box • An open in the wire
5 2 [8] 18 11	YEL/GRN GRN/BLK YEL/RED YEL/BLU	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 22, 24 or 25 (20A) fuse in the under-dash fuse/relay box • Faulty power window relay • An open in the wire
6[4] 7 [3]	RED/YEL RED/BLK	Connect the No. 14 and No. 6 [No. 4] terminals, and the No. 7[No. 3]and No. 4[No. 6]terminals, and turn the ignition switch ON (II)	Check for driver's window motor operation: It should run (the driver's window moves down)	• Faulty driver's window motor • An open in the wire
1 [9] 3 [7]	BLU/RED BLU/WHT	Connect the No. 2 and No. 3 [No. 7] terminals, and the No. 1 [No. 9] and No. 8 [No. 2] terminals, and turn the ignition switch ON (II)	Check for front passenger's window motor operation: It should run (the front passenger's window moves down)	• Faulty front passenger's window motor • Faulty front passenger's window switch • An open in the wire
19 17	BRN/WHT BRN	Connect the No. 18 and No. 17 terminals, and the No. 19 and No. 8 [No. 2] terminals, and turn the ignition switch ON (II)	Check for left rear window motor operation: It should run (the left rear window moves down)	• Faulty left rear window motor • Faulty left rear window switch • An open in the wire
12 10	BLU/ORN BRN/YEL	Connect the No. 11 and No. 10 terminals, and the No. 12 and No. 8 [No. 2] terminals, and turn the ignition switch ON (II)	Check for right rear window motor operation: It should run (the right rear window moves down).	• Faulty right rear window motor • Faulty right rear window switch • An open in the wire

2. 5. Reconnect the 20P connector to the switch and perform the following input tests.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
16	RED/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Faulty power window master switch • An open in the wire
9 [1]	LT GRN	Under all conditions	Check for voltage to ground: There should be battery voltage	• An open in the wire
20	BLU	Ignition switch ON (II),	Check for voltage between the No.	• Blown No. 23 (20A) fuse in the

		and the driver's window switch AUTO DOWN	20 and No. 9 [No. 1] terminals: There should be 0 V – about 5 V – 0 V – about 5 V repeatedly	under - dash fuse/relay box • Faulty power window relay • Faulty power window master switch • An open in the wire
13	ORN	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 13 and No. 9[No. 1]terminals: There should be 0 V – about 5 V - 0 V - about 5 V repeatedly	

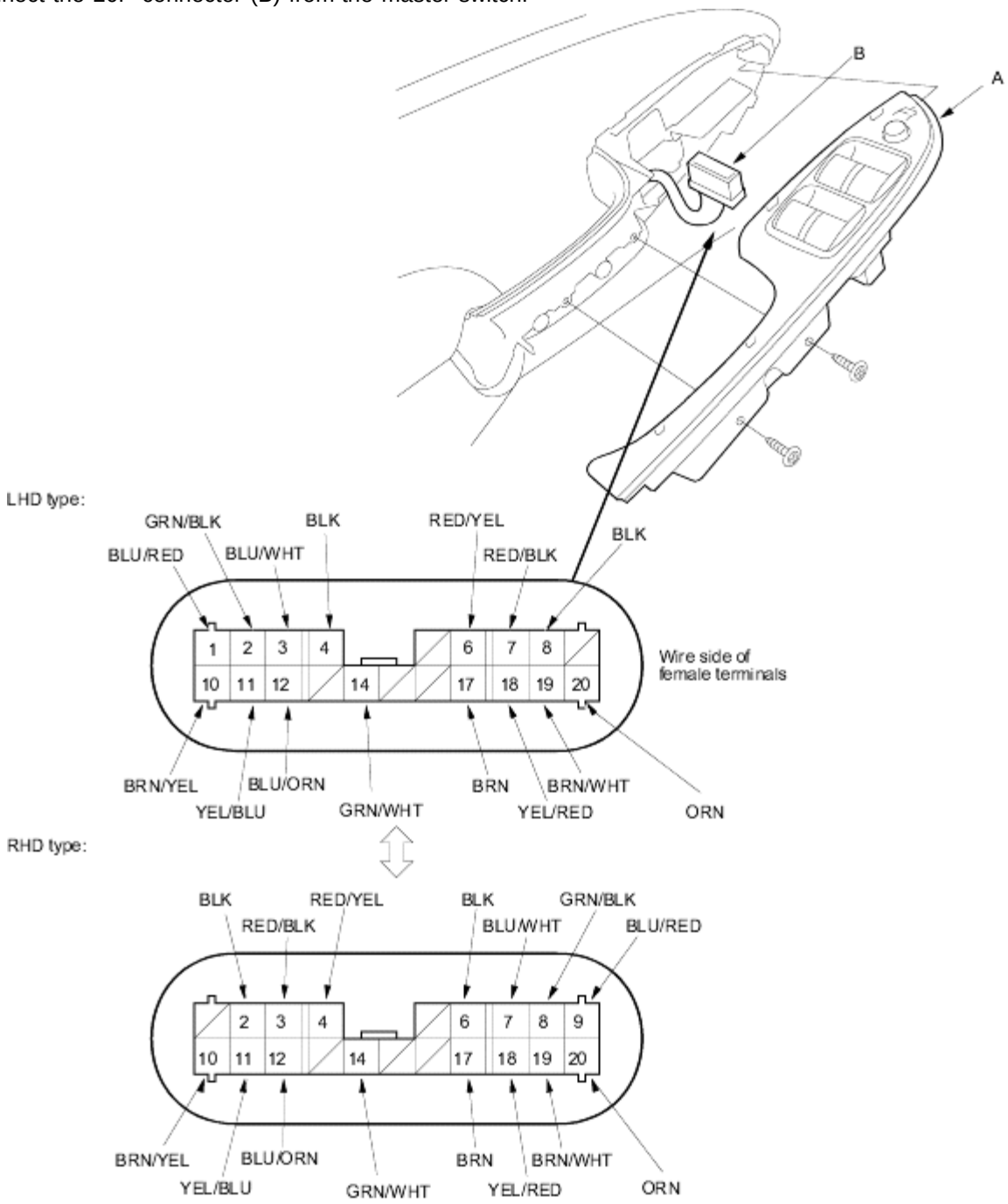
[ ]:RHD type

Power Windows

Master Switch Input Test - Without UP-AUTO Function

NOTE: The power window control unit is built into the power window master switch and it only controls the driver's window operations.

1. 1. Remove the power window master switch (A) (see page 22-200).
   2. Disconnect the 20P connector (B) from the master switch.



2. 3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, make the following input tests at the connector.

– – If a test indicates a problem, find and correct the cause, then recheck the system.
– If all the input tests prove OK, go to step 4.

Power Windows

Master Switch Input Test - Without UP-AUTO Function (cont'd)

1. 4. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
4 [6]	BLK	Under all condition	Check for continuity to ground: There should be continuity	• Poor ground (G501) • An open in the wire
8[2]				
14	GRN/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 6 (7.5A) fuse in the under - dash fuse/relay box • Blown No. 22, 24 or 25 (20A) fuse in the under - dash fuse/relay box • Faulty power window relay • An open in the wire
2 [8]	GRN/BLK			
18	YEL/RED			
11	YEL/BLU			
6 [4]	RED/YEL	Connect the No. 14 and No. 6 [No. 4] terminals, and the No. 7[No. 3]and No. 4[No. 6]terminals, and turn the ignition switch ON (II)	Check for driver's window motor operation: It should run (the driver's window moves down)	• Faulty driver's window motor • An open in the wire
7 [3]	RED/BLK			
1 [9]	BLU/RED	Connect the No. 2 and No. 3 [No. 7] terminals, and the No. 1 [No. 9] and No. 8 [No. 2] terminals, and turn the ignition switch ON (II)	Check for front passenger's window motor operation: It should run (the front passenger's window moves down)	• Faulty front passenger's window motor • Faulty front passenger's window switch • An open in the wire
3 [7]	BLU/WHT			
19	BRN/WHT	Connect the No. 18 and No. 17 terminals, and the No. 19 and No. 8[No. 2]terminals, and turn the ignition switch ON (II)	Check for left rear window motor operation: It should run (the left rear window moves down)	• Faulty left rear window motor • Faulty left rear window switch • An open in the wire
17	BRN			
12	BLU/ORN	Connect the No. 11 and No. 10 terminals, and the No. 12 and No. 8 [No. 2] terminals, and turn the ignition switch ON (II)	Check for right rear window motor operation: It should run (the right rear window moves down)	• Faulty right rear window motor • Faulty right rear window switch • An open in the wire
10	BRN/YEL			

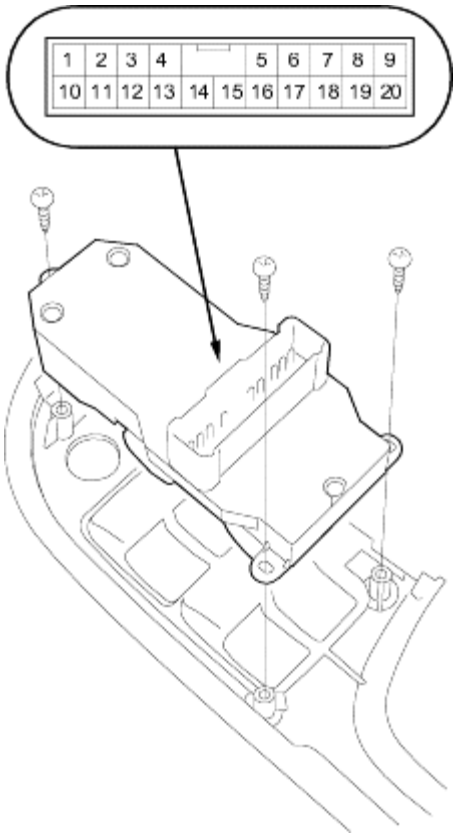
2. 5. Reconnect the 20P connector to the switch and perform the following input tests.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
20	RED/WHT	Connect the No. 14 and No. 6[No. 4]terminals, and the No. 7 [No. 3] and No. 4[No. 6]terminals, and turn the ignition switch ON (II)	Check for voltage between the No. 20 and No. 4[No. 6]terminals: About 6 V should be indicated while the driver's window motor running	• Faulty driver's window motor • An open in the wire

[ ]:RHD type

Power Windows
Master Switch Test

1. 1. Remove the power window master switch (see page 22-200).
2. 2. Disconnect the 20P connector from the switch.



3. 3. Disconnect the 20P connector (B) from the master switch.

Driver's Switch:

The driver's switch is combined with the control unit so you cannot isolate the switch to test it.

Instead, run the master switch input test procedures on page 22-190. If the tests are normal, the driver's switch must be faulty.

Front Passenger's Switch:

Position	Main Switch \ Terminal	1 [9]	2 [8]	3 [7]	8 [2]
OFF	ON	○		○	○
	OFF	○		○	
UP	ON	○	○		○
	OFF	○	○		
DOWN	ON		○	○	○
	OFF		○	○	

Left Rear Switch:

Position	Main Switch \ Terminal	19	18	17	8 [2]
OFF	ON	○		○	○
	OFF	○		○	
UP	ON	○	○		○
	OFF	○	○		
DOWN	ON		○	○	○
	OFF		○	○	

Right Rear Switch:

Position	Main Switch \ Terminal	11	12	10	8 [2]
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○	○		○
	OFF	○	○		
DOWN	ON	○		○	○
	OFF	○		○	

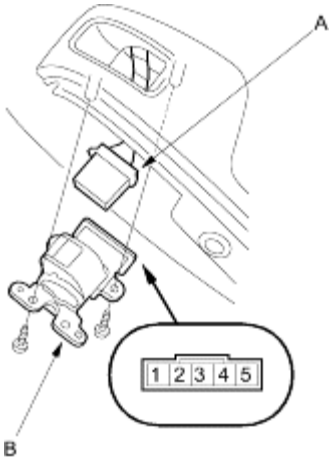
[ ] : RHD type

1. 4. If the switch is faulty, replace the switch.

Power Windows

Passenger's Window Switch Test

1. 1. Remove the passenger's power window switch (A) (see page 22-201).
2. 2. Disconnect the 20P connector from the switch.



1. 3. Check for continuity between the terminals in each switch position according to the table.

Front Passenger's (LHD type):

Terminal / Position	1	2	3	4	5
UP	○	○		○	
OFF		○		○	○
DOWN	○	○		○	○

Front Passenger's (RHD type):

Terminal / Position	1 [3]	2 [5]	3 [2]	4 [1]	5 [4]
UP	○	○		○	○
OFF		○	○	○	○
DOWN	○	○	○	○	

Left Rear Window:

Terminal / Position	1 [3]	2 [5]	3 [2]	4 [1]	5 [4]
UP	○	○		○	○
OFF		○	○	○	○
DOWN	○	○	○	○	

Right Rear Window:

Terminal / Position	1 [3]	2 [1]	3 [4]	4 [5]	5 [2]
UP	○	○		○	
OFF		○		○	○
DOWN	○	○		○	○

[ ] : 5 door

2. 4. If the switch is faulty, replace the switch.

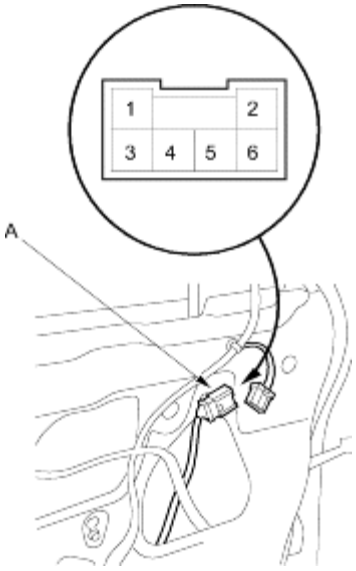
Power Windows

Driver's Window Motor Test - With UP-AUTO Function

Motor Test:

1. 1. Remove the door panel (see page 20-7).
   2. Disconnect the 6P connector (A) from the driver's window motor (B).

      Terminal side of male terminals



2. 3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	2
UP	⊕	⊖
DOWN	⊖	⊕

3. 4. If the motor does not run or fails to run smoothly, replace it.

Detection Circuit Test:

1. 1. Turn the ignition switch ON (II).
   2. Move the driver's window up with the driver's switch Manual UP.
   3. Hold the top of window glass with hands while the window moving up.
   4. Move the driver's window up with the driver's switch Manual UP.

   Does the window move down immediately?

   YES – The driver's window motor is OK. ■

   NO – Go to step 5.

2. 5. Check for continuity between the driver's window motor No. 3 terminal and the master switch No. 13 terminal and the driver's window motor No. 4 terminal and the master switch No. 9 (RHD type: No. 1) terminal.

   Is there continuity?

   YES – Go to step 6.

   NO – An open in the wire. ■

3. 6. Check for continuity between the driver's window motor No. 5 terminal and power window master switch No. 20 terminal and the driver's window motor No. 6 terminal and the master switch No. 16 terminal.

   Is there continuity?

   YES – Go to step 7.

   NO – An open in the wire. ■

4. 7. Substitute a known-good power window master switch and recheck from step 3.

   Does the window move down immediately?

   YES – Replace the power window master switch. ■

   NO – Replace the driver's window motor. ■

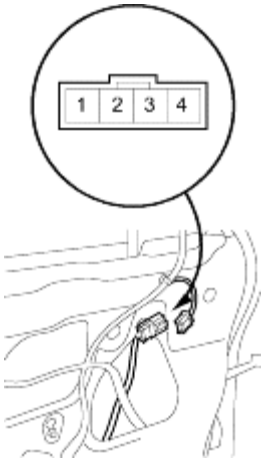
Power Windows

Driver's Window Motor Test - Without UP-AUTO Function

Motor Test:

1. 1. Remove the door panel (see page 20-7).
   2. Disconnect the 4P connector (A) from the driver's window motor.

      Terminal side of male terminals



2. 3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	2
UP	⊖	⊕
DOWN	⊕	⊖

3. 4. If the motor does not run or fails to run smoothly, replace it.

Pulsar Test:

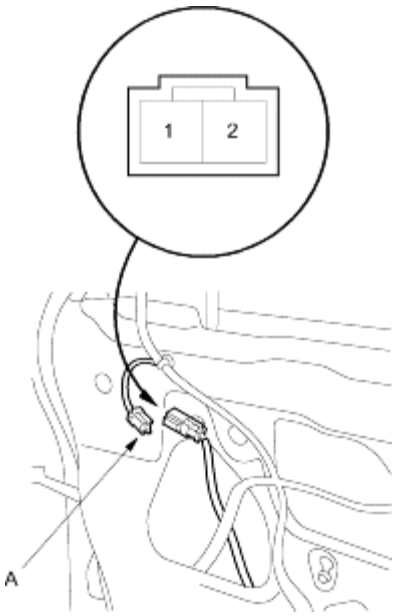
1. 1. Remove the 4P connector to the driver's window motor and reconnect the 20P connector to the power window master switch.
   2. Connect the test leads of a voltmeter to the No. 3 and No. 4 terminals of the driver's window motor 4P connector.
   3. Run the motor by connecting power and ground to the No. 1 and No. 2 terminals. The voltmeter should read about 6 V.
   4. If the voltage is not as specified, check for an open in the wires. If the wires are OK, replace the driver's window motor.

Power Windows

Passenger's Window Motor Test

1. 1. Remove the passenger's door panel (see page 20-7).
2. 2. Disconnect the 2P connector (A) from the passenger's power window motor.

Terminal side of male terminals



1. 3. Test the motor in each direction by connecting battery power and ground according to the table.When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	2
UP	⊕	⊖
DOWN	⊖	⊕

2. 4. If the motor does not run or fails to run smoothly, replace it.

Power Windows

Resetting the Power Window Control Unit - With Up-AUTO Function

Resetting the power window control unit is required after performing the following procedures:

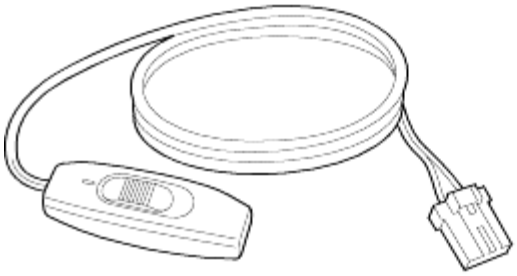
- Shutdown of the battery power
- Shutdown of the electric power caused by both No. 6 (7.5A) and No. 23 (20A) fuses in the under-dash fuse/relay box.
- Open circuit caused by disconnected 20P connector from the power window master switch
- Removal of the regulator, glass or glass run channel

1. 1. Make sure the glass is installed properly.
   2. Close the driver's door.
   3. Turn the ignition switch OFF.
   4. Remove the No. 23 (20A) fuse in the under-dash fuse/relay box
   5. Turn the ignition switch ON (II).
   6. After 1 second, turn the ignition switch OFF.
   7. After 5 seconds, install the No. 23 (20A) fuse to the under-dash fuse/relay box.
   8. Make sure the driver's window does not work in AUTO with the ignition switch ON (II).
   9. Turn the ignition switch START (III) and start the engine.
   10. Move the driver's window all the way down by manual DOWN of the driver's power window switch.
   11. Open the driver's door.
   12. Move the driver's window all the way up by manual UP of the driver's power window switch and hold on for 1 second.
   13. If the window does not work in AUTO, reset the power window master switch according to the above procedures again.

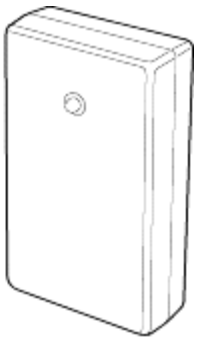
Body Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
1	07WAZ-0010100	MPCS Short Connector	1
2	07MAJ-SP00300	Keyless Entry Checker	1



1



2

Standards and Service Limits

Honda Multi Matic Transmission and HMM Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Drive pulley shaft	Diameter of needle bearing contact area	Flywheel side	24.007-24.020 mm (0.945-0.946 in.)	When worn or damaged
		Forward clutch side	24.007-24.020 mm (0.945-0.946 in.)	When worn or damaged
	I.D.	at sealing ring	24.007-24.020 mm (0.945-0.946 in.)	When worn or damaged
Driven pulley shaft	Diameter of needle bearing contact area	Start clutch side	43.981-43.991 mm (1.7315-1.7319 in.)	When worn or damaged
	Thrust clearance	Start clutch side	0-0.13 mm (0-0.005 in.)	-
	Cotter, 25.5 mm thickness (Start clutch hub)	A	2.90 mm (0.114 in.)	When worn or damaged
		B	3.00 mm (0.118 in.)	When worn or damaged
		C	3.10 mm (0.122 in.)	When worn or damaged
		D	3.20 mm (0.126 in.)	When worn or damaged
	Starter clutch feed pipe O.D.	End cover side	6.97-6.98 mm (0.274-0.275 in.)	6.95 mm (0.274 in.)
		Flywheel housing side	8.97-8.98 mm (0.353-0.354 in.)	8.95 mm (0.352 in.)
	Driven pulley shaft feed pipe O.D.		11.47-11.48 mm (0.4516-0.4520 in.)	11.45 mm (0.451 in.)
	Start clutch feed pipe bushing I.D.	End cover side	7.00-7.015 mm (0.2756-0.2762 in.)	7.030 mm (0.277 in.)
		Flywheel housing side	9.0-9.015 mm (0.354-0.355 in.)	9.03 mm (0.356 in.)
	Driven pulley shaft feed pipe bushing I.D.		11.50-11.518 mm (0.4528-0.4535 in.)	11.533 mm (0.454 in.)
	Start clutch end plate I.D.		88.90-88.935 mm (3.500-3.501 in.)	When worn or damaged
Secondary gear shaft	Thrust clearance		0-0.15 mm (0-0.006 in.)	-
	Thrust shim, 25 x 35 mm thickness	A	2.80 mm (0.110 in.)	When worn or damaged
		B	2.90 mm (0.114 in.)	When worn or damaged
		C	3.00 mm (0.118 in.)	When worn or damaged
		D	3.10 mm (0.122 in.)	When worn or damaged
		E	3.20 mm (0.126 in.)	When worn or damaged
		F	3.30 mm (0.130 in.)	When worn or damaged
		G	3.40 mm (0.134 in.)	When worn or damaged
		H	3.50 mm (0.138 in.)	When worn or damaged
		I	3.60 mm (0.142 in.)	When worn or damaged

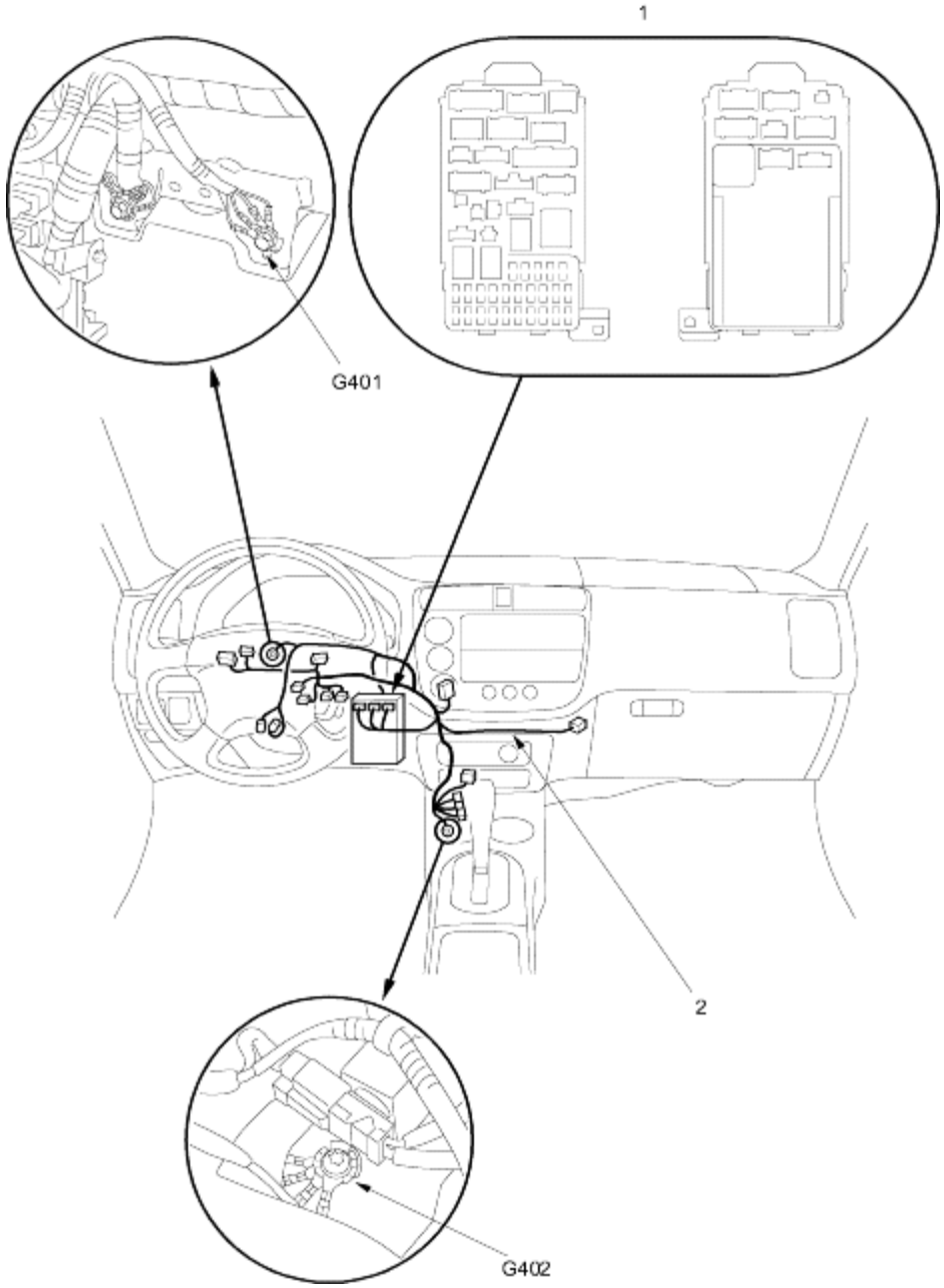
		J	3.70 mm (0.146 in.)	When worn or damaged
		K	3.80 mm (0.150 in.)	When worn or damaged
	Sealing ring groove width		2.50-2.65 mm (0.098-0.104 in.)	2.655 mm (0.105 in.)
Park gear and pawl				When worn or damaged

Wire Harness and Ground Locations

Dashboard

4 - door:

NOTE: LHD type is shown, RHD type is similar.



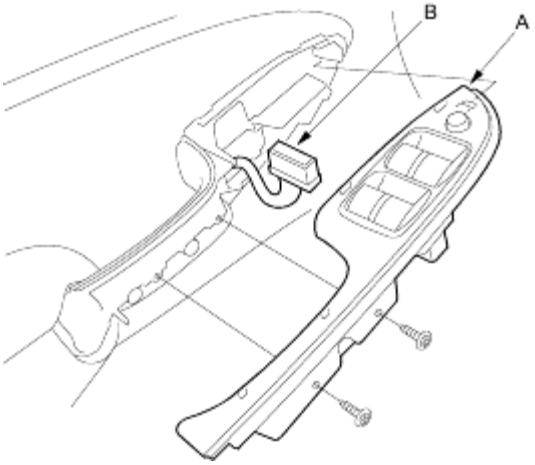
1. UNDER - DASH FUSE/RELAY BOX
2. DASHBOARD WIRE HARNESS B

Power Windows

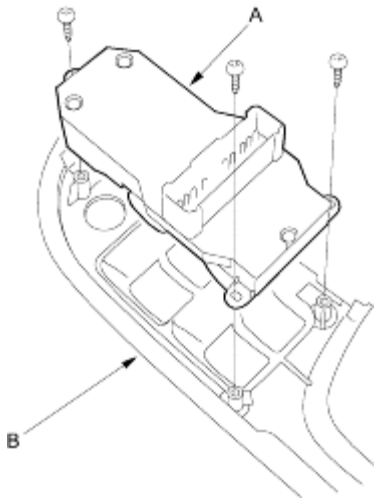
Master Switch Replacement

4-door:

1. 1. Remove the door grip cover (see page 20-7).
   2. Remove the screws and power window master switch (A) from the door panel.

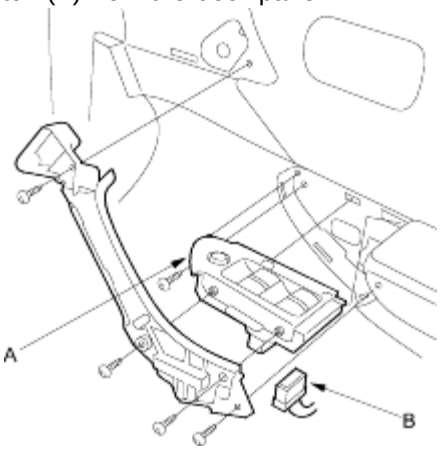


2. 3. Disconnect the 20P connector (B) from the switch.
   4. Remove the screws and switch (A) from the switch panel (B).

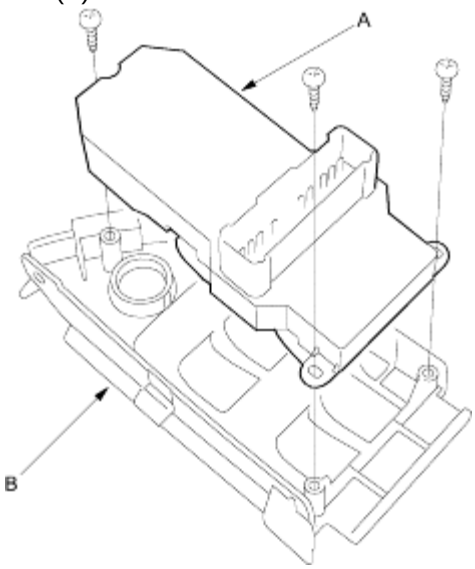


5-door:

1. 1. Remove the door grip cover (see page 20-144).
   2. Remove the screws and power window master switch (A) from the door panel.



2. 3. Disconnect the 20P connector (B) from the switch.
   4. Remove the screws and switch (A) from the switch panel (B).

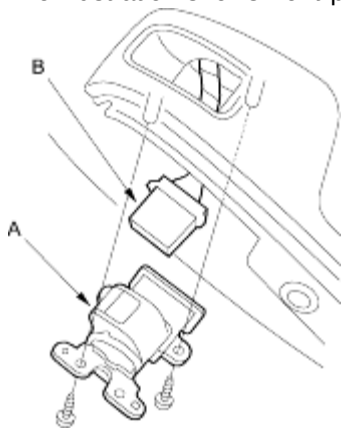


Power Windows

Passenger's Switch Replacement

4-door:

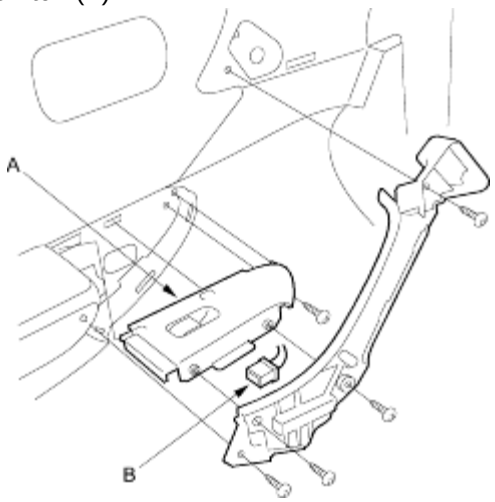
1. 1. Remove the door grip cover (see page 20-7).
   2. Remove the screws and passenger's power window switch (A).
      NOTE: The illustration shows front passenger's door.



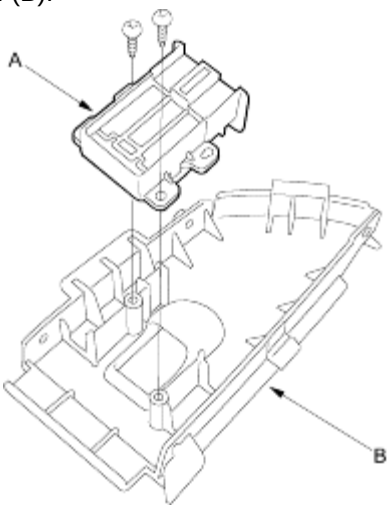
2. 3. Disconnect the 5P connector (B) from the switch.

5-door (Front Passenger's):

1. 1. Remove the door grip cover (see page 20-144).
   2. Remove the screws and passenger's power window switch (A).



2. 3. Disconnect the 5P connector (B) from the switch.
   4. Remove the screws and switch (A) from the switch panel (B).

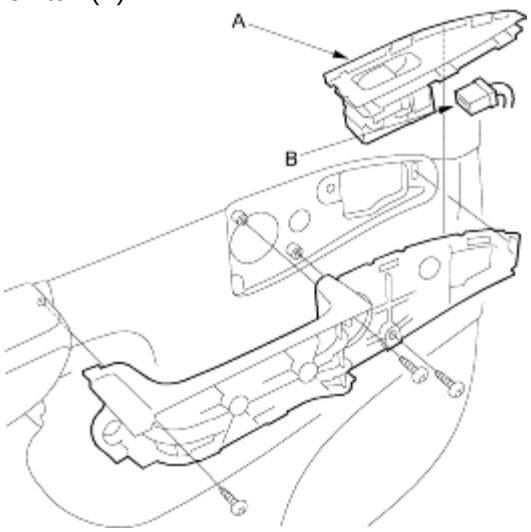


Power Windows

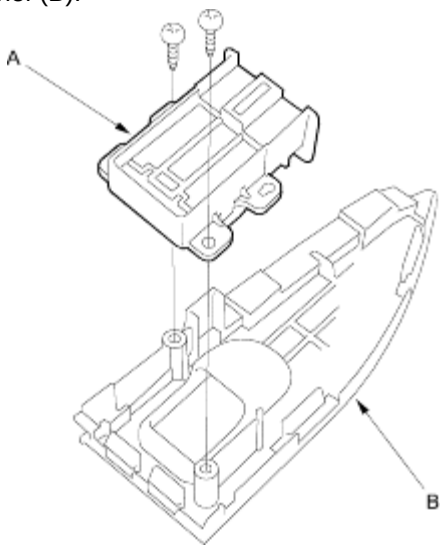
Passenger's Switch Replacement (cont'd)

5-door (Rear Door):

1. 1. Remove the door grip cover (see page 20-144).
   2. Remove the screws and passenger's power window switch (A).



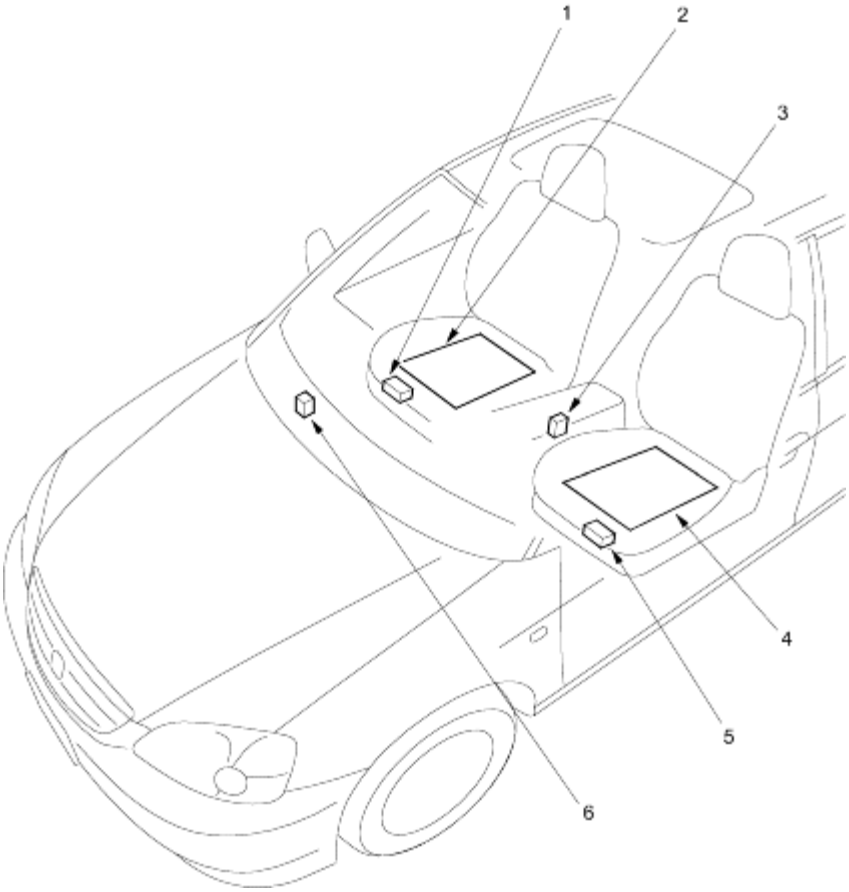
2. 3. Disconnect the 5P connector (B) from the switch.
   4. Remove the screws and switch (A) from the switch panel (B).



Seat Heaters

Component Location Index

4-door:

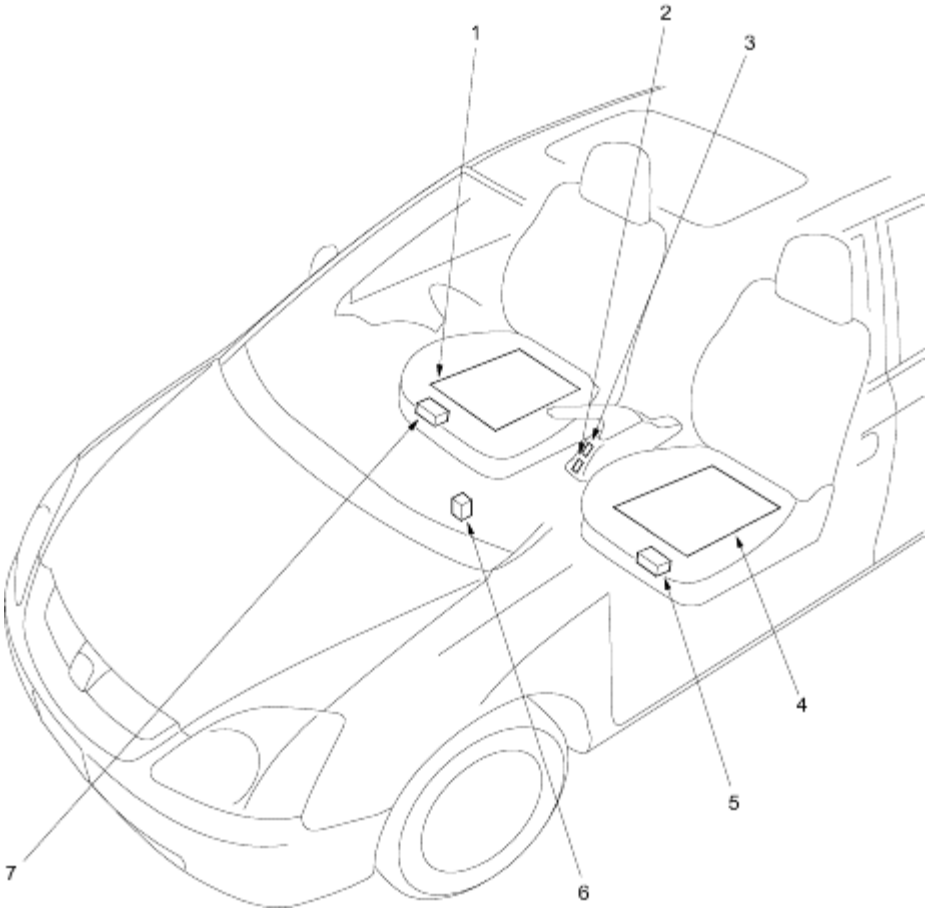


1. FRONT PASSENGER'S SEAT HEATER RELAY
   Test, page 22-208
2. FRONT PASSENGER'S SEAT CUSHION HEATER
   Test, page 22-208
3. DRIVER'S/FRONT PASSENGER'S SEAT HEATER SWITCH
   Test Replacement, page 22-207
4. DRIVER'S SEAT CUSHION HEATER
   Test, page 22-208
5. DRIVER'S SEAT HEATER RELAY
   Test, page 22-208
6. SEAT HEATER MAIN RELAY
   Test, page 22-80

Seat Heaters

Component Location Index (cont'd)

5-door:

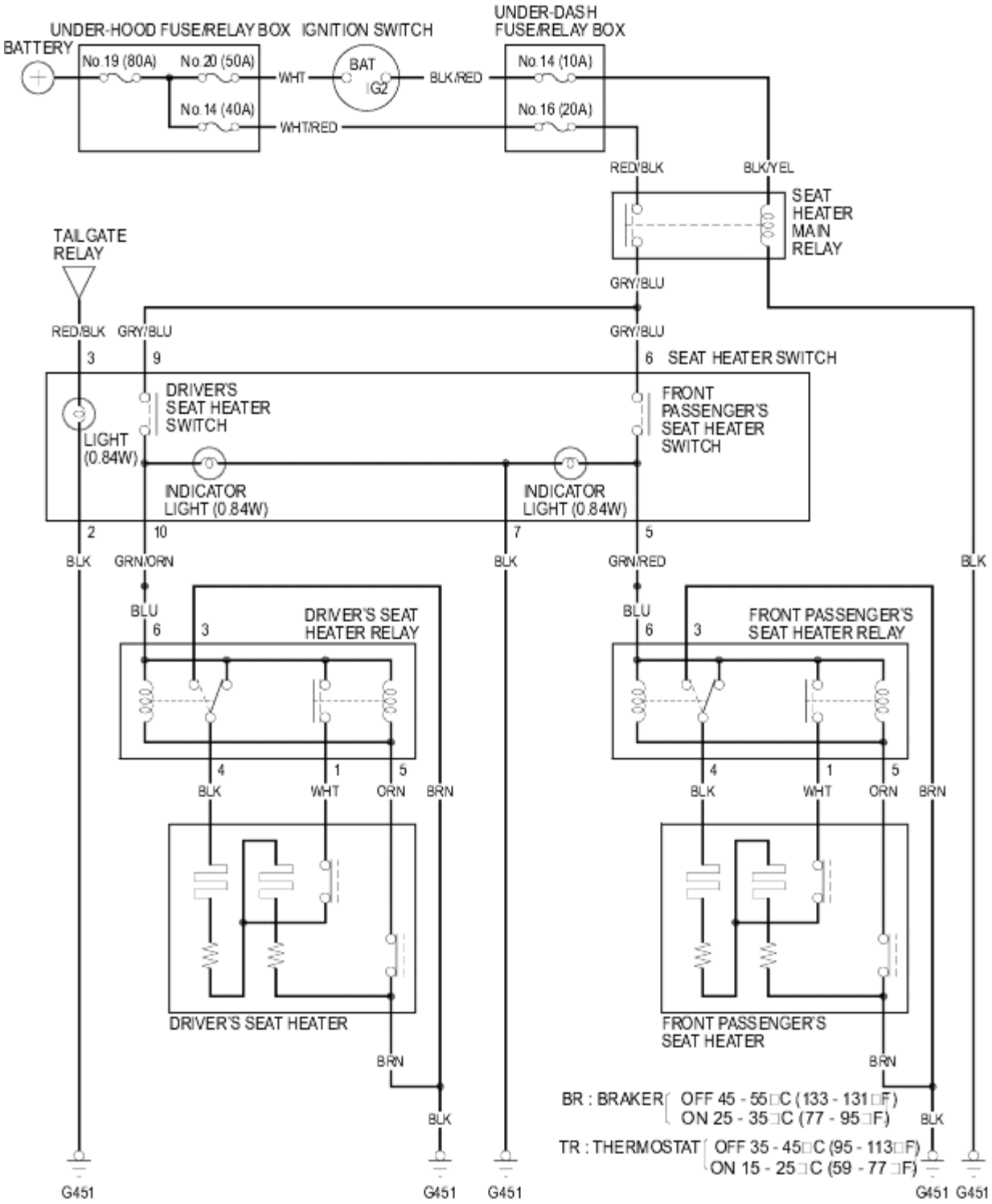


1. DRIVER'S SEAT CUSHION HEATER
   Test, page 22-208
2. DRIVER'S SEAT HEATER SWITCH
   Test/Replacement, page 22-207
3. FRONT PASSENGER'S SEAT HEATER SWITCH
   Test/Replacement, page 22-207
4. FRONT PASSENGER'S SEAT CUSHION HEATER
   Test, page 22-208
5. FRONT PASSENGER'S SEAT HEATER RELAY
   Test, page 22-208
6. SEAT HEATER MAIN RELAY
   Test, page 22-80
7. DRIVER'S SEAT HEATER RELAY
   Test, page 22-208

Seat Heaters

Circuit Diagram

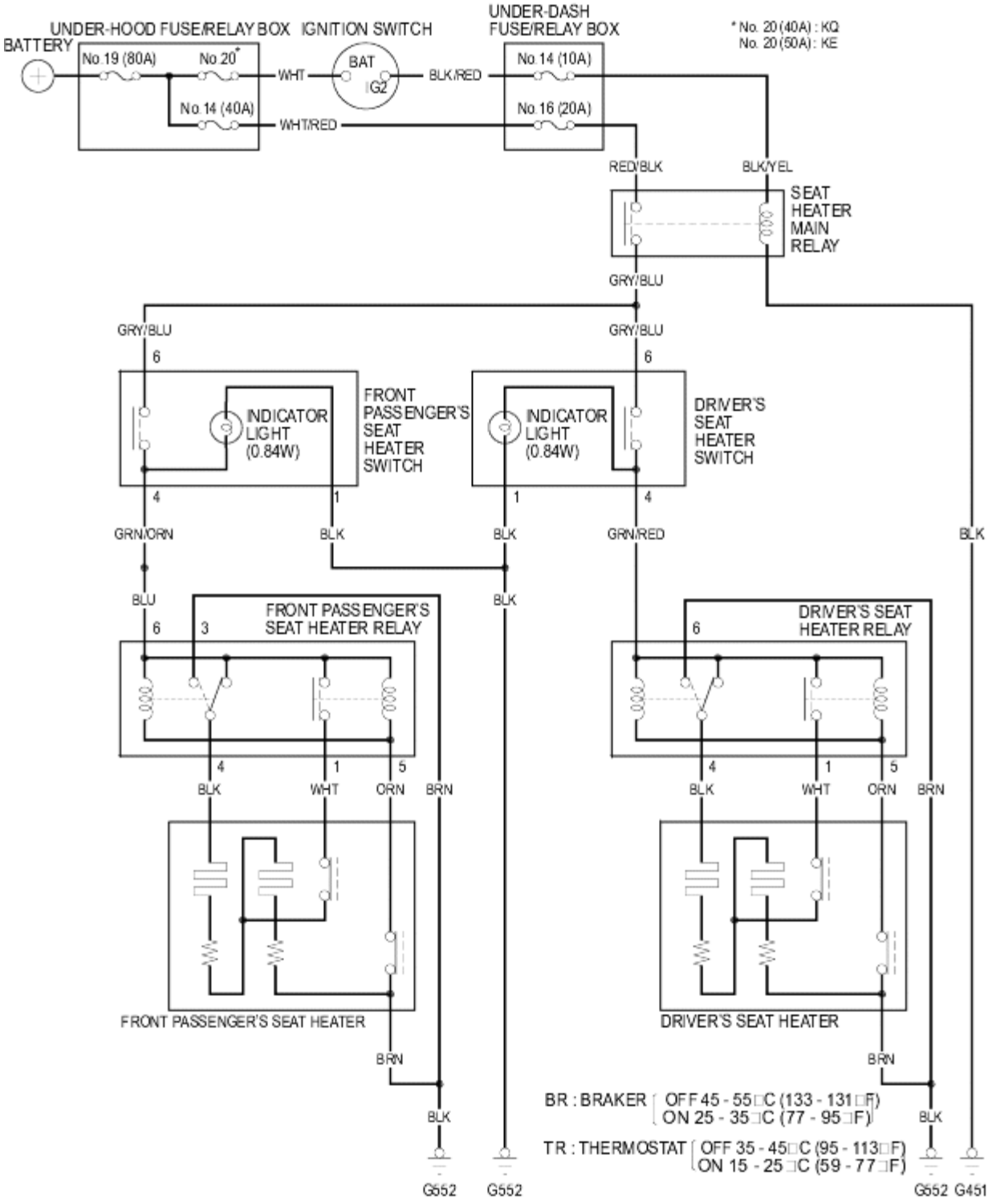
4-door KG model:



Seat Heaters

Circuit Diagram (cont'd)

5-door:

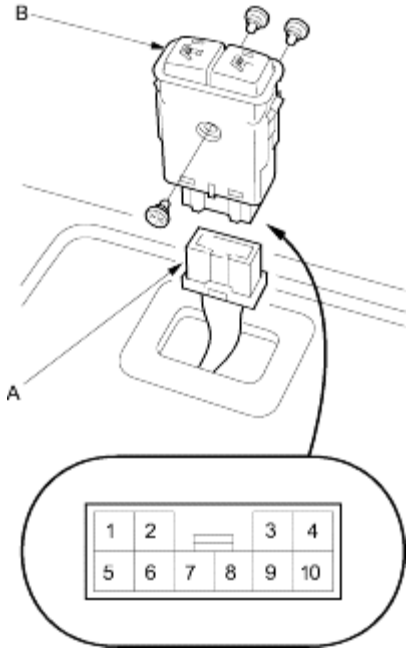


Seat Heaters

Seat Heater Switch Test/Replacement

4-door:

1. 1. Remove the centre console switch panel (see page 20-73).
   2. Disconnect the 10P connector (A) from the seat heater switch (B), then remove the switch.

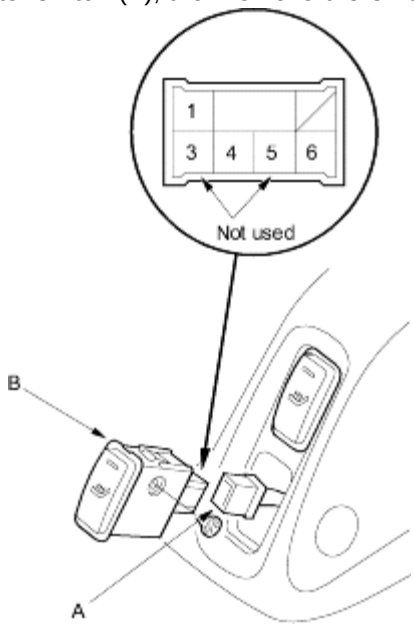


2. 3. Check for continuity in each switch position according to the table.

Terminal / Position	2		3	5	6		7		9	10
ON	○	⊕	○	○	○	⊕	○	⊕	○	○
OFF	○	⊕	○	○		⊕	○	⊕		○

5-door:

1. 1. Remove the parking brake cover (see step 3 on page 20-213).
   2. Disconnect the 6P connector (A) from the seat heater switch (B), then remove the switch.



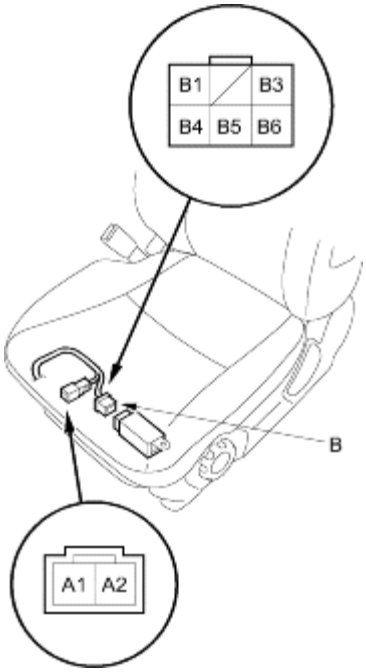
2. 3. Check for continuity in each switch position according to the table.

Terminal / Position	1		4	6
ON	○	⊕	○	○
OFF	○	⊕	○	

Seat Heaters

Seat Heater Test

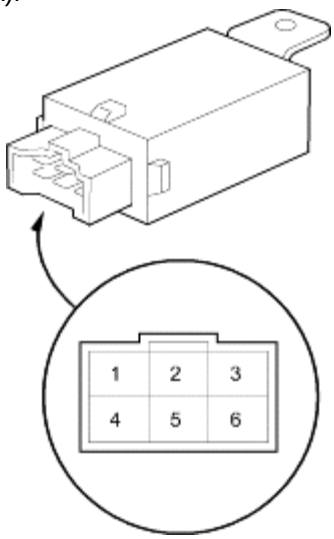
1. 1. Remove the front seat (see page 20-87).
2. 2. Disconnect the seat heater harness 2P connector (A) from the floor wire harness and 6P connector (B) from the seat heater relay (C).
   Wire side of female terminals



Terminal side of male terminals

3. 3. Check for continuity between the A1 and B3 terminals and A2 and B6 terminals. There should be continuity.
   If there is no continuity, replace the seat cushion (see page 20-87).
   4. Check for continuity between the B1 and B4 terminals and B1 and B5 terminals. There should be continuity.
   If there is no continuity, replace the seat cushion (see page 20-87).

1. 1. Remove the front seat (see page 20-87).
2. 2. Disconnect the 6P connector from the seat heater relay (A).

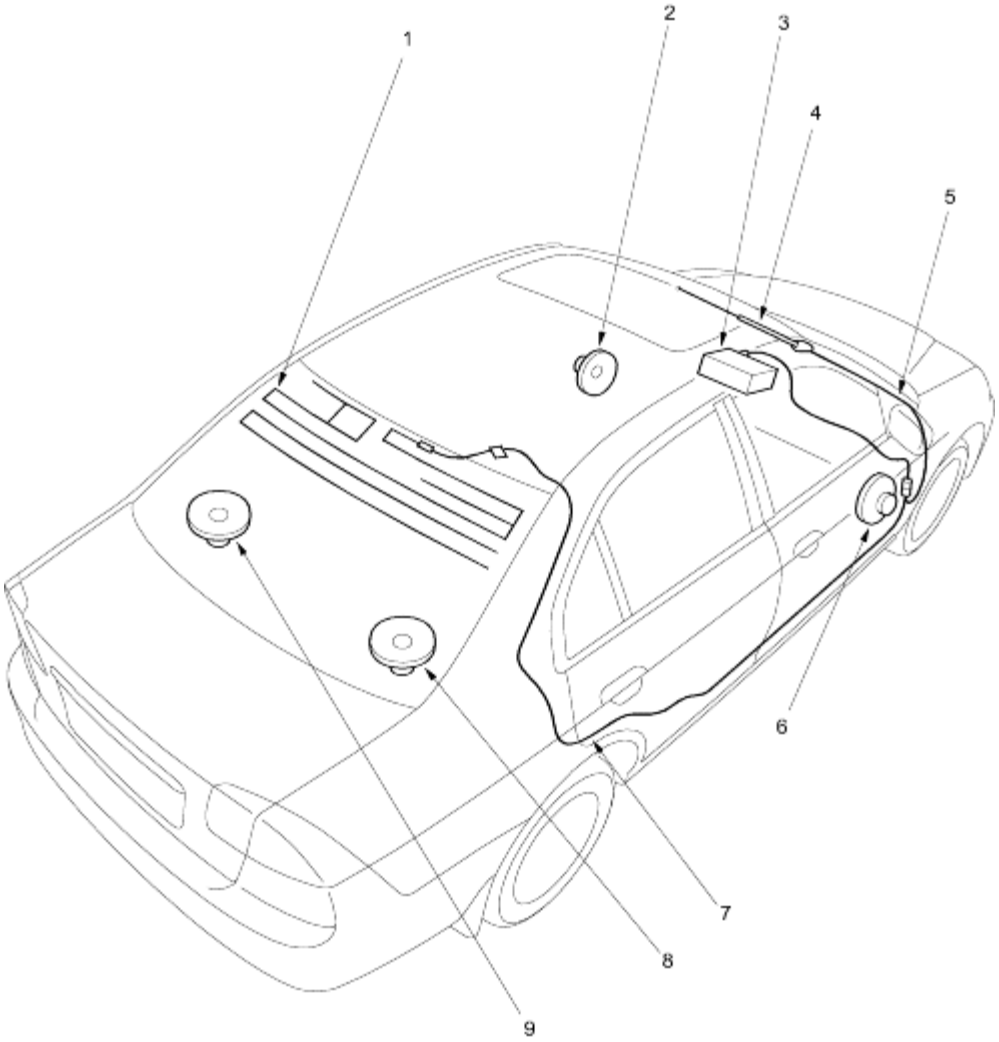


3. 3. Check for continuity between the No. 6 and No. 5 terminals and No. 6 and No. 4 terminals. There should be continuity.
   If there is no continuity, replace the seat heater relay.
   4. Check for continuity between the No. 1 and No. 6 terminals and No. 3 and No. 4 terminals when power and ground are connected across the No. 6 and No. 5 terminals. There should be continuity. If there is no continuity, replace the seat heater relay.

Stereo Sound System

Component Location Index

4-door:

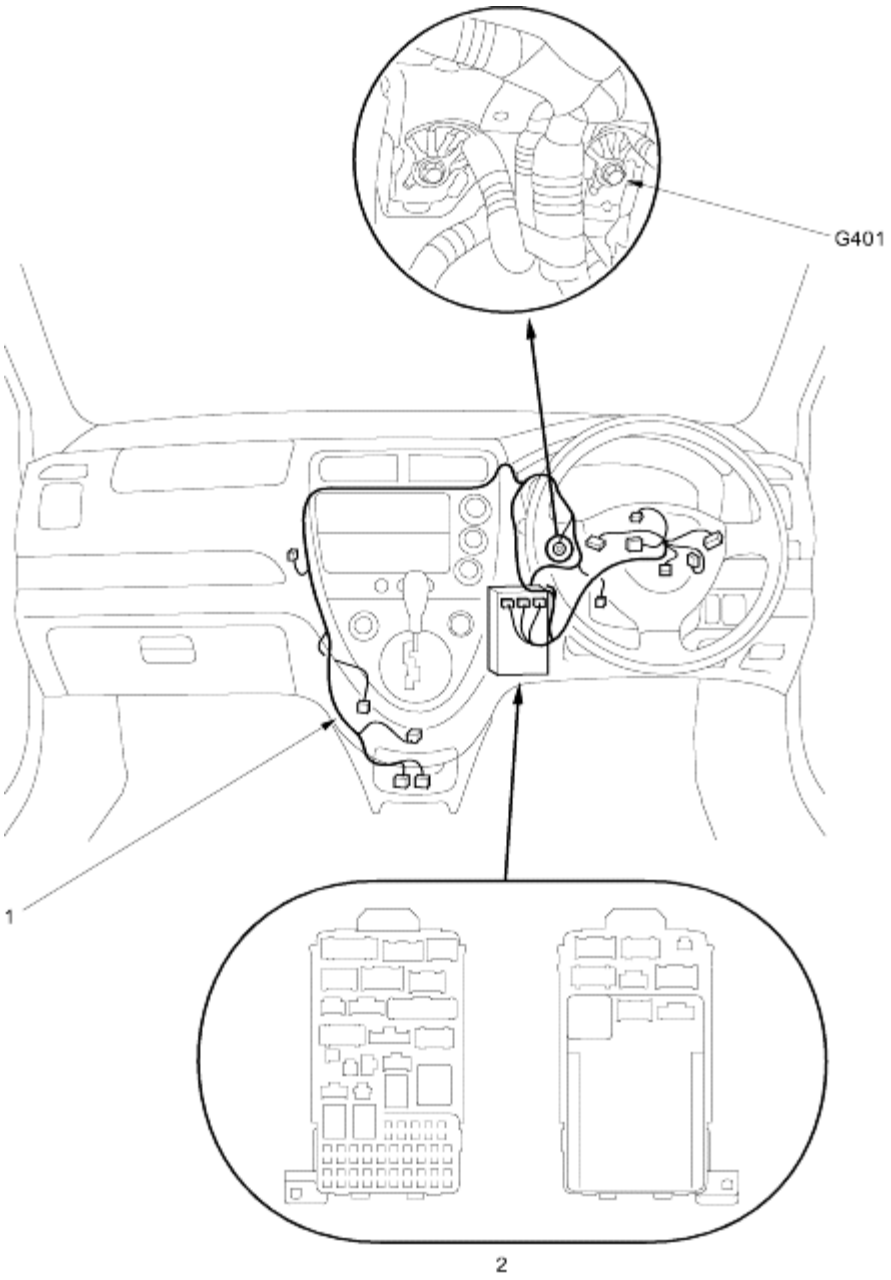


1. WINDOW ANTENNA
   Test, page 22-214
   Repair, page 22-214
2. LEFT FRONT DOOR SPEAKER
   Replacement, page 22-213
3. AUDIO UNIT
   Connector Replacement, page 22-212
   Removal/Installation, page 22-212
4. MAST ANTENNA
   Replacement, page 22-215
5. ANTENNA LEAD
6. RIGHT FRONT DOOR SPEAKER
   Replacement, page 22-213
7. ANTENNA LEAD
8. RIGHT REAR SPEAKER
   Replacement, page 22-213
9. LEFT REAR SPEAKER
   Replacement, page 22-213

Wire Harness and Ground Locations

Dashboard (cont'd)

5 - door:

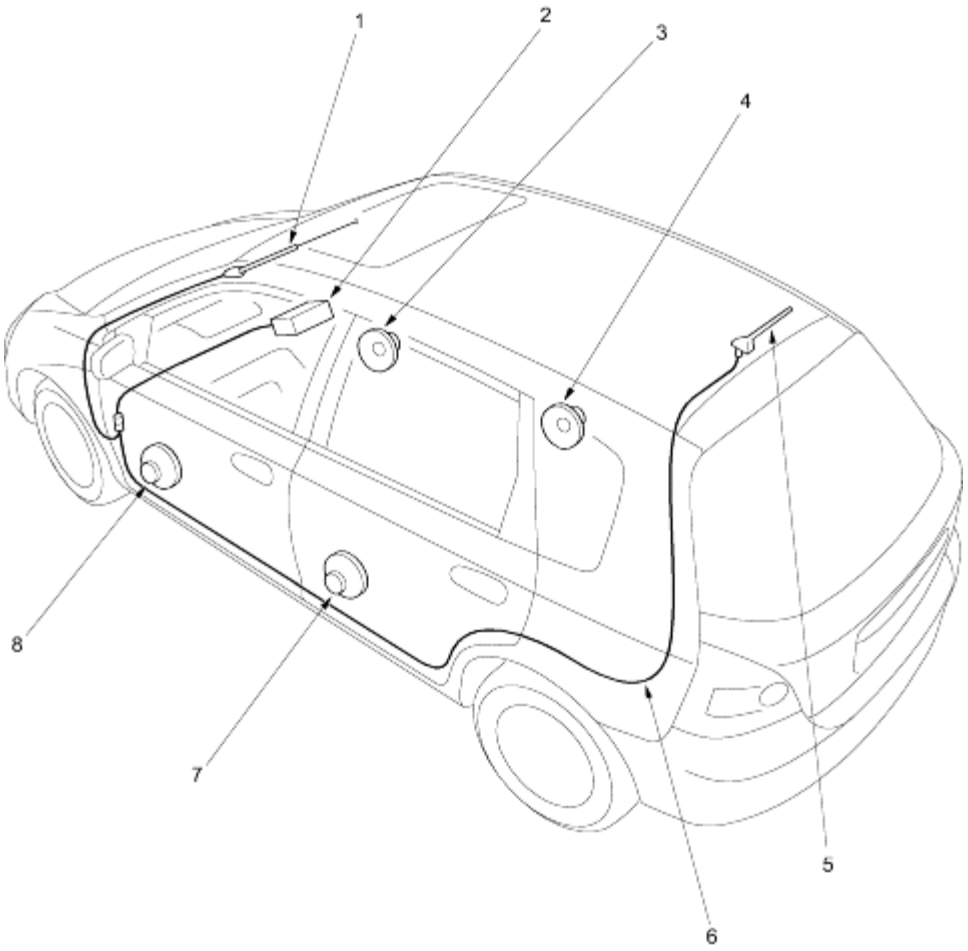


1. DASHBOARD WIRE HARNESS B
2. UNDER - DASH FUSE/RELAY BOX

Stereo Sound System

Component Location Index (cont'd)

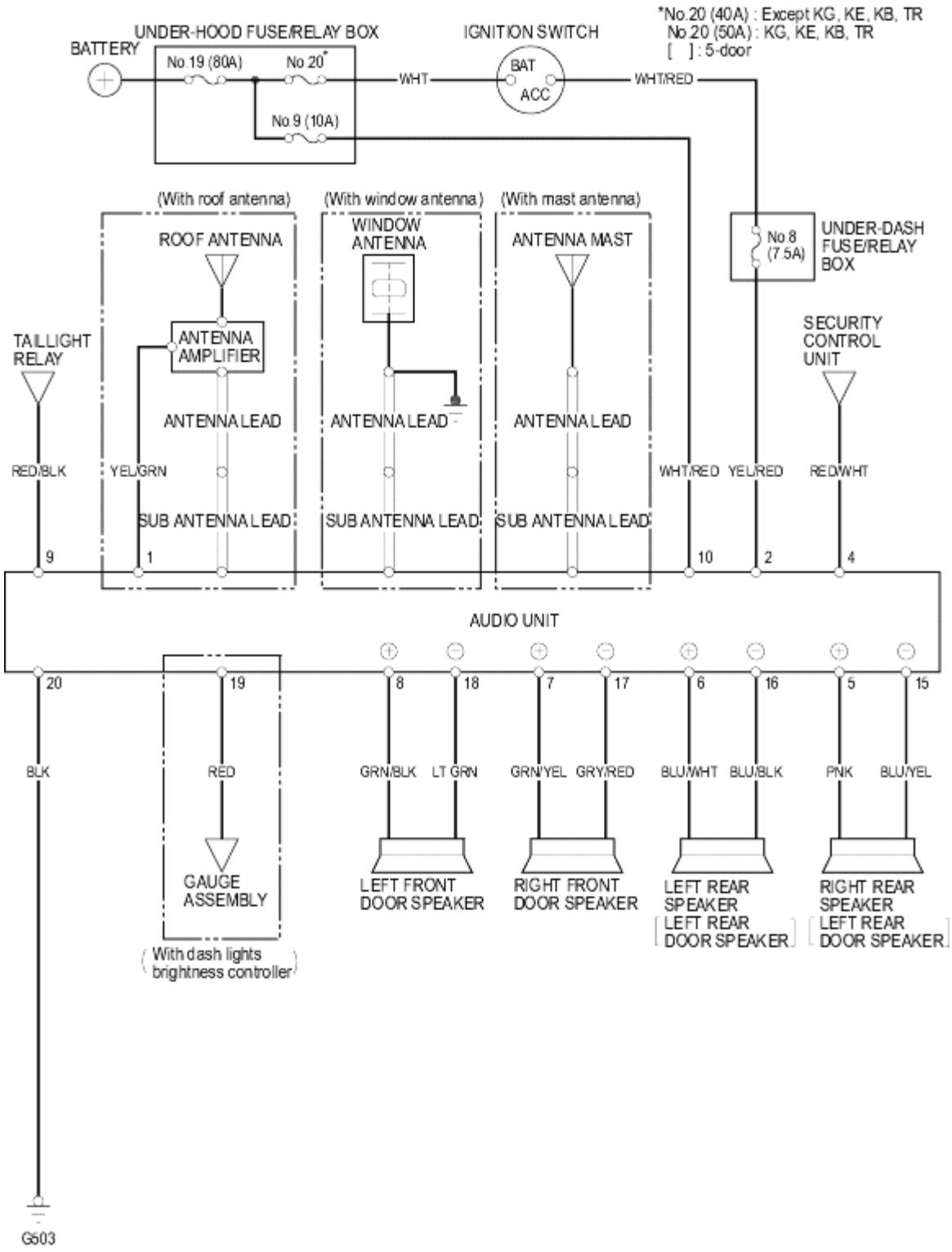
5-door:



1. MAST ANTENNA
   Replacement, page 22-215
2. AUDIO UNIT
   Connector Replacement, page 22-212
   Removal/Installation, page 22-212
3. RIGHT FRONT DOOR SPEAKER
   Replacement, page 22-213
4. RIGHT REAR DOOR SPEAKER
   Replacement, page 22-213
5. ROOF ANTENNA
   Replacement, page 22-215
6. ANTENNA LEAD
7. LEFT REAR DOOR SPEAKER
   Replacement, page 22-213
8. LEFT FRONT DOOR SPEAKER
   Replacement, page 22-213

Stereo Sound System

Circuit Diagram



Stereo Sound System

Audio Unit Connector Replacement

Cavity

Wire		Connects to
1*1	YEL/GRN	Roof antenna
2	YEL/RED	ACC (Main stereo power supply)
3	———	Not used
4*2	RED/WHT	Security signal input
5	PNK	Right rear[door]speaker (+)
6	BLU/WHT	Left rear [door] speaker (+)
7	GRN/YEL	Right front door speaker (+)
8	GRN/BLK	Left front door speaker (+)
9	RED/BLK	Lights - on signal
10	WHT/RED	Constant power
11	———	Not used
12	———	Not used
13	———	Not used
14	———	Not used
15	BLU/YEL	Right rear [door] speaker (–)
16	BLU/BLK	Left rear [door] speaker (–)
17	GRY/RED	Right front door speaker (–)
18	LT GRN	Left front door speaker (–)
19*3	RED	Dash lights brightness controller
20	BLK	Ground (G503)

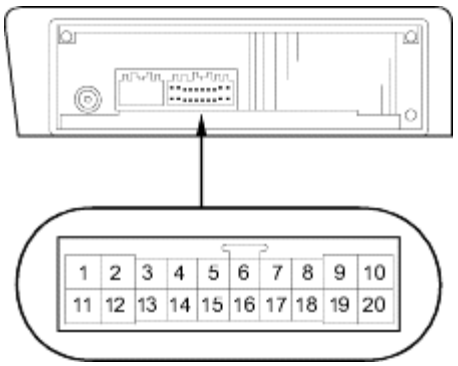
[ ]: 5-door

*1: 5-door with roof antenna

*2: With security alarm system

*3: With dash lights brightness controller

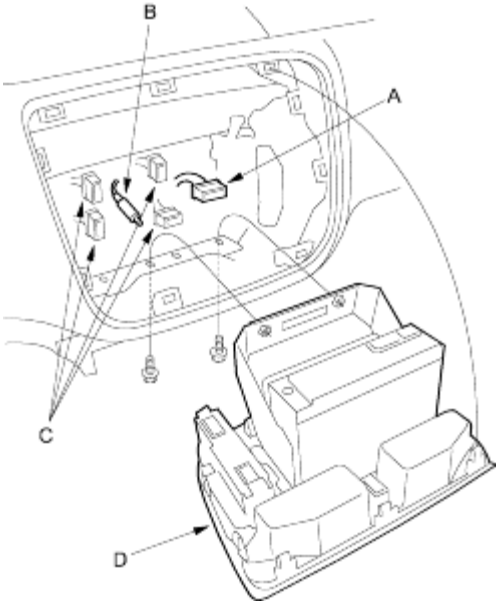
AUDIO UNIT 20P CONNECTOR



NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Remove the dashboard centre lower cover (see page 20-77).
   3. Remove the heater control panel (or climate control unit) (see page 21-51) from the centre panel.
   4. Remove the four mounting bolts and the audio unit from the radio brackets.



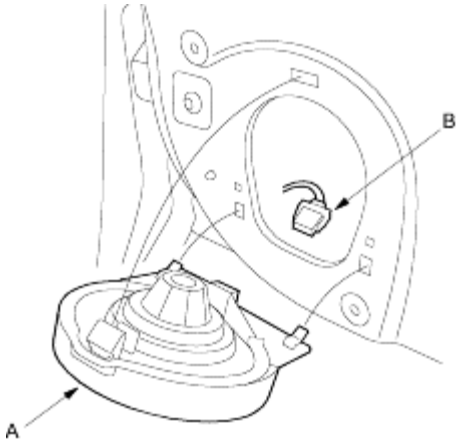
2. 5. Install the audio unit in the reverse order of removal and note these items:
   - Make sure the audio unit and A/C connectors are plugged in properly and the antenna lead is connected properly.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Stereo Sound System
Speaker Replacement

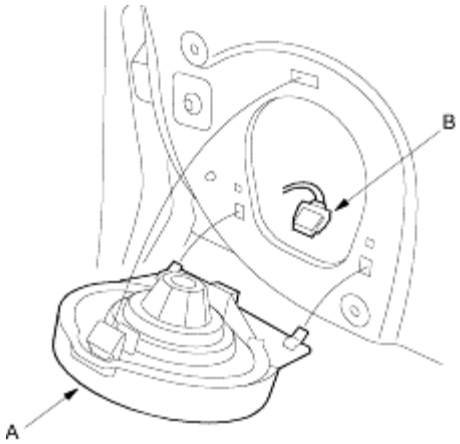
Door Speaker:

1. 1. Remove the door panel (see page 20-152).
   2. Pull the top of the speaker (A) straight out to release the upper clip, then lift the speaker straight up to release the lower clips.

Front Door:



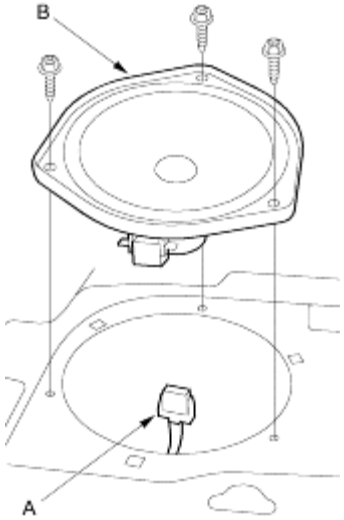
Rear Door:



2. 3. Disconnect the 2P connector (B) and remove the speaker.

Rear (4-door):

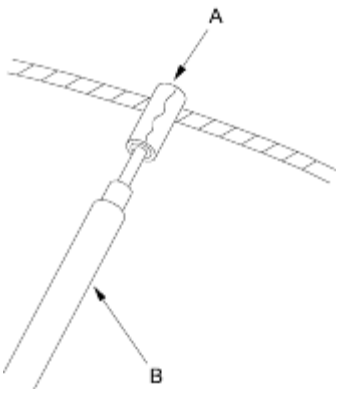
1. 1. Remove the rear shelf (see page 20-65).
   2. Remove the three mounting screws, then disconnect the 2P connector (A) from the speaker (B).



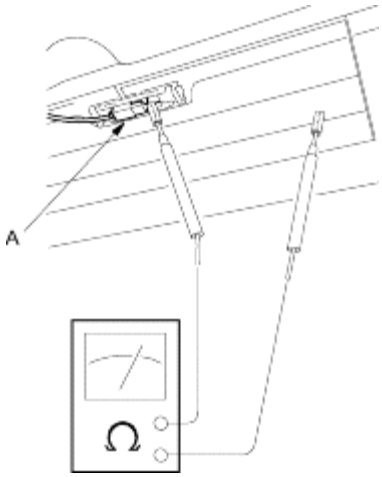
Stereo Sound System

Window Antenna Test

1. 1. Wrap Aluminium foil (A) around the tip of the tester probe (B) as shown.

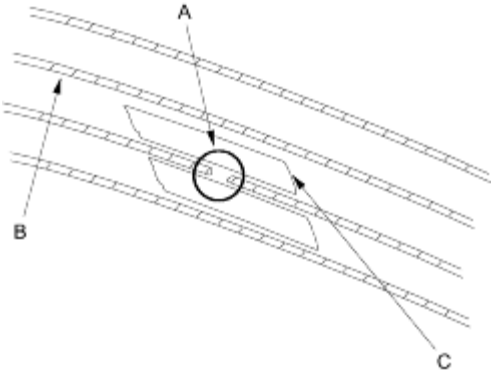


2. 2. Touch one tester probe to the window antenna terminal (A) and move the other tester probe along the antenna wires to check that continuity exists.

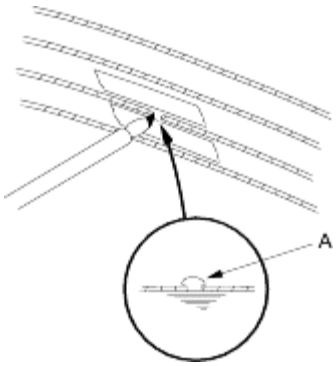


NOTE: To make an effective repair, the broken section must be no longer than 1 inch.

1. 1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



2. 2. Carefully mask above and below the broken portion of the window antenna wire (B) with transparent tape (C).
   3. Using a small brush, apply a heavy coat of silver conductive paint (A) extending about 1/8" on both sides of the break. Allow 30 minutes to dry.
   NOTE: Thoroughly mix the paint before use.

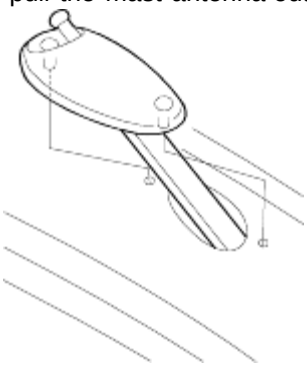


3. 4. Check for continuity in the repaired wire.
   5. Apply a second coat of pain in the same way. Let it dry 3 hours before removing the tape

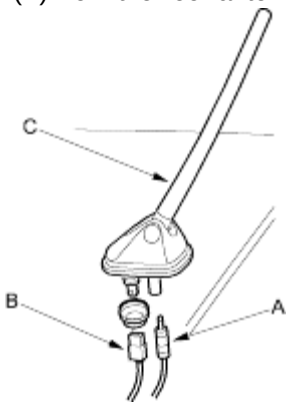
Stereo Sound System

Antenna Mast Replacement

1. 1. Disconnect the sub antenna lead from the antenna lead.
2. 2. Carefully pull the mast antenna out.



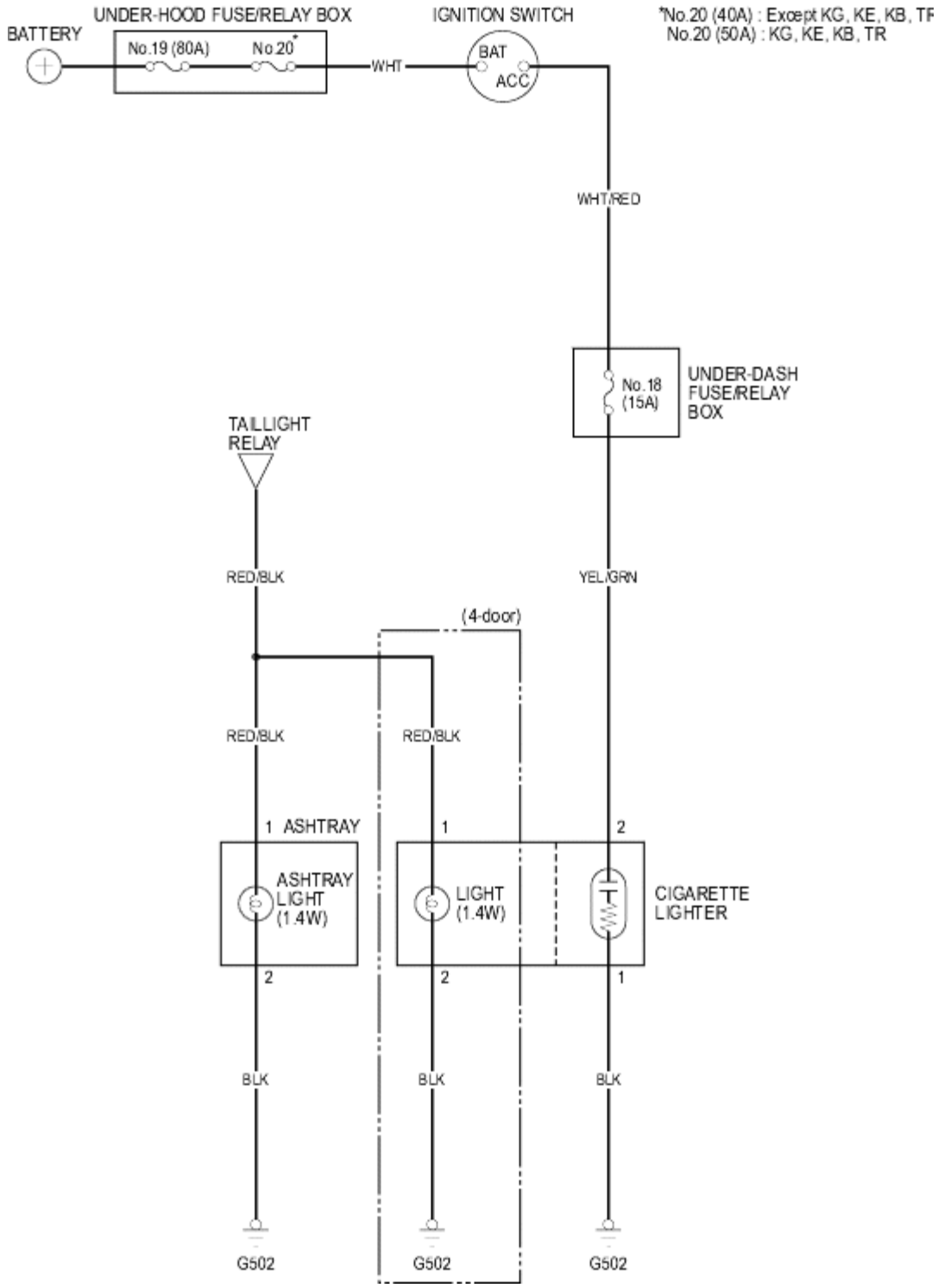
1. 1. Remove the rear part of headliner (see page 20-210).
2. 2. Disconnect the antenna lead connector (A) and 1P connector (B) from the roof antenna (C).



3. 3. Remove the mounting nut and the antenna.

Cigarette Lighter

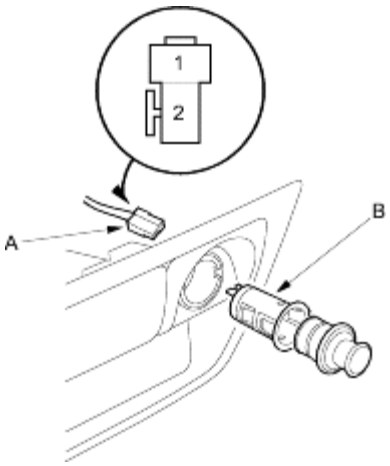
Circuit Diagram



Cigarette Lighter
Test/Replacement

4-door:

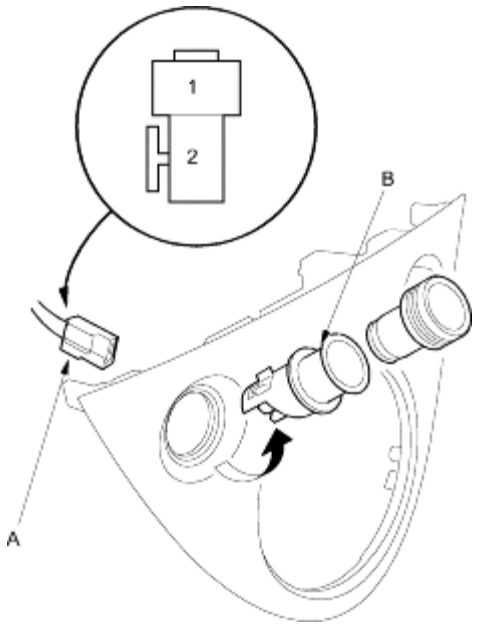
1. 1. Remove the centre lower cover (see page 20-75).
   2. Disconnect the 2P connector (A) from the cigarette lighter (B).
      Wire side of female terminals



2. 3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.
3. 4. Turn the ignition switch ACC (I) and check for voltage between the No. 1 and No. 2 terminals.
   - If there is no battery voltage, check for:
     - Blown No. 18 (15A) fuse in the under-dash fuse/relay box.
     - Poor ground (G502).
     - An open in the YEL/GRN or BLK wire.

5-door:

1. 1. Remove the shift lever panel (see page 20-218).
   2. Disconnect the 2P connector (A) from the cigarette lighter (B).
      Wire side of female terminals



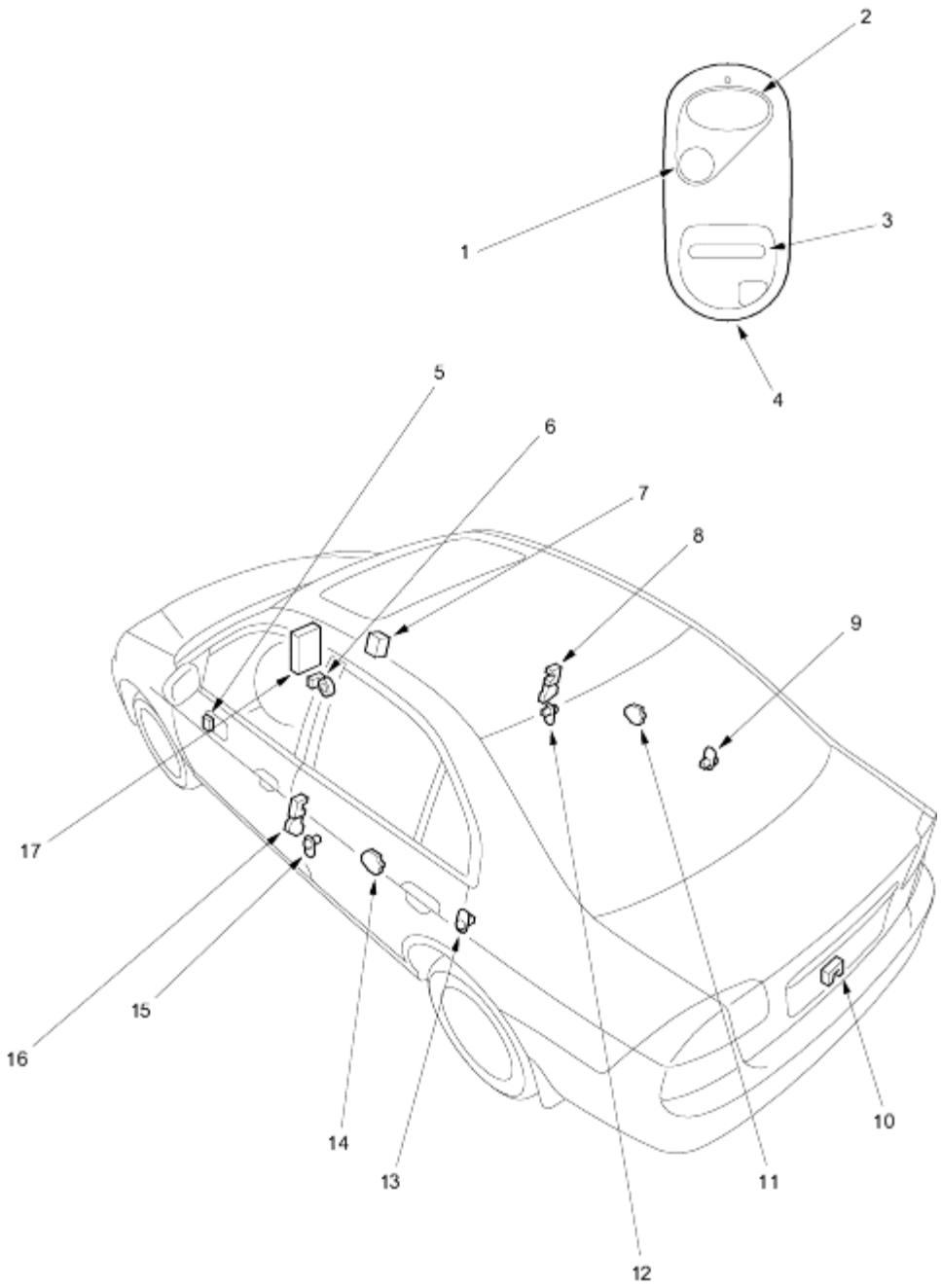
2. 3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system
   - If the terminals look OK, go to step 4.
3. 4. Turn the ignition switch ACC (I) and check for voltage between the No. 1 and No. 2 terminals. There should be battery voltage.
   - If there is no battery voltage, check for:
     - Blown No. 18 (15A) fuse in the under-dash fuse/relay box.
     - Poor ground (G502).
     - An open in the YEL/GRN or BLK wire.

Keyless/Power Door Lock System

Component Location Index

4-door:

NOTE: LHD type is shown, RHD type is similar.



1. UNLOCK BUTTON
2. LOCK BUTTON
3. PANIC BUTTON
4. TRANSMITTER
   Test, page 22-239
   Programming, page 22-239
5. DRIVER'S DOOR LOCK SWITCH
   Test, page 22-238
6. IGNITION KEY SWITCH
   Test, page 22-131
7. KEYLESS RECEIVER UNIT
   Input Test, page 22-226
8. FRONT PASSENGER'S DOOR LOCK ACTUATOR
   Test, page 22-236
9. RIGHT REAR DOOR SWITCH
10. TRUNK LID LATCH SWITCH
    Test, page 22-139
11. RIGHT READ DOOR LOCK ACTUATOR
    Test, page 22-236
12. FRONT PASSENGER'S DOOR SWITCH
13. LEFT REAR DOOR SWITCH
14. LEFT REAR DOOR LOCK ACTUATOR
    Test, page 22-236
15. DRIVER'S DOOR SWITCH
16. DIVER'S DOOR LOCK ACTUATOR/KNOB SWITCH
    Actuator Test, page 22-236
    Knob Switch Test, page 22-262
17. MULTIPLEX CONTROL UNIT

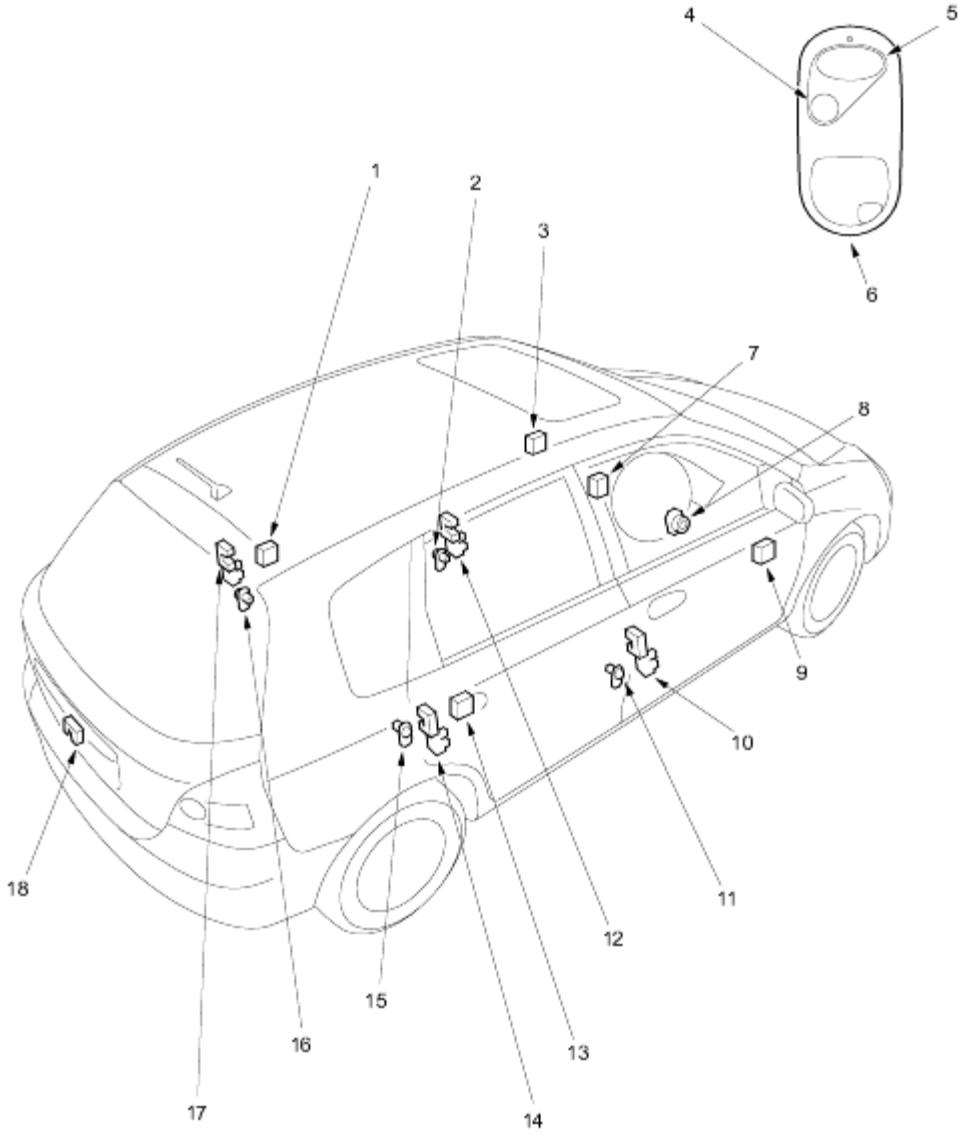
Keyless/Power Door Lock System

Component Location Index (cont'd)

5-door:

*1 KE model

*2 Except KE model



1. LEFT REAR SUPER LOCKING CONTROL UNIT *1
   Input Test, page 22-234
2. FRONT PASSENGER'S DOOR SWITCH
3. FRONT PASSENGER'S SUPER LOCKING CONTROL UNIT *1
   Input Test, page 22-234
4. UNLOCK BUTTON
5. LOCK BUTTON
6. TRANSMITTER
   Test, page 22-239
   Programming, page 22-239
7. KEYLESS RECEIVER UNIT
   Input Test, page 22-226
8. IGNITION KEY SWITCH
   Test, page 22-131
9. DRIVER'S SUPER LOCKING CONTROL UNIT *1
   Input Test, page 22-234
10. DRIVER'S SUPER LOCKING ACTUATOR/KNOB SWITCH*1
    Actuator Test, page 22-237
    Knob Switch Test, page 22-262
    DRIVER'S DOOR LOCK ACTUATOR/KNOB SWITCH *2
    Actuator Test, page 22-236
    Knob Switch Test, page 22-262
11. DRIVER'S DOOR SWITCH
12. FRONT PASSENGER'S SUPER LOCKING ACTUATOR/KNOB SWITCH
    Actuator Test, page 22-237
    Knob Switch Test, page 22-262
    FRONT PASSENGER'S DOOR LOCK ACTUATOR*2
    Test, page 22-236
13. RIGHT REAR SUPER LOCKING CONTROL UNIT *1
    Input Test, page 22-234
14. RIGHT REAR SUPER LOCKING ACTUATOR/KNOB SWITCH *1
    Actuator Test, page 22-237
    Knob Switch Test, page 22-262
    RIGHT REAR DOOR LOCK ACTUATOR *2
    Test, page 22-236
15. RIGHT REAR DOOR SWITCH
16. LEFT REAR DOOR SWITCH
17. LEFT REAR SUPER LOCKING ACTUATOR/KNOB SWITCH *1
    Actuator Test, page 22-237
    Knob Switch Test, page 22-262
    LEFT REAR DOOR LOCK ACTUATOR *2
    Test, page 22-236
18. TAILGATE LATCH SWITCH

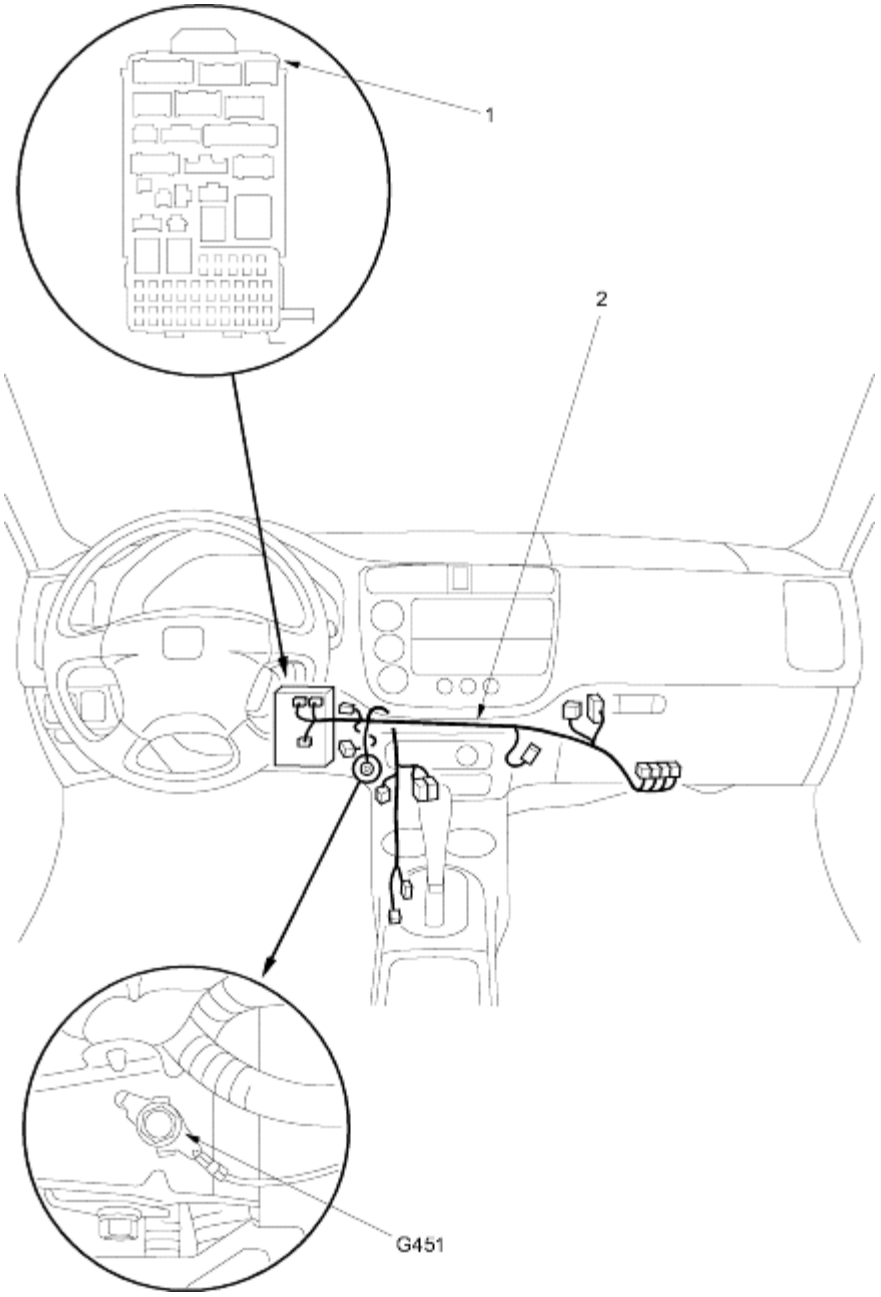
Test page 22-140TAILGATE
LOCK ACTUATOR
Test, page 22-237

Wire Harness and Ground Locations

Dashboard (cont'd)

4 - door:

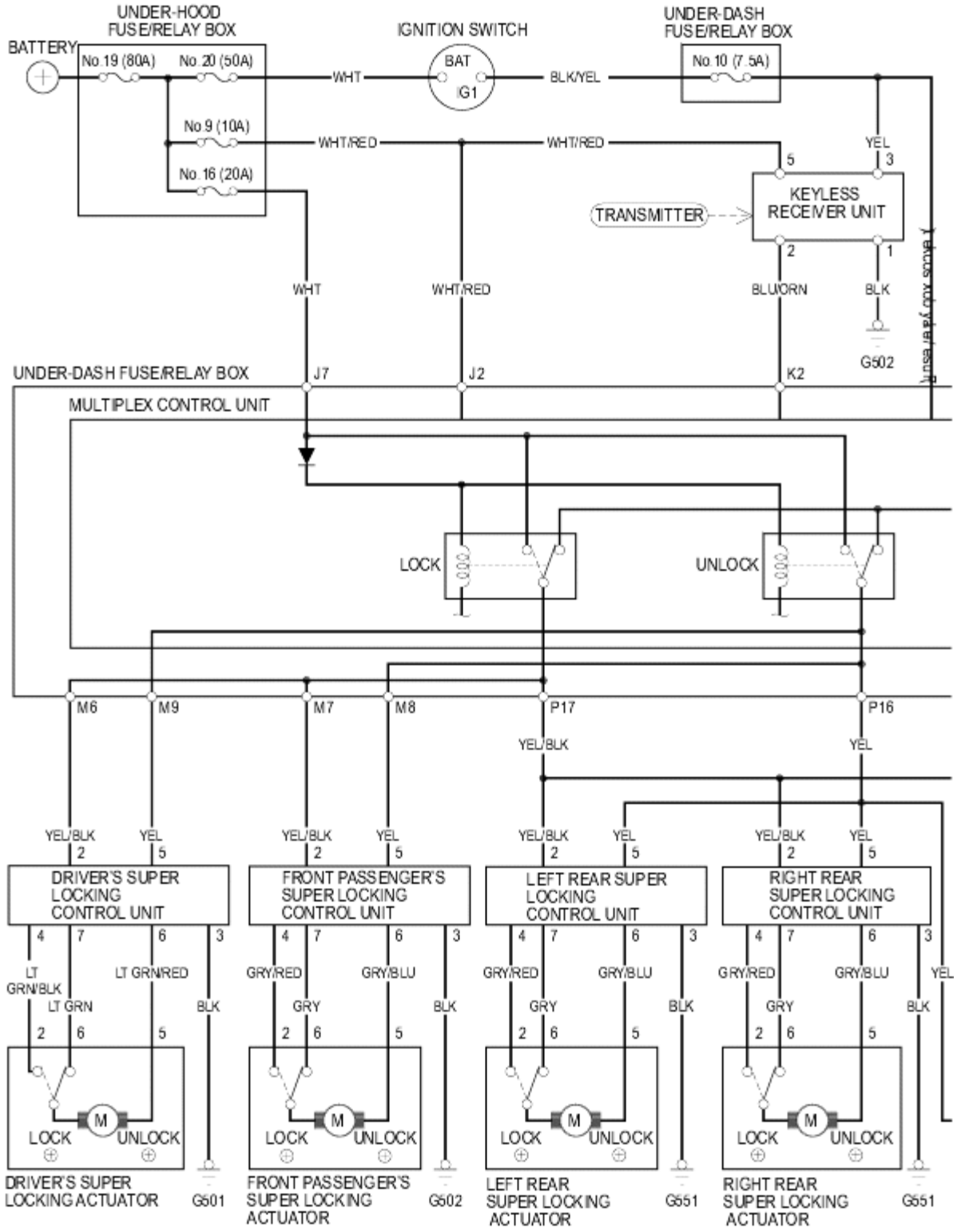
NOTE: LHD type is shown, RHD type is similar



1. UNDER - DASH FUSE/RELAY BOX
2. ECM/PCM WIRE HARNESS

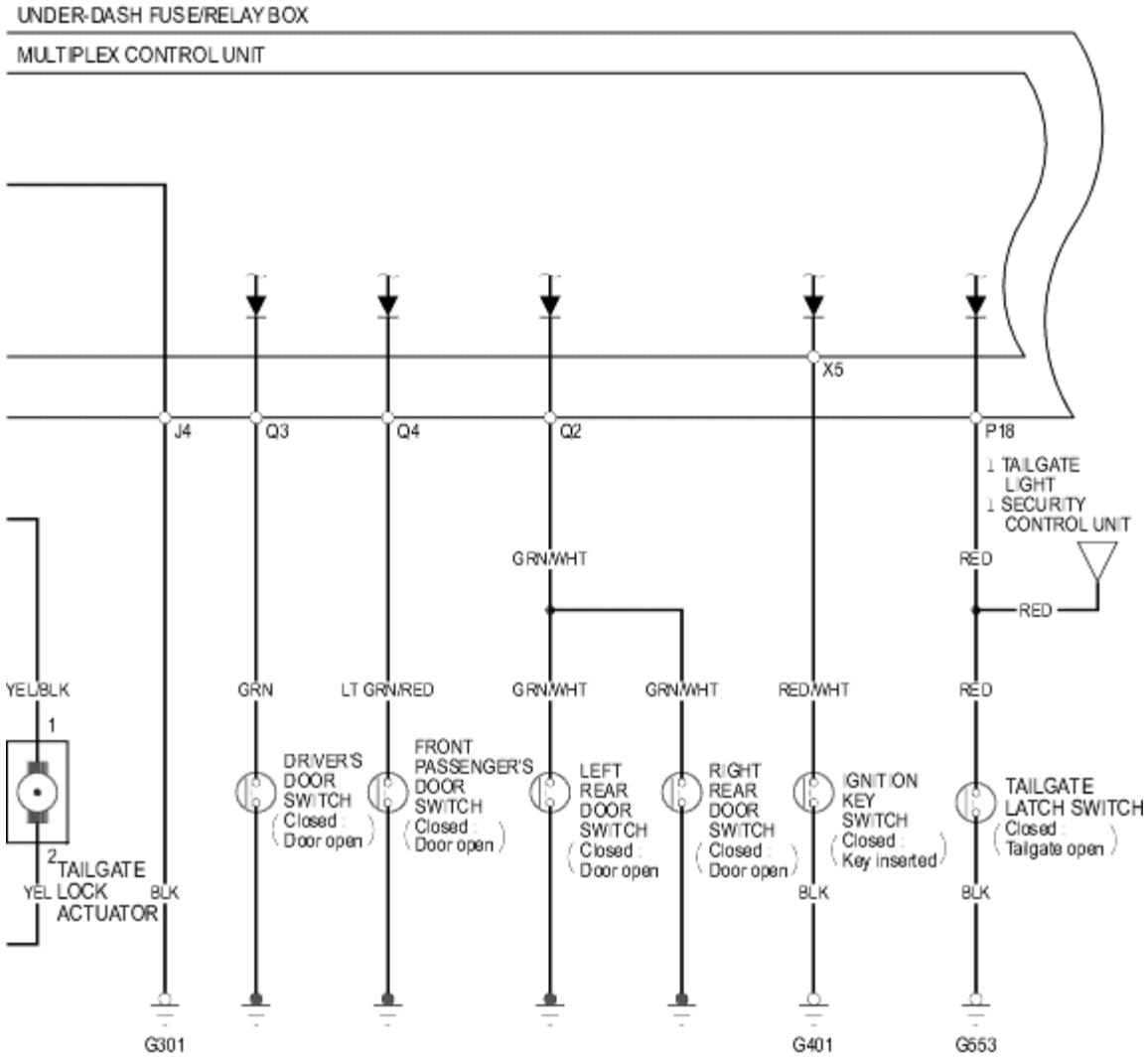
Keyless/Power Door Lock System

Circuit Diagram - With Super Locking



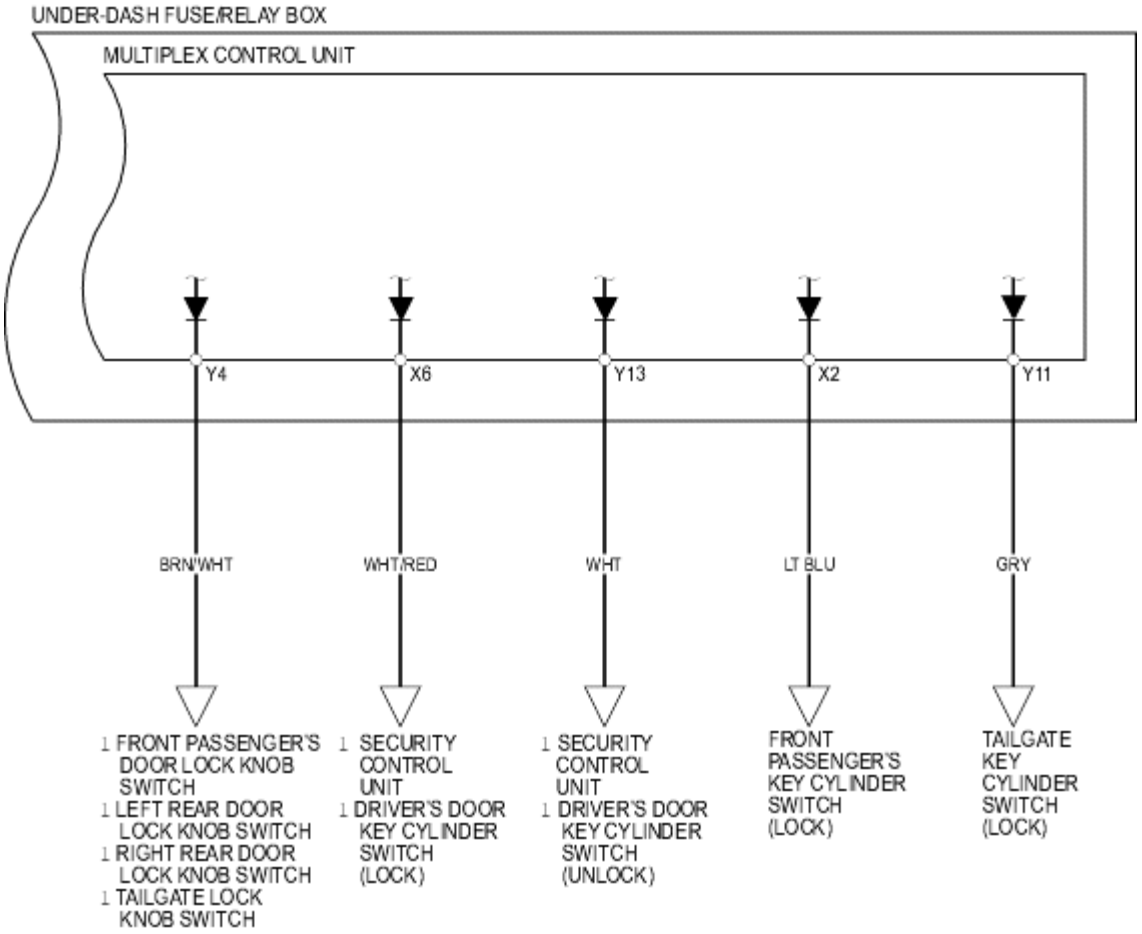
Keyless/Power Door Lock System

Circuit Diagram - With Super Locking (cont'd)



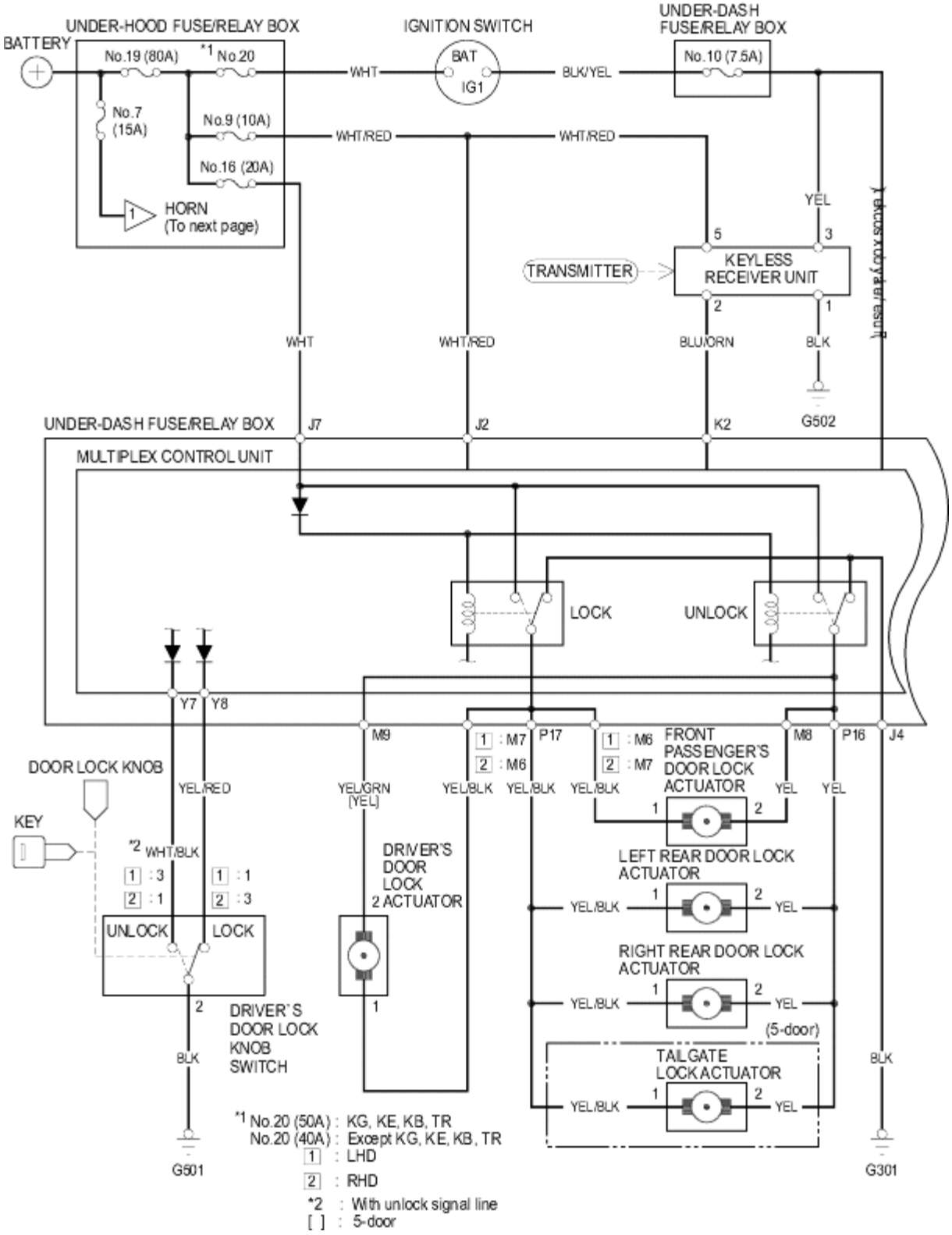
Keyless/Power Door Lock System

Circuit Diagram - With Super Locking (cont'd)



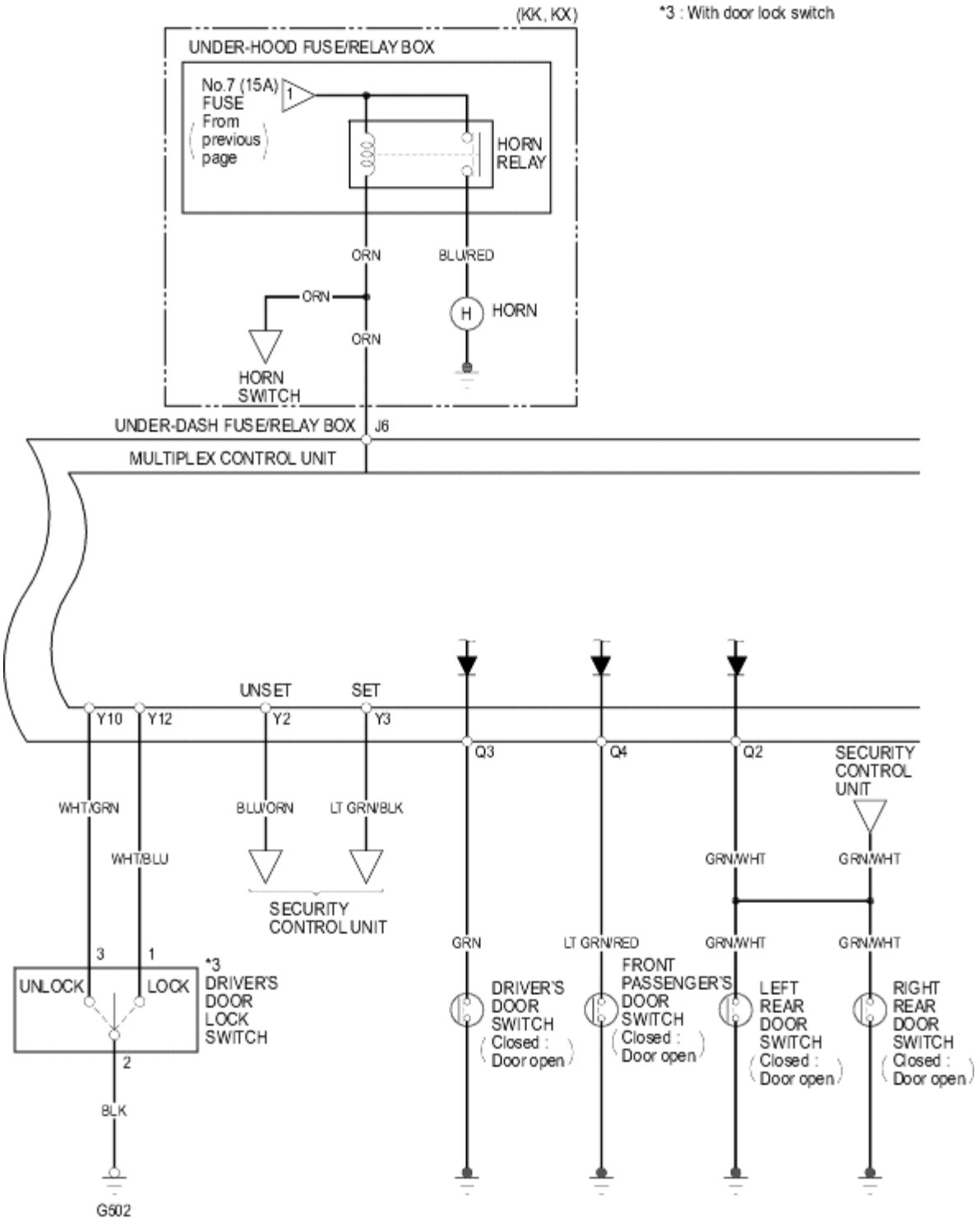
Keyless/Power Door Lock System

Circuit Diagram - Without Super Locking



Keyless/Power Door Lock System

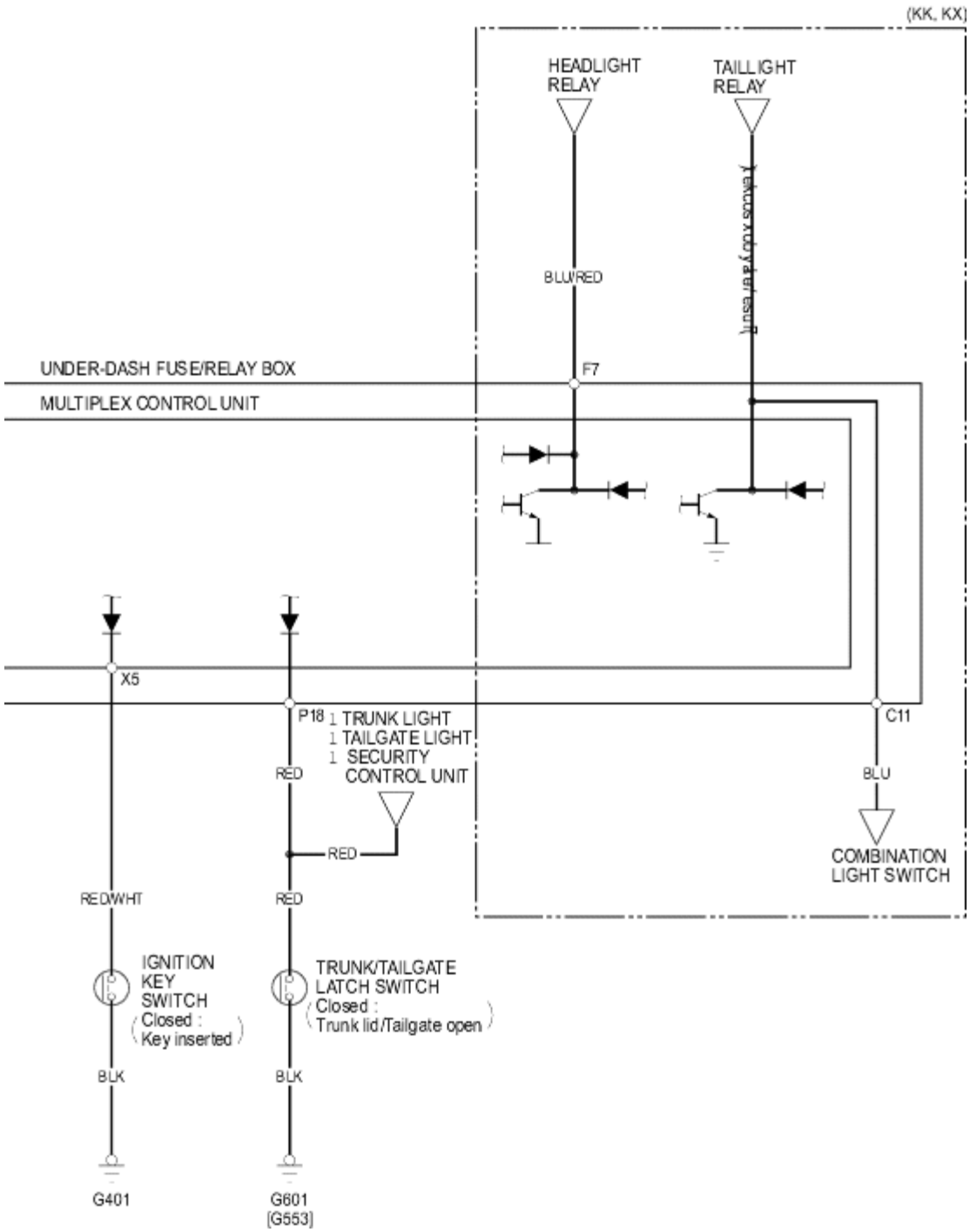
Circuit Diagram - Without Super Locking (cont'd)



Keyless/Power Door Lock System

Circuit Diagram - Without Super Locking (cont'd)

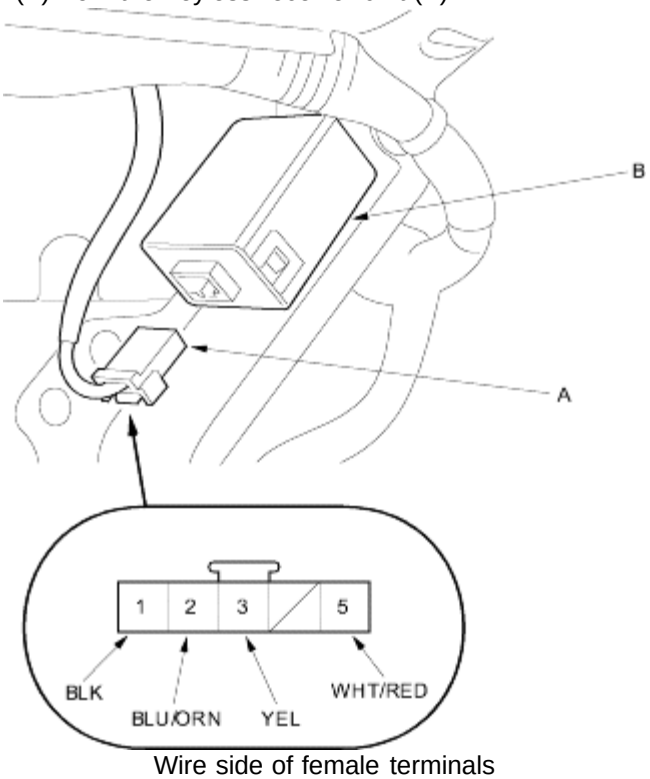
[ ] : 5-door



Keyless/Power Door Lock System

Keyless Receiver Unit Input Test

1. 1. Remove the dashboard centre lower cover (see page 20-79).
   2. Remove the audio unit (see page 22-212).
   3. Disconnect the 5P connector (A) from the keyless receiver unit (B).



Wire side of female terminals

2. 4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals are OK, go to step 5.

Keyless/Power Door Lock System

Keyless Receiver Unit Input Test (cont'd)

1. 5. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the keyless receiver unit.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502) • An open in the wire
3	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
5	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire
2	BLU/ORN	Under all conditions	Check for continuity between the No. 2 terminal and the No. 2 terminal of the under-dash fuse/relay box connector K (17P). There should be continuity.	• An open in the wire

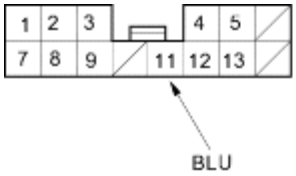
Keyless/Power Door Lock System

Control Unit Input Test - Without Super Locking

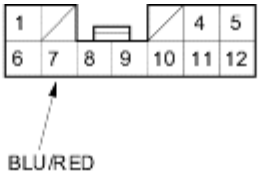
1. 1. Before testing, troubleshoot the multiplex control system (see page 22-273).
   2. Remove the dashboard lower cover.
   3. Disconnect the under-dash fuse/relay box connectors.

NOTE: All connectors are wire side of female terminals.

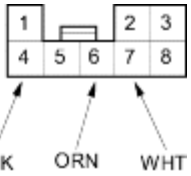
UNDER-DASH FUSE/RELAY BOX CONNECTOR C (14P)



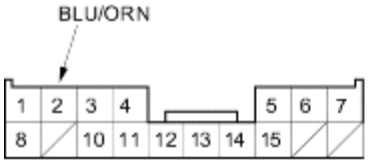
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



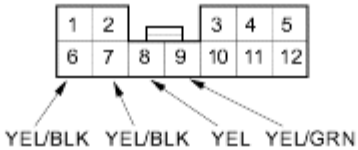
UNDER-DASH FUSE/RELAY BOX CONNECTOR J (8P)



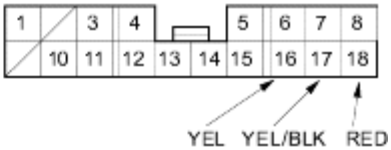
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



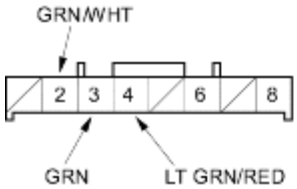
UNDER-DASH FUSE/RELAY BOX CONNECTOR M (12P)



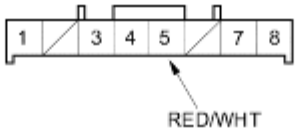
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



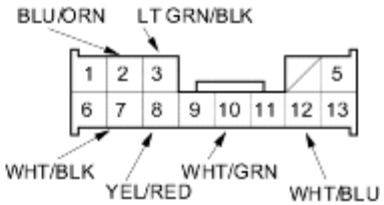
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



2. 4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

Keyless/Power Door Lock System

Control Unit Input Test - Without Super Locking (cont'd)

1. 5. Reconnect the connectors, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
M7	YEL/BLK	Connect J7 terminal to *3M7 or *4M6 [M9] terminal, and M9 [*3M7 or *4M6] terminal to J4 terminal.	Check actuator operation: The driver's door lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under - hood fuse/relay box • Faulty driver's door lock actuator • An open in the wire
M9	*1YEL/GRN *2YEL			
M6	YEL/BLK	Connect J7 terminal to *3M6 or *4M7 [M8] terminal, and M8 [*3M6 or *4M7] terminal to J4 terminal.	Check actuator operation: The front passenger's door lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under - hood fuse/relay box • Faulty front passenger's door lock actuator • An open in the wire
M8	YEL			
P16	YEL	Connect J7 terminal to P17 [P16] terminal, and P16 [P17] terminal to J4 terminal.	Check actuator operation: The both rear door lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under - hood fuse/relay box • Faulty left or right door lock actuator • An open in the wire
P17	YEL/BLK			

*1: 4-door *3: LHD type*2: 5-door *4: RHD type

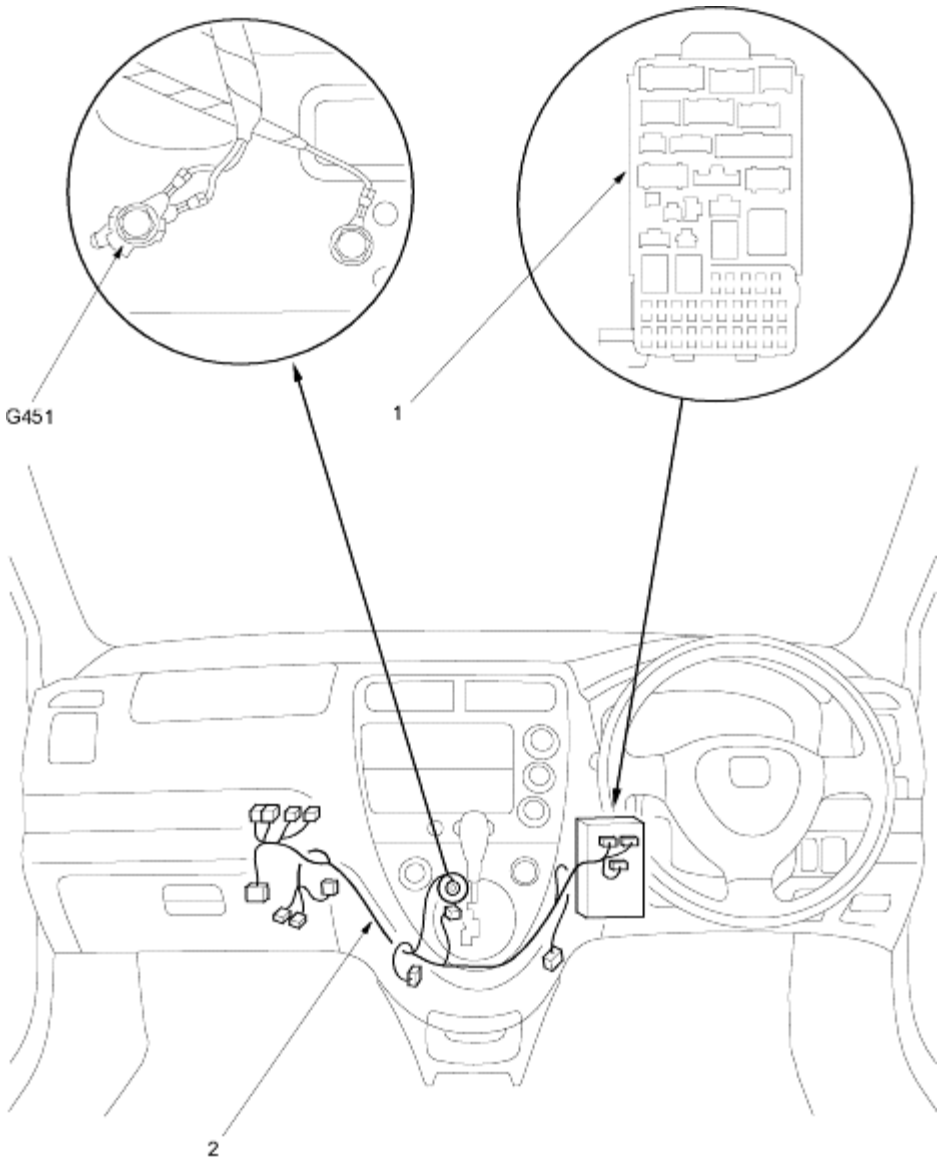
2. 6. Reconnect all connections to the under-dash fuse/relay box and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
C11	BLU	Under all conditions	Attach to ground: Parking, side marker, license plate lights and taillights should come on.	• Blown No. 2 (15A) fuse in the under-hood fuse/relay box • Faulty taillight relay • Faulty under-dash fuse/relay box • An open in the wire
F7	BLU/RED	Under all conditions	Attach to ground: Headlights should come on.	• Blown No. 15 or 17 (15A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 or 2 • An open in the wire
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire
J4	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G301) • An open in the wire

Wire Harness and Ground Locations

Dashboard (cont'd)

5 - door:



1. UNDER - DASH FUSE/RELAY BOX
2. ECM/PCM WIRE HARNESS

Keyless/Power Door Lock System

Control Unit Input Test - Without Super Locking (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J6	ORN	Under all conditions	Attach to ground: The horn should sound.	• Blown No. 7 (15A) fuse in the under-hood fuse/relay box • Faulty horn relay • Faulty horn • An open in the wire
J7	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • An open in the wire
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector No. 2 terminal with the 5P connector disconnected: There should be continuity.	• An open in the wire
P18	RED	Trunk lid or tailgate open	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G601 or G553) • Faulty trunk or tailgate switch • An open in the wire
		Trunk lid or tailgate closed	Check for voltage to ground: There should be 5 V or more.	• Faulty trunk switch • Short to ground
Q2	GRN/WHT	Left (right) rear door open	Check for voltage to ground: There should be 1 V or less.	• Faulty left (right) rear door switch • An open in the wire
		Left (right) rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty left (right) rear door switch • Short to ground
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more	• Faulty driver's door switch • Short to ground
Q4	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more	• Faulty front passenger's door switch • Short to ground
X5	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more	• Faulty ignition key switch • Short to ground
Y8	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob	Check for voltage to ground:	• Faulty driver's door lock knob

		switch unlocked	There should be 5 V or more	switch • Short to ground
Y10	WHT/GRN	Driver's door lock switch unlocked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G502) • Faulty driver's door lock switch • An open in the wire
		Driver's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more	• Faulty driver's door lock switch • Short to ground
Y12	WHT/BLU	Driver's door lock switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G502) • Faulty driver's door lock switch • An open in the wire
		Driver's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock switch • Short to ground
Y7	WHT/BLK	Driver's door lock switch locked	Check for voltage to ground: There should be 1 V or less	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
Y2	BLU/ORN	Keyless transmitter unlock button is pushed	Check for continuity between the Y2 terminal and security control unit A17 terminal: There should be continuity.	• An open in the wire
Y3	LT GRN/BLK	Keyless transmitter unlock button is pushed	Check for continuity between the Y3 terminal and security control unit A6 terminal: There should be continuity.	• An open in the wire

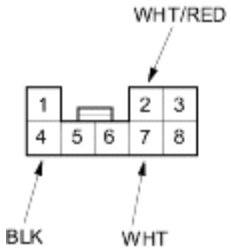
Keyless/Power Door Lock System

Control Unit Input Test - With Super Locking (cont'd)

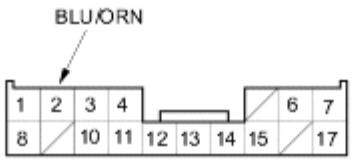
1. 1. Before testing, troubleshoot the multiplex control system (see page 22-273).
   2. Remove the dashboard lower cover.
   3. Disconnect the under-dash fuse/relay box connectors.

NOTE: All connectors are wire side of female terminals.

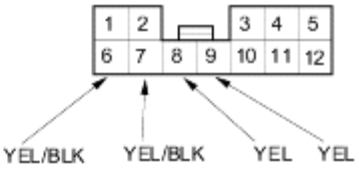
UNDER-DASH FUSE/RELAY BOX CONNECTOR J (8P)



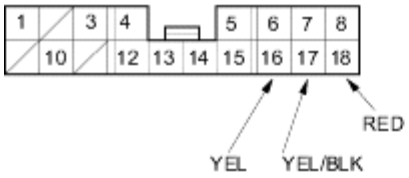
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



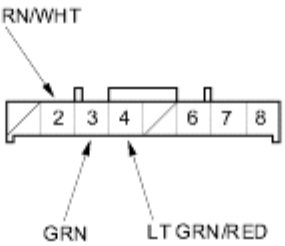
UNDER-DASH FUSE/RELAY BOX CONNECTOR M (12P)



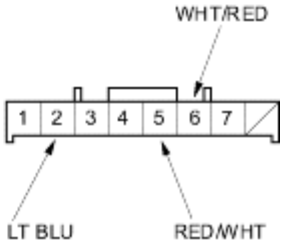
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



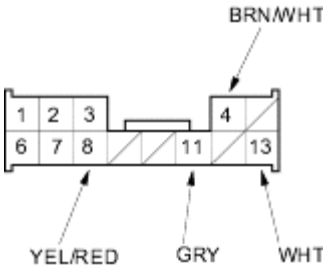
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



2. 4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

Keyless/Power Door Lock System

Control Unit Input Test - With Super Locking (cont'd)

1. 5. Reconnect the connectors and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire
J7	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • An open in the wire
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector No. 2 terminal: There should be continuity.	• An open in the wire
M6 M9	YEL/BLK YEL	Connect J7 terminal to M7 [M9] terminal, and M9 [M6] terminal to J4 terminal.	Check actuator operation: The driver's door lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • Faulty actuator • Faulty super locking control unit • An open in the wire
M7 M8	YEL/BLK YEL	Connect J7 terminal to M7 [M8] terminal, and M8 [M7] terminal to J4 terminal.	Check actuator operation: The front passenger's door lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • Faulty actuator • Faulty super locking control unit • An open in the wire
P17 P16	YEL/BLK YEL	Connect J7 terminal to P17 [P16] terminal, and P16 [P17] terminal to J4 terminal.	Check actuator operation: The left rear door or right rear door or tailgate lock actuator should lock [unlock].	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • Faulty actuator • Faulty left rear or right rear super locking control unit. • An open in the wire
J4	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301) • An open in the wire

Keyless/Power Door Lock System

Control Unit Input Test - With Super Locking (cont'd)

1. 6. Reconnect all connector to the under-dash fuse/relay box and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P18	RED	Tailgate open	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G553) • Faulty tailgate latch switch • An open in the wire
		Tailgate closed	Check for voltage to ground: There should be 5 V or more.	
X5	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	
Q4	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	
Q2	GRN/WHT	Left (right) rear door open	Check for voltage to ground: There should be 1 V or less.	• Faulty left (right) rear door switch • An open in the wire
		Left (right) rear door closed	Check for voltage to ground: There should be 5 V or more.	
Y4	BRN/WHT	Front passenger's or left rear or right rear door lock knob switch unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's or left rear or right rear door lock knob switch • Poor ground (G502, G551) • An open in the wire
X6	WHT/RED	Driver's door key cylinder switch lock	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
Y13	WHT	Driver's door key cylinder switch unlocked	Check for voltage to ground: There should be 1 V or less.	
		Driver's door key		

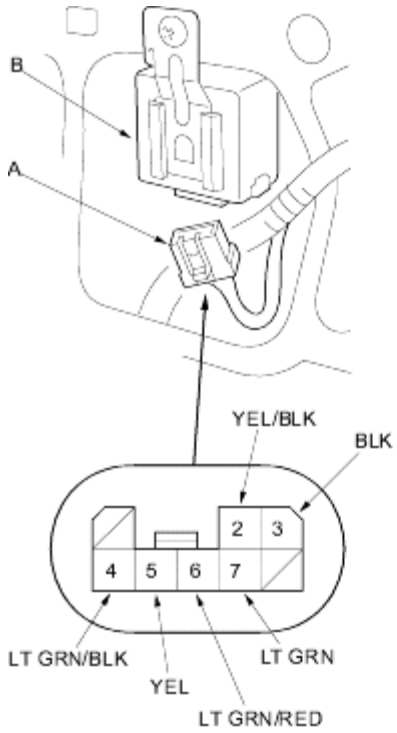
		cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
X2	LT BLU	Front passenger's door key cylinder switch lock	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door key cylinder switch • Poor ground (G502) • An open in the wire
		Front passenger's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
Y11	GRY	Tailgate key cylinder switch lock	Check for voltage to ground: There should be 1 V or less.	• Faulty tailgate key cylinder switch • Poor ground (G553) • An open in the wire
		Tailgate key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	

Keyless/Power Door Lock System

Super Locking Control Unit Input Test

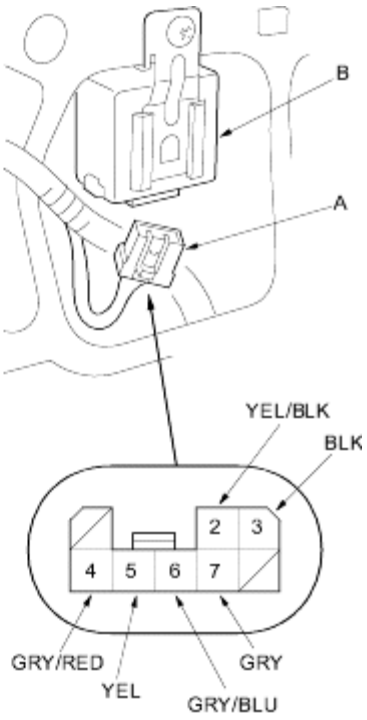
1. 1. Remove the each door panel (see page 20-7).
   2. Disconnect the 8 P connector (A) from the super locking control unit (B).Inspect the connector and socket terminals to be sure they are all making good contact.
      - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
      - If the terminals look OK, make the following input tests at the connector.
   - – If a test indicates a problem, find and correct the cause, then recheck the system.
   - – If all the input tests prove OK, the control unit must be faulty, replace it.

Driver's



Wire side of female terminals

Passenger's



Wire side of female terminals

Keyless/Power Door Lock System

Super Locking Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G502, G551) • An open in the wire
2	YEL/BLK	Connect the No. 2 terminal to the No. 7 terminal and the No. 6 terminal to the No. 3 terminal momentarily with ignition switch ON (II)	Check actuator operation: The actuator should lock.	• Faulty door lock actuator • An open in the wire
7	LT GRN [GRY]			
5	YEL	Connect the No. 5 terminal to the No. 6 terminal and the No. 7 terminal to the No. 3 terminal momentarily with ignition switch ON (II)	Check actuator operation: The actuator should unlock.	
6	LT GRN/RED [GRY/BLU]			
4	LT GRN/BLK [GRY/RED]	Under all condition	Check for continuity between the No. 4 terminal and No. 7 terminal of the actuator. There should be continuity.	• An open in the wire

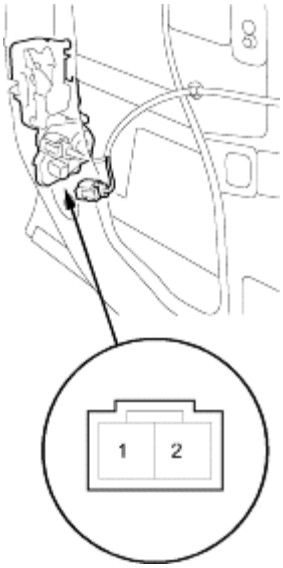
[ ]: Passenger's

Keyless/Power Door Lock System

Door Lock Actuator Test

Driver's door:

1. 1. Remove the driver's door panel (see page 20-7).
   2. Disconnect the 2P connector from the actuator.



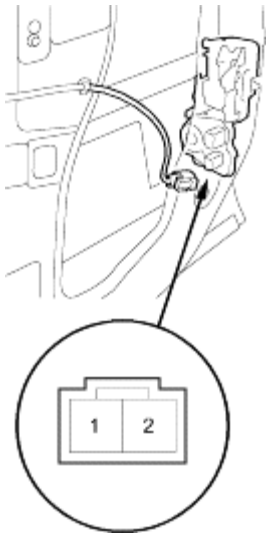
2. 3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

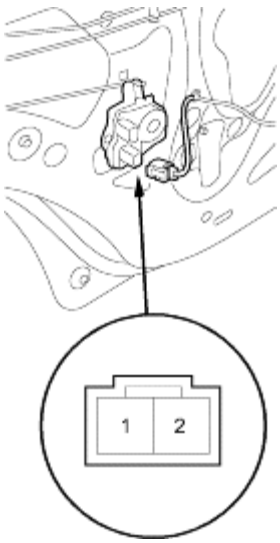
Passenger's door:

1. 1. Remove the passenger's door panel (see page 20-7).
   2. Disconnect the 2P connector from the actuator.

FRONT:



REAR:



2. 3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

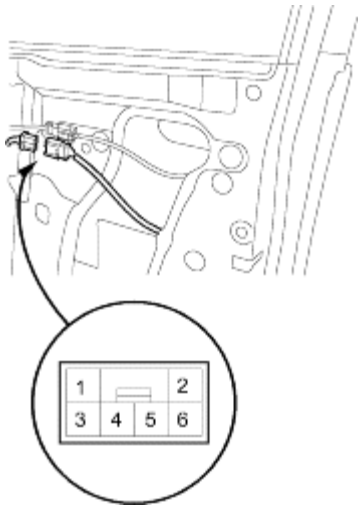
Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

Keyless/Power Door Lock System

Door Lock Actuator Test (cont'd)

5-door with Super Locking:

1. 1. Remove the driver's door panel (see page 20-209).
   2. Disconnect the 6 P connector from the actuator.

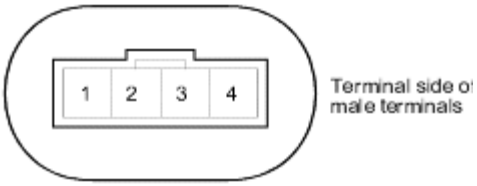


2. 3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

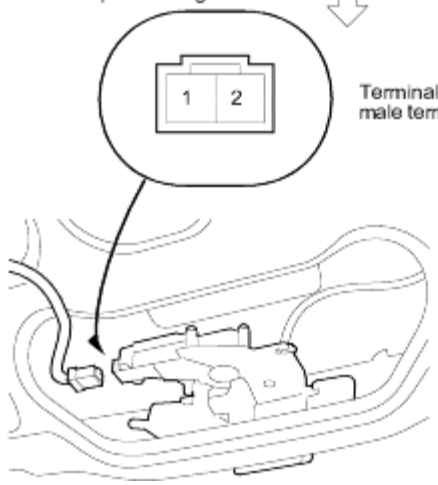
Terminal / Position	6	5
LOCK	⊕	⊖
UNLOCK	⊖	⊕

1. 1. Remove the tailgate trim panel (see page 20-209).
2. 2. Open the tailgate.
   3. Disconnect the 2P[4P]connector from the tailgate lock actuator.
      [ ]: With super locking

With Super Locking:



Without Super Locking:



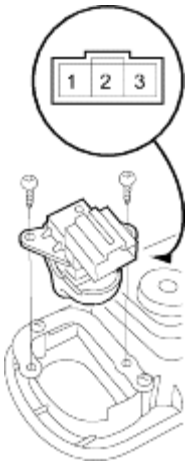
3. 4. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

Keyless/Power Door Lock System

Door Lock Actuator Test

1. 1. Remove the driver's door panel (see page 20-7).
2. 2. Remove the two mounting screws and the door lock switch.



3. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the door lock switch is in the LOCKED position.
   - There should be continuity between the No. 2 and No. 3 terminals when the door lock switch is in the UNLOCKED position.

Keyless/Power Door Lock System

Transmitter Test

NOTE:

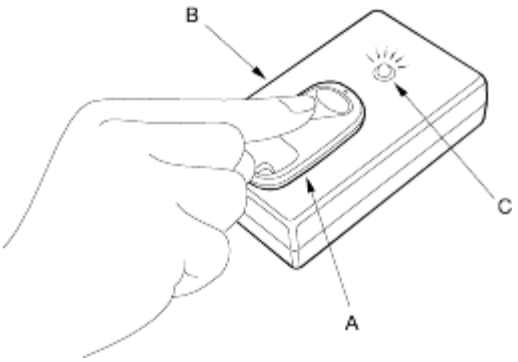
- If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.
- If any door is open, you cannot lock the door with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

Using a keyless entry checker, (07MAJ-SP00300):

Put the transmitter (A) on the keyless entry checker (B) and press the button.

- If the ray indicator light (C) does not come on, check for:
  - a dead or low battery.
  - faulty transmitter.
- If the ray indicator light comes on, the transmitter is OK.

NOTE: When the transmitter battery was replaced, aim the transmitter at the receiver and press the transmitter button six times. The receiver is located behind the centre lower panel. Confirm you can hear the sound of the door lock actuators when you press the sixth time.



Storing transmitter codes:

The codes of up to three transmitters can be read into the keyless receiver unit memory. (If a fourth code is stored, the code which was input first will be erased.)

NOTE: It is important to maintain the time limits between the steps.

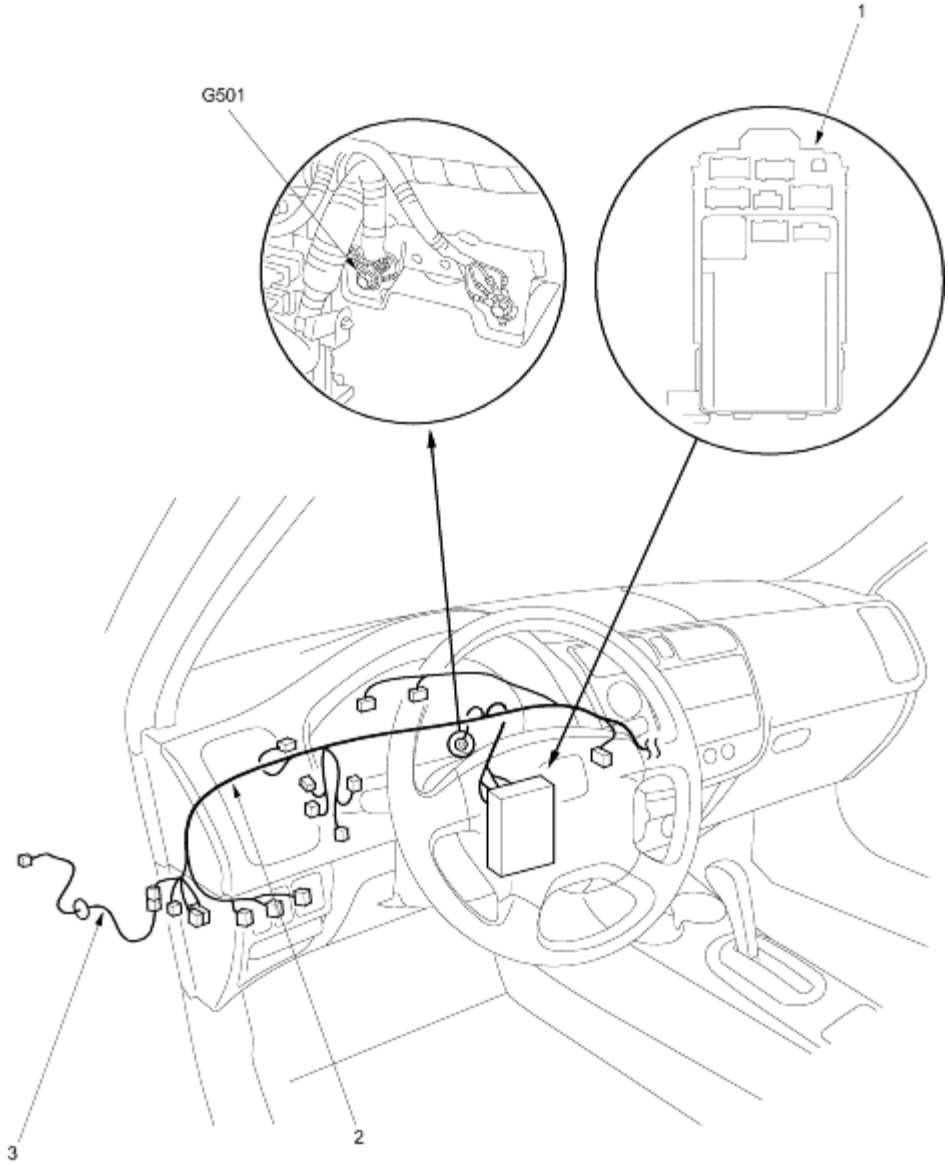
1. 1. Turn the ignition switch ON (II).
   2. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the key less receiver unit.
   3. Within 1 to 4 sec., turn the ignition switch OFF.
   4. Within 1 to 4 sec., turn the ignition switch ON (II).
   5. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the key less receiver unit.
   6. Within 1 to 4 sec., turn the ignition switch OFF.
   7. Within 4 sec., turn the ignition switch ON (II).
   8. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the key less receiver unit.
   9. Within 1 to 4 sec., turn the ignition switch OFF.
   10. Within 4 sec., turn the ignition switch ON (II).
   11. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the key less receiver unit.
   12. Confirm you can hear the sound of the door lock actuators. Within 1 to 4 sec., push the transmitter lock or unlock button again.
   13. Within 10 sec., aim the transmitters (up to three) whose codes you want to store at the receiver and press the transmitter lock or unlock buttons. Confirm that you can hear the sound of the door lock actuators after each transmitter code is stored.
   14. Turn the ignition switch OFF and pull out the key.
   15. Confirm proper operation with the new code(s).

Wire Harness and Ground Locations

Dashboard (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar

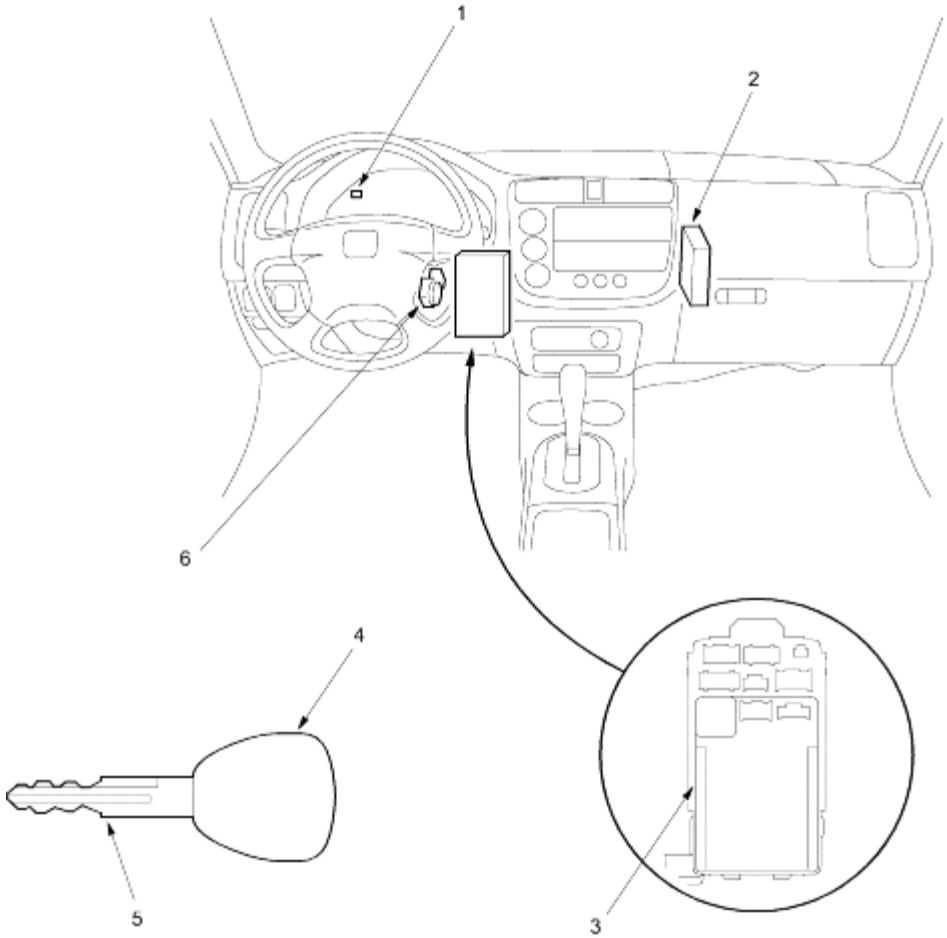


1. UNDER - DASH FUSE/RELAY BOX
2. DASH BOARD WIRE HARNESS A
   (Left branch)
3. LEFT SIDE TURN SIGNAL LIGHT SUB - HARNESS

Immobiliser System
Component Location Index

4-door:

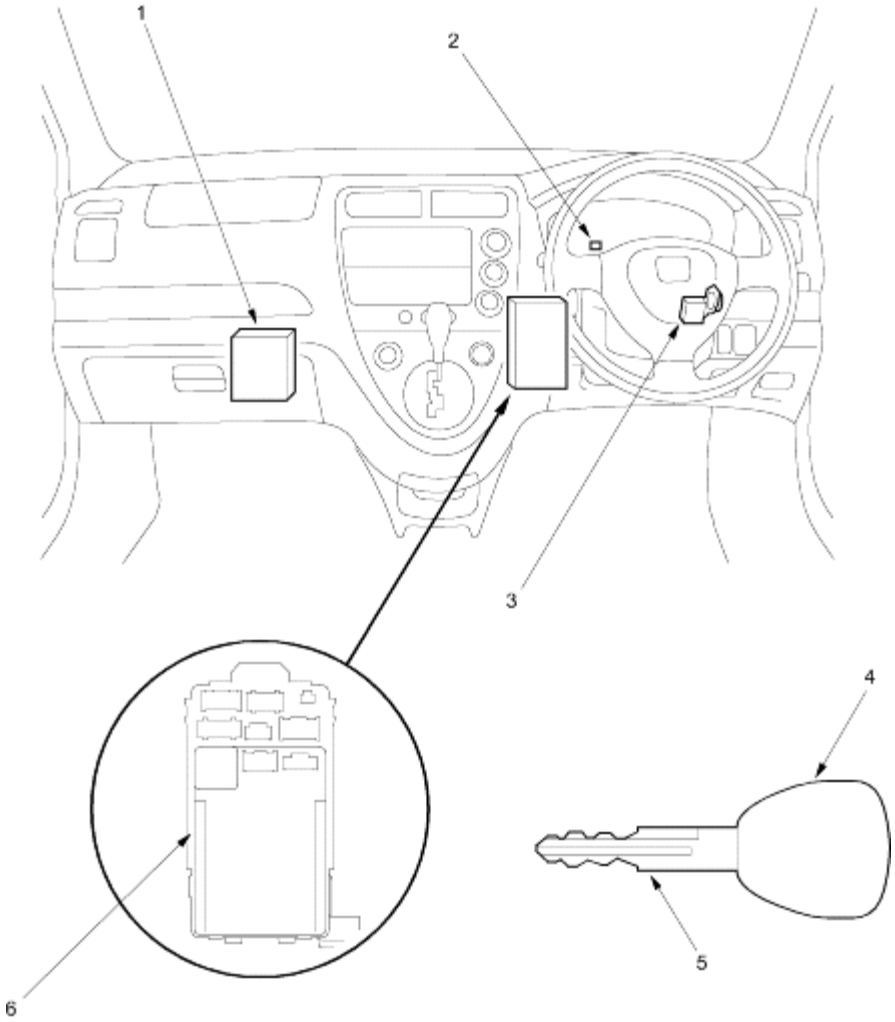
NOTE: LHD type is shown, RHD type is similar.



1. IMMOBILISER INDICATOR LIGHT
   Bulb Replacement, page 22-87
2. ECM/PCM
3. MULTIPLEX CONTROL UNIT
   Input Test, page 22-277
4. TRANSPONDER
   (Built into the ignition key)
5. IGNITION KEY
   (Master and valet keys)
6. IMMOBILISER CONTROL UNIT-RECEIVER
   Troubleshooting, page 22-245
   Replacement, page 22-246

Immobiliser System

Component Location Index (cont'd)



1. ECM/PCM
2. IMMOBILISER INDICATOR LIGHT
   Bulb Replacement, page 22-87
3. IMMOBILISER CONTROL UNIT-RECEIVER
   Troubleshooting, page 22-245
   Replacement, page 22-246
4. TRANSPONDER
   (Built into the ignition key)
5. IGNITION KEY
   (Master and valet keys)
6. MULTIPLEX CONTROL UNIT
   Input Test, page 22-277

Immobiliser System

System Description

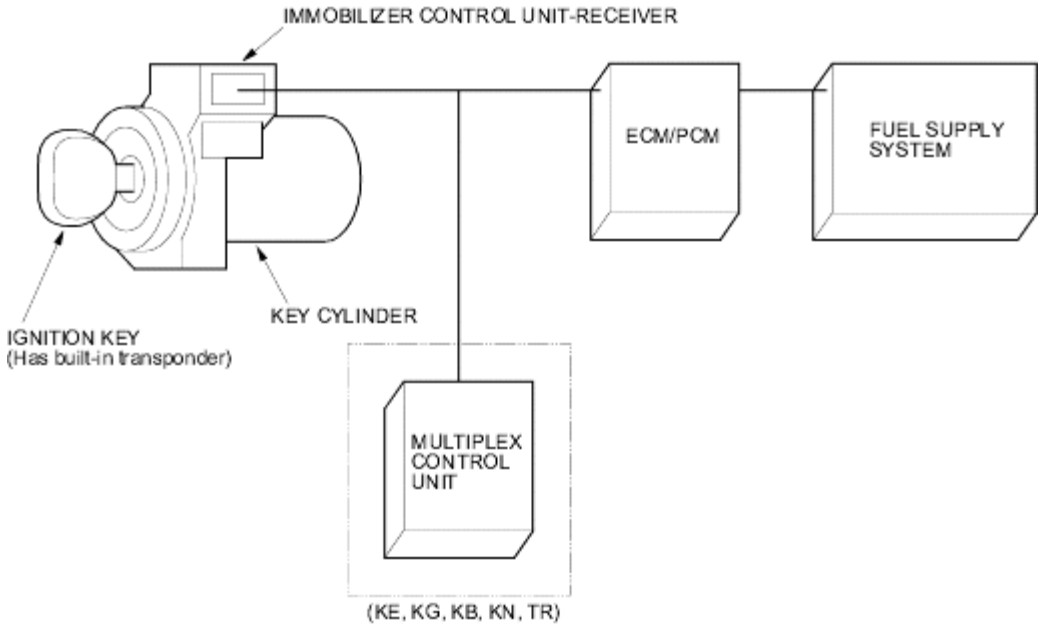
The vehicle is equipped with an Immobiliser system that will disable the vehicle unless the proper ignition key is used.

This system consists of a transponder located in the ignition key, an Immobiliser control unit-receiver, an indicator light, the multiplex control unit and the ECM/PCM.

The vehicle has two kinds of keys.

- The black master key for:
  - ignition switch.
  - door locks.
  - tailgate or trunk lid lock.
  - glove box.
- The grey valet key for:
  - ignition switch.
  - door locks.

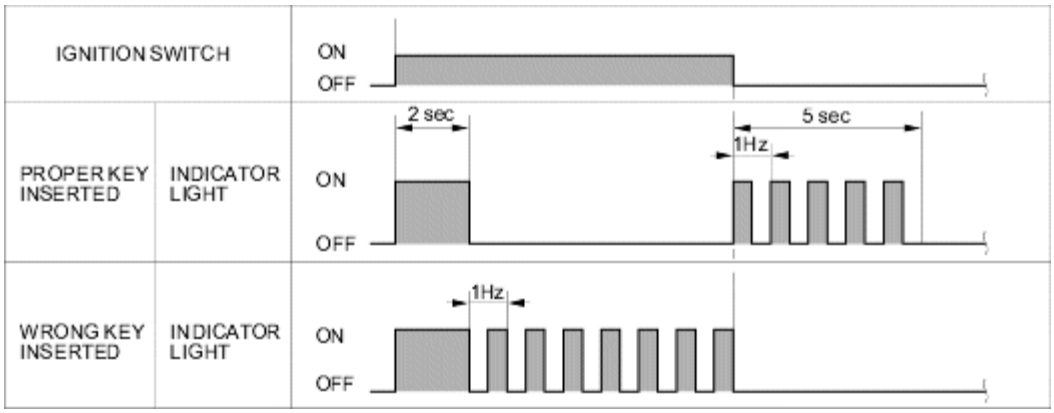
When the key is inserted in the ignition switch and turned to the (II) position, the Immobiliser control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back through the Immobiliser control unit-receiver to the ECM/PCM.



Immobiliser System
System Description (cont'd)

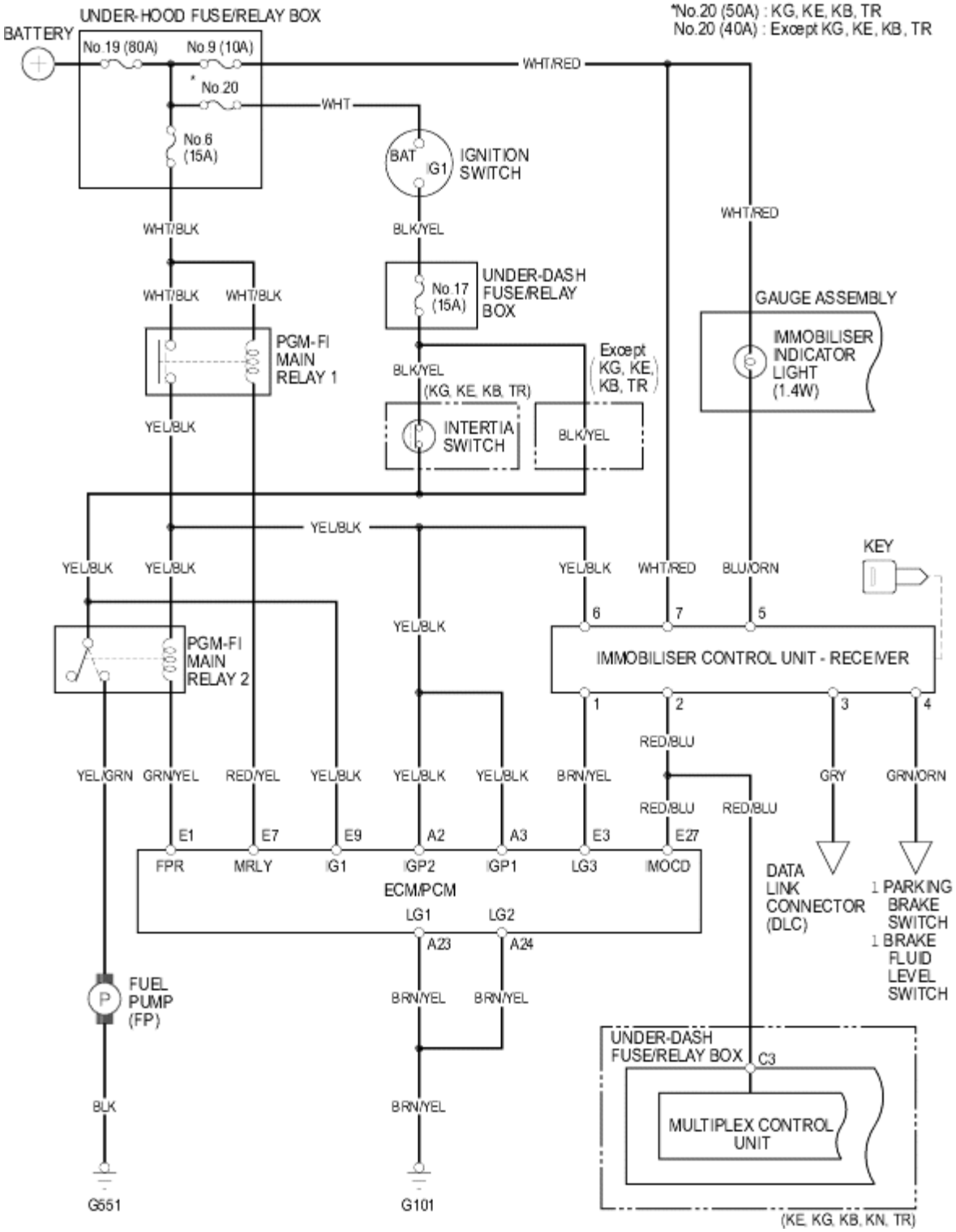
- If the proper key has been used, the immobiliser indicator light will come on for about 2 seconds, then go off.
- If the wrong key has been used whose code was not received or recognised by the unit, the indicator light will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.
- If the ignition switch is turned OFF, the indicator will blink for about 5 seconds to signal that the unit has been set correctly, then the indicator will go off.
- If the customer has lost his key, and cannot start the engine, contact Honda Customer Relations.

IMMOBILISER INDICATOR LIGHT BLINKING PATTERN:



Immobiliser System

Circuit Diagram



Immobiliser System
Troubleshooting

Before troubleshooting the Immobiliser system, troubleshoot any ECM/PCM with Diagnostic Trouble Codes (DTC's) (see page 11-3) and make sure the ECM/PCM has no malfunction.

Note these items before troubleshooting:

- Due to the action of the Immobiliser system, the engine takes slightly more time to start than on a vehicle without an Immobiliser system.
- When the system is normal and the proper key is inserted, the indicator light comes on for 2 seconds, then it will go off.
- If the indicator starts to blink after 2 seconds, or if the engine does not start, repeat the starting procedure.
- If the engine still does not start, continue with this procedure.

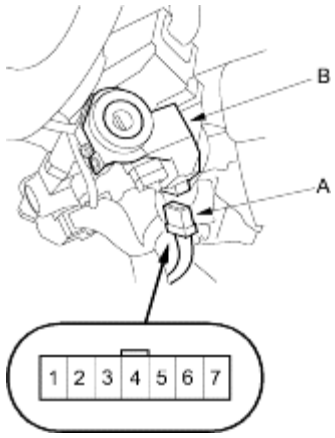
1. 1. Turn the ignition switch ON (II) with proper key.
   2. Check to see if the Immobiliser indicator light comes on.

   Does the indicator light blink?

   YES – Go to step 3.

   NO – Check for these problems. ■

   - Blown No. 9 (10A) fuse in the under-hood fuse/relay box.
   - An open in the wire between the gauge assembly and the Immobiliser control unit-receiver.
   - A faulty immobiliser indicator light.
   - An open in the wire between the gauge assembly and the under-hood fuse/relay box.
2. 3. Remove the dashboard lower cover.
   4. Remove the steering column lower covers (see page 17-9).
1. 5. Disconnect the 7P connector from the Immobiliser control unit-receiver.



2. 6. Check for voltage between the Immobiliser control unit-receiver 7P connector No. 7 terminal and body ground.

   Is there battery voltage?

   YES – Go to step 7.

   NO – Repair open in the WHT/RED wire. ■
3. 7. Check for voltage between the Immobiliser control unit-receiver 7P connector No. 6 terminal and body ground.

   Is there battery voltage?

   YES – Go to step 8.

   NO – Check for these problems:

   - Blown No. 6 (15A) fuse in the under-hood fuse/relay box.
   - Faulty PGM-FI main relay 1.
   - An open in the YEL/BLK wire.

Immobiliser System
Troubleshooting (cont'd)

Immobiliser Control Unit-Receiver Replacement

8. Check for voltage between the immobiliser control-unit receiver 7P connector No. 4 terminal and body ground with the parking brake lever pulled, then released.

Is there 1 V or less, then 5 V or more?

YES – Go to step 9.

NO – Check for these problems. ■

- Faulty parking brake switch or a poor body ground of the parking brake switch.
- Repair open in the GRN/ORN wire.

9. Check for continuity between the Immobiliser control unit-receiver 7P connector No. 1 terminal and ECM/PCM terminal D3.

Is there continuity?

YES – Go to step 10.

NO – Repair open in the BRN/YEL wire. ■

10. Check for continuity between the Immobiliser control unit-receiver 7P connector No. 2 terminal and ECM/PCM terminal D27.

Is there continuity?

YES – Go to step 11.

NO – Repair open in the RED/BLU wire. ■

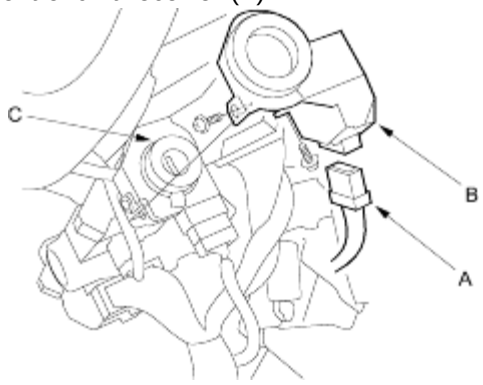
11. Check for continuity between the Immobiliser control unit-receiver 7P connector No. 2 terminal and the multiplex control unit (under-dash fuse/relay box connector terminal C3).

Is there continuity?

YES – Replace the Immobiliser control unit-receiver. After replacing the Immobiliser control unit-receiver, rewrite the unit with a Honda PGM-Tester. ■

NO – Repair open in the RED/BLU wire. If the harness is OK, check to see if there is any Diagnostic Trouble Code (DTC) for the multiplex control unit. If it is, troubleshoot the multiplex control unit (see page 11-3), then recheck. ■

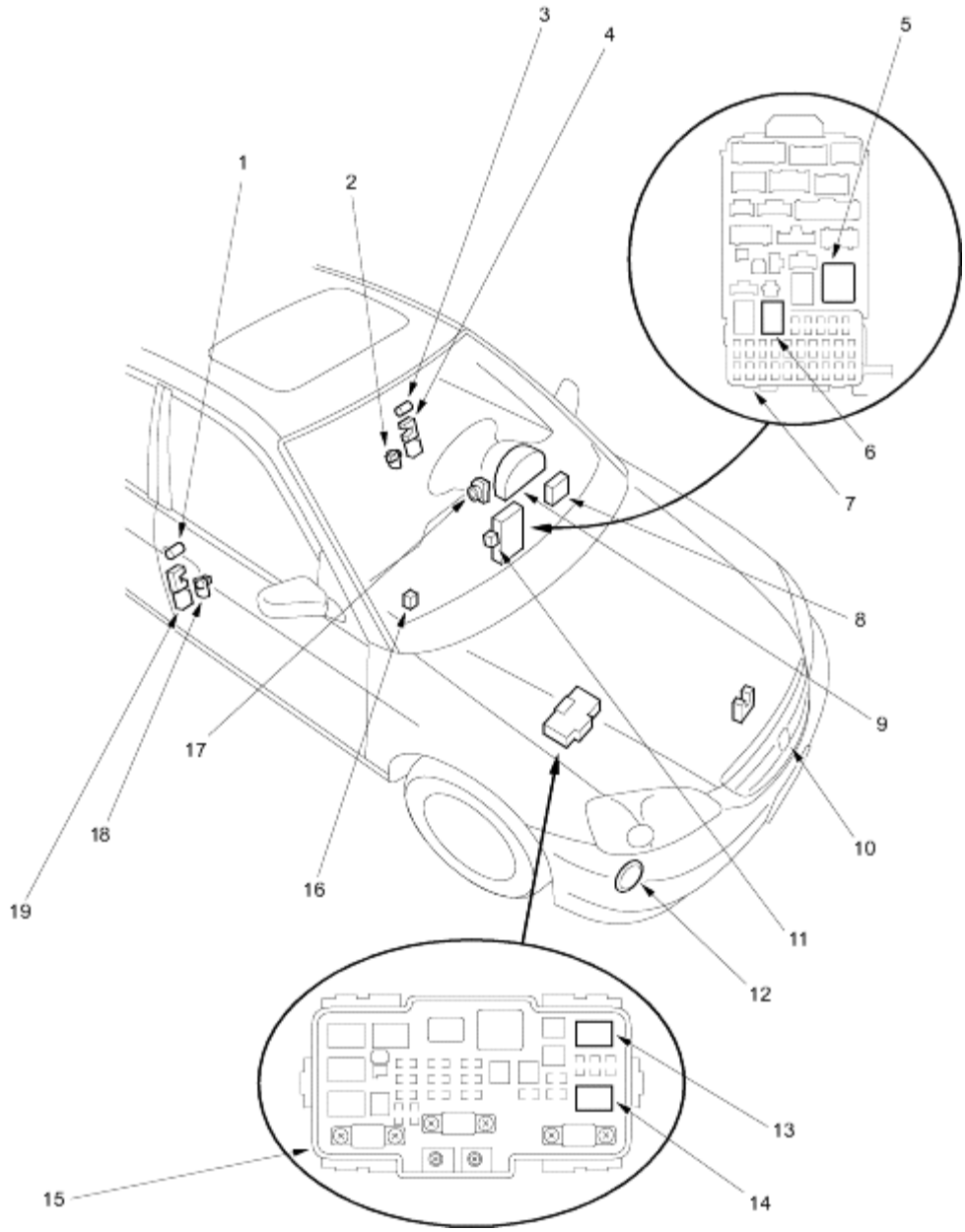
1. Remove the dashboard lower cover.
2. Remove the steering column covers (see page 17-9).
3. Disconnect the connectors (A) from the Immobiliser control unit-receiver (B).



4. Remove the two screws and the Immobiliser control unit-receiver from the ignition key cylinder (C).
5. Install the Immobiliser control unit-receiver in the reverse order of removal.
6. After replacement, check the Immobiliser system.

Security System
Component Location Index

NOTE: LHD type is shown, RHD type is similar.

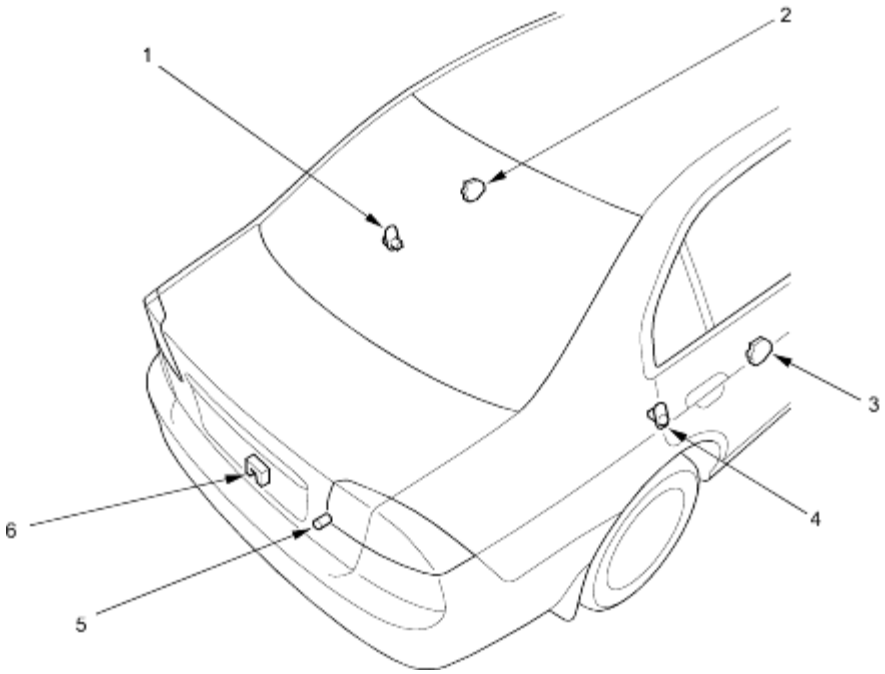


1. FRONT PASSENGER'S DOOR KEY CYLINDER SWITCH
   Test, page 22-264
2. DRIVER'S DOOR SWITCH
3. DRIVER'S DOOR KEY CYLINDER SWITCH
   Test, page 22-264
4. DRIVER'S DOOR LOCK KNOB SWITCH
   Test, page 22-262
5. TURN SIGNAL/HAZARD RELAY
   Input Test page 22-126
6. TAILLIGHT RELAY
   Test, page 22-80
7. UNDER - DASH FUSE/RELAY BOX
8. SECURITY CONTROL UNIT
   Input Test, page 22-256
9. SECURITY INDICATOR LIGHT
10. HOOD SWITCH
    Test, page 22-266
11. SECURITY HORN RELAY
    Test, page 22-266
12. SECURITY HORN
    Test, page 22-266
13. HEADLIGHT RELAY 1
    Test, page 22-80
14. HEADLIGHT RELAY 2
    Test, page 22-80
15. UNDER HOOD FUSE/RELAY BOX
    SECURITY STARTER CUT
16. RELAY (KH and KN models)
    Test, page 22-80
17. IGNITION KEY SWITCH
    Test, page 22-131
18. FRONT PASSENGER'S DOOR SWITCH
19. FRONT PASSENGER'S DOOR LOCK KNOB SWITCH
    Test, page 22-262

Security System

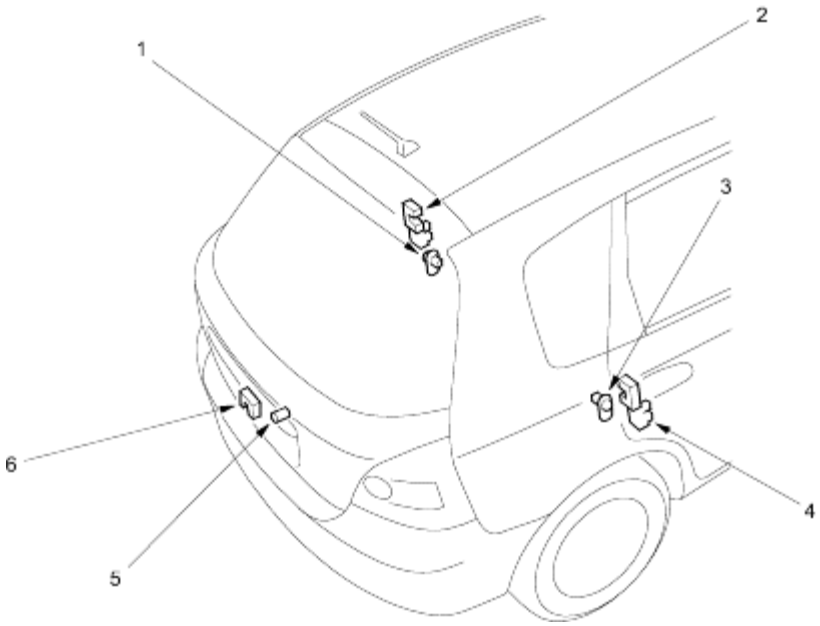
Component Location Index (cont'd)

4-door



1. LEFT REAR DOOR SWITCH
2. LEFT REAR DOOR LOCK KNOB SWITCH
   Test, page 22-262
3. RIGHT REAR DOOR LOCK KNOB SWITCH
   Test, page 22-262
4. RIGHT REAR DOOR SWITCH
5. TRUNK KEY CYLINDER SWITCH
   Test, page 22-265
6. TRUNK LATCH SWITCH
   Test, page 22-139

5-door



1. LEFT REAR DOOR SWITCH
2. LEFT REAR DOOR LOCK KNOB SWITCH
3. Test, page 22-263RIGHT REAR DOOR SWITCH
4. RIGHT REAR DOOR LOCK KNOB SWITCH
5. Test, page 22-263TAILGATE KEY CYLINDER SWITCH
   Test, page 22-265
6. TAILGATE LATCH SWITCH
   Test, page 22-267

Security System
System Description

Security Alarm System

The security alarm system is armed automatically after the doors, hood and trunk or tailgate are closed and locked. The security indicator on the gauge assembly flashes after the system is armed.

The system is set off when any of these things occur.

- A door is forced open
- A door is unlocked without using the key or the transmitter
- The trunk lid or tailgate is opened without using the key.
- The hood is opened
- The engine starter circuit and battery circuit are bypassed by breaking the ignition switch (KH and KN models)

When the system is set off, the alarm sounds and the exterior lights (headlights, parking lights and taillights: KX model or turn signal lights: except (KX model) flash for 2 minutes (KX model) or 30 seconds (Except KX model) or until the system is disarmed by unlocking either door with the key or the transmitter.

For the system to arm, the ignition switch must be off and the key removed. Then, the security control unit must receive signals that the doors, hood and trunk lid or tailgate are closed and locked. When everything is closed and locked, none of the control unit inputs are grounded.

The door switches, hood switch, trunk latch switch or tailgate latch switch, door lock knob switches and door lock key cylinder switches are all open,. 10 seconds after the doors are locked with the key or the lock knob, or immediately after locking the doors with the remote transmitter, the system arms.

If anything is opened or improperly unlocked after the system is armed, the control unit gets a ground signal from that switch and the system is set off.

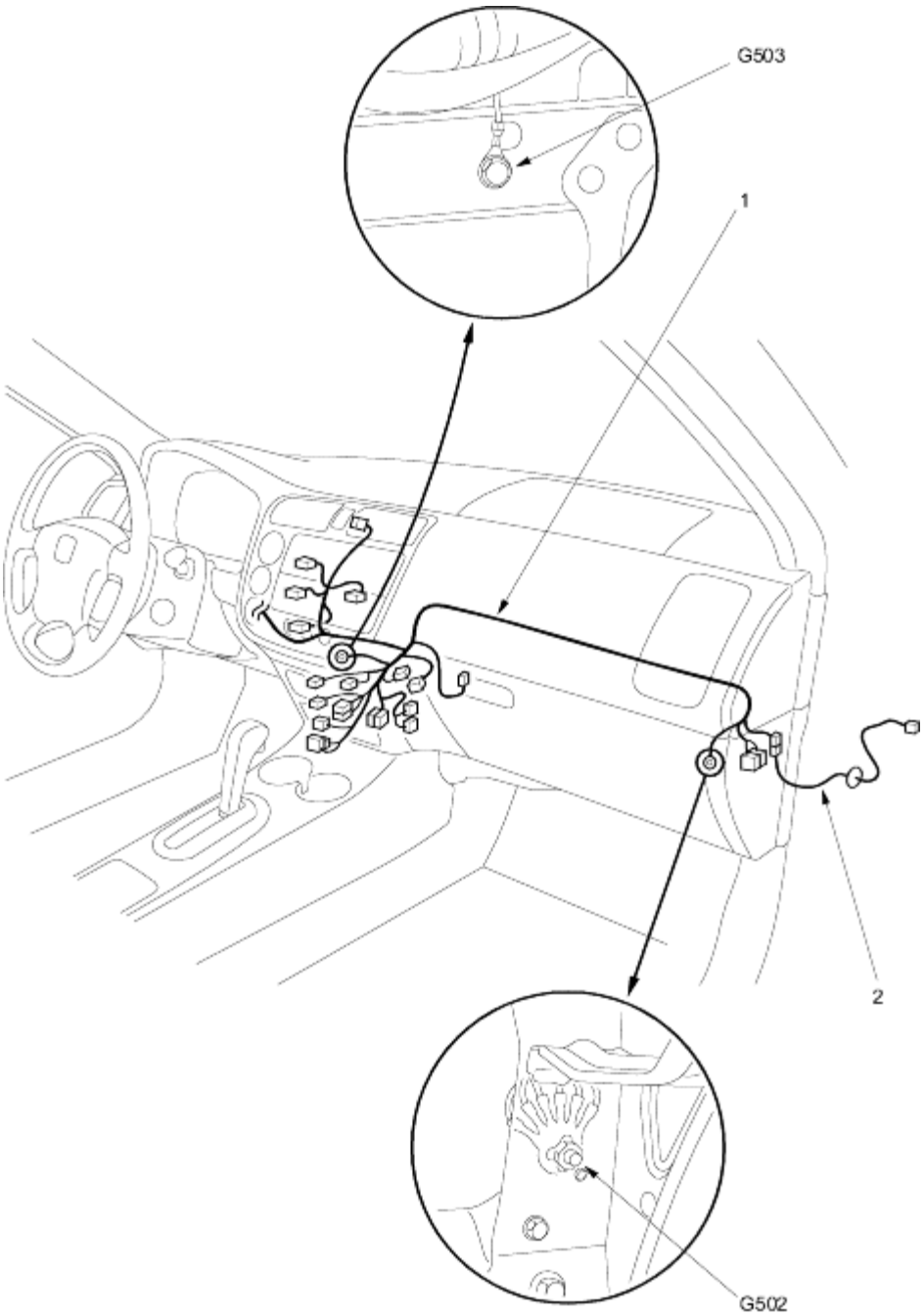
If one of the switches is misadjusted or there is a short in the system, the system will not arm. As long as the control unit continues to get a ground signal, it thinks the vehicle is not closed and locked and will not arm.

An alarm that sounds for no apparent reason may have been set off by switch that is on the threshold of misadjustment. In this case, it may only take a significant change in outside temperature, the vibration of a passing truck, or someone bumping into the vehicle to make the alarm sound.

Wire Harness and Ground Locations

Dashboard (cont'd)

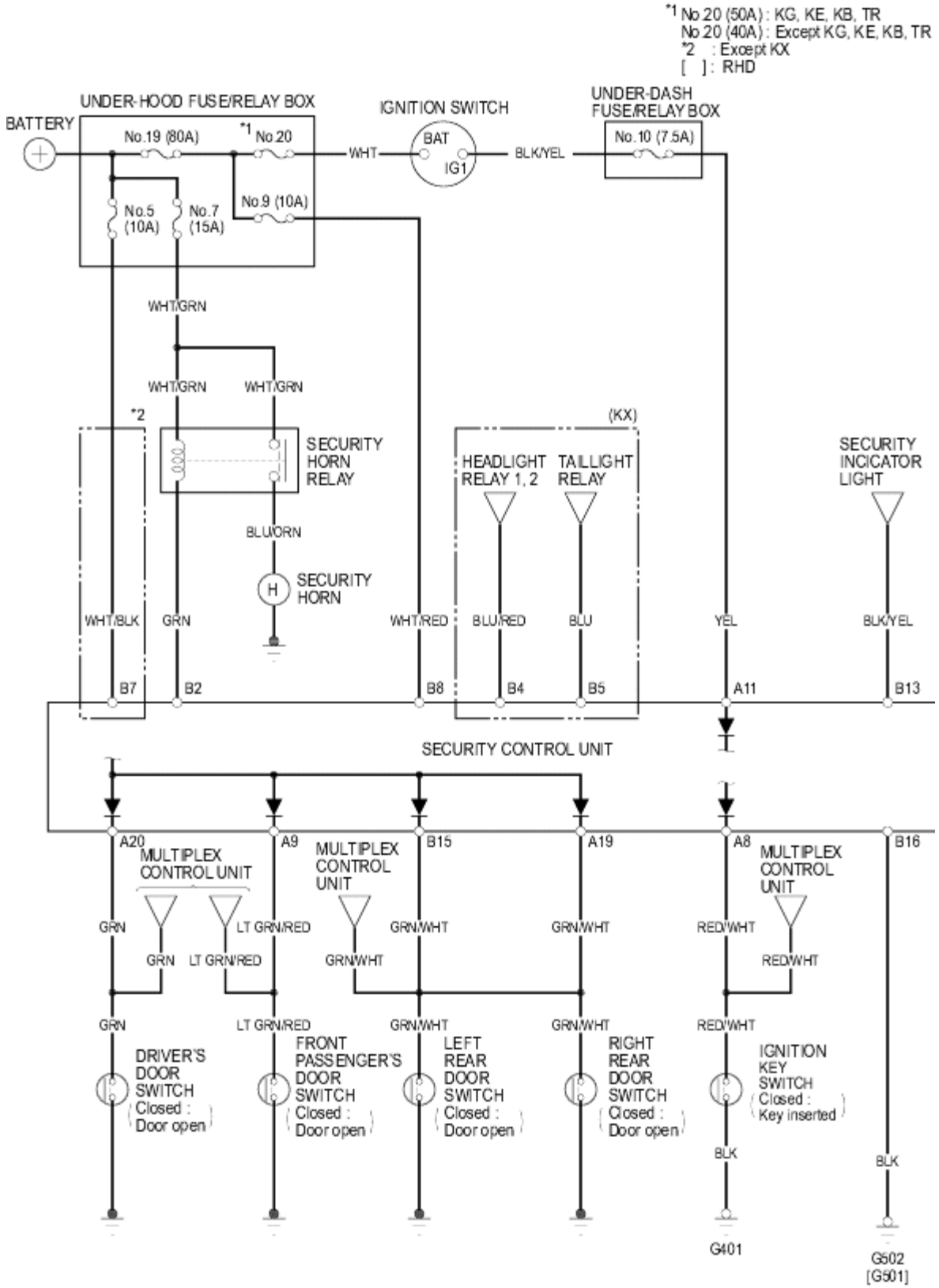
4 - door:



1. DASHBOARD WIRE HARNESS A (Right branch)
2. RIGHT SIDE TURN SIGNAL LIGHT SUB - HARNESS

Security System

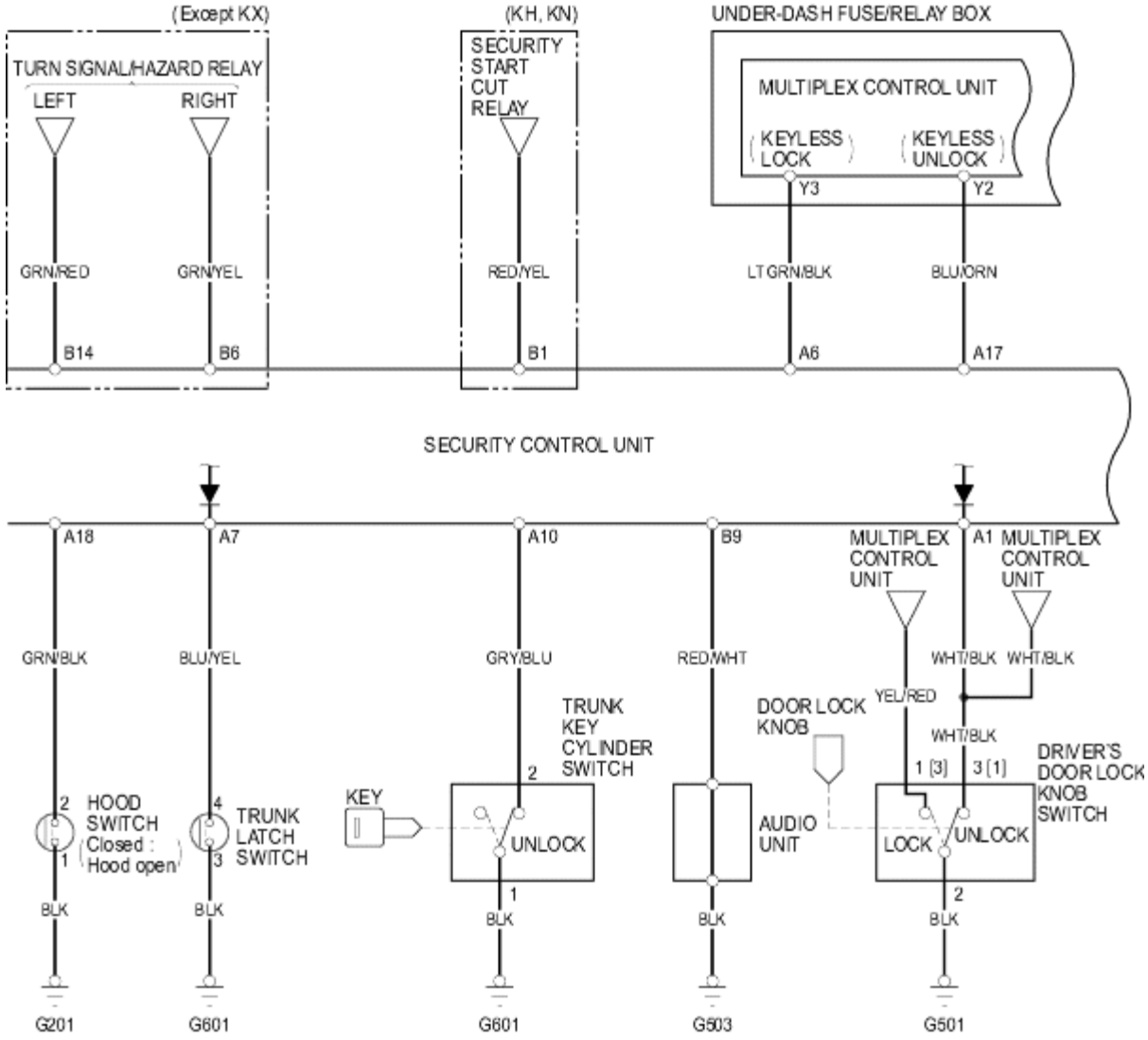
Circuit Diagram



Security System

Circuit Diagram (cont'd)

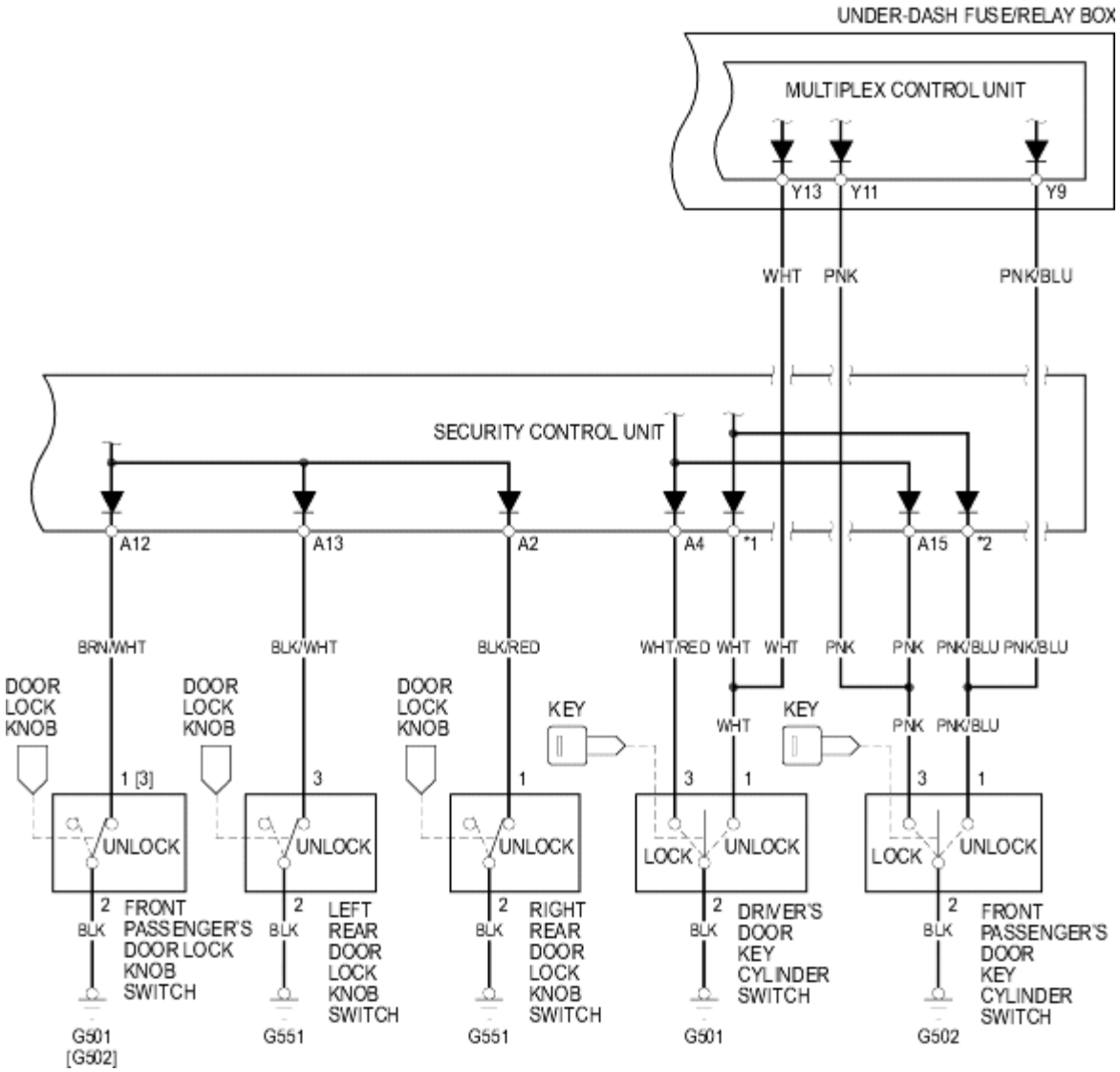
[ ] : RHD



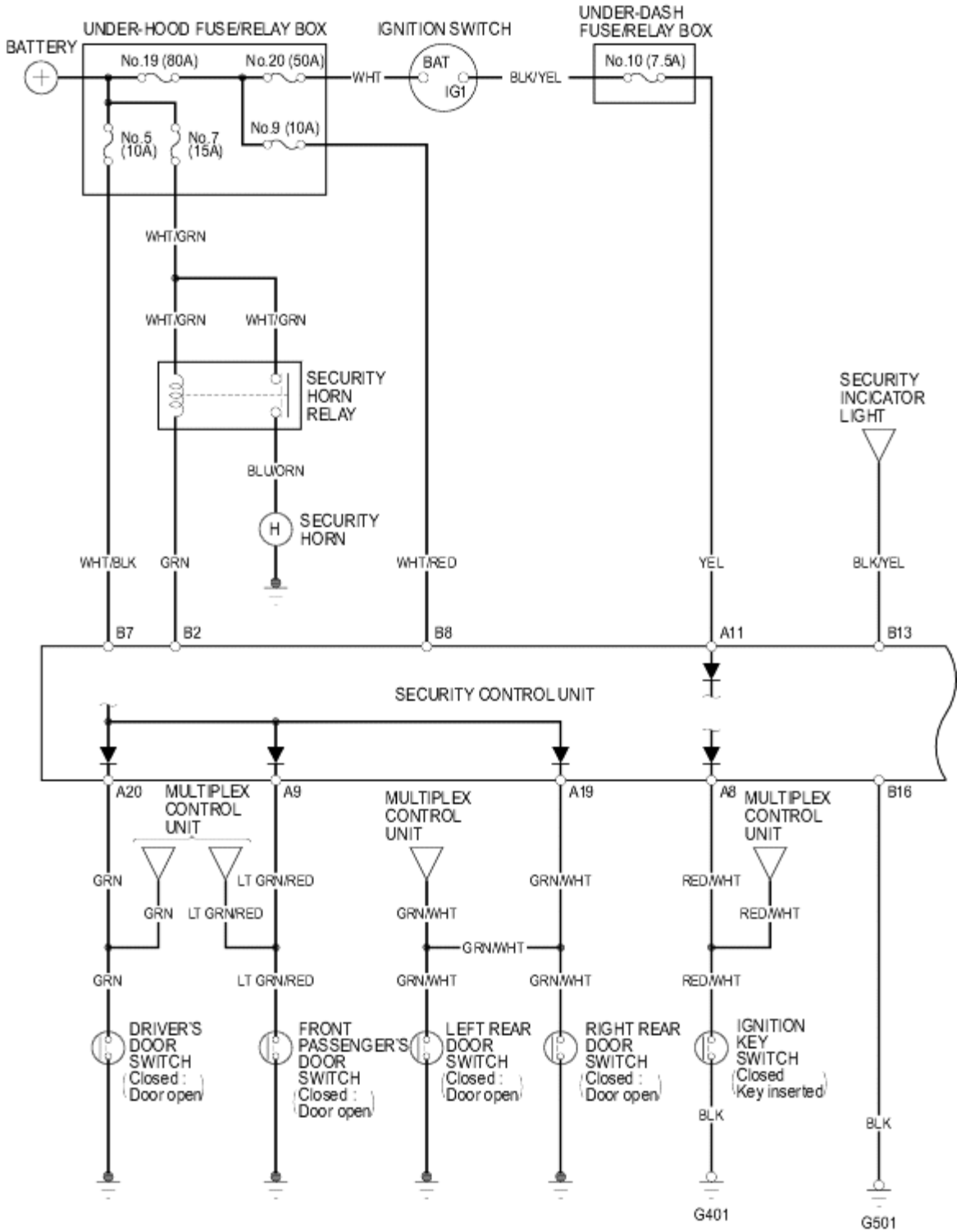
Security System

Circuit Diagram (cont'd)

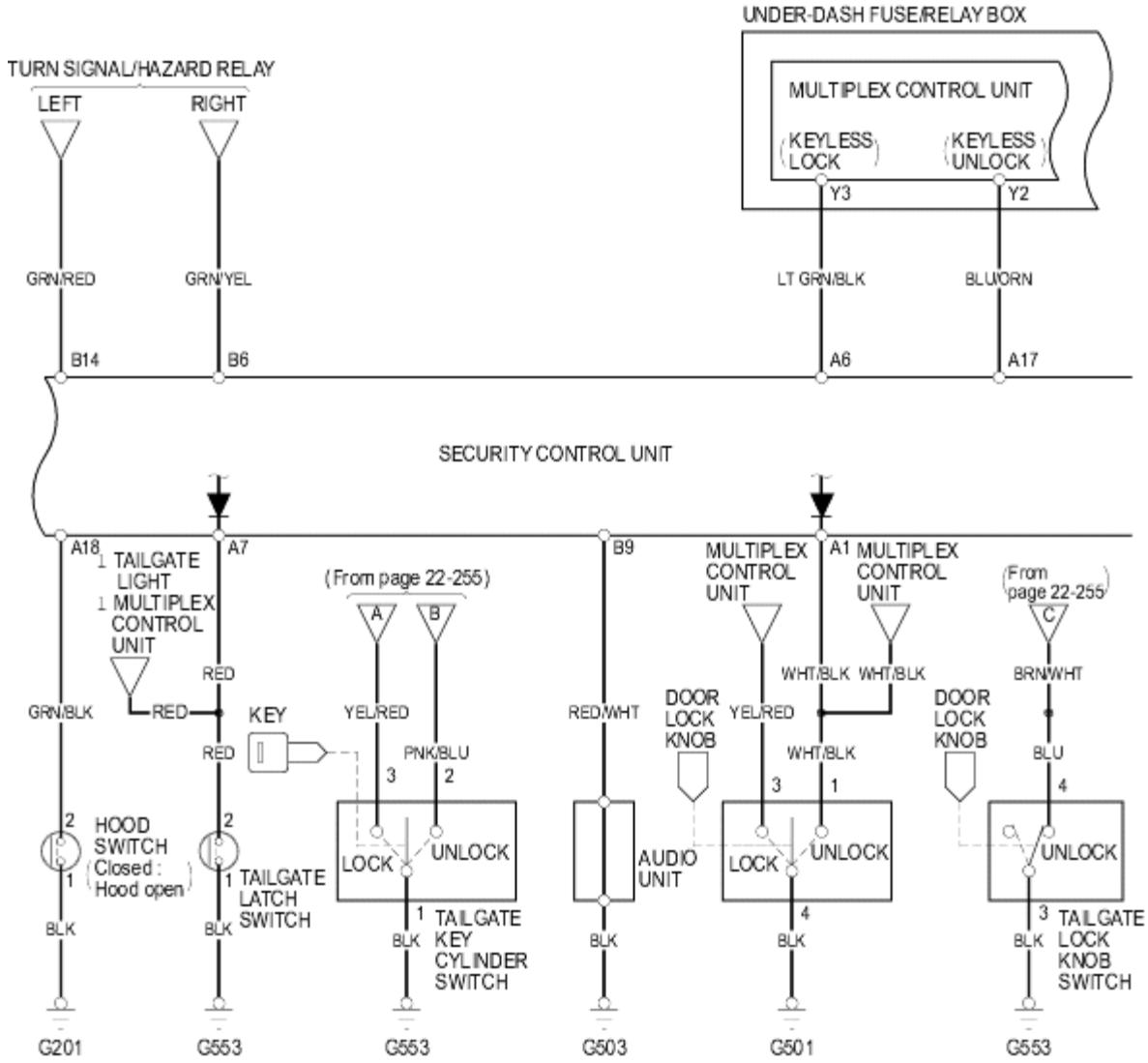
*1 A3 : KX
B3 : Except KX
*2 A14 : KX
B10 : Except KX
[ ] : RHD



Security System
Circuit Diagram (cont'd)

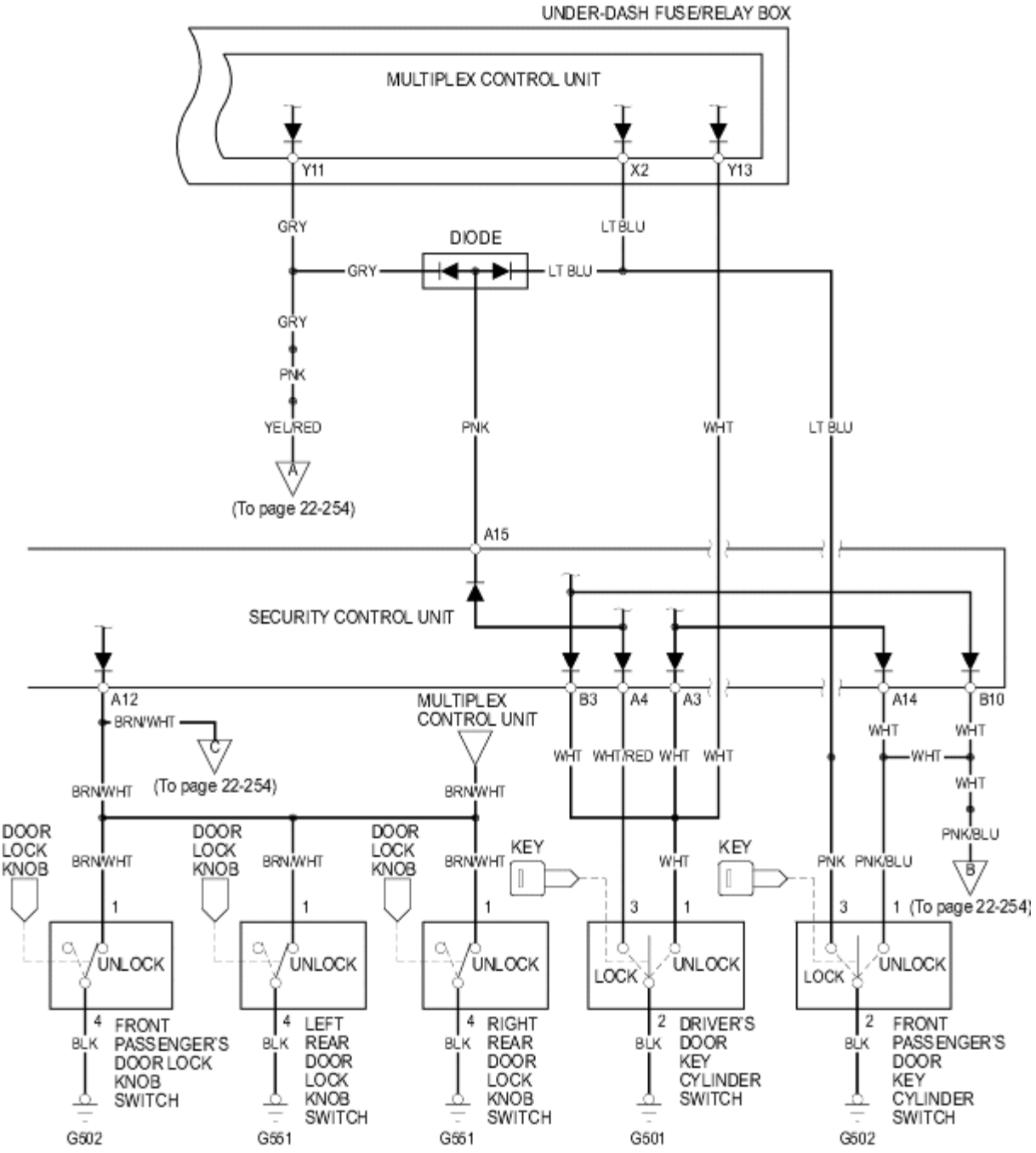


Security System
Circuit Diagram (cont'd)



Security System

Circuit Diagram (cont'd)

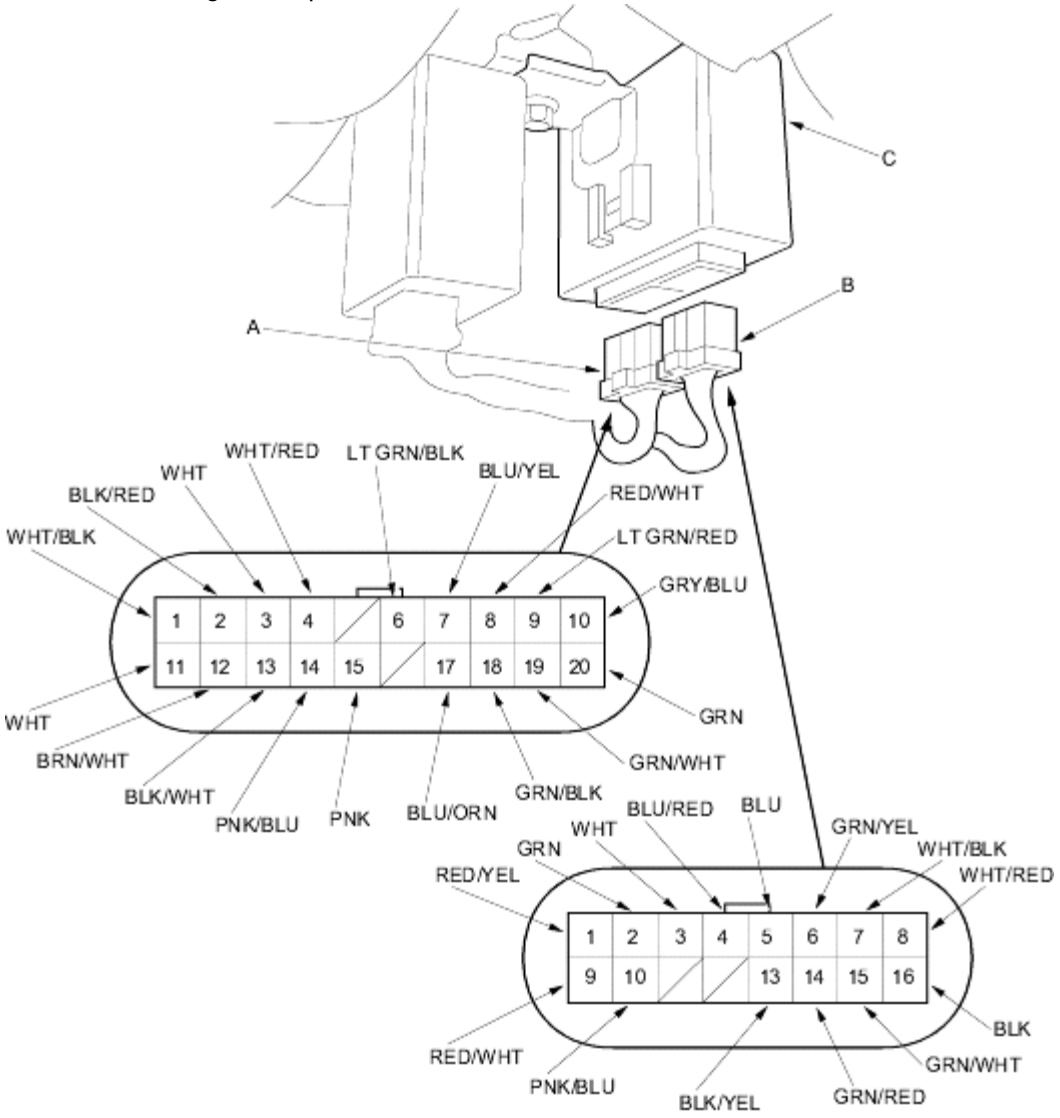


Security System

Security Control Unit Input Test

4-door:

1. 1. Remove the dashboard lower cover (see page 20-75).
   2. Disconnect the 20P connector (A) and 16P connector (B) from the control unit (C).
   3. Inspect the all connector and socket terminals to be sure they are all making good contact.
      - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
      - If the terminals look OK, go to step 4.



Wire side of female terminals

Security System

Security Control Unit Input Test (cont'd)

1. 4. If any tests indicate a problem, find and correct the cause, then recheck the system.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire
B7	WHT/BLK	Under all condition	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (10A) fuse in the under-hood fuse/relay box • An open in the wire
A11	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
B16	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502 or G501: 5-door) • An open in the wire
B13	BLK/YEL	Under all conditions	Attach to ground: The security indicator should come on.	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • Faulty gauge assembly • An open in the wire
B2	GRN	Under all conditions	Attach to ground: Security horn should sound	• Blown No. 7 (15A) fuse in the under-hood fuse/relay box • Faulty security horn relay • Faulty security horn • An open in the wire
B4	BLU/RED	Under all conditions	Attach to ground: Headlights should come on	• Faulty headlight relay 1 or 2 • An open in the wire
B5	BLU	Under all conditions	Attach to ground: The taillights should come on.	• Faulty taillight relay • An open in the wire
B9	RED/WHT	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G503) • Faulty audio unit • An open in the wire
A6	LT GRN/BLK	Under all conditions	Check for continuity to ground: There should be continuity	• An open in the wire
A17	BLU/ORN	Under all conditions	Check for continuity to ground: There should be continuity.	• An open in the wire
B1	RED/YEL	Ignition switch START (III)	Starting the engine	• Faulty security starter cut relay • An open in the wire
B14	GRN/RED	Ignition switch OFF	Attach to ground: The turn signal lights should come on.	• Blown No. 5 (10A) fuse in the under-hood fuse/relay box • Faulty turn signal switch • Faulty turn signal/hazard relay • An open in the wire
B6	GRN/YEL	Ignition switch OFF		

2. 5. Reconnect the connectors to the security control unit and perform the following input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, the security control unit internal circuit must be faulty.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A20	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V	• Faulty driver's door switch • An open in the wire

		Driver's door closed	Check for voltage to ground: There should be 5 V or more	
A9	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	
B15	GRN/WHT	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	
A19	GRN/WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	

Security System

Security Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A8	RED/WHT	Ignition key is in the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key is out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	
A18	GRN/BLK	Hood open	Check for voltage to ground: there should be 1 V or less.	• Faulty hood switch • Poor ground (G201) • An open in the wire
		Hood closed	Check for voltage to ground: There should be 5 V or more	
A7	BLU/YEL	Trunk lid open	Check for voltage to ground: There should be 1 V or less.	• Faulty trunk latch switch • Poor ground (G601) • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be 5 V or more.	
A10	GRY/BLU	Trunk key cylinder switch unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty trunk key cylinder switch • Poor ground (G601) • An open in the wire
		Trunk key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
A1	WHT/BLK	Driver's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door lock knob switch • Poor ground (G501) • An open in the wire
		Driver's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A12	BRN/WHT	Front passenger's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door lock knob switch • Poor ground (G501 or G502: 5-door) • An open in the wire
		Front passenger's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A13	BLK/WHT	Left rear door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty left rear door lock knob switch • Poor ground (G551) • An open in the wire
		Left rear door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A2	BLK/RED	Right rear door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty right rear door lock knob switch • Poor ground (G551) • An open in the wire
		Right rear door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A4	WHT/RED	Driver's door key cylinder locked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder

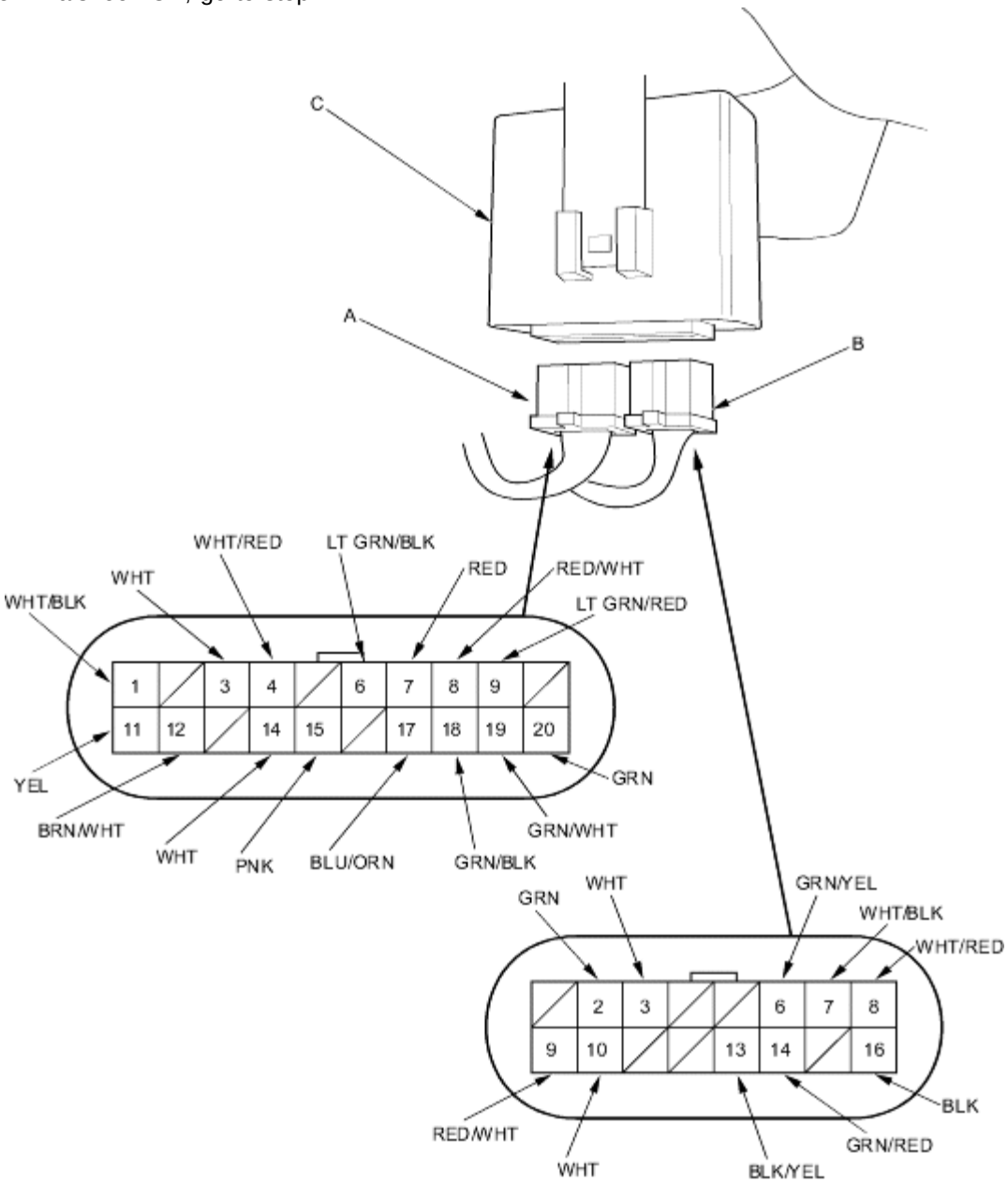
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	switch • Poor ground (G501) • An open in the wire • A short to ground
A3 . B3	WHT	Driver's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A15	PNK	Front passenger's door key cylinder locked	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door key cylinder switch • Poor ground (G502) • An open in the wire • A short to ground
		Front passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A14 . B10	PNK/BLU	Front passenger's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	
		Front passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	

Security System

Security Control Unit Input Test (cont'd)

5-door:

1. 1. Remove the dashboard lower cover (see page 20-217).
   2. Disconnect the 20P connector (A) and 16P connector (B) from the control unit (C).
   3. Inspect the all connector and socket terminals to be sure they are all making good contact.
      - If the terminals are bent, louse or corroded, repair them as necessary and recheck the system.
      - If the terminals look OK, go to step 4.

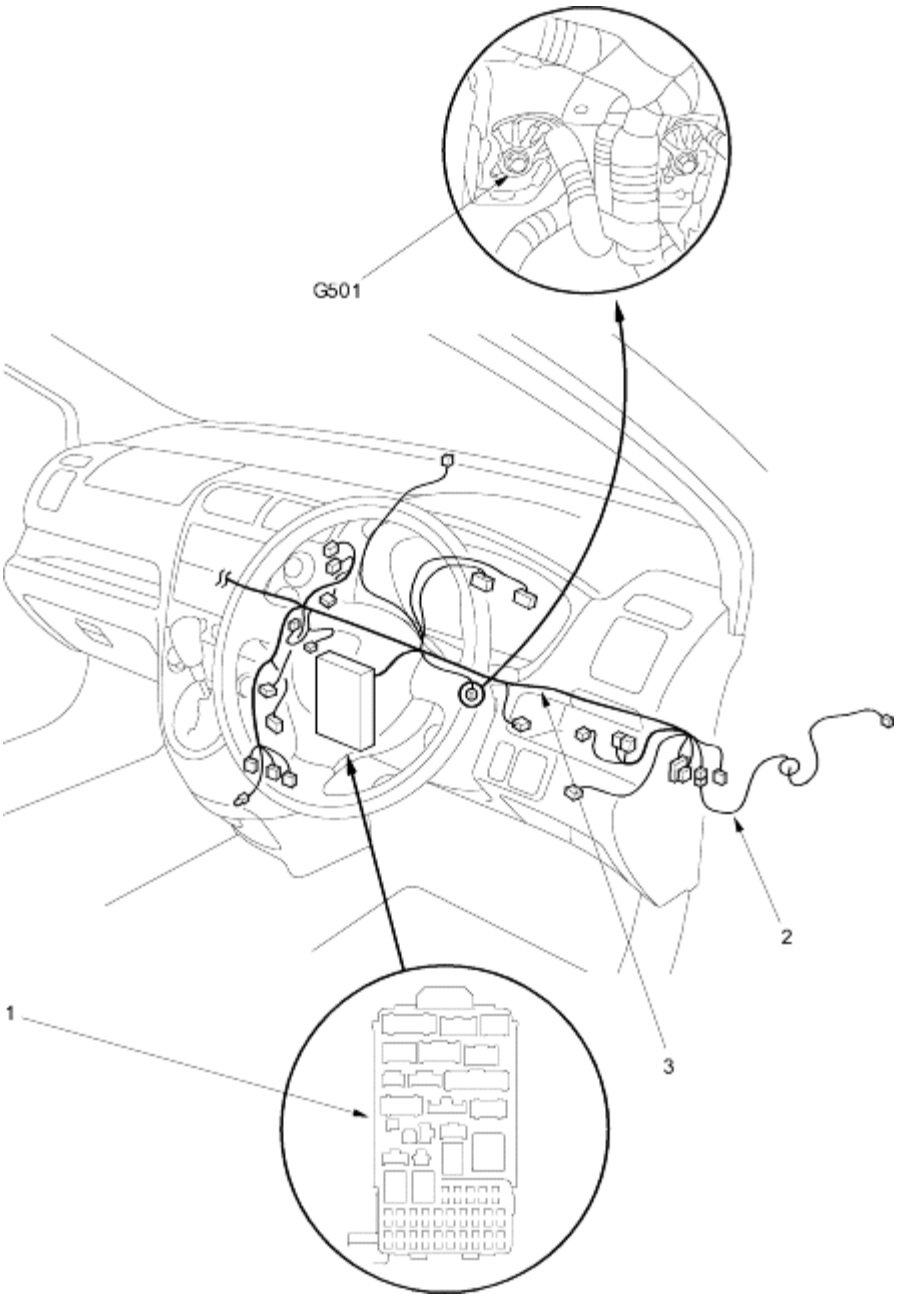


Wire side of female terminals

Wire Harness and Ground Locations

Dashboard (cont'd)

5 - door:



1. UNDER - DASH FUSE/RELAY BOX
2. RIGHT SIDE TURN SIGNAL LIGHT SUB - HARNESS
3. DASHBOARD WIRE HARNESS A (Right branch)

Security System

Security Control Unit Input Test (cont'd)

1. 4. If any tests indicate a problem, find and correct the cause, then recheck the system.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire
B7	WHT/BLK	Under all condition	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (10A) fuse in the under-hood fuse/relay box • An open in the wire
A11	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be continuity.	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
B16	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502 or G501: 5-door) • An open in the wire
B13	BLK/YEL	Under all conditions	Attach to ground: The security indicator should come on	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • Faulty gauge assembly • An open in the wire
B2	GRN	Under all conditions	Attach to ground: Security horn should sound.	• Blown No. 7 (15A) fuse in the under-hood fuse/relay box • Faulty security horn relay • Faulty security horn • An open in the wire
B9	RED/WHT	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G503) • Faulty audio unit • An open in the wire
A6	LT GRN/BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• An open in the wire
A17	BLU/ORN	Under all conditions	Check for continuity to ground: There should be continuity.	• An open in the wire
B14 B6	GRN/RED GRN/YEL	Ignition switch ON (II) and turn signal switch in LEFT, or RIGHT	Attach to ground: The turn signal lights should come on.	• Blown No. 5 (10A) fuse in the under-hood fuse/relay box • Faulty turn signal switch • Faulty turn signal/hazard relay • An open in the wire

2. 5. Reconnect the connectors to the security control unit and perform the following input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, the security control unit internal circuit must be faulty.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A20	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	
A9	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more	

A19	GRN/WHT	Left rear door open	Check for voltage to ground: There should be 1 V or less.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	
A19	GRN/WHT	Right rear door open	Check for voltage to ground: There should be 1 V or less.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	
A8	RED/WHT	Ignition key is in the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • An open in the wire
		Ignition key is out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	

Security System

Security Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A18	GRN/BLK	Hood open	Check for voltage to ground: There should be 1 V or less.	• Faulty hood switch • Poor ground (G201) • An open in the wire
		Hood closed	Check for voltage to ground: There should be 5 V or more.	
A7	RED	Tailgate open	Check for voltage to ground: There should be 1 V or less.	• Faulty tailgate latch switch • Poor ground (G553) • An open in the wire
		Tailgate closed	Check for voltage to ground: There should be 5 V or more.	
A1	WHT/BLK	Driver's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door lock knob switch • Poor ground (G501) • An open in the wire
		Driver's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A12	BRN/WHT	Front passenger's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less	• Faulty front passenger's door lock knob switch • Poor ground (G502) • An open in the wire
		Front passenger's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
		Left rear door lock knob unlocked	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door lock knob switch • Poor ground (G551) • An open in the wire
		Left rear door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
		Right rear door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty right rear door lock knob switch • Poor ground (G551) • An open in the wire
		Right rear door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A4	WHT/RED	Driver's door key cylinder locked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire • A short to ground
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A3 . B3	WHT	Driver's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
		Front passenger's door key cylinder locked	Check for voltage to ground:	

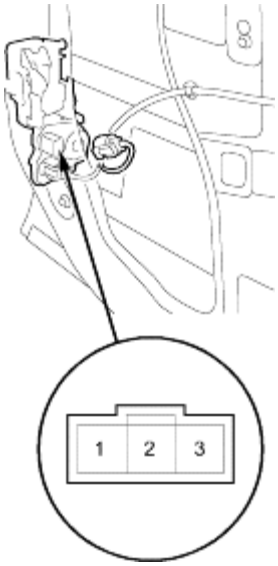
A15	PNK	Tailgate key cylinder locked	There should be 1 V or less.	• Faulty front passenger's door key cylinder switch • Faulty tailgate key cylinder switch • Poor ground (G502) • An open in the wire • A short to ground
		Front passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
		Tailgate key cylinder in neutral		
A14 . B10	WHT	Front passenger's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	
		Tailgate key cylinder unlocked		
		Front passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
		Tailgate key cylinder in neutral		

Security System

Door Lock Knob Switch Test

Driver's door (4-door):

1. 1. Remove the driver's door panel (see page 20-7).
   2. Disconnect the 3P connector (A) from the actuator (B).



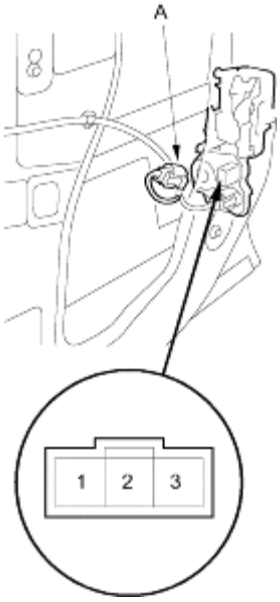
2. 3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	1 [3]	2	3 [1]
LOCK	○	○	
UNLOCK		○	○

[ ] :RHD type

Passenger's door (4-door):

1. 1. Remove the passenger's door panel (see page 20-7).
   2. Disconnect the 3P connector (A) from the actuator.



2. 3. Check for continuity between the terminals in each switch position according to the table.

Front passenger's:

Terminal / Position	1 [3]	2
LOCK		
UNLOCK	○	○

[ ] :RHD type

Left rear:

Terminal / Position	2	3
LOCK		
UNLOCK	○	○

Right rear:

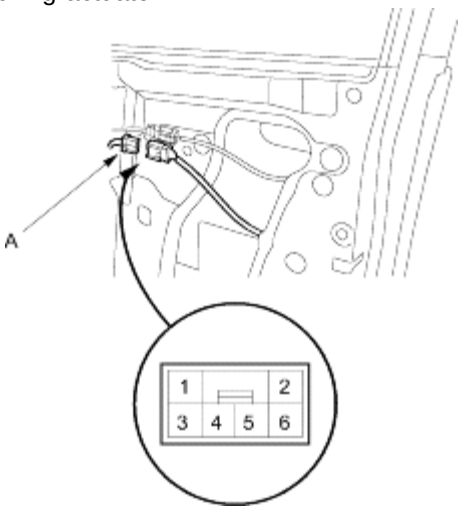
Terminal / Position	1	2
LOCK		
UNLOCK	○	○

Security System

Door Lock Knob Switch Test (cont'd)

Driver's door (5-door):

1. 1. Remove the driver's door panel (see page 20-144).
   2. Disconnect the 6P connector (A) from the super locking actuator.

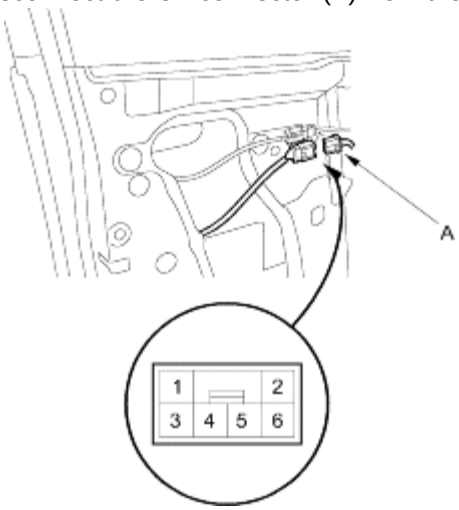


Terminal side of male terminals

2. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 3 and No. 4 terminals when the door lock knob switch is LOCK position.
   - There should be continuity between the No. 1 and No. 4 terminals when the door lock knob switch is UNLOCK position.

Passenger's door (5-door):

1. 1. Remove the passenger's door panel (see page 20-7).
   2. Disconnect the 3P connector (A) from the actuator.



Terminal side of male terminals

2. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 4 terminals when the door lock knob switch is UNLOCK position.

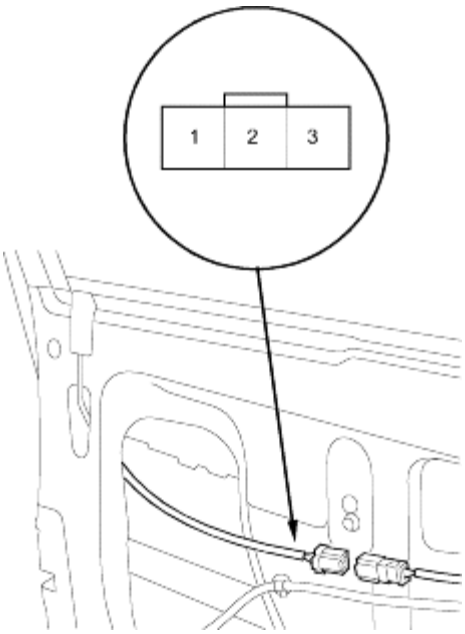
Security System

Door Key Cylinder Switch Test

4-door:

1. 1. Remove the door panel (see page 20-7).
   2. Disconnect the 3P connector from the key cylinder switch.

Wire side of female terminals

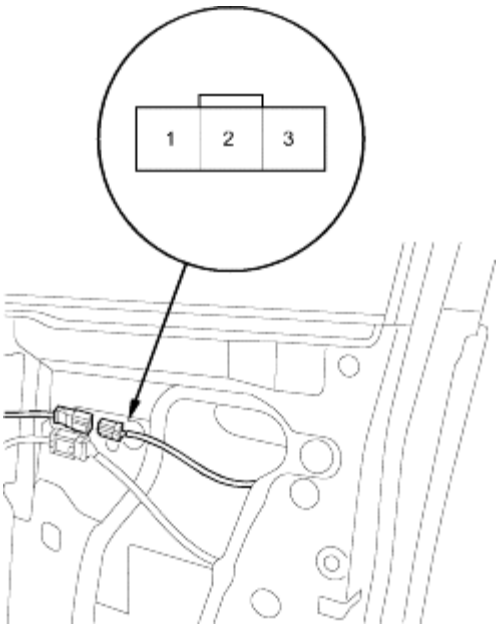


2. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is LOCK position.
   - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is UNLOCK position.

5-door:

1. 1. Remove the door panel (see page 20-144).
   2. Disconnect the 3P connector from the key cylinder switch.

Wire side of female terminals

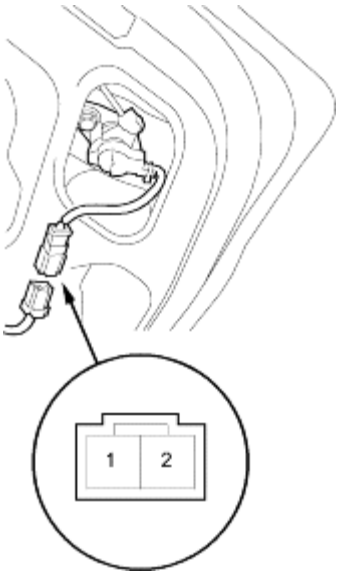


2. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is LOCK position.
   - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is UNLOCK position.

Security System

Trunk Key Cylinder Switch Test

1. 1. Open the trunk lid.
2. 2. Disconnect the 2P connector from the key cylinder switch.

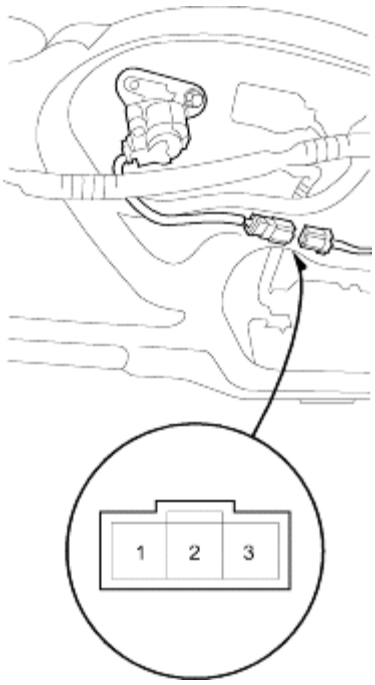


Terminal side of male terminals

3. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the trunk key cylinder switch is UNLOCK position.

Tailgate Key Cylinder Switch Test

1. 1. Remove the tailgate trim panel (see page 20-209).
2. 2. Open the tailgate.
   3. Disconnect the 3P connector from the key cylinder switch.



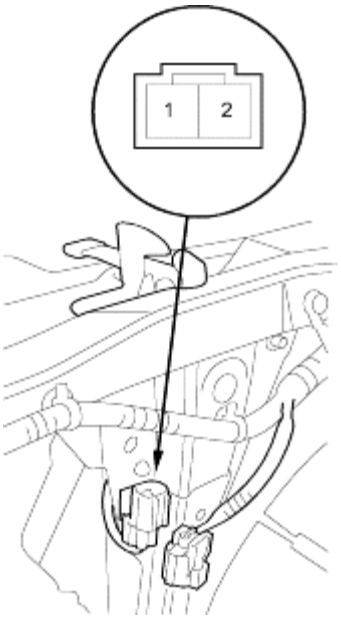
Terminal side of male terminals

3. 4. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 3 terminals when the tailgate key cylinder switch is LOCK position.
   - There should be continuity between the No. 1 and No. 2 terminals when the tailgate key cylinder switch is UNLOCK position.

Security System
Hood Switch Test

1. 1. Open the hood.
   2. Disconnect the 2P connector from the hood switch.

Terminal side of male terminals

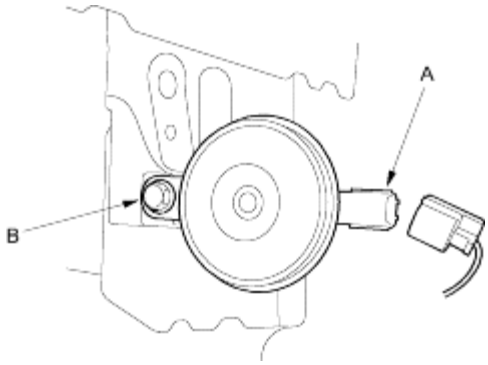


2. 3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the hood is opened. (lever released)
   - There should be no continuity between the No. 1 and No. 2 terminals when the hood closed. (lever pushed down)

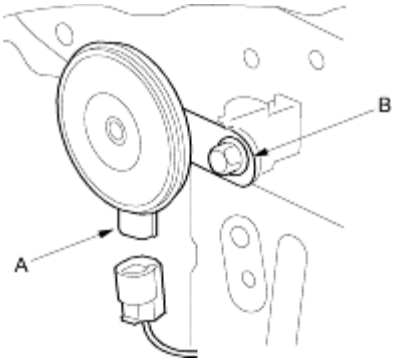
Security Horn Test

1. 1. Remove the front bumper (see page 20-105).
   2. Disconnect the 1P connector from the horn.

4-door:



5-door:



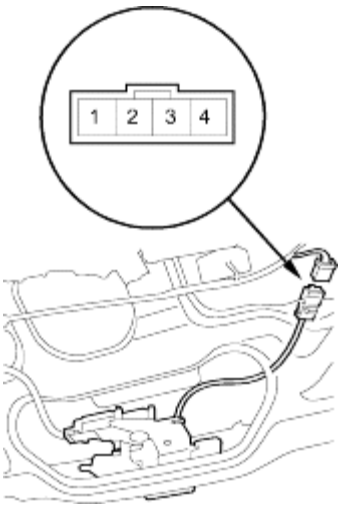
2. 3. Test the horn by connecting battery power to the terminal (A) and grounding the body ground (B). The horn should sound.
   4. If the horn fails to sound, check for.
      - faulty security horn relay.
      - faulty mounting bolt.

Security System

Tailgate Latch Switch Test

1. 1. Remove the tailgate trim panel (see page 20-209).
2. 2. Open the tailgate.
   3. Disconnect the 4P connector from the tailgate lock actuator.

Terminal side of male terminals

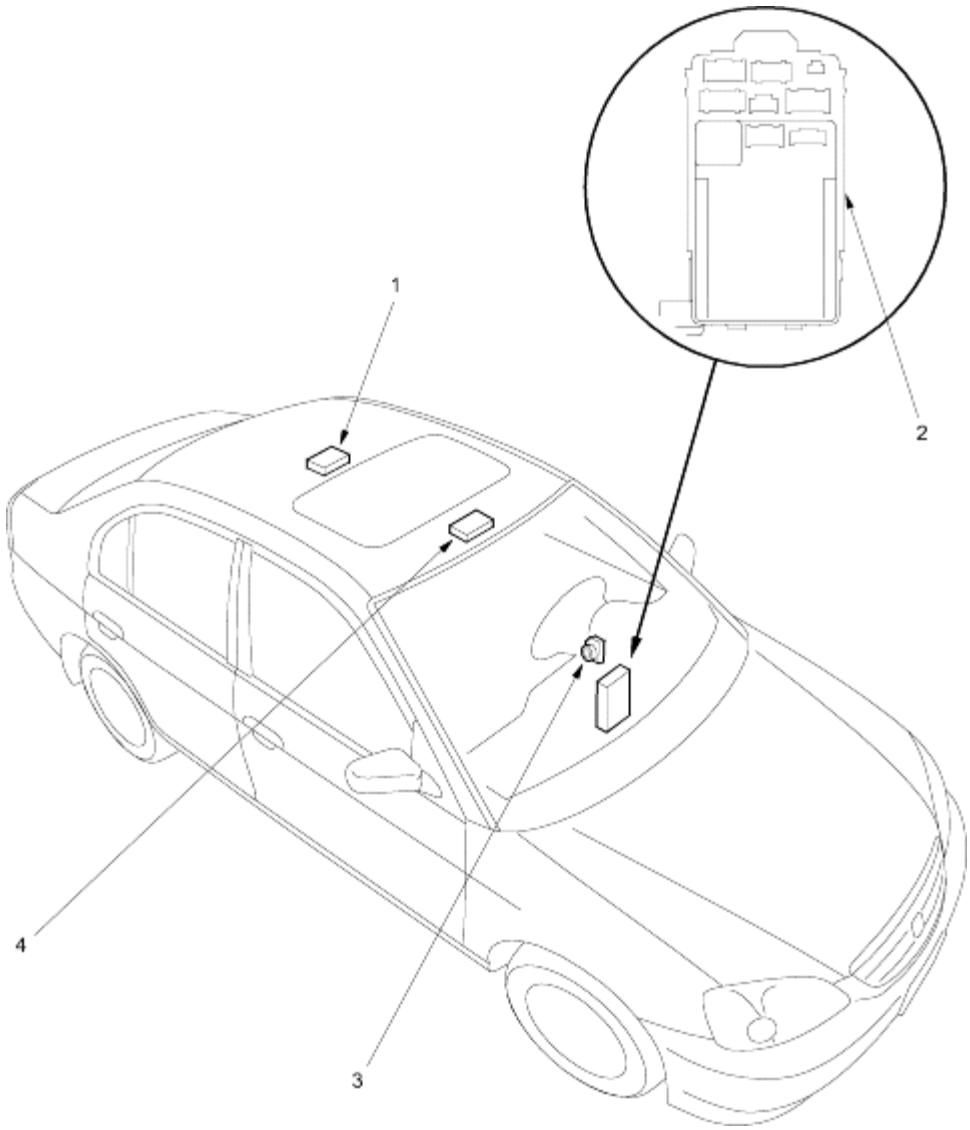


3. 4. Check for continuity between the terminals.
   - There should be continuity between the No. 3 and No. 4 terminals when the tailgate lock knob switch is UNLOCK position.
   - There should be no continuity between the No. 3 and No. 4 terminals when the tailgate lock knob switch is LOCK position.

Multiplex Control System
Component Location Index

4-door:

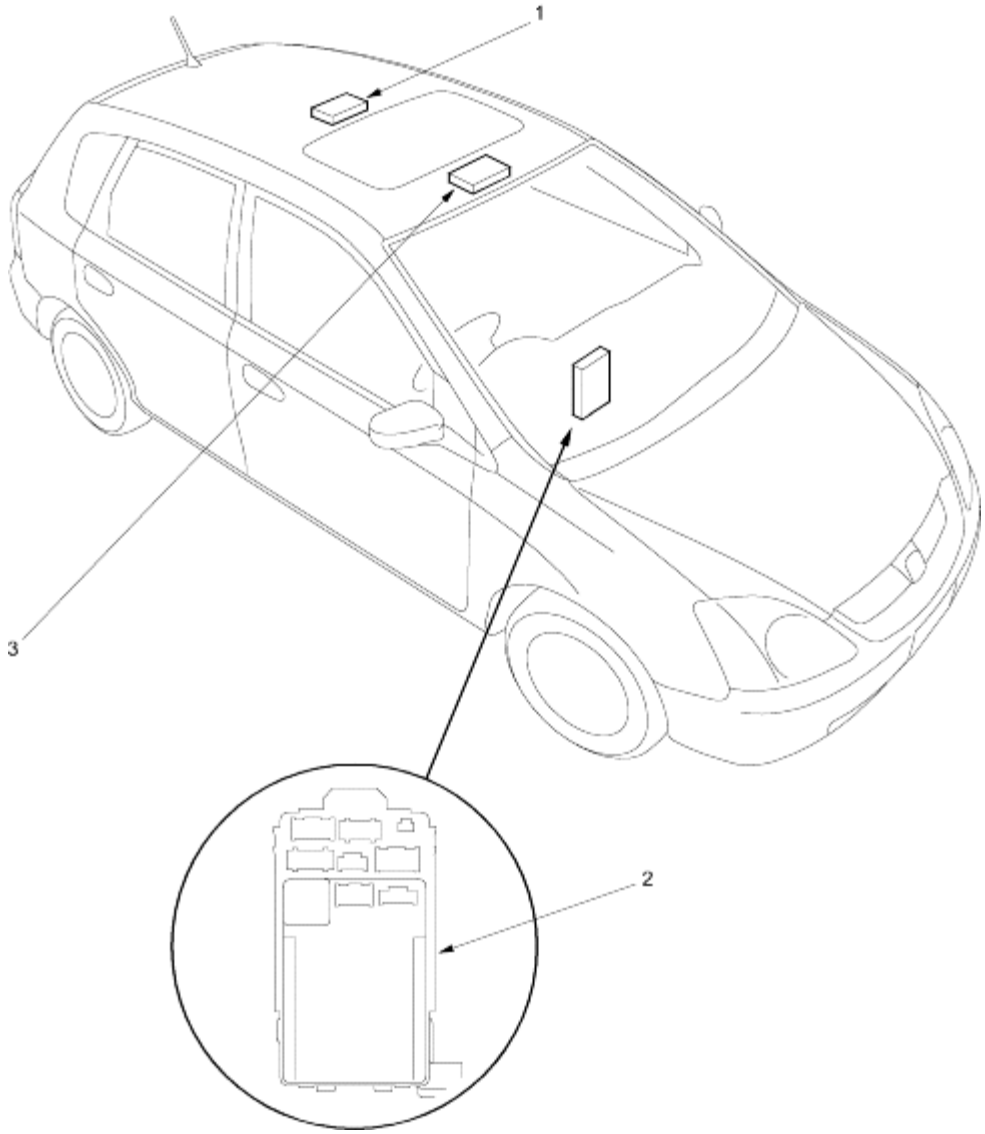
NOTE: LHD type is shown, RHD type is similar.



1. CEILING LIGHT
   Test, page 22-138
2. MULTIPLEX CONTROL UNIT
   Troubleshooting, page 22-273
   Input Test, page 22-277
3. IGNITION KEY LIGHT
   Test, page 22-131
4. SPOTLIGHTS/CEILING LIGHT (With sunroof)
   SPOTLIGHTS (Without sunroof)
   Test, page 22-138

Multiplex Control System
Component Location Index (cont'd)

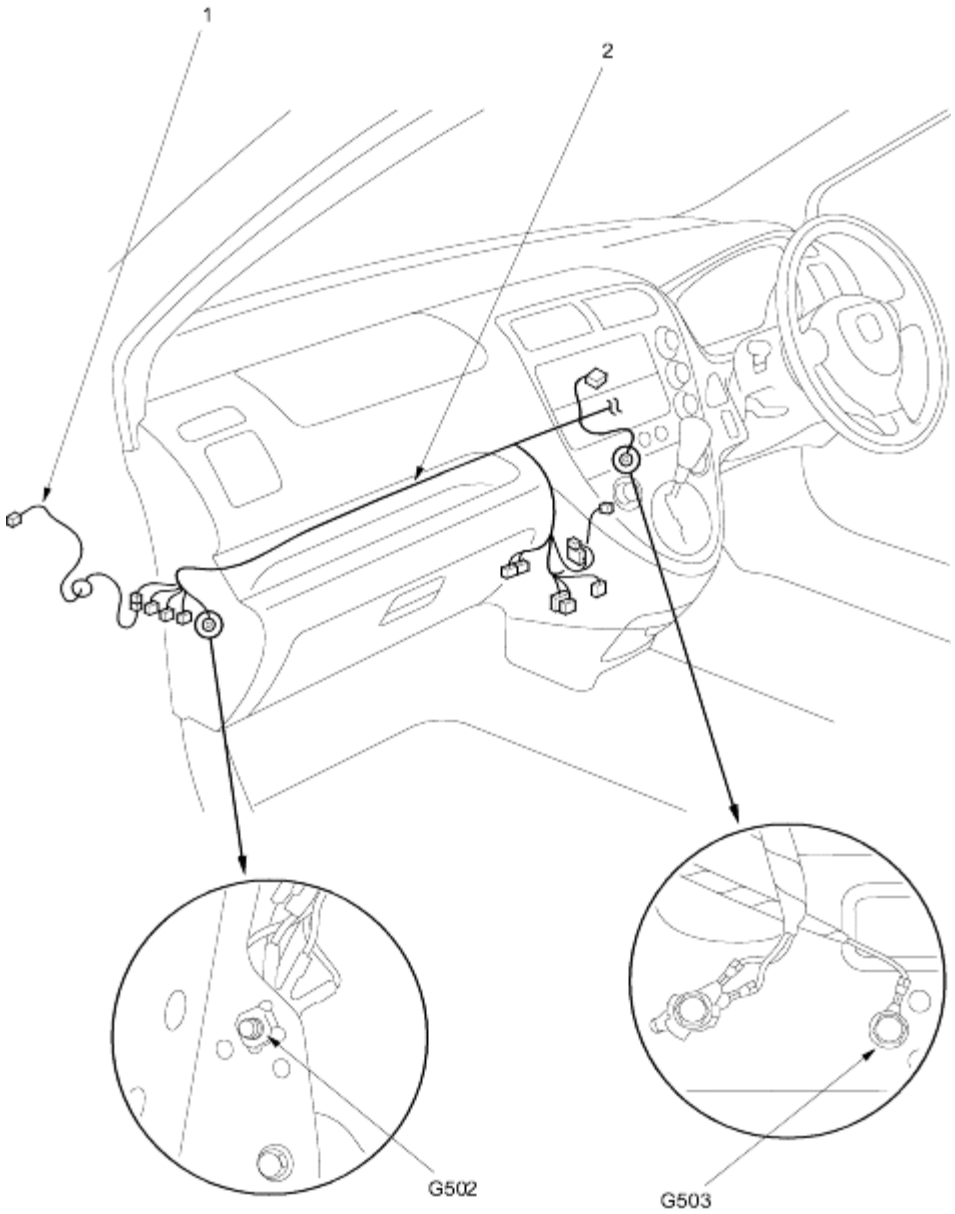
5-door:



1. CEILING LIGHT
   Test, page 22-138
2. MULTIPLEX CONTROL UNIT
   Troubleshooting, page 22-273
   Input Test, page 22-277
3. SPOTLIGHTS/CEILING LIGHT (With sunroof)
   SPOTLIGHTS (Without sunroof)
   Test, page 22-138

Wire Harness and Ground Locations

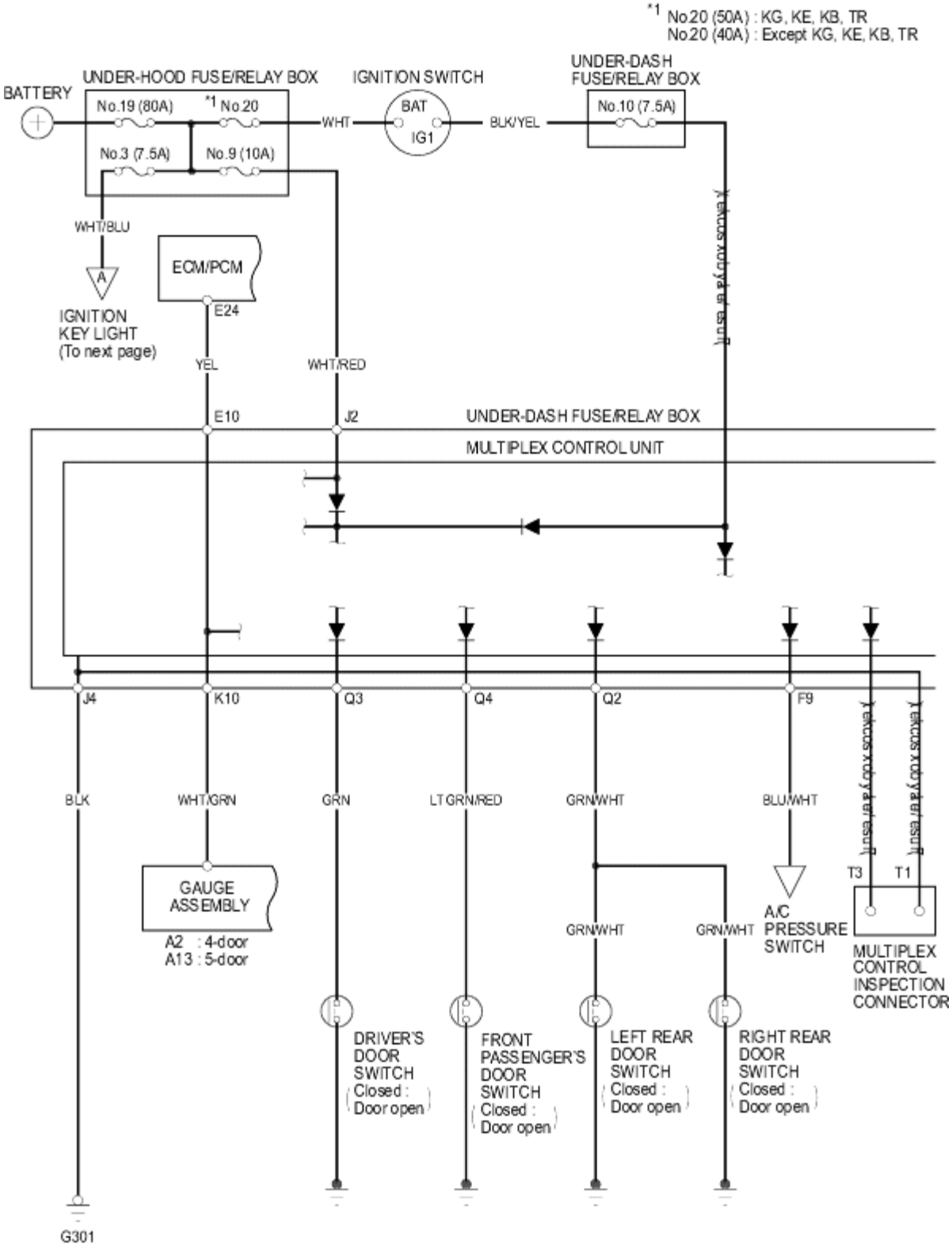
Dashboard (cont'd)



1. LEFT TURN SIGNAL LIGHT SUB - HARNESS
2. DASHBOARD WIRE HARNESS A (Left branch)

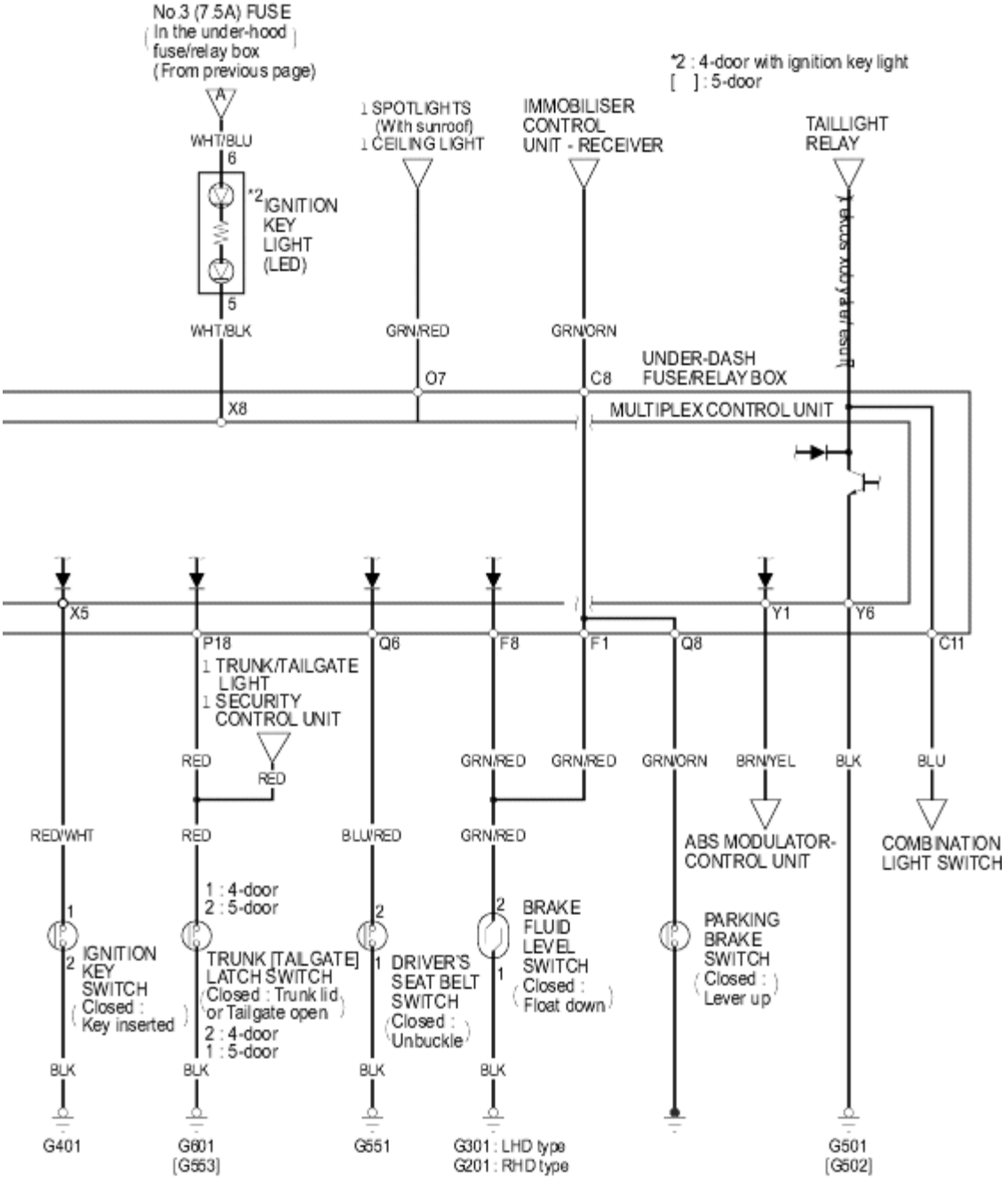
Multiplex Control System

Circuit Diagram



Multiplex Control System

Circuit Diagram (cont'd)



Multiplex Control System
System Description

The multiplex Control System has four internal functions:

- Multiplexing (send multiple signals over shared wires)
- Wake up/sleep (runs at full power only on demand to reduce battery draw)
- Fail-safe (fixes or ignores faulty signals)
- Self-diagnosis (Mode 1 for the system, Mode 2 for input lines)

The system controls the function of these circuits:

- Entry light control
- Wiper/washer (including intermittent wiper)
- Interlock
- Keyless/power Door Lock
- Key - in reminder

Multiplex Communication

To reduce the number of wire harnesses, digital signals are sent via shared multiplex communication lines rather than sending normal electrical signals through individual wires.

- The input signals from each switch are converted to digital signals at the central processing unit (CPU).
- The digital signals are sent from the transmitting unit to the receiving unit as serial signals.
- The transmitted signal is converted to a switch signal at the receiving unit and it operates the related component or monitors a switch.
- There are exclusive communication lines between the ECM/PCM and the gauge assembly.

Wake-up and Sleep

The multiplex control system has "wake-up" and "sleep" functions to decrease parasitic draw on the battery when the ignition switch is OFF.

- In the sleep mode, the multiplex control unit stops functioning (communication and CPU control) when it is not necessary for the system to operate.
- As soon as any operation is requested (for example, a door is unlocked), the related control unit in the sleep mode immediately wakes up and begins to function.
- When the ignition switch is turned OFF and the driver's or front passenger's door is opened, then closed, there is about a 10 second delay before the control unit goes from the wake-up mode to the sleep mode.
- If any door is open, the sleep mode will not function.
- If a key is in the ignition switch, the sleep mode will not function.

Fail-safe

To prevent improper operation, the multiplex control system has a fail-safe function. In the fail-safe mode, the output signal is fixed when any part of the system malfunctions (for example a faulty control unit or communication line).

Each control unit has a hardware fail-safe function that fixes the output signal when there is any CPU malfunction and a software fail-safe function that ignores the signal from the malfunctioning control unit and allows the system to operate normally.

Multiplex Control System
Troubleshooting

Special Tool Required:

MPCS Service Connector 07WAZ-0010100

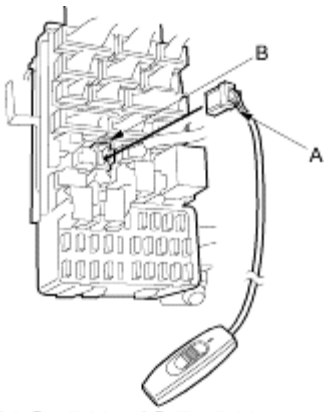
1. 1. Check the No. 9 (10 A) fuse in the under - hood fuse/relay box and the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

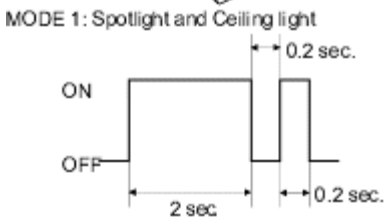
Are the fuses OK?

YES – Go to step 2.

NO – Find and repair the cause of the blown fuse. ■

2. 2. Remove the dashboard lower cover (see page 20-75).
   3. Turn the ignition switch ON (II).
   4. Check self-diagnosis function Mode 1 for a diagnostic trouble code (DTC) by connecting the special tool (A) to the multiplex control inspection connector (B). After about 5 seconds, the spotlight and ceiling light should come on then blink 0.2 second. This means that you are in Mode 1 of the self-diagnosis function.





1. 5. If there is a DTC, it will blink, pause, then repeat the DTC as long as the ignition switch is ON (II).

Is there a repeating DTC?

YES – Count the blinks, then go to step 8.

NO – See if the SCS circuit is working properly. Go to step 6.

2. 6. Check for continuity between the inspection connector T1 and T3 terminals.

Is there continuity?

YES – Go to step 7.

NO – Faulty under-dash fuse/relay box, replace it and recheck for DTCs. ■

3. 7. Check for continuity between the connector J of under - dash fuse/relay box No. 4 terminal and body ground.

Is there continuity?

YES – Go to step 9.

NO – Repair the open in the wire and recheck for DTC's. ■

Multiplex Control System
Troubleshooting (cont'd)

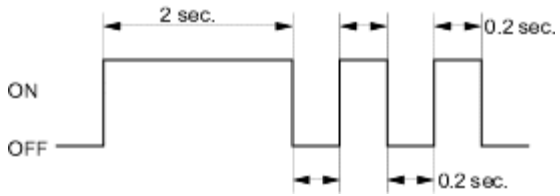
1. 8. About 1 second after you go into self-diagnosis mode 1, the ceiling light will indicate the DTC and repeat it every 3 seconds. If there is more than one DTC, the system will indicate them in ascending order, beginning from the DTC with the lowest numerical value. Troubleshoot the DTCs as indicated below:
   - DTC 1, 2, and 3 (ECM/PCM P0600) simultaneously: Check for a short to body ground in the YEL wire between multiplex control unit terminal E10 and ECM/PCM terminal E24 and in the WHT/GRN wire between multiplex control unit terminal K10 and gauge assembly terminal A2. If both wires are OK, substitute a known-good multiplex control unit, gauge assembly and ECM/PCM one at a time, in that order and recheck for the DTCs after each substitution.
   - DTC 2 and 5 simultaneously: Check for an open in the YEL wire between multiplex control unit terminal E10 and ECM/PCM terminal E24, If the wire is OK, substitute a known-good multiplex control unit, gauge assembly and ECM/PCM one at a time, in that order and recheck for the DTC's after each substitution.
   - DTC 1, and 6 simultaneously: Check for an open in the WHT/GRN wire between multiplex control unit terminal K10 and gauge assembly terminal A2, If the wire is OK, substitute a known-good multiplex control unit, gauge assembly and ECM/PCM one at a time, in that order and recheck for the DTC's after each substitution.
   - DTC 1 only (no other DTC's present): Substitute a known-good multiplex control unit and a gauge assembly one at a time, in that order and recheck for the DTC's after each substitution.
   - DTC 2 only (no other DTC's present): Substitute a known-good multiplex control unit and a ECM/PCM one at a time, in that order and recheck for the DTCs after each substitution.
   - DTC 3 only (no other DTC's present): Substitute a known-good multiplex control unit and recheck for the DTC.
   - DTC 5 only (no other DTC's present): Substitute a known-good gauge assembly and recheck for the DTC.
   - DTC 6 only (no other DTC's present): Substitute a known-good ECM/PCM and recheck for the DTC.

DTC	Cause
1	The multiplex control unit cannot receive signals from the gauge assembly.
2	The multiplex control unit cannot receive signals from the ECM/PCM.
3	The multiplex control unit cannot receive signals from itself.
4	The gauge assembly cannot receive signals from multiplex control unit and the ECM/PCM.
5	The ECM/PCM cannot receive signals from multiplex control unit and the gauge assembly.

Multiplex Control System
Troubleshooting (cont'd)

1. 9. From Mode 1, disconnect the special tool from the multiplex control inspection connector for about 10 seconds, then reconnect it. The spotlight and ceiling light should come on for 2 seconds, then blink twice more at 0.2 seconds intervals. This means the system has gone from Mode 1 to Mode 2.

MODE 2:



NOTE: To cancel mode 2, disconnect the SCS service connector from the multiplex control inspection connector for more than 10 seconds or turn the ignition switch OFF.

2. 10. Look in the following table for the switches most closely related to the problem. While still in Mode 2, operate the switches and the control unit. If the circuit is OK, the spotlight and ceiling light should blink once. If the circuit is faulty, there will be no indication.

Does the spotlight and ceiling light blink?

YES – Go to step 12.

NO – Go to step 11.

In each table below is a list of circuits that can be checked in Mode 2.

Taillight relay
Windshield washer motor
Windshield wiper motor (INT, Auto stop)
Driver's door switch
Front passenger's door switch
Left rear door switch
Right rear door switch
Ignition key switch
Trunk/Tailgate latch switch
Parking brake switch
Driver's door lock switch (LOCK/UNLOCK)
Passenger's door lock switch (LOCK/UNLOCK)
Driver's door key cylinder switch (LOCK/UNLOCK)
Driver's door lock switch (LOCK/UNLOCK)
Front passenger's door key cylinder switch (LOCK/UNLOCK)
Driver's seat belt switch (UNLATCH)
A/C switch (with fan switch ON)
Combination light switch
Keyless signal line
ECM/PCM communication line
Gauge assembly communication line
ABS communication
Front fog light switch
Tailgate key cylinder switch (LOCK/UNLOCK) (5 - door)

1. 11. Check two or three other circuits listed above.

Does the spotlight and ceiling light blink for each circuit?

YES – The additional circuits are OK. Repair the short or open in the circuit that failed the test in step 10. ■

NO – Multiplex failed circuits can mean that the control unit has failed, but without triggering a DTC. Test a few more circuits. If they also fail, test the multiplex control unit inputs (see page 22-277). If all the input test are OK, substitute a known-good control unit, gauge assembly, or ECM/PCM, one at a time, then recheck. If the system works properly, the original control unit is faulty; replace it. If there is still a malfunction, substitute a known-good control unit for the next most likely faulty control unit, then recheck. If the system works properly, that control unit is faulty; replace it. ■

Multiplex Control System
Troubleshooting (cont'd)

1. 12. Shift to the sleep mode:
   Turn the ignition switch OFF.
   If the control unit receivers no inputs from the inputs listed below, it will go into the sleep mode after about 20 seconds.

Multiplex Control Unit
Taillight relay
Driver's door switch
Front passenger's door switch
Left rear door switch
Right rear door switch
Tailgate latch switch (5-door)
Trunk latch switch
Driver's door key cylinder switch (LOCK/UNLOCK)
Driver's door lock switch (LOCK/UNLOCK)
Passenger's door lock switch (LOCK/UNLOCK)
Keyless communication line

2. 13. Confirm the sleep mode:
   Check for voltage on the YEL and WHT/GRN wires. There should be battery voltage in the sleep mode. Check the parasitic draw at the battery while shifting into the sleep mode. Amperage should change from about 70 through 80 mA to less than 10 mA.

1. 14. Shift to the wake up mode:

   When the ignition switch is turned ON (II), the multiplex control unit, gauge assembly and ECM/PCM wake up at the same time without "talking" to each other through the communication lines. When any switch in the multiplex system is turned on, it wakes up its related control unit which, in turn, wakes up the other units.

   After confirming the sleep mode, look in the following table for the switch most closely related to the problem. Operate that switch and see if its control unit wakes up.

   NOTE: If any control unit is faulty and will not wake up, several parts of the system will malfunction at the same time.

   In the table below, the control unit is followed by a list of the switches and input signals that can wake it up.

Multiplex Control Unit No. 9 (10 A) under - hood fuse
Communication lines (ECM/PCM, Gauge assembly)
Taillight relay
Driver's door switch
Front passenger's door switch
Left rear door switch
Right rear door switch
Driver's door key cylinder switch (LOCK/UNLOCK)
Driver's door lock knob switch (LOCK/UNLOCK)
Driver's door lock switch (LOCK/UNLOCK)
Tailgate key cylinder switch (LOCK/UNLOCK) (5 - door)
Front passenger's door key cylinder switch (UNLOCK)
Keyless communication line
Ignition key switch

Is the wake-up function OK?

YES – Intermittent failure; the system is OK at this time.

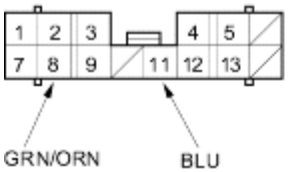
NO – Test the multiplex control unit inputs (see page 22-277).

Multiplex Control System

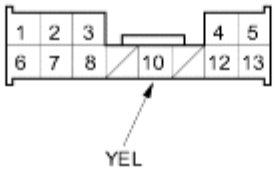
Multiplex Control Unit Input Test

1. 1. Remove the dashboard lower cover (see page 20-78).
   2. Disconnect the under-dash fuse/relay box connectors C, E, F, J, K, O, P, Q, X and Y.
      NOTE: All connectors are wire side of female terminals.

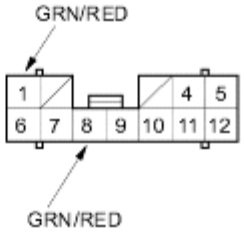
CONNECTOR C (14P)



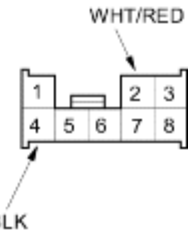
CONNECTOR E (13P)



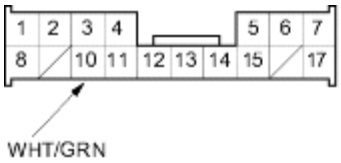
CONNECTOR F (12P)



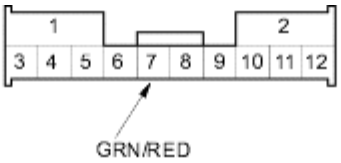
CONNECTOR J (8P)



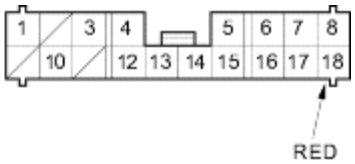
CONNECTOR K (17P)



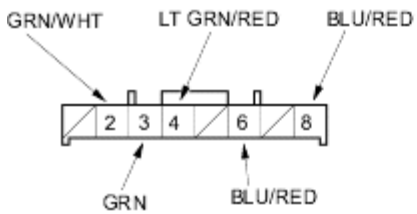
CONNECTOR O (12P)



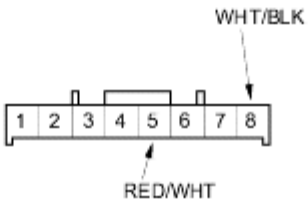
CONNECTOR P (18P)



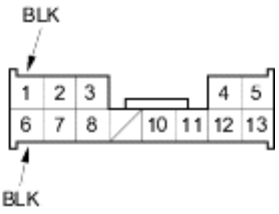
CONNECTOR Q (8P)



CONNECTOR X (8P)



CONNECTOR Y (13P)



2. 3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

Multiplex Control System

Multiplex Control Unit Input Test (cont'd)

1. 4. With the connectors still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301) • An open in the wire
Y6	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
Y1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502) • An open in the wire
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire

2. 5. Reconnect the connectors to the under - dash fuse/relay box and make sure these input tests at the appropriate connectors on the under - dash fuse/relay box.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under - dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
Q4	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground
Q2	GRN/WHT	Left or right rear door open	Check for voltage to ground: There should be 1 V or less.	• Faulty rear door switch • An open in the wire
		Left or right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty rear door switch • Short to ground
Q8 . C8 . F1	GRN/ORN . GRN/RED	Parking brake lever up	Check for voltage to ground: There should be 1 V or less.	• Faulty parking brake switch • An open in the wire
		Parking brake lever up	Check for voltage to ground: There should be 5 V or more.	• Faulty parking brake switch • Short to ground
Q5	BLU/RED	Ignition switch ON (II) driver's seat belt unbuckled.	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's seat belt switch • Poor ground (G551) • An open in the wire
Q6	BLU/RED			
P18	RED	Trunk lid [tailgate] open	Check for voltage to ground: There should be 1 V or less.	• Faulty trunk[tailgate]latch switch • Poor ground (G601) • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be 5 V or more.	• Faulty trunk[tailgate]latch switch • Short to ground
X5	RED/WHT	Ignition key is in the	Check for voltage to ground:	• Faulty ignition key switch

		ignition switch	There should be 1 V or less.	• Poor ground (G401) • An open in the wire
		Ignition key is out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground

[ ]: 5-door

Multiplex Control System

Multiplex Control Unit Input Test (cont'd)

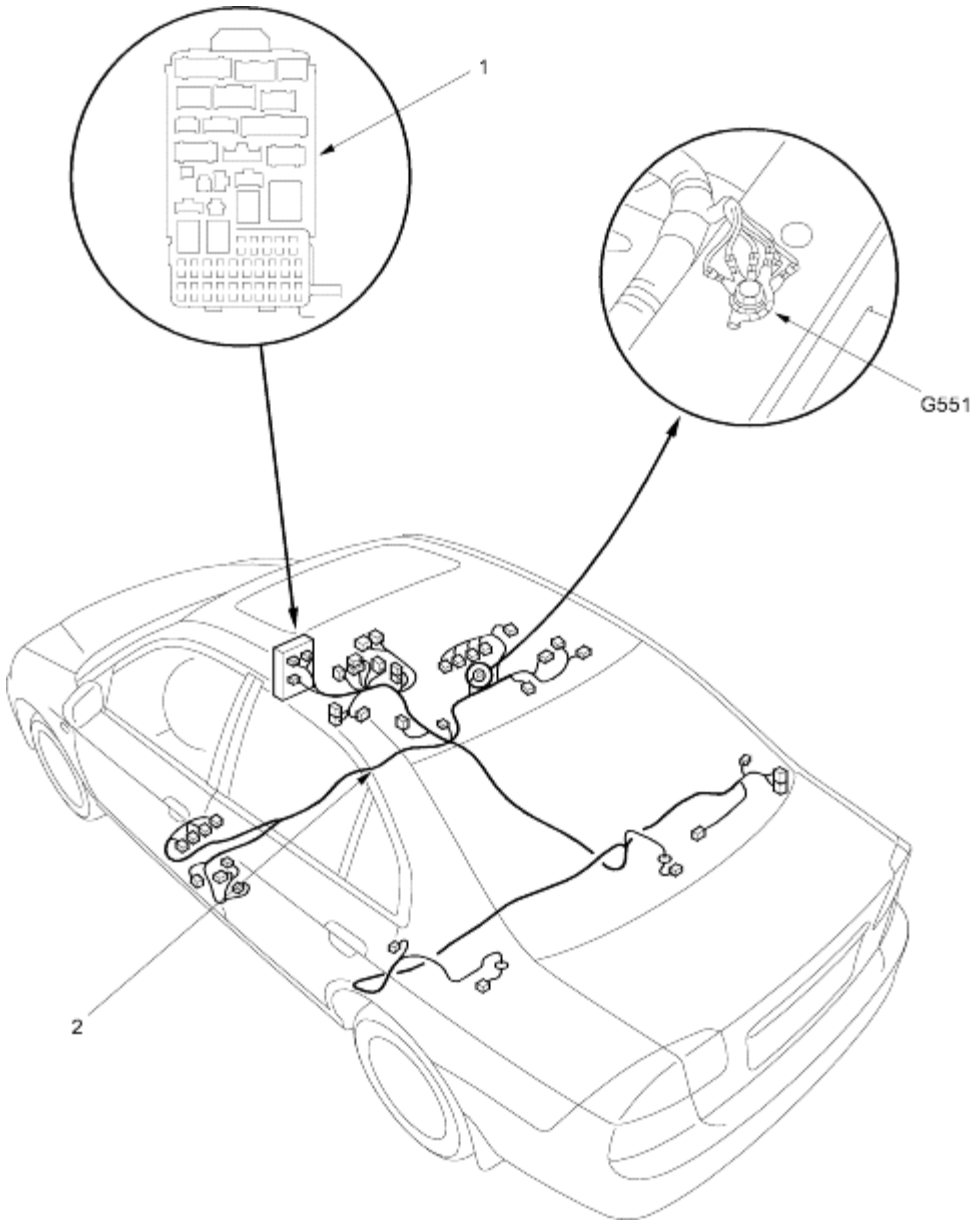
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
X8	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Blown LED • An open in the wire
O7	GRN/RED	Ceiling light, spotlights switches in the middle position	Attach to ground: The ceiling light, spotlights should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Faulty ceiling light or spotlights • An open in the wire
C11	BLU	Under all conditions	Attach to ground: Dash lights should come on.	• Blown No. 2 (15A) fuse in the under-hood fuse/relay box • Faulty taillight relay • An open in the wire
F8	GRN/RED	Brake fluid reservoir float in down position	Check for voltage to ground: There should be battery voltage.	• Faulty brake fluid level switch • An open in the wire
E10	YEL	Under all conditions	Check for voltage to ground: there should be 3 - 8 volts in the sleep mode and battery voltage when awake.	• An open or short in the wire
K10	WHT/GRN	Under all conditions	Check for voltage to ground: There should be 3 - 8 volts in the sleep mode and battery voltage when awake.	• An open or short in the wire

Wire Harness and Ground Locations

Floor

4 - door:

NOTE: LHD type is shown, RHD type is similar

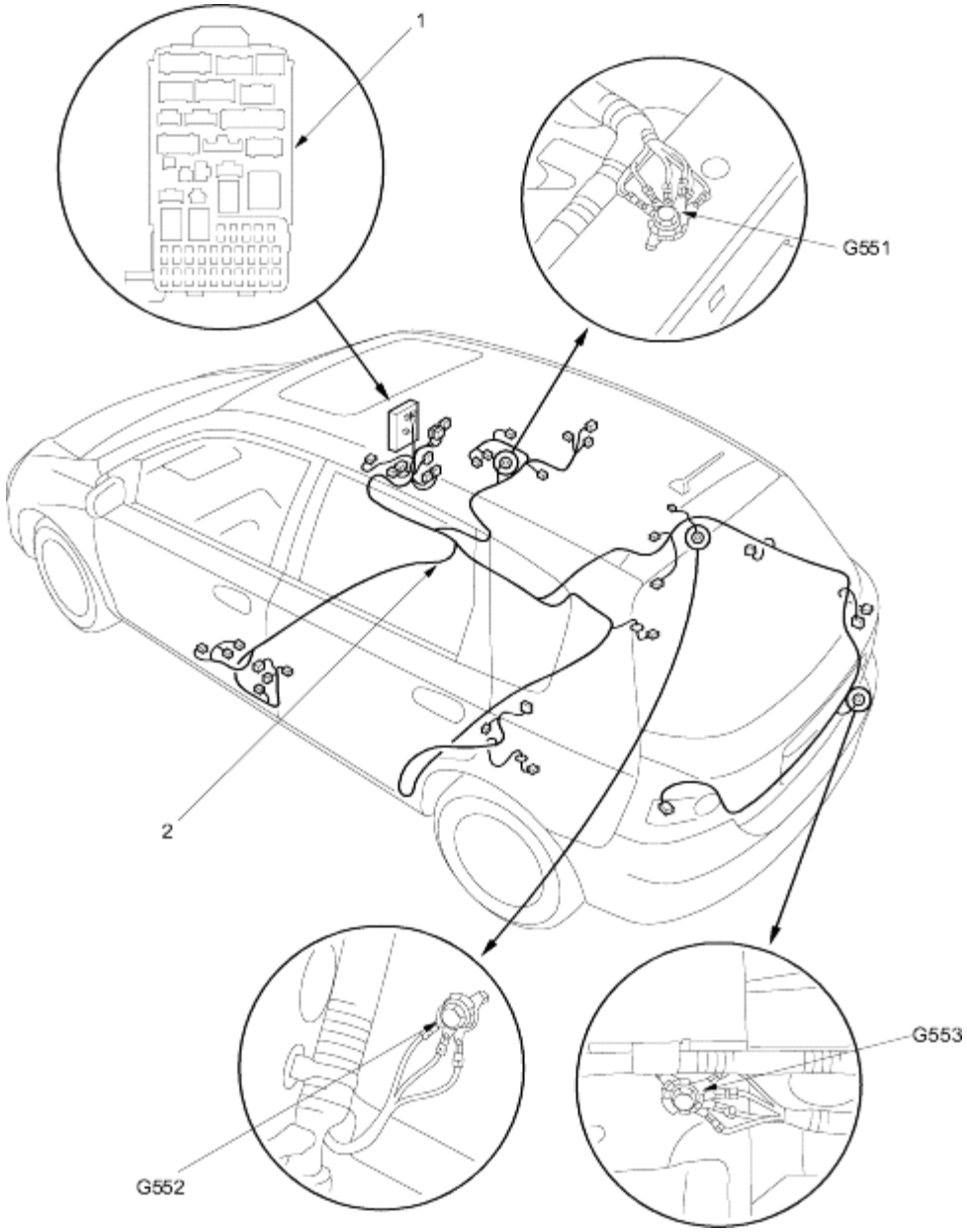


1. UNDER - DASH FUSE/RELAY BOX
2. FLOOR WIRE HARNESS

Wire Harness and Ground Locations

Floor (cont'd)

5 - door:



1. UNDER - DASH FUSE/RELAY BOX
2. FLOOR WIRE HARNESS

Body Electrical

General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

1. 1. Check applicable fuses in the appropriate fuse/relay box.
   2. Check the battery for damage, state of charge and clean and tight connections.

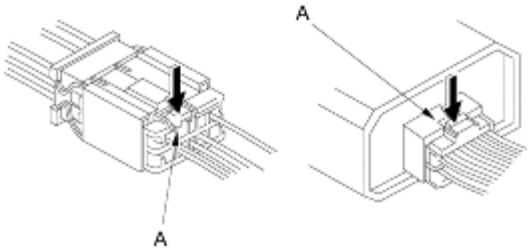
NOTICE

- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

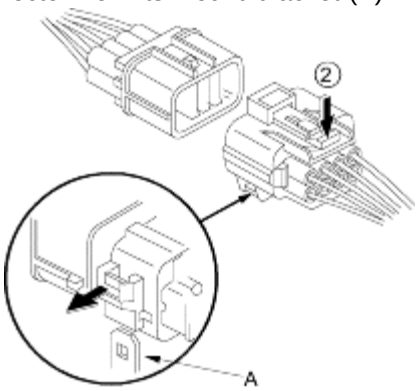
2. 3. Check the alternator belt tension.

Handling Connectors

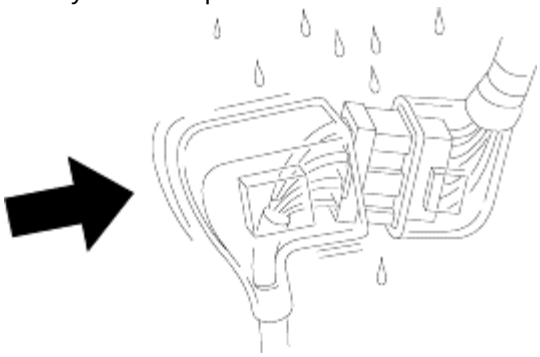
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with grease (except watertight connectors).
- All connectors have pushdown release type locks (A).



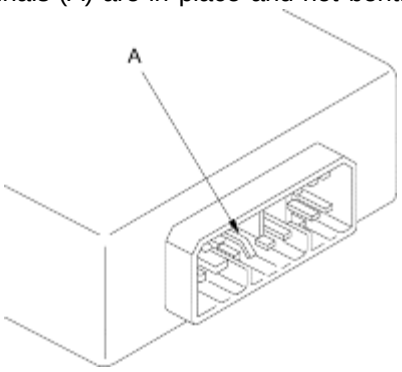
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



- Before connecting connectors, make sure the terminals (A) are in place and not bent.



Standards and Service Limits

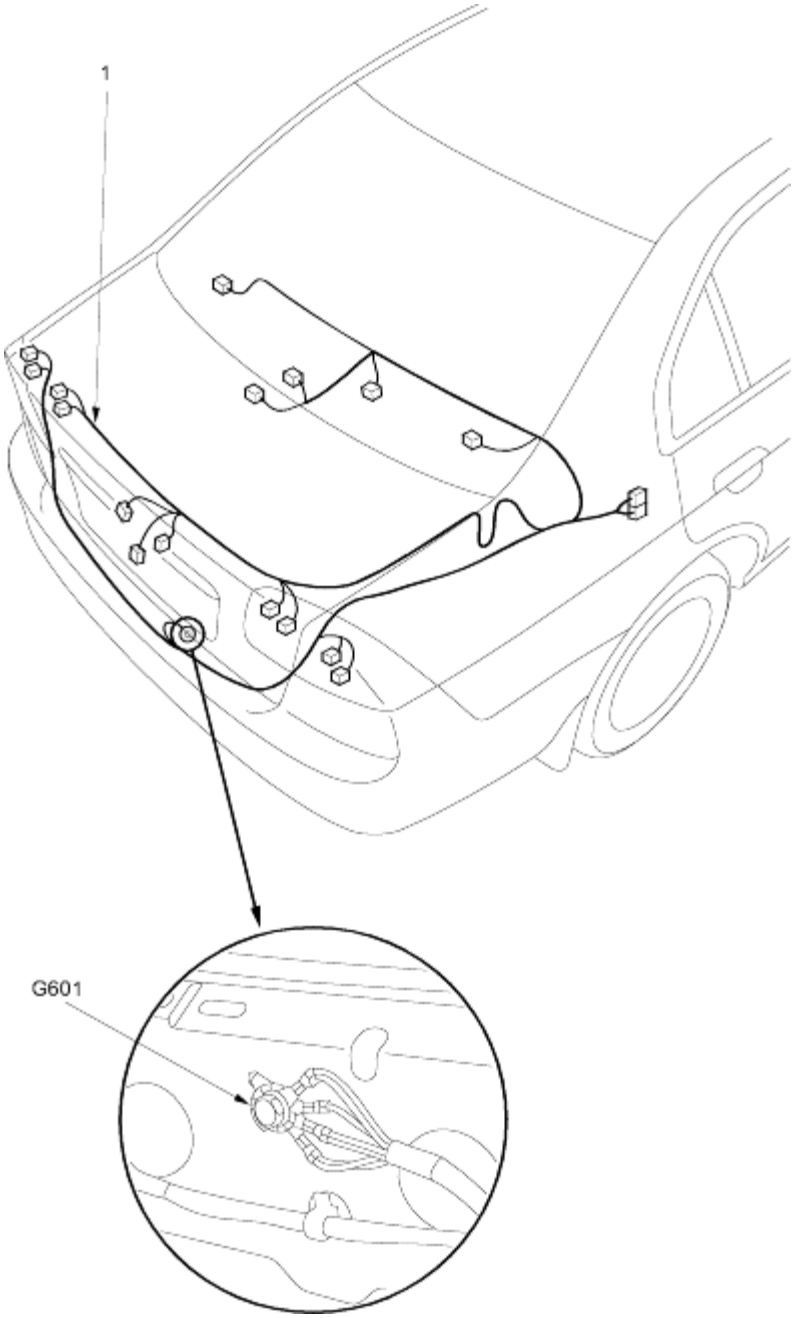
Honda Multi Matic Transmission and HMM Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
HMM differential carrier	Pinion shaft contact area I.D.		18.010-18.028 mm (0.709-0.710 in.)	-
	Carrier-to-pinion shaft clearance		0.023-0.057 mm (0.001-0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		26.025-26.045 mm (1.0246-1.0254 in.)	-
	Carrier-to-driveshaft clearance		0.045-0.086 mm (0.002-0.003 in.)	0.12 mm (0.005 in.)
	Set ring-to-carrier bearing outer race clearance		0-0.15 mm (0-0.006 in.)	Adjust
HMM differential pinion gear	Backlash		0.08-0.15 mm (0.003-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.055-0.095 mm (0.0022-0.0037 in.)	0.15 mm (0.006 in.)

Wire Harness and Ground Locations
Rear/Tailgate

4 - door:

NOTE: LHD type is shown, RHD type is similar

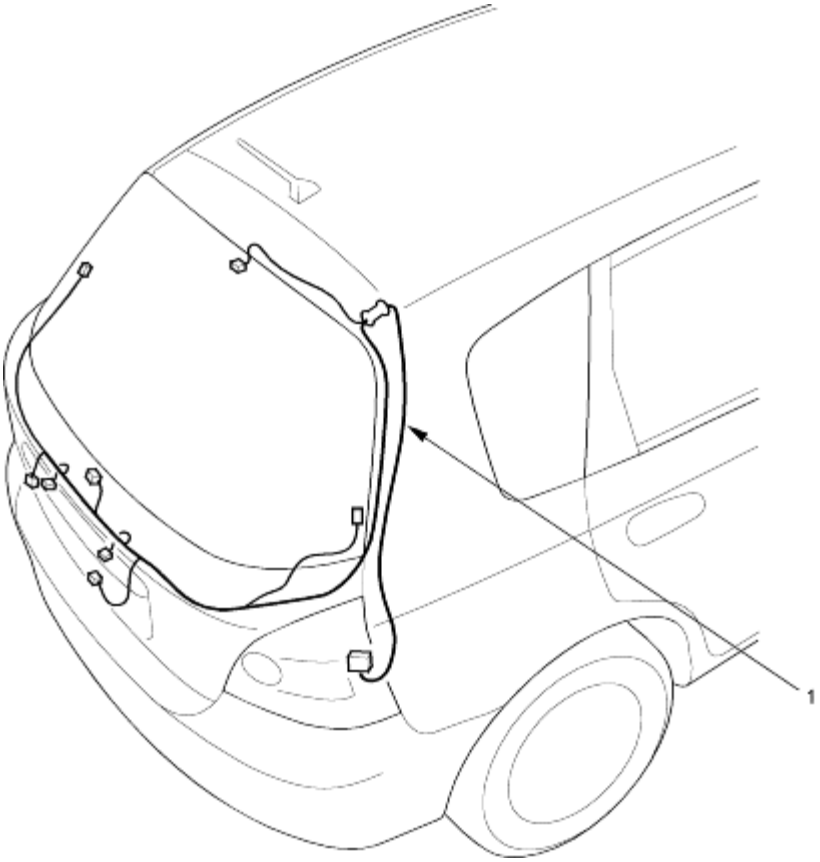


1. REAR WIRE HARNESS

Wire Harness and Ground Locations

Rear/Tailgate (cont'd)

5 - door:

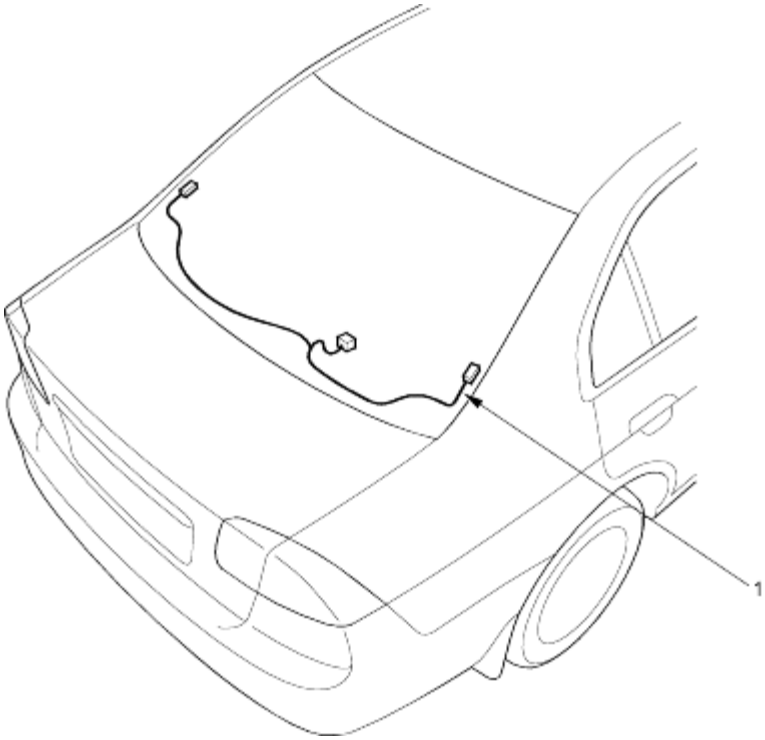


1. TAILGATE WIRE HARNESS

Wire Harness and Ground Locations
Rear/Tailgate (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar

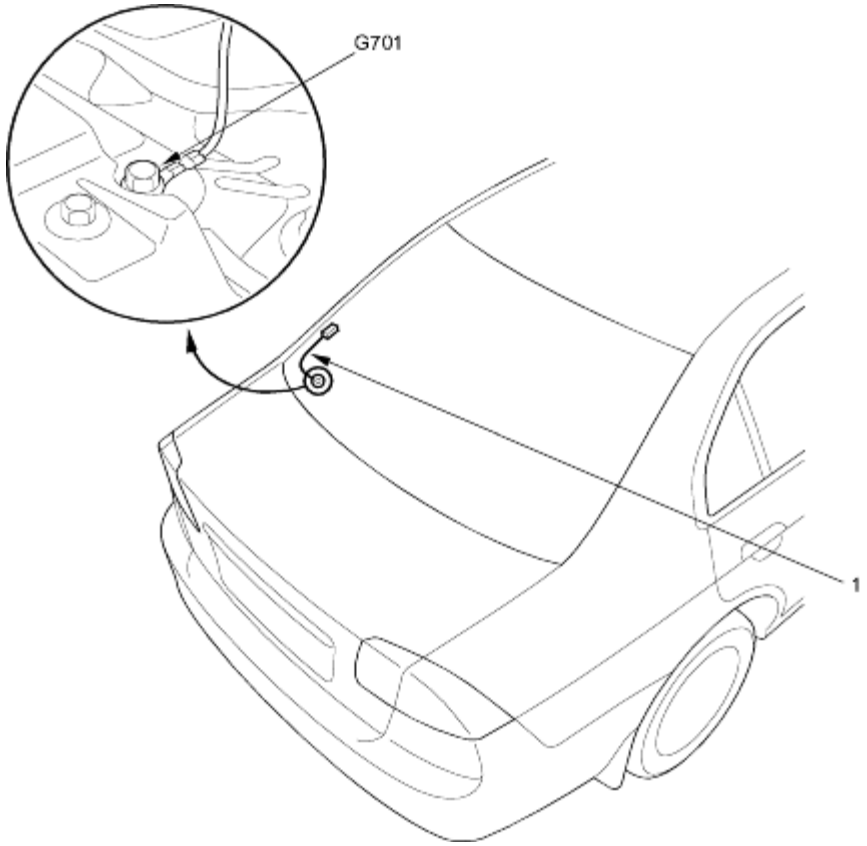


1. REAR WINDOW DEFOGGER WIRE HARNESS
   (With window antenna)

Wire Harness and Ground Locations
Rear/Tailgate (cont'd)

4 - door:

NOTE: LHD type is shown, RHD type is similar



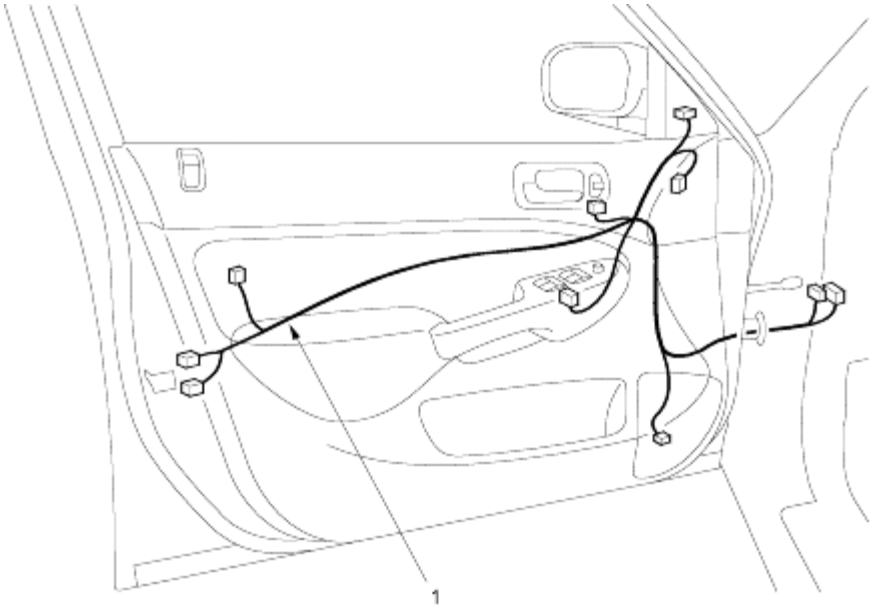
1. REAR WINDOW DEFOGGER GROUND WIRE (Without window antenna)

Wire Harness and Ground Locations

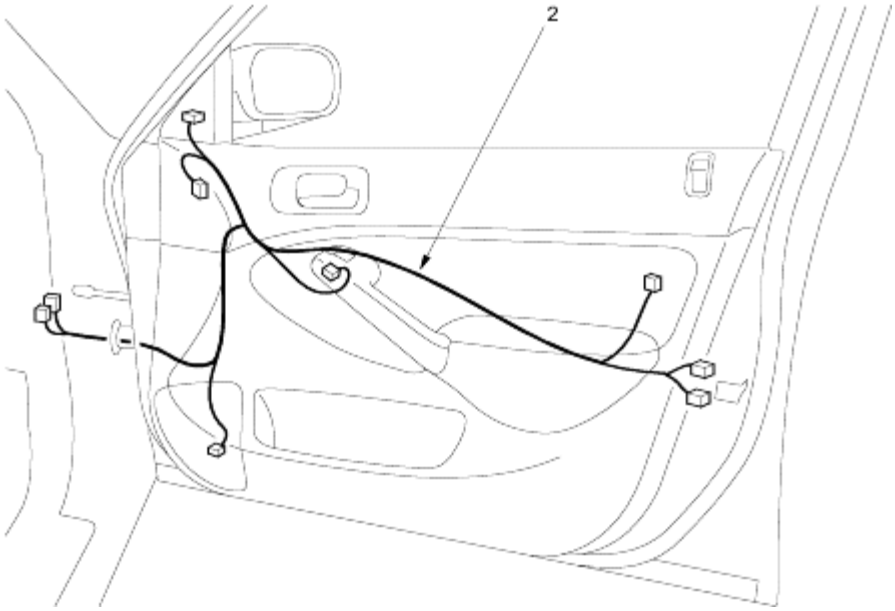
Door

4 - door:

NOTE: LHD type is shown, RHD type is symmetrical.



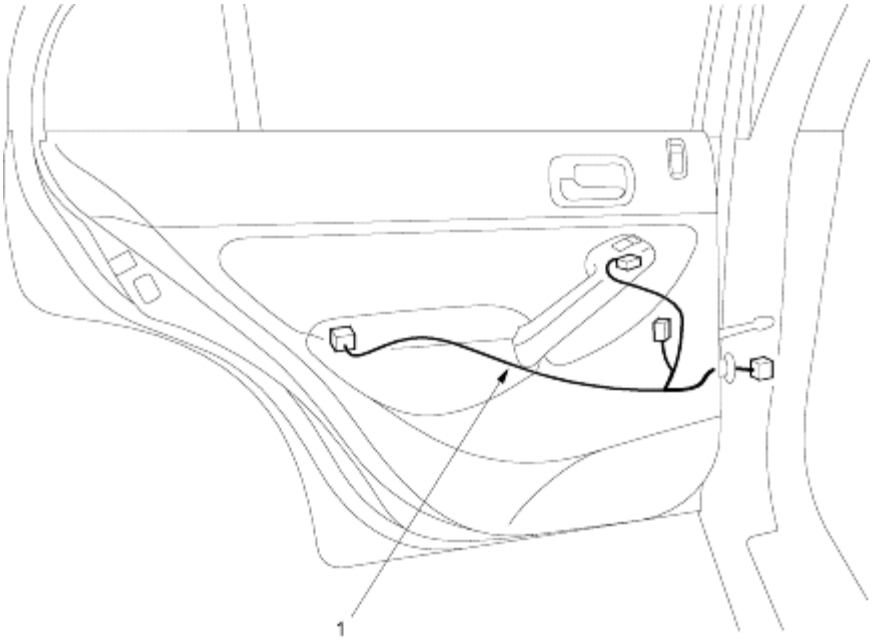
1. DRIVER'S DOOR WIRE HARNESS
2. FRONT PASSENGER'S DOOR WIRE HARNESS

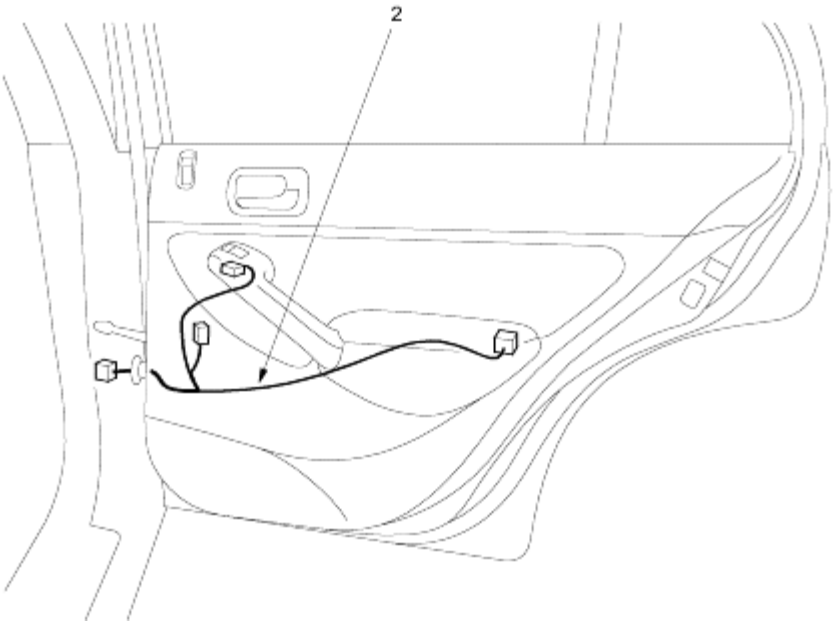


Wire Harness and Ground Locations

Door (cont'd)

4 - door:



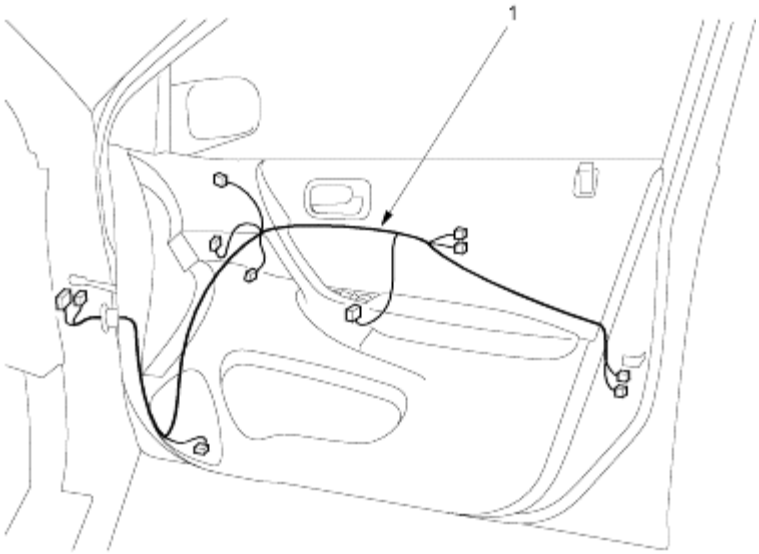


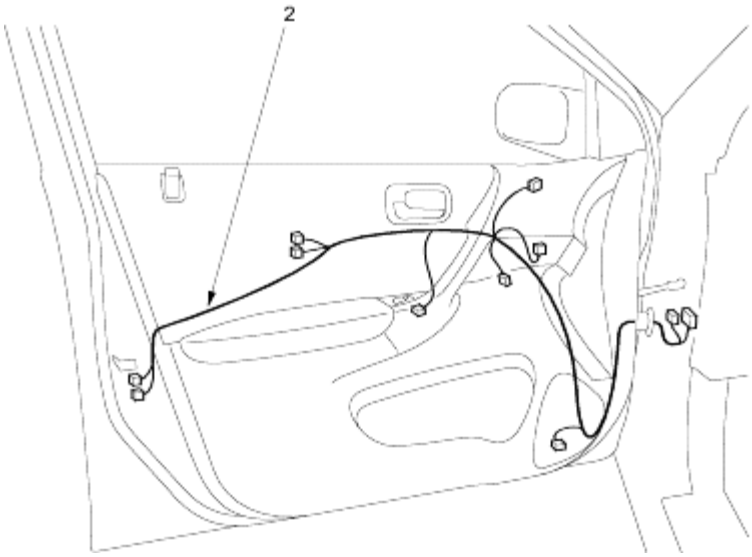
1. LEFT REAR DOOR WIRE HARNESS
2. RIGHT REAR DOOR WIRE HARNESS

Wire Harness and Ground Locations

Door (cont'd)

5 - door:



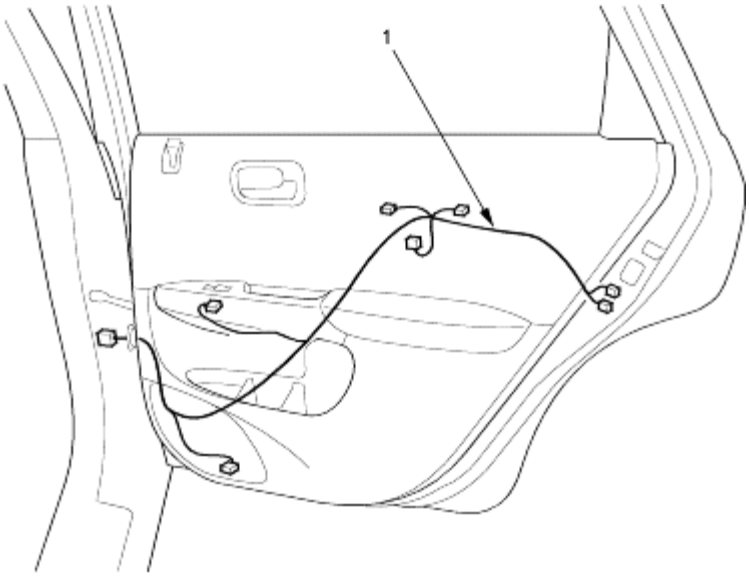


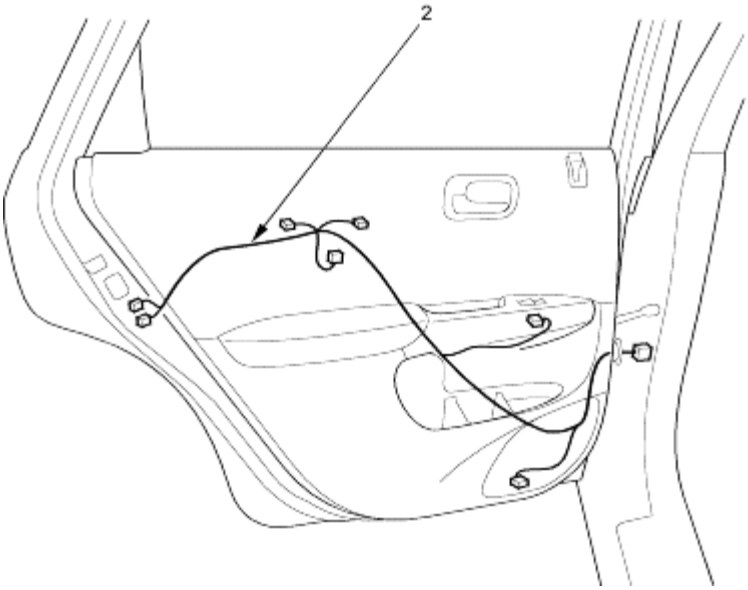
1. DRIVER'S DOOR WIRE HARNESS
2. FRONT PASSENGER'S DOOR WIRE HARNESS

Wire Harness and Ground Locations

Door (cont'd)

5 - door:





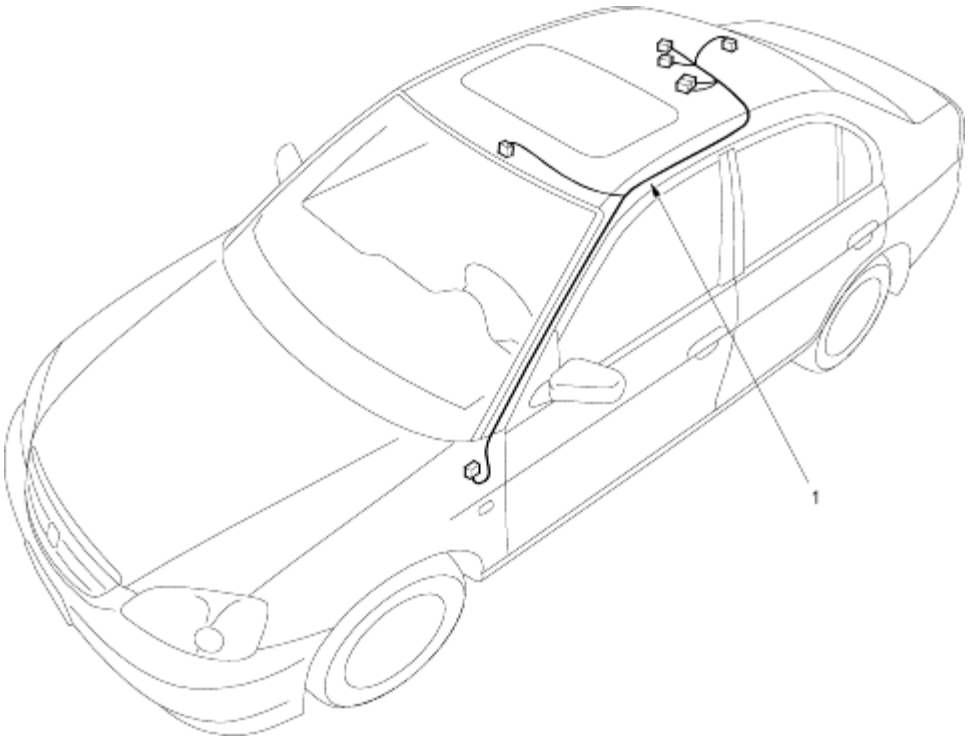
1. RIGHT REAR DOOR WIRE HARNESS
2. LEFT REAR DOOR WIRE HARNESS

Wire Harness and Ground Locations

Roof

4 - door:

NOTE: LHD type is shown, RHD type is similar.

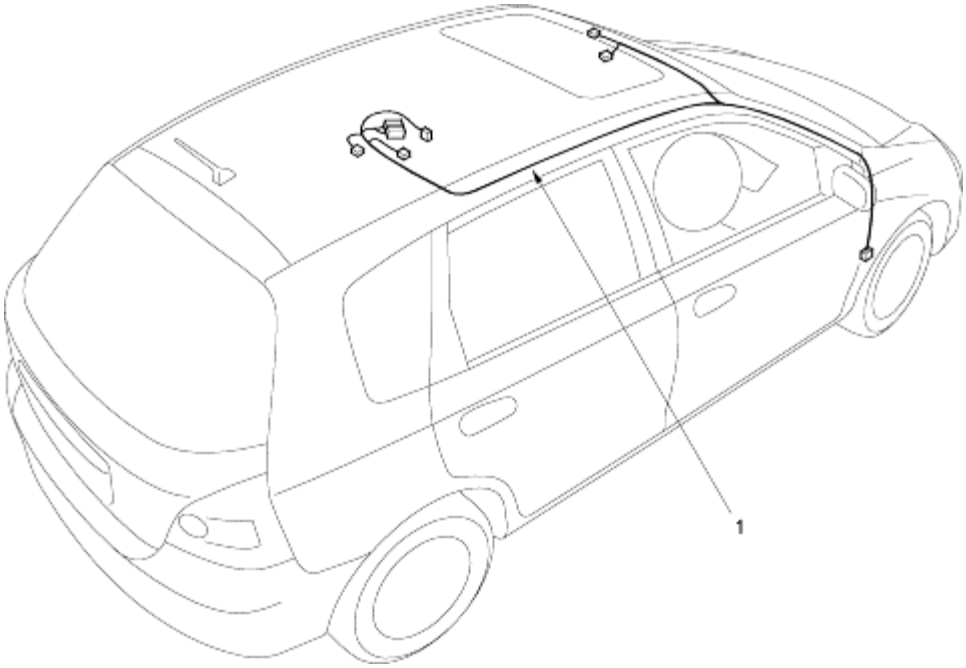


1. ROOF WIRE HARNESS

Wire Harness and Ground Locations

Roof (cont'd)

5 - door:

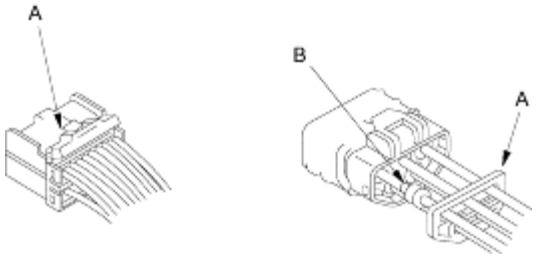


1. ROOF WIRE HARNESS

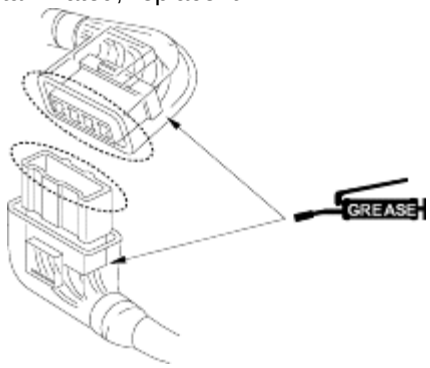
Body Electrical

General Troubleshooting Information (cont'd)

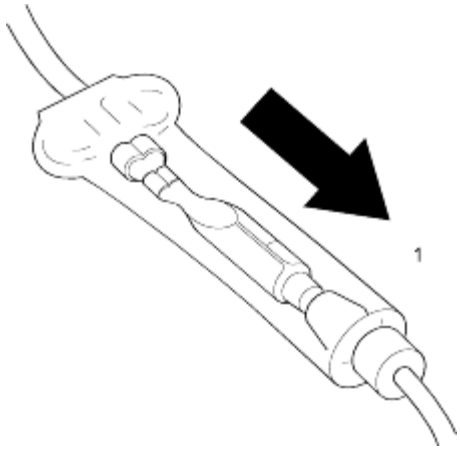
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with grease. Add grease if necessary. If the grease is contaminated, replace it.



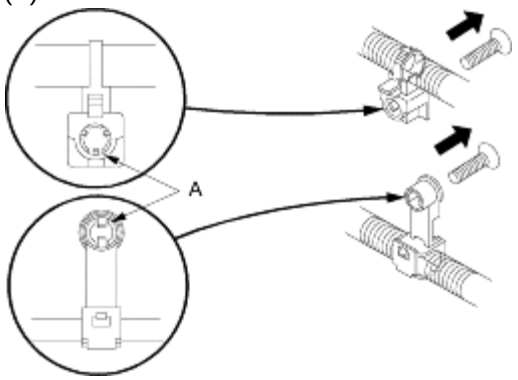
- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.



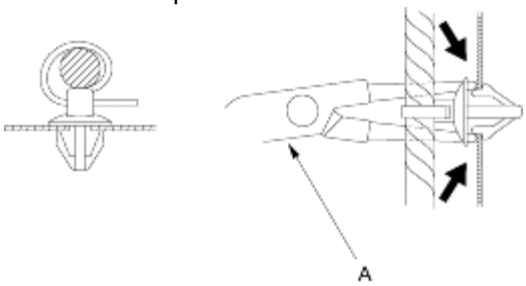
1. 1. DOWN

Handling Wires and Harnesses

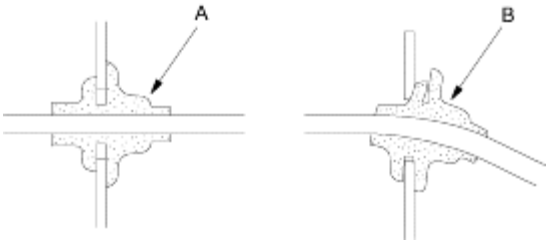
- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; do not damage their locks (A).



- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.



- After installing harness clips, make sure the harness does not interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).



Standards and Service Limits

Steering

Item	Measurement	Qualification	Standard or New	Service Limit
Steering wheel	Rotational play measure at outside edge	With engine running	0-10 mm (0-0.39 in.)	-
	Starting load measured at outside edge	With engine running	29 N (3.0 kgf, 6.6 lbs)	-
Gearbox	Angle of rack guide screw loosened from locked position		20° Max.	
Pump	Output pressure with shut-off valve closed	Engine speed at 3,000 rpm (min)	7,600-8,300 kPa (78-85 kgf/cm2, 1,110-1,210 psi)	
			290-1,100 kPa (3-11 kgf/cm2, 43-156 psi)	
Power steering fluid	Capacity	Use Genuine Honda power steering fluid	For reservoir capacity: 0.3 *l* (0.32 US qt, 0.26 Imp qt)	
			For system capacity: 1.0 *l* (1.06 US qt, 0.88 Imp qt)	
Power steering pump belt NOTE: Adjust a new belt to the new belt spec, run the engine for 5 minutes, then readjust it to the used belt spec.	Deflection with 98 N (10 kgf, 22 lbs) applied mid-way between pulleys		Used belt: 13.0-16.5 mm (0.51-0.65 in.)	
			New belt: 9.0-11.0 mm (0.35-0.43 in.)	
	Tension (measured with belt tension gauge)		Used belt: 390-540 N (40-55 kgf, 88-121 lbs)	
			New belt: 740-880 N (75-90 kgf, 165-198 lbs)	

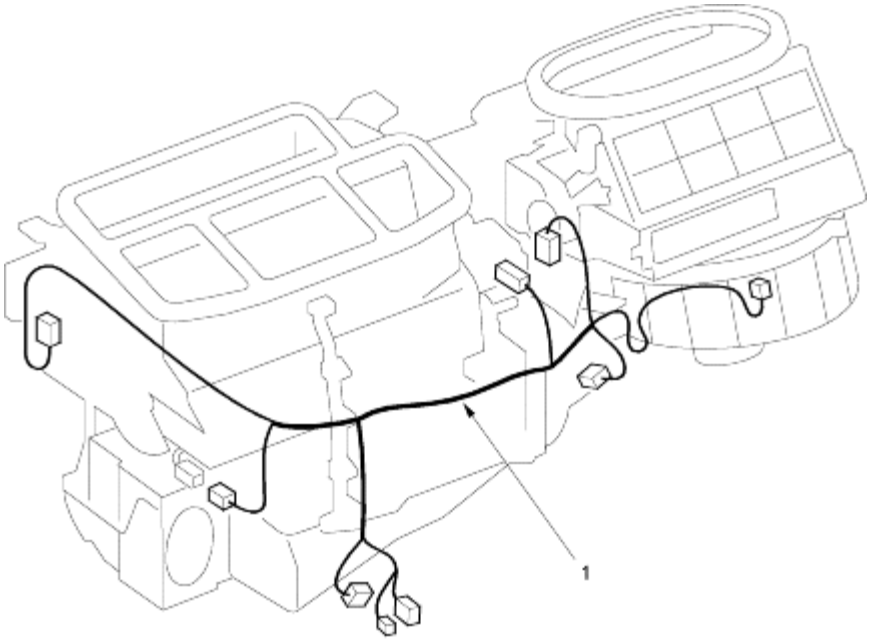
Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0°00'±45°	
		Rear	-0°45'±45'	
	Caster	Front	1°33'±1°	
	Total Toe	Front	0±3 mm (0±0.12 in.)	
		Rear	Adjust: IN 2+2-1 mm (0.08+0.08-0.04 in.)	
			Inspect: IN 2±3 mm (0.08±0.12 in.)	
	Front wheel turning angle	Inside wheel		
		D15B engine	40°00'±2°	
		D17A engine	38°00'±2°	
		Outside wheel		
		D15B engine	31°00' (Reference)	
		D17B engine	30°00' (Reference)	
Aluminium wheel	Runout	Axial	0-0.7 mm (0-0.03 in.)	2.0 mm (0.08 in.)
		Radial	0-0.7 mm (0-0.03 in.)	1.5 mm (0.06 in.)
Steel wheel	Runout	Axial	0-1.0 mm (0-0.04 in.)	2.0 mm (0.08 in.)
		Radial	0-1.0 mm (0-0.04 in.)	1.5 mm (0.06 in.)
Wheel bearings	End play	Front	0-0.05 mm (0-0.002 in.)	
		Rear	0-0.05 mm (0-0.002 in.)	

Wire Harness and Ground Locations

Blower and Seat

NOTE: LHD type is shown, RHD type is similar.





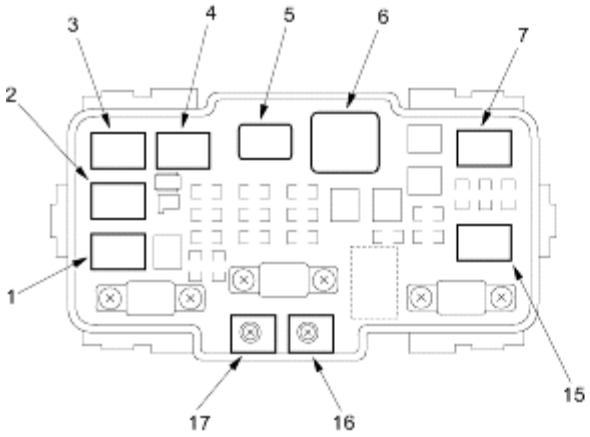
1. A/C WIRE HARNESS
2. OPDS UNIT HARNESS

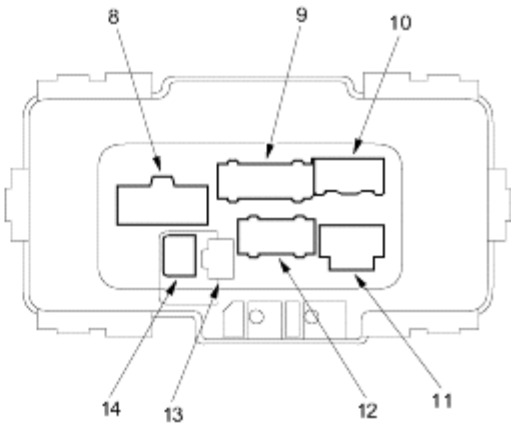
Fuse/Relay Boxes

Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref.	Terminal	Connects to
A	11	2	Engine compartment wire harness
A/C compressor clutch relay	4	4	
B	12	12	Engine compartment wire harness
Blower motor relay	6	4	
C	8	7	Engine compartment wire harness
Condenser fan relay	1	4	
D	9	14	Engine compartment wire harness
E	10	5	Engine compartment wire harness
ELD unit	14	3	Engine compartment wire harness
F	13	———	Not used
Headlight relay 1	7	4	
Headlight relay 2	15	4	
Horn relay	2	4	
Radiator fan relay	2	4	
Rear window defogger relay	5	4	
T1	17		Battery positive cable (Engine wire harness)
T101	16		Engine wire harness



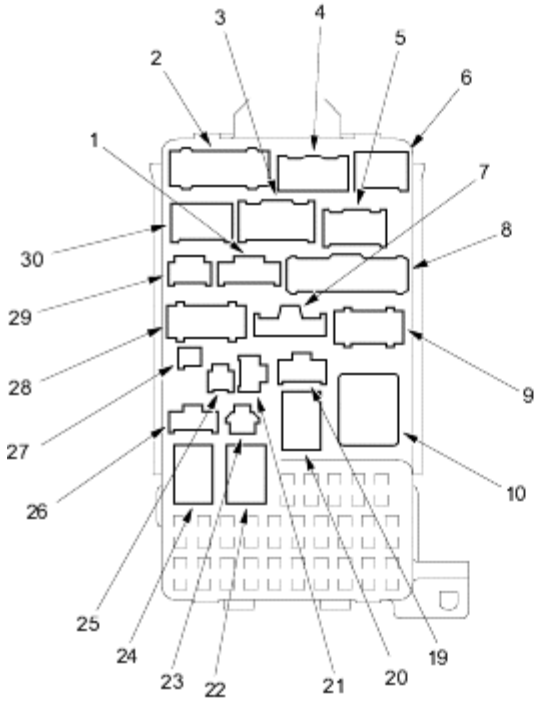


Fuse/Relay Boxes

Connector to Fuse/Relay Box Index (cont'd)

Under-dash Fuse/Relay Box

Socket	Ref.	Terminal	Connects to
A	4	5	Dashboard wire harness B
B	6	6	Dashboard wire harness B
C	2	14	Dashboard wire harness B
D	3	12	ECM/PCM wire harness
Diode	27	——-	
E	5	13	ECM/PCM wire harness
F	28	12	Engine compartment wire harness
G	9	10	Engine compartment wire harness
H	7	3	Engine compartment wire harness
I	29	5	Engine compartment wire harness
J	30	8	Engine compartment wire harness
K	13	17	Dashboard wire harness A
L	14	10	Dashboard wire harness A
M	12	12	Dashboard wire harness A
N	11	6	Dashboard wire harness A
O	16	12	Dashboard wire harness A
P	8	18	Floor wire harness
Power window relay	20	4	
Q	1	8	Floor wire harness
R	19	6	ECM/PCM wire harness
S	15	2	Dashboard wire harness B
Starter cut relay	24	4	
T	21	3	Service check connector
Taillight relay	22	4	
Turn signal/hazard relay	10	4	
U	23	1	Optional connector
V	26	4	Optional connector
W	25	2	Floor wire harness (Memory erase signal connector
X	17	8	Dashboard wire harness B
Y	18	13	Dashboard wire harness A


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Power Distribution

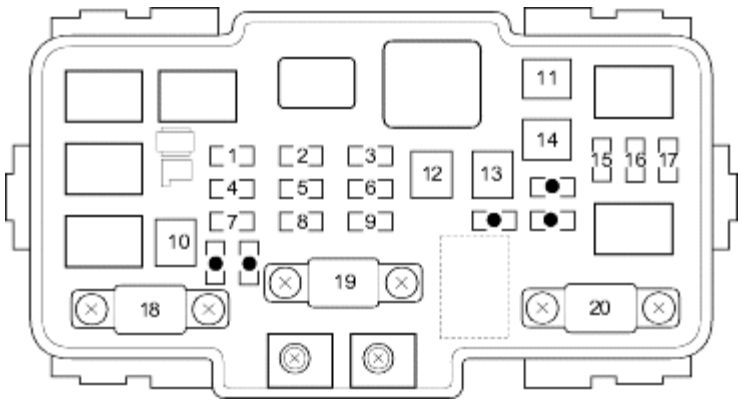
Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Wire Colour	Component(s) or Circuit(s) Protected
1	20A	BLU/YEL	Condenser fan motor
		BLU/RED	A/C compressor clutch
2	15A	WHT/GRN	Dash lights, Front parking lights, Front side marker lights (KK model), Multiplex control unit (KG model), License plate lights, Taillights, Taillight relay
3	7.5A	WHT/BLU	Ceiling light, Spotlights, Trunk light
4	20A	BLU/BLK	Radiator fan motor
5	10A	WHT/BLK	Hazard warning light (KM model, KP model), Security control unit (KK model: EX, KH model, TR model: 1.6 ES, KG model: 1.6 ES, KN model), Turn signal/hazard relay
6	15A	WHT/BLK	CKP sensor, ECM/PCM, Fuel injectors, IAC valve, Immobiliser receiver unit, PGM-FI main relay 1 and 2, TDC sensor
7	15A	WHT/GRN	ABS modulator-control unit, Brake lights, Cruise control unit, ECM, Multiplex control unit, PCM, Security horn relay (KK model: EX, KH model, TR model: 1.6 ES, KG model: 1.6 ES, KN model), Security horn (KK model: EX, KH model, TR model: 1.6 ES, KG model: 1.6 ES, KN model), Shift lock solenoid (KH model)
8	20A	WHT/GRN	ABS modulator-control unit
9	10A	WHT/RED	Audio unit, Data link connector, Gauge assembly, Multiplex control unit, Immobiliser indicator light, Immobiliser receiver unit, Keyless receiver unit, Security control unit (KK model: EX, KH model, TR model: 1.6 ES, KG model: 1.6 ES, KN model)
10	40A	WHT/RED	ABS modulator-control unit
11	30A	BLK	Rear window defogger
12	40A	BLU/WHT	Blower motor
13	40A	WHT/BLK	Power window motors, Sunroof motor
14	40A	WHT/RED	No. 3, 5, 15 and 16 fuses (in the under-dash fuse/relay box)
15	15A	RED/YEL	High beam indicator light, Headlight washer control unit, Left headlight
16	20A	WHT	Multiplex control unit
17	15A	RED	Right headlight
18	60A	WHT/BLU	EPS control unit
19	80A	———	Battery, Power distribution
20	50A*1 40A*2	WHT	Ignition switch (BAT)

*1: KB model, KG model, TR model, KE model

*2: Except KB model, KG model, TR model, KE model



●: Spare Fuse

Power Distribution

Fuse to Components Index (cont'd)

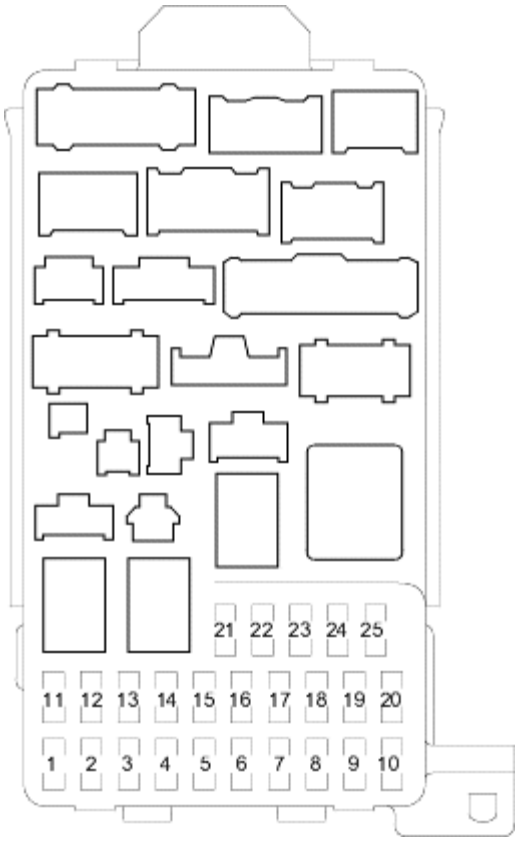
Under - dash Fuse/Relay Box

Fuse Number	Amps	Wire Colour	Component(s) or Circuit(s) Protected
1	15A	BLK/WHT	Ignition coils
2	———	———	Not used
3	10A	Fuse/relay box socket	Multiplex control unit (KG model: daytime running lights)
	20A	BLU/RED	Front fog light (KH model), Front fog light indicator light (KH model)
4	10A	BLK/ORN	Alternator, Cruise control unit, Cruise main switch, ELD unit (KU model), EVAP purge control solenoid valve, Primary HO2S, Secondary HO2S, Vehicle speed sensor
5	7.5A	Fuse/relay box socket	Multiplex control unit (KG model, KB model, KH model, TR model, KE model)
6	7.5A	YEL/GRN	Headlight adjuster switch, Headlight adjuster unit, Power window master switch, Sunroof open relay, Sunroof close relay
7	20A	GRN	Sunroof motor
8	7.5A	Fuse/relay box socket	Optional connector V, Multiplex control unit
		YEL/RED	Audio unit, Key interlock relay (KH model), Key interlock solenoid (KH model)
9	10A	GRN	OPDS unit
10	7.5A	Fuse/relay box socket	Multiplex control unit
		YEL	A/T reverse relay, Back-up lights, EPS control unit, Gauge assembly, Keyless receiver unit, Security control unit (KG model: 1.6 ES, KH model, KK model: EX, KX model, TR model: 1.6 ES, KN model), Shift lock relay (KH model), Shift lock solenoid (KM model: A/T, KP model: A/T, KX model: A/T, KQ model: A/T)
11	7.5A	BLK/ORN	ABS modulator-control unit
12	7.5A	Fuse/relay box socket	Multiplex control unit (KG model: daytime running lights)
13	10A	PNK	SRS unit
14	10A	Fuse/relay box socket	Optional connector V
		BLK/YEL	A/C compressor clutch relay, Blower motor relay, Condenser fan relay, Climate control unit (with auto A/C), Heater control panel (without auto A/C), Power mirror actuator, Power mirror defogger, Radiator fan relay, Rear window defogger relay, Recirculation control motor, Seat heater main relay
15	10A	WHT	Security control unit connector (optional)
	30A	RED/YEL	Headlight washer control unit
16	20A	RED/BLK	Driver's seat heater, Passenger's seat heater
17	15A	BLK/YEL	Inertia switch (KG model, KB model, TR model, KE model), SRS unit
		YEL/BLK	ECM, PCM, Fuel pump
18	15A	YEL/GRN	Cigarette lighter
19	7.5A	YEL/BLK	Turn signal/hazard relay
20	20A	Fuse/relay box socket	Multiplex control unit
		GRN/BLK	Windshield wiper motor, Windshield washer motor
21	———	———	Not used
22	20A	GRN/BLK	Front passenger's power window motor
23	20A	GRN/WHT	Driver's power window motor
24	20A	YEL/RED	Left rear power window motor

25	20A	YEL/BLU	Right rear power window motor

Power Distribution

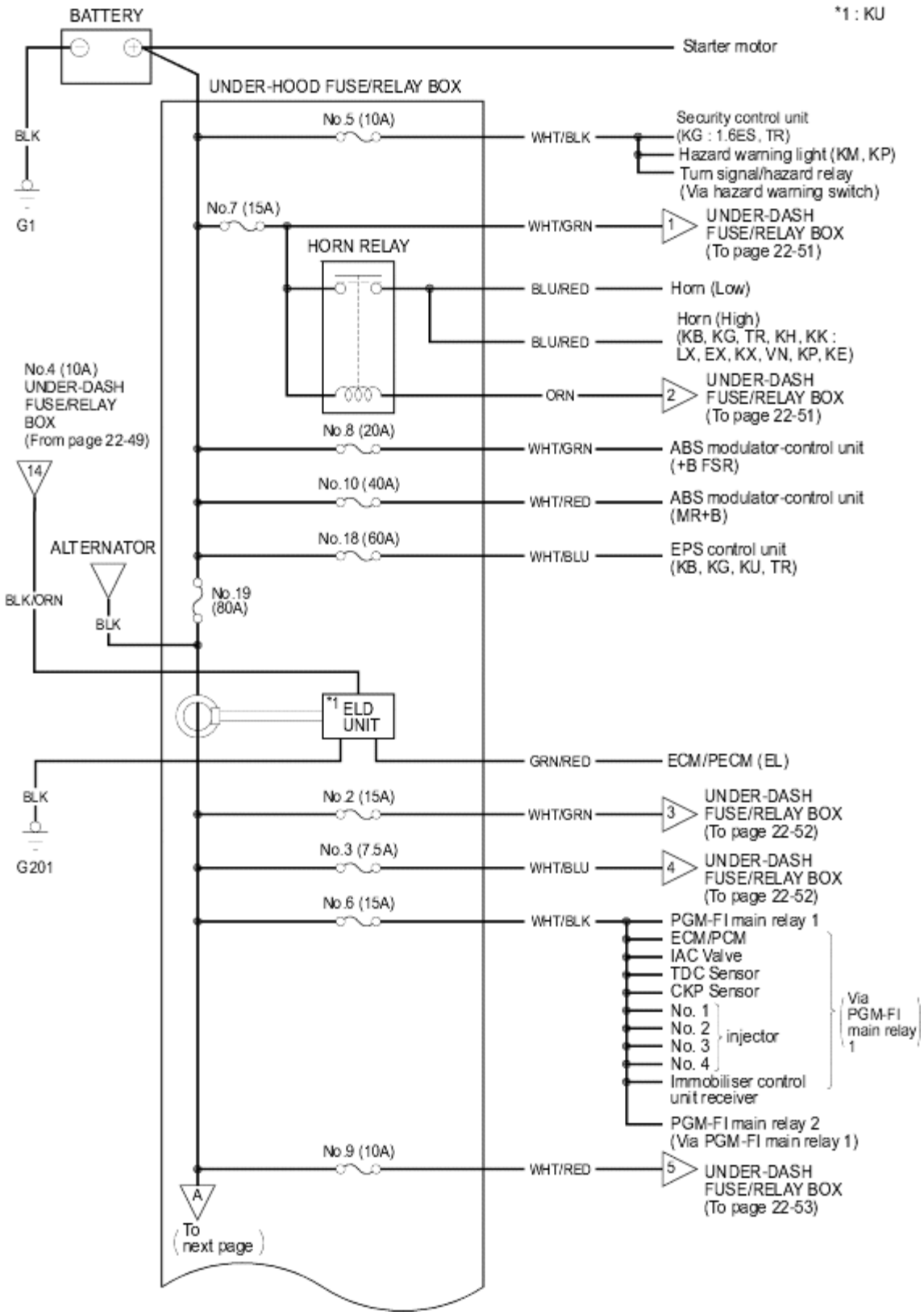
Fuse to Components Index (cont'd)



*: Not used

Power Distribution
Circuit Identification

4 - door:



To go to the pages referenced in the diagram above, click on the following:

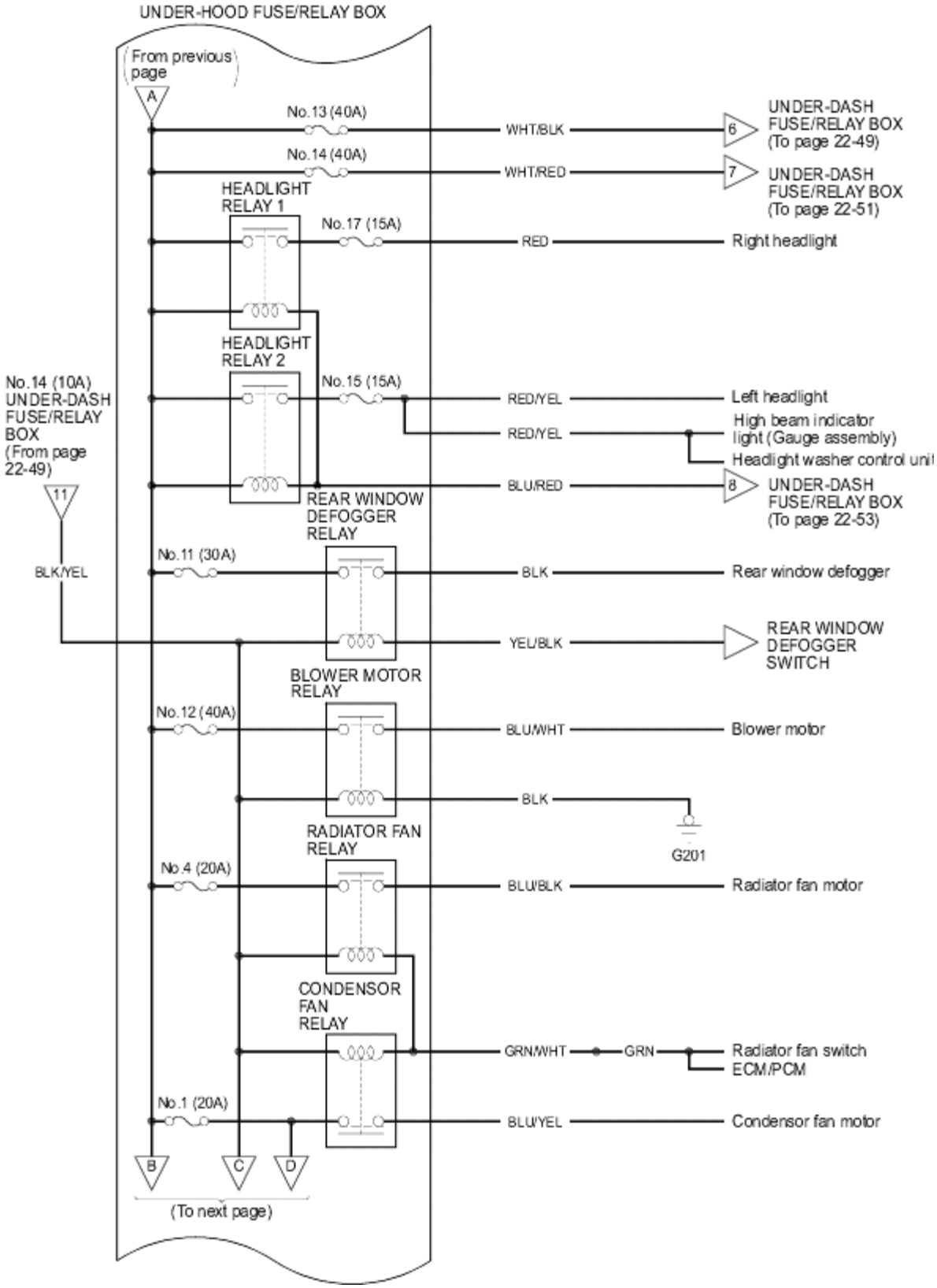
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22-52

22-53

Power Distribution

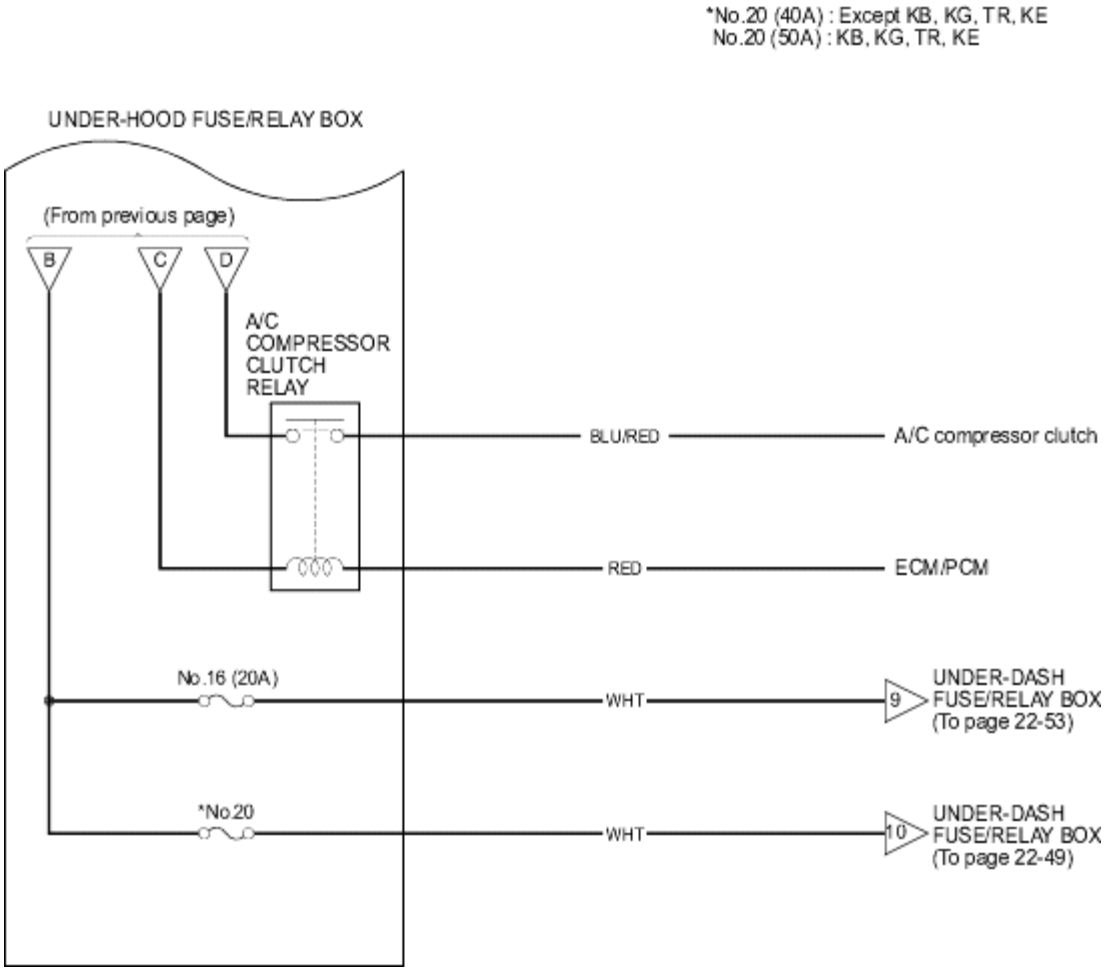
Circuit Identification (cont'd)



To go to the pages referenced in the diagram above, click on the following:

22-49 22-51 22-53

Power Distribution
Circuit Identification (cont'd)

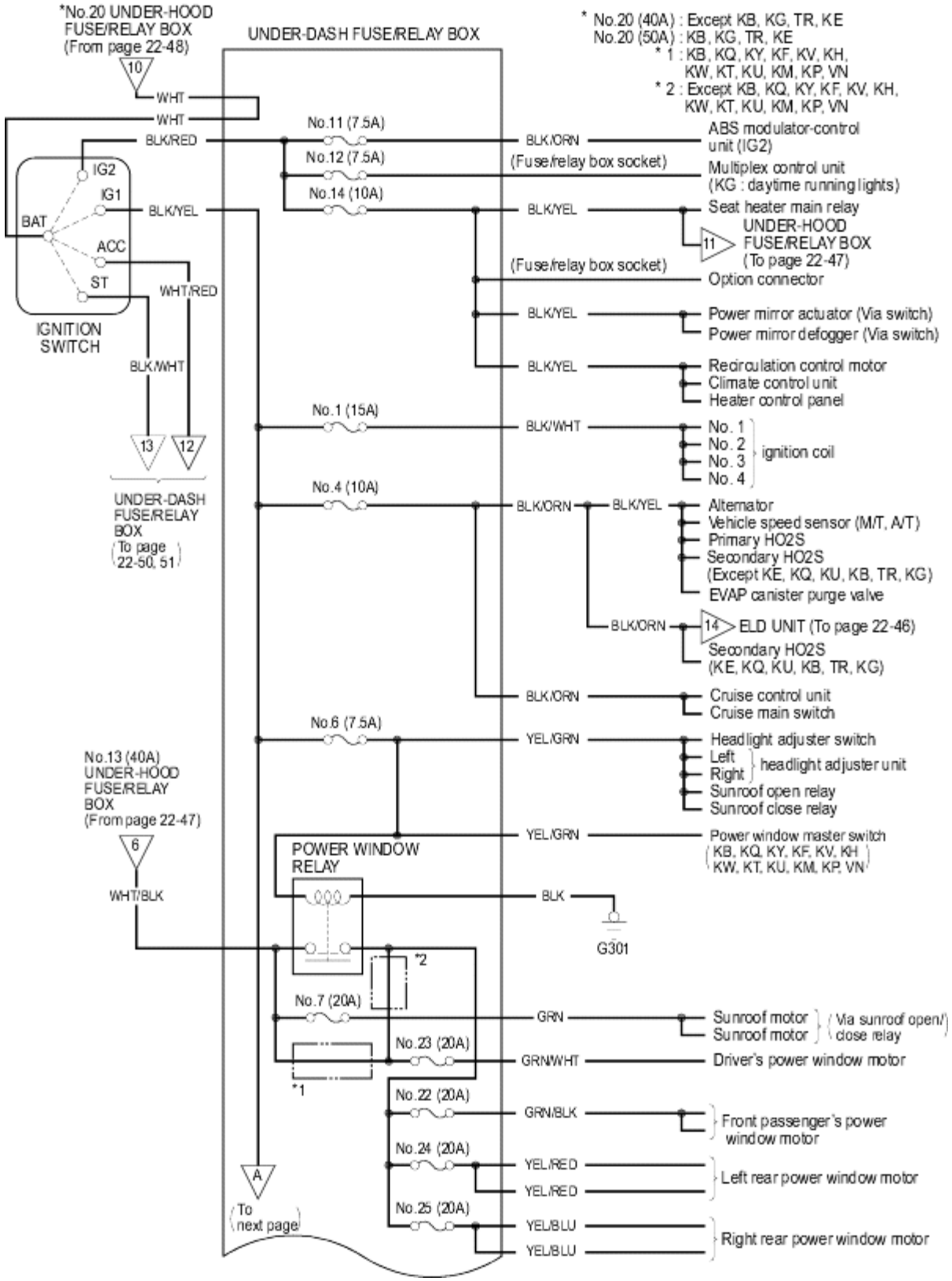


To go to the pages referenced in the diagram above, click on the following:

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Power Distribution

Circuit Identification (cont'd)



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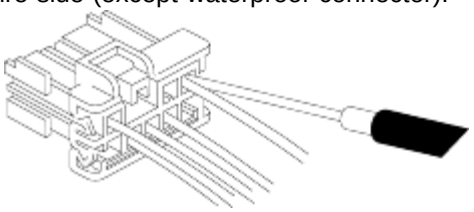
22-47 22-50 22-51 22-46

Body Electrical

General Troubleshooting Information (cont'd)

Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use a probe with a tapered tip.



- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Standards and Service Limits

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake lever	Distance travelled when pulled with 196 N (20 kgf, 44 lbs) of force	4-door	Rear drum brake 6-7 clicks, Rear disc brake 7-8 clicks	
		5-door	8-9 clicks	
Brake pedal	Pedal height (Carpet removed)	M/T	4-door 184 mm (7.24 in.), 5-door 180 mm (7.09 in.)	
		A/T	4-door 188 mm (7.40 in.), 5-door 184 mm (7.24 in.)	
	Free play		0.4-3.0 mm (0.016-0.118 in.)	
Master cylinder	Piston-to-pushrod clearance		0-0.4 mm (0-0.02 in.)	
Brake disc	Thickness	Front	20.9-21.8 mm (0.82-0.86 in.)	19.0 mm (0.75 in.)
		Rear	8.9-9.1 mm (0.350-0.358 in.)	8.0 mm (0.31 in.)
	Runout		-	0.10 mm (0.004 in.)
	Parallelism		-	0.015 mm (0.0006 in.)
Brake pads	Thickness Front	KX model	9.5-10.5 mm (0.37-0.41 in.)	1.6 mm (0.06 in.)
		Except KX model	9.0-10.0 mm (0.35-0.39 in.)	1.6 mm (0.06 in.)
	Thickness Rear		8.5-9.5 mm (0.33-0.37 in.)	1.6 mm (0.06 in.)
Brake drum	I.D.	4-door	199.9-200.0 mm (7.870-7.874 in.)	201 mm (7.91 in.)
		5-door	219.9-220.0 mm (8.657-8.661 in.)	221 mm (8.701 in.)
Brake shoes	Lining thickness	4-door	4.0 mm (0.16 in.)	2.0 mm (0.08 in.)
		5-door	4.5 mm (0.18 in.)	2.0 mm (0.08 in.)

Brake booster Vehicle with ABS	Characteristics at 196 N (20 kgf, 44 lbf) pedal force	Vacuum	N (kgf, lbf)	kPa (kgf/cm2, psi)	
		kPa (mmHg, inHg)		(1)	(2)
		0 (0, 0)	98 (10, 22)	0 (0, 0)	0 (0, 0)
			294 (30, 66)	1700 (17, 240)	1600 (16, 230)
		66.7 (500, 19.7)	98 (10, 22)	4600 (47, 670)	4200 (43, 610)
			294 (30, 66)	10500 (107, 1500)	10300 (105, 1500)

Brake booster Vehicle without ABS	Characteristics at 196 N (20 kgf, 44 lbf) pedal force	Vacuum	N (kgf, lbf)	kPa (kgf/cm2, psi)		
		kPa (mmHg, inHg)		(3)	(4)	(5)
		0 (0, 0)	98 (10, 22)	0 (0, 0)	0 (0, 0)	0 (0, 0)
			294 (30, 66)	1700 (17, 240)	1600 (16, 230)	1800 (18, 260)
		66.7 (500, 19.7)	98 (10, 22)	4400 (45, 640)	4100 (42, 600)	4800 (49, 700)
			294 (30, 66)	10500 (107, 1500)	10300 (105, 1500)	9800 (100, 1400)

(1) Except 4-door KQ models

(2) 4-door KQ model

(3) Except 4-door KQ, PA models and KK (VIN) model

(4) 4-door KQ model and KK (VIN) model

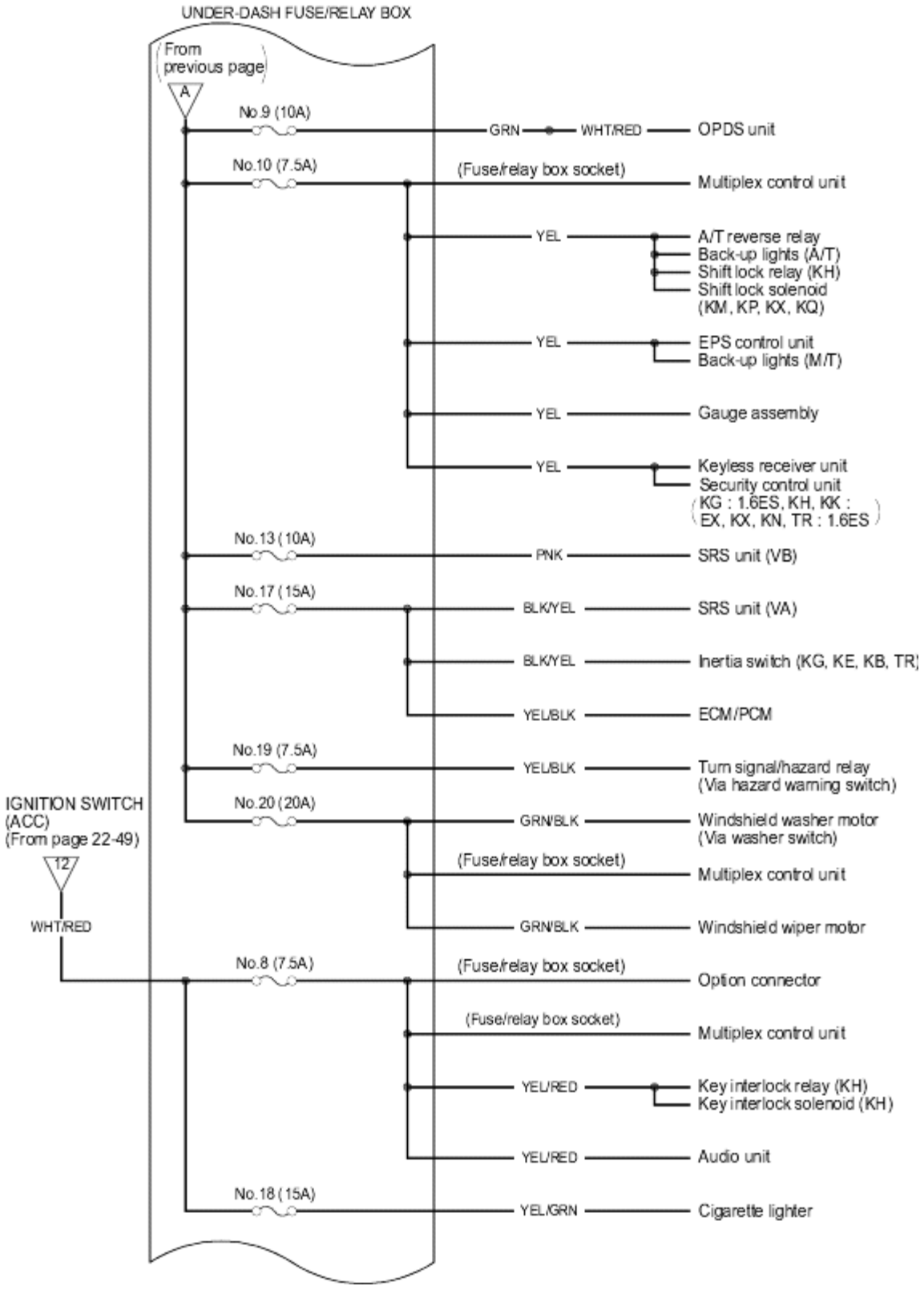
(5) 4-door PA model

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134 a (R-134 a)
	Capacity or system		500-550 g (17.6-19.4 oz)
Refrigerant Oil	Type		SANDEN: SP-10 (P/N 38897-P13-003 or38899-P13-A01)
	Capacity of components	Condenser	25 m/ (5/6 fl oz, 0.9 Imp oz)
		Evaporator	45 m/ (1 ½ fl oz, 1.3 Imp oz)
		Each line and hose	10 m/ (1/3 fl oz, 0.4 Imp oz)
		Receiver	10 m/ (1/3 fl oz, 0.4 Imp oz)
		Compressor	130-150 m/ (4 1/3 fl oz, 3.7 Imp oz-5 fl oz, 4.5 Imp oz)
Compressor	Starter coil resistance	at 68°F (20°C)	3.05-3.35 ohms
	Pulley-to-pressure plate clearance		0.5±0.15 mm (0.02±0.006 in.)
Compressor belt NOTE: Adjust a new belt to the new belt spec., run the engine for 5 minutes, then readjust it to the used belt spec.	Deflection with 98 N (10 kgf, 22 lbs) applied mid-way between pulleys		Used belt: 8.5-11.0 mm (0.33-0.43 in.)
			New belt: 5.0-6.5 mm (0.20-0.26 in.)
	Tension (measured with belt tension gauge)		Used belt: 440-590 N (45-60 kgf, 100-130 lbs)
			New belt: 930-1,125 N (95-115 kgf, 210-255 lbs)

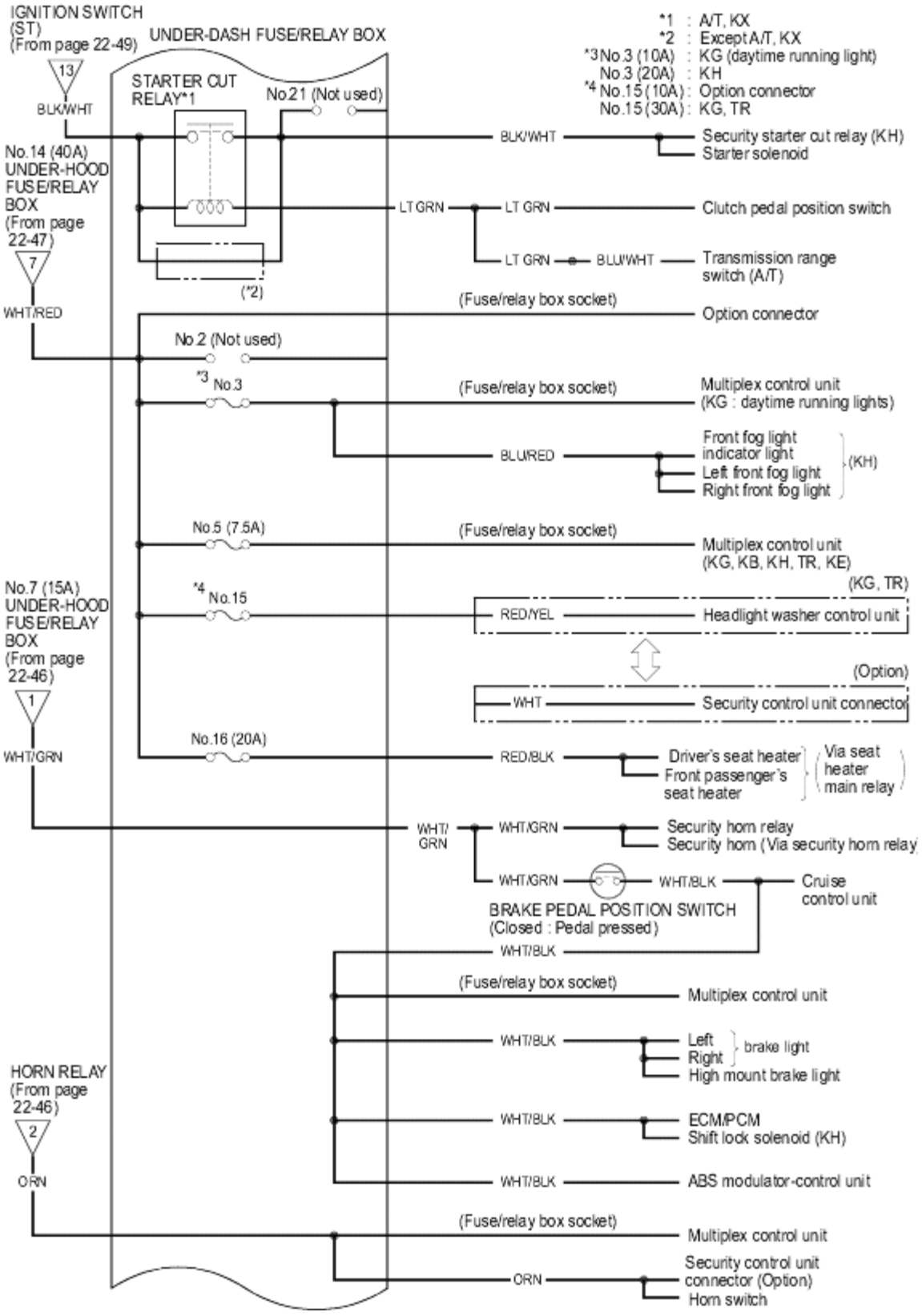
Power Distribution

Circuit Identification (cont'd)



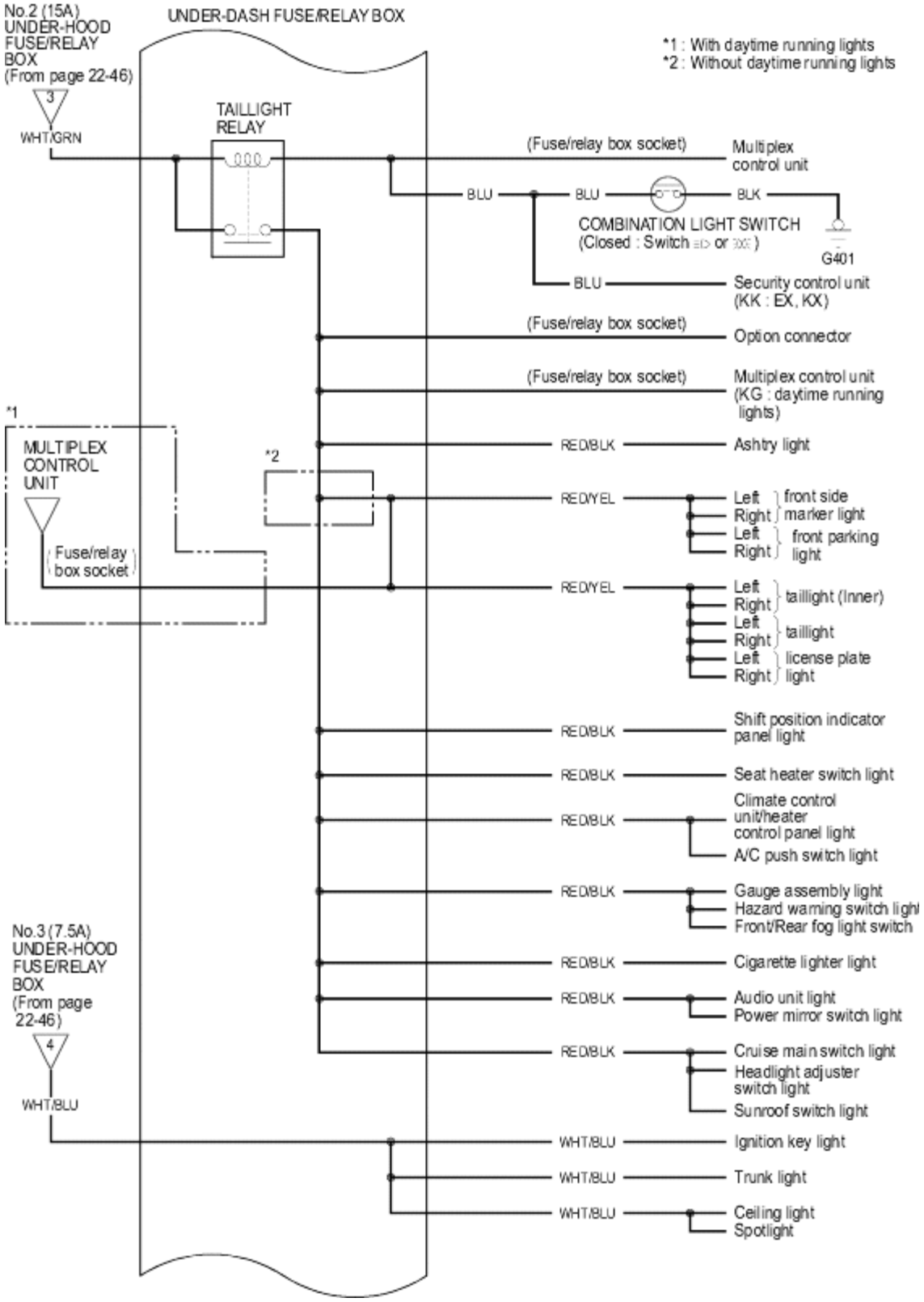
Power Distribution

Circuit Identification (cont'd)



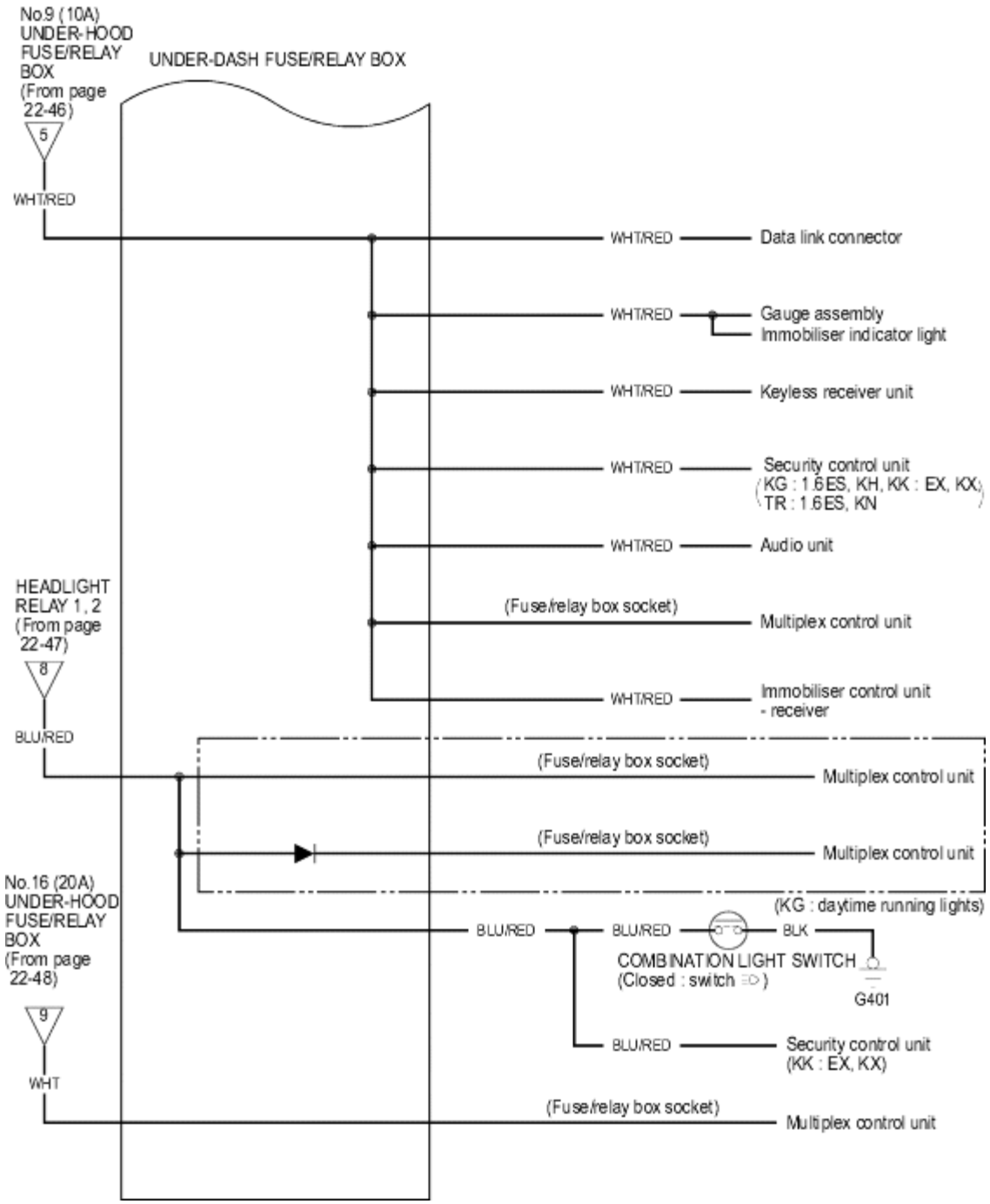
Power Distribution

Circuit Identification (cont'd)



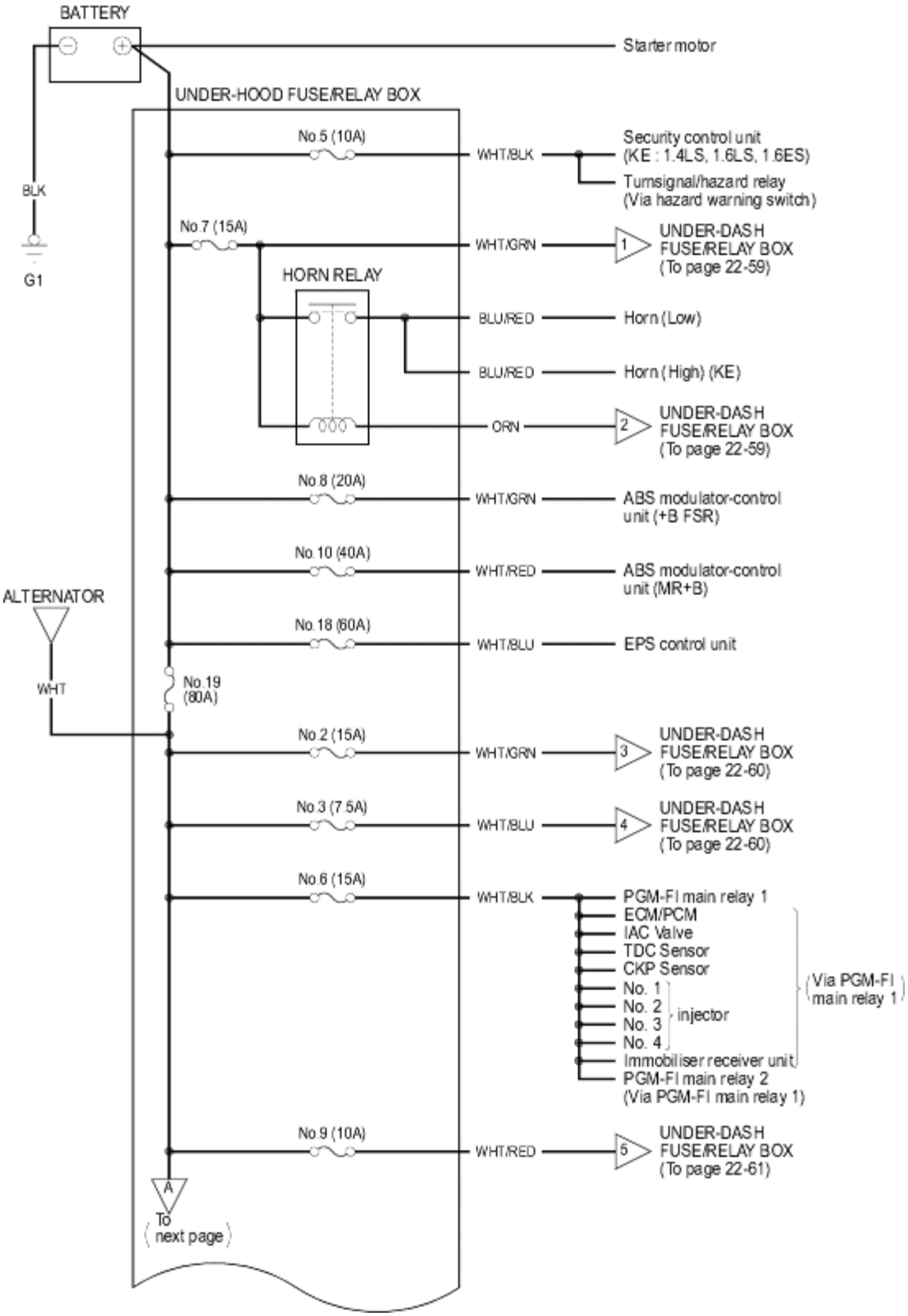
Power Distribution

Circuit Identification (cont'd)



Power Distribution
Circuit Identification (cont'd)

5 - door:

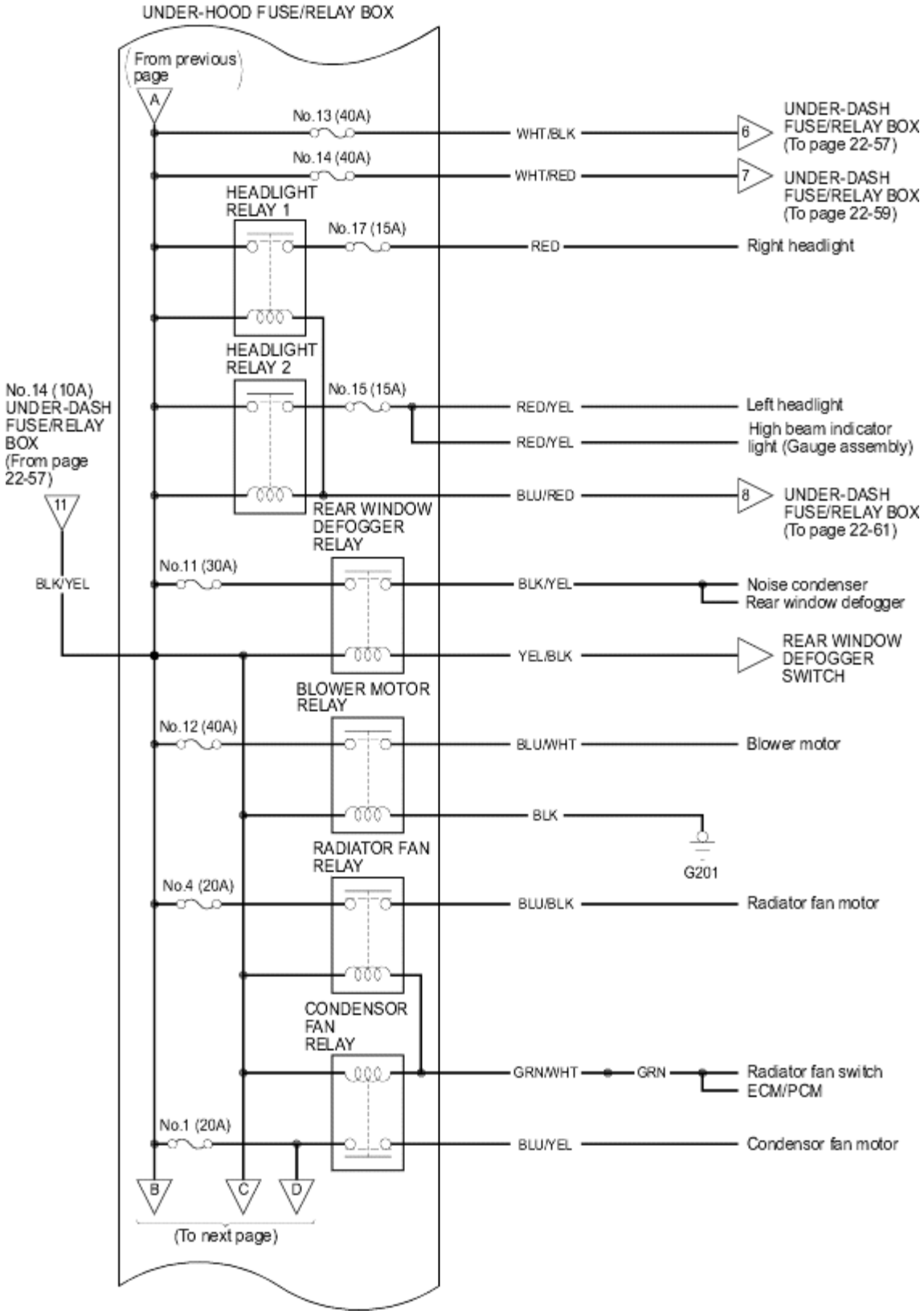


To go to the pages referenced in the diagram above, click on the following:

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Power Distribution

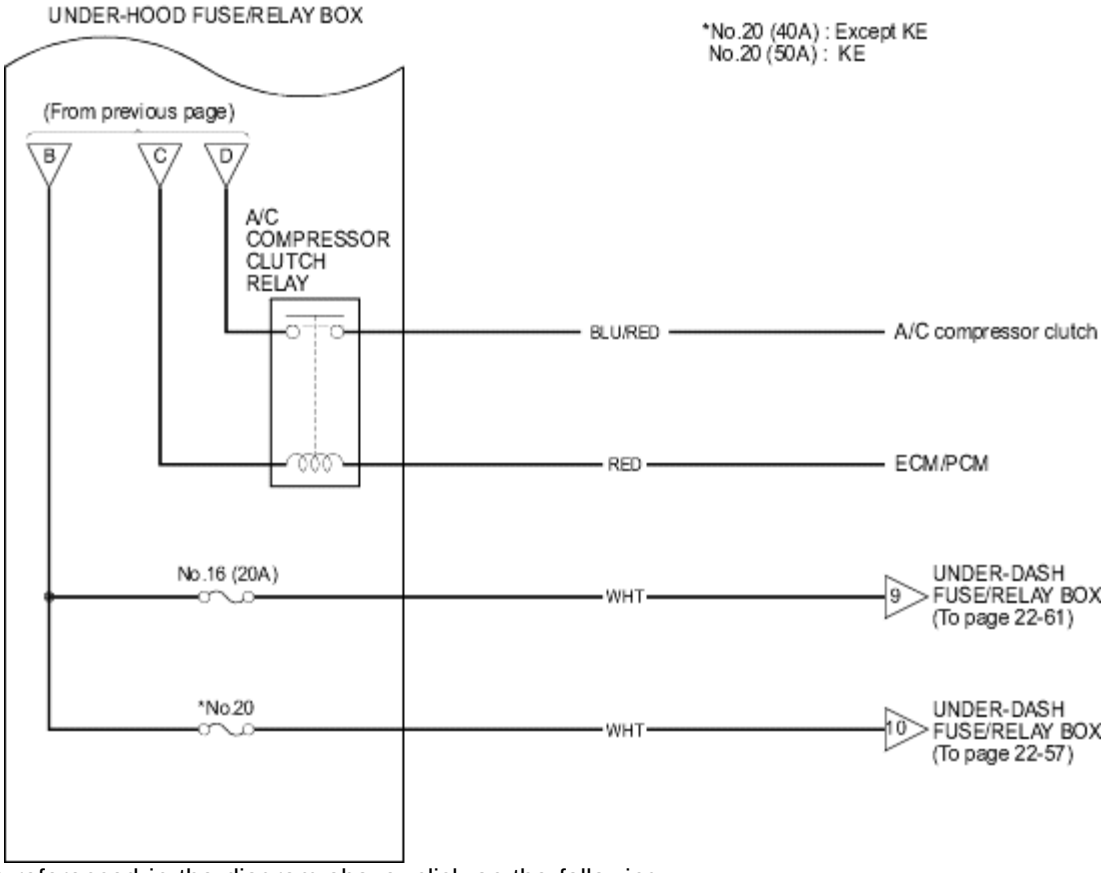
Circuit Identification (cont'd)



To go to the pages referenced in the diagram above, click on the following:

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Power Distribution
Circuit Identification (cont'd)

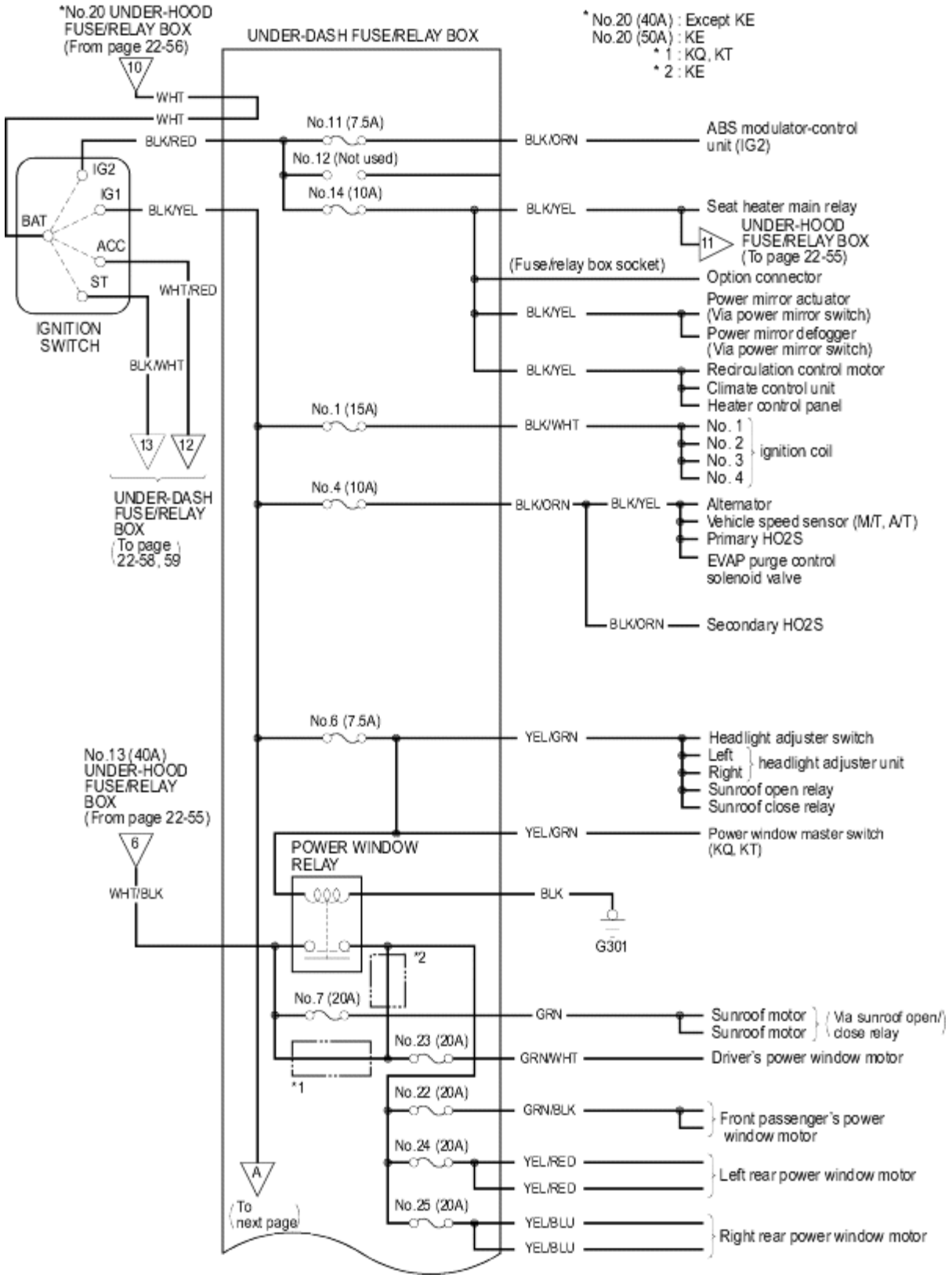


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Power Distribution

Circuit Identification (cont'd)

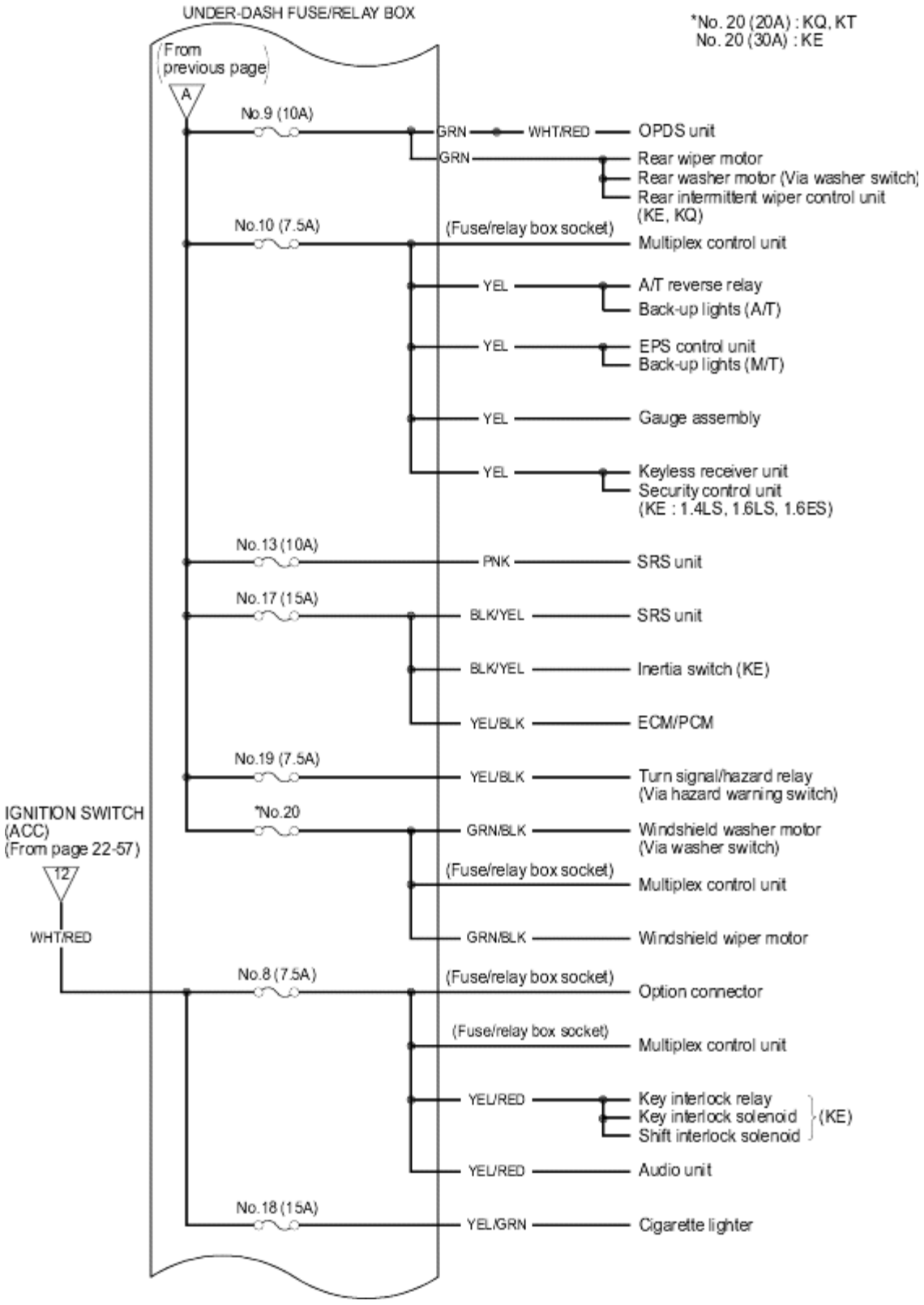


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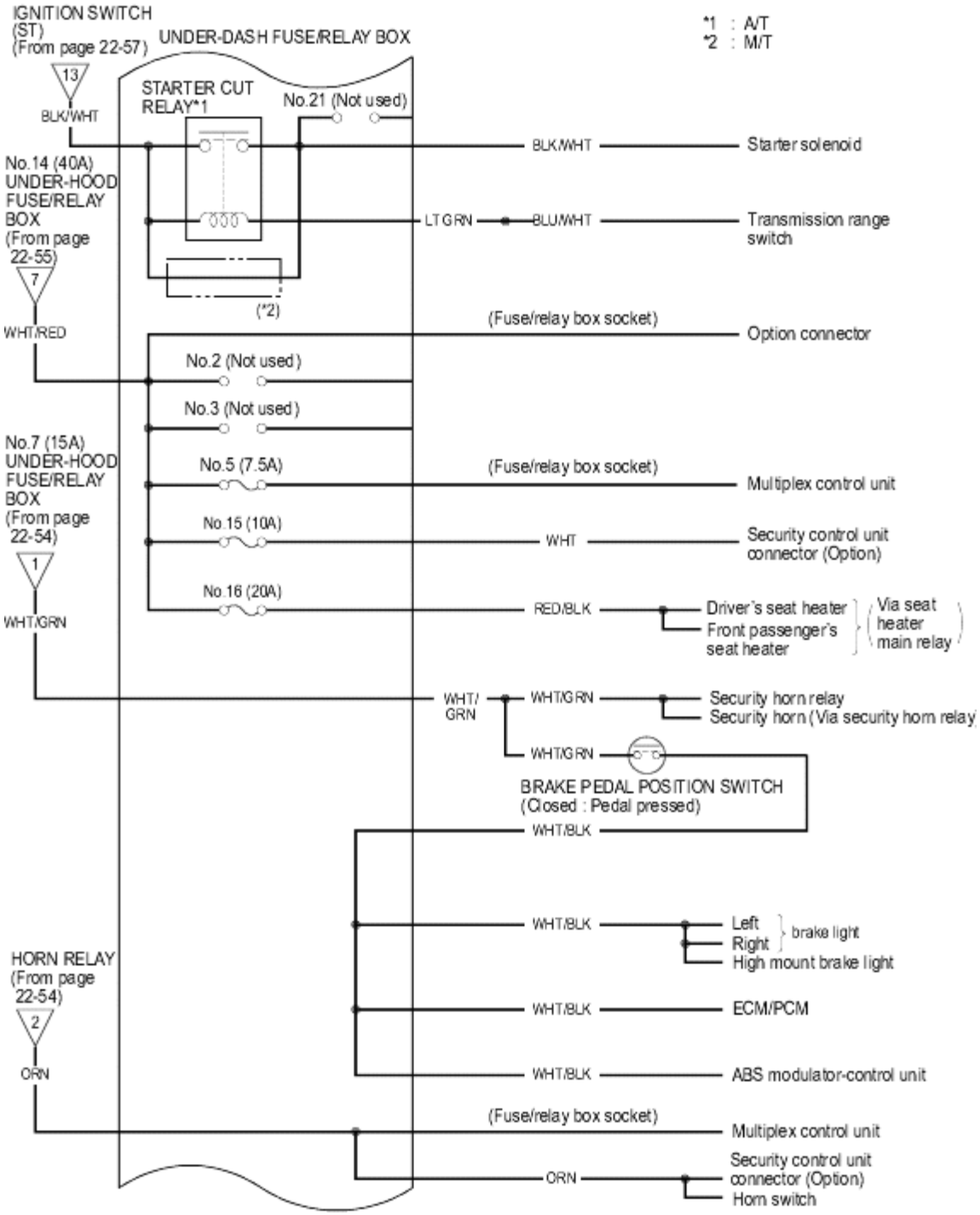
Power Distribution

Circuit Identification (cont'd)



Power Distribution

Circuit Identification (cont'd)



Body Electrical

General Troubleshooting Information (cont'd)

5-step Troubleshooting

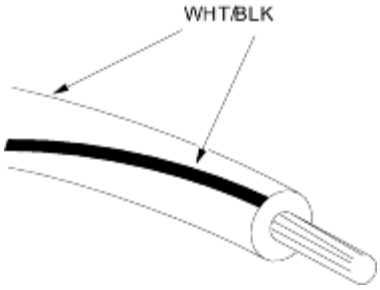
1. 1. Verify the Complaint
   Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.
   2. Analyse the Schematic
   Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or ground is a likely cause.
   Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.
   3. Isolate the Problem by Testing the Circuit
   Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.
   4. Fix the Problem
   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.
   5. Make Sure the Circuit Works
   Turn on all components in the repaired circuit in all modes to make sure you have fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

Wire Colour Codes

The following abbreviations are used to identify wire colours in the circuit schematics:

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Grey
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

The wire insulation has one colour or one colour with another colour stripe. The second colour is the stripe.



Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length	4-door	4,460 mm (175.6 in.)*1
			4,450 mm (175.2 in.)*2
			4,435 mm (174.6 in.)*3 *4
		5-door	4,285 mm (168.7 in.)
	Overall width	4-door	1,715 mm (67.5 in.)
			1,720 mm (67.7 in.)*3
			1,695 mm (66.7 in.)*4
		5-door	1,695 mm (66.7 in.)
	Overall height	4-door	1,445 mm (56.9 in.)
			1,440 mm (56.7 in.)*2 *3 *4
		5-door	1,495 mm (58.9 in.)
			1,585 mm (62.4 in.)*5
	Wheelbase	4-door	2,625 mm (103.3 in.)
			2,620 mm (103.1 in.)*2 *3 *4
		5-door	2,680 mm (105.5 in.)*6
			2,685 mm (105.7 in.)*7
	Track	Front (4-door)	1,471 mm (57.9 in.)
			1,470 mm (57.9 in.)*2 *3 *4
		Front (5-door)	1,470 mm (57.9 in.)*6
			1,472 mm (58.0 in.)*7
		Rear (4-door)	1,478 mm (58.2 in.)
			1,470 mm (57.9 in.)*2 *3
			1,465 mm (57.7 in.)*4
		Rear (5-door)	1,470 mm (57.9 in.)*6
			1,489 mm (58.6 in.)*7
	Ground clearance		104 mm (4.10 in.)
	Seating capacity		Five
WEIGHT	Curb Weight	4-door (M/T)	1,077-1,144 kg (2,374-2,522 lbs)
			1,100-1,135 kg (2,425-2,502 lbs)*2
		4-door (A/T)	1,106-1,170 kg (2,438-2,579 lbs)
			1,125-1,160 kg (2,480-2,557 lbs)*2
		4-door (HMM)	1,140-1,145 kg (2,513-2,524 lbs)
		5-door (M/T)	1,130-1,195 kg (2,491-2,634 lbs)
			1,160-1,190 kg (2,557-2,623 lbs)*2
		5-door (A/T)	1,164-1,221 kg (2,566-2,692 lbs)
			1,185-1,215 kg (2,612-2,679 lbs)*2
	Max. permissible Weight	4-door	
		4-door (KY model)	1,555 kg (3,428 lbs)
	Max. loaded Vehicle Weight (ADR)*2	4-door	1,580 kg (3,483 lbs)
		5-door (M/T)	1,640 kg (3,616 lbs)
		5-door (A/T)	1,660 kg (3,660 lbs)

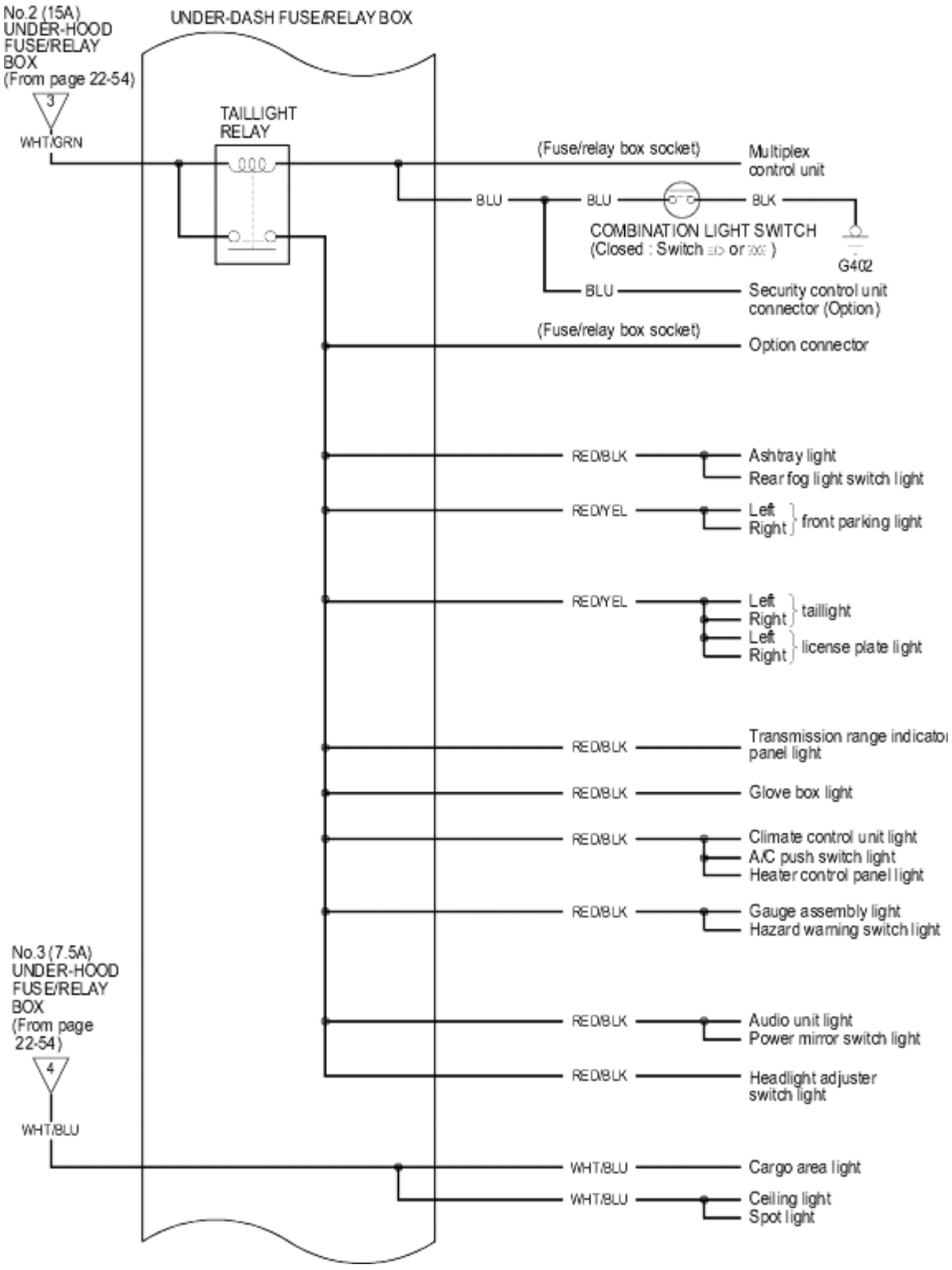
*1: European model

*2: Australian model

*3: Saudi Arabia model
*4: Hong Kong model
*5: With Roof Antenna
*6: European model (MPW Condition)
*7: Except European model

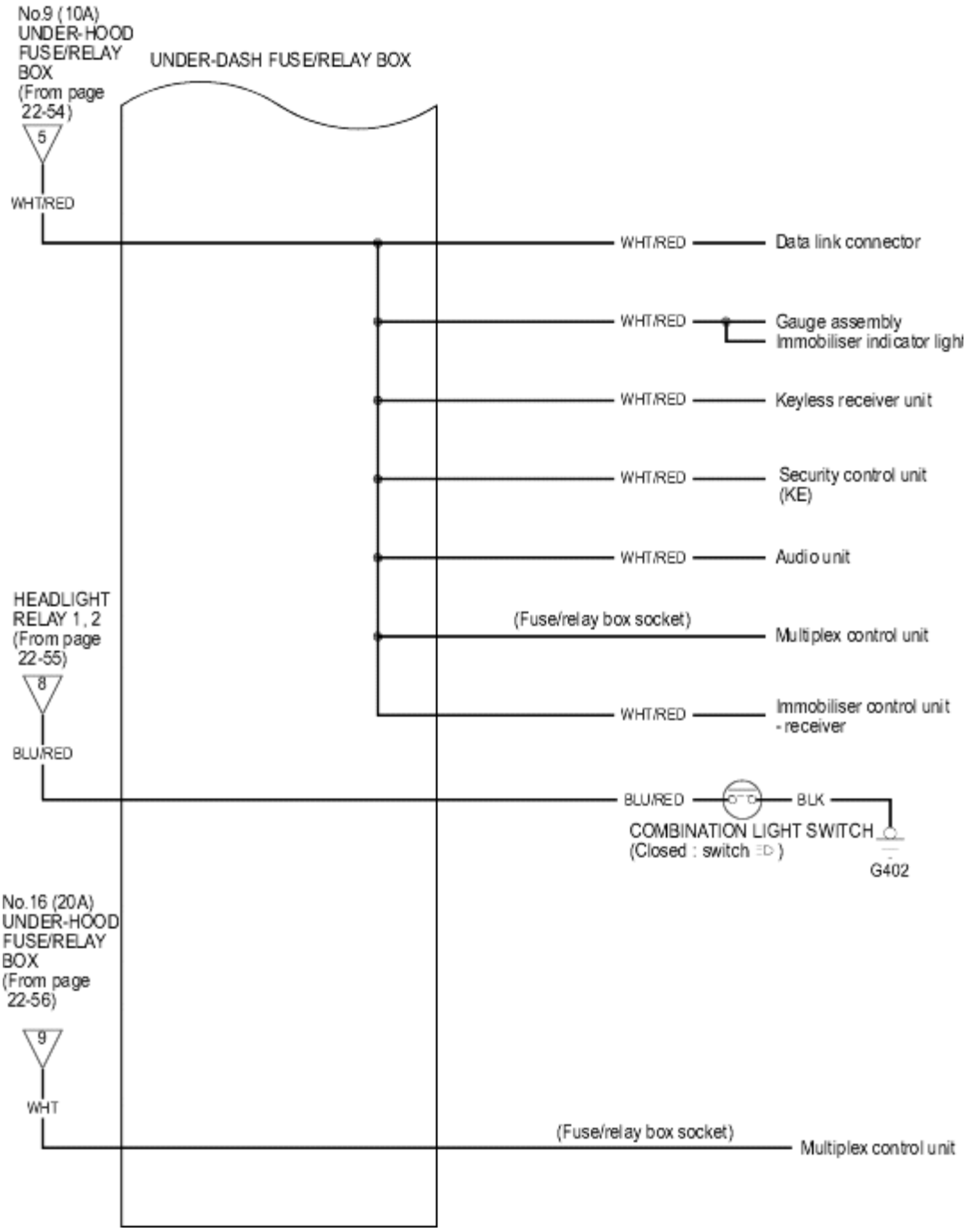
Power Distribution

Circuit Identification (cont'd)



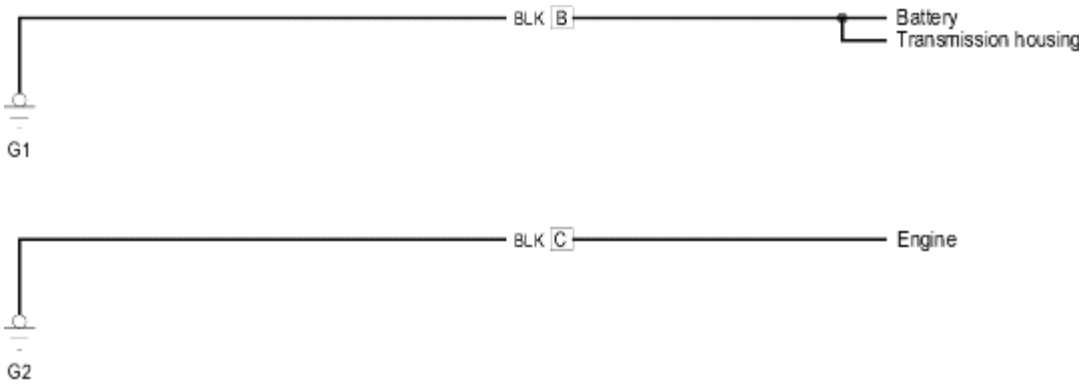
Power Distribution

Circuit Identification (cont'd)



Power Distribution

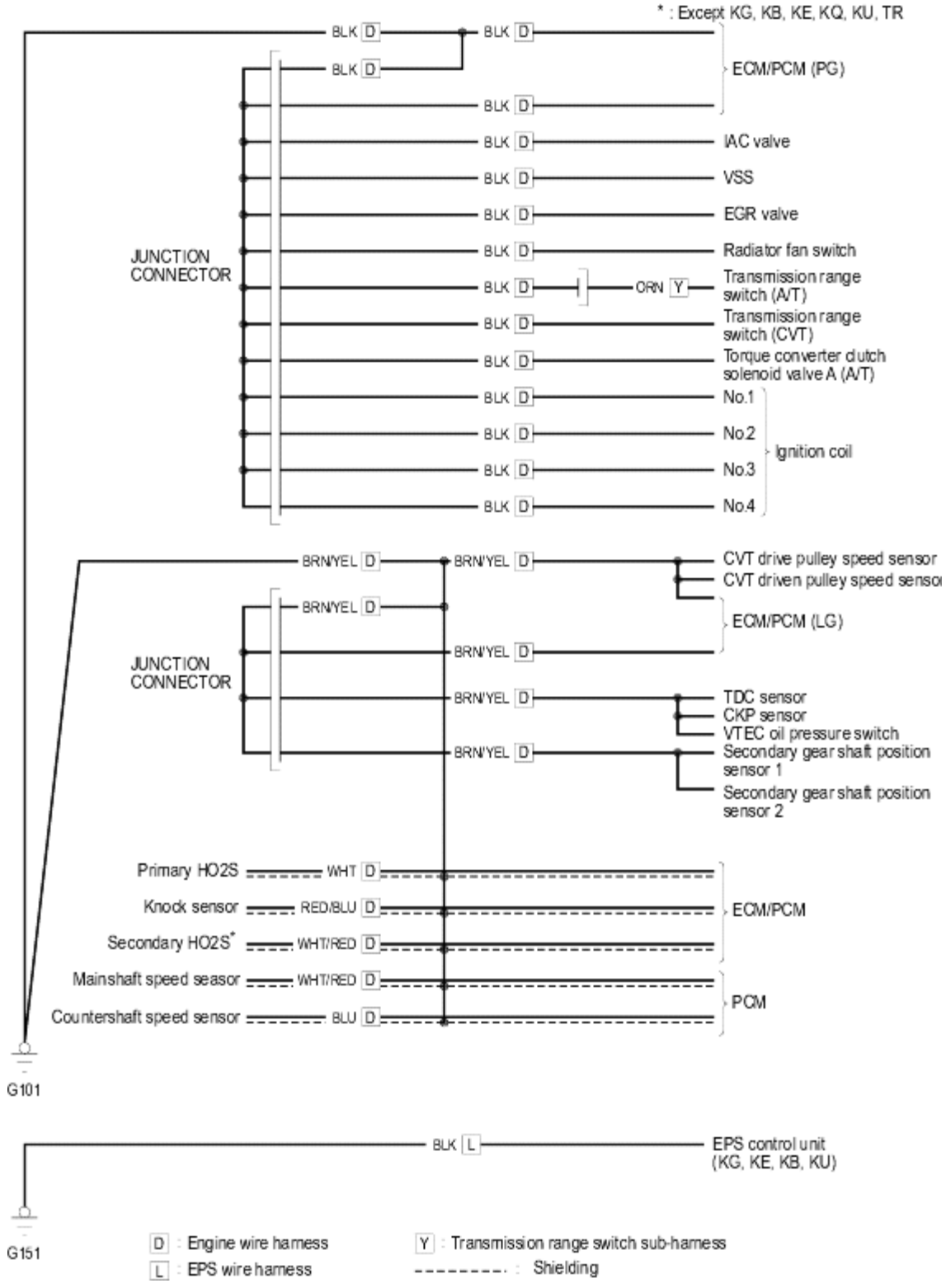
Circuit Identification (cont'd)



B : Battery ground cable
C : Engine ground cable

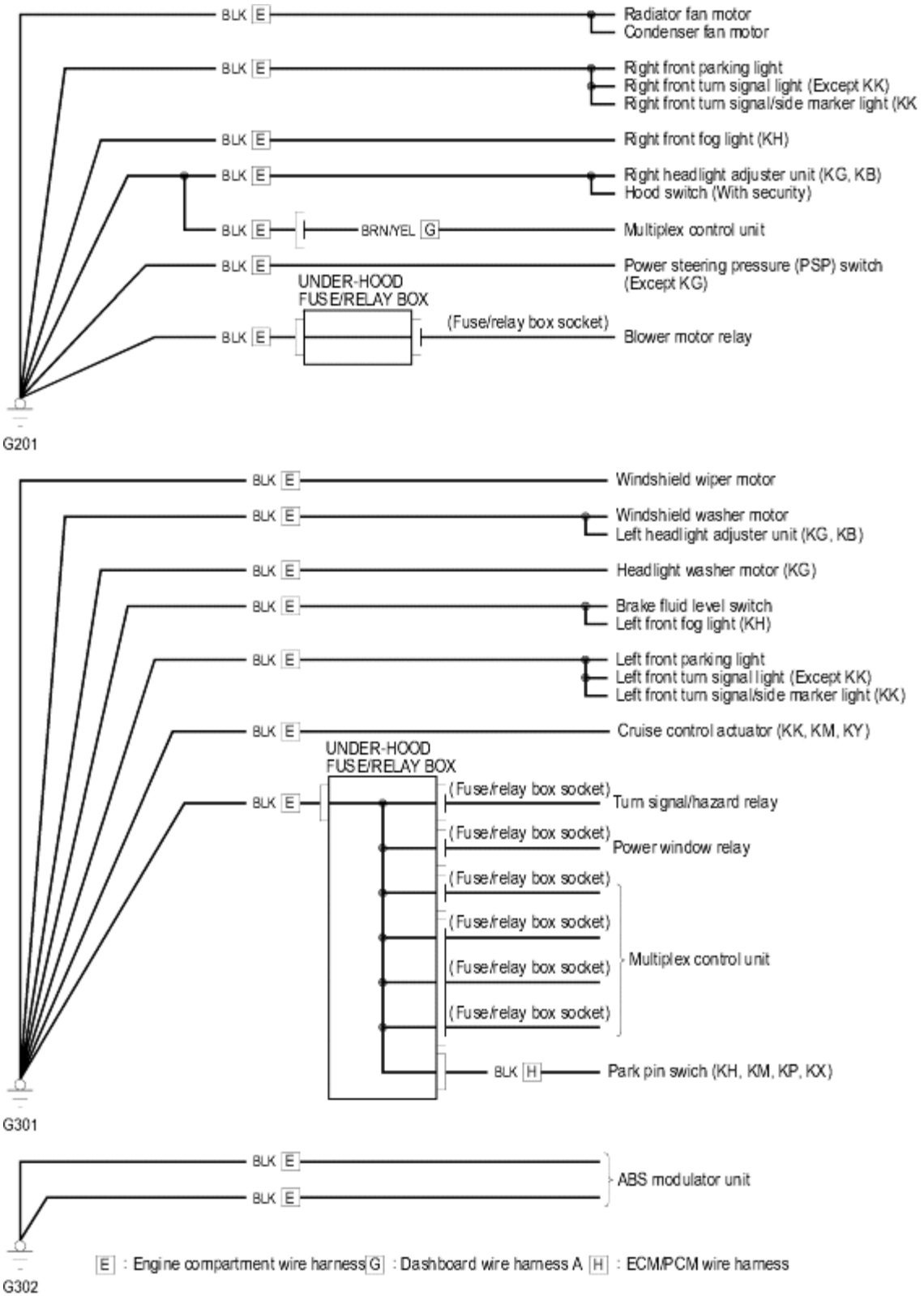
Power Distribution

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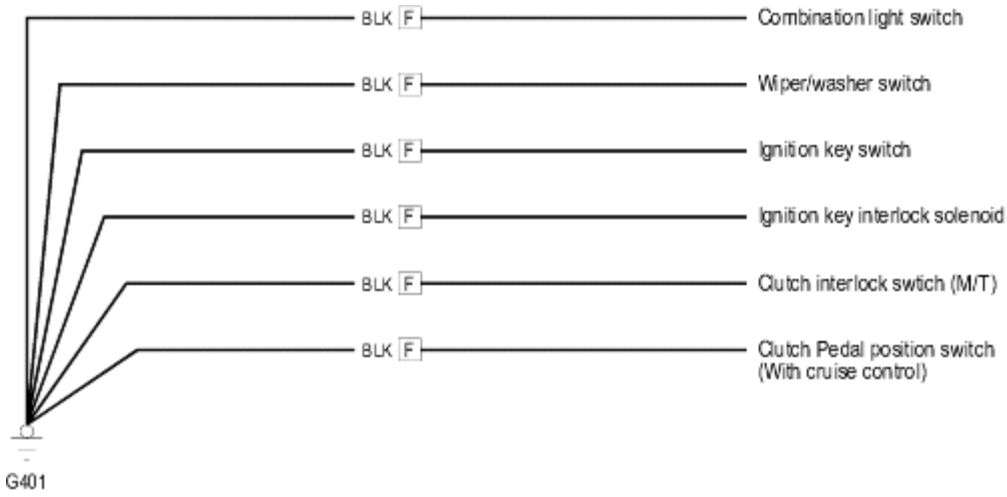


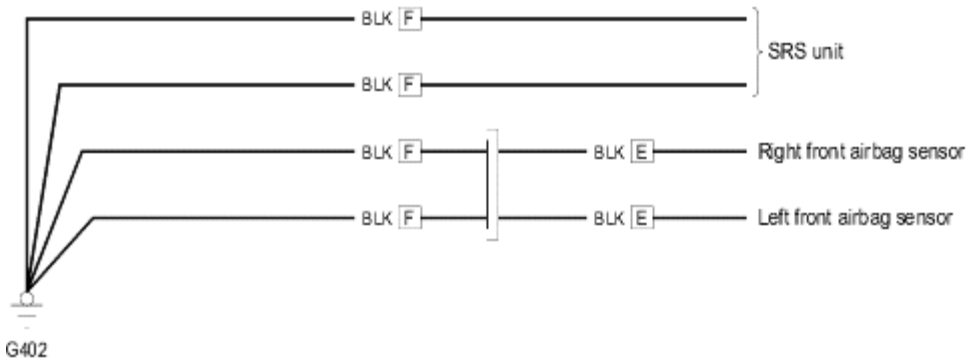
Power Distribution

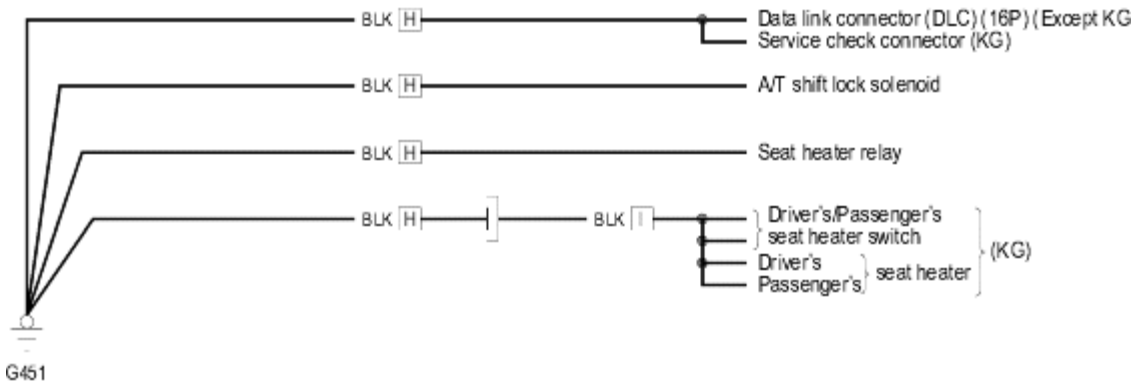
Circuit Identification (cont'd)



Power Distribution
Circuit Identification (cont'd)



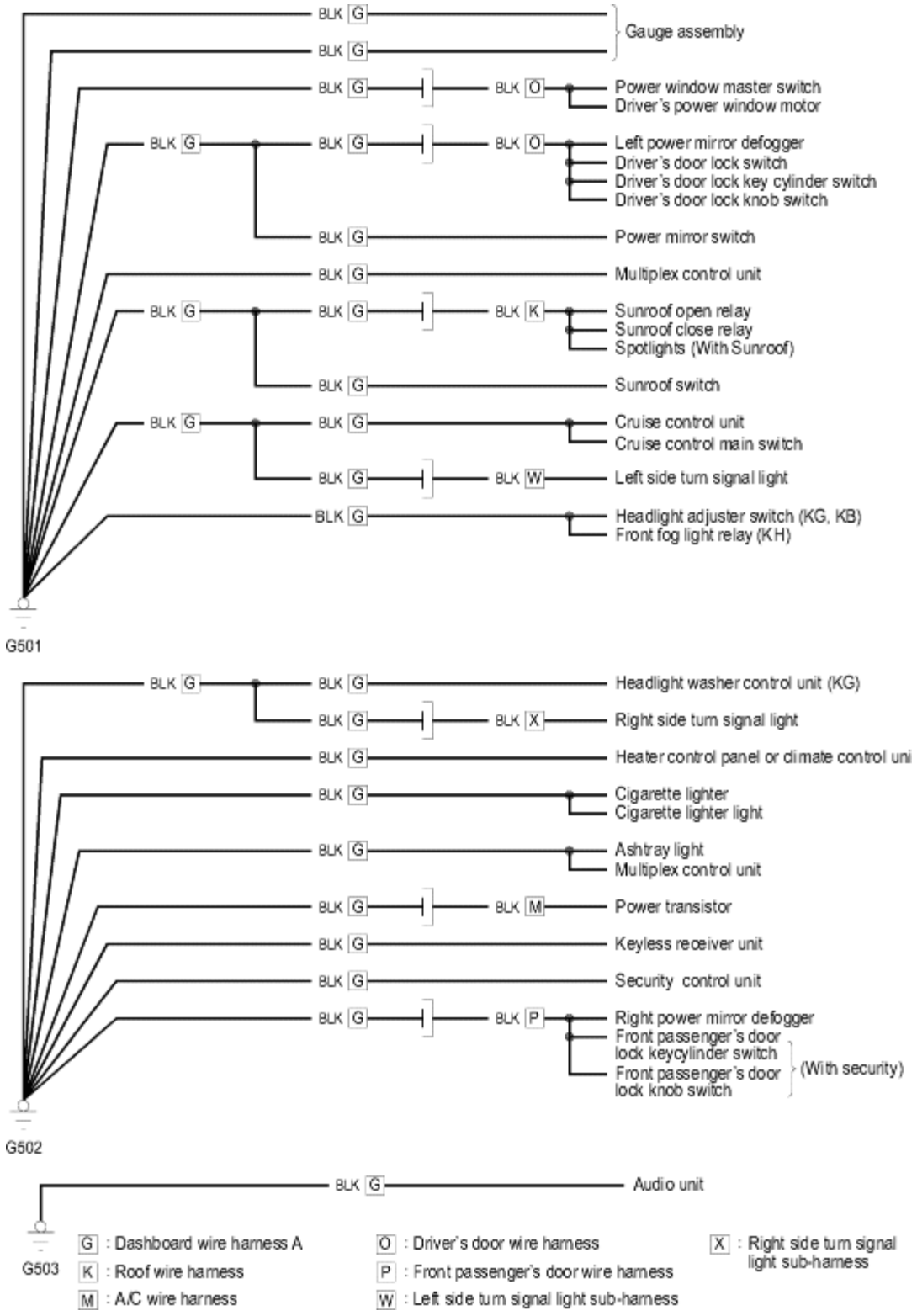




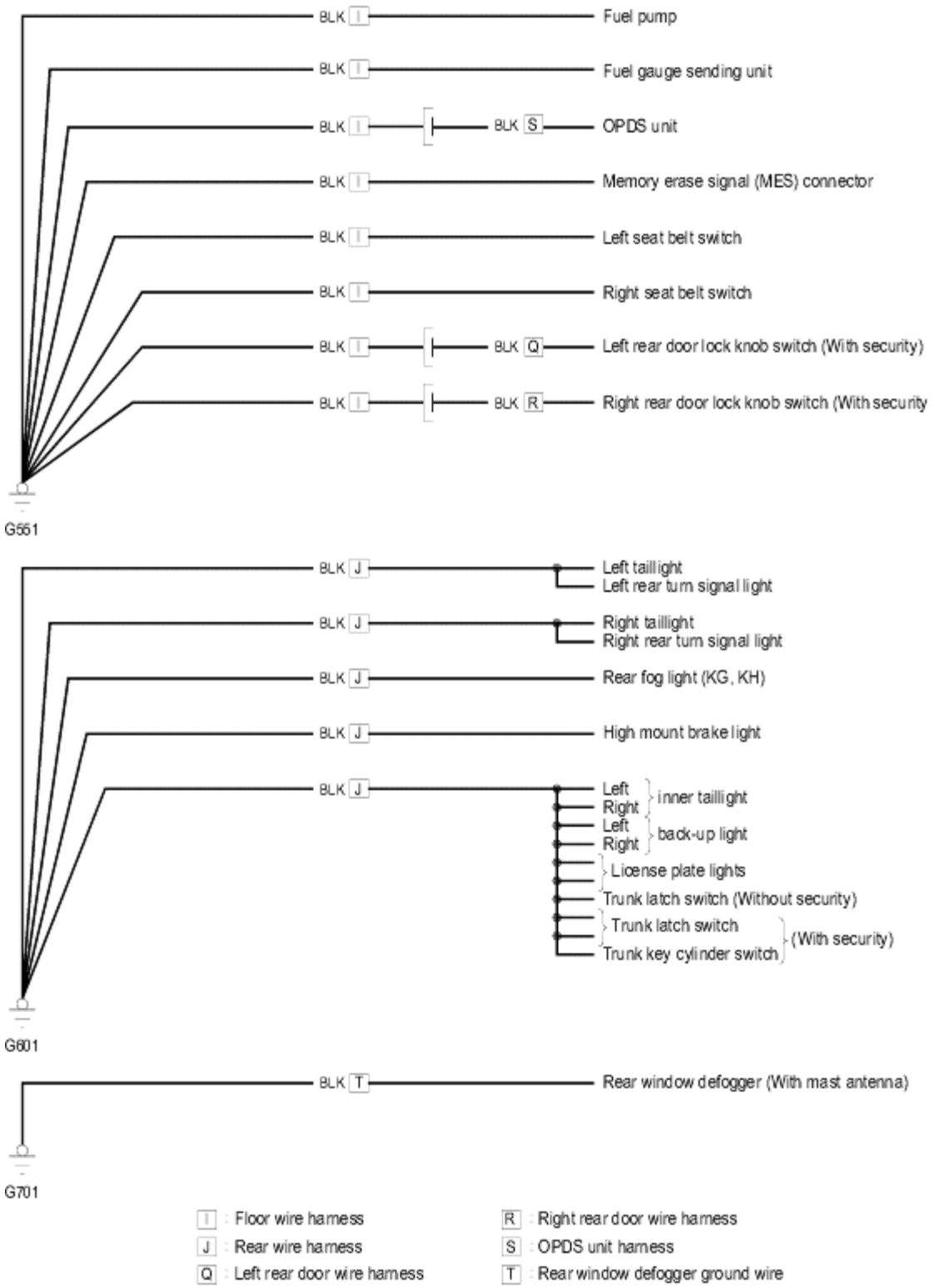
E : Engine compartment wire harness
F : Dashboard wire harness B
H : ECM/PCM wire harness
I : Floor wire harness

Power Distribution

Circuit Identification (cont'd)

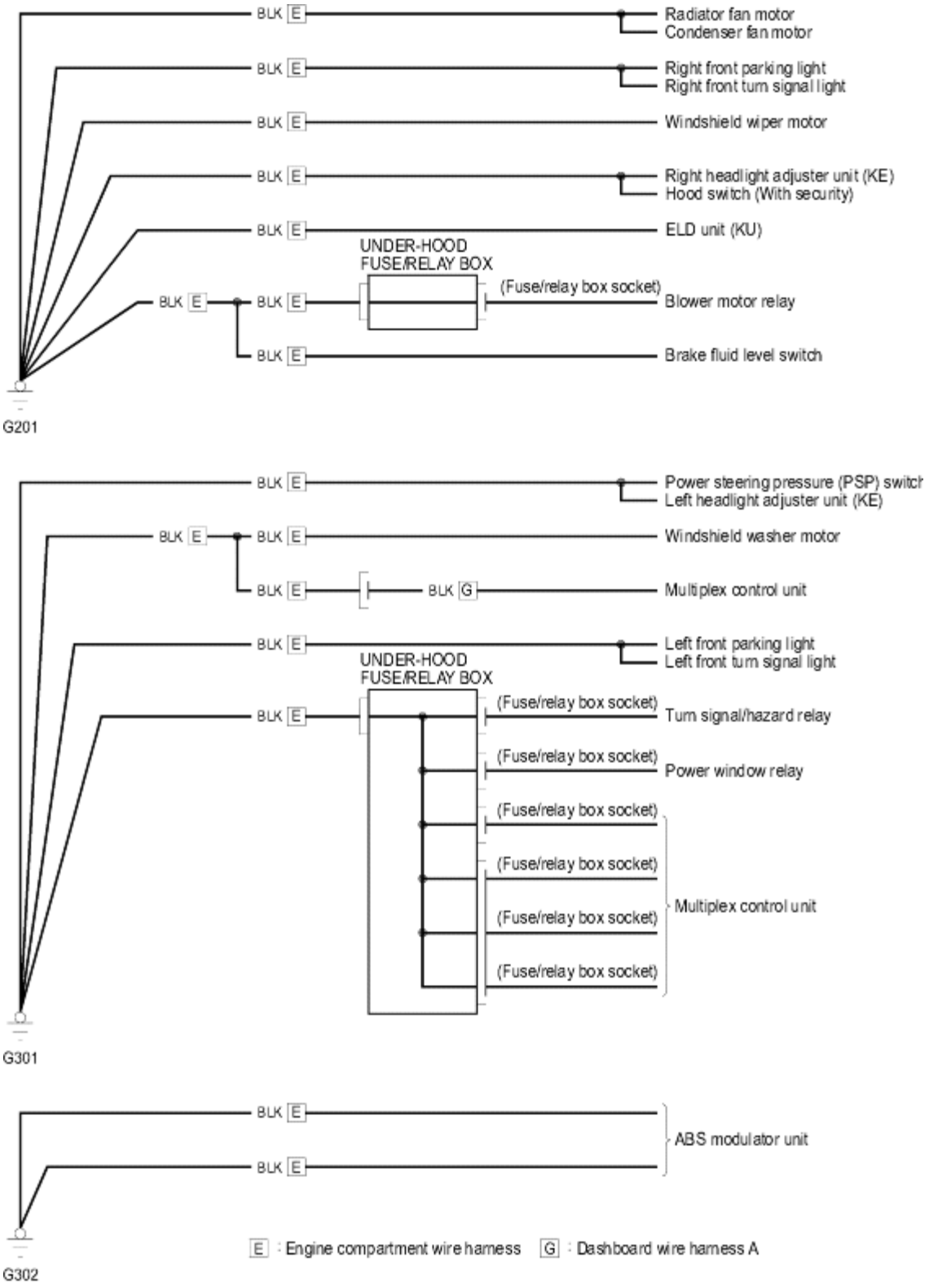


Power Distribution
Circuit Identification (cont'd)



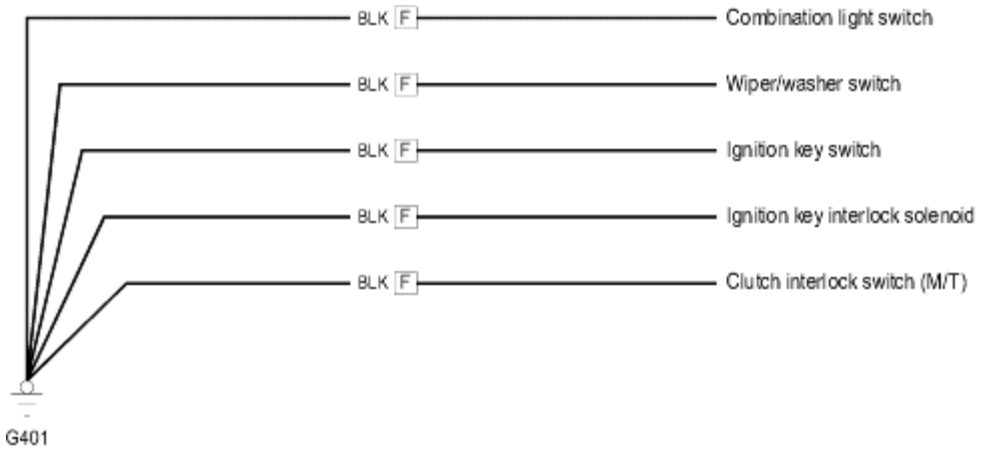
Power Distribution

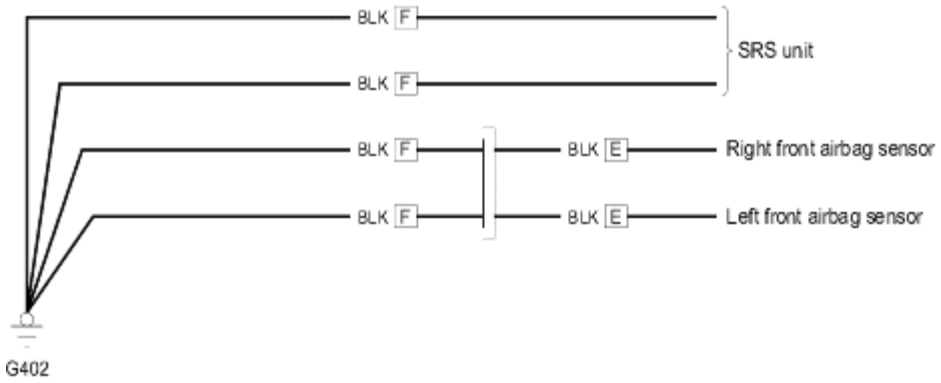
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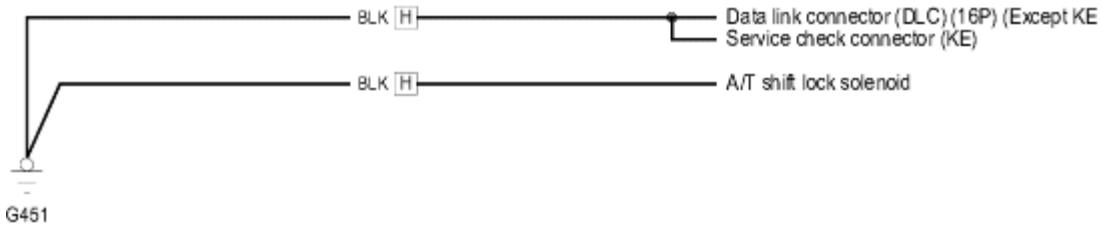


Power Distribution

Circuit Identification (cont'd)





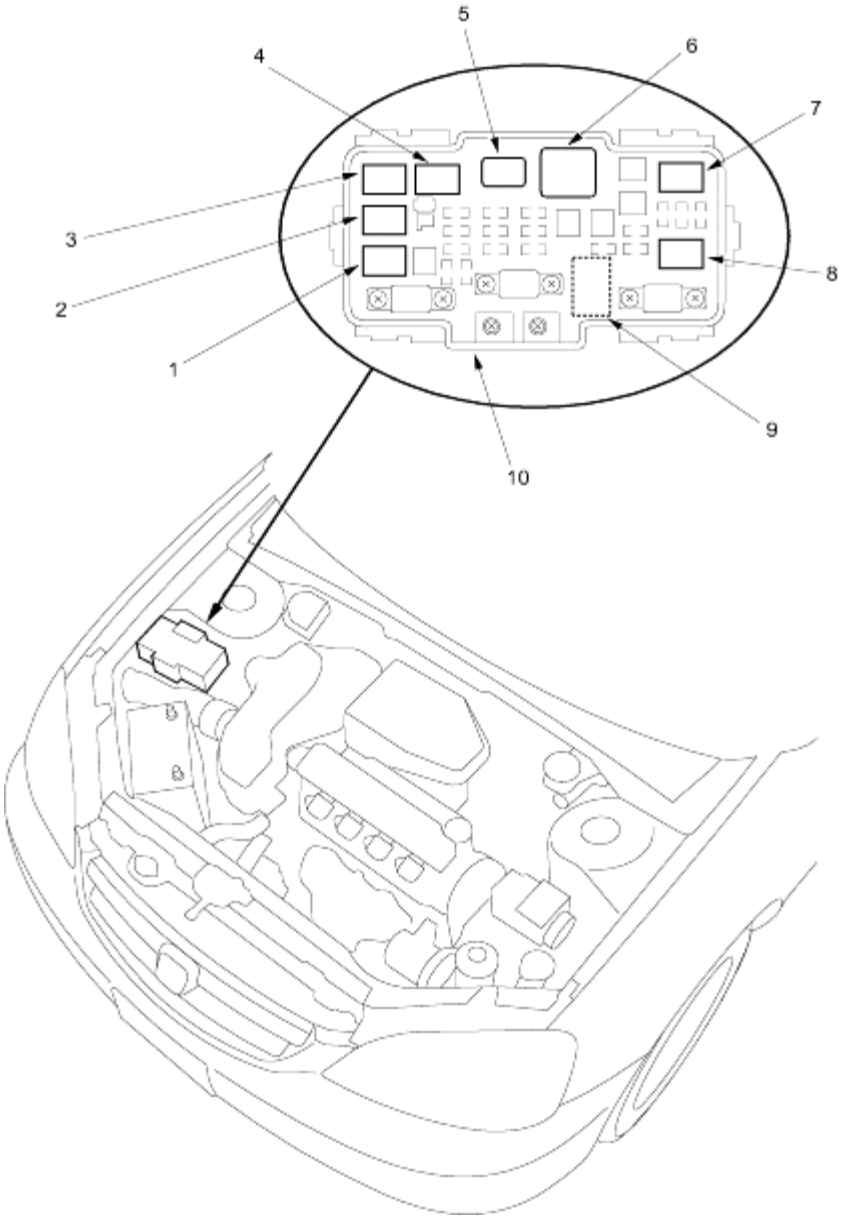


E : Engine compartment wire harness
F : Dashboard wire harness B
H : ECM/PCM wire harness

Relay and Control Unit Locations

Engine Compartment

NOTE: LHD type is shown, RHD type is similar



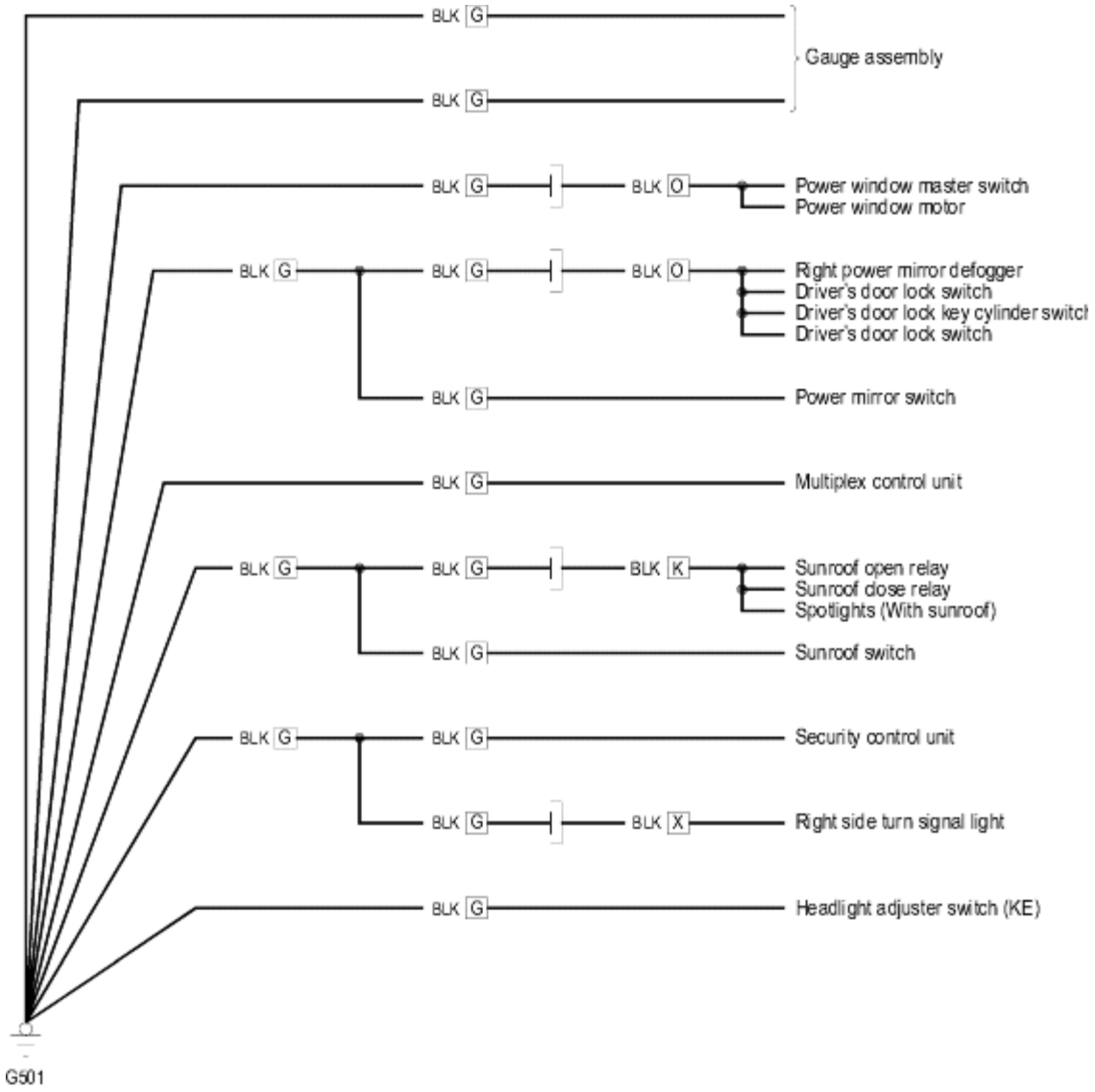
1. CONDENSER FAN RELAY
2. HORN RELAY
3. RADIATOR FAN RELAY
4. A/C COMPRESSOR CLUTCH RELAY
5. REAR WINDOW DEFOGGER RELAY
6. BLOWER MOTOR RELAY
7. HEADLIGHT RELAY 1
8. HEADLIGHT RELAY 2
9. ELD UNIT
10. UNDER - HOOD FUSE/RELAY BOX

Design Specifications
(cont'd)

Item	Measurement	Qualification	Specification
ENGINE	Type	D17A5, D17A4, D17A2, D16V2, D16W8, D16W7, D15Y4 engines	Water-cooled, 4-stroke SOHC VTEC engine
		D17A3, D17A1, D17Z1, D15Y6, D15Y5, D15Y3, D15Y2, D14Z5 engines	Water-cooled, 4-stroke SOHC engine
	Cylinder arrangement		Inline 4-cylinder, transverse
	Bore and stroke	D14Z5 engine	75 x 79 mm (2.95 x 3.11 in.)
		D15Y6, D15Y5, D15Y4, D15Y3, D15Y2 engines	75 x 84.5 mm (2.95 x 3.33 in.)
		D16V2, D16W8, D16W7 engines	75 x 90 mm (2.95 x 3.54 in.)
		D17A5, D17A4, D17A3, D17A2, D17A1, D17Z1 engines	75 x 94.4 mm (2.95 x 3.72 in.)
	Displacement	D14Z5 engine	1,396 cm3 (85 cu in.)
		D15Y6, D15Y5, D15Y4, D15Y3, D15Y2 engines	1,493 cm3 (91 cu in.)
		D16V2, D16W8, D16W7 engines	1,590 cm3 (97 cu in.)
		D17A5, D17A4, D17A3, D17A2, D17A1, D17Z1 engines	1,668 cm3 (102 cu in.)
	Compression ratio	D14Z5 engine	10.4
		D15Y5, D15Y3, D15Y2 engines	9.0
		D15Y6 engine	9.4
		D15Y4 engine	9.9
		D16V2, D16W8 engines	9.4
		D16W7 engine	10.4
		D17A3, D17A1, D17Z1 engines	9.5
		D17A4, D17A2 engines	9.9
		D17A5 engine	9.5
	Valve train	D17A5, D17A4, D17A2, D16V2, D16W8, D16W7, D15Y4 engines	Belt driven, SOHC VTEC 4 valves per cylinder
		D17A3, D17A1, D15Y5, D15Y3, D15Y2, D14Z5 engines	Belt driven, SOHC 4 valves per cylinder

Power Distribution

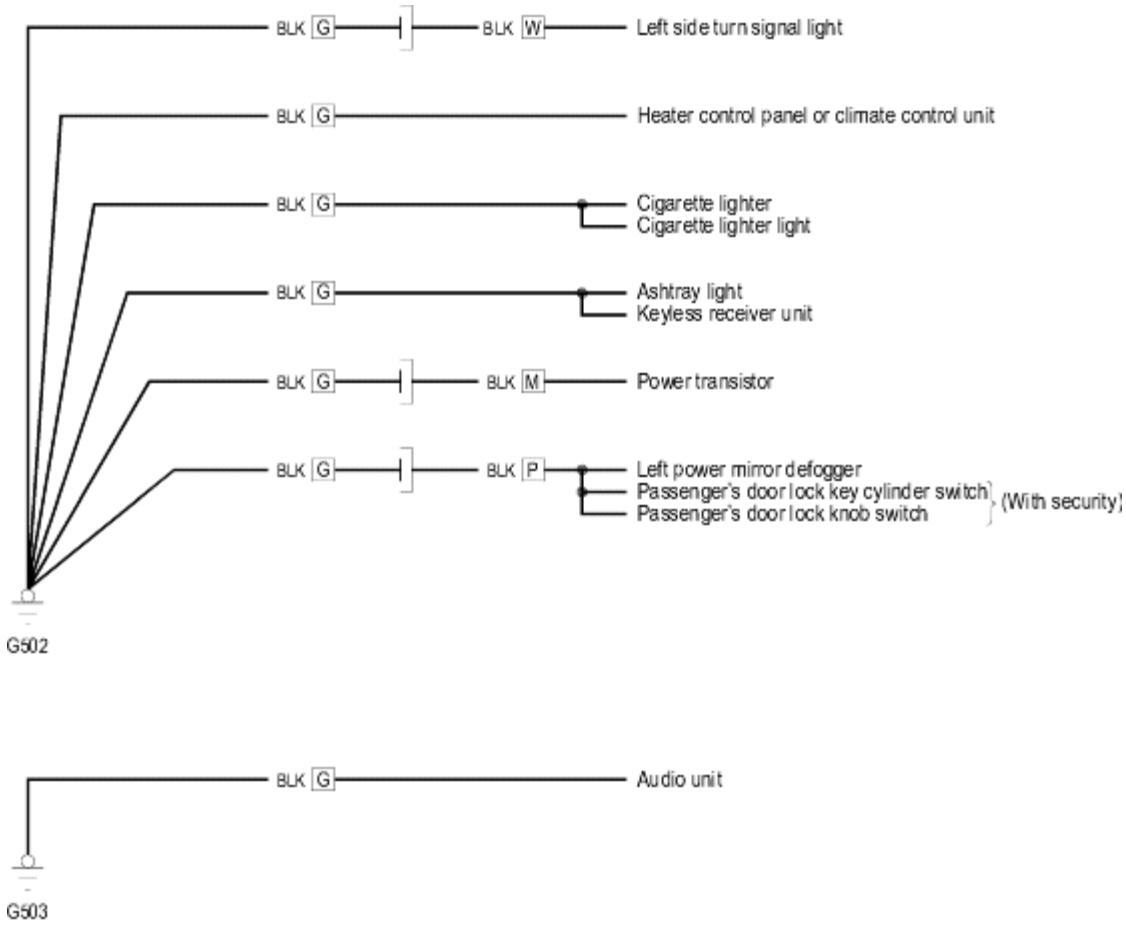
Circuit Identification (cont'd)



G : Dashboard wire harness A
K : Roof wire harness
O : Driver's door wire harness
X : Right side turn signal light sub-harness

Power Distribution

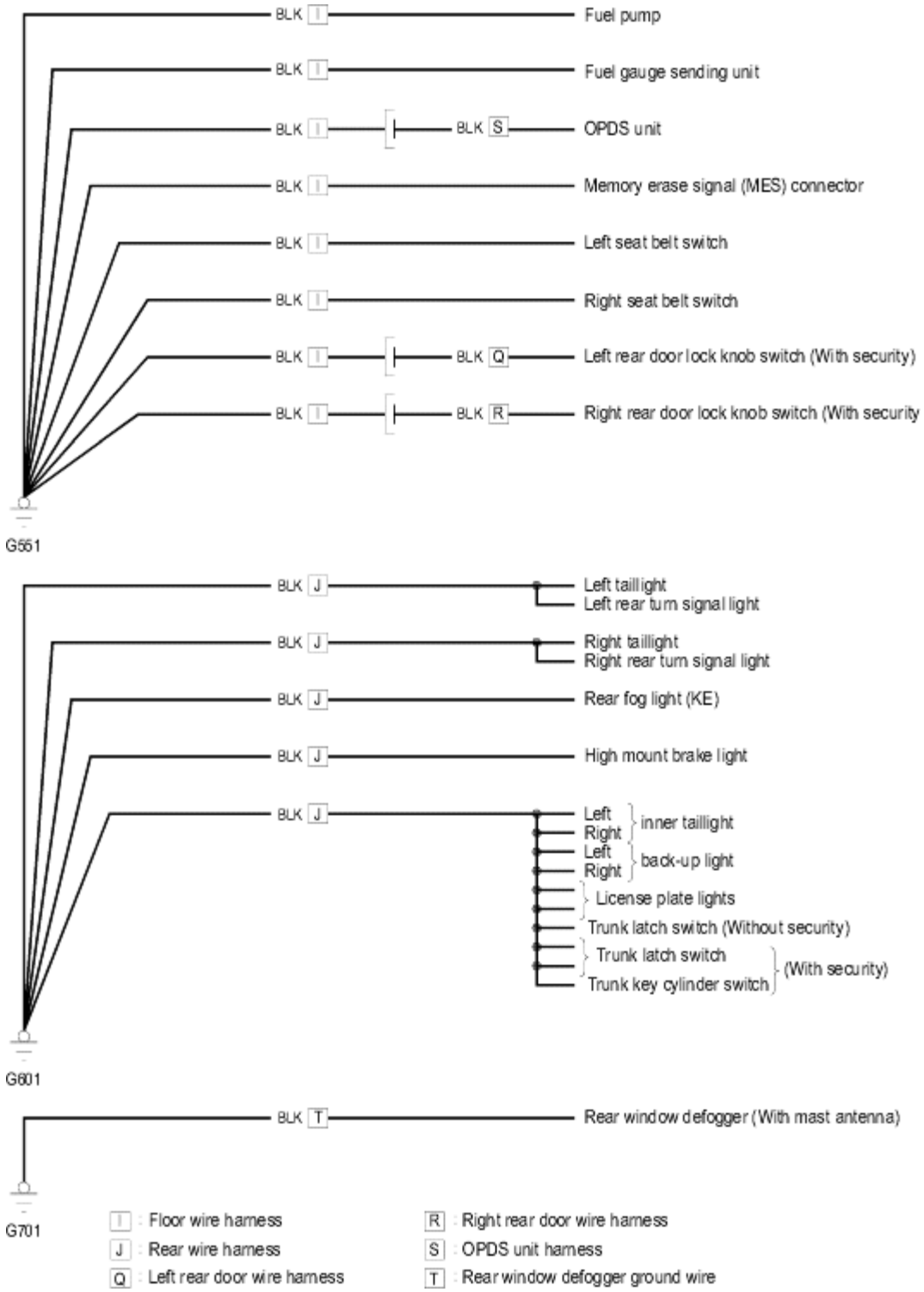
Circuit Identification (cont'd)



G : Dashboard wire harness A
M : A/C wire harness
P : Front passenger's door wire harness
W : Left side turn signal light sub-harness

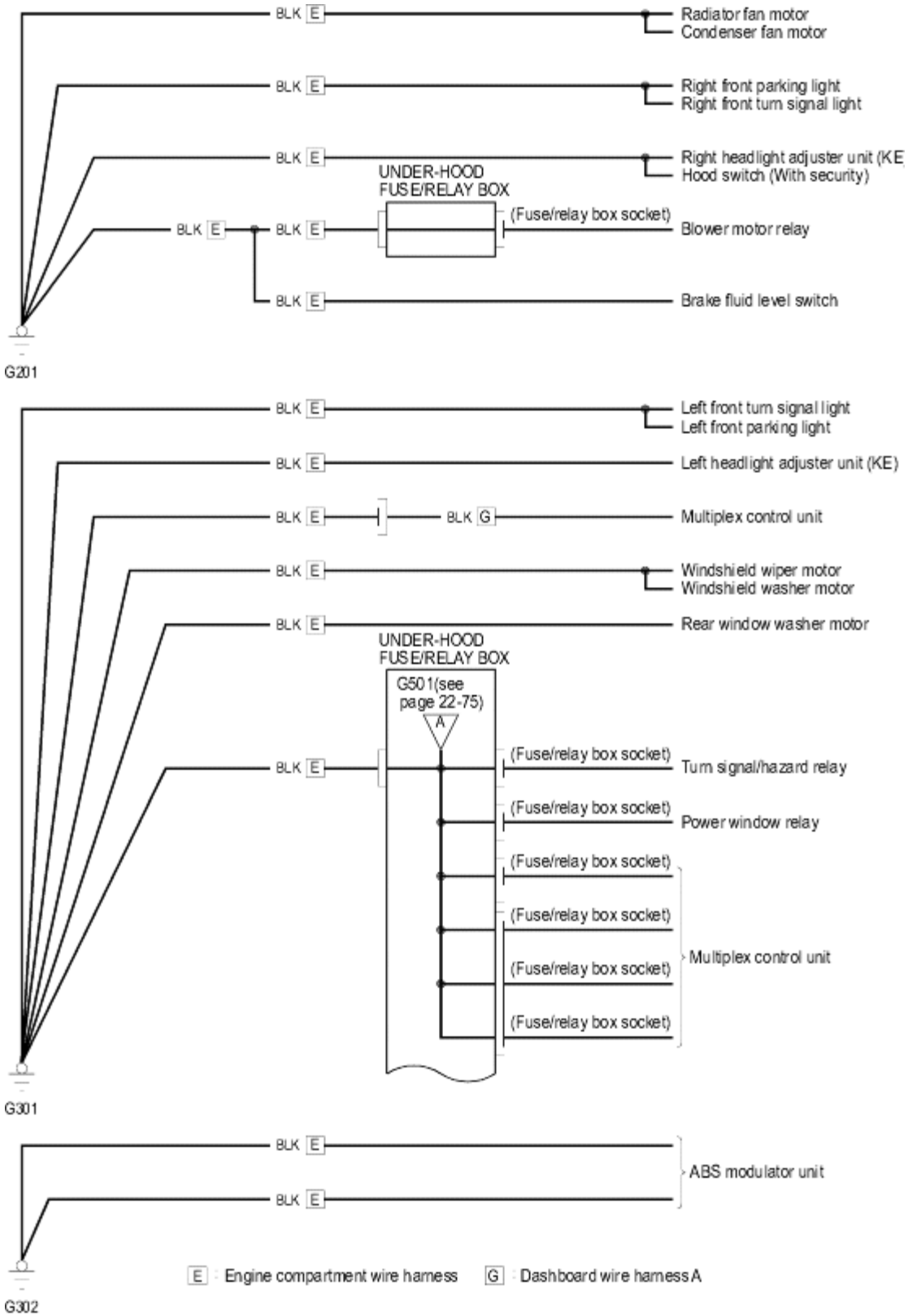
Power Distribution

Circuit Identification (cont'd)



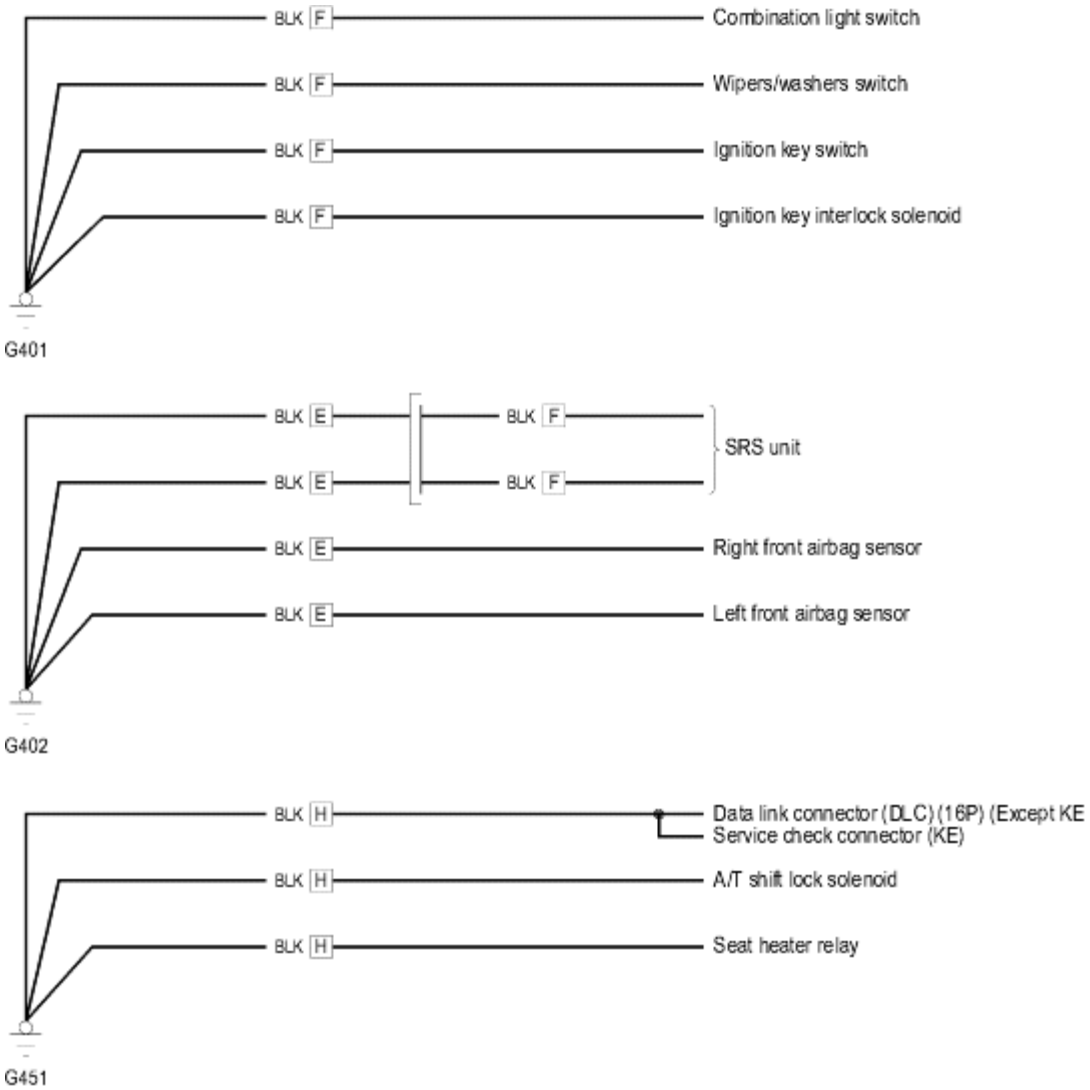
Power Distribution

Circuit Identification (cont'd)



Power Distribution

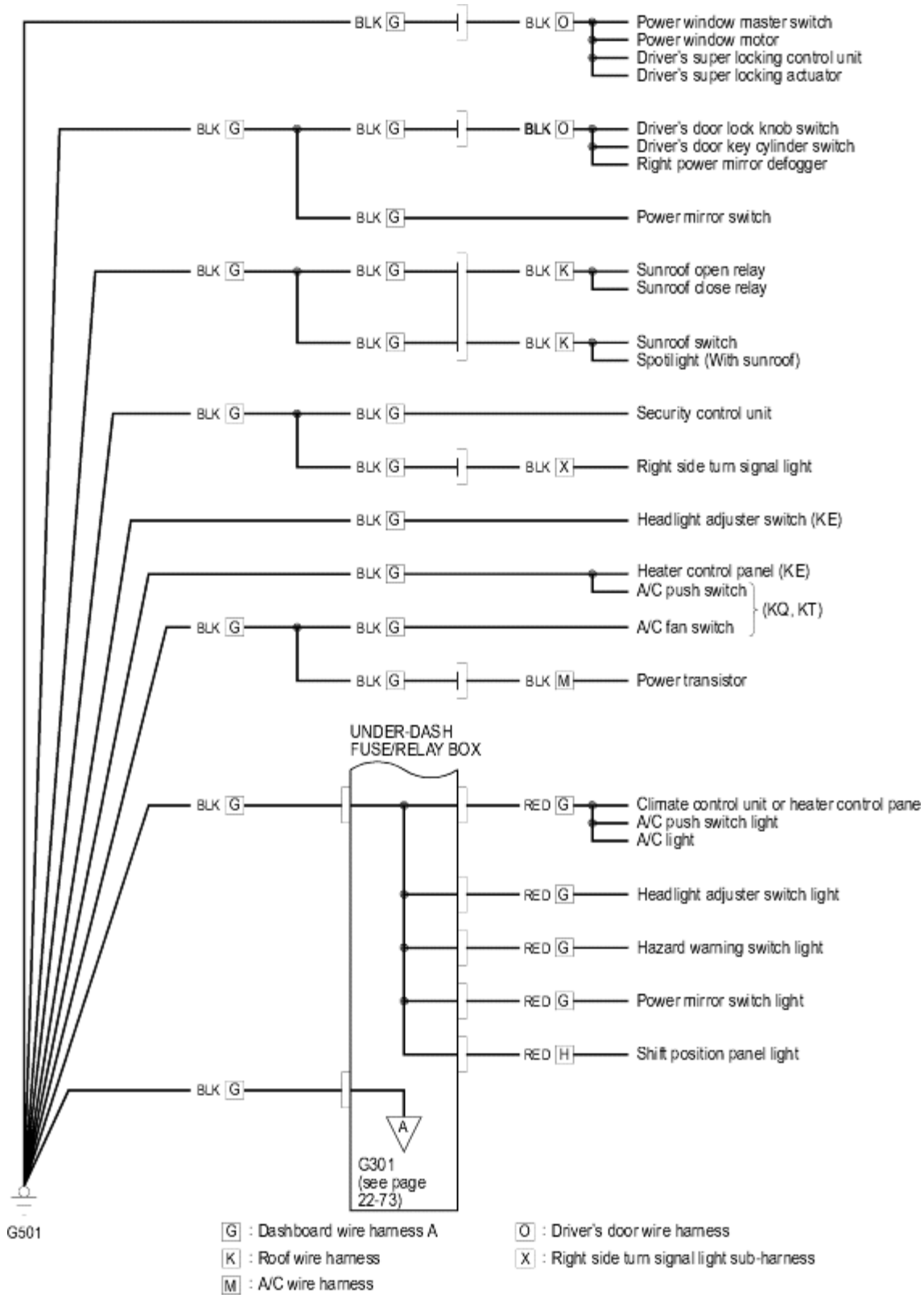
Circuit Identification (cont'd)



E : Engine compartment wire harness
F : Dashboard wire harness B
H : ECM/PCM wire harness

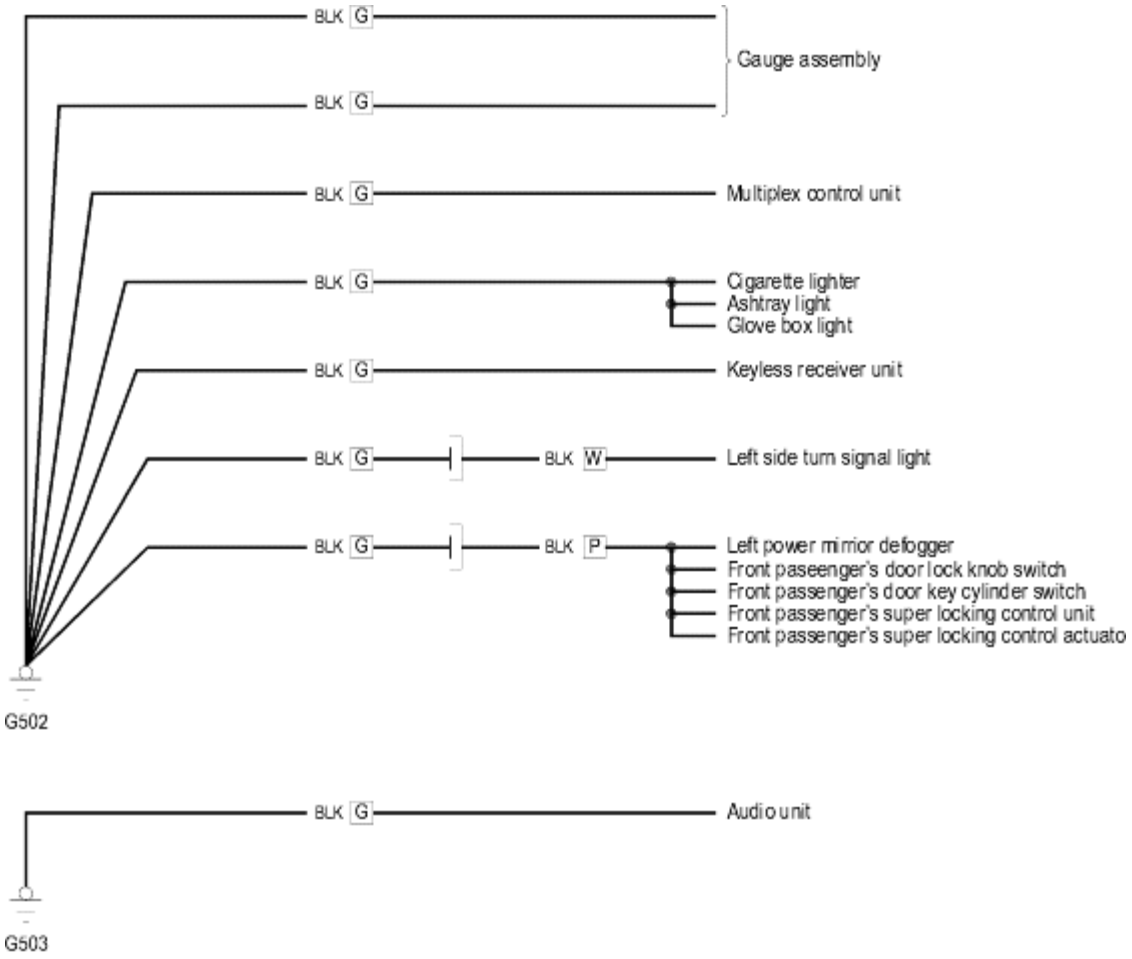
Power Distribution

Circuit Identification (cont'd)



Power Distribution

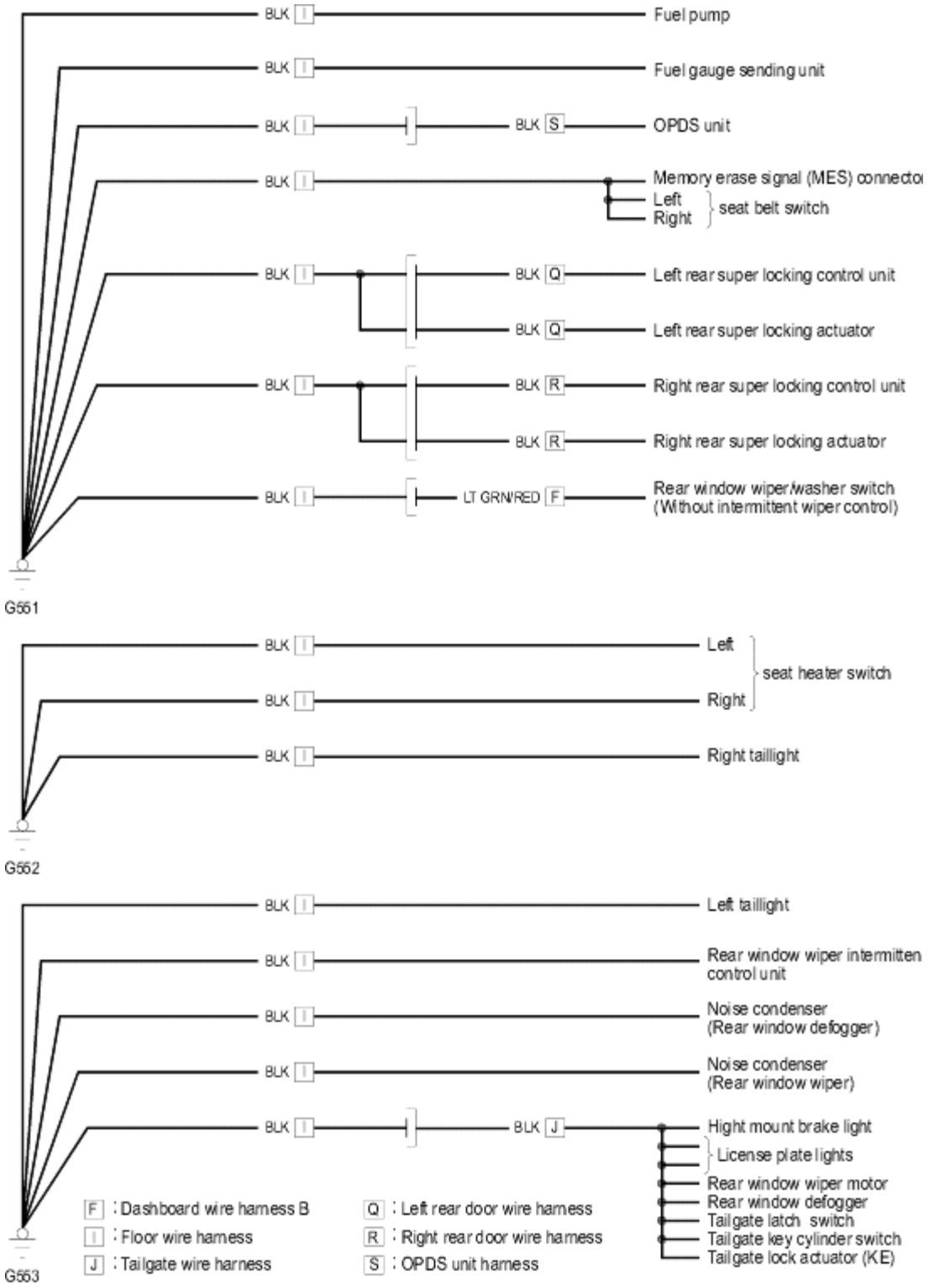
Circuit Identification (cont'd)



G : Dashboard wire harness A
P : Front passenger's door wire harness
W : Left side turn signal light sub-harness

Power Distribution

Circuit Identification (cont'd)

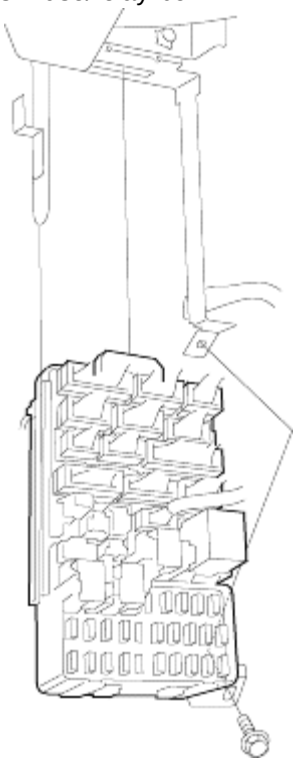


Under-dash Fuse/Relay Box
Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-23) and precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

Removal

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Disconnect the battery negative cable, then disconnect the positive cable and wait at least three minutes.
   3. Remove the dashboard lower cover (see page 20-78).
   4. Disconnect the connectors from the fuse side of the under-dash fuse/relay box.



1. 5. Remove the mounting bolt and slide the under-dash fuse/relay box (A) down from the bracket (B).
2. 6. Disconnect the connectors from the back of the under-dash fuse/relay box and remove the fuse/relay box.
   NOTE: The SRS connector is a spring-loaded lock type (see page 23-25).

Installation

3. 1. Install the under-dash fuse/relay box in the reverse order of removal and connect all connectors to the under-dash fuse/relay box.
   2. Install the dashboard lower cover.
   3. Connect both the negative cable and positive cable to the battery.
   4. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   5. Confirm that all systems work properly.

Battery

Battery Test

WARNING

A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby.

Follow all procedures carefully and keep sparks and open flames away from the battery.

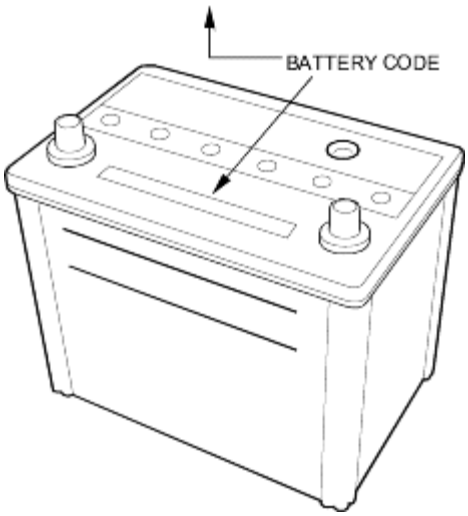
NOTE:

- To get accurate results, the temperature of the electrolyte must be between 21 and 38ºC (70 and 100ºF) before testing.
- The ECM/PCM memory must be reset after reconnecting the battery (see page 11-3).

Test Equipment Required:

- Battery Tester with:
  Voltmeter with 0 – 18 V scale, ammeter with 0 – 100 A and 0 – 500 A scales and a carbon pile with 0 – 300 W
- 12 V Battery Charger:
  Fast charge capability of 50 A and slow charge capability of 5 A

1 46B24R-MF (Except KK model and KX model)
1 55B24R(S)-MF (KK model and KX model)



Test Procedure:

1. 1. Check for damage: If the case is cracked or the terminals are loose, replace the battery.
   2. Check indicator (for basic charge condition): Blue or Green is OK. If the indicator is red, peel the tape off, remove the caps and add distilled water; then reinstall the caps and tape. If the indicator is clear, go to step
   3. Test battery load capacity by connecting a battery tester, and applying a load of three times the battery ampere hour rating.

   When the load has been applied for exactly 15 seconds, the battery voltage reading should stay above 9.6 V.

   - If the reading stays above 9.6 V, the battery is OK; clean its terminals and case and reinstall it.
   - If the reading is between 6.5 and 9.6 V, connect a battery charger and charge the battery for 3 minutes at an initial rate of 40 amps.

CAUTION

Amperage will drop as voltage increases; do not increase the amperage to compensate or you may damage the battery.

   - Watch the battery voltage during the entire 3 minutes; the highest reading should stay below 15.5 V.
   - If the reading stays below 15.5 V, the battery is OK; clean its terminals and case and reinstall it.
   - If the reading exceeds 15.5 V any time during the 3 minutes of fast charge, the battery is not good; replace it.
   - If the reading drops below 6.5 V, slow-charge the battery by connecting a battery, and charge at 5 amps for no more than 24 hours (or until the indicator shows full charge, or the specific gravity of the electrolyte is at least 1.270).

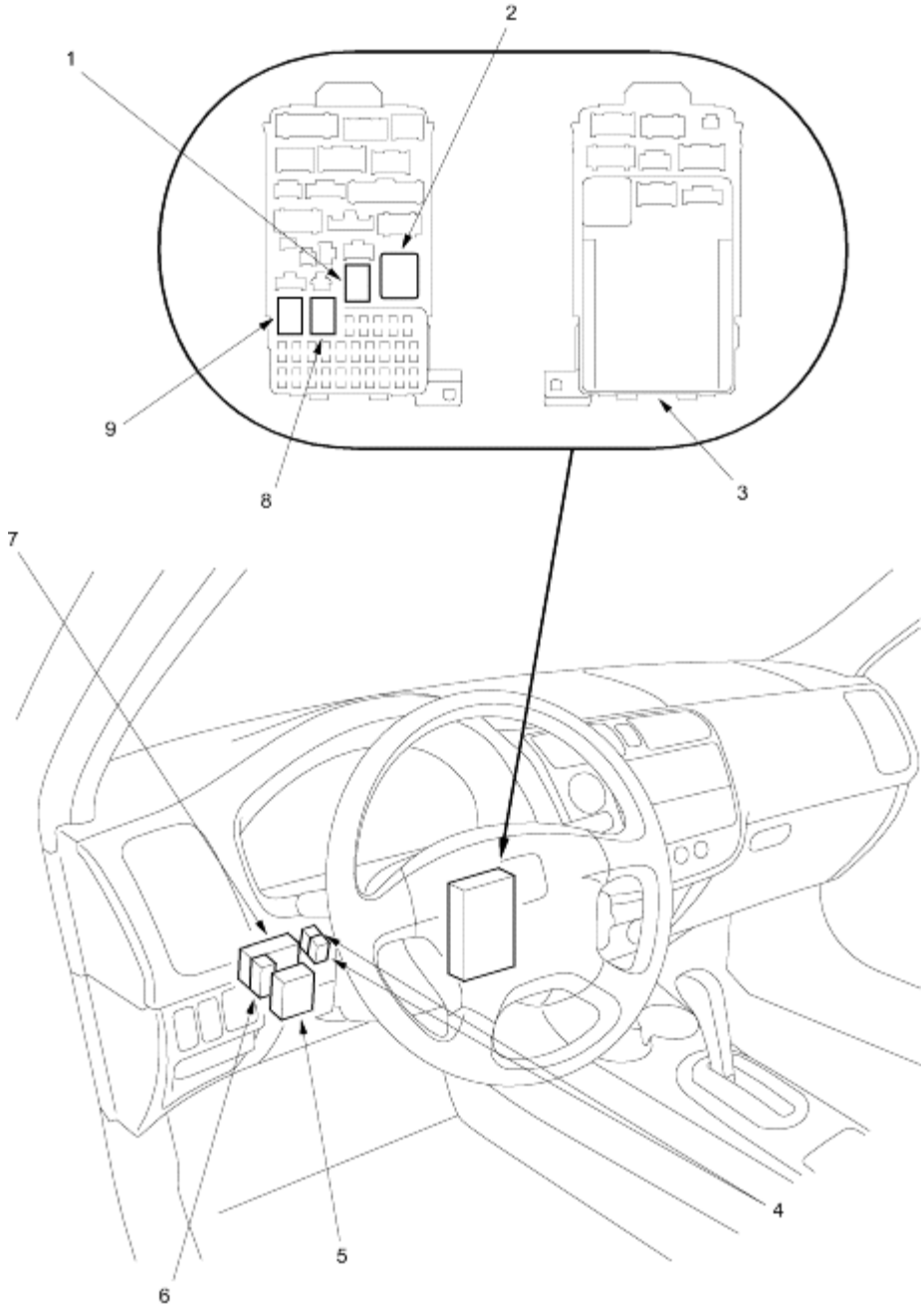
   Then test load capacity again.

– – If the voltage stays above 9.6 V, the battery is OK; clean its terminals and case and reinstall it.
– If the voltage still drops below 6.5 V, the battery is not good; replace it.

Relay and Control Unit Locations

Dashboard

NOTE: LHD type is shown, RHD type is similar.



1. POWER WINDOW RELAY
2. TURN SIGNAL/HAZARD RELAY
3. UNDER - DASH FUSE/RELAY BOX (Has built-in multiplex control unit)
4. FRONT FOG LIGHT RELAY [Wire colours: BLU/YEL, BLU/RED, BLU/BLK and BLK]
   SECURITY HORN RELAY [Wire colours: BLU/ORN, WHT/GRN, WHT/GRN and GRN]
5. CRUISE CONTROL UNIT
6. HEADLIGHT WASHER UNIT
7. SECURITY CONTROL UNIT
8. TAILLIGHT RELAY
9. STARTER CUT RELAY (A/T)

Design Specifications (cont'd)

Item	Measurement	Qualification	Specification
ENGINE	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	at 6,000 engine rpm	36.4 l (38.5 US qt, 32.0 imp qt)/minute
	Water pump displacement	at 6,000 engine rpm	130 l (137 US qt, 114 imp qt)/minute
	Fuel required	KQ, KK, KX, KP, KV, KH, KN, KU models	UNLEADED gasoline with 86 research octane number or higher
		KE, KG, KB models	Premium UNLEADED gasoline with 93 research octane number or higher
		KY, KF, KW, KT models	LEADED gasoline with 86 pump octane number or higher (RON of 86 UNLEADED gasoline may also be used)
STARTER	Type		Gear reduction
	Normal output	M/T	1.0 kW
		A/T	1.2 kW
	Hour rating		30 seconds
	Direction of rotation		Clockwise as viewed from gear end
CLUTCH	Clutch	M/T	Single plate dry, diaphragm spring
		A/T	Torque converter
	Clutch friction material surface area	M/T	176 cm3 (102 sq in.)
MANUAL TRANSMISSION	Type		Synchronised, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	D14/D17 engines 4-door and D16 engine 3/4-door 3.142 Other engines 3.461
		2nd	D14 engine 4-door 1.750 other engines 1.869
		3rd	1.241
		4th	KU D15 engine 0.911 other engines 0.969
		5th	KU D15 engine 0.756 other engines 0.805
		Reverse	3.230
	Final reduction	Type	Single helical gear
		Gear ratio	4.411
AUTOMATIC TRANSMISSION	Type		Electronically controlled automatic, 4-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.722
		2nd	KU D17A2 engine model: 1.516, other model: 1.468
		3rd	KU D17A2 engine model: 1.078, other model: 0.975
		4th	KU D17A2 engine model: 1.516, other model: 0.674
		Reverse	1.955
	Final reduction	Type	Single helical gear
		Gear ratio	KU D15Y6 engine model: 4.066, other model: 4.357
HONDA MULTI MATIC TRANSMISSION (CVT)	Type		Electronically controlled continuously variable transmission
	Primary reduction		Direct 1:1
	Gear ratio	Low-high	2.466-0.449
		Reverse	2.466
	Final reduction	Type	Single helical gear

		Gear ratio	4.562
STEERING	Type	4-door	Rack and pinion, with electrical power assistance/hydraulic power assistance
		5-door	Rack and pinion, with electrical power assistance
	Overall ratio		14.49
	Turns, lock-to-lock		2.83
	Steering wheel diameter		380 mm (15.0 in.)
SUSPENSION	Type	Front (4-door)	Strut
		Front (5-door)	Strut
		Rear	Double wishbone
	Shock absorber	Front and rear	Telescopic, hydraulic, nitrogen gas-filled

Relays

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

NOTE: See page 22-126 for the turn signal/hazard relay input test.

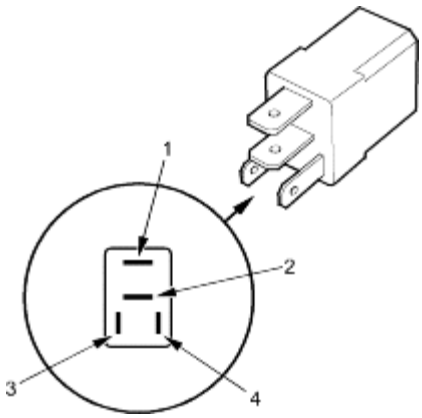
Relay	Test
A/C compressor clutch relay	Normally-open type A
A/T reverse relay	
Condenser fan relay	
Front fog light relay	
Headlight relay 1	
Headlight relay 2	
Horn relay	
Key interlock relay (KH model)	
PGM-FI main relay 1	
PGM-FI main relay 2	
Power window relay	
Radiator fan relay	
Seat heater main relay	
Security horn relay	
Shift lock relay (KH model)	
Starter cut relay (A/T)	
Taillight relay	
Blower motor relay	Normally-open type B
Rear window defogger relay	
Security starter cut relay (KH model)	5 terminal type
Shift lock relay (5 - door: KH model)	
Sunroof open relay	
Sunroof open relay	

Normally-open type A:

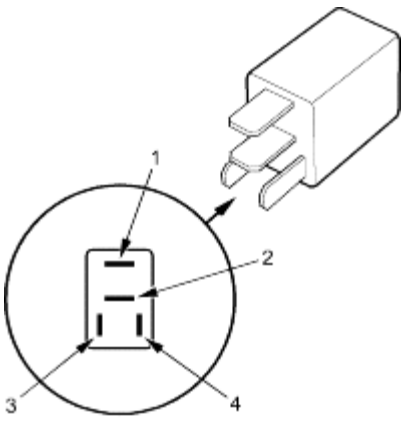
Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 4 terminals.

type 1:



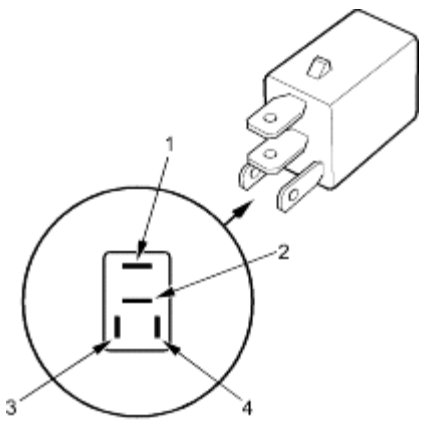
type 2:



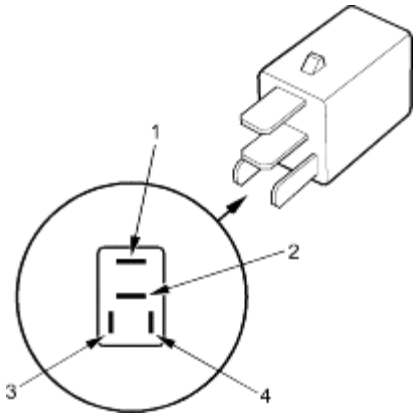
PGMFI main relay 1

PGMFI main relay 2

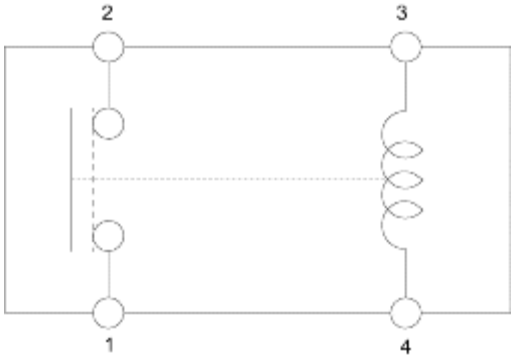
type 1:



type 2:



There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.



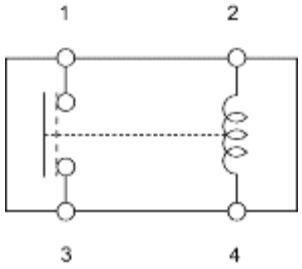
Relays

Power Relay Test (cont'd)

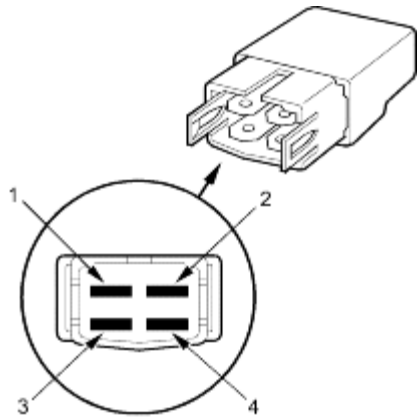
Normally-open type B:

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 3 terminals when power and ground are connected to the No. 2 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 3 terminals when power is disconnected.

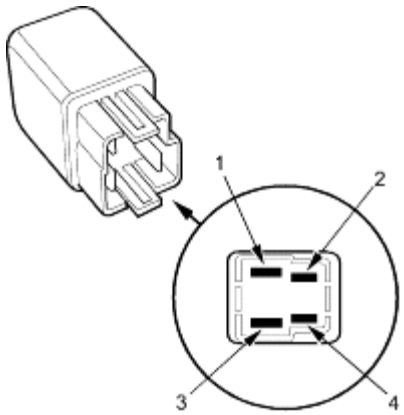


Rear window defogger relay

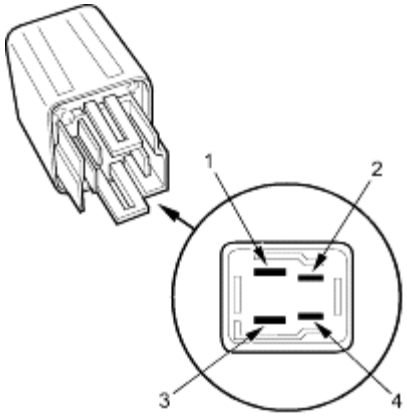


Blower motor relay

type 1:



type 2:



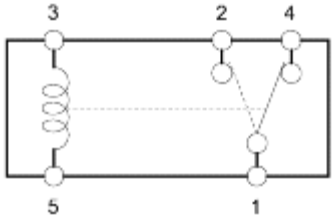
Relays

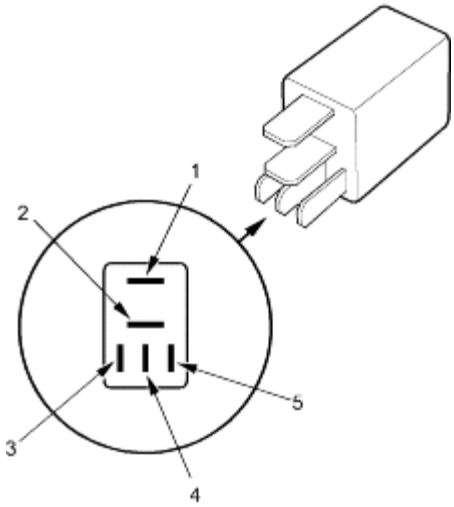
Power Relay Test (cont'd)

5-terminal type

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 5 terminals.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.



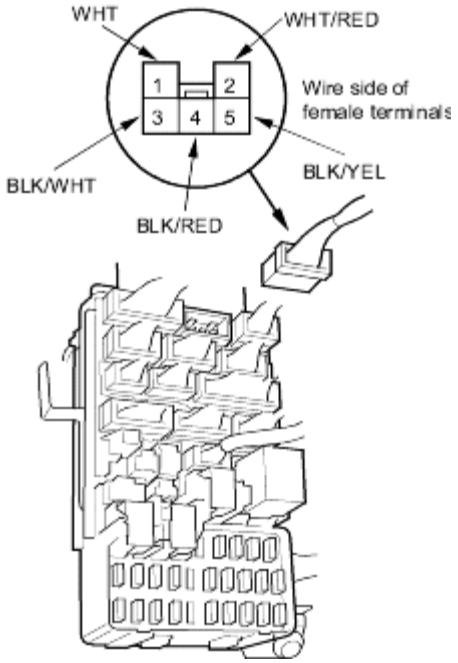


Ignition Switch

Test

SRS components are located in this area. Review the SRS component locations (see page 23-23) and precautions and procedures (see page 23-25) in the SRS section before performing repairs or servicing.

1. 1. Remove the dashboard lower cover (see page 20-77)
   2. Disconnect the 5P connector from the under-dash fuse/relay box.



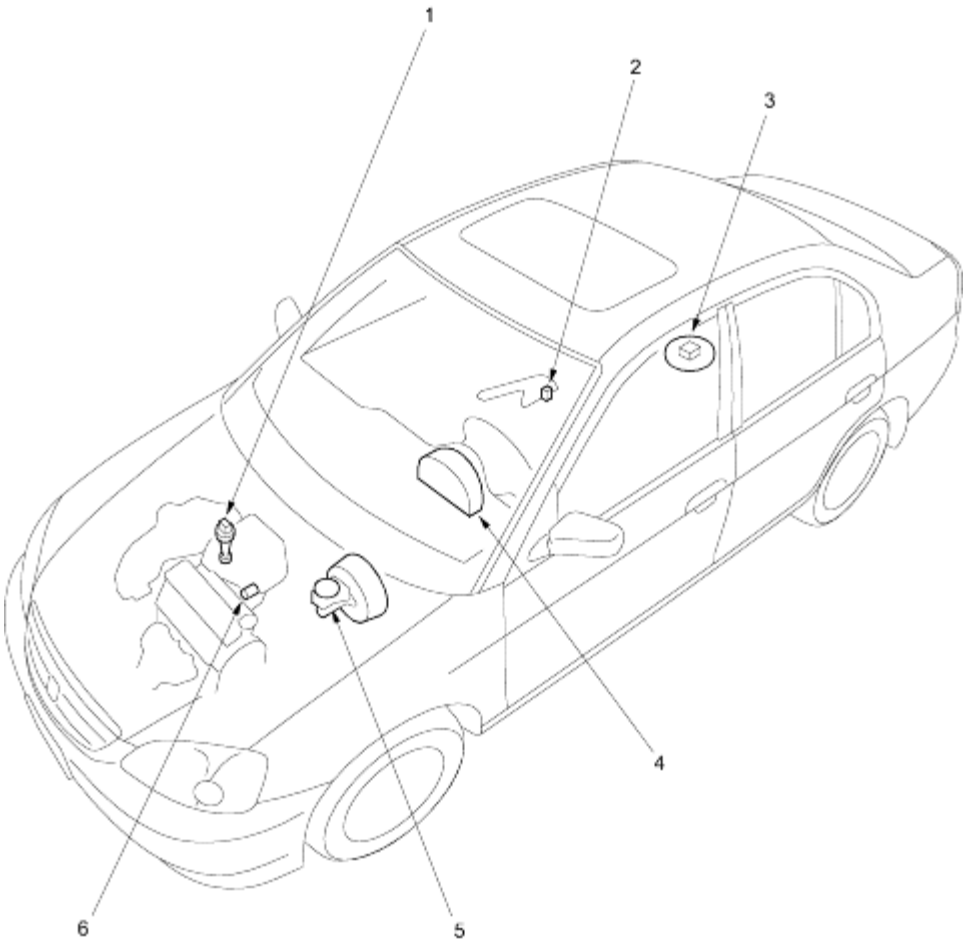
2. 3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	WHT/ RED (ACC)	WHT (BAT)	BLK/ YEL (IG1)	BLK/ RED (IG2)	BLK/ WHT (ST)
O (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○		○

3. 4. If the continuity checks do not agree with the table, replace the steering lock assembly (see page 17-12).

Gauges

Component Location Index



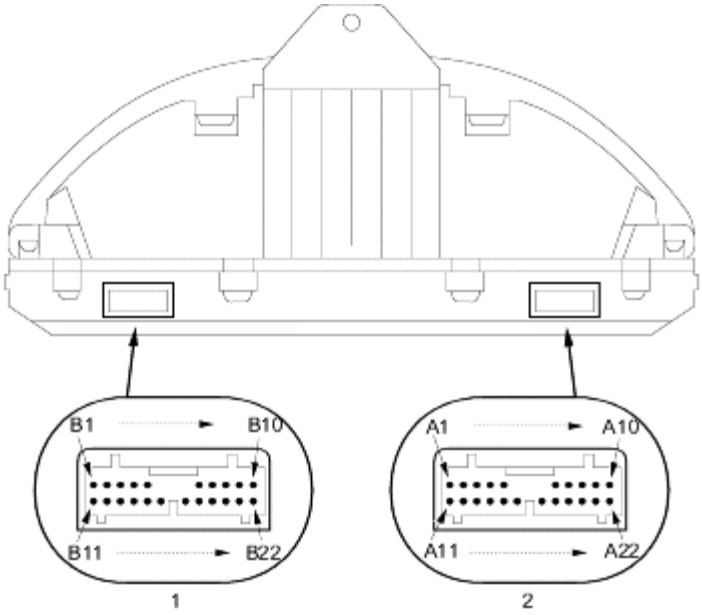
1. VEHICLE SPEED SENSOR (VSS)
   Troubleshooting, page 22-94
   Replacement, page 22-96
2. PARKING BRAKE SWITCH
   page 19-10
3. FUEL GAUGE SENDING UNIT
   page 11-141
4. GAUGE ASSEMBLY
   Gauge Bulb Replacement, page 22-87
   Replacement, page 22-93
   Coolant Temperature Gauge
   Troubleshooting, page 22-93
5. BRAKE FLUID LEVEL SWITCH
   page 19-10
6. ENGINE OIL PRESSURE SWITCH
   page 8-4

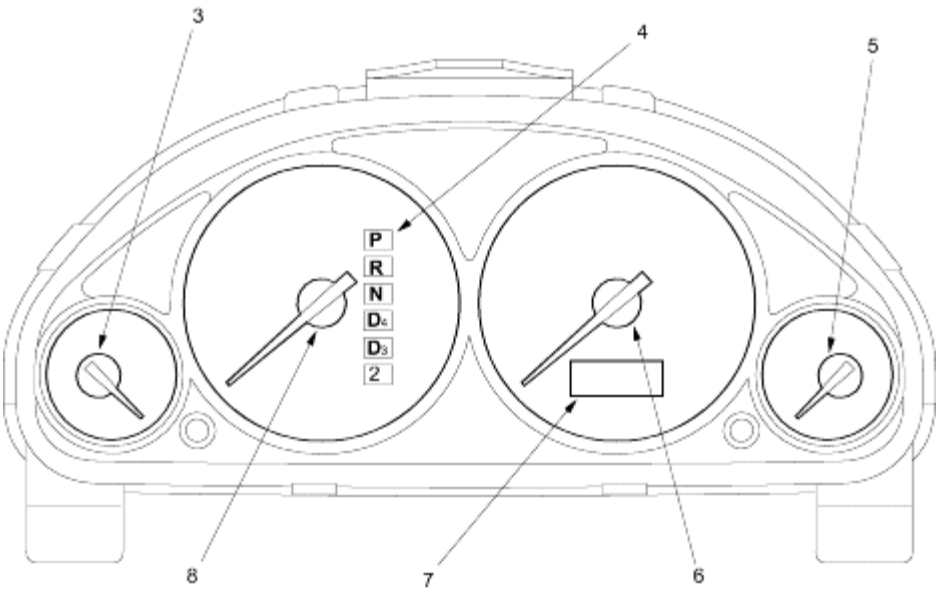
*: M/T, A/T

Gauges

Component Location Index (cont'd)

4-door:



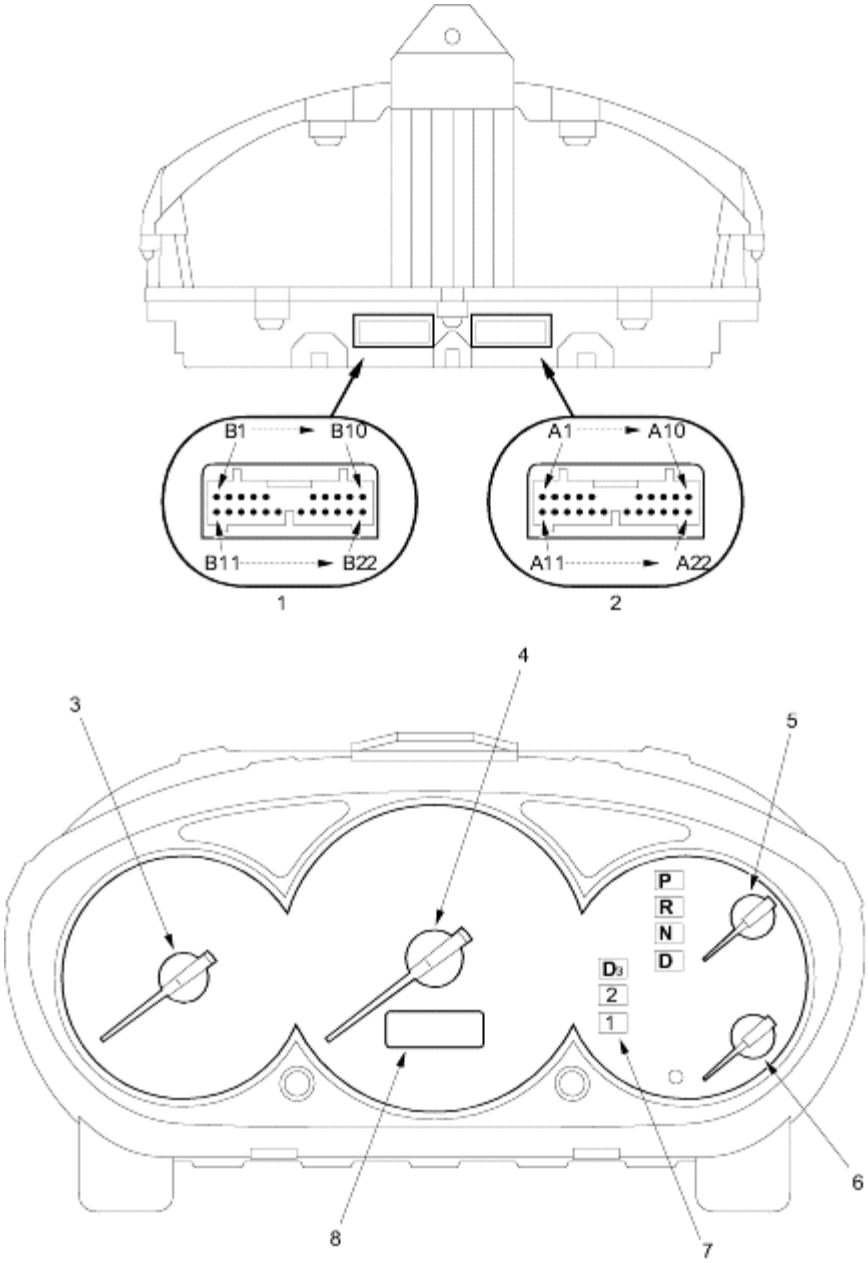


1. CONNECTOR B (green)
2. CONNECTOR A (blue)
3. COOLANT TEMPERATURE GAUGE
   Troubleshooting, page 22-93
4. A/T GEAR POSITION INDICATOR
5. FUEL GAUGE
6. Test, page 11-141SPEEDOMETER
   Vehicle Speed Signal Circuit
   Troubleshooting, page 22-94
7. ODO/TRIP METER
8. TACHOMETER

Gauges

Component Location Index (cont'd)

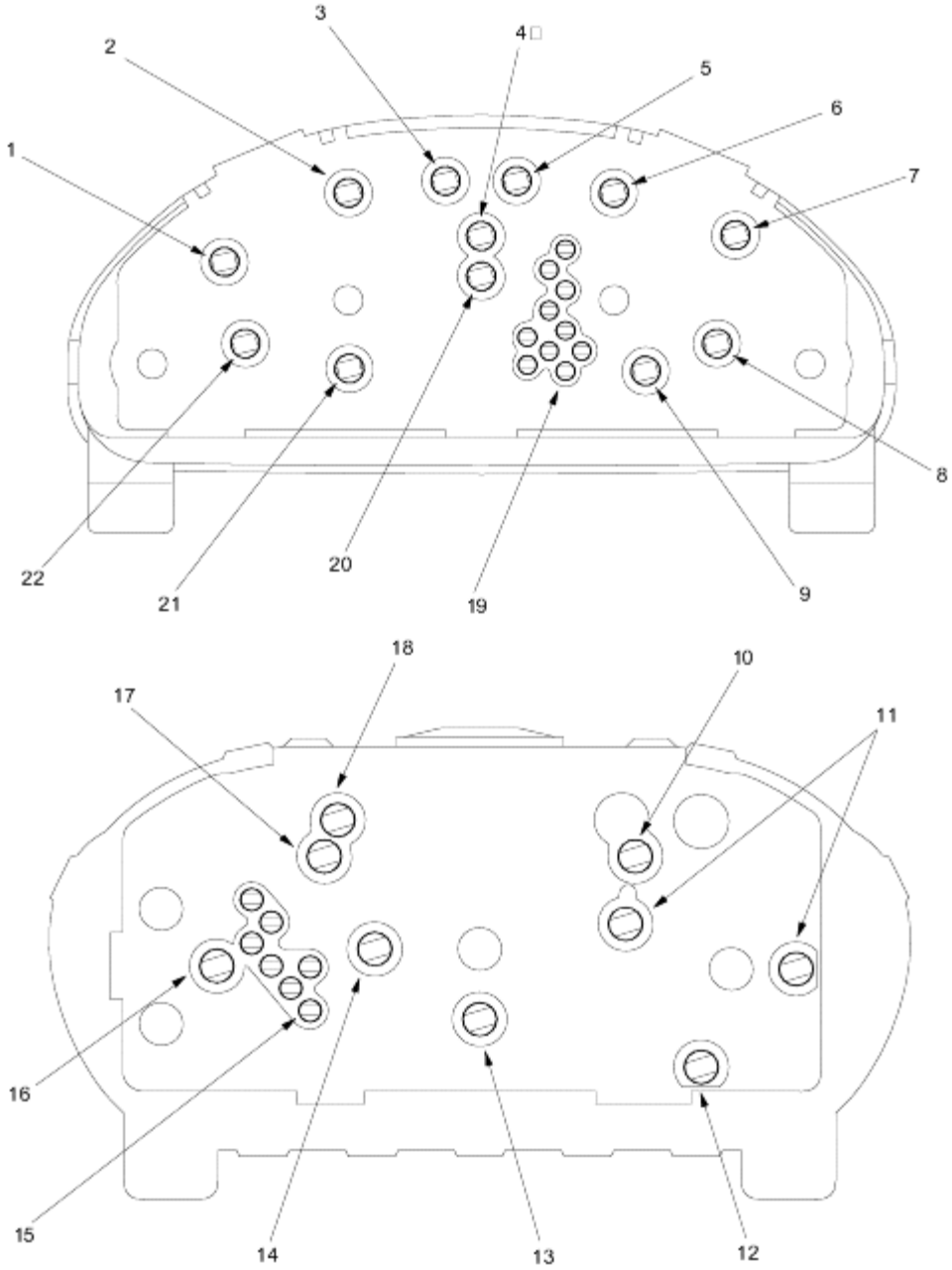
5-door:



1. CONNECTOR B (green)
2. CONNECTOR A (blue)
3. TACHOMETER
4. SPEEDOMETER
   Vehicle Speed Signal Circuit Troubleshooting, page 22-94
5. COOLANT TEMPERATURE GAUGE
   Troubleshooting, page 22-93
6. FUEL GAUGE
7. Test, page 11-441A/T GEAR POSITION INDICATOR
8. ODO/TRIP METER

Gauges

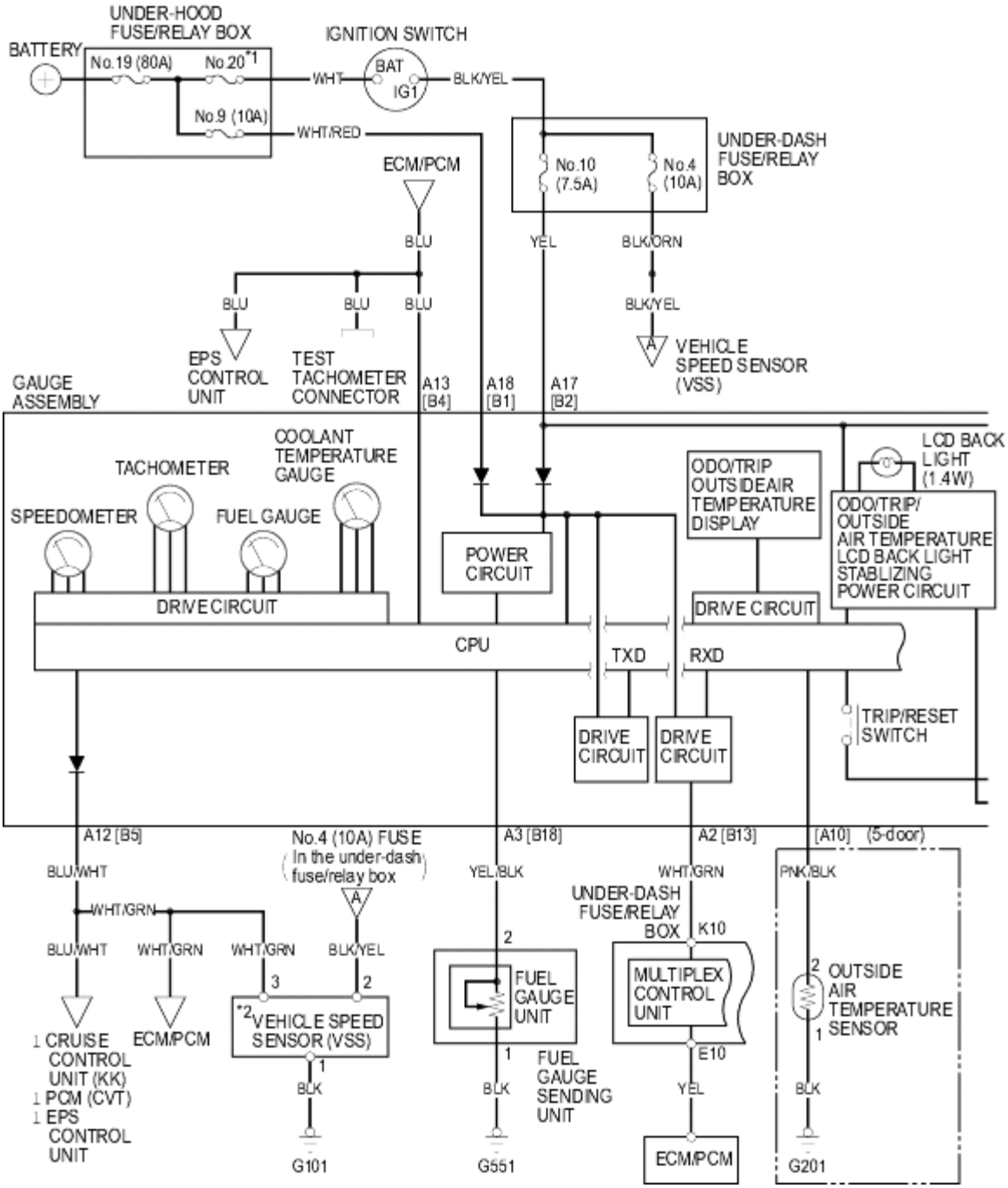
Gauge Bulb Replacement



1. CRUISE INDICATOR LIGHT (1.4 W)
   (KK model)
2. GAUGE LIGHT (1.4 W)
3. RIGHT TURN SIGNAL LIGHT (1.4 W)
4. HIGH BEAM INDICATOR LIGHT (1.4 W)
5. LEFT TURN SIGNAL LIGHT (1.4 W)
6. GAUGE LIGHT (1.4 W)
7. IMMOBILISER INDICATOR LIGHT (1.4 W)
8. GAUGE LIGHT (1.4 W)
9. FRONT FOG LIGHT INDICATOR LIGHT (1.4W)
   (KH model)
10. RIGHT TURN SIGNAL INDICATOR LIGHT (1.4 W)
11. GAUGE LIGHTS
    (1.4 W x 2)
12. IMMOBILISER INDICATOR LIGHT (1.4 W)
13. LCD BACK LIGHT (1.4 W)
14. GAUGE LIGHT (1.4 W)
15. A/T GEAR POSITION INDICATOR LIGHTS
    (1.12 W x 7)
16. GAUGE LIGHT (1.4 W)
17. LEFT TURN SIGNAL INDICATOR LIGHT (1.4 W)
18. HIGH BEAM INDICATOR LIGHT (1.4 W)
19. A/T GEAR POSITION INDICATOR LIGHTS (1.12 W x 10)
20. GAUGE LIGHT
    (1.4 W)
21. LCD BACK LIGHT
    (1.4 W)
22. GAUGE LIGHT
    (1.4 W)

Gauges

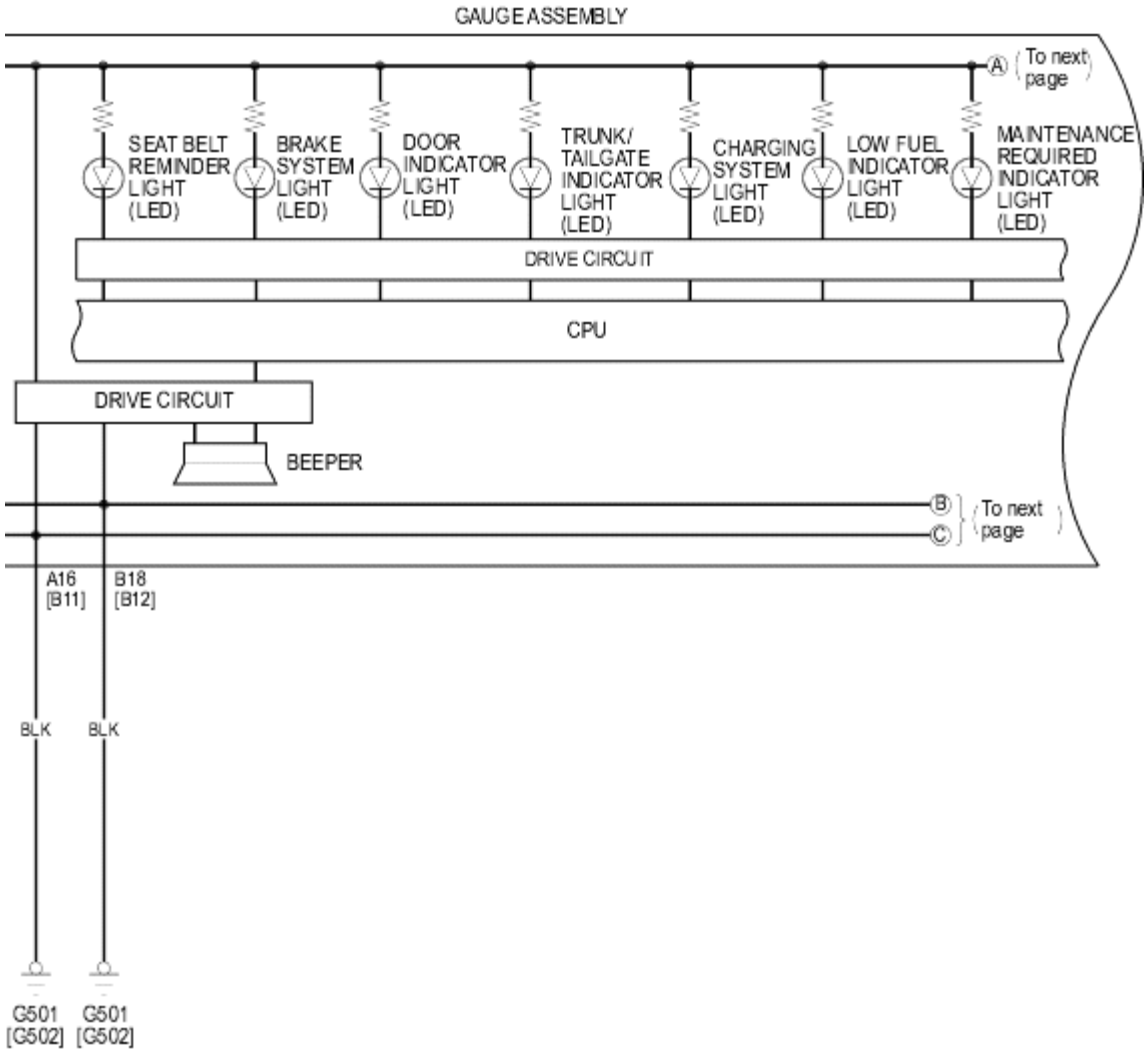
Circuit Diagram



Gauges

Circuit Diagram (cont'd)

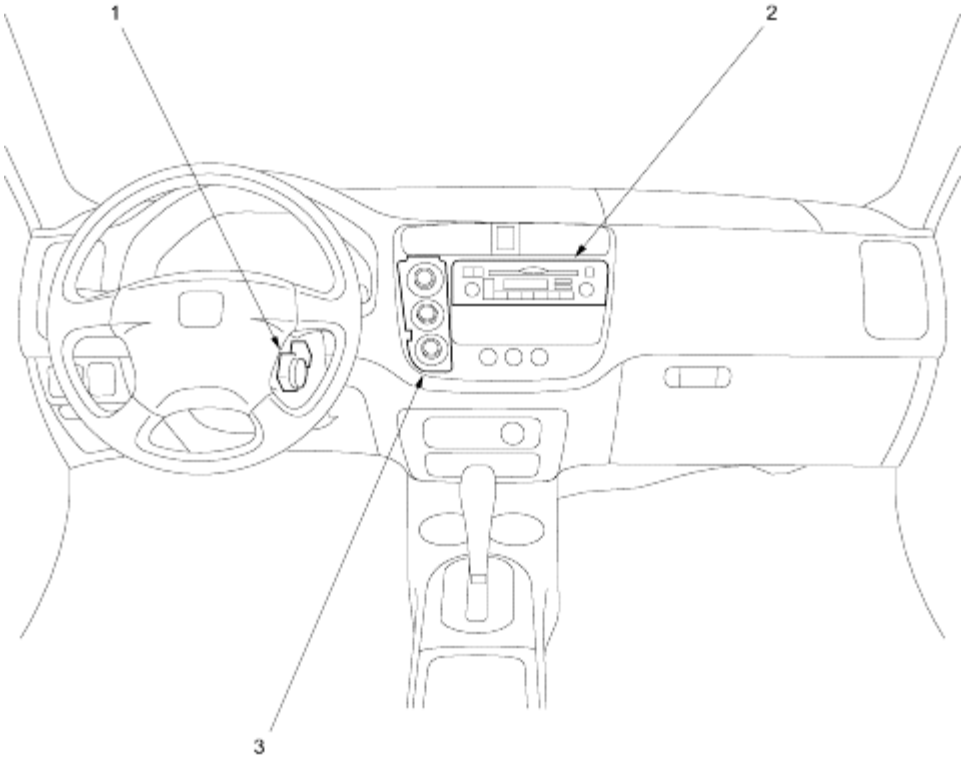
*1 No.20 (40A) : Except KG, KE, KB, TR
No.20 (50A) : KG, KE, KB, TR
*2 : M/T, A/T
[ ] : 5-door



Relay and Control Unit Locations

Dashboard (cont'd)

NOTE: LHD type is shown, RHD type is similar.



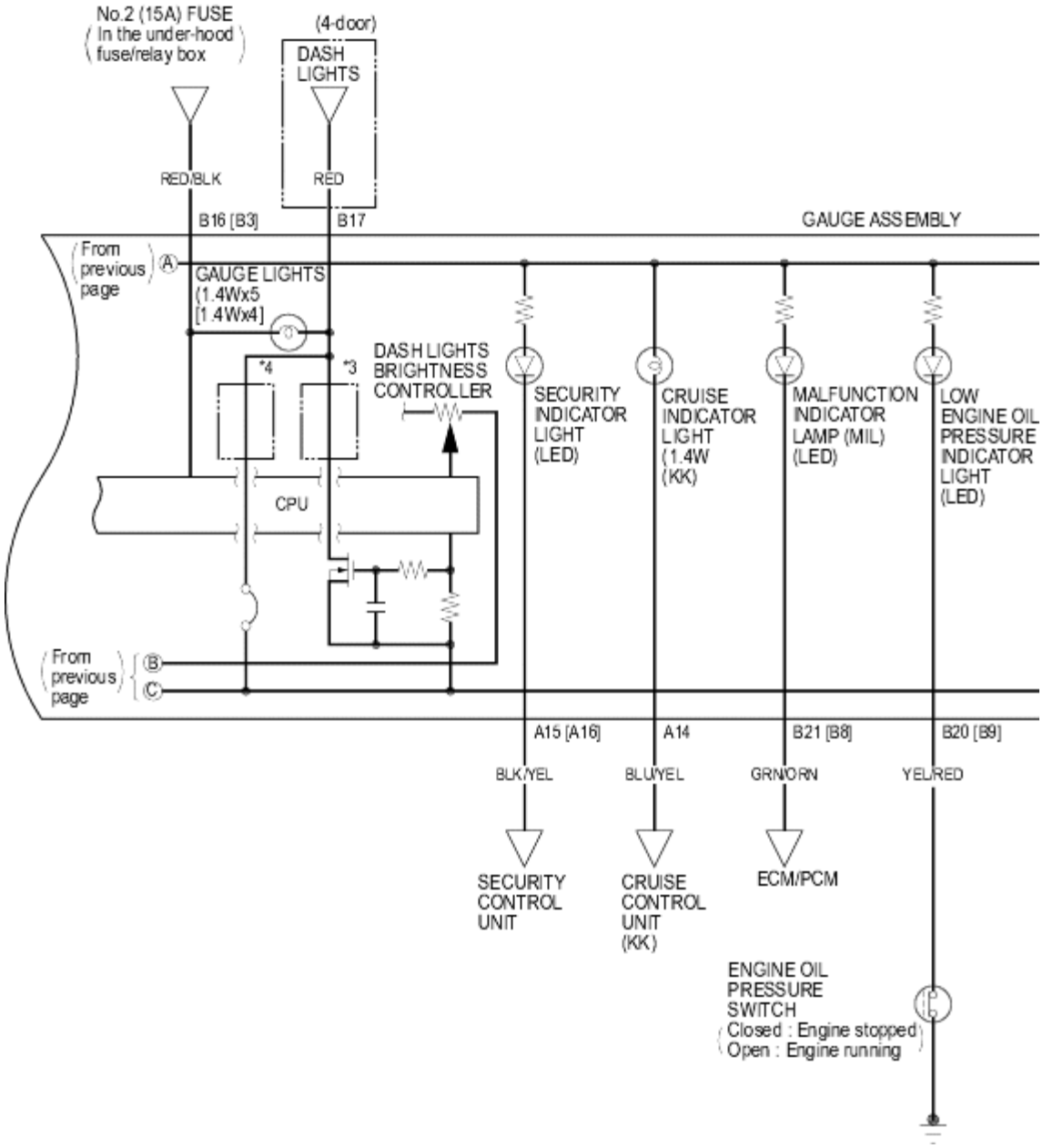
1. IMMOBILISER RECEIVER UNIT
2. AUDIT UNIT
3. CLIMATE CONTROL UNIT
   (Auto A/C)
   HEATER CONTROL PANEL
   (Manual A/C and without A/C)

Design Specifications
(cont'd)

Item	Measurement	Qualification	Specification
WHEEL ALIGNMENT	Camber	Front	0°
		Rear	-0°45'
	Caster	Front	1°33'
	Total toe	Front	0 mm (0 in.)
		Rear	In 2 mm (1/16 in.)
BRAKE	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc or drum
	Type of parking brake		Mechanical actuating, rear wheels
	Pad friction surface area	Front	35 cm2 x 2 (5.4 sq in. x 2)
	Shoe friction surface area	Rear	67 cm2 x 2 (10.3 sq in. x 2)
TYRES	Size of front and rear tyre (4-door)	KE (1.4S), KG (1.4S, 1.6 LS), KB, KQ (GLI), KH (EXI), KN (150I), KU (EXI), KY, KF, KV, KT models	184/70R14 88H
		KK, KX models	185/70R14 86H M + S
		KM, KP models	185/65R15 88H
		KE (1.6SE), KG (1.6LS, 1.6ES) KQ (VTI), KH (VTI), KN (170I) KU (VTI, VTI-S) models	195/60R15 88H
	Size of front and rear tyre (5-door)	KE (1.4S, 1.4LS), KT models	185/70R 14 88H
		KE (1.6S, 1.6LS, 1.6ES), KQ models	195/60R 15 88H
	Size of spare tyre	KQ, KN, KU, KX models	T125/70D15 95M
AIR CONDITIONING	Cooling capacity		3,870 kcal/h (15,400 BTU/h)
	Compressor	Type/manufacturer	Scroll/SANDEN
		Number of cylinders	-
		Capacity	85.7 ml/rev. (5.23 cu in./rev.)
		Maximum speed	12,000 rpm
		Lubricant capacity	130 ml (4 1/3 fl oz)
		Lubricant type	SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01)
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Radial fan
		Motor type	190 W/12 V
		Speed control	9-speed
		Maximum capacity	480 m3/h (16,900 cu ft/h)
	Temperature clutch		Air-mix type
	Compressor clutch	Type	Dry, single plate, poly-V belt drive
		Electrical power consumption at 20°C (68°F)	42 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Quantity	500-550 g (17.5-19.5 oz)

Gauges

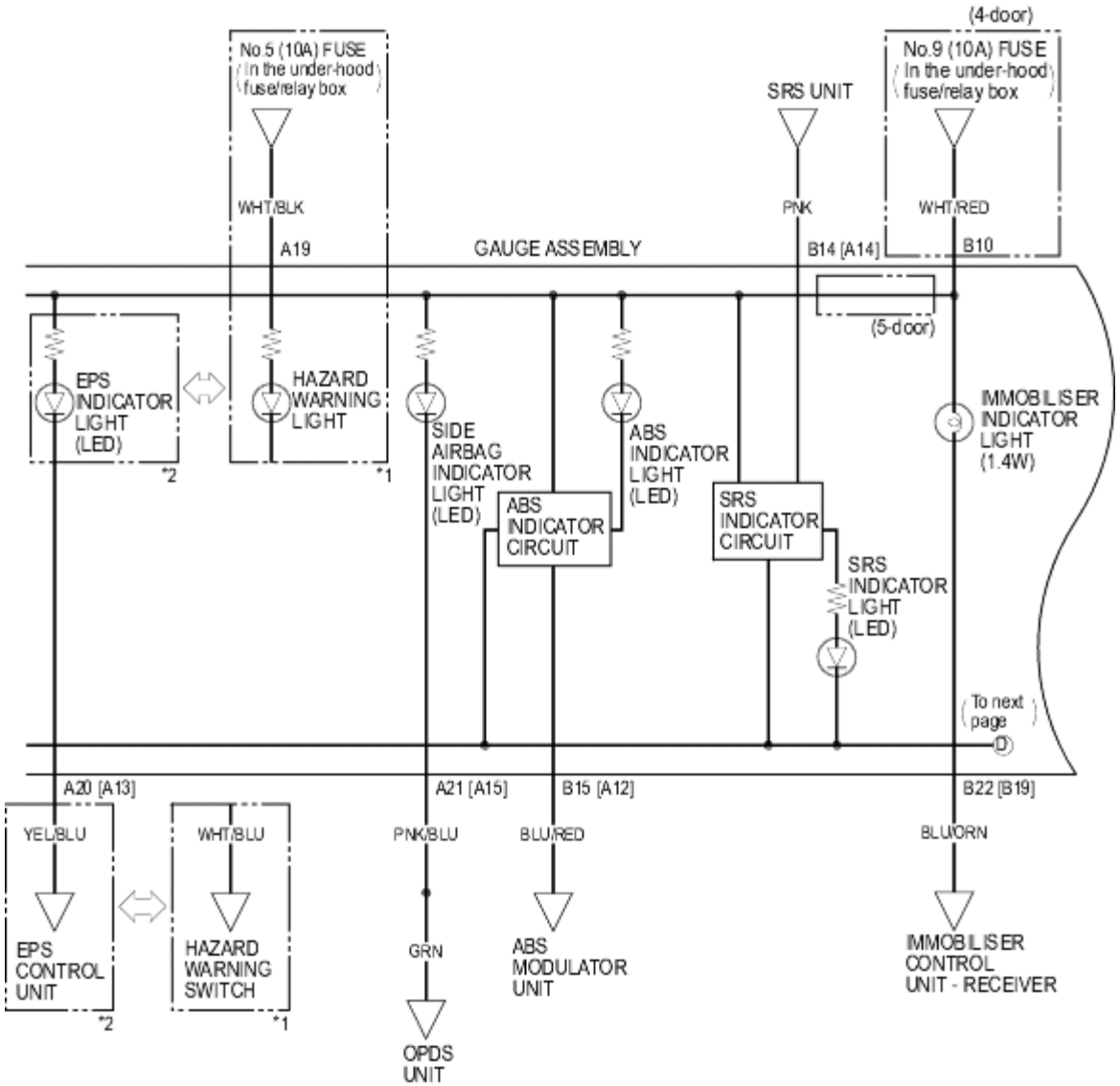
Circuit Diagram (cont'd)



Gauges

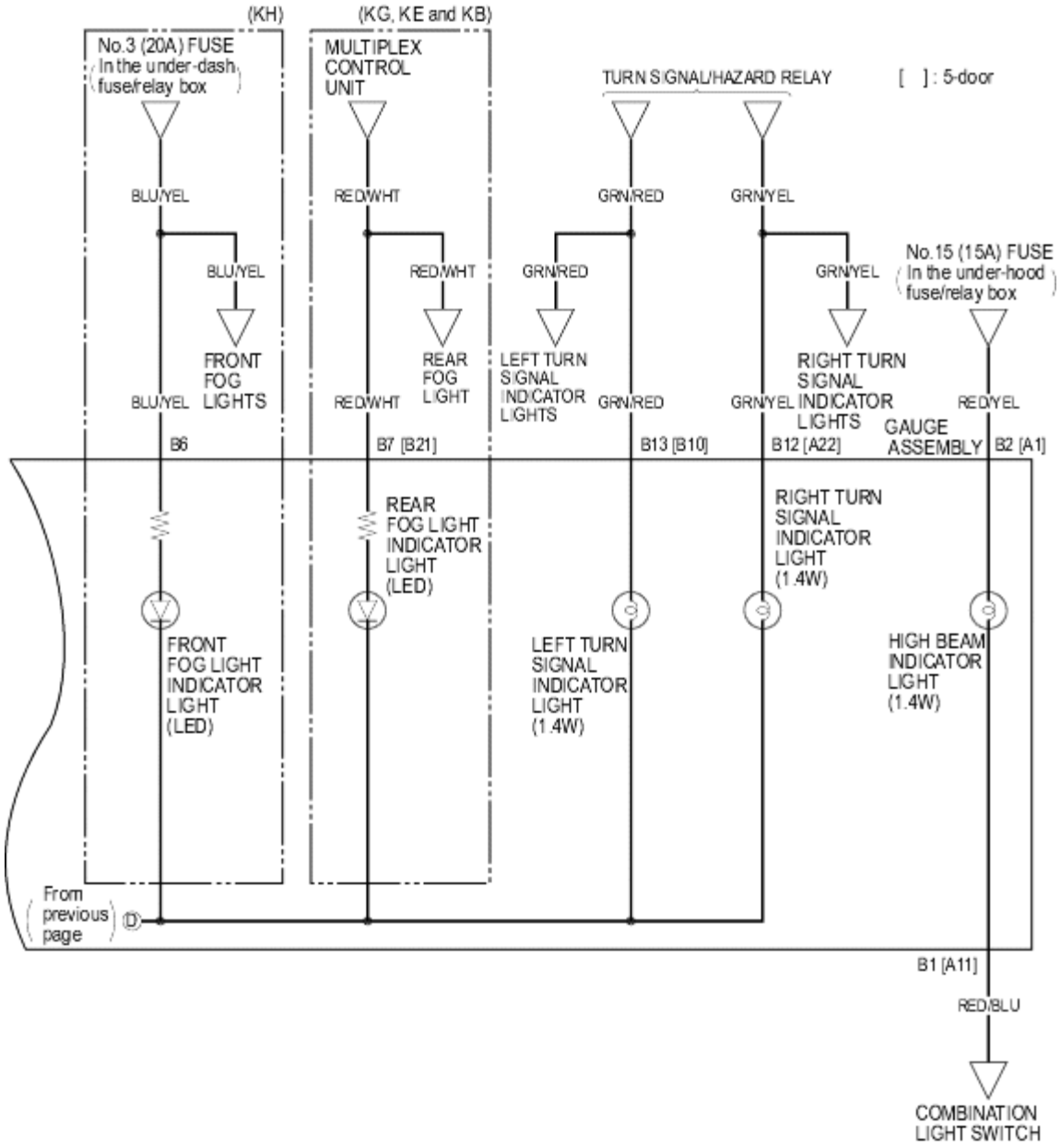
Circuit Diagram (cont'd)

*1 : KM and KP models
*2 : Except KM and KP with EPS
*3 : With dash lights brightness controller
*4 : Without dash lights brightness controller
[ ] : 5-door



Gauges

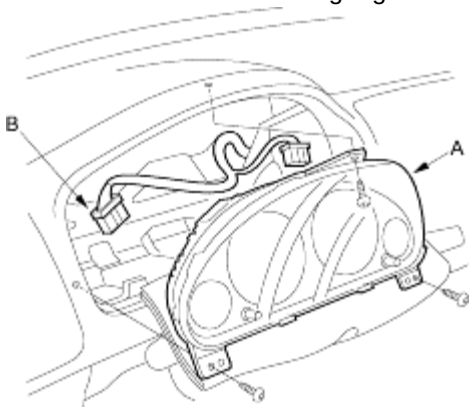
Circuit Diagram (cont'd)



Gauges

Gauge Assembly Replacement

1. Remove the instrument panel (see page 20-75), then remove the upper column cover (see page 17-9).
2. Remove the screws from the gauge assembly (A).



3. Disconnect the connectors (B) and remove the gauge assembly.
4. Install the gauge assembly in the reverse order of removal.

Before testing, check the No. 9 (10A) fuse in the under-hood fuse/relay box and No. 10 (7.5A) fuse in the under-dash fuse/relay box.

1. Start the engine and check the Malfunction Indicator Lamp (MIL).

Does the MIL come on?

YES – Troubleshoot the DTC (see page 11-90) and recheck.

NO – Go to step 2.

2. Check the multiplex control unit DTC (see page 22-273).

Is the DTC indicated?

YES – Troubleshoot the DTC (see page 22-273) and recheck. ■

NO – Inspect the connector and socket terminals of the gauge assembly connectors. If the terminals look OK, replace the gauge assembly. ■

Gauges

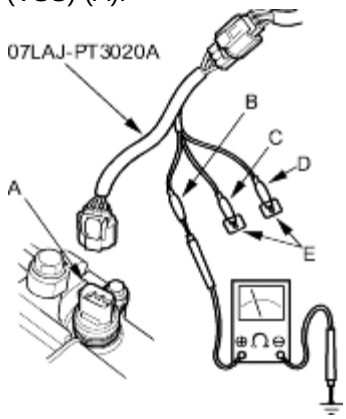
Vehicle Speed Signal Circuit Troubleshooting

Special Tools Required:

Test Harness 07LAJ-PT3020A

Before testing, inspect the No. 4 (10A) and No. 10 (7.5A) fuses in the under-dash fuse/relay box.

1. 1. Disconnect the 3P connector from the vehicle speed sensor (VSS) (A).



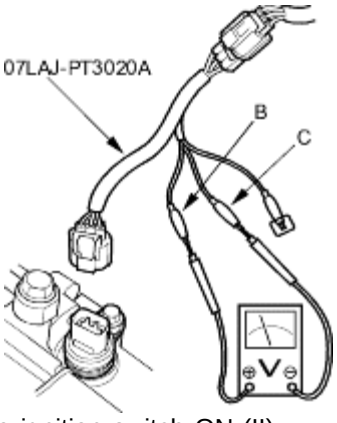
2. 2. Connect the test harness only to the engine wire harness.
   3. Connect the RED test harness clip (B) to the positive prove of an ohmmeter. Cover the white (C) and green (D) test harness with protective tape (E).
   4. Check for continuity between the RED test harness clip and body ground.

Is there continuity?

YES – Go to step 5.

NO – Repair open in the BLK wire between the VSS and G101. ■

1. 5. Connect the WHT test harness clip (B) to the positive probe of a voltmeter, and connect the RED test harness clip (C) to the negative probe.



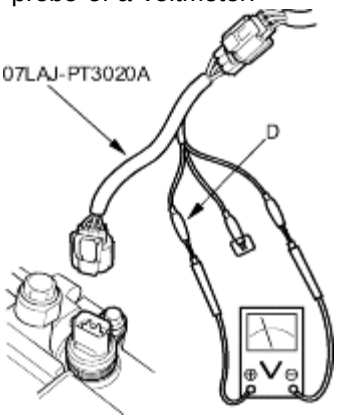
2. 6. Turn the ignition switch ON (II).

Is there battery voltage?

YES – Go to step 7.

NO – Repair open in the BLK/YEL wire between the VSS and the under-dash fuse/relay box. ■

3. 7. Disconnect the WHT test harness clip (B).
   8. Connect the GRN test harness clip (D) to the positive probe of a voltmeter.



Is there 5 V or more?

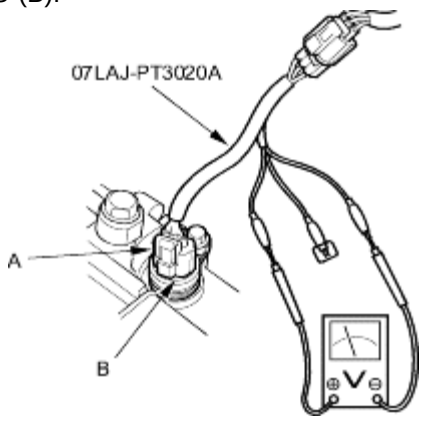
YES – Go to step 9.

NO – Repair short in the BLU/WHT wire between the VSS and the cruise control unit, or the ECM/PCM. ■

Gauges

Vehicle Speed Signal Circuit Troubleshooting (cont'd)

1. 9. Turn the ignition switch OFF.
2. 10. Connect the other test harness connector (A) to the VSS (B).



3. 11. Raise the front of the vehicle and make sure it is securely supported.
   12. Put the vehicle in neutral with the ignition switch ON (II).
   13. Slowly rotate one wheel with the other wheel blocked.

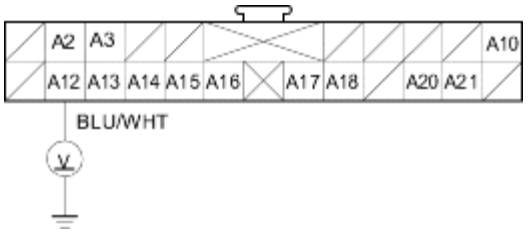
Does voltage pulse from 0 to about 5 V or more?

YES – Go to step 14.

NO – Replace the VSS. ■

1. 14. Disconnect the 22P connector "A" from the gauge assembly.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

2. 15. Touch a probe to the BLU/WHT wire and connect it to body ground through a voltmeter.
   16. Slowly rotate one wheel with the other wheel blocked.

Does the voltmeter indicate pulsing voltage?

YES – Replace the speedometer assembly. ■

NO – Repair open in the BLU/WHT wire between the VSS and the speedometer. ■

Gauges

Vehicle Speed Signal Circuit Troubleshooting (cont'd)

CVT

Before testing, check the No. 9 (10A) fuse in the under-hood fuse/relay box and No. 10 (7.5A) fuse in the under-dash fuse/relay box.

1. Start the engine and check the Malfunction Indicator Lamp (MIL).

Does the MIL come on?

YES – Troubleshoot the DTC (see page 11-90) and recheck.

NO – Go to step 2.

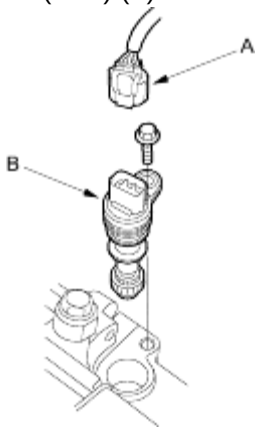
2. Check the multiplex control unit DTC (see page 22-273).

Is the DTC indicated?

YES – Troubleshoot the DTC (see page 22-273) and recheck. ■

NO – Inspect the connector and socket terminals of the gauge assembly connectors. If the terminals look OK, replace the gauge assembly. ■

1. Remove the intake resonator.
2. Disconnect the 3P connector (A) from the vehicle speed sensor (VSS) (B).

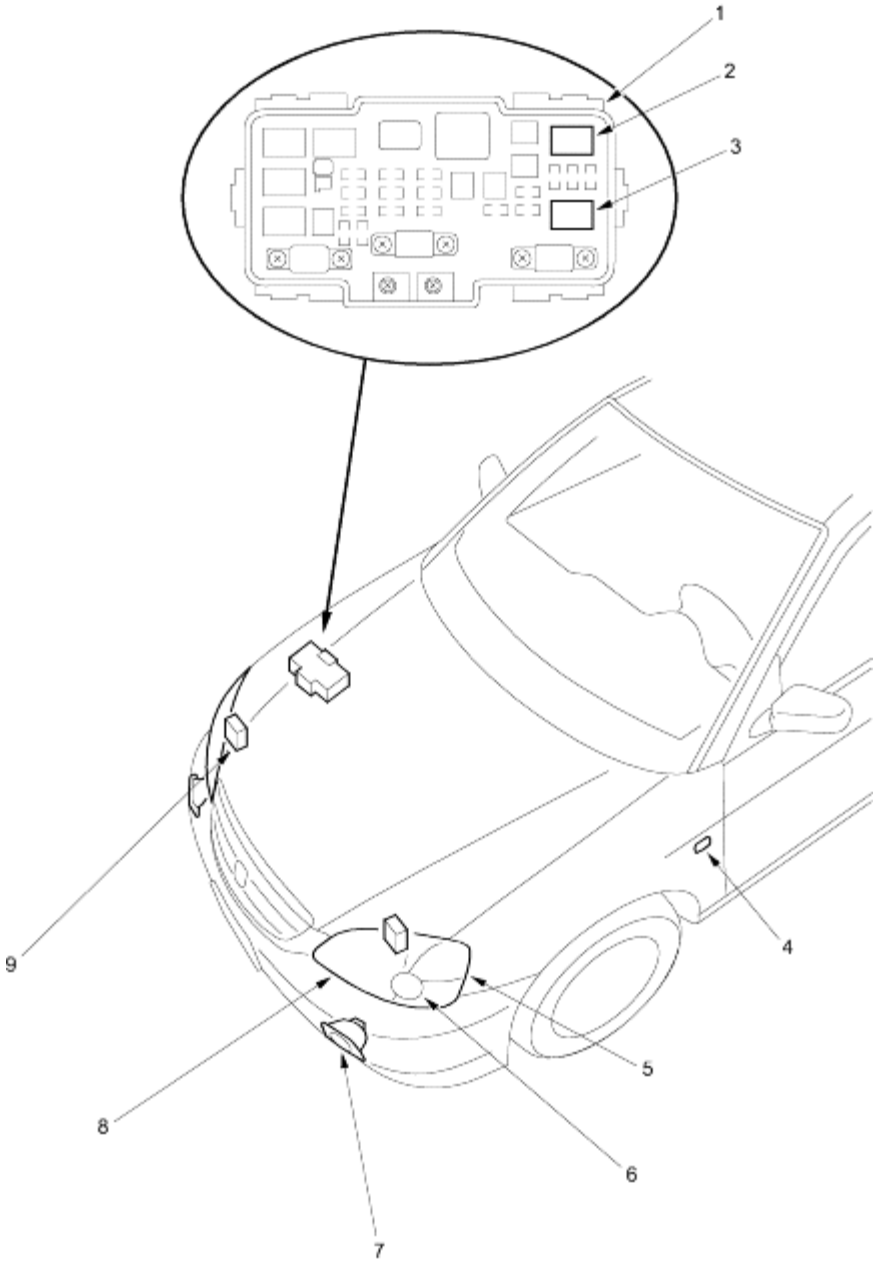


3. Remove the mounting bolt, then remove the VSS.
4. Install the VSS in the reverse order of removal.

Exterior Lights

Component Location Index

NOTE: LHD type is shown, RHD type is similar



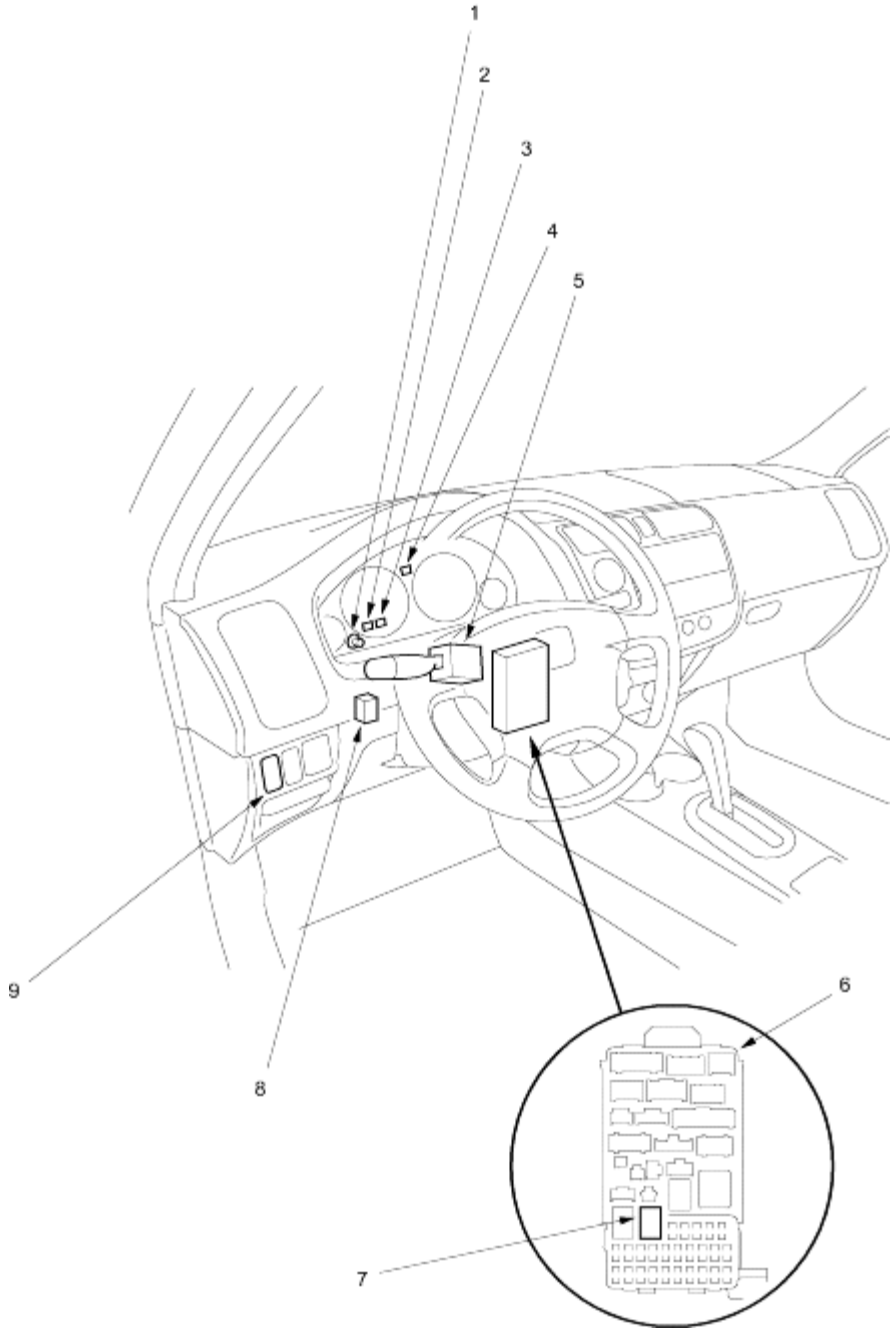
1. UNDER - HOOD FUSE/RELAY BOX
2. HEADLIGHT RELAY 1
   Test, page 22-80
3. HEADLIGHT RELAY 2
   Test, page 22-80
4. SIDE TURN SIGNAL LIGHT (Except KK)
   Replacement, page 22-119
5. FRONT TURN SIGNAL LIGHT
   Replacement, page 22-114
   FRONT TURN SIGNAL/SIDE MARKER LIGHT (KX model)
   Replacement, page 22-114
6. FRONT POSITION LIGHT
   Replacement, page 22-114
7. FRONT FOG LIGHTS (KH model),
   Replacement, page 22-117
   Adjustment, page 22-117
8. HEADLIGHTS
   Replacement, page 22-114
   Adjustment, page 22-114
9. HEADLIGHT ADJUSTER UNITS (KG and KE models)
   Troubleshooting, page 22-115

Exterior Lights

Component Location Index (cont'd)

4-door:

NOTE: LHD type is shown, RHD type is similar

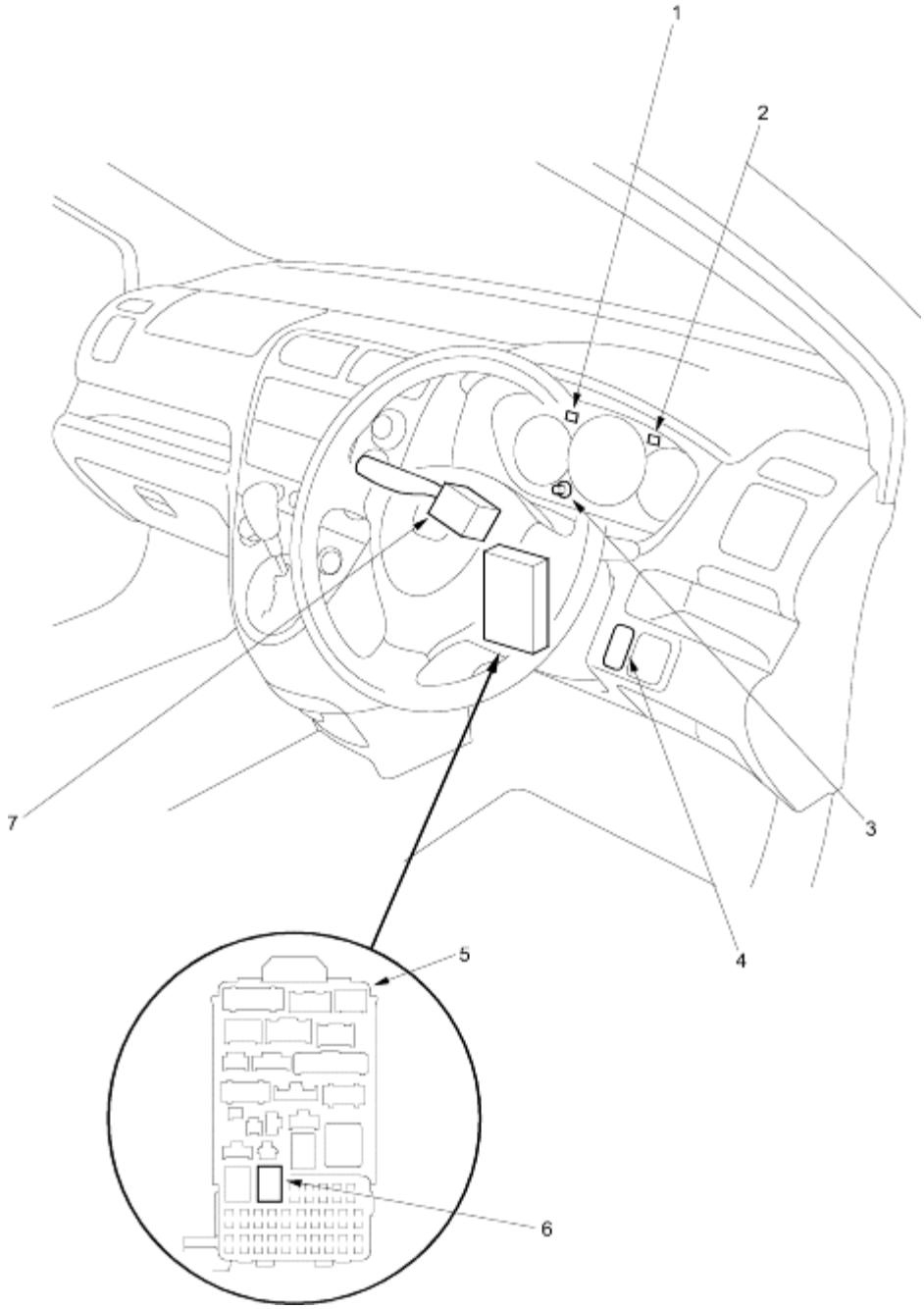


1. DASH LIGHTS BRIGHTNESS CONTROLLER
2. FRONT FOG LIGHTS INDICATOR LIGHT (KH model)
   Bulb Replacement, page 22-87
3. REAR FOG LIGHT INDICATOR LIGHT (KG, KE and KB models)
   Bulb Replacement, page 22-87
4. HIGH BEAM INDICATOR LIGHT
   Bulb Replacement, page 22-87
5. COMBINATION LIGHT SWITCH
   Test, page 22-112
   Replacement, page 22-112
   FRONT FOG LIGHTS SWITCH (KH model)
   Test, page 22-112
   REAR FOG LIGHT SWITCH (KG, KE and KB models)
   Test, page 22-112
6. UNDER - DASH FUSE/RELAY BOX
7. TAILLIGHT RELAY
   Test, page 22-80
8. FRONT FOG LIGHT RELAY (KH model)
   Test, page 22-80
9. HEADLIGHT ADJUSTER SWITCH (KG and KE models)
   Test, page 22-116
   Replacement, page 22-116

Exterior Lights

Component Location Index (cont'd)

5-door:



1. REAR FOG LIGHT INDICATOR LIGHT (KE model),
   Bulb Replacement, page 22-87
2. HIGH BEAM INDICATOR LIGHT
   Bulb Replacement, page 22-87
3. DASH LIGHTS BRIGHTNESS CONTROLLER
4. HEADLIGHT ADJUSTER SWITCH (KE model)
   Test, page 22-116
   Replacement, page 22-116
5. UNDER - DASH FUSE/RELAY BOX
6. TAILLIGHT RELAY
   Test, page 22-80
7. COMBINATION LIGHT SWITCH
   Test, page 22-112
   Replacement, page 22-112
   REAR FOG LIGHT SWITCH (KE model)
   Test, page 22-112

Standards and Service Limits

Engine Electrical (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Starter for D15Y3 (Philippine model), D16W9 (Philippine model), D17Z1 (Malaysia model), D17Z5, D17A2 (Malaysia model), D17A5 (Indonesia model) engines (MITSUBISHI)	Output		0.8 kW	
	Commutator mica depth		0.50-0.75 mm (0.020-0.030 in.)	0.2 mm (0.008 in.)
	Commutator runout		0.05 mm (0.002 in.) max	0.4 mm (0.02 in).
	Commutator O.D.		27.9-28.0 mm (1.098-1.102 in.)	27.0 mm (1.063 in.)
	Brush length		9.7-10.3 mm (0.38-0.41 in.)	6.0 mm (0.24 in)
	Brush spring tension		13.7-17.7 N (1.4-1.8 kgf, 3.09-4.00 lbf)	
Starter for Except D15Y2, D15Y3 (Philippine model), D16W7 (KG model), D16W8, D16W9, D17Z1, D17A1, D17A2, D17A5 engines (DENSO)	Output		0.8 kW	
	Commutator mica depth		0.50-0.75 mm (0.020-0.030 in.)	0.2 mm (0.008 in.)
	Commutator runout		0.05 mm (0.002 in.) max.	0.4 mm (0.02 in.)
	Commutator O.D.		27.9-28.0 mm (1.098-1.102 in.)	27.0 mm (1.063 in.)
	Brush length		9.7-10.3 mm (0.35-0.41 in.)	6.0 mm (0.24 in.)

Engine Assembly

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure check at 250 rpm (min-1) with wide open throttle. (See Design Specs for ratio.)	Minimum	930 kPa (9.5 kgf/cm2, 135 psi)	-
		Maximum variation	200 kPa (2.0 kgf/cm2, 28 psi)	-

Design Specifications
(cont'd)

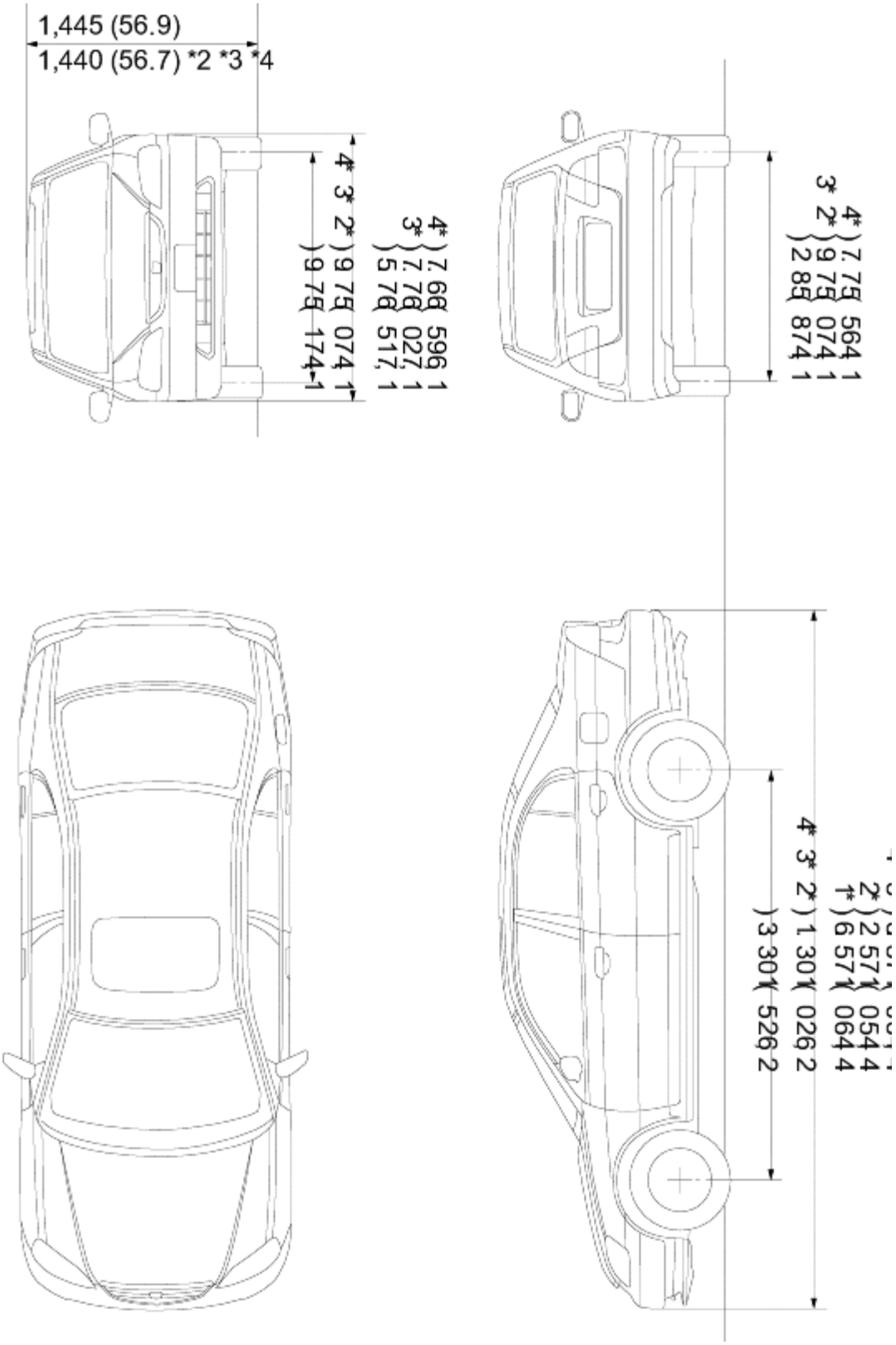
Item	Measurement	Qualification	Specification
ELECTRICAL RATINGS	Battery		12 V-36 AH/5 hours
			12 V – 45 AH/20 hours
			12 V – 38 AH/5 hours*1
			12 V – 47 AH/20 hours*1
	Starter	DENSO	12 V – 1.0 kW
		MITSUBA	12 V – 1.2 kW
	Alternator		12 V – 70 A
	Fuses	Under-hood fuse/relay box	80 A, 40 A, 30 A, 20 A, 15 A, 7.5 A
		Under-dash fuse/relay box	20 A, 15 A, 10 A, 7.5 A
	Light bulbs	Headlight high beam	12 V – 60 W
		Headlight low beam	12 V – 55 W
		Front turn signal/Front side marker lights	12 V – 21 W/5 W
		Front position lights	12 V – 5 W/3 CP*2 (candlepower)
		Front parking lights	12 V – 5 W
		Side turn signal lights	12 V – 21 W*2
		Rear turn signal lights	12 V – 21 W
		Brake/Taillights/Rear side marker light	12 V – 21W/5 W
		Rear for light	12 V – 21 W
		Inner taillight	12 V – 5 W
		High mount brake light	12 V – 21 W
		Back-up light	12 V – 21 W
		License plate light	12 V -3 CP
		Ceiling light	12 V – 8 W
		Trunk light (4-door)	12 V – 5 W
		Luggage area light (5-door)	12 V – 5 W
		Individual map light	12 V – 8 W
		Spotlights	14 V – 8 W
		Gauge light	14 V – 1.4 W
		Indicator light	12 V – 1.12 W

Restraints

Special Tools	23-2
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SRS (Supplemental Restraint System)	
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Front Sensor Replacement	23-179

Body Specifications

Unit: mm (in.)



*1: European model

*2: Australian model

*3: Saudi Arabia model

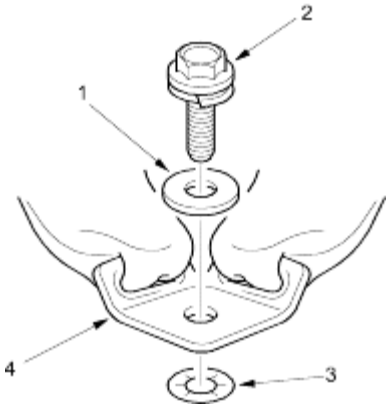
*4: Hong Kong model

Seat Belts

Rear Seat Belt Replacement (cont'd)

1. 6. Install the seat belt and buckles in the reverse order of removal and note these items:
   - With centre shoulder belt: If the threads on the retractor mounting self-tapping ET screw are worn out, use an oversized self-tapping ET screw made specifically for this application.
   - With centre shoulder belt: Check that the retractor locking mechanism functions (see page 23-11).
   - Assemble the washers on the centre anchor bolt as shown.
   - Before installing the centre anchor bolt, make sure there are no twists or kinks in the centre belt.

Centre anchor bolt construction:



2. 1. WASHER
   2. CENTRE ANCHOR BOLT
   3. TOOTHED LOCK WASHER
   4. CENTRE ANCHOR

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

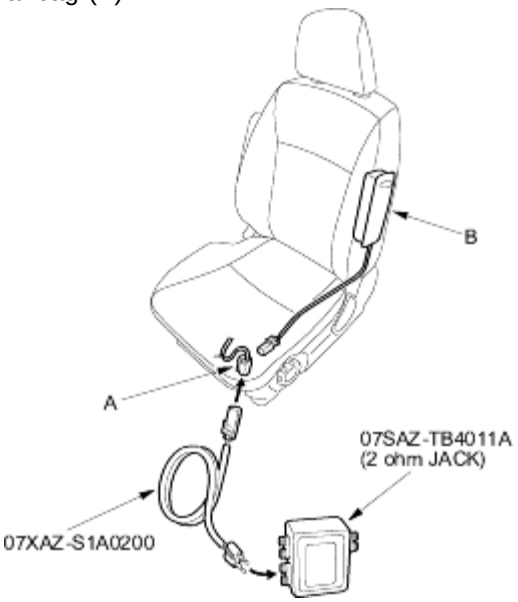
DTC 11-1: Open or Increased Resistance in Left Side Airbag Inflator (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi connector (A) from the left side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SLi connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

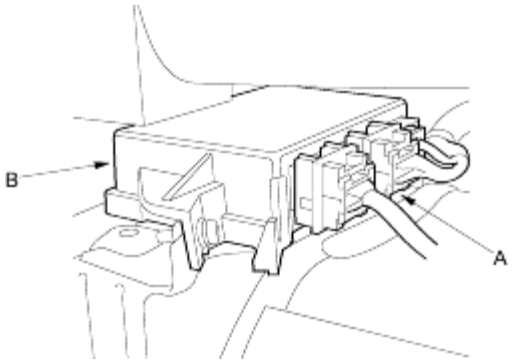
   Is DTC 11-1 indicated?

   YES - Go to step 9.

   NO - Open or increased resistance in the left side airbag inflator; replace the left side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SRi connector (A) from the right side airbag (B).



4. 11. Disconnect the U2o connector (A) from the SRS unit (B). Do not disconnect the special tool (2 ohm) from the SLi connector.

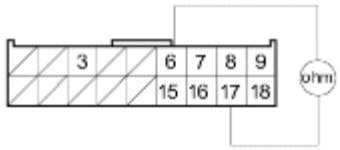


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 6 and No. 17 terminals of the U2o connector. There should be 2.0 - 3.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U2o connector and the SRS unit; check the connection at the U2o connector and SRS unit. If the connector is OK, replace the SRS unit. ■

NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

DTC 11-3: Short to Another Wire or Decreased Resistance in Left Side Airbag Inflator (Without OPDS Unit Model)

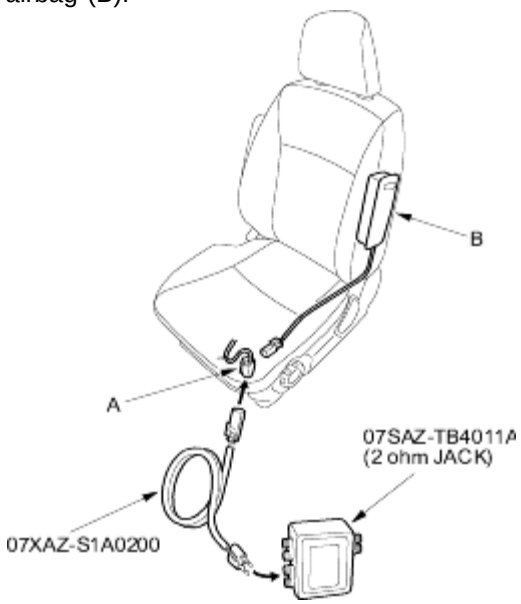
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi connector (A) from the left side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SLi connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

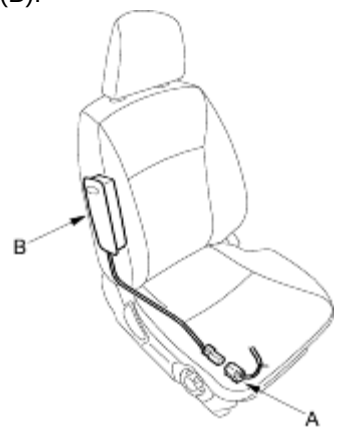
1. 8. Read the DTC.

Is DTC 11-3 indicated?

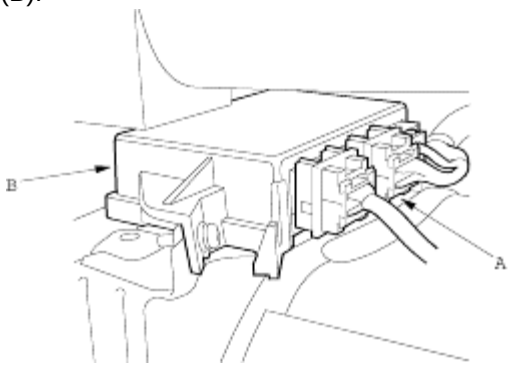
YES - Go to step 9.

NO - Short to another wire in the left side airbag inflator; replace the left side airbag. ■

2. 9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SRi connector (A) from the right side airbag (B).

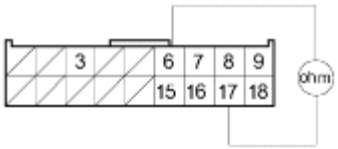


3. 11. Disconnect the special tool (2 ohm) from the SLi connector.
12. Disconnect the U2o connector (A) from the SRS unit (B).



1. 13. Check resistance between the No. 6 and No. 17 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to another wire in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

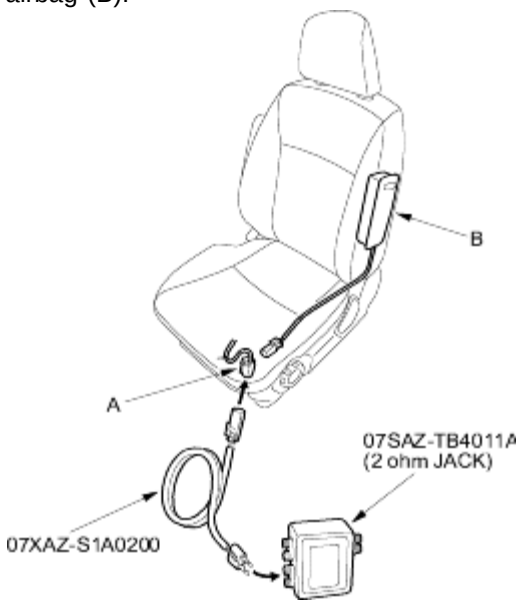
DTC 11-4: Short to Power in Left Side Airbag Inflator (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi connector (A) from the left side airbag (B).

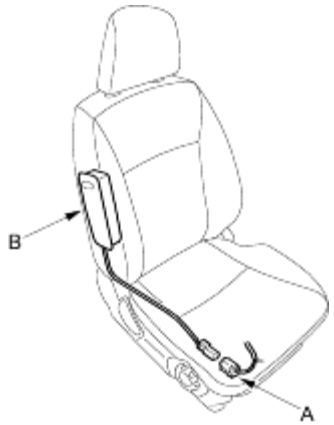


3. 5. Connect the special tool (2 ohm) to the SLi connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

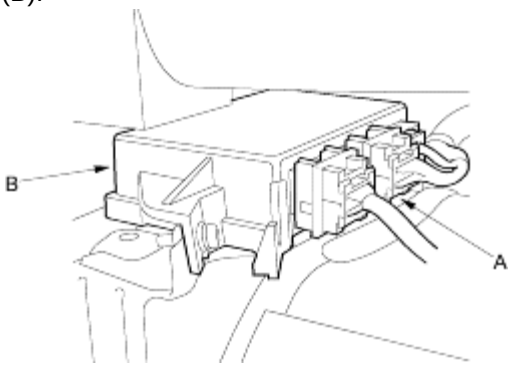
   Is DTC 11-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the left side airbag inflator; replace the left side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes. ■
   10. Disconnect the SRi connector (A) from the right side airbag (B), and disconnect the special tool (2 ohm) from the SLi connector.



4. 11. Disconnect the U2o connector (A) from the SRS unit (B).

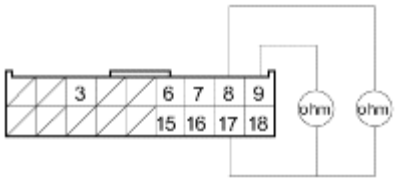


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 17 and No. 8 terminals of the U2o connector, and between the No. 17 and No. 9 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 11-5: Short to Ground in Left Side Airbag Inflator (Without OPDS Unit Model)

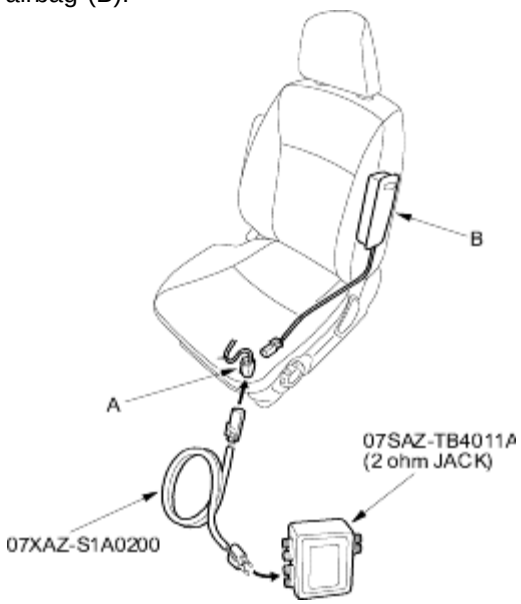
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi connector (A) from the left side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SLi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

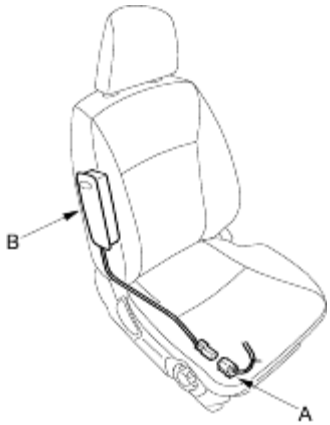
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

Is DTC 11-5 indicated?

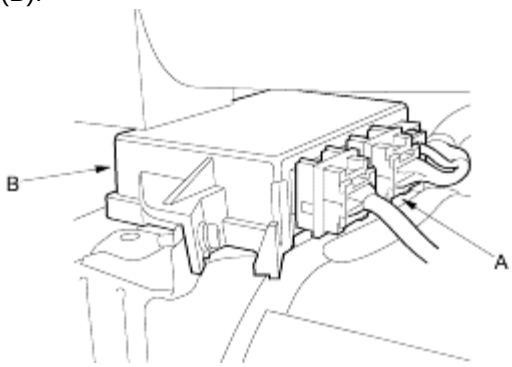
YES - Go to step 9.

NO - Short to ground in the left side airbag inflator; replace the left side airbag. ■

3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SRi connector (A) from the right side airbag (B), and disconnect the special tool (2 ohm) from the SLi connector.

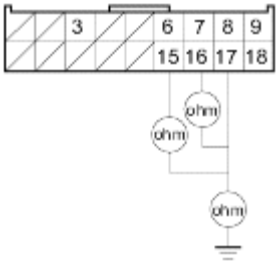


4. 11. Disconnect the U2o connector (A) from the SRS unit (B).



1. 12. Check resistance between the No. 17 and No. 15 terminals of the U2o connector, and between the No. 17 and No. 16 terminals of the U2o connector. Then check resistance between the No. 17 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

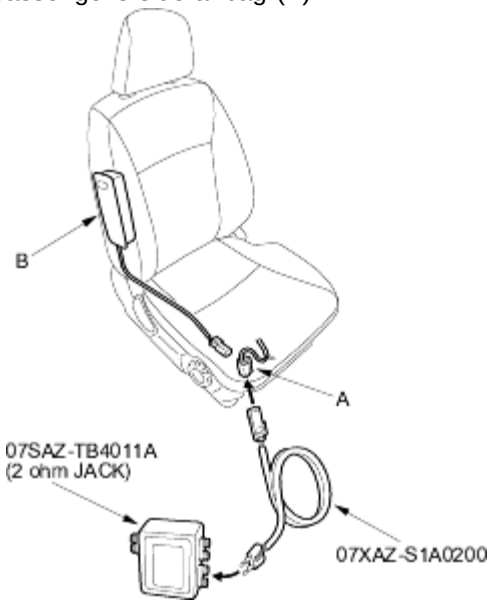
DTC 12-1: Open or Increased Resistance in Front Passenger's Side Airbag Inflator (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SPi connector (A) from the front passenger's side airbag (B).

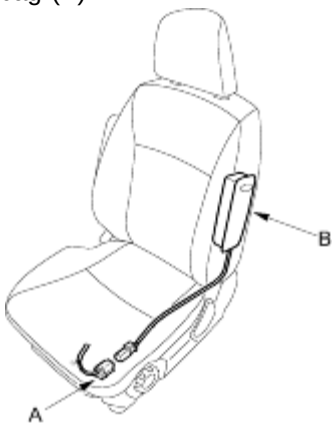


1. 5. Connect the special tool (2 ohm) to the SPi connector.
2. 6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 12-1 indicated?

   YES - Go to step 9.

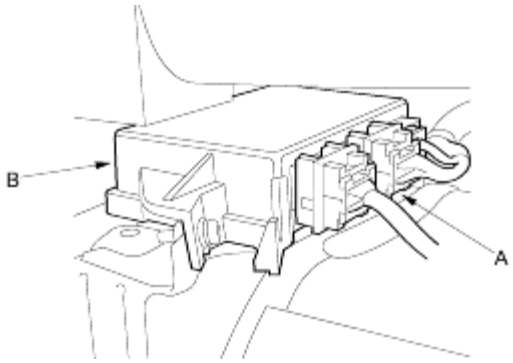
   NO - Open or increased resistance in the front passenger's side airbag inflator, replace the front passenger's side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SDi connector (A) from the driver's side airbag (B).



SRS

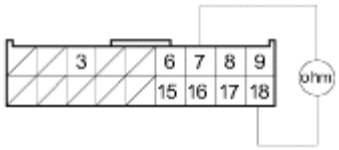
DTC Troubleshooting - with Side Airbags (cont'd)

1. 11. Disconnect the U2o connector (A) from the SRS unit (B). Do not disconnect the special tool (2 ohm) from the SPi connector.



2. 12. Check resistance between the No. 7 and No. 18 terminals of the U2o connector. There should be 2.0 - 3.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U2o connector and the SRS unit; check the connection at the U2o connector and SRS unit. If the connector is OK, replace the SRS unit. ■

NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

DTC 12-3: Short to Another Wire or Decreased Resistance in Front Passenger's Side Airbag Inflator (With OPDS Unit Model)

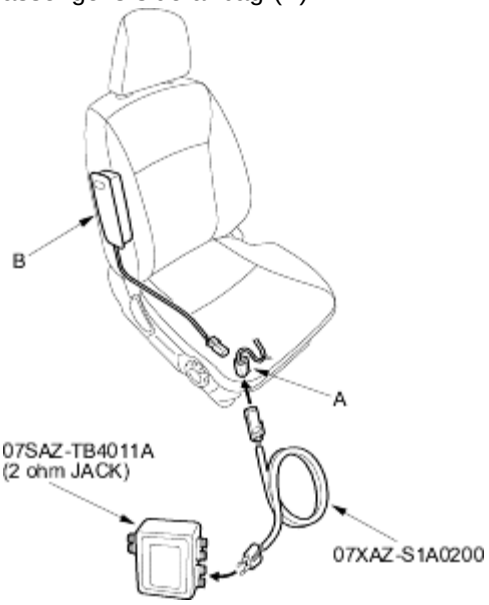
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SPi connector (A) from the front passenger's side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SPi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

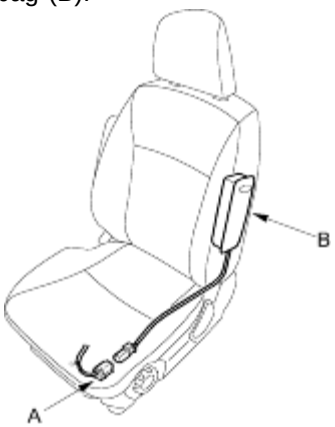
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

Is DTC 12-3 indicated?

YES - Go to step 9

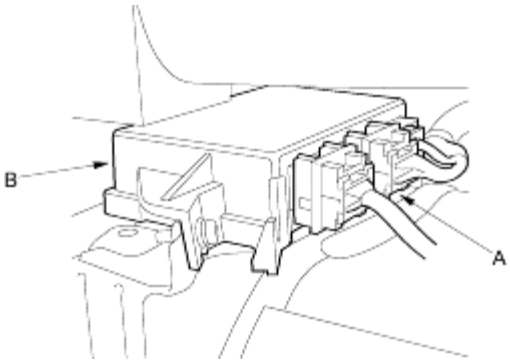
NO - Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag. ■

9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SDi connector (A) from the driver's side airbag (B).



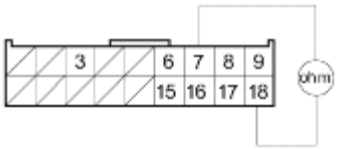
11. Disconnect the special tool (2 ohm) from the SPi connector.

12. Disconnect the U2o connector (A) from the SRS unit (B).



13. Check resistance between the No. 7 and No. 18 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to another wire in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

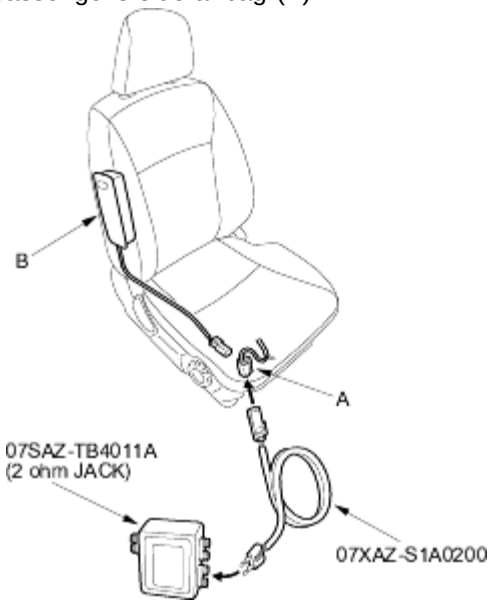
DTC 12-4: Short to Power in Front Passenger's Side Airbag Inflator (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SPi connector (A) from the front passenger's side airbag (B).

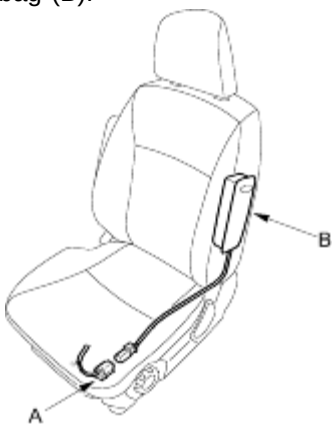


3. 5. Connect the special tool (2 ohm) to the SPi connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

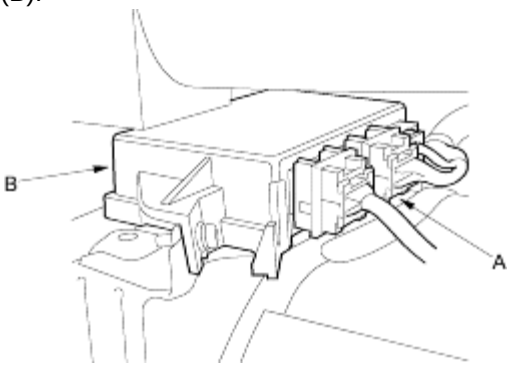
   Is DTC 12-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the front passenger's side airbag inflator, replace the front passenger's side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SDi connector (A) from the driver's side airbag (B).



4. 11. Disconnect the U2o connector (A) from the SRS unit (B).



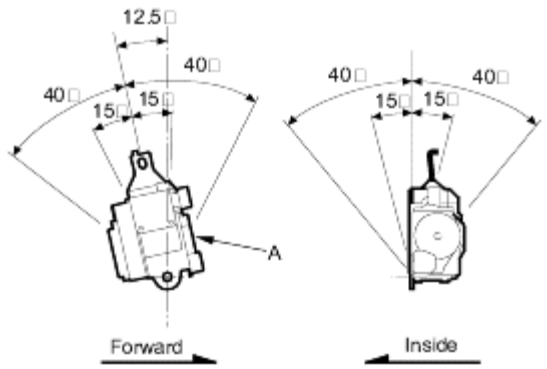
Seat Belts
Inspection

For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

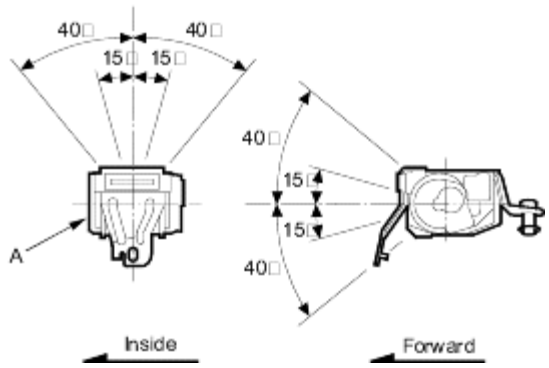
Retractor

1. 1. Before installing the retractor, check that the seat belt can be pulled out freely.
   2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position. The seat belt should lock when the retractor is leaned over 40°. Do not attempt to disassemble the retractor. The front seat belt retractor with seat belt tensioner is shown, the front seat belt retractor without seat belt tensioner is similar.

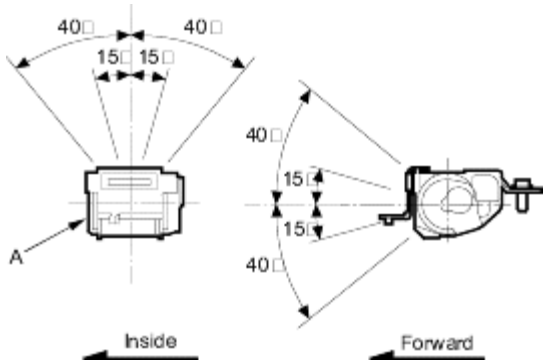
Front:



Rear:



Rear centre:



1. 3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

In-vehicle

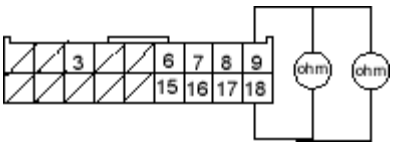
2. 1. Check that the seat belt is not twisted or caught on anything.
   2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.
   3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.
      NOTE: Dirt build-up in the metal loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.
   4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
   5. Make sure that the seat belt will retract automatically when released.
   6. For rear passenger's seat belt on some models (except centre shoulder belt), make sure that the locking mechanism in the seat belt retractor will engage when the seat belt is pulled all the way out.
   7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 18 and No. 8 terminals of the U2o connector, and between the No. 18 and No. 9 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 12-5: Short to Ground in Front Passenger's Side Airbag Inflator (With OPDS Unit Model)

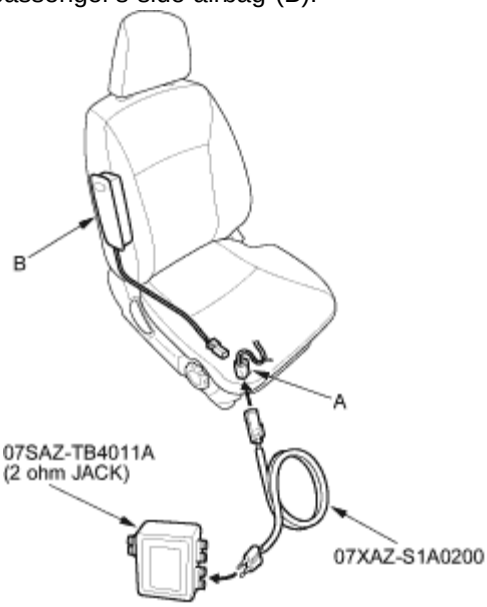
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SPi connector (A) from the front passenger's side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SPi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

Is DTC 12-5 indicated?

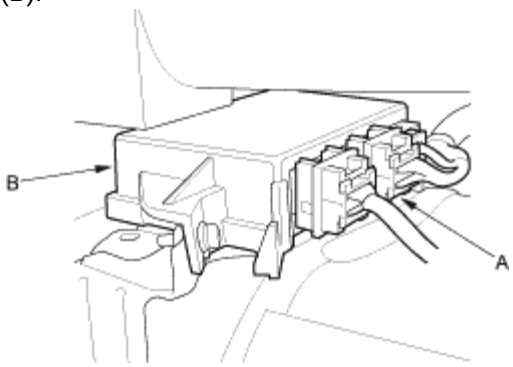
YES - Go to step 9.

NO - Short to ground in the front passenger's side airbag inflator, replace the front passenger's side airbag. ■

3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SDi connector (A) from the driver's side airbag (B).

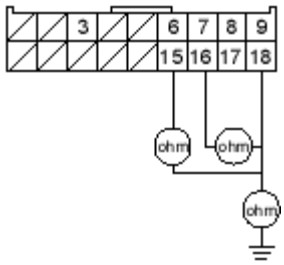


4. 11. Disconnect the U2o connector (A) from the SRS unit (B).



1. 12. Check resistance between the No. 15 and No. 18 terminals of the U2o connector, and between the No. 16 and No. 18 terminals of the U2o connector. Then check resistance between the No. 18 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

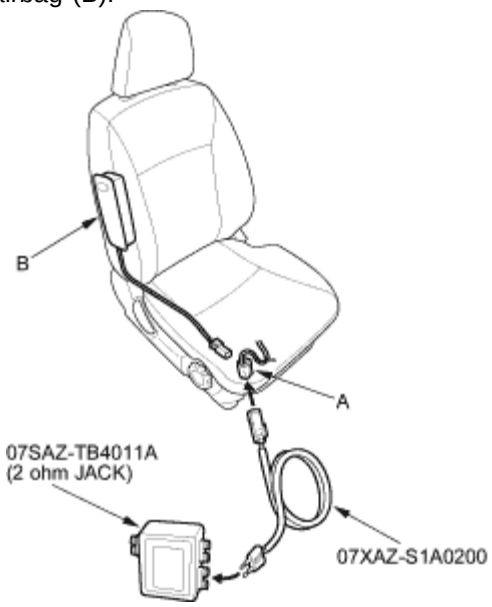
DTC 12-1: Open or Increased Resistance in Right Side Airbag Inflator (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SRi connector (A) from the right side airbag (B).



1. 5. Connect the special tool (2 ohm) to the SRi connector.
2. 6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 12-1 indicated?

   YES - Go to step 9.

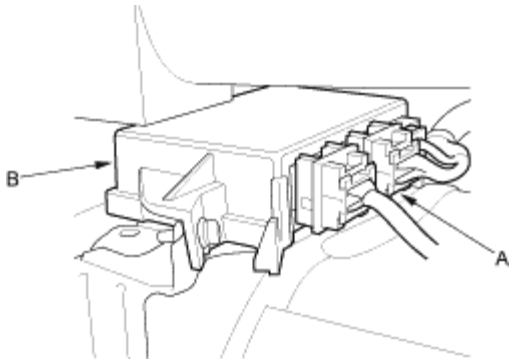
   NO - Open or increased resistance in the right side airbag inflator, replace the right side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SLi connector (A) from the left side airbag (B).



SRS

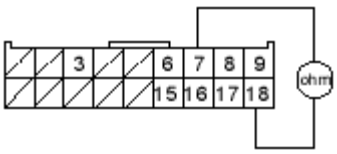
DTC Troubleshooting - with Side Airbags (cont'd)

1. 11. Disconnect the U2o connector (A) from the SRS unit (B). Do not disconnect the special tool (2 ohm) from the SRi connector.



2. 12. Check resistance between the No. 7 and No. 18 terminals of the U2o connector. There should be 2.0 - 3.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U2o connector and the SRS unit; check the connection at the U2o connector and SRS unit. If the connector is OK, replace the SRS unit. ■

NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

DTC 12-3: Short to Another Wire or Decreased Resistance in Right Side Airbag Inflator (Without OPDS Unit Model)

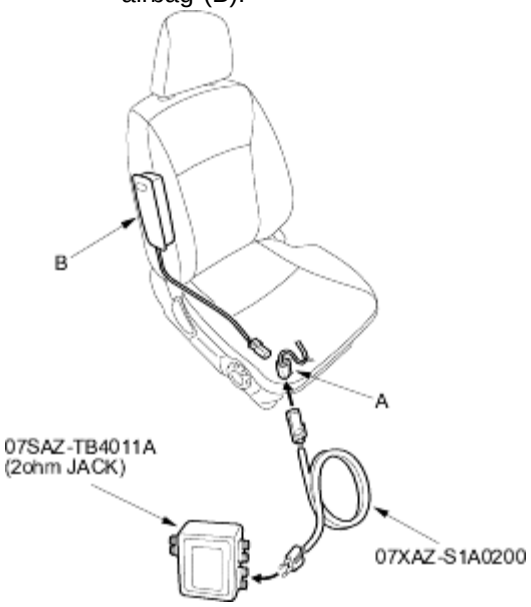
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SRi connector (A) from the right side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SRi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

Is DTC 12-3 indicated?

YES - Go to step 9

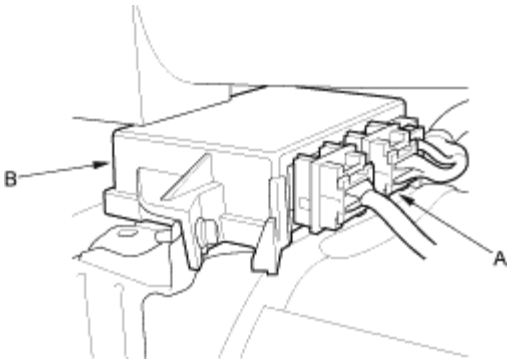
NO - Short to another wire in the right side airbag inflator; replace the right side airbag. ■

9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SLi connector (A) from the left side airbag (B).



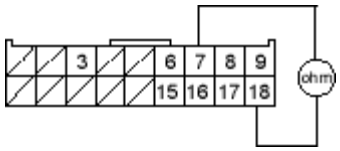
11. Disconnect the special tool (2 ohm) from the SRi connector.

12. Disconnect the U2o connector (A) from the SRS unit (B).



13. Check resistance between the No. 7 and No. 18 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to another wire in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

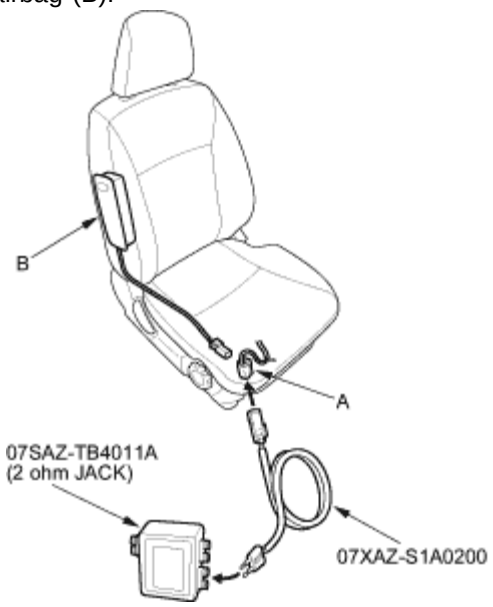
DTC 12-4: Short to Power in Right Side Airbag Inflator (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SRi connector (A) from the right side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SRi connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

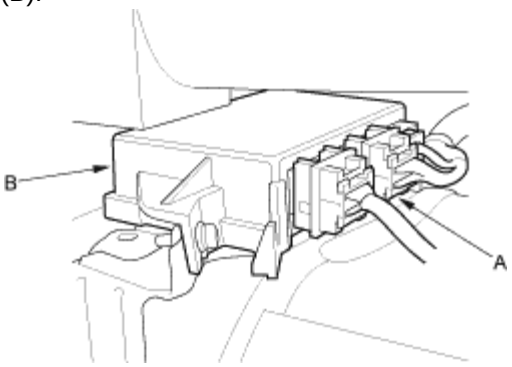
   Is DTC 12-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the right side airbag inflator, replace the right side airbag. ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SLi connector (A) from the left side airbag (B).



4. 11. Disconnect the U2o connector (A) from the SRS unit (B).

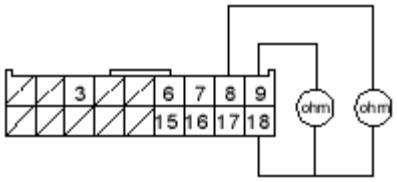


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 18 and No. 8 terminals of the U2o connector, and between the No. 18 and No. 9 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 12-5: Short to Ground in Right Side Airbag Inflator (Without OPDS Unit Model)

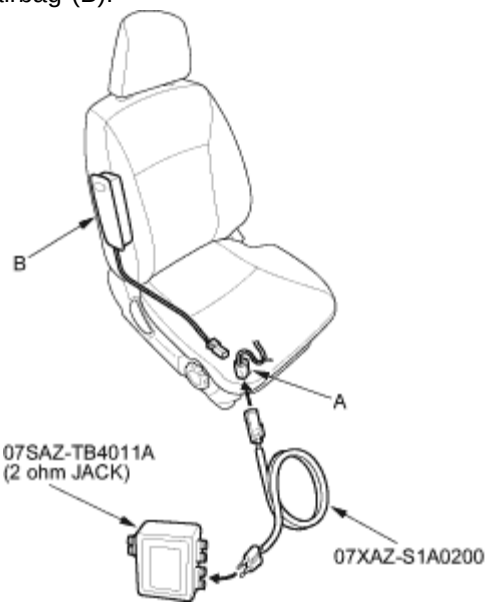
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
   4. Disconnect the SRi connector (A) from the right side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SRi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

Is DTC 12-5 indicated?

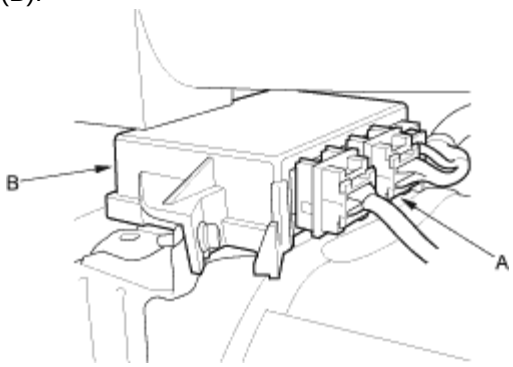
YES - Go to step 9.

NO - Short to ground in the right side airbag inflator, replace the right side airbag. ■

9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SLi connector (A) from the left side airbag (B).

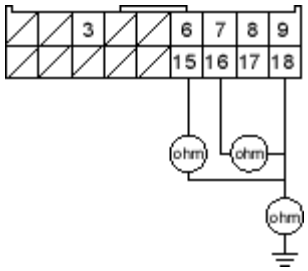


11. Disconnect the U2o connector (A) from the SRS unit (B).



12. Check resistance between the No. 15 and No. 18 terminals of the U2o connector, and between the No. 16 and No. 18 terminals of the U2o connector. Then check resistance between the No. 18 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 13-3: No Signal from the Driver's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Check the connection between the IDi connector and the driver's side impact sensor.

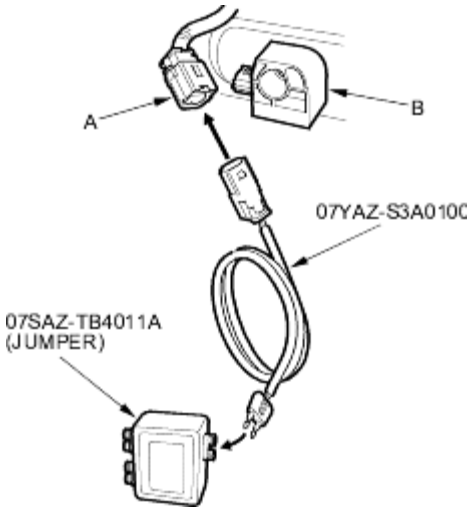
   Is the connection OK?

   YES - Go to step 5.

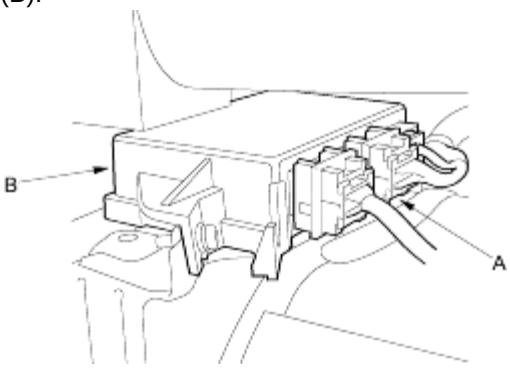
   NO - Poor contact between the IDi connector and the driver's side impact sensor; reconnect or replace the driver's side impact sensor. ■
3. 5. Disconnect the SDi and SPi connectors.



1. 6. Disconnect the IDi connector (A) from the driver's side impact sensor (B).



2. 7. Connect the special tool (Jumper) to the IDi connector.
   8. Disconnect the U2o connector (A) from the SRS unit (B).

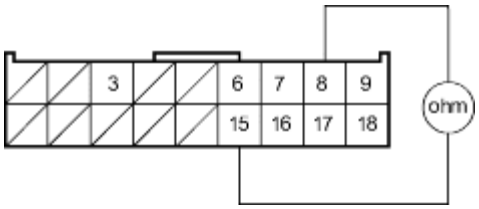


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 9. Check resistance between the No. 8 and No. 15 terminals of the U2o connector. There should be 0 - 1.0 ohm.

U2o CONNECTOR



Wire side of female connectors

Is the resistance as specified?

YES - Faulty driver's side impact sensor or SRS unit; replace the driver's side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Open in the floor wire harness; replace the floor wire harness. ■

DTC 13-4: Faulty Power Supply to the Driver's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi and SPi connectors.

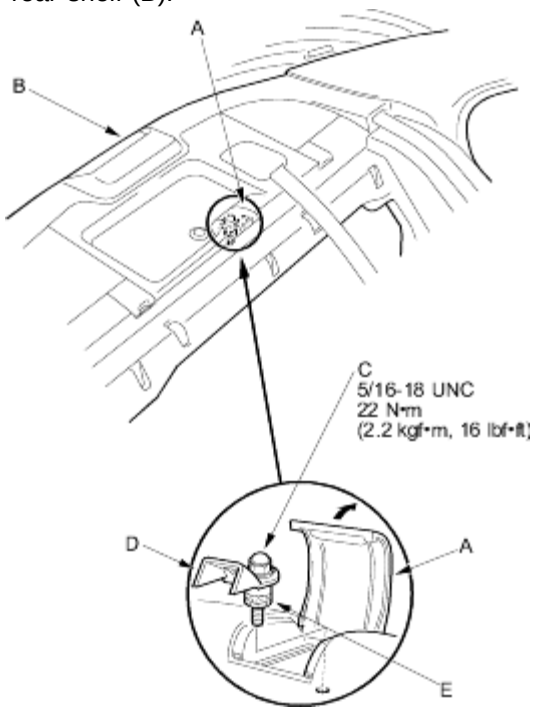


Seat Belts

Child Seat Tether Anchor Fitting Replacement

KQ model

1. 1. Open the tether anchor cap (A) on the middle of the rear shelf (B).

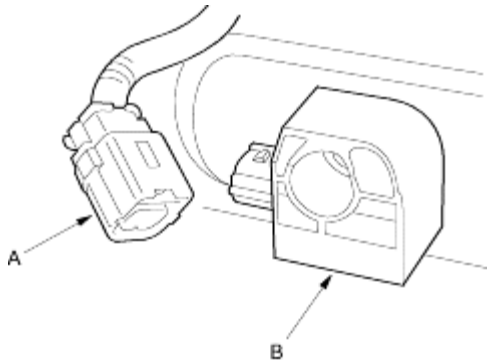


2. 2. Remove the anchor bolt (C), then remove the child seat tether anchor fitting (D). Do not remove the toothed washer (E) from the tether anchor fitting. Take care not to scratch the rear shelf.
   3. Install the tether anchor fitting in the reverse order of removal.

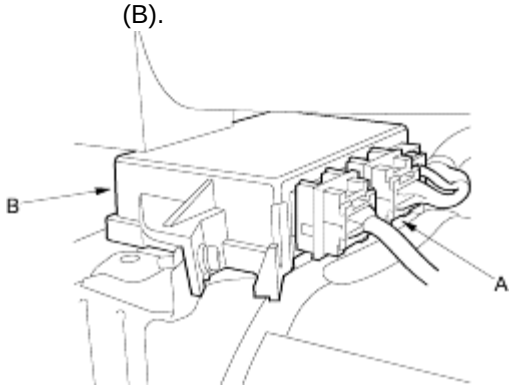
SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 5. Disconnect the IDi connector (A) from the driver's side impact sensor (B).

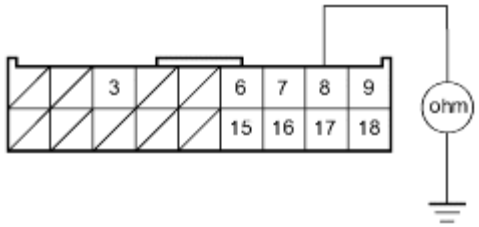


2. 6. Disconnect the U2o connector (A) from the SRS unit (B).



1. 7. Check resistance between the No. 8 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

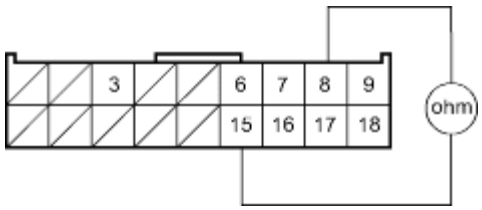
Is the resistance as specified?

YES - Go to step 8.

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

2. 8. Check resistance between the No. 8 and No. 15 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty driver's side impact sensor or SRS unit; replace the driver's side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Short in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 13-3: No Signal from the Left Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Check the connection between the ILi connector and the left side impact sensor.

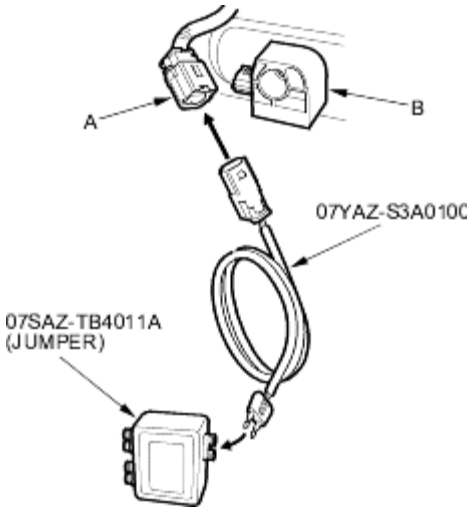
   Is the connection OK?

   YES - Go to step 5.

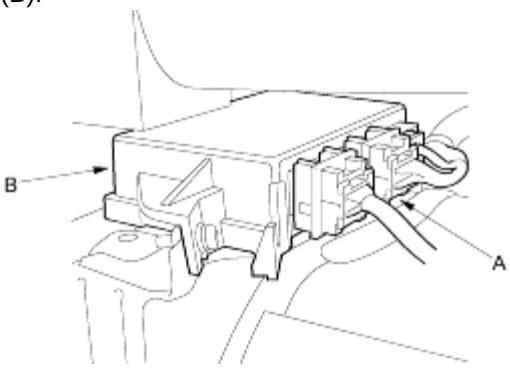
   NO - Poor contact between the ILi connector and the left side impact sensor; reconnect or replace the left side impact sensor. ■
3. 5. Disconnect the SLi and SRi connectors.



1. 6. Disconnect the ILi connector (A) from the left side impact sensor (B).



2. 7. Connect the special tool (Jumper) to the ILi connector.
   8. Disconnect the U2o connector (A) from the SRS unit (B).

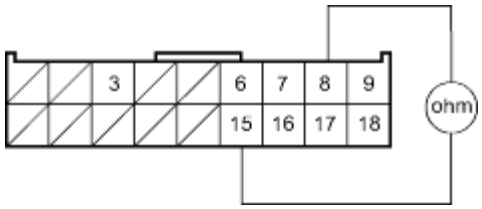


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 9. Check resistance between the No. 8 and No. 15 terminals of the U2o connector. There should be 0 - 1.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty left side impact sensor or SRS unit; replace the left side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Open in the floor wire harness; replace the floor wire harness. ■

DTC 13-4: Faulty Power Supply to the Left Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

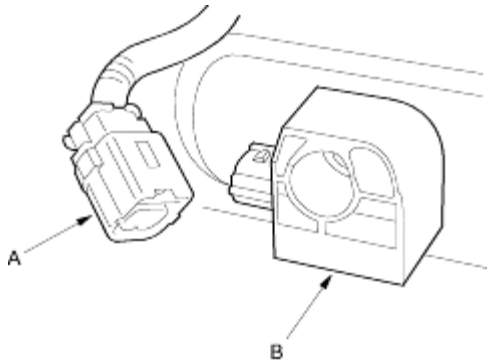
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi and SRi connectors.



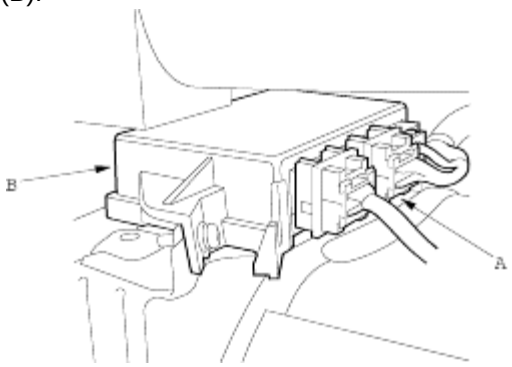
SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 5. Disconnect the ILi connector (A) from the left side impact sensor (B).

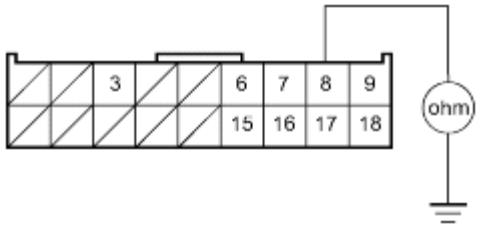


2. 6. Disconnect the U2o connector (A) from the SRS unit (B).



1. 7. Check resistance between the No. 8 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

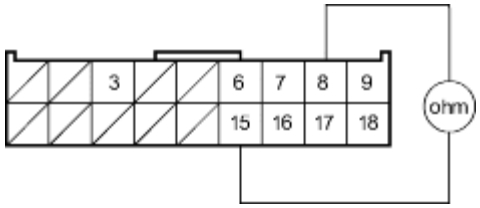
Is the resistance as specified?

YES - Go to step 8.

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

2. 8. Check resistance between the No. 8 and No. 15 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty left side impact sensor or SRS unit; replace the left side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Short in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 14-3: No Signal from the Front Passenger's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Check the connection between the IPi connector and the front passenger's side impact sensor.

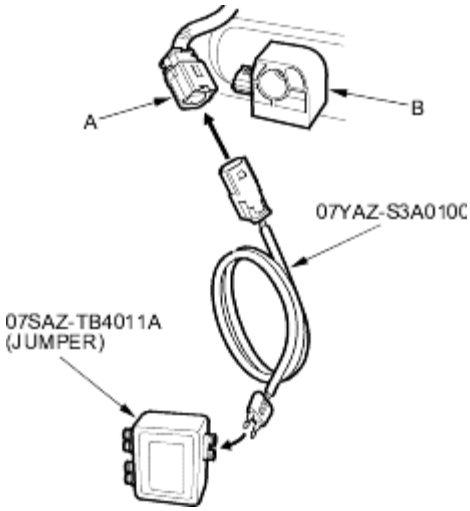
   Is the connection OK?

   YES - Go to step 5.

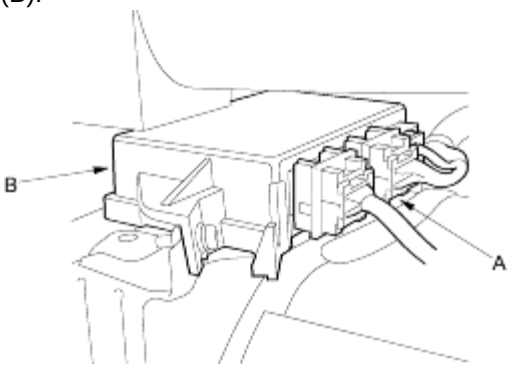
   NO - Poor contact between the IPi connector and the front passenger's side impact sensor; reconnect or replace the front passenger's side impact sensor. ■
3. 5. Disconnect the SDi and SPi connectors.



1. 6. Disconnect the IPi connector (A) from the front passenger's side impact sensor (B).



2. 7. Connect the special tool (Jumper) to the IPi connector.
   8. Disconnect the U2o connector (A) from the SRS unit (B).

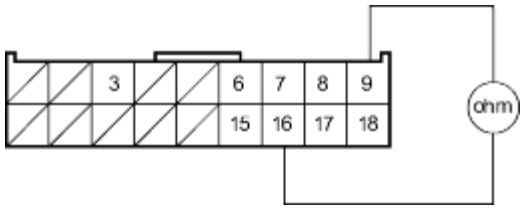


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 9. Check resistance between the No. 9 and No. 16 terminals of the U2o connector. There should be 0 - 1.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty front passenger's side impact sensor or SRS unit; replace the front passenger's side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Open in the floor wire harness; replace the floor wire harness. ■

DTC 14-4: Faulty Power Supply to the Front Passenger's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

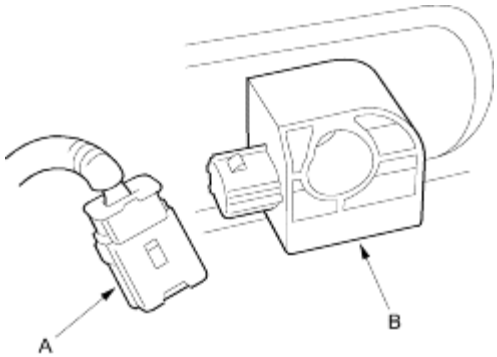
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi and SPi connectors.



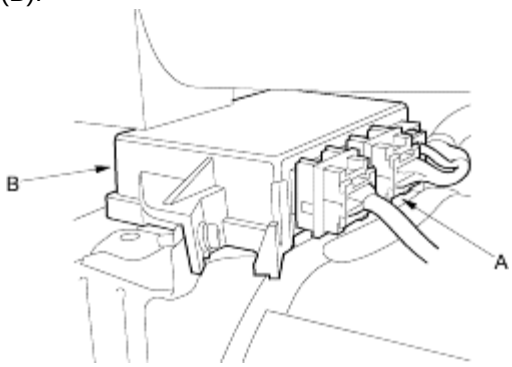
SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 5. Disconnect the IPi connector (A) from the front passenger's side impact sensor (B).

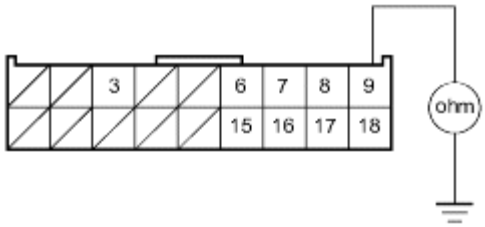


2. 6. Disconnect the U2o connector (A) from the SRS unit (B).



1. 7. Check resistance between the No. 9 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

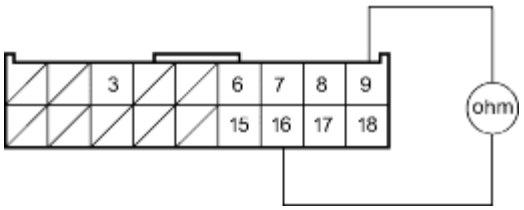
Is the resistance as specified?

YES - Go to step 8.

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

2. 8. Check resistance between the No. 9 and No. 16 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty front passenger's side impact sensor or SRS unit; replace the front passenger's side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Short in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 14-3: No Signal from the Right Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Check the connection between the IRi connector and the right side impact sensor.

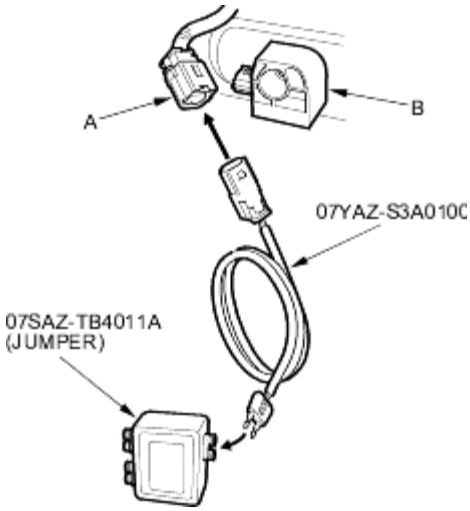
   Is the connection OK?

   YES - Go to step 5.

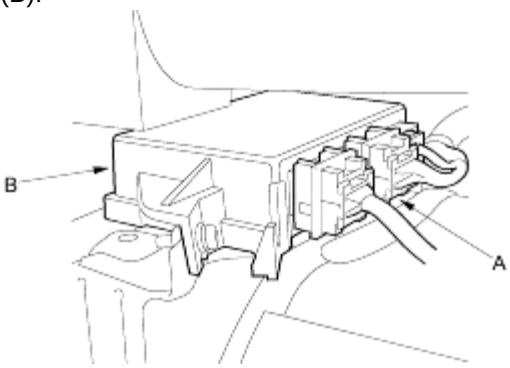
   NO - Poor contact between the IRi connector and the right side impact sensor; reconnect or replace the right side impact sensor. ■
3. 5. Disconnect the SLi and SRi connectors.



1. 6. Disconnect the IRi connector (A) from the right side impact sensor (B).



2. 7. Connect the special tool (Jumper) to the floor wire harness 2P connector.
   8. Disconnect the U2o connector (A) from the SRS unit (B).

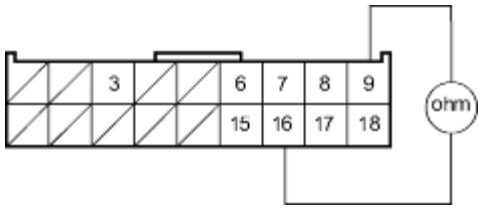


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 9. Check resistance between the No. 9 and No. 16 terminals of the U2o connector. There should be 0 - 1.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty right side impact sensor or SRS unit; replace the right side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Open in the floor wire harness; replace the floor wire harness. ■

DTC 14-4: Faulty Power Supply to the Right Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

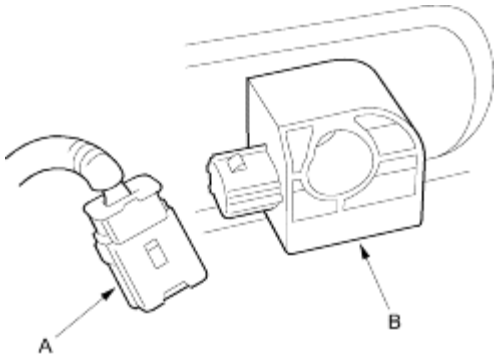
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SLi and SPi connectors.



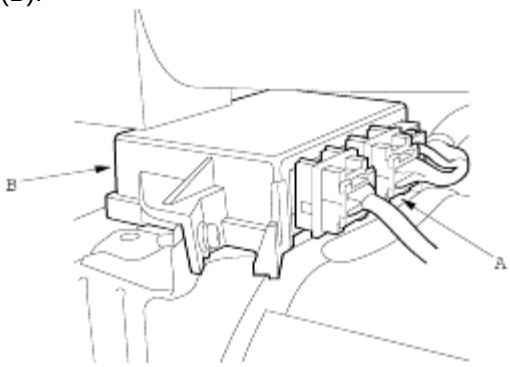
SRS

DTC Troubleshooting - with Side Airbags (cont'd)

5. Disconnect the IRi connector (A) from the right side impact sensor (B).

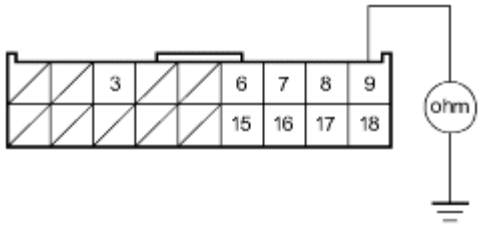


6. Disconnect the U2o connector (A) from the SRS unit (B).



7. Check resistance between the No. 9 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

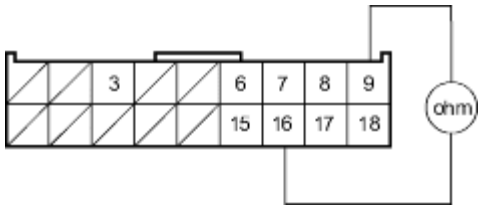
Is the resistance as specified?

YES - Go to step 8.

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

8. Check resistance between the No. 9 and No. 16 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty right side impact sensor or SRS unit; replace the right side impact sensor. If the problem is still present, replace the SRS unit. ■

NO - Short in the floor wire harness; replace the floor wire harness. ■

5-door Seat Belts

Component Location Index	23-14
Front Seat Belt Replacement	23-15
Rear Seat Belt Replacement	23-18
Inspection	23-20
Child Seat Tether Anchor Fitting Replacement	23-22

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 15-1: Faulty OPDS Unit

1. 1. Make sure nothing is sitting on the front passenger's seat.
   2. Initialise the OPDS unit (see page 23-39).
   3. Erase the DTC memory (see page 23-38).
   4. Read the DTC.

   Is DTC 15-1 indicated?

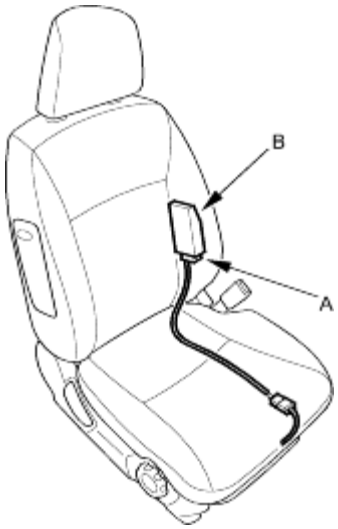
   YES - Go to step 5.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 5. Check the No. 9 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

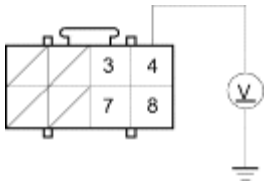
   YES - Go to step 6.

   NO - Go to step 9.
3. 6. Disconnect the O1i connector (A) from the OPDS unit (B).



4. 7. Turn the ignition switch ON (II).
1. 8. Check for voltage between the No. 4 terminal of the O1i connector and body ground. There should be battery voltage.

O1i CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 16.

NO - Open in the floor wire harness or in the OPDS unit harness; replace the faulty harness. ■

2. 9. Replace the No. 9 (10A) fuse in the under-dash fuse/relay box.
   10. Turn the ignition switch ON (II) for 30 seconds then turn it OFF.
   11. Check the No. 9 (10A) fuse in under-dash fuse/relay box.

   Is the fuse OK?

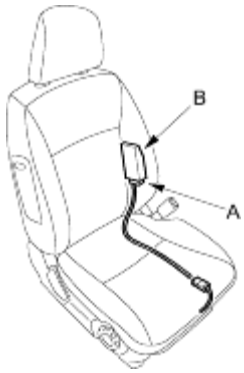
   YES - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

   NO - Go to step 12.
3. 12. Replace the No. 9 (10 A) fuse in the under-dash fuse/relay box.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 13. Disconnect the O1i connector (A) from the OPDS unit (B).



2. 14. Turn the ignition switch ON (II) for 30 seconds then turn it off.
   15. Check the No. 9 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

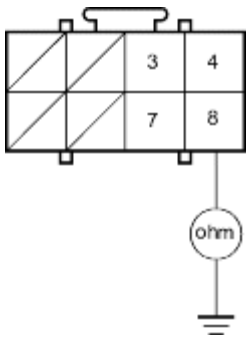
YES - Short to ground in the OPDS unit; replace the OPDS unit. ■

NO - Short to ground in the No. 9 (10A) circuit. ■

3. 16. Turn the ignition switch OFF.

1. 17. Check resistance between the No. 8 terminal of the O1i connector and body ground. There should be 0 - 1.0 ohm.

O1i CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Go to step 18.

NO - Open in the floor wire harness, OPDS unit harness, or poor ground (G551). If the G551 is OK, replace the faulty harness.

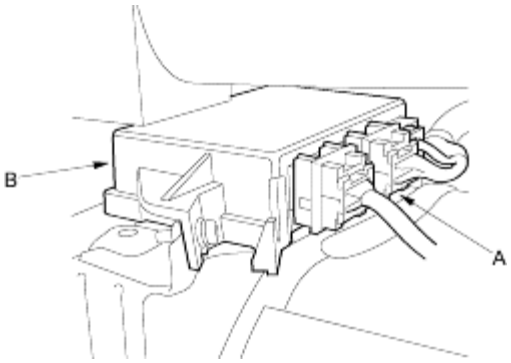
2. 18. Disconnect the battery negative cable and wait for 3 minutes.
   19. Disconnect the side airbag connectors (A).



SRS

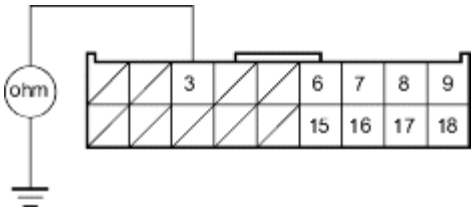
DTC Troubleshooting - with Side Airbags (cont'd)

1. 20. Disconnect the U2o connector (A) from the SRS unit (B).



2. 21. Check resistance between the No. 3 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

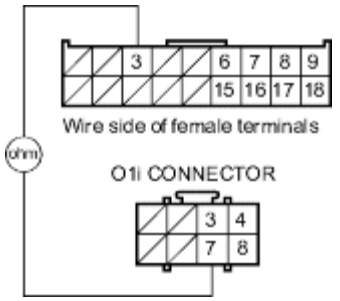
Is the resistance as specified?

YES - Go to step 22.

NO - Short to ground in the floor wire harness or in the OPDS unit harness; replace the faulty harness. ■

1. 22. Check resistance between the No. 3 terminal of the U2o connector and the No. 7 terminal of the O1i connector. There should be 0 - 1.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

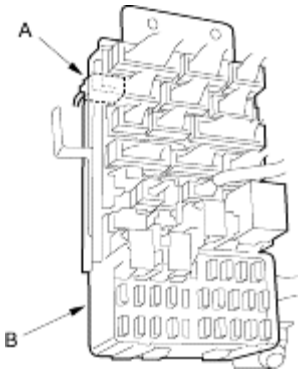
YES - Go to step 23.

NO - Open in the floor wire harness or in the OPDS unit harness; replace the faulty harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

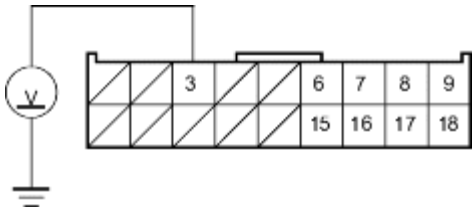
1. 23. Disconnect the F1o connector (A) from the under-dash fuse/relay box (B).



2. 24. Reconnect the negative battery cable.
25. Turn the ignition switch ON (II).

1. 26. Check for voltage between the No. 3 terminal of the U2o connector and body ground. There should be 0.5 V or less.

U2o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Faulty OPDS unit or SRS unit. Replace the OPDS unit. If the problem is still present, replace the SRS unit. ■

NO - Short to power in the floor wire harness or in the OPDS unit harness; replace the faulty harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 15-2: Faulty Side Airbag Indicator Light Circuit (4-door Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Make sure nothing is sitting on the front passenger's seat.
   4. Turn the ignition switch ON (II), and check that the side airbag indicator light comes on.

   Does the side airbag indicator light come on?

   YES - Go to step 5.

   NO - Go to step 6.
3. 5. Make sure the side airbag indicator light comes on for 5 seconds and then goes off.

   Does the side airbag indicator light go off?

   YES - Faulty OPDS unit or SRS unit; replace the OPDS unit. If the problem is still present, replace the SRS unit. ■

   NO - Go to step 36.
4. 6. Turn the ignition switch OFF.
   7. Check the No. 19 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

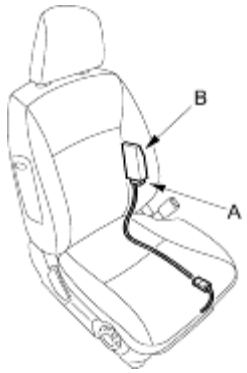
   YES - Go to step 8.

   NO - Short to ground in the No. 19 (7.5A) fuse circuit. ■
1. 8. Check for a blown side airbag indicator light.

   Is the side airbag indicator light OK?

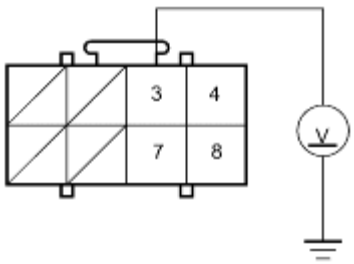
   YES - Go to step 9.

   NO - Blown side airbag indicator; replace the gauge assembly. ■
2. 9. Disconnect the O1i connector (A) from the OPDS unit (B).



3. 10. Turn the ignition switch ON (II).
   11. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be battery voltage.

O1i CONNECTOR



Wire side of female terminals

Is there battery voltage?

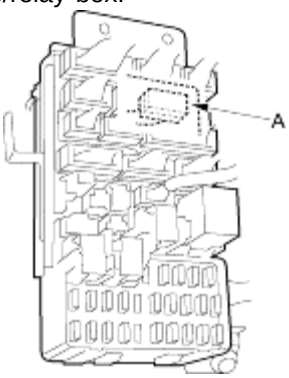
YES - Go to step 12.

NO - Go to step 24.

SRS

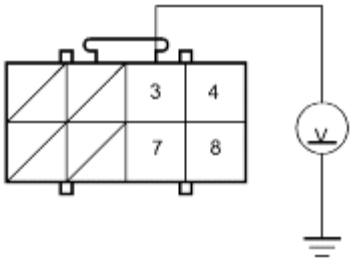
DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Turn the ignition switch OFF.
13. Disconnect the F3o connector (A) from the under-dash fuse/relay box.



2. 14. Turn the ignition switch ON (II).
15. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNECTOR



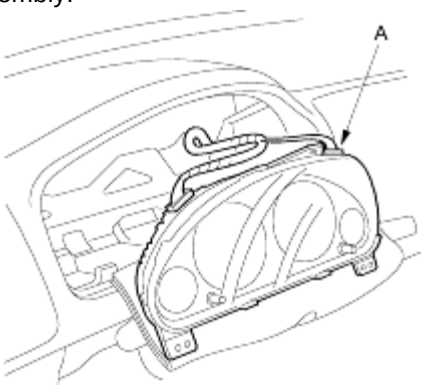
Wire side of female terminals

Is the voltage as specified?

YES - Faulty OPDS unit; replace the OPDS unit. ■

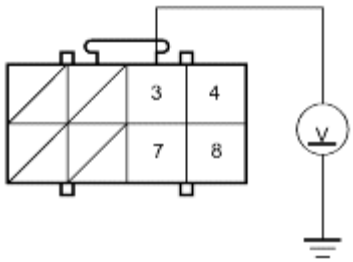
NO - Go to step 16.

1. 16. Turn the ignition switch OFF.
17. Disconnect the C2 connector (A) from the gauge assembly.



2. 18. Turn the ignition switch ON (II).
19. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNECTOR



Wire side of female terminals

Is the voltage as specified?

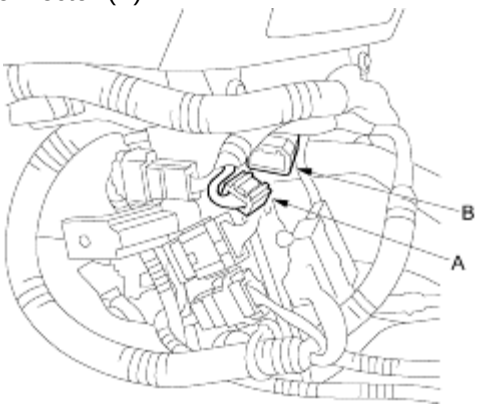
YES - Short to power in the gauge assembly; replace the gauge assembly. ■

NO - Go to step 20.

SRS

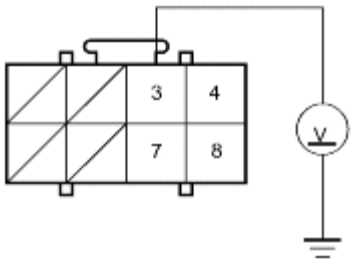
DTC Troubleshooting - with Side Airbags (cont'd)

1. 20. Turn the ignition switch OFF.
2. 21. Disconnect the C4 connector (A) from the C3 connector (B).



3. 22. Turn the ignition switch ON (II).
   23. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNECTOR



Wire side of female terminals

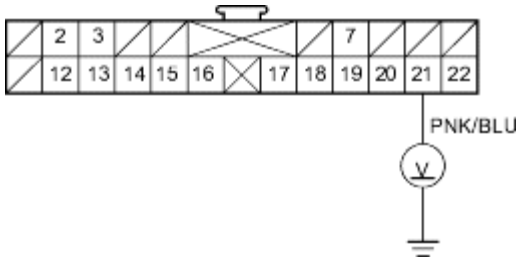
Is the voltage as specified?

YES - Short to power in dashboard wire harness A; replace dashboard wire harness A. ■

NO - Short to power in the floor wire harness or in the OPDS unit harness; if the OPDS unit harness is OK, replace the floor wire harness. ■

1. 24. Turn the ignition switch OFF.
   25. Backprobe the No. 21 terminal of the C2 connector. Do not disconnect the C2 connector from the gauge assembly.
   26. Turn the ignition switch ON (II).
   27. Check for voltage between the No. 21 terminal of C2 connector and body ground. There should be battery voltage.

C2 CONNECTOR



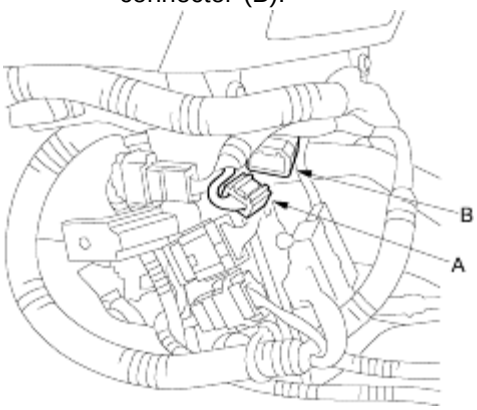
Wire side of female terminals

Is there battery voltage?

YES - Go to step 28.

NO - Go to step 32.

2. 28. Turn the ignition switch OFF.
   29. Disconnect the C4 connector (A) from the C3 connector (B).

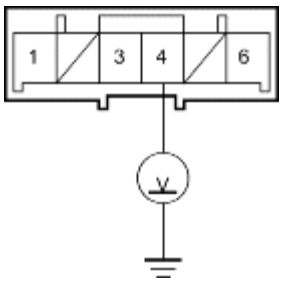


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 30. Turn the ignition switch ON (II).
2. 31. Check for voltage between the No. 4 terminal of the C3 connector and body ground. There should be battery voltage.

C3 CONNECTOR



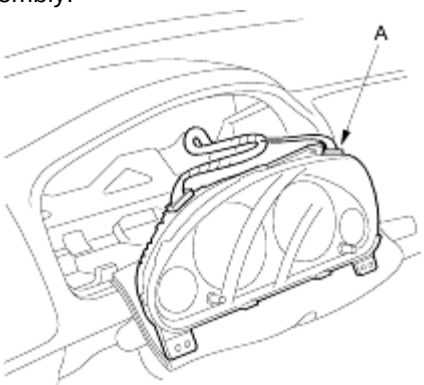
Wire side of female terminals

Is there battery voltage?

YES - Poor contact at C3 and C4 connectors or an open in floor wire harness or in the OPDS unit harness. Check the connection between the C3 and C4 connectors; if the connection is OK, replace the faulty harness. ■

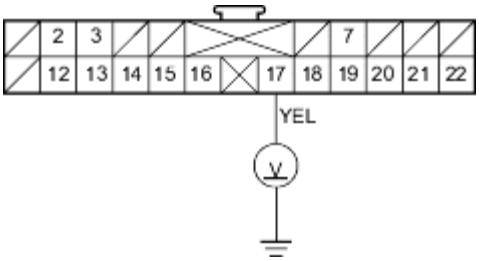
NO - Poor contact at C2 connector or an open in dashboard wire harness A. Check C2 connector; if the connections is OK, replace the dashboard wire harness A. ■

1. 32. Turn the ignition switch OFF.
2. 33. Disconnect the C2 connector (A) from the gauge assembly.



3. 34. Turn the ignition switch ON (II).
   35. Check for voltage between the No. 17 terminal of C2 connector and body ground. There should be battery voltage.

C2 CONNECTOR



Wire side of female terminals

Is there battery voltage?

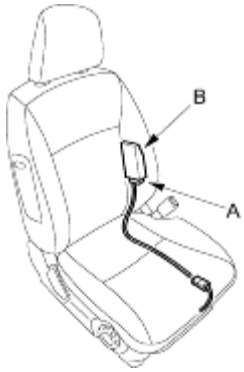
YES - Faulty side airbag indicator light circuit; replace the gauge assembly. ■

NO - Open in dashboard wire harness A; replace dashboard wire harness A. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 36. Turn the ignition switch OFF.
2. 37. Disconnect the O1i connector (A) from the OPDS unit (B).



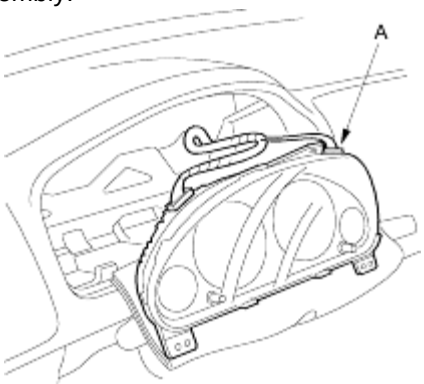
3. 38. Turn the ignition switch ON (II).

Does the side airbag indicator light come on?

YES - Go to step 39.

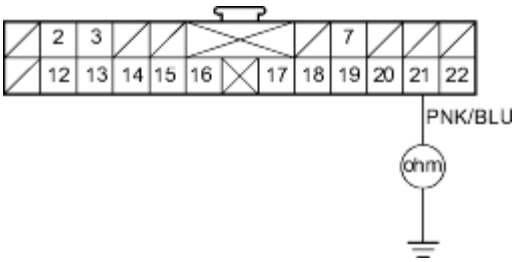
NO - Faulty OPDS unit; replace the OPDS unit. ■

4. 39. Turn the ignition switch OFF.
   40. Disconnect the C2 connector (A) from the gauge assembly.



1. 41. Check resistance between the No. 21 terminal of C2 connector and body ground. There should 1 M ohm or more.

C2 CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Short to ground in the side airbag indicator light circuit; replace the gauge assembly. ■

NO - Short to ground in dashboard wire harness A, floor wire harness or OPDS unit harness; replace the faulty harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 15-2: Faulty Side Airbag Indicator Light Circuit (5-door Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Make sure nothing is sitting on the front passenger's seat.
   4. Turn the ignition switch ON (II), and check that the side airbag indicator light comes on.

   Does the side airbag indicator light come on?

   YES - Go to step 5.

   NO - Go to step 6.
3. 5. Make sure the side airbag indicator light comes on for 5 seconds and then goes off.

   Does the side airbag indicator light go off?

   YES - Faulty OPDS unit or SRS unit; replace the OPDS unit. If the problem is still present, replace the SRS unit. ■

   NO - Go to step 36.
4. 6. Turn the ignition switch OFF.
   7. Check the No. 19 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

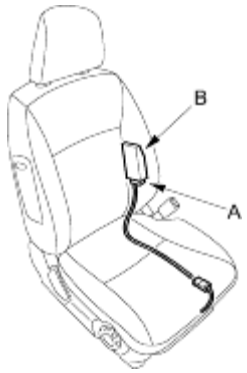
   YES - Go to step 8.

   NO - Short to ground in the No. 19 (7.5A) fuse circuit. ■
1. 8. Check for a blown side airbag indicator light.

   Is the side airbag indicator light OK?

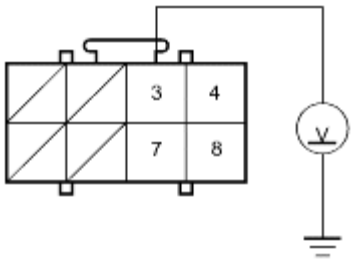
   YES - Go to step 9.

   NO - Blown side airbag indicator; replace the gauge assembly. ■
2. 9. Disconnect the O1i connector (A) from the OPDS unit (B).



3. 10. Turn the ignition switch ON (II).
   11. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be battery voltage.

O1i CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 24.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 15-2: Faulty Side Airbag Indicator Light Circuit (5-door Model)

1. Erase the DTC memory (see page 23-38).
2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.
NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

3. Make sure nothing is sitting on the front passenger's seat.
4. Turn the ignition switch ON (II), and check that the side airbag indicator light comes on.

Does the side airbag indicator light come on?

YES - Go to step 5.
NO - Go to step 6.

5. Make sure the side airbag indicator light comes on for 5 seconds and then goes off.

Does the side airbag indicator light go off?

YES - Faulty OPDS unit or SRS unit; replace the OPDS unit. If the problem is still present, replace the SRS unit. ■
NO - Go to step 36.

6. Turn the ignition switch OFF.
7. Check the No. 19 (7.5A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 8.
NO - Short to ground in the No. 19 (7.5A) fuse circuit. ■

8. Check for a blown side airbag indicator light.

Is the side airbag indicator light OK?

YES - Go to step 9.
NO - Blown side airbag indicator; replace the gauge assembly. ■

9. Disconnect the O1i connector (A) from the OPDS unit (B).

10. Turn the ignition switch ON (II).
11. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be battery voltage.

O1i CONNECTOR

Generate/help0301.gif

Wire side of female terminals

Is there battery voltage?

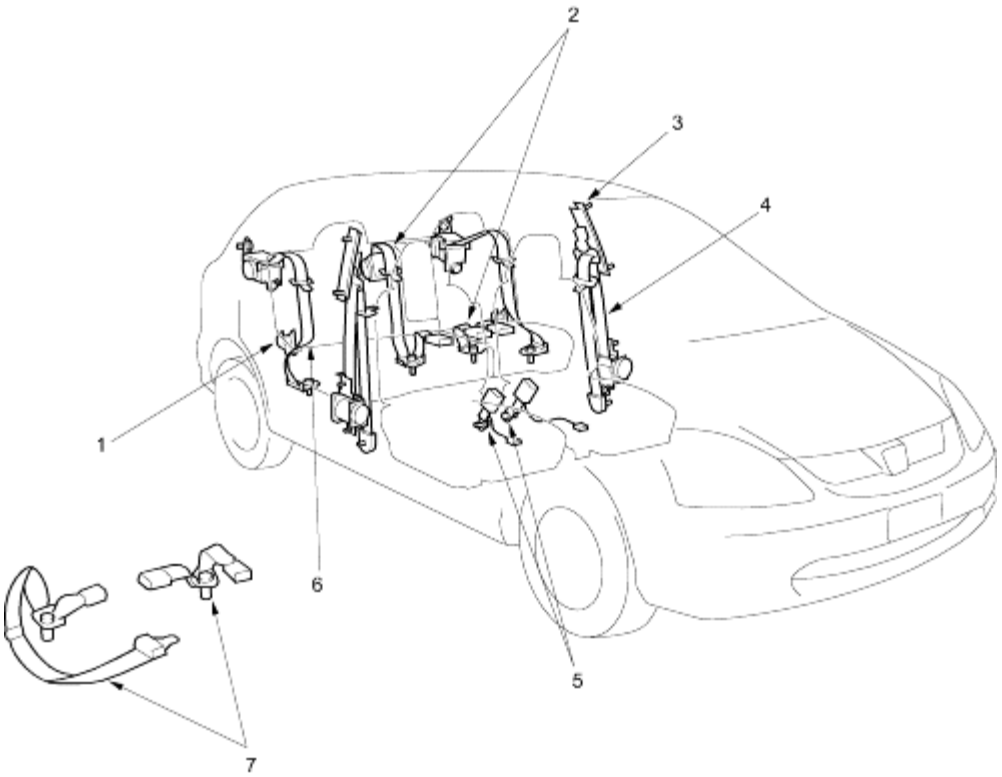
YES - Go to step 12.

NO - Go to step 24.

DTC Troubleshooting - with Side Airbags (cont'd)

Seat Belts

Component Location Index

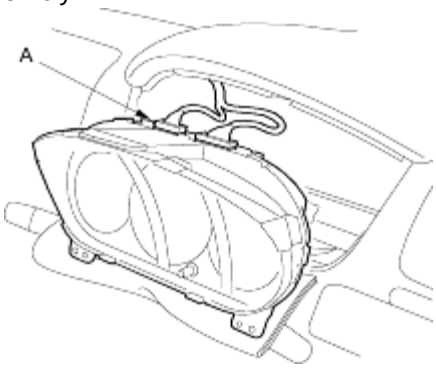


1. CHILD SEAT TETHER ANCHOR FITTING
2. Replacement, page 23-22REAR CENTRE BELT and REAR SEAT BELT BUCKLES
   (Rear centre shoulder belt)
   Step 1 on page 23-19
   Inspection, page 23-20
3. SHOULDER ANCHOR ADJUSTER
   Step 7 on page 23-16
4. FRONT SEAT BELT
   Replacement, page 23-15
   Inspection, page 23-20
5. FRONT SEAT BELT BUCKLES
6. Step 1 on page 23-17REAR SEAT BELT
   Replacement, page 23-18
   Inspection, page 23-20
7. REAR SEAT BELT and REAR SEAT BELT BUCKLES
   (Rear centre lap belt)
   Step 1 on page 23-19

SRS

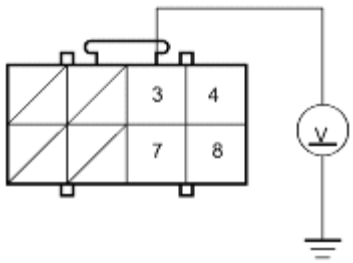
DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Turn the ignition switch OFF.
2. 13. Disconnect the C2 connector from the gauge assembly.



3. 14. Turn the ignition switch ON (II).
   15. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNECTOR



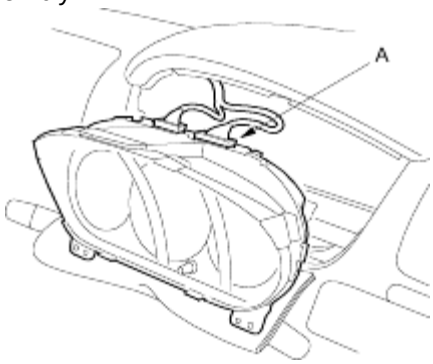
Wire side of female terminals

Is the voltage as specified?

YES - Faulty OPDS unit; replace the OPDS unit. ■

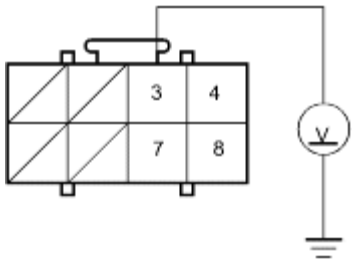
NO - Go to step 16.

1. 16. Turn the ignition switch OFF.
2. 17. Disconnect the C1 connector (A) from the gauge assembly.



3. 18. Turn the ignition switch ON (II).
   19. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNECTOR



Wire side of female connectors

Is the voltage as specified?

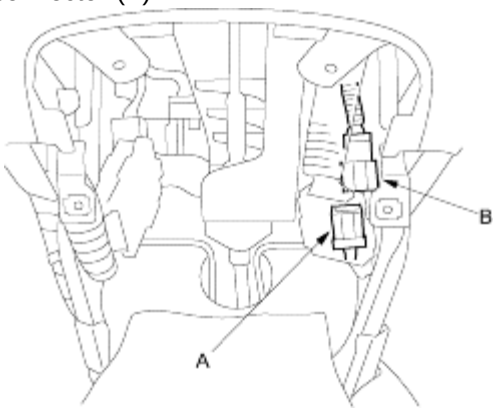
YES - Short to power in the gauge assembly; replace the gauge assembly. ■

NO - Go to step 20.

SRS

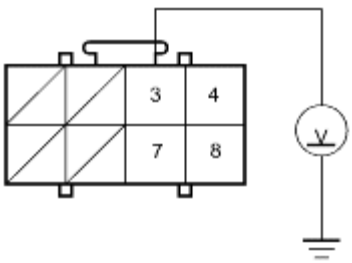
DTC Troubleshooting - with Side Airbags (cont'd)

1. 20. Turn the ignition switch OFF.
2. 21. Disconnect the C4 connector (A) from the C3 connector (B).



3. 22. Turn the ignition switch ON (II).
   23. Check for voltage between the No. 3 terminal of the O1i connector and body ground. There should be 0.5 V or less.

O1i CONNE0CTOR



Wire side of female terminals

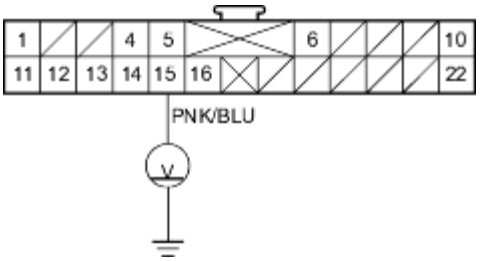
Is the voltage as specified?

YES - Short to power in dashboard wire harness A; replace dashboard wire harness A. ■

NO - Short to power in the floor wire harness or in the OPDS unit harness; if the OPDS unit harness is OK, replace the floor wire harness. ■

1. 24. Turn the ignition switch OFF.
2. 25. Backprobe the No. 21 terminal of the C1 connector. Do not disconnect the C1 connector from the gauge assembly.
   26. Turn the ignition switch ON (II).
   27. Check for voltage between the No. 15 terminal of C1 connector and body ground. There should be battery voltage.

C1 CONNECTOR



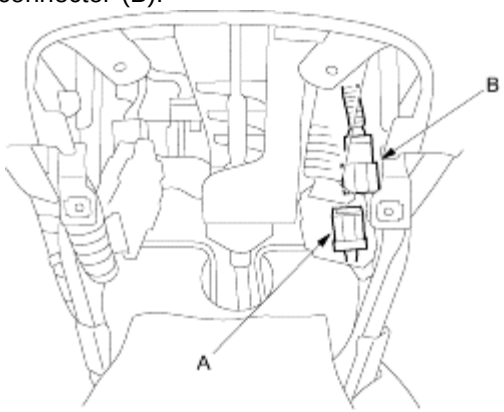
Wire side of female terminals

Is there battery voltage?

YES - Go to step 28.

NO - Go to step 32.

3. 28. Turn the ignition switch OFF.
   29. Disconnect the C4 connector (A) from the C3 connector (B).

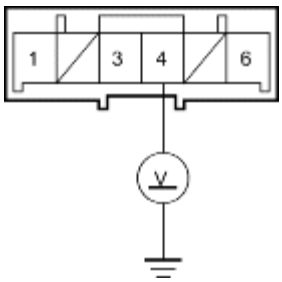


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 30. Turn the ignition switch ON (II).
2. 31. Check for voltage between the No. 4 terminal of the C3 connector and body ground. There should be battery voltage.

C3 CONNECTOR



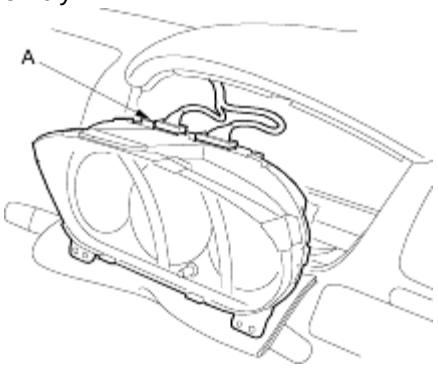
Wire side of female terminals

Is there battery voltage?

YES - Poor contact at C3 and C4 connectors or an open in floor wire harness or in the OPDS unit harness. Check the connection between the C3 and C4 connectors; if the connection is OK, replace the faulty harness. ■

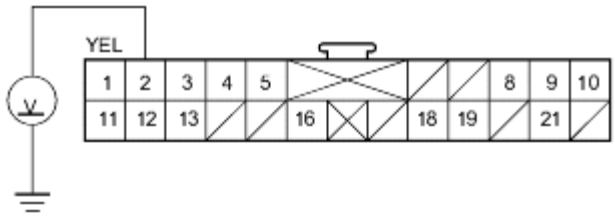
NO - Poor contact at C1 connector or an open in dashboard wire harness A. Check C1 connector; if the connection is OK, replace the dashboard wire harness A. ■

1. 32. Turn the ignition switch OFF.
2. 33. Disconnect the C2 connector (A) from the gauge assembly.



3. 34. Turn the ignition switch ON (II).
   35. Check for voltage between the No. 2 terminal of C2 connector and body ground. There should be battery voltage.

C2 CONNECTOR



Wire side of female terminals

Is there battery voltage?

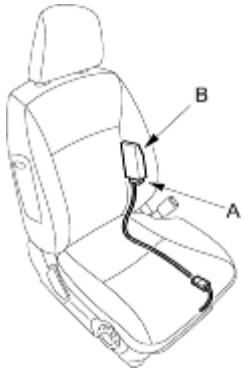
YES - Faulty side airbag indicator light circuit; replace the gauge assembly. ■

NO - Open in dashboard wire harness A; replace dashboard wire harness A. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 36. Turn the ignition switch OFF.
2. 37. Disconnect the O1i connector (A) from the OPDS unit (B).



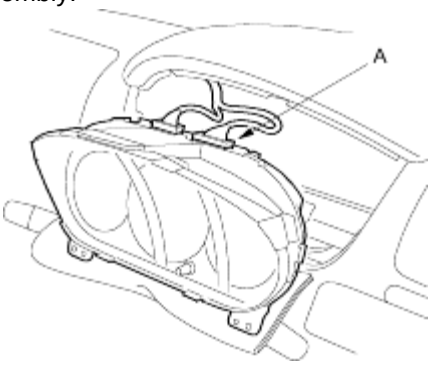
3. 38. Turn the ignition switch ON (II).

Does the side airbag indicator light come on?

YES - Go to step 39.

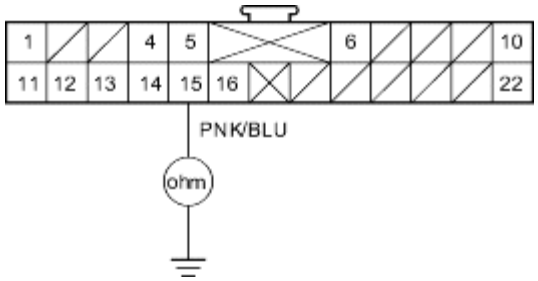
NO - Faulty OPDS unit; replace the OPDS unit. ■

4. 39. Turn the ignition switch OFF.
   40. Disconnect the C1 connector (A) from the gauge assembly.



1. 41. Check resistance between the No. 15 terminal of C1 connector and body ground. There should 1 M ohm or more.

C1 CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Short to ground in the side airbag indicator light circuit; replace the gauge assembly. ■

NO - Short to ground in dashboard wire harness A, floor wire harness or OPDS unit harness; replace the faulty harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

DTC 15-3: Faulty OPDS Sensor

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Check the connection at the OPDS sensor harness connector and the OPDS unit connector.

   Are the connections OK?

   YES - Go to step 4.

   NO - Reconnect the OPDS sensor harness connector and clear the DTC. ■
3. 4. Replace the OPDS sensor/seat back foam (see page 20-92), and reinitialise the OPDS system (see page 23-33).
   5. Erase the DTC memory.
   6. Read the DTC.

   Is DTC 15-3 indicated?

   YES - Go to step 7.

   NO - System is OK. ■
1. 7. Replace the OPDS unit (see page 23-178) and reinitialise the OPDS system.
2. 8. Erase the DTC memory.
   9. Read the DTC.

   Is DTC 15-3 indicated?

   YES - Replace the SRS unit. ■

   NO - System is OK. ■

SRS

SRS Indicator Light Circuit Troubleshooting

The SRS Indicator Light Does not Come On (4-door Model)

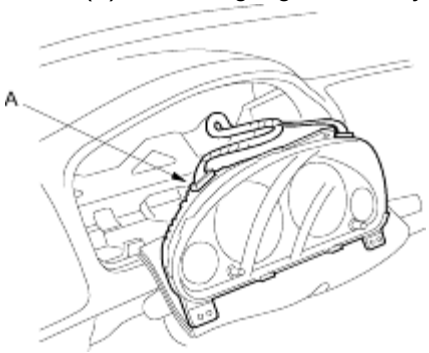
1. 1. Turn the ignition switch ON (II), and check to see if the other indicator lights come on (brake system, etc).

Do the other indicator lights come on?

YES - Go to step 2.

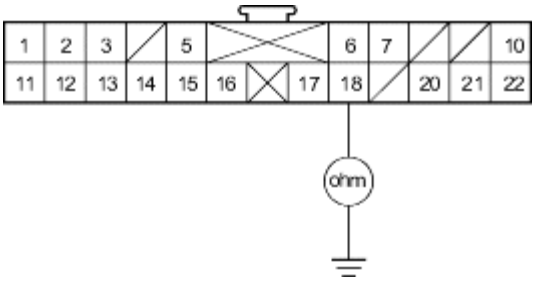
NO - Go to step 8.

2. 2. Turn the ignition switch OFF, then disconnect the C1 connector (A) from the gauge assembly.



3. 3. Check resistance between the No. 18 terminal of C1 connector and body ground. There should be 0 - 1.0 ohm.

C1 CONNECTOR



Wire side of female terminals

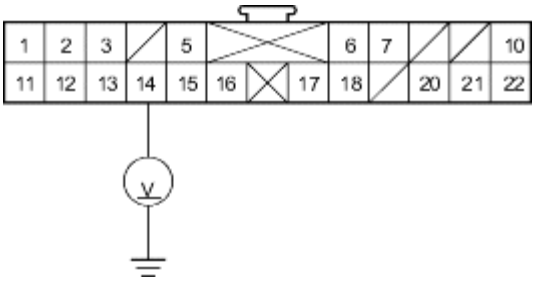
Is resistance as specified?

YES - Go to step 4.

NO - Open in the BLK wire of dashboard wire harness A or faulty body ground terminal (G501). If the body ground terminal is OK, replace dashboard wire harness A. ■

1. 4. Check for voltage between the No. 14 terminal of C1 connector and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be 8.5 V or less.

C1 CONNECTOR



Wire side of female terminals

Is voltage as specified?

YES - Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly. ■

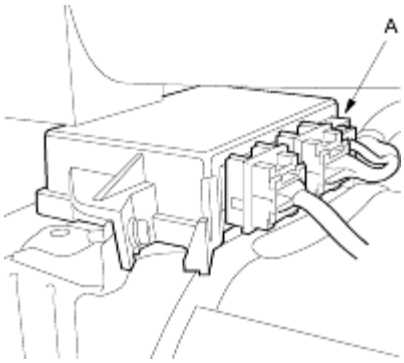
NO - Go to step 5.

2. 5. Turn the ignition switch OFF.

SRS

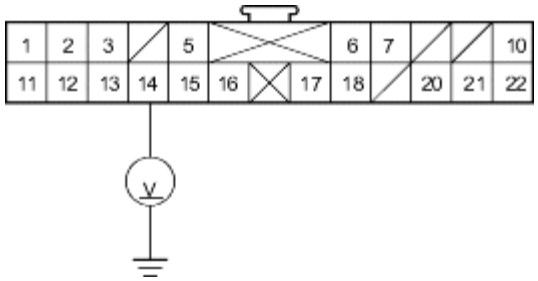
SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 6. Disconnect the U3o connector (A) from the SRS unit.



2. 7. Connect a voltmeter between the No. 14 terminal (+) of C1 connector and body ground. Turn the ignition switch ON (II) and measure voltage. There should be 0.5 V or less.

C1 CONNECTOR



Wire side of female terminals

Is voltage as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the PNK wire of dashboard wire harness A or in the floor wire harness; replace the faulty harness. ■

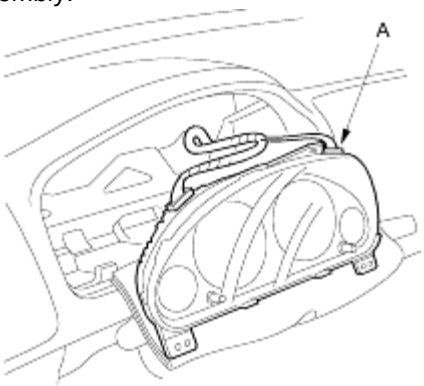
1. 8. Turn the ignition switch OFF. Check the No. 19 (7.5A) fuse in the under-dash fuse/relay box.

Did fuse No. 19 (7.5A) blow?

YES - Go to step 11.

NO - Go to step 9.

2. 9. Disconnect the C2 connector (A) from the gauge assembly.

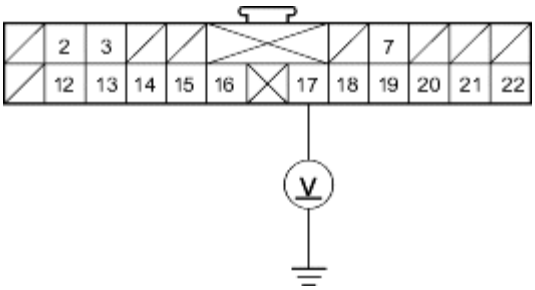


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 10. Connect a voltmeter between the No. 17 terminal (+) of C2 connector and body ground. Turn the ignition switch ON (II) and measure voltage. There should be battery voltage.

C2 CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Faulty SRS indicator light circuit in the gauge assembly or poor contact at C2 connector and the gauge assembly; if the connection is OK, replace the gauge assembly. ■

NO - Open in the under-dash fuse/relay box No. 19 (7.5A) fuse line, or open in the YEL wire of dashboard wire harness A. If the under-dash fuse/relay box is OK, replace the faulty harness. ■

1. 11. Replace the No. 19 (7.5A) fuse, and check to see if the SRS indicator light comes on.

Does the SRS indicator light come on?

YES - The system is OK at this time. ■

NO - Short to ground in the under-dash fuse/relay box No. 19 (7.5A) fuse line. ■

SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

The SRS Indicator Light Stays On After the Ignition Switch is Turned ON (II) (4-door Model)

1. 1. Erase the DTC memory (see page 23-38).

Does the SRS indicator light go off while the DTC memory is erased?

YES - Go to step 42.

NO - Go to step 2.

2. 2. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 19.

NO - Go to step 3.

3. 3. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   4. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   5. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - The system is OK at this time. ■

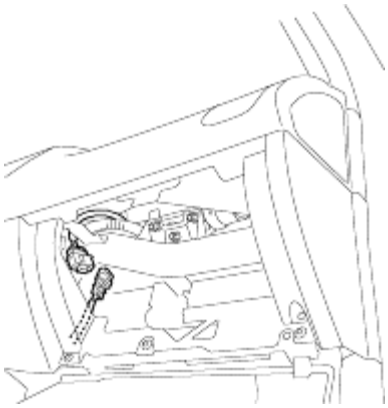
NO - Go to step 6.

4. 6. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   7. Disconnect the battery negative cable and wait for 3 minutes.

1. 8. Disconnect the D1o connector.



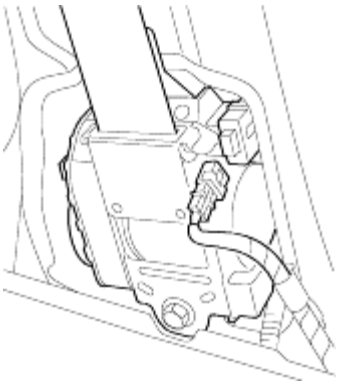
2. 9. Disconnect the P1o connector.



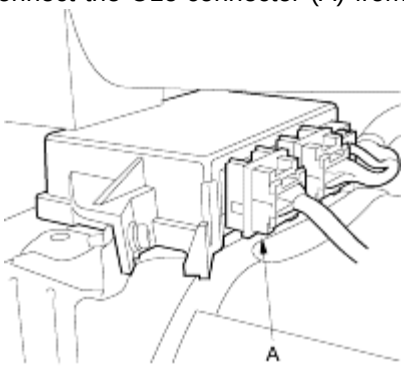
SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 10. Disconnect the TL1o and TR1o connectors.



2. 11. Disconnect the U1o connector (A) from the SRS unit.



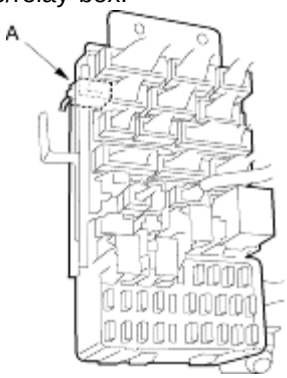
1. 12. Reconnect the negative battery cable.
2. 13. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   14. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Short to ground in the SRS unit; replace the SRS unit. ■

NO - Go to step 15.

3. 15. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   16. Disconnect the F1o connector (A) from the under-dash fuse/relay box.



4. 17. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   18. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Short to ground in the dashboard wire harness B; replace the dashboard wire harness B. ■

NO - Short to ground in the under-dash fuse/relay box No. 13 (10A) fuse line; replace the under-dash fuse/relay box or repair it. ■

Seat Belts

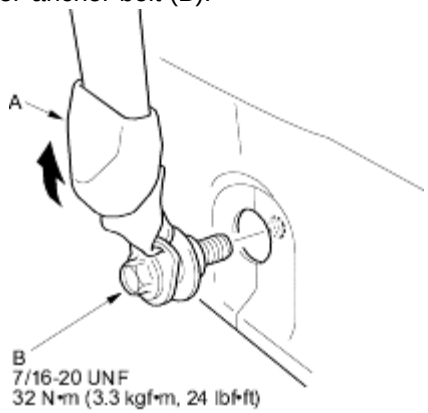
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-24), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE: Check the front seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

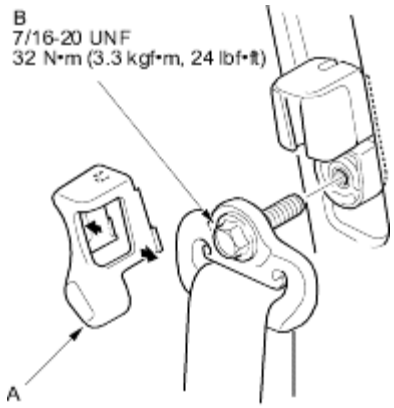
Front Seat Belt

1. 1. Disconnect the negative battery cable and wait at least 3 minutes before beginning work.
   2. Slide the front seat forward fully.
   3. Pull the lower anchor cover (A) back and remove the lower anchor bolt (B).

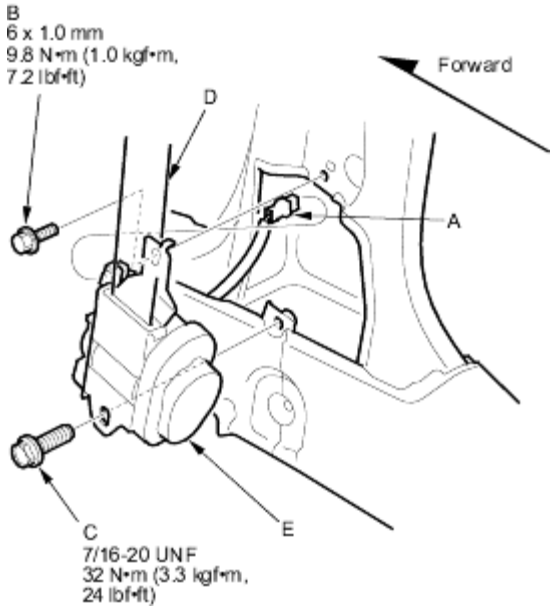


2. 4. Remove the centre pillar lower trim (see page 20-206).

1. 5. Remove the upper anchor cover (A) and remove the upper anchor bolt (B).



2. 6. Disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).



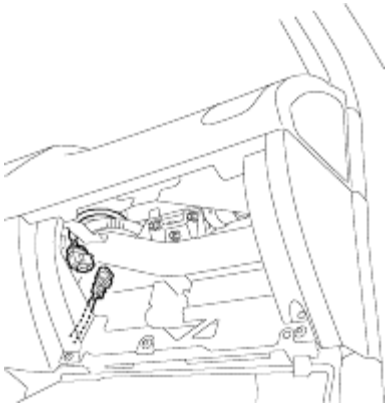
SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

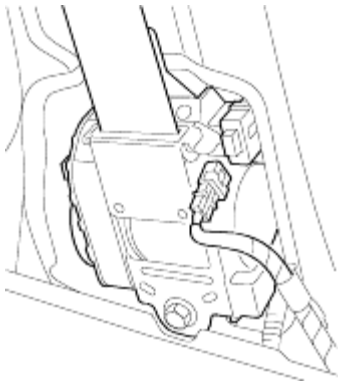
1. 19. Disconnect the battery negative cable and wait for 3 minutes.
2. 20. Disconnect the D1o connector.



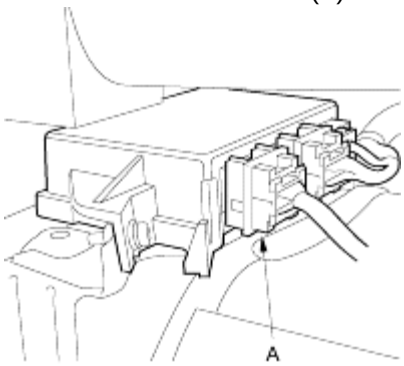
3. 21. Disconnect the P1o connector.



1. 22. Disconnect the TL1o and TR1o connectors.



2. 23. Disconnect the U1o connector (A) from the SRS unit.

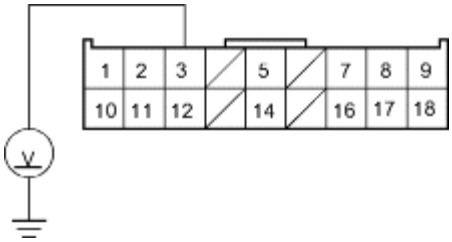


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 24. Reconnect the battery negative cable.
2. 25. Connect a voltmeter between the No. 3 terminal (+) of U1o connector and body ground. Turn the ignition switch ON (II) and measure voltage. There should be battery voltage.

U1o CONNECTOR



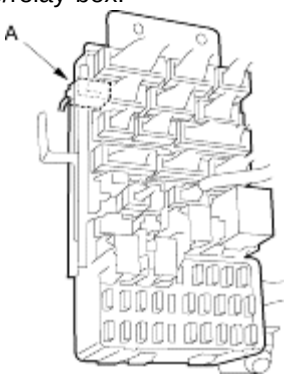
Wire side of female terminals

Is there battery voltage?

YES - Go to step 29.

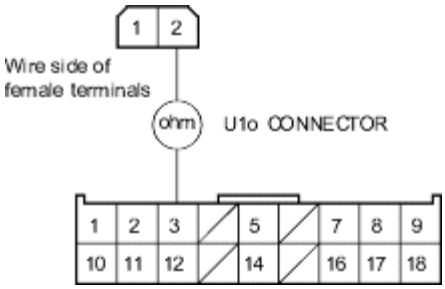
NO - Go to step 26.

3. 26. Turn the ignition switch OFF.
   27. Disconnect the F1o connector (A) from the under-dash fuse/relay box.



1. 28. Check resistance between the No. 3 terminal of the U1o connector and the No. 2 terminal of the F1o connector. There should be 0 - 1.0 ohm.

F1o CONNECTOR



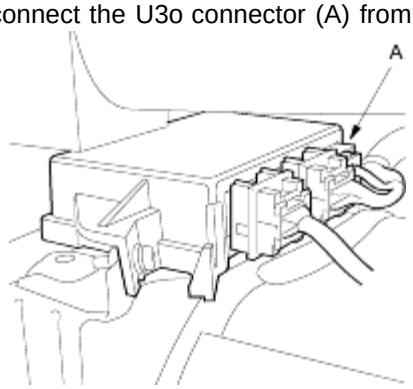
Wire side of female terminals

Is the resistance as specified?

YES - Open in the under-dash fuse/relay box or poor contact at the F1o connector; check the connection. If the connection is OK, replace the under-dash fuse/relay box. ■

NO - Open in dashboard wire harness B; replace the dashboard wire harness B. ■

2. 29. Turn the ignition switch OFF.
   30. Disconnect the U3o connector (A) from the SRS unit.

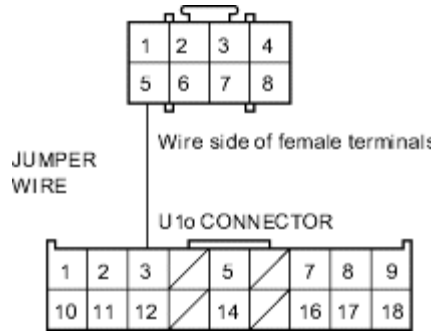


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 31. Connect the No. 3 terminal of the U1o connector and the No. 5 terminal of the U3o connector with a jumper wire.

U3o CONNECTOR



Wire side of female terminals

2. 32. Turn the ignition switch ON (II).
   33. Check the SRS indicator light.

Does the SRS indicator light go off?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Go to step 34.

3. 34. Turn the ignition switch OFF.
   35. Disconnect the jumper wire between the No. 3 terminal of the U1o connector and the No. 5 terminal of the U3o connector.
   36. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

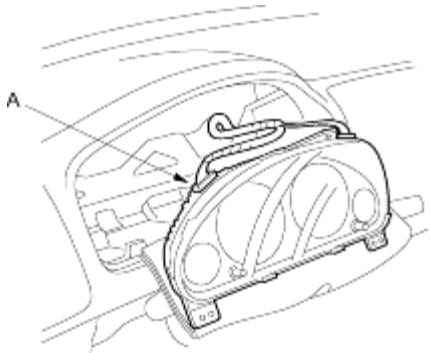
Is the fuse OK?

YES - Go to step 40.

NO - Go to step 37.

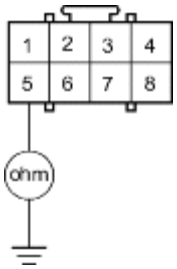
4. 37. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.

1. 38. Disconnect the C1 connector (A) from the gauge assembly.



2. 39. Check resistance between the No. 5 terminal of the U3o connector and body ground. There should be 1 M ohm or more.

U3o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

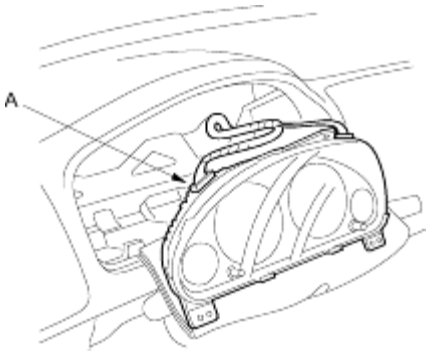
YES - Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly. ■

NO - Short to ground in the floor wire harness or in dashboard wire harness A; replace the faulty harness. ■

SRS

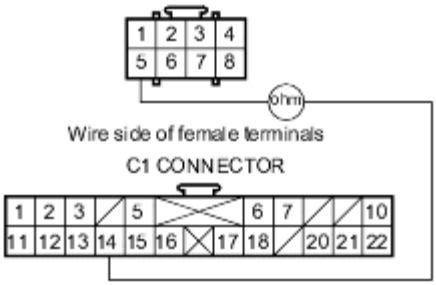
SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 40. Disconnect the C1 connector (A) from the gauge assembly.



2. 41. Check resistance between the No. 14 terminal of C1 connector and the No. 5 terminal of the U3o connector. There should be 1 ohm or less.

U3o CONNECTOR

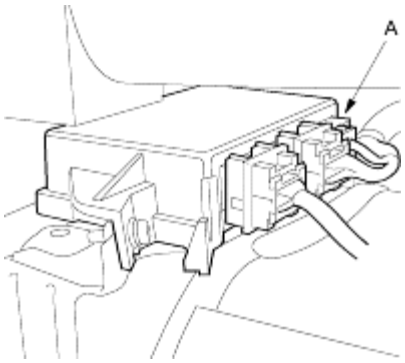


Is the resistance as specified?

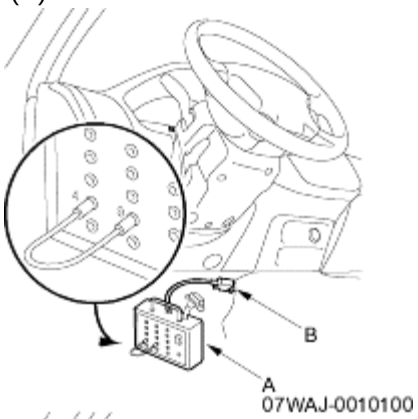
YES - Faulty SRS indicator light circuit in the gauge assembly or poor contact at the C1 connector; Check the connection. If the connection is OK, replace the gauge assembly. ■

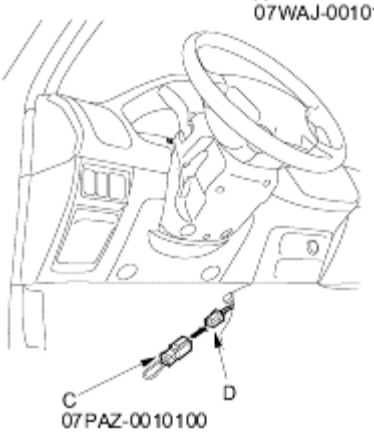
NO - Open in the floor wire harness or in dashboard wire harness A; replace the faulty harness. ■

1. 42. Disconnect the U3o connector (A) from the SRS unit.



2. 43. Connect the DLC terminal box (A) to the Data Link Connector (DLC) 16P (B).Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire, and push the operation switch or connect the SCS short connector (C) to the service check connector (2P) (D).



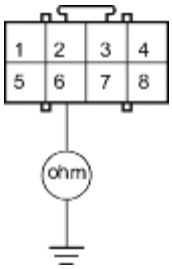


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 44. Check resistance between the No. 6 terminal of the U3o connector and body ground. There should be 0 - 1.0 ohm.

U3o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U3o connector; check the connection at the U3o connector and the SRS unit. If the connection is OK, replace the SRS unit. ■

NO - Open in the SCS line between the No. 6 terminal of U3o connector and the No. 9 terminal (brown wire) of the Data Link connector (DLC) (16P) or open between the No. 4 terminal of the Data Link Connector (DLC) and body ground or open in the SCS line between the No. 6 terminal of the U3o connector and the No. 1 terminal (brown wire) of the service check connector (2P) or open between the No. 2 terminal of the service check connector (2P) and body ground; refer to the "Electrical" section, then continue troubleshooting. ■

SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

The SRS Indicator Light Does not Come On (5-door Model)

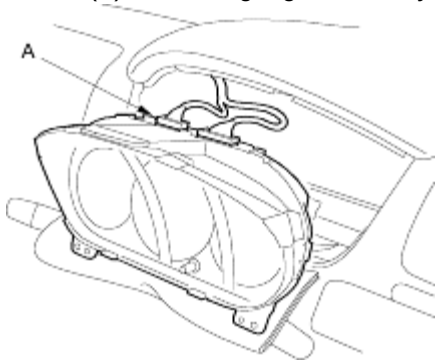
1. 1. Turn the ignition switch ON (II), and check to see if the other indicator lights come on (brake system, etc).

Do the other indicator lights come on?

YES - Go to step 2.

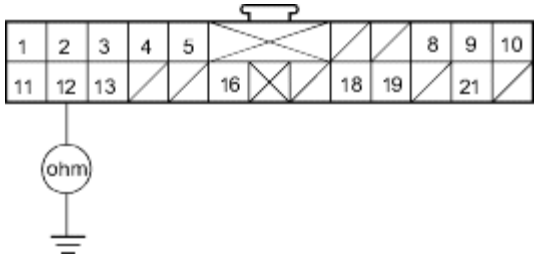
NO - Go to step 9.

2. 2. Turn the ignition switch OFF, then disconnect the C2 connector (A) from the gauge assembly.



3. 3. Check resistance between the No. 12 terminal of C2 connector and body ground. There should be 0 - 1.0 ohm.

C2 CONNECTOR



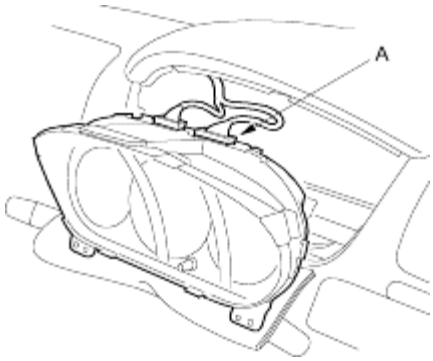
Wire side of female terminals

Is resistance as specified?

YES - Go to step 4.

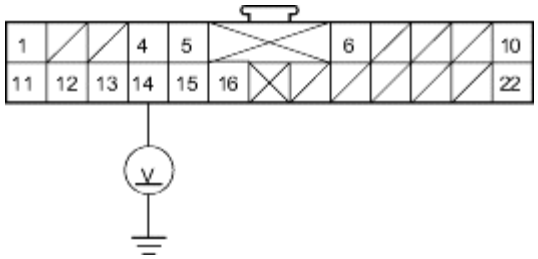
NO - Open in the BLK wire of dashboard wire harness A or faulty body ground terminal (G501). If the body ground terminal is OK, replace dashboard wire harness A. ■

1. 4. Disconnect the C1 connector (A) from the gauge assembly.



2. 5. Check for voltage between the No. 14 terminal of C1 connector and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be 8.5 V or less.

C1 CONNECTOR



Wire side of female terminals

Is voltage as specified?

YES - Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly. ■

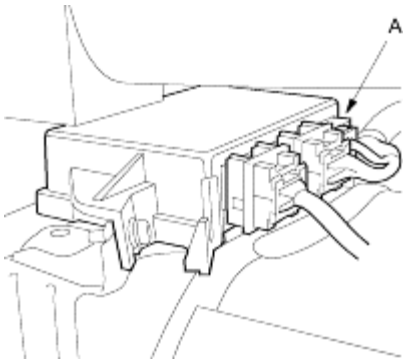
NO - Go to step 6.

3. 6. Turn the ignition switch OFF.

SRS

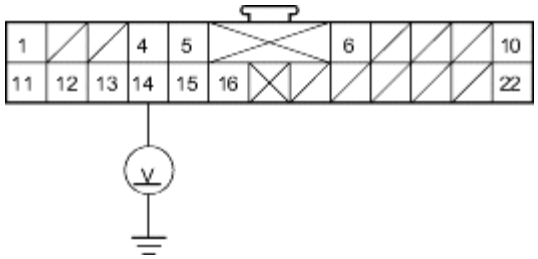
SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 7. Disconnect the U3o connector (A) from the SRS unit.



2. 8. Connect a voltmeter between the No. 14 terminal (+) of C1 connector and body ground. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.

C1 CONNECTOR



Wire side of female terminals

Is voltage as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the PNK wire of dashboard wire harness A or in the floor wire harness; replace the faulty harness. ■

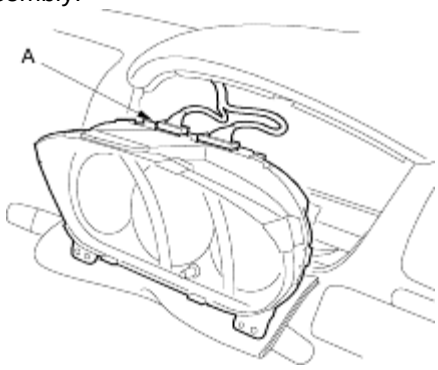
1. 9. Turn the ignition switch OFF. Check the No. 19 (7.5A) fuse in the under-dash fuse/relay box.

Did fuse No. 19 (7.5A) blow?

YES - Go to step 12.

NO - Go to step 10.

2. 10. Disconnect the C2 connector (A) from the gauge assembly.

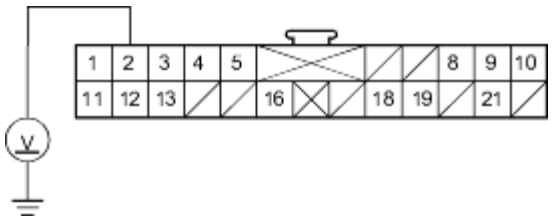


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 11. Connect a voltmeter between the No. 2 terminal (+) of C2 connector and body ground. Turn the ignition switch ON (II) and measure voltage. There should be battery voltage.

C2 CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES - Faulty SRS indicator light circuit in the gauge assembly or poor contact at C2 connector and the gauge assembly; if the connection is OK, replace the gauge assembly. ■

NO - Open in the under-dash fuse/relay box No. 19 (7.5A) fuse line, or open in the YEL wire of dashboard wire harness A. If the under-dash fuse/relay box is OK, replace the faulty harness. ■

1. 12. Replace the No. 19 (7.5A) fuse, and check to see if the SRS indicator light comes on.

Does the SRS indicator light come on?

YES - The system is OK at this time. ■

NO - Short to ground in the under-dash fuse/relay box No. 19 (7.5A) fuse line. ■

SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

The SRS Indicator Light Stays On After the Ignition Switch is Turned ON (II) (5-door Model)

1. 1. Erase the DTC memory (see page 23-38).

Does the SRS indicator light go off while the DTC memory is erased?

YES - Go to step 42.

NO - Go to step 2.

2. 2. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 19.

NO - Go to step 3.

3. 3. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   4. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   5. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

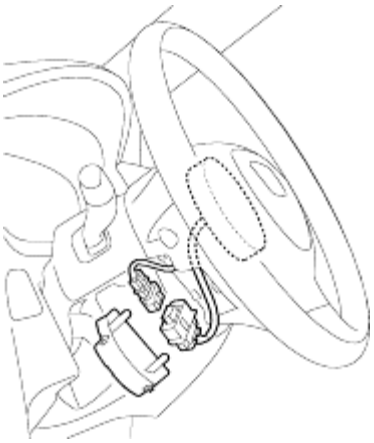
Is the fuse OK?

YES - The system is OK at this time. ■

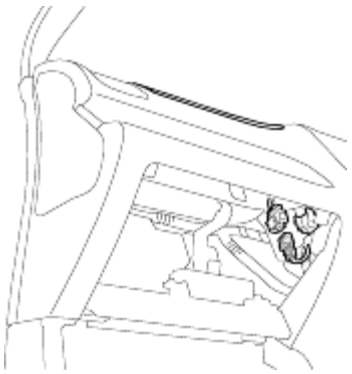
NO - Go to step 6.

4. 6. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   7. Disconnect the battery negative cable and wait for 3 minutes.

1. 8. Disconnect the D1o connector.



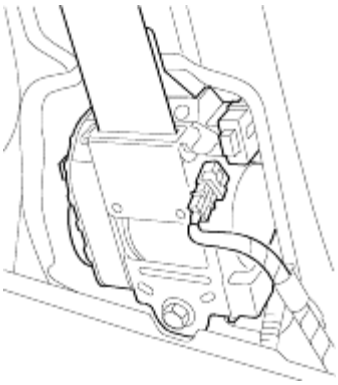
2. 9. Disconnect the P1o connector.



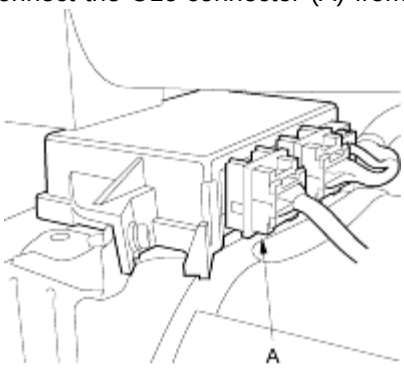
SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 10. Disconnect the TL1o and TR1o connectors.



2. 11. Disconnect the U1o connector (A) from the SRS unit.



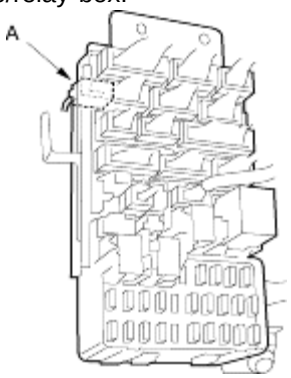
1. 12. Reconnect the negative battery cable.
2. 13. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   14. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Short to ground in the SRS unit; replace the SRS unit. ■

NO - Go to step 15.

3. 15. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.
   16. Disconnect the F1o connector (A) from the under-dash fuse/relay box.



4. 17. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
   18. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

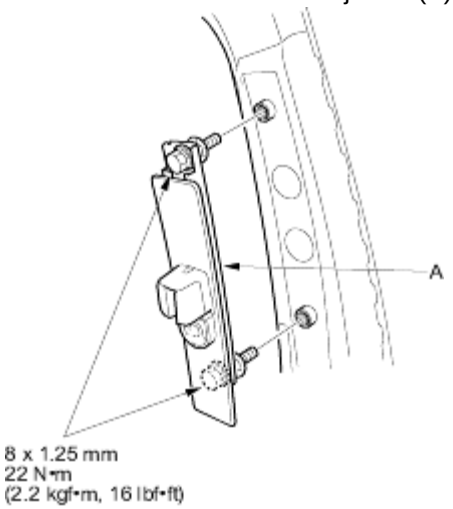
YES - Short to ground in the dashboard wire harness B; replace the dashboard wire harness B. ■

NO - Short to ground in the under-dash fuse/relay box No. 13 (10A) fuse line; replace the under-dash fuse/relay box or repair it. ■

Seat Belts

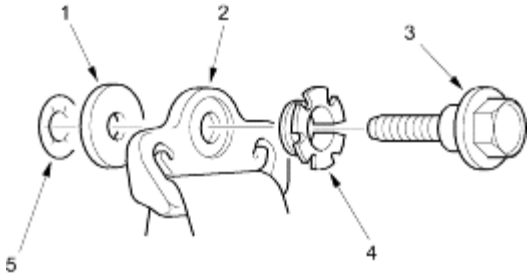
Front Seat Belt Replacement (cont'd)

1. 7. Remove the centre pillar upper trim (see page 20-206).
2. 8. Remove the shoulder anchor adjuster (A).



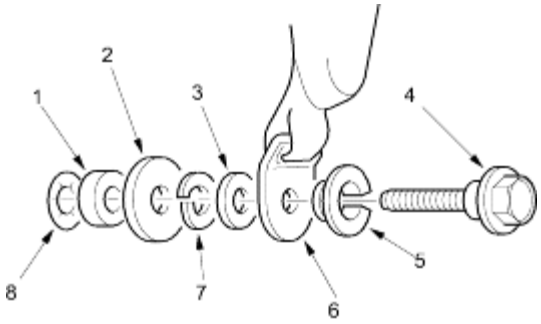
3. 9. Install the seat belt in the reverse order of removal and note these items:
   - Apply liquid thread lock to the upper anchor bolt before reinstallation.
   - Check that the retractor locking mechanism functions (see page 23-20).
   - Assemble the washers, collar and bushing on the upper and lower anchor bolts as shown.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the front seat belt.
   - Make sure the seat belt tensioner connector is plugged in properly.
   - Reconnect the negative cable to the battery.

Upper anchor bolt construction:



1.
1. COLLAR
2. UPPER ANCHOR
3. UPPER ANCHOR BOLT
4. BUSHING
5. TOOTHED LOCK WASHER

Lower anchor bolt construction:

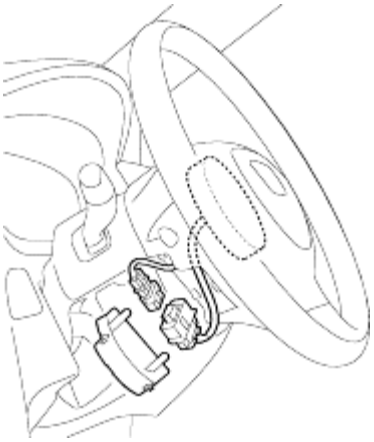


2.
1. COLLAR
2. WASHER
3. COLLAR
4. LOWER ANCHOR BOLT
5. BUSHING
6. LOWER ANCHOR
7. SPRING WASHER
8. TOOTHED LOCK WASHER

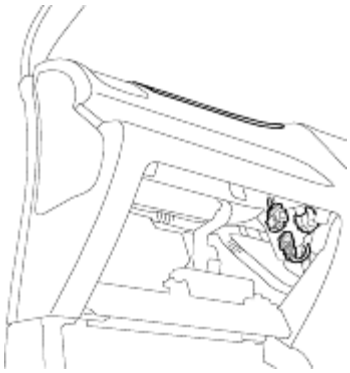
SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

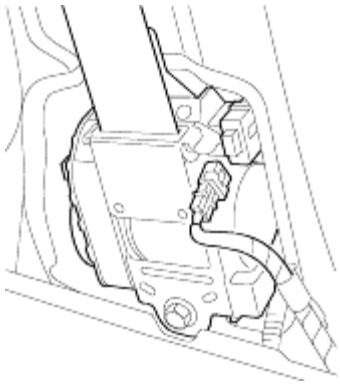
1. 19. Disconnect the battery negative cable and wait for 3 minutes.
2. 20. Disconnect the D1o connector.



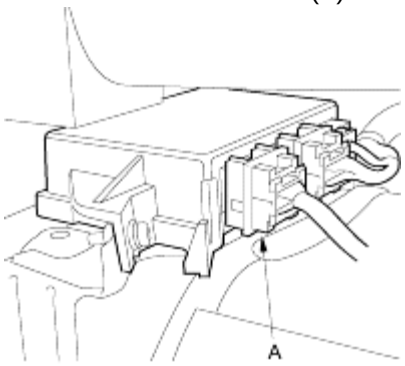
3. 21. Disconnect the P1o connector.



1. 22. Disconnect the TL1o and TR1o connectors.



2. 23. Disconnect the U1o connector (A) from the SRS unit.

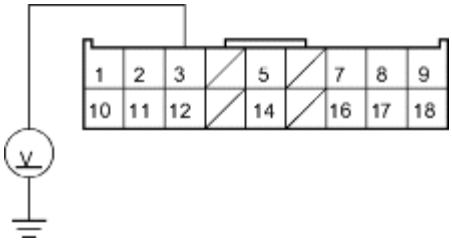


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 24. Reconnect the battery negative cable.
2. 25. Connect a voltmeter between the No. 3 terminal (+) of U1o connector and body ground. Turn the ignition switch ON (II) and measure voltage. There should be battery voltage.

U1o CONNECTOR



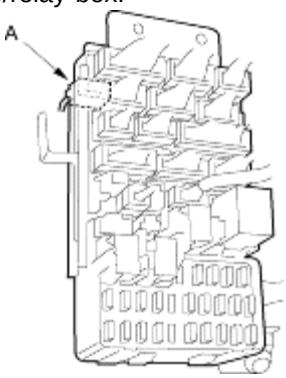
Wire side of female terminals

Is there battery voltage?

YES - Go to step 29.

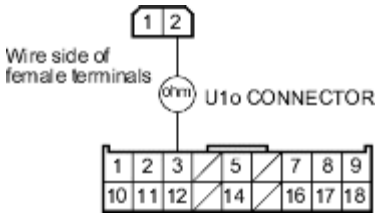
NO - Go to step 26.

3. 26. Turn the ignition switch OFF.
   27. Disconnect the F1o connector (A) from the under-dash fuse/relay box.



1. 28. Check resistance between the No. 3 terminal of the U1o connector and the No. 2 terminal of the F1o connector. There should be 0 - 1.0 ohm.

F1o CONNECTOR



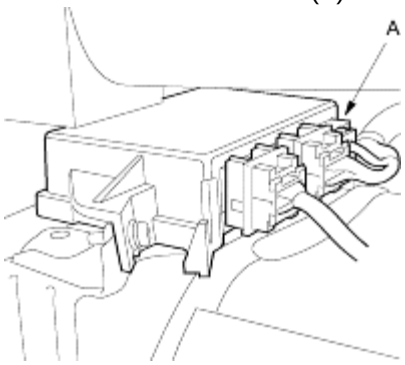
Wire side of female terminals

Is the resistance as specified?

YES - Open in the under-dash fuse/relay box or poor contact at the F1o connector; check the connection. If the connection is OK, replace the under-dash fuse/relay box. ■

NO - Open in dashboard wire harness B; replace the dashboard wire harness B. ■

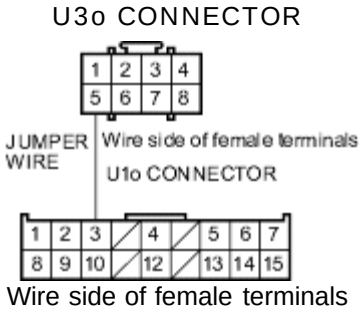
2. 29. Turn the ignition switch OFF.
   30. Disconnect the U3o connector (A) from the SRS unit.



SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 31. Connect the No. 3 terminal of the U1o connector and the No. 5 terminal of U3o connector with a jumper wire.



Wire side of female terminals

2. 32. Turn the ignition switch ON (II).
   33. Check the SRS indicator light.

Does the SRS indicator light go off?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Go to step 34.

3. 34. Turn the ignition switch OFF.
   35. Disconnect the jumper wire between the No. 3 terminal of the dashboard wire harness B 18P connector and the No. 5 terminal of the U3o connector.
   36. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

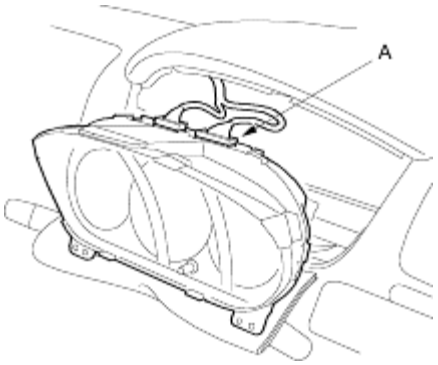
Is the fuse OK?

YES - Go to step 40.

NO - Go to step 37.

4. 37. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.

1. 38. Disconnect the C1 connector (A) from the gauge assembly.



2. 39. Check resistance between the No. 5 terminal of the U3o connector and body ground. There should be 1 M ohm or more.

Wire side of female terminals

Is the resistance as specified?

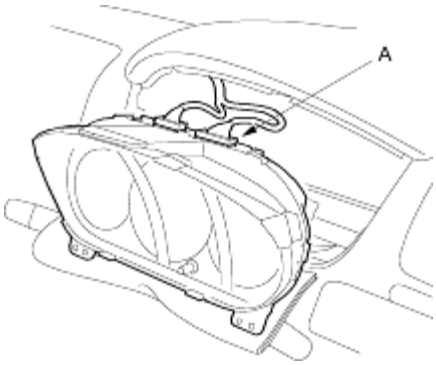
YES - Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly. ■

NO - Short to ground in the floor wire harness or in dashboard wire harness A; replace the faulty harness. ■

SRS

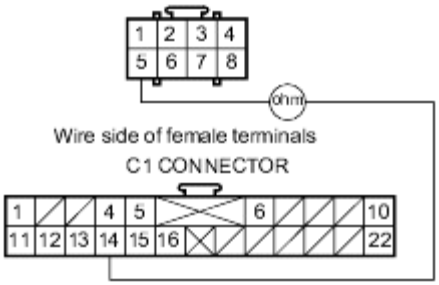
SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 40. Disconnect the C1 connector (A) from the gauge assembly.



2. 41. Check resistance between the No. 14 terminal of C1 connector and the No. 5 terminal of the U3o connector. There should be 1 ohm or less.

U3o CONNECTOR

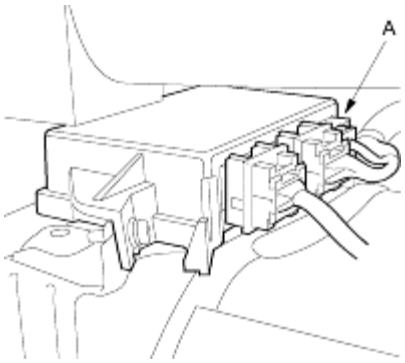


Is the resistance as specified?

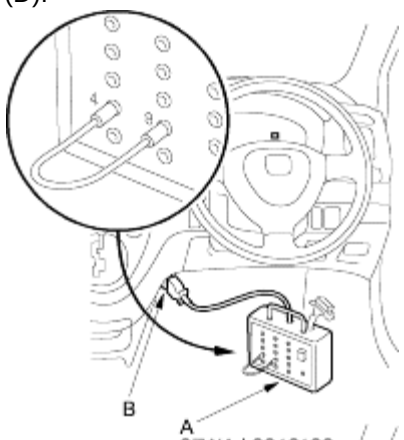
YES - Faulty SRS indicator light circuit in the gauge assembly or poor contact at the C1 connector; Check the connection. If the connection is OK, replace the gauge assembly. ■

NO - Open in the floor wire harness or in dashboard wire harness A; replace the faulty harness. ■

1. 42. Disconnect the floor wire harness 8P connector (A) from the SRS unit.



2. 43. Connect the DLC terminal box (A) to the Data Link Connector (DLC) 16P (B). Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire, and push the operation switch or connect the SCS short connector (C) to the service check connector (2P) (D).



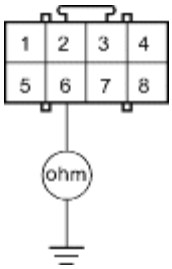


SRS

SRS Indicator Light Circuit Troubleshooting (cont'd)

1. 44. Check resistance between the No. 6 terminal of the U3o connector and body ground. There should be 0 - 1.0 ohm.

U3o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U3o connector; check the connection at the U3o connector and the SRS unit. If the connection is OK, replace the SRS unit. ■

NO - Open in the SCS line between the No. 6 terminal of U3o connector and the No. 9 terminal (brown wire) of the Data Link Connector (DLC) (16P) or open between the No. 4 terminal of the Data Link Connector (DLC) and body ground or open in the SCS line between the No. 6 terminal of the U3o connector and the No. 1 terminal (brown wire) of the service check connector (2P) or open between the No. 2 terminal of the service check connector (2P) and body ground; refer to the "Electrical" section, then continue troubleshooting. ■

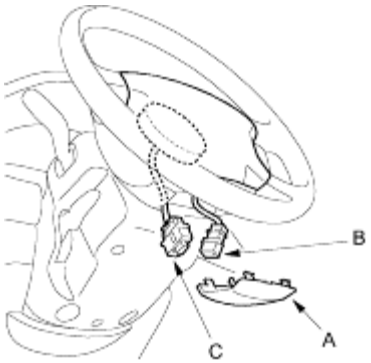
SRS

Driver's Airbag Replacement

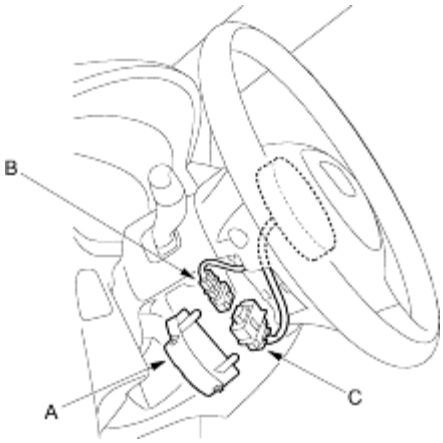
Removal

1. 1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
   2. Remove the access panel (A) from the steering wheel, then disconnect the connector between the cable reel 2P connector (B) and driver's airbag 2P connector (C).

4-door:

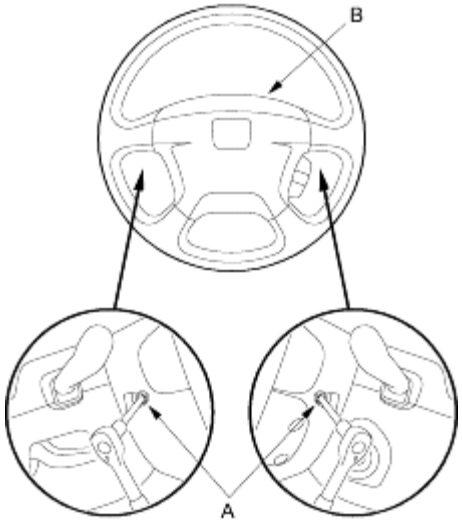


5-door:

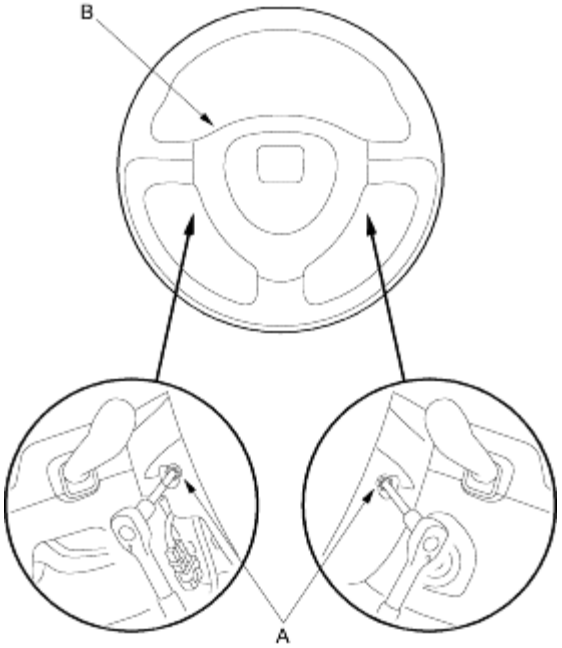


1. 3. Remove the two Torx bolts (A) using a Torx T30 bit. Then remove the driver's airbag (B).

4-door:



5-door:



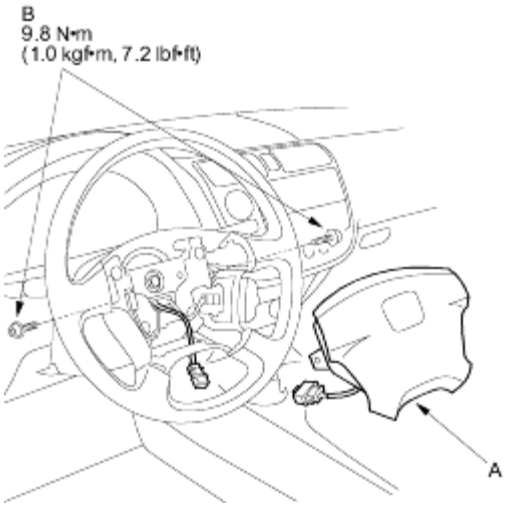
SRS

Driver's Airbag Replacement (cont'd)

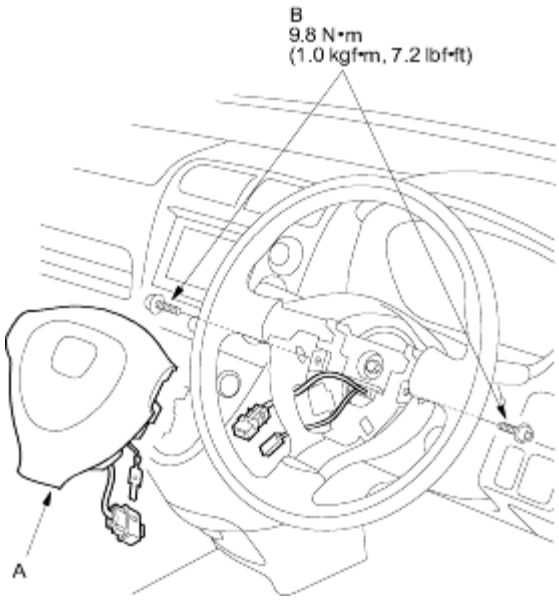
Installation

1. 1. Place the new driver's airbag (A) in the steering wheel and secure it with new Torx bolts (B).

4-door:

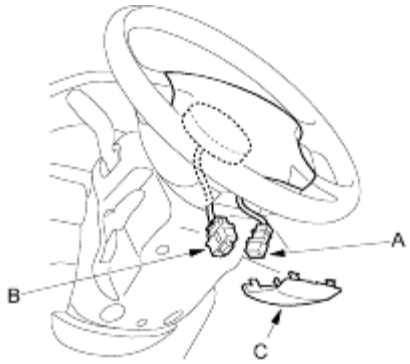


5-door:

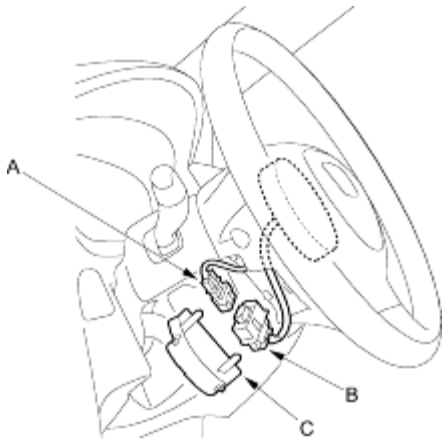


1. 2. Connect the cable reel 2P connector (A) to the driver's airbag 2P connector (B), then install the access panel (C) on the steering wheel.

4-door:



5-door:



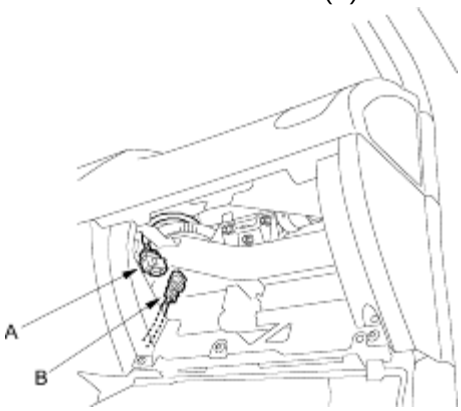
2. 3. Connect the battery negative cable.
4. After installing the airbag, confirm proper system operation:
   - Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.
   - Make sure the horn button works.
3. 5. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

SRS

Front Passenger's Airbag Replacement

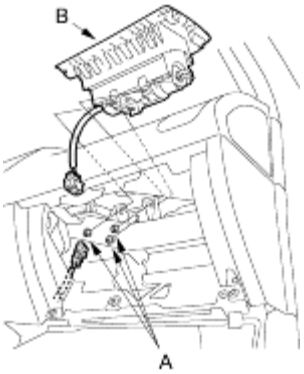
Removal

1. 1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
   2. Remove the glove box (see page 20-79).
   3. Disconnect the connector between the front passenger's airbag 2P connector (A) and dashboard wire harness B 2P connector (B).



1. 4. Remove the three mounting nuts (A) from the bracket. Cover the lid and dashboard with a cloth, and pry carefully with a screwdriver to lift the front passenger's airbag (B) out of the dashboard.

NOTE: The airbag lid has pawls on its side which attach it to the dashboard.

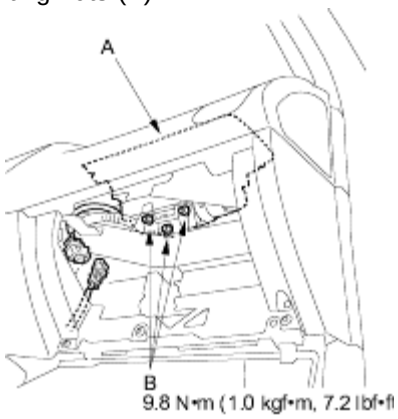


SRS

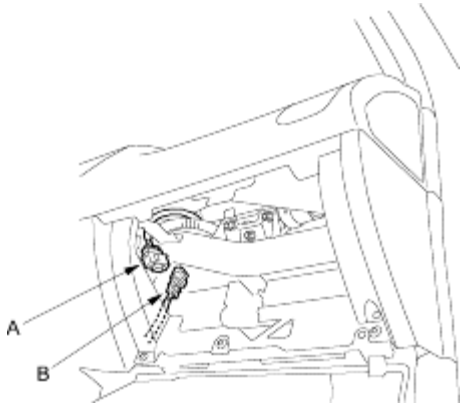
Front Passenger's Airbag Replacement (cont'd)

Installation

1. 1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



1. 2. Connect the front passenger's airbag 2P connector (A) to the dashboard wire harness B 2P connector (B), then reinstall the glove box.



2. 3. Reconnect the battery negative cable.
4. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.
5. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

SRS
Side Airbag Replacement

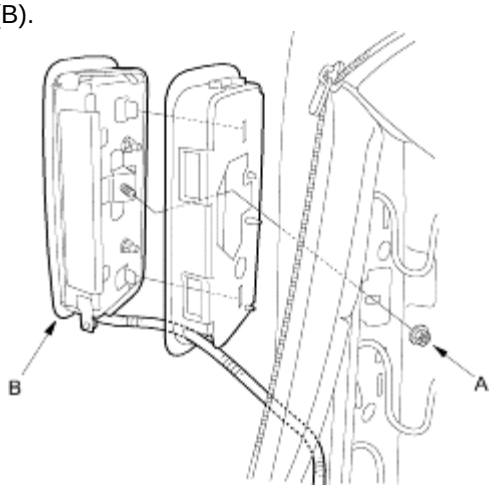
NOTE: Review the seats replacement procedure in the body section (see page 20-87) before performing repair or service.

Removal

1. 1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
   2. Disconnect the side airbag harness 2P connector (A).



2. 3. Remove the seat assembly (see page 20-87) and seat-back cover (see page 20-92).
   4. Remove the mounting nut (A) and the side airbag (B).



Installation

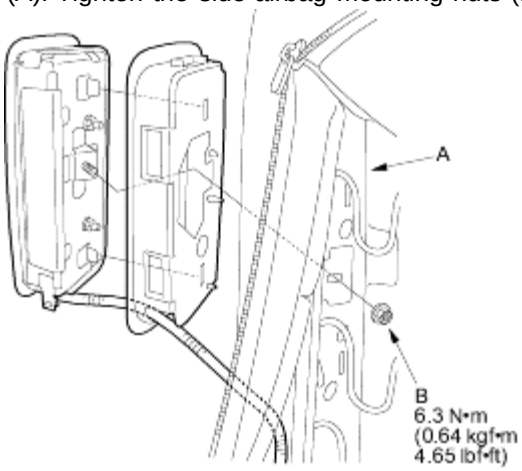
CAUTION

Be sure to install the harness wires so that they are not pinched or interfering with other parts.

NOTE:

- If the side airbag lid is fixed by a tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use new mounting nuts tightened to the specified torque when you replace a side airbag.
- Make sure that the seat-back cover is installed properly. Improper installation may prevent proper deployment.

1. 1. Place the new side airbag on the seat back-frame (A). Tighten the side airbag mounting nuts (B).



2. 2. Install the seat-back cover (see page 20-92).
   3. Install the seat assembly (see page 20-87), then connect the side airbag harness 2P connector.
   4. Move the front seat and the seat-back through their full ranges of movement, making sure the harness wires are not pinched or interfering with other parts.
   5. Reconnect the battery negative cable.
   6. After installing the side airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.

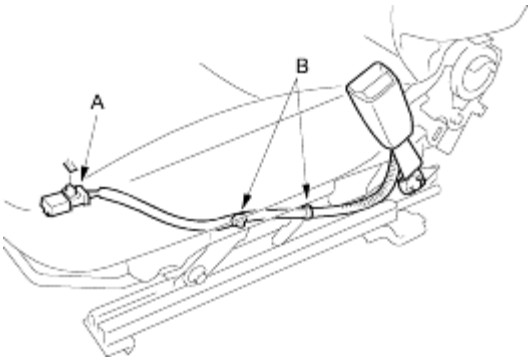
Seat Belts

Front Seat Belt Replacement (cont'd)

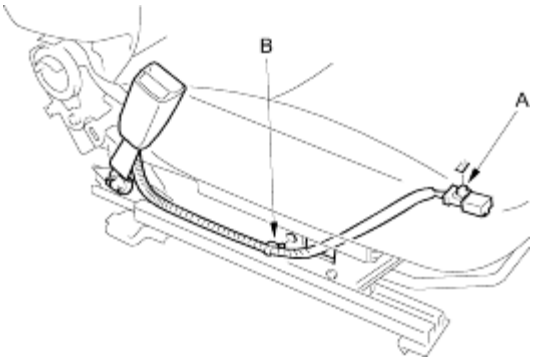
Seat Belt Buckle

1. 1. If equipped with a side airbag, disconnect the negative battery cable and wait at least 3 minutes before beginning work.
   2. Remove the front seat (see page 20-229).
   3. Remove the centre cover from the seat, driver's seat (see page 20-231), passenger's seat (see page 20-232).
   4. Detach the seat belt switch connector clip (A) and harness clip (B).

Driver's seat:

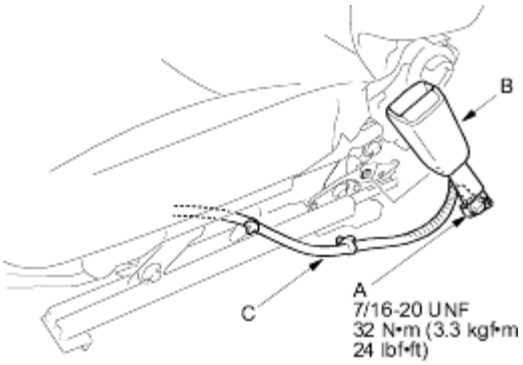


Passenger's seat:

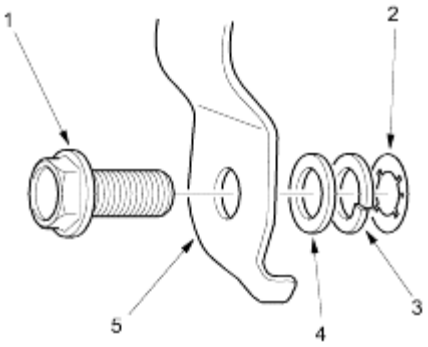


2. 5. On the driver's seat, adjust the seat cushion to its maximum height.

1. 6. Remove the centre anchor bolt (A) and remove the seat belt buckle (B).



2. 7. Pull the seat belt switch harness (C) out through the space between the seat cushion and the seat linkage (driver's seat), or the hole on the seat track (passenger's seat).
   8. Install the buckle in the reverse order of removal and note these items:
      - Assemble the washers on the centre anchor bolt as shown.
      - If equipped with a side airbag, reconnect the negative cable to the battery.



3. 1. CENTRE ANCHOR BOLT
   2. TOOTHED LOCK WASHER
   3. SPRING WASHER
   4. COLLAR
   5. CENTRE ANCHOR

SRS

Airbag Disposal

Special Tool Required

Deployment tool, 07HAZ-SG00500

Before scrapping any airbags, side airbags or seat belt tensioners (including those in a whole vehicle to be scrapped), the airbags, side airbags, seat belt tensioners must be deployed. If the vehicle is still within the warranty period, the Honda District Service Manager must give approval and/or special instruction before deploying the airbags, side airbags and seat belt tensioners. Only after the airbags, side airbags or seat belt tensioners have been deployed (as the result of vehicle collision, for example), can they be scrapped.

If the airbags, side airbags and seat belt tensioners appear intact (not deployed), treat them with extreme caution. Follow this procedure.

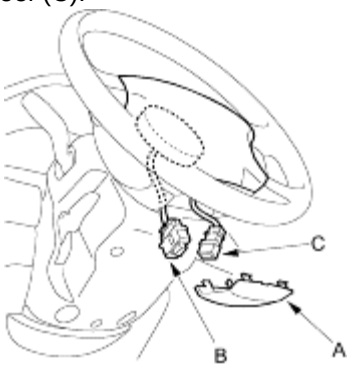
Deploying Airbags In the vehicle

If an SRS equipped vehicle is to be entirely scrapped, its airbags, side airbags and seat belt tensioners should be deployed while still in the vehicle. The airbags, side airbags and seat belt tensioners should not be considered as salvageable parts and should never be installed in another vehicle.

1. 1. Turn the ignition switch OFF, and disconnect the battery negative cable and wait at least 3 minutes.
   2. Confirm that each airbag, side airbag and seat belt tensioner is securely mounted.
   3. Confirm that the special tool is functioning properly by following the check procedure on the tool label.

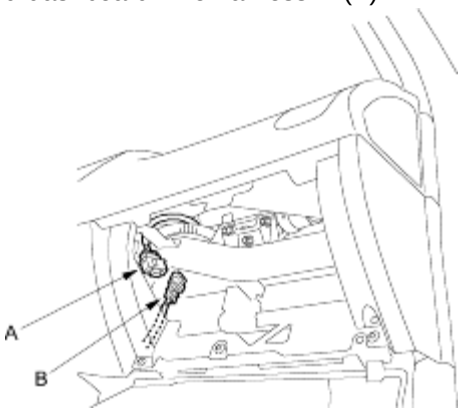
Driver's Airbag:

2. 4. Remove the access panel (A), then disconnect the 2P connector between the driver's airbag (B) and the cable reel (C).



Front Passenger's Airbag:

1. 5. Remove the glove box, then disconnect the 2P connector between the front passenger's airbag (A) and dashboard wire harness B (B).



Side Airbag:

2. 6. Disconnect the 2P connector between the side airbag (A) and the floor wire harness (B).

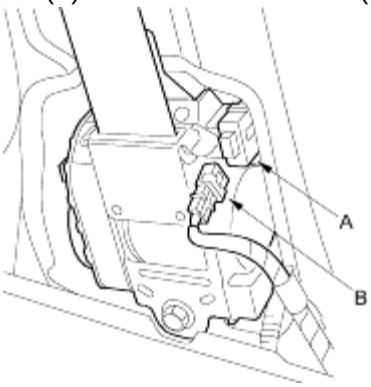


SRS

Airbag Disposal (cont'd)

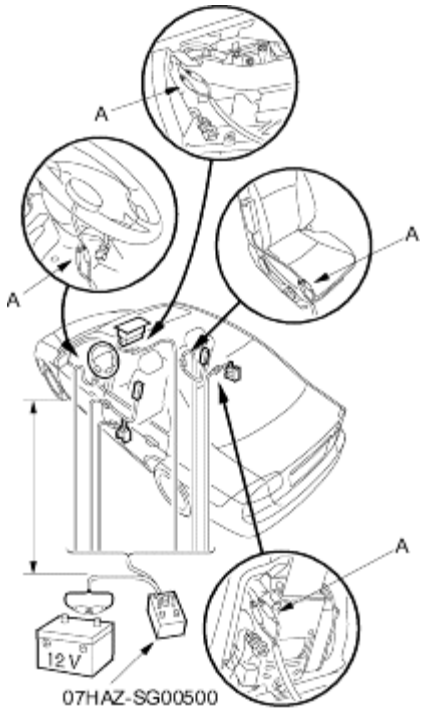
Seat belt tensioner:

1. 7. Disconnect the 2P connector between the seat belt tensioner (A) and floor wire harness (B).



2. 8. Pull the seat belt out all the way and cut it.

1. 9. Cut off each connector, strip the ends of the wires, and connect the deployment tool alligator clips (A) to the wires. Place the deployment tool at least 30 feet (10 meters) away from the vehicle.



SRS

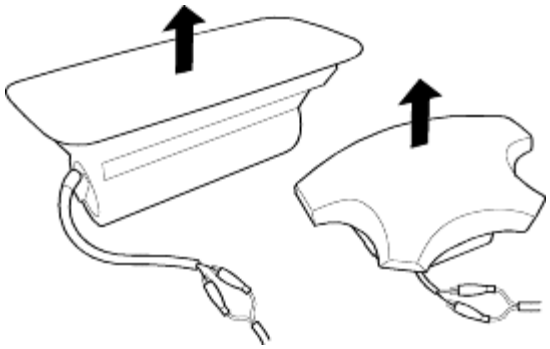
Airbag Disposal (cont'd)

1. 10. Connect a 12 volt battery to the tool.
   - If the green light on the tool comes on, the igniter circuit is defective and cannot deploy the component. Go to Damaged Airbag Special Procedure.
   - If the red light on the tool comes on, the component is ready to be deployed.
2. 11. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: a loud noise and rapid inflation of the bag, followed by slow deflation).
   - If the components deploy and the green light on the tool comes on, continue with this procedure.
   - If an component does not deploy, yet the green light comes ON, its igniter is defective. Go to Damaged components Special Procedure.
   - During deployment the airbag can become hot enough to burn you. Wait 30 minutes after deployment before touching the airbag.
3. 12. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A) and seal it securely.



Deploying the Components Out of the Vehicle

If an intact airbag or tensioner has been removed from a scrapped vehicle, or has been found defective or damaged during transit, storage or service, it should be deployed as follows:



1. 1. Confirm that the special tool is functioning properly by following the check procedure on this page or on the tool label.
   2. Position the airbag face up, outdoors on flat ground at least 30 feet (10 meters) from any obstacles or people.
   3. Follow steps 9, 10, 11, and 12 of the in-vehicle deployment procedure.

Disposal of Damaged Components

2. 1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 23-165), front passenger's airbag (see page 23-167), side airbag (see page 23-169), seat belt tensioner for 4-door model (see page 23-5) and 5-door model (see page 23-15).
   2. In all cases, make a short circuit by twisting together the two inflator wires.
   3. Package the component in exactly the same packaging that the new replacement part come in.
   4. Mark the outside of the box "DAMAGED AIRBAG NOT DEPLOYED", "DAMAGED SIDE AIRBAG NOT DEPLOYED", or "DAMAGED SEAT BELT TENSIONER NOT DEPLOYED" so it does not get confused with your parts stock.
   5. Contact your Honda District Service Manager for how and where to return it for disposal.

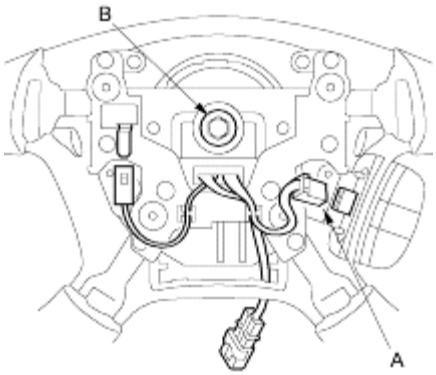
Deployment Tool Check

3. 1. Connect the yellow clips to both switch protector handles on the tool; connect the tool to a battery.
   2. Push the operation switch: green means the tool is OK; red means the tool is faulty.
   3. Disconnect the battery and the yellow clips.

SRS
Cable Reel Replacement

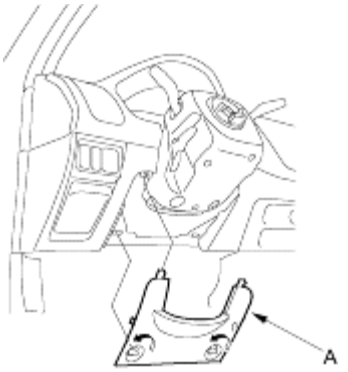
Removal

1. 1. Make sure the wheels are aligned straight ahead.
   2. Disconnect the battery negative cable and wait at least 3 minutes.
   3. Remove the driver's airbag (see page 23-165).
   4. Disconnect the connector (A) from the cruise control set/resume switch, then remove the steering wheel bolt (B).

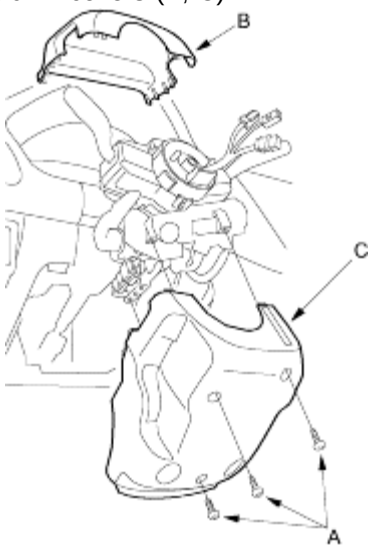


2. 5. Align the front wheels straight ahead, then remove the steering wheel with a steering wheel puller (see page 17-6).
   Do not tap on the steering wheel or steering column shaft when removing the steering wheel.

1. 6. Remove the dashboard lower cover (A).



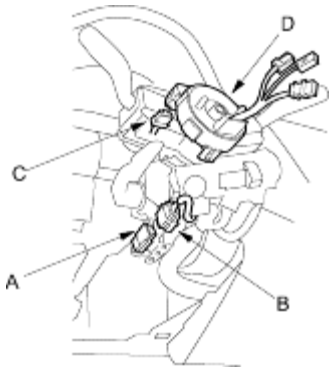
2. 7. Remove the column cover screws (A), then remove the column covers (B, C).



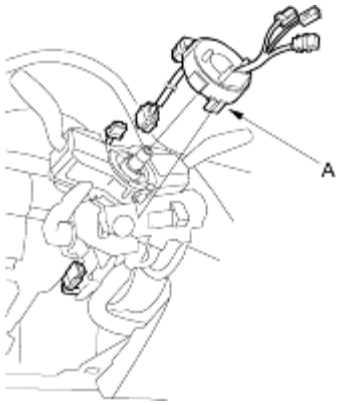
SRS

Cable Reel Replacement (cont'd)

1. 8. Disconnect the dashboard wire harness B 4P connector (A) from the cable reel 4P connector (B), then disconnect the dashboard wire harness B 5P connector (C) from the cable reel (D).

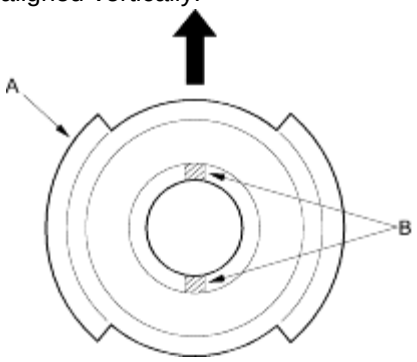


2. 9. Release the tab (A), then remove the cable reel from the column.

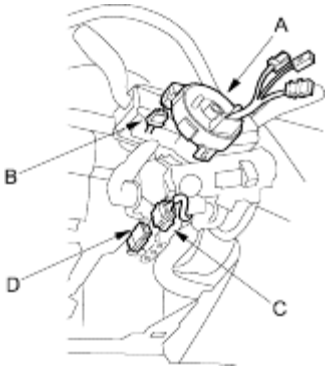


Installation

1. 1. Before installing the steering wheel, align the front wheels straight ahead.
   2. Disconnect the battery negative cable and wait at least 3 minutes.
   3. Set the cancel sleeve (A) so that the projections (B) are aligned vertically.



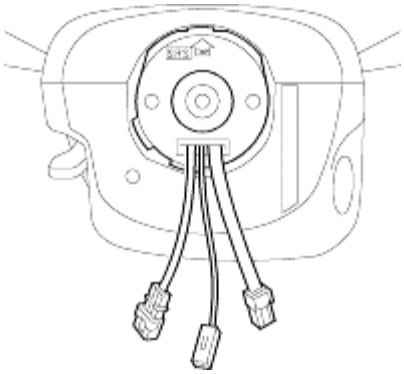
2. 4. Carefully install the cable reel (A) on the steering column shaft. Then connect the 5P connector (B) to the cable reel, and connect the 4P connector (C) to the SRS main harness 4P connector (D).



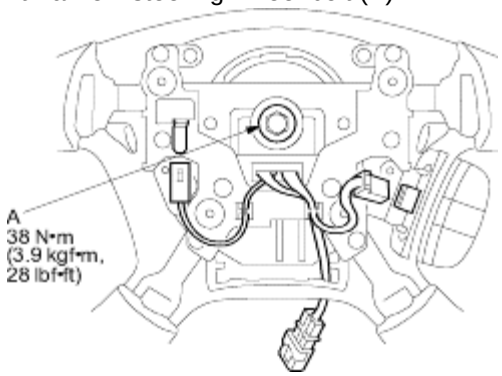
SRS

Cable Reel Replacement (cont'd)

5. Install the steering column covers.
6. If necessary, centre the cable reel. (New replacement cable reels come centred.) Do this by first rotating the cable reel clockwise until it stops. Then rotate it counter-clockwise (approximately 2 1/2 turns) until the arrow mark on the cable reel label points straight up.



7. Align the projections on the cable reel with the holes on the steering wheel, and install the steering wheel with a new steering wheel bolt (A).



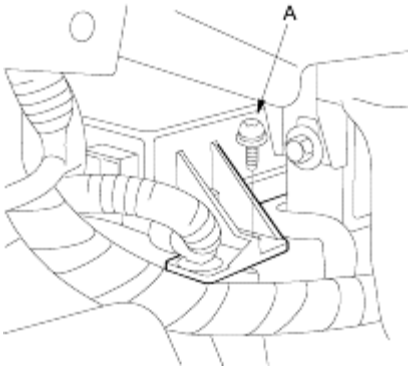
8. Install the driver's airbag (see page 23-166).
9. Reconnect the battery negative cable.
10. After installing the cable reel, confirm proper system operation:
    - Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.
    - After the SRS indicator light has turned off, turn the steering wheel fully left and right to confirm the SRS indicator light does not come on.
    - Make sure the horn button works.
11. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

SRS

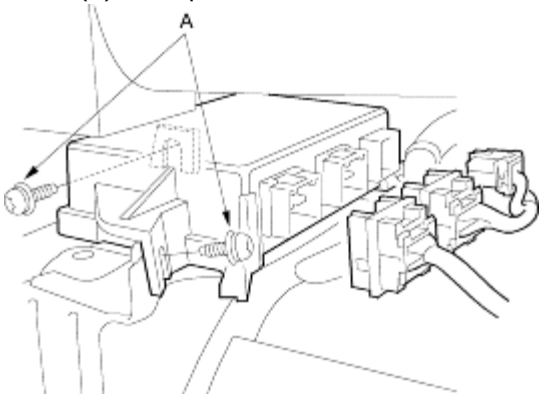
SRS Unit Replacement

Removal

1. 1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
   2. Disconnect the driver's and front passenger's airbag connectors (see page 23-32).
   3. Disconnect the side airbag connectors (see page 23-32).
   4. Disconnect both seat belt tensioner connectors (see page 23-32).
   5. Remove the dashboard centre lower cover (see page 20-219).
   6. Pull down the carpet, then remove the torx bolt (A) from the SRS unit.

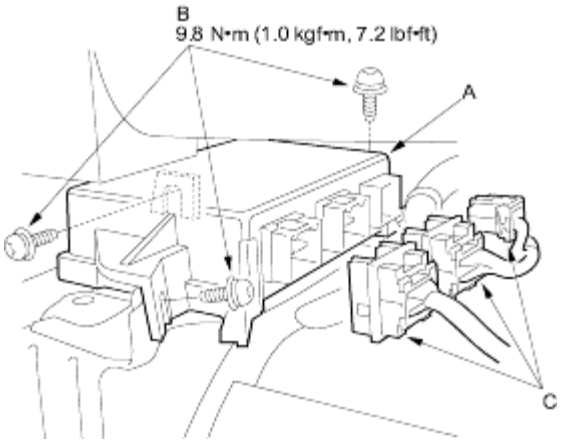


2. 7. Disconnect the connectors and remove the two torx bolts (A), then pull out the SRS unit.



Installation

1. 1. Install the new SRS unit (A) with Torx bolts (B), then connect the connectors (C) to the SRS unit; push it into position until it clicks.
   NOTE: When tightening the Torx bolts to the specified torque after replacement, be careful to turn them in so that their heads rest squarely on the brackets.



2. 2. Reinstall the dashboard centre lower cover (see page 20-219).
   3. Reconnect the driver's and front passenger's airbag connectors (see page 23-32).
   4. Reconnect the side airbag connectors (see page 23-32).
   5. Reconnect both seat belt tensioner connectors (see page 23-32).
   6. Reconnect the battery negative cable.
   7. After installing the SRS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.

SRS

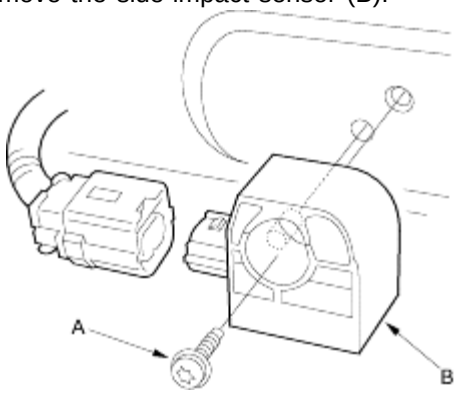
Side Impact Sensor Replacement

Removal

CAUTION

- Removal of the airbag must be performed according to the precautions/procedures described before.
- Before disconnecting the side impact sensor 2P connector(s), disconnect the side airbag 2P connector(s).
- Do not turn the ignition switch ON (II) and do not connect the battery cable while replacing the side impact sensor.

1. 1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
   2. Remove the seat assembly (see page 20-87).
   3. Remove the centre pillar lower trim (see page 20-64).
   4. Disconnect the floor wire harness 2P connector from the side impact sensor.
   5. Remove the Torx bolt (A) using a Torx T30 bit, then remove the side impact sensor (B).

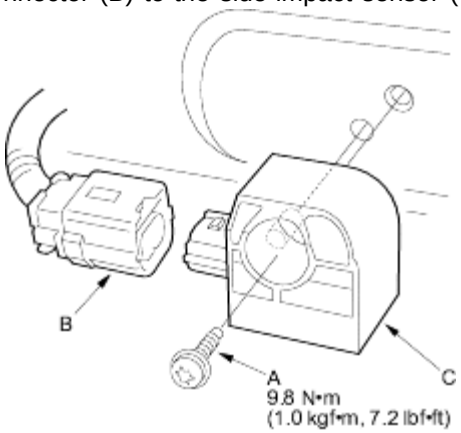


Installation

CAUTION

- Be sure to install the harness wires so that they are not pinched or interfering with other parts.
- Do not turn the ignition switch ON (II) and do not connect the battery cable while replacing the side impact sensor.

1. 1. Install the new side impact sensor with a new Torx bolt (A) then connect the floor wire harness 2P connector (B) to the side impact sensor (C).



2. 2. Reconnect the negative battery cable.
   3. After installing the side impact sensor, confirm proper system operation. Turn the ignition switch ON (II), the SRS indicator light should come on for about 6 seconds and then go off.

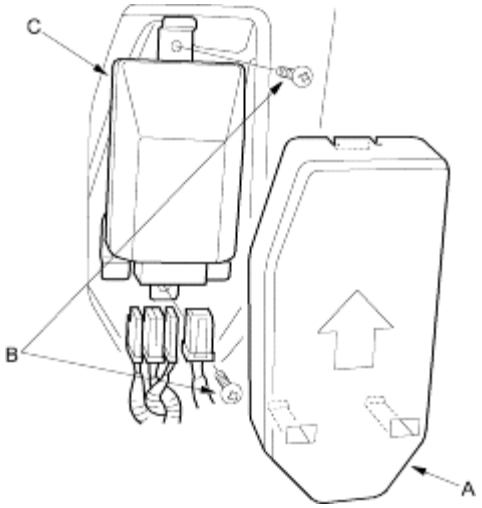
SRS

OPDS Unit Replacement

NOTE: Review the seats replacement procedure in the body section (see page 20-87) before performing repair or service.

Removal

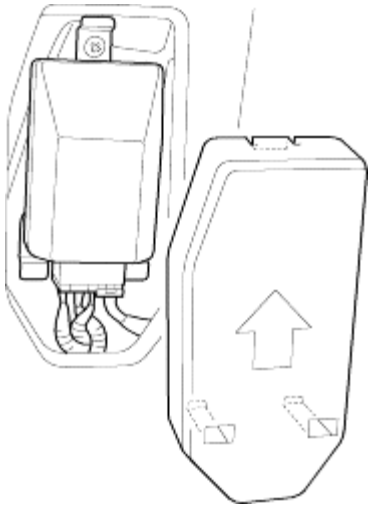
1. 1. Disconnect the negative battery cable and wait at least 3 minutes before beginning work.
   2. Disconnect the side airbag harness 2P connector (see step 4 on page 23-32).
   3. Remove the seat assembly (see page 20-87) and seat-back cover (see page 20-92).
   4. Remove the cover (A), then disconnect the OPDS unit harness 8P and sensor connectors from the OPDS unit.



2. 5. Remove the two screws (B) and OPDS unit (C).

Installation

1. 1. Place the new OPDS unit on the seat-back frame. Tighten the two screws (A) and connect the OPDS unit harness 8P and sensor connector to the OPDS unit. Reinstall the cover.



2. 2. Install the seat-back cover (see page 20-92).
   3. Install the seat assembly (see page 20-87), then connect the side airbag harness 2P connector.
   4. Reconnect the battery negative cable.
   5. Set the seat-back in the normal position and make sure there is nothing sitting on the front passenger's seat.
   6. Initialise the OPDS unit (see page 23-39).
   7. After installing the OPDS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator light should come on for about 6 seconds and then go off.

SRS

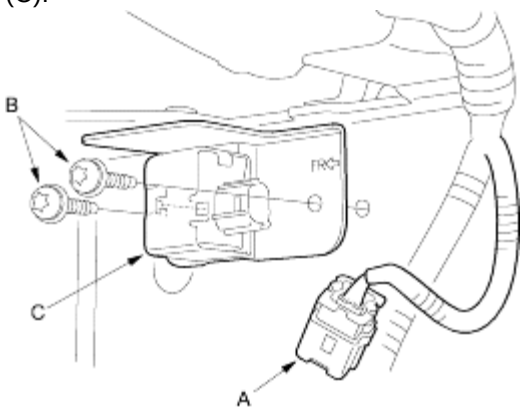
Front Sensor Replacement

Removal

CAUTION

- Removal of the airbag must be performed according to the precautions/procedures described before.
- Before disconnecting the side impact sensor 2P connector(s), disconnect the driver's and front passenger's airbag 2P and both seat belt tensioner 2P connector(s).
- Do not turn the ignition switch ON (II) and do not connect the battery cable while replacing the side impact sensor.

1. 1. Disconnect the negative battery cable and wait at least 3 minutes before beginning work.
   2. Remove the front inner fender (see page 20-121).
   3. Disconnect the engine compartment wire harness 2P connector (A) and remove the two Torx bolts (B) using a Torx T30 bit, then remove the front sensor (C).

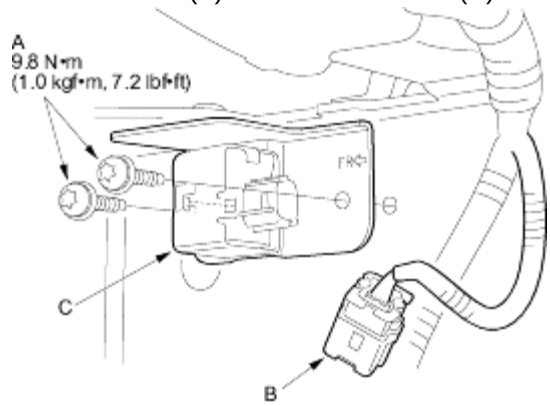


Installation

CAUTION

- Be sure to install the harness wires so that they are not pinched or interfering with other parts.
- Do not turn the ignition switch ON (II) and do not connect the battery cable while replacing the side impact sensor.

1. 1. Install the new front sensor with new Torx bolts (A), then connect the engine compartment wire harness 2P connector (B) to the front sensor (C).



2. 2. Reconnect the negative battery cable.
   3. After installing the front sensor, confirm proper system operation: Turn the ignition switch ON (II): the SRS indicator light should come on for about 6 seconds and then go off.

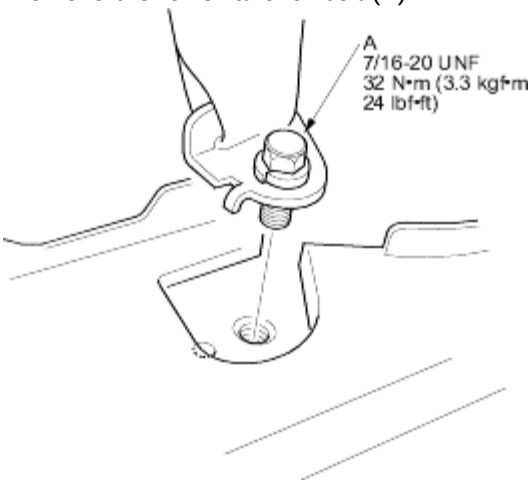
Seat Belts

Rear Seat Belt Replacement

NOTE: Check the rear seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

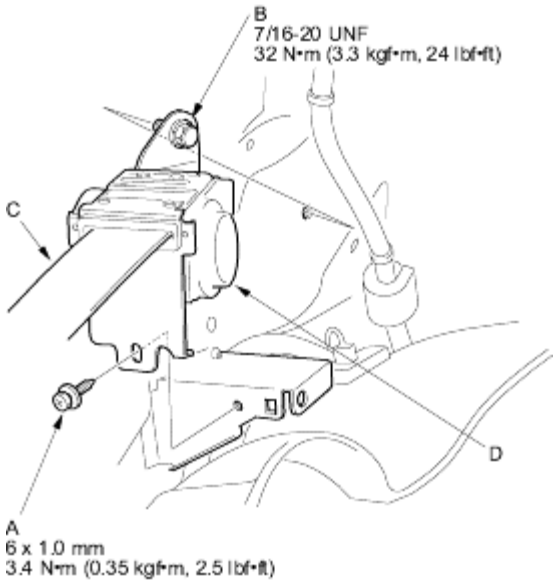
Rear Seat Belt

1. 1. Lift the seat cushion up and fold the seat-back forward.
   2. Remove the lower anchor bolt (A).



2. 3. Remove the seat side trim and trunk side upper trim (see page 20-207).
   4. Remove the seat belt through the hole in the trunk side upper trim.
   5. Remove the quarter pillar trim (see page 20-207).

1. 6. Remove the retractor mounting self-tapping ET screw (A) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).



2. 7. Install the seat belt in the reverse order of removal and note these items:
   - If the threads on the retractor mounting self-tapping ET screw are worn out, use an oversized self-tapping ET screw made specifically for this application.
   - Check that the retractor locking mechanism functions as described (see page 23-20).
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

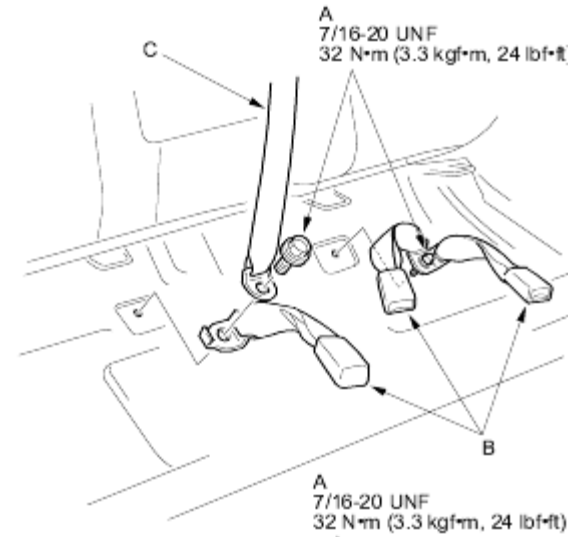
Seat Belts

Rear Seat Belt Replacement (cont'd)

Centre Belt and Seat Belt Buckles

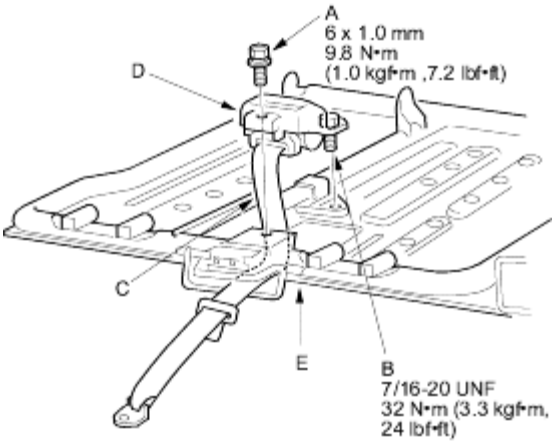
1. 1. Lift the seat cushion on each side up.
   2. Remove the centre anchor bolts (A), and remove the seat belt buckles (B) and centre belt (C).

With centre shoulder belt:



With centre shoulder belt:

1. 3. Remove the right seat-back (see page 20-237).
   4. Separate the seat-back frame and seat-back cover/pad (see page 20-239).
   5. Remove the retractor mounting bolt (A) and the retractor bolt (B), then remove the centre belt (C) and retractor (D) from the right seat-back frame (E).



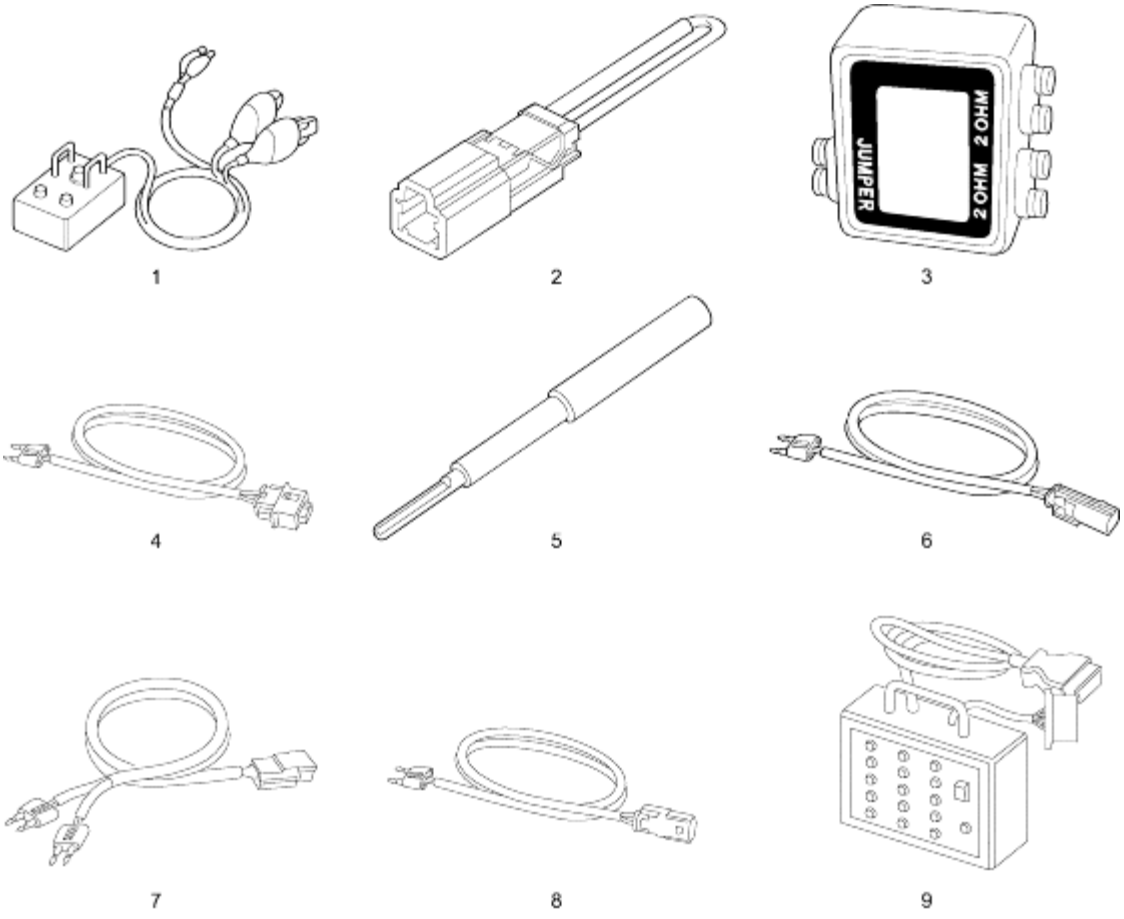
Restraints

Special Tools

Ref. No.	Tool Number	Description	Qty
1*1	07HAZ-SG00500	Deployment Tool	1
2	07PAZ-0010100	SCS Short Connector	2
3	07SAZ-TB4011A	SRS Inflator Simulator	1
4	07TAZ-SZ5011A	SRS Simulator Lead C	1
5*2	07TAZ-001020A	Backprobe Adapter, 17 mm	2
6	07XAZ-S1A0200	SRS Simulator Lead E	1
7	07XAZ-SZ30100	SRS Simulator Lead F	1
8	07YAZ-S3A0100	SRS Simulator Lead H	1
9	07WAJ-0010100	DLC Terminal Box	1

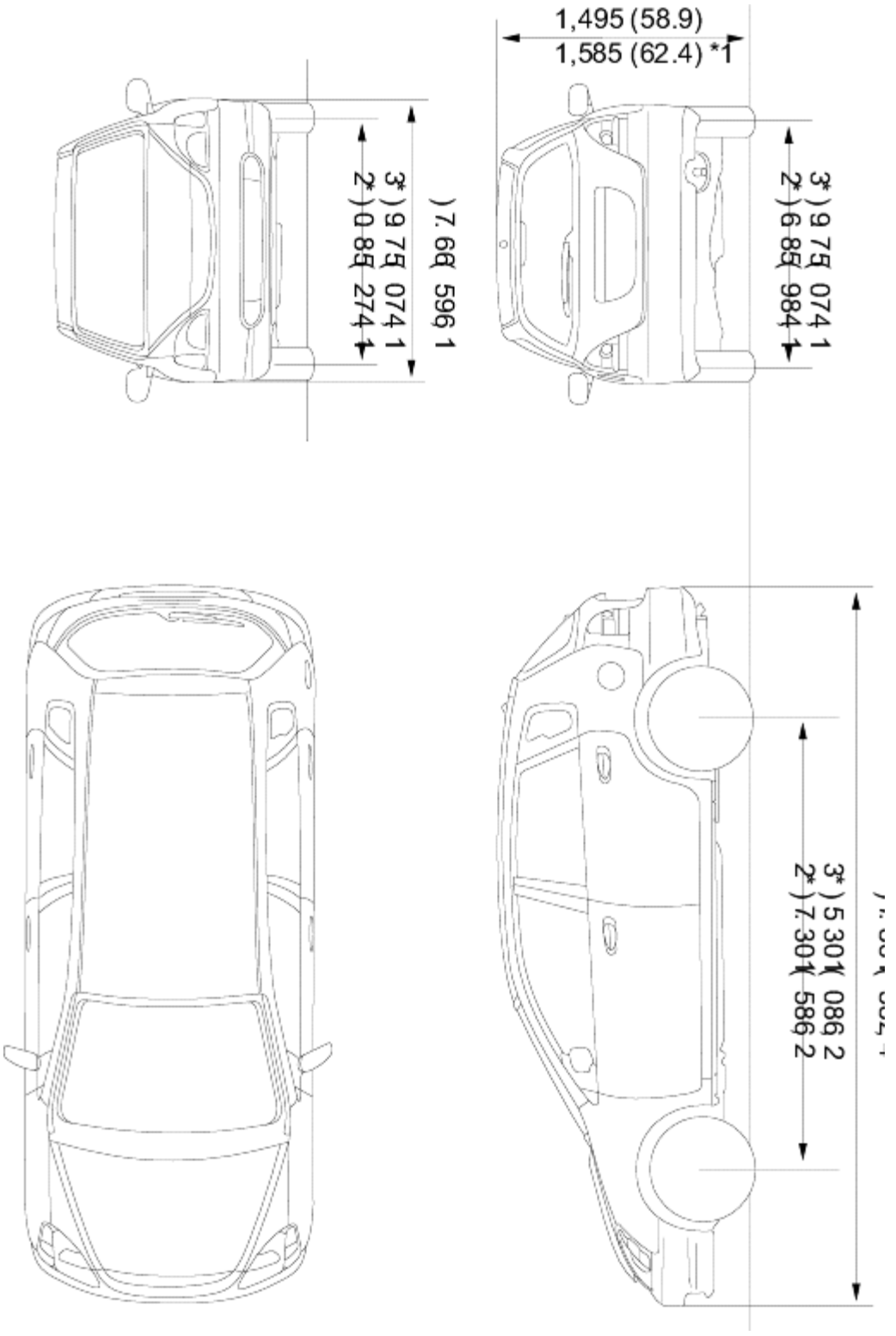
*1: Included in SRS Tool Set 07MAZ-SM5000B

*2: Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



Body Specifications
(cont'd)

Unit: mm (in.)



*1: With Roof Antenna

*2: European model (MPW condition)

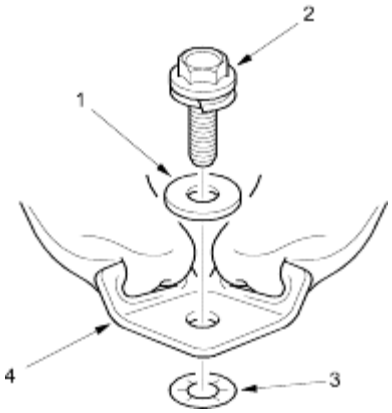
*3: Except European model

Seat Belts

Rear Seat Belt Replacement (cont'd)

1. 6. Install the seat belt and buckles in the reverse order of removal and note these items:
   - With centre shoulder belt: Check that the retractor locking mechanism functions (see step 1 on page 23-21).
   - Assemble the washers on the centre anchor bolt as shown (except centre shoulder belt).
   - Before installing the centre anchor bolt, make sure there are no twists or kinks in the centre belt.

Centre anchor bolt construction:

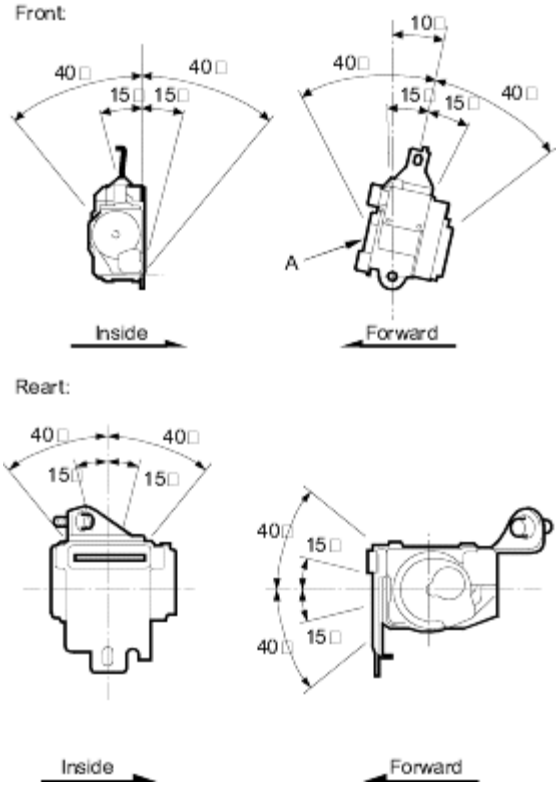


2. 1. WASHER
   2. CENTRE ANCHOR BOLT
   3. TOOTHED LOCK WASHER
   4. CENTRE ANCHOR

For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 23-24), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

Retractor, Front and Rear

1. 1. Before installing the retractor, check that the seat belt can be pulled out freely.
   2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position. The seat belt should lock when the retractor is leaned over 40°. Do not attempt to disassemble the retractor.



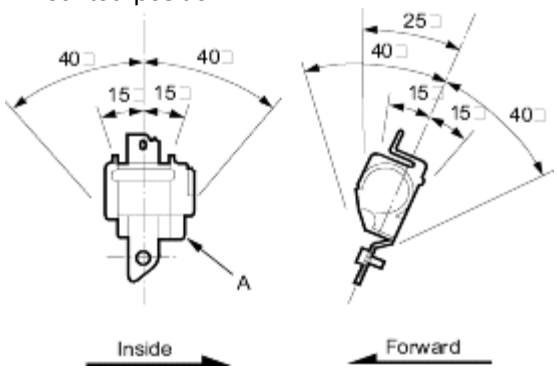
2. 3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Seat Belts

Inspection (cont'd)

Retractor, Rear Centre

1. 1. Before installing the retractor, check that the seat belt can be pulled out freely.
   2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position.



2. 3. Lean the retractor over 40° and make sure that the seat belt does not lock when pulled out over 900 mm (35.4 in.). Do not attempt to disassemble the retractor.
   4. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

In-vehicle

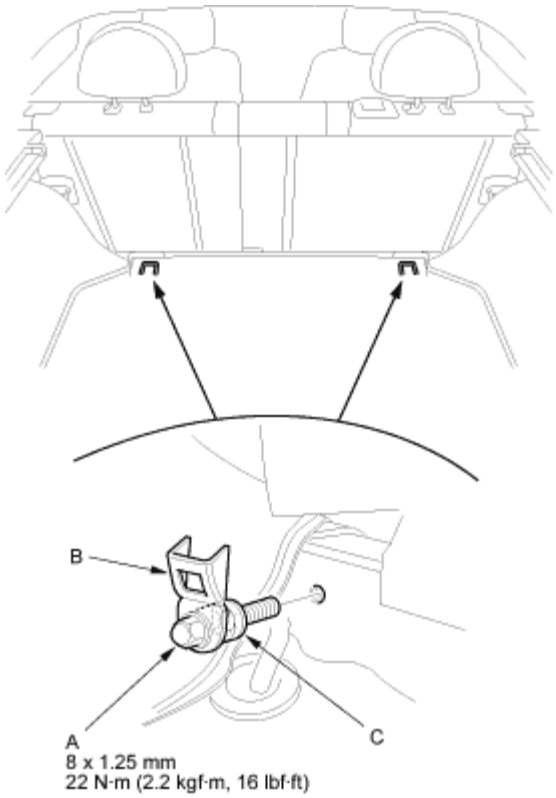
1. 1. Check that the seat belt is not twisted or caught on anything.
   2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.
   3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.
      NOTE: Dirt build-up in the metal loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.
   4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
   5. For rear centre shoulder belt, check that the seat belt locks when pulled out over 300 mm (11.8 in.) with the seat-back folded down.
   6. Make sure that the seat belt will retract automatically when released.
   7. For rear passenger's seat belt (except centre shoulder belt), make sure that the locking mechanism in the seat belt retractor will engage when the seat belt is pulled all the way out.
   8. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Seat Belts

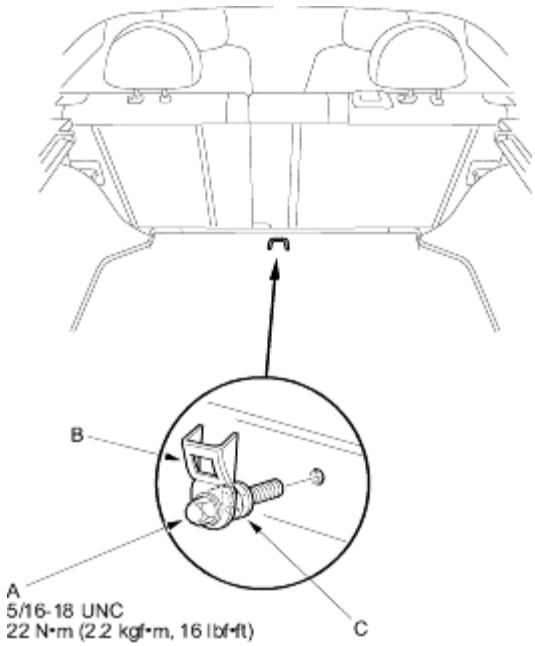
Child Seat Tether Anchor Fitting Replacement

1. 1. Remove the trunk floor mat as necessary (see page 20-208).
2. 2. Remove the anchor bolt (A), then remove the child seat tether anchor fitting (B) from behind the seat-back on each side of the trunk component (KE model) and middle of the trunk component (KQ model). Do not remove the toothed washer (C) from the tether anchor fitting.

KE model:



KQ model:

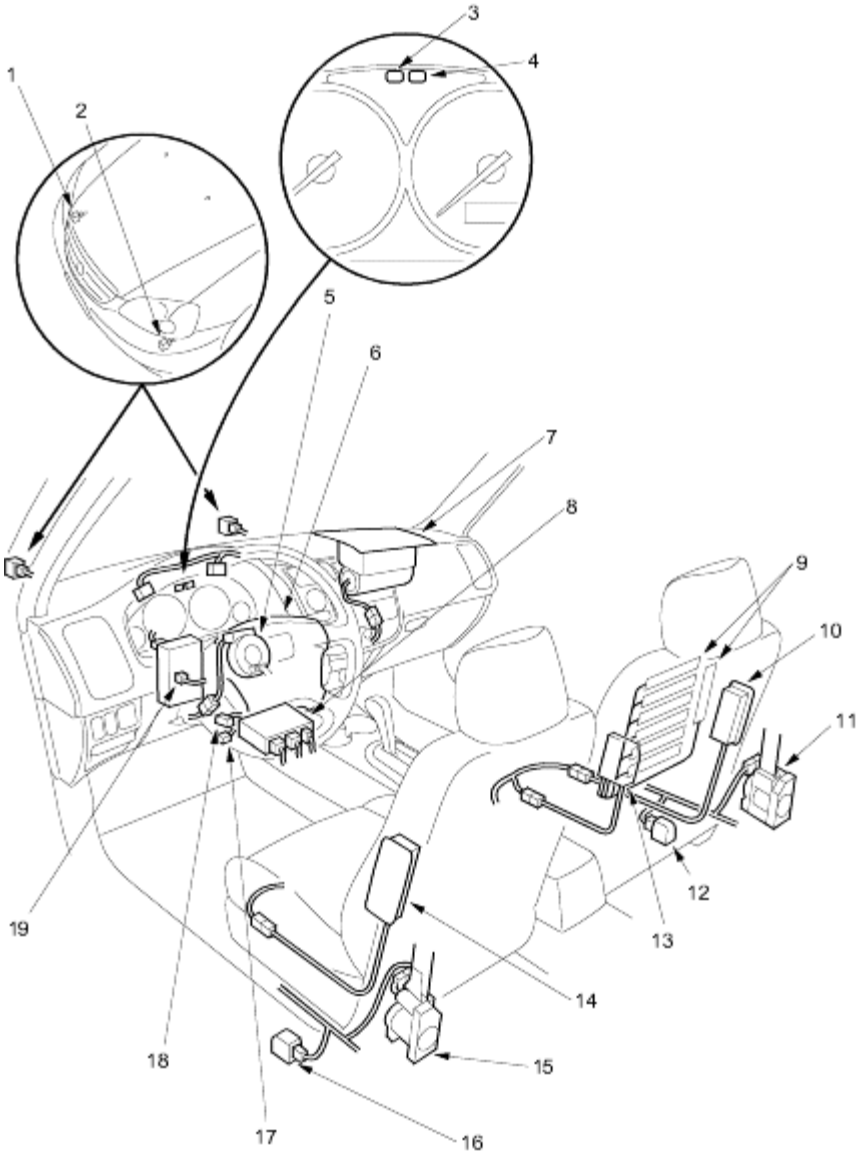


1. 3. Install the tether anchor fitting in the reverse order of removal.

SRS

Component Location Index

4-door

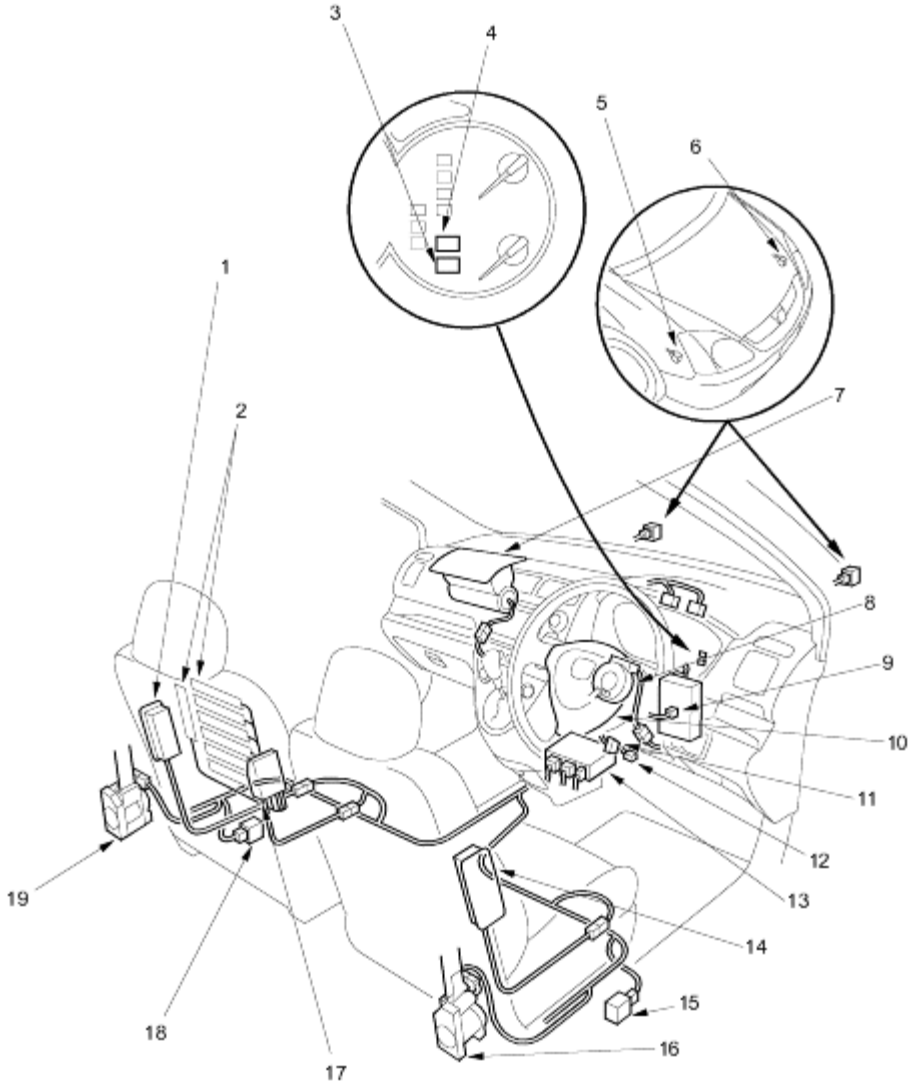


1. RIGHT FRONT SENSOR
2. LEFT FRONT SENSOR
3. SRS INDICATOR LIGHT
   Troubleshooting, page 23-145
4. SIDE AIRBAG INDICATOR LIGHT
5. CABLE REEL
   Replacement, page 23-173
6. DRIVER'S AIRBAG
   Replacement, page 23-165
   Disposal, page 23-170
7. FRONT PASSENGER'S AIRBAG
   Replacement, page 23-167
   Disposal, page, 23-170
8. SRS UNIT
   Replacement, page 23-176
9. OPDS SENSOR/SEAT BACK
   Replacement, page 20-92
10. FRONT PASSENGER'S SIDE AIRBAG
    Replacement, page 23-167
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11. RIGHT SIDE SEAT BELT TENSIONER
    Replacement, page 23-5
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12. FRONT PASSENGER'S SIDE IMPACT SENSOR
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14. DRIVER'S SIDE AIRBAG
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15. LEFT SIDE SEAT BELT TENSIONER
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16. DRIVER'S SIDE IMPACT SENSOR
    Replacement, page 23-177
17. SERVICE CHECK CONNECTOR (2P)
    (some models)
18. DATA LINK CONNECTOR (DLC) 16P
19. MEMORY ERASE SIGNAL (MES) CONNECTOR (2P)

SRS

Component Location Index (cont'd)

5-door



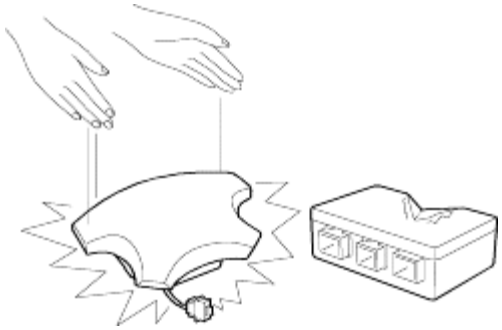
1. FRONT PASSENGER'S SIDE AIRBAG
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4. SRS INDICATOR LIGHT
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SRS
Precautions and Procedures

General Precautions

Please read the following precautions carefully before performing the airbag system service. Observe the instructions described in this manual, or the airbags could accidentally deploy and cause damage or injuries.

- Except when performing electrical inspections, always turn the ignition switch OFF and disconnect the negative cable from the battery and wait at least 3 minutes before beginning work.
  NOTE: The contents in the memory is not erased even if the ignition switch is turned OFF or the battery cables are disconnected from the battery.
- Use the replacement parts which are manufactured to the same standards as the original parts and quality. Do not install used SRS parts from another vehicle. Use only new parts when making SRS repairs.
- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.



- Before removing any of the SRS parts (including the disconnection of the connectors), always disconnect the SRS connector.
- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.
- Do not put objects on the front passenger's airbag.
- The original radio has a coded theft protection circuit. Be sure to get the customer's radio code before disconnecting the battery cable.

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring making the SRS system and the horns inoperative. Centre the cable reel whenever the following is performed (see step 6 on page 23-175).
  - Installation of the steering wheel
  - Installation of the cable reel
  - Installation of the steering column
  - Other steering-related adjustment or installation
- Do not disassemble the cable reel.
- Do not apply grease on the cable reel.
- If the cable reel shows any signs of damage, replace it with a new one. For example, it does not rotate smoothly.

Inspection After Deployment

After a collision in which the airbags were deployed, replace the deployed parts (airbag, seat belt tensioner, seat belt buckle tensioner and side airbag), the SRS unit, the side impact sensor on the side which deployed and any related parts and inspect the following:

2. 1. Inspect all the SRS wire harnesses. Replace, do not repair any damaged harnesses.
   2. Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.
   3. After the vehicle is completely repaired, turn the ignition switch on. If the SRS indicator light comes on for about 6 seconds and then goes off, the SRS airbag system is OK. If the indicator light does not function properly, go to SRS Troubleshooting.

SRS

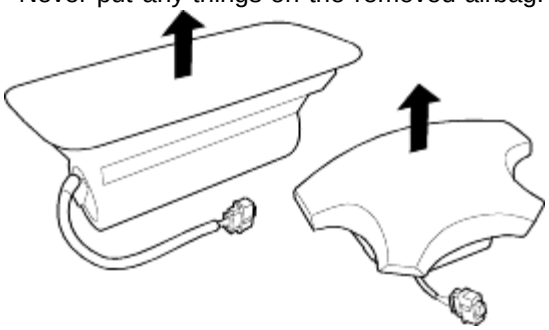
Precautions and Procedures (cont'd)

Airbag Handling and Storage

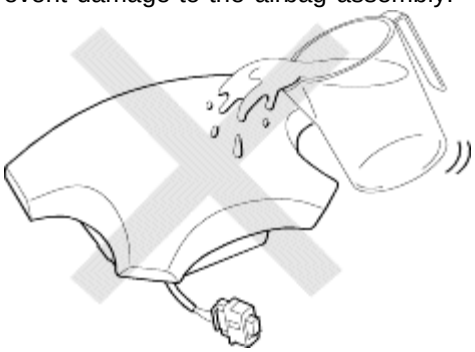
Do not disassemble the airbags. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of the airbag during service, please observe the following precautions.

- Store the removed airbag with the pad surface up. Never put any things on the removed airbag.



- Keep free from any oil, grease, detergent, or water to prevent damage to the airbag assembly.



- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200°F/93°C).



- Never perform electrical inspections to the airbags, such as measuring resistance.
- Do not position yourself in front of the airbag assembly during removal, inspection, or replacement.



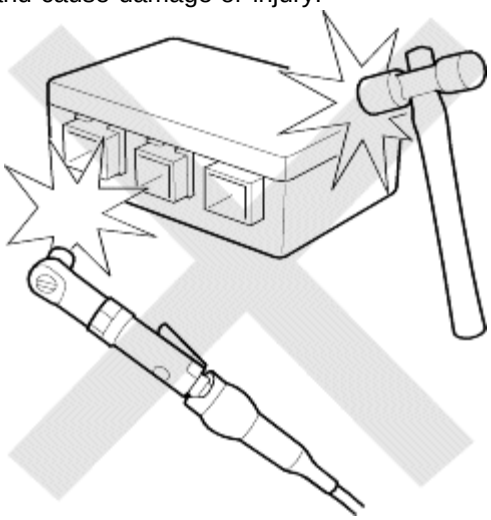
- Refer to the scrapping procedures for disposal of the damaged airbag.

SRS

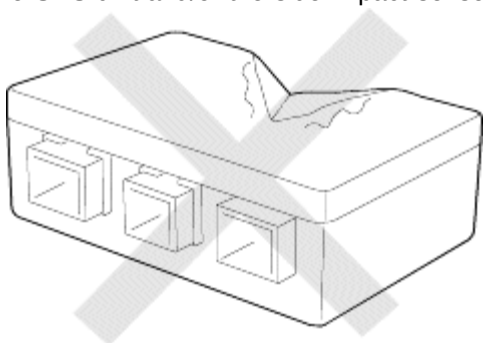
Precautions and Procedures (cont'd)

SRS Unit, Front Sensors and Side Impact Sensors

- Be careful not to bump or impact the SRS unit, front sensors or the side impact sensors whenever the ignition switch is ON (II), or at least for 3 minutes after the ignition switch is turned OFF.
- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, front sensors and the side impact sensor. The airbags could accidentally deploy and cause damage or injury.



- After a collision in which the airbags were deployed, replace the SRS unit and front sensors. After a collision in which the side airbag was deployed, replace the side impact sensor on the side where the side airbag deployed and the SRS unit. After a collision in which the airbags or the side airbags did not deploy, inspect for any damage or any deformation on the SRS unit, front sensors and the side impact sensors. If there is any damage, replace the SRS unit and/or the side impact sensors.



- Do not disassemble the SRS unit or the side impact sensors.
- Turn the ignition switch OFF, disconnect the battery negative cable and wait at least 3 minutes before beginning installation or replacement of the SRS unit, or disconnecting the connectors from the SRS unit.
- Be sure the SRS unit and side impact sensors are installed securely with the mounting bolts torqued to 9.8 Nm (1.0 kgf/m, 7.2 lbf/ft)
- Do not spill water or oil on the SRS unit or the side impact sensors and keep them away from dust.
- Store the SRS unit and the side impact sensors in a cool (less than $104^{o}F/40^{o}C$) and dry (less than 80 % relative humidity, no moisture) area.

SRS

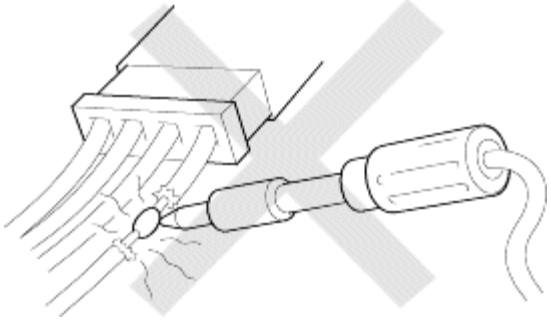
Precautions and Procedures (cont'd)

Wiring Precautions

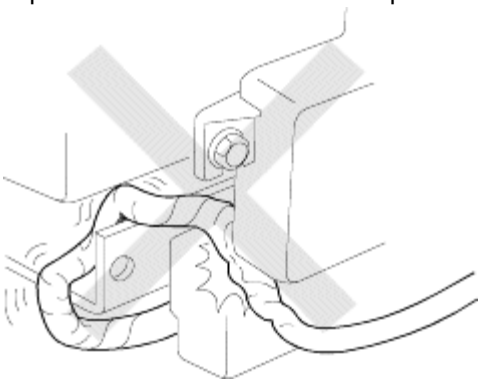
SRS wiring can be identified by special yellow outer covering (except the SRS indicator light circuit).

Observe the instructions described in this section.

- Never attempt to modify, splice or repair SRS wiring. If there is an open or damage in SRS wiring, replace the harness.



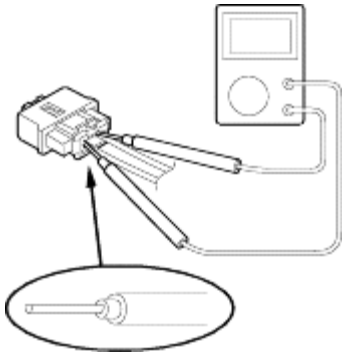
- Be sure to install the harness wires so that they are not pinched or interfere with other parts.



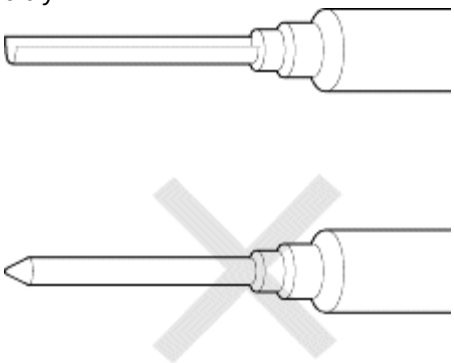
- Make sure all SRS ground locations are clean and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

Precautions for Electrical Inspections

- When using electrical test equipment, insert the probe of the tester into the wire side of the connector. Do not insert the probe of the tester into the terminal side of the connector and do not tamper with the connector.



- Use a u-shaped probe. Do not insert the probe forcibly.



- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.

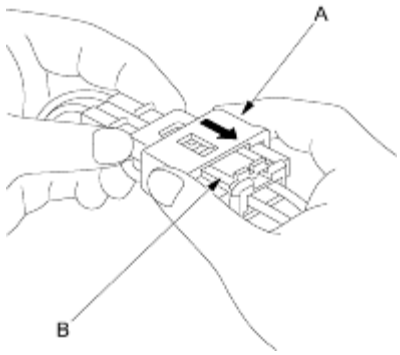
Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

Front Airbag Connectors:

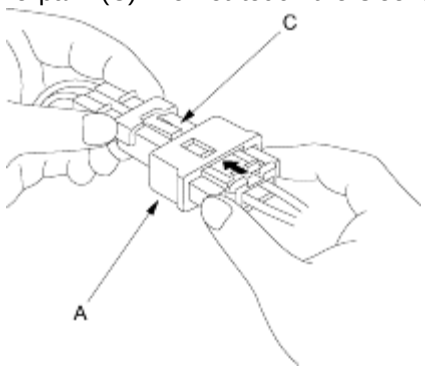
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.

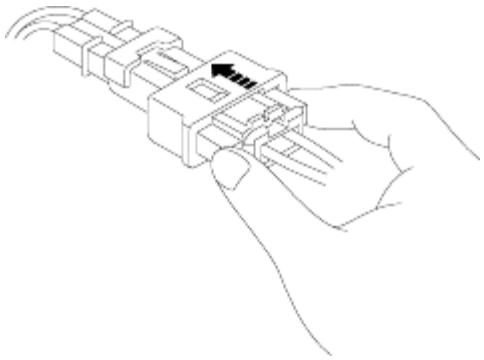


Connecting

1. 1. To reconnect, hold the pawl-side connector half, and press on the back of the sleeve-side connector half in the direction shown. As the two connector halves are pressed together, the sleeve (A) is pushed back by the pawl (C). Do not touch the sleeve.



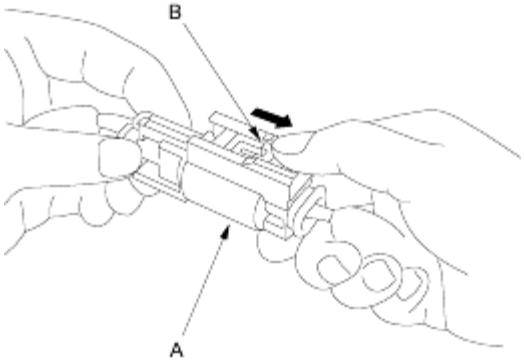
2. 2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.



Side Airbag Connector:

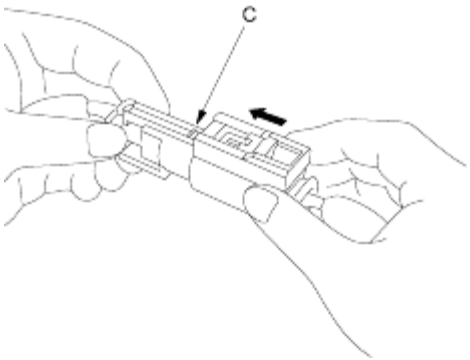
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) and the slider (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.



Connecting

Hold the both connector halves and press them forcibly until the projection (C) of the sleeve-side connector clicks to lock.



4-door Seat Belts

Component Location Index	23-4
Front Seat Belt Replacement	23-5
Rear Seat Belt Replacement	23-8
Inspection	23-11
Child Seat Tether Anchor Fitting Replacement	23-12

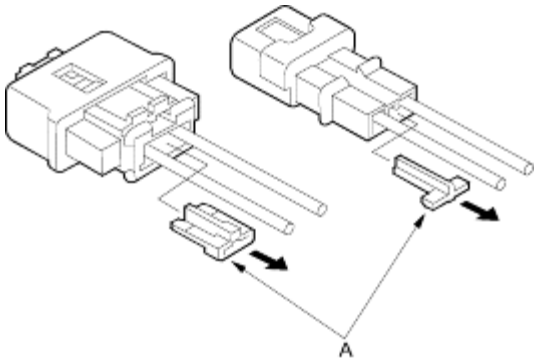
SRS

Precautions and Procedures (cont'd)

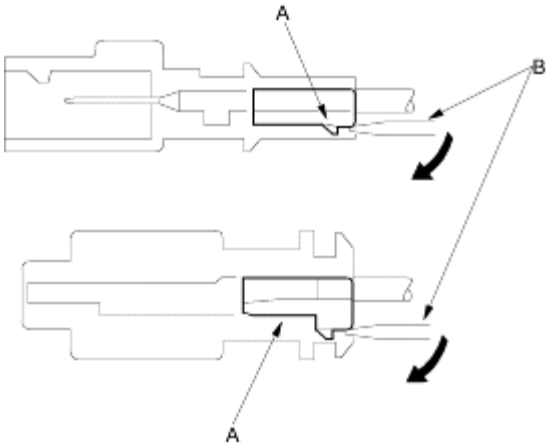
Backprobing Spring-loaded Lock Connectors

When checking voltage or resistance on this type of connector the first time, you must remove the retainer to insert the tester probe from the wire side.

NOTE: It is not necessary to reinstall the removed retainer; the terminals will stay locked in the connector housing.



To remove the retainer (A), insert a flat-tip screwdriver (B) between the connector body and the retainer, then carefully pry out the retainer. Take care not to break the connector.



Seats with Side Airbags

Seats with side airbags have a "SIDE AIRBAG" label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.



- When cleaning, do not saturate the seat with liquid, and do not spray steam on the seat.
- Do not repair torn or frayed seat-back covers. Replace the seat-back cover.
- After a collision in which the side airbag was deployed, replace the side airbag with new parts. If the seat-back cushion is split, it must be replaced. If the seat-back frame is deformed, it must be replaced.

SRS

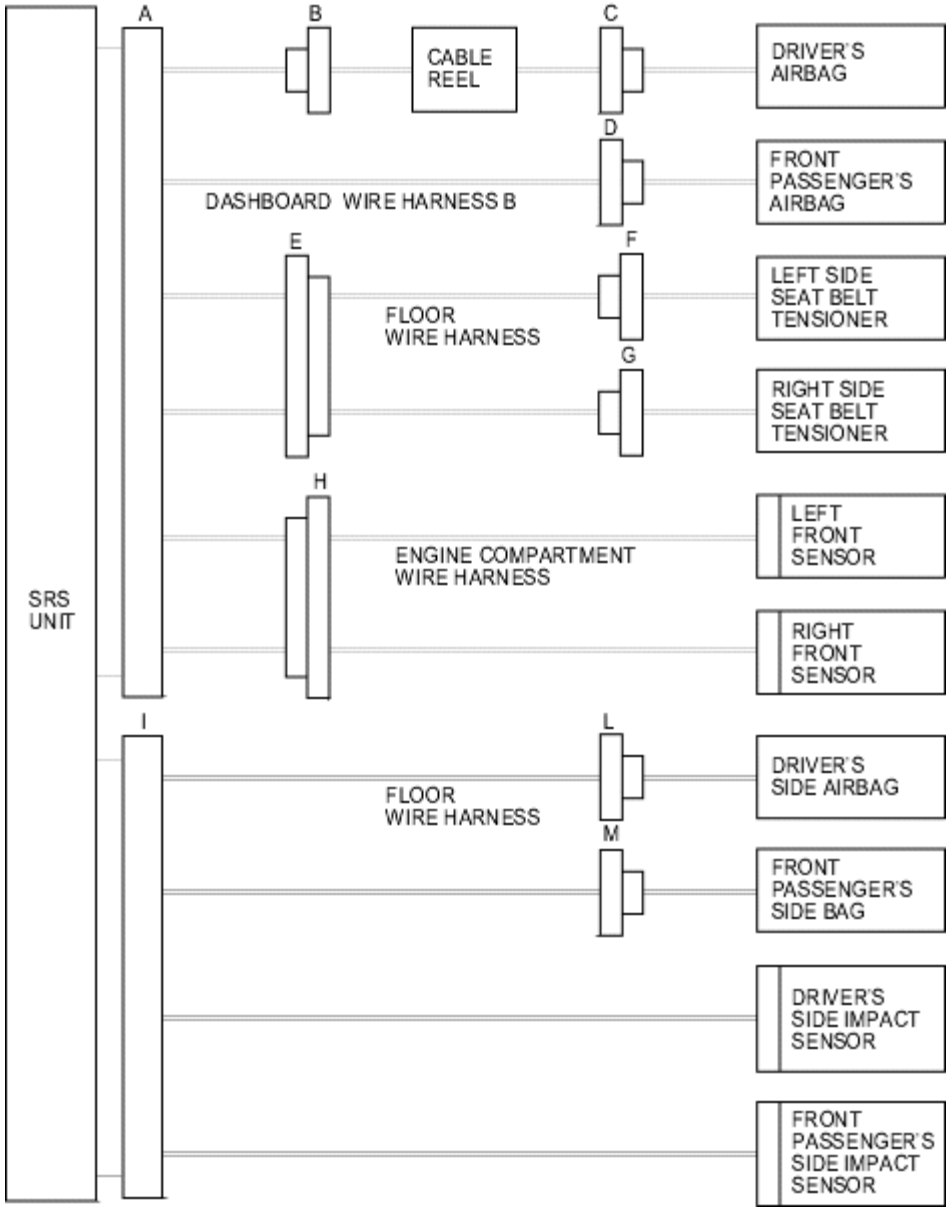
Precautions and Procedures (cont'd)

Disconnecting the Airbag Connectors, Side Airbag Connectors and Seat Belt Tensioner Connectors

Before removing a front airbag, side airbag or other SRS related devices (the SRS unit, the cable reel, the side impact sensors and the seat belt tensioner connector), disconnecting connectors from related devices, or removing the dashboard or the steering column, disconnect the airbag connectors or the side airbag connectors to prevent accidental deployment.

Turn the ignition switch OFF and disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

- Before disconnecting the dashboard wire harness B 18P connector (A) from the SRS unit, disconnect the driver's airbag 2P connector (C), the front passenger's airbag 2P connector (D), the left side seat belt tensioner 2P connector (F) and the right side seat belt tensioner 2P connector (G).
- Before disconnecting the floor wire harness 18P connector (I) from the SRS unit, disconnect both side airbag 2P connectors (L, M).
- Before disconnecting the cable reel 4P connector (B), disconnect the driver's airbag 2P connector (C).
- Before disconnecting the floor wire harness 4P connector (E), disconnect both seat belt tensioner 2P connectors (F, G).



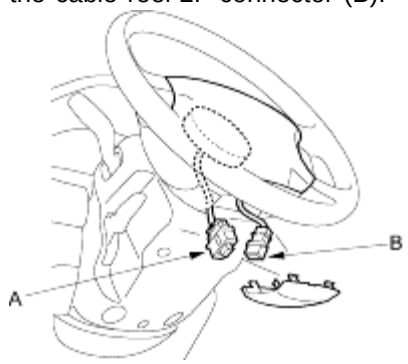
SRS

Precautions and Procedures (cont'd)

1. 1. Disconnect the negative battery cable and wait at least 3 minutes.

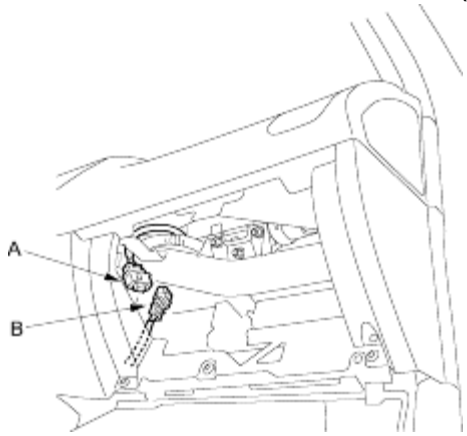
Driver's Airbag

2. 2. Remove the access panel from the steering wheel, then disconnect the driver's airbag 2P connector (A) from the cable reel 2P connector (B).



Front Passenger's Airbag

3. 3. Remove the glove box, then disconnect the front passenger's airbag 2P connector (A) from the dashboard wire harness B 2P connector (B).



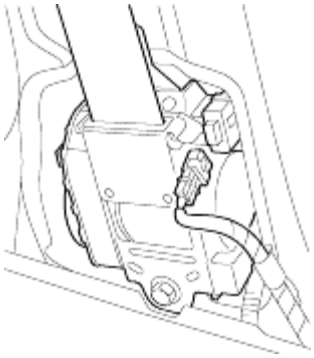
Side Airbag

1. 4. Disconnect both side airbag 2P connectors (A) from the floor wire harness 2P connectors (B).



Seat Belt Tensioner

2. 5. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness 2P connector (B).



SRS

General Troubleshooting Information

DTC (Diagnostic Trouble Codes)

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and then store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

- When you turn the ignition switch ON (II), the SRS indicator will come on. If it goes off after 6 seconds, the system is normal.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory and turns the SRS indicator light on. The data will remain in the memory even when the ignition switch is turned off or if the battery is disconnected.
- When you connect the SCS short connector (or DLC terminal box) to the service check connector (2P) or 16P data link connector (DLC) and turn the ignition switch ON (II), the SRS indicator light will indicate the diagnostic trouble code (DTC) by the number of blinks.
- After reading and recording the DTC, proceed with the troubleshooting procedure for this code.

Precautions

- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure the output is 10 mA (0.01A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible injury.
- Whenever the ignition switch is ON (II), or has been turned OFF for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the SRS wire harness from the SRS unit, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, and both seat belt tensioner connectors.
- Make sure the battery is sufficiently charged. If the battery is dead or low, measuring values will not be correct.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors and do not connect the terminals with a jumper wire. Use only the backprobe set and the special tools.

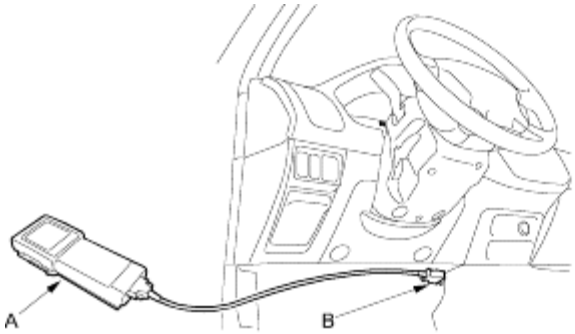
Reading the DTC

When the SRS indicator light is on, read the DTC using either of the following methods:

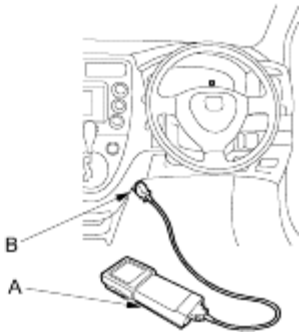
PGM Tester Method

Connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC)(B), and follow the tester's prompts in the "SRS" menu. If the tester indicates no DTC, DTC 9-1 or DTC 9-2, read by SRS indicator light method.

4-door



5-door



SRS

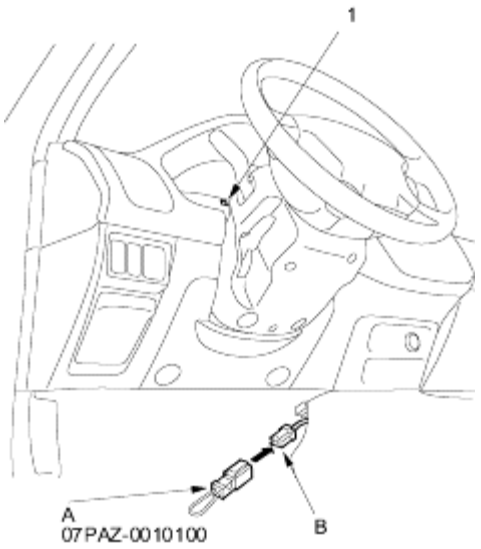
General Troubleshooting Information (cont'd)

Reading the SRS Indicator Light Method (with service check connector (2P) models):

The SRS indicator light indicates the DTC by the number of blinks when the SCS short connector is connected to the service check connector (2P).

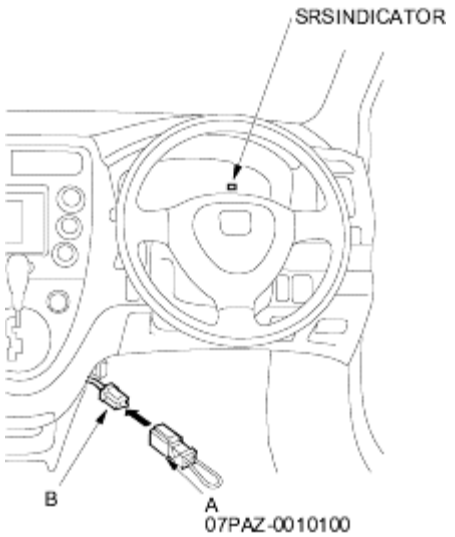
1. 1. Make sure the ignition switch is OFF and wait for 10 seconds. Then connect the SCS short connector (A) to the service check connector (2P) (B). If you do not wait 10 seconds, the SRS unit will not be completely reset or output DTCs.

4-door



2. 1. SRS INDICATOR LIGHT

5-door



3. 1. SRS INDICATOR LIGHT

1. 2. Turn the ignition switch ON (II). The SRS indicator light comes on for about 6 seconds and then goes off. Then it will indicate the DTC.
2. 3. Read the DTC.
4. Turn the ignition switch OFF and wait for 10 seconds. Then disconnect the SCS short connector from the service check connector (2P).

SRS

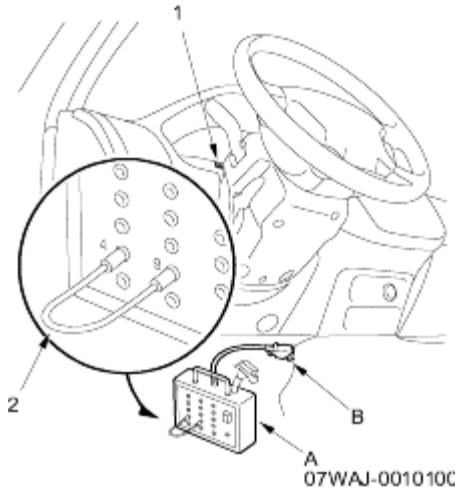
General Troubleshooting Information (cont'd)

Reading the SRS Indicator Light Method (without service check connector (2P) models):

The SRS indicator light indicates the DTC by the number of blinks when the DLC terminal box is connected to the Data Link Connector (DLC) 16P.

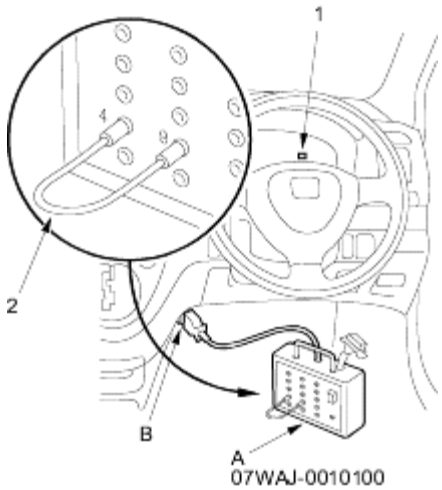
1. 1. Make sure the ignition switch is OFF and wait for 10 seconds. Then connect the DLC terminal box (A) to the Data Link Connector (DLC) 16P (B). If you do not wait 10 seconds, the SRS unit will not be completely reset or output DTCs.

4-door



2. 1. SRS INDICATOR LIGHT
   2. JUMPER WIRE

5-door

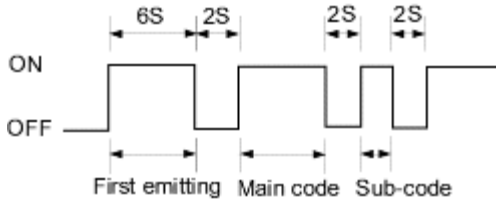


3. 1. SRS INDICATOR LIGHT
   2. JUMPER WIRE

1. 2. Connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire and push the operation switch.
2. 3. Turn the ignition switch ON (II). The SRS indicator light comes on for about 6 seconds and then goes off. Then it will indicate the DTC.
   4. Read the DTC.
   5. Turn the ignition switch OFF and wait for 10 seconds. Then disconnect the DLC terminal box from the Data Link Connector (DLC) 16P.

Patterns of DTC Indications:

The DTC consists of a main code and sub-code.

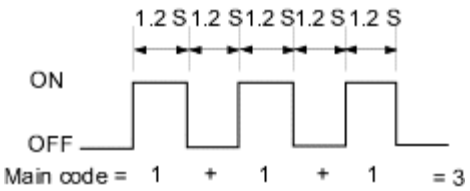


Reading the main code:

In case of 1 ~ 10

Count the number of blinks.

Example:

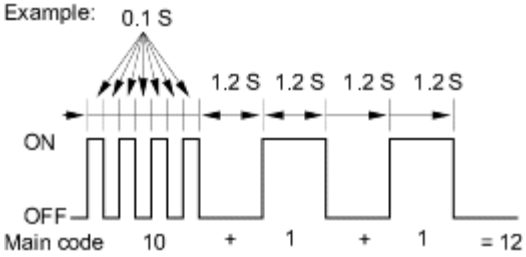


In case of 11 ~ 15

Four continuous blinks count as ten.

Add any further blinks together as shown.

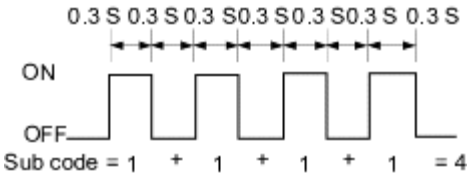
Example:



Reading the sub code:

Count the number of blinks.

Example:



If the main code is '3' and the sub-code is '4', record a DTC 3-4.

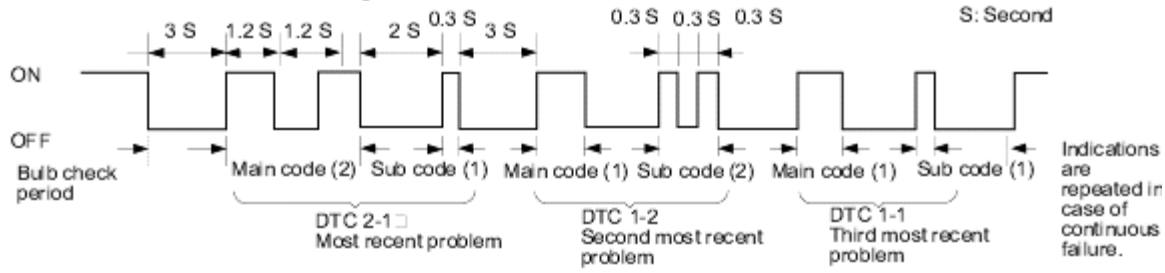
SRS

General Troubleshooting Information (cont'd)

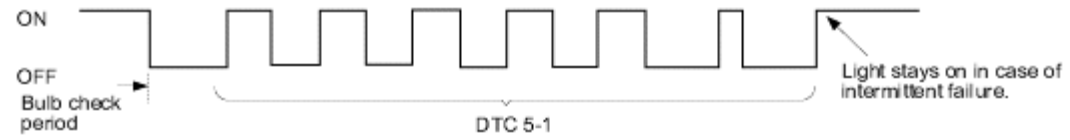
- Including the most recent problem, up to three different malfunctions can be indicated (see example 1 below).
- In case of a continuous failure, the DTC will be indicated repeatedly (see example 1 below).
- In case of an intermittent failure, the SRS indicator light will indicate the DTC one time, then it will stay on (see example 2 below).
- If both a continuous and an intermittent failure occur, both DTCs will be indicated as continuous failures.
- When the system is normal (no DTC), the SRS indicator light will stay on (see example 3).
- If the SRS indicator light comes on continuously without a DTC, there may be a problem with the system.
- If the SRS indicator light does not come on as indicated above, always check for an open or a short to ground in the SCS circuit before troubleshooting the system.

Example of the DTC Indications:

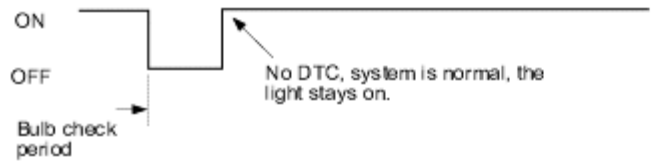
1. Continuous failure, SRS Indicator Light is:



2. Intermittent failure, SRS Indicator Light blinks like this:



3. Normal (no failure), SRS Indicator Light is:



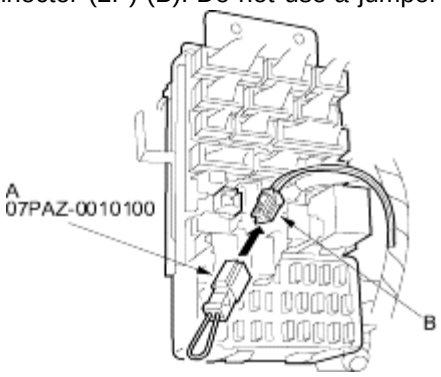
Erasing the DTC Memory

Special Tools Required

SCS short connector, 07PAZ-0010100

To erase the DTC(s) from the SRS unit, use a Honda PGM Tester (see the Honda PGM Tester SRS vehicle System Supplement) or the following procedure.

1. 1. Make sure the ignition switch is OFF.
   2. Connect the SCS short connector (A) to the MES connector (2P) (B). Do not use a jumper wire.



2. 3. Turn the ignition switch ON (II).
   4. The SRS indicator light will come on for about 6 seconds and then go off. Remove the SCS short connector from the MES connector (2P) within 4 seconds after the light goes off.
   5. The SRS indicator light will come on again. Reconnect the SCS short connector to the MES connector (2P) within 4 seconds after the light comes on.
   6. When the SRS indicator light goes off, remove the SCS short connector from the MES connector (2P) within 4 seconds.
   7. The SRS indicator light will blink 2 times indicating that the memory has been erased.
   8. Turn the ignition switch OFF and wait for 10 seconds.
      Turn the ignition switch ON (II) again after the procedure. The SRS system is OK if the SRS indicator light comes on for 6 seconds and then goes off.

Troubleshooting Intermittent Failures

If there was a malfunction, but it does not recur, it will be stored in the memory as an intermittent failure and the SRS indicator light will come on.

After checking the DTC, troubleshoot as follows:

1. 1. Read the DTC (see "Reading DTCs").
   2. Erase the DTC memory (see "Erasing the DTC Memory").
   3. With the shift lever in Park or neutral, start the engine and let the engine idle.
   4. The SRS indicator light will come on for about 6 seconds and then go off.
   5. Shake the wire harness and the connectors, take a test drive (quick acceleration, quick braking, cornering), turn the steering wheel fully left and right and hold it there for 5 to 10 seconds. If the problem recurs, the SRS indicator light will come on.
   6. If you can not duplicate the intermittent failure, the system is OK at this time.

SRS

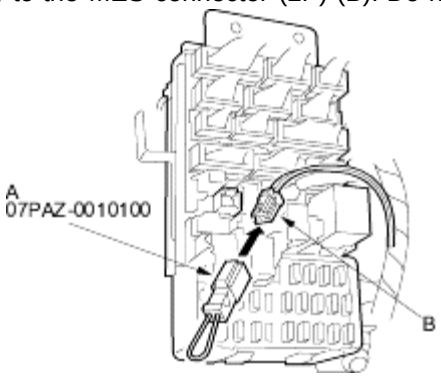
General Troubleshooting Information (cont'd)

Initialising the OPDS (Occupant Position Detection System) Unit

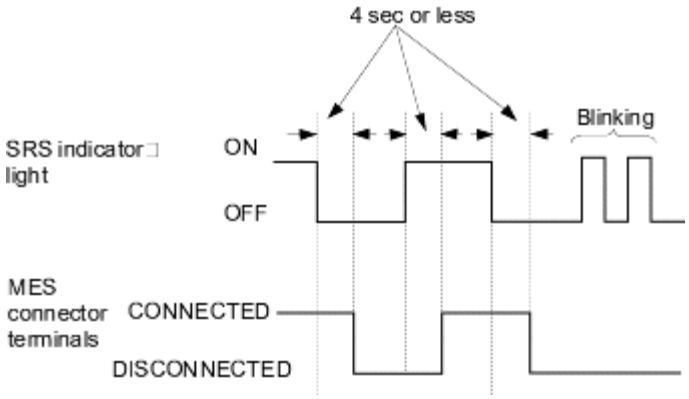
When the seat-back cover, seat-back cushion or (and) OPDS unit assembly are replaced with a new one, initialise the OPDS unit links with the OPDS sensor by following the procedure below.

NOTE: Make sure the passenger's seat is dry, set the seat-back in the normal position, and make sure there is nothing sitting on the front passenger's seat.

1. 1. Make sure the ignition switch is OFF.
   2. With service check connector (2P)models: connect the SCS short connector to the service check connector (2P). Without service check connector (2P) models: connect the DLC terminal box to the DLC (16P), and connect the DLC terminal box terminals No. 4 and No. 9 with a jumper wire and push the operation switch.
   3. Connect the SCS short connector (A) to the MES connector (2P) (B). Do not use a jumper wire.

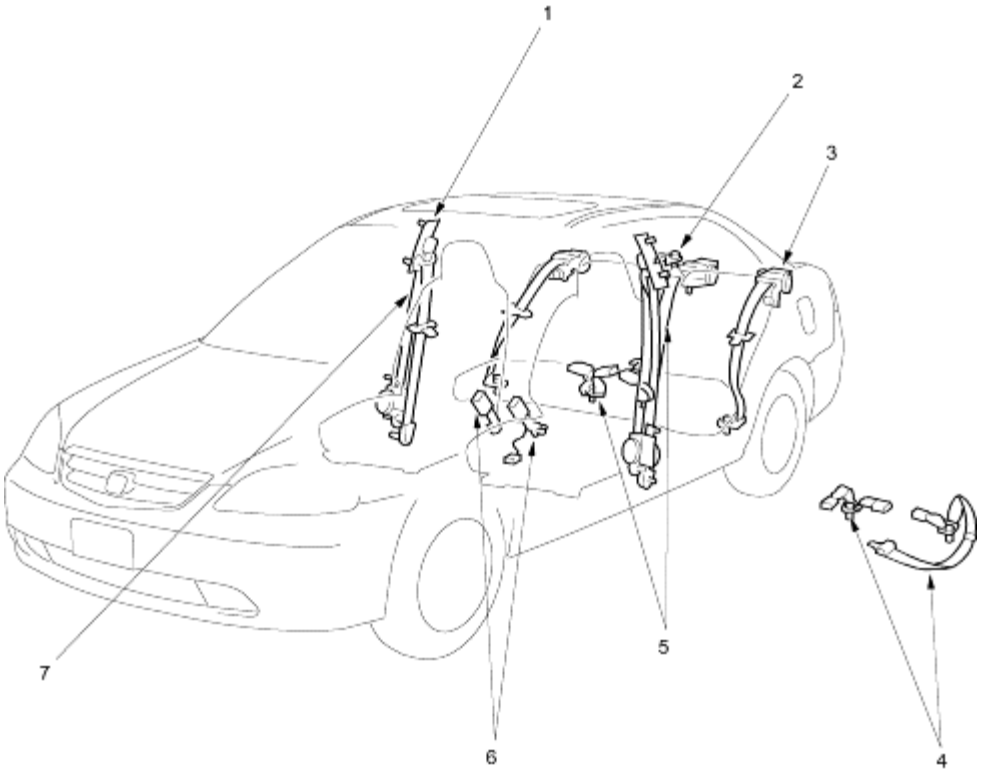


2. 4. Turn the ignition switch ON (II).
   5. The SRS indicator light comes on for about 6 seconds and goes off. Remove the SCS short connector from the MES connector within 4 seconds after the SRS indicator light went off.
   6. The SRS indicator light comes on again. Reconnect the SCS short connector to the MES connector within 4 seconds after the SRS indicator light comes on.
   7. The SRS indicator light goes off. Remove the SCS short connector from the MES connector within 4 seconds.
   8. The SRS indicator light indicates that the OPDS unit is initialised by blinking 2 times, then goes off.
      If the light does not blink 2 times and stay on, repeat this procedure beginning with step 1.
      If the light stays on after blinking 2 times, read the DTC and proceed with troubleshooting procedures.
   9. Turn the ignition switch OFF and wait for 10 seconds. Disconnect the DLC terminal box from the DLC (16P), or disconnect the SCS short connector from the service check connector (2P).
      Turn the ignition switch ON (II) again after the procedure. The SRS indicator light comes on for about 6 seconds and goes off. If the SRS indicator light does not come on again after 30 seconds, the initialisation of the OPDS unit is complete and the system is OK.



Seat Belts

Component Location Index



1. SHOULDER ANCHOR ADJUSTER
   Step 8 on page 23-6
2. CHILD SEAT TETHER ANCHOR FITTING
   Replacement, page 23-12
3. REAR SEAT BELT
   Replacement, page 23-8
   Inspection, page 23-11
4. REAR CENTRE BELT and REAR SEAT BELT BUCKLES (Rear centre lap belt)
   Step 1 on page 23-9
5. REAR CENTRE BELT and REAR SEAT BELT BUCKLES (Rear centre shoulder belt)
   Step 1 on page 23-9Inspection, page 23-11
6. FRONT SEAT BELT BUCKLES
   Step 1 on page 23-7
7. FRONT SEAT BELT
   Replacement, page 23-5
   Inspection, page 23-11

SRS

DTC Troubleshooting Index

NEC (M2), DENSO (M1) SRS unit (Without Side Airbag Model)

DTC	Detection Item	Notes
1-1	Open in driver's airbag inflator	(see page 23-55)
1-2	Increased resistance in driver's airbag inflator	(see page 23-55)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-57)
1-4	Short to power in driver's airbag inflator	(see page 23-59)
1-5	Short to ground in driver's airbag inflator	(see page 23-61)
2-1	Open in front passenger's airbag inflator	(see page 23-63)
2-2	Increased resistance in front passenger's airbag inflator	(see page 23-63)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-64)
2-4	Short to power in front passenger's airbag inflator	(see page 23-66)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-67)
3-1	Open in left side seat belt tensioner	(see page 23-69)
3-2	Increased resistance in left side seat belt tensioner	(see page 23-69)
3-3	Short to another wire or decreased resistance in left side seat belt tensioner	(see page 23-71)
3-4	Short to power in left side seat belt tensioner	(see page 23-73)
3-5	Short to ground in left side seat belt tensioner	(see page 23-75)
4-1	Open in right side seat belt tensioner	(see page 23-77)
4-2	Increased resistance in right side seat belt tensioner	(see page 23-77)
4-3	Short to another wire or decreased resistance in left side seat belt tensioner	(see page 23-79)
4-4	Short to power in left side seat belt tensioner	(see page 23-81)
4-5	Short to ground in left side seat belt tensioner	(see page 23-83)

SRS

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Notes
5-1	Internal failure of SRS unit	(see page 23-85)
5-2		
5-3 (NEC)		
5-4		
5-5 (NEC)		
6-1 (NEC)		
6-2 (NEC)		
6-3 (NEC)		
6-4		
7-1		
7-2		
7-3		
8-1		
8-2		
8-3		
8-4		
8-5		
8-6		(see page 23-85)
9-1	Internal failure of the SRS unit. If intermittent, could mean internal failure of the unit or a faulty indicator light circuit. Refer to Troubleshooting Intermittent Failures (see page 23-38).	
9-2	Internal failure of the SRS unit. If intermittent, could mean internal failure of the power supply (VB line). Refer to Troubleshooting Intermittent Failures (see page 23-38).	
9-6	Faulty left front sensor	(see page 23-88)
9-7	Faulty right front sensor	(see page 23-91)
10-1	Seat belt tensioners (and airbag(s)) deployed	(see page 23-85)

NOTE:

Before troubleshooting DTCs 5-1 through 8-6, check battery/system voltage. If voltage is low, repair the charging system before troubleshooting the SRS system.

SRS

DTC Troubleshooting Index (cont'd)

SIEMENS (M1), KEIHIN (M3) SRS unit (Without Side Airbag Model)

DTC	Detection Unit	Notes
1-1	Open or increased resistance in driver's airbag inflator	(see page 23-55)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-57)
1-4	Short to power in driver's airbag inflator	(see page 23-59)
1-5	Short to ground in driver's airbag inflator	(see page 23-61)
2-1	Open or increased resistance in front passenger's airbag inflator	(see page 23-63)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-64)
2-4	Short to power in front passenger's airbag inflator	(see page 23-66)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-67)
3-1	Open or increased resistance in left side seat belt tensioner	(see page 23-69)
3-3	Short to another wire or decreased resistance in left side seat belt tensioner	(see page 23-71)
3-4	Short to power in left side seat belt tensioner	(see page 23-73)
3-5	Short to ground in left side seat belt tensioner	(see page 23-75)
4-1	Open or increased resistance in right side seat belt tensioner	(see page 23-77)
4-3	Short to another wire or decreased resistance in right side seat belt tensioner	(see page 23-79)
4-4	Short to power in right side seat belt tensioner	(see page 23-81)
4-5	Short to ground in right side seat belt tensioner	(see page 23-83)

SRS

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Notes
5-1	Internal failure of SRS unit	(see page 23-85)
5-2		
5-4		
5-8		
6-3		
6-4		
6-7		
6-8		
7-1		
7-2		
7-3		
8-1		
8-2		
8-3		
8-4		
8-5		
8-6		
9-1	Internal failure of the SRS unit. If intermittent, could mean internal failure of the unit or a faulty indicator light circuit. Refer to Troubleshooting Intermittent Failures (see page 23-38).	(see page 23-85)
9-2	Internal failure of the SRS unit. If intermittent, could mean internal failure of the power supply (VB line). Refer to Troubleshooting Intermittent Failures (see page 23-38).	
9-6	Faulty left front sensor	(see page 23-88)
9-7	Faulty right front sensor	(see page 23-91)
10-1	Seat belt tensioners (and airbag(s)) deployed	(see page 23-85)

SRS
DTC Troubleshooting Index (cont'd)

SIEMENS (M1), KEIHIN (M3 or M4) SRS unit (Side Airbag with OPDS Unit Model)

DTC	Detection Item	Notes
1-1	Open or increased resistance in driver's airbag inflator	(see page 23-55)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-57)
1-4	Short to power in driver's airbag inflator	(see page 23-59)
1-5	Short to ground in driver's airbag inflator	(see page 23-61)
2-1	Open or increased resistance in front passenger's airbag inflator	(see page 23-63)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-64)
2-4	Short to power in front passenger's airbag inflator	(see page 23-66)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-67)
3-1	Open or increased resistance in left side seat belt tensioner	(see page 23-69)
3-3	Short to another wire or decreased resistance in left side seat belt tensioner	(see page 23-71)
3-4	Short to power in left side seat belt tensioner	(see page 23-73)
3-5	Short to ground in left side seat belt tensioner	(see page 23-75)
4-1	Open or increased resistance in right side seat belt tensioner	(see page 23-77)
4-3	Short to another wire or decreased resistance in right side seat belt tensioner	(see page 23-79)
4-4	Short to power in right side seat belt tensioner	(see page 23-81)
4-5	Short to ground in right side seat belt tensioner	(see page 23-83)
5-1	Internal failure of SRS unit	(see page 23-85)
5-2		
5-4		
5-8		
6-3		
6-4		
6-7		
6-8		
7-1		
7-2		
7-3		
8-1		
8-2		

8-3		
8-4		
8-5		
8-6		

NOTE:

Before troubleshooting DTCs 5-1 through 8-6, check battery/system voltage. If voltage is low, repair the charging system before troubleshooting the SRS system.

SRS

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Notes
9-1	Internal failure of the SRS unit. If intermittent, could mean internal failure of the unit or a faulty indicator light circuit. Refer to Troubleshooting Intermittent Failures (see page 23-38).	(see page 23-85)
9-2	Internal failure of the SRS unit. If intermittent, could mean internal failure of the power supply (VB line). Refer to Troubleshooting Intermittent Failures (see page 23-38).	
9-6	Faulty left front sensor	(see page 23-88)
9-7	Faulty right front sensor	(see page 23-91)
10-1	Seat belt tensioners (and airbag(s)) deployed	(see page 23-85)
10-2	Driver's side airbag deployed	
10-3	Seat belt tensioners (and airbag(s)) and driver's side airbag deployed	
10-4	Front passenger's side airbag deployed	
10-5	Seat belt tensioners (and airbag(s)) and front passenger's side airbag deployed	
10-6	Driver's and front passenger's side airbags deployed	
10-7	Seat belt tensioners (and airbag(s)) and driver's and front passenger's side airbags deployed	
11-1	Open or increased resistance in driver's side airbag inflator	(see page 23-94)
11-3	Short to another wire or decreased resistance in driver's side airbag inflator	(see page 23-95)
11-4	Short to power in driver's side airbag inflator	(see page 23-97)
11-5	Short to ground in driver's side airbag inflator	(see page 23-98)
12-1	Open or increased resistance in front passenger's side airbag inflator	(see page 23-106)
12-3	Short to another wire or decreased resistance in front passenger's side airbag inflator	(see page 23-107)
12-4	Short to power in front passenger's side airbag inflator	(see page 23-109)
12-5	Short to ground in front passenger's side airbag inflator	(see page 23-110)
13-1	Internal failure of the driver's side impact sensor	(see page 23-86)
13-2		
13-3	No signal from the driver's side impact sensor	(see page 23-118)
13-4	Faulty power supply to the driver's side impact sensor	(see page 23-119)
14-1	Internal failure of the front passenger's side impact sensor	(see page 23-86)
14-2		
14-3	No signal from the front passenger's side impact sensor	(see page 23-124)
14-4	Faulty power supply to the front passenger's side impact sensor	(see page 23-125)
15-1	Faulty OPDS unit	(see page 23-130)
15-2	Faulty side airbag indicator light circuit	(see page 23-134)
15-3	Faulty OPDS sensor	(see page 23-144)

SRS
DTC Troubleshooting Index (cont'd)

SIEMENS (M1 or M2), KEIHIN (M3) SRS unit (Side Airbag without OPDS Unit Model)

DTC	Detection Item	Notes
1-1	Open or increased resistance in driver's airbag inflator	(see page 23-55)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-57)
1-4	Short to power in driver's airbag inflator	(see page 23-59)
1-5	Short to ground in driver's airbag inflator	(see page 23-61)
2-1	Open or increased resistance in front passenger's airbag inflator	(see page 23-63)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-64)
2-4	Short to power in front passenger's airbag inflator	(see page 23-66)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-67)
3-1	Open or increased resistance in left side seat belt tensioner	(see page 23-69)
3-3	Short to another wire or decreased resistance in left side seat belt tensioner	(see page 23-71)
3-4	Short to power in left side seat belt tensioner	(see page 23-73)
3-5	Short to ground in left side seat belt tensioner	(see page 23-75)
4-1	Open or increased resistance in right side seat belt tensioner	(see page 23-77)
4-3	Short to another wire or decreased resistance in right side seat belt tensioner	(see page 23-79)
4-4	Short to power in right side seat belt tensioner	(see page 23-81)
4-5	Short to ground in right side seat belt tensioner	(see page 23-83)
5-1	Internal failure of SRS unit	(see page 23-85)
5-2		
5-4		
5-8		
6-3		
6-4		
6-7		
6-8		
7-1		
7-2		
7-3		
8-1		
8-2		

8-3		
8-4		
8-5		
8-6		

NOTE:

Before troubleshooting DTCs 5-1 through 8-6, check battery/system voltage. If voltage is low, repair the charging system before troubleshooting the SRS system.

SRS

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Notes
9-1	Internal failure of the SRS unit. If intermittent, could mean internal failure of the unit or a faulty indicator light circuit. Refer to Troubleshooting Intermittent Failures (see page 23-38).	(see page 23-85)
9-2	Internal failure of the SRS unit. If intermittent, could mean internal failure of the power supply (VB line). Refer to Troubleshooting Intermittent Failures (see page 23-38).	
9-6	Faulty left front sensor	(see page 23-88)
9-7	Faulty right front sensor	(see page 23-91)
10-1	Seat belt tensioners (and airbag(s)) deployed	(see page 23-85)
10-2	Left side airbag deployed	
10-3	Seat belt tensioners (and airbag(s)) and left side airbag deployed	
10-4	Right side airbag deployed	
10-5	Seat belt tensioners (and airbag(s)) and front right side airbag deployed	
10-6	Side airbags deployed	
10-7	Seat belt tensioners (and airbag(s)) and side airbags deployed	
11-1	Open or increased resistance in left side airbag inflator	(see page 23-100)
11-3	Short to another wire or decreased resistance in left side airbag inflator	(see page 23-101)
11-4	Short to power in left side airbag inflator	(see page 23-103)
11-5	Short to ground in left side airbag inflator	(see page 23-104)
12-1	Open or increased resistance in right side airbag inflator	(see page 23-112)
12-3	Short to another wire or decreased resistance in right side airbag inflator	(see page 23-113)
12-4	Short to power in right side airbag inflator	(see page 23-115)
12-5	Short to ground in right side airbag inflator	(see page 23-116)
13-1	Internal failure of the left side impact sensor	(see page 23-87)
13-2		
13-3	No signal from the left side impact sensor	(see page 23-121)
13-4	Faulty power supply to the left side impact sensor	(see page 23-122)
14-1	Internal failure of the right side impact sensor	(see page 23-87)
14-2		
14-3	No signal from the right side impact sensor	(see page 23-127)
14-4	Faulty power supply to the right side impact sensor	(see page 23-128)

SRS

Symptom Troubleshooting Index

4-door

Symptom	Diagnostic procedure	Also check for
SRS indicator light does not come on	SRS Indicator Light Troubleshooting (see page 23-145)	
SRS indicator light stays on after the ignition switch is turned on (II)	SRS Indicator Light Troubleshooting (see step 1 on page 23-148)	

5-door

Symptom	Diagnostic procedure	Also check for
SRS indicator light does not come on	SRS Indicator Light Troubleshooting (see page 23-155)	
SRS indicator light stays on after the ignition switch is turned on (II)	SRS Indicator Light Troubleshooting (see step 1 on page 23-158)	

SRS

System Description

SRS Components

Airbags

The SRS is a safety device which, when used in conjunction with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit, including safing sensor and impact sensor (A), the cable reel (B), the driver's airbag (C), the front passenger's airbag (D), side airbags (E), seat belt tensioners (I) and front impact sensors (J).

Side Airbags

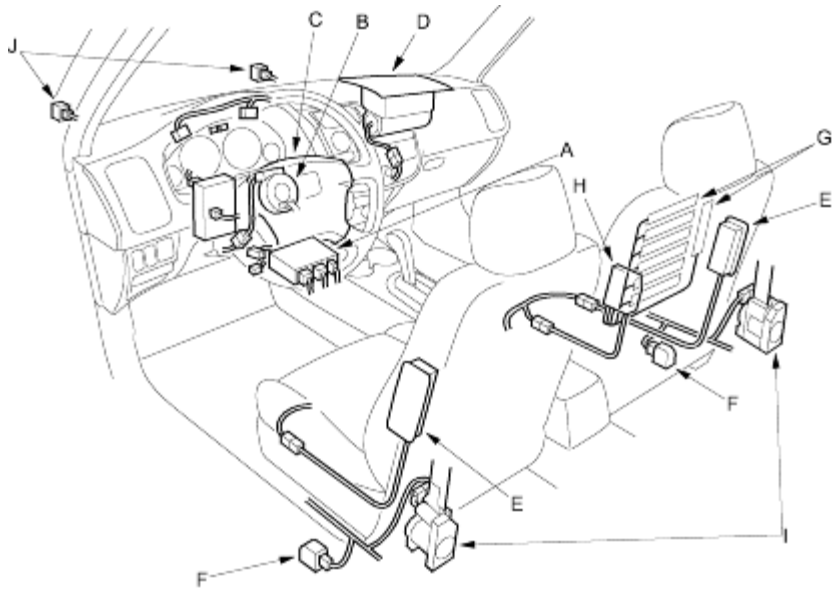
The side airbags (E) are in each front seat-back. They help protect the upper torso of the driver or front seat passenger during a moderate to severe side impact. Sensors (F) in each door sill and in the SRS unit detect such an impact and instantly inflate the driver's or the passenger's side airbag. Only one side airbag will deploy during a side impact. If the impact is on the passenger's side, the passenger's side airbag will deploy even if there is no passenger.

Seat Belt Tensioners

The seat belt tensioners are linked with the SRS airbags to further increase the effectiveness of the seat belt. In a front-end collision, the tensioners instantly retract the belt firmly to secure the occupants in their seats.

OPDS

Some models side airbag system include an Occupant Position Detection System (OPDS). This system consists of sensors (G) and a control unit (H) in the front passenger's seat-back. The control unit sends occupant height and position data to the SRS unit. If the SRS unit determines that the front passenger's head is in the deployment path of the side airbag, it will automatically disable the airbag. When the side airbag is disabled, the Side Airbag indicator light in the gauge assembly alerts the driver that the passenger's side airbag will not deploy in a side impact.



Seat Belts

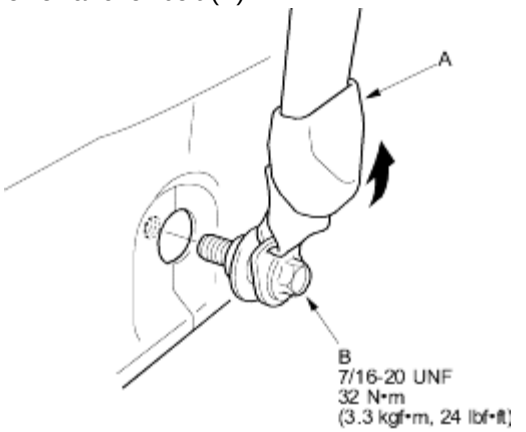
Front Seat Belt Replacement

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-23), and the precautions and procedures (see page 23-25) in the SRS section before performing repairs or service.

NOTE: Check the front seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

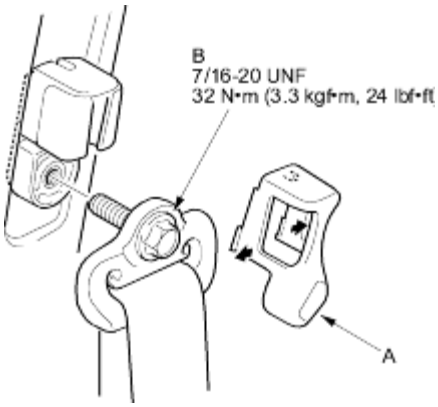
Front Seat Belt

1. 1. If equipped, make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
   2. If equipped with a seat belt tensioner, disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
   3. Slide the front seat forward fully.
   4. Pull the lower anchor cover (A) back and remove the lower anchor bolt (B).

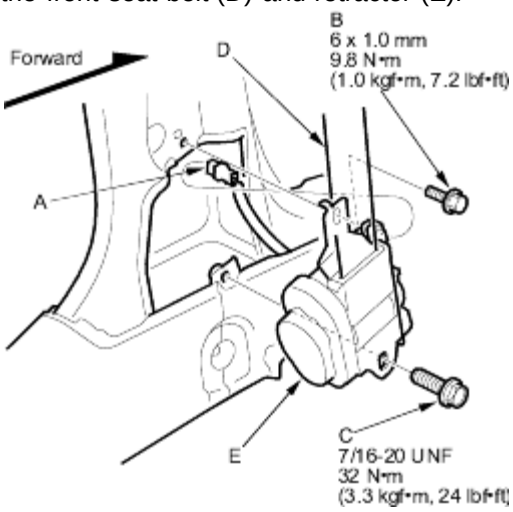


2. 5. Remove the centre pillar lower trim (see page 20-64).

1. 6. Remove the upper anchor cover (A) and remove the upper anchor bolt (B).



2. 7. If equipped, disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).



SRS

System Description (cont'd)

SRS Operation

The main circuit in the SRS unit senses and judges the force of impact and if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the voltage regulator and the back-up power circuit, respectively, will keep voltage at a constant level.

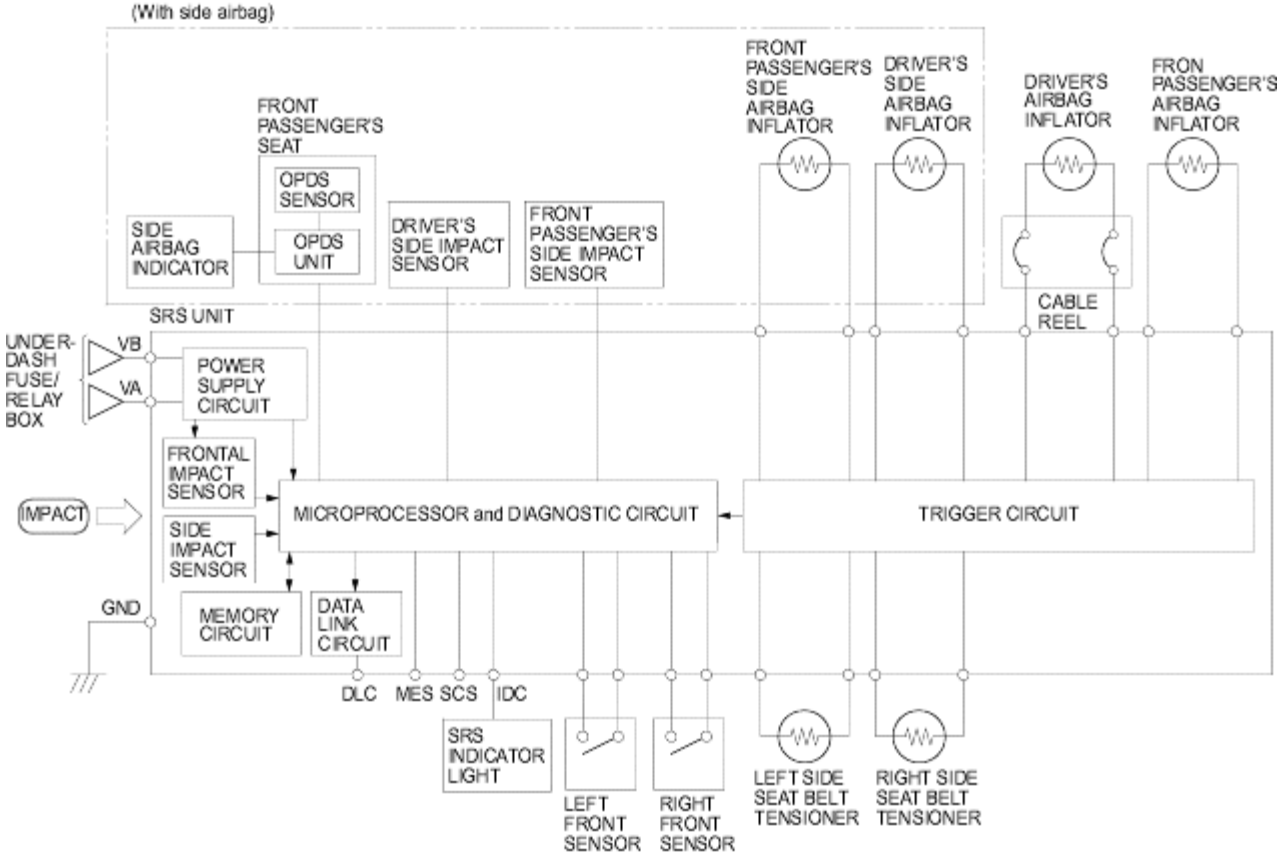
For the SRS to operate:

Airbag

1. 1. The frontal impact sensor must activate, and send electric signals to the microprocessor.
   2. The microprocessor must compute the signals, and depending on the severity of the collision and whether the seat belt buckle switch is ON or OFF, it sends the appropriate signals to the airbag inflators.
   3. The inflators that received signals must ignite and deploy the airbags.

Side Airbags

2. 1. The side impact sensors must activate, and send electric signals to the microprocessor.
   2. The microprocessor must compute the signals and send them to the side airbag inflators. However, the microprocessor cuts off the signals to the front passenger's side airbag if the SRS unit determines that the front passenger's head is in the deployment path of the side airbag.
   3. The inflator that received the signal must ignite and deploy the side airbag.



Self-diagnosis System

A self-diagnosis circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator light comes on and goes off after about 6 seconds if the system is operating normally.

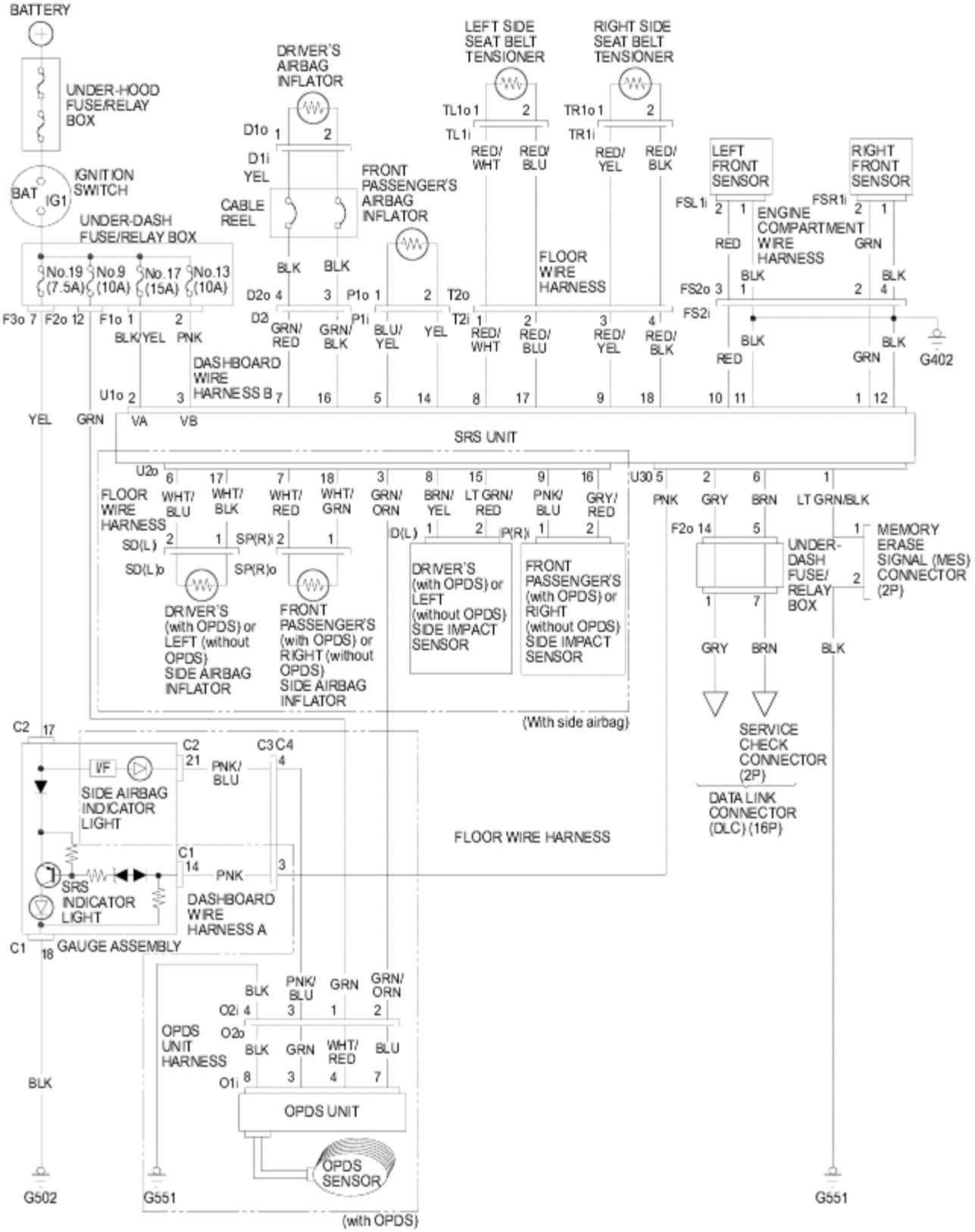
If the light does not come on, or does not go off after 6 seconds, or if it comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible.

For better serviceability, the SRS unit memory stores the cause of the malfunction, and the unit is connected to the data link connector (DLC). This information can be read with the Honda PGM Tester when it is connected to the DLC (16P).

SRS

Circuit Diagram

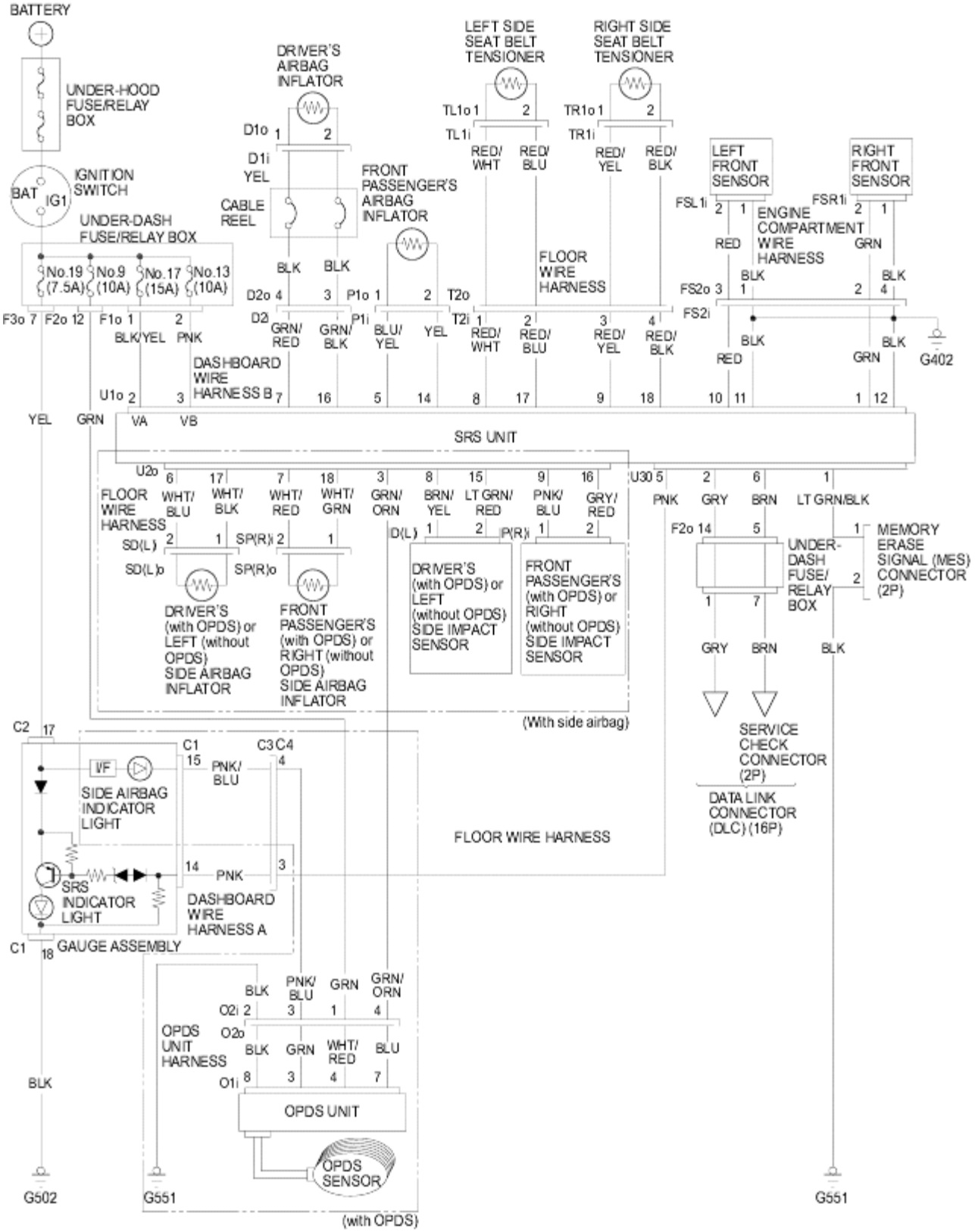
4-door



SRS

Circuit Diagram (cont'd)

5-door



SRS
Connectors

Connector No. *1		Wire harness and connector	Terminal		Note *2	Ref. No.
			Male	Female		
U1o		Dashboard wire harness B 18P connector		O	a	1
U2o		Floor wire harness 18P connector		O	a	2
U3o		Floor wire harness 8P connector		O	a	3
F1o		Dashboard wire harness B 2P connector		O	a	4
F2o		Floor wire harness 18P connector		O		5
F3o		Dashboard wire harness B 17P connector		O		6
D1	D1o	Driver's airbag 2P connector		O	ab	7
	D1i	Cable reel 2P connector	O			8
D2	D2o	Cable reel 4P connector		O	a	8
	D2i	Dashboard wire harness B 4P connector	O			7
P1	P1o	Front passenger's airbag 2P connector		O	ab	10
	P1i	Dashboard wire harness B 2P connector	O			9
TL1	TL1o	Left side seat belt tensioner 2P connector		O	ab	10
	TL1i	Floor wire harness 2P connector	O			9
TR1	TR1o	Right side seat belt tensioner 2P connector		O	ab	10
	TR1i	Floor wire harness 2P connector	O			9
T2	T2o	Floor wire harness 4P connector	O		a	7
	T2i	Dashboard wire harness B 4P connector		O		8
SD(L)	SD(L)o	Driver's (Left) side airbag 2P connector	O		abc	11
	SD(L)i	Floor wire harness 2P connector		O		12
SP(R)	SP(R)o	Front passenger's (Right) side airbag 2P connector	O		abc	11
	SP(R)i	Floor wire harness 2P connector		O		12
FS	FSL1i	Engine compartment wire harness 2P connector		O	ac	13
	FSR1i	Engine compartment wire harness 2P connector		O		13
FS2	FS2o	Engine compartment wire harness 4P connector		O	a	8
	FS2i	Dashboard wire harness B 4P connector	O			7
ID(L)I		Floor wire harness 2P connector		O	ac	13
IP(R)I		Floor wire harness 2P connector		O		13
O1i		OPDS unit harness 8P connector		O		14
C1		Dashboard wire harness A 22P connector		O		17, 18
C2		Dashboard wire harness A 22P connector		O		19, 20
C3		Dashboard wire harness A 6P connector	O			21
C4		Floor wire harness 6P connector		O		22

*1: The connector numbers are original in this section that are different from other sections.

*2: Note

a: Spring loaded lock connector

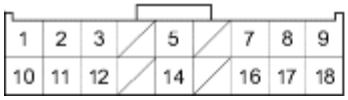
b: With built-in short contact connector

c: Waterproof connector

SRS

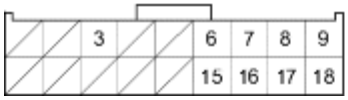
Connectors (cont'd)

1. U1o



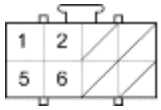
Wire side of female terminals.

2.U2o



Wire side of female terminals.

3. U3o



Wire side of female terminals.

4. F1o



Wire side of female terminals.

5. F2o



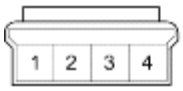
Wire side of female terminals.

6. F3o



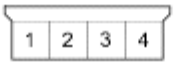
Wire side of female terminals.

7. D1o, D2i, T2o, FS2I



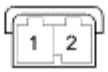
Terminal side of male terminals.

8. D1i, D2o, T2I, FS2o



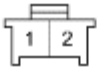
Wire side of female terminals.

9. P1i, TL1i, TR1I



Terminal side of male terminals.

10. P1o, TL1o, TR1o



Wire side of female terminals.

11. SD(L)o, SP(R)o



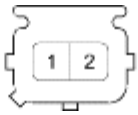
Terminal side of male terminals.

12. SD(L)i, SP(R)i



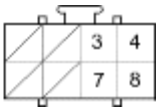
Wire side of female terminals.

13. ID(L)i, IP(R)i, FSL1i, FSR1i



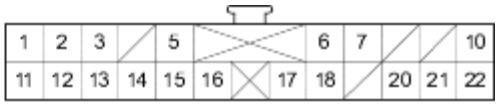
Wire side of female terminals.

14. O1i



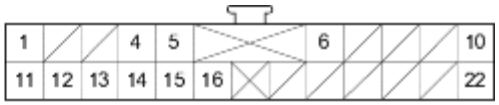
Wire side of female terminals.

15. C1 (4-door)



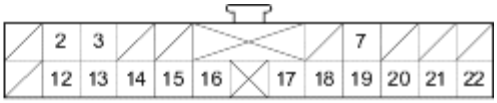
Wire side of female terminals.

16. C1 (5-door)



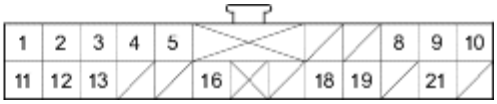
Wire side of female terminals.

17. C2 (4-door)



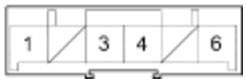
Wire side of female terminals.

18. C2 (5-door)



Wire side of female terminals.

19. C3



Terminal side of male terminals.

20. C4



Wire side of female terminals.

DTC 1-1: Open in Driver's Airbag Inflator

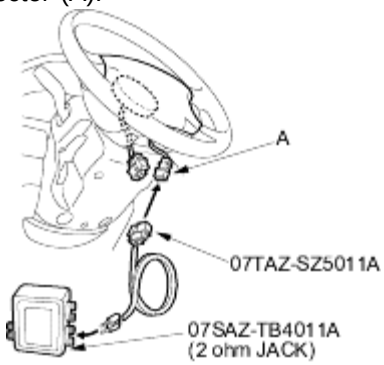
DTC 1-2: Increased Resistance in Driver's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II) and check that the SRS indicator light comes on for about 6 seconds, and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the D1o connector from the D1i connector (A).

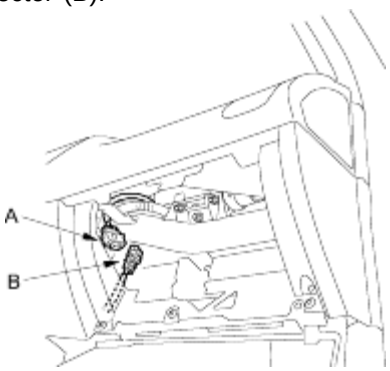


3. 5. Connect the special tool (2 ohm) to the D1i connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 1-1 or DTC 1-2 indicated?

   YES - Go to step 9.

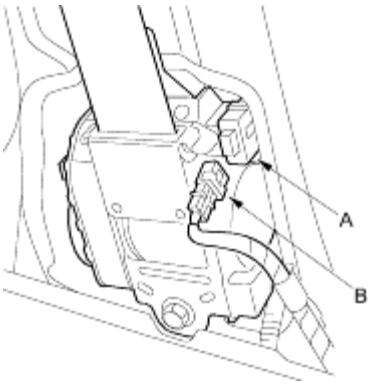
   NO - Open or increased resistance in the driver's airbag inflator; replace the driver's airbag (see page 23-165). ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the P1o connector (A) from the P1i connector (B).



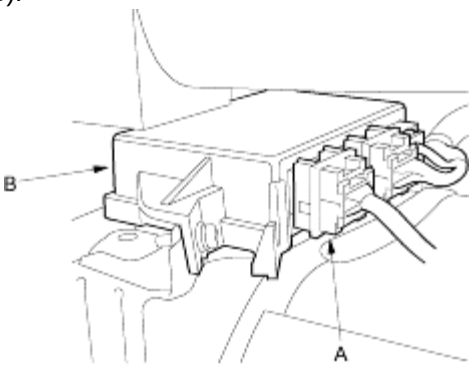
SRS

DTC Troubleshooting (cont'd)

1. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).

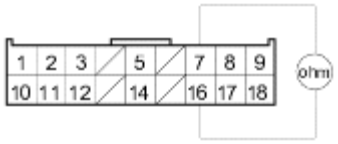


2. 12. Disconnect the U1o connector (A) from the SRS unit (B).



1. 13. Check resistance between the No. 7 and the No. 16 terminals of the U1o connector. There should be 2.0 - 3.0 ohm.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U1o connector and the SRS unit, check the connection between the U1o connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 23-176). ■

NO - Go to step 14.

2. 14. Disconnect the cable reel from dashboard wire harness B. Check resistance between the No. 7 and the No. 16 terminals of the U1o connector. There should be 0 - 1.0 ohm

Is the resistance as specified?

YES - Replace the cable reel. ■

NO - Replace dashboard wire harness. ■

SRS
DTC Troubleshooting (cont'd)

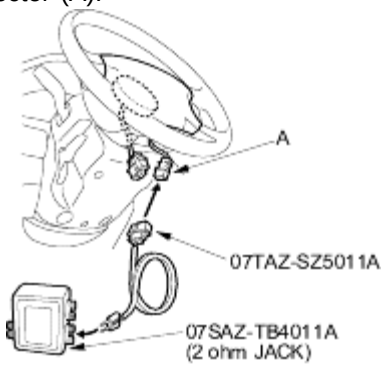
DTC 1-3: Short to Another Wire or Decreased Resistance in Driver's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the D1o connector from the D1i connector (A).

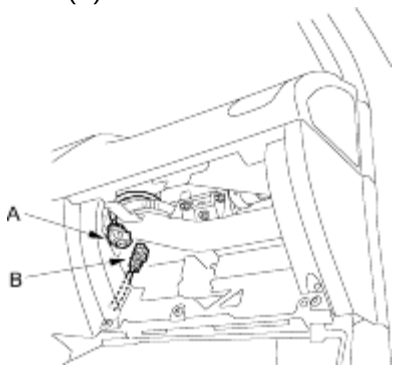


3. 5. Connect the special tool (2 ohm) to the D1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.

   Is DTC 1-3 indicated?

   YES - Go to step 9.

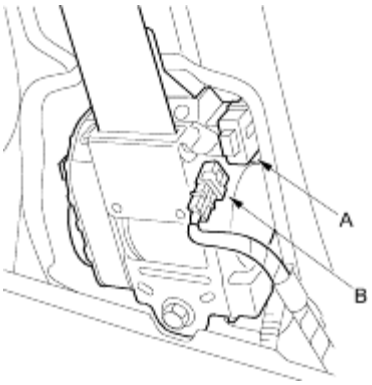
   NO - Short in the driver's airbag; replace the driver's airbag (see page 23-165). ■
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the P1o connector (A) from the P1i connector (B).



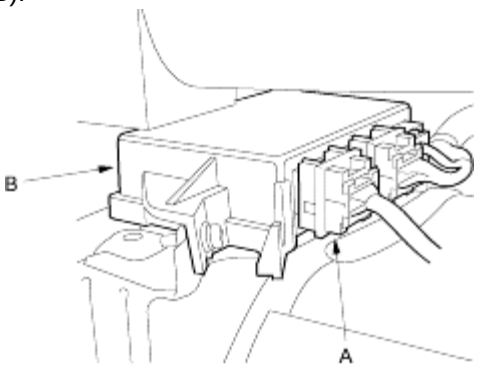
SRS

DTC Troubleshooting (cont'd)

1. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).



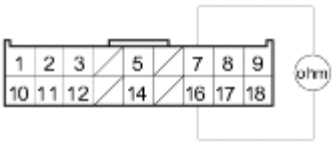
2. 12. Disconnect the U1o connector (A) from the SRS unit (B).



3. 13. Disconnect the special tool (2 ohm) from the D1i connector.

1. 14. Check resistance between the No. 7 and the No. 16 terminals of the U1o connector. There should be 1 M ohm or more.
15.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short in dashboard wire harness B; replace dashboard wire harness B or the cable reel. ■

SRS
DTC Troubleshooting (cont'd)

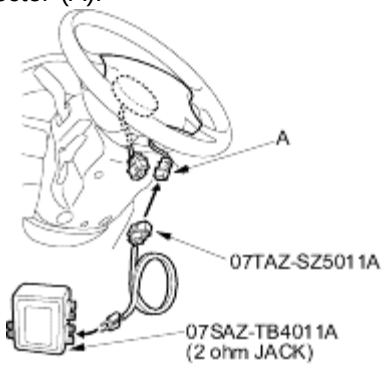
DTC 1-4: Short to Power in Driver's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the D1o connector from the D1i connector (A).

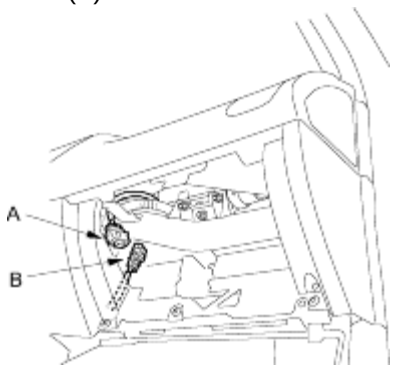


3. 5. Connect the special tool (2 ohm) to the D1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.

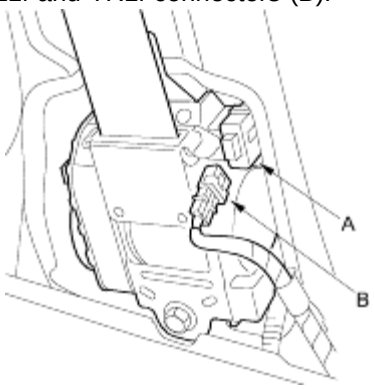
   Is DTC 1-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the driver's airbag; replace the driver's airbag (see page 23-165). ■
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the P1o connector (A) from the P1i connector (B).



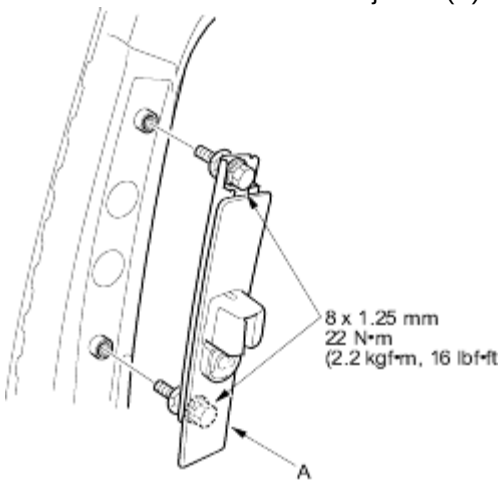
3. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).



Seat Belts

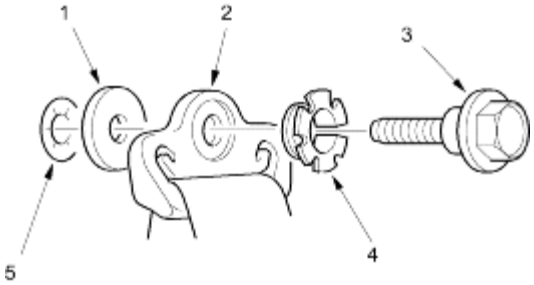
Front Seat Belt Replacement (cont'd)

1. 8. Remove the centre pillar upper trim (see page 20-64).
2. 9. Remove the shoulder anchor adjuster (A).



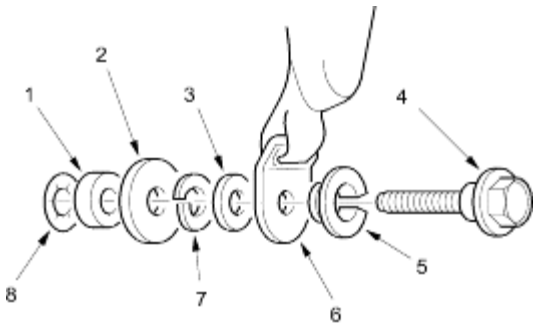
3. 10. Install the seat belt in the reverse order of removal and note these items:
   - Apply liquid thread lock to the upper anchor bolt before reinstallation.
   - Check that the retractor locking mechanism functions (see page 23-11).
   - Assemble the washers, collar and bushing on the upper and lower anchor bolts as shown.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the front seat belt.
   - If equipped, make sure the seat belt tensioner connector is plugged in properly.
   - If equipped with a seat belt tensioner, reconnect the negative cable to the battery.
   - If equipped, enter the anti-theft code for the radio, then enter the customer's radio station presets.

Upper anchor bolt construction:



1.
1. COLLAR
2. UPPER ANCHOR
3. UPPER ANCHOR BOLT
4. BUSHING
5. TOOTHED LOCK WASHER

Lower anchor bolt construction:

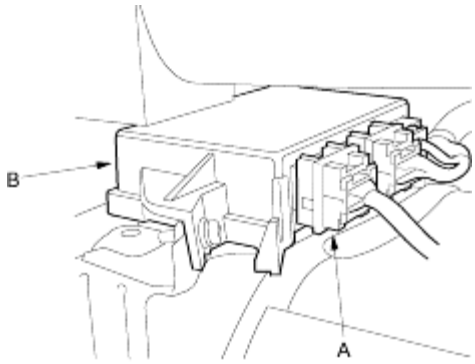


2.
1. COLLAR
2. WASHER
3. COLLAR
4. LOWER ANCHOR BOLT
5. BUSHING
6. LOWER ANCHOR
7. SPRING WASHER
8. TOOTHED LOCK WASHER

SRS

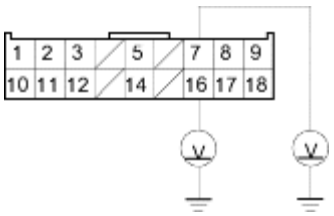
DTC Troubleshooting (cont'd)

1. 12. Disconnect the U1o connector (A) from the SRS unit (B).



2. 13. Disconnect the special tool (2 ohm) from the D1i connector.
   14. Reconnect the battery negative cable.
   15. Turn the ignition switch ON (II).
   16. Check for voltage between the No. 7 terminal of the U1o connector and body ground, between the No. 16 terminal of the U1o connector and body ground, There should be 0.5 V or less.

U1o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Go to step 17.

1. 17. Turn the ignition switch OFF.
2. 18. Disconnect the cable reel from dashboard wire harness B.
   19. Turn the ignition switch ON (II).
   20. Check for voltage between the No. 7 terminal of the U1o connector and body ground, between the No. 16 terminal of the U1o connector and body ground, There should be 0.5 V or less.

Is the voltage as specified?

YES - Replace the cable reel. ■

NO - Replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

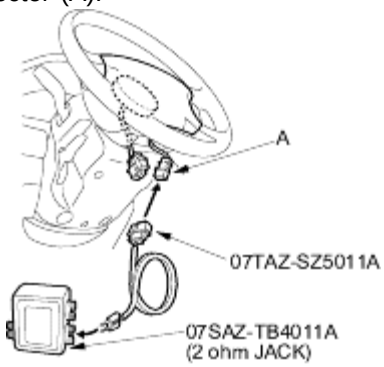
DTC 1-5: Short to Ground in Driver's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the D1o connector from the D1i connector (A).

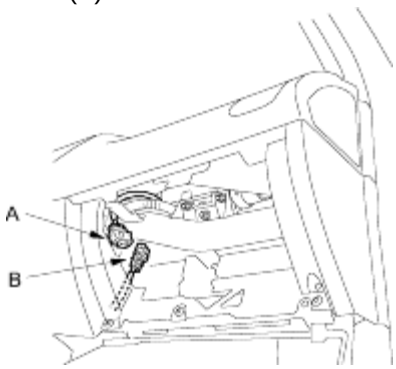


3. 5. Connect the special tool (2 ohm) to the D1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 6. Read the DTC.

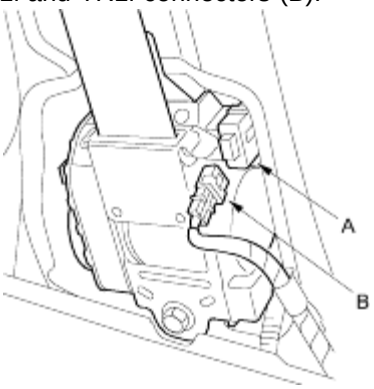
   Is DTC 1-5 indicated?

   YES - Go to step 9.

   NO - Short to ground in the driver's airbag inflator; replace the driver's airbag (see page 23-165). ■
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the P1o connector (A) from the P1i connector (B).



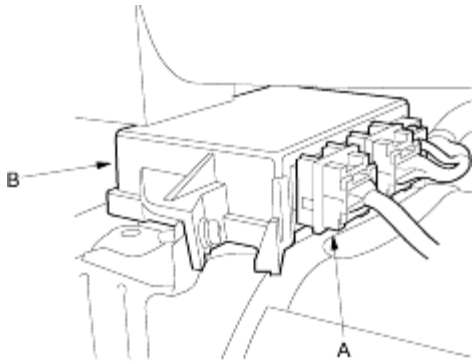
3. 11. Disconnect the TL1o and TR1o connectors (A) from the Tl1i and TR1i connectors (B).



SRS

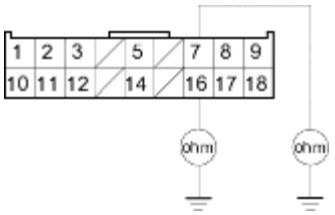
DTC Troubleshooting (cont'd)

1. 12. Disconnect the U1o connector (A) from the SRS unit (B).



2. 13. Disconnect the special tool (2 ohm) from the D1i connector.
   14. Check resistance between the No. 7 terminal of the U1o connector and body ground, and between the No. 16 terminal of the U1o connector and body ground. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Go to step 15.

1. 15. Disconnect the cable reel from dashboard wire harness B.
2. 16. Check resistance between the No. 7 terminal of the U1o connector and body ground, between the No. 16 terminal of the U1o connector and body ground. There should be 1 M ohm or more.

Is the resistance as specified?

YES - Replace the cable reel. ■

NO - Replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

DTC 2-1: Open in Front Passenger's Airbag Inflator

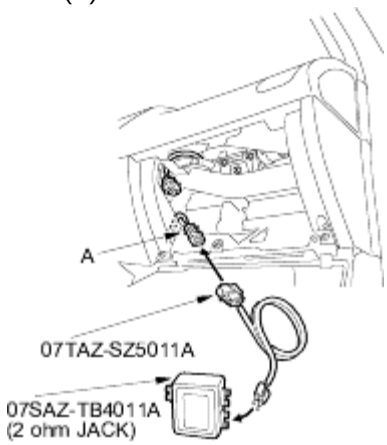
DTC 2-2: Increased Resistance in Front Passenger's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the P1o connector from the P1i connector (A).

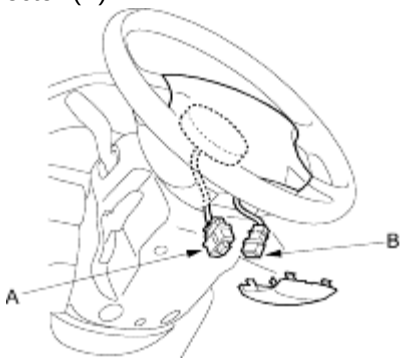


3. 5. Connect the special tool (2 ohm) to the P1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.

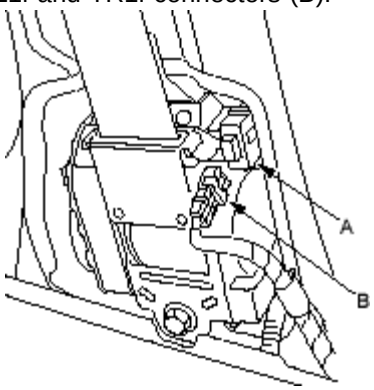
   Is DTC 2-1 or 2-2 indicated?

   YES - Go to step 9.

   NO - Open or increased resistance in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-167). ■
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the D1o connector (A) from the D1i connector (B).

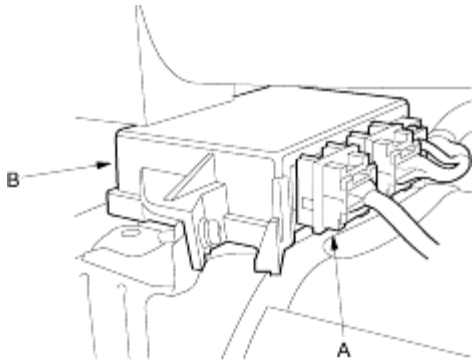


3. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).



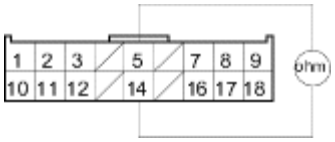
SRS
DTC Troubleshooting (cont'd)

1. 12. Disconnect the U1o connector (A) from the SRS unit (B).



2. 13. Check resistance between the No. 5 and No. 14 terminals of the U1o connector. There should be 2.0 - 3.0 ohm.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the SRS unit connector; check the connection between the U1o connector and the SRS unit. If the connector is OK, replace the SRS unit (see page 23-176). ■

NO - Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B. ■

DTC 2-3: Short to Another Wire or Decreased Resistance in Front Passenger's Airbag Inflator

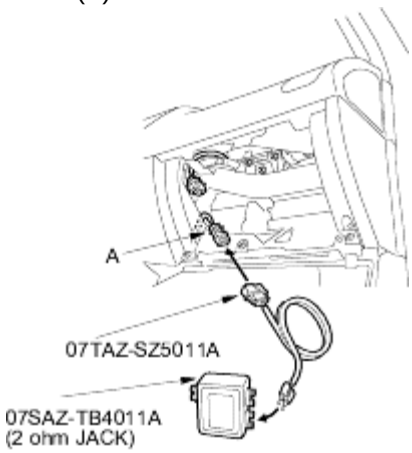
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the P1o connector from the P1i connector (A).



3. 5. Connect the special tool (2 ohm) to the P1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.

SRS
DTC Troubleshooting (cont'd)

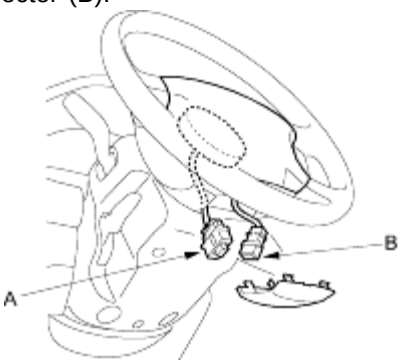
1. 8. Read the DTC.

Is DTC 2-3 indicated?

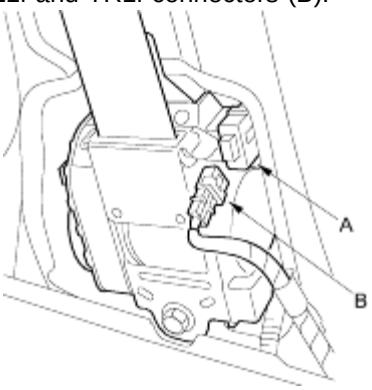
YES - Go to step 9.

NO - Short in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-167). ■

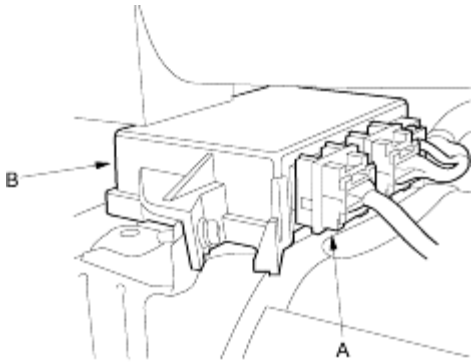
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the D1o connector (A) from the D1i connector (B).



3. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).

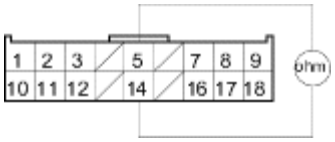


1. 12. Disconnect the U1o connector (A) from the SRS unit (B).



2. 13. Disconnect the special tool (2 ohm) from the P1i connector.
14. Check resistance between the No. 5 and No. 14 terminals of the U1o connector. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

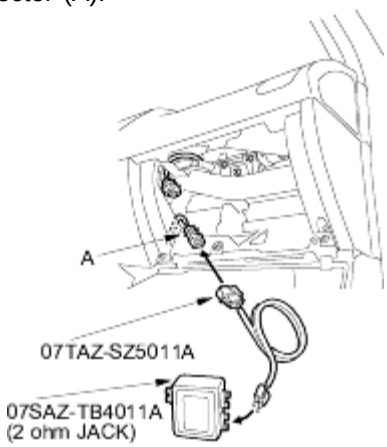
DTC 2-4: Short to Power in Front Passenger's Airbag Inflator

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the P1o connector from the P1i connector (A).

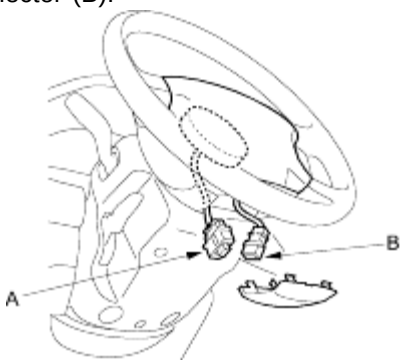


3. 5. Connect the special tool (2 ohm) to the P1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.

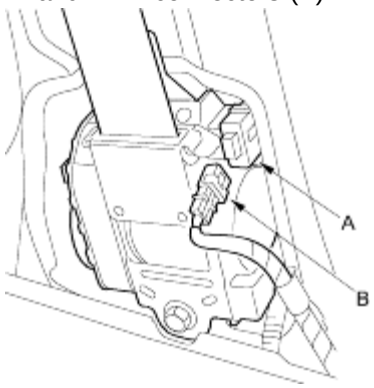
   Is DTC 2-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-167). ■
2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the D1o connector (A) from the D1i connector (B).



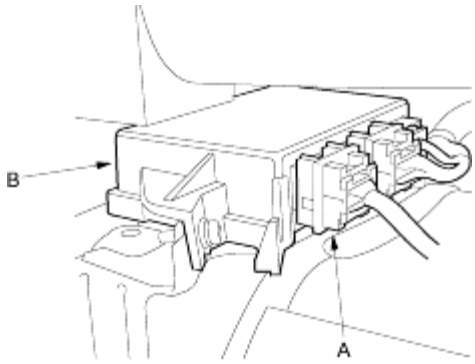
3. 11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).



SRS

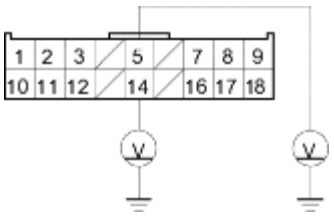
DTC Troubleshooting (cont'd)

1. 12. Disconnect the U1o connector (A) from the SRS unit (B).



2. 13. Disconnect the special tool (2 ohm) from the P1i connector.
   14. Reconnect the battery negative cable.
   15. Turn the ignition switch ON (II).
   16. Check for voltage between the No. 5 terminal of the U1o connector and body ground, and between the No. 14 terminal of the U1o connector and body ground. There should be 0.5 V or less.

U1o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to power in dashboard wire harness B; replace dashboard wire harness B. ■

DTC 2-5: Short to Ground in Front Passenger's Airbag Inflator

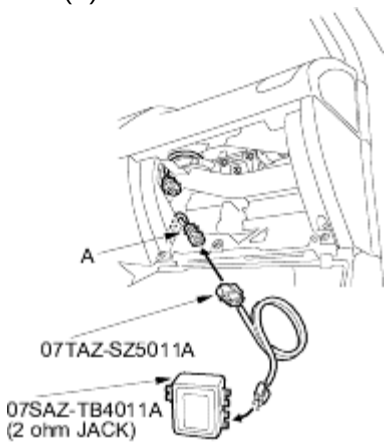
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II) and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the P1o connector from the P1i connector (A).



3. 5. Connect the special tool (2 ohm) to the P1i connector.

SRS
DTC Troubleshooting (cont'd)

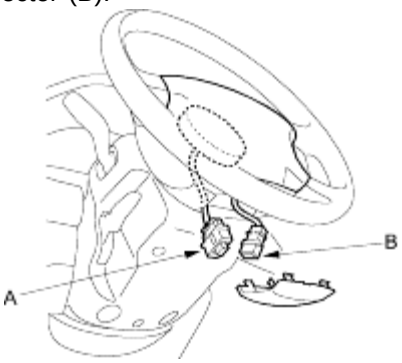
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

Is DTC 2-5 indicated?

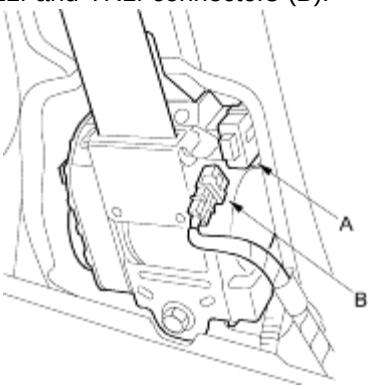
YES - Go to step 9.

NO - Short to ground in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-167). ■

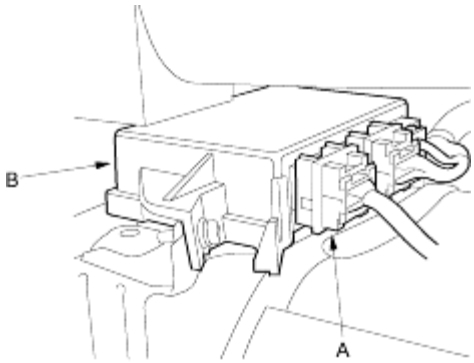
9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the D1o connector (A) from the D1i connector (B).



11. Disconnect the TL1o and TR1o connectors (A) from the TL1i and TR1i connectors (B).

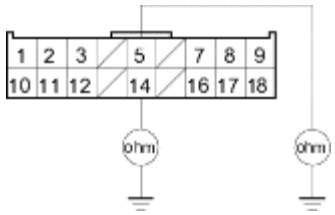


12. Disconnect the U1o connector (A) from the SRS unit (B).



13. Disconnect the special tool (2 ohm) from the P1i connector.
14. Check resistance between the No. 5 terminal of the U1o connector and body ground, and between No. 14 terminal of the U1o connector and body ground. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to ground in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

DTC 3-1: Open in Left Side Seat Belt Tensioner

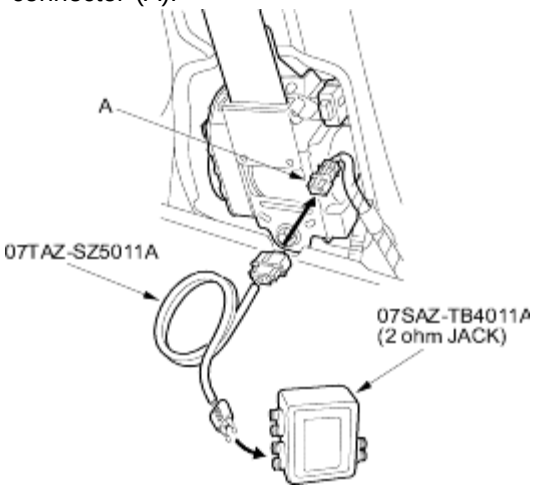
DTC 3-2: Increased Resistance in Left Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TL1o connector from the TL1i connector (A).



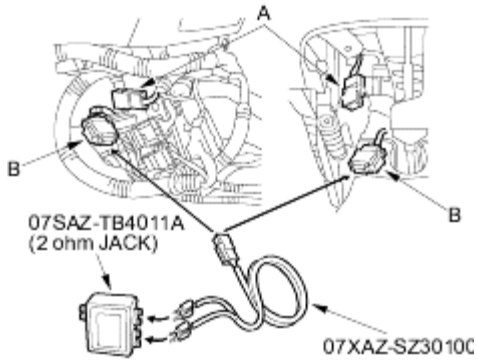
3. 5. Connect the special tool (2 ohm) to the TL1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 3-1 or DTC 3-2 indicated?

   YES - Go to step 9.

   NO - Open or increased resistance in the left side seat belt tensioner; replace the left side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
4. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



5. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

   Is DTC 3-1 or DTC 3-2 indicated?

   YES - Go to step 15.

   NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■
6. 15. Disconnect the battery negative cable and wait for 3 minutes.

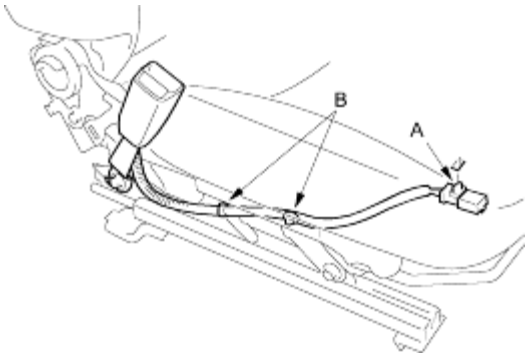
Seat Belts

Front Seat Belt Replacement (cont'd)

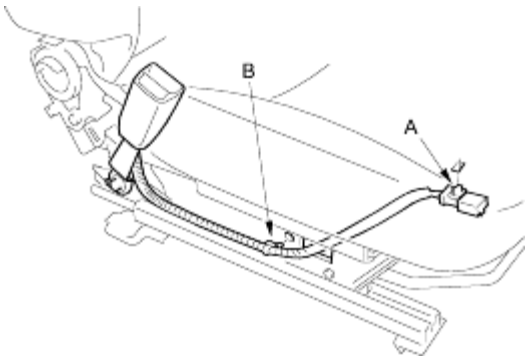
Seat Belt Buckle

1. 1. If equipped, make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
   2. If equipped, with a side airbag disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
   3. Remove the front seat (see page 20-87).
   4. Remove the centre cover from the seat, with manual height adjustable (see page 20-89), without manual height adjustable (see page 20-90).
   5. On the driver's seat for some models, detach the seat belt switch connector (A) and harness clip (B). LHD is shown, RHD is symmetrical.

With manual height adjustable:

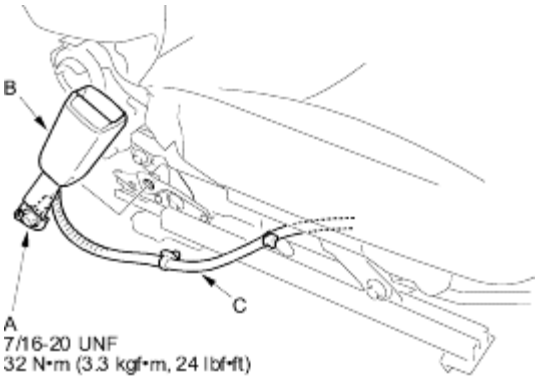


Without manual height adjustable:

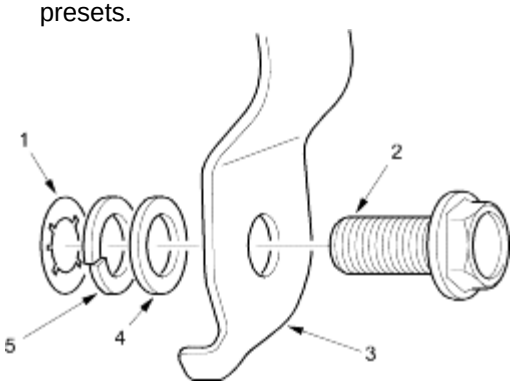


2. 6. With manual height adjustable, adjust the seat cushion to its maximum height.

1. 7. Remove the centre anchor bolt (A) and remove the seat belt buckle (B).



2. 8. Pull the seat belt switch harness (C) out through the space between the seat cushion and the seat linkage (driver's seat with manual height adjustable), or the hole on the seat track (driver's seat without manual height adjustable).
   9. Install the buckle in the reverse order of removal and note these items:
      - Assemble the washers on the centre anchor bolt as shown.
      - If equipped with a side airbag, reconnect the negative cable to the battery.
      - If equipped, enter the anti-theft code for the radio, then enter the customer's radio station presets.

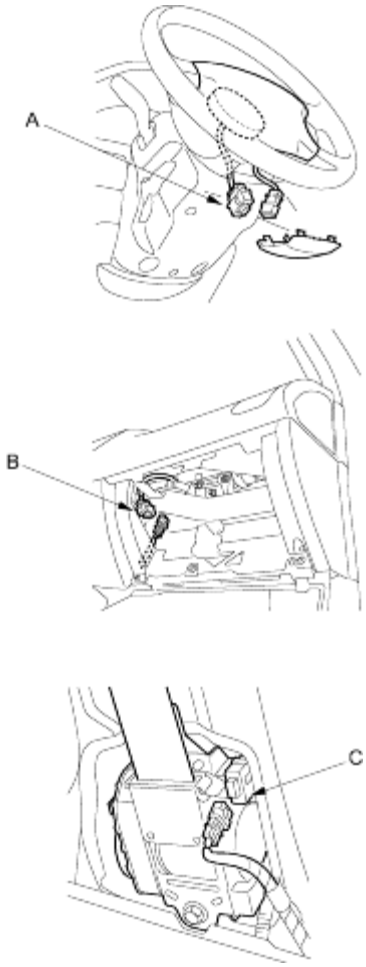


3. 1. TOOTHED LOCK WASHER
   2. CENTRE ANCHOR BOLT
   3. CENTRE ANCHOR
   4. COLLER
   5. SPRING WASHER

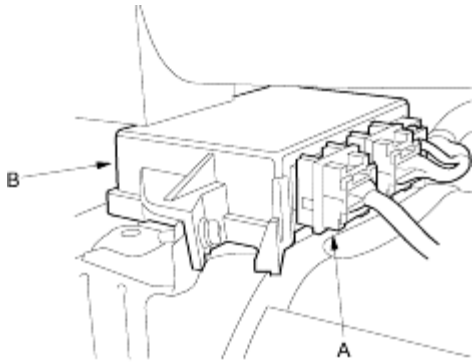
SRS

DTC Troubleshooting (cont'd)

1. 16. Disconnect the D1o connector (A), P1o connector (B) and TR1o connector (C).

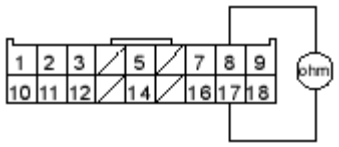


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Check resistance between the No. 8 terminal and the No. 17 terminal of the U1o connector. There should be 2.0 - 3.0 ohm.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U1o connector and at the SRS unit. Check the connection between the U1o connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 23-176). ■

NO - Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

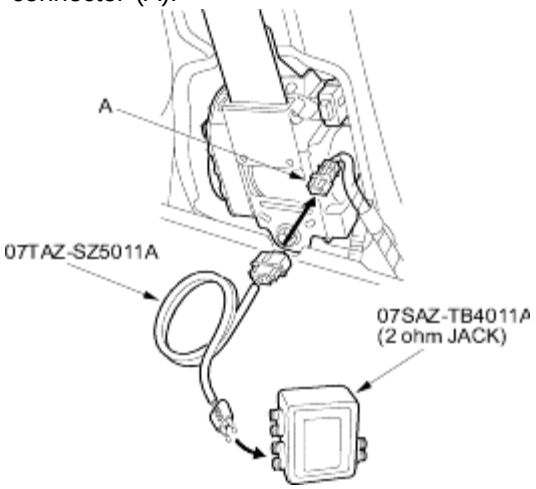
DTC 3-3: Short to Another Wire or Decreased Resistance in Left Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TL1o connector from the TL1i connector (A).



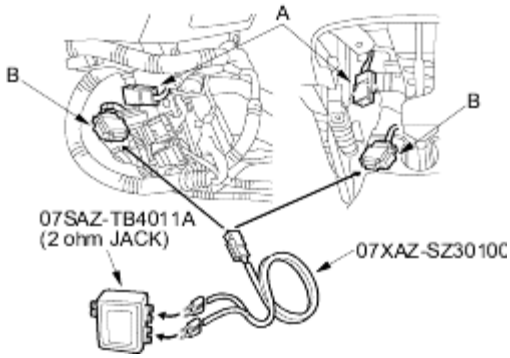
3. 5. Connect the special tool (2 ohm) to the TL1i connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 3-3 indicated?

   YES - Go to step 9.

   NO - Short in the left side seat belt tensioner; replace the left side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



4. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

   Is DTC 3-3 indicated?

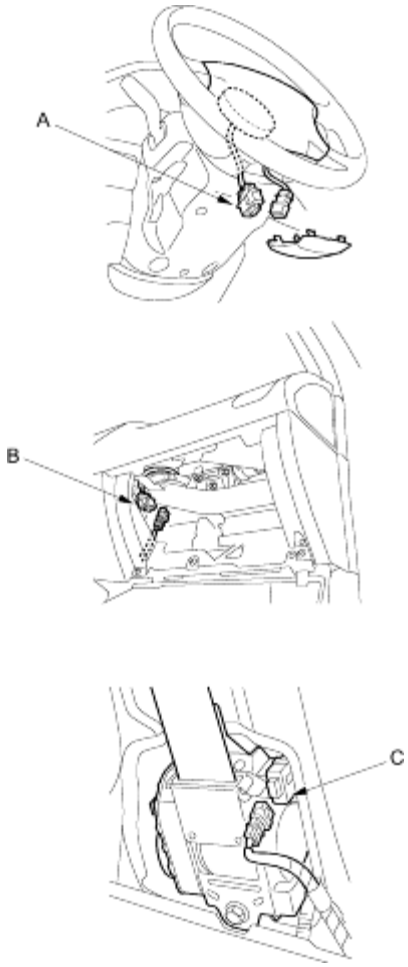
   YES - Go to step 15.

   NO - Short in the floor wire harness; replace the floor wire harness. ■
5. 15. Disconnect the battery negative cable and wait for 3 minutes.

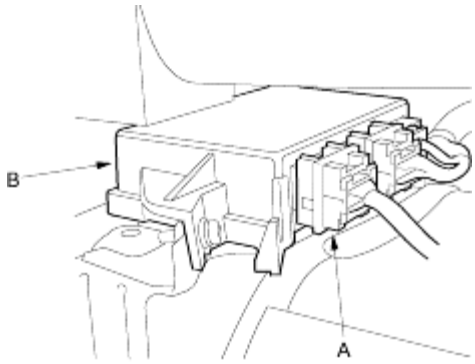
SRS

DTC Troubleshooting (cont'd)

1. 16. Disconnect the D1o connector (A), P1o connector (B) and TR1o connector (C).

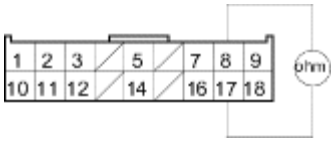


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
   19. Check resistance between the No. 8 terminal and the No. 17 terminal of the U1o connector. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

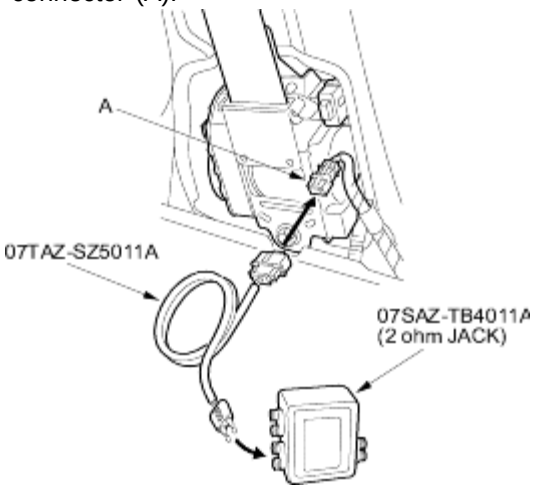
DTC 3-4: Short to Power in Left Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TL1o connector from the TL1i connector (A).



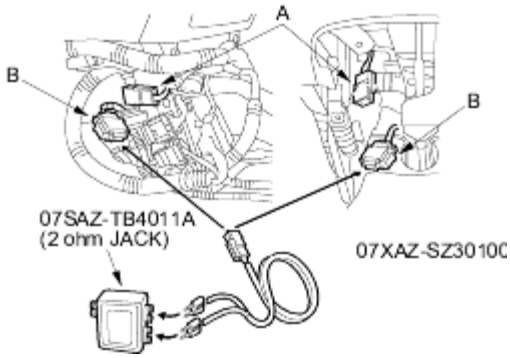
3. 5. Connect the special tool (2 ohm) to the TL1i connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 3-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the left side seat belt tensioner; replace the left side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
3. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



4. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

   Is DTC 3-4 indicated?

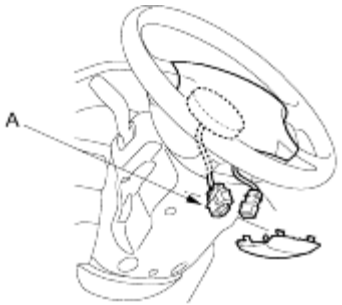
   YES - Go to step 15.

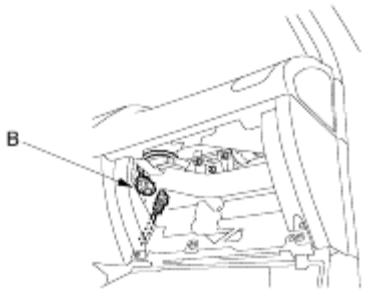
   NO - Short to power in the floor wire harness; replace the floor wire harness. ■
5. 15. Disconnect the battery negative cable and wait for 3 minutes.

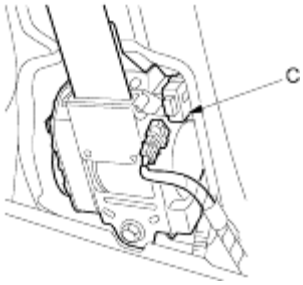
SRS

DTC Troubleshooting (cont'd)

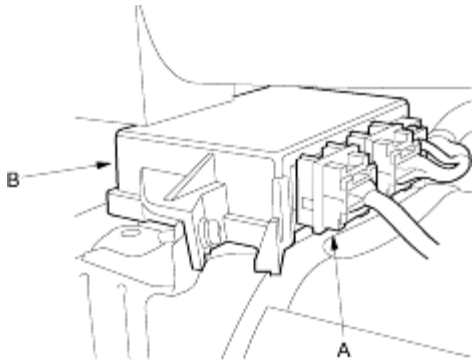
1. 16. Disconnect the D1o connector (A), P1o connector (B) and TR1o connector (C).





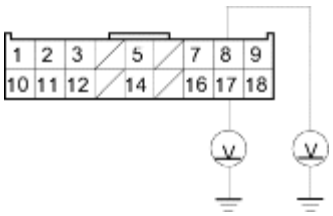


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
   19. Reconnect the battery negative cable.
   20. Turn the ignition switch ON (II).
   21. Check for voltage between the No. 8 terminal of the U1o connector and body ground. There should be 0.5 V or less. Check for voltage between the No. 17 terminal of the U1o connector and body ground. There should be 0.5 V or less.

U1o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to power in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

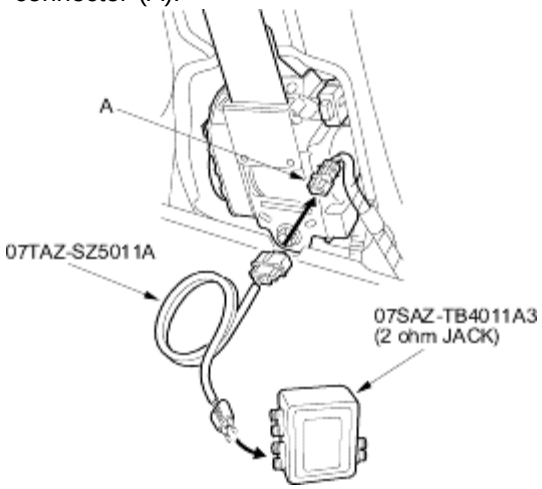
DTC 3-5: Short to Ground in Left Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TL1o connector from the TL1i connector (A).



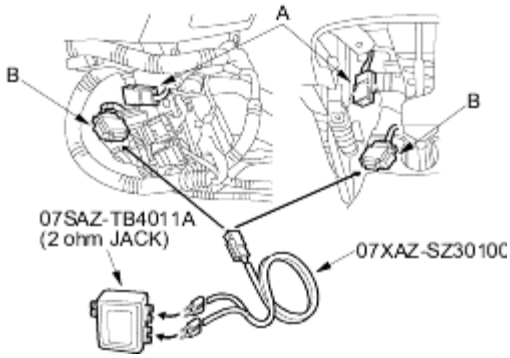
3. 5. Connect the special tool (2 ohm) to the TL1i connector.
   6. Reconnect the battery negative cable.
4. 7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 3-5 indicated?

   YES - Go to step 9.

   NO - Short to ground in the left side seat belt tensioner; replace the left side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
5. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



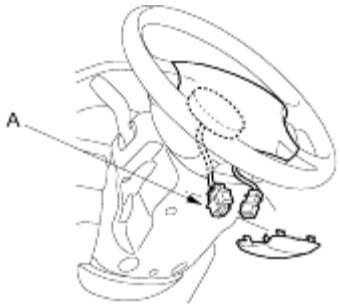
6. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

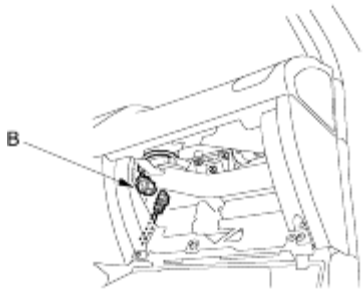
   Is DTC 3-5 indicated?

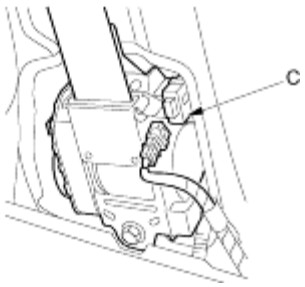
   YES - Go to step 15.

   NO - Short to ground in the floor wire harness; replace the floor wire harness. ■
7. 15. Disconnect the battery negative cable and wait for 3 minutes.

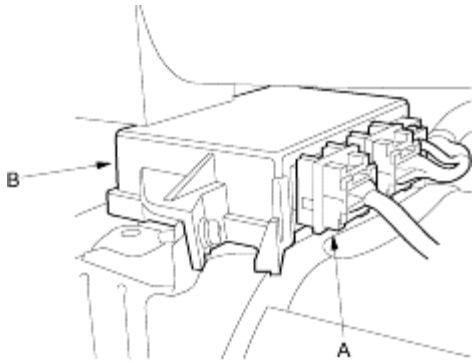
1. 16. Disconnect the D1o connector (A), P1o connector (B) and TR1o connector (C).





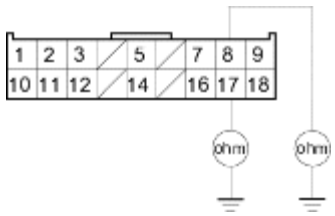


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
19. Check resistance between the No. 8 terminal of the U1o connector and body ground. There should be 1 M ohm or more. Then check resistance between the No. 17 terminal of the U1o connector and body ground. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to ground in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

DTC 4-1: Open in Right Side Seat Belt Tensioner

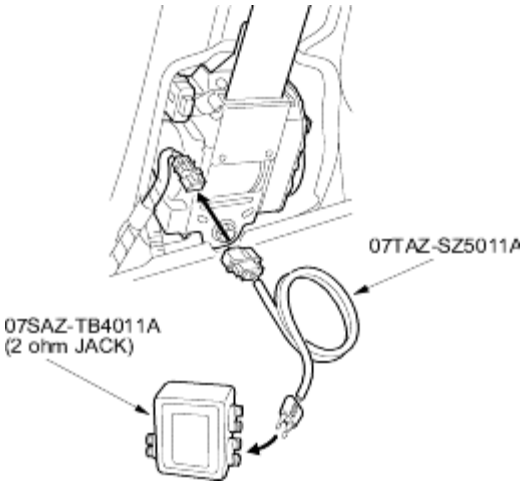
DTC 4-2: Increased Resistance in Right Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TR1o connector from the TR1i connector.



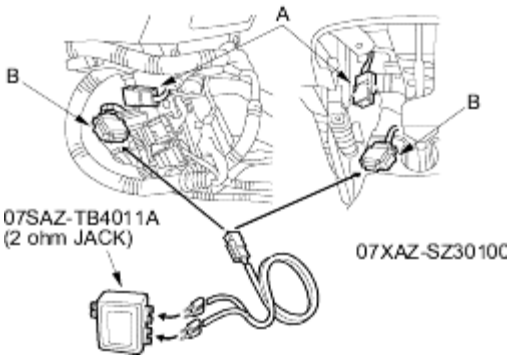
3. 5. Connect the special tool (2 ohm) to the TR1i connector.
1. 6. Reconnect the battery negative cable.
2. 7. Erase the DTC memory.
   8. Read the DTC.

   Is DTC 4-1 or DTC 4-2 indicated?

   YES - Go to step 9.

   NO - Open or increased resistance in the right side seat belt tensioner; replace the right side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
3. 9. Disconnect the battery negative cable and wait for three minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



4. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

   Is DTC 4-1 or DTC 4-2 indicated?

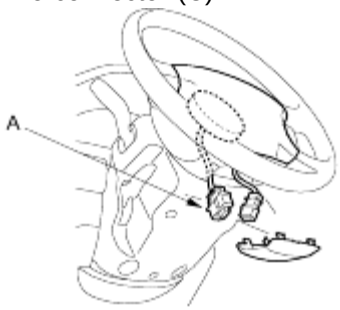
   YES - Go to step 15.

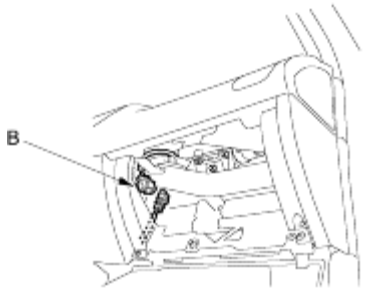
   NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

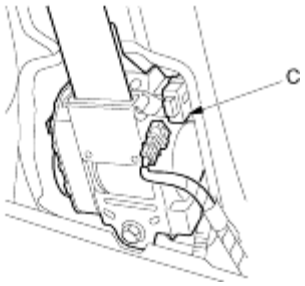
SRS

DTC Troubleshooting (cont'd)

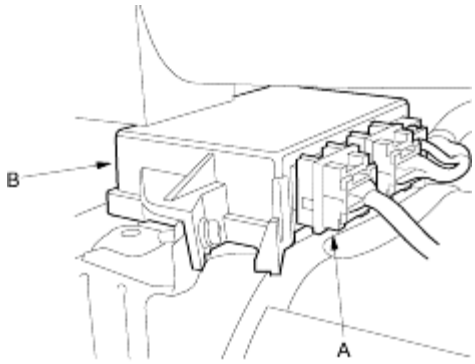
1. 15. Disconnect the battery negative cable and wait for 3 minutes.
2. 16. Disconnect the D1o connector (A), P1o connector (B) and TL1o connector (C).





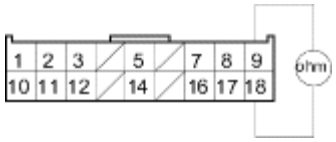


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Check resistance between the No. 9 terminal and the No. 18 terminal of the U1o connector. There should be 2.0 - 3.0 ohm.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U1o connector and the SRS unit. Check the connection between the U1o connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 23-176). ■

NO - Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B. ■

DTC 4-3: Short to Another Wire or Decreased Resistance in Right Side Seat Belt Tensioner

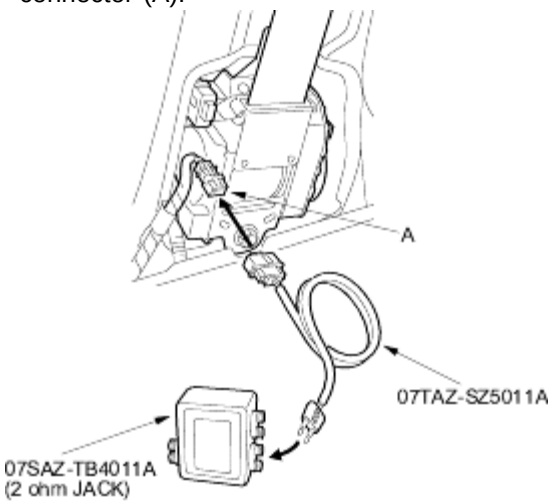
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TR1o connector from the TR1i connector (A).



3. 5. Connect the special tool (2 ohm) to the TR1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.

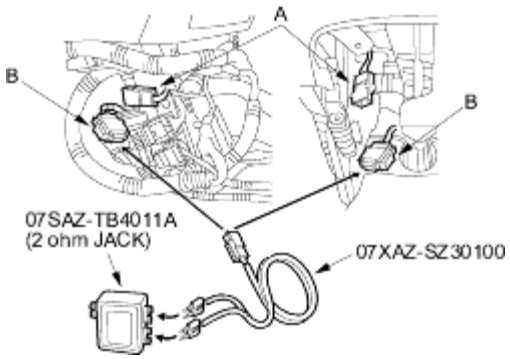
Is DTC 4-3 indicated?

YES - Go to step 9.

NO - Short in the right side seat belt tensioner; replace the right side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■

2. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



3. 11. Connect the special tool (2 ohm) to the T2i connector.
   12. Reconnect the battery negative cable.
   13. Erase the DTC memory.
   14. Read the DTC.

Is DTC 4-3 indicated?

YES - Go to step 15.

NO - Short in the floor wire harness; replace the floor wire harness. ■

4. 15. Disconnect the battery negative cable and wait for 3 minutes.

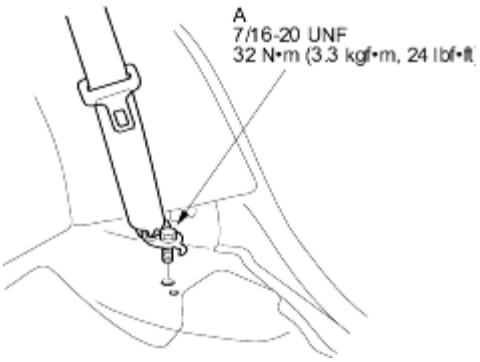
Seat Belts

Rear Seat Belt Replacement

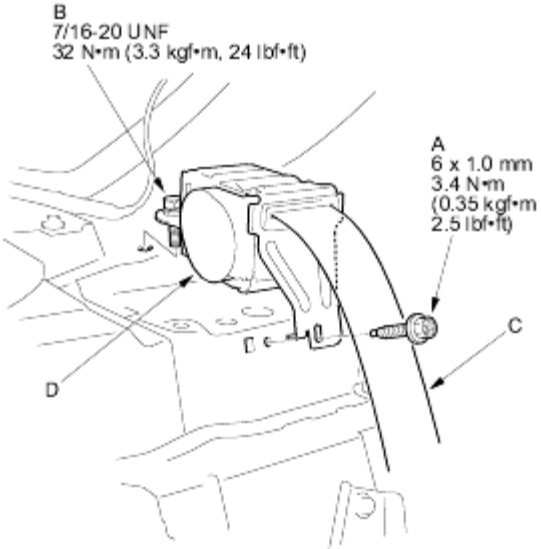
NOTE: Check the rear seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

Rear Seat Belt

1. 1. Remove the rear seat cushion, folding type (see page 20-95), fixed type (see page 20-96).
   2. Remove the lower anchor bolt (A).



2. 3. Remove the rear shelf, folding type rear seat (see page 20-65), fixed type rear seat (see page 20-66).
   4. Remove the retractor mounting self-tapping ET screw (A) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).

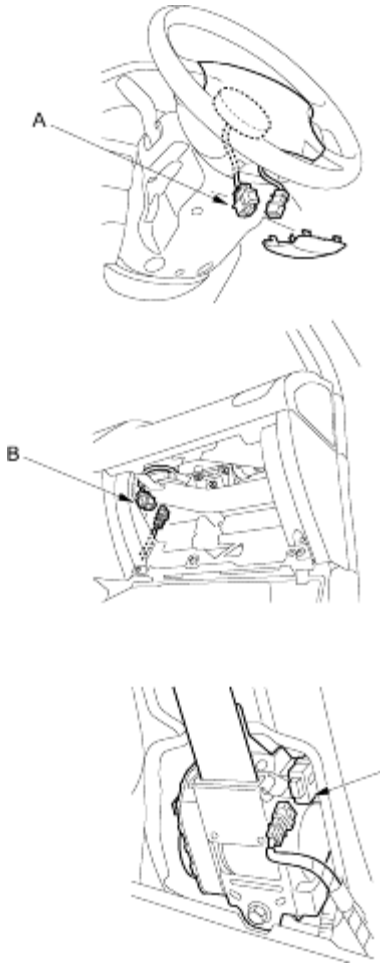


1. 5. Install the seat belt in the reverse order of removal and note these items:
   - If the threads on the retractor mounting self-tapping ET screw are worn out, use an oversized self-tapping ET screw made specifically for this application.
   - Check that the retractor locking mechanism functions as described (see page 23-11).
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

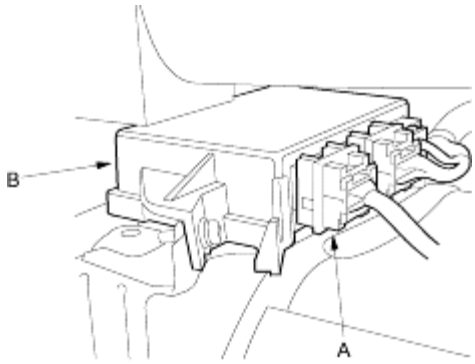
SRS

DTC Troubleshooting (cont'd)

1. 16. Disconnect the D1o connector (A), P1o connector (B) and TL1o connector (C).

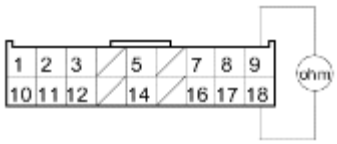


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
   19. Check resistance between the No. 9 terminal and the No. 18 terminal of the U1o connector. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

DTC 4-4: Short to Power in Right Side Seat Belt Tensioner

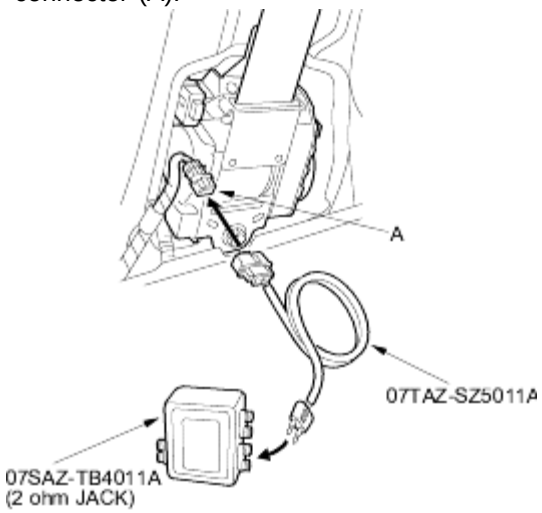
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TR1o connector from the TR1i connector (A).



3. 5. Connect the special tool (2 ohm) to the floor wire harness 2P connector.
   6. Reconnect the battery negative cable.
4. 7. Erase the DTC memory.
   8. Read the DTC.

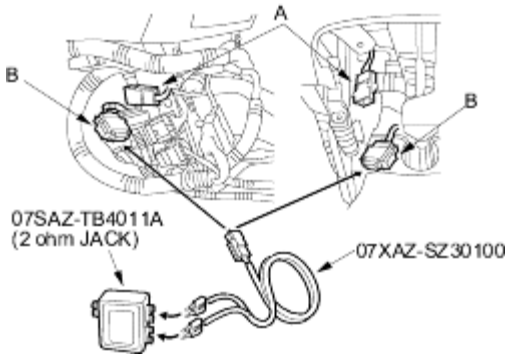
Is DTC 4-4 indicated?

YES - Go to step 9.

NO - Short to power in the right side seat belt tensioner; replace the right side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■

5. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



6. 11. Connect the special tool (2 ohm) to the T2i connector.
    12. Reconnect the battery negative cable.
    13. Erase the DTC memory.
    14. Read the DTC.

Is DTC 4-4 indicated?

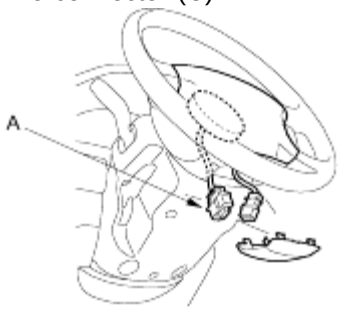
YES - Go to step 15.

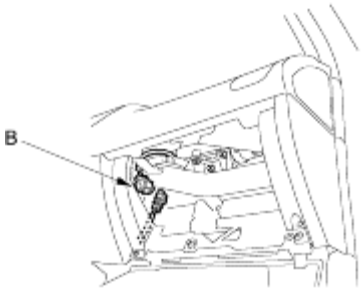
NO - Short to power in the floor wire harness; replace the floor wire harness. ■

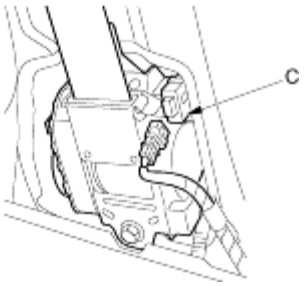
SRS

DTC Troubleshooting (cont'd)

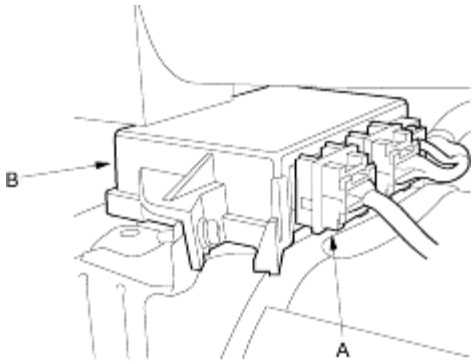
1. 15. Disconnect the battery negative cable and wait for 3 minutes.
2. 16. Disconnect the D1o connector (A), P1o connector (B) and TL1o connector (C).





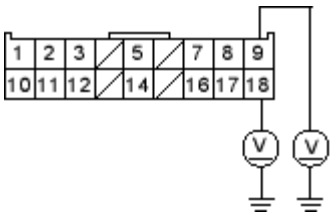


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
   19. Reconnect the battery negative cable.
   20. Turn the ignition switch ON (II).
   21. Check for voltage between the No. 9 terminal of the U1o connector and body ground. There should be 0.5 V or less. Check for voltage between the No. 18 terminal of the U1o connector and body ground. There should be 0.5 V or less.

U1o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to power in dashboard wire harness B; replace dashboard wire harness B. ■

SRS

DTC Troubleshooting (cont'd)

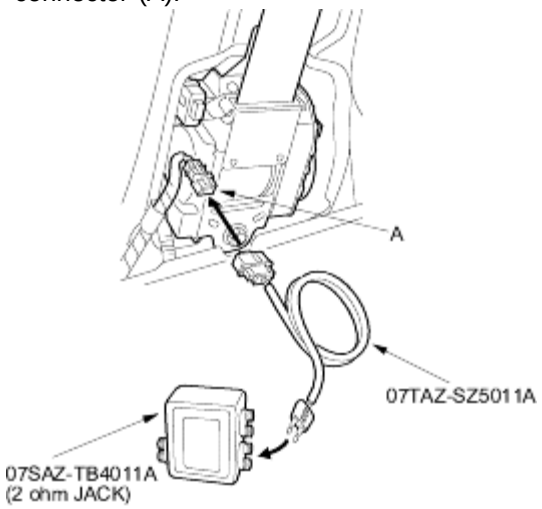
DTC 4-5: Short to Ground in Right Side Seat Belt Tensioner

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the TR1o connector from the TR1i connector (A).



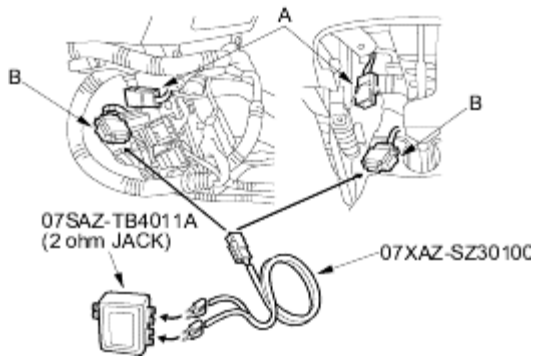
3. 5. Connect the special tool (2 ohm) to the TR1i connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
1. 8. Read the DTC.
   ,/ol>

   Is DTC 4-5 indicated?

   YES - Go to step 9.

   NO - Short to ground in the right side seat belt tensioner; replace the right side seat belt for 4-door model (see page 23-5) or 5-door model (see page 23-15). ■
9. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the T2o connector (A) from the T2i connector (B).

4-door 5-door



10. 11. Connect the special tool (2 ohm) to the T2i connector.
    12. Reconnect the battery negative cable.
    13. Erase the DTC memory.
    14. Read the DTC.

    Is DTC 4-5 indicated?

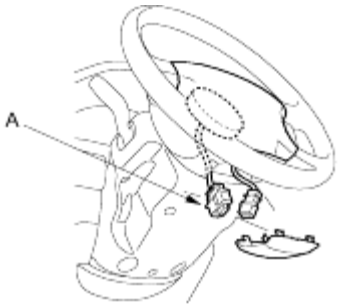
    YES - Go to step 15.

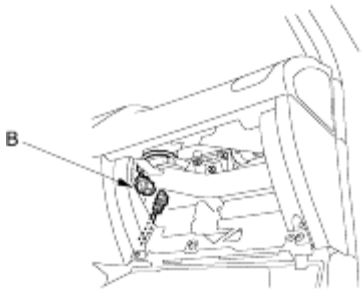
    NO - Short to ground in the floor wire harness; replace the floor wire harness. ■
11. 15. Disconnect the battery negative cable and wait for 3 minutes.

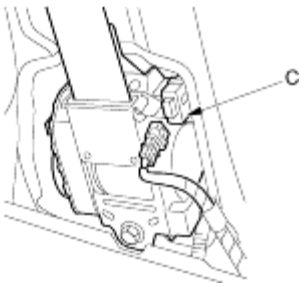
SRS

DTC Troubleshooting (cont'd)

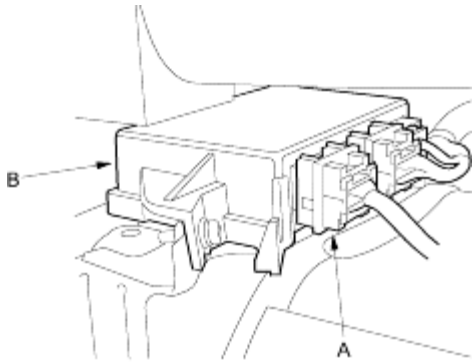
1. 16. Disconnect the D1o connector (A), P1o connector (B) and TL1o connector (C).





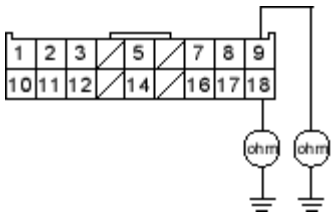


1. 17. Disconnect the U1o connector (A) from the SRS unit (B).



2. 18. Disconnect the special tool (2 ohm) from the T2i connector.
   19. Check resistance between the No. 9 terminal of the U1o connector and body ground. There should be 1 M ohm or more. Then check resistance between the No. 18 terminal of the U1o connector and body ground. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit (see page 23-176). ■

NO - Short to ground in dashboard wire harness B; replace dashboard wire harness B. ■

SRS
DTC Troubleshooting (cont'd)

DTC 5-1, 5-2, 5-3, 5-4, 5-5, 5-8, 6-1, 6-2, 6-3, 6-4, 6-7, 6-8, 7-1, 7-2, 7-3, 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 9-1, 9-2: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check battery/system voltage. If voltage is low, repair the charging system before troubleshooting the SRS system.

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Replace the SRS unit (see page 23-176). ■

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

DTC 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7: Airbags, Side Airbags and/or Seat Belt Tensioners Deployed

The SRS unit must be replaced after any airbags have deployed (see page 23-176). ■

SRS
DTC Troubleshooting (cont'd)

DTC 13-1, 13-2: Internal Failure of the Driver's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Replace the driver's side impact sensor (see page 23-177). ■

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

DTC 14-1, 14-2: Internal Failure of the Front Passenger's Side Impact Sensor (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Replace the front passenger's side impact sensor (see page 23-177). ■

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

SRS
DTC Troubleshooting (cont'd)

DTC 13-1, 13-2: Internal Failure of the Let Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Replace the front passenger's side impact sensor (see page 23-177). ■

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

DTC 14-1, 14-2: Internal Failure of the Right Side Impact Sensor (Without OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Replace the right side impact sensor (see page 23-177). ■

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

SRS
DTC Troubleshooting (cont'd)

DTC 9-6: Faulty Left Front Sensor

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

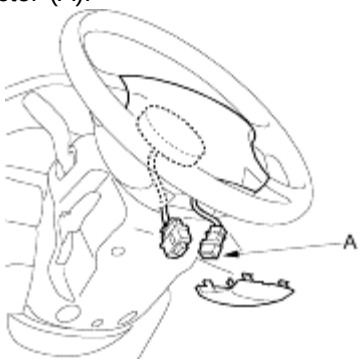
   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Check the connections between the U1o connector and the SRS unit, and between the FSL1i connector and the left front sensor for 4-door model (see page 23-23) or 5-door model (see page 23-24).

   Are the connections OK?

   YES - Go to step 4.

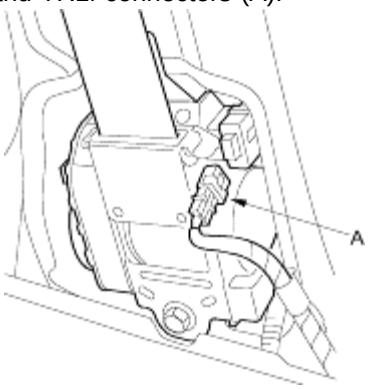
   NO - Poor contact at the SRS unit and/or left front sensor; reconnect or replace them. ■
3. 4. Disconnect the battery negative cable and wait for 3 minutes.
   5. Disconnect the D1o connector from the D1i connector (A).



1. 6. Disconnect the P1o connector from the P1i connector (A).



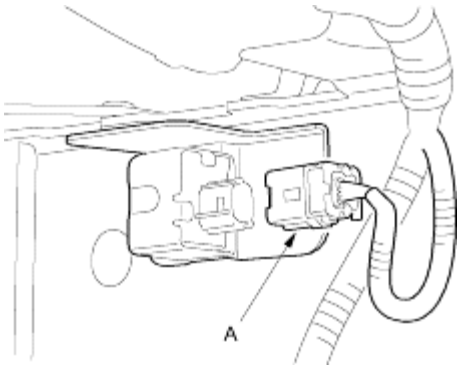
2. 7. Disconnect the TL1o and TR1o connectors from the TL1i and TR1i connectors (A).



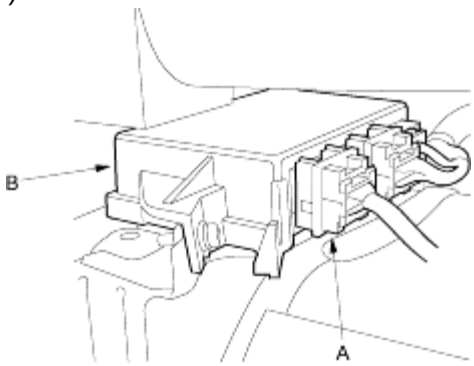
SRS

DTC Troubleshooting (cont'd)

1. 8. Disconnect the FSL1i connector (A) from the left front sensor.

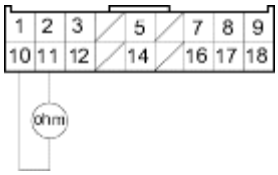


2. 9. Disconnect the U1o connector (A) from the SRS unit (B).



1. 10. Check resistance between the No. 10 and No. 11 terminals of U1o connector. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

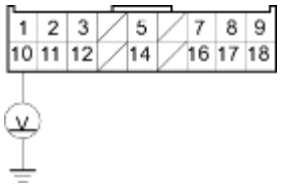
Is the resistance as specified?

YES - Go to step 11.

NO - Short in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

2. 11. Reconnect the battery negative cable.
12. Turn the ignition switch ON (II).
13. Check the voltage between the No. 10 terminal of the U1o connector and the body ground. There should be 1 V or less.

U1o CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES - Go to step 14.

NO - Short to power in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

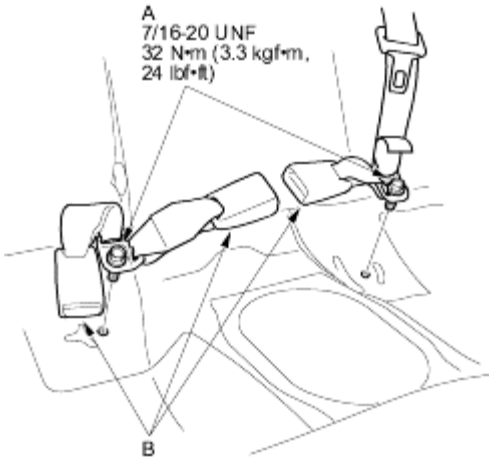
Seat Belts

Rear Seat Belt Replacement (cont'd)

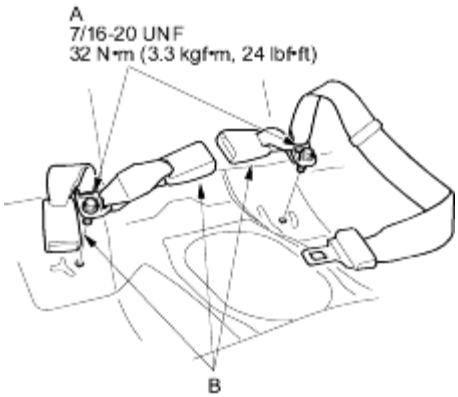
Centre Belt and Seat Belt Buckles

1. 1. Remove the rear seat cushion, folding type (see page 20-95), fixed type (see page 20-96).
   2. Remove the centre anchor bolts (A), and remove the seat belt buckles (B).

With centre shoulder belt:

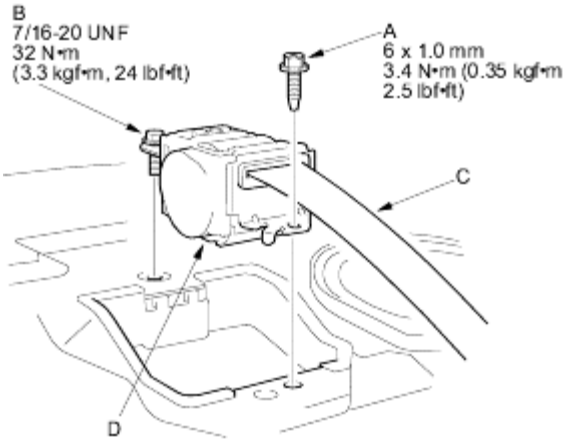


With centre lap belt:

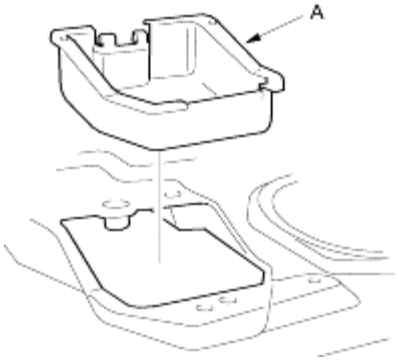


With centre shoulder belt:

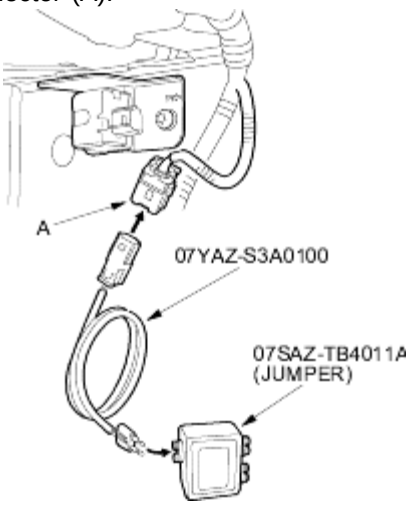
1. 3. Remove the rear shelf, folding type (see page 20-65).
   4. Remove the retractor mounting self-tapping ET screw (A) and the retractor bolt (B), then remove the centre belt (C) and retractor (D).



2. 5. Remove the protector (A).

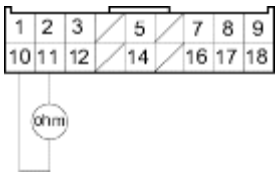


1. 14. Turn the ignition switch OFF.
2. 15. Connect the special tool (Jumper) to the FSL1i connector (A).



3. 16. Check resistance between the No. 10 and No. 11 terminals of the U1o connector. There should be 1 ohm or less.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty left front sensor or SRS unit. Replace the left front sensor; if the problem is still present, replace the SRS unit. ■

NO - Faulty engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

SRS

DTC Troubleshooting (cont'd)

DTC 9-7: Faulty Right Front Sensor

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

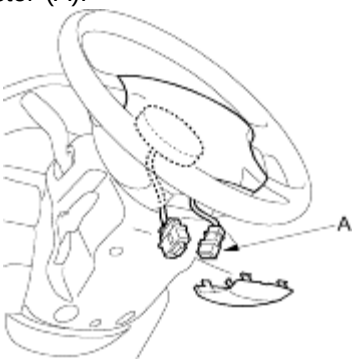
   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Check the connections between the dashboard wire harness B 18P connector and the SRS unit, and between the engine compartment wire harness 2P connector and the right front sensor for 4-door model (see page 23-23) or 5-door model (see page 23-24).

   Are the connections OK?

   YES - Go to step 4.

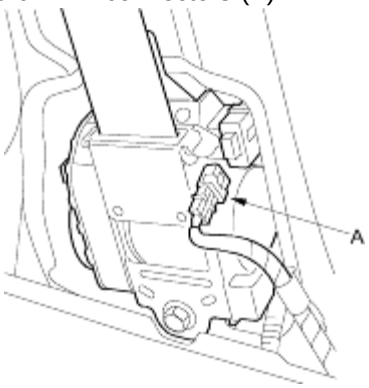
   NO - Poor contact at the SRS unit and/or right front sensor; reconnect or replace them. ■
3. 4. Disconnect the battery negative cable and wait for 3 minutes.
   5. Disconnect the D1o connector from the D1i connector (A).



1. 6. Disconnect the P1o connector from the P1i connector (A).



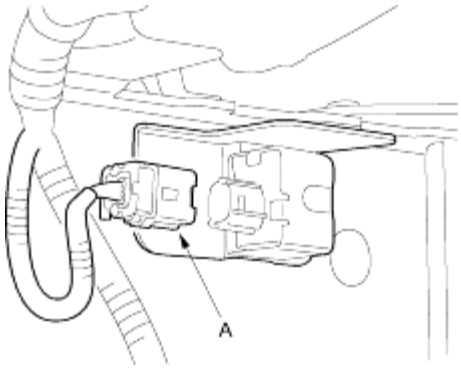
2. 7. Disconnect the TL1o and TR1o connectors from the TL1i and TR1i connectors (A).



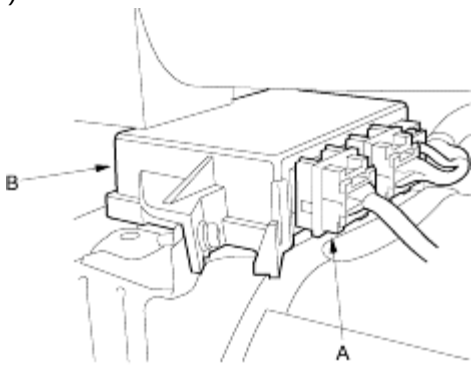
SRS

DTC Troubleshooting (cont'd)

1. 8. Disconnect the FSR1i connector (A) from the right front sensor.

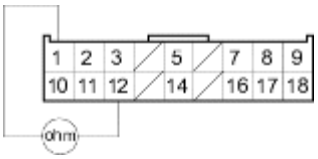


2. 9. Disconnect the U1o connector (A) from the SRS unit (B).



1. 10. Check resistance between the No. 1 and No. 12 terminals of the U1o connector. There should be 1 M ohm or more.

U1o CONNECTOR



Wire side of female terminals

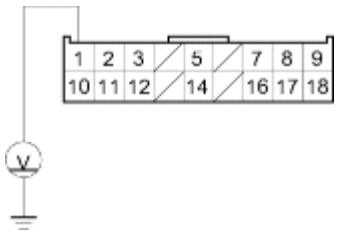
Is the resistance as specified?

YES - Go to step 11.

NO - Short in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

2. 11. Reconnect the battery negative cable.
12. Turn the ignition switch ON (II).
13. Check the voltage between the No. 1 terminal of the U1o connector and the body ground. There should be 1 V or less.

U1o CONNECTOR



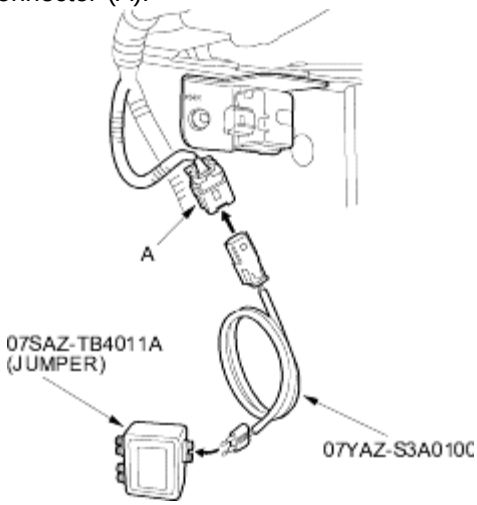
Wire side of female terminals

Is the voltage as specified?

YES - Go to step 14.

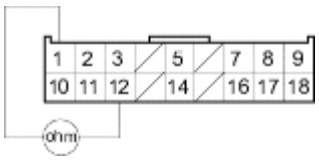
NO - Short to power in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

1. 14. Turn the ignition switch OFF.
2. 15. Connect the special tool (Jumper) to the FSR1i connector (A).



3. 16. Check resistance between the No. 1 and No. 12 terminals of the U1o connector. There should be 1 ohm or less.

U1o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty right front sensor or SRS unit. Replace the right front sensor; if the problem is still present, replace the SRS unit. ■

NO - Faulty engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

SRS

DTC Troubleshooting - with Side Airbags

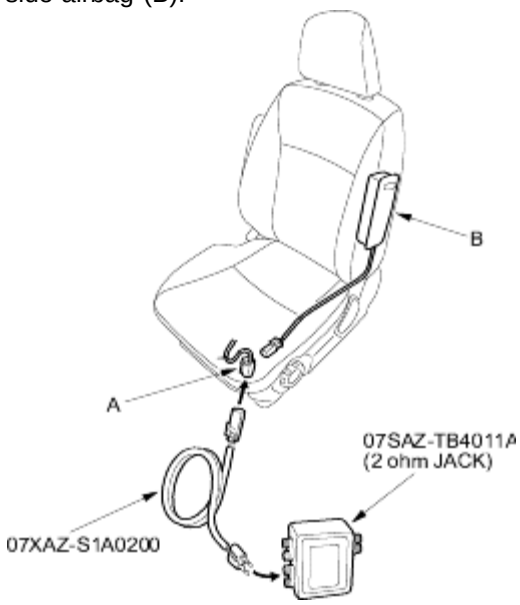
DTC 11-1: Open or Increased Resistance in Driver's Side Airbag Inflator (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi connector (A) from the driver's side airbag (B).

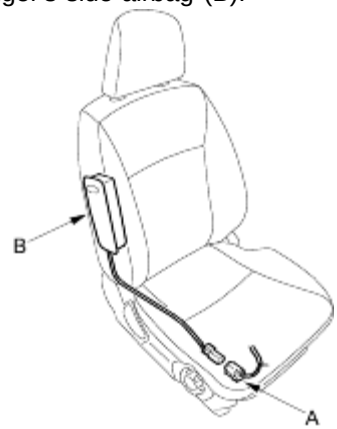


3. 5. Connect the special tool (2 ohm) to the SDi connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
   8. Read the DTC.

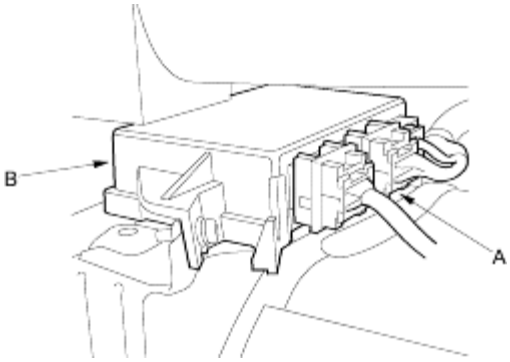
   Is DTC 11-1 indicated?

   YES - Go to step 9.

   NO - Open or increased resistance in the driver's side airbag inflator; replace the driver's side airbag. ■
4. 9. Disconnect the battery negative cable and wait for 3 minutes.
   10. Disconnect the SPi connector (A) from the front passenger's side airbag (B).



5. 11. Disconnect the U2o connector (A) from the SRS unit (B). Do not disconnect the special tool (2 ohm) from the SDi connector.

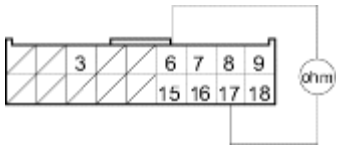


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 6 and No. 17 terminals of the U2o connector. There should be 2.0 - 3.0 ohm.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit or poor contact at the U2o connector and the SRS unit; check the connection at the U2o connector and SRS unit. If the connector is OK, replace the SRS unit. ■

NO - Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

DTC 11-3: Short to Another Wire or Decreased Resistance in Driver's Side Airbag Inflator (With OPDS Unit Model)

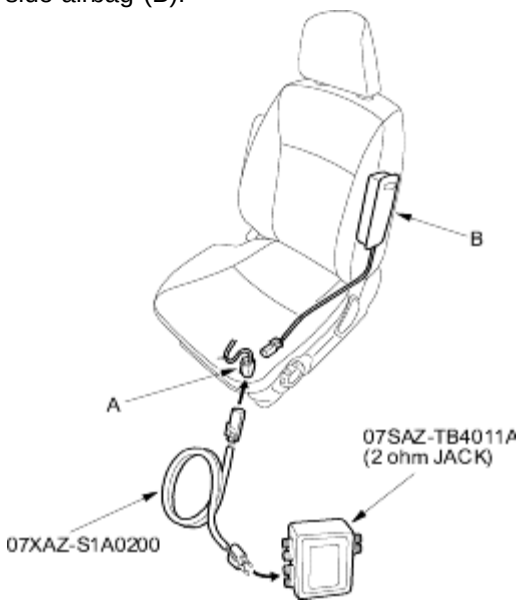
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi connector (A) from the driver's side airbag (B).



3. 5. Connect the special tool (2 ohm) to the SDi connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

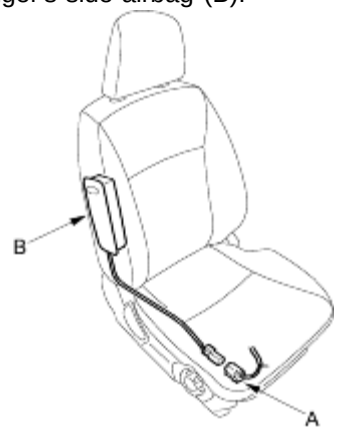
1. 8. Read the DTC.

Is DTC 11-3 indicated?

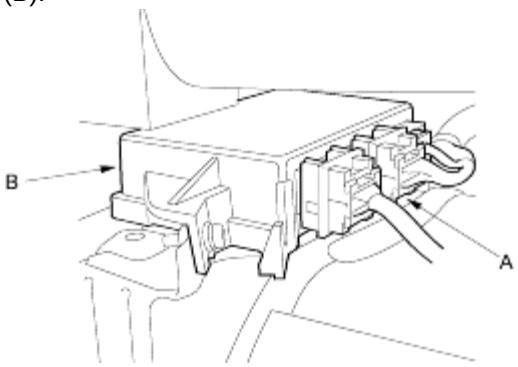
YES - Go to step 9.

NO - Short to another wire in the driver's side airbag inflator; replace the driver's side airbag. ■

2. 9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SPi connector (A) from the front passenger's side airbag (B).

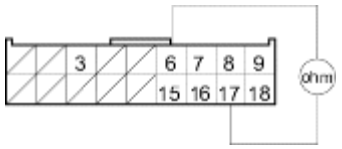


3. 11. Disconnect the special tool (2 ohm) from the SDi connector.
12. Disconnect the U2o connector (A) from the SRS unit (B).



1. 13. Check resistance between the No. 6 and No. 17 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to another wire in the floor wire harness; replace the floor wire harness. ■

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

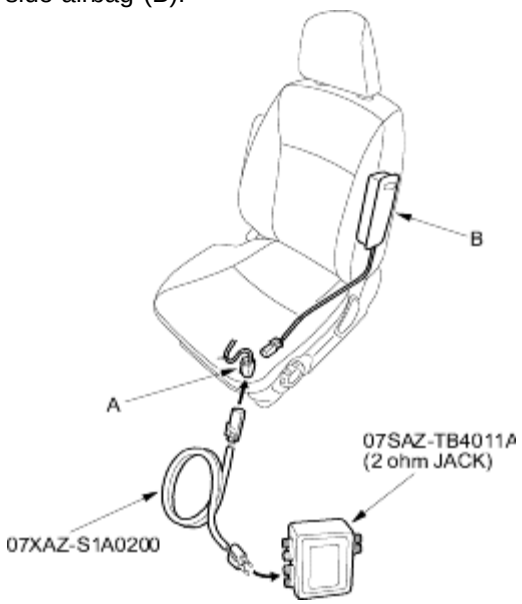
DTC 11-4: Short to Power in Driver's Side Airbag Inflator (With OPDS Unit Model)

1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

   Does the SRS indicator light stay on?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).
2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi connector (A) from the driver's side airbag (B).

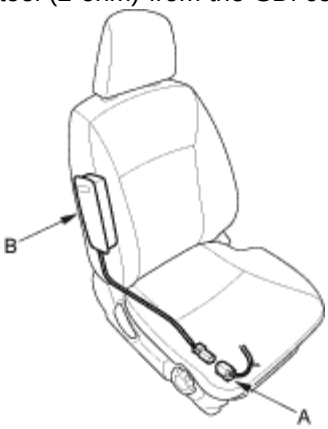


3. 5. Connect the special tool (2 ohm) to the SDi connector.
   6. Reconnect the battery negative cable.
   7. Erase the DTC memory.
   8. Read the DTC.

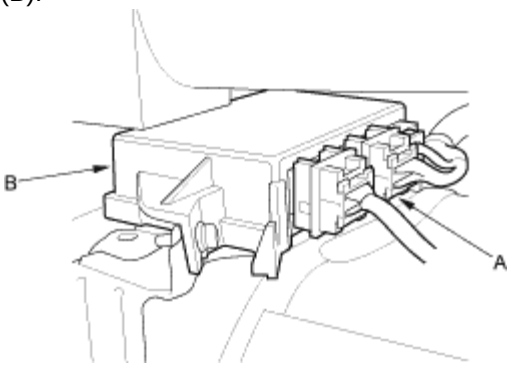
   Is DTC 11-4 indicated?

   YES - Go to step 9.

   NO - Short to power in the driver's side airbag inflator; replace the driver's side airbag. ■
4. 9. Disconnect the battery negative cable and wait for 3 minutes. ■
   10. Disconnect the SPi connector (A) from the front passenger's side airbag (B), and disconnect the special tool (2 ohm) from the SDi connector.



5. 11. Disconnect the U2o connector (A) from the SRS unit (B).

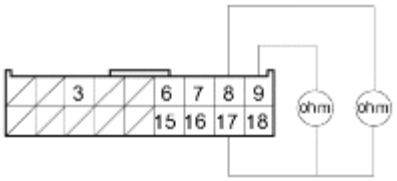


SRS

DTC Troubleshooting - with Side Airbags (cont'd)

1. 12. Check resistance between the No. 17 and No. 8 terminals of the U2o connector, and between the No. 17 and No. 9 terminals of the U2o connector. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 11-5: Short to Ground in Driver's Side Airbag Inflator (With OPDS Unit Model)

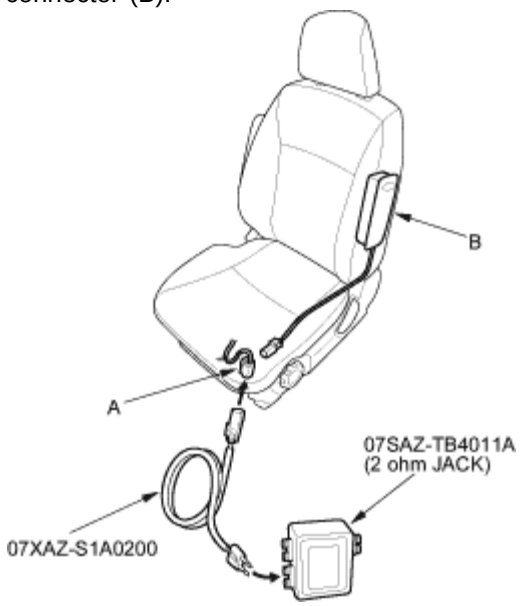
1. 1. Erase the DTC memory (see page 23-38).
   2. Turn the ignition switch ON (II), and check that the SRS indicator light comes on for about 6 seconds and then goes off.

Does the SRS indicator light stay on?

YES - Go to step 3.

NO - Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-38).

2. 3. Turn the ignition switch OFF. Disconnect the battery negative cable and wait for 3 minutes.
   4. Disconnect the SDi connector (A) from the SDo connector (B).



3. 5. Connect the special tool (2 ohm) to the SDi connector.

SRS

DTC Troubleshooting - with Side Airbags (cont'd)

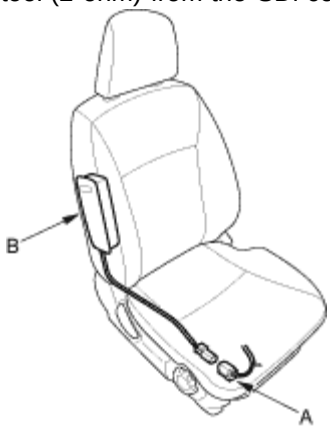
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

Is DTC 11-5 indicated?

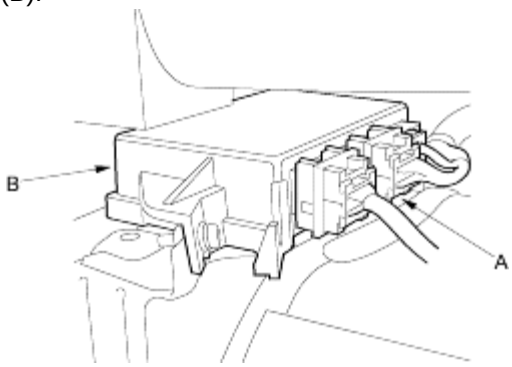
YES - Go to step 9.

NO - Short to ground in the driver's side airbag inflator; replace the driver's side airbag. ■

9. Disconnect the battery negative cable and wait for 3 minutes.
10. Disconnect the SPi connector (A) from the front passenger's side airbag (B), and disconnect the special tool (2 ohm) from the SDi connector.

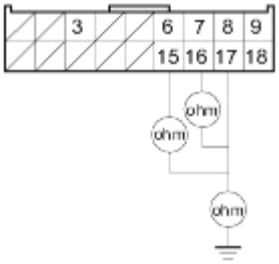


11. Disconnect the U2o connector (A) from the SRS unit (B).



12. Check resistance between the No. 17 and No. 15 terminals of the U2o connector, and between the No. 17 and No. 16 terminals of the U2o connector. Then check resistance between the No. 17 terminal of the U2o connector and body ground. There should be 1 M ohm or more.

U2o CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES - Faulty SRS unit; replace the SRS unit. ■

NO - Short to ground in the floor wire harness; replace the floor wire harness. ■

Standards and Service Limits

Cylinder Head

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		-	0.05 mm (0.002 in.)
	Height		92.95-93.05 mm (3.659-3.663 in.)	-
Camshaft	End Play		0.05-0.15 mm (0.002-0.006 in.)	0.5 mm (0.02 in.)
	Camshaft-to-holder oil clearance		0.050-0.089 mm (0.0020-0.0035 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height for D15Y4 engine	VTEC intake, primary	38.427 mm (1.5129 in.)	-
		VTEC intake, secondary	32.292 mm (1.2713 in.)	-
		VTEC exhaust	38.784 mm (1.5269 in.)	-
	Cam lobe height for D16W7 engine	VTEC intake, primary	38.427 mm (1.5129 in.)	-
		VTEC intake, secondary	32.848 mm (1.2932 in.)	-
		VTEC exhaust	38.784 mm (1.5269 in.)	-
	Cam lobe height for D17A2, D17A5 engines	VTEC intake, primary	38.604 mm (1.5198 in.)	-
		VTEC intake, secondary	32.848 mm (1.2932 in.)	-
		VTEC exhaust	38.784 mm (1.5269 in.)	-
	Cam lobe height for D16W8 engine	VTEC intake, primary	36.662 mm (1.4434 in.)	-
		VTEC intake, mid	38.274 mm (1.5068 in.)	-
		VTEC intake, secondary	32.885 mm (1.2947 in.)	-
		VTEC exhaust	38.008 mm (1.4964 in.)	-
	Cam lobe height for D14Z5 engine	Intake	34.158 mm (1.3448 in.)	-
		Exhaust	36.488 mm (1.4365 in.)	-
	Cam lobe height for D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1 engines	Intake	35.299 mm (1.3897 in.)	-
		Exhaust	37.281 mm (1.4678 in.)	-

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Wiring Diagram

Engine Control Module (ECM)

Wiring Diagram

Engine Control Module (ECM)

Wiring Diagram
Engine Control Module (ECM)

Wiring Diagram

Engine Control Module (ECM)

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Engine Control Module (ECM)

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Immobiliser System

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Malfunction Indicator

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Keyless Entry System

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Front Position Lights

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Front Position Lights

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High Mount Brake Light

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Licence Plate Light

Wiring Diagram

Licence Plate Light

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Powertrain Control Module (PCM)

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Powertrain Control Module (PCM)

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Powertrain Control Module (PCM)

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Powertrain Control Module (PCM)

Wiring Diagram
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Wiring Diagram
Power Door Locks

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Security Control

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Supplementary Restraint System (SRS)

Wiring Diagram

Turn Signal/Hazard Flasher

Wiring Diagram

Vehicle Speed Sensor (VSS)

Standards and Service Limits
Cylinder Head (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Valve	Clearance (cold)	Intake	0.18-0.22 mm (0.007-0.009 in.)	-
		Exhaust	0.23-0.27 mm (0.009-0.011 in.)	-
	Stem O.D.	Intake	5.48-5.49 mm (0.2157-0.2161 in.)	5.45 mm (0.215 in.)
		Exhaust	5.45-5.46 mm (0.2146-0.2150 in.)	5.42 mm (0.213 in.)
	Stem-to-guide clearance	Intake	0.02-0.05 mm (0.0008-0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.05-0.08 mm (0.0020-0.0031 in.)	0.11 mm (0.004 in.)
Valve seats	Width	Intake	0.85-1.15 mm (0.033-0.045 in.)	1.60 mm (0.063 in.)
		Exhaust	1.25-1.55 mm (0.049-0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	53.17-53.64 mm (2.093-2.112 in.)	53.89 mm (2.112 in.)
		Exhaust	53.17-53.64 mm (2.093-2.112 in.)	53.89 mm (2.112 in.)
Valve springs	Free length for D15Y4, D16W7, D17A2, D17A5 engines	VTEC intake	56.49 mm (2.224 in.)	-
		VTEC exhaust	58.70 mm (2.311 in.)	-
	Free length for D16W8 engine	VTEC intake	58.02 mm (2.284 in.)	-
		VTEC exhaust	58.70 mm (2.311 in.)	-
	Free length for D14Z5, D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1 engines	Intake	58.70 mm (2.311 in.)	-
		Exhaust	58.70 mm (2.311 in.)	-
Valve guides	I.D.	Intake	5.51-5.53 mm (0.217-0.218 in.)	5.55 mm (0.219 in.)
		Exhaust	5.51-5.53 mm (0.217-0.218 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	17.85-18.35 mm (0.703-0.722 in.)	-
		Exhaust	18.65-19.15 mm (0.734-0.754 in.)	-
Rocker arms	Arm-to-shaft clearance	Intake	0.017-0.050 mm (0.0007-0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.018-0.054 mm (0.0007-0.0021 in.)	0.08 mm (0.003 in.)

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter		75.00-75.02 mm (2.9528-2.9535 in.)	75.07 mm (2.9555 in.)
	Bore taper		-	0.05 mm (0.002 in.)
	Reboring limit		-	0.5 mm (0.02 in.)
Piston	Skirt O.D. at 13 mm (0.5 in.) from bottom of skirt		74.98-74.99 mm (2.9520-2.9524 in.)	74.97 mm (2.9516 in.)
	Clearance in cylinder		0.010-0.040 mm (0.0004-0.0016 in.)	0.05 mm (0.002 in.)
	Ring groove width for D15Y3, D17A5 engines	Top	1.020-1.030 mm (0.0402-0.0406 in.)	1.05 mm (0.041 in.)
		Second	1.220-1.230 mm (0.0481-0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.805-2.820 mm (0.1104-0.1110 in.)	2.85 mm (0.112 in.)
	Ring groove width for except D15Y3, D17A5 engines	Top	1.020-1.030 mm (0.0402-0.0406 in.)	1.05 mm (0.041 in.)
		Second	1.220-1.230 mm (0.0481-0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.005-2.020 mm (0.0789-0.0795 in.)	2.05 mm (0.08 in.)
Piston rings	Ring-to-groove clearance for except D15Y3, D17A5 engines	Top	0.035-0.055 mm (0.0014-0.0022 in.)	0.13 mm (0.005 in.)
		Second	0.030-0.055 mm (0.0012-0.0022 in.)	0.13 mm (0.005 in.)
	Ring-to-groove clearance for D15Y3, D17A5 engines	Top	0.035-0.060 mm (0.0014-0.0024 in.)	0.13 mm (0.005 in.)
		Second	0.030-0.055 mm (0.0012-0.0022 in.)	0.13 mm (0.005 in.)
	Ring end gap for except D15Y3, D17A5 engines	Top	0.15-0.30 mm (0.006-0.012 in.)	0.60 mm (0.024 in.)
		Second	0.30-0.45 mm (0.012-0.018 in.)	0.60 mm (0.024 in.)
		Oil	0.20-0.80 mm (0.008-0.031 in.)	0.90 mm (0.035 in.)
	Ring end gap for D15Y3, D17A5 engine	Top	0.15-0.30 mm (0.006-0.012 in.)	0.60 mm (0.024 in.)
		Second	0.30-0.45 mm (0.012-0.018 in.)	0.60 mm (0.024 in.)
		Oil	0.20-0.70 mm (0.008-0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		18.996-19.000 mm (0.7479-0.7480 in.)	-
	Pin-to-piston clearance		0.010-0.020 mm (0.0004-0.0008 in.)	-
Connecting rod	Pin-to-rod interference		0.016-0.036 mm (0.0006-0.0014 in.)	-
	Small-end bore diameter		18.96-18.98 mm (0.746-0.747 in.)	-
	Large-end bore diameter (Nominal)	D14Z5 engine	43.0 mm (1.69 in.)	-

		D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 engines	45.0 mm (1.77 in.)	-
		D16W7, D16W8, D17Z1, D17A1, D17A2, D17A5 engines	48.0 mm (1.89 in.)	-
	End play installed on crankshaft		0.15-0.30 mm (0.006-0.012 in.)	0.40 mm (0.016 in.)

Standards and Service Limits

Engine Block (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Crankshaft	Main journal diameter	D14Z5, D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 engines	44.976-45.000 mm (1.7707-1.7717 in.)	-
		D16W7, D16W8, D17Z1, D17A1, D17A2, D17A5 engines	54.976-55.000 mm (2.1644-2.1654 in.)	-
	Rod journal diameter	D14Z5 engine	39.976-40.000 mm (1.5739-1.5748 in.)	-
		D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 engines	41.976-42.000 mm (1.6526-1.6535 in.)	-
		D16W7, D16W8, D17Z1, D17A1, D17A2, D17A5 engines	44.976-45.000 mm (1.7707-1.7717 in.)	-
	Rod/main journal taper		0.0025 mm (0.0001 in.)	0.005 mm (0.0002 in.)
	Rod/main journal out-of-round		0.0025 mm (0.0001 in.)	0.005 mm (0.0002 in.)
	End play		0.10-0.35 mm (0.004-0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
Crankshaft bearings	Main bearing-to-journal oil clearance for D14Z5, D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 engines	No. 1 journal	0.018-0.036 mm (0.0007-0.0014 in.)	0.05 mm (0.002 in.)
		No. 5 journal		
		No. 2 journal	0.020-0.038 mm (0.0008-0.0015 in.)	0.05 mm (0.002 in.)
		No. 3 journal		
		No. 4 journal		
	Main bearing-to-journal oil clearance for D16W7, D16W8, D17Z1, D17A1, D17A2, D17A5 engines	No. 1 journal	0.018-0.036 mm (0.0007-0.0014 in.)	0.05 mm (0.002 in.)
		No. 5 journal		
		No. 2 journal	0.024-0.042 mm (0.0009-0.0017 in.)	0.05 mm (0.002 in.)
		No. 3 journal		
		No. 4 journal		
	Rod bearing clearance		0.024-0.042 mm (0.0009-0.0017 in.)	0.05 mm (0.002 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	D15Y4, D17A2 (KU, KQ models), D17A5 (KN model) engines	4.2 *l* (4.4 US qt, 3.7 Imp qt) for engine overhaul	
			3.5 *l* (3.7 US qt, 3.1 Imp qt) for oil change, including filter	
			3.3 *l* (3.5 US qt, 2.9 Imp qt) for oil change, without filter	
		Except D15Y4, D17A2 (KU, KQ models, D17A5 (KN model) engines	4.2 *l* (4.4 US qt, 3.7 Imp qt) for engine overhaul	
			3.2 *l* (3.4 US qt, 2.8 Imp qt) for oil change, including filter	
			3.0 *l* (3.2 US qt, 2.6 Imp qt) for oil change, without filter	
Oil pump	Inner-to-outer rotor clearance		0.06-0.18 mm (0.002-0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.10-0.18 mm (0.004-0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to-rotor axial clearance		0.02-0.07 mm (0.001-0.003 in.)	0.15 mm (0.006 in.)
	Oil pressure with oil temperature at 80°C (176°F)	At idle	70 kPa (0.7kgf/cm2, 10 psi) min.	
		at 3,000 rpm (min-1)	340 kPa (3.5 kgf/cm2, 50 psi) min.	

Standards and Service Limits

Cooling

Item	Measurement	Qualification	Standard or New	Service Limit
Radiator	Coolant capacity (Includes engine, heater, hoses and reservoir)	M/T: engine overhaul	5.1 / (5.4 US qt, 4.5 Imp qt)	
		M/T: coolant change	4.0 / (4.2 US qt, 3.5 Imp qt)	
		A/T, HONDA MULTI MATIC: engine overhaul	5.0 / (5.3 US qt, 4.4 Imp qt)	
		A/T, HONDA MULTI MATIC: coolant change	3.9 / (4.1 US qt, 3.4 Imp qt)	
Reservoir	Coolant capacity		0.4 / (0.4 US qt, 0.4 Imp qt)	
Radiator cap	Opening pressure		93-123 kPa (0.95-1.25 kgf/cm2, 14-18 psi)	
Thermostat	Opening temperature	Begin to open	76-80°C (169-176°F)	
		Fully open	90°C (194°F)	
	Valve lift at fully open		8.0 mm (0.31 in.) min.	
Radiator fan switch	Thermoswitch "ON" temperature		91-95°C (196-203°F)	
	Thermoswitch "OFF" temperature		Subtract 3-8°C (5-15°F) from actual "ON" temperature	

Standards and Service Limits

Fuel and Emissions

Item	Measurement	Qualification	Standard or New	Service Limit
Fuel pressure regulator	Pressure with fuel pressure gauge connected		270-320 kPa (2.8-3.3 kgf/cm2, 40-47 psi)	
Fuel tank	Capacity		45 / (11.9 US gal, 9.9 Imp gal)	
Engine idle for D14Z5, D16W7, D17Z1 engines (4-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	700±50 rpm	
		A/T in N or P	650±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.1 max.	
Engine idle for D15Y3, D17A5 engines (4-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	750±50 rpm	
		CVT, A/T in N or P	750±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.5 max.	
Engine idle for D15Y5, D15Y2, D16W8, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines (4-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	720±50 rpm	
		A/T in N or P	720±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.1 max.	
Engine idle for D14Z5, D16W7 engines (5-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	700±50 rpm	
		A/T in N or P	650±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.1 max.	
Engine idle for D15Y5, D15Y2 D16W8, D17A1, D17Z1, D17Z2, D17Z5, D17A2, D17Z3 engines (5-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	720±50 rpm	
		A/T in N or P	720±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.1 max.	
Engine idle for D16V2 engine (5-door model)	Idle speed with headlights and radiator fan off	M/T in neutral	750±50 rpm	
		CVT, A/T in N or P	750±50 rpm	
	Fast idle	M/T in neutral	1,300±50 rpm	
		A/T in N or P	1,300±50 rpm	
	Idle CO%		0.5 max.	

Maintenance

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Maintenance Schedule for Severe Conditions (Except European, Australia and New Zealand Models)	3-14

Maintenance Schedule for Severe Conditions

(Australian and New Zealand Models)

Listed by Distance/Time

Service at the indicated distance or time whichever comes first.											
	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12	24	36	48	60	72	84	96	108	120
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil		Every 5,000 km (3,000 miles) or 6 months									
Replace engine oil filter		Every 10,000 km (6,000 miles) or 6 months									
Replace air cleaner element		●	●	●	●	●	●	●	●	●	●
Inspect valve clearance			●		●		●		●		●
Replace fuel filter			●		●		●		●		●
Replace spark plugs			●		●		●		●		●
Replace timing belt, and inspect water pump						●					●
Inspect and adjust drive belts			●		●		●		●		●
Inspect idle speed						●					●
Replace engine coolant		200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid	Manual Transmission			●			●			●	
	Automatic Transmission			●		●		●		●	
	CVT				●			●			●
Inspect front and rear brakes		Every 10,000 km (6,000 miles) or 6 months									
Replace brake fluid		Every 36 months									
Check parking brake adjustment		●	●		●		●		●		●
Check light alignment		●	●	●	●	●	●	●	●	●	●
Test drive (noise, stability, dashboard operation)		●	●	●	●	●	●	●	●	●	●
Visually inspect the following items:											
Tie rod ends, steering gearbox and boots		Every 10,000 km (6,000 miles) or 6 months									
Suspension components											
Driveshaft boots											
Brake hoses and lines (including ABS)		●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid											
Exhaust system											
Fuel line and connections											
Tyre condition											

Follow the Severe Conditions Maintenance Schedule if the customer's vehicle is driven MAINLY under one or more of the following

conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling of long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Maintenance Schedule for Severe Conditions

(Australian and New Zealand Models) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page8-6)
	(see page 11-147) (seepage 11-147)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of seal leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-320)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the calipers for damage, leaks and tightness.	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
Check the position of the headlight.	(see page 22-144)
Check for road stability, noise, vibrations and dashboard operation.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease. • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness. • Check all dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page9-5)

Check fuel lines for loose connections, cracks and deterioration. Retighten loose connections and replace any damaged parts	(see page 11-132) (see page 11-290) (see page 11-432) (see page 11-565)
Check for pressure, puncture or cuts and irregular tread wear.	-

NOTE: If the customer's vehicle is driven OCCASIONALLY under severe condition, you should follow the Normal Condition Maintenance Schedule on pages 3-8 and 3-9.

Maintenance Schedule for Normal Conditions

(Except European, Australian and New Zealand Models)

Listed by Distance/Time

Service at the indicated distance or time whichever comes first.		km x 1,000	20	40	60	80	100	120	140	160	180	200
		miles x 1,000	12	24	36	48	60	72	84	96	108	120
		months	12	24	36	48	60	72	84	96	108	120
Replace engine oil			Unleaded type: Every 10,000 km (6,000 miles) or 12 months									
			Leaded type: Every 5,000 km (3,000 miles) or 6 months									
Replace engine oil filter			Unleaded type: Every 20,000 km (12,000 miles) or 12 months									
			Leaded type: Every 10,000 km (6,000 miles) or 6 months									
Clean or replace air cleaner element			Every 20,000 km (12,000 miles)									
Inspect valve clearance		with catalytic converter	Every 40,000 km (24,000 miles)									
		without catalytic converter	Every 20,000 km (12,000 miles)									
Replace fuel filter				●		●		●		●		●
Replace spark plugs	Non-Platinum type	with catalytic converter	Every 40,000 km (24,000 miles)									
		without catalytic converter	Every 20,000 km (12,000 miles)									
	Platinum type		Every 100,000 km (60,000 miles)									
Replace timing belt and inspect water pump							●					●
Inspect and adjust drive belts				●		●		●		●		●
Inspect idle speed		with catalytic converter						●				
		without catalytic converter			●			●			●	
Replace engine coolant			200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid	Manual Transmission							●			●	
	Automatic Transmission							●			●	
	Honda Multi Matic					●			●			●
Inspect front and rear brakes			Every 100,000 km (60,000 miles) or 6 months									

Replace brake fluid	Every 36 months									
Check parking brake adjustment	●	●		●		●		●		●
Rotate tyre (Check tyre inflation and condition at least once per month)	Every 100,000 km (60,000 miles)									
Visually inspect the following items:										
Tie rod ends, steering gearbox and boots	Every 10,000 km (6,000 miles) or 6 months									
Suspension components										
Driveshaft boots										
Brake hoses and lines (including ABS)	●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid										
Exhaust system										
Fuel line and connections										

Follow the Normal Conditions Maintenance Schedule if the severe driving conditions specified in the Severe Conditions Maintenance Schedule on 3-14 and 3-15 do not apply.

Maintenance Schedule for Normal Conditions

(Except European, Australian and New Zealand Models) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page 8-6)
	(see page 11-147) (see page 11-447)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of seal leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-320)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the callipers for damage, leaks and tightness.	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
The suggested rotation method is shown in the diagram of the Owner's Manual.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease, • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness • Check all the dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page 9-5)
Check fuel lines for loose connections, cracks and deterioration. Retighten loose	(see page 11-132) (see page 11-290)

connections and replace any damaged parts.	(see page 11-432) (see page 11-565)

Maintenance Schedule for Severe Conditions

(Except European, Australian and New Zealand Models)

Listed by Distance/Time

Service at the indicated distance or time whichever comes first.			20	40	60	80	100	120	140	160	180	200
		km x 1,000										
		miles x 1,000	12	24	36	48	60	72	84	96	108	120
		months	12	24	36	48	60	72	84	96	108	120
Replace engine oil			Every 5,000 km (3,000 miles) or 6 months									
Replace engine oil filter			Every 10,000 km (6,000 miles) or 6 months									
Clean or replace air cleaner element			Every 20,000 km (12,000 miles)									
Inspect valve clearance		with catalytic converter	Every 40,000 km (24,000 miles)									
		without catalytic converter	Every 20,000 km (12,000 miles)									
Replace fuel filter				●		●		●		●		●
Replace spark plugs	Non-Platinum type	with catalytic converter	Every 40,000 km (24,000 miles)									
		without catalytic converter	Every 20,000 km (12,000 miles)									
	Platinum type		Every 100,000 km (60,000 miles)									
Replace timing belt and inspect water pump							●					●
Inspect and adjust drive belts				●		●		●		●		●
Inspect idle speed	with catalytic converter							●				
	without catalytic converter				●			●			●	
Replace engine coolant			200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid		Manual Transmission			●			●			●	
		Automatic Transmission			●		●		●		●	
		Honda Multi Matic		●		●		●		●		●
Inspect front and rear brakes			Every 100,000 km (60,000 miles) or 6 months									
Replace brake fluid			Every 36 months									
Check parking brake adjustment			●	●		●		●		●		●
Rotate tyre (Check tyre inflation and condition at least once per month)			Every 100,000 km (60,000 miles)									
Visually inspect the following items:												
Tie rod ends, steering gearbox and boots			Every 10,000 km (6,000 miles) or 6 months									
Suspension components												
Driveshaft boots												
Brake hoses and lines (including ABS)			●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid												

Exhaust system										
Fuel line and connections										

Follow the Severe Conditions Maintenance Schedule if the customer's vehicle is driven MAINLY under one or more of the following conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling of long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Maintenance Schedule for Severe Conditions

(Except European, Australian and New Zealand Models) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page 8-6)
	(see page 8-6) (see page 11-447)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-320)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the calipers for damage, leaks and tightness.	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
The suggested rotation method is shown in the diagram of the Owner's Manual.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease. • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness. • Check all dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page 9-5)
Check fuel lines for loose connections, cracks and deterioration. Retighten loose	(see page 11-132) (see page 11-290)

connections and replace any damaged parts	(see page 11-432) (see page 11-565)

NOTE: If the customer's vehicle is driven OCCASIONALLY under severe condition, you should follow Normal Condition Maintenance Schedule on pages 3-12 and 3-13

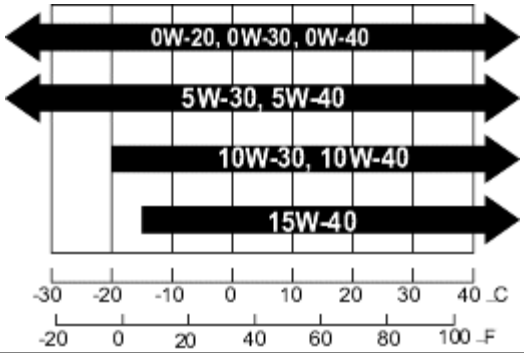
Lubricants and Fluids

For the details of lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

NO.	LUBRICATION POINTS		LUBRICANT
1	Engine		Always use fuel-efficient that says "API service SG, SH or SJ" SAE Viscosity See chart below.
2	Transmission	Manual	Genuine Honda Manual Transmission Fluid (MTF) *1
		Automatic	Genuine Honda ATF-Z1 (ATF) *2
		Honda Multi Matic	
3	Brake system (includes ABS line)		Brake fluid DOT 3 or DOT 4 *3
4	Clutch line		Brake fluid DOT 3 or DOT 4 *3
5	Power steering gearbox		Steering grease P/N 08733-B070E
6 7	Release fork (manual transmission) Shift and select cable ends (Manual transmission)		Super High Temp Urea Grease (P/N 08798-9002)
8	Throttle cable end (dashboard lower panel hole)		Silicon grease
9	Throttle cable end (throttle link)		Multi-purpose grease
10	Brake master cylinder pushrod		
11	Clutch master cylinder pushrod		
12	Shift lever		
13	Pedal linkage		
14	Battery terminals		
15	Fuel fill lid		
16	Rear brake shoe linkage		Honda White Lithium Grease
17	Hood hinges and latch		
18	Trunk hinges and latch (4-Door model) Tailgate hinges and latch (5-Door model)		
19	Door hinges, upper and lower		
20	Door opening detent		
21	Calliper piston boot, calliper pins and boots		Silicone grease
22	Brake line joints (front and rear wheelhouse)		Rust preventatives
23	Power steering system		Honda Power Steering Fluid *4
24	Air conditioning compressor		Compressor oil: SANDEN: SP-10 (P/N 38897-P13-003 or 38899-P13-A01) For refrigerant: HFC-134a (R-134a)

Recommended Engine Oil

Engine oil viscosity for ambient temperature ranges



CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still

advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

*1: Always use genuine Honda Manual Transmission Fluid (MTF). Using motor oil can cause stiffer shifting because it does not contain the proper additives.

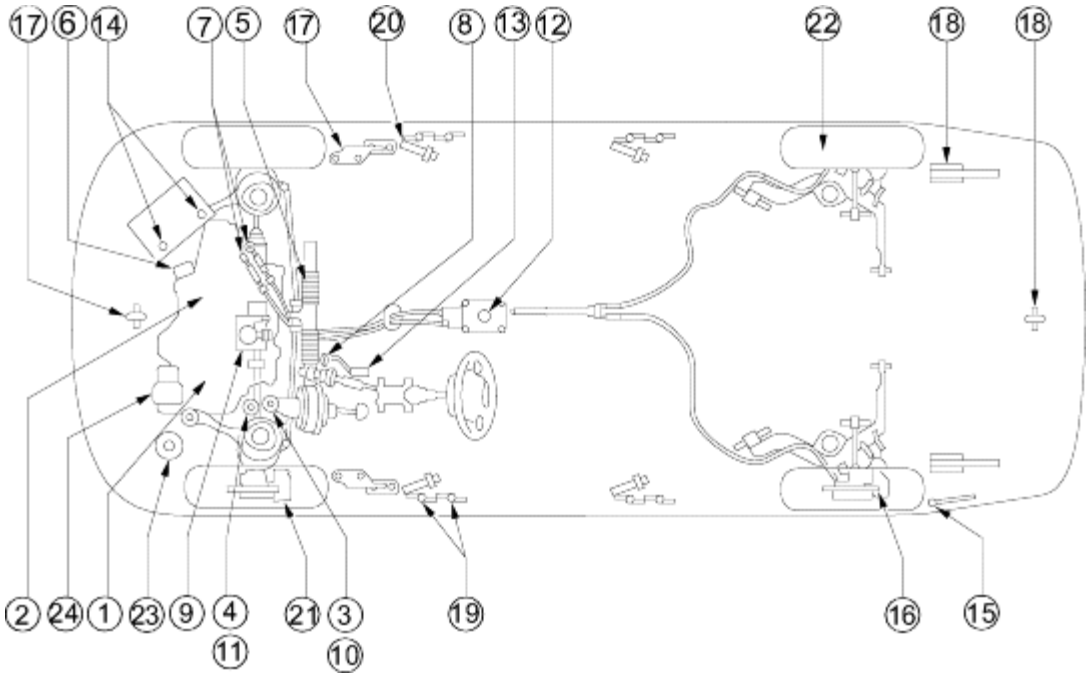
*2: Always use genuine Honda ATF-Z1 (ATF). Using a non-Honda ATF can affect shift quality.

*3: We recommend Genuine Honda Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.

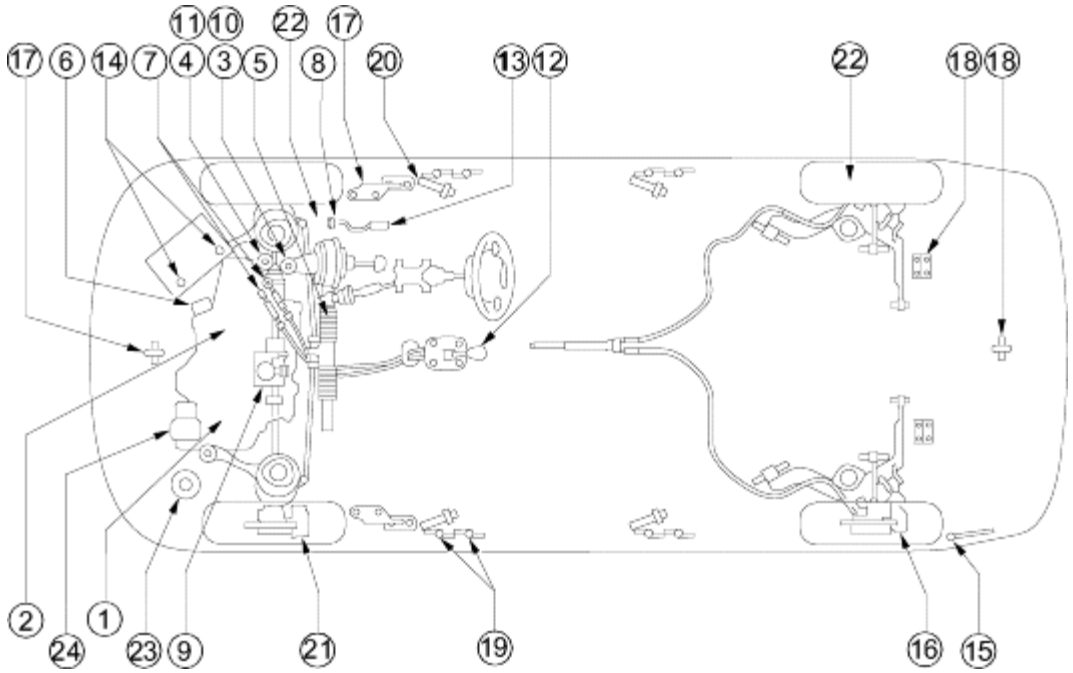
*4: Always Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

Lubricants and Fluids
(cont'd)

4-door



5-door



Maintenance Schedule for Normal Conditions

(European Model)

Listed by Distance/Time

Follow the Normal Conditions Maintenance Schedule if the severe driving conditions specified in the Severe Conditions Maintenance Schedule on 3-6 and 3-7 do not apply.

Service at the indicated distance or time whichever comes first.										
	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12	24	36	48	60	72	84	96	108	120
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil		●	●	●	●	●	●	●	●	●	●
Replace engine oil filter		●	●	●	●	●	●	●	●	●	●
Replace air cleaner element			●		●		●		●		●
Inspect valve clearance			●		●		●		●		●
Replace fuel filter							●				
Replace spark plugs			●		●		●		●		●
Replace timing belt, and inspect water pump		Every 120,000 km (72,000 miles) or 96 months									
Inspect and adjust drive belts			●		●		●		●		●
Inspect idle speed							●				
Replace engine coolant		200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid	Manual Transmission	Every 120,000 km (72,000 miles) or 96 months									
	Automatic Transmission	120,000 km (72,000 miles) or 96 months, thereafter every 80,000 km (48,000 miles) or 48 months									
Inspect front and rear brakes		●	●	●	●	●	●	●	●	●	●
Replace brake fluid		Every 36 months									
Check parking brake adjustment		●	●		●		●		●		●
Replace air conditioning filter		Every 30,000 km (18,000 miles) or 12 months									
Check light alignment		●	●	●	●	●	●	●	●	●	●
Test drive (noise, stability, dashboard operation)		●	●	●	●	●	●	●	●	●	●
Visually inspect the following items:											
Tie rod ends, steering gearbox and boots		●	●	●	●	●	●	●	●	●	●
Suspension components											
Driveshaft boots											
Brake hoses and lines (including ABS)											
All fluid levels and condition of fluid											
Exhaust system											
Fuel line and connections											
Tyre condition											

Maintenance Schedule for Normal Conditions
(European Model) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page8-6)
	(see page 11-147) (see page 11-147)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of seal leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the callipers for damage, leaks and tightness.	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
	-
Check the position of the headlight.	(see page 22-114)
Check for road stability, noise, vibrations and dashboard operation.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease. • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness. • Check all the dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page 9-5)

Check fuel lines for loose connections, cracks and deterioration. Retighten loose connections and replace any damaged parts	(see page 11-132) (see page 11-290) (see page 11-432) (see page 11-565)
Check for pressure, puncture or cuts and irregular tread wear.	-

Maintenance Schedule for Severe Conditions

(European Model)

Listed by Distance/Time

Service at the indicated distance or time whichever comes first.	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12	24	36	48	60	72	84	96	108	120
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil		Every 10,000 km (6,000 miles) or 6 months									
Replace engine oil filter		●	●	●	●	●	●	●	●	●	●
Replace air cleaner element		●	●	●	●	●	●	●	●	●	●
Inspect valve clearance			●		●		●		●		●
Replace fuel filter							●				
Replace spark plugs			●		●		●		●		●
Replace timing belt and inspect water pump							●				
Inspect and adjust drive belts			●		●		●		●		●
Inspect idle speed							●				
Replace engine coolant		200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid	Manual Transmission	Every 60,000 km (36,000 miles) or 48 months									
	Automatic Transmission	60,000 km (36,000 miles) or 48 months, thereafter every 40,000 km (24,000 miles) or 24 months									
Inspect front and rear brakes		Every 10,000 km (6,000 miles) or 6 months									
Replace brake fluid		Every 36 months									
Check parking brake adjustment		●	●	●	●	●	●	●	●	●	●
Replace air conditioning filter		Every 30,000 km (18,000 miles) or 12 months									
Check light alignment		●	●	●	●	●	●	●	●	●	●
Test drive (noise, stability, dashboard operation)		●	●	●	●	●	●	●	●	●	●
Visually inspect the following items:											
Tie rod ends, steering gearbox and boots		Every 10,000 km (6,000 miles) or 6 months									
Suspension components											
Driveshaft boots											
Brake hoses and lines (including ABS)		●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid											
Exhaust system											
Fuel line and connections											
Tyre condition											

Follow the Severe Conditions Maintenance Schedule if the customer's vehicle is driven MAINLY under one or more of the following conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling of long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Maintenance Schedule for Severe Conditions
(European Model) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page 8-6)
	(see page 11-147) (see page 11-447)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of seal leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the calipers for damage, leaks and tightness.	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
	-
Check the position of the headlight.	(see page 22-144)
Check for road stability, noise, vibrations and dashboard operation.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease. • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness. • Check all dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page 9-5)

Check fuel lines for loose connections, cracks and deterioration. Retighten loose connections and replace any damaged parts	(see page 11-132) (see page 11-290) (see page 14-232) (see page 11-565)
Check for pressure, puncture or cuts and irregular tread wear.	-

NOTE: If the customer's vehicle is driven OCCASIONALLY under severe condition, you should follow the Normal Condition Maintenance Schedule on pages 3-4 and 3-5.

Maintenance Schedule for Normal Conditions

(Australian and New Zealand Models)

Listed by Distance/Time

Follow the Normal Conditions Maintenance Schedule if the severe driving conditions specified in the Severe Conditions Maintenance Schedule on 3-10 and 3-11 do not apply.

Service at the indicated distance or time whichever comes first.											
	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12	24	36	48	60	72	84	96	108	120
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil		Every 10,000 km (6,000 miles) or 12 months									
Replace engine oil filter		●	●	●	●	●	●	●	●	●	●
Replace air cleaner element			●		●		●		●		●
Inspect valve clearance			●		●		●		●		●
Replace fuel filter			●		●		●		●		●
Replace spark plugs			●		●		●		●		●
Replace timing belt and inspect water pump						●					
Inspect and adjust drive belts			●		●		●		●		●
Inspect idle speed							●				●
Replace engine coolant		200,000 km (120,000 miles) or 120 months, thereafter every 100,000 km (60,000 miles) or 60 months									
Replace transmission fluid	Manual Transmission						●				
	Automatic Transmission	120,000 km (72,000 miles) or 96 months, thereafter every 80,000 km (48,000 miles) or 48 months									
	CVT				●			●			●
Inspect front and rear brakes		●	●	●	●	●	●	●	●	●	●
Replace brake fluid		Every 36 months									
Check parking brake adjustment		●	●		●		●		●		●
Check light alignment		●	●	●	●	●	●	●	●	●	●
Test drive (noise, stability, dashboard operation)		●	●	●	●	●	●	●	●	●	●
Visually inspect the following items:											
Tie rod ends, steering gearbox and boots		●	●	●	●	●	●	●	●	●	●
Suspension components											
Driveshaft boots											
Brake hoses and lines (including ABS)											
All fluid levels and condition of fluid											
Exhaust system											
Fuel line and connections											

Tyre condition										

Maintenance Schedule for Normal Conditions

(Australian and New Zealand Models) (cont'd)

NOTES	SECTION and PAGE
	(see page 8-5)
	(see page 8-6)
	(see page 11-147) (see page 11-447)
Check the valve clearance.	(see page 6-14)
	(see page 11-138) (see page 11-296) (see page 11-438) (see page 11-571)
	(see page 4-25)
Check water pump for signs of seal leakage.	(see page 6-18) (see page 6-22) (see page 10-7)
• Check for cracks and damage. • Check deflection and tension.	(see page 17-23)
	(see page 11-125) (see page 11-285) (see page 11-425) (see page 11-560)
Check specific gravity for freezing point.	(see page 10-8)
Use genuine Honda MTF (Manual Transmission Fluid).	(see page 13-3)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-122)
Use genuine Honda AFT-Z1 (ATF).	(see page 14-320)
• Check the brake pad and disc thickness. Check for damage or cracks. • Check the wheel cylinder for leaks. • Check the brake linings for cracking, glazing, wear or contamination. • Check the calipers for damage, leaks and tightness	(see page 19-3)
Use only DOT 3 brake fluid. (We recommend Genuine Honda Brake Fluid.) Check that Brake fluid level is between the upper and lower marks on the reservoir.	(see page 19-7)
Check the parking brake operation.	(see page 19-6)
Check the position of the headlight.	(see page 22-114)
Check for road stability, noise, vibrations and dashboard operation.	-
• Check for correct installation and position, check for cracks, deterioration rust and leaks. • Check tightness of screws, nuts and joints. If necessary, retighten.	-
• Check rack grease and steering linkage. Check the boot for damage and leaking grease. • Check the fluid line for damage and leaks.	(see page 17-5)
• Check the bolts for tightness. • Check all dust covers for deterioration and damage.	(see page 18-3)
• Check the boot and boot band for cracks • Check rack grease.	(see page 16-3)
Check the master cylinder, proportioning control valve and ABS modulator and leakage.	(see page 19-48)
Check for leaks.	-
Check the catalytic converter heat shield, exhaust pipe and muffler for damage, leaks and tightness.	(see page 9-5)

Check fuel lines for loose connections, cracks and deterioration. Retighten loose connections and replace any damaged parts	(see page 11-132) (see page 11-290) (see page 11-432) (see page 11-565)
Check for pressure, puncture or cuts and irregular tread wear.	-

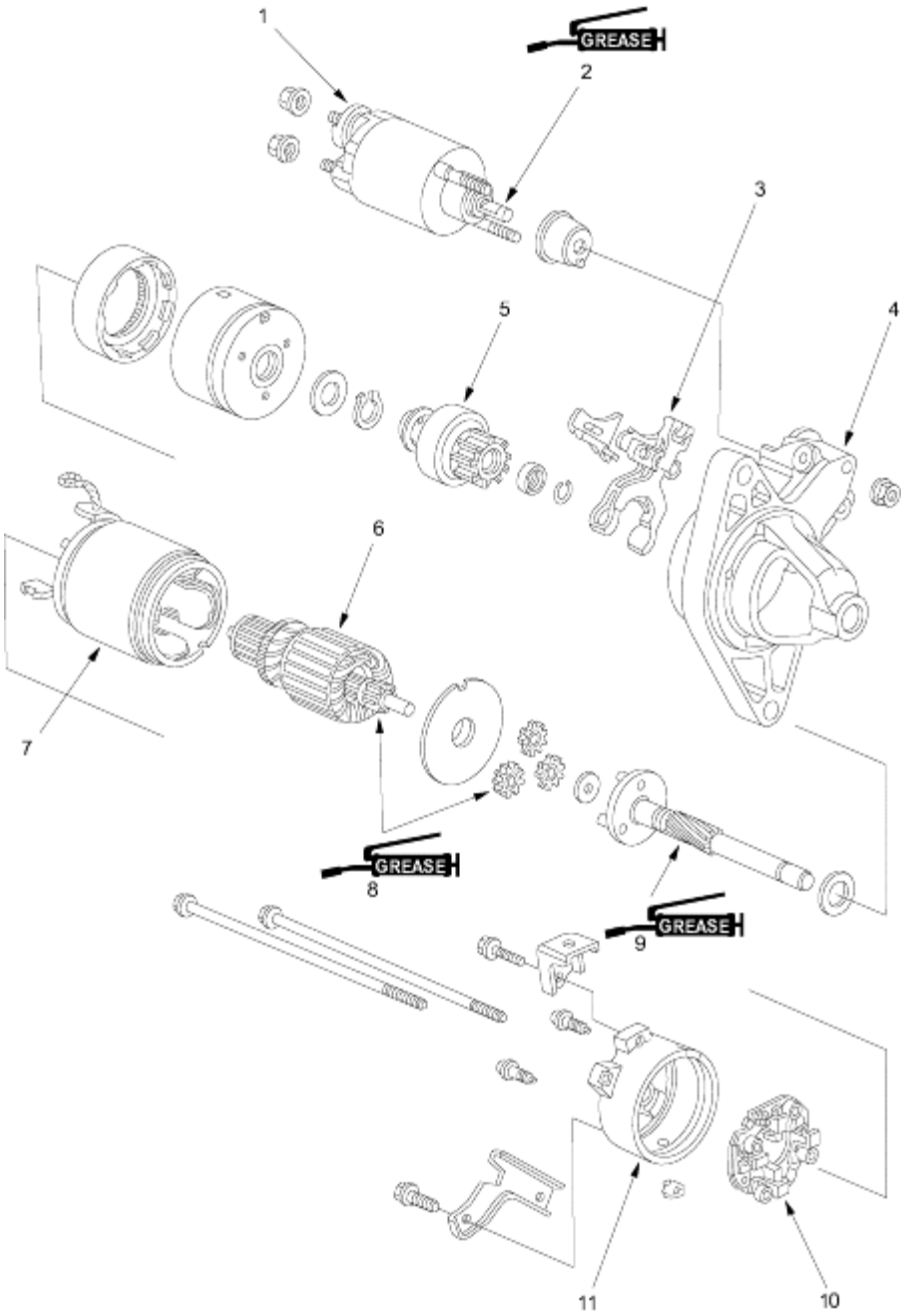
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Starting System

Starter Overhaul

Disassembly/Reassembly - D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines

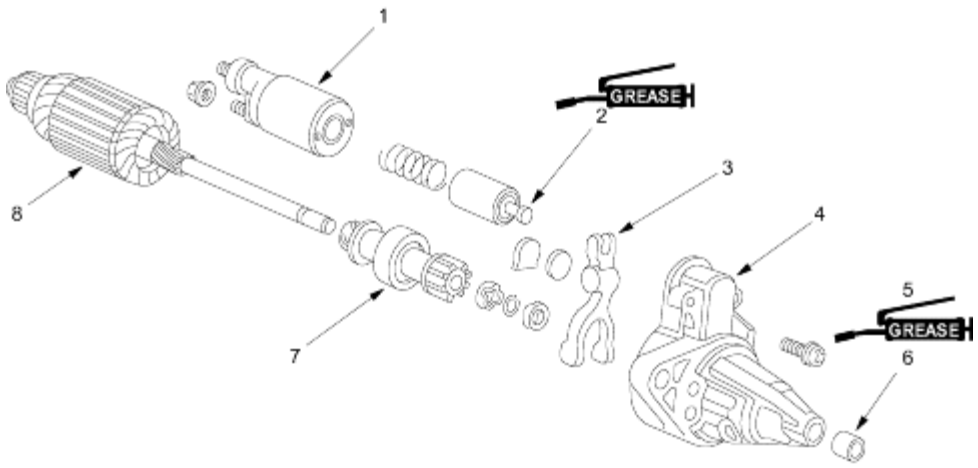


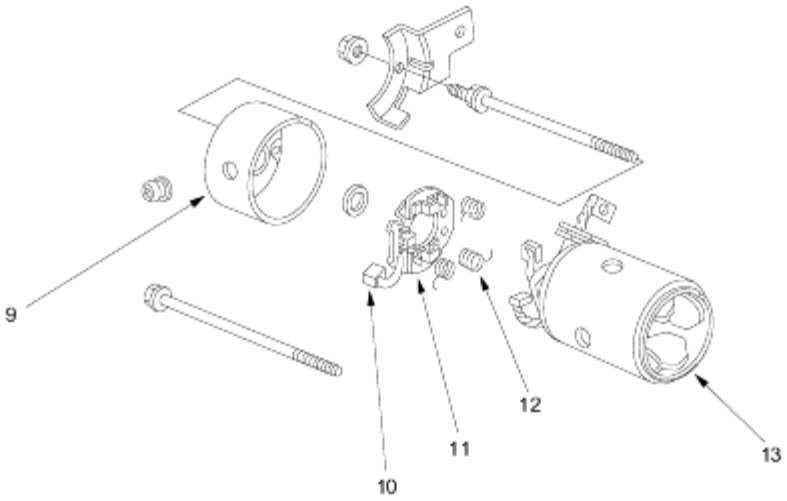
1. STARTER SOLENOID
2. MOLYBDENUM DISULPHIDE
3. SOLENOID LEVER
4. GEAR HOUSING
5. OVERRUNNING CLUTCH ASSEMBLY
6. ARMATURE
7. ARMATURE HOUSING
8. MOLYBDENUM DISULPHIDE
9. MOLYBDENUM DISULPHIDE
10. BRUSH HOLDER
11. END COVER

Starting System

Starter Overhaul (cont'd)

Disassembly/Reassembly - D15Y3 (Philippine model), D16W9 (Philippine model), D17Z1 (Malaysia model), D17Z5, D17A2 (Malaysia model), D17A5 (Indonesia model) engines



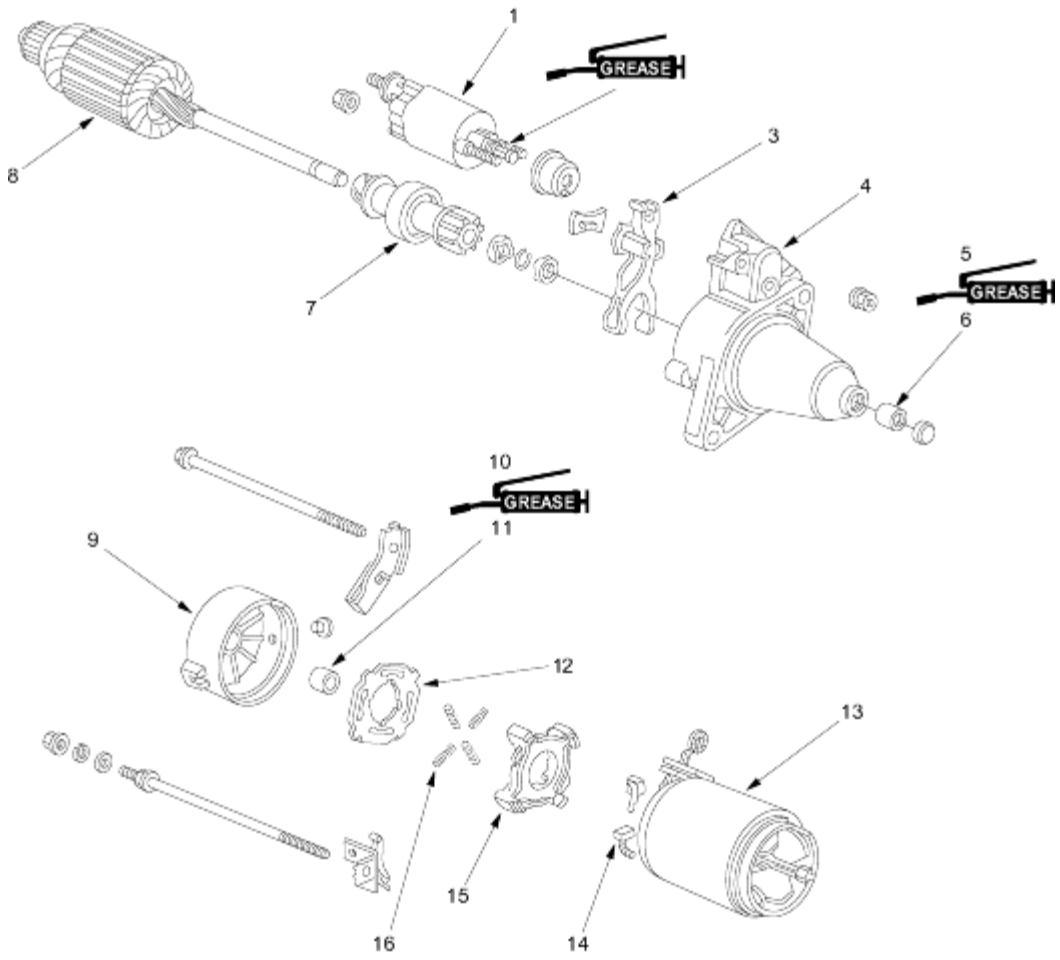


1. STARTER SOLENOID
2. MOLYBDENUM DISULPHIDE
3. STARTER LEVER
4. GEAR HOUSING
5. FRONT BEARING
6. MOLYBDENUM DISULPHIDE
7. OVERRUNNING CLUTCH ASSEMBLY
8. ARMATURE
9. END COVER
10. BRUSH
11. BRUSH HOLDER
12. BRUSH SPRING
13. ARMATURE HOUSING

Starting System

Starter Overhaul (cont'd)

Disassembly/Reassembly - Except D15Y2, D15Y3 (Philippine model), D16W7 (KG model), D16W8, D16W9, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines

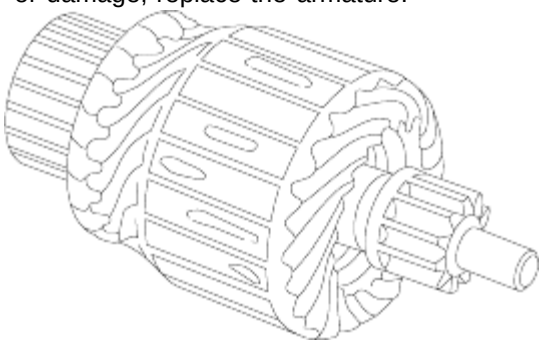


1. STARTER SOLENOID
2. MOLYBDENUM DISULPHIDE
3. SOLENOID LEVER
4. GEAR HOUSING
5. FRONT BEARING
6. MOLYBDENUM DISULPHIDE
7. OVERRUNNING CLUTCH ASSEMBLY
8. ARMATURE
9. END COVER
10. REAR BEARING
11. MOLYBDENUM DISULPHIDE
12. BRUSH HOLDER INSULATOR
13. ARMATURE HOUSING
14. BRUSH
15. BRUSH HOLDER
16. BRUSH SPRING

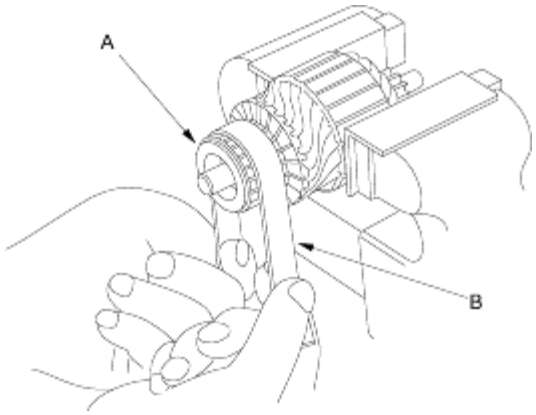
Starting System
Starter Overhaul (cont'd)

Armature Inspection and Test

1. 1. Remove the starter (see page 4-9).
   2. Disassemble the starter as shown at the beginning of this procedure.
   3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



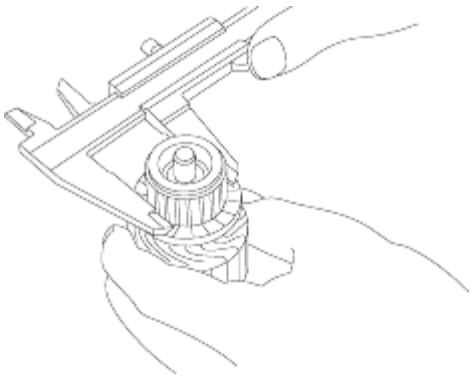
2. 4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within the following specifications, or recondition with #500 or #600 sandpaper (B).



1. 5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

Commutator Diameter

Standard (New):	27.9 - 28.0 mm (1.09 - 1.10 in.)
Service Limit:	27.0 mm (1.06 in.)



2. 6. Measure the commutator (A) runout.
   - If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
   - If the commutator runout is not within the service limit, replace the armature.

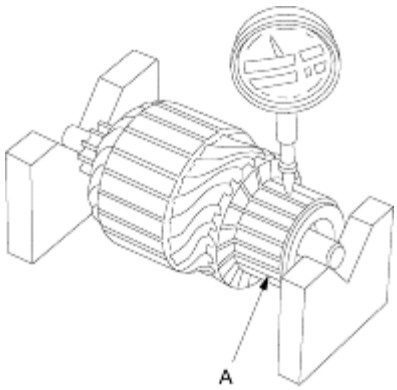
Commutator Runout

D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17A2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:

Standard (New):	0.02 mm (0.001 in.) max.
Service Limit:	0.05 mm (0.002 in.)

Except D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:

Standard (New):	0.05 mm (0.002 in.) max.
Service Limit:	0.4 mm (0.002 in.)



Starting System

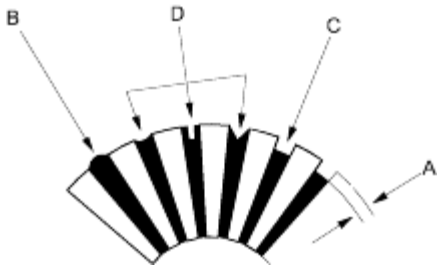
Starter Overhaul (cont'd)

1. 7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

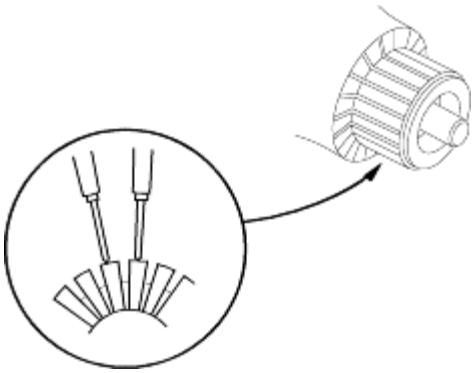
Commutator Mica Depth

Standard (New): 0.50 - 0.75 mm (0.020 - 0.030 in.)

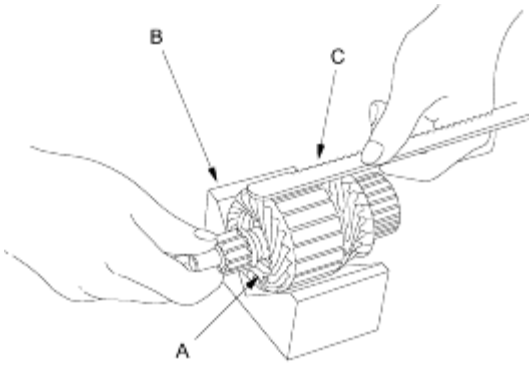
Service Limit: 0.2 mm (0.008 in.)



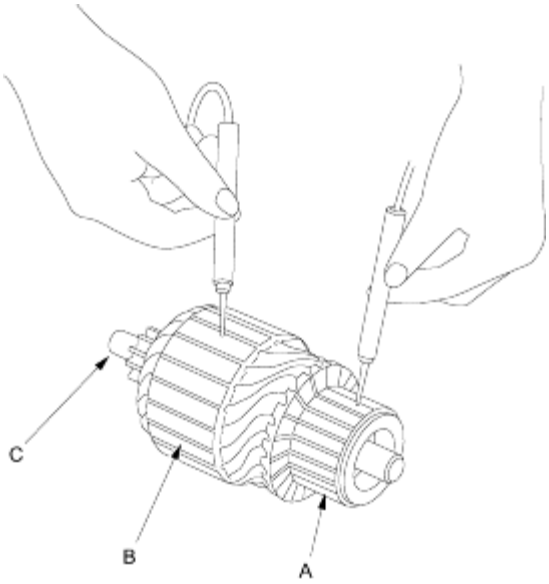
2. 8. Check for continuity between the segments of the commutator. If an open circuit exists between any segments, replace the armature.



1. 9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



2. 10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature.



Starting System

Starter Overhaul (cont'd)

Starter Brush Inspection

1. 11. Measure the brush length. If it is not within the service limit, replace the armature housing assembly.

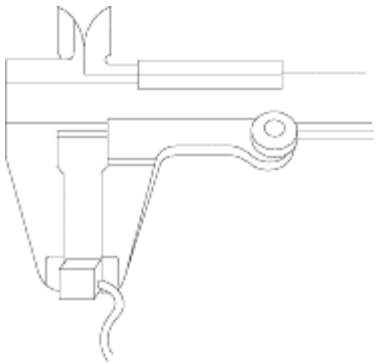
Brush Length

D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:

Standard (New):	14.0 - 14.5 mm (0.55 - 0.57 in.)
Service Limit:	9.0 mm (0.35 in.)

Except D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:

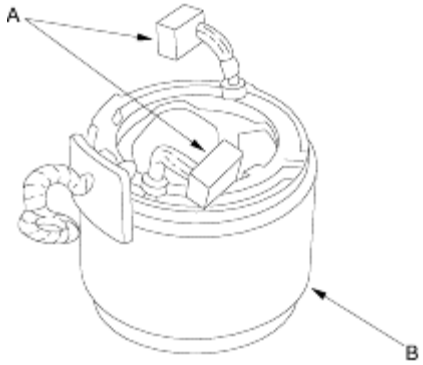
Standard (New):	9.7 - 10.3 mm (0.38 - 0.41 in.)
Service Limit:	6.0 mm (0.24 in.)



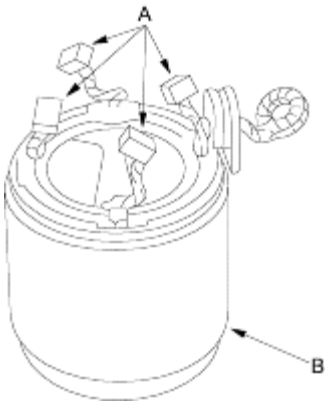
Starter Field Winding Test

1. 12. Check for continuity between the brushes (A). If there is no continuity, replace the armature housing (B).

D15Y2, D15Y3 (Philippine model), D16W7 (KG model), D16W8, D16W9, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines:



Except D15Y2, D15Y3 (Philippine model), D16W7 (KG model), D16W8, D16W9, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines:



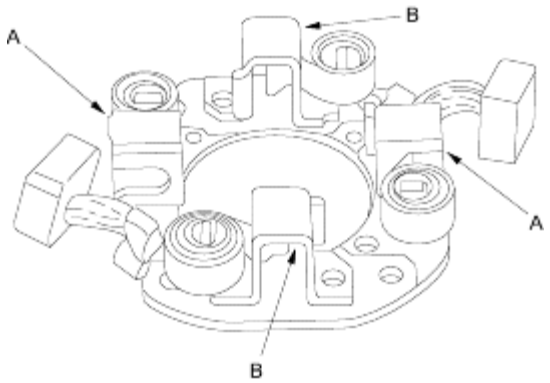
2. 13. Check for continuity between each brush (A) and the armature housing (B). If there is continuity, replace the armature housing.

Starting System
Starter Overhaul (cont'd)

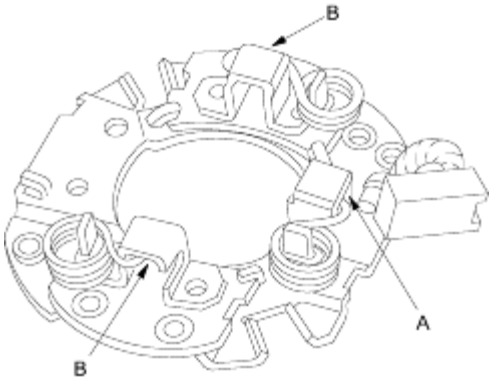
Starter Brush Holder Test:

1. 14. Check that there is no continuity between the (+) brush holder (A) and (-) brush holder (B). If there is continuity, replace the brush holder assembly.

D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:



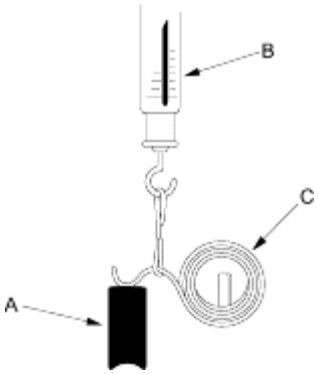
D15Y3 (Philippine model), D16W9 (Philippine model), D17Z1 (Malaysia model), D17Z5, D17A2 (Malaysia model), D17A5 (Indonesia model) engines:



Brush Spring Inspection (D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines)

1. 15. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush.

Spring Tension: 13.7 - 17.7 N (1.40 - 1.80 kgf, 3.09 - 4.00 lbf)

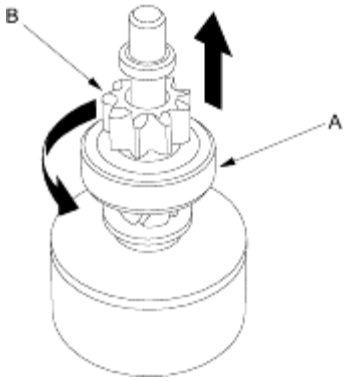


Starting System
Starter Overhaul (cont'd)

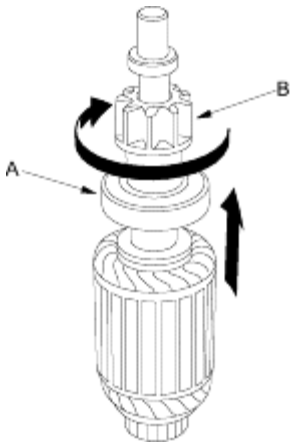
Overrunning Clutch Inspection

1. 16. Slide the overrunning clutch along the shaft. Replace it, if it does not slide smoothly.
   17. Rotate the overrunning clutch (A) both ways. Does it lock in one direction and rotate smoothly in reverse ? If it does not lock in either direction or it locks in both directions, replace it.

D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:



Except D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines:

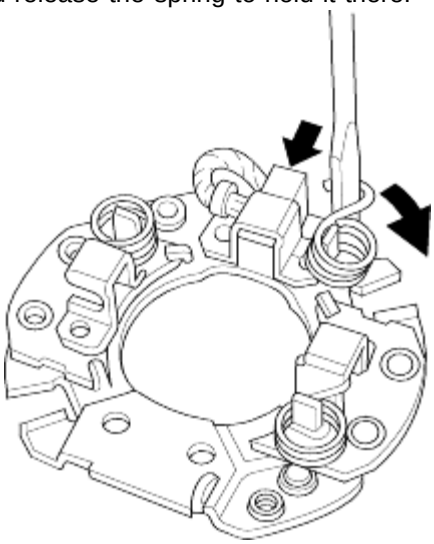


2. 18. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

Check the condition of the flywheel or torque converter ring gear if the starter drive gear teeth are damaged.

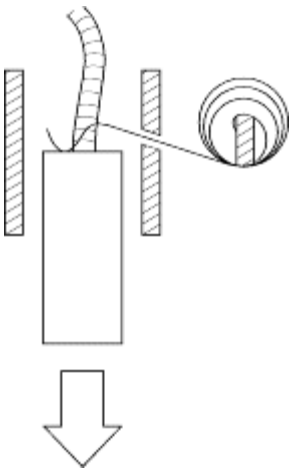
Starter Reassembly (D15Y3 (Philippine model), D16W9 (Philippine model), D17Z1 (Malaysia model), D17Z5, D17A2 (Malaysia model), D17A5 (Indonesia model) engines)

1. 19. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



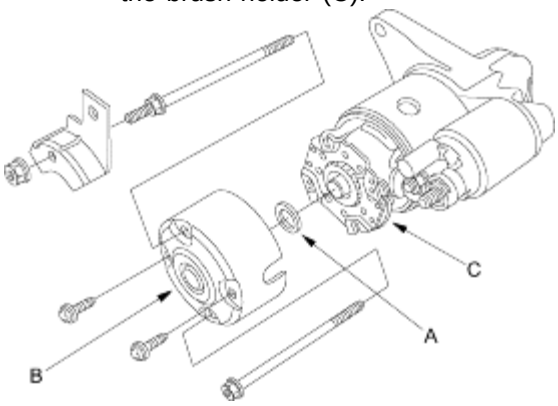
2. 20. Install the armature in the housing and install the brush holder. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.

NOTE: To seat new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate will be sanded to the same contour as the commutator.



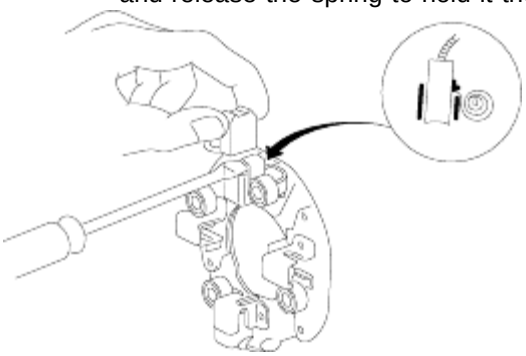
Starting System
Starter Overhaul (cont'd)

1. 21. Install the washer (A) starter end cover (B) to retain the brush holder (C).



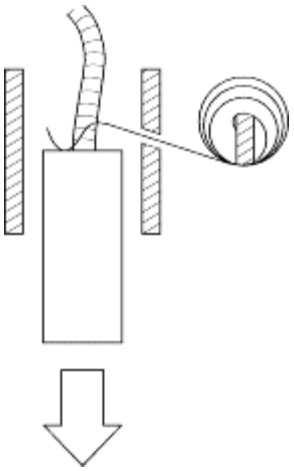
Starter Reassembly (D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines)

1. 22. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



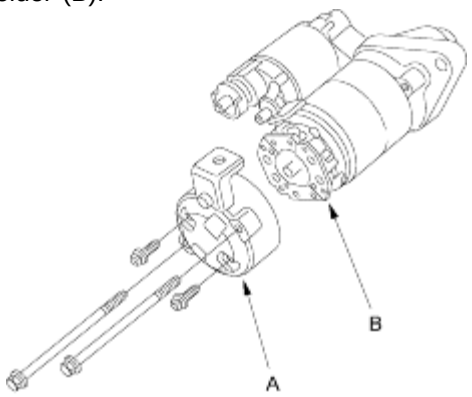
2. 23. Install the armature in the housing and install the brush holder. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.

NOTE: To seat new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate will be sanded to the same contour as the commutator.



Starting System
Starter Overhaul (cont'd)

1. 24. Install the starter end cover (A) to retain the brush holder (B).

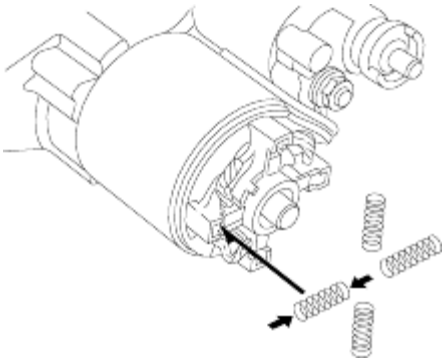


Starter Reassembly (Except D15Y2, D15Y3 (Philippine model), D16W7 (KG model), D16W8, D16W9, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines)

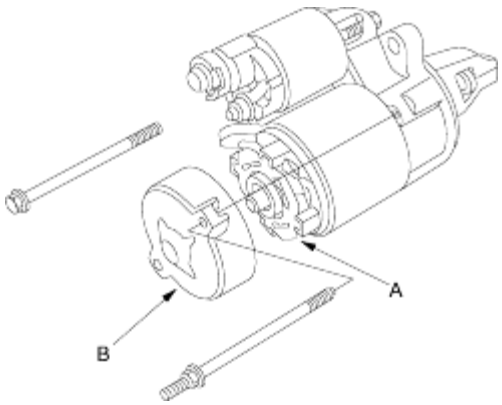
1. 25. Install the armature in the housing, and install the brush holder, then install the tach brush in the holder.

   NOTE: To seat new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate will be sanded to the same contour as the commutator.

2. 26. Compress the spring, and install it in the brush holder.



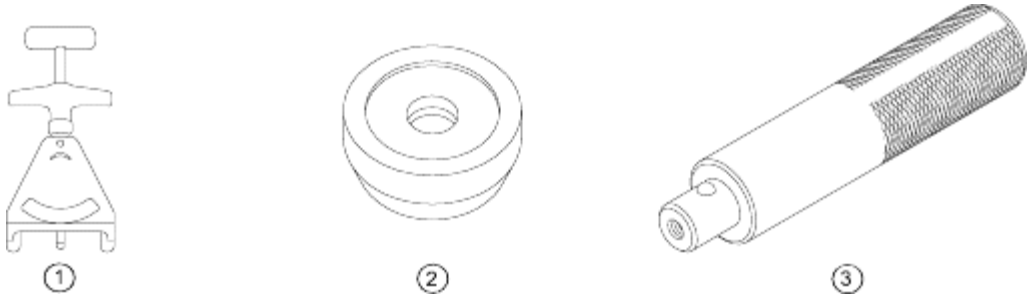
3. 27. Install the brush holder insulator (A) and end cover (B).



Engine Electrical

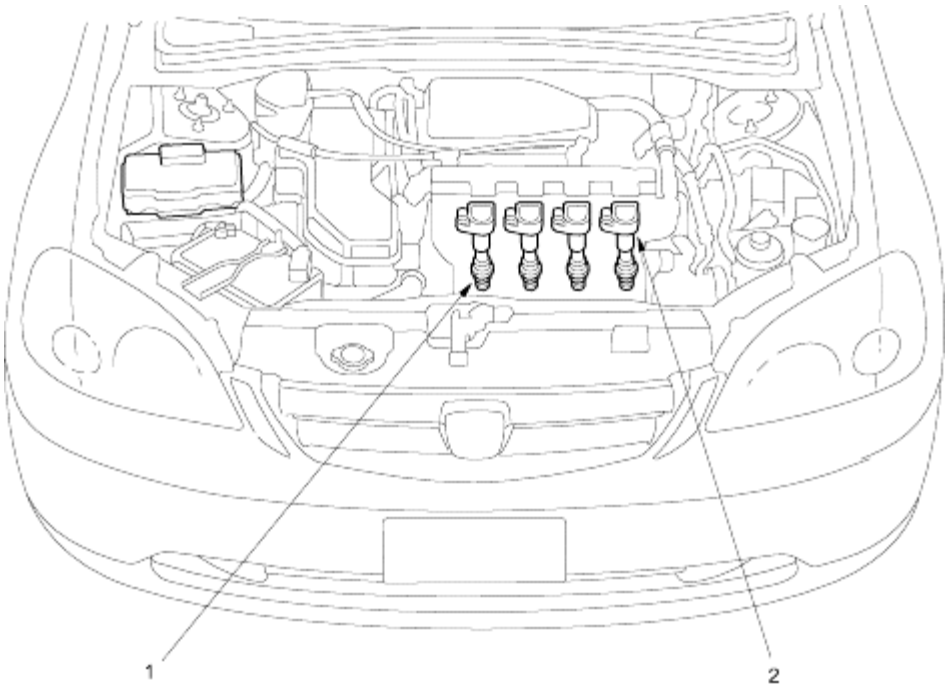
Special Tools

Number	Tool Number	Description	Qty
1	07JGG-0010100	Belt Tension Gauge	1
2	07746-0010400	Driver Attachment, 52 x 55 mm	1
3	07749-0010000	Handle Driver	1



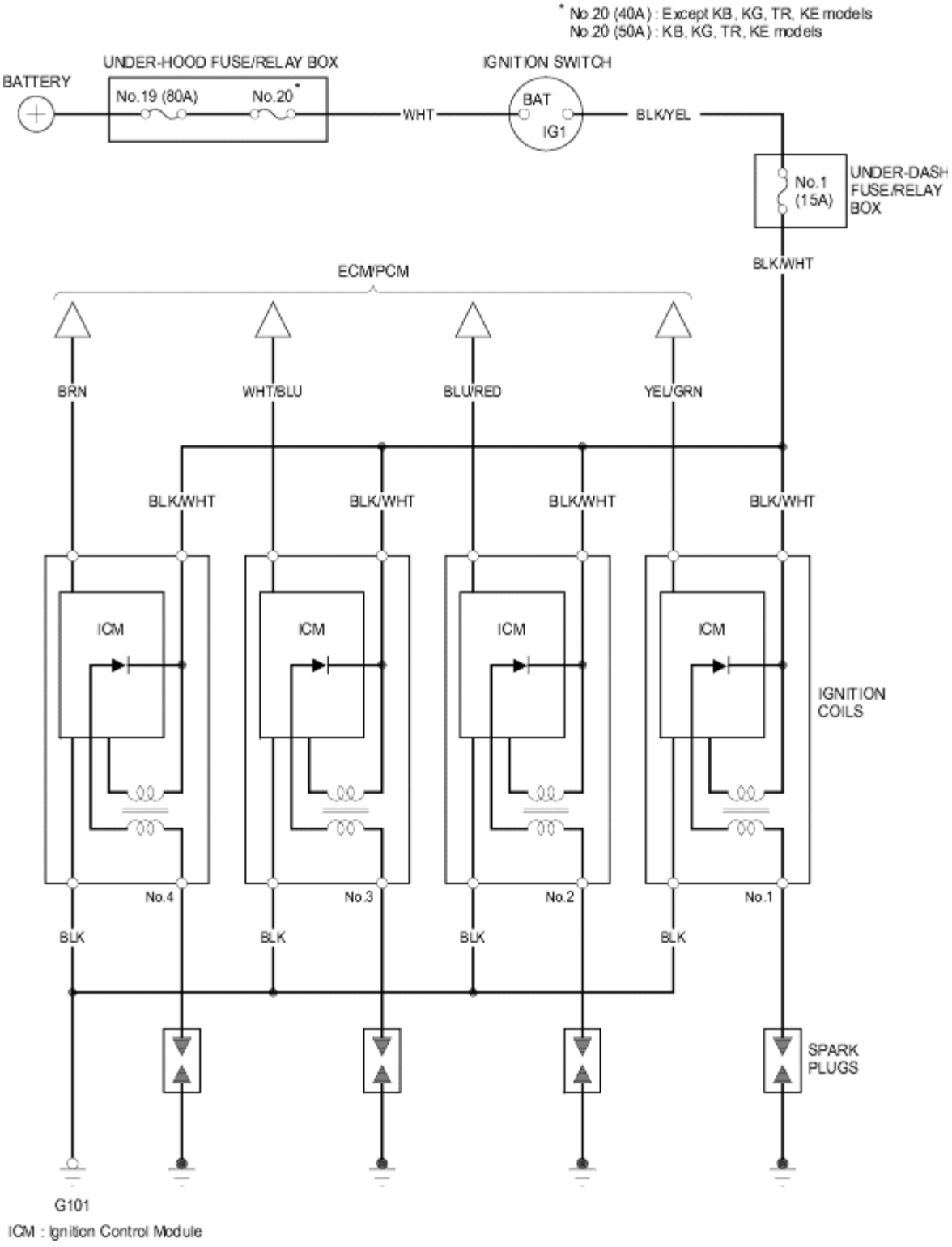
Ignition System

Component Location Index



1. SPARK PLUG
   Inspection, page 4-25
2. IGNITION COIL
   Troubleshooting, page 4-23
   Removal/Installation, page 4-24

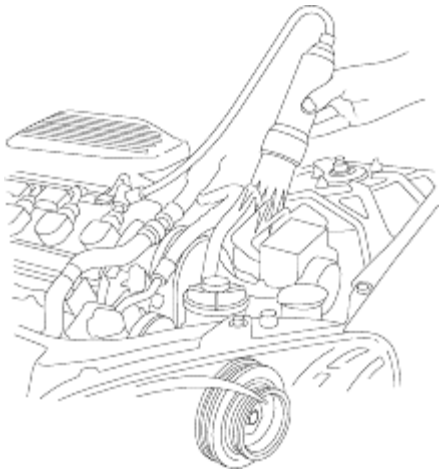
Ignition System
Circuit Diagram



Ignition System

Ignition Timing Inspection

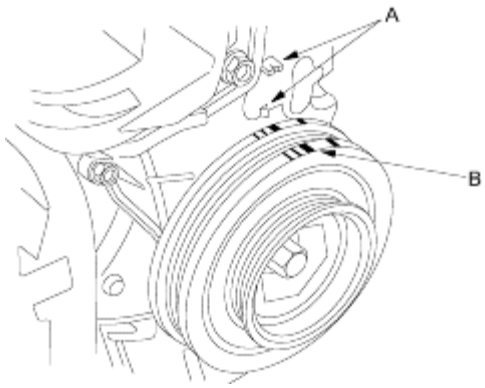
1. 1. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load Shift lever in Park or Neutral, until the radiator fan comes on, then let it idle.
   2. Check the idle speed, and adjust it if necessary:
      - 4-door(KB, KE, KG, TR models) (see page 11-125).
      - 4-door(except KB, KE, KG, TR models) (see page 11-285).
      - 5-door(KE model) (see page 11-425).
      - 5-door(except KE models) (see page 11-560).
2. 3. Short the SCS terminal to ground:
      - Using the SCS short connector (KB, KE, KG, TR models) (see page 19-55).
      - Using the DLC terminal box (except KB, KE, KG, TR models) (see step 1 on page 19-57).
      - Using the Honda PGM Tester (except KB, KE, KG, TR models) (see step 1 on page 19-57).
3. 4. Connect the timing light to the No. 1 ignition coil wire.



1. 5. Point the light toward the pointers (A) on the timing belt cover. Check the ignition timing under a no load conditions: headlights, blower fan, rear window defogger, and air conditioner are not operating. If the ignition timing differs from the specification below, replace the ECM/PCM, 4-door (see page 11-3) or 5-door (see page 11-311).

Ignition Timing:

M/T:	$8^{o} \pm 2^{o}$ BTDC (RED mark (B)) during idling in neutral
A/T, HONDA MULTI MATIC:	$8^{o} \pm 2^{o}$ BTDC (RED mark (B)) during idling in P or N



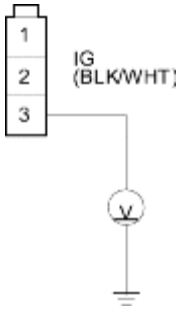
2. 6. Disconnect the SCS short connector.

Ignition System
Ignition Coil Troubleshooting

NOTE: Perform an ignition coil test after finishing the fundamental tests for the ignition system and the fuel and emissions system.

1. 1. Remove the ignition coil cover.
   2. Disconnect the four ignition coil 3P connectors.
   3. Measure the voltage at the No. 3 terminal of each ignition coil 3P connector with the ignition switch ON (II).

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

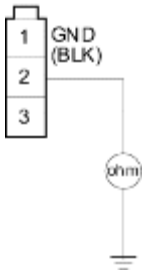
Is there battery voltage?

YES - Go to step 4.

NO - Repair open in the wire between ignition coil and No. 1 (15A) fuse in the under-dash fuse/relay box. ■

2. 4. Turn the ignition switch OFF.
   5. Check for continuity between the No. 2 terminal of each ignition coil 3P connector and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

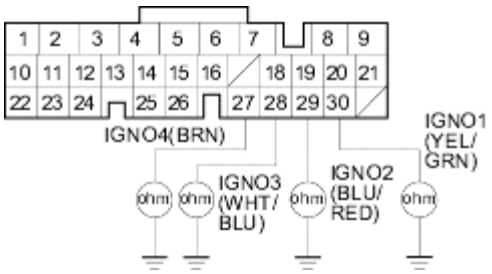
Is there continuity?

YES - Go to step 6.

NO - Repair open in the wire between ignition coil and body ground (G101). ■

1. 6. Disconnect ECM/PCM connector A (31P).
   7. Check for continuity between the body ground and ECM/PCM connector terminals A27, A28, A29 and/or A30 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

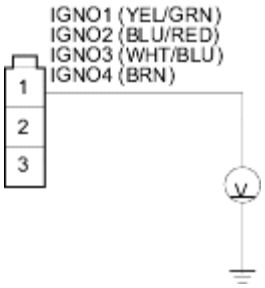
Is there continuity?

YES - Repair short in the wire between ignition coil and ECM/PCM. ■

NO - Go to step 8.

2. 8. Connect the ECM/PCM connector A (31P).
   9. Measure the voltage at the No. 1 terminal of each ignition coil 3P connector with the ignition switch to start (III).

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there approx. 0.5 V?

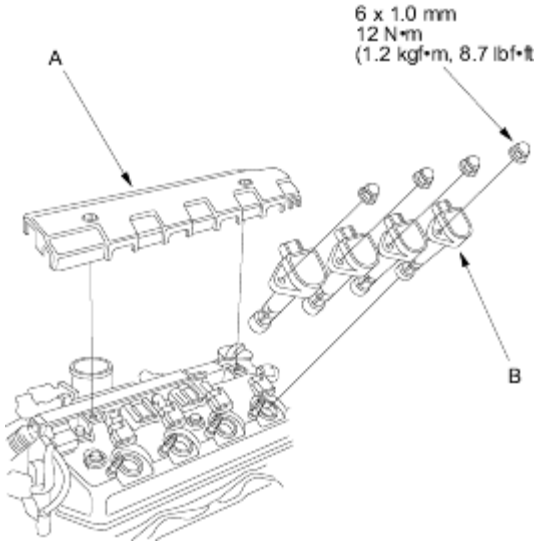
YES - Replace the ignition coil. ■

NO - Repair open in the wire between ignition coil and ECM/PCM. ■

Ignition System

Ignition Coil Removal/Installation

1. 1. Remove the ignition coil cover (A), then remove the ignition coils (B).

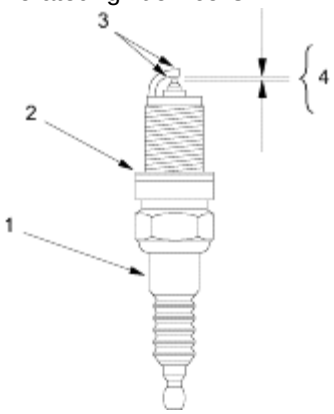


2. 2. Install the ignition coils in the reverse order of removal.

Ignition System
Spark Plug Inspection

1. 1. Inspect the electrodes and ceramic insulator.
   Burned or worn electrodes may be caused by:
   - Advanced ignition timing
   - Loose spark plug
   - Plug heat range too hot
   - Insufficient cooling

   Fouled plug may be caused by:
   - Retarded ignition timing
   - Oil in combustion chamber
   - Incorrect spark plug gap
   - Plug heat range too cold
   - Excessive idling/low speed running
   - Clogged air cleaner element
   - Deteriorated ignition coils



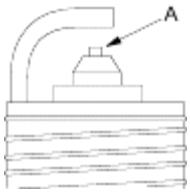
2. 1. Cracked insulator
   2. Damaged gasket
   3. Worn or deformed electrodes
   4. Improper gap
      Oil-fouling
      Carbon deposits
      Cracked centre electrode insulator

3. 2. Do not adjust the gap of platinum tip plugs (A); replace the spark plug if the gap is out of specification.

Electrode Gap:

Standard (New): 1.0 - 1.1 mm (0.039 - 0.043 in.)

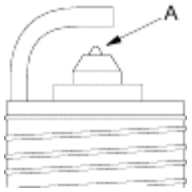
Service Limit: 1.3 mm (0.05 in.)



1. 3. Replace the plug at the specified interval, or if the centre electrode is rounded (A). Use only the spark plugs listed below.

Spark Plugs:

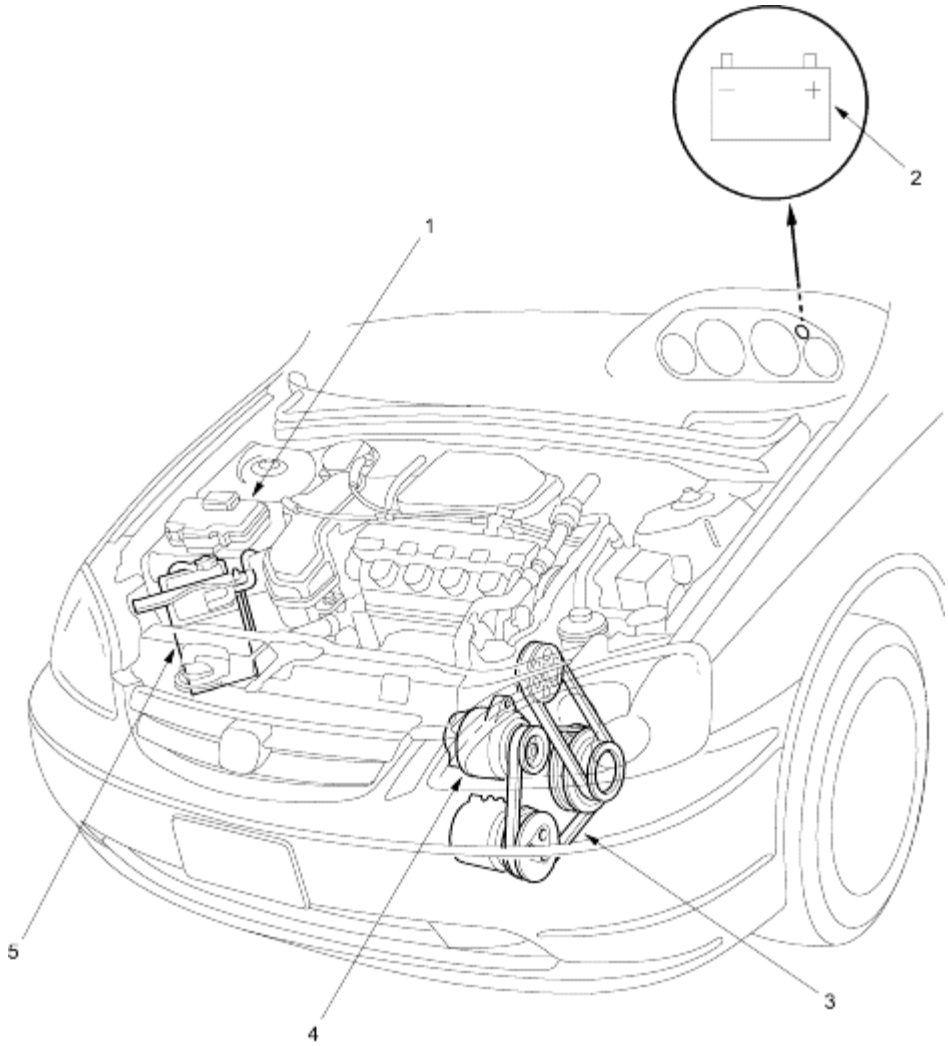
Engine Type	Spark Plug Type
D14Z5, D15Y6, D15Y4, D16W7	ZFR5J-11 (NGK) KJ16CR-L11 (DENSO)
D15Y5, D17A1, D17A2, D17Z1, D17Z4	ZFR6J-11 (NGK) KJ20CR-L11 (DENSO)
D17A5	BKR6E-N11 (NGK) K20PR-L11 (DENSO)
D15Y2, D15Y3, D16V2, D16W8	BKR5E-11 (NGK) K16CR-L11 (DENSO)
D17Z2, D17Z3	ZFR6J-11 (NGK) ZFR7J-11 (NGK) KJ20CR-L11 (DENSO) KJ22CR-L11 (DENSO)



2. 4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them to 18 Nm (1.8 kgf/m, 13 lbf/ft).

Charging System

Component Location Index

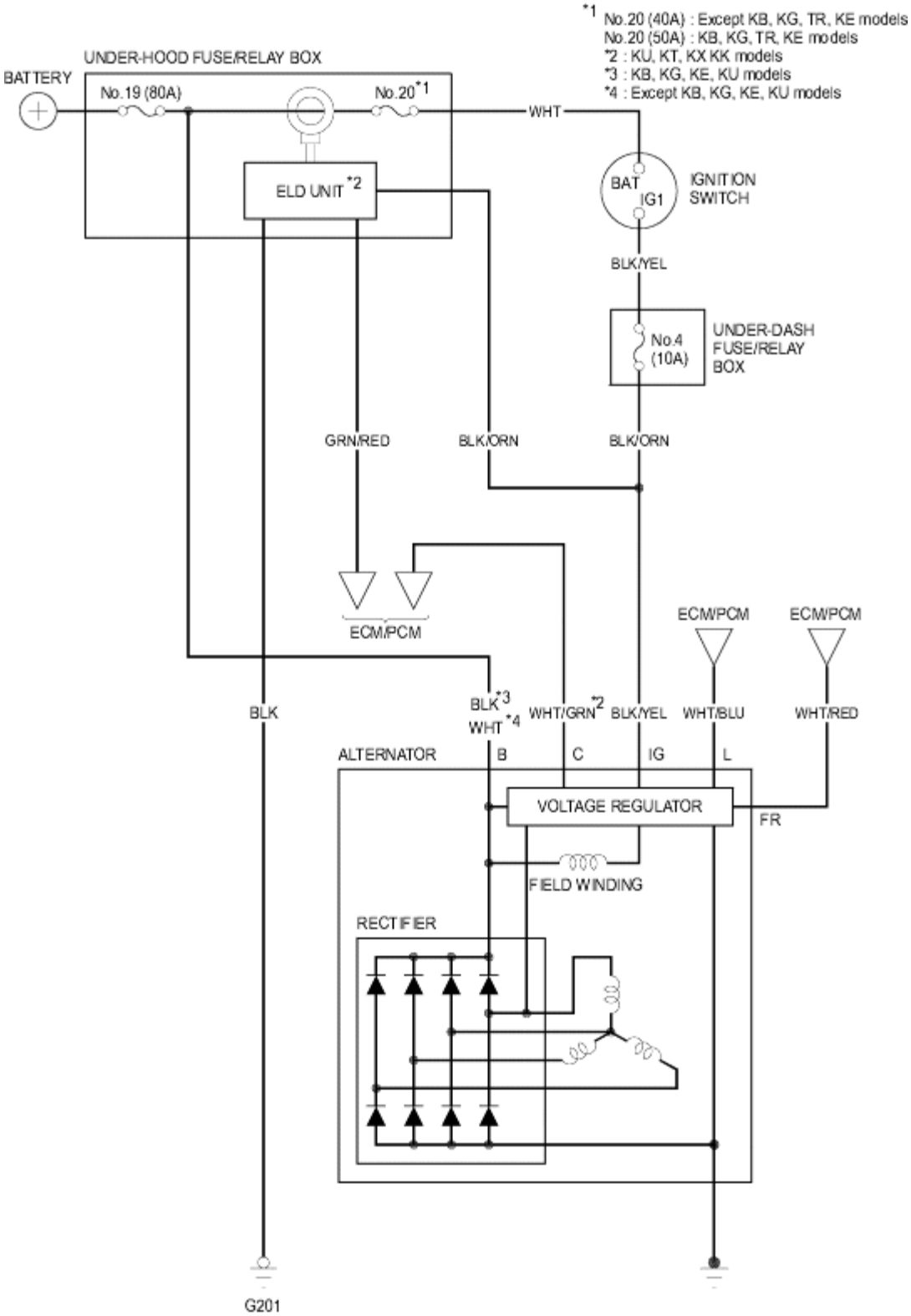


1. UNDER-HOOD FUSE/RELAY BOX
   (Has built-in ELECTRICAL LOAD DETECTOR (ELD) UNIT*)
2. CHARGING SYSTEM INDICATOR
   (In the gauge assembly)
3. Test, page 22-84ALTERNATOR-COMPRESSOR BELT
   Inspection and Adjustment, page 4-37
4. ALTERNATOR
   Troubleshooting, page 4-28
5. Replacement, page 4-31Overhaul, page 4-32BATTERY
   Test, page 22-79

*: KU, KT, KX, KK models

Charging System

Circuit Diagram



Charging System

Charging Circuit Troubleshooting

If the charging system indicator does not come on or does not go off, or the battery is dead or low, test the following items in the order listed below:

Battery (see page 22-79)

Charging system indicator

Alternator and regulator circuit

Alternator control system (KU, KT, KX, KK models)

Charging System Indicator Test

1. 1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES - Go to step 2.

NO - Go to step 3.

2. 2. Start the engine.

Does the charging system indicator go off?

YES - Charging system indicator circuit is OK. ■

NO - Go to step 3.

3. 3. Turn the ignition switch OFF.
   4. Troubleshoot the multiplex control system (see page 22-273).

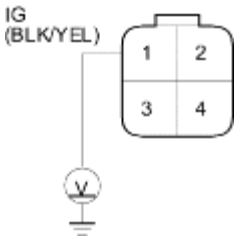
Is the multiplex control system OK?

YES - Go to step 5.

NO - Check the multiplex control system as indicated by the DTC (see page 22-273). ■

4. 5. Disconnect the alternator 4P connector from the alternator.
   6. Measure the voltage at the No. 1 terminal of the alternator 4P connector with the ignition switch ON (II).

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

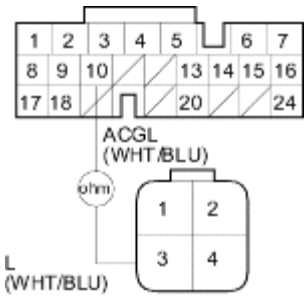
Is there battery voltage?

YES - Go to step 7.

NO - Check for a blown No. 4 (10A) fuse. If the fuse is OK, repair open in the wire between the alternator and the under-dash fuse/relay box. ■

1. 7. Turn the ignition switch OFF
   8. Disconnect ECM/PCM connector B (24P)
   9. Check continuity between the ECM/PCM connector terminal B10 and alternator 4P connector terminal No. 3.

ECM/PCM CONNECTOR B (24P)



ALTERNATOR 4P CONNECTOR

Wire side of female terminals

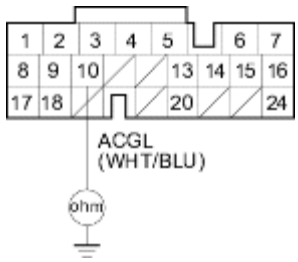
Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the alternator and the ECM/PCM. ■

2. 10. Check continuity between the ECM/PCM connector terminal B10 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES - Repair short in the wire between the alternator and the ECM/PCM. ■

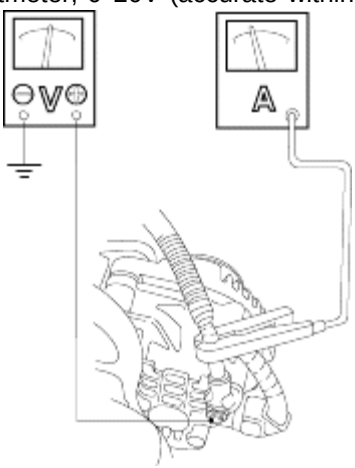
NO - Go to alternator and regulator test.

Charging System

Charging Circuit Troubleshooting (cont'd)

Alternator and Regulator Circuit Test

1. 1. Be sure the battery is sufficiently charged (see page 22-79).
   2. Hook up the following equipment:
      - Ammeter, 0-400A
      - Voltmeter, 0-20V (accurate within 0.1 V)



2. 3. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load shift lever in Park or Neutral, until the radiator fan comes on then let it idle.
3. 4. Raise the engine speed to 2,000 rpm (min^{-1}) and hold it there.
   5. Turn the headlights (high beam) on, and measure voltage at the alternator terminal.

Is the voltage between 13.9 and 15.1V?

YES - Go to step 6.

NO - Repair the alternator components (see page 4-32). ■

1. 6. Read the voltage at 13.5 V.

NOTE: Adjust the voltage by turn the blower motor, rear window defogger, brake lights and etc. on.

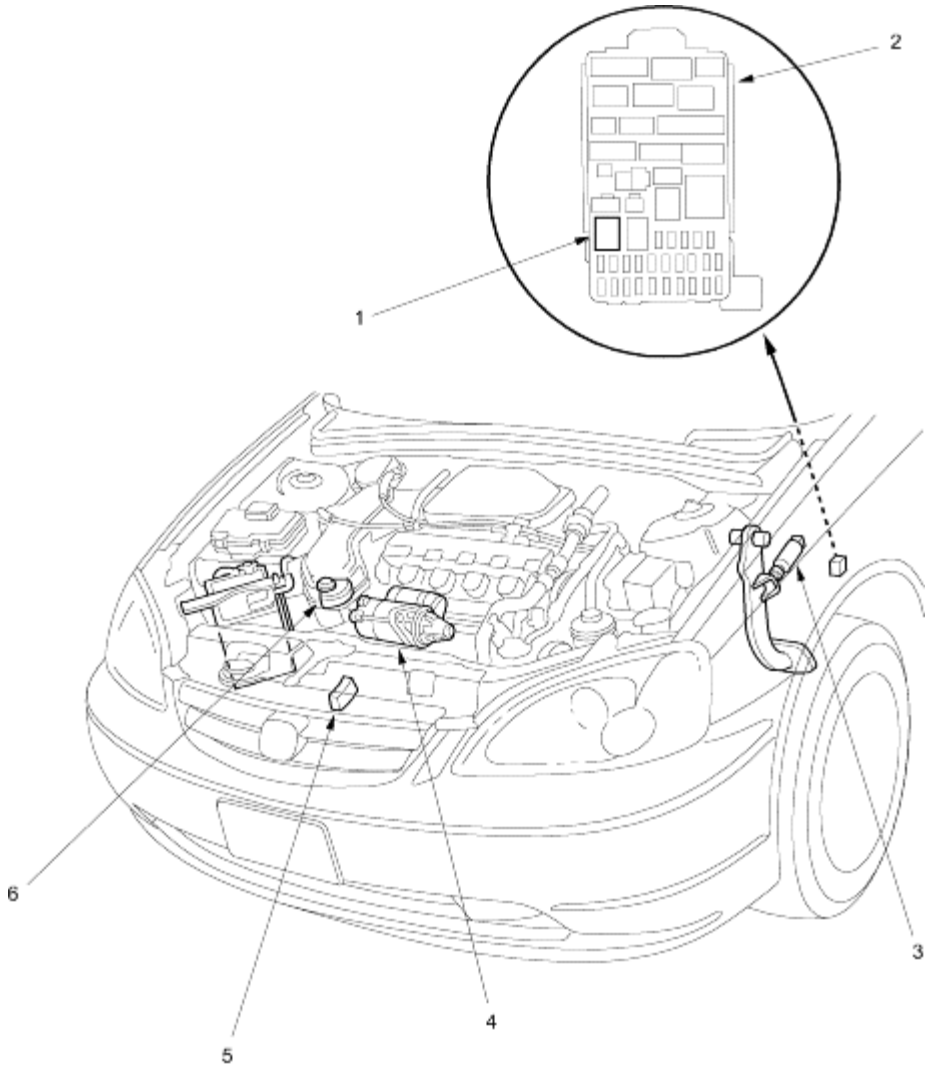
Is the amperage 60A or more?

YES - Alternator/regulator operation is OK. ■

NO - Repair the alternator components (see page 4-32). ■

Starting System

Component Location Index



1. STARTER CUT RELAY
2. Test, page 23-79UNDER-DASH FUSE/RELAY BOX
3. CLUTCH INTERLOCK SWITCH (KX model with M/T)
   Test, page 4-7
   Switch Position Adjustment, page 12-4
4. STARTER
   Starter Circuit Troubleshooting, page 4-5
   Solenoid Test, Page 4-7
   Performance Test, page 4-8
   Replacement, page 4-9
   Overhaul, page 4-10
5. TRANSMISSION RANGE SWITCH (A/T)
   Test 4-door, page 14-159 or
6. 5-door, page 14-160Replacement, page 14-161TRANSMISSION RANGE SWITCH (HONDA MULTIMATIC)
   Test, page 14-342
   Replacement, page 14-343

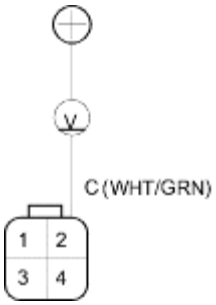
Charging System

Charging Circuit Troubleshooting (cont'd)

Alternator Control System Test (KU, KT, KX, KK models)

1. 1. Check for proper operation of the ELD by checking the MIL 4-door (see page 11-3) or 5-door (see page 11-309).
   2. Disconnect the alternator 4P connector from the alternator.
   3. Start the engine, and turn the headlights (high beam) ON.
   4. Measure voltage between the alternator 4P connector terminal No. 2 and the positive terminal of the battery.

BATTERY



ALTERNATOR 4P CONNECTOR
Wire side of female terminals

Is there 1 V or less?

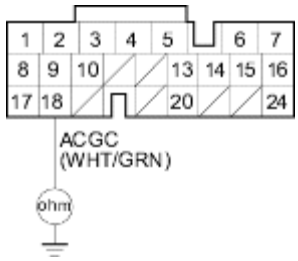
YES - Go to step 8.

NO - Go to step 5.

2. 5. Turn the headlight and ignition switch OFF.
   6. Disconnect ECM/PCM connector B (24P).

1. 7. Check for continuity between ECM/PCM connector terminal B18 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

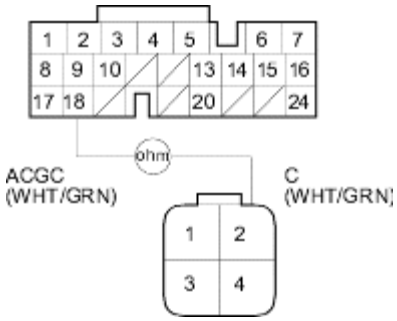
Is there continuity?

YES - Repair short in the wire between the alternator and ECM/PCM. ■

NO - Substitute a known-good ECM/PCM, and recheck (see page 11-3) or 5-door (see page 11-309). If prescribed voltage is now available, replace the original ECM/PCM. ■

2. 8. Turn the headlight and ignition switch OFF.
   9. Disconnect ECM/PCM connector B (24P).
   10. Check for continuity between ECM/PCM connector terminal B18 and alternator 4P connector terminal No. 2.

ECM/PCM CONNECTOR B (24P)



ALTERNATOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

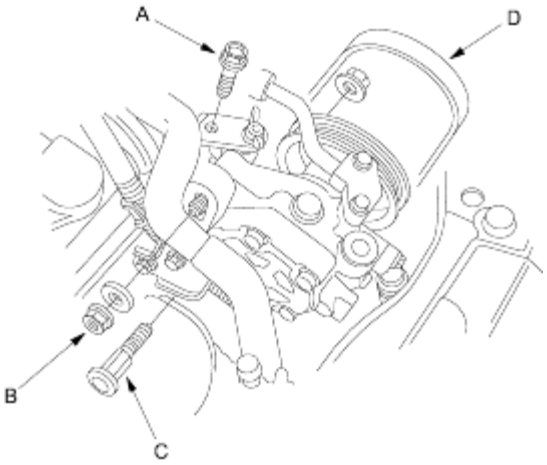
YES - Repair the alternator (see page 4-32). ■

NO - Repair open in the wire between the alternator and ECM/PCM. ■

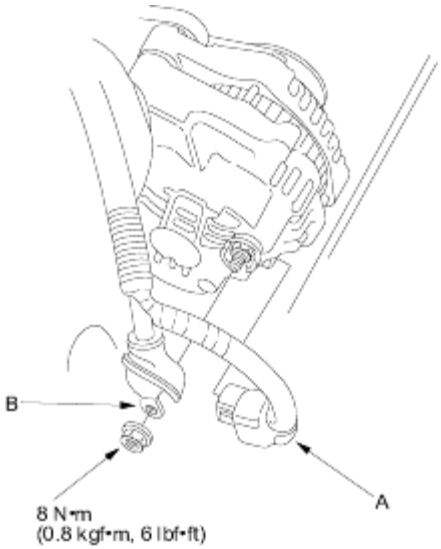
Charging System

Alternator Replacement

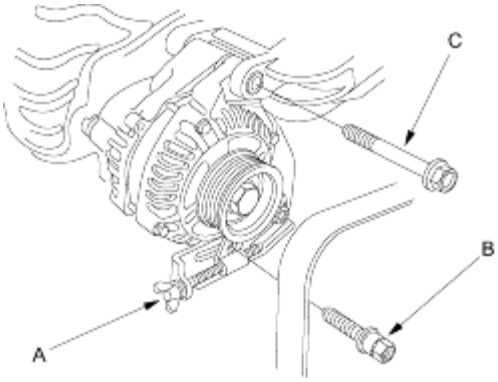
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative terminal.
3. Remove the adjust plate mounting bolt (A), locknut (B), and mounting bolt (C), then remove the power steering (P/S) pump belt (D) and pump without disconnecting the P/S hoses (P/S).



4. Disconnect the 4P connector (A) and alternator cable (B) from the alternator.



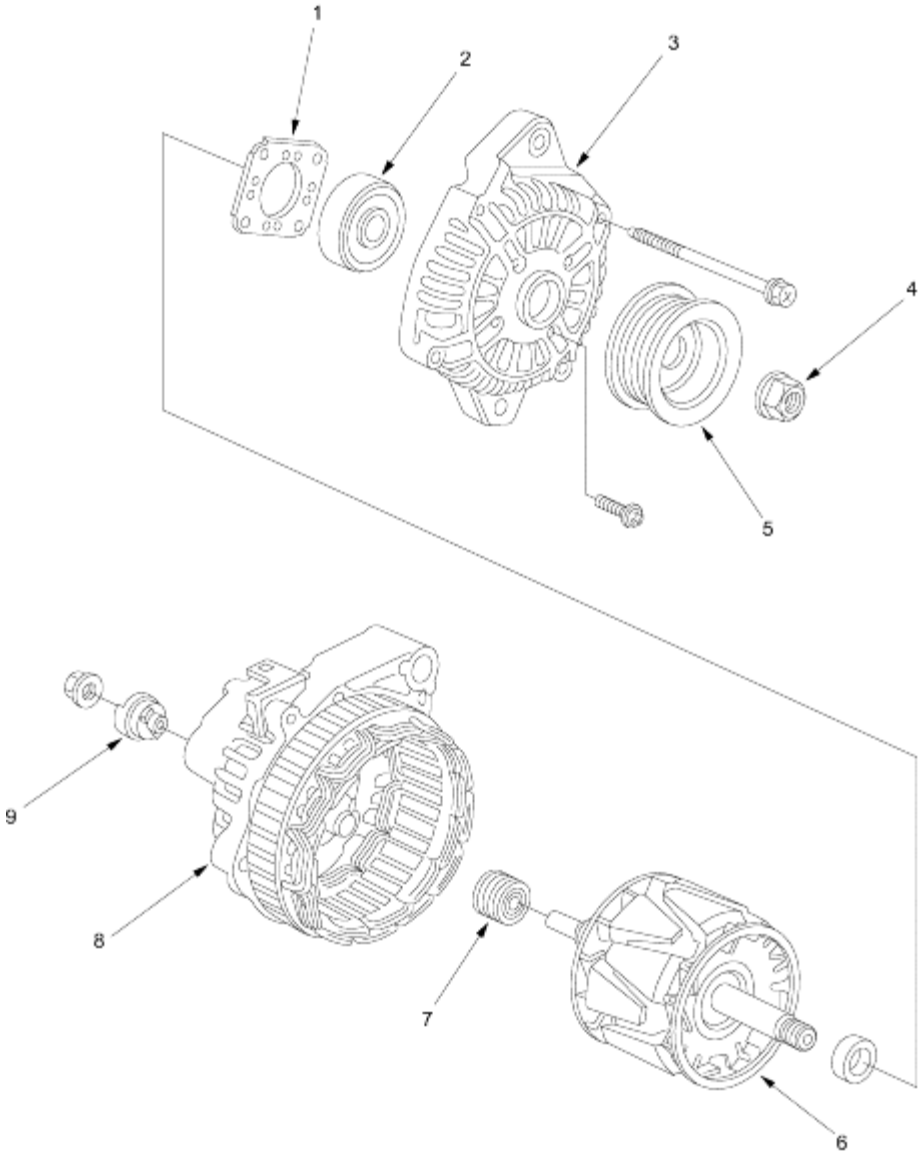
5. Loosen the adjusting bolt (A), and remove the lock bolt (B) and mounting bolt (C), then remove the alternator belt and alternator.



6. Install in the reverse order of removal.
7. Adjust the alternator belt tension (see page 4-38) or the alternator-compressor belt tension (see page 4-37).
8. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Charging System
Alternator Overhaul

Exploded View



1. BEARING RETAINER
2. FRONT BEARING
3. DRIVE-END HOUSING
4. PULLEY LOCKNUT
5. PULLEY
6. ROTOR
7. REAR BEARING
8. REAR HOUSING ASSEMBLY
9. TERMINAL INSULATOR

Charging System

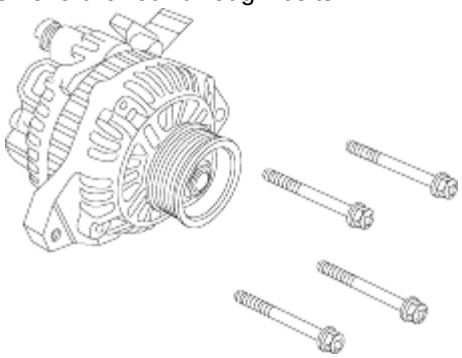
Alternator Overhaul (cont'd)

Special Tools Required

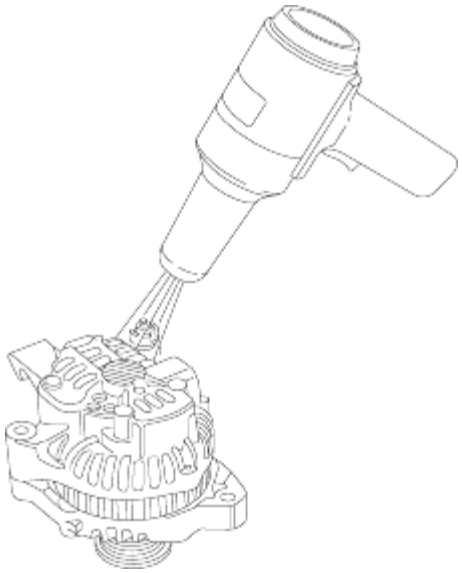
- Handle driver, 07749-0010000
- Driver attachment, 52 x 55 mm, 07746-0010400

NOTE: Refer to the Exploded View as needed during this procedure.

1. 1. Test the alternator and regulator before you remove them (see page 4-28).
   2. Remove the alternator (see page 4-31).
   3. Remove the four through bolts.

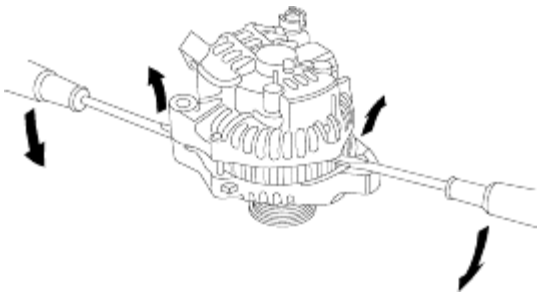


2. 4. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (50 - 60°C, 129 - 140°F).

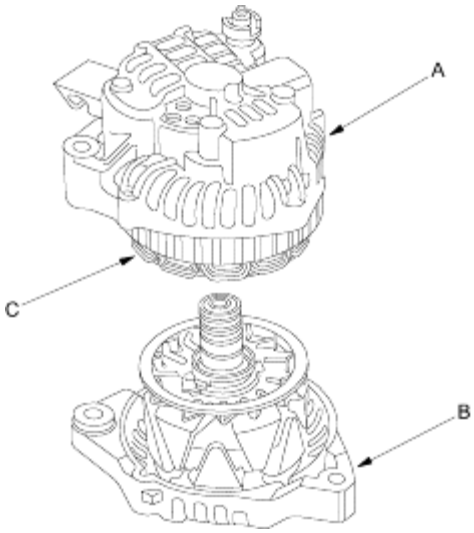


1. 5. Separate the rear housing from the drive-end housing by inserting a flat tip screwdriver into the openings and prying them apart.

NOTE: Be careful not to damage the stator with the tip of the screwdriver.



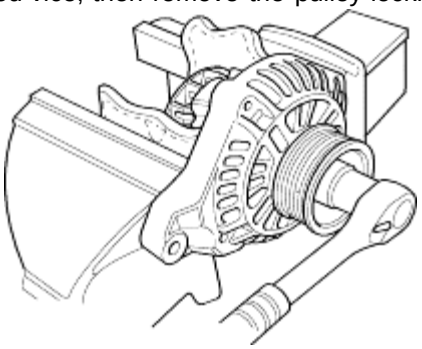
2. 6. Separate the rear housing (A) and drive-end housing (B) with the stator (C) attached to the rear housing.



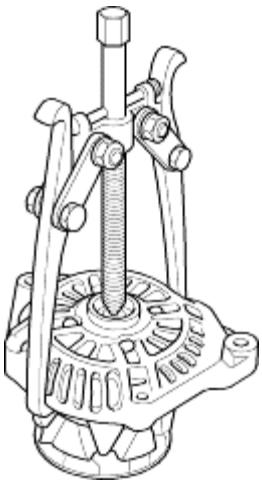
Charging System

Alternator Overhaul (cont'd)

1. 7. If you are not replacing the front bearing and/or rear bearing, go to step 15. Clamp the rotor in a soft-jawed vice, then remove the pulley locknut.

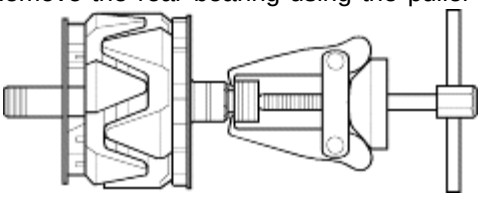


2. 8. Remove the rotor using a puller as shown.

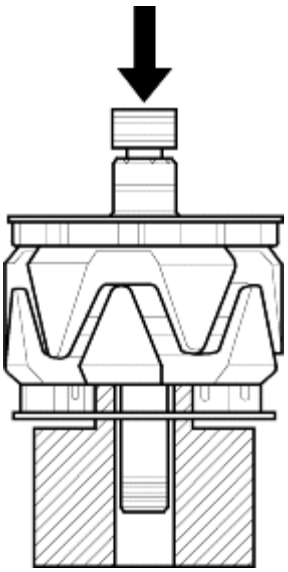


3. 9. Inspect the rotor shaft for galling, and inspect the bearing journal surface in the drive-end housing for seizure marks.
   - If either the rotor or drive-end housing is damaged, replace the alternator.
   - If both the rotor and the drive-end housing are OK, go to step 10.

1. 10. Remove the rear bearing using the puller as shown.



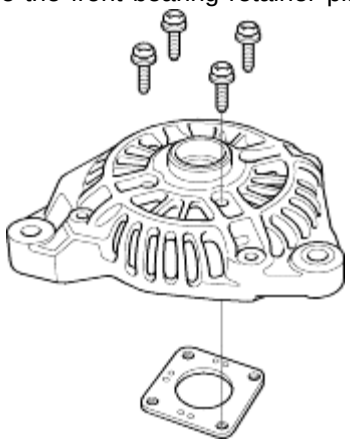
2. 11. Use a hand press to install the new rear bearing. Apply pressure only on the inner race to avoid damaging the bearing.



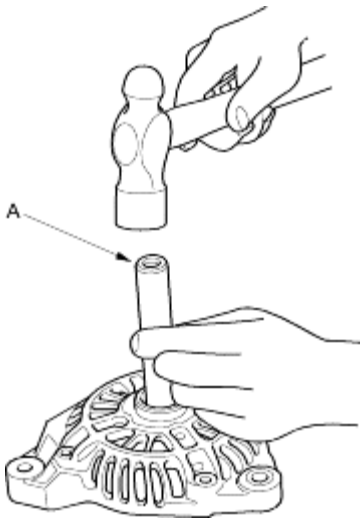
Charging System

Alternator Overhaul (cont'd)

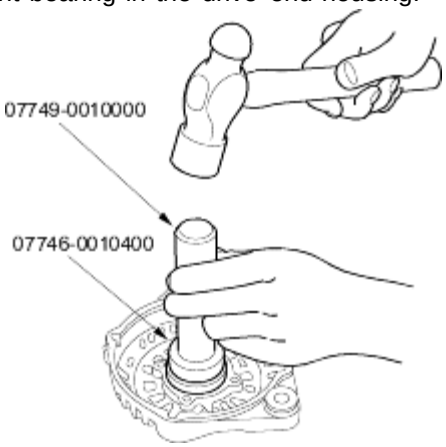
1. 12. Remove the front bearing retainer plate.



2. 13. Support the drive-end housing in a vice, and drive out the front bearing with a brass drift (A) and hammer.



1. 14. With a hammer and the special tools, install a new front bearing in the drive-end housing.

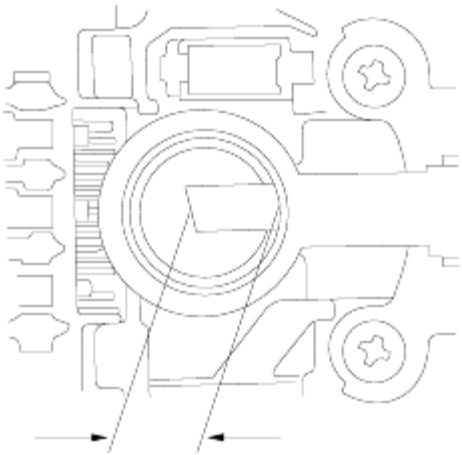


Alternator Brush Inspection

2. 15. Measure the length of both brushes with a vernier calliper.
   - If either brush is shorter than the service limit, replace the rear housing assembly.
   - If brush length is OK, go to step 16.

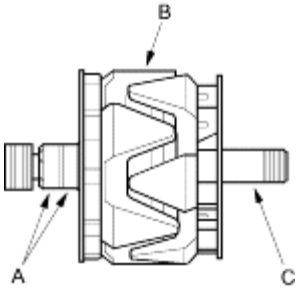
Alternator Brush Length:

Standard (New):	19.0 mm (0.75 in.)
Service Limit:	5 mm (0.2 in.)



Rotor Slip Ring Test

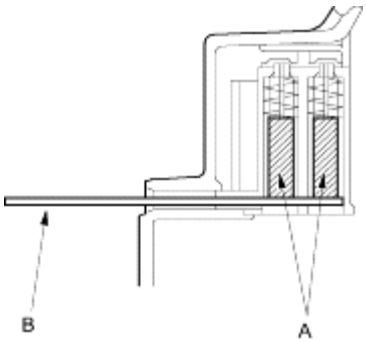
1. 16. Check that there is continuity between the slip rings (A).
   - If there is continuity, go to step 17.
   - If there is no continuity, replace the rotor assembly.



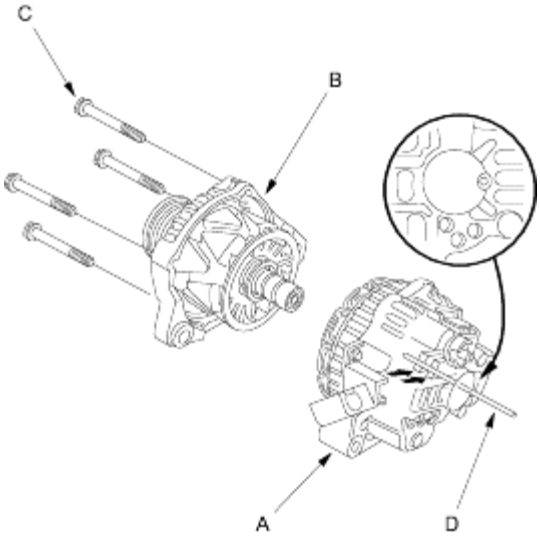
2. 17. Check that there is no continuity between each slip ring (A) and the rotor (B) and the rotor shaft (C).
   - If there is no continuity, replace the rear housing assembly, go to step 18.
   - If there is continuity, replace the rotor assembly.

Alternator Reassembly

3. 18. If you removed the pulley, put the rotor in the drive-end housing, then tighten its locknut to 111 Nm (11.3 kgf/m, 81.7 lbf/t).
   19. Remove any grease or any oil from the slip rings.
   20. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.8 mm (0.77 in.) diameter) to hold them there.



1. 21. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (50 - 60°C, 129 - 140°F).
   22. Put the rear housing assembly (A) and drive-end housing/rotor assembly (B) together, tighten the four through bolts (C) and pull put the pin (D).



2. 23. After assembling the alternator, turn the pulley by hand to make sure the rotor rotates smoothly and without noise.
   24. Reinstall the alternator, and adjust its belt tension (see page 4-37).

Charging System

Alternator-A/C Compressor Belt Inspection and Adjustment

Special Tools Required

Belt Tension Gauge, 07JGG-0010100

Belt Tension Gauge Method

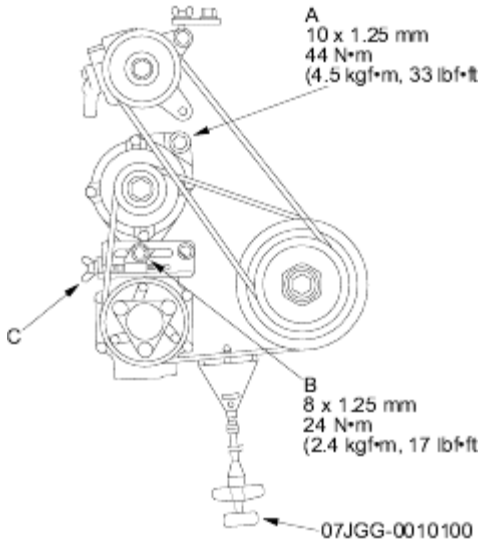
Inspection

1. 1. Attach the belt tension gauge to the belt and measure the tension. Follow the gauge manufacturer's instructions. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Tension:

Used Belt: 390 - 540 N (40 - 55 kgf, 88 - 120 lbf)

New Belt: 830 - 980 N (85 - 100 kgf, 190 - 220 lbf)



Adjustment

2. 2. Loosen the mounting bolt (A),lock bolt (B) and lower bracket mounting bolt mounting bolt (C).
   3. Torque the mounting bolt to 20 N.m (2.0kgf.m,14 lbf.ft).
   4. Turn the adjusting bolt (D) to obtain the proper belt tension, then retighten the lock bolt, mounting bolt and lower bracket mounting bolt.
   5. Recheck the belt tension.
   6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.
   7. Check the power steering pump belt adjustment (see page 17-12).

Deflection Method

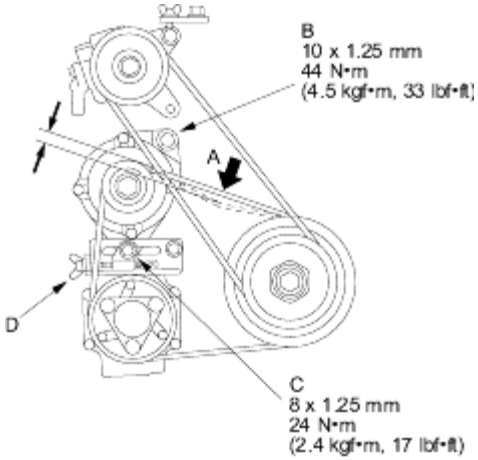
Inspection

1. 1. Apply a force of 98 Nm (10 kgf, 22 lbf), and measure the deflection at the mid point (A) between the alternator and crankshaft pulley. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Deflection:

Used Belt: 8.5 - 11.0 mm (0.33 - 0.43 in.)

New Belt: 5.6 - 6.5 mm (0.20 - 0.26 in.)



Adjustment

2. 2. Loosen the mounting bolt (B),lock bolt (C) and lower bracket mounting bolt mounting bolt (D).
   3. Torque the mounting bolt to 20 N.m (2.0kgf.m,14 lbf.ft).
   4. Turn the adjusting bolt (E) to obtain the proper belt tension, then retighten the lock bolt, mounting bolt and lower bracket mounting bolt.
   5. Recheck the belt tension.
   6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.
   7. Check the power steering pump belt adjustment (see page 17-12).

Charging System

Alternator Belt Inspection and Adjustment

Special Tools Required

Belt Tension Gauge, 07JGG-0010100

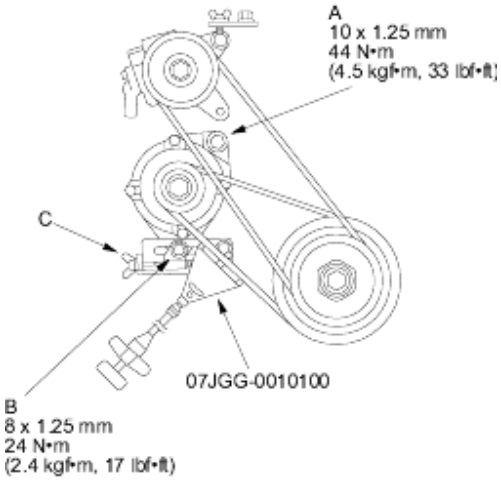
Belt Tension Gauge Method

Inspection

1. 1. Attach the belt tension gauge to the belt and measure the tension. Follow the gauge manufacturer's instructions. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Tension:

Used Belt:	340 - 490 N (35 - 50 kgf, 77 - 110 lbf)
New Belt:	540 - 740 N (55 - 75 kgf, 120 - 170 lbf)



Adjustment

2. 2. Loosen the mounting bolt (A),lock bolt (B) and lower bracket mounting bolt mounting bolt (C).
3. Torque the mounting bolt to 20 N.m (2.0kgf.m,14 lbf.ft).
4. Turn the adjusting bolt (D) to obtain the proper belt tension, then retighten the lock bolt, mounting bolt and lower bracket mounting bolt.
5. Recheck the belt tension.
6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.
7. Check the power steering pump belt adjustment (see page 17-12).

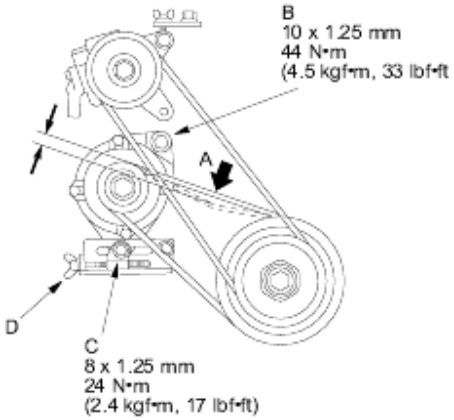
Deflection Method

Inspection

1. 1. Apply a force of 98 Nm (10 kgf, 22 lbf), and measure the deflection at the mid point (A) between the alternator and crankshaft pulley. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Deflection:

Used Belt:	8.5 - 11.0 mm (0.33 - 0.43 in.)
New Belt:	6.5 - 8.5 mm (0.26 - 0.33 in.)

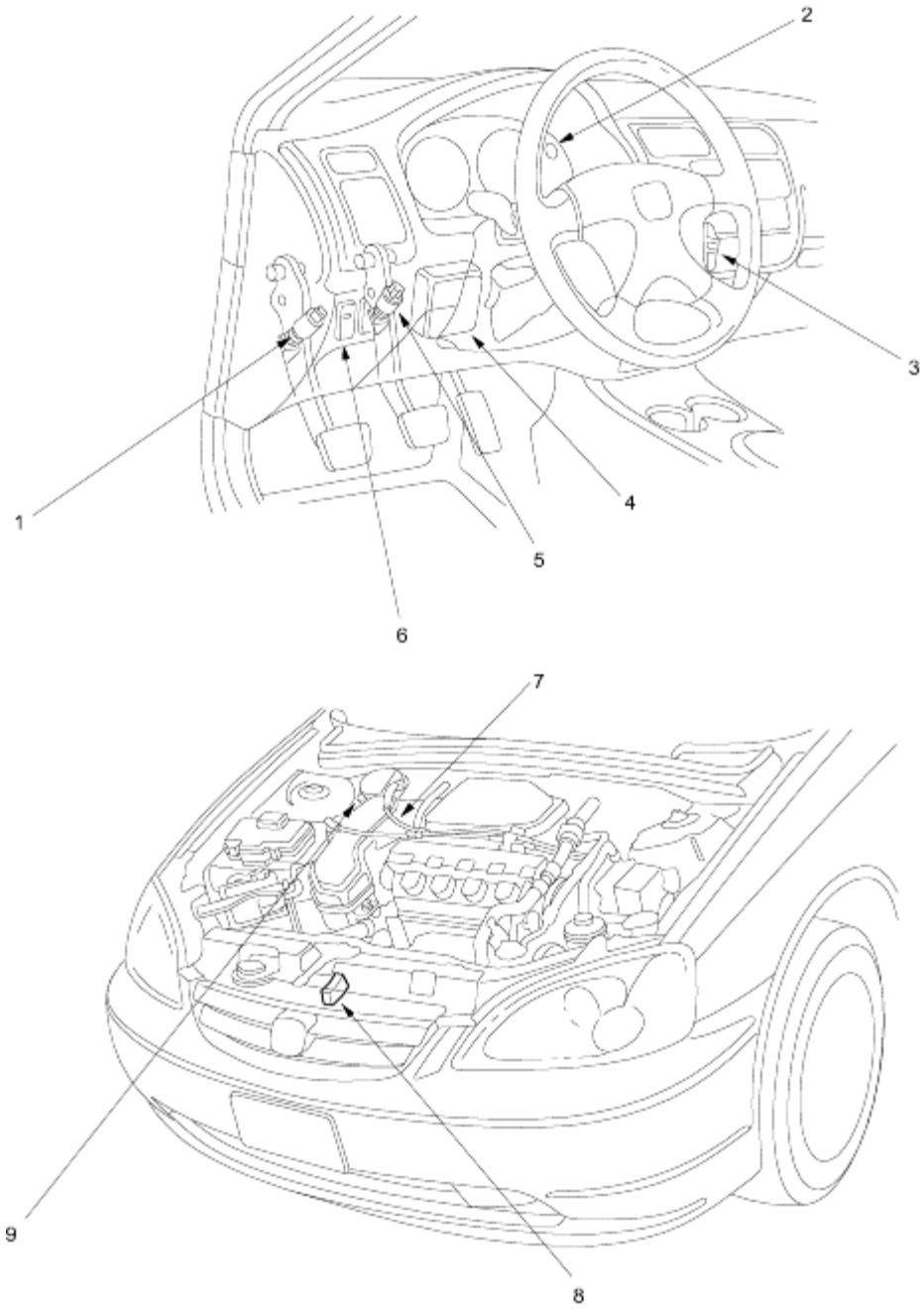


Adjustment

2. 2. Loosen the mounting bolt (B),lock bolt (C) and lower bracket mounting bolt mounting bolt (D).
3. Torque the mounting bolt to 20 N.m (2.0kgf.m,14 lbf.ft).
4. Turn the adjusting bolt (E) to obtain the proper belt tension, then retighten the lock bolt, mounting bolt and lower bracket mounting bolt.
5. Recheck the belt tension.
6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.
7. Check the power steering pump belt adjustment (see page 17-12).

Cruise Control

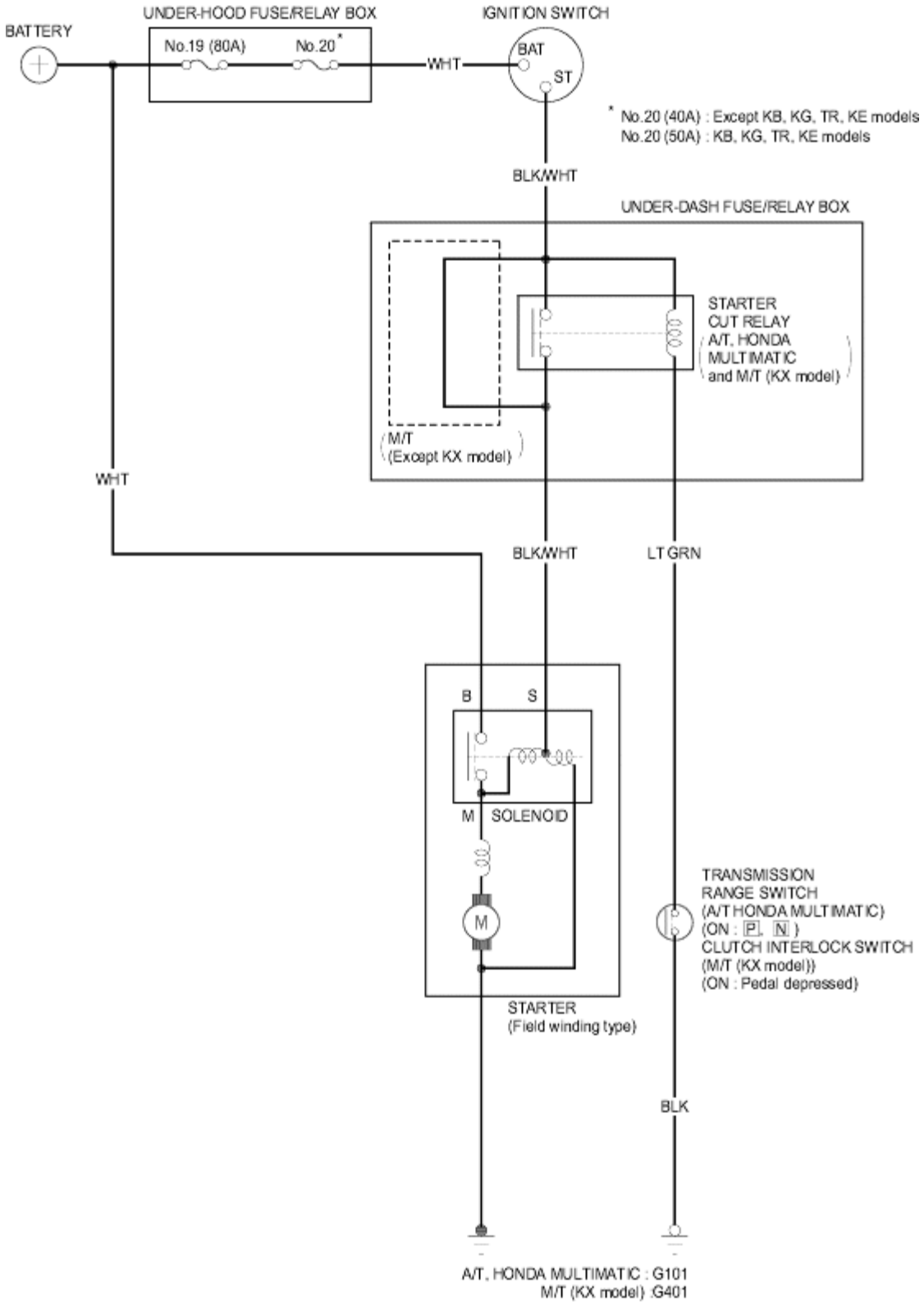
Component Location Index



1. CLUTCH PEDAL POSITION SWITCH (M/T)
   Test, page 4-49
   Clutch Pedal Adjustment, page 12-4
2. CRUISE CONTROL INDICATOR (Built into gauge assembly)
   Bulb Locations, page 22-87
3. SET/RESUME/CANCEL SWITCH
   Test/Replacement, page 4-46
4. CRUISE CONTROL UNIT
   Input Test, page 4-44
5. BRAKE PEDAL POSITION SWITCH
   Test, page 22-122Pedal Height Adjustment, page 19-5
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7. ACTUATOR CABLE
   Adjustment, page 4-44
8. TRANSMISSION RANGE SWITCH (A/T)
   Test 4-door, page 14-159 or 5-door, page 14-160
9. ACTUATOR
   Test, page 4-47Replacement, page 4-48

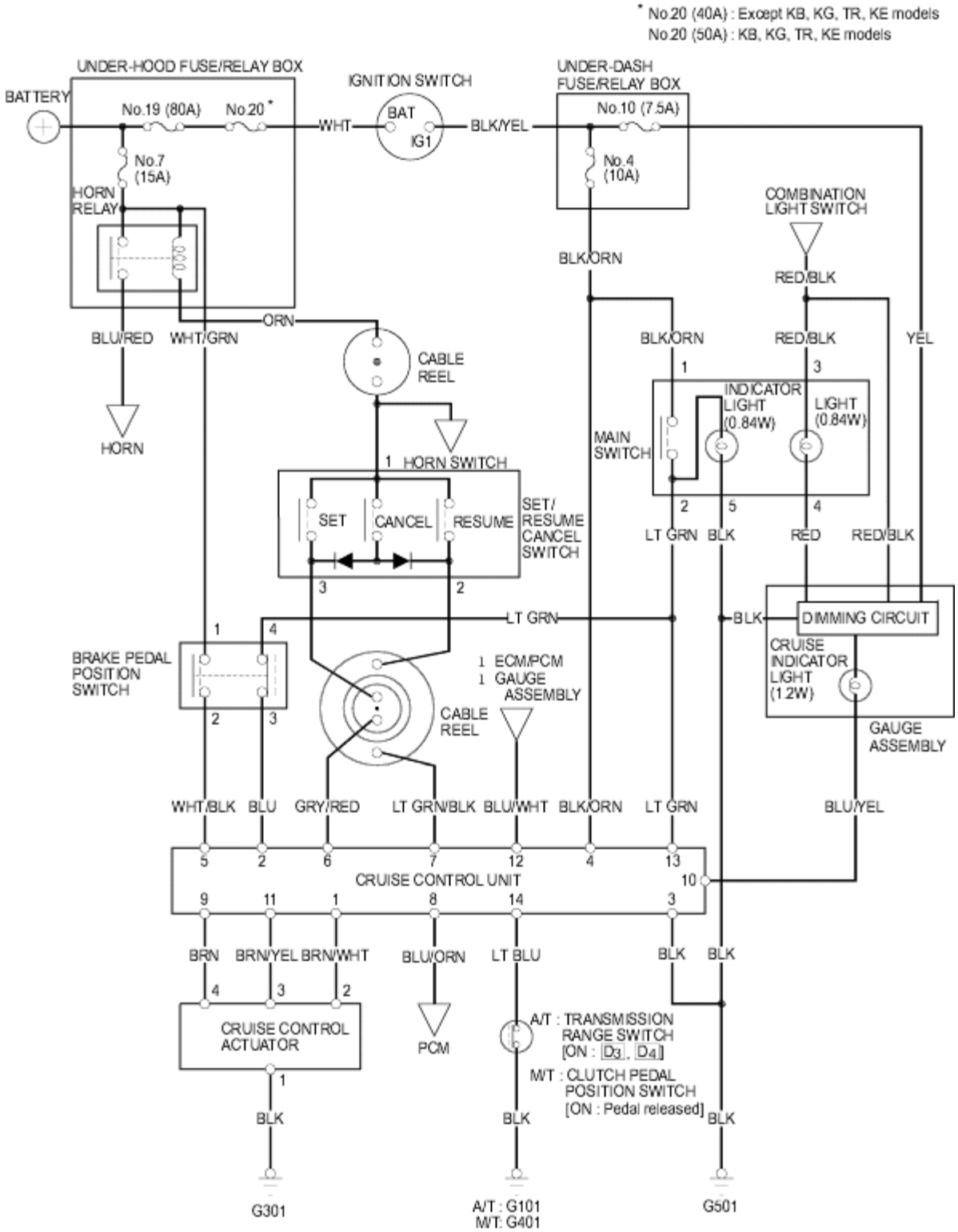
Starting System

Circuit Diagram



Cruise Control

Circuit Diagram



Cruise Control
Symptom Troubleshooting Index

NOTE:

- The numbers in the table show the troubleshooting sequence.
- Before troubleshooting.
  - check the No. 10 (7.5 A) and No. 4 (10 A) fuses in the under-dash fuse/relay box, and the No. 7 (15 A) fuse in the under-hood fuse/relay box.
  - check that the horn sounds.
  - check the tachometer to see if it works properly.

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check main switch (see page 4-46) 2. Check SET/RESUME/CANCEL switch (see page 4-46) 3. Check brake pedal position switch and mounting (see page 19-5) 4. Check clutch pedal position switch and mounting (M/T) (see page 4-49) 5. Check transmission range switch (A/T) (see page 14-160) 6. Check control unit (see page 4-44)	• Poor ground: G101(A/T), G401(M/T), G501 • Open circuit, loose or disconnected terminals: LT GRN, BLK/ORN, GRY/RED, BLU, LT BLU, BLU/WHT
Cruise control can be set but indicator light does not go on	1. Check dimming circuit in gauge (see page 22-88) 2. Check control unit (see page 4-44)	• Poor ground: G501 • Open circuit, loose or disconnected terminals: YEL, BLK/YEL
Cruise speed is noticeably higher or lower than what was set	1. Check vehicle speed sensor (VSS) (see page 22-96) 2. Check actuator (see page 4-47) 3. Check control unit (see page 4-44)	
Excessive overshooting or undershooting when trying to set speed	1. Check actuator (see page 4-47) 2. Check vehicle speed sensor (VSS) (see page 22-96) 3. Check control unit (see page 4-44)	
Speed fluctuation on a flat road with cruise control set	1. Check vehicle speed sensor (VSS) (see page 22-96) 2. Check actuator (see page 4-47) 3. Check control unit (see page 4-44)	
Vehicle does not decelerate or accelerate accordingly when SET/RESUME/CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-46) 2. Check control unit (see page 4-44)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed not cancelled (engine rpm stays high) when clutch pedal is pushed (M/T)	1. Check clutch pedal position switch and mounting (see page 4-49) 2. Check control unit (see page 4-44)	Short to ground in the LT BLU wire
Set speed not cancelled when shift lever is moved to Neutral position (A/T)	1. Check transmission range switch (see page 14-160) 2. Check control unit (see page 4-44)	Short to ground in the LT BLU wire
Set speed not cancelled when brake pedal is pushed	1. Check brake pedal position switch and mounting (see page 19-6) 2. Check control unit (see page 4-44)	Open circuit, loose or disconnected terminals: WHT/BLK

Cruise Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed, does not cancel when main switch is pushed OFF	1. 1. Check main switch (see page 4-46) 2. Check control unit (see page 4-44)	Short to power in the LT GRN wire.
Set speed, does not cancel when CANCEL button is pushed	1. 1. Check SET/RESUME/CANCEL switch (see page 4-46) 2. Check control unit (see page 4-44)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed will not resume when RESUME button is pushed (with main switch on, when set speed is temporarily cancelled)	1. 1. Check SET/RESUME/CANCEL switch (see page 4-46) 2. Check control unit (see page 4-44)	Open circuit, loose or disconnected terminals: LT GRN/BLK
The transmission shifts down slower than normal when going up a hill with the cruise control on (A/T)	1. 1. Troubleshoot the cruise control communication circuit (see page 4-43)	

Cruise Control

Cruise Control Communication Circuit Troubleshooting (A/T)

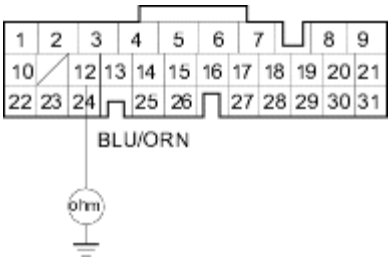
1. 1. Start the engine.
   2. Turn on the cruise control main switch, then drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control.

   Does the cruise control operate?

   YES - Go to step 3.

   NO - Check the cruise control unit (see page 4-44) or cruise control actuator. ■
2. 3. Turn the ignition switch OFF.
   4. Disconnect ECM/PCM connector E (31P) and cruise control unit 14P connector.
   5. Check for continuity between ECM/PCM connector terminal E12 and body ground.

   ECM/PCM CONNECTOR E (31P)



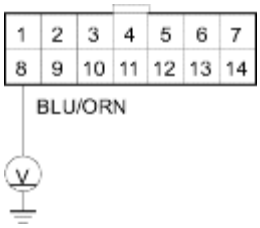
Wire side of female terminals

   Is there continuity?

   YES - Repair short to ground in the wire between PCM connector terminal E12 and the cruise control unit 14P connector terminal No. 8. ■

   NO - Go to step 6.
3. 6. Reconnect ECM/PCM connector E (31P) and the cruise control unit 14P connector.
1. 7. Connect a voltmeter between the No. 8 terminal of the cruise control unit 14 P connector and body ground. Test-drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

   CRUISE CONTROL UNIT 14P CONNECTOR



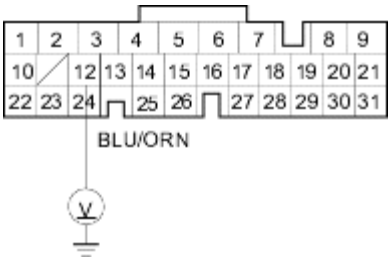
Wire side of female terminals

   Is there about 1 V?

   YES - Go to step 8.

   NO - Replace the cruise control unit. ■
2. 8. Connect a voltmeter between ECM/PCM connector terminal E12 and body ground. Drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

   ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

   Is there about 1 V?

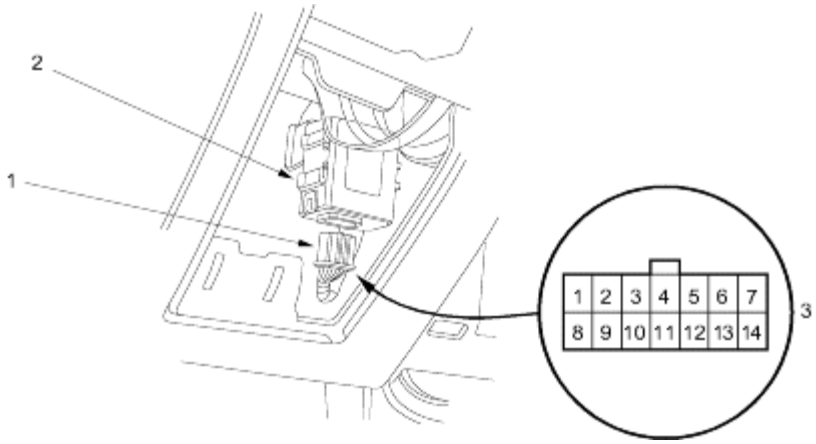
   YES - Check for loose connectors. If necessary replace the ECM/PCM and recheck (see page 11-3) or 5-door (see page 11-309). ■

   NO - Repair open in the wire between ECM/PCM connector terminal E12 and the control unit 14P connector terminal No. 8. ■

Cruise Control
Control Unit Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-25), precautions and procedures (see page 23-25) in the SRS before performing repairs or service.

1. 1. Remove the driver's dashboard lower cover.
   2. Disconnect the 14P connector from the control unit.
   3. Inspect the connector and socket terminals to be sure they are all making good contact.
      - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
      - If the terminals look OK, go to step 4.



1. 14P CONNECTOR
2. CRUISE CONTROL UNIT
3. Wire side of female terminals

2. 4. With the 14P connector disconnected, make these input tests.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BRN/WHT	Connect battery power	Check the operation of the magnetic clutch: Clutch should click and output link should be locked.	• Faulty actuator • Poor ground (G301) • An open in the wire
2	BLU	Ignition switch ON (II), main switch ON and brake pedal pressed, then released	Check for voltage to ground: There should be 0 V with the pedal pressed and battery voltage with the pedal released.	• Faulty brake pedal position switch • An open in the wire
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire

Cruise Control

Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
4	BLK/ORN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash driver's fuse/relay box • An open in the wire
5	WHT/BLK	Brake pedal pressed, then released	Check for voltage to ground: There should be battery voltage with the pedal pressed, and 0 V with the pedal released.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty brake pedal position switch • An open in the wire
6	GRY/RED	Set button pushed	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty horn relay • Faulty set/resume/cancel switch • Faulty cable reel • An open in the wire
7	LT GRN/BLK	Resume button pushed		
8	BLU/ORN	Reconnect the cruise control unit 14P connector, start the engine, turn the main switch ON and drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control set.	Check for voltage to ground: There should be about 1V	• Faulty cruise control unit • Short to ground
9	BRN	Connect battery power to the BRN terminal and ground to the BRN/YEL terminal	Check the operation of the actuator motor: You should be able to hear the motor	• Faulty actuator • An open in the wire
11	BRN/YEL			
10	BLU/YEL	Ignition switch ON (II)	Attach to ground: Cruise indicator light in the gauge assembly should comes on.	• Blown bulb • Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • Faulty dimming circuit in the gauge assembly • An open in the wire
12	BLU/WHT	Ignition switch ON (II) and main switch ON; raise the front of the vehicle, and rotate one wheel slowly while holding the other wheel	Check for voltage between the BLU/WHT (+) and BLK (-) terminals: There should be 0 5 V or more repeatedly.	• Faulty ECM/PCM • An open in the wire
13	LT GRN	Ignition switch ON (II) and main switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash fuse/relay box

				Faulty main switch • An open in the wire
14	LT BLU	A/T: Shift lever in D3 or D4 M /T: Clutch pedal released	Check for continuity to ground: There should be continuity. NOTE: There should be no continuity when the clutch pedal is pressed or when the shift lever is in other positions.	• Faulty transmission range switch • Faulty clutch pedal position switch • Poor ground (M/T: G401, A/T: G101) • An open in the wire

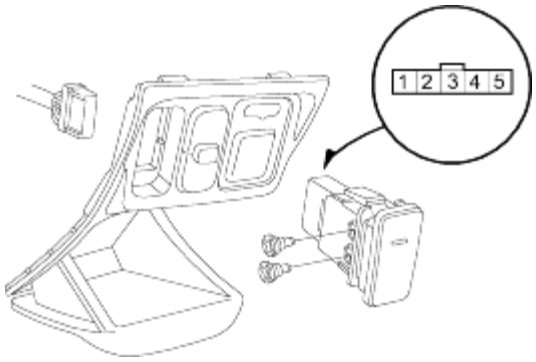
1. 5. If any test indicates a problem, find and correct the cause, then recheck the system. If all the input tests prove OK, the control unit must be faulty; replace it.

Cruise Control

Main Switch Test/Replacement

1. 1. Carefully pry the switch panel -assembly out of the instrument panel.

   Terminal side of male terminals

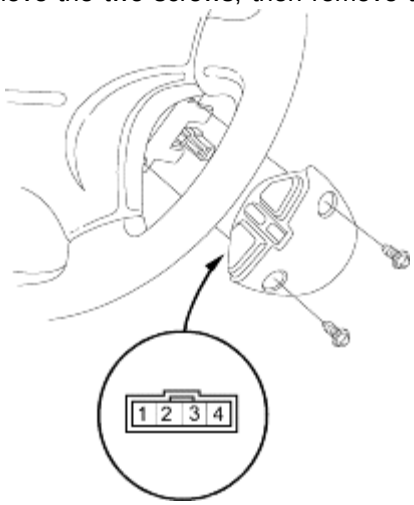


2. 2. Disconnect the 5P connector from the main switch, then remove the switch.
   3. Check for continuity between the terminals in each switch position according to the table. If there is no continuity, replace the switch.

Position \ Terminal	2		5	1	3		4
OFF	○	—(V)—	○		○	—(V)—	○
ON	○	—(V)—	○	○	○	—(V)—	○

Resume/Cancel Switch Test/Replacement

1. 1. Remove the two screws, then remove the switch.



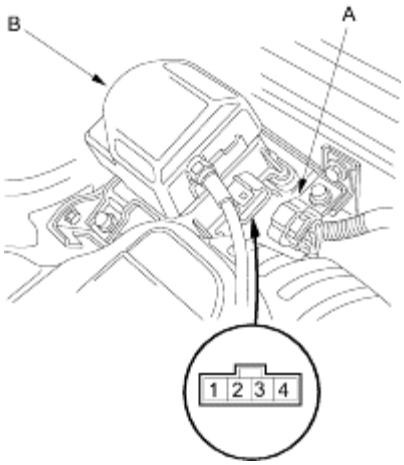
   Terminal side of male terminal.

2. 2. Check for continuity between the terminals in switch position according to the table.
   - If there is continuity, and it matches the table, but switch failure is occurred on the cruise control unit input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in one or both positions, replace the switch.

Position \ Terminal	1		2	3
SET (ON)	○			○
RESUME (ON)	○		○	
CANCEL (ON)	○		○	○

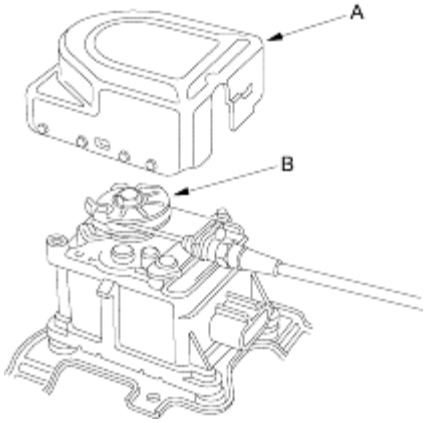
Cruise Control
Actuator Test

1. 1. Disconnect the 4P connector (A) from the actuator (B).



Terminal side of male terminals

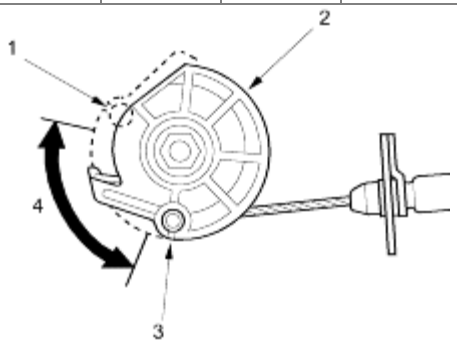
2. 2. Remove the cover (A), and check the output linkage (B) for smooth movement.



3. 3. Connect the battery power to the No. 2 terminal and ground to the No. 1 terminal.
4. 4. Check for a clicking sound from the magnetic clutch. The output linkage should be locked.
   5. If the output linkage is not locked, replace the actuator assembly.

1. 6. Check the operation of the actuator motor in each output linkage position according to the table. You should be able to hear the motor.

Battery power polarities		Output linkage position		
(+)	(-)	FULL CLOSE	MIDDLE POSITION	FULL OPEN
No. 4 Terminal	No. 3 Terminal	The motor runs.	The motor runs.	The motor stops.
No. 3 Terminal	No. 4 Terminal	The motor stops.	The motor runs.	The motor runs.

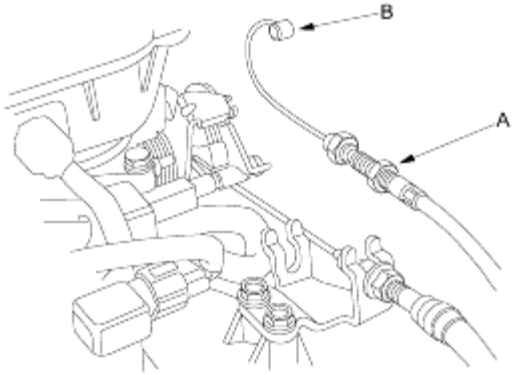


2. 1. FULL OPEN
   2. OUTPUT LINKAGE
   3. FULL CLOSE
   4. MIDDLE POSITION

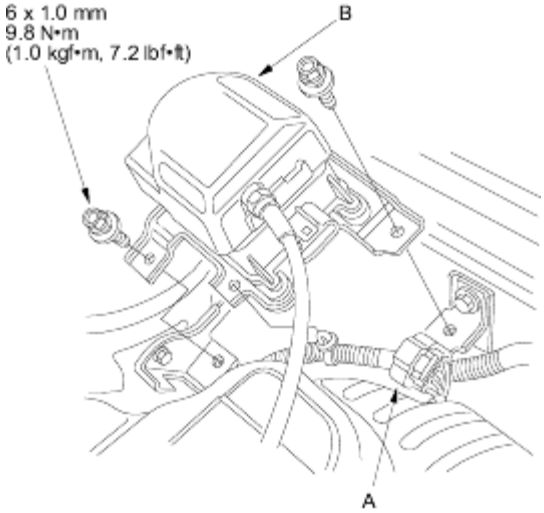
Cruise Control

Actuator/Cable Replacement

1. 1. Loosen the locknut (A), then disconnect the actuator cable (B) from the throttle linkage.

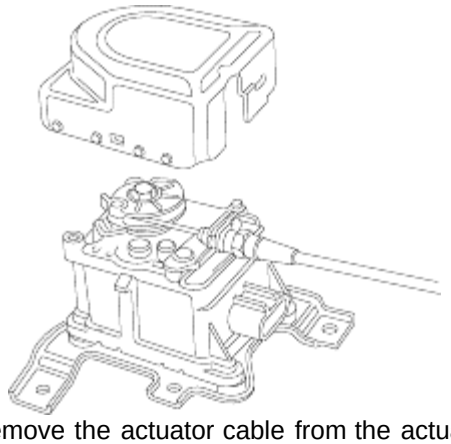


2. 2. Disconnect the 4P connector (A) from the actuator.

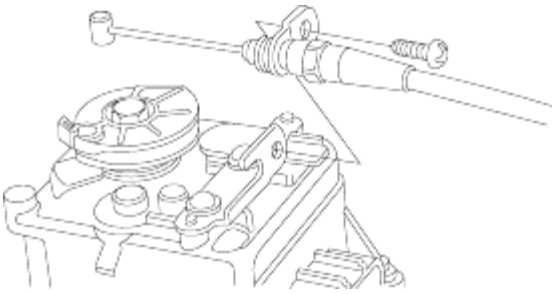


3. 3. Remove the two mounting bolts, and remove the actuator assembly (B).

1. 4. Remove the actuator cover.



2. 5. Remove the actuator cable from the actuator.

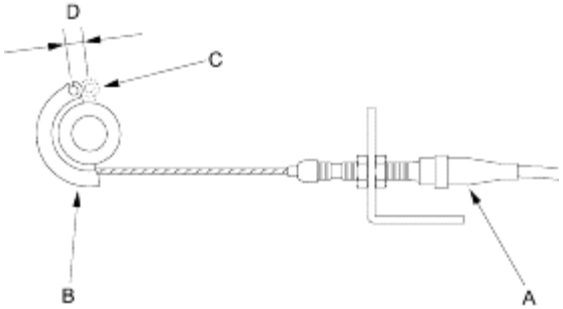


3. 6. Install the reverse order of removal, and adjust the free play at the throttle linkage after connecting the actuator cable.

Cruise Control

Actuator Cable Adjustment

1. 1. Check that the actuator cable (A) moves smoothly with no binding or sticking.

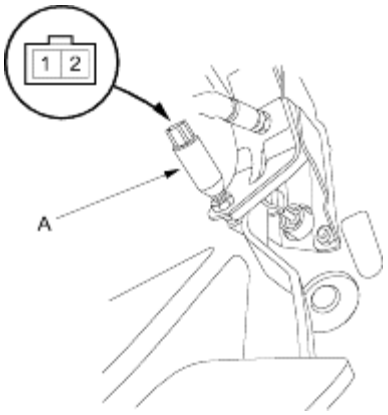


2. 2. Measure the amount of movement of the output linkage (B) until the engine speed starts to increase. At first, the output linkage should be located at the fully closed position (C). The free play (D) should be 3.75 ± 0.5 mm (0.15 ±0.02 in.).
   3. If the free play is not within specs, loosen the locknut, and turn the adjusting nut until the free play is as specified, then retighten the locknut.

4-49 Clutch Pedal Position Switch Test

1. 1. Disconnect the 2P connector from the clutch pedal position switch (A).

CLUTCH PEDAL POSITION SWITCH 2P CONNECTOR



2. 2. Remove the clutch pedal position switch.
   3. Check for continuity between the terminals according to the table.

Terminal / Clutch Pedal Position Switch	1	2
PRESSED		
RELEASED	○	○

3. 4. If necessary, replace the clutch pedal position switch or adjust the pedal height (see page 12-4).

Starting System

Starter Circuit Troubleshooting

NOTE:

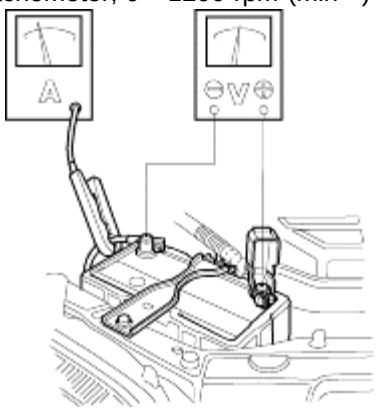
- Air temperature must be between 15° and 38°F (59° and 100°F) during this procedure.
- After this test, or any subsequent repair, reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) to clear any Diagnostic Trouble Codes (DTCs), 4-door (see page 11-3) or 5-door (see page 11-3).

Recommended Procedure:

- Use a starter system tester.
- Connect and operate the equipment in accordance with the manufacturer's instructions.

Alternate Procedure

1. 1. Hook up the following equipment:
   - Ammeter, 0 - 400 A
   - Voltmeter, 0 - 20 V (accurate within 0.1 volt)
   - Tachometer, 0 - 1200 rpm (min^{-1})



2. 2. Remove the No. 46 (15 A) fuse from the under-dash fuse/relay box.
3. 3. With the shift lever in N or P (A/T, HONDA MULTI MATIC), or the clutch pedal pressed (M/T with KX model), turn the ignition switch to start (III).

Did the starter crank the engine normally?

YES - The starting system is OK. ■

NO - If the starter will not crank at all, go to step 4. If it cranks the engine erratically or too slowly, go to step 7. If it will not disengage from the flywheel or torque converter ring gear when you release the key, check for the following until you find the cause.

- Solenoid plunger and switch malfunction
- Dirty drive gear or damaged overrunning clutch

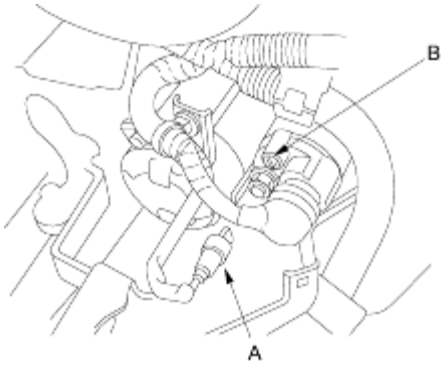
1. 4. Check the battery condition. Check electrical connections at the battery and the starter for looseness and corrosion. Then check the starter again.

Did the starter crank the engine?

YES - The starting system is OK. ■

NO - Go to step 5.

2. 5. Make sure the transmission is in neutral, then disconnect the BLK/WHT wire (A) from the starter solenoid (B). Connect a jumper wire from the battery positive terminal to the solenoid terminal.



Did the starter crank the engine?

YES - Go to step 6.

NO - Remove the starter, and diagnose its internal problems.

3. 6. Check the following items in the order listed until you find the open circuit.
   - Check the BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
   - Check the ignition switch (see page 22-83).
   - With A/T, HONDA MULTIMATIC, check the transmission range switch and connector. With M/T (KX model), check the clutch inter lock switch and connector.
   - Check the starter cat-relay (A/T, HONDA MULTI MATIC, and M/T [KX model]).

Starting System

Starter Circuit Troubleshooting (cont'd)

1. 7. Check engine speed during cranking.

   Is engine speed above 100 rpm (min^{-1})?

   YES - Go to step 8.

   NO - Remove and disassemble the starter, and check for the following until you find the cause.

   - Excessively worn starter brushes
   - Open circuit in commutator brushes
   - Dirty or damaged helical splines or drive gear
   - Faulty drive gear clutch

2. 8. Check the cranking voltage and current draw.

   Is cranking voltage no less than 8.0 volts (D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines) or 9.0 volts (Except D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines) and current draw no more than 200 amps (D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines) or 150 amps (Except D15Y2, D16W7 (KG model), D16W8, D17Z1 (Except Malaysia model), D17Z2, D17Z3, D17A1, D17A2 (Except Malaysia model), D17A5 (Except Indonesia model) engines)?

   YES - Go to step 9.

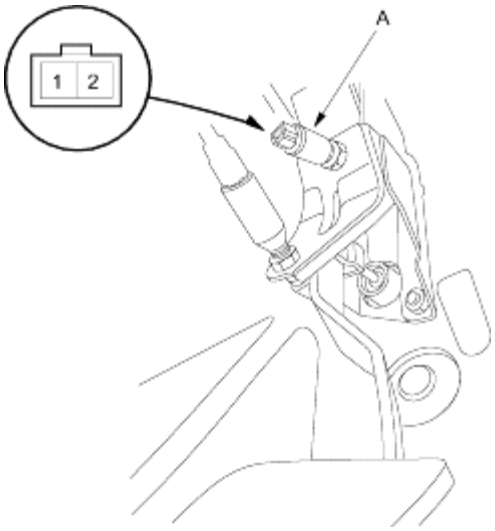
   NO - Remove and disassemble the starter, and check for the following until you find the cause.

   - Open circuit in starter armature commutator segments
   - Starter armature dragging
   - Shorted armature winding
   - Excessive drag in engine

3. 9. Remove the starter and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts. ■

Starting System
Clutch Interlock Switch Test

1. 1. Disconnect the clutch interlock switch 2P connector.

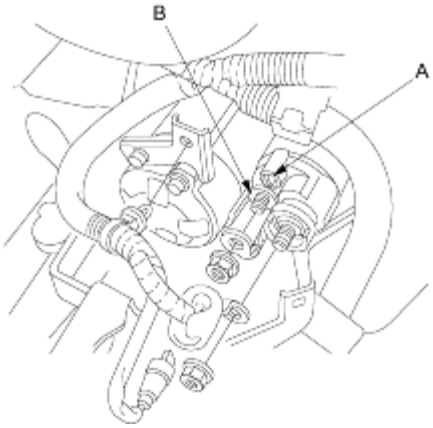


2. 2. Remove the clutch interlock switch (A).
3. 3. Check for continuity between the terminals according to the table.

Terminal / Clutch Interlock Switch	1	2
PRESSED	○	○
RELEASED		

4. 4. If necessary, replace the switch or adjust the pedal height (see page 12-4).

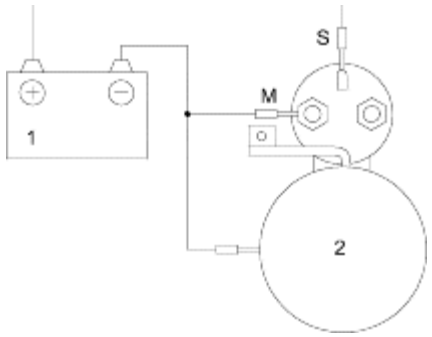
1. 1. Check the hold-in coil for continuity between the S terminal (A) and the armature housing (ground). There should be continuity.
   - If there is continuity, go to step 2.
   - If there is no continuity, replace the solenoid.



2. 2. Check the pull-in coil for continuity between the S terminal (A) and M terminal (B). There should be continuity.
   - If there is continuity, the solenoid is OK.
   - If there is no continuity, replace the solenoid.

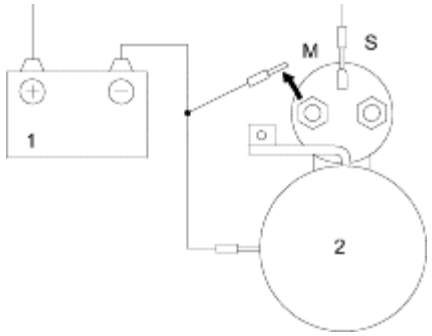
Starting System
Starter Performance Test

1. 1. Disconnect the wires from the S terminal and the M terminal.



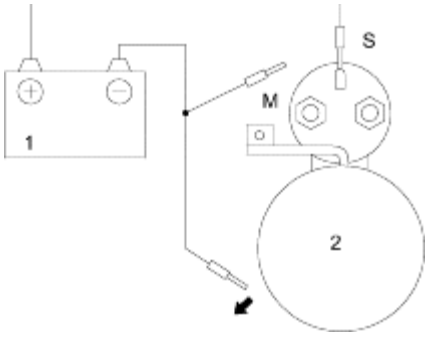
2. 1. 12V BATTERY
   2. BODY (GROUND)

3. 2. Make a connection as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle).
   3. Connect the battery as shown. If the starter pinion pops out, it is working properly. To avoid damaging the starter, do not leave the battery connected for more than 10 seconds.
   4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil is working properly. To avoid damaging the starter, do not leave the battery connected for more than 10 seconds.



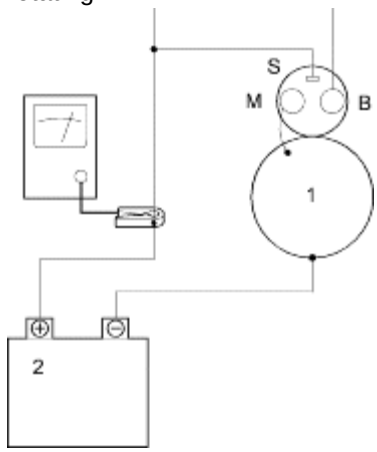
4. 1. 12V BATTERY
   2. BODY (GROUND)

1. 5. Disconnect the battery also from the body. If the pinion retracts immediately, it is working properly. To avoid damaging the starter, do not leave the battery connected for more than 10 seconds.



2. 1. 12V BATTERY
   2. BODY (GROUND)

3. 6. Clamp the starter firmly in a vice.
   7. Connect the starter to the battery as described in the diagram below, and confirm that the motor starts and keeps rotating.



4. 1. STARTER
   2. 12V BATTERY

5. 8. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

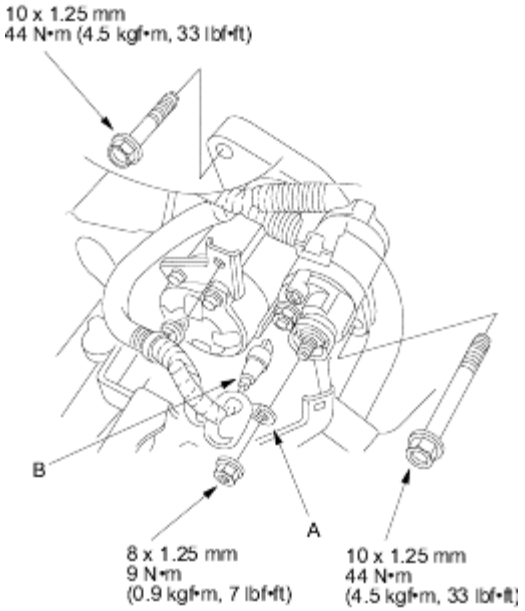
Specifications:

Maker	Electric current	Motor speed
DENSO (1.0 Kw)	90 A or less	3,000 rpm (min^{-1}) or more
DENSO (0.8 Kw)	50 A or less	6,000 rpm (min^{-1})
MITSUBISHI (0.8 Kw)	53 A or less	6,000 rpm (min^{-1}) or more

Starting System

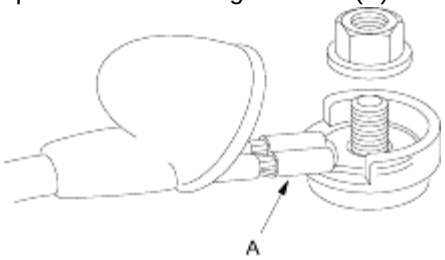
Starter Replacement

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least 3 minutes.
   3. Remove the resonator.
   4. Disconnect the starter cable (A) from the B terminal on the solenoid, then disconnect the BLK/WHT wire (B) from the S terminal.



2. 5. Remove the two bolts holding the starter, then remove the starter.

1. 6. Install in the reverse order of removal. Make sure the crimped side of the ring terminal (A) is facing out.



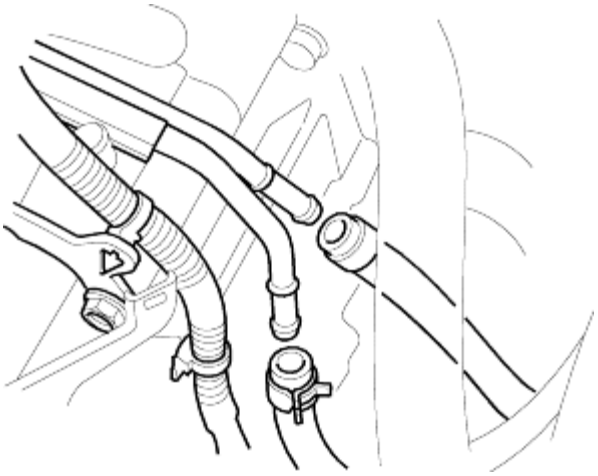
2. 7. Connect the battery positive cable and negative cable to the battery.
3. 8. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Engine Assembly

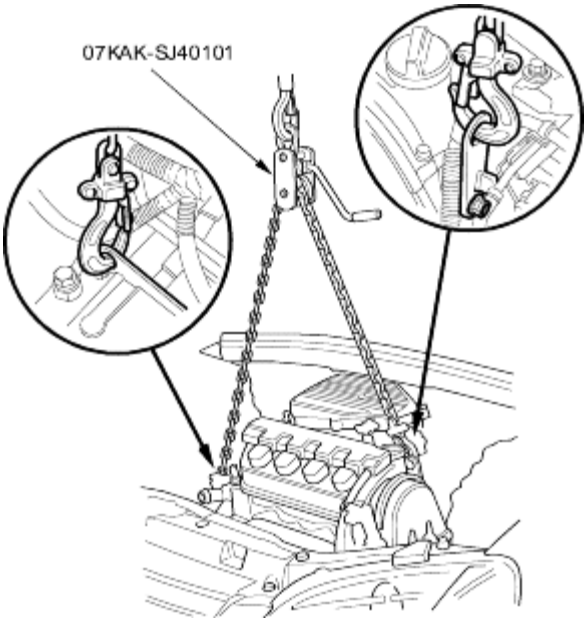
Special Tools	5-2
Engine Removal	5-3
Engine Installation	5-13
Cylinder Head	6-1
Engine Block	7-1
Engine Lubrication	8-1
Intake Manifold/Exhaust System	9-1
Engine Cooling	10-1

Engine Assembly
Engine Removal (cont'd)

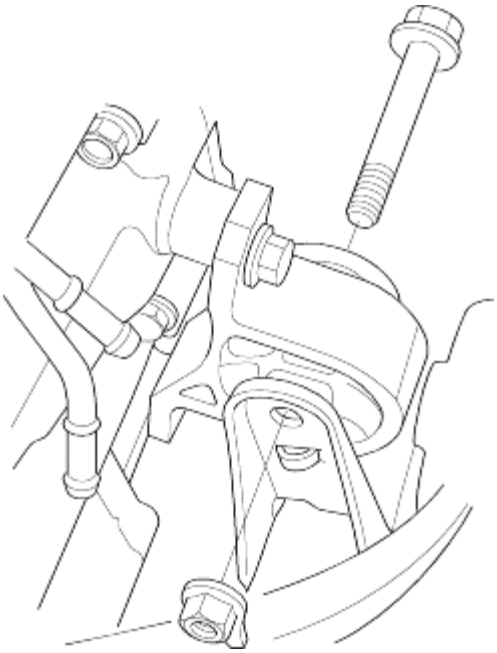
1. 39. Remove the ATF cooler hoses, then plug the ATF cooler hoses and lines (A/T. Honda multi matic).



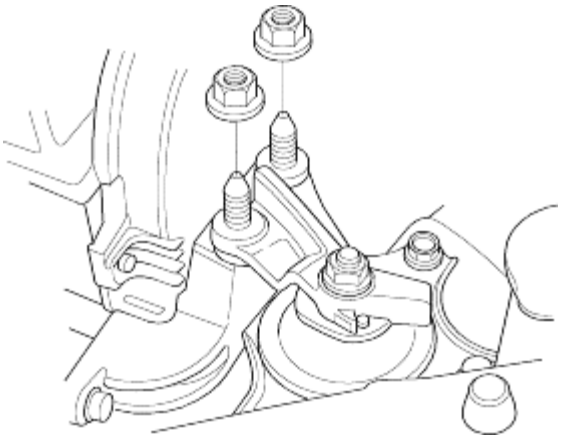
2. 40. Attach the engine tilt hanger set (commercially available tool for EU models) to the engine as shown.



1. 41. Remove the front mount mounting bolt.



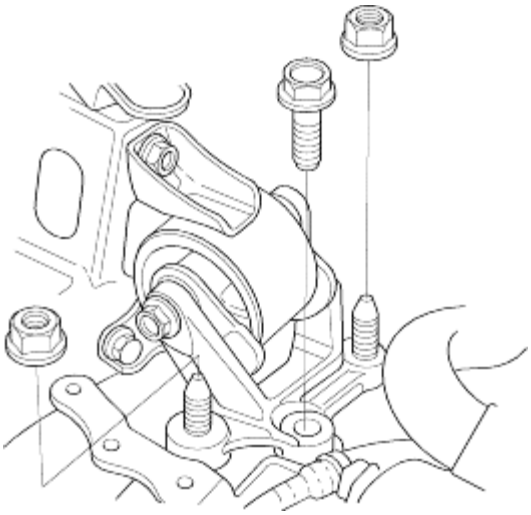
2. 42. Remove the side engine mount bracket mounting nuts.



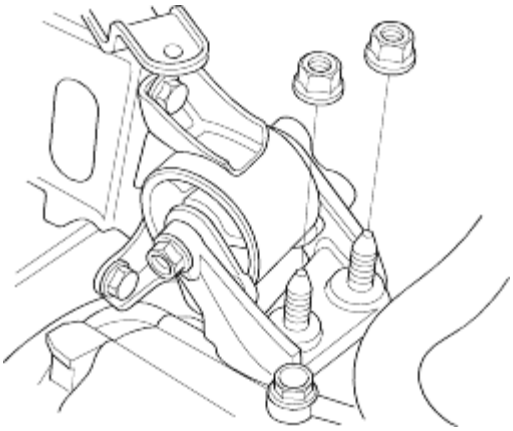
Engine Assembly
Engine Removal (cont'd)

1. 43. Remove the transmission mount bracket mounting bolt/nuts.

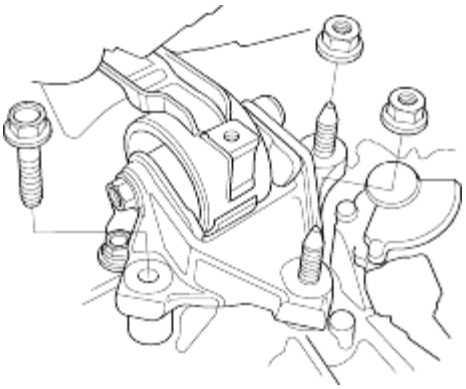
M/T:



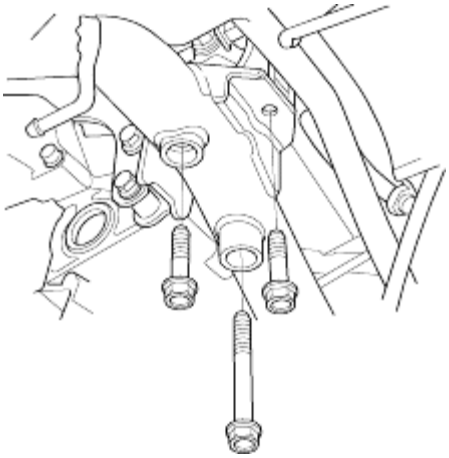
A/T:



HONDA MULTI MATIC:

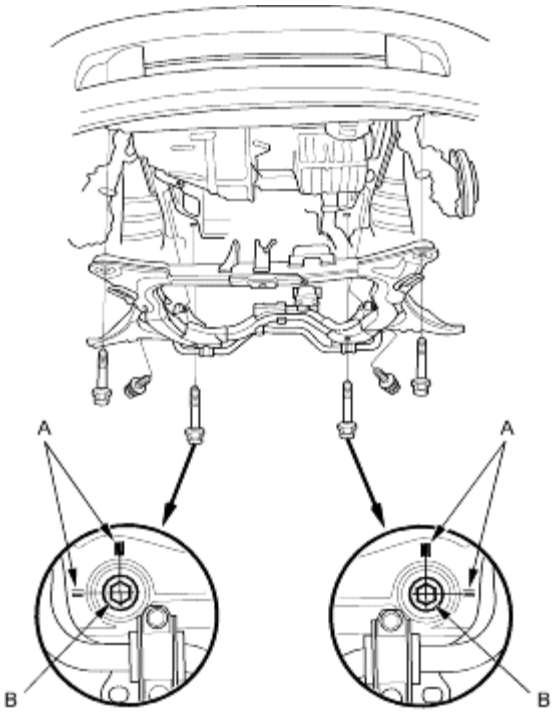


1. 44. Make sure the hoist brackets are positioned properly. Raise the hoist to full height.
45. Remove the rear mount mounting bolts.



Engine Assembly
Engine Removal (cont'd)

1. 46. Use a marker to make alignment marks on the reference lines (A) that align with the centres of the rear sub-frame mounting bolts (B).

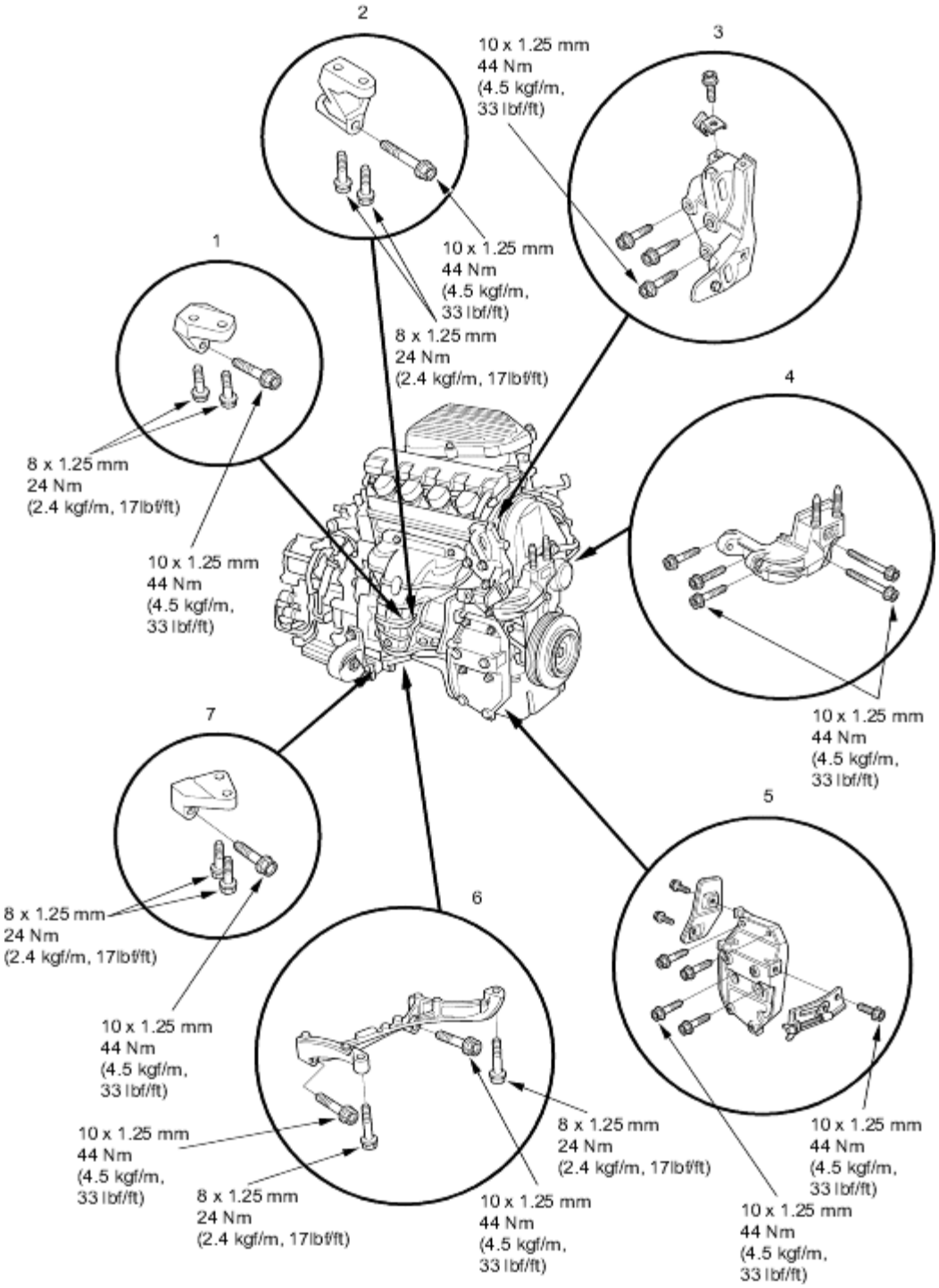


2. 47. Remove the front sub-frame.

1. 48. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses and electrical wiring.
   49. Slowly lower the engine approximately 150 mm (6 in.). Check once again that all hoses and wires are disconnected from the engine/transmission.
   50. Lower the engine all the way. Remove the chain hoist from the engine.
   51. Remove the engine from under the vehicle.

Engine Assembly
Engine Installation

1. 1. Install the accessory brackets and tighten their bolts and nuts to the specified torques.



1. REAR STIFFENER (D15Y4,D17A2 engines M/T, HONDA MULTIMATIC)
2. REAR STIFFENER (D17A2 engine A/T)
3. P/S PUMP BRACKET (P/S)
4. ENGINE MOUNT BRACKET
5. A/C COMPRESSOR BRACKET
6. STIFFENER (Except D15Y4, D17A1 engines)
7. FRONT STIFFENER (D15Y4, D17A2 engines)

Engine Assembly

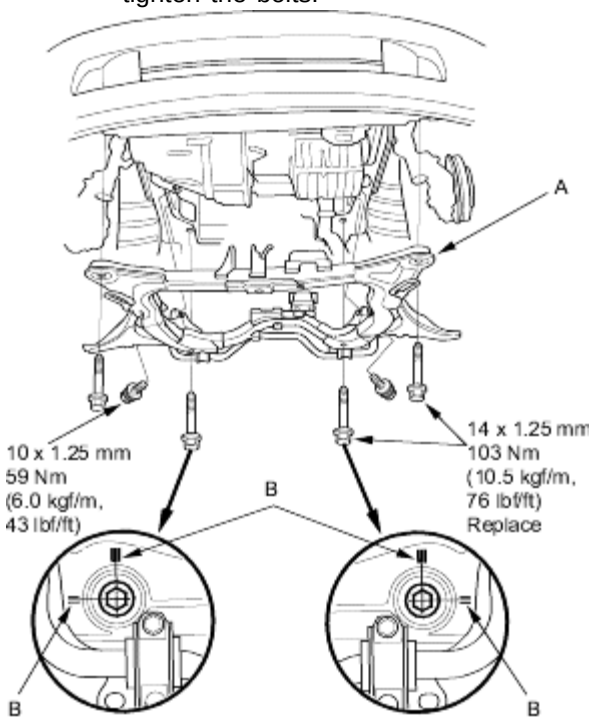
Engine Installation (cont'd)

1. 2. Position the engine under the vehicle. Attach the chain hoist to the engine, then lift the engine into position in the vehicle.

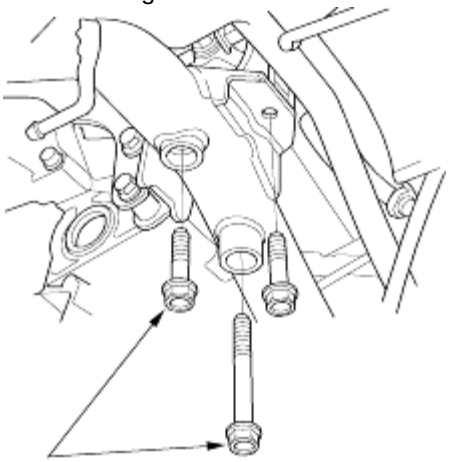
NOTICE

Reinstall the mounting bolts/support nuts in the sequence given. Failure to follow this sequence may cause excessive noise and vibration and reduce bushing life.

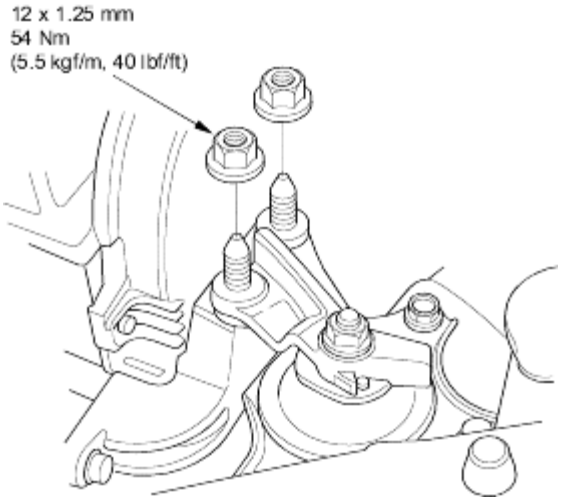
2. 3. Install the sub-frame (A). Align the reference lines (B) on the sub-frame with the bolt head centre, then tighten the bolts.



1. 4. Tighten the rear mount mounting bolts.



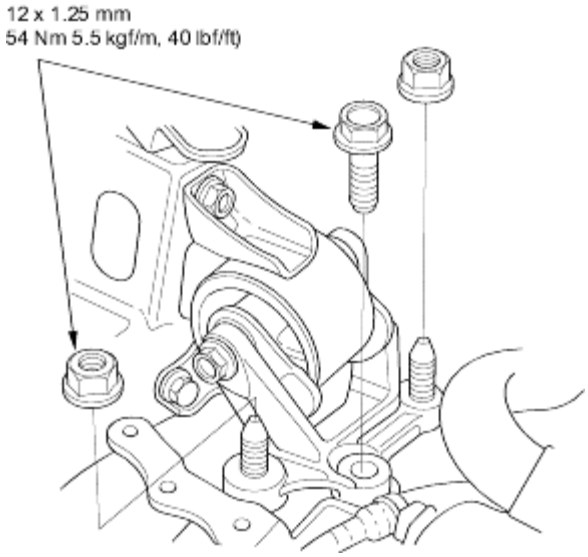
2. 5. Lower the hoist.
3. 6. Tighten the side engine mount bracket mounting nuts.



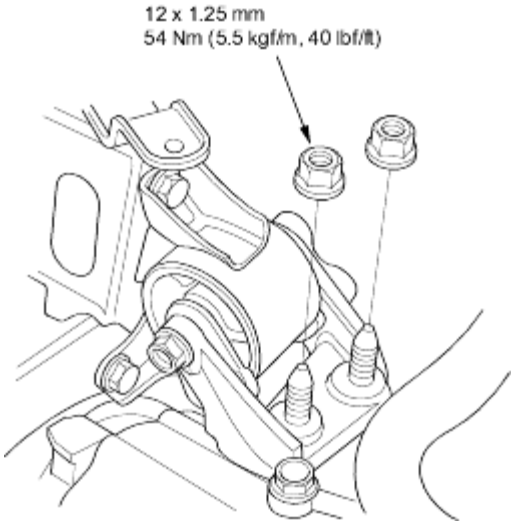
Engine Assembly
Engine Installation (cont'd)

1. 7. Tighten the transmission mount bracket mounting bolt/nuts.

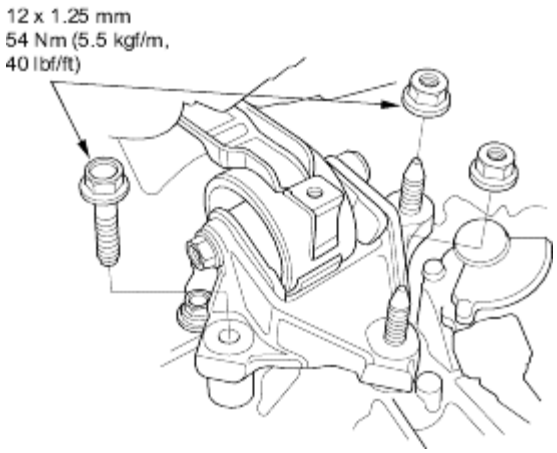
M/T:



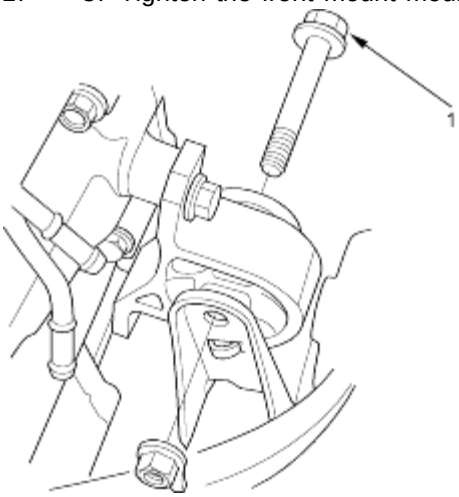
A/T:



HONDA MULTI MATIC:

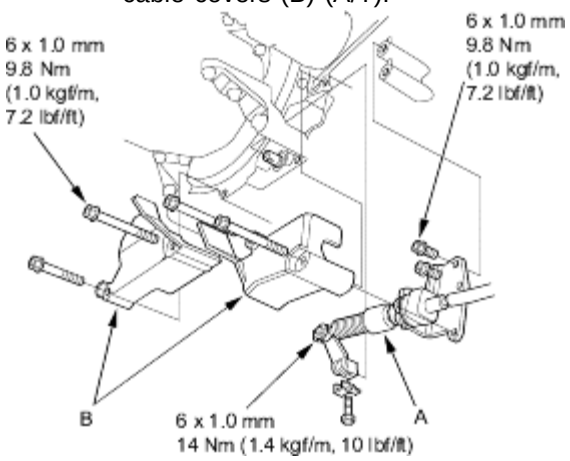


1. 8. Tighten the front mount mounting bolt.



2. 1. 12x1.25mm
64 Nm (6.5 kgf/m, 47 lbf/ft)
Replace.

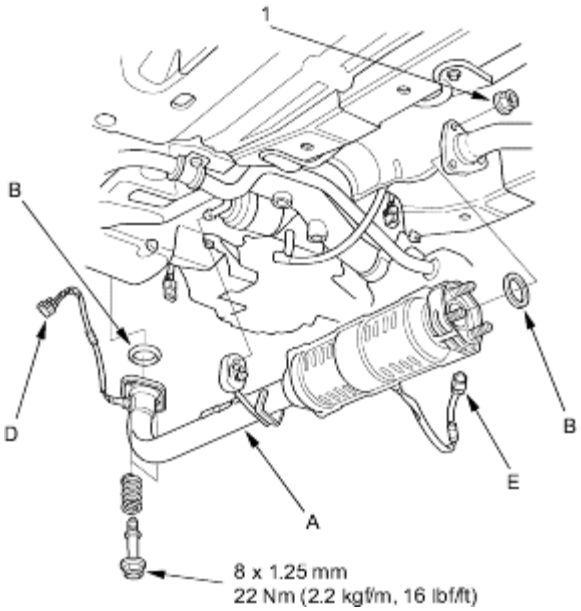
3. 9. Remove the chain hoist from the engine.
10. Raise the hoist to full height.
11. Install a new spring clip on the end of each driveshaft, then install the driveshafts. Make sure each clip "clicks" into place in the differential and intermediate shaft.
12. Connect the suspension lower arm ball joints and stabiliser links (see page 18-18).
13. Install the shift control cable (A), then install the shift cable covers (B) (A/T).



Engine Assembly

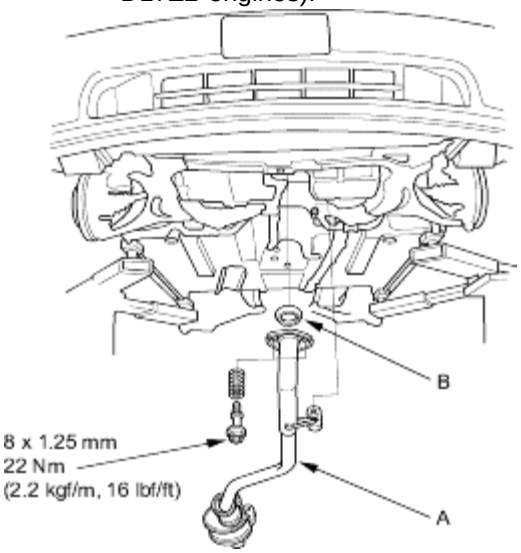
Engine Installation (cont'd)

1. 14. Install exhaust pipe A (A): use new gaskets (B) and new self-locking nuts (C) (D14Z5, D15Y2, D15Y3, D15Y4, D16V2, D16W7, D16W8, D17A2, D17A5, D17Z3 engines).

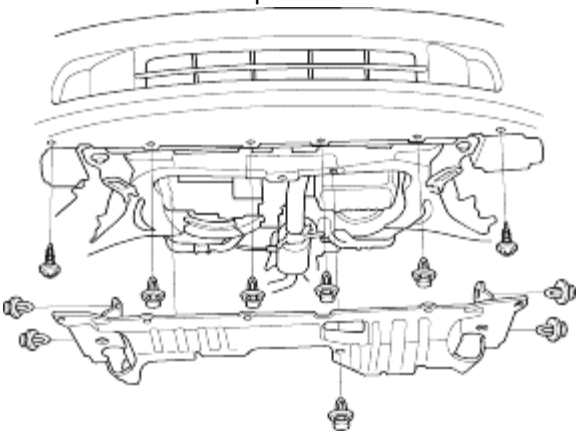


2. 1. C
   10x 1.25 mm
   33 Nm (3.4 kgf/m, 25 lbf/ft)
   Replace.

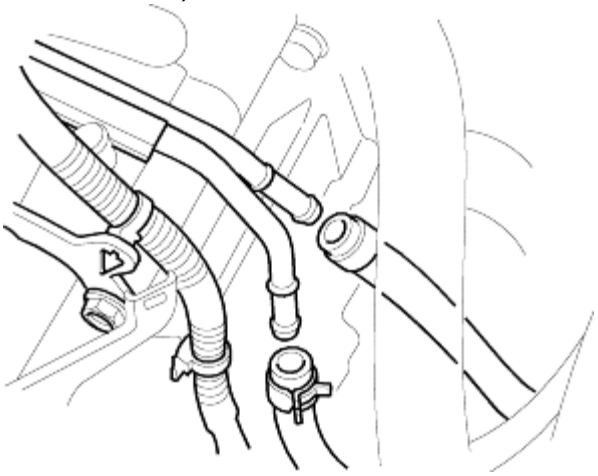
3. 15. Connect the primary HO2S connector (D) D14Z5, D15Y2, D15Y4, D16W7, D16W8, D17A2, D17Z3 engines).
   16. Connect the secondary HO2S connector (E) (D14Z5, D15Y4, D16W7, D17A2 engines).
   17. Install the exhaust pipe/muffler assembly (A); use a new gasket (B) (D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines).



1. 18. Install the splash shield.



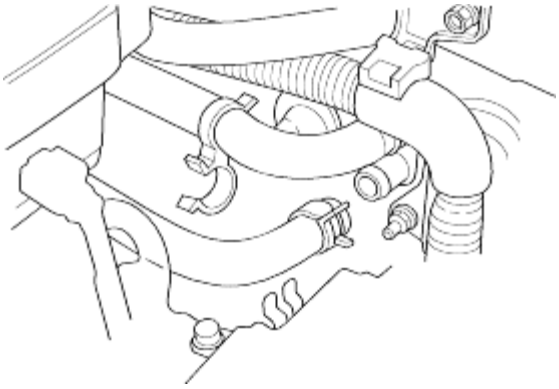
2. 19. Install the front tyres/wheels.
   20. Lower the hoist.
   21. Install the ATF cooler hoses (A/T, Honda multi matic).



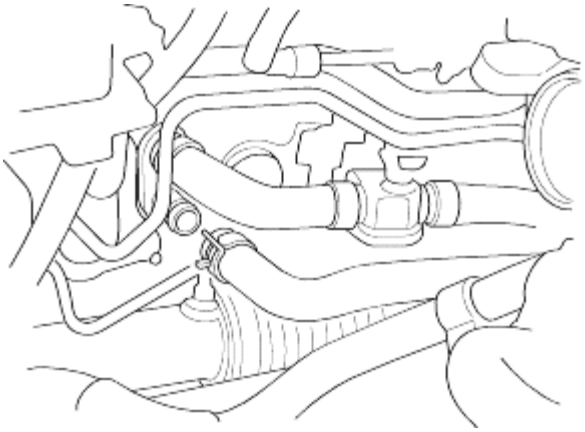
Engine Assembly
Engine Installation (cont'd)

1. 22. Install the heater hose.

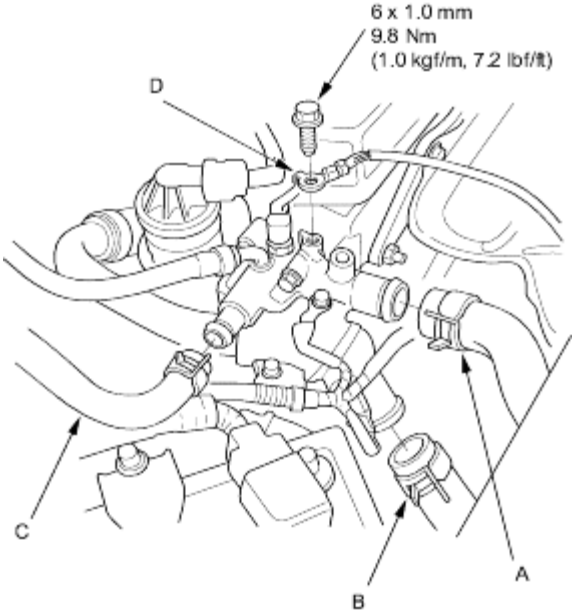
RHD models:



LHD models:

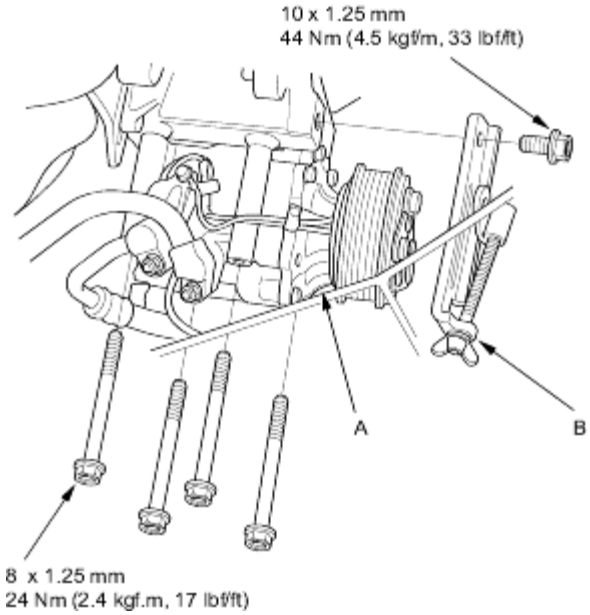


1. 23. Install the upper radiator hose (A), lower radiator hose (B), heater hose (C) and ground cable (D).

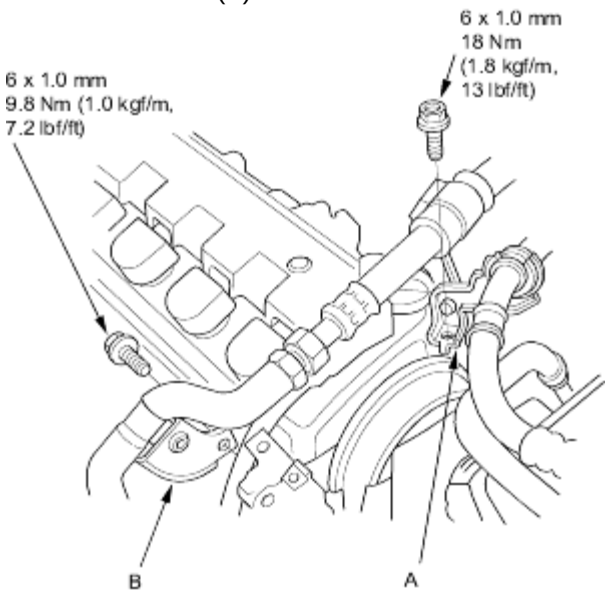


Engine Assembly
Engine Installation (cont'd)

1. 24. Install the A/C compressor (A), then install the alternator lower bracket (B).

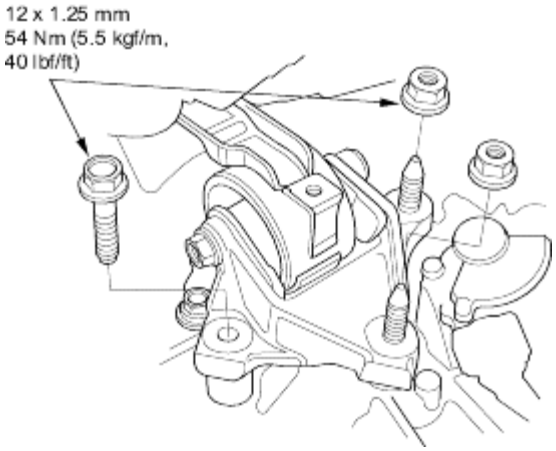


2. 25. Install the A/C hose bracket (A) and P/S hose bracket (B).

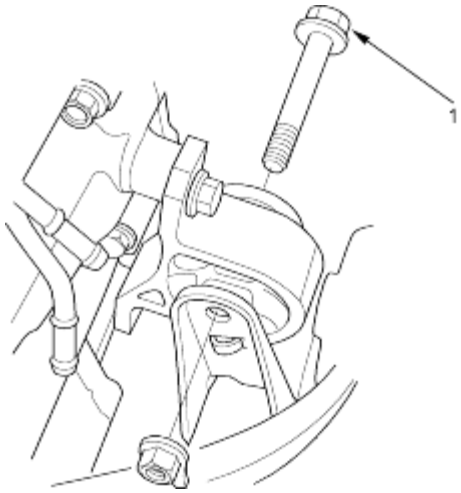


1. 26. Loosely install the alternator.
   27. Adjust the alternator belt tension (see page 4-38) or the alternator-compressor belt tension (see page 4-37).
   28. Loosely install the P/S pump belt and pump.
   29. Adjust the P/S pump belt (see page 17-23).
   30. Push the ECM/PCM connectors through the bulkhead, then install the grommet (A).

RHD models:



LHD models:

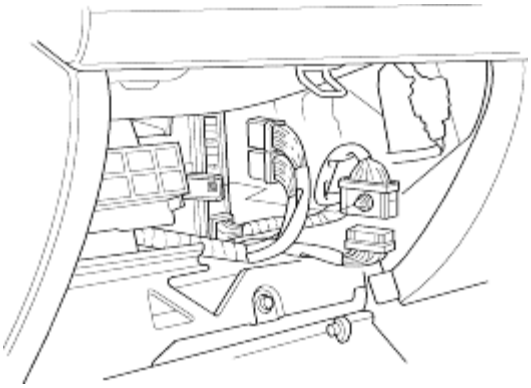


2. 31. Install the harness clamps (B).

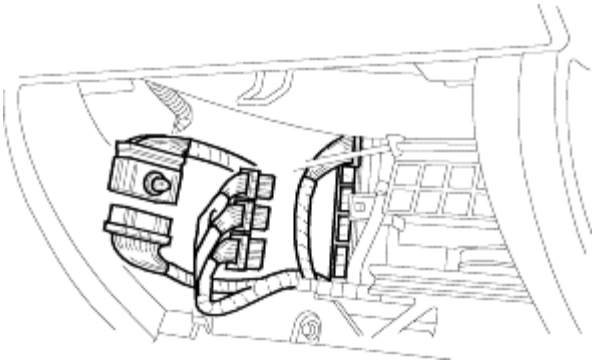
Engine Assembly
Engine Installation (cont'd)

1. 32. Connect the PCM connectors.

RHD models:



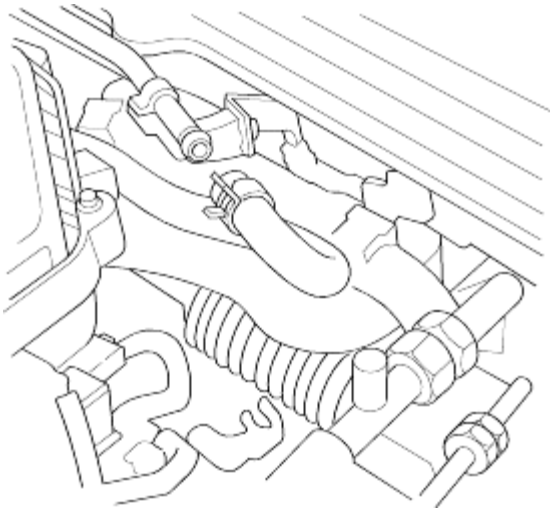
LHD models:



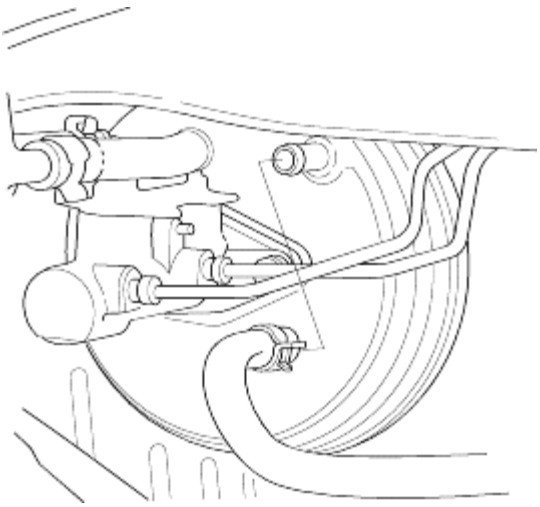
2. 33. Install the glove box stops.

1. 34. Install the cruise control cable, then adjust the cable (see page 4-48).
35. Install the throttle cable, then adjust the cable (see page 11-148).
36. Install the brake booster vacuum hose.

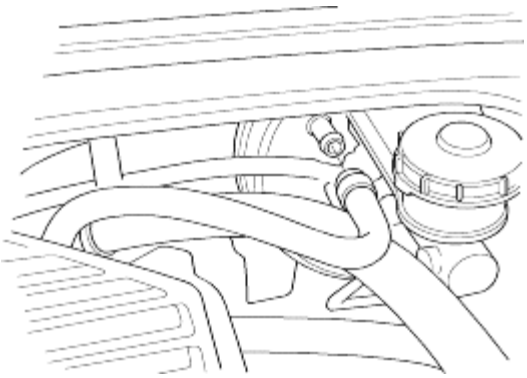
RHD models (4-door):



RHD models (5-door):

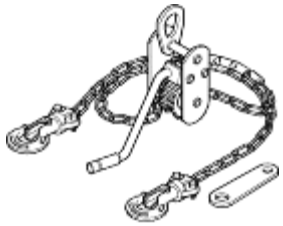


LHD models:



Engine Assembly Special Tools	5-2

Ref. No.	Tool Number	Description	Qty
1	07KAK-SJ40101	Engine Tilt Hanger Set	1

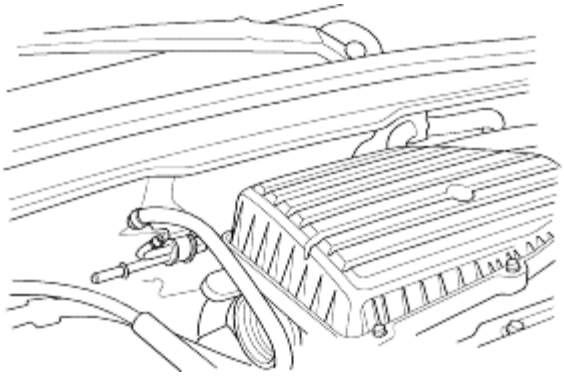


①

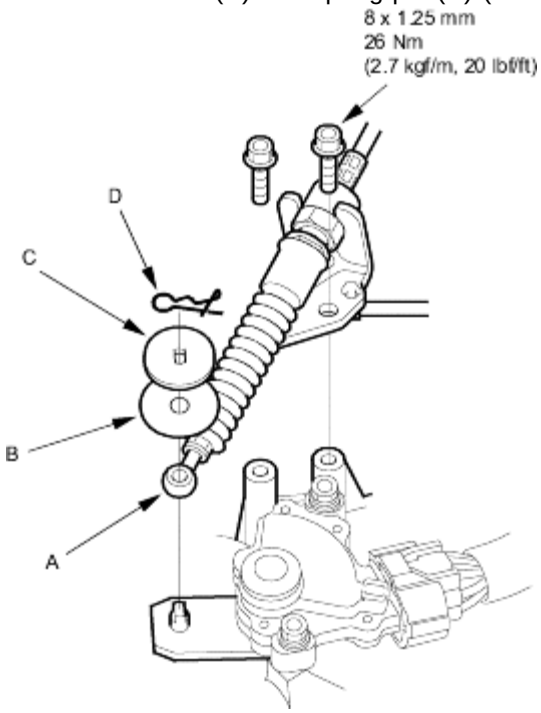
Engine Assembly

Engine Installation (cont'd)

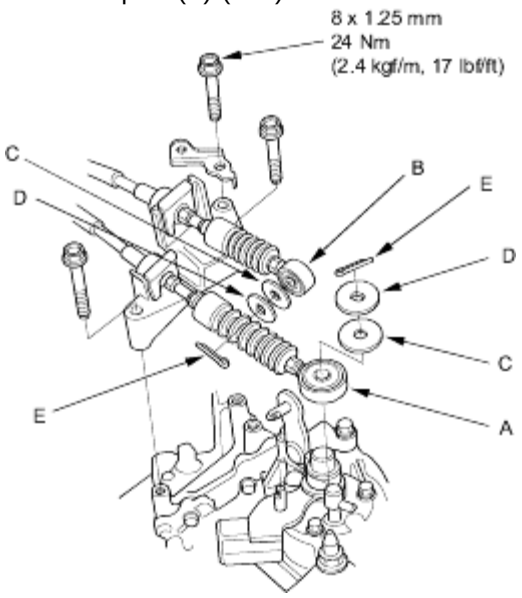
1. 37. Install the EVAP canister hose.



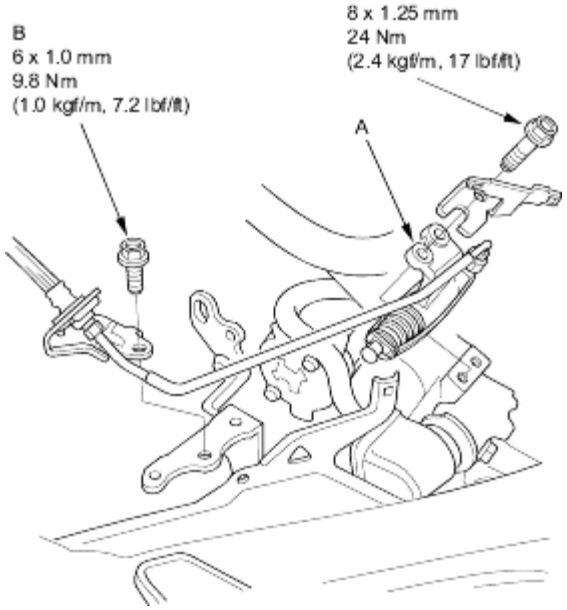
2. 38. Install the shift cable (A) using the plastic washer (B), washer (C) and spring pin (D) (Honda multi matic).



1. 39. Install the select cable (A) and shift cable (B) using the plastic washers (C), washers (D) and new cotter pins (E) (M/T).

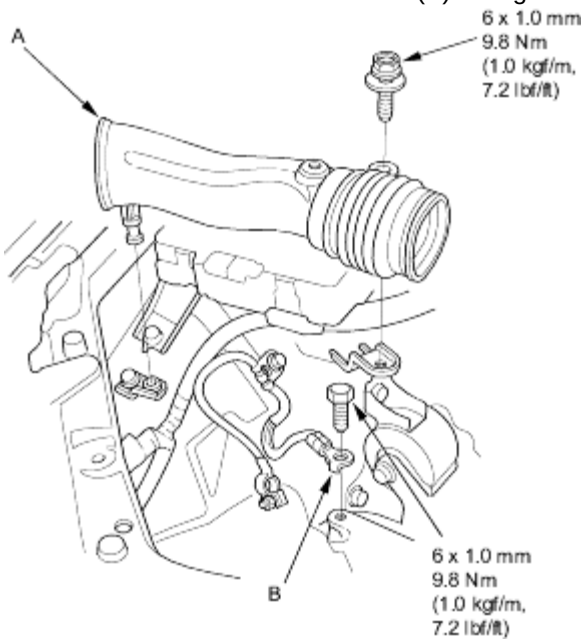


2. 40. Install the clutch slave cylinder (A) and clutch line bracket mounting bolt (B) (M/T).

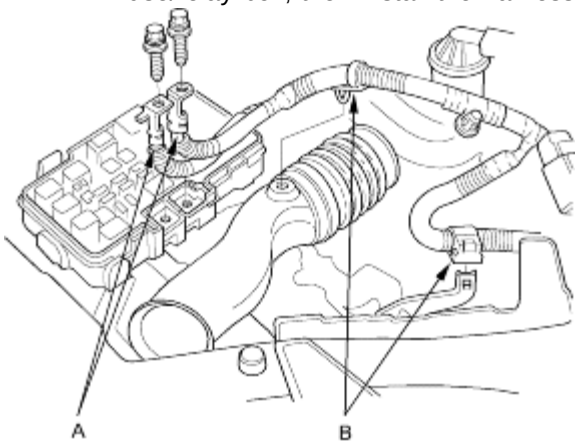


Engine Assembly
Engine Installation (cont'd)

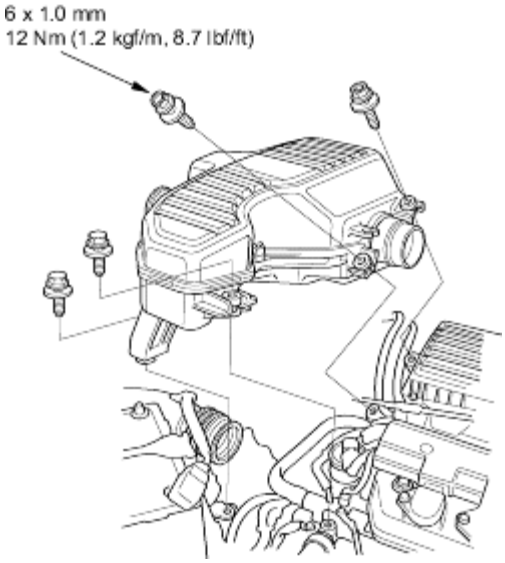
1. 41. Install the battery base.
2. 42. Install the intake air duct (A) and ground cable (B).



3. 43. Install the battery cable (A) on the under-hood fuse/relay box, then install the harness clamps (B).



1. 44. Install the intake resonator.



2. 45. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
   46. Move the shift lever to each gear and verify that the A/T gear position indicator, follows the transmission range switch (A/T, Honda multi matic).
   47. Check that the transmission shifts into gear smoothly (M/T).
   48. Inspect for fuel leaks. Turn ON (II) the ignition switch (do not operate the starter) so that the fuel pump runs for approximately 2 seconds and pressurises the fuel line. Repeat this operation 2 or 3 times, then check for fuel leakage at any point in the fuel line.
   49. Refill the engine with engine oil (see page 8-5).
   50. Refill the transmission with fluid:
       - Manual transmission (see page 13-3).
       - Automatic transmission (see page 14-122).
       - Honda multi matic (see page 14-312).
3. 51. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-8).
   52. Check the wheel alignment (see page 18-4).
   53. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

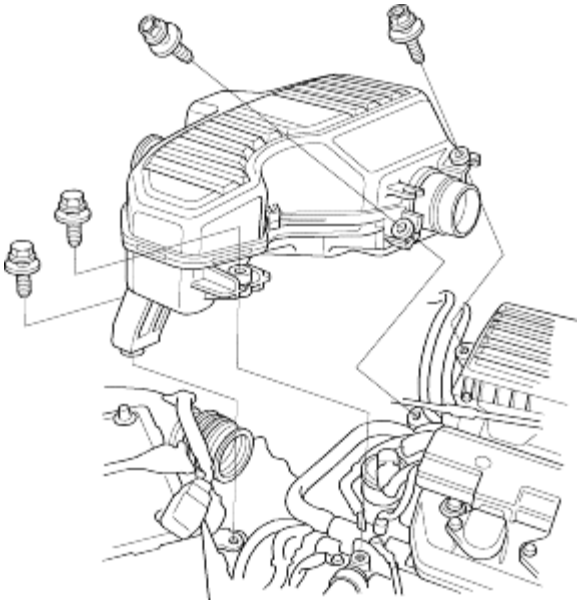
Engine Assembly

Engine Removal

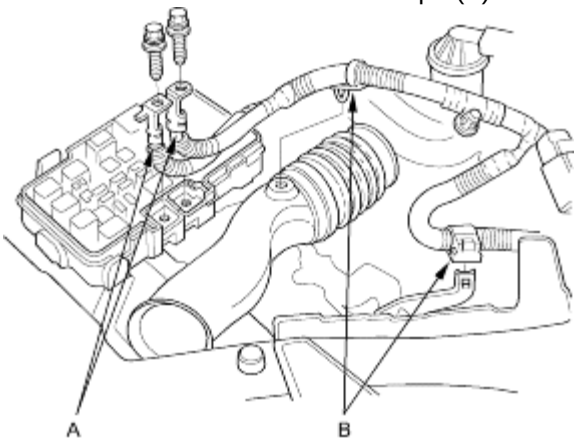
NOTE:

- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection.
- Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

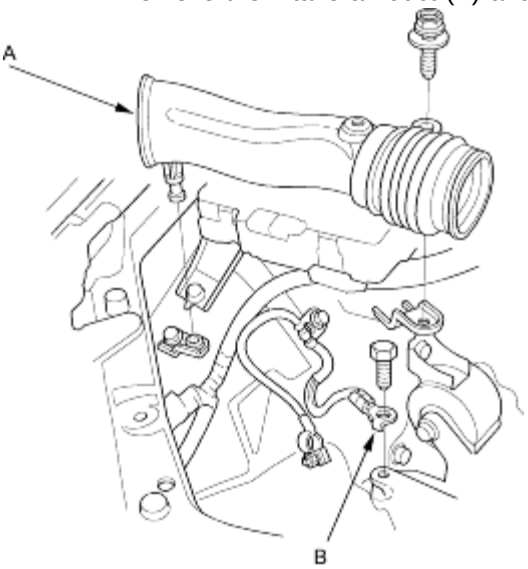
1. 1. Secure the hood in the wide open position (support rod in the lower hole).
   2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   3. Disconnect the battery negative terminal first, then the positive terminal.
   4. Remove the intake resonator.



1. 5. Remove the battery and battery base.
   6. Remove the battery cables (A) from the fuse box and remove the harness clamps (B).



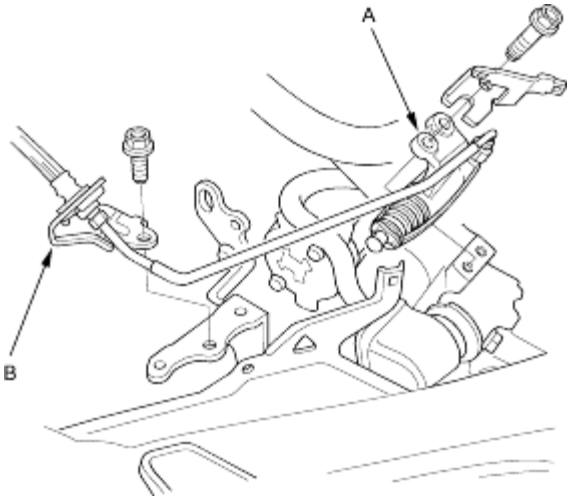
2. 7. Remove the intake air duct (A) and ground cable (B).



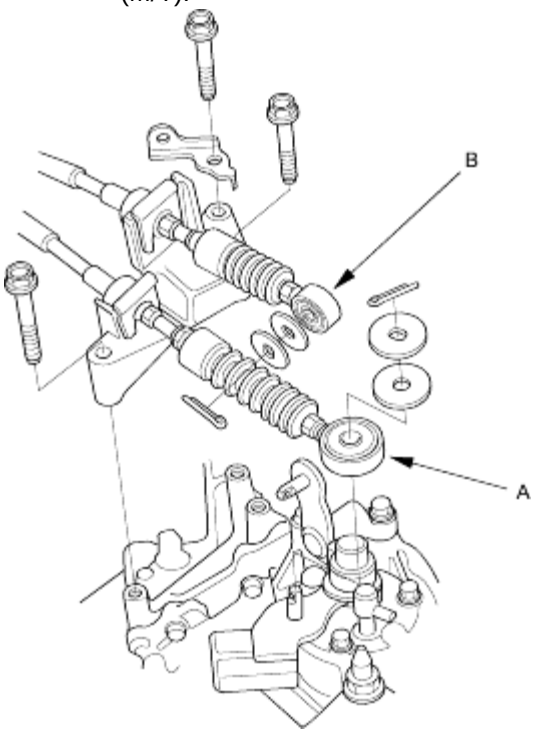
Engine Assembly

Engine Removal (cont'd)

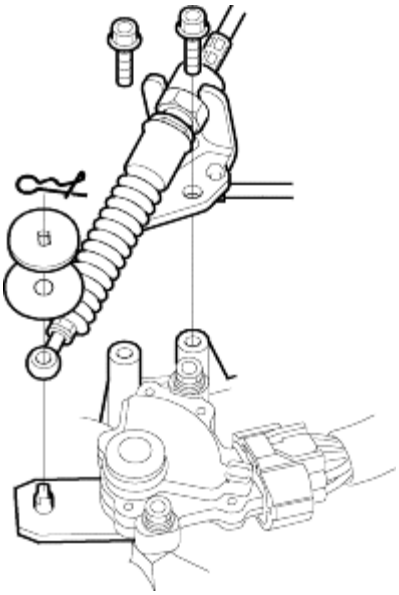
1. 8. Remove the clutch slave cylinder (A) and clutch line bracket mounting bolt (B) (M/T).



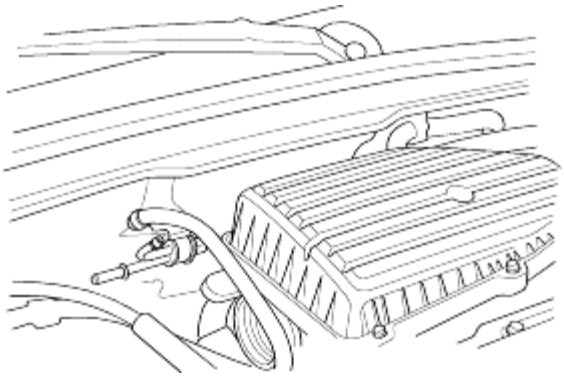
2. 9. Remove the shift cable (A) and select cable (B) (M/T).



1. 10. Remove the shift cable (Honda multi matic).



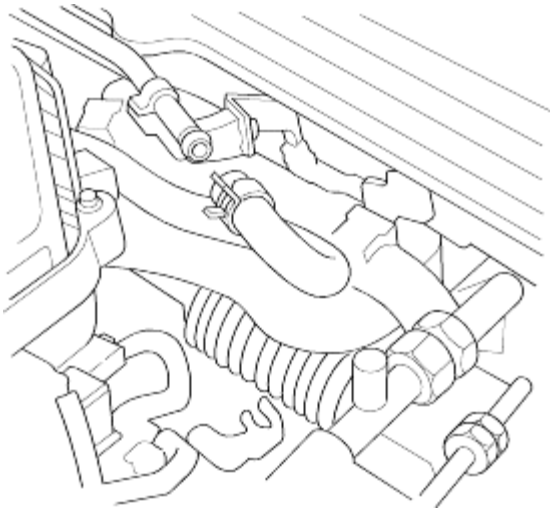
2. 11. Relieve fuel pressure, 4-door (see page 11-130), or 5-door (see page 11-430).
12. Remove the evaporative emission (EVAP) canister hose.



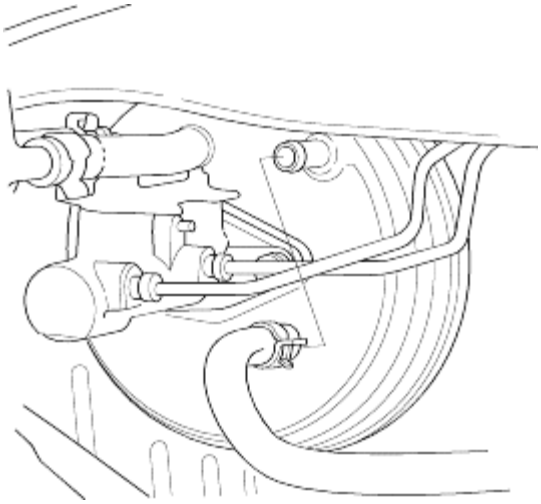
Engine Assembly
Engine Removal (cont'd)

1. 13. Remove the brake booster vacuum hose.

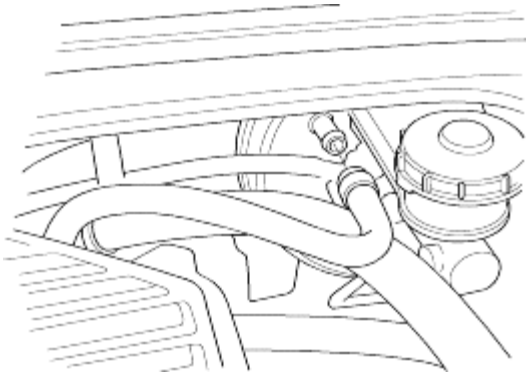
RHD models: (4-door)



RHD models: (5-door)

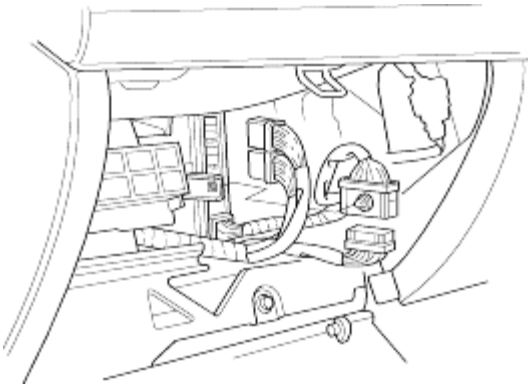


LHD models:

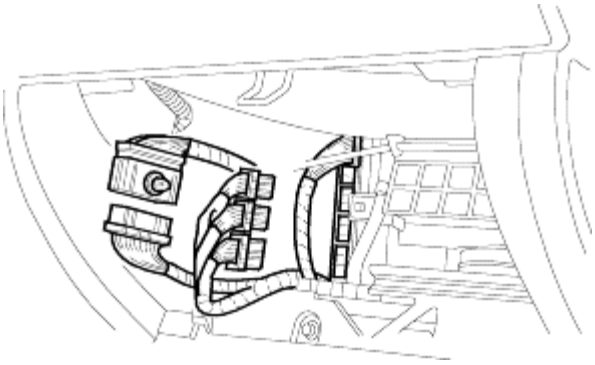


1. 14. Remove the glove box stops, then open the glove box.
15. Disconnect the engine control module (ECM)/powertrain control module (PCM) connectors.

RHD models:



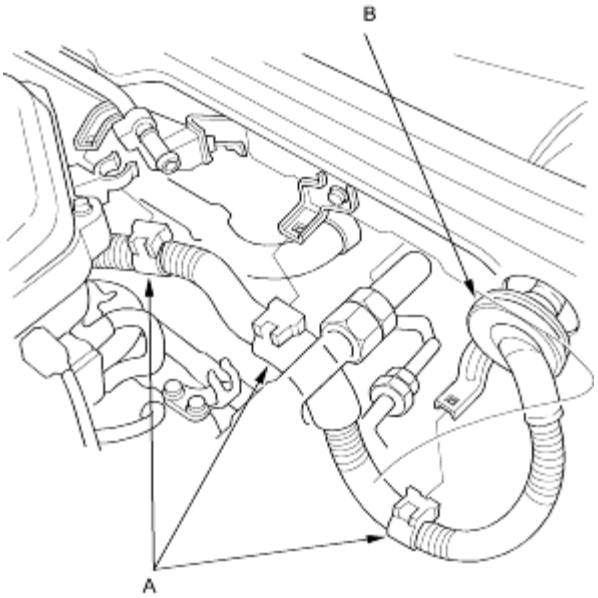
LHD models:



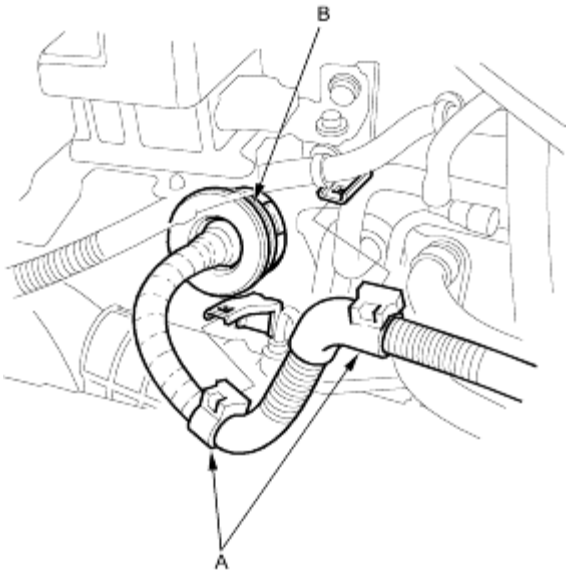
Engine Assembly
Engine Removal (cont'd)

1. 16. Remove the harness clamps (A) and grommet (B), then pull the engine wire harness through the bulkhead.

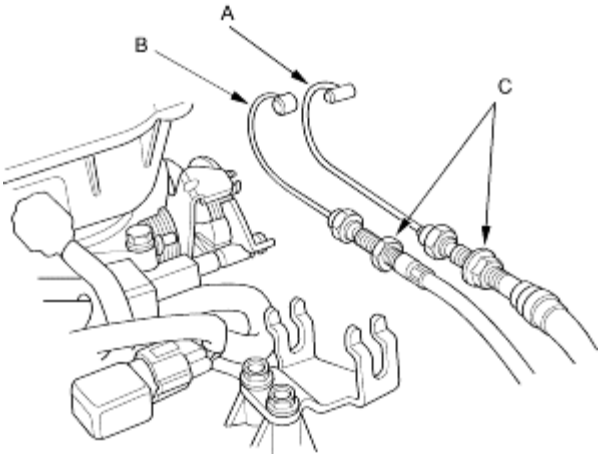
RHD models:



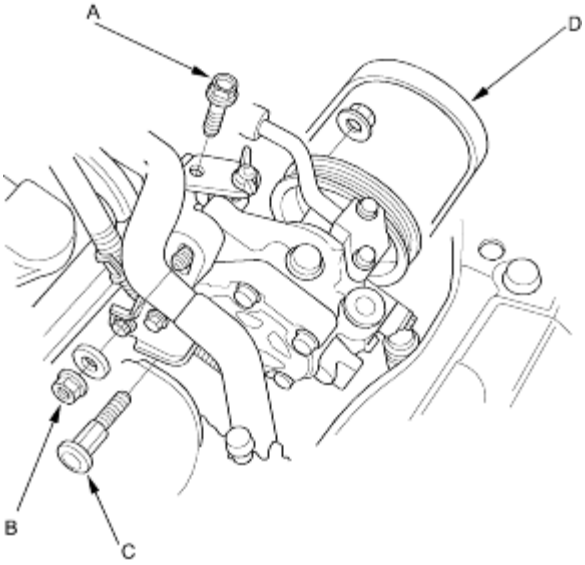
LHD models:



1. 17. Remove the throttle cable (A) and cruise control cable (B) by loosening the locknuts (C), then slipping the cable ends out of the accelerator linkage. Take care not to bend the cables when removing them. Always replace any kinked cable with a new one.

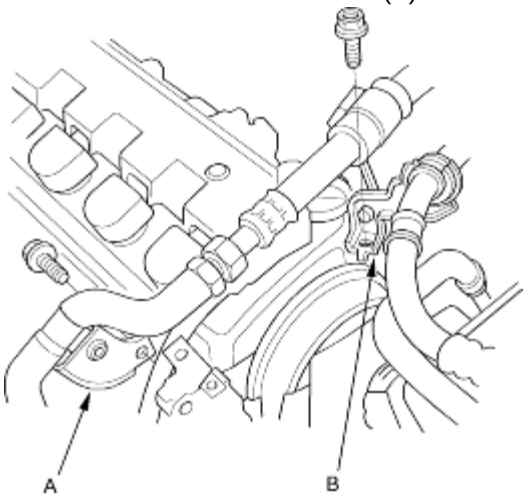


2. 18. Remove the adjust plate mounting bolt (A), lock nut (B) and mounting bolt (C), then remove the power steering (P/S) pump belt (D) and pump without disconnecting the P/S hoses (P/S).

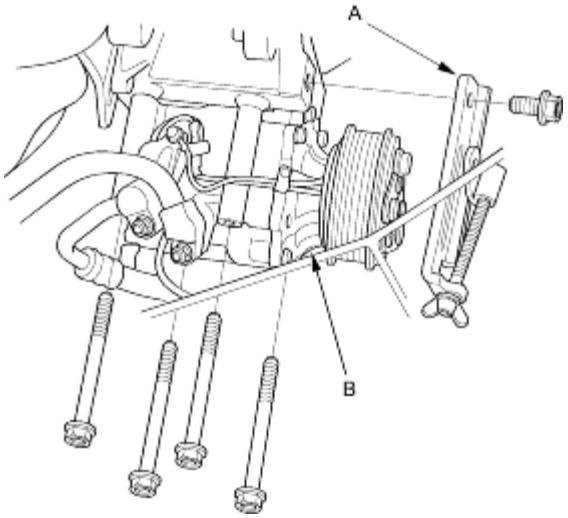


Engine Assembly
Engine Removal (cont'd)

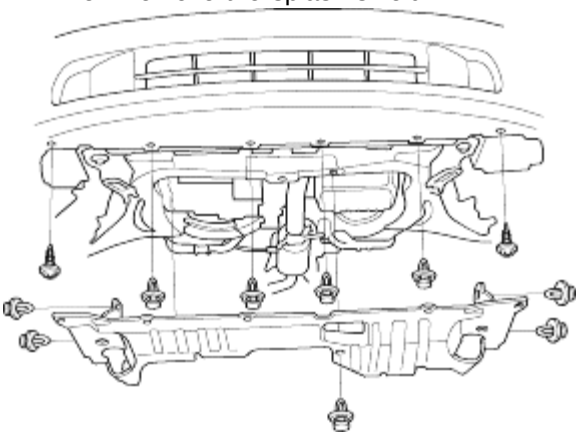
1. 19. Remove the alternator (see page 4-31).
2. 20. Remove the air conditioning (A/C) hose bracket (A) and P/S hose bracket (B).



3. 21. Remove the alternator lower bracket (A), then remove the A/C compressor (B) without disconnecting the A/C hoses.



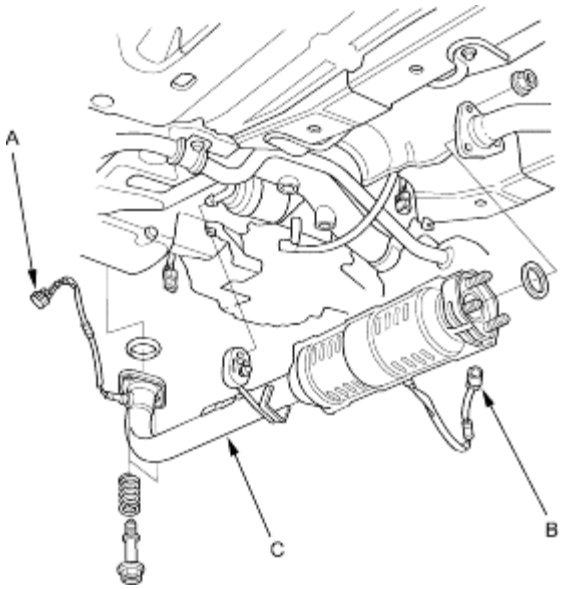
1. 22. Remove the radiator cap.
   23. Raise the hoist to full height.
   24. Remove the front tyres/wheels.
   25. Remove the splash shield.



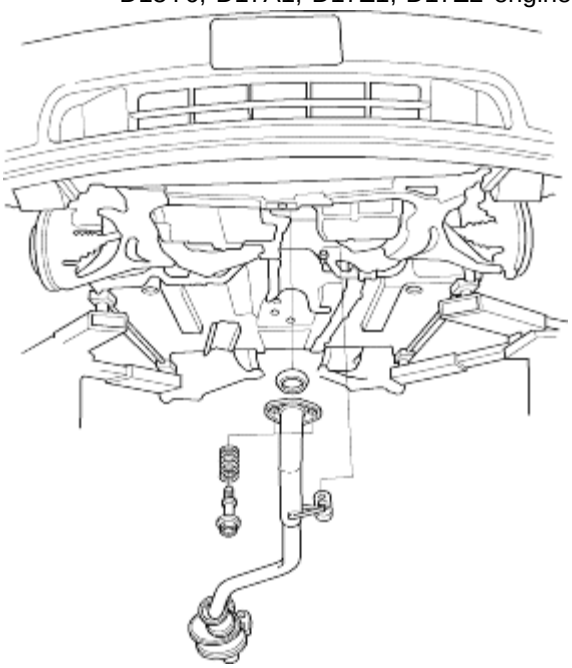
2. 26. Loosen the drain plug in the radiator, drain the engine coolant (see page 10-8).
   27. Drain the transmission fluid. Reinstall the drain plug using a new washer:
   - Manual transmission (see page 13-3).
   - Automatic transmission (see page 14-122).
   - Honda multi matic (see page 14-312).
3. 28. Drain the engine oil. Reinstall the drain bolt using a new washer (see page 8-5).

Engine Assembly
Engine Removal (cont'd)

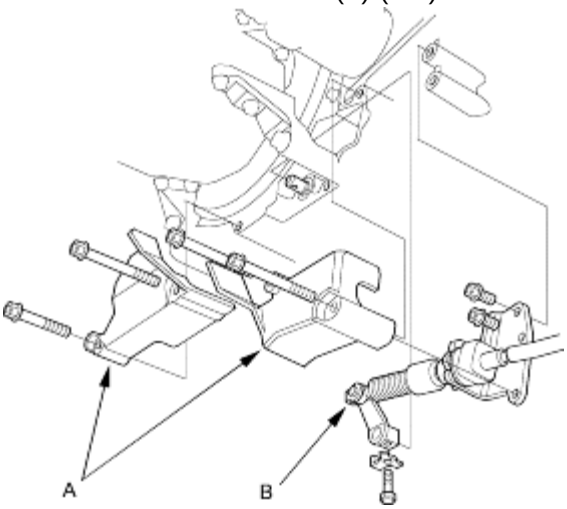
1. 29. Disconnect the primary heated oxygen sensor (primary HO2S) connector (A) (D14Z5, D15Y2, D15Y4, D16W7, D16W8, D17A2, D17Z3 engines).



2. 30. Disconnect the secondary heated oxygen sensor (secondary HO2S) connector (B) (D14Z5, D15Y4, D16W7, D17A2 engines).
   31. Remove exhaust pipe A (C) (D14Z5, D15Y2, D15Y3, D15Y4, D16V2, D16W7, D16W8, D17A2, D17A5, D17Z3 engines).
   32. Remove the exhaust pipe/muffler assembly (D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines).



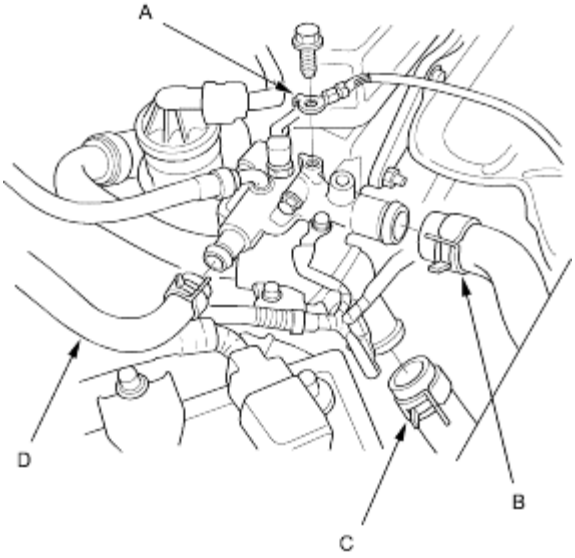
1. 33. Remove the shift cable covers (A), then remove the shift control cable (B) (A/T).



2. 34. Disconnect the suspension lower arm ball joints and stabiliser links (see page 18-18).
   35. Remove the driveshafts (see page 16-3). Coat all precision finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

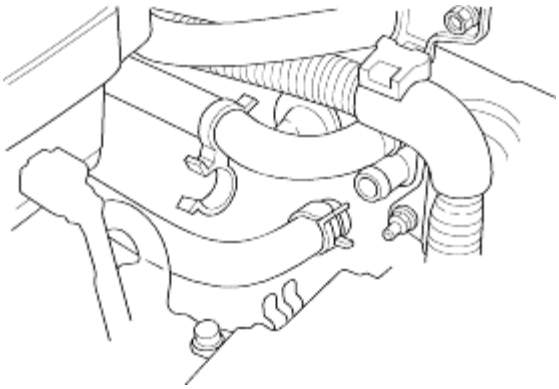
Engine Assembly
Engine Removal (cont'd)

1. 36. Lower the hoist.
2. 37. Remove the ground cable (A), upper radiator hose (B), lower radiator hose (C) and heater hose (D).

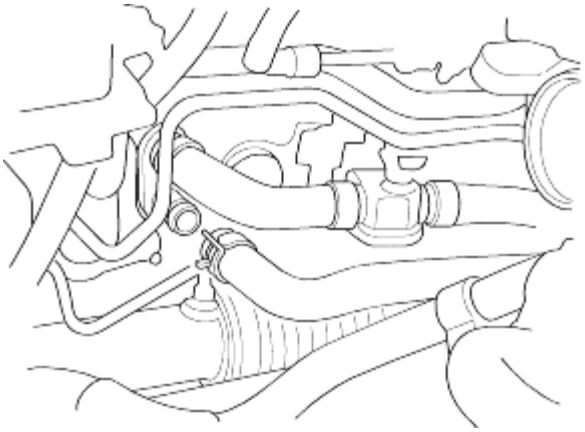


1. 38. Remove the heater hose.

RHD models:



LHD models:



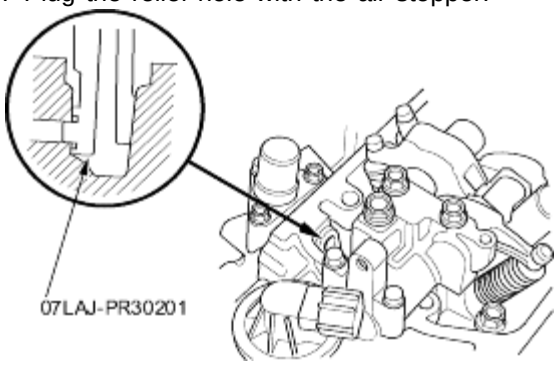
Cylinder Head

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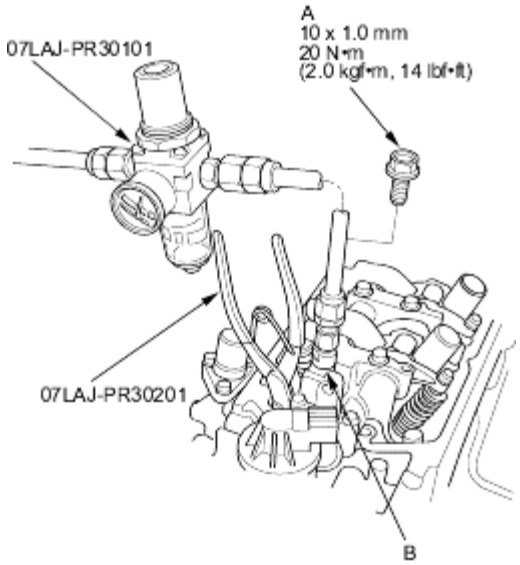
Cylinder Head

VTEC Rocker Arm Test (cont'd)

1. 8. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4 kgf/cm2, 57 psi).
2. 9. Inspect the valve clearance (see page 6-14).
   10. Cover the timing belt with a shop towel to protect the belt.
   11. Plug the relief hole with the air stopper.



3. 12. Remove the sealing bolt (A) from the inspection hole (B) and connect the valve inspection set.



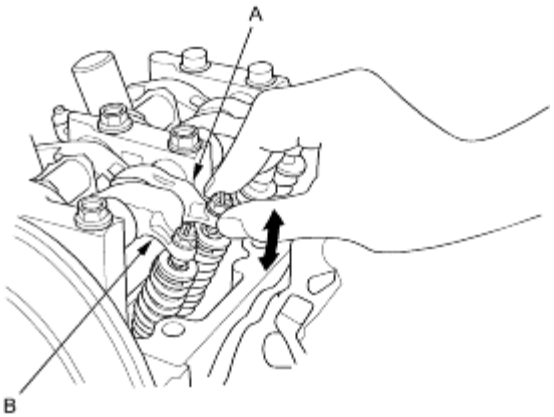
1. 13. Loosen the valve on the regulator and apply the specified air pressure:

   Specified Air Pressure:

   250 kPa (2.5 kgf/cm2, 36 psi)

   NOTE: If the synchronising piston does not move after applying air pressure, move the primary or secondary rocker arm up and down manually by rotating the crankshaft counter-clockwise.

2. 14. Move the intake secondary rocker arm (A) for the No. 1 cylinder. The primary rocker arm (B) and secondary rocker arm should move together.
   - If the intake primary rocker arm does not move, remove the primary and secondary rocker arms as an assembly and check that the piston in the secondary and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly and retest.

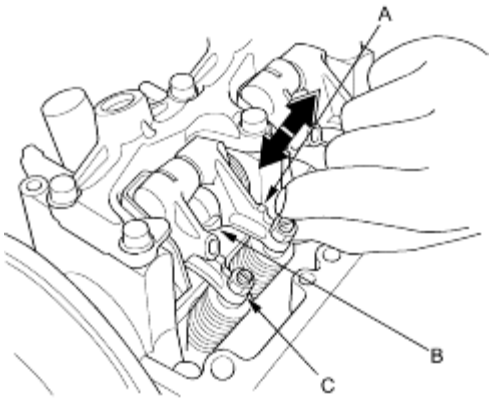


3. 15. Remove the special tools.
   16. After inspection, check that the MIL does not come on.

Cylinder Head
VTEC Rocker Arm Test (cont'd)

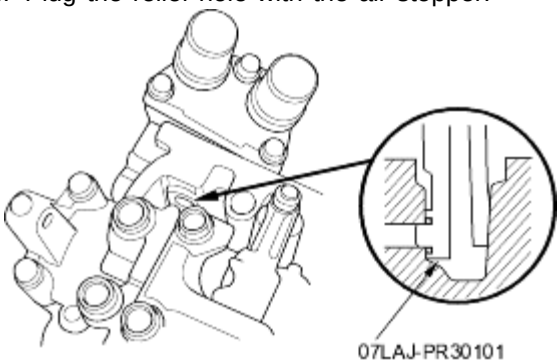
D16W8 engine:

1. 1. Remove the resonator (see step 5 on page 6-29).
   2. Remove the ignition coil cover, then remove the 4 ignition coils (see page 4-24).
   3. Remove the throttle cable clamps and harness holder from the cylinder head cover (see step 9 on page 6-19).
   4. Remove the cylinder head cover (see step 10 on page 6-19).
   5. Set the No. 1 piston at TDC (see step 3 on page 6-18).
   6. Move the intake secondary rocker arm (A) moves independently of the intake mid rocker arm (B) and intake primary rocker arm (C).
      - If the intake secondary rocker arm does not move, remove the mid, primary and secondary rocker arms as assembly and check that the pistons in the mid and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary and secondary rocker arms as an assembly and retest.
      - If the intake secondary rocker arm moves freely, go to step 7.

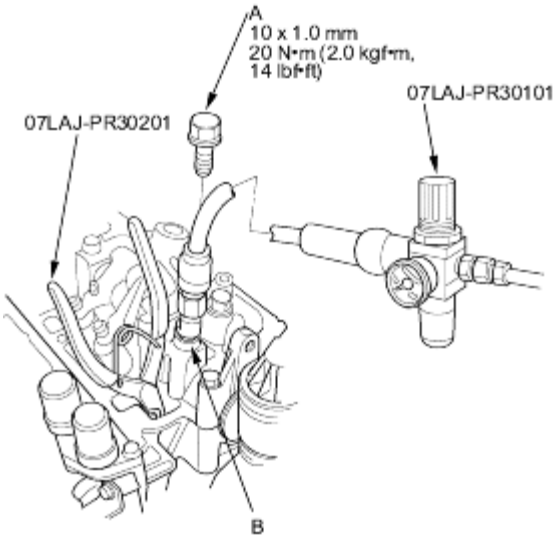


2. 7. Repeat step 6 on the remaining intake secondary rocker arms with each piston at TDC. when all the secondary rocker arms pass the test, go to step 8.

1. 8. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4 kgf/cm, 57 psi).
   9. Inspect the valve clearance (see page 6-14).
   10. Cover the timing belt with a shop towel to protect the belt.
   11. Plug the relief hole with the air stopper.



2. 12. Remove the sealing bolt (A) from the inspection hole A (B) and connect the valve inspection set.



Cylinder Head

VTEC Rocker Arm Test (cont'd)

1. 13. Loosen the valve on the regulator and apply the specified air pressure.

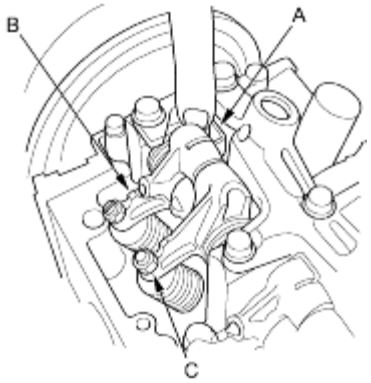
   Specified Air Pressure:

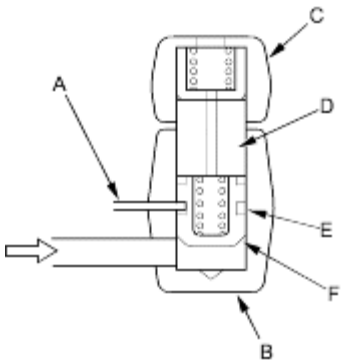
   250 kPa (2.5 kgf/cm2, 36 psi)

2. 14. With the specified air pressure applied, push up the timing plate (A); the synchronising piston will pop out and engage the intake primary rocker arm (B) and intake secondary rocker arm (C).

   NOTE:

   - The synchronising piston (D) can be seen in the gap between the secondary and primary rocker arms.
   - When the timing plate is engaged in the groove A (E) on the timing piston (F), the piston will be locked in the pushed out piston.

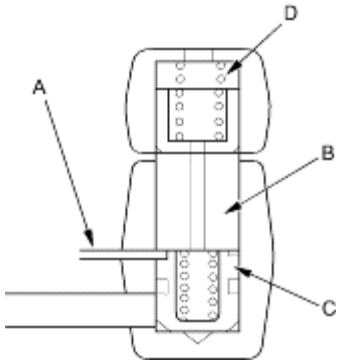




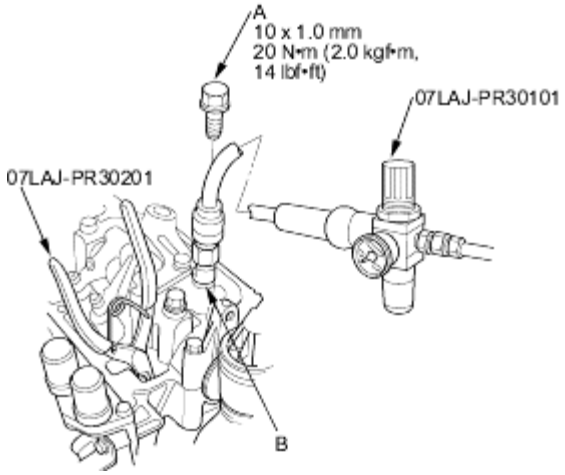
1. 15. Stop applying air pressure and push up the timing plate (A); the synchronising piston (B) will return to its original position with a click.

   Visually check the disengagement of the synchronising piston. Replace the intake rocker arms as an assembly if there is any abnormality.

   NOTE: When the timing plate is pushed up, it releases the timing piston (C), letting the return spring (D) move the synchronising piston to its original positions.



2. 16. Remove the valve inspection set from the inspection hole A, then tighten the sealing bolt.
   17. Remove the sealing bolt (A) from the inspection hole B (B) and connect the valve inspection set.



Cylinder Head

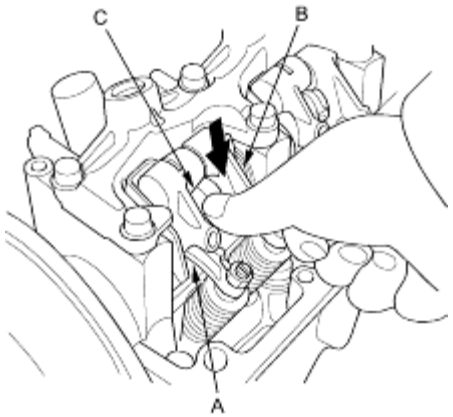
VTEC Rocker Arm Test (cont'd)

1. 18. Loosen the valve on the regulator and apply the specified air pressure.

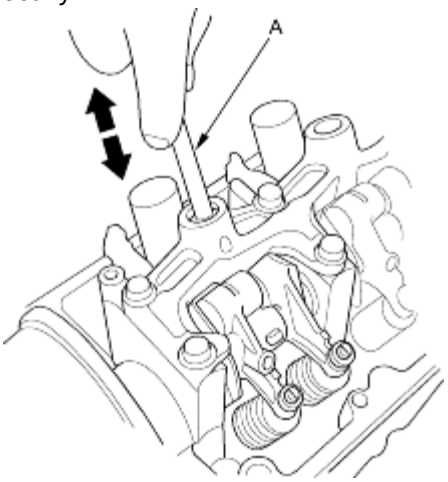
   Specified Air Pressure:

   250 kPa (2.5 kgf/cm2, 36 psi)

2. 19. Make sure that the intake primary rocker arm (A) and secondary rocker arm (B) are mechanically connected by piston and that the intake mid rocker arm (C) does not move when pushed manually. If any intake mid rocker arm moves independently of the intake primary and intake secondary rocker arms, replace the rocker arms as a set.



1. 20. Remove the special tools, then tighten the sealing bolt.
   21. Use a 10 mm (0.39 in.) diameter rod (A) to depress each lost motion assembly through its full movement, replace any lost motion assembly that does move smoothly.



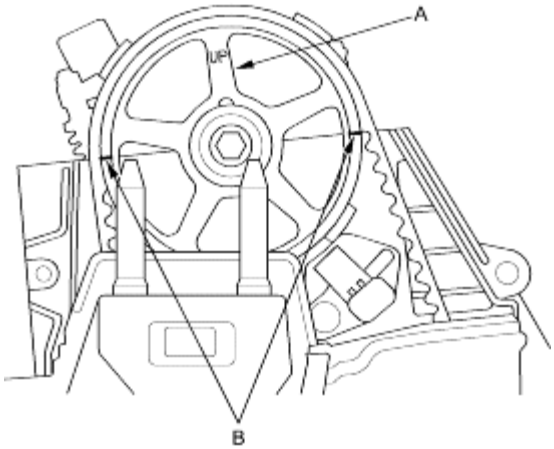
2. 22. After inspection, check that the MIL does not come on.

Cylinder Head

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 38°C (100°F).

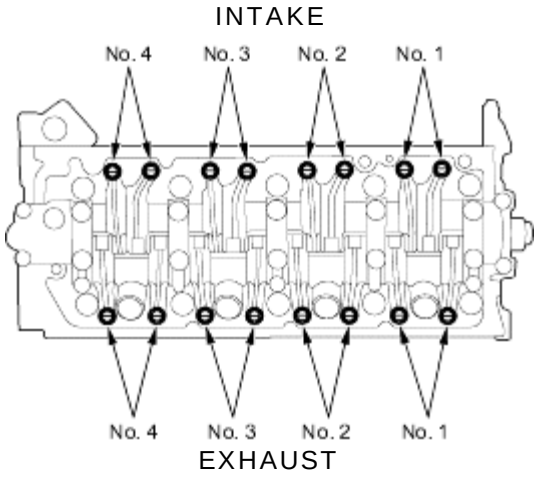
1. 1. Remove the ignition coil cover, then remove the four ignition coils (see page 4-25).
   2. Remove the throttle cable clamps and harness holder from the cylinder head cover (see step 9 on page 6-19).
   3. Remove the cylinder head cover (see step 10 on page 6-19).
   4. Remove the grommet from the upper cover and disconnect the TDC sensor connector. Remove the upper cover (see step 1 on page 6-57).
   5. Set the No. 1 piston at TDC. The "UP" mark (A) on the camshaft pulley should be at the top and the TDC marks (B) on the pulley should line up with the top edge of the head.



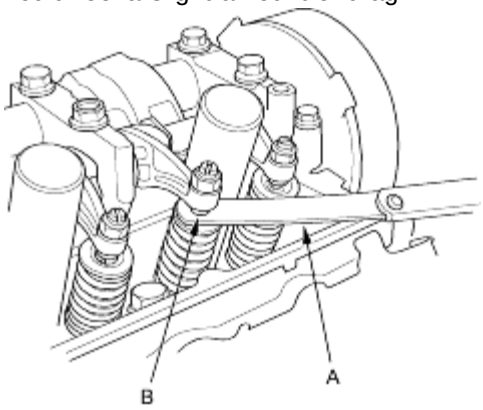
1. 6. Select the correct thickness feeler gauge for the valves you are going to check.

Intake:	0.18 - 0.22 mm (0.007 - 0.009 in.)
Exhaust:	0.23 - 0.27 mm (0.009 - 0.011 in.)

Adjusting screw location:



2. 7. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem and slide it back and forth; you should feel a slight amount of drag.

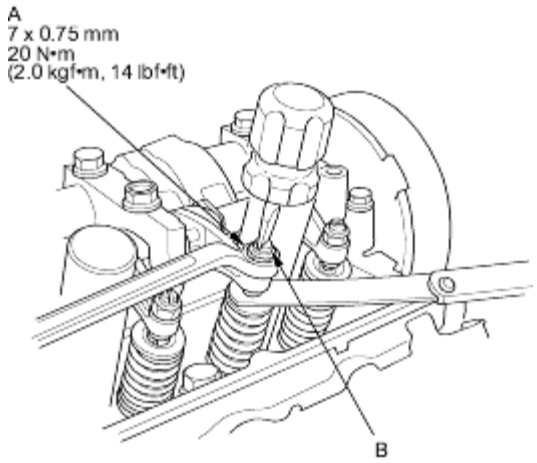


Cylinder Head

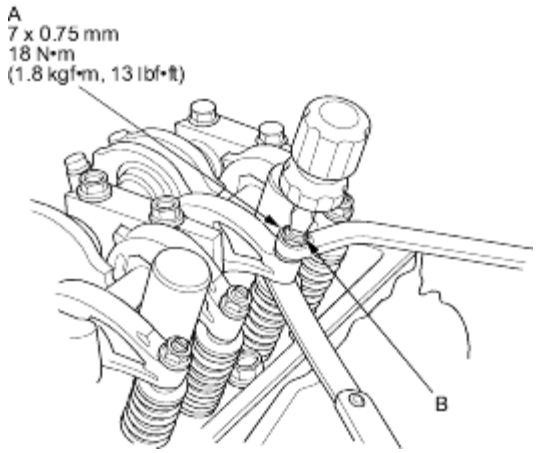
Valve Clearance Adjustment (cont'd)

1. 8. If you feel too much or too little drag, loosen the locknut (A) and turn the adjusting screw (B) until the drag on the feeler gauge is correct.

D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines:

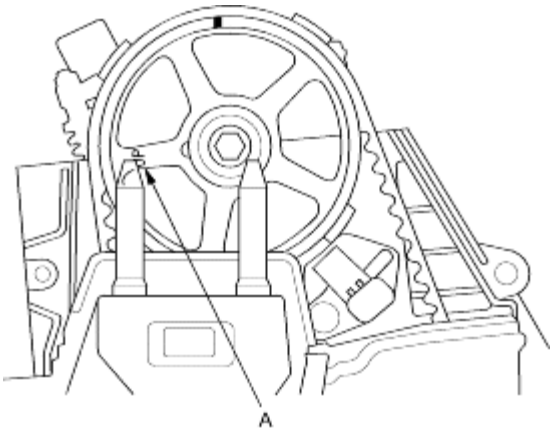


D14Z5, D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



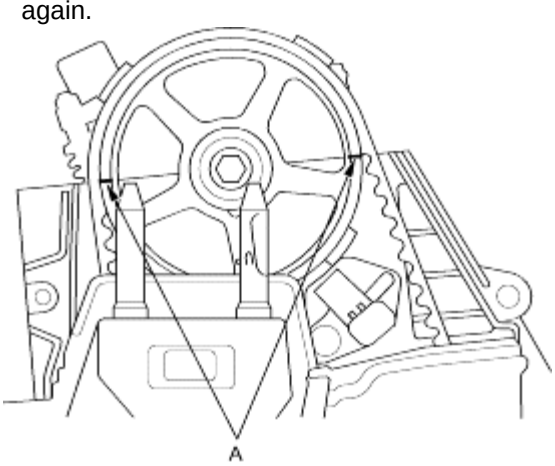
2. 9. Tighten the locknut and recheck the clearance. Repeat the adjustment if necessary.

1. 10. Rotate the crankshaft 180° counter-clockwise (camshaft pulley turns 90°). The "UP" mark (A) on the camshaft pulley should be toward the exhaust side of the head.



2. 11. Check and if necessary, adjust the valve clearance on No. 3 cylinder.

12. Rotate the crankshaft 180° counter-clockwise to bring No. 4 piston to TDC. TDC marks (A) are visible again.

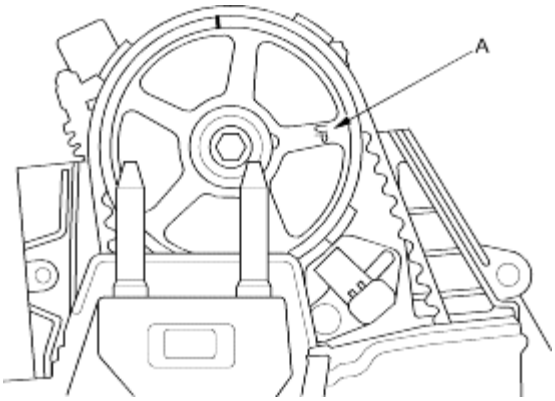


3. 13. Check and if necessary, adjust the valve clearance on No. 4 cylinder.

Cylinder Head

Valve Clearance Adjustment (cont'd)

1. 14. Rotate the crankshaft 180° counter-clockwise to bring No. 2 piston to TDC. The "UP" mark (A) should be on the intake side of the head.



2. 15. Check and if necessary, adjust the valve clearance on No. 2 cylinder.
16. Install the cylinder head cover (see page 6-55).

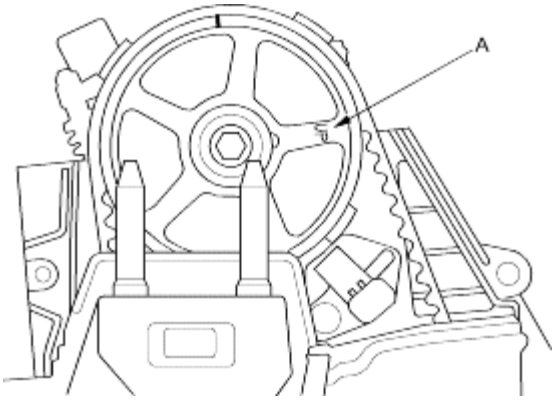
Special Tools Required

- Socket, 19 mm, 07JAA-001020A
- Handle, 07JAB-0010200
- Pulley holder attachment, HEX 50 mm, 07JAB-0010400
- Pulley holder attachment, HEX 50 mm, 07MAB-PY30100

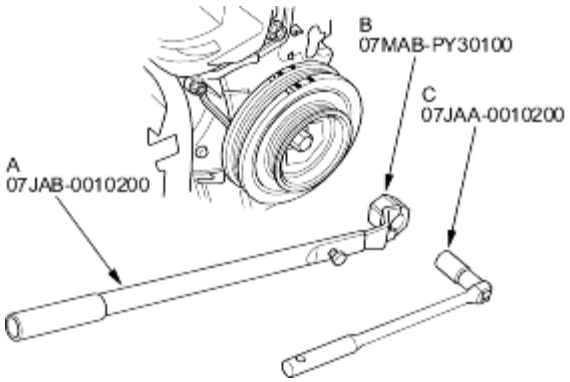
Removal

1. 1. Hold the pulley with holder handle (A) and holder attachment (B).

With P/S:



With EPS:



2. 2. Remove the bolt with a 19 mm socket (C) and breaker bar.

Cylinder Head

Crankshaft Pulley Removal and Installation (cont'd)

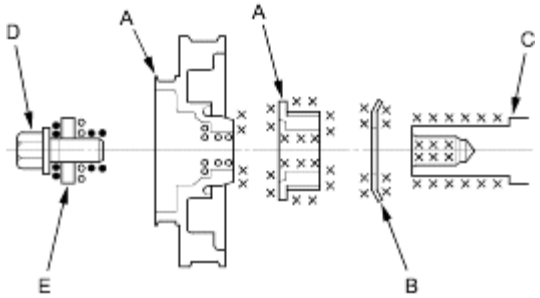
Installation

1. 1. Remove any oil from the pulleys (A), guide plate (B), crankshaft (C), bolt (D) and washer (E). Clean and lubricate as shown below.

O: Clean

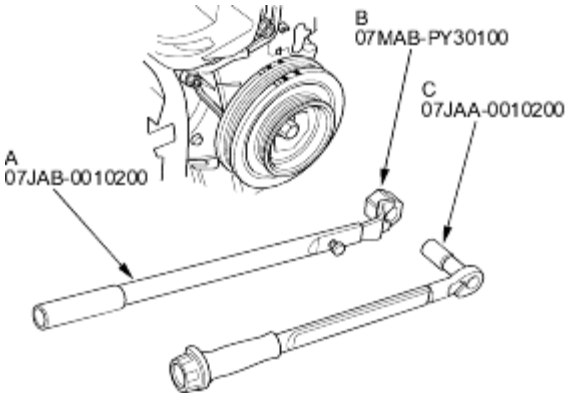
X: Remove any oil

●: Lubricate

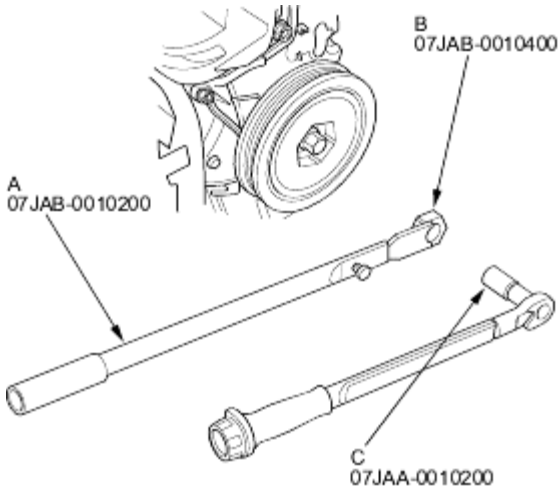


1. 2. Install the crankshaft pulley and hold the pulley with holder handle (A) and holder attachment (B).

With P/S:



With EPS:



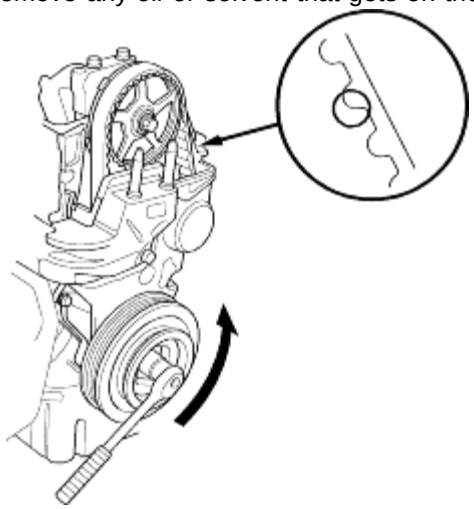
2. 3. Tighten the bolt to 20 Nm (2.0 kgf/m, 14 lbf/ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.

4. Tighten the pulley bolt an additional 90°.

Cylinder Head

Timing Belt Inspection

1. 1. Remove the ignition coil cover, then remove the four ignition coils.
2. 2. Remove the throttle cable clamps and harness holder mounting bolts.
   3. Remove the cylinder head cover.
   4. Inspect the timing belt for cracks and oil or coolant soaking. Replace the belt if it is oil or coolant soaked. Remove any oil or solvent that gets on the belt.



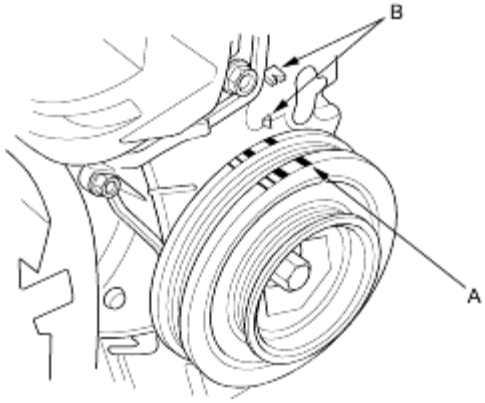
3. 5. After inspecting, retorque the crankshaft pulley bolt (see page 6-17).

Timing Belt Removal

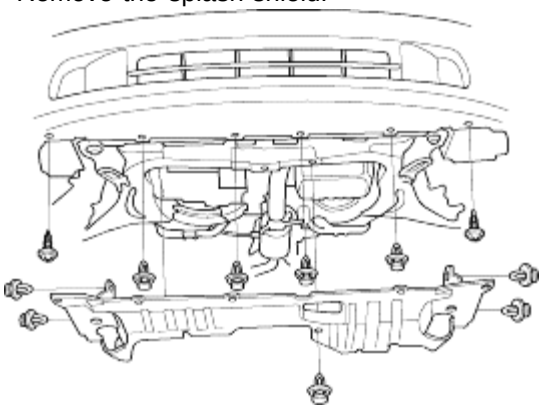
Special Tools Required

- Socket, 19 mm, 07JAA-001020A
- Handle, 07JAB-0010200
- Pulley holder attachment, HEX 50 mm, 07JAB-0010400
- Pulley holder attachment, HEX 50 mm, 07MAB-PY30100

1. 1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
   2. Disconnect the battery negative terminal.
   3. Turn the crankshaft pulley so its TDC mark (A) lines up with the pointers (B).



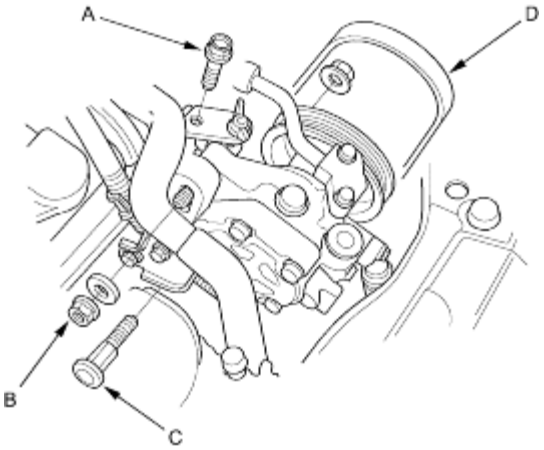
2. 4. Remove the front tyres/wheels.
   5. Remove the splash shield.



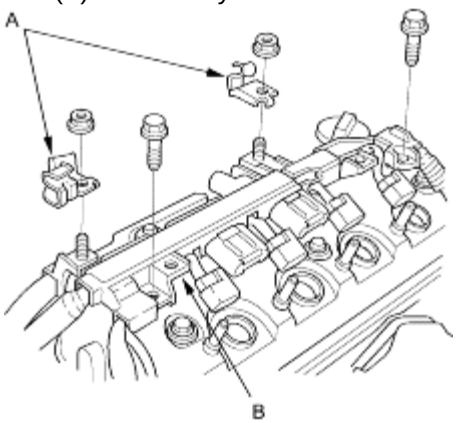
Cylinder Head

Timing Belt Removal (cont'd)

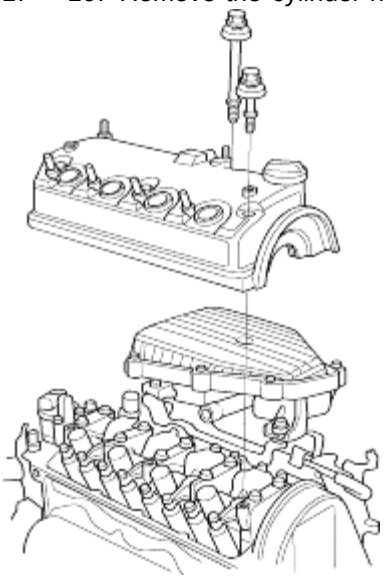
1. 6. Remove the adjust plate mounting bolt (A), locknut (B) and mounting bolt (C), then remove the power steering (P/S) pump belt (D) and pump without disconnecting the P/S hoses.



2. 7. Remove the alternator (see page 4-32).
   8. Remove the four ignition coils (see page 4-24).
   9. Remove the throttle cable clamps (A) and harness holder (B) from the cylinder head cover.

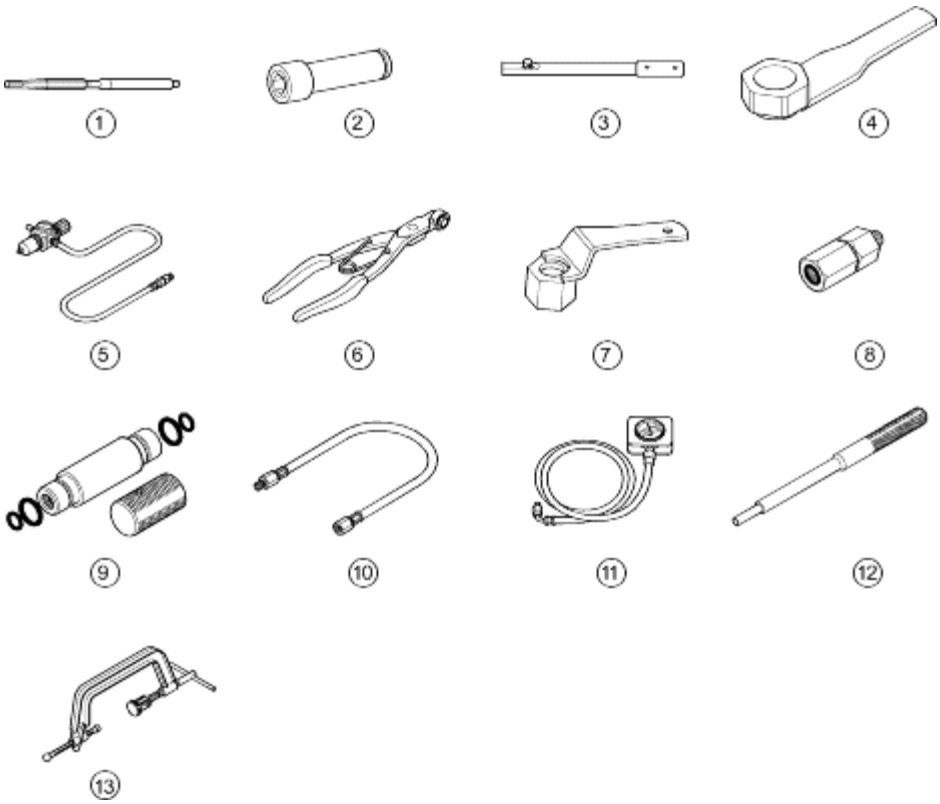


1. 10. Remove the cylinder head cover.



Cylinder Head
Special Tools

Ref. No	Tool Number	Description	Qty
1	07HAH-PJ70100	Valve Guide Reamer, 5.525 mm	1
2	07JAA-0010200	Socket Wrench, 19 mm	1
3	07JAB-0010200	Handle	1
4	07JAB-0010400	Pulley Holder Attachment, HEX 50 mm	1
5	07LAJ-PR30101	Valve Inspection Set	1
6	07LAJ-PR30201	Air Stopper	1
7	07MAB-PY30100	Pulley Holder Attachment, HEX 50 mm	1
8	07NAJ-P070100	Oil Pressure Gauge Attachment	1
9	07PAD-0010000	Stem Seal Driver	1
10	07ZAJ-S5A0200	Hose, Oil Pressure	1
11	07406-0070001	Low Pressure Gauge	1
12	07742-0010100	Valve Guide Driver, 5.5 mm	1
13	07757-0010000	Valve Spring Compressor	1

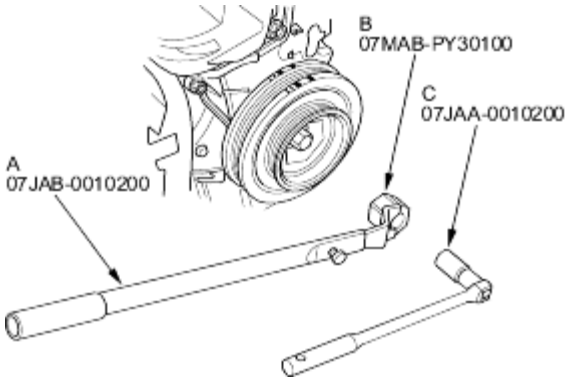


Cylinder Head

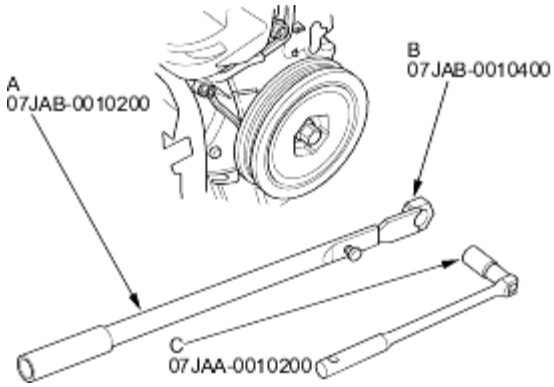
Timing Belt Removal (cont'd)

1. 11. Hold the pulley with holder handle (A) and holder attachment (B).

With P/S

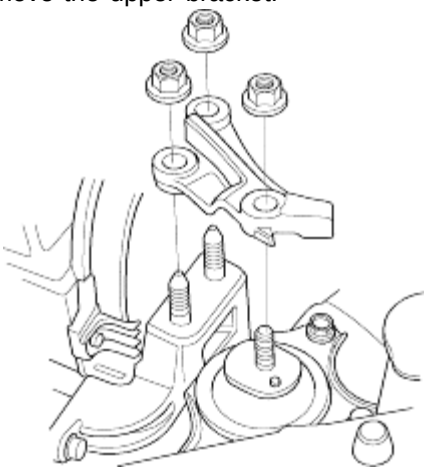


With EPS

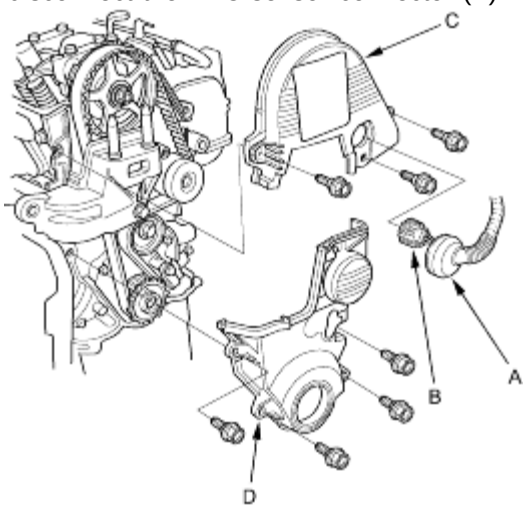


2. 12. Remove the bolt with a 19 mm socket (C) and breaker bar.

1. 13. Support the engine with a jack and wood block under the oil pan.
   14. Remove the upper bracket.



2. 15. Remove the grommet (A) from the upper cover and disconnect the TDC sensor connector (B).

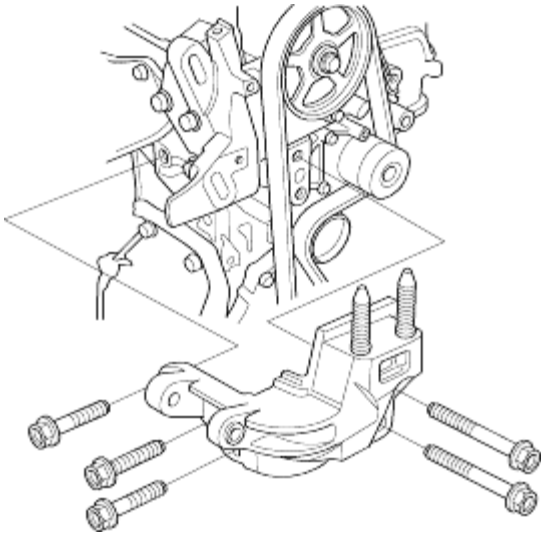


3. 16. Remove the upper cover (C) and lower cover (D).

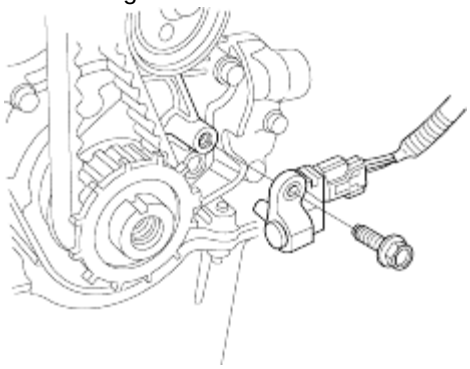
Cylinder Head

Timing Belt Removal (cont'd)

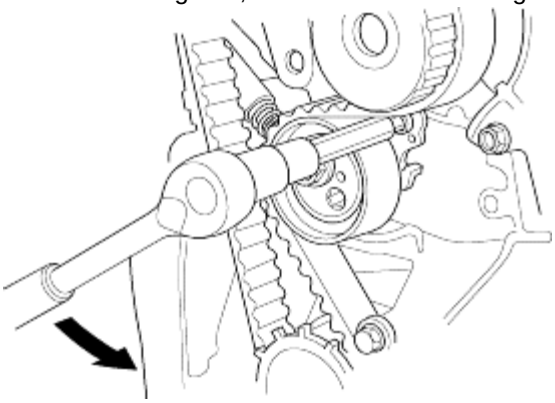
1. 17. Remove the side engine mount bracket.



2. 18. Remove the CKP sensor from the oil pump without disconnecting the connector.



1. 19. Move the auto-tensioner to remove tension from the timing belt, then remove the timing belt.



Cylinder Head

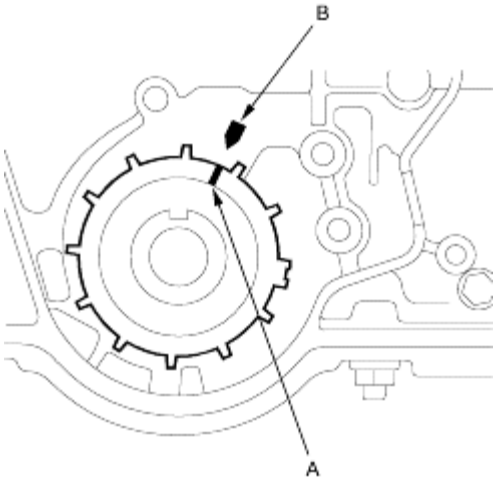
Timing Belt Installation

Special Tools Required

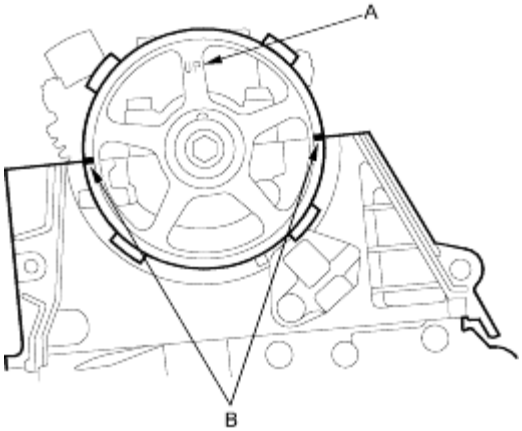
- Socket, 19 mm, 07JAA-001020A
- Handle, 07JAB-0010200
- Pulley holder attachment, HEX 50 mm, 07JAB-0010400
- Pulley holder attachment, HEX 50 mm, 07MAB-PY30100

NOTE: If you are removing the auto-tensioner, refer to the auto-tensioner installation procedure.

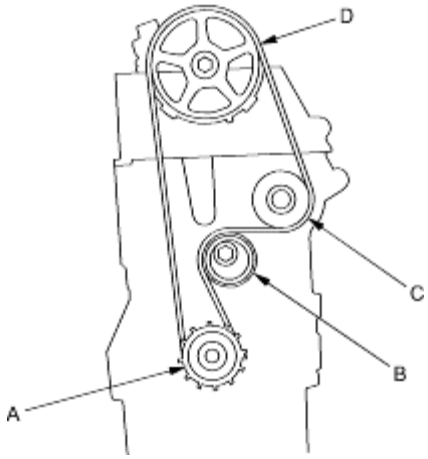
1. 1. Clean the timing belt pulleys and the upper and lower covers.
   2. Set the crankshaft to TDC. Align the TDC mark (A) on the timing belt drive pulley with the pointer (B) on the oil pump.



1. 3. Clean the camshaft pulley and set it to TDC.
      1. The "UP" mark (A) on the camshaft pulley should be at the top.
      2. Align the TDC marks (B) on the camshaft pulley with the top edge of the head.



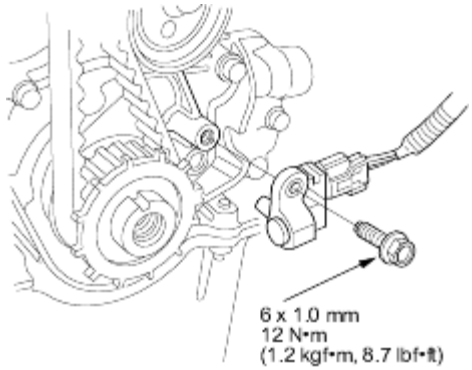
2. 4. Install the timing belt in a counter-clockwise sequence, starting with the drive pulley.
      1. Drive pulley (A).
      2. Tensioner pulley (B).
      3. Water pump pulley (C).
      4. Camshaft pulley (D).



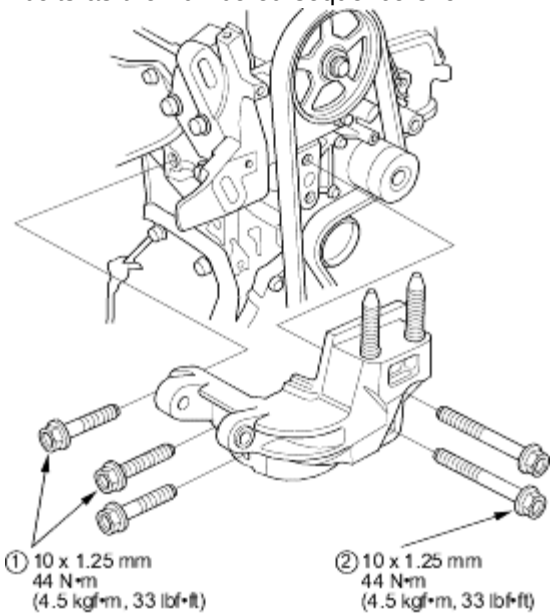
Cylinder Head

Timing Belt Installation (cont'd)

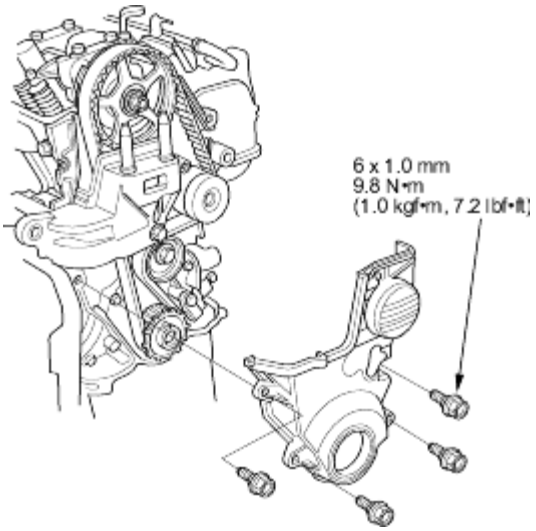
1. 5. Install the CKP sensor.



2. 6. Install the all bolts loosely, then tighten the mounting bolts as the numbered sequence shown.



1. 7. Install the lower cover.

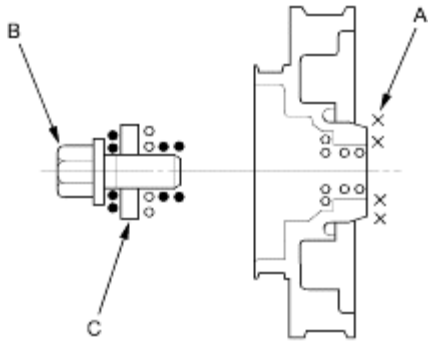


2. 8. Clean the pulley bolt and washer.
   9. Clean all oil off the inside face (A) of the crankshaft pulley and apply lubricant to the pulley bolt (B) and washer (C).

O: Clean

X: Remove any oil

●: Lubricate

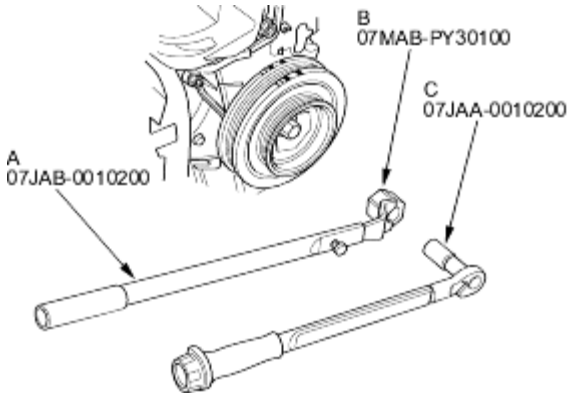


Cylinder Head

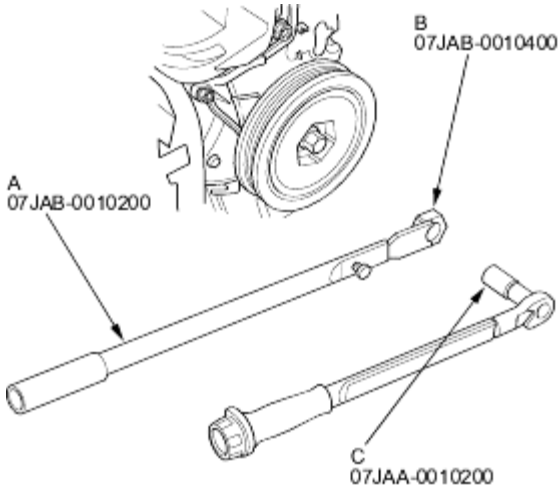
Timing Belt Installation (cont'd)

1. 10. Install the crankshaft pulley and hold the pulley with holder handle (A) and holder attachment (B).

With P/S:

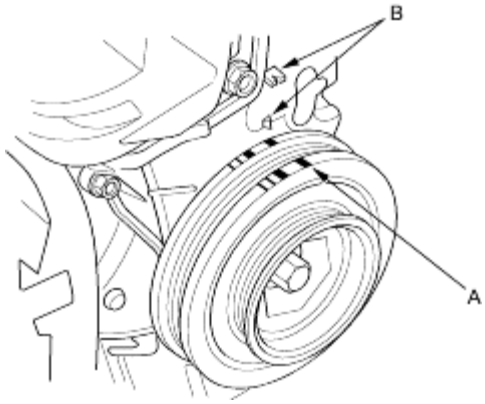


With EPS:

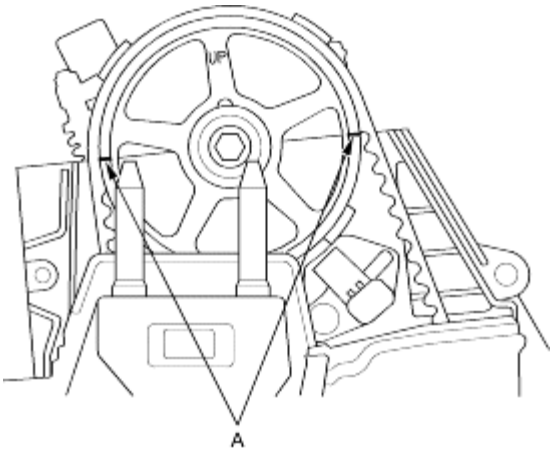


2. 11. Tighten the bolt to 20 Nm (2.0 kgf/m, 14 lbf/ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.
   12. Tighten the pulley bolt an additional 90°.

1. 13. Rotate the crankshaft pulley about 5 or 6 turns counter-clockwise so that the timing belt positions on the pulleys.
   14. Turn the crankshaft pulley so its TDC mark (A) lines up with the pointers (B).

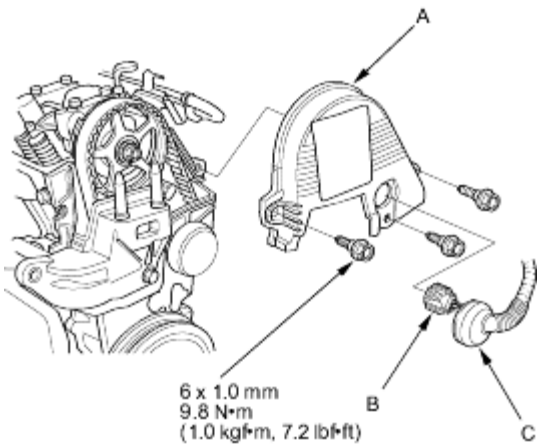


2. 15. Check the camshaft pulley marks (A)
   - If the camshaft pulley marks are also at TDC, go to step 16.
   - If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 12.

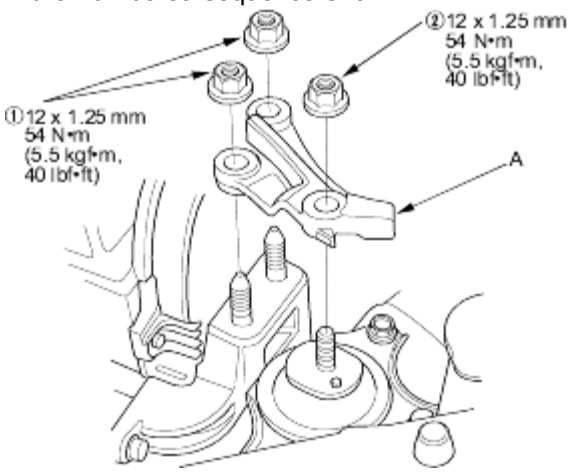


Cylinder Head
Timing Belt Installation (cont'd)

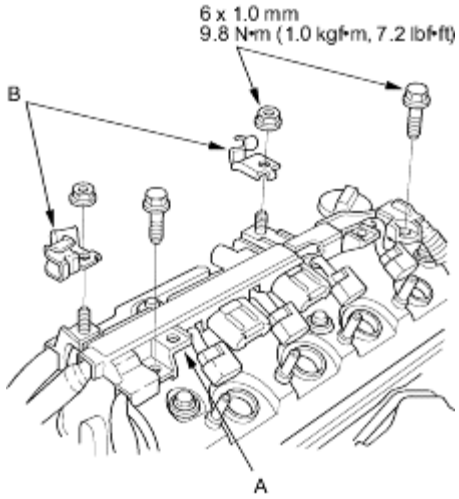
1. 16. Install the upper cover (A), then connect the TDC sensor connector (B) and install the grommet (C).



2. 17. Install the upper bracket (A), then tighten the nuts in the numbered sequence shown.



1. 18. Install the cylinder head cover (see page 6-55).
19. Install the harness holder (A) and throttle cable clamps (B).



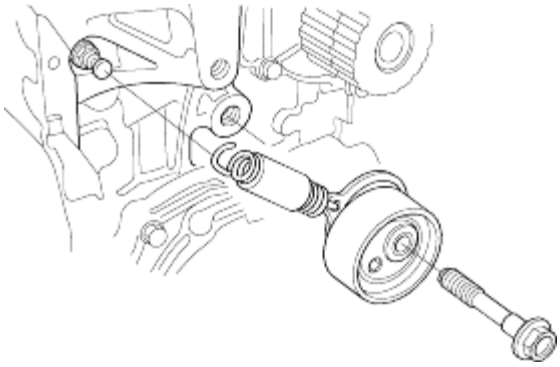
2. 20. Loosely install the alternator.
21. Adjust the alternator belt tension (see page 4-38) or the alternator-compressor belt tension (see page 4-37).
22. Loosely install the P/S pump belt and pump.
23. Adjust the P/S pump belt (see page 17-23).
24. Install the splash shield.
25. Install the front tyres/wheels.
26. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
27. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Cylinder Head

Auto-Tensioner Removal/Installation

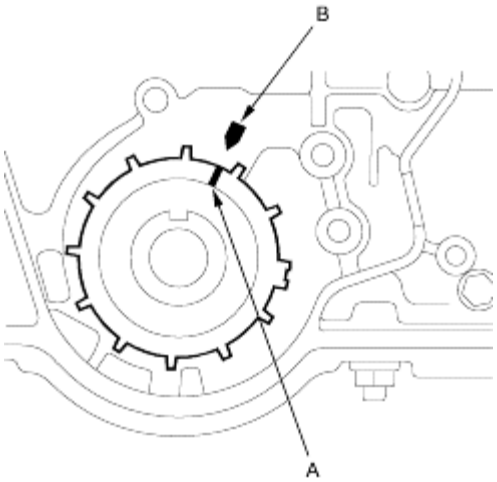
Removal:

1. 1. Remove the timing belt (see page 6-18).
   2. Remove the auto-tensioner.

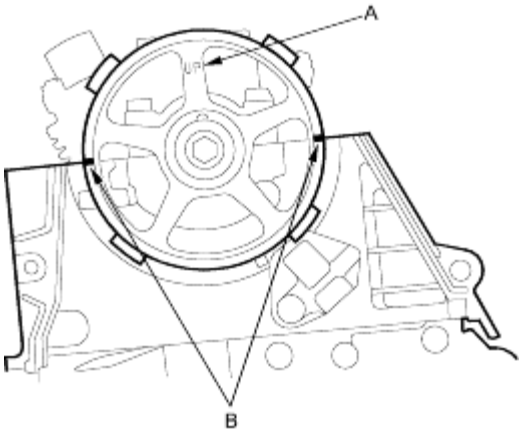


Installation:

1. 1. Clean the timing belt pulleys and the upper and lower covers.
   2. Set the crankshaft to TDC. Align the TDC mark (A) on the timing belt drive pulley with the pointer (B) on the oil pump.



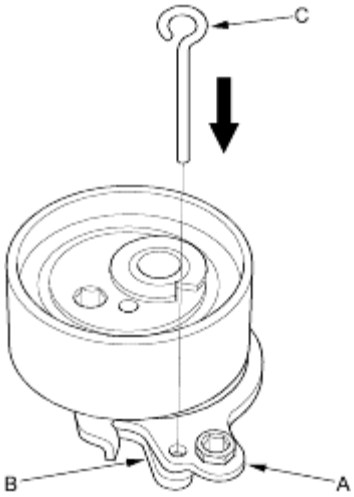
2. 3. Clean the camshaft pulley and set it to TDC.
      1. The "UP" mark (A) on the camshaft pulley should be at the top.
      2. Align the TDC marks (B) on the camshaft pulley with the top edge of the head.



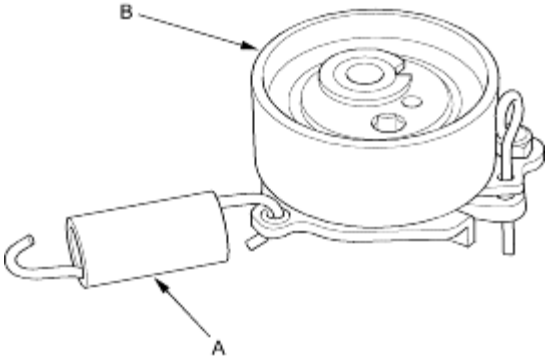
Cylinder Head

Auto-Tensioner Removal/Installation (cont'd)

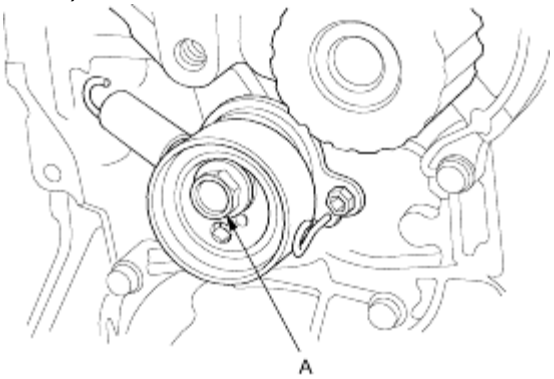
1. 4. Align the holes on the tensioner pulley (A) and tensioner base (B), then insert 3.0 mm (0.12 in.) diameter pin (C) into the holes.



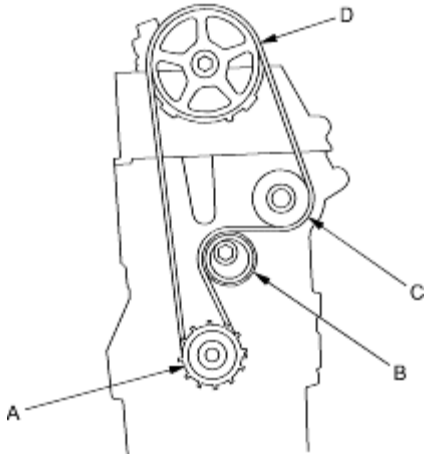
2. 5. Install the tensioner spring (A) on the auto-tensioner (B).



1. 6. Install the auto-tensioner, then tighten the auto-tensioner mounting bolt (A) to 9.8 Nm (1.0 kgf/m, 7.2 lbf/ft).



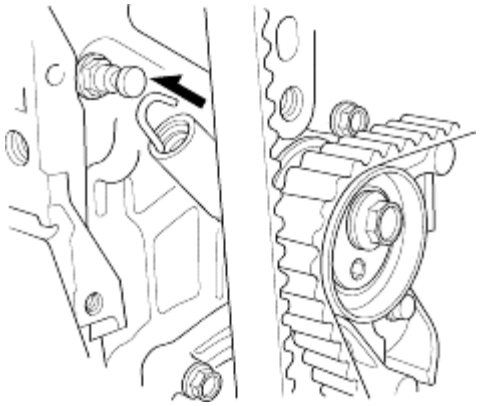
2. 7. Loosen the auto-tensioner mounting bolt 180°.
8. Install the timing belt in a counter-clockwise sequence, starting with the drive pulley.
   1. Drive pulley (A).
   2. Tensioner pulley (B).
   3. Water pump pulley (C).
   4. Camshaft pulley (D).



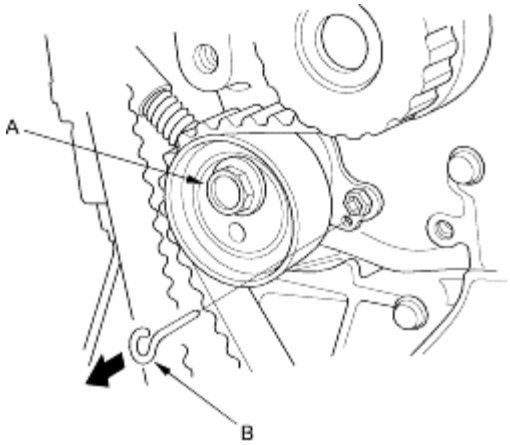
Cylinder Head

Auto-Tensioner Removal/Installation (cont'd)

9. Install the tensioner spring on the tensioner bolt.



10. Rotate the crankshaft pulley 2 turns counter-clockwise so that the timing belt positions on the pulleys.
11. Set the No. 1 piston at TDC.
12. Tighten the auto-tensioner mounting bolt (A) to 44 Nm (4.5 kgf/m, 33 lbf/ft), then remove the pin (B) from the auto-tensioner.

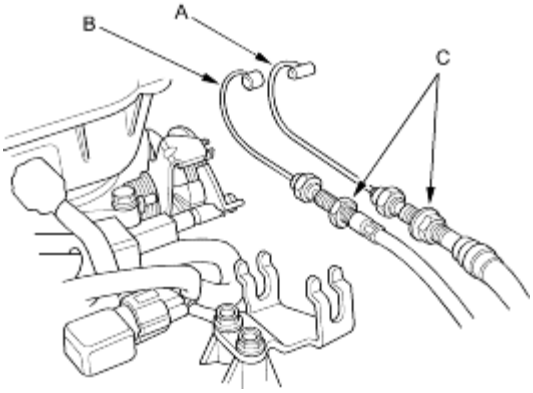


13. Install the remaining parts.

NOTE:

- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 38°C (100°F) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

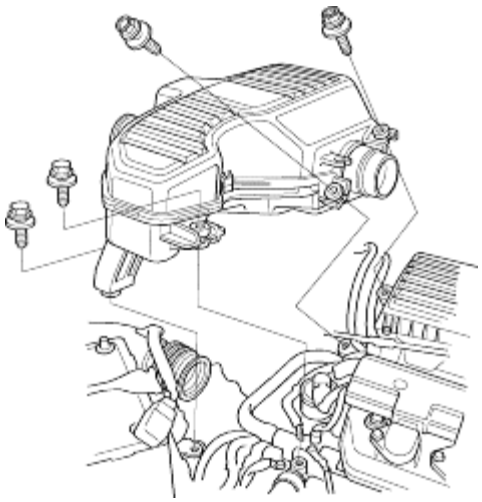
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative terminal.
3. Drain the engine coolant (see page 10-8).
4. Remove the throttle cable (A) and cruise control cable (B) by loosening the locknuts (C), then slipping the cable ends out of the accelerator linkage. Take care not to bend the cables when removing them. Always replace any kinked cable with a new one.



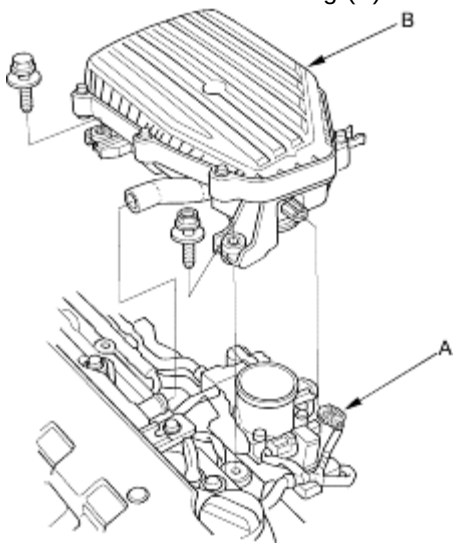
Cylinder Head

Cylinder Head Removal (cont'd)

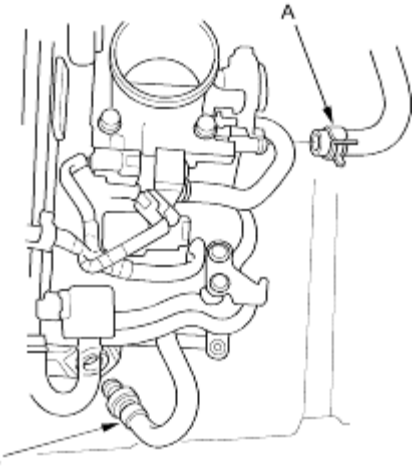
1. 5. Remove the intake resonator.



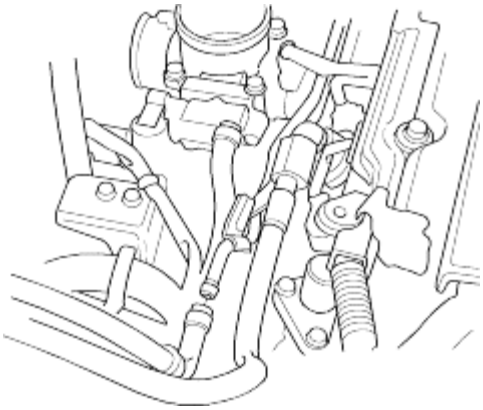
2. 6. Disconnect the intake air temperature (IAT) sensor connector (A) and remove the breather hose, then remove the air cleaner housing (B).



1. 7. Remove the brake booster vacuum hose (A) and positive crankcase ventilation (PCV) hose (B).

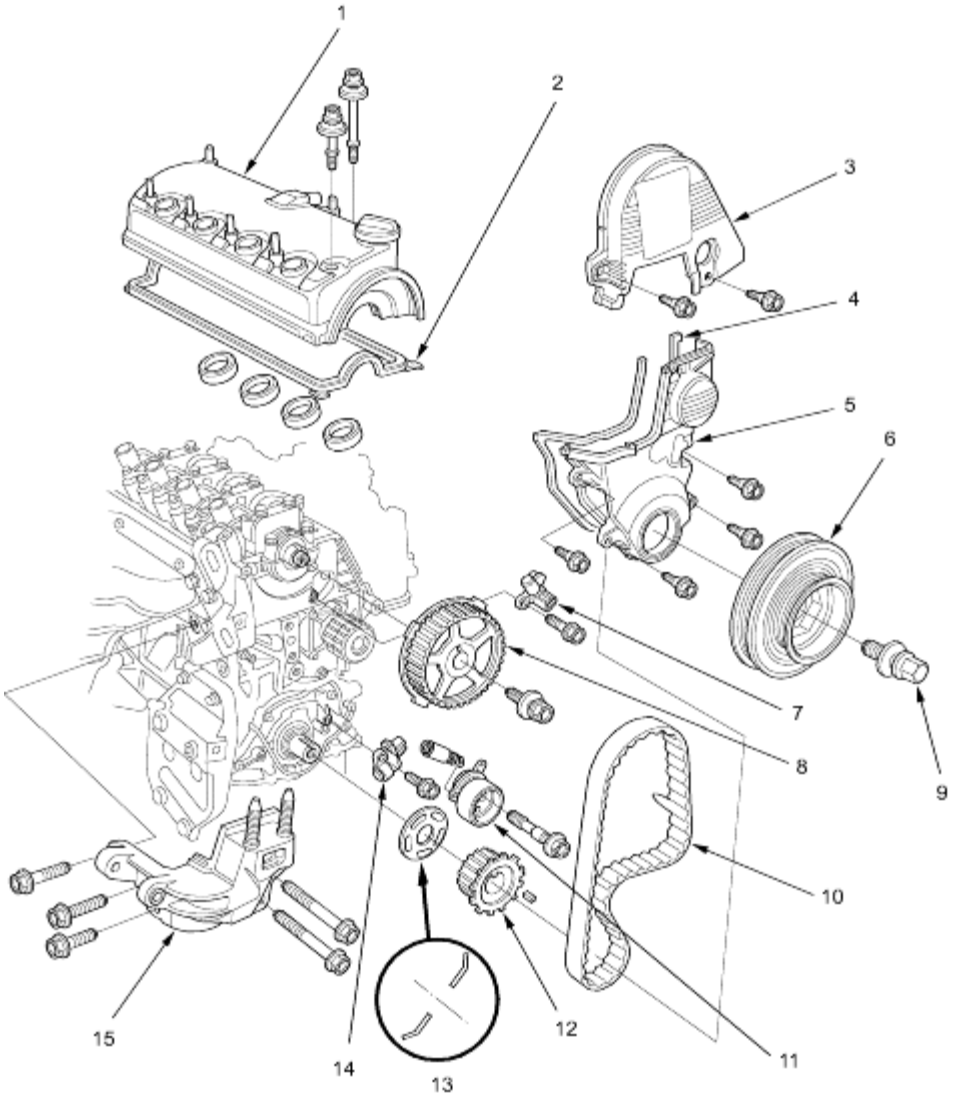


2. 8. Relieve fuel pressure, 4-door (see page 11-129), or 5-door (see page 11-427).
9. Remove the EVAP canister hose.



Cylinder Head

Component Location Index

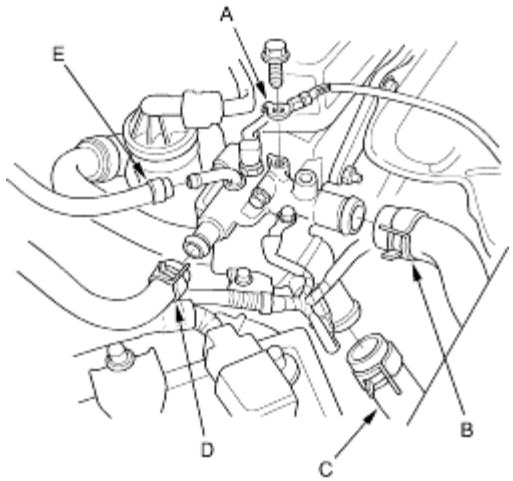


1. CYLINDER HEAD COVER
2. HEAD COVER GASKET
3. UPPER COVER
4. RUBBER SEAL
5. LOWER COVER
6. CRANKSHAFT PULLEY
   Replacement, page 6-16
7. TDC SENSOR
8. CAMSHAFT PULLEY
9. CRANKSHAFT PULLEY BOLT
   Replacement, 6-16
10. TIMING BELT
    Removal, page 6-18
    Inspection, page 6-18Installation, page 6-22
11. AUTO-TENSIONER
12. TIMING BELT DRIVE PULLEY
13. Install with concave surface facing in.
14. CKP SENSOR
15. SIDE ENGINE MOUNT BRACKET

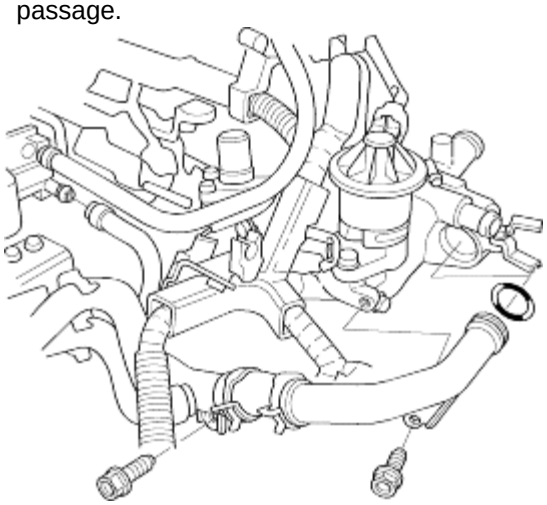
Cylinder Head

Cylinder Head Removal (cont'd)

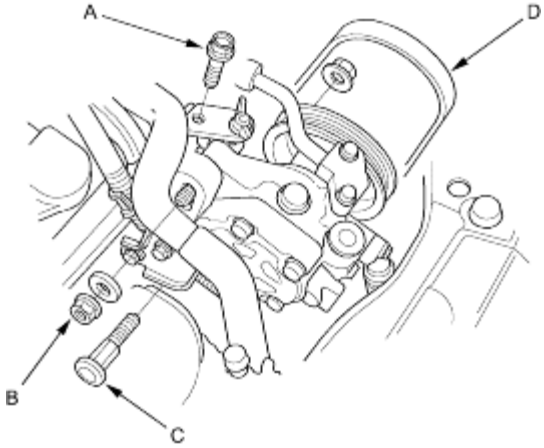
1. 10. Remove the ground cable (A), upper radiator hose (B), lower radiator hose (C), heater hose (D) and water bypass hose (E).



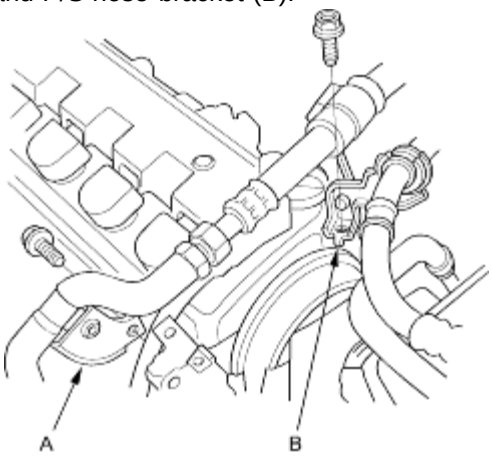
2. 11. Remove the two bolts securing the connecting pipe, then remove the connecting pipe from the water passage.



1. 12. Remove the adjusting plate mounting bolt (A), locknut (B) and mounting bolt (C), then remove the power steering (P/S) pump belt (D) and pump without disconnecting the P/S hoses.



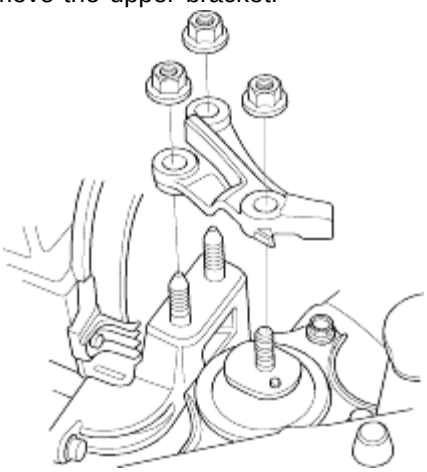
2. 13. Remove the alternator (see page 4-31).
14. Remove the air conditioning (A/C) hose bracket (A) and P/S hose bracket (B).



Cylinder Head

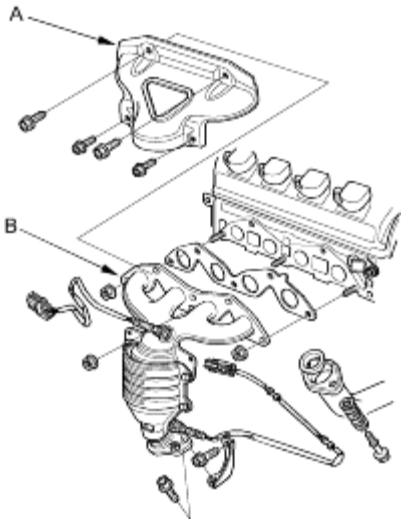
Cylinder Head Removal (cont'd)

1. 15. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.
   - Idle air control (IAC) valve connector
   - Throttle position sensor connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector (Except KT, KW models)
   - Engine coolant temperature (ECT) sensor connector
   - Radiator fan switch connector
   - CKP sensor connector
   - TDC sensor connector
   - Exhaust gas recirculation (EGR) connector (D14Z5, D15Y4, D16W7, D17A2 engines)
   - VTEC solenoid valve connector (D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines)
   - VTEC oil pressure switch connector (D16W7 engine)
   - Oil pressure sensor connector
2. 16. Support the engine with a jack and wood block under the oil pan.
   17. Remove the upper bracket.

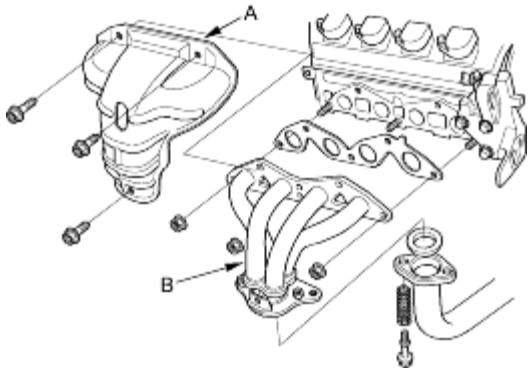


1. 18. Remove the cover (A), then remove the exhaust manifold (B).

D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



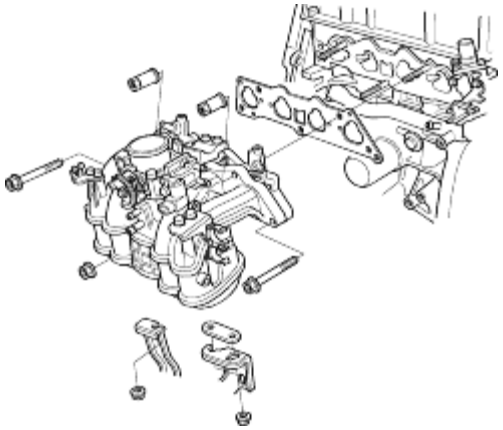
Except D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



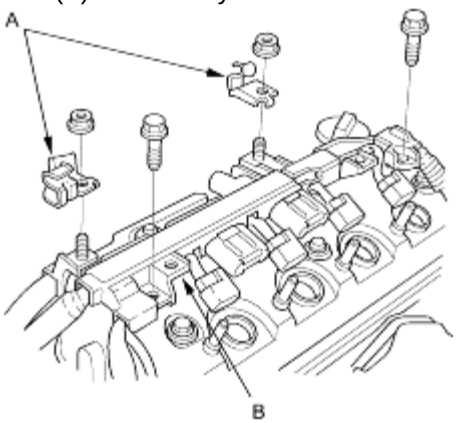
Cylinder Head

Cylinder Head Removal (cont'd)

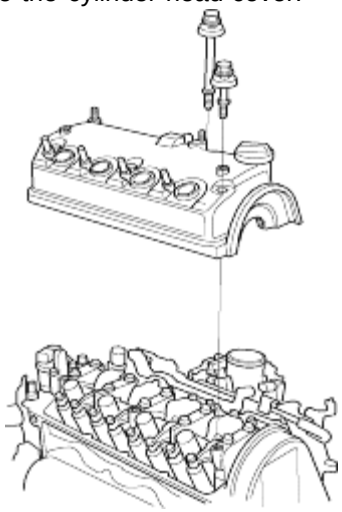
1. 19. Remove the intake manifold.



2. 20. Remove the four ignition coils (see page 4-24).
   21. Remove the throttle cable clamps (A) and harness holder (B) from the cylinder head cover.



1. 22. Remove the cylinder head cover.

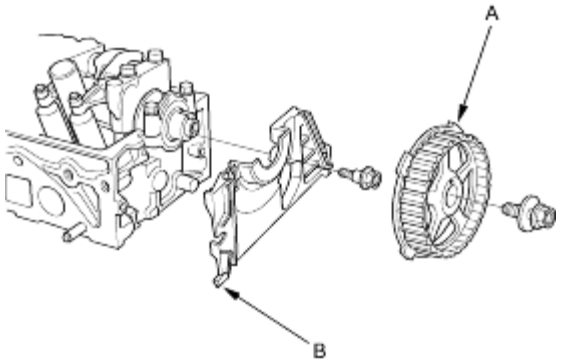


2. 23. Remove the timing belt (see page 6-18).

Cylinder Head

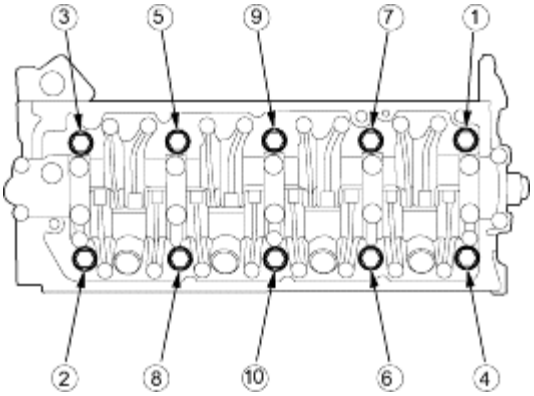
Cylinder Head Removal (cont'd)

1. 24. Remove the camshaft pulley (A) and back cover (B).



1. 25. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

CYLINDER HEAD BOLTS LOOSENING SEQUENCE:



2. 26. Remove the cylinder head.

Cylinder Head

Cylinder Head Inspection for Warpage

NOTE: If camshaft-to-holder oil clearances (see page 6-40) are not within specifications, the cylinder head cannot be resurfaced.

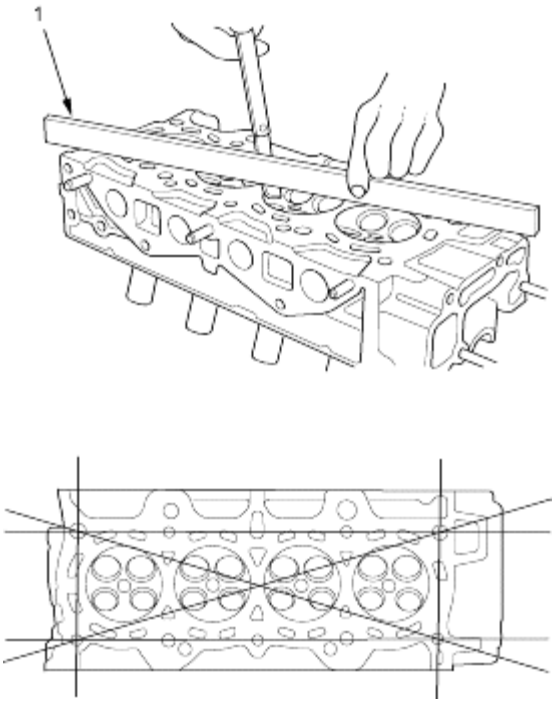
If camshaft-to-holder oil clearances are within specifications, check the cylinder head for warpage.

Measure along the edges and three ways across the centre.

- If warpage is less than 0.05 mm (0.002 in.) cylinder head resurfacing is not required.
- If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface cylinder head.
- Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 93 mm (3.7 in.).

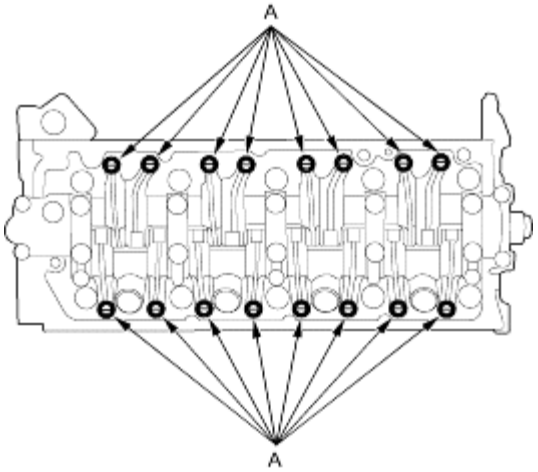
Cylinder Head Height:

Standard (New):	92.95 - 93.05 mm (3.659 - 3.663 in.)



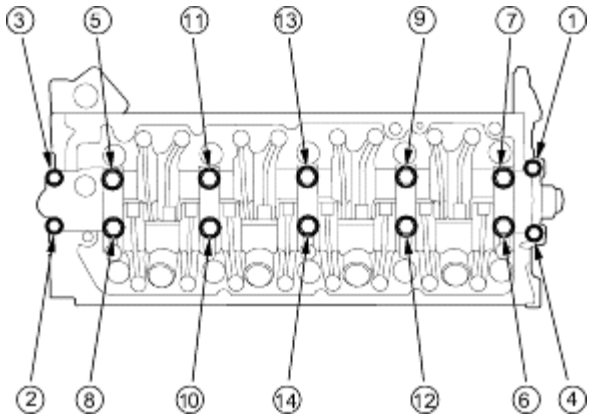
1. 1. PRECISION STRAIGHT EDGE

1. 1. Loosen the adjusting screws (A).



2. 2. Remove the bolts and the rocker arm assembly.
   1. Unscrew the camshaft holder bolts 2 turns at a time, in a criss-cross pattern, to prevent damaging the valves or rocker arm assembly.
   2. When removing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the camshaft holders, the springs and the rocker arms on the shafts.

CAMSHAFT HOLDER BOLT LOOSENING SEQUENCE:



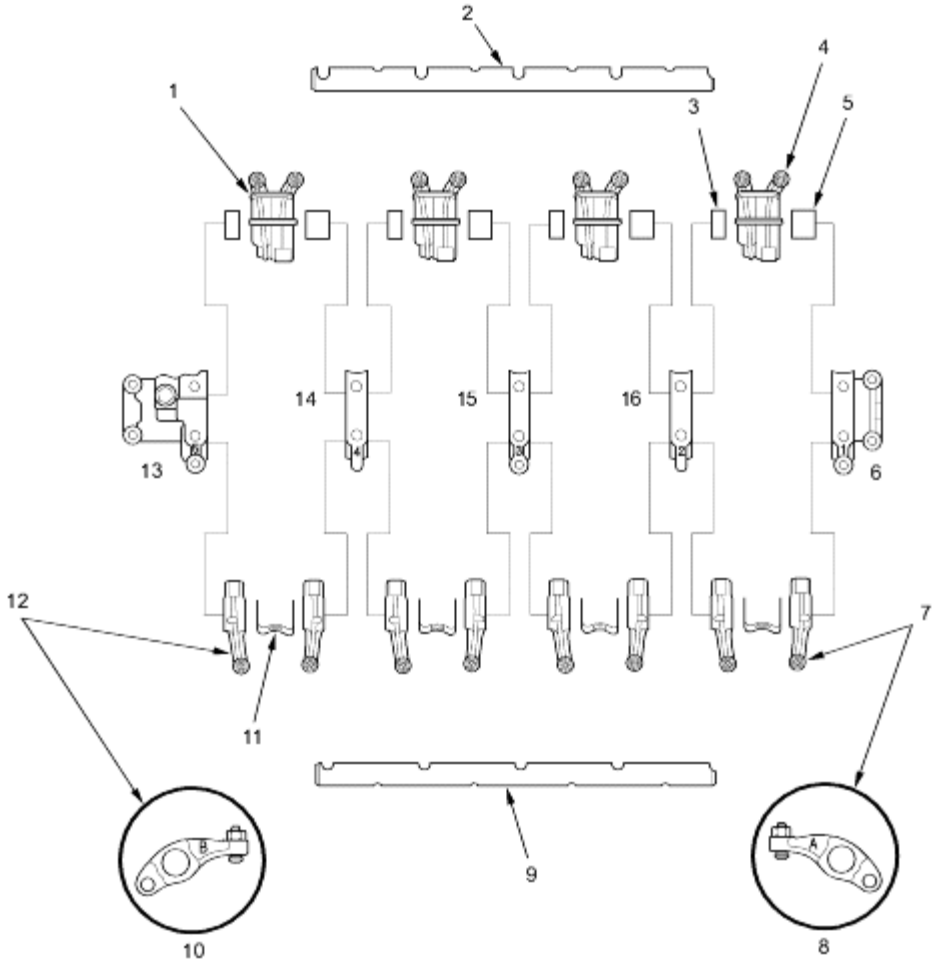
Cylinder Head

Rocker Arms and Shafts Disassembly/Reassembly

NOTE:

- Identify parts as they are removed to ensure reinstallation in original location.
- Inspect the rocker shafts and rocker arms (see page 6-38).
- The rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders, springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact points.

D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines:



1. RUBBER BAND
2. INTAKE ROCKER SHAFT
3. COLLAR B
4. INTAKE ROCKER ARM ASSEMBLY
5. COLLAR A
6. No. 1 CAMSHAFT HOLDER
7. EXHAUST ROCKER ARM A
8. Letter "A" is stamped on the rocker arm.
9. EXHAUST ROCKER SHAFT
10. Letter "B" is stamped on the rocker arm.
11. SPRING
12. EXHAUST ROCKER ARM B
13. No. 5 CAMSHAFT HOLDER
14. No. 4 CAMSHAFT HOLDER
15. No. 3 CAMSHAFT HOLDER
16. No. 2 CAMSHAFT HOLDER

Cylinder Head

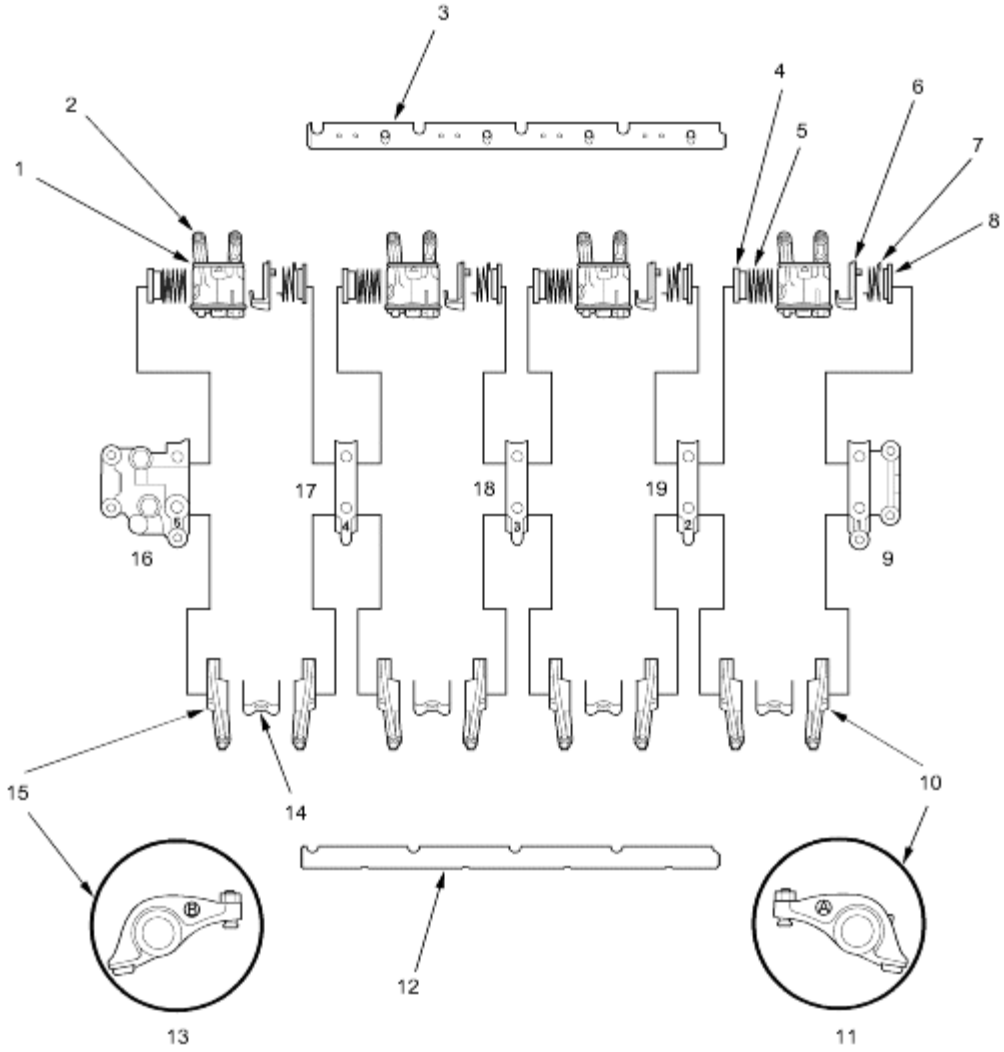
Rocker Arms and Shafts

Disassembly/Reassembly (cont'd)

NOTE:

- Identify parts as they are removed to ensure reinstallation in original location.
- Inspect the rocker shafts and rocker arms (see page 6-38).
- The rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders, springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact points.
- Bundle the rocker arms with rubber bands to keep them together as a set.

D16W8 engine:



1. RUBBER BAND
2. INTAKE ROCKER ARM ASSEMBLY
3. INTAKE ROCKER SHAFT
4. COLLAR B
5. SPRING
6. TIMING PLATE
7. RETURN SPRING
8. COLLAR A
9. No. 1 CAMSHAFT HOLDER
10. EXHAUST ROCKER ARM A
11. Letter "A" is stamped on the rocker arm.
12. EXHAUST ROCKER SHAFT
13. Letter "B" is stamped on the rocker arm.
14. SPRING
15. EXHAUST ROCKER ARM B
16. No. 5 CAMSHAFT HOLDER
17. No. 4 CAMSHAFT HOLDER
18. No. 3 CAMSHAFT HOLDER
19. No. 2 CAMSHAFT HOLDER

Cylinder Head

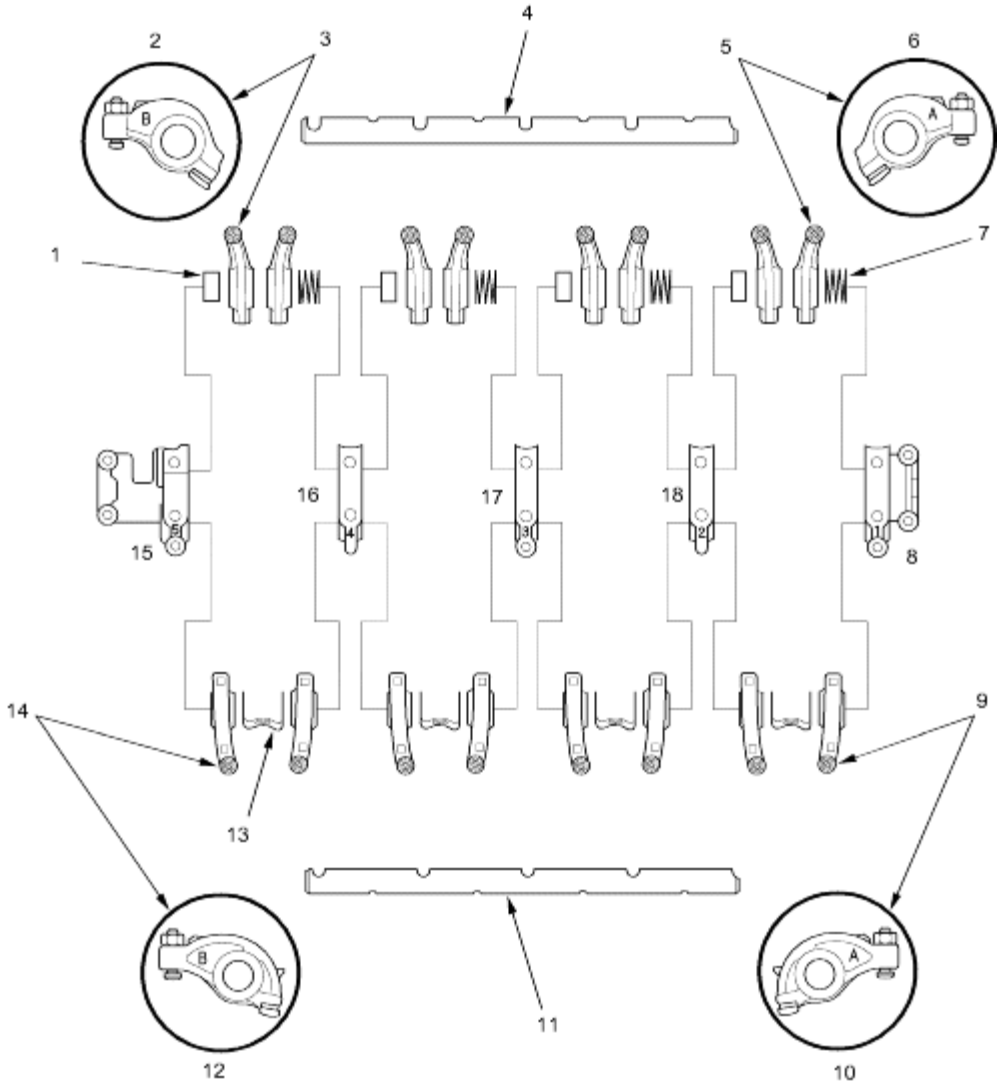
Rocker Arms and Shafts

Disassembly/Reassembly (cont'd)

NOTE:

- Identify parts as they are removed to ensure reinstallation in original location.
- Inspect the rocker shafts and rocker arms (see page 6-38).
- The rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders, springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact points.

D14Z5, D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:

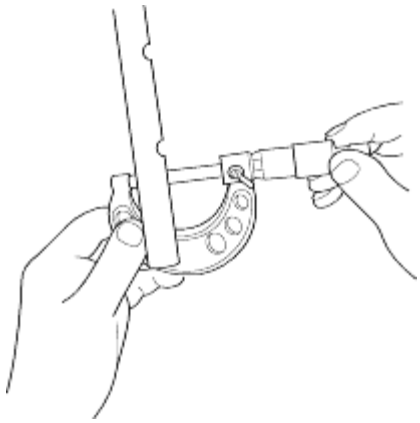


1. COLLAR
2. Letter "B" is stamped on the rocker arm.
3. INTAKE ROCKER ARM B
4. INTAKE ROCKER SHAFT
5. INTAKE ROCKER ARM A
6. Letter "A" is stamped on the rocker arm.
7. SPRING
8. No. 1 CAMSHAFT HOLDER
9. EXHAUST ROCKER ARM A
10. Letter "A" is stamped on the rocker arm.
11. EXHAUST ROCKER SHAFT
12. Letter "B" is stamped on the rocker arm.
13. SPRING
14. EXHAUST ROCKER ARM B
15. No. 5 CAMSHAFT HOLDER
16. No. 4 CAMSHAFT HOLDER
17. No. 3 CAMSHAFT HOLDER
18. No. 2 CAMSHAFT HOLDER

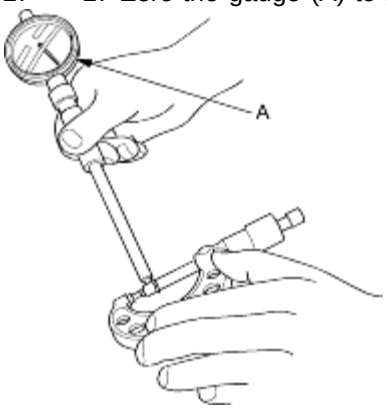
Cylinder Head

Rocker Arms and Shafts Inspection

1. 1. Measure the diameter of the shaft at the first rocker location.



2. 2. Zero the gauge (A) to the shaft diameter.

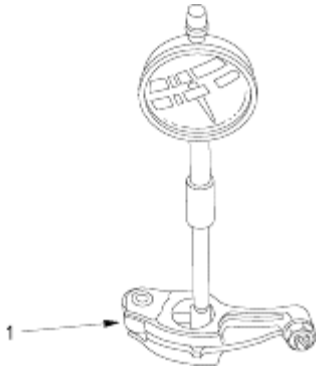


1. 3. Measure the inside diameter of the rocker arm and check it for an out-of-round condition.

Rocker Arm-to-Shaft Clearance:

Standard (New):

Intake:	0.017 - 0.050 mm (0.0007 - 0.0020 in.)
Exhaust:	0.018 - 0.054 mm (0.0007 - 0.0021 in.)
Service Limit:	0.08 mm (0.003 in.)



2. 1. Inspect rocker arm face for wear.

3. 4. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all overtolerance rocker arms. If any VTEC intake rocker arm needs replacement, replace rocker arms (primary and secondary as a set, or primary, mid and secondary as a set).

Cylinder Head

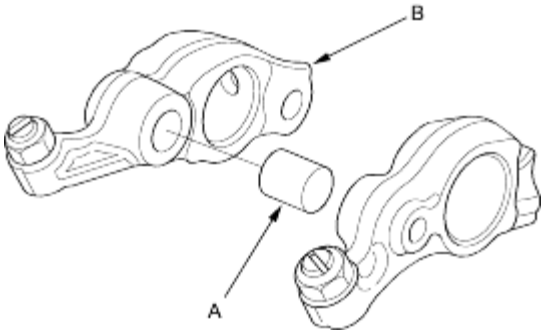
Rocker Arms and Shafts Inspection (cont'd)

1. 5. Inspect the synchronising piston (s) (A) and timing piston (B). Push it manually. If it does not move smoothly, replace the rocker arm assembly.

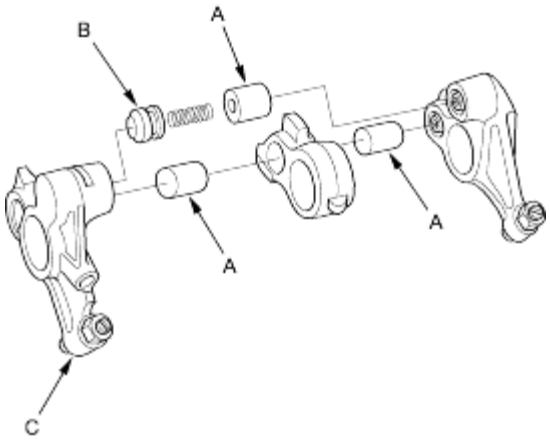
NOTE:

- When reassembling the primary rocker arm (C), carefully apply air pressure to its oil passage.
- Apply oil to the pistons when reassembling.

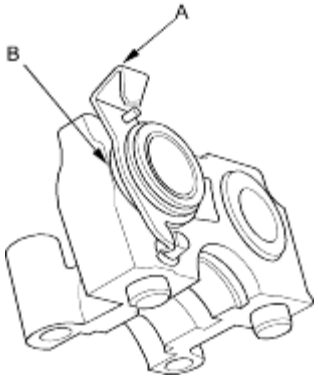
D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines:



D16W8 engine:

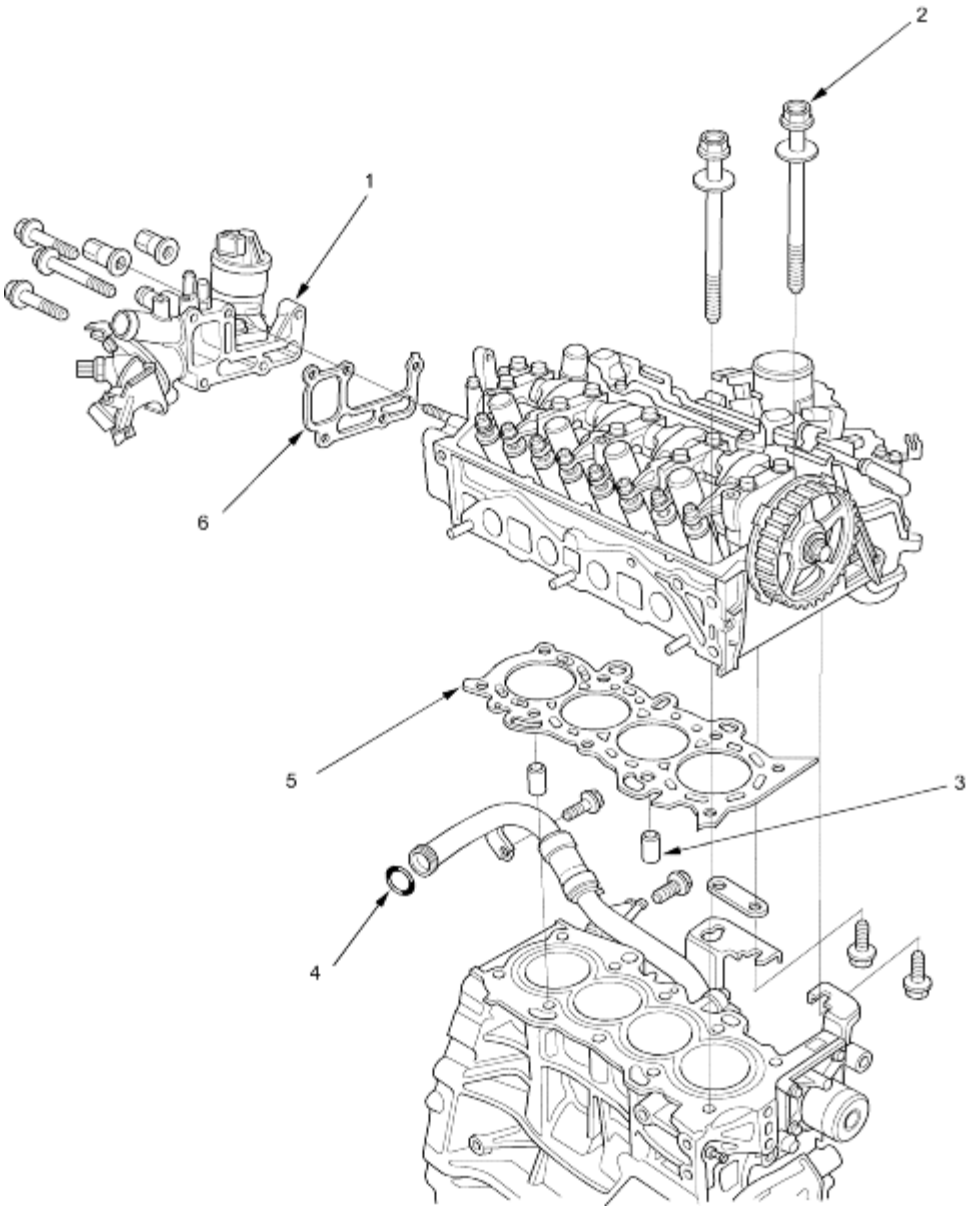


1. 6. Assemble each timing plate (A) and return spring (B) on its camshaft holder as shown (D16W8 engine).



Cylinder Head

Component Location Index (cont'd)



1. WATER PASSAGE
2. CYLINDER HEAD BOLT
3. DOWEL PIN
4. O-RING
5. CYLINDER HEAD GASKET
6. GASKET

Cylinder Head
Camshaft Inspection

NOTE:
- Do not rotate the camshaft during inspection.
- Remove the rocker arms and rocker shafts.

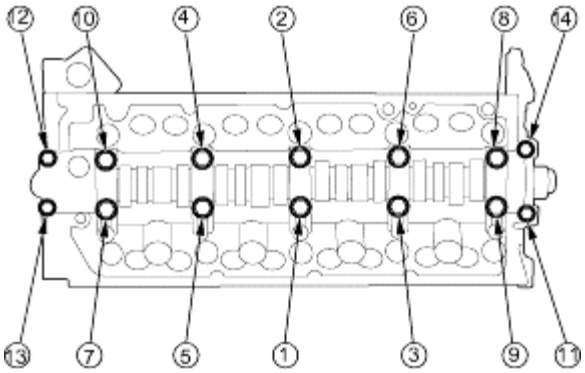
1. Put the camshaft and the camshaft holders on the cylinder head, then tighten the bolts to the specified torque.

   Specified torque:

   8 mm bolts: 20 Nm (2.0 kgf/m, 14 lbf/ft)
   Apply engine oil to the bolt threads.

   6 mm bolts: 12 Nm (1.2 kgf/m, 8.7 lbf/ft)
   Apply engine oil to the bolt threads.

   6 mm bolts: (11), (12), (13), (14)

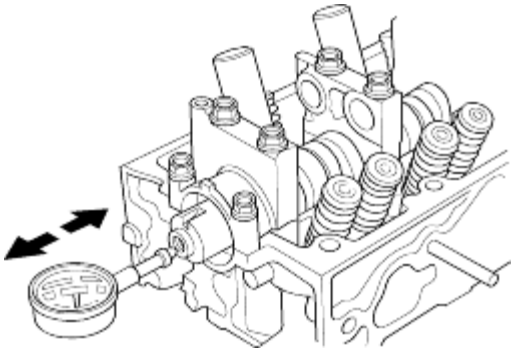


2. Seat the camshaft by pushing it away from the camshaft pulley end of the cylinder head.
3. Zero the dial indicator against the end of the camshaft, then push the camshaft back and forth and read the end play.

   Camshaft End Play:

   Standard (New): 0.05 - 0.15 mm (0.002 - 0.006 in.)

   Service Limit: 0.5 mm (0.02 in.)

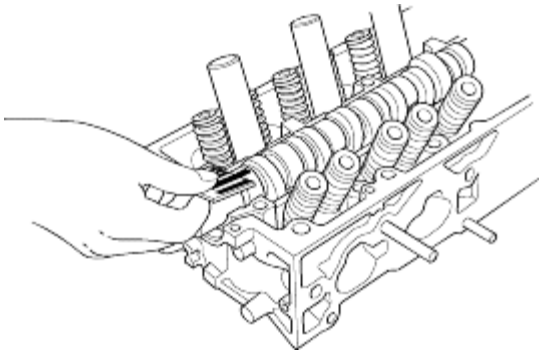


4. Unscrew the camshaft holder bolts 2 turns at a time, in a criss-cross pattern. Then remove the camshaft holders from the cylinder head.
5. Lift the camshaft out of the cylinder head, wipe them clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
6. Clean the camshaft journal surfaces in the cylinder head, then set the camshaft back in place. Place a plastigage strip across each journal.
7. Install the camshaft holders, then tighten the bolts to the specified torque as shown in step 1.
8. Remove the camshaft holders. Measure the widest portion of plastigage on each journal.
   - If the camshaft-to-holder clearance is within limits, go to step 10.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 9.

Camshaft-to-Holder Oil Clearance:

Standard (New): 0.050 - 0.089 mm (0.0020 - 0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)



Cylinder Head

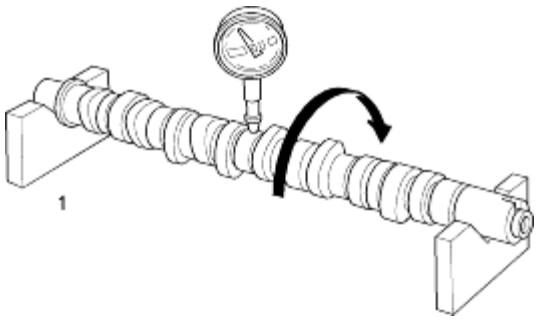
Camshaft Inspection (cont'd)

1. 9. Check the total runout with the camshaft supported on V-blocks.
   - If the total runout of the camshaft is within the service limit, replace the cylinder head.
   - If the total runout is beyond the service limit, replace the camshaft and recheck the camshaft-to-holder oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout:

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)



2. 1. Rotate camshaft while measuring.

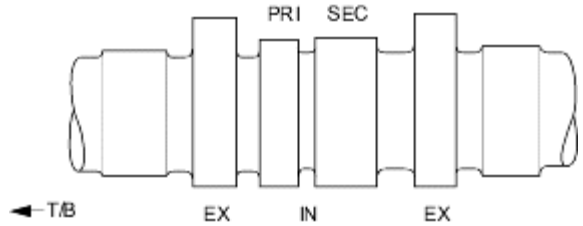
1. 10. Measure cam lobe height.

Cam Lobe Height Standard (New):

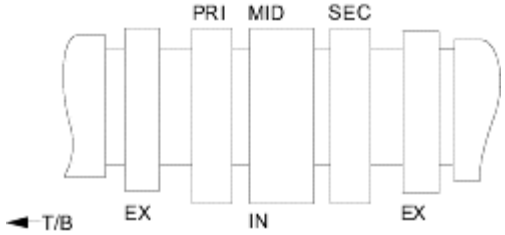
		INTAKE	EXHAUST
D15Y4 engine	PRI	38.427 mm (1.5129 in.)	38.784 mm (1.5269 in.)
	SEC	32.292 mm (1.2713 in.)	
D16V2, D16W7 engines	PRI	38.427 mm (1.5129 in.)	38.784 mm (1.5269 in.)
	SEC	32.848 mm (1.2932 in.)	
D17A2, D17A5, D17Z3 engines	PRI	38.604 mm (1.5198 in.)	38.784 mm 1.5269 in.)
	SEC	32.848 mm 1.2932 in.)	
D16W8 engine	PRI	36.662 mm (1.4434 in.)	38.008 mm (1.4964 in.)
	MID	38.274 mm (1.5068 in.)	
	SEC	32.848 mm 1.2932 in.)	
D14Z5 engine		34.158 mm (1.3448 in.)	36.488 mm (1.4365 in.)
D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines		35.299 mm (1.3897 in.)	37.281 mm (1.4678 in.)

PRI: Primary SEC: Secondary

IN: Intake EX: Exhaust T/B: Timing Belt



D15Y4, D16W7, D17A2, D17A5 engines:



D16W8 engine:

Cylinder Head

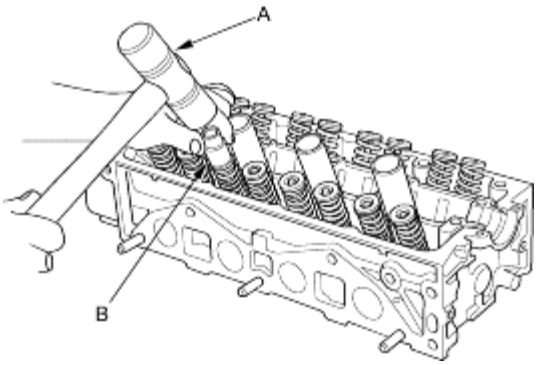
Valves, Springs and Valve Seals Removal

Special Tools Required

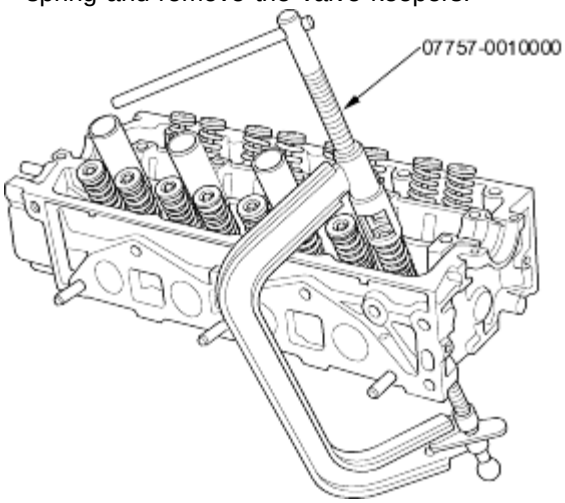
Valve Spring Compressor, 07757-0010000

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. 1. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve keepers.



2. 2. Install the valve spring compressor. Compress the spring and remove the valve keepers.



Valve Inspection

Measure the valve in these areas.

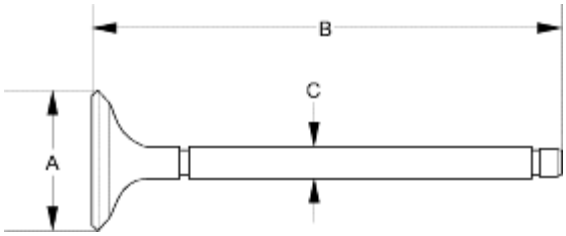
Except D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

Intake Valve Dimensions

A Standard (New):	29.85 - 30.15 mm (1.175 - 1.187 in.)
B Standard (New):	118.27 - 118.87 mm (4.656 - 4.680 in.)
C Standard (New):	5.480 - 5.490 mm (0.2157 - 0.2161 in.)
C Service Limit:	5.45 mm (0.215 in.)

Exhaust Valve Dimensions

A Standard (New):	25.85 - 26.15 mm (1.018 - 1.030 in.)
B Standard (New):	115.65 - 116.25 mm (4.553 - 4.577 in.)
C Standard (New):	5.450 - 5.460 mm (0.2146 - 0.2150 in.)
C Service Limit:	5.42 mm (0.213 in.)



Cylinder Head
Valve Inspection (cont'd)

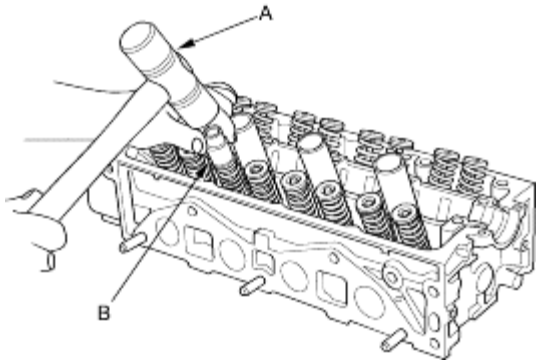
D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

Intake Valve Dimensions

A Standard (New):	29.85 - 30.10 mm (1.175 - 1.185 in.)
B Standard (New):	118.27 - 118.87 mm (4.656 - 4.680 in.)
C Standard (New):	5.480 - 5.490 mm (0.2157 - 0.2161 in.)
C Service Limit:	5.45 mm (0.215 in.)

Exhaust Valve Dimensions

A Standard (New):	25.90 - 26.10 mm (1.020 - 1.028 in.)
B Standard (New):	115.65 - 116.25 mm (4.553 - 4.577 in.)
C Standard (New):	5.450 - 5.460 mm (0.2146 - 0.2150 in.)
C Service Limit:	5.42 mm (0.213 in.)



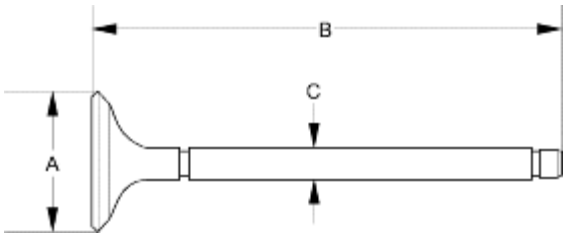
1. 1. Slide the valve out of its guide about 10 mm, then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 2.

Intake Valve Stem-to-Guide Clearance:

Standard (New):	0.04 - 0.10 mm (0.002 - 0.004 in.)
Service Limit:	0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance:

Standard (New):	0.10 - 0.16 mm (0.004 - 0.006 in.)
Service Limit:	0.22 mm (0.009 in.)



2. 2. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge.

   Take the measurements in 3 places along the valve stem and three places inside the valve guide.

   The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance:

Standard (New):	0.02 - 0.05 mm (0.0008 - 0.0020 in.)
Service Limit:	0.08 mm (0.003 in.)

Exhaust Valve Stem-to-Guide Clearance:

Standard (New):	0.05 - 0.08 mm (0.0020 - 0.0031 in.)
Service Limit:	0.11 mm (0.004 in.)

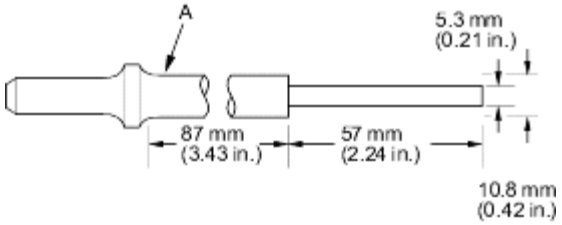
Cylinder Head

Valve Guide Replacement

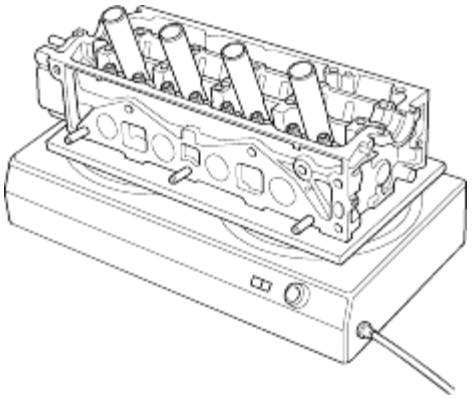
Special Tools Required

- Valve guide driver, 5.5 mm, 07742-0010100
- Valve guide reamer, 5.525 mm, 07HAH-PJ70100

1. 1. As illustrated below, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.

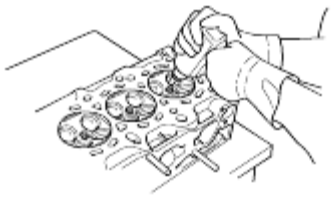


2. 2. Select the proper replacement guides and chill them in the freezer section of a refrigerator for about an hour.
   3. Use a hot plate or oven to evenly heat the cylinder head to 150°C (300°F). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 150°C (300°F); excessive heat may loosen the valve seats.



1. 4. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver.
   5. Turn the head over and drive the guide out toward the camshaft side of the head.







2. 6. If a valve guide will not move, drill it out with an 8 mm (5/16 inch) bit, then try again. Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.
   7. Remove the new guide(s) from the freezer, one at a time, as you need them.

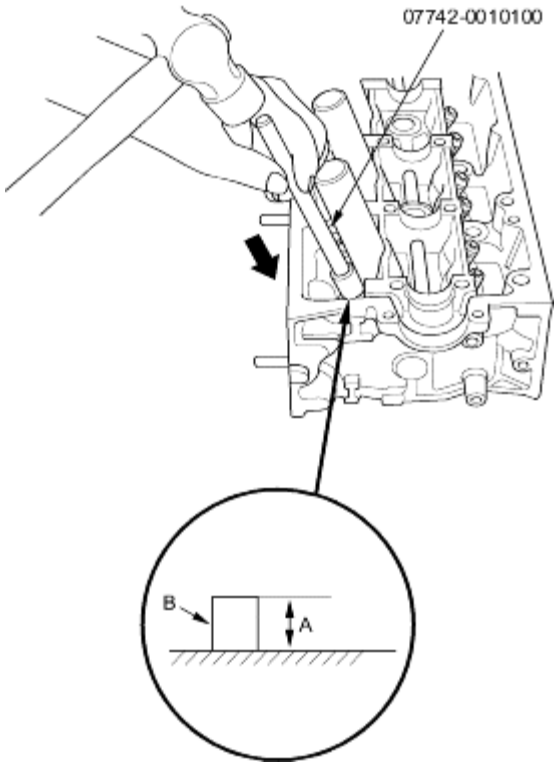
Cylinder Head

Valve Guide Replacement (cont'd)

1. 8. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide in to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

Valve Guide Installed Height:

Intake:	17.85 - 18.35 mm (0.703 - 0.722 in.)
Exhaust:	18.65 - 19.15 mm (0.734 - 0.754 in.)



1. 9. Coat both reamer and valve guide with cutting oil.
10. Rotate the reamer clockwise the full length of the valve guide bore.



2. 11. Continue to rotate the reamer clockwise while removing it from the bore.
12. Thoroughly wash the guide in detergent and water to remove any cutting residue.
13. Check the clearance with a valve (see page 6-43). Verify that the valve slides in the intake and exhaust valve guides without exerting pressure.

Cylinder Head

Valve Seat Reconditioning

If the valve guides are worn (see page 6-43), replace them (see page 6-44) before cutting the valve seats.

1. Renew the valve seats in the cylinder head using a valve seat cutter.
    1. Carefully cut a 45° seat, removing only enough material to ensure a smooth and concentric seat.
    2. Bevel the upper edge of the seat with the 30° cutter and the lower edge of the seat with the 67.5° cutter (Intake) or 60° cutter (exhaust). Check the width of the seat and adjust accordingly.
    3. Make one more very light pass with the 45° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width:

Intake:

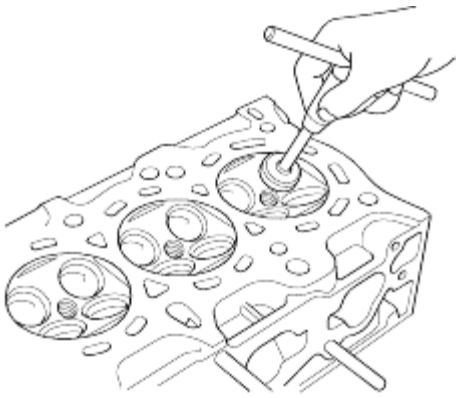
Standard (New): 0.85 - 1.15 mm (0.033 - 0.045 in.)

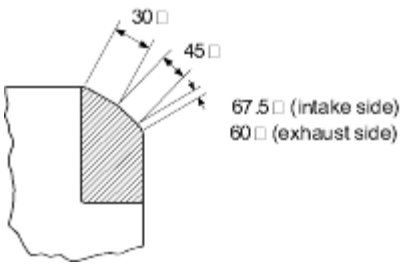
Service Limit: 1.60 mm (0.063 in.)

Exhaust:

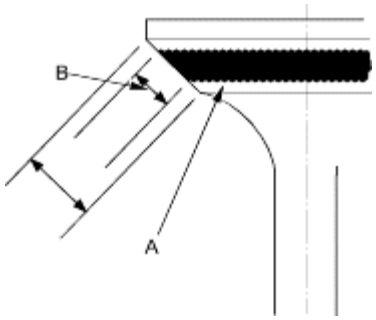
Standard (New): 1.25 - 1.55 mm (0.049 - 0.061 in.)

Service Limit: 2.00 mm (0.079 in.)





1. After resurfacing the seat, inspect it for even valve seating: Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



2. The actual valve seating surface (B), as shown by the blue compound, should be centred on the seat.
    - If it is too high (closer to the valve stem), you must make a second cut with the 67.5° cutter (Intake) or 60° cutter (exhaust) to move it down, then one more cut with the 45° cutter to restore seat width.
    - If it is too low (closer to the valve edge), you must make a second cut with the 30° cutter to move it up, then one more cut with the 45° cutter to restore seat width.

NOTE: The final cut should always be made with the 45° cutter.

Cylinder Head

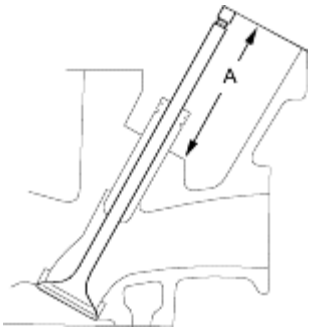
Valve Seat Reconditioning (cont'd)

1. 4. Insert the intake and exhaust valves in the head and measure the valve stem installed height (A).

Valve Stem Installed Height:

Standard (New): 53.17 - 53.64 mm (2.093 - 2.112 in.)

Service Limit: 53.89 mm (2.122 in.)



2. 5. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

Cylinder Head

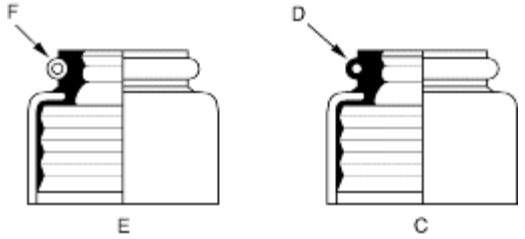
Valves, Springs and Valve Seals Installation

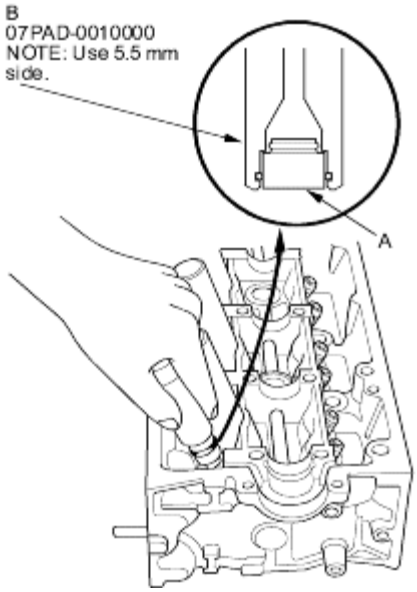
Special Tools Required

- Stem seal driver, 07PAD-0010000
- Valve spring compressor, 07757-0010000

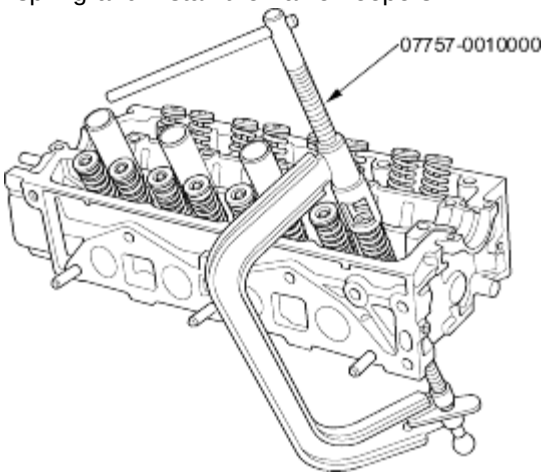
1. 1. Coat the valve stems with engine oil. Install the valves in the valve guides.
   2. Check that the valves move up and down smoothly.
   3. Install the spring seats on the cylinder head.
   4. Install the new valve seals (A) using the stem seal driver (B).

NOTE: Exhaust valve seal (C) has a black spring (D) and intake valve seal (E) has a white spring (F). They are not interchangeable.

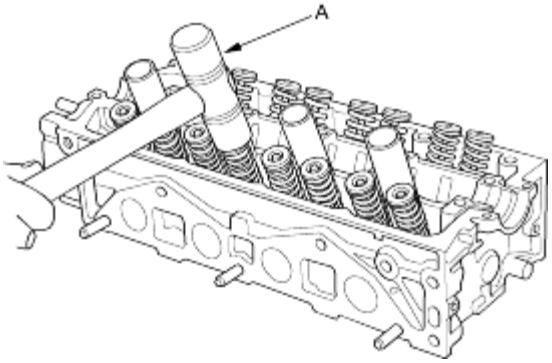




1. 5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
   6. Install the valve spring compressor. Compress the spring and install the valve keepers.



2. 7. Lightly tap the end of each valve stem 2 or 3 times with a plastic mallet (A) to ensure proper seating of the valve and valve keepers. Tap the valve stem only along its axis so you do not bend the stem.

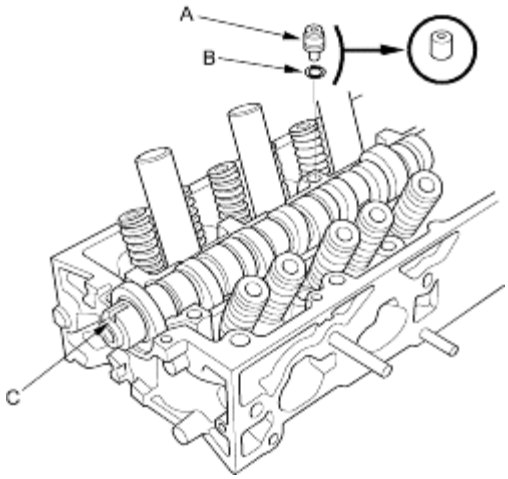


Cylinder Head

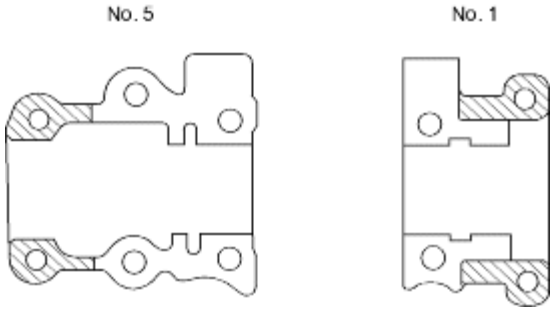
Camshaft/Rocker Arms, Camshaft Seal and Pulley Installation

NOTE: To prevent the rocker arm assembly from coming apart, leave the camshaft holder bolts in the holes.

1. 1. After wiping down the camshaft and the journals in the cylinder head, lubricate both surfaces and install the camshaft.
   2. Clean and install the oil control orifice (A) with a new O-ring (B).



2. 3. Turn the camshaft until its keyway (C) is facing up (No. 1 piston TDC).
   4. Loosen all the valve adjusting screws.
   5. Apply liquid gasket to the head mating surface (shaded areas) of the No. 1 and No. 5 camshaft holders.



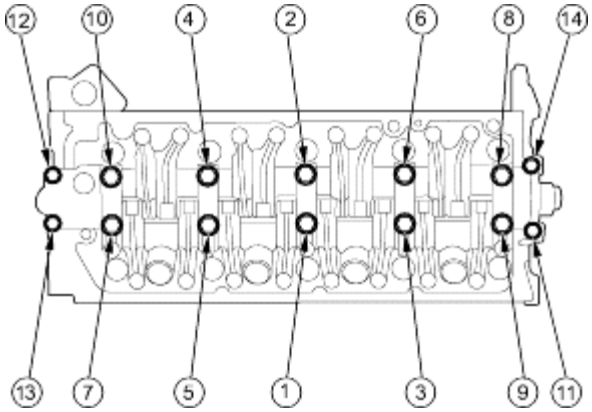
1. 6. Set the rocker arm assembly in place and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.
   7. Tighten each bolt 2 turns at a time, in the sequence shown below to ensure that the rockers do not bind on the valves.

      Specified torque:

      8 mm bolts: 20 Nm (2.0 kgf/m, 14 lbf/ft)
      Apply engine oil to the bolt threads.

      6 mm bolts: 12 Nm (1.2 kgf/m, 8.7 lbf/ft)
      Apply engine oil to the bolt threads.

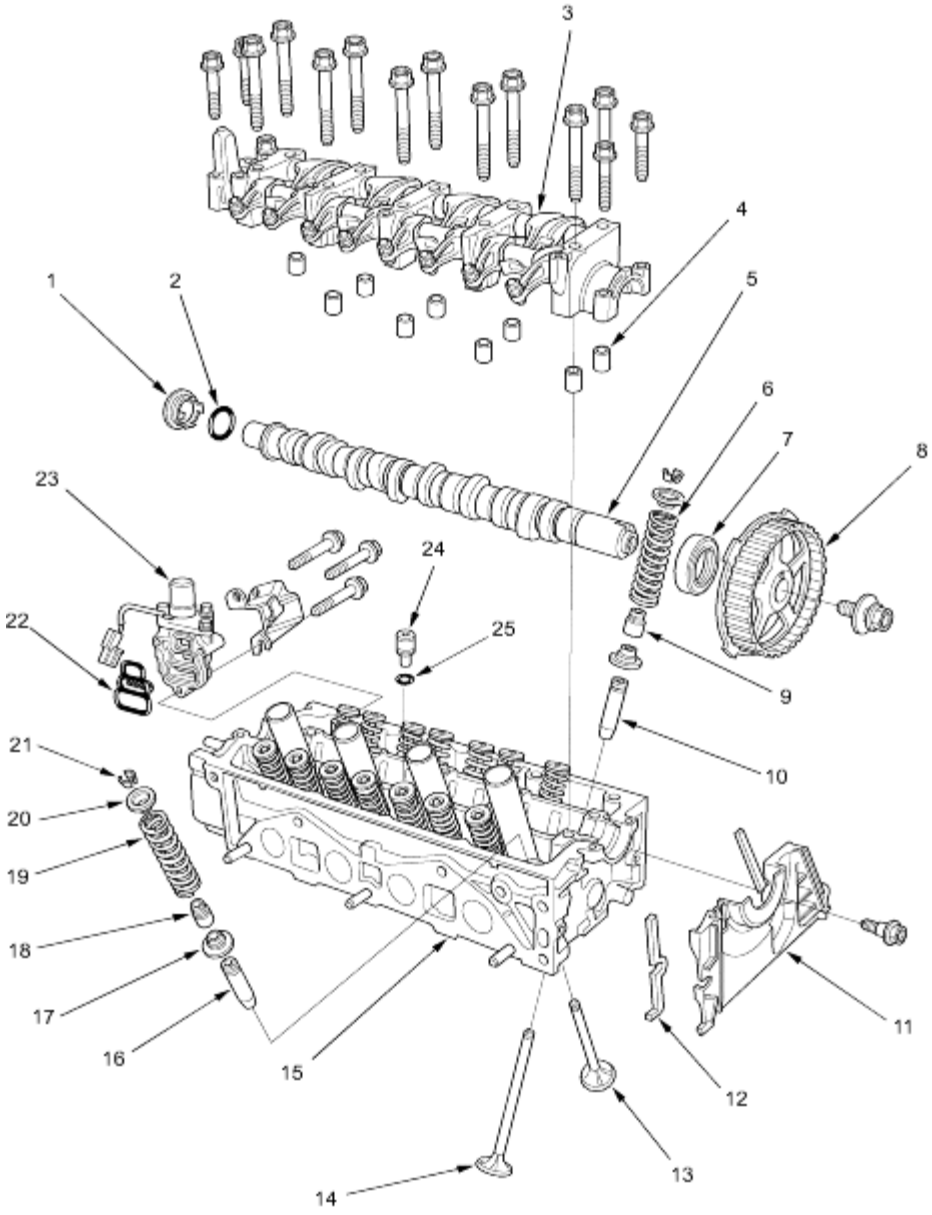
      6 mm bolts: (11), (12), (13), (14)



Cylinder Head

Component Location Index (cont'd)

D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines:

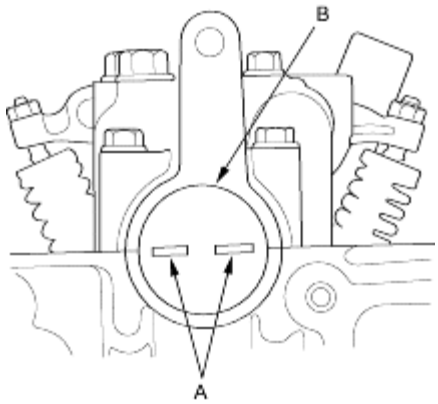


1. CYLINDER HEAD PLUG
2. O-RING
3. ROCKER ARM ASSEMBLY
   Overhaul, page 6-35
   Inspection, 6-38
4. DOWEL PIN
5. CAMSHAFT
   Inspection, page 6-40
6. INTAKE VALVE SPRING
7. SEAL
8. CAMSHAFT PULLEY
9. INTAKE VALVE SEAL
   Replacement, page 6-42
10. VALVE GUIDE
    Replacement, page 6-44
11. BACK COVER
12. RUBBER SEAL
13. EXHAUST VALVE
    Removal, page 6-42
    Installation, page 6-48
14. INTAKE VALVE
15. CYLINDER HEAD
    Removal, page 6-28
    Inspection, page 6-34
    Installation, page 6-50
16. VALVE GUIDE
17. VALVE SPRING SEAT
18. EXHAUST VALVE SEAL
19. EXHAUST VALVE SPRING
20. SPRING RETAINER
21. VALVE KEEPERS
22. VTEC SOLENOID VALVE FILTER
23. VTEC SOLENOID VALVE
24. OIL CONTROL ORIFICE
25. O-RING

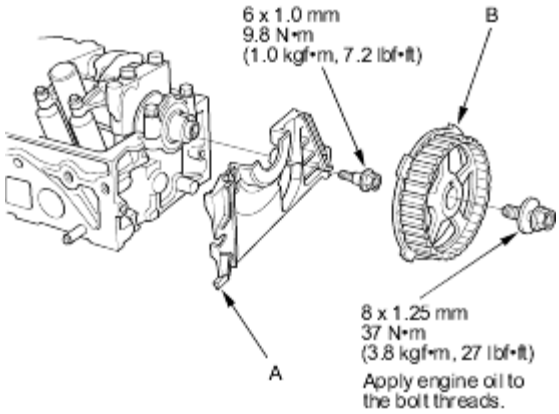
Cylinder Head

Camshaft/Rocker Arms, Camshaft Seal and Pulley Installation (cont'd)

1. 8. Align the marks (A) on the new cylinder head plug (B) with the top edge of the head, then install the cylinder head plug in the cylinder head.

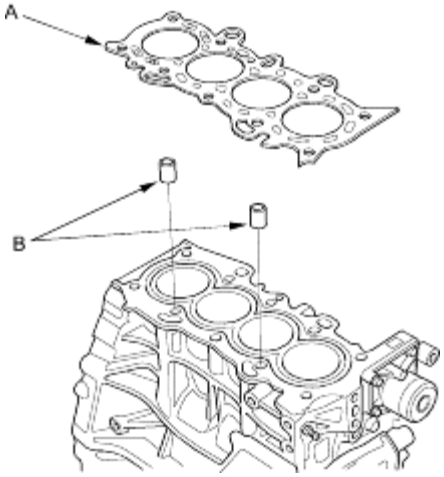


2. 9. Install the back cover (A), then install the camshaft pulley (B).

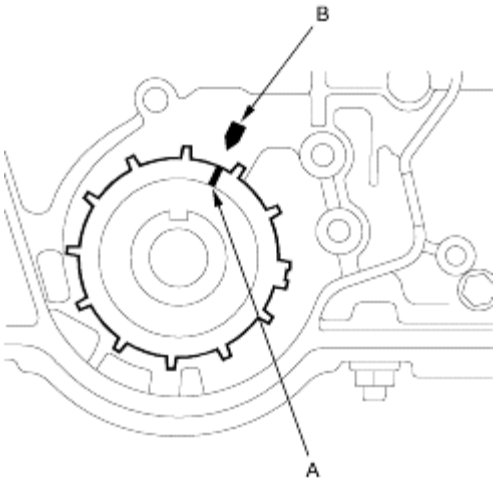


Install the cylinder head in the reverse order of removal:

1. 1. Clean the cylinder head and block surface.
   2. Install the cylinder head gasket (A) and dowel pins (B) on the cylinder block. Always use a new cylinder head gasket.



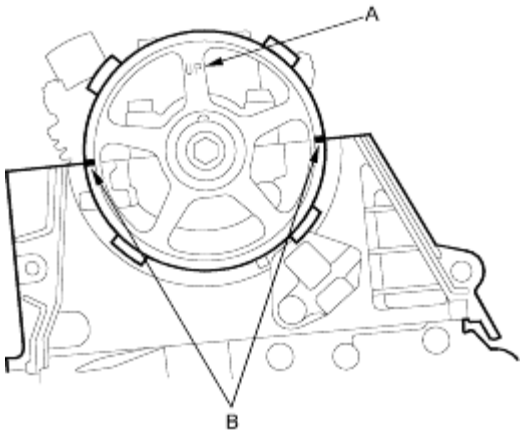
2. 3. Set the crankshaft to TDC. Align the TDC mark (A) on the timing belt drive pulley with the pointer (B) on the oil pump.



Cylinder Head

Cylinder Head Installation (cont'd)

1. 4. Clean the camshaft pulley and set it to TDC.
   1. The "UP" mark (A) on the camshaft pulley should be at the top.
   2. Align the TDC marks (B) on the camshaft pulley with the top edge of the head.



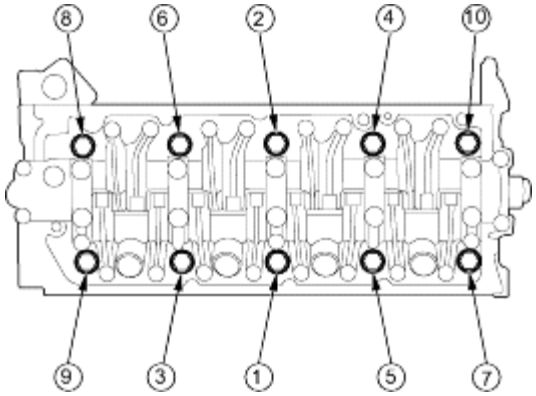
2. 5. Install the cylinder head on the block.

1. 6. Apply engine oil to the bolt threads and under the bolt heads of all the cylinder head bolts.
   7. Tighten the cylinder head bolts sequentially in 3 steps.

1st step torque: 20 Nm (2.0 kgf/m, 14 lbf/ft)
2nd step torque: 49 Nm (5.0 kgf/m, 36 lbf/ft)
3rd step torque: 67 Nm (6.8 kgf/m, 49 lbf/ft)

Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retighten it from the 1st step.

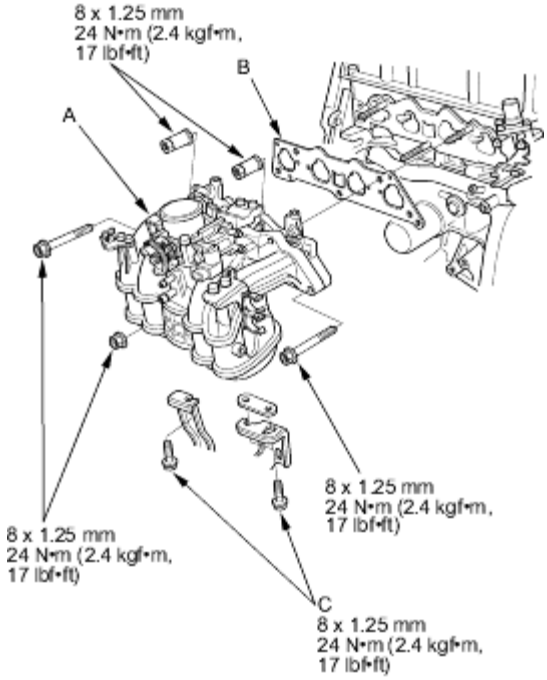
CYLINDER HEAD BOLTS TORQUE SEQUENCE:



Cylinder Head

Cylinder Head Installation (cont'd)

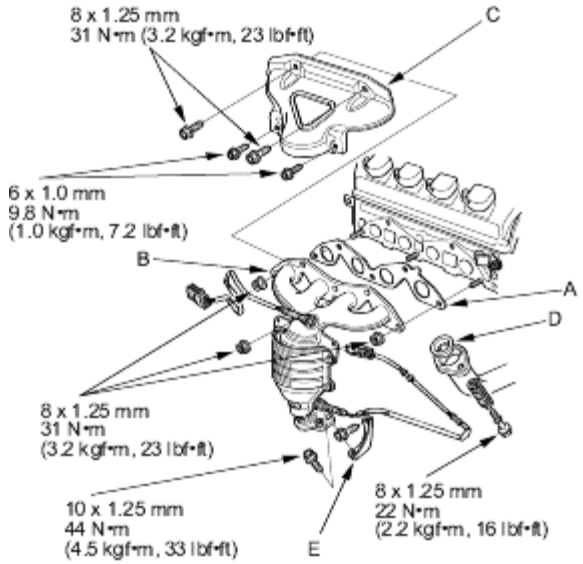
1. 8. Install the timing belt (see page 6-22).
2. 9. Adjust the valve clearance (see page 6-14).
   10. Install the cylinder head cover (see page 6-55).
   11. Install the intake manifold (A) and tighten the bolts/nuts in a criss-cross pattern in 2 or 3 steps, beginning with the inner nut. Always use a new intake manifold gasket (B).



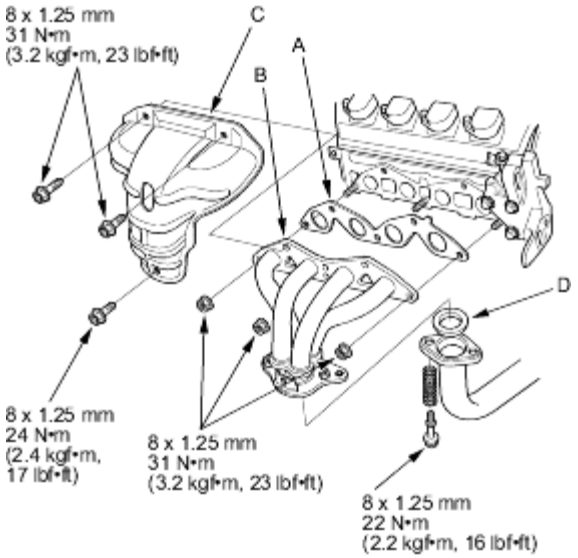
3. 12. Tighten the three nuts securing the intake manifold and brackets.

1. 13. Install the new exhaust manifold gasket (A) and exhaust manifold (B). Loosely install the new nuts, then install the cover (C) and loosely install the new bolts.

D15Y5, D15Y6, D17A1 D17Z1, D17Z2 engines:



Except D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:

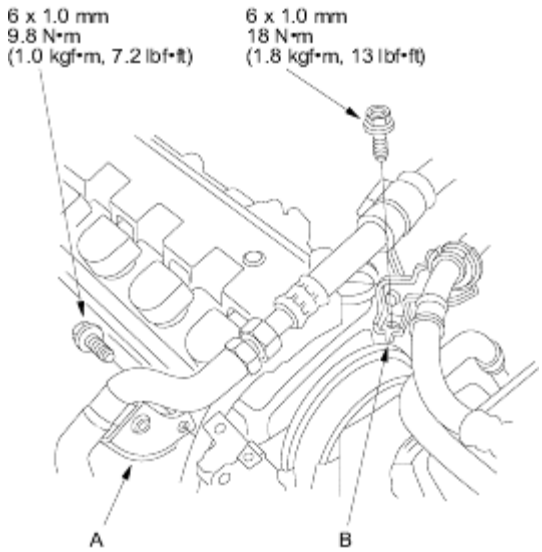


2. 14. Tighten the bolts/nuts in a criss-cross pattern in 2 or 3 steps.
   15. Install the exhaust pipe with a new gasket (D).
   16. Install the exhaust manifold bracket (E) (D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines).

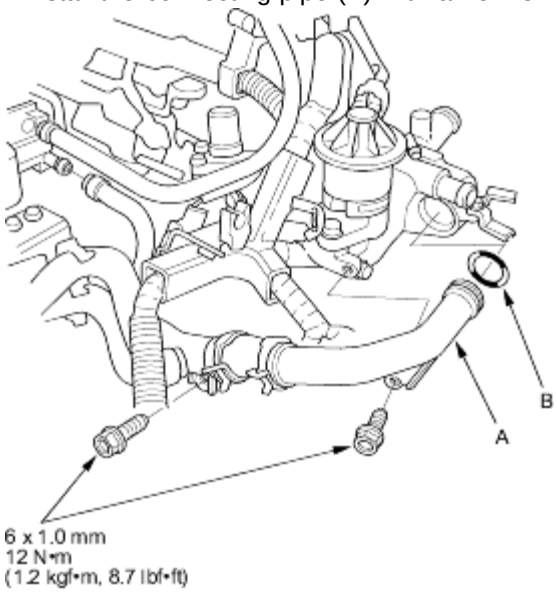
Cylinder Head

Cylinder Head Installation (cont'd)

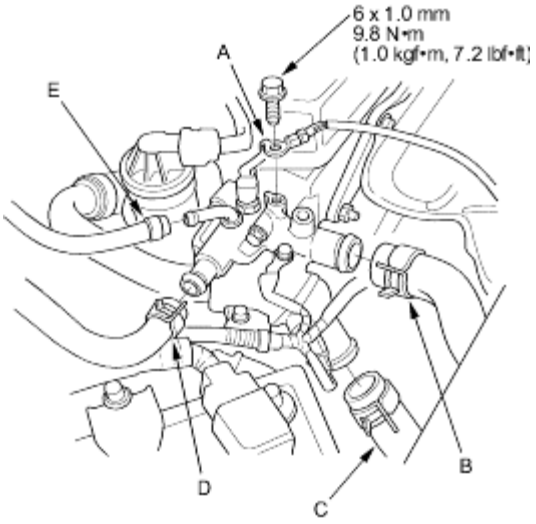
1. 17. Install the A/C hose bracket (A) and P/S hose bracket (B).



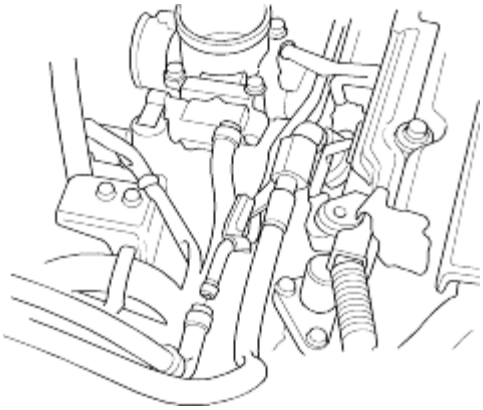
2. 18. Loosely install the alternator.
   19. Adjust the alternator belt tension (see page 4-38) or the alternator-compressor belt tension (see page 4-37).
   20. Loosely install the P/S pump belt and pump.
   21. Adjust the P/S pump belt (see page 17-23).
   22. Install the connecting pipe (A) with a new O-ring (B).



1. 23. Install the ground cable (A), upper radiator hose (B), lower radiator hose (C), heater hose (D) and water bypass hose (E).



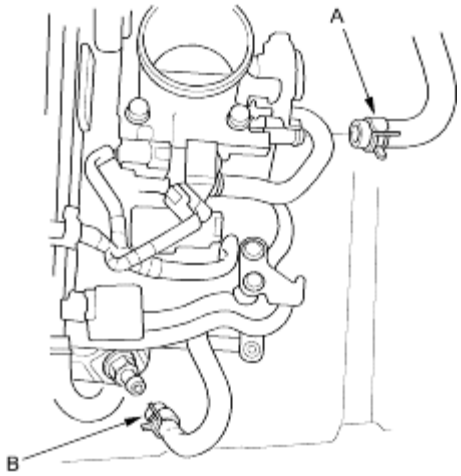
2. 24. Install the EVAP canister hose.



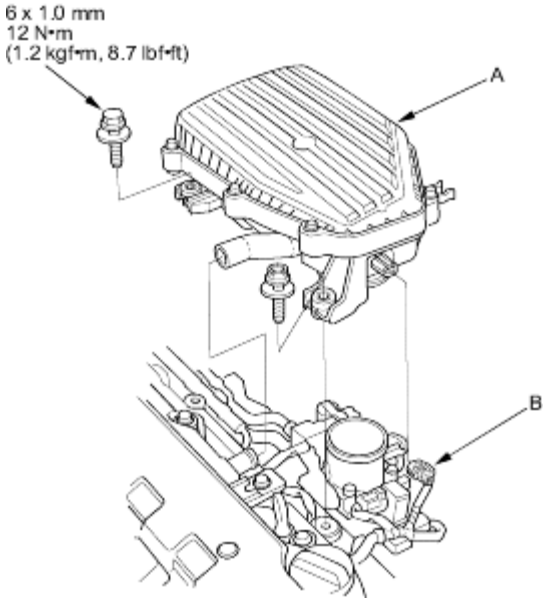
Cylinder Head

Cylinder Head Installation (cont'd)

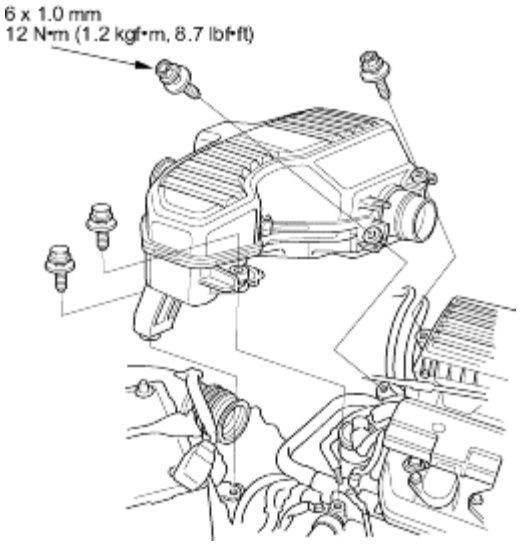
1. 25. Install the brake booster vacuum hose (A) and PCV hose (B).



2. 26. Install the air cleaner housing (A), then connect the IAT sensor connector (B) and breather hose.



1. 27. Install the intake resonator.

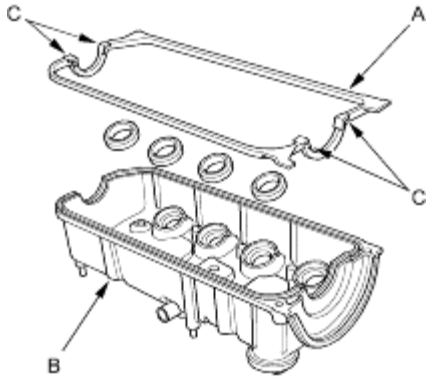


2. 28. Install the cruise control cable, then adjust the cable (see page 4-49).
29. Install the throttle cable, then adjust the cable (see page 11-148).
30. After installation, check that all tubes, hoses and connectors are installed correctly.
31. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
32. Inspect for fuel leaks. Turn ON (II) the ignition switch (do not operate the starter) so that the fuel pump runs for approximately 2 seconds and pressurises the fuel line. Repeat this operation 2 or 3 times, then check for fuel leakage at any point in the fuel line.
33. Refill the radiator with engine coolant and bleed air from the cooling system with the heater valve open (see page 10-8).
34. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

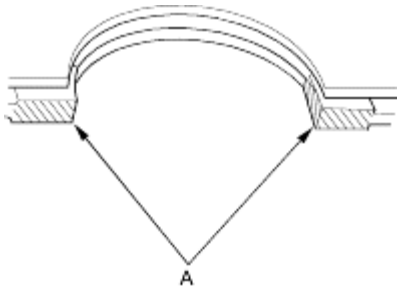
Cylinder Head

Cylinder Head Cover Installation

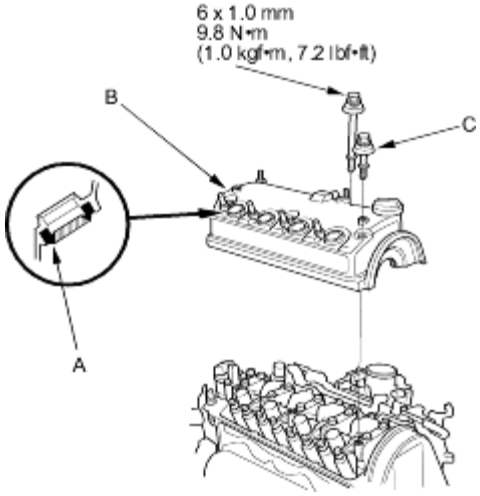
1. 1. Thoroughly clean the head cover gasket and the groove.
2. 2. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Seat the head cover gasket in the recesses for the camshaft first, then work it into the groove around the outside edges. Make sure the head cover gasket is seated securely in the corners of the recesses (C) with no gap.



3. 3. Check that the mating surfaces are clean and dry.
   4. Apply liquid gasket, part No. 08C70-K0234M, 08C70-K0334M or, 08C70-X0331S to the head cover gasket at the four corners of the recesses (A).
   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.



1. 5. Hold the head cover gasket in the groove by placing your fingers on the camshaft holder contacting surfaces (top of the semicircles). Set the spark plug seals (A) on the spark plug tubes. Once the cylinder head cover (B) is on the cylinder head, slide the cover slightly back and forth to seat the head cover gasket.

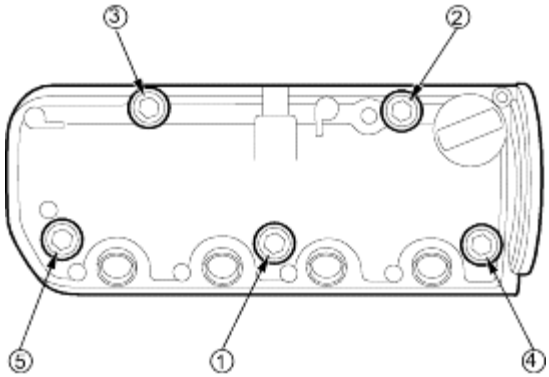


2. 6. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

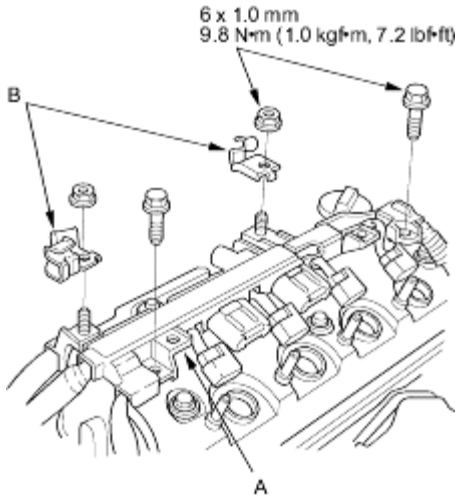
Cylinder Head

Cylinder Head Cover Installation (cont'd)

7. Tighten the bolts in 2 or 3 steps. In the final step, tighten all bolts, in sequence, to 9.8 Nm (1.0 kgf/m, 7.2 lbf/ft).



8. Install the harness holder (A) and throttle cable clamps (B).

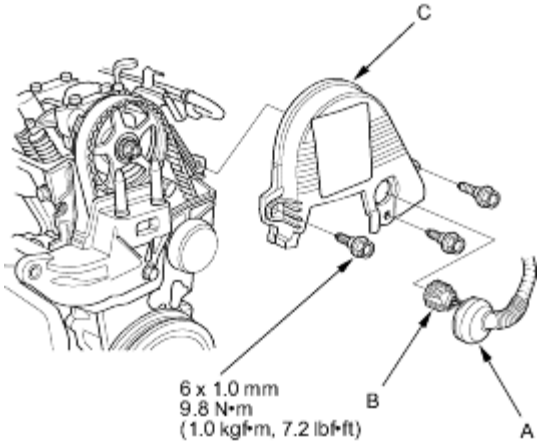


9. Install the ignition coils (see page 4-24).
10. Check that all tubes, hoses and connectors are installed correctly.
11. After assembly, wait at least 30 minutes before filling the engine with oil.

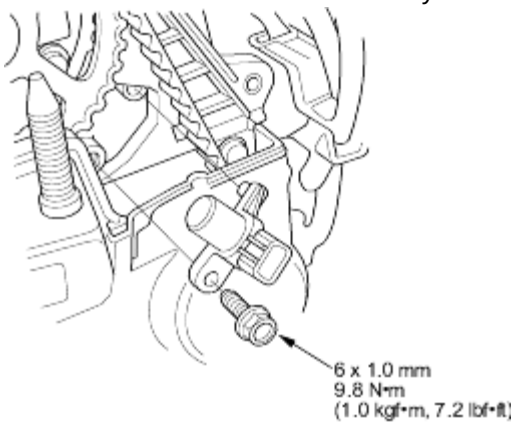
Cylinder Head

TDC Sensor Replacement

1. 1. Remove the grommet (A) from the upper cover and disconnect the TDC sensor connector (B).



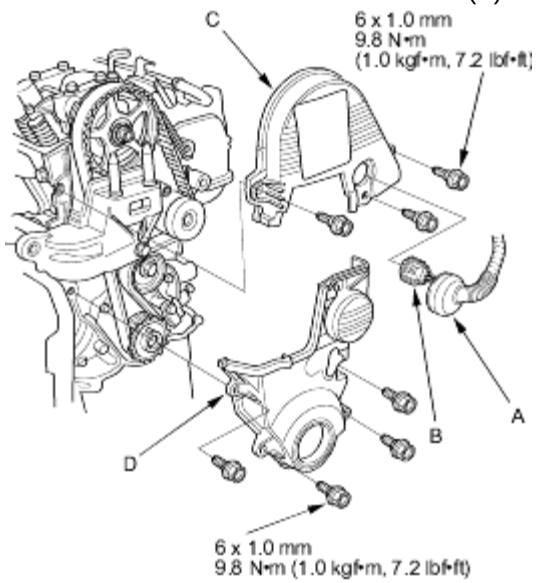
2. 2. Remove the upper cover (C).
   3. Remove the TDC sensor from the cylinder head.



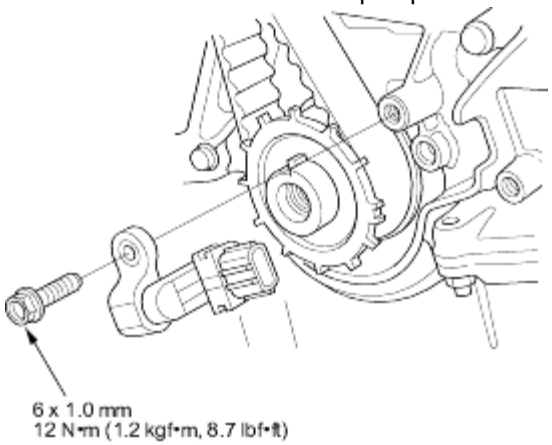
3. 4. Install the TDC sensor in reverse order of removal.

CKP Sensor Replacement

1. 1. Remove the grommet (A) from the upper cover and disconnect the TDC sensor connector (B).



2. 2. Remove the upper cover (C) and lower cover (D).
   3. Disconnect the CKP sensor connector, then remove the CKP sensor from the oil pump.

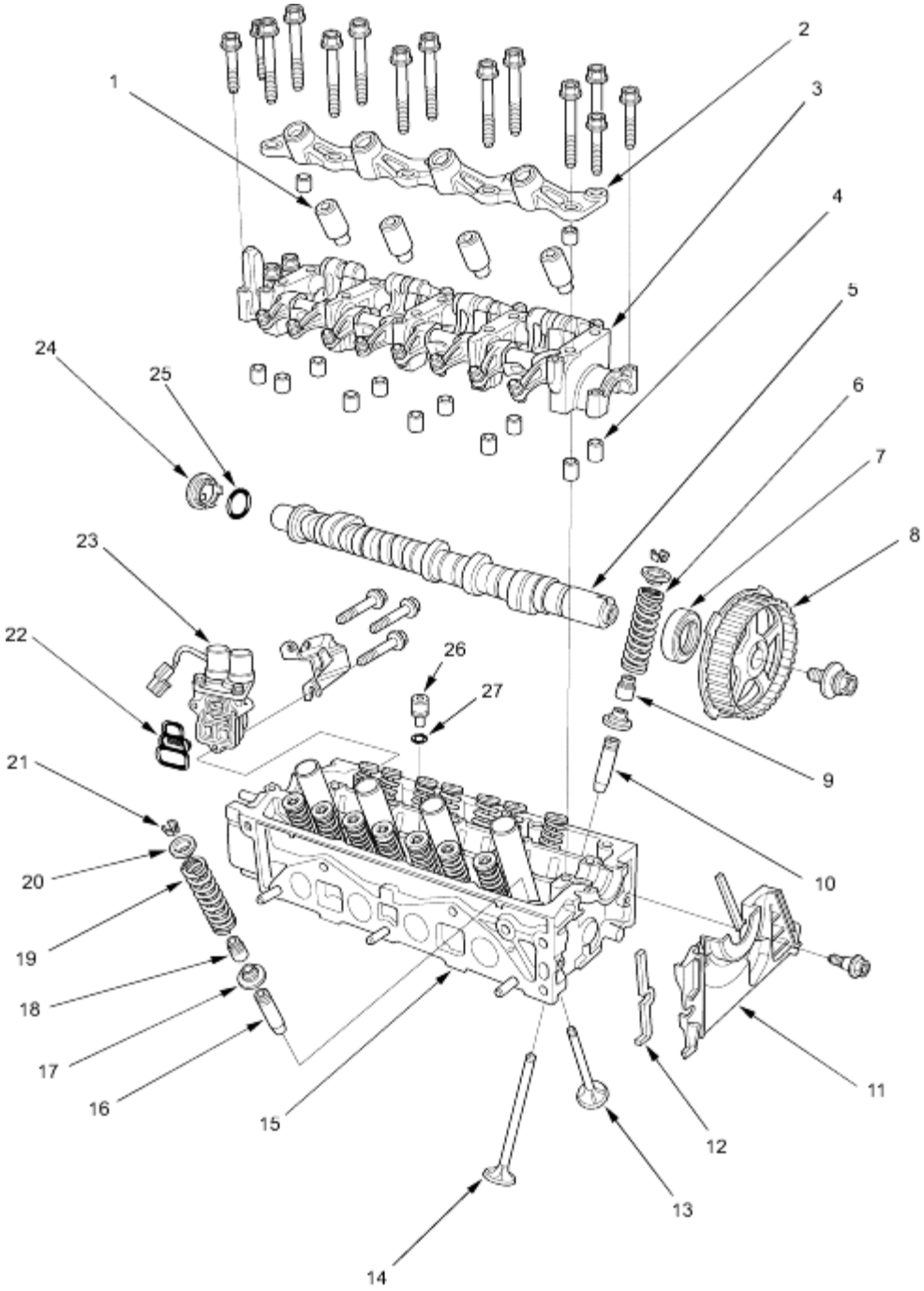


3. 4. Install the CKP sensor in reverse order of removal.

Cylinder Head

Component Location Index (cont'd)

D16W8 engine:

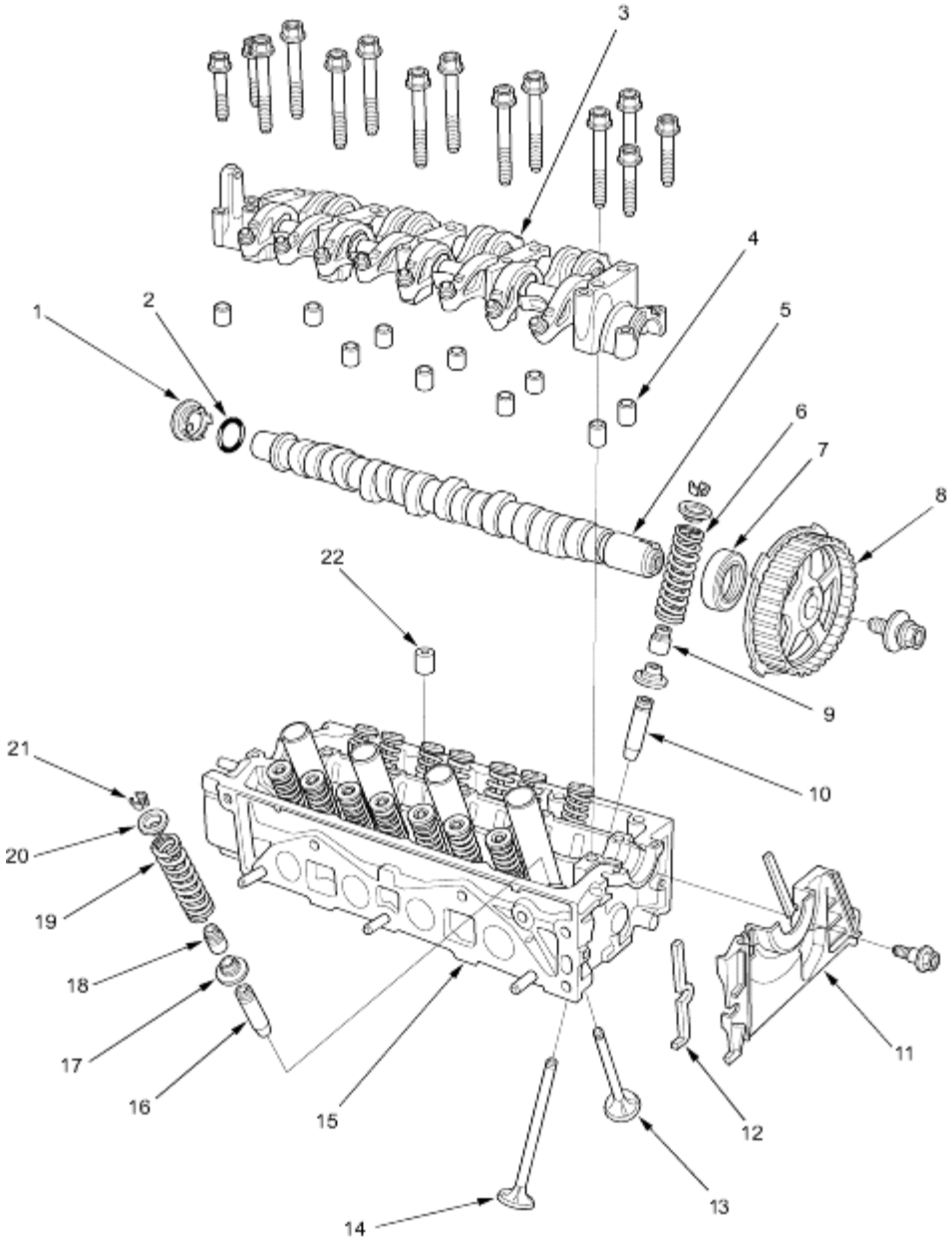


1. LOST MOTION ASSEMBLY
2. LOST MOTION HOLDER
3. ROCKER ARM ASSEMBLY
   Overhaul, page 6-36
   Inspection, page 6-38
4. DOWEL PIN
5. CAMSHAFT
   Inspection, page 6-40
6. INTAKE VALVE SPRING
7. SEAL
8. CAMSHAFT PULLEY
9. INTAKE VALVE SEAL
   Replacement, page 6-42
10. VALVE GUIDE
    Replacement, page 6-44
11. BACK COVER
12. RUBBER SEAL
13. EXHAUST VALVE
    Removal, page 6-42
    Installation, page 6-48
14. INTAKE VALVE
15. CYLINDER HEAD
    Removal, page 6-28Inspection, page 6-34
    Installation, page 6-50
16. VALVE GUIDE
17. VALVE SPRING SEAT
18. EXHAUST VALVE GUIDE
19. EXHAUST VALVE SPRING
20. SPRING RETAINER
21. VALVE KEEPERS
22. VTEC SOLENOID VALVE FILTER
23. VTEC SOLENOID VALVE
24. CYLINDER HEAD PLUG
25. O-RING
26. OIL CONTROL ORIFICE
27. O-RING

Cylinder Head

Component Location Index (cont'd)

D14Z5, D15Y2, D15Y3, D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:

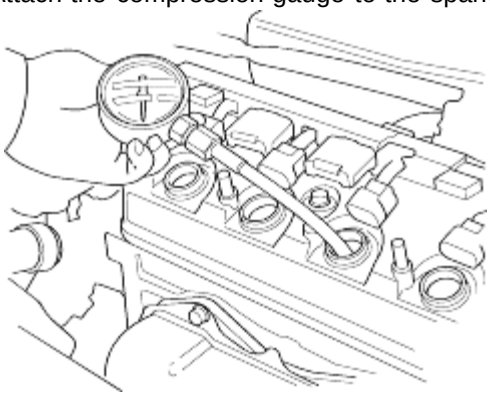


1. CYLINDER HEAD PLUG
2. O-RING
3. ROCKER ARM ASSEMBLY
   Overhaul, page 6-37
   Inspection, page 6-38
4. DOWEL PIN
5. CAMSHAFT
   Inspection, page 6-40
6. VALVE SPRING
7. SEAL
8. CAMSHAFT PULLEY
9. INTAKE VALVE SEAL
   Replacement, page 6-42
10. VALVE GUIDE
    Replacement, page 6-44
11. BACK COVER
12. RUBBER SEAL
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    Removal, page 6-42
    Installation, page 6-48
14. INTAKE VALVE
15. CYLINDER HEAD
    Removal, page 6-28
    Inspection, page 6-34
    Installation, page 6-50
16. VALVE GUIDE
17. VALVE SPRING SEAT
18. EXHAUST VALVE SEAL
19. VALVE SPRING
20. SPRING RETAINER
21. VALVE KEEPERS
22. OIL CONTROL ORIFICE

Cylinder Head

Engine Compression Inspection

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Remove the air cleaner housing (see step 6 on page 6-29).
4. Disconnect all four injector connectors.
5. Start the engine and let it run until it stalls.
6. Remove the all four ignition coils (see page 4-24).
7. Remove the all four spark plugs.
8. Attach the compression gauge to the spark plug hole.



9. Connect a tachometer.
10. Open the throttle fully, then crank the engine with the starter motor and measure the compression.

    Compression Pressure:

    Above 930 kpa (9.5 kgf/cm2, 135 psi)-250 rpm (min-1)

11. Measure the compression on the remaining cylinders.

    Maximum variation:

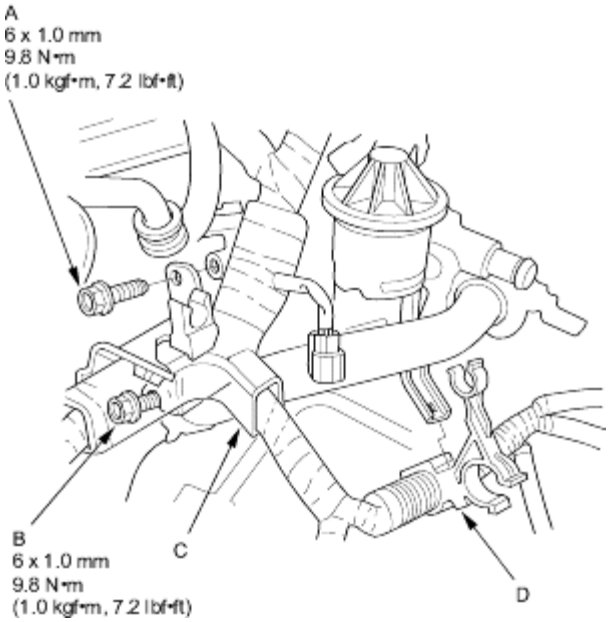
    Within 200 kPa (2.0 kgf/cm2, 28 psi)

12. If the compression is not within specifications, check the following items, then remeasure the compression.
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore

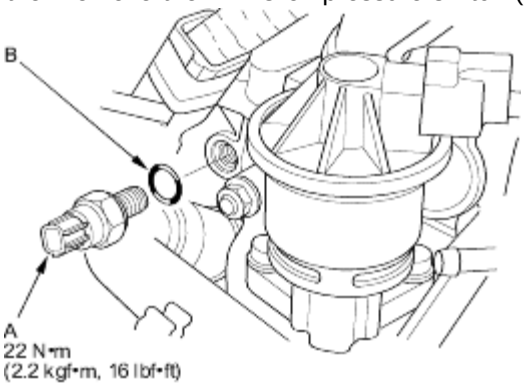
Cylinder Head

VTEC Oil Pressure Switch Replacement

1. 1. Remove the resonator (see step 5 on page 6-29).
2. 2. Remove the bolt (A) and loosen the bolt (B) securing the VTEC solenoid valve, then remove the harness bracket (C) from the VTEC solenoid valve.



3. 3. Remove the harness clamp (D) from the connecting pipe.
   4. Disconnect the VTEC oil pressure switch connector, then remove the VTEC oil pressure switch (A).



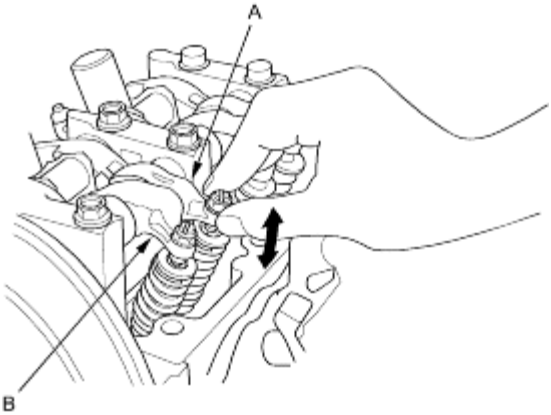
4. 5. Install the VTEC oil pressure switch using a new O-ring (B).

Special Tools Required

- Air Stopper, 07LAJ-PR30201
- Valve Inspection Set, 07LAJ-PR30101

D15Y4, D16V2, D16W7, D17A2, D17A5, D17Z3 engines:

1. 1. Remove the resonator (see step 5 on page 6-29).
   2. Remove the ignition coil cover, then remove the four ignition coils (see page 4-24).
   3. Remove the throttle cable clamps and harness holder from the cylinder head cover (see step 9 on page 6-19).
   4. Remove the cylinder head cover (see step 10 on page 6-19).
   5. Set the No. 1 piston at TDC (see step 3 on page 6-18).
   6. Verify that the intake secondary rocker arm (A) moves independently of the intake primary rocker arm (B).
      - If the intake secondary rocker arm does not move, remove the primary and secondary rocker arms as an assembly and check that the pistons in the secondary and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly and retest.
      - If the intake secondary rocker arm moves freely, go to step 7.



2. 7. Repeat step 6 on the remaining intake secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 8.

Engine Block

Special Tools	7-2
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Flywheel Removal and Installation	7-5
Drive Plate Removal and Installation	7-5
Connecting Rod and Crankshaft End Play Inspection	7-6
Crankshaft Main Bearing Replacement	7-7
Connecting Rod Bearing Replacement	7-9
Crankshaft and Piston Removal	7-11
Crankshaft Inspection	7-13
Block and Piston Inspection	7-14
Cylinder Honing	7-16
Piston, Pin and Connecting Rod Replacement	7-17
Piston Ring Replacement	7-19
Piston Installation	7-21
Crankshaft Installation	7-22
Oil Pan Installation	7-25
Knock Sensor Replacement	7-26

Engine Block

Connecting Rod Bearing Replacement (cont'd)

Rod Bearing Selection

Each rod falls into one of four tolerance ranges (from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments) depending on the size of its big end bore.

It's then stamped with a number (1,2,3, or 4), indicating the range.

You may find any combination of 1, 2, 3, or 4 in any engine.

Normal Bore Size:

D14Z5 engines: 43.0 mm (1.69 in.)

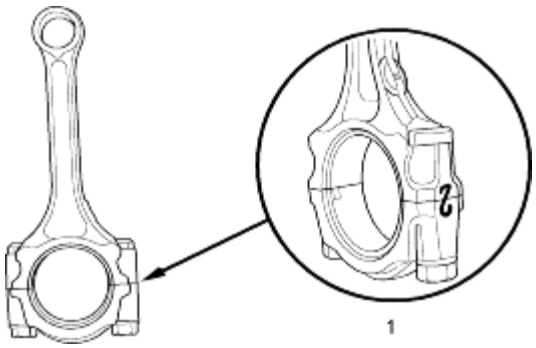
D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 engines: 45.0 mm (1.77 in.)

D16V1, D16W7, D16W8, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines: 48.0 mm (1.89 in.)

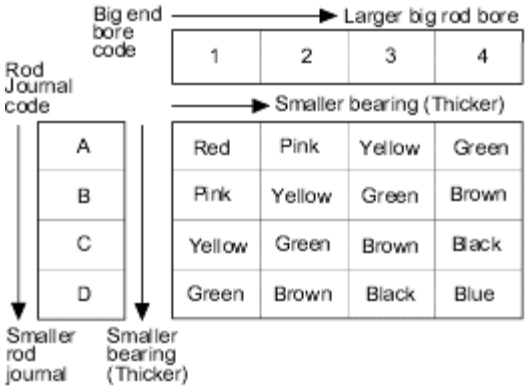
Inspect the connecting rod for cracks and heat damage.

Connecting Rod Journal Code Locations

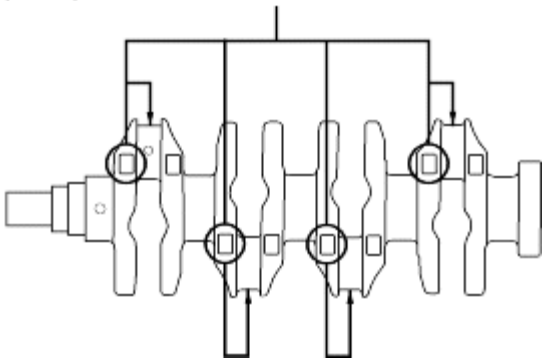
Numbers have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



1. 1. Half of number is stamped on bearing cap and the other half is stamped on rod.



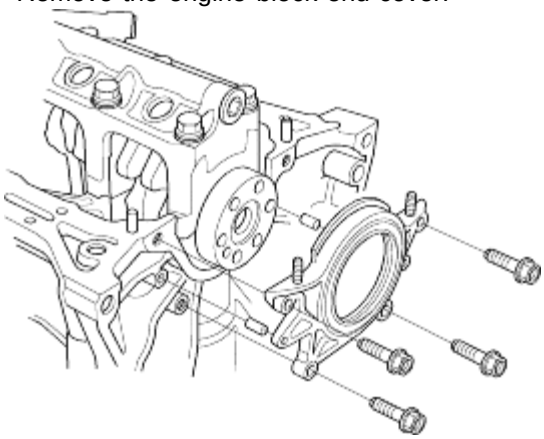
Connecting Rod Journal Code Locations (Letters)



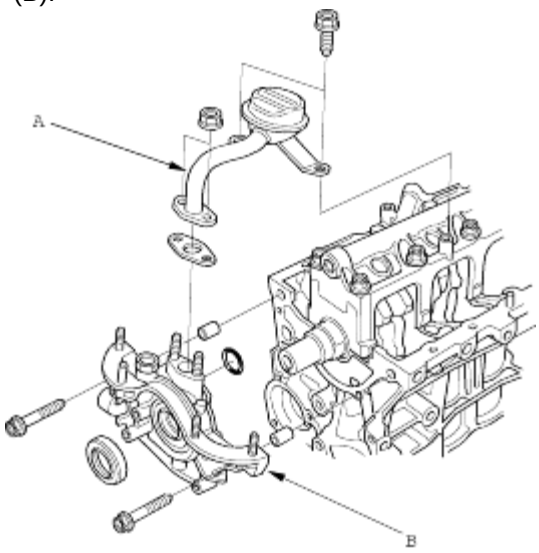
Engine Block

Crankshaft and Piston Removal

1. 1. Remove the oil pan.
   2. Remove the engine block end cover.

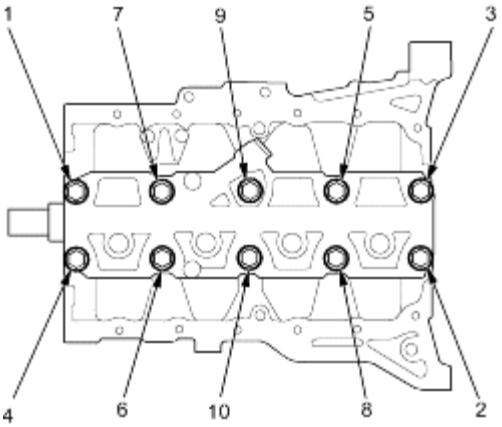


2. 3. Remove the oil screen (A), then remove the oil pump (B).

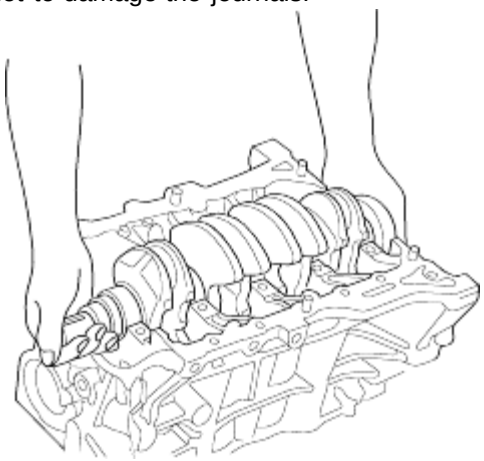


1. 4. Remove the bearing cap bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

BEARING CAP BOLTS LOOSENING SEQUENCE:



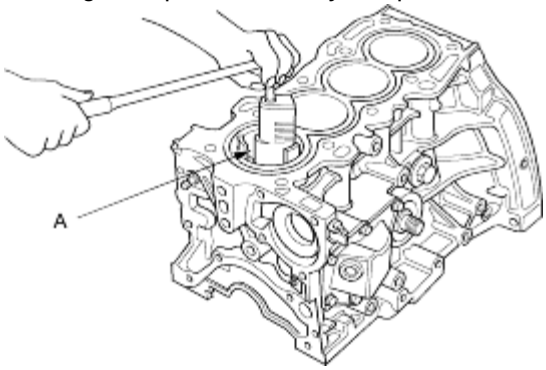
2. 5. Remove the bearing cap bridge/bearings. Keep all bearings in order.
   6. Turn the crankshaft so No. 2 and No. 3 crankpins are at the top.
   7. Remove the rod caps/bearings. Keep all caps/bearings in order.
   8. Lift the crankshaft out of the engine, being careful not to damage the journals.



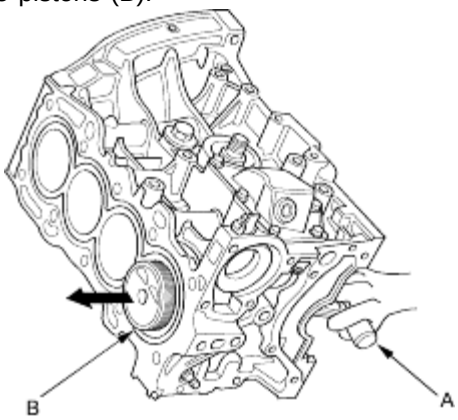
Engine Block

Crankshaft and Piston Removal (cont'd)

1. 9. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
   10. Reinstall the bearing cap bridge and bearings on the engine in the proper order.
   11. If you can feel a ridge of metal or hard carbon around the top of each cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the pistons as they are pushed out.



2. 12. Use the wooden handle of a hammer (A) to drive out the pistons (B).



3. 13. Reinstall the connecting rod bearing and caps after removing each piston/connecting rod assembly.

1. 14. To avoid mix-up on reassembly, mark each piston/connecting rod assembly with its cylinder number.

NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod size.

Engine Block

Crankshaft Inspection

Straightness

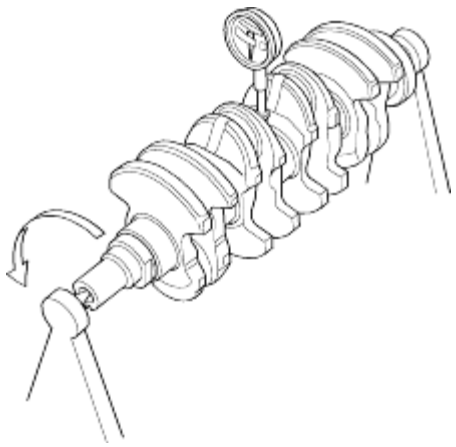
NOTE:

- Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
- Check the keyway and threads.

1. 1. Support the crankshaft with a lathe-type tool or V-blocks.
   2. Measure runout on all main journals to make sure the crank is not bent. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Indicator Runout:

Standard (New):	0.03 mm (0.001 in.) max.
Service Limit:	0.04 mm (0.002 in.)

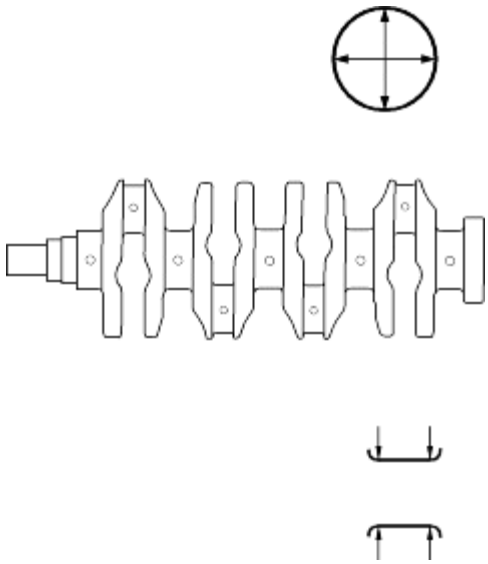


Out-of-Round and Taper

1. 1. Measure out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round:

Standard (New):	0.0025 mm (0.0001 in.) max.
Service Limit:	0.005 mm (0.0002 in.)



2. 2. Measure taper at the edge of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper:

Standard (New):	0.0025 mm (0.0001 in.) max.
Service Limit:	0.005 mm (0.0002 in.)

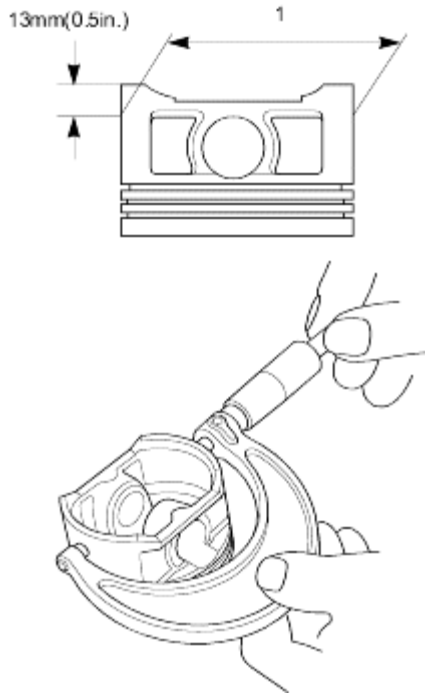
Engine Block

Block and Piston Inspection

1. 1. Check the piston for distortion or cracks.
   2. Measure the piston diameter at a point 13 mm (0.5 in.) from the bottom of the skirt.

Piston Diameter:

Standard (New):	74.98 - 74.99 mm (2.9520 - 2.9524 in.)
Service Limit:	74.97 mm (2.9516 in.)



2. 1. SKIRT DIAMETER

Oversize Piston Diameter:

0.25: 75.23 - 75.24 mm (2.9618 - 2.9622 in.)

0.50: 75.48 - 75.49 mm (2.9716 - 2.9720 in.)

1. 3. Measure wear and taper in direction X and Y at 3 levels in each cylinder as shown. If measurements in any cylinder are beyond the Oversize Bore Service Limit, replace the block. If the block is to be rebored, refer to step 6 after reboring.

Cylinder Bore Size:

Standard (New):	75.00 - 75.02 mm (2.9528 - 2.9535 in.)
Service Limit:	75.07 mm (2.9555 in.)

Oversize:

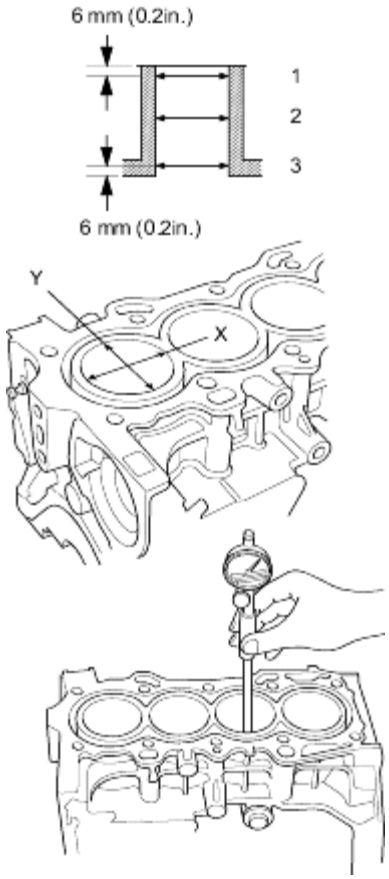
0.25: 75.25 - 75.27 mm (2.9626 - 2.9634 in.)

0.50: 75.50 - 75.52 mm (2.9724 - 2.9732 in.)

Reboring limit: 0.5 mm (0.02 in.) max.

Bore Taper:

Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)



2. 1. First Measurement
   2. Second Measurement
   3. Third Measurement

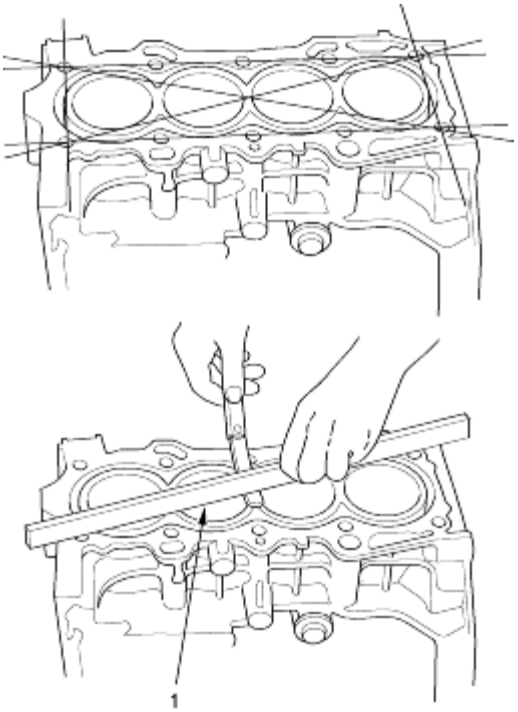
Engine Block

Block and Piston Inspection (cont'd)

1. 4. Scored or scratched cylinder bores must be honed.
5. Check the top of the block for warpage. Measure along the edges and across the centre as shown.

Engine Block Warpage:

Standard (New):	0.07 mm (0.003 in.) max.
Service Limit:	0.10 mm (0.004 in.)

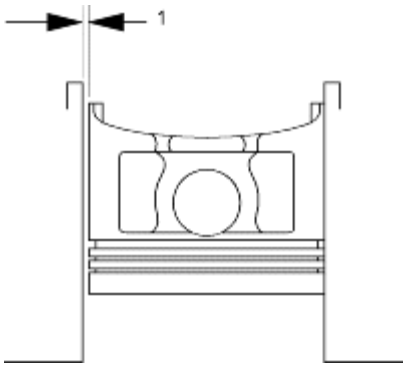


2. 1. PRECISION STRAIGHT EDGE

1. 6. Calculate the difference between the cylinder bore diameter and the piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder block for excessive wear.

Piston-to-Cylinder Clearance:

Standard (New):	0.010 - 0.040 mm (0.0004 - 0.0016 in.)
Service Limit:	0.05 mm (0.002 in.)

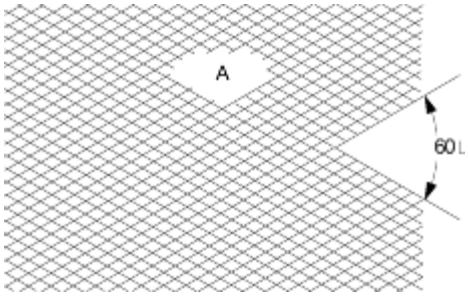


2. 1. PISTON-TO-CYLINDER CLEARANCE

Engine Block
Cylinder Honing

Only a scored or scratched cylinder bore must be honed.

1. 1. Measure the cylinder bores (see page 7-14).
   If the block is to be reused, hone the cylinders and remeasure the bores.
   2. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree cross-hatch pattern (A). Use only a rigid hone with 400 grit or finer stone such as Sunnen, Ammco, or equivalent. Do not use stones that are worn or broken.



2. 3. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
   4. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the cylinder block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.

Engine Block

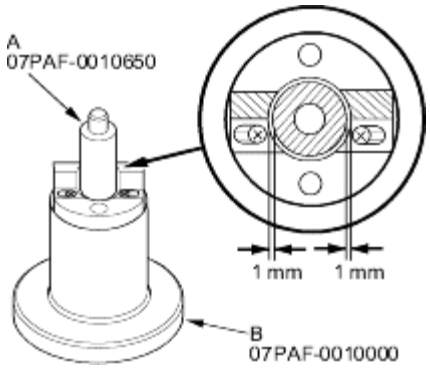
Piston, Pin and Connecting Rod Replacement

Special Tools Required

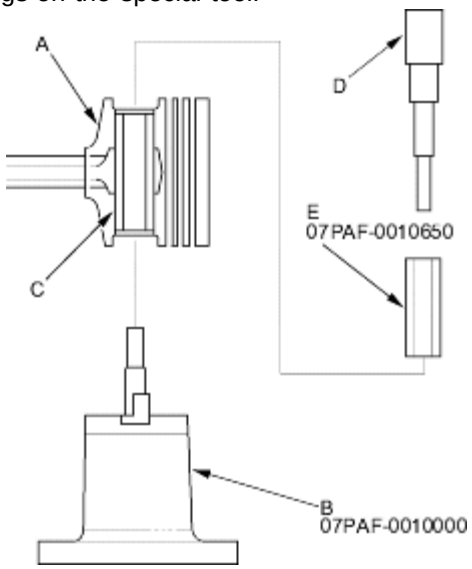
- Piston pin assembly tool set, 07PAF-0010000
- Pilot collar, O.D. 19 mm, 07PAF-0010650

Disassembly

1. 1. Set the pilot collar (A) the piston pin assembly tool set (B), then adjust the piston pin assembly tool set as shown.



2. 2. With the embossed mark facing up, place the piston assembly (A) on the special tool (B). Be sure you position the recessed flat on the piston against the lugs on the special tool.



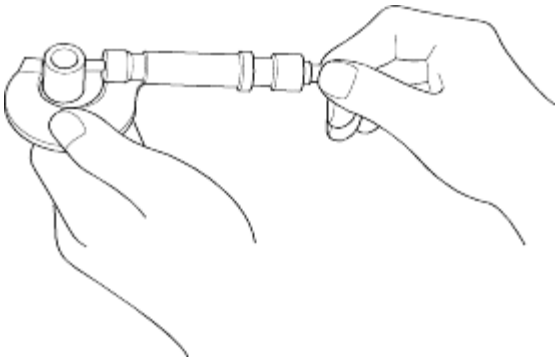
3. 3. Press the pin (C) out with the driver (D), pilot collar (E) and a hydraulic press.

Inspection

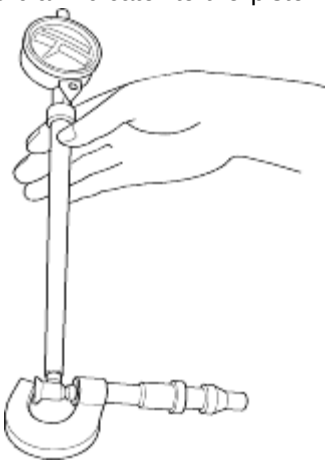
1. 1. Measure the diameter of the piston pin.

Piston Pin Diameter:

Standard (New):	18.996 - 19.000 mm (0.7479 - 0.7480 in.)



2. 2. Zero the dial indicator to the piston pin diameter.



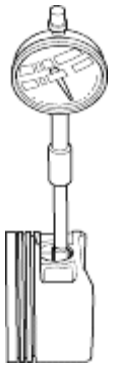
Engine Block

Piston, Pin and Connecting Rod Replacement (cont'd)

1. 3. Measure the piston pin-to-piston clearance.

Piston Pin-to-Piston Clearance:

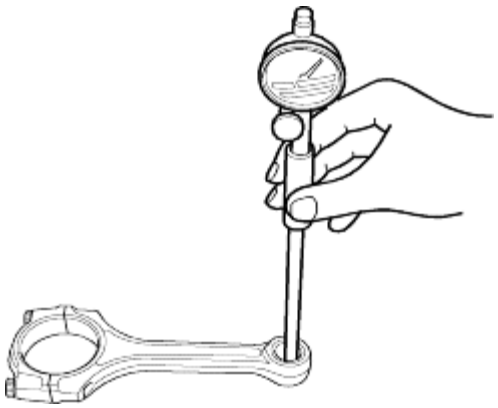
Standard (New): 0.010 - 0.020 mm (0.0004 - 0.0008 in.)



2. 4. Check the difference between the piston pin diameter and connecting rod small end diameter.

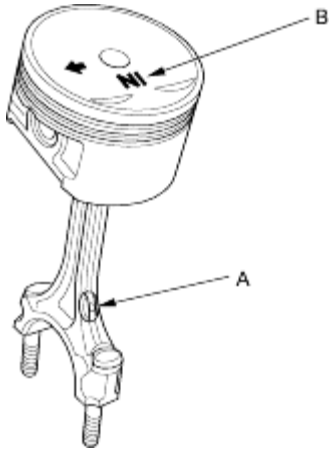
Piston Pin-to-Connecting Rod Interference:

Standard (New): 0.016 - 0.036 mm (0.0006 - 0.0014 in.)

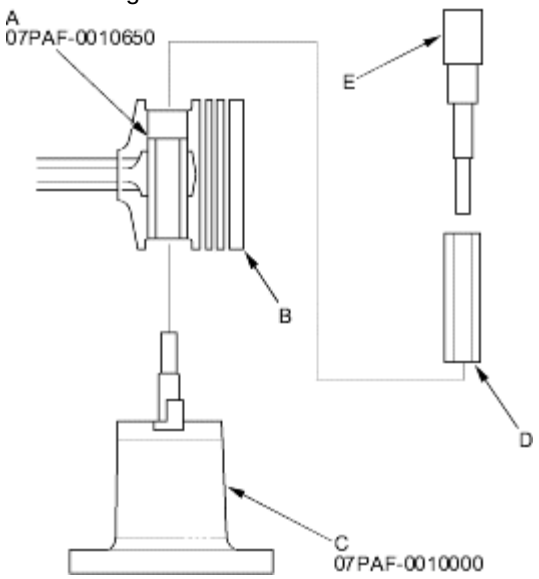


Reassembly

1. 1. Assemble the piston and connecting rod with the connecting rod oil hole (A) facing the "IN" mark (B) side.



2. 2. Insert the pilot collar (A) into the piston and connecting rod.

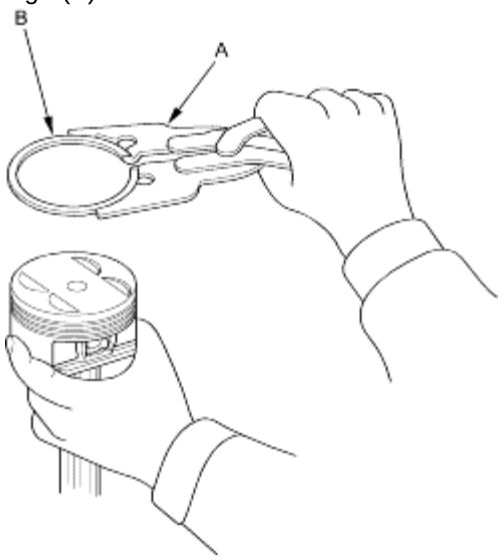


3. 3. With the embossed mark facing up, place the piston assembly (B) on the special tool (C). Be sure you position the recessed flat on the piston against the lugs on the base attachment.
4. Press the pin (D) in with the pin driver (E) and a hydraulic press.

Engine Block

Piston Ring Replacement

1. 1. Using a ring expander (A), remove the old piston rings (B).



2. 2. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade to fit the piston grooves.

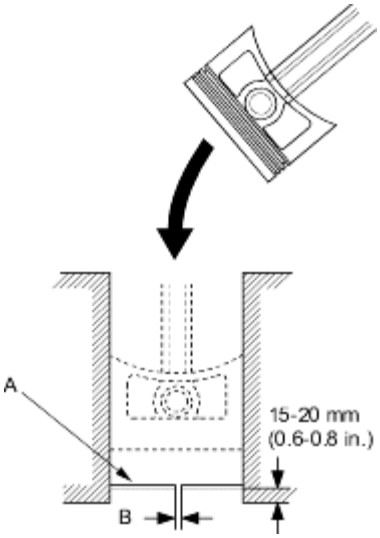
The top ring groove is 1.0 mm (0.04 in.) wide. The second ring groove is 1.2 mm (0.05 in.) wide. The oil ring groove is 2.8 mm (0.11 in.) wide (D15Y2, D15Y3, D16V2, D16W8, D17A5 engines) 2.0 mm (0.08 in.) wide (Except D15Y2, D15Y3, D16V2, D16W8, D17A5 engines).

File down a blade if necessary.

Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with cleaning tools.

NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

1. 3. Using a piston, push a new ring (A) into the cylinder bore 15 - 20 mm (0.6 - 0.8 in.) from the bottom.



2. 4. Measure the piston ring end-gap (B) with a feeler gauge:
   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see page 7-14).

If the bore is over the service limit, the cylinder block must be rebored.

Piston Ring End-Gap:

Top Ring

Standard (New):	0.15 - 0.30 mm (0.006 - 0.012 in.)
Service Limit:	0.60 mm (0.024 in.)

Second Ring

Standard (New):	0.30 - 0.45 mm (0.012 - 0.018 in.)
Service Limit:	0.60 mm (0.024 in.)

Oil Ring

D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

Standard (New):	0.20 - 0.80 mm (0.008 - 0.031 in.)
Service Limit:	0.90 mm (0.035 in.)

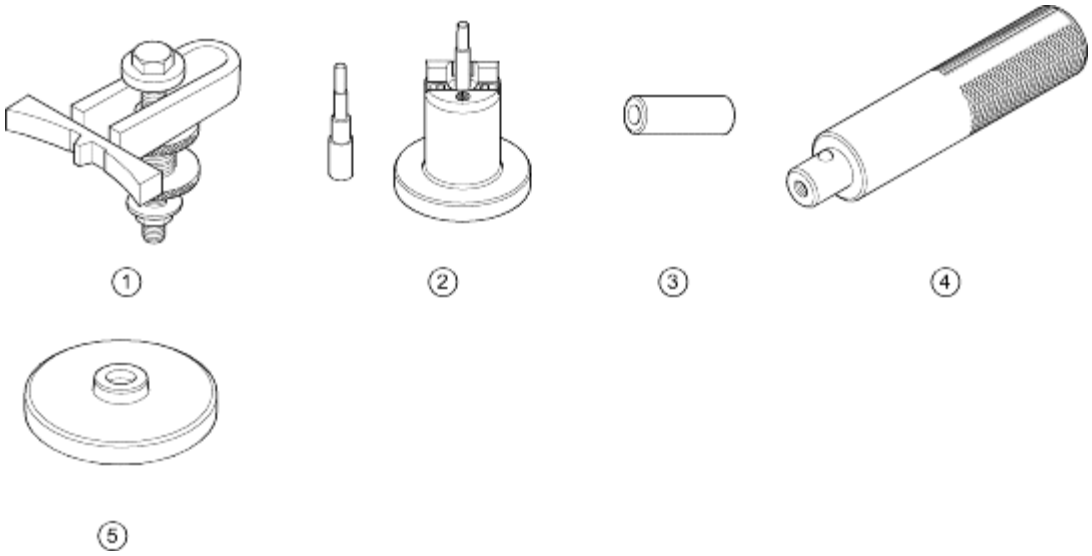
Except D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

Standard (New):	0.20 - 0.70 mm (0.008 - 0.028 in.)
Service Limit:	0.80 mm (0.031 in.)

Engine Block

Special Tools

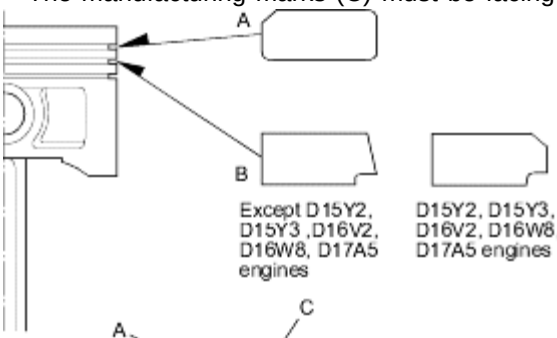
Ref. No.	Tool Number	Description	Qty
1	07LBA-PV00100	Ring Gear Holder	1
2	07PAF-0010000	Piston Pin Assembly Tool Set	1
3	07PAF-0010650	Pilot Collar, O.D. 19 mm	1
4	07749-0010000	Handle Driver	1
5	07948-SB00101	Driver Attachment, 96 mm	1

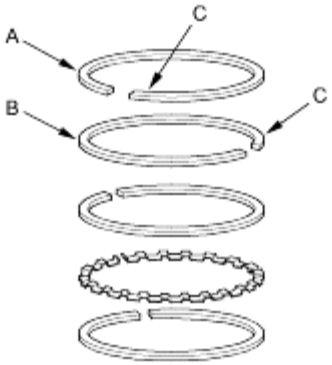


Engine Block

Piston Ring Replacement (cont'd)

1. 5. Install the top ring (A) and second ring (B) as shown. The manufacturing marks (C) must be facing upward.





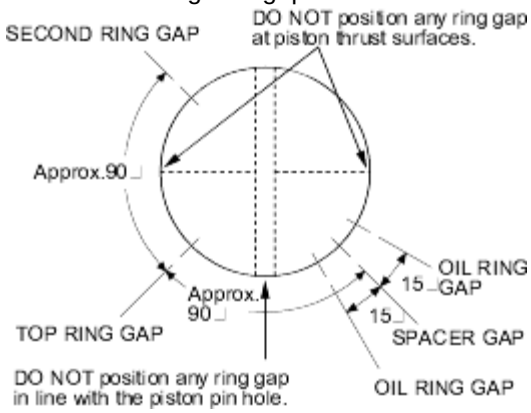
Piston Ring Dimensions:



Top Ring (Standard):
A:2.6mm (0.10in.)
B:1.0mm (0.04in.)

Second Ring (Standard):
A:3.0mm (0.12in.)
B:1.2mm (0.05in.)

1. 6. Rotate the rings in their grooves to make sure they do not bind.
2. 7. Position the ring end gaps as shown:



3. 8. After installing a new set of rings, measure the ring-to-groove clearances:

Top Ring Clearance

D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

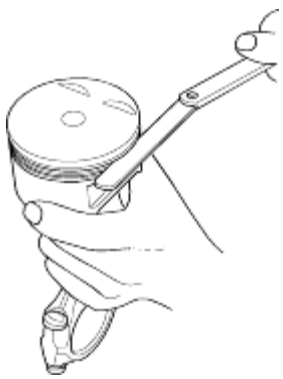
Standard (New):	0.35 - 0.55 mm (0.014 - 0.022 in.)
Service Limit:	0.13 mm (0.005 in.)

Except D15Y2, D15Y3, D16V2, D16W8, D17A5 engines:

Standard (New):	0.35 - 0.60 mm (0.014 - 0.024 in.)
Service Limit:	0.13 mm (0.005 in.)

Second Ring Clearance

Standard (New):	0.30 - 0.55 mm (0.012 - 0.022 in.)
Service Limit:	0.13 mm (0.005 in.)

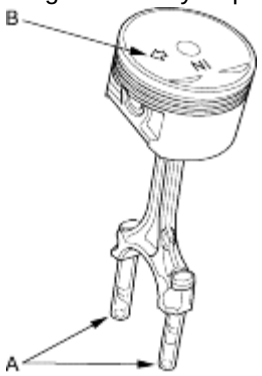


Engine Block

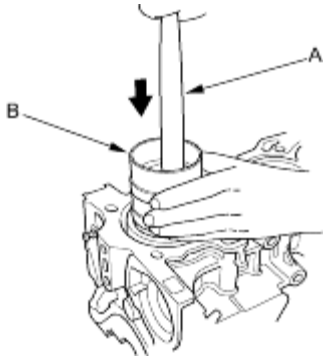
Piston Installation

If the crankshaft is already installed

1. 1. Set the crankshaft to BDC for each cylinder.
   2. Remove the connecting rod caps and slip short sections of rubber hose (A) over the connecting rod bolts. Then install the ring compressor, and check that the bearing is securely in place.



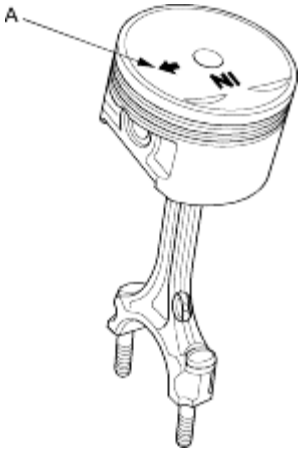
2. 3. Position the arrow (B) facing the timing belt side of the engine.
   4. Position the piston in the cylinder and tap it in using the wooden handle of a hammer (A).
   Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



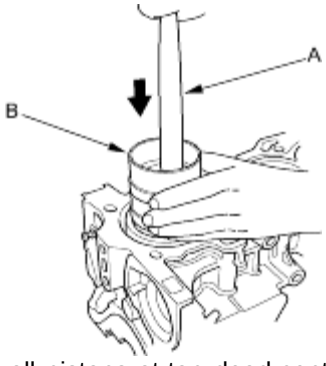
3. 5. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
   6. Check the connecting rod bearing clearance with plastigage (see page 7-9).
   7. Apply engine oil to the bolt threads, then install the rod caps with bearings. Torque the nuts to 32 Nm (3.3 kgf/m, 24 lbf/ft).

If the crankshaft is not installed

1. 1. Remove the connecting rod caps, then install the ring compressor, and check that the bearing is securely in place.
   2. Position the arrow (A) facing the timing belt side of the engine.



2. 3. Position the piston in the cylinder and tap it in using the wooden handle of a hammer (A).
   Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



3. 4. Position all pistons at top dead centre.

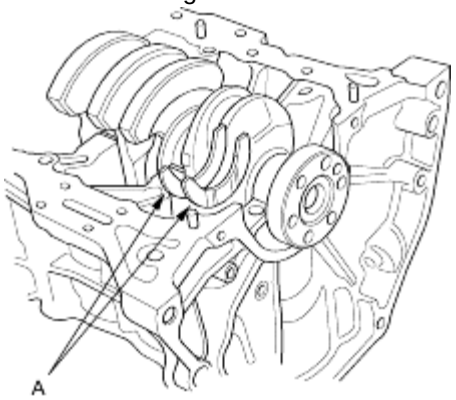
Engine Block

Crankshaft Installation

Special Tools Required

- Handle Driver, 07749-0010000
- Driver Attachment, 96 mm, 07948-SB00101

1. 1. Apply engine oil to the main bearings and rod bearings.
   2. Install the bearing halves in the cylinder block and connecting rods.
   3. Hold the crankshaft so rod journal No. 2 and rod journal No. 3 are straight up and lower the crankshaft into the block.
   4. Install the thrust washers (A) on both edges of the No. 4 main bearing recess.



2. 5. Apply engine oil to the threads of the connecting rod bolts.
   6. Seat the rod journals into connecting rod No. 1 and connecting rod No. 4. Install the caps and nuts finger tight. Install the cap so the bearing recess is on the same side as the recess in the rod.
   7. Rotate the crankshaft clockwise and seat the journals into connecting rod No. 2 and connecting rod No. 3. Install the connecting rod cap and bolts finger tight.
   8. Check the connecting rod bearing clearance with plastigage (see page 7-9).
   9. Tighten the connecting rod bolts to 32 Nm (3.3 kgf/m, 24 lbf/ft).

1. 10. Check the main bearing clearance with plastigage (see page 7-7).
2. 11. Install the bearing cap bridge. Coat the bolt threads with engine oil.
   12. Torque the cylinder head bolts sequentially in 2 steps.

1st step torque: 25 Nm (2.5 kgf/m, 18 lbf/ft)

2nd step torque:

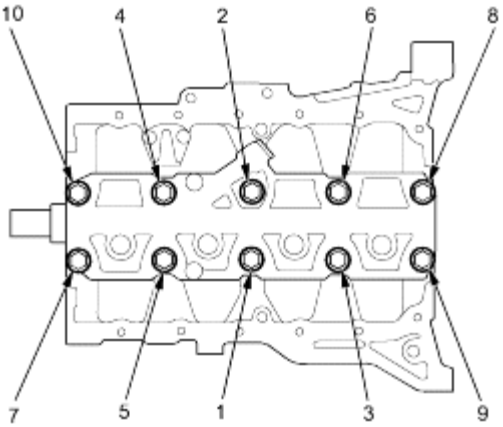
D14Z5, D15Y2, D15Y3, D15Y4, D15Y5, D15Y6 Engines: 44 Nm (4.5 kgf/m, 33 lbf/ft)

D16V2, D16W7, D16W8, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5 engines:

51 Nm (5.2 kgf/m, 38 lbf/ft)

NOTE: Whenever any crankshaft or connecting rod bearing is replaced, it is necessary after reassembly to run the engine at idling speed until it reaches normal operating temperature, then continue to run it for approximately 15 minutes.

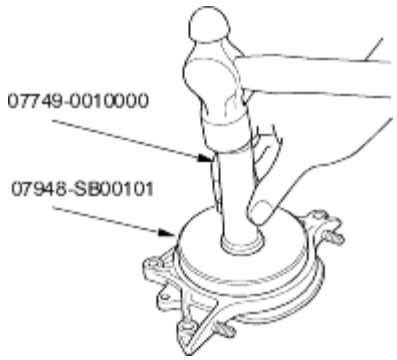
BEARING CAP BOLTS TIGHTENING SEQUENCE:



Engine Block

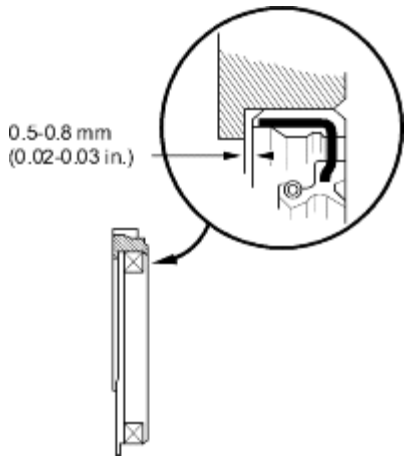
Crankshaft Installation (cont'd)

1. 13. The seal mating surface on the engine block end cover should be dry. Apply a light coat of grease to the crankshaft and to the lip of the seal.
   14. Drive the crankshaft oil seal squarely into the engine block end cover.



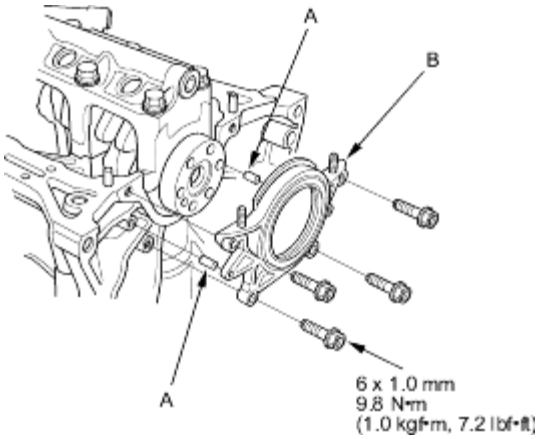
2. 15. Confirm that the clearance is equal all the way around with a feeler gauge.

Clearance: 0.5 - 0.8 mm (0.02 - 0.03 in.)



1. 16. Clean and dry the engine block end cover mating surfaces.
2. 17. Apply liquid gasket, part No. 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the engine block end cover and to the inner threads of the bolt holes. Install the dowel pins (A), and the engine block end cover (B) on the cylinder block.

NOTE: Do not install the parts if 5 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.

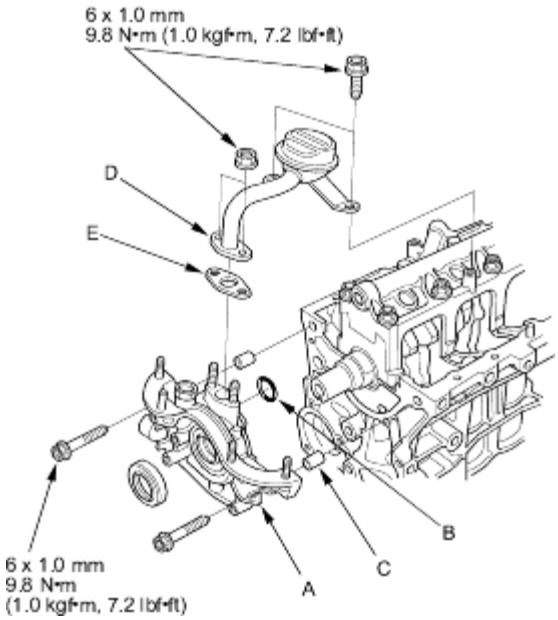


3. 18. After assembly, wait at least 30 minutes before filling the engine with oil.

Engine Block

Crankshaft Installation (cont'd)

1. 19. Clean and dry the oil pump mating surfaces.
   20. Install the oil pump (A).
       1. Install a new crankshaft oil seal in the oil pump (see step 12 on page 8-11).
       2. Apply liquid gasket, part No. 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the oil pump and to the inner threads of the bolt holes.
       3. Grease the lip of the oil seal and apply oil to the new O-ring (B).
       4. Install the dowel pins (C), then align the inner rotor with the crankshaft and install the oil pump.
       5. Clean the excess grease off the crankshaft and check the seal for distortion.



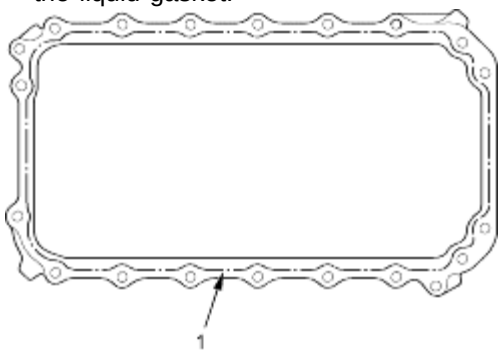
2. 21. Install the oil screen (D) with a new gasket (E).
   22. Install the oil pan (see page 7-24).

Aluminium Oil Pan Type:

1. 1. Clean and dry the oil pan mating surfaces and bolt holes.
   2. Apply liquid gasket, part No. 08C70-K0334M or 08C70-X0331S, evenly to the oil pan mating surface of the block and to the inner threads of the bolt holes.

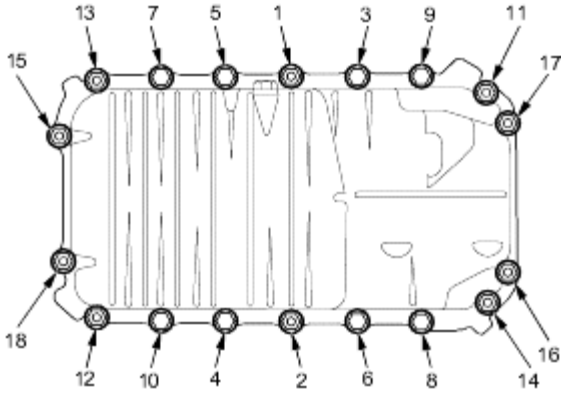
NOTE:

- Apply liquid gasket 4 mm wide.
- Apply liquid gasket doubly to the jointing point of the liquid gasket.



2. 1. Apply liquid gasket along the broken line.

3. 3. Install the oil pan.
   4. Tighten the bolts in 2 or 3 steps. In the final step, tighten all bolts, in sequence to 12 Nm (1.2 kgf/m, 8.7 lbf/ft).



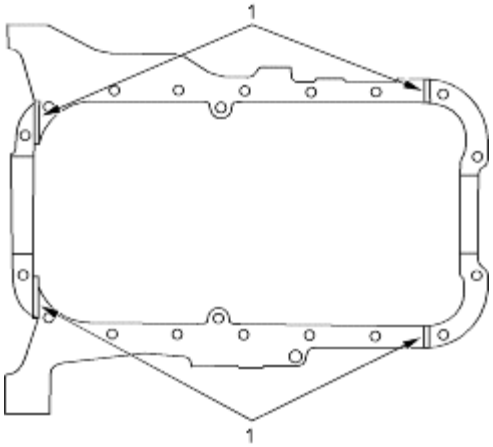
4. 5. After assembly, wait at least 30 minutes before filling the engine with oil.

Engine Block

Oil Pan Installation (cont'd)

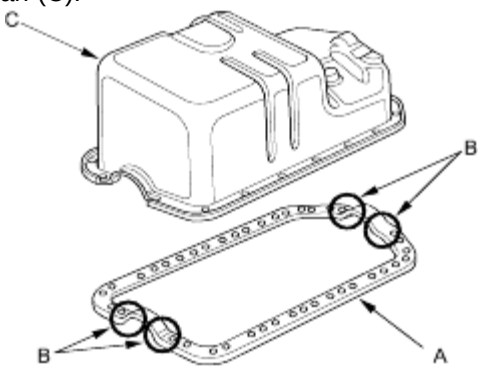
Steel Oil Pan Type:

1. 1. Clean and dry the oil pan mating surfaces and bolt holes.
   2. Apply liquid gasket, part No. 08C70-K0334M or 08C70-X0331S, on the oil pump and engine block end cover mating areas.

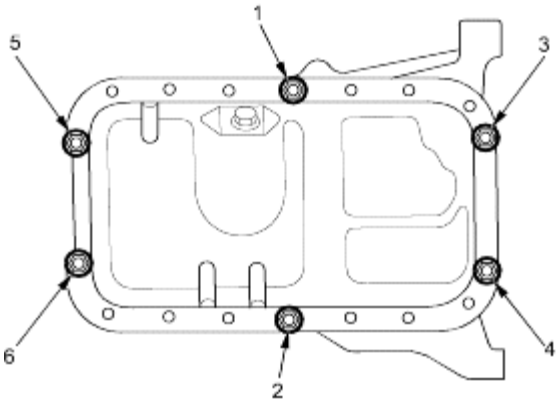


2. 1. Apply liquid gasket to these points.

3. 3. Apply liquid gasket, part No. 08C70-K0334M or 08C70-X0331S, to the new oil pan gasket (A) at the four corners of the recesses (B), then install the oil pan (C).



1. 4. Tighten bolts and nuts finger tight at six points as shown below.

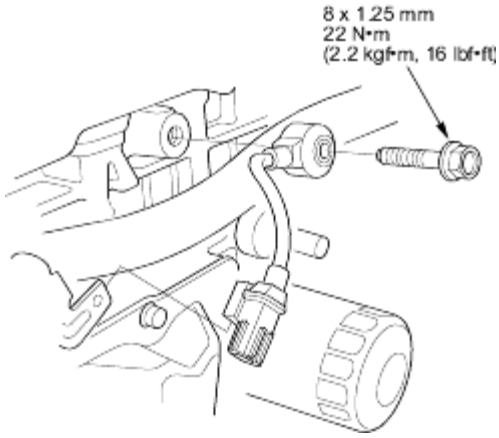


2. 5. Tighten all bolts and nuts, stating from nut (1), clockwise in 3 steps. In the final step, tighten all bolts, in sequence to 12 Nm (1.2 kgf/m, 8.7 lbf/ft).
   6. After assembly, wait at least 30 minutes before filling the engine with oil.

Engine Block

Knock Sensor Replacement

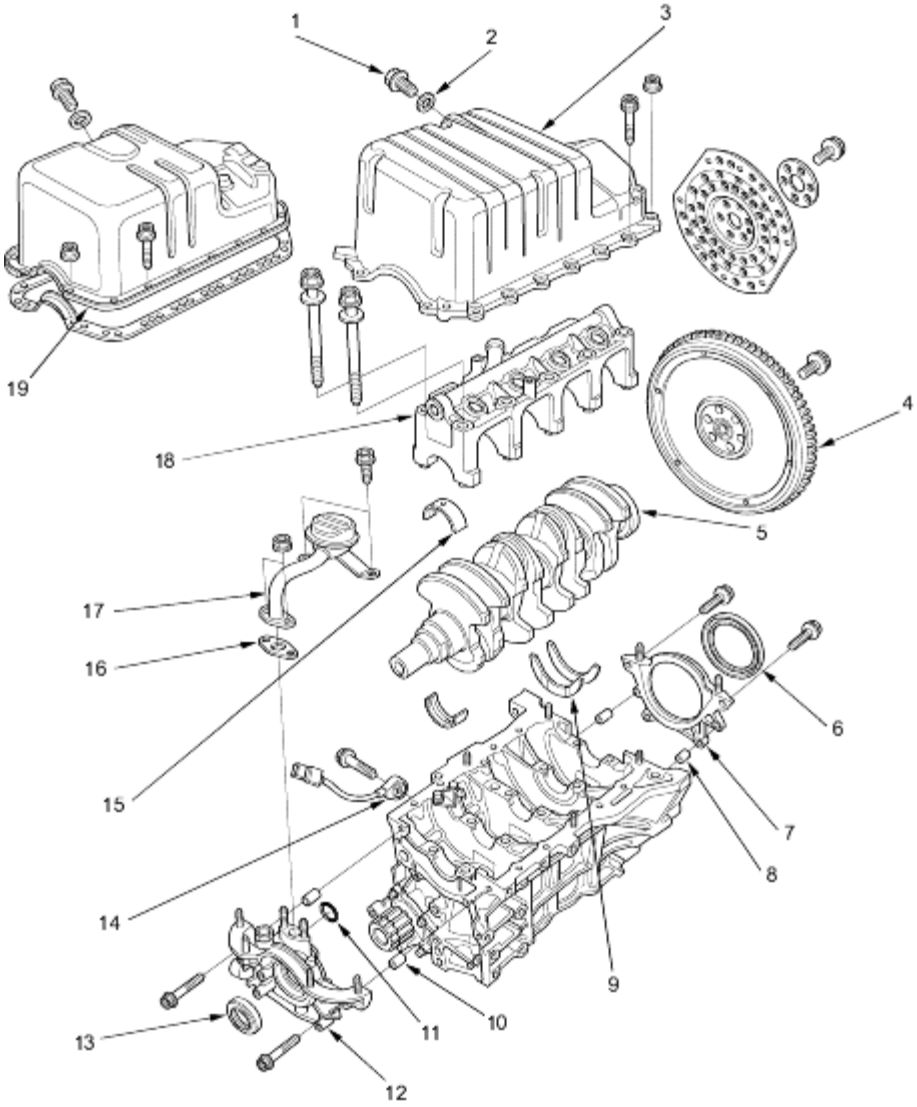
1. 1. Disconnect the knock sensor connector, then remove the knock sensor.



2. 2. Install the knock sensor.

Engine Block

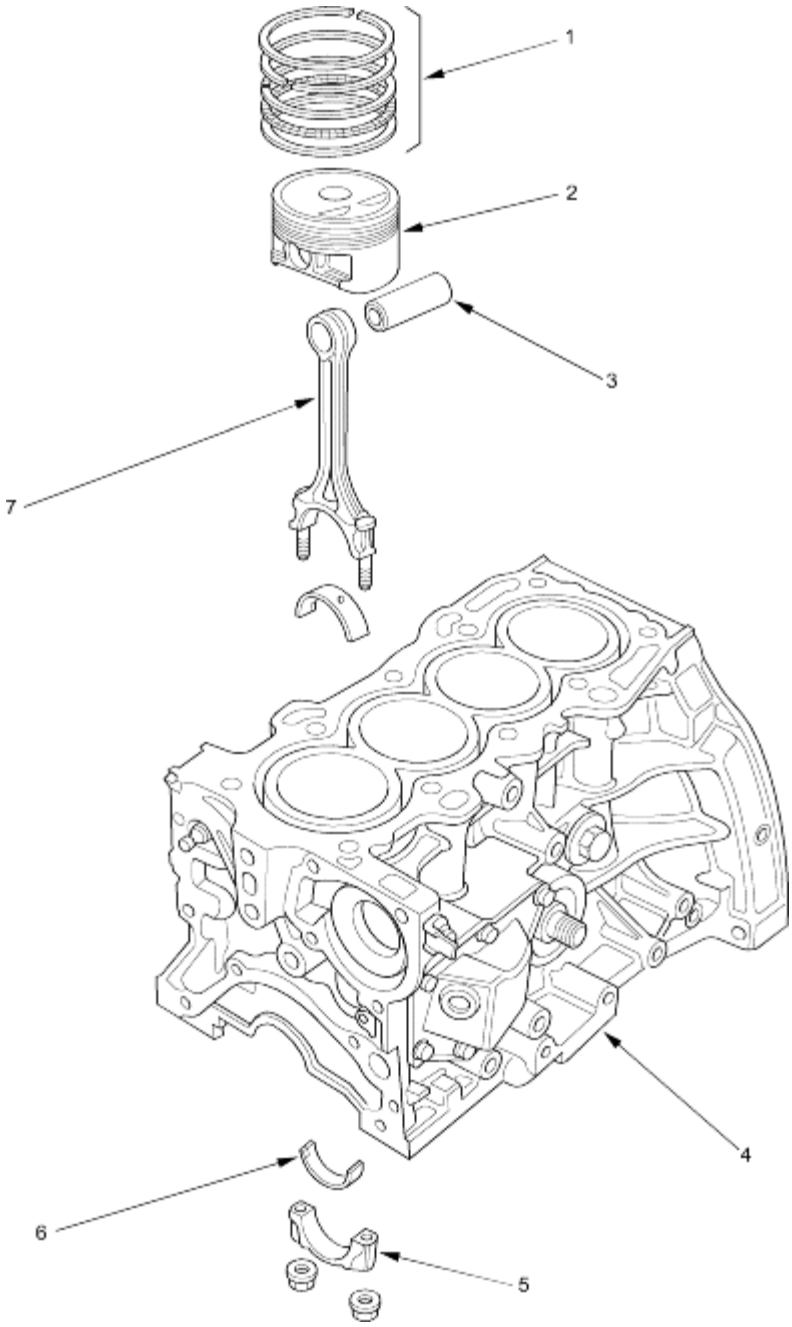
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10. DOWEL PIN
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Engine Block

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7. CONNECTING ROD
   End play, page 7-6
   Small end measurement, page 7-17

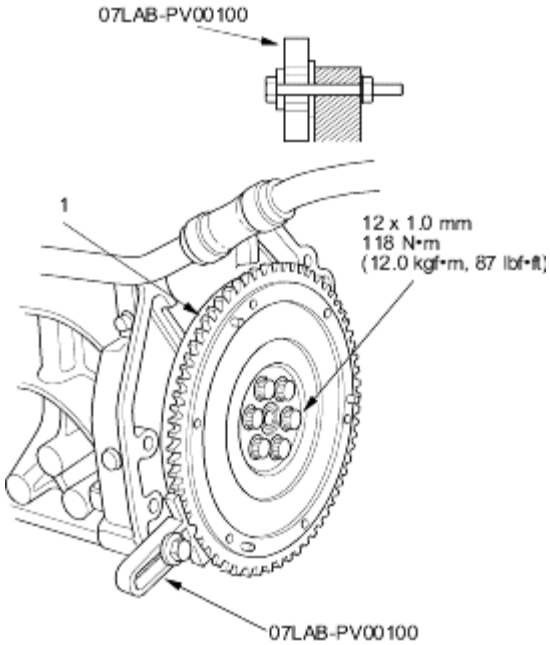
Engine Block

Flywheel Removal and Installation

Special Tools Required

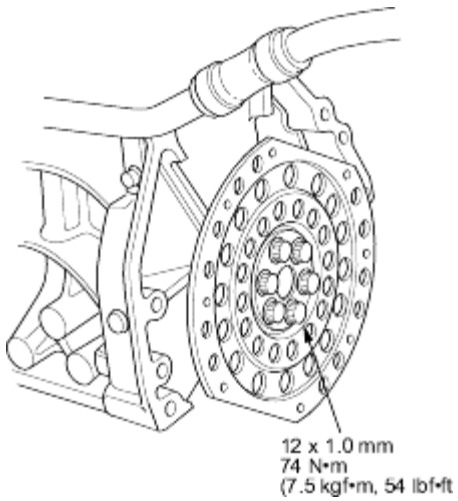
Ring Gear Holder, 07LAB-PV00100

Remove the six flywheel bolts, then separate the flywheel from the crankshaft flange. After installation, tighten the bolts in a criss-cross pattern.



1. 1. Inspect ring gear teeth for wear or damage.

Remove the six drive plate bolts, then separate the drive plate from the crankshaft flange. After installation, tighten the bolts in a criss-cross pattern.



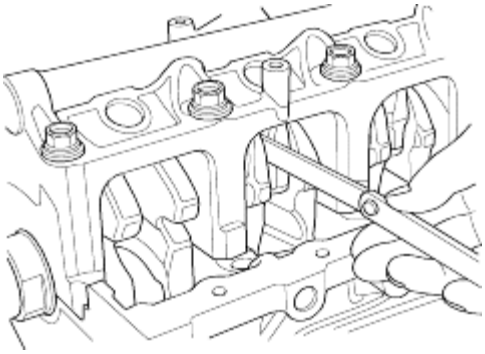
Engine Block

Connecting Rod and Crankshaft End Play Inspection

1. 1. Measure the connecting rod end play with a feeler gauge between the connecting rod and crankshaft.

Connecting Rod End Play:

Standard (New):	0.15 - 0.30 mm (0.006 - 0.012 in.)
Service Limit:	0.40 mm (0.016 in.)

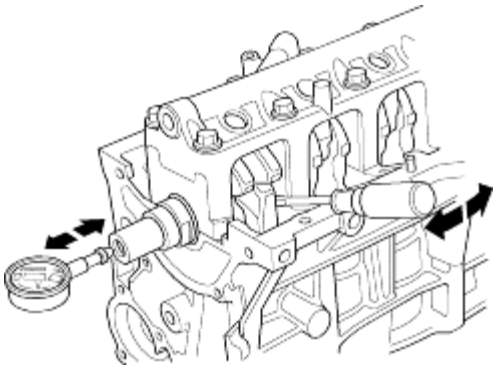


2. 2. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance; replace the crankshaft (see page 7-11).
   3. Mount a dial indicator on the block so that it's tip contacts the end of the crankshaft.

1. 4. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

Crankshaft End Play:

Standard (New):	0.10 - 0.35 mm (0.004 - 0.014 in.)
Service Limit:	0.45 mm (0.018 in.)



2. 5. If the end play is excessive, inspect the thrust washers and thrust surface on the crankshaft. Replace parts as necessary. Thrust washer thickness is fixed and must not be changed either by grinding or shimming.

Engine Block

Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. 1. To check main bearing-to-journal oil clearance, remove the main caps and bearing halves.
   2. Clean each main journal and bearing half with a clean shop towel.
   3. Place one strip of plastigage across each main journal.
      NOTE: If the engine is still in the car when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.
   4. Reinstall the bearings and caps, then torque the bolts. Do not rotate the crankshaft.

Tightening torque:

D14Z5, D15Y2, D15Y3, D15Y4, D15Y5, D15Y6

Engines: 44 Nm (4.5 kgf/m, 33 lbf/ft)

D16V2, D16W7, D16W8, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5

Engines: 51 Nm (5.2 kgf/m, 38 lbf/ft)

1. 5. Remove the cap and bearing half, and measure the widest part of the plastigage.

Main Bearing-to-Journal Oil Clearance:

D14Z5, D15Y2, D15Y3, D15Y4, D15Y5, D15Y6

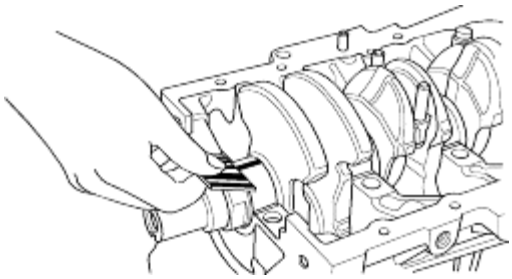
Standard (New):

No. 1, 5:	0.018 - 0.036 mm (0.0007 - 0.0014 in.)
No. 2, 3, 4:	0.020 - 0.038 mm (0.0009 - 0.0017 in.)
Service Limit:	0.05 mm (0.002 in.)

D16V2, D16W7, D16W8, D17Z1, D17Z2, D17Z3, D17A1, D17A2, D17A5

Standard (New):

No. 1, 5:	0.018 - 0.036 mm (0.0007 - 0.0014 in.)
No. 2, 3, 4:	0.024 - 0.042 mm (0.0009 - 0.0017 in.)
Service Limit:	0.05 mm (0.002 in.)



2. 6. If the plastigage measures too wide or too narrow, (remove the engine if it's still in the car), remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same colour code and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
   7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the colour listed above or below that one) and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

Engine Block

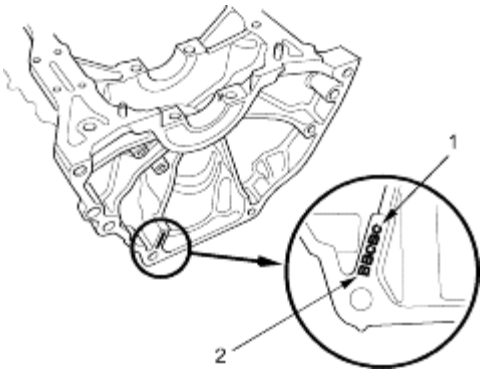
Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

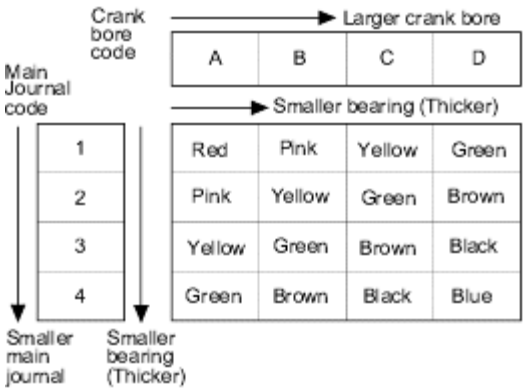
Crankshaft Bore Code Location

Letters have been stamped on the end of the block as a code for the size of each of the five main journal bores.

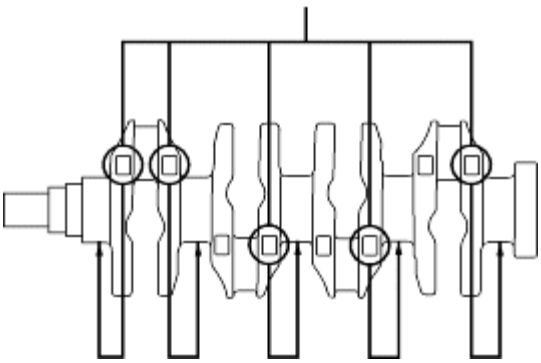
Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



1. 1. No. 1 BORE (PULLEY END)
   2. No. 4 BORE (DRIVE PLATE END)



Main Journal Code Locations (Numbers)



Engine Block

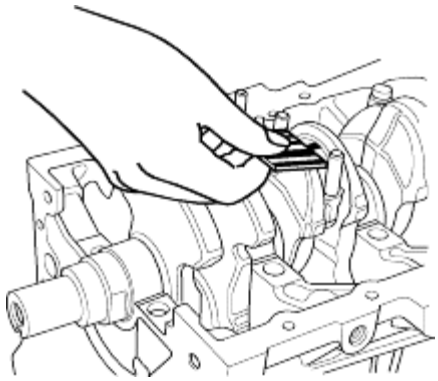
Connecting Rod Bearing Replacement

1. 1. Remove the connecting rod cap and bearing half.
   2. Clean the crankshaft rod journal and bearing half with a clean shop towel.
   3. Place a strip of plastigage across the rod journal.
   4. Reinstall the bearing half and cap and torque the bolts to 32 Nm (3.3 kgf/m, 24 lbf/ft). Do not rotate the crankshaft.
   5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance:

Standard (New): 0.024 - 0.042 mm (0.0009 - 0.0017 in.)

Service Limit: 0.05 mm (0.002 in.)



1. 6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, install a new, complete bearing with the same colour code and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
2. 7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the colour listed above or below that one) and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

Engine Lubrication

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Oil Pump Overhaul	8-9
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Oil Pressure Switch Replacement	8-12

Engine Lubrication
Oil Pump Overhaul (cont'd)

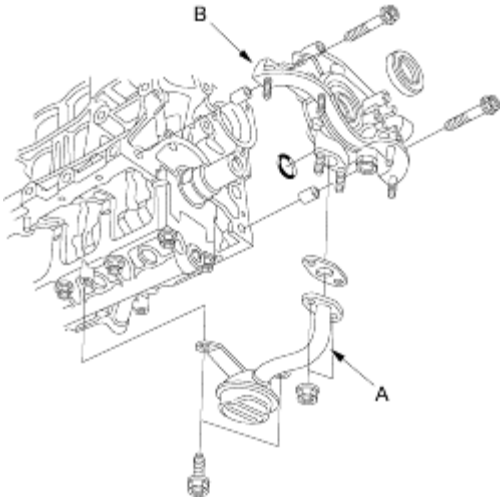
Special Tools Required

- Driver, 07749-0010000
- Driver Attachment, 52 x 55 mm, 07746-0010400

NOTE: Refer to the exploded view as needed during this procedure.

Removal

1. 1. Drain the engine oil.
   2. Remove the timing belt (see page 6-18).
   3. Remove the oil pan.
   4. Remove the oil screen (A).



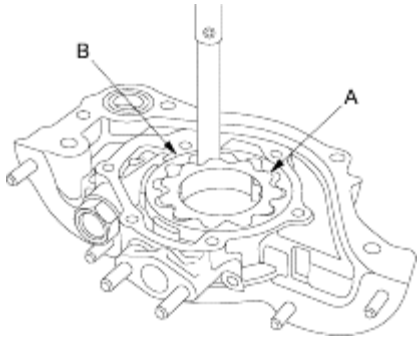
2. 5. Remove the mounting bolts and the oil pump assembly (B).
   6. Remove the screws from the pump housing, then separate the housing and cover.

Inspection

1. 7. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

Inner Rotor-to-Outer Rotor Radial Clearance

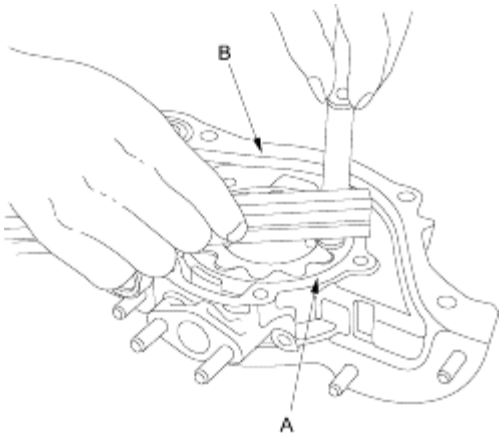
Standard (New):	0.02 - 0.07 mm (0.001 - 0.003 in.)
Service Limit	0.15 mm (0.006 in.)



2. 8. Check the housing-to-rotor axial clearance between the rotor (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Rotor Axial Clearance

Standard (New):	0.02 - 0.07 mm (0.001 - 0.003 in.)
Service Limit	0.15 mm (0.006 in.)

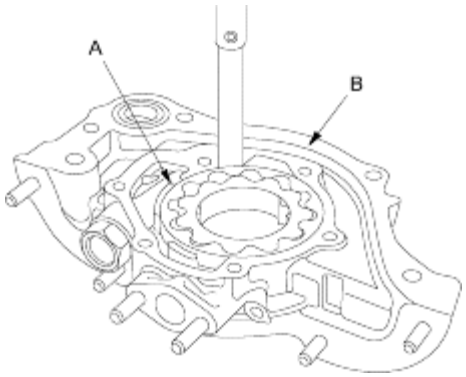


Engine Lubrication
Oil Pump Overhaul (cont'd)

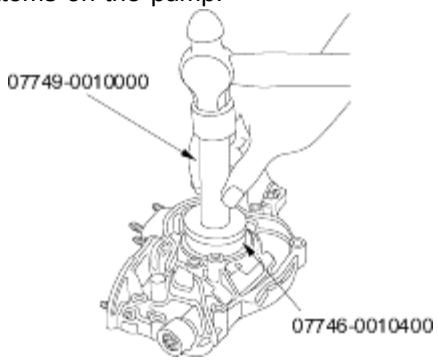
1. 9. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Outer Rotor Radial Clearance

Standard (New):	0.10 - 0.18 mm (0.004 - 0.007 in.)
Service Limit	0.20 mm (0.008 in.)



2. 10. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.
11. Remove the old oil seal from the pump.
12. Gently tap in the new oil seal until the special tool bottoms on the pump.

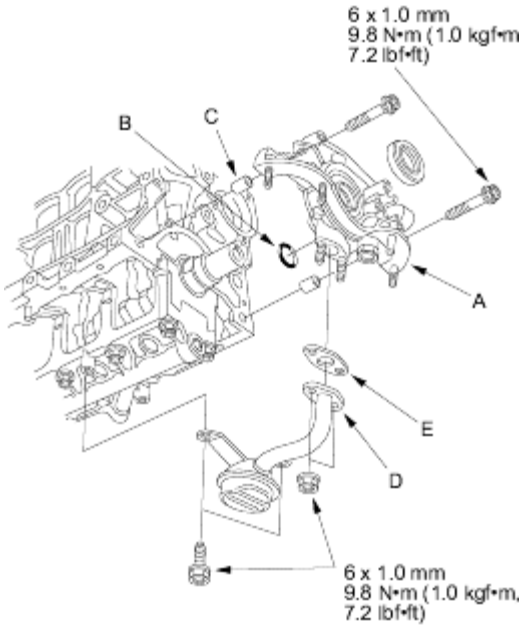


3. 13. Apply liquid thread lock to the pump housing screws.

Installation

1. 14. Reassemble the oil pump.
15. Check that the oil pump turns freely.
16. Clean and dry the oil pump mating surface.
17. Install the oil pump (A).

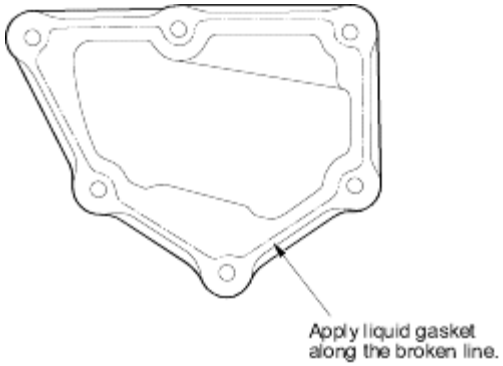
a. Apply liquid gasket, Part No. 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the oil pump and to the inner threads of the bolt holes.
b. Grease the lips of the oil seal and apply oil to the new O-ring (B).
c. Install dowel pins (C), then align the inner rotor with the crankshaft and install the oil pump.
d. Clean the excess grease off the crankshaft and balancer shaft and check the seal for distortion.



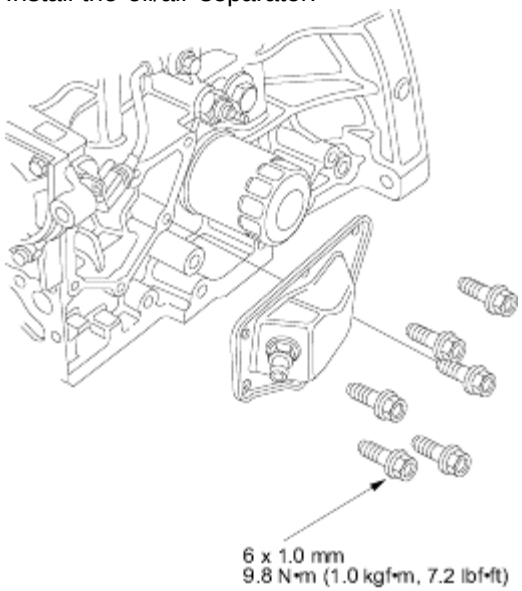
2. 18. Install the oil screen (D) with a new gasket (E).
19. Install the oil pan (see page 7-24).

Engine Lubrication
Oil/Air Separator Installation

1. Clean and dry the oil/air separator mating surfaces.
2. Apply liquid gasket, Part No 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the oil/air separator and to the inner threads of the bolt holes.

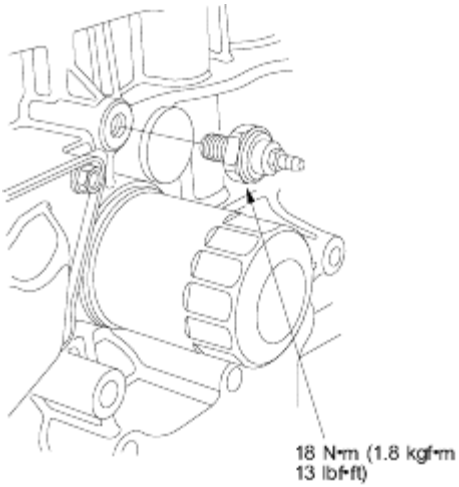


3. Install the oil/air separator.



Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.

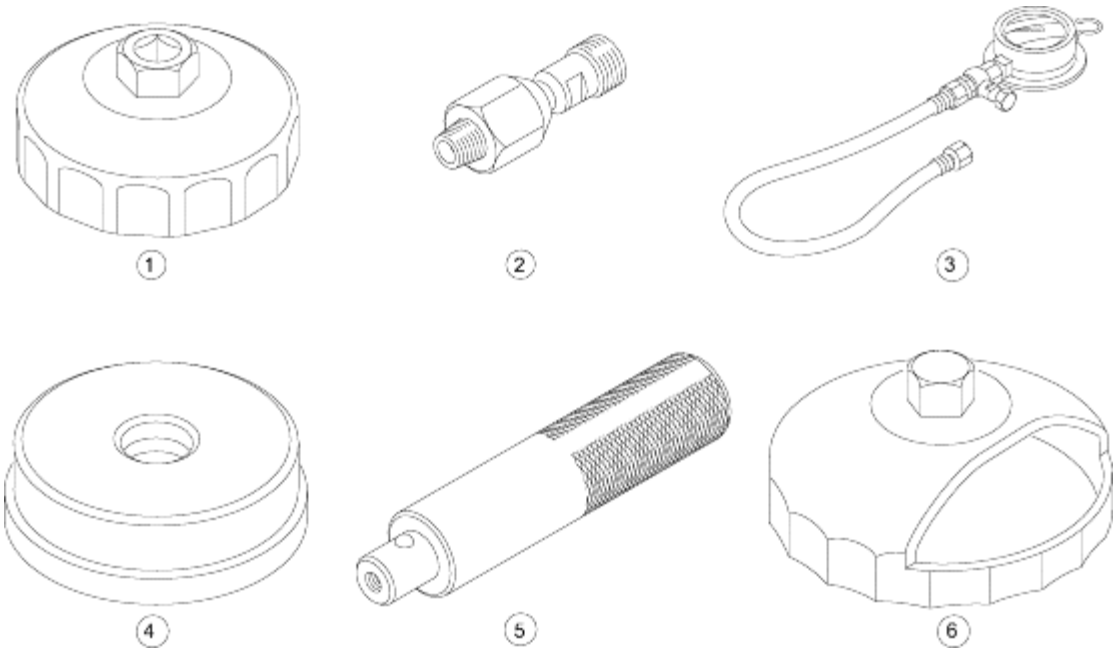


2. Apply liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

Engine Lubrication
Special Tools

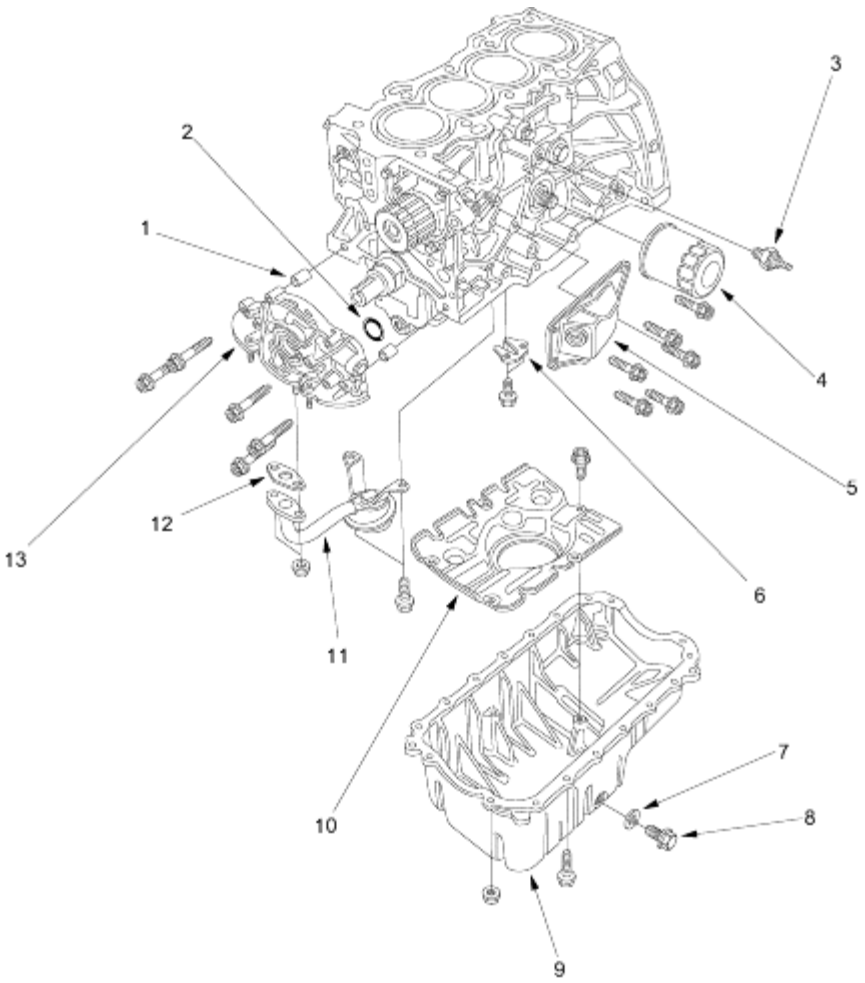
8-2

Ref. No.	Tool Number	Description	Qty
1	07HAA-PJ70100	Oil Filter Wrench	1
2	07406-0030000	Oil Pressure Gauge Attachment	1
3	07506-3000000	Oil Pressure Gauge	1
4	07746-0010400	Driver Attachment, 52 x 55 mm	1
5	07749-0010000	Handle Driver	1
6	07912-6110001	Oil Filter Wrench	1



Engine Lubrication

Component Location Index

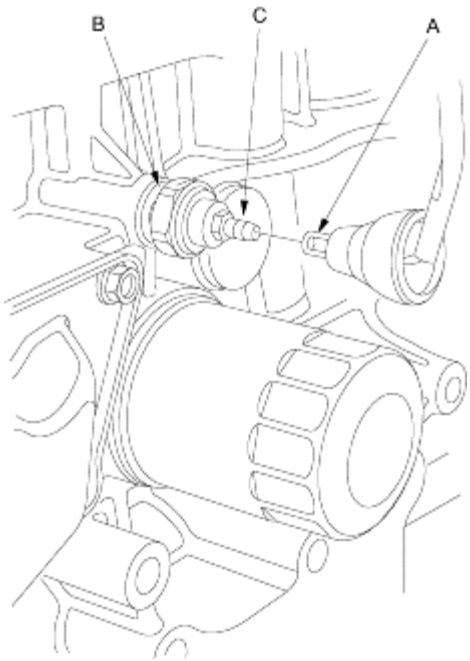


1. DOWEL PIN
2. O-RING
3. OIL PRESSURE SWITCH
   Circuit Diagram, page 22-88
   Switch Test, page 8-4
   Oil Pressure Test, page 8-4
   Replacement, page 8-12
4. OIL FILTER
   Replacement, page 8-6
5. OIL/AIR SEPARATOR
   Installation, page 8-12
6. BREATHING PORT COVER
7. WASHER
8. DRAIN BOLT
9. OIL PAN
   Installation, page 7-24
10. BAFFLE PLATE
11. OIL SCREEN
12. GASKET
13. OIL PUMP
    Overhaul, page 8-9

Engine Lubrication

Oil Pressure Switch Test

1. 1. Remove the YEL/RED wire (A) from the engine oil pressure switch (B).



2. 2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.
   3. If the switch fails to operate, check the engine oil level. If the engine oil level is OK, check the engine oil pressure. If the oil pressure is OK, replace the oil pressure switch.

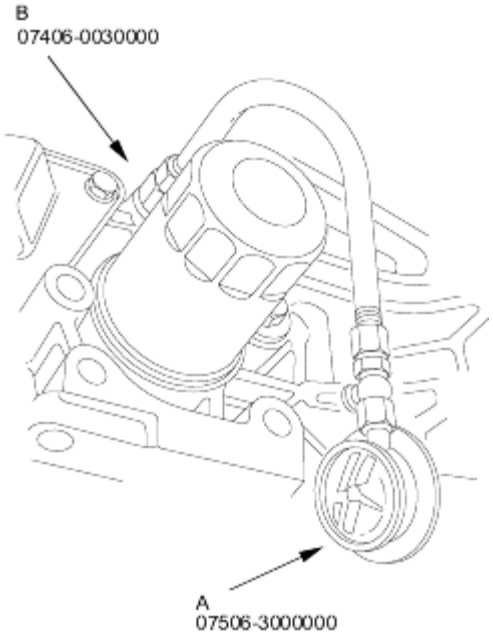
Oil Pressure Test

Special Tools Required

- Oil pressure gauge attachment, 07406-0030000
- Oil pressure Gauge, 07506-3000000

If the oil pressure warning light stays on with the engine running, check the engine oil level. If the oil level is correct.

1. 1. Connect a tachometer.
   2. Remove the engine oil pressure switch and install the special tools.



2. 3. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
   4. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

Engine Oil Temperature: 80° C (176° F)

Engine Oil Pressure:

At Idle:	70 kPa (0.7 kgf/cm^2, 10 psi minimum)
At 3,000 rpm (min^{-1}):	340 kPa (3.5 kgf/cm^2, 50 psi minimum)

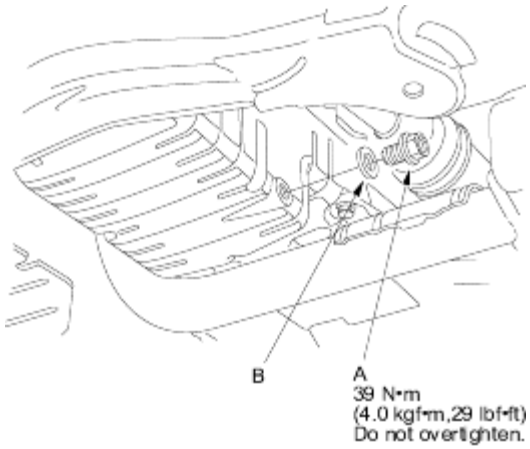
3. 4. If oil pressure is NOT within specifications, inspect the oil pump (see step 7 on page 8-10).

Engine Lubrication

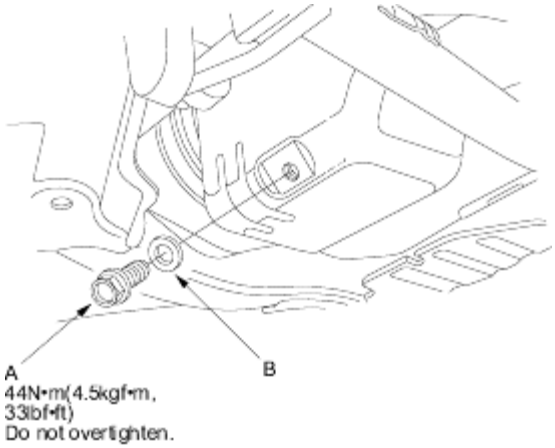
Engine Oil Replacement

1. 1. Warm up the engine.
2. 2. Remove the drain bolt (A) and drain the engine oil.

D15Y4, D17A2 (KU, KQ models), D17A5 (KN model) engines:



Except D15Y4, D17A2 (KU, KQ models), D17A5 (KN model) engines:



3. 3. Reinstall the drain bolt with a new washer (B).

1. 4. Refill with the recommended oil (see page 3-2).

Capacity

D15Y4, D17A2 (KU, KQ models), D17A5 (KN model) engines:

3.3 l (3.5 US qt, 2.9 Imp qt) at oil change

3.5 l (3.7 US qt, 3.1 Imp qt) at oil change including filter

4.2 l (4.4 US qt, 3.7 Imp qt) after engine overhaul

Except D15Y4, D17A2 (KU, KQ models), D17A5 (KN model) engines:

3.0 l (3.2 US qt, 2.6 Imp qt) at oil change

3.2 l (3.4 US qt, 2.8 Imp qt) at oil change including filter

4.2 l (4.4 US qt, 3.7 Imp qt) after engine overhaul

2. 5. Run the engine for more than 3 minutes then check for oil leakage.

Engine Lubrication

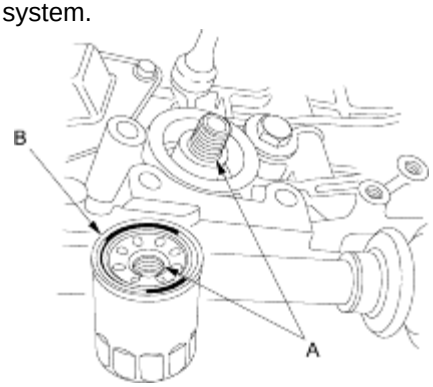
Engine Oil Filter Replacement

Special Tools Required

- Oil filter wrench, 07HAA-PJ70100
- Oil filter wrench, 07912-6110001

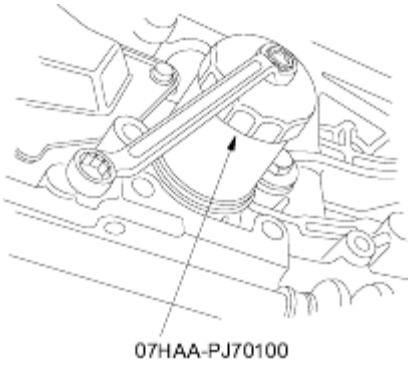
Engine Oil Filter Replacement (oil filter type A)

1. 1. Remove the oil filter with the special oil filter wrench.
   2. Inspect the threads (A) and rubber seal (B) on the new filter. Wipe off the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.

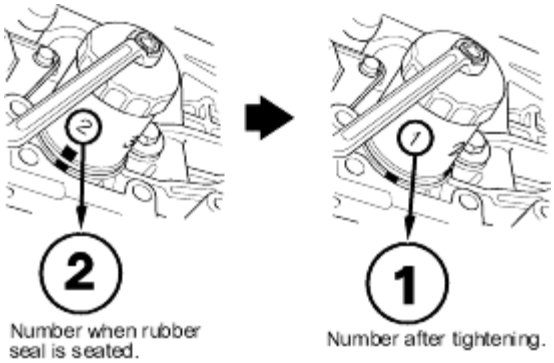


2. 3. Install the oil filter by hand.
   4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

Tighten:	3/4 turn clockwise
Tightening torque:	22 Nm (2.2 kgf/m, 16 lbf/ft)



1. 5. If 4 numbers or marks (1 to 4 or ▼▼ to▼ ▼ ▼▼)are printed around the outside of the filter, use the following procedure to tighten the filter.
   - Spin the filter until its seal lightly seats against the block and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise 3 numbers or marks from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 1 comes around the bottom.



Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

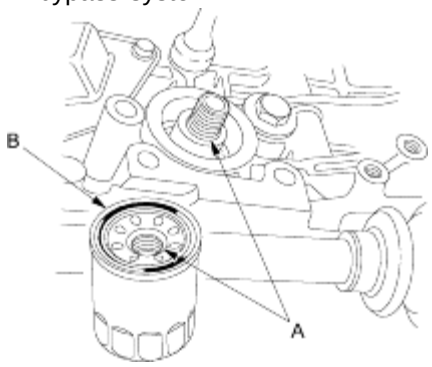
2. 6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Engine Lubrication

Engine Oil Filter Replacement (cont'd)

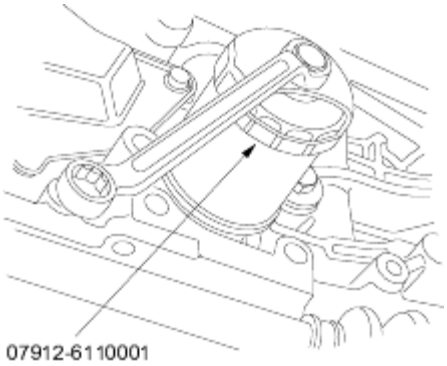
Engine Oil Filter Replacement (oil filter type B)

1. 1. Remove the oil filter with the special oil filter wrench.
   2. Inspect the threads (A) and rubber seal (B) on the new filter. Wipe off the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.

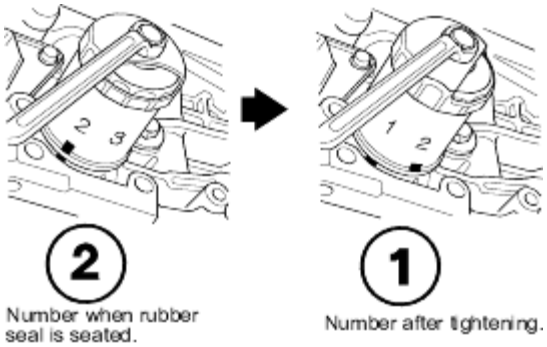


2. 3. Install the oil filter by hand.
   4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

Tighten:	7/8 turn clockwise
Tightening torque:	22 Nm (2.2 kgf/m, 16 lbf/ft)



1. 5. If 8 numbers or marks (1 to 8) are printed around the outside of the filter, use the following procedure to tighten the filter.
   - Spin the filter until its seal lightly seats against the block and note which number is at the bottom.
   - Tighten the filter by turning it clockwise 7 numbers from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 1 comes around the bottom.



Number when rubber seal is seated	1	2	3	4	5	6	7	8
Number after tightening	8	1	2	3	4	5	6	7

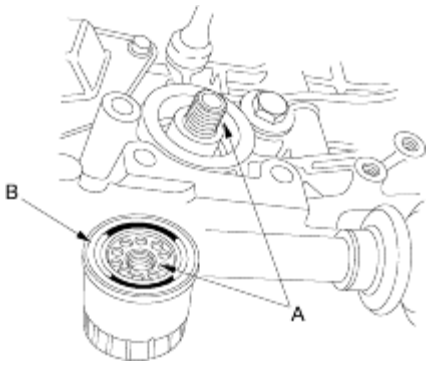
2. 6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Engine Lubrication

Engine Oil Filter Replacement (cont'd)

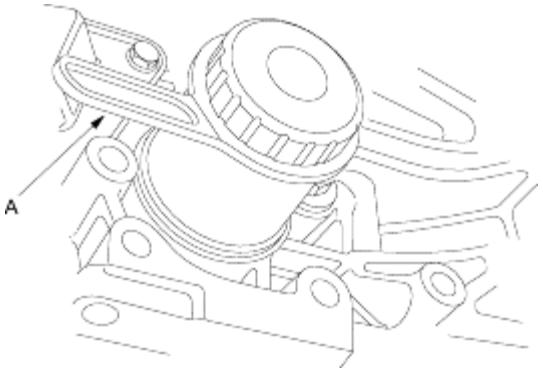
Engine Oil Filter Replacement (oil filter type C)

1. 1. Remove the oil filter with the commercially available oil filter wrench (LABINAL-Purflux 76).
   2. Inspect the threads (A) and rubber seal (B) on the new filter. Wipe off the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.

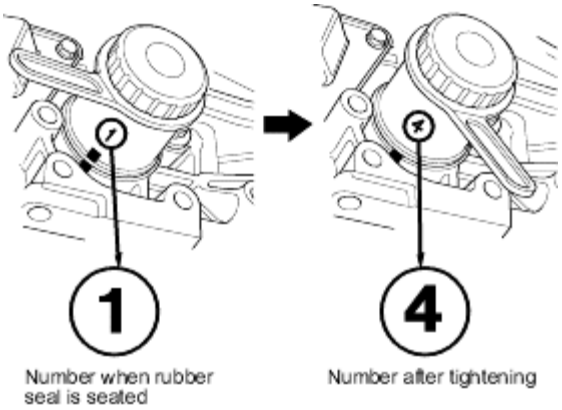


2. 3. Install the oil filter by hand.
   4. After the rubber seal seats, tighten the oil filter clockwise with the commercially available oil filter wrench (LABINAL-Purflux 76)

Tighten:	3/4 turn clockwise
Tightening torque:	22 Nm (2.2 kgf/m, 16 lbf/ft)



1. 5. If 4 numbers or marks (1 to 4) are printed around the outside of the filter, use the following procedure to tighten the filter.
   - Spin the filter until its seal lightly seats against the block and note which number is at the bottom.
   - Tighten the filter by turning it clockwise 3 numbers from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 4 comes around the bottom.

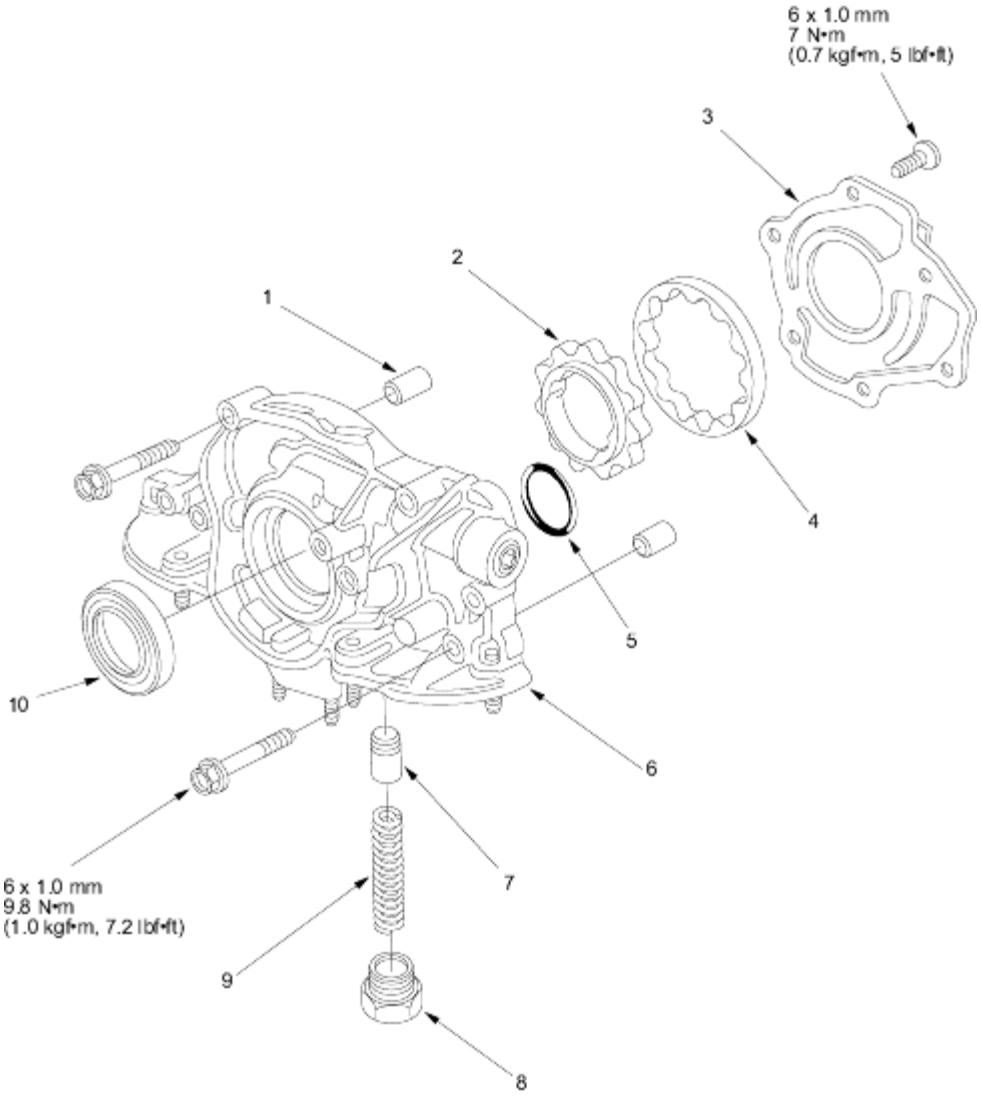


Number when rubber seal is seated	1	2	3	4
Number after tightening	4	1	2	3

2. 6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Engine Lubrication
Oil Pump Overhaul

Exploded View



1. DOWEL PIN
2. INNER ROTOR
3. PUMP COVER
4. OUTER ROTOR
5. O-RING
   Replace
6. PUMP HOUSING
   Apply liquid gasket to mating surface of the cylinder block when installing
7. RELIEF VALVE
   Valve must slide freely in housing bore.
   Replace if scored.
8. SEALING BOLT
   39 Nm (4.0 kgf/m, 29 lbf/ft)
9. SPRING
10. OIL SEAL
    Replace

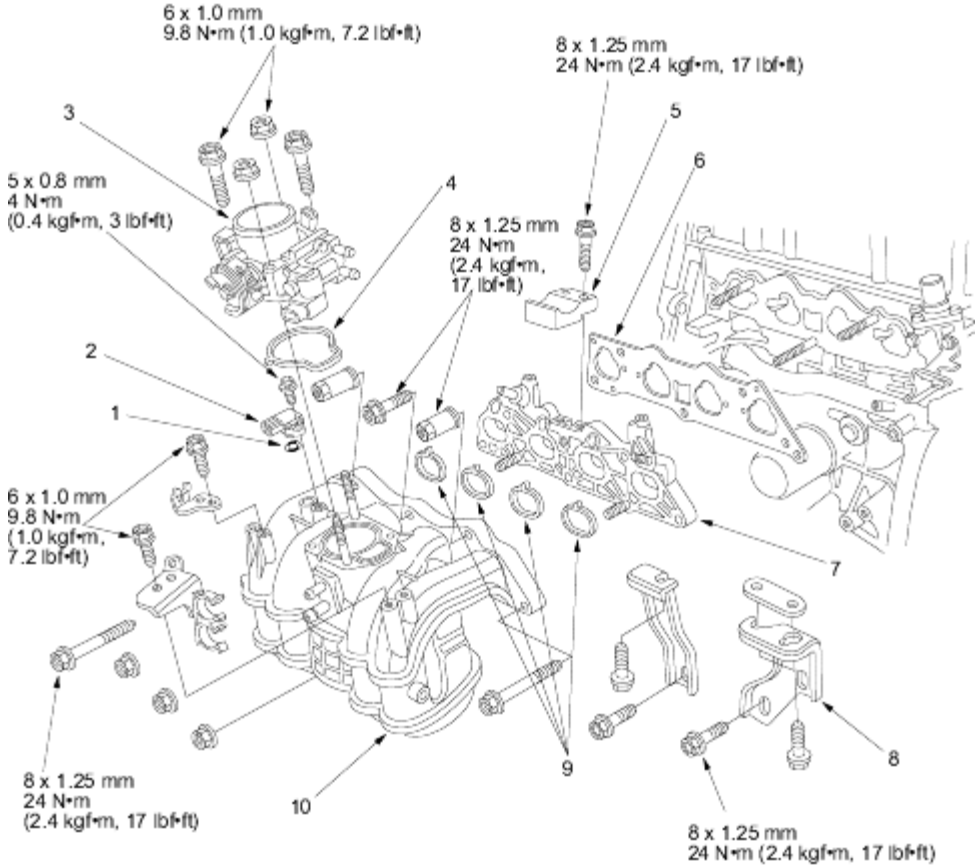
Intake Manifold and Exhaust System

Intake Manifold Removal and Installation	9-2
Exhaust Manifold Removal and Installation	9-3
Exhaust Pipe and Muffler Replacement	9-5

Intake Manifold and Exhaust System

Intake Manifold Removal and Installation

NOTE: Use a new O-rings and gasket when reassembling.



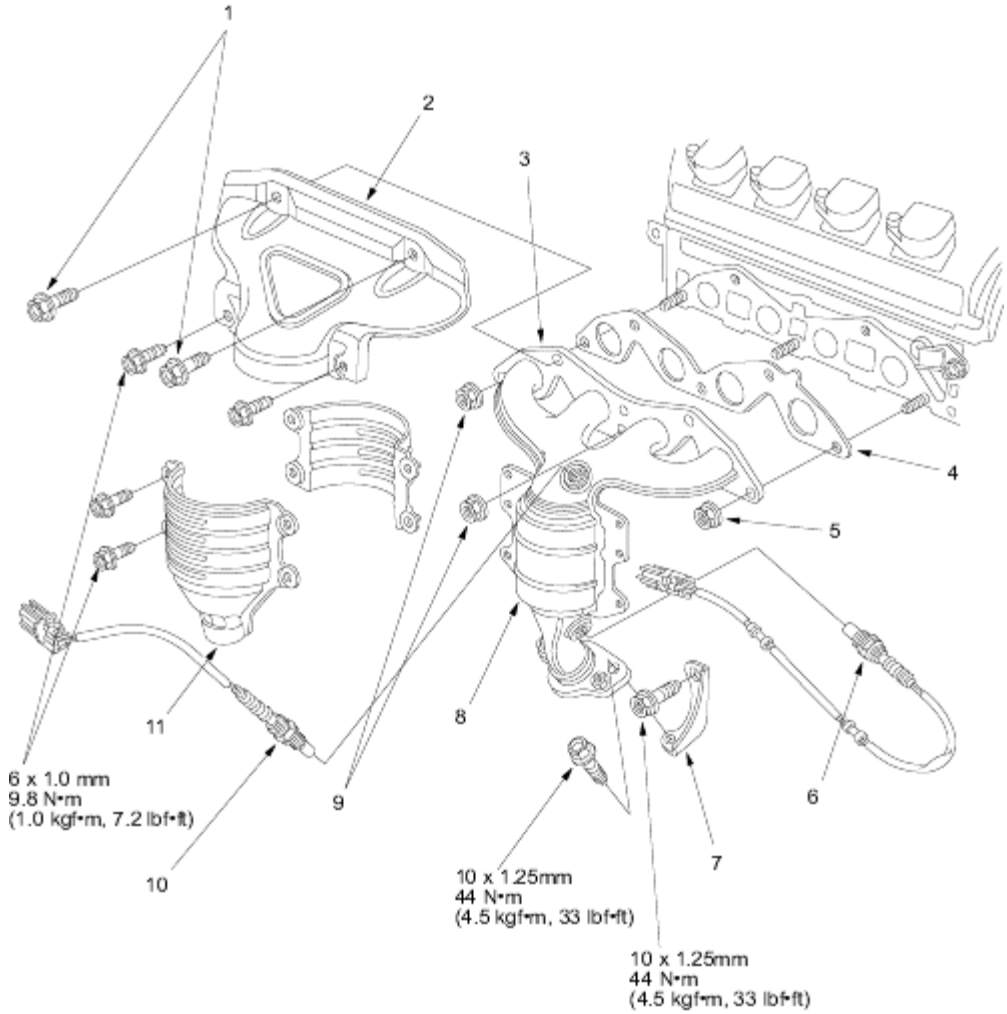
1. O-RING
   Replace.
2. MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
3. THROTTLE BODY
4. O-RING
   Replace.
5. INJECTOR BASE STIFFENER
6. GASKET
   Replace.
7. INJECTOR BASE
8. INTAKE MANIFOLD BRACKET
9. O-RINGS
   Replace.
10. INTAKE MANIFOLD
    Replace if cracked or if mating surfaces are damaged.

Intake Manifold and Exhaust System

Exhaust Manifold Removal and Installation

NOTE: Use a new gaskets and self-locking nuts when reassembling.

D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



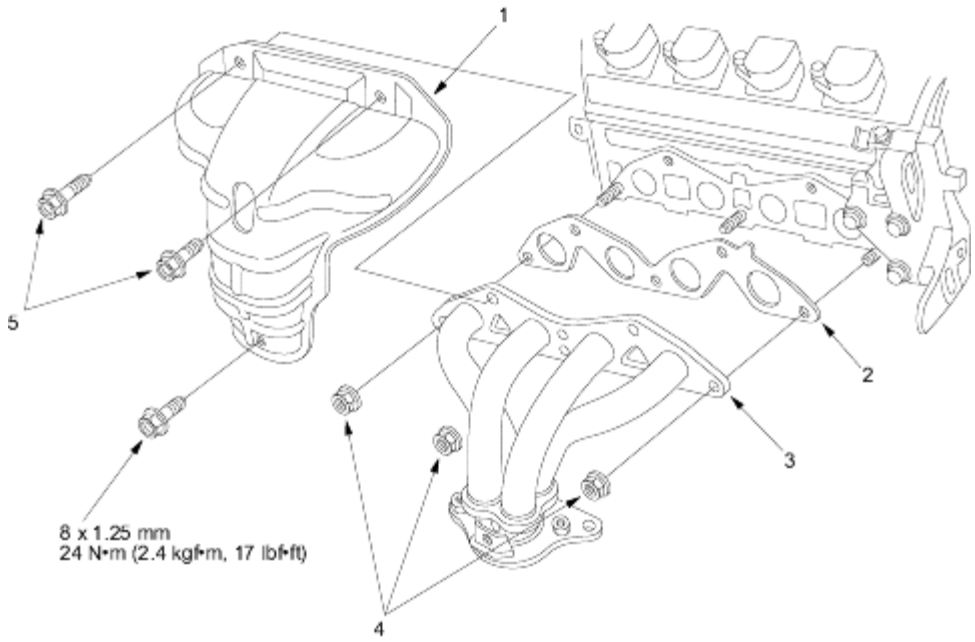
1. 8 x 1.25 mm
   31 Nm (3.2 kgf/m, 23 lbf/ft)
   Replace.
2. COVER
3. EXHAUST MANIFOLD
4. GASKET
   Replace.
5. 8 x 1.25 mm
   31 Nm (3.2 kgf/m, 23 lbf/ft)
   Replace.
6. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S)
   (D15Y6, D17Z2 engines)
   44 Nm (4.5 kgf/m, 33 lbf/ft)
7. EXHAUST MANIFOLD BRACKET
8. THREE WAY CATALYTIC CONVERTER
9. 8 x 1.25 mm
   31 Nm (3.2 kgf/m, 23 lbf/ft)
   Replace.
10. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S)
    44 Nm (4.5 kgf/m, 33 lbf/ft)
11. COVER

Intake Manifold and Exhaust System

Exhaust Manifold Removal and Installation (cont'd)

NOTE: Use a new gasket when reassembling.

Except D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



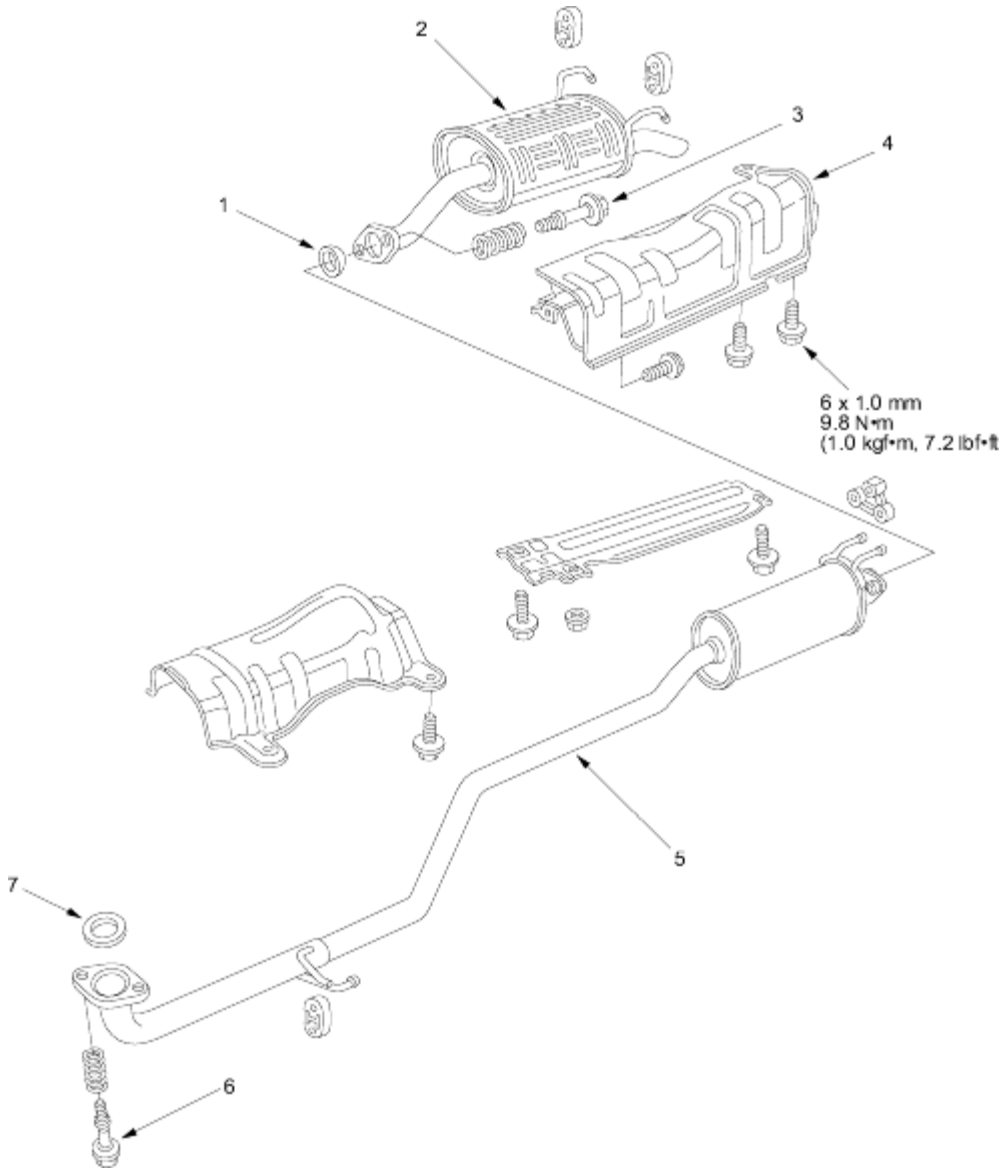
1. COVER
2. GASKET
   Replace.
3. EXHAUST MANIFOLD
4. 8 x 1.25 mm
   31 Nm (3.2 kgf/m, 23 lbf/ft)
   Replace.
5. 8 x 1.25 mm
   31 Nm (3.2 kgf/m, 23 lbf/ft)
   Replace.

Intake Manifold and Exhaust System

Exhaust Pipe and Muffler Replacement

NOTE: Use a new gaskets when reassembling.

D15Y5, D15Y6, D17A1, D17Z1, D17Z2 engines:



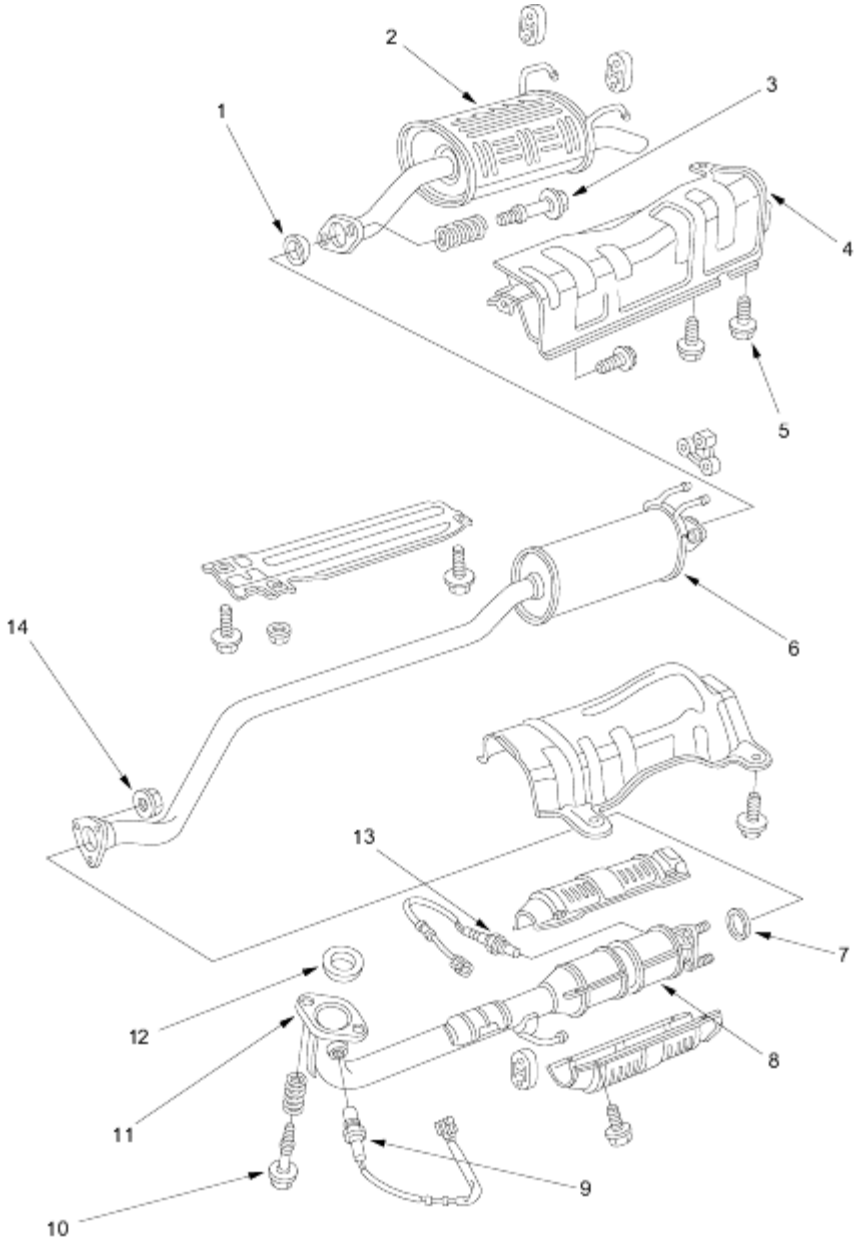
1. GASKET
   Replace.
2. MUFFLER
3. 8 x 1.25 mm
   22 Nm (2.2 kgf/m, 16 lbf/ft)
   Replace.
   Tighten the bolts in steps, alternating side-to-side
4. HEATSHIELD
5. EXHAUST PIPE B
6. 8 x 1.25 mm
   22 Nm (2.2 kgf/m, 16 lbf/ft)
   Replace.
   Tighten the bolts in steps, alternating side-to-side
7. GASKET
   Replace.

Intake Manifold and Exhaust System

Exhaust Pipe and Muffler Replacement(cont'd)

NOTE: Use new gaskets and self-locking nuts when reassembling.

D14Z5, D15Y2, D15Y4, D16W7, D16W8, D17Z1, D17Z3, D17A2 engines:



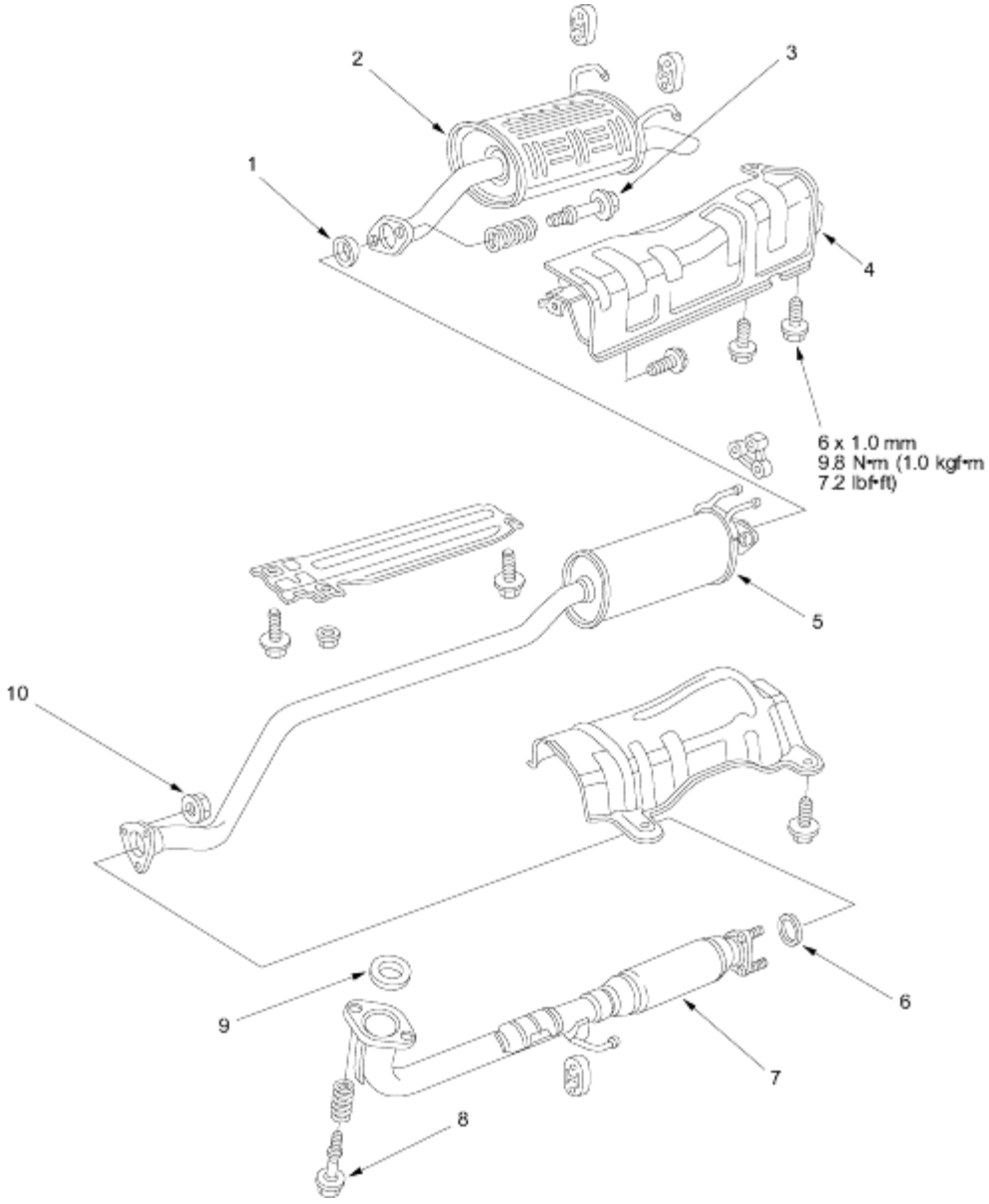
1. GASKET
   Replace.
2. MUFFLER
3. 8 x 1.25 mm
   22 Nm (2.2 kgf/m, 16 lbf/ft)
   Replace.
   Tighten the bolts in steps, alternating side-to-side
4. HEATSHIELD
5. 6 x 1.0 mm
   98 Nm (1.0 kgf/m, 7.2 ibf/ft)
6. EXHAUST PIPE B
7. GASKET
   Replace.
8. THREE WAY CATALYTIC CONVERTER
9. PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO2S)
   (D14Z5, D15Y2, D15Y4, D16W7, D16W8, D17Z3, D17A2 engines)
   44 Nm (4.5 kgf/m, 33 lbf/ft)
10. 8 x 1.25 mm
    22 Nm (2.2 kgf/m, 16 lbf/ft)
    Replace.
    Tighten the bolts in steps, alternating side-to-side
11. EXHAUST PIPE A
12. GASKET
    Replace.
13. SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S)
    (D14Z5, D15Y4, D16W7, D17Z3, D17A2 engines)
    44 Nm (4.5 kgf/m, 33 lbf/ft)
14. SELF-LOCKING NUT
    10 x 1.25 mm
    33 N (3.4 kgf/m, 25 lbf/ft)
    Replace.

Intake Manifold and Exhaust System

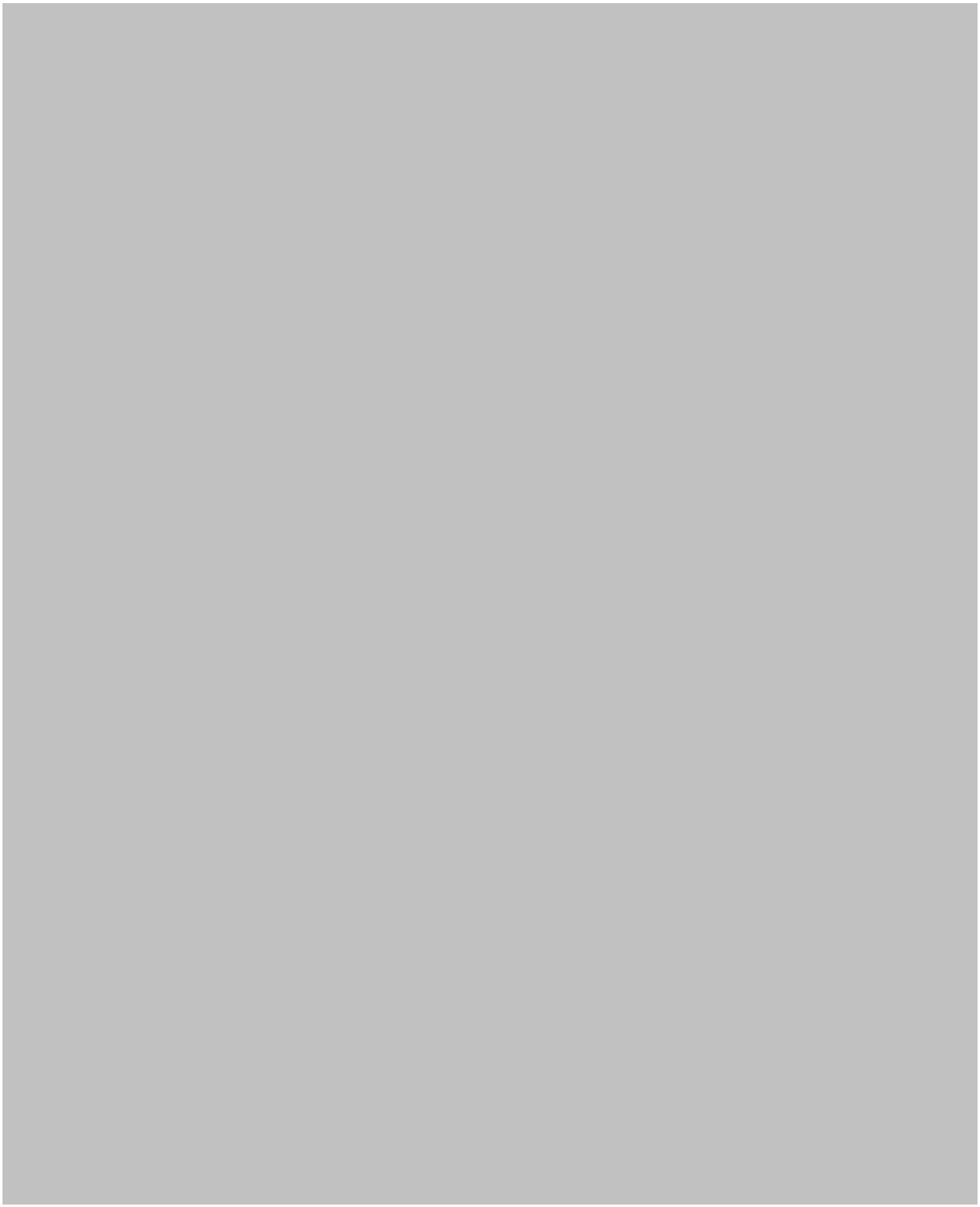
Exhaust Pipe and Muffler Replacement(cont'd)

NOTE: Use new gaskets and self-locking nuts when reassembling.

D15Y3, D16V2, D17A5 engines:



1. GASKET
   Replace.
2. MUFFLER
3. 8 x 1.25 mm
   22 Nm (2.2 kgf/m, 16 lbf/ft)
   Replace.
   Tighten the bolts in steps, alternating side-to-side
4. HEATSHIELD
5. EXHAUST PIPE B
6. GASKET
   Replace.
7. EXHAUST PIPE A
8. 8 x 1.25 mm
   22 Nm (2.2 kgf/m, 16 lbf/ft)
   Replace.
   Tighten the bolts in steps, alternating side-to-side
9. GASKET
   Replace.
10. SELF-LOCKING NUT
    10 x 1.25 mm
    33 N (3.4 kgf/m, 25 lbf/ft)
    Replace.

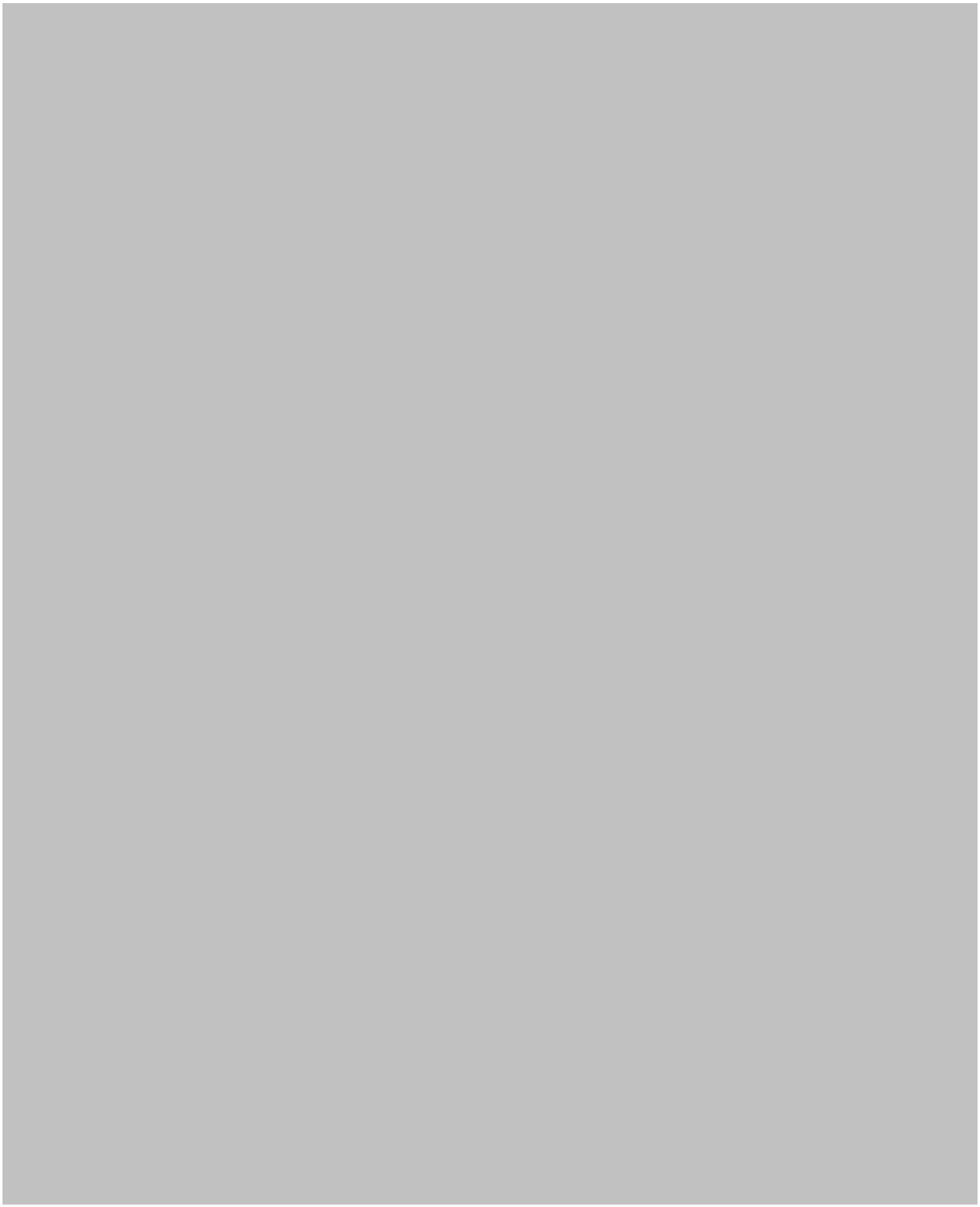


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