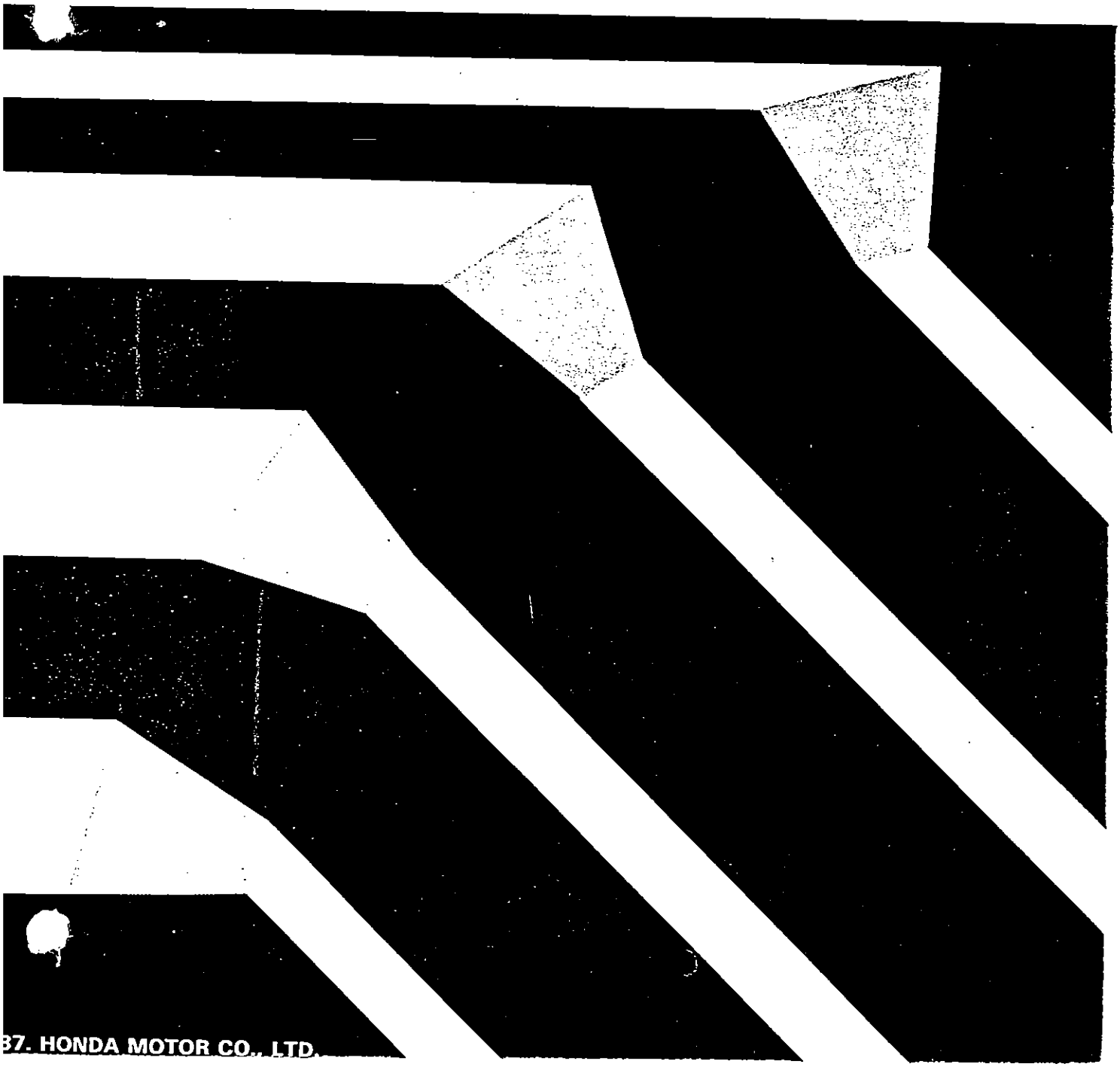
SHOP MANUAL

HONDA CIVIC COUPE CRX

CHASSIS MAINTENANCE AND REPAIR 88



87. HONDA MOTOR CO., LTD.

INTRODUCTION

How to Use This Manual

This manual contains service information for the CIVIC COUPE CRX. Separate volumes are published regarding vehicle construction, engine, and transmission; the applicable reference manuals are listed below.
This manual is divided into sections. This first page of each section is marked with a black tab that lines up with one of the thumb index tabs on the next 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. 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. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Reference Manuals

Description	Code No.	Remarks	Date Published
CIVIC COUPE CRX Construction and Function	62SH210		Dec. 1987
D12B/D13B/D14A/D15B/D16A Engine Maintenance and Repair	62PM100	1.2 ℓ SOHC 1-Carbureted Engine 1.3 ℓ SOHC 1-Carbureted Engine 1.4 ℓ SOHC 2-Carbureted Engine 1.5 ℓ SOHC 1-Carbureted Engine 1.5 ℓ SOHC 2-Carbureted Engine 1.5 ℓ SOHC PGM-FI Engine 1.6 ℓ SOHC PGM-FI Engine 1.6 ℓ DOHC PGM-FI Engine	Nov. 1987
L3 Manual Transmission Maintenance and Repair	62PL300	5 Speed	Nov. 1987

Special Information

WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard* workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause PERSONAL INJURY, or could damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by Honda Motor, might be done, or of the possible hazardous consequences of each conceivable way, nor could Honda Motor investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda Motor, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

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.

First Edition 12/87 728 pages
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Service Publication Office

1 General Info 

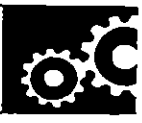
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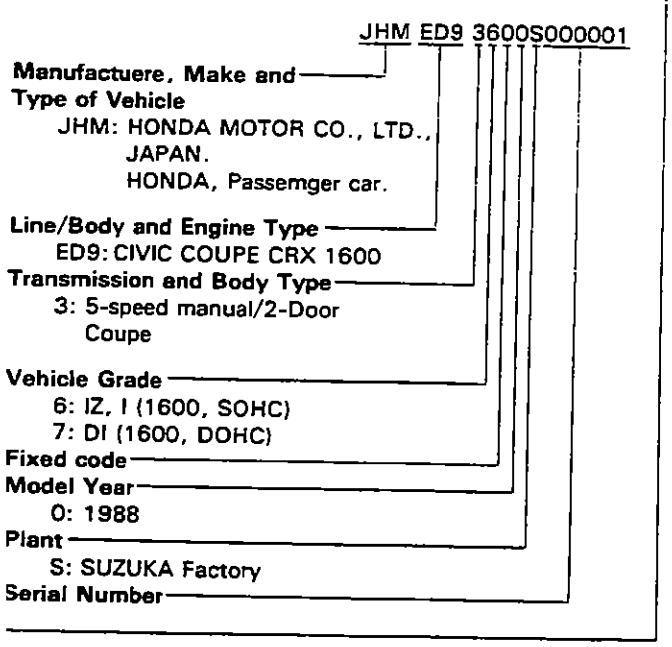
Electrical 

General Information

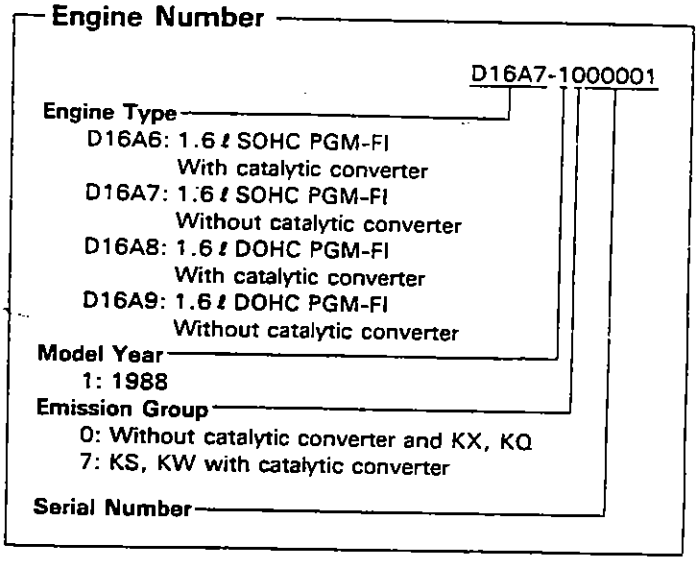
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Chassis and Engine Numbers

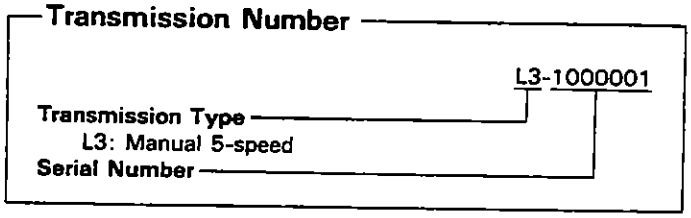
Vehicle Identification Number



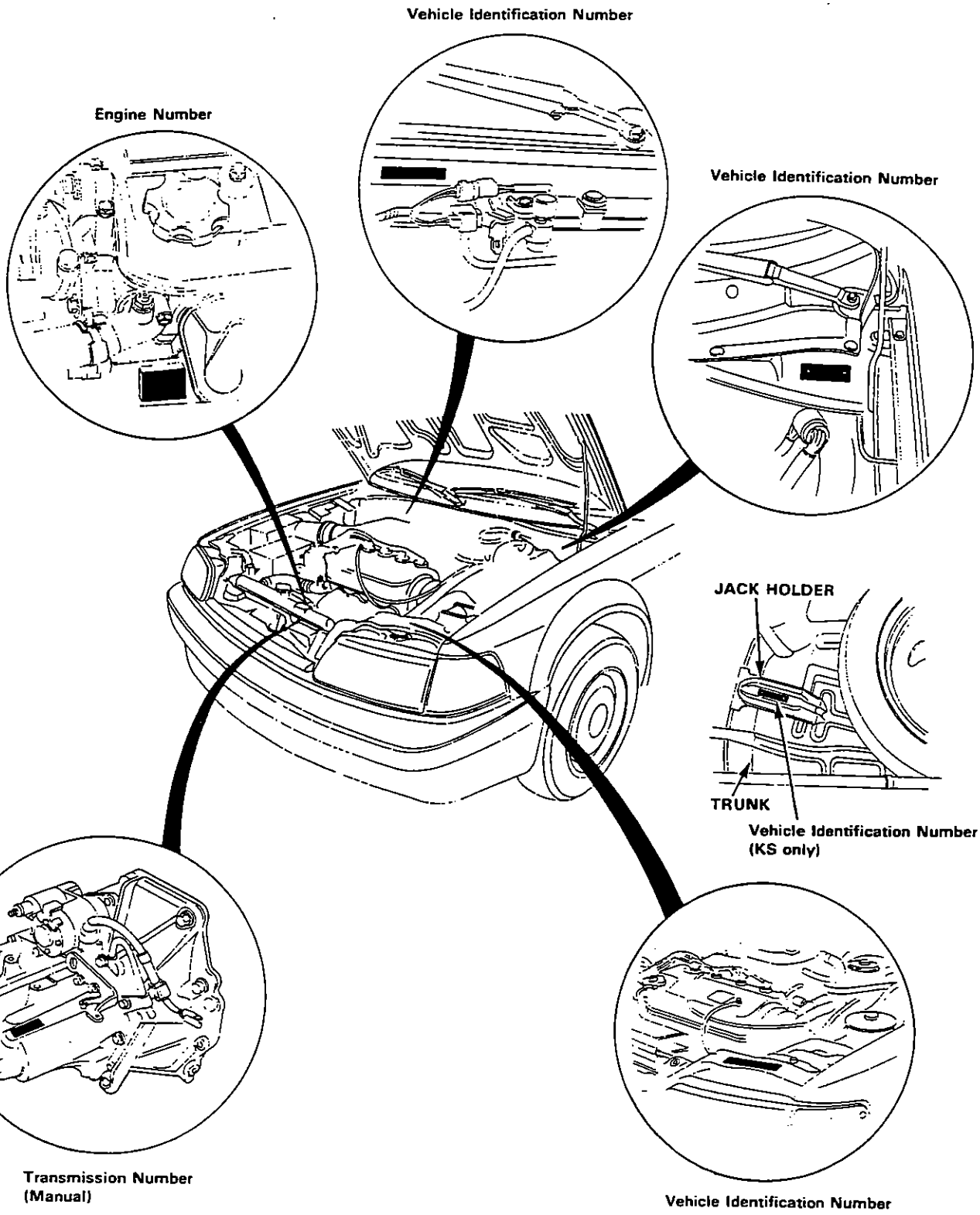
Engine Number



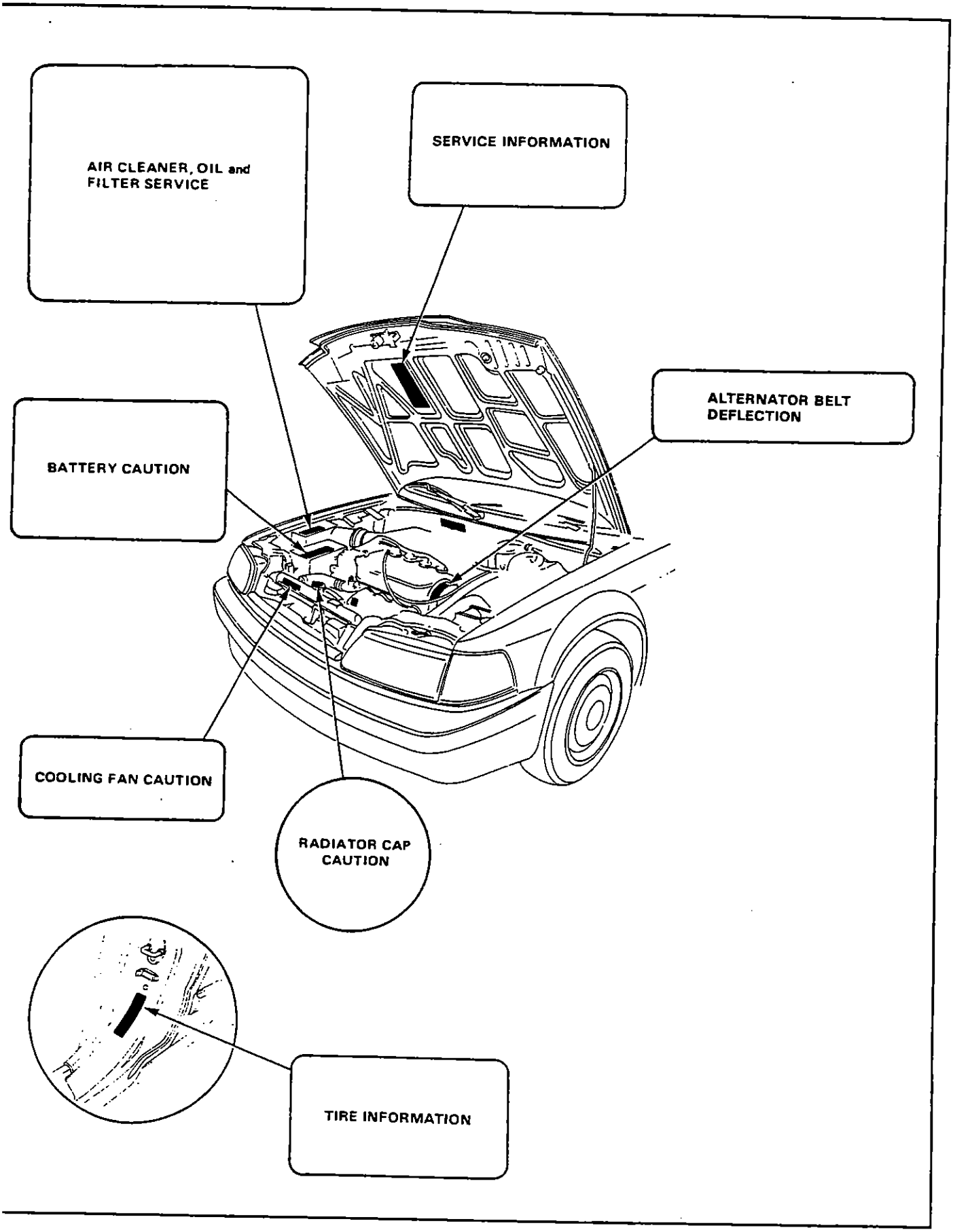
Transmission Number



Identification Number Locations



.abel Locations



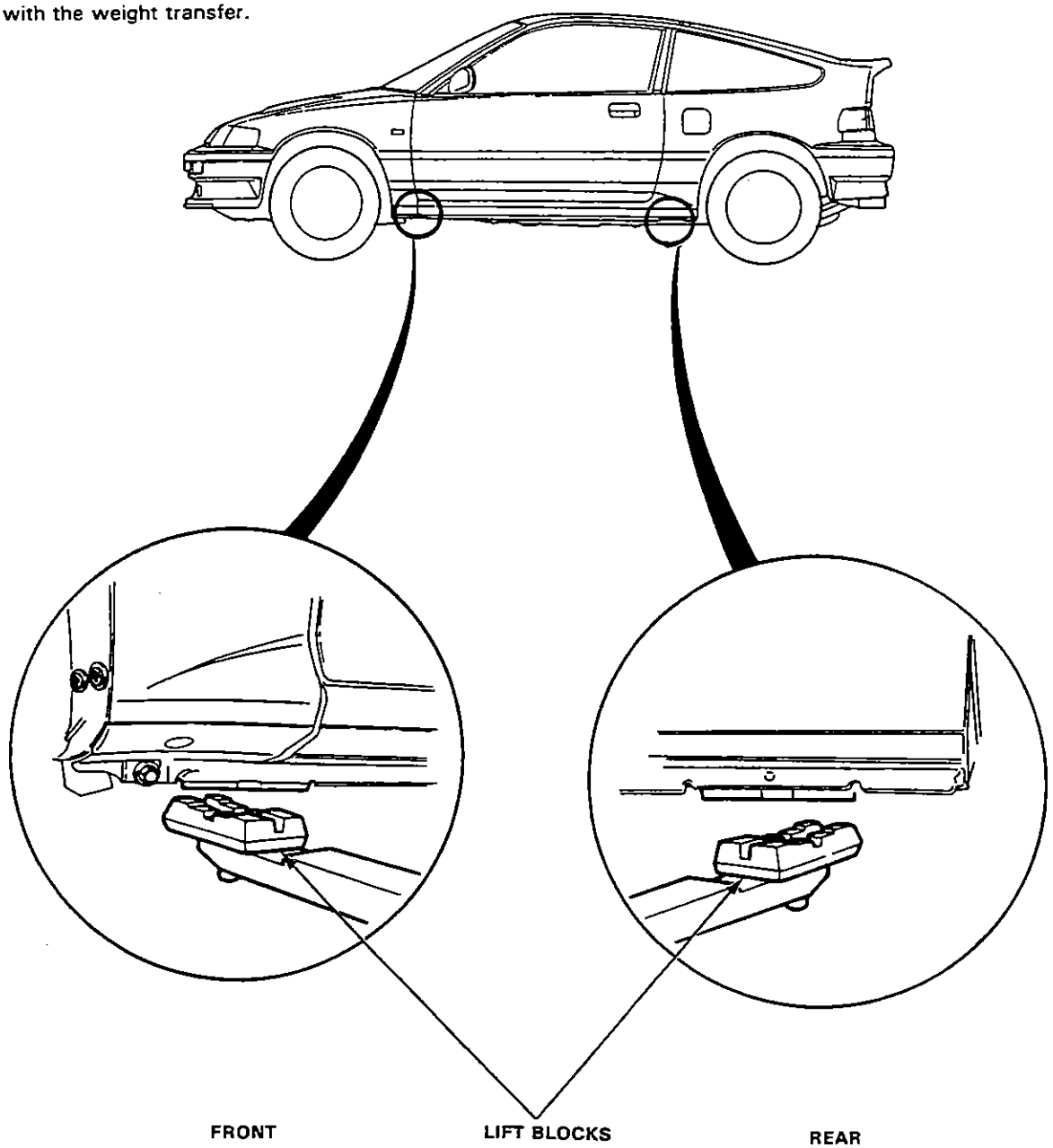
Lift and Support Points

Hoist

1. Place the lift blocks as shown.
2. Raise the hoist a few inches and rock the car to be sure it is firmly supported.
3. Raise the hoist to full height and inspect lift points for solid support.

WARNING **When heavy rear components such as suspension, fuel tank, spare tire and trunk lid/hatch are to be removed, place additional weight in the trunk before hoisting. When substantial weight is removed from the rear of the car, the center of gravity may change and can cause the car to tip forward on the hoist.**

NOTE: Since each tire/wheel assembly weighs approximately 14 kg (30 lbs), placing the front wheels in the trunk will assist with the weight transfer.



(cont'd)

ift and Support Points (cont'd)

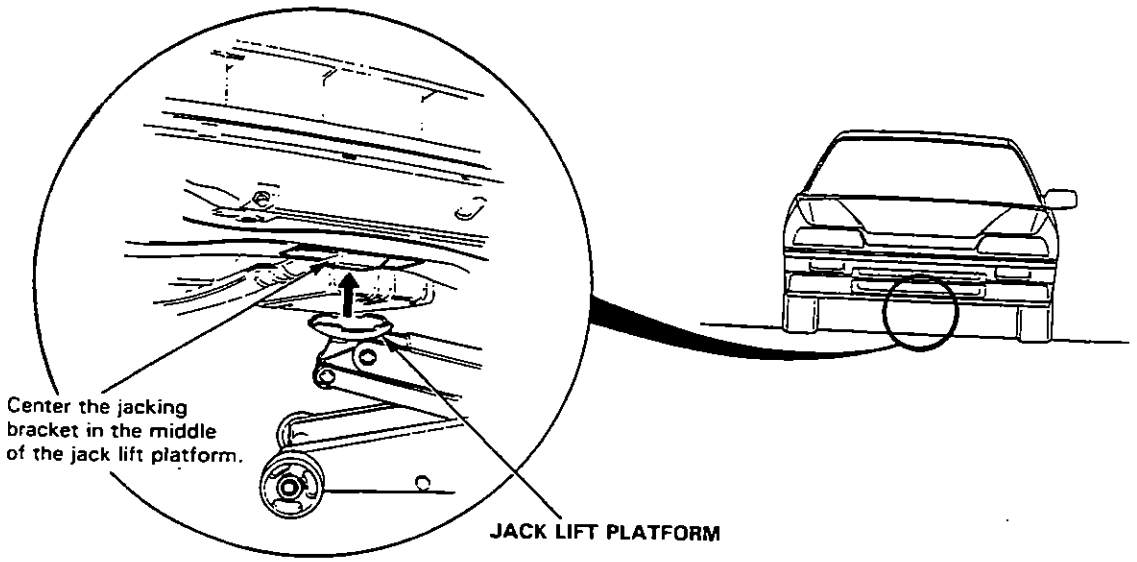
Floor Jack

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse.
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page 1-7 so the car will be approximately level, then lower the car onto the stands.

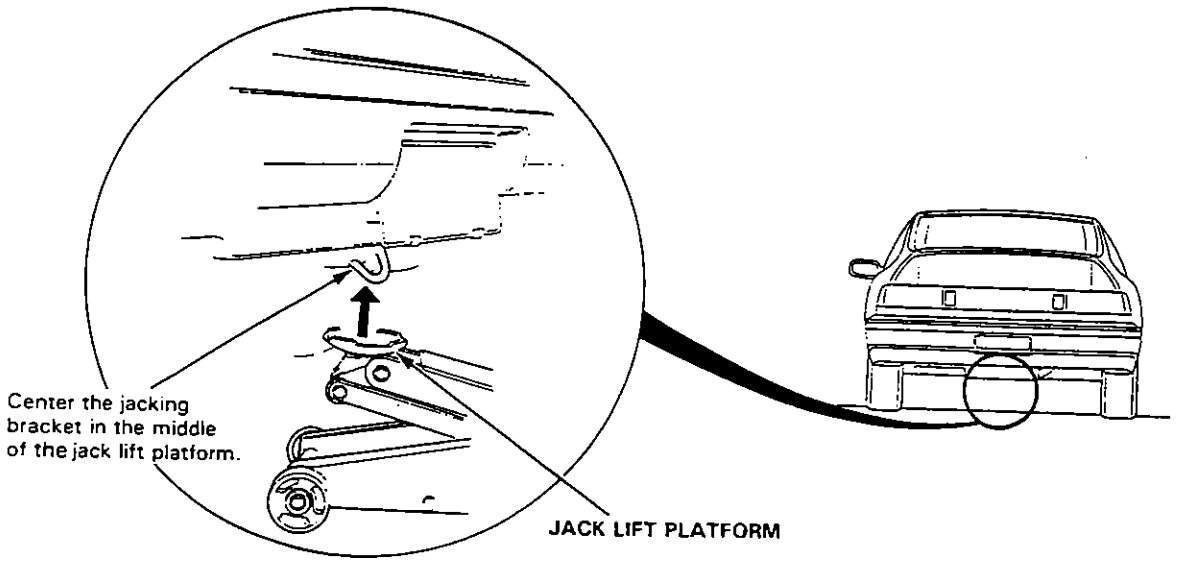
WARNING

- **Always use safety stands when working on or under any vehicle that is supported by only a jack.**
- **Never attempt to use a bumper jack for lifting or supporting the car.**

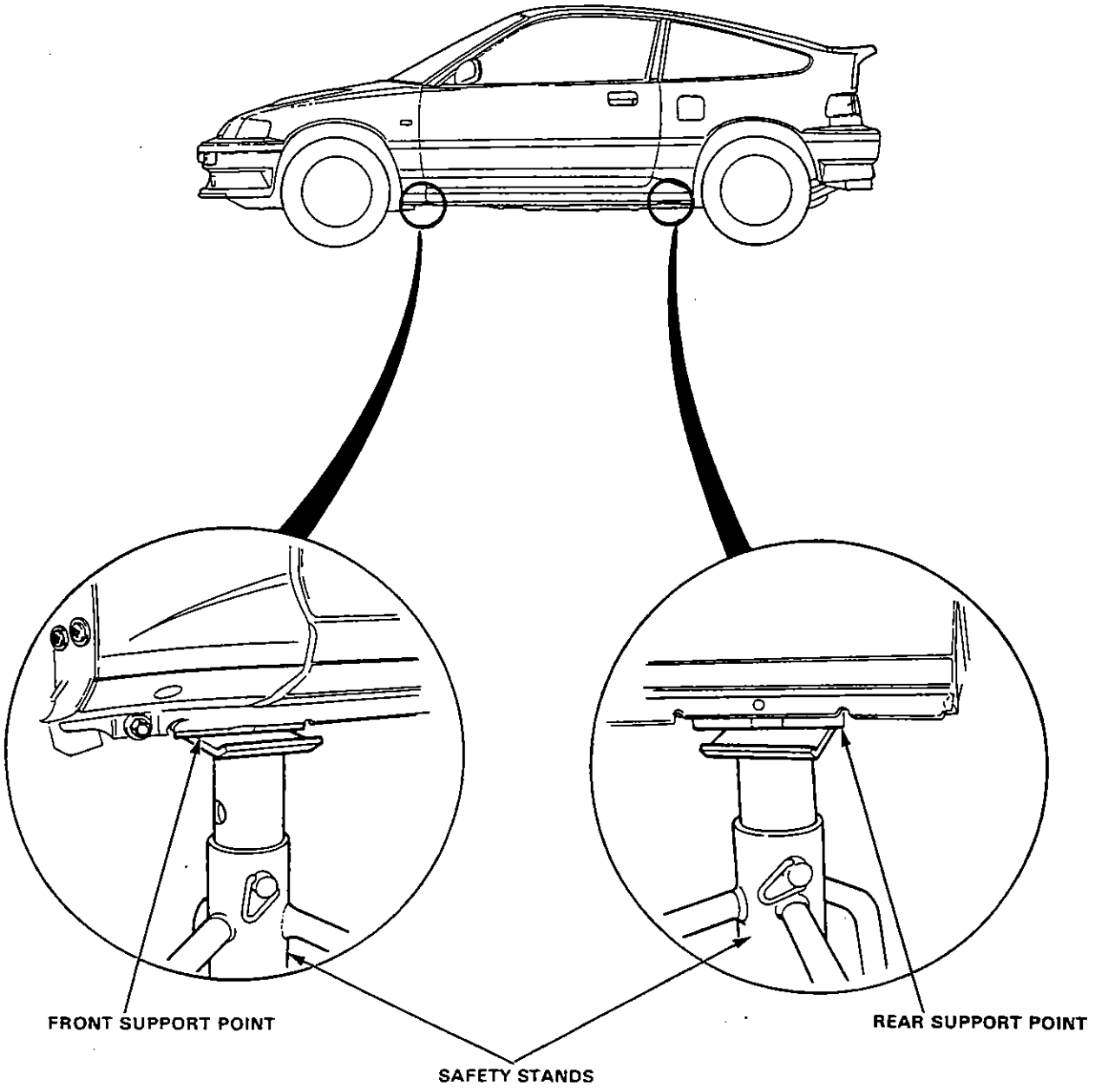
Front



ear



Safety Stands



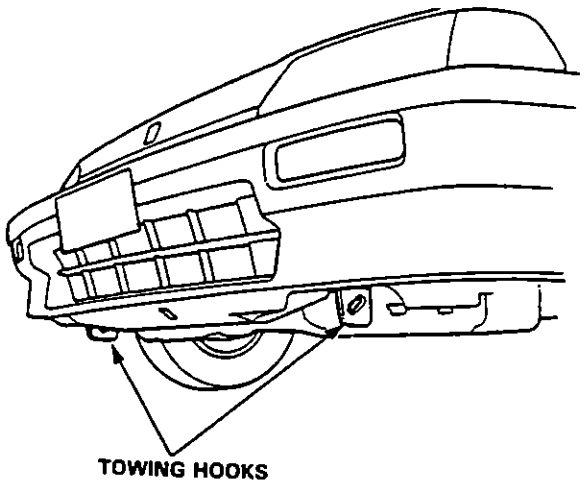
Towing

- Towing

If towing is necessary, we recommended the following:
Flat Bed Equipment: Entire car is winched on a flat bed vehicle. This is the best way of towing the car.

Wheel Lift Type: Front or rear of the car is lifted at the wheels and is suitable for the car.

CAUTION: If a sling type tow is used, the tow truck driver should position wood spacer blocks between your car's frame and the chains and lift straps to avoid damaging the bumper and the body. Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing.



TOWING HOOKS

mergency towing with all four wheels on the ground:
Inder certain emergency conditions, the car may need
› be towed with all four wheels on the ground. if the
ar is towed with all four wheels on the ground, check local
egulations and observe the following precautions:

- Shift the transmission to neutral.
- Release the parking brake.
- Turn the ignition to the "I" position to unlock the steering.
- Do not exceed 55 kph (35 mph) or tow for distances of more than 80 km (50 miles).

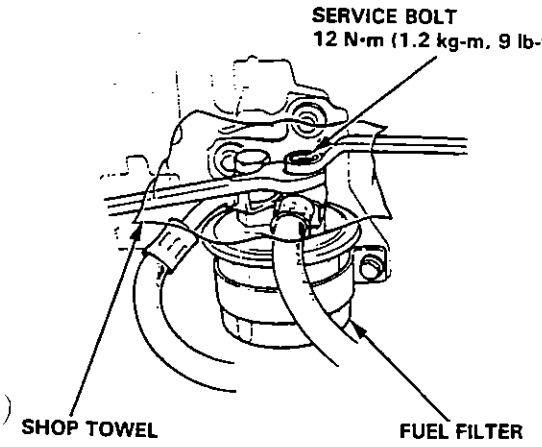
a frame mount tow bar is used with a four wheel tow:

- Do not attach it to the bumper.
- Follow the tow bar manufacturer's instructions.

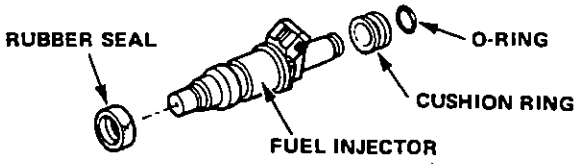
WARNING **Never use tow chains or rope to tow a car; your ability to safely control the car may be adversely affected.**

Special Caution Items For This Car

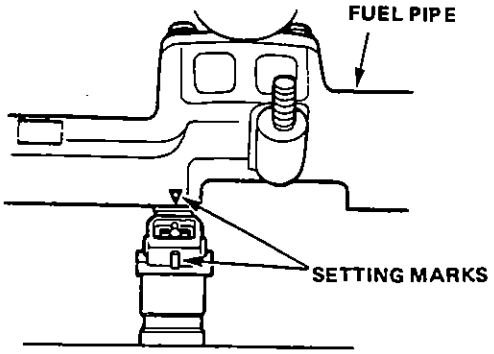
1. Fuel Line Servicing
   - Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



   - Be sure to replace washers, O-rings, and rubber seals with new ones when servicing fuel line parts.
   - Always apply oil to the surfaces of O-rings and seal rings before installation. Never use brake fluid, radiator fluid, vegetable oils or alcohol-based oils.



   - When assembling the flare joint of the high-pressure fuel line, clean the joint and coat with new engine oil.
   - When installing an injector, check the angle of the coupler. The center line of the coupler should align with the setting mark on the injector holder.



2. Inspection for fuel leakage
   - After assembling fuel line parts, turn ON the ignition switch (do not operate the starter) so that the fuel pump is operated for approximately two seconds and the fuel is pressurized. Repeat this operation two or three times and check whether any fuel leakage has occurred in any of the various points in the fuel line.

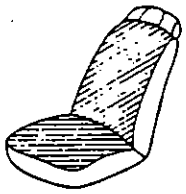
3. Installation of an amateur radio for cars equipped with PGM-FI.
   Care has been taken for the PGM-FI ECU (computer) and its wiring to prevent erroneous operation from external interference, but erroneous operation of the computer may be caused by extremely strong radio waves. Attention must be paid to the following items to prevent erroneous operation of the computer.
   - The antenna and the body of the radio must be at least 200 mm (7.9 in.) away from the computer.

   The computer locations:
   - PGM-FI ECU: Passenger's side front lower panel.
   - Do not lead the antenna feeder and the coaxial cable over a long distance parallel to the car's wiring. When crossing with the wiring is required, execute crossing at a right angle.
   - Do not install a radio with a large output (max. 10 W).

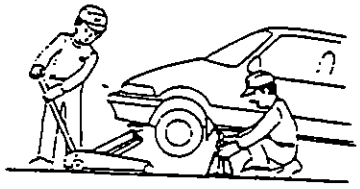
4. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use HONDA PART NO 08740—99986 as a liquid gasket.
   - Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
   - Apply liquid gasket evenly, being careful to cover all the mating surface.
   - To prevent leakage of oil, apply liquid gasket to the inner threads of the bolt holes.
   - Do not allow liquid gasket to stand for more than 20 minutes before assembly.
   - Wait at least 30 minutes before filling with the appropriate liquid (engine oil, coolant etc).

CAUTION: Observe all safety precautions and notes while working.

1. Protect all painted surfaces and seats against dirt and scratches with a clean cloth or vinyl cover.



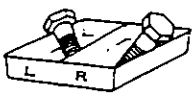
2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate signals as frequently as possible when work involves two or more workers. Do not run the engine unless the shop or working area is well ventilated.



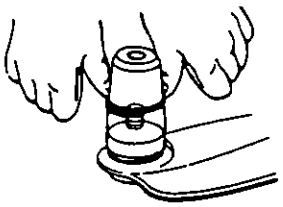
3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.

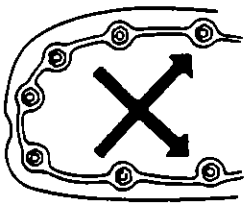


4. Use special tools when use of such is specified.

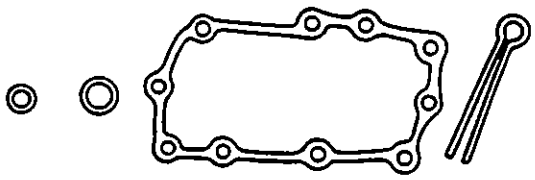


5. Parts must be assembled with the proper torgue according to the maintenance standards established.

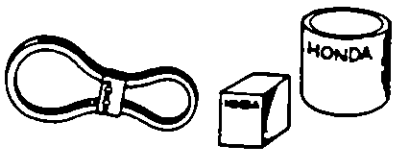
6. When tightening a series bolts or nuts, begin with the center or larger diameter bolts and tighten them in crisscross pattern in two or more steps.



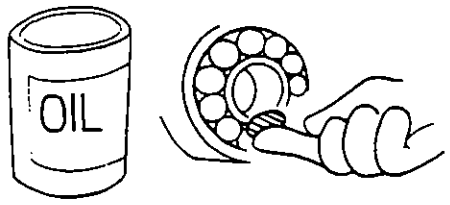
7. Use new packings, gaskets, O-rings and cotter pins whenever reassembling.



8. Use genuine HONDA parts and lubricants or those 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.



9. Coat or fill parts with specified grease as specified (Page 4-2). Clean all removed parts with solvent upon disassembly.

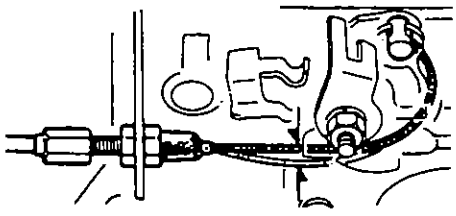


10. Brake fluid and hydraulic components
    - When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
    - Do not mix different brands of fluid as they may not be compatible.
    - Do not reuse drained brake fluid.
    - Brake fluid can cause damage to painted surfaces. Wipe up spilled fluid at once.
    - 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.



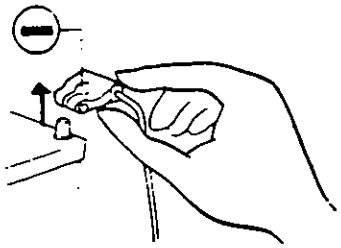
    - Keep disassembled parts from air-borne dust and abrasives.
    - Check that parts are clean before assembly.

11. Avoid oil or grease getting on rubber parts and tubes, unless, specified.
12. Upon assembling, check every part for proper installation and operation.

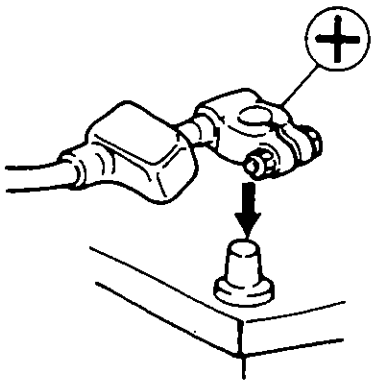


Electrical

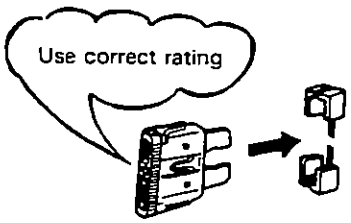
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (−) terminal.



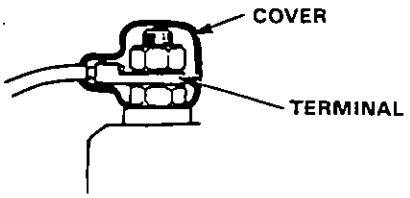
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (−) cable.



- Coat the terminals with clean grease after connecting the battery cables.
- Don't forget to install the terminal cover over the positive battery terminal after connecting.
- Before installing a new fuse, isolate the cause and take corrective measures, particularly when frequent fuse failure occurs.



- Be sure to install the terminal cover over the connections after a wire or wire harness has been connected.

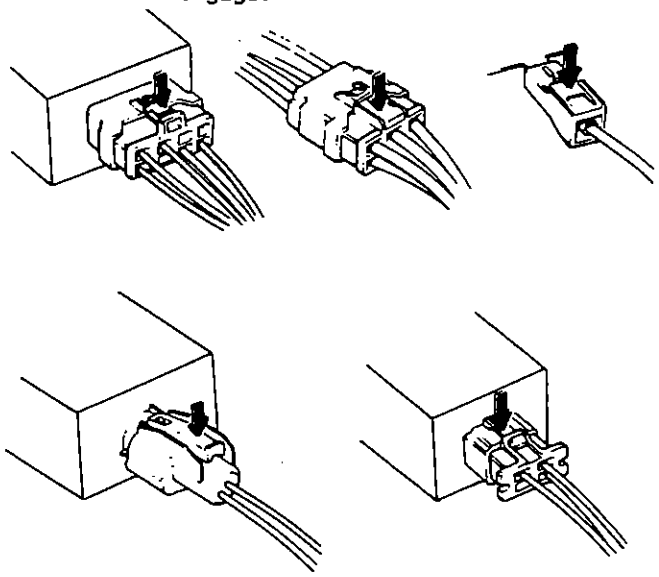


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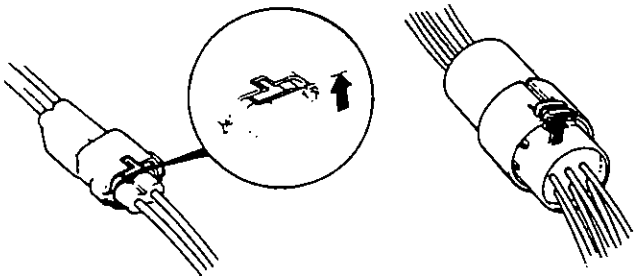
— Electrical (cont'd)

- When removing locking couplers, be sure to disengage the lock before disconnecting.
- Couplers may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following is a depiction of the means of disconnecting various typical couplers.

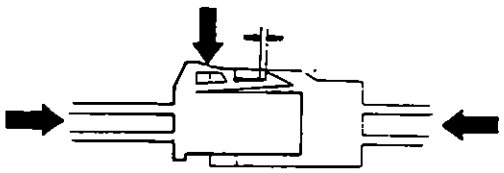
Press to disengage:



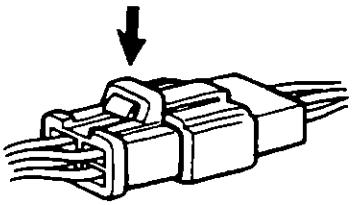
Pull up to disengage:



- When disconnecting locks, first press in the coupler tightly (to provide clearance to the locking device), then operate the tab fully and remove the coupler in the designated manner.



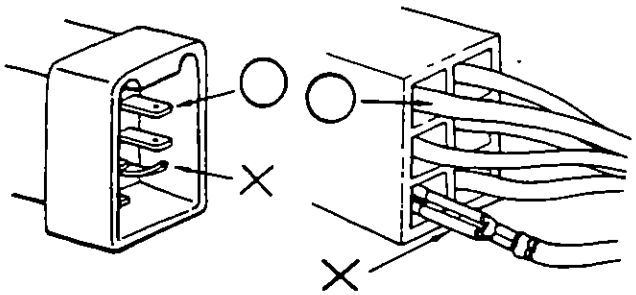
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.



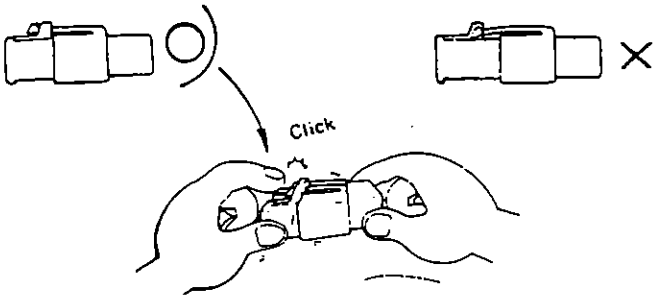
- When disconnecting a coupler, pull it off from the mating coupler by holding on both couplers.
- Never try to disconnect couplers by pulling on their wires.



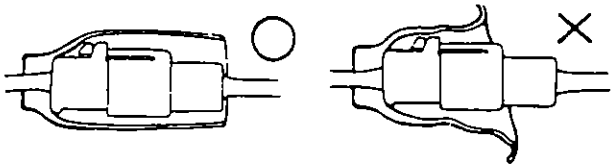
- Before connecting couplers, check to see that the terminals are in place and are not bent or distorted.



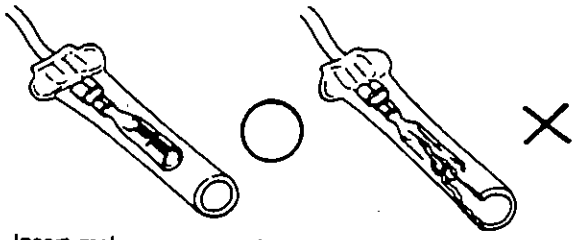
- Insert couplers fully until they will no longer go.
- Some couplers have locking tabs that must be aligned and engaged securely.
- Don't use wire harnesses with a loose wire or coupler.



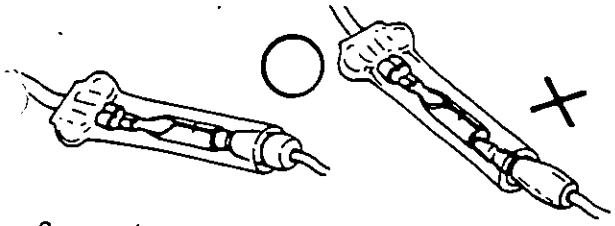
- Place the plastic cover over the mating coupler after reconnecting. Also check that the cover is not distorted.



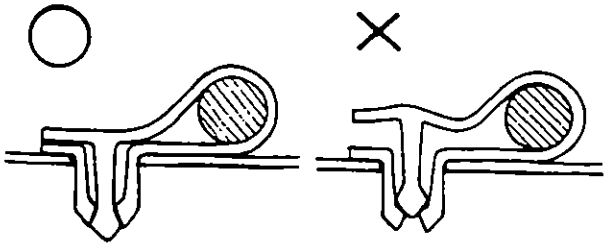
- Before clamping, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



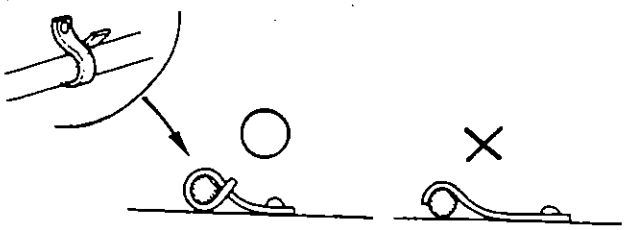
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover is not facing upward.



- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Position the wiring in the bands so that only the insulated surfaces contact the wires or wire harnesses.



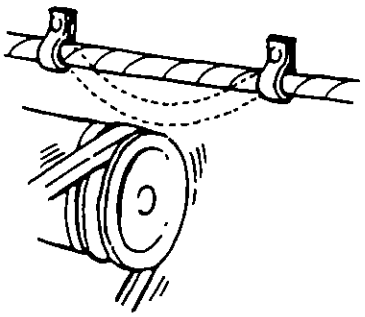
- A loose wire harness or cable can be a hazard to safety. After clamping, check each wire for security in its clamp.



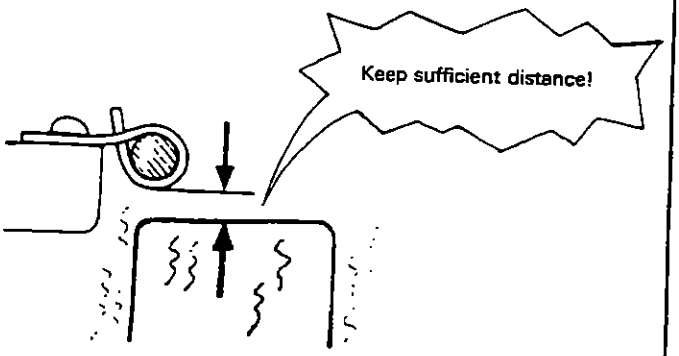
- Do not squeeze wires against the weld when a weld-on clamp is used.



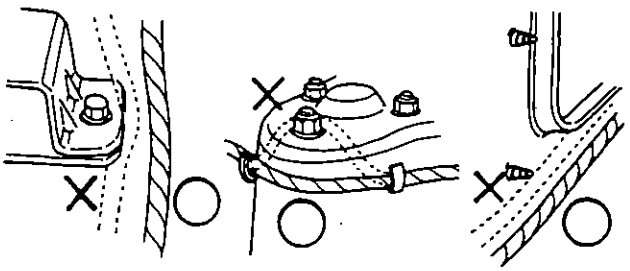
- After clamping, check each harness to be certain that it is not interferring with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



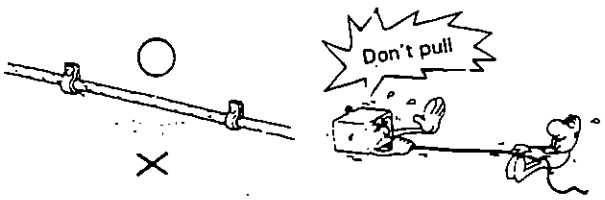
- Always keep a safe distance between wire harnesses and any heated parts.



- Do not bring wire harnesses in direct contact with sharp edges or corners.
- Also avoid contact with the projected ends of bolts, screws and other fasteners.



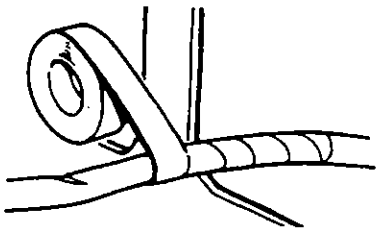
- Route harnesses so they are not pulled taut or slackened excessively.



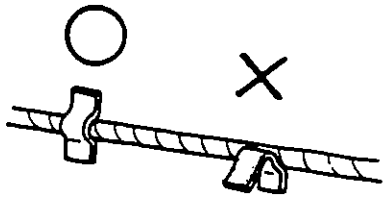
(cont'd)

– Electrical (cont'd)

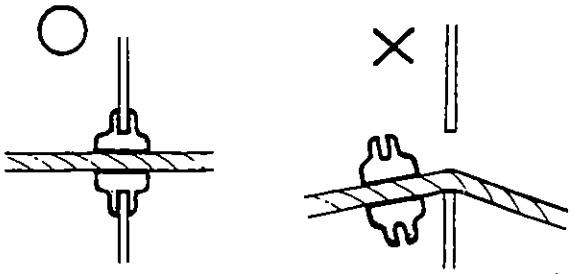
- Protect wires and harnesses with tape or a tube if they are in contact with a sharp edge or corner.



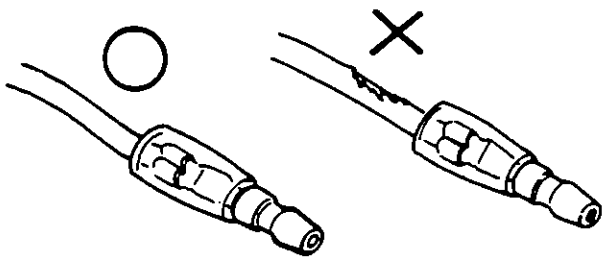
- Clean the attaching surface thoroughly if an addhesive is used. First, wipe with solvent or alcohol in necessary.



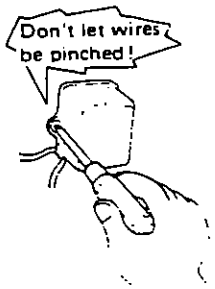
- Seat grommets in their grooves properly.



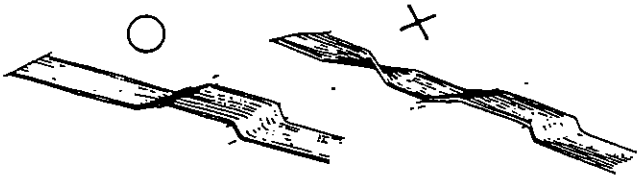
- Do not damage the insulation when connecting a wire.
- Do not use wires or harnesses with a broken insulation. Repair by wrapping with a protective tape or replace with new ones if necessary.



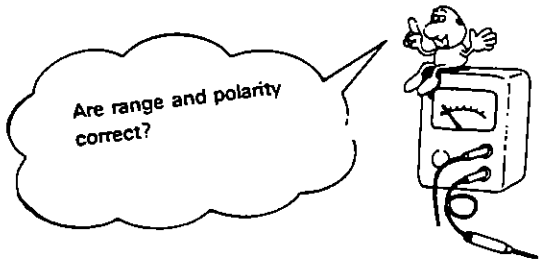
- After installing parts, make sure that wire harnesses are not pinched.



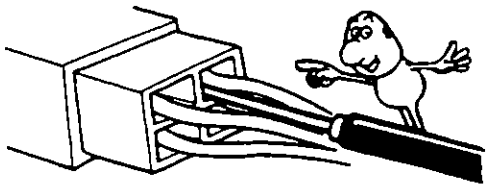
- After routing, check that the wire harnesses are not twisted or kinked.



- Wire harnesses should be routed so that they are not pulled taut, slackened excessively, pinched, or interfering with adjacent or surrounding parts in all steering positions.



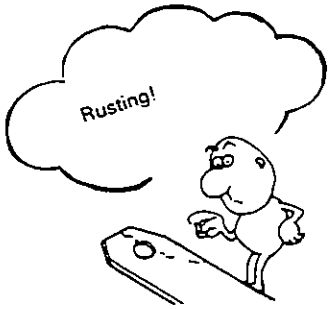
- When using the Service Tester, follow the manufacturer's instructions and those described in the Shop Manual.



- Do not drop parts.



- Rust is the enemy of all finished surfaces. Before connecting connectors and couplers, check the terminals and remove, if any, rust using a fine sand paper or emery cloth.



Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.



: Apply Power Steering Fluid.



:Apply or check vacuum.

①, ②, ③, ...
❶, ❷, ❸, ... : Sequence for removal.

Abbreviation

A/C	Air Conditioner
BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	PGM-FI Electronic Control Unit
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L.	Left Side
LHD	Left Hand Drive
M/T	Manual Transmission
PCV	Positive Crankcase Ventilation
PGM-FI	Programmed Fuel-Injection
P/S	Power Steering
R.	Right Side
RHD	Right Hand Drive
SW	Switch
SOL. V	Solenoid Valve
TDC	Top Dead Center

Special Tools

Existing Tools
(Common with Other Models) 2-2

Special Tools

Existing Tools (Common with Other Models)

5. Engine

No.	Tool Number	Description	Q'ty	Remarks
①	07966–6340011	Engine Block Hanger	1	
②	07944–6110100	Pin Driver 5 mm	2	Used to set the piston at TDC (DOHC engine).
③	07757–0010000	Valve Spring Compressor	1	07957–3290001 may also be used.
④	07HAD–PJ70200	Valve Guide Seal Installer	1	
⑤	07742–0010100	Valve Guide Driver 5.5 mm	1	
⑥	07743–0020000	Adjustable Valve Guide Driver	1	
⑦	07HAH–PJ70100	Valve Guide Reamer, 5.5 mm	1	
⑧	07GMD–PH70100	Valve Guide Seal Installer	1	
⑨	07742–0010200	Valve Guide Driver, 6.6 mm	1	
⑩	07984–6570101	Valve Guide Reamer, 6.6 mm	1	
⑪	07947–SB00100	Oil Seal Driver	1	For camshaft seal
⑫	07973–6570002	Piston Pin Dis/Assembly Tool Set	1	
⑬	07973–6570500	Piston Base	1	
⑭	07973–SB00100	Piston Base Head	1	
⑮	07973–PE00200	Pilot Collar	1	
⑯	07973–PE00400	Piston Pin Base Insert	1	
⑰	07973–PE00302	Adjustable Piston Pin Driver	1	
⑱	07948–0080000	Driver Attachment	1	Crankshaft (Clutch side)
⑲	07HAD–PJ70100	Driver	1	Crankshaft (Pulley side)
⑳	07749–0010000	Driver	1	Crankshaft (Clutch side)
㉑	07912–6110001	Oil Filter Socket Wrench	1	
㉒	07406–0030000	Oil Pressure Gauge Adapter	1	For pressure measurement

6. Fuel and Emissions

No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ–SH20100	R.P.M. Connecting Adaptor	1	
②	07999–PD6000A	PGM-FI Test Harness	1	
③	07406–0040001	Fuel Pressure Gauge	1	
③-1	07406–0040100	Pressure Gauge	1	
③-2	07406–0040201	Hose Assy	1	]— Component Tools
④	07GMJ–ML80100	Test Harness	1	
⑤	07411–0020000	Digital Circuit Meter	1	

7. Clutch

No.	Tool Number	Description	Q'ty	Remarks
①	07924–PD20003	Ring Gear Holder	1	07924–PD20002 may also be used.
②	07JAF–PM70100	Clutch Disc Alignment Tool	1	
③	07746–0010100	Attachment, 32 x 35 mm	1	
④	07749–0010000	Driver	1	

8. Manual Transmission

No.	Tool Number	Description	Q'ty	Remarks
①	07744—0010400	Pin Driver, 5 mm	1	07944—6110100 may also be used.
②	07936—6340000	Bearing Remover Set	1	
③	07746—0010300	Attachment, 42 x 47 mm	1	07974—6110100 may also be used.
④	07749—0010000	Driver	1	07949—6110000 may also be used.
⑤	07746—0010400	Attachment, 52 x 55 mm	1	07947—6340200 may also be used.
⑥	07979—PJ40000	Magnet Stand Base	1	
⑦	07GAJ—PG20101	Mainshaft Clearance Inspection Tool	1	
⑧	07746—0030100	Driver	1	
⑨	07944—SA00000	Pin Driver 4.0 mm	1	
⑩	07947—6110500	Oil Seal Driver	1	
⑪	07948—SC20200	Oil Seal Driver	1	
⑫	07947—6340500	Oil Seal Driver Attachment E	1	

10. Driveshafts

No.	Tool Number	Description	Q'ty	Remarks
①	07749—0010000	Driver	1	
②	07746—0040800	35 mm Pilot	1	
③	07746—0010300	Attachment, 42 x 47 mm	1	
④	07947—SD90100	Oil Seal Driver Attachment	1	
⑤	07JAD—SH30100	Oil Seal Driver Attachment	1	
⑥	07746—0030100	Inner Handle (C)	1	

(cont'd)

Existing Tools (Common with Other Models)

11. Manual Steering

No.	Tool Number	Description	Q'ty	Remarks
①	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	07916—6920100 may also be used.
②	07941—6920003	Ball Joint Remover	1	
③	07974—SA50800	Ball Joint Boot Clip Guide B	1	

11. Power Steering

No.	Tool Number	Description	Q'ty	Remarks
①	07406—0010101	Bypass Tube Joint	1	
②	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	
③	07406—0010200	P/S Pressure Gauge Set	1	
③-1	07406—0010300	Pressure Control Valve	1	Component Tools
③-2	07406—0010400	Pressure Gauge	1	
④	07GAK—SE00100	P/S Pressure Gauge Adaptor Set	1	
④-1*	07GAK—SE00110	P/S Joint Adaptor (Pump)	1	07406—0011100 may also be used.
④-2*	07GAK—SE00120	P/S Joint Adaptor (Hose)	1	07406—0011200 may also be used.
⑤	07941—6920003	Ball Joint Remover	1	
⑥	07749—0010000	Driver	1	07949—6110000 may also be used.
⑦	07746—0010300	Attachment, 42 x 47 mm	1	
⑧	07947—6340300	Driver Attachment	1	
⑨	07GAG—SD40000	P/S Tool Kit	1	
⑨-1	07GAG—SD40100	Piston Seal Ring Guide	1	Component Tools
⑨-2	07GAG—SD40200	Piston Seal Ring Sizing Tool	1	
⑨-3	07GAG—SD40300	Cylinder End Seal Slider	1	
⑨-4	07GAG—SD40400	Cylinder End Seal Guide	1	
⑨-5	07GAG—SD40600	Tool Box	1	
⑩	07974—SA50600	Pinion Seal Guide	1	
⑪	07725—0030000	Universal Holder	1	07725—0010101 may also be used.

④— 1 * and ④— 2 * : Component Tools

12. Suspension

No.	Tool Number	Description	Q'ty	Remarks
①	07HGK—0010100	Wheel Alignment Gauge Attachment	1	
②	07941—6920003	Ball Joint Remover	1	
③	07965—6340301	Hub Dis/Assembly Base	1	
④	07JAF—SH20110	Hub Dis/Assembly Pilot, 38 mm	1	
⑤	07JAF—SH20120	Hub Dis/Assembly Shaft, 22.4 x 25.4 mm	1	
⑥	07749—0010000	Driver	1	
⑦	07746—0010400	Attachment, 52 x 55 mm	1	
⑧	07GAF—SE00401	Hub Dis/Assembly Base	1	
⑨	07965—6920201	Hub Dis/Assembly Base	1	
⑩	07746—0010600	Attachment, 72 x 75 mm	1	
⑪	07GAF—SE00200	Hub Assembly Guide Attachment	1	
⑫	07965—SB00100	Ball Joint Remover/Installer	1	
⑬	07JAF—SH20200	Ball Joint Remover Base	1	
⑭	07965—SB00200	Ball Joint Installer Base	1	
⑮	07974—SA50700	Ball Joint Boot Clip Guide A	1	
⑯	07974—SA50800	Ball Joint Boot Clip Guide B	1	
⑰	07GAE—SE00100	Spring Compressor	1	

13. Brakes

No.	Tool Number	Description	Q'ty	Remarks
①	07921—0010001	Flare Nut Wrench	1	
②	07510—6340300	Vacuum Joint Tube A	1	
③	07404—5790300	Vacuum Gauge	1	
④	07410—5790500	Tube Joint Adaptor	1	
⑤	07406—5790200	Oil Pressure Gauge	2	
⑥	07410—5790100	Pressure Gauge Attachment C	2	
⑦	07510—6340100	Pressure Gauge Joint Pipe	2	
⑧	07749—0010000	Driver	1	07949—6110000 may also be used.
⑨	07747—6890300	Driver Attachment C	1	
⑩	07GAG—SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE—SG00100	Brake Spring Compressor	1	
⑫	07914—SA50001	Snap Ring Pliers	1	

15. Heater and Air Conditioner

No.	Tool Number	Description	Q'ty	Remarks
①	07746—0030100	Driver C	1	Pulley installation
②	07HAF—SF10300	Seal Seat Remover	1	Cover plate removal
③	07HAF—SF10400	Seal Remover/Installer	1	Shaft seal removal/installation

16. Electrical

No.	Tool Number	Description	Q'ty	Remarks
①	07920—SB20000	Fuel Sender Wrench	1	

Specifications

spe

Standards and Service Limits 3-2
Design Specifications 3-8
Body Specifications 3-11

Standards and Service Limits

5. Engine/Cylinder Head, Valve Train (SOHC Engine)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min⁻¹ (rpm) and wide-open throttle		Normal Minimum Maximum variation	1,275 kPa (13.0 kg/cm², 185 psi) 932 kPa (9.5 kg/cm², 135 psi) 196 kPa (2 kg/cm², 28 psi)
Cylinder head	Warpage Height		— 94.95—95.05	0.05 (0.002) —
Camshaft	End play Oil clearance Runout Cam lobe height	 IN Ex. KY KY EX Ex. KY KY	0.05—0.15 (0.002—0.006) 0.050—0.089 (0.002—0.004) 0—0.03 (0—0.001) max. 36.603 (1.4411) 36.957 (1.4515) 36.747 (1.4467) 36.996 (1.4565)	0.5 (0.02) 0.15 (0.006) 0.03 (0.001) — — — —
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance Stem installed height	IN EX IN EX IN EX IN EX	0.17—0.22 (0.007—0.009) 0.22—0.27 (0.009—0.011) 5.48—5.49 (0.2157—0.2161) 5.45—5.46 (0.2147—0.2150) 0.02—0.05 (0.001—0.002) 0.05—0.08 (0.002—0.003) 46.985—47.455 (1.8498—1.8683) 48.965—49.435 (1.9278—1.9263)	— — 5.45 (0.2147) 5.42 (0.2134) 0.08 (0.003) 0.12 (0.005) 47.705 (1.8781) 49.685 (1.9561)
Valve seat	Width	IN EX	0.85—1.15 (0.033—0.045) 1.25—1.55 (0.049—0.061)	1.6 (0.06) 2.0 (0.08)
Valve spring	Free length Squareness	IN EX. IN/EX	48.58 (1.9126) 49.19 (1.9366) —	47.64 (1.8756) 48.32 (1.9024) 1.70/1.72 (0.0669/0.0677)
Valve guide	I.D.	IN and EX	5.51—5.53 (0.2169—0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-shaft clearance	IN EX	0.017—0.05 (0.0007—0.0020) 0.018—0.054 (0.0007—0.0021)	0.08 (0.003) 0.08 (0.003)

5. Engine/Cylinder Head, Valve Train (DOHC Engine)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min⁻¹ (rpm) and wide-open throttle		Nominal Minimum Maximum variation	1,324 kPa (13.5 kg/cm², 192 psi) 932 kPa (9.5 kg/cm², 135 psi) 196 kPa (2 kg/cm², 28 psi)
Cylinder head	Warpage Height		— 131.95—132.05	0.05 (0.002) —
Camshaft	End play Oil clearance Runout Cam lobe height	 IN EX	0.05—0.15 (0.002—0.006) 0.050—0.089 (0.002—0.004) 0—0.03 (0—0.001) max. 33.021 (1.3000) 32.382 (1.2749)	0.5 (0.02) 0.15 (0.006) 0.03 (0.001) — —
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance Stem installed height	IN EX IN EX IN EX IN EX	0.13—0.17 (0.005—0.007) 0.15—0.19 (0.006—0.008) 6.58—6.59 (0.2591—0.2595) 6.55—6.56 (0.2579—0.2583) 0.02—0.05 (0.001—0.002) 0.05—0.08 (0.002—0.003) 45.545—46.015 (1.7931—1.8116) 44.735—45.205 (1.7612—1.7797)	— — 6.55 (0.2579) 6.52 (0.2567) 0.08 (0.003) 0.12 (0.005) 46.265 (1.8215) 45.455 (1.7896)
Valve seat	Width	IN and EX	1.25—1.55 (0.049—0.061)	2.0 (0.08)
Valve spring	Free length Squareness	IN EX IN/EX	47.49 (1.8697) 46.89 (1.8461) —	46.46 (1.8291) 45.93 (1.8083) 1.66/1.64 (0.065/0.065)
Valve guide	I.D.	IN and EX	6.61—6.63 (0.2602—0.2610)	6.55 (0.2579)

5. Engine/Engine Block

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface	0.07 (0.0028) max.	0.10 (0.004)
	Bore diameter	75.00—75.02 (2.9526—2.9535)	75.07 (2.9555)
	Bore taper	—	0.05 (0.002)
	Reboring limit	—	0.5 (0.02)
Piston	Skirt O.D. At 16 mm (0.63 in) from bottom of skirt	74.98—74.99 (2.9520—2.9524)	74.97 (2.9517)
	Clearance in cylinder	0.01—0.04 (0.0004—0.0016)	0.05 (0.002)
	Piston-to-ring clearance Top	0.03—0.06 (0.0012—0.0024)	0.13 (0.005)
	2nd	0.030—0.055 (0.0012—0.0022)	0.13 (0.005)
Piston ring	Ring end gap Top	0.15—0.35 (0.006—0.014)	0.6 (0.02)
	2nd	0.15—0.35 (0.006—0.014)	0.6 (0.02)
	Oil	0.20—0.60 (0.008—0.024)	0.7 (0.03)
Connecting rod	Pin-to-rod interference	0.014—0.040 (0.0006—0.0016)	—
	Large end bore diameter	Nominal 45.0 (1.77)	—
	End play installed on crankshaft	0.15—0.30 (0.006—0.012)	0.40 (0.016)
Crankshaft	Main journal diameter	44.976—45.000 (1.7707—1.7718)	—
	Taper/out-of-round, main journal	0.005 (0.0002) max.	0.010 (0.004)
	Rod journal diameter	44.976—45.000 (1.7707—1.7765)	—
	Taper/out-of-round, rod journal	0.0025 (0.0001) max.	0.010 (0.004)
	End play	0.10—0.35 (0.004—0.014)	0.45 (0.018)
	Runout	0.015 (0.0006) max.	0.03 (0.002)
Bearings	Main bearing-to-journal oil clearance		
	No. 1,2,4 and 5 jornals	0.024—0.042 (0.0010—0.0017)	0.5 (0.002)
	No.3 journal	0.030—0.048 (0.0012—0.0019)	0.5 (0.002)
	Rod bearing-to-journal oil clearance	0.020—0.038 (0.0008—0.0015)	0.05 (0.002)

5. Engine/Engine Lubrication

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (U.S.qt., Imp. qt)	SOHC	4.0 (4.2, 3.5) After engine disassembly 3.5 (3.7, 3.1) After oil change, including oil filter 3.0 (3.2, 2.6) After oil change, without oil filter	
		DOHC	4.3 (4.5, 3.8) After enge disassembly 3.8 (4.0, 3.3) After oil change, including oil filter 3.3 (3.5, 2.9) After oil change, with out oil filter	
Oil pump	Displacement	SOHC	44 ℓ (11.6 U.S. gal., 9.7 Imp. gal.) 6,250 min⁻¹ (rpm)	
		DOHC	67 ℓ (17.7 U.S. gal., 14.7 Imp. gal.) 6,750 min⁻¹ (rpm)	
	Inner-to-outer rotor radial clearance		0.14 (0.006)	0.2 (0.008)
	Pump body-to-rotor radial clearance		0.10—0.175 (0.004—0.007)	0.2 (0.008)
	Pump body-to rotor side clearance		0.03—0.08 (0.001—0.003)	0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F)	Idle SOHC	167 kPa (1.7 kg/cm², 24 psi) min.	
		Idle DOHC	137 kPa (1.4 kg/cm², 20 psi) min.	
		3,000 min⁻¹ (rpm) SOHC	451 kPa (4.6 kg/cm², 65 psi)	
		3,000 min⁻¹ (rpm) DOHC	470 kPa (4.8 kg/cm², 68 psi)	

5. Engine/Cooling

	MEASUREMENT	STANDARD (NEW)
Radiator	Capacity (incl.heater) ℓ (U.S.qt.,Imp.qt.) (Includes resvoir tank 0.4 (0.42, 0.35))	DOHC 4.5 (4.8, 4.0) SOHC 4.4 (4.7, 3.9)
Radiator cap	Pressure cap opening pressure	74—103 kPa (0.75—1.05 kg/cm², 11—15 psi)
Thermostat	Starts to open	78°C± 2 (172±3)
	Full open	90°C (194°F)
	Valve lift at full open	8 (0.31) min.
Water pump	Pulley ratio (crankshaft)	1 : 1
	Capacity: ℓ per min/at min⁻¹ (rpm)	108 (27 U.S. gal., 23 Imp. gal.)/5,000 min⁻¹ (rpm)
Cooling fan	Fan-to-core clearance	28.0 (1.10)
	Thermoswitch "ON" temperature	88.5°—91.5°C (191°—197°F)
	Thermoswitch "OFF" temperature	83.5°—86.5°C (182°—188°F)

(cont'd)

Standards and Service Limits (cont'd)

6. Fuel and Emission

	MEASUREMENT		STANDARD (NEW)
Fuel pump	Delivery pressure Displacement Relief valve opening pressure		250 kPa (2.55 kg/cm², 36psi) 236 cc /minutes in 10 seconds min. 441—588 kPa (4.5—6.0 kg/cm², 64—85 psi)
Pressure regulator	Pressure		230—270 kPa (2.35—2.75 kg/cm², 33—39 psi)
Fuel Tank	Capacity		45 ℓ (11.9 U.S. gal., 9.9 Imp. U.S.gal.)
Fast idle			1,000—2,000 min⁻¹ (rpm)
Idle spped	with headlights and cooling fan off	SOHC KY Ex. KY DOHC KQ Ex. KQ	780 ± 50 min⁻¹ (rpm) 750 ± 50 min⁻¹ (rpm) 750 ± 50 min⁻¹ (rpm) 800 ± 50 min⁻¹ (rpm)
Idle CO	With Catalytic Converter Without Catalytic Converter		0.1% Max. 1.0 ±1.0%

7. Clutch

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	213 (8.39) to floor 140—150 (5.5—5.9) 15—20 (0.59—0.79) 70 (2.76) min.to floor	— — — —
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth Surface runout Thickness	1.3 (0.05) min. 0.8 (0.03) max. 8.1—8.8 (0.32—0.35)	0.2 (0.008) 1.0 (0.04) 5.7 (0.224)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance	31.00—31.15 (1.220—1.226) 0.05—0.239 (0.002—0.009)	31.2 (1.228) 0.28 (0.011)
Clutch cover	Uneveness of diaphragm spring	0.8 (0.03) max.	1.0 (0.04)
Clutch release lever	Lever play	4.0—5.0 (0.16—0.20)	—

8. Manual Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US.qt.,Imp.qt.)	1.8 (1.9, 1.6) at oil change 2.4 (2.1, 2.5) at assembly	
Mainshaft	End play Diameter of needle bearing contact area Diameter of third gear contact area Diameter of 4th, 5th gear contact area Diameter of ball bearing contact area Runout	0.13—0.20 (0.005—0.008) 25.977—25.990 (1.0227—1.0232) 33.984—34.000 (1.3380—1.2713) 26.980—26.993 (1.0622—1.0627) 21.987—22.000 (0.8656—0.8661) 0.02 (0.0008) max.	Adjustable 25.92 (1.020) 33.93 (1.336) 26.93 (1.060) 21.93 (0.863) 0.05 (0.002)
Mainshaft third and fourth gears	I.D. End play 3rd 4th Thickness 3rd 4th	39.009—39.025 (1.5358—1.5364) 0.06—0.21 (0.0012—0.008) 0.06—0.19 (0.0024—0.0075) 30.22—30.27 (1.1898—1.1917) 30.12—30.17 (1.1858—1.1878)	39.07 (1.538) 0.33 (0.013) 0.31 (0.012) 30.15 (1.187) 30.05 (1.183)
Mainshaft fifth gears	I.D. End play Thickness	37.009—37.025 (1.4570—1.4577) 0.06—0.19 (0.0024—0.0075) 28.42—28.47 (1.1189—1.1209)	39.07 (1.538) 0.31 (0.012) 28.35 (1.116)
Countershaft	End play Diameter of needle bearing contact area Diameter of ball bearing contact are Diameter of low gear contact area Runout	0.17—0.38 (0.0067—0.0150) 30.000—30.015 (1.1811—1.817) 24.980—24.993 (0.9835—0.9840) 35.984—36.000 (1.4167—1.4173) 0.02 (0.0008) max.	0.53 (0.021) 29.95 (1.179) 24.93 (0.981) 35.93 (1.415) 0.05 (0.002)
Countershaft low gear	I.D. End play Thickness	41.009—44.025 (1.6145—1.6152) 0.03—0.10 (0.0012—0.0039) 29.41—29.44 (1.1579—1.1591)	41.07 (1.617) 0.22 (0.009) 29.36 (1.156)
Countershaft second gear	I.D. End play Thickness	44.009—44.025 (1.7326—1.7333) 0.03—0.11 (0.0012—0.0043) 29.92—29.97, (1.1780—1.1799)	44.07 (1.735) 0.23 (0.009) 29.85 (1.175)

3. Manual Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Spacer collar (Countershaft second gear)	I.D. O.D. Length	32.975—32.985 (1.2982—1.2986) 38.989—39.000 (1.5350—1.5354) 30.03—30.06 (1.1823—1.1835)	33.03 (1.300) 38.93 (1.533) 30.01 (1.181)
Spacer collar (Mainshaft fourth and fifth gears)	I.D. O.D. 4th 5th Length 4th 5th	27.002—27.012 (1.0631—1.0635) 33.989—34.000 (1.3381—1.3386) 31.989—32.000 (1.2594—1.2598) 27.43—27.46 (1.0799—1.0811) 23.53—23.56 (0.9264—0.9276)	27.06 (1.065) 33.93 (1.336) 31.93 (1.257) 27.41 (1.079) 23.51 (0.926)
Reverse idler gear	I.D. Gear-to-reverse gear shaft clearance	15.016—15.043 (0.5911—0.5922) 0.032—0.077 (0.0013—0.0030)	15.08 (0.594) 0.14 (0.006)
Synchro ring	Ring-to-gear clearance (ring pushed against gear)	0.73—1.18 (0.029—0.046)	0.4 (0.016)
Shift fork	Shift fork finger thickness Fork-to-synchro sleeve clearance	6.4—6.5 (0.252—0.255) 0.25—0.45 (0.0098—0.0177)	— 0.8 (0.03)
Reverse shift fork	Shift fork paul groove width Fork-to-reverse idler gear clearance Groove width Fork-to-fifth/reverse shift piece pin clearance	12.7—13.0 (0.500—0.512) 0.5—1.1 (0.020—0.043) 7.05—7.25 (0.278—0.285) 0.05—0.35 (0.002—0.014)	— 1.8 (0.071) — 0.5 (0.02)
Shift arm A	Diameter of shift rod contact area Shift arm A-to-shift rod clearance	13.005—13.130 (0.5120—0.5169) 0.005—0.230 (0.0002—0.0091)	— 0.35 (0.0138)
Shift arm B	Diameter of shift arm shaft contact area Shift arm B-to-shift arm shaft clearance Shift arm B-to-shift piece clearance Shift piece diameter of shift fork shaft contact area	13.973—14.000 (0.5501—0.5512) 0.013—0.070 (0.0005—0.0028) 0.2—0.5 (0.0079—0.0197) 12.9—13.0 (0.5079—0.5118)	— 0.16 (0.0063) 0.62 (0.0244) 12.78 (0.5031)
Ring gear	Backlash	0.072—0.130 (0.0028—0.0051)	0.18 (0.007)
Differential carrier	Pinionshaft bore diamater Carrier-to-pinionshaft clearance Driveshaft bore diameter Carrier-to-driveshaft clearance Carrier-to-intermediate shaft clearance Side clearance	18.000—18.018 (0.7087—0.7094) 0.017—0.047 (0.007—0.0019) 26.025—26.045 (1.0246—0.0413) 0.045—0.086 (0.0017—0.0034) 0.075—0.111 (0.0030—0.0044) 0.15 max.	— 0.095 (0.004) — 0.14 (0.006) 0.16 (0.006)
Differential pinion gear	Backlash pinion gear bore diameter Pinion gear to pinionshaft clearance	0.05—0.15 (0.002—0.006) 18.042—18.066 (0.7103—0.7113) 0.059—0.095 (0.0023—0.0037)	Selection with 7 type of washers — 0.15 (0.006)

10. Driveshaft

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Driveshaft	*Right with intermediate shaft without intermediate shaft *Left with intermediate shaft without intermediate shaft	485—490 (19.01—19.29) 481.5—486.5 (18.96—19.15) 485—490 (19.09—19.29) 774.5—779.5 (30.49—30.69)	— — — —

*not as installed

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft) with P/S	0.49—1.67 (0.05—0.17, 0.36—1.27) 0.098 (0.01, 0.072)	
Power steering	The angle of rack-guide-nut loosened locked position with P/S Pump pressure with valve closed (Oil temp./ speed: 40°C (104°F) min/idle. Do not run for more than 5 seconds) kPa (kg/cm², psi)	40° ± 60° 20°—25 7,845—8,826 (80—90, 1,138—1,280)	
Power steering fluide	Fluid capacity Reservoir At change	0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.) approx 1.2 ℓ (1.3 U.S. qt., 1.1 Imp.qt.)	
Power steering belt	Deflection midway between pulleys/load	9—12 (0.35—0.47)/98N (10 kg, 22 lb) for used belt 7—10 (0.28—0.39)/98N (10 kg, 22 lb) after replacement of belt	
Rack end	Floating torque N·m (kg-m, lb-ft)	0.49—2.94 (0.05—0.3, 0.36—1.27)	

Standard and Service Limits (cont'd)

12. Suspension

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	Toe-in		Front: 0 ±3 (0±0.12) / Rear: 2 ± 2 (0.08 ±0.08)	
	Camber		0°00' ± 1°	
	Caster		3°00' ± 1°	
	Side slip		0 ±3 (0 ± 0.12)	
	Turning angle (MAX.)	Inward wheel	41°30' ± 2°	
		Outward wheel	33°30' ± 2°	
Wheel	Rim runout	Steel	0—1.0 (0—0.039)	2.0 (0.08)
		Aluminum	0—0.7 (0—0.028)	1.5 (0.06)
Wheel bearing	End play	Front	0	0.05
		Rear	0	0.05

△: Maximam steering angle at which front and rear wheel in place.

13. Brake

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke 200N (20 kg, 44 lbs)		To be locked when pulled 6—10 notches	
Foot brake pedal	Pedal height	RHD	161 (6.3) from floor	—
		LHD	153 (6.0) from floor	—
	Free play		1—5 (0.04—0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance		0—0.4 (0—0.016)	—
Disc brake	Disc thickness	Front	19.0 (0.75)	17.0 (0.67)
		Rear	10.0 (0.39)	8.0 (0.32)
	Disc runout		—	0.1 (0.004)
	Disc paralleism		—	0.015 (0.006)
	Pad thickness	Front	10.0 (0.39)	1.6 (0.06)
		Rear	8.0 (0.32)	1.6 (0.06)
Brake Drum	I.D.		180 (7.09)	181 (7.13)
	Lining thickness		4.5 (0.18)	2.0 (0.08)
Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kPa (kg/cm², psi)
		0	20 (44)	1.362 (13.9, 198)
		300	20 (44)	4.508 (46.0, 654)
		500	20 (44)	6.605 (67.4, 960)

16. Electrical

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)
Ignition coil	Rated voltage	12 Volts
	Primary winding resistance	0.378—0.462 ohms
	Secondary winding resistance	9,440—14,160 ohms
Ignition wire	Resistance	25,000 ohms max.
Spark plug	Type	See Section 16
	Gap	1.0—1.1 (0.039—0.043)
Ignition timing	At idling SOHC DOHC	18° ± 2° (Red) BTDC 16° ± 2° (Red) BTDC
Battery	Lighting capacity (20-hour ratio) Starting capacity (5-second ratio)	40, 45, 47 Ampere Hours 8.6 V min. at 300 Ampere draw
Alternator	Output	13.5V / 60A

MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Coil resistance (rotor)	2.8—3.0 ohm	±0.1 ohm
Slip ring O.D.	32.5 (1.28)	32.1 (1.26)
Brush length	15.5 (0.61)	5.3 (0.21)
Brush Spring tension	300—500g (10.6—17.6 oz)	—

Starting motor		ND 1.0 kw, 1.2 kw		MITSUBA 1.0 kw, 1.4 kw	
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth	0.5—0.8 (0.020—0.031)	0.2 (0.008)	0.4—0.5 (0.016—0.020)	0.15 (0.006)
	Commutator	0—0.02 (0.008)	0.05 (0.002)	0—0.02 (0.0008)	0.05 (0.002)
	Commutator O.D.	29.9—30.0 (1.18)	29.0 (1.14)	28.0—28.1 (1.10—1.11)	27.5 (1.08)
	Brush length	12.5—13.5 (0.49—0.53)	8.5 (0.33)	14.3—14.7 (0.56—0.58)	9.3 (0.37)
	Spring Pressure (new)	18.1—2.89 N (1.85—2.4 kg, 4.1—5.4 lb)	—	20.1—26.5 N (2.05—2.7 kg, 4.5—6.0 lb)	—

Design Specifications

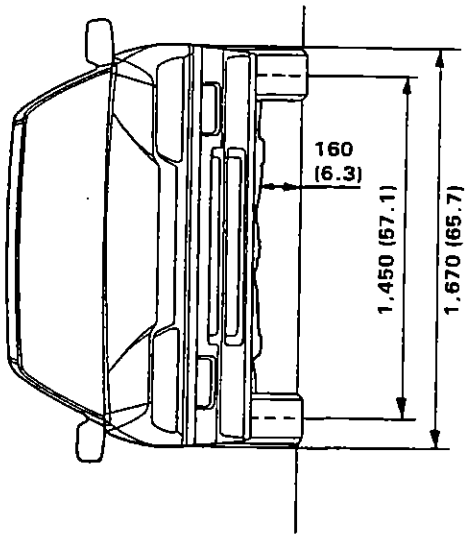
	ITEMS	METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	3,755 mm	147.8 in.	
	With bumper guard	3,795 mm	149.4 in.	
	Overall Width	1,675 mm	65.9 in.	KQ, KY
		1,670 mm	65.7 in.	Ex. KQ, KY
	Overall Height	1,270 mm	50.0 in.	
		1,280 mm	50.4 in.	KY
	Wheel Base	2,300 mm	90.6 in.	
	Track, Front/Rear	1,450/1,456 mm	57.1/57.3 in.	Ex. KQ, KY
		1,445/1,455 mm	56.9/57.3 in.	KY
		1,450/1,455 mm	57.1/57.3 in.	KQ
	Ground Clearance	160 mm	6.3 in.	Without Catalytic Converter
		150 mm	5.9 in.	With Catalytic Converter
	Overhang, Front/Rear	765/690 mm	30.1/27.2 in.	} Includes bumber
	With bumper guard	805/690 mm	31.7/27.2 in.	
WEIGHTS	Engine Weight (Wet)			
	SOHC	107 kg	236 lb.	
	DOHC	113 kg	249 lb.	
	Curb Weight DOHC	925 kg	2,040 lb.	KX
		909 kg	2,004 lb.	KY
		910 kg	2,007 lb.	KB
		905 kg	1,996 lb.	KF, KE
		900 kg	1,985 lb.	KW
	SOHC	895 kg	1,973 lb.	KS
		890 kg	1,962 lb.	KW
		900 kg	1,985 lb.	KG
		935 kg	2,017 lb.	KQ
	Weight Distribution (Front/Rear)			
	DOHC	575/350 kg	1,268/772 lb.	KX
		559/350 kg	1,232/772 lb.	KY
		560/350 kg	1,235/772 lb.	KB
		555/350 kg	1,224/772 lb.	KF, KE
		550/350 kg	1,213/772 lb.	KW
	SOHC	550/345 kg	1,213/761 lb.	KS
		545/345 kg	1,202/761 lb.	KW
		550/350 kg	1,213/772 lb.	KG
		585/350 kg	1,290/772 lb.	KQ
	Max. Permissible Weight (EC)	1,290 kg	2,844 lb.	Ex. KS
		1,140 kg	2,513 lb	KS
	Maximum Loaded Vehicle Weight	1,370 kg	3,020 lb.	KY
	Carrying (Loading) Weight Capacity	45 kg	160 lb.	
ENGINE	Type	Water cooled 4-cycle S.O.H.C. Water cooled 4-cycle D.O.H.C.		
	Cylinder arrangement	4-cylinder in-line, transverse		
	Bore and Stroke	75×90 mm	2.95×3.54 in.	
	Displacement	1,590 cm³ (cc)	97 cu. in.	
	Compression Ratio			
	Without Catalytic Converter	9.1		
	With Catalytic Converter	9.5		
	Valve Train	4-valves per cylinder, single or dual overhead camshafts		
	Lubrication System	Pressure fed		
	Fuel Required			
	DOHC with Catalytic Converter	Unleaded gasoline with 95 research octane number or higher		
	SOHC with Catalytic Converter	Unleaded gasoline with 91 research octane number or higher		
	Without Catalytic Converter	Leaded gasoline with 97 research octane number or higher		

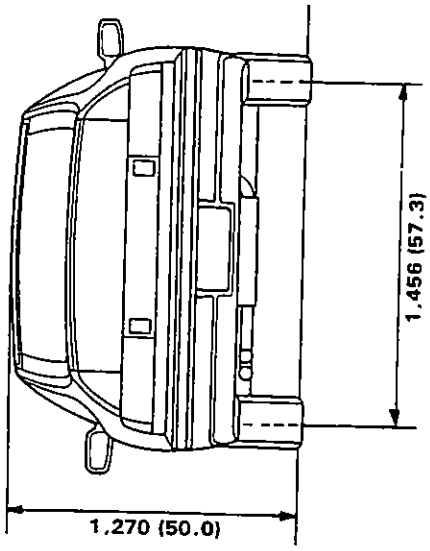
	ITEMS	METRIC	ENGLISH	NOTES
STARTER	Type 1.0 kW, 1.2 kW, 1.4kW	Gear reduction		
	Normal Output	1.0 kW, 1.2 kW, 1.4 kW		
	Normal Voltage	12V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weight 1.0 kW MITSUBA	3.4 kg	7.5 lb.	
	ND	3.85 kg	8.5 lb.	
	1.2 kW ND	3.85 kg	8.5 lb.	
	1.4 kW MITSUBA	3.7 kg	8.2 lb.	
TRANSMISSION	Clutch	Single plate dry, diaphragm spring		
	Transmission Type	5 speeds forward, synchromesh, 1 speed reverse, constant mesh		
	Primary Reduction	1.000		
	Gear Ratio	SOHC	DOHC	
	1st	3.250	3.250	
	2nd	1.894	1.944	
	3rd	1.259	1.346	
	4th	0.937	1.033	
	5th	0.771	0.878	
	Reverse	3.153	3.153	
	Final Reduction SOHC	Single helical gear, 4.250		
	DOHC	Single helical gear, 3.888		
	Clutch Facing Area	160 cm^2	24.8 sq. in.	
R CONDI-ONER	Cooling Capacity	3,850 Kcal/h		
	Conditions:			
	Compressor Revolution Speed	1,800 min^{-1} (rpm)		
	Outside Air Temperature	27.0°C	81°F	
	Outside Air Humidity	50%		
	Condenser Air Temperature	35°C	95°F	
	Condenser Air Velocity	4.5 m/sec.	14.8 ft/sec.	
	Blower Capacity	440 m^3/h	15,118 cu. ft/h	
	Compressor (MATSUSITA) Type	Vane rotary type		
	Number of Vane	3		
	Displacement	130cc/rev.	7.93 cu. in. /rev	
	Max. speed	7,500 min^{-1} (rpm)		
	Lubricant Capacity	130 cc	7.93 cu. in.	
	Receiver Dryer With Desiccant	Includes fusible safety plug.		
	Condenser	Corrugated fin type		
	Evaporator	Corrugated fin type		
	Blower Type	Sirocco fan		
	Motor Input	170 W (12 V)		
	Speed Control	4 speeds		
	Max. Capacity	390 m^3/h	13,773 cu. ft/h	
	Temp. Control	Air-mix type		

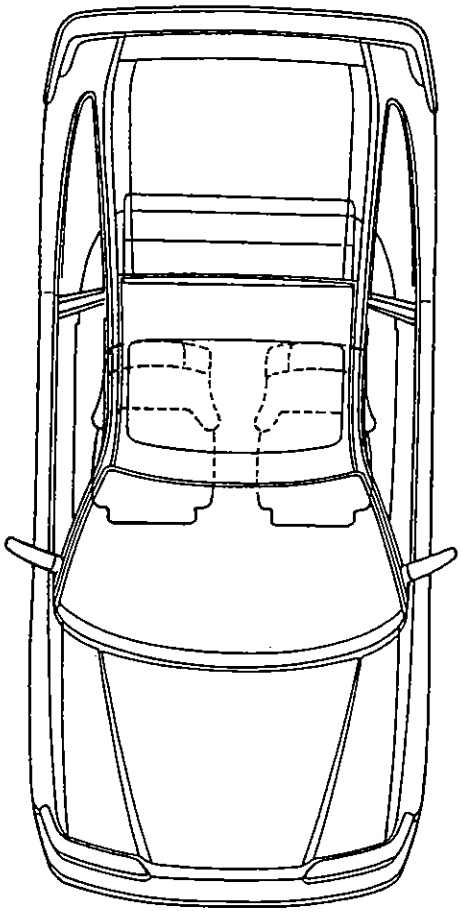
Design Specifications

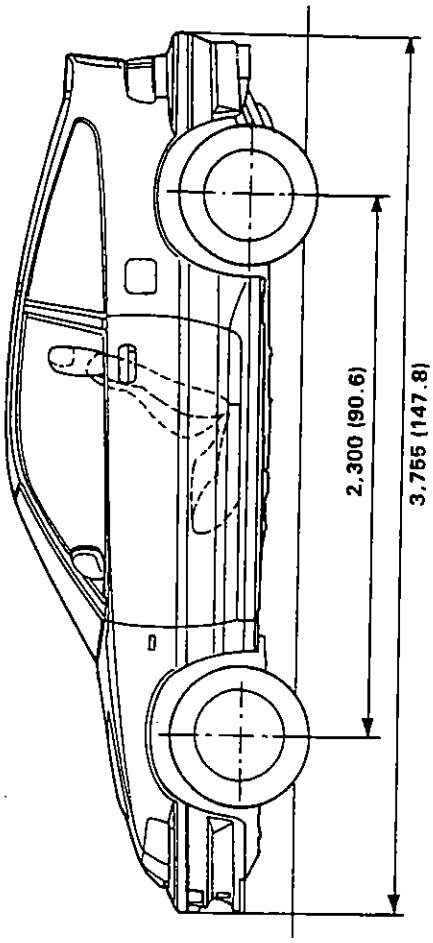
	ITEMS		METRIC	ENGLISH	NOTES
AIR CONDITIONER	Comp. Clutch	Type	Dry, single plate, V-belt		
		Power Consumption	32 W max. 12 V		
	Refrigerant	Type	R-12		
		Quantity	0.9±0.05 kg	1.98±0.11 lb	
STEERING SYSTEM	Type		Rack and pinion		
	Overall Ratio	Manual	18.6 (18—20.4): 1		
		Power	17.7: 1		
	Turns, Lock-to-lock	Manual	4.1		
		Power	3.65		
	Steering Wheel Diameter		370 mm	14.6 in.	
SUSPENSION SYSTEM	Type	Front/Rear	Independent by double wishbones, coil springs		
	Shock Absorber	Front	Telescopic, nitrogen gas-filled		
		Rear	Telescopic, nitrogen gas-filled		
WHEEL ALIGNMENT	Wheel Alignment				
	Camber	Front	0°00′±1°		
		Rear	−0°30′±1°		
	Caster	Front	3°00′±1°		
	Toe-in	Front	0±3 mm	0±0.12 in.	
		Rear	2±2 mm	0.08±0.08 in.	
BRAKE SYSTEM	Type	Front	Power assisted self-adjusting disc		
		Rear	Power assisted self-adjusting disc		
	Lining Surface Area	Front	44.1 mm²	6.84 sq. in.	
		Rear	21.0 mm²	3.25 sq. in.	
	Effective Disc Diameter	Front	194 mm	7.64 in.	
		Rear	208 mm	8.19 in.	
	Parking Brake Kind and Type		Mechanically actuating, rear two wheel brakes		
TIRES	Front/Rear	SOHC	185/60 R14 82H		
		DOHC	185/60 VR14		
	Spare (EC)		T105/80D 13		
ELECTRICAL	Battery		12V-47AH		
			12V-45AH		KE, KF
	Starter		12V-1.0 kW, 1.2 kW, 1.4 kW		
	Alternator		12V-60 amps		
	Fuses	In the dash fuse box	10A, 15A, 20A, 30A		
		In the main fuse box	50A, 60A		
	Headlights High/Low		12V-60/55W		
	Front Turn Signal Lights		12V-21W		
	Rear Turn Signal Lights		12V-21W		
	Side Turn Signal Lights		12V-5W		
	Stop/Taillights		12V-21/5W		
	Back-up Lights		12V-21W		
	License Plate Lights		12V-5W		
	Gauge Lights		12V-3.4W, 3.0W, 1.4W		
	Indicator Lights		12V-1.4W		
	Warning Lights		12V-5W		
	Dome Light		12V-5W		
	Trunk Light		12V-3.4W		
	Illumination and Pilot Lights		12V-1.4W		
	Heater Illumination Lights		0.91W, 0.84W, LED		
			12V-1.4W		

unit: mm (in)









Maintenance

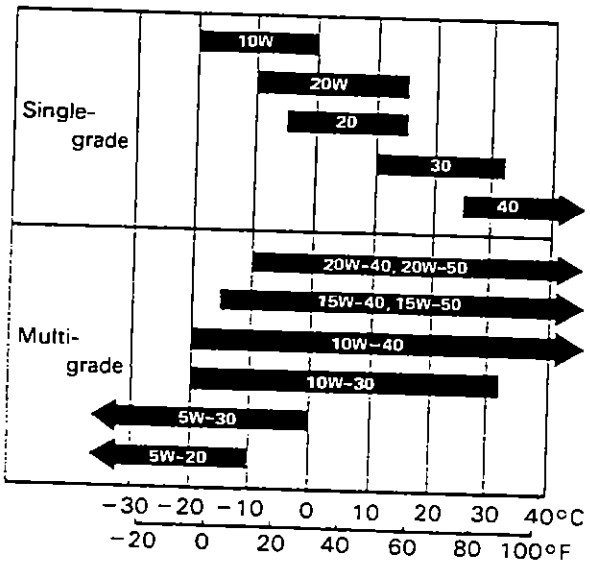
Lubrication Points..... 4-2
Maintenance Schedule 4-4



Lubrication Points

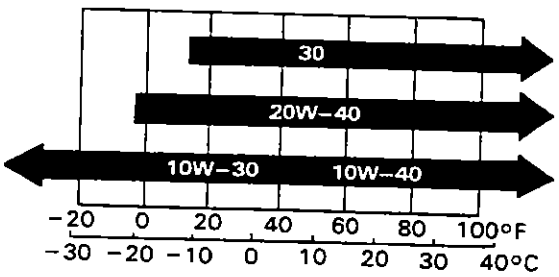
No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SE or SF SAE Viscosity: See chart below
2	Transmission	Manual	API Service Grade: SE or SF SAE30, 10W—30, 10W—40 or 20W—40 grade oil
3	Brake reservoir		Brake fluid DOT 3
4	Power steering reservoir		Honda power steering fluid P/N 08208—99961
5	Steering gearbox (Power)		Honda steering grease P/N 08740—99969
6	Steering gearbox(Manual)		Multi-purpose Grease
7	Tilt steering		
8	Steering ball joints		
9	Suspension ball joints		
10	Steering boots		
11	Shift lever pivot		
12	Steering column bushings		
13	Pedal linkage		
14	Brake master cylinder push rod		
15	Tailgate hinges		
16	Door hinges upper and lower		
17	Door opening detents		
18	Fuel filler lid		
19	Engine hood hinges		
20	Engine hood latch		
21	Caliper	Piston seal Dust seal Caliper pin Piston	Silicone Grease

Recommended Engine Oil
(SE or SF Grade oil)

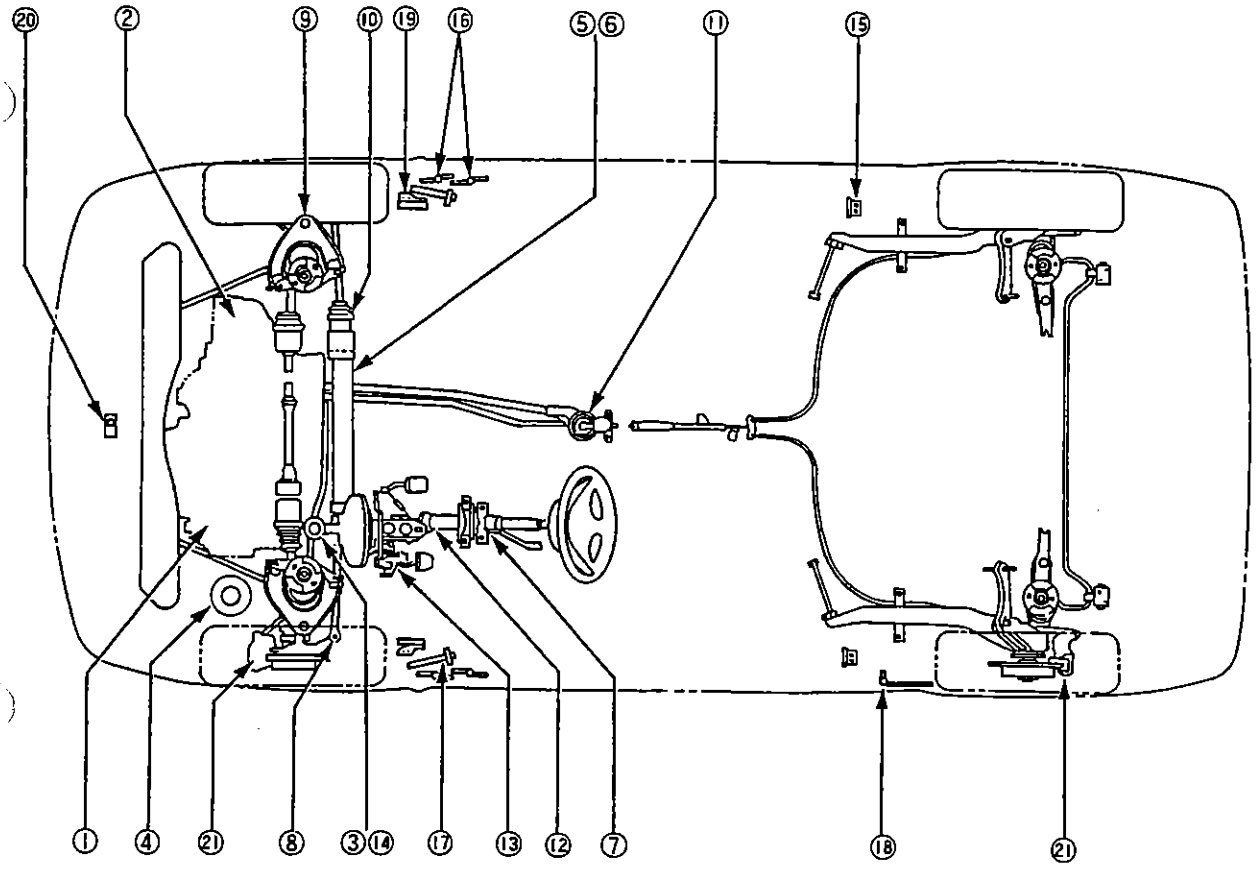


Engine oil viscosity for
ambient temperature ranges.

Recommended Manual Transmission Oil



Transmission oil viscosity for
ambient temperature ranges.


20
2
9
10
19
16
5
6
11
15
1
4
21
8
3
14
17
13
12
7
18
21

Maintenance Schedule

	SERVICE AT THE INTERVAL OF LISTED KM (MILES) OR MONTHS, WHICHEVER OCCURS FIRST.						
	ITEMS	x 1,000 km	20	40	60	80	100
		x 1,000 miles	12	24	36	48	60
		months	12	24	36	48	60
	IDLE SPEED AND IDLE CO		I	I	I	I	I
	VALVE CLEARANCE		I	I	I	I	I
	ALTERNATOR DRIVE BELT			I		I	
■	ENGINE OIL AND OIL FILTER		Replace every 10,000 km (6,000 miles) or 6 months				
■	TRANSMISSION OIL			R		R	
■	RADIATOR COOLANT					R*1	
	COOLING SYSTEM, HOSES AND CONNECTIONS			I		I	
	AIR CLEANER ELEMENT (Viscous type)*2			R		R	
	AIR CLEANER ELEMENT (Dry type)*3		R	R	R	R	R
	FUEL FILTER			R		R	
	TANK, FUEL LINE AND CONNECTIONS			I		I	
	EVAPORATIVE EMISSION CONTROL SYSTEM*5						I
	IGNITION TIMING AND CONTROL SYSTEM			I		I	
	SPARK PLUGS (For cars using unleaded gasoline)			R		R	
	SPARK PLUGS (For cars using leaded gasoline)		R	R	R	R	R
	DISTRIBUTOR CAP AND ROTOR			I		I	
	IGNITION WIRING			I		I	
	CRANKCASE EMISSION CONTROL SYSTEM			I		I	
	BRAKE FLUID			R		R	
	BRAKE HOSES AND LINES		I	I	I	I	I
	FRONT BRAKE PADS		Inspect every 10,000 km (6,000 miles) or 6 months				
	FRONT BRAKE DISCS AND CALIPERS		I	I	I	I	I
	REAR BRAKE DISCS, CALIPERS AND PADS			I		I	
	PARKING BRAKES		I	I		I	
	CLUTCH RELEASE ARM TRAVEL		I	I	I	I	I
	EXHAUST PIPE AND MUFFLER		I	I	I	I	I
	SUSPENSION MOUNTING BOLTS		I	I	I	I	I
	FRONT WHEEL ALIGNMENT		I	I	I	I	I
	STEERING OPERATION, TIE ROD ENDS, STEERING GEAR BOX AND BOOTS		I	I		I	
	POWER STEERING SYSTEM*4		I	I	I	I	I
	POWER STEERING PUMP BELT*4			I		I	
	CATALYTIC CONVERTER HEAT SHIELD (Car equipped with catalytic converter)						I

—Replace I—Inspect. After inspection, clean, adjust, repair or replace if necessary.

REMARK: These service intervals assume routine checking
ıd replenishment has been done, as needed, by the customer.

*1 Thereafter, replace every 2 years or 40,000 km (24,000 miles), whichever comes first.
*2 For European and KQ types.
*3 Except for European and KQ types.
*4 Only for KQ type.
*5 For cars using unleaded gasoline and KY type.

AUTION :The following items must be serviced more frequently on cars normally used under severe driving conditions. ɔfer to the chart below for the appropriate maintenance intervals.

evere driving conditions" include:
: Repeated short distance driving
: Driving in dusty conditions
: Driving in severe, cold weather
: Driving in areas using road salt or other corrosive materials

E : Driving on rough and/or muddy roads
F : Towing a trailer
R—Replace
I— Inspect. After inspection, clean, adjust, repair or replace if necessary.

Condition	Maintenance item	Maintenance operation	Interval
B • • • F	Engine oil and oil filter	R	Every 5,000 km (3,000 miles) or 3 months
• • • • F	Transmission oil	R	Every 20,000 km (12,000 miles) or 12 months
B • D E F	Front brake discs and calipers	I	Every 10,000 km (6,000 miles) or 6 months
B • D E F	Rear brakes (discs, calipers and pads)	I	Every 20,000 km (12,000 miles) or 12 months
B C • E •	Clutch release arm travel	I	Every 10,000 km (6,000 miles) or 6 months
• B C E •	Power steering system	I	Every 10,000 km (6,000 miles) or 6 months

Engine

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Engine Tune-up

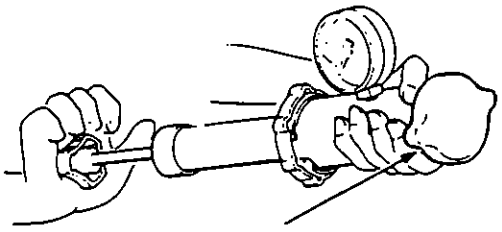
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Engine Tune-up

Radiator Cap Testing

WARNING **System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.**

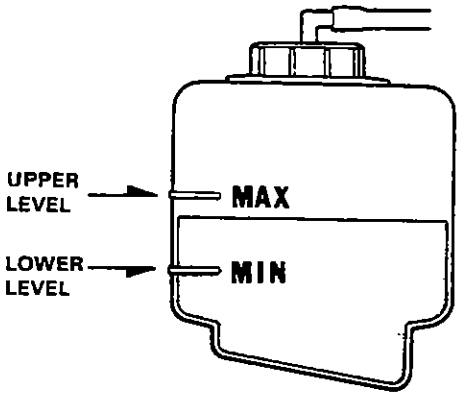
1. Remove the radiator cap, wet its seal with coolant, them install it on the pressure tester.
2. Apply pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).
3. Check for a drop in pressure.
4. If there is a drop in pressure, replace the cap.



RADIATOR CAP

Coolant Level Inspection

1. Check whether the coolant level in the coolant reservoir tank is between "MAX" and "MIN".



2. Supply the coolant reservoir tank with coolant to "MAX", if the coolant level is lower than "MIN" or near to "MIX".

NOTE:
- Use only HONDA RECOMMENDED anti-freeze / coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 50% MINIMUM. Coolant concentrations less than 50% may not provide sufficient protection against corrosion or freezing.
- Coolant concentrations greater than 60% will impair cooling efficiency and are not recommended.

CAUTION:
- **Do not mix different brand anti-freeze/coolants.**
- **Do not use a additional rust inhibitors or antirust products; they may not be compatible with the recommended coolant.**

Radiator Coolant Refill Capacity:

	ℓ (U.S.qt., Imp.qt.)
1.6 ℓ DOHC	4.5 (4.7, 4.0)
1.6 ℓ SOHC	4.4 (4.6, 3.9)

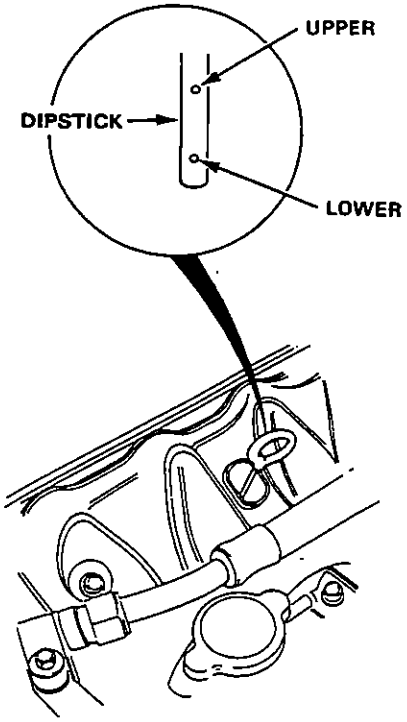
Including the reservoir tank capacity: 0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.)

3. See page 5-59 for refilling.

ngine Oil Level Inspection

1. Check engine oil with the engine off and the car parked on level ground.
2. Make certain that the oil level indicated on the dipstick is between the upper and lower marks.
3. If the level has dropped close to the lower mark, add oil until it reaches the upper mark.

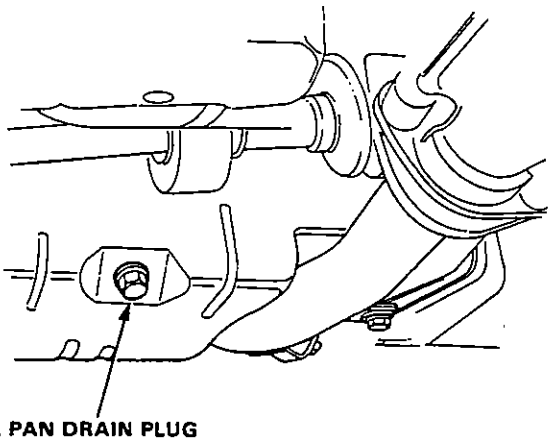
CAUTION: Insert the dipstick carefully to avoid bending it.



Engine Oil Replacement

1. Warm up the engine.
2. Drain the engine oil.

   NOTE: Remove the filler cap to speed draining.

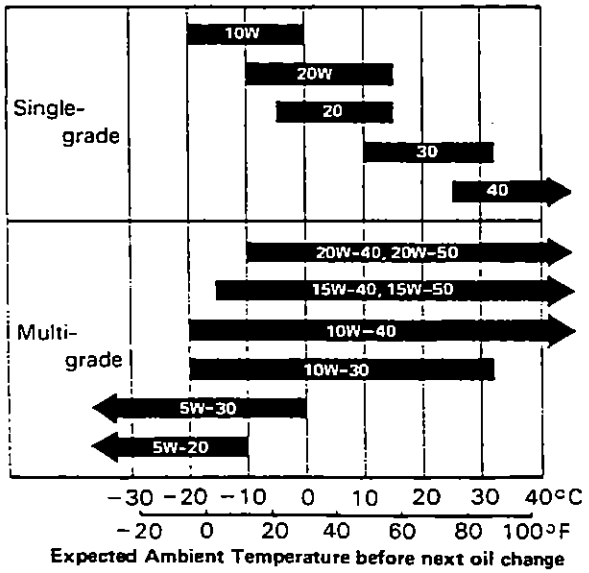


OIL PAN DRAIN PLUG
45 N·m (4.5 kg-m, 33 lb-ft)

3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

Capacity	SOHC: 3.0 lit (3.2 US qt, 2.7 Imp. qt) DOHC 3.3 lit (3.5 US qt, 2.9 Imp. qt) excluding oil filter SOHC: 3.5 lit (3.7 US qt, 3.1 Imp. qt) DOHC 3.8 lit (4.0 US qt, 3.4 Imp. qt) at change, including filter SOHC: 4.0 lit (4.2 US qt, 3.5 Imp. qt) DOHC 4.3 lit (4.6 US qt, 3.8 Imp. qt)
Change	Every 10,000 km (6,000 miles) or 6 months

Recommended Engine Oil (SE or SF Grade only)



Expected Ambient Temperature before next oil change

NOTE: Oil filter should be replaced at each oil change.

Engine Tune-up

Air Cleaner Element Inspection/ Replacement

Inspection

1. Remove the air cleaner element.
2. Check the air cleaner element for fouling.

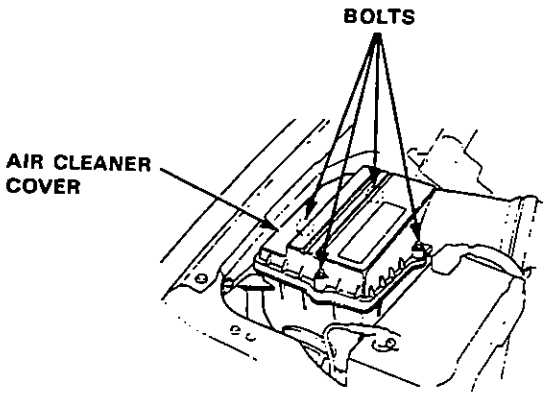
   NOTE: No cleaning is necessary for the air cleaner element, because its filter takes in oil (: viscous type).

   Replace: every two years

   - The air cleaner element should be replaced more frequently on cars normally used under severe driving conditions.

Replacement

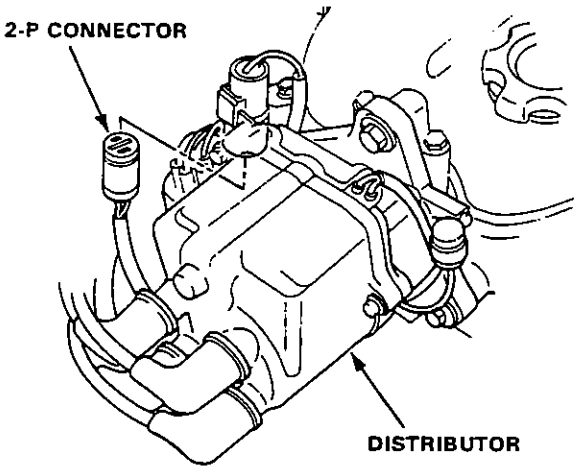
1. Remove the air cleaner cover.



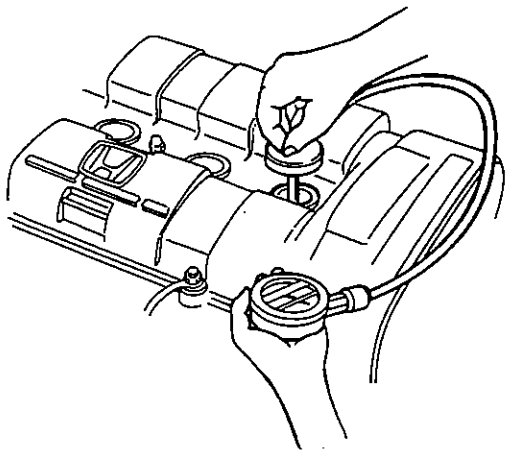
2. Replace the element, install the air cleaner cover and tighten the clip, nut or bolts securely.

Compression Pressure Inspection

1. Before inspection, run the engine until it warms up (radiator fan comes on).
2. Disconnect spark plugs (4).
3. Disconnect the 2-P connector (ignition coil primary lead) from the distributor.



4. Fit the compression gauge adapter into a plug hole.
   - Measure compression pressure at each cylinder.



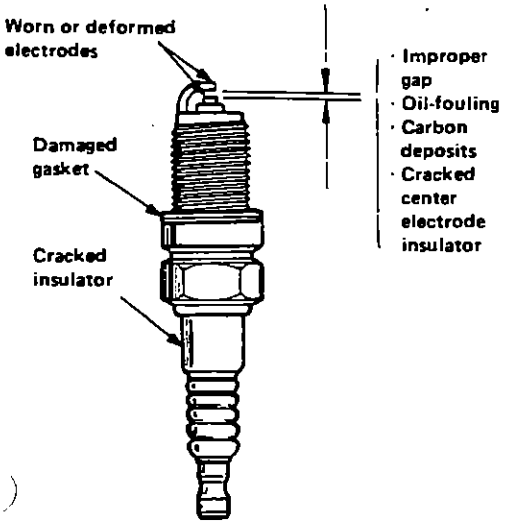
Compression pressure:
SOHC Engine: 1,275 kPa (13.0 kg/cm², 185 psi) at 250 min⁻¹ (rpm)
DOHC Engine: 1,324 kPa (13.5 kg/cm², 192 psi) at 250 min⁻¹ (rpm)
Limit: 932 kPa (9.5 kg/cm², 135 psi) at 250 min⁻¹ (rpm)
Difference between cylinders: 169 kPa (2.0 kg/cm², 28 psi)

NOTE: Use a full charged battery.

5. If compression pressure is low, it is caused by wear or damage of piston rings or head gasket, and improper seated valves.

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



Burned or worn electrodes may be caused by:
- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

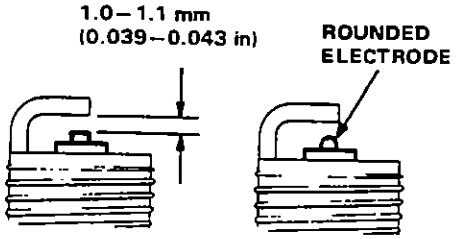
Fouled plug may be caused by:
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below:

Spark Plug:

		Standard	Optional
Unleaded gasoline	NGK	BCPR6E-11	BCPR6EY-N11 BCPR7E-11 BCPR7EY-N11
	ND	Q20PR-U11	Q22PR-U11
leaded gasoline	NGK	BCPR6E-11	BCPR5E-11 (*) BCPR7E-11
	ND	20PR-U11 20PR-UL11 (*)	16PR-U11 (*) 16PR-UL11 (*) 20PR-U11 (*) 22PR-U11 22PR-UL11 (*)

(*): 1.6 ℓ DOHC only



3. Adjust the gap with a suitable gapping tool.

   Electrode Gap: 1.0–1.1 mm (0.039–0.043 in)

4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

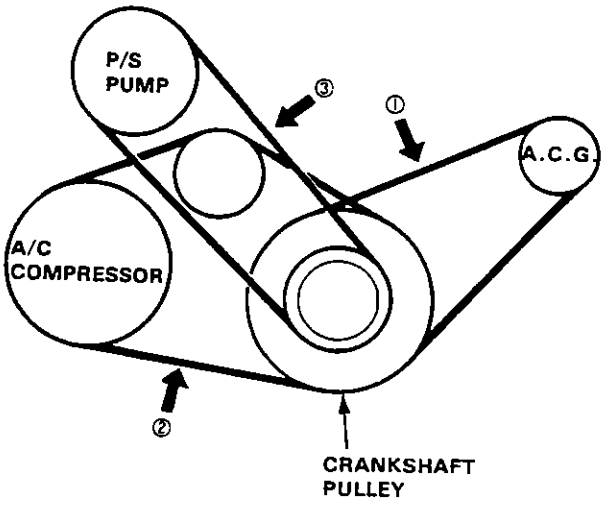
   NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Engine Tune-up

Drive Belts Inspection

Drive Belts Deflection:
(When applying a force of 9.8 N (10 kg, 22 lbs))

	Used Belt	New Belt
①Alternator Belt	9—11 mm (0.35—0.43 in.)	7—9 mm (0.28—0.35 in.)
②A/C Compressor Belt	9—11 mm (0.35—0.43 in.)	7—9 mm (0.28—0.35 in.)
③P/S Belt	9—12 mm (0.35—0.47 in.)	7—10 mm (0.28—0.39 in.)

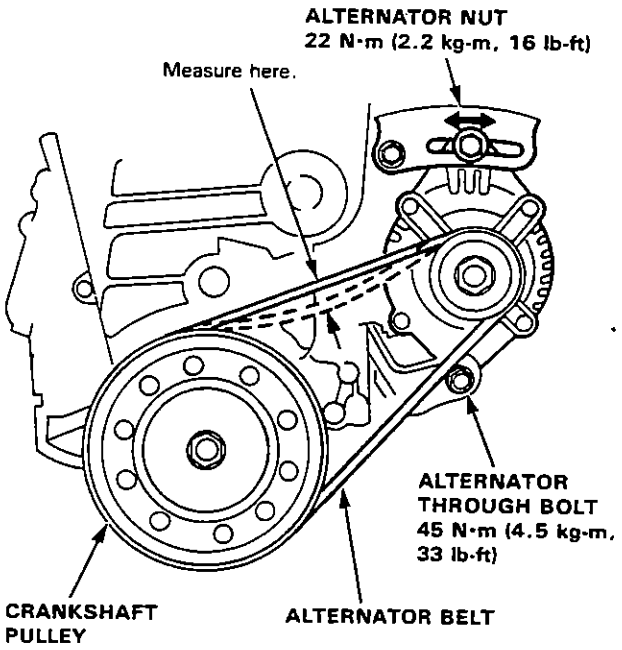


Alternator Belt Adjustment

1. Apply a force of 98 N (10 kg, 22 lb) and measure the deflection between the alternator pulley and the crankshaft pulley.

   Deflection: 9—11 mm (0.35—0.43 in.)

   NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.28— 0.35 in.) when first measured.



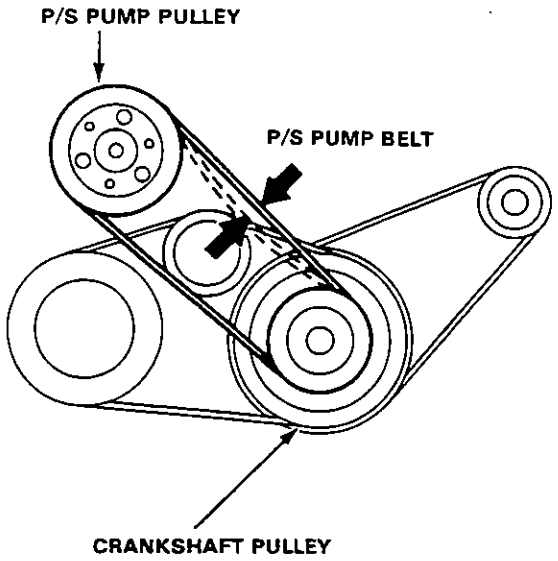
2. Loosen the alternator nut and through bolt.
3. Move the alternator by turning the adjust nut to obtain the proper belt tension, then retighten the bolt and nut.
4. Recheck the deflection of the belt.

P/S Pump Belt Adjustment

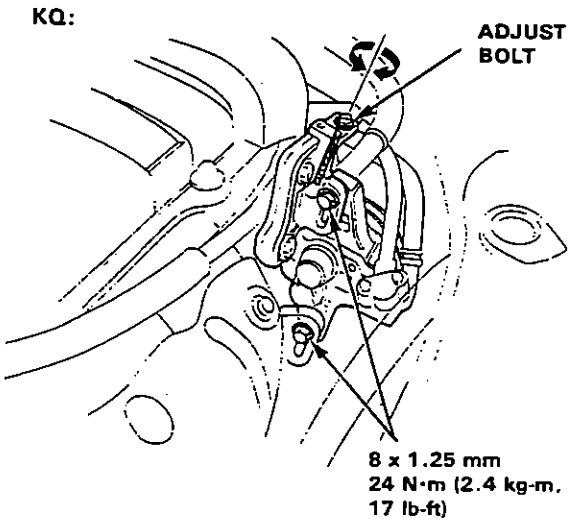
1. Apply a force of 98 N (10 kg, 22 lb) and measure the deflection, between the P/S pump pulley and the crankshaft pulley.

   Deflection: 9—12 mm (0.35—0.47 in.)

   NOTE: On a brand-new belt, the deflection should be 7—10 mm (0.28—0.39 in.) when first measured.



2. Loosen the P/S adjust pulley bolt.
3. Turn the adjust nut to get the proper belt tension, then retighten the bolt and nut.
4. Recheck the deflection of the belt.

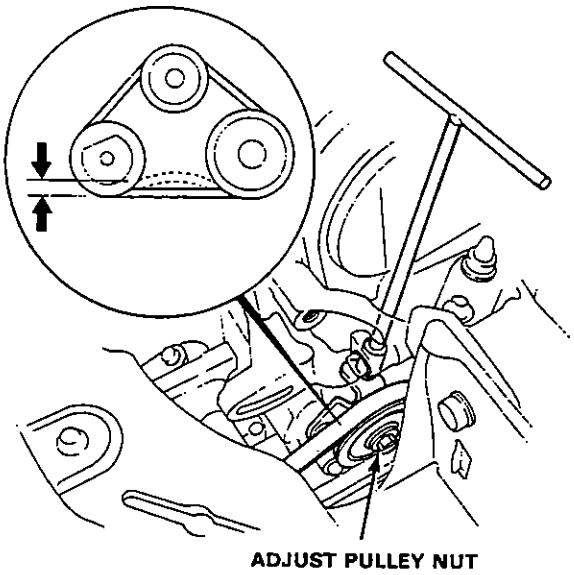


A/C Compressor Belt Adjustment

1. Apply a force of 98 N (10 kg, 22 lb) and measure the deflection, between the A/C compressor adjusting pulley and the crankshaft pulley.

   Deflection: 9—11 mm (0.35—0.43 in.)

   NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.28—0.35 in.) when first measured.



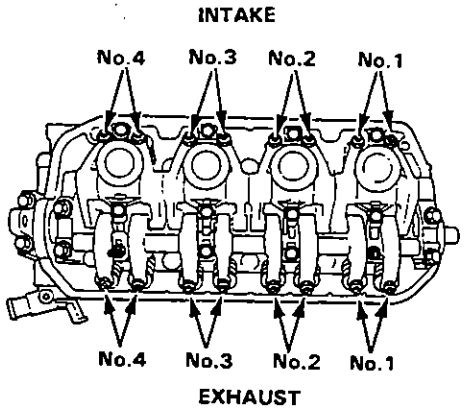
2. Loosen the adjust pulley nut.
3. Turn the adjust bolt to get the proper belt tension, then retighten the bolt and nut.
4. Recheck the deflection of the belt.

Valve Clearance Adjustment

SOHC Engine:

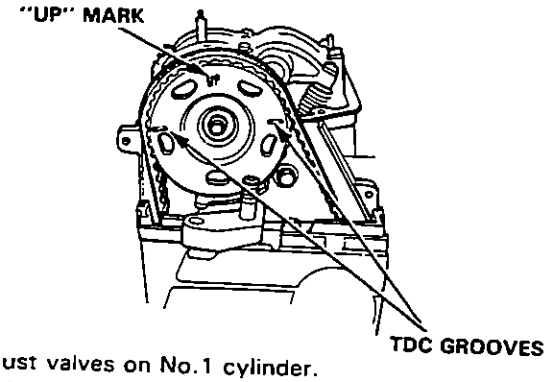
NOTE: Valves should be adjusted cold when the cylinder head temperature is less than 38°C (100°F). Adjustment is the same for intake and exhaust valves.

1. Remove valve cover.

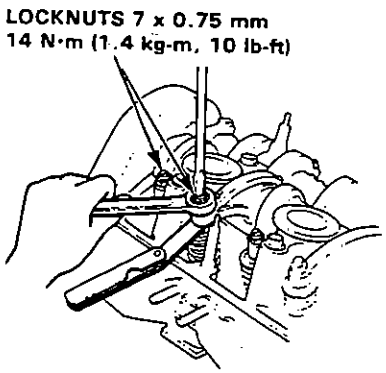


2. Set No. 1 piston at TDC. "UP" mark on the pulley should be at top, and TDC grooves on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

Number 1 piston at TDC

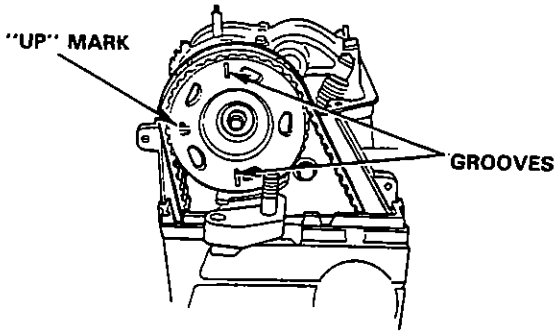


3. Adjust valves on No.1 cylinder.
   Intake: 0.17—0.22 mm (0.007—0.009 in.)
   Exhaust: 0.22—0.27 mm (0.009—0.011 in.)
4. Loosen locknut and turn adjustment screw until feeler gauge slides back and forth with slight amount of drag.



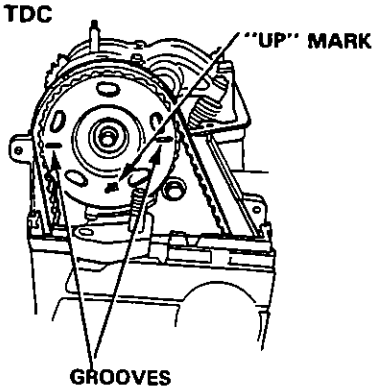
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



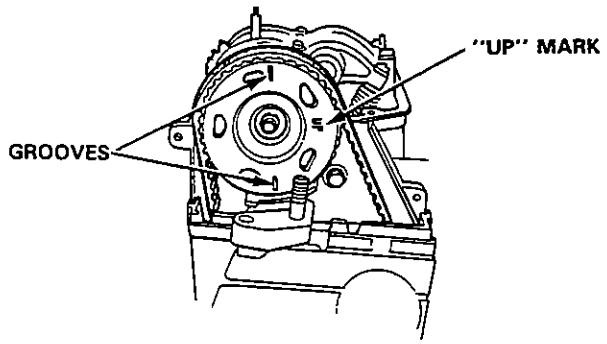
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

Number 4 piston at TDC



8. Rotate crankshaft 180° counterclockwise to bring No. 2 piston to TDC. The "UP" mark should be at intake side. Distributor rotor should point to No. 2 plug wire. Adjust valves on No. 2 cylinder.

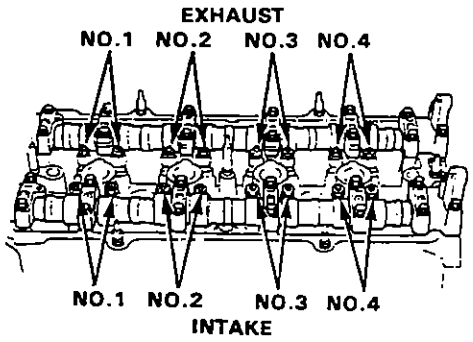
Number 2 piston at TDC



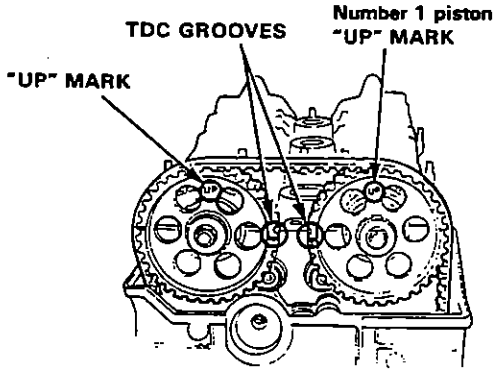
DOHC Engine:

NOTE: Valves should be adjusted cold when the cylinder head temperature is less then 38°C (110°F). Adjustment is the same for intake and exhaust valves.

1. Remove the valve cover.

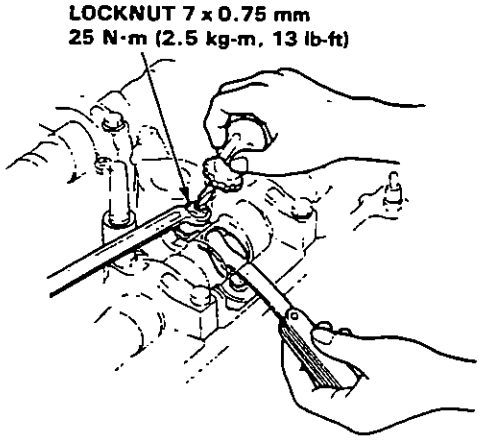


2. Set the No. 1 piston at TDC. "UP" marks in the pulleys should be at top, and the TDC grooves on back side of pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.



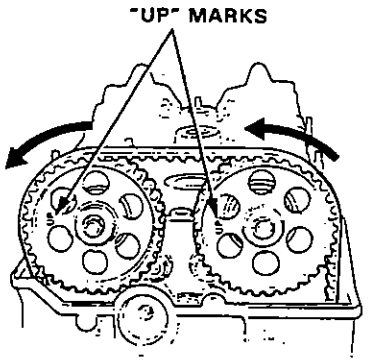
3. Adjust valves on No.1 cylinder.
   Intake: 0.13—0.17 mm (0.005—0.007 in.)
   Exhaust:0.15—0.19 mm (0.006—0.007 in.)

4. Loosen locknut and turn adjust screw until feeler gauge slides back and forth with slight amount of drag.



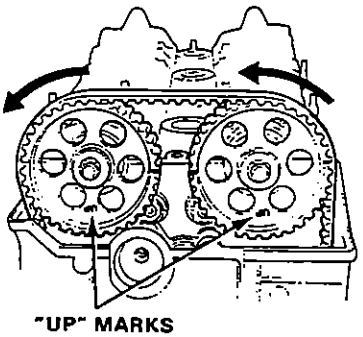
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" marks should be at exhaust side. Distributor rotor should point to No.3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



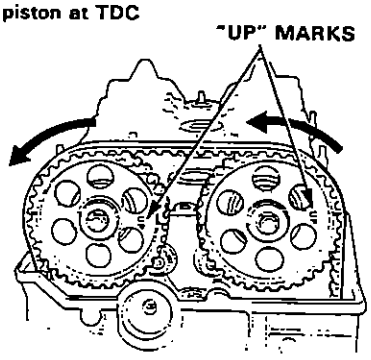
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both "UP" marks should be at bottom and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

Number 4 piston at TDC



8. Rotate crankshaft 180° counterclockwise to bring No. 2 piston to TDC. "UP" marks should be at intake side. Distributor rotor should point to No.2 plug wire. Adjust valves on No.2 cylinder.

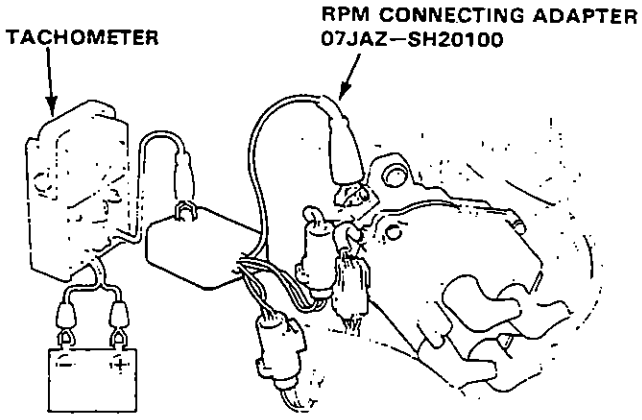
Number 2 piston at TDC



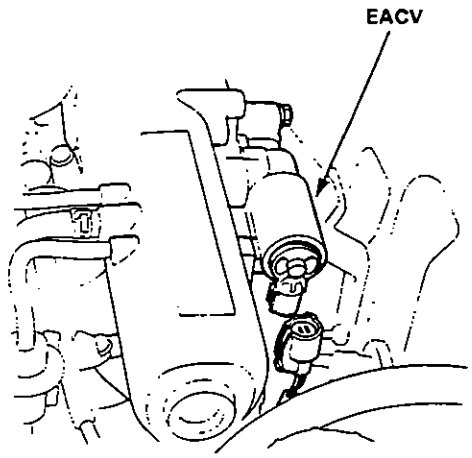
-Idle Speed Inspection/Adjustment

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).

2. Connect a tachometer.



3. Disconnect the 2P connector from the EACV.

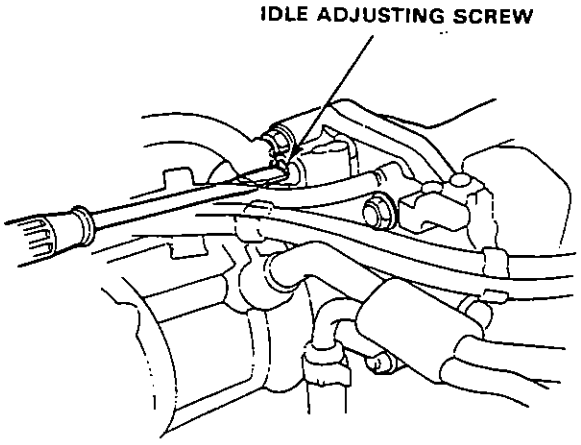


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be: 650±50 min⁻¹ (rpm)

   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-86).



5. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

6. Idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not oparating for one minute, then check the idle speed.

KQ, SOHC with CATA	750±50 min⁻¹ (rpm)
KY	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

7. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle Speed should be:

KQ, SOHC with CATA	750±50 min⁻¹ (rpm)
KY	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

8. Idle the engine for one minute with heater fan switch at HI (right end) and air conditioner on, then check the idle speed.

   Idle Speed should be:

SOHC and KQ	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-59.

Engine Tune-up

Tailpipe Emissions Inspection

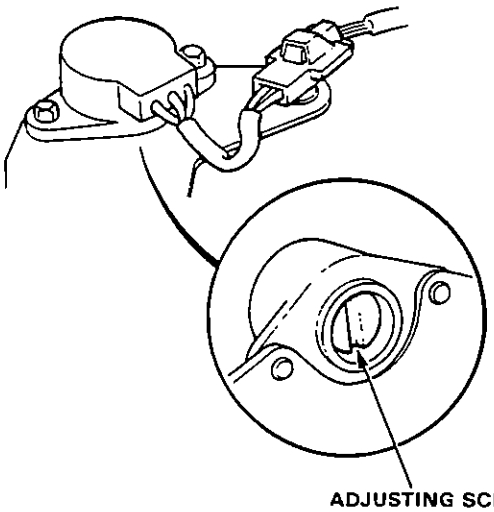
Inspection

WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-69).
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%:
With CATA: 0.1% maximum
Without CATA: 1.0 ± 1.0%

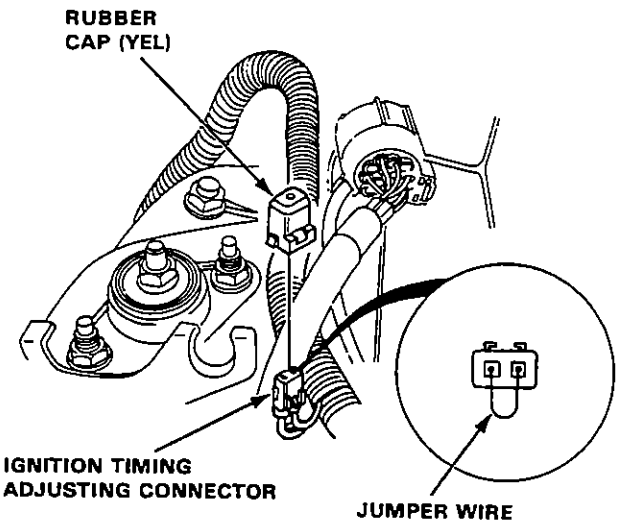
- If unable to obtain this reading;
  On With CATA, see ECU troubleshooting (page 6-14 or 16).
  On other models, adjust by turning the adjusting screw of the IMA sensor.



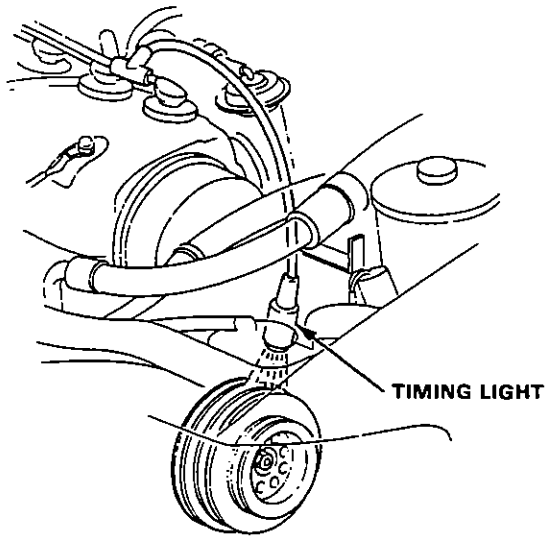
- If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

Ignition Timing Inspection and Setting

1. Start the engine and allow it to warm up (cooling fan comes on).
2. Remove the rubber cap (YEL) from the ignition timing adjusting connector located left rear engine compartment and connect the BRN and GRN/WHT terminals with a jumper wire.



3. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



(cont'd)

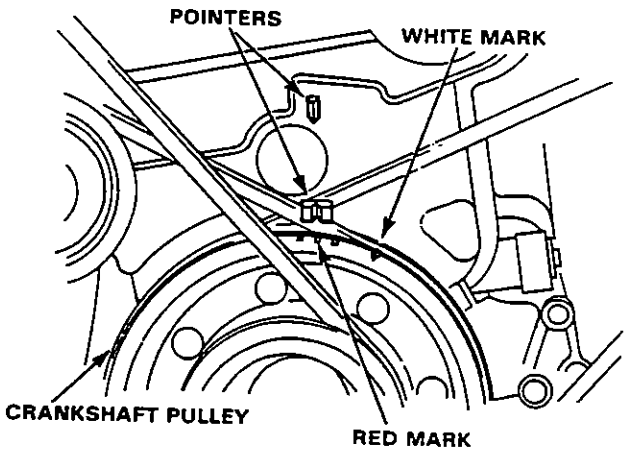
Engine Tune-up

Ignition Timing Inspection and Setting (cont'd)

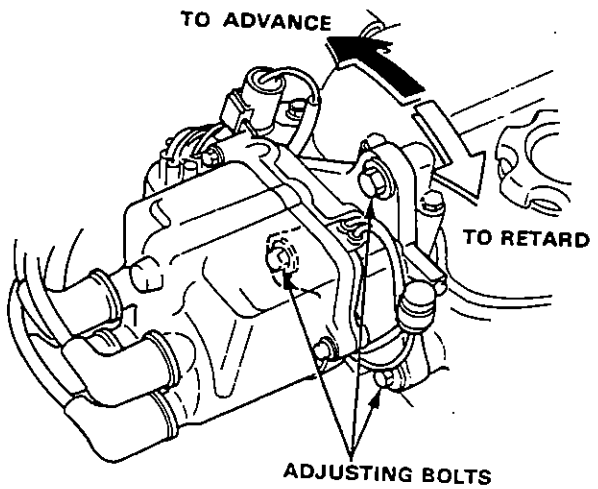
4. Adjust ignition timing, if necessary, to the following specifications:

Ignition Timing

1.6ℓ SOHC (With CATA):
18°±2°BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral
1.6ℓ SOHC (Without CATA):
18°±2°BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral
1.6ℓ DOHC (EX. KQ model):
16°±2°BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral
1.6ℓ DOHC (KQ model):
16°±2°BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral



5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counterclockwise to advance the timing, or clockwise to retard the timing.



6. Tighten the adjusting bolts and recheck the timing.

7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

Timing Belt

SOHC 5–15
DOHC 5–21



Timing Belt

<SOHC>

Illustrated Index 5–16
Inspection 5–17
Tension Adjustment 5–17
Replacement 5–18
Positioning Timing Belt 5–20

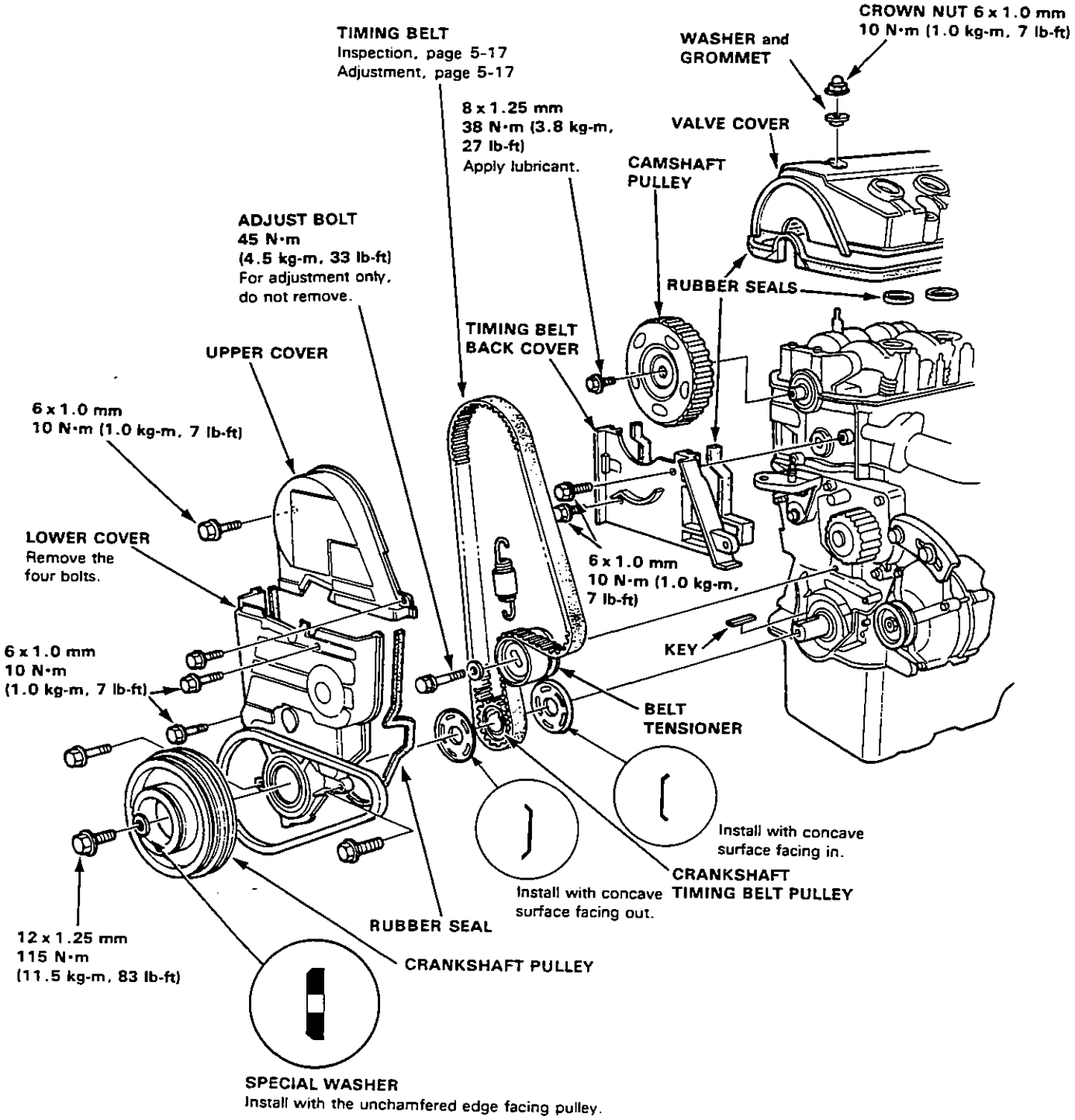


Timing Belt

Illustrated Index

NOTE:

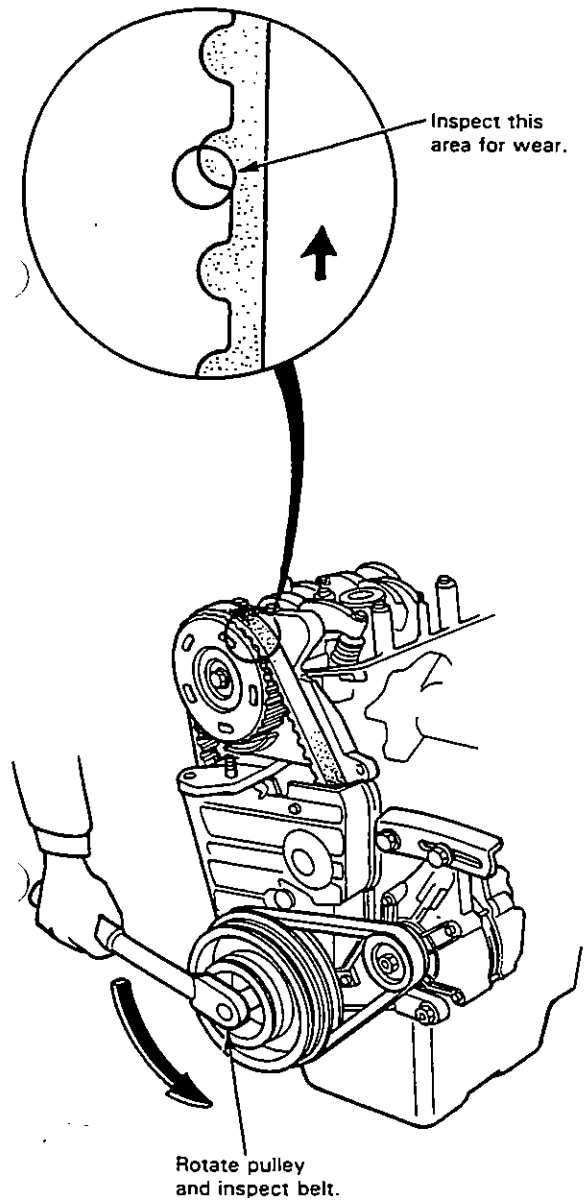
- Refer to page 5-20 for positioning crank and pulley before installing belt.
- Refer to page 5-6, for alternator belt adjustment.
- Refer to page 5-7, for A/C compressor belt adjustment.
- Mark direction of rotation before removing.



Inspection

NOTE:

- Replace belt if oil soaked.
- Remove any oil or solvent that gets on the belt.

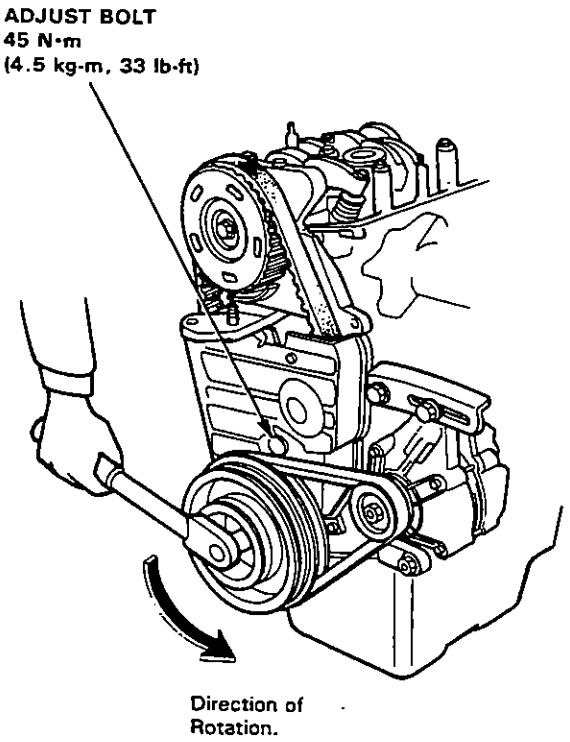


Tension Adjustment

CAUTION: Always adjust timing belt tension with the engine cold.

NOTE: Tensioner is spring-loaded to apply proper tension to the belt automatically after making the following adjustment:

1. Set the No. 1 piston at TDC.
2. Loosen adjust bolt.



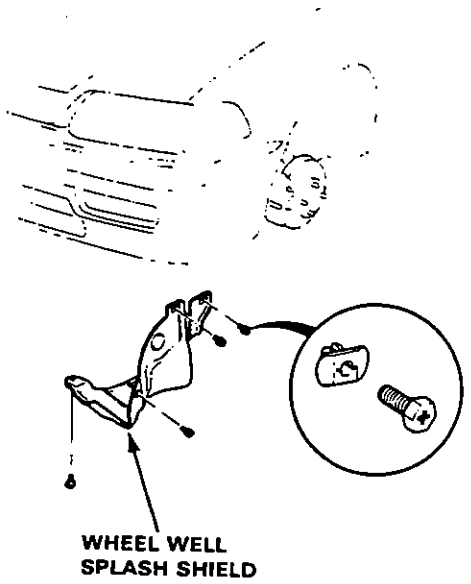
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

NOTE: Put transmission in gear and set parking brake before retorquing pulley bolt.

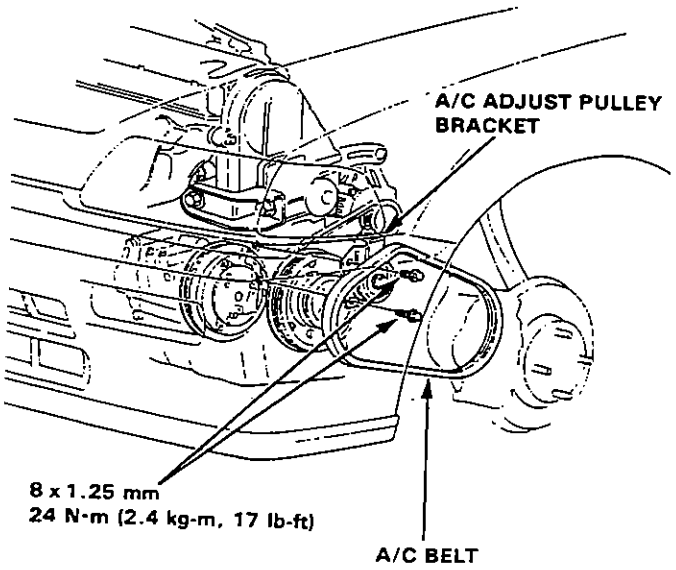
Timing Belt

Replacement

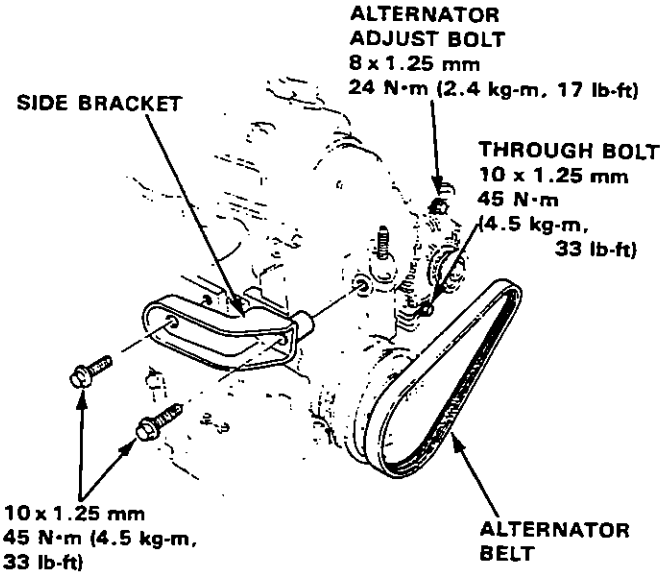
1. Remove the wheel well splash shield.



2. Remove the A/C compressor adjust pulley with bracket and the belt (with A/C).

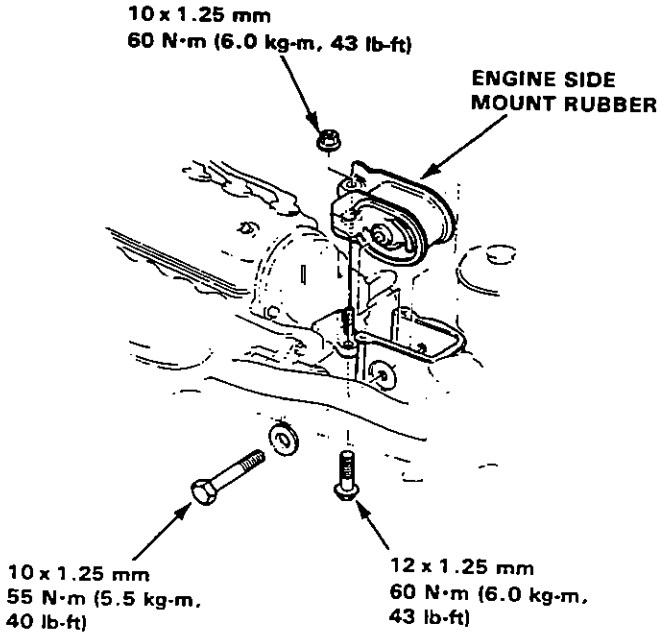


3. Remove the side bracket.
4. Loosen the alternator adjust bolt and through bolt, then remove the belt.

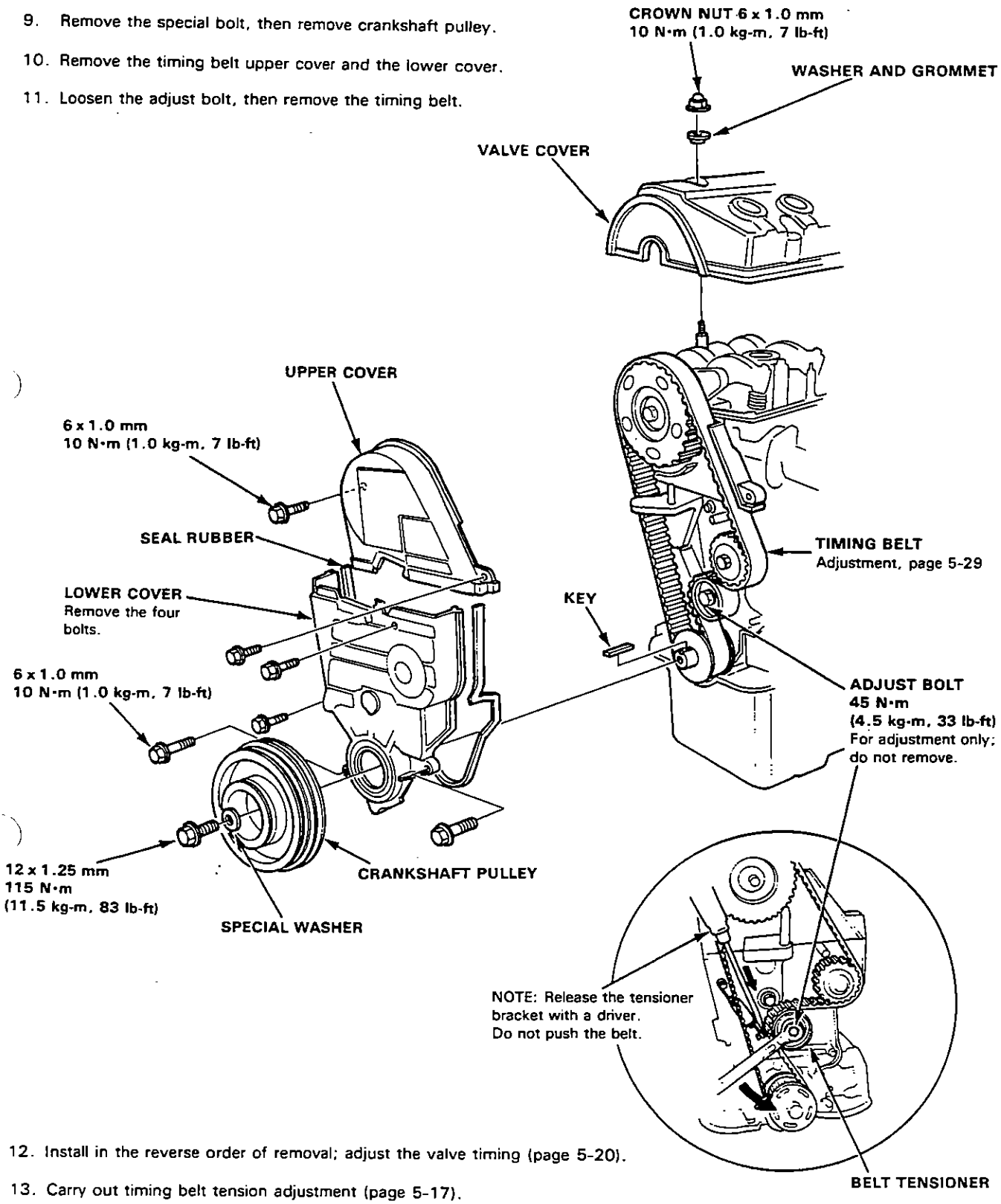


5. After installation, adjust the tension of each belt.
   See page 5-6 for alternator belt tension adjustment.
   See page 5-7 for A/C compressor belt tension adjustment.

6. Remove the engine support bolts and nut, then remove the side mount rubber.



8. Remove the valve cover.
9. Remove the special bolt, then remove crankshaft pulley.
10. Remove the timing belt upper cover and the lower cover.
11. Loosen the adjust bolt, then remove the timing belt.

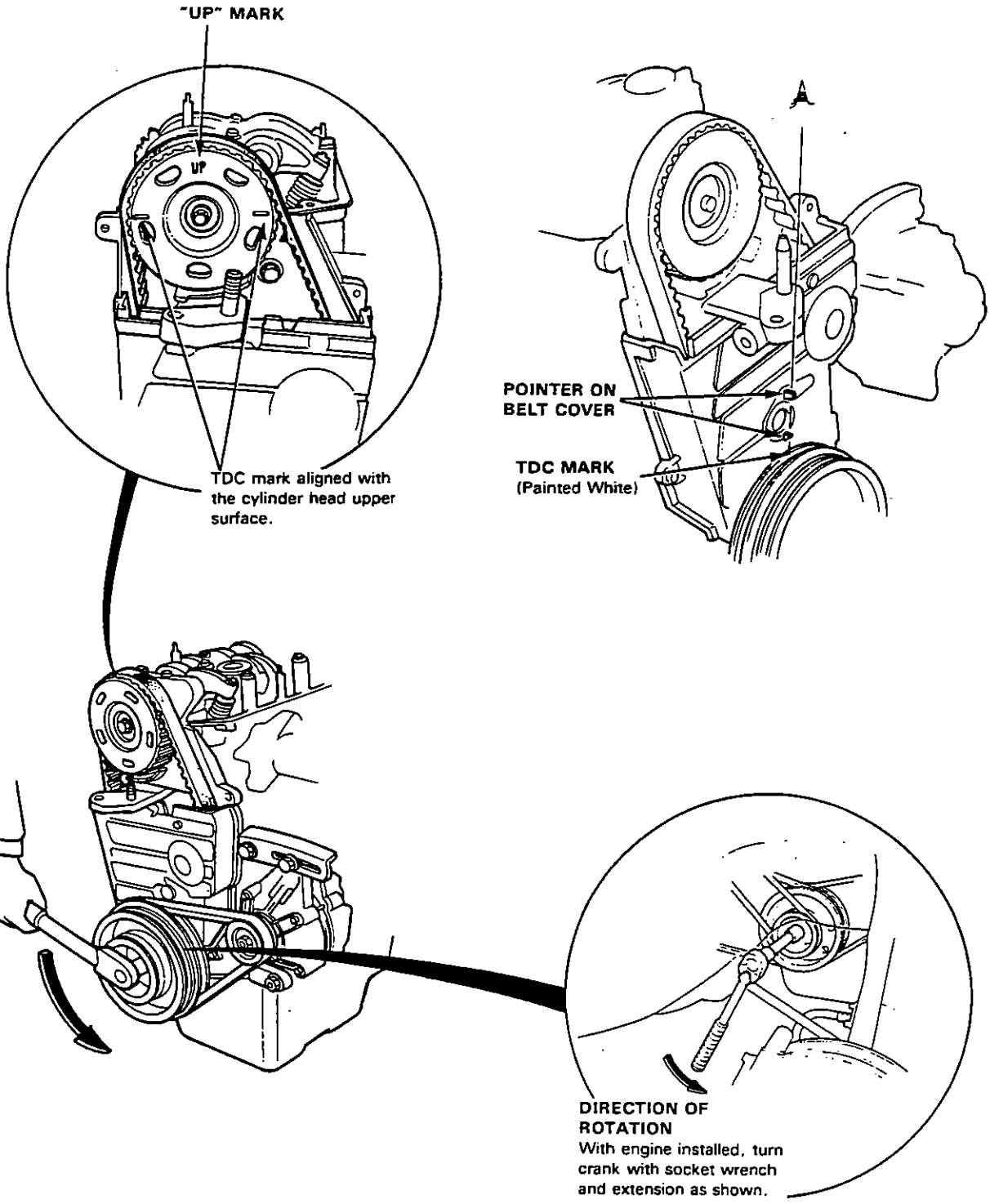


12. Install in the reverse order of removal; adjust the valve timing (page 5-20).
13. Carry out timing belt tension adjustment (page 5-17).

Timing Belt

- Positioning Crankshaft Before Installing Timing Belt

NOTE: Install the timing belt with the No. 1 piston at TDC (Top Dead Center) of the compression stroke.



Timing Belt

<DOHC>

Illustrated Index 5–22
Inspection 5–23
Tension Adjustment 5–23
Replacement 5–24
Positioning Timing Belt 5–26

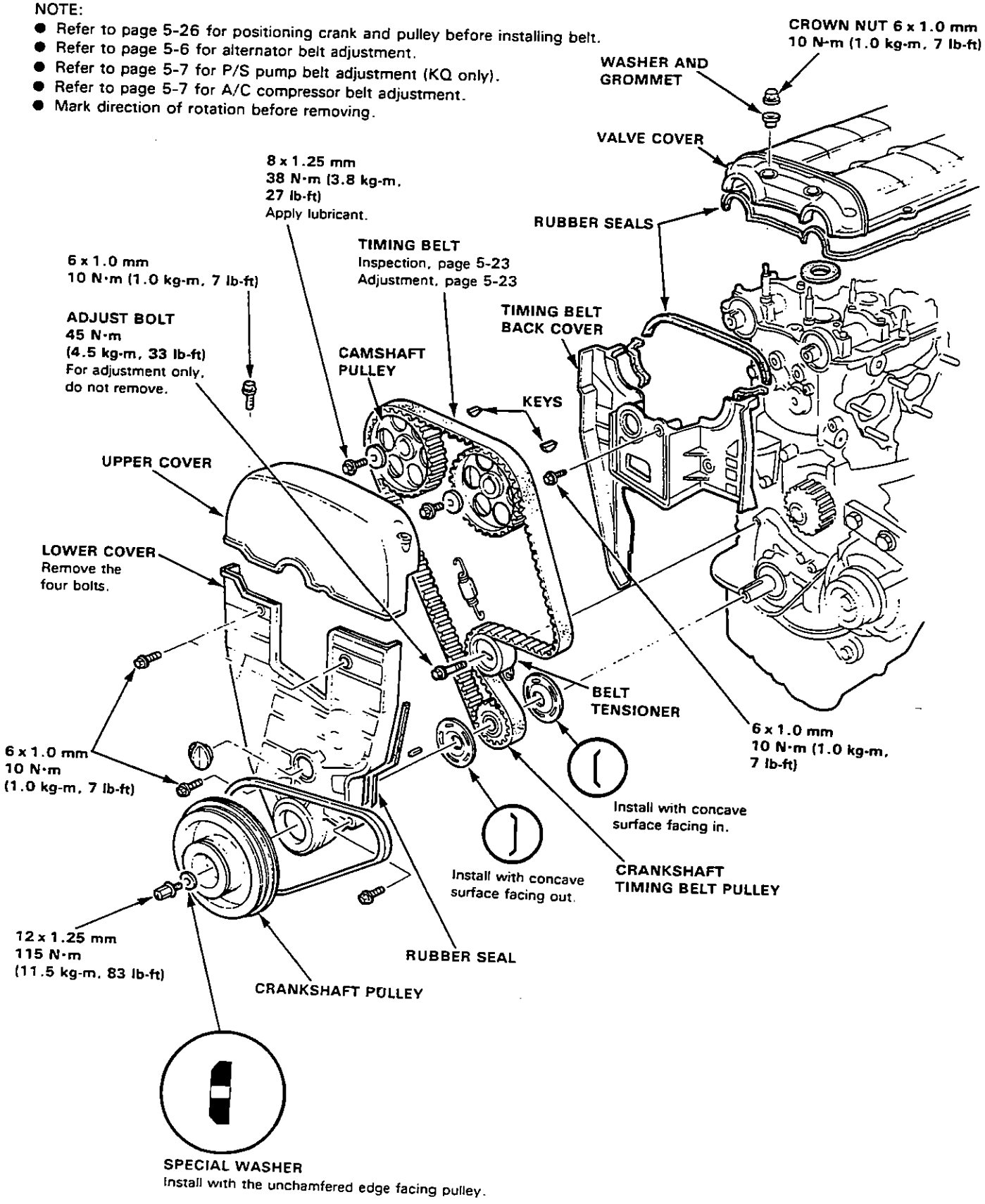


Timing Belt

Illustrated Index

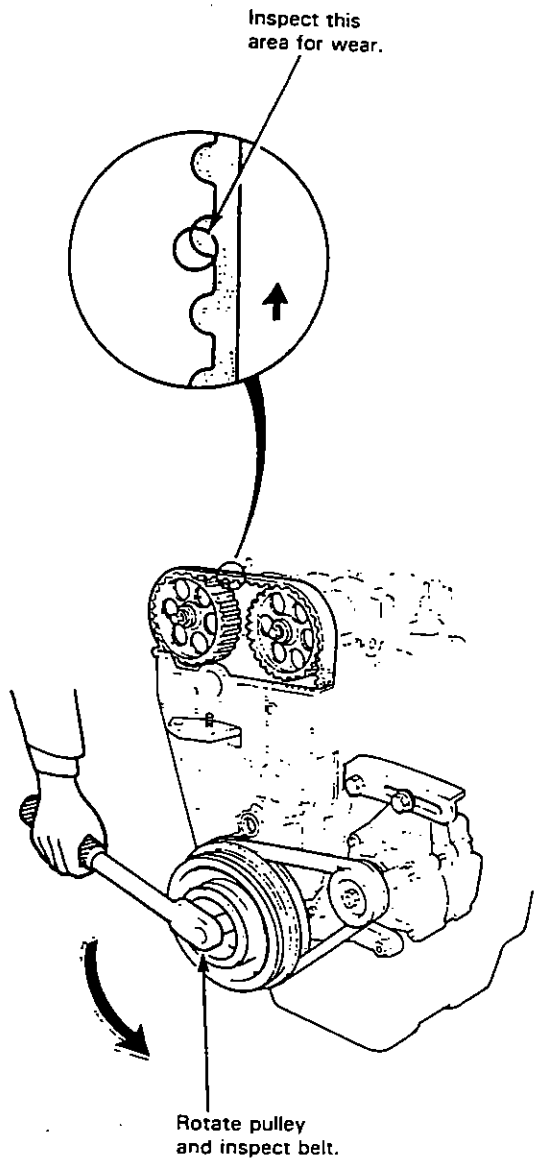
NOTE:

- Refer to page 5-26 for positioning crank and pulley before installing belt.
- Refer to page 5-6 for alternator belt adjustment.
- Refer to page 5-7 for P/S pump belt adjustment (KQ only).
- Refer to page 5-7 for A/C compressor belt adjustment.
- Mark direction of rotation before removing.



Inspection

NOTE:
- Replace belt if oil soaked.
- Remove any oil or solvent that gets on the belt.

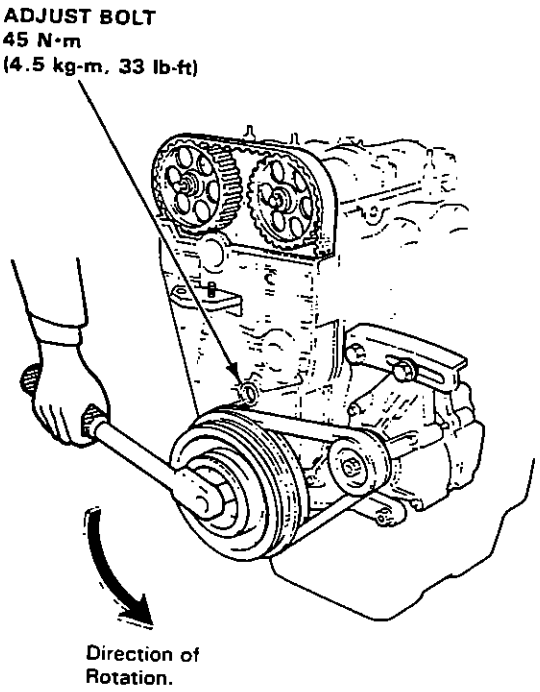


Tension Adjustment

CAUTION: Always adjust timing belt tension with the engine cold.

NOTE: Tensioner is spring-loaded to apply proper tension to the belt automatically after making the following adjustment:

1. Set the No. 1 piston at TDC.
2. Loosen adjust bolt.



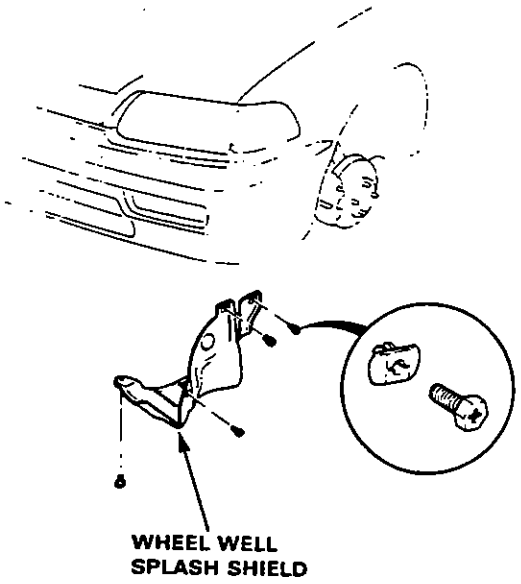
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

NOTE: Put transmission in gear and set parking brake before retorquing pulley bolt.

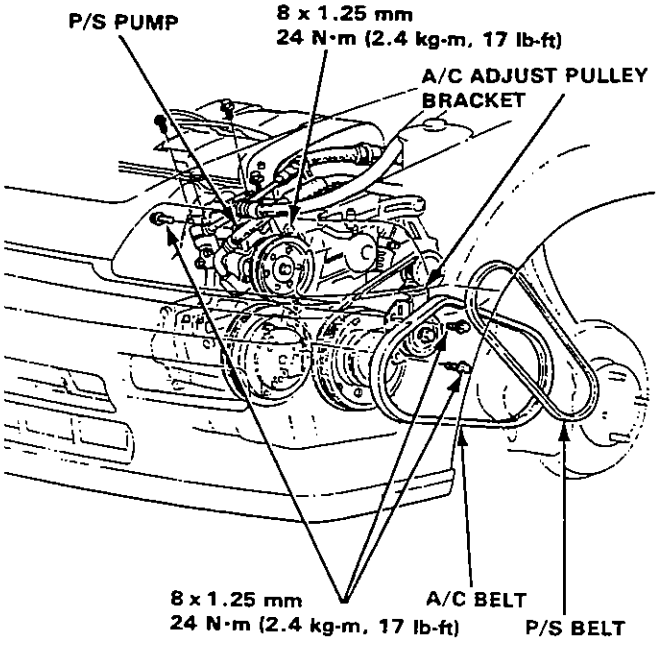
Timing Belt

–Replacement

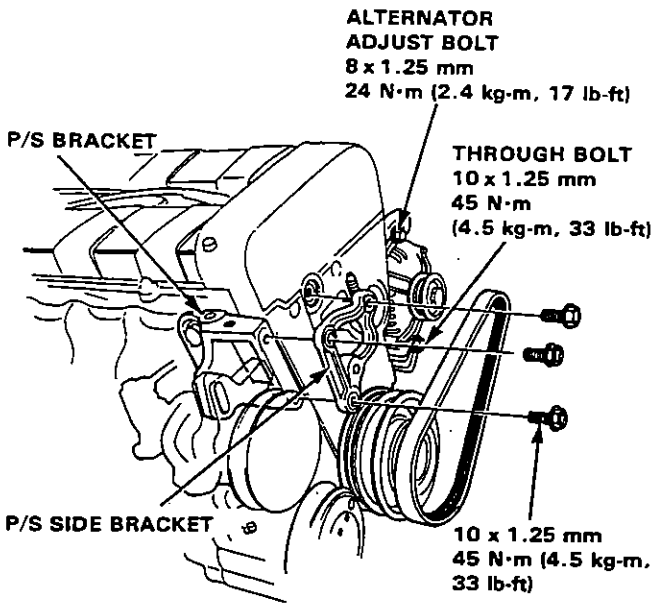
1. Remove the wheel well splash shield.



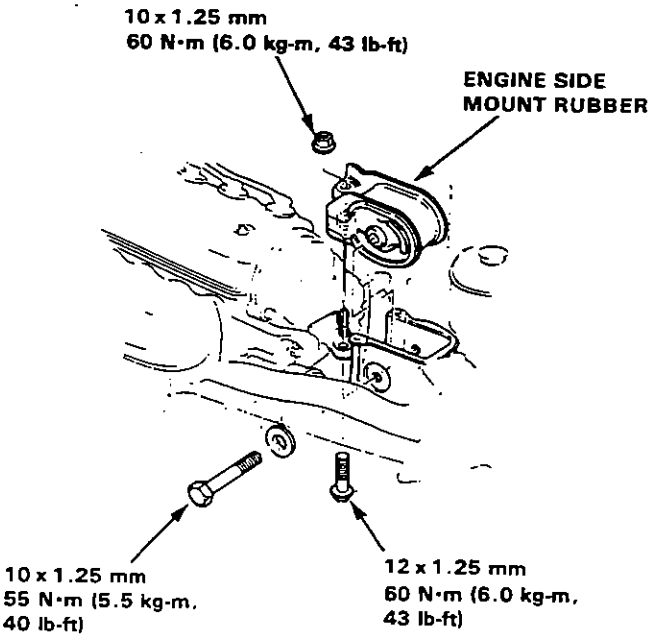
2. Remove the power steering (P/S) pump (KQ).
3. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.



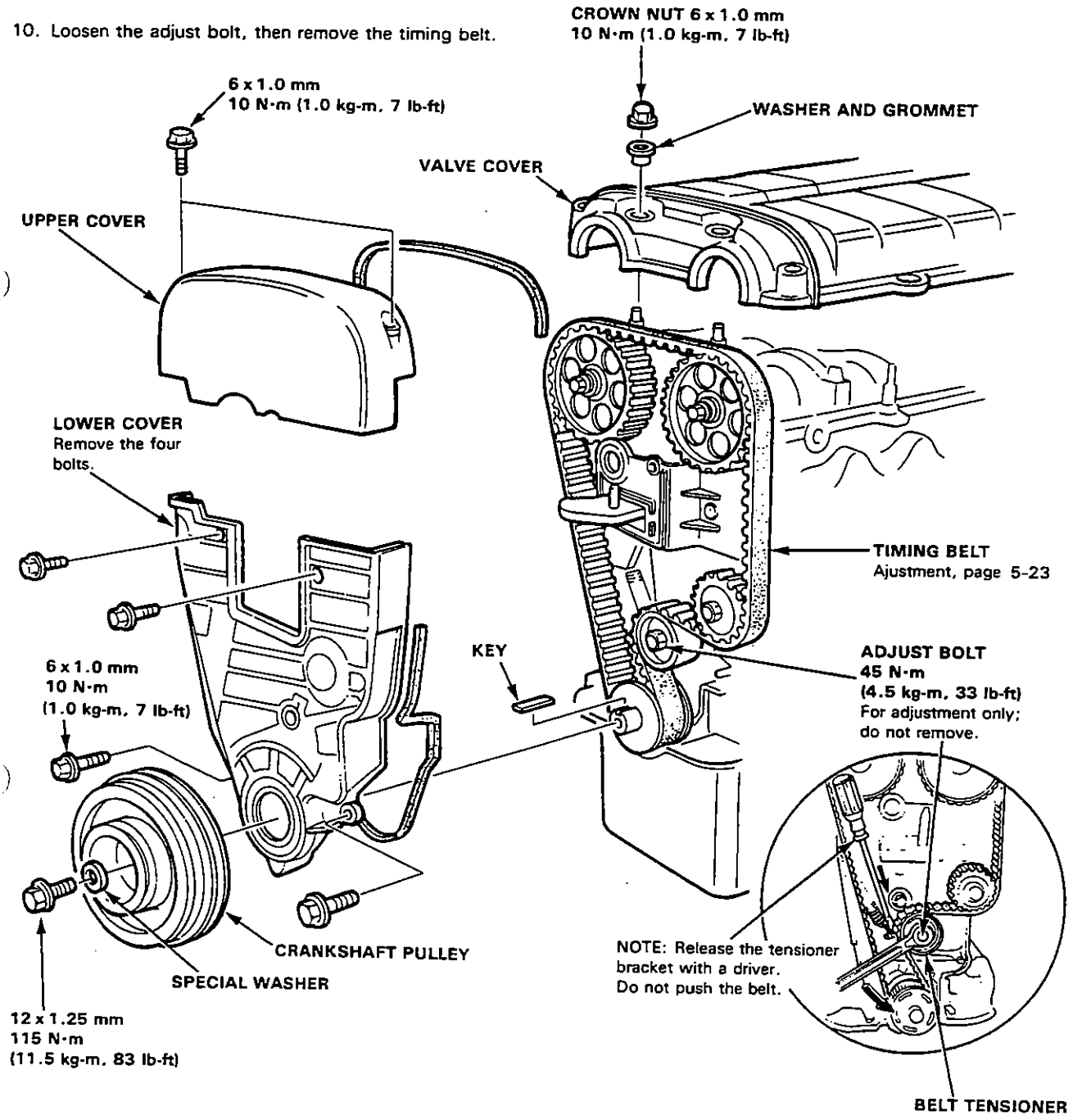
4. Remove the P/S bracket (KQ).
5. Loosen the alternator adjust bolt and through bolt, then remove the belt.



6. After installation, adjust the tension of each belt.
   See page 5-6 for alternator belt tension adjustment.
   See page 5-7 for A/C compressor belt tension adjustment.
   See page 5-7 for P/S pump belt tension adjustment.
7. Remove the engine support bolts and nut, then remove the side mount rubber.



6. Remove the timing belt upper cover.
7. Remove the valve cover.
8. Remove the special bolt, then remove crankshaft pulley.
9. Remove the timing belt lower cover.
10. Loosen the adjust bolt, then remove the timing belt.

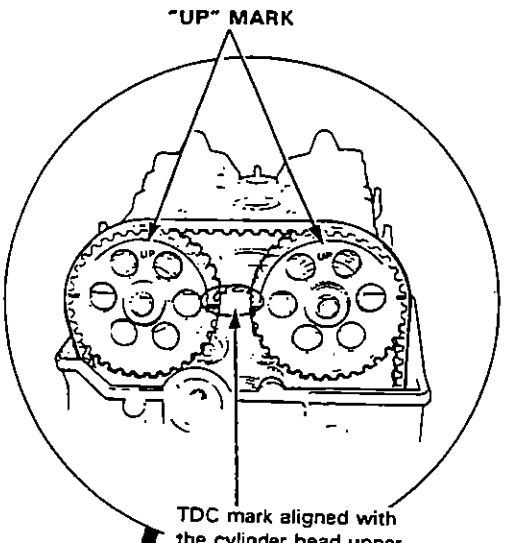


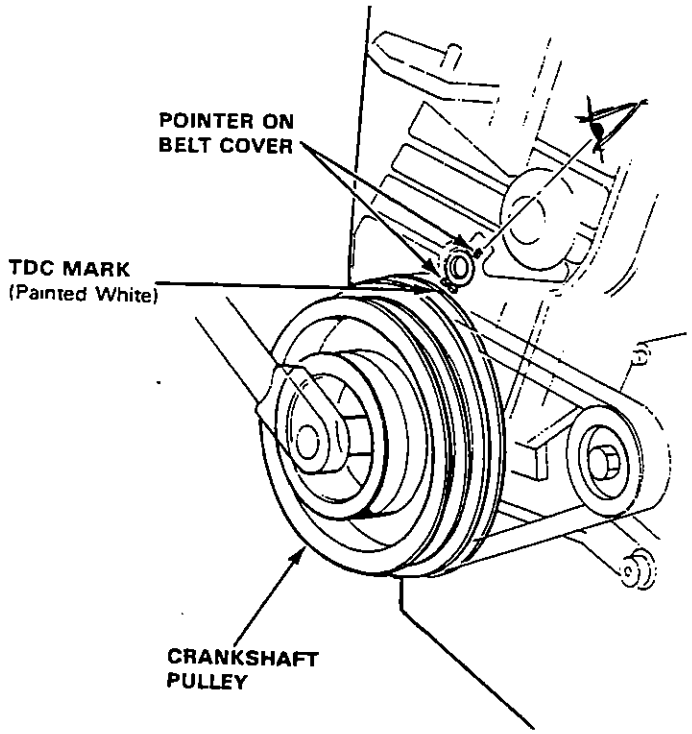
11. Install in the reverse order of removal; adjust the valve timing (page 5-26).
12. Carry out timing belt tension adjustment (page 5-23).

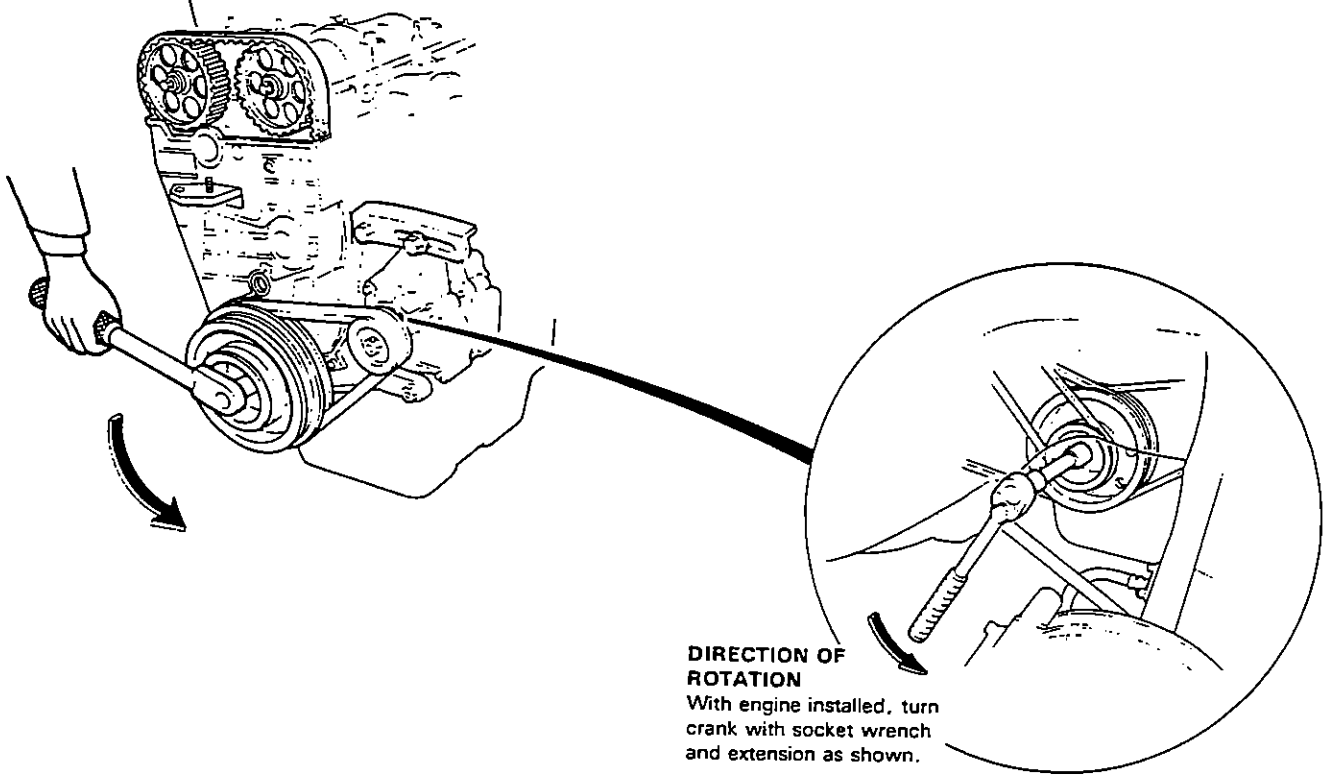
Timing Belt

Positioning Crankshaft Before Installing Timing Belt

NOTE: Install the timing belt with the No. 1 piston at TDC (Top Dead Center) of the compression stroke.







Cylinder Head Removal/Installation

SOHC 5-29
DOHC 5-35



Cylinder Head Removal/Installation

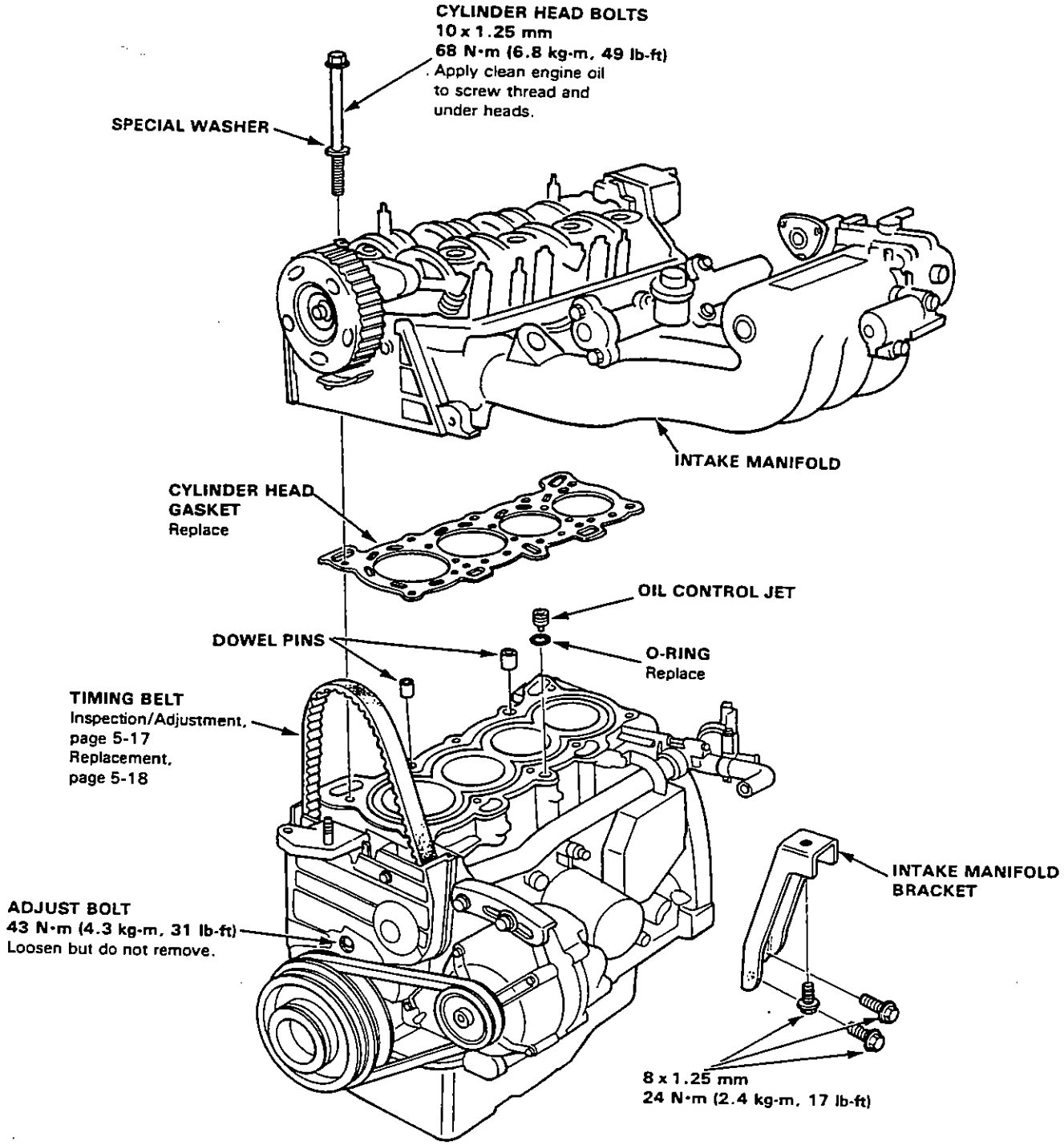
〈SOHC〉
Removal 5-30
Installation 5-33

Cylinder Head

– Removal (engine removal not required)

CAUTION: To avoid damaging the cylinder head, wait until the coolant temperature drops below 38°C (100°F) before removing it.

NOTE: Use new O-rings and gaskets whenever reassembling.



CAUTION: To avoid damaging the cylinder head, wait until the coolant temperature drops below 38°C (100°F) before loosening the retaining bolts.

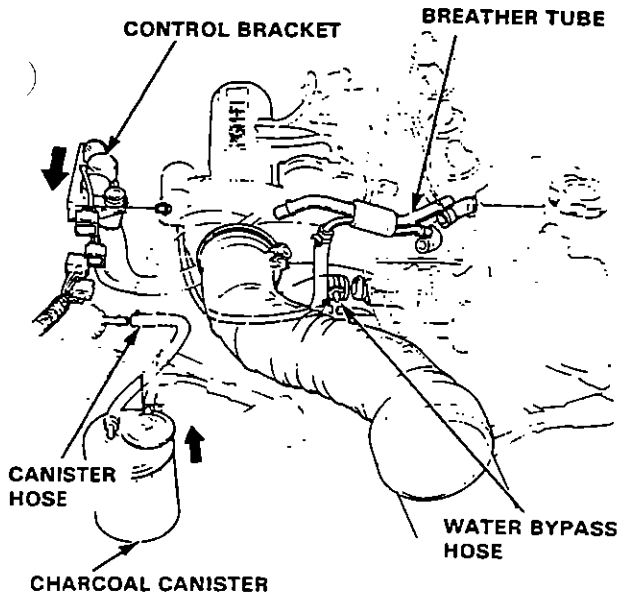
NOTE:
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

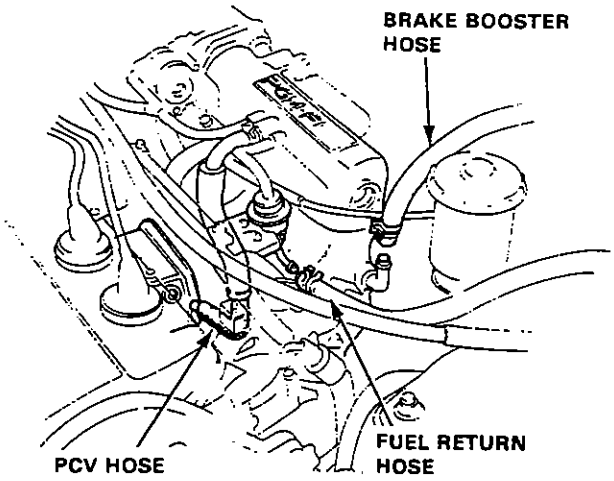
1. Disconnect the negative terminal from the battery.
2. Drain the cooling system (See page 5-59).
3. Remove the brake booster vacuum hose from the brake muster power booster.
4. Remove the engine secondary ground cable from the valve cover.
5. Remove the air intake hose from the throttle body
6. Relieve fuel pressure (See Section 6).

WARNING Do not smoke while working on fuel system, keep open flame or spark away from work area. Drain fuel only into an approved container.

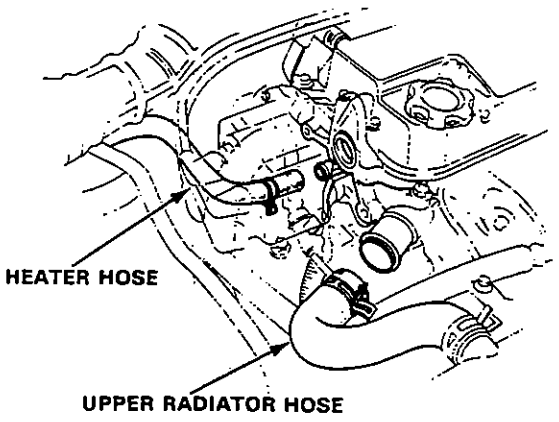
Disconnect the fuel hose and fuel return hose.
Remove the air intake hose and resonator hose.
Disconnect the throttle cable at the throttle body (See Section 5).

7. Disconnect the charcoal canister hose at the throttle valve.
8. Disconnect the vacuum hoses and the water bypass hoses from intake manifold and the throttle body.
9. Remove the PCV hose, charcoal canister hose and vacuum hose from intake manifold, and remove the vacuum hose from the brake muster power booster.





10. Remove the upper radiator hose and the heater hose from the cylinder head.

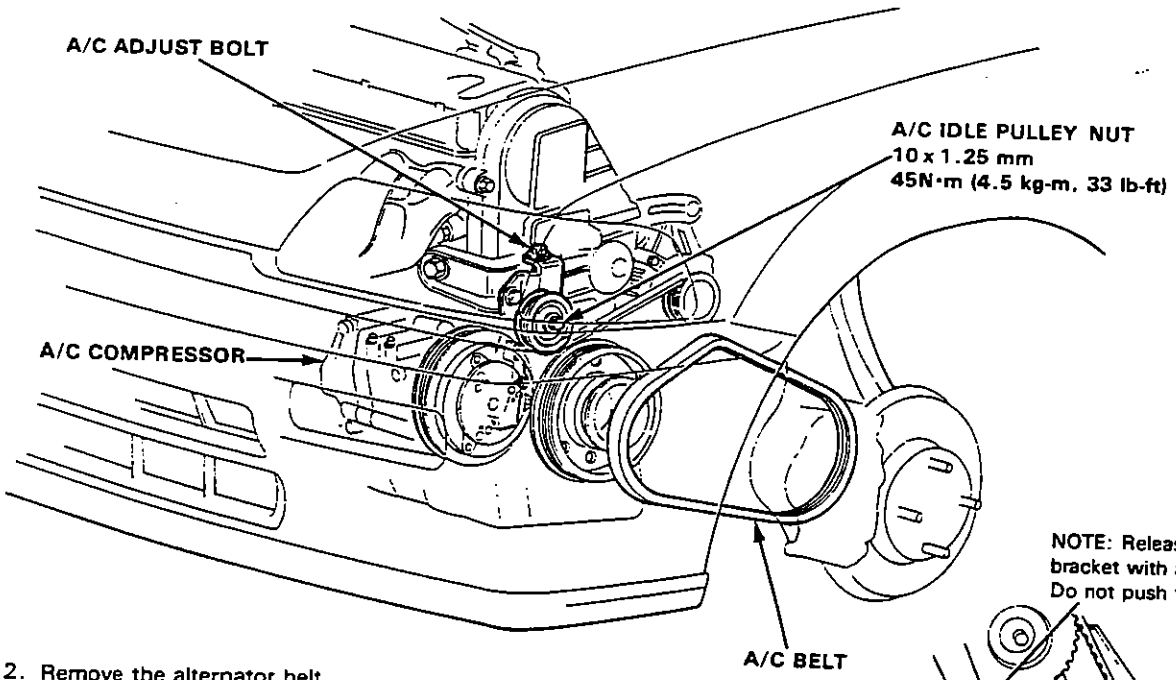


11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - Ignition coil connector (from distributor)
    - EACV connector
    - Engine ground wire
    - Thermounit connector
    - Coolant temperature sensor connector
    - Intake air temperature sensor connector
    - Throttle angle sensor connector
    - Injection connectors
    - TDC/CRANK sensor connector (from distributor)

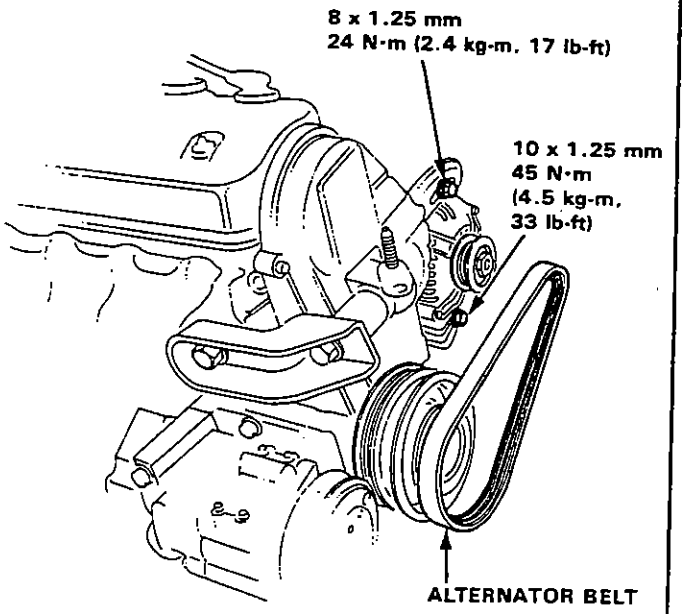
(cont'd)

Cylinder Head

Removal (engine removal not required) (cont'd)

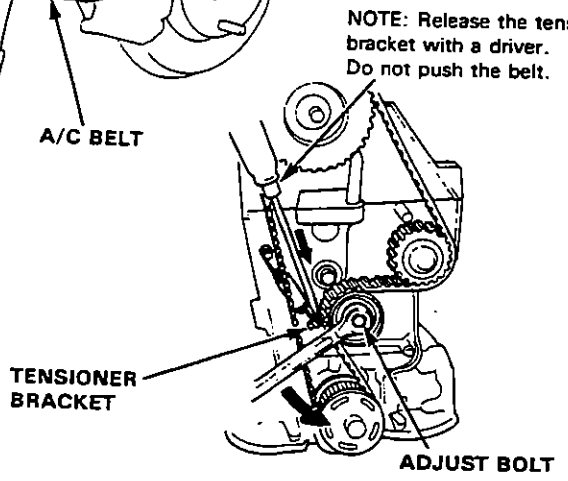


12. Remove the alternator belt.



13. Remove the intake manifold bracket.

14. Remove the exhaust manifold bracket, then remove the header pipe.



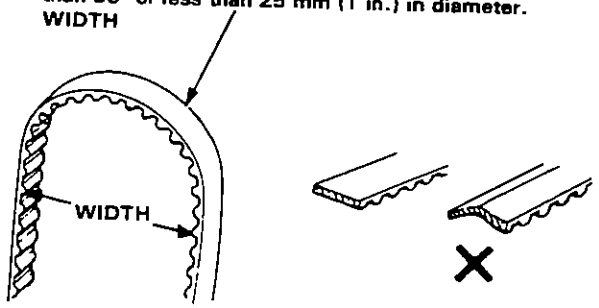
15. Remove the exhaust manifold shroud, then remove exhaust manifold.

16. Remove the distributor and valve cover.

17. Remove the timing belt upper cover.

18. Loosen the timing belt adjust bolt, then remove the timing belt from the camshaft pulley.

CAUTION: DO not crimp or bend timing belt more than 90° or less than 25 mm (1 in.) in diameter.

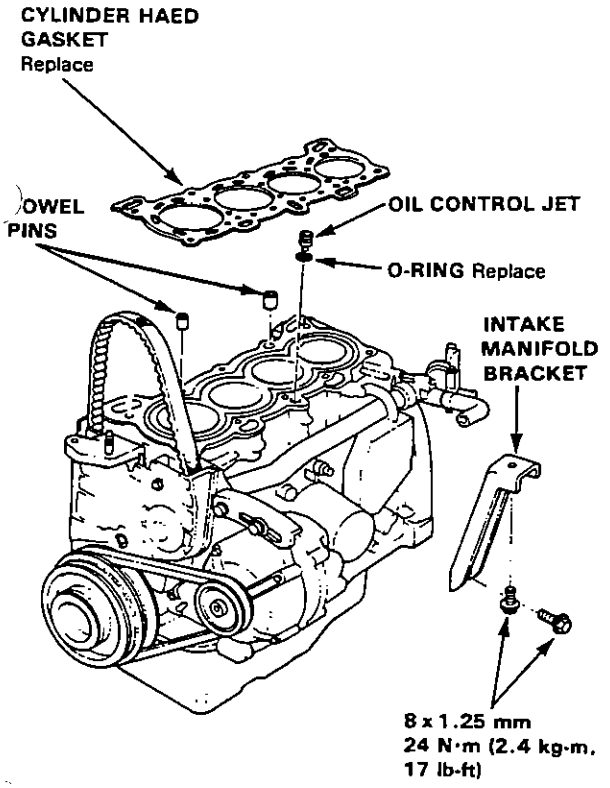


19. Remove the cylinder head.

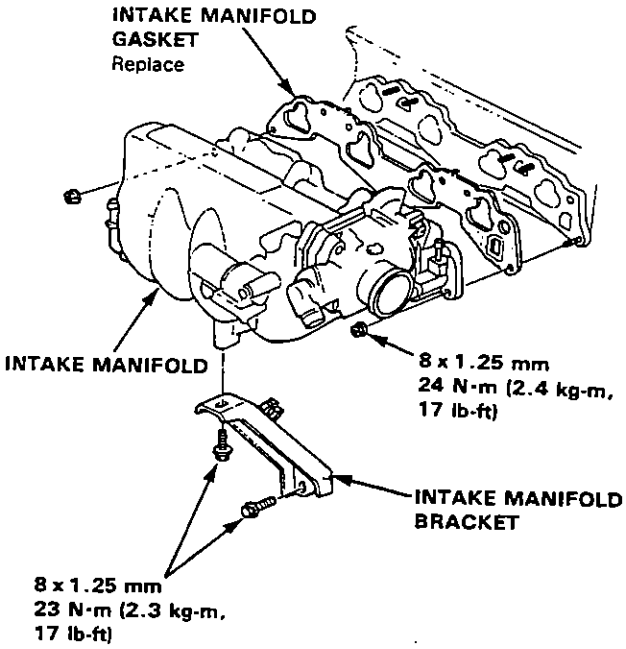
20. Remove the intake manifold from the cylinder head.

Installation

1. Intall the cylinder head in reverse order of removal:
   - Always use a new head gasket.
   - Cylinder head and engine block surface must be clean.
   - "UP" mark on timing belt pulley should be at the top.
2. Cylinder head dowel pins and oil control jet must be aligned.



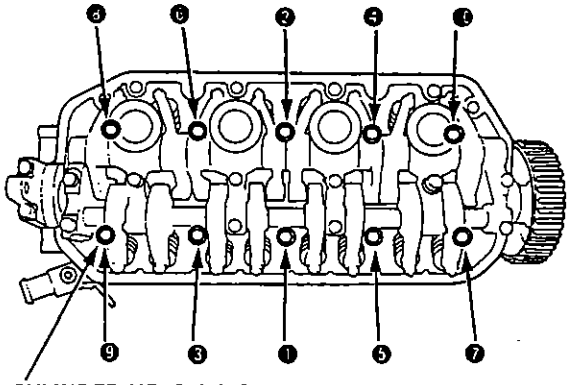
3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.



4. Tighten cylinder head bolts in two steps.
   In the first step tighten all bolts and nuts, in sequence, to about 30 N·m (3.0 kg, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft).

   NOTE: Apply engine oil to the cylinder head bolts and the washers.

CYLINDER HEAD TORQUE SEQUENCE



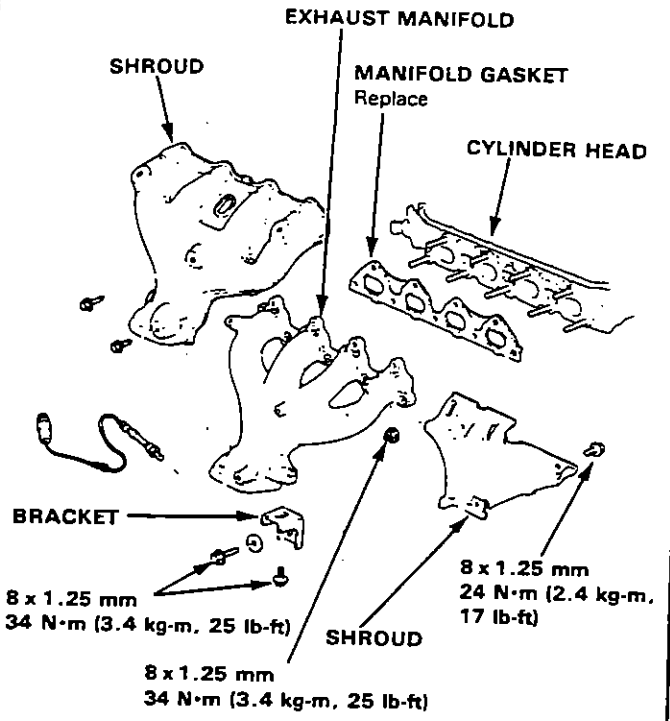
5. Adjust the valve timing.
6. Install the exhaust manifold and bracket.

(cont'd)

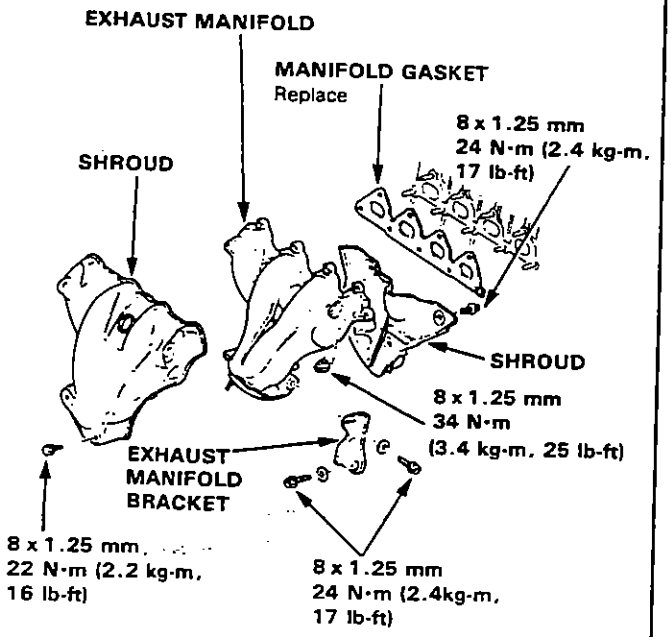
Cylinder Head

Installation (cont'd)

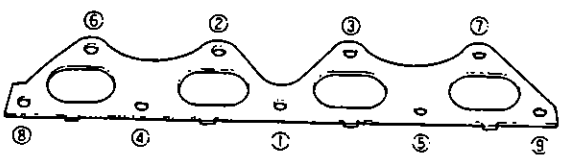
1.6 ℓ with CATA:



1.6 ℓ without CATA:



EXHAUST MANIFOLD TORQUE SEQUENCE



Cylinder Head Removal/Installation

<DOHC>

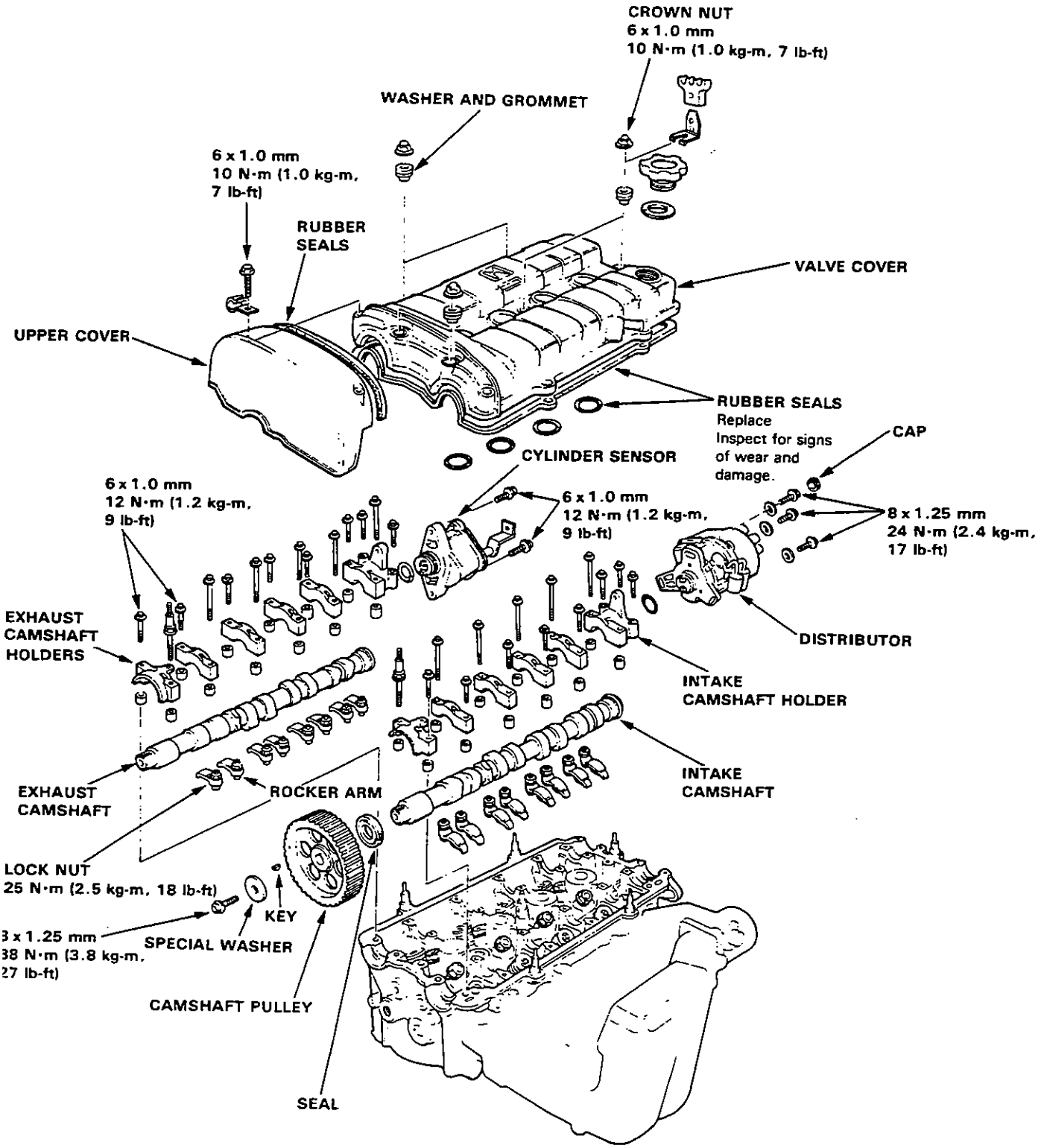
Removal 5–36
Installation 5–40

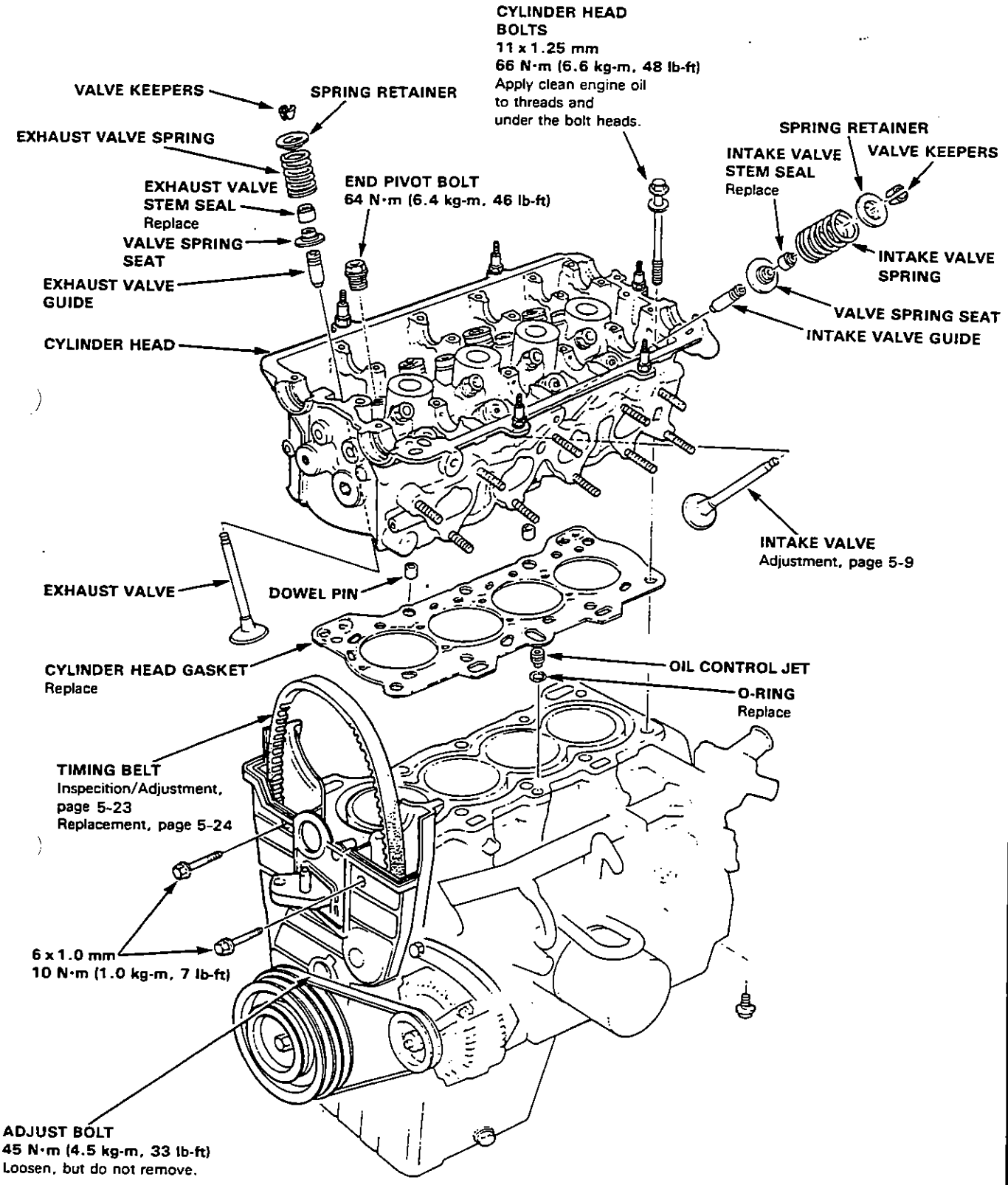
Cylinder Head

– Removal (engine removal not required)

CAUTION:To avoid damaging the cylinder head, wait until the coolant temperature drops below 38°C (100°F) before removing it.

NOTE: Use new O-rings and gaskets whenever reassembling.




CYLINDER HEAD BOLTS
11 x 1.25 mm
66 N·m (6.6 kg-m, 48 lb-ft)
Apply clean engine oil to threads and under the bolt heads.
VALVE KEEPERS
SPRING RETAINER
EXHAUST VALVE SPRING
EXHAUST VALVE STEM SEAL
Replace
VALVE SPRING SEAT
EXHAUST VALVE GUIDE
END PIVOT BOLT
64 N·m (6.4 kg-m, 46 lb-ft)
CYLINDER HEAD
SPRING RETAINER
INTAKE VALVE STEM SEAL
Replace
VALVE KEEPERS
INTAKE VALVE SPRING
VALVE SPRING SEAT
INTAKE VALVE GUIDE
INTAKE VALVE
Adjustment, page 5-9
EXHAUST VALVE
DOWEL PIN
CYLINDER HEAD GASKET
Replace
OIL CONTROL JET
O-RING
Replace
TIMING BELT
Inspecition/Adjustment, page 5-23
Replacement, page 5-24
6 x 1.0 mm
10 N·m (1.0 kg-m, 7 lb-ft)
ADJUST BOLT
45 N·m (4.5 kg-m, 33 lb-ft)
Loosen, but do not remove.

(cont'd)

Cylinder Head

Removal (engine removal not required) (cont'd)

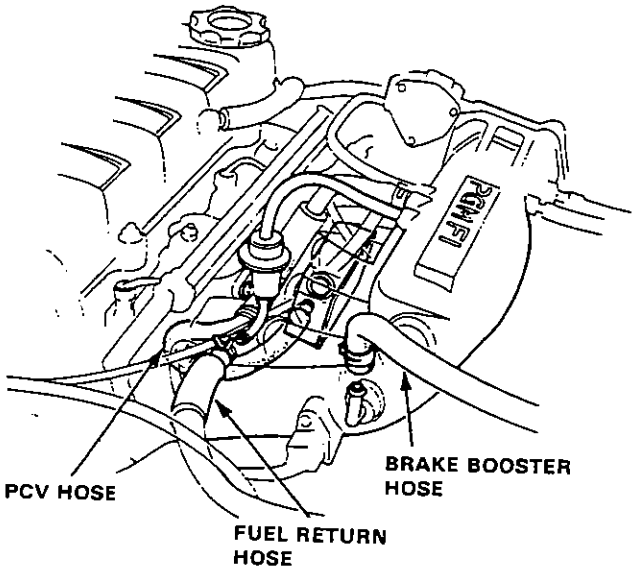
CAUTION: To avoid damaging the cylinder head, wait until the coolant temperature drops below 38°C (100°F) before loosening the retaining bolts.

NOTE:
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

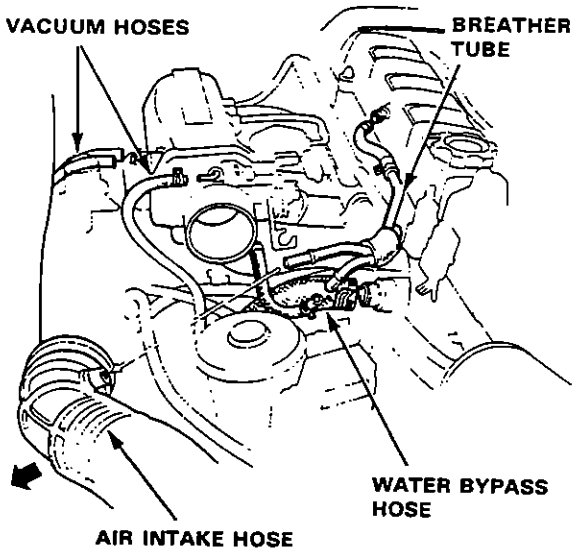
1. Disconnect the negative terminal from the battery.
2. Drain the coolant system.
3. Relieve fuel pressure (See Section 6).
4. Disconnect the fuel feeder hose and fuel return hose.

WARNING
- **Do not smoke while working on fuel system, keep open flame or spark away from work area.**
- **Drain fuel only into an approved container.**

5. Remove the brake booster vacuum hose.
6. Disconnect the PCV hose.

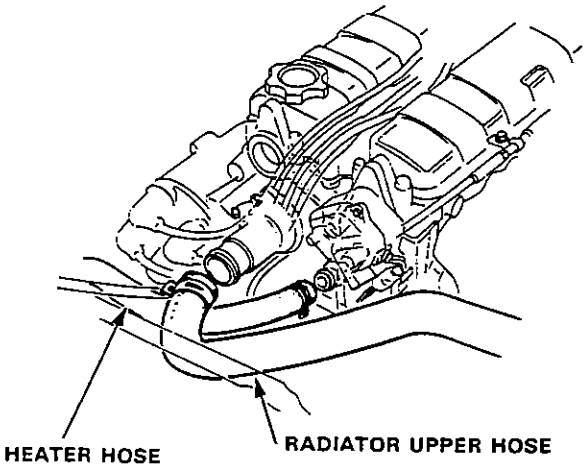


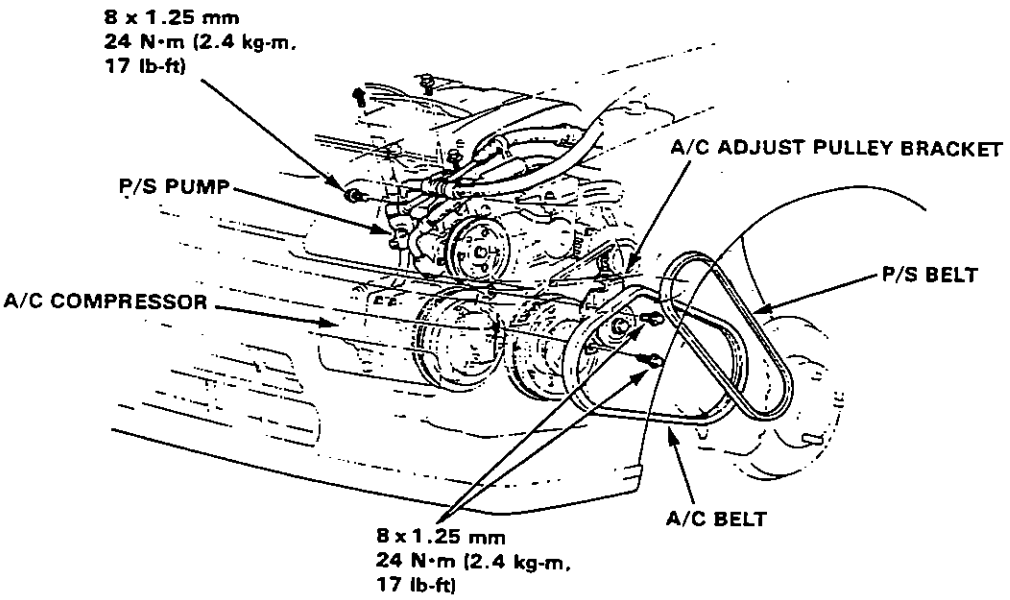
7. Disconnect the breather tube and air intake hose.
8. Disconnect the vacuum hose from the intake manifold.
9. Disconnect the charcoal canister hose.
10. Disconnect the water bypass hose.
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - Ignition coil connector (from distributor)
    - EACV connector
    - Engine ground wire
    - Thermounit connector
    - Coolant temperatuer sensor connector



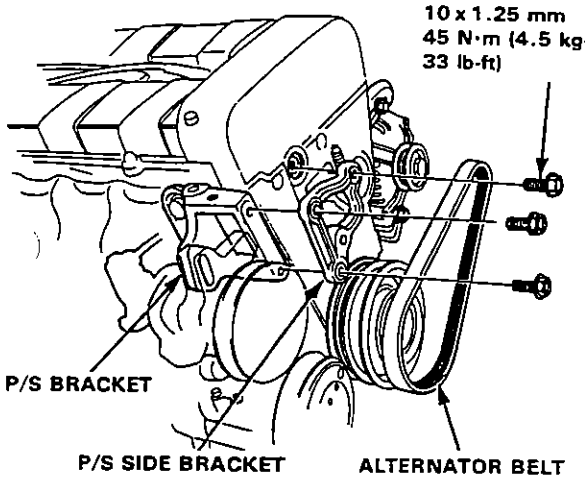
    - Intake air pressure sensor connector
    - Throttle angle sensor connector
    - Injection connector
    - TDC/CRANK sensor connector

12. Disconnect the radiator upper hose at the engine.
13. Remove the heater hose.

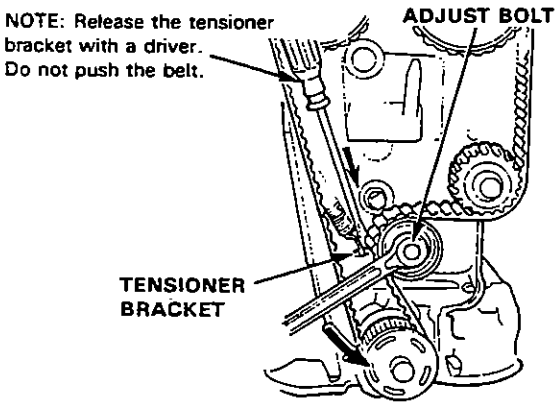




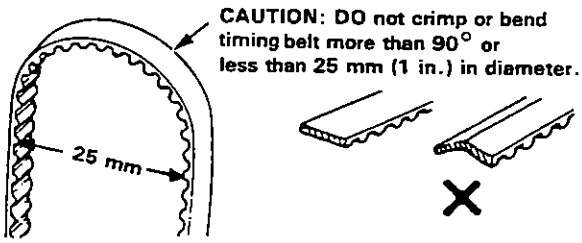
14. Remove the power steering (P/S) pump belt (KQ only) and the alternator belt.
15. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.
16. Remove the P/S pump bracket (KQ only).



17. Remove the bolts from the intake manifold bracket.
18. Remove the exhaust mandfold shroud.
19. Remove the bolts from the exhaust manifold bracket.
20. Remove the self lock nut from the exhaust header pipe.
21. Remove the exhaust manifold assy.
22. Remove the timing belt upper cover.
23. Remove the valve cover.
24. Loosen the timing belt adjust bolt, releasing the timing belt, and fix the bolt.



25. Remove the timing belt from the driven pulleys.



26. Remove the cylinder head.

CAUTION: Loosen the head bolts diagonally from the inside to outside.

27. Remove the intake manifold from the cylinder head.

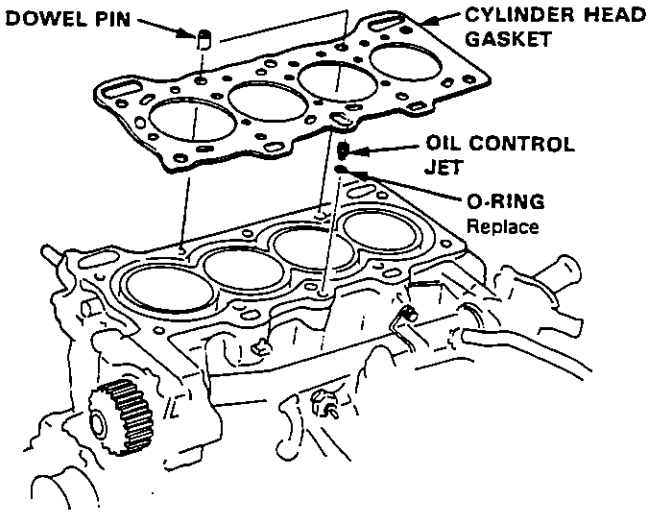
Cylidner Head

Installation

1. Install the cylinder head in reverse order of removal:

   - Always use a new head gasket.
   - Cylinder head and engine block surface must be clean.
   - "UP" mark on timing belt pulley should be at the top.

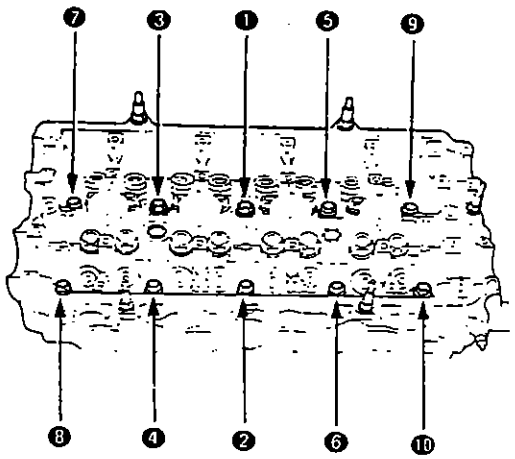
   NOTE: Cylinder head dowel pins and oil control jet must be aligned.



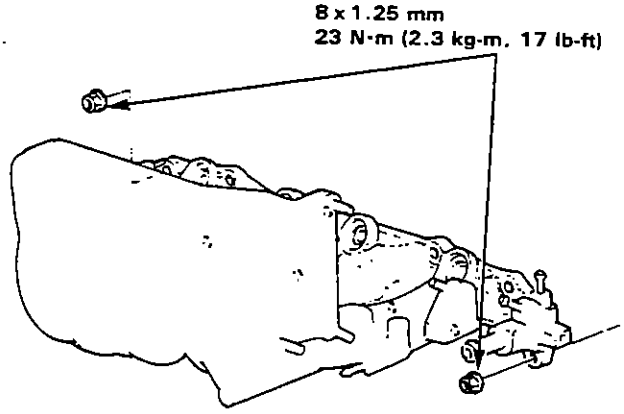
2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft)

   NOTE:
   - Apply engine oil to the cylinder head bolts and the washers.
   - Use the longer bolts at the position No.1 and No.2 as shown.

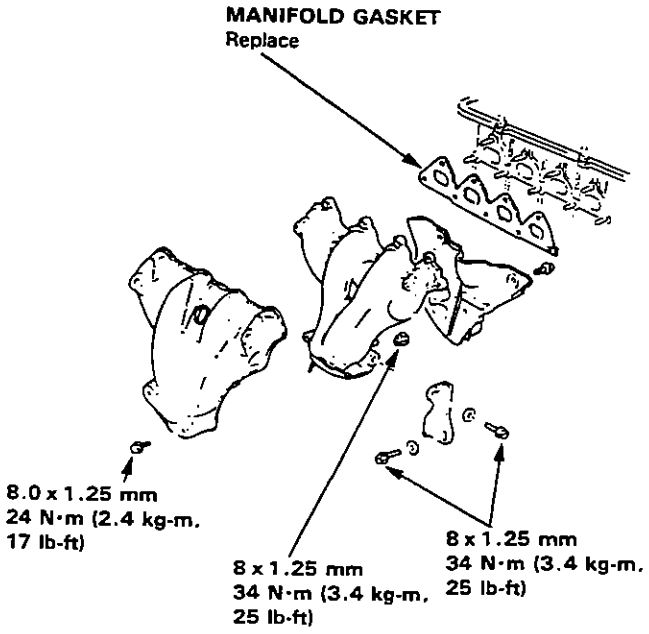
CYLINDER HEAD BOLTS TORQUE SEQUENCE



3. Install the intake manifold and tighten the nuts in a criss-cross pattern in 2 or 3 steps, beginning with the inner nuts.



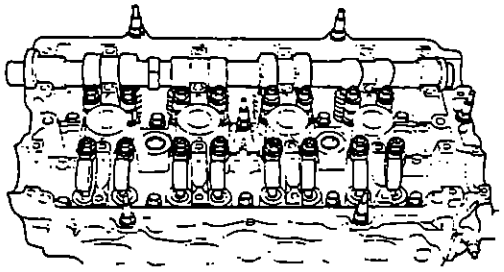
4. Install the exhaust manifold and bracket.



CAUTION:

- **Make sure that the keyways on the camshafts are facing up. (NO. 1 cylinder TDC).**
- **Valve locknuts should be loosened and adjust screws backed off before installation.**
- **Replace the rocker arms in these original positions.**

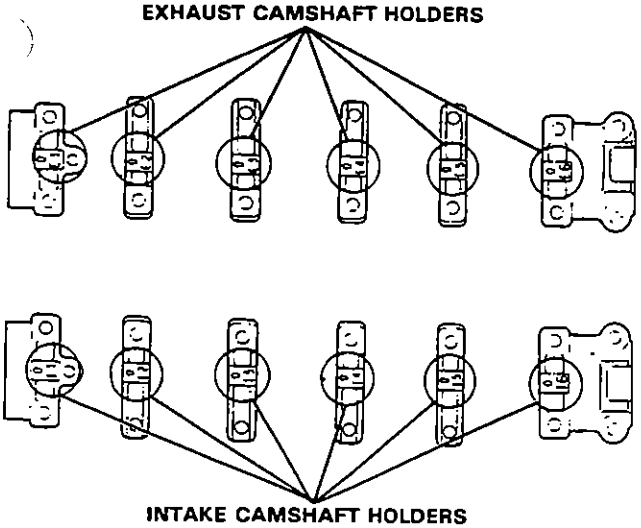
5. Place the rocker arms on the pivot bolts and the valve stems.



6. Install the camshafts and the camshaft seals with the open side (spring) facing in.

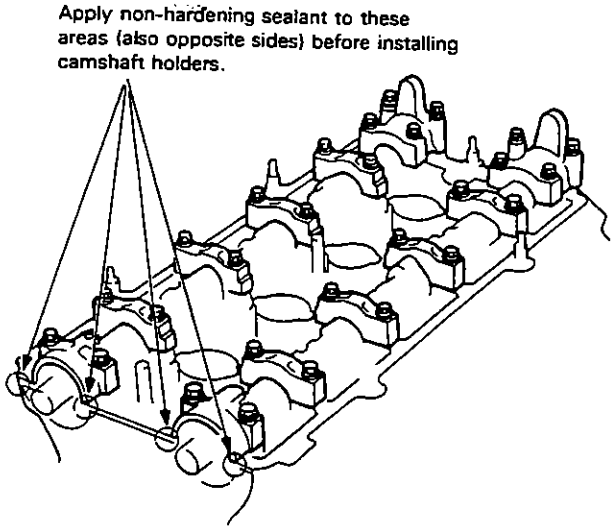
NOTE:

- "I" or "E" marks are stamped on the camshaft holders.
- Do not apply oil to the holder mating surface of camshaft seals.

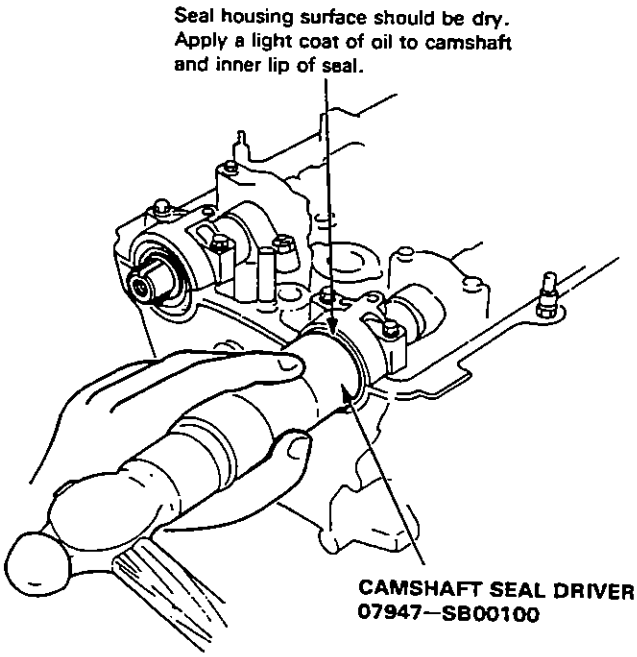


7. Apply liquid gasket to the head mating surfaces of the No. 1 and No. 6 camshaft holders, then install them, along with the No. 2. 3. 4 and 5.

8. Tighten the camshaft holders temporarily.
   - Make sure that the rocker arms are properly positioned on the valve stems.



9. Press in the camshaft oil seal securely with the special tool.

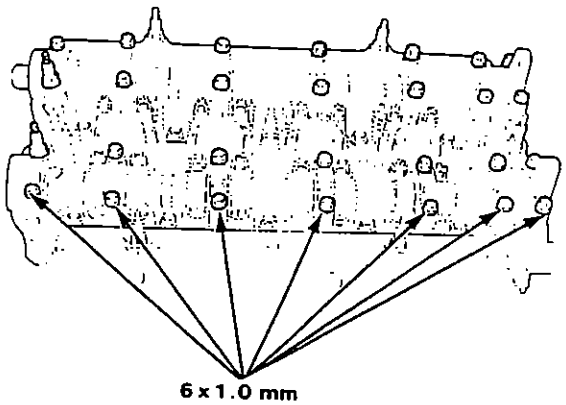


(cont'd)

Cylinder Head

- Installation (cont'd)

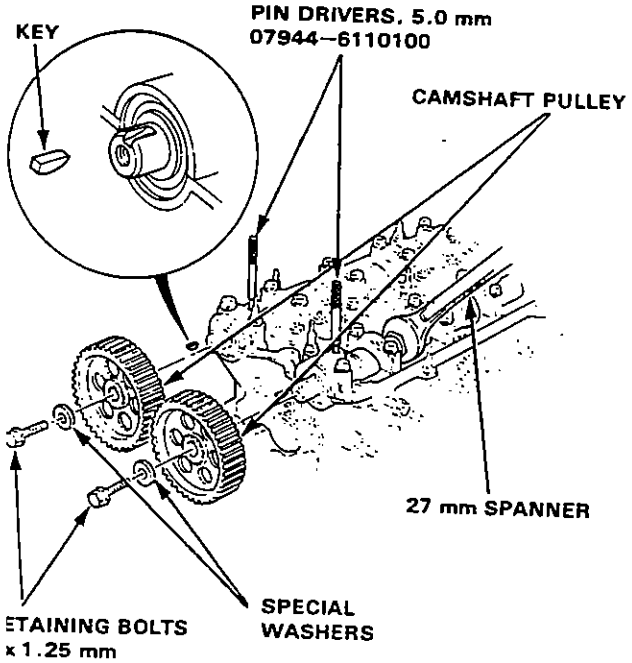
10. Tighten each bolt two turns at a time in the sequence shown below to insure that the rockers do not bind on the valves.



6 x 1.0 mm
12 N·m (1.2 kg-m, 9 lb-ft)

11. Install keys into grooves in camshafts.

NOTE: To set the No. 1 piston at TDC, align the hole on the camshaft with the hole in the No.1 camshaft holders and drive 5.0 mm pin drivers into the holes.



ETAINING BOLTS
x 1.25 mm
3 N·m (3.8 kg-m, 27 lb-ft)

12. Push camshaft pulleys onto camshafts, then tighten retaining bolts to torque shown.
13. Adjust the valve timing (page 5-9).
14. After installation, check that all hoses and connectors are installed correctly.

Engine Removal/Installation



Engine Removal/Installation

WARNING

- **Make sure jacks and safety stands are placed properly and hoist brackets are attached to correct positions on the engine. (See Section 1).**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

1. Disconnect the battery negative terminal first then the positive terminal. Remove battery.
2. Unbolt the hood brackets and remove the hood.
   - Disconnect the washer fluid tube.

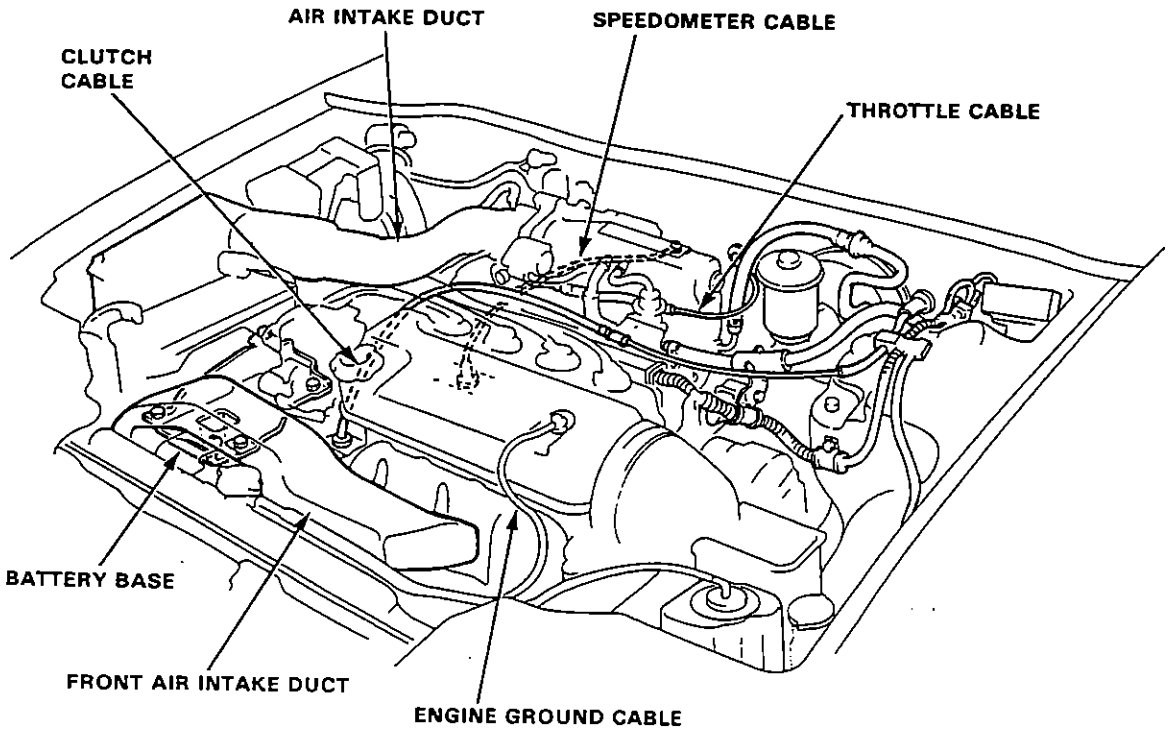
CAUTION: Use care when storing the hood to avoid damaging the paint.

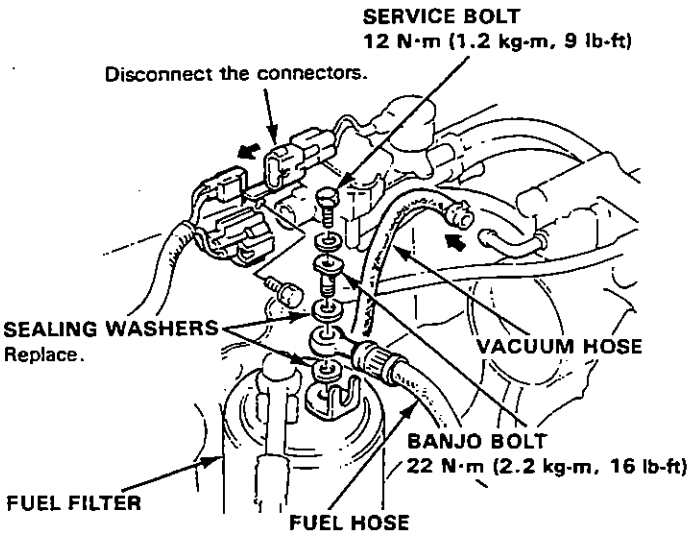
3. Drain the engine oil. Remove the oil filler cap to speed draining. Reistall the drain plug with a new washer.
4. Drain the coolant from the radiator into a clean pan so it may be re-used. Remove the radiator cap to speed draining.

   WARNING Use care when removing radiator cap to avoid scalding by hot coolant or steam.

5. Drain transmission oil/fluid.Use a 3/8" drive ratchet wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.
6. Remove the air intake duct and front air intake duct.
7. Remove the battery base.

LHD:

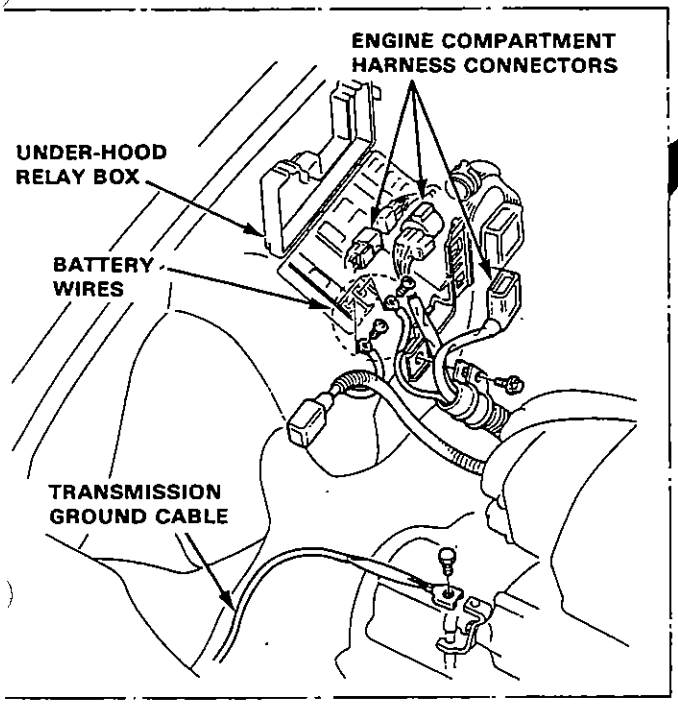


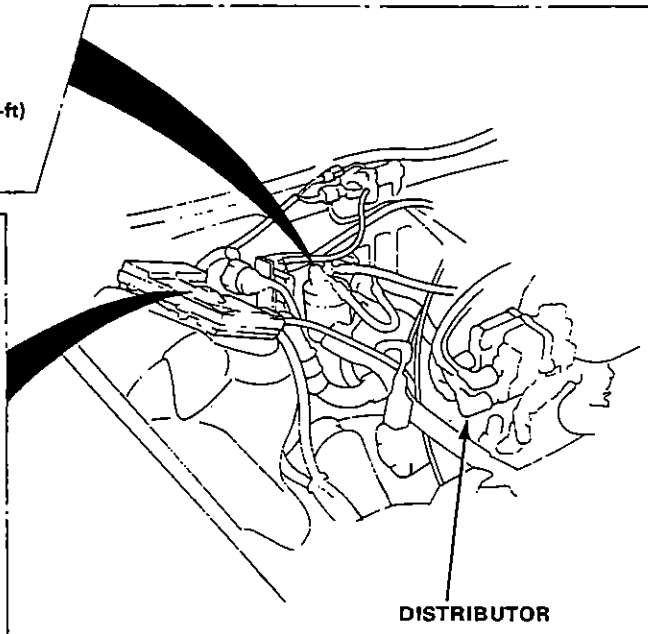


8. Relieve fuel pressure by slowly loosening the service bolt on the fuel filler about one turn. (Section 6).

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area. Drain fuel only into an approved container.**

CAUTION:
- **Before disconnecting any fuel line, the fuel pressure should be relieved as described above.**
- **Place a shop towel over the fuel filler to prevent pressurized fuel from spraying over the engine.**



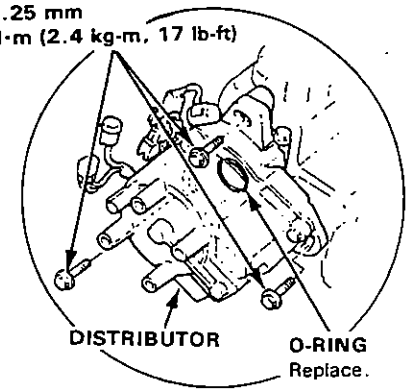


9. Disconnect the engine compartment harness connectors, battery wires and transmission ground cable.

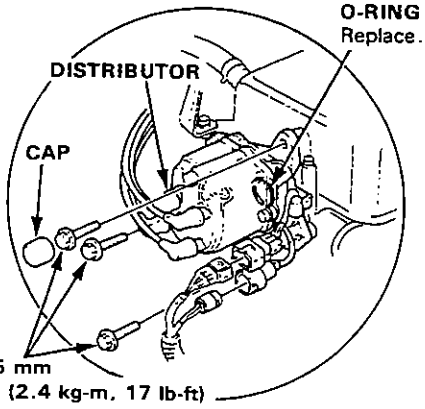
10. Disconnect the engine wire connectors and spark plug wires.

11. Remove the cap and bolts, then remove the distributor from the cylinder head.

DOHC:



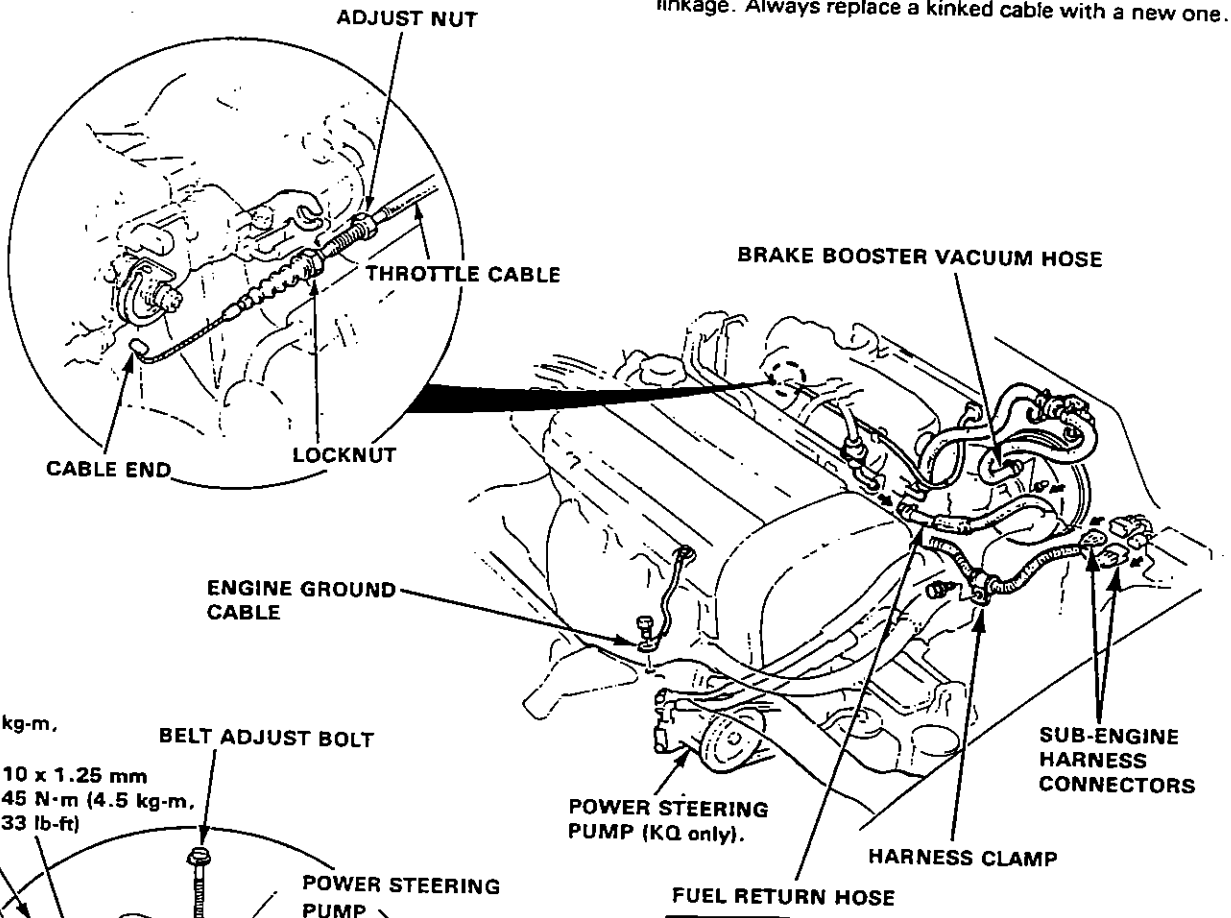
SOHC:



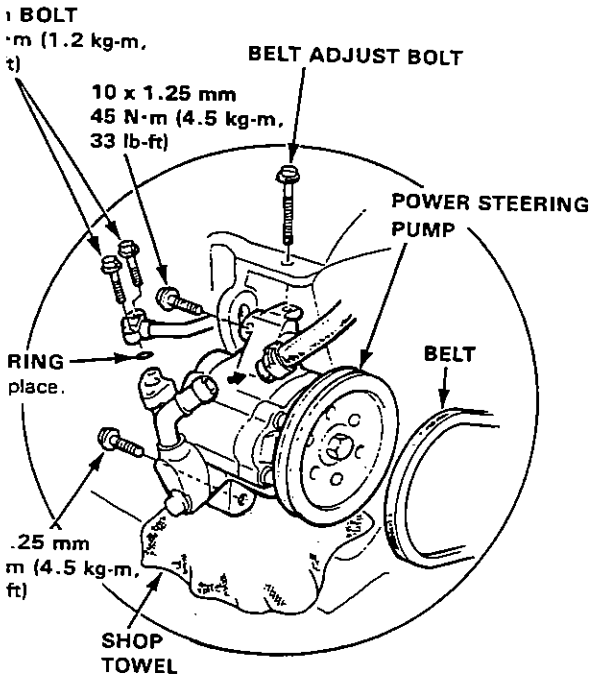
(cont'd)

12. Remove the throttle cable by loosening lock the nut and the throttle cable adjust nut, then silp the cable end out of the throttle bracket and accelerator linkage.

NOTE: Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.

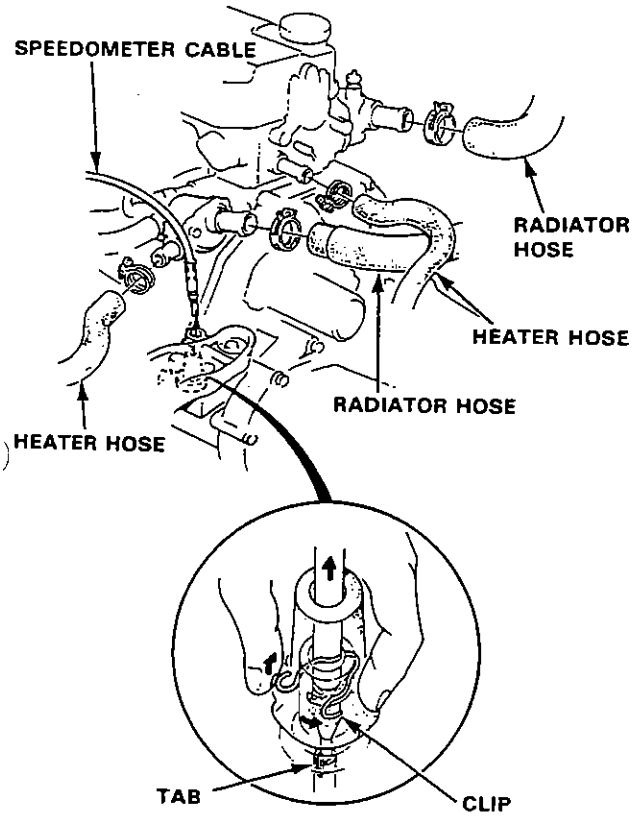


WARNING **Do not smoke while working on fuel system. Keep open flame away from work area. Drain fuel only into an approved container.**



13. Remove the adjust bolt, mounting bolts and V-belt for the power steering pump, then without disconnecting the hose, pull the pump away from its mounting bracket (KQ only).

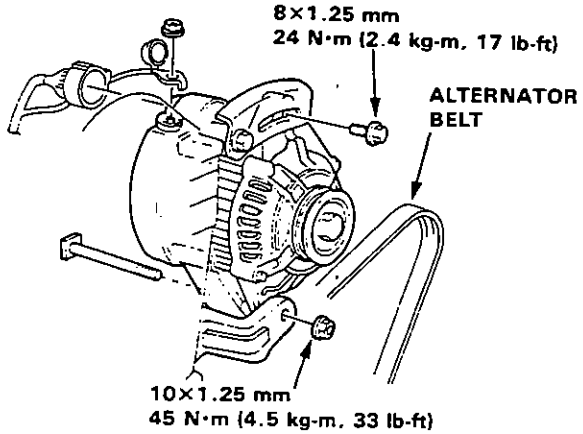
14. Disconnect the radiator hoses and heater hoses.
15. Remove the speedometer cable.



CAUTION: Do not remove the holder because the speedometer gear may fall into the transmission housing.

16. Remove the alternator: (LHD only)

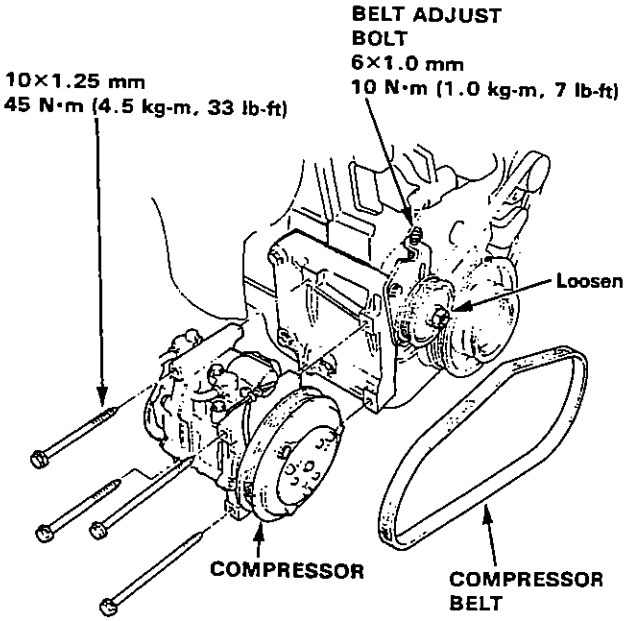
- Disconnect the alternator wire harness connectors.
- Remove the adjust bolt and remove the belt.
- Remove the belt alternator mount bolt and remove the alternator.



17. On cars with A/C:

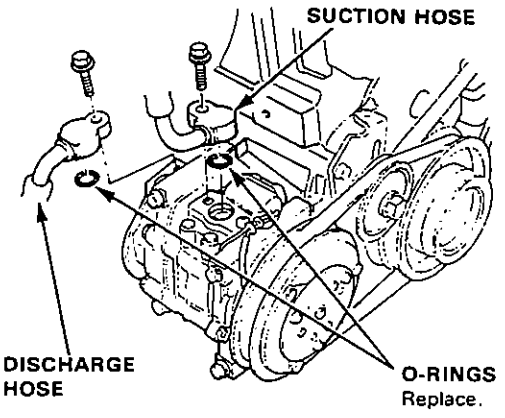
- Loosen the belt adjust bolt and idle pulley nut.
- Remove the compressor mount bolts, then lift the compressor out of the bracket with hoses attached, and wire it up to the front beam.

NOTE: The compressor can be moved without discharging the air conditioner system.



If necessary:

- Disconnect the suction and discharge hoses from the compressor.

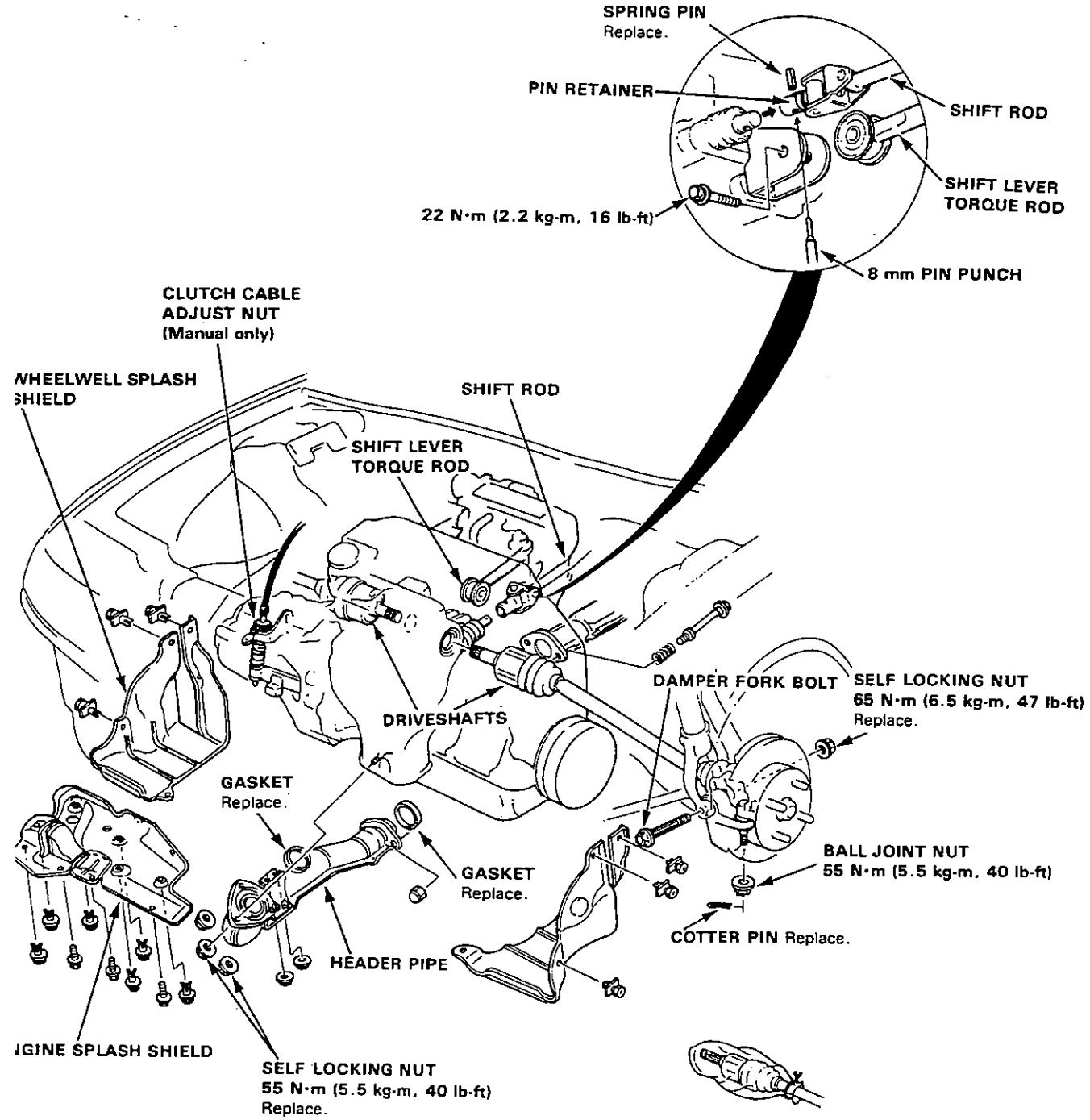


(cont'd)

18. Remove the shift lever torque rod, shift rod and clutch cable.

    NOTE: On reassembly, slide the retainer back into place after driving in the spring pin.

9. Remove the right and left driveshafts. (See Section 10)

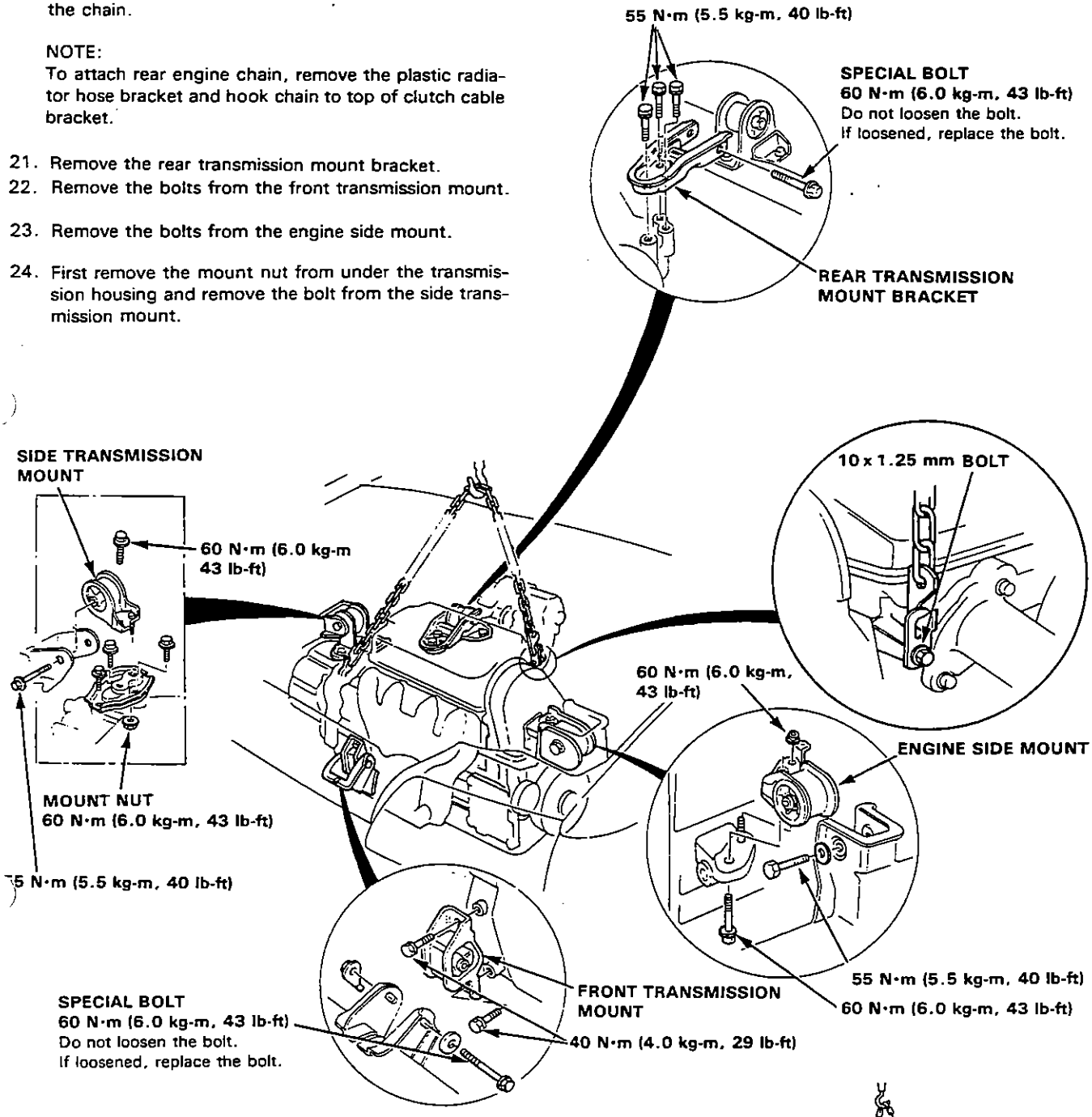


NOTE: Coat all precision finished surfaces with clean engine oil or grease.
Tie Plastic bags over the drivehaft ends.

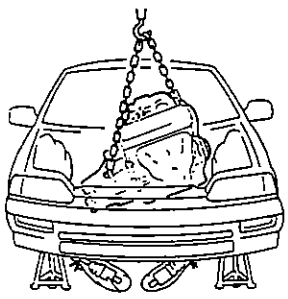
20. Attach a chain hoist to the engine block hoist brackets and raise the hoist just enough to remove slack from the chain.

    NOTE:
    To attach rear engine chain, remove the plastic radiator hose bracket and hook chain to top of clutch cable bracket.

21. Remove the rear transmission mount bracket.
22. Remove the bolts from the front transmission mount.
23. Remove the bolts from the engine side mount.
24. First remove the mount nut from under the transmission housing and remove the bolt from the side transmission mount.



25. Check that the engine/transaxle is completely free of vacuum, fuel, and coolant hoses, and electrial wires.
26. Slowly raise the engine approximately 6" and stop. Check once again that all wires and hoses have been disconnected from the engine/transaxle.
27. Raise the engine/transaxle all the way and remove it from the car.



(cont'd)

28. Install the engine in the reverse order of removal. After the engine is in place:

- Torque engine mount bolts in sequence shown.

CAUTION: Failure to tighten the bolts in the proper sequence can cause excessive noise and vibration, and reduce bushing life: check that the bushings are not twisted or offset.

- Check that the spring clip on the end of each driveshaft clicks into place.

CAUTION: Use new spring clips on installation.

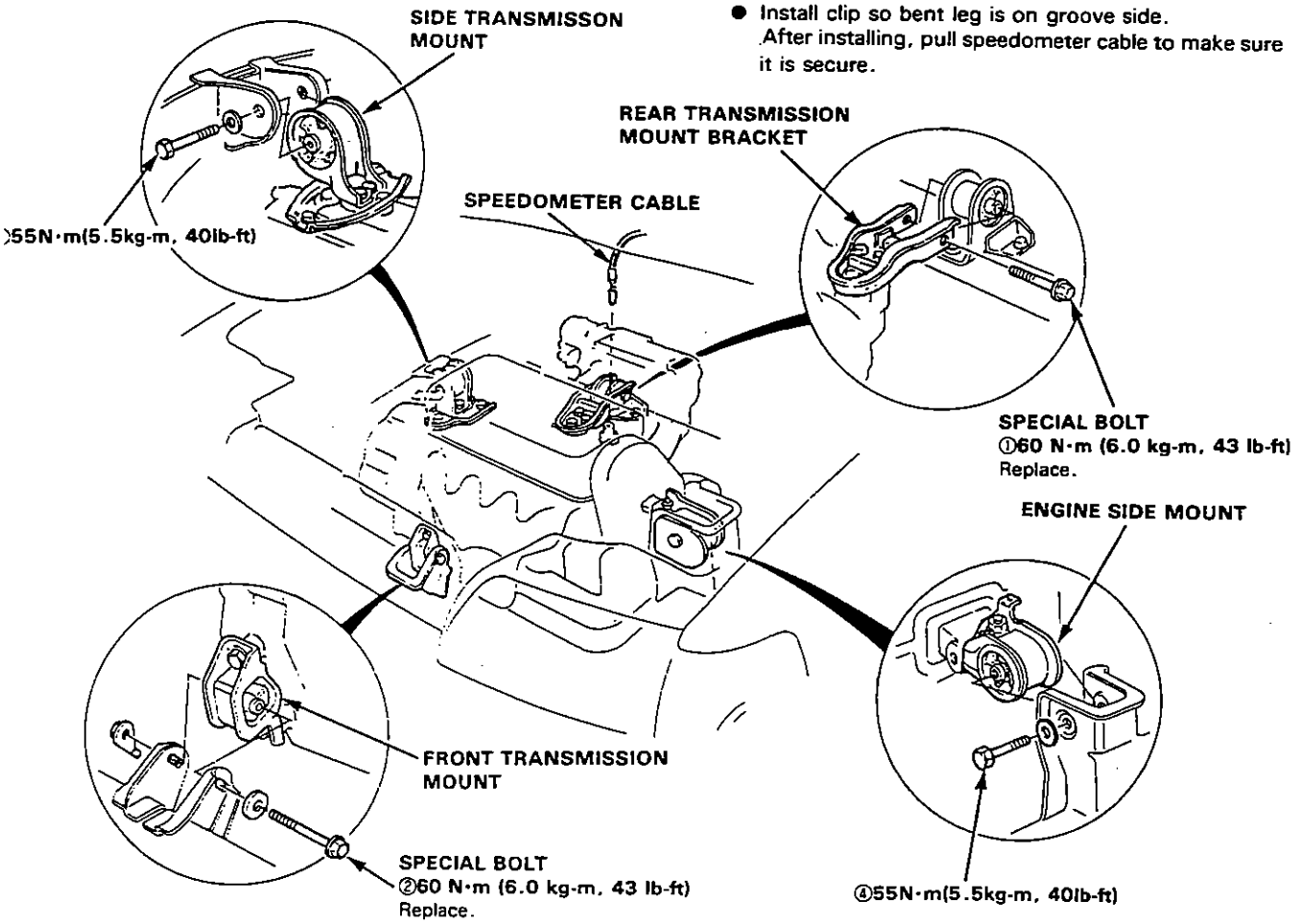
- Inspection for fuel leakage.
  After assembing fuel line parts, turn on the ignition switch (do not operate the starter) so that the fuel pump is operated for approximately two seconds and the fuel is pressurized. Repeat this operation two or three times and check whether any fuel leakage has occurred at any point in the fuel line.
- Bleed air from the cooling system at the bleed bolt with the heater valve open.
- Adjust the throttle cable tension. (See Section 11).
- Adjust the alternator belt tension.
- Check the clutch pedal free play.
- Check that the transmission shifts into gear smoothly.
- Reinstall the A/C compressor and A/C wiring.
- Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.
- Check the ignition timing. (See Section 16).
- Charge the system and test performance. (See Section 15).

ENGINE MOUNT TORQUE SEQUENCE

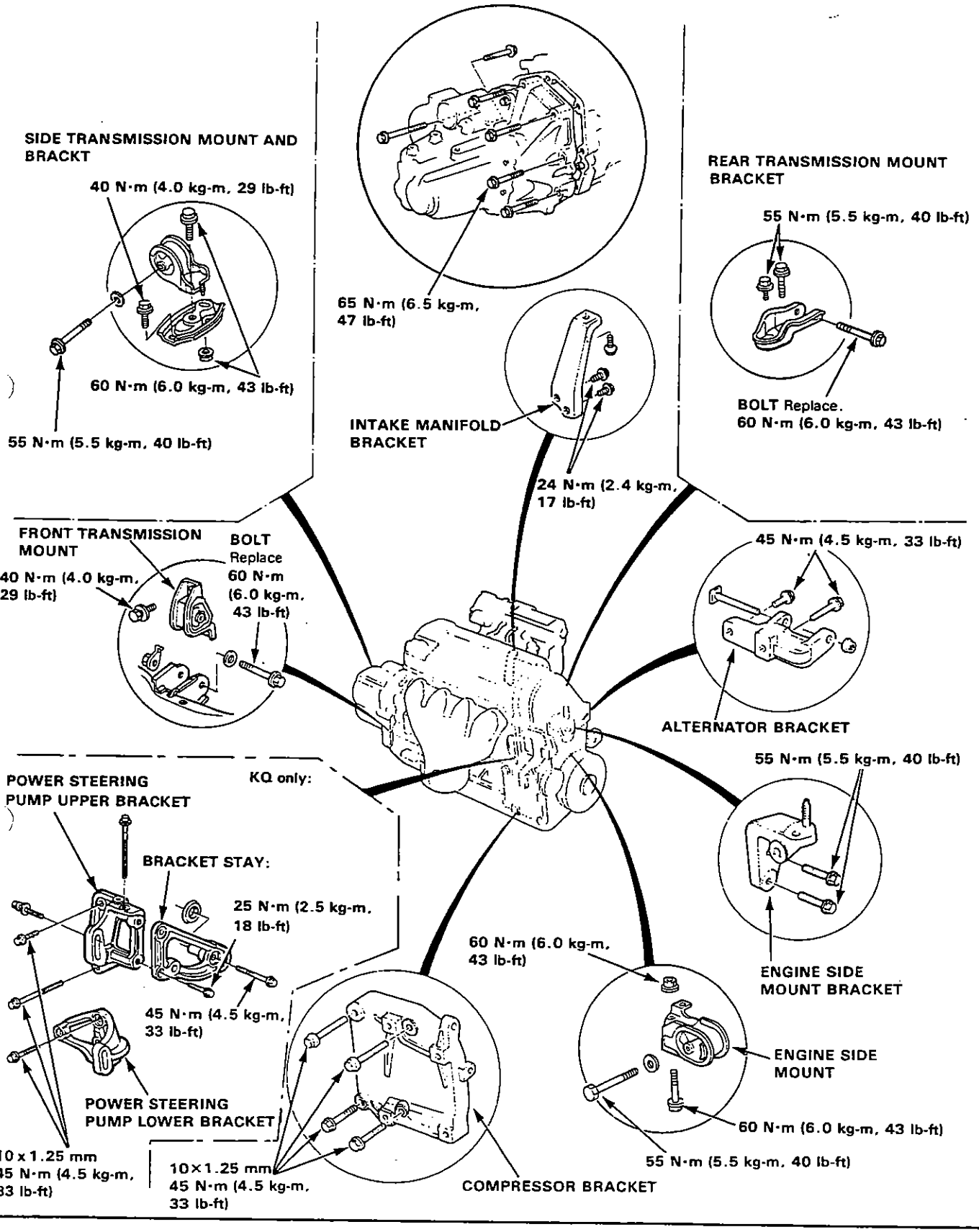
NOTE: Check the mount and bracket for damage.

Speedometer cable Installation:

- Align tab on cable end with slot in holder (page 5-45).
- Install clip so bent leg is on groove side.
  After installing, pull speedometer cable to make sure it is secure.



Additional Torque Specifications:

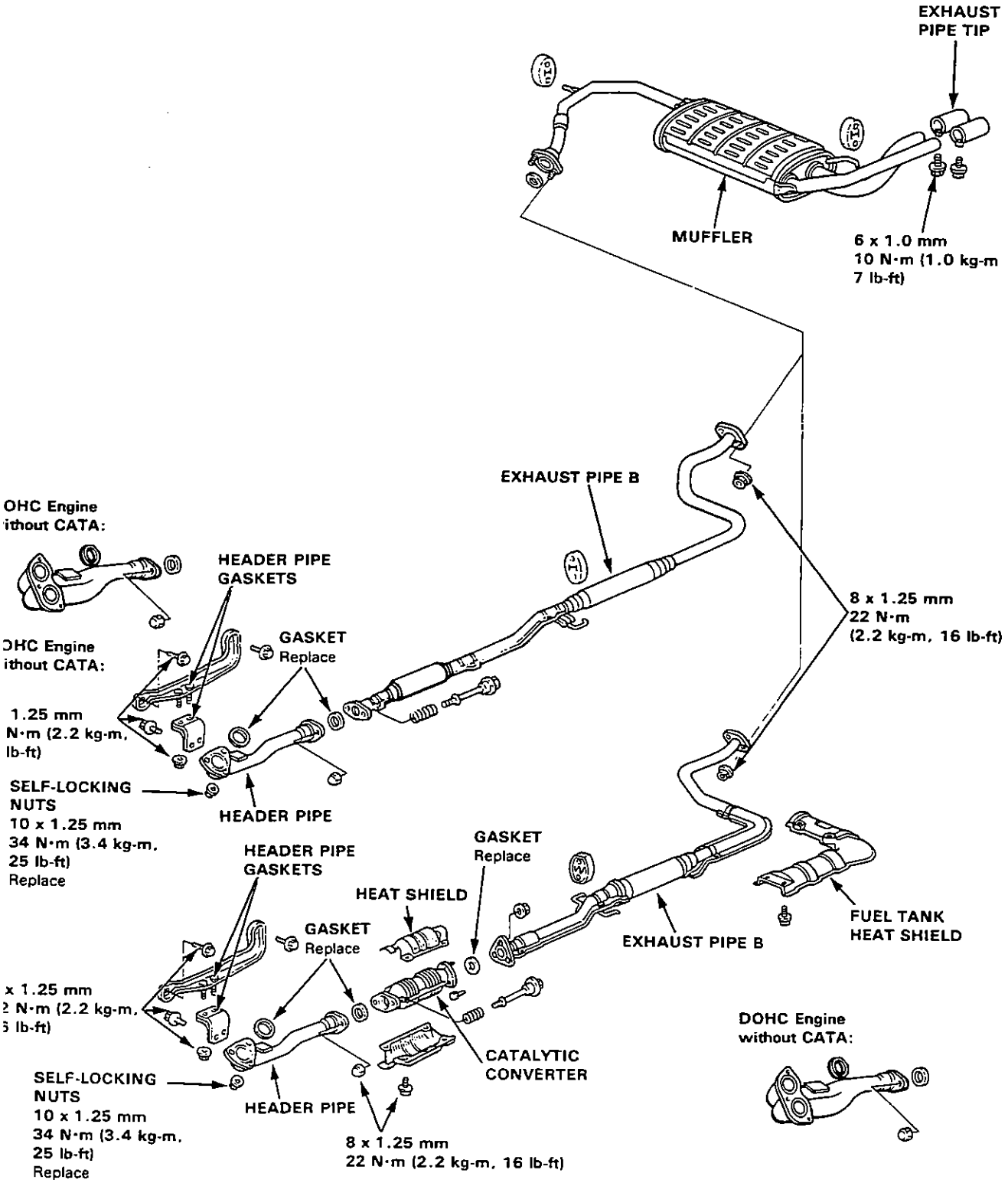


Exhaust Pipe and Muffler



‹haust Pipe and Muffler

Replacement



SOHC Engine with CATA:

Radiator

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Radiator Testing 5–60
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Water Pump Replacement 5–62

diator

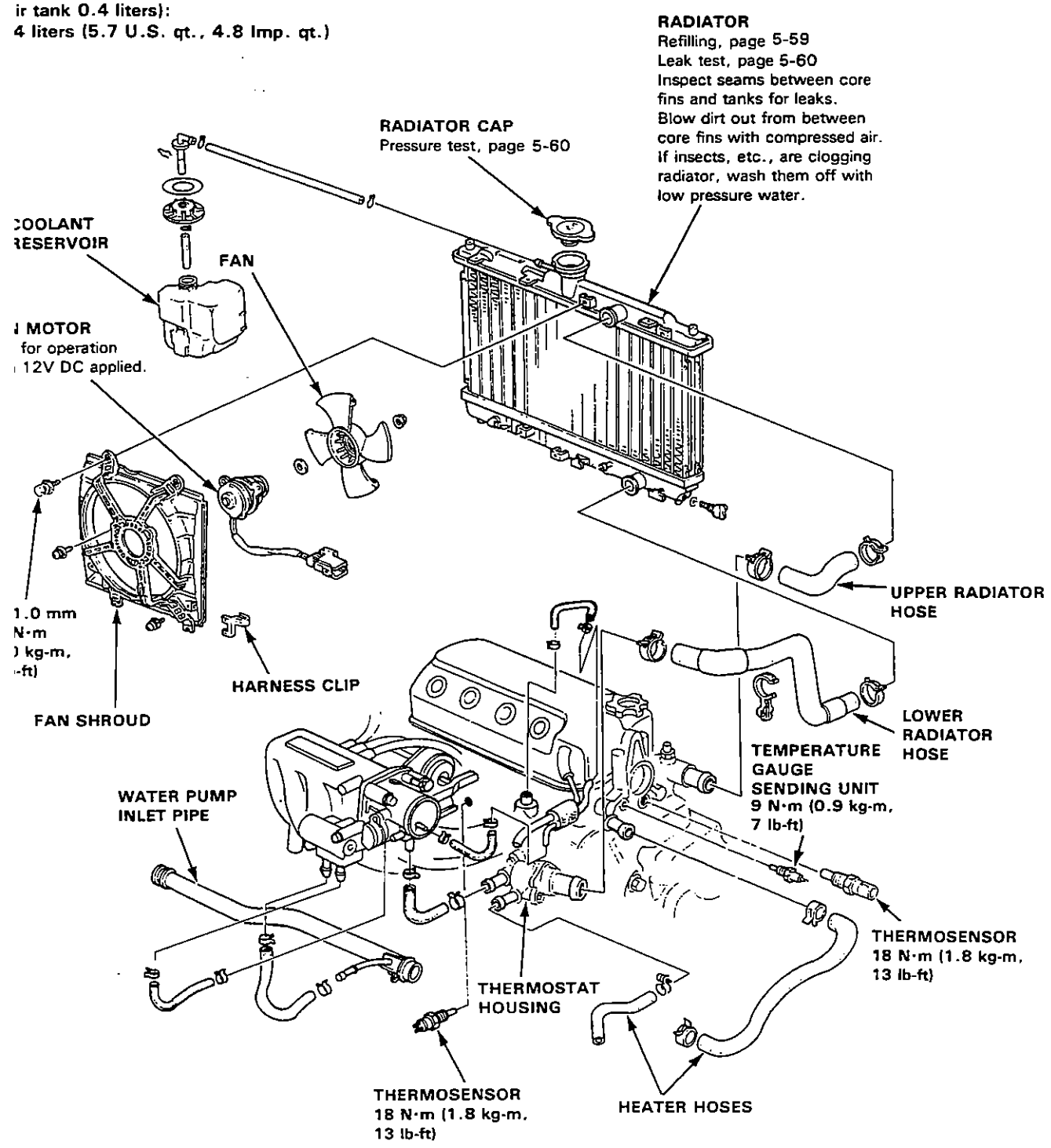
lustrated Index

6 ℓ SOHC Fuel-Injected Engine:

WARNING System is under high pressure when engi- is not. To avoid danger of releasing scalding coolant, move cap only when engine is cool.

tal Cooling System Capacity (Incl. heater, and reser- ir tank 0.4 liters):
4 liters (5.7 U.S. qt., 4.8 Imp. qt.)

NOTE:
- Check all cooling system hoses for damage, leaks or deterioration and replace if necessary.
- Check all hose clamps and retighten if necessary.
- Use new O-rings whenever reassembling.

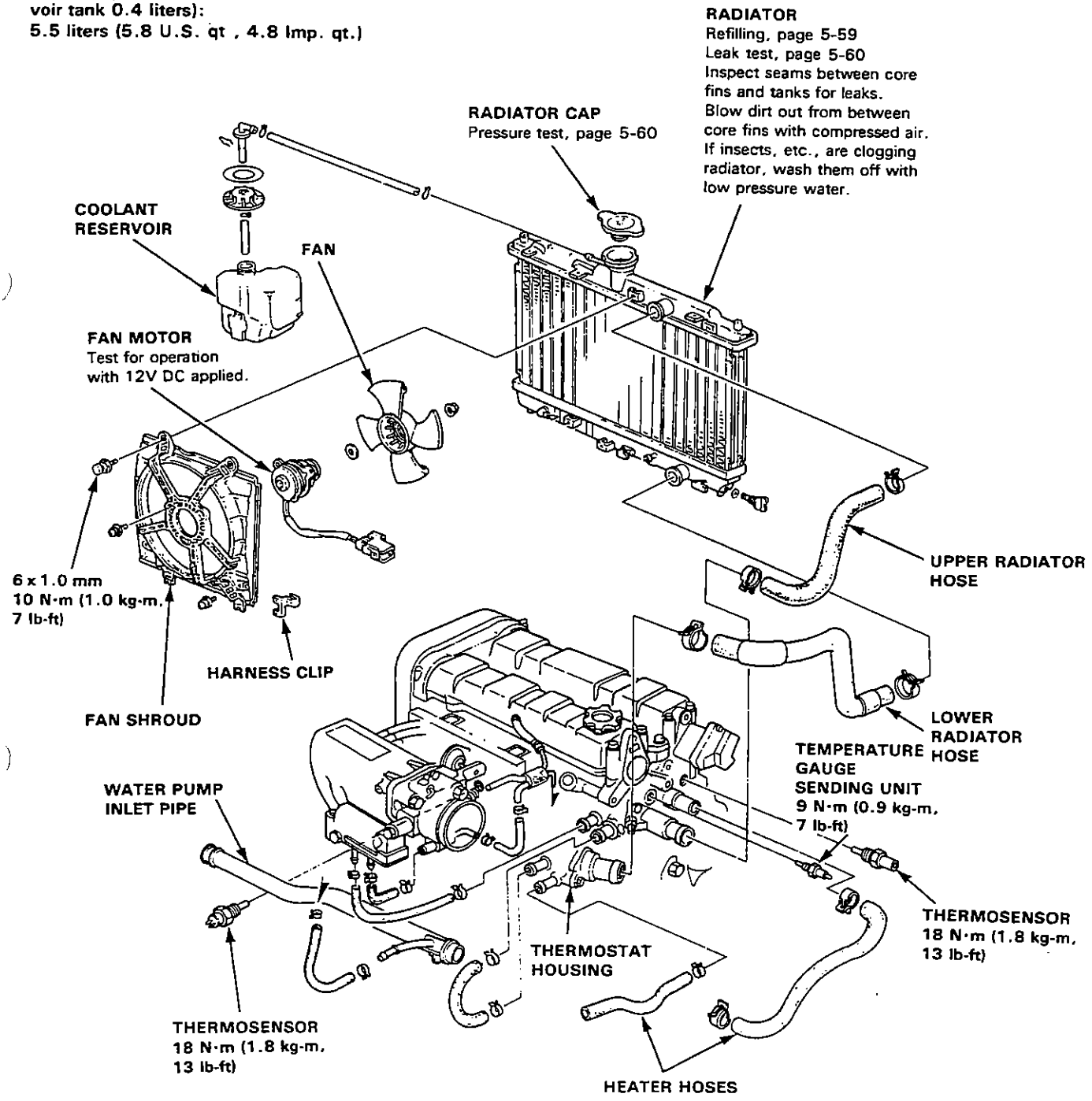


DOHC Fuel-Injected Engine:

WARNING **System is under high pressure when engine is not. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.**

Total Cooling System Capacity (Incl. heater, and reservoir tank 0.4 liters):
5.5 liters (5.8 U.S. qt , 4.8 Imp. qt.)

NOTE:
- Check all cooling system hoses for damage, leaks or deterioration and replace if necessary.
- Check all hose clamps and retighten if necessary.
- Use new O-rings whenever reassembling.



ıdiator

ɜeplacement

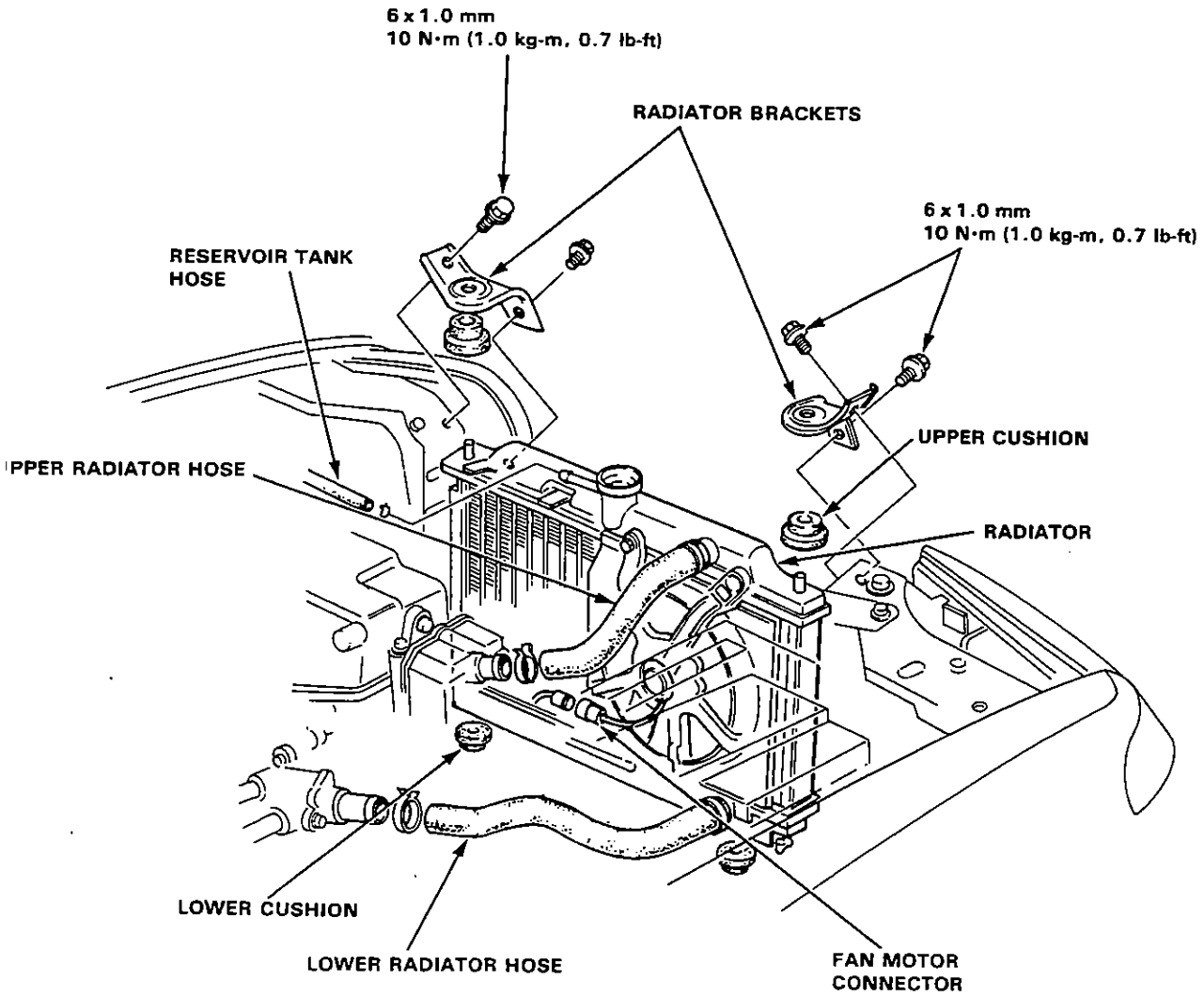
. Drain the coolant from the radiator.
  • Remove the radiator cap to speed draining.

WARNING Use care when removing radiator to avoid scalding by hot coolant or steam.

:. Remove the connectors from the cooling fan motor and thermoswitch.

3. Disconnect the upper and lower radiator hoses from cylinder head.

4. Remove the radiator bracket and radiator.



TE:
Install the radiator in the reverse order of removal.
Before installing the radiator, set the radiator lower cushion securely under it.

Refilling and Bleeding

1. Set the heater temperature lever to maximum heat.
2. When the radiator is cool, remove the radiator cap and drain plug, and drain the radiator.
3. Reinstall the radiator drain plug and tighten it securely.
4. Remove, drain and reinstall the reserve tank. Fill the tank halfway to the MAX mark with water, then up to the MAX mark with coolant.
5. Mix the recommended anti-freeze with an equal amount of water, in a clean container.

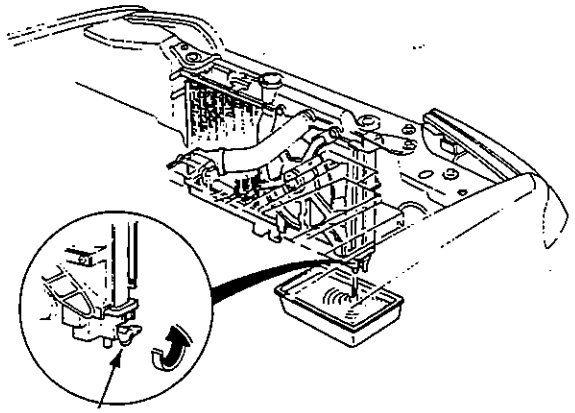
NOTE:
- Use only HONDA RECOMMENDED anti-freeze / coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 50% MINIMUM. Coolant concentrations less than 50% may not provide sufficient protection against corrosion or freezing.
- Coolant concentrations greater than 60% will impair cooling efficiency and are not recommended.

CAUTION:
- **Do not mix different brand anti-freeze/coolants.**
- **Do not use additional rust inhibitors or anti-rust products; they may not be compatible with the recommended coolant.**

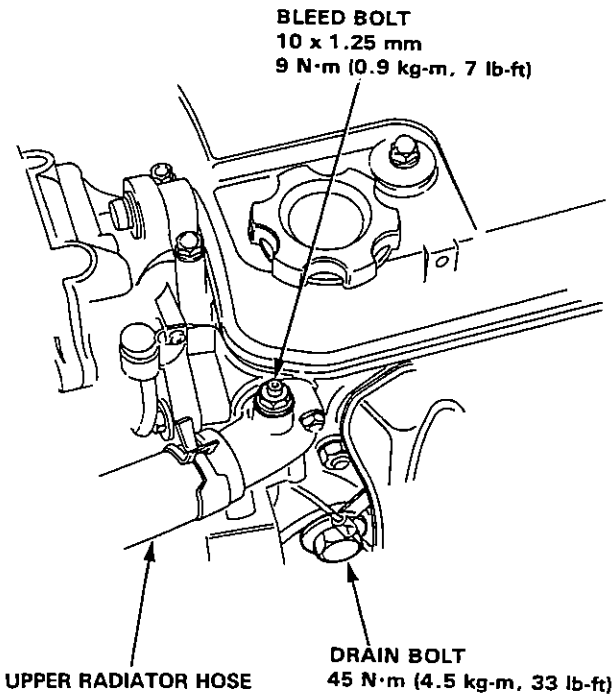
Radiator Coolant Refill Capacity:

	ℓ (U.S.qt., Imp.qt)
1.6 ℓ DOHC	4.5 (4.7, 4.0)
1.6 ℓ SOHC	4.4 (4.6, 3.9)

Induding reservoir tank capacity:
0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.)



6. Loosen the air bleed bolt in the water outlet, then fill the radiator to the bottom of the filler neck with the coolant mixture. Tighten the bleed bolt as soon as coolant starts to run out in a steady stream without bubbles.

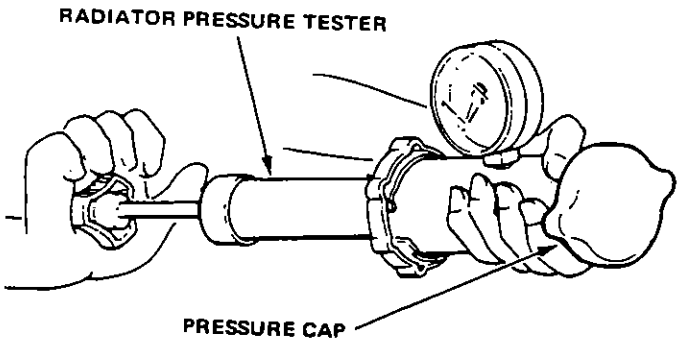


7. With the radiator cap off, start the engine and let it run until warmed up (fan goes on at least twice). If necessary add more coolant mix to bring the level back up to the bottom of the filler neck.
8. Put the radiator cap on, then run the engine again and check for leaks.

Radiator

- Cap Testing

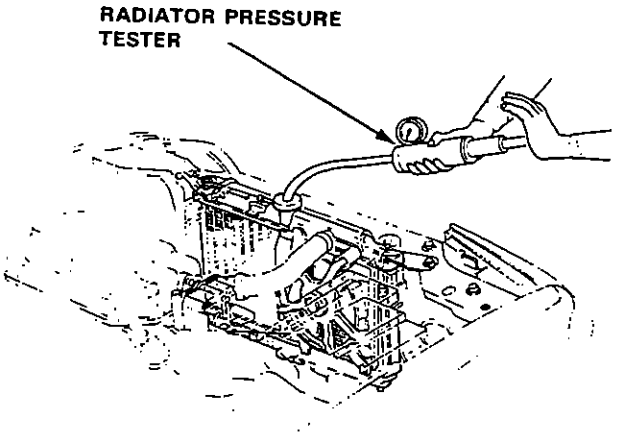
1. Remove the radiator cap, wet its seal with coolant, then install it on the pressure tester.
2. Apply a pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).
3. Check for a drop in pressure.



· Radiator Testing

1. Wait until the engine is cool, then carefully remove the pressure cap and fill the radiator with coolant to the top of the filler neck.
2. Attach the pressure tester to the radiator and apply a pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).
3. Inspect for coolant leaks and a drop in pressure.
4. Remove the tester and reinstall the pressure cap.

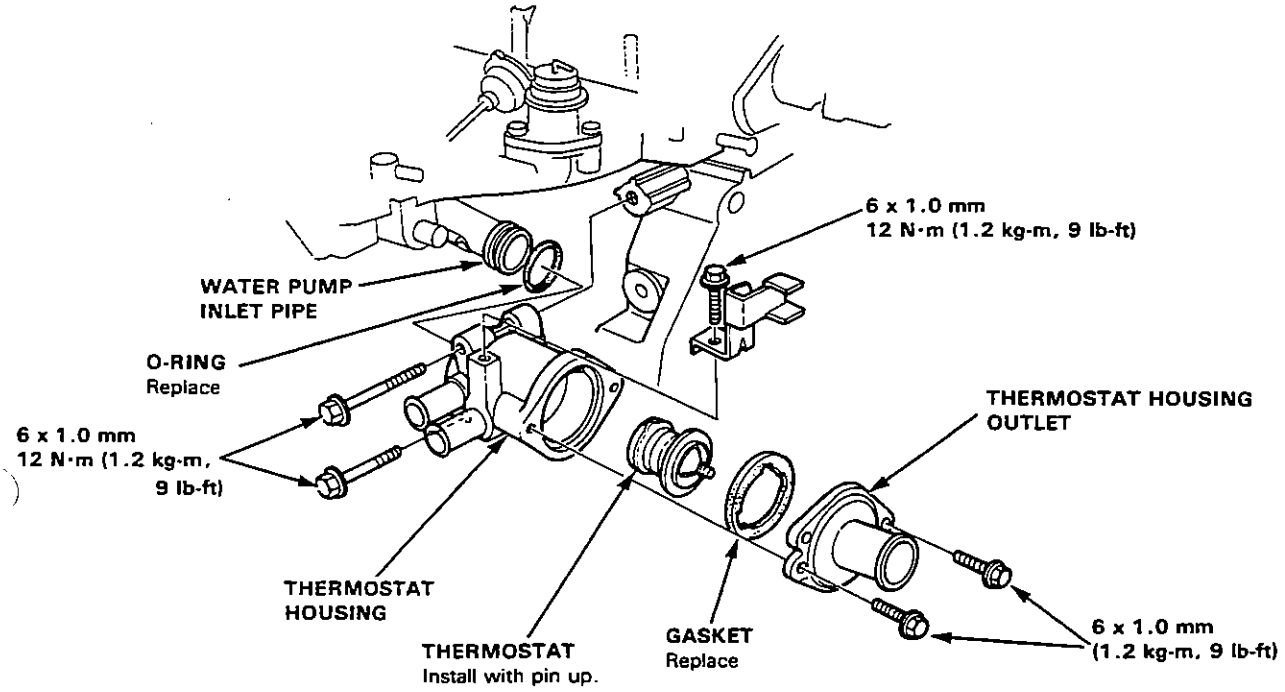
   NOTE: Check for engine oil in coolant and/or coolant in engine oil.



Thermostat

Replacement

NOTE: Use new gaskets and O-rings whenever reassembling.



Testing

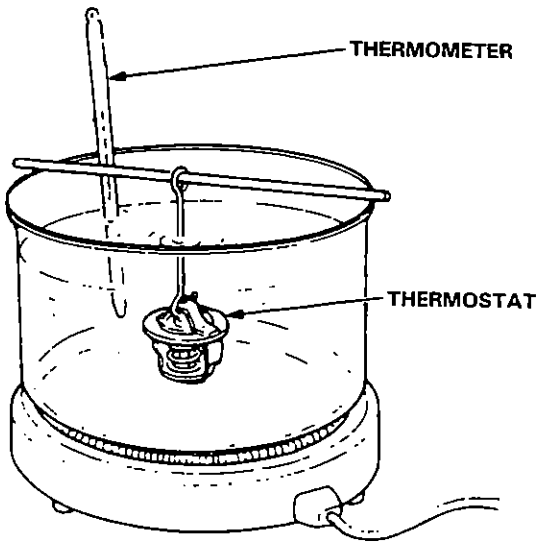
Replace thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat in a container of water as shown.
2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens and at full lift.

   CAUTION: Do not let thermometer touch bottom of hot container.
3. Measure lift height of thermostat when fully open.

   STANDARD THERMOSTAT
   Lift height: 8 mm (0.31 in.)
   Starts opening: 78° C ± 2° C (172° F ± 3° F)
   Fully open: 90° C (194° F)

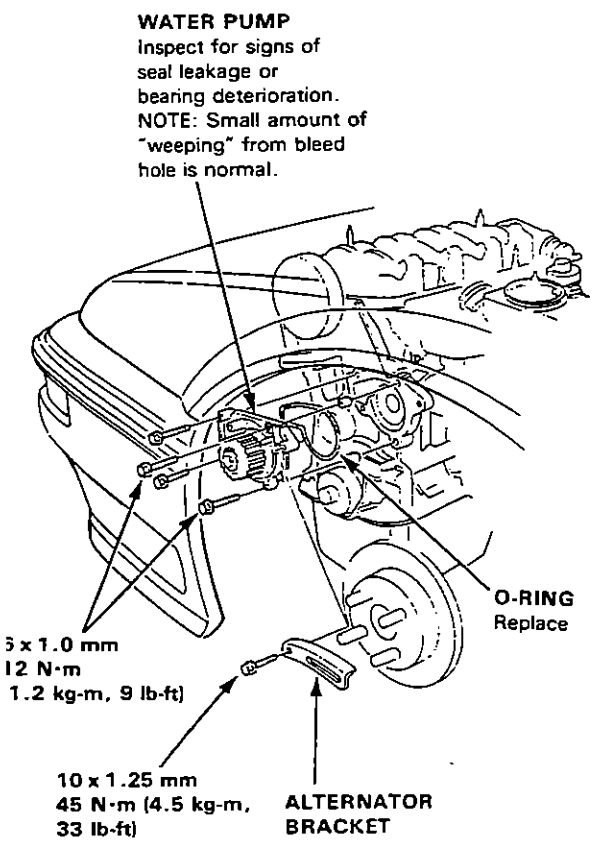


/ater Pump

Replacement

. Remove the timing belt (SOHC: page 5-18, DOHC: page 5-24).

:. Remove the water pump by removing five bolts.



. Install the water pump in the reverse order of removal.

Fuel and Emissions

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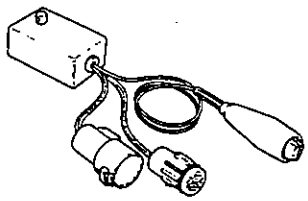
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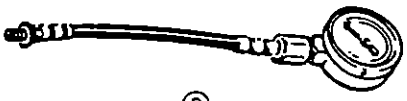
pecial Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07406—0040001	Fuel Pressure Gauge	1	
②-1	07406—0040100	Pressure Gauge	(1)	Component Tools
②-2	07406—0040201	Hose Assy	(1)	Component Tools
③	07999—PD6000A	PGM-FI Test Harness	1	
④	07411—0020000	Digital Circuit Tester	1	



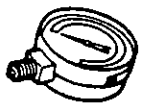
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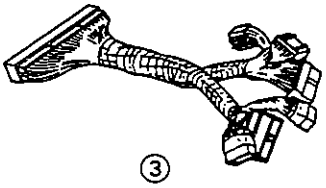
②



②-1



②-2



③

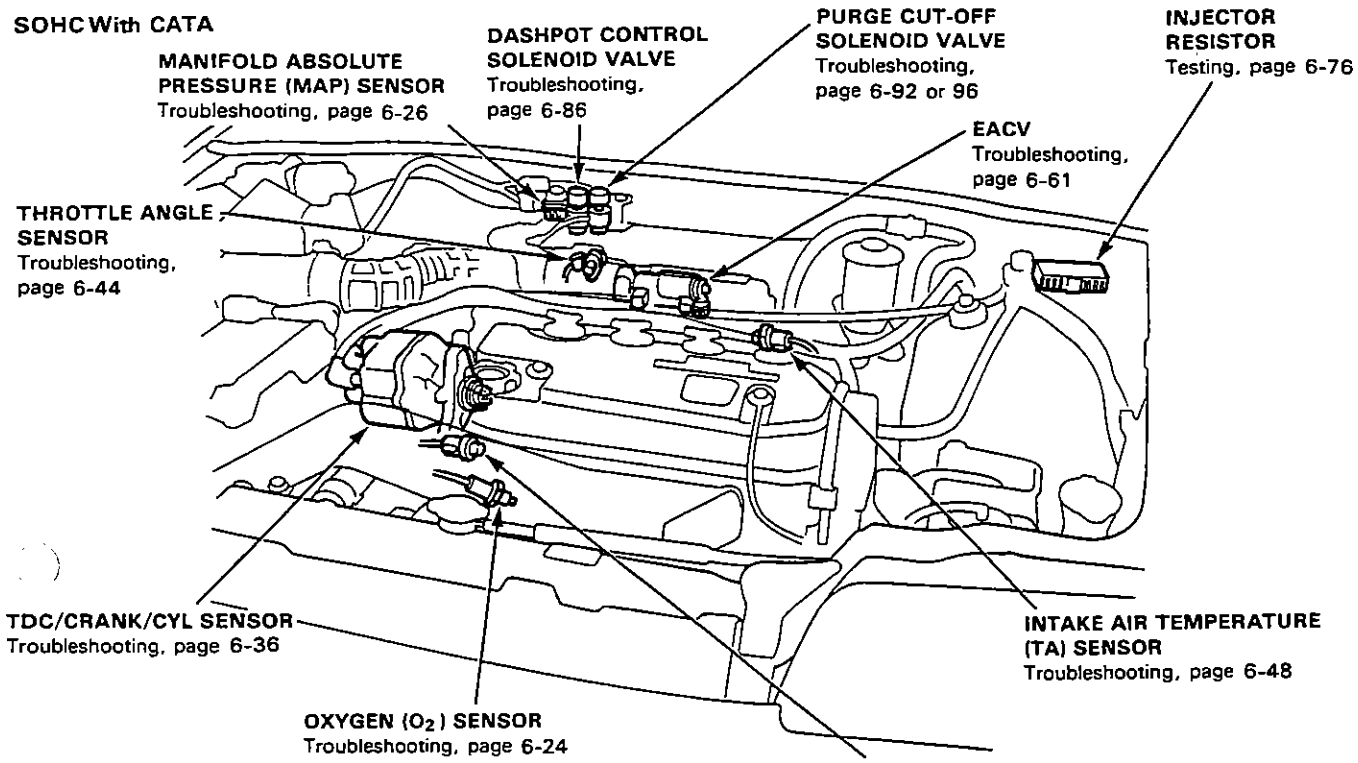


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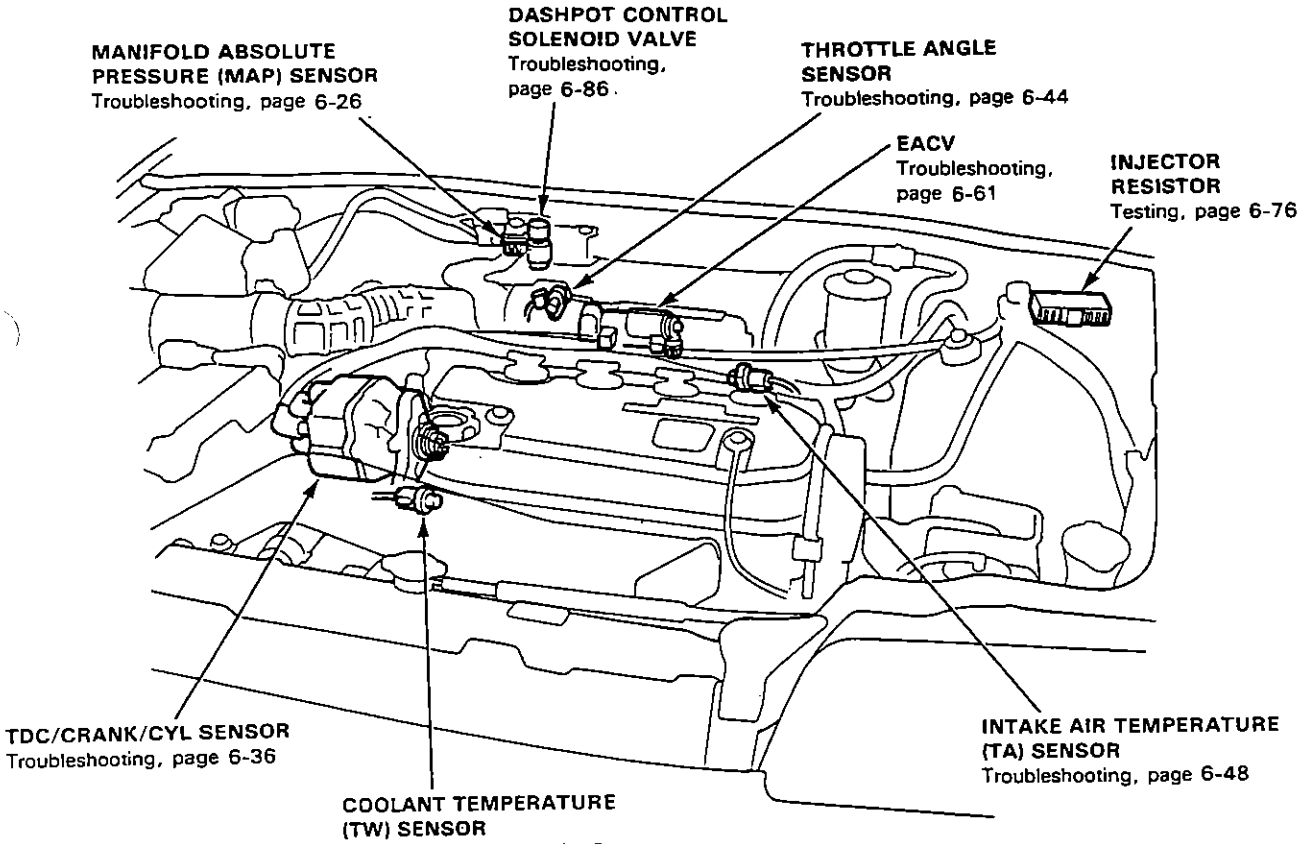
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SOHC With CATA



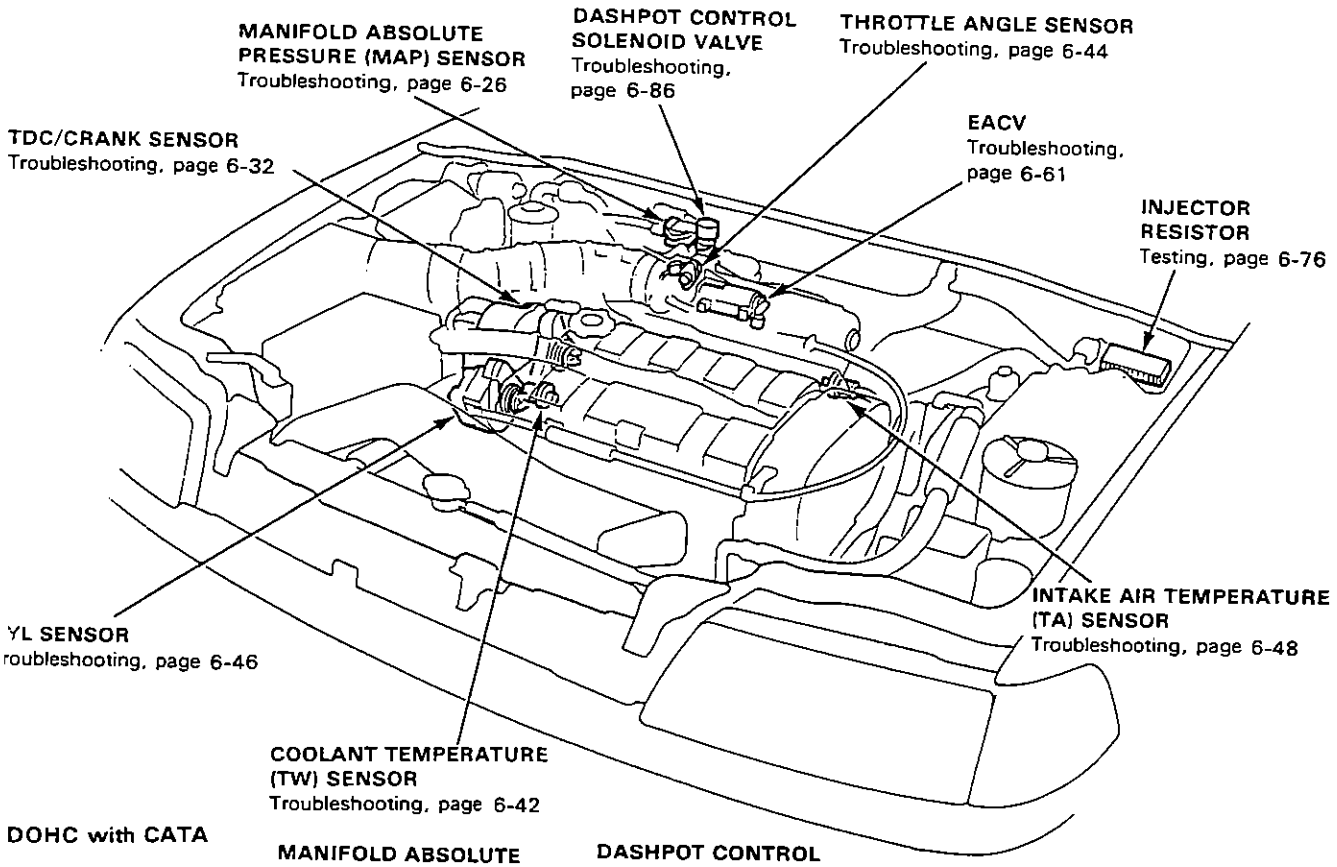
SOHC Without CATA



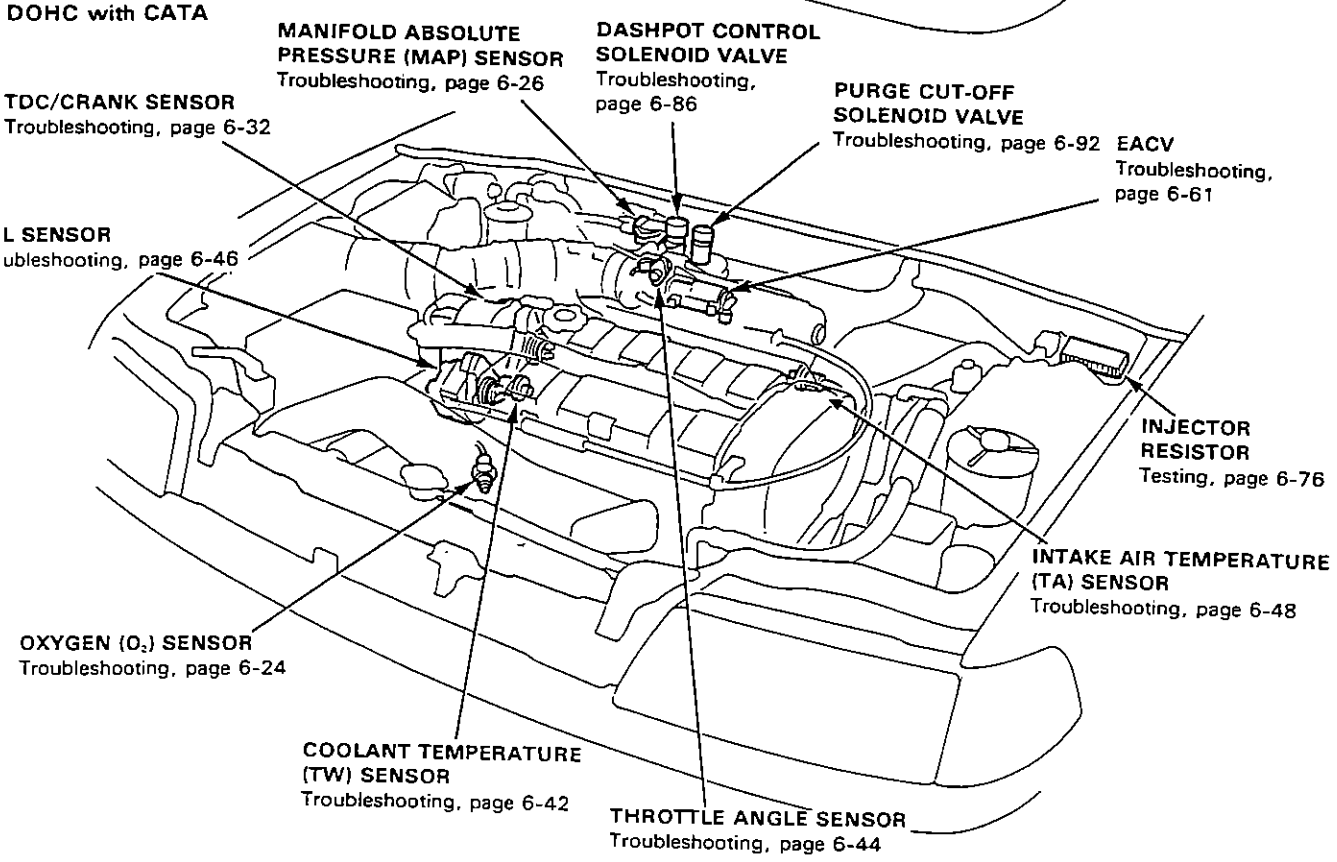
ɔmponent Locations

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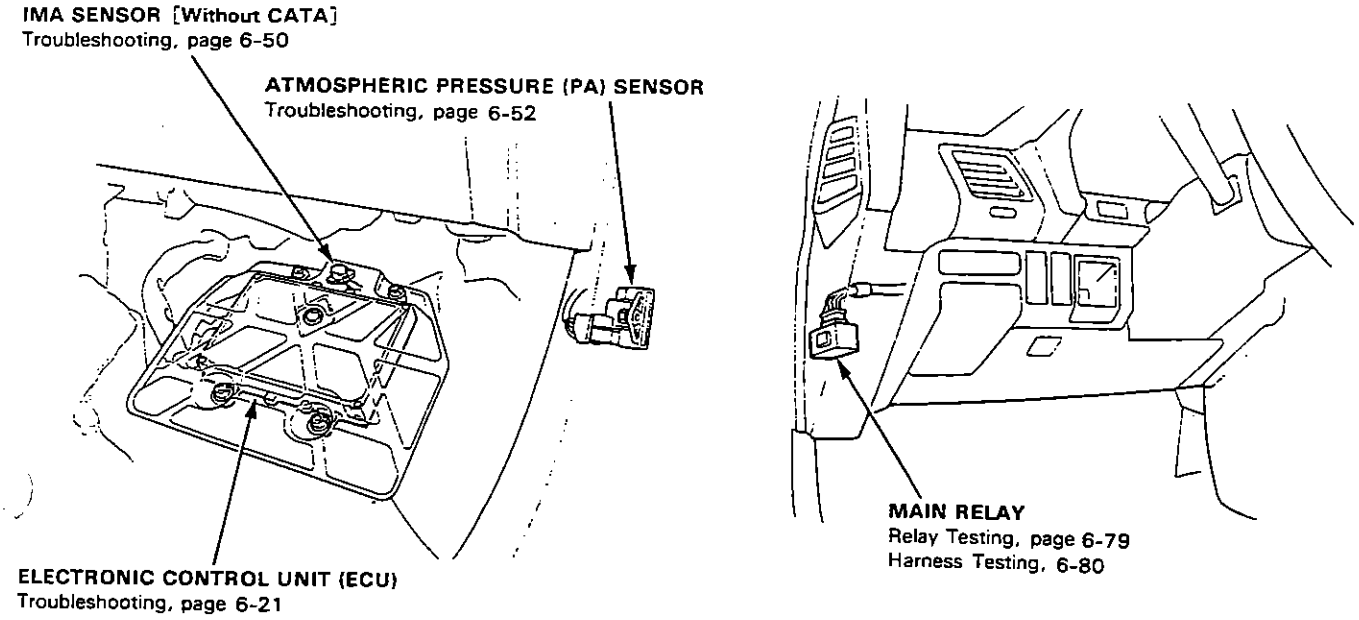
ɔOHC without CATA



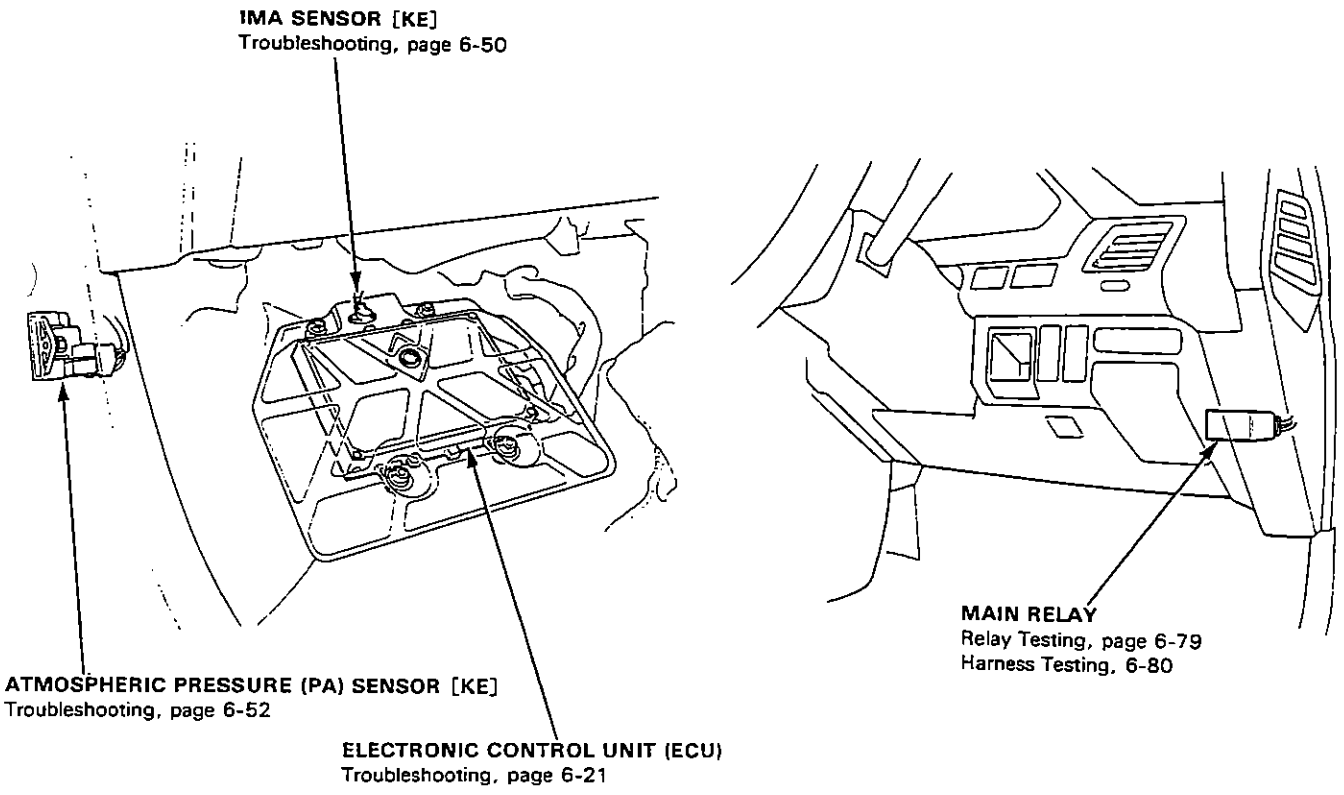
DOHC with CATA



LHD

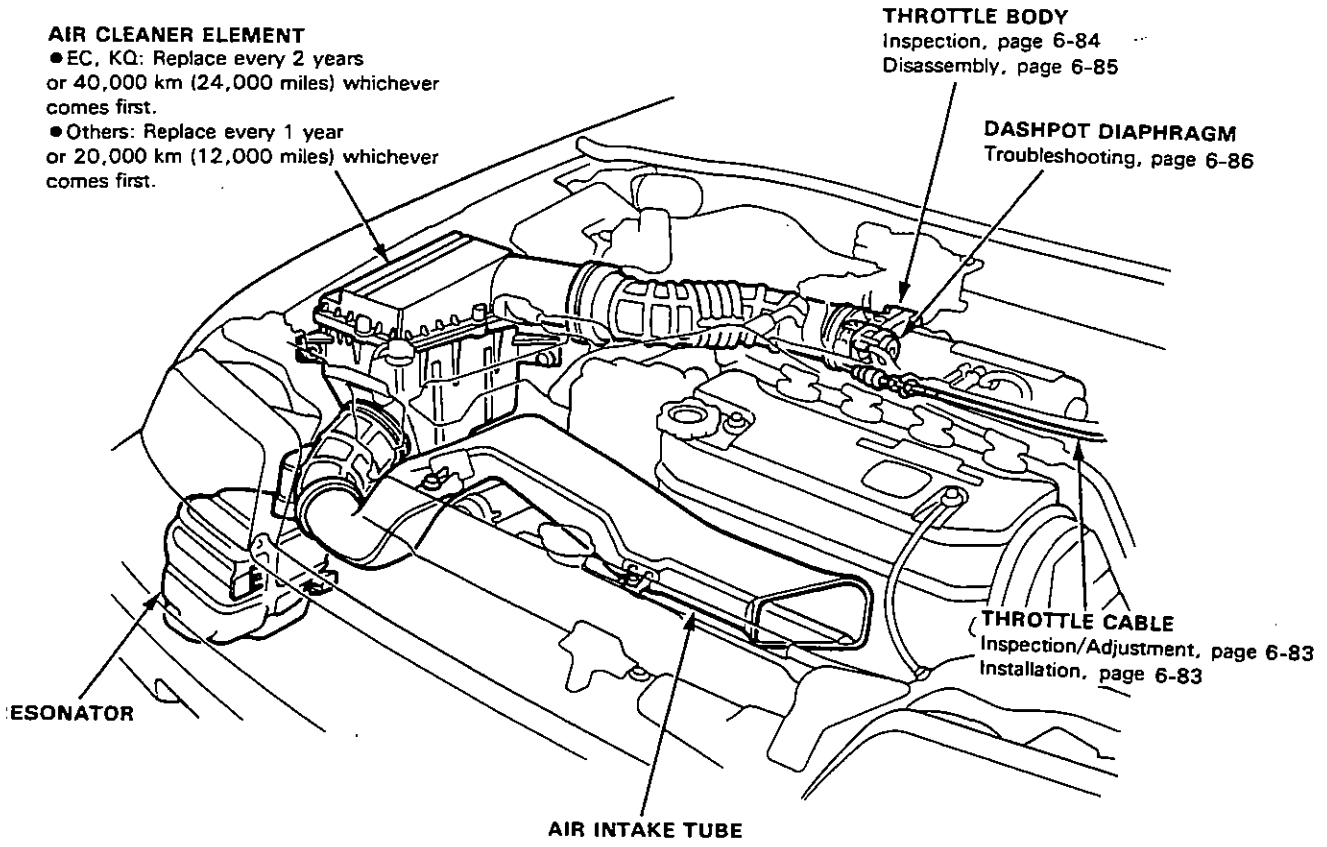

IMA SENSOR [Without CATA]
Troubleshooting, page 6-50
ATMOSPHERIC PRESSURE (PA) SENSOR
Troubleshooting, page 6-52
ELECTRONIC CONTROL UNIT (ECU)
Troubleshooting, page 6-21
MAIN RELAY
Relay Testing, page 6-79
Harness Testing, 6-80

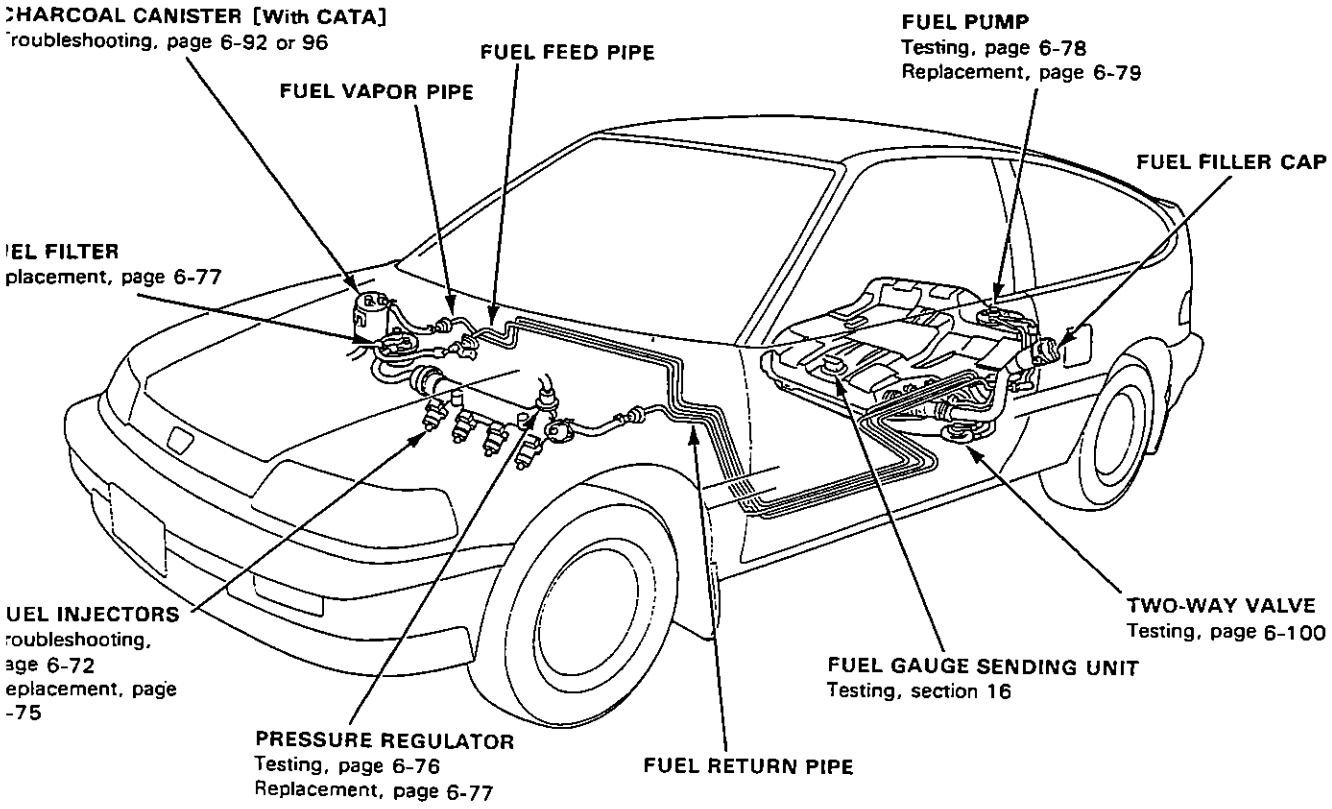
RHD


IMA SENSOR [KE]
Troubleshooting, page 6-50
ATMOSPHERIC PRESSURE (PA) SENSOR [KE]
Troubleshooting, page 6-52
ELECTRONIC CONTROL UNIT (ECU)
Troubleshooting, page 6-21
MAIN RELAY
Relay Testing, page 6-79
Harness Testing, 6-80

ɔmponent Locations

Index

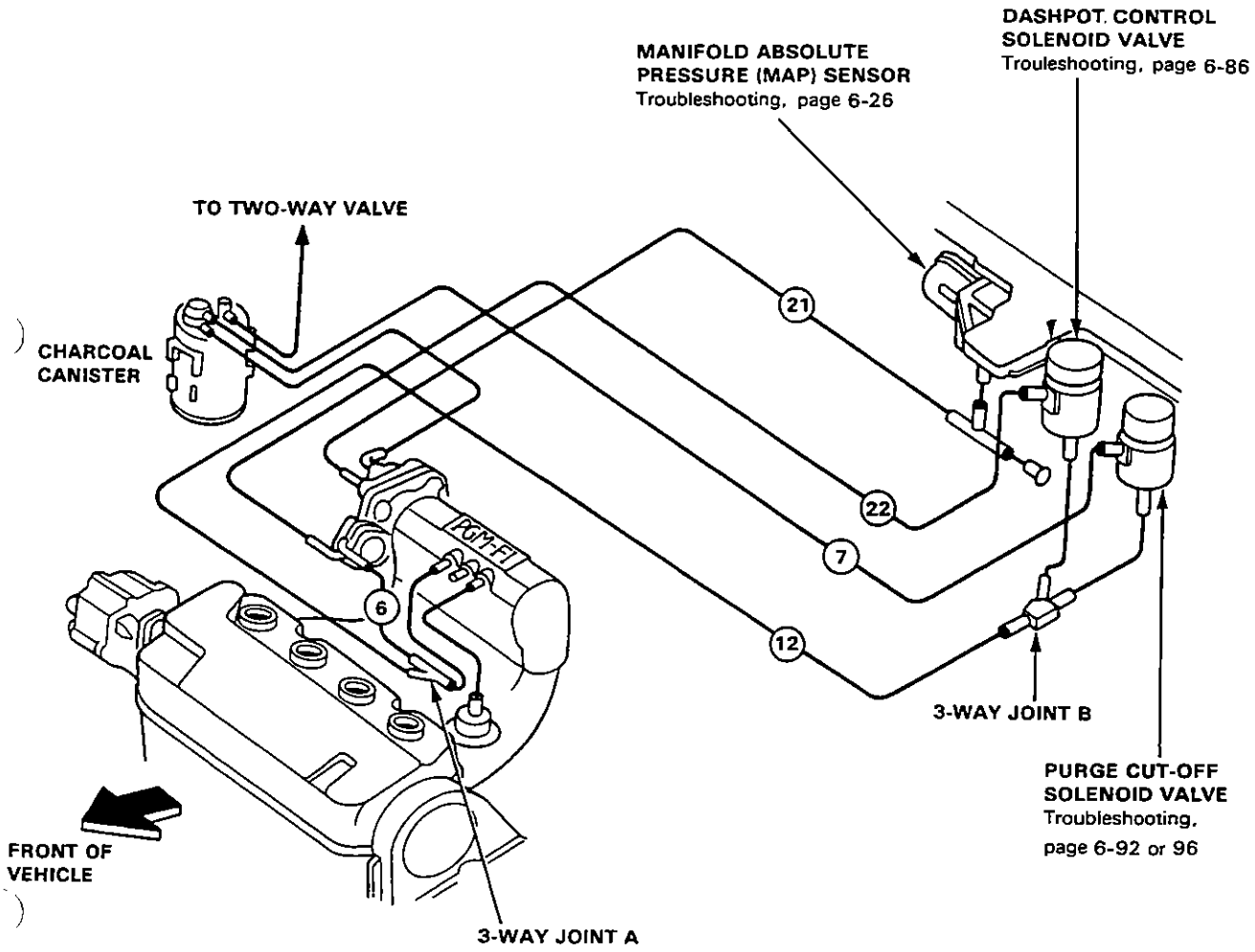




Vacuum Connections

With CATA

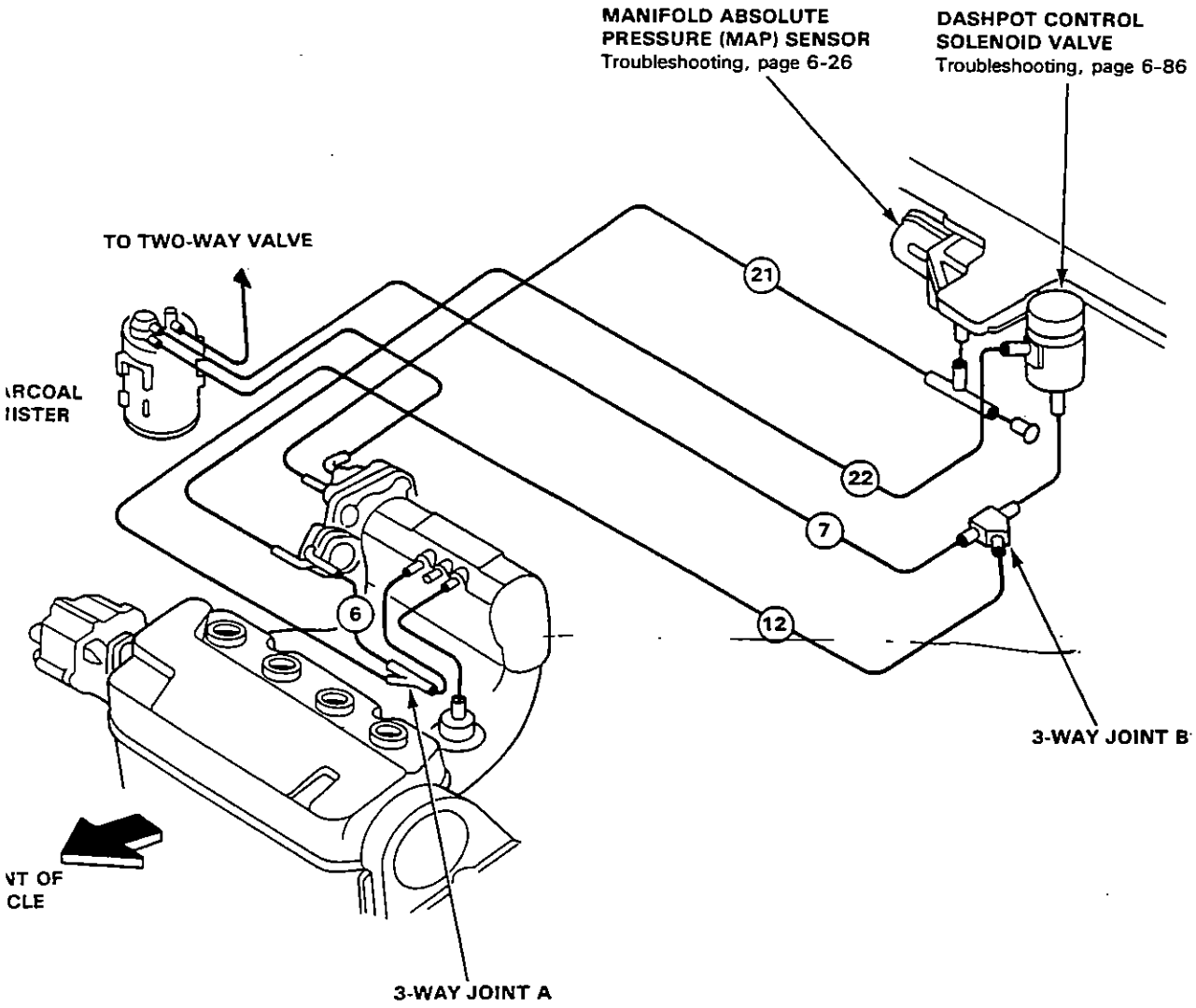
NOTE: The illustration is SOHC type. DOHC type is the same as of SOHC type, except for the cylinder head.



ystems Description

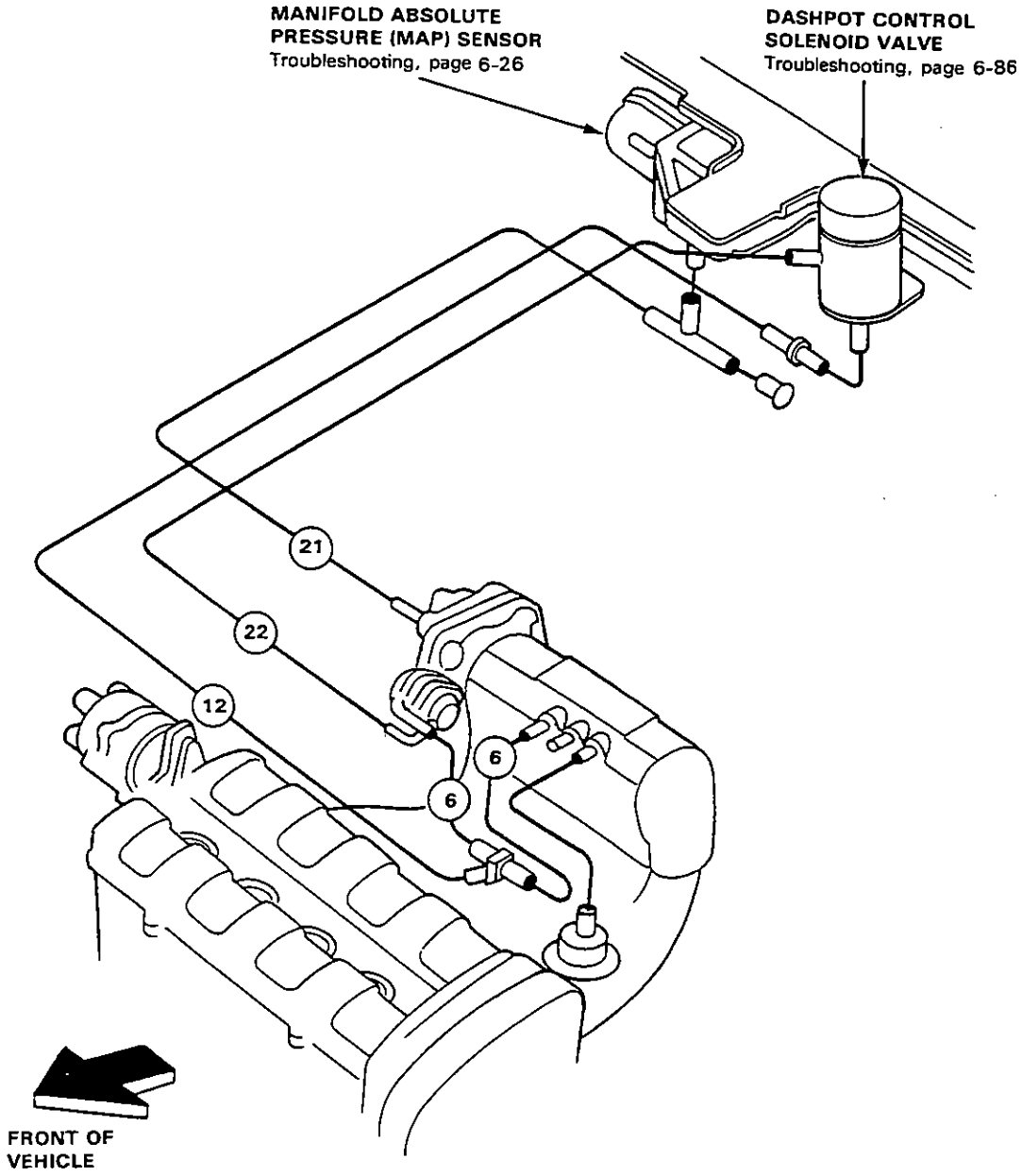
Vacuum Connections

KY



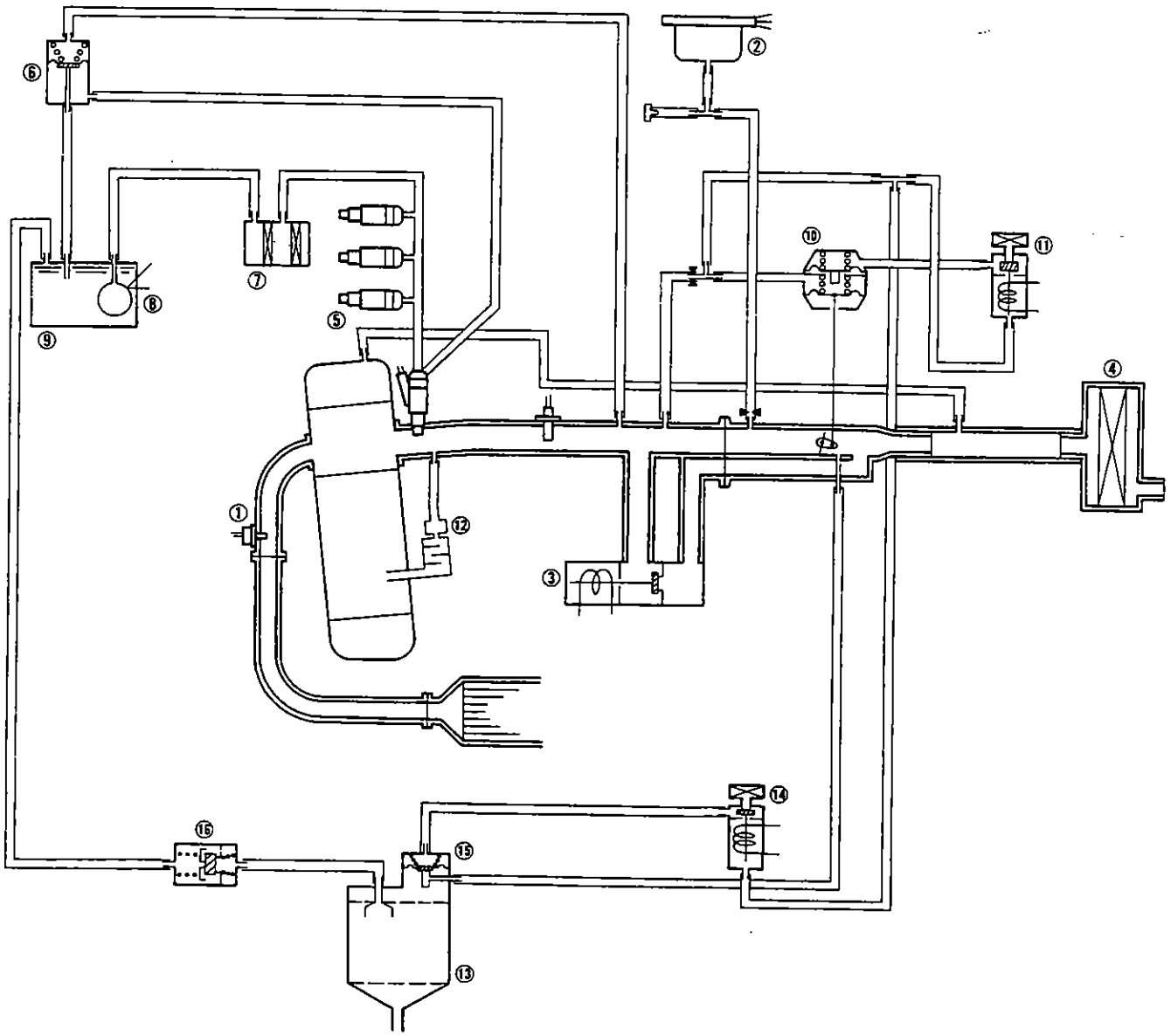
8

Without CATA Ex. KY



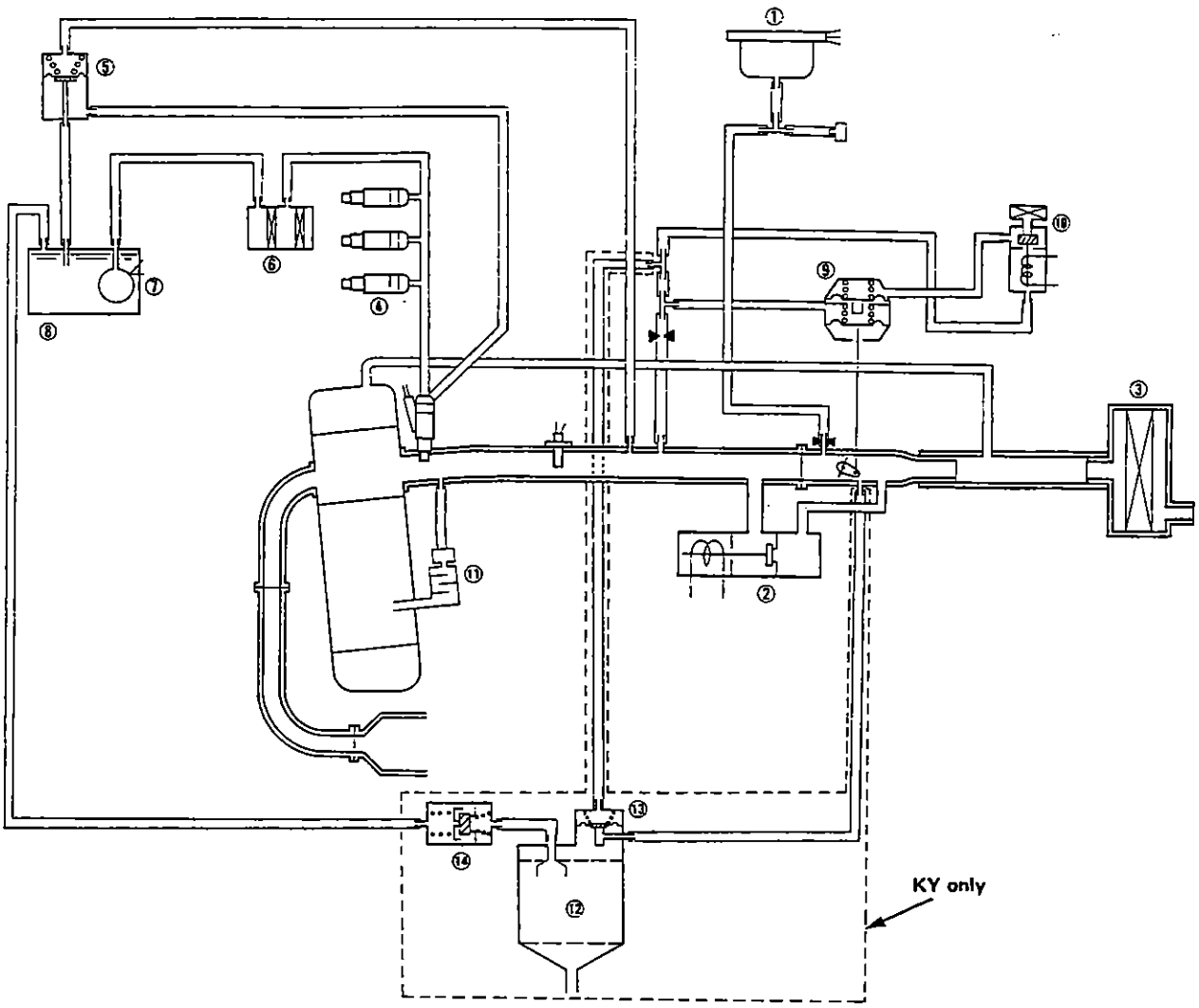
Systems Descriptions

Vacuum Connections [With CATA]



① OXYGEN (O_2) SENSOR
② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
③ ELECTRONIC AIR CONTROL VALVE (EACV)
④ AIR CLEANER
⑤ FUEL INJECTOR
⑥ PRESSURE REGULATOR
⑦ FUEL FILTER
⑧ FUEL PUMP
⑨ FUEL TANK
⑩ DASHPOT DIAPHRAGM
⑪ DASHPOT CONTROL SOLENOID VALVE
⑫ PCV VALVE
⑬ CHARCOAL CANISTER
⑭ PURGE CUT-OFF SOLENOID VALVE
⑮ PURGE CONTROL DIAPHRAGM VALVE
⑯ TWO-WAY VALVE

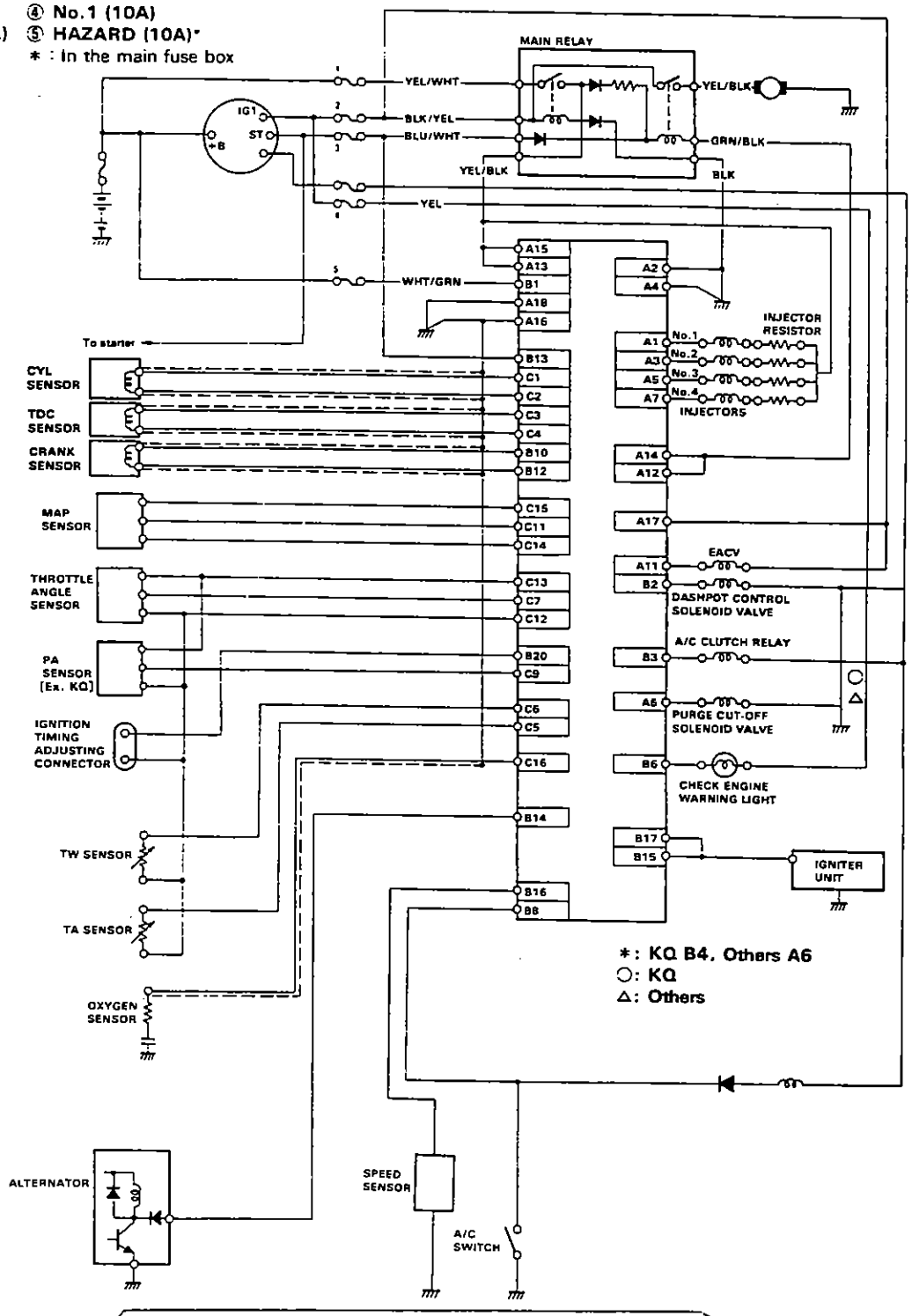
Vacuum Connections [Without CATA]

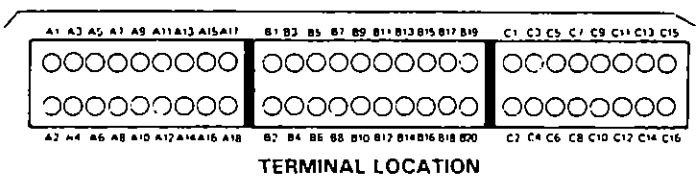


① MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
② ELECTRONIC AIR CONTROL VALVE (EACV)
③ AIR CLEANER
④ FUEL INJECTOR
⑤ PRESSURE REGULATOR
⑥ FUEL FILTER
⑦ FUEL PUMP
⑧ FUEL TANK
⑨ DASHPOT DIAPHRAGM
⑩ DASHPOT CONTROL SOLENOID VALVE
⑪ PCV VALVE
⑫ CHARCOAL CANISTER
⑬ PURGE CONTROL DIAPHRAGM VALVE
⑭ TWO-WAY VALVE

Electrical Connections [With CATA]

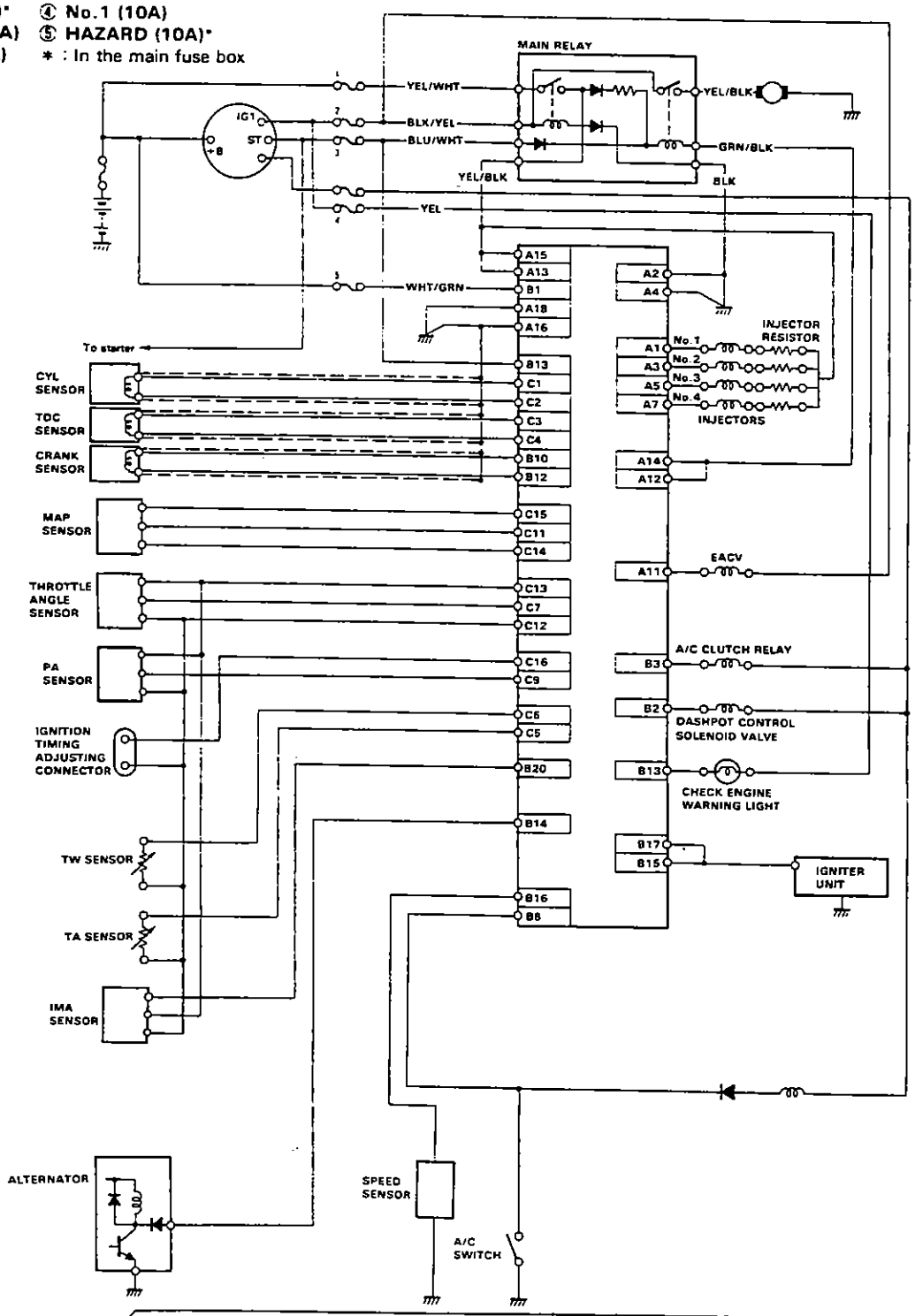
FUSES
① ECU (15A)* ④ No.1 (10A)
② No.14 (10A) ⑤ HAZARD (10A)*
③ No.2 (10A) * : In the main fuse box





TERMINAL LOCATION

FUSES
① ECU (15A)*
② No.14 (10A)
③ No.2 (10A)
④ No.1 (10A)
⑤ HAZARD (10A)*
* : In the main fuse box



TERMINAL LOCATION

roubleshooting

Troubleshooting Guide [With CATA]

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be nspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed it the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

PAGE / SYSTEM / SYMPTOM		PGM-FI							
		ECU	OXYGEN SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR
		21	24	26	32	46	36	42	44
CHECK ENGINE WARNING LIGHT TURNS ON		▭ or ⚙	K	K	K	K	K	K	K
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	①	③ or ⑤	④ or ⑧	⑨	④ or ⑧ or ⑨	⑥	⑦
ENGINE WON'T START		②							
DIFFICULT TO START ENGINE WHEN COLD		ⓑⓤ						①	
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	ⓑⓤ						②	
	ROUGH IDLE	ⓑⓤ		②					
	WHEN WARM IDLE SPEED TOO HIGH	ⓑⓤ							
	WHEN WARM IDLE SPEED TOO LOW	ⓑⓤ							
FREQUENT STALLING	WHILE WARMING UP	ⓑⓤ		③					
	AFTER WARMING UP	ⓑⓤ		③					
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING	ⓑⓤ		③					
	FAILS EMISSION TEST	ⓑⓤ		②					
	LOSS OF POWER	ⓑⓤ		③					②

If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

ⓑⓤ: When the Check Engine warning light and the self-diagnosis indicator are on, the back-up system is in operation. Substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

* : SOHC, ** : DOHC

PGM-FI				IDLE CONTROL		FUEL SUPPLY			
INTAKE AIR TEMPERATURE SENSOR	ATMOSPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELECTRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL INJECTOR	OTHER FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
48	52	54	56	61	59	72	70	82	89
									
⑩	⑬	⑮	⑰	⑭		⑯			
		③				②	①		
					②				
				①	②				
				③	①				
				②	①				
				①	②				
				①	②		③		
				①	②		③		
						②	①		
							①		
						③	①		

roubleshooting

Troubleshooting Guide [Without CATA]

IOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be ıspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed t the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

PAGE / SYSTEM / SYMPTOM		PGM-FI							
		ECU	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR
		21	26	32	46	36	42	44	48
CHECK ENGINE WARNING LIGHT TURNS ON		□ or ☼	K	K	K	K	K	K	K
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	③ or ⑤	④ or ⑧	⑨	④ or ⑧ or ⑨	⑥	⑦	⑩
ENGINE WON'T START		②							
DIFFICULT TO START ENGINE WHEN COLD		BU	③				①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	BU					②		
	ROUGH IDLE	BU	③						
	WHEN WARM IDLE SPEED TOO HIGH	BU							
	WHEN WARM IDLE SPEED TOO LOW	BU							
FREQUENT STALLING	WHILE WARMING UP	BU	③						
	AFTER WARMING UP	BU	③						
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	BU	②						
	FAILS EMISSION TEST	BU	②						
	LOSS OF POWER	BU	③					②	

If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

(BU): When the Check Engine warning light and the self-diagnosis indicator are on, the back-up system is in operation. Substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

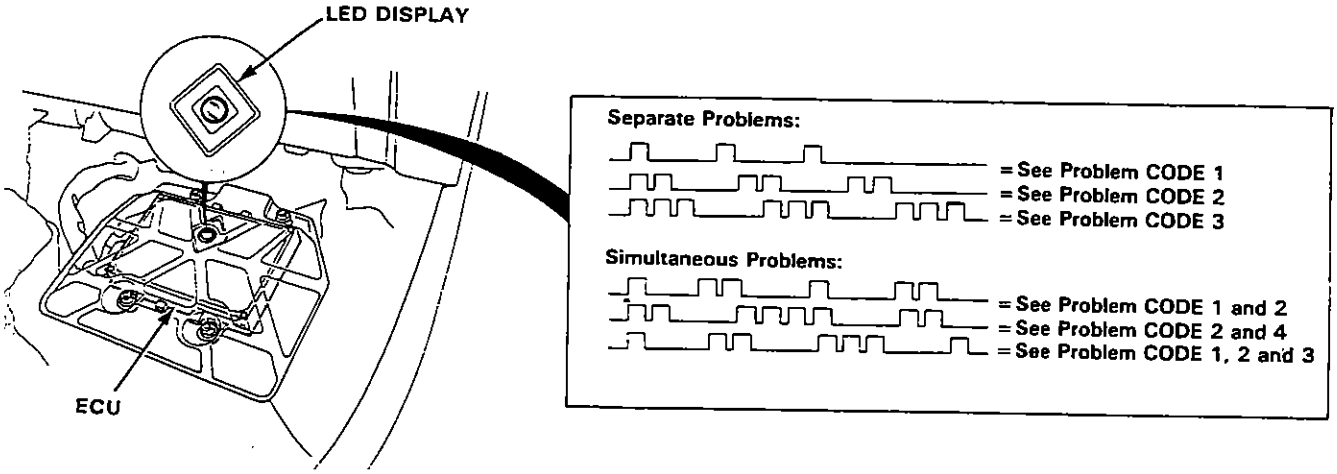
* : SOHC, ** : DOHC

PGM-FI				IDLE CONTROL				
IMA SENSOR	ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
50	52	54	56	61	59	70	82	89
								
⑪	⑬	⑮	⑰	⑭				
		②				①		
					②			
				①	②			
				③	①			
				②	①			
				①	②			
				①	②			
				①	②	③		
						①		
						①		
						①		

roubleshooting

Self-diagnostic Procedure

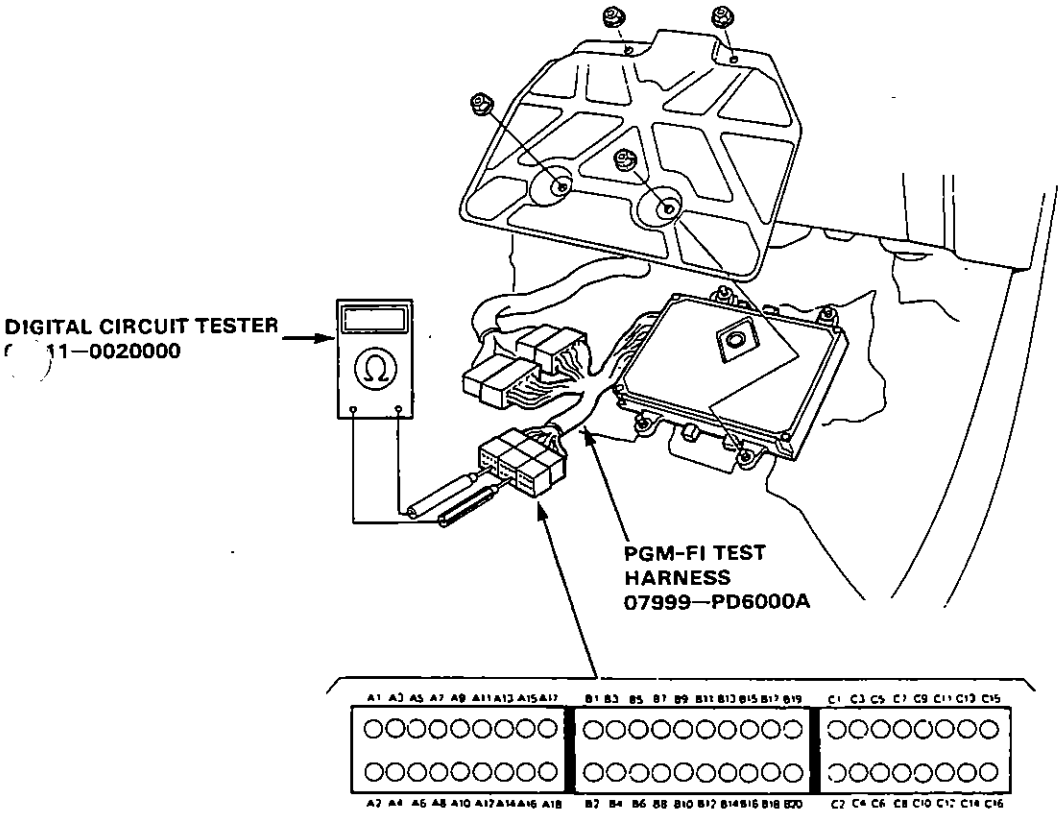
When the Check Engine warning light has been reported on, turn the ignition on, pull down the passenger's side carpet from under the dashboard and observe the LED on the top of the ECU. The LED indicates a system failure code by blinking frequency. The ECU LED can indicate any number of simultaneous component problems by blinking separate codes, one after another.



SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-21
1	OXYGEN CONTENT (With CATA)	6-24
3	MANIFOLD ABSOLUTE PRESSURE	6-26
5		6-30
4	CRANK ANGLE	6-32, 36
6	COOLANT TEMPERATURE	6-42
7	THROTTLE ANGLE	6-44
8	TDC POSITION	6-34, 38
9	No.1 CYLINDER POSITION	6-40, 46
10	INTAKE AIR TEMPERATURE	6-48
11	IMA (Without CATA)	6-50
13	ATMOSPHERIC PRESSURE (Ex. KQ)	6-52
14	ELECTRONIC AIR CONTROL	6-61
15	IGNITION OUTPUT SIGNAL	6-54
16	FUEL INJECTOR	6-72
17	VEHICLE SPEED SENSOR	6-56

codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these odes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.
he Check Engine warning light and ECU LED may come on, indicating an system problem, when, in fact, there is a poor or ıtermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.
the Check Engine warning light is on and LED stays on, replace the ECU.

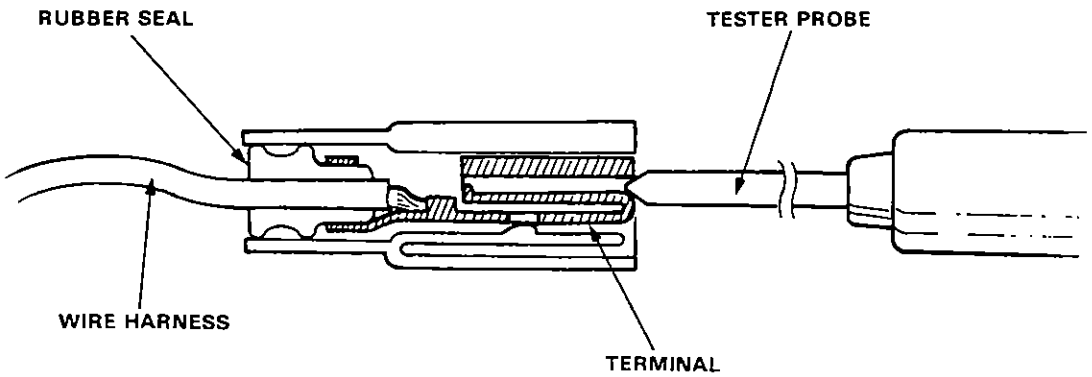
If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure described for the appropriate code(s) listed on the following pages.



TERMINAL LOCATION

CAUTION:

- **Puncturing the insulation on a wire can cause poor or intermittent electrical connections.**
- **For testing at connectors other than the PGM-FI test harness, 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.**



oubleshooting

How to Read Flowcharts

, flowchart is designed to be used from start to final repair. It's like a map showing you the shortest distance. But beware: if you o off the "map" anywhere but a "stop" symbol, ycu can easily get lost.

START (bold type) — Describes the conditions or situation to start a troubleshooting flowchart.

ACTION — Asks you to do something: perform a test, set up a condition, etc.

DECISION — Asks you about the result of an action by giving an "answer" and asking did you get the same answer: Yes or No.

STOP (bold type) — The end of a series of actions and decisions, describes a final repair action and sometimes directs you to an earlier part of the flow to confirm your repair.

OTE:

The term "Intermittent Failure" is used several times in these charts. It simply means a system may have had a failure, but it checks out OK through all your tests. You may need to road test the car to reproduce the failure or if the problem was a loose connection, you may have unknowingly solved it while doing the tests.

"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. In simple electronics, this usually means something won't work at all. In complex electronics (like ECUs), this can sometimes mean something works, but not the way it's supposed to.

If the electrical readings are not as specified when using the PGM-FI test harness, check the test harness connections before proceeding.

Check Engine warning light isn't on for two seconds after ignition is first turned on.

Is oil pressure warning light on ? NO → Inspect No. 1 fuse.

YES

Turn the ignition switch OFF.

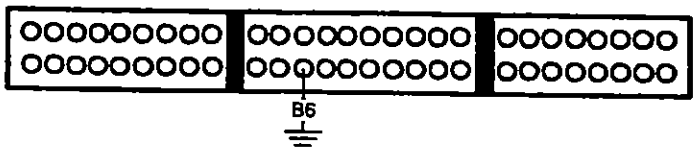
Is No. 1 fuse OK ? NO → Replace fuse.

YES

Repair open in YEL wire between No. 1 fuse and combination meter.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

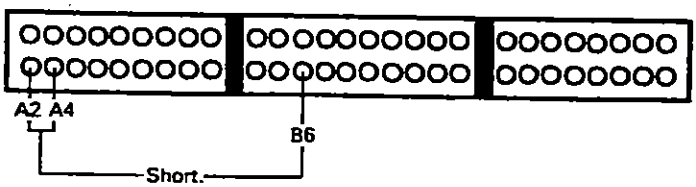
Connect B6 terminal to body ground.



Turn the ignition switch ON.

Is Check Engine warning light on ? NO →
- Replace warning light bulb.
- Repair open in GRN/ORN wire between ECU (B6) and combination meter.

YES



Connect the following terminals individually to B6: • A2, • A4

Is Check Engine warning light on ? NO →
- Repair open in BLK wire between ECU (A2) and G101.
- Repair open in BLK wire between ECU (A4) and G101.

YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

(cont'd)

Troubleshooting Flowchart ——— ECU (cont'd) ———

- Check Engine warning light is on.
- LED doesn't blink.

Connect the PGM-FI test harness between the ECU and connector (page 6-19). Disconnect "B" connector from ECU only, not the main wire harness.

Turn the ignition switch ON.

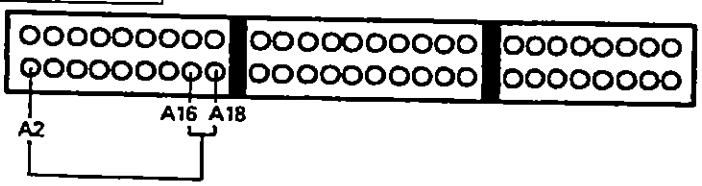
Does Check Engine warning light remain on ?

YES → Repair short to ground in GRN/ORN wire between ECU (B6) and combination meter.

NO

Reconnect "B" connector to ECU.

Connect following terminals individually to A2: • A16, • A18.

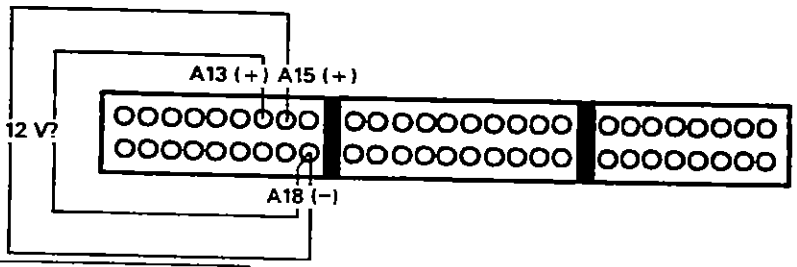


Is Check Engine warning light on ?

NO → - Repair open in BLK/RED wire between ECU (A18) and G101.
- Repair open in BRN/BLK wire between ECU (A16) and G101.

YES

Measure voltage between A13 (+), A15 (+) terminals and A18 (–) terminal.



Is there battery voltage ?

NO → - Repair open in YEL/BLK wire between ECU (A13, A15) and main relay.
- Check main relay and wiring connectors at main relay (page 6-79).

YES

(To page 6-23)

(From page 6-22)

Turn the ignition switch OFF.

Disconnect the 3P connector of each sensor one at a time:
- MAP sensor
- Throttle angle sensor
- PA sensor (Ex. KQ)
- IMA sensor (Without CATA)

Start the engine.

Does LED indicate the CODE for the sensor disconnected ?

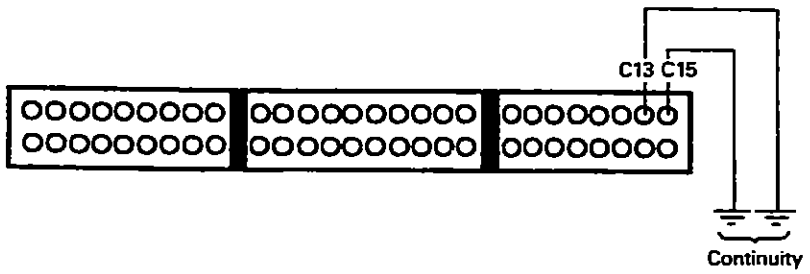
NO → **Replace the sensor that did not cause the CODE to appear upon its disconnection.**

YES

Reconnect all connectors.

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19). Disconnect "C" connector from ECU only, not the main wire harness.



Check for continuity between the body ground and the following terminals individually: • C13 • C15

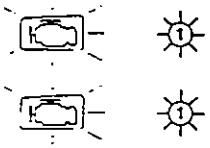
Does continuity exist ?

YES → **- Repair short to ground in YEL/RED wire between ECU (C15) and MAP sensor.**
- Repair short to ground in YEL/WHT wire between ECU (C13) and PA sensor (Ex. KQ) or throttle angle sensor.
- Repair short to ground in YEL/WHT wire between ECU (C13) and IMA sensor (Without CATA)

NO

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

Troubleshooting Flowchart —— Oxygen Sensor [With CATA] ——



Self-diagnosis LED blinks once: A problem in the Oxygen (O_2) Sensor circuit.

– Check Engine warning light has been reported on.
– LED indicates CODE 1.

↓

Turn the ignition switch OFF.

↓

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

↓

Inspect pressure regulator (page 6-76).

↓

Is it normal ? — NO → **Replace the pressure regulator (page 6-77).**

YES ↓

Warm up engine to normal operating temperature (cooling fan comes on).

↓

Hold engine at 1500 min^{-1} (rpm) for 15 minutes.
NOTE: Do not close throttle completely during this time.

↓

Is Check Engine warning light on ?
Does LED indicate CODE 1 ? — NO → **Intermittent failure (test drive may be necessary).**

YES ↓

(To page 6-25)

(From page 6-24)

Disconnect engine wire harness from O_2 sensor.

Warm up engine to normal operating temperature again, then open the throttle wide open then close it.

Measure voltage between the connector terminal and body ground.

Is voltage above 0.6V during wide open acceleration? Is voltage below 0.4V during closed throttle deceleration from 5,000 min^{-1} (rpm)?

NO → Replace O_2 sensor.

YES

Stop engine.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Restart and warm up engine to normal operating temperature, then open the throttle wide open then close it.

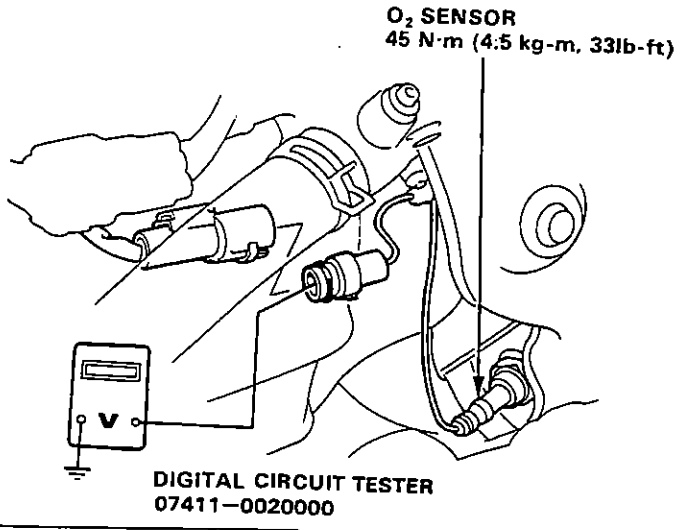
Measure voltage between C16 (+) and A18 (–) terminals.

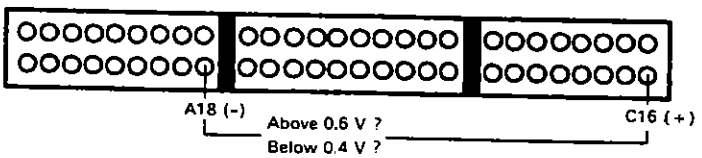
Is voltage above 0.6V during wide open acceleration? Is voltage below 0.4V during closed throttle deceleration from 5,000 min^{-1} (rpm)?

NO → Repair short or open in WHT wire between ECU (C16) and O_2 sensor.

YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.





Troubleshooting Flowchart —— MAP Sensor

Self-diagnosis LED indicator blinks three times: Most likely an electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

Self-diagnosis LED indicator blinks five times: Most likely a mechanical problem (broken hose) in the Manifold Absolute Pressure (MAP) Sensor system.

- **Engine is warm and running.**
- **Check Engine warning light is on.**
- **LED indicates CODE 3.**

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start the engine and allow to idle.

Is Check Engine warning light on ?
Does LED indicate CODE 3 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

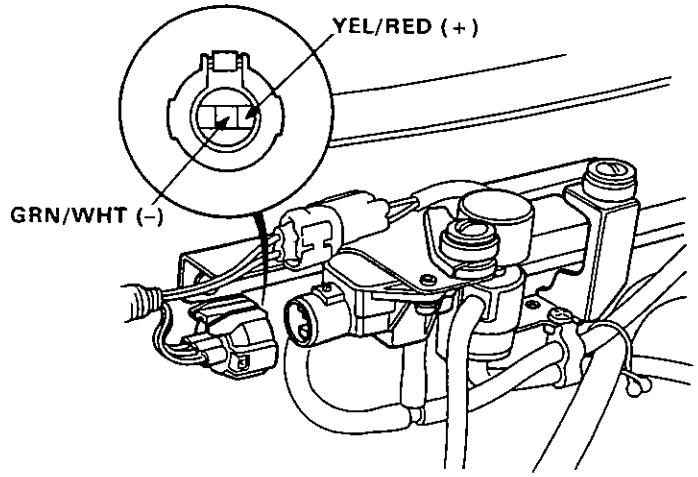
Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

Measure voltage between YEL/RED (+) terminal and GRN/WHT (-) terminal.

(To page 6-27)



(From page 6-26)

Is there approx. 5 V ?

NO

Measure voltage between YEL/RED (+) terminal and body ground.

Is there approx. 5 V ?

YES

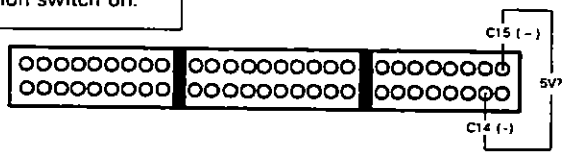
Repair open in GRN/WHT wire between ECU (C14) and MAP sensor.

NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Measure voltage between C15 (+) terminal and C14 (–) terminal with the ignition switch on.



YES

Repair open in YEL/RED wire between ECU(C15) and MAP sensor.

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

Measure voltage between WHT (+) terminal and GRN/WHT (–) terminal.

Is there approx. 5 V ?

NO

Turn the ignition switch OFF.

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Connect the PGM-FI test harness between the ECU and connector (page 6-149).

Turn the ignition switch ON.

(To page 6-28)

(To page 6-28)

(cont'd)

- Troubleshooting Flowchart ——— MAP Sensor (cont'd) ———

(From page 6-27)

Reconnect the 3P connector.

Turn the ignition switch ON.

Measure voltage between C11 (+) terminal and C14 (–) terminal.

Is there approx. 3 V ?

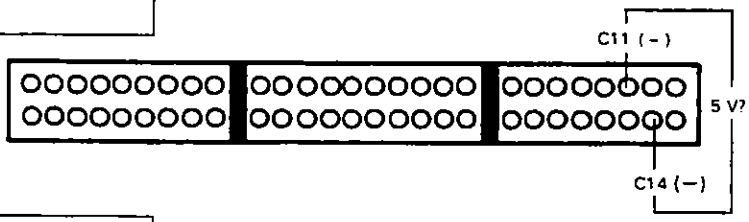
NO → **Replace MAP sensor.**

YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

(From page 6-27)

Measure voltage between C11 (+) terminal and C14 (–) terminal.

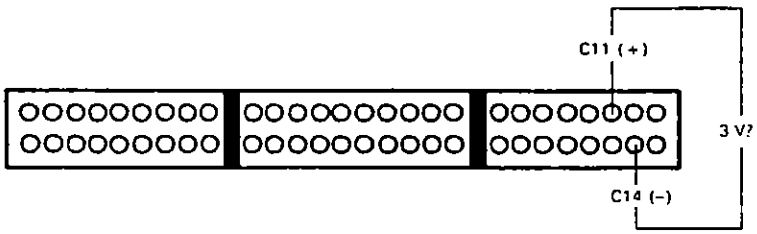


Is there approx. 5 V ?

YES → **Repair open in WHT wire between ECU (C11) and MAP sensor.**

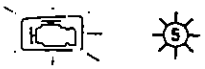
NO

Repair short in WHT wire between ECU (C11) and MAP sensor.





— Troubleshooting Flowchart —— MAP Sensor (cont'd) ——



- Check Engine warning light has been reported on.
- LED indicates CODE 5.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start the engine.

Is Check Engine warning light on ?
Does LED indicate CODE 5 ?

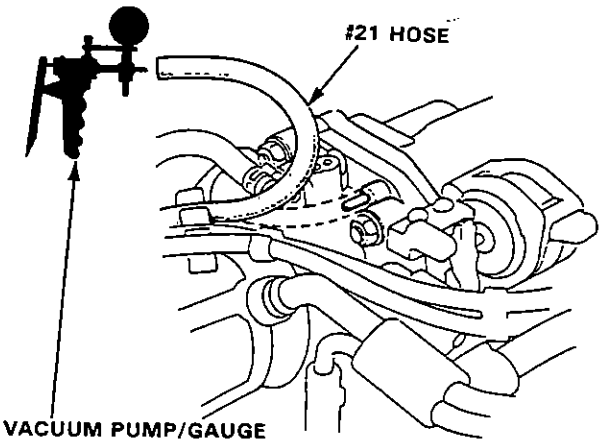
NO

- Make sure all connectors are secure.
- Check vacuum hoses, pipes, and connections.
- Intermittent failure (test drive may be necessary).

YES

Stop engine.

Connect vacuum pump to #21 hose and apply vacuum.



Does it hold vacuum?

NO

Connect a vacuum pump to the MAP sensor and apply vacuum.

YES

Does it hold vacuum?

NO

Replace MAP sensor.

YES

Replace #21 hose.

Disconnect #21 hose from the throttle body and connect a T-fitting from a vacuum gauge between the throttle body and MAP sensor.

(To page 6-31)

(From page 6-30)

Start engine.

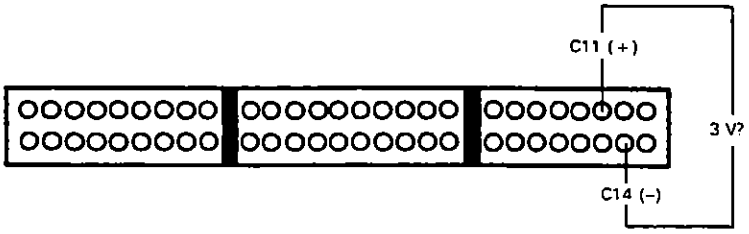
Is there vacuum? NO → -Remove restriction from throttle body. -Replace throttle body.

YES

Stop engine.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.



Measure voltage between C11 (+) terminal and C14 (-) terminal.

Is there approx. 3 V ? NO → Inspect for an open in WHT wire between the MAP sensor and ECU. If wire is OK, replace the MAP sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — TDC/CRANK Sensor [DOHC]

Self-diagnosis LED indicator blinks four times: A problem in the CRANK circuit of the TDC/CRANK Sensor.

Self-diagnosis LED indicator blinks eight times: A problem in the TDC circuit of the TDC/CRANK Sensor.

– Check Engine warning light has been reported on.
– LED indicates CODE 4.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on ?
Does LED indicate CODE 4 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect 6P connector from the TDC/CRANK sensor.

Measure resistance between D terminal and E terminal.

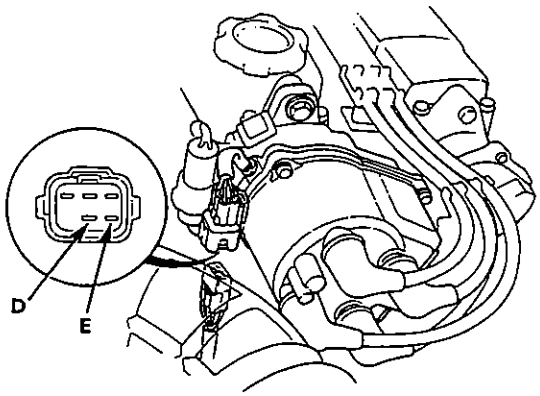
Is there 350–550 Ω ?

NO → **Replace the distributor assembly (section 16).**

YES

Check for continuity to body ground on D terminal and E terminal individually.

(To page 6-33)



(From page 6-32)

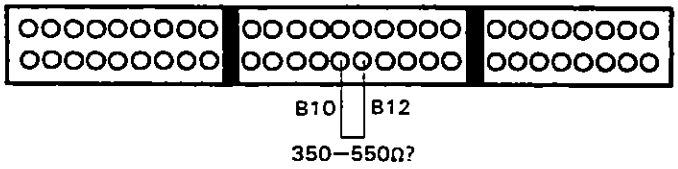
Does continuity exist ?

YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-19).



Measure resistance between B10 terminal and B12 terminal.

Is there 350–550 Ω ?

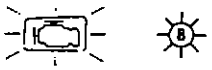
NO → **Repair open in ORN and/or WHT wires.**

YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

(cont'd)

- Troubleshooting Flowchart —— TDC/CRANK sensor [DOHC] ——



- Check Engine warning light has been reported on.
- LED indicates CODE 8.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on ?
Does LED indicate CODE 8 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect the 6P connector from the TDC/CRANK sensor.

Measure resistance between B terminal and C terminal.

Is there 350—550 Ω ?

NO → **Replace the distributor assembly (section 16).**

YES

Check for continuity to body ground on B terminal and C terminal individually.

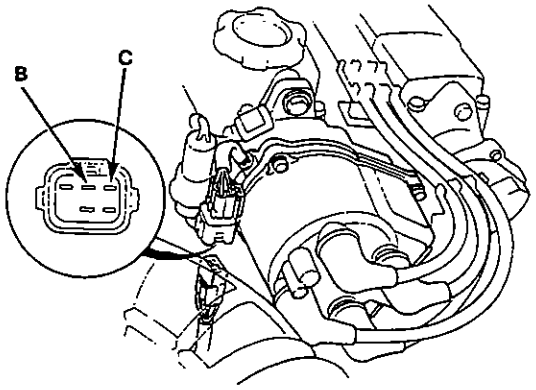
Does continuity exist ?

YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

(To page 6-35)



(From page 6-34)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-19).

Measure resistance between C3 terminal and C4 terminal.

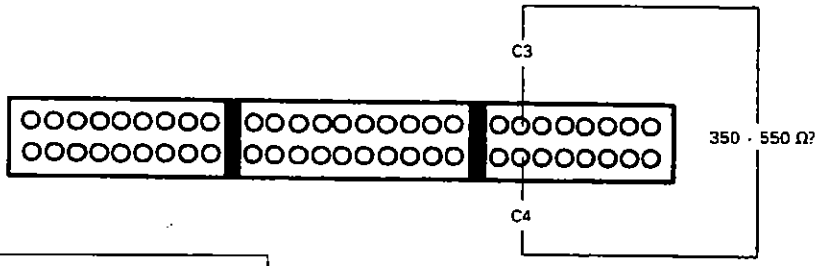
Is there 350 — 550 Ω ?

NO

Repair open in ORN/BLU and/or WHT/BLU wires.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



—Troubleshooting Flowchart —— TDC/CRANK/CYL Sensor [SOHC] ——

Self-diagnosis LED indicator blinks four times: A problem in the CRANK circuit of the TDC/CRANK/CYL Sensor.

Self-diagnosis LED indicator blinks eight times: A problem in the TDC circuit of the TDC/CRANK/CYL Sensor.

Self-diagnosis LED indicator blinks nine times: A problem in the CYL circuit of the TDC/CRANK/CYL Sensor.

- Check Engine warning light has been reported on.
- LED indicates CODE 4.

↓

Turn the ignition switch OFF.

↓

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

↓

Start engine.

↓

Is Check Engine warning light on?
Does LED indicate CODE 4 ?

NO → **Intermittent failure (test drive may be necessary).**

YES ↓

Stop engine.

↓

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.

↓

Measure resistance between C terminal and D terminal.

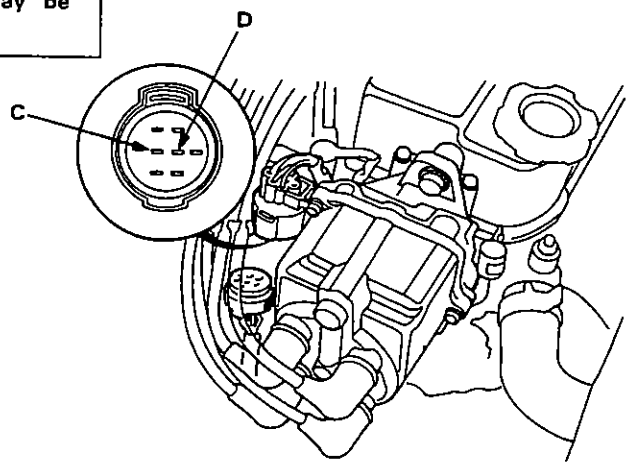
↓

Is there 350–550 Ω ?

NO → **Replace the distributor assembly (sectieon 16).**

YES ↓

(To page 6-37)



(From page 6-36)

Check for continuity to body ground on C terminal and D terminal individually.

Does continuity exist ?

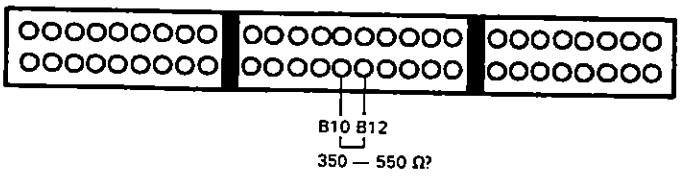
YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-19).

Measure resistance between B10 terminal and B12 terminal.



Is there 350–550 Ω ?

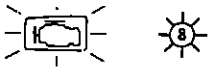
NO → **Repair open in ORN and/or WHT wires.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(cont'd)

— Troubleshooting Flowchart —— TDC/CRANK/CYL sensor [SOHC] ——



- Check Engine warning light has been reported on.
- LED indicates CODE 8.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

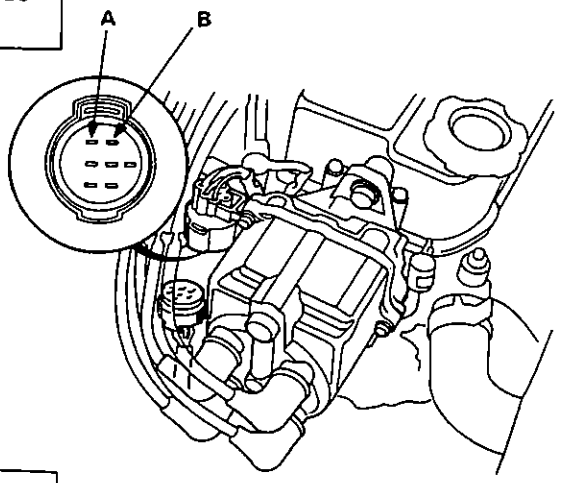
Is Check Engine warning light on?
Does LED indicate CODE 8 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.



Measure resistance between A terminal and B terminal.

Is there 350—550 Ω ?

NO → **Replace the distributor assembly (section 16).**

YES

Check for continuity to body ground on A terminal and B terminal individually.

Does continuity exist ?

YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

(To page 6-39)

(From page 6-38)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-19).

Measure resistance between C3 terminal and C4 terminal.

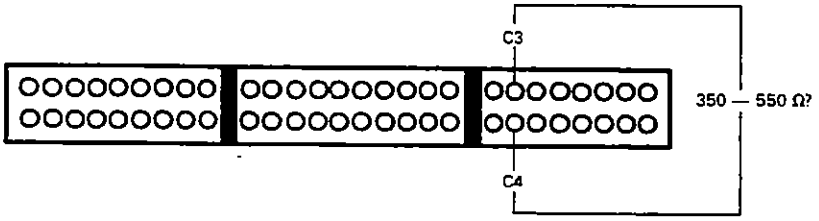
Is there 350 — 550 Ω ?

NO

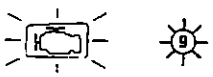
Repair open in ORN/BLU and/or WHT/BLU wires.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



— Troubleshooting Flowchart —— TDC/CRANK/CYL Sensor [SOHC] ——



- Check Engine warning light has been reported on.
- LED indicates CODE 9.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

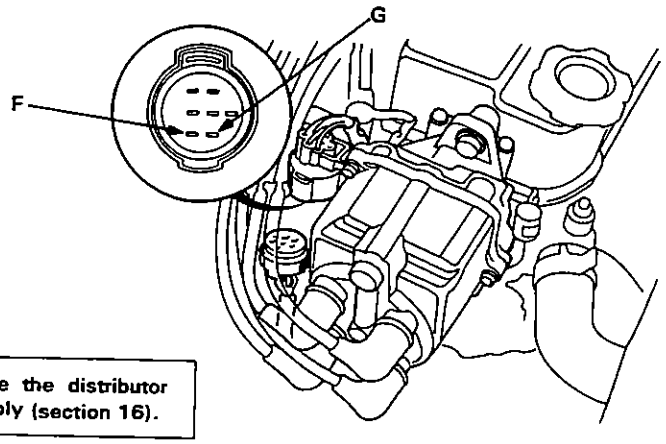
Is Check Engine warning light on?
Does LED indicate CODE 9 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.



Measure resistance between F terminal and G terminal.

Is there 350—550 Ω ?

NO → **Replace the distributor assembly (section 16).**

YES

Check for continuity to body ground on F terminal and G terminal individually.

Does continuity exist ?

YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

(To page 6-41)

(From page 6-40)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-19).

Measure resistance between C1 terminal and C2 terminal.

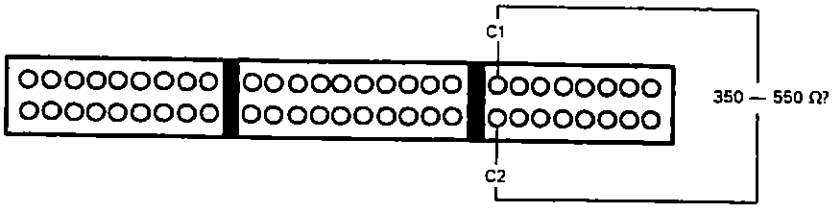
Is there 350 — 550 Ω ?

NO

Repair open in BLU/GRN and/or BLU/YEL wires.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



—Troubleshooting Flowchart —— TW Sensor

Self-diagnosis LED indicator blinks six times: Most likely a problem in the Coolant Temperature (TW) Sensor circuit.

– Check Engine warning light is on.
– LED indicates CODE 6.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on ?
Does LED indicate CODE 6 ?

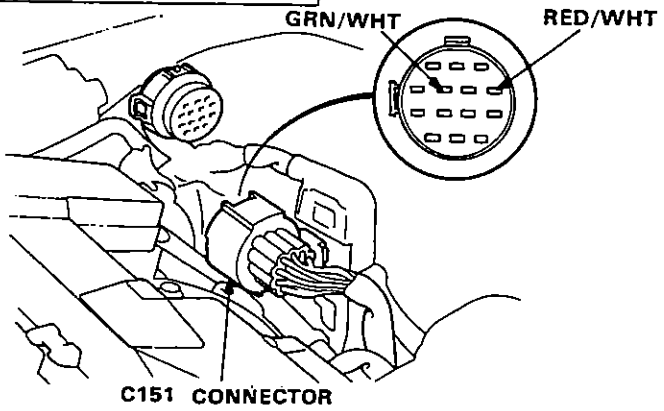
NO → **Intermittent failure. (test drive may be necessary).**

YES

Warm up engine to normal operating temperature (cooling fan comes on).

Disconnect C210 and C151 connectors.

Measure resistance between RED/WHT terminal and GRN/WHT terminal at C151 connector.

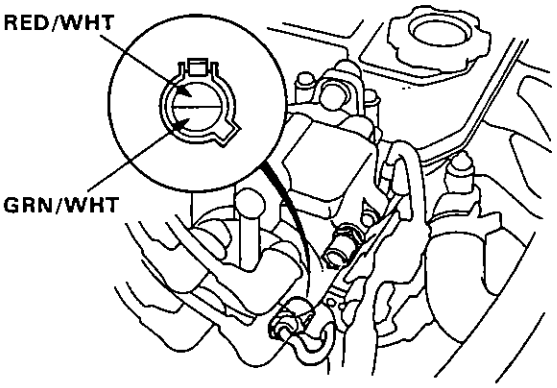


Is there 200—400 Ω ?

NO → **Inspect for open or short in RED/WHT or GRN/WHT wire between C151 connector and TW sensor. If wires are OK, replace TW sensor.**

YES

(To page 6-43)



(From page 6-42)

Reconnect C210 and C151 connectors, then disconnect the 2P connector from TW sensor.

Is there approx. 5V ?

NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

YES

Measure voltage between RED/WHT (+) terminal and GRN/WHT (–) terminal.

Is there approx. 5V ?

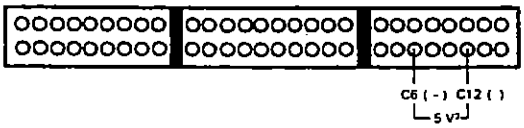
NO

Repair open in GRN/WHT wire between ECU (C12) and TW sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Measure voltage between C6 (+) terminal and C12 (–) terminal.



Is there approx. 5V ?

YES

Repair open in RED/WHT wire between ECU (C6) and TW sensor.

NO

Disconnect "C" connector from the main wire harness only, not the ECU.

Measure voltage between C6 (+) terminal and C12 (–) terminal.

Is there approx. 5V ?

YES

Repair short in RED/WHT wire between ECU (C6) and TW sensor.

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

PGM-FI Control System

—Troubleshooting Flowchart —— Throttle Angle Sensor ——————

Self-diagnosis LED indicator blinks seven times: Most likely a problem in the Throttle Angle Sensor circuit.

- **Engine is running**
- **Check Engine warning light is on**
- **LED indicates CODE 7**

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

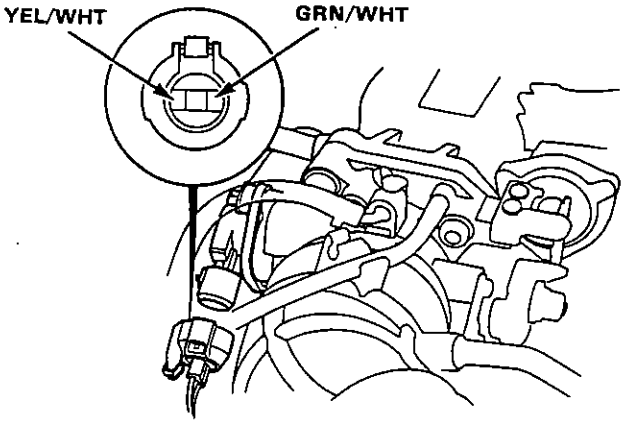
Is Check Engine warning light on?
Does LED indicate CODE 7 ?

NO → **Intermittent failure. (test drive may be necessary).**

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the throttle angle sensor.



Turn the ignition switch ON.

Measure voltage between YEL/WHT (+) terminal and GRN/WHT (–) terminal.

Is there approx. 5V ?

NO → Measure voltage between YEL/WHT (+) terminal and body ground.

YES

Turn the ignition switch OFF.

Reconnect the 3P connector.

(To page 6-45)

Is there approx. 5V ?

YES → **Repair open in GRN/WHT wire between ECU (C12) and throttle angle sensor.**

NO

Turn the ignition switch OFF.

(To page 6-45)

(From page 6-44)

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Measure voltage between C7(+) terminal and C12(–) terminal.

Is voltage approx. 0.5 V at full close throttle (applying vacuum to the dashpot diaphragm), and approx. 4.5 V at full open throttle? NOTE: There should be a smooth transition from 0.5 V to 4.5 V as the throttle is depressed.

NO

- **Replace throttle angle sensor.**
- **Repair open or short in RED/BLU wire between ECU (C7) and throttle angle sensor.**

YES

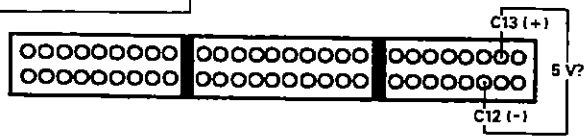
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(From page 6-44)

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Measure voltage between C13 (+) terminal and C12 (–) terminal.



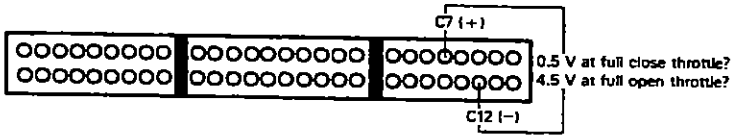
Is there approx. 5V ?

YES

Repair open in YEL/WHT wire between ECU(C13) and throttle angle sensor.

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.



PGM-FI Control System

Troubleshooting Flow Chart —— CYL Sensor [DOHC]

Self-diagnosis LED indicator blinks nine times: A problem in the CYL sensor.

–Check Engine warning light has been reported on.
–LED indicates CODE 9.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on? Does LED indicate CODE 9?

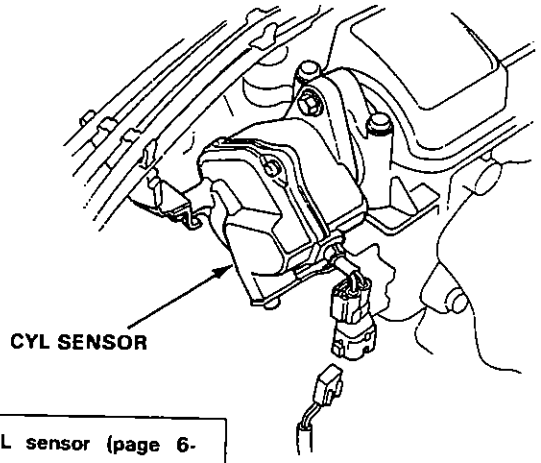
NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect the 2P connector from the CYL sensor.

Measure resistance between 2 terminals on the CYL sensor.



Is there 700—1,000 Ω?

NO → **Replace CYL sensor (page 6-57).**

YES

Check for continuity to body ground on the 2 terminals individually.

Does continuity exist?

YES → **Replace CYL sensor (page 6-57).**

NO

(To page 6-47)

(From page 6-46)

Reconnect the connector.

Connect the PGM-FI test harness only to the wire harness, but not to the ECU (page 6-19).

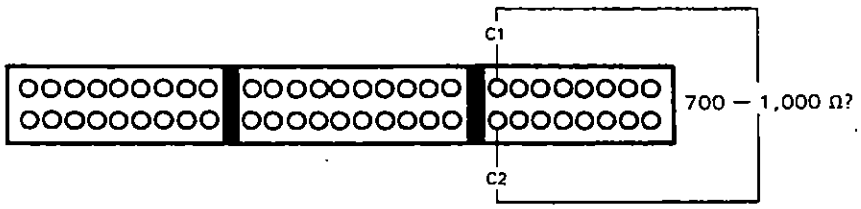
Measure resistance between C1 terminal and C2 terminal.

Is there 700—1,000 Ω?

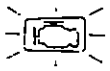
NO → **Repair open in BLU/GRN and/or BLU/YEL wires.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



—Troubleshooting Flowchart —— TA Sensor ——————————




Self-diagnosis LED indicator blinks ten times: Most likely a problem in the Intake Air Temperature (TA) Sensor circuit.




– Check Engine warning light is on.
– LED indicates CODE 10

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on?
Does LED indicate CODE 10 ?

NO → **Intermittent failure (test drive may be necessary).**

YES

Disconnect the 2P connector from the TA sensor.

Measure resistance between the 2 terminals on the TA sensor.

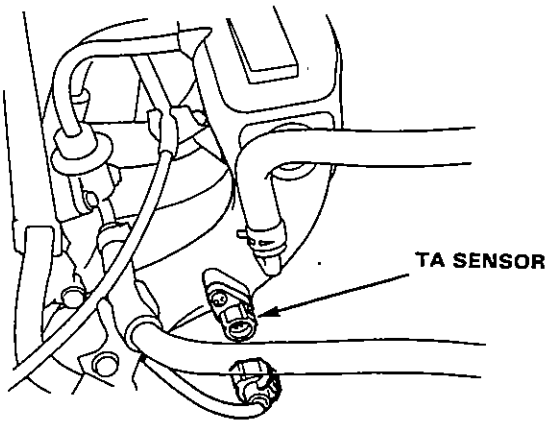
Is there 1–4 kΩ ?

NO → **Replace TA sensor.**

YES

Measure voltage between RED/YEL (+) terminal and body ground.

(To page 6-49)



(From page 6-48)

Is there approx. 5 V ?

NO

Turn the ignition switch OFF.

YES

Measure voltage between RED/YEL (+) terminal and GRN/WHT (–) terminal.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Is there approx. 5 V ?

NO

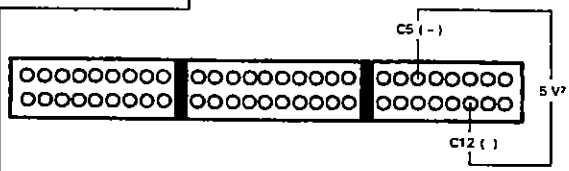
Repair open in GRN/WHT wire between ECU (C12) and TA sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Turn the ignition switch ON.

Measure voltage between C5 (+) terminal and C12 (–) terminal.



Is there approx. 5 V ?

YES

Repair open in RED/YEL wire between ECU (C5) and TA sensor.

NO

Disconnect "C" connector from the main wire harness only, not the ECU.

Measure voltage between C5 (+) terminal and C12 (–) terminal.

Is there approx. 5 V ?

YES

Repair short in RED/YEL wire between ECU (C5) and TA sensor.

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

PGM-FI Control System

–Troubleshooting Flow Chart —— IMA Sensor [Without CATA] ——

Self-diagnosis LED indicator blinks eleven times: Most likely a problem in the IMA Sensor circuit.

–Check Engine warning light is on.
–LED indicates CODE 11.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch ON.

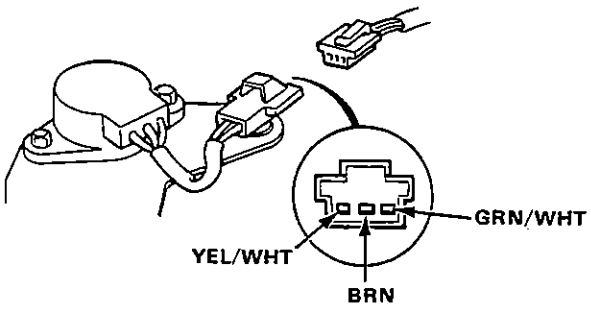
Is Check Engine warning light on? Does LED indicate CODE 11?

NO → **Intermittent failure (test drive may be necessary).**

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the IMA sensor.



Measure resistance between YEL/WHT terminal and GRN/WHT terminal on IMA sensor harness.

Is there 4—6 kΩ?

NO → **Replace IMA sensor.**

YES

Measure resistance between YEL/WHT and BRN terminals and between GRN/WHT and BRN terminals.

Does the sum of the two resistance checks equal 4—6 kΩ?

NO → **Replace IMA sensor.**

YES

(To page 6-51)

(From page 6-50)

Turn the ignition switch ON.

Measure voltage between YEL/WHT (+) terminal and GRN/WHT (−) terminal on the wire harness.

Is there approx. 5V? NO

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

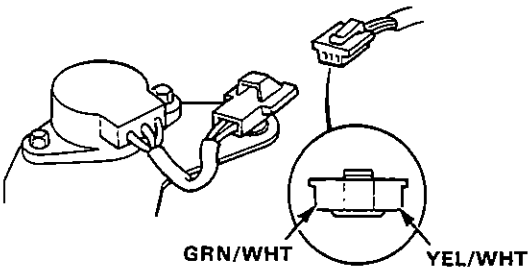
Measure voltage between B20 (+) terminal and C12 (−) terminal.

Is voltage 0.5—4.5V? NO

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Repair open or short in BRN wire between ECU (B20) and IMA sensor.



Measure voltage between YEL/WHT (+) terminal and body ground.

Is there approx. 5V? YES

NO

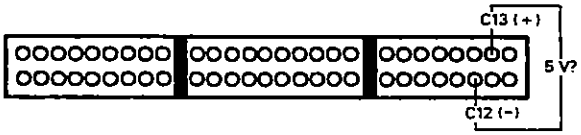
Repair ope in GRN/WHT wire between ECU (C12) and IMA sensor.

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Measure voltage between C13 (+) terminal and C12 (−) terminal.



Is there approx. 5V? YES

NO

Repair open in YEL/WHT wire between ECU (C13) and IMA sensor.

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

PGM-FI Control System

—Troubleshooting Flowchart —— PA Sensor [Ex. KΩ] ——————————

Self-diagnosis LED indicator blinks thirteen times: A problem in the Atmospheric Pressure (PA) Sensor circuit.

– Check Engine warning light is on.
– LED indicates CODE 13.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on ?
Does LED indicate CODE 13 ?

NO → **Intermittent failure (test drive may be necessary).**

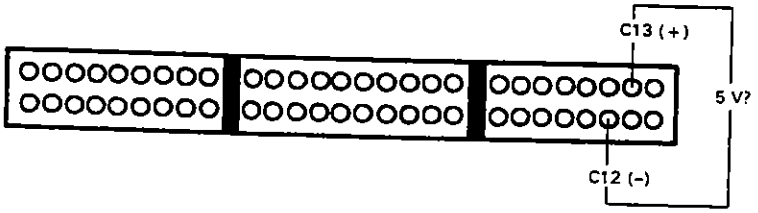
YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Measure voltage between C13 (+) terminal and C12 (–) terminal.

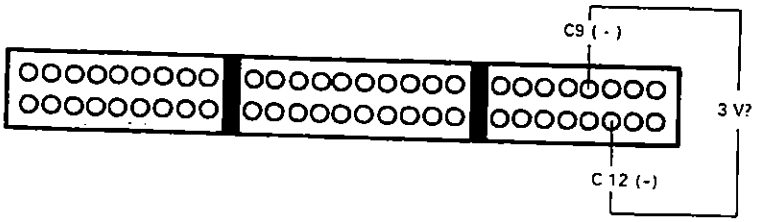


Is there approx. 5V ?

NO → **Substitute a known-good ECU and re-check. If prescribed voltage is now available replace the original ECU.**

YES

Measure voltage between C9 (+) terminal and C12 (–) terminal.



(To page 6-53)

(From page 6-52)

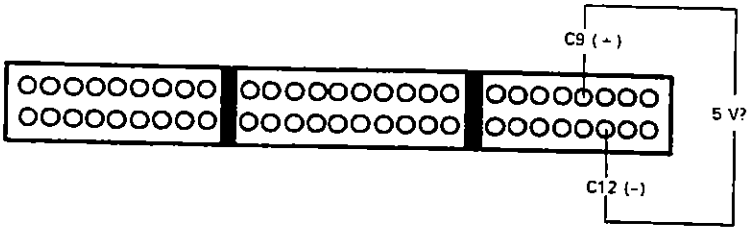
Is there approx. 3V ?

YES → Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

NO

Disconnect the main wire harness from PA sensor.

Measure voltage between C9 (–) terminal and C12 (–) terminal.

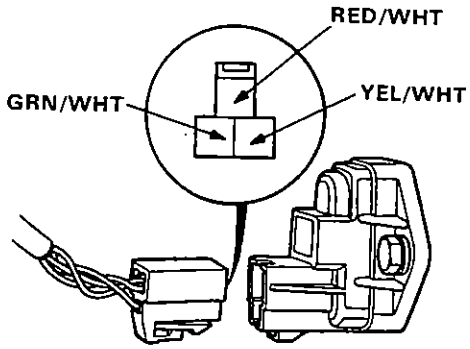


Is there approx. 5V ?

NO → Repair short in RED/WHT wire between ECU (C9) and PA sensor.

YES

Measure voltage between WHT/YEL (+) terminal and GRN/WHT (–) terminal.



Is there approx. 5V ?

NO → Measure voltage between YEL/WHT (+) terminal and body ground.

YES

Measure voltage between RED/WHT (+) terminal and GRN/WHT (–) terminal.

Is there approx. 5V ?

NO → Repair open in YEL/WHT wire between ECU (C13) and PA sensor.

YES → Repair open in GRN/WHT wire between ECU (C12) and the sensor.

Is there approx. 5V ?

NO → Repair open in RED/WHT wire between ECU (C9) and PA sensor.

YES

Replace PA sensor.

Troubleshooting Flowchart — Ignition Output Signal

Self-diagnosis LED indicator blinks fifteen times: A problem in the Ignition Output Signal circuit.

- **Check Engine warning light is on.**
- **LED indicates CODE 15.**

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

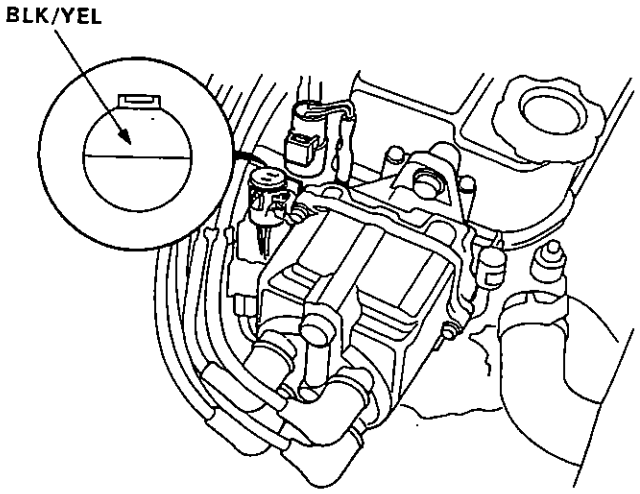
Is Check Engine warning light on? Does LED indicate CODE 15?

NO → **Intermittent failure (test drive may be necessary).**

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the distributor.



Turn the ignition switch ON.

Measure voltage between BLK/YEL (+) terminal and body ground.

Is there battery voltage ?

NO → **Repair open in BLK/YEL wire between the 2P connector and ignition switch.**

YES

Turn the ignition switch OFF.

Reconnect the 2P connector.

(To page 6-55)

(From page 6-54)

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Measure voltage individually between B15 (+), B17 (+) terminals and A18 (–) terminal.

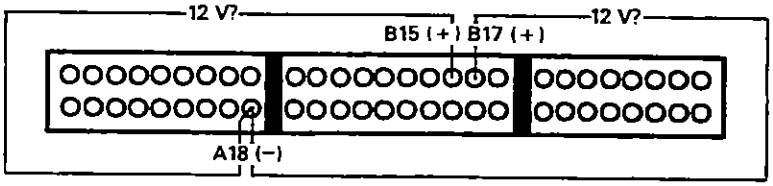
Is there battery voltage ?

NO

- **Replace the igniter unit.**
- **Repair open in wires between distributor and ECU (B15 or B17).**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



—Troubleshooting Flowchart —— Vehicle Speed Sensor

Self-diagnosis LED indicator blinks seventeen times: A problem in the Vehicle Speed Sensor circuit.

- **Check Engine warning light is on.**
- **LED indicates CODE 17.**

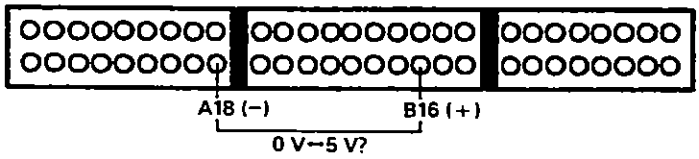
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stands.

WARNING **Block rear wheels before jacking up front of car.**

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Turn the ignition switch ON.

Slowly rotate left front wheel and measure voltage between B16 (+) terminal and A18 (-) terminal.



Does voltage pulse 0V and 5V ?

NO

- **Repair open or short in YEL/RED wire between ECU (B16) and the speed sensor.**
- **Faulty speed sensor.**

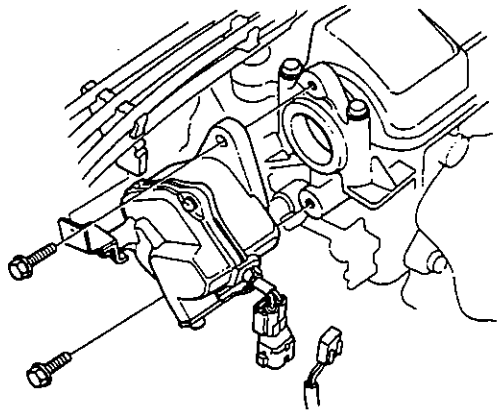
YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

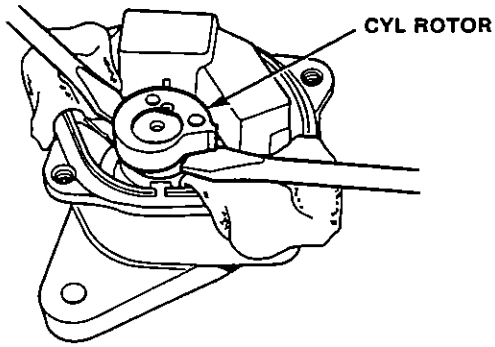
CYL Sensor Overhaul

Disassembly:

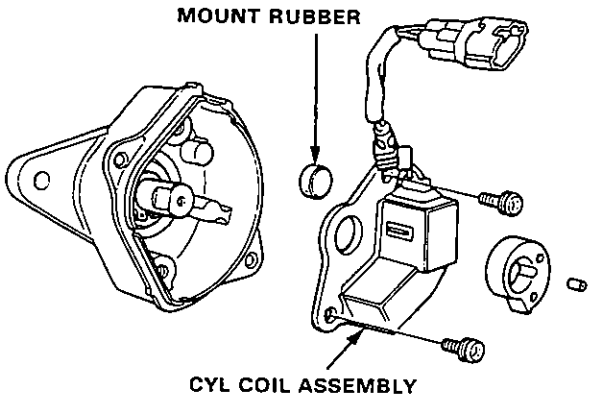
1. Remove the CYL sensor from the engine.



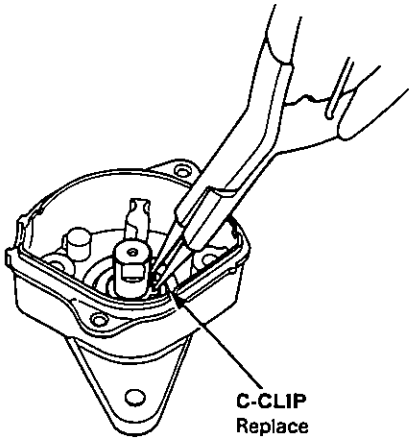
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



3. Pull the CYL coil assembly and mount rubber out from the sensor housing by removing the screws.

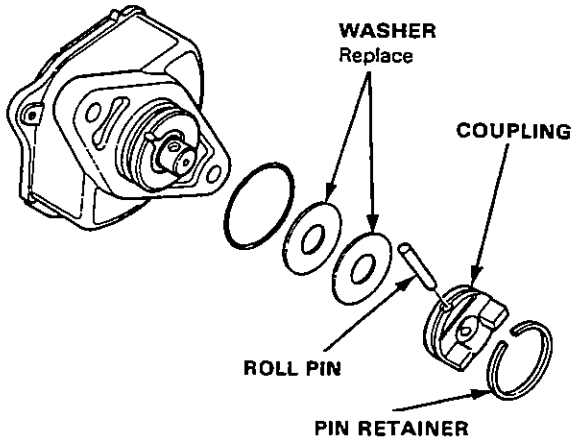


4. Remove the C-clip.

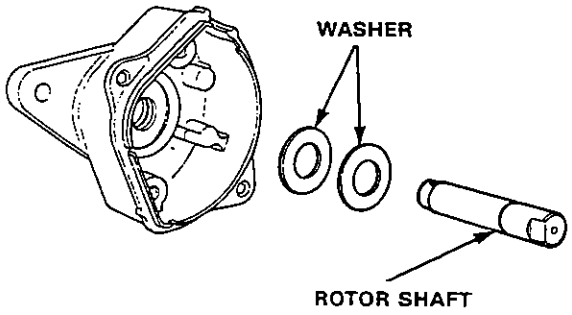


5. Slide off the pin ratainer being careful not to stretch it.

6. Separate the coupling from the shaft by removing the roll pin as shown.



7. Remove the rotor shaft.

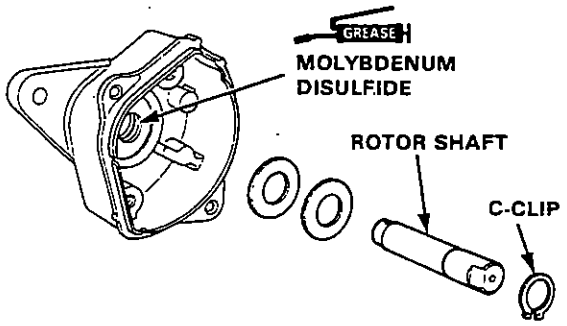


(cont'd)

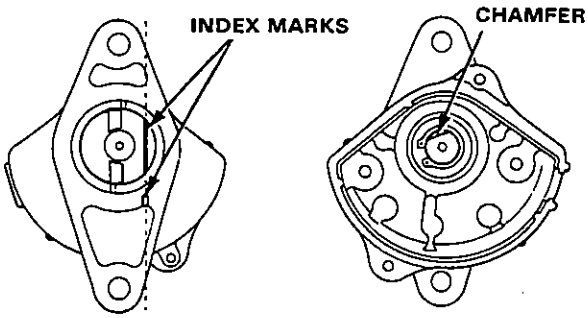
– CYL Sensor Overhaul (cont'd)

Reassembly:

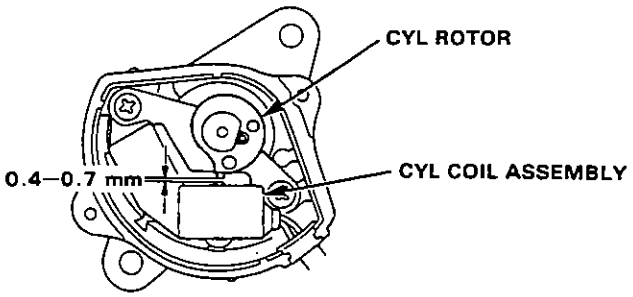
1. Apply molybdenum disulfide grease to the sensor housing, install the washers on the rotor shaft, then install it in the sensor housing. Install a new C-clip.



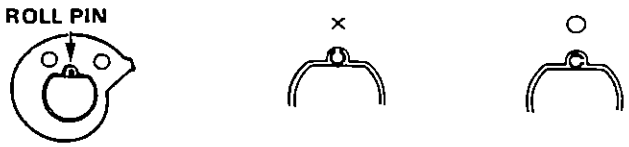
2. Install the coupling with its index mark facing in the direction shown, install the pin, and install the pin retainer.



3. Install the mount rubber, then install the CYL coil assembly and the CYL rotor. Adjust the air gap to 0.4 —0.7 mm.



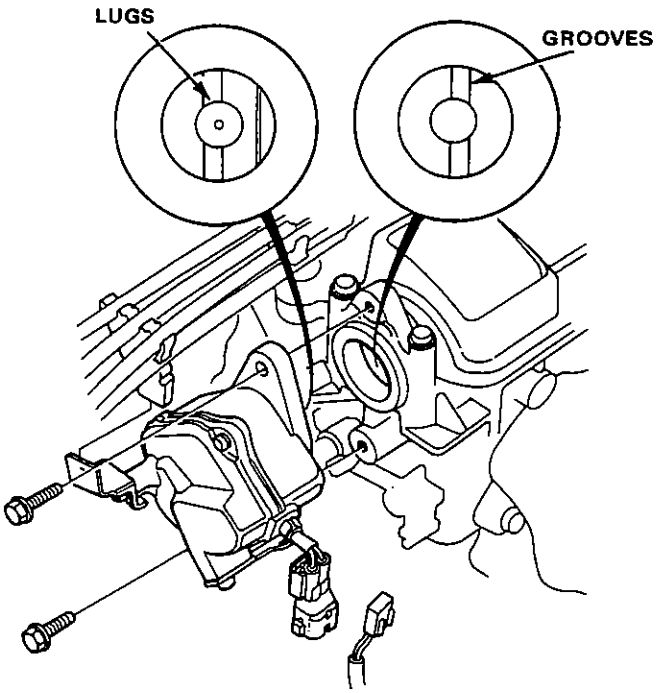
NOTE:
- Install the rotor with the part number facing up.
- Install the roll pin so that it faces as shown below.



Installation:

1. Install a new O-ring on the sensor housing.
2. Slip the sensor into the position.

NOTE: The lugs on the end of the sensor and its mating grooves in the camshaft end are both offset to eliminate the possibility of installing the sensor 180° out of time.



Idle Control System

System Troubleshooting Guide

NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- If the idle speed is out of specification and LED does not blink CODE 14, go to inspection described on page 6-60.

PAGE / SUB SYSTEM / SYMPTOM		IDLE ADJUSTING SCREW	EACV	AIR CONDITIONING SIGNAL	ALTERNATOR FR SIGNAL	STARTER SWITCH SIGNAL	HOSES AND CONNECTIONS
		69	61	64	66	68	*
ENGINE WON'T START			②				①
DIFFICULT TO START ENGINE WHEN COLD		②	①				
WHEN COLD FAST IDLE OUT OF SPEC (1,000–2,000 min^{-1}, rpm)		②	①				
ROUGH IDLE			②				①
WHEN WARM ENGINE SPEED TOO HIGH		③	②	③			①
WHEN WARM ENGINE SPEED TOO LOW	Idle speed is below specified (no load)	②	①		③		③
	Idle speed does not increase after initial start up.		①			②	
	Idle speed drops when blipping throttle with electrical load		②		①		
	Idle speeds drops when air conditioner in ON		②	①			③
FREQUENT STALLING	WHILE WARMING UP		①				③
	AFTER WARMING UP	③	②				①
FAILS EMISSION TEST			②				①

Idle Control System

1. When the idle speed is out of specification and LED does not blink CODE 14, check the following items:
   - Adjust the idle speed (page 6-69)
   - Air conditioning signal (page 6-64)
   - Alternator FR signal (page 6-66)
   - Starter switch signal (page 6-68)
   - Hoses and connections
   - EACV and O-rings for mounting conditions.

2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 6-69).

   ● If the idle speed still cannot be adjusted to specification (and LED does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Troubleshooting Flowchart — EACV

Self-diagnosis LED indicator blinks fourteen times: A problem in the Electronic Air Control Valve (EACV) circuit.

– Engine is running.
– Check Engine warning light is on.
– LED indicates CODE 14.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on?
Does LED indicate CODE 14 ?

NO → **Intermittent failure (test driving may be necessary)**

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

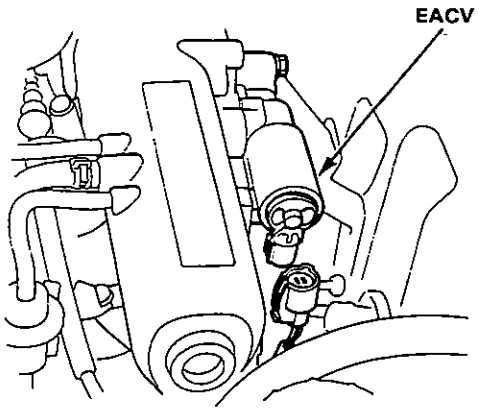
Is there 8—15Ω ?

NO → **Replace EACV.**

YES

Check for continuity to body ground on each terminal on the EACV.

(To page 6-62)



(cont'd)

Idle Control System

Troubleshooting Flowchart —— EACV (cont'd)

(From page 6-61)

Does continuity exist ? YES → Replace EACV.

NO

Turn the ignition switch ON.

Measure voltage between BLK/YEL (+) terminal and BLU/YEL (–) terminal.

Is there battery voltage ? YES → Disconnect the 17P connector from the ECU.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.

Is there battery voltage ? YES → **Repair short in BLU/YEL wire between ECU (A11) and EACV.**

NO

Is there battery voltage ? NO → **Repair open in BLK/YEL wire between the EACV and No.14 fuse.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

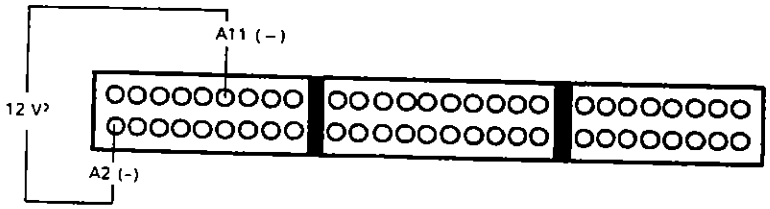
Turn the ignition switch OFF.

Reconnect the 2P connector to EACV.

Connect the PGM-FI test harness "A" connector to the main wire harness only, not the ECU (page 6-19).

Turn the ignition switch ON.

Measure voltage between A11 (+) terminal and A2 (–) terminal.



(To page 6-63)

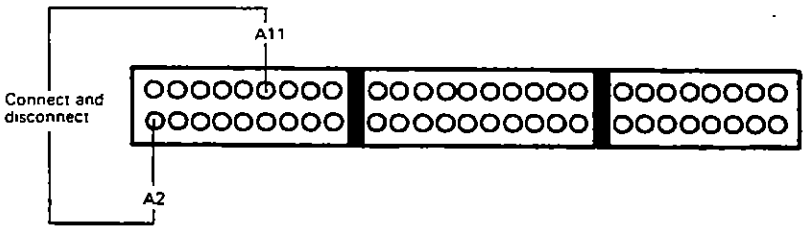
(From page 6-62)

Is there battery voltage ?

NO → **Repair open in BLU/YEL wire between ECU (A11) and EACV.**

YES

Connect and disconnect A11 terminal to A2 terminal.



Does EACV click when the connector is connected and disconnected ?

NO → **Replace EACV.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

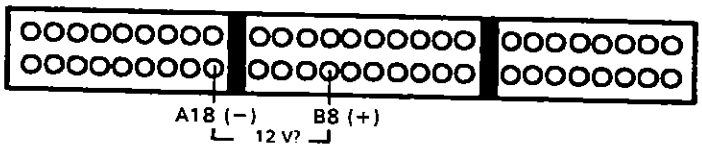
Idle Control System

— Troubleshooting Flowchart —— Air Conditioning Signal ——————

Inspection of Air Conditioning Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-19). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.



Measure voltage between B8 (+) terminal and A18 (–) terminal.

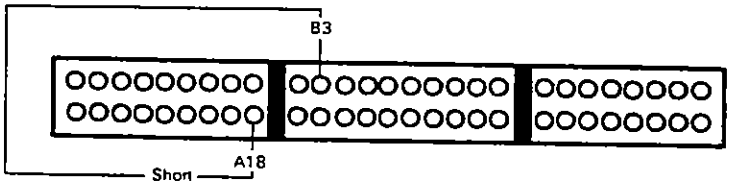
Is there battery voltage ?

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

Reconnect "B" connector to the main wire harness.



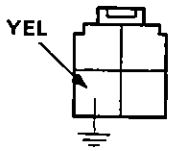
Connect B3 terminal to A18 terminal.

Does A/C operate ?

NO

Connect the YEL terminal of the 4P connector on the A/C clutch relay to body ground.

YES



Start engine.

Does A/C operate ?

NO

See Air conditioner inspection (section 15).

YES

Blower switch ON.

Repair open in YEL wire between ECU (B3) and A/C clutch relay.

(To page 6-65)

(From page 6-64)

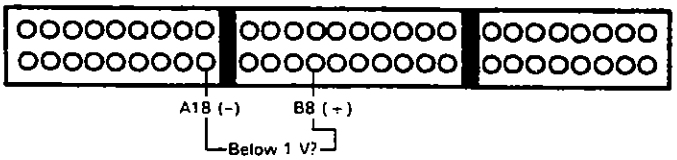
A/C switch ON.

Does A/C operate ?

NO → **See Air conditioner inspection (section 15).**

YES

Measure voltage between B8 (+) terminal and A18 (–) terminal.



Is voltage below 1 V ?

NO → **Repair open in BLU/RED wire between ECU (B8) and A/C switch.**

YES

Air conditioning signal is OK.

Idle Control System

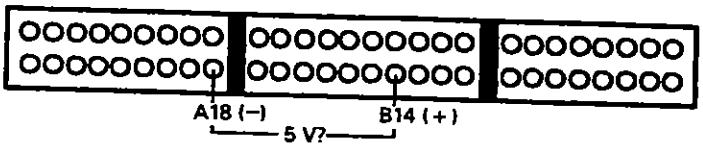
—Troubleshooting Flowchart —— Alternator FR Signal ——————————

Inspection of Alternator FR signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-19). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.

Measure voltage between B14 (+) terminal and A18 (–) terminal.



Is there approx. 5V ?

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

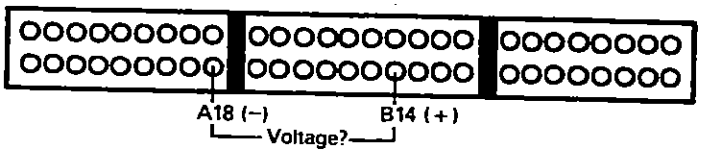
YES

Turn the ignition switch OFF.

Reconnect "B" connector to the main wire harness.

Warm up engine to normal operating temperature (cooling fan comes on).

Measure voltage between B14 (+) terminal and A18 (–) terminal.



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

NO

Stop engine.

YES

Alternator FR signal is OK.

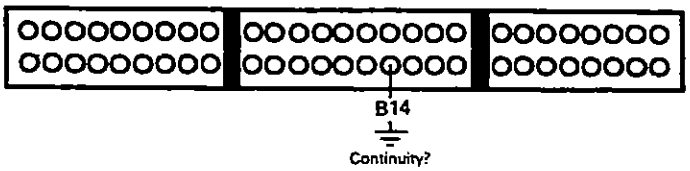
(To page 6-67)

(From page 6-66)

Disconnect "B" connector from ECU only, not the main wire harness.

Disconnect the negative battery cable from the battery.

Check for continuity between B14 terminal and body ground.



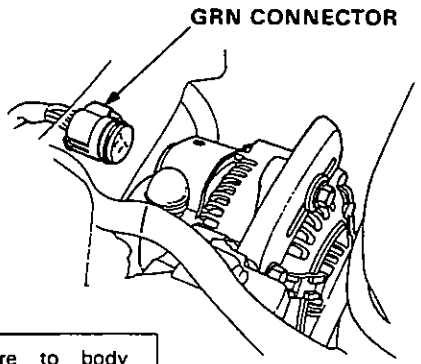
Does continuity exist ?

YES

Disconnect GRN connector from the alternator.

NO

Disconnect GRN connector from the alternator.



Connect BLU wire to body ground.

Check for continuity between B14 terminal and body ground.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

NO

See Alternator Inspection (section 16).

YES

Repair short in BLU wire between ECU (B14) and alternator.

Does continuity exist ?

YES

NO

See Alternator Inspection (section 16).

Repair open in BLU wire between ECU (B14) and alternator.

– Troubleshooting Flowchart ——— Starter Switch Signal

This signals the PGM-FI ECU when the engine is cranking.

Inspection of Starter Switch Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

Measure voltage between B13 (+) terminal and A18 (–) terminal with ignition switch in the start position.

Is there battery voltage ?

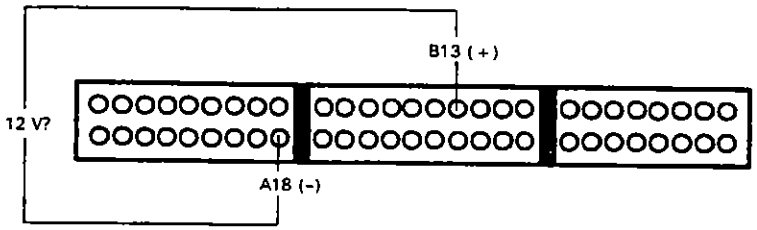
NO → Inspect No. 2 fuse.

Is No. 2 fuse OK ?

NO → **Replace fuse.**

YES → **Repair open in BLU/WHT wire between ECU (B13) and No. 2 fuse.**

YES → **Starter switch signal is OK.**

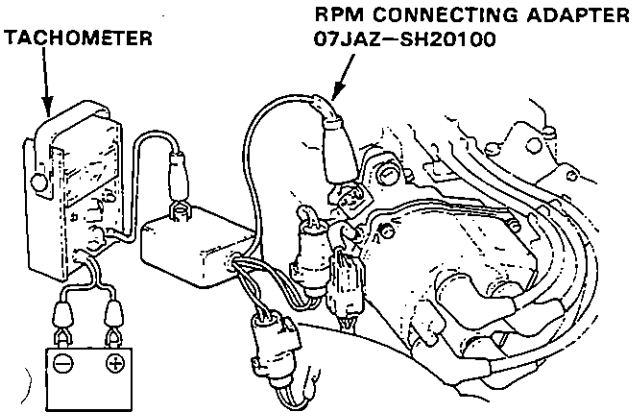


Idle Speed Setting

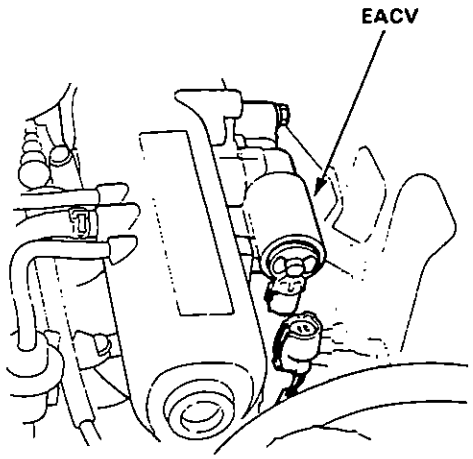
Inspection/Adjustment

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).

2. Connect a tachometer.



3. Disconnect the 2P connector from the EACV.

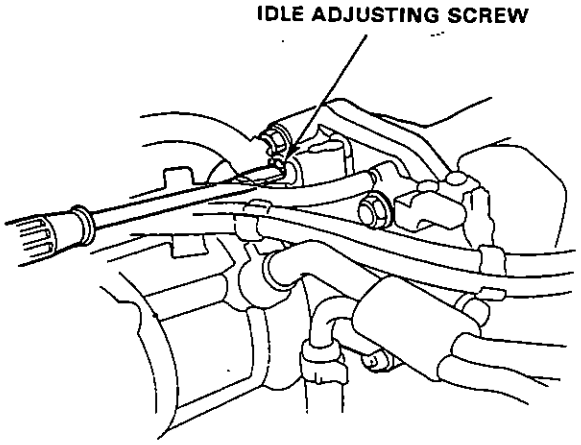


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be: 650±50 min⁻¹ (rpm)

   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-86).



5. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

6. Idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not oparating for one minute, then check the idle speed.

SOHC With CATA and KQ	750±50 min⁻¹ (rpm)
KY	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

7. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle Speed should be:

SOHC With CATA and KQ	750±50 min⁻¹ (rpm)
KY	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

8. Idle the engine for one minute with heater fan switch at HI (right end) and air conditioner on, then check the idle speed.

   Idle Speed should be:

SOHC and KQ	780±50 min⁻¹ (rpm)
DOHC Ex. KQ	800±50 min⁻¹ (rpm)

NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-59.

Fuel Supply System

System Troubleshooting Guide

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

SYMPTOM \ SUB SYSTEM		FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	FUEL TANK	CONTAMI-NATED FUEL
PAGE		72	76	76	77	78	79	81	*
ENGINE WON'T START			③		③	①	②		
DIFFICULT TO START ENGINE WHEN COLD		③			②	①			
ROUGH IDLE		①		②					③
FREQUENT STALLING	WHILE WARMING UP	①			②	③			
	AFTER WARMING UP	①		③	③	②			
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	①		②					③
	FAILS EMISSION TEST	①		②					
	LOSS OF POWER			③	①	③			②

* Fuel with dirt, water or a high percentage of alcohol is considered contaminated.

;el Pressure

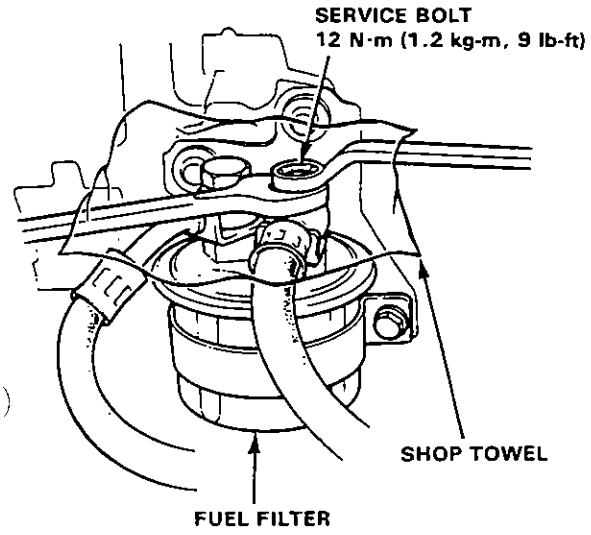
Relieving

WARNING

- **Do not smoke while working on the fuel system. Keep open flames or sparks away from the work area.**
- **Be sure to relieve fuel pressure while the engine is off.**

NOTE: Before disconnecting fuel pipes or hoses, release pressure from the system by loosening the 6 mm service bolt at top of the fuel filter.

1. Remove fuel filler cap.
2. Disconnect the battery negative cable from the battery negative terminal.
3. Use a box end wrench on the 6 mm service bolt at top of the fuel filter, while holding the special banjo bolt with another wrench.
4. Place a rag or shop towel over the 6 mm service bolt.
5. Slowly loosen the 6 mm service bolt one complete turn.



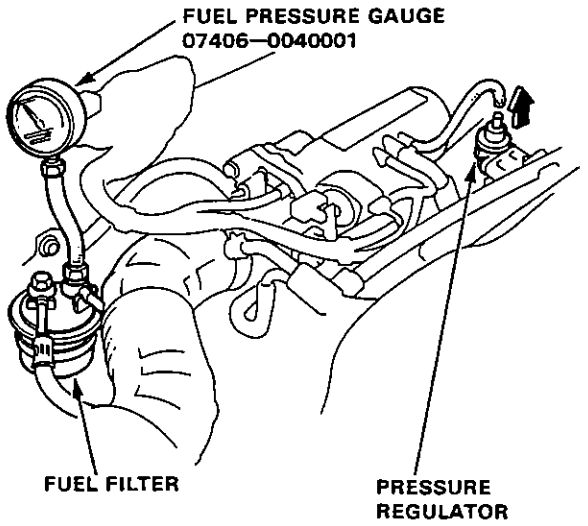
NOTE:

- A fuel pressure gauge can be attached at the 6 mm service bolt hole.
- Always replace the washer between the service bolt and the special banjo bolt, whenever the service bolt is loosened to relieve fuel pressure.
- Replace all washers whenever the bolts are removed to disassemble parts.

Inspection

1. Relieve fuel pressure.
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected.

   Pressure should be:
   240—279 kPa (2.45—2.85 kg/cm^2, 35-41 psi)



- If the fuel pressure is not as specified, first check the fuel pump (page 6-78). If the pump is OK, check the following:

— If the pressure is higher than specified, inspect for:
  - Pinched or clogged fuel return hose or piping.
  - Faulty pressure regulator (page 6-76).

— If the pressure is lower than specified, inspect for:
  - Clogged fuel filter.
  - Pressure regulator failure (page 6-76).
  - Leakage in the fuel line.

Fuel Supply System

— Fuel Injectors

Troubleshooting Flowchart

With CATA Self-diagnosis LED indicator blinks sixteen times: A problem in the fuel injector circuit.

With CATA

– Check Engine warning light is on.
– LED indicates CODE 16.

NOTE: On With CATA models, start the troubleshooting from this procedure.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch to START position.

NOTE: On Without CATA models, start the throbleshooting from this procedure.

Does the engine start ?

NO

YES

With CATA only

Is Check Engine warning light on?
Does LED indicate CODE 16 ?

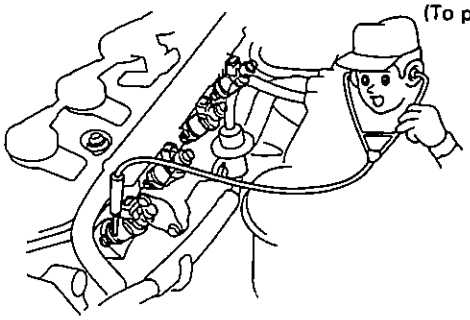
NO

Intermittent failure (Test drive may be necessary.)

YES

(To page 6-73)

Check the clicking sound of each injector by means of a stethoscope when the engine is idling.



Do the injectors click ?

YES

Substitute a known-good ECU and re-check. If symptom/ indication goes away, replace the original ECU.

NO

(To page 6-73)

(From page 6-72)

Turn the ignition switch OFF.

Disconnect the 2P connector from the injector that does not click.

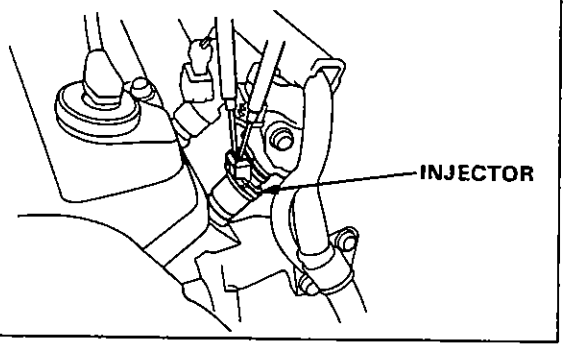
Measure resistance between the 2 terminals of the injector.

(From page 6-72)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



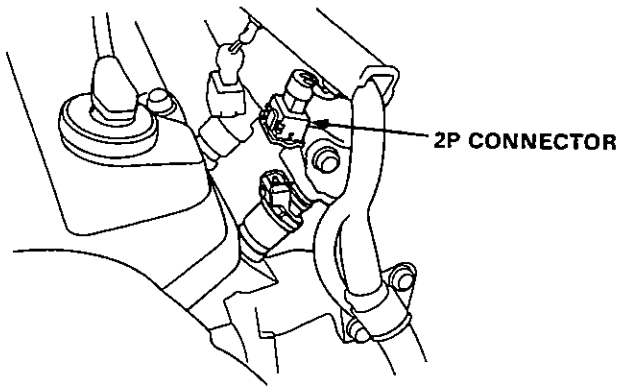
Is there 1.5—2.5Ω ?

NO — **Replace the injector.**

YES

Turn the ignition switch ON.

Measure voltage between RED/BLK (+) terminal on the 2P connector and body ground.



(To page 6-74)

(cont'd)

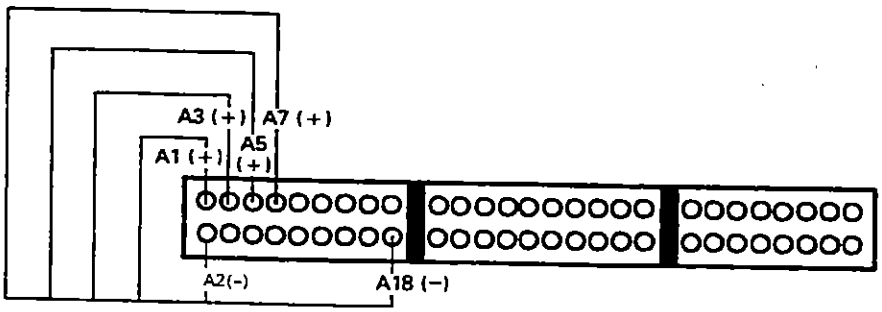
Fuel Injector

Troubleshooting Flowchart (cont'd)

(From page 6-73)

Is there battery voltage ?
- NO → Turn the ignition switch OFF.
  - Disconnect 6P connector on the injector resistor.
  - Turn the ignition switch ON.
  - Measure voltage between YEL/BLK (+) terminal and body ground.
  - Is there battery voltage ?
    - NO → **Repair open in the YEL/BLK wire between the injector resistor and the main relay.**
    - YES → **Replace the injector resistor.**
- YES → Measure voltage between the following terminals,
  - No. 1 injector: RED/BLK (+) terminal and BRN (–) terminal.
  - No. 2 injector: RED/BLK (+) terminal and RED (–) terminal.
  - No. 3 injector: RED/BLK (+) terminal and LT BLU (–) terminal
  - No. 4 injector: RED/BLK (+) terminal and YEL (–) terminal

Is there battery voltage ?
- YES → Disconnect C451 (17P) connector from the ECU.
  - Is there battery voltage ?
    - YES → **Repair short in the wire between the ECU (A1, A3, A5 or A7) and the injector.**
    - NO → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**
- NO → Reconnect the 2P connector to the injector.
  - Connect the PGM-FI test harness between the ECU and connector (page 6-19).
  - Measure voltage between A2 (–) terminal and following terminals,
    - No.1 injector: A1 (+) terminal.
    - No.2 injector: A3 (+) terminal.
    - No.3 injector: A5 (+) terminal.
    - No.4 injector: A7 (+) terminal.



Is there battery voltage ?
- NO → **Repair open in the wire between the ECU (A1, A3, A5 or A7) and the injector.**
- YES → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

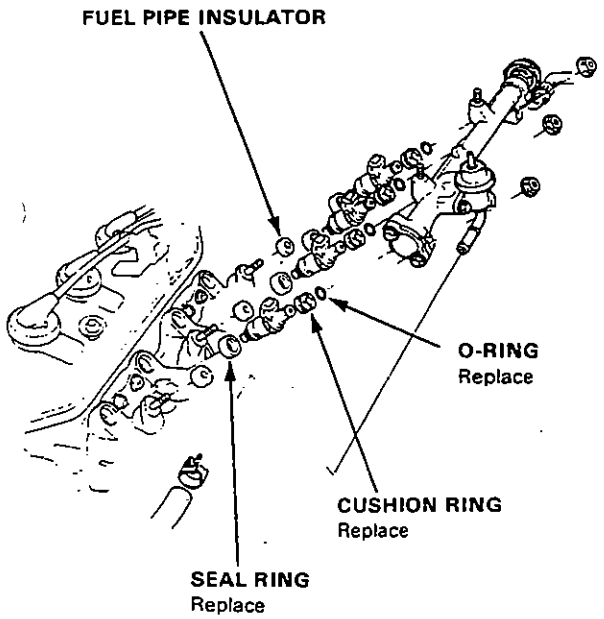
Replacement

WARNING Do not smoke during the work. Keep open flames away from your work area.

1. Disconnect the battery negative cable from the battery negative terminal.
2. Relieve fuel pressure (page 6-71).
3. Disconnect the connectors from the injectors.
4. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

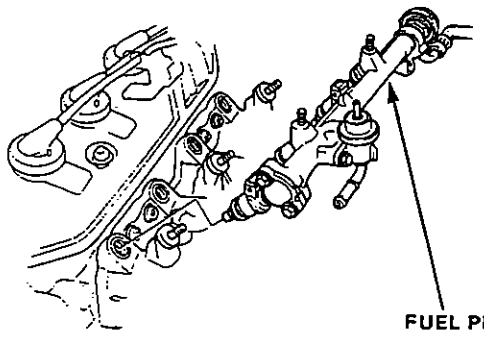
   NOTE: Place a rag or shop towel over the hoses before disconnecting them.

5. Lossen the retainer nuts on the fuel pipe and harness holder.
6. Diconnect the fuel pipe.
7. Remove the injectors from the intake manifold.

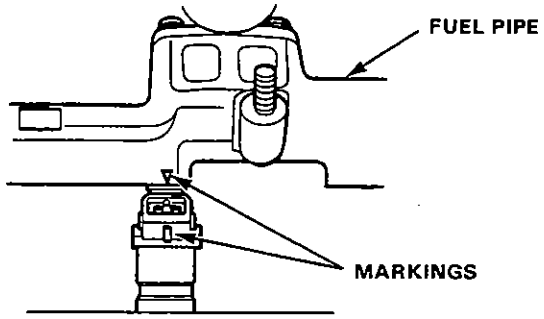


8. Slide new cushion rings onto the injectors.
9. Coat new O-rings with clean engine oil and put them on the injectors.
10. Insert the injectors into the fuel pipe first.
11. Coat new seal rings with clean engine oil and press them into the intake manifold.
12. Install the injectors and fuel pipe assembly in the manifold.

    CAUTION: To prevent damage to the O-ring, install the injectors in the fuel pipe first, then install them in the intake manifold.



13. Align the center line on the connector with the mark on the fuel pipe.



14. Install and tighten the retainer nuts.
15. Connect the vacuum hose and fuel return hose to the pressure regulator.
16. Install the connectors on the injectors.
17. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approximately two seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.

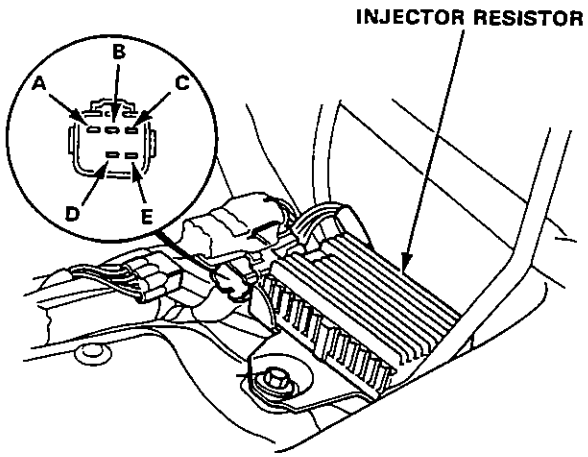
Fuel Supply System

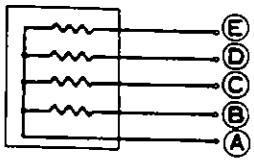
Injector Resistor

Testing

1. Disconnect the resistor connector.
2. Check for resistance between each of the resistor terminals (E, D, C and B) and the Power terminal (A).

   Resistance should be: 5—7 Ω





- Replace the resistor with a new one if any of the resistances are outside of the specification.

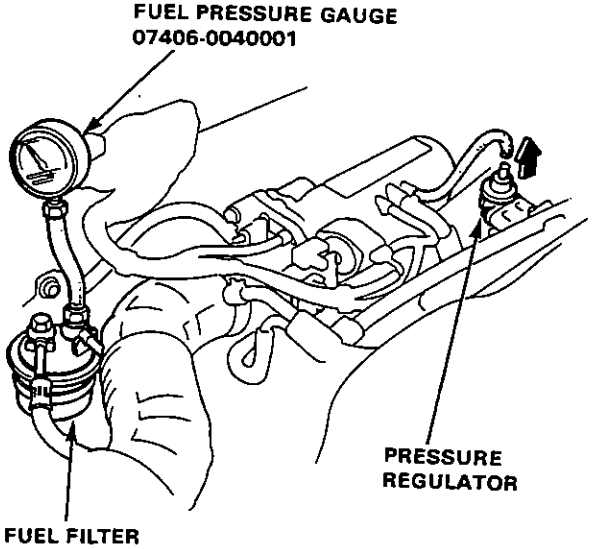
Pressure Regulator

Testing

WARNING **Do not smoke during the test. Keep open flames away from your work area.**

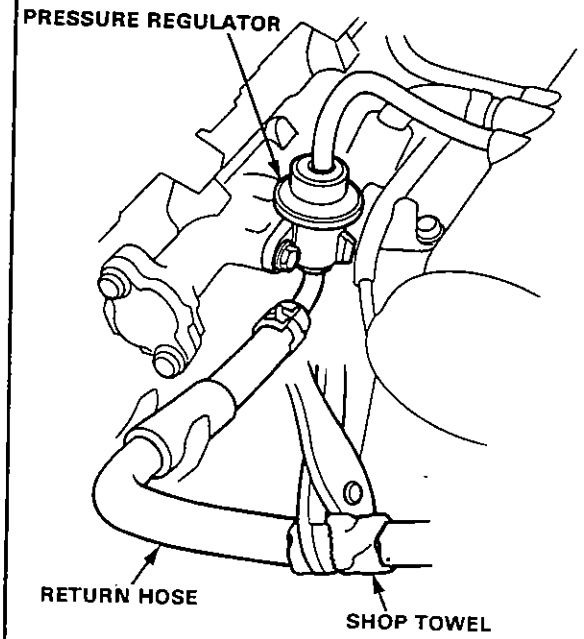
1. Attach a pressure gauge to the service port of the fuel filter (page 6-71).

   Pressure should be:
   240—279 kPa (2.45—2.85 kg/cm², 35—41 psi)
   (with the regulator vacuum hose disconnected)



2. Check that the fuel pressure rises when the vacuum hose from the regulator is disconnected.

   - If the fuel pressure did not rise, check whether it rises when the return hose is lightly pinched.

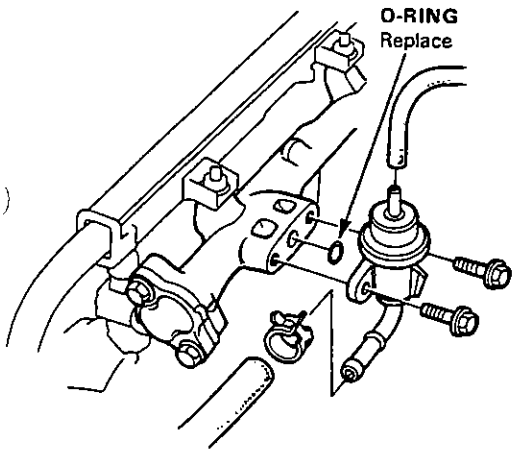


   — If the pressure does not rise, replace the regulator and retest.

Replacement

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Disconnect the negative terminal of the battery.
2. Place a shop towel under pressure regulator, then relieve fuel pressure (page 6-71).
3. Disconnect the vacuum hose and fuel return hose.
4. Remove the two 6 mm retainer bolts.



NOTE:
- Replace the O-ring.
- When assembling the regulator, apply clean engine oil to the O-ring and assemble it into its proper position, taking care not to damage the O-ring.

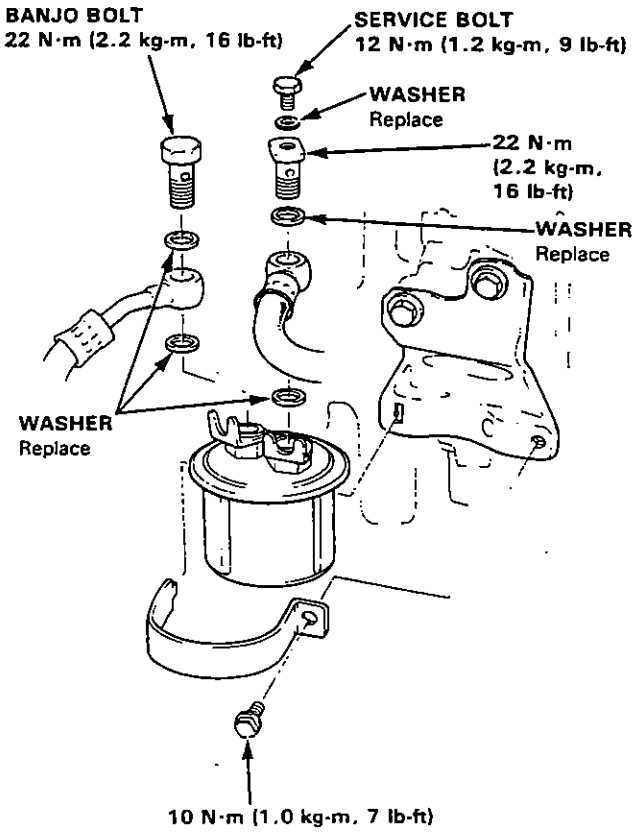
Fuel Filter

Replacement

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

The filter should be replaced: every 2 years or 40,000 km (24,000 miles), whichever comes first or whenever the fuel pressure drops below the specified value (240—279 kpa, 2.45—2.85 kg/cm², 35—41 psi with the pressure regulator vacuum hose disconnected) after making sure that the fuel pump and the pressure regulator are OK.

1. Disconnect the battery cable from the negative terminal.
2. Place a shop towel under and around the fuel filter.
3. Relieve fuel pressure (page 6-71).
4. Remove the 12 mm banjo bolt and the fuel feed pipe from the filter.
5. Remove the fuel filter clamp and fuel filter.
6. When assembling, use new washers, as shown.

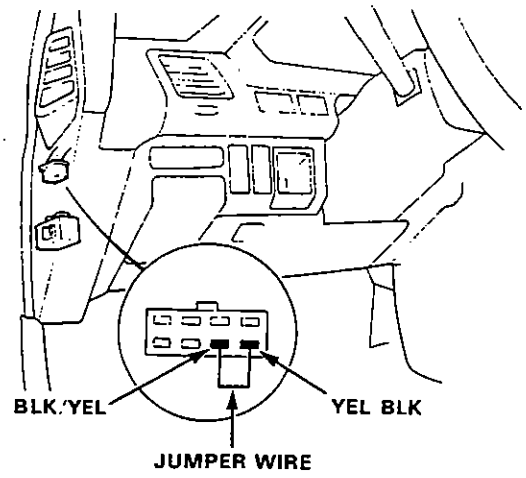


Fuel Pump

Testing

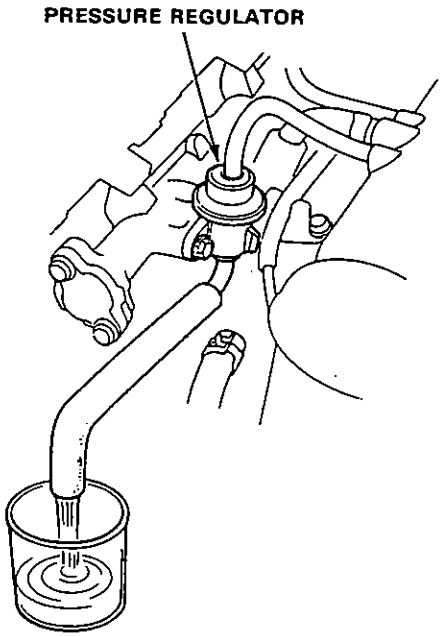
WARNING **Do not smoke during the test. Keep open flame away from your work area.**

1. With the ignition switch OFF, disconnect the connector from the main relay at left side of the cowl.
2. Connect the BLK/YEL wire and YEL/BLK wire with a jumper wire.



3. Relieve fuel pressure as described on page 6-71 then tighten the service bolt.
4. Disconnect the fuel return hose from the regulator.
5. Turn the ignition switch ON for 10 seconds and measure the amount of fuel flow.

Amount should be:
230 cm³ (7.8 oz) min. in 10 seconds at 12V

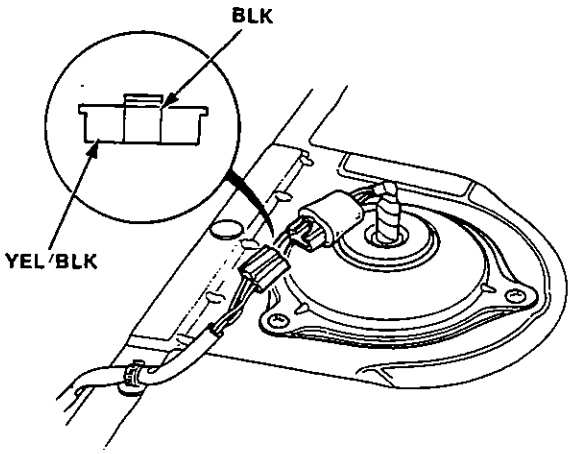


- If fuel flow is less than 230 cm³ (7.8 oz), or there is no fuel flow, check for:
  - Clogged fuel filter.
  - Clogged fuel line.
  - Pressure regulator failure (page 6-76).

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 hold your ear to the fuel filler port with the fuel filler cap removed. If the pump does not make noise, check as follows:

1. Remove the rear seat.
2. Disconnect the 3P connector.

   CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.
3. Check that battery voltage is avaiable at the fuel pump connector when the ignition switch is turned ON (positive probe to the YEL/BLK wire, negative probe to the BLK wire).

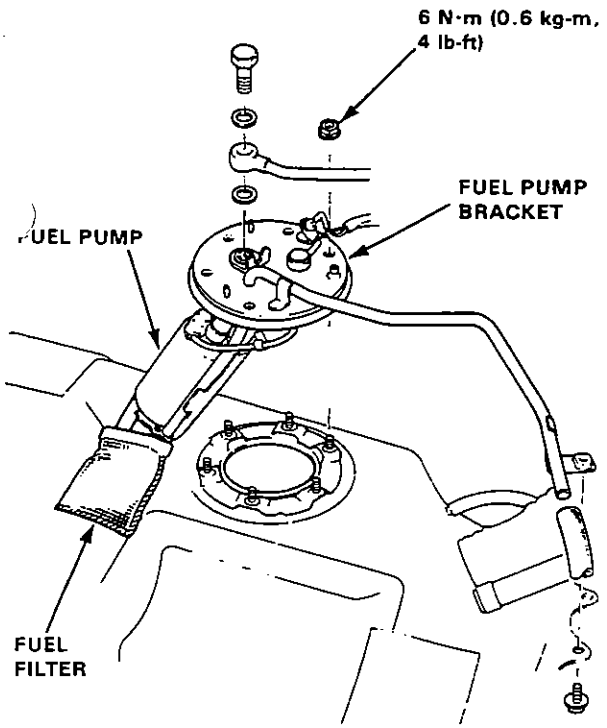


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness (page 6-79).

Replacement

WARNING **Do not smoke while working on fuel system. Keep open flames away from your work area.**

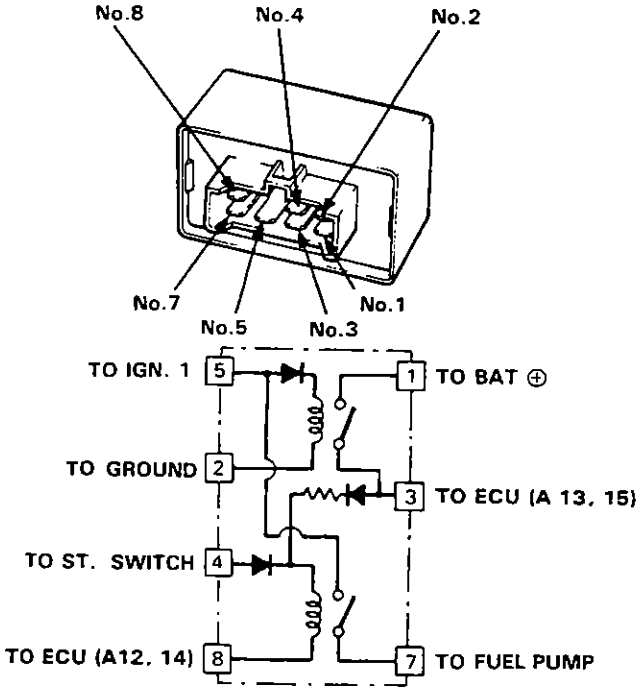
1. Remove the fuel tank (page 6-81).
2. Remove the fuel pump mounting nuts.
3. Remove the fuel pump from the fuel tank.



Main Relay

Relay Testing

1. Remove the main relay.
2. Attach the battery positive terminal to the No. 4 terminal and the battery negative terminal to the No. 8 terminal of the main relay. Then check for continuity between the No. 5 terminal and No. 7 terminal of the main relay.
   - If there is continuity, go on to step 3.
   - If there is no continuity, replace the relay and retest.

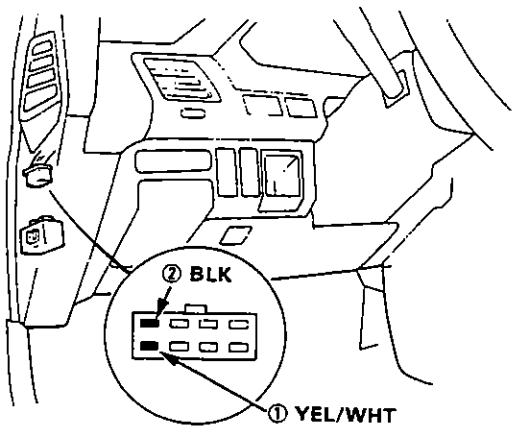


3. Attach the battery positive terminal to the No. 5 terminal and the battery negative terminal to the No. 2 terminal of the main relay. Then check that there is continuity between the No. 1 terminal and No. 3 terminal of the main relay.
   - If there is continuity, go on to step 4.
   - If there is no continuity, replace the relay and retest.
4. Attach the battery positive terminal to the No. 3 terminal and battery negative terminal to the No. 8 terminal of the main relay. Then check that there is continuity between the No. 5 terminal and No. 7 terminal of the main relay.
   - If there is continuity, the relay is OK;
     If the fuel pump still does not work, go to Harness Testing in the next column.
   - If there is no continuity, replace the relay and retest.

Main Relay

Harness Testing

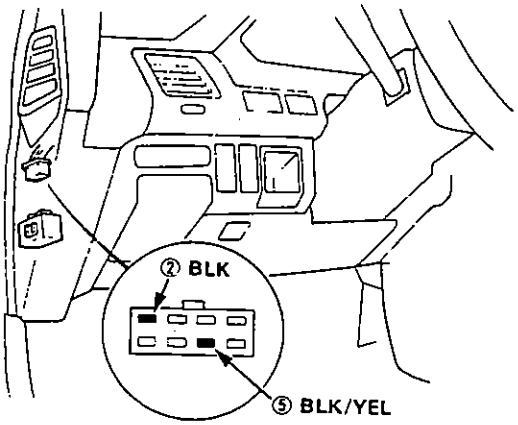
1. Keep the ignition switch in the OFF position.
2. Disconnect the main relay connector.
3. Check for continuity between the BLK wire ② in the connector and body ground.
4. Attach the positive probe of voltmeter to the YEL/WHT wire ① and the negative probe to the BLK wire ②.



Battery voltage should be available.

- If there is no voltage, check the wiring between the battery and the main relay as well as ECU fuse (15A) in the main fuse box.

5. Attach the positive probe of voltmeter to the BLK/YEL wire ⑤ and the negative probe to the BLK wire ②.

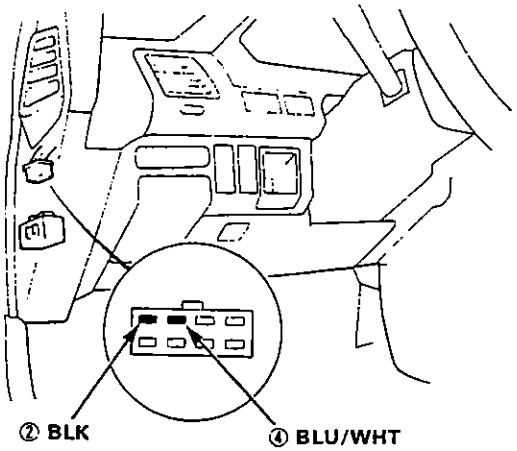


6. Turn the ignition switch ON.

Battery voltage should be available.

- If there is no voltage, check the wiring from the ignition switch and the main relay as well as No. 14 (10A) fuse.

7. Attach the positive probe of voltmeter to the BLU/WHT wire ④ and the negative probe to the BLK wire ②.

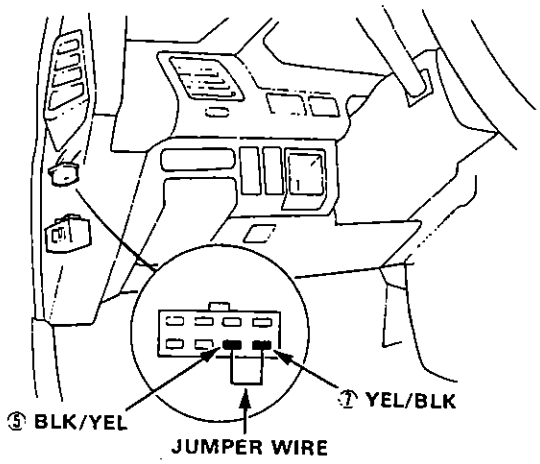


8. Turn the ignition switch to START position.

Battery voltage should be available.

- If there is no voltage, check the wiring between the ignition switch and main relay as well as No. 2 (10A) fuse.

9. Connect a jumper wire between the BLK/YEL wire ⑤ and YEL/BLK wire ⑦.



10. Turn the ignition switch ON.

The fuel pump should work.

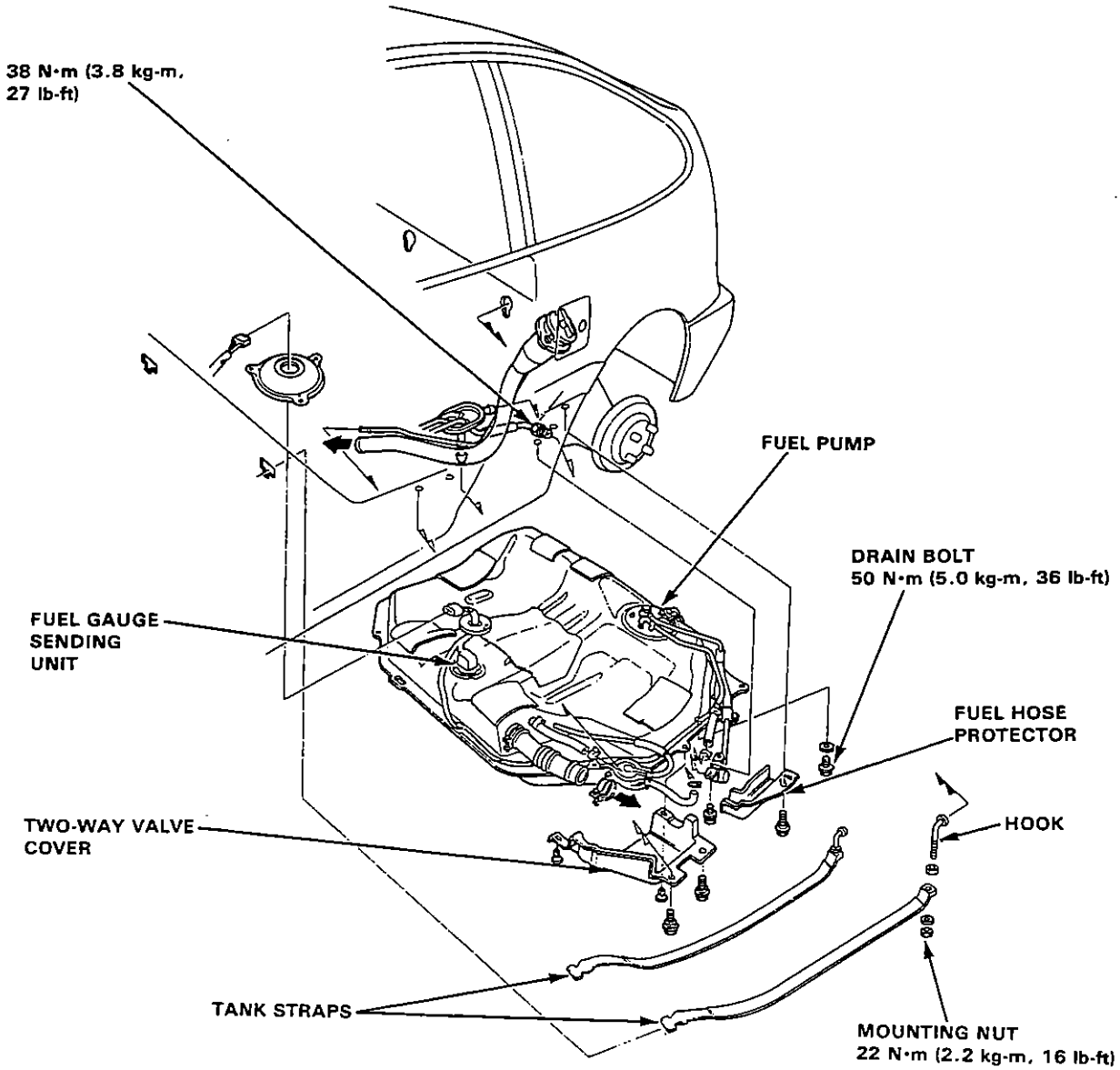
- If the fuel pump does not work, check the wiring between the main relay and fuel pump, and the wiring from the fuel pump to the ground (BLK wire).

Fuel Tank

Replacement

WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Remove the rear seat and disconnect the 3P connector.
4. Remove the two-way valve cover and fuel hose protector.
5. Disconnect the hoses.
   CAUTION:
   - **When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.**
   - **Clean the flared joint of high pressure hoses thoroughly before reconnecting them.**
6. Place a jack, or other support, under the tank.
7. Remove the strap nuts and let the straps fall free.
8. Remove the fuel tank.
   NOTE: The tank may have stuck on the undercoat applied to its mount. To remove, carefully pry it off the mount.
9. Install a new washer on the drain bolt, then install parts in the reverse order of removal.



Air Intake System

System Troubleshooting Guide

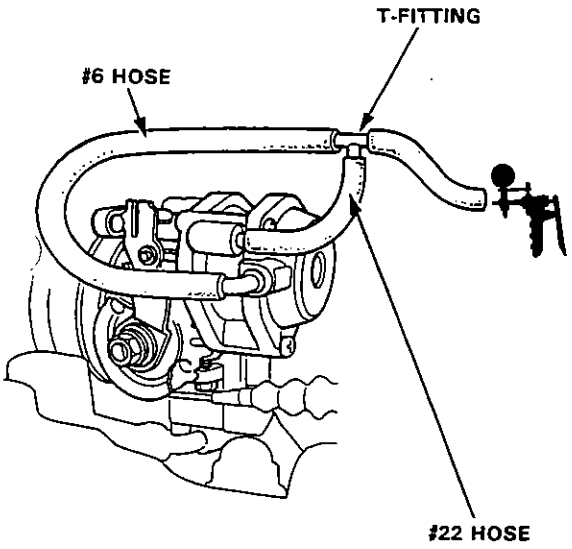
NOTE: Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.

PAGE / SUB SYSTEM / SYMPTOM	THROTTLE CABLE	THROTTLE BODY	THROTTLE CONTROL SYSTEM
	83	84	86
ENGINE WON'T START			①
DIFFICULT TO START ENGINE WHEN COLD			①
WHEN COLD FAST IDLE OUT OF SPEC	③	②	①
WHEN WARM ENGINE SPEED TOO HIGH	③	②	①
WHEN WARM ENGINE SPEED TOO LOW		①	
FREQUENT STALLING WHILE WARMING UP	①	②	②
LOSS OF POWER	①	①	

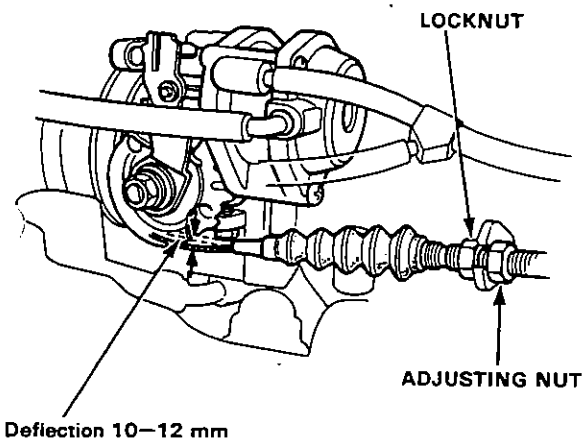
Throttle Cable

Inspection/Adjustment

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Check that the throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. Disconnect #6 and #22 hoses from the dashpot diaphragm and connect a vacuum pump to the diaphragm using a T-fitting as illustrated bellow. Apply vacuum.



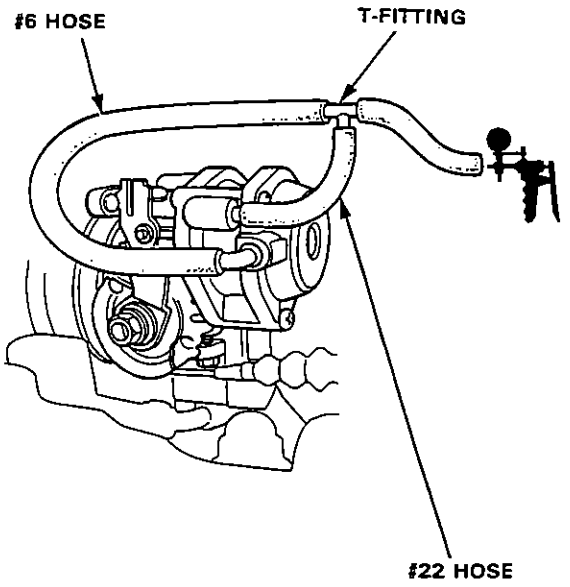
4. Check cable free play at the throttle linkage. Cable deflection should be 10—12 mm (0.39—0.47 in.)



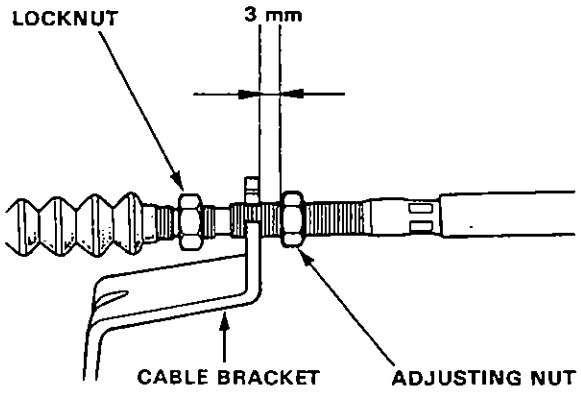
5. If deflection is not within specs, loosen the locknut and turn the adjusting nut until the deflection is as specified.
6. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator.

Installation

1. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the cable bracket.
2. Warm up the engine to normal operating temperature (the cooling fan comes on).
3. Disconnect #6 and #22 hoses from the dashpot diaphragm and connect a vacuum pump to the diaphragm using a T-fitting as illustrated bellow. Apply vacuum.



4. Hold the cable sheath, removing all slack from the cable.
5. Turn the adjusting nut until it is 3 mm away from the cable bracket.
6. Tighten the locknut.



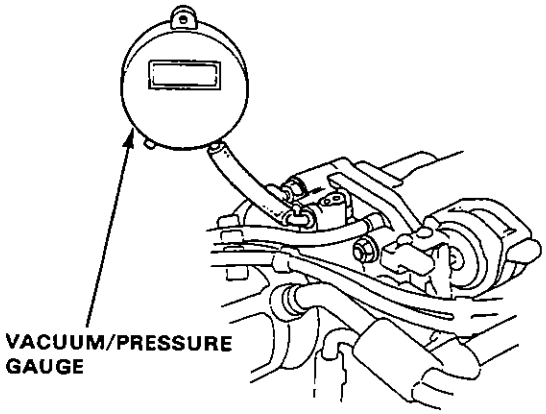
7. Disconnect the vacuum pump and connect the #6 and #22 vacuum hoses.

Throttle Body

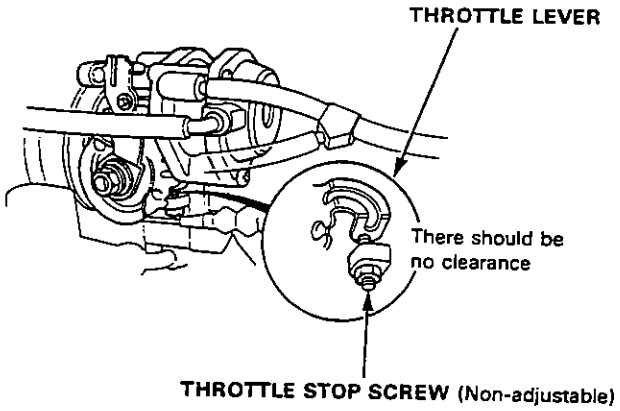
Inspection

CAUTION: Do not adjust the throttle stop screw since it can not be reset except at the factory.

1. Start the engine and allow to reach normal operating temperature (cooling fan comes on).
2. Disconnect the vacuum hose (to the canister) from the top of the throttle body; connect a vacuum gauge to the throttle body.

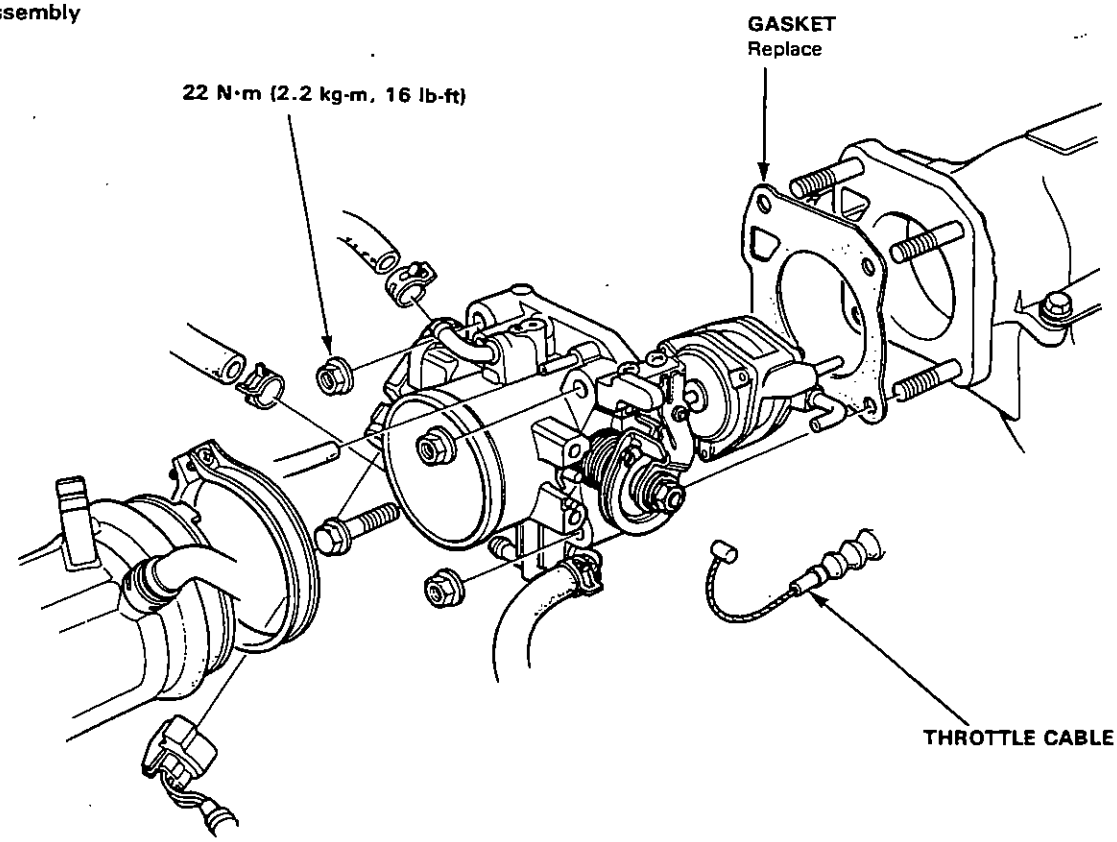


3. Allow the engine to idle and check that the gauge indicates no vacuum.
   - If there in vacuum, check the throttle control system (page 6-86).
4. Check that vacuum is indicated on the gauge when the throttle is opened slightly from idle.
   - If the gauge indicates no vacuum, check the canister port. If the canister port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly witout binding or sticking.
   - If there are any abnormalities in the above steps, check for:
   - Excessive wear or play in the throttle valve shaft.
   - Sticky or binding throttle lever at full close position.
   - Clearance between throttle stop screw and throttle lever at full close position.

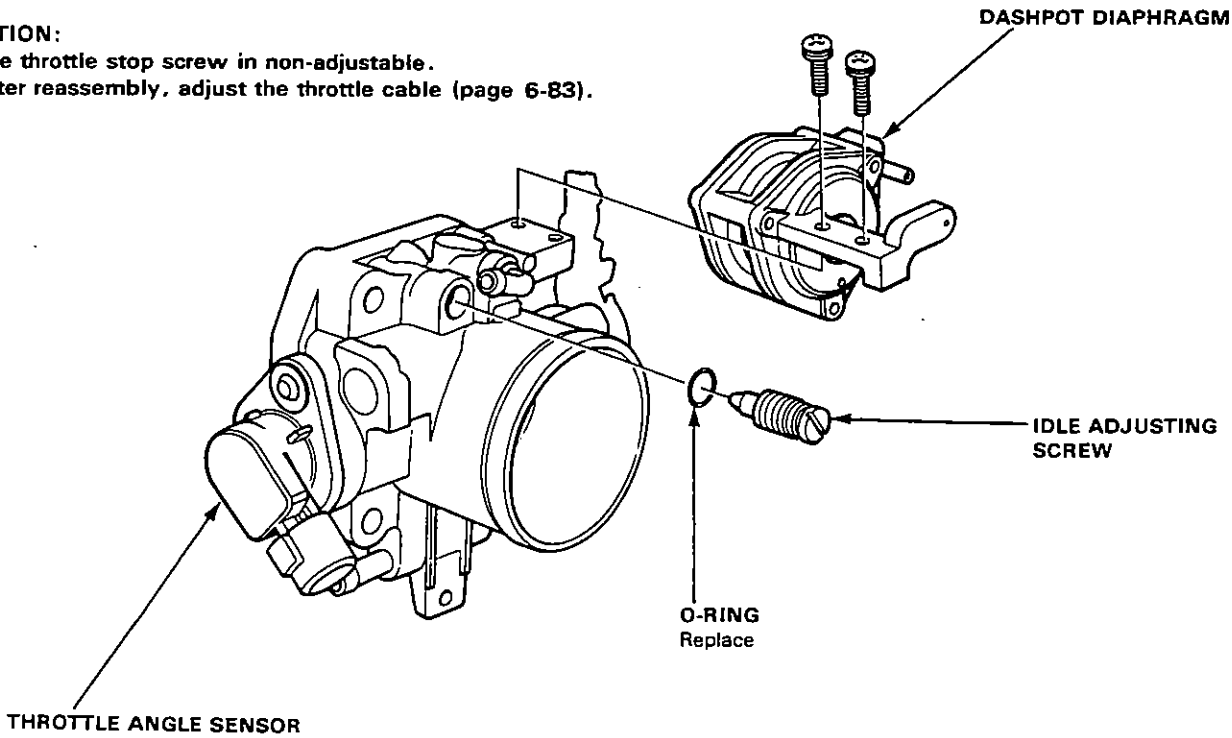


Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.

Disassembly



CAUTION:
- The throttle stop screw in non-adjustable.
- After reassembly, adjust the throttle cable (page 6-83).



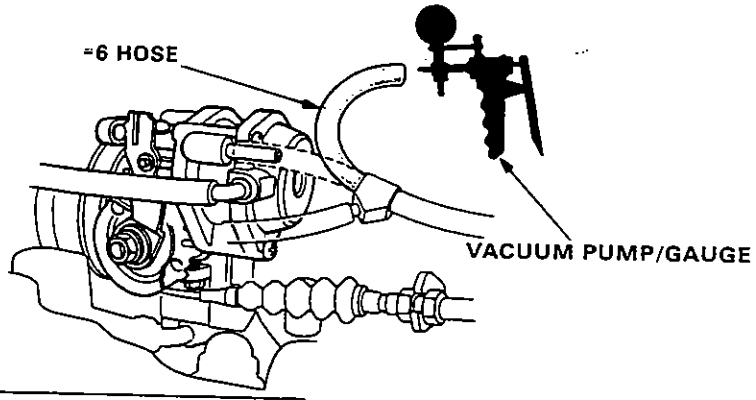
Throttle Control System

Troubleshooting Flowchart

Inspection of Throttle Control System

Start the engine and allow to idle.

Disconnect #6 hose from the dashpot diaphragm and connect a vacuum gauge.

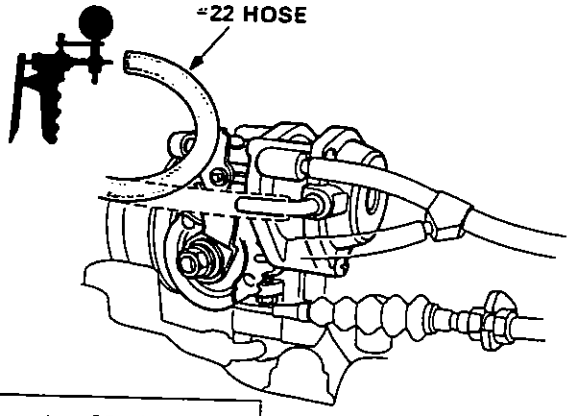


Is there vacuum?

NO → **–Check the 3-way joint A.**
–Repair blockage at port or pinch in #6 hose.

YES

Disconnect #22 hose from the dashpot diaphragm and connect a vacuum gauge.
NOTE:
- Coolant temperature must be below –10°C (14°F).
- Fast idle speed must be below 1,800 min⁻¹ (rpm).



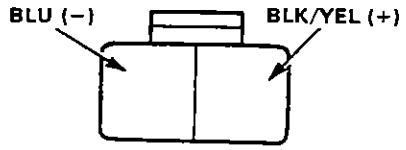
Is there vacuum?

YES → Disconnect the 2P (Without CATA) or 4P (With CATA) connector.

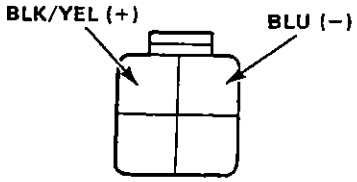
NO

Measure voltage between BLK/YEL (+) terminal and BLU (–) terminal.

(Without CATA)



(With CATA)



Is there battery voltage?

YES → Replace the dashpot control solenoid valve.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.

Is there battery voltage?

NO → Repair open in BLK/YEL wire between No.14 fuse and the connector.

YES

(To page 6-87)

(To page 6-87)

(From page 6-86)

Warm up engine to normal operating temperature (cooling fan comes on).

Check for vacuum at #22 vacuum hose.

Is there vacuum?

NO

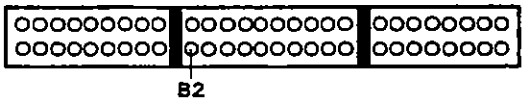
YES

Throttle control system is OK.

(From page 6-86)

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).



Check for continuity of BLU wire between ECU (B2) and the 4P connector.

Does continuity exist?

NO

Repair open in BLU wire between ECU (B2) and the connector.

YES

Subsitute a known-good ECU and recheck. If symptom goes away replace the original ECU.

Disconnect the 2P (Without CATA) or 4P (With CATA) connector.

Is there vacuum?

NO

Replace the dashpot control solenoid valve.

YES

Turn the ignition switch OFF.

Disconnect "B" connector from ECU.

Check for continuity to ground in the BLU (to ECU, B2) wire.

Is there continuity to ground?

YES

Repair short to ground at BLU wire between ECU (B2) and the connector.

NO

Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Air Intake System

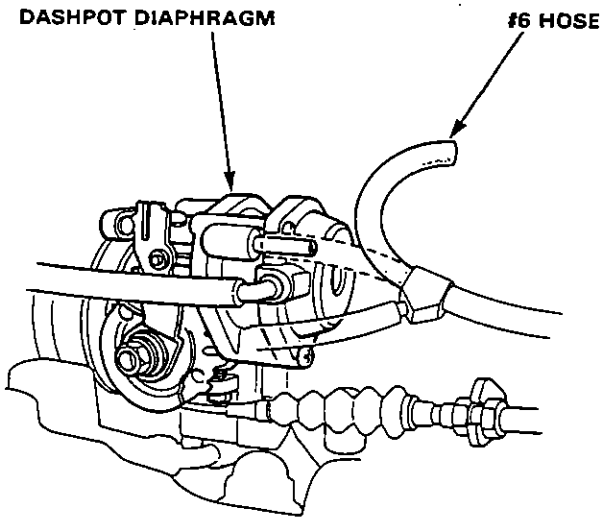
—Throttle Control System

Dashpot Diaphragm Testing

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).

2. Disconnect #6 vacuum hose from the dashpot diaphragm and check the engine speed.

   Engine speed should be 2,500±500 min^{-1} (rpm)



- If the engine speed is out of specified engine speed, inspect the throttle body (page 6-84).

System Troubleshooting Guide

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

PAGE / SUB SYSTEM / SYMPTOM		CATALYTIC CONVERTER	POSITIVE CRANKCASE VENTILATION SYSTEM	EVAPORATIVE EMISSION CONTROLS
		91	90	92
ROUGH IDLE			①	
POOR PERFORMANCE	FAILS EMISSION TEST	①		②
	LOSS OF POWER	①		

Emission Control System

Tailpipe Emission

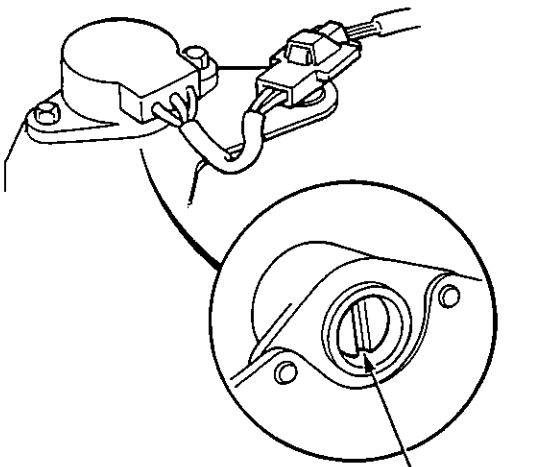
Inspection

WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-69).
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%:
With CATA: 0.1% maximum
Without CATA: 1.0 ± 1.0%

- If unable to obtain this reading;
  On With CATA, see ECU troubleshooting (page 6-14 or 16).
  On other models, adjust by turning the adjusting screw of the IMA sensor.

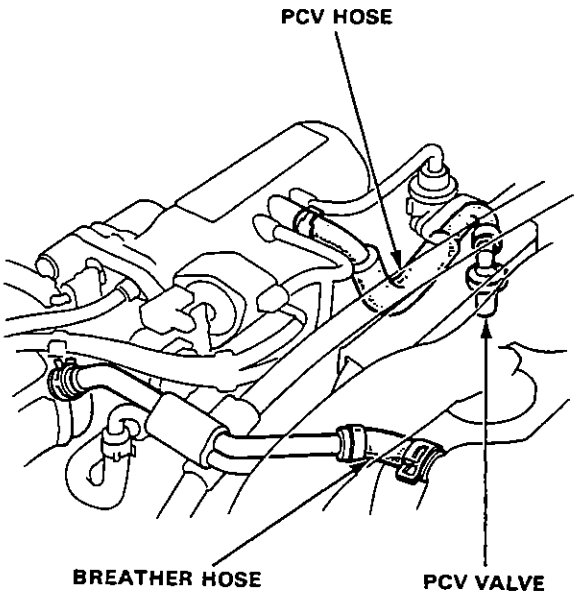


– If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

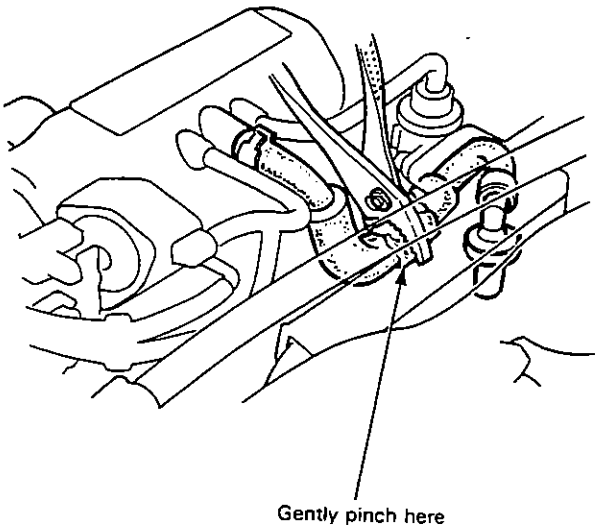
Positive Crankcase Ventilation System

Inspection

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. At idling, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold in lightly pinched with your fingers or pliers.

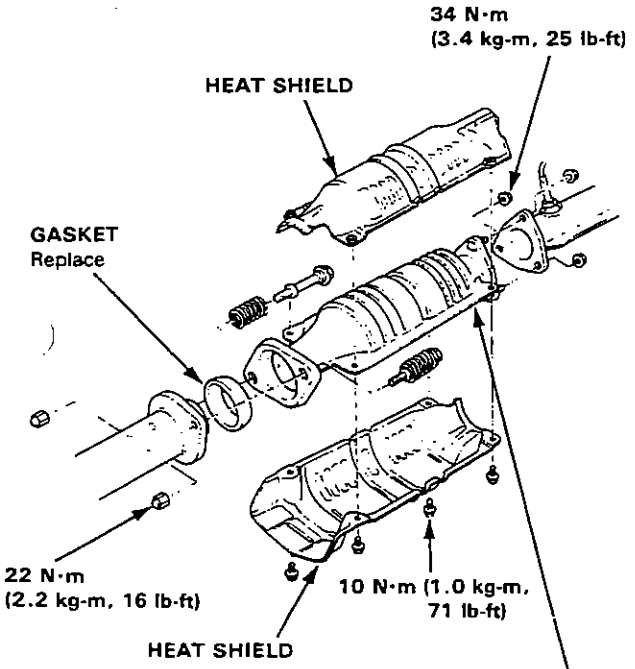


- If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

atalytic Converter

Inspection

If excessive exhaust system back-pressure is suspected, remove the catalytic converter from the car and make a visual check for plugging, melting or cracking of the catalyst. Replace the catalytic converter if more than 50% of the visible area is damaged or plugged.



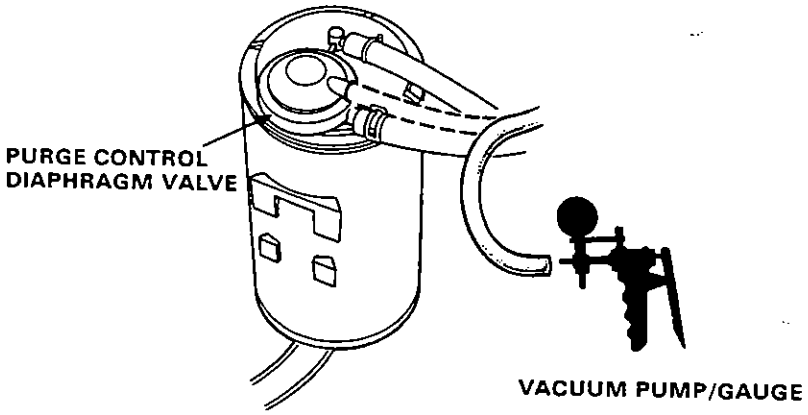
Evaporative Emission Controls [With CATA Ex. KQ]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

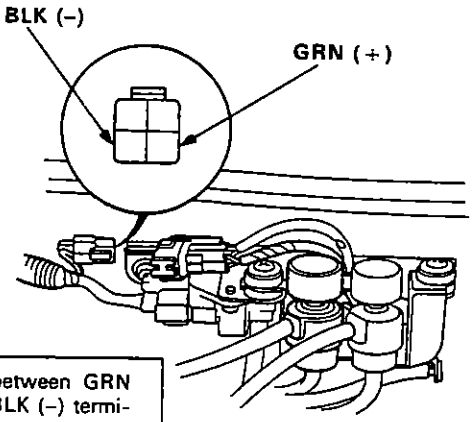
Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 57 °C (135 °F).



Is there vacuum ?

YES → Disconnect the 4P connector.

NO



Measure voltage between GRN (+) terminal and BLK (–) terminal.

Is there battery voltage ?

YES → Replace purge cut-off solenoid valve.

NO

Measure voltage between GRN (+) terminal and body ground.

(To page 6-93)

(To page 6-93)

(From page 6-92)

Warm up the engine to normal operating temperature (cooling fan comes on).

Check for vacuum at #7 hose 5 seconds after starting the engine.

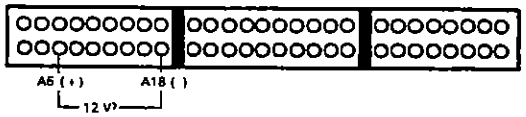
(From page 6-92)

Is there battery voltage ? YES → **Repair open in BLK wire between the 4P connector and G201.**

NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).

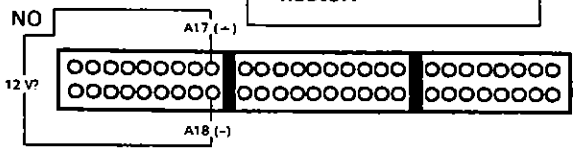


Turn the ignition switch ON.

Measure voltage between A6 (+) terminal and A18 (–) terminal.

Is there battery voltage? YES → **Repair open in GRN wire between ECU (A6) and the 4P connector.**

NO



Measure voltage between A17 (+) terminal and A18 (–) terminal.

Is there battery voltage ? NO → Inspect No. 14 fuse.

YES

Is No. 14 fuse OK ? NO → **Replace fuse.**

YES

Repair open in BLK/YEL wire between ECU (A17) and No. 14 fuse.

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(To page 6-94)

(cont'd)

Evaporative Emission Controls [With CATA Ex. KQ]

Trobleshooting Flowchart (cont'd)

(From page 6-93)

Is there vacuum ?

NO

Disconnect the 4P connector.

Is there vacuum ?

YES

Repair purge cut-off solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "A" connector from ECU.

Check for continuity to ground on GRN wire.

Is there continuity to ground ?

YES

Repair short to ground in BLU wire between ECU (A6) and the 2P connector.

NO

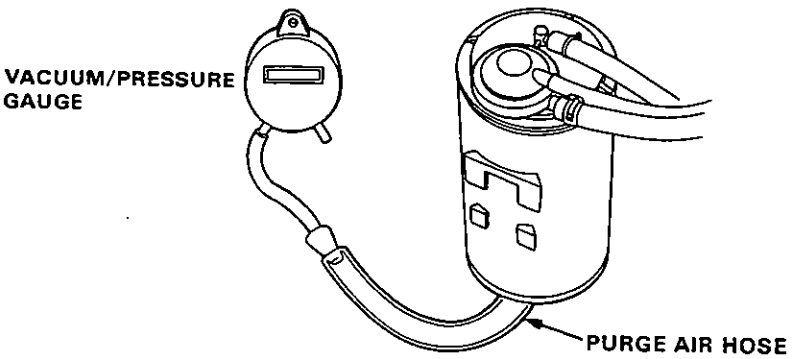
Substitute a known good ECU and recheck. If symptom goes away, replace the original ECU.

YES

Connect a vacuum gauge to canister purge air hose.

Start the engine and rise speed to 3,500 min^{-1} (rpm).

(To page 6-95)



(From page 6-94)

Does vacuum appear on gauge within 1 minute ?

NO

Check the charcoal canister for signs of damage or defects.

Is the canister OK ?

NO

Replace the canister.

YES

Disconnect #7 hose from the purge control diaphragm valve.

Connect a vacuum pump to the canister "purge" fitting and apply vacuum.

Does it hold vacuum ?

NO

Replace the canister.

YES

Reconnect #7 hose.

Does "purge" side vacuum drop to zero ?

NO

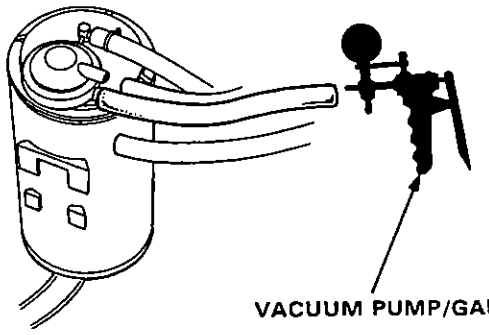
Replace the canister.

YES

See two-way valve test (page 6-100).

YES

Evaporative emission controls are OK.



VACUUM PUMP/GAUGE

Evaporative Emission Control [KQ]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

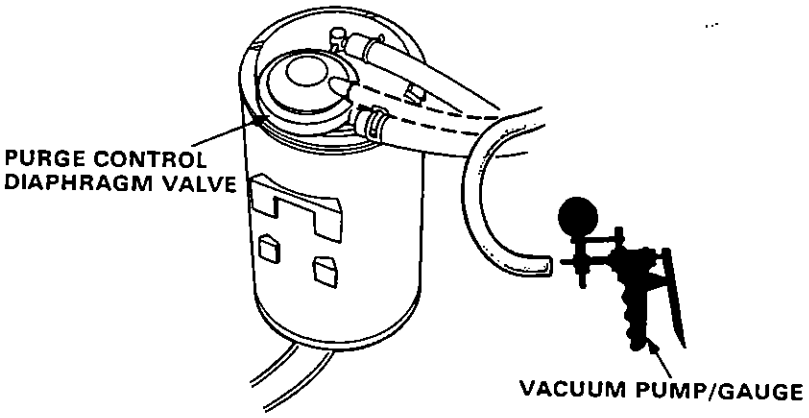
Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

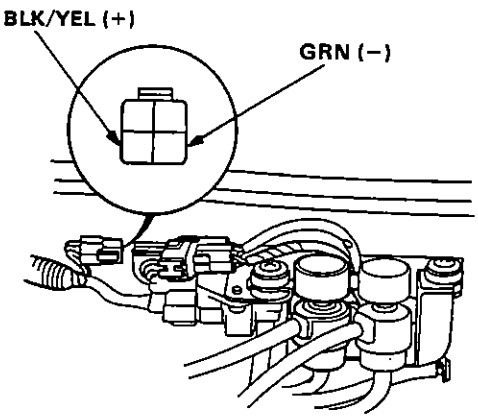
Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 80°C (176°F).

Is there vacuum ?

YES → Disconnect the 2P connector.

NO





Measure voltage between BLK/YEL (+) terminal and GRN (–) terminal.

Is there battery voltage ?

YES → Replace purge cut-off solenoid valve.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.

(To page 6-97)

(To page 6-97)

(From page 6-96)

Warm up the engine to normal operating temperature (cooling fan comes on).

Check for vacuum at #7 hose 5 seconds after starting the engine.

Is there vacuum?

NO

YES

Reconnect the hose.

Remove fuel filler cap.

(To page 11-98)

(From page 6-96)

Is there battery voltage?

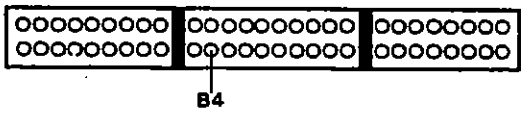
NO

Repair open in BLK/YEL wire between No. 14 fuse and the 4P connector.

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-19).



Check for continuity of GRN wire between ECU (B4) and the 4P connector.

Does continuity exist?

NO

Repair open in GRN wire between ECU (B4) and the 4P connector.

YES

Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Disconnect the 4P connector.

Is there vacuum?

YES

Replace purge cut-off solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "B" connector from ECU.

Check for continuity to ground on GRN wire.

(To page 11-98)

(cont'd)

Evaporative Emission Controls [KQ]

Troubleshooting Flowchart (cont'd)

(From page 6-97)

Connect a vacuum gauge to canister purge air hose.

Start the engine and raise speed to 3,500 min^{-1} (rpm).

Does vacuum appear on gauge within 1 minute ?

NO → Check the charcoal canister for signs of damage or defects.

YES

Evaporative emission controls are OK.

Is the canister OK ?

NO → **Replace the canister.**

YES

Disconnect #7 hose from the purge control diaphragm valve.

Connect a vacuum pump to the canister "purge" fitting and apply vacuum.

Does it hold vacuum ?

NO → **Replace the canister.**

YES

Reconnect #7 hose.

Does "purge" side vacuum drop to zero ?

NO → **Replace the canister.**

YES

See two-way valve test (page 6-100).

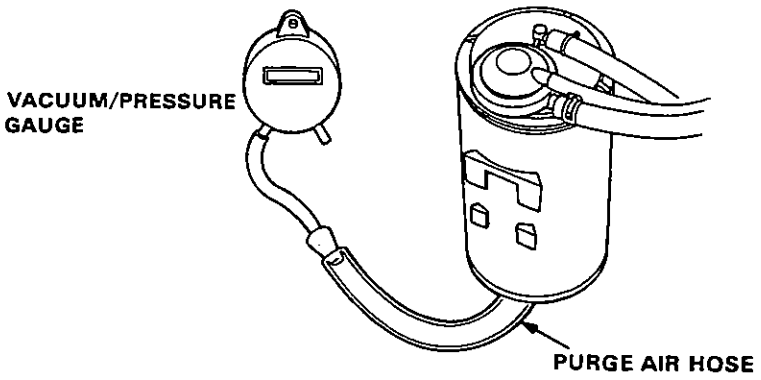
(From page 6-97)

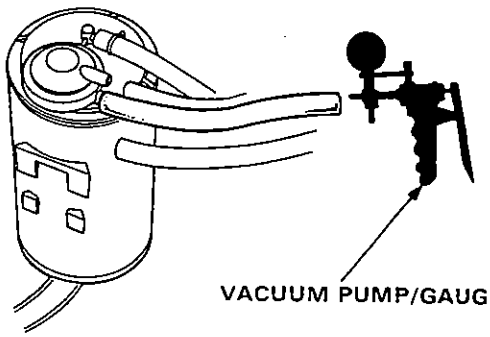
Is there continuity to ground ?

YES → **Repair short to ground in BLU wire between ECU (B4) and the connector.**

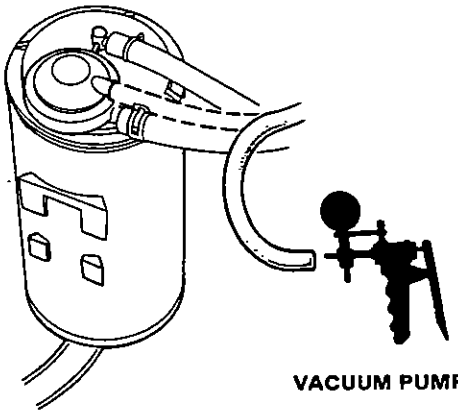
NO

Substitute a known good ECU and recheck. If symptom goes away, replace the original ECU.





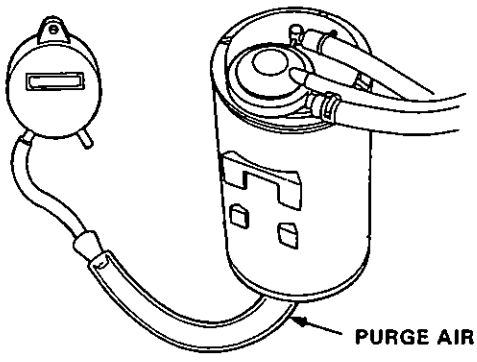
1. Remove the fuel filler cap.
2. Start the engine and allow to idle.
3. Disconnect #7 hose at the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.



VACUUM PUMP/GAUGE

- If there is no vacuum, check #7 hose for blockage, cracks or disconnected hose, as well as vacuum port for blockage.

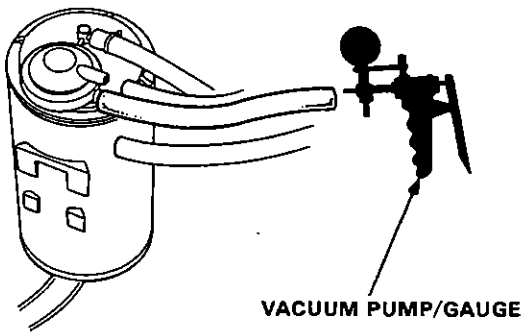
4. Disconnect the vacuum gauge and reconnect the hose.
5. Connect a vacuum gauge to canister purge air hose.



PURGE AIR HOSE

6. Raise engine speed to 3,500 min^{-1} (rpm).
   Vacuum should appear on gauge within 1 minute.
   - If vacuum appears on gauge in 1 minute, remove gauge, test is complete.
   - If no vacuum, disconnect vacuum gauge and reinstall fuel filler cap.
7. Remove charcoal canister and check for signs of damage or defects.
   - If defective, replace canister.
8. Stop engine. Disconnect upper vacuum hose from canister "PCV" fitting.
   Connect a vacuum pump to canister "purge" fitting as shown, and apply vacuum.

   Vacuum should remain steady.



VACUUM PUMP/GAUGE

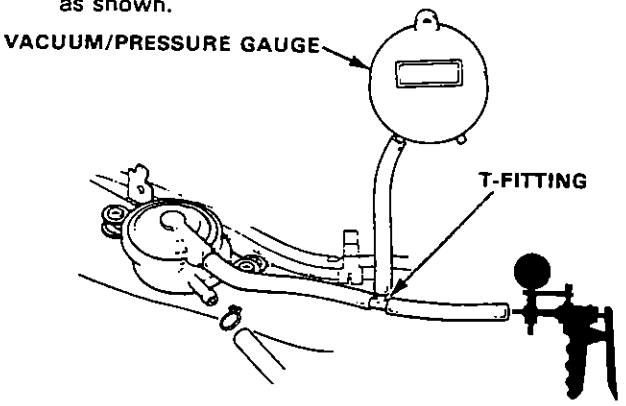
   - If vacuum drops, replace canister and retest.
9. Restart engine. Reconnect hose to canister "PCV" fitting.

   "PURGE" side vacuum should drop to zero.
   - If "PURGE" side vacuum does not drop to zero, replace the canister and retest.

Evaporative Emission Controls

Two-Way Valve Test [With CATA and KY]

1. Remove the fuel filler cap.
2. Remove vapor line from the fuel tank and connect to T-fitting from vacuum gauge and vacuum pump as shown.

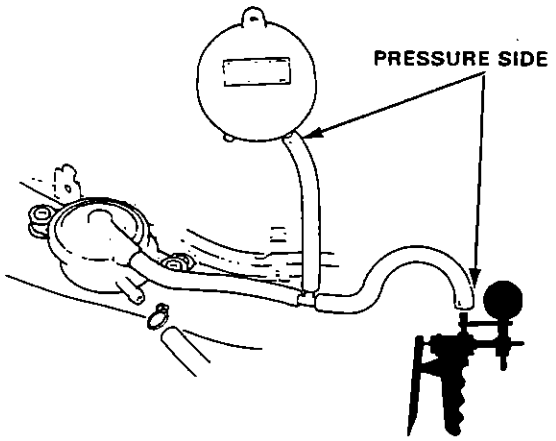


3. Slowly apply vacuum while watching the gauge.

   Vacuum should stabilize momentarily at 5 to 15 mmHg (0.2 to 0.6 in. Hg).

   - If vacuum stabilizes (valve opens) below 5 mmHg (0.2 in. Hg) or above 15 mmHg (0.6 in. Hg), install new valve and retest.

4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



5. Slowly pressurize the vapor line while watching the gauge.

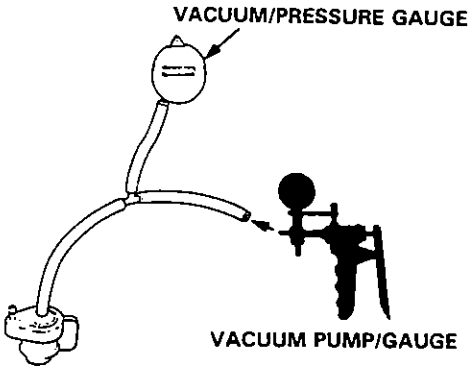
   Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in. Hg).

   - If pressure momentarily stabilizes (valve opens) at 10 to 35 mmHg (0.4 to 1.4 in. Hg), the valve is OK.
   - If pressure stabilizes below 10 mmHg (0.4 in. Hg) or above 35 mmHg (1.4 in. Hg), install a new valve and retest.

Two-Way Valve [Without CATA Ex. KY]

Test

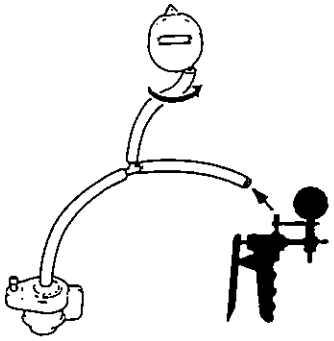
1. Remove the fuel filler cap.
2. Remove the vapor line from the canister or frame, and connect to a T-fitting from the vacuum gauge and the vacuum pump as shown.



3. Slowly draw a vacuum while watching the gauge. Vacuum should stabilize at 15 to 30 mmHg (0.6 to 1.2 in. Hg).

   - If vacuum stabilizes momentarily (Two-way Valve opens) between 15 and 30 mmHg (0.6 and 1.2 in. Hg), go on Step 4.
   - If vacuum stabilizes (valve opens) below 15 mmHg or above 30 mmHg (1.2 in.Hg), install new valve and retest.

4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



5. Slowly pressurize the vapor line while watching the gauge.
   Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in.Hg).

   - If pressure momentarily stabilizes (Valve opens) at 10 to 25 mmHg (0.4 to 1.0 in.Hg), the valve is OK.
   - If pressure stabilizes below 10 mmHg (0.4 in.Hg) or above 25 mmHg (1.0 in. Hg), install a new valve and re-test.

Transaxle

Clutch

Illustrated Index 7-2
Clutch Adjustment 7-3
Release Bearing 7-4
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Clutch Disc 7-7
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Driveshafts

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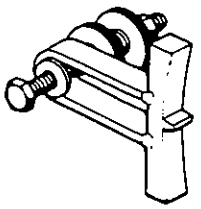


Clutch

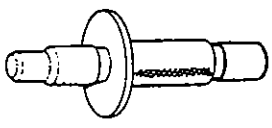
Illustrated Index 7-2
Clutch Adjustment 7-3
Release Bearing 7-4
Pressure Plate 7-6
Clutch Disc 7-7
Flywheel 7-8
Flywheel Bearing 7-8
Flywheel and Clutch 7-9

Special Tools

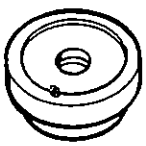
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07924—PD20003	Ring Gear Holder	1	or 07924—PD20002
②	07JAF-PM70100	Clutch Disc Alignment Tool	1	
③	07746—0010100	Attachment 32 x 35 mm	1	
④	07749—0010000	Driver	1	



①



②



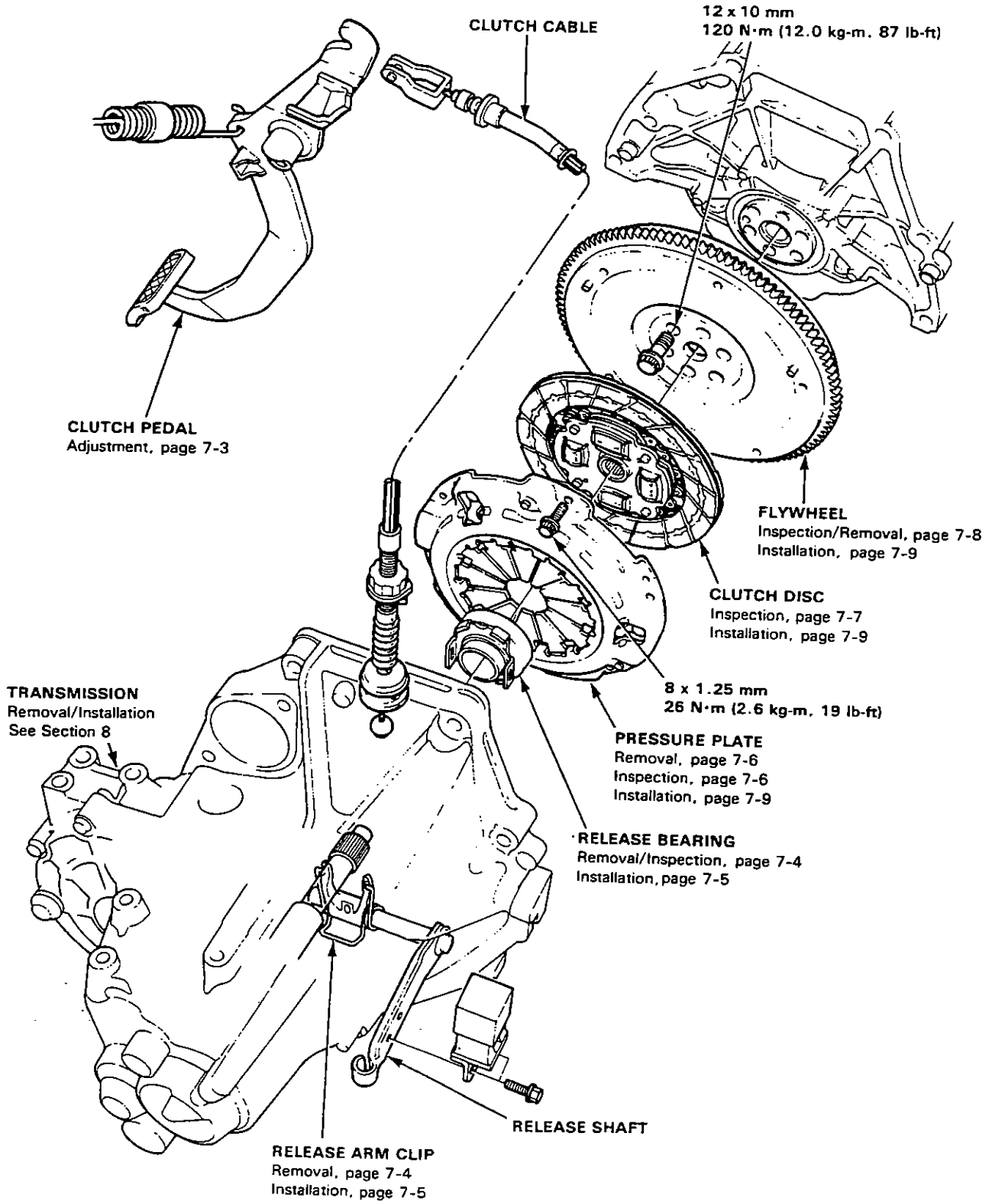
③



④

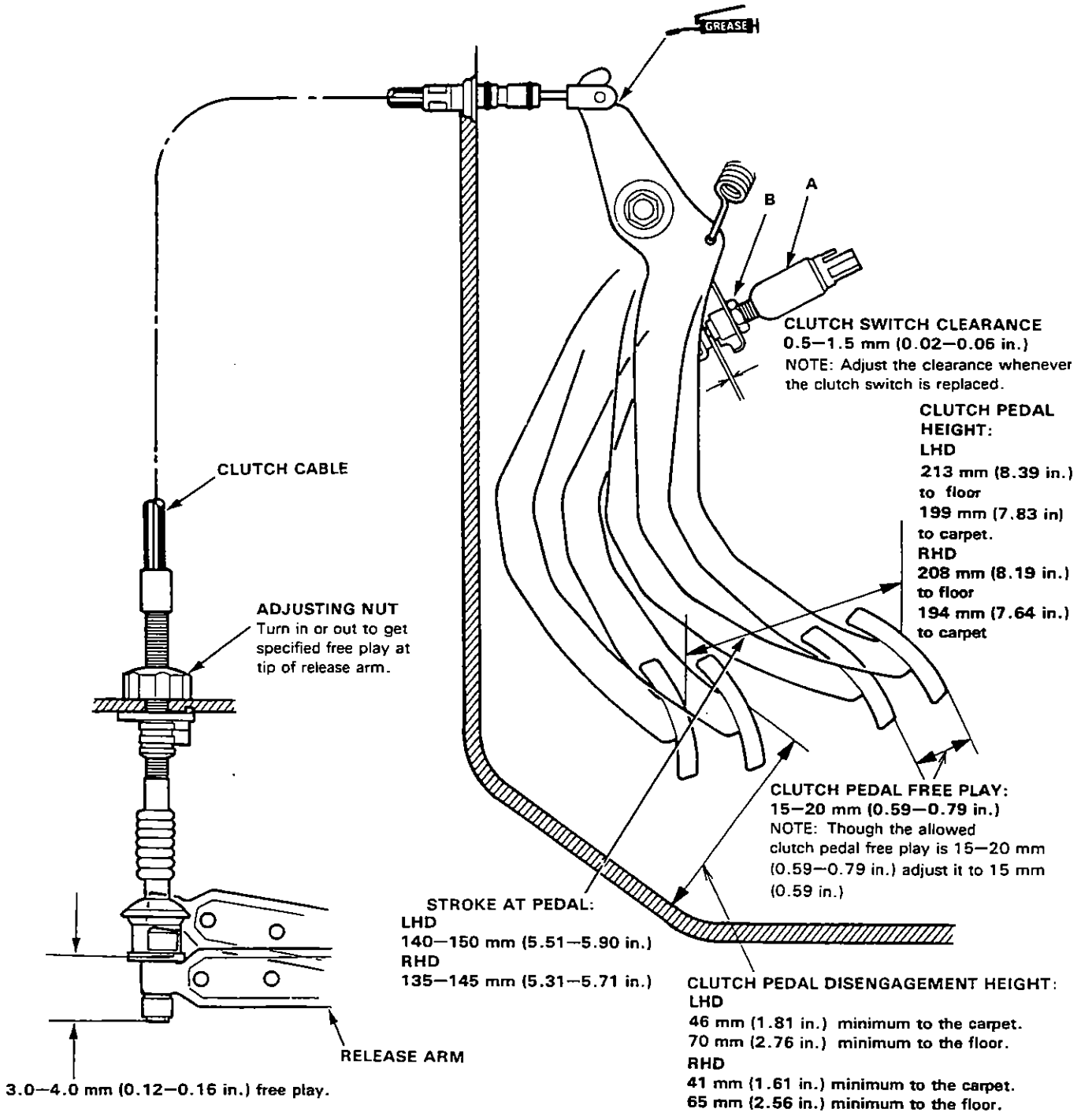
Illustrated Index

NOTE: Whenever the transmission is removed, the release bearing sliding surface should be cleaned and greased (Molybdenum Disulfide).



Adjustment

1. Measure the clutch pedal disengagement height.
2. Measure the clutch pedal free play.
3. Adjust the clutch free play by turning the adjusting nut.
4. Make sure that there is 3.0—4.0 mm (0.12—0.16 in.) free play at the tip of release arm after the adjustment.
5. Turn A to right or left to bring the clutch pedal stroke to the specification and tighten nut B.
6. When clutch switch is replaced, install the switch and turn nut B to adjust clearance.

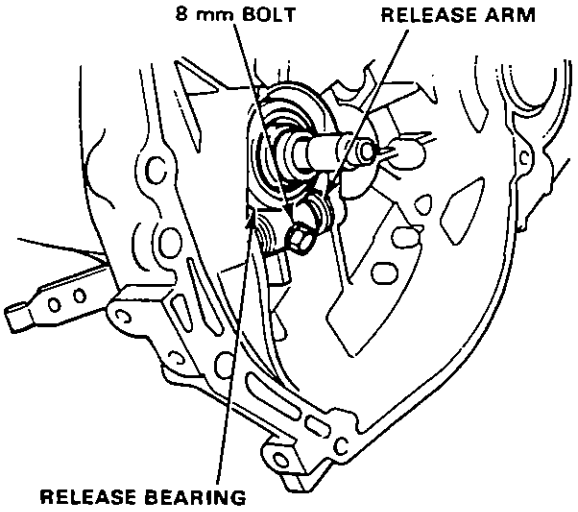


Release Bearing

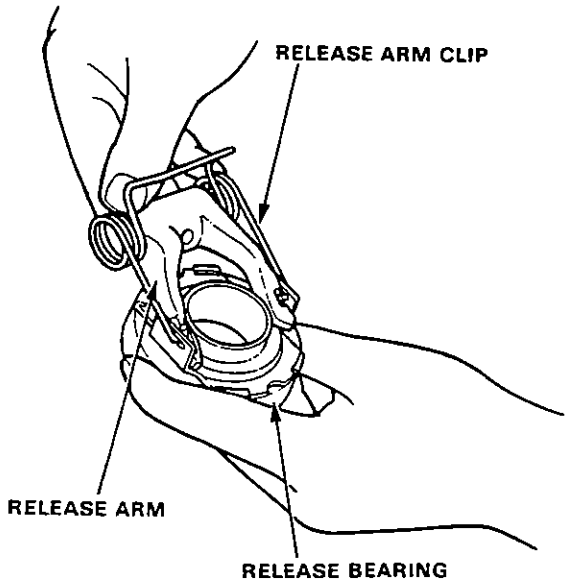
Removal

1. Remove the 8 mm special bolt.

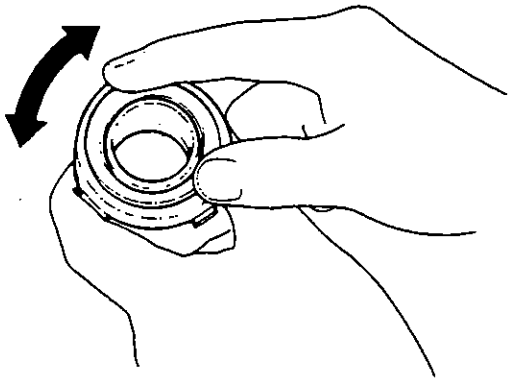
2. Remove the release shaft and release bearing assembly.



3. Separate the release arm from the bearing by removing the clip from the holes in the release bearing.



4. Check the release bearing for excessive play by spinning it by hand.

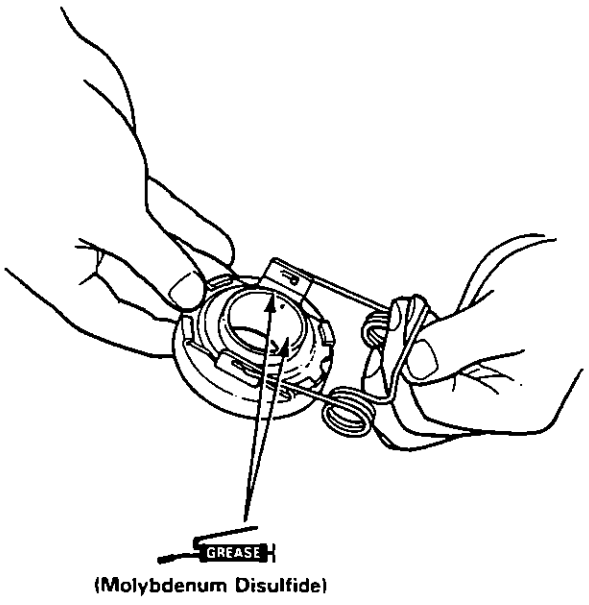


5. Replace the bearing with a new one if there is excessive play.

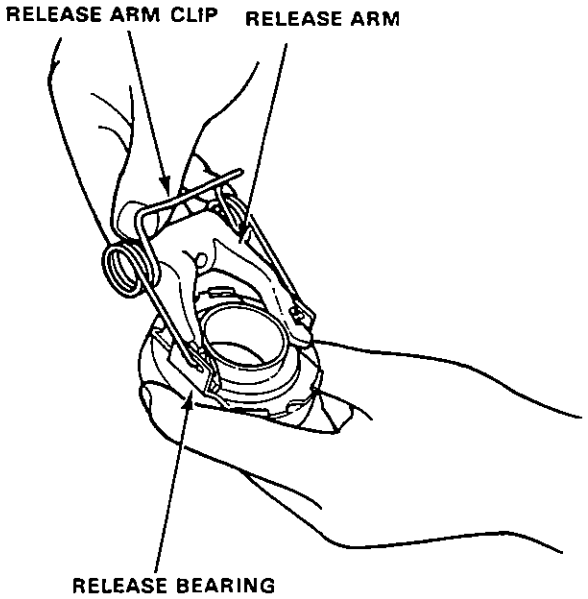
CAUTION: The bearing is packed with grease. Do not wash it in solvent.

Installation

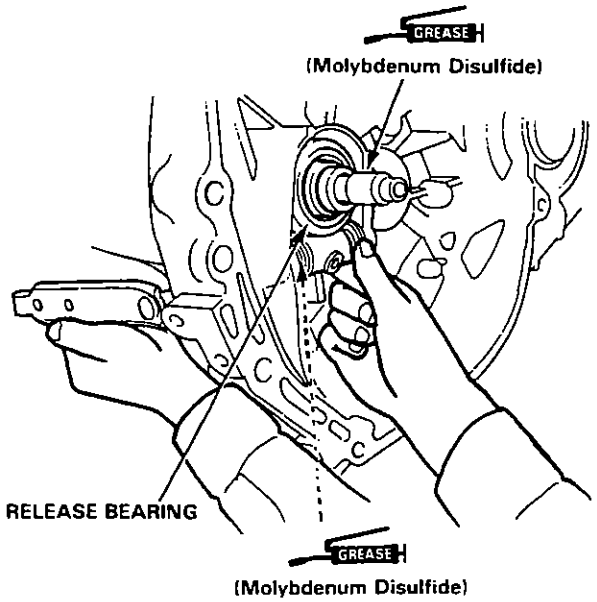
1. Align the release arm with the locating holes of the release bearing.



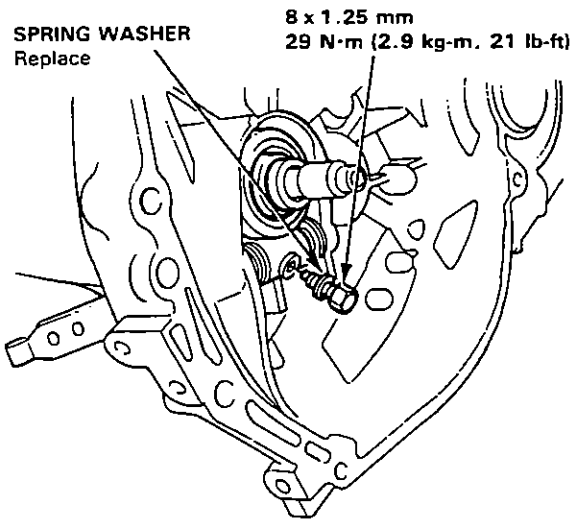
2. Install the release arm clip in the locating holes as shown.



3. Install the release shaft and the release bearing.
NOTE: Grease the release shaft with molybdenum disulfide also.



4. Align the release shaft and release arm, then install a new spring washer and bolt.



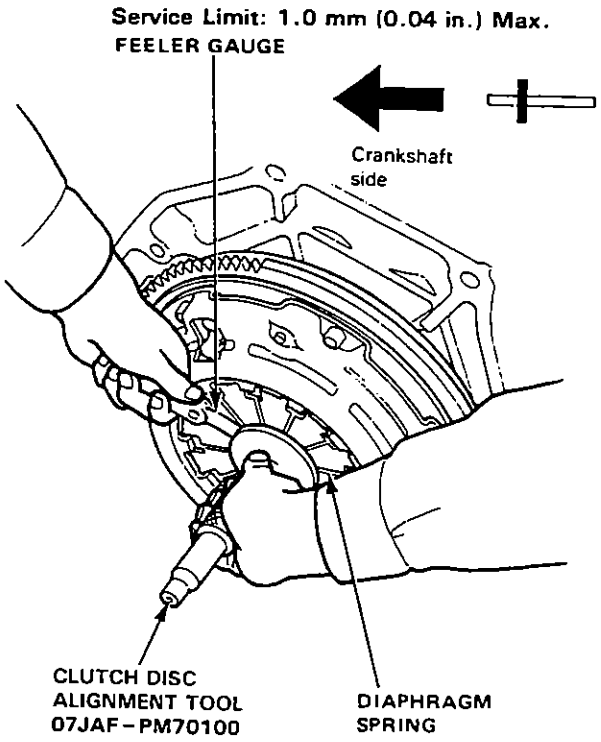
5. Move the release arm up and down to make sure the fork fits properly against the bearing, and that the bearing slides freely.

Pressure Plate

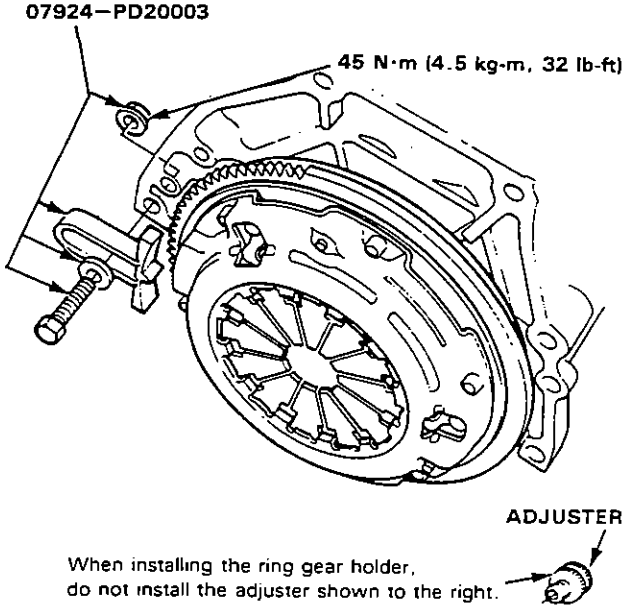
Removal/Inspection

1. Inspect the fingers of the diaphragm spring for wear at the release bearing contact area.

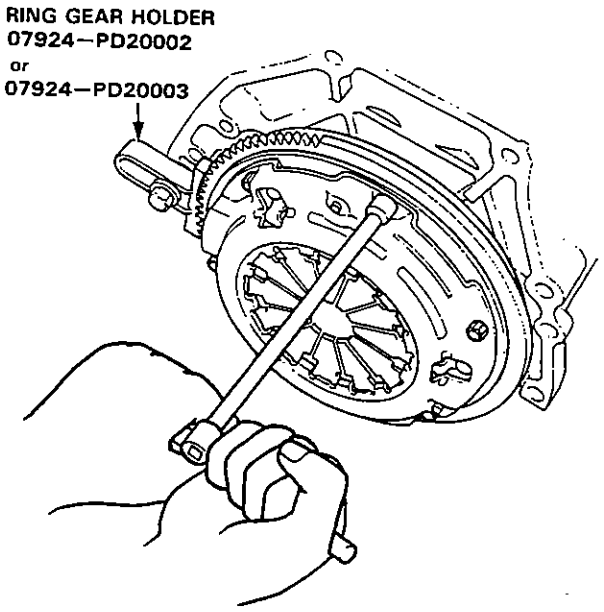
2. Check the diaphragm spring fingers for height using the Clutch Disc Alignment Tool and feeler gauge.



3. Install the Ring Gear Holder.



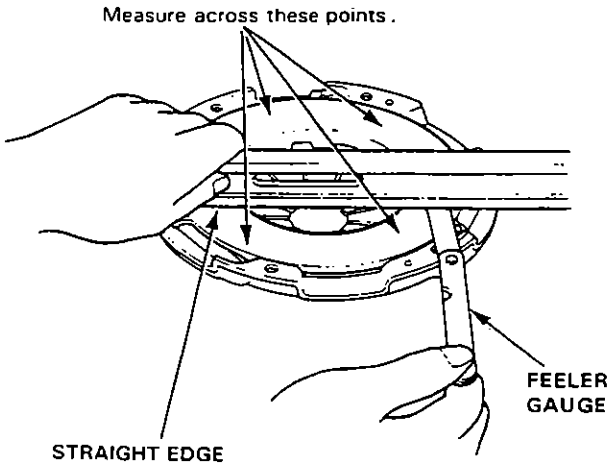
4. To prevent warping, unscrew the pressure plate mounting bolts two turns at a time in a crisscross pattern using a 10 mm T-wrench, then remove the pressure plate and clutch disc.



5. Inspect the pressure plate surface for wear, cracks, or burning.

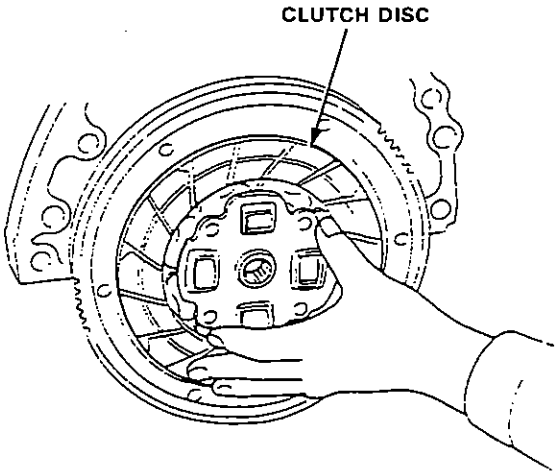
6. Inspect for warpage using a straight edge and feeler gauge.

Service Limit: 0.15 mm (0.006 in.) Max.



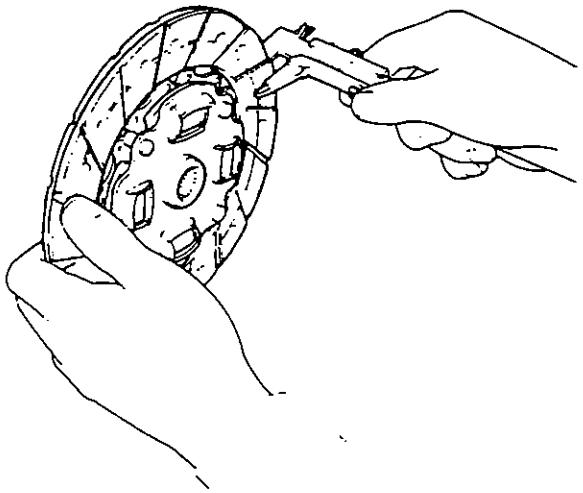
Inspection

1. Inspect lining of the clutch disc for signs of slipping or oil. Replace it if it is burned black or oil soaked.



2. Measure the clutch disc thickness.

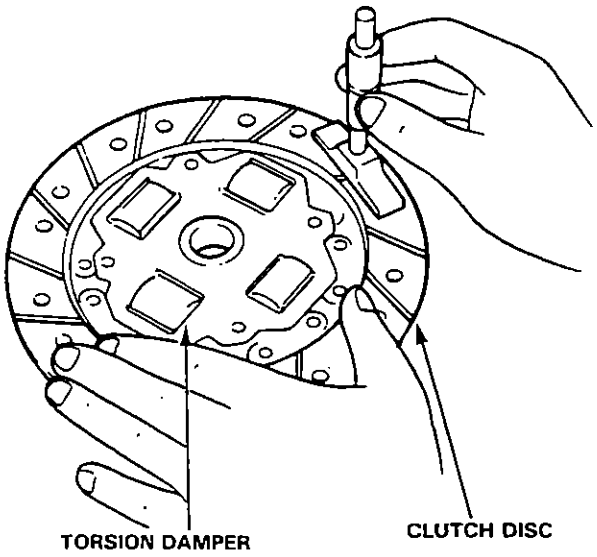
CLUTCH DISC
Clutch Disc Thickness:
Standard (New): 8.1—8.8 mm (0.319—0.346 in.)
Service Limit: 5.7 mm (0.224 in.)



3. Check for loose rubber torsion dampers. Replace the clutch disc if any are loose.

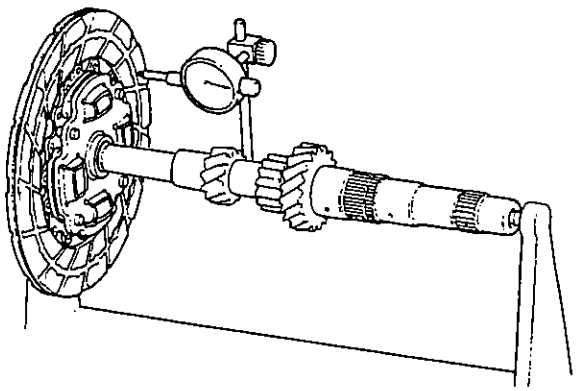
4. Measure the depth from the lining surface to the rivets, on both sides.

Rivet Depth:
Standard (New): 1.3 mm (0.051 in.) min.
Service Limit: 0.2 mm (0.008 in.)



5. Measure the clutch plate runout with the mainshaft and a dial indicator.

Clutch plate runout:
Standard: 0.8 mm (0.031 in.) max.
Service Limit: 1.0 mm (0.039 in.)



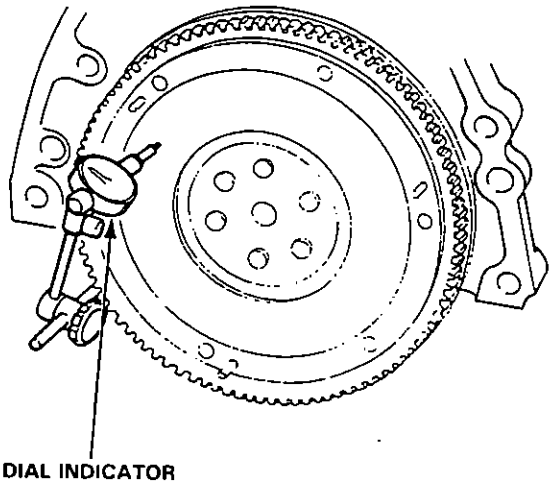
Flywheel

Inspection/Removal

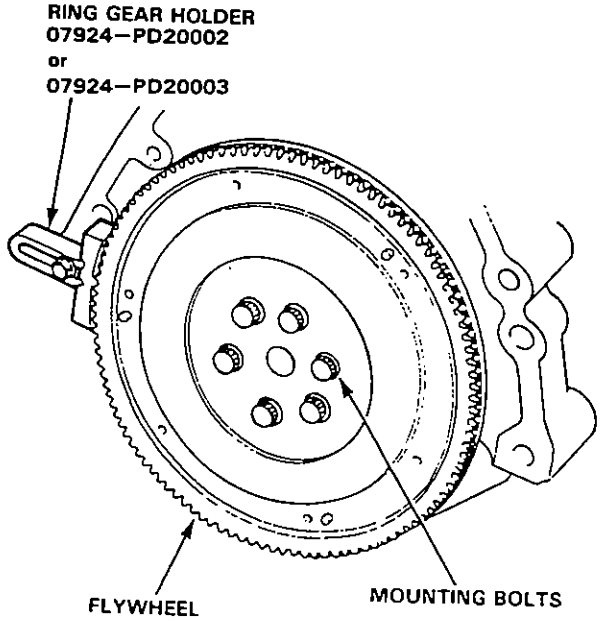
1. Inspect the ring gear teeth for wear or damage.
2. Inspect the clutch disc mating surface on the flywheel for wear, cracks or burning.
3. Measure the flywheel runout using a dial indicator through at least two full turns. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance.

   NOTE: The runout can be measured with engine installed.

   Standard (New): 0.05 mm (0.002 in.) max.
   Service Limit: 0.15 mm (0.006 in.)



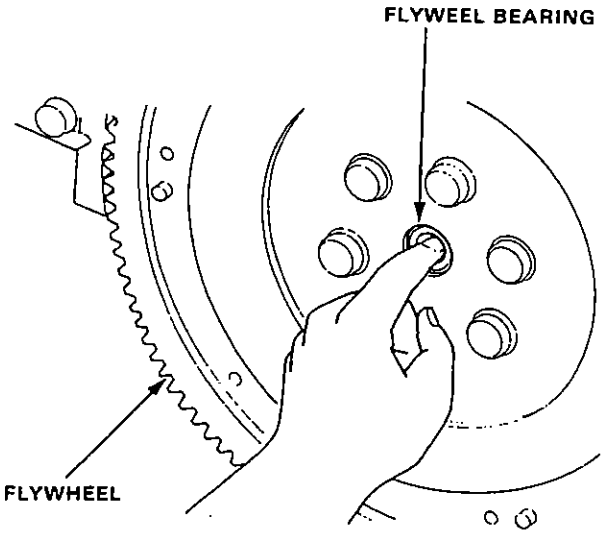
4. Remove the six flywheel mounting bolts and flywheel.



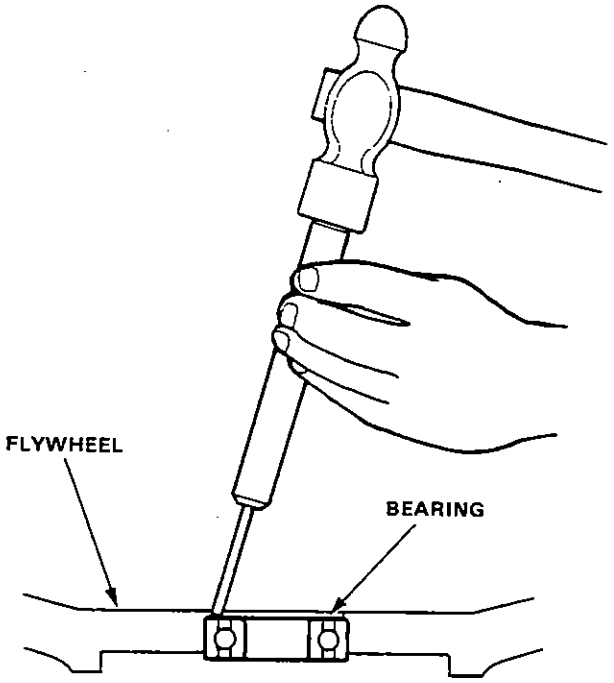
Flywheel Bearing

Inspection/Replacement

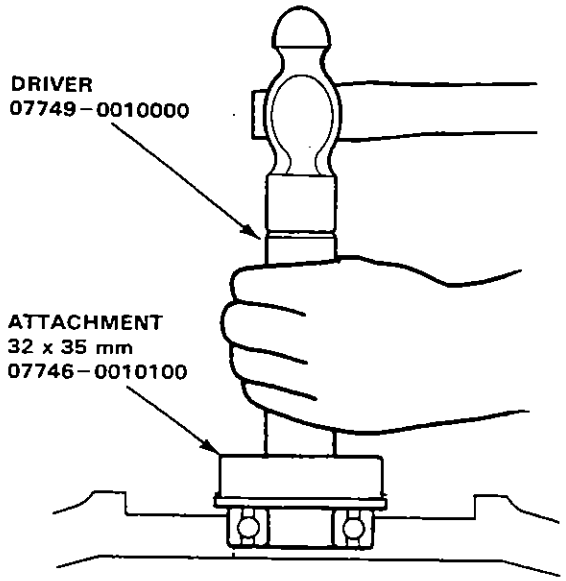
1. Turn the inner race of the bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the flywheel. Replace the bearing if the race does not turn smoothly, quietly, or fit tightly in the flywheel.



2. Remove the bearing from the flywheel.



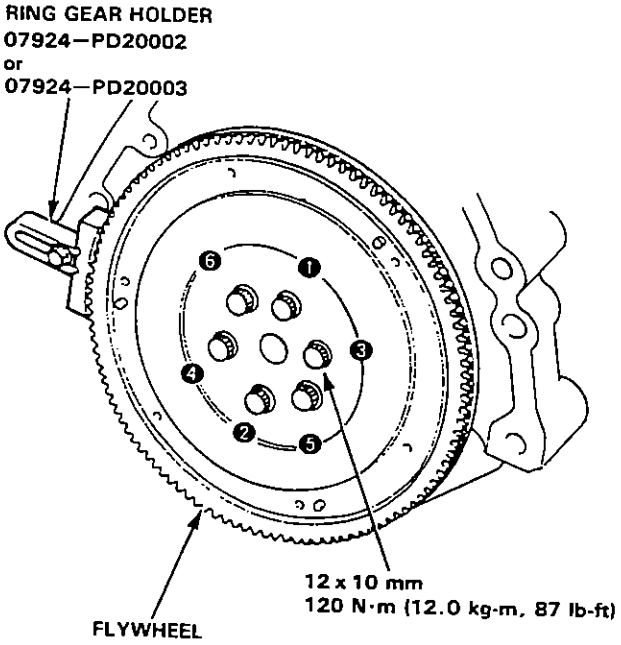
3. Drive in the new bearing in the flywheel.



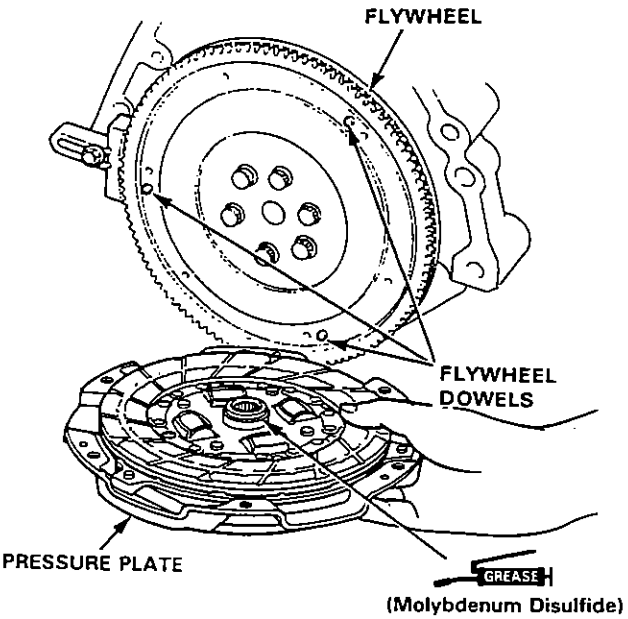
Installation

1. Align the hole in flywheel with the crankshaft dowel pin and assemble. Install the bolts only finger tight.

2. Install the Ring Gear Holder, then torque the flywheel bolts in a crisscross pattern, as shown.



3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.

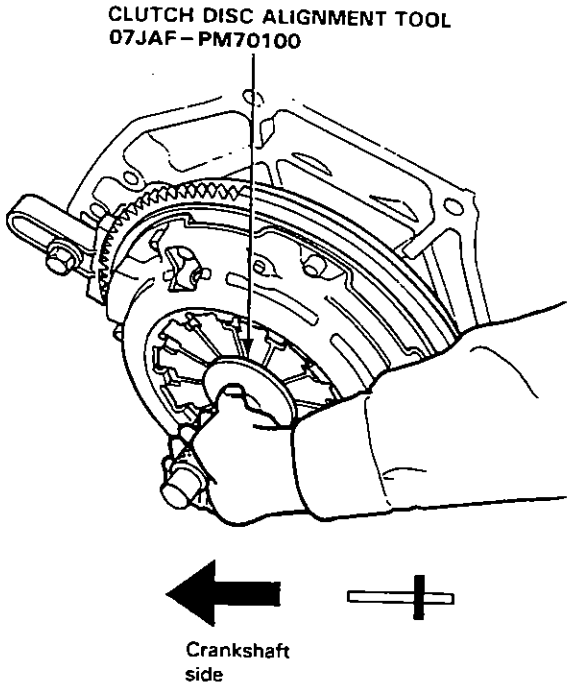


4. Install the attaching bolts finger tight.

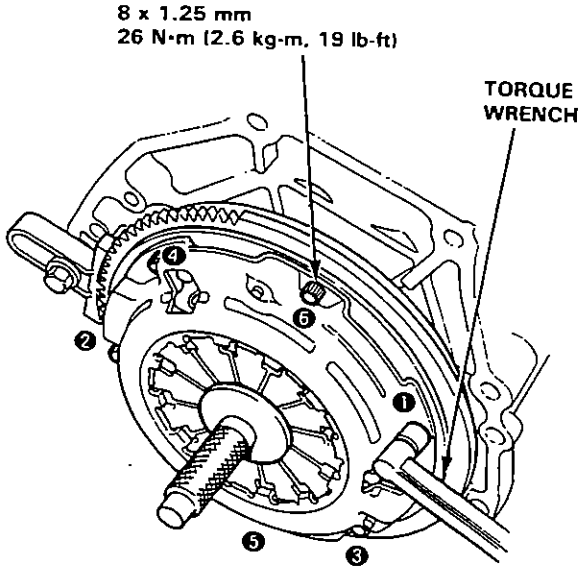
(cont'd)

Installation (cont'd)

5. Insert the Clutch Disc Alignment Tool in the splined hole in the clutch disc.



6. Torque the bolts in a crisscross pattern as shown. Tighten them two turns at a time to prevent warping the diaphragm spring.



7. Remove the Alignment Tool and Ring Gear Holder.

Manual Transmission

Maintenance 8–2
Back-up Light Switch 8–2
Gearshift Mechanism 8–3
Transmission
  Removal 8–4
  Installation 8–7



Maintenance

Oil Level Inspection

1. Check with oil at operating temperature, engine OFF, and car on level ground.
2. Remove oil filler plug and check level with finger.
3. Oil level must be up to fill hole. If it is below hole, add oil until it runs out, then reinstall plug.

Oil Change

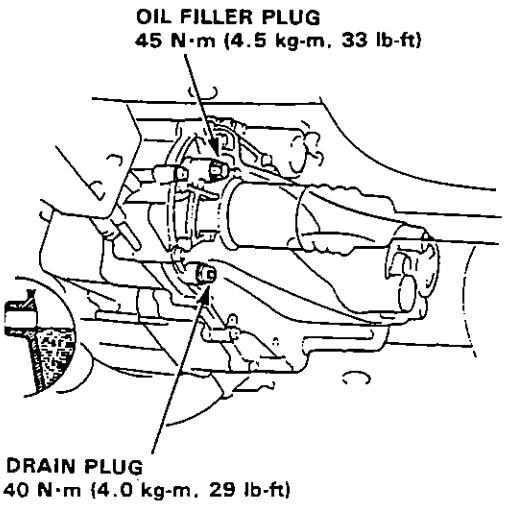
Use only SAE 10W-30 or 10W-40 oil rated SE or SF grade.

1. Drain with transmission oil at operating temperature, engine OFF, and car on level ground.
2. Remove the oil filler plug, then remove the drain plug and drain transmission.
3. Reinstall drain plug with new washer, and refill to proper level.

   NOTE: Drain plug washer should be replaced at every oil change.

Oil Capacity

1.8ℓ (1.9 U.S. qt.) after drain.
1.9ℓ (2.0 U.S. qt.) after overhaul.

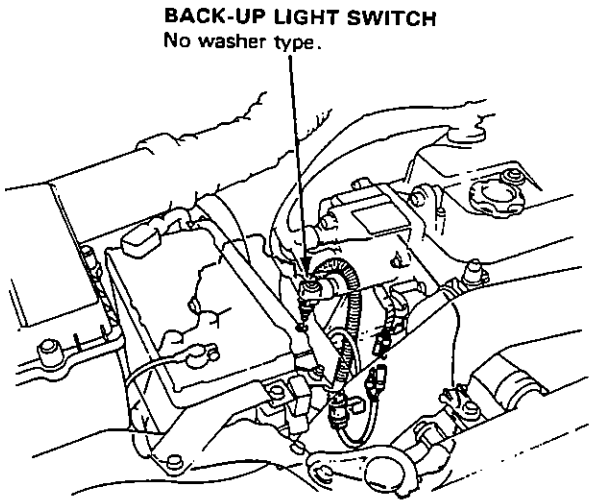


Back-up Light Switch

Replacement

NOTE: Check the switch see Section 16.

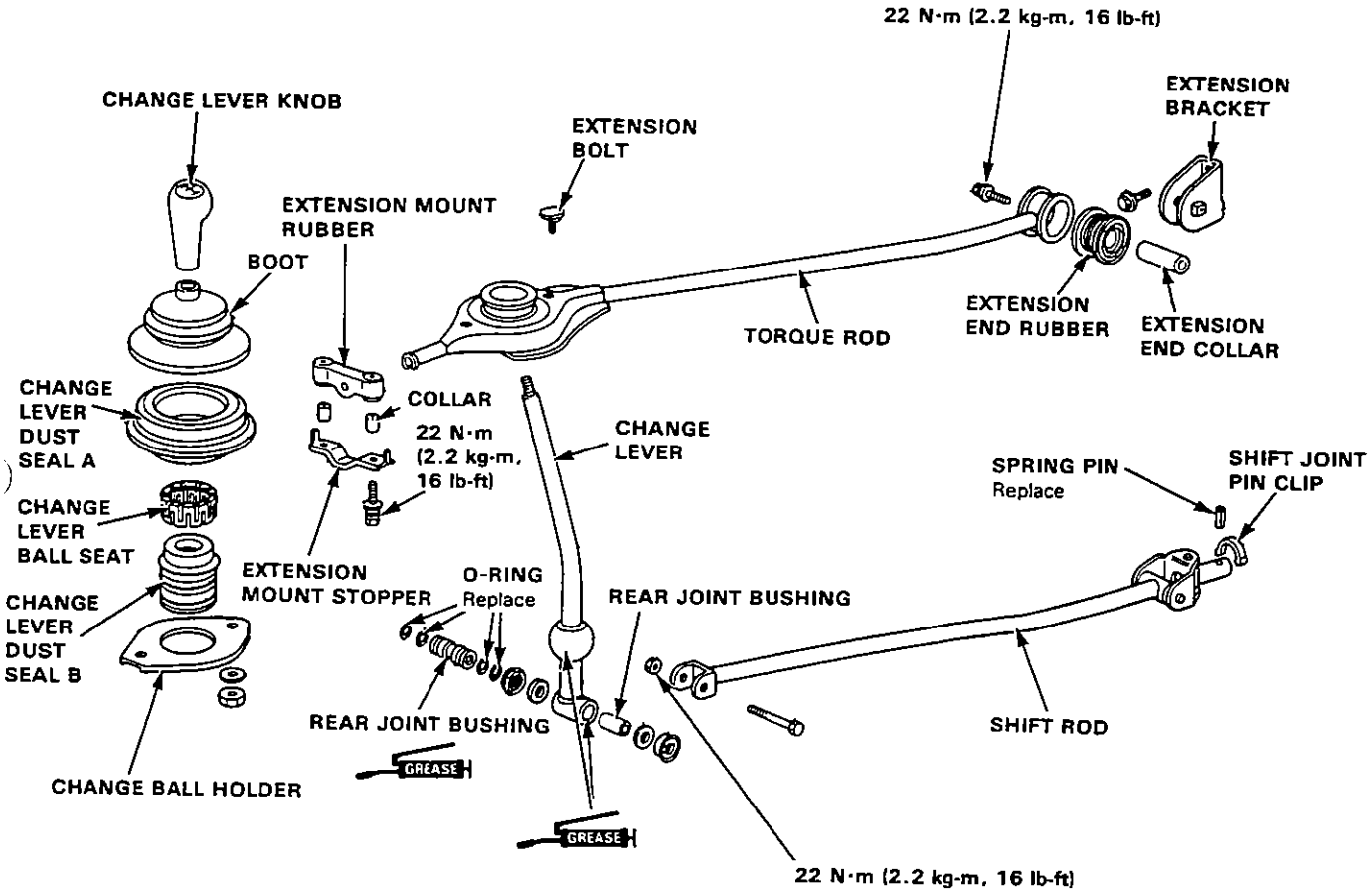
1. Disconnect the back-up light switch wire connectors.
2. Remove the back-up light switch.



3. Install the back-up light switch.

Gearshift Mechanism

Overhaul



Transmission

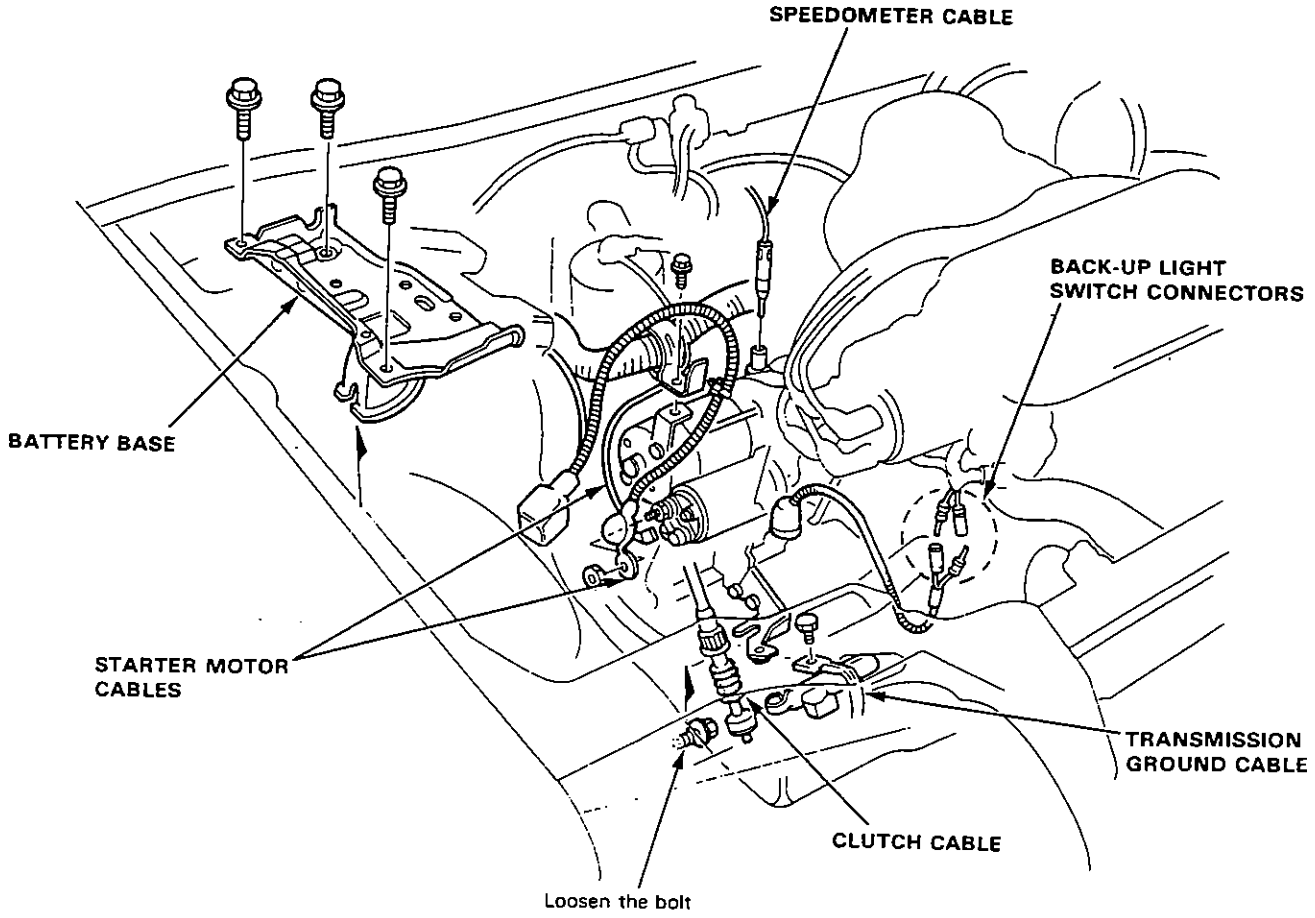
Removal

WARNING

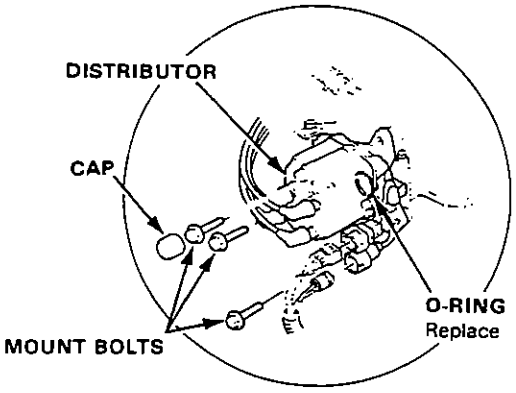
- **Make sure jacks and safety stands are placed properly (See Section 1), and hoist brackets are attached to correct positions on the engine (See Section 5).**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

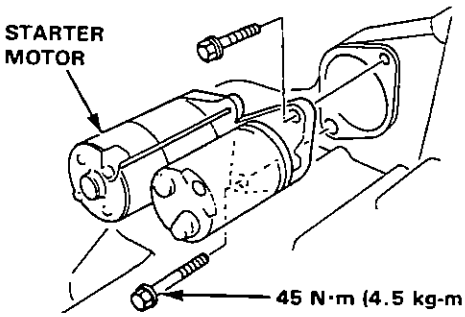
1. Disconnect the battery negative (−) and positive (+) cables from the battery.
2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base. Remove the intake hose band of the throttle body.
3. Remove the air cleaner case complete with the intake hose (See Section 6).
4. Disconnect the starter motor and transmission ground cables.
5. Disconnect the speedometer cable.
   NOTE: Do not disassemble speedometer gear holder.
6. Disconnect the back-up light switch connector from the engine.
7. Disconnect the clutch cable at release arm.
8. Drain transmission fluid. Use a socket wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.



9. Disconnect the connectors and remove the mount bolts, then remove the distributor from the cylinder head.



10. Remove the bolts attaching the starter motor, and remove the starter motor.



11. Remove the engine splash shield and the right wheelwell splash shield.

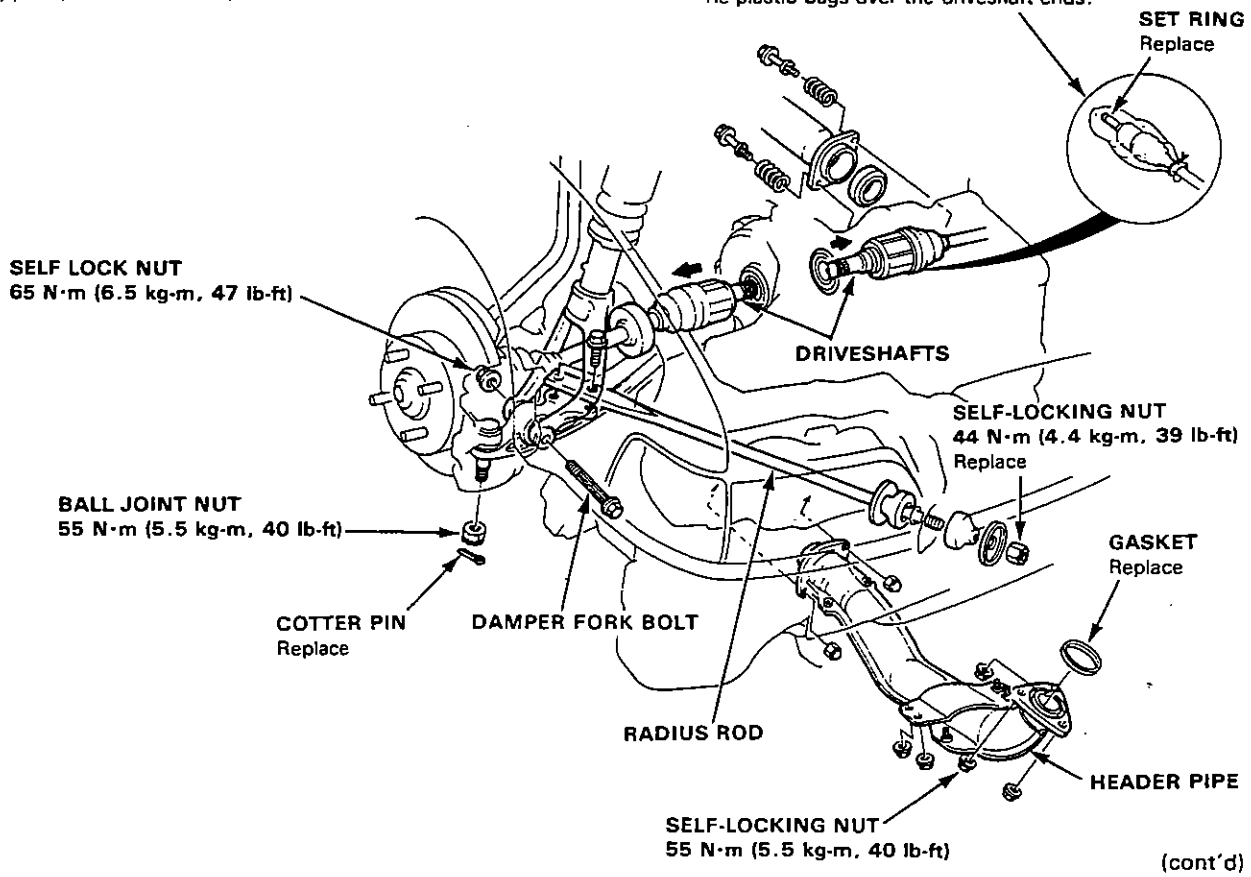
12. Remove the header pipe.

13. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm.

14. Remove the bolts and nut, then remove the right radius rod.

15. Remove the right driveshaft (See Section 10). Remove the left driveshaft and intermediate shaft if equipped (See Section 10).

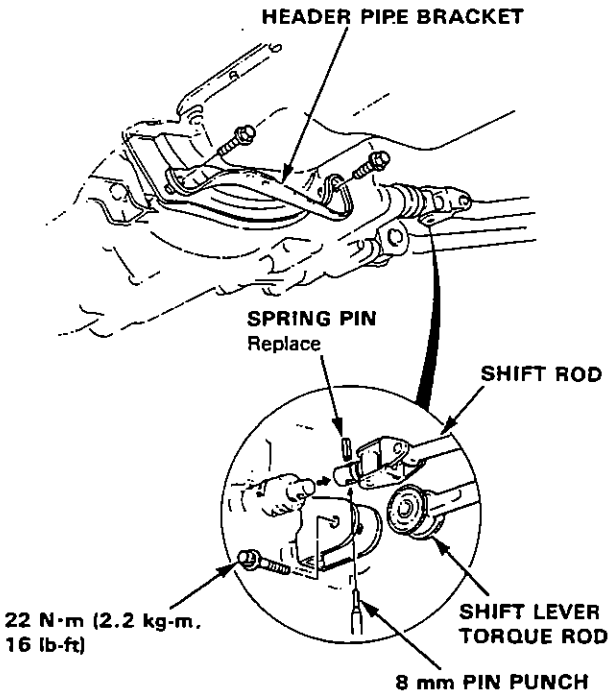
NOTE: Coat all precision finished surfaces with clean engine oil or grease.
Tie plastic bags over the driveshaft ends.

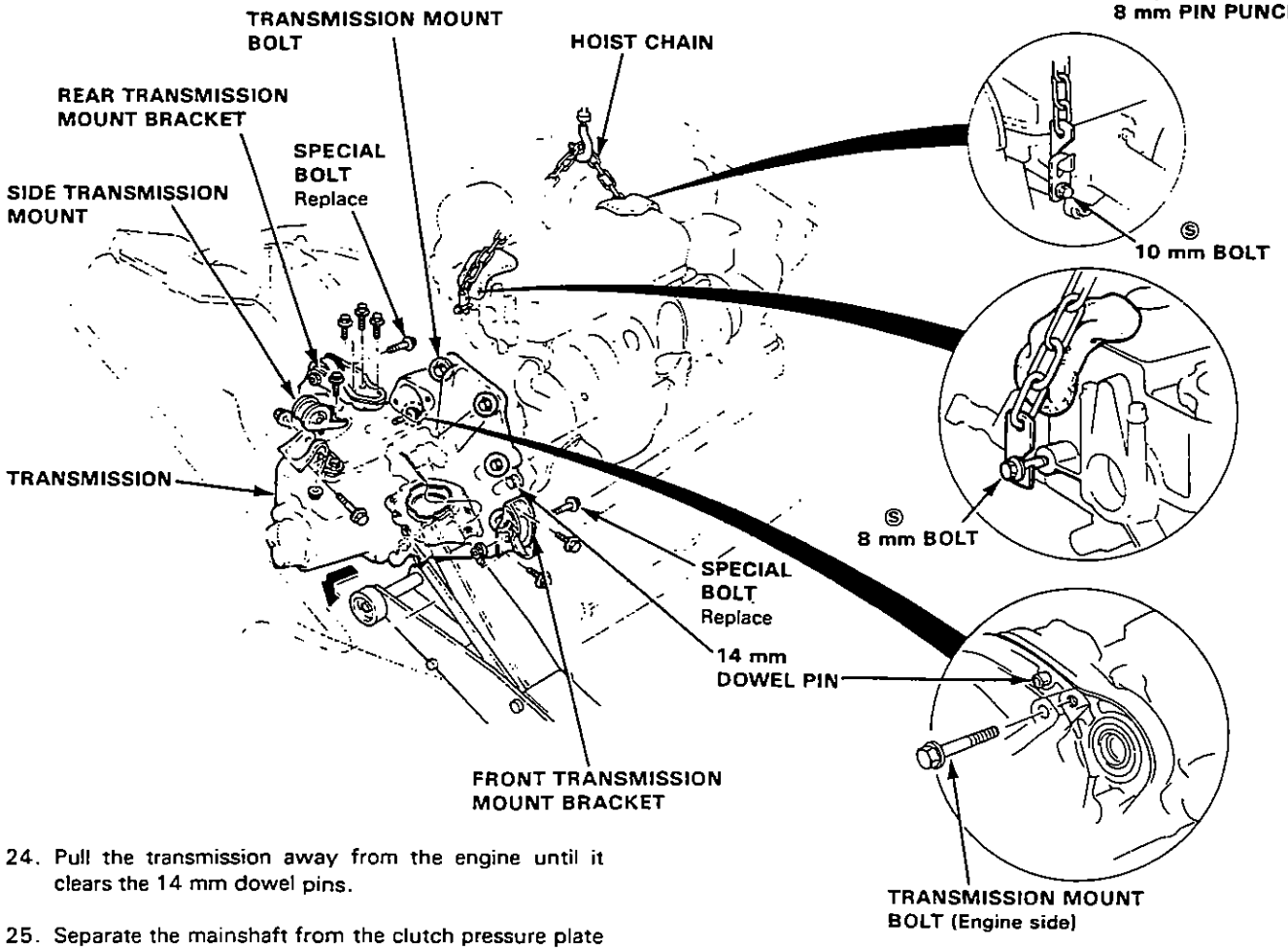


(cont'd)

Removal (cont'd)

16. Remove the header pipe bracket.
17. Remove the shift lever torque rod and shift rod from clutch housing.
18. Install the bolt Ⓢ at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plate Ⓢ, then lift the engine slightly to unload the mounts.
19. Place a jack under the transmission and raise transmission just enough to take the weight off the mounts.
20. Remove the bolts from the front transmission mount.
21. Remove the rear transmission mount bracket by removing the 4 mounting bolts.
22. Remove the bolts and nut, then remove the side transmission mount.
23. Remove the 5 transmission mount bolts.

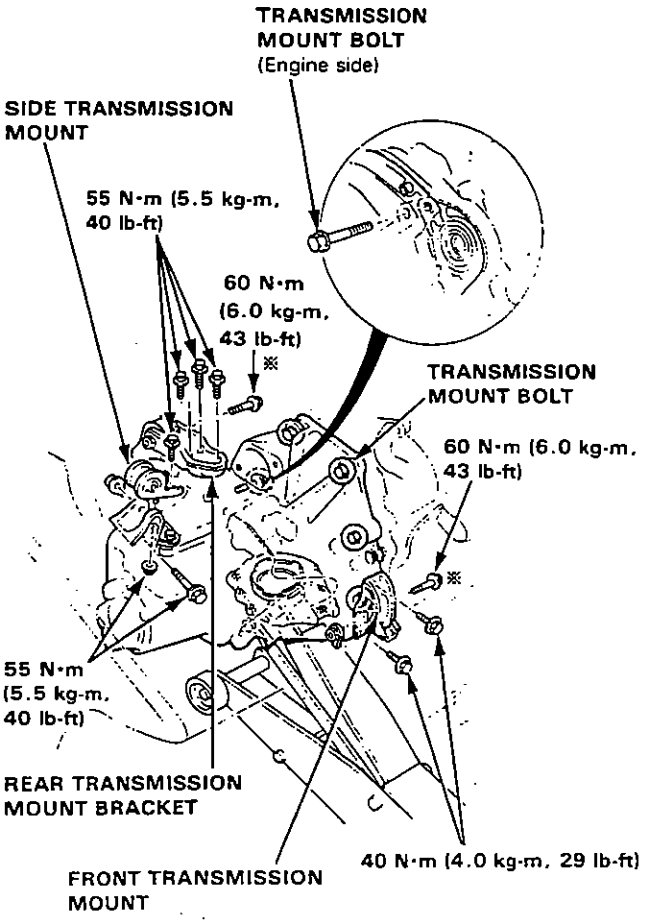




24. Pull the transmission away from the engine until it clears the 14 mm dowel pins.
25. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.

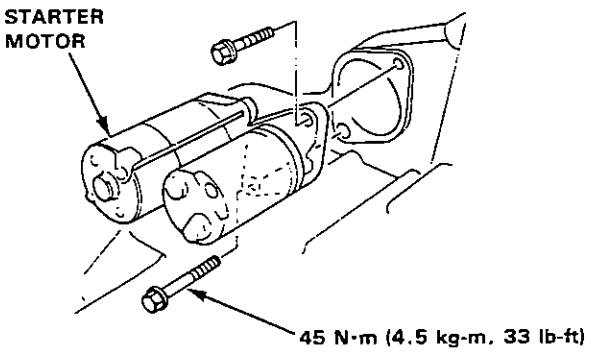
Installation

1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the clutch housing.
3. Loosely install the transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12 x 1.25 x 70 mm) and torque to 68 N·m (6.8 kg-m, 50 lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to front and side transmission mounts.

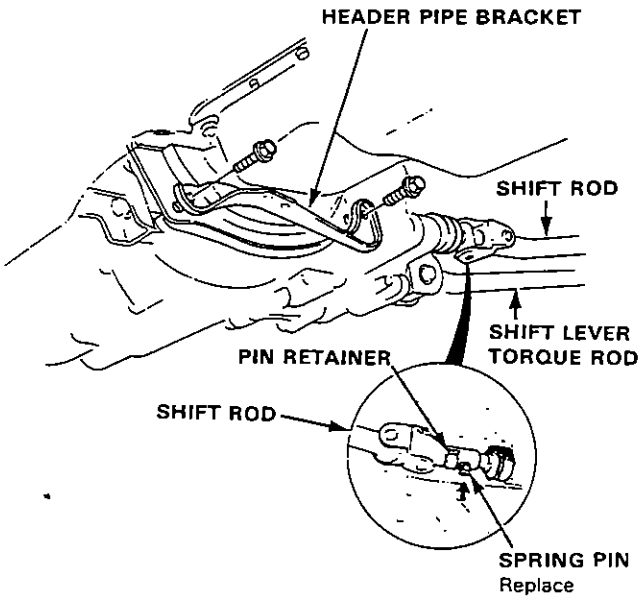


※Special bolt: Replace.

7. Install the starter motor.



8. Remove the transmission jack.
9. Remove the chain hoist by removing the hanger plate and 10 mm bolts.
10. Install the shift lever torque rod and shift rod.



NOTE: On reassembly, slide the retainer back into place after driving in the spring pin.

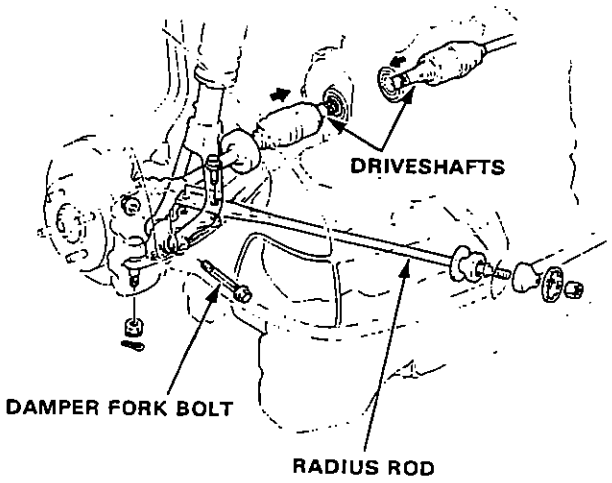
11. Install the header pipe bracket.

(cont'd)

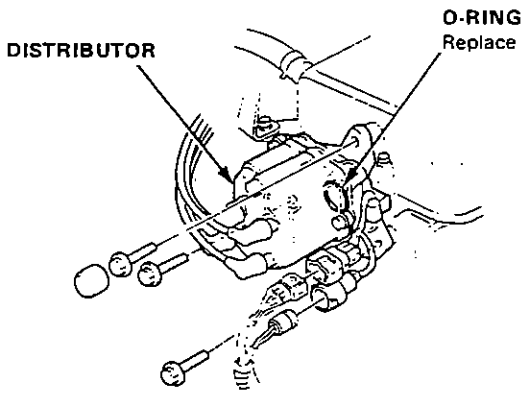
Installation (cont'd)

12. Install a new set rings on the end of each driveshaft.
13. Install the right driveshaft (See Section 10).
    Install the left driveshaft and intermediate shaft if removed (See Section 10).

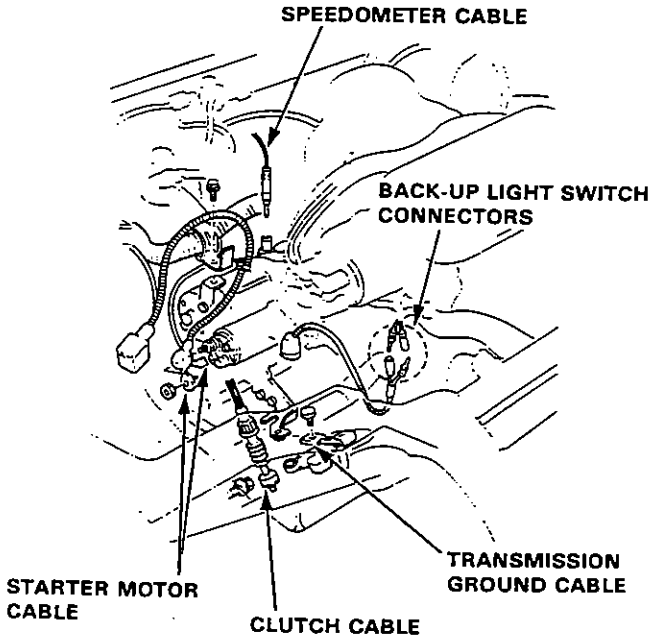
    NOTE: Turn the right steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage side gear.



14. Install the damper fork and radius rod.
15. Install the ball joints to the lower arm.
16. Install the splash shields and exhaust header pipe.
    Install the distributor.



17. Connect the speedometer cable.
18. Connect the clutch cable to release arm.
19. Connect the back-up light switch connector.
20. Install the 3 bolts located at the side of the battery base, and retighten the intake hose band of the throttle body.



21. Refill the transmission with oil.
22. Connect the starter motor and transmission ground cables.
23. Connect the battery positive (+) and negative (−) cables to the battery.
24. Install the air cleaner case and intake hose.
25. Check the ignition timing (See Section 16).
26. Check the transmission for smooth operation.

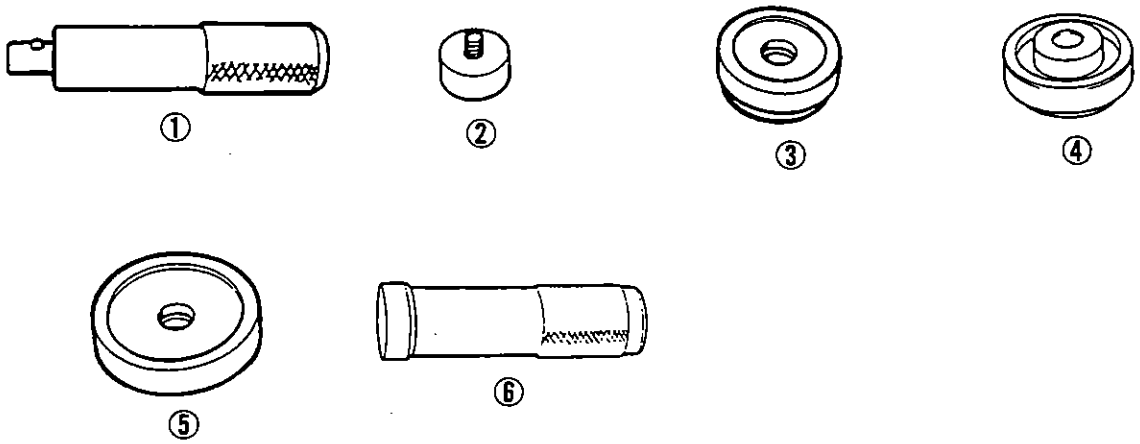
Driveshafts

Driveshafts
- Special Tools 10-1
- Removal 10-2
- Disassembly/Inspection 10-3
- Reassembly 10-4

Intermediate Shaft
- Replacement 10-6
- Disassembly 10-6
- Index/Inspection 10-7
- Reassembly 10-8

Special Tools

Re1. No.	Tool Number	Description	Q'ty	Remarks
①	07749-0010000	Driver	1	
②	07746-0040800	35 mm Pilot	1	
③	07746-0010300	Attachment 42 x 47 mm	1	
④	07947-SD90100	Oil Seal Driver Attachment	1	
⑤	07JAD-SH30100	Oil Seal Driver Attachment	1	
⑥	07746-0030100	Inner Handle (C)	1	

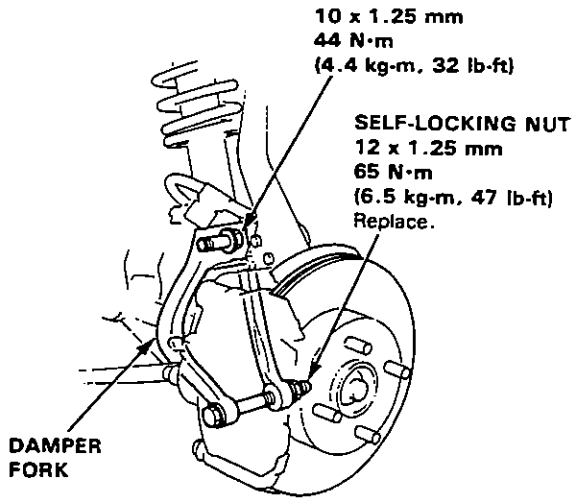


Driveshafts

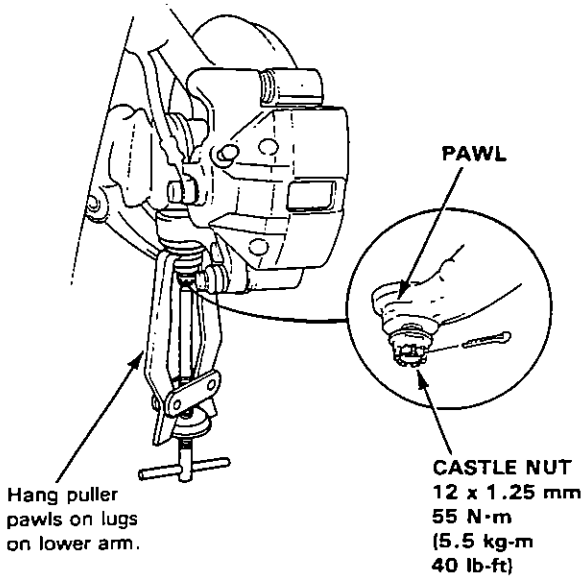
Removal

1. Loosen the front wheel lug nuts.
2. Raise the front end of the car and place safety stands in the proper locations. Remove the front wheels.
3. Drain the transmission oil.

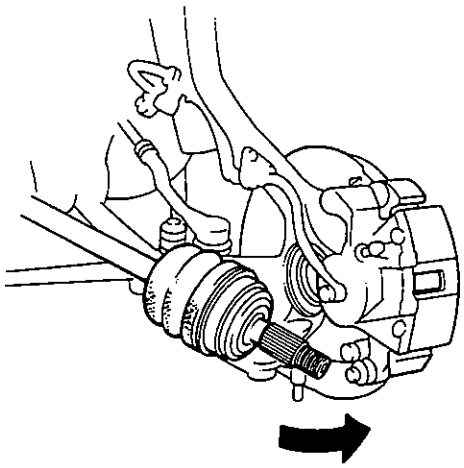
   NOTE: It is not necessary to drain the transmission oil when only the left driveshaft is removed.
4. Raise the locking tab on the spindle nut and remove it with a 36 mm (1-7/16 in.) socket wrench.
5. Remove the damper fork nut and damper pinch bolt. Remove the damper fork.



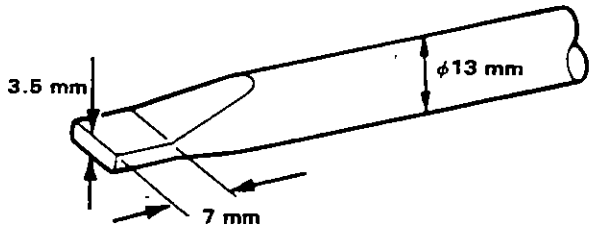
6. Remove the knuckle-to-lower arm castle nut, and separate the lower arm from the knuckle using a puller with the pawls applied to the lower arm.

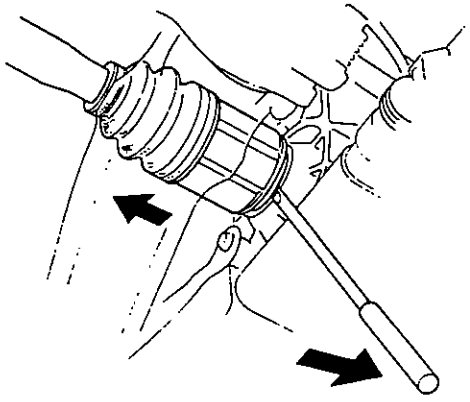


7. Pull the knuckle outward and remove the driveshaft outboard joint from the knuckle using a plastic hammer.



8. Pry the driveshaft assembly with a screwdriver as shown to force the set ring at the driveshaft end past the groove.
9. Pull the inboard joint and remove the driveshaft and CV joint out of the differential case as an assembly.





CAUTION:

- **Do not pull on the driveshaft, as the CV joint may come apart.**
- **Use care when prying out the assembly and pull it straight to avoid damaging the differential oil seal or intermediate shaft dust seal.**

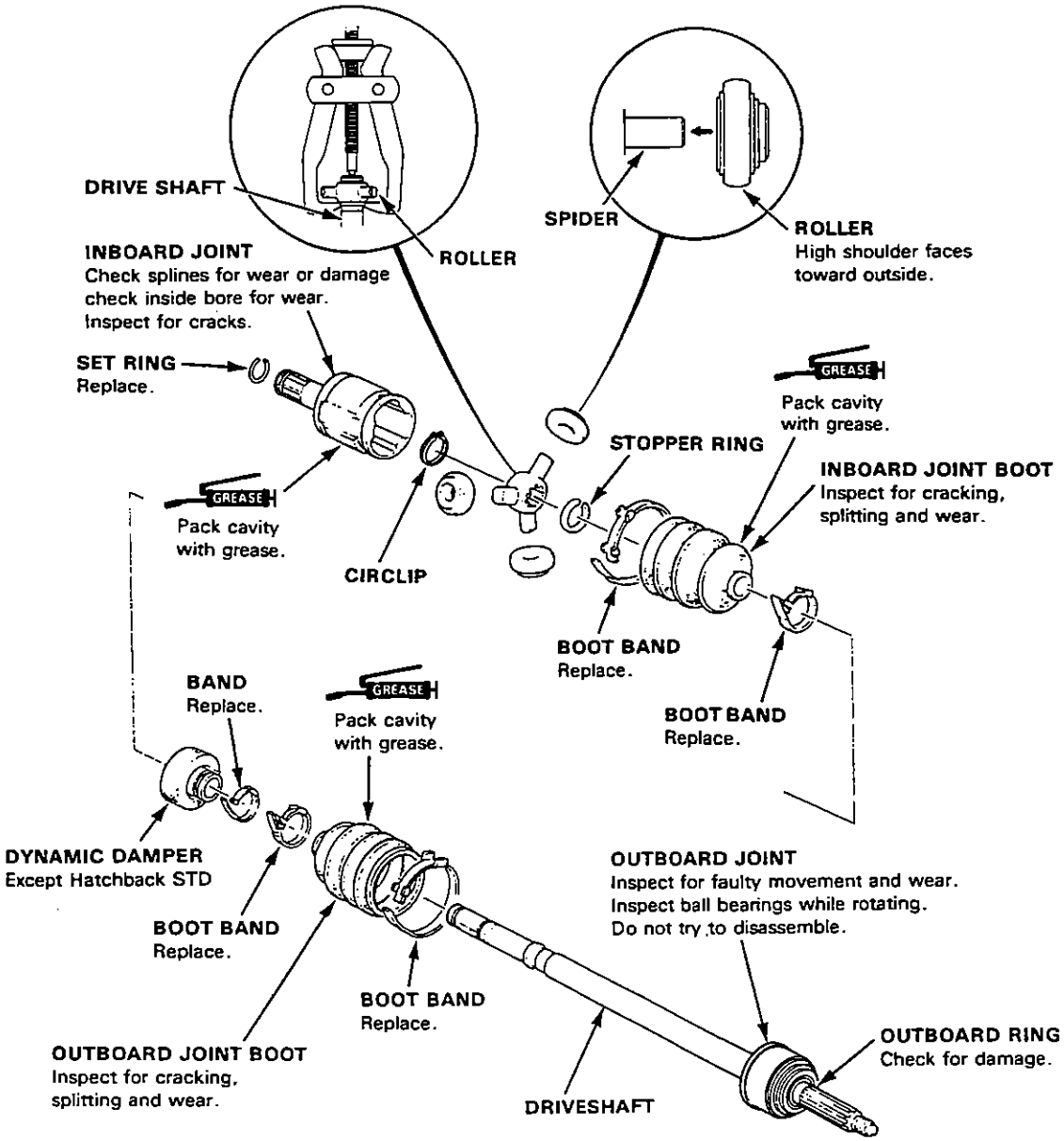
Disassembly/Inspection

NOTE:
- Mark the rollers and roller grooves during disassembly to ensure proper positioning during reassembly.
- Before disassembly, mark the spider and driveshaft so they can be reinstalled in their original positions.
- The inboard joint must be removed to replace the boots.

GREASE Thoroughly pack the inboard joint and both joint boots with high quality molybdenum disulfide grease when reassembling.

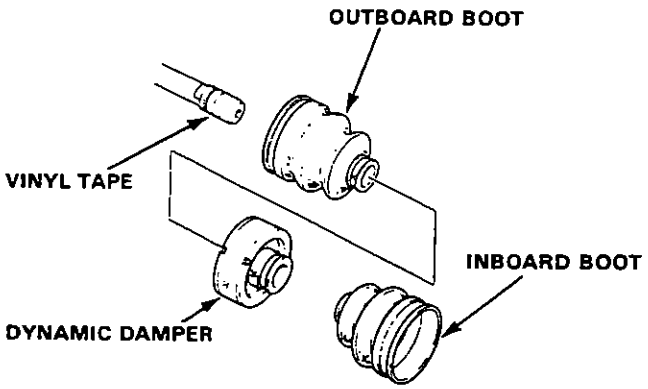
Grease Quantity:

Inboard Joint	**120—130 g**
Outboard Joint	**90—100 g**

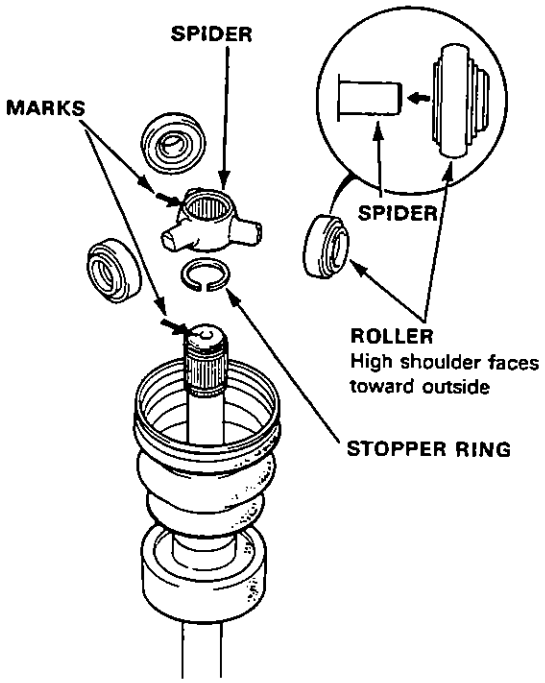


Reassembly

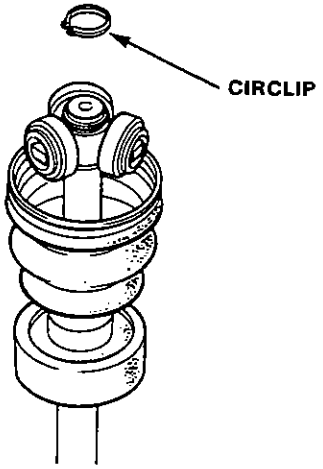
1. Wrap the splines with vinyl tape to prevent damage to the boots and dynamic damper.
2. Install the outboard boot, dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape.



3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the rollers to the spider with their high shoulders facing outward.
   CAUTION:
   - **Reinstall the rollers to their original positions on the spider.**
   - **Hold the driveshaft assembly so the spider and roller points up, to prevent it from falling off.**

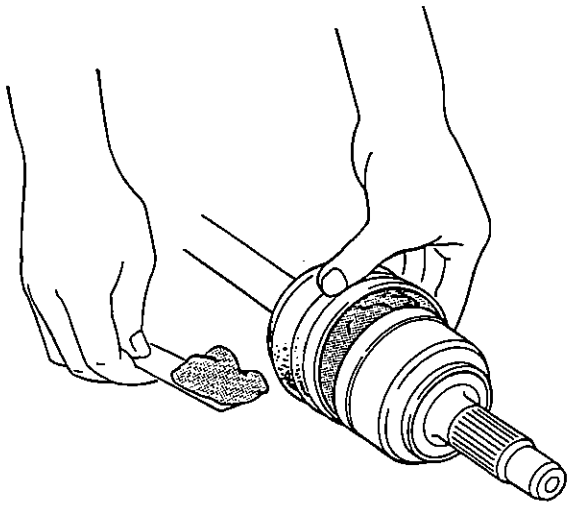


6. Fit the circlip onto the driveshaft groove.



7. Pack the outboard joint boot with molybdenum disulfide grease.

   Grease Quantity: 90—100 g

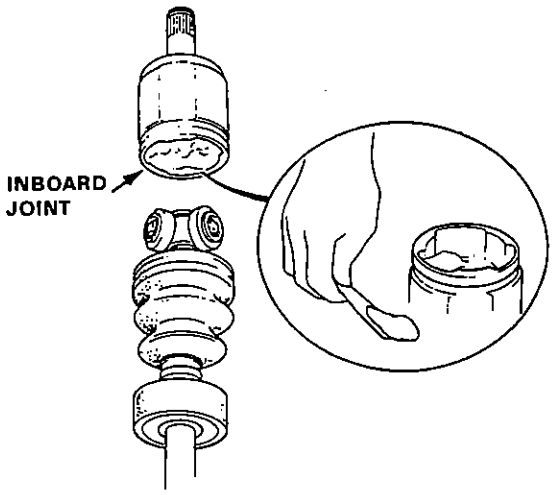


8. Pack the inboard joint with molybdenum disulfide grease.

Grease Quantity: 120—130 g

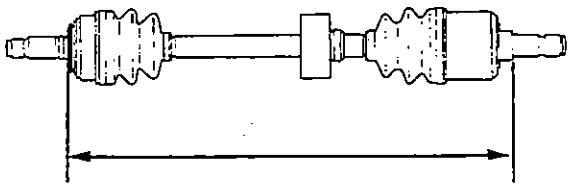
9. Fit the inboard joint onto the driveshaft.

CAUTION: Hold the driveshaft assembly so the inboard joint points up, to prevent it from falling off.



10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full entension.

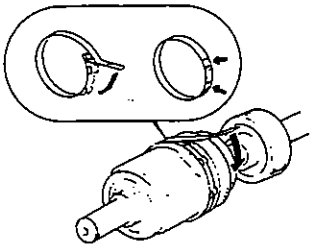
NOTE: The ends of boots seat in the groove of the driveshaft and joint.



	Left	Right
With Intermediate Shaft	485—490 mm (19.09—19.29 in)	485—490 mm (19.09—19.29 in)
Without Intermediate Shaft	774.5—779.5 mm (30.50—30.69 in)	481.5—486.5 mm (18.96—19.15 in)

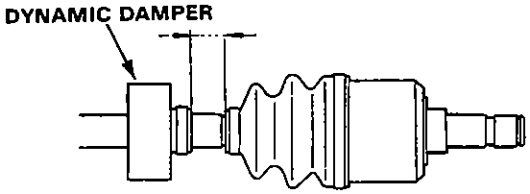
11. Install new boot bands on the boot and bend both sets of locking tabs.

12. Lightly tap on the doubled-over portions to reduce their height.



13. Position the dynamic damper as shown below.
14. Lighly tap on the doubled-over portion to reduce its height.
15. Install a new dynamic damper band and bend down both sets of locking tabs.

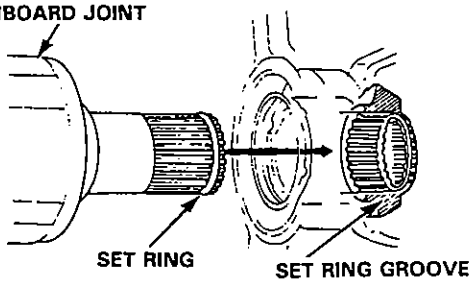
	Left	Right
KQ, KY Models	30±2 mm (1.20±0.08 in)	30±2 mm (1.20±0.08 in)
KG, KS and KW (SOHC) Models	53.7±2 mm (2.10±0.08 in)	20±2 mm (0.78±0.08 in)
Other Models	25±2 mm (0.98±0.08 in)	30±2 mm (1.20±0.08 in)



16. Install a new set ring in the driveshaft groove.

17. Install the inboard end of the driveshaft into the differential or intermediate shaft.

CAUTION:
- **Always use a new set ring whenever the driveshaft is being installed.**
- **Make sure the driveshaft locks in the differential side gear groove, and the CV joint subaxle bottoms in the differential or intermediate shaft.**

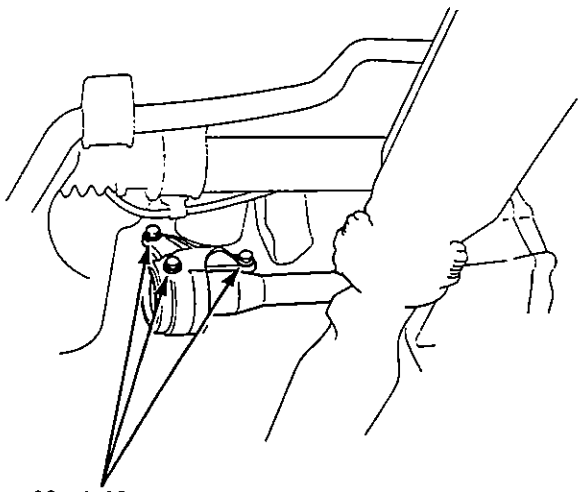


18. Refill the transmission.

Intermediate Shaft

Replacement

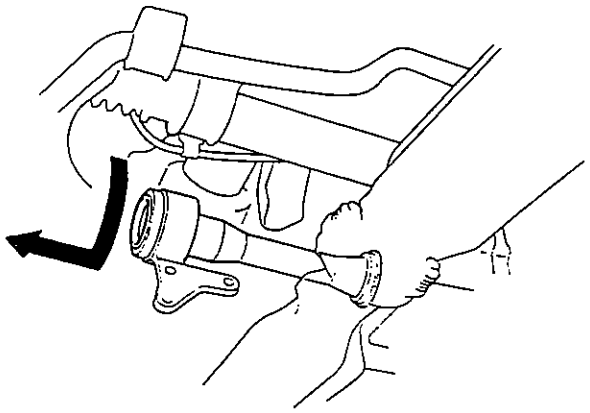
1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



10 x 1.25 mm
40 N·m (4.0 kg-m, 29 lb-ft)

3. Lower the bearing support close to the steering gearbox and remove the intermediate shaft from the differential.

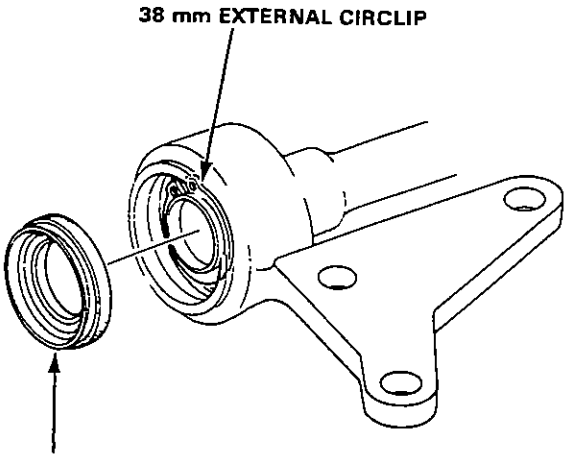
CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



Installation is the reverse order of removal.

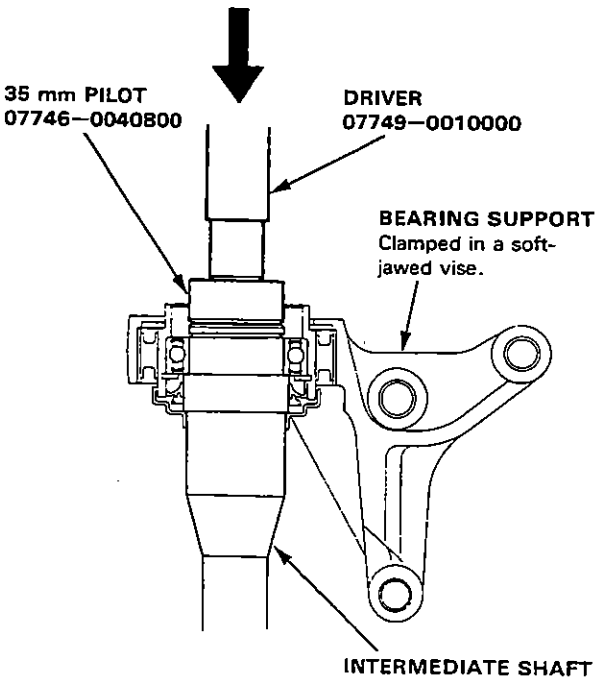
Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the 38 mm external circlip.

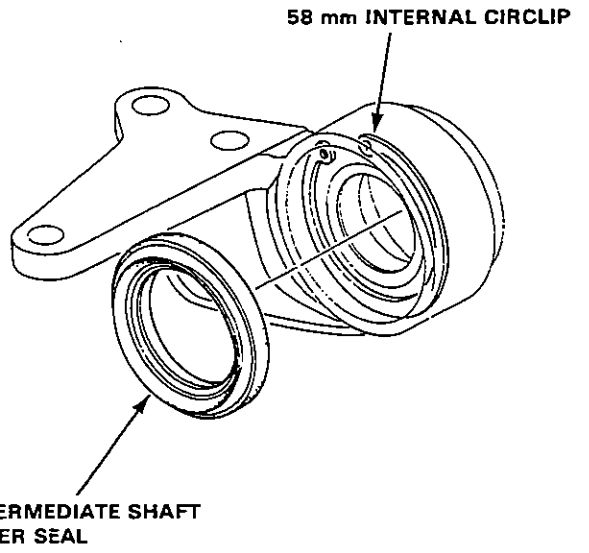


3. Drive out the intermediate shaft out of the shaft bearing.

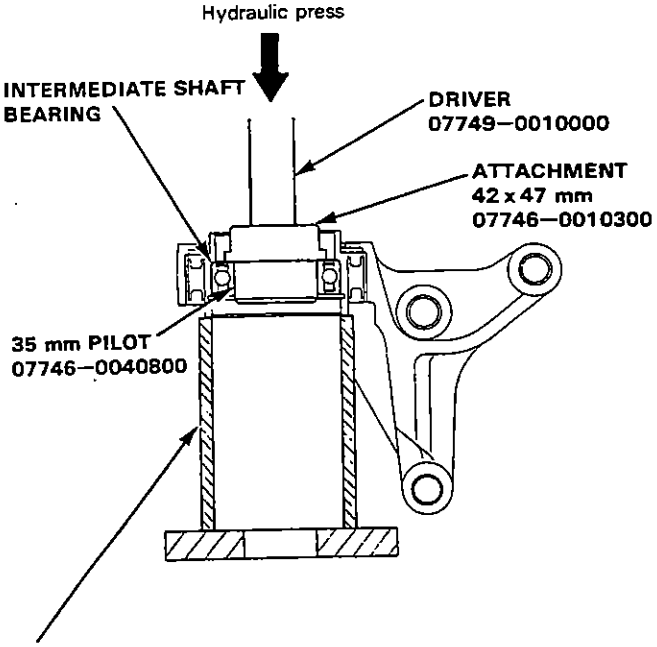
NOTE: The shaft can be hammered out using the driver and pilot, it the bearing support is clamped in a soft-jawed vise.



4. Remove the intermediate shaft inner seal.
5. Remove the 58 mm internal circlip.

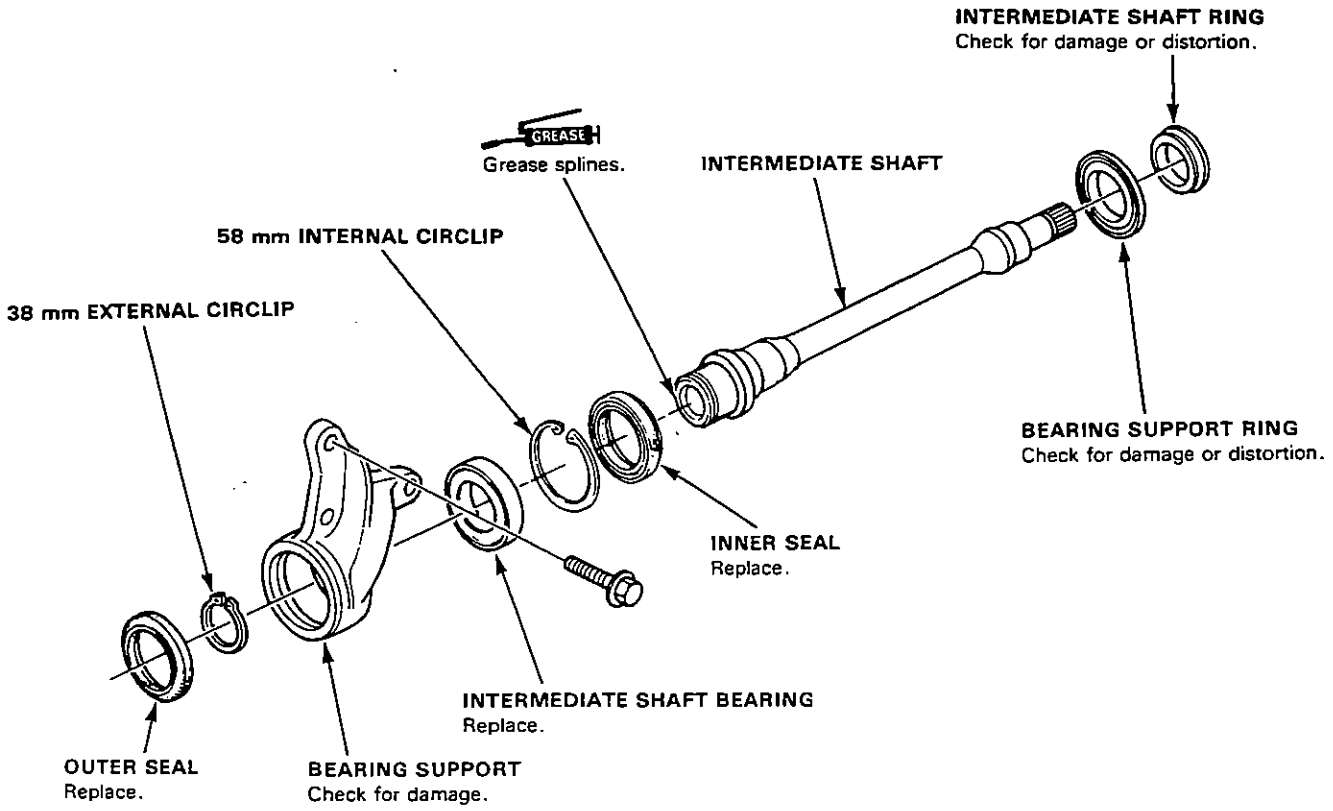


6. Press the intermediate shaft bearing out of the bearing support.



Use a 100 mm (4.0 in) pice of pipe, with an inner diameter of 60 mm (2.4 in) and an outer diameter of 65~88 mm (2.6~3.4 in).

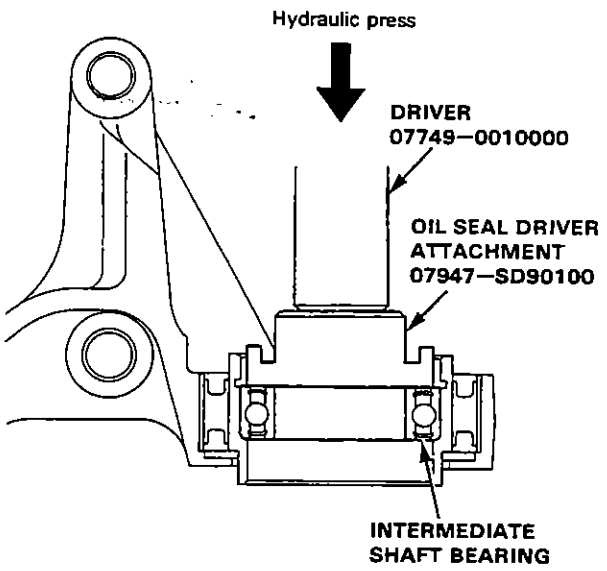
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Intermediate Shaft

Reassembly

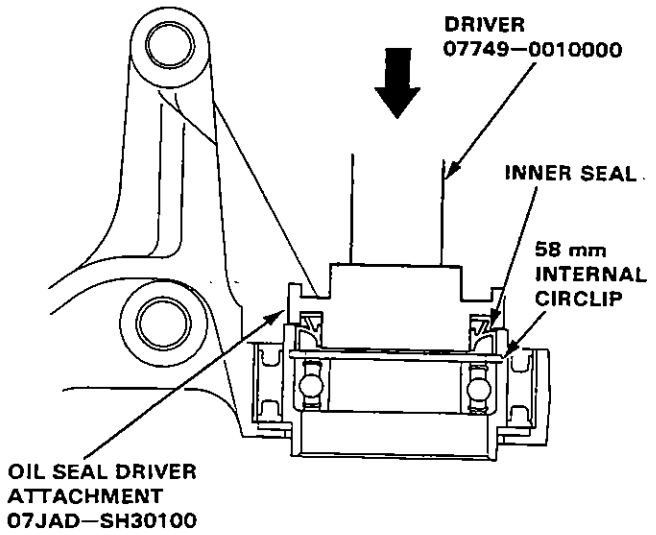
1. Press the intermediate shaft bearing into the bearing support.



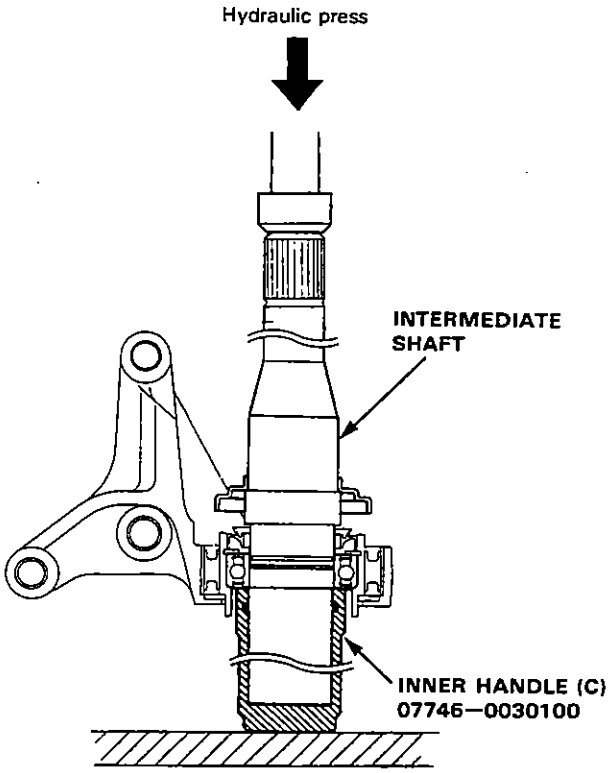
2. Seat the 58 mm internal circlip in the groove of the bearing support.

   CAUTION: Install the circlip with the tapered end facing out.

3. Press the intermediate shaft inner seal into the bearing support.



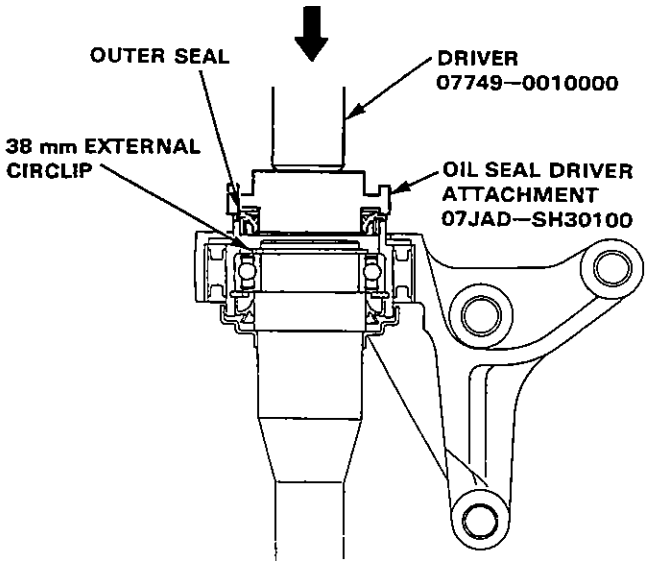
4. Press the intermediate shaft into the shaft bearing.



5. Seat the 38 mm external circlip in the groove of the intermediate shaft.

   CAUTION: Install the circlip with the tapered end facing out.

6. Press the outer seal into the bearing support.



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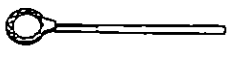
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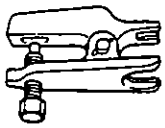
Special Tools

Special Tools

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	
②	07941—6920003	Ball Joint Remover	1	
③	07974—SA50800	Ball Joint Boot Clip Guide B	1	



①



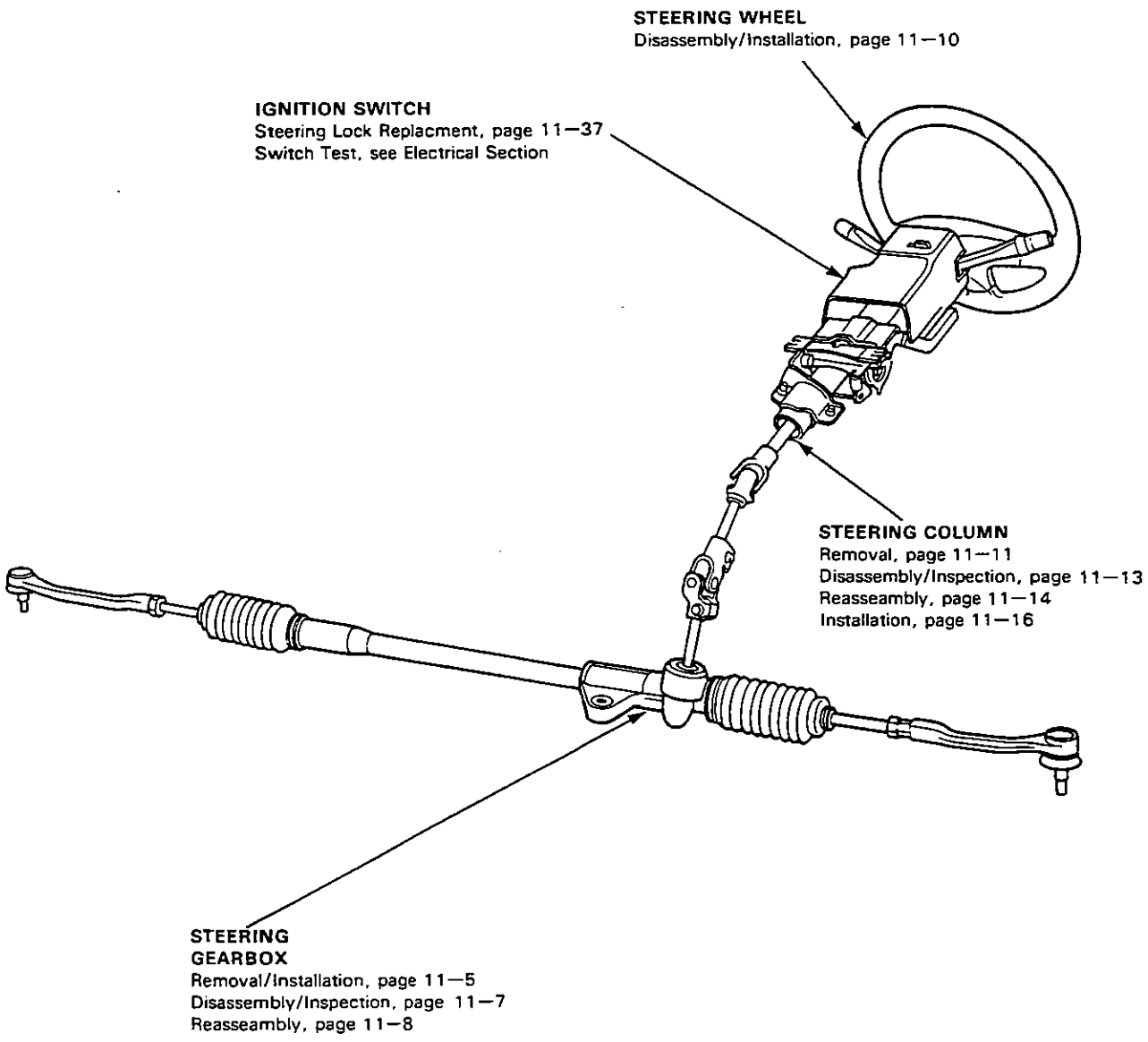
②



③

Component Location

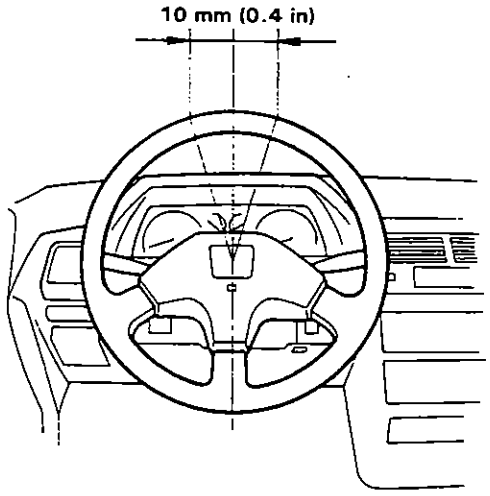
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Inspection

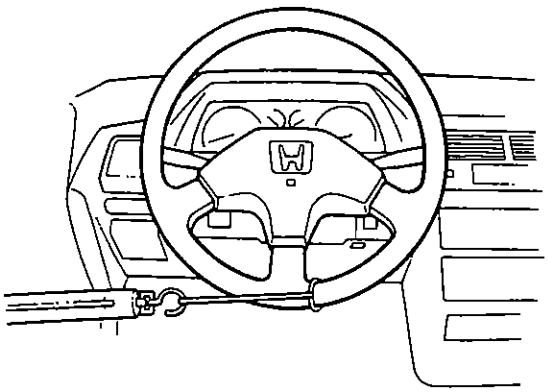
Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.
   Service Limit: 10 mm (0.4 in)



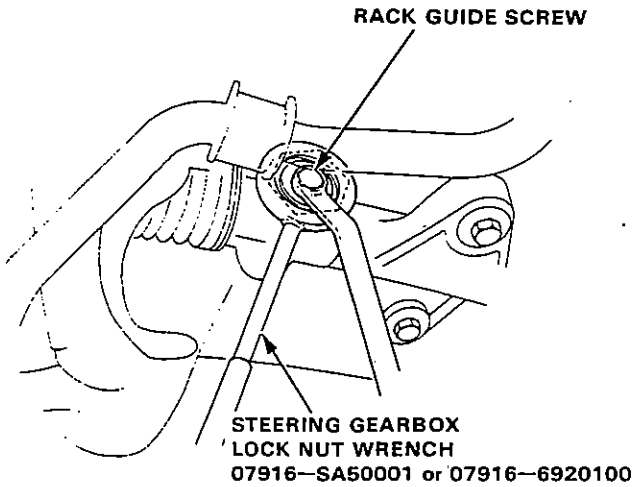
Steering Effort Check

1. Raise the front wheels off the ground.
2. Turn the steering wheel with a spring gauge and check its reading.
3. If the reading exceeds the service limit, adjust the steering gearbox as shown below.
   Service Limit: 15 N(1.5 kg, 3.3 lbs)



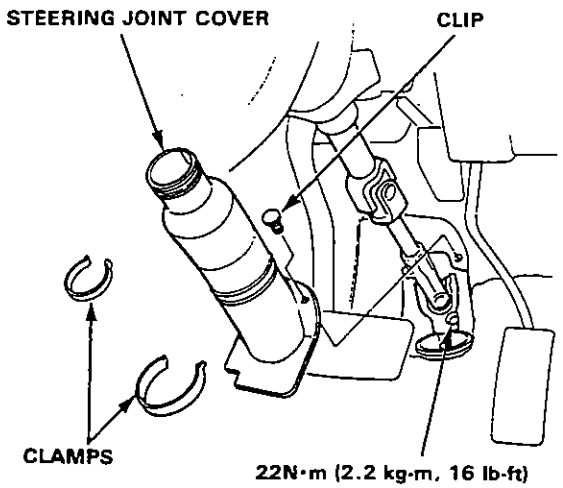
Steering Gearbox Adjustment

1. Loosen the rack screw locknut. Then:
2. Tighten, loosen and re-tighten the rack guide screw two times, to 5 N·m (0.5 kg-m, 3.6 lb-ft) then, back it off $15^{\circ}{}^{+0}_{-5}$ (front wheels pointed straight ahead).
3. Tighten the locknut on the rack guide screw to the 68 N·m (6.8 kg-m, 49 lb-ft).
4. Check for tight or loose steering through the compete turning travel.
5. Recheck steering effort as shown adove.

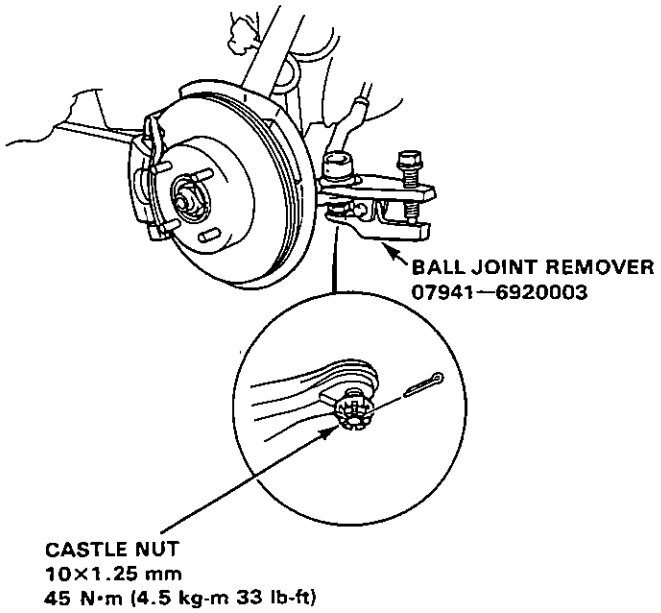


Removal/Installation

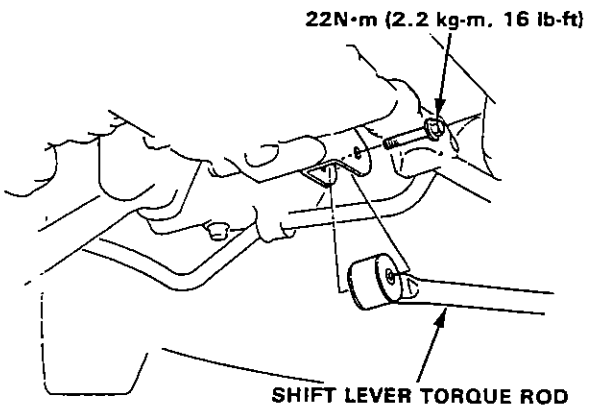
1. Remove the cover panel and steering joint cover, then disconnect the steering shaft from the gearbox.



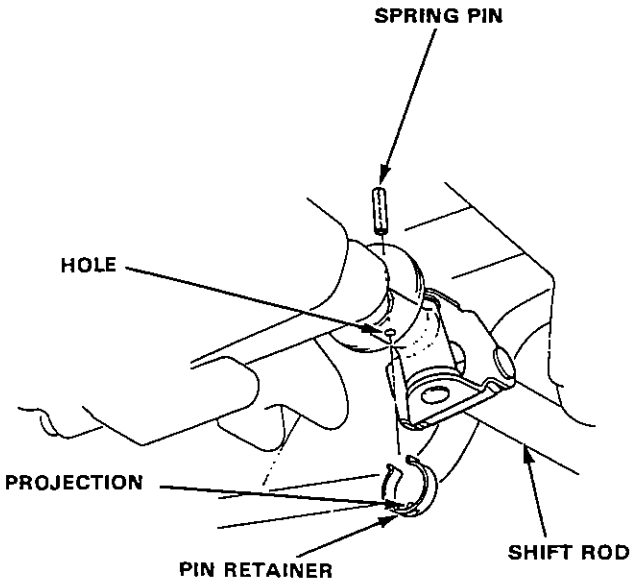
2. Raise the front of car on jack stands and remove the front wheels.
3. Remove the cotter pins, and unscrew the tie-rod end ball joint nuts halfway.
4. Break the ball joints loose using the ball joint remover.
5. Then remove the nuts, and lift the tie-rod ends out of the steering knuckles.



6. Disconnect the shift lever torque rod from the clutch housing.



7. Remove the pin retainer, drive out spring pin with punch, then disconnect the shift rod.



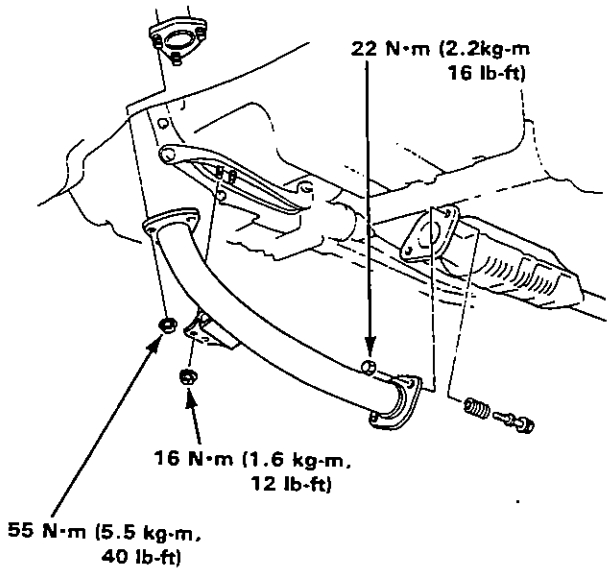
NOTE: On reassembly, reinstall the pin retainer after driving in pin and be sure that the projection on the pin retainer is in the hole.

(cont'd)

Removal/Inspection (cont'd)

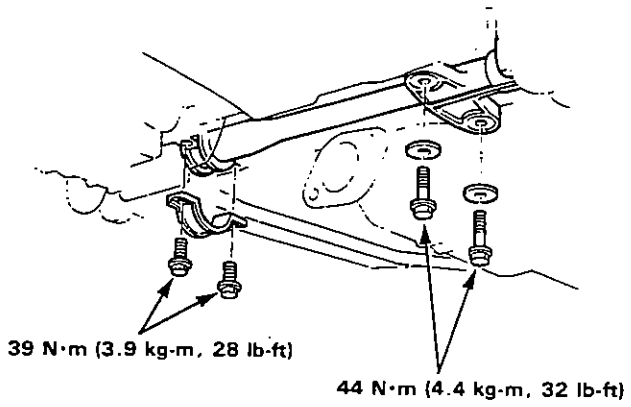
8. Remove the self-locking nuts connecting exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.
   CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

9. Remove the header pipe.

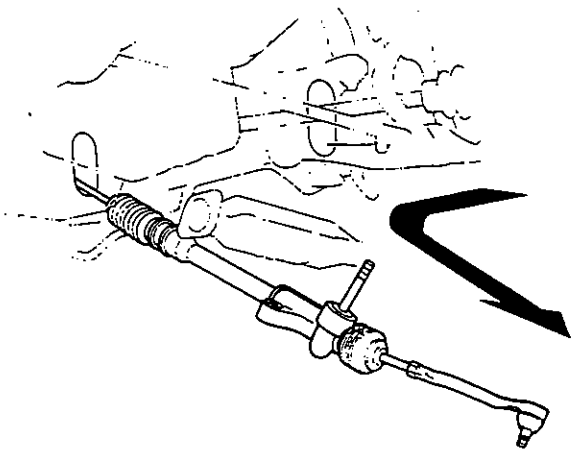


10. Remove the steering gearbox brackets.

11. Remove the steering gearbox mounting bolts.



12. Slide tie rod all the way to the right side.

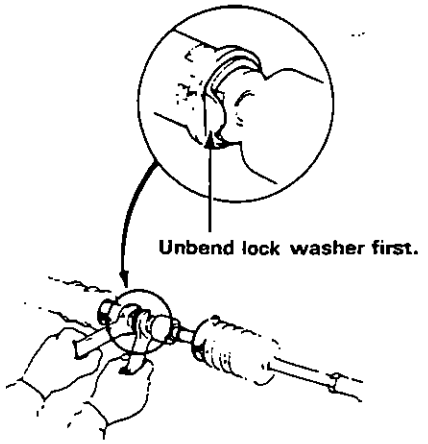


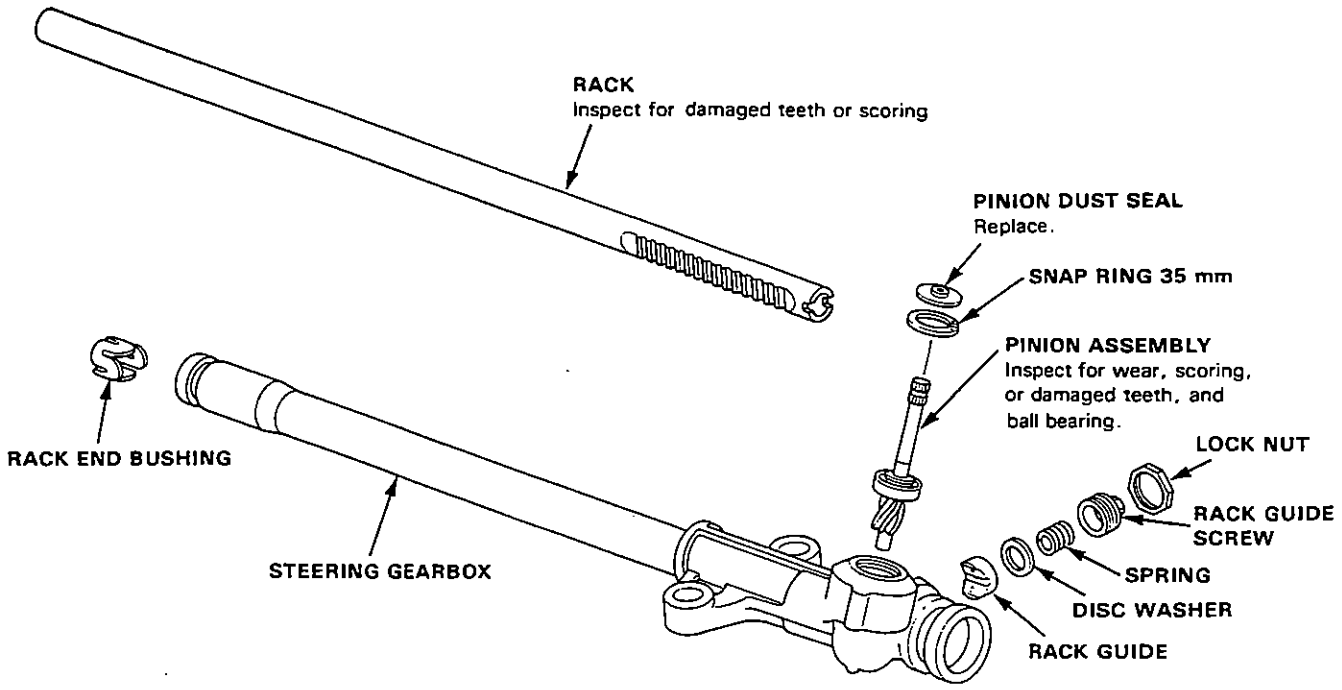
13. Slide the gear box right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.

14. Re-install is in the reverse order of removal.

Disasembly/Inspection

1. Carefully clamp the gearbox in a vise.
2. Loosen the bands, then pull the boots away from the ends of the gearbox and unbend the tie-rod lock washers.
3. Hold the rack with a 22 mm wrench and unscrew the tie-rods with a 17 mm wrench.
4. Remove the rack guide components from the gearbox.
5. Remove the pinion boot, pinion dust seal, and 35 mm snap ring, then pull the pinion out of the gearbox.
6. Slide the rack out of the gearbox.





NOTE: The pinion assembly bearing cannot be removed. If the bearing must be replaced, replace as an assembly.

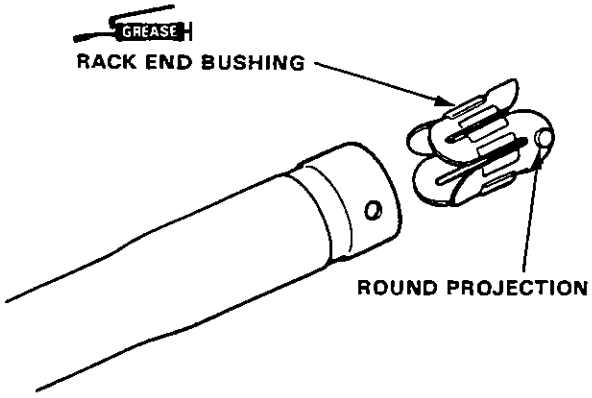
Reassembly

1. Apply a thin coat of grease to the inside surface of the rack end bushing.

Grease quantity: 1—3g

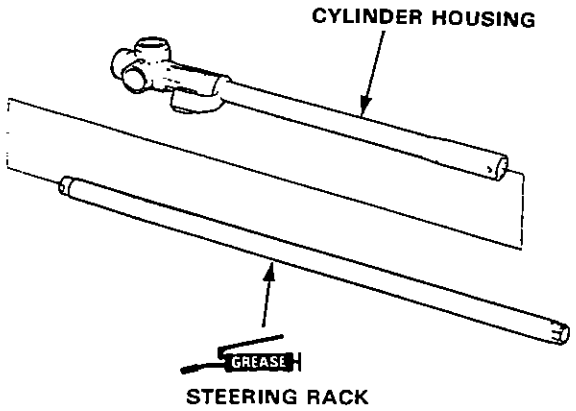
CAUTION: Do not fill the slots with grease; they must remain open to serve as air passages.

2. Install the rack end busing by aligning the round projections on the busing with the holes in the cylinder housing.

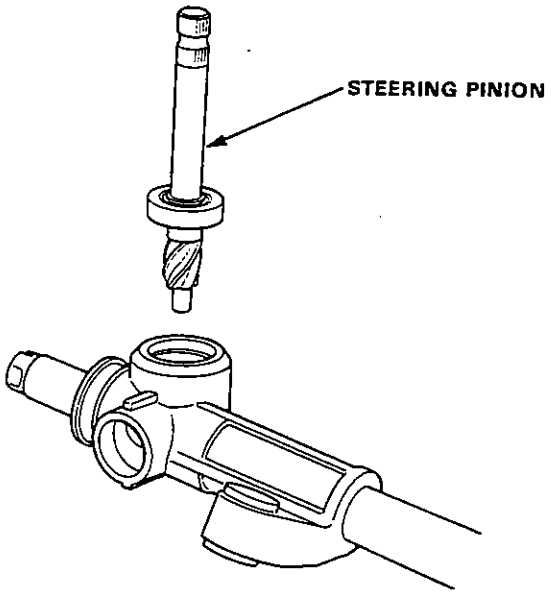


3. Apply grease to the steering rack.

4. Install the steering rack into the cylinder housing carefully to avoid damaging the steering rack sliding surface.

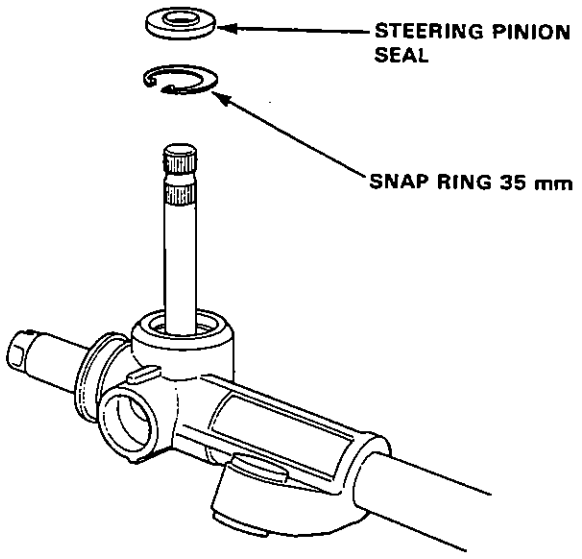


5. Install the steering pinion in the gear housing.



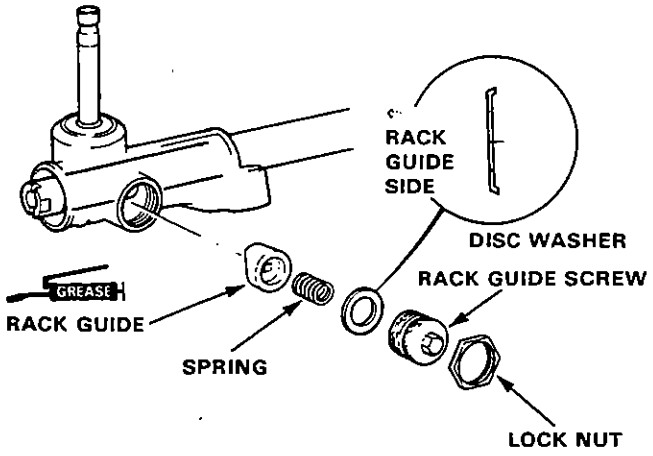
6. Install the 35 mm snap ring securely in the gear housing groove.

7. Grease the Steering pinion seal, and install it on the gear housing.



8. Coat the rack guide with grease.

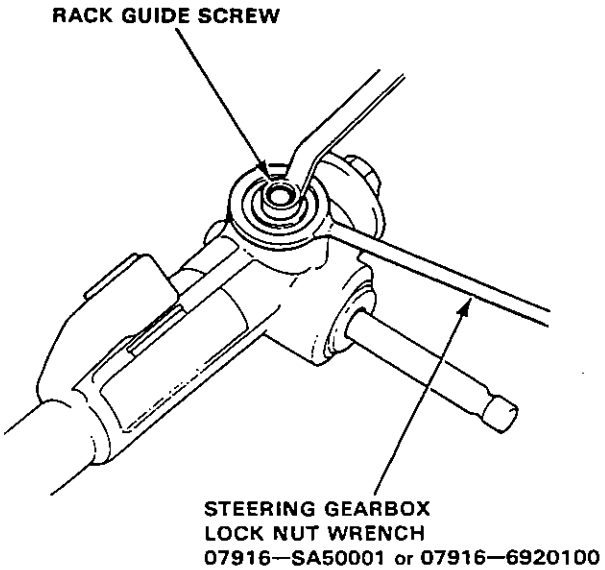
9. Install the rack guide, spring, disc washer and rack guide screw on the gear housing.



— Tighten, loosen and re-tighten the rack guide screw two times, to 5 N·m (0.5 kg-m, 3.6 lb-ft) then back it off $15^{\circ}{}^{+0}_{-5}$ (front wheels pointed straight ahead).

— Tighten the locknut on the rack guide screw to the 68 N·m (6.8 kg-m, 49 lb-ft).

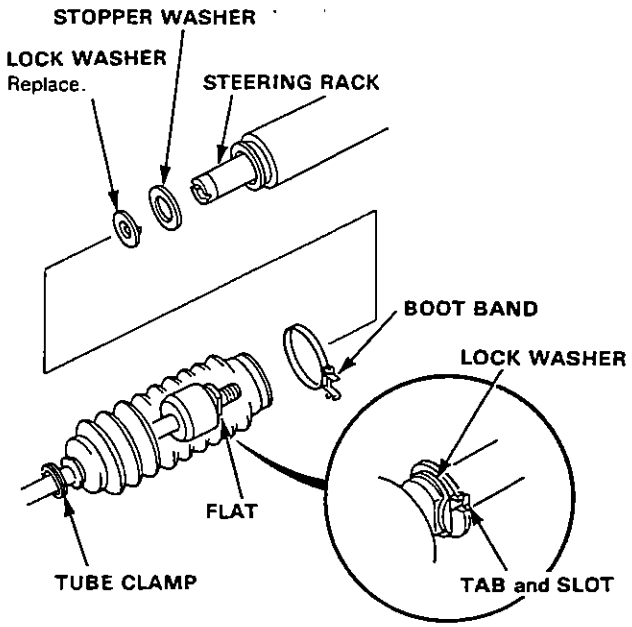
10. Tighten the lock nut while holding the rack guide screw with the special tool.



11. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

NOTE: Install the stopper washer with the chamfered side facing out.

12. Tighten the tie-rod securely, then bend the lock washer back against the flat on the flange as shown.



13. Install the boots and secure with boot band and tube clamp.

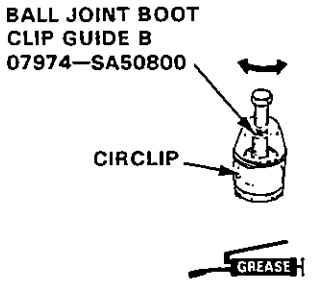
14. Check that the boots are not twisted or collapsed by sliding the rack.

15. Install the tie-rod ends on the tie-rods. Do not tighten the locknuts until after tie-rod adjustment.

16. Fill the tie-rod boots with grease and install; replace boots that are cut or split.

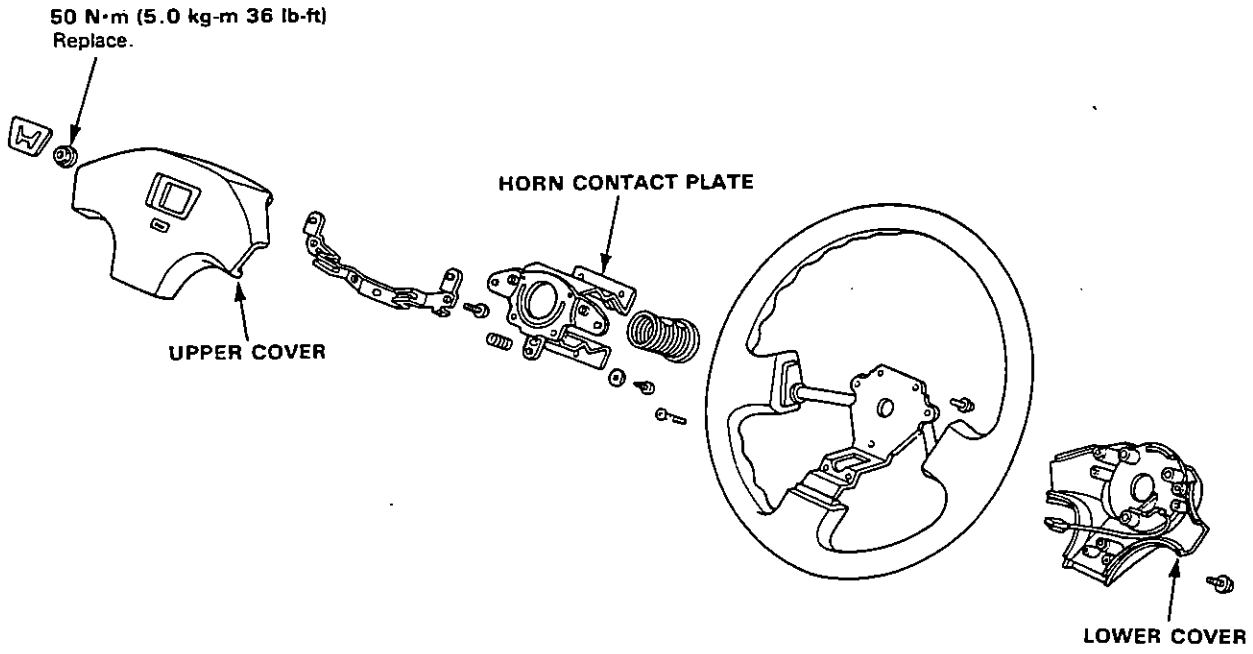
17. Bleed air from the boots by gently squeezing them from the bottom up.

18. Use the special tool's bolt to adjust the depth of the tool's large end. Align the large end of the tool with the groove on the boot. Slide the clip into position over the tool.



Steering Wheel

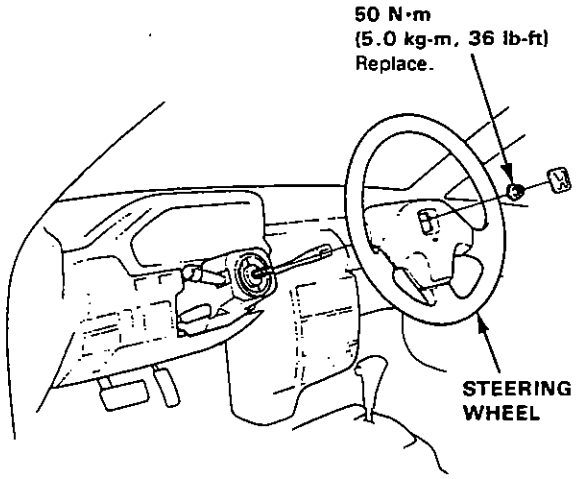
Disassembly/Reassembly



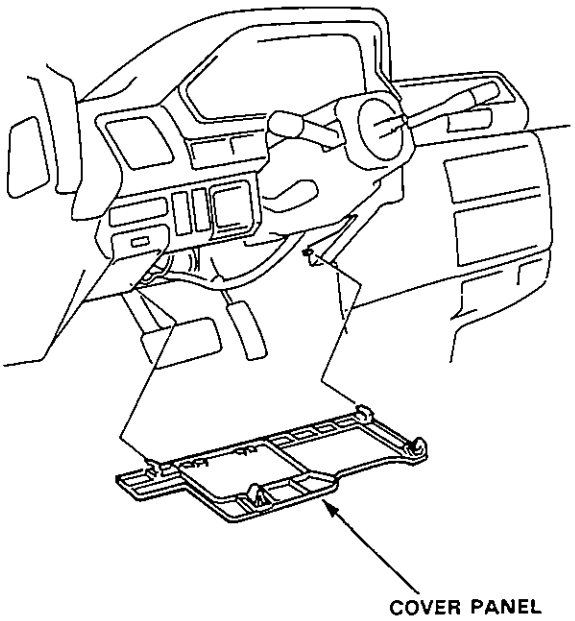
Steering Column

Removal

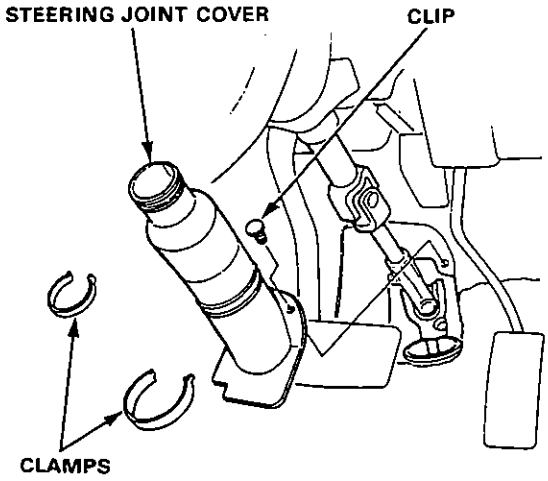
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



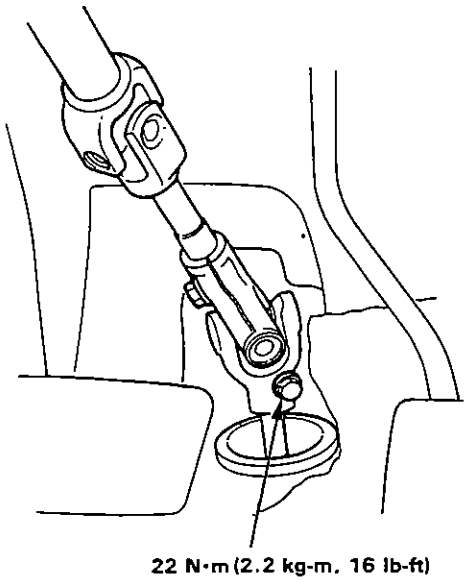
4. Remove the cover panel.



5. Remove the steering joint cover.



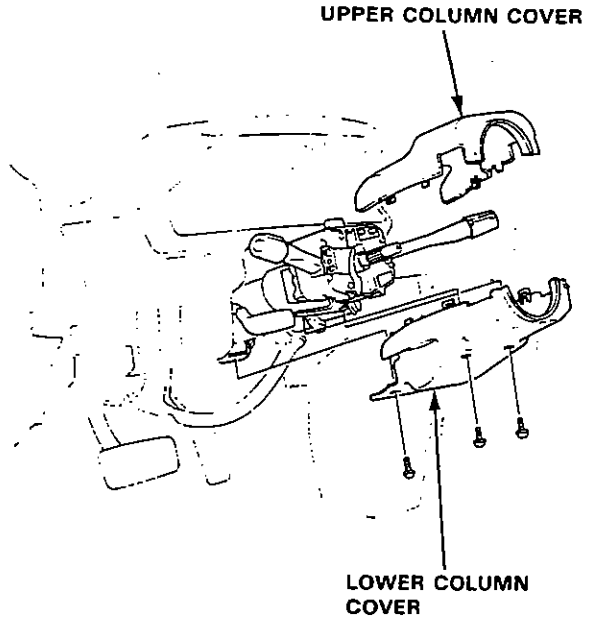
6. Remove the lower steering joint bolt.



(cont'd)

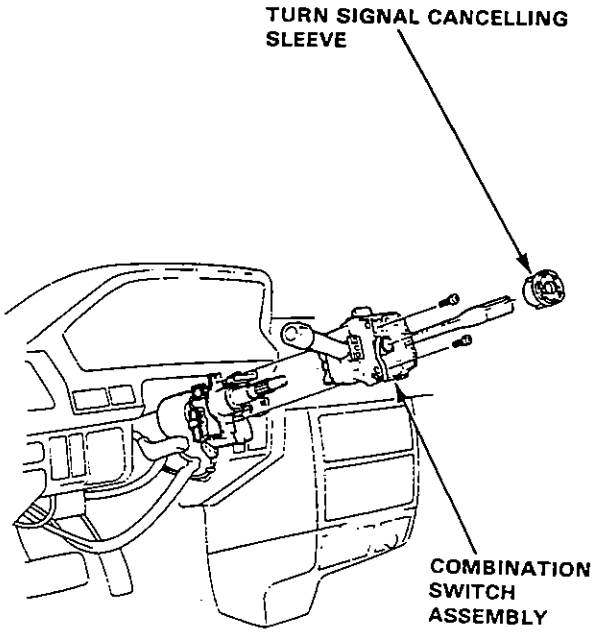
Removal (cont'd)

7. Remove the upper and lower column covers.



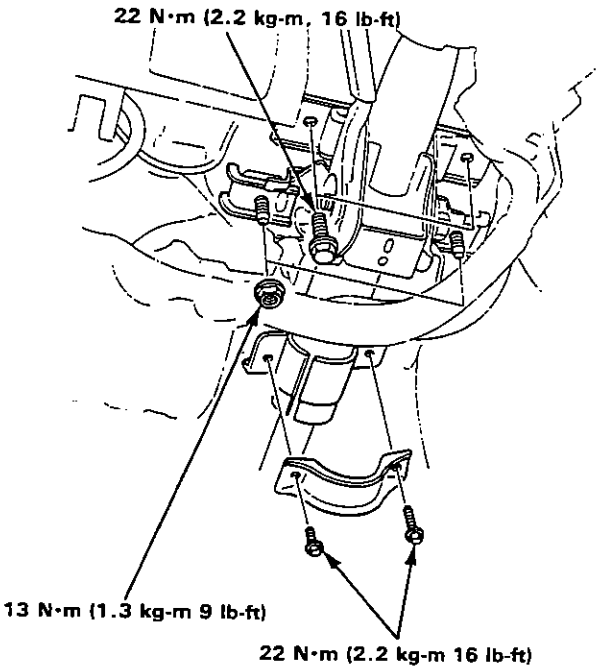
8. Disconnect each wire coupler from the combination switch.

9. Remove the turn signal cancelling sleeve and combination switch assembly.



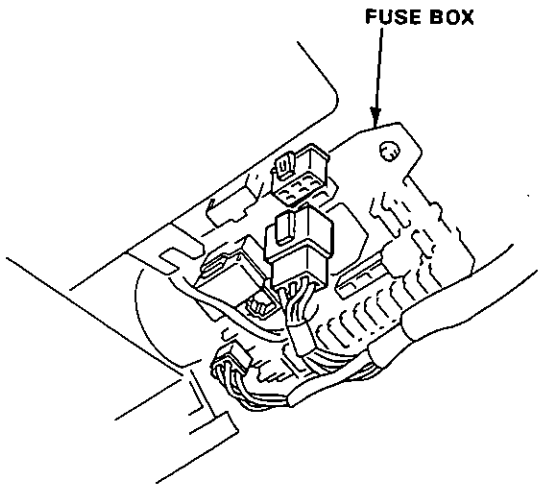
10. Remove the lower column bracket.

11. Remove the nuts attaching the bending plate guide and bending plate.



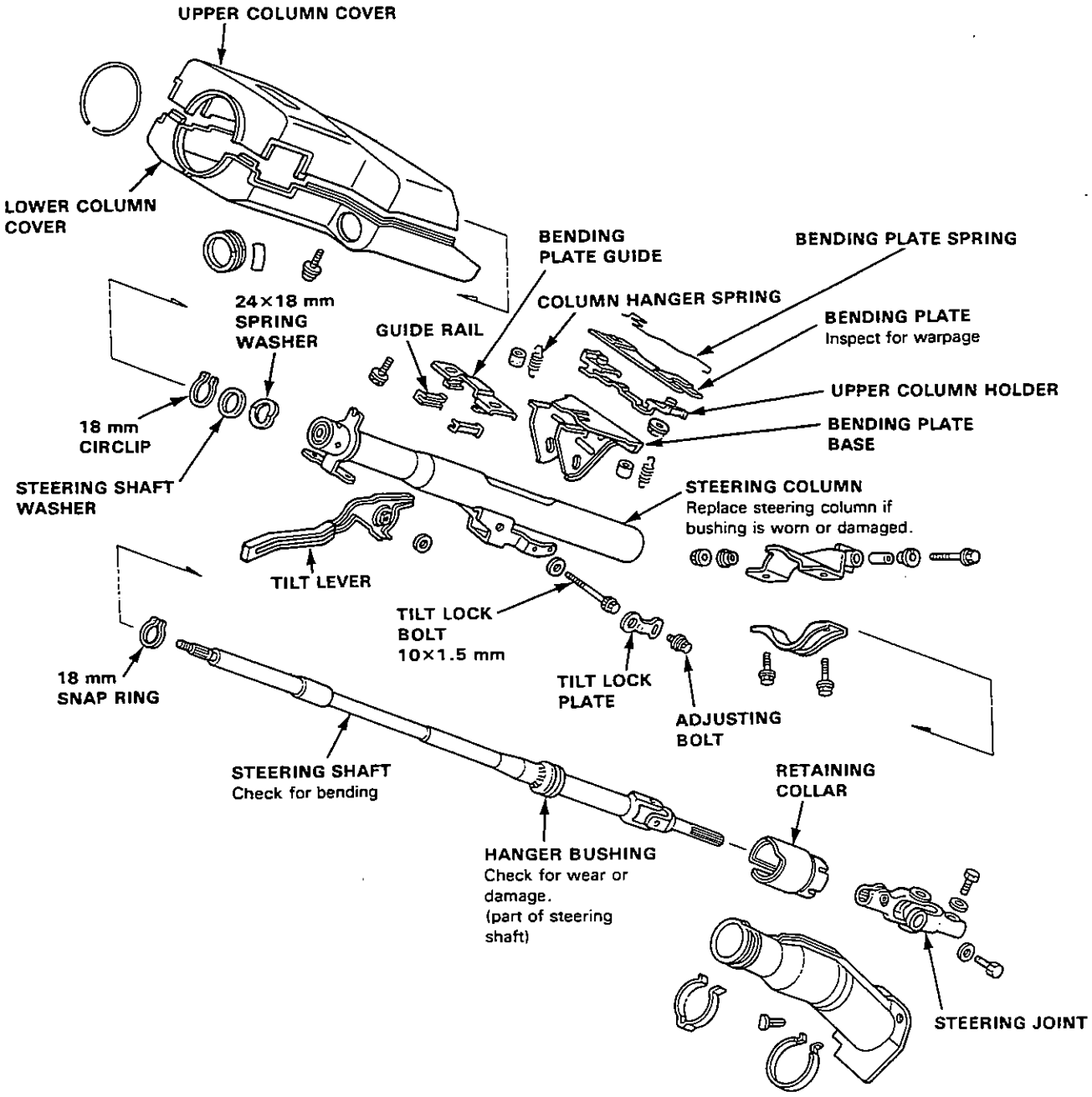
12. Disconnect each wire coupler from the fuse box at under-dash left side.

13. Remove the steering column assembly.



Disassembly/Inspection

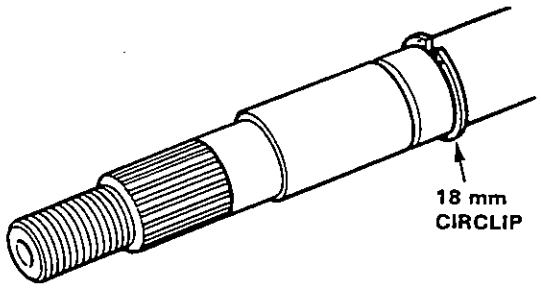
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I".
5. Remove the snap ring, then remove the steering shaft from the bottom of the column.
6. Remove the retaining collar.



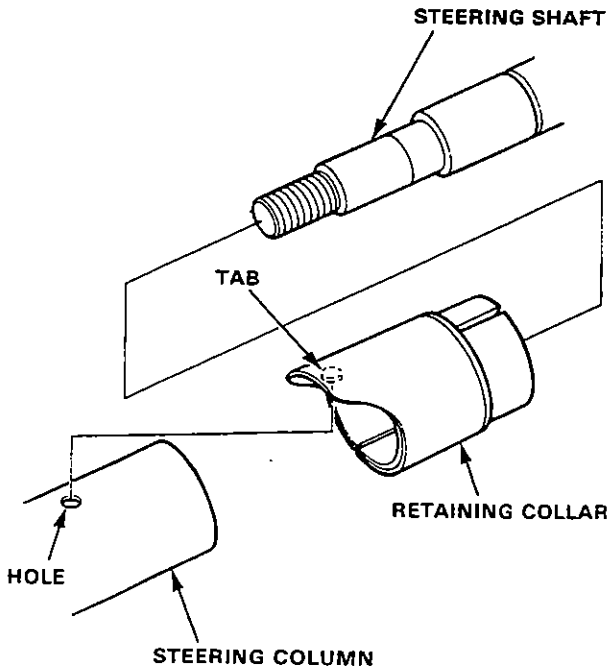
Steering Column

Reassembly

1. Install the circlip on the steering shaft.



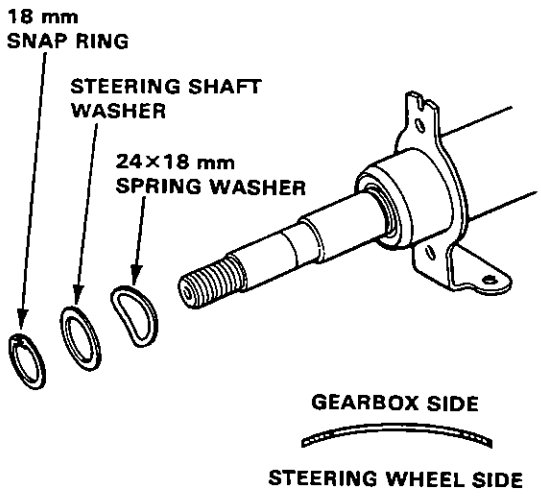
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



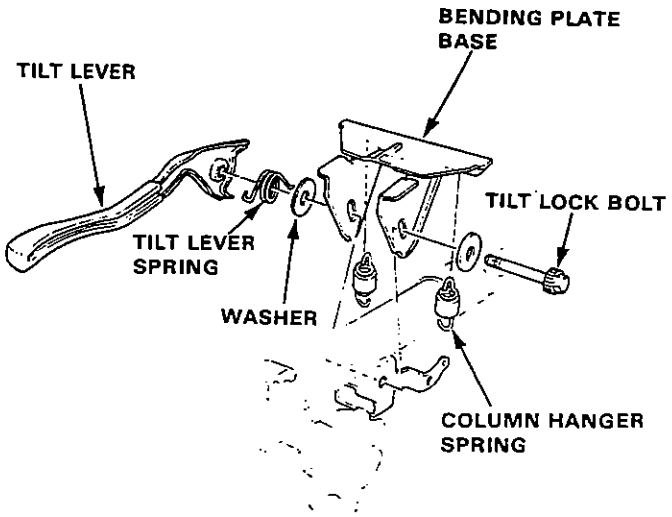
3. Insert the steering shaft into the steering column from the bottom.

4. Install the 24×18 mm spring washer and steering washer on the steering shaft and secure with the 18 mm snap ring.

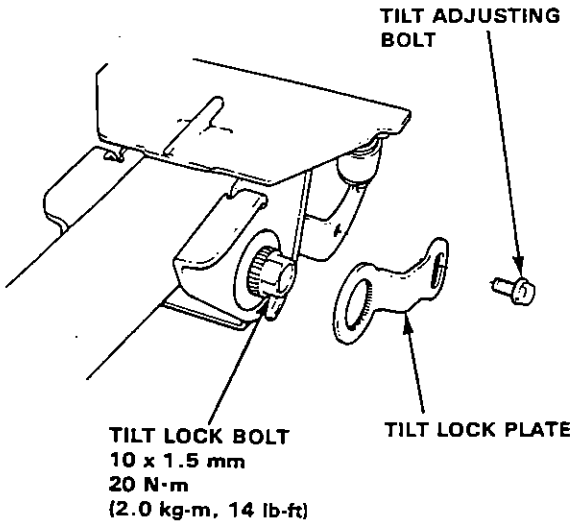
   NOTE: Install the spring washer as shown.



5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, tilt lever spring, washers, and the bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.

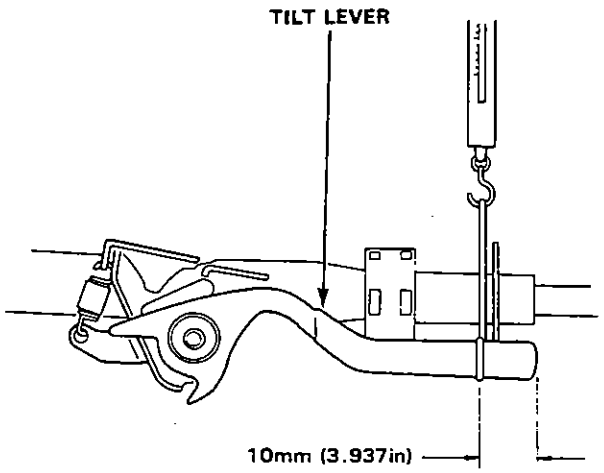


8. Tighten the tilt lock bolt to 20N·m (2.0 kg-m 14lb-ft), then position the tilt lock plate on the splined portion of the tilt lock bolt and loosely attach with the tilt adjusting bolt.

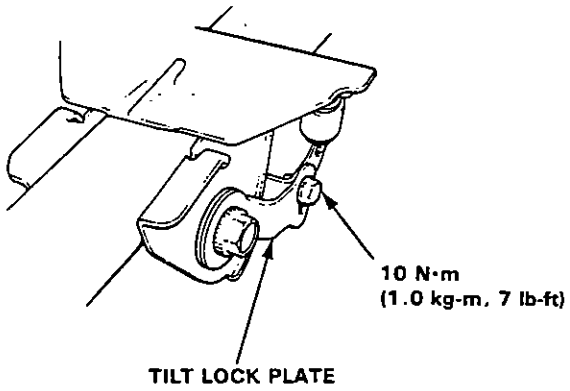


9. Attach a spring scale 10mm(3.937in) from the end of the knob. Measure the force required to move the lever.

Preload: 80N(8.0kg, 18lbs)



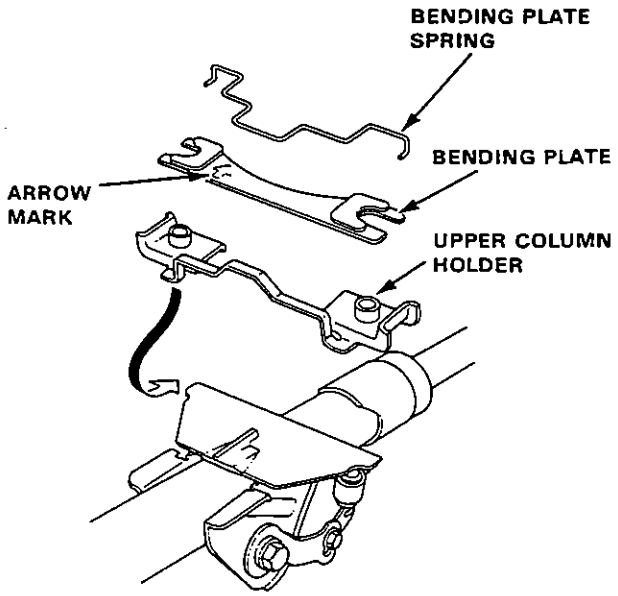
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

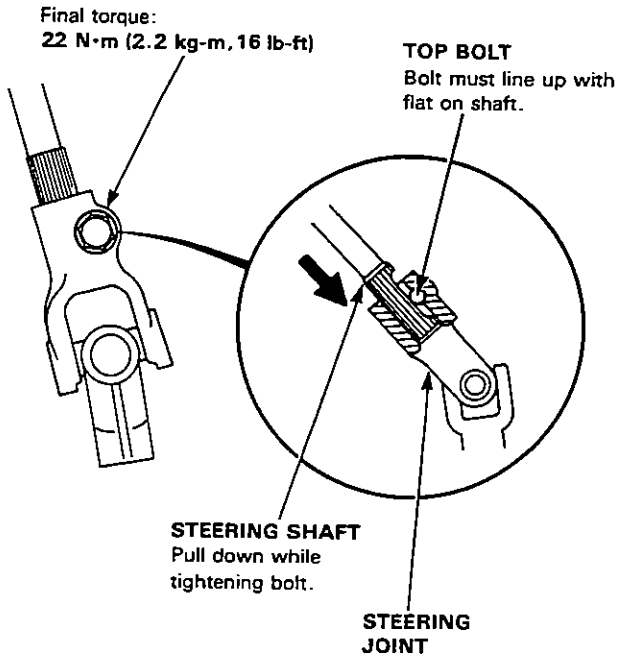
NOTE: Install the bending plate with arrow mark facing the steering gearbox.



(cont'd)

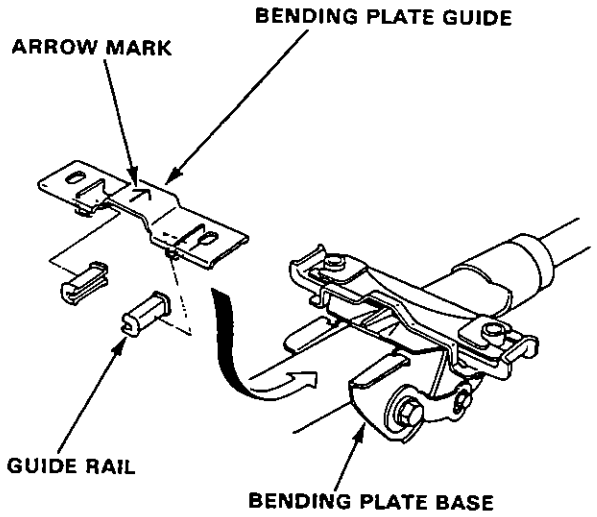
Reassembly (cont'd)

13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the top bolt.

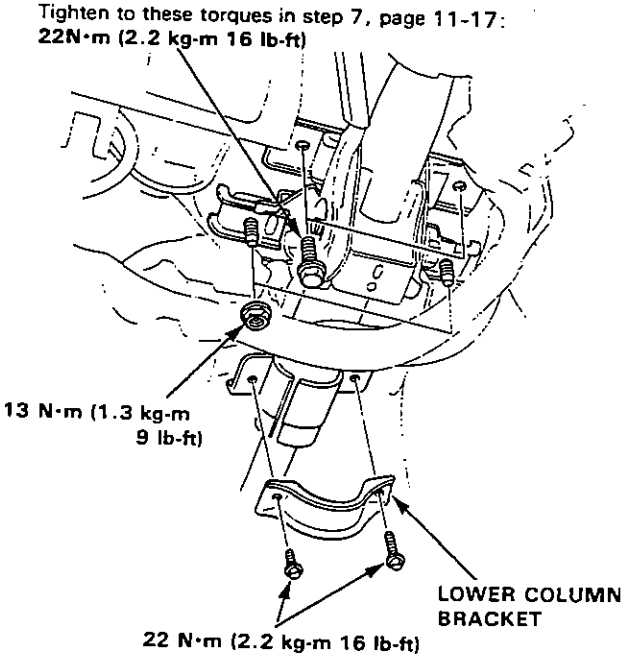


Installation

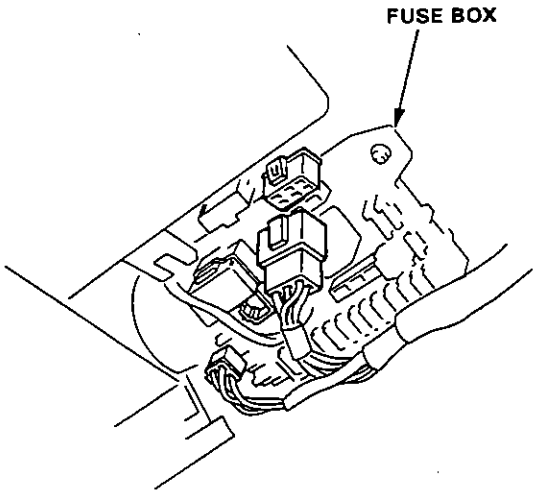
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.
NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



2. Loosely install the steering column assembly with the nuts, bolts, and lower column bracket.

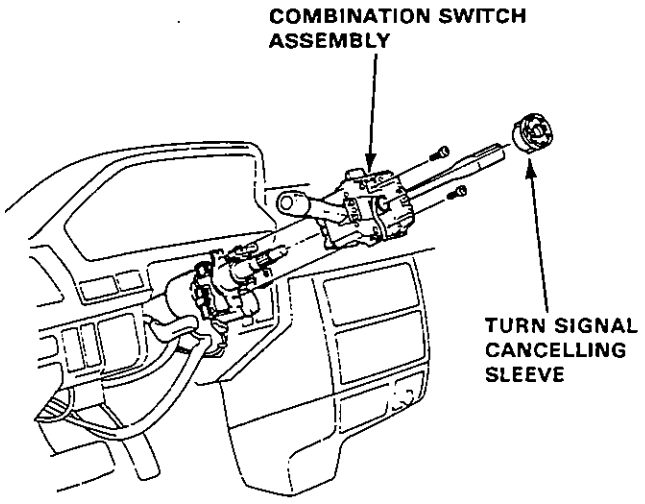


3. Connect each wire coupler to the fuse box at the under dash left side.

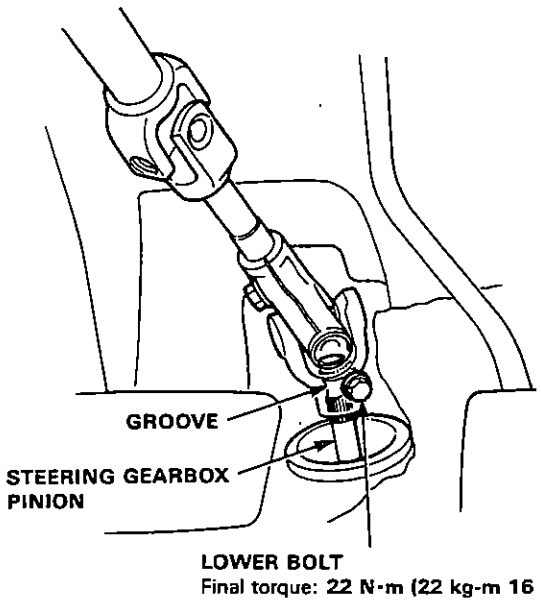


4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.



6. Loosely install the steering joint on the steering gearbox pinion.
NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

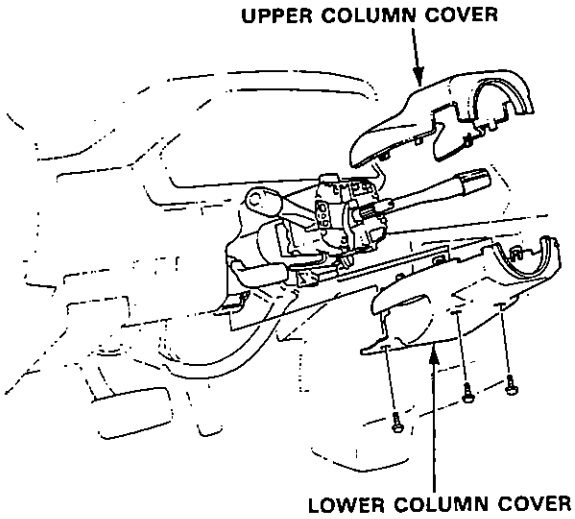


Final torque: **22 N·m (22 kg-m 16 lb-ft)**

7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.

8. Tighten the steering joint lower and top bolts.

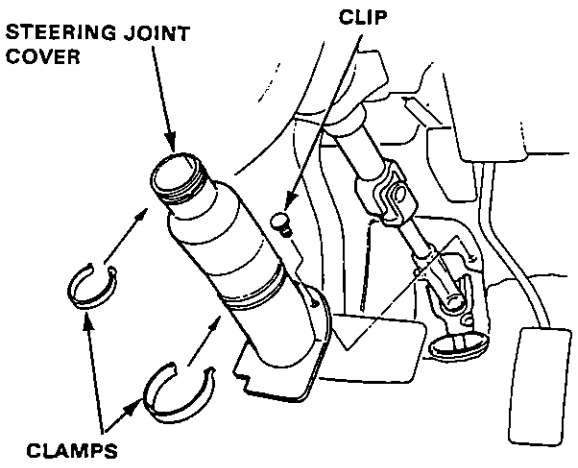
9. Install the upper column cover and lower column cover.



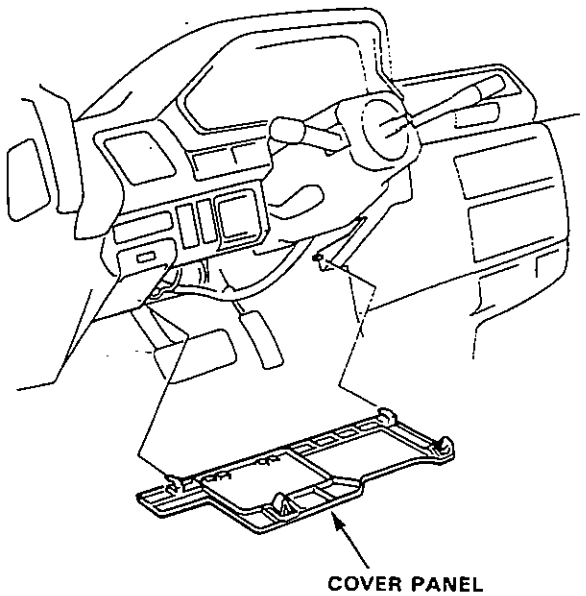
(cont'd)

Installation (cont'd)

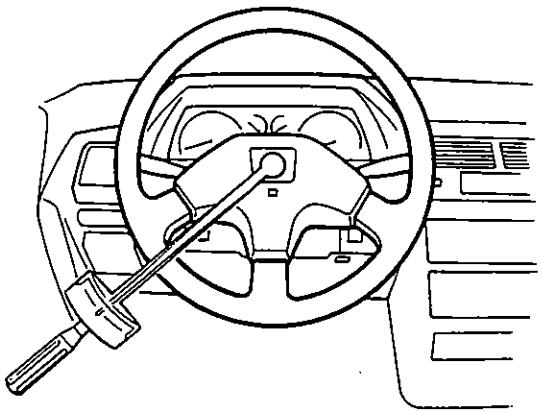
10. Install the steering joint cover with the clamps and clip.



11. Install the cover panel.

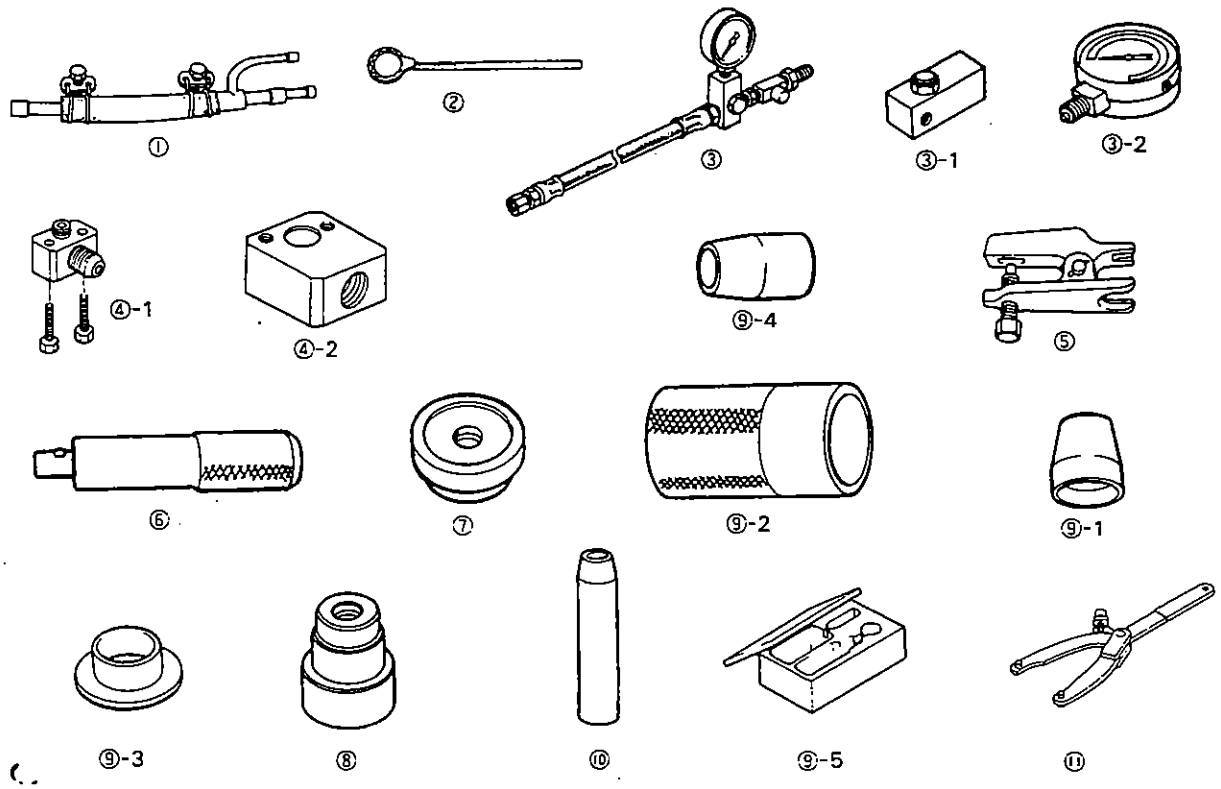


12. Install the steering wheel in a straight ahead position.
13. Tighten the steering wheel mount nut and torque to 50 N·m (5.0 kg-m, 36 lb-ft).
14. Check that the horn works properly, then install the center pad.



Special Tools

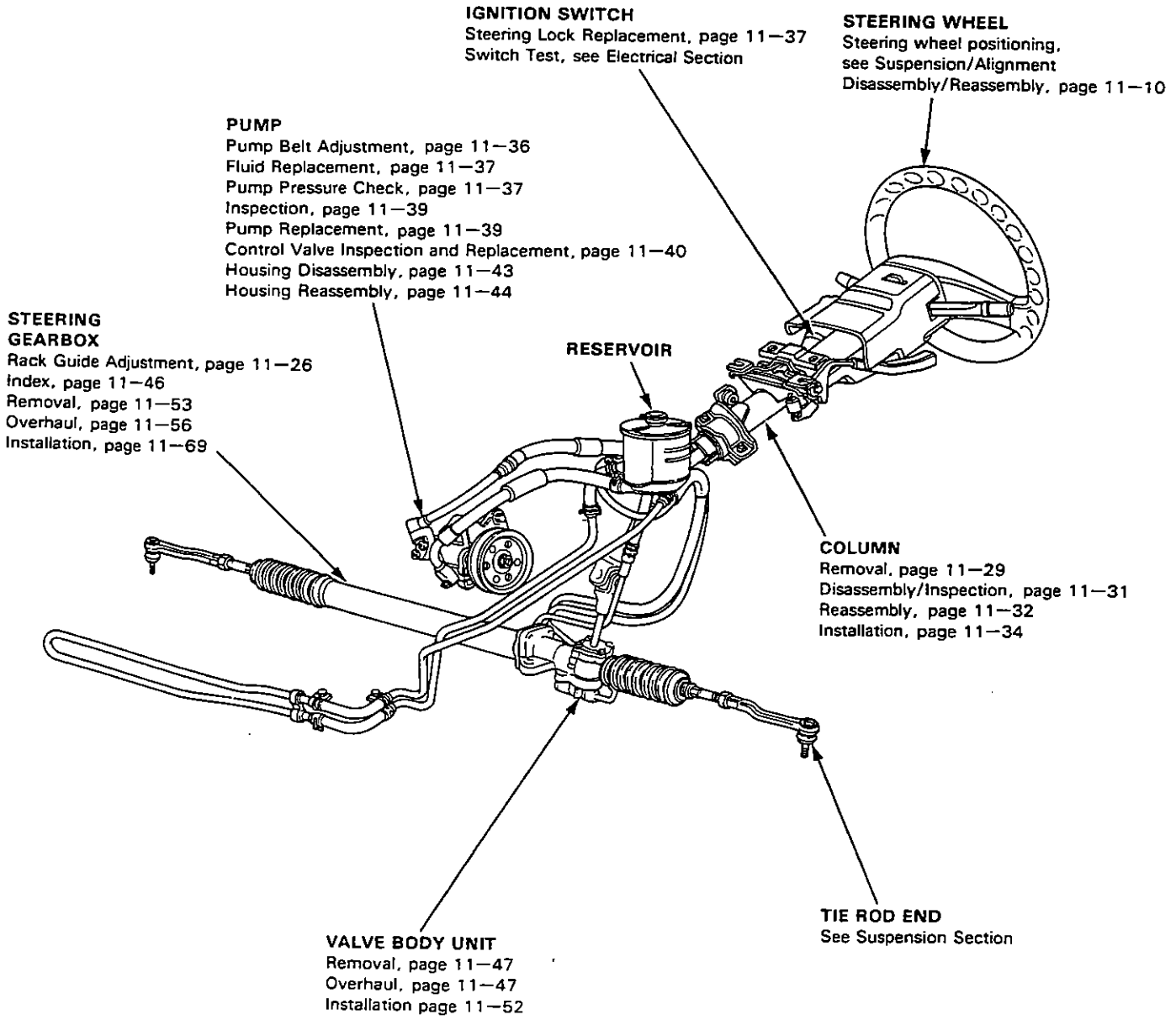
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07406–0010101	Bypass Tube Joint	1	
②	07916–SA50001	Steering Gearbox Lock Nut Wrench	1	
③	07406–0010200	P/S Pressure Gauge Set	1	
③-1	07406–0010300	Pressure Control Valve	1	
③-2	07406–0010400	Pressure Gauge	1	
④	07GAK–SE00100	P/S Pressure Gauge Adapter Set	1	
④-1	07GAK–SE00110	P/S Joint Adapter (Pump)	1	
④-2	07GAK–SE00120	P/S Joint Adapter (Hose)	1	
⑤	07941–6920003	Ball Joint Remover	1	
⑥	07749–0010000	Driver	1	
⑦	07746–0010300	Attachment 42 x 47 mm	1	
⑧	07947–6340300	Driver Attachment	1	
⑨	07GAG–SD40000	P/S Tool Kit	1	
⑨-1	07GAG–SD40100	Piston Seal Ring Guide	1	
⑨-2	07GAG–SD40200	Piston Seal Ring Sizing Tool	1	
⑨-3	07GAG–SD40300	Cylinder End Seal Slider	1	
⑨-4	07GAG–SD40400	Cylinder End Seal Guide	1	
⑨-5	07GAG–SD40600	Tool Box	1	
⑩	07974–SA50600	Pinion Seal Guide	1	
⑪	07725–0030000	Universal Holder	1	



Component Location

Index

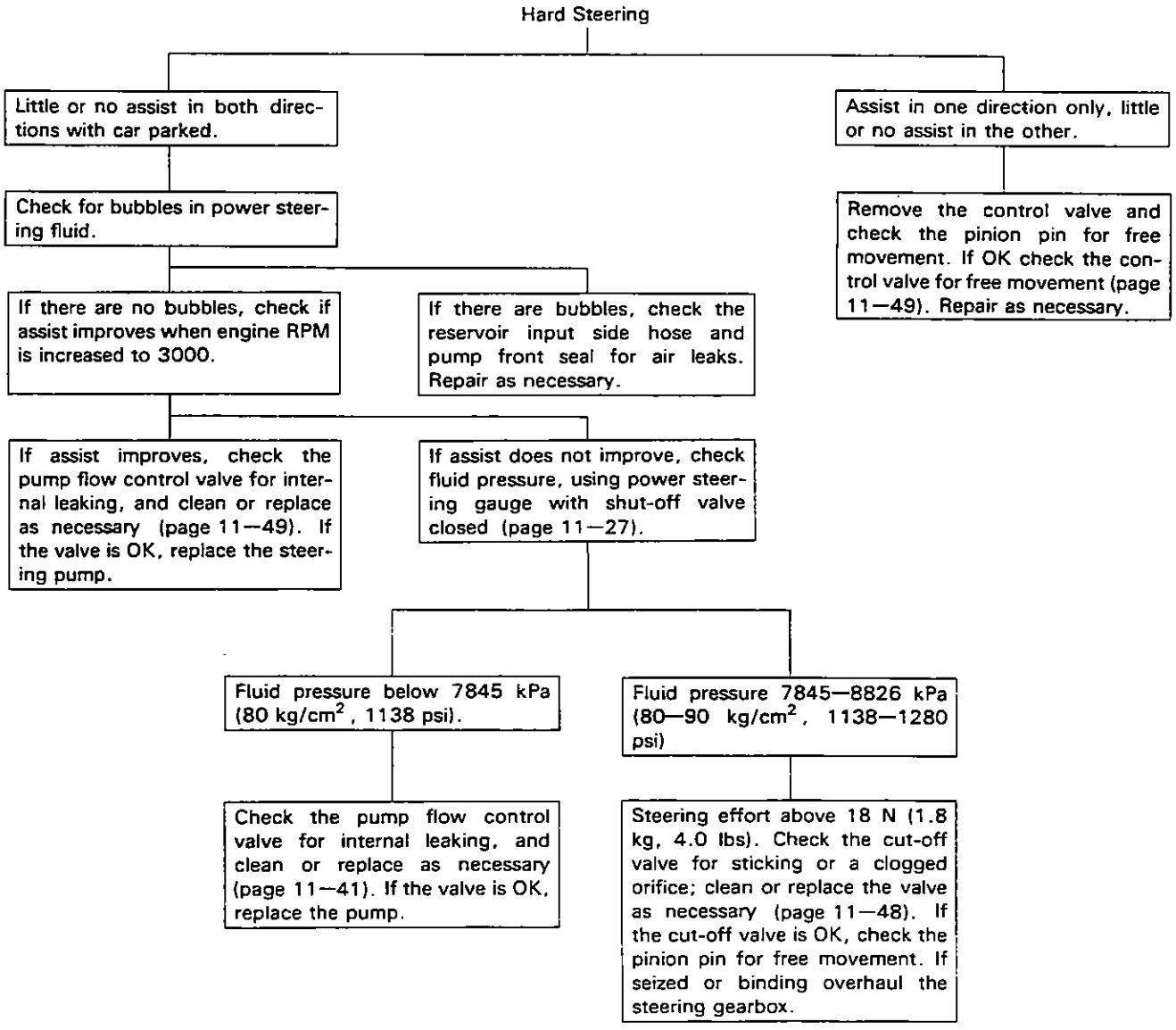
The power steering is rack and pinion type. The power operating assembly is integral with the steering gear. Road feel is maintained throughout the entire speed range of the vehicle.



General Troubleshooting

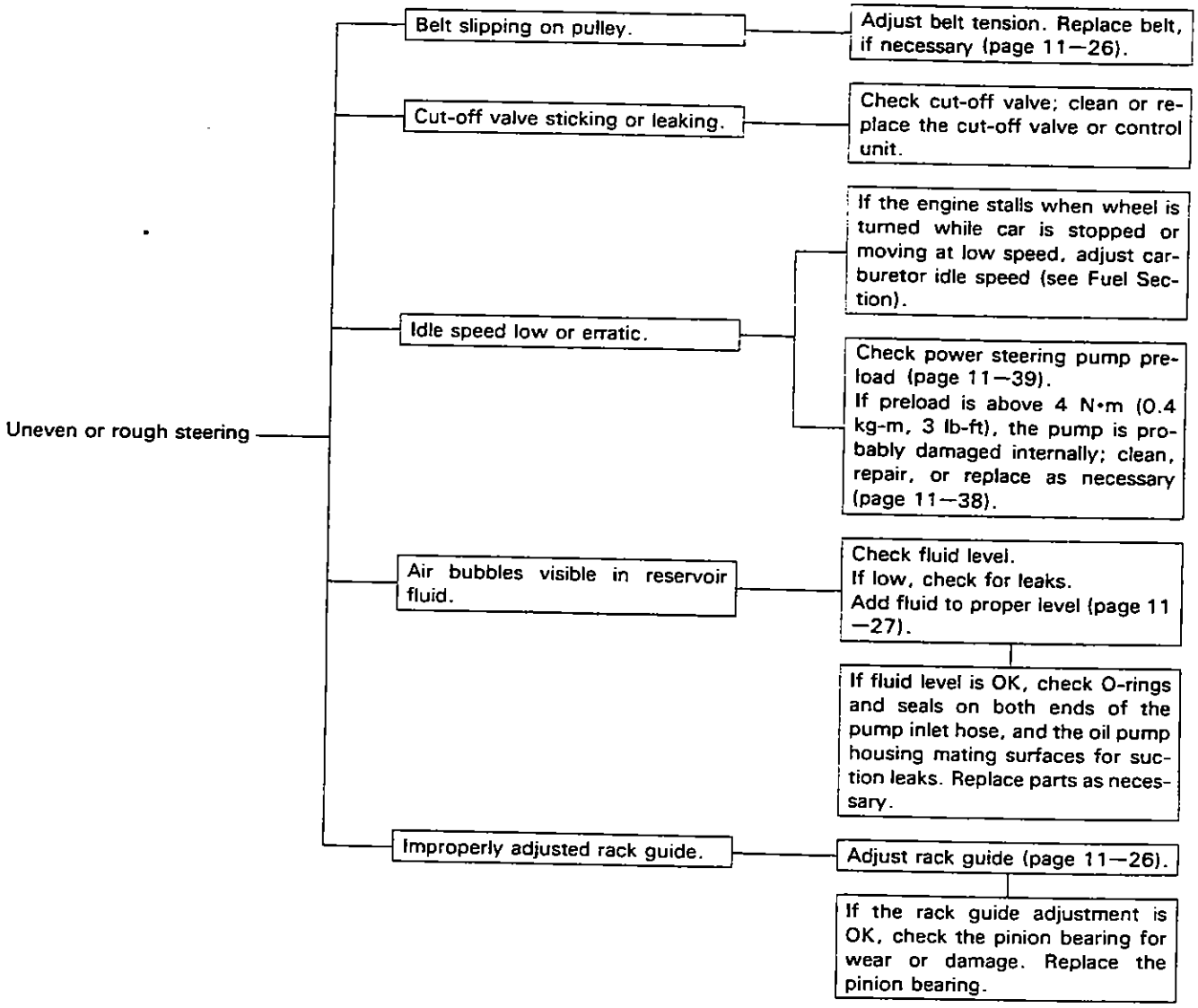
Check the following before you begin:

- Has the suspension been modified in a way that would affect steering?
- Are tire size and air pressure correct?
- Is the steering wheel original equipment or equivalent?
- Is the power steering pump belt properly adjusted?
- Is steering fluid reservoir filled to proper level?
- Is the engine idle speed correct and steady?



(cont'd)

General Troubleshooting (cont'd)

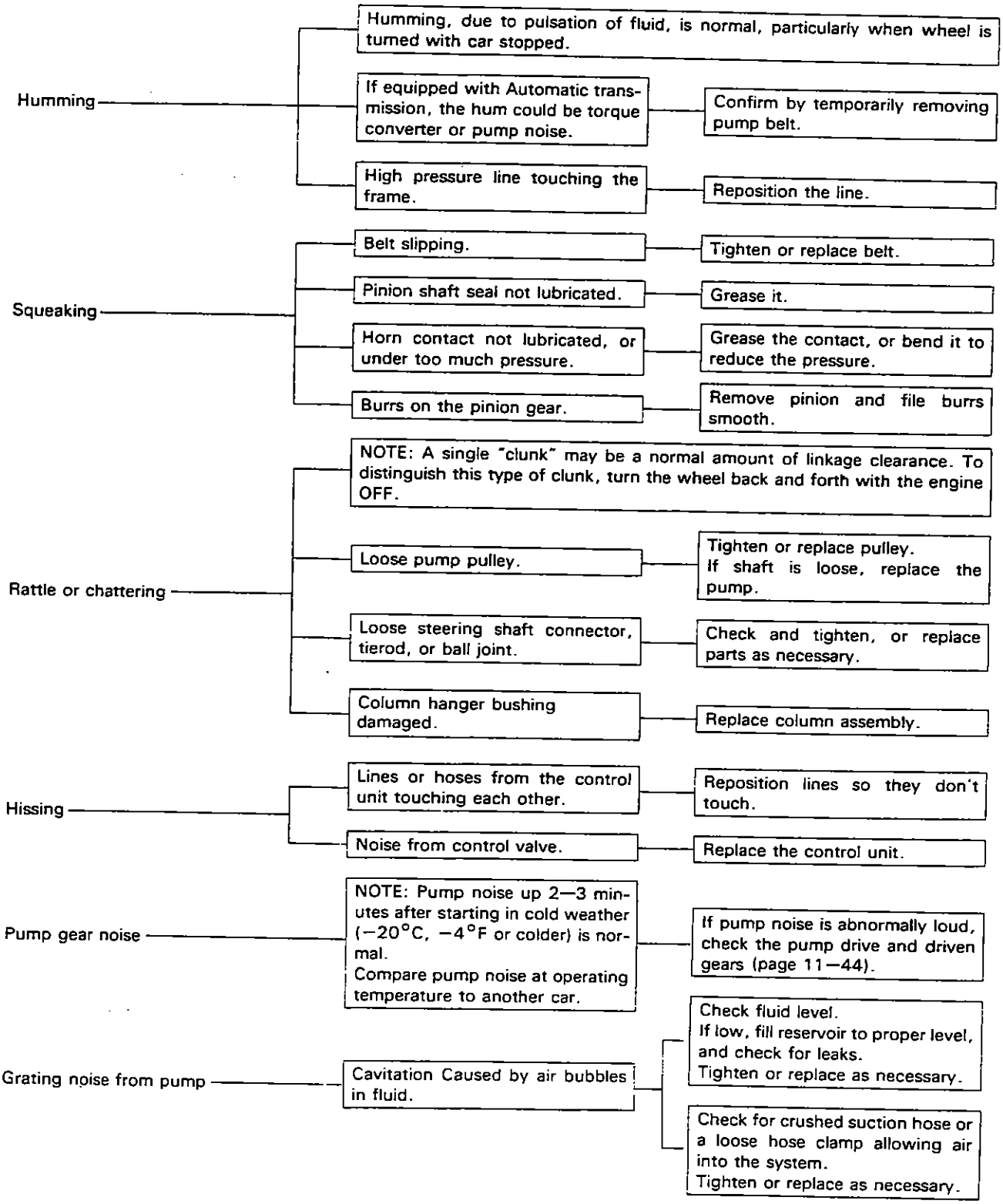


Shock or vibration when wheel is turned to full lock.	Pump belt slipping on pulley (pump stops momentarily).	Adjust belt tension (page 11—26). or replace belt.
	Sticking relief valve; pulsation exceeds 980 kPa (10 kg/cm^2, 142 psi).	Check flow control valve (page 11—41); clean or replace as necessary. If the flow control valve is OK, replace the pump.
Assist (excessively light steering) at high speed.	Measure force required to turn wheel with bypass tube joint installed, and car parked on dry paved surface (page 11—28).	If below 50 N (5.0 kg, 11 lbs), check cut-off valve and control unit and replace parts as necessary.
Steering kicks back during wide turns.	Pump belt slipping.	Adjust belt tension (page 11—26) or replace belt.
	Sticking cut-off valve or control valve.	Replace cut-off valve or control unit.
	Rack guide adjusted too loose.	Adjust rack guide (page 11—26).
Wheel will not return smoothly.	Tire pressure too low.	Inflate to correct pressure.
	Improper front wheel alignment.	Readjust front wheel alignment or replace parts as necessary.
	Improperly adjusted rack guide.	Adjust rack guide (page 11—26).

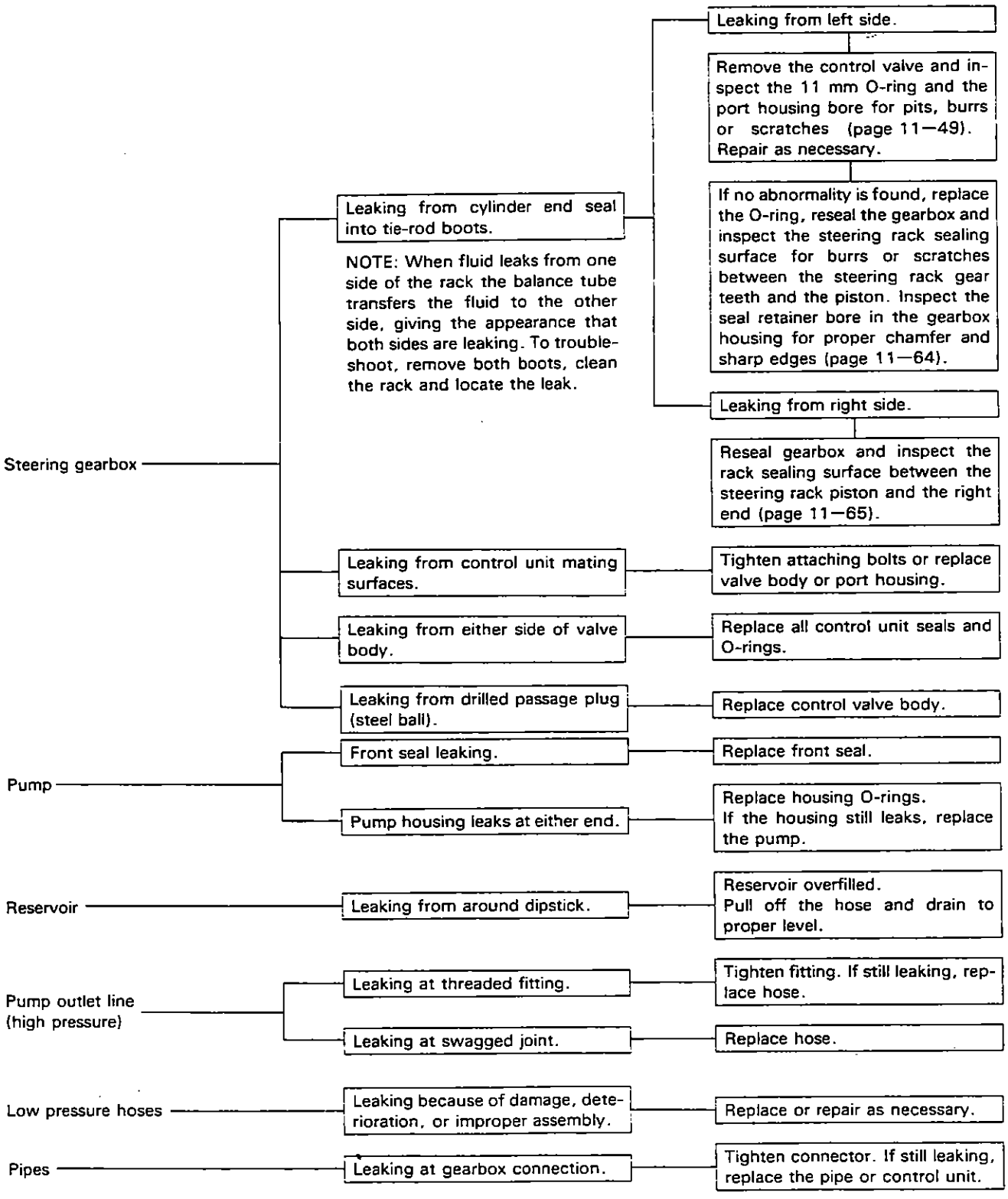
Troubleshooting

Noise and Vibration

NOTE: Pump noise in first 2—3 minutes after starting in cold weather (−20°C, −4°F or colder) is normal.



Fluid Leaks


Steering gearbox
Leaking from cylinder end seal into tie-rod boots.
NOTE: When fluid leaks from one side of the rack the balance tube transfers the fluid to the other side, giving the appearance that both sides are leaking. To trouble-shoot, remove both boots, clean the rack and locate the leak.
Leaking from left side.
Remove the control valve and inspect the 11 mm O-ring and the port housing bore for pits, burrs or scratches (page 11—49). Repair as necessary.
If no abnormality is found, replace the O-ring, reseal the gearbox and inspect the steering rack sealing surface for burrs or scratches between the steering rack gear teeth and the piston. Inspect the seal retainer bore in the gearbox housing for proper chamfer and sharp edges (page 11—64).
Leaking from right side.
Reseal gearbox and inspect the rack sealing surface between the steering rack piston and the right end (page 11—65).
Leaking from control unit mating surfaces.
Tighten attaching bolts or replace valve body or port housing.
Leaking from either side of valve body.
Replace all control unit seals and O-rings.
Leaking from drilled passage plug (steel ball).
Replace control valve body.
Pump
Front seal leaking.
Replace front seal.
Pump housing leaks at either end.
Replace housing O-rings. If the housing still leaks, replace the pump.
Reservoir
Leaking from around dipstick.
Reservoir overfilled. Pull off the hose and drain to proper level.
Pump outlet line (high pressure)
Leaking at threaded fitting.
Tighten fitting. If still leaking, replace hose.
Leaking at swagged joint.
Replace hose.
Low pressure hoses
Leaking because of damage, deterioration, or improper assembly.
Replace or repair as necessary.
Pipes
Leaking at gearbox connection.
Tighten connector. If still leaking, replace the pipe or control unit.

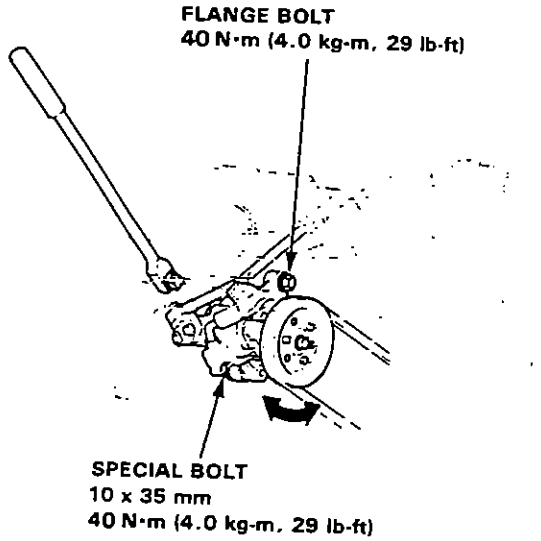
Maintenance

Pump Belt Adjustment

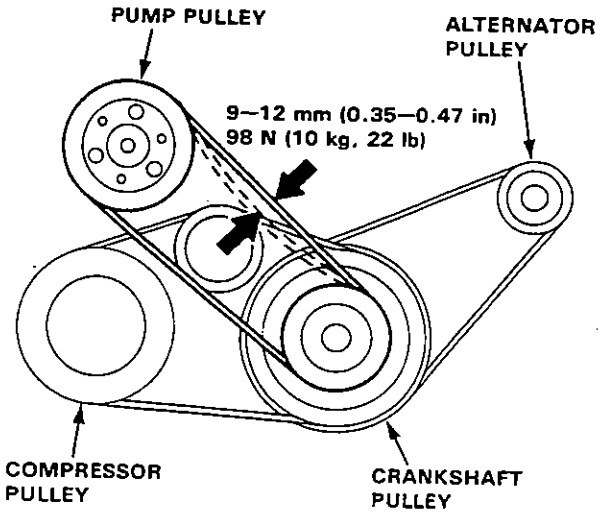
A properly adjustment belt should deflect about 9—12 mm (0.35—0.47 in) when you push on it mid-way between the pulleys with a force of about 98 N (10 kg; 22 lbs).

NOTE: On a brand new belt, the deflection should be 7—10 mm (0.28—0.39 in.) when first measured.

1. Loosen the pump special bolt and flange bolt.
2. Pry pump away from the engine to get the proper tension, then retighten the special bolt and flange bolt.



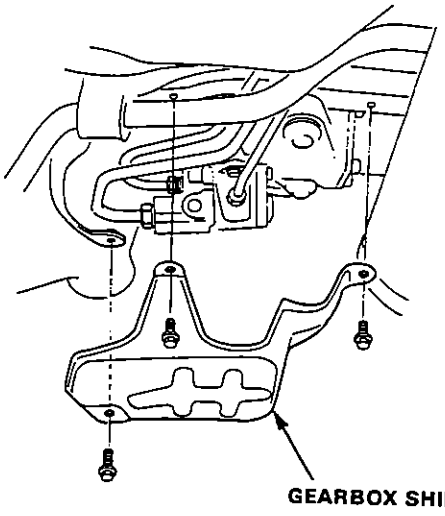
3. Start the engine and turn the steering wheel from lock-to-lock several times, then recheck the belt tension.



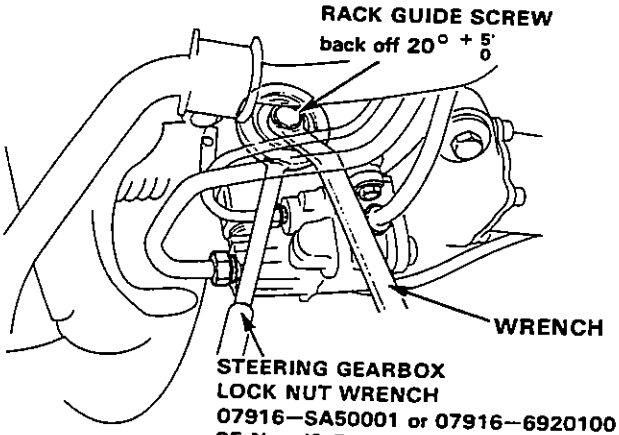
On-Car Checks

Rack Guide Adjustment

1. Remove the gearbox splash splash.



2. Loosen the lock nut on the rack guide screw with the special tool as shown.



3. Tighten the guide screw until it compresses the spring and seats against the guide, then loosen it.

   Re-tighten it to about:
   4 N·m (0.4 kg-m, 3 lb-ft)

   Then back it off about:
   $20° +^{5}_{0}$

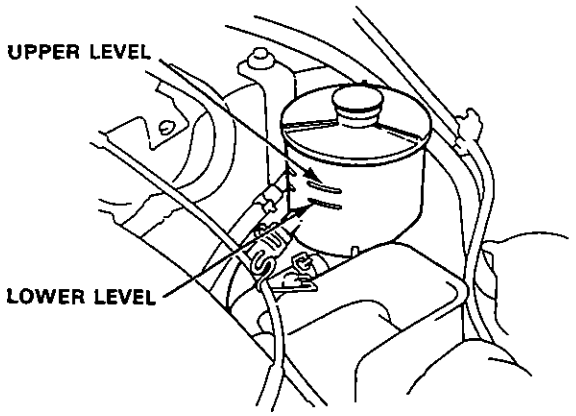
   Tighten the lock nut to about 25 N·m (2.5 kg-m, 18 ft-lb) while preventing the guide screw from turning.

4. Check the steering effort as described on page 11—28.

Fluid Replacement

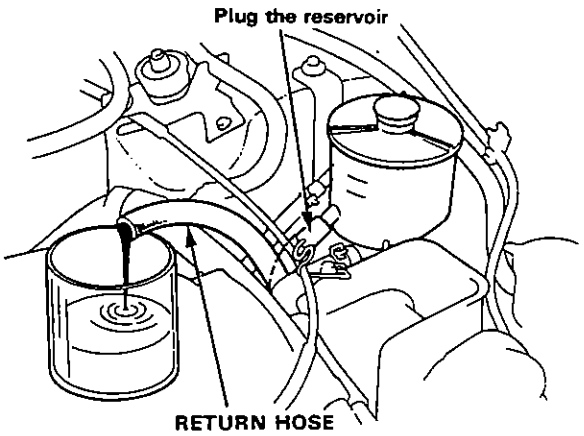
Check the reservoir at regular intervals, and add fluid as necessary.

CAUTION: Use only GENUINE HONDA Power Steering Fluid. Using other fluids such as ATF or other manufacturer's power steering fluid will damage the sytem.



Fluid Replacement
CAPACITY: 1.2 liter (1.3 U.S. pt) at change

1. Disconnect the return hose from the gearbox at the reservoir, and put the end in a suitable container.
2. 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.



3. Re-fit the return hose on the reservoir.
4. Fill the reservoir to the upper level mark.
5. 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.
6. Recheck the fluid level and add some if necessary.

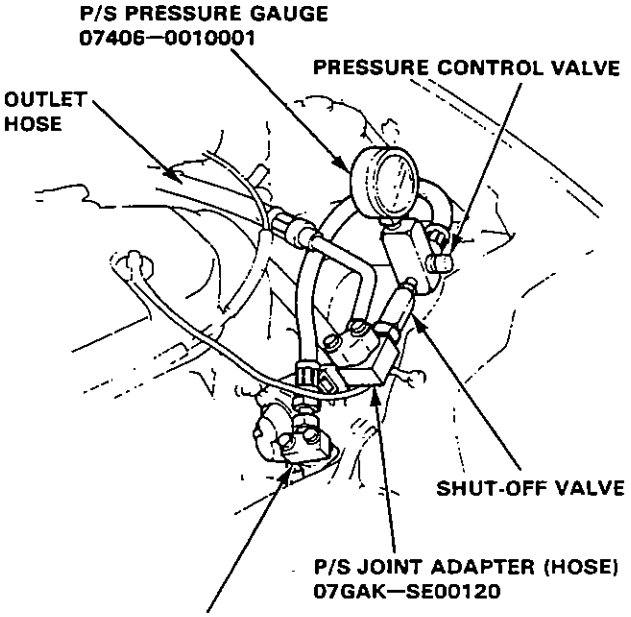
CAUTION: Do not fill the reservoir beyond the upper level mark.

Pump Pressure Check

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

NOTE: First check the power steering fluid level and pump belt tension.

1. Disconnect the outlet hose from the pump outlet fitting, and install the pump joint adaptor on the outlet.
2. Install the hose joint adaptor to the outlet hose.
3. Install the power steering pressure gauge between the pump and hose joint adaptors as shown.



4. Open the shut-off valve fully.
5. Open the pressure control valve fully.

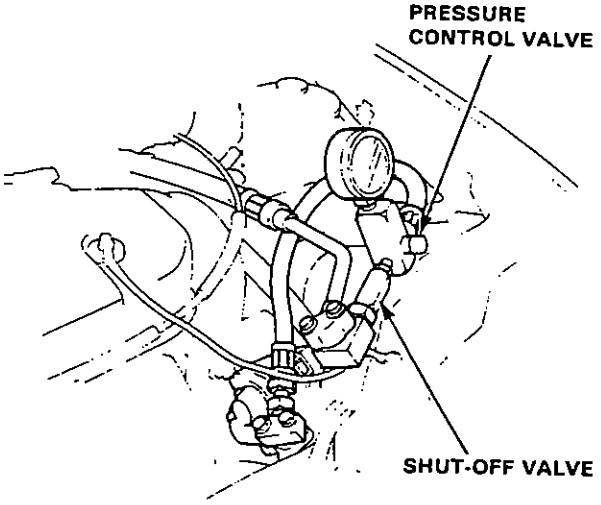
(cont'd)

Pump Pressure Check (cont'd)

6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Close the shut-off valve, then, close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.
9. Immediately open the shut-off valve fully.

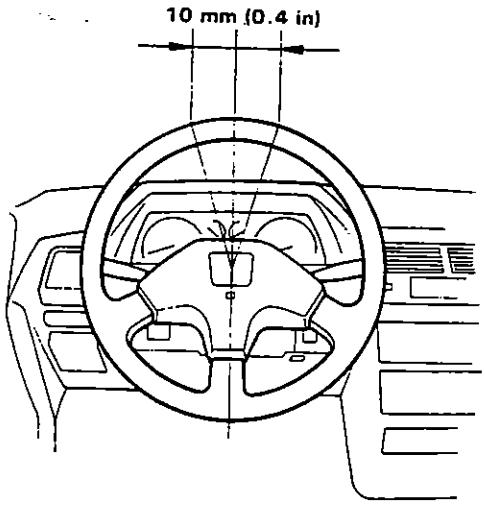
CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

If the pump is in good condition, the gauge should read at least 7845—8826 kPa (80—90 kg/cm^2, 1138—1280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



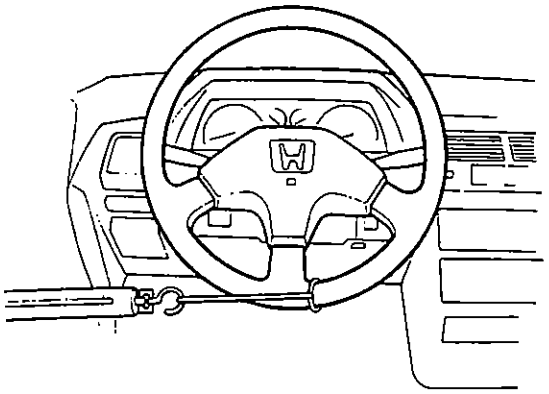
Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.



Power Assist Check with Car Parked

1. Check the power steering fluid level and pump belt tension.
2. Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

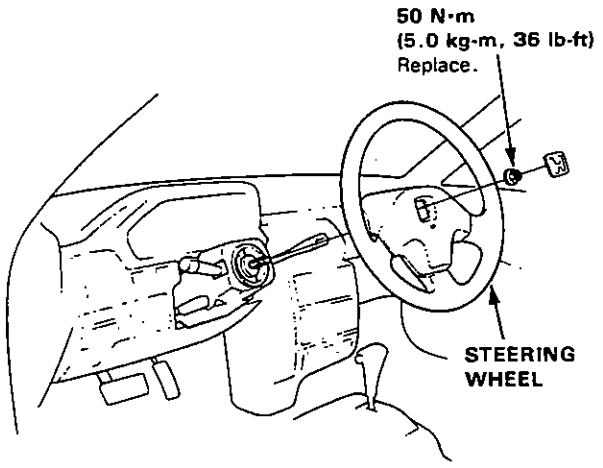


4. The scale should read no more than 18 N (1.8 kg, 4 lb) If it reads more or less, check the gearbox and pump.

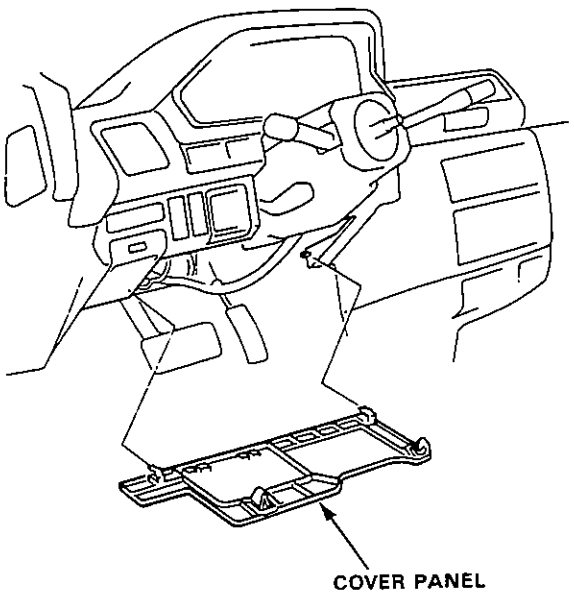
Column

Removal

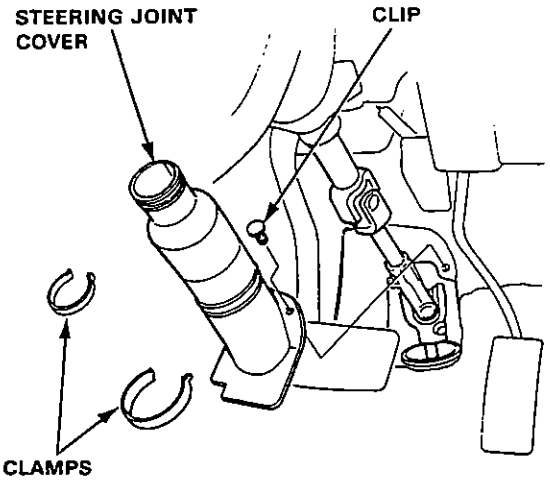
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



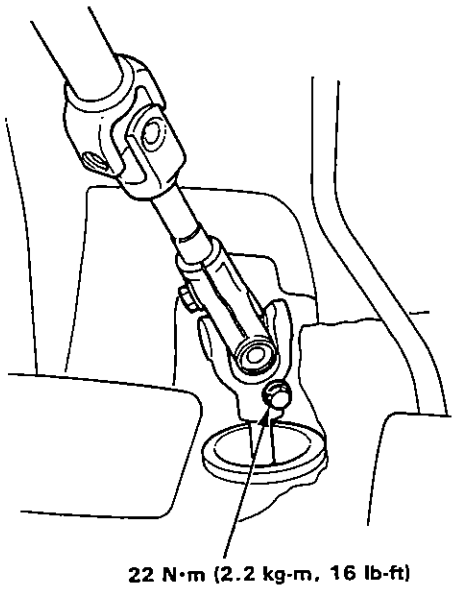
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.



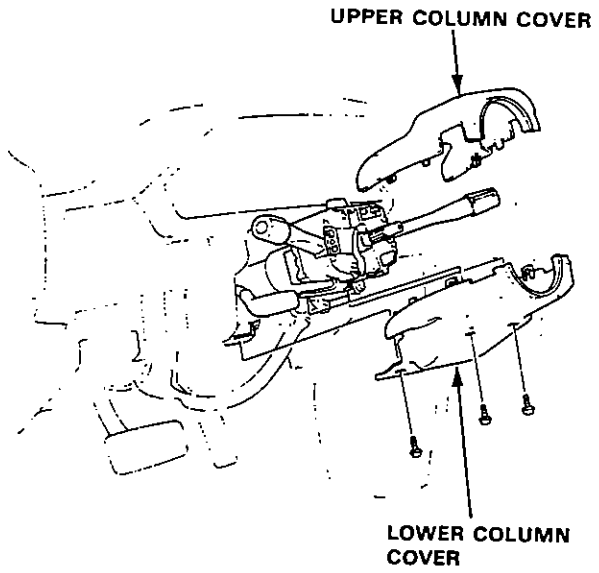
6. Remove the steering joint bolt, and move the joint toward the column.



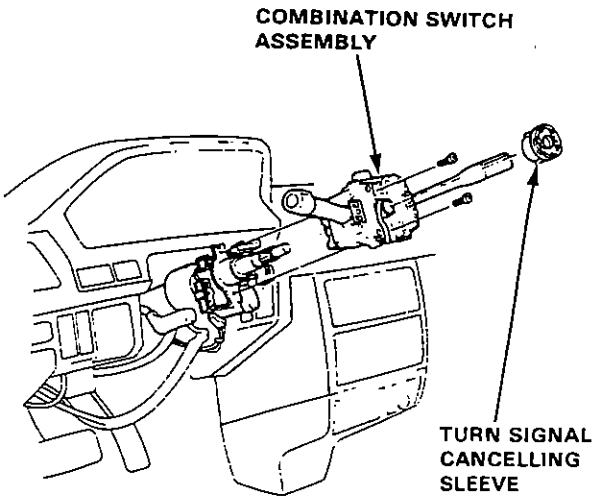
(cont'd)

Removal (cont'd)

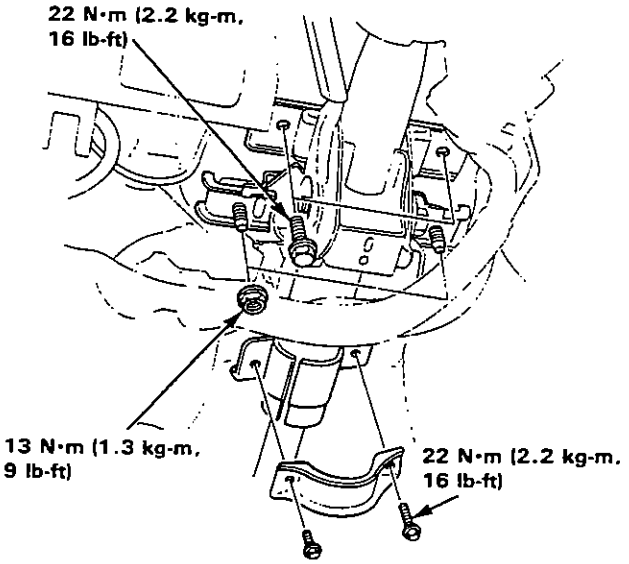
7. Remove the upper and lower column covers.



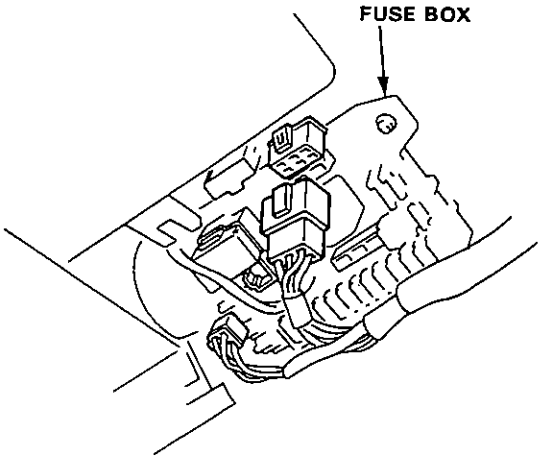
8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal cancelling sleeve and combination switch assembly.



10. Remove the lower column bracket.
11. Remove the nuts attaching the bending plate guide and bending plate.

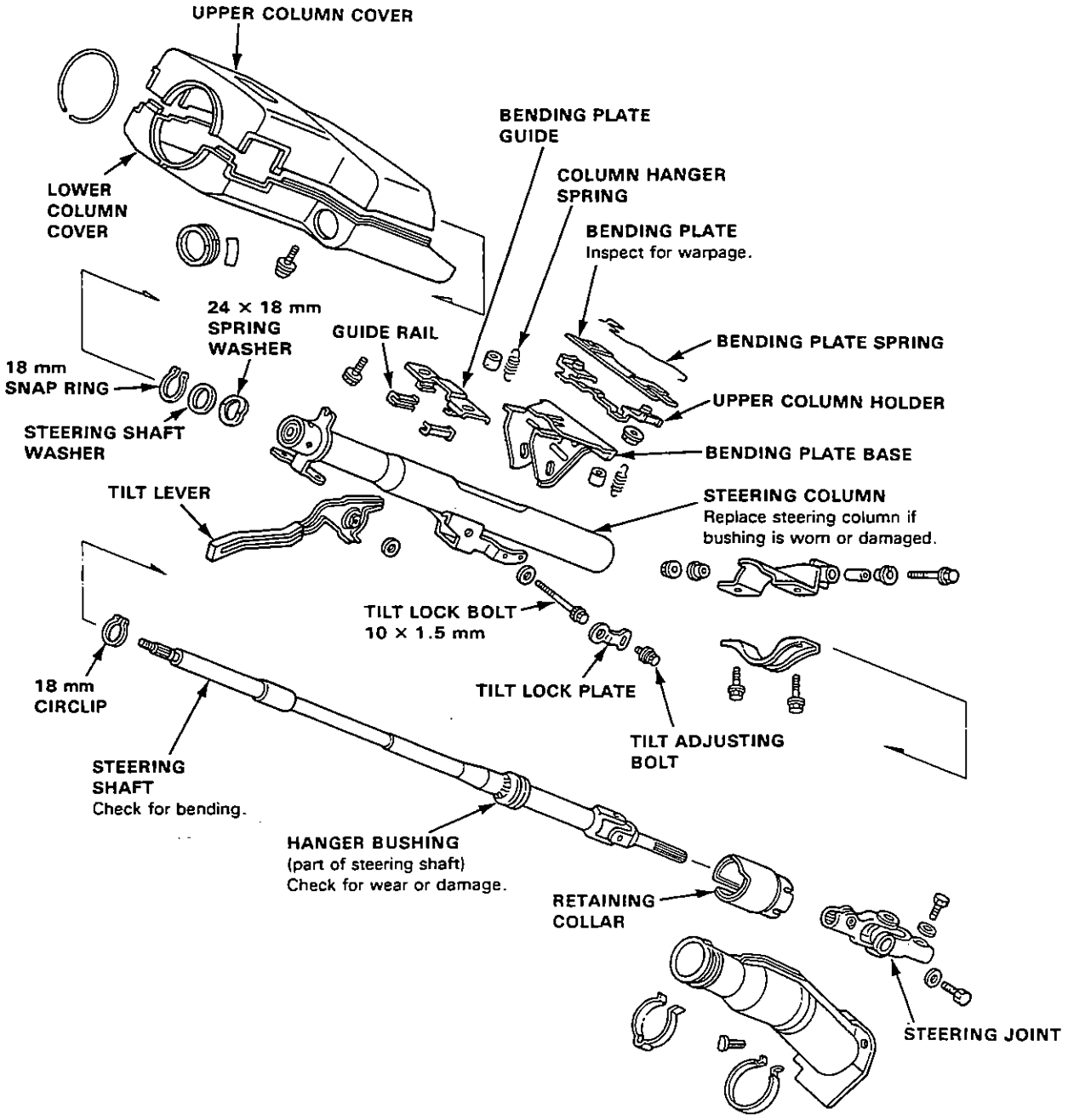


12. Disconnect each wire coupler from the fuse box at under dash left side.
13. Remove the steering column assembly.



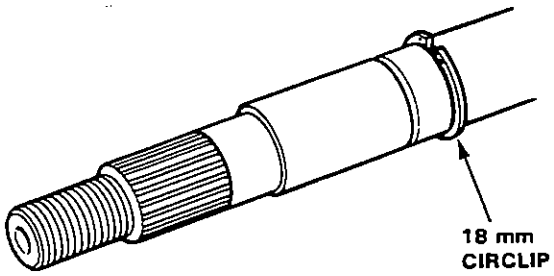
Disassembly/Inspection

1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I."
5. Remove the snapring, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.

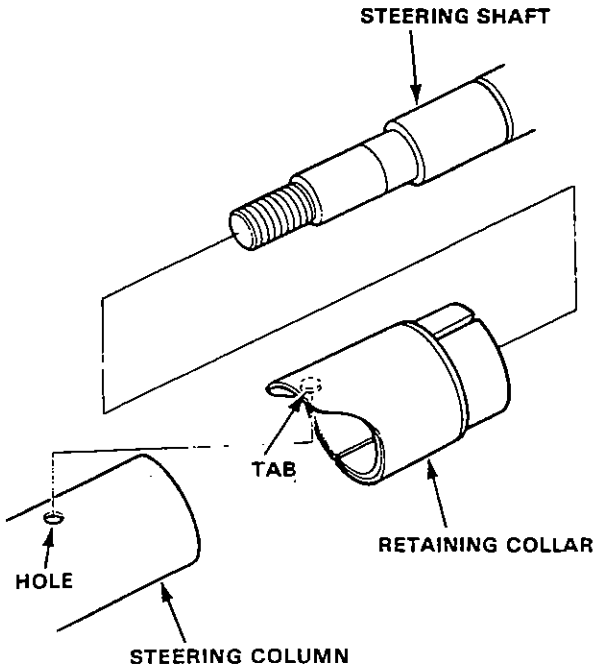


Reassembly

1. Install the circlip on the steering shaft.



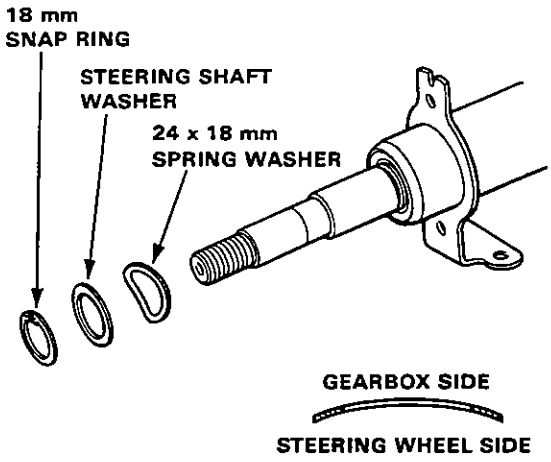
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



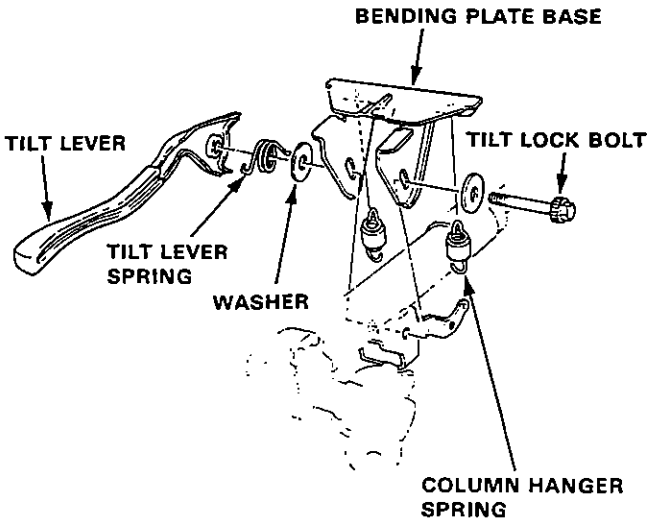
3. Insert the steering shaft into the steering column from the bottom.

4. Install the 24×18 mm spring washer and steering shaft washer on the steering shaft and secure with the 18 mm snap ring.

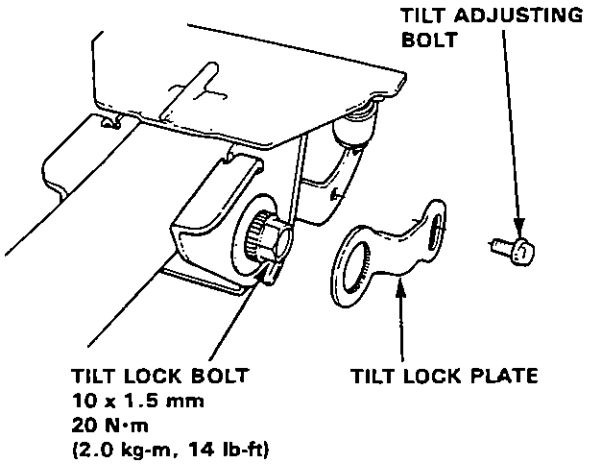
   NOTE: Install the spring washer as shown.



5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, spring, washers, and bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.

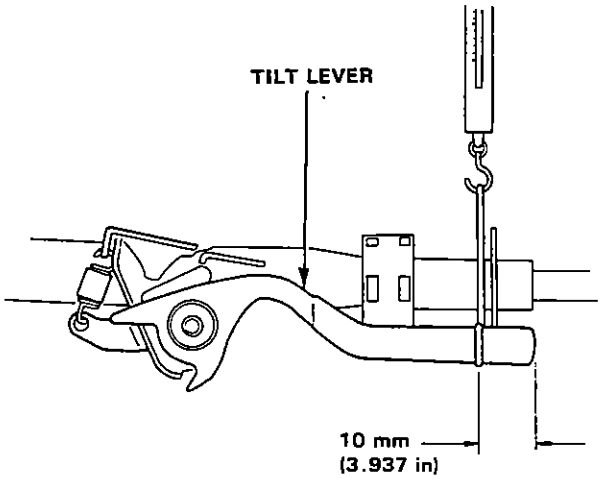


8. Tighten the tilt lock bolt to 20 N·m (2.0 kg-m, 14 lb-ft), then position the tilt lock plate on the splined portion of tilt lock bolt and loosely attach with the tilt adjusting bolt.

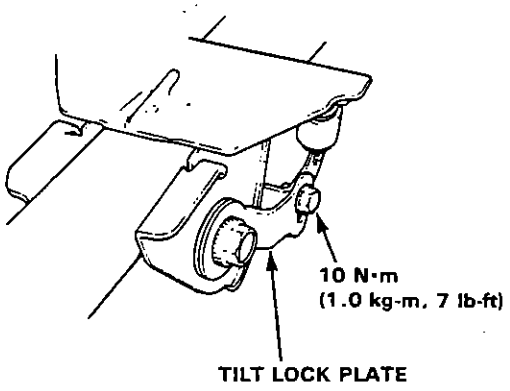


9. Attach a spring scale 10 mm (3.937 in) from the end of the knob. Measure the force required to move the lever.

Preload: **80 N (8.0 kg, 18 lbs)**



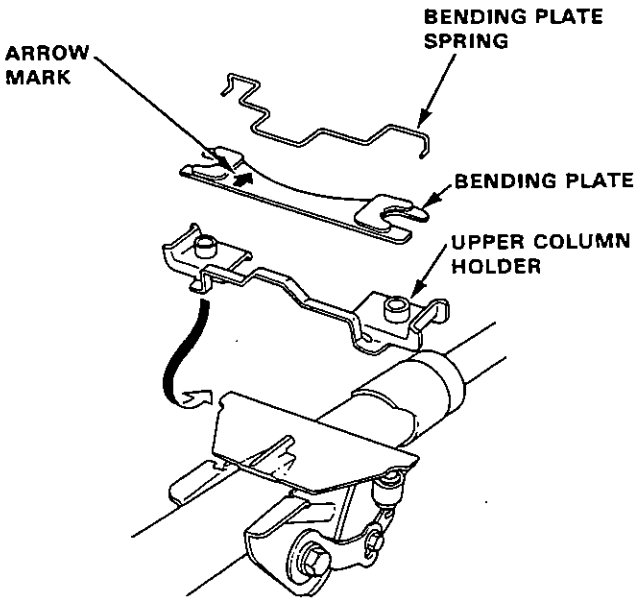
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

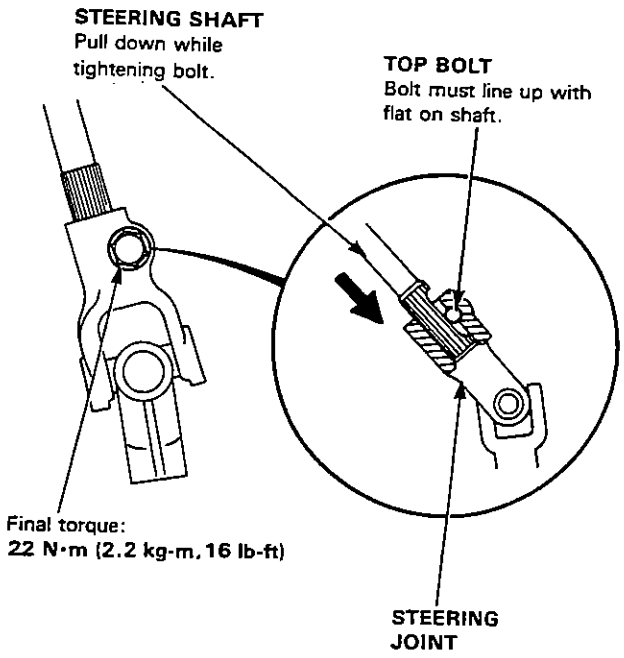
NOTE: Install the bending plate with arrow mark facing the steering gearbox.



(cont'd)

Reassembly (cont'd)

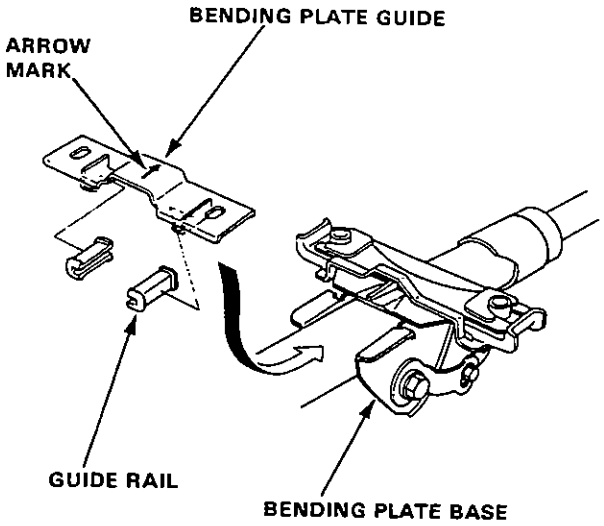
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the top bolt.



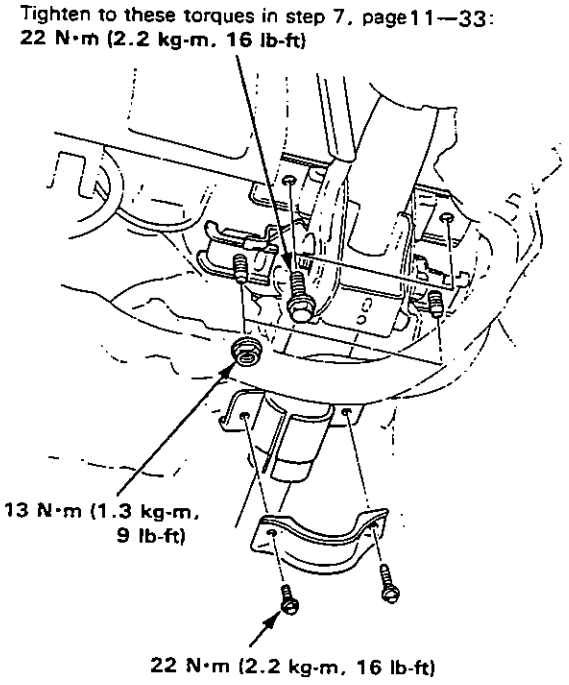
Installation

1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

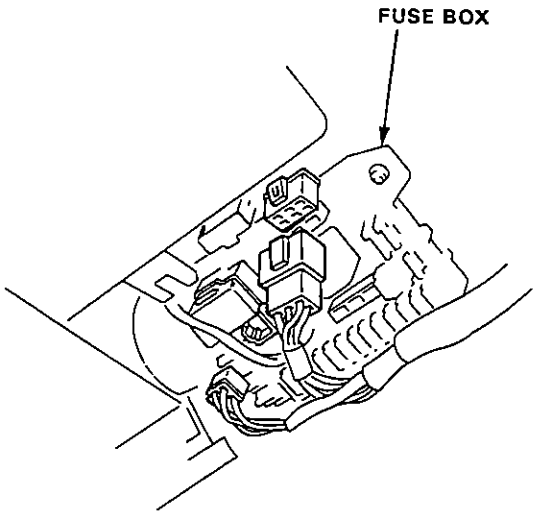
NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket.

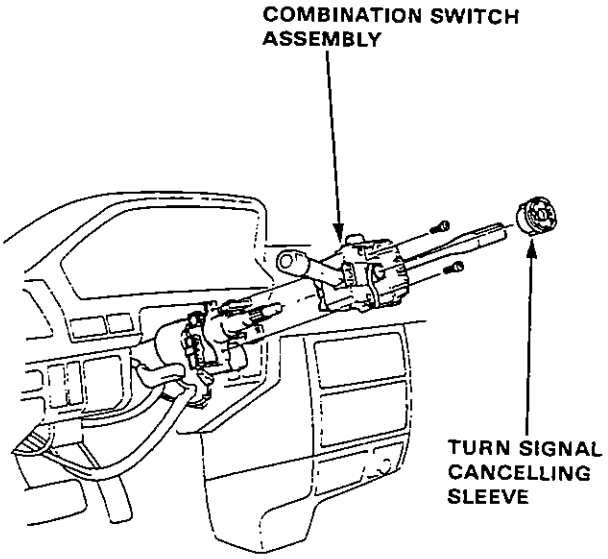


3. Connect each wire coupler to the fuse box at the under dash left side.

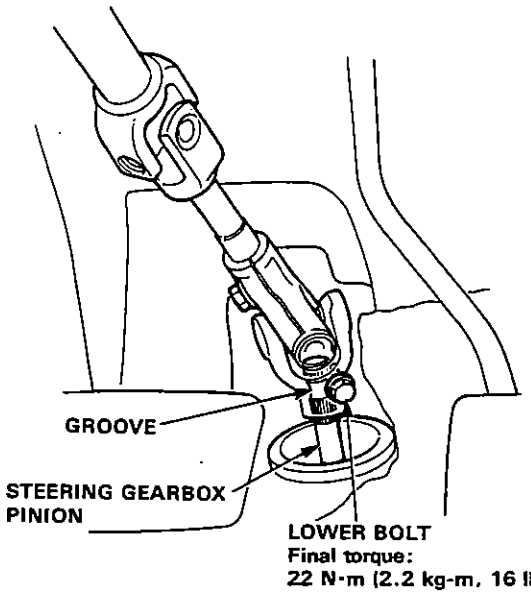


4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.



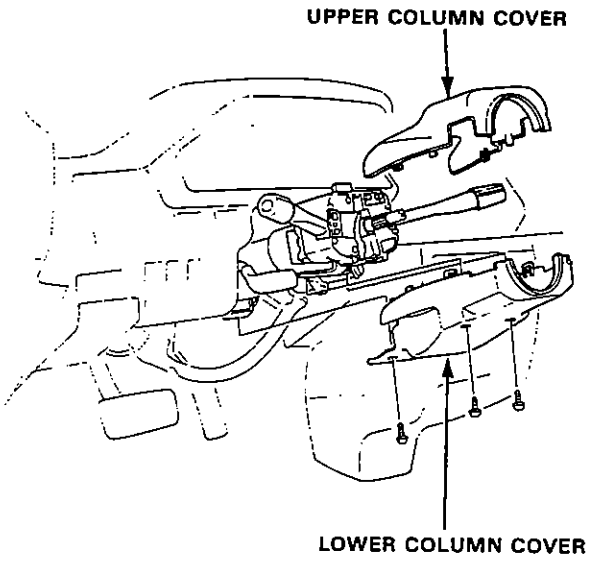
6. Loosely install the steering joint on the steering gearbox pinion.
NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.



7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.

8. Tighten the and upper steering joint lower and top bolts.

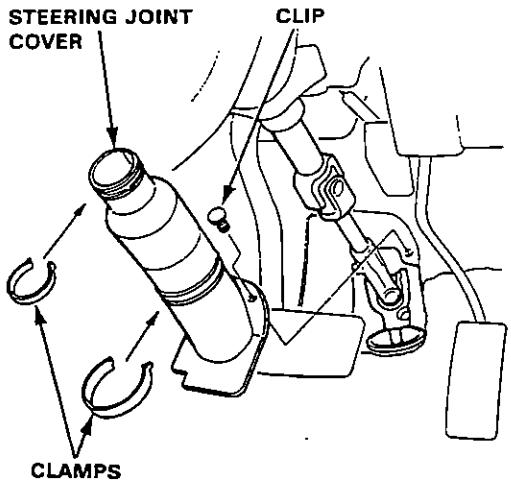
9. Install the upper column cover and lower column cover.



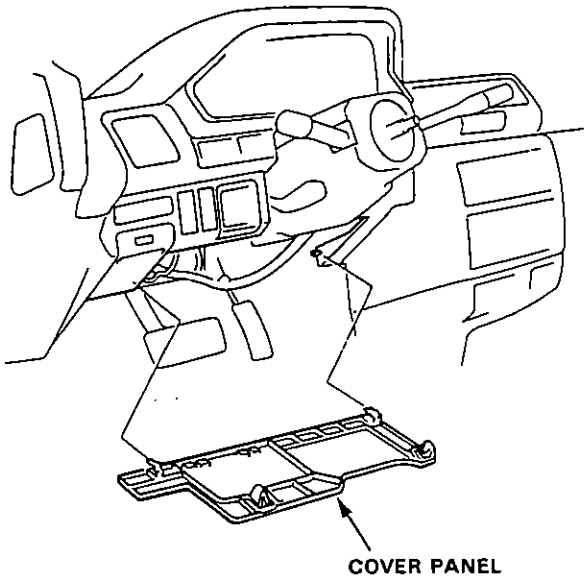
(cont'd)

Installation (cont'd)

10. Install the steering joint cover with the clamps and clip.



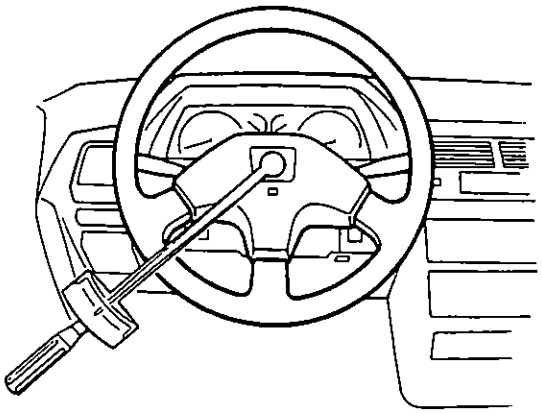
11. Install the cover panel.



12. Install the steering wheel in a straight ahead position.

13. Tighten the steering wheel mount nut and torque to 50 N•m (5.0 kg-m, 36 lb-ft).

14. Check that the horn works properly, then install the center pad.

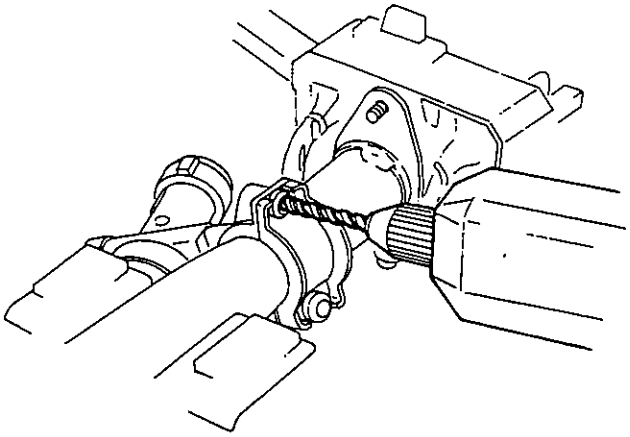


Steering Lock

Lock Replacement

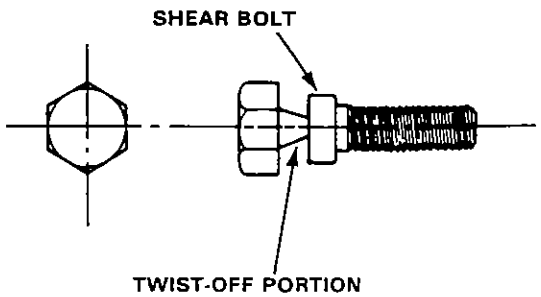
1. Remove the steering column covers.
2. Disconnect the ignition switch connector.
3. Center punch the 2 shear bolts and drill their heads off with a 3/8 in. drill bit.

   CAUTION: Do not damage the switch body when removing the shear bolt heads.
4. Remove the shear bolts from the switch body.



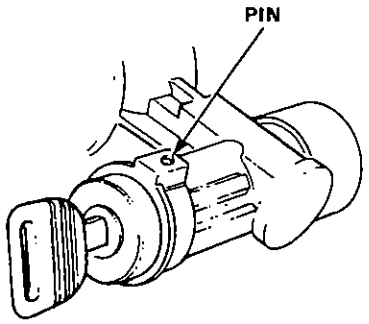
5. Install the new ignition switch without the key inserted.
6. Loosely tighten the new shear bolts.

   NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.
7. Insert the ignition key and check for proper operation of the steering wheel lock and that the ignition key turns freely.
8. Tighten the shear bolts until the hex heads twist off.

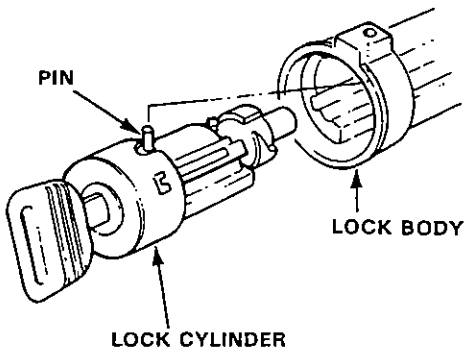


Lock Cylinder Replacement

1. Remove the ignition switch.
2. Turn the ignition key to "I."
3. Push the pin in and remove the lock cylinder from the lock body.



4. Turn the key to LOCK and align the lock cylinder with the lock body.
5. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
6. Turn the key to "I," push the pin and insert the lock cylinder into the lock body until the pin clicks into place.



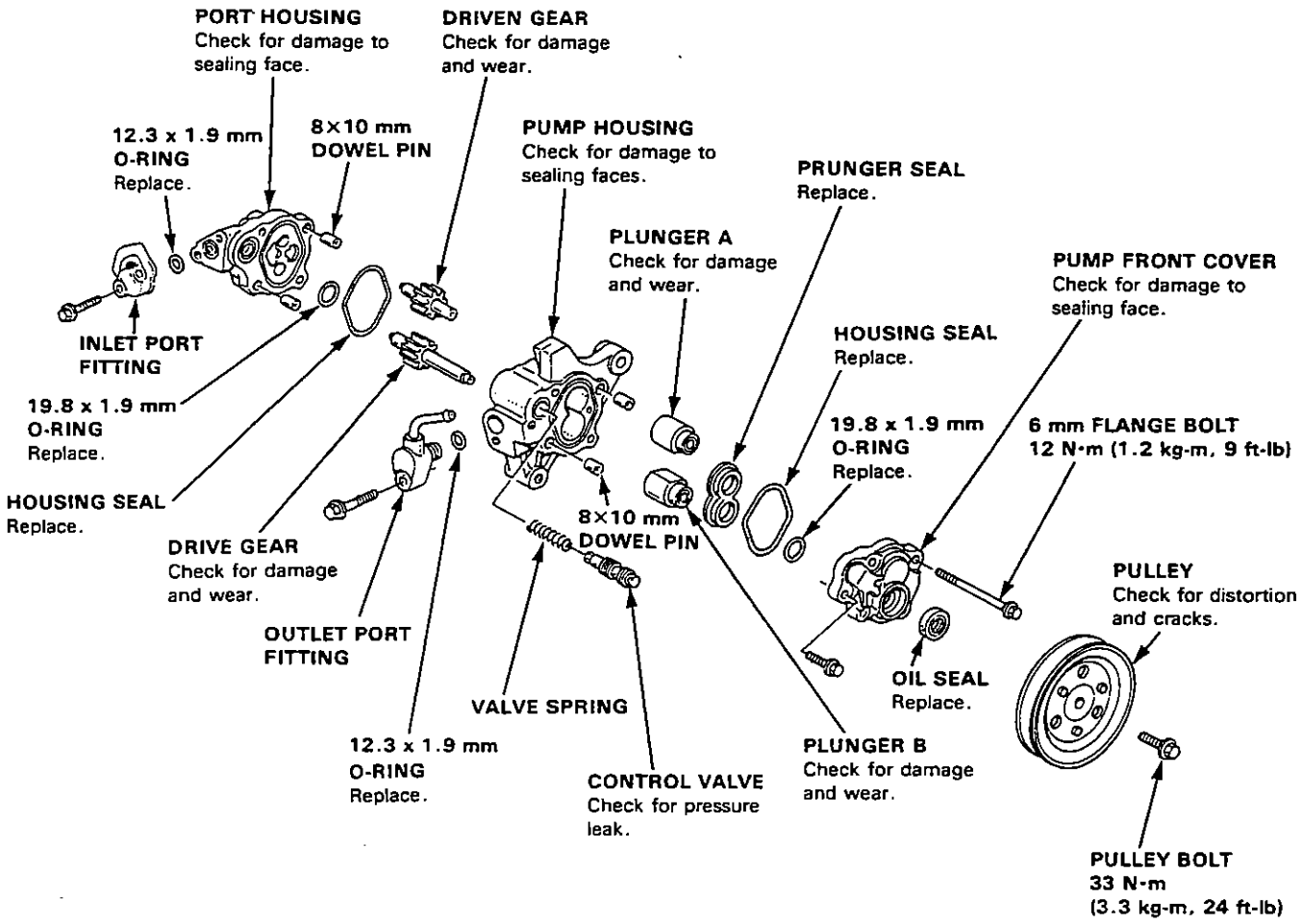
7. Install the ignition switch.

Steering Pump

Illustrated Index

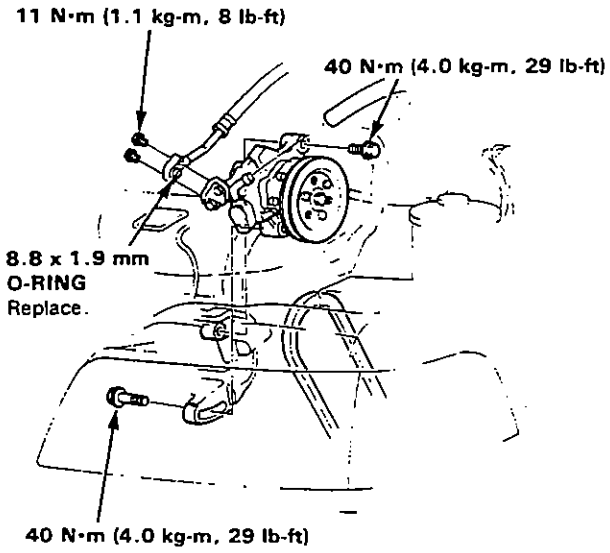
CAUTION: Pump components are made of aluminium. Be careful not to damage them when servicing.

- Clean all of the disassembled parts thoroughly.
- Replace all O-rings and seals. Do not dip new O-rings and seals in solvent; coat O-rings with steering grease before installation, and make sure they stay in place during reassembly.
- The shaded parts are selectively fitted, and should not be disassembled except to replace seals. If any one of them is faulty, replace the whole pump as an assembly.



Replacement

1. Drain the fluid from the system (page 11—27).
2. Disconnect the inlet and outlet hoses from the pump and plug them.
3. Remove the belt by loosening the pump attaching bolts.
4. Remove the bolts, then remove the pump.

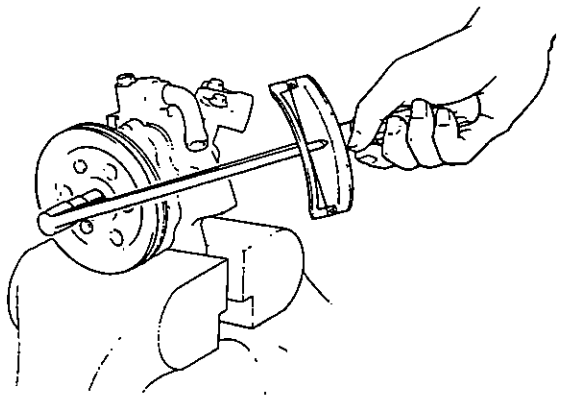


5. Loosely install the new pump on the bracket.
6. Connect the inlet and outlet hoses to the pump.
7. Install and adjust the belt (page 11—26).
8. Fill the reservoir with new fluid to the UPPER LEVEL on the reservoir.
9. Start the engine and let it run at fast idle while turning the steering wheel lock-to-lock several times to bleed air from the system.
10. Check the reservoir and add fluid if necessary.

Preload Inspection

Check the pump preload with a torque wrench after overhauling a pump or installing a replacement pump.

Preload: 4 N·m (0.4 kg-m, 3 lb-ft) max.

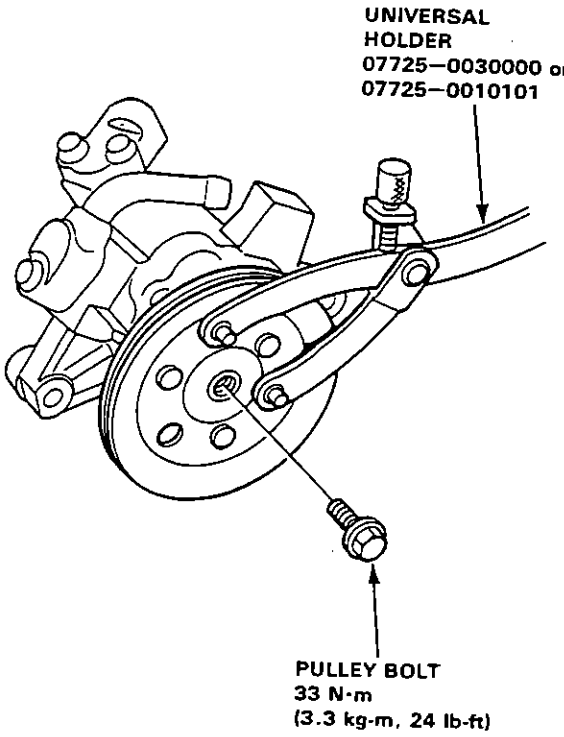


Steering Pump

Pulley Replacement

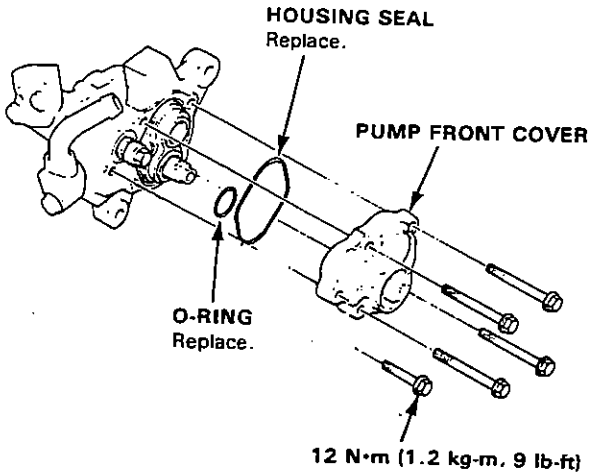
Remove the pulley bolt using the special tool, then remove the pulley.

NOTE: Pulley bolt has left hand threads.

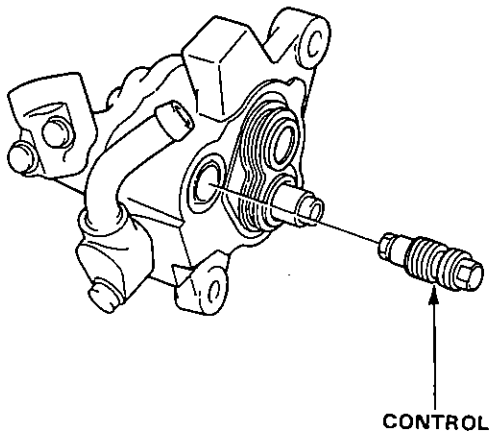


Control Valve Inspection and Replacement

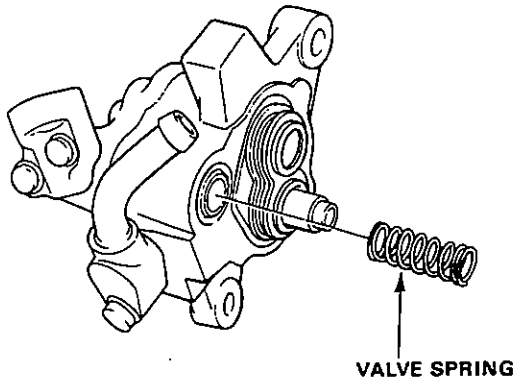
1. Remove the five 6 mm bolts in the order shown, then separate the pump front cover, pump housing and port housing.



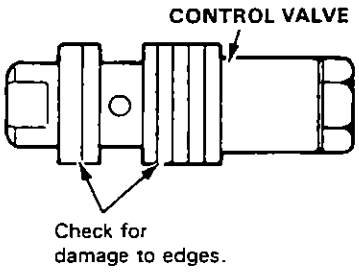
2. Remove the control valve from the pump housing.



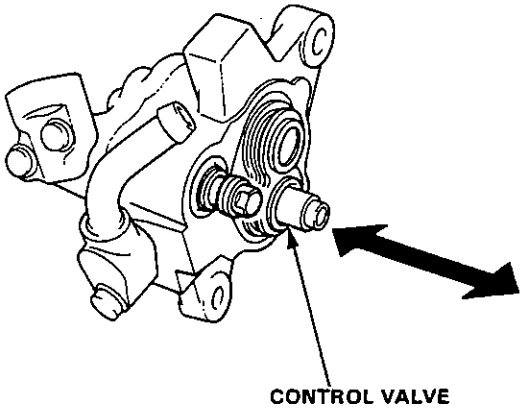
3. Remove the valve spring from the pump housing.



4. Check for wear, burrs, and other damage to the edges of the grooves in the valve.

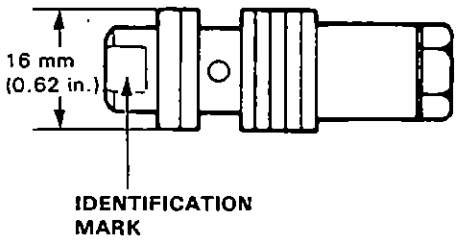


5. Slip the valve back in the pump and check that it moves in and out smoothly.



if OK, go on to step 6, if not, replace the valve:

- The original valve was selected for a precise fit in the pump housing bore, so make sure the new one has the same identification mark.

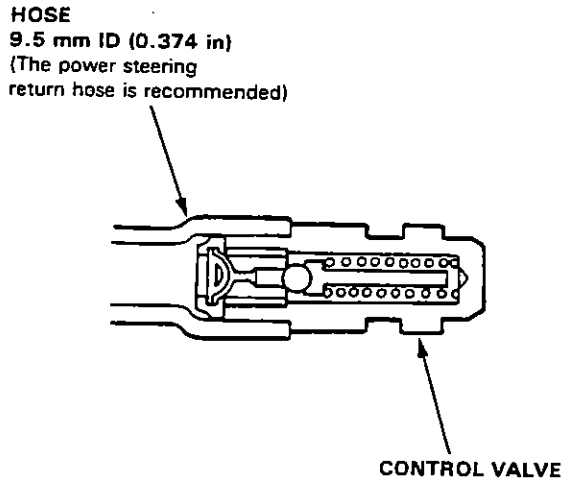


Mark	Part Number	Part Name	Size mm(in)
A	56350—PC1—010	CONTROL VALVE A	15.995—16.000 (0.6297—0.6299)
Without mark	56360—PC1—010	CONTROL VALVE B	16.000—16.006 (0.6299—0.6302)

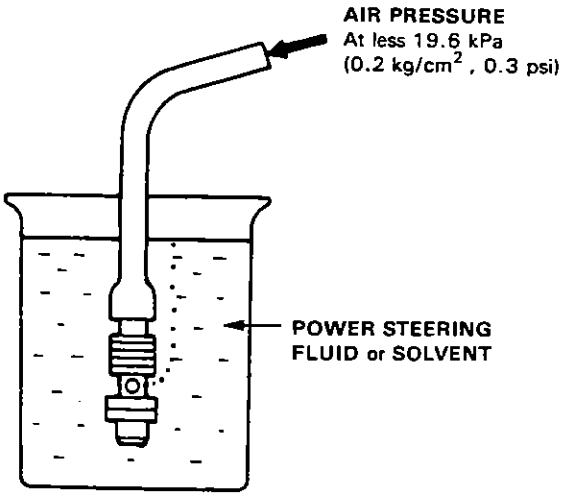
(cont'd)

Control Valve Inspection and Replacement (cont'd)

6. Attach a hose to the end of the valve as shown.

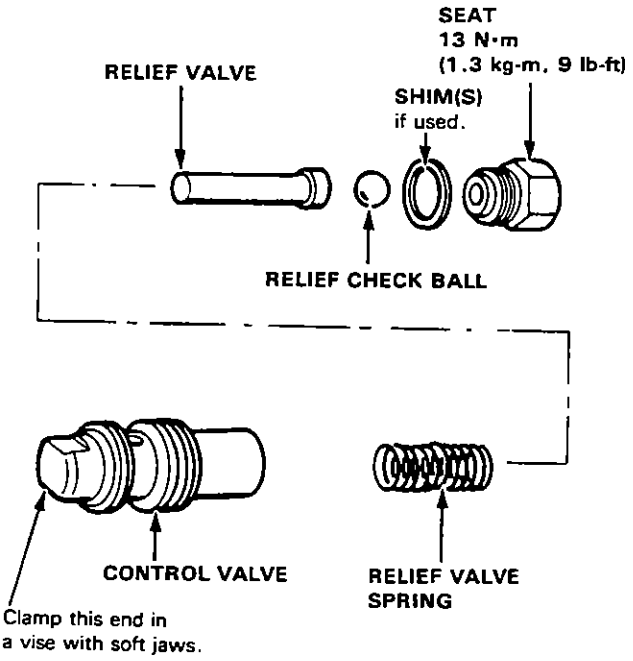


7. Then submerge the valve in a container of power steering fluid or solvent, and blow on the hose. If air bubbles leak through the valve, replace or repair it as follows.



8. Clamp the bottom end of the valve in a vise with soft jaws.

9. Unscrew the seat in the top end of the valve, and remove any shims, the relief check ball, relief valve and relief valve spring.



10. Clean all the parts in solvent, dry them off, then re-assemble and re-test the valve.

    NOTE: If necessary, relief pressure is adjusted at the factory by adding shims under the check ball seat. If you found shims in your valve, be sure you reinstall as many as you took out.

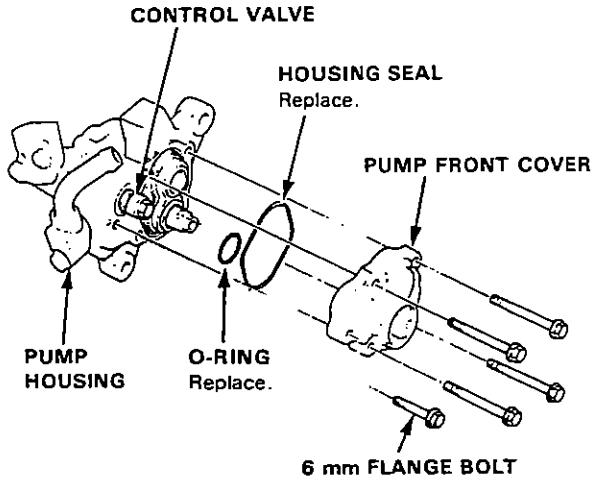
11. Install the control valve in the reverse order of removal.

    - Apply steering grease (Honda P/N 08740—99969) to new O-rings.
    - Coat the control valve with power steering fluid then install it and its spring.

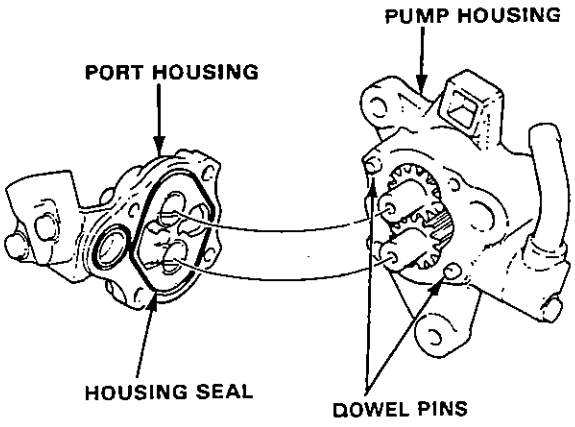
Housing Disassembly

CAUTION: The pump components are made of aluminum. Be careful not to damage them when servicing.

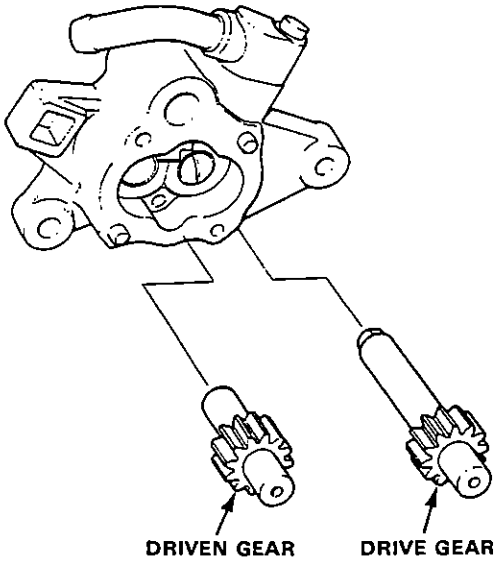
1. Remove the pump from car (page 11—39).
2. Remove the pulley (page 11—40) and pump front cover.



3. Remove the housing seal from the pump housing.
4. Remove the dowel pins, plunger seal, control valve O-ring from the pump housing.
5. Separate the port housing from the pump housing.



6. Remove the dowel pins from the pump housing and remove the housing seal and O-ring from the port housing.
7. Remove the pump drive and driven gears from the pump housing.



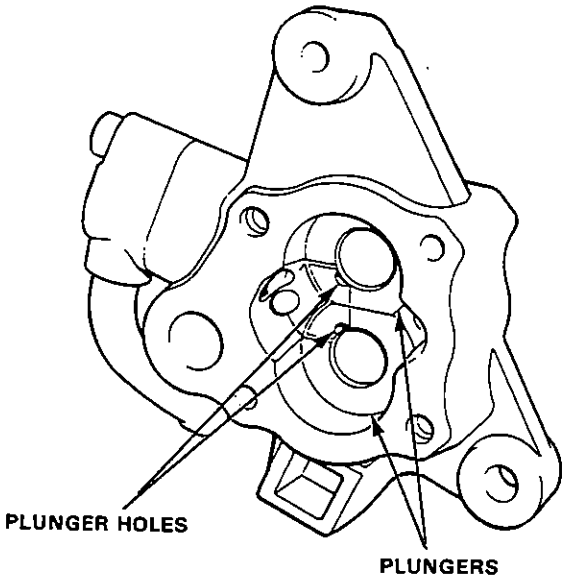
8. Remove the plungers from the pump housing.
9. Pry the oil seal out of the pump front cover.



Steering Pump

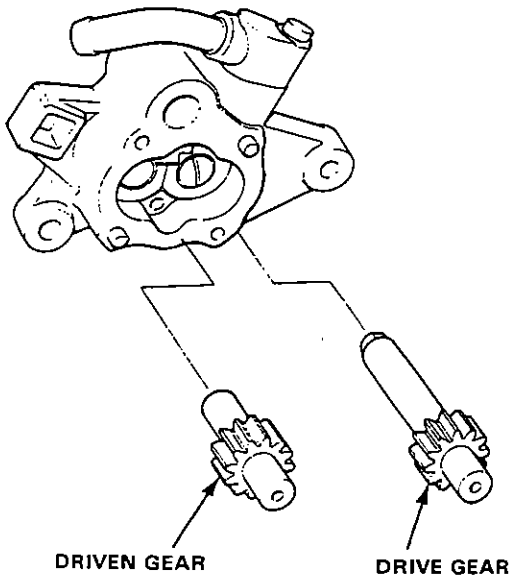
Housing Reassembly

1. Coat the outer surfaces of the plungers with power steering fluid, then install them in the pump housing. Make sure the plunger holes are positioned as shown.



2. Coat the inside of the plungers with power steering fluid.

3. Install the pump drive and driven gears in the pump housing.

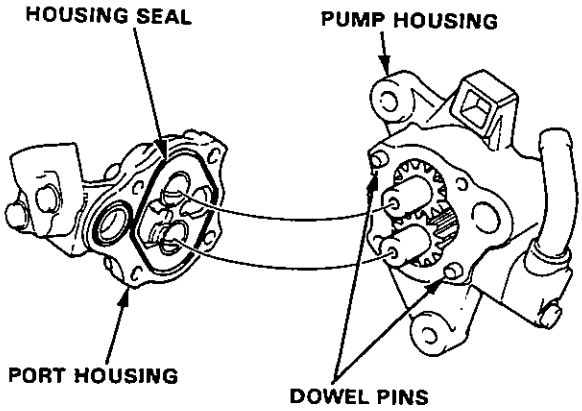


4. Coat the bushings on the port housing with power steering fluid.

5. Install the dowel pins in the pump housing, then install the new housing seal and O-ring in the port housing.

   NOTE: Coat the new housing seal with grease.

6. Install the port housing on the pump housing.



7. Grease the new plunger seal and install it over the plungers.

8. Install the dowel pins.

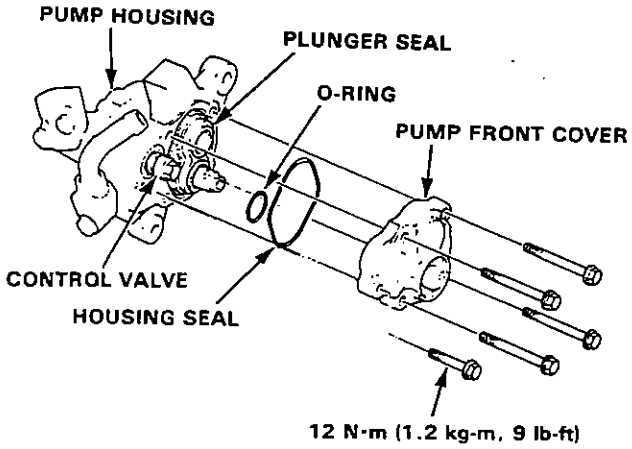
9. Fill the groove of the pump housing with grease and install the new housing seal in the pump housing.

11. Grease the new O-ring and install it in the pump housing.

12. Install the control valve.

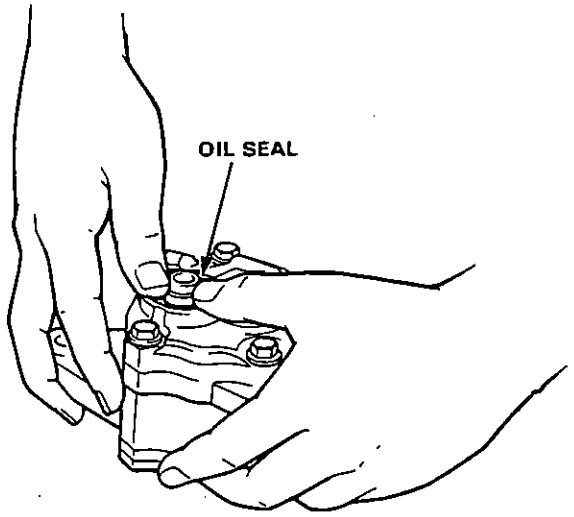
13. Install the pump front cover.

    NOTE: Tighten the front cover bolts in the order shown.

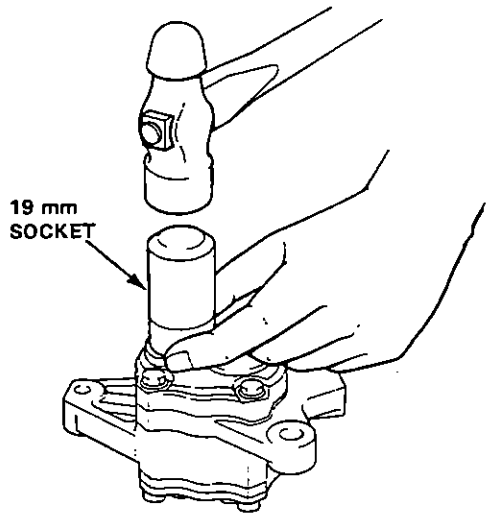


14. Loosely install the new oil seal in the pump front cover.

NOTE: The oil seal spring may come out of position if the oil seal is not installed squarely.



15. Install the new oil seal in the pump front cover; get it started by hand, then use a 19 mm socket to push it in the rest of the way.



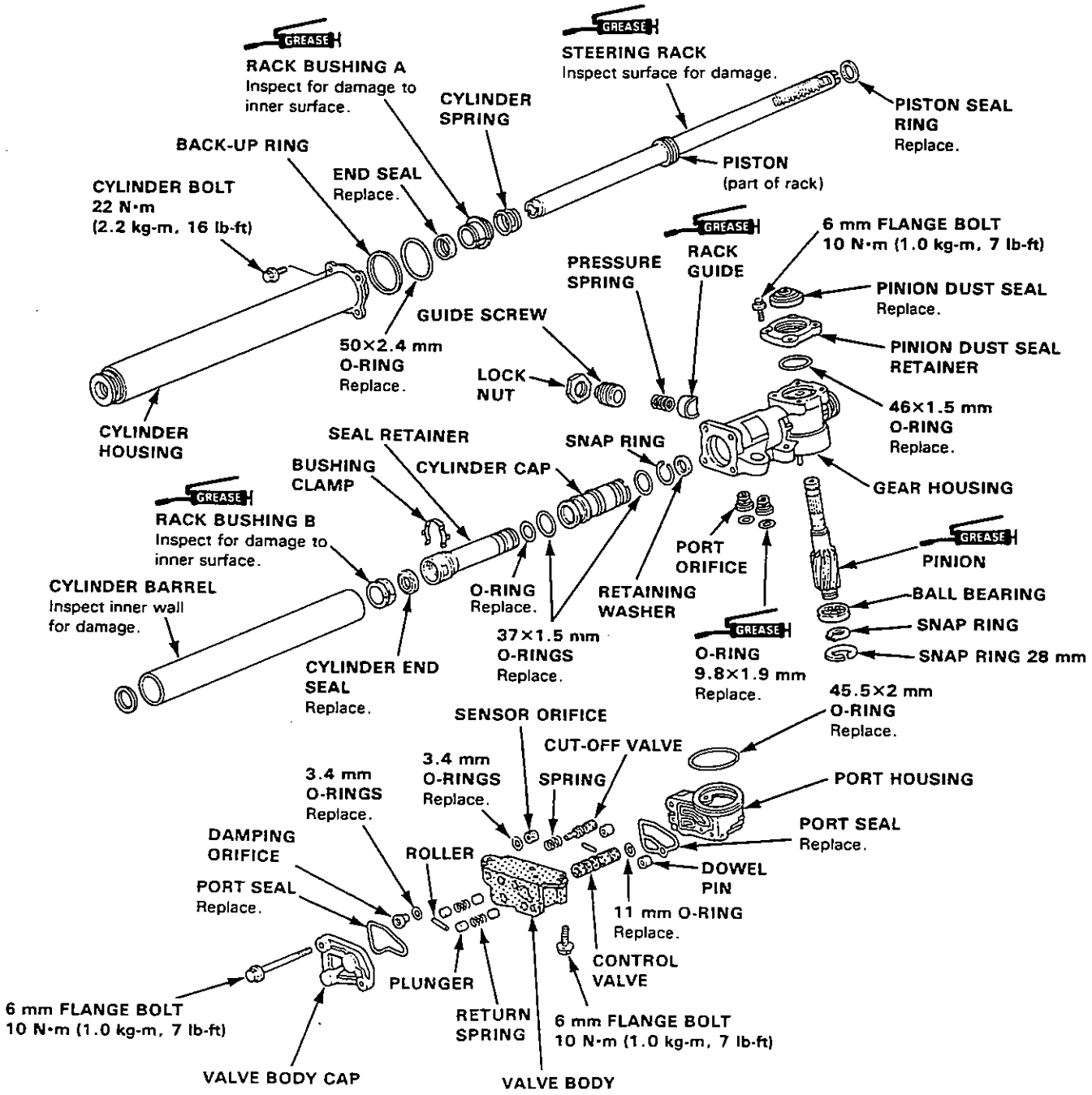
Steering Gearbox

Illustrated Index

CAUTION:

- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Always replace O-rings and seals.
- Replace parts with damaged sliding surfaces.
- Do not dip seals and O-rings in solvent; coat O-rings with grease, make sure they stay in position during reassembly, and use the appropriate special tools to install them where necessary.
- The shaded parts (valve body, control valve, cut-off valve) are a matched set; if the valve body is faulty, replace the complete valve body unit.

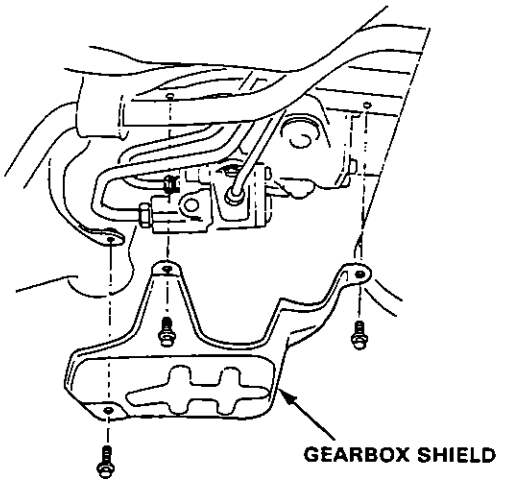
- GREASE STEERING GREASE ..... Part Number 08740—99969



Valve Body Unit Overhaul

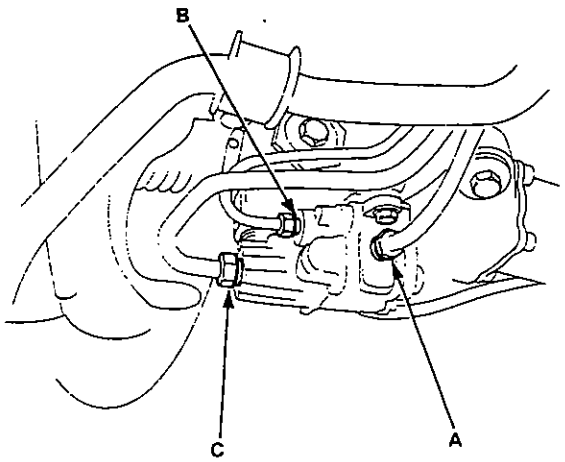
Removal:

1. Drain the power steering fluid (page 11—27).
2. Remove the gearbox shield.
3. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.



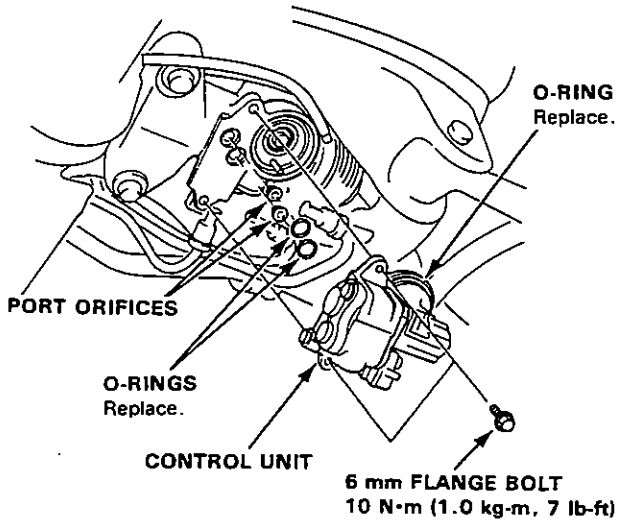
4. Using flare nut wrenches, disconnect the four lines from the control unit.

   A: From pump: 14 mm wrench
   38 N·m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
   13 N·m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
   29 N·m (2.9 kg-m, 20 lb-ft)

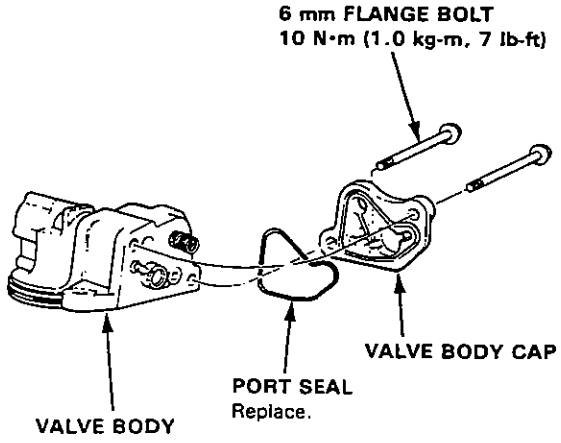


Disassembly:

5. Remove the two 6 mm flange bolts and remove the control unit from the gearbox.
6. Remove the O-rings and port orifices from the gearbox.
7. Remove the O-rings from the control unit.



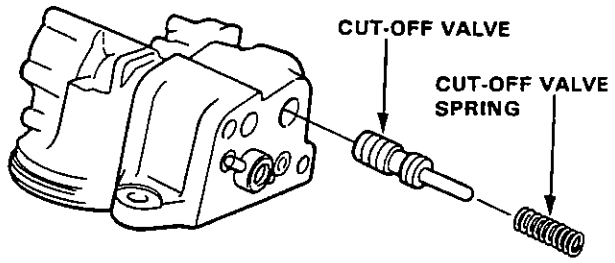
8. Remove the two 6 mm flange bolts, and remove the cap from the valve body.
9. Remove the port seal from the cap.



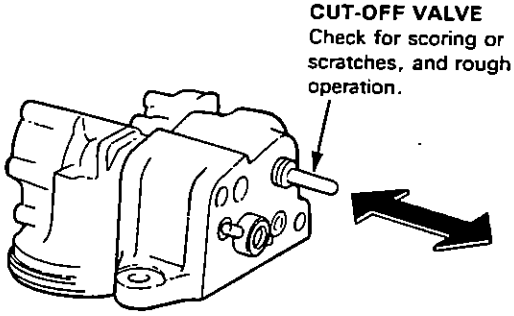
(cont'd)

Valve Body Unit Overhaul (cont'd)

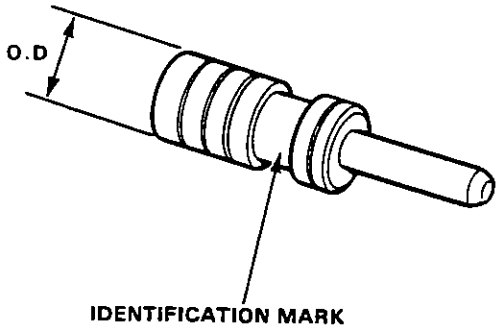
10. Remove the cut-off valve and spring from the valve body.



11. Check the cut-off valve:
    - Inspect its surface for scoring or scratches.
    - Slip it back into the valve body, and make sure it slides sloothly without drag and without side play.



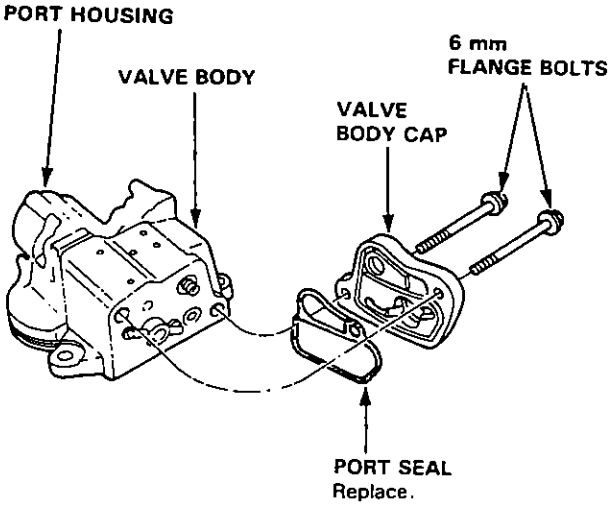
NOTE:
- The cut-off valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification make on it.
- If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.



Identification mark	Outside diameter	Part number
A	10.000—10.005 mm (0.3937—0.3939 in)	53650—SB4—950
B	9.995—10.000 mm (0.3935—0.3937 in)	53651—SB4—950
C	9.990—9.995 mm (0.3933—0.3935 in)	53652—SB4—950

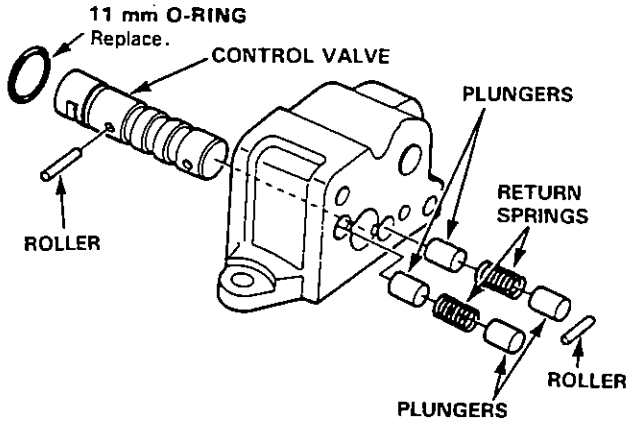
12. Separate the valve body and port housing.

13. Remove the seal and dowel pins from the port housing.



14. Remove the rollers from the control valve by pushing the valve out one side of the valve body, and then the other.

NOTE: When removing the rollers, hold the plungers with your fingers to keep them from popping out.



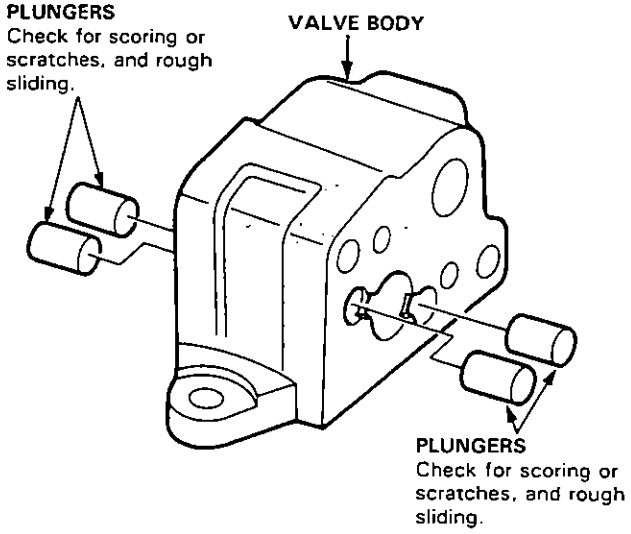
15. Remove the plungers, return springs and control valve from the valve body.

16. Remove the 11 mm O-ring from the control valve.

17. Check the plungers.

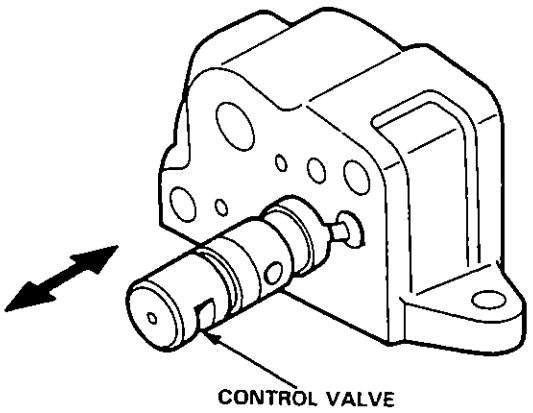
- Inspect their surface for scoring or scratches.
- Slip each plunger into the valve body, and make sure it slides smoothly, without drag or side play. If any plunger is damaged, replace it.

NOTE: If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.

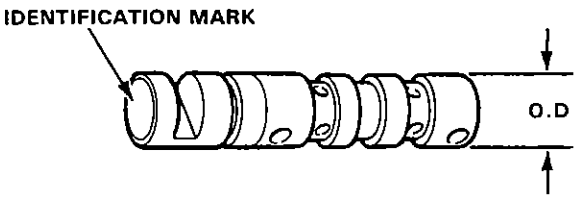


18. Check the control valve.

- Inspect its surface for scoring or scratches.
- Slip it into the valve body, and make sure it slidies smoothly, without drag or side play.



NOTE:
- The control valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification mark on it.
- If the valve body is damaged, replace all three parts (valve body, control valve and cut-off valve) as a set.

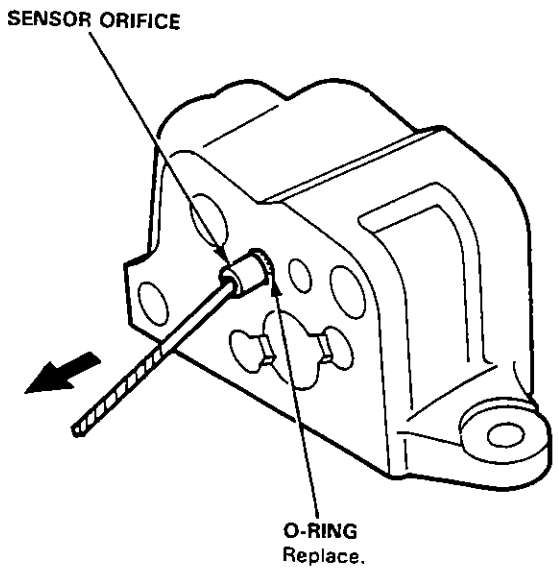


Identification mark	Outside diameter	Part number
X	13.998—14.003 mm (0.5511—0.5513 in)	53646—SH3—950
Y	13.993—13.998 mm (0.5509—0.5511 in)	53647—SH3—950
Z	13.988—13.993 mm (0.5507—0.5509 in)	53648—SH3—950

(cont'd)

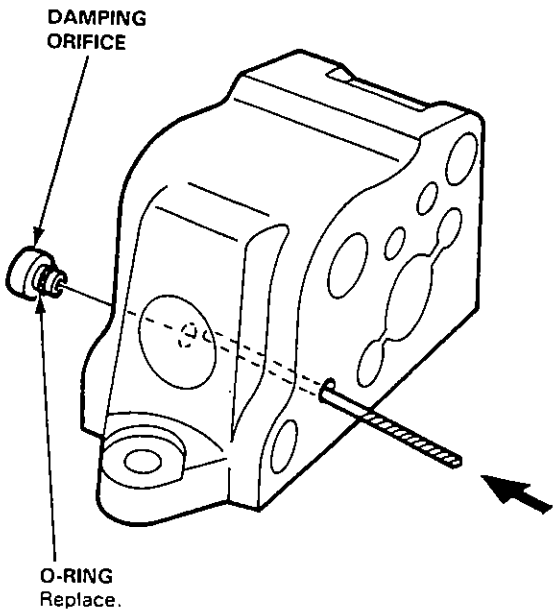
Valve Body Unit Overhaul (cont'd)

19. Using a 1.5 mm (1/16") drill bit, remove the sensor orifice and O-ring.



20. Using 1.5 mm (1/16") drill bit, push the damping orifice and O-ring out of the valve body.

CAUTION: Grind the shank end of the drill bit flat before using.



Valve Body Unit Overhaul

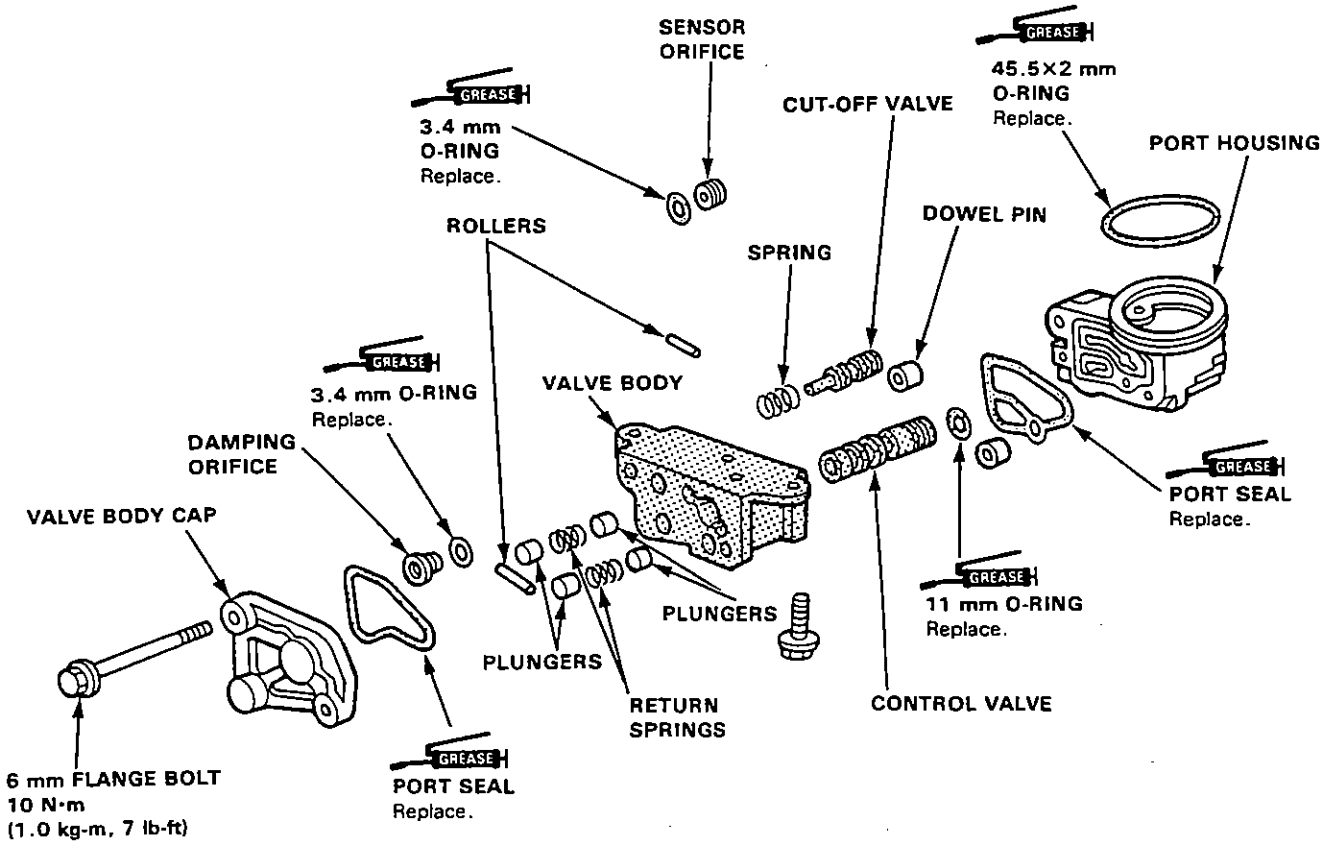
Assembly:

1. Thoroughly clean the disassembled parts shown below.
2. Coat the plungers, cut-off valve and reaction control valve surfaces with power steering fluid.
3. Reassemble the parts in the reverse order of disassembly.

CAUTION:

- **Replace the O-rings and seals with new ones.**
- **Do not dip the O-rings and seals in solvent.**
- **Apply grease in the port seal grooves to keep the seals in place.**
- **Apply grease to the 45.5×2 mm and 11 mm O-rings to keep them in place in the valve ports.**

- GREASE **STEERING GREASE ..... Part Number 08740—99969**



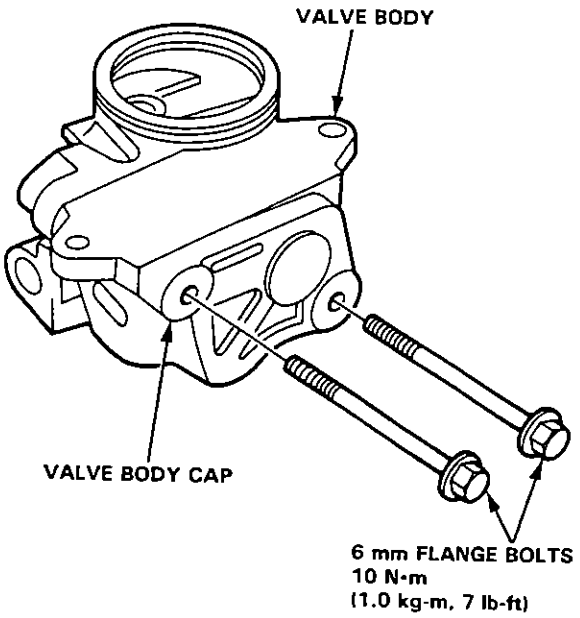
NOTE: If the Valve Body is damaged, it must be replaced as a set, with the Cut-off Valve and Control Valve (shaded parts).

(cont'd)

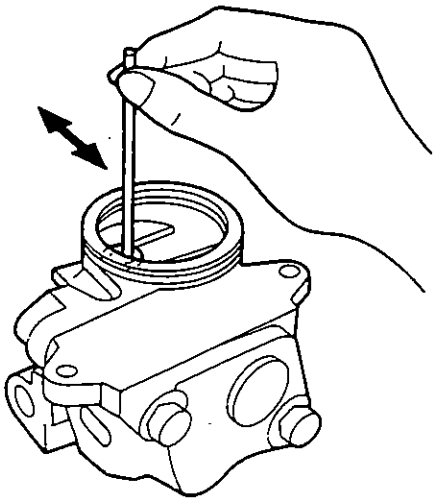
Valve Body Unit Overhaul (cont'd)

4. Install and tighten the 6 mm flange bolts in the control valve body unit.

   CAUTION: Make sure the mating surface of the valve body and cap are flush at the upper side.

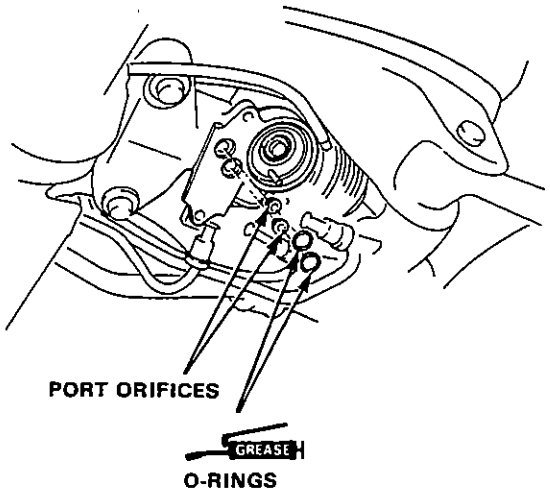


5. Make sure the control valve moves smoothly, and returns to neutral position.



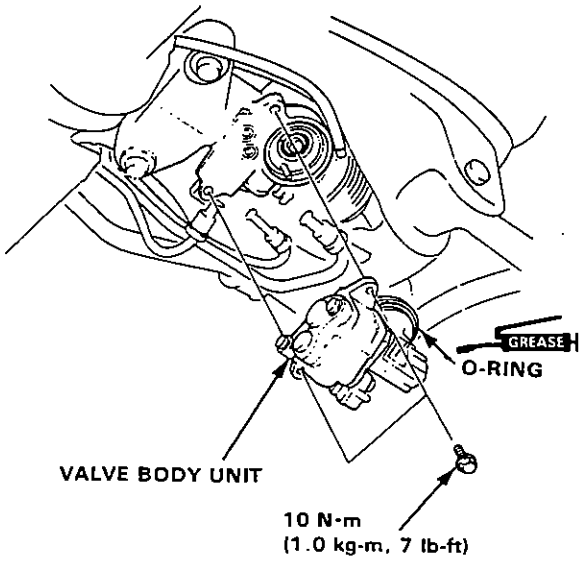
Installation:

6. Coat the 9.8×1.9 mm O-rings with grease, and install them together with the orifices.



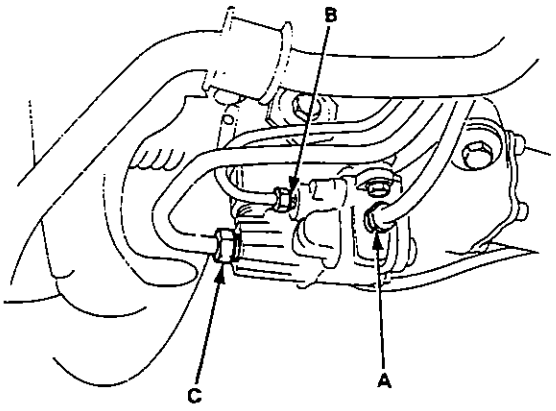
7. Install the O-ring to the valve body unit, then install the valve body unit on the gear housing with the two 6 mm bolt.

   CAUTION:
   - **When installing, be careful not to hit the pinion holder pin.**
   - **Make sure the O-rings are in place and not pinched.**



8. Connect the four lines to the control unit, using flare nut wrenches.

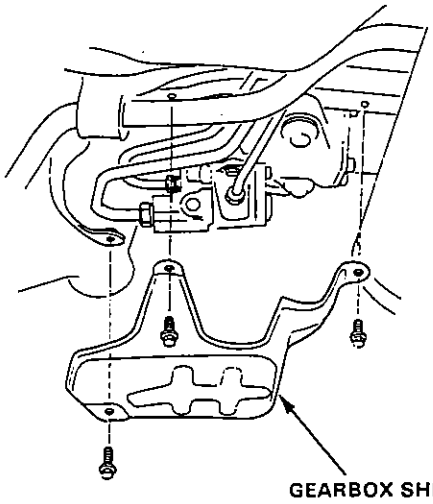
   A: From pump: 14 mm wrench
      38 N·m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
      13 N·m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
      29 N·m (2.9 kg-m, 20 lb-ft)



9. Fill the reservoir with power steering fluid and bleed air from the system by turning the steering wheel from lock to lock several times with the engine warm.

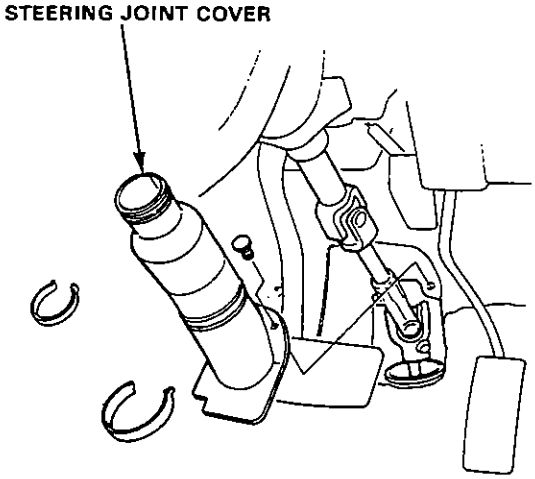
10. Make sure there are no fluid leaks, then install the shield.

11. Recheck the fluid level in the reservoir (page 11—27).



Steering Rack Removal

1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.



2. Drain the power steering fluid as described on page 11—27.

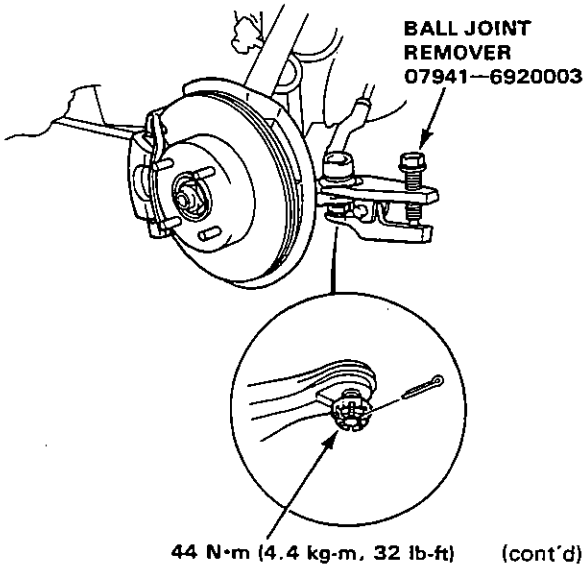
3. Remove the gearbox shield.

4. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.

5. Raise the front of car and support on safety stands in the proper locations.

6. Remove the front wheels.

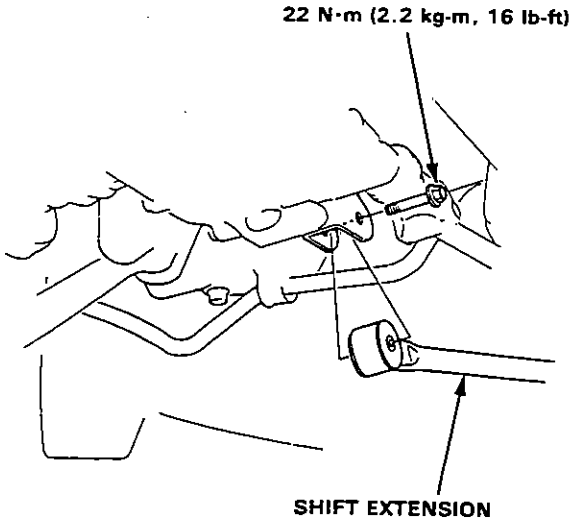
7. Disconnect the tie rods from the steering knuckles using the special tool shown.



(cont'd)

Steering Rack Removal (contd)

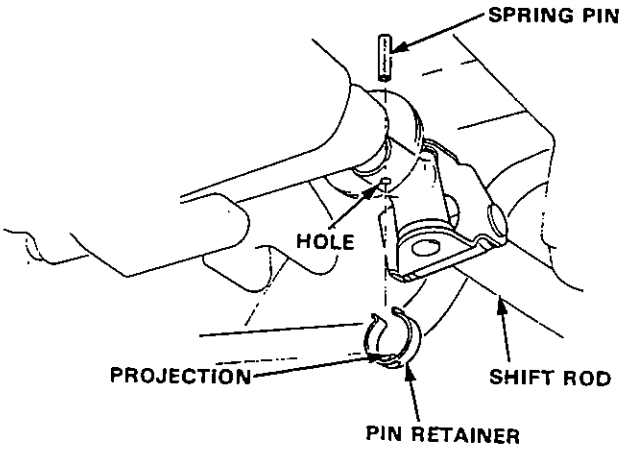
8. Remove the shift extension from the transmission case.



9. Slide the boot at the connecting position of the gear shift rod.

10. Drive out the spring pin with a punch, then disconnect the shift rod.

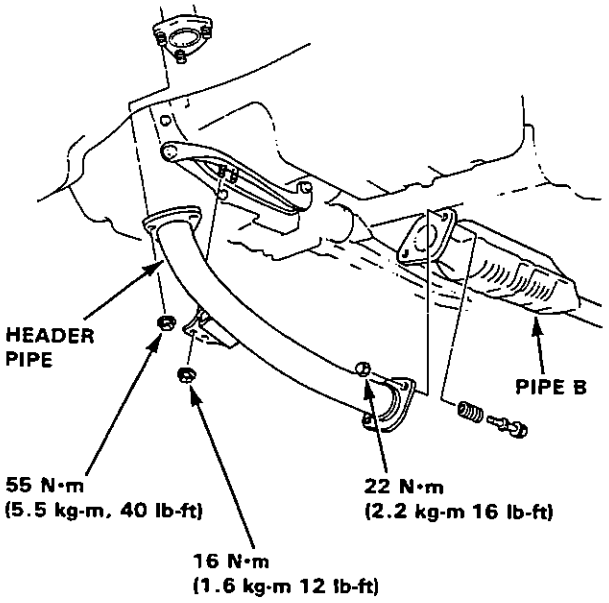
NOTE: On reassembly, install the pin retainer back into place after driving in the spring pin as shown.



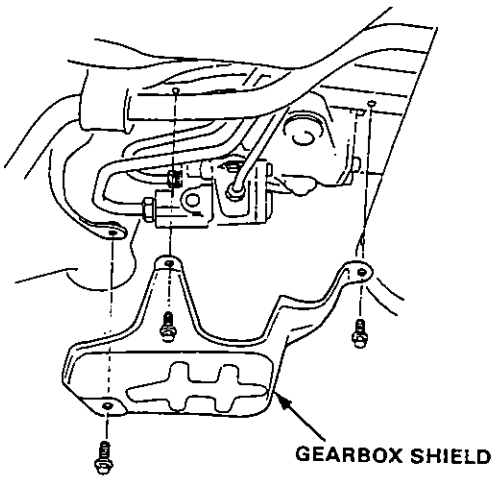
11. Remove the self-locking nuts connecting the exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.

CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

12. Remove the header pipe.



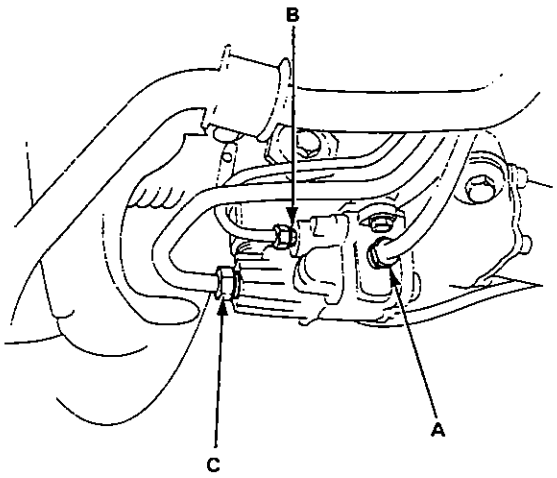
13. Remove the gearbox shield.



14. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.

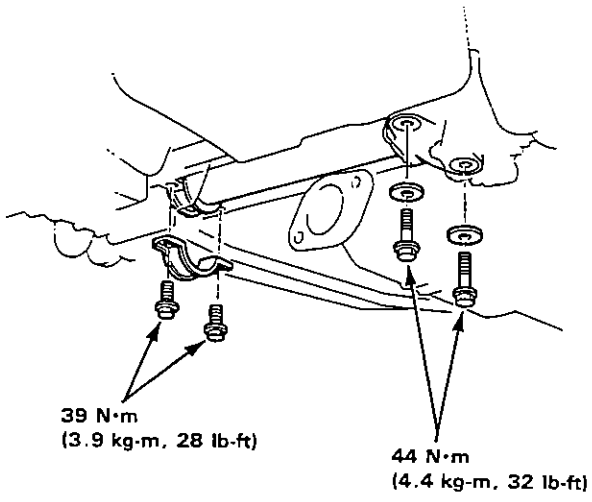
15. Disconnect the three lines from the control unit.

    A: From pump: 14 mm wrench
       38 N·m (3.8 kg-m, 28 lb-ft)
    B: To reservoir: 12 mm wrench
       13 N·m (1.3 kg-m, 9 lb-ft)
    C: To oil Cooler: 17 mm wrench
       29 N·m (2.9 kg-m, 20 lb-ft)

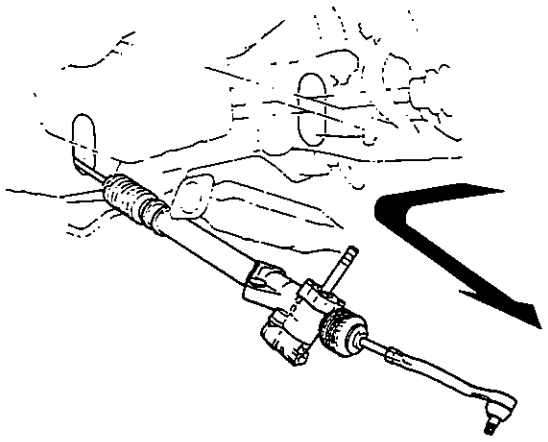


16. Slide the tie rod all the way to the right side.

17. Remove the steering gearbox mounting bolts.

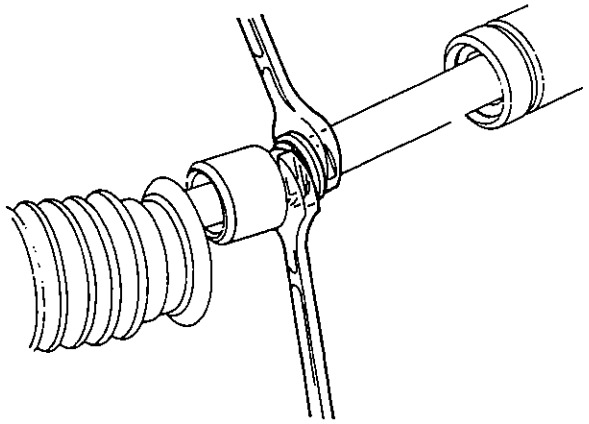


18. Slide the gearbox right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.

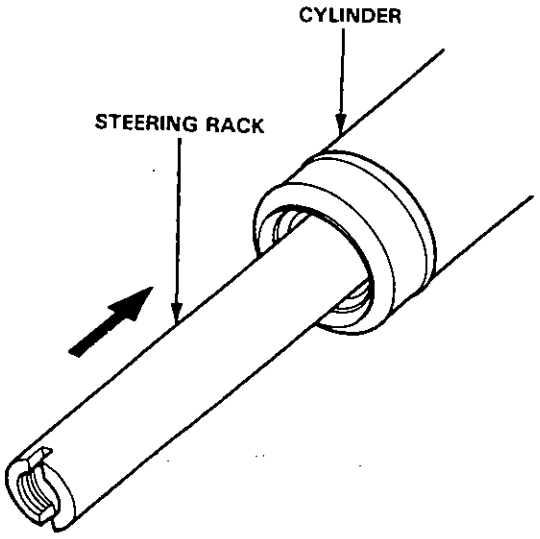


Overhaul

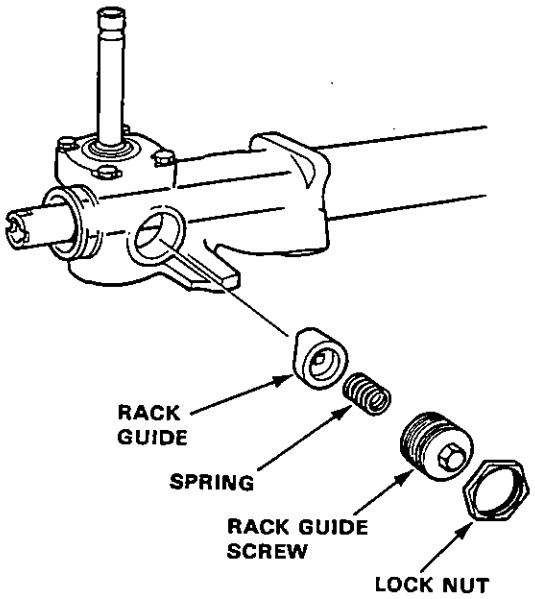
1. Remove the control unit as described on page 11-47.
2. Carefully clamp the gearbox in a vise with soft jaws.
3. Loosen the bands, pull the boots away from the ends of the geaebox, and unbend the tie-rod lock washers. Hold the rack with a 22 mm wrench, and unscrew the tie-rods with a 17 mm wrench.



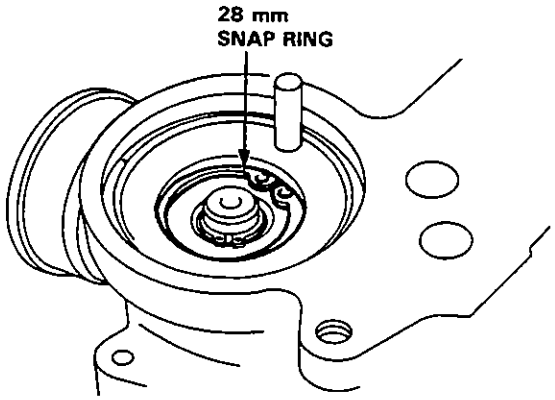
4. Push the right end of the rack back into the cylinder housing so the smooth surface that rides against the seal won't be damaged.



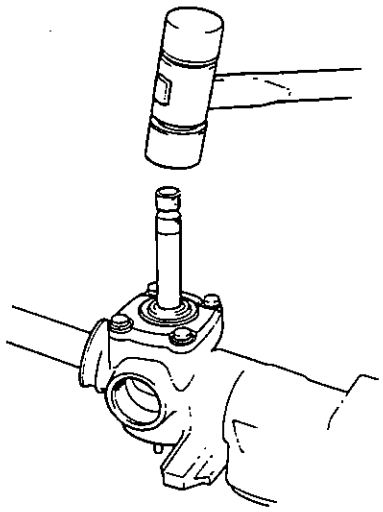
5. Loosen the rack screw lock nut, and remove the rack guide screw.



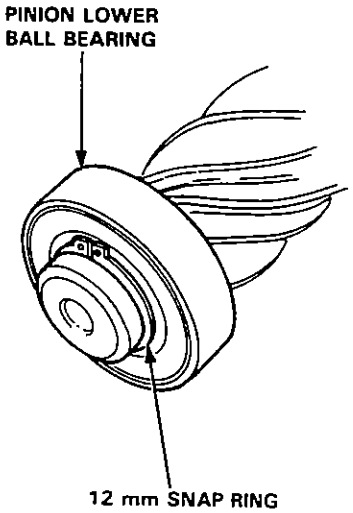
6. Remove the 28 mm snap ring from the bottom of the gear housing.



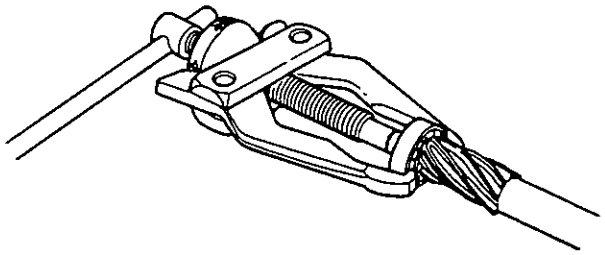
7. Remove the pinion from the gear housing by tapping it lightly.



8. Check the pinion lower ball bearing for play.

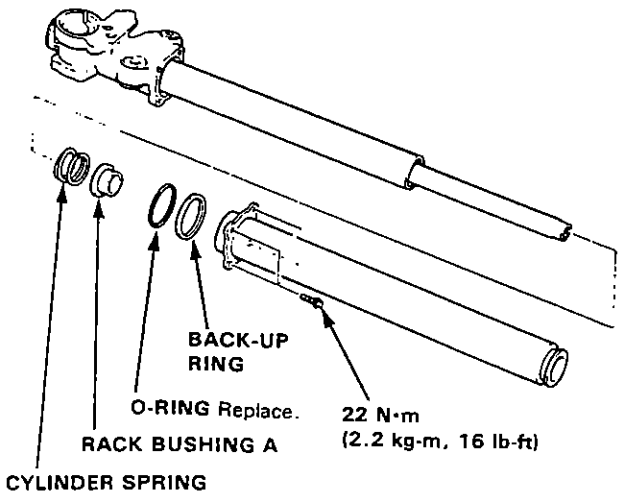


9. If the bearing is noisy or has excessive play, remove the 12 mm snap ring and remove the bearing using a commercially available bearing puller.



10. Remove the four bolts from the end of the cylinder housing, then slide the housing off the rack.

11. Remove the cylinder housing.



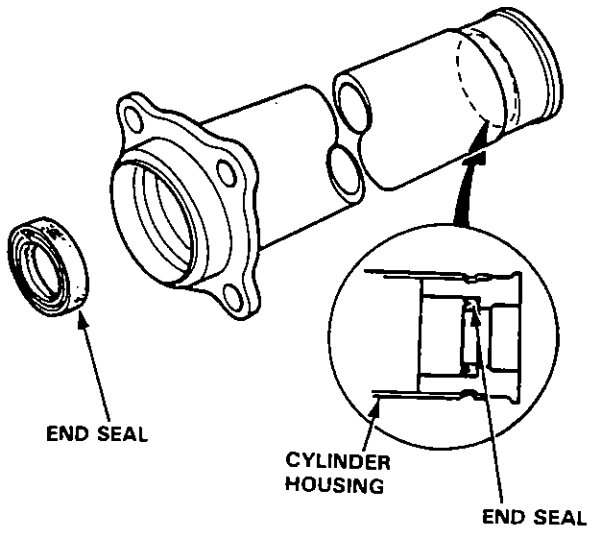
(cont'd)

Overhaul(cont'd)

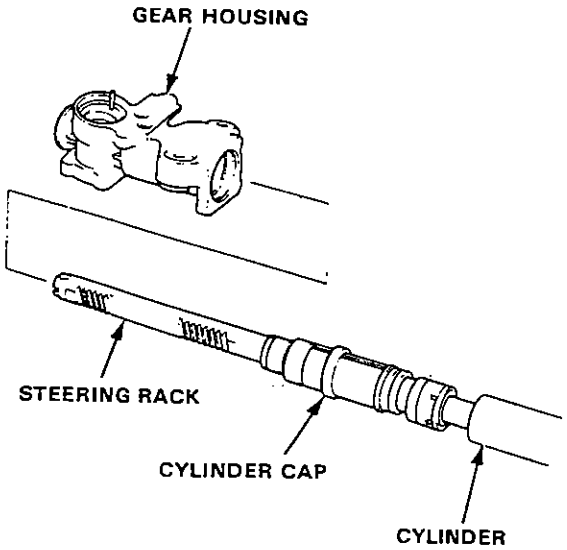
12. Remove the O-ring, back-up ring, steering rack bushing A and cylinder spring.

13. Remove the cylinder end seal from the cylinder housing.

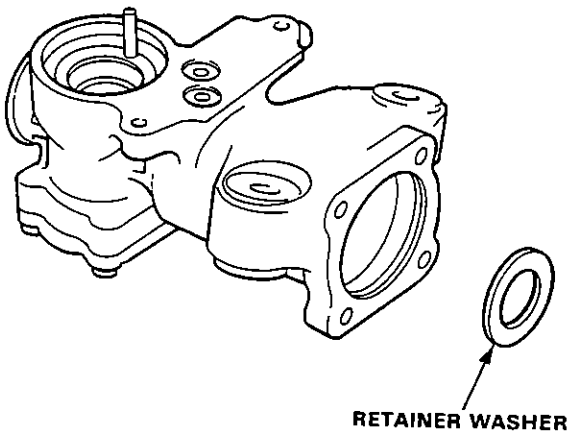
14. Use your fingers or a wooden stick to avoid damaging the housing.



15. Remove the cylinder, cylinder seal retainer, cylinder cap and steering rack from the gear housing.

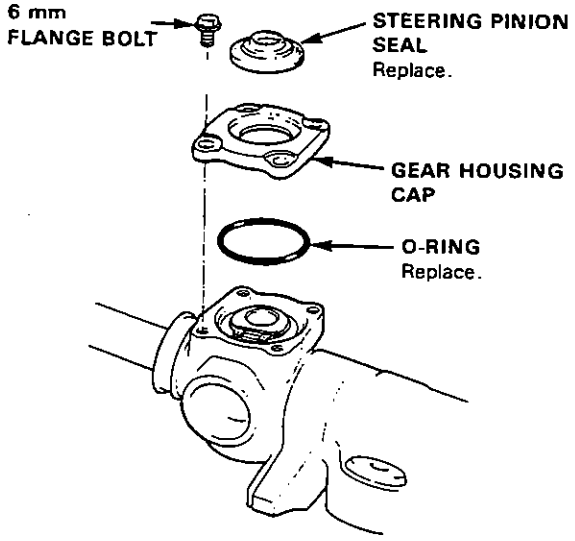


16. Remove the retainer washer from the gear housing.



17. Remove the gear housing cap from the gear housing by removing the four 6 mm flange bolts.

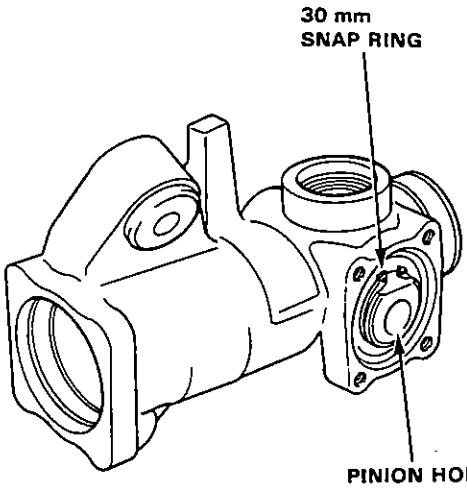
18. Remove the steering pinion seal from the gear housing cap.



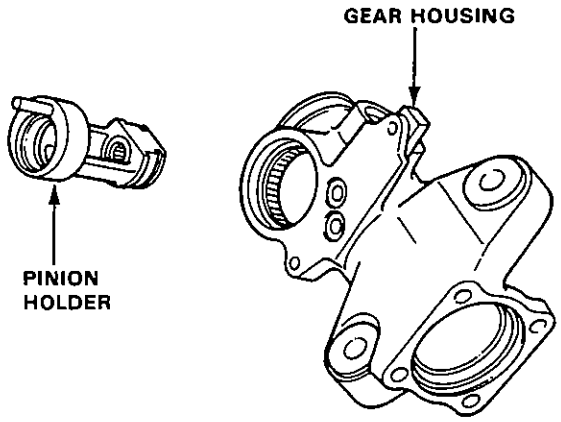
19. Remove the O-ring from the gear housing.

20. Check the upper bearing for free movement and excessive play; if it is good and the grease in it is clean, go on step 20.
If it is damaged, or if dirt has gone past the seal into the grease, replace the bearing.

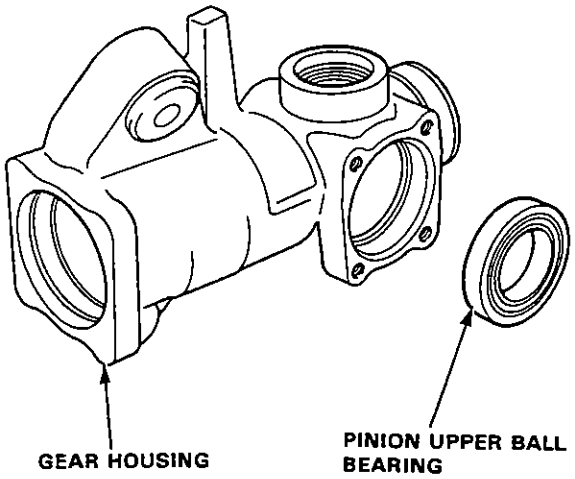
- Remove the 30 mm snap ring from the pinion holder.



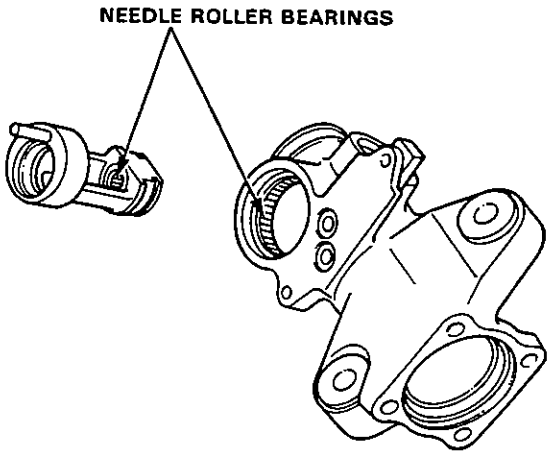
- Remove the pinion holder from the gear housing.



- Remove the pinion upper ball bearing from the gear housing.



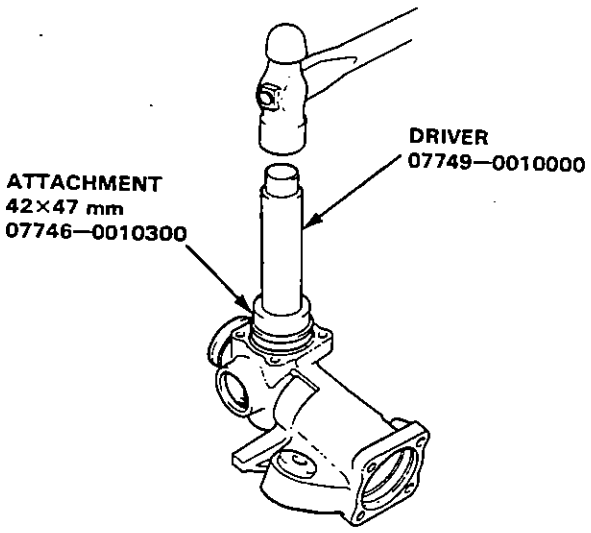
- Check the needle roller bearing in the pinion holder and in the gear housing for damage; if they are OK, pack them with grease. If the bearings are damaged, replace them as a set.



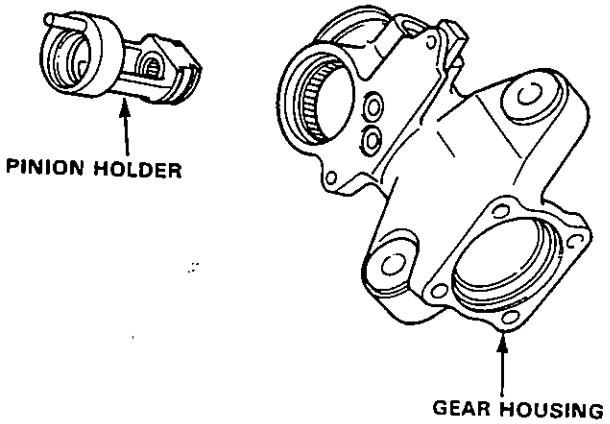
(cont'd)

Overhaul (cont'd)

- Pack a new upper bearing with grease, then drive the bearing into the gear housing with its sealed side facing out.

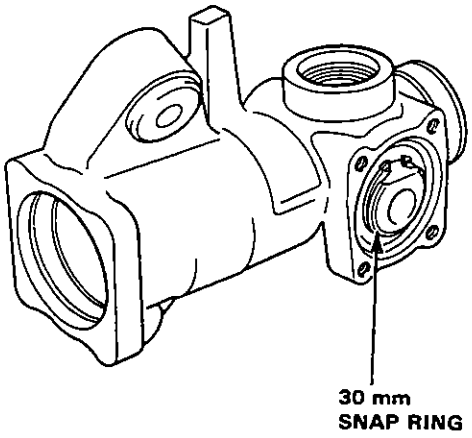


- Install the pinion holder in the gear housing.

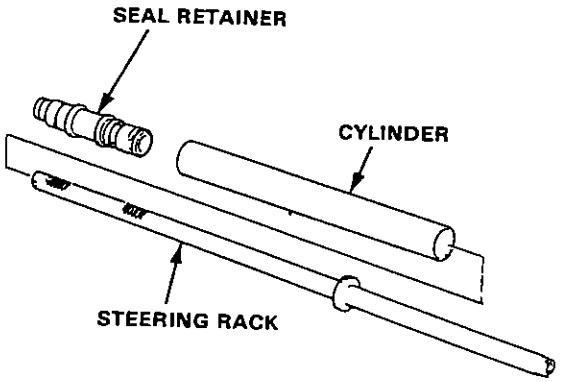


- Reinstall the 30 mm snap ring with its tapered side facing out.

NOTE: Snap ring ends must be aligned with the flat area.

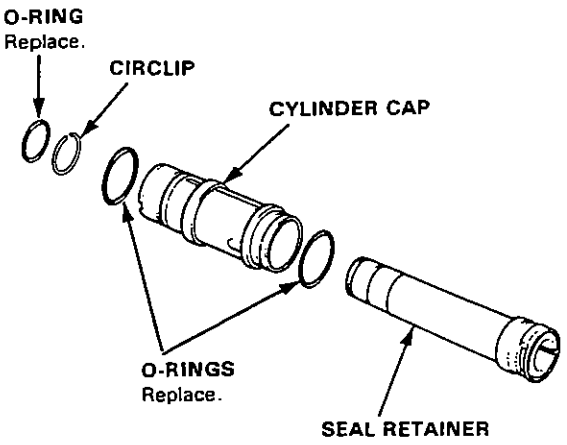


21. Remove the cylinder and seal retainer from the steering rack.



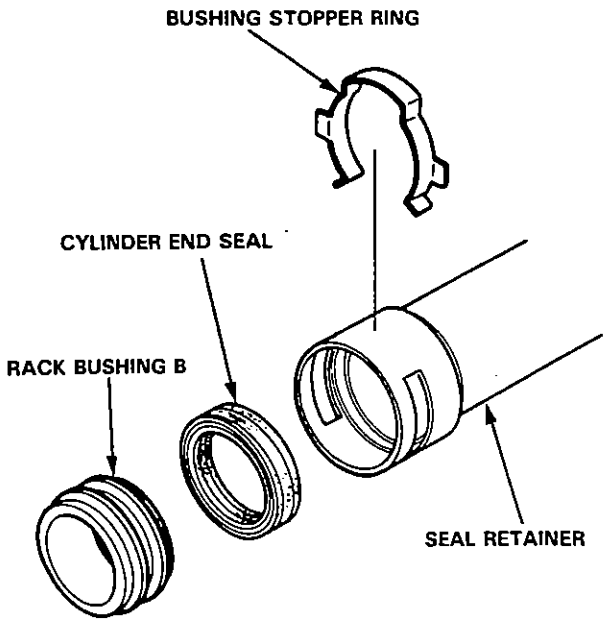
22. Remove the O-rings and circlip from the seal retainer, then remove the cylinder cap from the seal retainer.

23. Remove the O-rings from the cylinder cap.

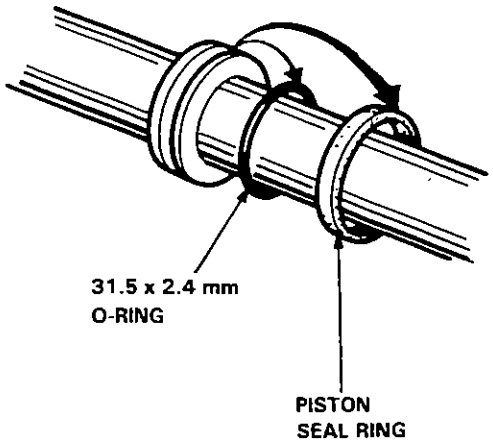


24. Remove the bushing stopper ring from the seal retainer.

25. Remove the cylinder end seal.

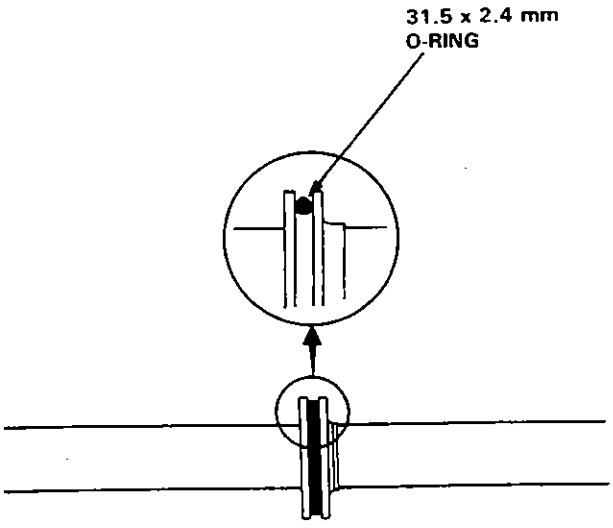


26. Carefully pry the piston seal ring and O-ring off the rack.



NOTE: Before reassembling any parts inspect them as described on page 11—46 and make sure they are clean. Replace worn or damaged parts.

27. Install a new O-ring on the rack with its narrow edge facing out.

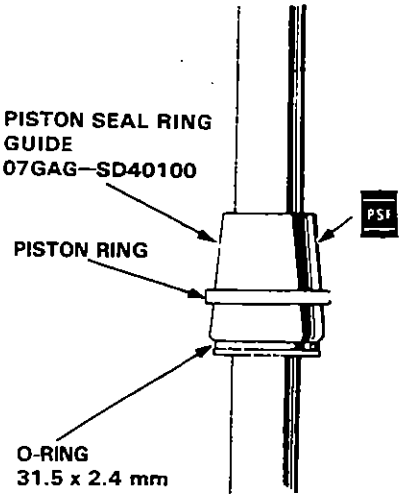


(cont'd)

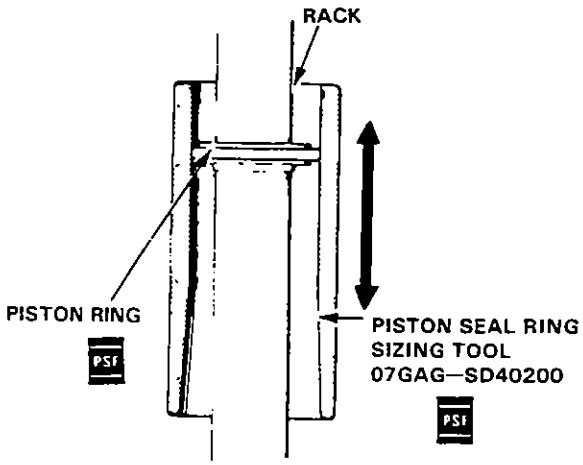
Overhaul (cont'd)

28. Coat the pinion seal ring guide with power steering fluid, and slide it onto the rack, big end first.

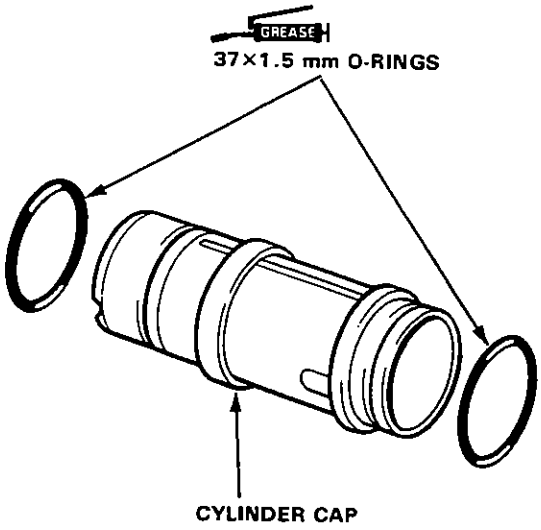
29. Position the new piston seal ring on the special tool, slide it down to to big end of the tool, and then pull it off into the piston groove on top of the O-ring.



30. Coat the piston seal ring and inside of the special tool with power steering fluid.
Carefully slide the tool onto the rack and over the piston ring, then rotate the tool as you move it up and down to seat the piston ring.

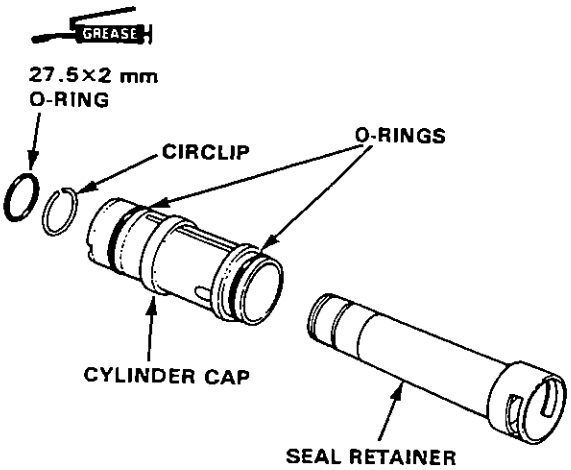


31. Coat new O-rings with grease and install them on the cylinder cap.

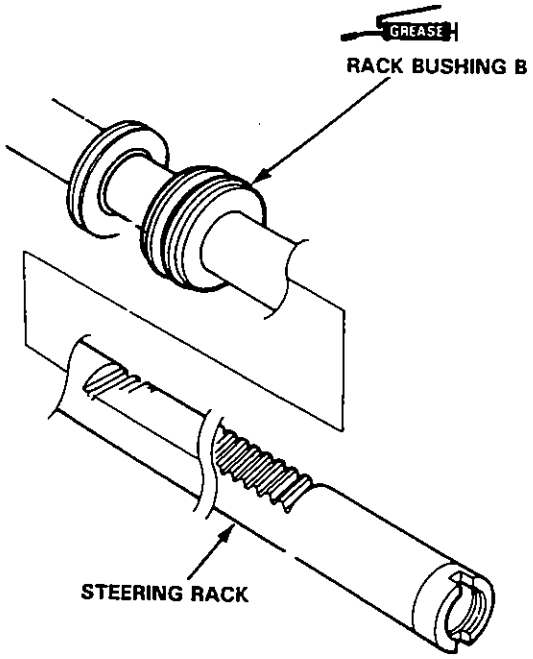


32. Slide the cylinder cap onto the seal retainer.

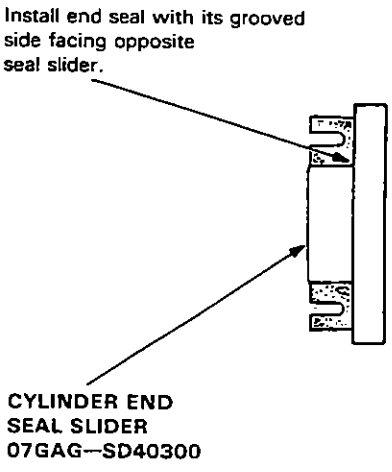
33. Install the circlip and O-ring on the seal retainer.



34. Grease the sliding surface of the steering rack bushing B, and install the bushing on the steering rack with the groove of the bushing facing the steering rack piston.

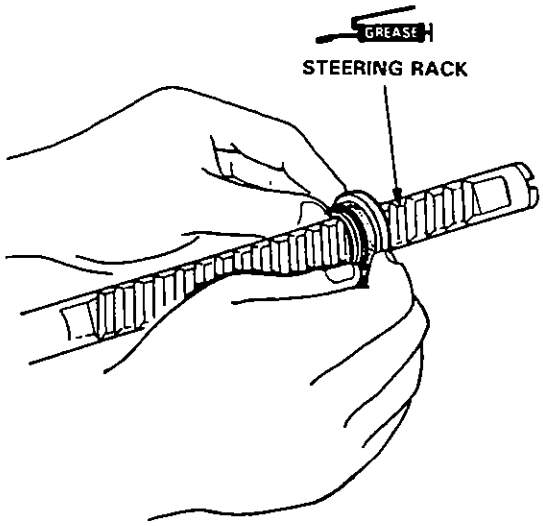


35. Grease the sliding surfaces of the new cylinder end seal and the special tool , then place the seal on the special tool with its grooved side facing opposite the slider.

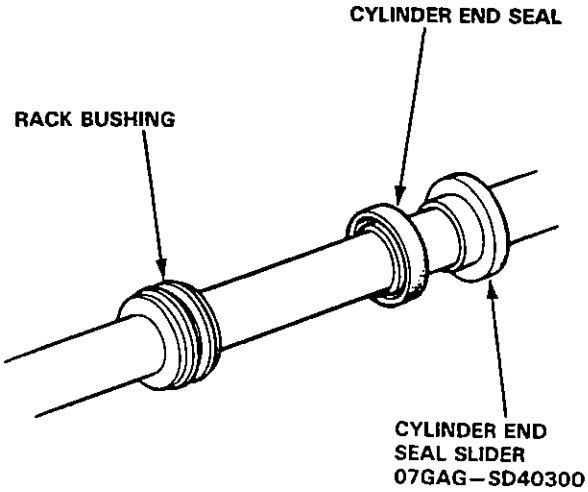


36. Grease the steering rack, and install the special tool.

CAUTION: Make sure the rack teeth do not face the slot in the special tool.



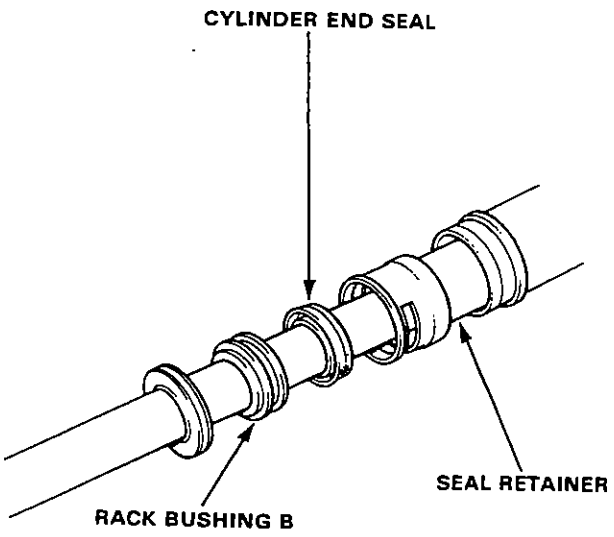
37. Remove the special tool from the cylinder end seal, then separate the ends of the tool and remove it from the rack.



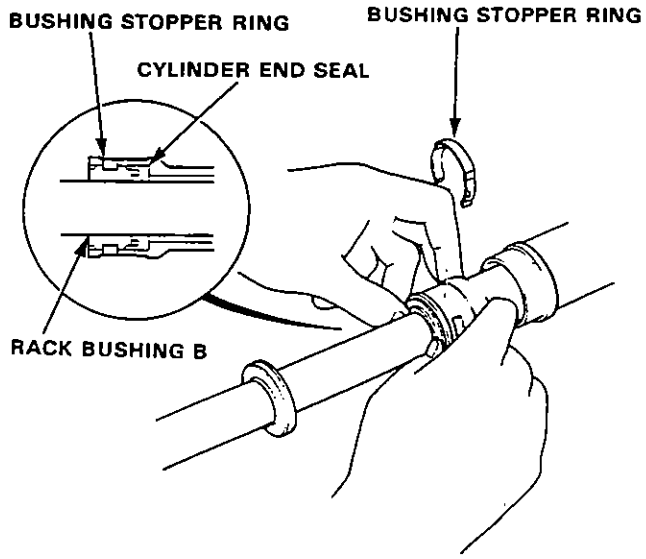
(cont'd)

Overhaul(cont'd)

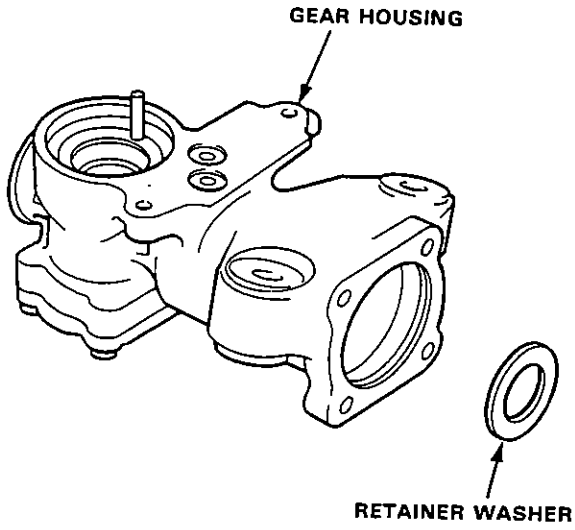
38. Fit the seal retainer on the steering rack.



39. Push the rack bushing B toward the seal retainer by hand until the cylinder end seal is seated in the retainer. Fit the seal stopper ring in the groove of the seal retainer securely.

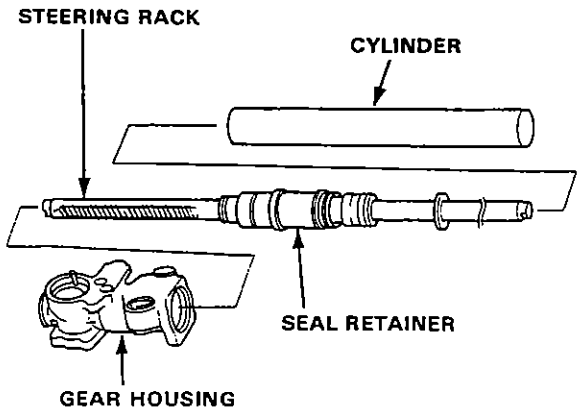


40. Install the retainer washer on the gear housing.



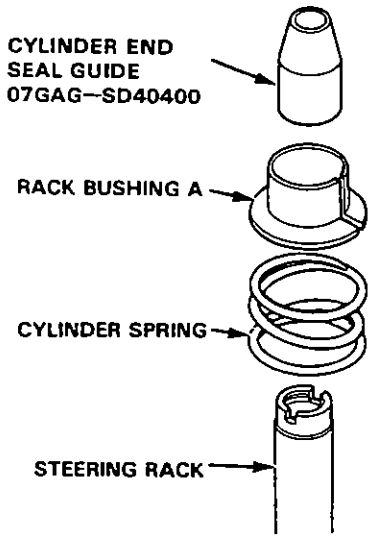
41. Place the gear housing on the work bench and insert the seal retainer and steering rack into the gear housing.

42. Coat the inside surface of the cylinder with power steering fluid, slide it over the rack and into the gear housing; press it into to housing until it seats.

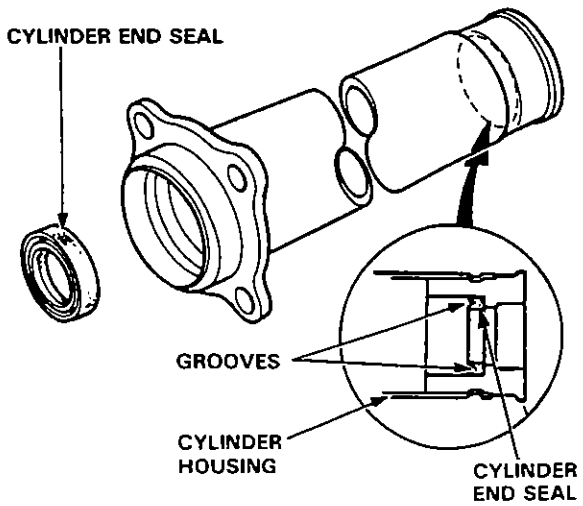


43. Install the cylinder spring over the rack, then coat the rack bushing A with power steering fluid and install it on the spring.

44. Grease the special tool and slip it onto the end of the steering rack.



45. Coat the inside surface of the cylinder with power steering fluid and install the cylinder end seal with its grooved side facing out.

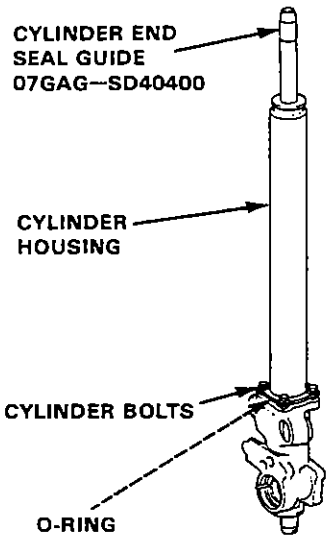


46. Install the O-ring and back-up ring on the gear housing.

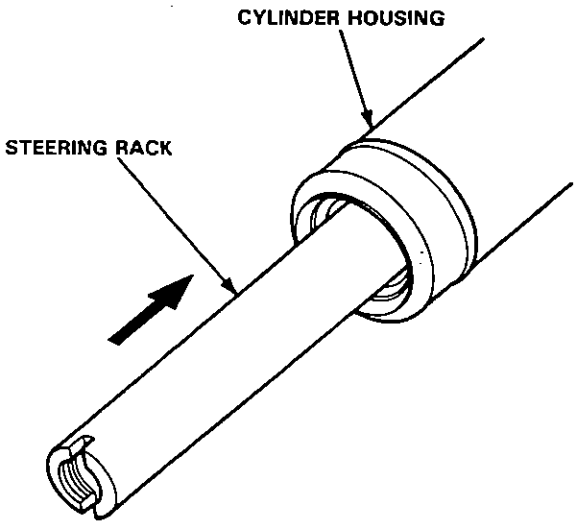
47. Carefully position the cylinder on the gear housing and loosely install with four bolts.

CAUTION: Be careful not to damage the end seal in the cylinder housing.

48. Remove the special tool from the steering rack.



49. Insert the steering rack into the cylinder housing, being careful not to damage the steering rack sliding surface.

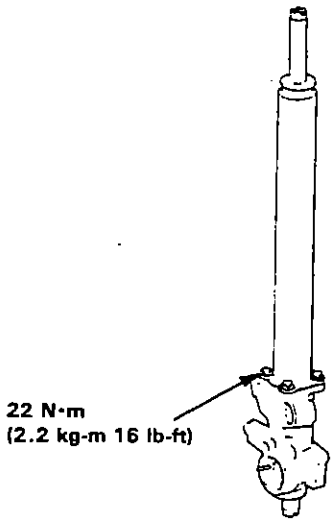


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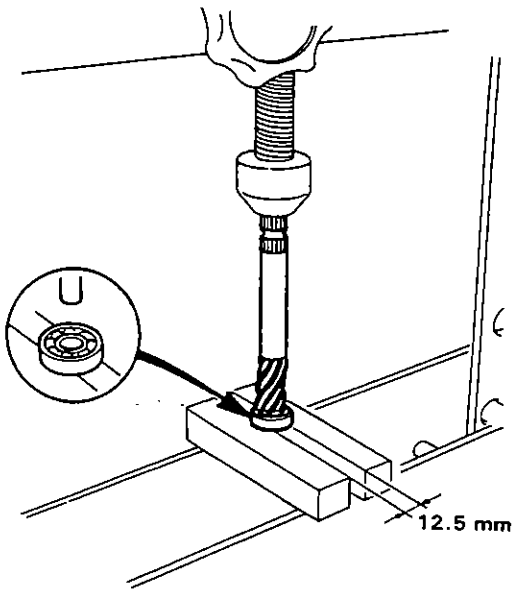
Overhaul (cont'd)

50. Tighten the cylinder housing to the gear housing.

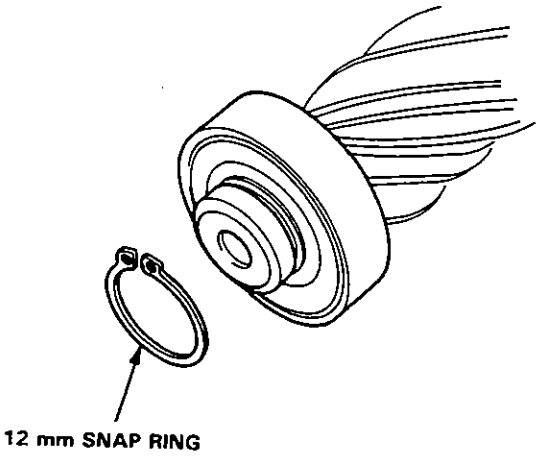
    NOTE: Before tightening the bolts, make sure the mating surfaces of the cylinder and gear housings fit properly by pushing them together; hold them together while tightening the bolts.



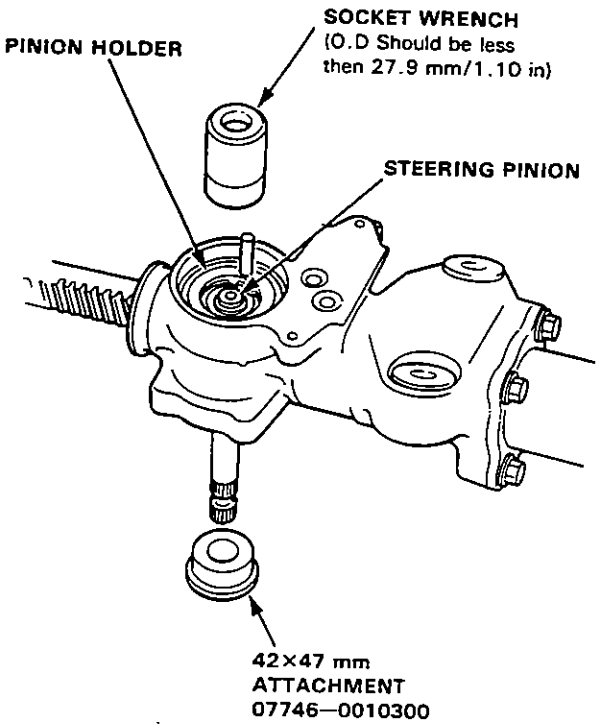
51. Press the lower ball bearing onto the pinion with its shielded side facing down.



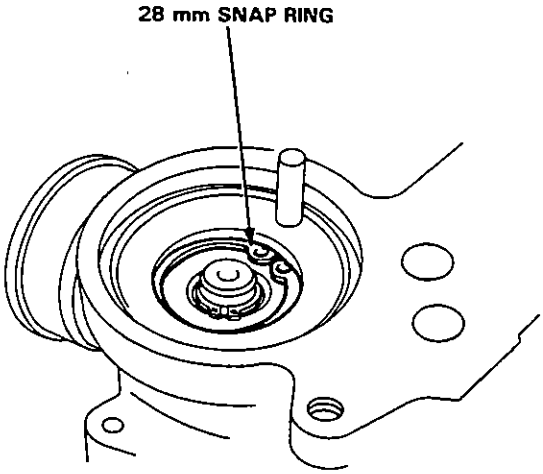
52. Install the 12 mm snap ring on the steering pinion, apply grease to the lower ball bearing and check for smooth operation.



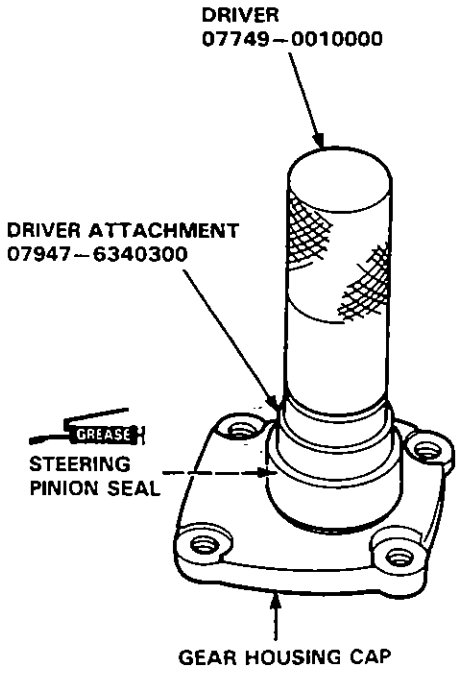
53. Install the steering pinion in the pinion holder.



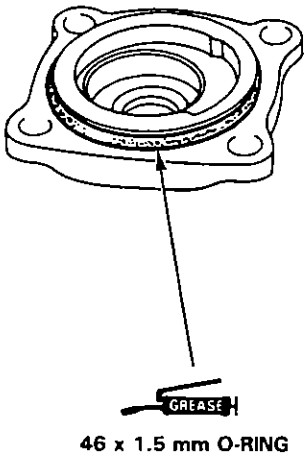
54. Install the 28 mm snap ring securely in the pinion holder groove.



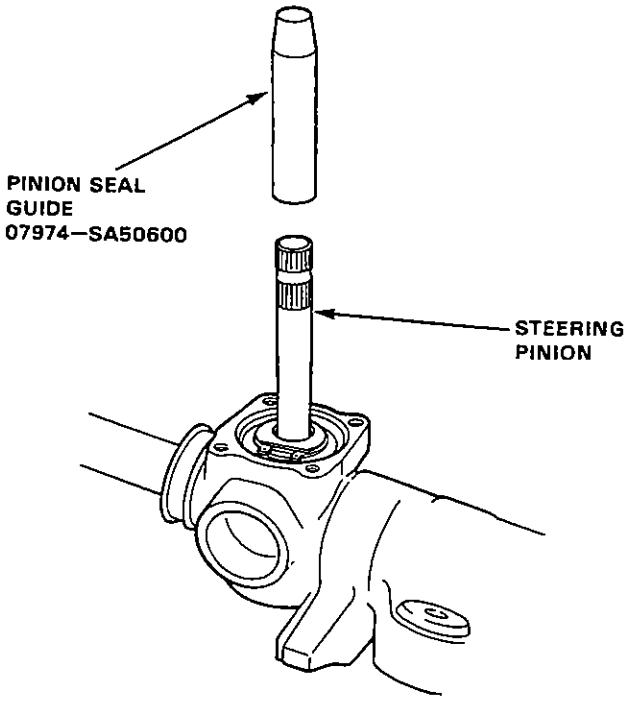
55. Grease the steering pinion seal, and install it on the gear housing using the special tools.



56. Grease the new O-ring and install it in the groove in the gear housing cap.



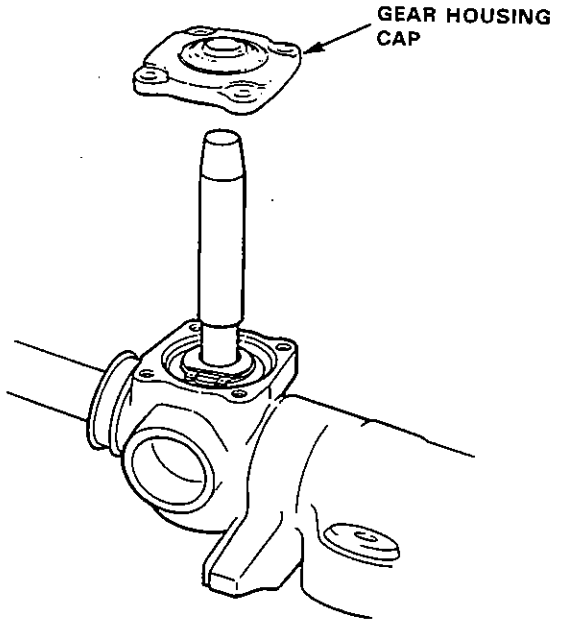
57. Grease the special tool and fit it over the steering pinion.



(cont'd)

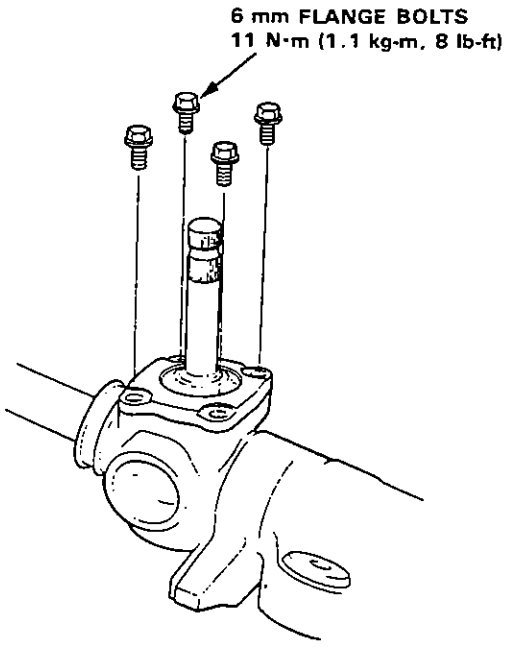
Overhaul (cont'd)

58. Install the gear housing cap carefully to avoid damaging or distorting lip of the seal, or distorting the seal spring.



59. Remove the special tool.

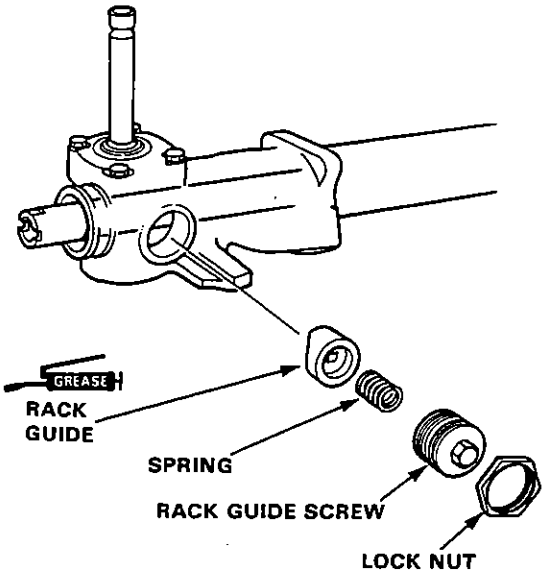
60. Tighten the four flange bolts.



61. Install the control valve unit on the gear housing.

62. Coat the rack guide with grease.

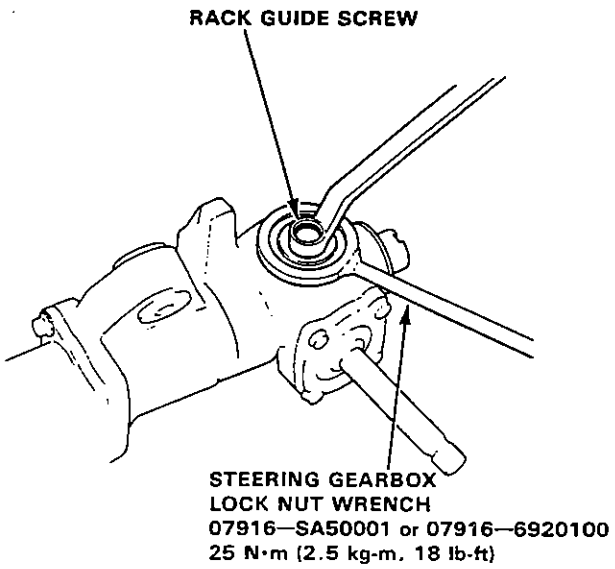
63. Install the rack guide, spring and rack guide screw on the gear housing.



64. Tighten the rack guide screw until it compresses the spring and seats against the rack guide, then loosen it.

65. Re-tighten it to 4 N·m (0.4 kg-m, 2.9 lb-ft), back off about $20° {}^{+5}_{0}$ and install the lock nut on the rack guide screw.

66. Tighten the lock nut while holding the rack guide screw with the special tool.

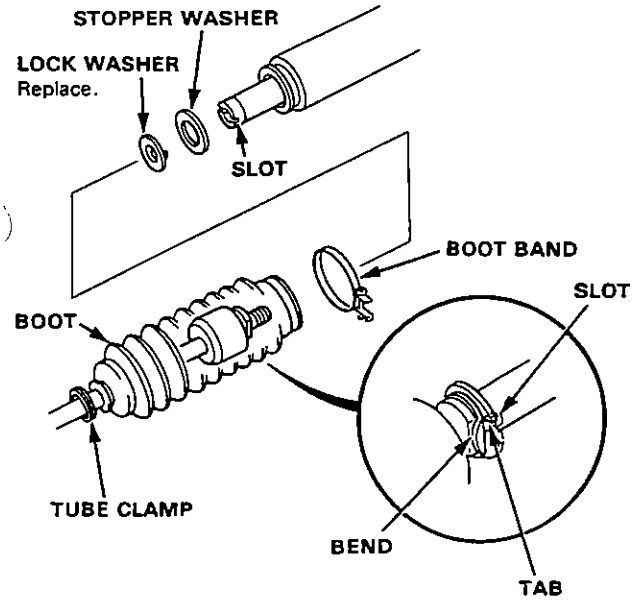


67. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

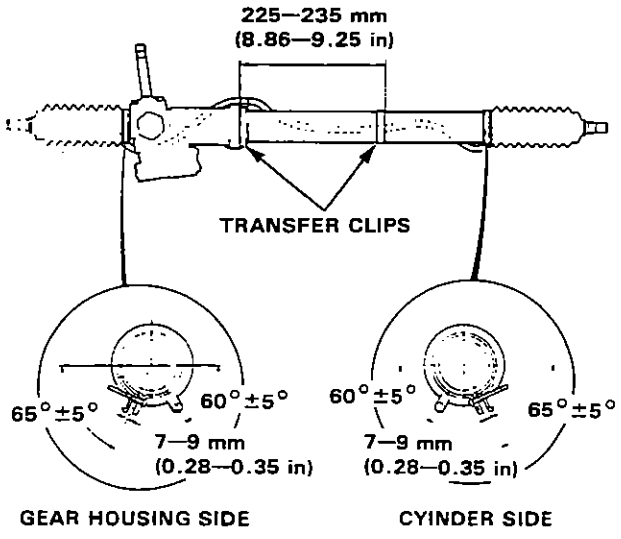
    NOTE: Install the stopper washer with the chamfered side facing out.

68. Tighten the tie-rod securely, then bend the lock washer back against the flat on the flange as shown.

69. Install the boots and secure with boot band and tube clamp.

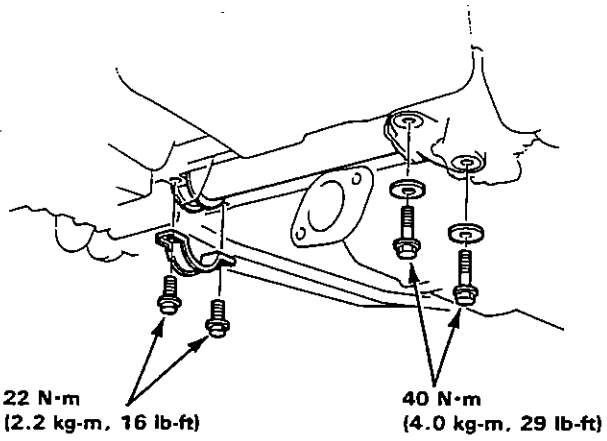


70. Install the air transfer hose and clamp with transfer clips as shown.



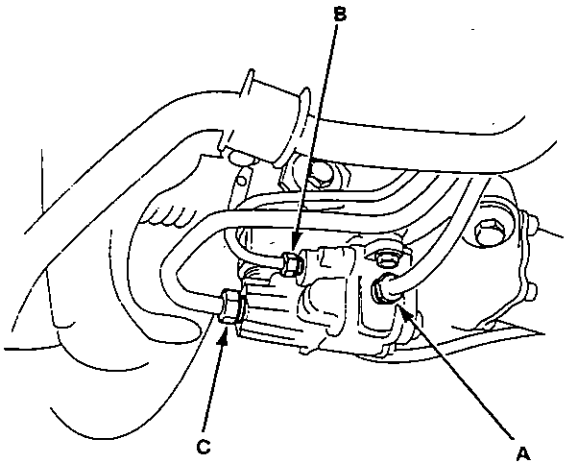
Installation

1. Re-install the gearbox in the reverse order of removal.
2. Tighten the gearbox mounting bolts.



3. Connect the fluid lines to the control unit.

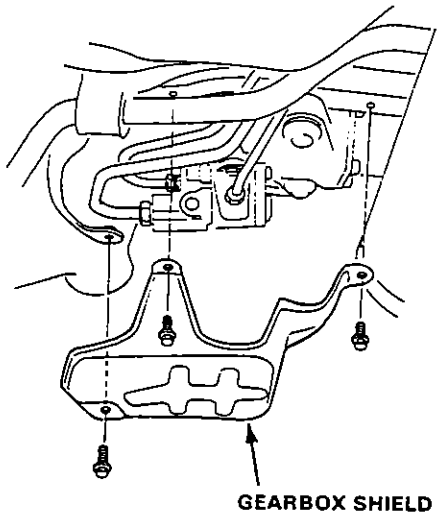
   A: From pump: 14 mm wrench
   38 N·m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
   13 N·m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
   29 N·m (2.9 kg-m, 20 lb-ft)



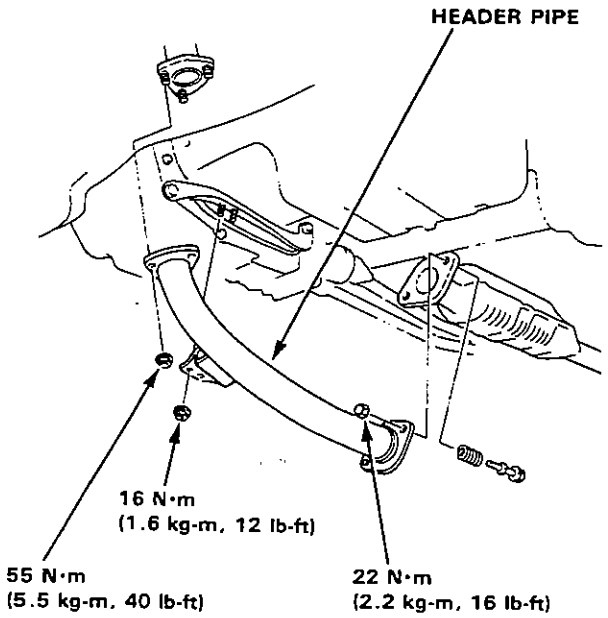
(cont'd)

Installation (cont'd)

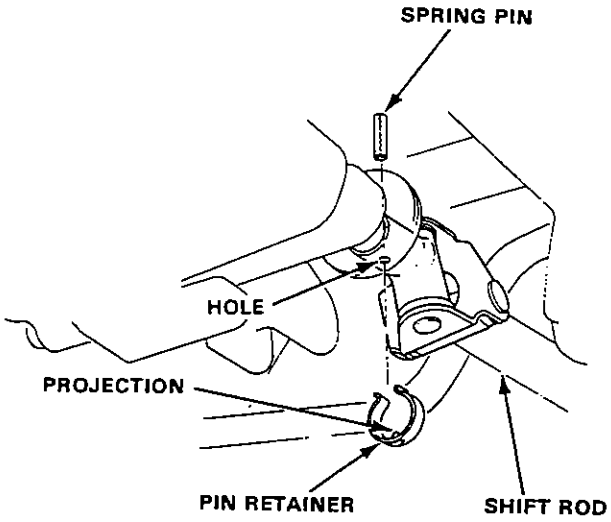
4. Install the gearbox shield.



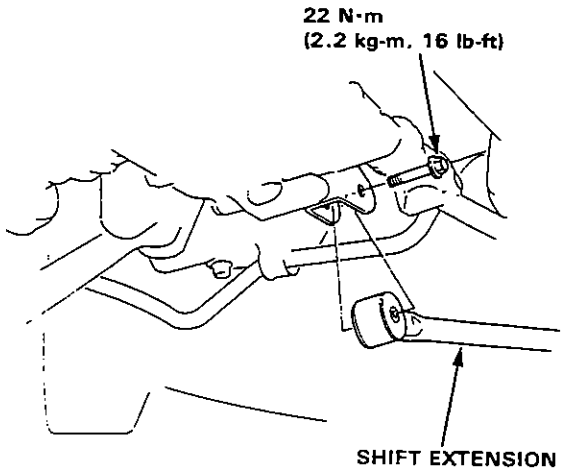
5. Install the header pipe with new gasket, and tighten the bolts and nuts.



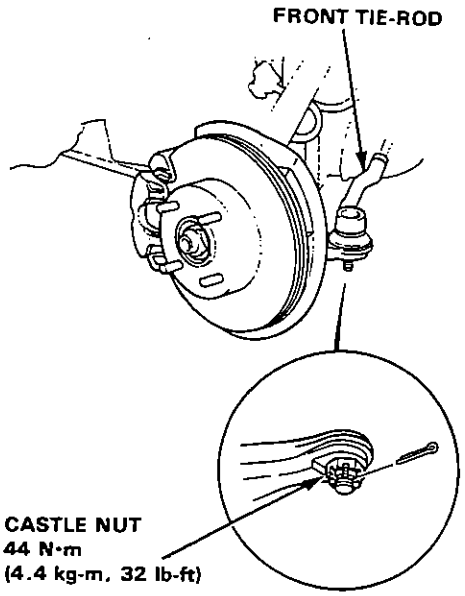
6. Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.



7. Install the shift extension to the transmission case.



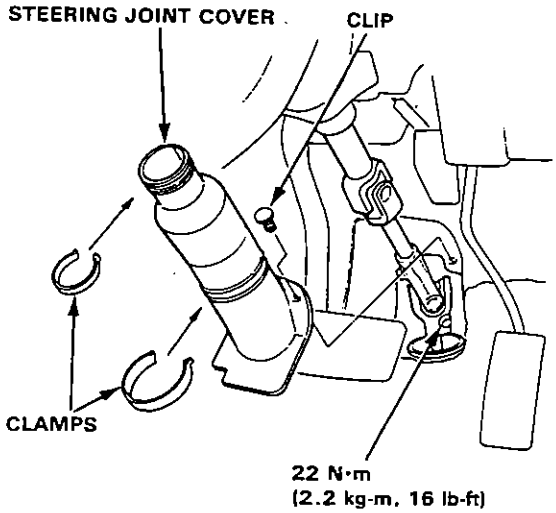
8. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.



9. Re-connect the steering shaft to the gearbox.

10. Install the steering joint cover.

CAUTION: Before tightening the steering joint bolts, pull up the steering joint to make sure that the steering joint is fully seated.



11. Fill the system:

- Fill the reservoir with new Honda Power Steering Fluid.
- Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
- Check the fluid again, and add more if necessary.

12. Check the gearbox for leaks, then re-install the shield.

13. Re-install the front wheels.

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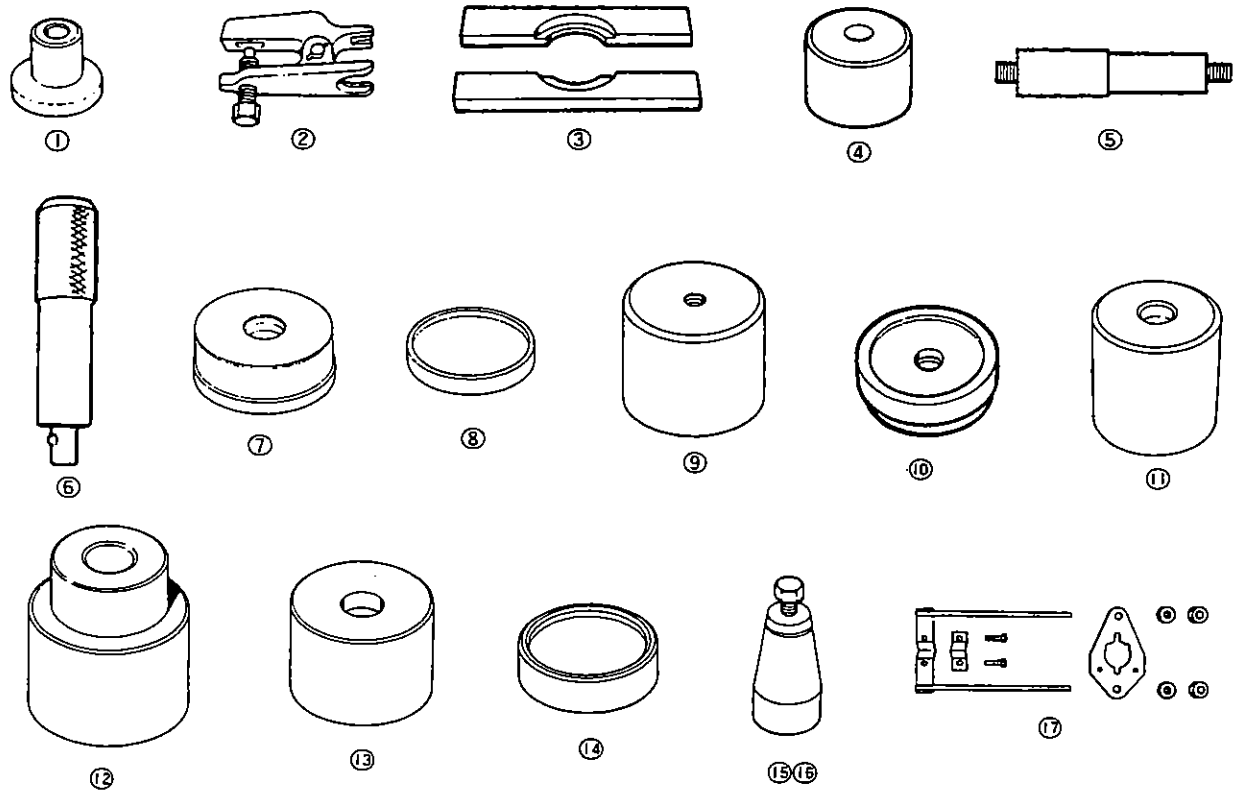
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Special Tools

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07HGK—0010100	Wheel Alignment Gauge Attachment	1	
②	07941—6920003	Ball Joint Remover	1	
③	07965—6340301	Hub Dis/Assembly Base	1	
④	07JAF—SH20110	Hub Dis/Assembly Pilot, 38 mm	1	
⑤	07JAF—SH20120	Hub Dis/Assembly Shaft 22.4 x 25.4 mm	1	
⑥	07749—0010000	Driver	1	
⑦	07746—0010400	Attachment 52 x 55 mm	1	
⑧	07GAF—SE00401	Hub Dis/Assembly Base	1	
⑨	07965—6920201	Hub Dis/Assembly Base	1	
⑩	07746—0010600	Attachment 72 x 75 mm	1	
⑪	07GAF—SE00200	Hub Assembly Guide Attachment	1	
⑫	07965—SB00100	Ball Joint Remover/Installer	1	
⑬	07JAF—SH20200	Ball Joint Remover Base	1	
⑭	07965—SB00200	Ball Joint Installer Base	1	
⑮	07974—SA50700	Ball Joint Boot Clip Guide A	1	
⑯	07974—SA50800	Ball Joint Boot Clip Guide B	1	
⑰	07GAE—SE00100	Spring Compressor	1	

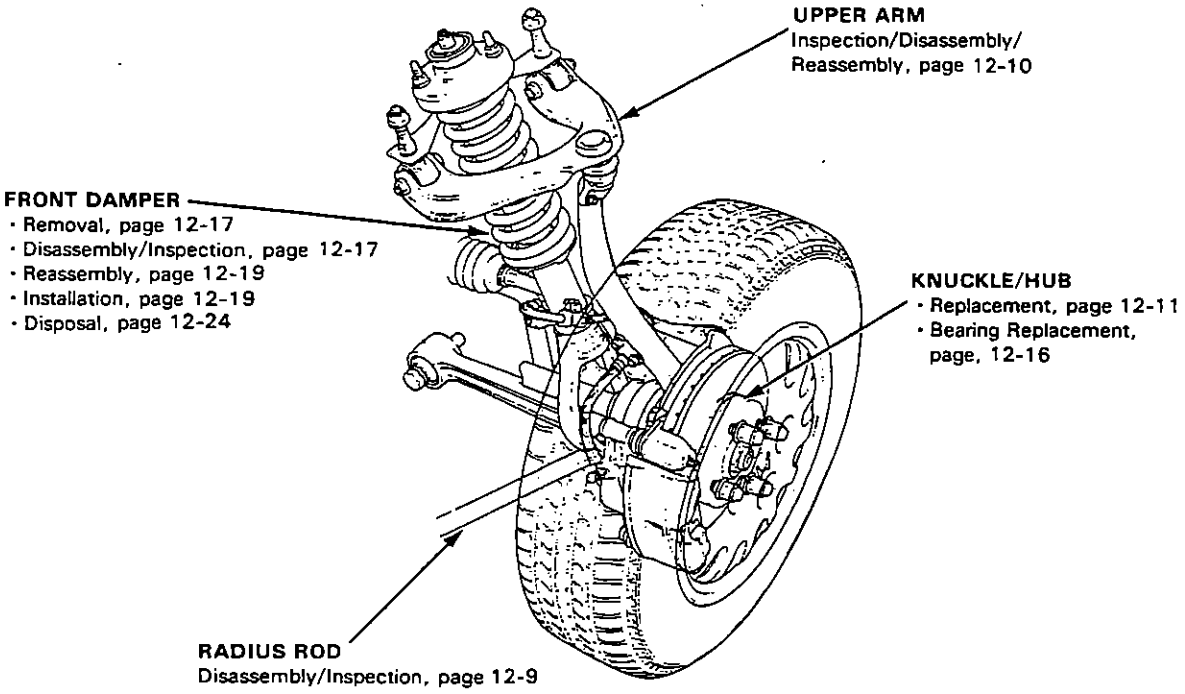


Component Location

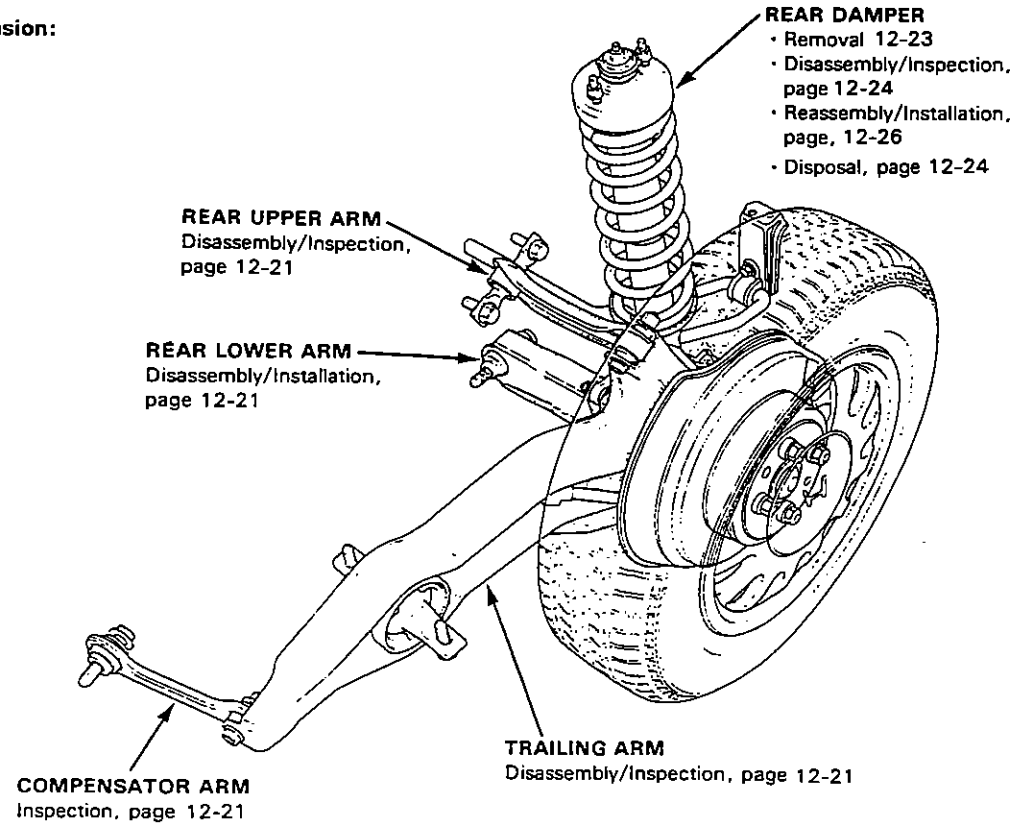
Index

WARNING **The front and rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal explosion and possible injure when scrapping.**

Front Suspension:



Rear Suspension:



Wheel Alignment

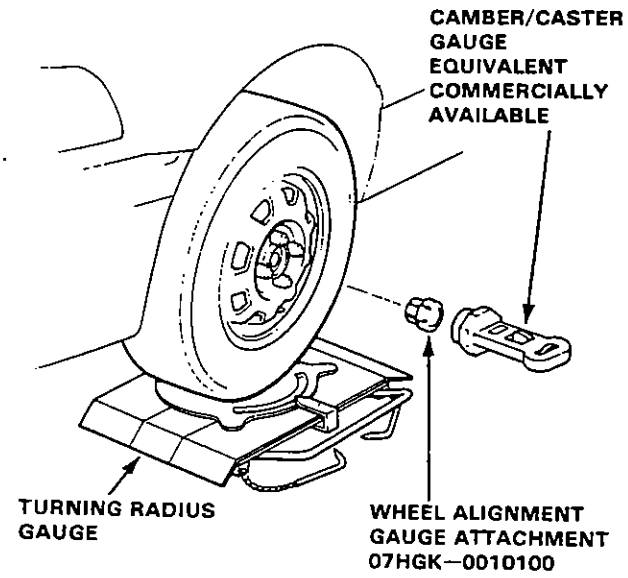
Caster

Inspection

1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel aylignment attachments.
4. Install a camber/caster gauge on the Wheel Alignment Gauge Attachment and apply the front brake. Turn the wheel 20° inward.
5. Turn the adjust screw so that the bubble in the caster gauge is at 0°
6. Turn the wheel outward 20° and read the caster on the gauge with the bubble at the center of the gauge.

   Caster Angle: 3° 00′ ± 1°



7. If out of specification, check for bent or damaged suspension components.

Camber

Inspection

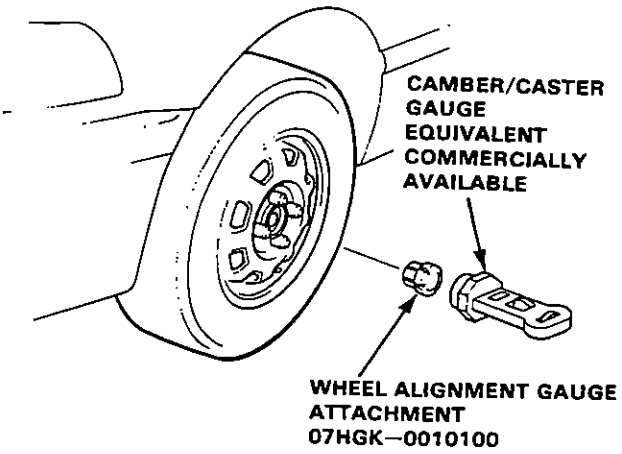
1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel alignment attachments.
4. Read the camber on the gauge with the bubble at the center of the gauge.

   Camber angle:

   KY Model Only **Front: 0° 15′ ± 1°**
   Rear: 0° 15′ ± 1°

   Other Models **Front: 0° 00′ ± 1°**
   Rear: −0° 25′ ± 1°



5. If out of specification, check for bent or damaged suspension components.

Rear Toe Inspection/ Adjustment

1. Release parking brake.

   NOTE: If the parking brake is engaged, you may get an incorrect reading.

   Rear toe in: 2±2 mm (0.079±0.079 in.)

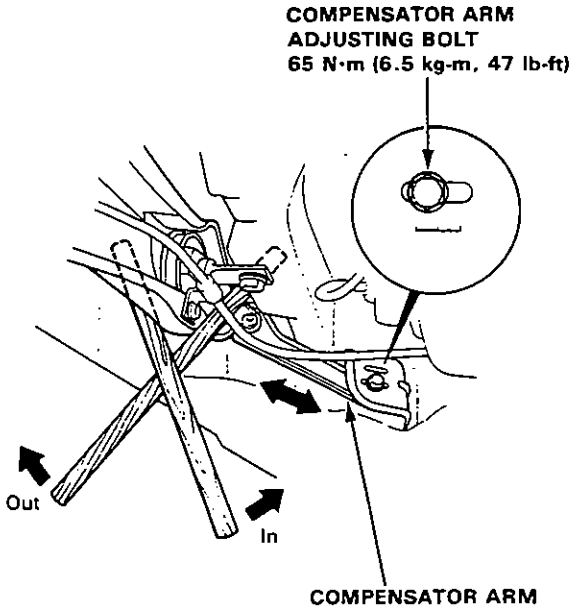
   — If adjustment is required, go to step 2.

   — If no adjustment is required, remove alignment equipment.

2. Before adjustment, note the locations of right and left compensator arm adjusting bolts.

3. Loosen the adjusting bolt and slide the compensator arm in or out as shown, to adjust the toe.

4. Tighten the adjusting bolt.



● Example
After the rear toe inspection, the wheel is 2 mm (0.079 in.) out of the specification.
— Move the arm so the adjusting bolt moves 2 mm (0.079 in) inward from the position recorded before the adjustment.
— The distance the adjusting bolts is moved should be equal to the amount of out-of-specification.

Front Toe Inspection/ Adjustment

NOTE: Check the tire pressure before inspection.

1. Center Steering Wheel spokes.

   NOTE: Measure difference in toe measurements with the wheels pointed straight ahead.

   Front toe-in: 0±3 mm (0±0.118 in)

   — If adjustment is required, go on to step 2.

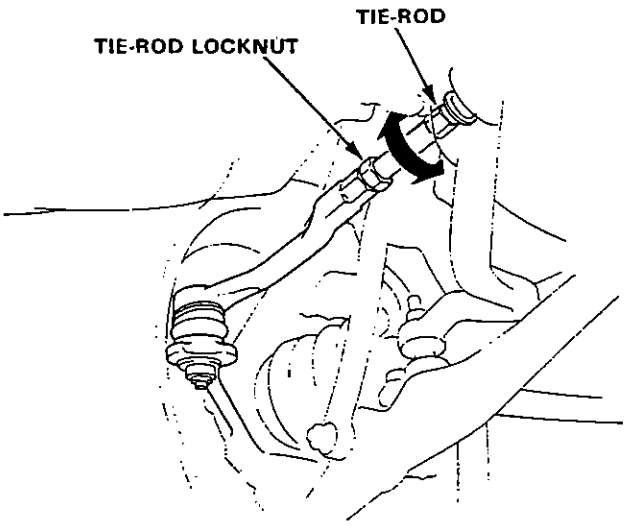
   — If no adjustment is required, remove alignment equipment.

2. Loosen the tie-rod locknuts and turn both tie-rods in the same direction until the front wheels are in straight ahead position.

3. Turn both tie-rods equally until the toe reading on the turning radius gauge is correct.

4. After adjusting, tighten the tie-rod locknuts.

   NOTE: Reposition the tie-rod boot if twisted or displaced after adjustment has been made.



Wheel Alignment

Turning Angle Inspection/ Adjustment

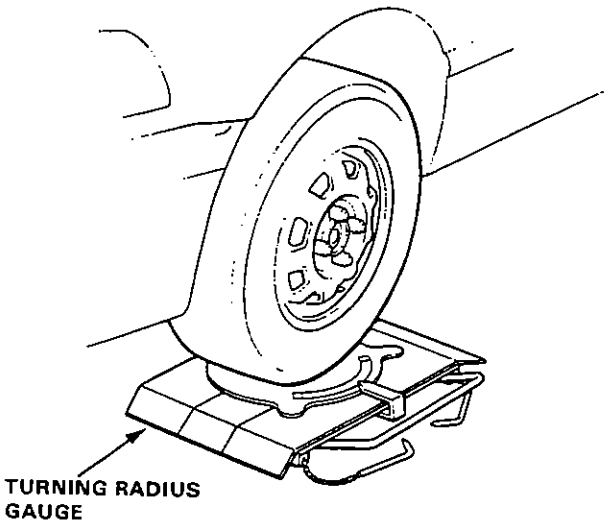
1. Jack up the front of the car, set the turning radius gauges beneath the front wheels, then lower the car.

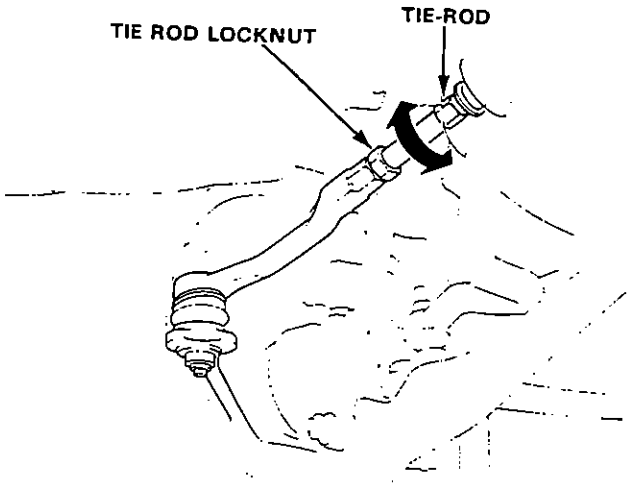
2. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   Turning angle:
   Inward wheel: 41° 30′±2°
   Outward wheel: 33° 30′±2°

3. If the measurements are not within the specifications, adjust as required by turning the tie-rods.

   NOTE: After adjustments, recheck the front wheel toe and readjust if necessary. Reposition the tie rod boot if twised or displaced after adjustment has been made.



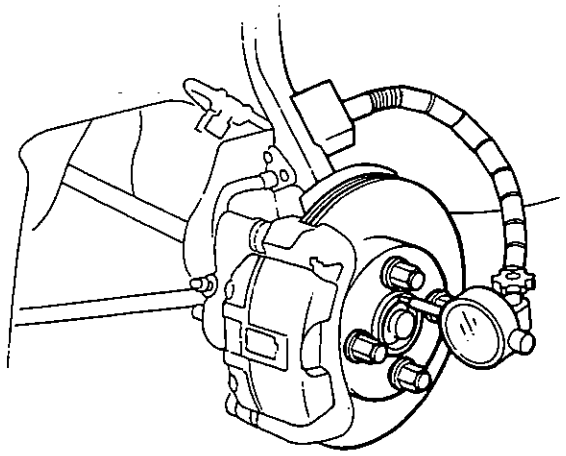


Wheel Measurements

Bearing End Play

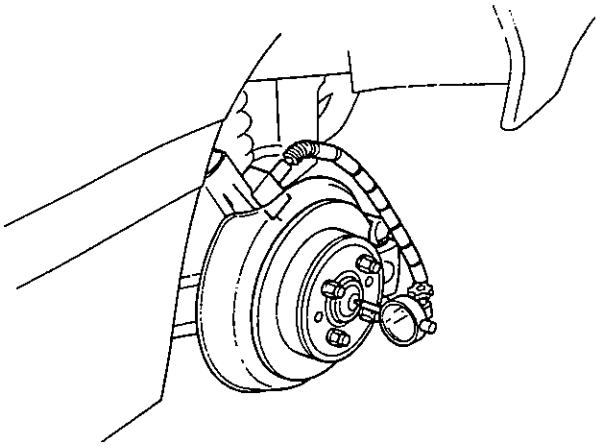
Front Wheel End Play

Standard: 0—0.05 mm (0—0.002 in.)



Rear Wheel End Play

Standard: 0—0.05 mm (0—0.002 in)

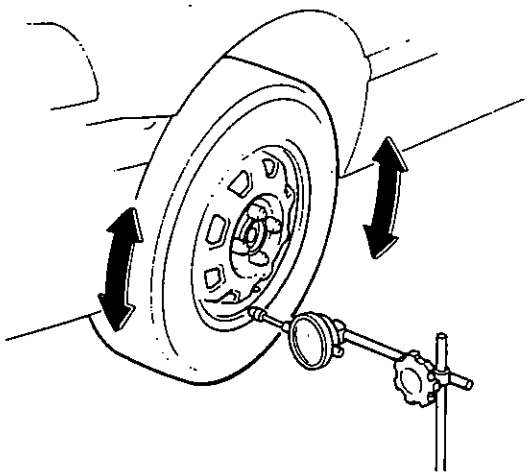


Runout

Front and Rear Wheel Axial Runout

Standard:

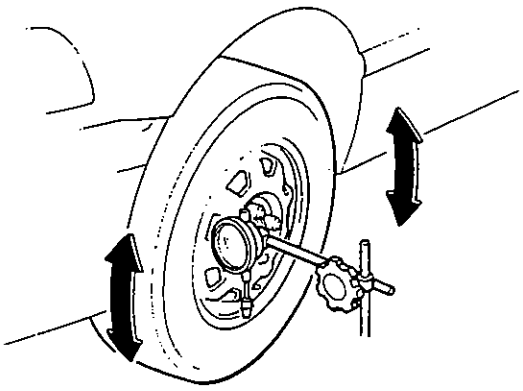
Steel Wheel: 0—1.0 mm (0—0.039 in.)
Aluminum Wheel: 0—0.7 mm (0—0.028 in)



Front and Rear Wheel Radial Runout

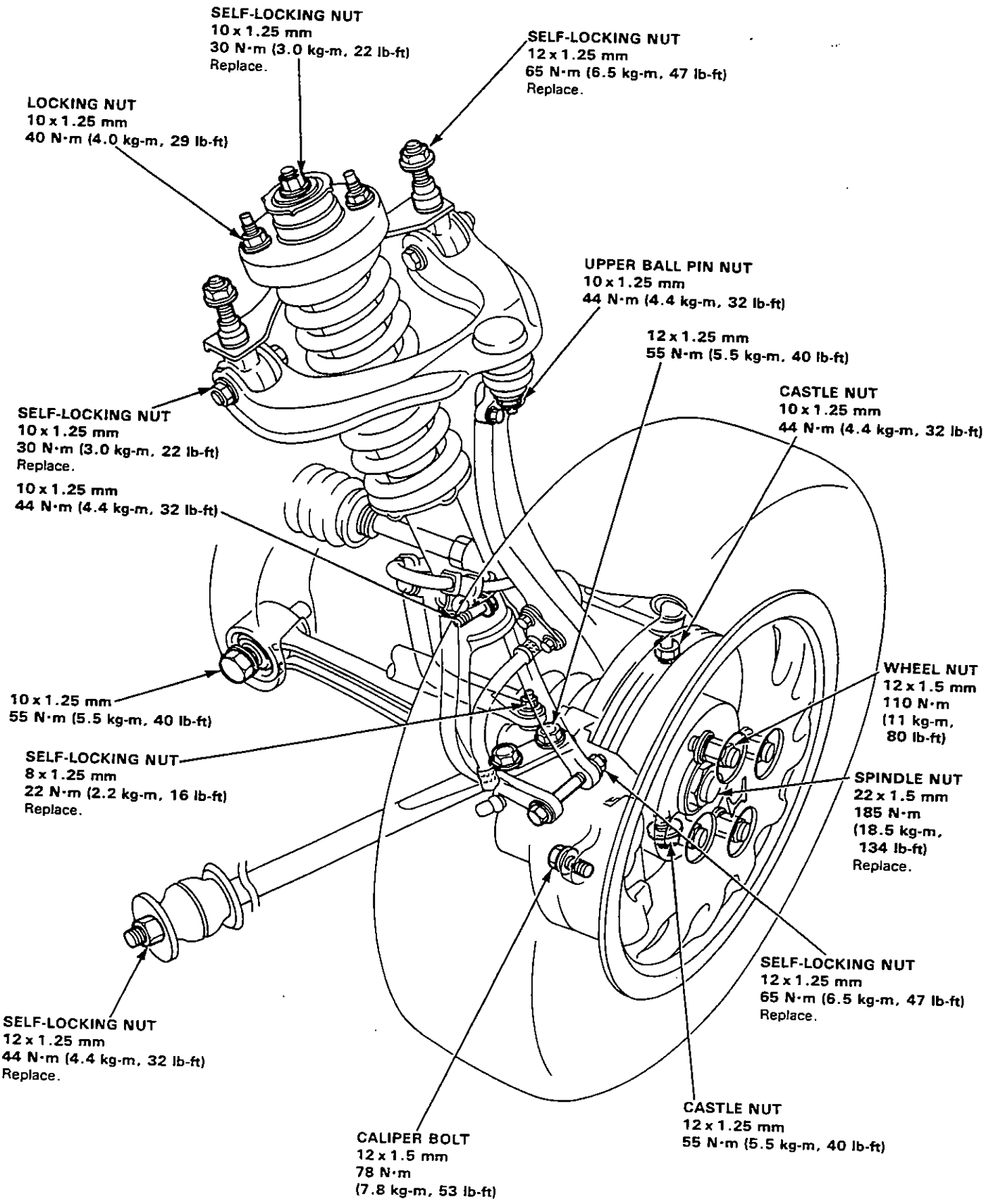
Standard:

Steel Wheel: 0—1.0 mm (0—0.039 in.)
Aluminum Wheel: 0—0.7 mm (0—0.028 in)



Front Suspension

Torque Specifications

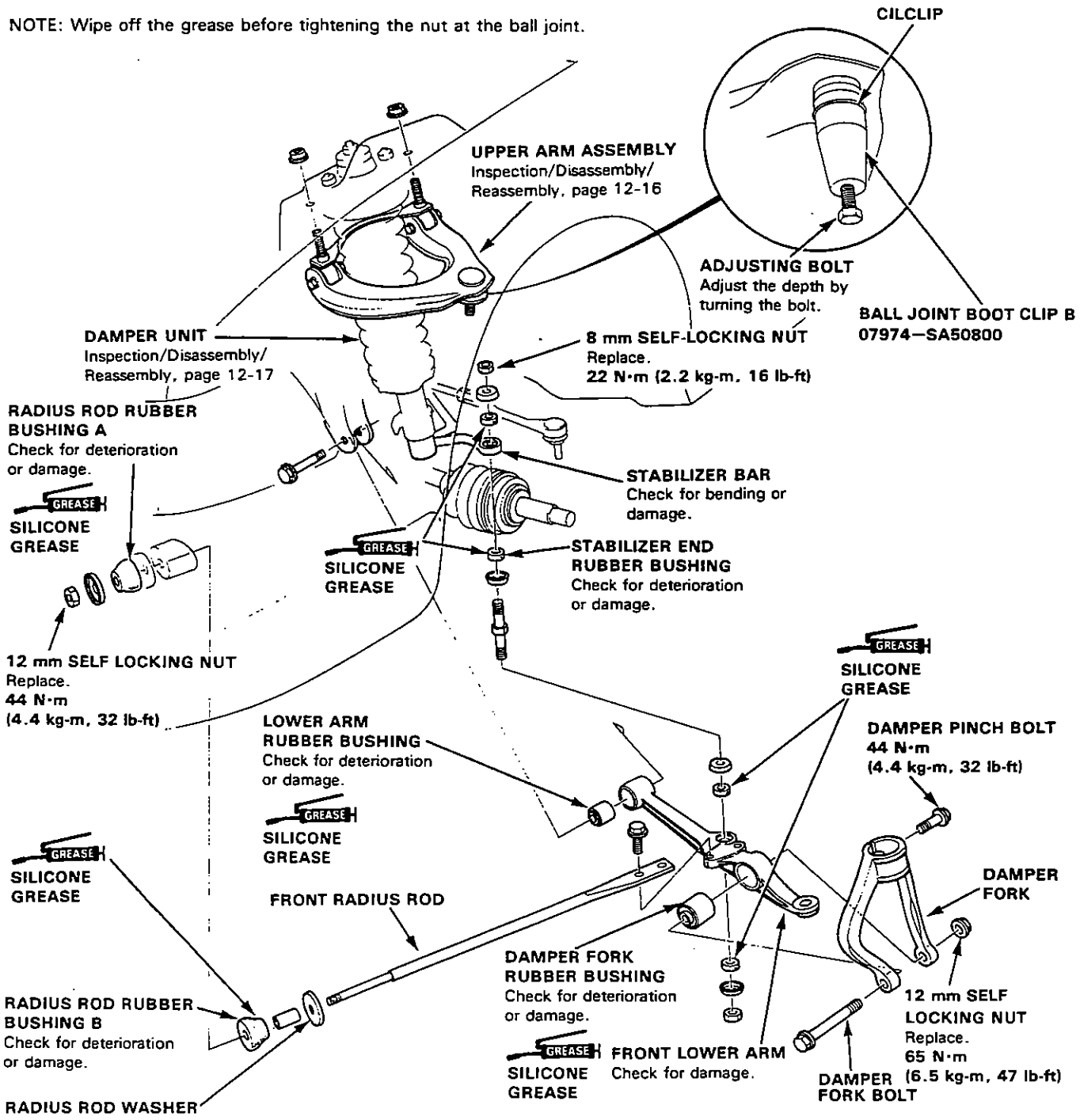


Overall Suspension

CAUTION:

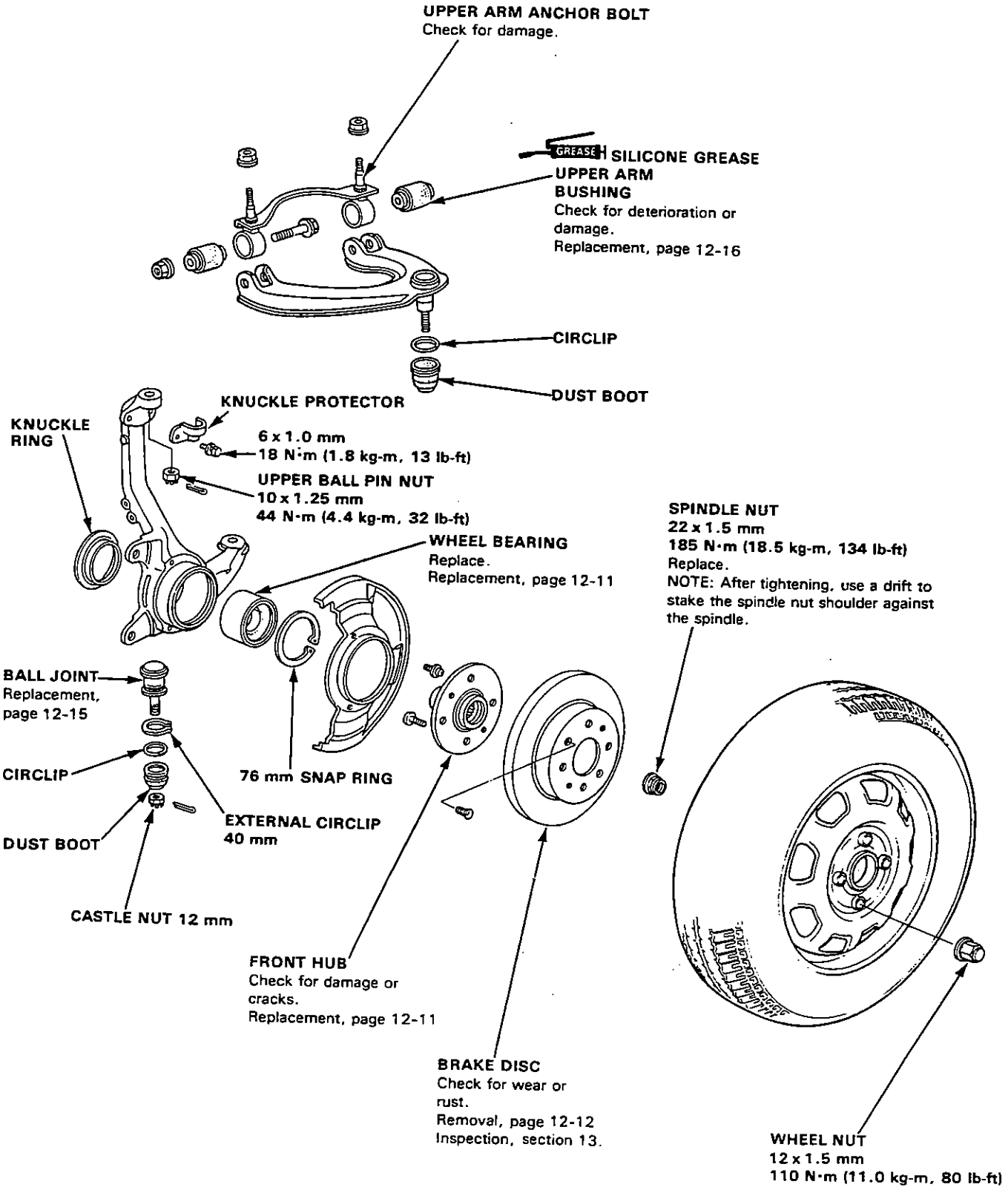
- **Replace the self-locking nuts after removal.**
- **Replace the self-locking bolts if you can easily thread a nut past their nylon locking inserts.**

NOTE: Wipe off the grease before tightening the nut at the ball joint.



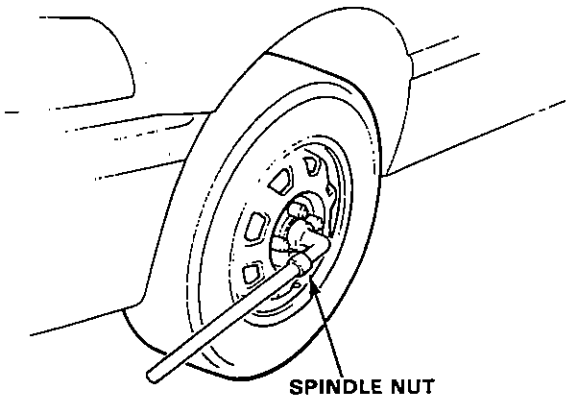
CAUTION: Do not interchange the radius rod rubber bushings. The thick bushing should be installed in front position.

Knuckle/Hub


UPPER ARM ANCHOR BOLT
Check for damage.
GREASE SILICONE GREASE
UPPER ARM BUSHING
Check for deterioration or damage.
Replacement, page 12-16
CIRCLIP
DUST BOOT
KNUCKLE PROTECTOR
KNUCKLE RING
6 x 1.0 mm
18 N·m (1.8 kg-m, 13 lb-ft)
UPPER BALL PIN NUT
10 x 1.25 mm
44 N·m (4.4 kg-m, 32 lb-ft)
WHEEL BEARING
Replace.
Replacement, page 12-11
SPINDLE NUT
22 x 1.5 mm
185 N·m (18.5 kg-m, 134 lb-ft)
Replace.
NOTE: After tightening, use a drift to stake the spindle nut shoulder against the spindle.
BALL JOINT
Replacement, page 12-15
CIRCLIP
DUST BOOT
CASTLE NUT 12 mm
76 mm SNAP RING
EXTERNAL CIRCLIP
40 mm
FRONT HUB
Check for damage or cracks.
Replacement, page 12-11
BRAKE DISC
Check for wear or rust.
Removal, page 12-12
Inspection, section 13.
WHEEL NUT
12 x 1.5 mm
110 N·m (11.0 kg-m, 80 lb-ft)

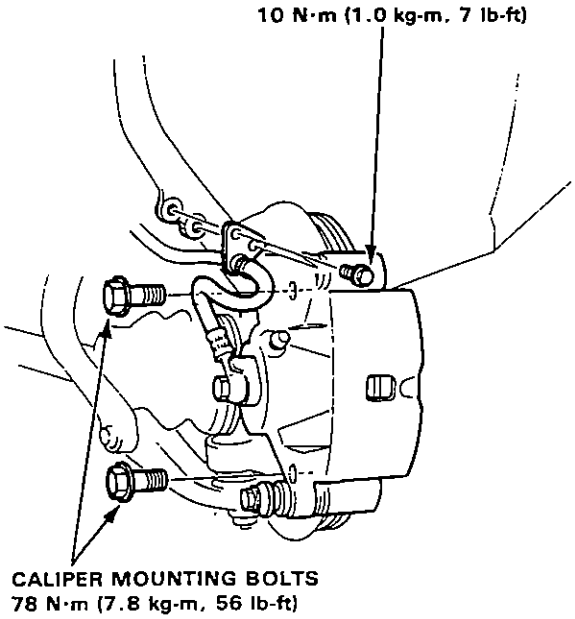
Knuckle/Hub Replacement

1. Pry the spindle nut stake away from the spindle, then loosen the nut using a 32 mm socket.



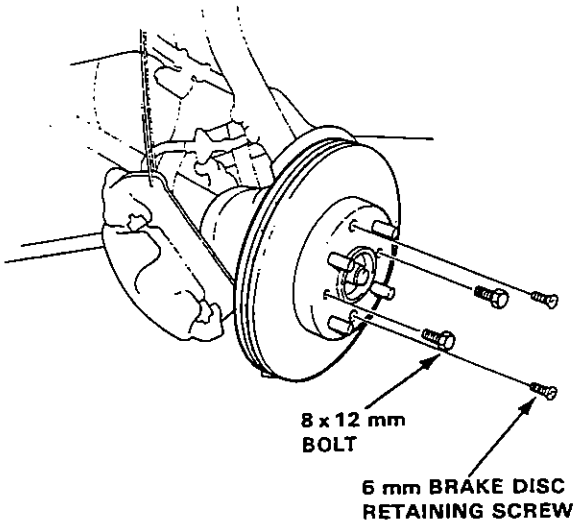
2. Loosen the wheel nuts slightly.
3. Raise the front of car and support on safety stands in proper locations.
4. Remove the wheel nuts, wheels, and spindle nut.
5. Remove the caliper mounting bolts and hang the caliper assembly to one side.

   CAUTION: To prevent accidental damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage.

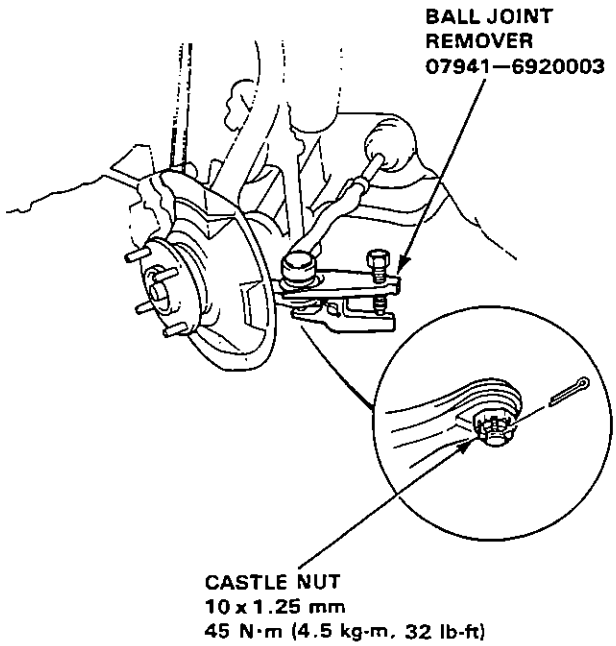


6. Remove the 6 mm brake disc retaining screws.
7. Screw two 8 ×12 mm bolts into the disc to push it away from the hub.

   NOTE: Turn each bolt two turns at a time to prevent cocking disc excessively.



8. Remove the cotter pin from the tie-rod end and remove the castle nut.
9. Break loose the tie-rod ball joint using the special tool, then lift the tie-rod out of the knuckle.



(cont'd)

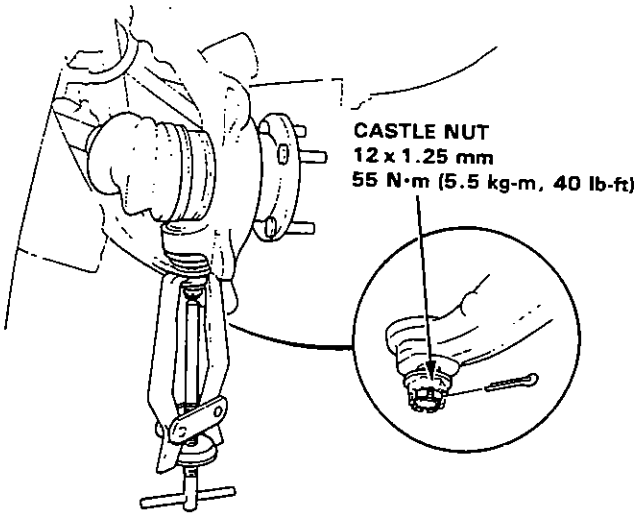
Knuckle/Hub Replacement (cont'd)

10. Remove the cotter pin and loosen the lower arm ball joint nut half the length of the joint threads.

11. Separate the ball joint and lower arm using a puller with the pawls applied to the lower arm.

    CAUTION: Avoid damaging the ball joint boot.

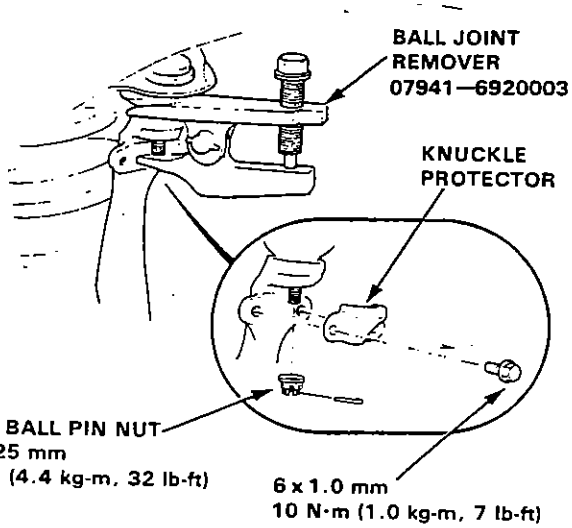
    NOTE: If necessary, apply penetrating type lubricant to loosen the ball joint.



12. Remove the knuckle protector.

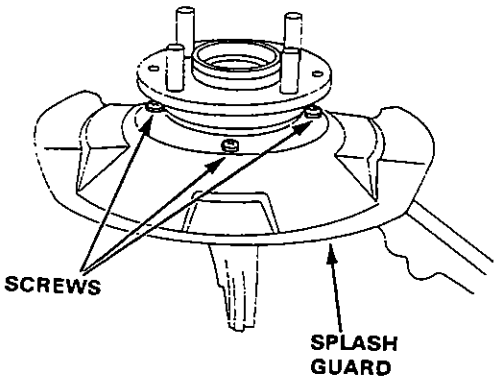
13. Remove the cotter pin and remove the upper ball pin nut.

14. Separate the upper ball joint and knuckle using the special tool.



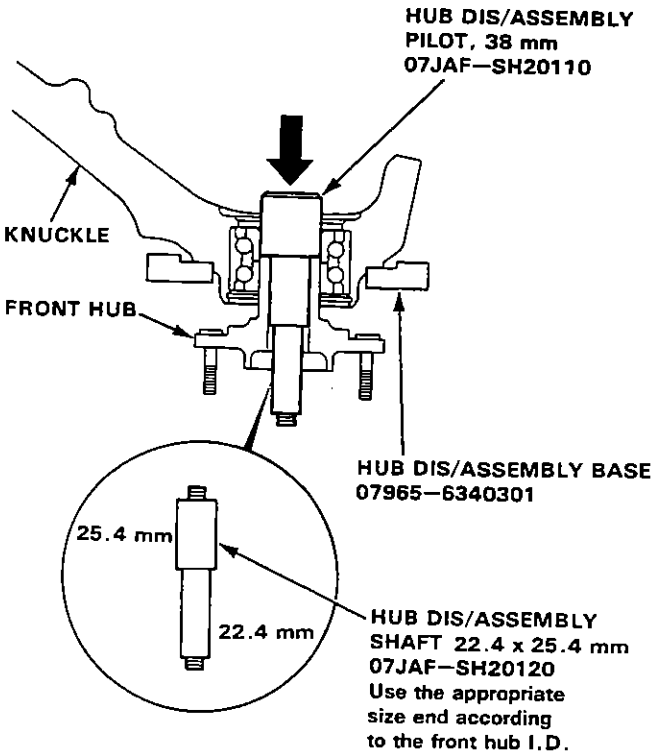
15. Remove the knuckle and hub by sliding them off the driveshaft.

16. Remove the splash guard screws from the knuckle.



17. Separate the hub from the knuckle using the special tools and a hydraulic press.

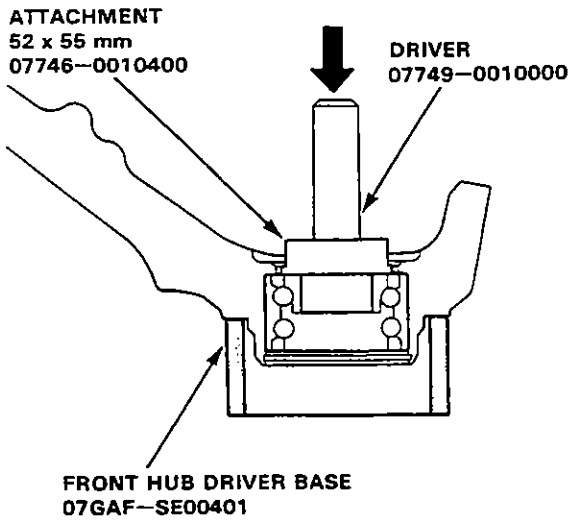
    CAUTION:
    - **Take care not to distort the splash guard.**
    - **Hold onto the hub to keep it from falling when pressed clear.**
    - **To prevent damage to the tool make sure the threads are fully engaged before pressing.**



NOTE: Replace the bearing with a new one after removal.

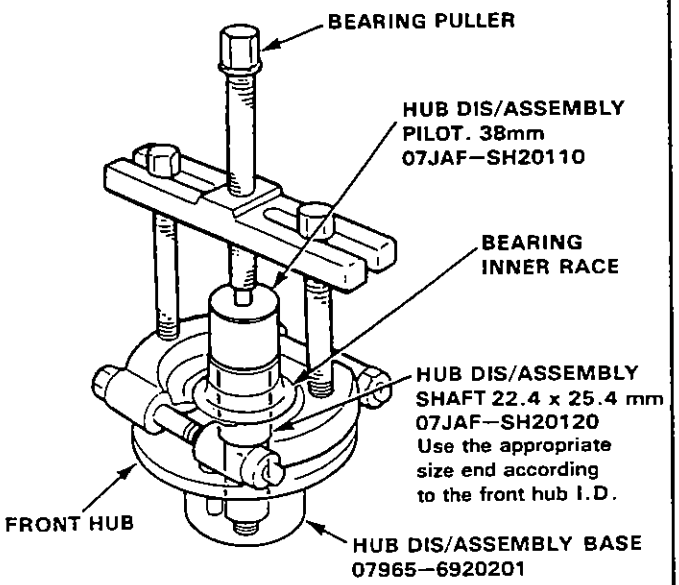
18. Remove the 76 mm snap ring and knuckle ring from the knuckle.

19. Press the wheel bearing out of the knuckle using the special tools shown and a hydraulic press.



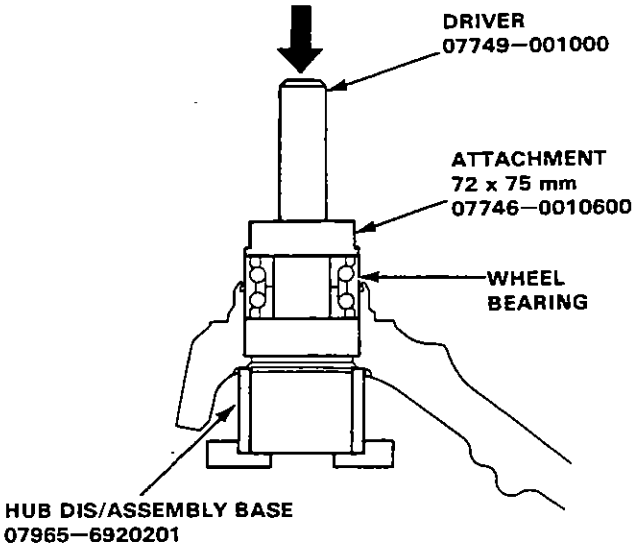
20. Remove the outboard bearing inner race from the hub using the special tools shown and a bearing puller.

CAUTION: To prevent damage to the tool make sure the threads are fully engaged before pressing.

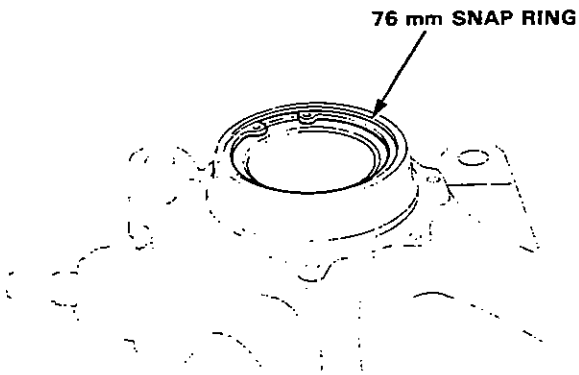


NOTE: Wash the knuckle and hub thoroughly in high flashpoint solvent before reassembly.

21. Press a new wheel bearing into the hub using the special tools shown and a hydraulic press.



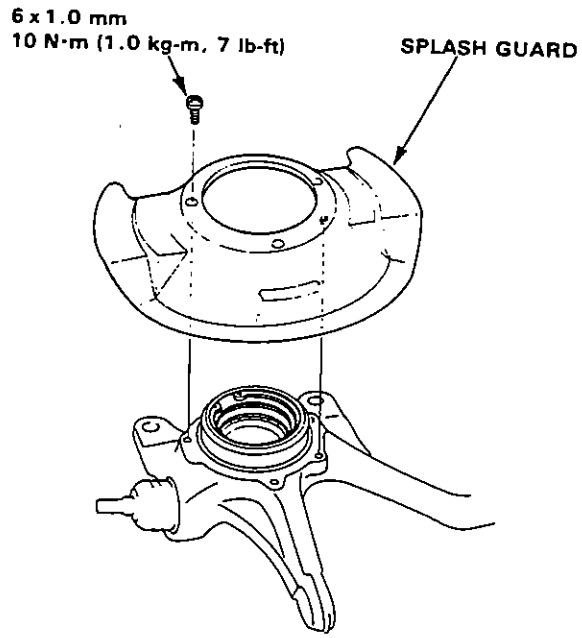
22. Install the 76 mm snap ring securely in the knuckle groove.



(cont'd)

Knuckle/Hub Replacement (cont'd)

23. Install the splash guard and tighten the screws.

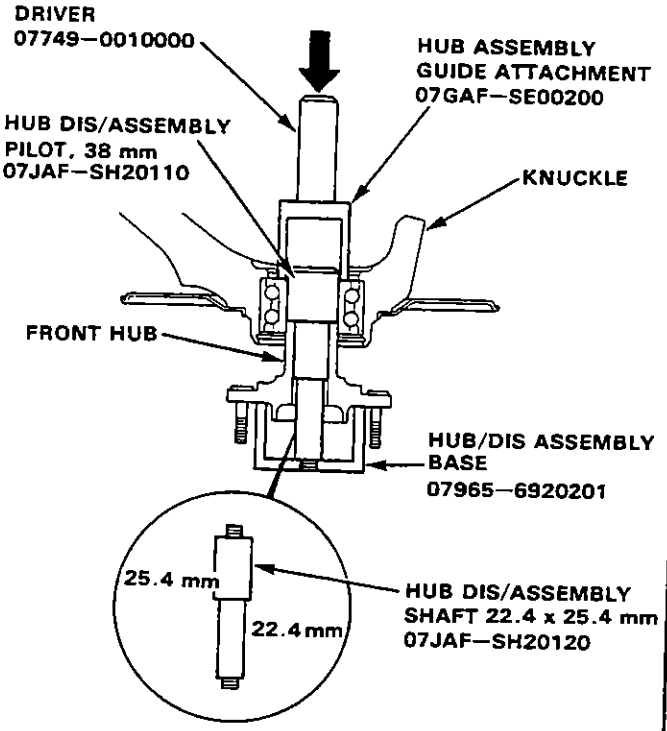


24. Install the shaft into the base with the appropriate size end according to the front hub I.D.

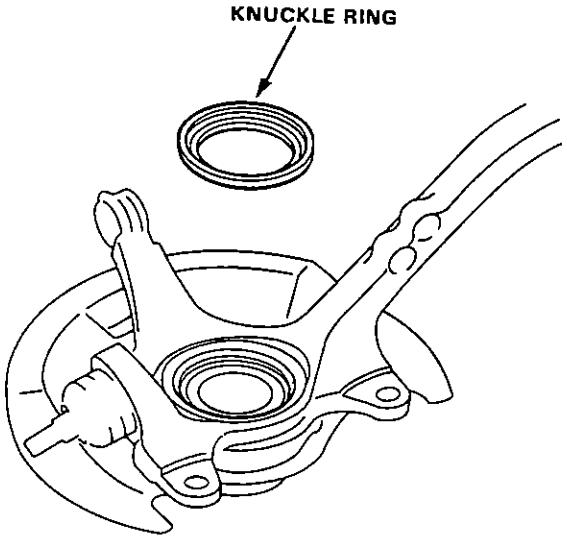
25. Place the front hub onto the special tools and install the pilot.

26. Set the knuckle in position and install using the special tools and a hydraulic press.

CAUTION:
- Maximum press load: 2 tons.
- To prevent damage to the tool make sure the threads are fully engaged before pressing.

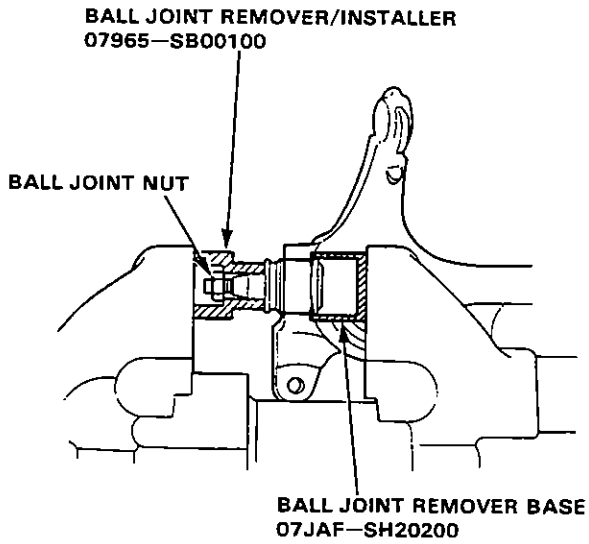


27. Install the front knuckle ring on the knuckle.

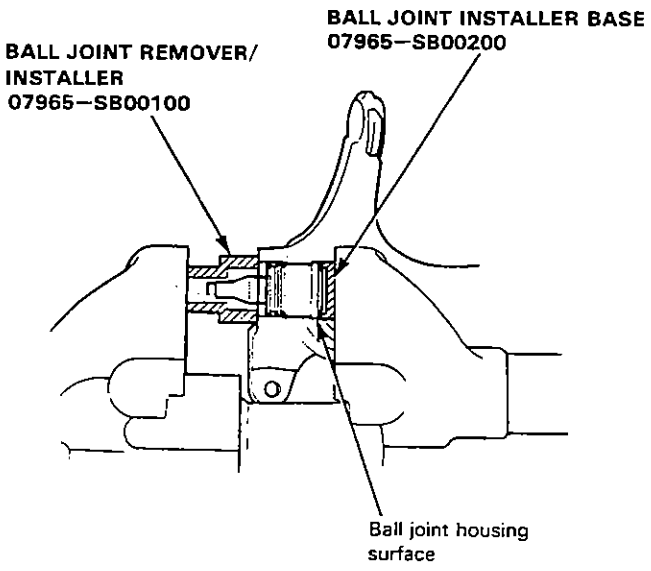


Lower Ball Joint Replacement

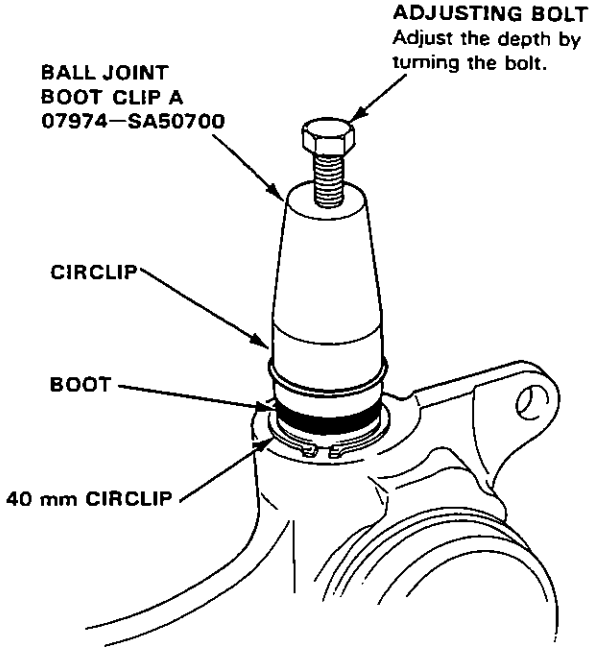
1. Remove the knuckle (page 12-10).
2. Remove the boot by prying the snap ring off.
3. Remove the 40 mm circlip.
4. Install the special tool on the ball joint and tighten the ball joint nut.
5. Position the special tool over the ball joint as shown then set the assembly in a vise. Press the ball joint out of the knuckle.



6. Place the ball joint in position by hand.
7. Install the special tools over the ball joint as shown, then press the ball joint in.

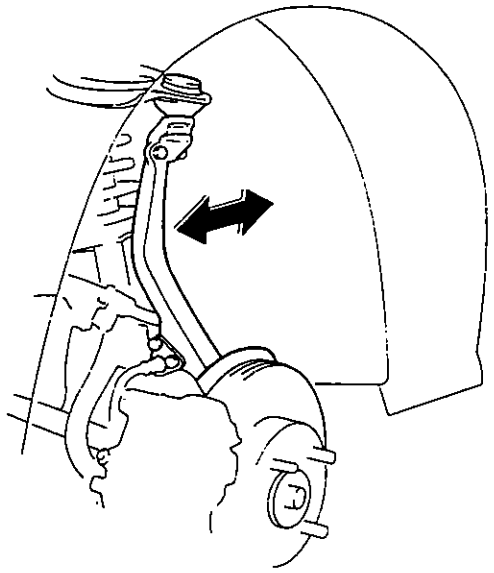


8. Install the 40 mm circlip.
9. Adjust the special tool with the adjusting bolt until the end of the tool aligns with the groove on the boot. Slide the clip over the tool and into position.

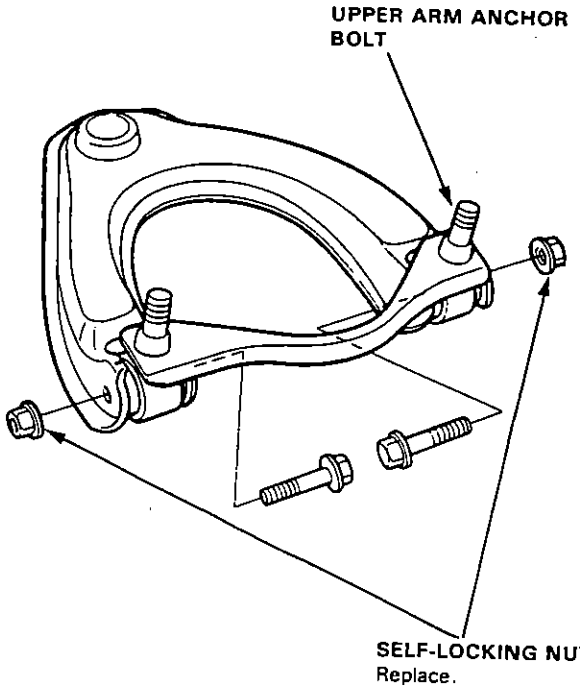


Upper Arm Bushing Replacement

1. Remove the front wheels.
2. Rock the upper ball joint front-to-back.
3. Replace the upper arm bushings as follows if there is any play.

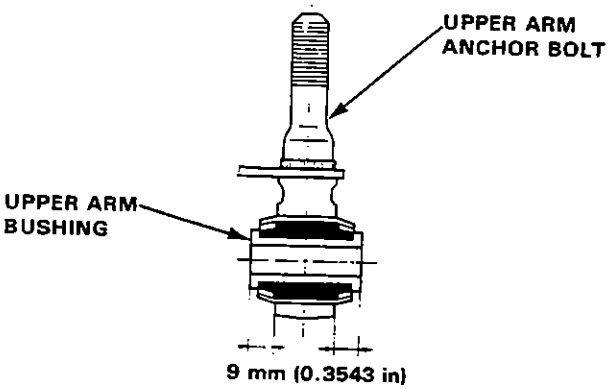


4. Remove the self-locking nuts, upper arm bolts and upper arm anchor bolts.



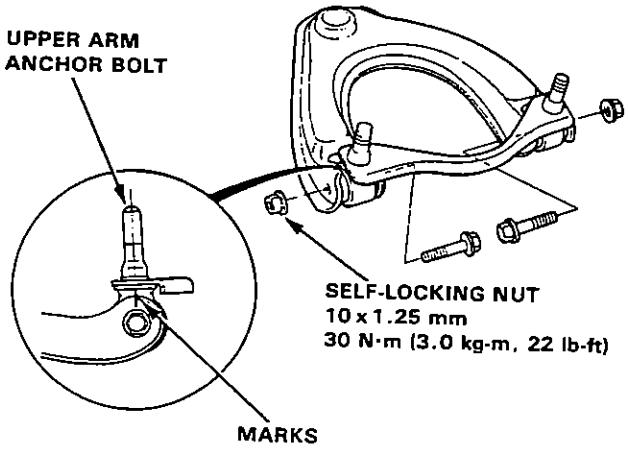
5. Place each upper arm anchor bolt in a vise and drive out the upper arm busings.
6. Drive the new upper arm bushings into the upper arm anchor bolts.

   NOTE: Center the bushing so that 9 mm (0.3543 in) protrudes from each side of the anchor bolt as shown.



7. Install the upper arm bolts and tighten the self-locking nuts.

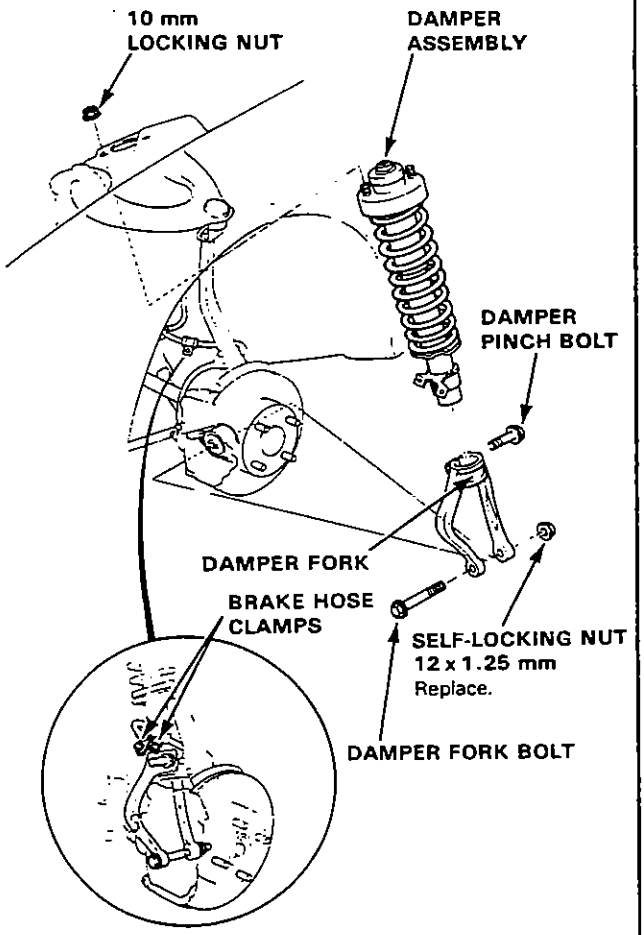
   NOTE: Align the upper arm anchor bolt with the mark on the upper arm.



9. After installation, check the camber (page 12-4).

Damper Removal

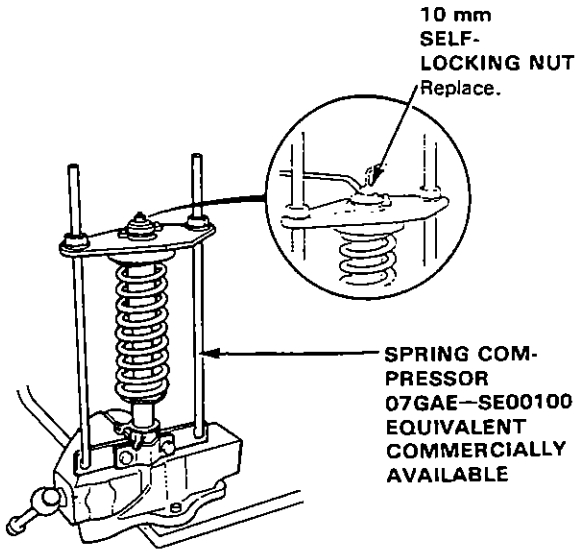
1. Remove the brake hose clamps from the damper.
2. Remove the damper pinch bolt.
3. Remove the damper fork bolt and remove the damper fork.
4. Remove the damper by removing the two 10 mm nuts.



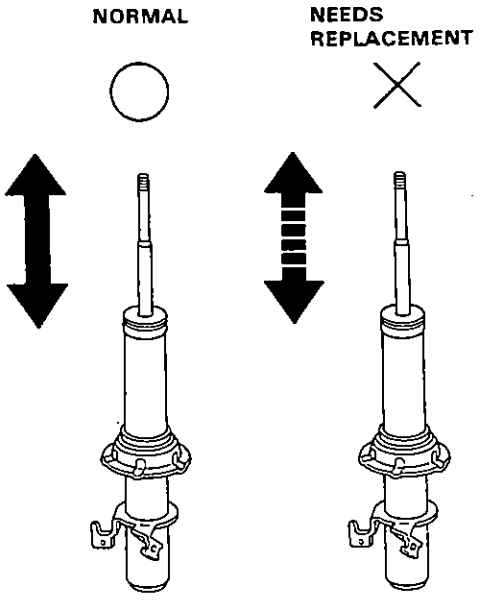
Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions, then remove the self locking nut.

   CAUTION: Do not compress the spring more than necessary to remove the nut.



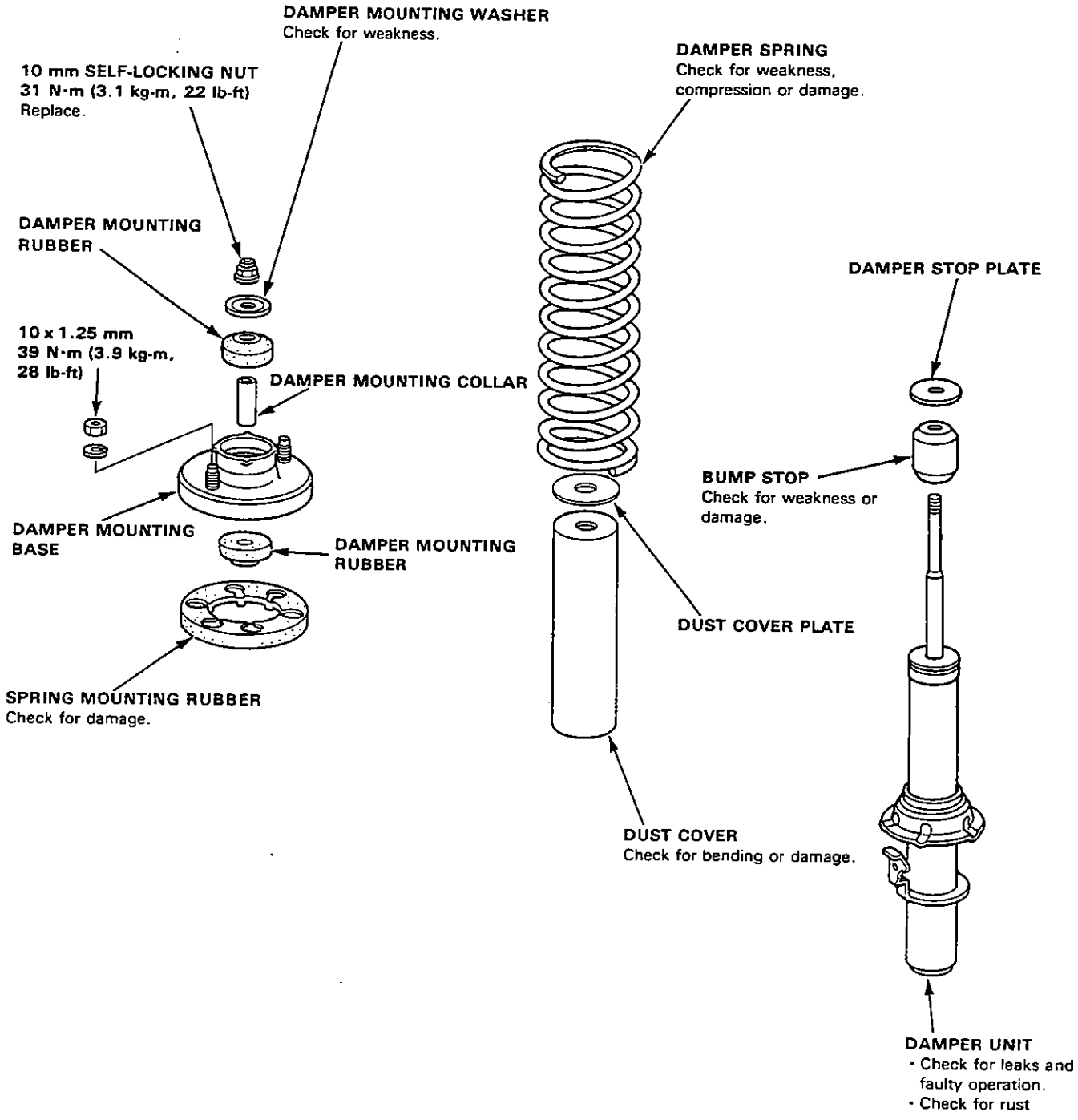
2. Remove the spring compressor then disassemble the damper as shown on the next page.
3. Check for smooth operation through a full stroke, both compression and extension.



4. Also check for smooth operation in short strokes of 5—10 cm (2—4 in). Replace the damper if resistance is uneven or jerky.
5. Check for oil leaks abnormal noises or binding during these tests.

(cont'd)

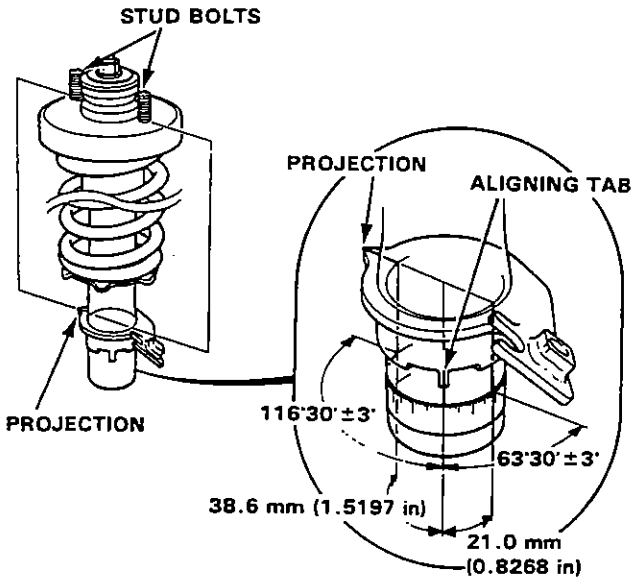
Damper Disassembly/Inspection (cont'd)



Damper Reassembly

1. Install the damper unit, damper spring, bump stop, boot, upper spring seat, damper bushings, and collar on the spring compressor.

2. Mark the damper at two points by measuring around from the damper fork aligning tab. Align the two points with the stud bolts on the mounting base.
   NOTE: Some damper units will have a projection at one of the alignment points.

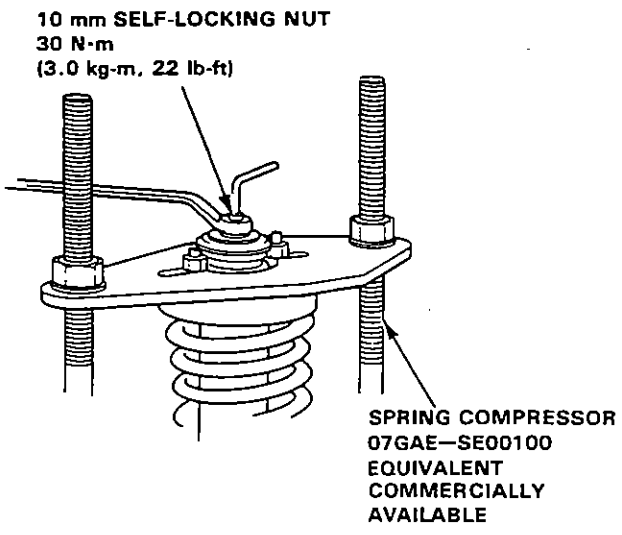


   NOTE: Left side shown, right side is opposite.

3. Compress the damper spring.

4. Install the damper mount washer and new 10 mm self-locking nut.

5. Hold the damper shaft and tighten the 10 mm self-locking nut.



Damper Installation

1. Loosely install the damper on the frame with the aligning tab facing inside.

2. Install the damper fork on the driveshaft and lower arm. Install the damper in the damper fork so the aligning tab is aligned with the slot in the damper fork. Hand tighten the bolts and nuts.

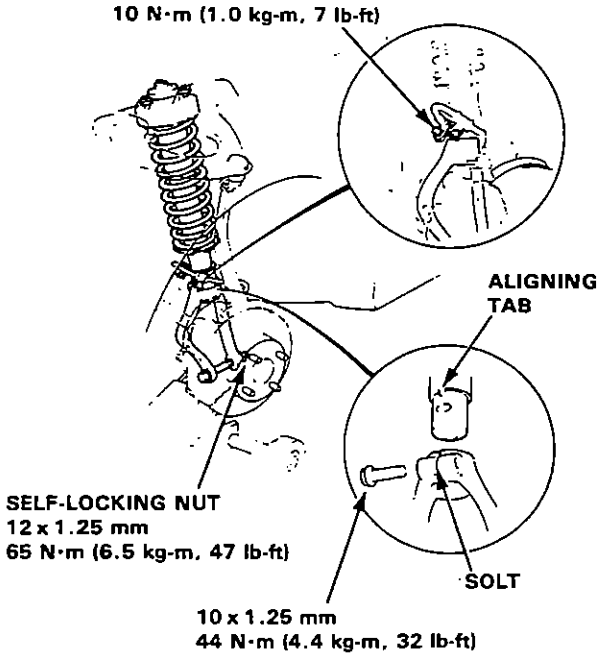
3. Raise the knuckle with a floor jack until the car just lifts off the safety stand.

   NOTE: The mount base nuts should be tightened with the damper under vehicle load.

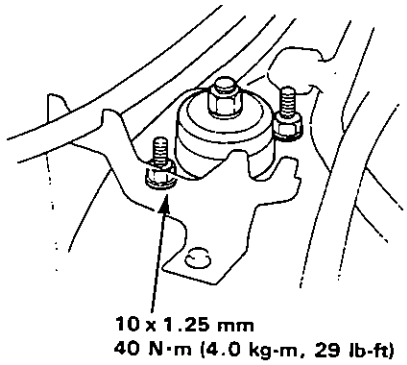
4. Tighten the damper pinch bolt.

5. Secure the damper fork bolt with a new 12 mm self locking nut.

6. Install the brake hose clamps with the two bolts.

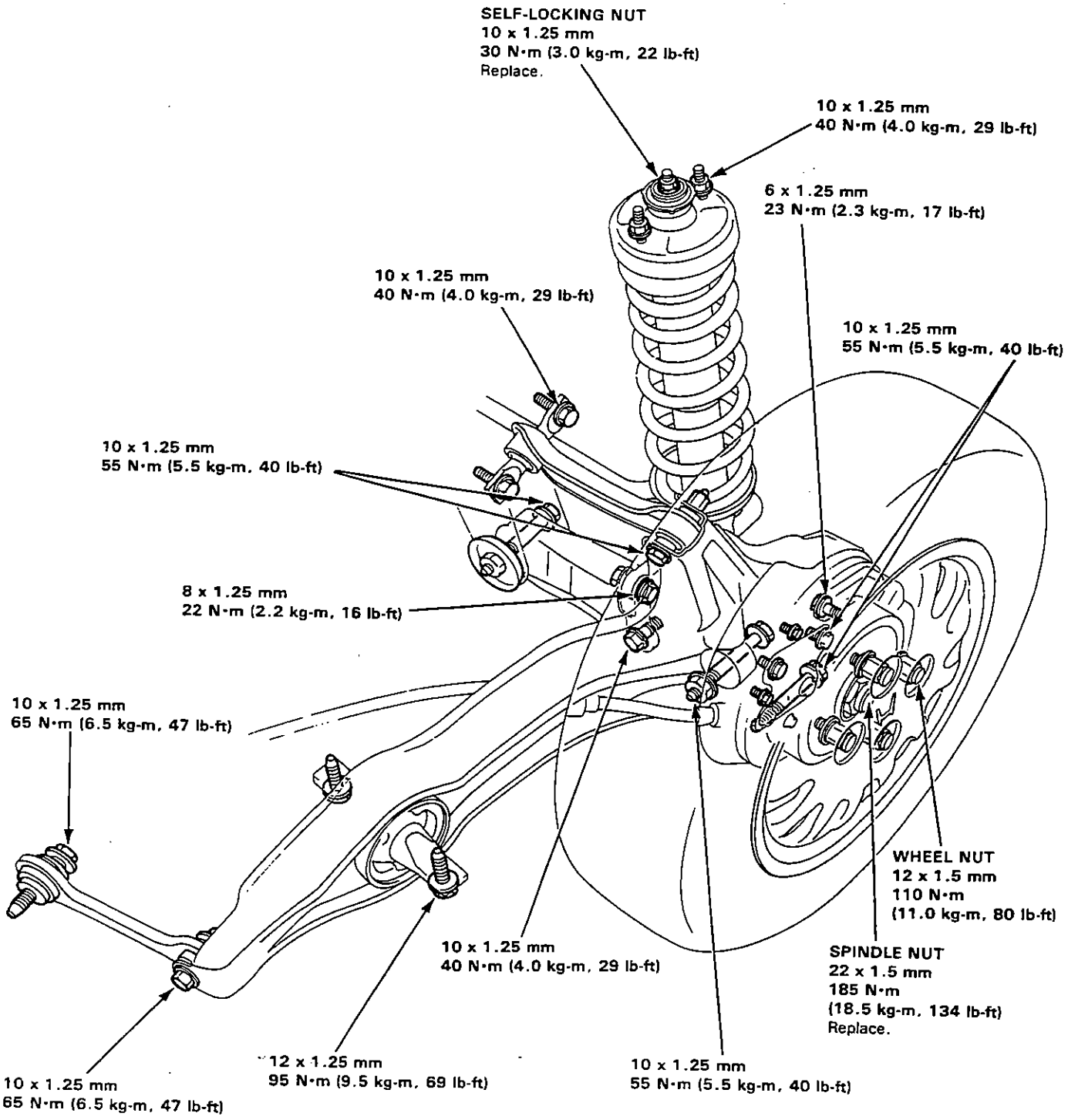


7. Secure the damper assembly to the frame with the 10 mm locking nuts.

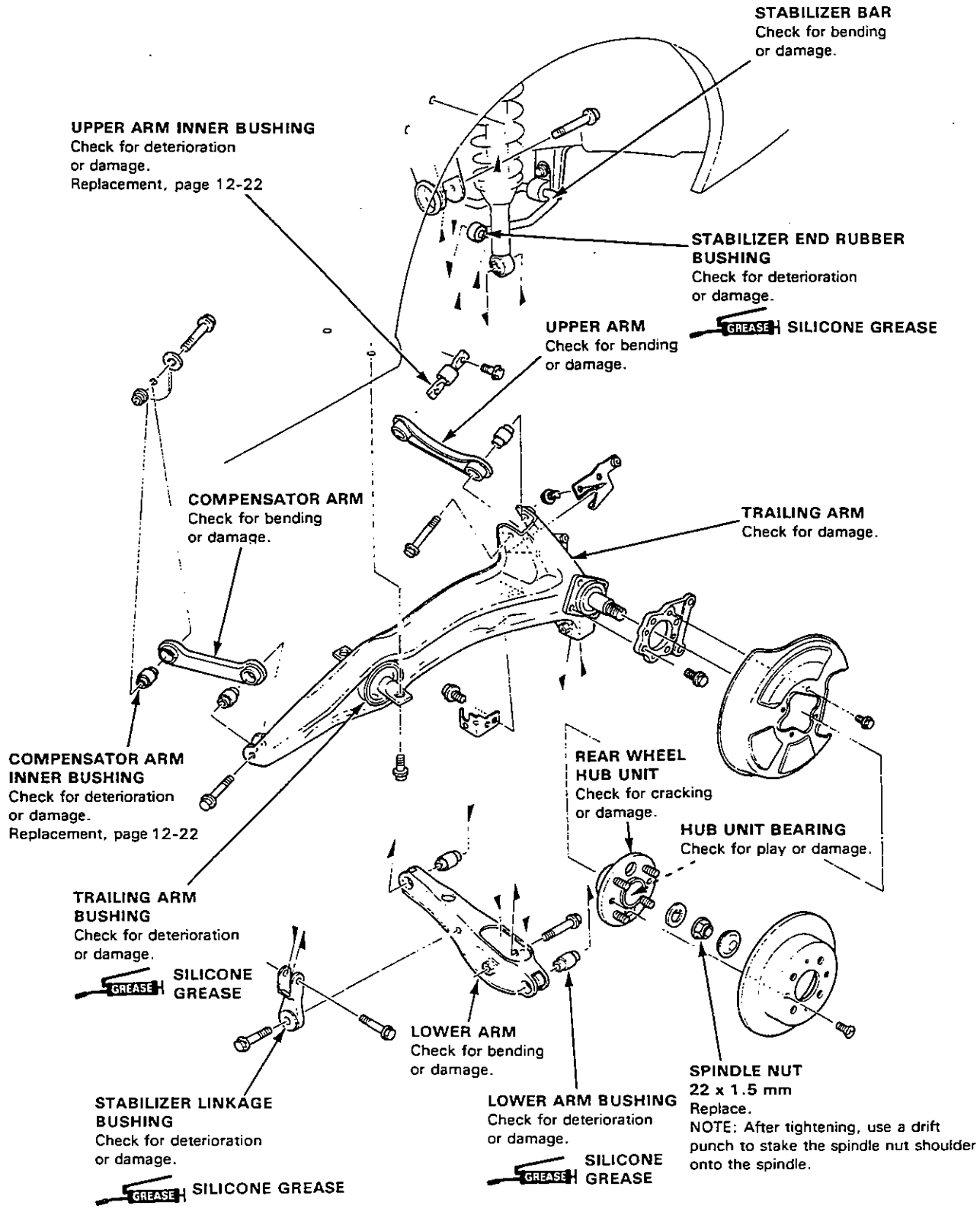


Rear Suspension

Torque Specifications



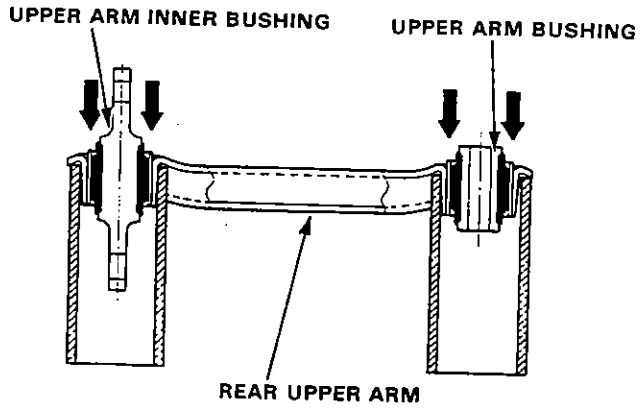
CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.


STABILIZER BAR
Check for bending or damage.
UPPER ARM INNER BUSHING
Check for deterioration or damage.
Replacement, page 12-22
STABILIZER END RUBBER BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
UPPER ARM
Check for bending or damage.
COMPENSATOR ARM
Check for bending or damage.
TRAILING ARM
Check for damage.
COMPENSATOR ARM INNER BUSHING
Check for deterioration or damage.
Replacement, page 12-22
REAR WHEEL HUB UNIT
Check for cracking or damage.
HUB UNIT BEARING
Check for play or damage.
TRAILING ARM BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
LOWER ARM
Check for bending or damage.
SPINDLE NUT
22 x 1.5 mm
Replace.
NOTE: After tightening, use a drift punch to stake the spindle nut shoulder onto the spindle.
STABILIZER LINKAGE BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
LOWER ARM BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE

Rear Suspension

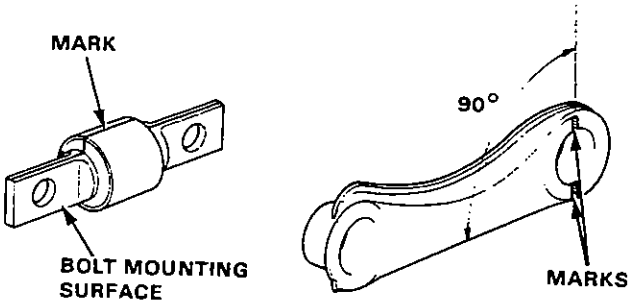
Upper Arm Bushing Replacement

1. Remove the upper arm bushing and inner bushing as shown.



2. Mark a scribe line on the upper arm inner bushing so that it is in line with the bolt mounting surface.

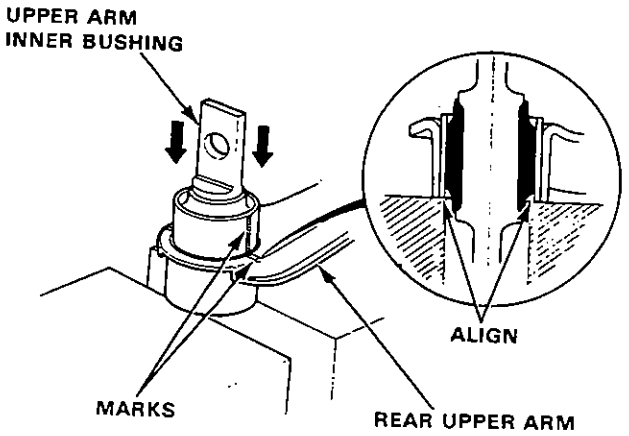
3. Mark on the upper arm at two points so that they are in line and make a right angle with the arm as shown in the drawing.



4. Drive in the upper arm inner bushing with the marks aligned.

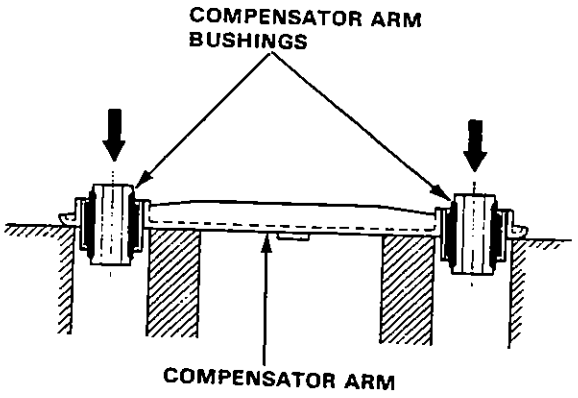
5. Drive the upper arm bushing into the upper arm.

   NOTE: Drive in the upper arm bushing and inner bushing until their leading edges are flush with the upper arm.



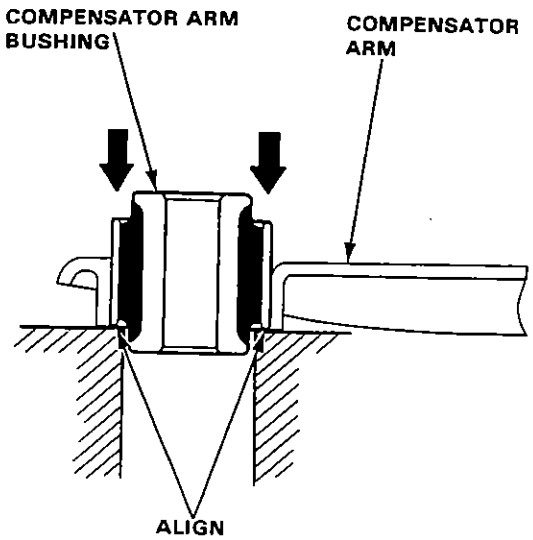
Compensator Arm Bushing Replacement

1. Drive the compensator arm bushing out of the compensator from the direction indicated.



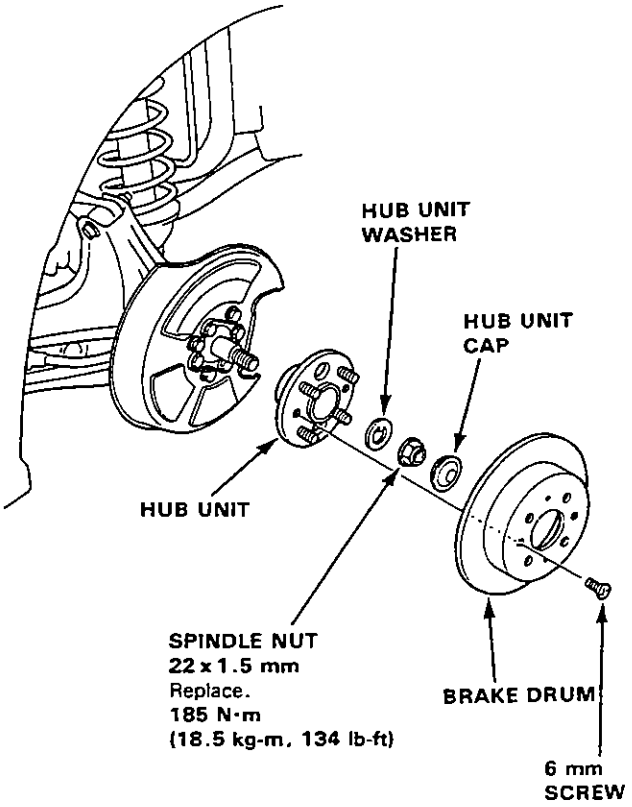
2. Drive in the compensator arm bushings from the direction indicated.

   NOTE: Drive in the compensator arm bushings so that their leading edges are flush with the compensator arm.



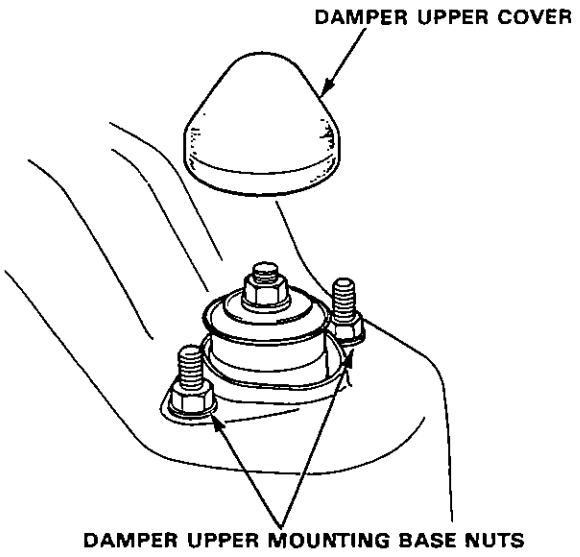
Hub Unit Bearing Replacement

1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel, two 6 mm screws and brake disc.
   NOTE: If the brake disc is difficult to remove, install 8 mm bolts into the threaded and tighten them.
3. Remove the hub unit cap unstake the spindle nut, then loosen the spindle nut.
4. Remove the hub unit and hub unit bearing.

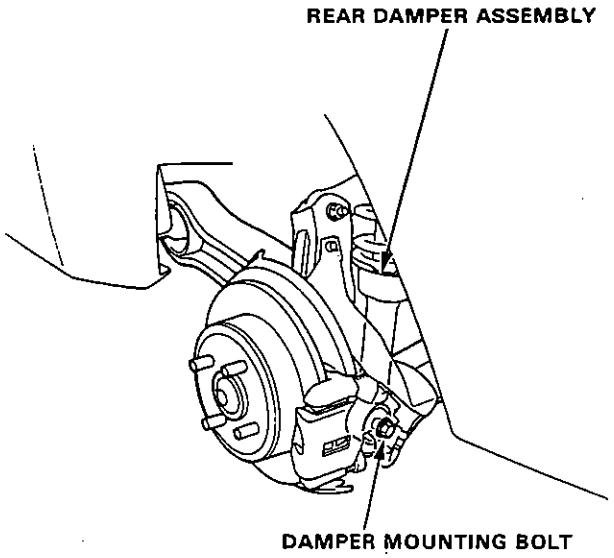


Damper Removal

1. Jack up the rear of car and support on safety stands in proper locations.
2. Remove the damper upper cover at the rear seat lining.
3. Remove the damper upper mounting base nuts.



4. Remove the damper mounting bolt.
5. Lower the lower arms and remove the damper assembly.

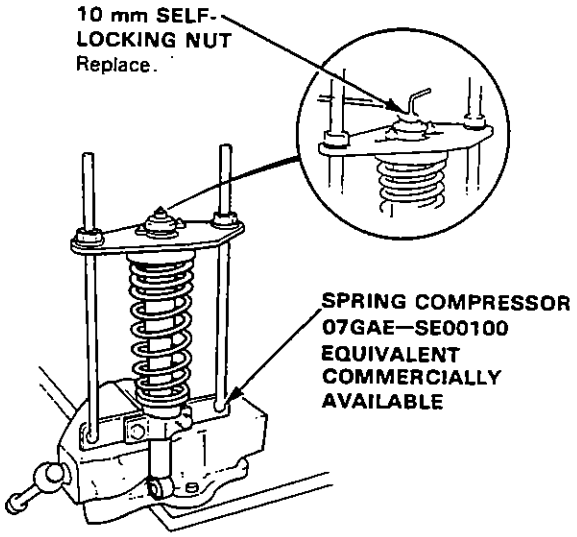


Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions.

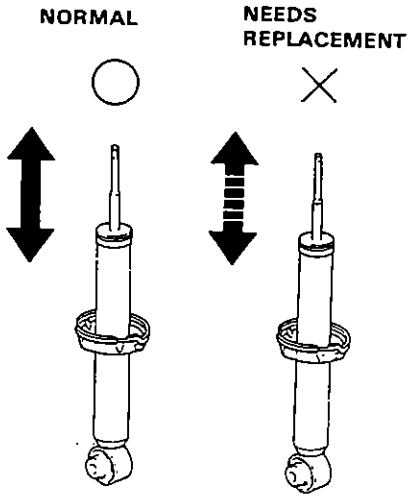
   CAUTION: Do not compress the spring more than necessary to remove the 10 mm self locking nut.

2. Remove the 10 mm self locking nut from the damper assembly.



3. Remove the spring compressor and disassemble the damper as shown on the next page.

4. Check for smooth operation through a full stroke, both compression and extension.



5. Also check for smooth operation in soft strokes of 5—10 cm (2—4 in). Replace the damper if resistance is uneven or jerky.

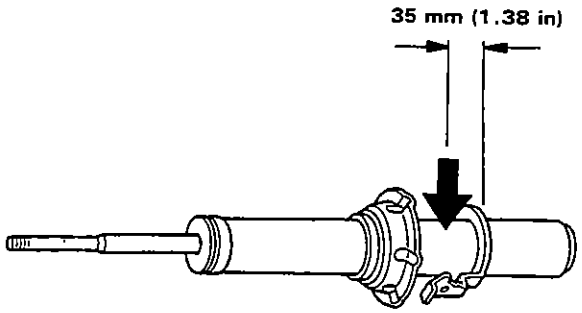
6. Check for oil leaks, abnormal noises or binding during these tests.

Damper Disposal

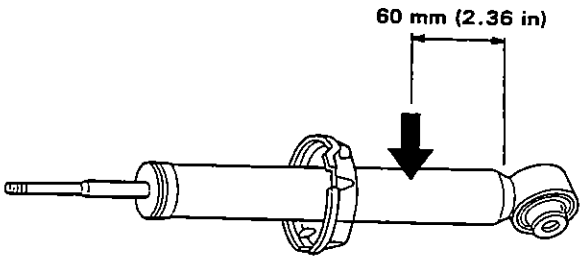
WARNING **The front and rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal to prevent explosion and possible injury.**

Place the damper on a level surface with its rod extended and drill a holl of 2~3 mm (0.078—0.118 in) diameter in the body to release the gas.

Front Damper

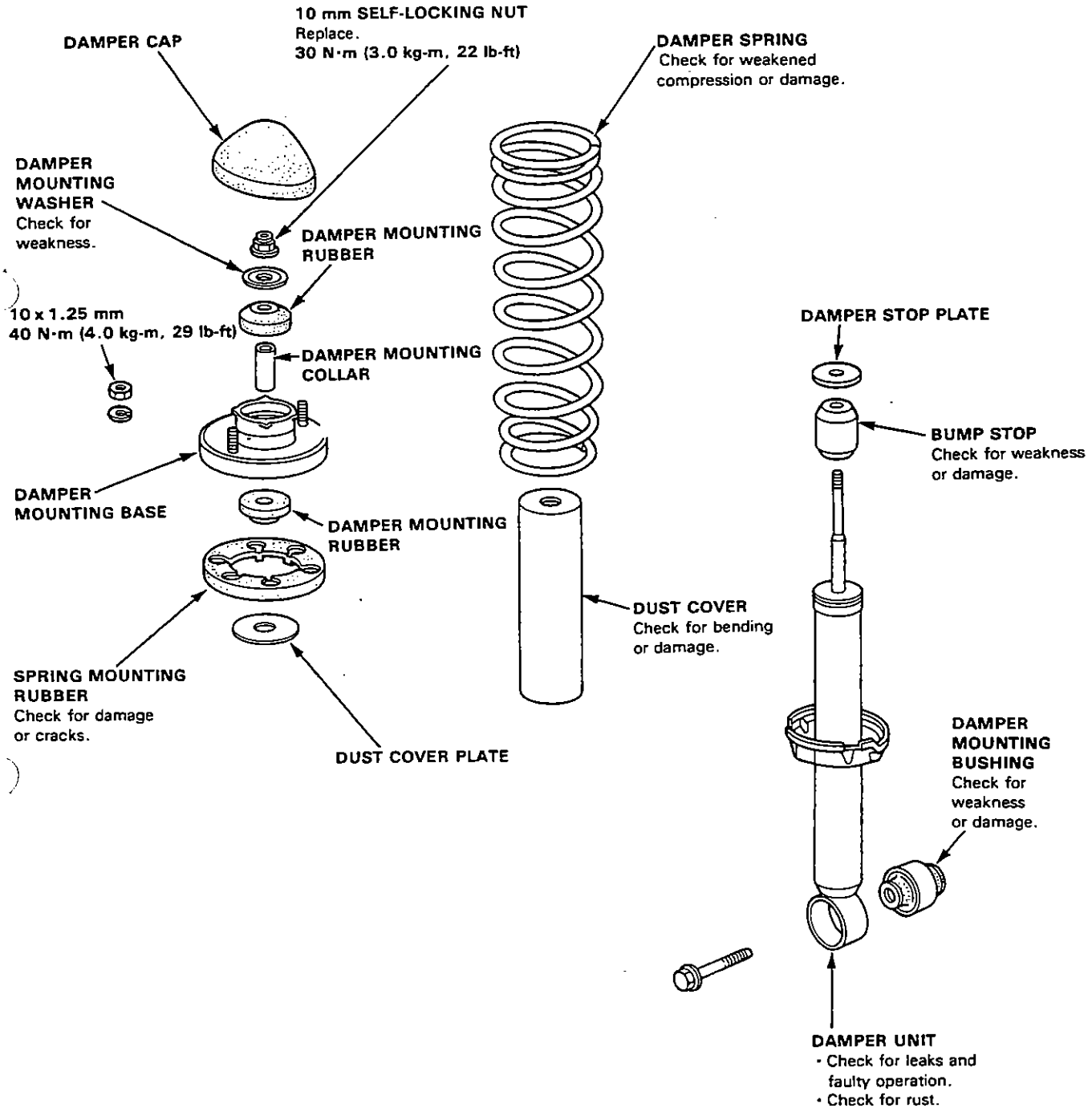


Rear Damper



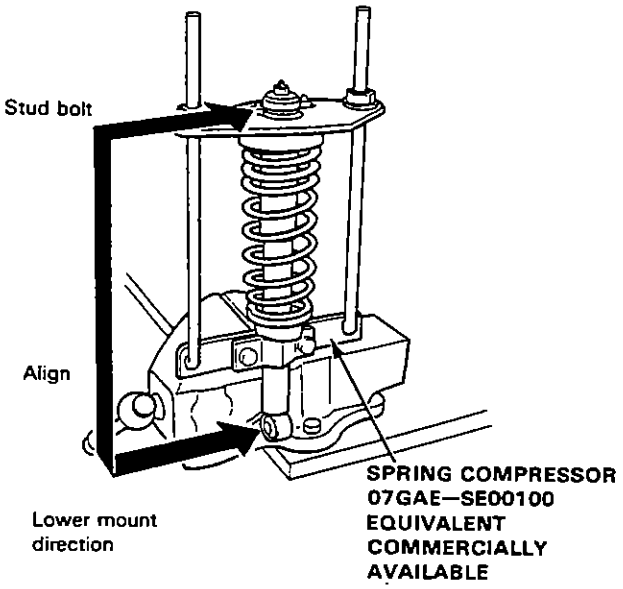
WARNING **Always wear eye protection to avoid getting metal shavings in your eyes when the gas damper pressure is relieved.**

Damper Disassembly/Inspection

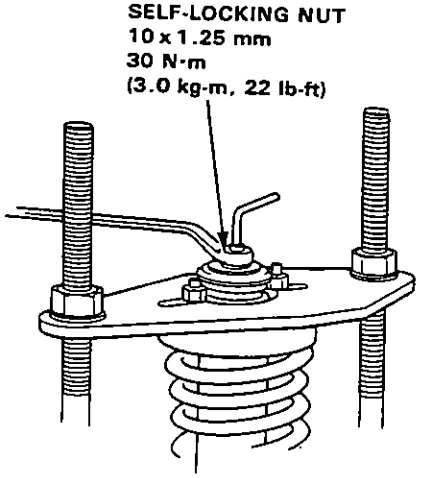


Damper Reassembly

1. Install the spring seat on the damper unit.
2. Install the damper unit, dust cover, damper spring, bump stop, bump stop plate, damper mounting collar, damper mounting rubber and spring mounting rubber in the spring compressor.
3. Install the damper mounting base on the damper unit so that the upper stud bolts are in line with the direction of the lower mount.

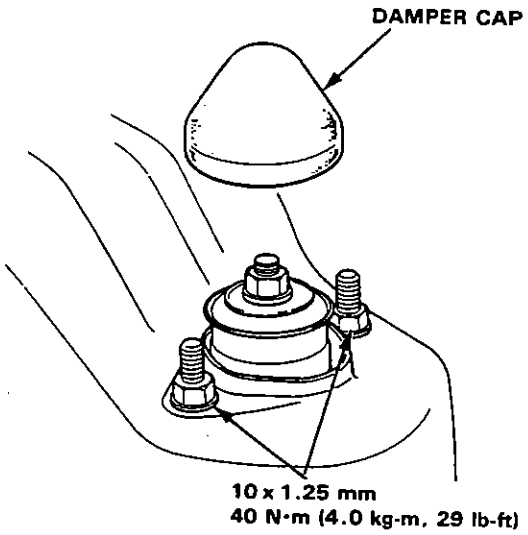


4. Compress the coil spring.
5. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self-locking nut.
6. Hold the damper shaft and tighten the 10 mm self-locking nut.



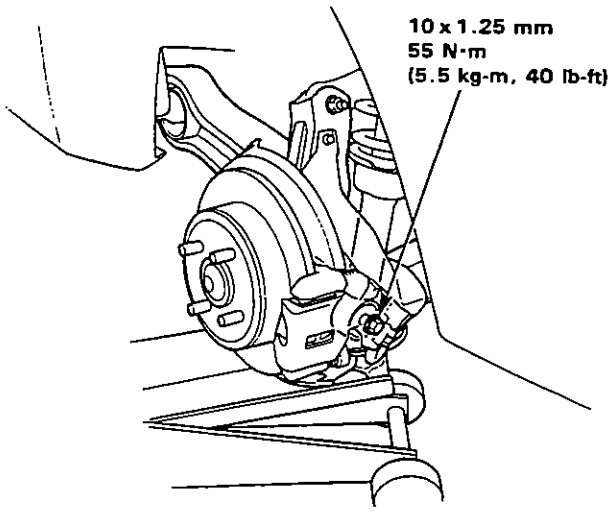
Damper Installation

1. Lower the rear suspension and set the damper unit in its original position.
2. Loosely install the damper unit mounting bolt.
3. Install the damper upper base mounting nuts and tighten them.



4. Install the damper cap.
5. Raise the rear suspension with a floor jack until the weight of the car is on the damper.

   NOTE: The damper mounting bolts should be tightened with the damper under vehicle load.
6. Tighten the damper mounting bolt.



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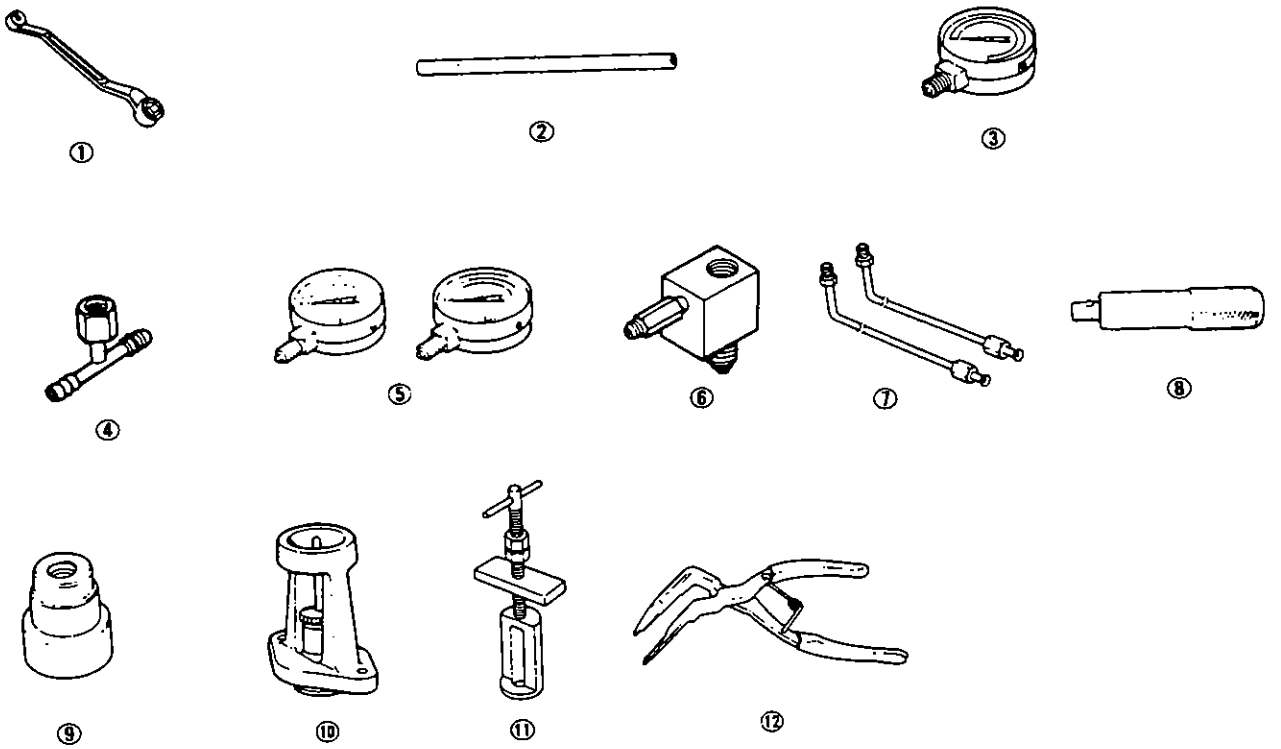
Parking Brake

Disassembly and Reassembly ...13–38

Special Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07921—0010001	Flare Nut Wrench	1	
②	07510—6340300	Vacuum Joint Tube A	1	
③	07404—5790300	Vacuum Gauge	1	
④	07410—5790500	Tube Joint Adaptor	1	
⑤	07406—5790200	Pressure Gauges	2	
⑥	07410—5790100	Pressure Gauge Attachment C	2	
⑦	07510—6340100	Pressure Gauge Joint Pipe	2	
⑧	07749—0010000	Driver	1	
⑨	07947—6890300	Driver Attachment C	1	
⑩	07GAG—SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE—SG00100	Brake Spring Compressor	1	
⑫	07914—SA50001	Snap Ring Pliers	1	

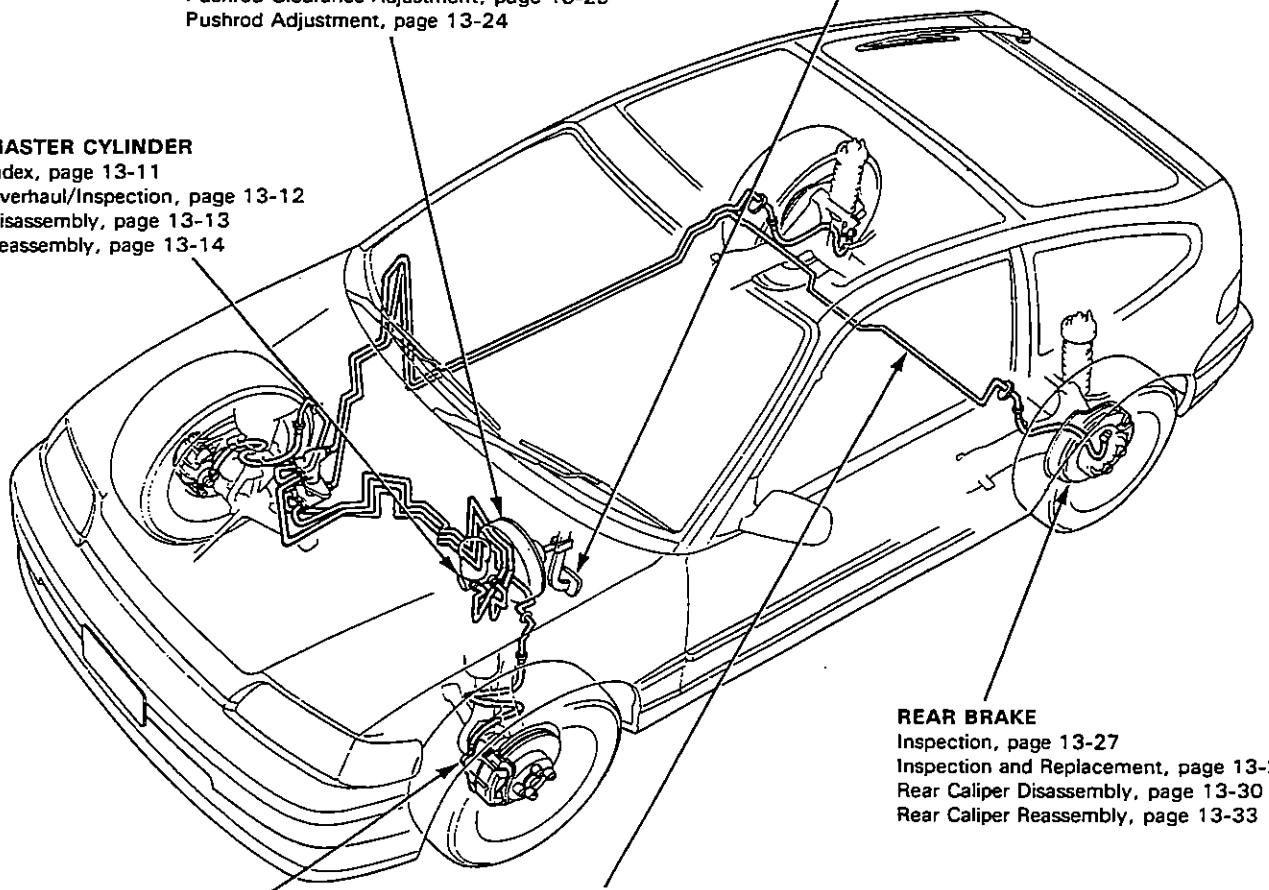


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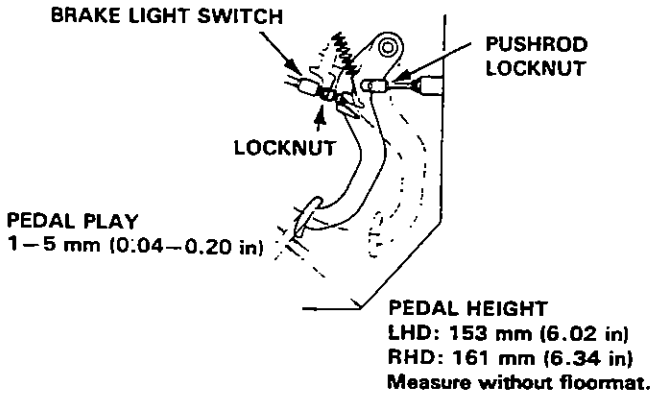
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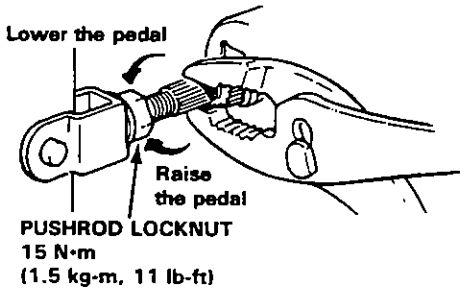
Pedal Height

Adjustment

1. Loosen brake light switch locknut and back off brake light switch until it is no longer touching brake pedal.

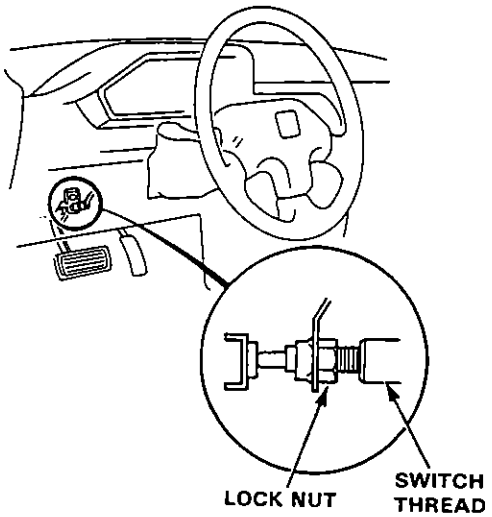


2. Loosen pushrod locknut and screw pushrod in or out with plier until the pedal height from the floor is 153 mm (6.02 in). After adjustment, tighten the locknut firmly.



3. Screw in the brake light switch until its plunger is fully depressed (threaded end touching pad on pedal arm). Then back off switch 1/2 turn and tighten locknut firmly.

CAUTION: Check that brake lights go off when pedal is released.



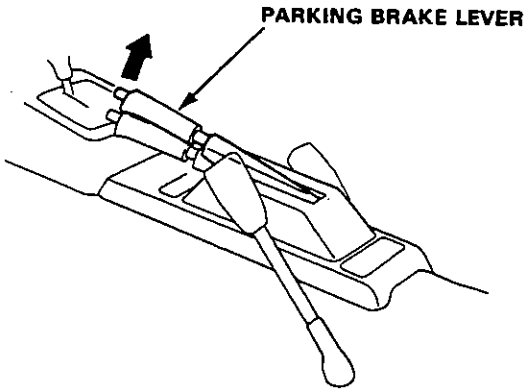
Parking Brake

Adjustment

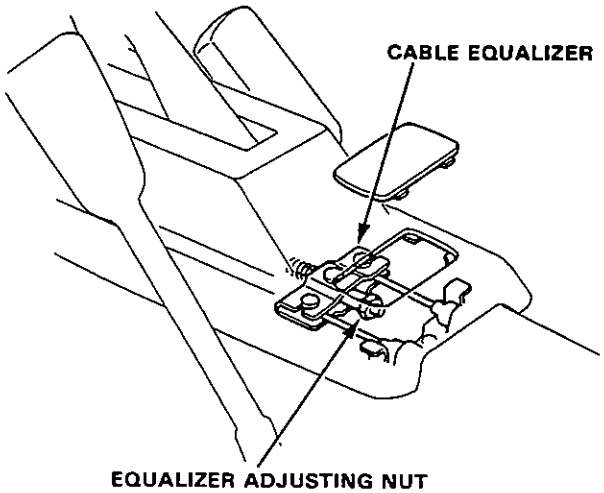
NOTE:
- Be sure the rear brakes are properly adjusted before adjusting the parking brake.
- Incorrectly adjusted rear brakes affect the parking brake adjustment.
- If rear brake adjustment is required repair the rear adjuster first.
- If doing this adjustment after brake drum installation, start the engine and depress the brake pedal several times to set self-adjusting brakes before adjusting parking brake cable.

WARNING Block the front wheels before jacking up the rear of the car.

1. Raise the rear wheels off the ground.
2. Pull the parking brake lever up one notch.



3. Tighten the equalizer adjusting nut until rear wheels drag slightly when turned.
4. Release brake lever and check that rear wheels do not drag when turned. Readjust if necessary.
5. With the equalizer properly adjusted, the rear brakes should be fully applied when the parking brake lever is pulled up 6 to 10 clicks.



Inspection

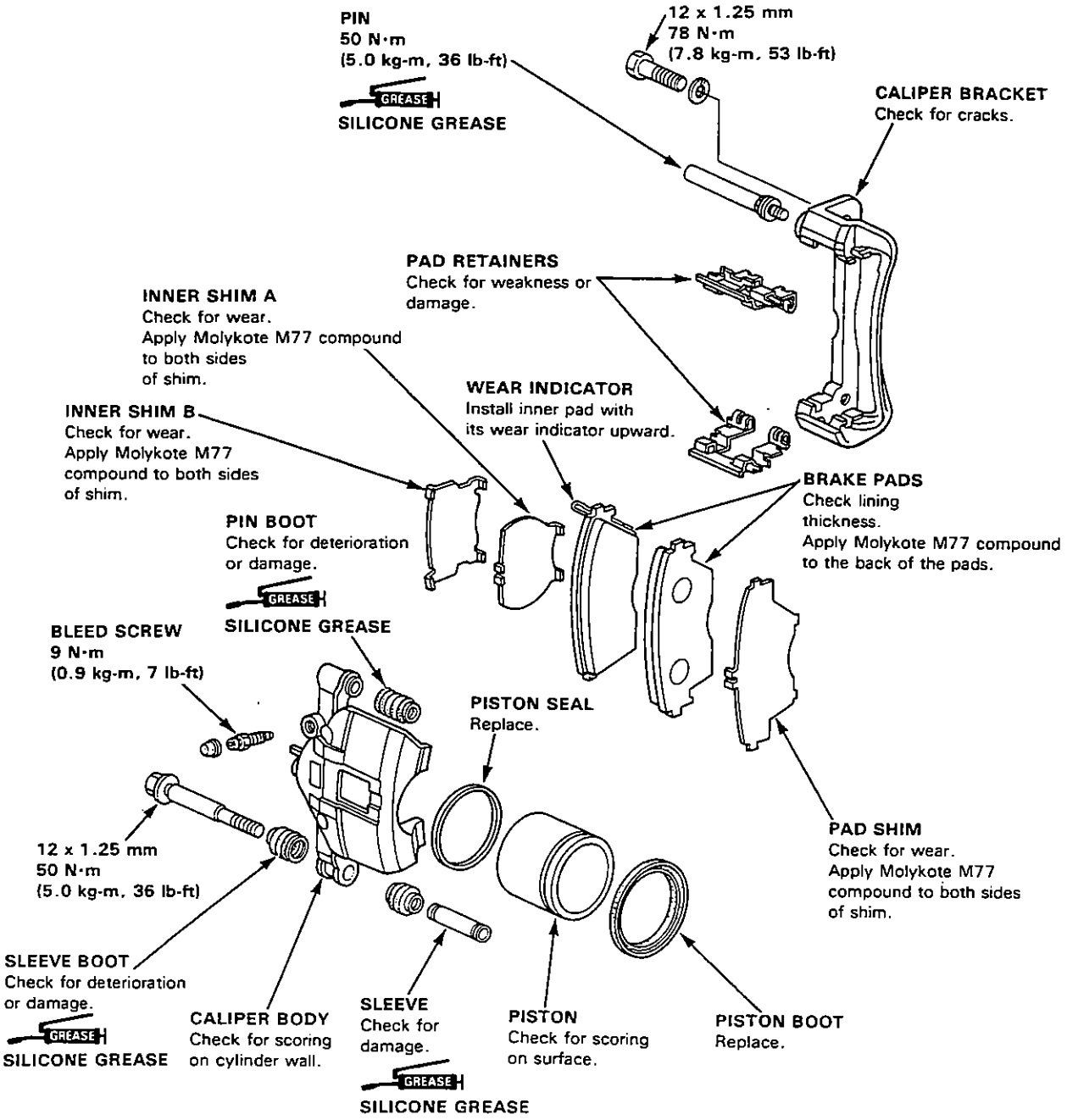
WARNING **Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.**

CAUTION:

- **Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **To prevent spills, cover the 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 mix different brands of brake fluid as they may not be compatible.**
- **Do not reuse the drained fluid.**

NOTE:

- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.

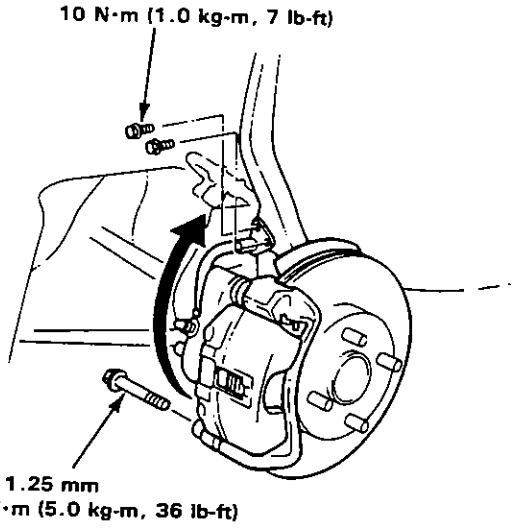


Brake Pad

Inspection/Replacement

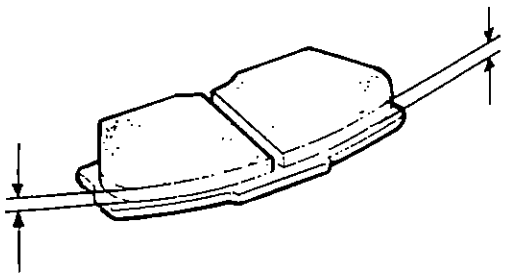
WARNING **Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.**

1. Remove the front wheels and support the front of car on safety stands.
2. Remove the brake hose clamp bolts from the knuckle.
3. Remove caliper bolt and pivot caliper up out of the way.



4. Remove the pad shims, pad retainers and pads.
5. Using a vernier caliper, measure the thikness of each brake pad lining.

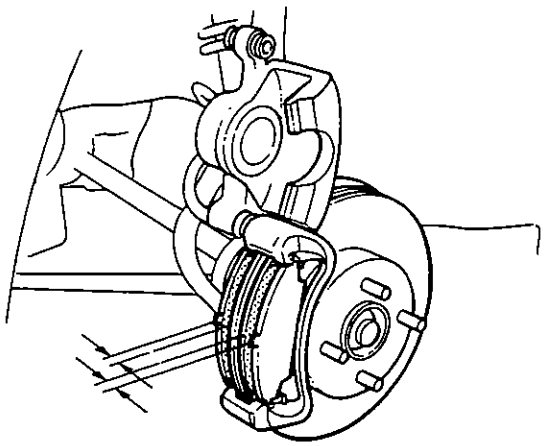
Brake Pad Thickness:
Standard: 9.0 mm (0.35 in)
Service Limit: 3.0 mm (0.12 in)



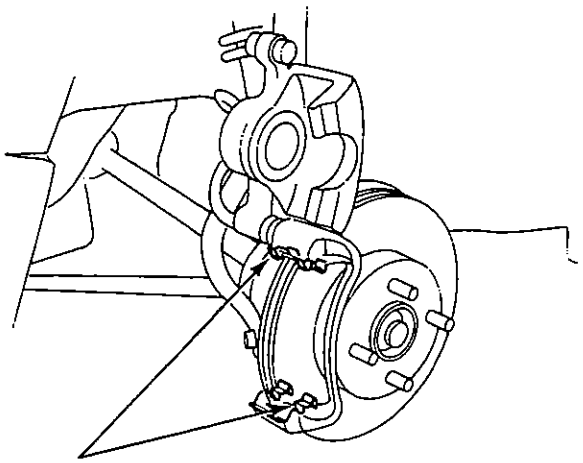
NOTE: Measurement does not include pad backing thickness.

6. If lining thickness is less than service limit, replace both pads as a set.

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.



7. Clean the caliper thoroughly; remove any rust, and check for grooves or cracks.
8. Install the pad retainers.

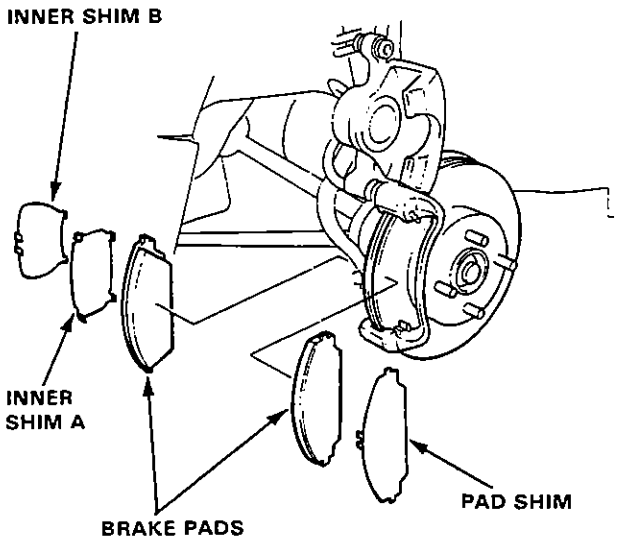


PAD RETAINERS

9. Apply Molykote M77 compound to both sides of the pad shims and back of the pads.

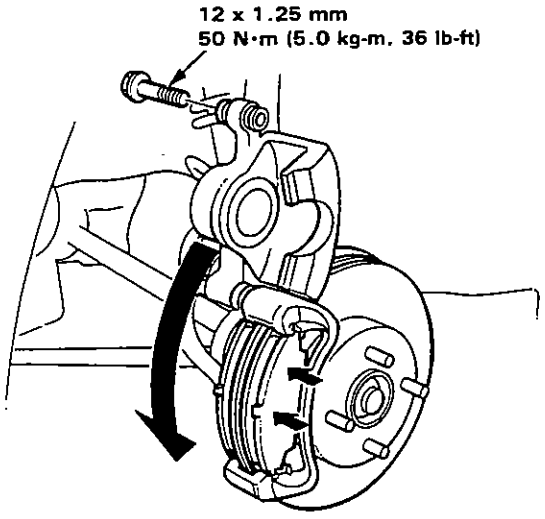
10. Install the brake pads and pad shims.

    NOTE: Install the pad with the wear indicator on the inside.



11. Push in the piston so that the caliper will fit over the pads. Keep the boot in position to prevent damaging the boot when pivoting the caliper down.

12. Pivot the caliper down into position, then install the bolt B and tighten to 45 N·m (4.5 kg-m, 33 lb-ft).



13. Install the brake hose clamp bolts to the Knuckle.
14. Depress the brake pedal several times to make sure the brakes work, then road-test.

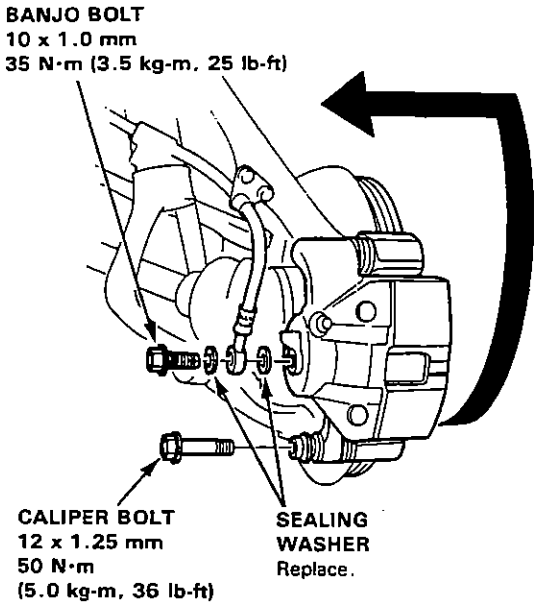
Disassembly

CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish; Wash spilled brake fluid off immediately with clean water.**

1. Remove the banjo bolt and disconnect the brake hose from the caliper.

2. Remove the caliper bolt, then remove the caliper.

   NOTE: Avoid damaging the splash guard.



(cont'd)

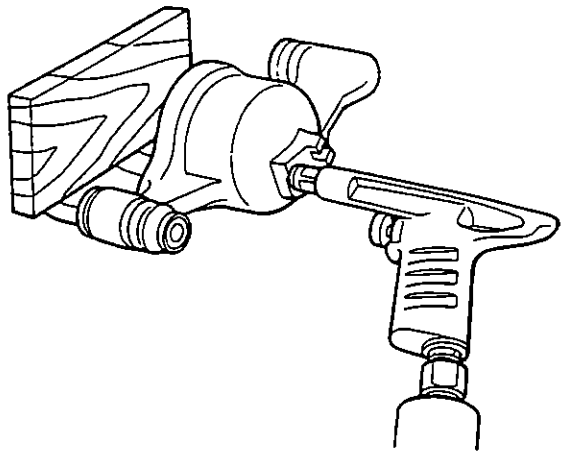
Brake Caliper

Disassembly (cont'd)

3. Place a wooden block or shop rag in the caliper opposite the piston, then carefully remove the piston from the caliper by applying air pressure through the brake line hole.

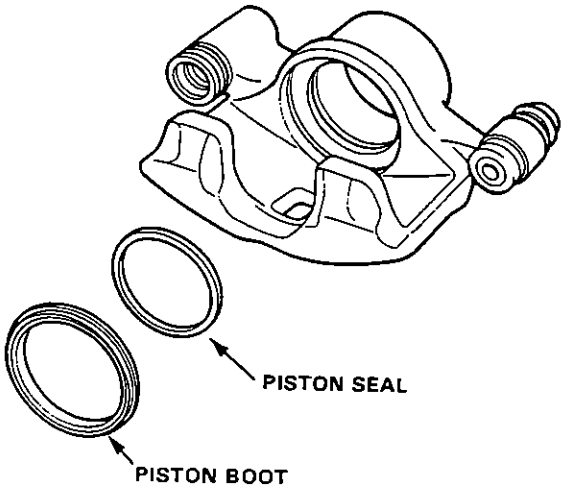
WARNING

- **Do not place your fingers in front of the piston.**
- **Do not use high air pressure; use the approved 30 PSI nozzle.**



4. Remove the piston boot and piston seal.

CAUTION: Take care not to damage the cylinder.



Reassembly

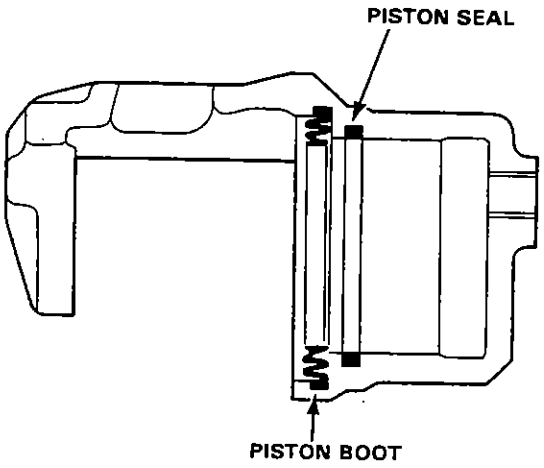
CAUTION:

- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish.**
- **Wash spilled brake fluid off immediately with clean water.**

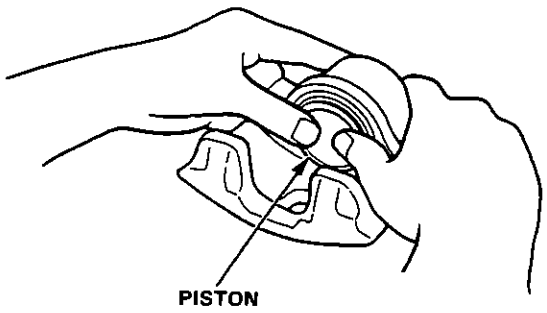
1. Clean the piston and caliper bore with brake fluid and inspect for wear or damage.

2. Apply brake cylinder grease to a new piston seal, then install the piston seal in the cylinder groove.

3. Install the piston boot.



4. Lubricate the caliper cylinder and piston with brake fluid, then install the piston in the cylinder with the dished end facing in.



5. Reinstall the caliper in the reverse order of removal.

6. Fill the brake reservoir up and bleed the brake system (page , 13-10).

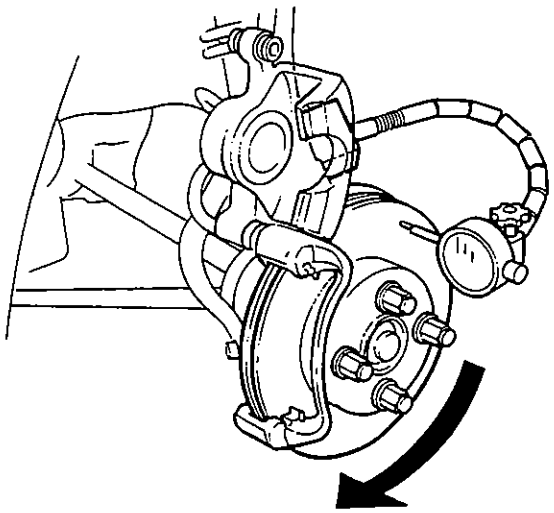
Brake Disc

Run-Out Inspection

1. Remove the front wheels, and support the front of the car on safety stands.
2. Remove caliper pin bolt, then pivot the caliper up out of the way on the caliper pin bolt, and remove the pads and pad retainers.
3. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.
4. Use the lug nuts to hold the disc securely against the hub, then mount a dial indicator as shown.

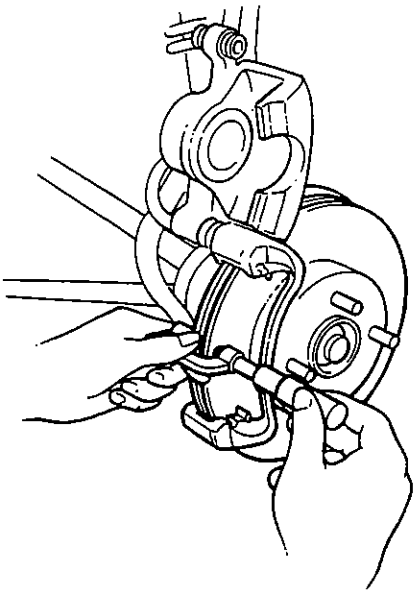
   Brake Disc Runout:
   Service Limit: 0.15 mm (0.006 in)

5. If the disc is beyond the service limit, refinish the rotor 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.



Thickness and Parallelism Inspection

1. Remove the front wheels, and support the front of car on safety stands.
2. Move the caliper and pads out of the way as described in the preceding column.
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in.) in from the outer edge of the disc.



Brake Disc Thickness:
Standard: 19 mm (0.75 in)
Max: Refinishing Limit 17 mm (0.67 in)

Brake Disc Parallelism:
The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in.)

4. If the disc is beyond the limits for thickness or parallelism, refinish the rotor 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: A new disc should be ground if its run-out is greater than 0.10 mm (0.004 in.).

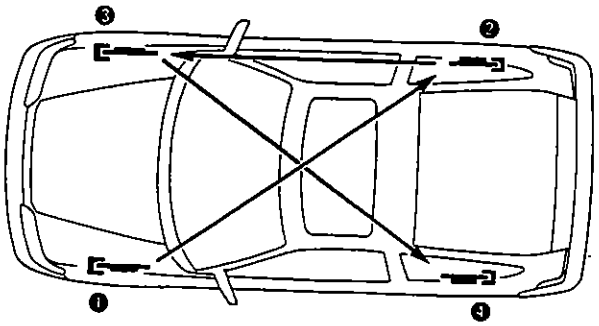
Bleeding

CAUTION

- **Make sure all parts are clean before reassembly.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish; Wash spilled brake fluid off immediately with clean water.**

NOTE: The reservoir on the master cylinder must be full at the start of bleeding procedure, and checked after bleeding each wheel cylinder. Add fluid as required. Use only DOT 3 brake fluid.

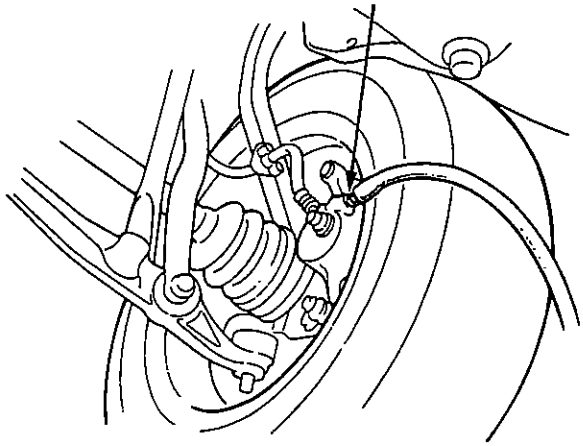
Bleeding Sequence



1. Have someone slowly pump the brake pedal several times, then apply steady pressure.
2. Loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
3. Repeat the procedure for each wheel in the sequence shown above, until air bubbles no longer appear in the fluid.
4. Check brake performance by road testing.

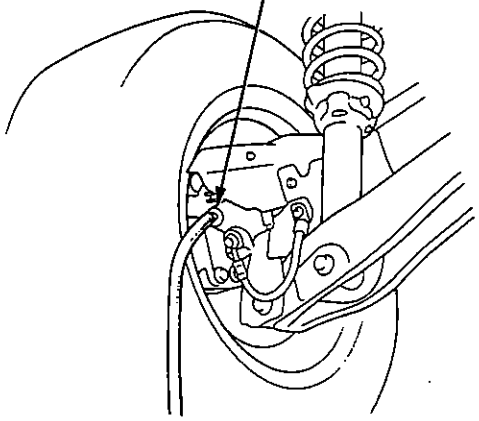
FRONT

FRONT BLEED SCREW
9 N·m (0.9 kg-m, 7 lb-ft).



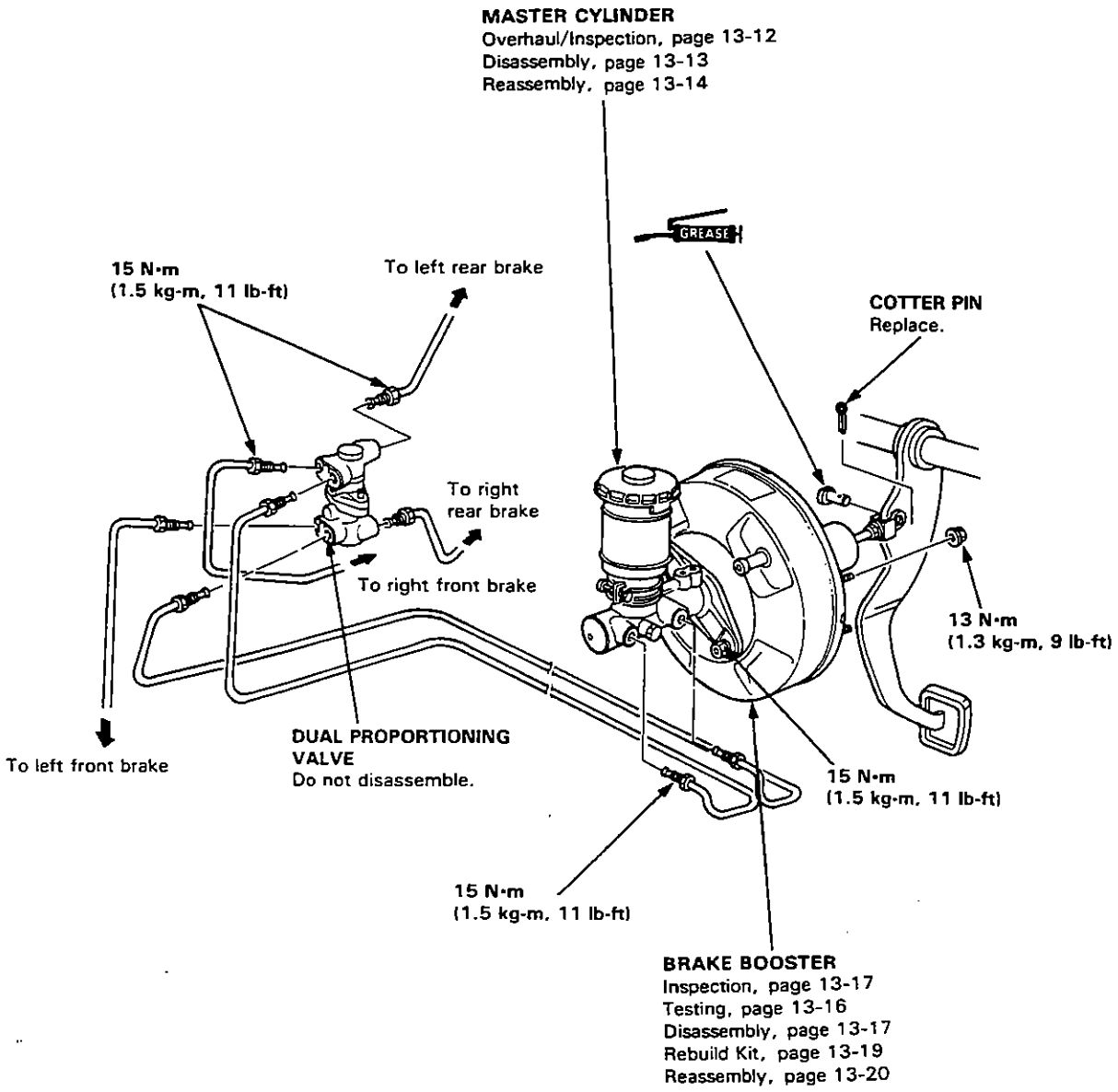
REAR

REAR BLEED SCREW
9 N·m (0.9 kg-m, 7 lb-ft)



Master Cylinder Booster

Index



Master Cylinder

Overhaul/Inspection

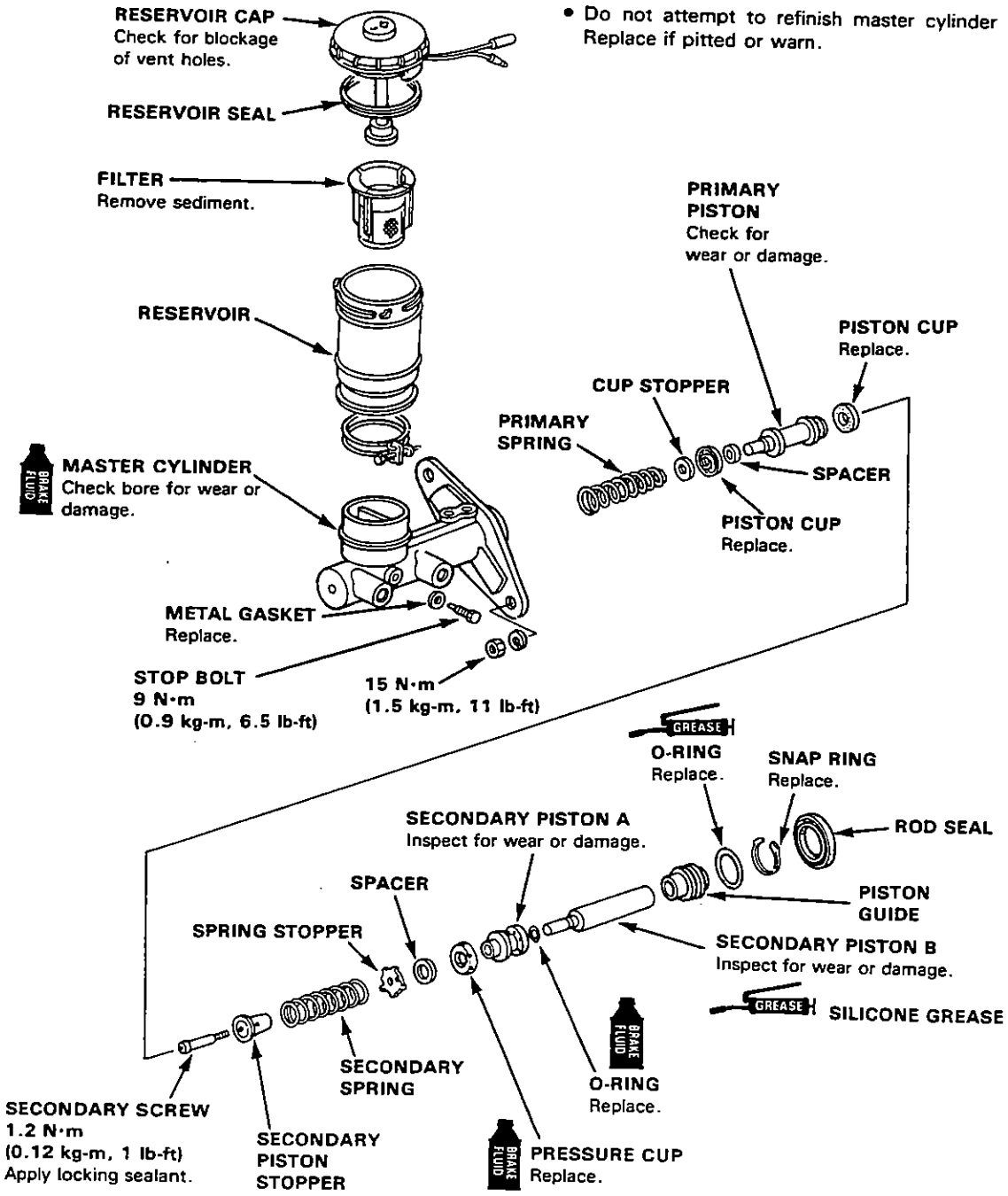
CAUTION:

- Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at once and rinse well with clean water.
- BRAKE FLUID This symbol represents brake fluid. Use only DOT 3 brake fluid.
- GREASE Use only HONDA cylinder grease (P/N 08733–B020E) or equivalent.

- Carefully inspect the bore of the master cylinder for pits, scratches or scoring.
- Replace the master cylinder if the bore is damaged or worn. Do not hone or attempt to refinish the bore.

NOTE:

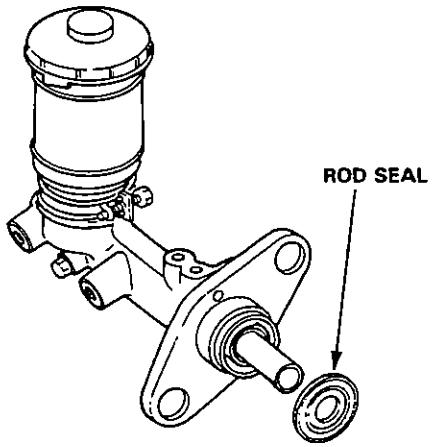
- Wash all removed parts in brake fluid and blow dry with compressed air. Blow open all passages and fluid ports.
- Replace all rubber parts with new ones whenever the cylinder is disassembled.
- To prevent damage, liberally apply clean brake fluid to the piston cups before installation. Use special tool to install the cups.
- Do not attempt to refinish master cylinder bore. Replace if pitted or warn.



Disassembly

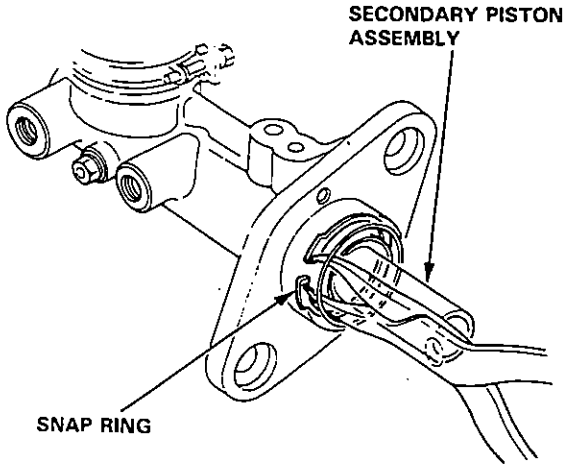
CAUTION:
- **Avoid spilling fluid on painted, plastic or rubber parts as it may damage the finish.**
- **Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.**
- **Use only new clean brake fluid.**
- **Clean all parts thoroughly with brake fluid. Blow out all passages with compressed air.**
- **Do not allow foreign matter to enter the system.**
- **Be careful not to bend or damage the brake pipe when removing the master cylinder.**

1. Remove the rod seal.

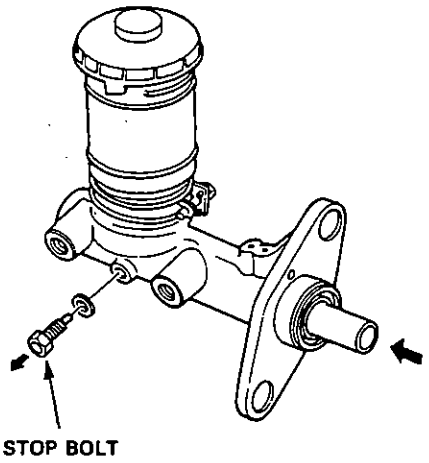


2. Push the secondary piston assembly, then remove the snap ring.

CAUTION: Avoid damaging the master cylinder wall.



3. Remove the stop bolt while pushing in the secondary piston assembly.

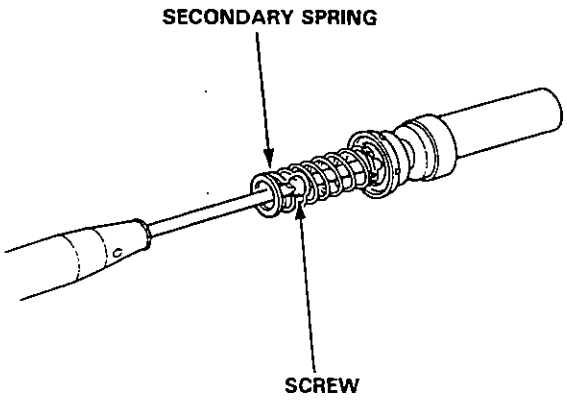


4. Remove the piston guide, secondary piston assembly and primary piston assembly.

NOTE: If the primary piston assembly is difficult to remove,apply compressed air from the primary piston side outlet.

CAUTION:
- **Do not use high pressure air or bring the nozzle too close to the inlet.**
- **Place a shop rag over the master cylinder to prevent the primary piston from becoming a projectile.**

5. Remove the screw from the secondary piston assembly, then remove the secondary spring.



6. Clean all parts with brake fluid.

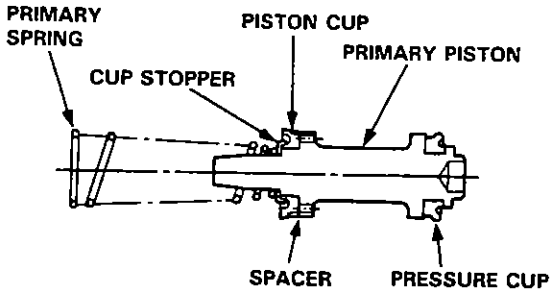
Master Cylinder

Reassembly

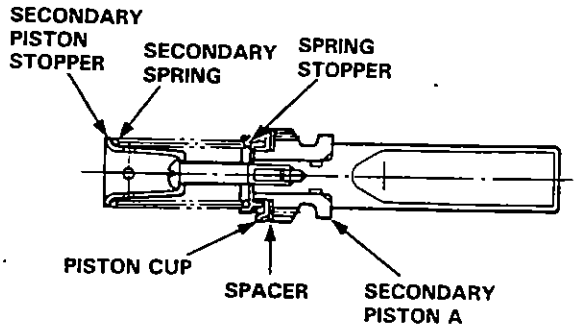
CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish. Wash spilled brake fluid off immediately with clean water.**

1. Lubricate new piston assemblies with brake fluid, then fit them together.

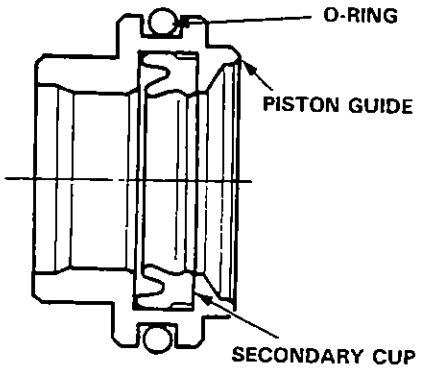
PRIMARY PISTON ASSEMBLY



SECONDARY PISTON ASSEMBLY



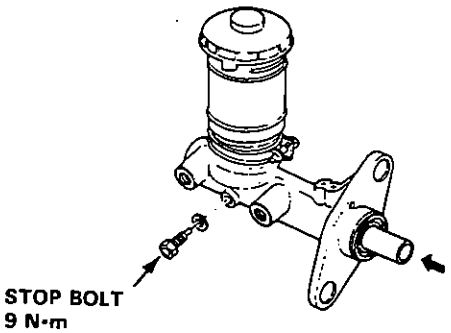
PISTON GUIDE ASSEMBLY



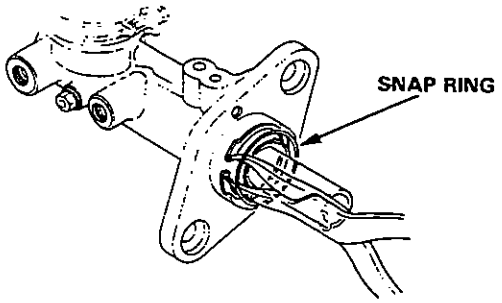
2. Install the piston assemblies in the master cylinder.

   NOTE: To ease assembly, rotate the pistons while inserting.

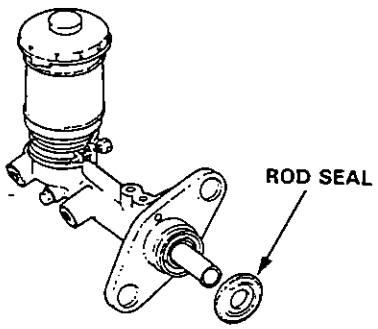
3. Install the stop bolt and new sealing washer while pushing in the secondary piston assembly, then tighten the stop bolt.



4. Install the snap ring while pushing in the secondary piston assembly.



5. Install a new rod seal.



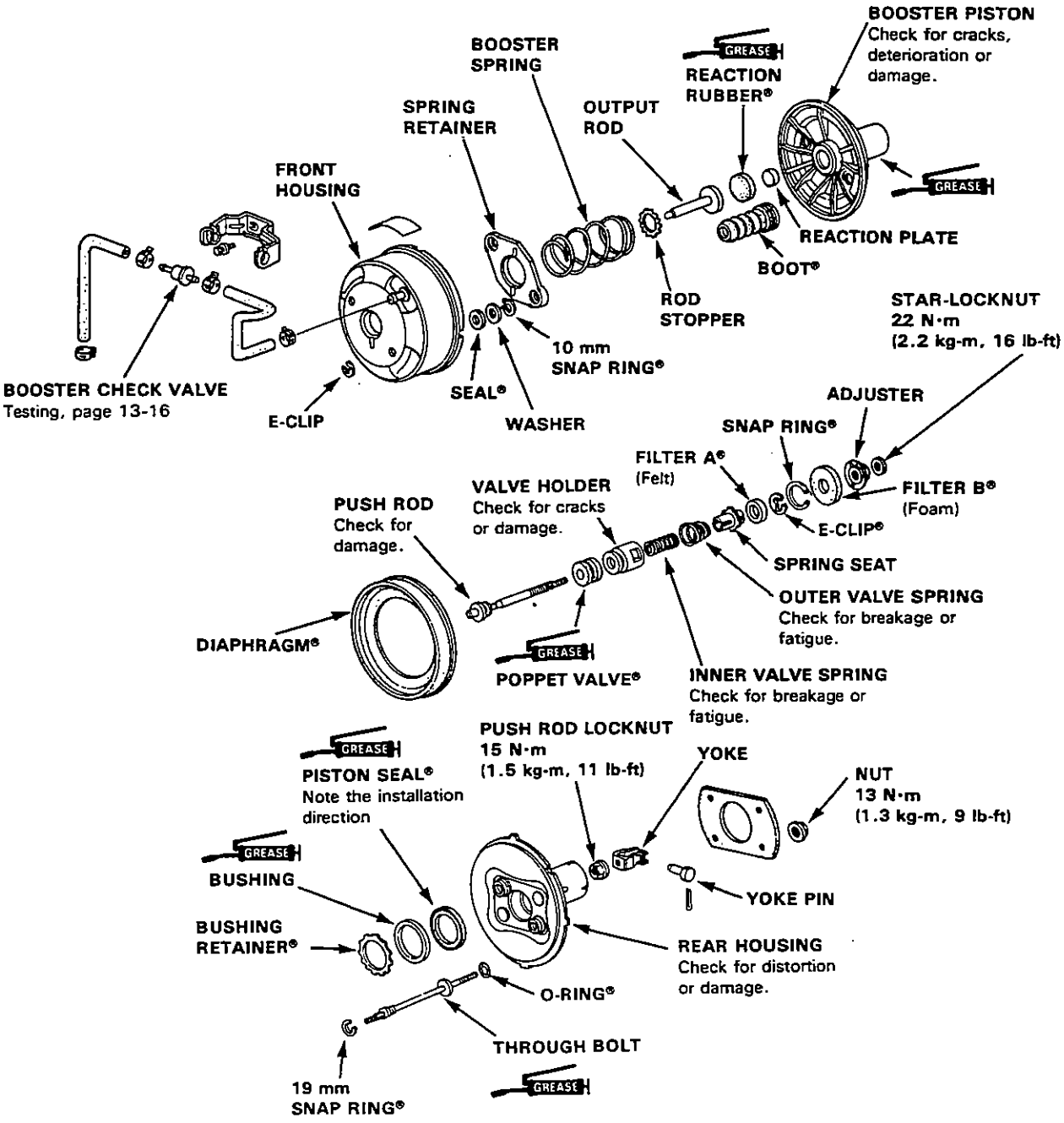
CAUTION: When connecting the brake pipes, make sure that there in no interference between the brake pipes and other parts

Brake Booster

Index and Inspection

Booster testing is on next page.

NOTE:
- Parts marked® are available with rebuild kit and must be replaced whenever disassembled.
- GREASE on this page refers to silicone grease.
- Scribe an aligning mark across the front and rear housings so you can reassemble in their original positions (page 13-17).



Brake Booster

Test

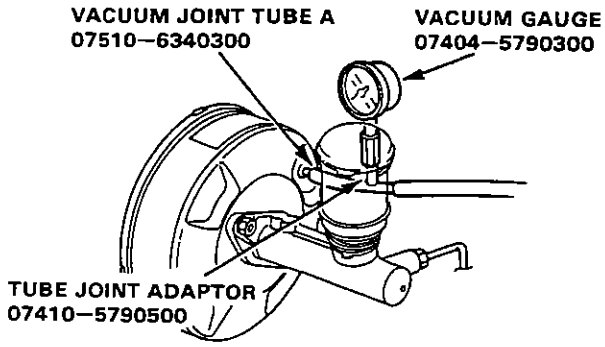
Leak Test

1. Install the Brake Power Kit (07504—6340100) as shown.

2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 300—500 mmHg (11.8—19.7 inHg), then stop the engine.

3. Read the vacuum gauge.

   If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.
   - Check valve
   - Vacuum hose
   - Seals
   - Diaphragm
   - Master cylinder O-ring and cup



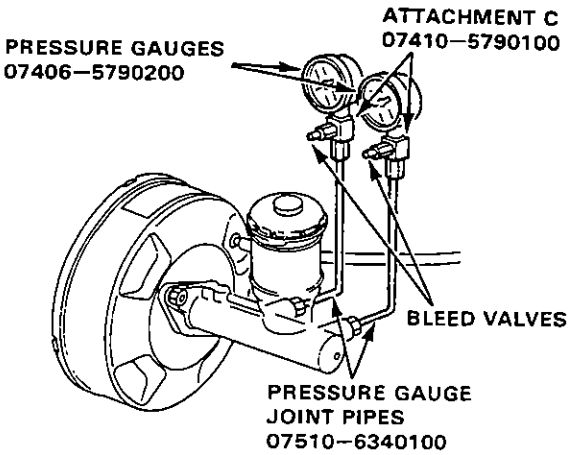
Function Test

1. Install the vacuum gauge as same the leak test.

2. Connect the oil pressure gauges to the master cylinder using the attachments as shown.

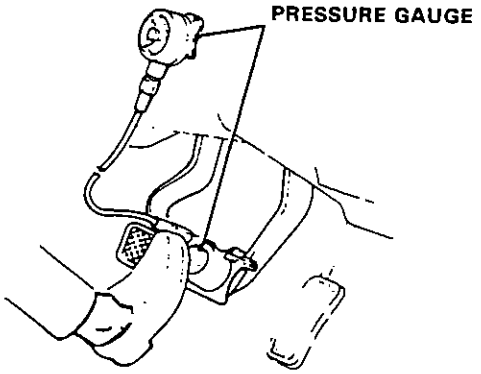
3. Bleed air through the valves.

   CAUTION: Avoid spilling brake fluid on painted, plastic or rubber partsas it may damage the finish.



4. Start the engine.

5. Depress the brake pedal with a 200 N (20 kg, 44 lbs) of pressure. The following pressures should be observed at the pressure gauges in each vacuum.

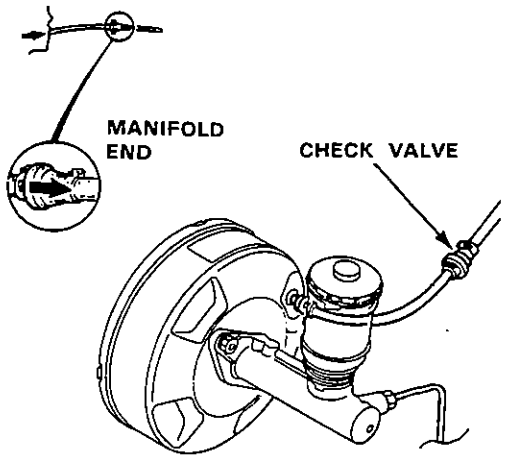


Vacuum mmHg	Line Pressure kpa (kg/cm², psi)
0	1363 (13.9, 198)
300	4511 (46, 654)
500	6610 (67.4, 958)

6. Inspect the master cylinder pistons and cups in the readings do not fall within the limits shown above.

Check Valve Test

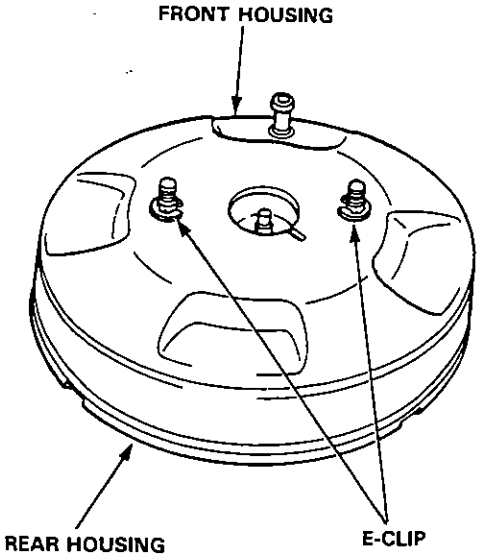
1. Remove the check valve, blow on one end of the hose and then the other; if you can blow through the booster end, but not through the manifold end, the check valve is OK.



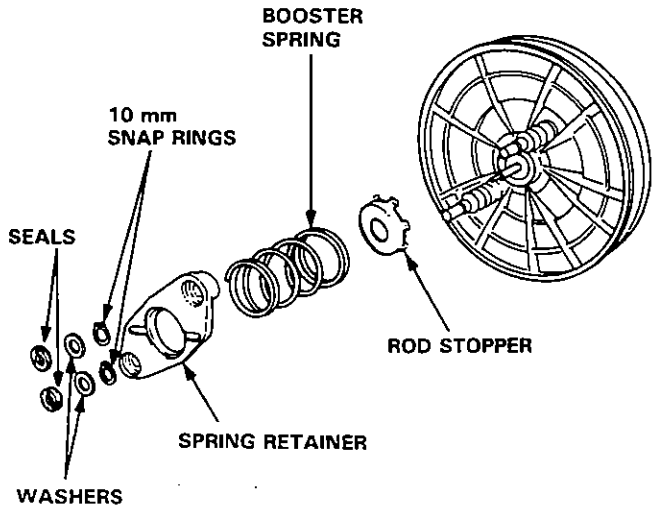
Disassembly

1. Scribe an aligning mark across the front and rear booster housings to ensure proper positioning of parts on reassembly.

2. Remove the E-clips, and separate the front booster housing and the rear booster housing.

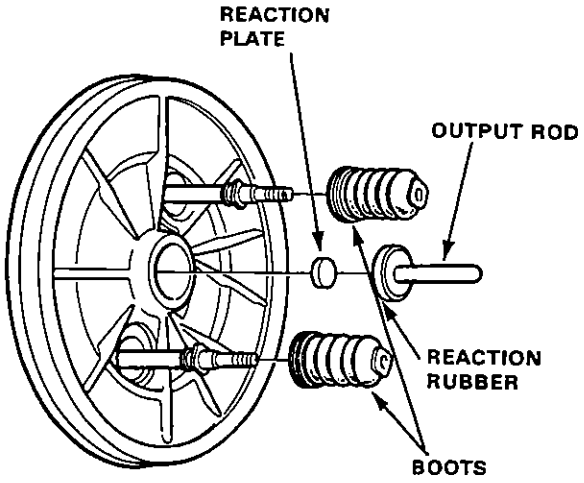


3. Remove the seals and washers from the spring retainer, then remove the spring retainer, booster spring and rod stopper by removing the 10 mm snap rings.



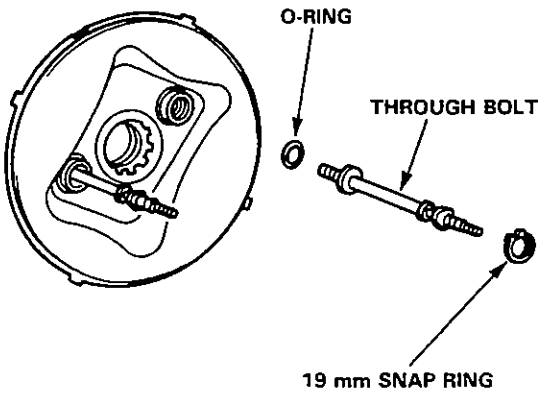
4. Remove the output rod, reaction rubber and reaction plate.

5. Remove the boots.



6. Separate the booster piston from the housing.

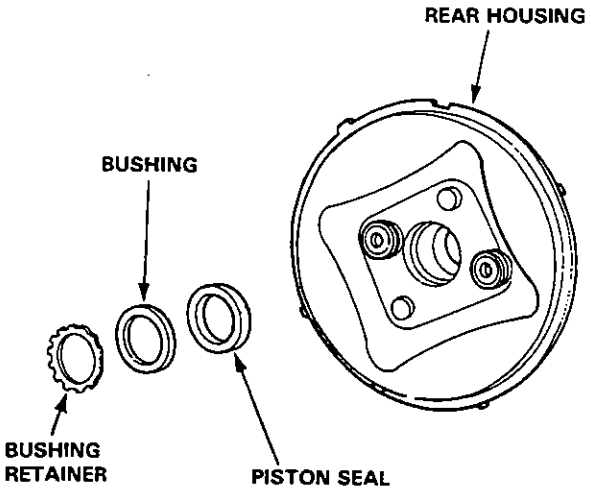
7. Remove the 19 mm snap ring and remove the through bolts with O-rings from the rear housing.



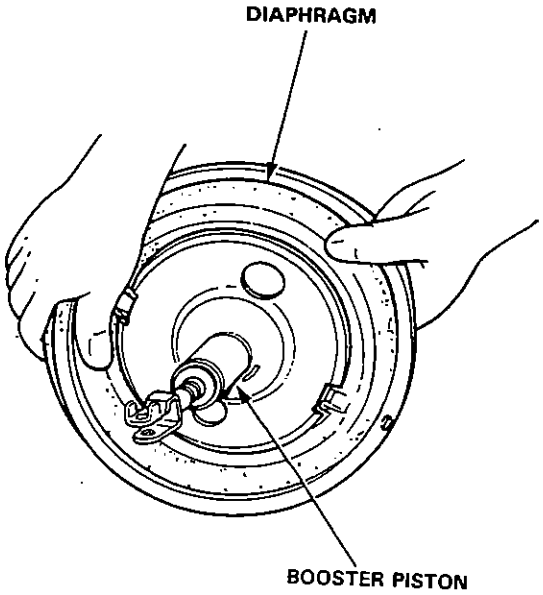
(cont'd)

Disassembly (cont'd)

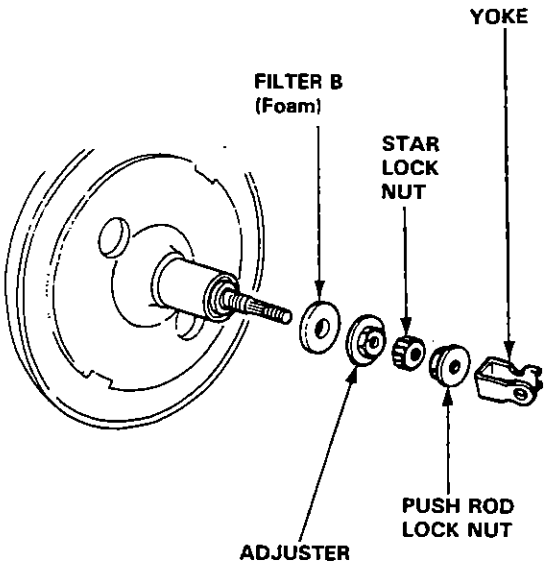
8. Remove the bushing retainer, bushing and piston seal from the rear housing.



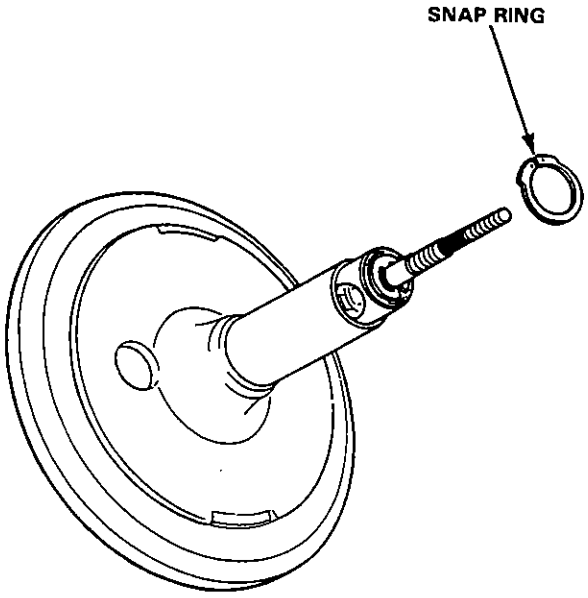
9. Remove the diaphragm from the booster piston.



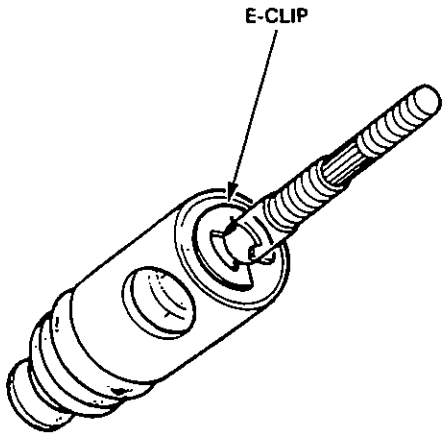
10. Remove the push rod yoke, push rod lock nut, star lock nut, adjuster and filter B (foam) from the booster piston



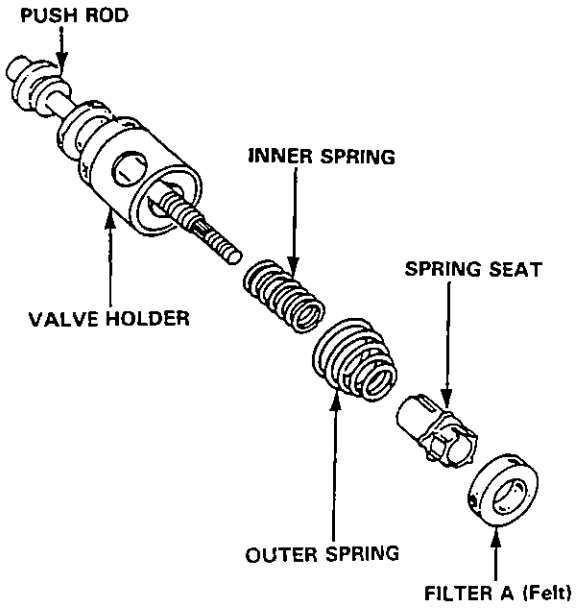
11. Remove the push rod by removing the snap ring.



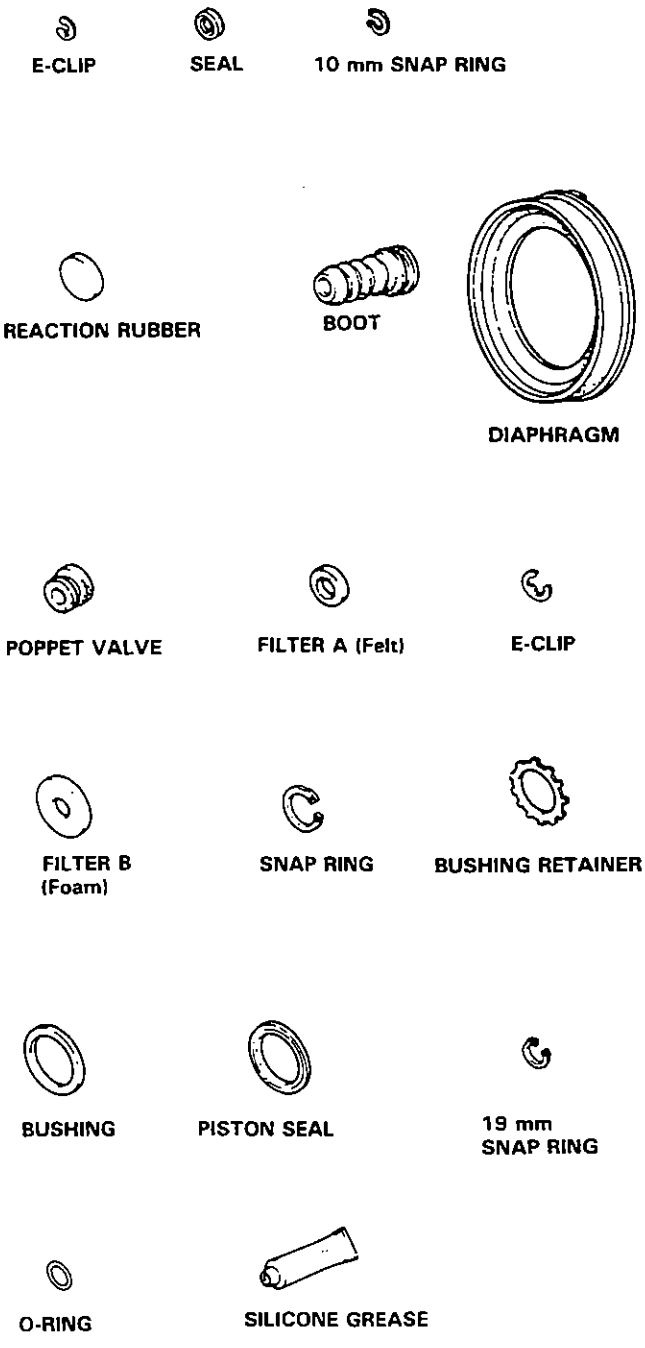
12. Remove the E-clip from the push rod.



13. Remove filter A (Felt), spring seat, outer valve spring, inner valve spring, valve holder, poppet valve and push rod.



Rebuild Kit

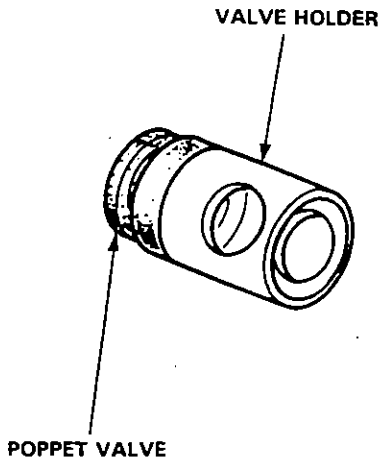


Brake Booster

Reassembly

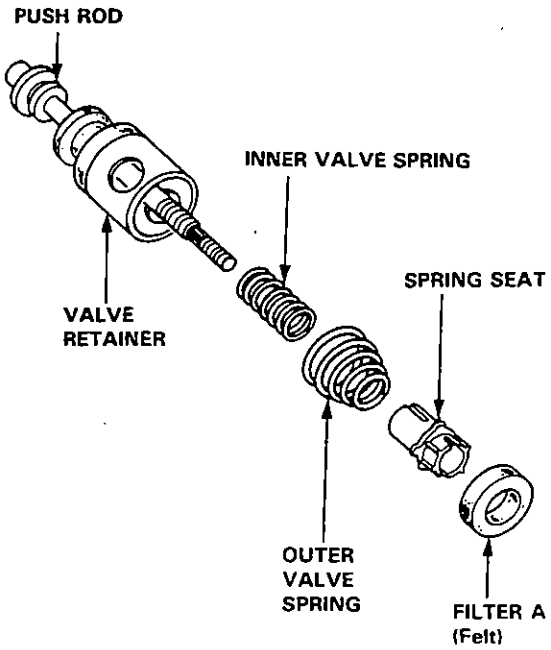
NOTE: Clean all parts before reassembly.

1. Install the poppet valve on the valve holder.

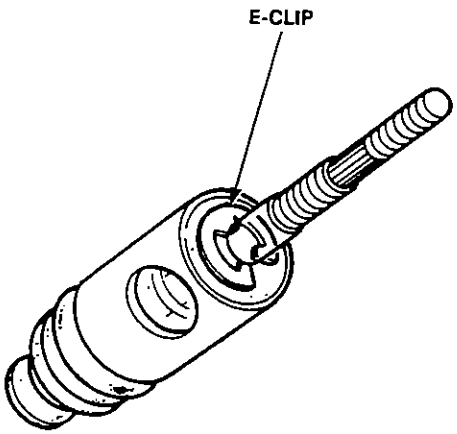


2. Install the valve holder, inner valve spring, outer valve spring and spring seat on the push rod.

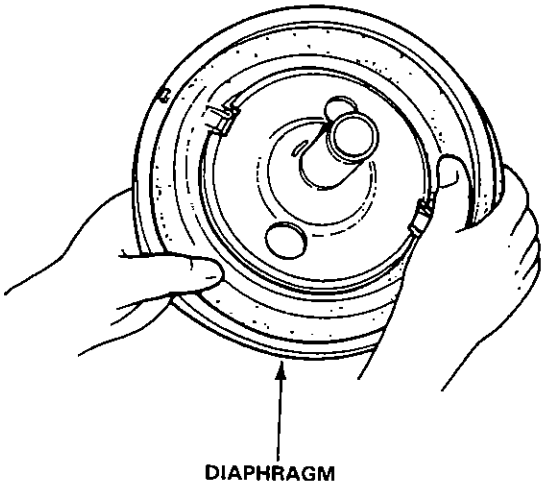
NOTE: Install the spring seat with its short end facing the filter side.



3. Install a new filter A (felt) on the push rod and secure with a new E-clip.

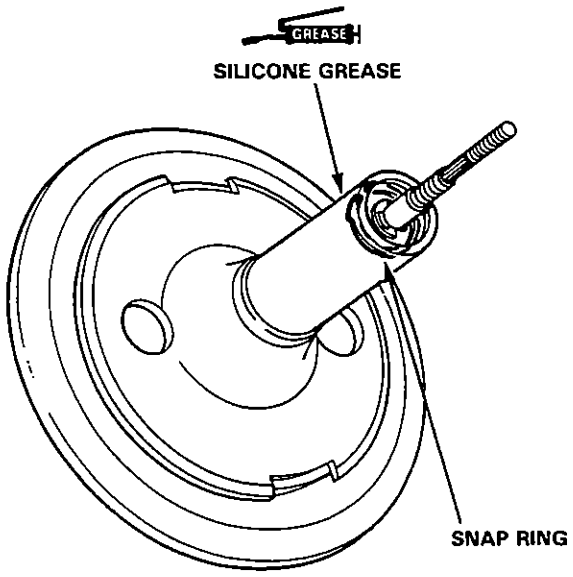


4. Install the diaphragm on the booster piston.

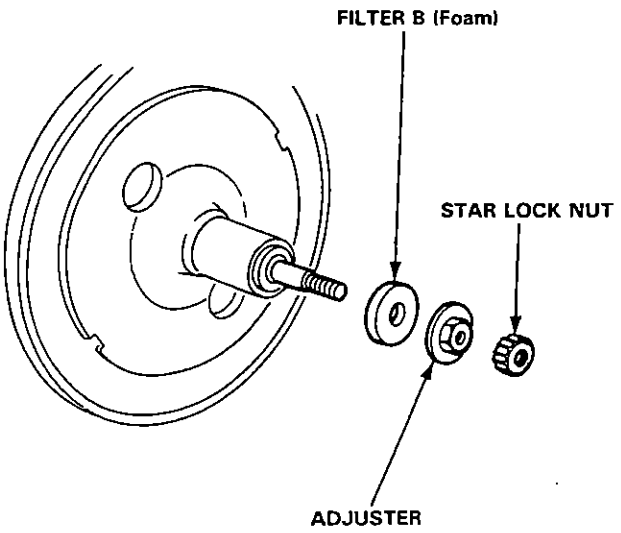


5. Apply silicone grease to the inner and outer surface of the booster piston tube.

6. Install the push rod assembly and secure with the snap ring.

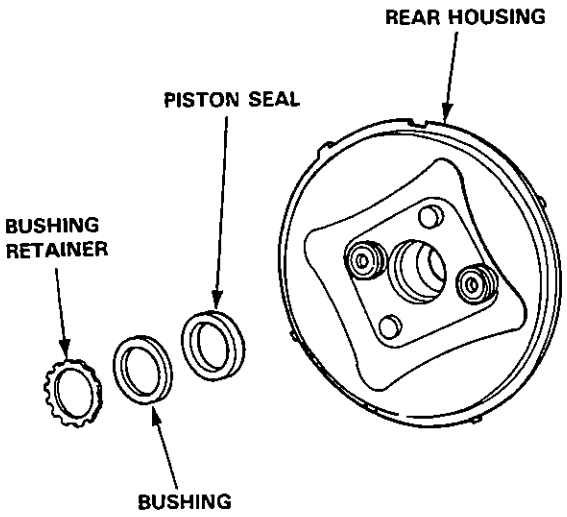


7. Install filter B (foam) on the push rod, then loosely install the adjuster and start lock nut.



8. Apply silicone grease to the piston seal.

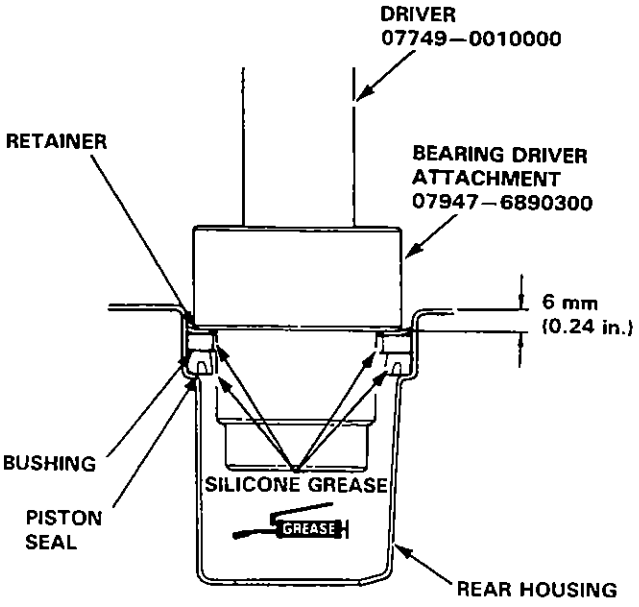
9. Position the piston seal, bushing and bushing retainer on the rear housing.



NOTE: Make sure the lip of the seal is facing in, as shown in drawing below.

10. Drive the bushing retainer in until it is 6 mm below the edge of the rear housing.

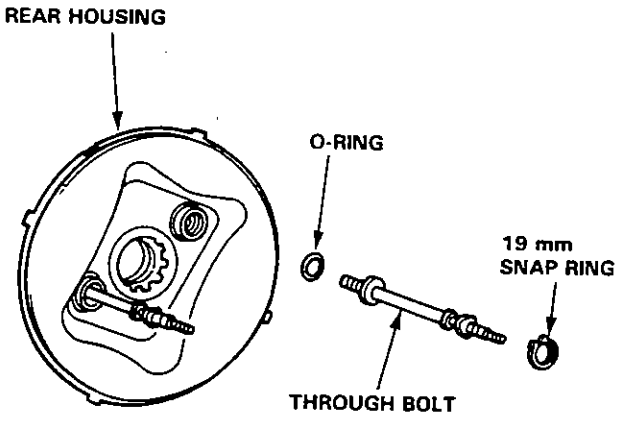
CAUTION: If you drive the retainer more than 6 mm, the piston seal may distort.



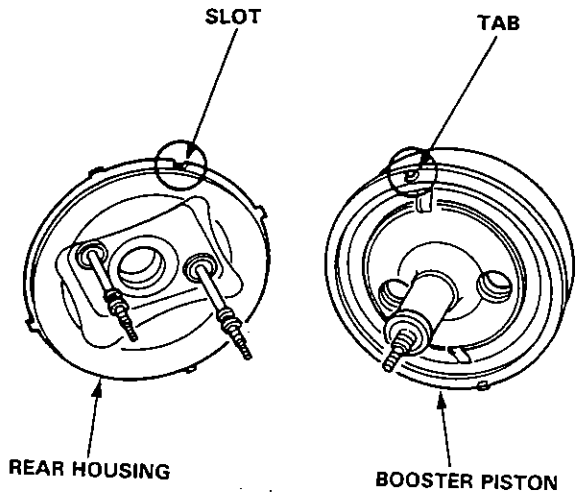
(cont'd)

Disassembly (cont'd)

11. Install the O-rings and through bolts on the rear housing and secure with 19 mm snap ring.

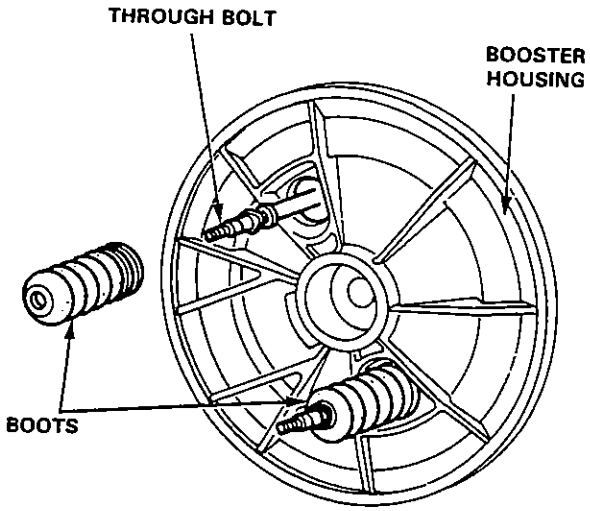


12. Install the booster pistion on the rear housing aligning their tabs and slots.



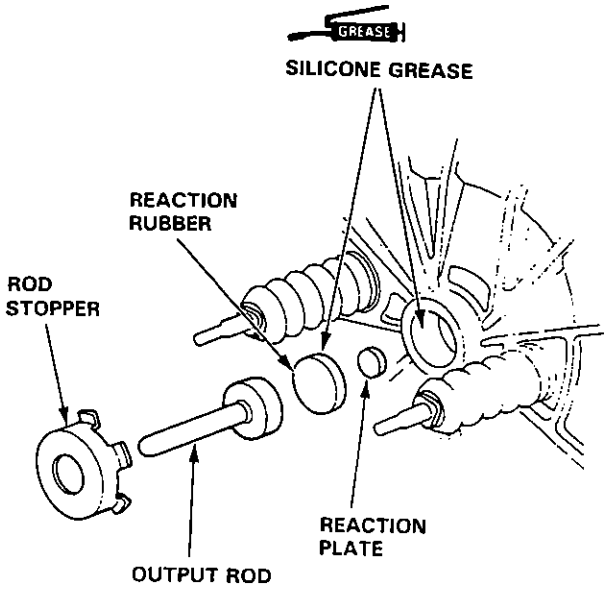
13. Install the boots on the throgh bolts.

NOTE: Make sure not to damage the boots when installing.

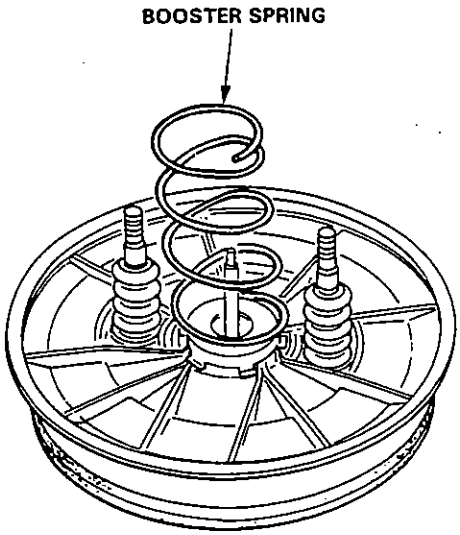


14. Apply silicone grease to the bore of the booster piston and reaction rubber.

15. Install the reaction plate, reaction rubber, output rod and rod stopper on the booster piston.

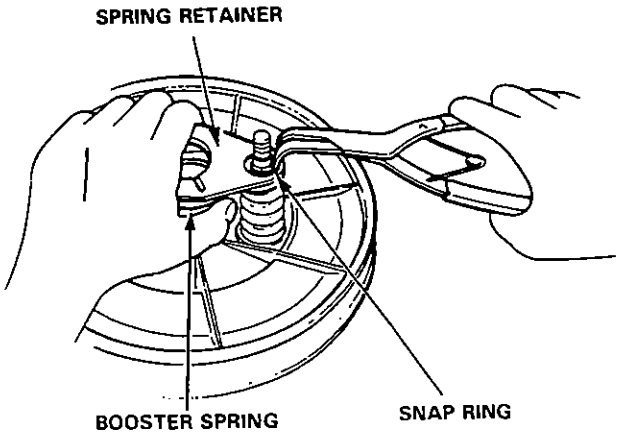


16. Install the booster spring.



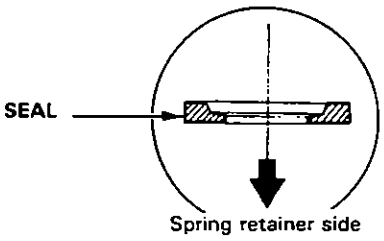
17. Install the spring retainer on the through bolts aligning the square portions of the bolts and retainer.

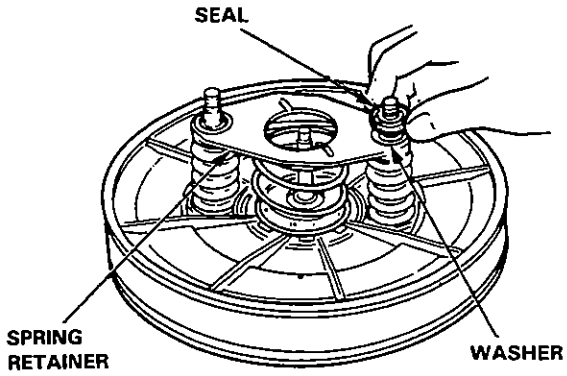
18. Compress the booster spring, then install the 10 mm snap ring on the through bolts.



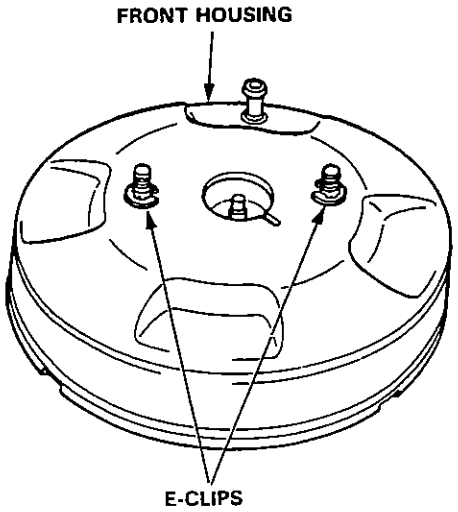
19. Install the washers and seals on the through bolts.

NOTE: Install the seals with the flat sides facing the spring retainer side as shown.





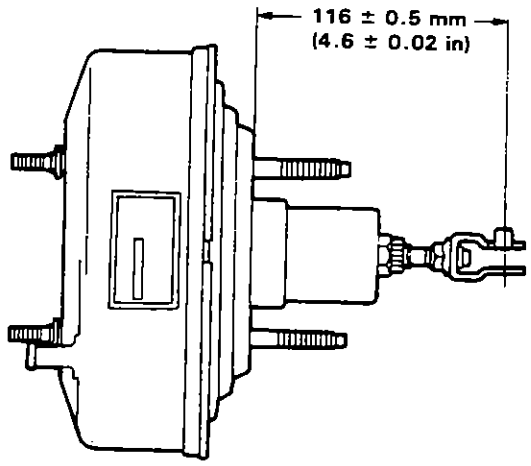
20. Install the front housing and secure with E-clips.



Brake Booster

Pushrod Adjustment

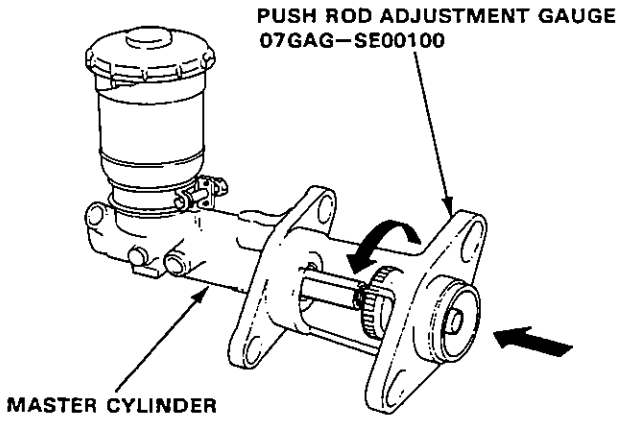
Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.



Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing master cylinder.

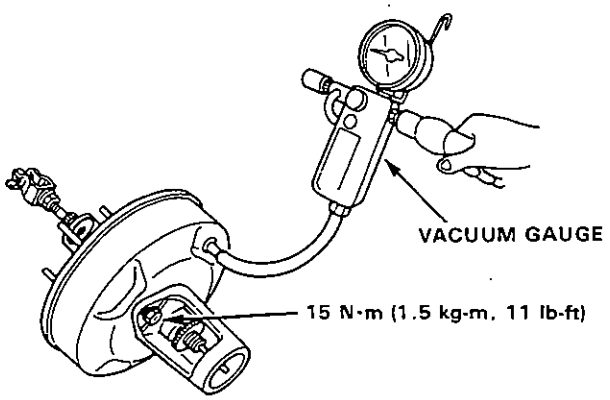
1. Using the Push Rod Adjustment Gauge, adjust bolt so the top of it is flush with end of master cylinder piston.



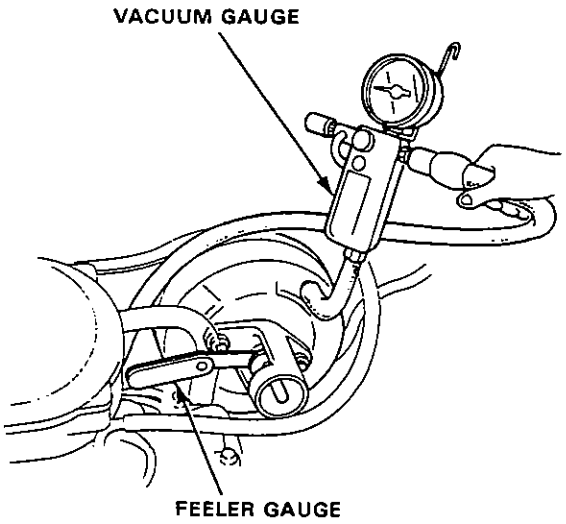
2. Install the master cylinder rod seal between the push rod adjustment gauge and brake booster.
3. Without disturbing the adjusting bolt's position, put the gauge upside down on the booster.
4. Install the master cylinder nuts and tighten to the specified torque.
5. Connect the booster in-line with a vacuum gauge to the booster's apply a 500 mm Hg (20 in Hg) vacuum and hold.
6. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut.

CLEARANCE: 0—0.4 mm (0—0.016 in)

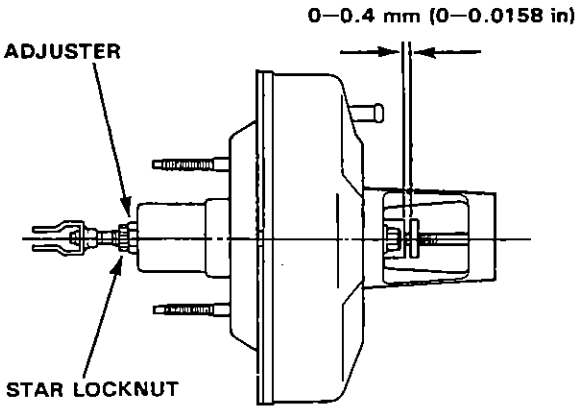
- Booster out of car.



- Inspection with the booster attached to the car.



7. If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust. Hold the clevis while adjusting.
8. Tighten the star locknut securely.



NOTE: If the clearance between the gauge body and adjusting nut is 0 mm, the push rod-to-piston clearance is 0.04 mm. If the clearance between the gauge body and adjusting nut is 0.4 mm, the push rod-to-piston clearance is 0 mm.

(cont'd)

Pushrod Clearance Adjustment (cont'd)

9. After adjustment, loosen the clevis end pushrod locknut and turn the pushrod to obtain the correct pedal height.

   PEDAL HEIGHT FROM FLOOR:
   LHD: 153 mm (6.02 in)
   RHD: 161 mm (6.34 in)
   (with floor mat removed)
   The pedal should have 1—5 mm free play.

10. Adjust the brake light switch (page 13-4).

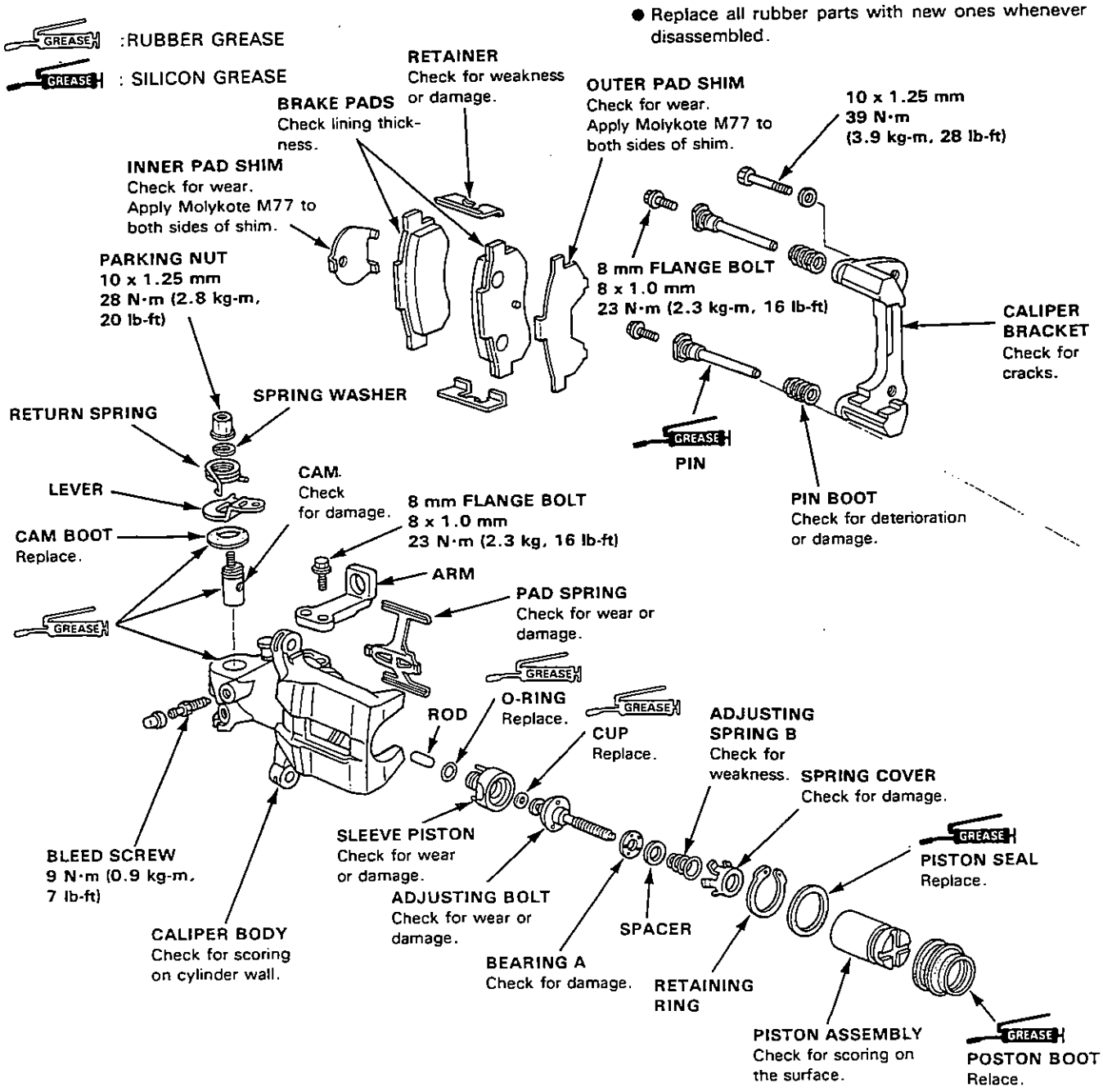
Rear Disc Brake

Inspection

WARNING Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.

CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the 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 mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

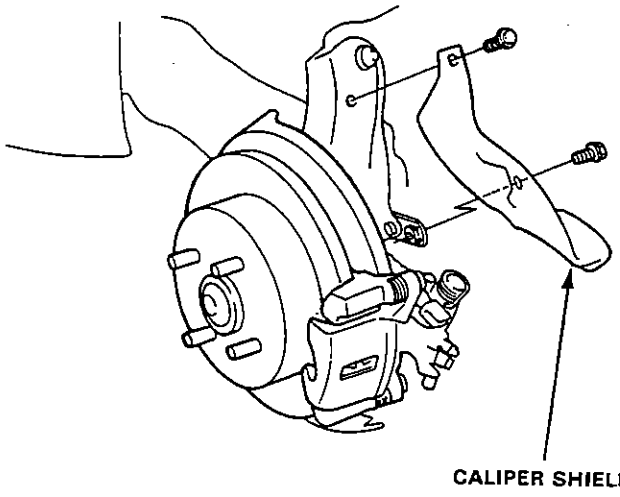
NOTE:
- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.



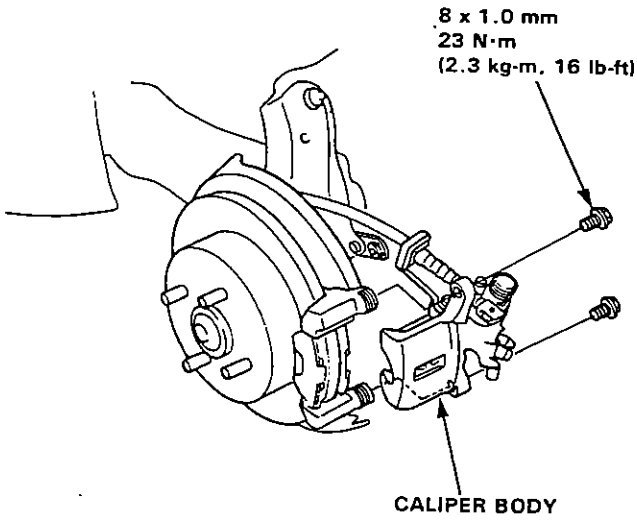
Rear Brake Pad/Disc

Inspection and Replacement

1. Block the front wheels, support the rear of car on safety stands, then remove the rear wheels.
2. Remove the caliper shield.

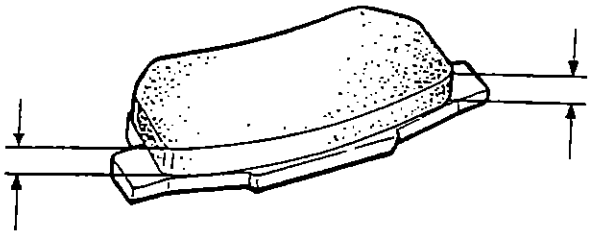


3. Remove the two caliper mounting bolts and the caliper from the bracket.

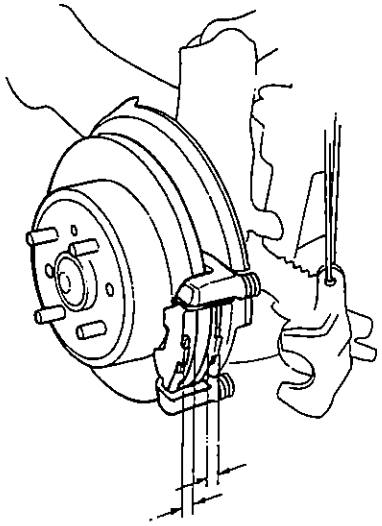


4. Remove the pads and measure the thickness of each brake pad lining using a vernier caliper.

Brake Pad Thickness:
Standard: 8.0 mm (0.31 in)
Service limit 1.6 mm (0.06 in)



5. If the lining thickness is less than service limit, replace the brake pads as a set.



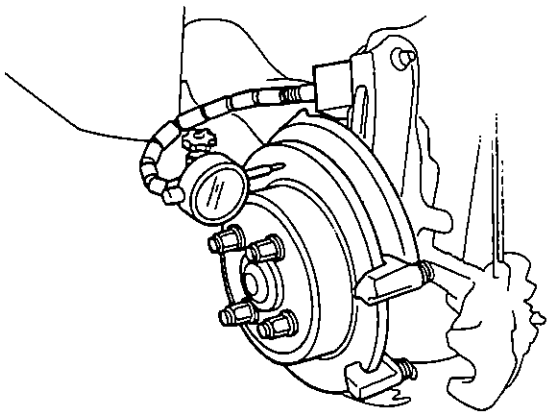
6. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.

7. Mount dial indicator as shown and measure the run-out at 10 mm (0.39 in) from the outer edge of the disc.

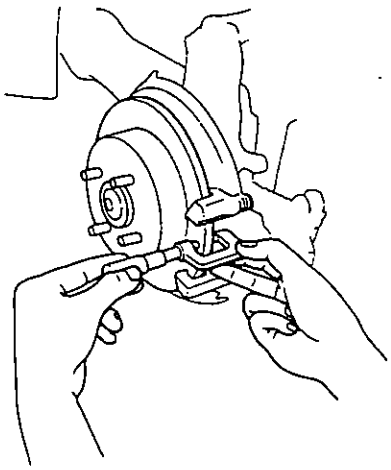
   CAUTION: Use wheel nuts and 3 mm thickness washers to hold the disc securely.

   Brake Disc Run-out:
   Service Limit: 0.15 mm (0.0006 in)

8. Replace the brake disc if beyond the service limit.



9. Using a micrometer, measure the rear brake disc thickness at eight points, approximately 45 apart and 10 mm (0.39 in) from the outer edge of the disc.



10. Replace the disc if it exceeds the following service limits.

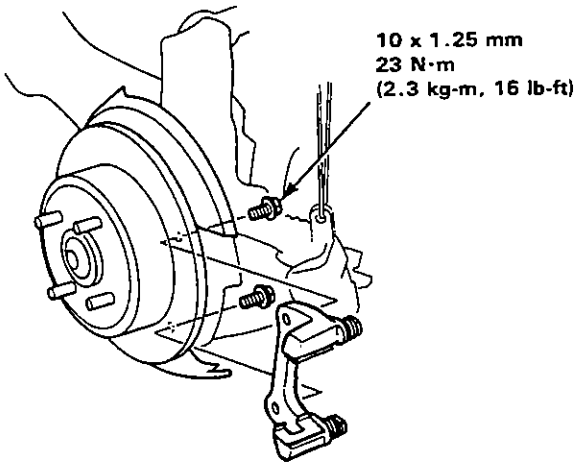
    Brake Disc Thickness:
    Standard: 10.0 mm (0.39 in)
    Service limit: 8.0 mm (0.31 in)

    Brake Disc Parallelism:
    The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in).

11. Replace the brake disc if beyond the limits.

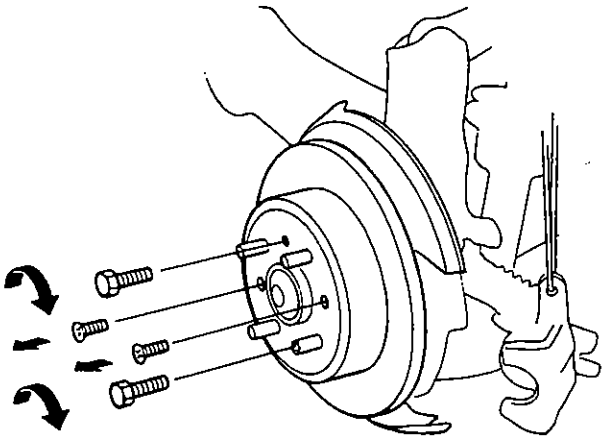
    NOTE: A now disc should be ground if its run-out is greater than 0.10 mm (0.004 in).

12. Remove the two caliper bracket mounting bolts and caliper bracket.



13. Remove the two 6 mm screws and brake disc.

    NOTE: If the brake disc is difficult to remove, install 8 mm bolts into the threaded holes and tighten them.



(cont'd)

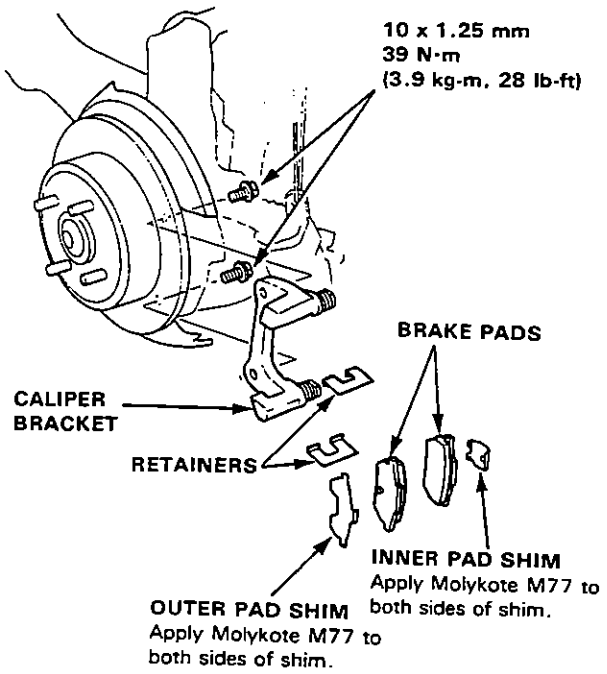
Rear Brake Pad/Disc

Inspection and Replacement (cont'd)

14. Install the new brake disc.

15. Clean the caliper bracket and retainers, then install the caliper bracket with two bolts and retainers.

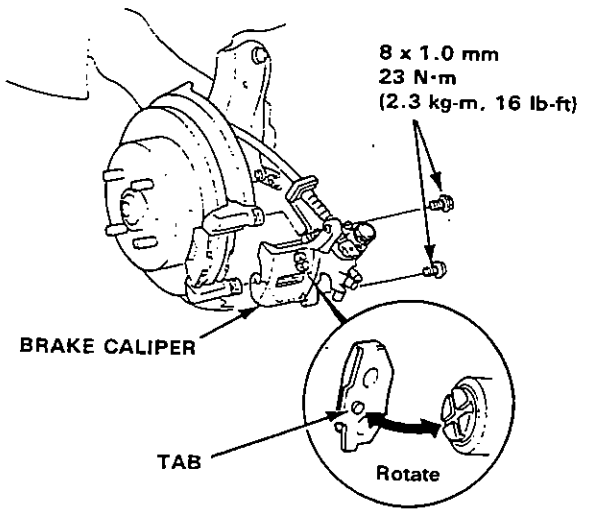
    Install the new brake pads and pad shims onto the caliper bracket.



16. Rotate the caliper piston clockwise into place in the cylinder, then align the cutout in the piston with the tab on the inner pad by turning back the piston back.

    CAUTION: Lubricate the boot with silicone to avoid twisting the piston boot. If the piston boot is twisted, back it out so it sits properly.

17. Install the brake caliper.

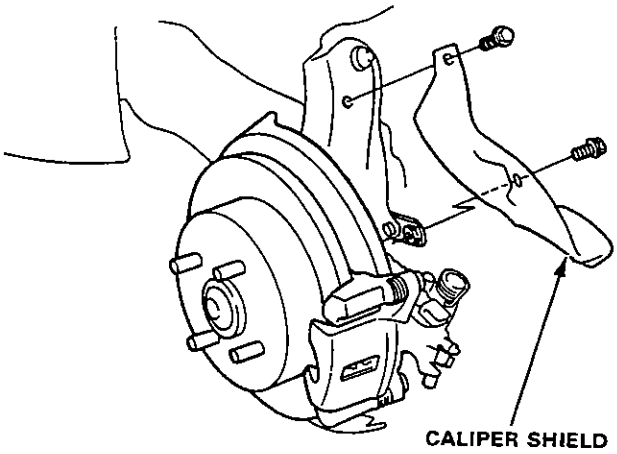


Rear Caliper

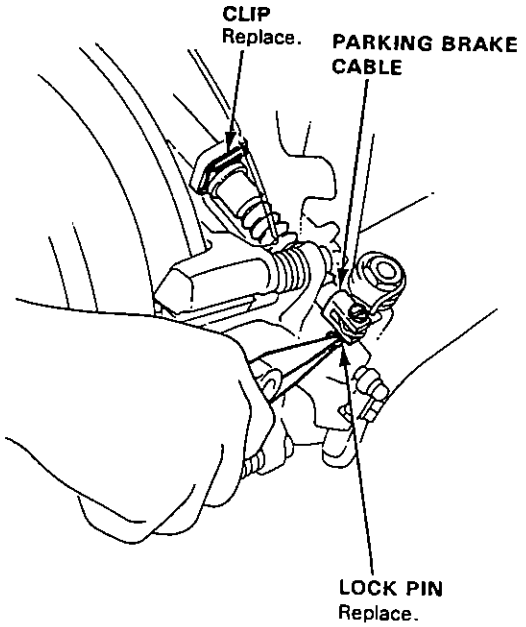
Disassembly

CAUTION:
- **Make sure all parts are clean before ressembly.**
- **Use only new replacement parts.**
- **Use only new clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as its can damage to finish. Wash spilled brake fluid off immediately with clean water.**

1. Remove the caliper shield.



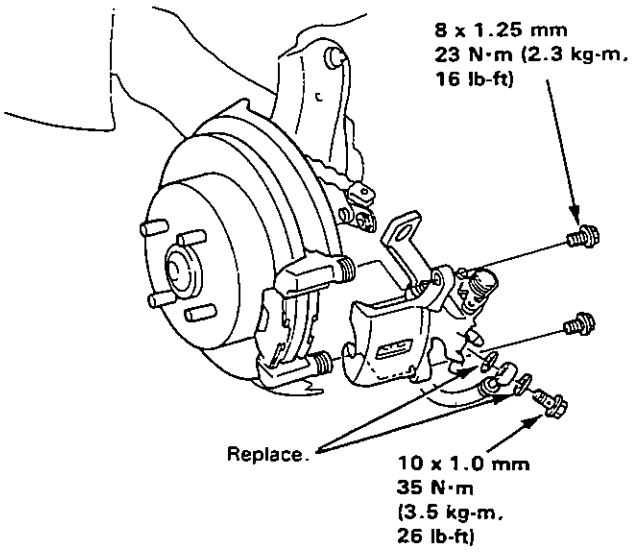
2. Disconnect the parking brake cable from the lever on the caliper by removing the lock pin.



3. Remove the banjo bolt and disconnect the brake hose from the caliper.

4. Remove the two caliper mounting bolts and the caliper from the bracket.

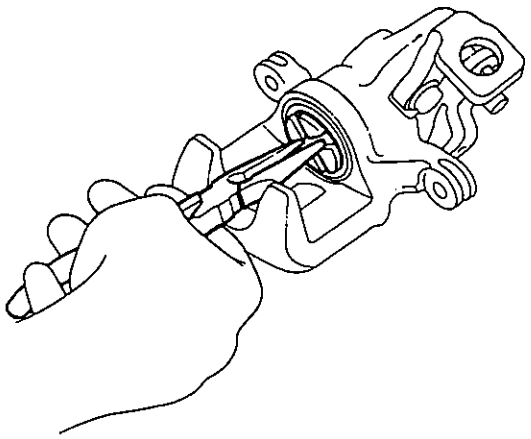
CAUTION:
- **Thoroughly clean the outside of the caliper to prevent dust and dirt from entering inside.**
- **Plug the end of the brake hose to prevent brake fluid from flowing out.**



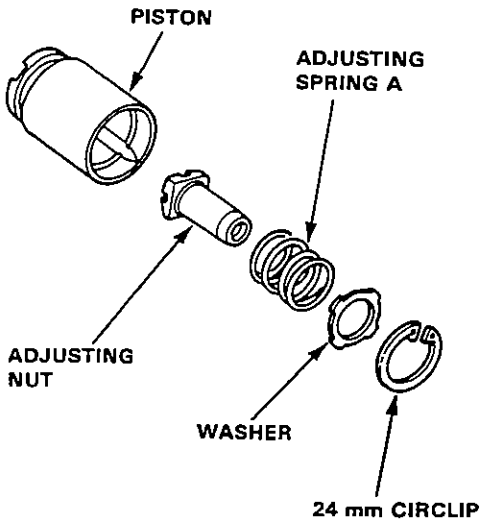
5. Remove the pad spring from the caliper.

6. Remove the piston and piston boot while rotating the piston.

CAUTION: Avoid damaging the piston and piston boot.

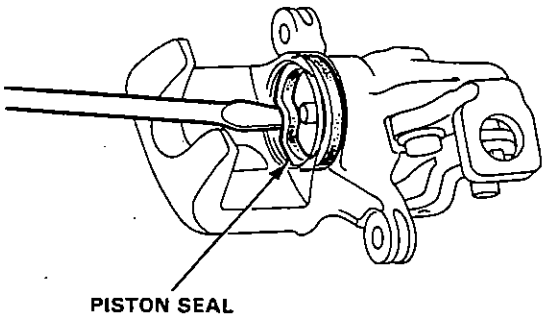


7. Remove the circlip, then washer, adjusting spring A, and the adjusting nut from the piston.



8. Remove the piston seal.

CAUTION: Take care not to damage the cylinder bore.



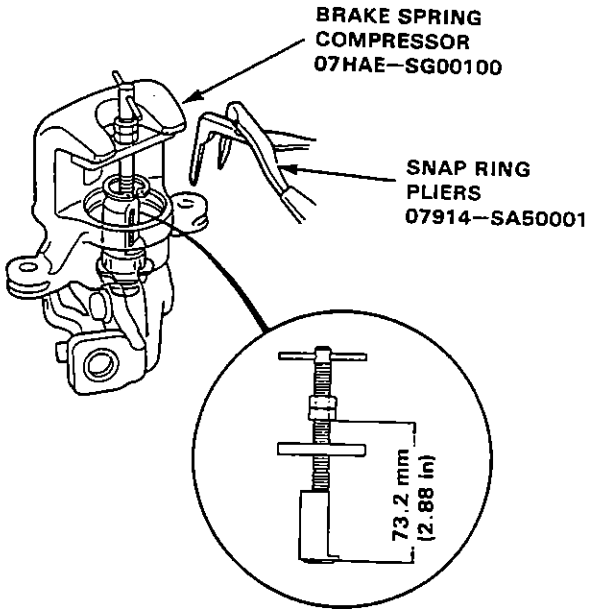
(cont'd)

Rear Caliper

Dissassembly (cont'd)

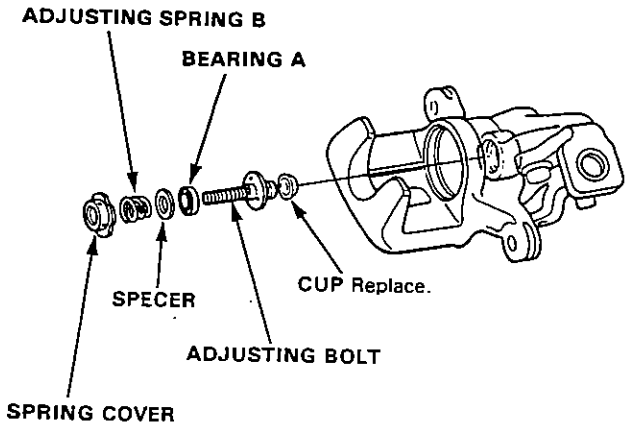
9. Install the special tool between the caliper body and spring guide as shown.

10. Compress the adjusting spring B by turning the shaft of the special tool, then remove the circlip with snap ring pliers.

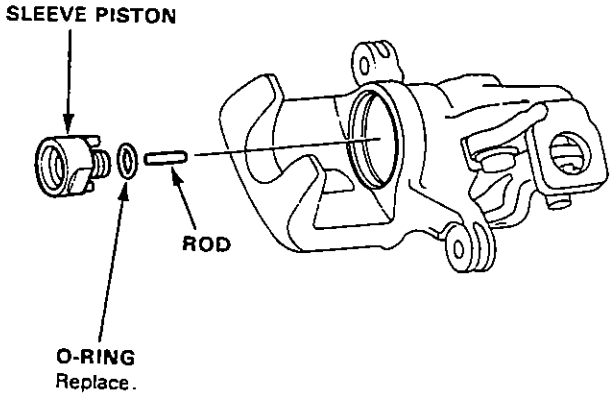


11. Remove the brake spring compressor from caliper body.

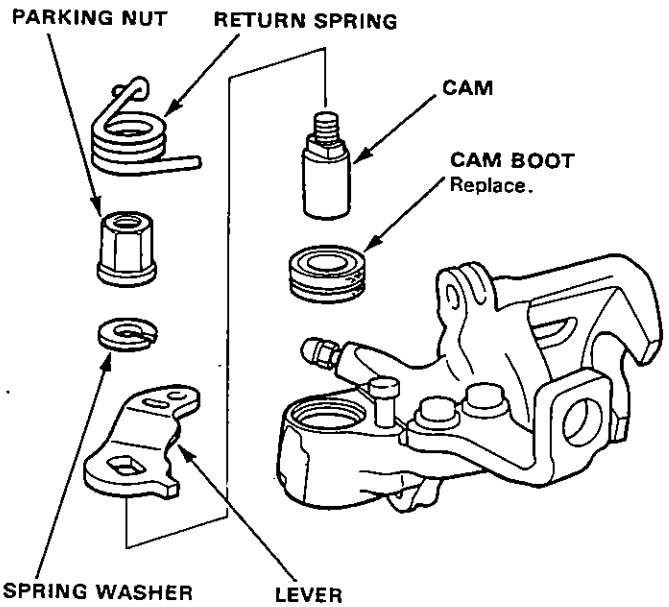
12. Remove the spring cover, adjusting spring B, spacer, bearing A, adjusting bolt and cup.



13. Remove the sleeve piston, then remove the rod from the cam.



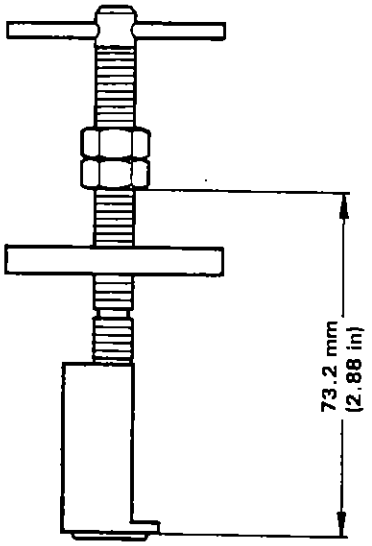
14. Remove the return spring, parking nut, spring washer, lever, cam and cam boot.



Reassembly

CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only new clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as its can damage the finish. Wash spilled brake fluid off immediately with clean water.**

1. Adjust the brake spring compressor (special tool) as shown.

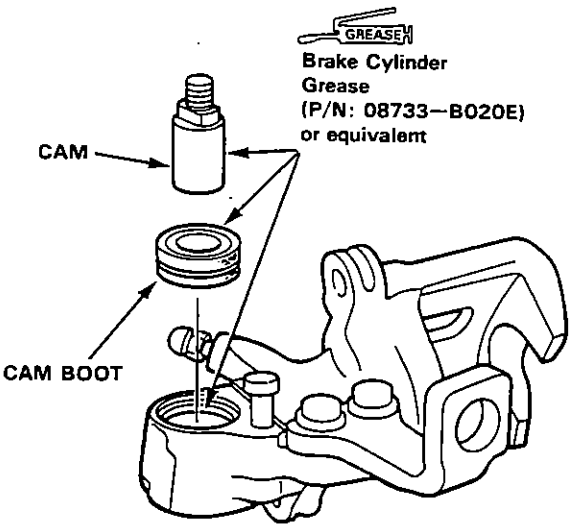


2. Pack all cavities of the needle bearing with Brake Cylinder Grease (P/N: 08733—B020E), or equivalent rubber grease.

3. Coat the new cam boot with Brake Cylinder Grease (P/N: 08733—B020E), or equivalent rubber grease and install in the caliper.

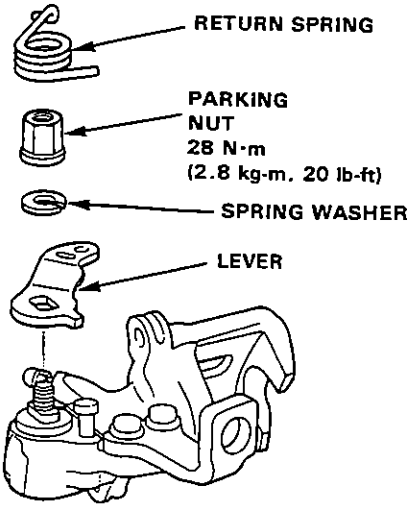
4. Install the cam with threaded end facing up.

   CAUTION: Avoid damaging the cam boot since it must be installed before the cam.



5. Install the lever, spring washer and parking nut, then tighten parking nut.

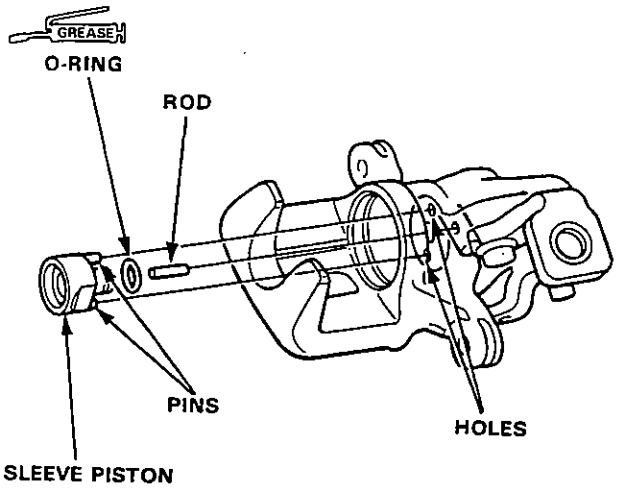
6. Install the return spring.



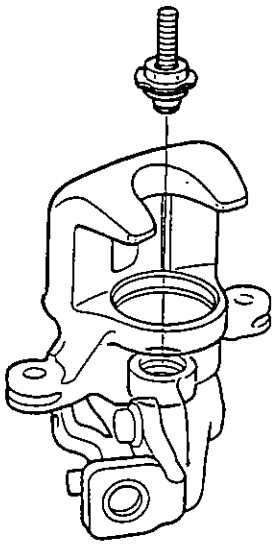
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Reassembly (cont'd)

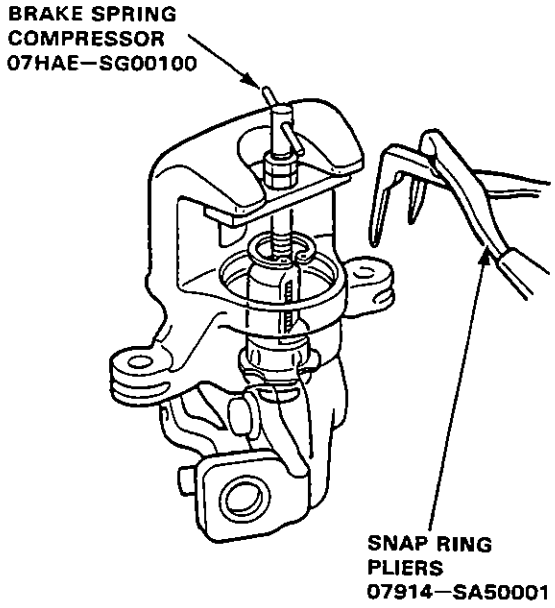
7. Install the rod in the cam.
8. Install a new O-ring on the sleeve piston.
9. Install the sleeve piston so the hole in the bottom of the piston is aligned with the rod in the cam, and two pins on the piston are aligned with the holes in the caliper.



10. Install a new cup with its groove facing the bearing A side on the adjusting bolt.
11. Fit the bearing A, spacer, adjusting spring B and spring cover on the adjusting bolt, and install in the caliper cylinder.

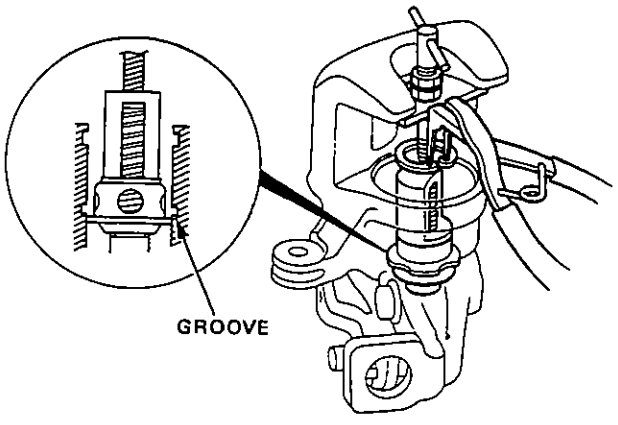


12. Install the brake spring compressor (special tool) as shown.

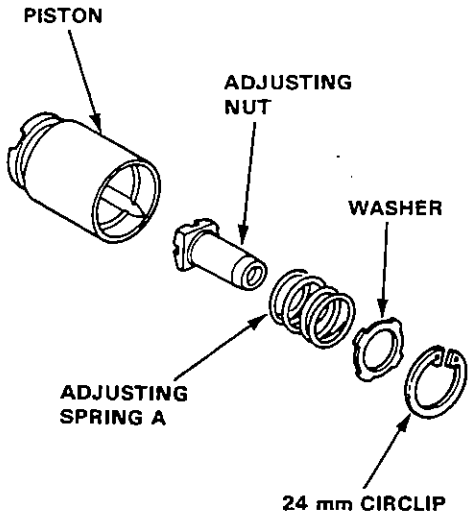


13. Compress the spring until it bottoms out.
14. Check that the flared end of the spring cover is below the circlip groove.
15. Install the circlip then remove the brake spring compressor.

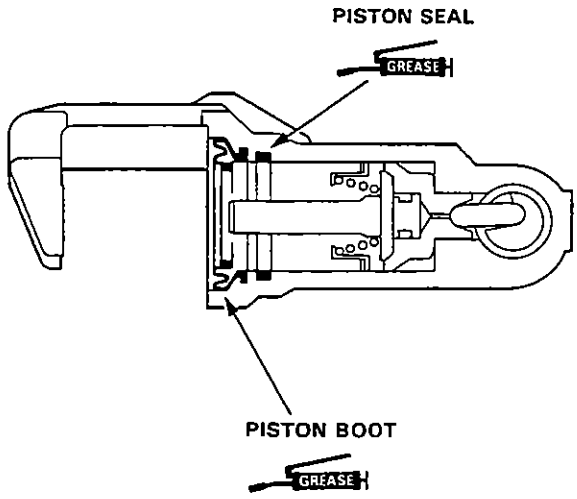
NOTE: Check that the circlip is seated in the groove properly.



16. Install the adjusting nut, adjusting spring A, and washer, and secure with the circlip.

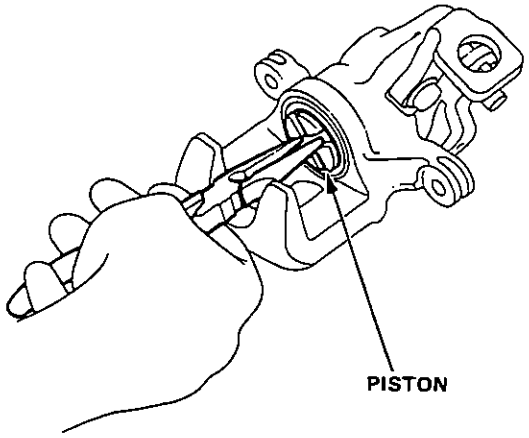


17. Coat the new piston seal and piston boot with silicone grease and install them in the caliper.



18. Coat the outside of the piston with silicone grease, and install it on the adjusting bolt while rotating it clockwise.

CAUTION: Avoid damaging the piston boot.



19. Install the brake pad retainers and brake pads.
20. Install the pad springs on the caliper.
21. Install the caliper on the caliper bracket and tighten the caliper mounting bolts.
22. Connect the brake hose to the caliper with new sealing washers and tighten the banjo bolt.
23. Connect the parking brake cable to the arm on the caliper.
24. Fill the brake reservoir up and bleed the brake system (page 13-10).
25. Operate the brake pedal several times, then adjust the parking brake lever.

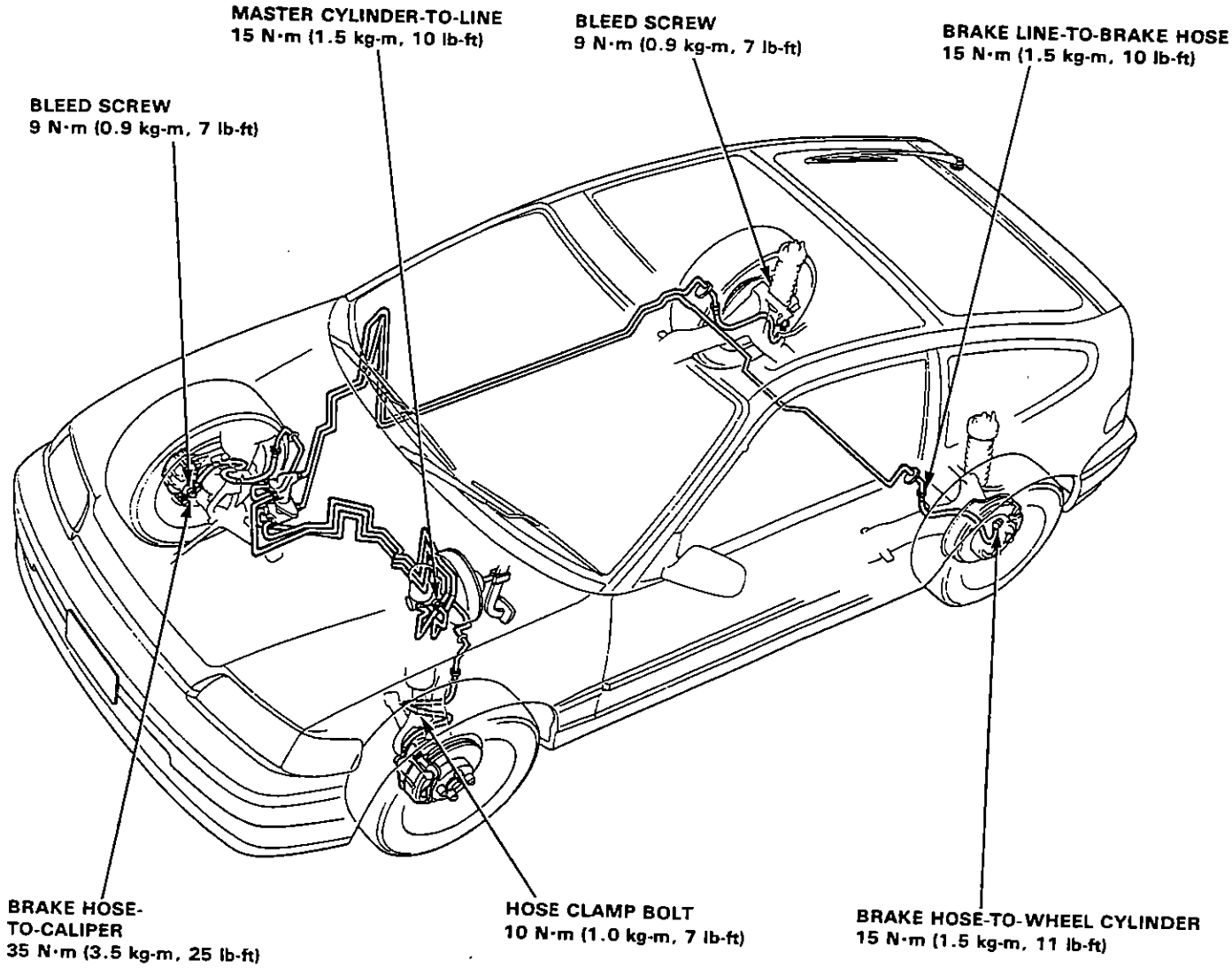
    NOTE: Before adjustments, make sure the parking brake arm on the caliper touches the pin.

26. Install the caliper shield and tighten the bolts.

Brake Hoses/Pipes

Inspection

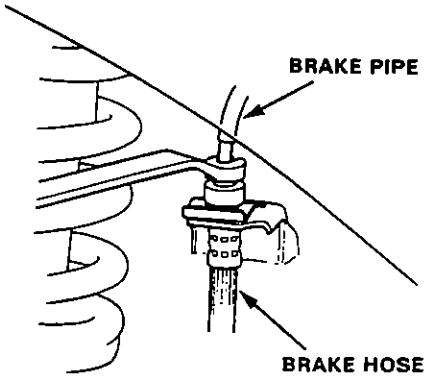
1. Inspect the brake hoses for damage, leaks, interference or twisting.
2. Check the brake lines for damage, rusting or leakage. Also check for bent brake lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.



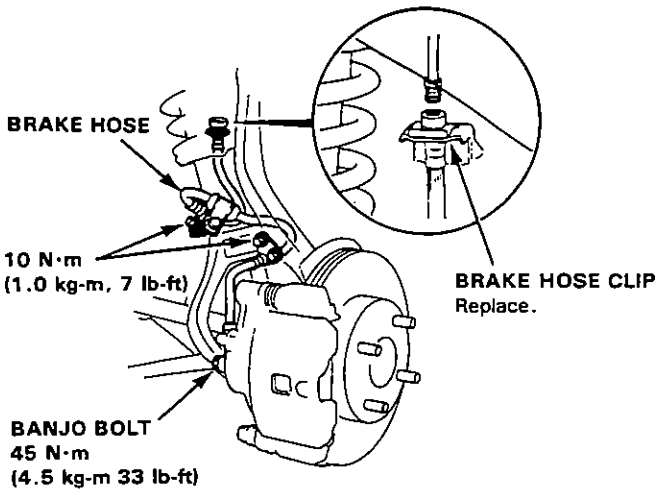
Brake Hose Replacement

CAUTION
- **Before reassembling, check that all parts are free of dust and other foreign particles.**
- **Replace parts with new ones whenever specified to do so.**
- **Use only clean brake fluid.**
- **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 spill brake fluid on the car, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**

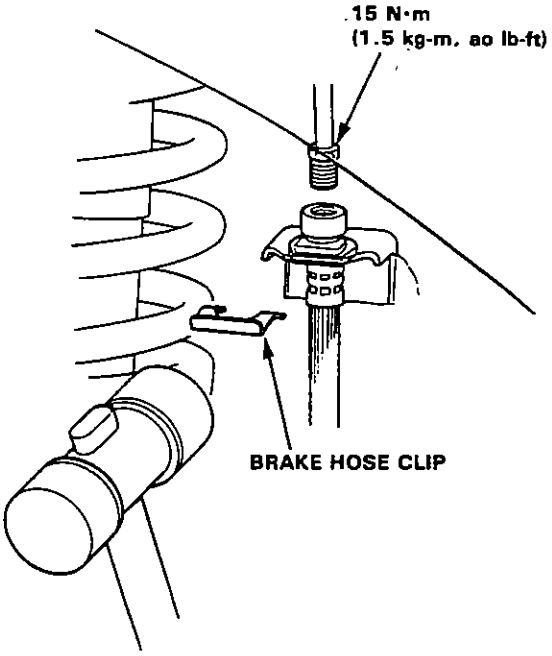
1. Replace the brake hose if the hose is twisted, cracked or if it leaks.
2. Disconnect the brake hose from the brake pipe using a 10 mm flare nut wrench.



3. Remove and discard the brake hose clip from the brake hose.
4. Remove the banjo bolt and disconnect the brake hose from the caliper.



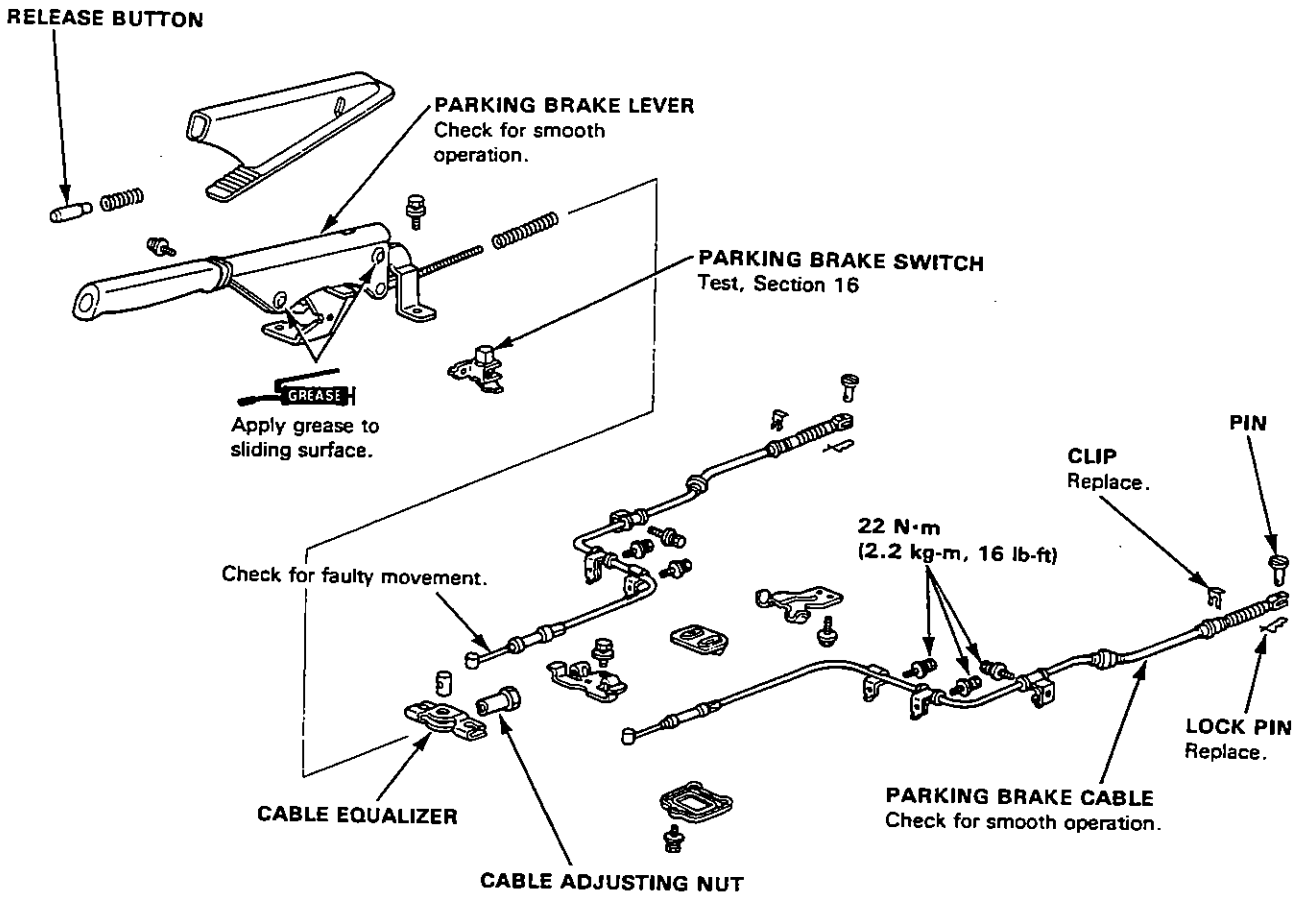
5. Install a new brake hose clip to the brake hose.
6. Connect the brake line to the brake hose.



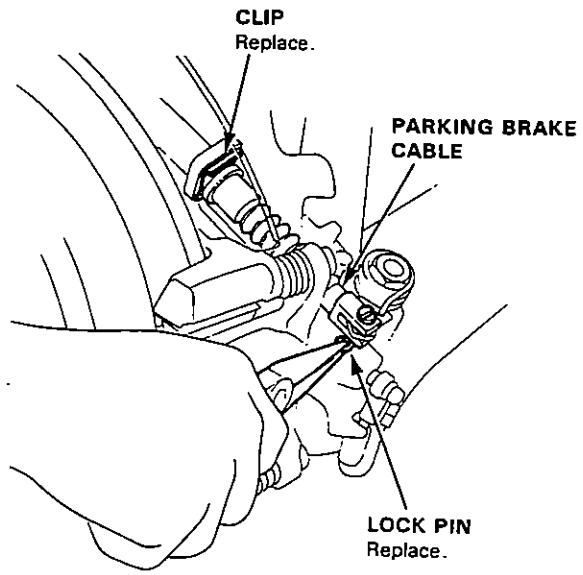
7. Connect the brake hose to the caliper.
8. Install the brake hose on the knuckle and damper mounting clamp.
9. After installing the brake hose, check the hose and line joints for leaks, and tighten as necessary.

Parking Brake

Disassembly and Reassembly



Disconnect the parking brake cable from the lever on the rear caliper by removing the lock pin and pin.



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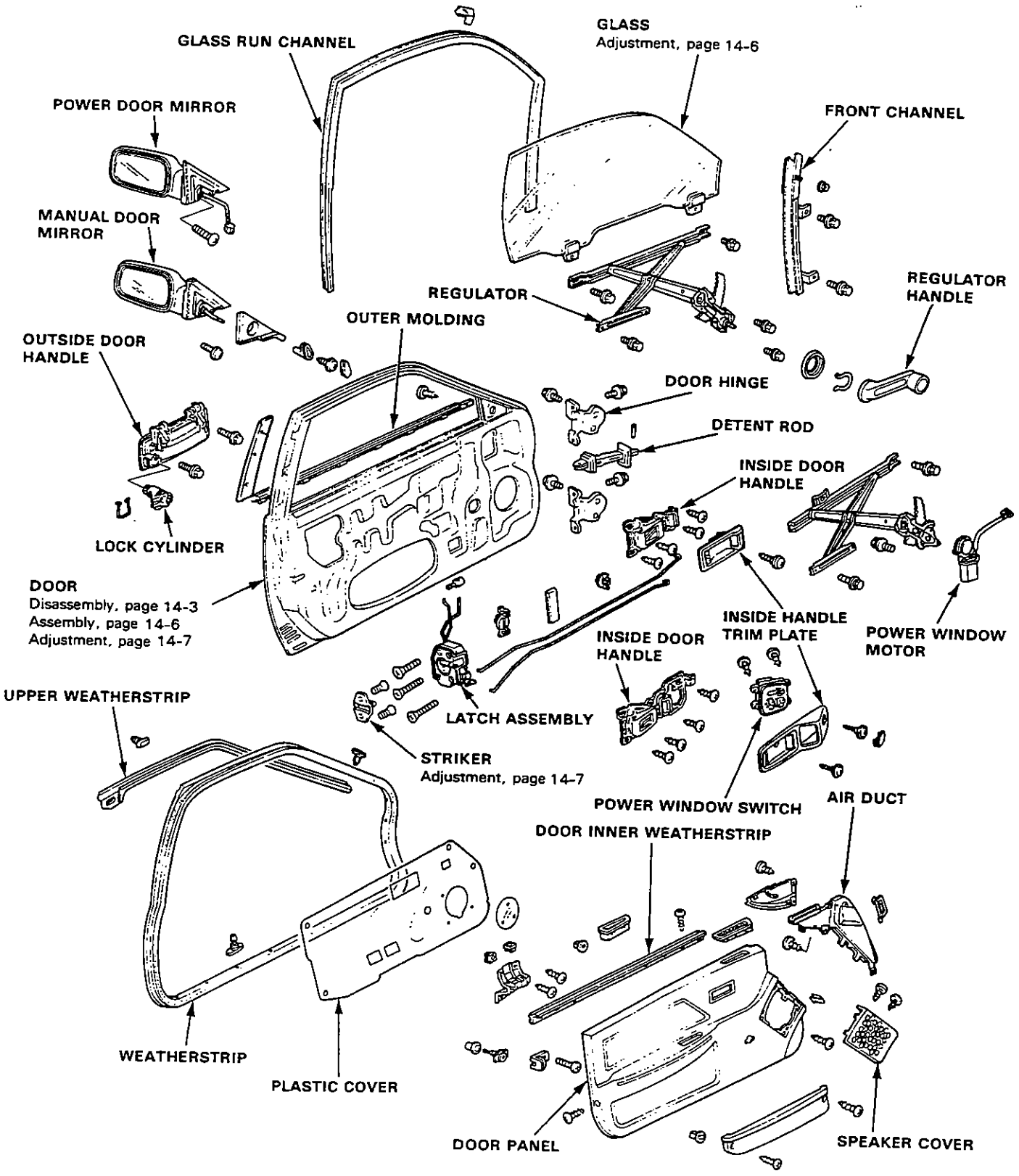
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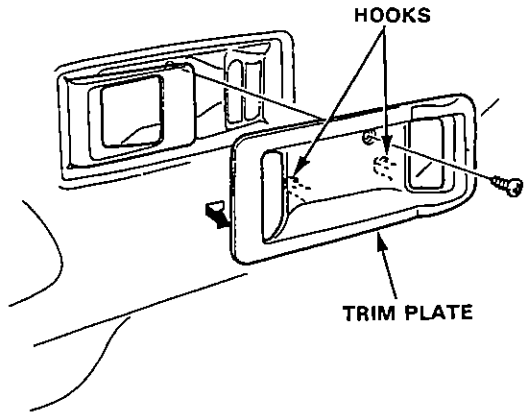
Doors

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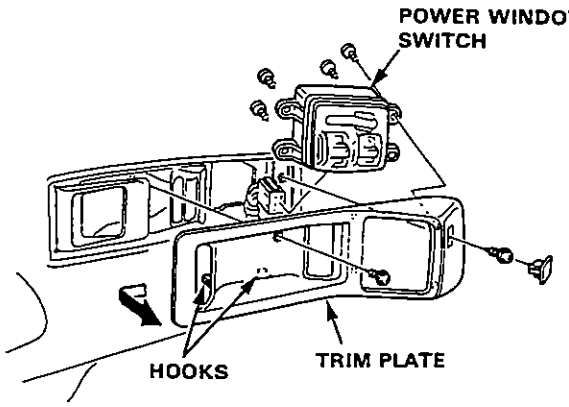

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Disassembly

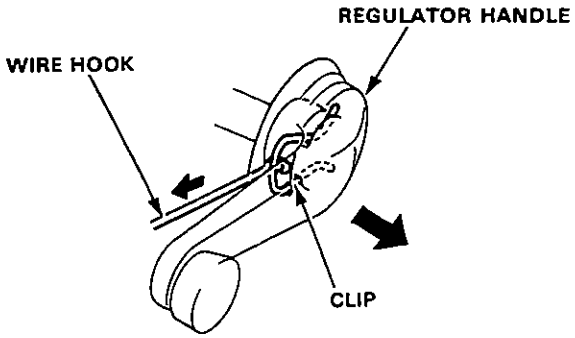
1. Remove the trim plate screw, then carefully remove the trim plate.



2. Remove the power window switch, if equipped, from the trim plate by removing the 4 screws.

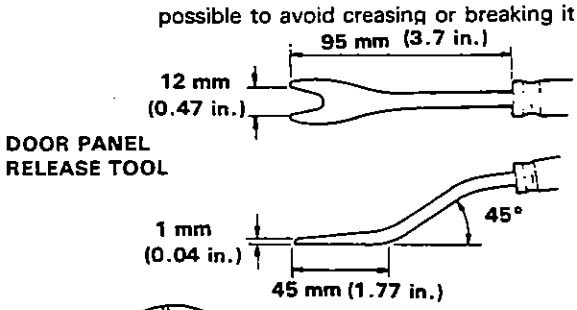


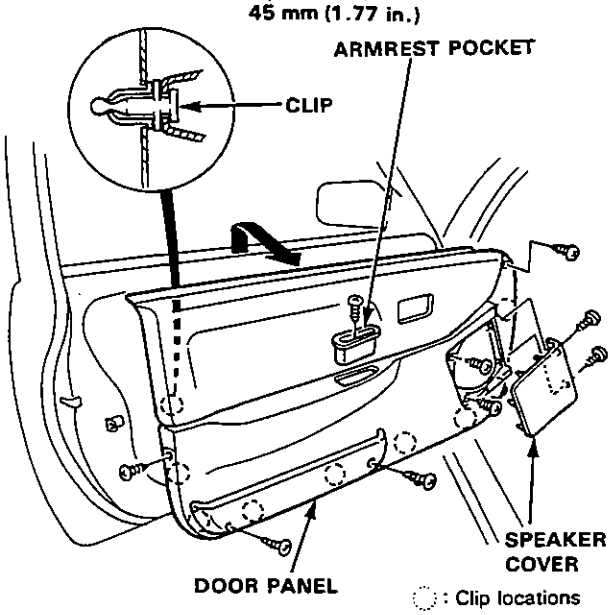
3. If applicable, remove the regulator handle by pulling the clip out with a wire hook.



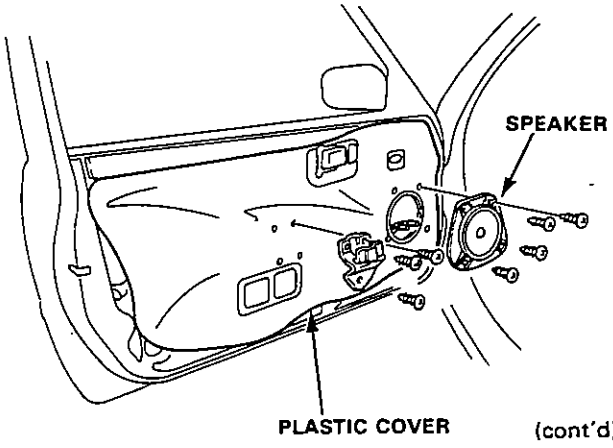
4. Remove the screw and carefully pry up the armrest pocket. Remove the screws, then remove the speaker cover. Remove the screws and clips (see door panel release tool) attaching the door panel. Remove the door panel by pulling it upward.

NOTE ● The speaker cover has 6 hooks on its back side.
● Remove the panel with as little bending as possible to avoid creasing or breaking it.





5. Remove the screws, then remove the speaker and door panel bracket.
6. Carefully remove the plastic cover.

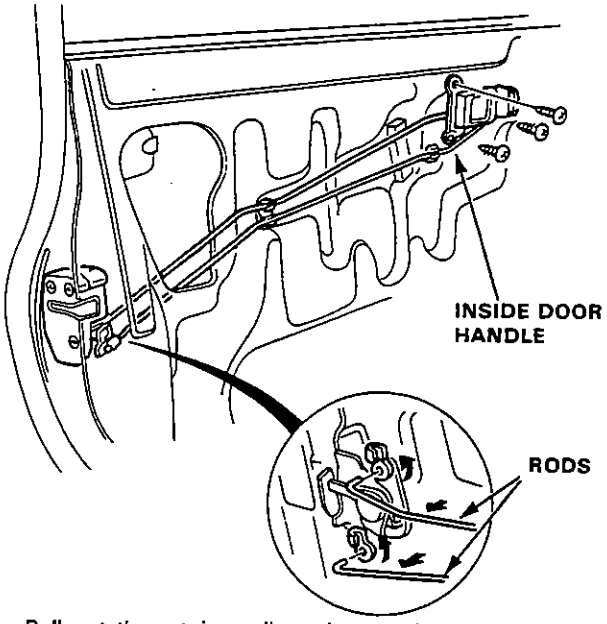


(cont'd)

Disassembly (cont'd)

7. Raise the window fully.

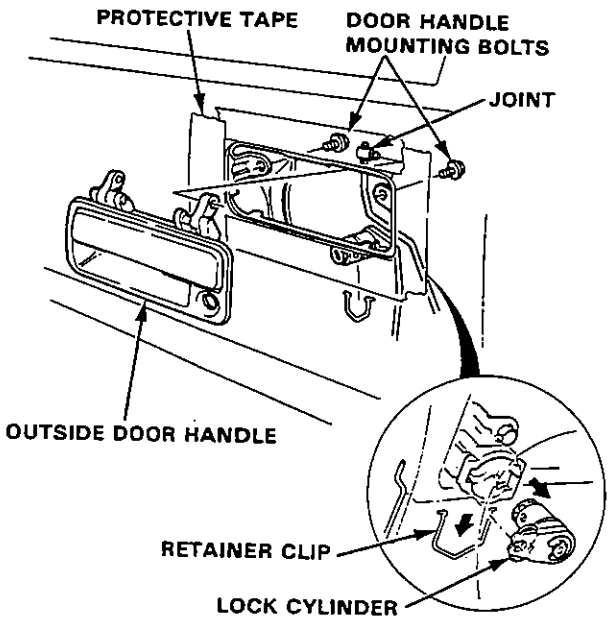
8. Remove the 3 screws, disconnect the latch rods, then remove the inside door handle.



9. Pull out the retainer clip, take out the lock cylinder, then disconnect the lock rod.

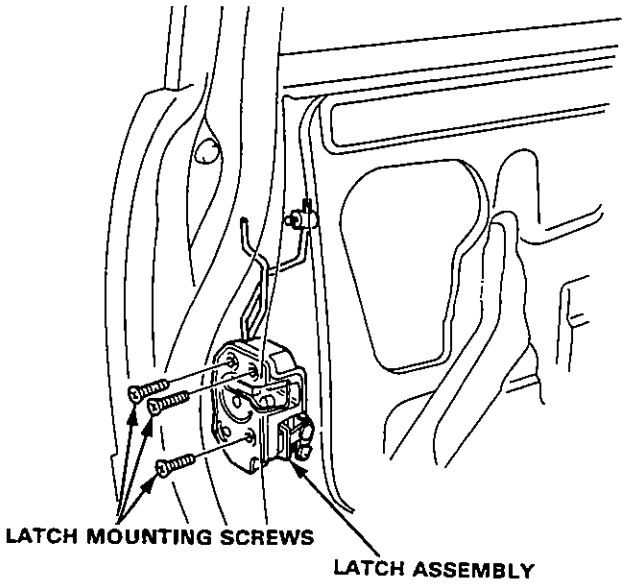
   NOTE: Use protective tape around the edge of the door handle to prevent scratching the paint.

10. Remove the mounting bolts for the outside door handle.



11. Pull the outside door handle out, and pry the joint off the handle with a flat-tip screwdriver. Remove the handle from the rod.

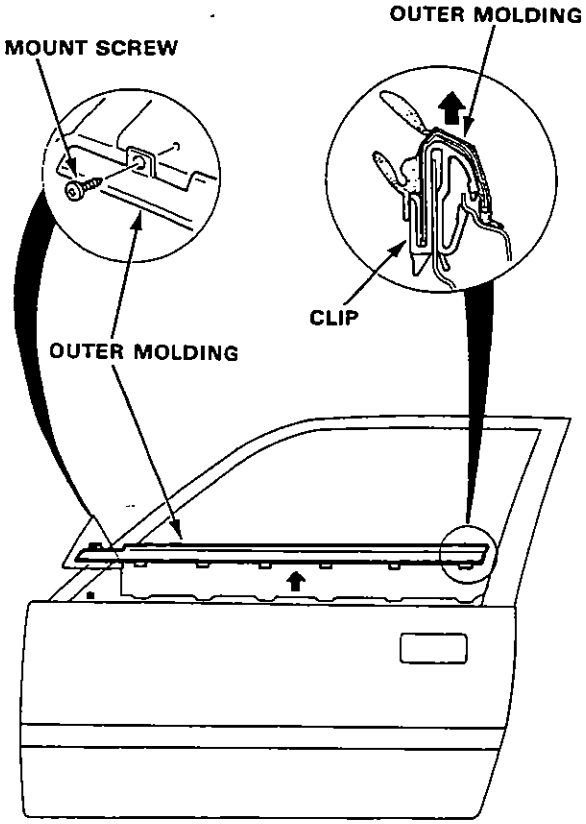
12. Remove the screws, take the door latch off the door, then push the door latch and rod inside the door.



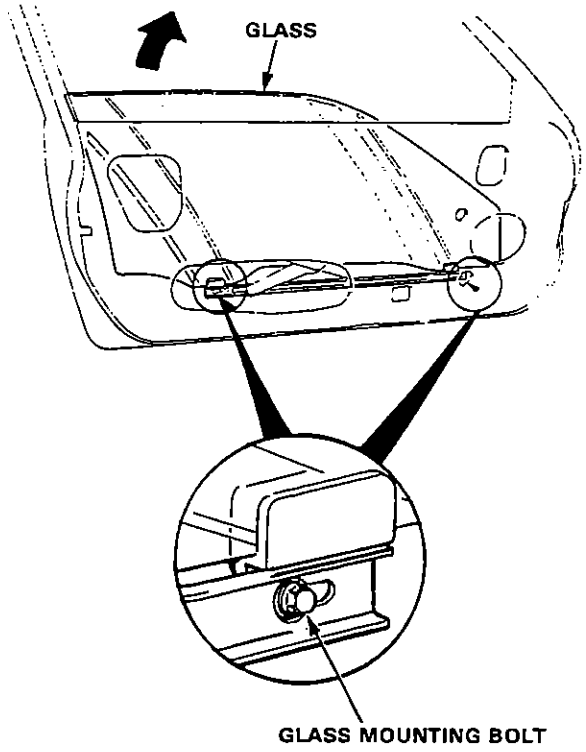
13. Lower the window fully.

14. Remove the door mirror (page 14-8, 9).

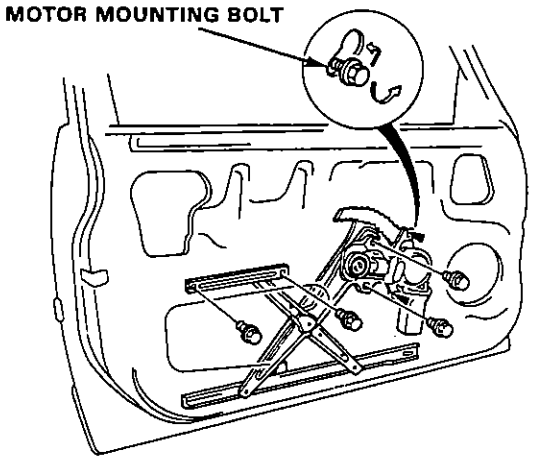
15. Remove the screw and detach the clips, then remove the outer molding.



16. Carefully raise the window until you can see its mounting bolts. Loosen the bolts and pull the door glass out through the window slot.



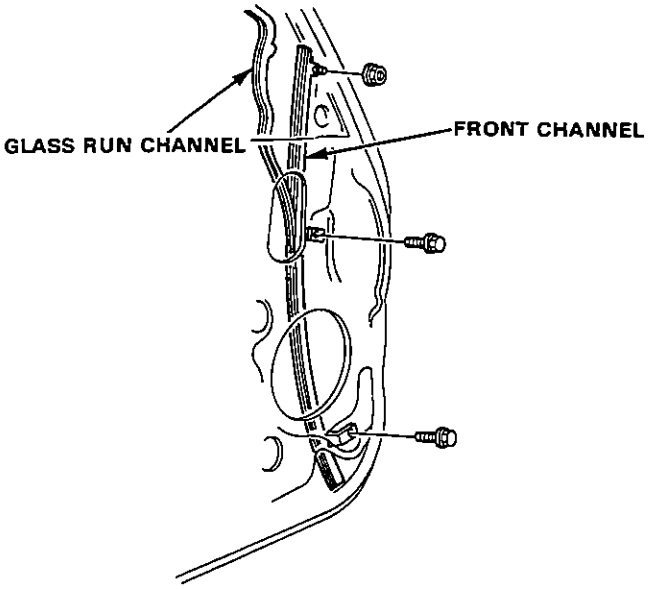
17. Remove the 4 mounting bolts and loosen the 2 motor mounting bolts, then take out the regulator assembly through the lower hole in the door.



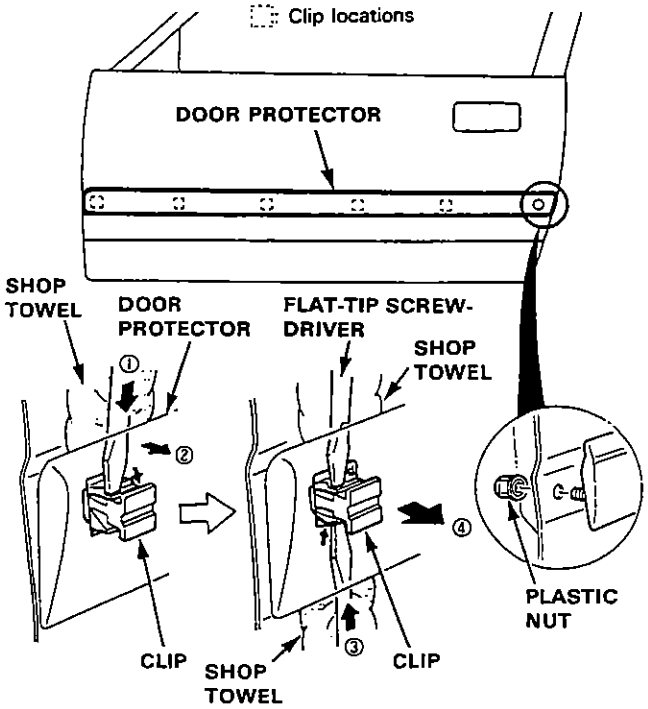
18. Remove the glass run channel.

19. Remove the front channel by removing the 2 bolts and the nut.

NOTE: Before installation, insert the glass run channel into the front channel.



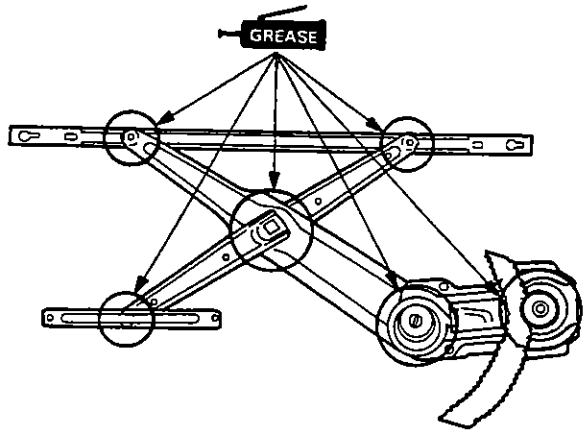
20. Remove the door protector by removing the nut and detach the clips from the inside, or outside.



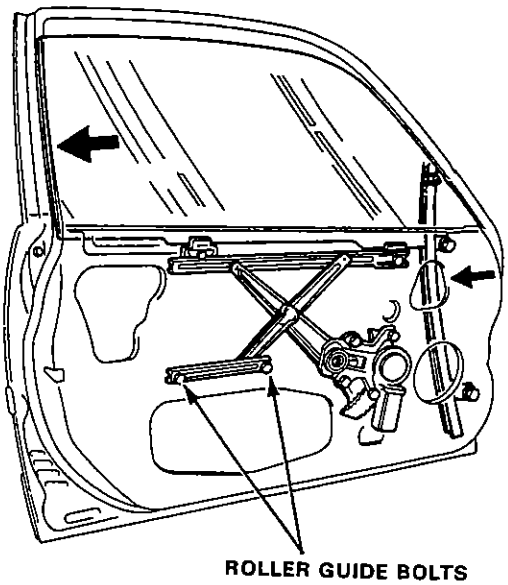
Assembly

Assemble the door in the reverse order of disassembly, and also:

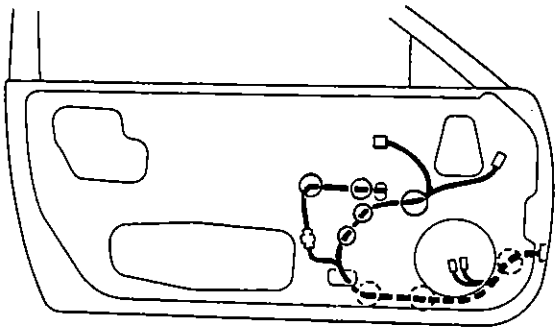
1. Grease all the sliding surfaces of the window regulator where shown.



2. To adjust window fit in the door, raise the window as far up as possible and hold it against the door sash. Then, tighten the roller guide bolts.



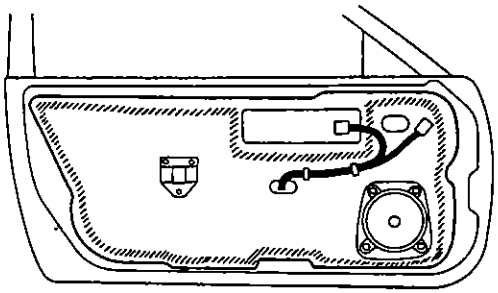
3. Fix the wire harness correctly on the door.



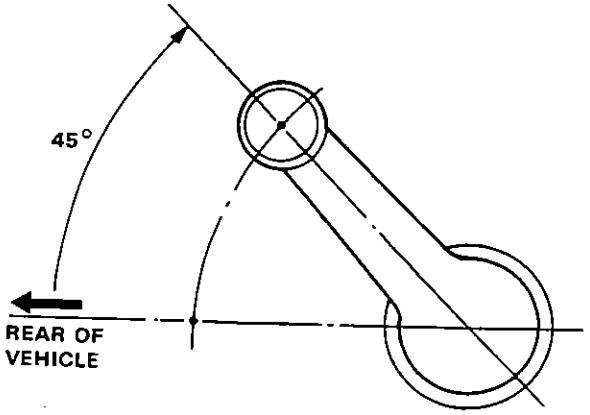
○: **Clip locations**

4. When reinstalling the plastic cover, apply adhesive along the edge where necessary to maintain a continuous seal and prevent air/water leaks.

   NOTE: Repair any torn section of the plastic cover.



5. Install the regulator handle so it points backward, and up at a 45 degree angle with the window closed.

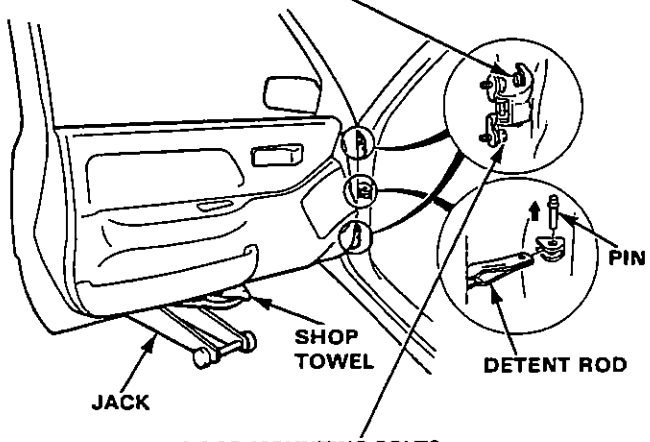


Door Position Adjustment

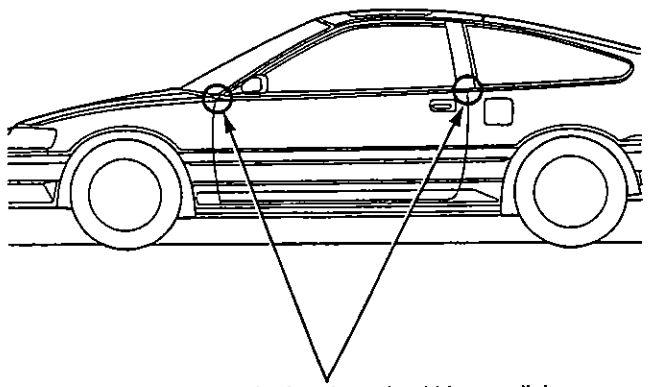
After installing the door, check for a flush fit with the body, then check for equal gap between the front and rear, and top and bottom door edges and the body. The door and body edges should also be parallel. Adjust at the hinges as shown.

CAUTION: Place a shop towel on the jack to prevent damage to the door when the hinge bolts are loosened for adjustment.

HINGE MOUNTING BOLTS
Loosen the bolts, and move the door BACKWARD or FORWARD, UP or DOWN as necessary to equalize the gaps.



DOOR MOUNTING BOLTS
Loosen the bolts slightly to move the door IN or OUT until flush with the body. If necessary, you can install a shim behind one hinge to make the door edges PARALLEL with the body.

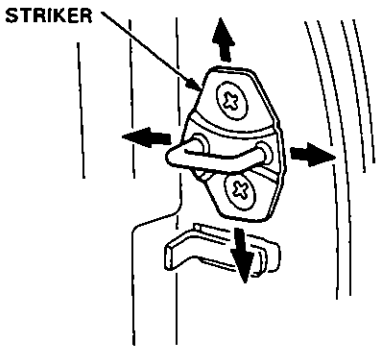


The door and body edges should be parallel.

Door Striker Adjustment

Make sure the door latches securely without slamming. If it needs adjustment:

1. Draw a line around the striker plate for reference.
2. Loosen the striker screws, and move the striker IN or OUT to make the latch fit tighter or looser. Move the striker UP or DOWN to align it with the latch opening. Then lightly tighten the screws and recheck.



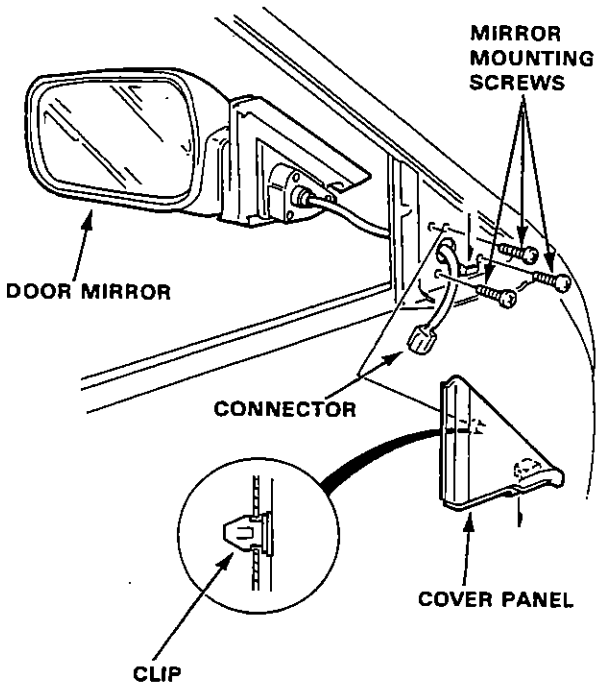
NOTE: Hold the outside handle out and push the door against the body to be sure the striker allows a flush fit.

3. If the door latches properly, tighten the screws and recheck.

Power Door Mirror

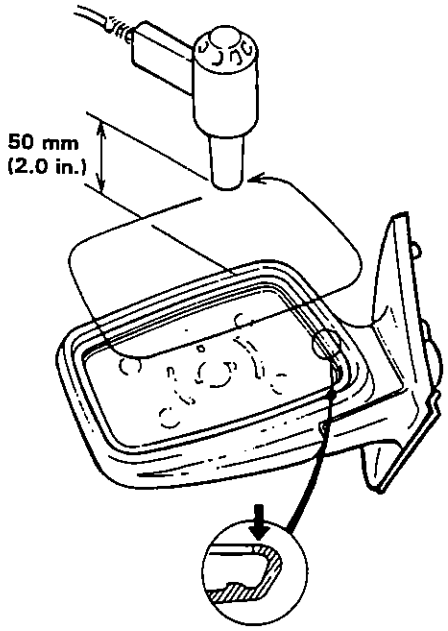
Removal

1. Remove the door panel and disconnect the power mirror connector.
2. Pry out the cover panel with a flat-tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.

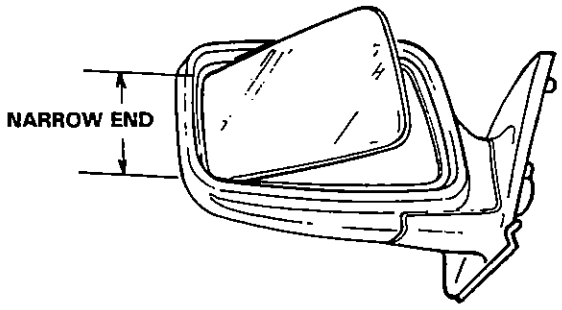


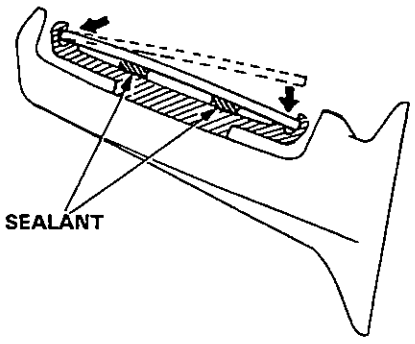
Mirror Glass Replacement

1. Heat the edge of the glass with a low powered heat gun for several minutes, then remove the glass.



2. Install the glass in the mirror case, narrow end first.

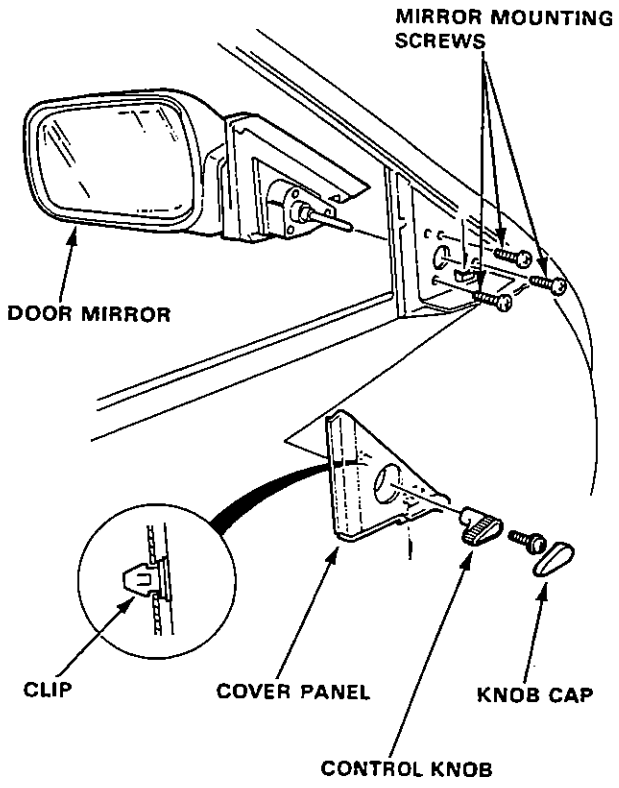




Manual Door Mirror

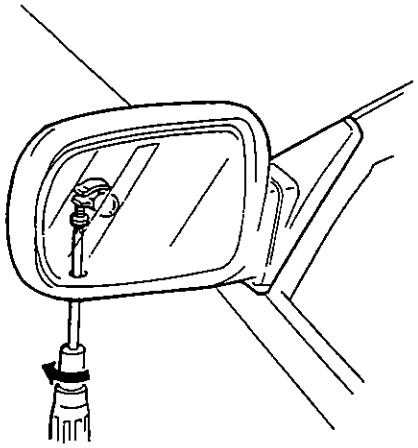
Removal

1. Remove the knob cap and screw, then remove the control knob.
2. Pry out the cover panel with a flat-tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.



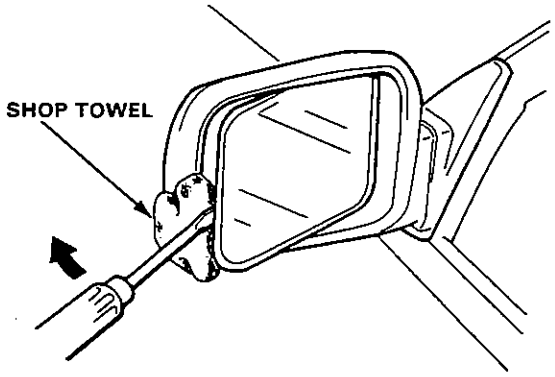
Mirror Glass Replacement

1. Insert a screwdriver in the mirror through the service hole, and loosen the glass retaining screw.

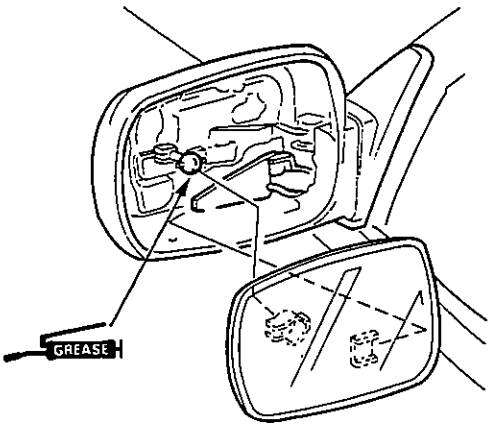


2. Carefully pry out the mirror with a flat-tip screwdriver as shown.

   CAUTION: To prevent damage to the mirror, wrap the end of the screwdriver with a shop towel.



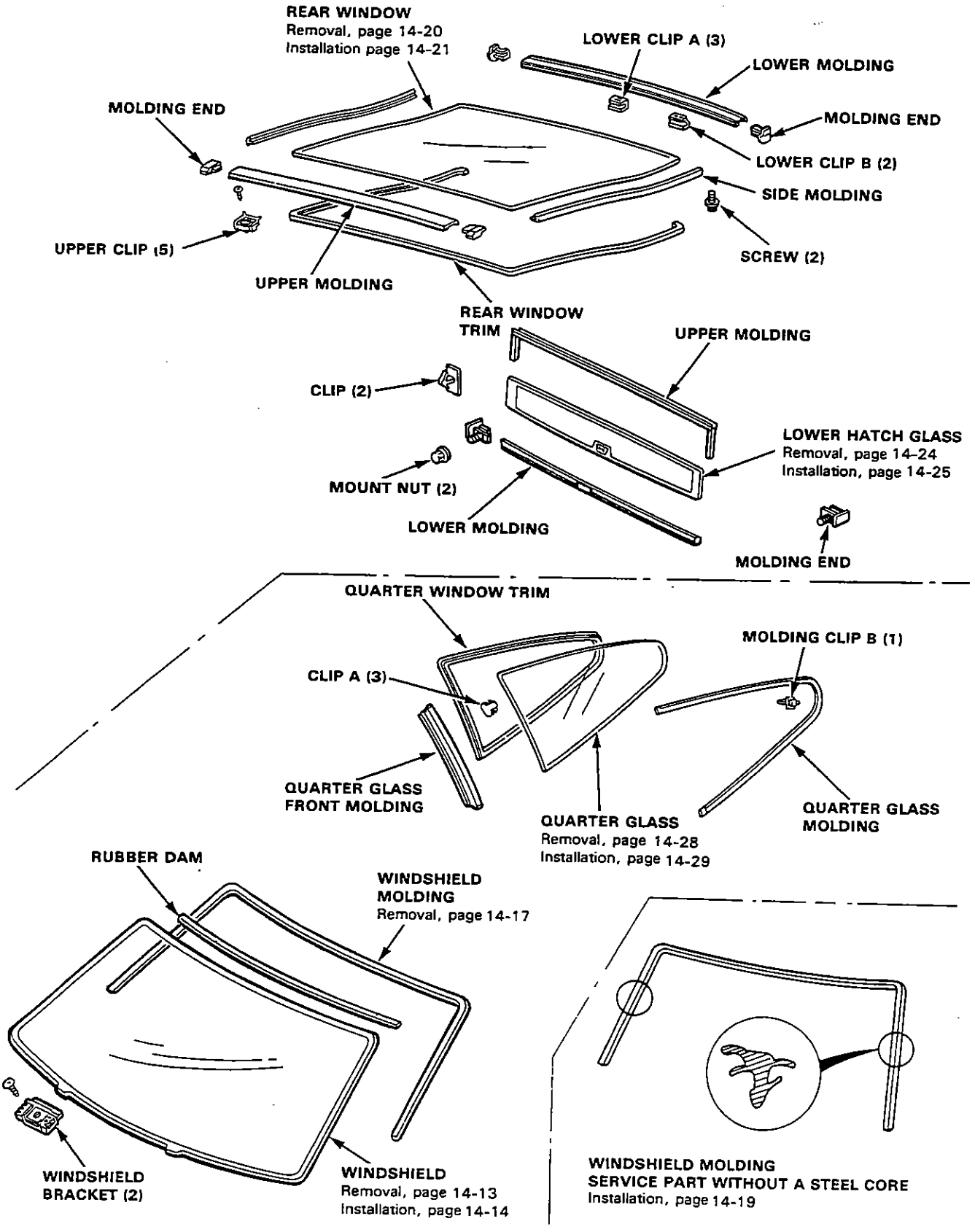
3. Install the mirror in the reverse order of removal, and also apply grease to the location shown.



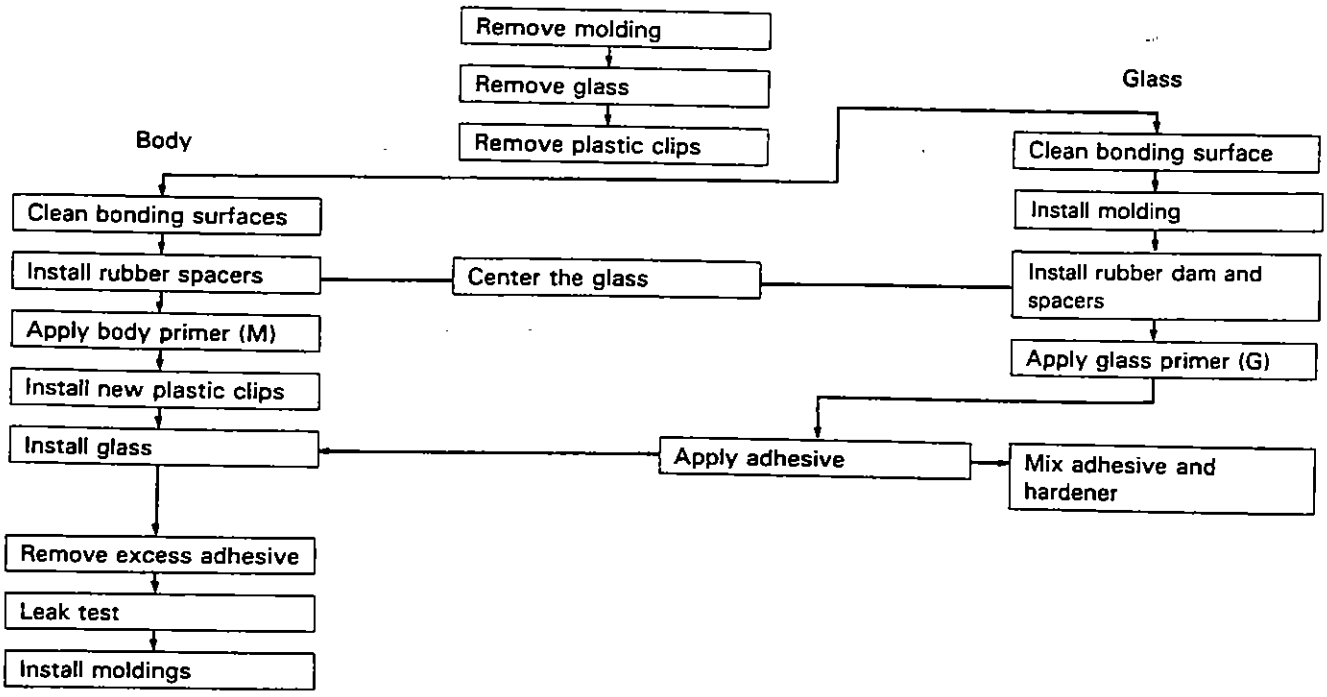
Windshield, Rear Window Glass, Lower Hatch Glass, Quarter Glass

Index

( ): Quantity of part used.



Installtion



Parts

Part Number	Contents	Comment
Adhesive kit — Low temperature 08718—99960 High temperature 08718—99961	Adhesive sealant (500 g) Hardener (75 g) Glass primer G (20 g) Body primer M (20 g) Piano wire (0.6ϕ x 1 m (3f)) Gauze Cartridge Sponge	 For glass primer (G) For applying primers

Tools

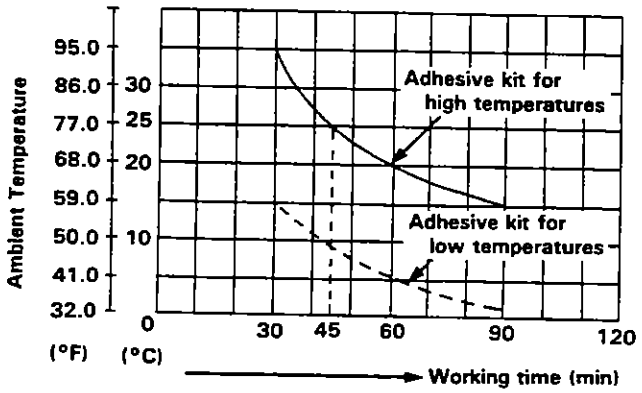
Tool/Material	Remarks
Glass or steel plate	To mix adhesive and hardener on
Putty knife	To mix adhesive and remove excess
Caulking gun	To apply bead of adhesive to windshield
Suction cups	To install windshield
Knife	To scrape bonding surface around window opening
Awl	To make hole through existing adhesive for piano wire
Two wood sticks	To hold piano wire
Toluene or alcohol	To clean bonding surfaces

Windshield, Rear Window Glass, Lower Hatch Glass, Quarter Glass

Workable Time

Adhesive workable time varies widely according to temperature, so choose the correct adhesive kit for the temperature range you will be working in.
After mixing and applying adhesive, you should install the windshield within the time shown on the chart.

For example, when the ambient temperature is 25°C (77°F), the glass should be installed within 45 minutes using the high temperature type adhesive.
Kit part numbers and contents are listed on the page before.



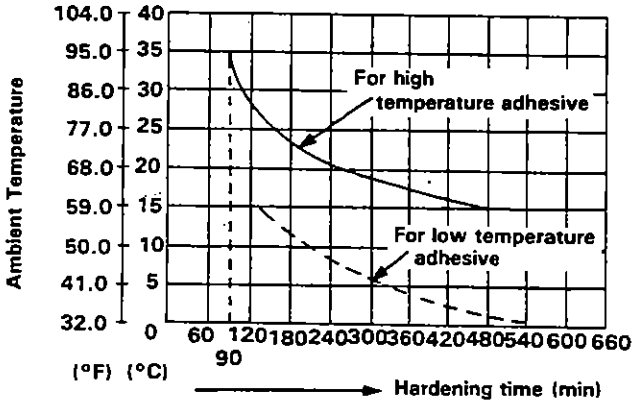
Notes

- Both kits have two types of adhesive primer: one for the body (metal), and one for glass.
- Always use new genuine Honda adhesive, or equivalent.
- Do not use the adhesive if 6 months have elapsed since date of manufacture.
- Store adhesive in a cool, dry place.
- Open only immediately before you are going to use it.

Hardening Time

Hardening time can be shortened by heating with infrared light.

For example, the adhesive will start to harden within 270 minutes mixing at 20°C (63°F). If however, it is heated to 35°C (95°F), it will start to harden within 90 minutes.



Broken Glass Removal

Remove as much broken glass as possible with a vacuum cleaner.
Blow out the glass in the heater and behind the dashboard with low pressure compressed air:

WARNING Wear eye protection while using the air gun.

1. Set the temperature control knob to COLD.
2. Push the HEAT button on the function panel.
3. Make sure the recirculation button is out (OFF).
4. Blow compressed air through the defroster center vent outlet.
5. Remove the blower duct, and remove any glass from the air mix chamber.
6. Remove the any glass from the top of the vent/defrost door.
7. Remove any glass from top and bottom of carpet and seats with a vacuum cleaner.

NOTE: It is recommended to remove the seats to shake off any glass (page 14-46).

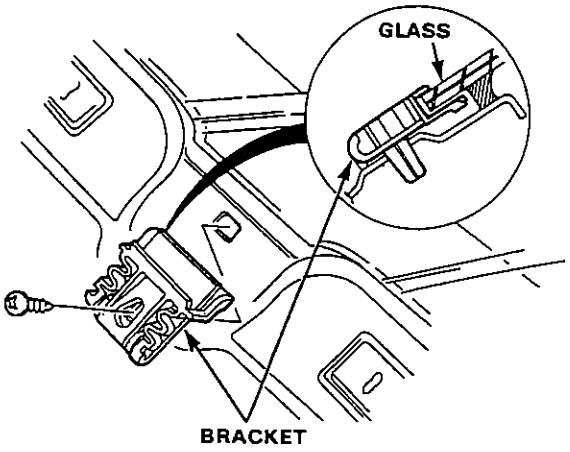
Windshield

Removal

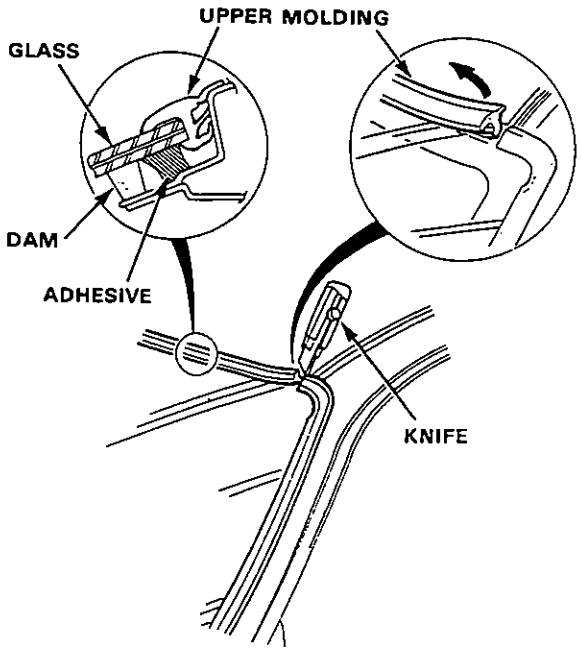
1. To remove the windshield, first remove the:
   - Rearview mirror (page 14-51).
   - Sun visors and holders.
   - Front pillar trim (page 14-44).
   - Front wiper and air scoop.
   - Lower molding.
   - Front of weatherstrip.

NOTE: Do not damage the painted surface.

2. Remove the screws, then remove the right and left glass brackets.

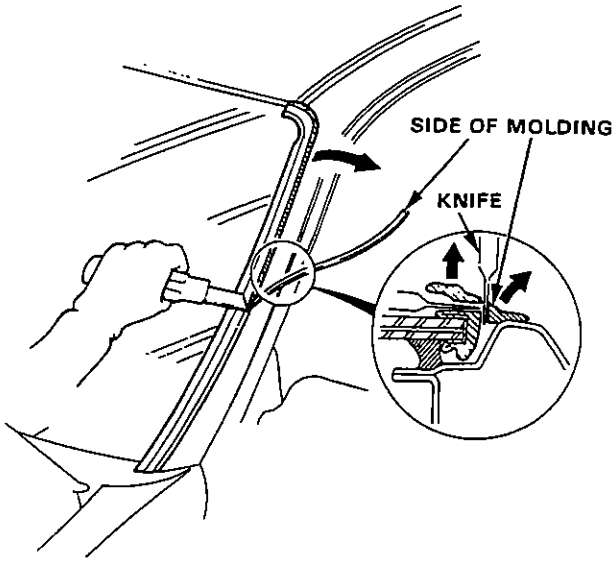


3. Cut the end of the upper molding as shown.



4. Pull away the upper molding.

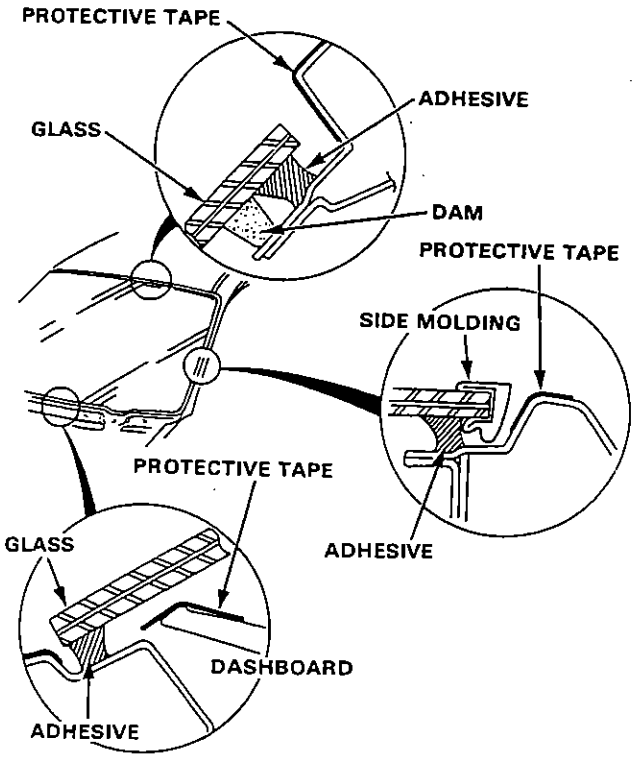
5. Cut the side rubber portion off the molding as shown (Page 14-17).



6. Lower the front of the headliner.

   NOTE: Take care not to bend the headliner excessively.

7. Apply protective tape along the edge of the dashboard and body next to the glass as shown.

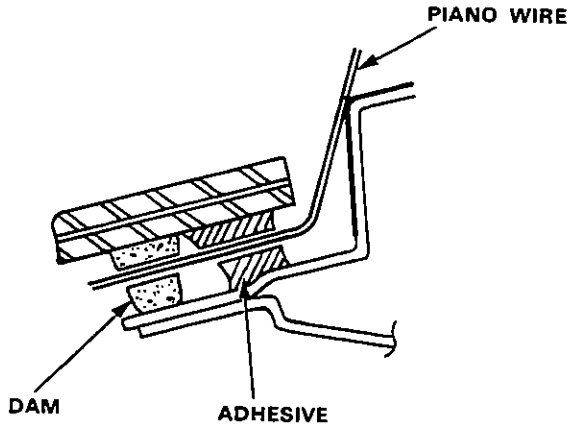


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Windshield

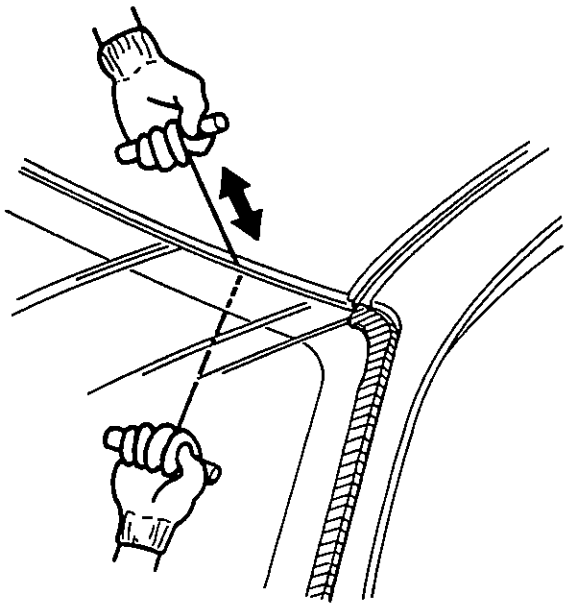
Removal (cont'd)

8. Using an awl, make a hole through the adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.



9. With a helper on the outside, pull the wire back and forth in a sawing motion and carefully cut through the adhesive around the entire glass.

CAUTION: Hold the piano wire as close to the glass as possible to prevent damage to the body and dashboard.



10. Remove the side molding from the glass.

Installation

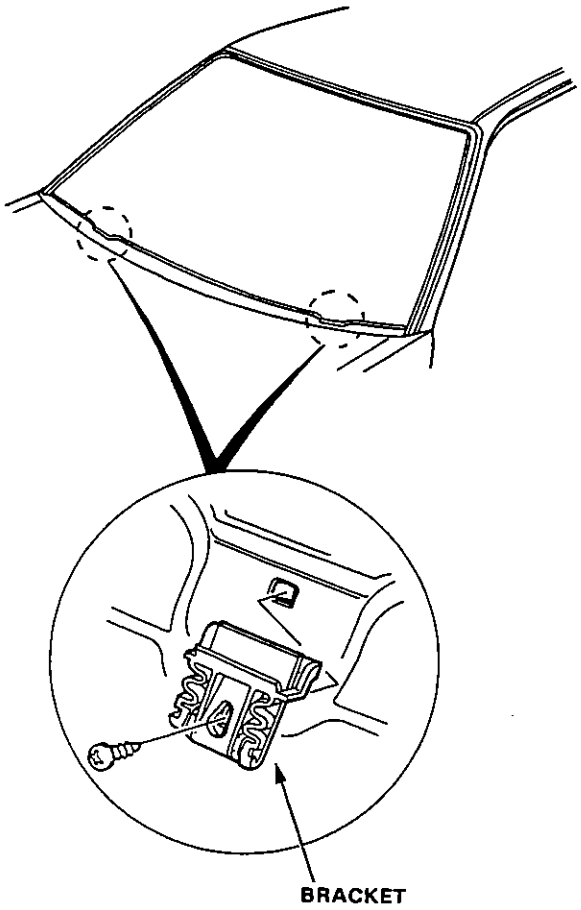
1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

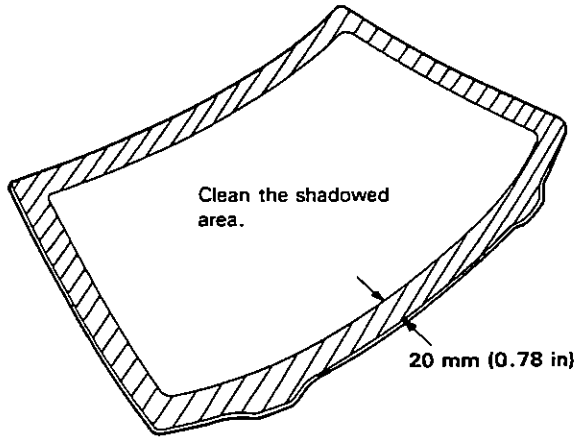
3. Install the glass brackets as shown.



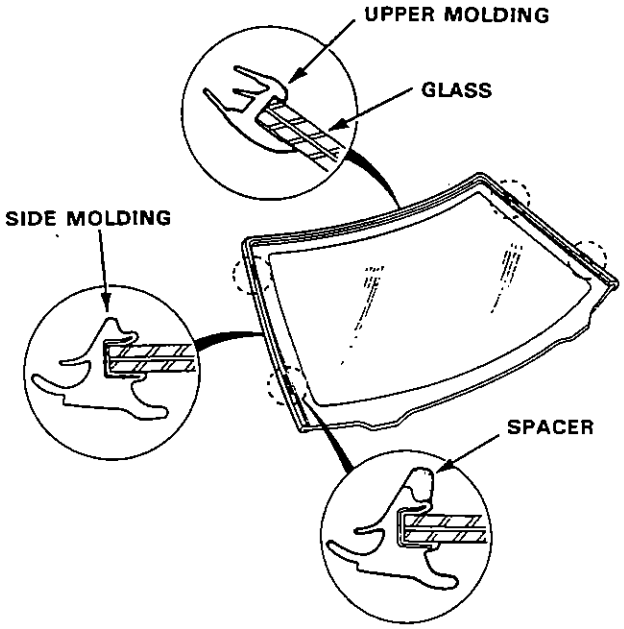
4. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

   NOTE: Make sure the bonding surface is kept free of water, oil and grease.

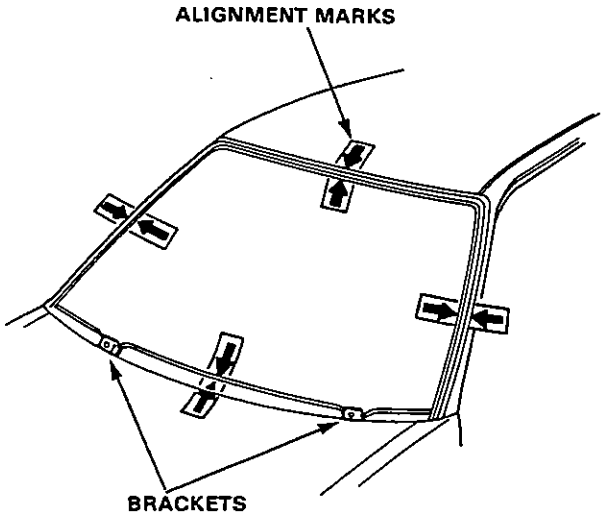
   CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.



5. Apply the windshield moldings to the glass as shown.

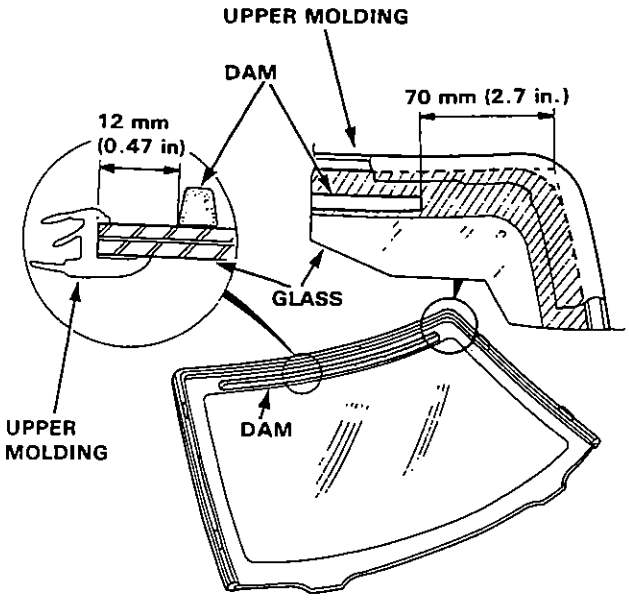


6. Set the glass upright on the spacers, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.



7. Center and glue the rubber dam to the inside face of the glass as shown, to contain the adhesive during installation.

   NOTE:
   - Be careful not to touch the glass where adhesive will be applied.
   - Mask off surrounding surfaces before applying primer.

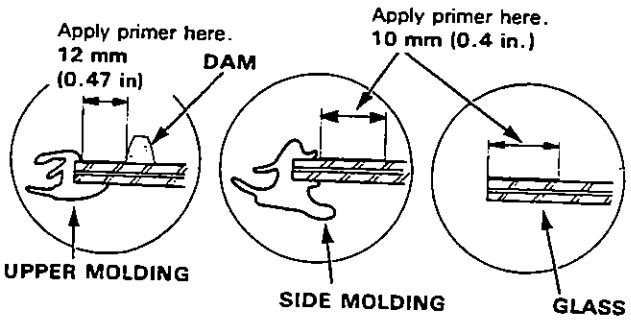


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Installation (cont'd)

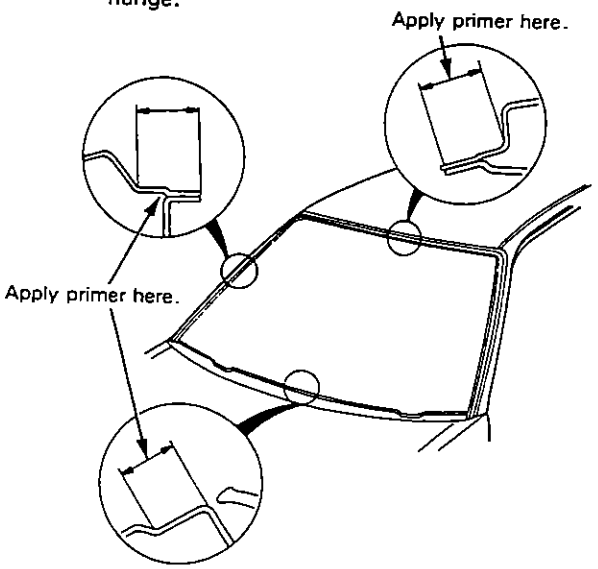
8. With a sponge, apply a light coat of glass primer around the edge of the glass, then lightly wipe it off with gauze or cheesecloth.

   NOTE:
   - Do not apply body primer to the 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 glass properly, causing a leak after the glass is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

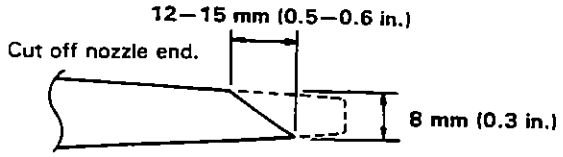
   NOTE:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.
   - Mask off the dashboard before painting the flange.



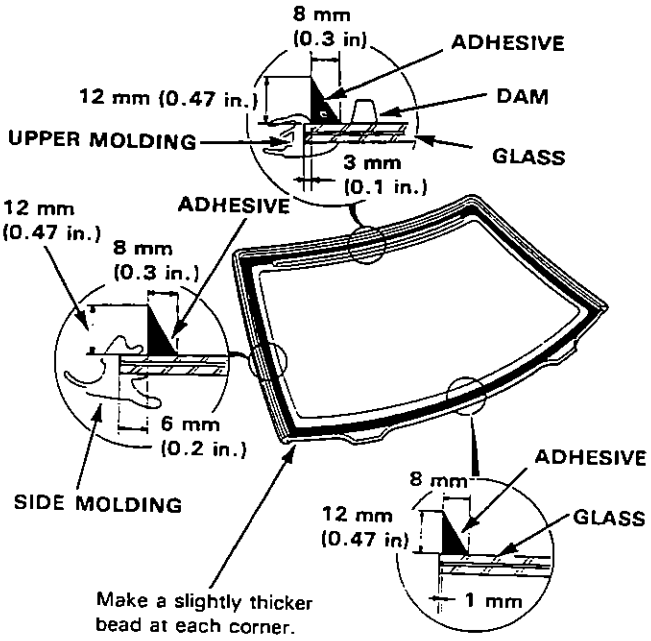
10. Thoroughly mix the adhesive and hardener together on a glass or metal plate.

    NOTE:
    - Clean the plate with a sponge and alcohol before mixing.
    - Follow the instructions that came with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

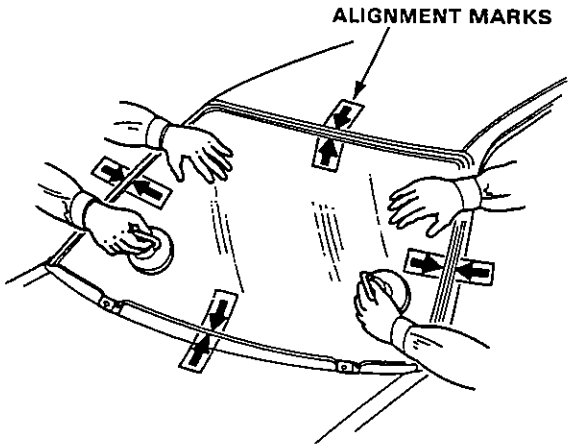


12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



13. Use suction cups to hold the glass over the opening, align it with the marks made in step 6 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close the doors until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

15. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

    NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

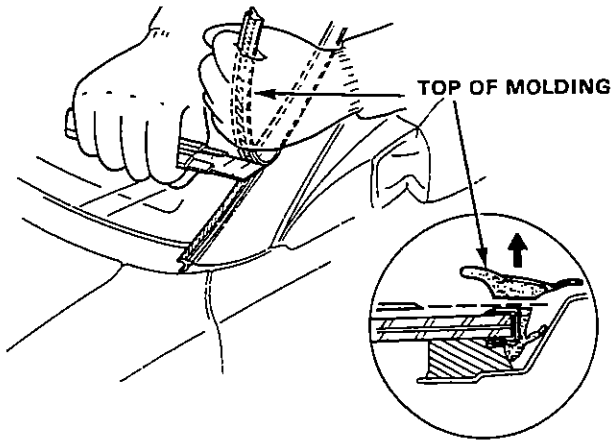
16. Reinstall all remaining removed parts.

Removal

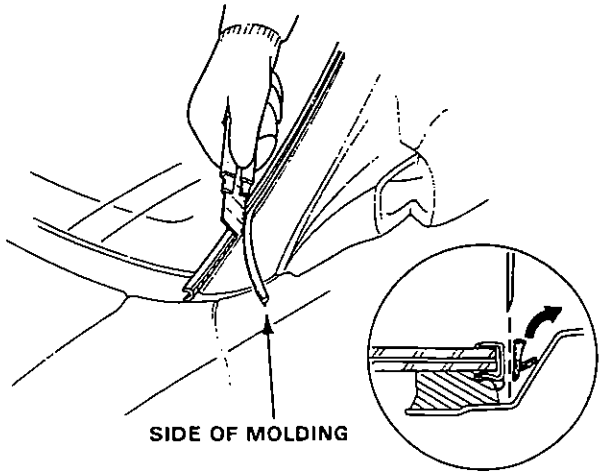
1. To remove the front windshield molding, first remove the:
   - Front wiper and air scoop
   - Lower molding.

   NOTE: Do not damage the painted surface during removal procedure.

2. Cut the top rubber portion off the side of molding as shown.



3. Cut the side rubber portion off the molding as shown.

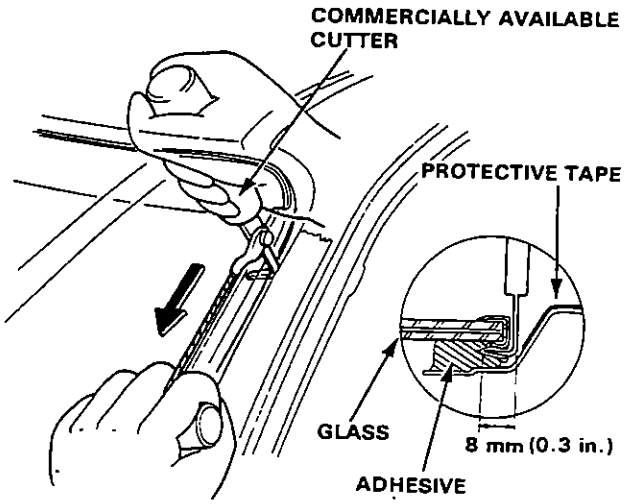


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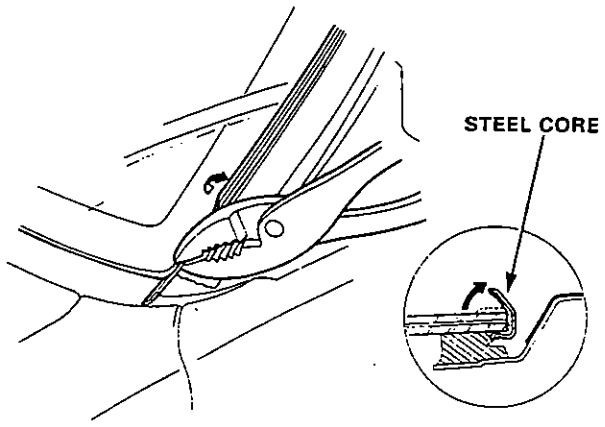
Windshield Molding

Removal (cont'd)

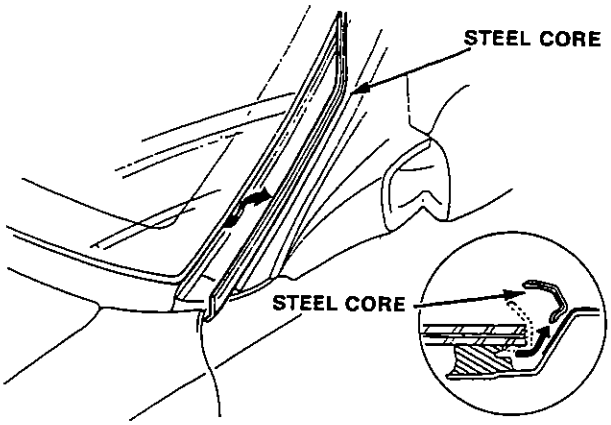
4. Apply protective tape along the edge of the body next to the glass as shown. Cut the bottom of the side molding as shown. Cut through the adhesive holding the underside of the side moldings.
   NOTE:
   - You will need a commercially available cutter with an L-angled blade having 8 mm of cutting surface, in order to cut only the molding adhesive without cutting the glass adhesive. The blade supplied with some cutters may need to be ground down to 8 mm.
   - Windshield moldings can be cut easily with a hot-tip type L-angle bladed cutter.



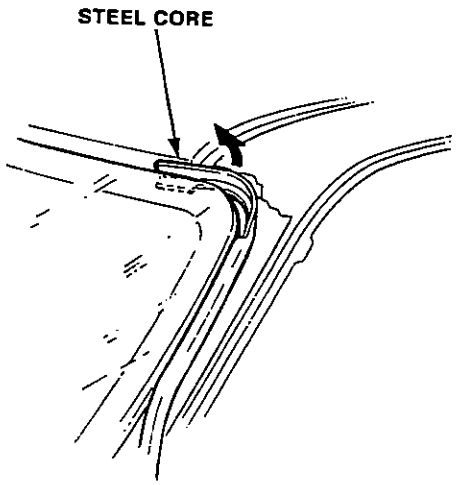
5. Carefully bend up the top side of the steel core as shown.



6. Pull the molding steel core away from the glass.
   NOTE: The upper molding can be removed by simply pulling it up.



CAUTION: Remove the steel core without damaging the glass.



Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

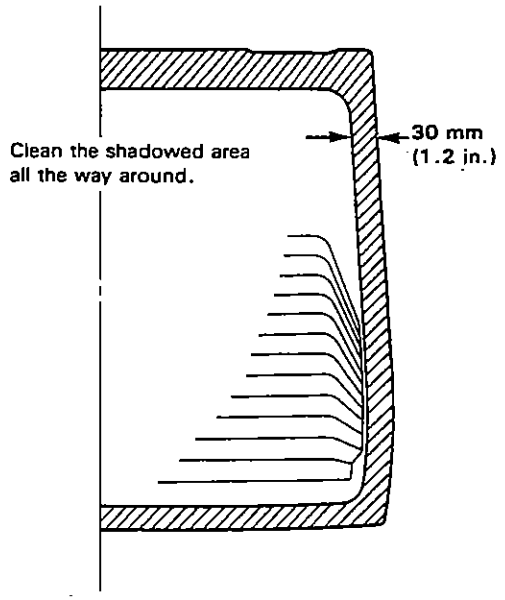
   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

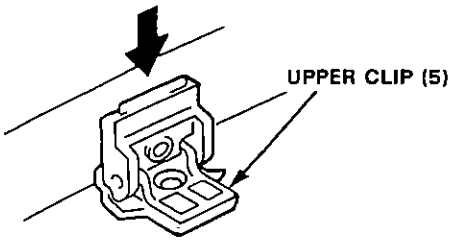
   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

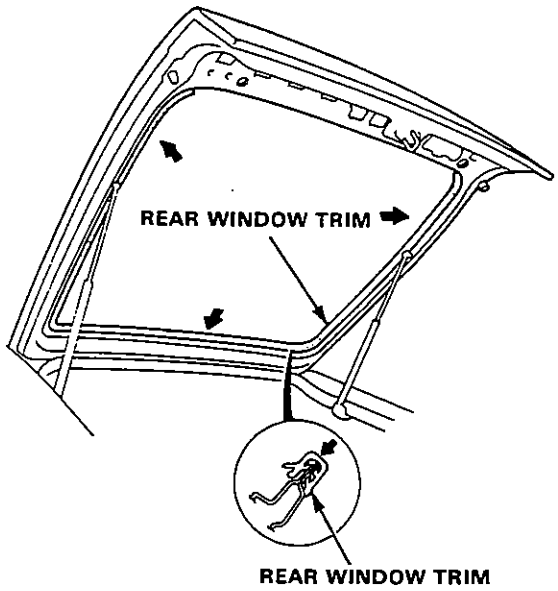
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.



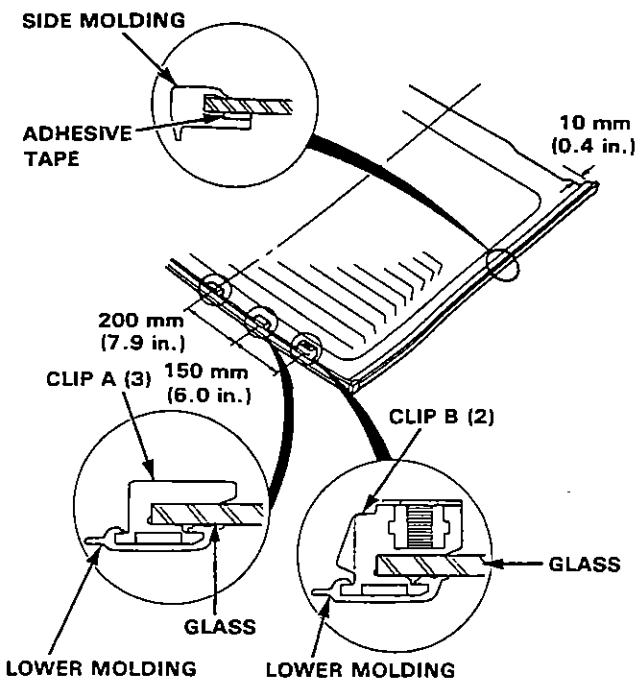
4. Install the upper clips.



5. Install the rear window trim in the tailgate.



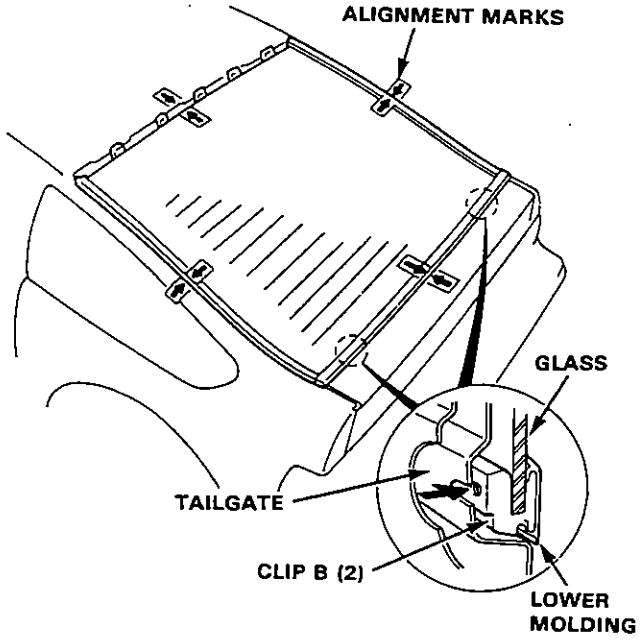
6. Adhere the side moldings, lower molding clips and lower molding to the side and lower edge of the glass as shown.



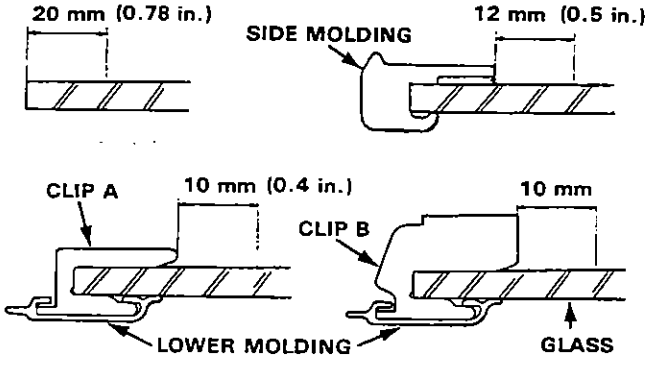
(cont'd)

Installation (cont'd)

7. Set the glass upright on the tailgate, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.
   NOTE: Check that the lower molding clip B mount holes and tailgate holes align with each other as shown.

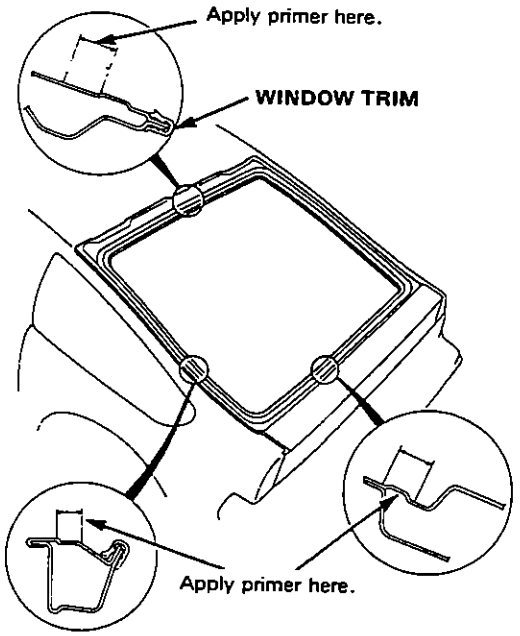


8. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.
   NOTE:
   - Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

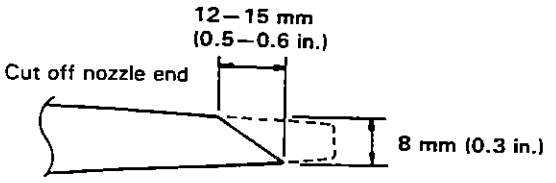
   NOTE:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.



10. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

    NOTE:
    - Clean the plate with a sponge and alcohol before mixing.
    - Follow the instructions that come with the adhesive.

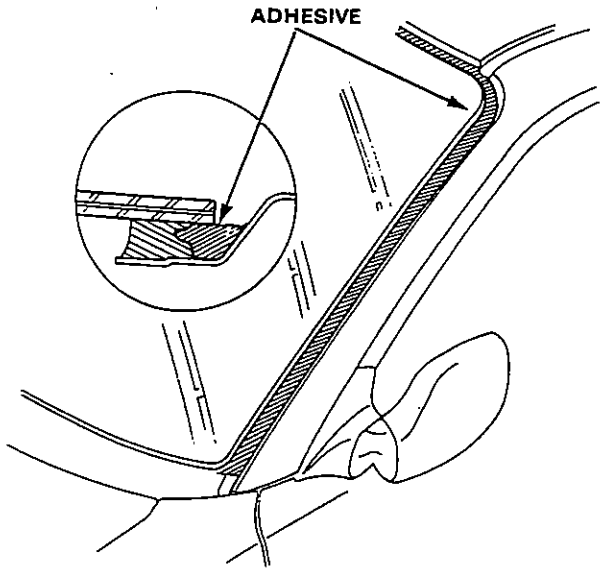
11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



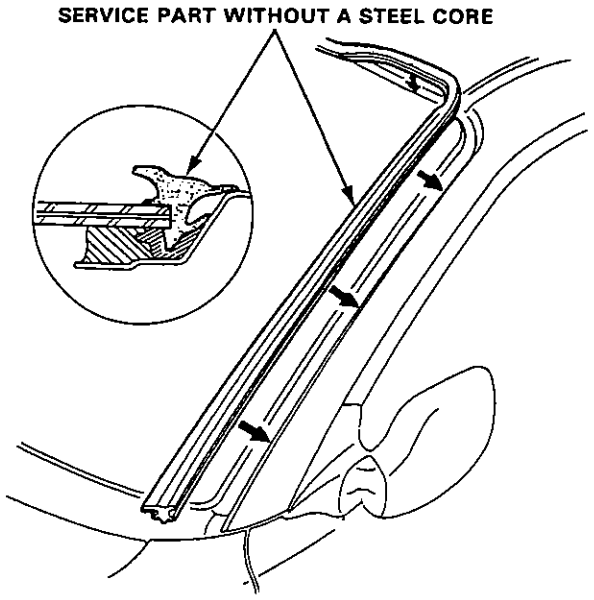
Installation

NOTE: When only replacing the molding (with the windshield remaining in place) use the replacement molding that has no steel core.

1. Apply adhesive around the glass as shown.



2. Install the coreless molding, starting at the upper corners then smoothly pushing the top and side portions into place.

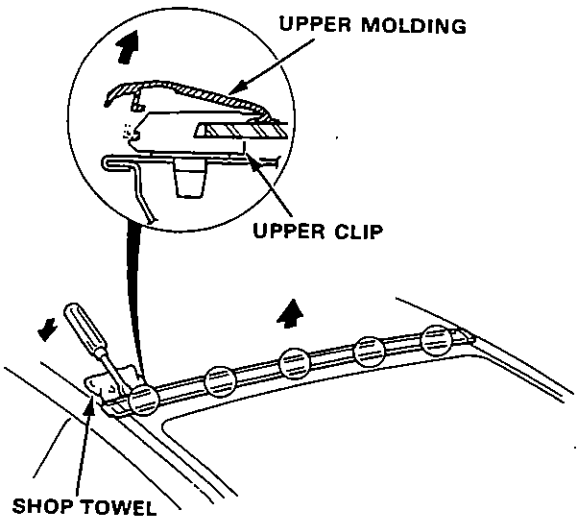


Rear Window

Removal

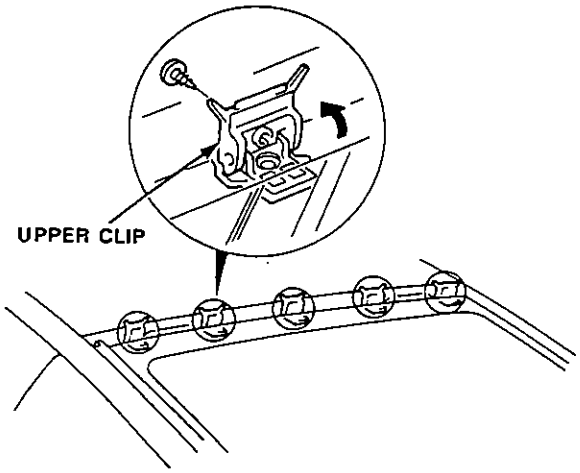
CAUTION:
- **Wear gloves to remove and install the glass.**
- **Do not damage the defroster grid lines.**

1. To remove the rear window glass, first remove the:
   - Tailgate trim panel (pages 14-62).
   - Rear wiper (See section 16).
   - Rear spoiler (page 14-64).
2. Remove the upper molding by prying it upward.



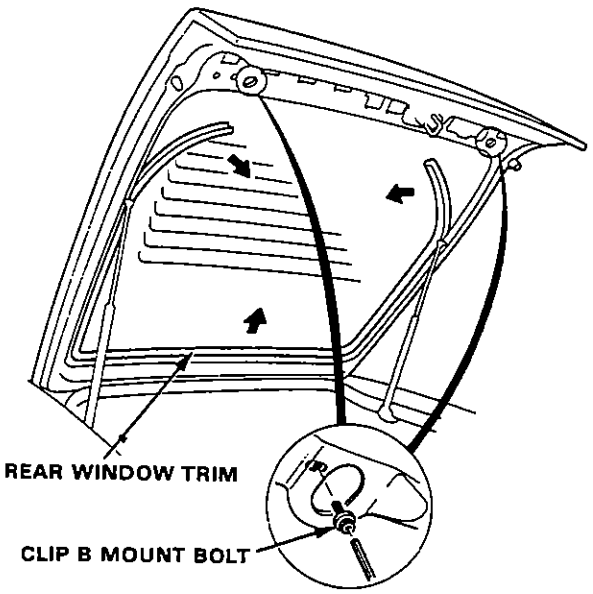
NOTE: Do not damage the painted surface.

3. Remove the screw, then raise the upper clips as shown.

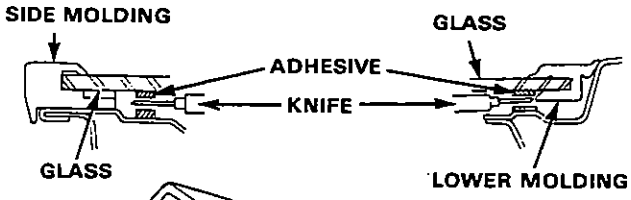


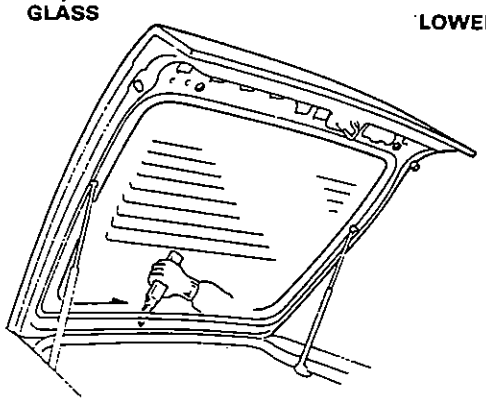
4. Remove the rear window trim, and remove the rear window lower molding clip B mount bolts.

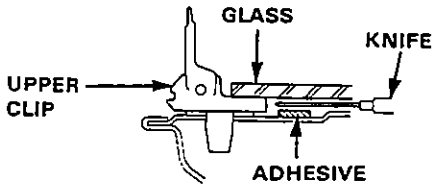
NOTE: Take care not to scratch or score the glass.



5. From inside the car, use a knife to cut through the glass adhesive all the way around the glass area.







6. Remove the rear window molding when the glass is to be reused.

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

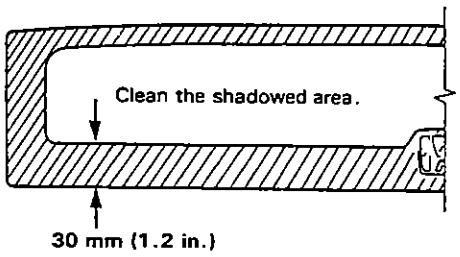
   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

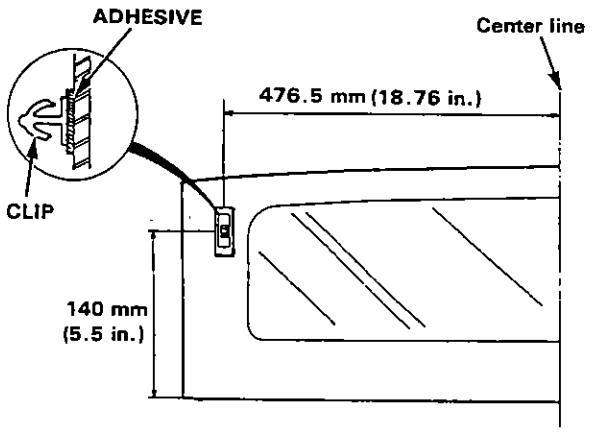
   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

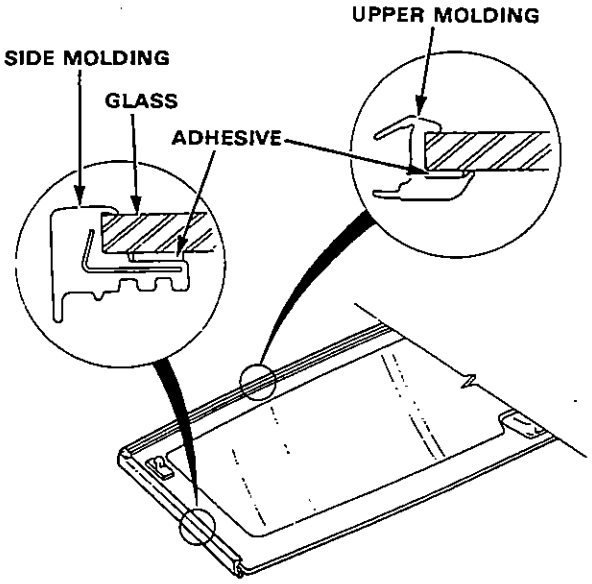
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.



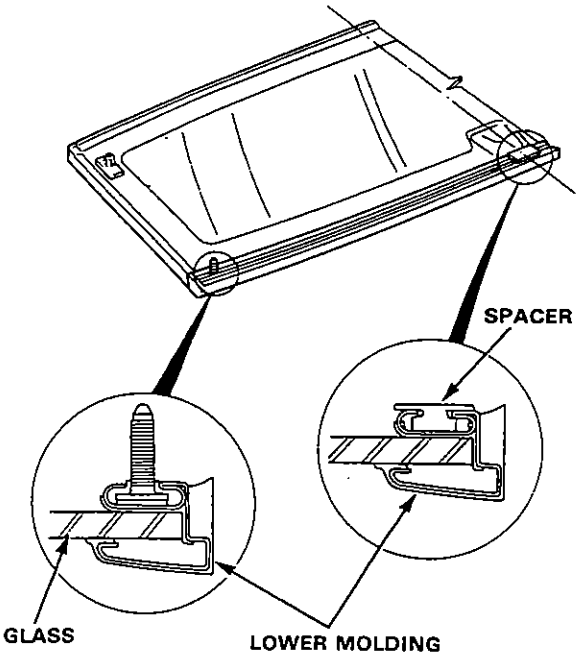
4. Glue the clips to the inside face of the glass as shown.



5. Adhere the upper and side moldings to the edge of the glass as shown.



6. Install the lower molding on the glass as shown.



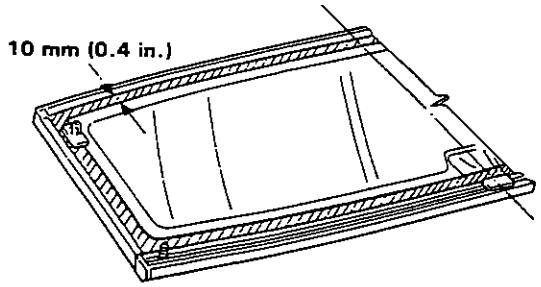
(cont'd)

Lower Hatch Glass

Installation (cont'd)

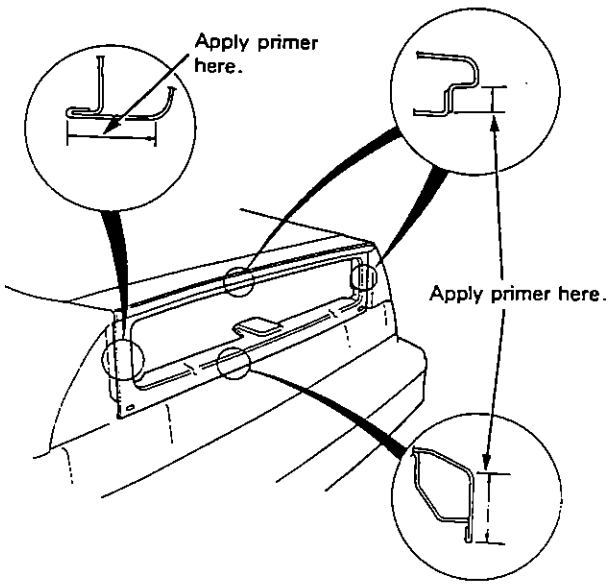
7. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

   NOTE:
   - Do not apply body primer to the 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 glass properly, causing a leak after the glass is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.



8. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

   NOTE:
   - 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.

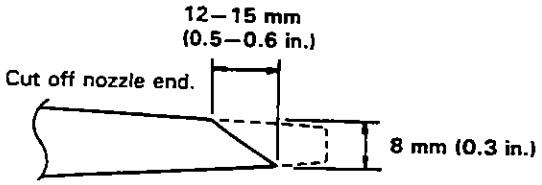


9. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

   NOTE: Clean the plate with a sponge and alcohol before mixing.

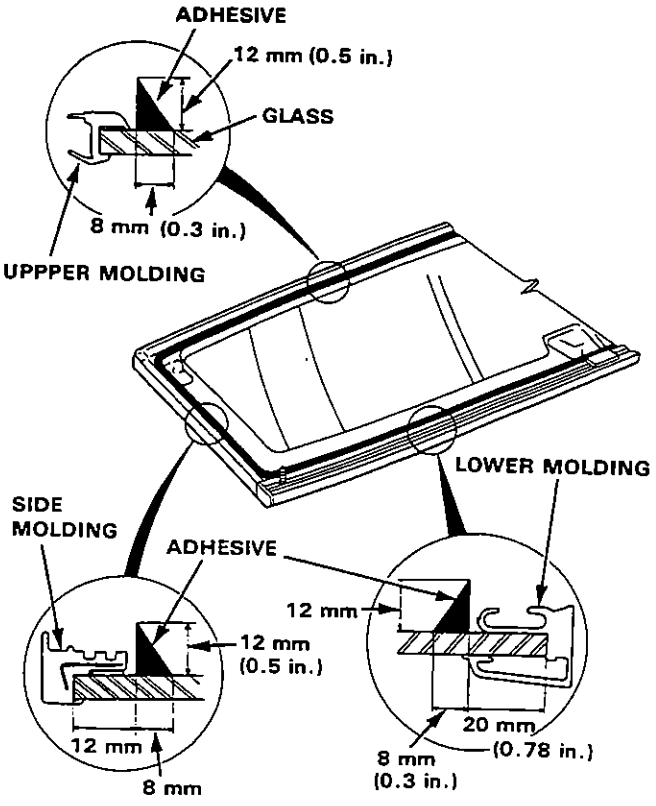
10. Follow the instructions that came with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

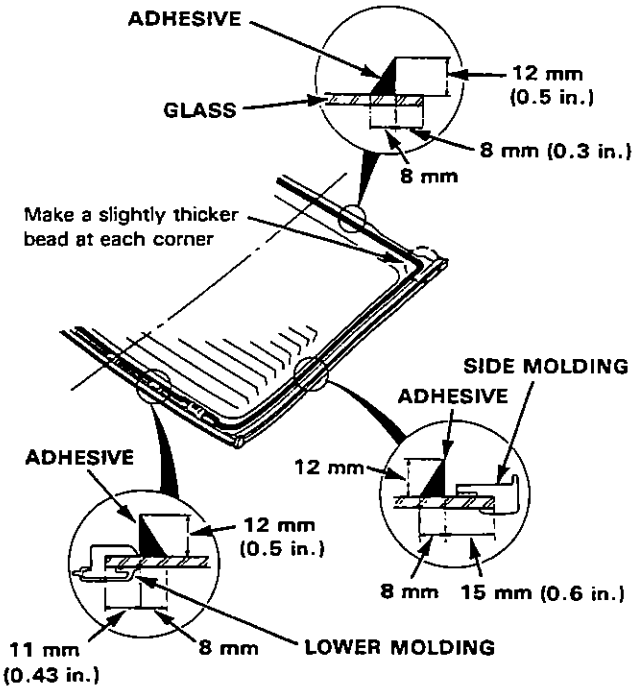


12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

    NOTE: Peel off the backing of dam.

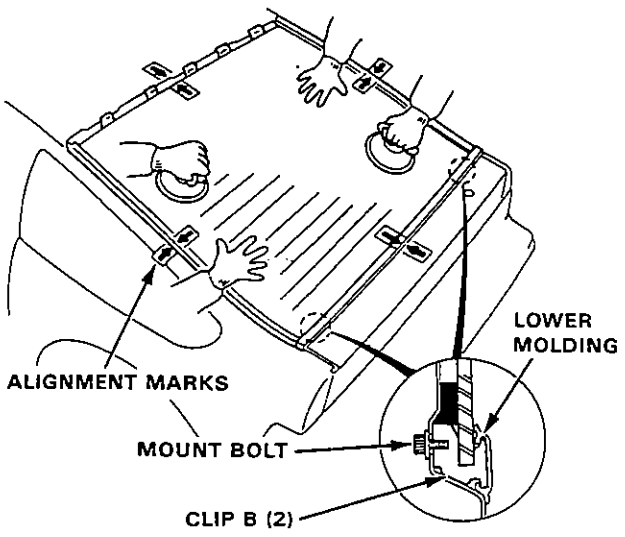


12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

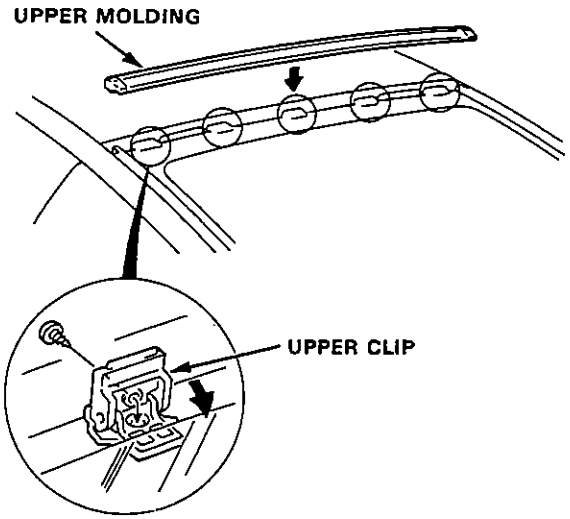


13. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the doors until the adhesive is dry.



14. Fold down the upper clips and install the screws. Install the upper molding by pressing down on the upper edge as shown.



15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

16. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

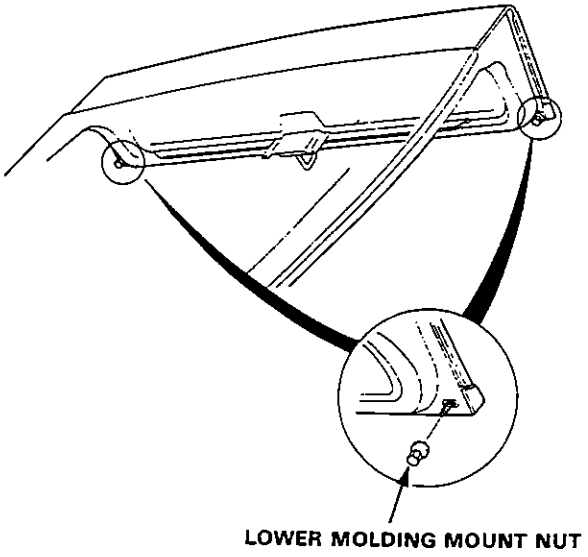
17. Reinstall all remaining removed parts.

Lower Hatch Glass

Removal

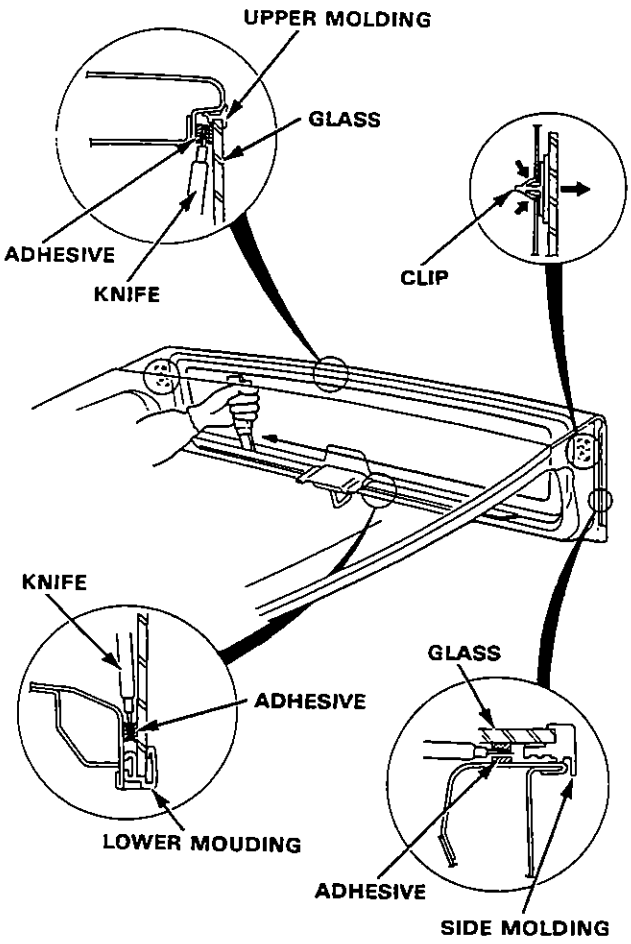
NOTE: To remove the lower hatch glass first remove the tailgate trim panel (page 14-62).

1. Remove the lower molding mount nuts.



NOTE: Take care not to scratch or score the glass.

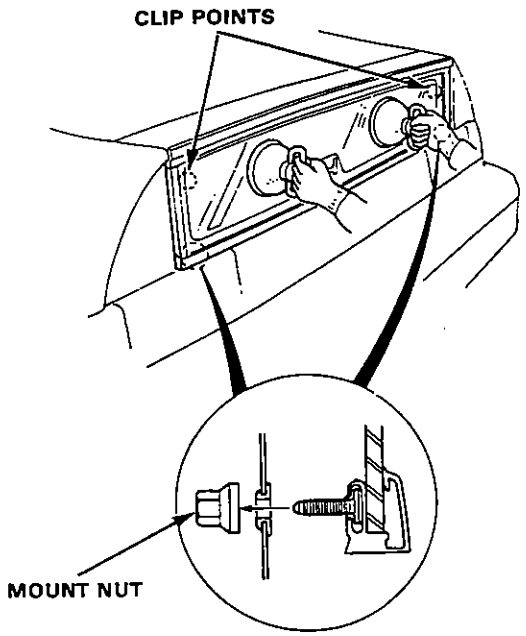
2. Detach the 2 clips and from inside the car, use a knife to cut through the glass adhesive all the way around.



3. Remove the glass.
4. Remove the lower and side molding if the glass is to be reused.
   NOTE: Do not damage the painted surface.

13. Use suction cups to hold the glass, then set it on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close the tailgate until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

15. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

    NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

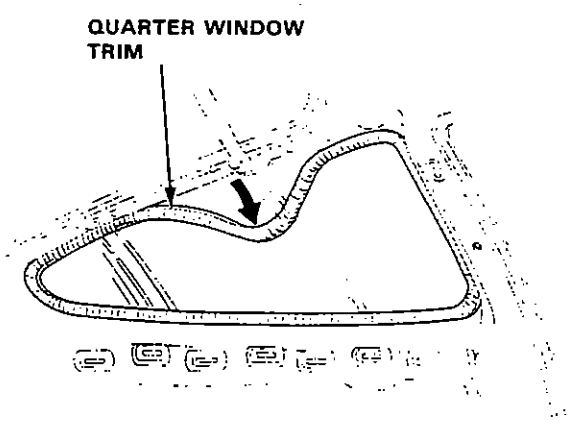
16. Reinstall all remaining removed parts.

Quarter Glass

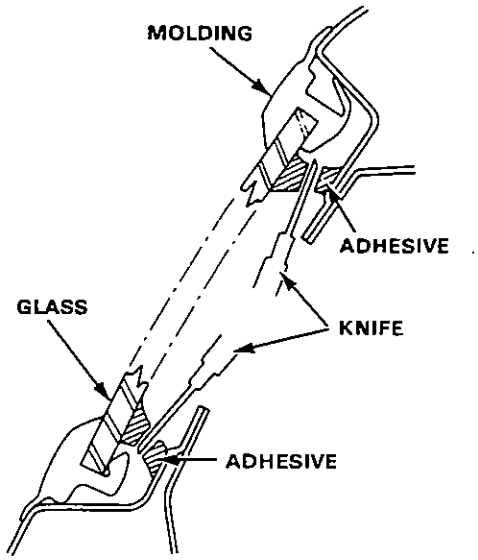
Removal

NOTE: To remove the guarter glass, first remove the quarter window trim panel and quarter trim panel (page 14-44).

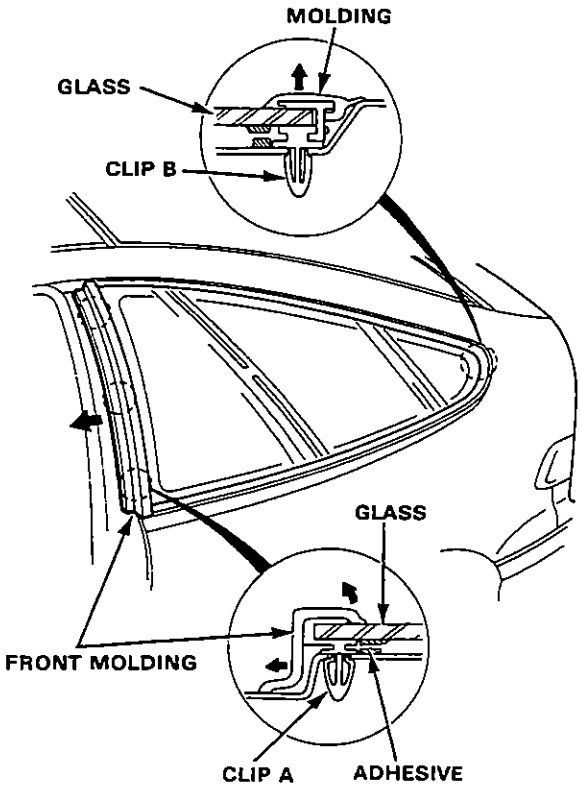
1. Remove the quarter window trim.



2. From inside the car, use a knife to cut through the glass adhesive all the way around.



3. As an assembly, pry the glass and upper and front moldings away from the car at the clip points shown.



4. Remove the quarter glass molding if the glass is to be reused.

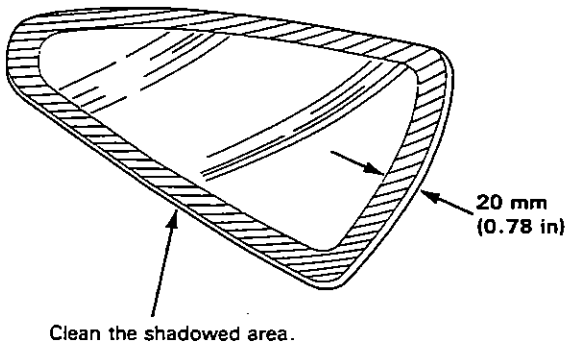
Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

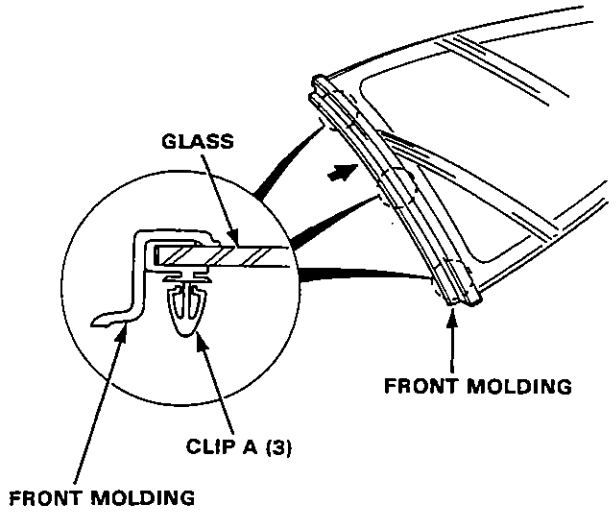
   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.
2. Clean the body bonding surface with a sponge dampened in alcohol.

   NOTE: After cleaning, keep oil, grease or water from getting on the surface.
3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

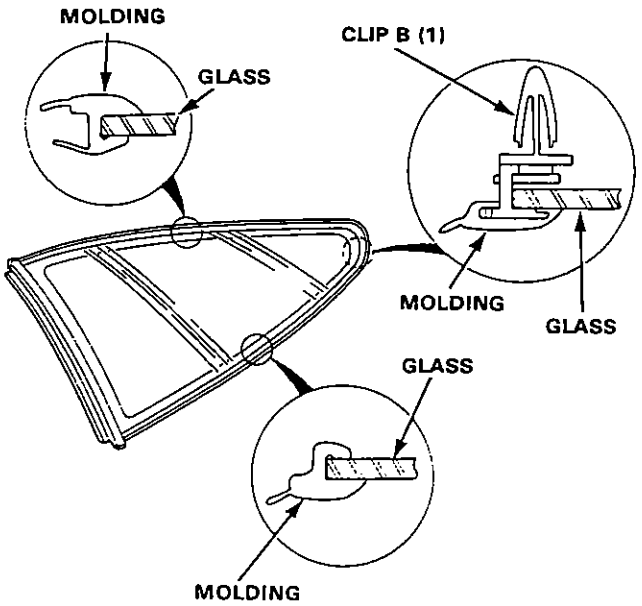
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.



4. Attach the front molding and 3 clips to the front edge of the quarter glass as shown.



5. Install the quarter molding on the glass by using the clips shown.

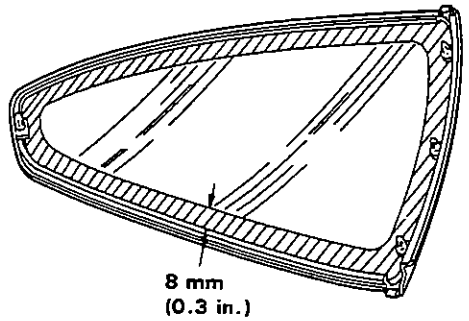


(cont'd)

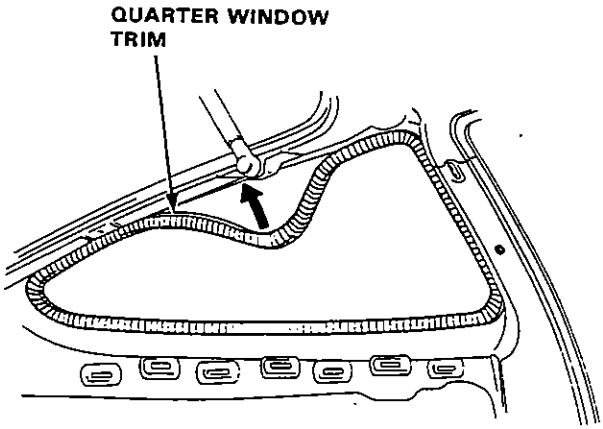
Installation (cont'd)

6. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

   NOTE:
   - Do not apply body primer to the 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 glass properly, causing a leak after the glass is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.

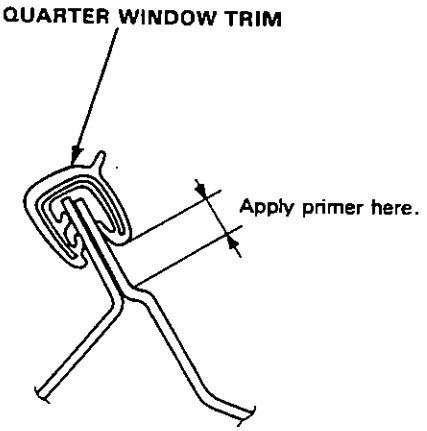


7. Install the quater window trim.



8. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

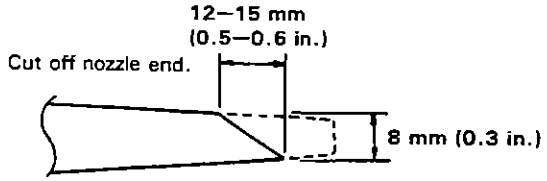
   NOTE:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.



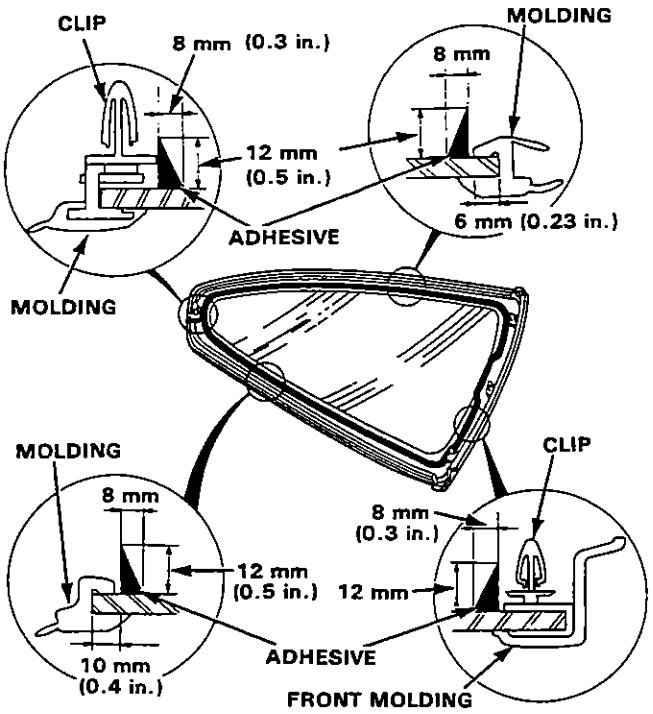
9. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

   NOTE:
   - Clean the plate with a sponge and alcohol before mixing.
   - Follow the instructions that come with the adhesive.

10. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

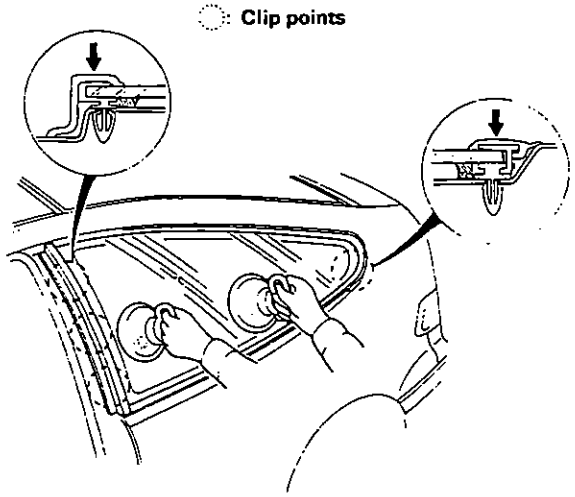


11. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



12. Use suction cups to hold the glass, then set it on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close the doors and tailgate until the adhesive is dry.



13. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

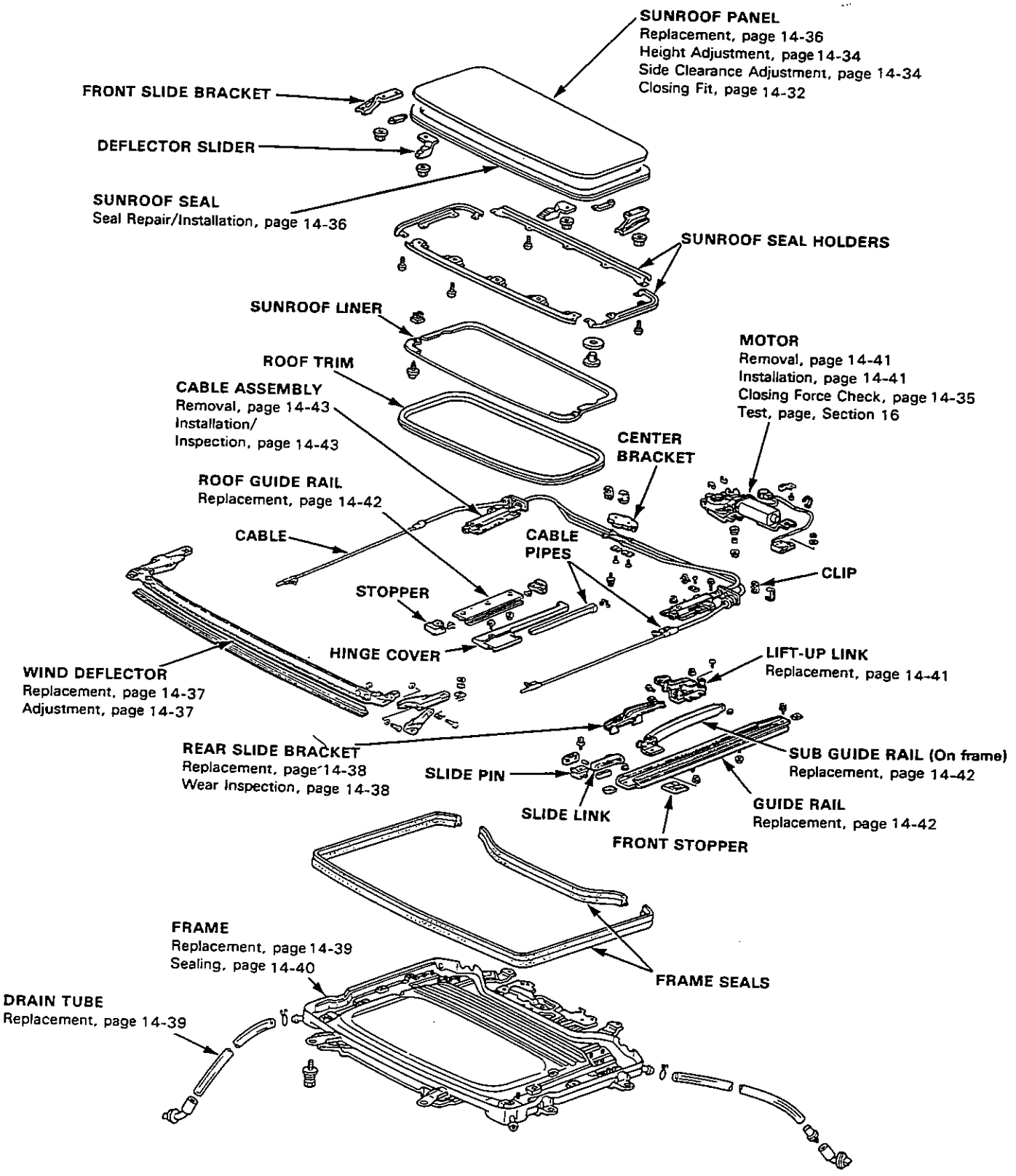
14. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

    NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

15. Reinstall all remaining removed parts.

Sunroof

Index



Troubleshooting

Symptom	Probable Causes
Water leak	1. Improperly installed sunroof seal and sunroof panel (page 14-36). 2. Gap between sunroof seal and roof panel (page 14-34). 3. Clogged drain tube. 4. Gap between frame seal and frame. 5. Improper sealing between cable pipe and frame (page 14-40). 6. Improper sealing between guide rail and frame (page 14-40).
Wind noise	1. Improper clearance between sunroof seal and roof panel (page 14-34). 2. Loose headliner and roof trim.
Deflector noise	1. Improper clearance between deflector blade and roof panel (page 14-37). 2. Insufficient deflector extension. 3. Deformed deflector.
Motor noise	1. Loose motor. 2. Worn gear or bearing. 3. Worn cable. 4. Deformed cable pipe.
Sunroof does not move, but motor turns.	1. Foreign matter stuck between guide rail and sub guide rail (page 14-38). 2. Interference between moving parts. 3. Cable slider loose. 4. Cable pipe loose or not attached properly. 5. Clutch out of adjustment (page 14-35). 6. Sunroof not tilting up properly.
Sunroof does not move and motor does not turn (Sunroof can be moved manually).	1. Blown fuse. 2. Faulty switch (Section 16). 3. Faulty relay (Section 16). 4. Faulty motor.
Sunroof vibrates	1. Worn rear slide bracket (page 14-38). 2. Improperly installed guide rails.
Sunroof remains tilted	1. Faulty cable slider (page 14-43). 2. Faulty limit switch (Section 16).

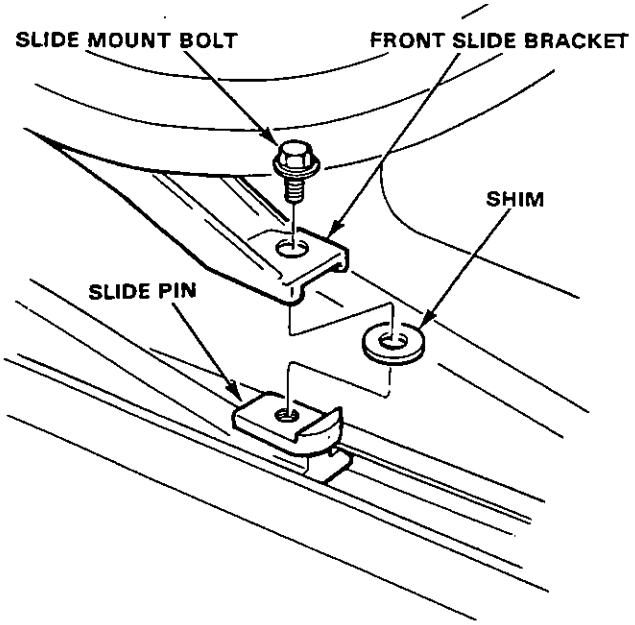
Sunroof

Height Adjustment

The roof panel should be flush with the sunroof seal.

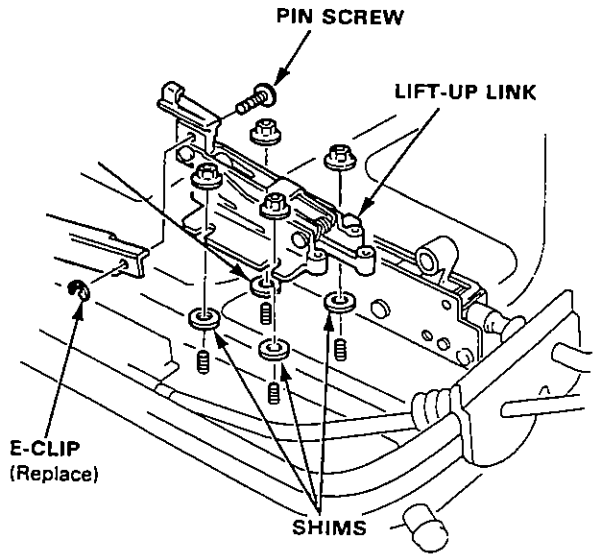
1. To adjust the front of the sunroof, remove the slide bracket mount bolt and add or remove shims between the slide bracket and the slide pin as shown.

   NOTE: The shims should be of equal thickness on both sides.



2. To adjust the rear height, remove the lift-up link (page 14-41) and add or remove shims between the lift-up link and frame as shown.

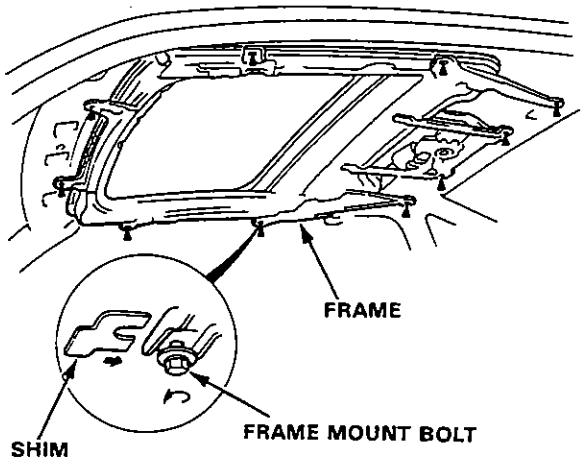
   NOTE: The shims should be of equal thickness on both sides.



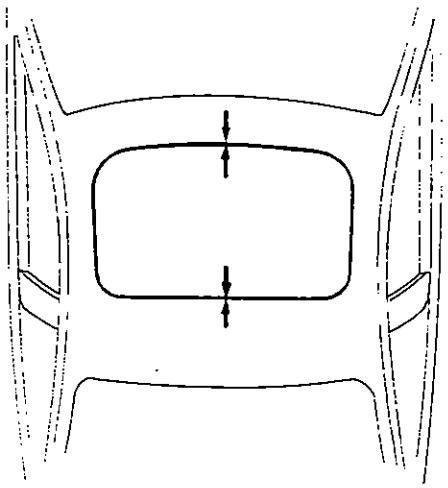
Side Clearance Adjustment

If sunroof seal fits too tightly against the roof panel on one side when closed, remove the headliner, then:

1. Loosen all frame mount bolts.



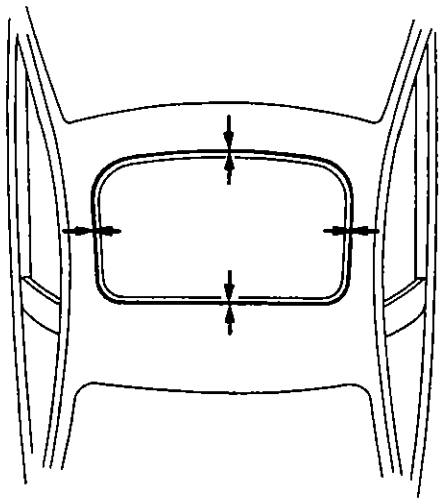
2. Side-to-side fit of sunroof seal can be adjusted by moving it right or left by hand.
3. If necessary, use shims as required to make the sunroof panel fit flush with the roof panel.



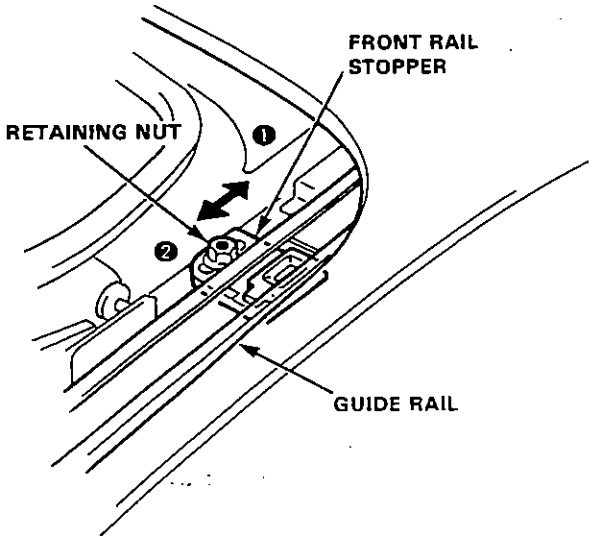
3. Tighten bolts, recheck.

Closhing Fit

If the fit of the sunroof seal is too tight at the front seal when the sunroof is closed, or too tight at the rear seal when it is pulled down into the closed position, proceed as follows:



1. Open the sunroof fully.
2. Loosen the front rail stopper nuts.



3. Slide the stoppers forward or backward until the sunroof closes snugly.

   NOTE: Slide the right and left stoppers equally.

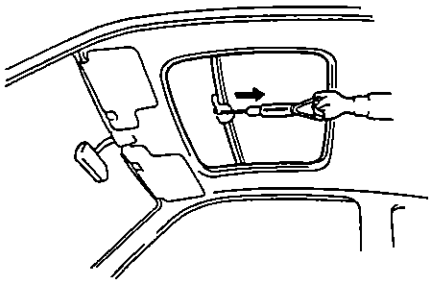
   ❶ : To increase clearance at rear seal.
   ❷ : To increase clearance at front seal.

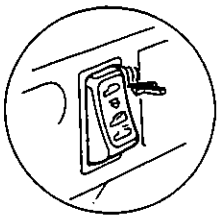
Closing Force Check

1. After installing all removed parts, have a helper hold the switch to close the sunroof while you measure force required to stop it. Attach spring scale as shown. Read force as soon as sunroof stops moving, then immediately release the switch and spring scale.

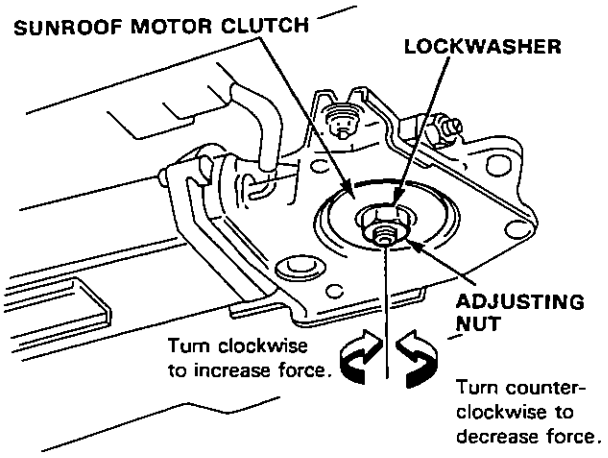
   CAUTION: When using the spring scale, protect the leading edge of the sunroof with a shop towel.

   Closing Force: 196—245 N (20—30 kg, 44—66 lb)

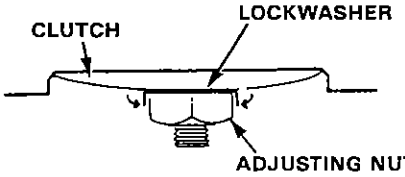




2. If force is not within specification, adjust by turning sunroof motor clutch adjusting nut.



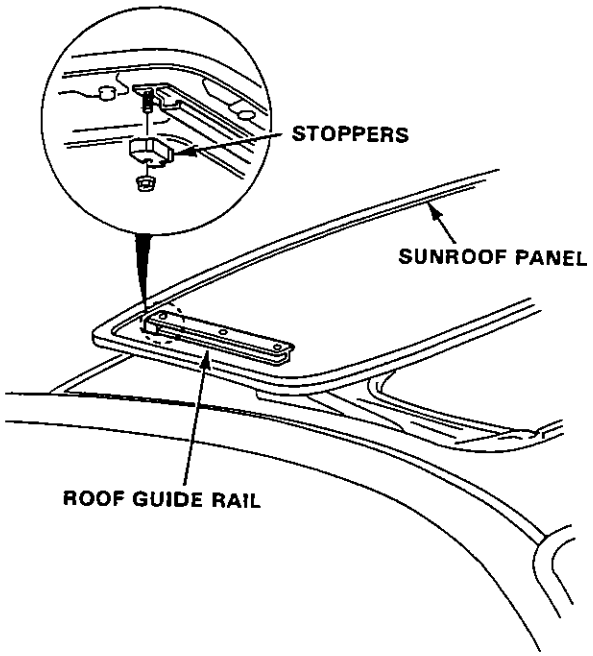
3. After adjusting, install a new lockwasher and bend it flat against the adjusting nut.



Sunroof

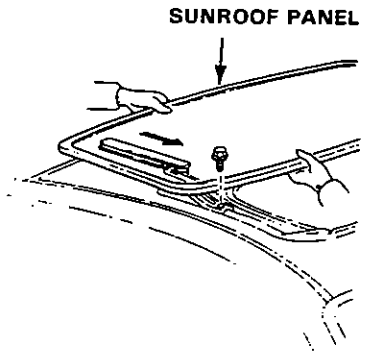
Sunroof Panel Replacement

1. Open the sunroof.
2. Remove the rear stoppers by removing the attaching nuts.



3. Remove the front mounting bolts. Remove the sunroof panel from the rear slide bracket by sliding it forward by hand.

   NOTE: Use extreme care to avoid damaging the body when removing the panel.



4. Install the sunroof panel in the reverse order of removal.

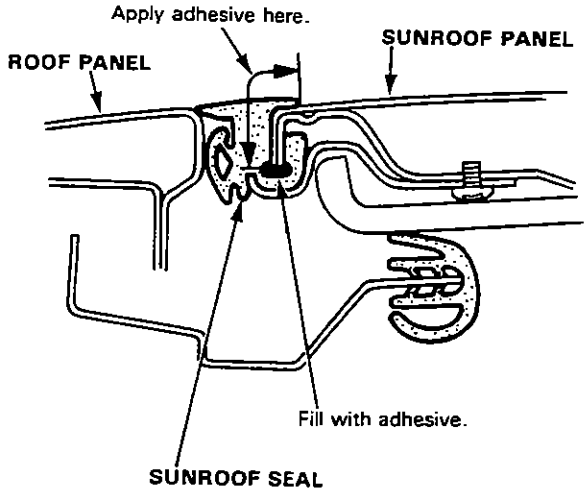
Seal Repair/Installation

If a seal is leaking, or if it is to be replaced, proceed as follows.

1. Remove the sunroof panel, remove the sunroof liner, front slide bracket and deflector slider.
2. Remove the seal holder. Carefully peel the seal off the sunroof panel.
3. Clean the seal attacing surfaces with a clean cloth dampened in alcohol.

   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

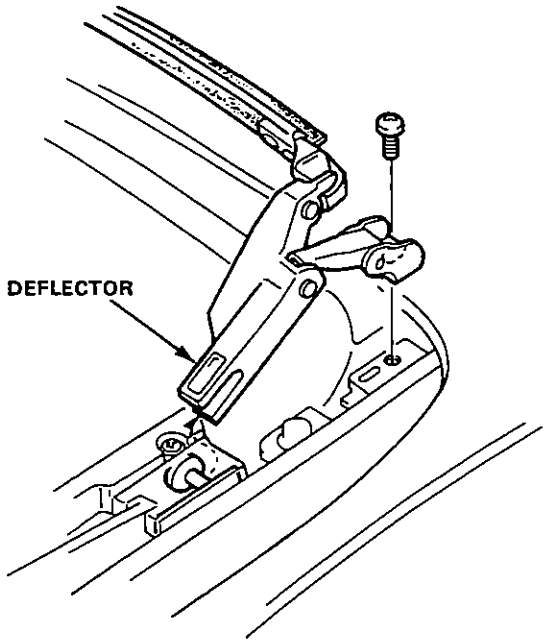
4. Fill the seal groove with adhesive. Coat the seal attaching surfaces of the sunroof panel with the same adhesive.



5. Fit the seal onto the sunroof panel evenly all the way around.
6. Wipe off excess adhesive with a clean cloth dampened with alcohol.
7. Allow the adhesive to cure for at least 4 hours after seal installation and before operating the sunroof.

Wind Deflector Replacement

1. Remove the deflector mount screws, then remove the deflector.

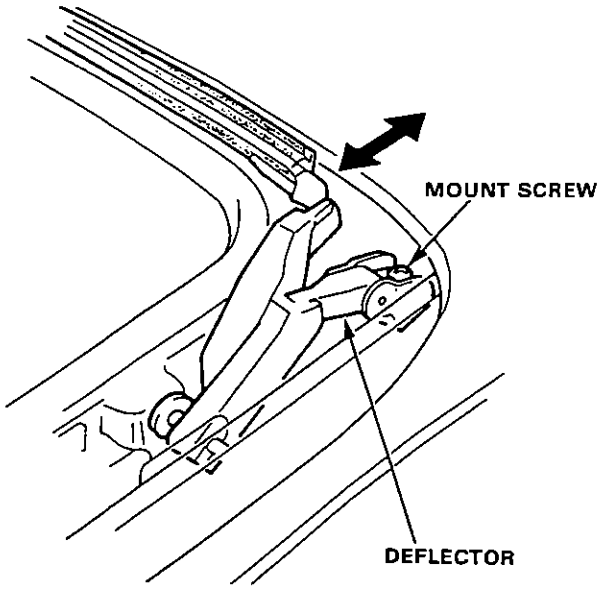


2. Install the deflector in the reverse order of removal. Adjust the deflector.

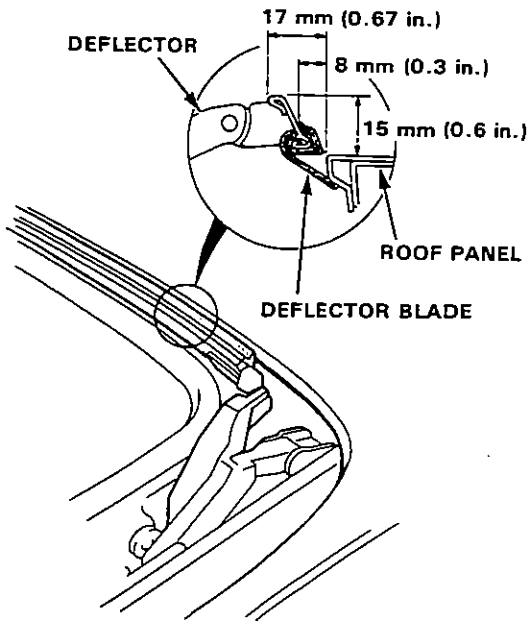
Wind Deflector Adjustment

NOTE: A gap between deflector blade and roof opening edge will cause excessive wind noise when driving at high speed with the roof open.

1. Open the sunroof fully.
2. Loosen the deflector mount screws.



3. Adjust the deflector forward or backward so the edge of its blade touches the front edge of the roof opening evenly.

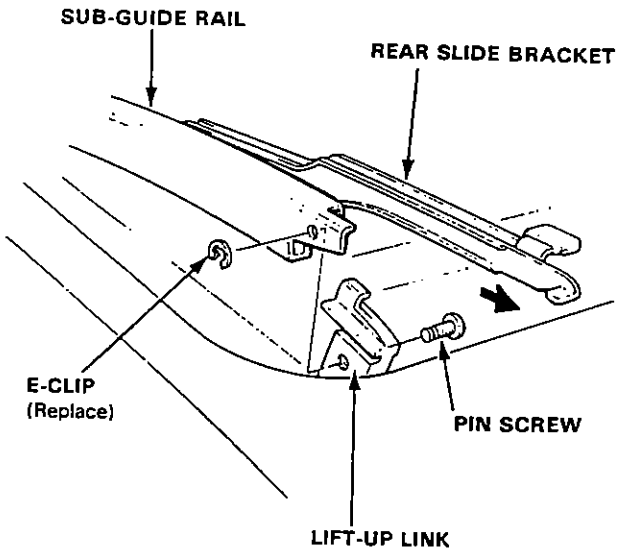


4. Check the height of the deflector.

NOTE: The height of the deflector cannot be adjusted. If damaged or deformed, replace or repair it.

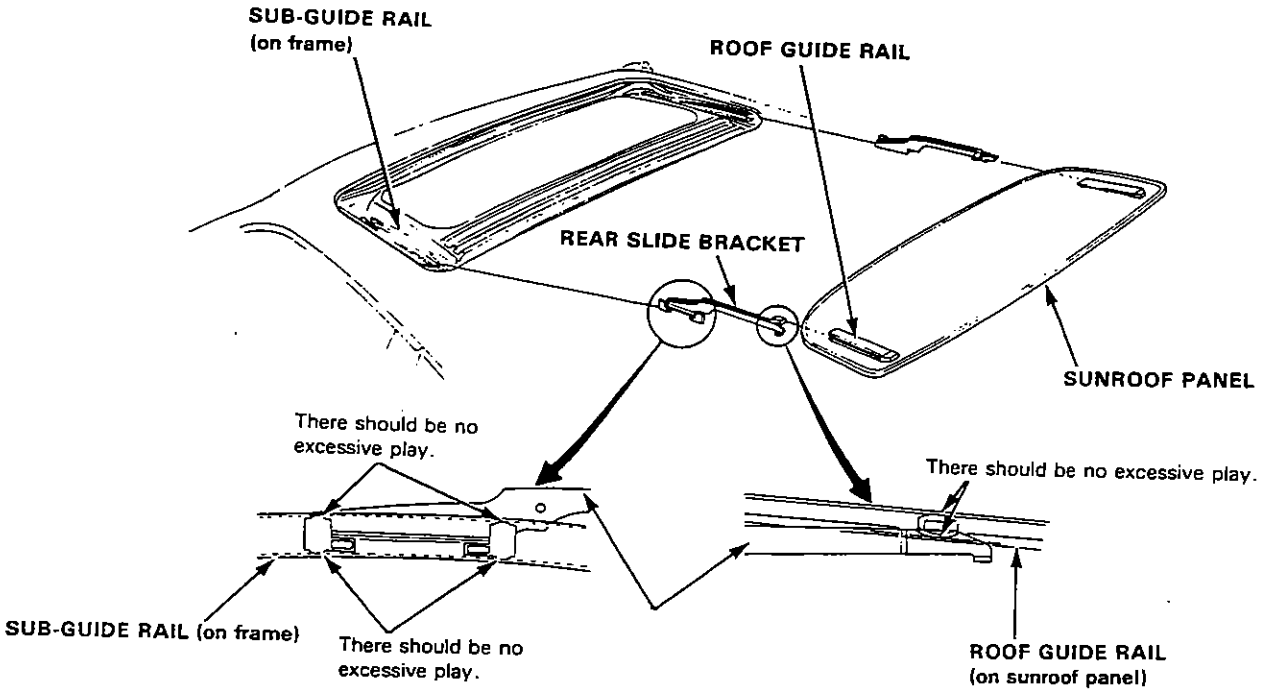
Rear Slide Bracket Replacement

1. Remove the sunroof panel (page 14-36).
2. Remove the e-clip and pin screw, then separate the lift-up link and sub-guide rail.
3. Slide the rear slide brackets off the guide rail.
4. Install the brackets in the reverse order of removal. Before installing the rear slide brackets, check that there is no excessive play between the brackets and roof guide rails (on the sunroof panel and the frame.)



Rear Slide Bracket Wear Inspection

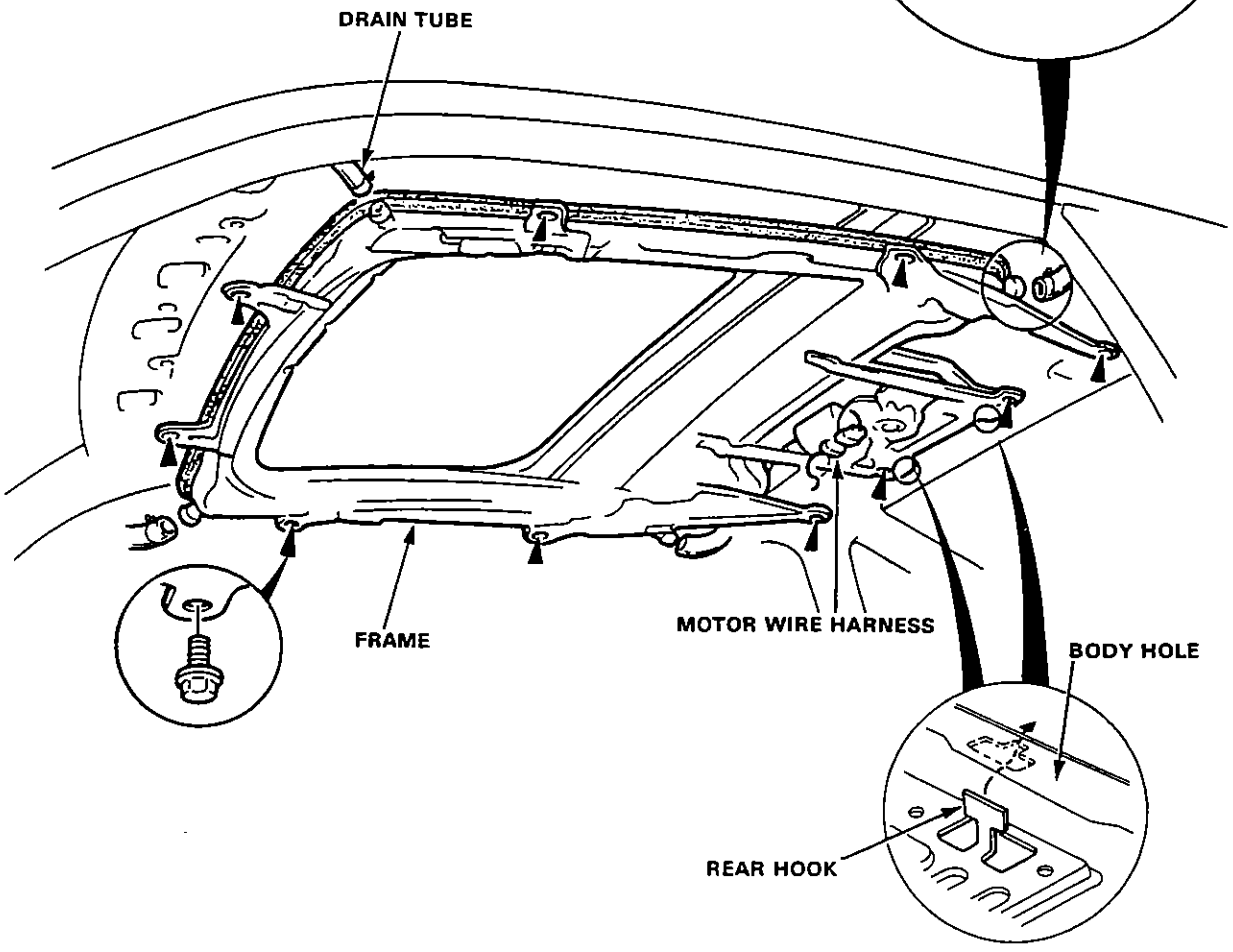
Remove the rear slide brackets. Check the roof guide rails (on the sunroof panel and the frame) and rear slide brackets for excessive wear on the sliding faces. Replace the rear slide brackets with new ones if worn excessively.



Drain Tube, Frame, and Frame Seal Replacement

1. Remove the sunroof panel (page 14-36) and the headliner (page 14-45).
2. Disconnect the motor wire harness.
3. Slide back the drain tube clamps and remove the drain tubes.
4. Remove the frame mount bolts, and remove the frame from the car.

   NOTE:
   - Remove the 2 front bolts last.
   - Use added care not to damage the seats or other interior trim.
5. Carefully remove the frame seal.

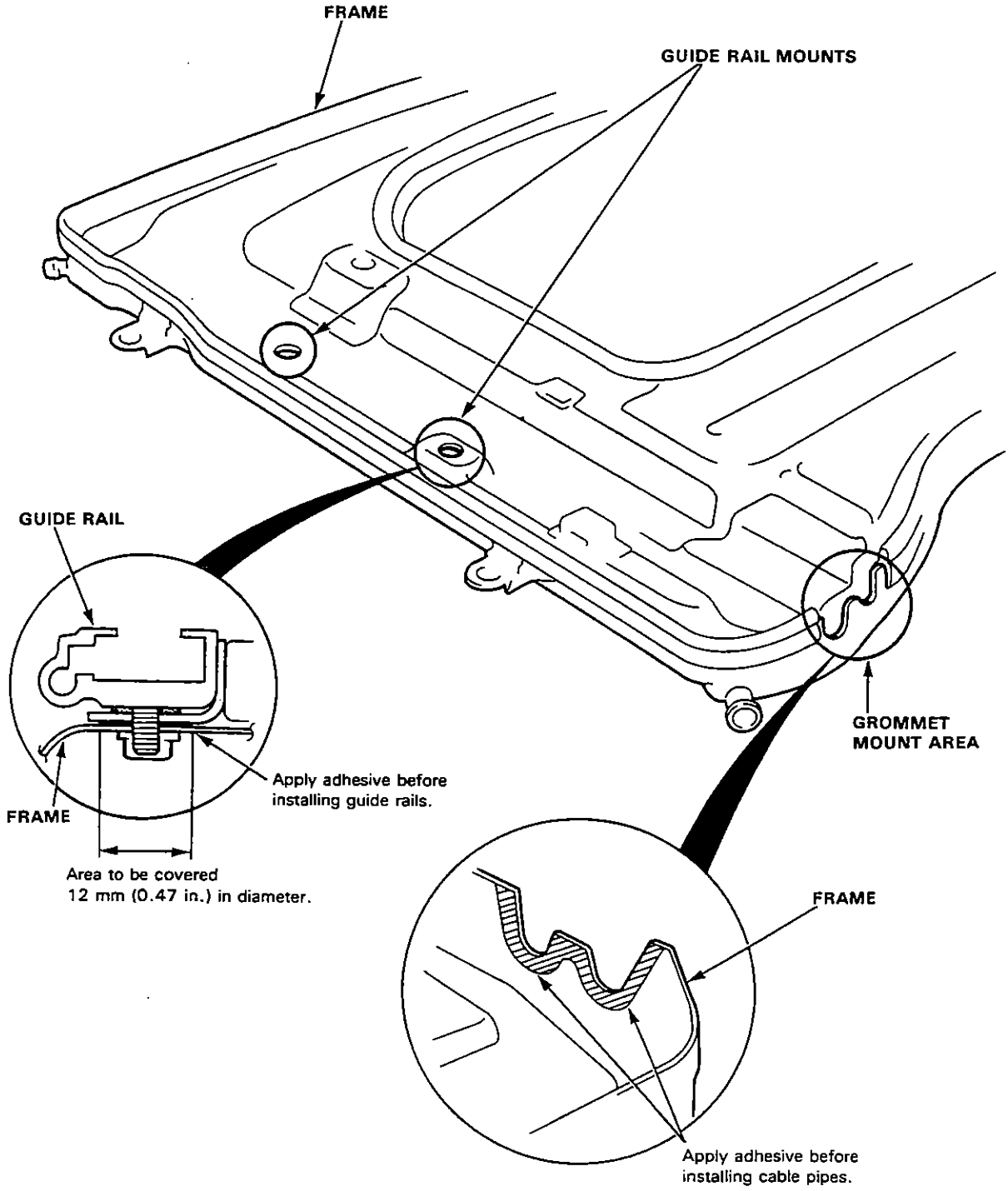


6. To install, insert the frame's rear hooks into the body holes, then install parts in the reverse order of removal.

   NOTE:
   - Do not tighten the frame mount bolts before adjusting the side clearance of the sunroof (page 14-34).
   - Install the tube clips with the ends facing the side to ease installation of the headliner.

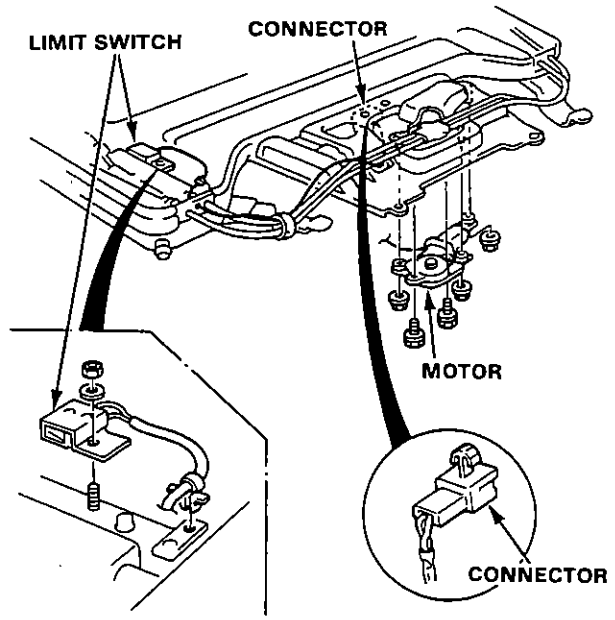
Frame Sealing

Water may leak through one or more of the 4 guide rail mounts or cable pipe grommets. Use adhesive at the points shown, to avoid leaks when the guide rails or cable pipes are reinstalled.



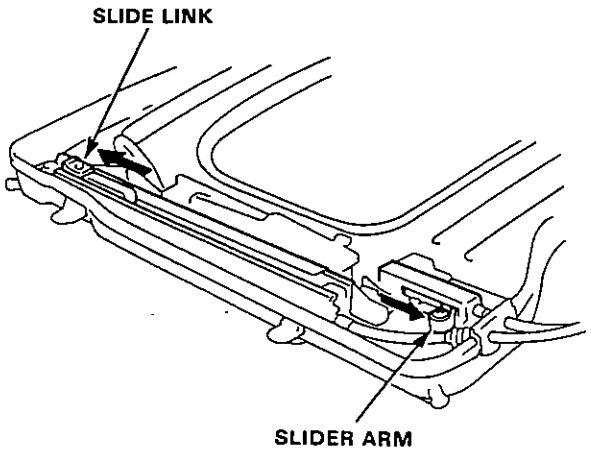
Motor Removal

1. Remove the headliner (page 14-45).
2. Disconnect the motor and the limit switch.
3. Remove the motor by removing the 2 bolts and 3 nuts.



Motor Installation

1. Check that the slide links are fully forward, and cable slider arms are fully to the rear (Sunroof completely closed).

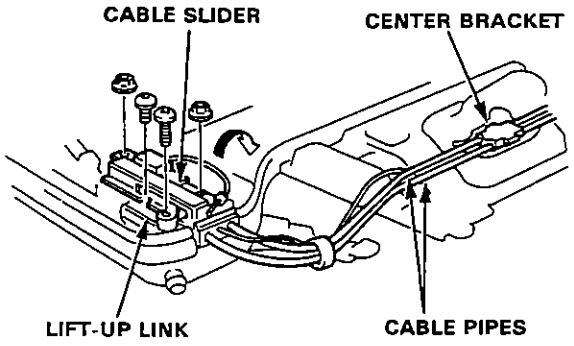


2. Check the gears for wear or damage; then install the motor.

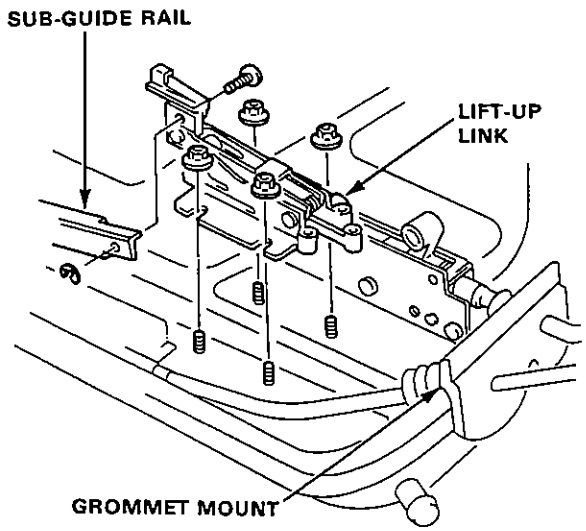
Lift-up Link Replacement

1. Remove the frame (page 14-39).
2. Remove the 2 nuts and 2 screws attaching the cable slider.
3. Raise the cable slider just enough to remove the lift-up link nuts.

   NOTE: Do not force the slider up as this will deform the cable pipes. If you encounter difficulty in raising the slider, remove the motor and center bracket.



4. Remove the lift-up link by removing the sub-guide rail (on frame) screw and the 4 link nuts.

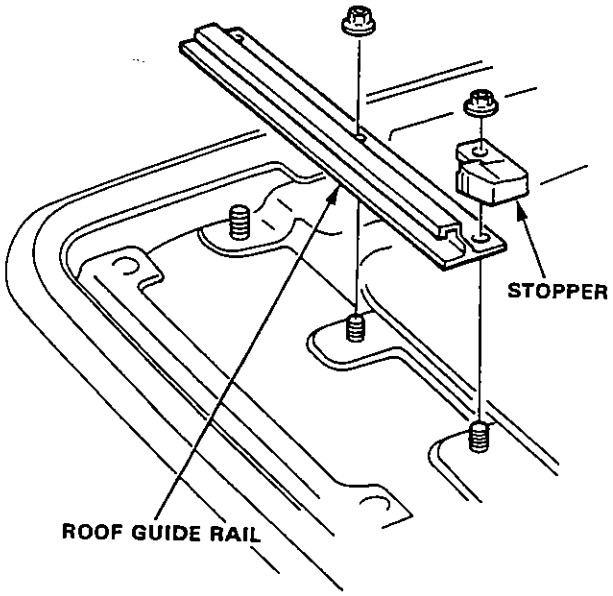


5. Install the link in the reverse order of removal. Before installing the cable pipes, apply adhesive to the grommet mount area of the frame (page 14-40).

Guide Rail Replacement

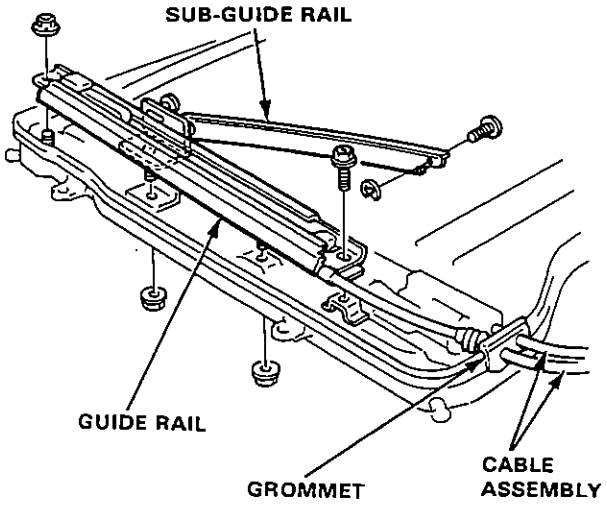
Roof Guide Rail (on Sunroof panel):

1. Remove the sunroof panel (page 14-36).
2. Remove the nuts and sub-guide rails.



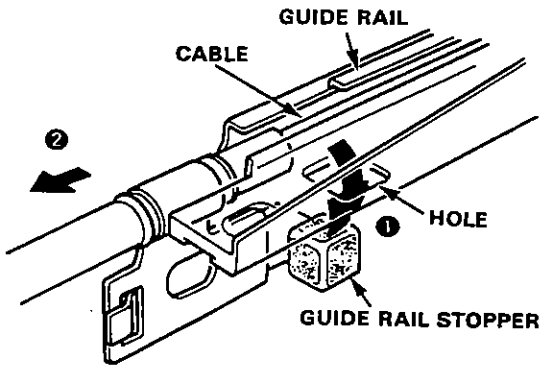
Guide Rail:

1. Remove the frame (page 14-39).
2. Remove 1 bolt and the 3 nuts attaching the guide rail.
3. Remove the sub-guide rail.



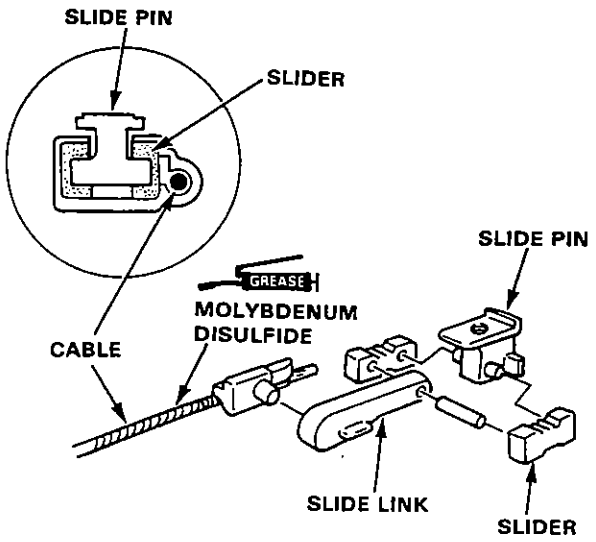
4. Pry the guide rail stopper out of the hole of the guide rail; pull out the cable.

   NOTE: Remove the guide rail slowly and carefully; it is cemented to the frame.



5. Install the guide rail in the reverse order of removal.

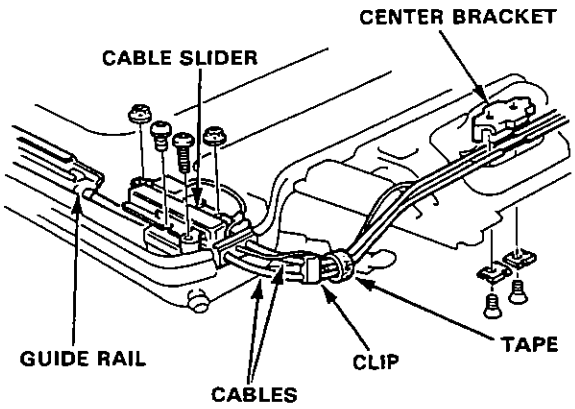
   - Check that the slide pin, slider and slide link are reassembled properly when installing the cable to the guide rail.



   - Before installing the cable pipes and guide rails on the frame, coat the cable pipe grommets and guide rail attaching surfaces with adhesive (page 14-40).

Cable Removal

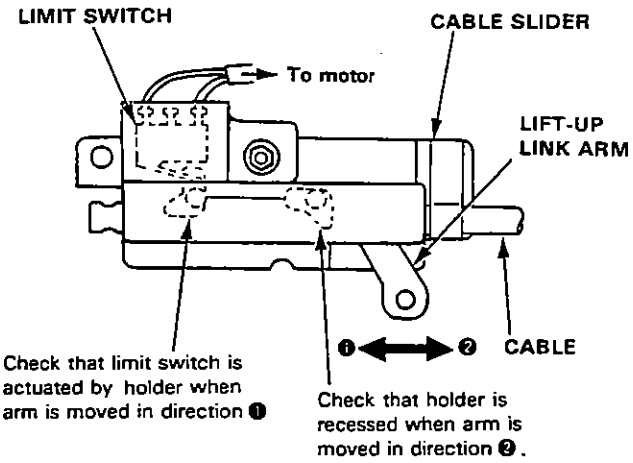
1. Remove the frame (page 14-39) and the motor (page 14-41).
2. Remove the guide rails (page 14-42).
3. Remove the screws and center bracket, then pry off all cable clips.
4. Take the cable slider off the frame by removing the 2 nuts and 2 screws.



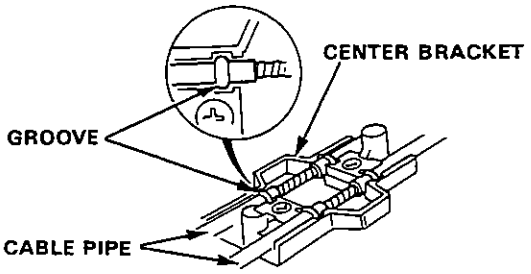
5. Carefully remove the cables being sure not to bend the cable pipes.

Cable Installation/Inspection

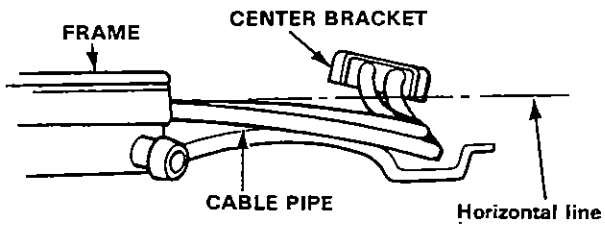
1. Check the cables for wear or damage.
2. Apply molybdenum disulfide grease to the cables. Route the cables through the cable pipes.
3. Check operation of the cable slider.



4. Apply adhesive to the cable pipe grommets and guide rail mount faces of the frame (page 14-40).
5. Attach the cables to the guide rails, then install them on the frame. Secure the cable pipes with the center bracket and clips.



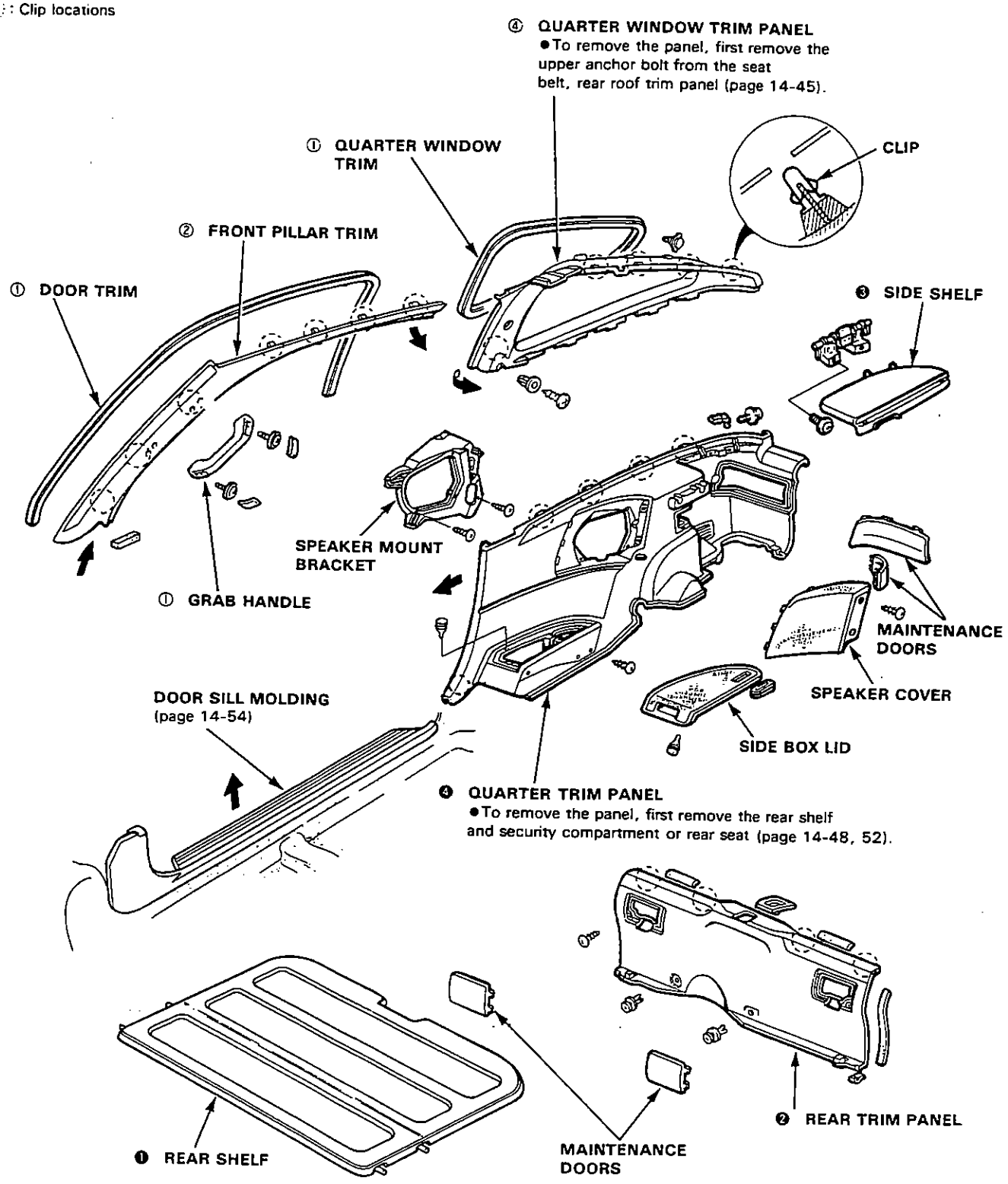
NOTE: Check that the center bracket is not tilted. If it is tilted, check the cable pipes for deformation or improper installation.



Interior Trim

Replacement

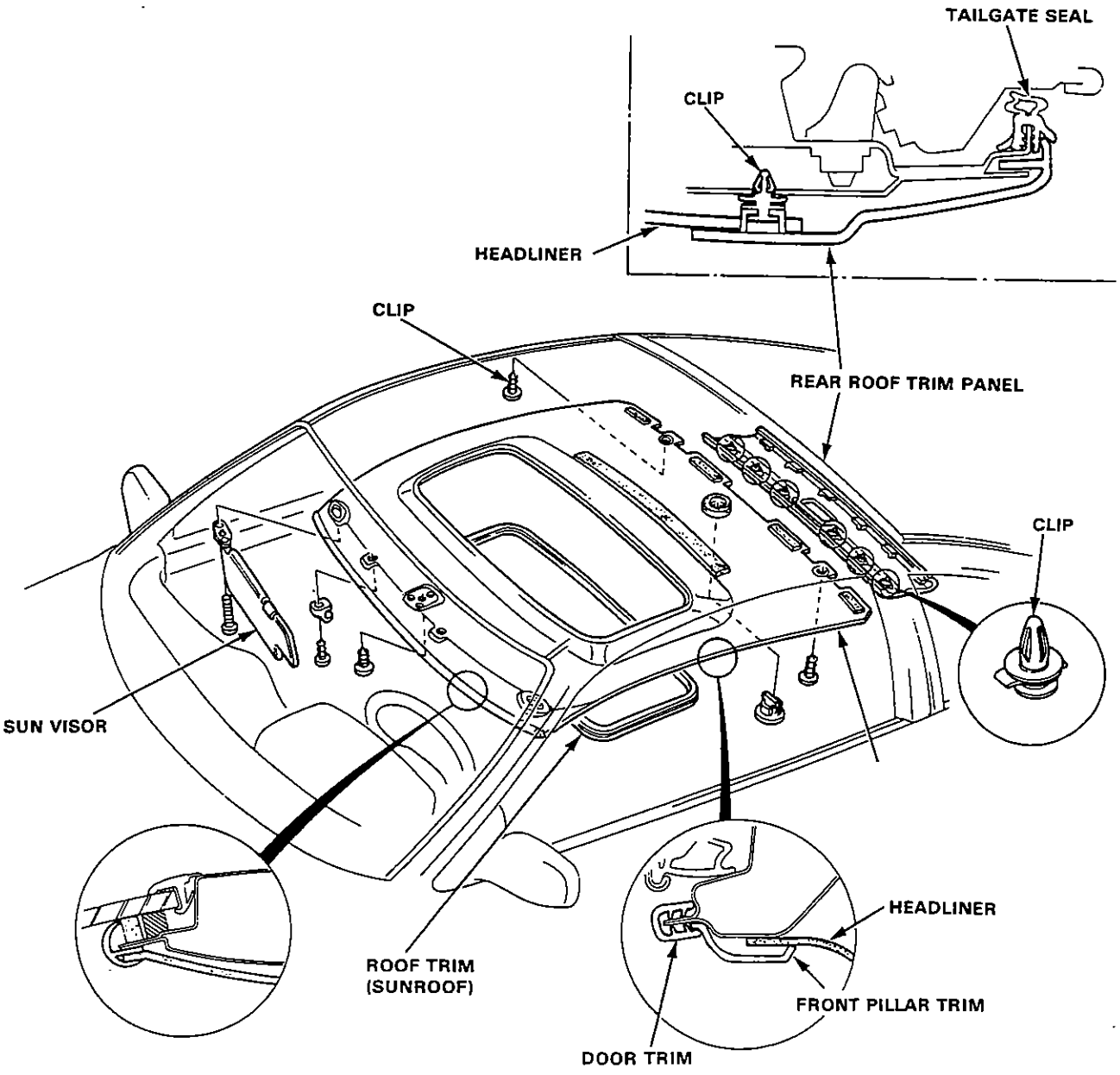
Disassemble in numbered sequence.
◌ : Clip locations



Headliner

Replacement

1. Remove:
   - Sun visors and holders.
   - Rearview mirror assembly (page 14-51).
   - Front pillar trim (page 14-44).
   - Quarter window trim panel (page 14-44).
   - Dome light.
   - Roof trim (Sunroof model).
2. Remove the clips and rear roof trim panel, then remove the headliner.



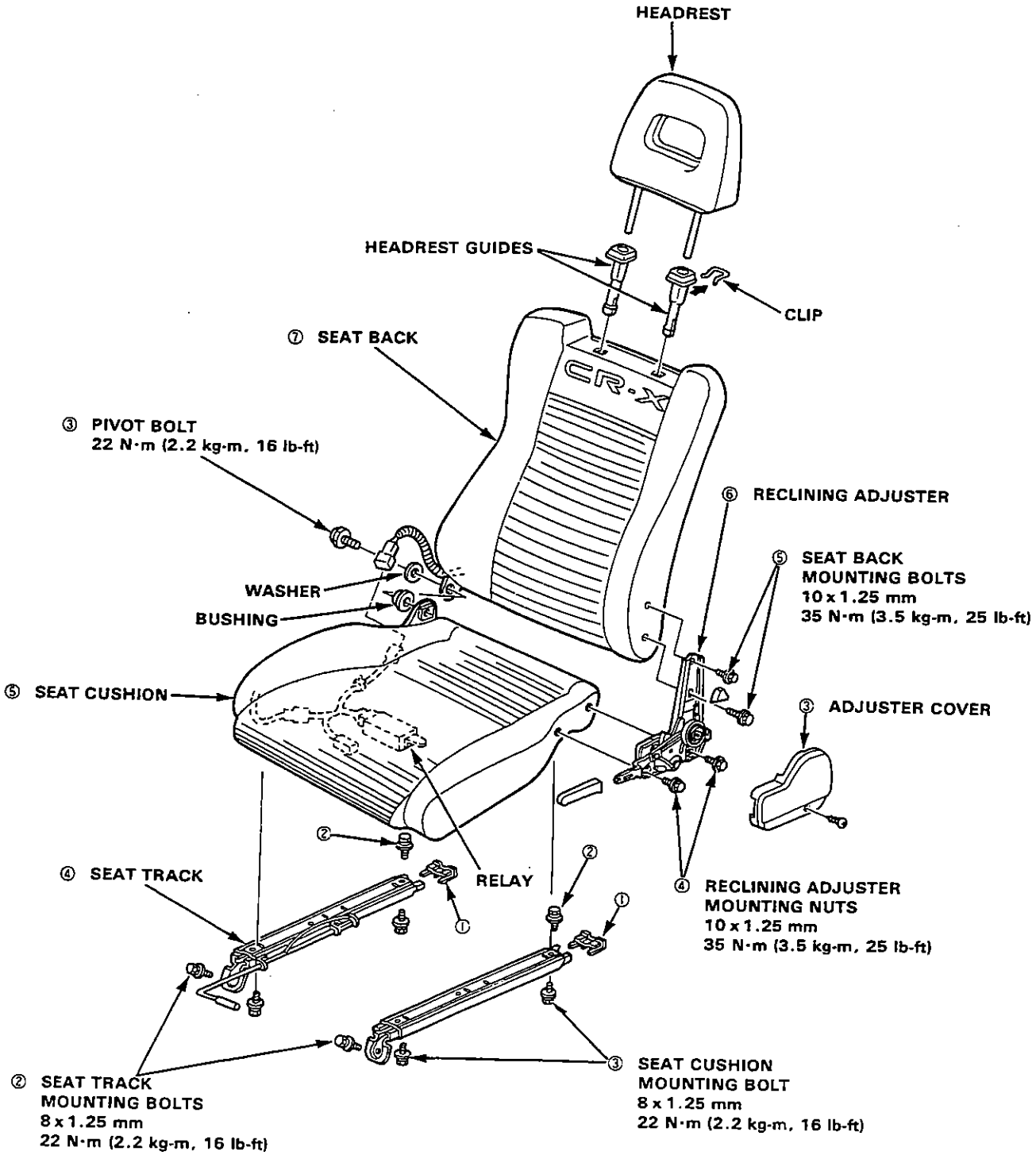
3. Assemble the headliner in the reverse order of disassembly.

NOTE:

- When installing the headliner inside the passenger compartment, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check that the two sides of the headliner are securely attached to the trim.

Front Disassembly

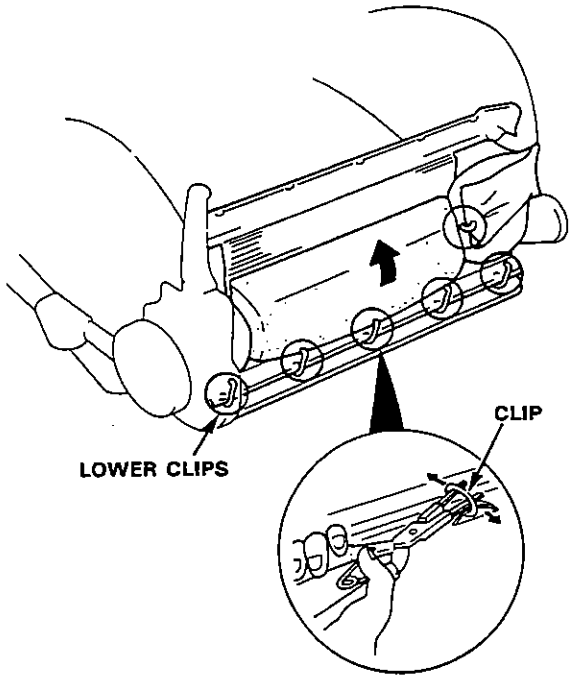
Disassemble in numbered sequence.

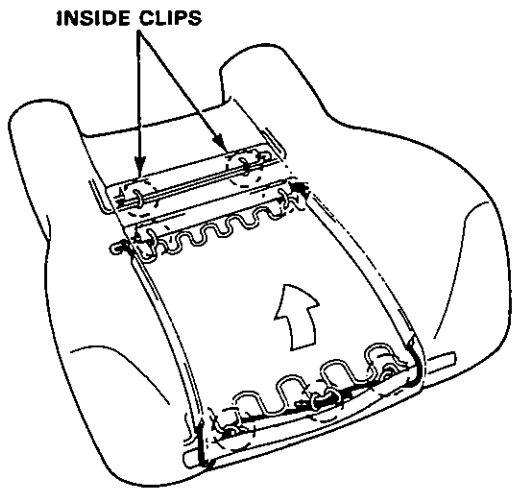


Trim Cover Replacement

Seat Back:

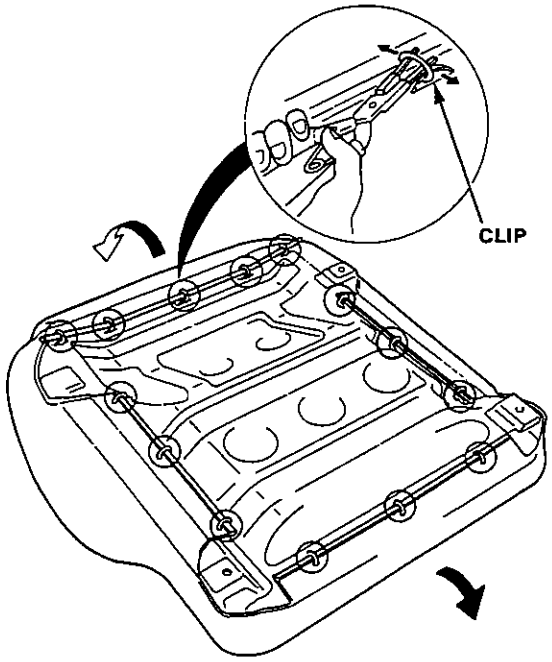
1. Separate the seat cushion and back. (page 14-46).
2. Remove the headrest and headrest guide (page 14-46).
3. Remove the lower clips.
4. Remove the inside clips, then remove the trim cover.

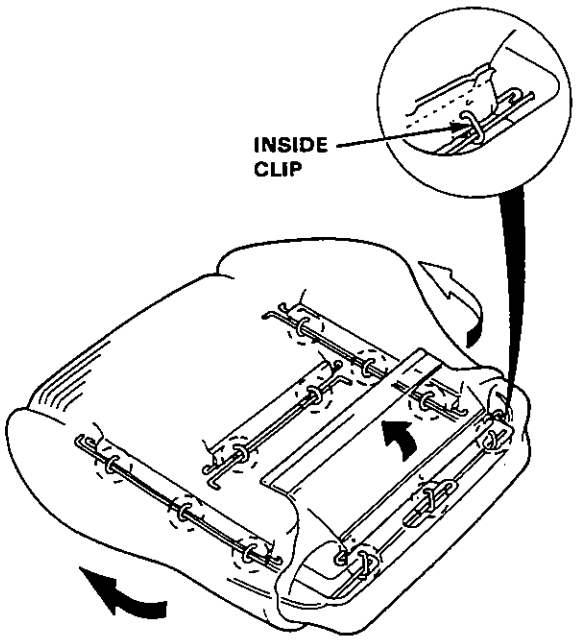




seat cushion:

5. Remove the 14 clips and turn over the trim cover.
6. Remove the inside clips, then remove the trim cover.

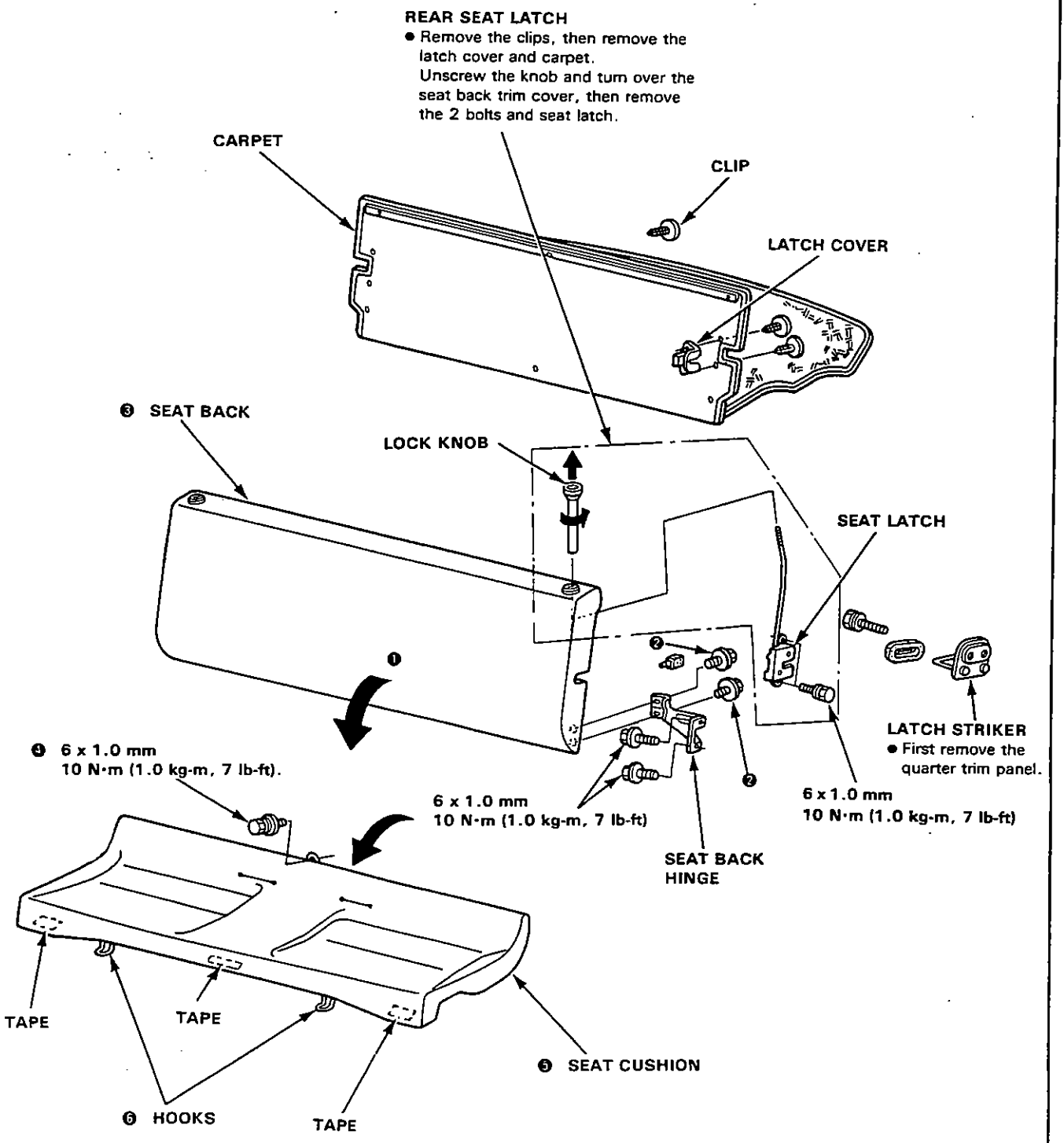




NOTE: To prevent wrinkles when installing a seat cover, make sure the material is stretched evenly over the frame before securing all the clips.

Rear Disassembly

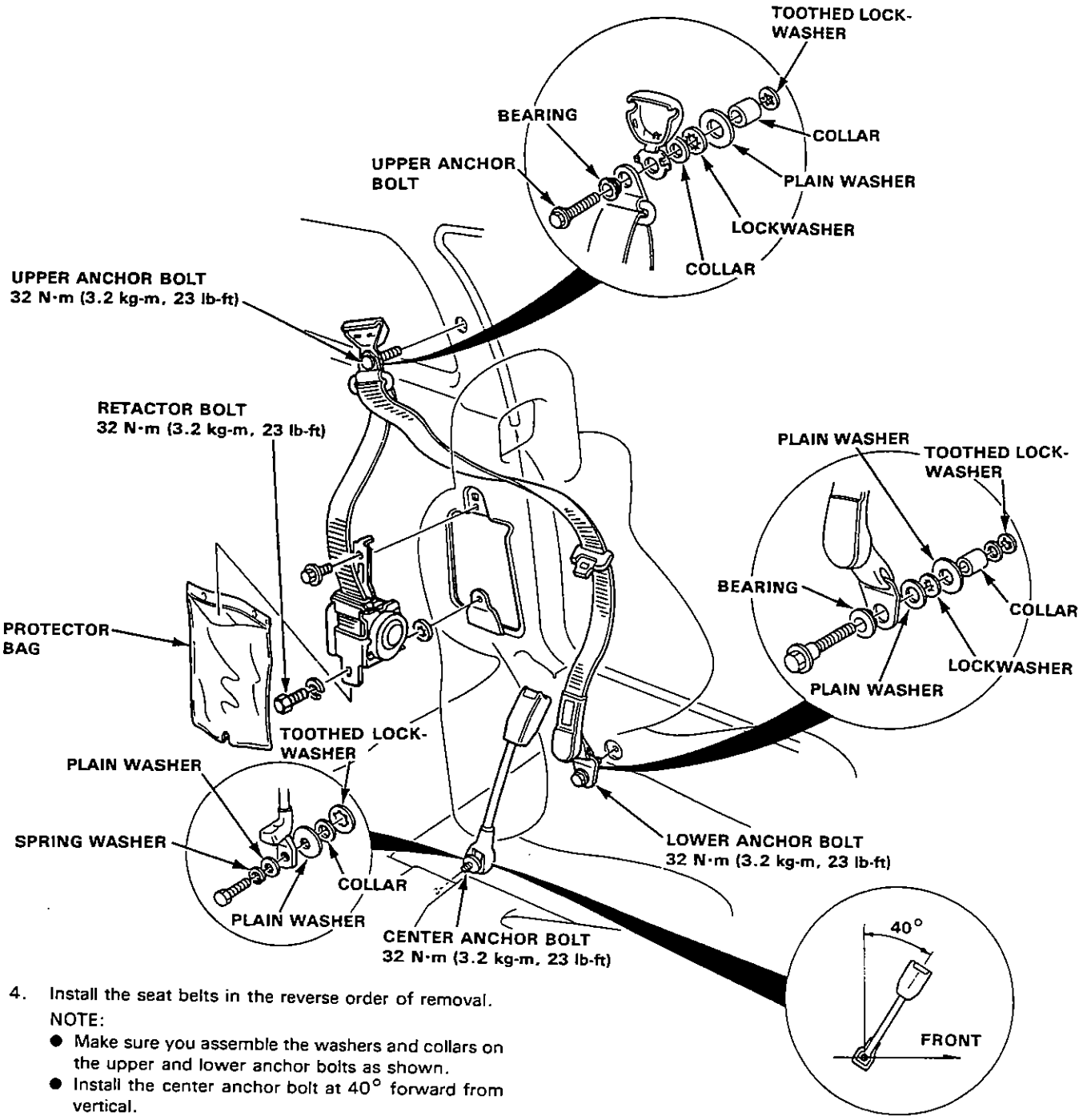
Disassemble in numbered sequence.



Front Replacement

CAUTION: Check the seat belts for damage (page 14-51), and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the quarter trim panel (page 14-44).
2. Remove the upper anchor bolt, lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.
3. Slide the front seat forward until the seat belt center anchor bolt is accessible, then remove the bolt and the center anchor.



4. Install the seat belts in the reverse order of removal.

NOTE:

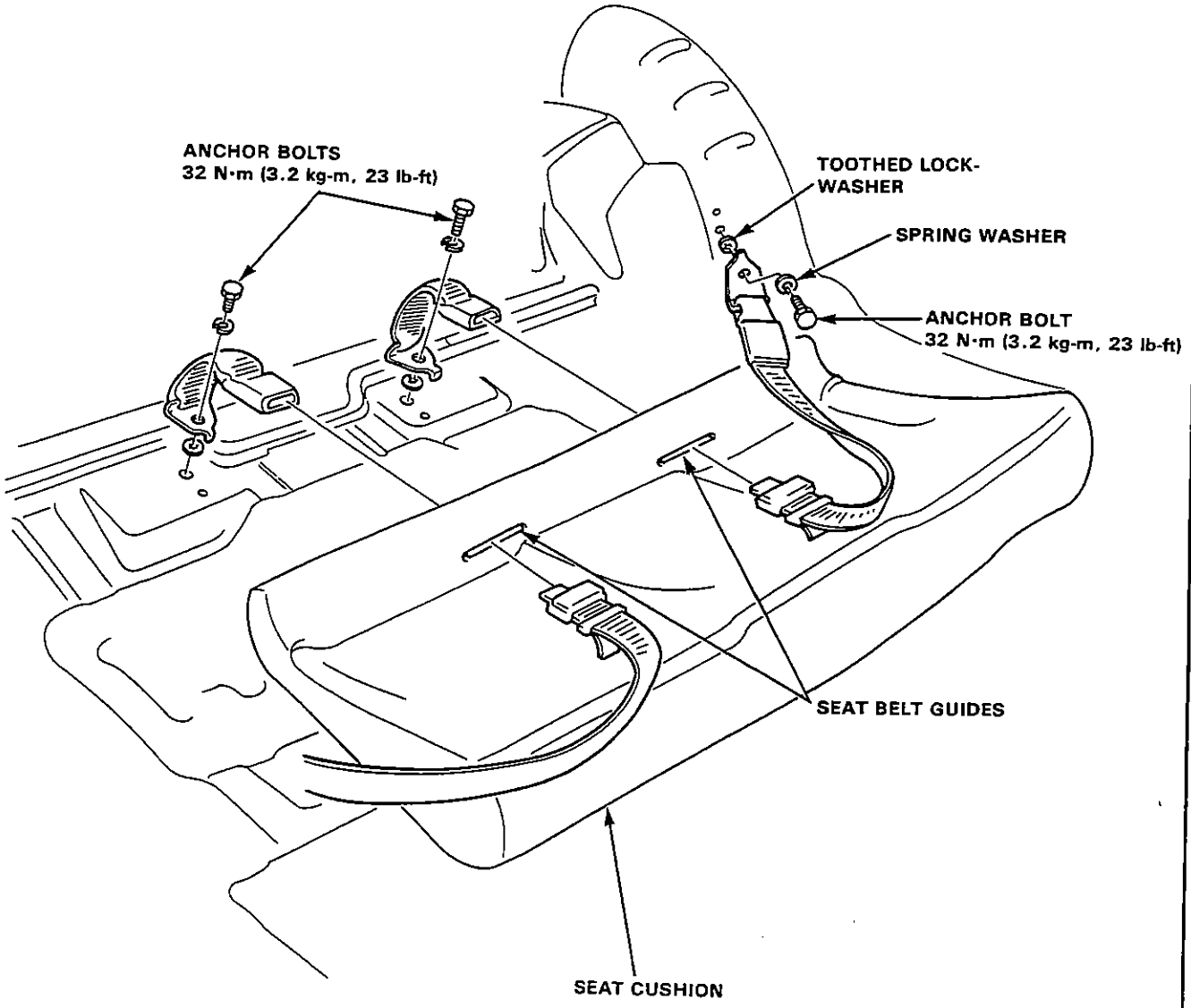
- Make sure you assemble the washers and collars on the upper and lower anchor bolts as shown.
- Install the center anchor bolt at 40° forward from vertical.
- Before attaching the quarter trim panel, make sure there are no twists or kinks in the belts.

Seat Belts

Rear Replacement

CAUTION: Check the seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the rear seat (page 14-48).
2. Remove the quarter trim panel (page 14-44).
3. Remove the the anchor bolts with a 17 mm socket or box-end wrench.



4. Install the seat belt in the reverse order of removal.

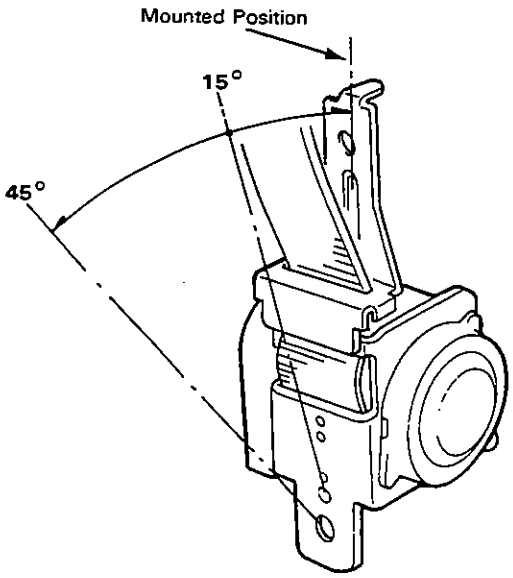
NOTE:
- Before attaching the quarter trim panel, make sure there are no twists in the belts.
- Pass the seat belts through the seat belt guides of the seat cushion and side box lid (page 14-44).

Inspection

Retractor Inspection

1. With the retractor installed, check that the belt can be pulled out freely.
2. Make sure that the belt does not lock when the retractor is leaned slowly up to 15° from the mounted position. The belt should lock when the retractor is leaned over 45°.

   CAUTION: Do not attempt to disassemble the retractor.



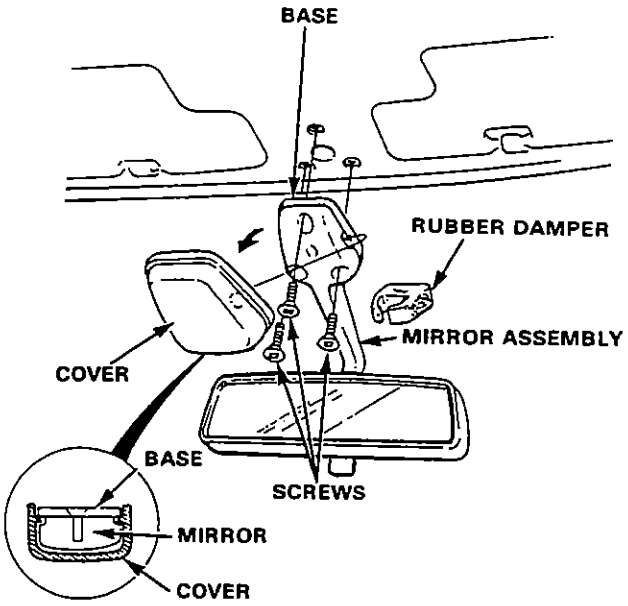
3. Replace the belt with a new one if there is any abnormality.

On-the-Car Belt Inspection

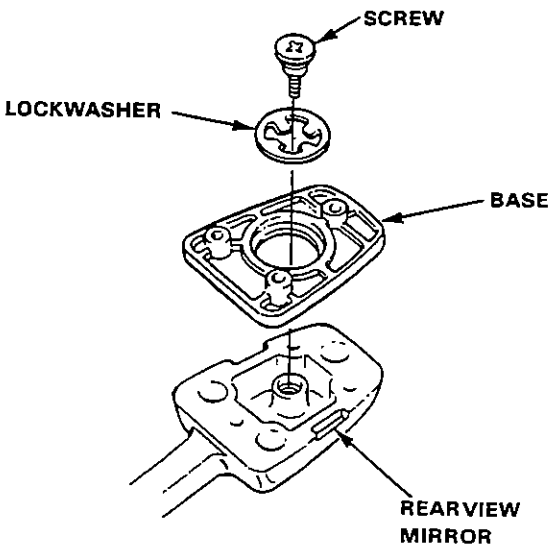
1. Check that the belt is not twisted or caught on anything.
2. After installing the anchor, check for free movement on its retaining bolt. if necessary, remove the bolt and check that the washers and other parts are not damaged or improperly installed.
3. Check the belts for damage or discoloration. Clean with a shop towel if necessary.
   CAUTION: Use only soap and water to clean.
4. Check that the belt does not lock when pulled out slowly. The belt is designed to lock only during a sudden stop or impact.
5. Make sure that the belt will retract automatically when released.
6. Replace the belt with a new one if there is any abnormality.

Replacement

1. Remove the rubber damper.
2. Pry the cover off using the end of a flat-tip screwdriver.



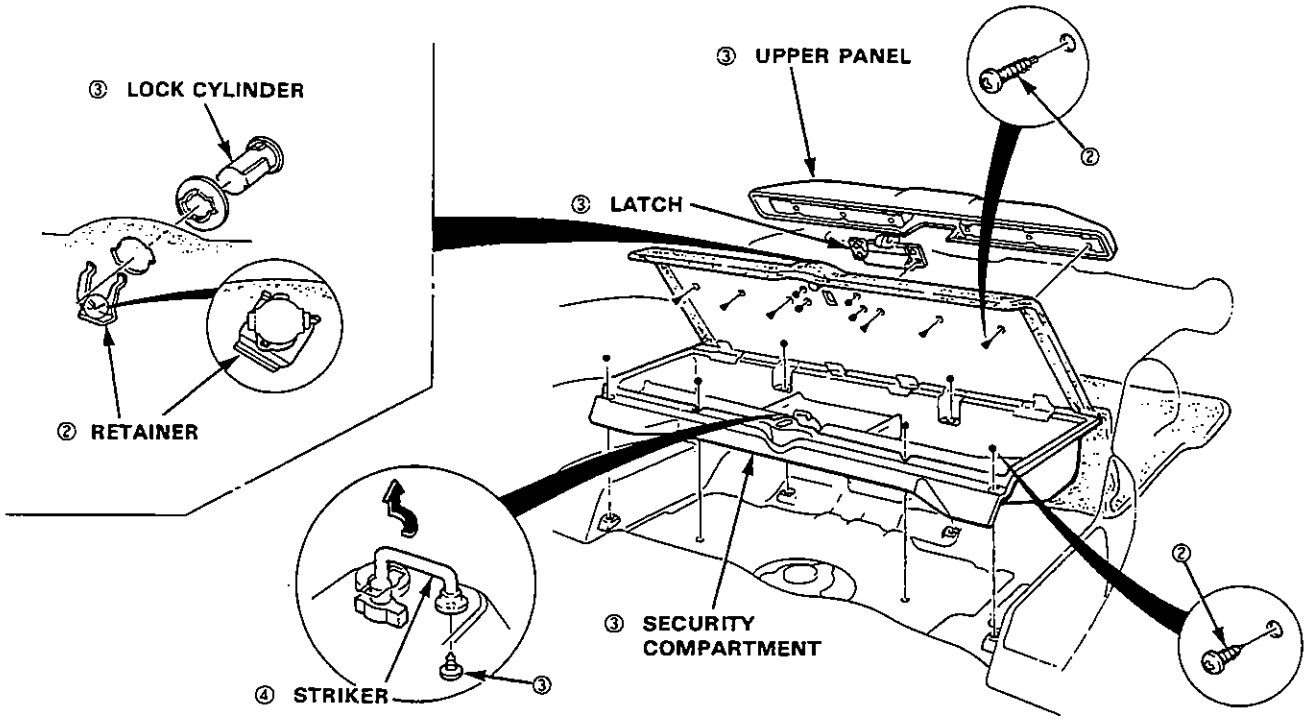
3. Remove the 3 mounting screws from the mirror base, then remove the mirror assembly.
4. Remove the base from the bracket by removing the screw.



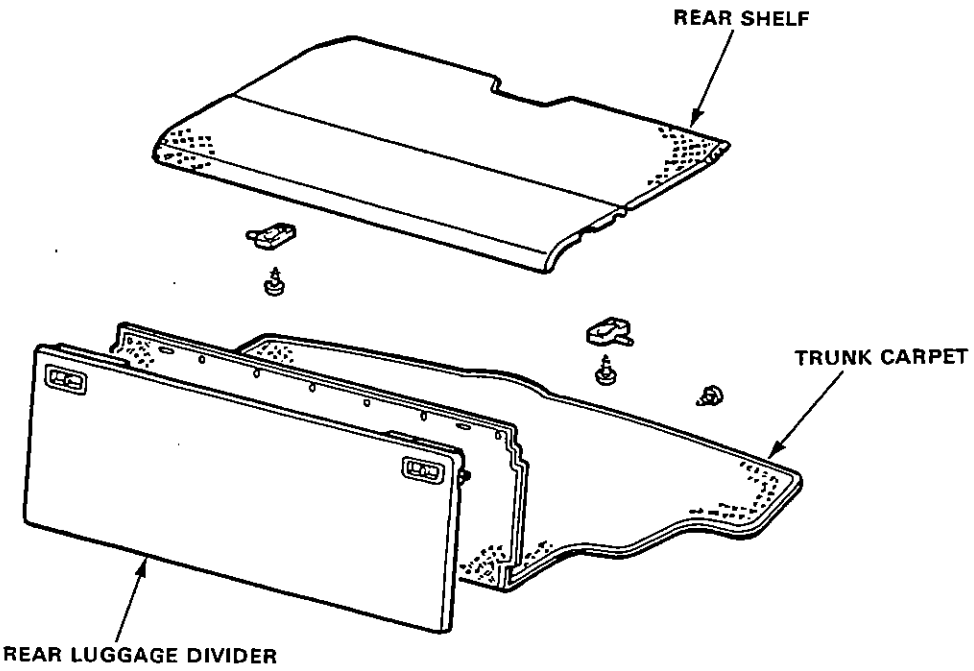
Security Compartment/Rear Shelf

Security Compartment Replacement

Disassemble in numbered sequence.



Rear Shelf Replacement

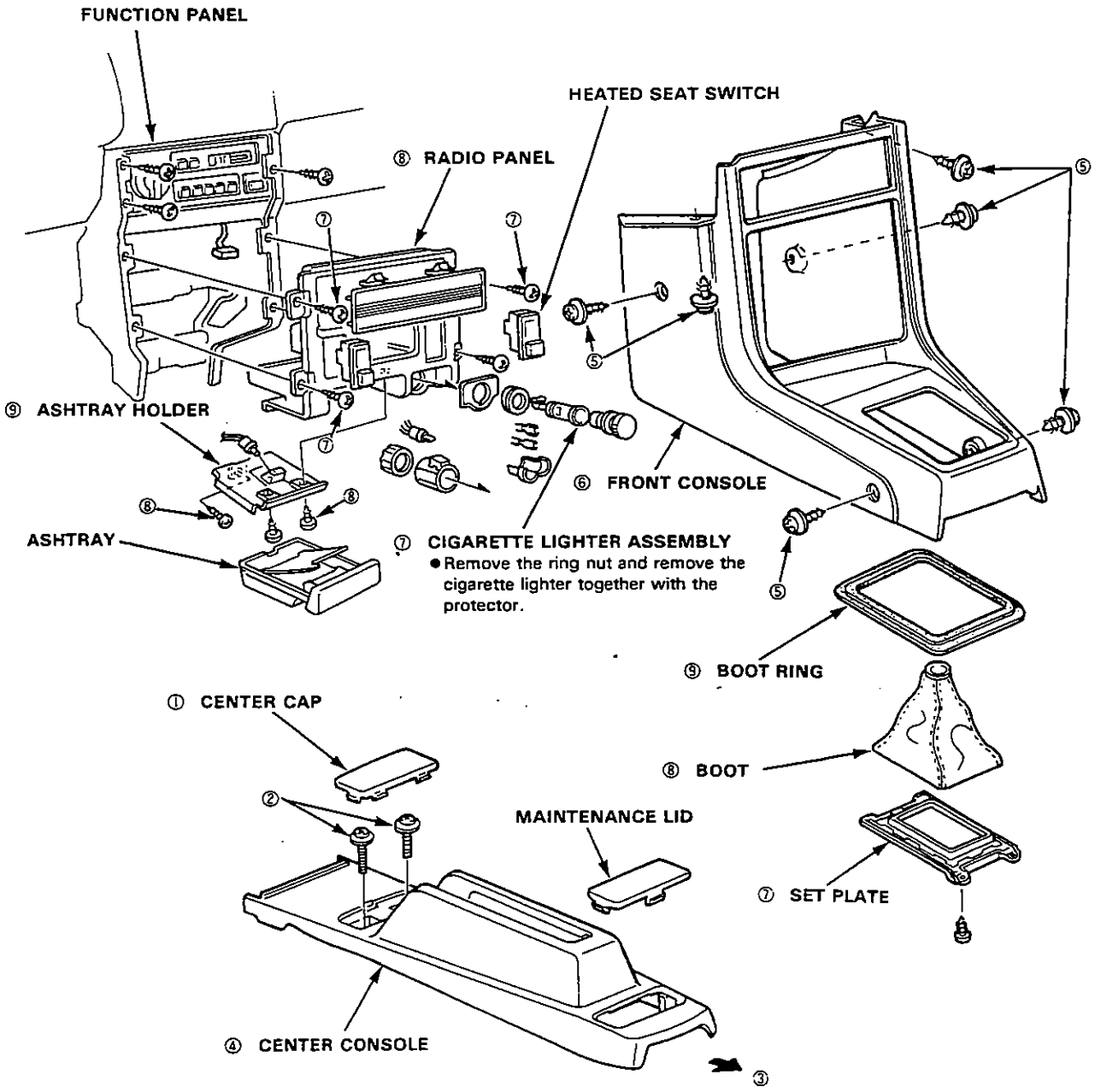


Console

Replacement

Disassemble in numbered sequence:

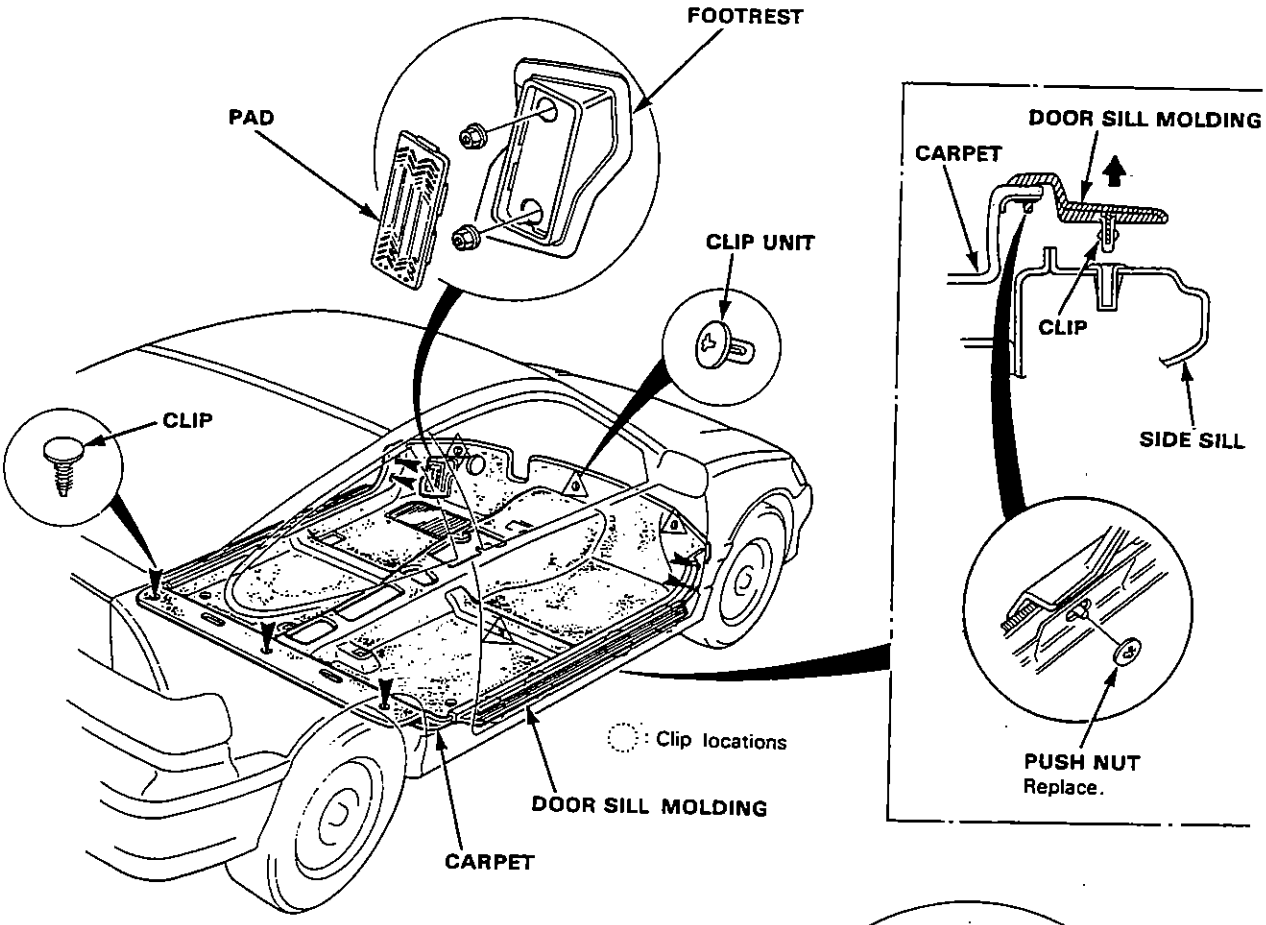
NOTE:
- Lift up the parking brake lever.
- For manual transmission models, remove the shift lever knob.



Carpet/Door Sill Moldings

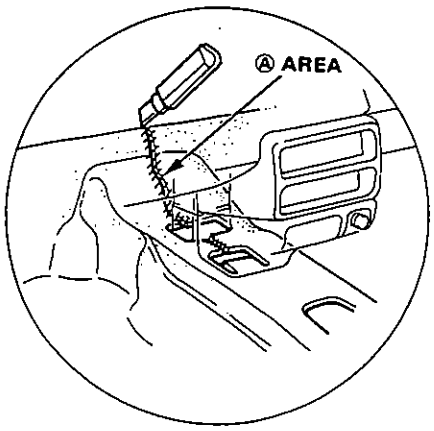
Replacement

1. Remove:
   - Front seats (page 14-46).
   - Security compartment (page 14-52).
   - Center console (page 14-53).
   - Hood release handle.
   - Fuel filler door and tailgate openers.
   - Front of quarter trim panel.
2. Pry out the clips and pull up the door sill moldings.
3. Remove the push nuts, then separate the door sill moldings and carpet.
4. Pry out the clips at the rear edge and under the dashboard, peel off the tape and remove the clip nuts.



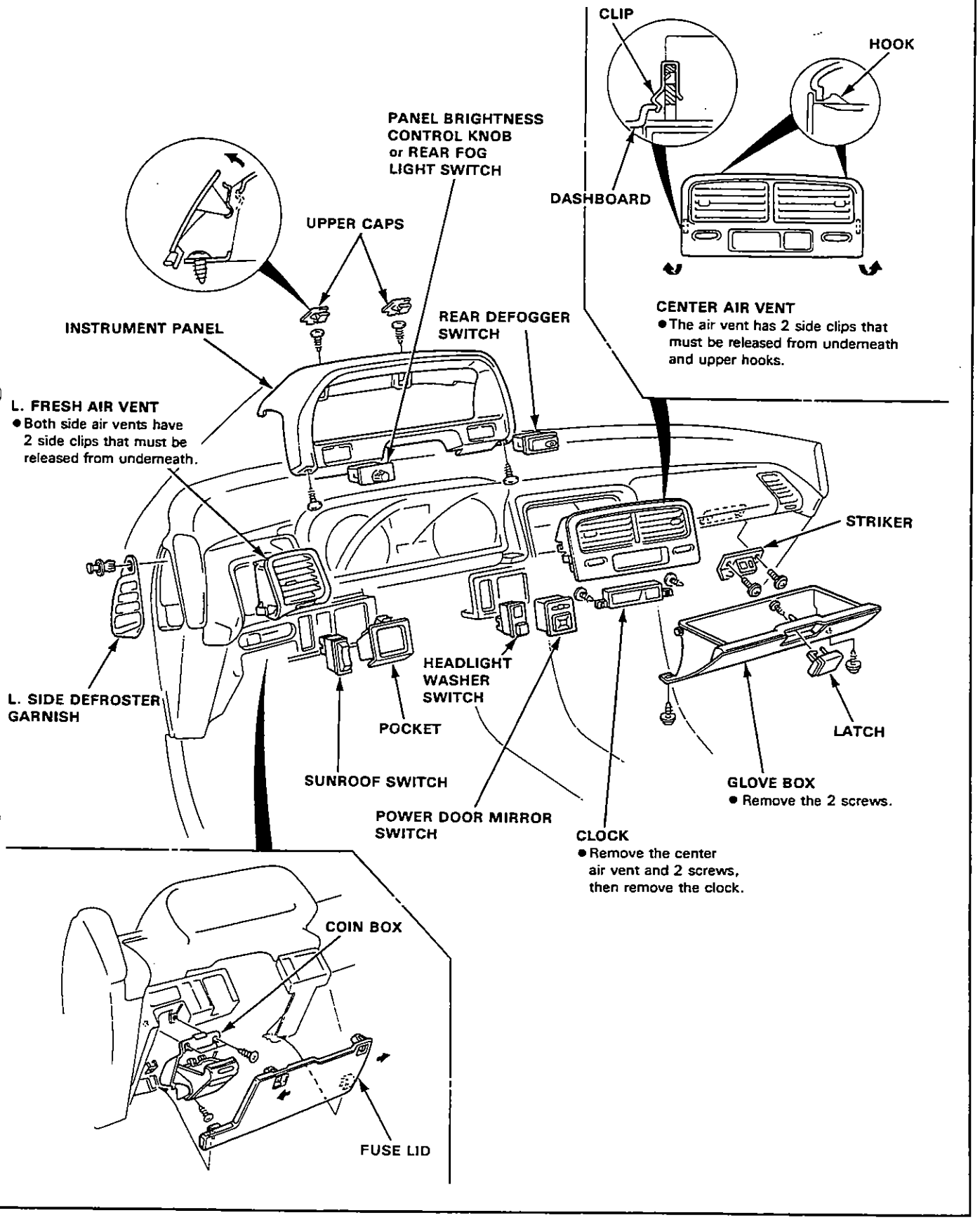
5. Cut the Ⓐ area first, then pull back the carpet as shown.
6. Remove the carpet.
7. Install the carpet in the reverse order of removal.

NOTE:
- Reattach the cut areas with tape and tie bands.



Dashboard

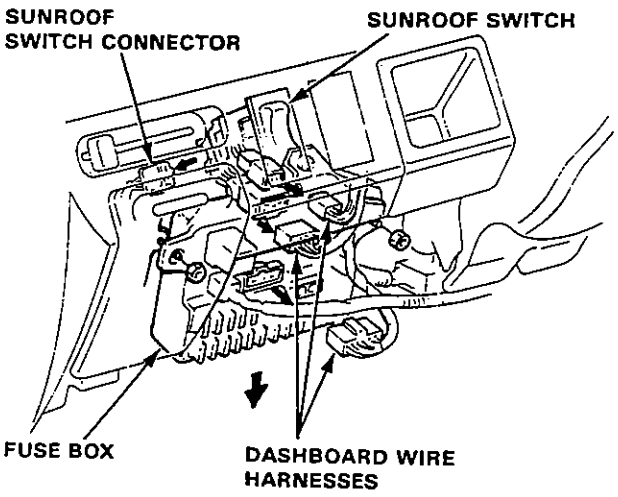
Component Removal/Installation



Dashboard

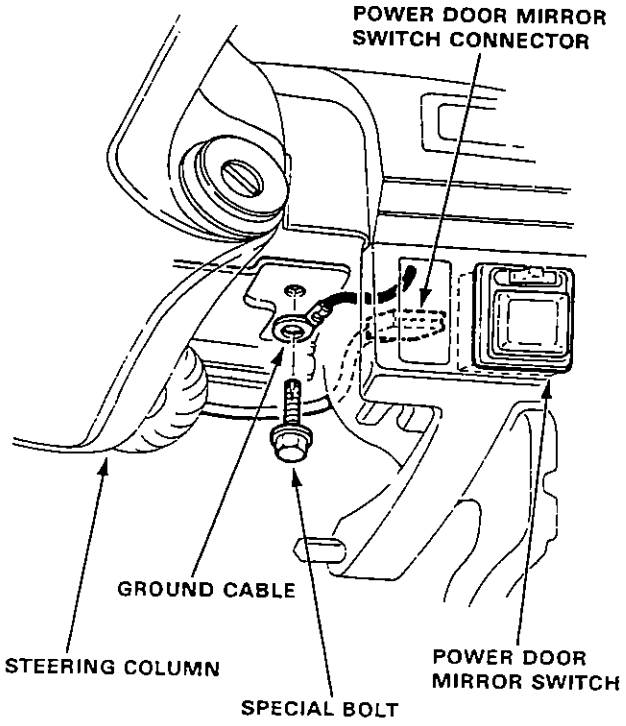
Replacement

1. To remove the dashboard, first slide the seats back fully and remove the:
   - Front console. (page 14-53).
2. Remove the fuse lid and disconnect the wire harnesses from the connector holder, and fuse box. Disconnect the sunroof switch connector.

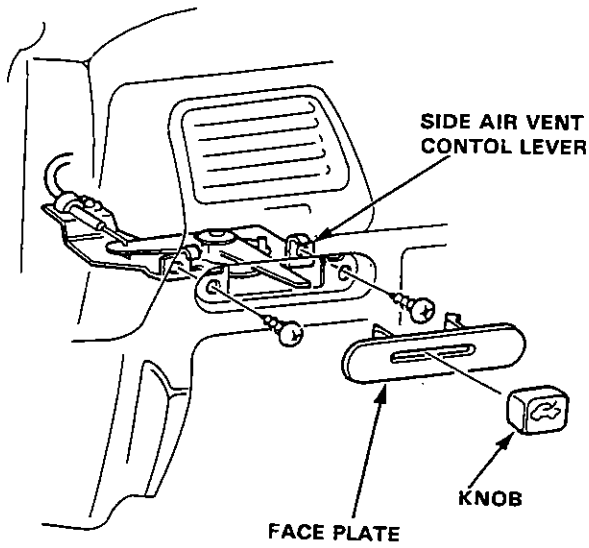


NOTE: Remove the fuse box mounting nuts, then lower the fuse box, if necessary.

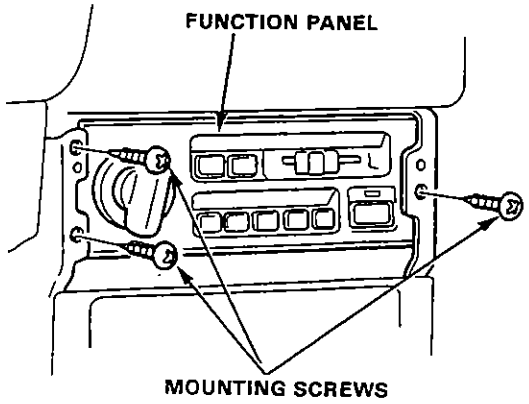
3. Disconnect the ground cable at right of steering column and power door mirror switch connector.



4. Remove the coin box.
5. Remove the knob, then remove the side air vent face plate.
6. Remove the 2 screws attaching the side air vent control lever.

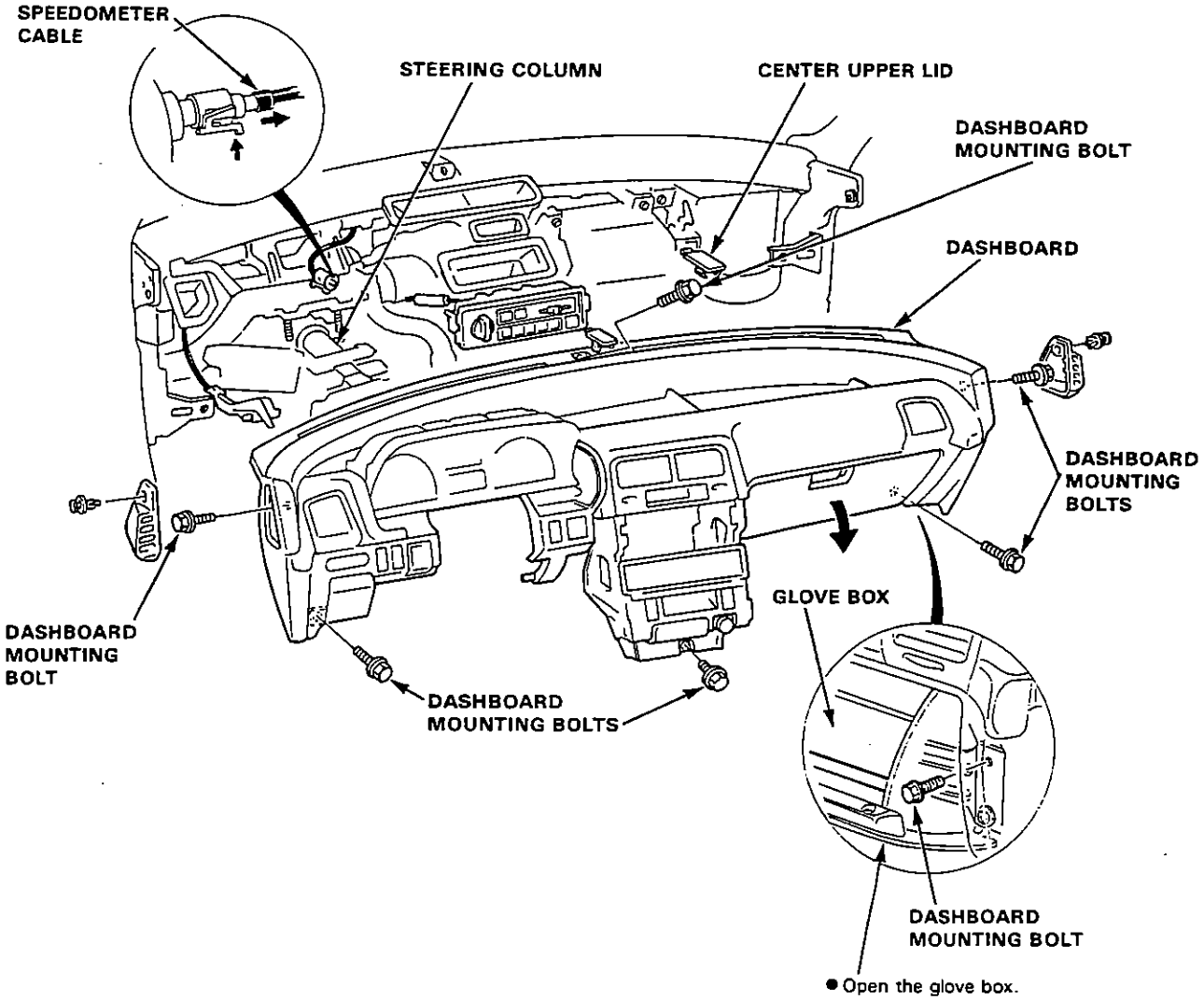


7. Remove the 3 screws attaching the function panel to the dashoboard.



8. Remove the instrument panel (Page 14-55).
9. Disconnect the speedometer cable.
10. Remove the center upper lid from the top of the dashboard.
11. Remove the side defroster garnishes from both ends of the dashboard.
12. Lower the steering column (See section 11).
13. Remove the dashboard mounting bolts.
14. Lift and remove the dashboard.

Reassembly NOTE:
- Make sure the dashboard fits onto the body correctly.
- Before tightening the dashboard bolts, make sure the dashboard wires are not pinched, and that the dashboard is not interfering with the heater control cable.



Front Bumper

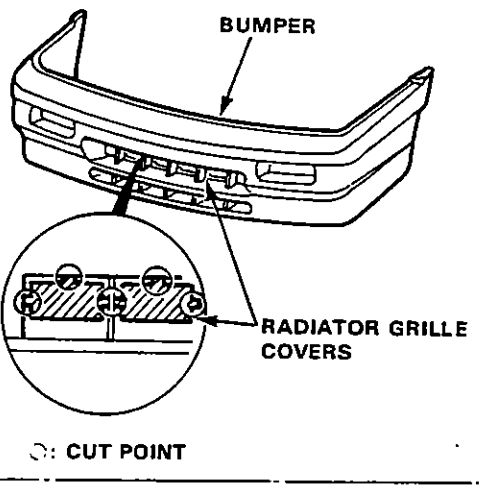
Replacement

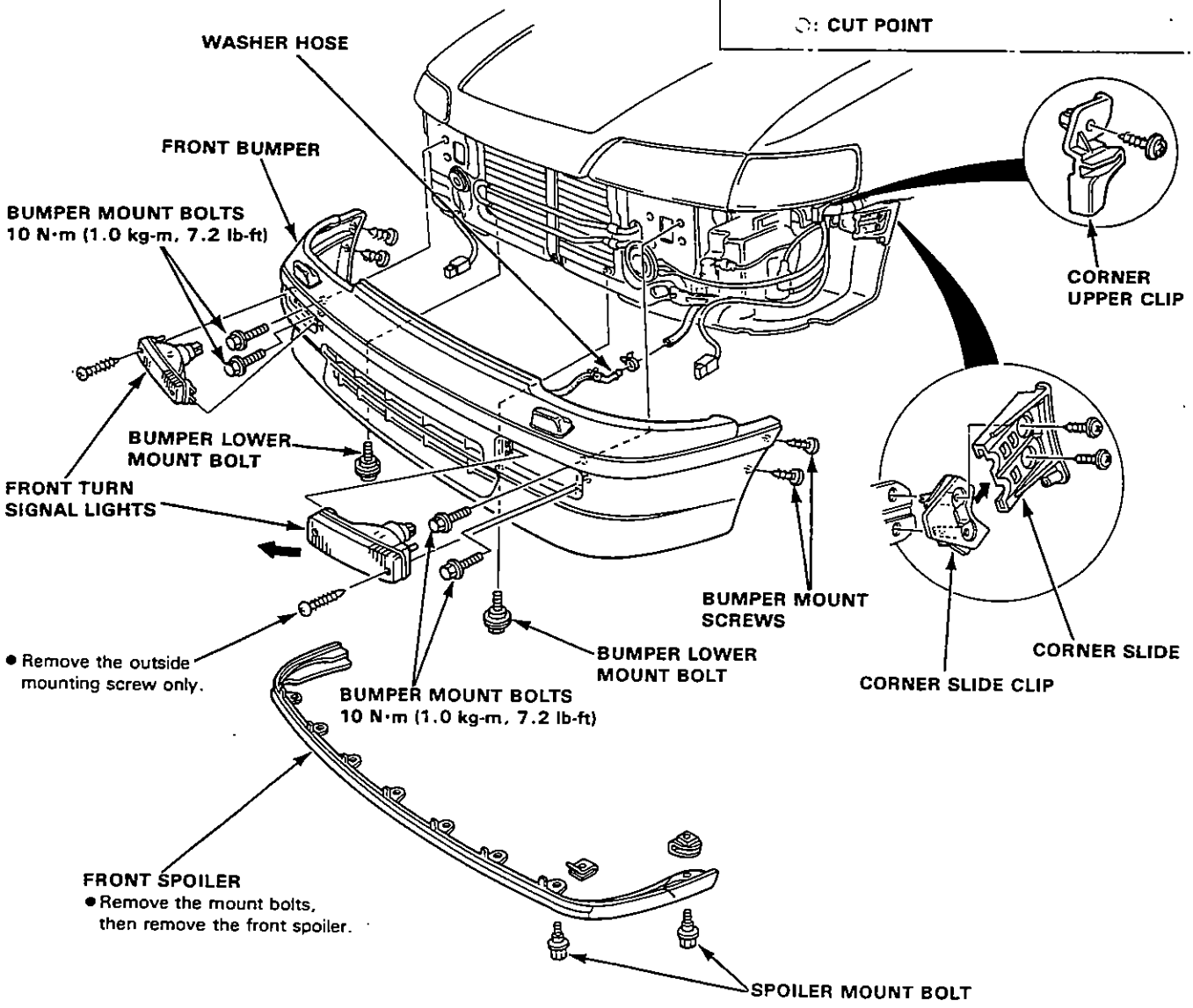
1. Remove the right and left front turn signal lights.
2. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
3. Remove the 2 bumper lower mount bolts and the 4 bumper mount bolts.
4. Disconnect the headlight washer hose.
5. Remove the bumper by sliding it forward.

If necessary:

6. Remove the screws, then remove the corner slide and slide clip.
7. Installation sequence is essentially the reverse order of removal.

NOTE: When installing a new bumper on a car with A/C, cut off and discard the 5 radiator grille covers.





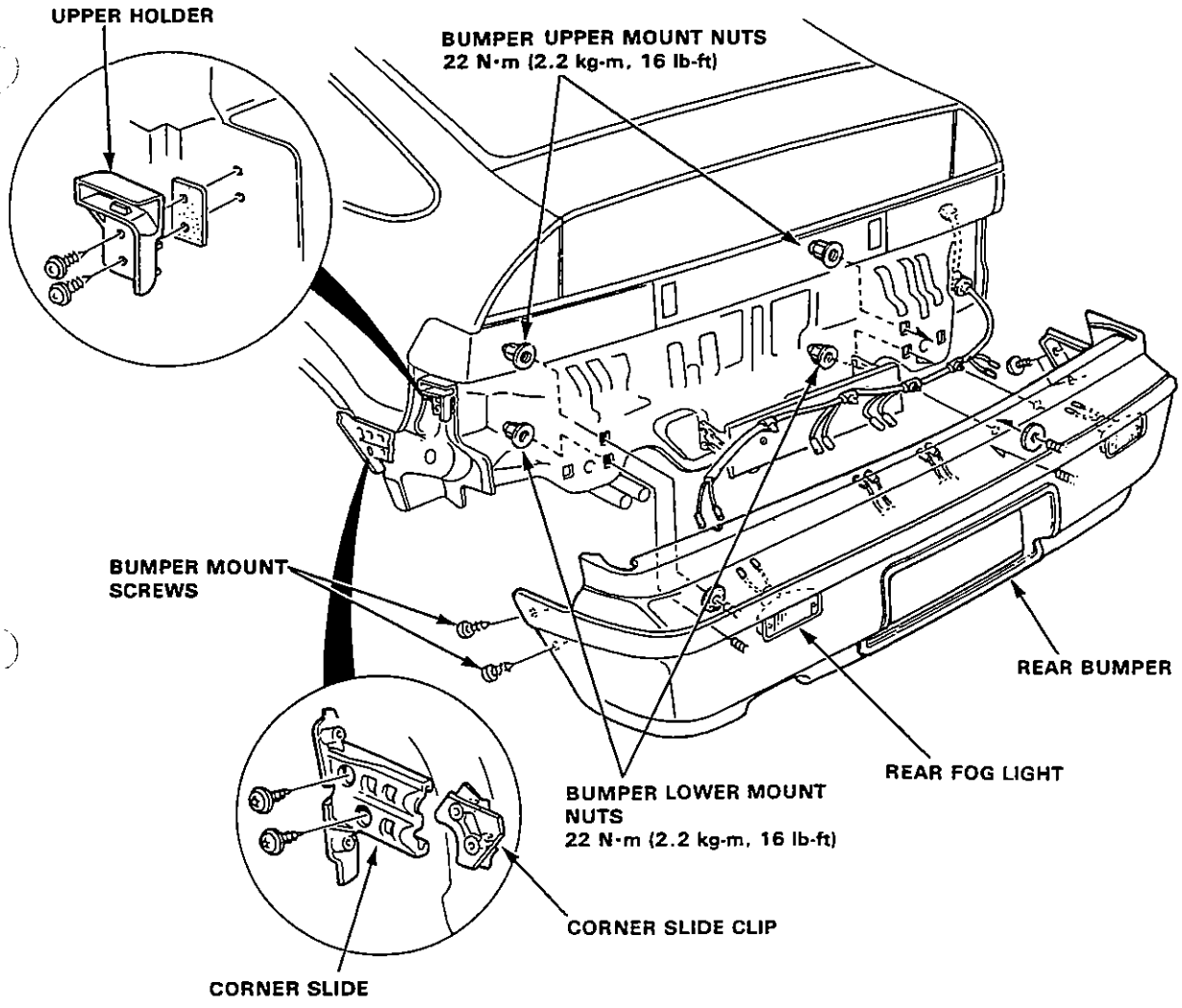
Rear Bumper

Replacement

1. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
2. Remove the 2 bumper lower mount nuts.
3. Remove the rear trim panel.
4. Remove the 2 bumper upper mount nuts from the trunk area.
5. Remove the bumper by sliding it to the rear and disconnect the license light/rear fog light wire connectors.
   NOTE: Do not damage the threads of the bumper bolts.

If necessary:

6. Remove the screws, then remove the corner slide and slide clip.

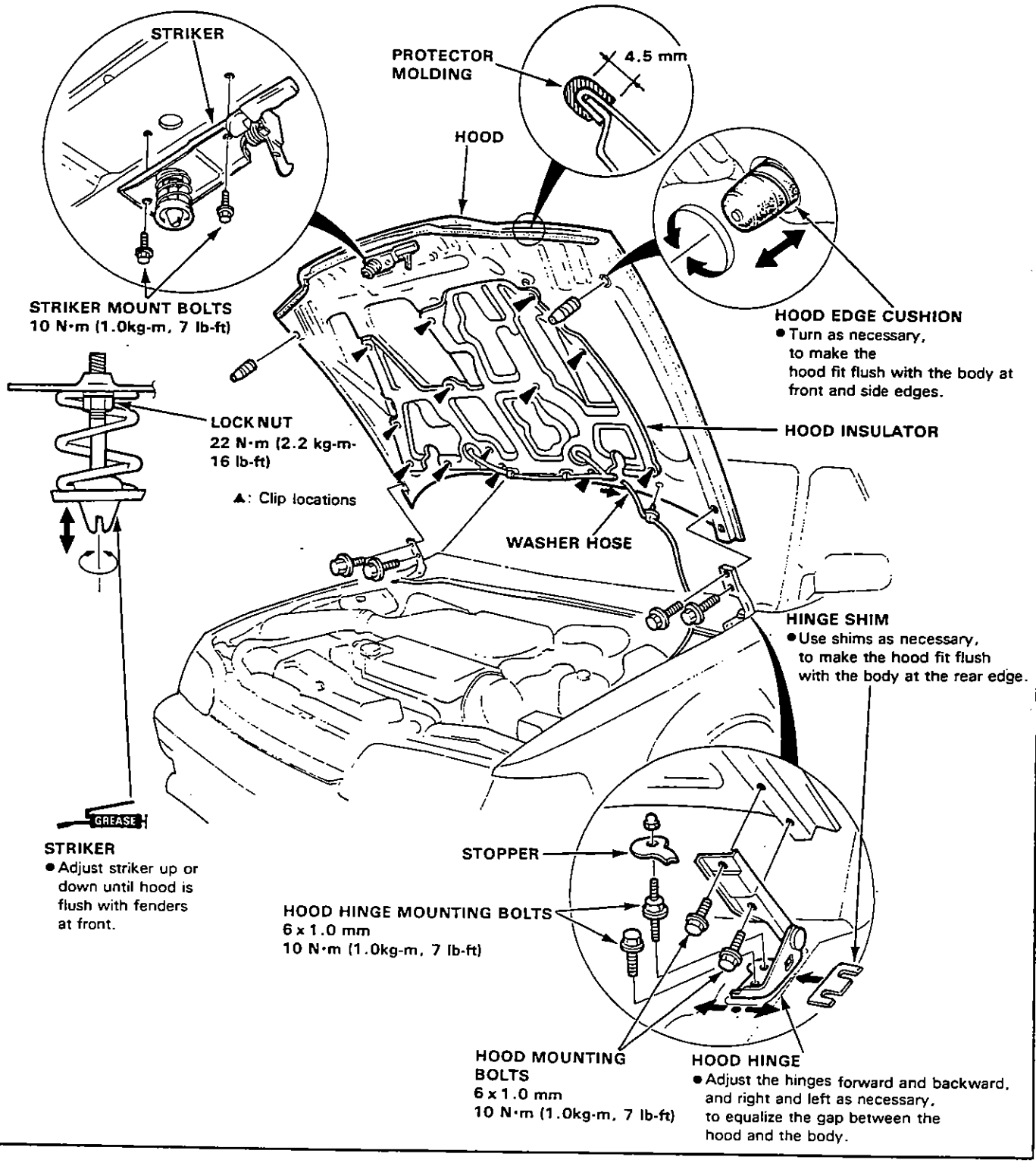


7. Installation sequence is essentially the reverse order of removal.

Hood

Replacement/Adjustment

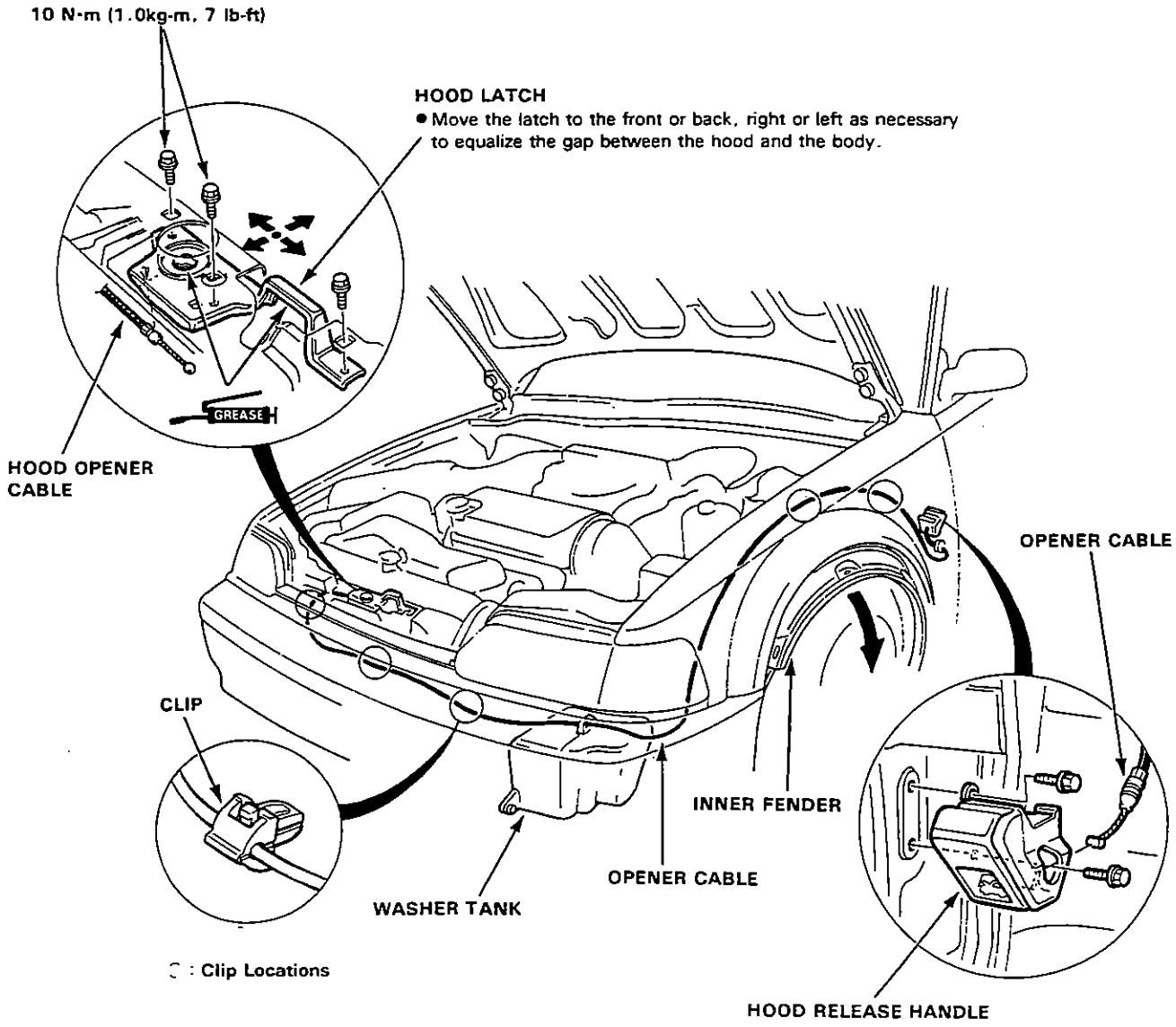
1. Pull the windshied washer hose out of the hood.
2. Hold the hood up and remove the 2 hood mounting bolts on each side, then remove the hood.
3. To remove the hood hinges, remove the front windshield wiper and air scoop.
4. When installing the hood, don't tighten the hinge bolts until you've checked the adjustments shown below.



Opener and Latch Replacement

1. Remove the bolts, then remove the hood release handle and disconnect the opener cable.
2. Remove the front bumper.
3. Remove the 3 mounting bolts, then remove the hood latch and disconnect the opener cable.
4. Remove the left side inner fender, then pull out the opener cable.

   NOTE: Before pulling out the opener cable, tie a string to the cable so you can pull it back in later.
5. After installing, adjust the hood fit to the opening.



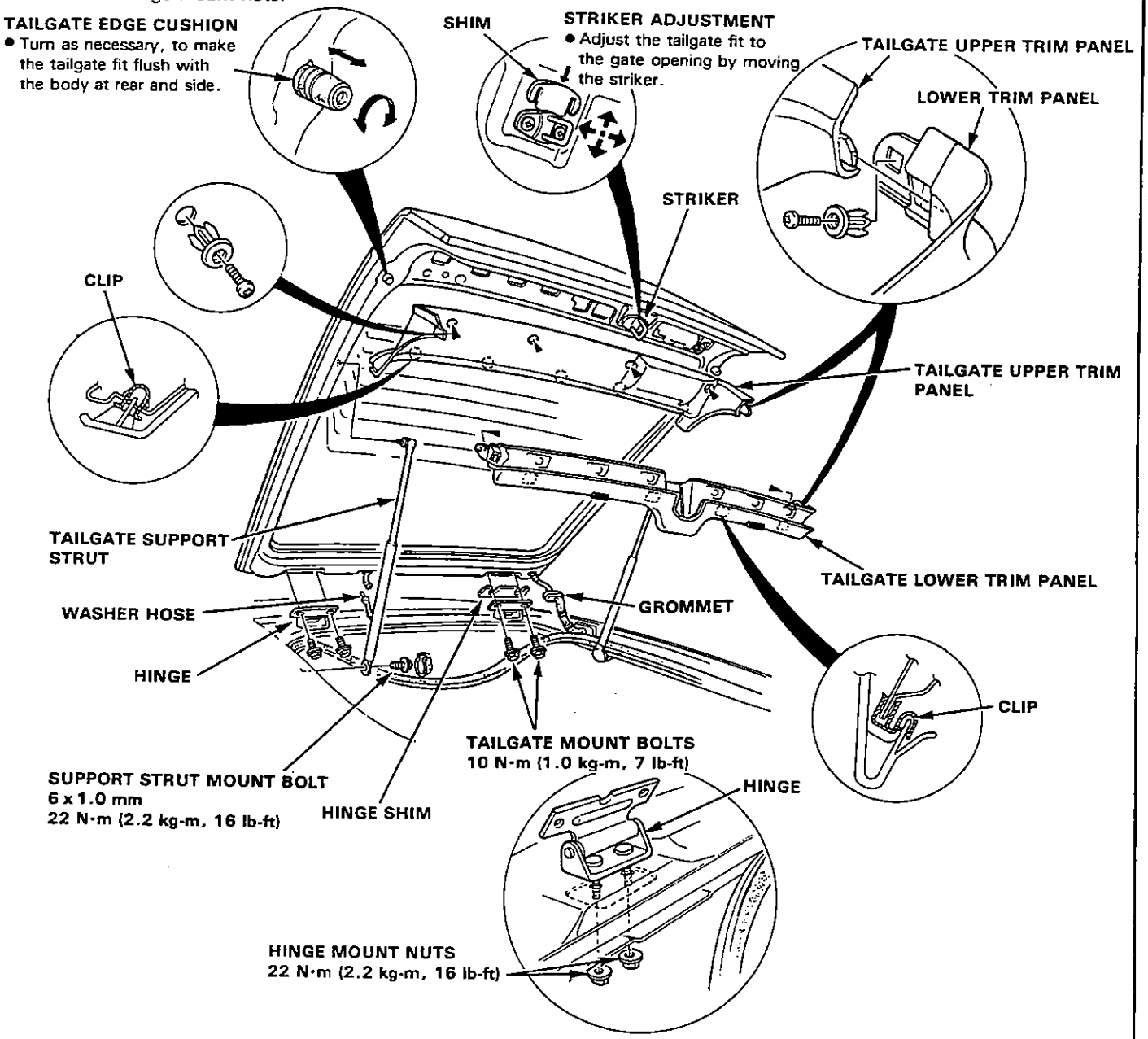
Tailgate

Replacement/Adjustment

1. Remove the screws and detach the clips, then remove the tailgate upper and lower trim panel.
2. Pull the wire harness out of the tailgate and disconnect the washer hose.
   NOTE: Before pulling out the wire harnesses, tie a string to the end of it so you can pull it back in when the tailgate is reinstalled.
3. Remove the tailgate support struts.
   NOTE: Let an assistant hold the tailgate when removing the struts.
4. Remove the tailgate by removing the tailgate mount bolts.
   NOTE: Take care not to damage the roof panel.

If necessary:

- Lower the rear of the headliner just enough to gain access to the hinge mount nuts, then remove the hinge by removing the hinge mount nuts.

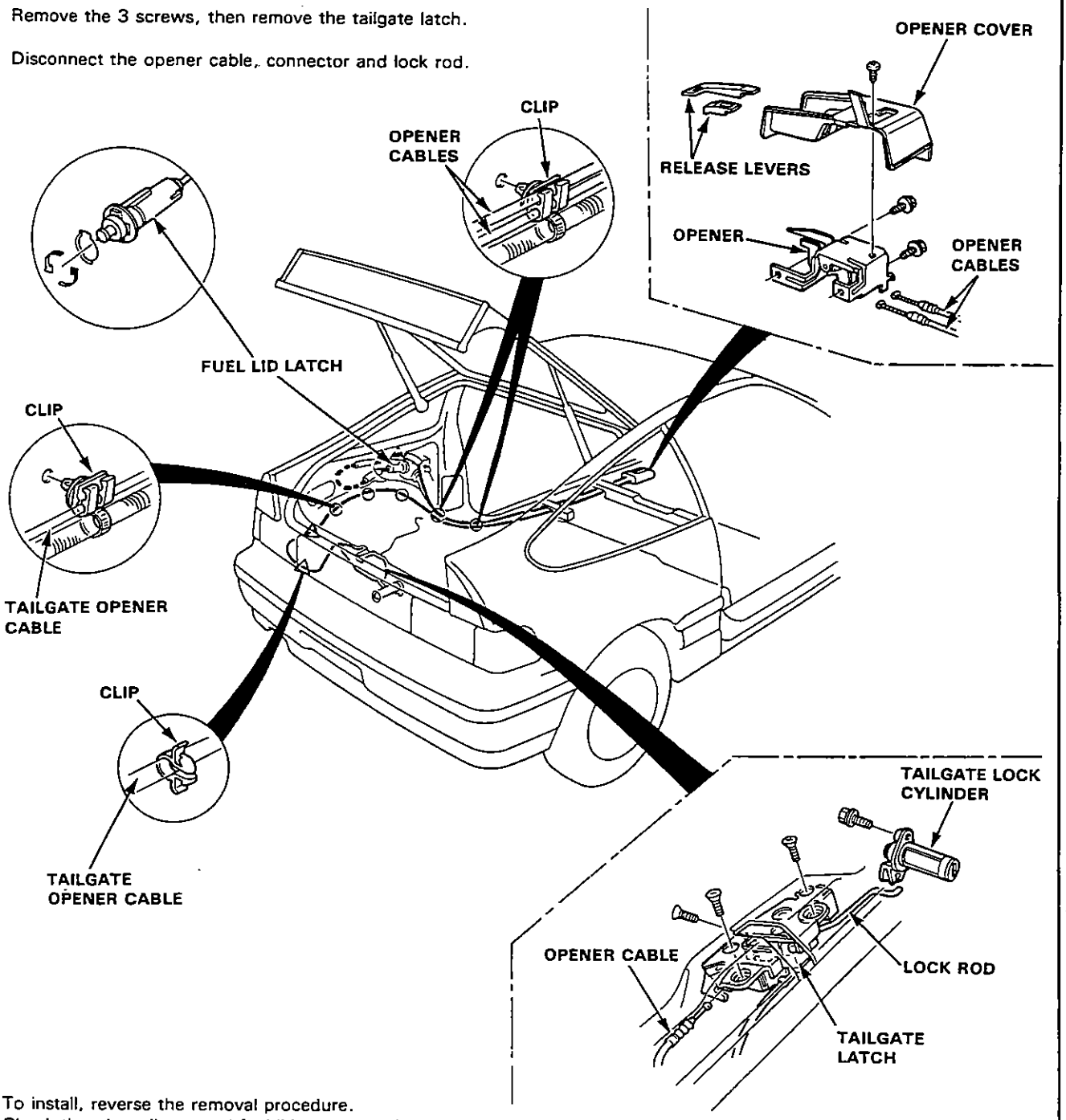


5. Installation sequence is essentially the reverse order of removal. However, observe the following:
   - Before tightening the hinge nuts, adjust the tailgate fit and striker.
   - Use care when pulling the wire harness back in to avoid damaging the body.
   - Coat the inside and outside of the grommet with sealer.

Fuel Filler/Tailgate Opener

Replacement

1. To remove the opener cables, remove the following parts:
   - Left side door sill molding, left half of carpet.
   - Left quarter trim panel, and rear trim panel.
2. Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts.
3. Remove the fuel lid latch by turning it 90°.
4. Remove the bolt, then remove the tailgate lock cylinder.
5. Remove the 3 screws, then remove the tailgate latch.
6. Disconnect the opener cable, connector and lock rod.



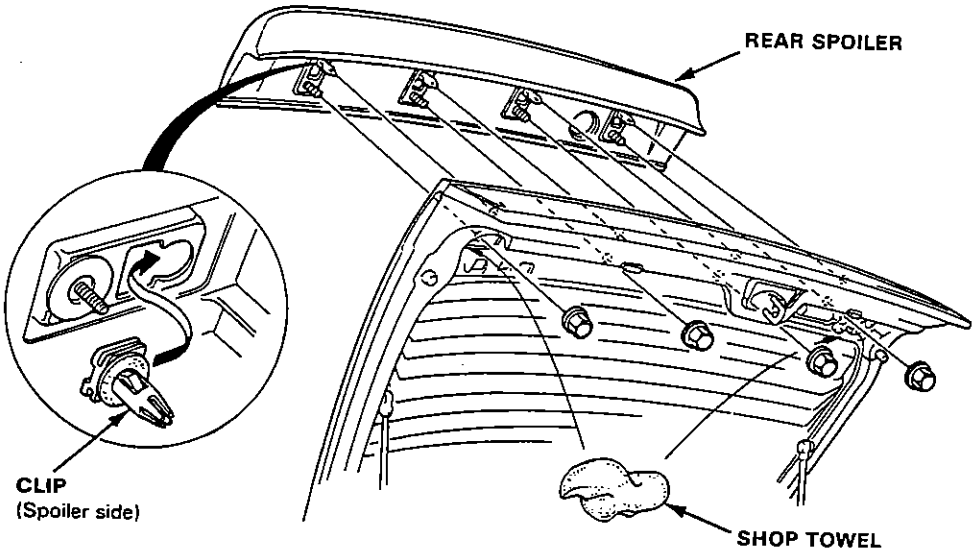
7. To install, reverse the removal procedure.
   Check that the tailgate and fuel lid opener cables are routed and connected properly.

Rear Spoiler/Rear Panel and Corner Panel

Rear Spoiler Replacement

1. Remove the tailgate trim panel (page 14-62) and rear wiper.
2. Remove the 4 mount nuts and detach the 4 clips, then remove the rear spoiler.

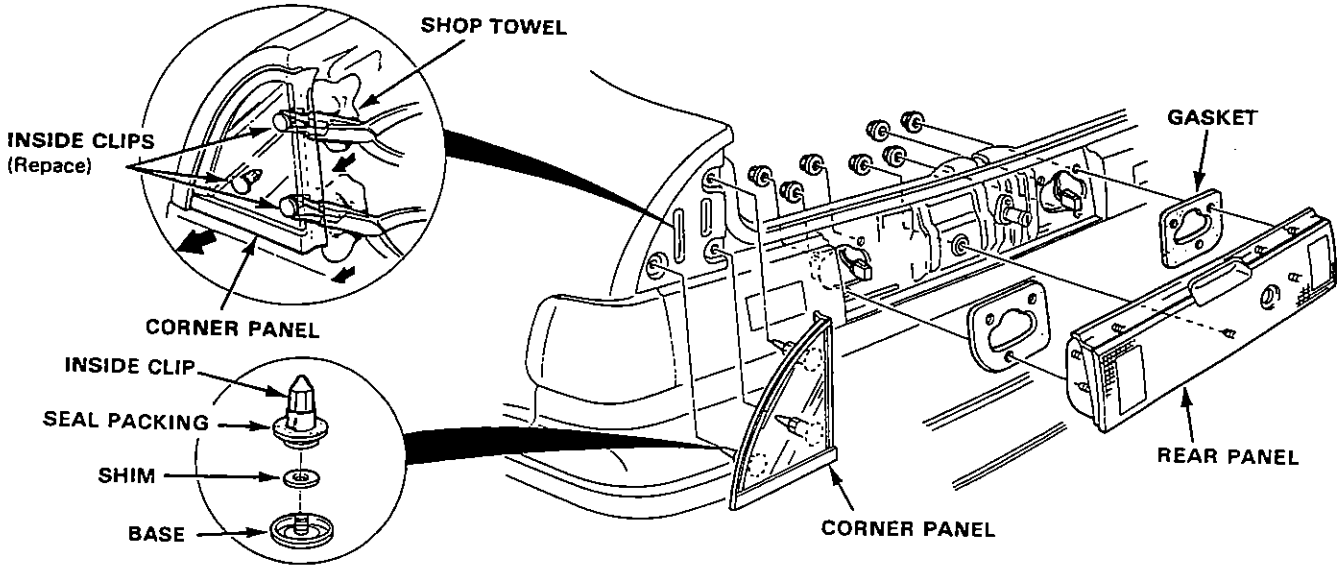
   NOTE: Be careful not to drop the nuts inside the tailgate panel.



3. Install the spoiler in the reverse order of removal.
   NOTE: Before attaching the spoiler, install the clips to the spoiler.

Rear Panel and Corner Panel Replacement

1. Remove the rear trim panel, then remove the rear panel by removing the 7 mount nuts and disconnecting the connectors.
2. Carefully pull out the 3 inside clips, then remove the corner panels.

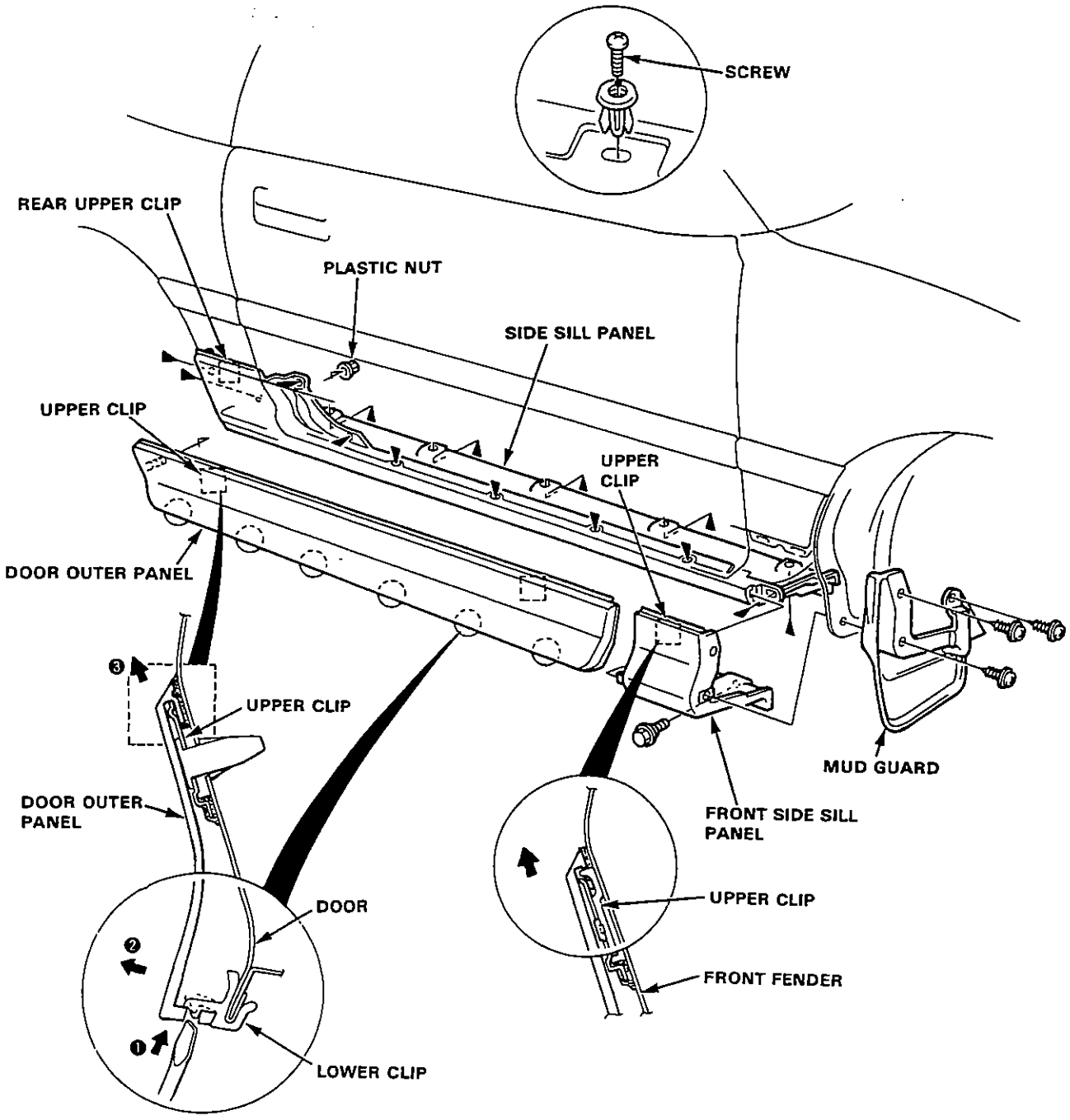


3. Install the panels in the reverse order of removal.
   NOTE: Before attaching the corner panels, install new clips and shims.

Replacement

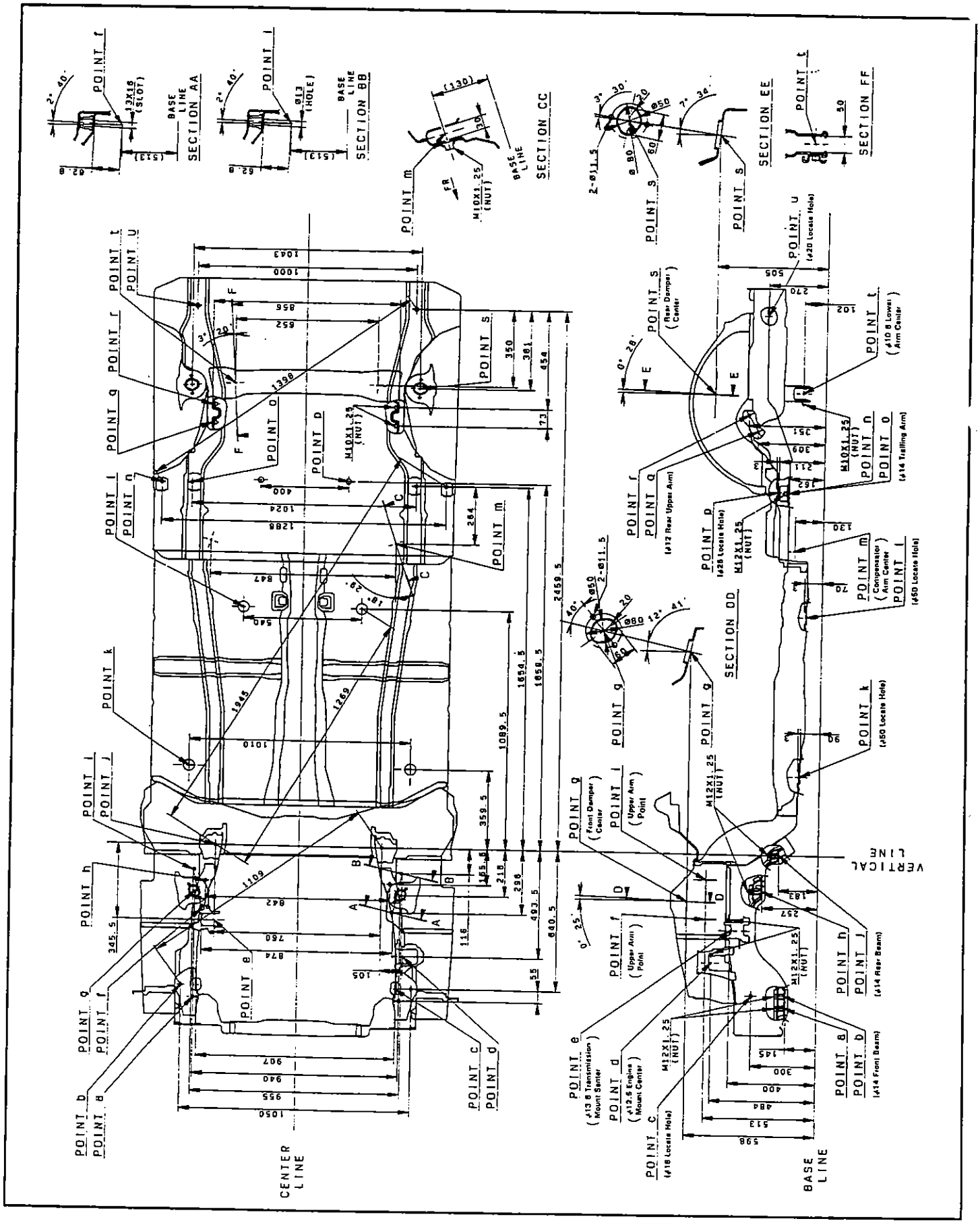
1. Remove the plastic nut and 6 lower clips with a long flat-tip screwdriver.
2. Lift the door outer panel straight up off the 2 upper clips, then remove the door outer panel.
3. Remove the bolt, screw and 1 upper clip, then remove the front side sill panel.
4. Remove the 14 screws and 1 rear upper clip, then remove the side sill panel.
   NOTE: Take care not to damage the side sill and door.

▲ : Screw location



5. Install the side panel in the reverse order of removal.

Frame Repair Chart



Heater and Air Conditioner

Heater 15–1
Air Conditioner 15–25



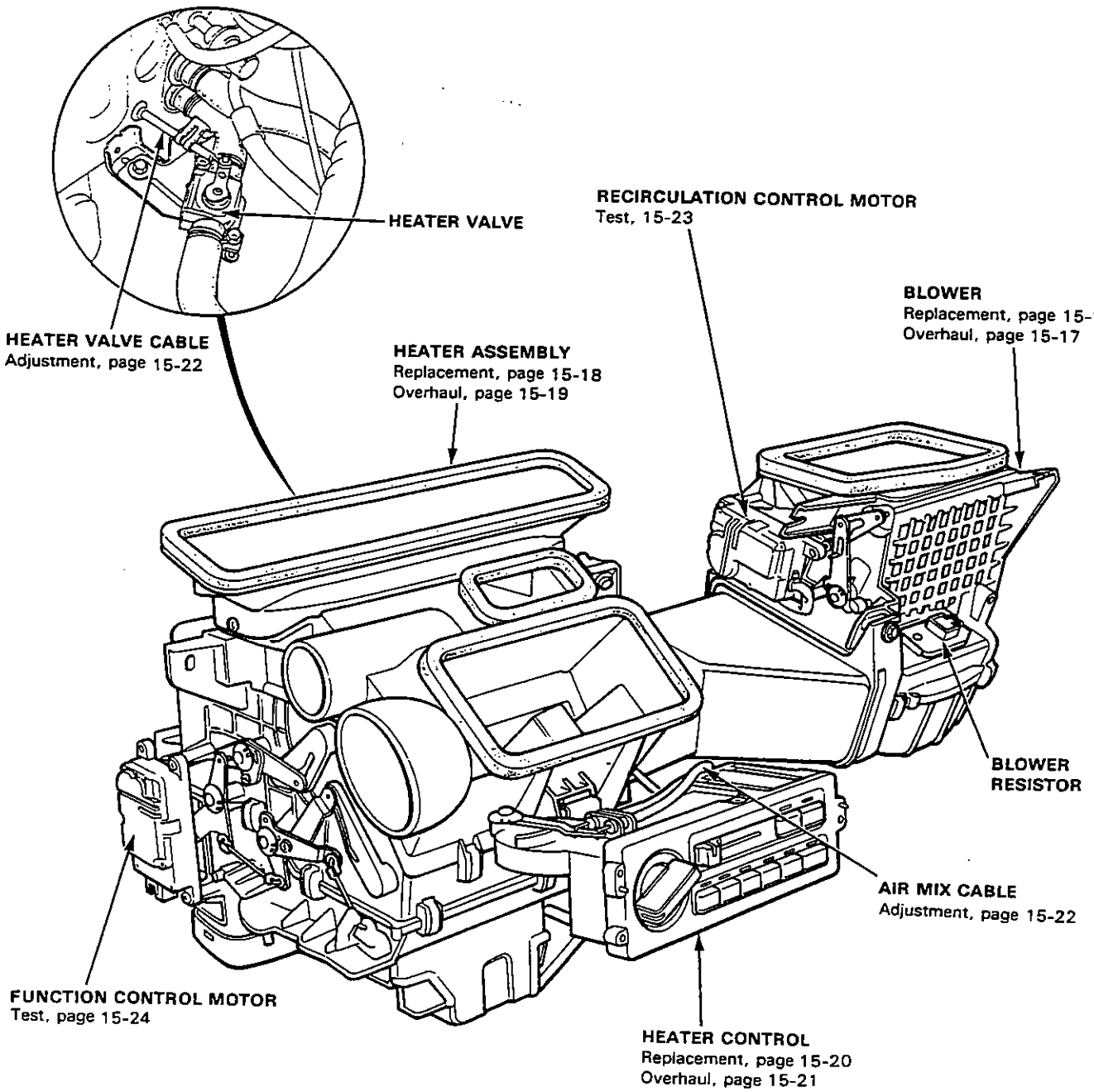
Heater

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  Symptom Chart .....15 – 8
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  Function Control Motor .....15 – 24



Heater

Illustrated Index

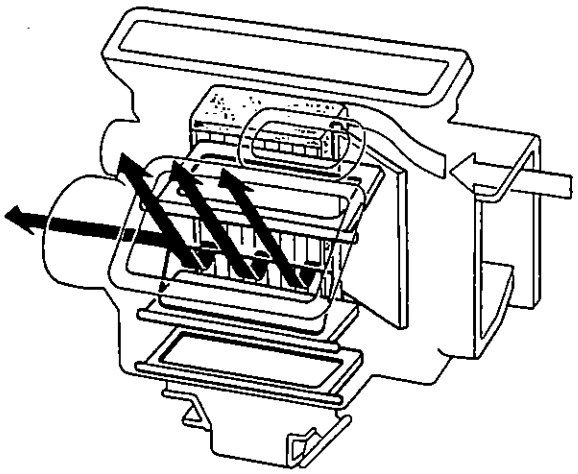


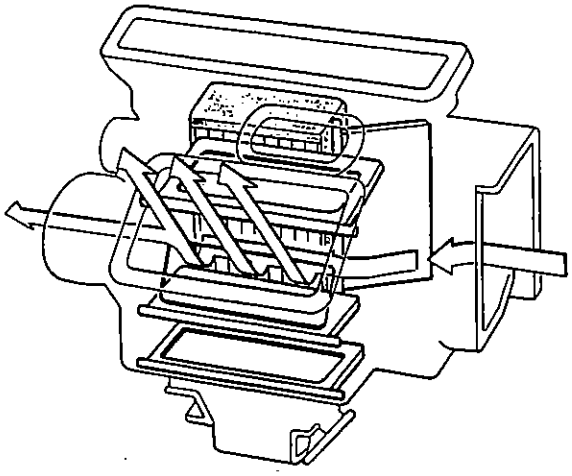
NOTE: LH Drive shown, RH Drive is similar.

Heater Door Position

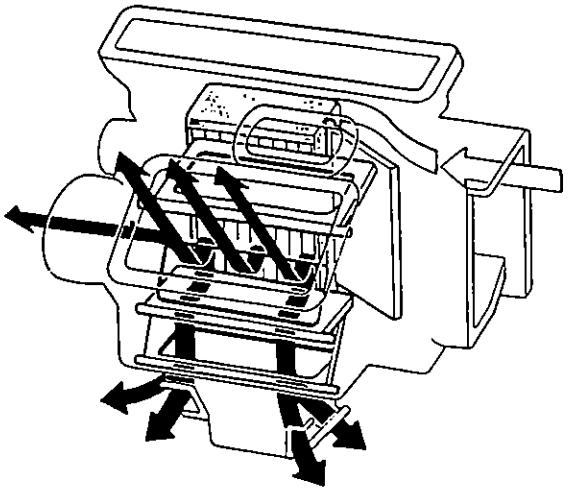
HOT
COLD

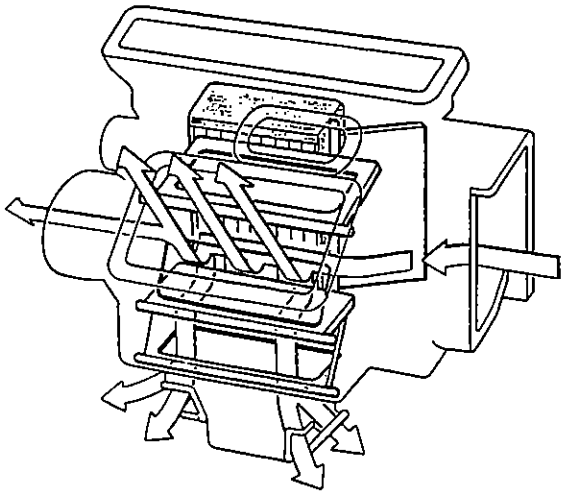
(VENT)





(HEAT/VENT)





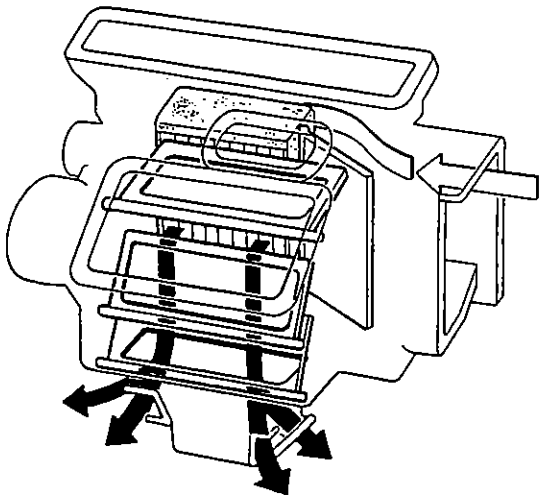
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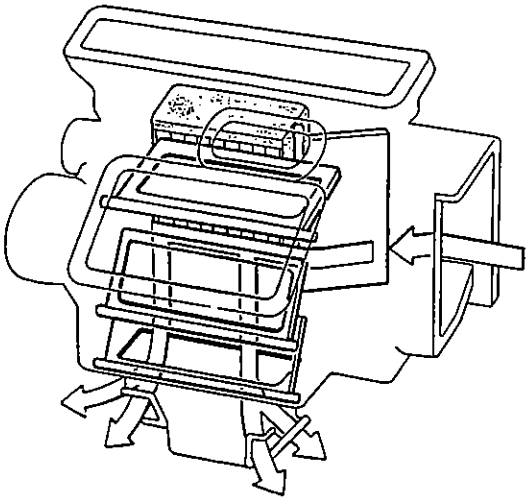
Heater Door Position (cont'd)



(HEAT)

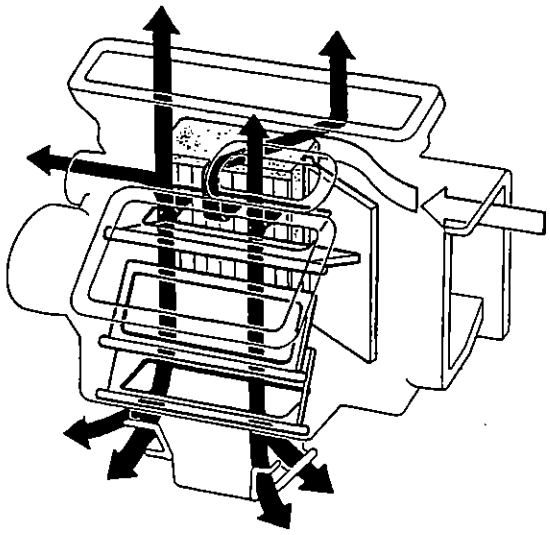
HOT
COLD

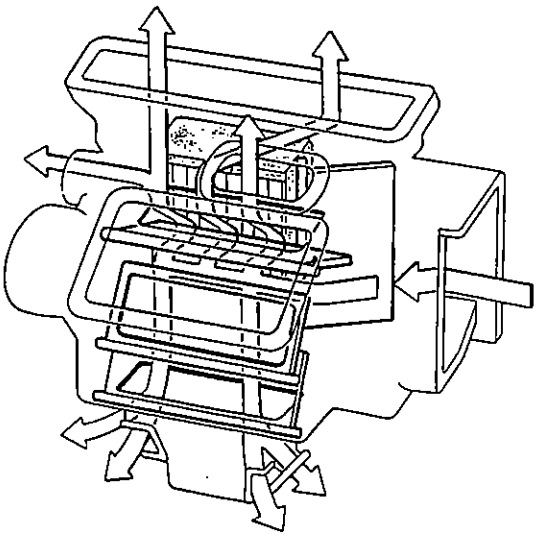




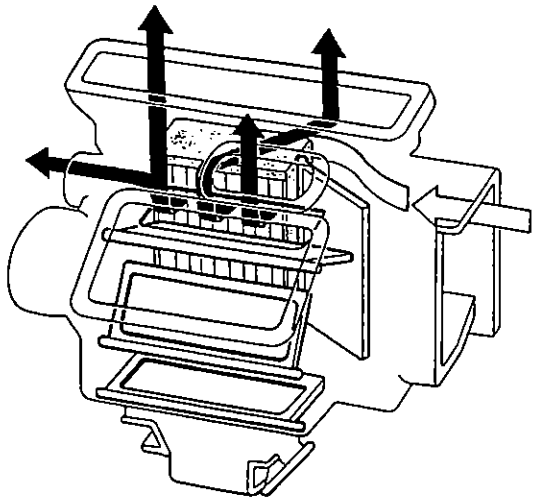


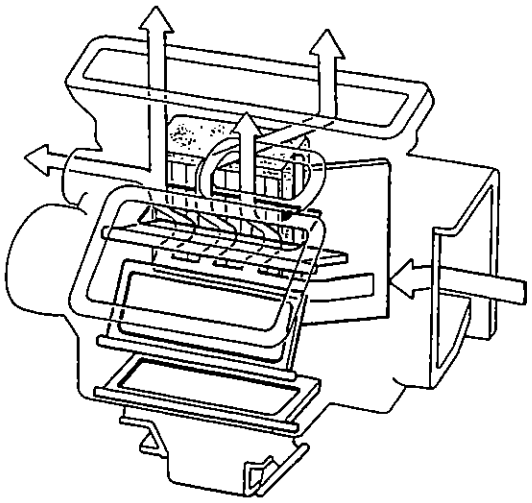
(HEAT/DEF)





(DEF)

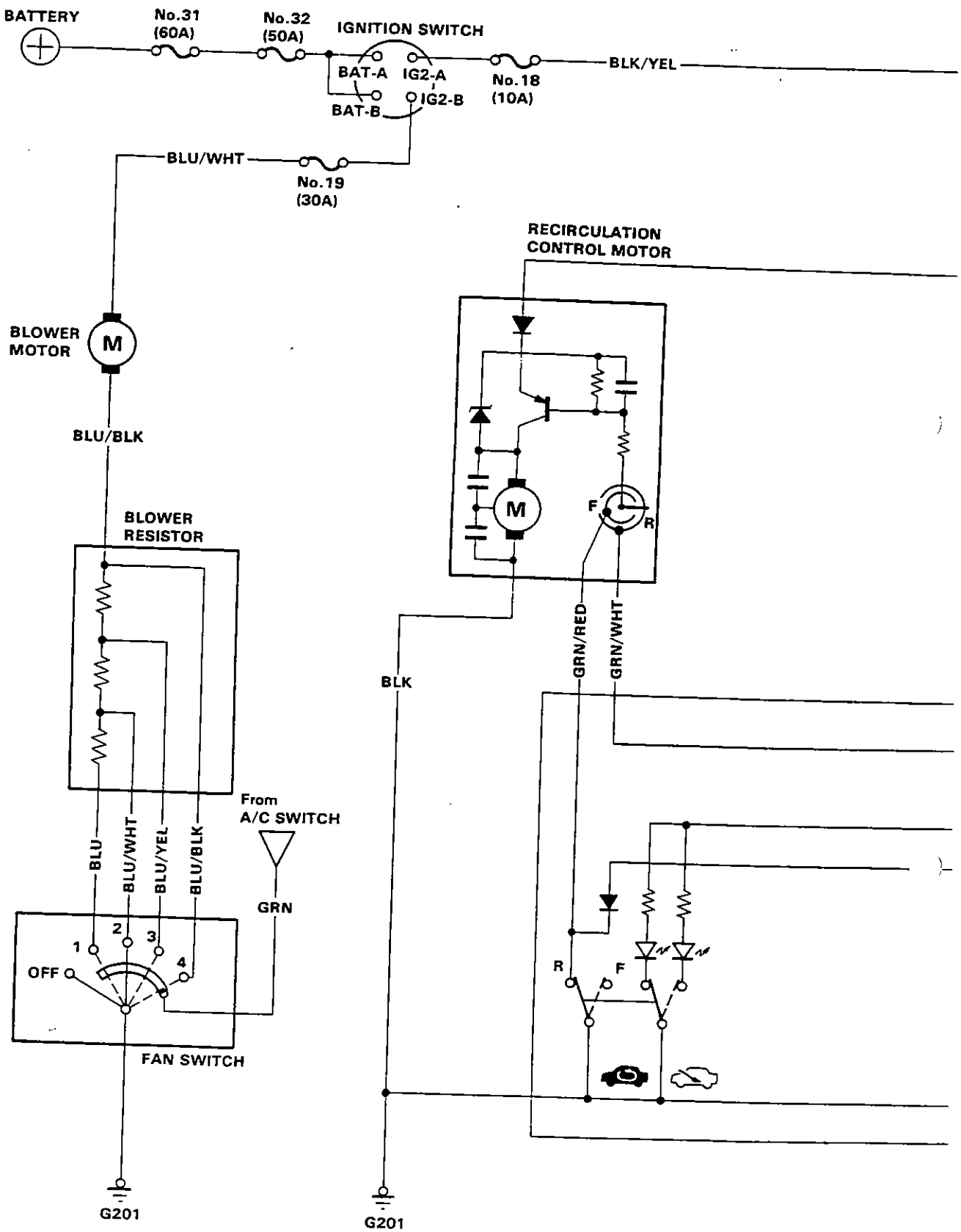


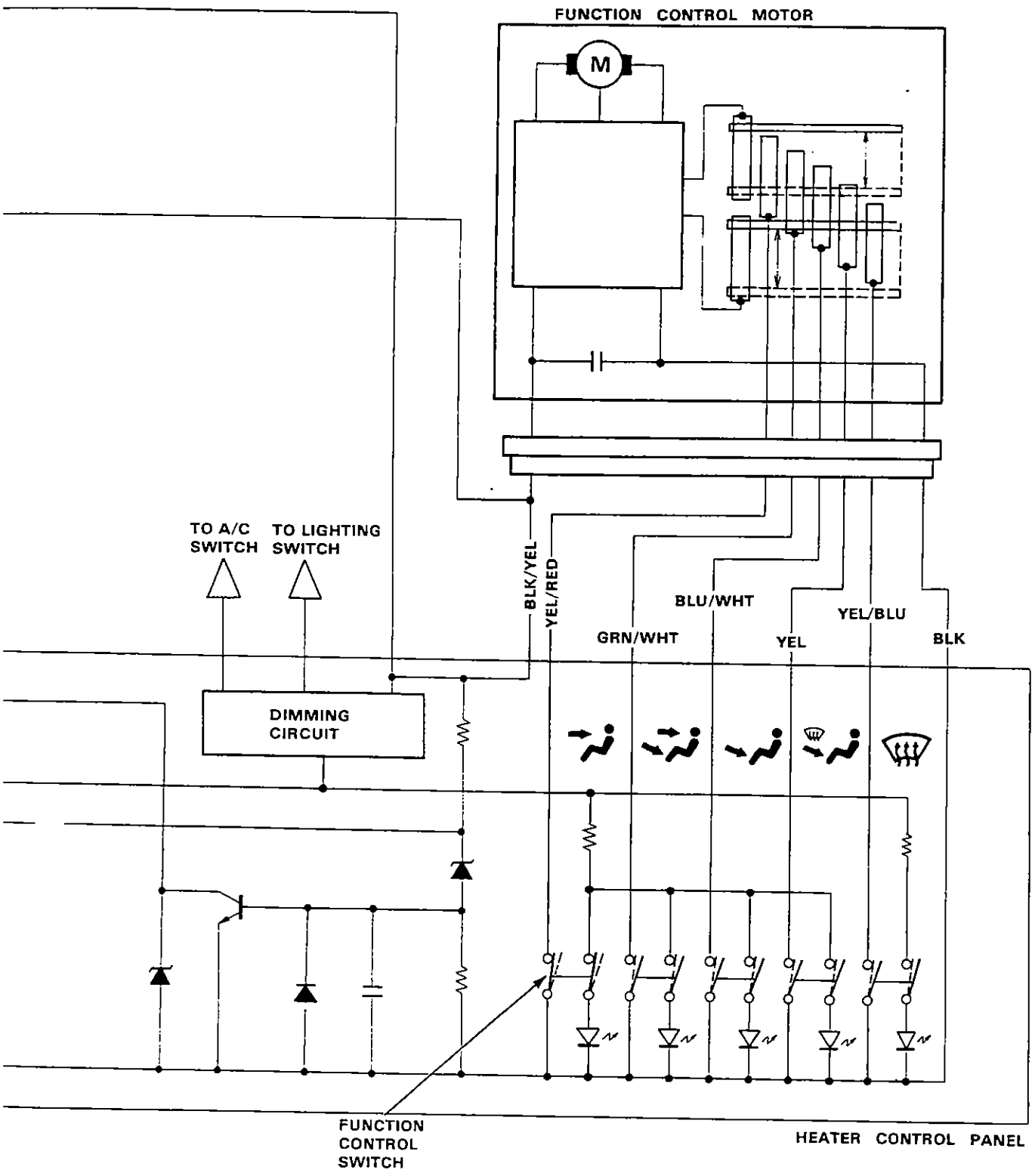


〈LHD〉

Heater

Circuit Diagram




FUNCTION CONTROL MOTOR
M
TO A/C SWITCH
TO LIGHTING SWITCH
BLK/YEL
YEL/RED
GRN/WHT
BLU/WHT
YEL
YEL/BLU
BLK
DIMMING CIRCUIT
FUNCTION CONTROL SWITCH
HEATER CONTROL PANEL

Troubleshooting

Symptom Chart

SYMPTOM		REMEDY
No hot air flow	Blower motor does not run	Perform the flowchart (page 15-9)
	Blower motor runs	Check following: • Clogged heater duct • Clogged blower outlet • Clogged heater valve • Faulty air mix door • Air mix cable adjustment • Faulty thermostat
Hot air flow is low	Blower speed does not change	Perform flow chart (page 15-11)
	Blower runs properly	Check following: • Clogged heater duct • Clogged blower outlet • Incorrect door position
Function does not change	Function control motor does not run	Perform flow chart (page 15-14)
	Function control motor runs	Check for the heater door linkage and cable adjustments.
Recirculation door does not change	Recirculation motor does not run	Perform flow chart (page 15-12)
	Recirculation motor runs	Check for the door linkage or perform flow chart (page 15-17)

Flow Chart-Blower

Blower motor does not run.

Inspect No.19 (30A) fuse.

Is the No.19 fuse OK? NO → **Replace fuse.**

YES

Disconnect the 2P connector from the blower motor.

Turn the ignition switch ON.

Measure voltage between BLU/WHT terminal (+) and body ground (–).

Is there battery voltage? NO → **Repair open in BLU/WHT wire between blower and ignition switch.**

YES

Turn the ignition switch OFF.

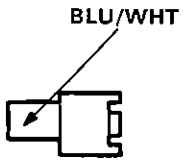
Reconnect the 2P connector to the blower motor.

Connect a jumper wire between the BLU/BLK terminal and body ground. Turn the ignition switch ON.

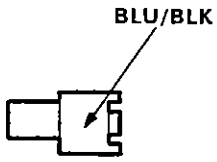
Does blower motor run? NO → **Replace the blower motor.**

YES

(To page 15-10)



View from wire side



View from wire side

(cont'd)

Flow Chart-Blower (cont'd)

(From page 15-9)

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the 6P connector from the fan switch.

Connect the jumper wire between the BLU/BLK terminal and body ground.

Turn the ignition switch ON.

Does the blower motor run?

NO → **Repair open in BLU/BLK wire between blower and fan switch.**

YES

Turn the ignition switch OFF.

Remove the jumper wire.

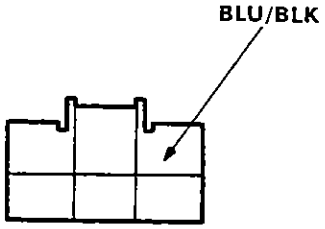
Inspect the fan switch (page 15-23).

Is the fan switch OK?

NO → **Replace the fan switch.**

YES

Repair open in BLK wire between the fan switch and body ground or poor ground (G201).



View from wire side

Blower motor running speed does not change.

Disconnect the 4P connector from the blower resistor.

Check for continuity between the 2 and 4 terminals of the resistor.

Does continuity exist? NO → **Replace the resistor.**

YES

Reconnect the 4P connector to the resistor.

Disconnect the 6P connector from the fan switch.

Turn the ignition switch on.

Measure voltage between:
- BLU/YEL terminal and body ground.
- BLU/WHT terminal and body ground.
- BLU terminal and body ground.

Is there battery voltage? NO → **Repair open in BLU/YEL, BLU/WHT and/or BLU wire(s) between the fan switch and resistor.**

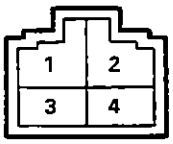
YES

Check for continuity from BLK terminal to body ground.

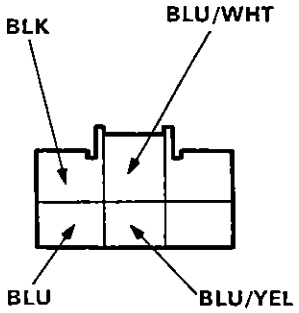
Is there continuity? NO → **Repair open in BLK wire between the fan switch and body ground or poor ground (G201).**

YES

Replace the fan switch.



View from terminal side



View from wire side

Flow Chart — Recirculation Control

Recirculation control door does not change between FRESH and REC.

Inspect No. 18 (10A) fuse.

Is the No. 18 fuse OK? NO → **Replace the No. 18 fuse.**

YES

Push the FRESH button and turn the ignition switch ON.

Does the motor run all the time? YES → **· Repair short in GRN/RED wire between recirc. motor and switch. · Replace the control switch.**

NO

Turn off the ignition switch.

Push the REC button and turn the ignition switch ON.

Does the motor run all the time? YES → **· Repair short in GRN/WHT wire between recirc. motor and switch. · Replace the control switch.**

NO

Turn off the ignition switch.

Disconnect the 4P connector from the recirc. motor at the bottom of the blower assembly.

Turn the ignition switch on.

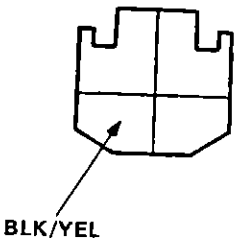
Measure the voltage between the BLK/YEL (+) and body ground (−).

Is there battery voltage? NO → **Repair open in BLK/YEL wire between the fuse box and recirc. motor.**

YES

Turn the ignition switch off and reconnect the 4P connector.

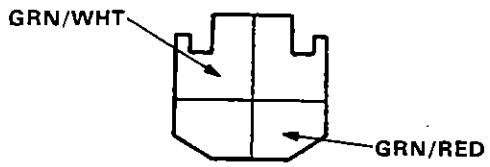
(To page 15-13)



View from wire side

(From page 15-12)

Connect the GRN/RED and GRN/WHT terminals to the body ground using a jumper wire. Turn the ignition switch ON.



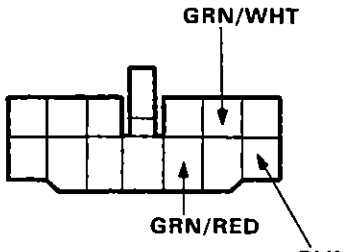
View from wire side

Does the motor run all the time?

NO → **Replace the recirculation control motor.**

YES

Turn the ignition switch OFF. Remove the heater control panel and disconnect the 13P connector.



View from wire side

Connect the GRN/WHT and GRN/RED terminals to BLK terminal using a jumper wire. Turn the ignition switch ON.

Does the motor run all the time?

YES → **Replace the heater control panel.**

NO

Check for continuity between the BLK terminal to body ground.

Is there continuity?

NO → **Repair the poor ground (G201) or open in BLK wire between the heater control panel and blower.**

YES

Repair open in GRN/RED or GRN/WHT between the heater control panel and blower.

Flow Chart — Function Control

Function control motor does not run.

Inspect No.18 (10A) fuse.

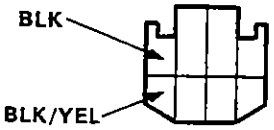
Is the No.18 fuse OK? NO → Replace the fuse.

YES

Disconnect the 8P connector from the function control motor.

Turn the ignition switch ON.

Measure voltage between BLK/YEL terminal and body ground.



View from wire side

Is there battery voltage? NO → Repair open in BLK/YEL wire between heater control panel and fuse box.

YES

Turn the ignition switch OFF.

Check for continuity from BLK terminal to body ground.

Is there continuity? NO → Repair open in BLK wire between the function control motor and body ground or poor ground (G201).

YES

Inspect the function control motor (page 15-24).

Is the function control motor OK? NO → Replace the function control motor.

YES

(To page 15-15)

(From page 15-14)

Disconnect the 13P connector from the heater control panel.

Check for continuity at each wire (BLU/WHT, GRN/WHT, YEL, YEL/RED, YEL/BLU) between the 8P and 13P connectors.

Is there continuity ? NO → **Repair open wire.**

YES

Check for continuity from each wire (BLU/WHT, GRN/WHT, YEL/RED, YEL/BLU, YEL) to body ground.

Is there continuity? YES → **Repair short to body ground in problem wire.**

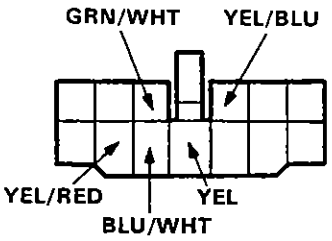
NO

Check for continuity between BLK terminal to body ground.

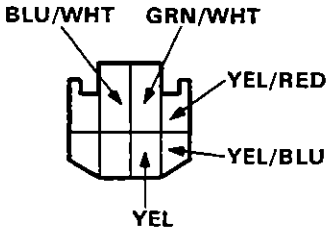
Is there continuity? NO → **Repair open in BLK wire or poor ground (G201).**

YES

Replace the heater control panel.



View from wire side



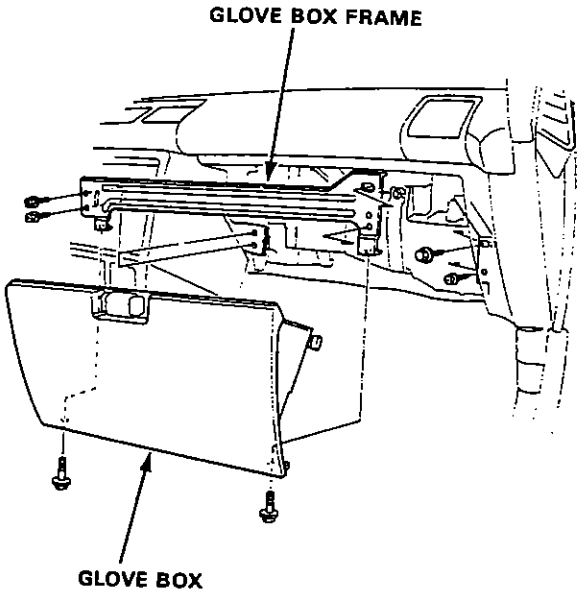
View from wire side

NOTE: If any of the wires are shorted to ground, the function control motor will not change positions.

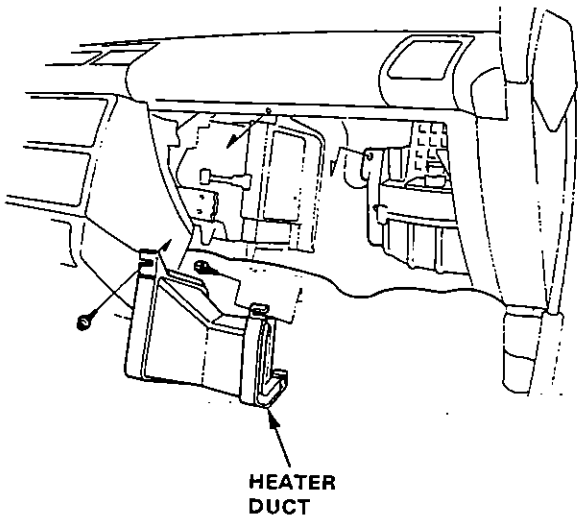
Blower

Replacement

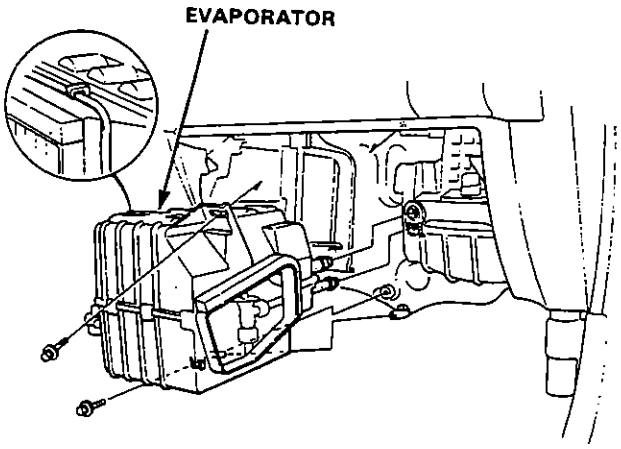
1. Disconnect the battery negative terminal.
2. Remove the glove box and glove box frame.



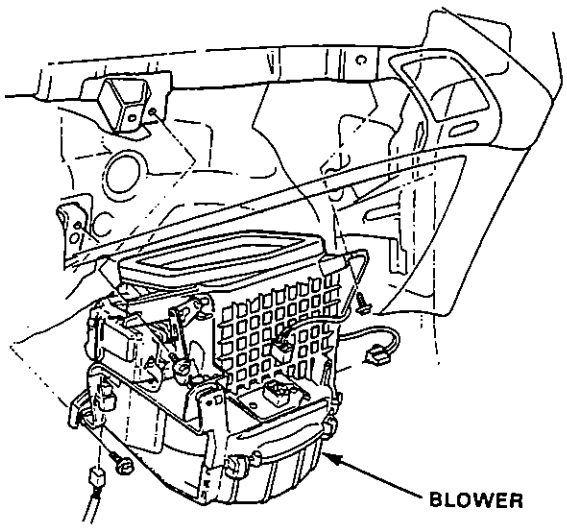
3-a Remove the tapping screws (2) and remove the heater duct.



3-b Remove the A/C bands and the evaporator.



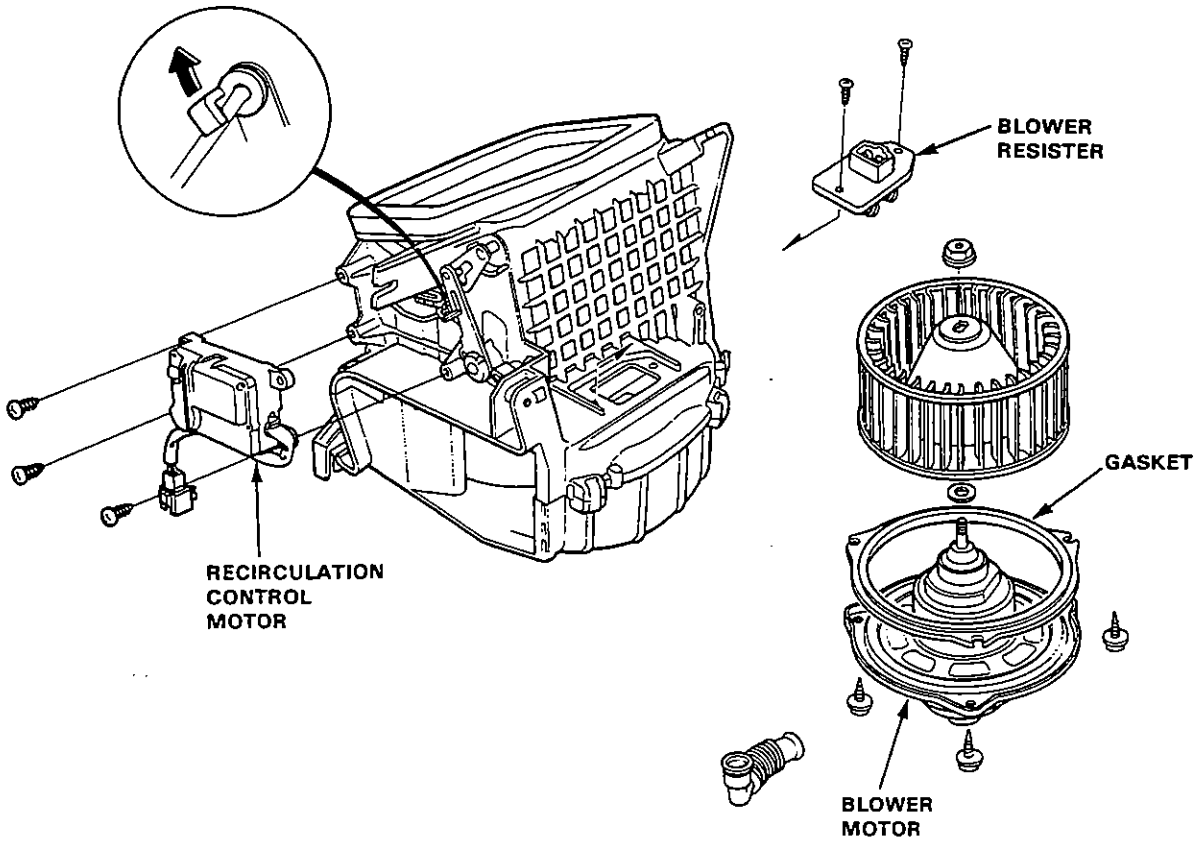
4. Remove the mounting bolts (3).
5. Disconnect the connectors from the blower motor, resistor and recirculation control motor, then remove the blower.



6. Install the blower in the reverse order of removal and make sure there is no air leakage.

NOTE
- Before reassembly, make sure that the air door and linkage moves smoothly without binding.
- When re-attaching the actuator, make sure its positioning will not allow the air door to be pulled too far. Attach the actuator and all linkage, then apply battery voltage and watch the door movement. If necessary, loosen the holding screw and move the actuator up or down.

To adjust the control rod:
Connect the recirc. control motor connector to the main wire harness, push the RECIRC and open the air doors. Then connect the control rod to the arm while holding the air doors open.



Heater Assembly

Replacement

1. When the engine is cool, drain coolant from the radiator (Section 5).

WARNING

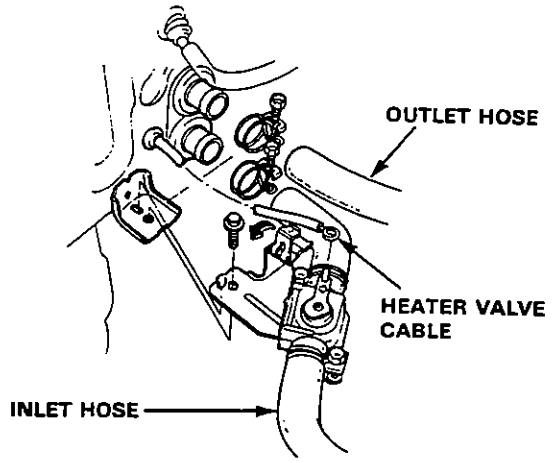
- **Do not remove the radiator cap when the engine is hot, the coolant is under pressure and could severely scald you.**
- **Keep hands away from the radiator fan. The fan may start automatically without warning and run for up to 30 minutes, even after the engine is turned off.**

CAUTION: Radiator coolant will damage paint. Quickly rinse any spilled coolant from painted surfaces.

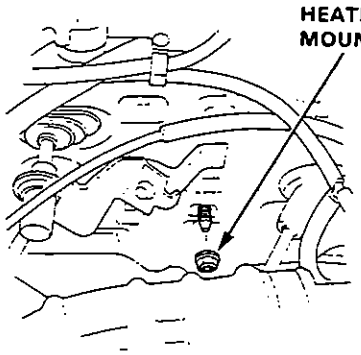
2. Disconnect the heater hoses at the heater.

NOTE: Coolant will run out when the hoses are disconnected, drain it into a clean drip pan.

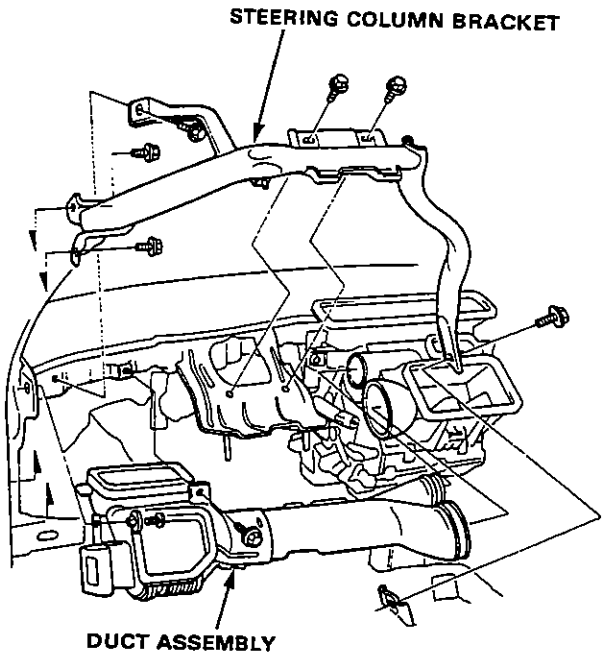
3. Disconnect the heater valve cable from the heater valve.



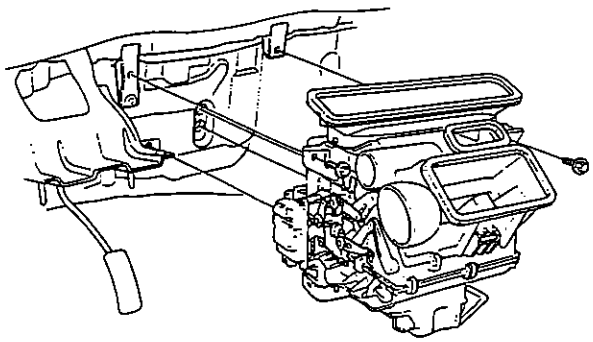
4. Remove the dashboard (Section 14)
5. Remove the heater duct (page 15-10).
6. Remove the heater lower mounting nut.



7. Remove the steering column bracket and the duct assembly.



8. Remove the heater mounting bolts (2), disconnect the wire harness connector from the function control motor, and then remove the heater assembly.

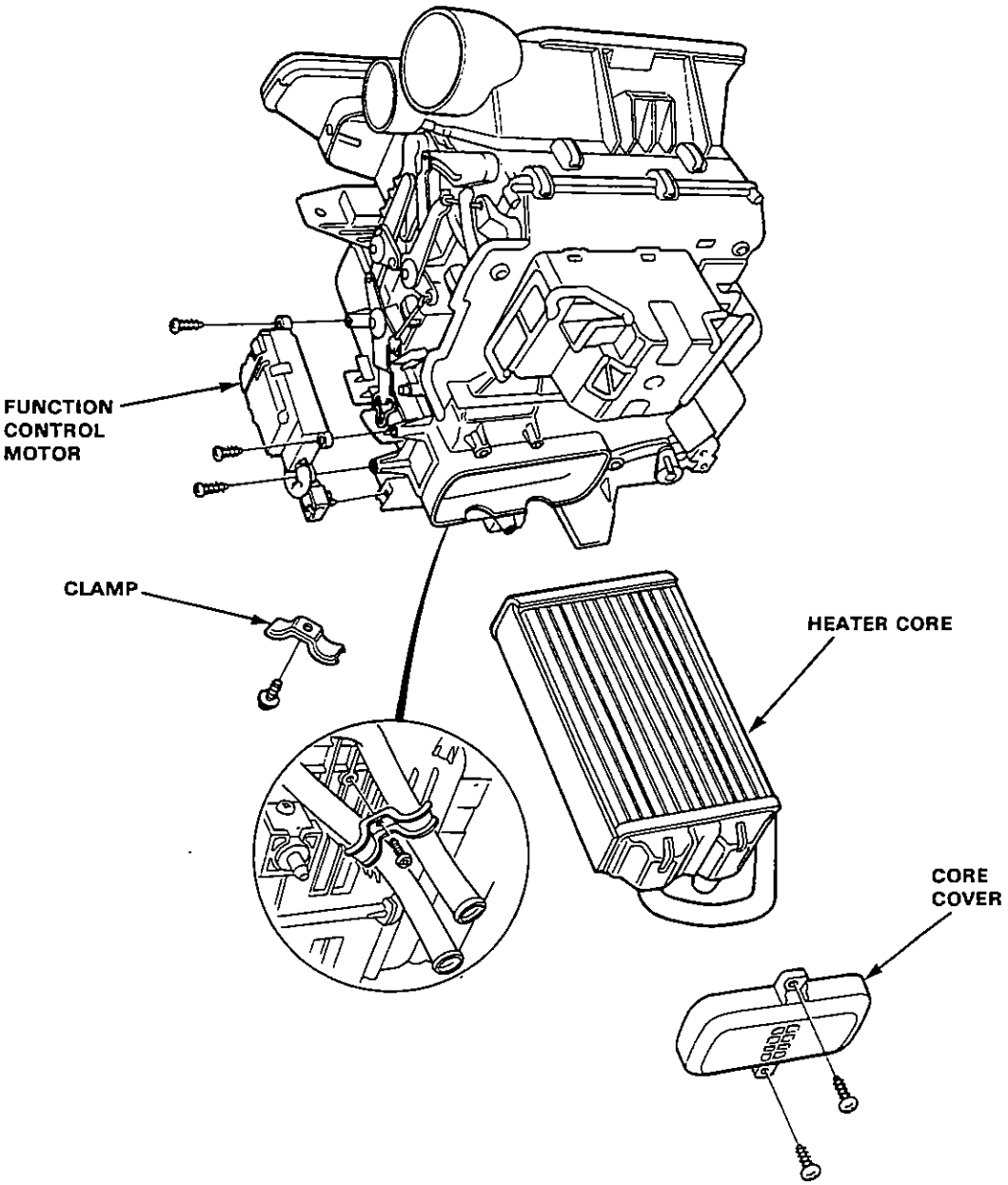


9. Install in the reverse order of removal, and:

- Apply a sealant to the grommets.
- Do not interchange the inlet and outlet hoses. Make sure that the hose clamps are secure.
- Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture.
  Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.
- Connect all cables and make sure they are properly adjusted (page 15-16).

Overhaul

1. Remove the heater assembly.
2. Remove the tapping screws (2) and heater core cover.
3. Remove the tapping screw and clamp.
4. Pull out the heater core from the heater housing.
5. Remove the function control motor if necessary.

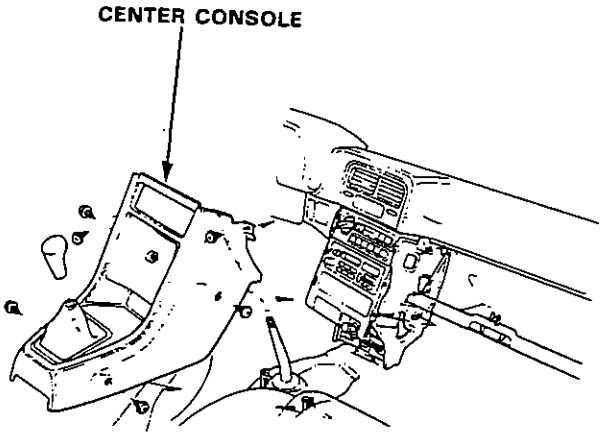


Install in the reverse order of removal and:
Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.

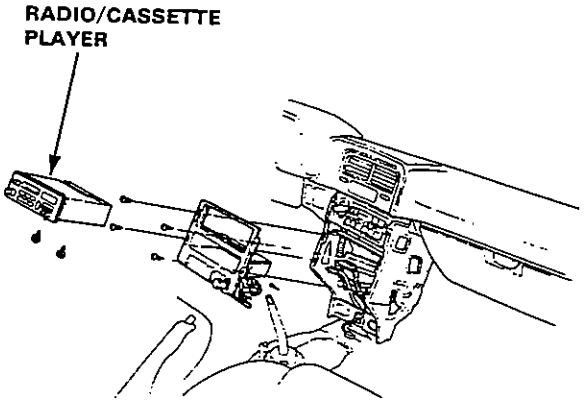
Heater Control

Replacement

1. Remove the center console.

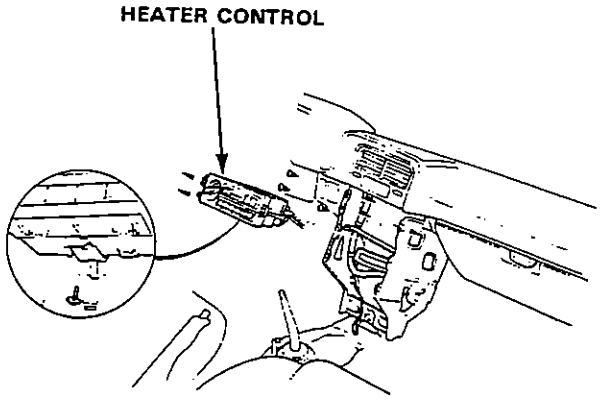


2. Remove the radio/cassette player.

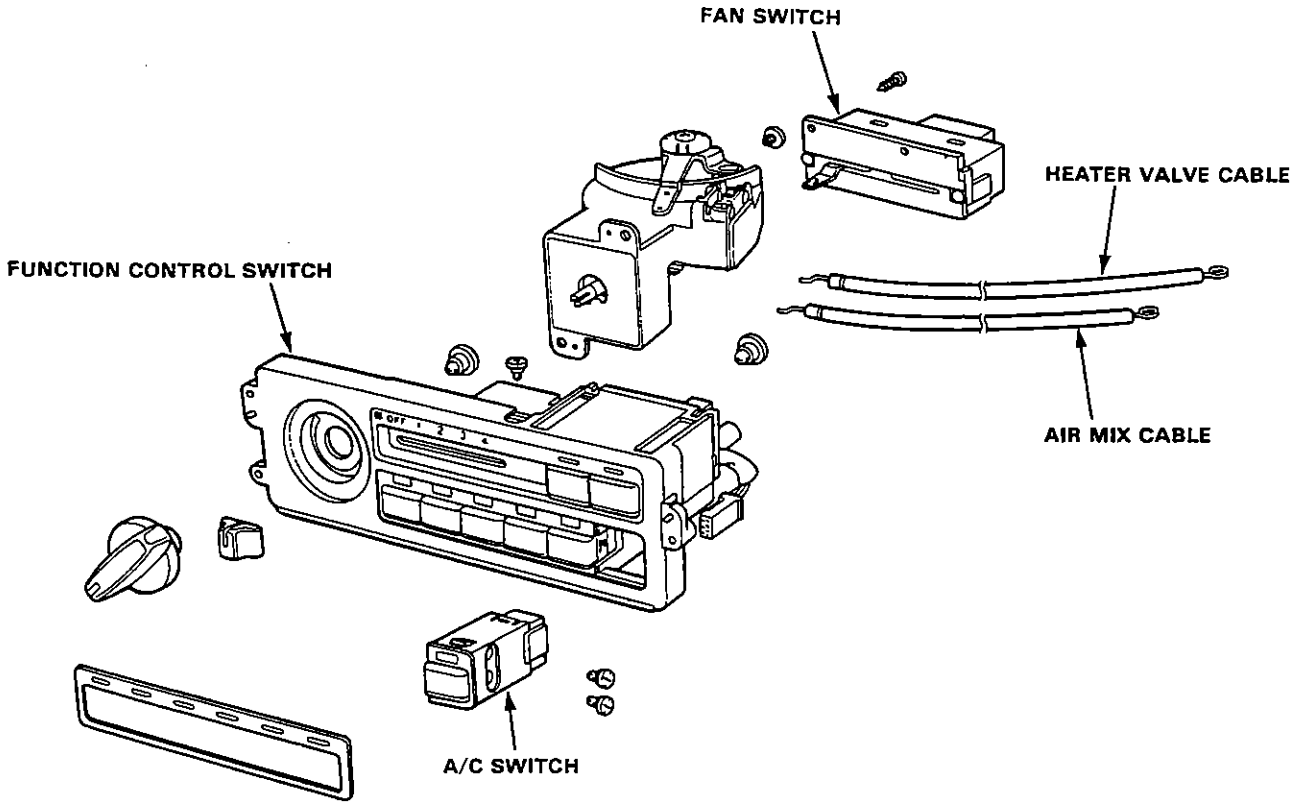


4. Disconnect the air mix cable at the heater assembly.

5. Remove the tapping screws (4) and setting plate, then disconnect the wire harness conectors and cables. Remove the heater control.

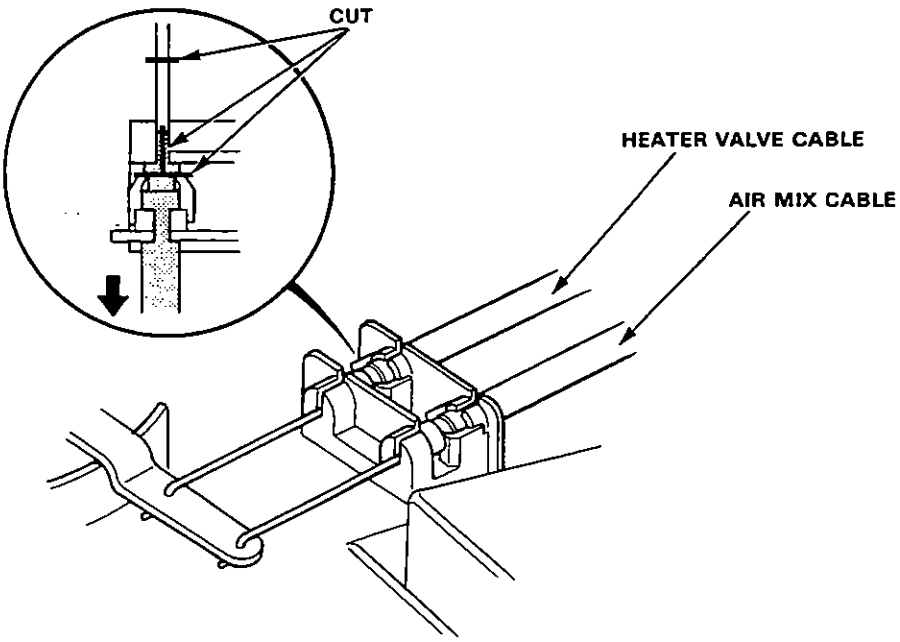


6. Install in the reverse order of removal and connect and make sure that it is properly adjusted (page 15-22).



Cable Replacement

1. Cut and pull the cable.
2. Set the new one.

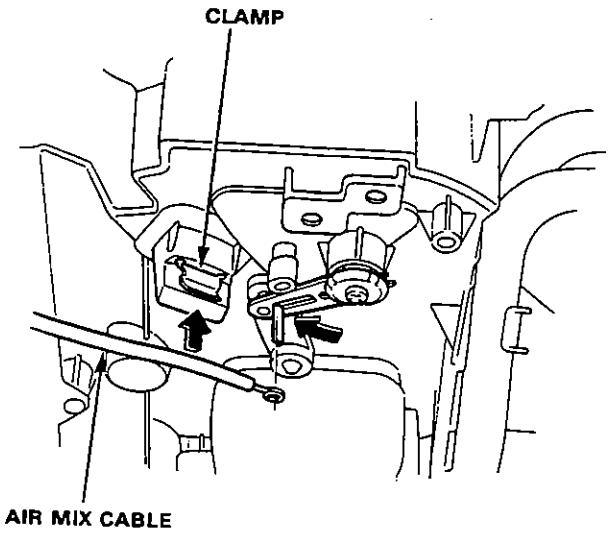


NOTE After assembly check that the air mix lever slides smoothly.

Heater Control Cables

Air Mix Cable Adjustment

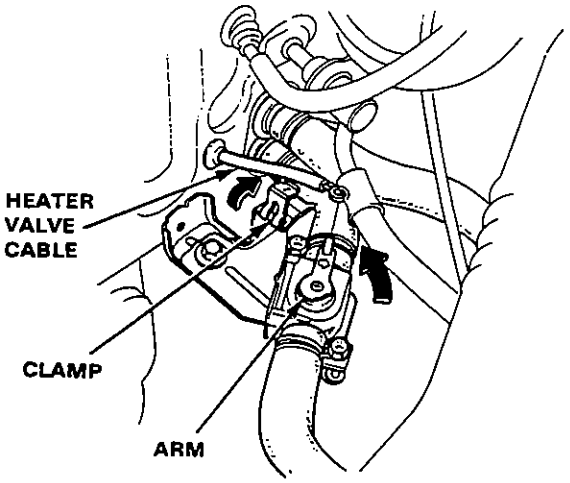
1. Slide the temperature control lever to HOT.
2. Turn the air mix door shaft arm to the left and connect the end of the cable to the arm.
3. Gently slide the cable outer housing back from end enough to take up any slack in the cable, but not enough to make temperature control lever move, then snap the cable housing into the clamp.



NOTE: Heater valve cable should be adjusted if the air mix cable has been disconnected.

Heater Valve Cable Adjustment

1. Slide the temperature control lever to HOT.
2. Gently slide the cable housing back from end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then hold the cable housing and snap it in the clamp.



NOTE: Air mix cable should be adjusted if the heater valve cable has been disconnected.

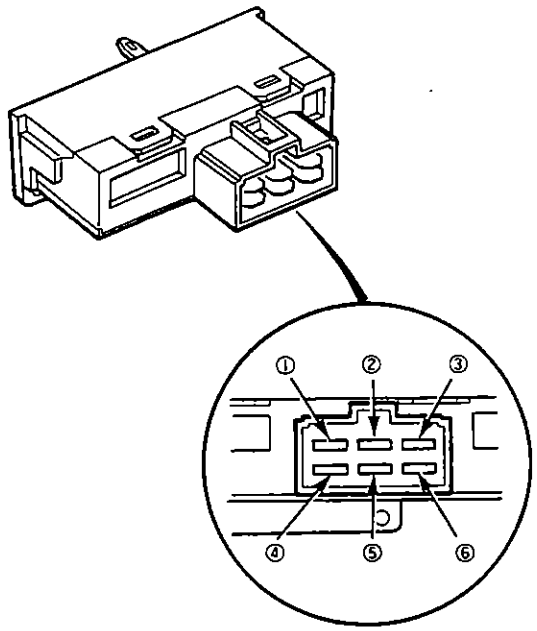
Test

Fan Switch

1. Disconnect the 6P connector from the fan switch.
2. Check for continuity between the terminals of the fan switch according to the table below.

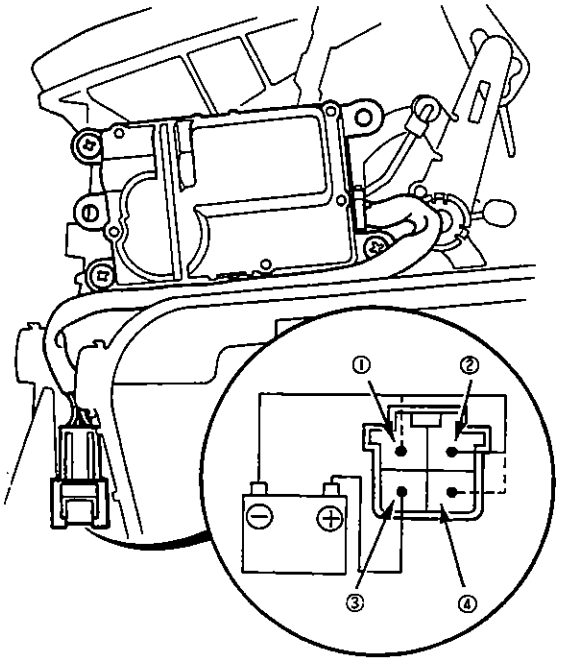
SWITCH CONNEHTION

Terminal No. / Position	①	②	③	④	⑤	⑥
OFF						
1	○			○		○
2	○	○				○
3	○				○	○
4	○		○			○



Recirculation Control Motor

1. Connect the battery positive to the ③ terminal of the recirculation control motor connector and negative to ② terminal.
2. Using a jumper wire connect the ② terminal and ① or ④ terminal.
   - On the recirculation door REC position, the motor should turn with the ② terminal connected to ① terminal.
   - On the door FRESH position, the motor should turn with the ② terminal connected to ④ terminal.
4. The motor automatically stops after half turn with the jumper wire connected.



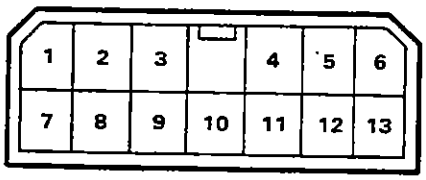
View from terminal side

Test

Function Control Switch

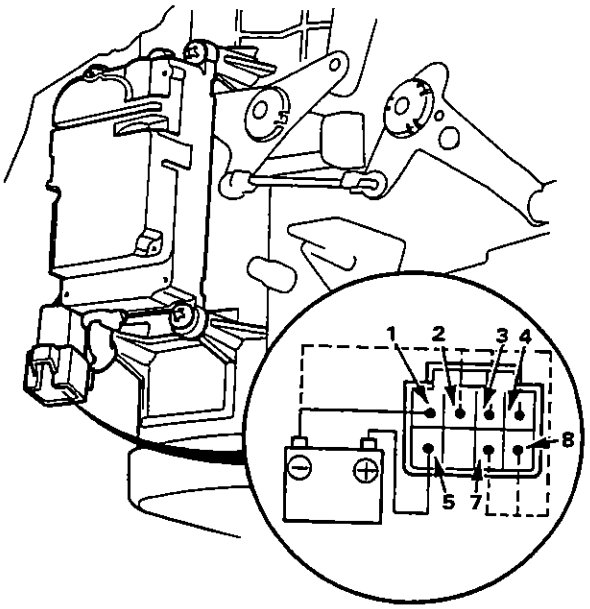
1. Disconnect the 13P connector from the heater control.
2. Check for continuity between the terminals according to the table.

Position \ Terminal No.	4	10	9	3	8	12 or 13
					○	○
				○		○
			○			○
		○				○
	○					○



Function Control Motor

1. Connect the battery positive terminal to the 5 terminal of the function contlol motor and negative to the 1 terminal.
2. Using jumper wire short the 1 terminal individually to the 2, 3, 4, 7 and 8 terminals to follow the order.
   - The motor should run each time the short circuit is made.



View from terminal side

Air Conditioner

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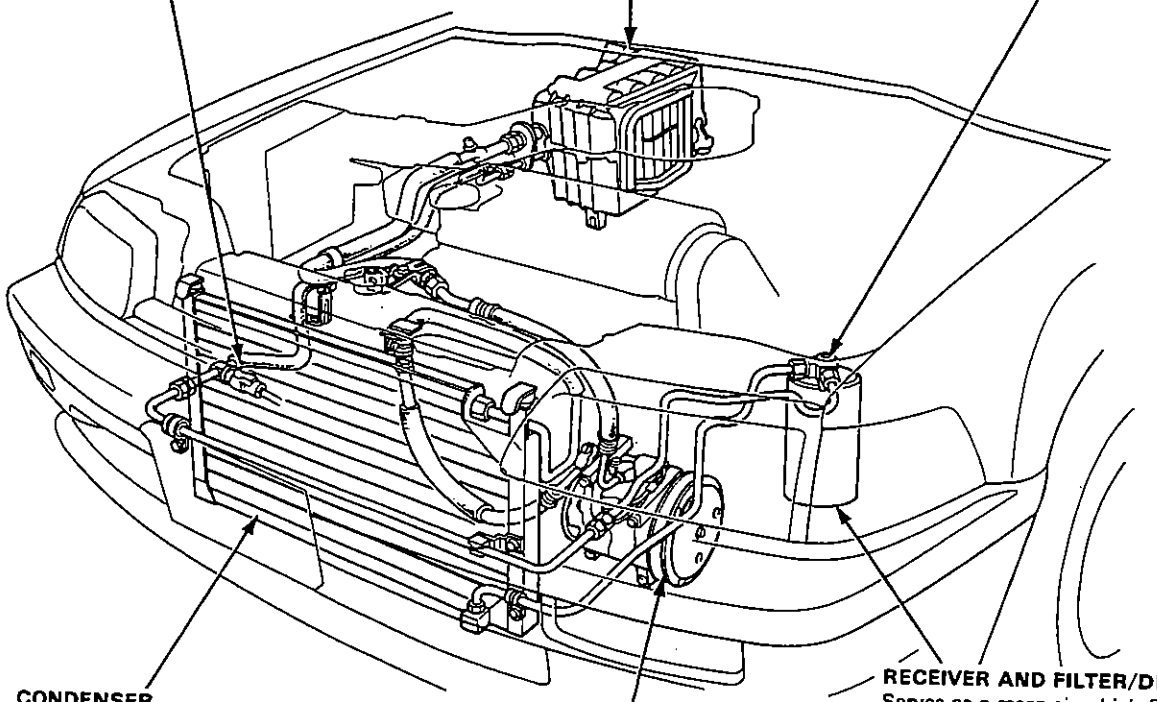
Air Conditioner

Illustrated Index

DUAL PRESSURE SWITCH
When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi) due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to portect the compressor.

EVAPORATOR
As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.
Replacement, page 15-44
Overhaul, page 15-45

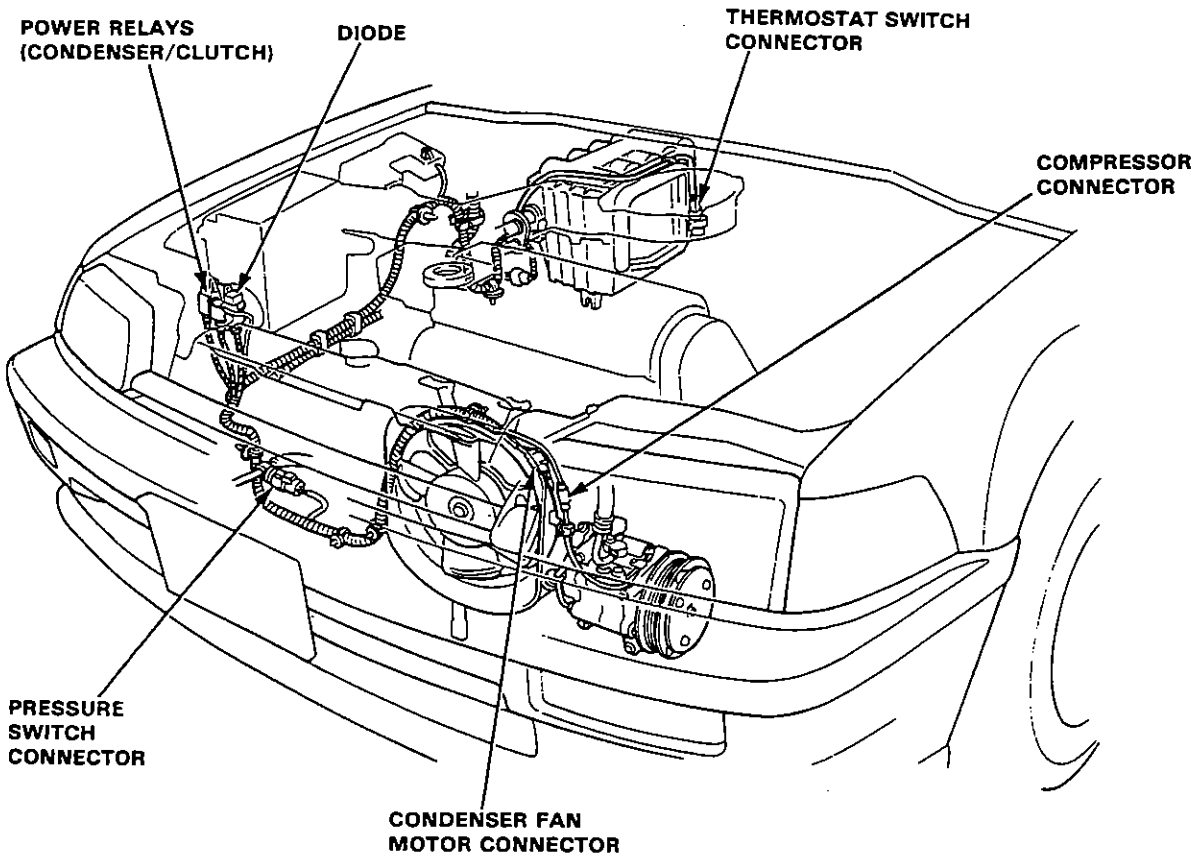
SIGHT GLASS



CONDENSER
Dissipates the heat which was absorbed by the refirigerant.
Replacement, page 15-42

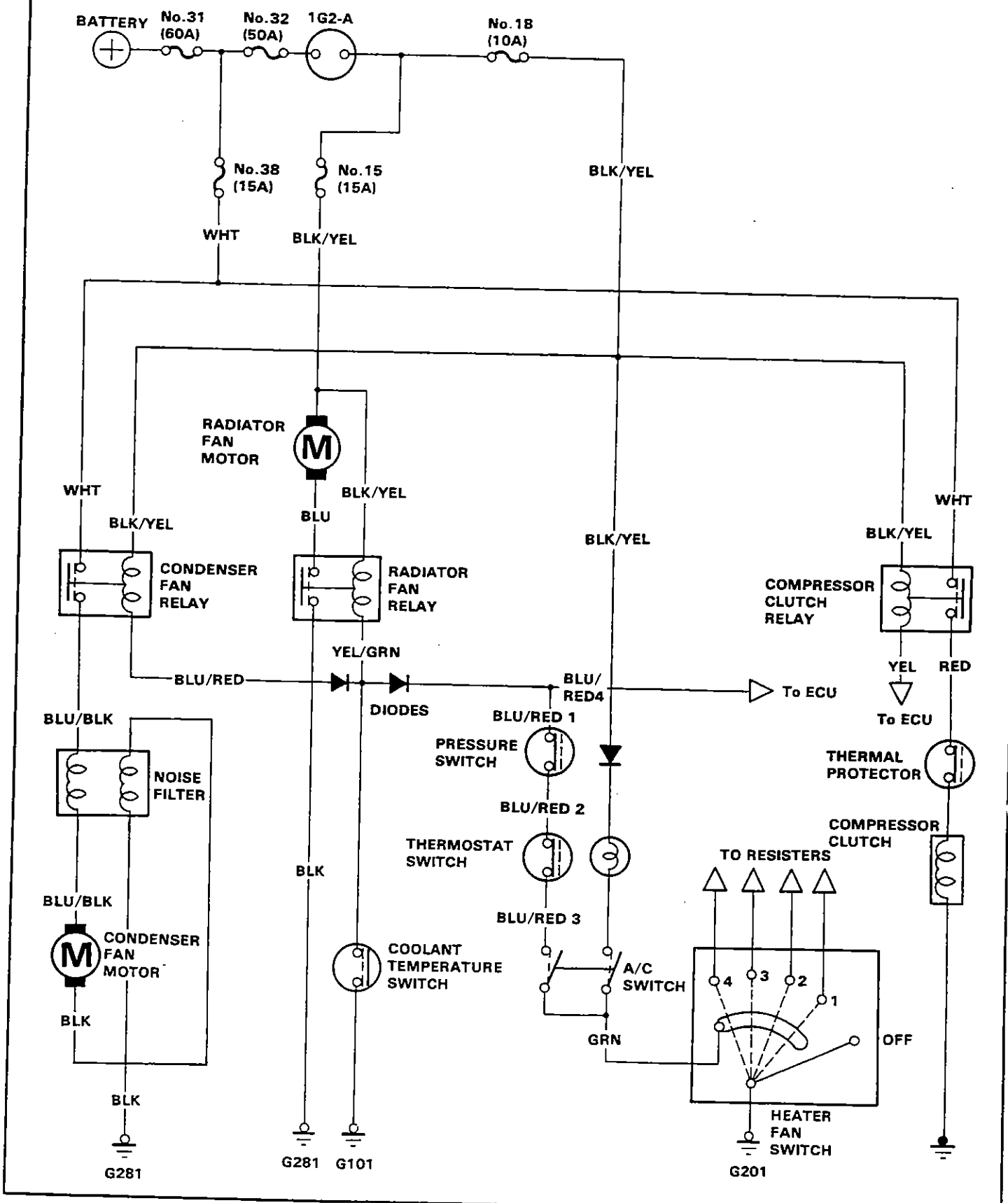
COMPRESSOR
Compresses the refrigerant and then forces it through the condenser.
Replacement, page 15-48

RECEIVER AND FILTER/DRYER
Serves as a reservoir which filters and removes moisture from the refrigerant.


POWER RELAYS
(CONDENSER/CLUTCH)
DIODE
THERMOSTAT SWITCH
CONNECTOR
COMPRESSOR
CONNECTOR
PRESSURE
SWITCH
CONNECTOR
CONDENSER FAN
MOTOR CONNECTOR

Air Conditioner

Circuit Diagram



Troubleshooting

- Any abnormality must be corrected before continuting the test.
- Because of the precise measurements needed, use a voltmeter and ammeter when testing.

Before performing any troubleshooting procedures check:
- Fuses No.15, 18, 32, 38

- All electrical connections are clean and tight.

SYMPTOM	REMEDY
Compressor does not come on.	Perform the procedures in the flow chart. (page 15-30)
Only radiator fan (or condensor fan) does not run.	Perform the procedures in the flow chart. (page 15-33)
Radiator fan and condensor fan do not run.	Perform the procedures in the flow chart. (page 15-34)
Compressor and radiator fan (or condensor fan) do not run.	Perform the procedures in the flow chart. (page 15-37)
	Discharge (high) pressure abnormally high or low.
Idle boost does not work.	See the fuel and emission section.

Flow Chart: Compressor

Compressor does not come on.

Inspect No. 18 and No. 38 fuses.

Are the fuses OK? NO → **Replace the fuses.**

YES

Disconnect the 4-P connector from the compressor clutch relay.

Measure voltage between the WHT terminal (+) and body ground.

Turn the ignition switch on.

Is there battery voltage? NO → **Repair open in WHT wire between the fuse box and compressor clutch relay.**

YES

Measure voltage between the BLK/YEL terminal (+) and body ground

Is there battery voltage? NO → **Repair open in BLK/YEL wire between the fuse box and compressor clutch relay**

YES

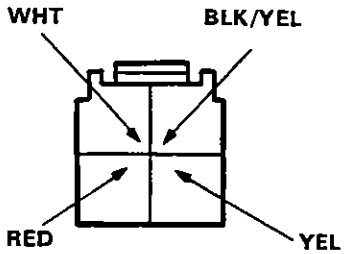
Connect the jumper wire between the WHT terminal and RED terminal

Does the compressor clutch engage? NO → Turn the ignition OFF and Reconnect the 4-P connector to the compressor clutch relay.

YES

(To 15-31 page)

(To page 15-32)



CLUTCH RELAY
View from wire side

(from 15-30 page)

Turn the ignition switch OFF and reconnect the 4-P connector to the compressor clutch relay.

Turn the ignition switch on and connect the jumper wire between the YEL terminal and body ground.

Does the compressor clutch engage? NO → **Replace the compressor clutch relay.**

YES

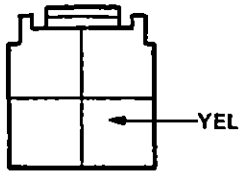
Turn the ignition OFF and disconnect the PGM-FI-ECU connector and connect the PGM-FI-ECU test harness.

Turn the ignition switch ON and connect the jumper wire between B-3 terminal and body ground.

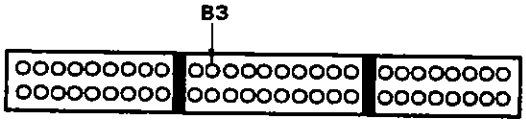
Does the compressor clutch engage? NO → **Repair open in YEL wire between the compressor clutch relay.**

YES

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.



CLUTCH RELAY
View from wire side



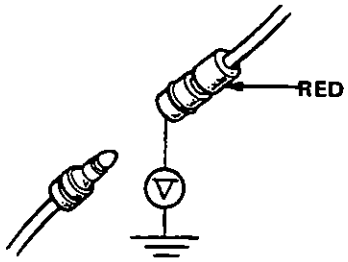
PGM-FI-ECU test harness

(cont'd)

Flow Chart : Compressor (cont'd)

(From page 15-30)

Disconnect the RED terminal and turn the ignition switch on.



Measure voltage between the RED terminal (+) and body ground.

Is there battery voltage?

NO → **Repair open in RED wire between the compressor clutch relay and compressor clutch connector.**

YES

Turn the ignition switch OFF and check the thermal protector (page 15-53).

Is the thermal protector OK?

NO → **Replace the thermal protector.**

YES

Replace the compressor clutch.

Flow Chart: Either Fan

Radiator fan (or condenser fan) does not run.

Turn the ignition, heater fan, A/C switches on.

Inspect the radiator (or condenser) fan motor.

Does the fan motor run?

NO — (Both not running)

(To page 15-34)

YES

Turn the ignition switch OFF. Inspect No. 32 or No. 15 fuses.

Are the fuses OK?

NO — **Replace the fuses.**

YES

Inspect the relay of the fan motor that does not run. (See page 15-60)

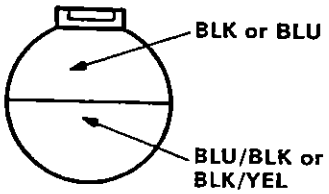
Is the relay OK?

NO — **Replace the relay.**

YES

Disconnect the 2-P connector of the motor.

View from terminal side



Turn the ignition switch ON and measure voltage between the BLU/BLK or BLK/YEL terminal (+) and BLK or BLU terminal (−).

Is there battery voltage?

NO — Check for continuity between BLK or BLU terminal and body ground.

YES

Replace the fan motor.

Is there continuity?

NO — **Repair open in BLK or BLU wire or poor ground.**

YES

Repair open in BLK/YEL or BLU/BLK wire.

Flow Chart : Both Fans

Radiator fan and condenser fan do not run.

Inspect fuse No. 15 (15A).

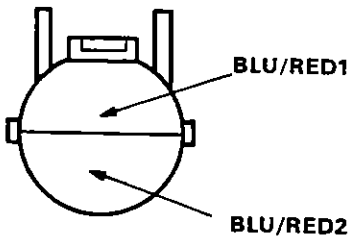
Is the fuse OK? NO → **Replace fuse.**

YES

Turn the ignition switch OFF.

Disconnect the dual pressure switch.

Connect the BLU/RED1 terminal to body ground.



View from terminal side

Do both fans run? NO → **Repair open in BLU/RED1 wire between diode and pressure switch or faulty diode.**

YES

Connect a jumper wire between the BLU/RED1 and BLU/RED2 terminals.

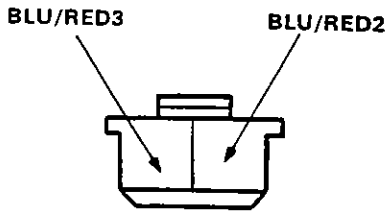
NOTE: Check A/C pressure first; may be low on refrigerant.

Do both fan motors run? YES → **Replace the dual pressure switch.**

NO

Remove the jumper wire and reconnect the 2P connector to the pressure switch.

Disconnect the 2P connector from the thermostat switch.



View from wire side

Connect a jumper wire between the BLU/RED2 terminal and body ground.

(To page 15-35)

(From page 15-34)

Turn the ignition switch ON.

Do both fan motors run?

NO → **Repair open in BLU/RED2 wire between the pressure switch and thermostat switch.**

YES

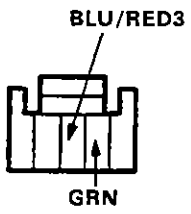
Connect a jumper wire between the BLU/RED2 and BLU/RED3 terminals of the thermostat switch connector.

Do both fan motors run?

YES → **Replace the thermostat switch.**

NO

Reconnect the 2P connector to the thermostat switch. Disconnect the 5P connector from the A/C switch.



View from wire side

Connect the BLU/RED3 terminal to the body ground.

Do both fan motors run?

NO → **Repair open in BLU/RED3 wire between the thermostat switch and A/C switch.**

YES

Connect the BLU/RED3 and GRN terminals with a jumper wire.

Do both fan motors run?

YES → **Replace the A/C switch.**

NO

Check the heater fan switch (page 15-23).

Is the heater fan switch OK?

NO → **Replace the heater fan switch.**

YES

(To page 15-36)

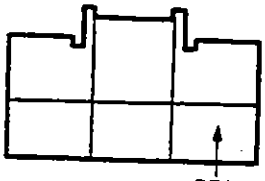
(cont'd)

Flow Chart : Both Fans (cont'd)

(From page 15-35)

Reconnect the 5P connector to the A/C switch and disconnect the 6P connector from the heater fan switch.

Connect a jumper wire between the GRN terminal and body ground.



View from wire side

Do both fans run?

NO → **Repair open in GRN wire between the heater fan switch and A/C switch.**

YES

Repair open in BLK wire between the heater fan switch and ground or poor ground (G201).

Flow Chart: Compressor And Either Fan

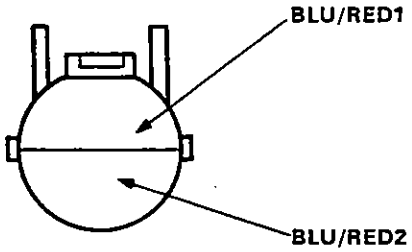
Compressor and radiator fan (or Condenser fan) do not run.

Inspect No.38 (15A), 15 (15A), 32 (50A) and No.18 (10A) fuses.

Are the fuses OK? — NO → **Replace the fuse(s).**

YES

Disconnect the 2P connector from the pressure switch.



Turn the heater fan, A/C switch ON and start the engine.

Connect a jumper wire between the BLU/RED1 terminal and body ground.

Do the compressor and both fans run? — NO → **Repair open in BLU/RED1 wire between presssure switch and diodes**

YES

Connect a jumper wire between the BLU/RED 1 and 2 terminals.

NOTE: Check A/C pressure first, may be low on refrigerant.

Do the compressor and both fans run? — YES → **Replace the pressure switch**

NO

(To page 15-38)

(cont'd)

Flow Chart : Compressor And Either Fan (cont'd)

(From page 15-37)

Reconnect the 2P connector to the pressure switch.

Disconnect the 2P connector from the thermostat switch.

Connect a jumper wire between the BLU/RED2 terminal and body ground.

Do the compressor and both fans run?

NO → **Repair open in BLU/RED2 wire between pressure and thermostat switches.**

YES

Connect a jumper wire between the BLU/RED2 and 3 terminals.

Do the compressor and both fans run?

YES → **Replace the thermostat switch.**

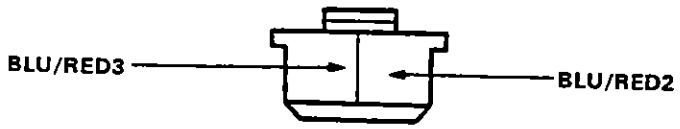
NO

Turn the ignition switch OFF

Reconnect the 2P connector to the thermostat switch.

Disconnect the 5P connector from the A/C switch.

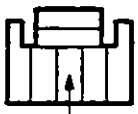
(To page 15-39)



View from wire side

(From page 15-38)

Connect a jumper wire between the BLU/RED3 terminal and body ground.



Start the engine.

Do the compressor and both fans run?

NO → **Repair open in BLU/RED3 wire between the thermostat and A/C switch.**

YES

Connect a jumper wire between the BLU/RED and GRN terminals.

Do the compressor and both fans run?

YES → Inspect the A/C switch. page 15-61.

Is the A/C switch OK?

NO → **Replace the A/C switch.**

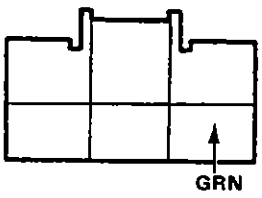
YES

NO

Reconnect the 5P connector to the A/C switch and turn A/C switch ON.

Disconnect the 6P connector from the fan switch.

Connect a jumper wire between the GRN terminal and body ground.



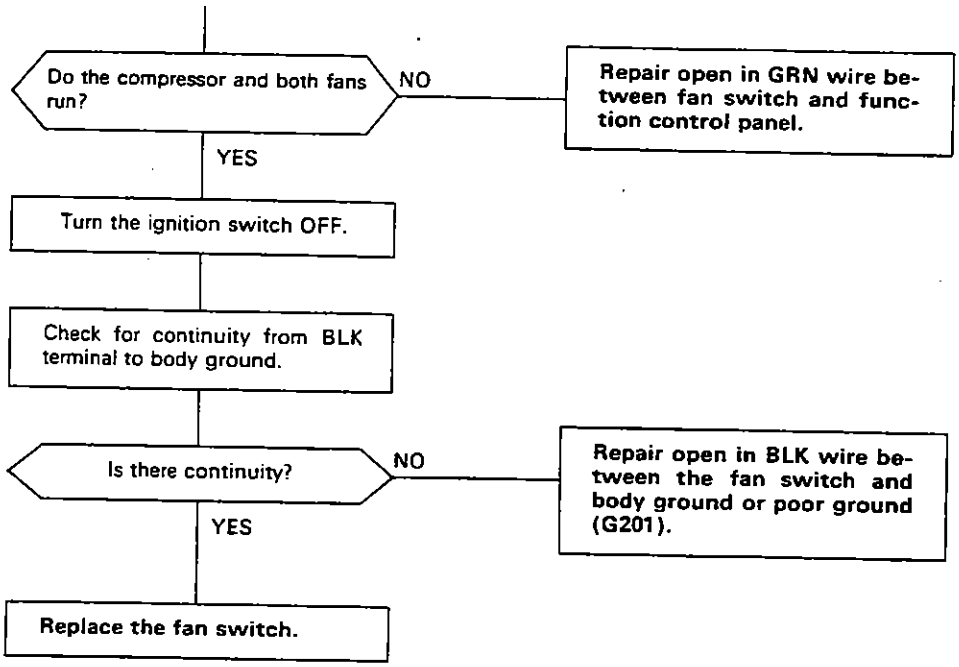
View from wire side

(To page 15-40)

(cont'd)

Flow Chart : Compressor And Either Fan (cont'd)

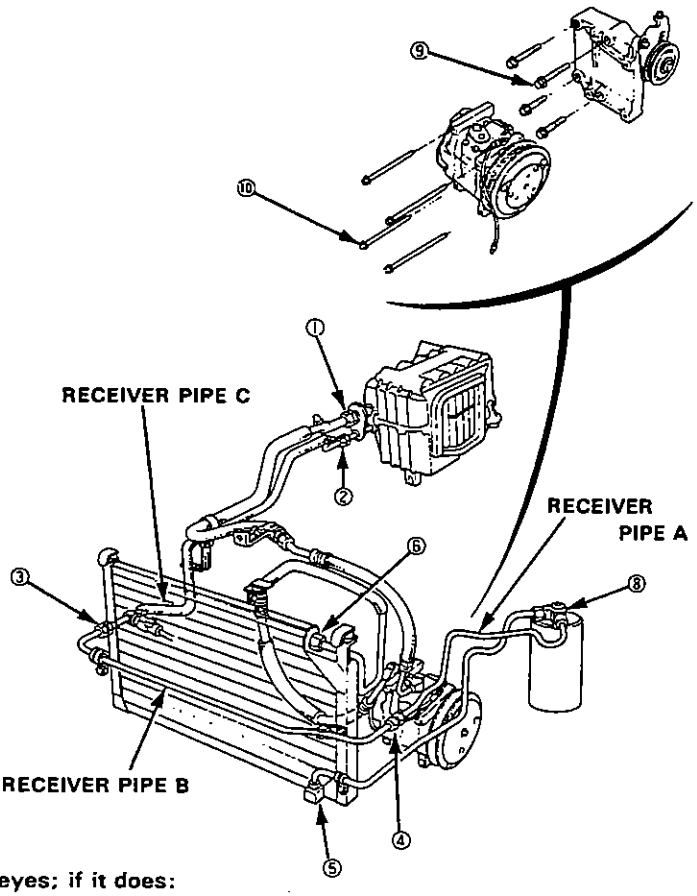
(From page 15-39)



CAUTION:

1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil after replacing the following parts:
   - Condenser ·····10 cc (1/3 fl oz)
   - Evaporator ·····30 cc (1 fl oz)
   - Line or hose ·····10 cc (1/3 fl oz)
   - Receiver ·····10 cc (1/3 fl oz)
   - Compressor·····On compressor replacement, subtract the volume of oil drained from the removed compressor from 150 cc (5 fl oz) or 120 cc (4 fl oz), and drain the calculated volume of oil from the new compressor.
     150 cc (5 fl oz) — Volume of removed compressor = Draining volume

7. Torque specifications
   - ① Suction hose evaporator side ·····32 N·m (3.2 kg-m, 23 lb-ft)
   - ② Receiver pipe C evaporator side ·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ③ Receiver pipe C to Receiver pipe B·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ④ Receiver pipe B to Receiver pipe A·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑤ Condenser pipe to Condenser ·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑥ Discharge hose to Condenser ·····22 N·m (2.3 kg-m, 16 lb-ft)
   - ⑦ Compressor hose mounting bolts ·····30 N·m (3.0 kg-m, 22 lb-ft)
   - ⑧ Receiver tank·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑨ Compressor bracket mounting bolts ·····48 N·m (4.8 kg-m, 35 lb-ft)
   - ⑩ Compressor mounting bolts ·····25 N·m (2.5 kg-m, 18 lb-ft)



WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes; if it does:
  - Do not rub your eyes or skin.
  - Splash large quantities of cool water in your eyes or on your skin.
  - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce a poisonous gas.

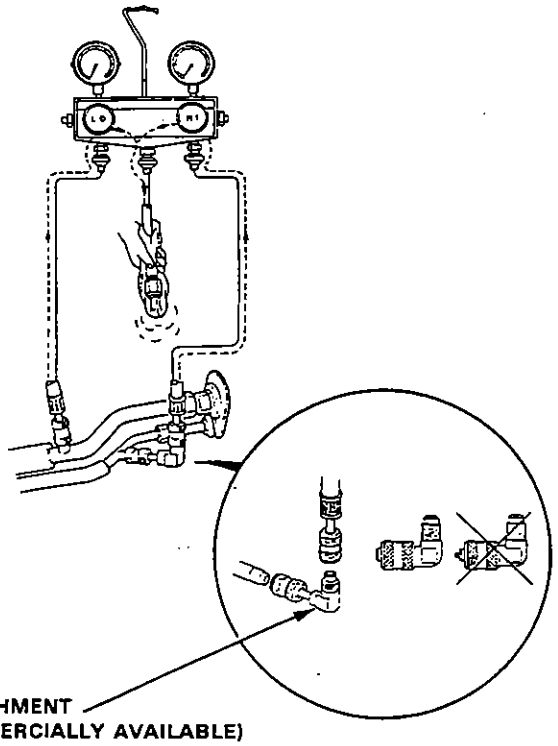
Discharge Procedure

WARNING

- **Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.**
- **Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.**

1. Connect the gauges as shown.
2. Disconnect the center hose of the gauge set and place the free end in a shop towel.
3. Slowly open the high side manifold valve slightly to let refrigerant flow from the center hose only. Do not open the valve too wide. Check the shop towel to make sure no oil is being discharged with the reriger-ant.

   CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.
4. After the high pressure gauge reading has dropped below 1000 kPa (142 psi), open the low side valve to discharge both high and low sides of the system.
5. Note the gauge readings and, as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 psi).

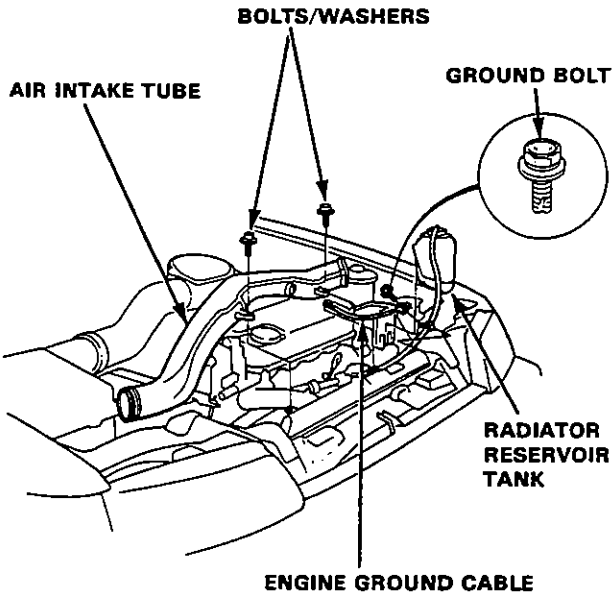


ATTACHMENT
(COMMERCIALLY AVAILABLE)
NOTE:Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

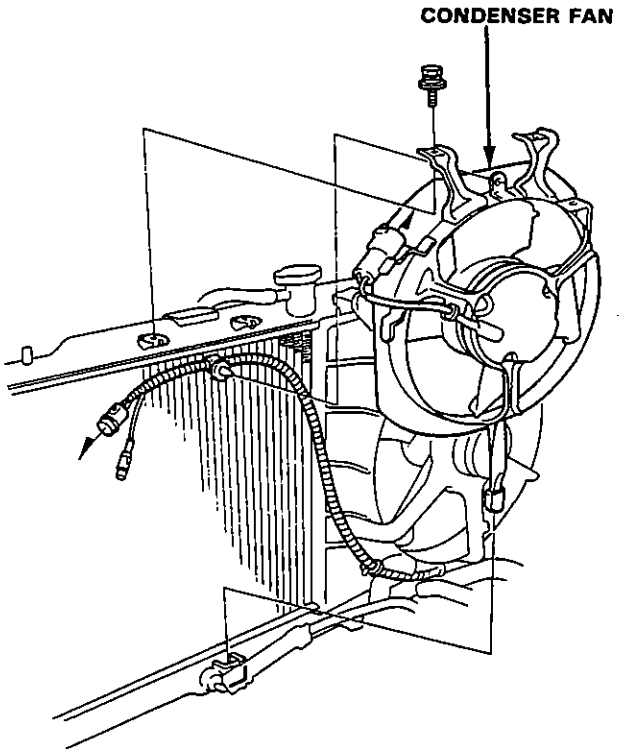
Condenser

Replacement

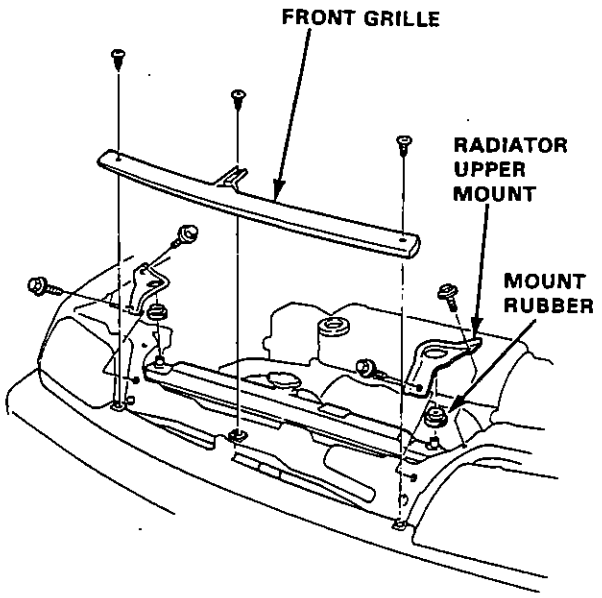
1. Discharge the refrigerant.
2. Disconnect the engine ground cable.
3. Remove the radiator reservoir tank and the air intake tube.



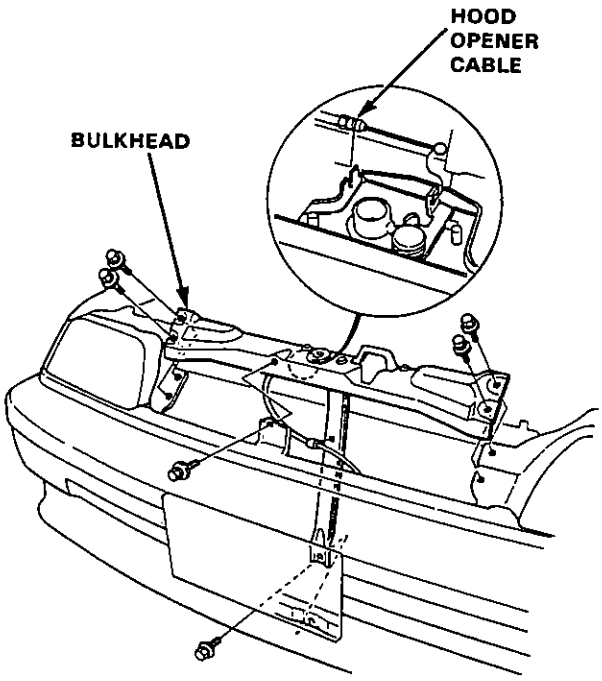
4. Remove the condenser fan with the two bolts.



5. Remove the front grille with three screws and radiator upper mounts with two bolts each.

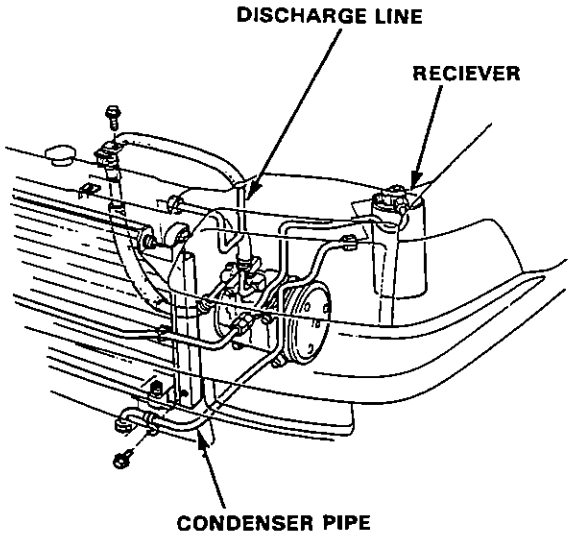


6. Remove the front bulkhead with six bolts, then remove the hood opener cable.

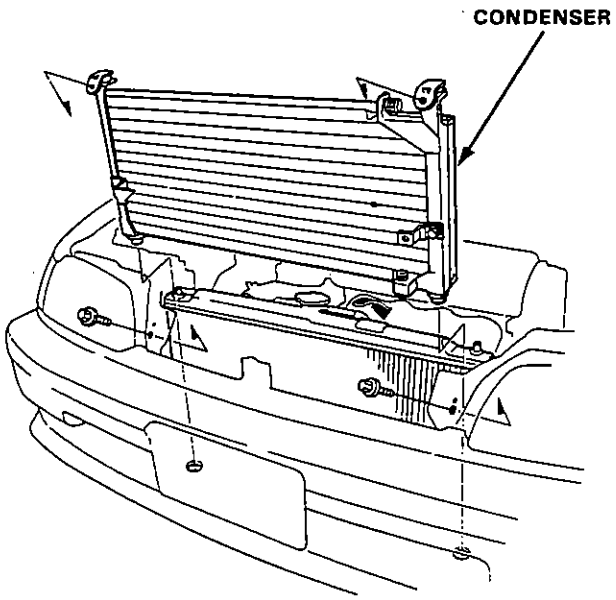


7. Disconnect the condenser pipe and discharge pipe from the condenser.

CAUTION: Cap the open fittings immediately to keep moisture and dirt out of system.



8. Remove the mounting bolts (2) and condenser.



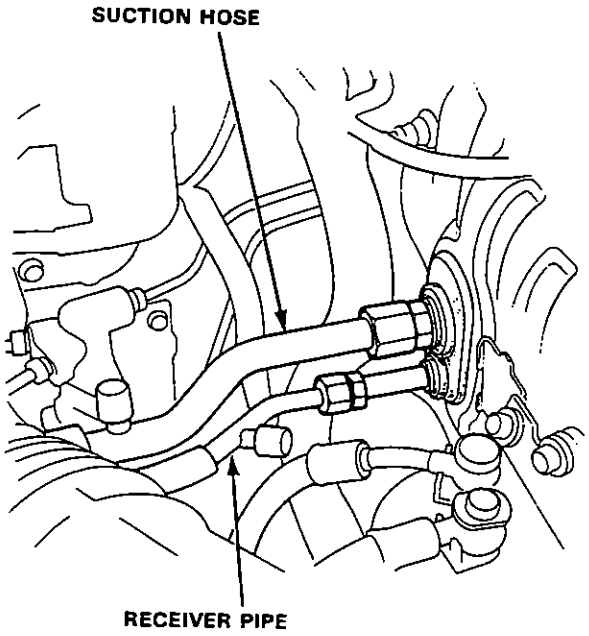
9. Install in the reverse order of removal, charge the system (page 15-56) and test performance (page 15-59).

Evaporator

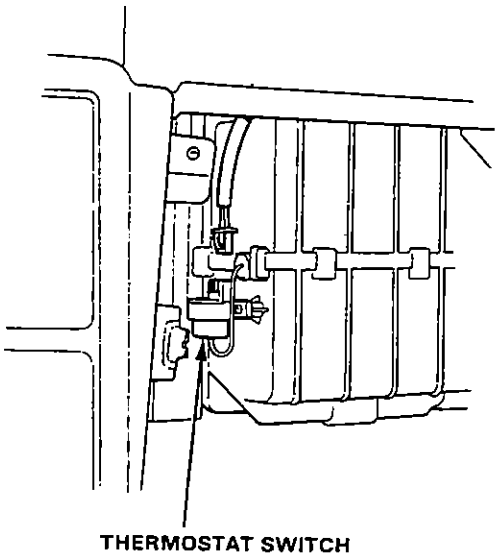
Replacement

1. Disconnect the battery negative terminal.
2. Discharge the refrigerant (page 15-42).
3. Disconnect the receiver line and suction hose from the evaporator.

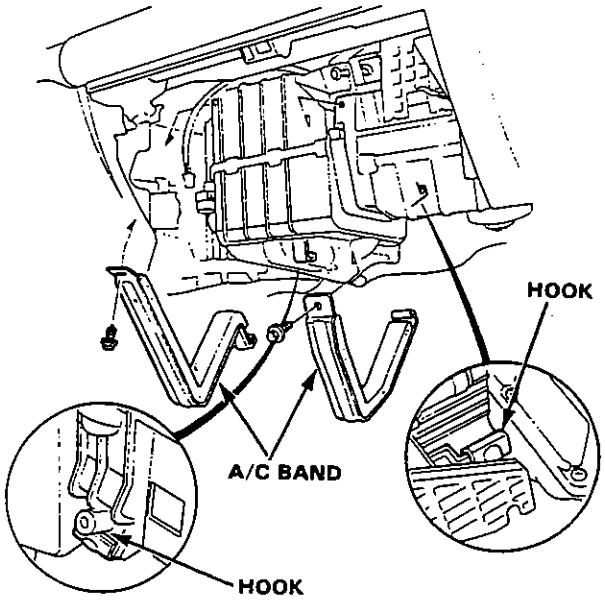
CAUTION: Cap the open fittings immediately to keep moisture out of the system.



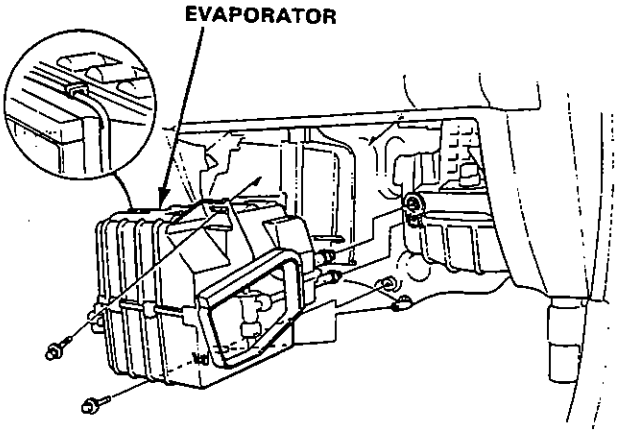
4. Remove the glove box (section 14).
5. Disconnect the connector from the thermostat switch and pull off the wire harness from the clamps.



6. Remove the tapping screws (2) and A/C bands.



7. Remove the mounting bolts (2) and evaporator.

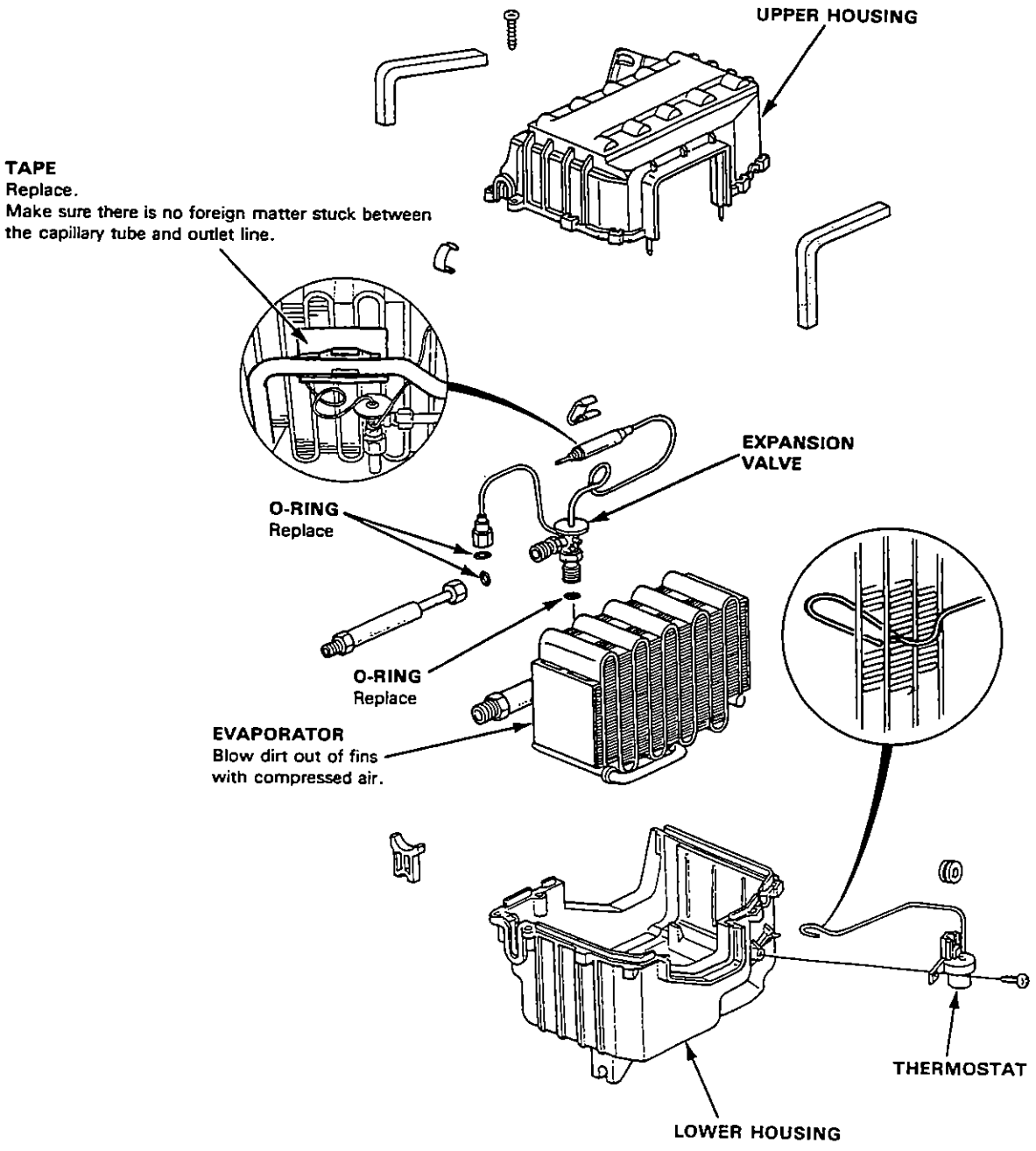


8. Install in the reverse order of removal, and:
   - Apply a sealant to the gromments.
   - Make sure that there is no air leakage.
   - Charge the system (page 15-56) and test performance (page 15-59).

Overhaul

1. Pull out the evaporator sensor from the evaporator fins.
2. Remove the tapping screws and clips from the housing.
3. Carefully separate the hosings and remove the evaporator covers.
4. Remove the expansion valve if necessary.

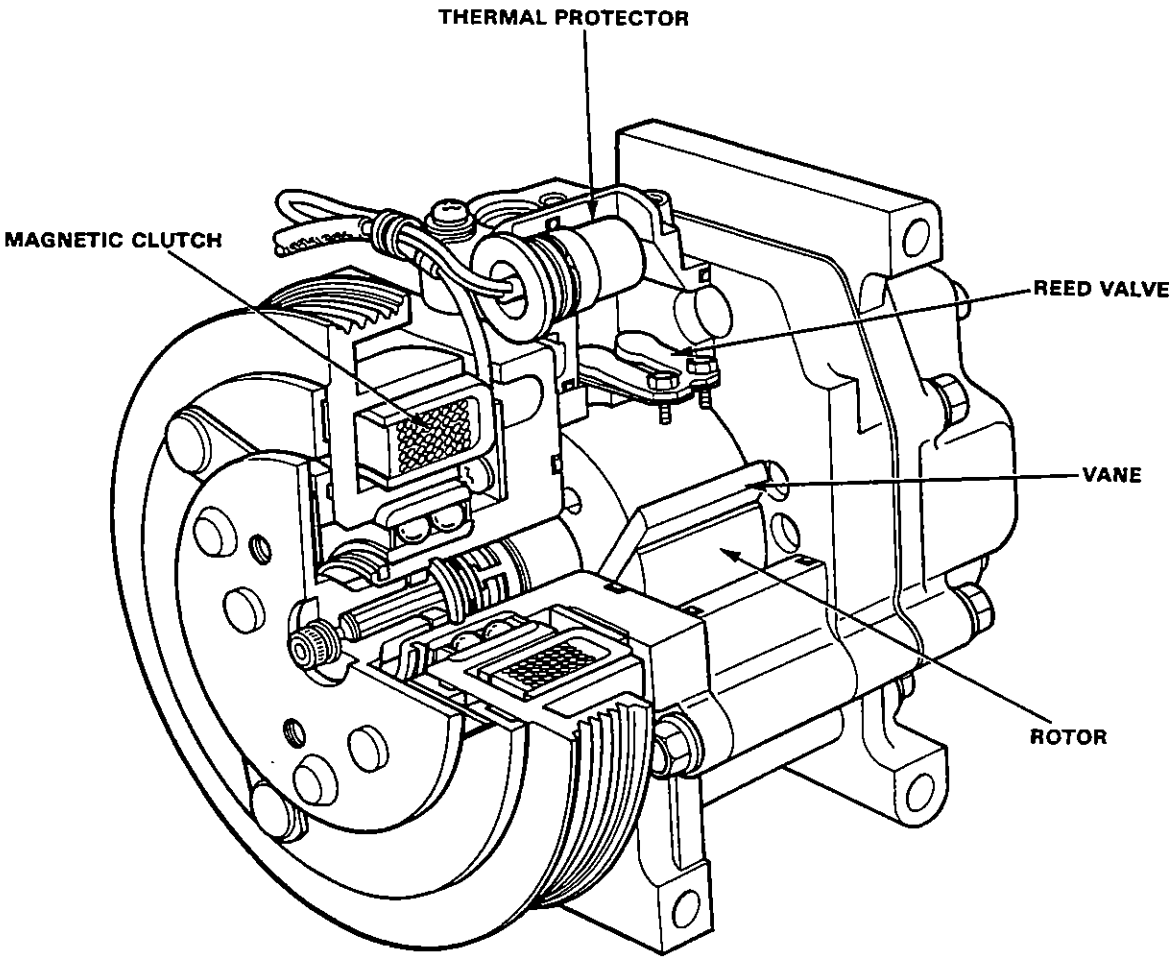
Assemble the evaporator in the reverse order of disassembly, and:
- Install the expansion valve capillary tube against the suction line, and wrap it with tape.
- Reinstall the evaporator sensor in its original location.



Compressor

Description

This compressor is a three-vane, rotary type and consists of three vanes that come out of the rotor to the cylinder wall, reed valve that prevents backflow, and magnetic clutch.
A thermal protector is installed on this compressor.



NOTE: Performance Test on page 15-59.

TEST RESULTS	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system; then recharge Evacuation: page 15-56 Recharging: 15-58
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as required
	Reduced or no air flow through condenser.	· Clogged condenser or radiater fins · Condenser or radiator fan not working properly	· Clean · Check voltage and fan rpm
	Line to condenser is excessively hot	Restricted flow of refrigerant in system	Expansion valve
Discharge pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot	Insufficient refrigerant in system	· Charge system · Check for leak
	High and low pressures are balanced soon after stopping compressor	· Faulty compressor discharge or inlet valve · Faulty compressor seal	Replace compressor Repair
	Outlet of expansion valve is not frosted, low pressure gauge indicates vacuum	· Faulty expansion valve	Repair or Replace
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	Insufficient refrigerant · Frozen expansion valve · Faulty expansion valve	Check for leaks. Charge as required. Replace expansion valve
	Discharge temperature is low and the air flow from vents is restricted	Frozen evaporator	Run the fan with compressor off then check the thermostat and capillary tube.
	Expansion valve frosted	Clogged expansion valve	Clean or Replace
	Receiver dryer is cool (should be warm during opration)	Clogged receiver dryer	Replace
Suction pressure abnormally high	Low pressure hose and check joint are cooler than around evaporator	· Expansion valve open too long · Loose expansion valve	Repair or Replace
	Suction pressure is lowered when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary
	High and low pressure are equalized as soon as the compressor is stopped	· Faulty gasket · Faulty high pressure valve · Foreign particle stuck in high pressure valve	Replace 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 condenser and radiator · Check volatage and fan rpm
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary.
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-driver.	Clogged high pressure line	Repair or Replace
Refrigerant leaks	Compressor clutch is dirty	Compressor shaft seal leaking	Replace compressor shaft seal
	Compressor bolt(s) are dirty	Leaking around bolt(s)	Replace compressor
	Compressor gasket is wet with oil	Gasket leaking	Replace compressor

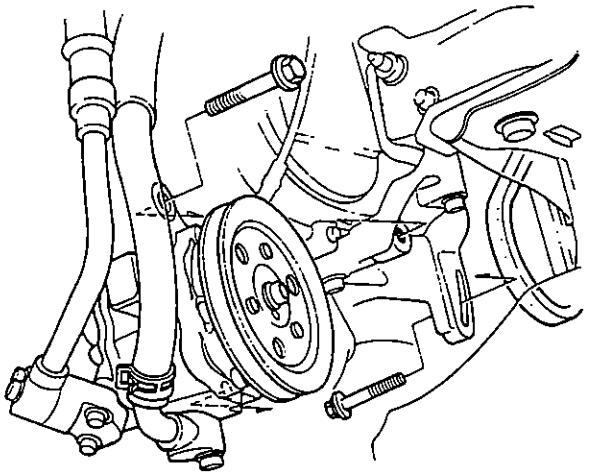
Compressor

Replacement

1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system (page 15-42).

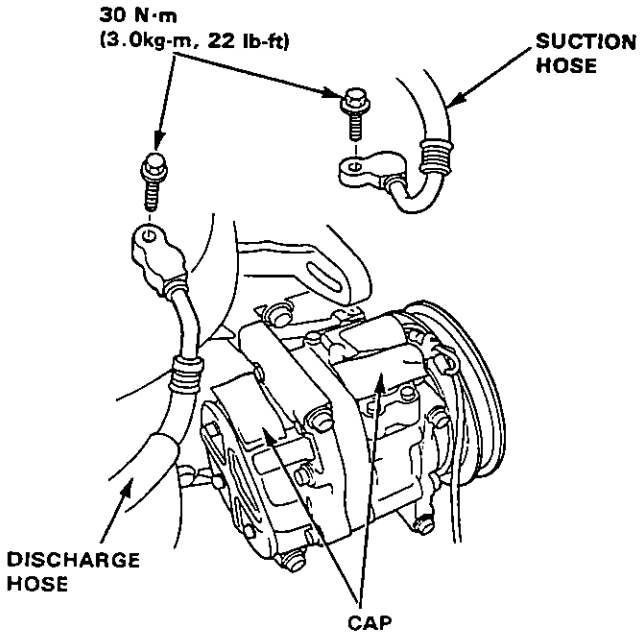
With power steering:

3. Remove the mounting bolts (2) the power steering pump belt, and the power steering pump.

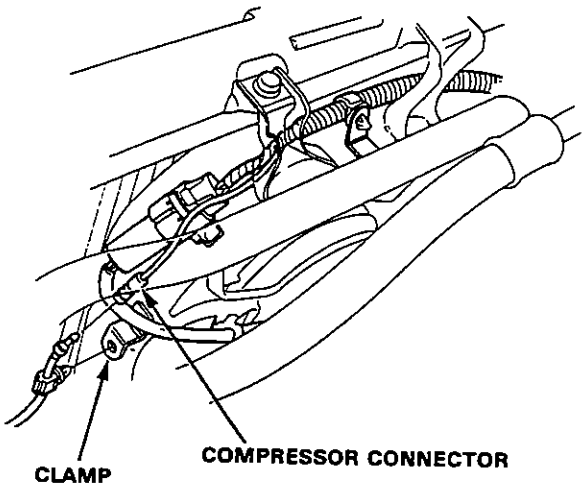


4. Disconnect the suction and discharge hoses from the compressor.

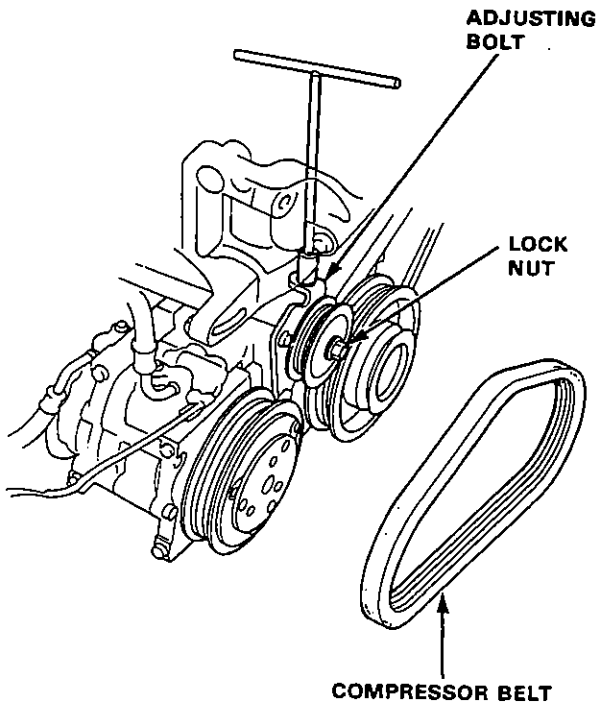
CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.



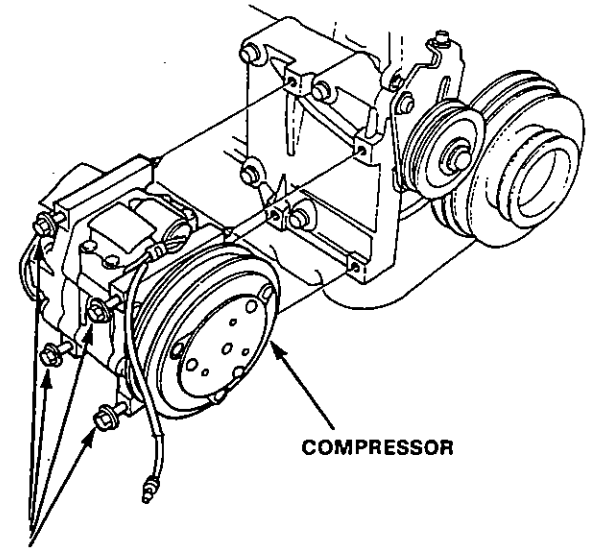
5. Disconnect the compressor connector and the clamp.



6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.



7. Remove the compressor mounting bolts (4) and compressor. Rest the compressor on the front beam.

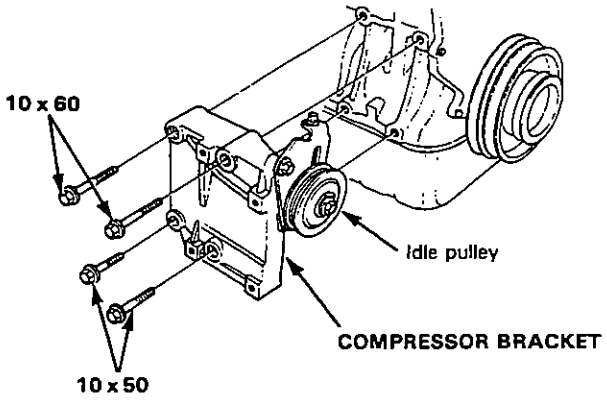


COMPRESSOR MOUNTING BOLTS
25 N·m (2.5kg-m, 18 lb-ft)

8. Remove the mounting bolts (4) and compressor bracket with idle pulley.

ALL TORQUE:

48 N·m (4.8kg-m, 35 lb-ft)



9. Remove the compressor.

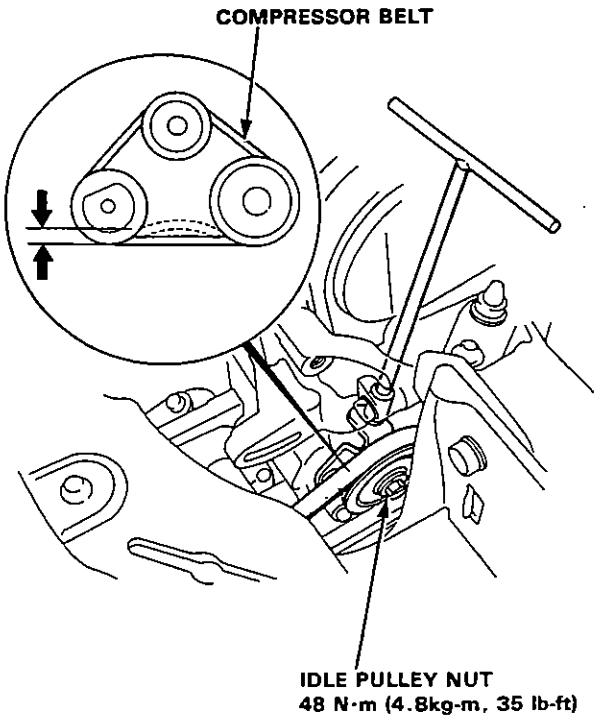
10. Install in the reverse order of removal and:

- If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
  150 cc (5fl oz,) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the compressor belt.

NOTE: Measure the deflection when 98 N (10 kg, 22 lb) force is applied between the pulleys.

Compressor belt Adjustemnt.
9—11 mm (0.35—0.43 in)

{7—9 mm (0.28—0.35 in) when new belt is intalled}



- Charge the system (page 15-56).
- Test the performance (page 15-59).

(cont'd)

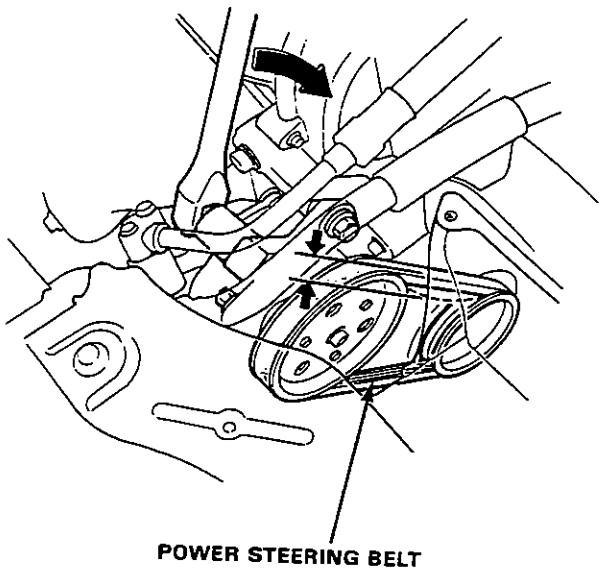
Compressor

Replacement (cont'd)

11. With power steering:

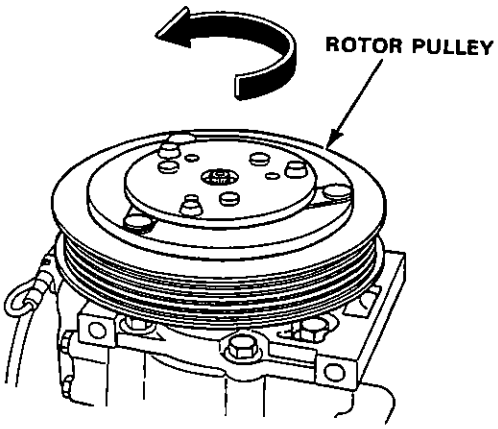
Power steering belt adjustment.
9—12 mm (0.35—0.47 in)

(7—10 mm (0.28—0.39 in) when new belt is intalled)



Clutch Inspection

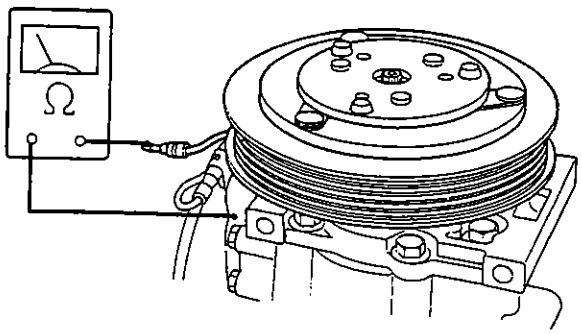
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.



- Check resistance of the field coil:

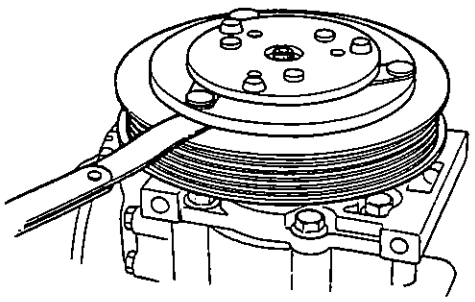
Field Coil Resistance: 3.33±0.17 ohm at 20°C) (68°F)

If resistance is not within specifications, replace the coil.

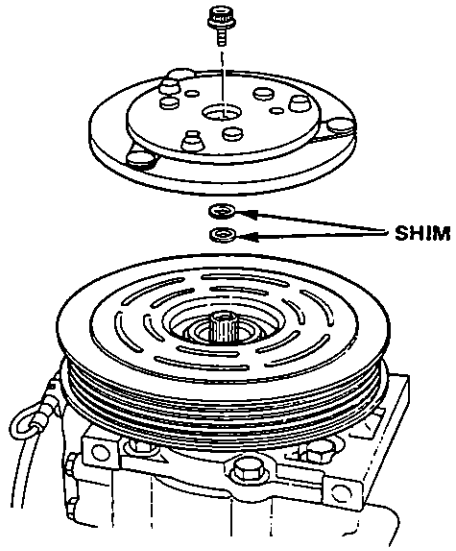


- Measure the clearance between the pulley and pressure plate all the way around. If the clearane is not within specified limits, the pressure plate must be removed and shims added or removed as required.

CREARANCE: 0.4—0.6 mm (0.016—0.024 in)

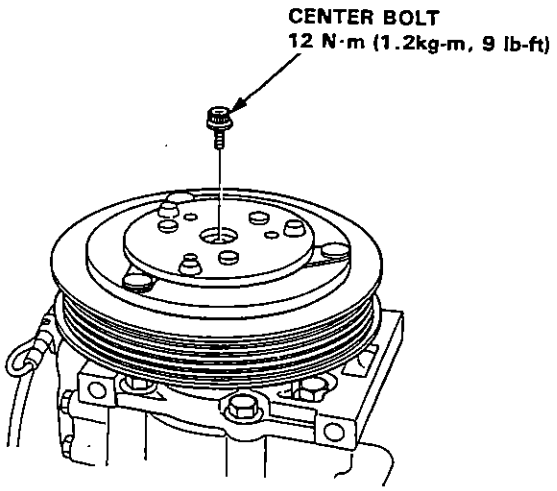


NOTE: The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

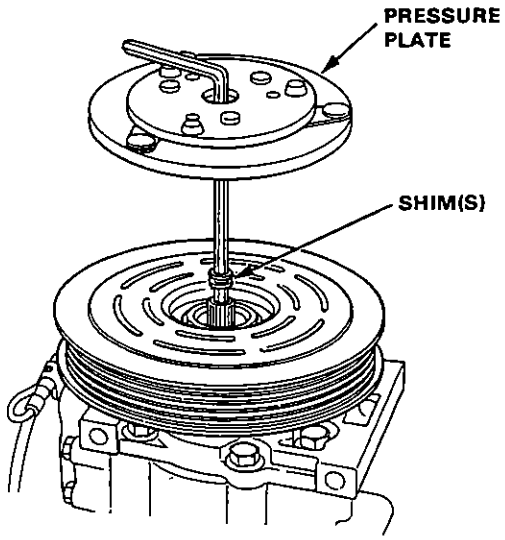


Clutch Overhaul

1. Remove the center bolt and washers.



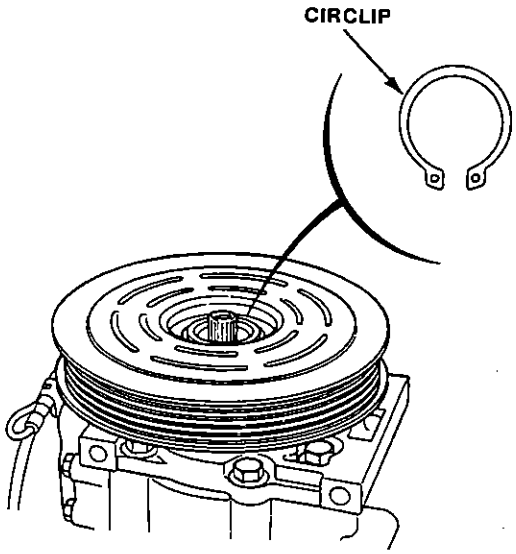
2. Remove the pressure plate and shim(s) taking care not to lose the shims.



(cont'd)

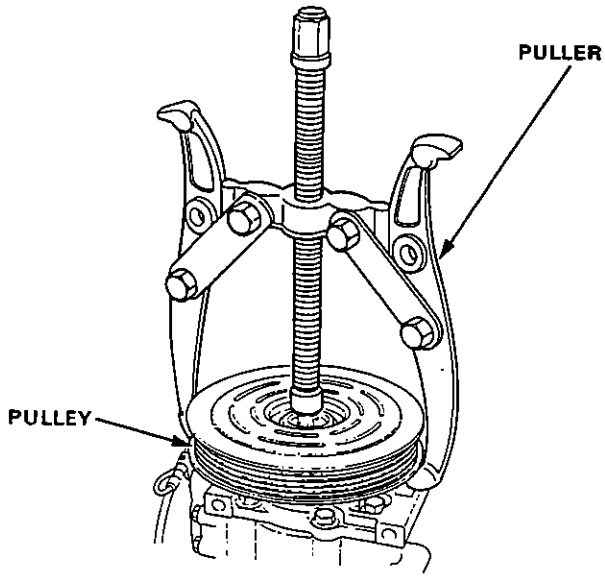
Clutch Overhaul (cont'd)

3. Use circlip pliers to remove the circlip.

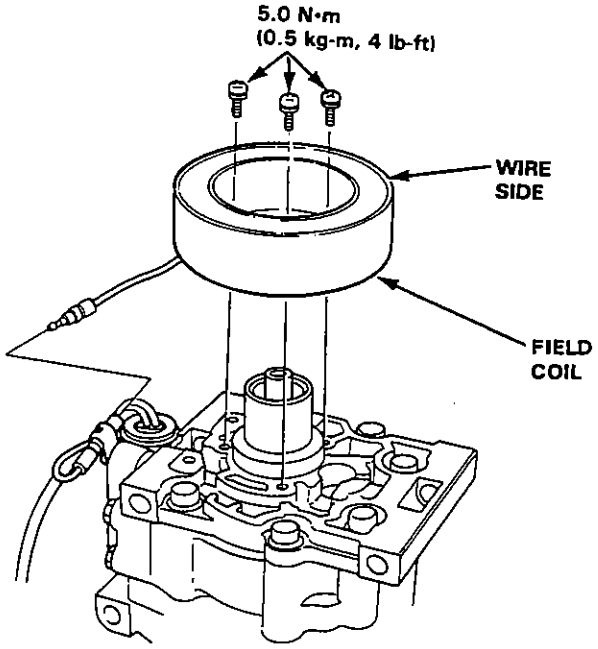


4. Remove the pulley from the shaft using a 2 or 3 jaw puller.

5. Check the pulley, replace the assembly if the pulley is damaged or deformed.



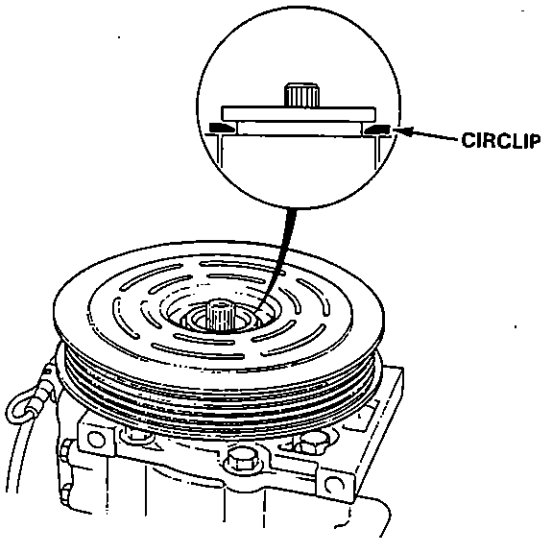
6. Disconnect the field coil connector and remove the screws (3) and field coil.



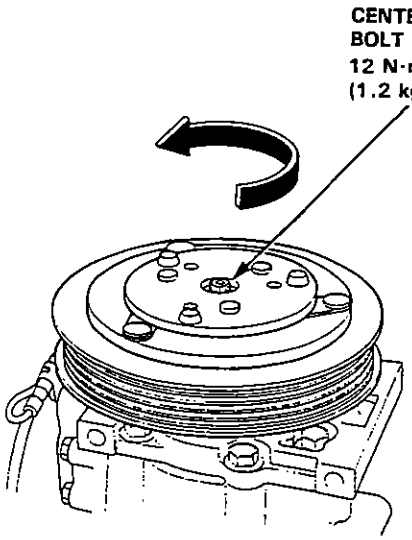
7. Install in the reverse order of removal and:

- Install the field coil with the wire side facing up (see above).
- Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
- Check the pulley bearings for excessive play.

- Make sure the circlip is fitted to the groove properly.



- Apply locking agent to the thread of the center bolt and tighten it securely.
- Make sure that the pulley turns smoothly.

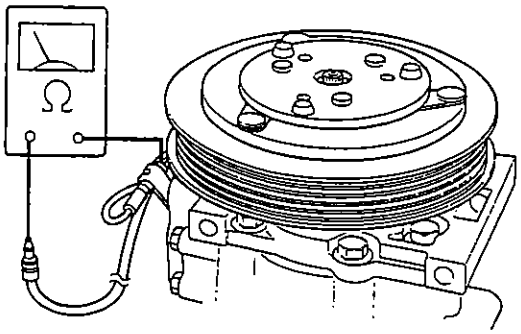


Thermal Protector Inspection

Check for continuity between the 1 and 3 terminals of the compressor connector.

There should be continuity.

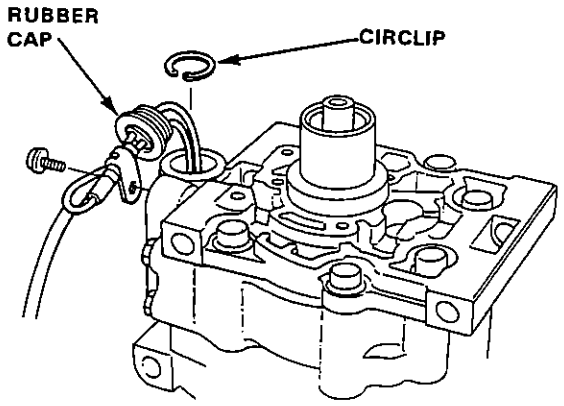
- If no continuity, replace the thermal protector (page 15-54).



Compressor

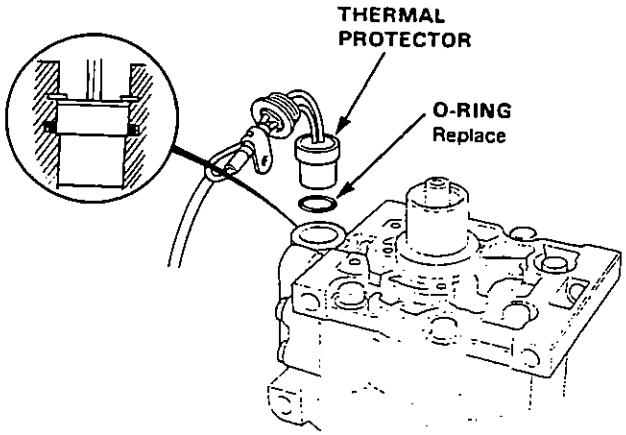
Thermal Protector Replacement

1. Remove the pressure plate and field coil (page 15-51).
2. Pull the rubber cap out from the thermal protector.
3. Remove the screws and wire clips.
4. Remove the circlip and thermal protector.



5. Install in the reverse order of removal

NOTE:
- Replace the O-rings with new ones.
- Set the new O-rings in place as shown.



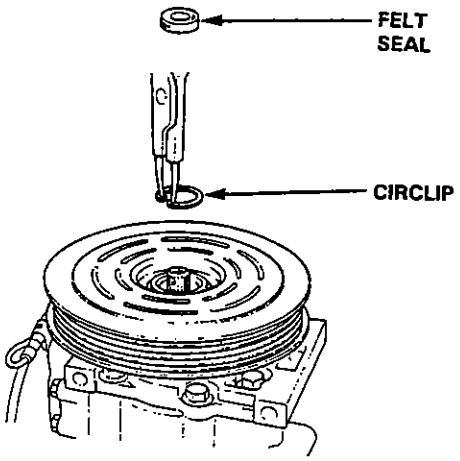
Shaft Seal Replacement

NOTE: Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate (page 15-51).

   NOTE: Removal of the clutch pulley and coil is not necessary.

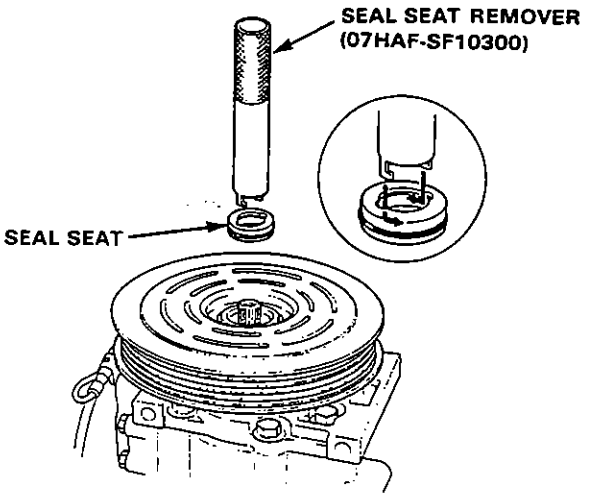
2. Remove the felt seal and circlip.



3. Remove the shim(s).

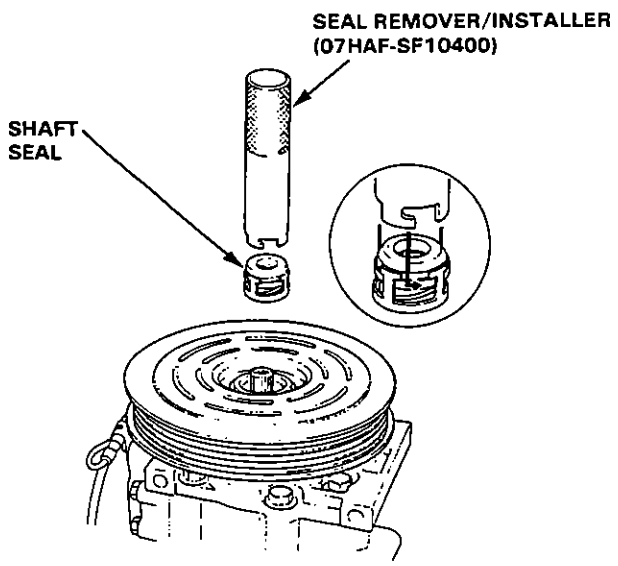
   NOTE: After removing, place shim(s) safely in a parts rack.

4. Insert the Special tool into the compressor aligning the cutout of the remover with the groove of the seal seat.
5. Rotate the Special tool counterclockwise to make sure that the cutout is engaged with the seal seat.
6. Pull out the seal seat.



7. Insert the special tool into the compressor aligning the cutout of the remover with the metal pawl of the seal case.

8. Rotate the special tool counter clock wise to make sure that the cutout is engaged with the metal pawl.



9. Withdraw the remover.

10. Lay down the compressor and clean the shaft seal contacting face of the compressor with cleaning solvent.

CAUTION:
- **Keep the cleaning solvent and dirt out of the compressor.**
- **Do not use any cloth for cleaning, clean only by rinsing with solvent.**
- **Do not spill the refrigerant oil from the compressor. Refill the same amount of the oil if the oil is spilled out.**

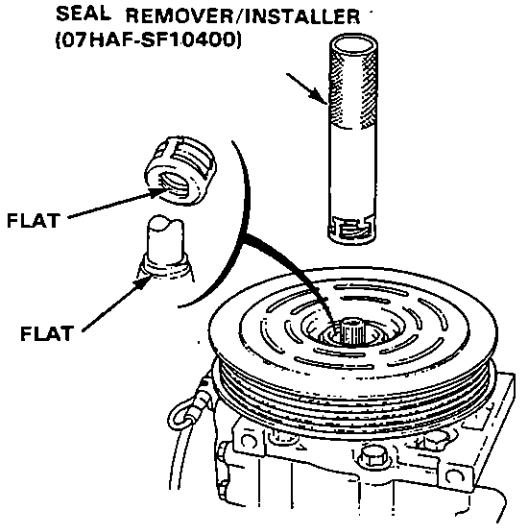
11. Clean the new shaft seal thoroughly with cleaning solvent.

12. Lubricate the shaft seal with refrigerant oil (SUNISO 5GS or equivalent) and install it on the shaft seal remover.

NOTE:
- Use only clean refrigerant oil.
- Do not touch the sealing surfaces of the shaft seal after lubricating.

13. Liberally lubricate the compressor shaft with refrigerant oil.

14. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.



15. Clean the seal seat with cleaning solvent, then lubricate the seal seat with refrigerant oil (SUNISO 5GS or equivalent).

NOTE:
- Use only clean refrigerant oil.
- Do not touch the sealing surface of the seal plate after lubricated.

16. First slide the seal seat into the compressor by hand as far as possible.

17 Press the seal seat with the grip side of the remover.

18. Install the circlip with its chamfered edge inside.

19. Press the circlip with the grip side of the remover, then install the felt seal.

20. Install the shim(s).

21. Install the pressure plate. Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within the specified limits, (0.3—0.45 mm (0.012—0.018 in)) shims must be added or removed as required.

System Charging

System Evacuation

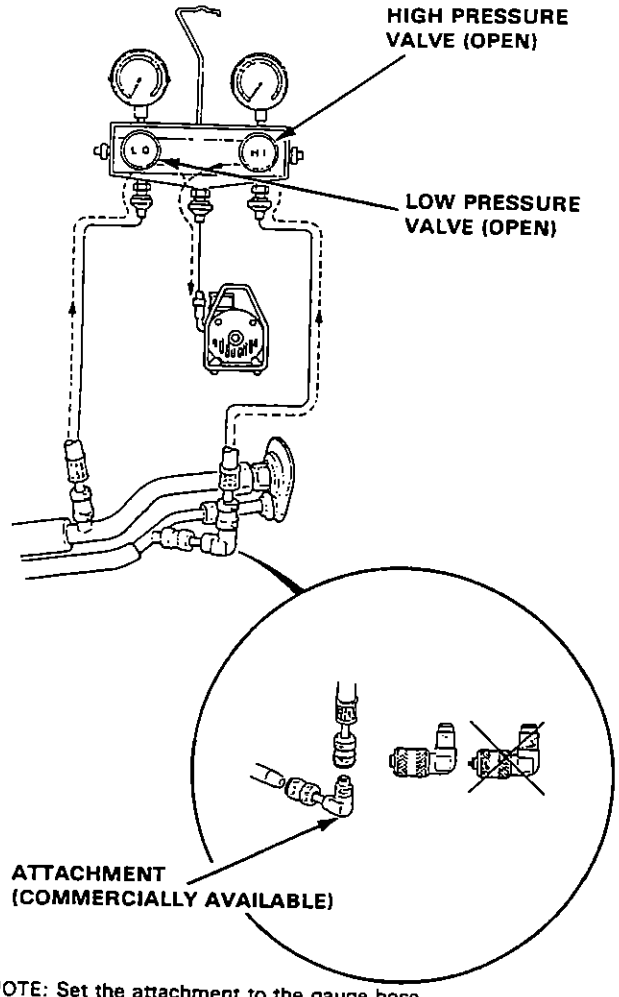
1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).

2. Attach a gauge set and pump as shown, connecting the center charging hose to the pump inlet.

3. Start the pump, then open both gauge valves. Run the pump for about 15 minutes. Close the valves and stop the pump. The low gauge should indicate above 700 mm Hg (27 in-Hg) and remain steady with the valves closed.

   NOTE: If low pressure does not reach more than 700 mm Hg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test below).

4. If there are no leaks open the valves and continue pumping for at least another 15 minutes, then close both valves, stop the pump and disconnect it from the center charging hose.



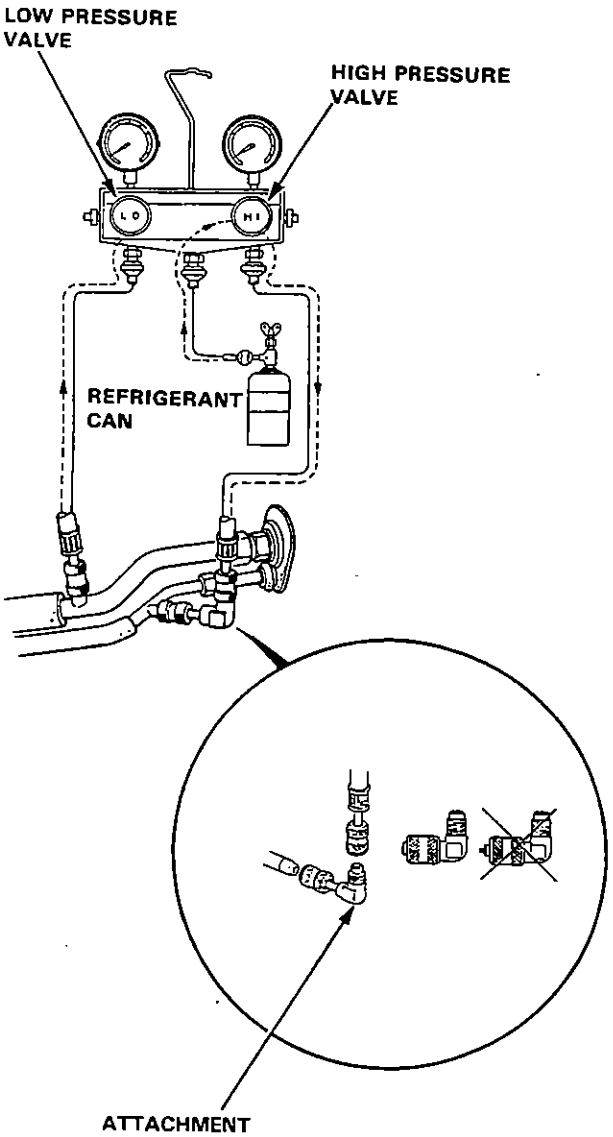
NOTE: Set the attachment to the gauge hose at high pressure side, then install the gauge set as shown.

Leak Test

WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
  - Do not rub your eyes or skin.
  - Splash large quantities of cool water in your eyes or on your skin.
  - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.
- Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.

1. Attach a refrigerant supply and gauge set as shown, with all valves closed. Then open the refrigerant supply valve on the can.
2. Loosen the center charging hose fitting at the gauge to purge any air from the hose, until it hisses for a few seconds, then tighten it again.
3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.
4. Check the system for leaks using a leak detector.
5. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system according to the Discharge Procedure on page 15-42.
6. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 15-56).



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown.

System Charging

Charging Procedures

WARNING Always wear eye protection when charging the system.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect a gauge set and refrigerant can (right side up) as shown, with the gauge valves closed. Purge air from the charging hose by opening the refrigerant valve, then loosening the center connector at the gauge, letting it hiss for a few seconds, and retighten it.

2. Open the high gauge valve and charge with approximately 300 g (10.5 oz) of refrigerant.

   WARNING Do not start the engine with high gauge valve open.

   NOTE:
   - Be sure to charge with 300 g (10.5 oz) refrigerant. If low, the vane in the compressor (if new compressor is installed) will not operate.
   - Do not open the low gauge valve.

3. After charging with 300 g (10.5 oz) refrigerant, close the high gauge valve.

4. Start the engine and turn on the A/C switch and heater fan switch and turn the air mix lever to "COLD."

5. Run the engine at 1500—2000 rpm, and check that the low gauge pressure suddenly drops.

6. If the low pressure does not drop:
   (a) Raise the engine speed to 2500 rpm and turn the A/C switch ON and OFF.
   If the low pressure does not drop, turn the ignition switch OFF and wait for 1—2 minutes, then restart the engine and raise to 2500 rpm and turn the A/C switch ON and OFF.

   (b) If the low pressure still does not drop, stop the engine and close the low gauge valve and recharge with additional 100 g (3.5 oz) of refrigerant. Repeat step (a).

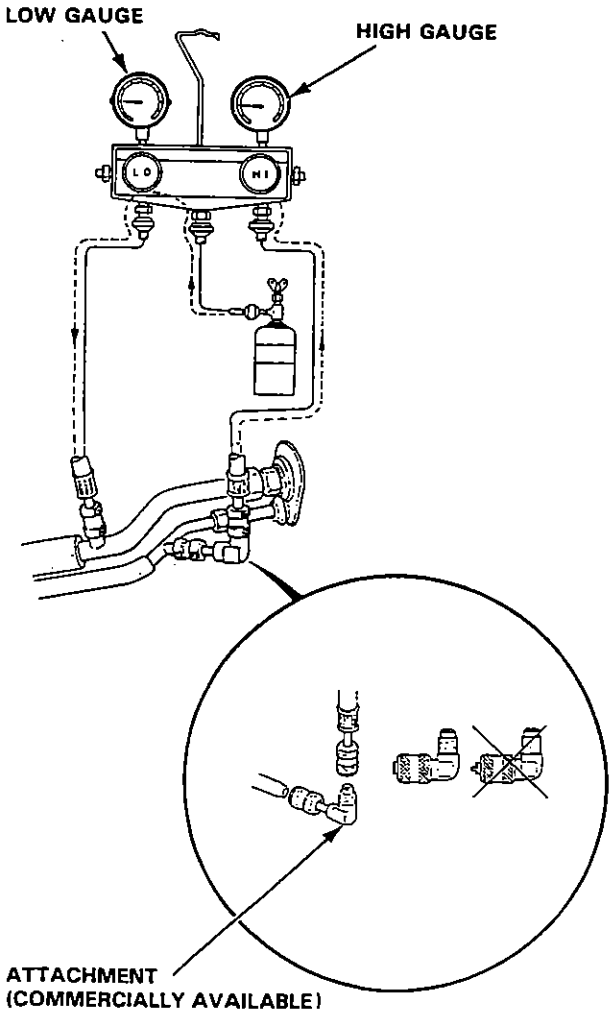
   (c) If the low pressure does not drop after repeating the procedure in step (a) several times. Stop the engine and re-evacuate and repeat steps 1 thru 6.

7. Open the low gauge valve and charge refrigerant with the engine running at 2,500 rpm.

   WARNING Do not open the high gauge valve and keep the refrigerant can right side-up.

8. Charge the system with 850—950 g (29-34 oz) of refrigerant until sight glass is free of any bubbles, indicating a full charge.

9. When fully charged, close the gauge valves, then the valve on the can. Slowly disconnect the refrigerant hose from the center gauge connection to allow excess refrigerant to escape. Quickly remove the gauges from the system to minimize refrigerant loss.



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

Performance Test

The performance test will help determine if the air conditioning system is operating within specifications.

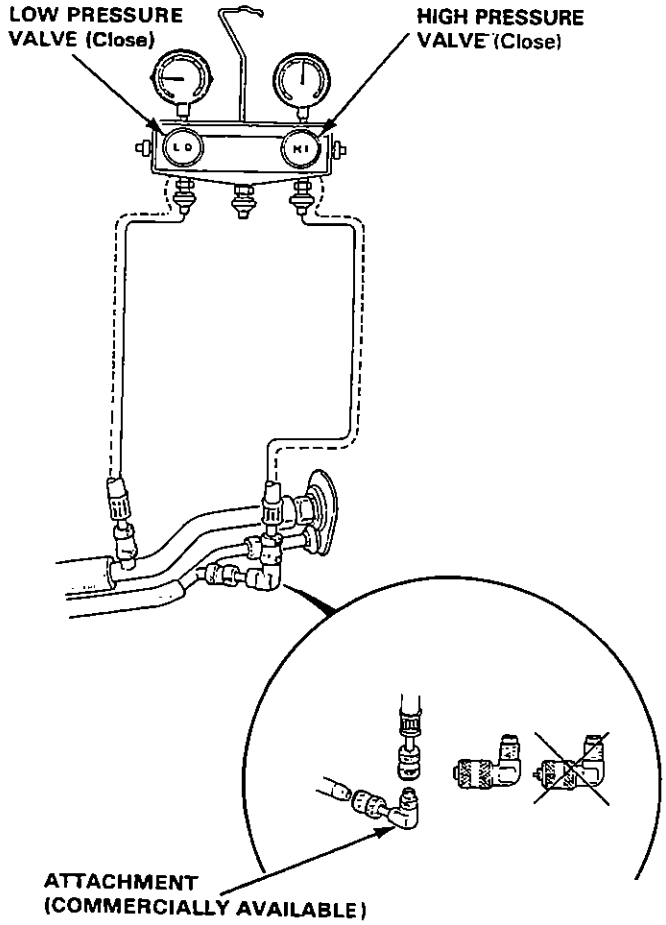
1. Connect the gauges as shown.

2. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.

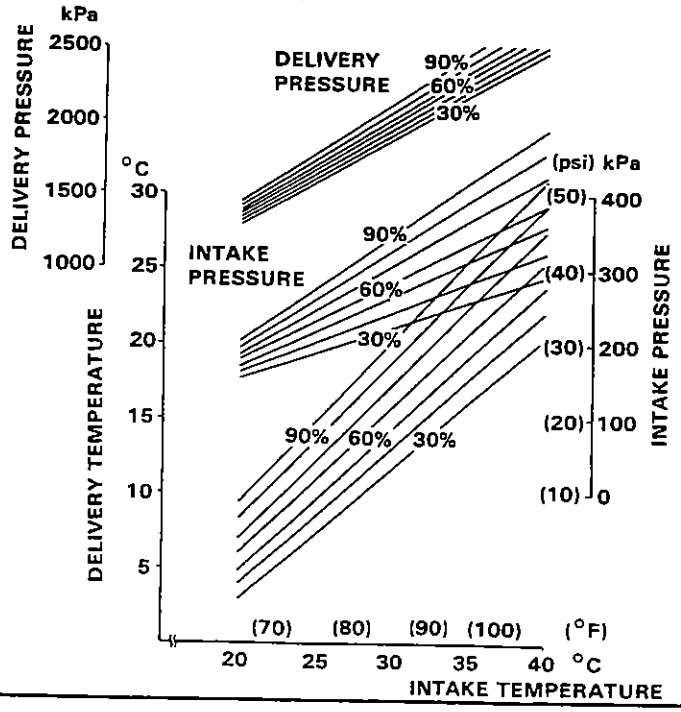
3. Test conditions:
   - Avoid direct sunlight.
   - Open engine hood.
   - Open front doors.
   - Set the temperature control dial to max and push the vent and fresh air buttons.
   - Turn the fan switch to MAX.
   - Run the engine at 1,500 RPM.
   - No driver or passengers in vehicle.

4. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the dash vent and the high and low system pressure from the A/C gauges.

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 one line above and one line below the humidity level.(10% above and 10% below the humidity level)
   - From each point,draw a horizontal line across to 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.



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.



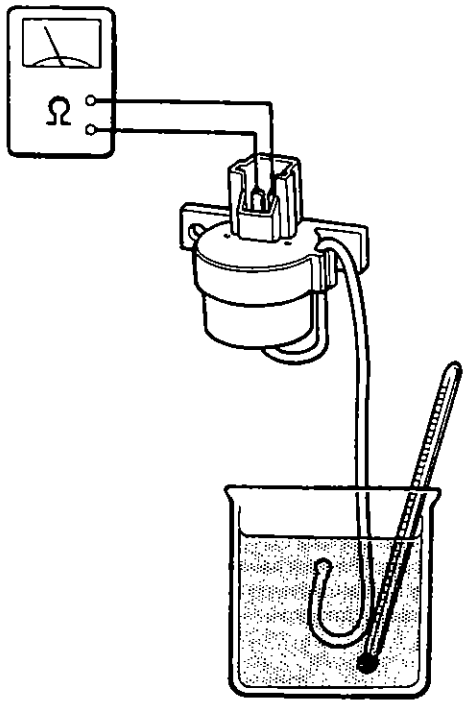
Test

Thermostat Switch

Dip the evaporator sensor into a pan filled with ice water, and check for continuity between the terminals.

Cut off 1.5—−0.5°C (35—33°F)
Cut in 2.5—5°C (36—41°F)

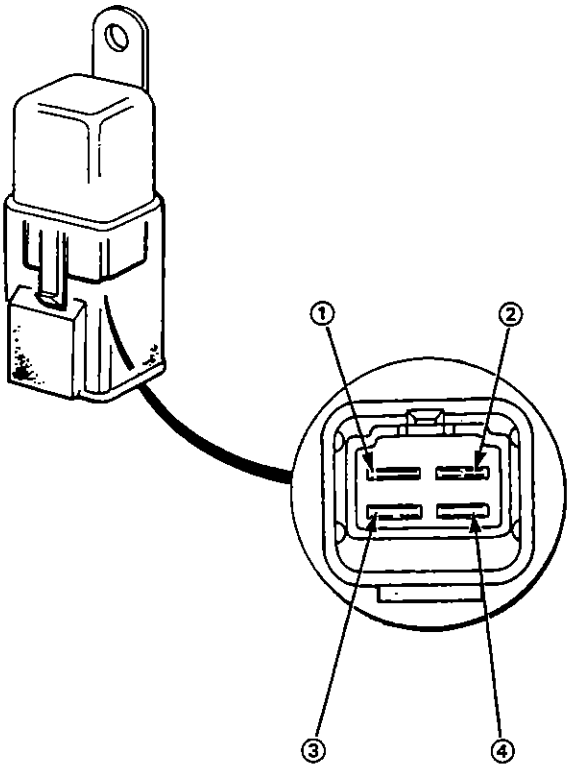
If cut off or cut in temperature is too low or too high, replace the thermostat switch.

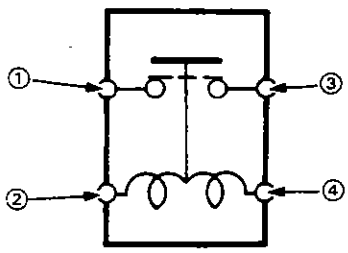


Relay

NOTE: All A/C system relays are similar.

1. Check for continuity between terminals ① and ③.
2. Connect a 12 V battery across terminals ② and ④. There should be continuity between terminals ① and ③.



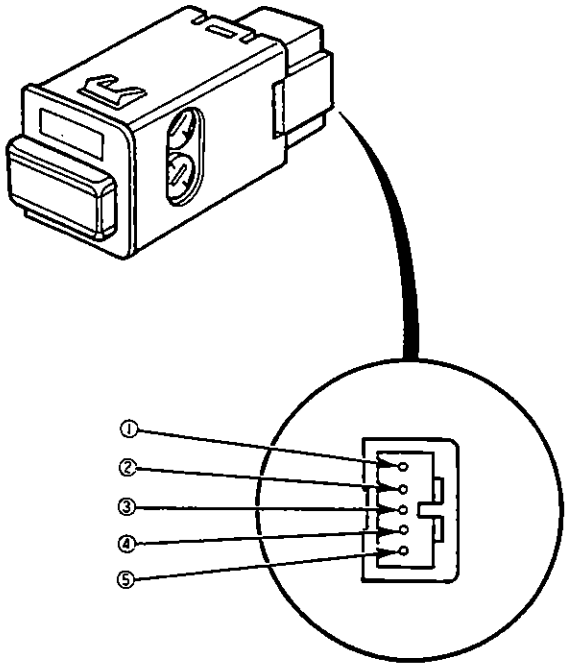


Test

A/C Switch

Check for continuity between the terminals according to the table.

Terminal No. / Position	①	②	③	④	⑤
OFF	○—⓪—○		○—⓪—◀—○		
ON	○—⓪—○			○—⓪—◀—○	
			○—○		



Electrical

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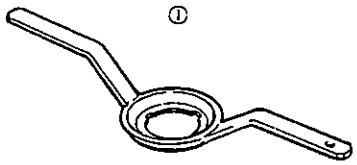
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Special Tool/Troubleshooting

Special Tool

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07920—SB20000	Fuel Sender Wrench	1	



Troubleshooting Precautions

Before Troubleshooting

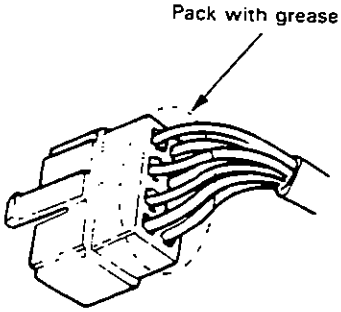
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

CAUTION:

- **Do not quick-charge a battery unless the battery ground cable has been disconnected, or you will damage the alternator diodes.**
- **Do not attempt to crank the engine with the battery ground cable connected incompletely or you will severely damage the wiring.**

While You're Working

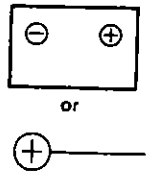
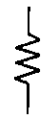
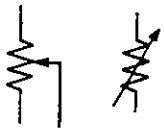
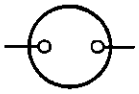
- Make sure connectors are clean, and have no loose pins or receptacles.
- Make sure multiple pin connectors are packed with grease (except watertight connectors).

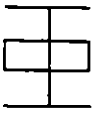
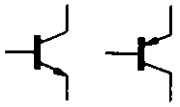
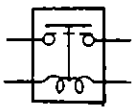
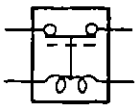
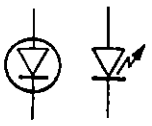
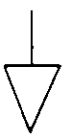
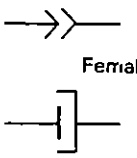


CAUTION:

- **Do not pull the wires when disconnecting a connector, pull only the connector housings.**
- **When connecting a connector, push it until it clicks into place.**

Schematic Symbols

BATTERY	GROUND		FUSE	COIL, SOLENOID	CIGARETTE LIGHTER
	Ground terminal 	Component ground 			
RESISTOR	**VARIABLE RESISTOR**	**THERMISTOR**	**IGNITION SWITCH**	**BULB**	**HEATER**
					
MOTOR	**PUMP**	**CIRCUIT BREAKER**	**HORN**	**DIODE**	**SPEAKER, BUZZER**
					

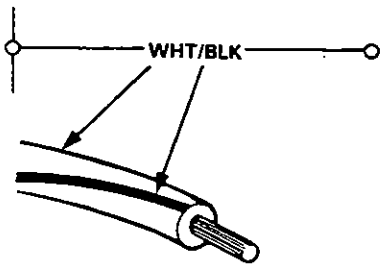
ANTENNA		TRANSISTOR (Tr)
Mast 	Window 	
RELAY (In normal condition)		**CONDENSER**
Normal open relay 	Normal closed relay 	
SWITCH (In normal condition)		**LUMINOUS DIODE (LED)**
Normal open switch 	Normal closed switch 	
CONNECTION	**CONNECTOR**	**REED SWITCH**
Input  Output 	Male  Female	

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics.

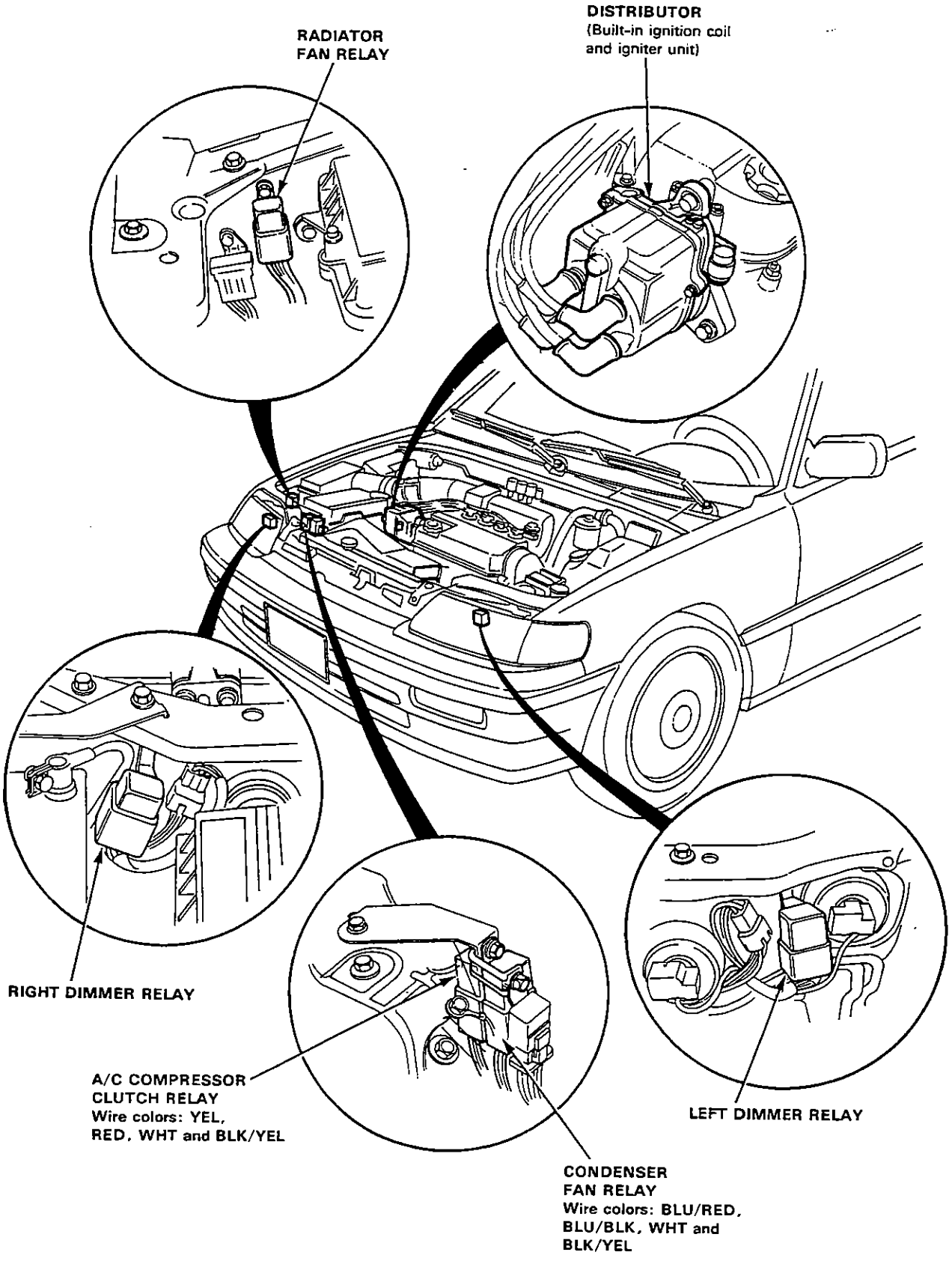
WHT ..... White
YEL ..... Yellow
BLK ..... Black
BLU ..... Blue
GRN ..... Green
RED ..... Red
ORN ..... Orange
PNK ..... Pink
BRN ..... Brown
GRY ..... Gray
LT BLU ..... Light Blue
LT GRN ..... Light Green

Wire insulator has one color or one color with another color stripe. The second color is the stripe.

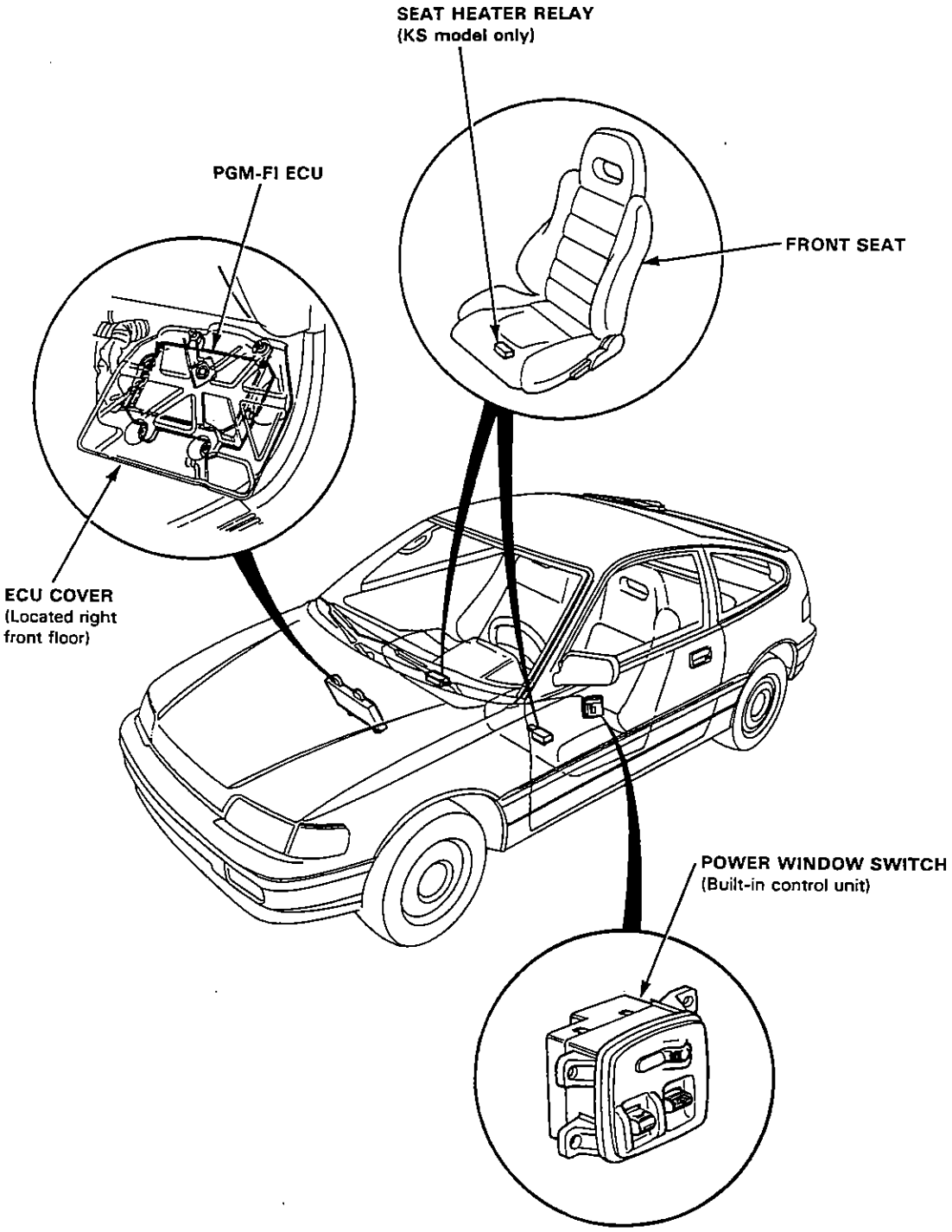


Relays and Control Unit Locations

Engine Compartment



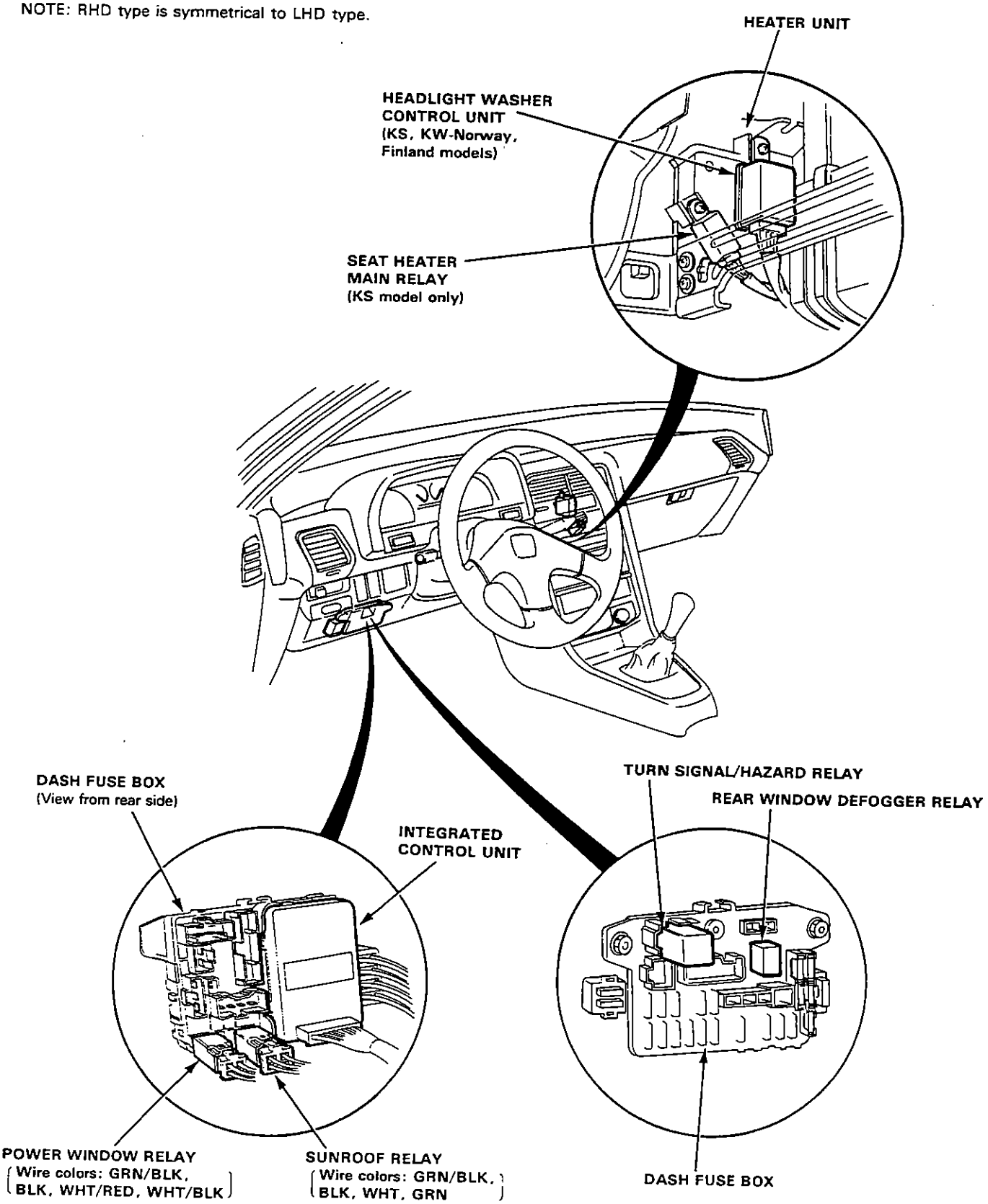
NOTE: RHD type is symmetrical to LHD type.



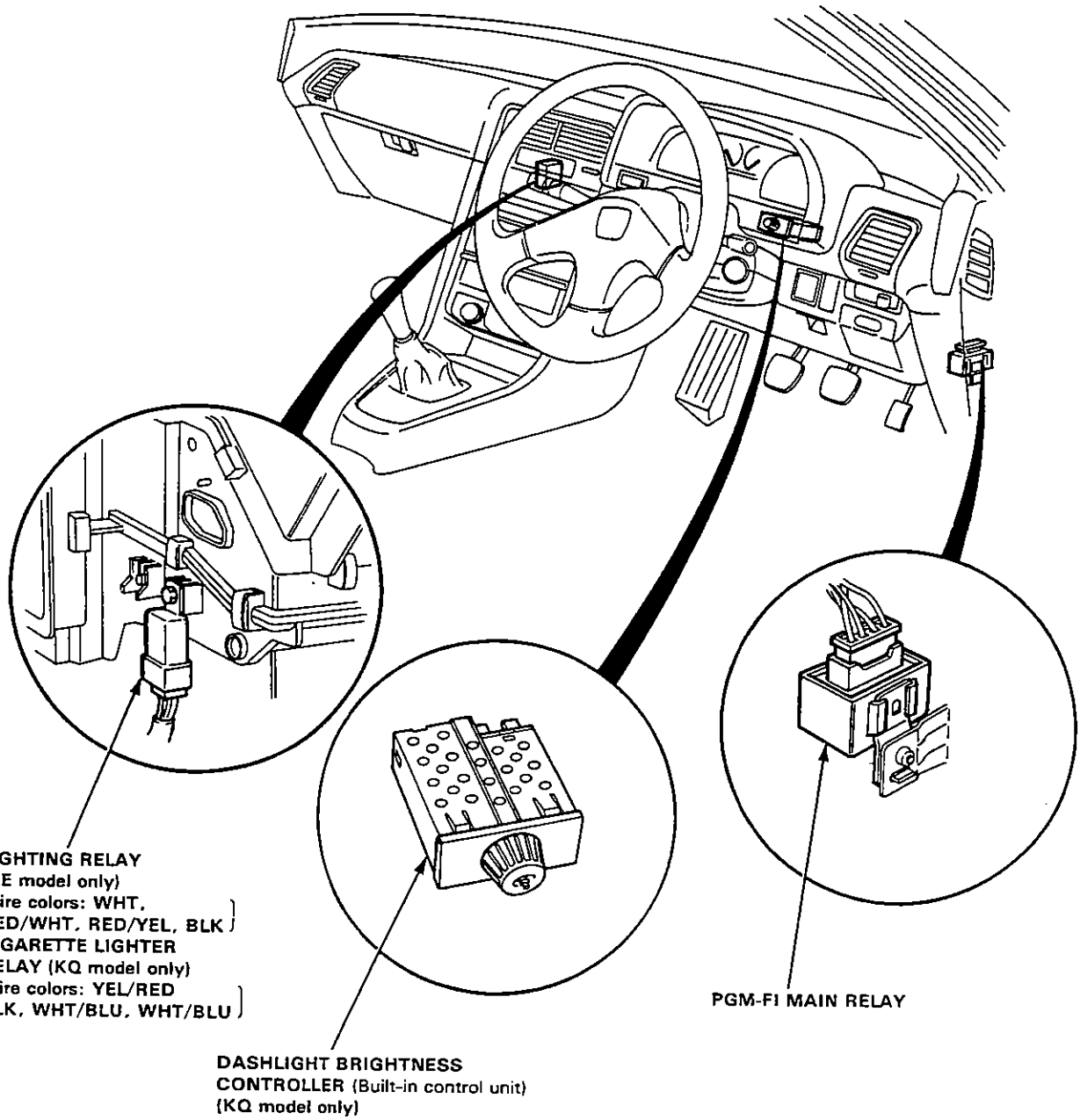
Relays and Control Unit Locations

Dashboard

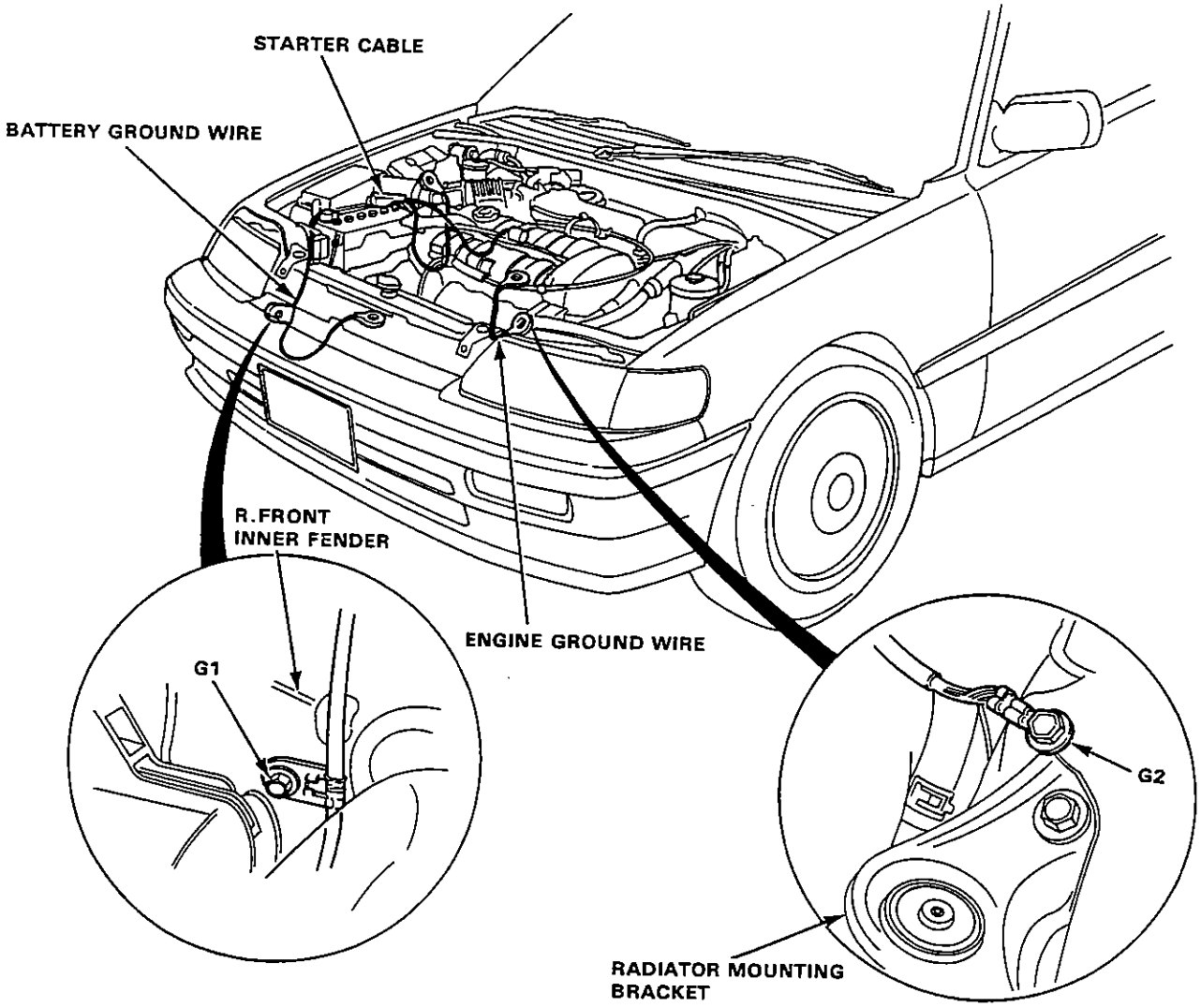
NOTE: RHD type is symmetrical to LHD type.

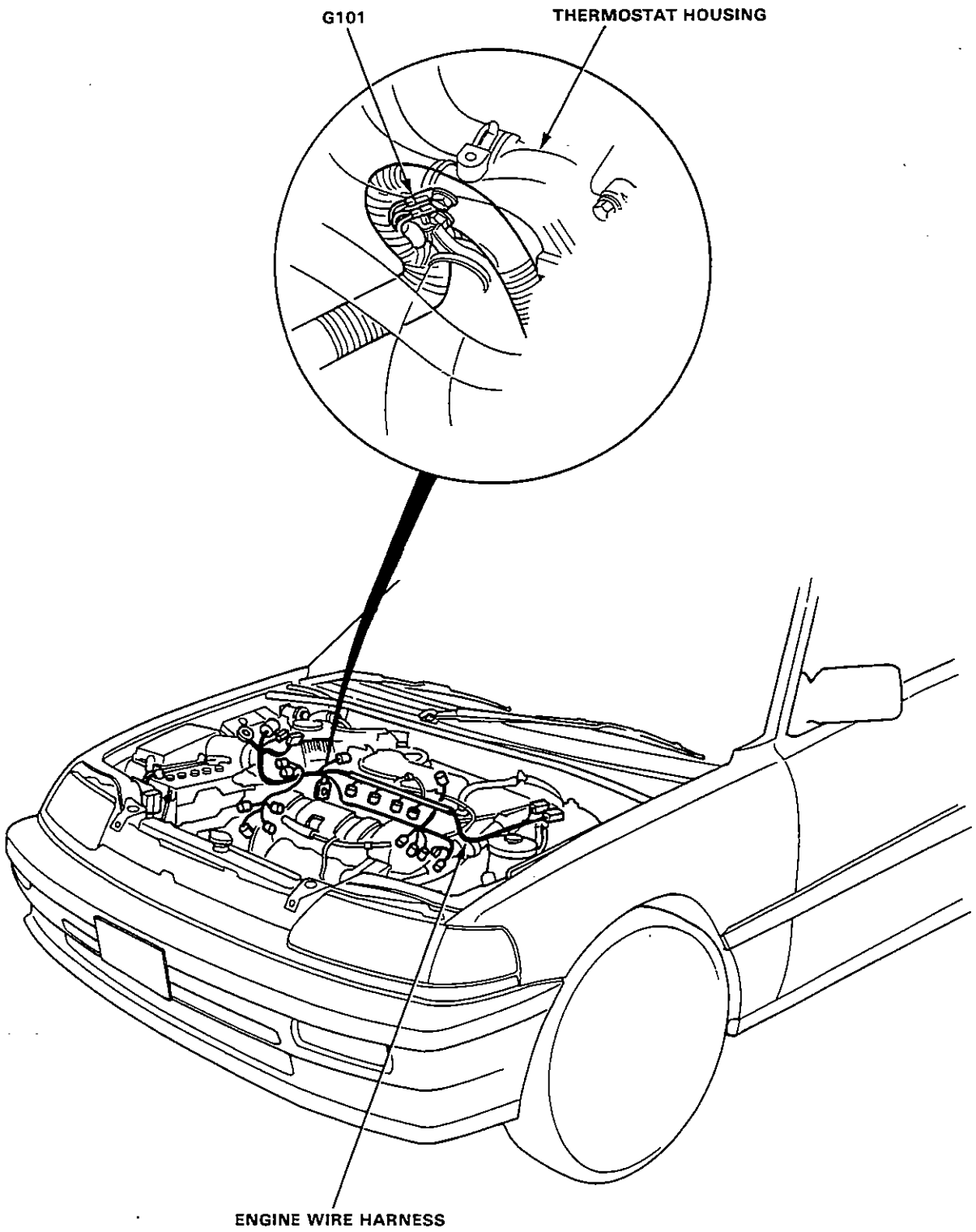


NOTE: LHD type is symmetrical to RHD type.



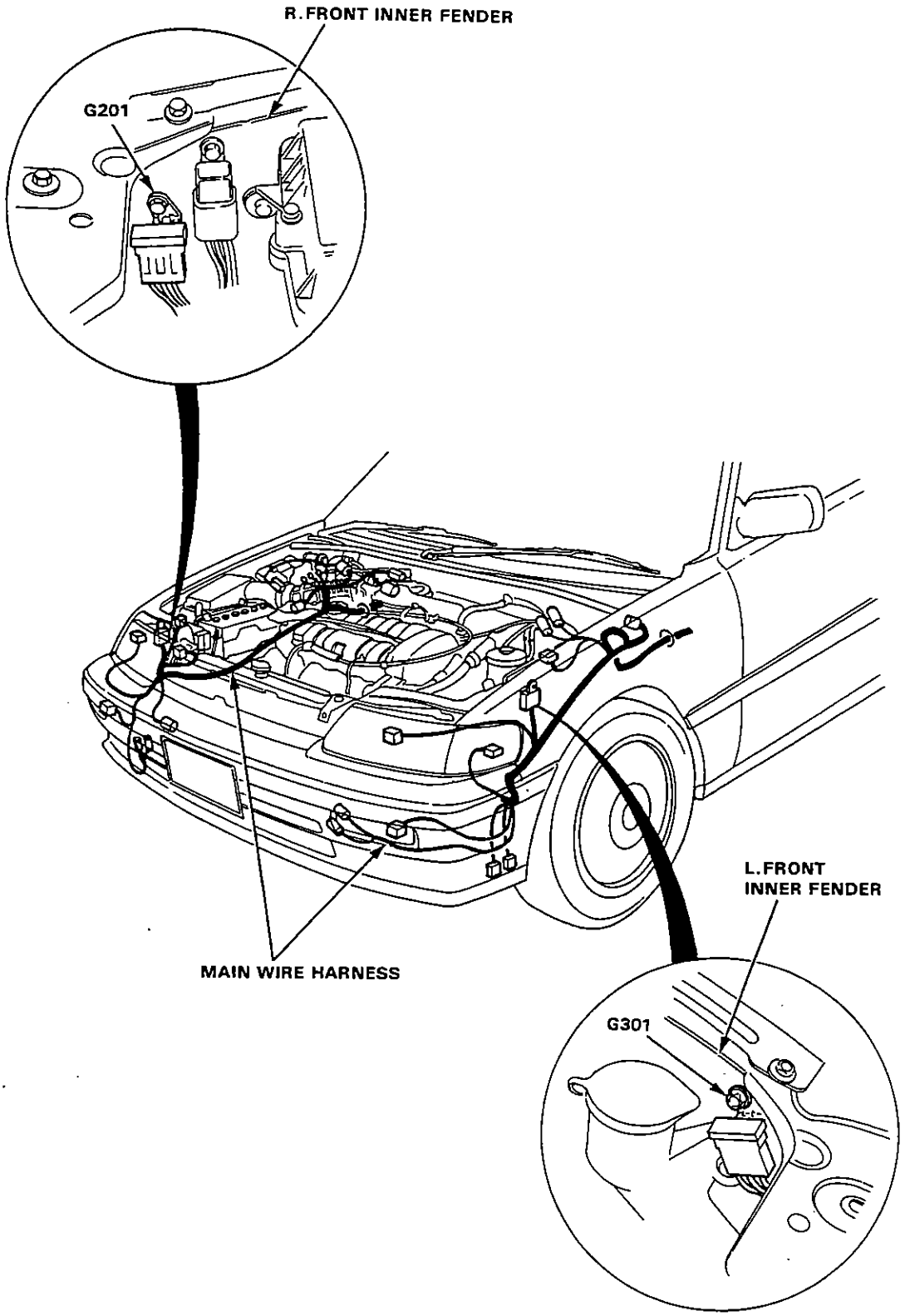
Ground and Wire Harness Routing



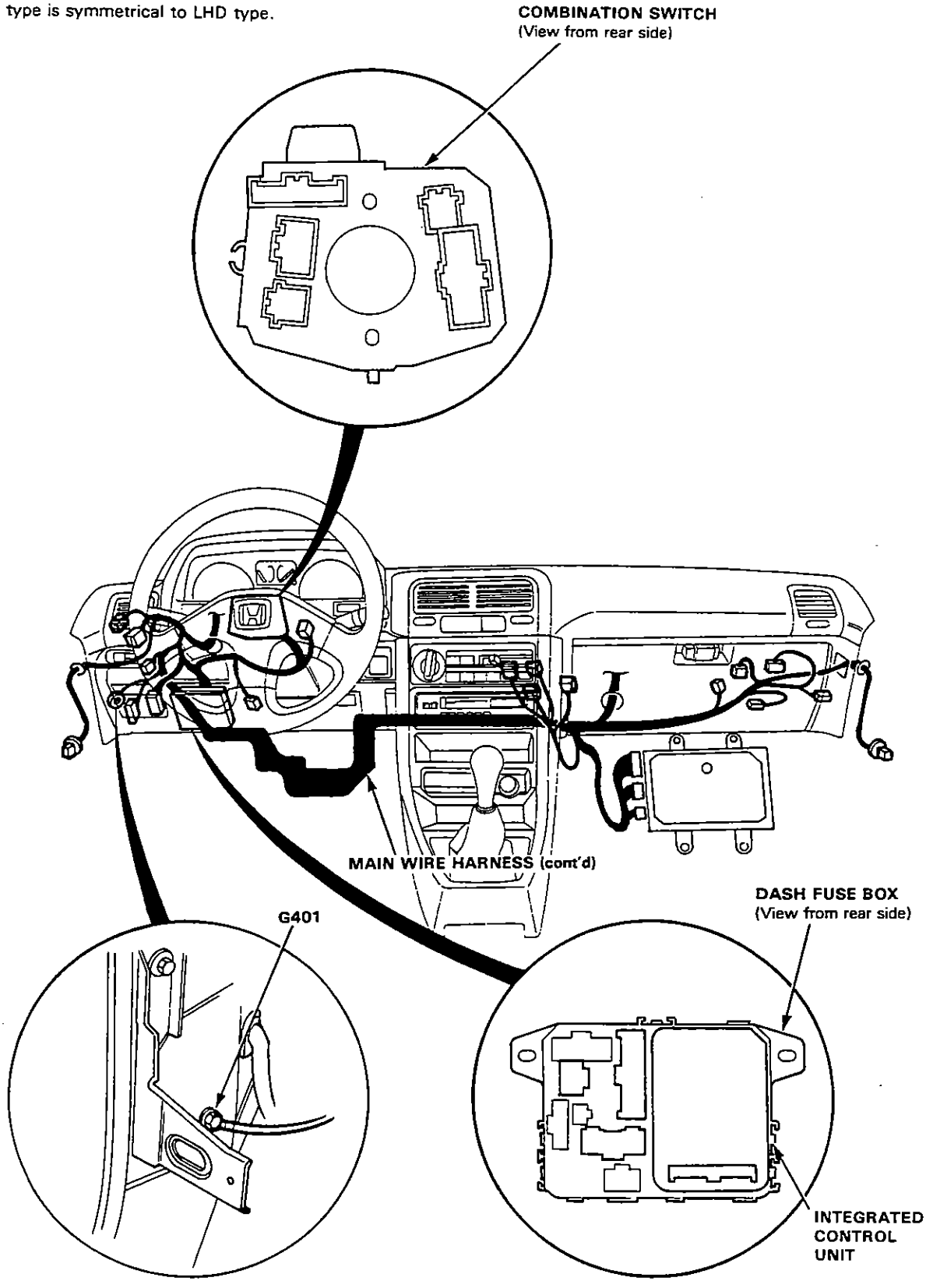


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Ground and Wire Harness Routing

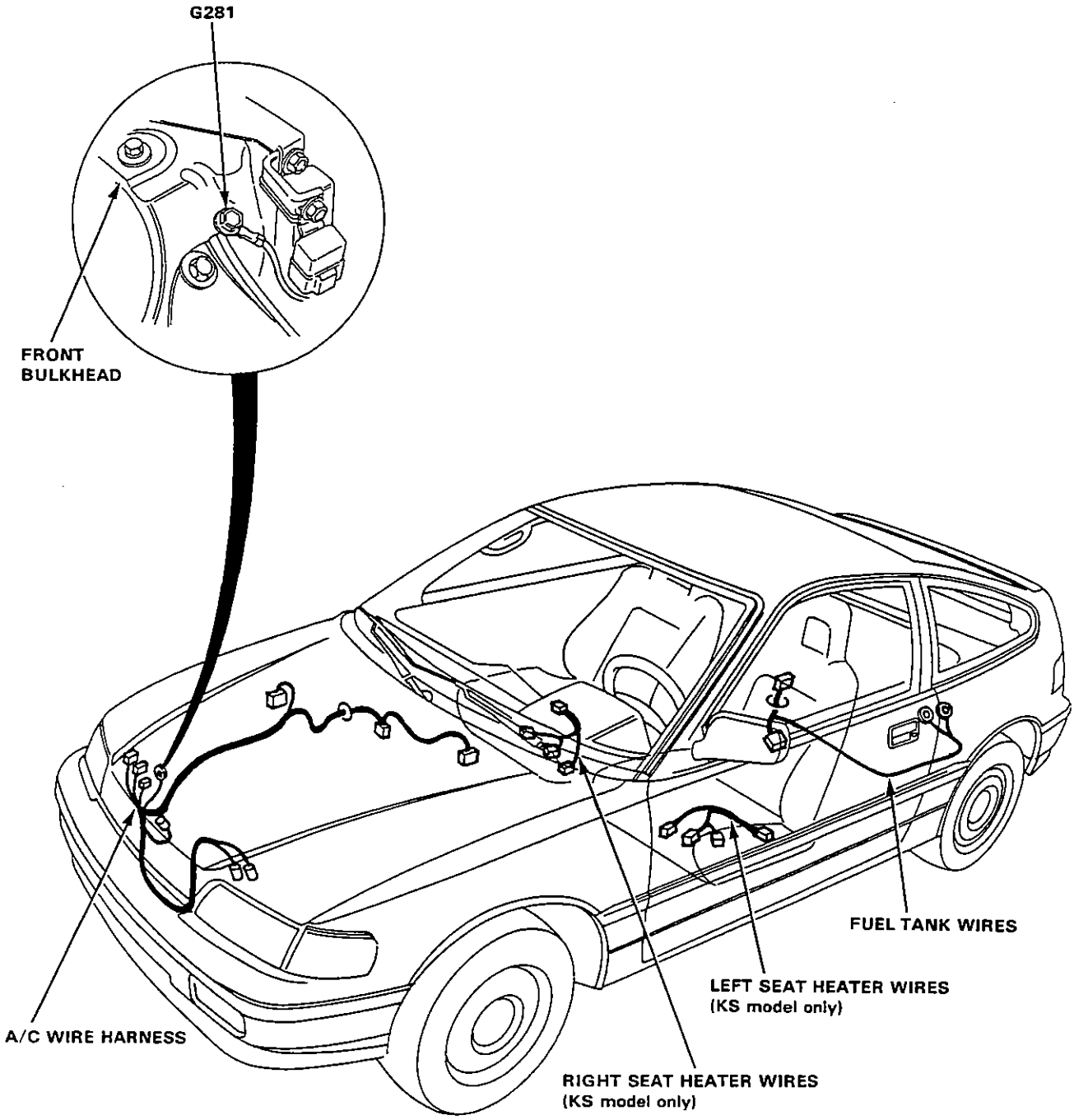


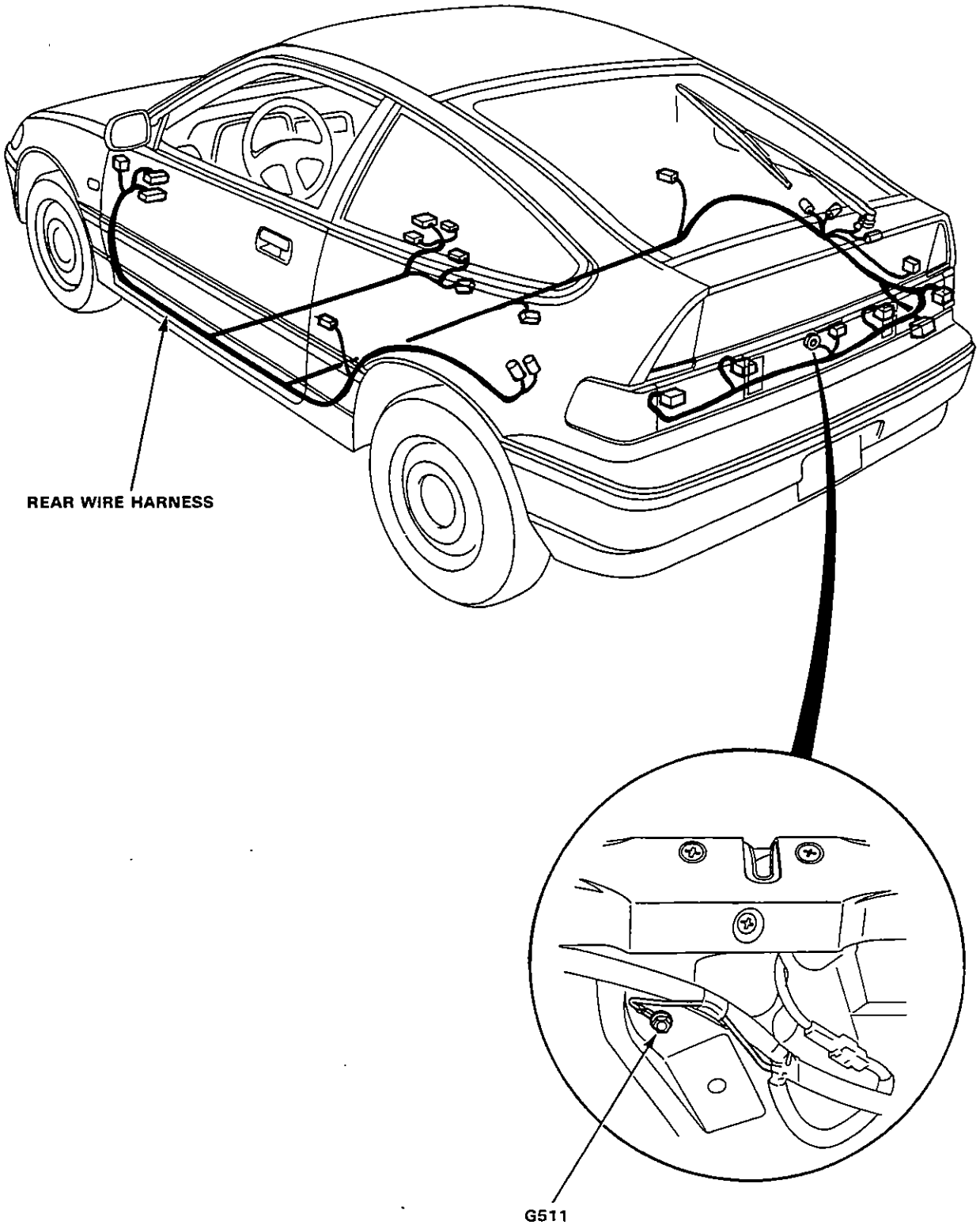
NOTE: RHD type is symmetrical to LHD type.



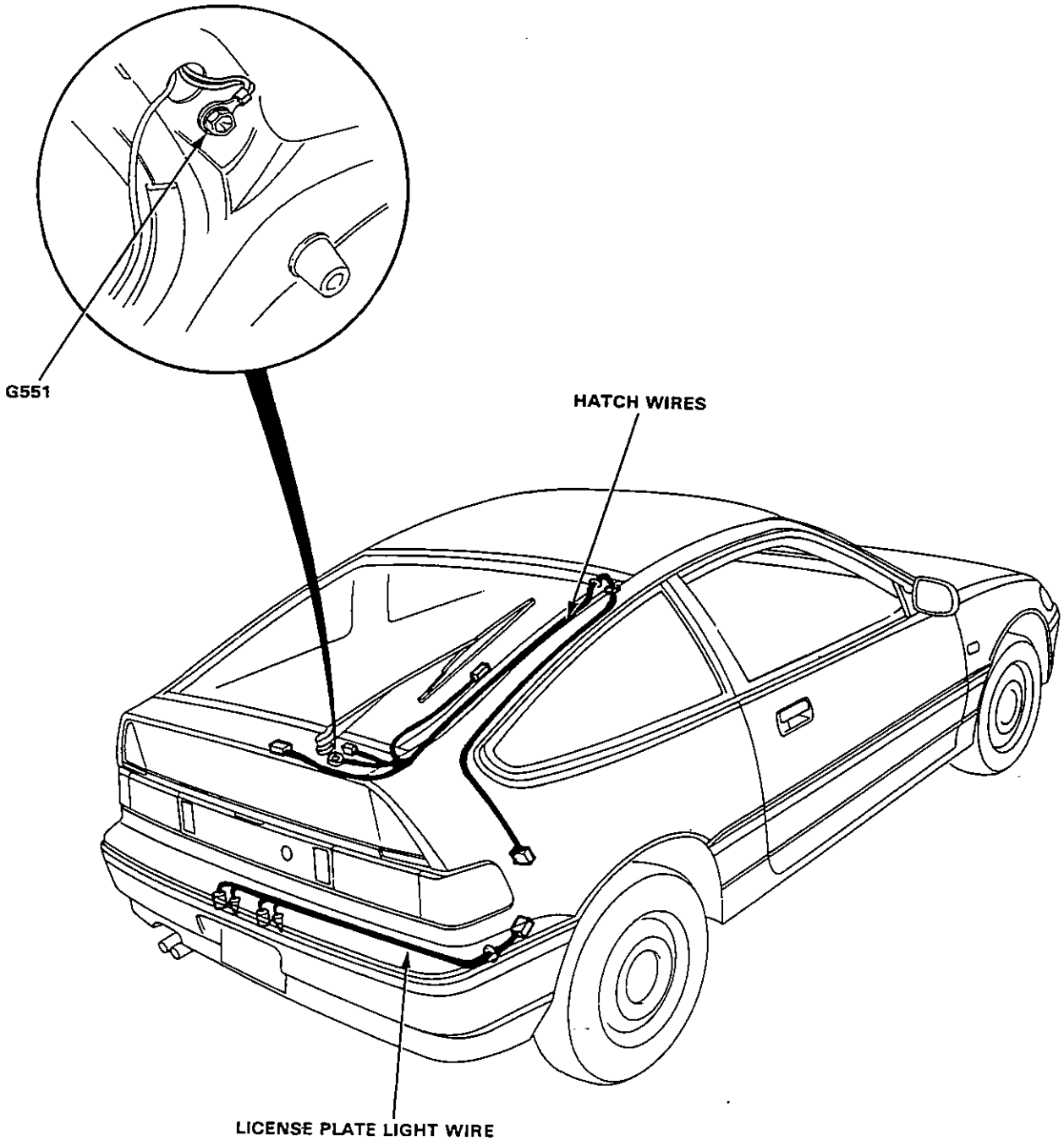
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Ground and Wire Harness Routing

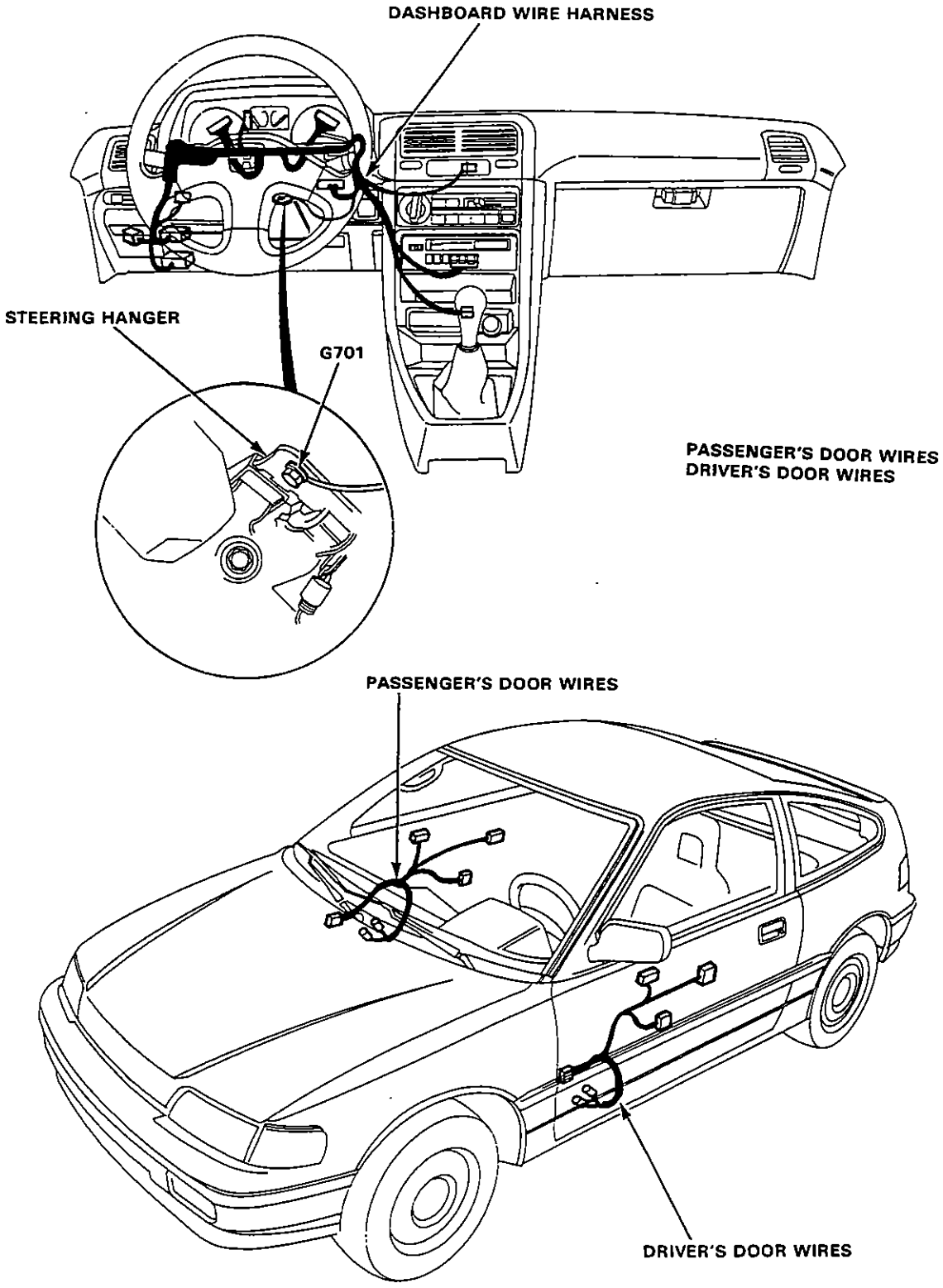




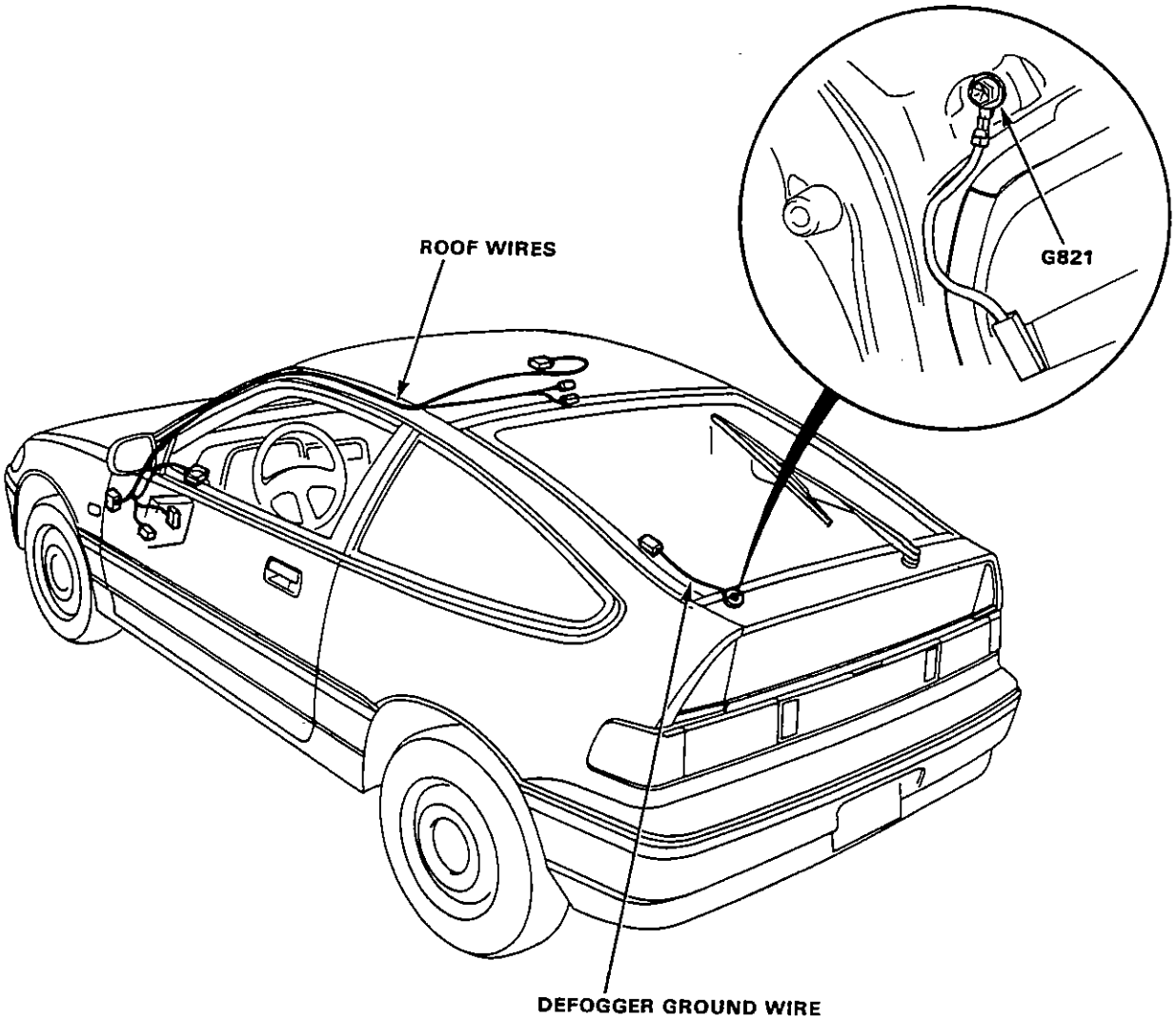
(cont'd)


G551
HATCH WIRES
LICENSE PLATE LIGHT WIRE

NOTE: RHD type is symmetrical to LHD type.



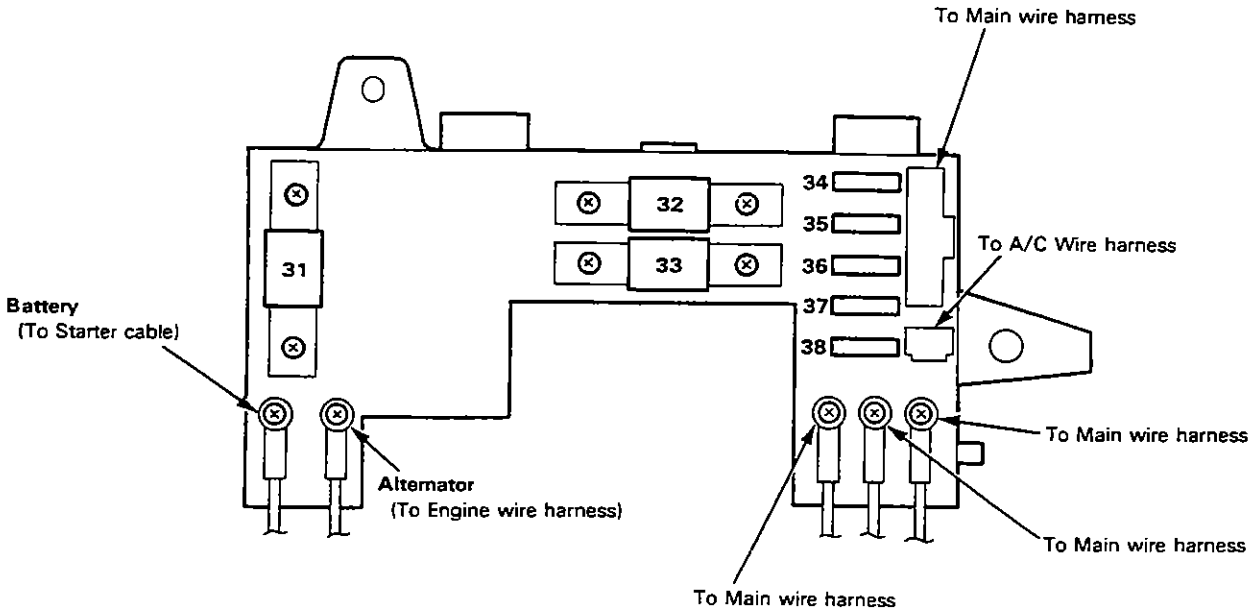
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ROOF WIRES
G821
DEFOGGER GROUND WIRE

Fuses

Main Fuse Box

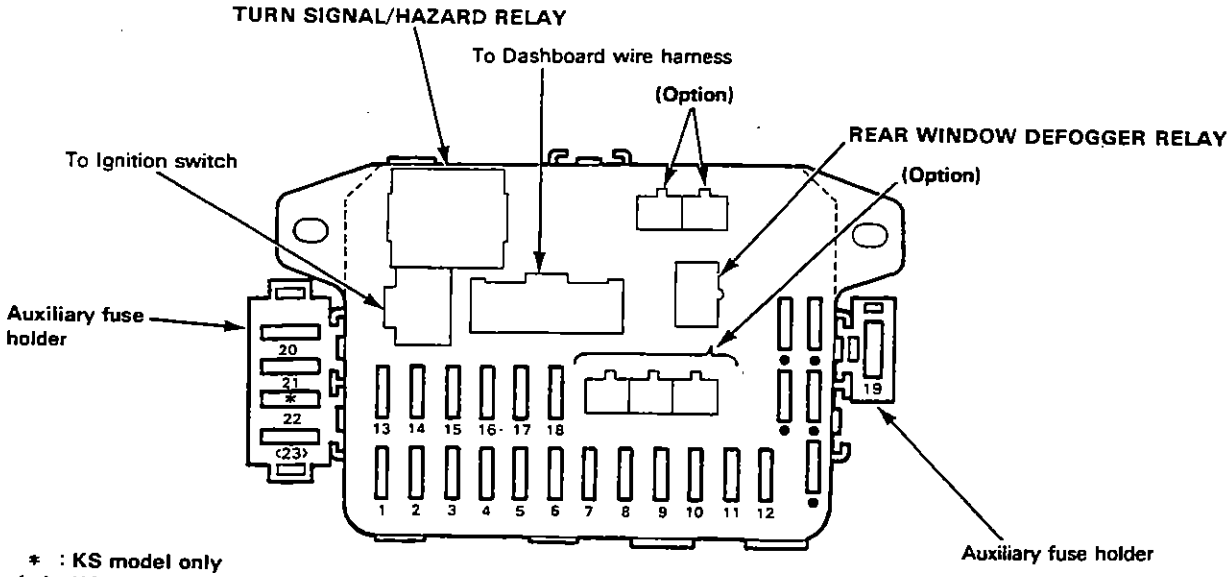
NOTE: Main fuse box is located right side, engine compartment.



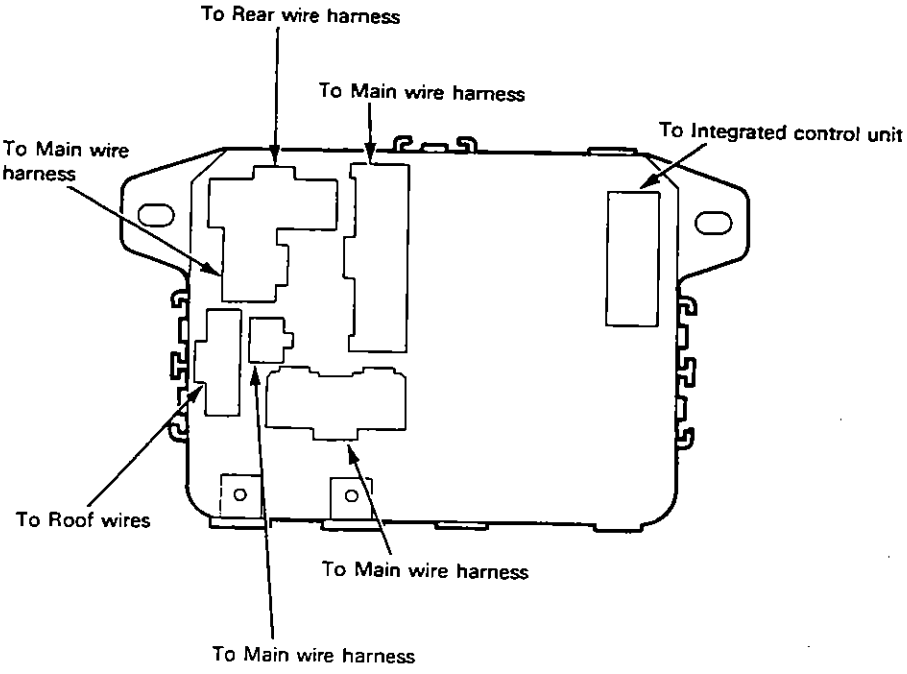
Fuses

Dash Fuse Box (LHD)

NOTE: Dash fuse box is located left side, under dash.

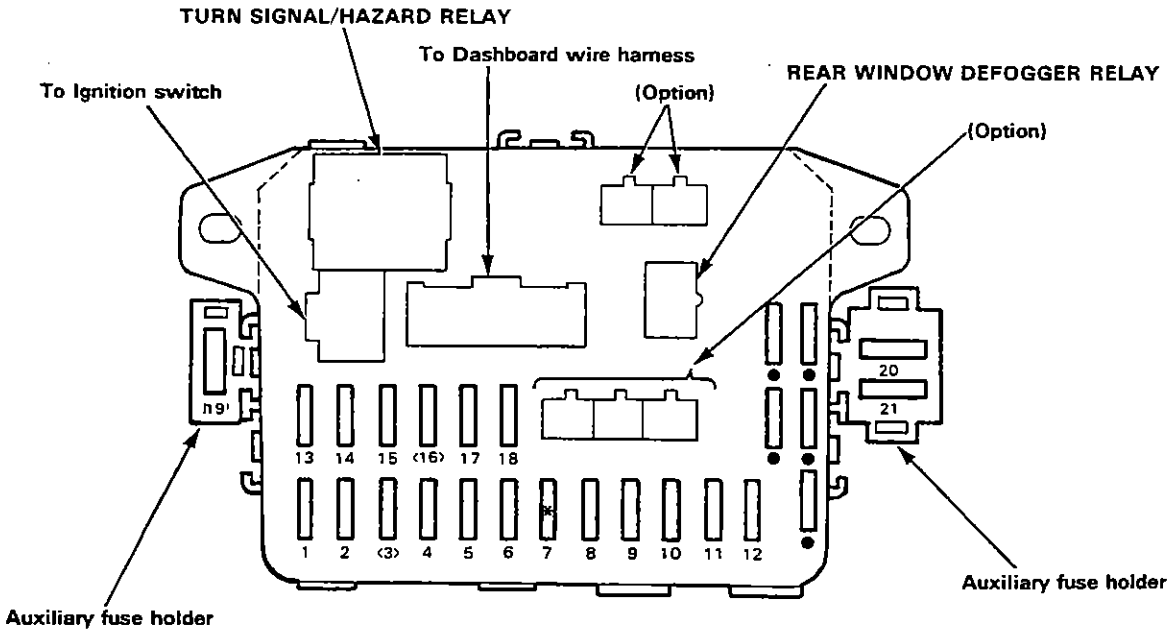


* : KS model only
( ) : KS. KW (Norway, Finland) models
< > : Not used
● : Spare fuse

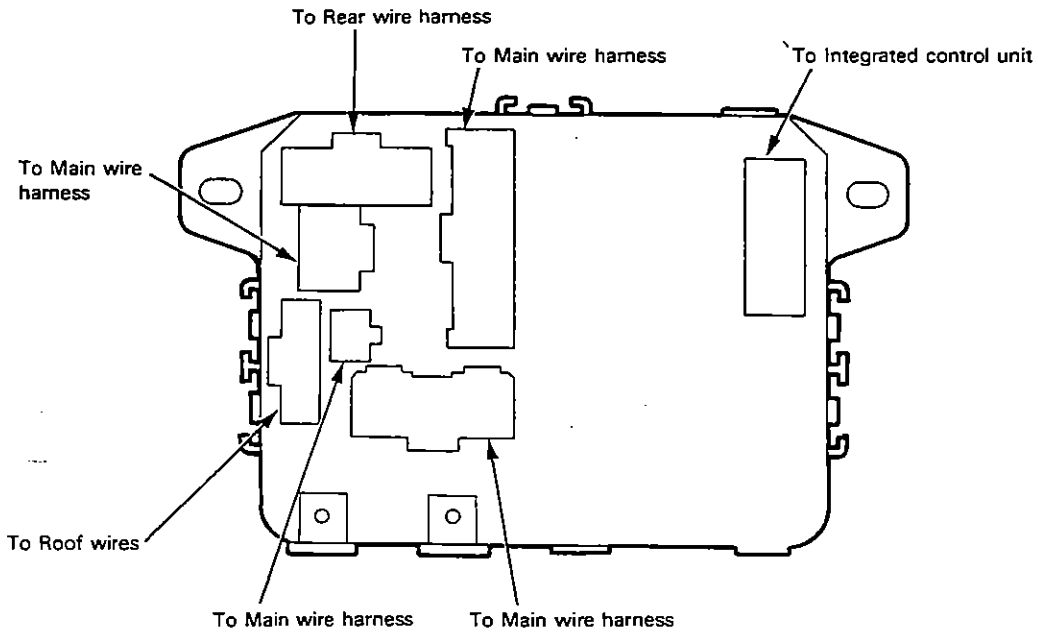


(RHD)

NOTE: Dash fuse box is located right side, under dash.

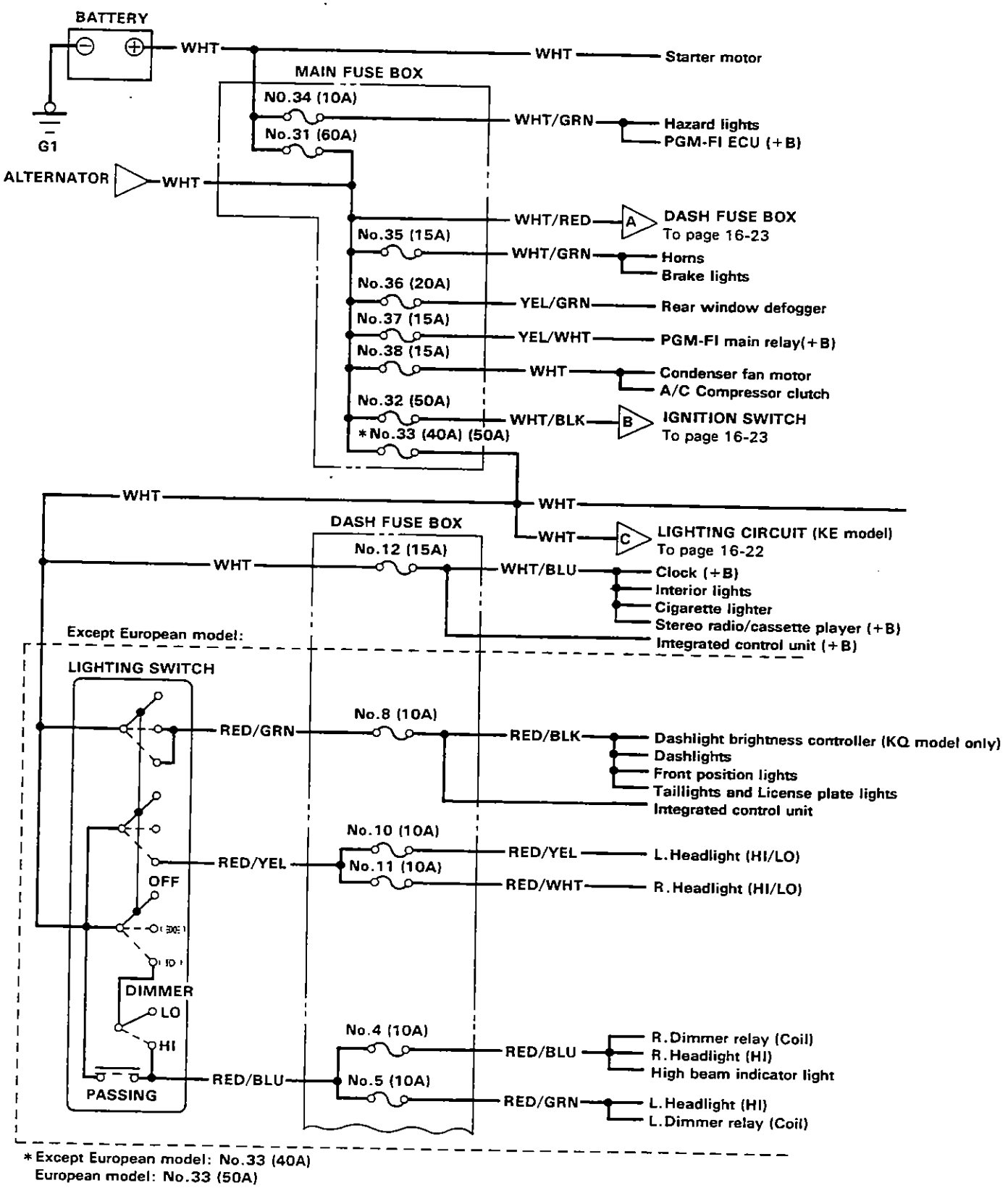


* : KE model only
( ) : Not used
● : Spare fuse



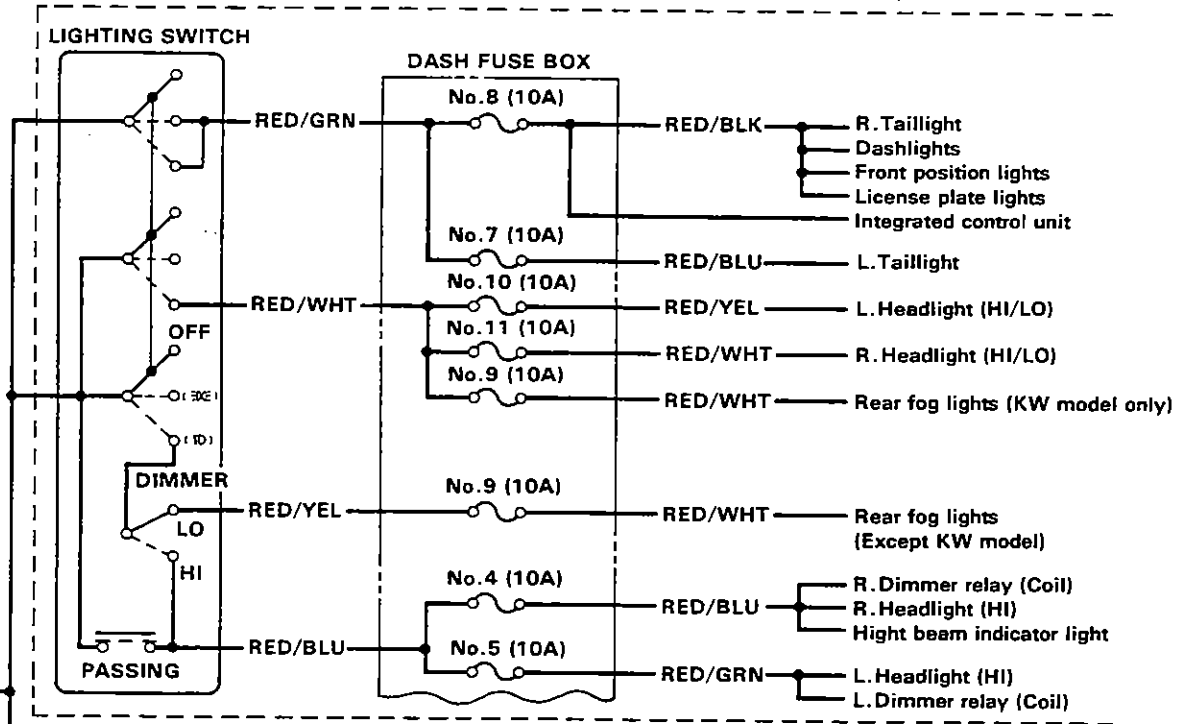
Power Distribution

Circuit Identification

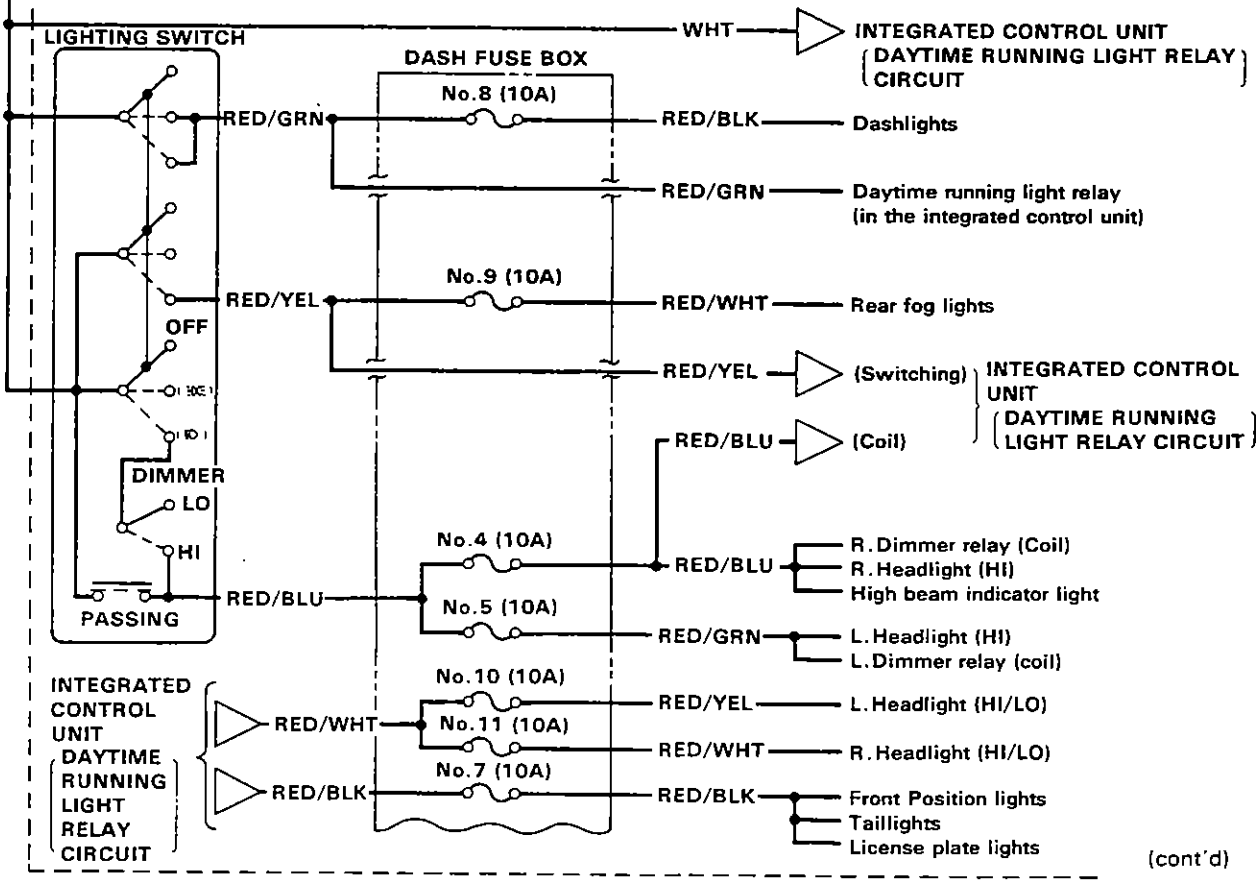


*Except European model: No.33 (40A)
European model: No.33 (50A)

KG, KX, KB and KW (Except Finland, Norway) models:



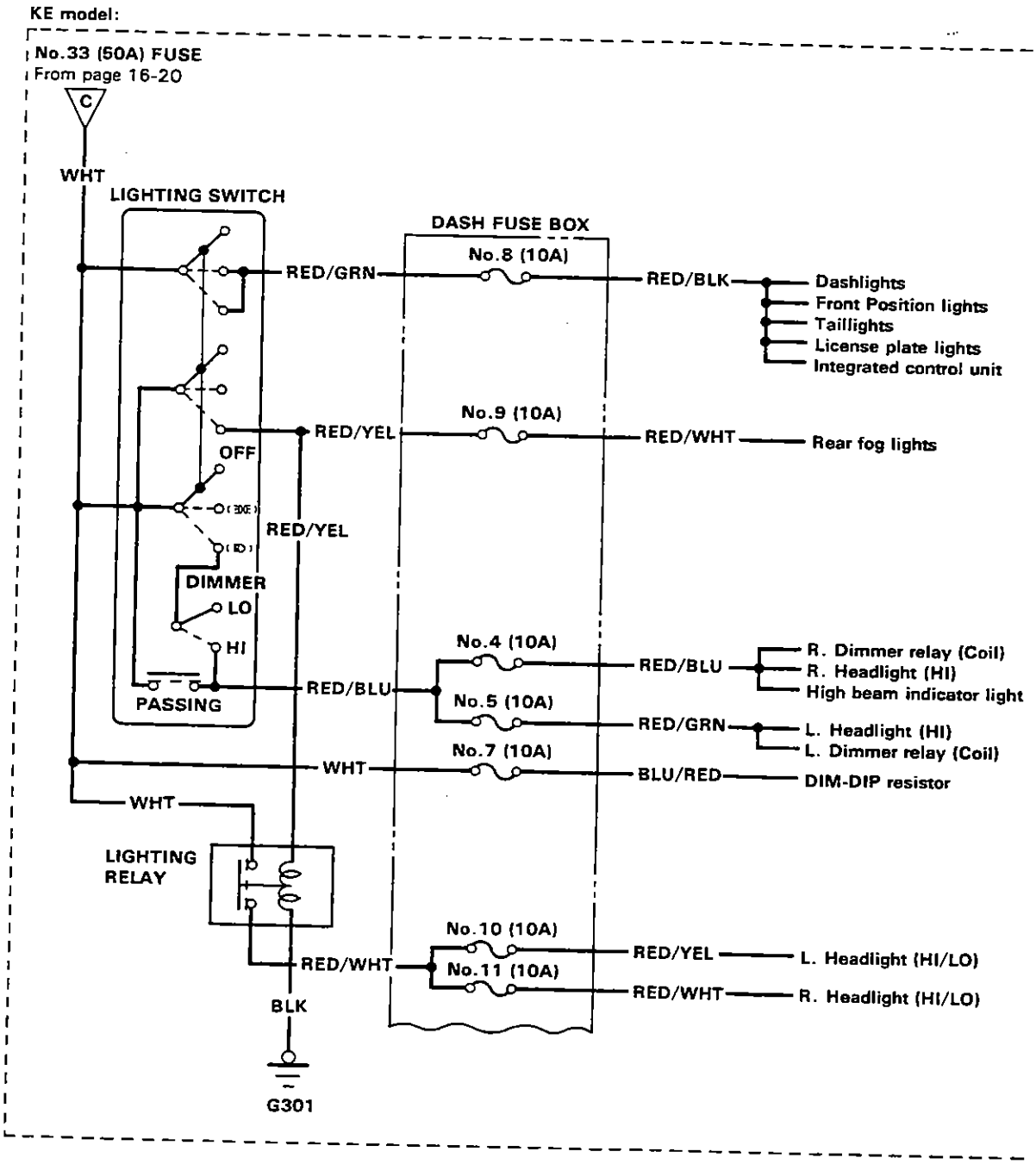
KS, KW (Finland, Norway) models:

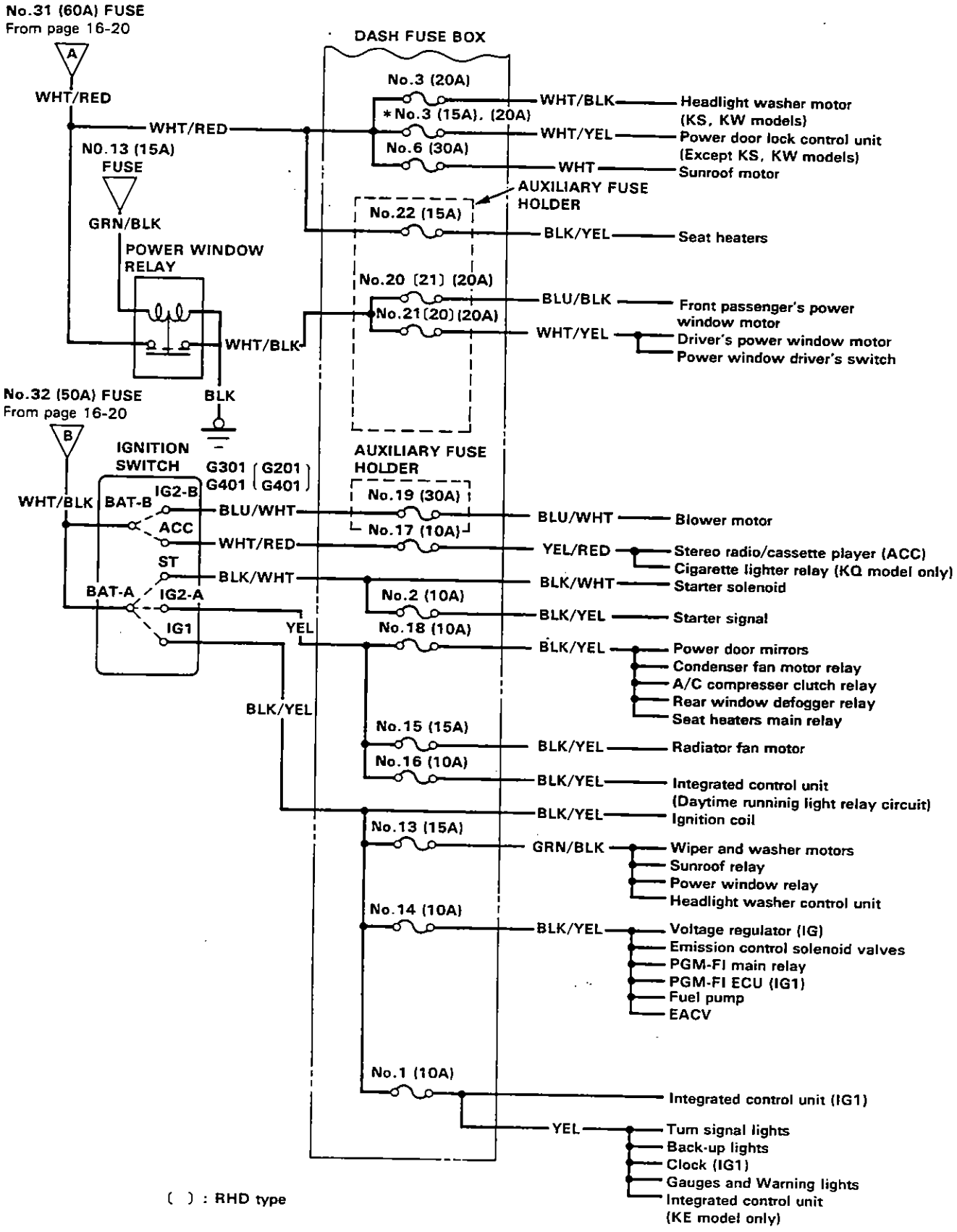


(cont'd)

Power Distribution

Circuit Indentification (cont'd)

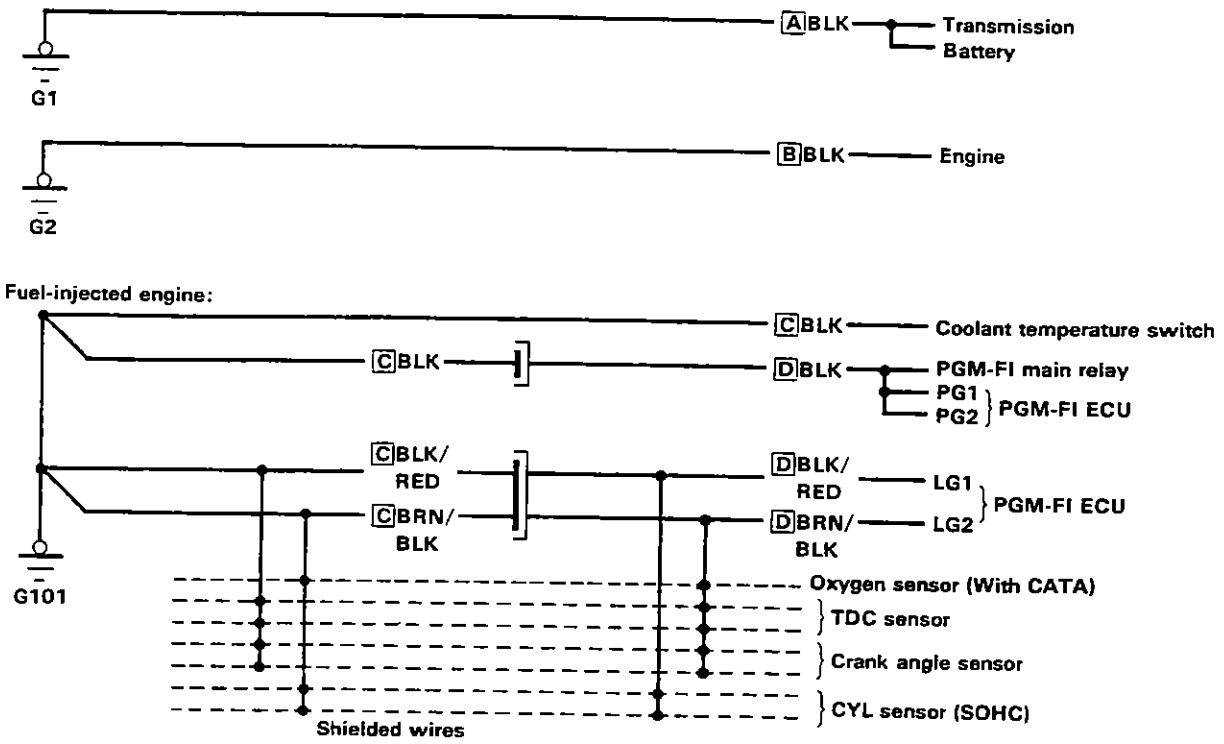



No.31 (60A) FUSE
From page 16-20
A
WHT/RED
WHT/RED
NO.13 (15A) FUSE
GRN/BLK
POWER WINDOW RELAY
WHT/BLK
BLK
No.32 (50A) FUSE
From page 16-20
B
IGNITION SWITCH
G301 (G201)
G401 (G401)
WHT/BLK
BAT-B
IG2-B
BLU/WHT
ACC
WHT/RED
ST
BLK/WHT
BAT-A
IG2-A
IG1
YEL
BLK/YEL
DASH FUSE BOX
No.3 (20A)
*No.3 (15A), (20A)
No.6 (30A)
AUXILIARY FUSE HOLDER
No.22 (15A)
No.20 (21) (20A)
No.21 (20) (20A)
AUXILIARY FUSE HOLDER
No.19 (30A)
No.17 (10A)
No.2 (10A)
No.18 (10A)
No.15 (15A)
No.16 (10A)
No.13 (15A)
No.14 (10A)
No.1 (10A)
WHT/BLK
Headlight washer motor (KS, KW models)
WHT/YEL
Power door lock control unit (Except KS, KW models)
WHT
Sunroof motor
BLK/YEL
Seat heaters
BLU/BLK
Front passenger's power window motor
WHT/YEL
Driver's power window motor
Power window driver's switch
BLU/WHT
Blower motor
YEL/RED
Stereo radio/cassette player (ACC)
Cigarette lighter relay (KQ model only)
BLK/WHT
Starter solenoid
BLK/YEL
Starter signal
BLK/YEL
Power door mirrors
Condenser fan motor relay
A/C compresser clutch relay
Rear window defogger relay
Seat heaters main relay
BLK/YEL
Radiator fan motor
BLK/YEL
Integrated control unit (Daytime runninig light relay circuit)
BLK/YEL
Ignition coil
GRN/BLK
Wiper and washer motors
Sunroof relay
Power window relay
Headlight washer control unit
BLK/YEL
Voltage regulator (IG)
Emission control solenoid valves
PGM-FI main relay
PGM-FI ECU (IG1)
Fuel pump
EACV
Integrated control unit (IG1)
YEL
Turn signal lights
Back-up lights
Clock (IG1)
Gauges and Warning lights
Integrated control unit (KE model only)
( ) : RHD type

Ground Distribution

Circuit Indentification

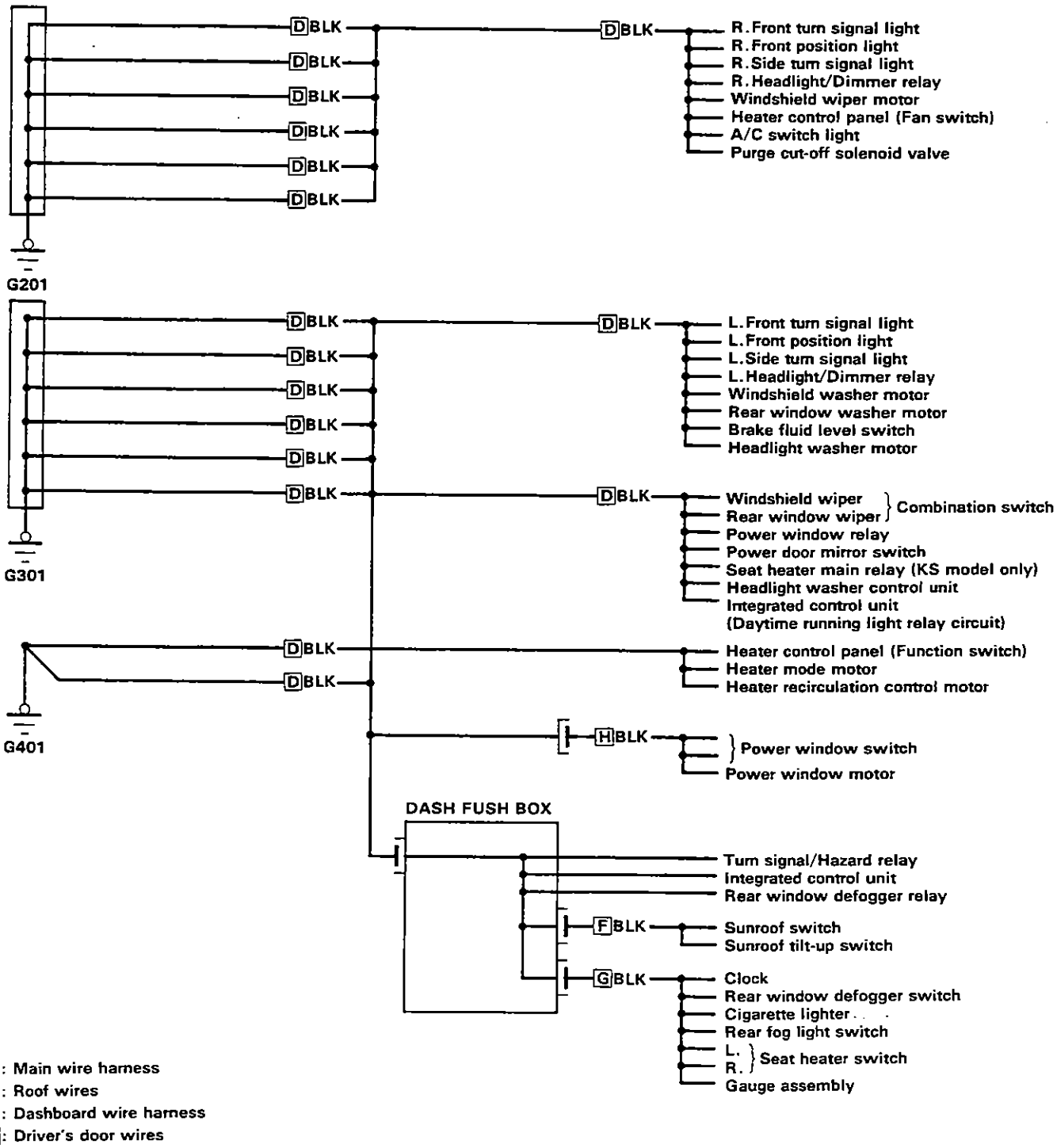
NOTE: See page 16-8 and 9 for illustrated ground locations.



A: Battery ground wire
B: Engine ground wire
C: Engine wire harness
D: Main wire harness

LHD:

NOTE: See pages 16-10 and 11 for illustrated ground locations.



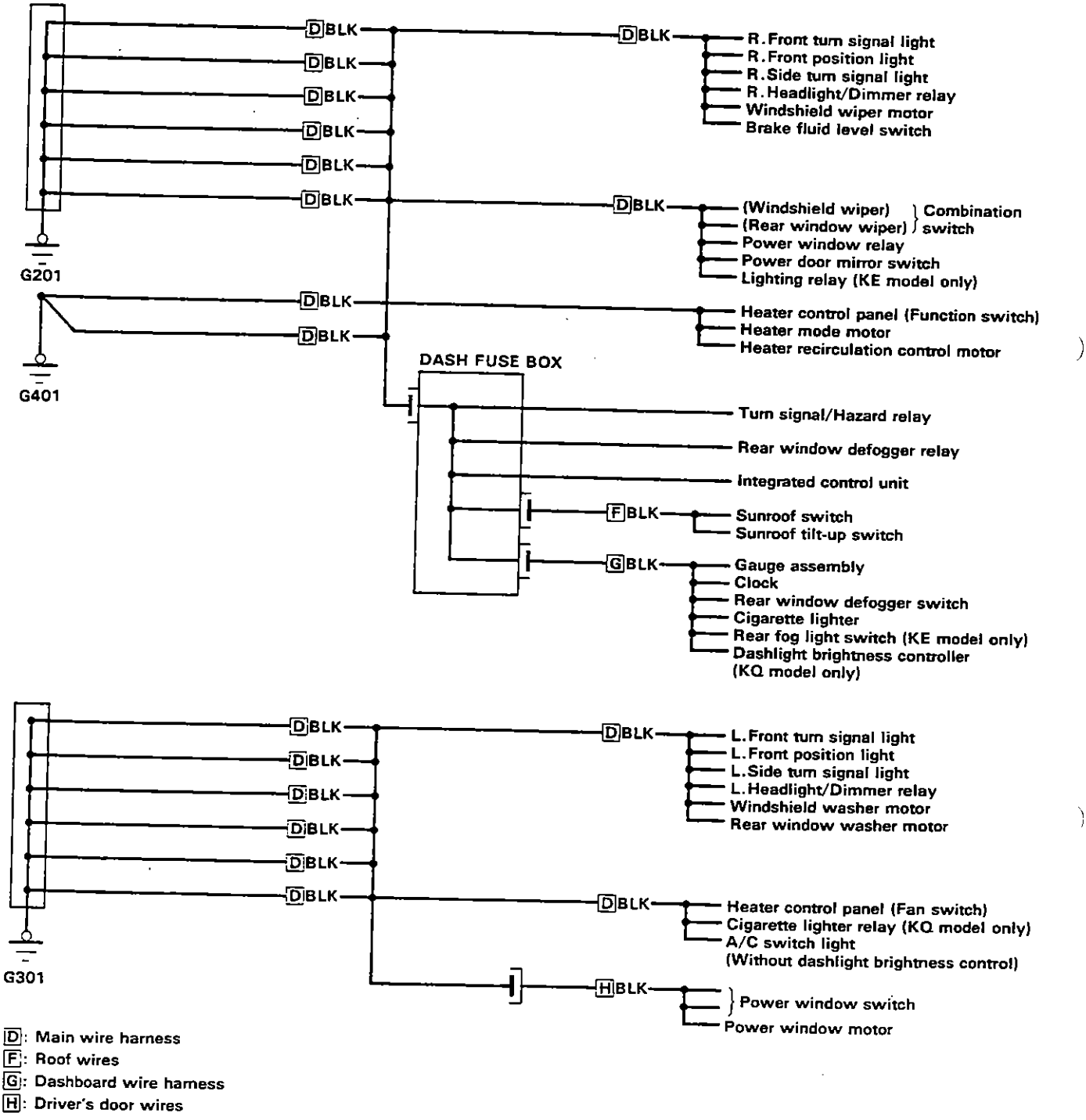
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

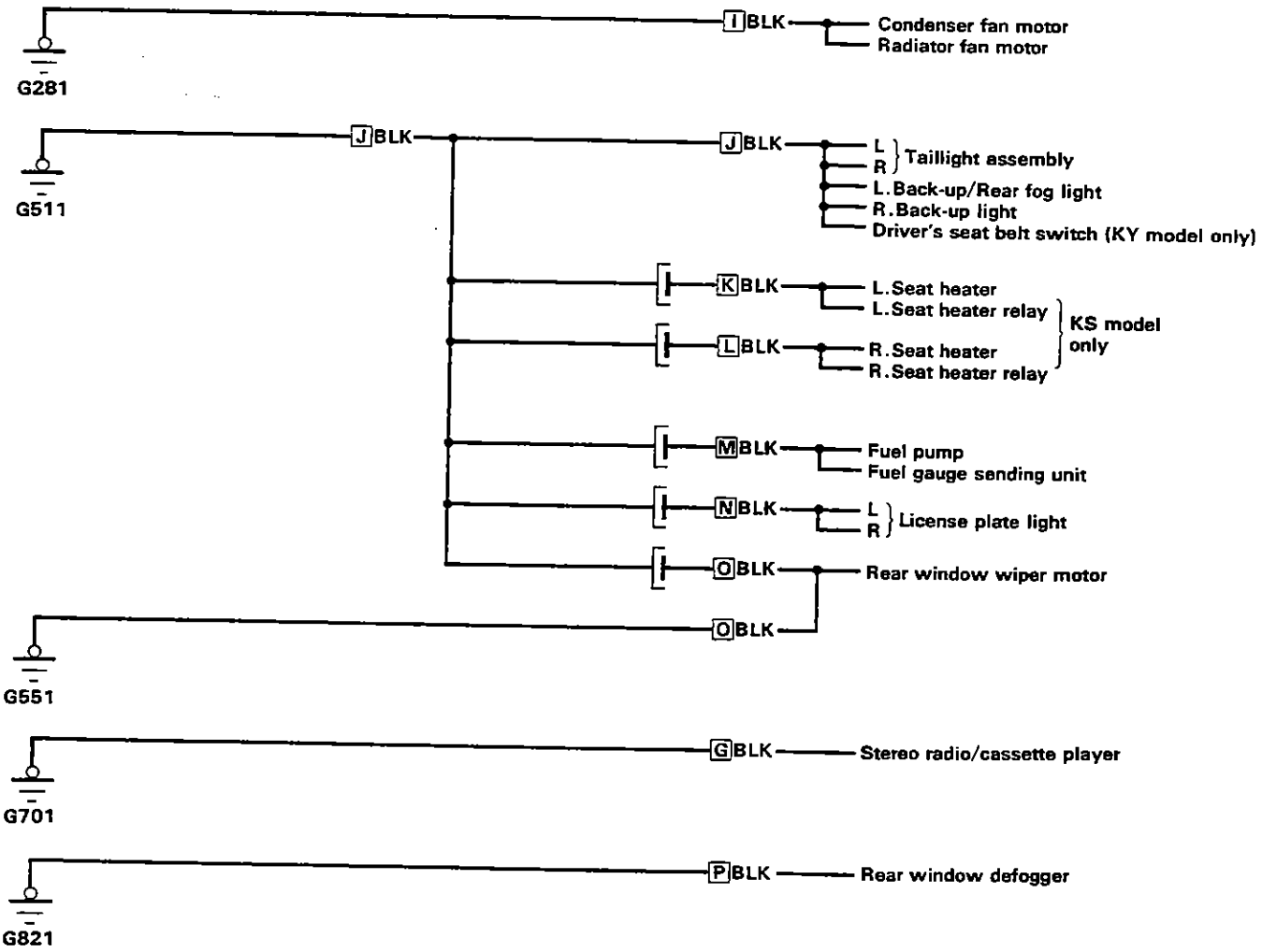
RHD:

NOTE: See pages 16-10 and 11 for illustrated ground locations.



D: Main wire harness
F: Roof wires
G: Dashboard wire harness
H: Driver's door wires

NOTE: See pages 16-12 thru 16 for illustrated ground locations.



G: Dashboard wire harness
I: A/C wire harness
J: Rear wire harness
K: Left seat heater wires
L: Right seat heater wires
M: Fuel tank wires
N: License plate light wires
O: Hatch wires
P: Defogger ground wire

Battery

Test

NOTE: To get accurate results, the temperature of the electrolyte must be between 15 and 38°C (59 and 100°F) before testing.

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.

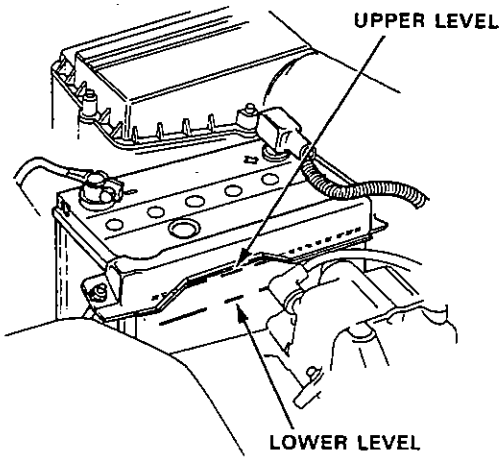
Test Procedure:

WARNING Keep sparks, flames and cigarettes away while charging battery.

CAUTION: Battery electrolyte is a sulfuric acid solution.

- If it spills on painted surfaces, clothing, or skin, rinse it off with water immediately to minimize the damage.
- Always wear safety goggles or a face shield when servicing a battery.

1. Check for damage: If the case is cracked or the posts are loose, replace the battery.
2. Check the battery electrolyte level:
   Check the electrolyte level in each cell.
   If it's low, add distilled water until the electrolyte rises to the UPPER mark.



3. Test battery load capacity by connecting a battery tester, and applying a load of 3 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, fast charge the battery by connecting a battery charger, 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 no 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 1.250).
     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 no good; replace it.

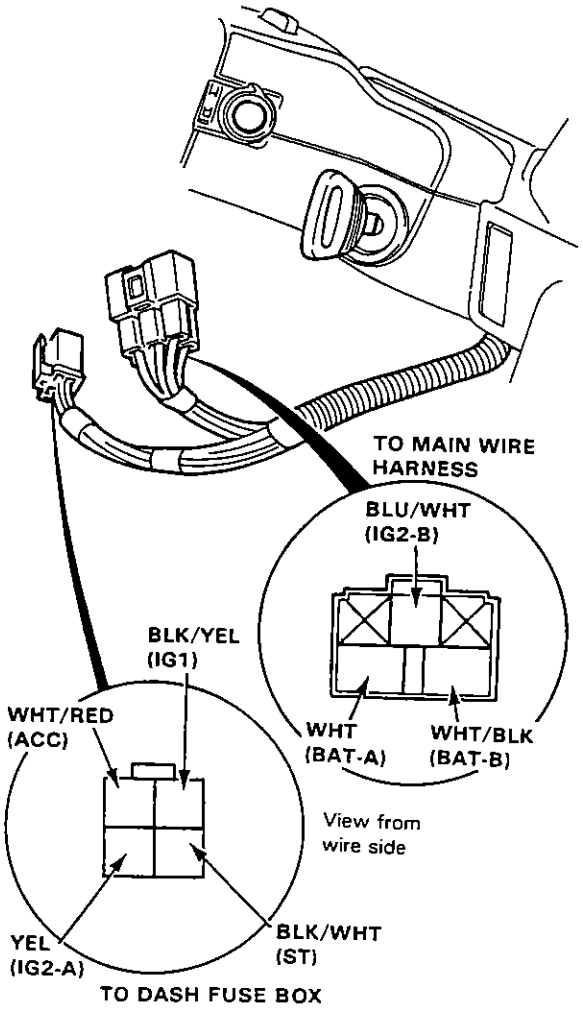


Ignition Switch

Test

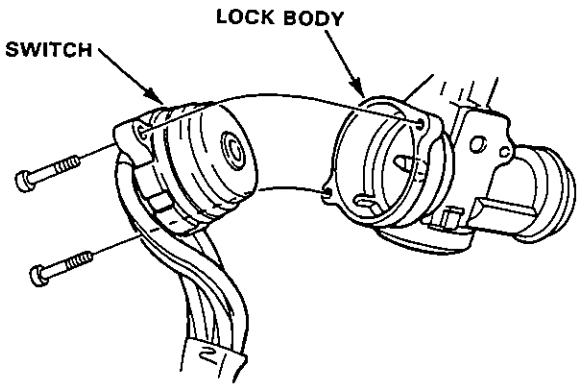
1. Remove the dashboard lower panel.
2. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	WHT/RED (ACC)	WHT/BLK (BAT -B)	BLU/WHT (IG2 -B)	WHT (BAT -A)	BLK/YEL (IG1)	YEL (IG2 -A)	BLK/WHT (ST)
O							
I	○—○						
II	○—○		○—○				
III				○—○	○—○	○—○	○—○



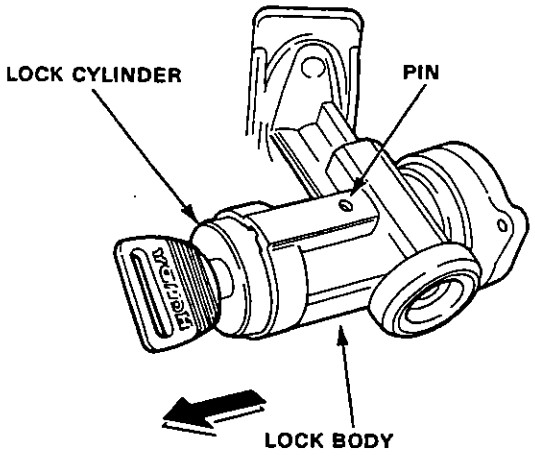
Electrical Switch Replacement

1. Remove the dashboard lower panel.
2. Remove the steering column lower cover.
3. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
4. Insert the key and turn it to "0."
5. Remove the 2 screws and replace the base of the switch

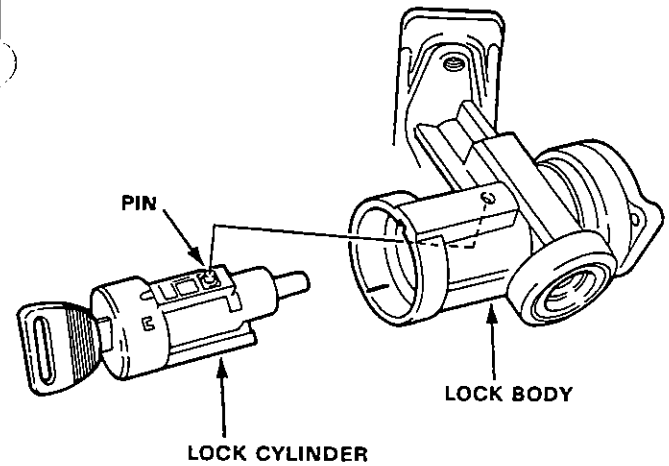


Lock Cylinder Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Turn the ignition key to "I."
4. Push the pin in and remove the lock cylinder from the lock body.



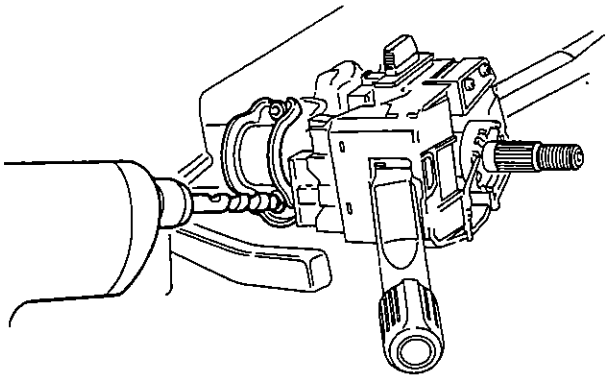
5. Turn the key to "O" and align the lock cylinder with the lock body.
6. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
7. Turn the key to the "I", push the pin and insert the lock body cylinder into the lock until the pin clicks into place.



Steering Lock Replacement

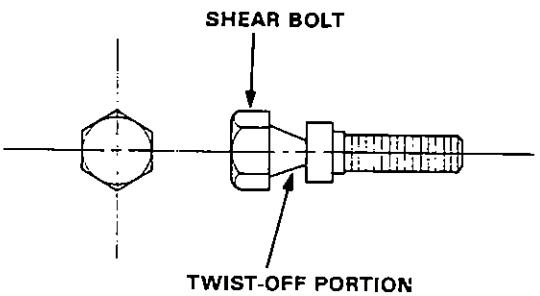
1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Center punch each of the 2 shear bolts and drill their heads off with a 3/16 in. drill bit.

   CAUTION Do not damage the switch body when removing the shear heads.
4. Remove the shear bolts from the switch body.



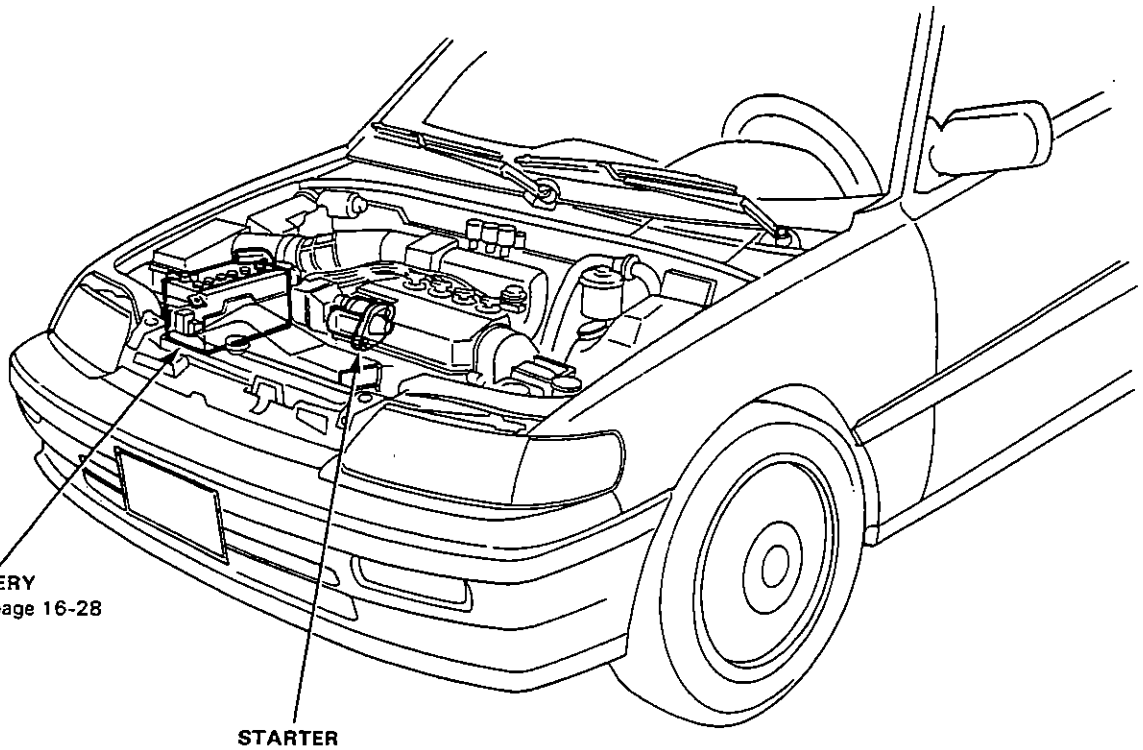
5. Install the new ignition switch without the key inserted.
6. Loosely tighten the new shear bolts.

   NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.
7. Insert the ignition key and check for proper operation of the steering wheel lock and that ignition key turns freely.
8. Tighten the shear bolts until the hex heads twist off.



Starting System

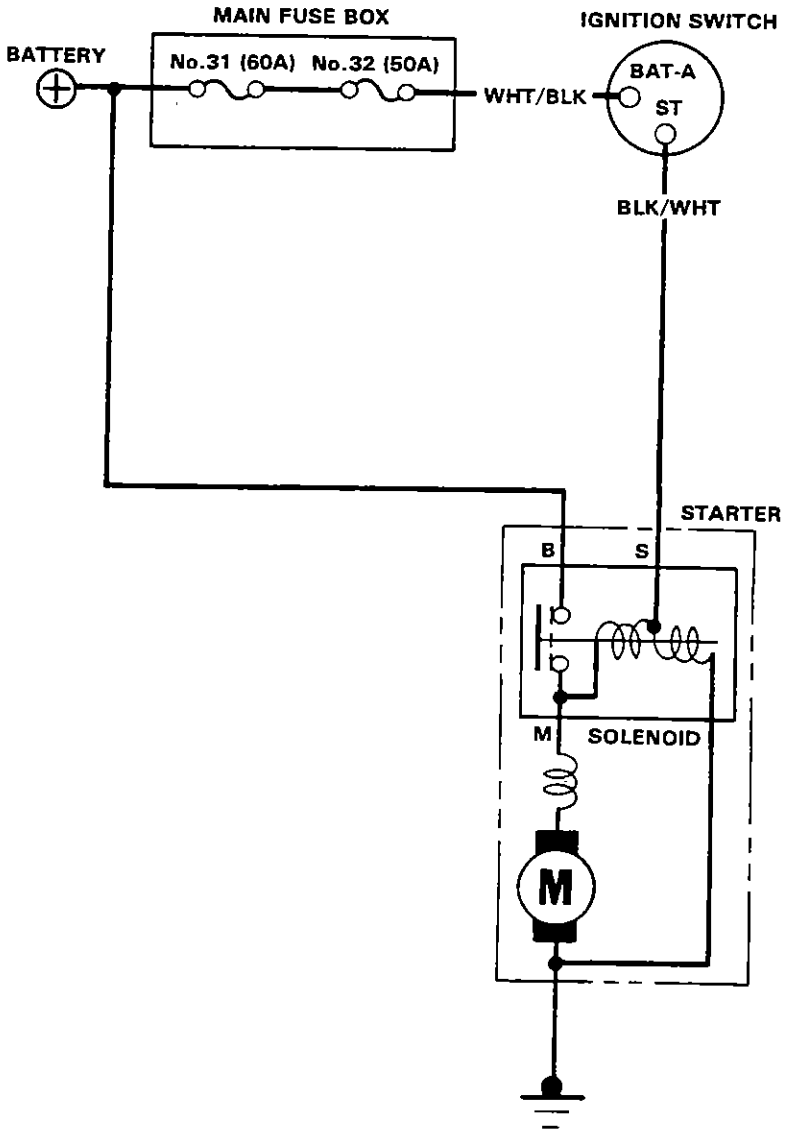
Component Location Index



BATTERY
Test, page 16-28

STARTER
Test, page 16-34
Solenoid Test, page 16-36
Replacement, page 16-37
Overhaul, page 16-38
Reassembly, page 16-44

Circuit Diagram



Starter Test

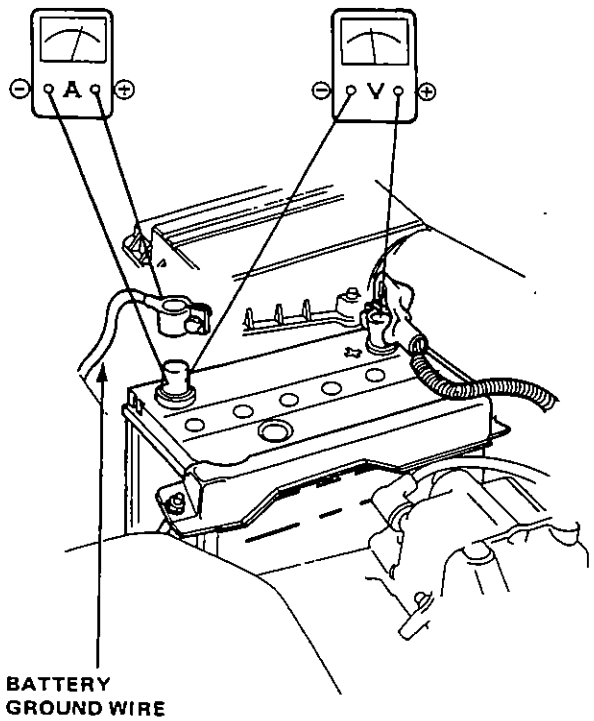
NOTE: The air temperature must be between 15 and 38°C (59 and 100°F) before testing. .

Recommended Procedure:

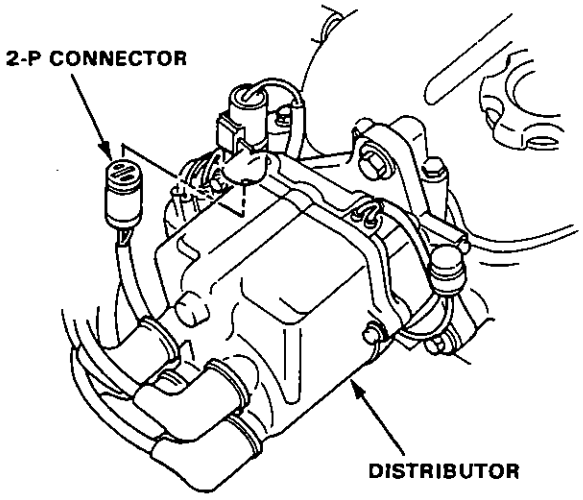
Use a starter system tester.
Connect and operate the equipment in accordance with manufacturer's instructions.
Test and troubleshoot as described.

Alternate Procedure:

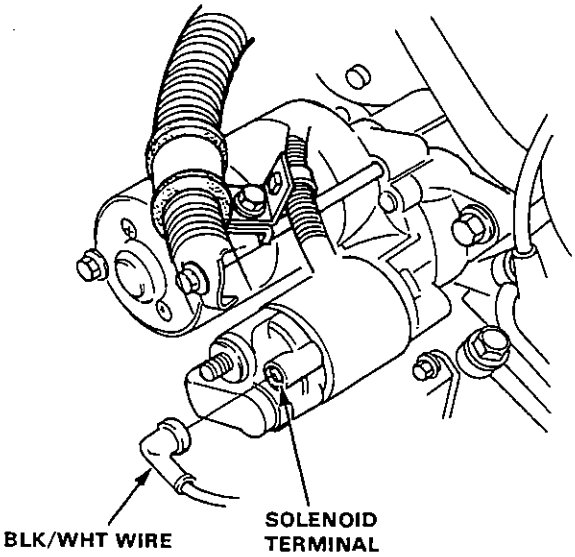
- Use the following equipment:
  - Ammeter, 0–400 A
  - Voltmeter, 0–20 V (accurate within 0.1 volt)
  - Tachometer, 0–1200 rpm
- Hook up voltmeter and ammeter as shown.



1. Disconnect the 2-P connector (Ignition coil primary lead) from the distributor.



2. Check the starter engagement:
   Turn the ignition switch to "Start". The starter should crank the engine.
   - If the starter does not crank the engine, check the battery, battery positive wire and ground, and the wire connections for looseness or corrosion.
   - Test again.
     If the starter still does not crank the engine, bypass the ignition switch circuit as follows:
     Unplug the connector (BLK/WHT wire) from the starter. Connect a jumper wire from the battery positive (+) terminal to the solenoid terminal. The starter should crank the engine.



– If the starter still does not crank the engine, remove the starter and diagnose its internal problems.

– If the starter cranks the engine, check for an open in the BLK/WHT wire circuit between the starter and ignition switch, and connectors. Check the ignition switch.

3. Check for wear or damage:
The starter should crank the engine smoothly and steadily.

If the starter engages, but cranks the engine erratically, remove the starter motor. Inspect the starter, drive gear, and flywheel ring gear for damage.
Check the drive gear overrunning clutch for binding or slipping when the armature is rotated with the drive gear held. Replace the gears if damaged.

4. Check cranking voltage and current draw.
Voltage should be no less than specified below:
1.2kwand1.4kw: 8 volts
Current should be no greater than specified below:
1.2 kw: 280 amperes
1.4 kw: 350 amperes

If voltage is too low, or current draw too high, check for:

- Battery fully charged.
- Open circuit in starter armature commutator segments.
- Starter armature dragging.
- Shorted armature winding.
- Excessive drag in engine.

5. Check cranking min^{-1} (rpm):
Engine speed during cranking should be above 100 min^{-1} (rpm).

- Loose battery or starter terminals.
- Excessively worn starter brushes.
- Open circuit in commutator segments.
- Dirty or damaged helical spline or drive gear.
- Defective drive gear overrunning clutch.

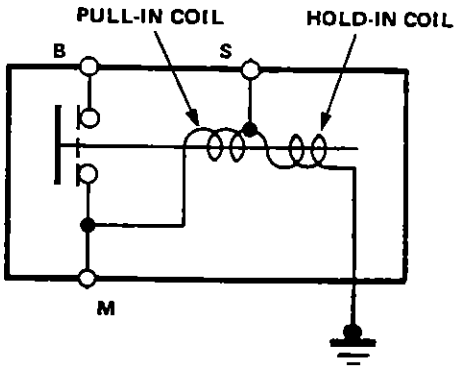
6. Check the starter disengagement:
Turn the ignition switch to "Start" and release to "Run." The starter drive gear should disengage from the flywheel ring gear.

If the drive gear hangs up on the flywheel ring gear, check:

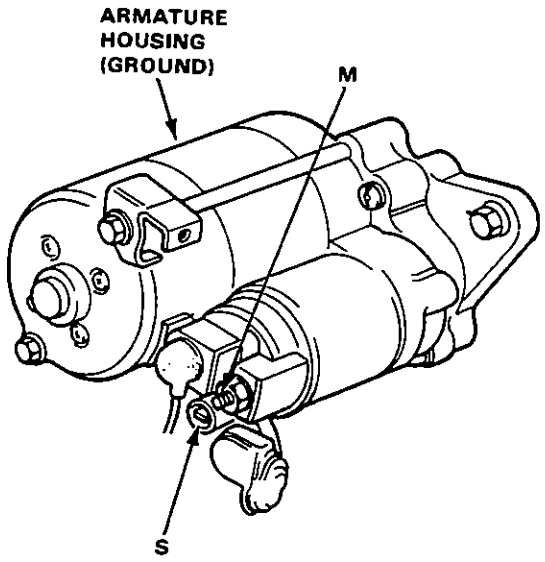
- Solenoid plunger and switch for malfunction.
- Drive gear assembly for dirty or damaged overrunning clutch.

Starter Solenoid Test

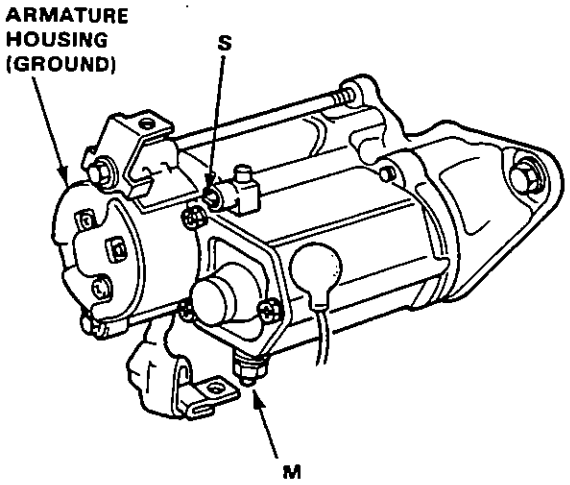
1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground).
   Coil is OK if there is continuity.
2. Check the pull-in coil for continuity between the S and M terminals.
   Coil is OK if there is continuity.



Mitsuba (1.4 kw) type:

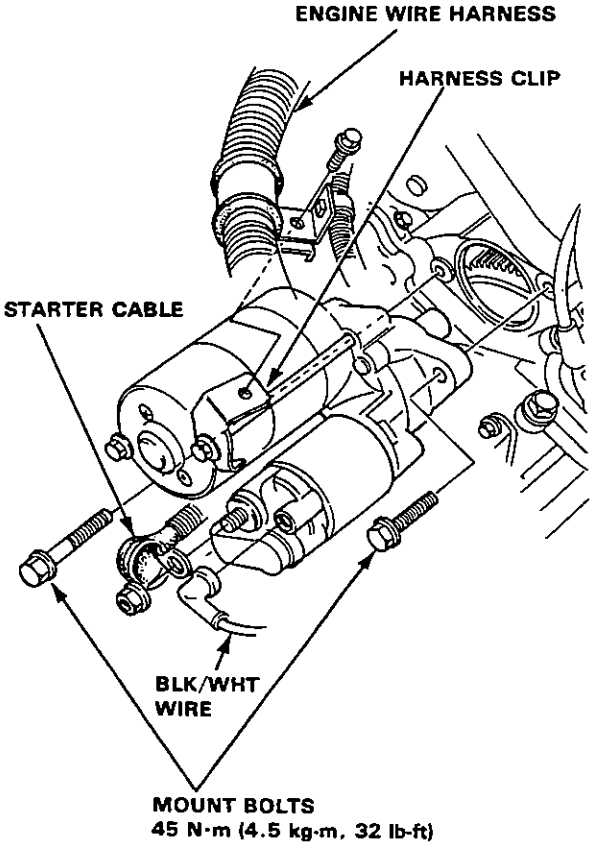


Nippon Denso (1.2 kw) type:



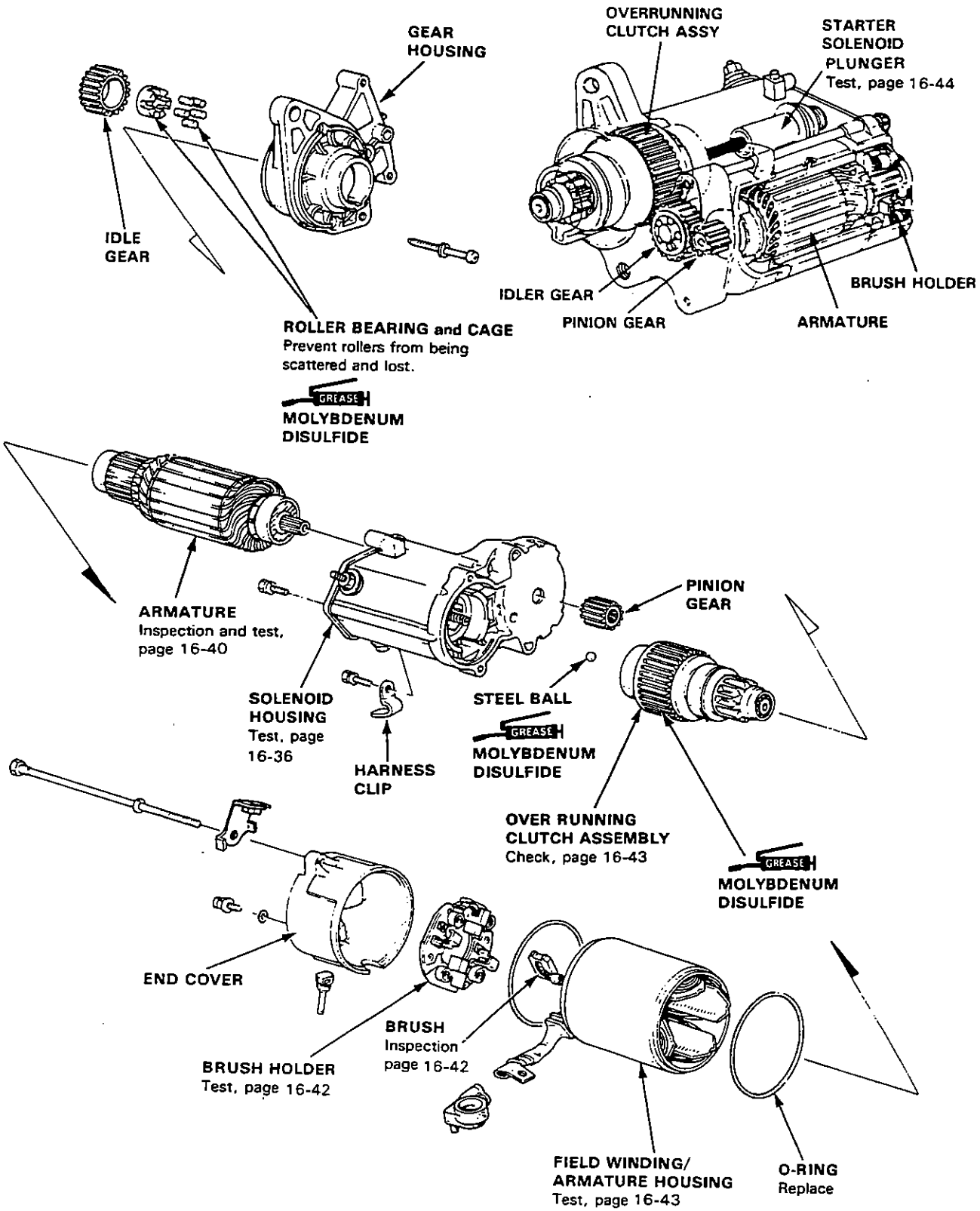
Starter Replacement

1. Disconnect the ground wire from the battery negative (−) post.
2. Remove the engine wire harness from the harness clip on the starter motor.
3. Disconnect the starter cable from the B terminal on the solenoid, and the BLK/WHT wire from the S terminal.
4. Remove the 2 bolts holding the starter, and remove the starter.



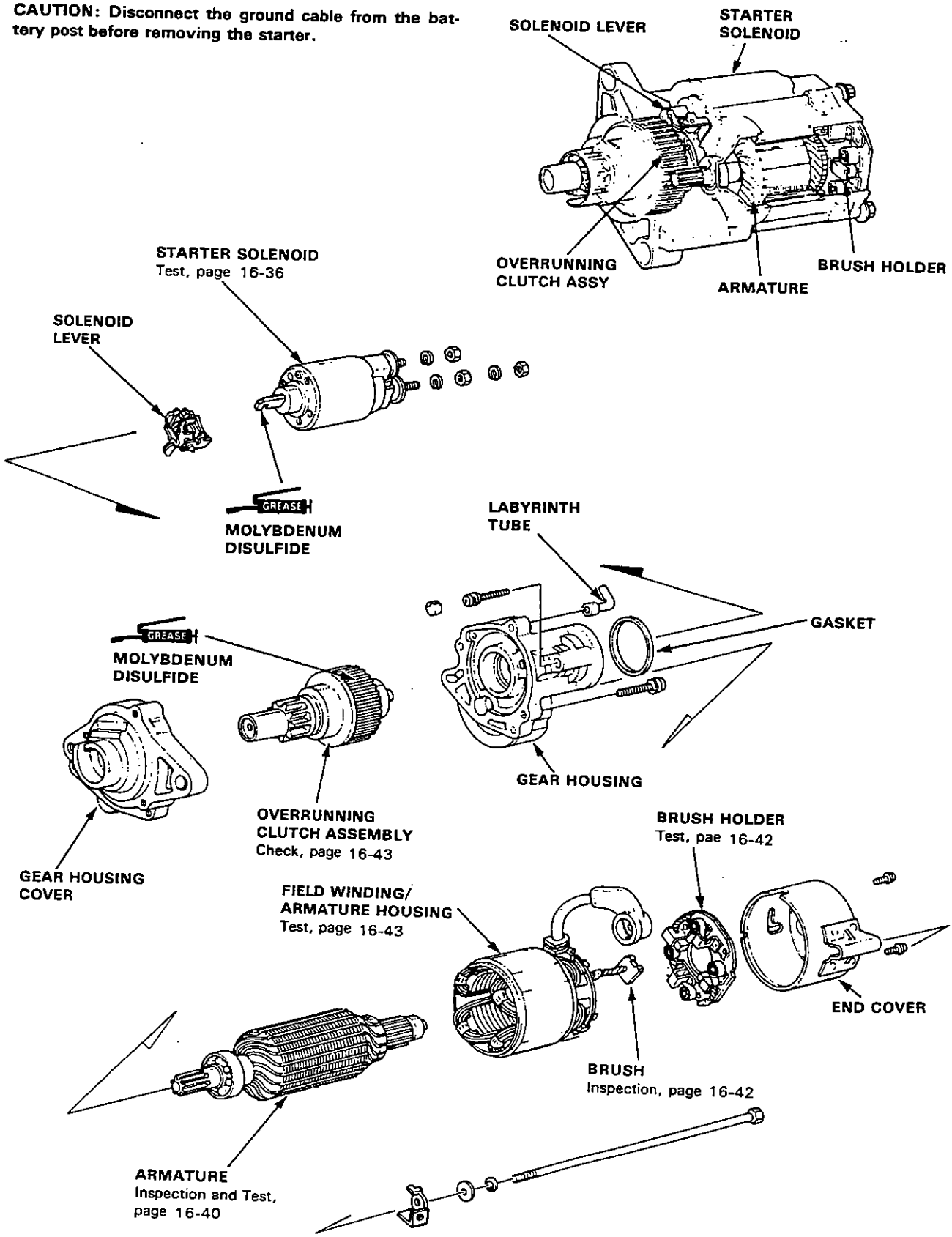
Starter Overhaul (Gear Reduction ND type)

CAUTION: Disconnect ground wire from the battery post before removing the starter.



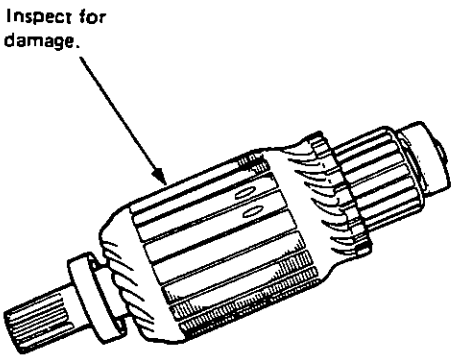
(Gear Reduction Mitsuba type)

CAUTION: Disconnect the ground cable from the battery post before removing the starter.



Armature Inspection and Test

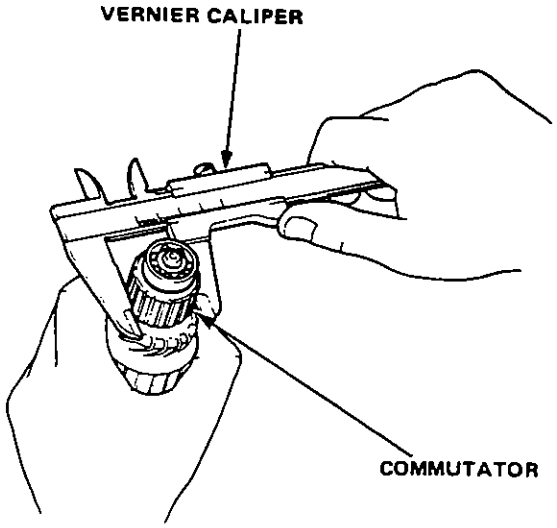
1. Inspect the armature for wear or damage due to contact with the field coil magnets.



2. A dirty or burnt commutator surface may be resurfaced with emery cloth or a lathe within the following specifications.

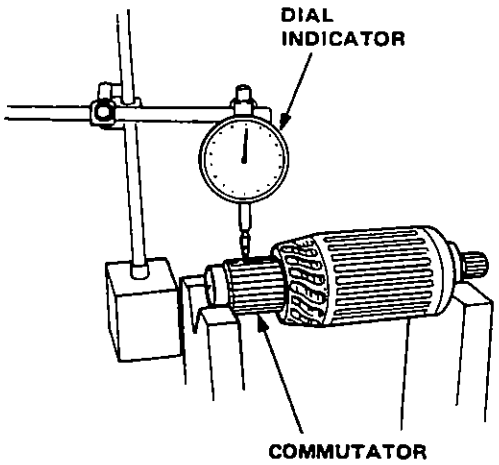
Commutator Diameter

	Standard (New)	Service Limit
ND	28.0—30.0 mm (1.177—1.181 in)	29.0 mm (1.14 in)
Mitsuba	26.0—28.1 mm (1.102—1.106 in)	27.5 mm (1.08 in)



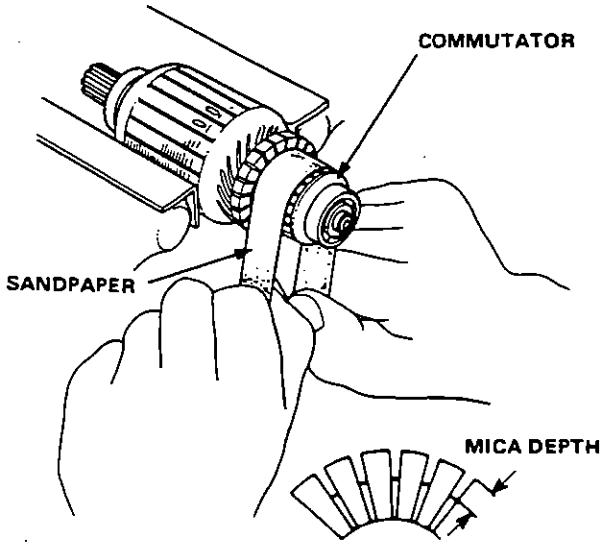
Commutator Runout

	Standard (New)	Service Limit
ND and Mitsuba	0—0.02 mm (0—0.001 in)	0.05 mm (0.002 in)



3. If the commutator runout and diameter are within limits, check the commutator for damage or for carbon dust or brass chips between the segments.

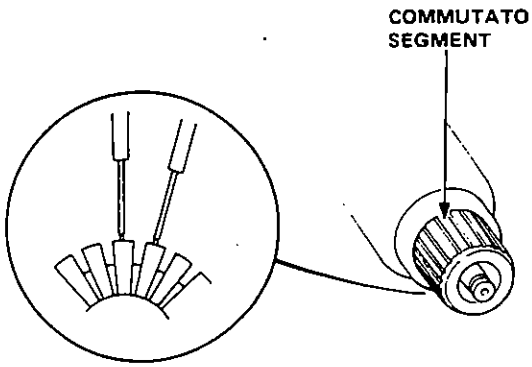
4. If surface is dirty, recondition it with a #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth.



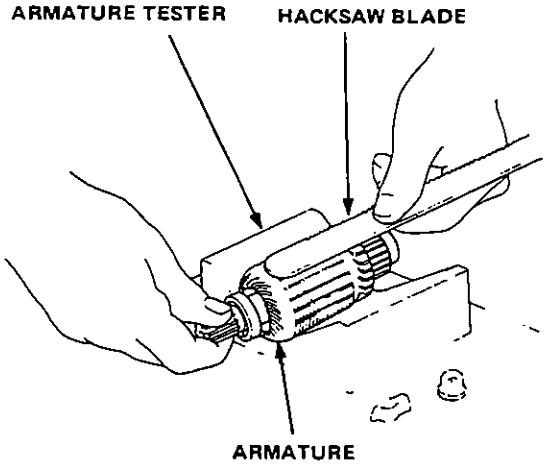
Commutator Mica Depth

	Standard (New)	Service Limit
ND	0.5—0.8 mm (0.020—0.031 in)	0.2mm (0.008 in)
Mitsuba	0.4—0.5mm (0.016—0.020 in)	0.15 mm (0.006 in)

5. Check for continuity between each segment of the commutator. If an open circuit exists between any segment, replace the armature.

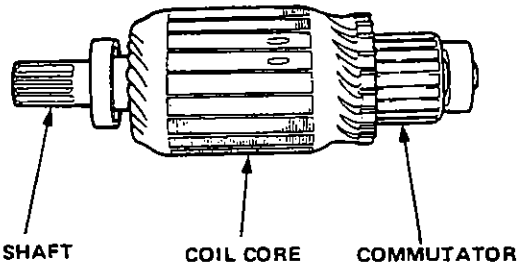


6. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.



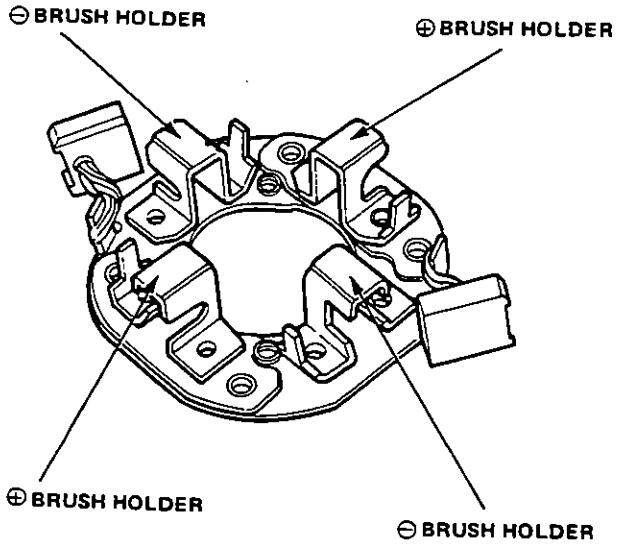
If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

7. With an ohmmeter, check that no continuity exists between the commutator and armature coil core, and between the commutator and armature shaft.
If continuity exists, replace the armature.



Starter Brush Holder Test

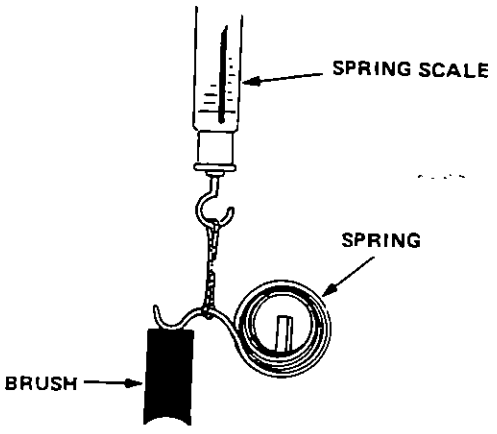
1. Check that there is no continuity between the ⊕ and ⊖ brush holders.
   If continuity exists, replace the brush holder assembly.



2. Insert the brush into the brush holder, and bring the brush into contact with commutator, then attach a spring scale to the spring. Measure the spring tension at the moment the spring lifts off the brush.

Spring Tension:

ND: 18.5—24.4 N (1.85—2.44 kg, 4.1—5.41 lb)
Mitsuba: 20.5—27.0 N (2.05—2.70 kg, 4.5—6.016 lb)

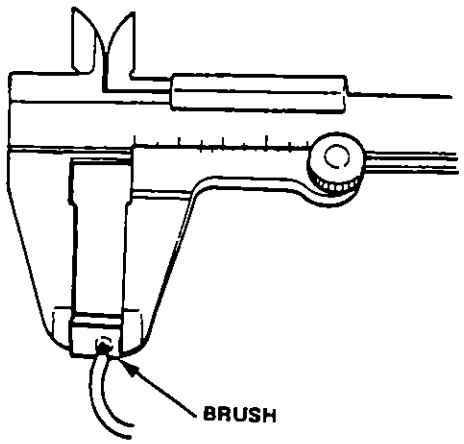


Starter Brush Inspection

Measure brush length. If not within service limit, replace the armature housing and brush holder assembly.

Brush Length

	Standard (New)	Service Limit
ND	12.5—13.5 mm (0.49—0.53 in)	8.5 mm (0.33 in)
Mitsuba	14.3—14.7 mm (0.56—0.58 in)	9.3mm (0.37in)

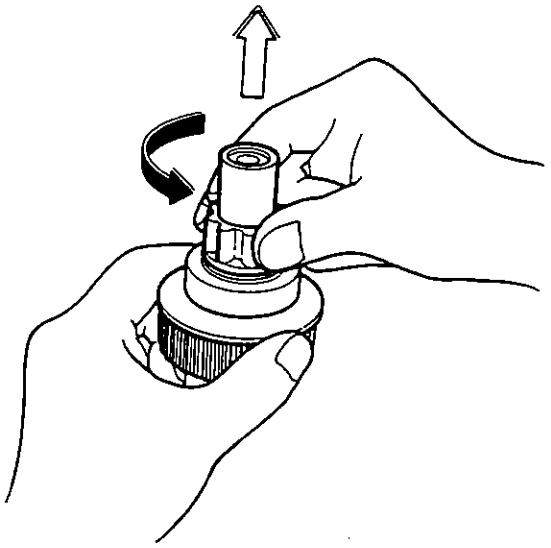


NOTE: To seat new brushes after installing them in their holders, slip a strip of #500 or #600 sandpaper, with the grit side up, over the commutator, and smoothly rotate the armature. The contact surface of the brushes will be sanded to same contour as the commutator.

Overrunning Clutch Check

1. Check if the overrunning clutch moves along the shaft freely. If not, replace the overrunning clutch assembly.

2. Check if the overrunning clutch locks in one direction and rotates smoothly in reverse. If it does not lock in either direction or it locks in both directions, replace the overrunning clutch assembly.



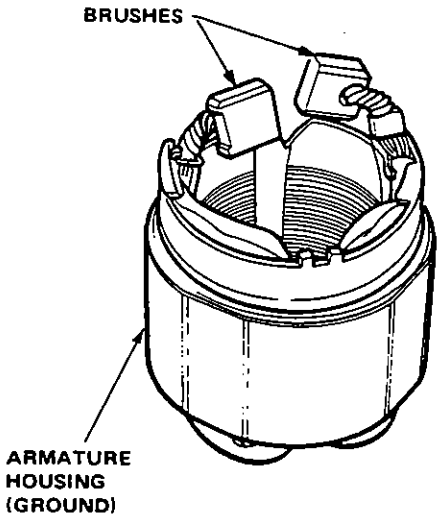
3. Check if the starter drive gear is worn or damaged. If the gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

   NOTE: Check condition of the flywheel if the starter drive gaer teeth are damaged.

Starter Field Winding Test

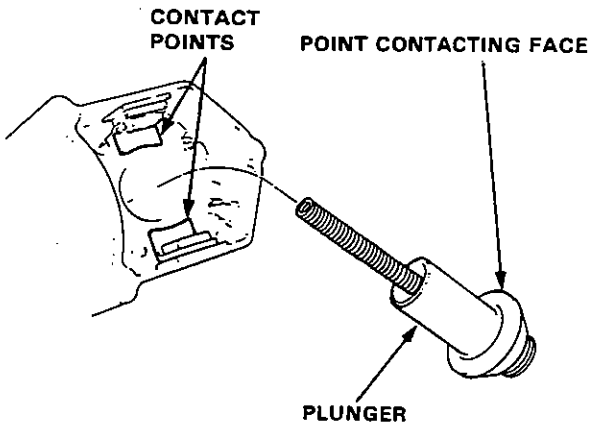
1. Check for continuity between the brushes. If no continuity, replace the armature housing.

2. Check for continuity between each brush and the armature housing (ground).
   If continuity exists, replace the armature housing.



Solenoid Plunger Inspection (ND type)

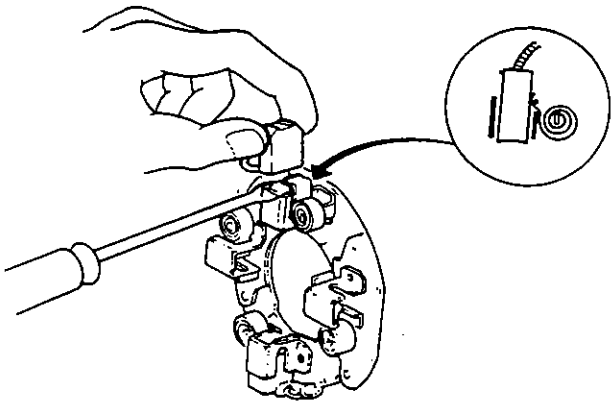
Check the contact points, and face of the starter solenoid plunger for burning, pitting or any other defects. If surfaces are rough, recondition with a strip of #500 or #600 sandpaper.



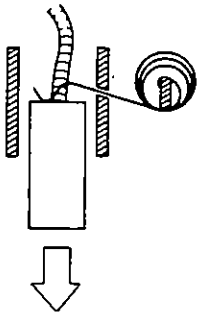
Starter Reassembly

Reassemble the starter in the reverse order of disassembly.

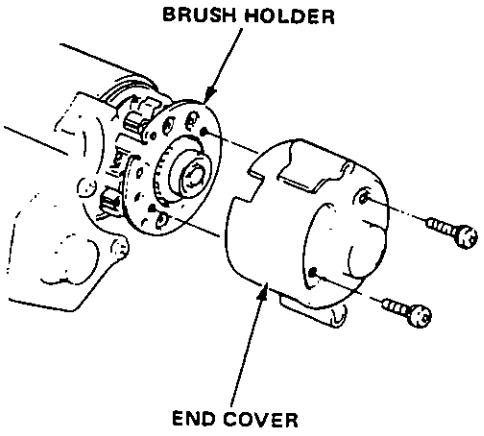
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



2. Install the armature in the housing. 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.



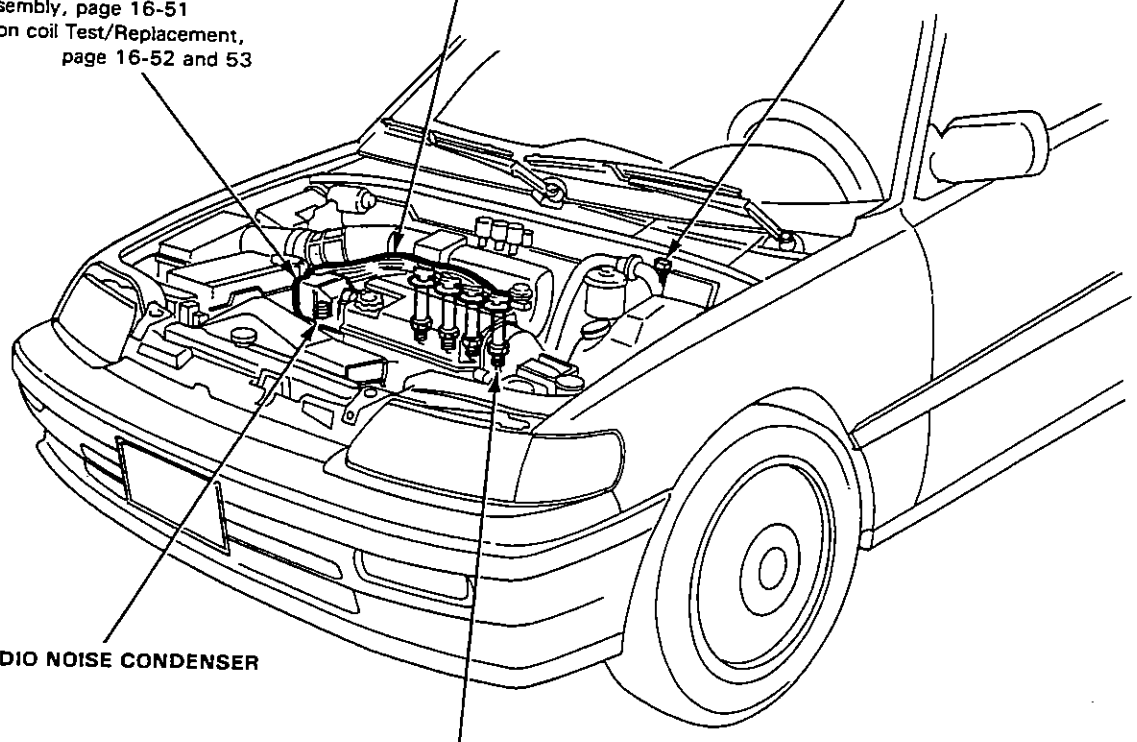
3. Install the end cover on the brush holder.



Ignition System

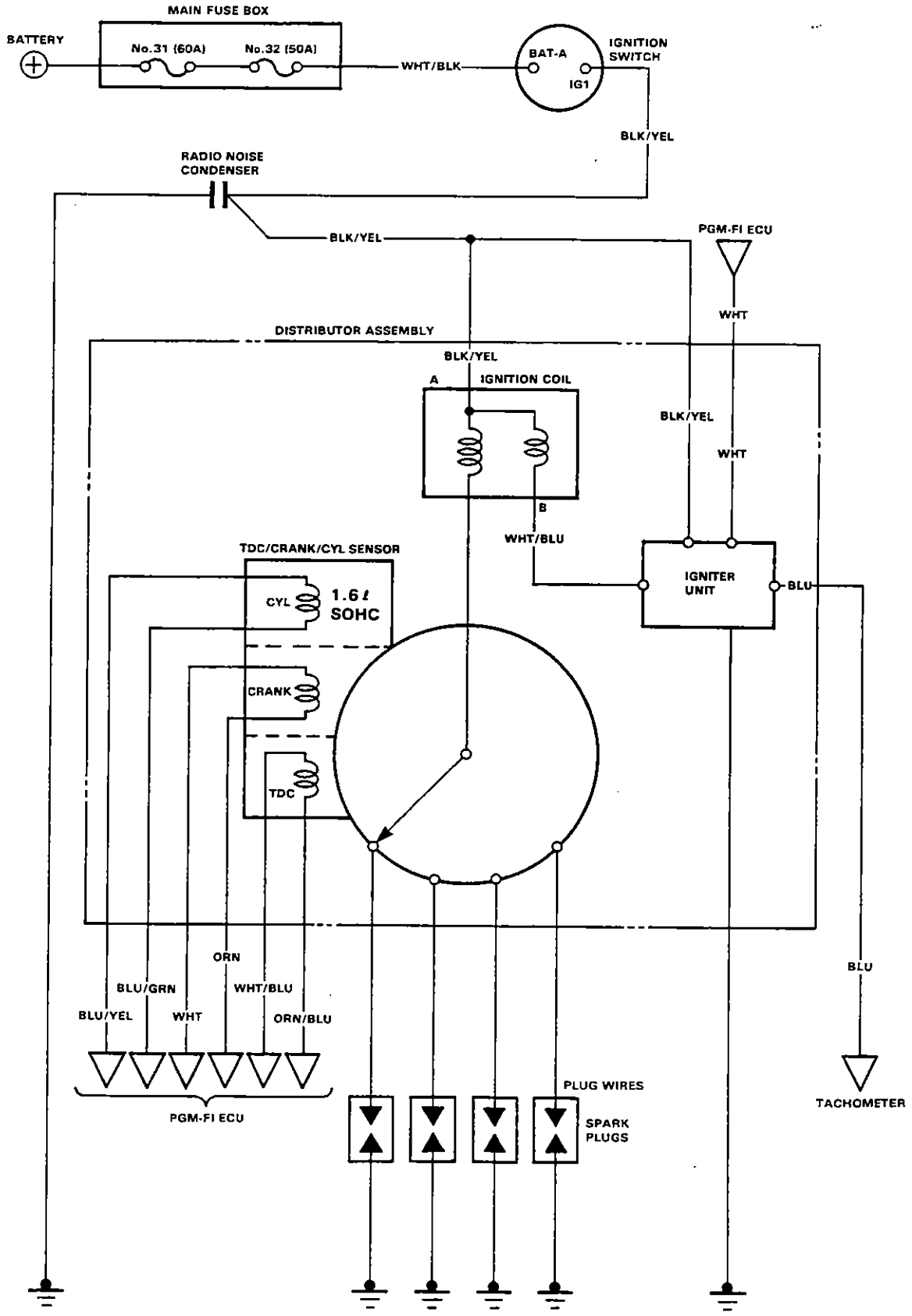
—Component Location Index

IGNITION TIMING CONTROL SYSTEM
Troubleshooting, section 5
Inspection and Setting, page 16-47



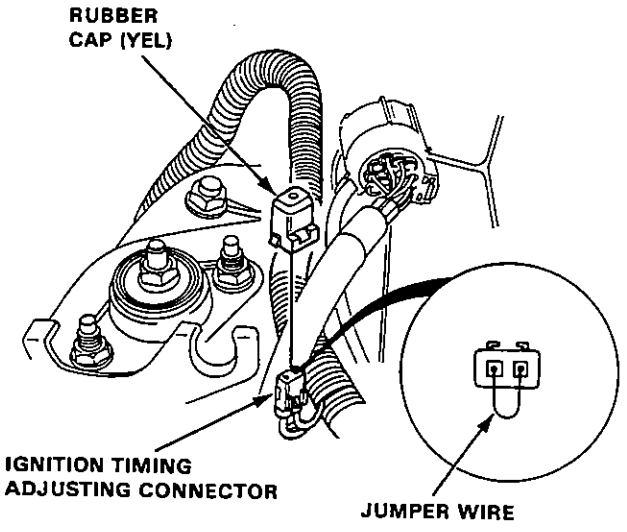
Ignition System

Circuit Diagram

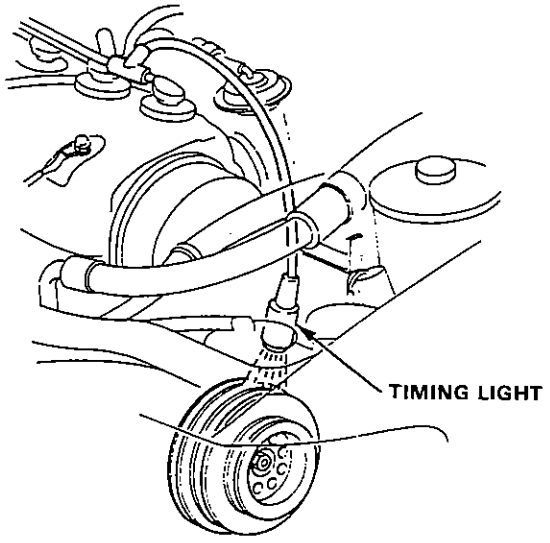


Ignition Timing Inspection and Setting

1. Start the engine and allow it to warm up (cooling fan comes on).
2. Remove the rubber cap (YEL) from the ignition timing adjusting connector located left rear engine compartment and connect the BRN and GRN/WHT terminals with a jumper wire.



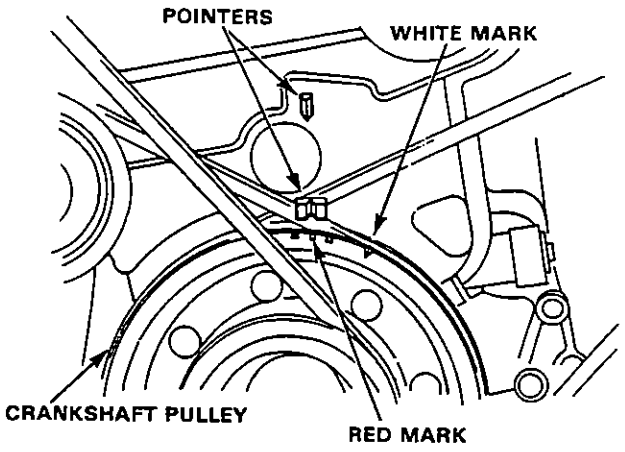
3. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



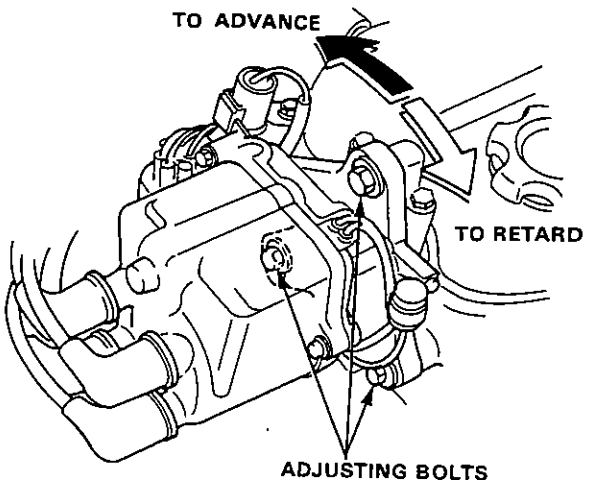
4. Adjust ignition timing, if necessary, to the following specifications:

Ignition Timing

1.6ℓ SOHC (With CATA):
18°±2°BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral
1.6ℓ SOHC (Without CATA):
18°±2°BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral
1.6ℓ DOHC (EX. KQ model):
16°±2°BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral
1.6ℓ DOHC (KQ model):
16°±2°BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral



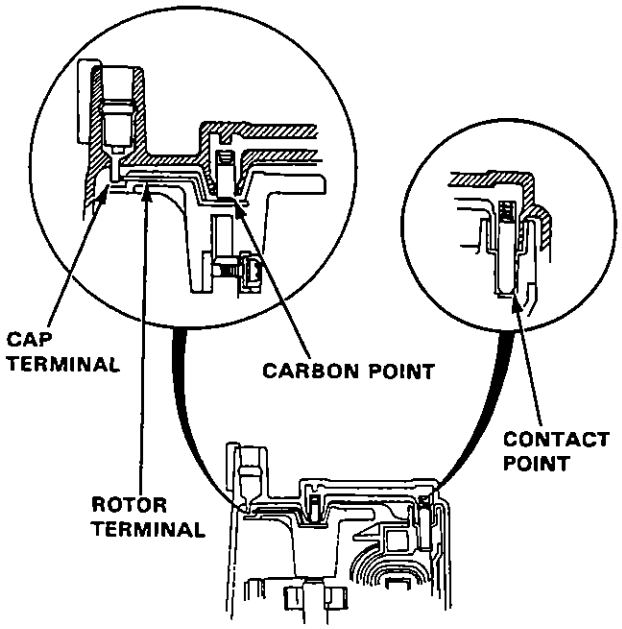
5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counterclockwise to advance the timing, or clockwise to retard the timing.



6. Tighten the adjusting bolts and recheck the timing.
7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

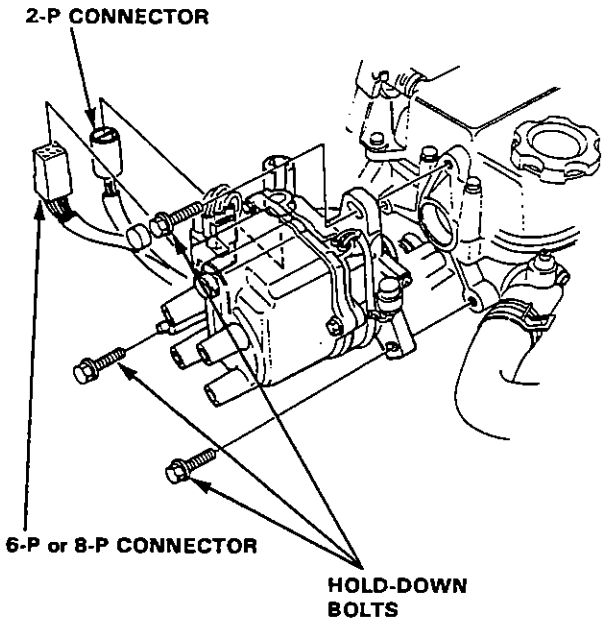
Distributor Top End Inspection

1. Check for rough or pitted rotor and cap terminals.
2. Scrape or file off the carbon deposits.
   Smooth the rotor terminal with an oil stone or #600 sandpaper if rough.
3. Check the distributor cap for cracks, wear and damage. If necessary, clean or replace it.



Distributor Removal

1. Disconnect the 2-P and 6-P or 8-P connectors from the distributor.
2. Disconnect the spark pulg wires from the distributor cap.

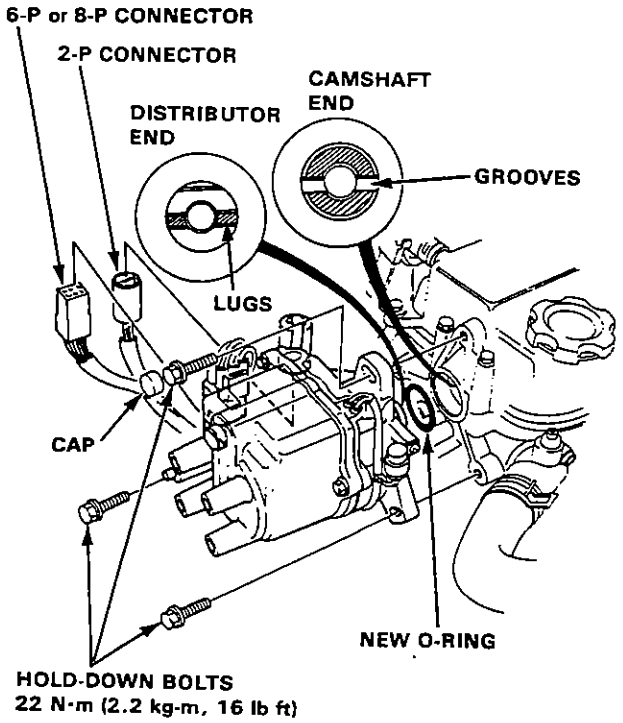


3. Remove the distributor hold-down bolts, then remove the distributor from the cylinder head.

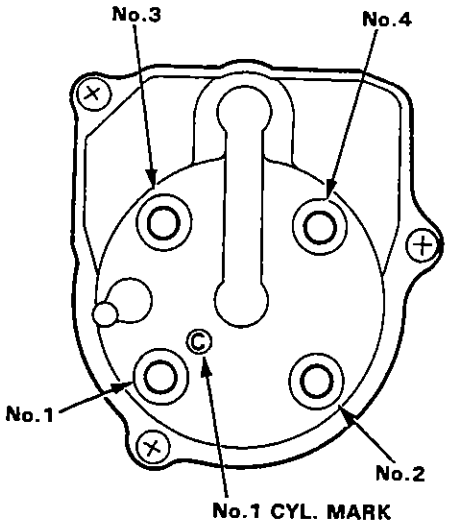
Distributor Installation

1. Coat a new O-ring with engine oil then install it.
2. Slip the distributor into position.

   NOTE: The lugs on the end of the distributor and its mating grooves in the camshaft end are both offset to eliminate the possibility of installing the distributor 180° out of time.

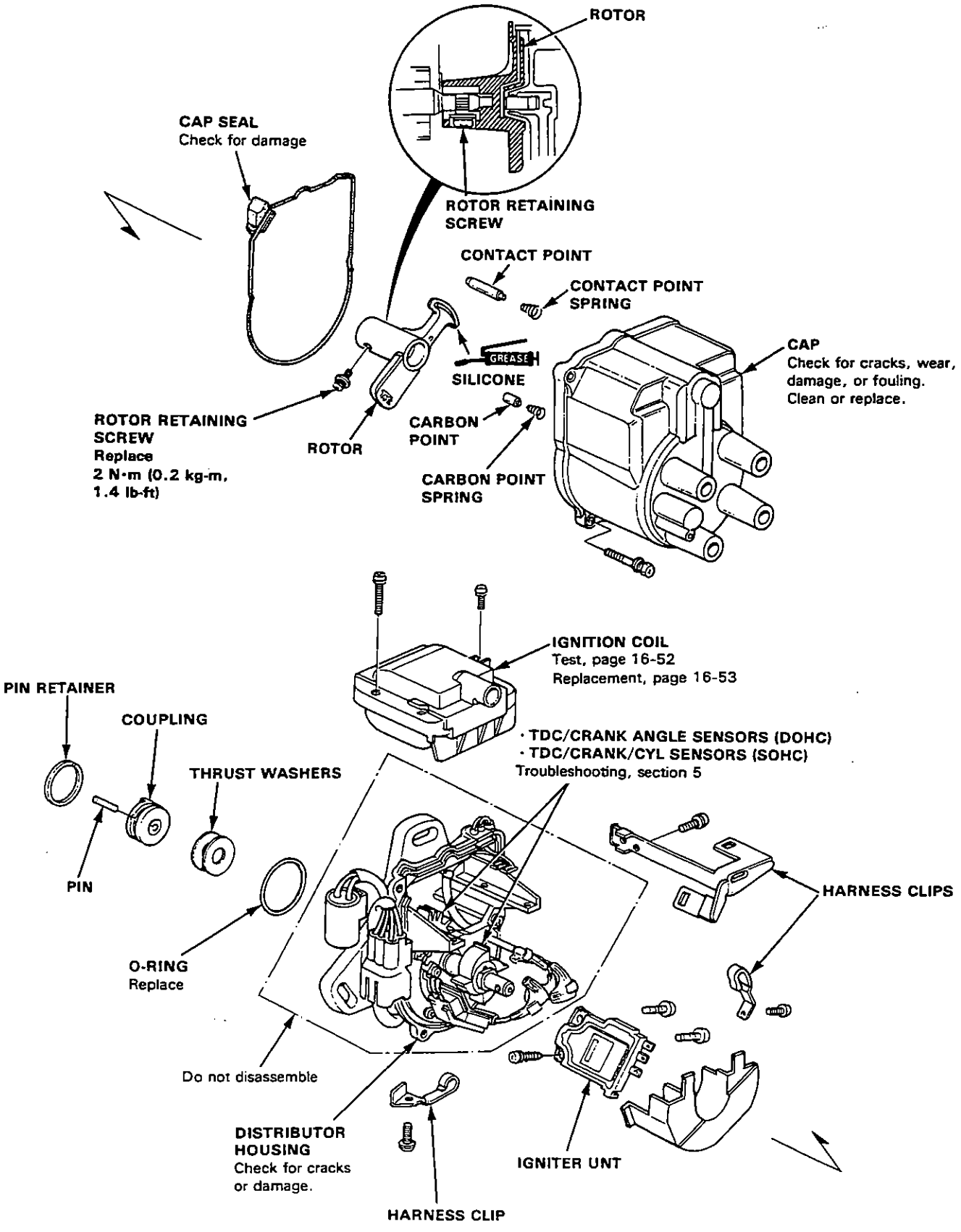


3. Install the hold-down bolts and tighten temporarily.
4. Connect the 2-P and 6-P or 8-P connectors to the distributor.
5. Connect the spark plug wires as shown.



6. Set the timing with a timing light as shown on page 16-47.
7. After adjusting, tighten the hold- down bolts, then install the cap on the bolt.

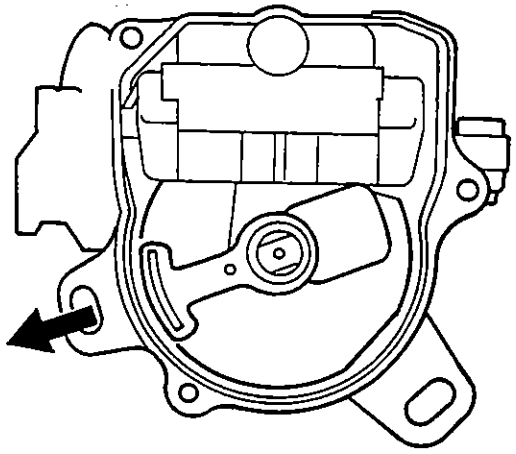
Distributor Overhaul



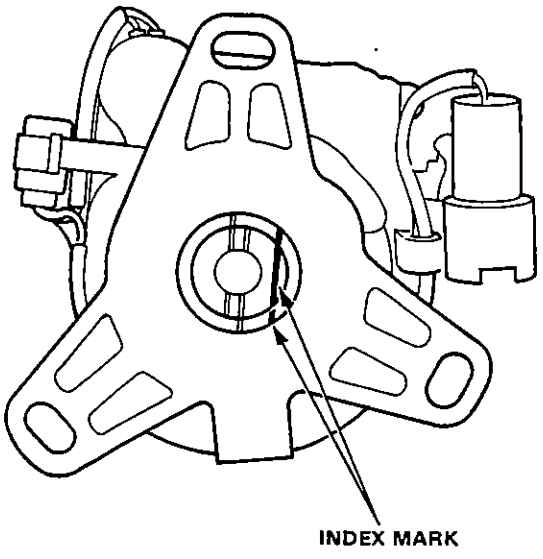
Distributor Reassembly

Reassemble the distributor in the reverse order of disassembly.

1. Install the rotor, then turn it so that it faces in the direction shown (toward the No. 1 cylinder).



2. Set the thrust washer and coupling on the shaft.
3. Check that the rotor is still pointing toward the No. 1 cylinder, then align the index mark on the housing with the index mark on the coupling.

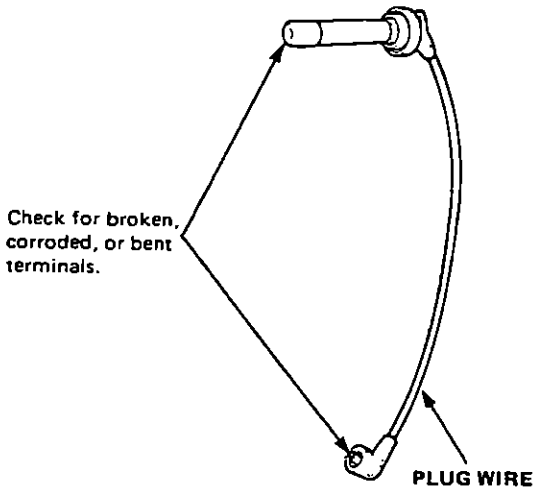


4. Drive in the pin and secure it with the pin retainer.

Ignition Wire Inspection and Test

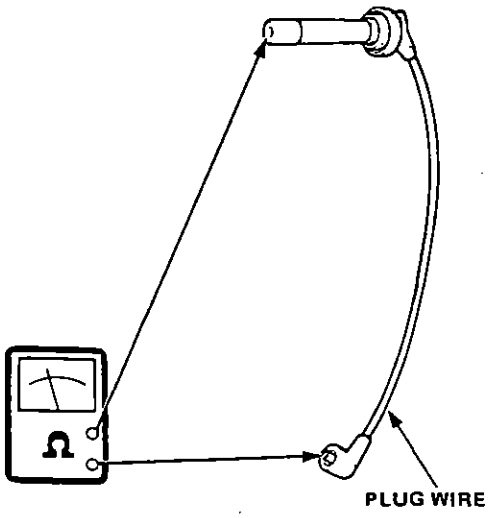
CAUTION: Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wire or the conductor may be broken.

1. Check the condition of the wire terminals. If any terminal is corroded, clean it, and if it is broken or distorted, replace the wire.



2. Connect ohmmeter probes and measure resistance.

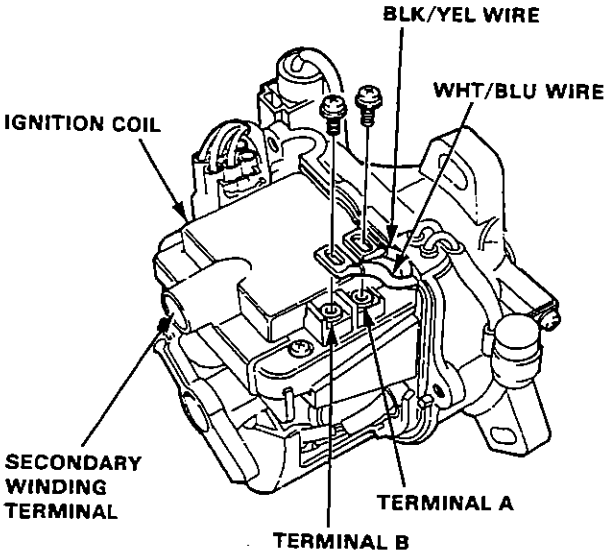
Ignition Wire Resistance:
25,000 ohms max. at 20°C (70°F)



3. If resistance exceeds 25,000 ohms, replace the ignition wire.

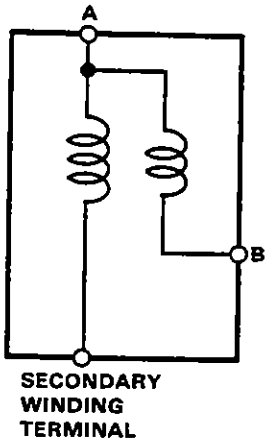
Ignition Coil Test

1. With the ignition switch OFF, remove the distributor cap.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.



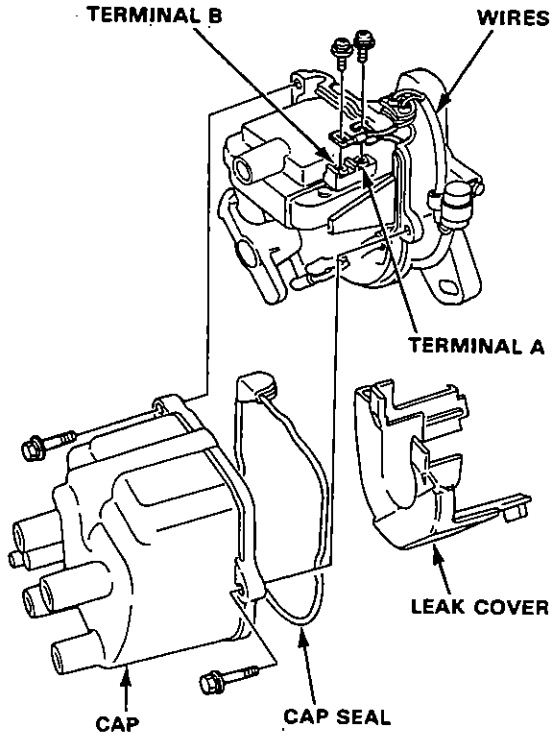
3. Using an ohmmeter, measure resistance between the terminals. Replace the coil if the resistance is not within specifications.
NOTE: Resistance will vary with the coil temperature; specifications are at 20°C (70°F)

Primary Winding Resistance (between the A and B terminals): 0.3—0.5 ohms
Secondary Winding Resistance (between the A and secondary winding terminanls): 9,440—14,160 ohms

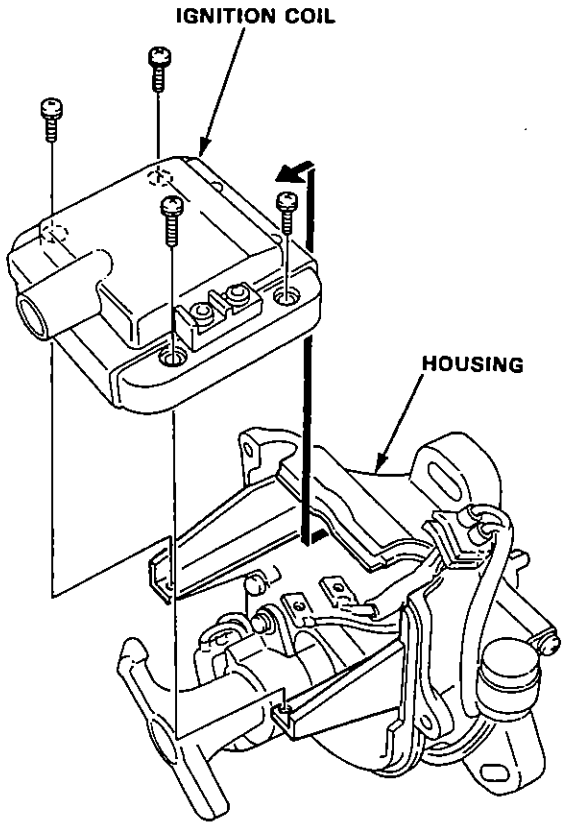


Ignition Coil Replacement

1. With ignition switch OFF, remove the distributor cap and cap seal, then remove the leak cover.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.

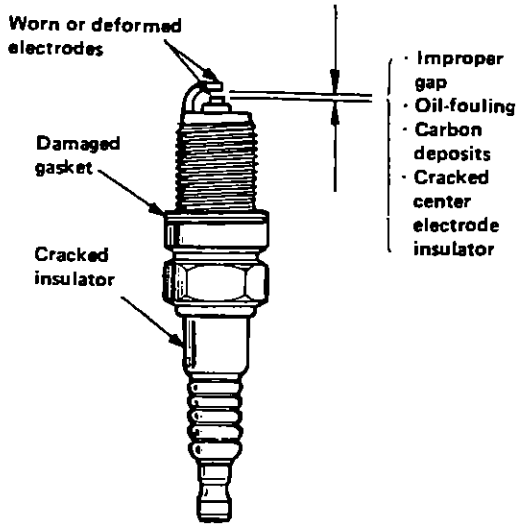


3. Remove the 4 screws and slide the ignition coil out of the distributor housing.



Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



Burned or worn electrodes may be caused by:
- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

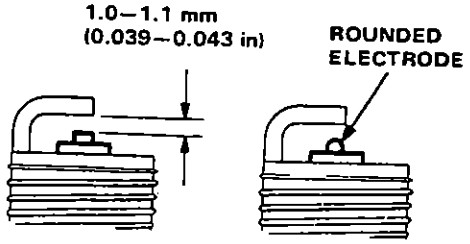
Fouled plug may be caused by:
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below:

Spark Plug:

		Standard	Optional
Unleaded gasoline	NGK	BCPR6E-11	BCPR6EY-N11 BCPR7E-11 BCPR7EY-N11
	ND	Q20PR-U11	Q22PR-U11
leaded gasoline	NGK	BCPR6E-11	BCPR5E-11 (*) BCPR7E-11
	ND	20PR-U11 20PR-UL11 (*)	16PR-U11 (*) 16PR-UL11 (*) 20PR-U11 (*) 22PR-U11 22PR-UL11 (*)

(*): 1.6 ℓ DOHC only



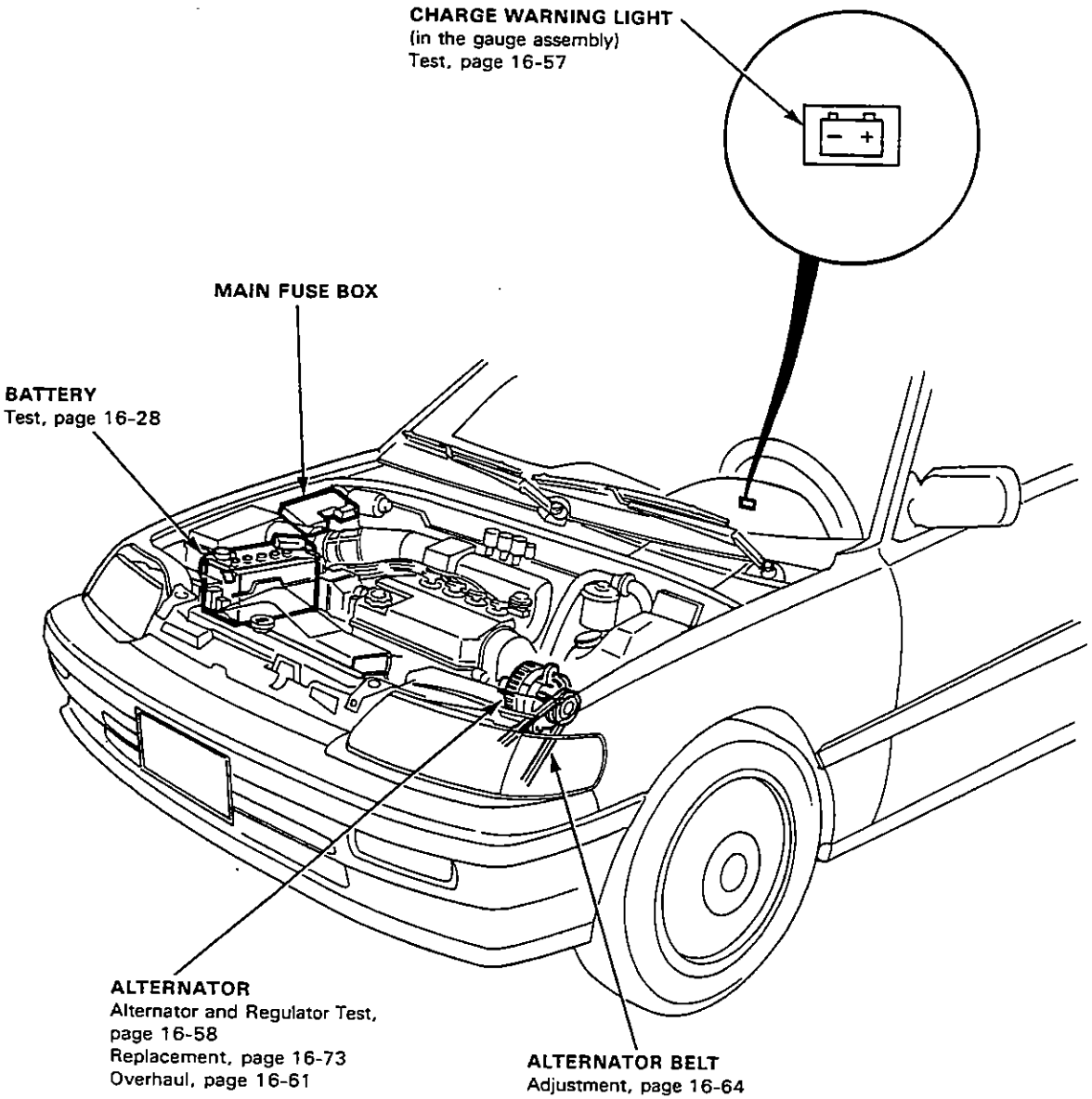
3. Adjust the gap with a suitable gapping tool.

   Electrode Gap: 1.0–1.1 mm (0.039–0.043 in)

4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

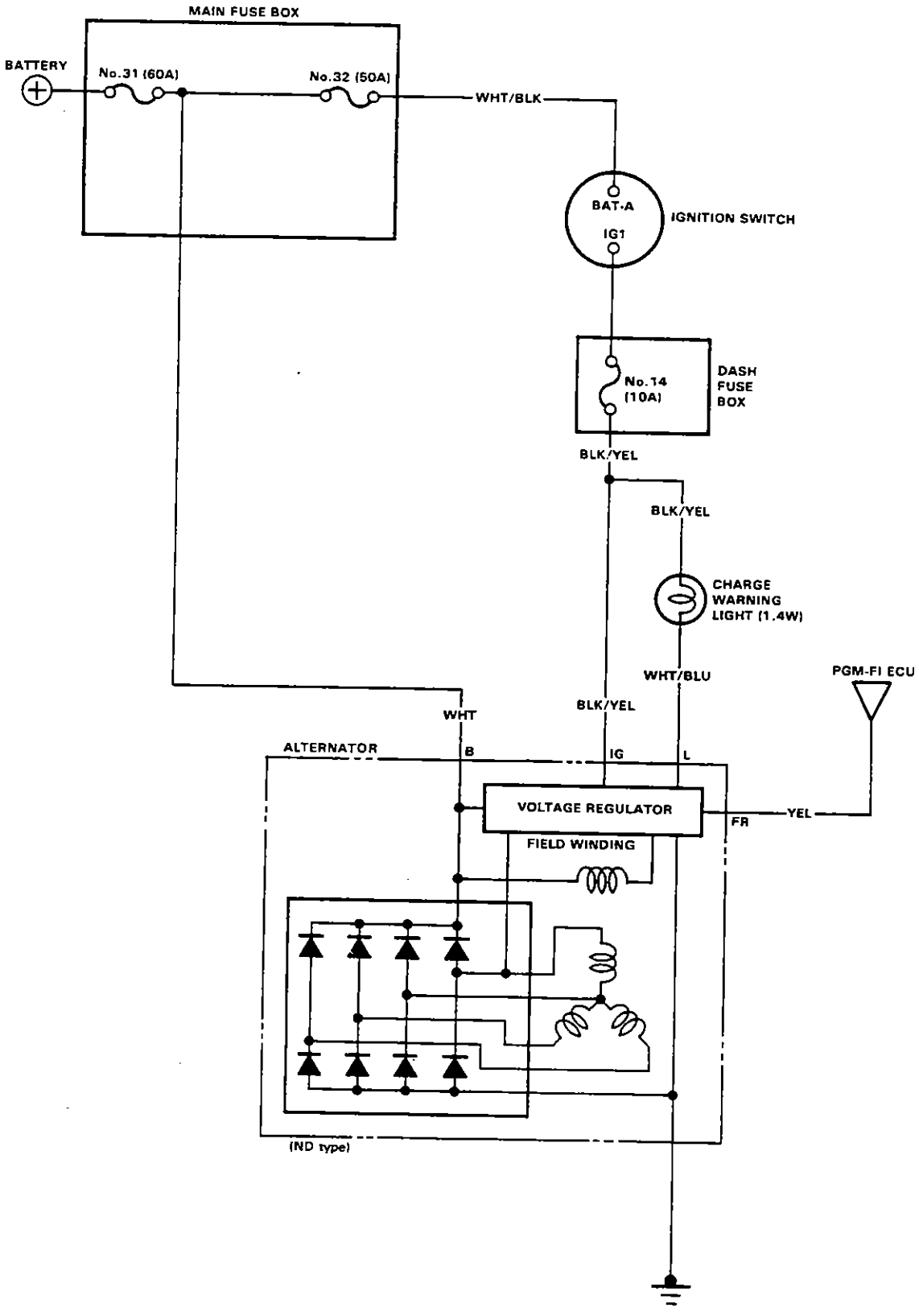
   NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Component Location Index



Charging System

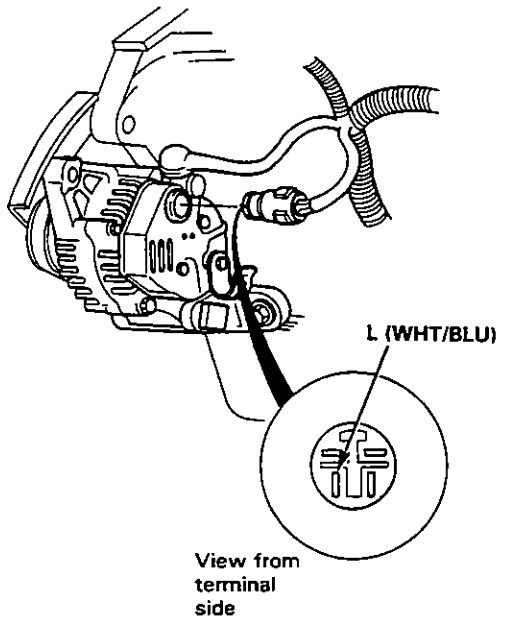
Circuit Diagram



Charge Warning Light Test

NOTE: Before testing, check the wire harness connection and alternator belt tension.

1. Turn the ignition switch on. The charge warning light should come on.
   If it does not come on, unplug the alternator connector and short the pin of the L (WHT/BLU) terminal to ground.



- If the warning light still does not come on, check for:
  - Blown No. 14 (10 A) fuse in the dash fuse box.
  - Bad bulb.
  - An open in the WHT/BLU wire between the warning light and voltage regulator.
  - An open in the BLK/YEL wire between the warning light and the dash fuse box, or the dash fuse box and the ignition switch.

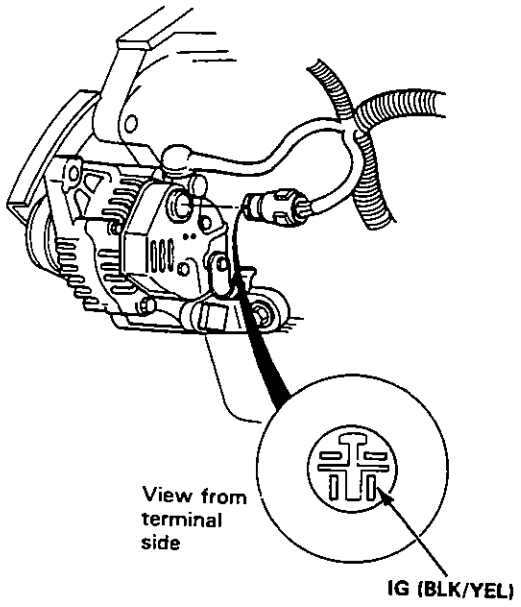
- If the light comes on, check the alternator and regulator (see page 16-58).

2. Start the engine and let it idle. The charge warning light should go off.
   If it stays on this time, check the alternator and regulator (see page 16-58).

Alternator and Regulator Test

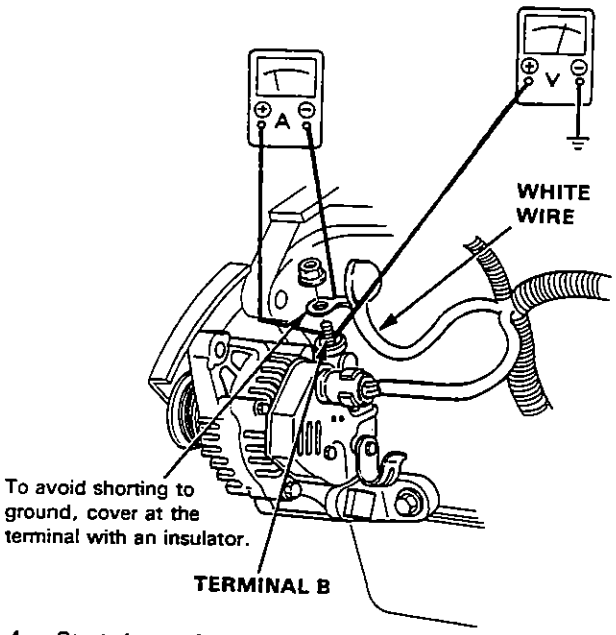
1. First make sure you have a good battery, and that the alternator belt, and connections at the alternator and main fuses are good. Next, check the No.14 (10A) fuse in the dash fuse box. (If blown, the charge warning light will come on even if the system is working properly)

2. Disconnect the alternator connector from the alternator.
   With the ignition switch on, there should be battery voltage between the IG (BLK/YEL) terminal and body ground.



- If there is no voltage, check for an open in the BLK/YEL wire between the dash fuse box and voltage regulator.
- If there is battery voltage, go to step 3.

3. If these check OK, connect a voltmeter between the alternator terminal B and body ground, and an ammeter (100 amp capacity or higher) between the alternator terminal B and the white wire as shown. (An inductive pick up can be used instead of disconnecting the white wire.)

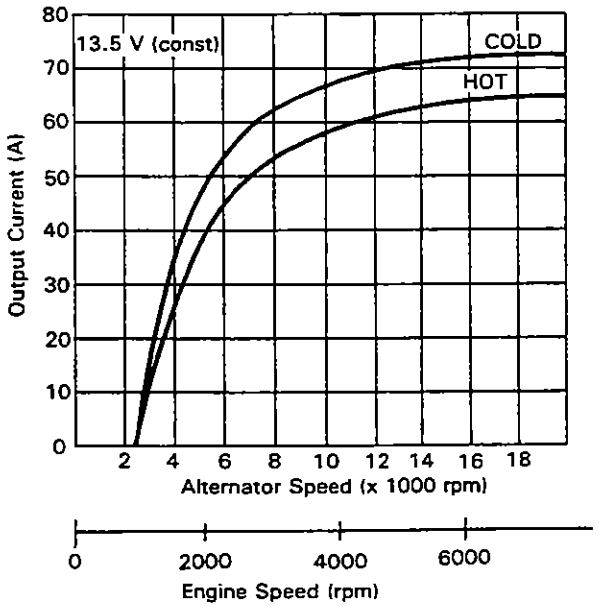


4. Start the engine, and turn on the headlights, blower motor, rear window defogger, etc.

   NOTE: If voltage stays above 13.5 V, apply electrical load more to lower the voltage to less than 13.5 V. If the voltage exceeds 16 V, stop the engine and replace the voltage regulator.

5. Compare the readings to the chart below. If no output or below specification, go to step 7. If output is within specification, go to step 6.

   NOTE: Subtract 5 to 10 amperes from the maximum reading due to engine operation.

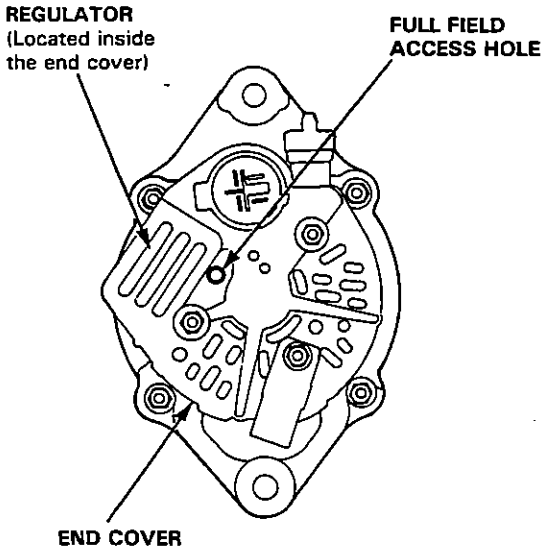


6. Turn off all loads in step 4, then measure the alternator output voltage at 1,500 rpm.

   - If the voltage is between 13.9 V and 15.1 V, the alternator and regulator are OK.
     If the charge warning light is still on, see Charge Warning Light Test.

7. Perform a full-field test: Insert a short screwdriver into the full field access hole at the back of the alternator. While grounding the screwdrive and check amperage reading.

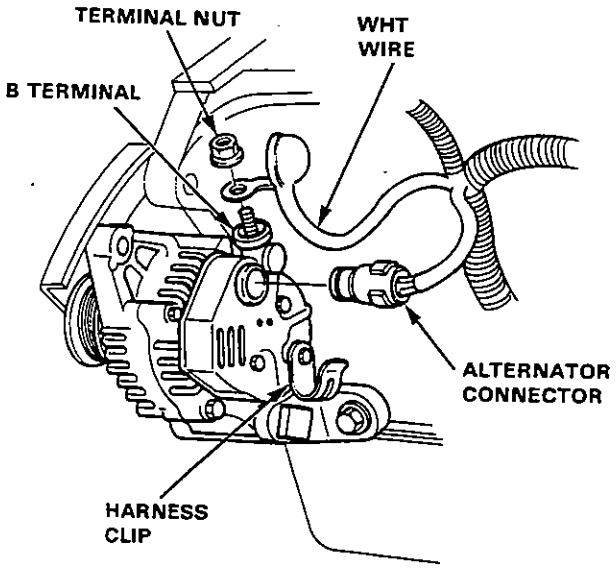
   CAUTION: The voltage will rise quickly when the alternator is full fielded. Do not allow the voltage to exceed 18 volts or damage to the electrical system may result.



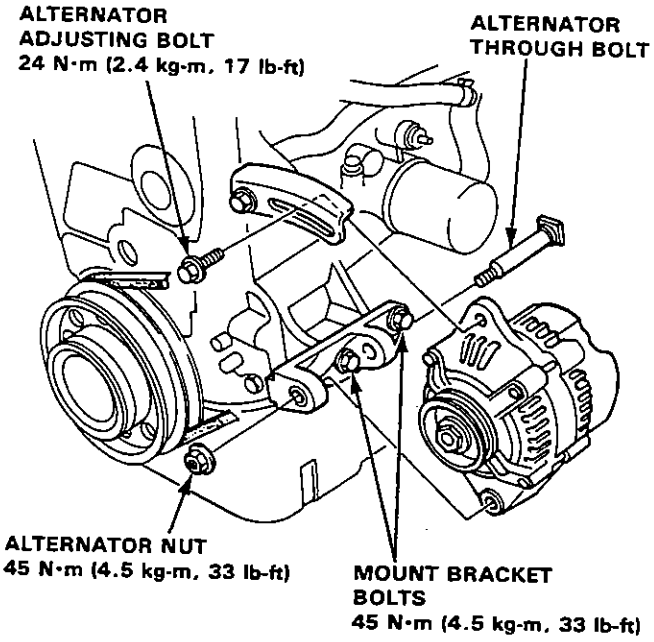
   - If the amperage is not within specification, replace the alternator.
   - If the amperage is within specification, replace the voltage regulator.

Alternator Replacement

1. Disconnect the ground wire from the battery negative (−) post.
2. Disconnect the alternator connector from the alternator.
3. Remove the terminal nut and the WHT wire from the B terminal.



4. Remove the adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.
5. Remove the alternator throught bolt, then remove the alternator.

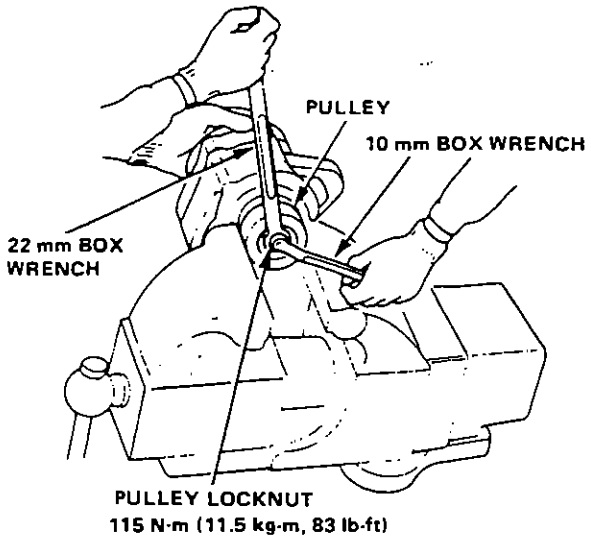


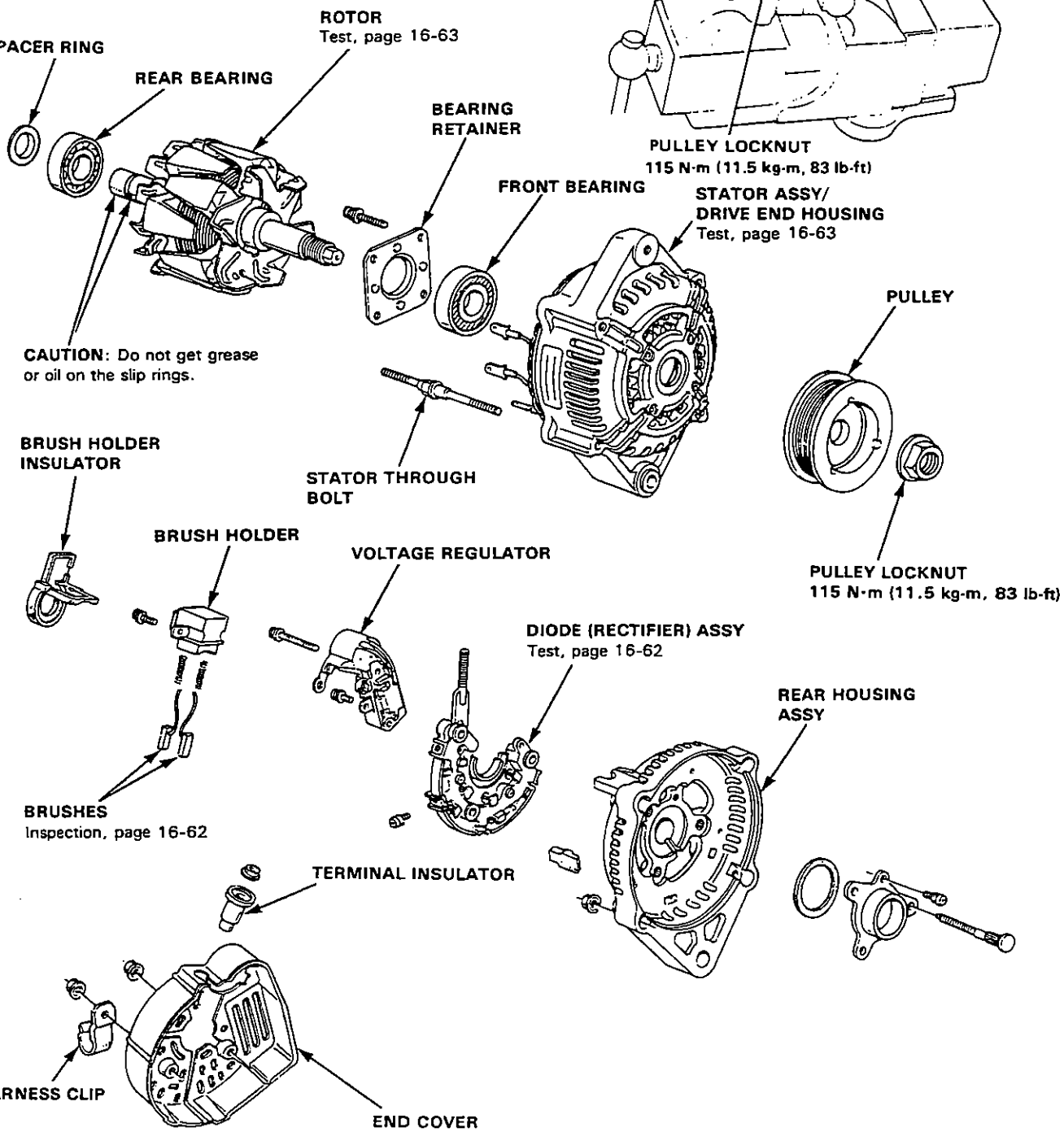
6. If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.
7. adjust the alternator belt tension after installation (see page 16-58).

Alternator Overhaul

NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

To remove the pulley and rotor, use 10 mm and 22 mm box wrenches to loosen the pulley locknut. Use an impact wrench to remove the nut if necessary.





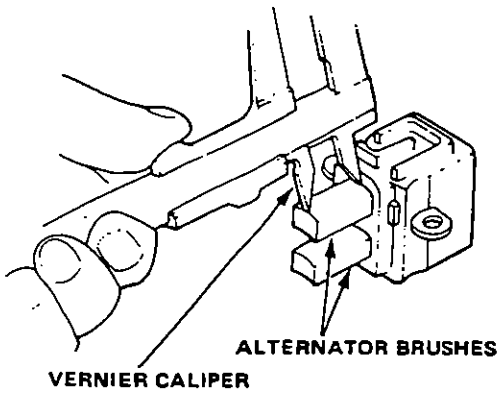
Charging System

Alternator Brush Inspection

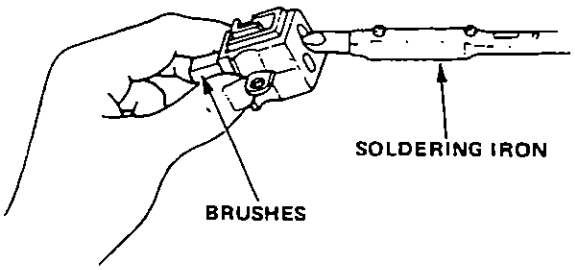
CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

1. Remove the end cover, then take out the brush holder by removing its 2 screws.
2. Measure length of the brushes with a vernier caliper.

Alternator Brush Length:
Standard : 15.5 mm (0.61 in)
Service Limit: 5.3 mm (0.21 in)



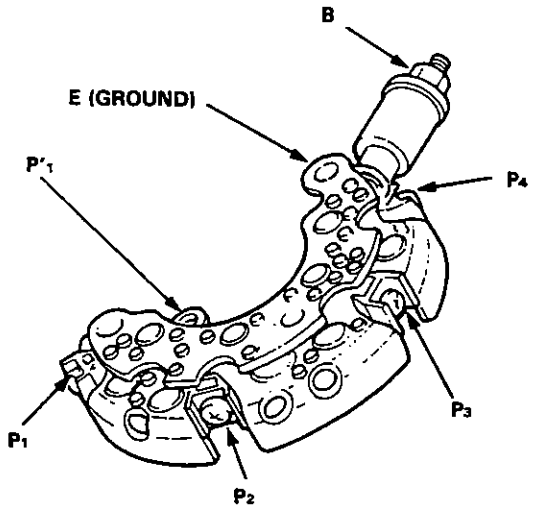
If the brushes are not within the service limit, replace them.

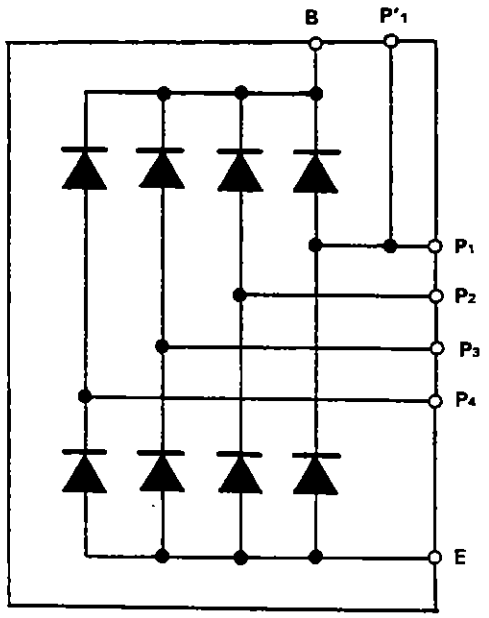


Rectifier Test

NOTE: The diodes are designed to pass current in one direction and block current in the opposite direction. Since the alternator rectifier is made up of eight diodes (4 pairs), each diode must be tested for continuity in both directions; a total of 16 checks.

1. Check for continuity in each direction, between the B and P (of each diode pair) terminals, and between the E (ground) and P (of each diode pair) terminals. All diodes should have continuity in only one direction.

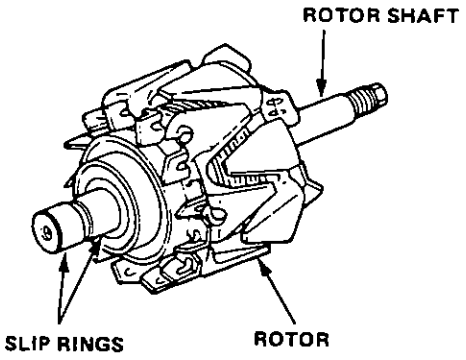




2. If any of the 8 diodes fails, replace the rectifier assembly (diodes are not available separately).

Rotor Slip Ring Test

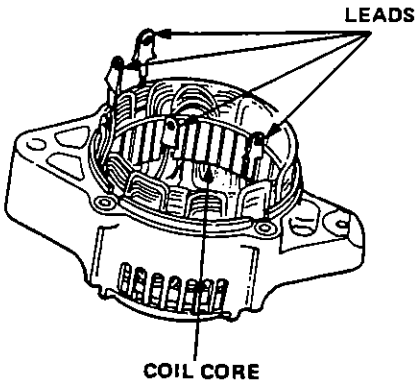
1. Check that there is continuity between the slip rings.
2. Check that there is no continuity between the rings and the rotor or rotor shaft.



3. If the rotor fails either continuity check, replace it.

Stator Test

1. Check that there is continuity between each pair of leads.
2. Check that there is no continuity between each lead and the coil core.



3. If the coil fails either continuity check, replace the stator.

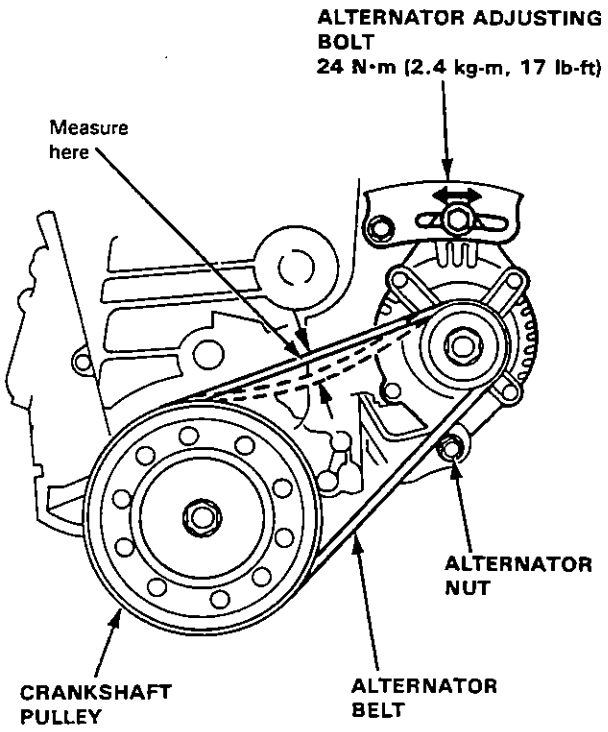
Charging System

Alternator Belt Adjustment

1. Apply a force of 98 N(10 kg, 22 lb) and measure the deflection between the alternator and the crankshaft pulley.

   Deflection: 9—11 mm (0.35—0.43 in)

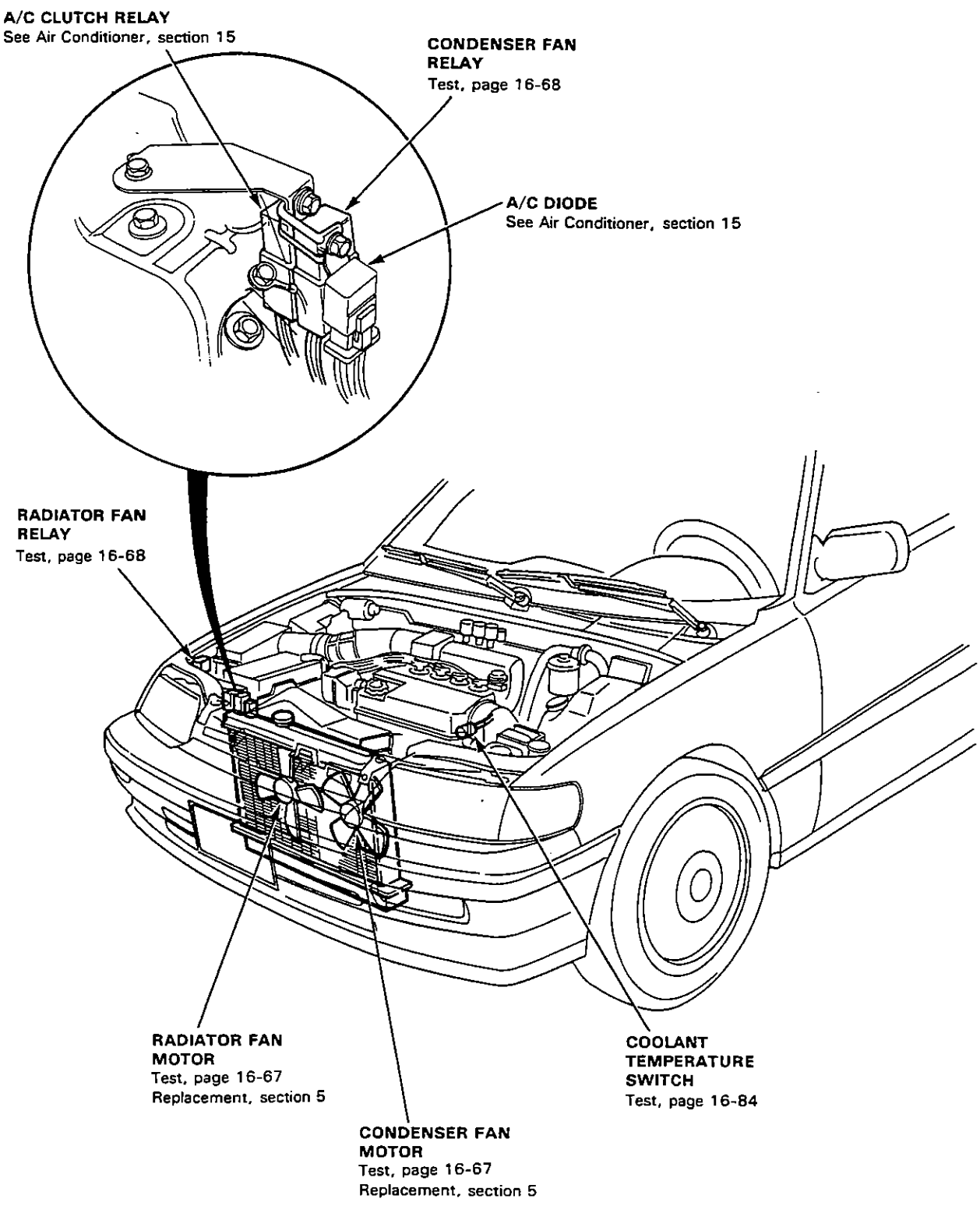
   NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.25—0.35 in) when first measured.



2. Loosen the alternator adjusting bolt and nut.
3. Move the alternator to obtain the proper belt tension, then retighten the adjusting bolt and nut.
4. Recheck the deflection of the belt.

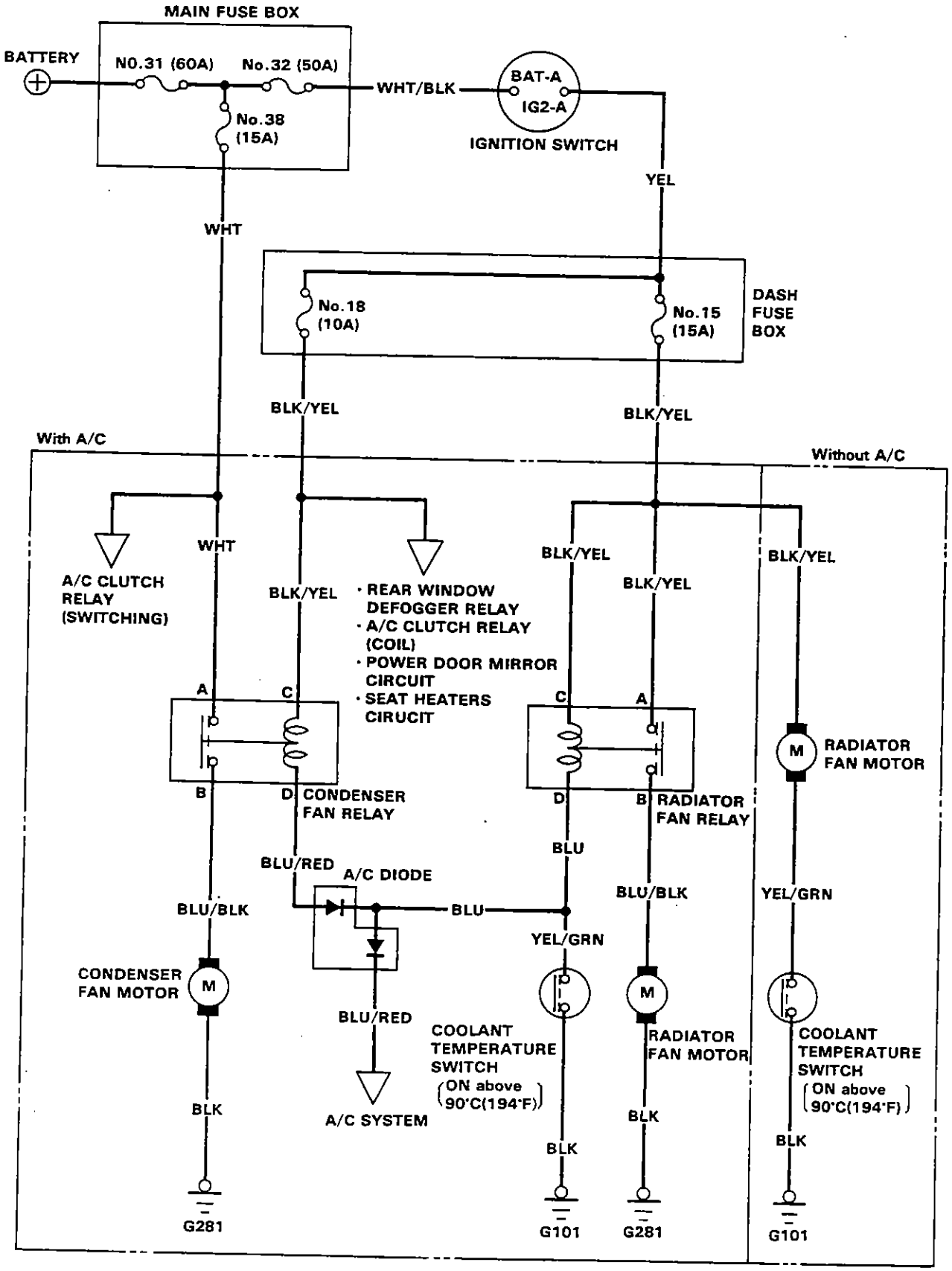
Cooling Fan System

Component Location Index



Cooling Fan System

Circuit Diagram

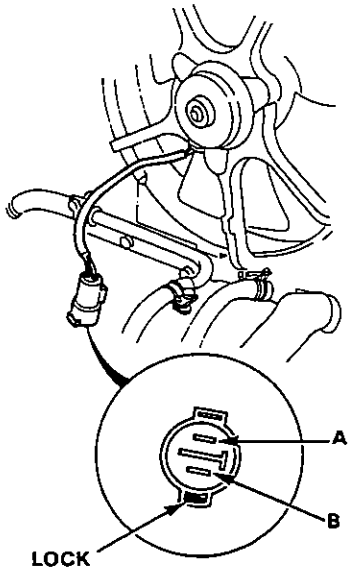


Fan Motor Test

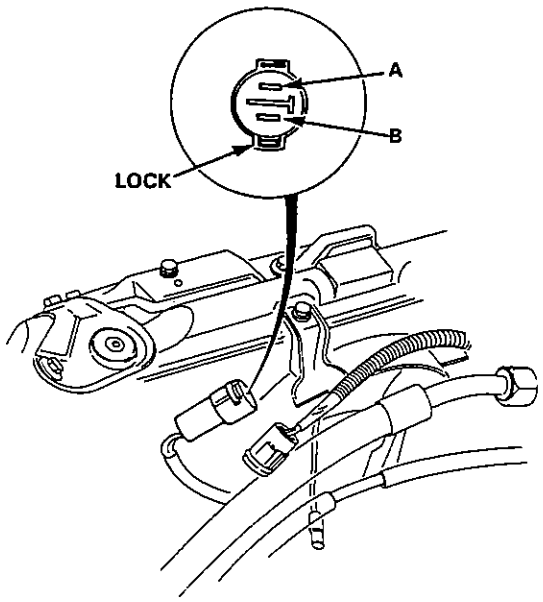
1. Disconnect the 2-P connector from the fan motor.
2. Test motor operation by connecting battery positive to the A terminal, and negative to the B terminal.
3. If the motor fails to run smoothly, replace it.

<A-Type>

Radiator Fan Motor:

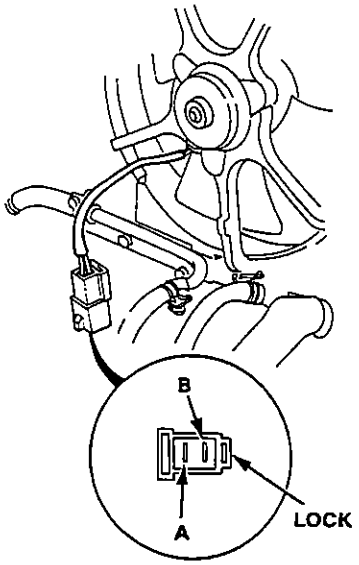


Condenser Fan Motor:

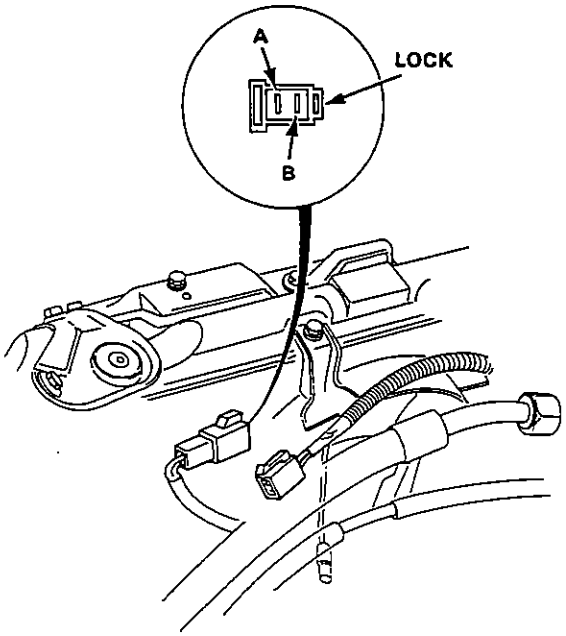


<B-Type>

Radiator Fan Motor:



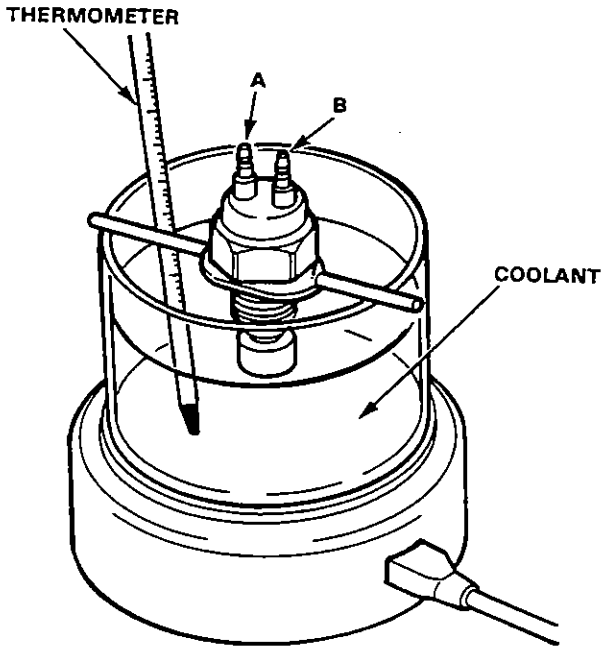
Condensor Fan Motor:



Cooling Fan System

Coolant Temperature Switch Test

1. Remove the coolant temperature switch from the rear of the engine cylinder block.
2. Suspend the coolant temperature switch in a container of coolant as shown.

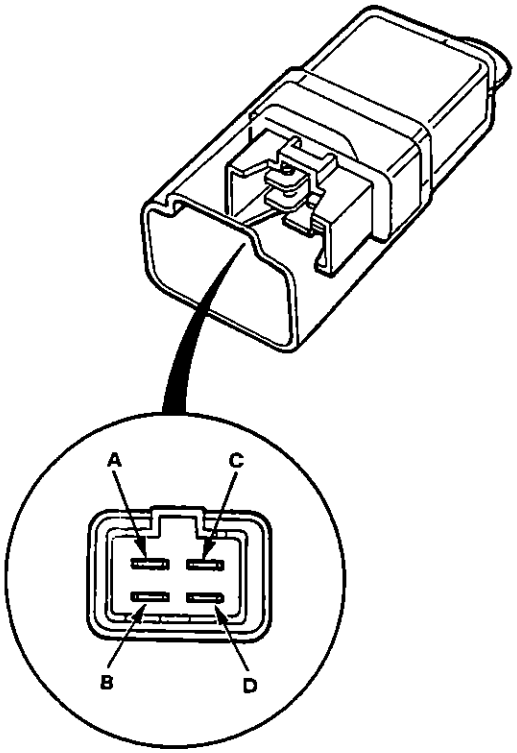


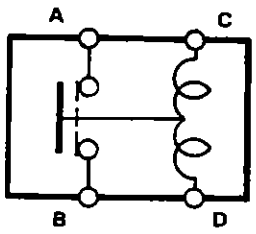
3. Heat the coolant and check coolant temperature with a thermometer (see table below).
4. Check for continuity between the A and B terminals according to the table.

Temperature \ Terminal	A	B
Above 88.5—91.5°C (191—197°F)	○——	——○
Below 83.5—86.5°C (182—188°F)		

Relay Test

1. Remove the radiator fan relay on the right front inner fender or condenser fan relay on the right front bulkhead.
2. There should be continuity between the A and B terminals when the battery in connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.

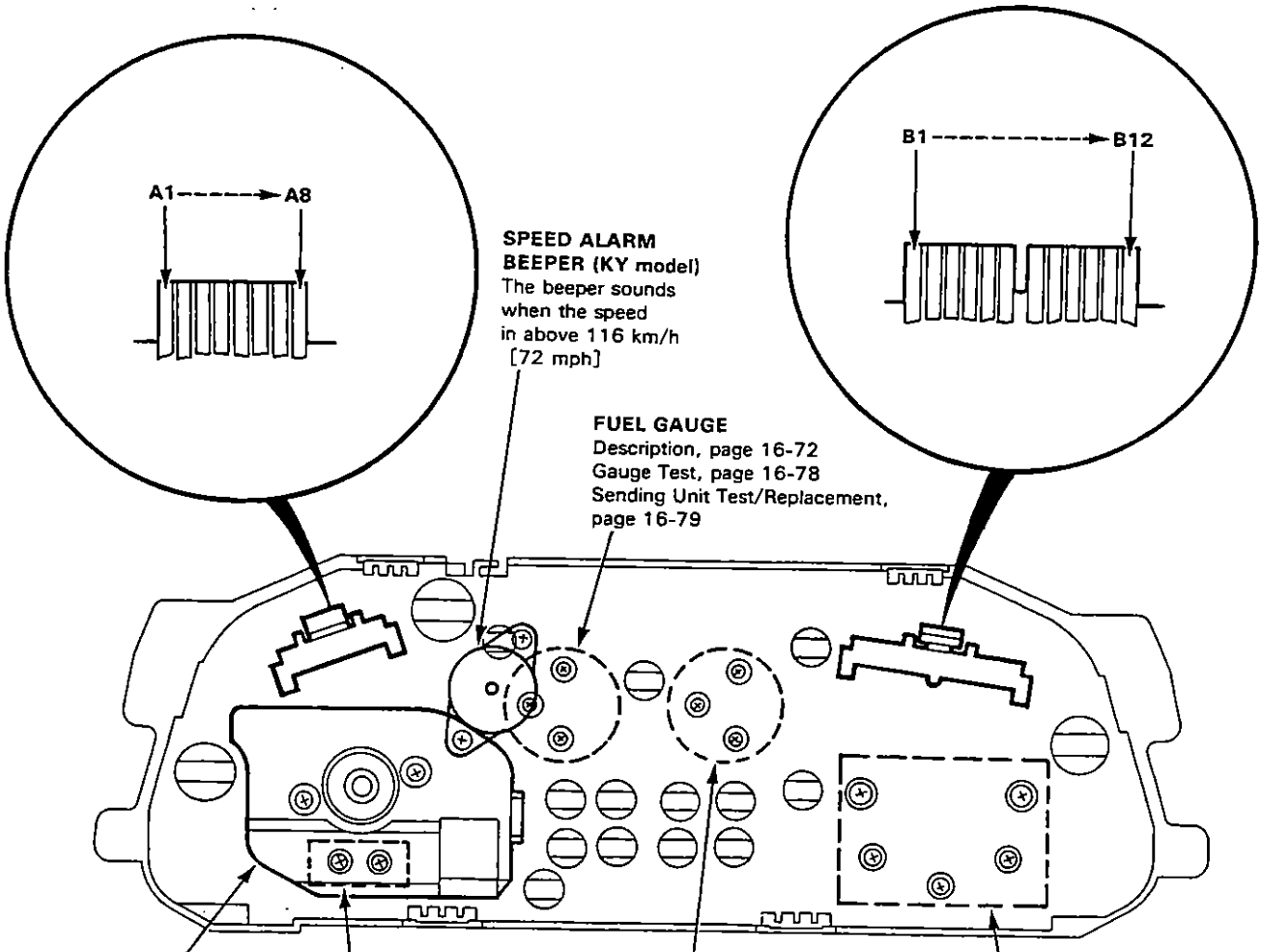




Gauge Assembly

—Gauge/Indicator Location Index

· **GAUGE ASSEMBLY**
Removal, page 16-73
Disassembly, page 16-77



SPEED ALARM BEEPER (KY model)
The beeper sounds when the speed in above 116 km/h [72 mph]

FUEL GAUGE
Description, page 16-72
Gauge Test, page 16-78
Sending Unit Test/Replacement, page 16-79

SPEED PULSER
Outputs 4 pulses per speedometer cable revolution
Test, page 16-76

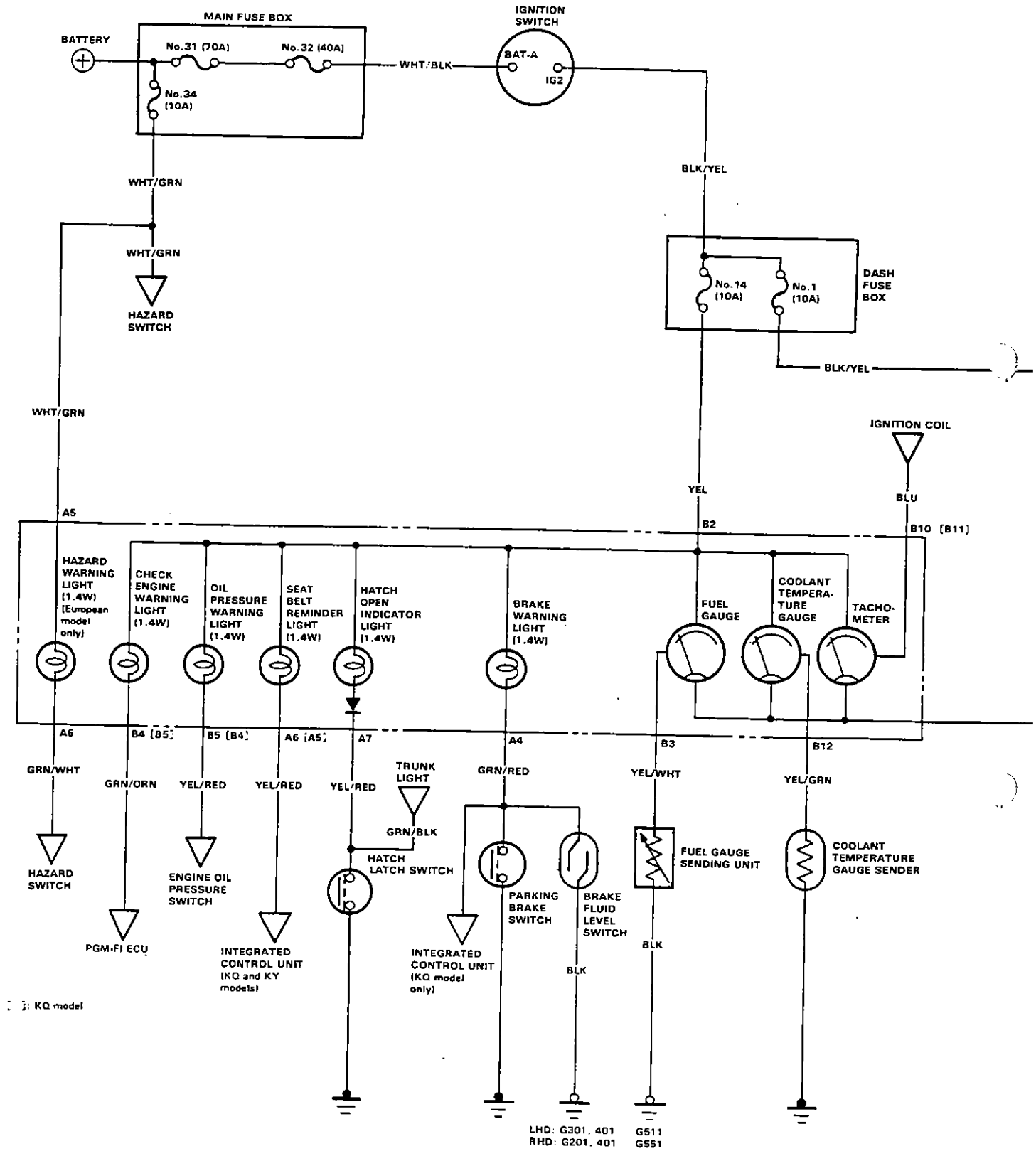
TACHOMETER
Indicates 100 min^{-1} (rpm) at 200 pulses per minute of the igniter unit.

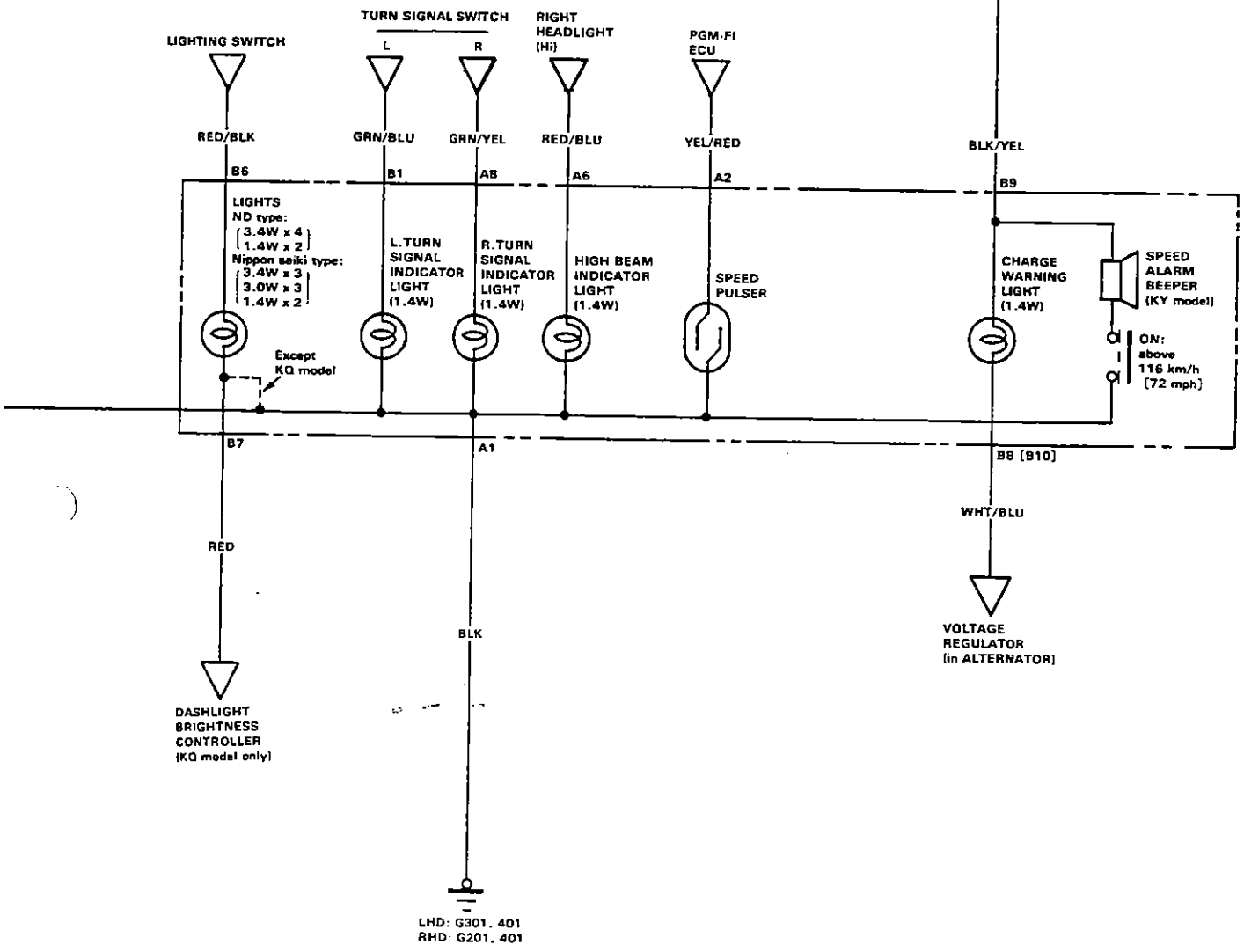
SPEEDOMETER
Indicates 60 mph (km/h) at 1,026 (637) min^{-1} (rpm) of the speedometer cable.

COOLANT TEMPERATURE GAUGE
Description, page 16-72
Gauge Test, page 16-80
Sender Test, page 16-80

Gauge Assembly

Circuit Diagram



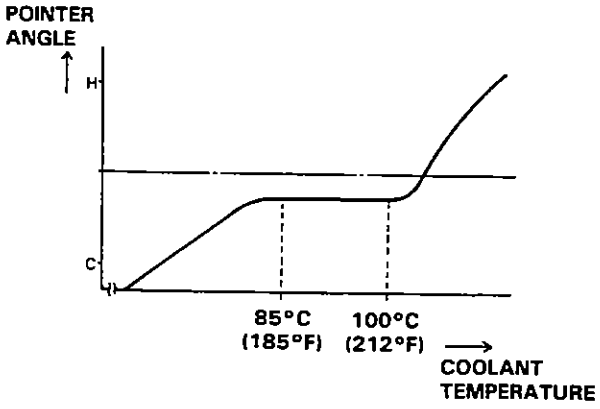

LIGHTING SWITCH
TURN SIGNAL SWITCH
L
R
RIGHT HEADLIGHT (Hi)
PGM-FI ECU
RED/BLK
GRN/BLU
GRN/YEL
RED/BLU
YEL/RED
BLK/YEL
B6
B1
A8
A6
A2
B9
LIGHTS
ND type:
3.4W x 4
1.4W x 2
Nippon seiki type:
3.4W x 3
3.0W x 3
1.4W x 2
L.TURN SIGNAL INDICATOR LIGHT (1.4W)
R.TURN SIGNAL INDICATOR LIGHT (1.4W)
HIGH BEAM INDICATOR LIGHT (1.4W)
SPEED PULSER
CHARGE WARNING LIGHT (1.4W)
SPEED ALARM BEEPER (KY model)
ON:
above 116 km/h (72 mph)
Except KQ model
B7
A1
B8 (B10)
WHT/BLU
RED
BLK
VOLTAGE REGULATOR (in ALTERNATOR)
DASHLIGHT BRIGHTNESS CONTROLLER (KQ model only)
LHD: G301, 401
RHD: G201, 401

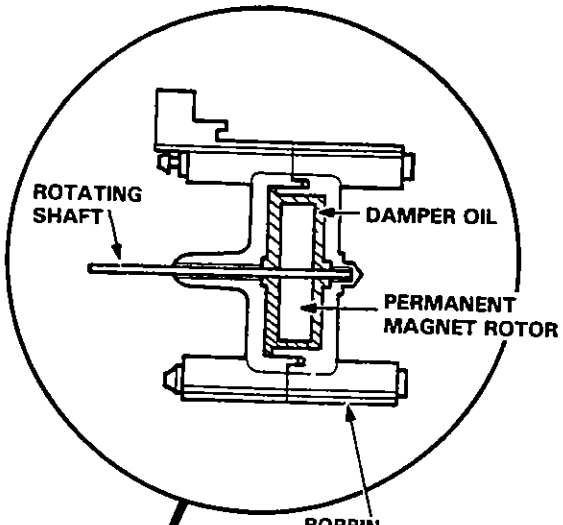
Gauge Assembly

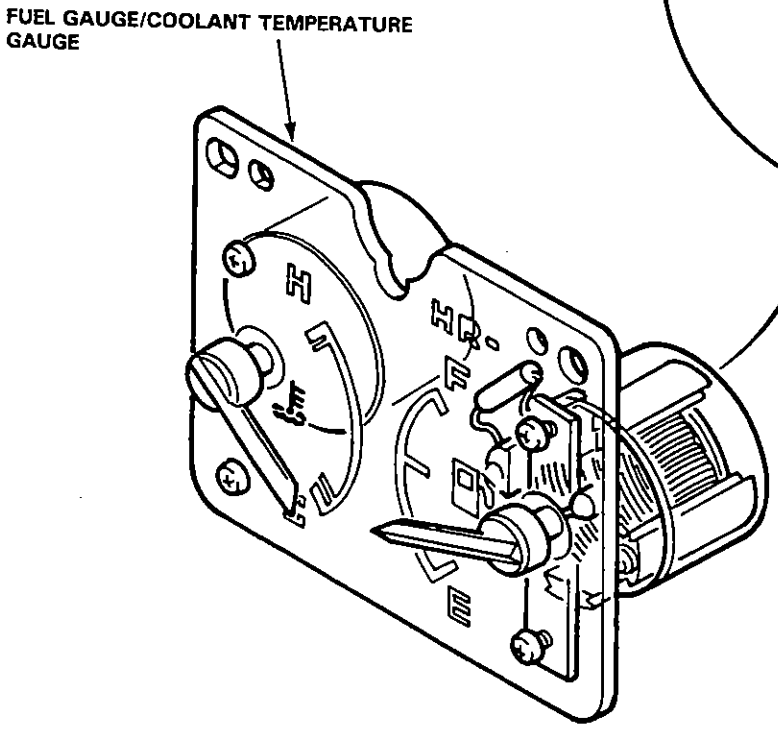
Description

Bobbin Type (Cross Coil Type) Gauge:

- A bobbin type gauge is an electromagnetic instrument in which two intersecting coils are wound around the permanent magnet rotor. By varying the resistance of the unit to vary the current which flows through the coil, the magnetic force which energizes the coil will vary, causing the rotor (pointer) to operate. A sliding resistance is employed in the fuel gauge just as in a bimetal type gauge, and a thermistor is used in the temperature gauge.
- The rotor of the fuel gauge is immersed in damper oil and its center of gravity lies roughly along the rotating shaft, hence the fuel level is indicated continuously even when the ignition switch is OFF.
- The coolant temperature gauge is a center point stable small indicating angle type which indicates the temperature of the coolant between about 85°C (185°F) and 100°C (212°F).

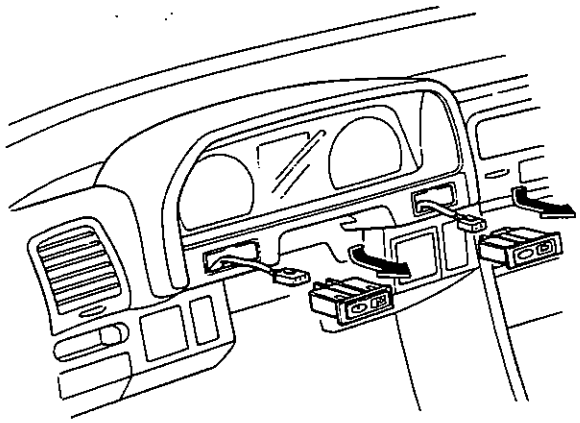




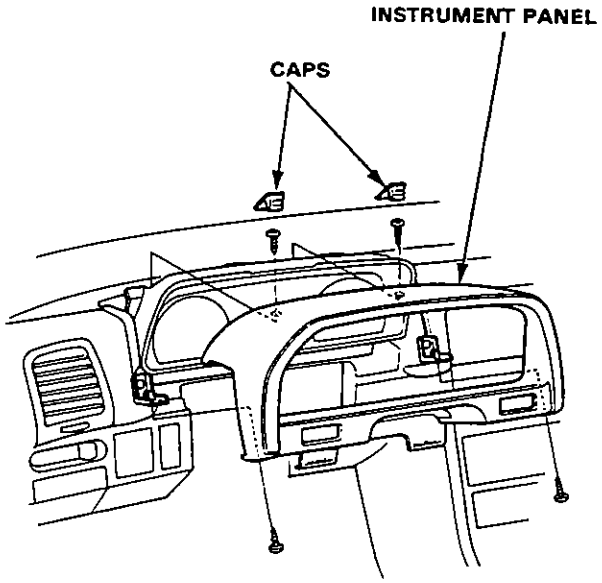


Removal

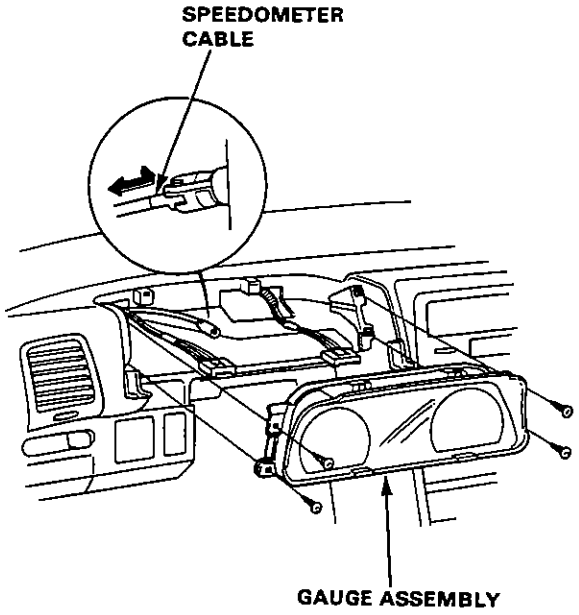
1. Remove the switches from the instrument panel.



2. Remove the caps and 4 screws, then remove the instrument panel from the dashboard.

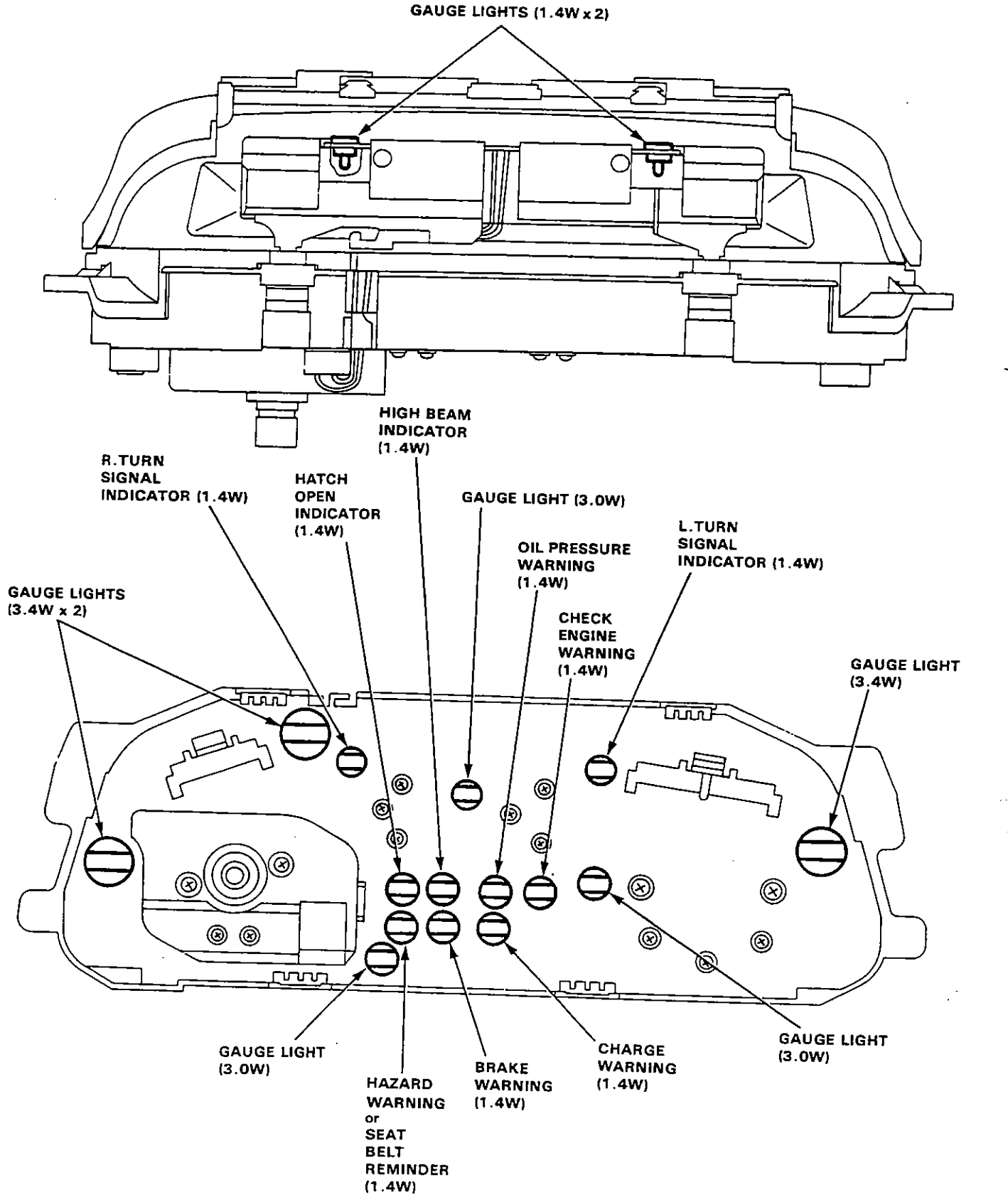


3. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.

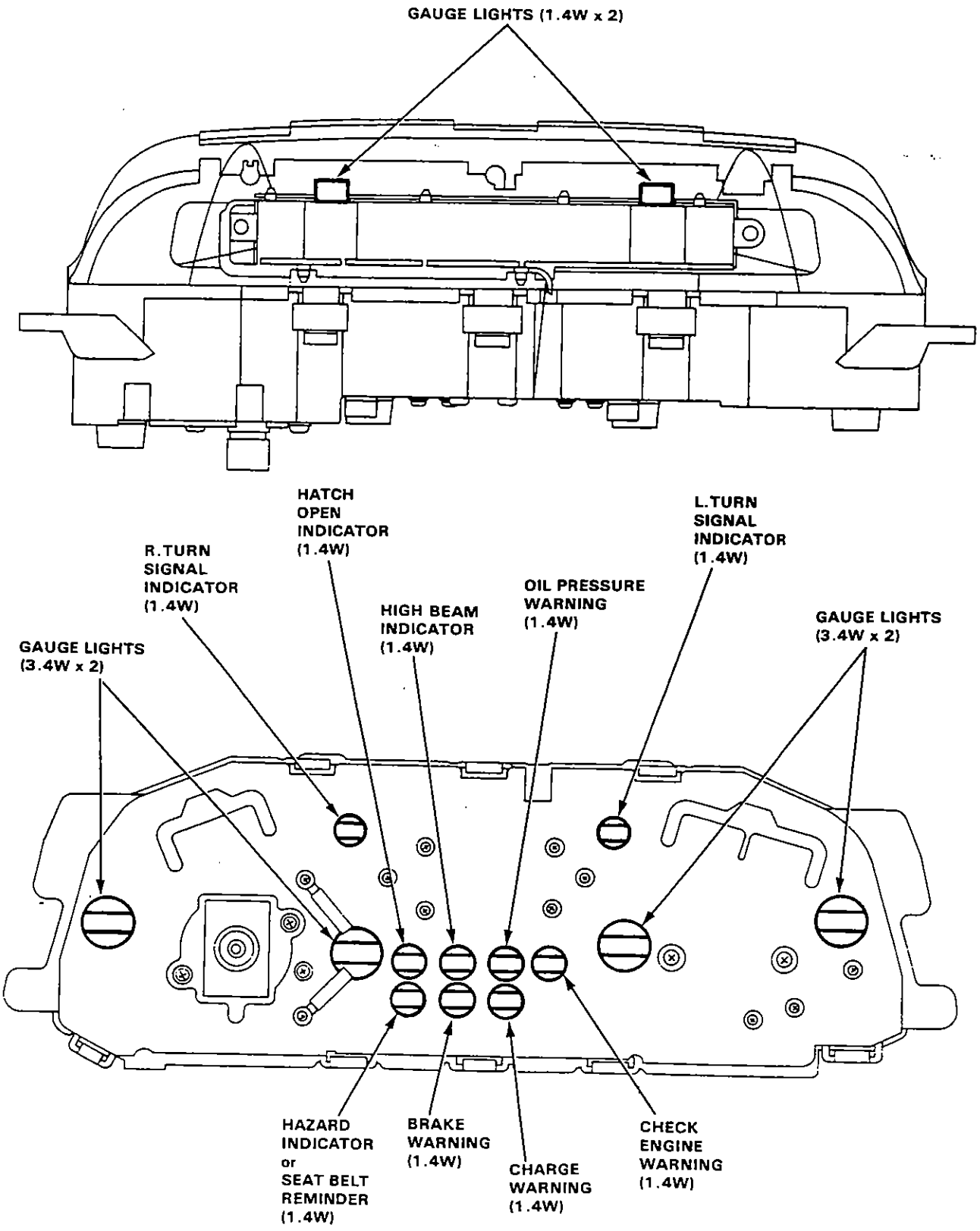


Gauge Assembly

Bulb Locations (Nippon Seiki type)



(Nippon Denso type)

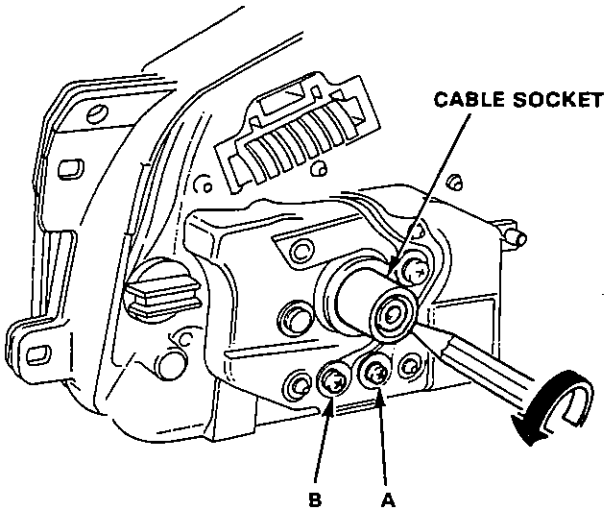


Gauge Assembly

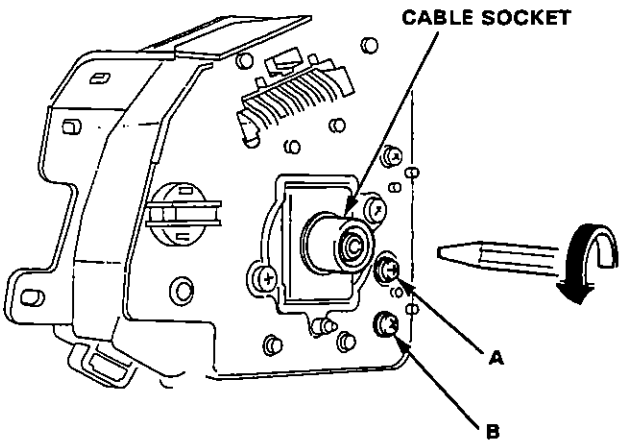
Speed Pulser Test

1. Remove the gauge assembly from the dashboard, then turn it over.
2. Break the lead off a pencil tip then insert the pencil into the speedometer cable connector socket and turn it.
   Connect an ohmmeter between the A and B terminals. There should be continuity 4 times between the A and B terminals per revolution.

Nippon Seiki type:

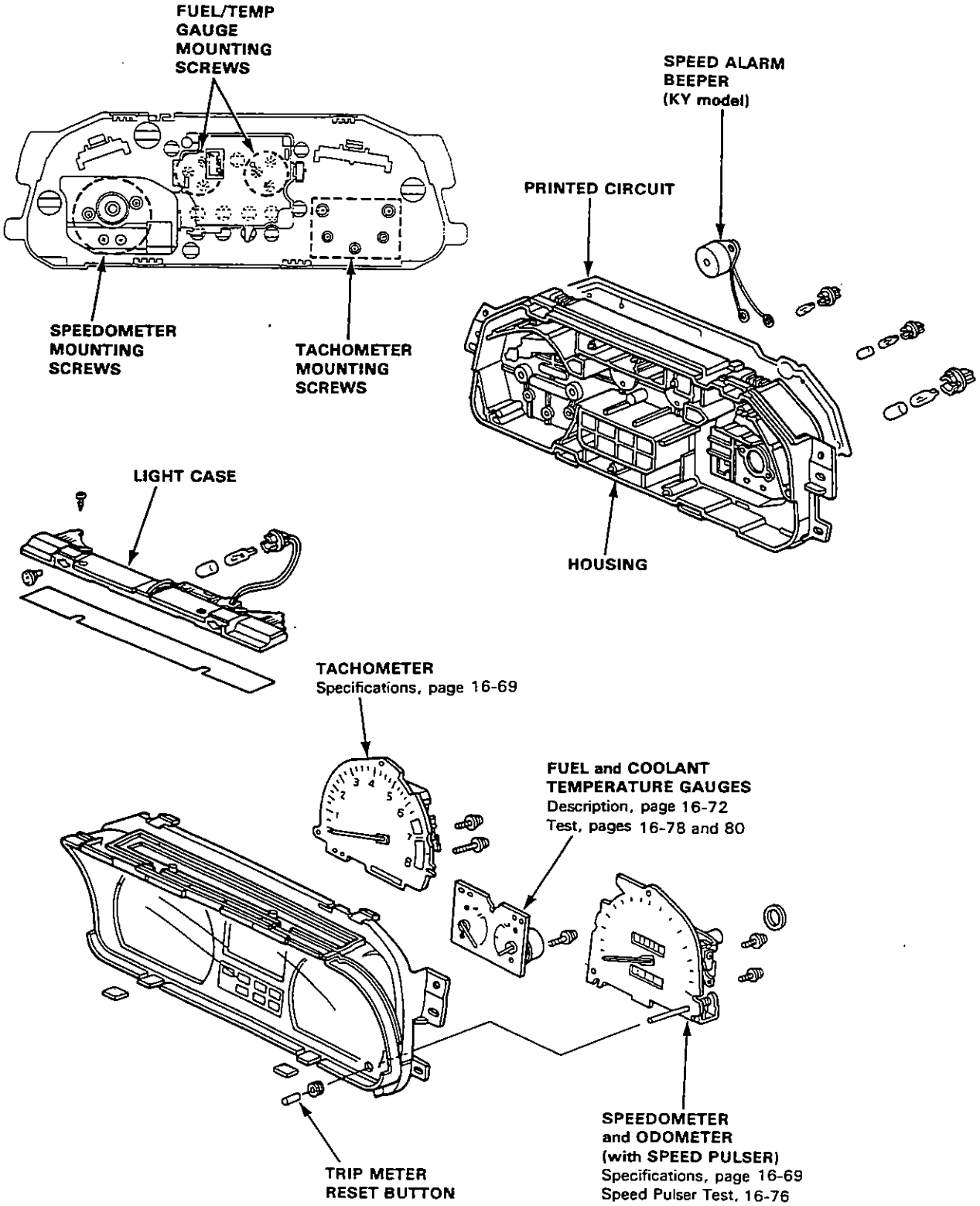


Nippon Denso type:



Disassembly

NOTE:
- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is shown below.



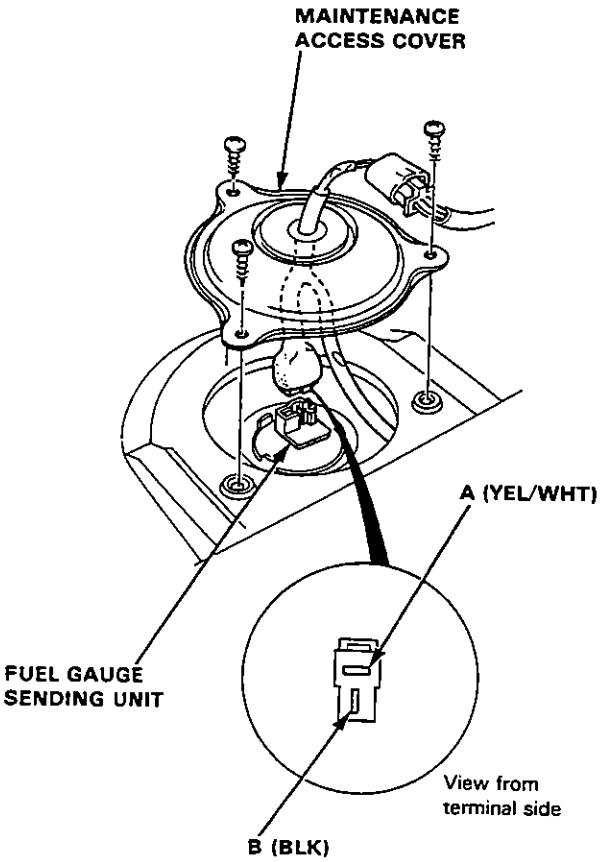
Fuel Gauge

Gauge Test

NOTE: Refer to page 16-70 for wiring description of the fuel gauge circuit.

1. Remove the rear seat (see section 14), then remove the maintenance access cover.

2. Disconnect the 2-P connector from the fuel gauge sending unit.



3. Connect the voltmeter positive probe to the A (YEL/WHT) terminal and the negative probe to the B (BLK) terminal, then turn the ignition switch ON.
There should be battery voltage.

   - If there is battery voltage, go to step 4.

   - If the voltage is not specified, check for:
     - Blown No. 1 (10A) fuse in the dash fuse box.
     - An open in the YEL, YEL/WHT or BLK wire.
     - Poor ground (G511, G551).

4. Turn the ignition switch OFF. Attach a jumper wire between the A (YEL/WHT) and B (BLK) terminals.

   Turn the ignition switch ON.
   Check that the pointer of the fuel gauge starts moving toward "F" mark.

   CAUTION: Turn the ignition switch OFF before the pointer reaches "F" mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F" mark may cause damage to the fuel gauge.

   NOTE: The fuel gauge is a bobbin (cross coil) type, hence the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

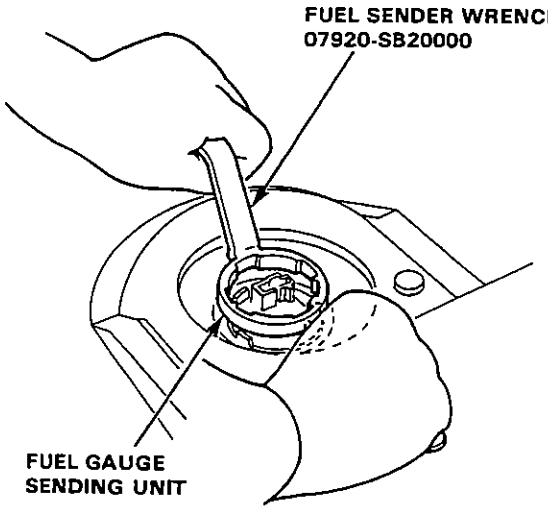
   - If the pointer of the fuel gauge does not swing at all, replace the gauge.

   - Inspect the fuel gauge sending unit if the gauge is OK.

Sending Unit Test/Replacement

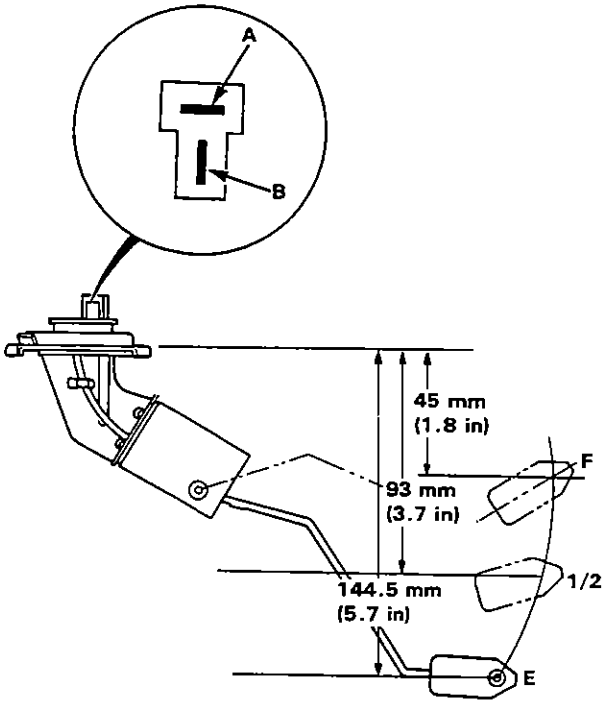
WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Remove the rear seat (see section 14), them remove the maintenance access cover.
2. Check that the ignition switch OFF, then disconnect the 2-P connector from the fuel gauge sending unit.
3. Remove the fuel gauge sending unit.



4. Measure the resistance between the A and B terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance (Ω)	105—110	25.5—39.5	2—5



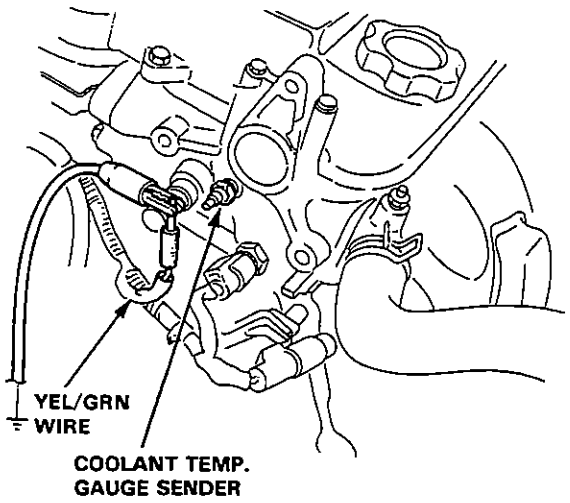
5. If unable to obtain the above readings, replace the fuel gauge sending unit.

Coolant Temperature Gauge

Gauge Test

NOTE: Refer to page 16-70 for wiring description of the coolant temperature gauge circuit.

1. Make sure the ignition switch is OFF, then disconnect the YEL/GRN wire from the coolant temperature gauge sender and ground it with a jumper wire.



2. Turn the ignition switch ON.
   Check that the pointer of the coolant temperature gauge starts moving toward "H" mark.

   CAUTION: Turn the ignition switch OFF before the pointer reaches "H" mark on the gauge dial. Failure to turn the ignition OFF quickly enough may cause damage to the gauge.

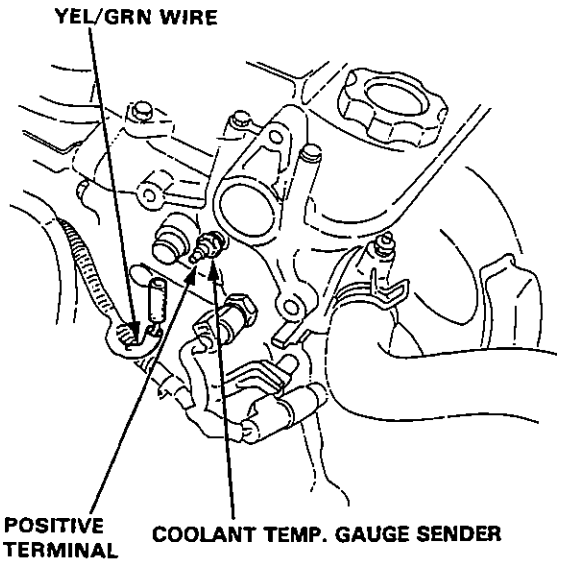
   - If the pointer of the gauge does not swing at all, check for:
     - Blown No. 1 (10 A) fuse in the dash fuse box.
     - An open in the YEL or YEL/GRN wire.

     Replace the coolant temperature gauge if the fuse and wiring are normal.

   - Inspect the gauge sender if the gauge is OK.

Sender Test

1. Disconnect the YEL/GRN wire from the sender.
2. With the engine cold, use an ohmmeter to measure resistance between the positive terminal and the engine (ground).



3. Check the temperature of the coolant.
4. Run the engine and measure the change in resistance with the engine at operting temperature (cooling fan comes on).

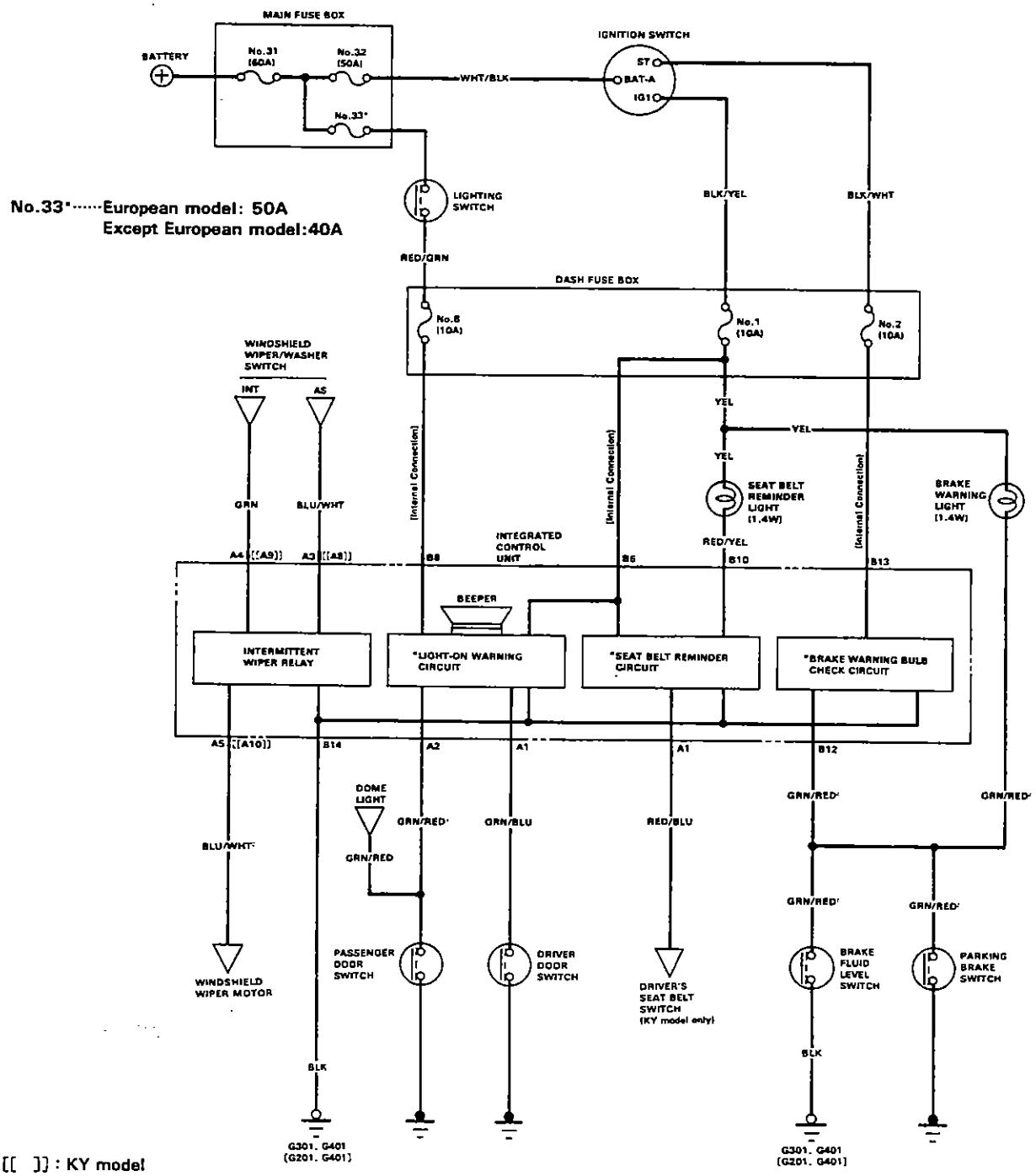
Temperature	56°C (133°F) ["C" mark]	85°C (185°F)– 100°C (212°F)
Resistance (Ω)	142	49 – 32

5. If obtained readings are substantially different from specifications above, replace the gauge sender.

Integrated Control Unit
(Without Daytime and Dim-Dip Light)

Circuit Piagram

Description:
A multi function control unit located under the driver side of the dashboard, integrates the function of brake warning bulb check circuit (KQ model only), seat belt reminder (KY model only), light-on warning circuit (Except KY model) and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.
NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/RED¹ and GRN/RED² are not the same).



No.33*·····European model: 50A
Except European model:40A

[[ ]] : KY model
[ ] : RHD
* · Light-on Warning Circuit: (Except KY model)
· Seat Belt Reminder Circuit: (KY model only)
· Brake Warning Bulb Circuit: (KQ model only)

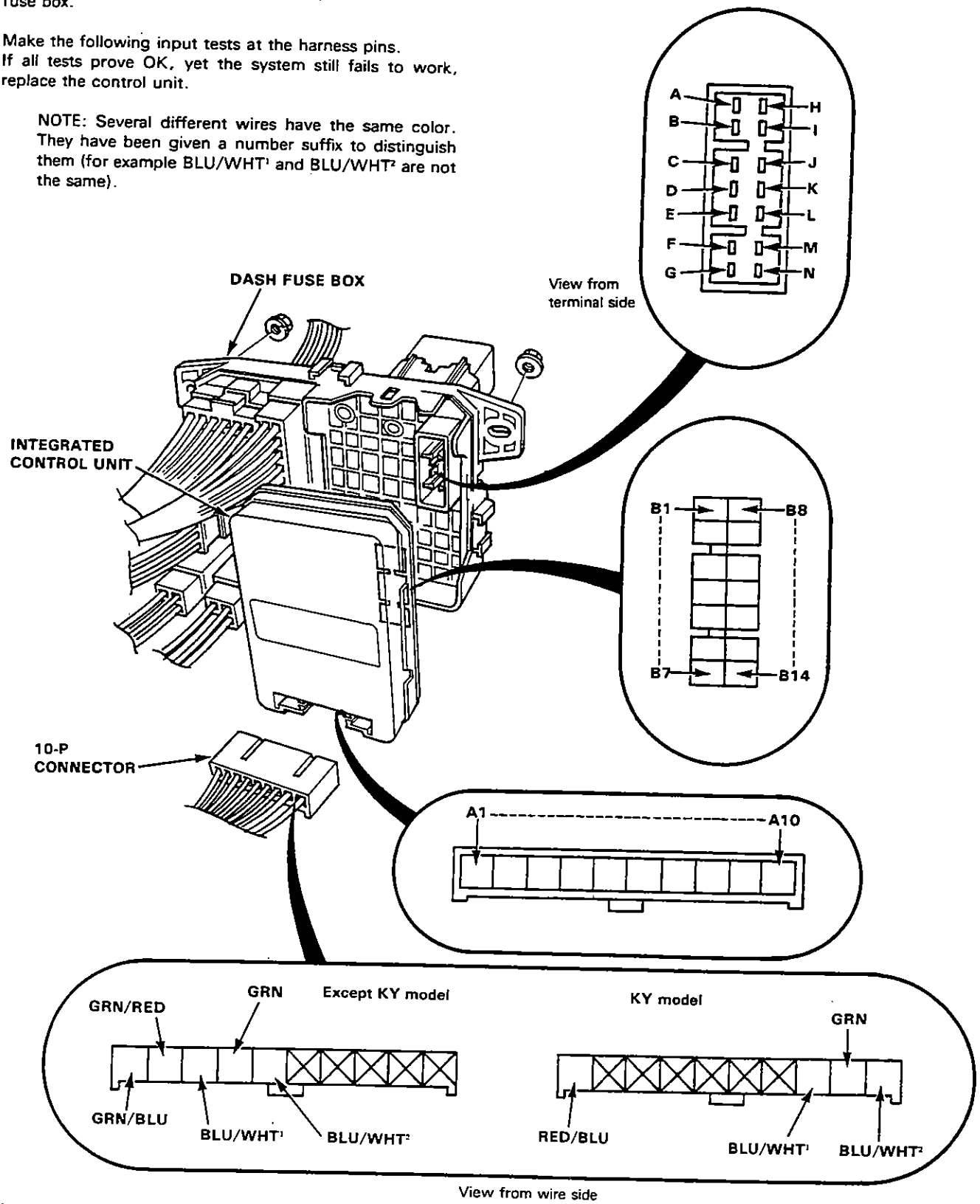
Integrated Control Unit (Without Daytime and Dim-Dip Light)

Input Test

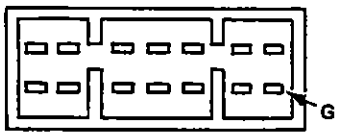
Remove the dashboard lower panel and dash fuse box, then disconnect the 10-P connector from the integrated control unit and remove the integrated control unit from the dash fuse box.

Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT¹ and BLU/WHT² are not the same).

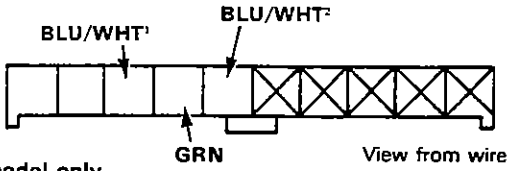


Wiper System:



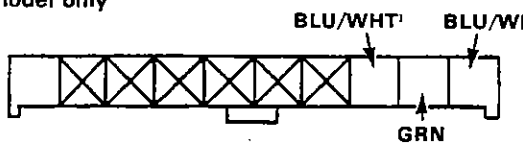
View from terminal side

Except KY model



View from wire side

KY model only

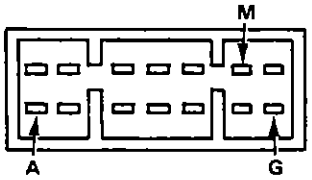


View from wire side

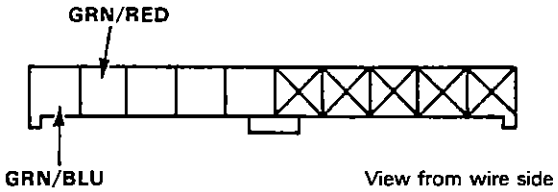
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G201, G401])
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT.	Check for voltage to ground: should be battery voltage.	• Blown No. 13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

[ ]: RHD

Light-on Warning System: Except KY model



View from terminal side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G201, G401]). • An open in the wire.
2	A	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1(10A) fuse. • An open in the wire.
4	GRN/RED	Passenger door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No.12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	GRN/BLU	Driver.door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

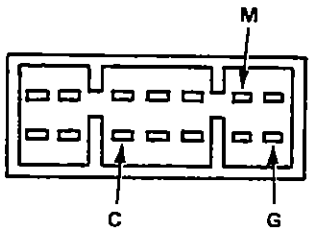
[ ] : RHD

(cont'd)

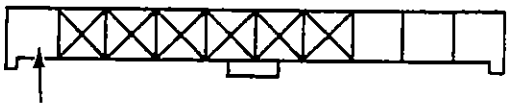
Integrated Control Unit (Without Daytime and Dim-Dip Light)

Input Test (cont'd)

Seat Belt Reminder System:



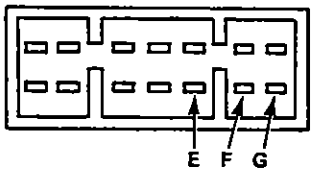
View from terminal side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	C and M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 1 (10A) fuse. • An open in the wire.
3	RED/BLU	Driver's seat belt is not buckled.	Check for continuity to ground: should be continuity.	• Faulty seat belt switch. • Poor ground (2D H/B: G511, 4D: G561). • An open in the wiire.

Brake Warning System: KQ model only



View from terminal side

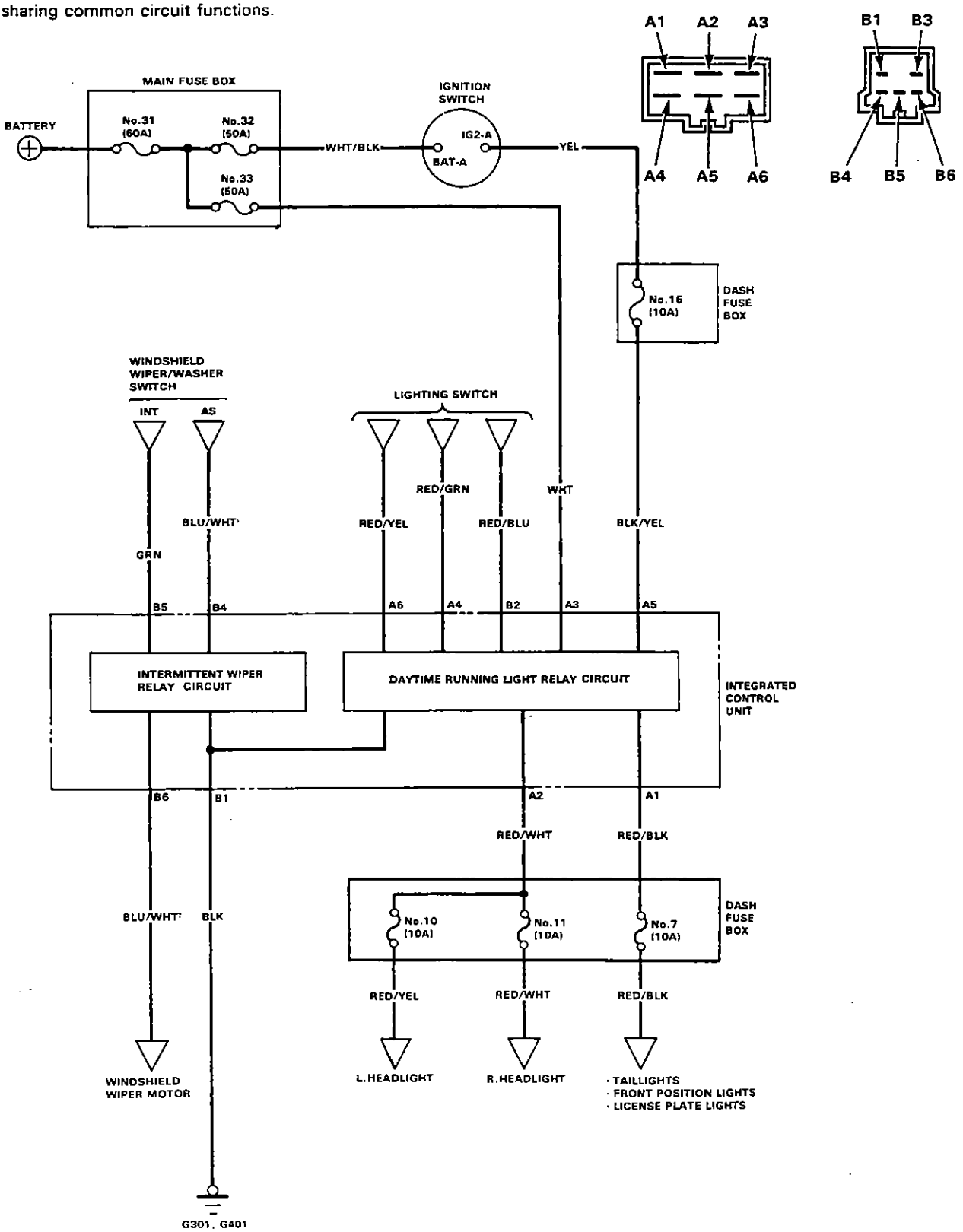
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	F	Ignition switch to "III" position.	Check for voltage to ground: should be battery voltage.	• Blown No.2 (10A) fuse. • An open is the wire.
3	E	Ignition switch ON, full brake fluid and parking brake DOWN.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • Blown brake warning light bulb. • An open is the wire.

Integrated Control Unit (With Daytime and Dim-Dip Light)

Circuit Diagram (With Daytime Light)

Description:
A multi function control unit located under the left side of the dashboard, integrates the functions of daytime running light relay and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit Terminals:

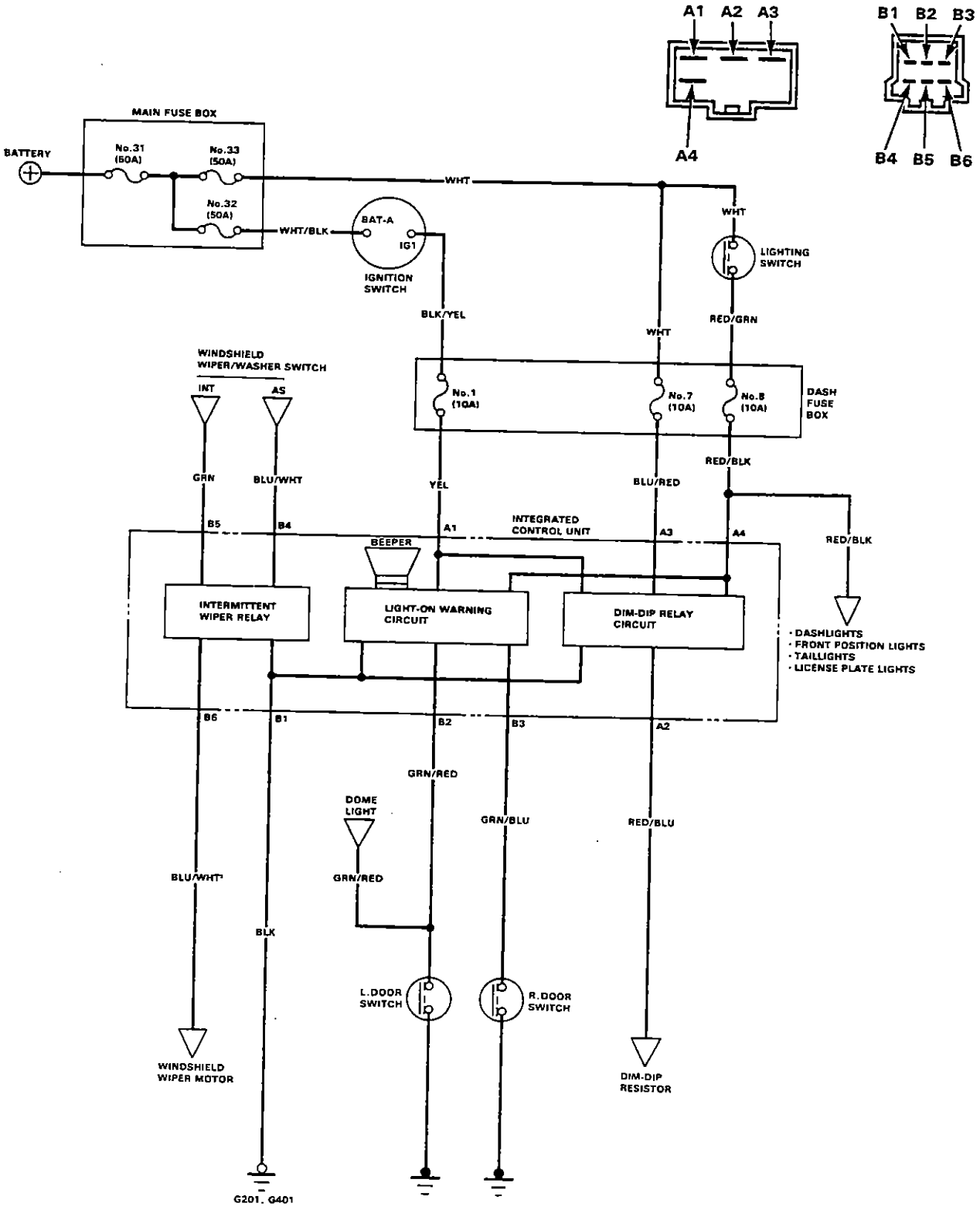


Integrated Control Unit (With Daytime and Dim-Dip Light)

Circuit Diagram (With Dim-Dip Light)

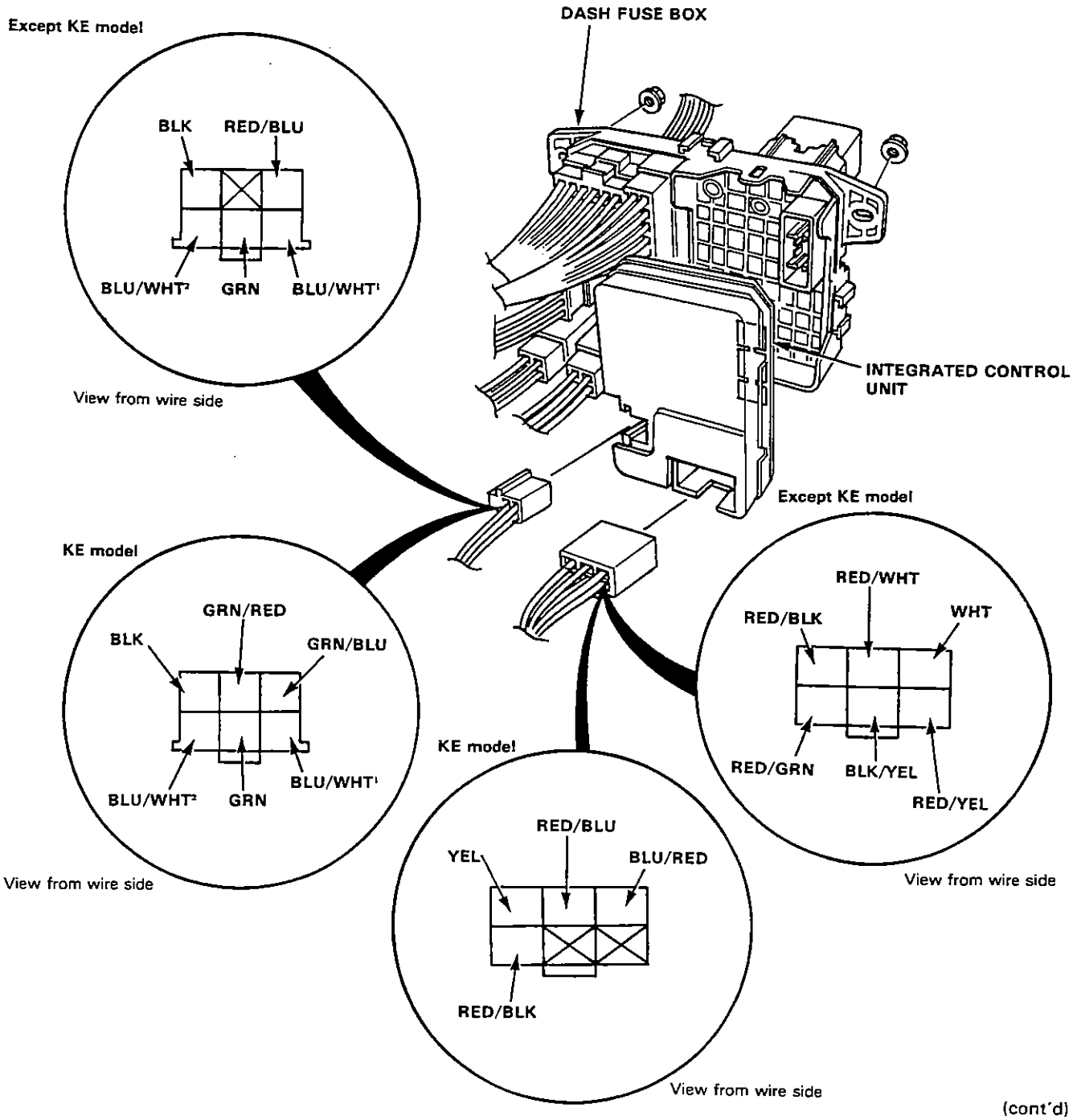
Description:
A multi function control unit located under the right side of the dashboard, integrates the functions of dim-dip relay circuit, light-on warning and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit Terminals:



Remove the dashboard lower panel and dash fuse box, then disconnect the 6-P connectors from the integrated control unit.
Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT¹ and BLU/WHT² are not the same).

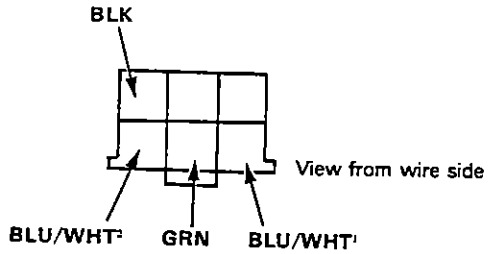


(cont'd)

Integrated Control Unit (With Daytime and Dim-Dip Light)

Input Test (cont'd)

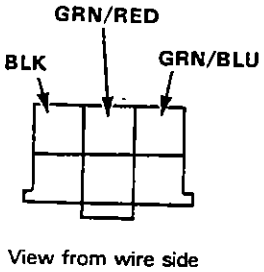
Wiper System:

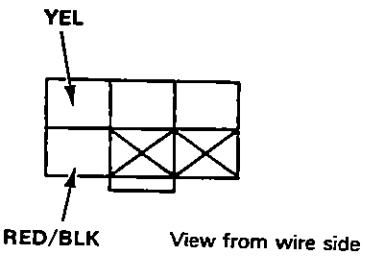


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G201, G401]).
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

[ ]: RHD

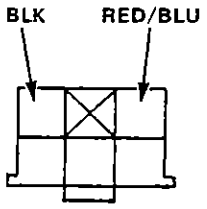
Light-on Warning System:



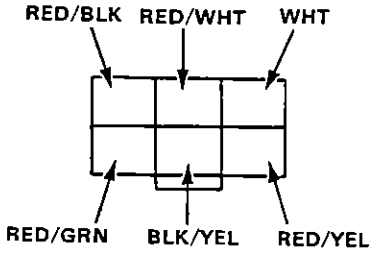


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground. should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltge.	• Blown No.1 (10A) fuse. • An open in the wire.
4	GRN/RED	Passenger door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No.12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	GRN/BLU	Driver door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

Daytime Running Light System:



View from wire side



View from wire side

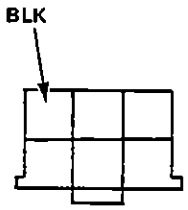
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT	Under all conditions.	Check for voltage to ground: should be battery voltage.	• An open in the wire.
3	RED/GRN	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
4	RED/YEL	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
5	RED/BLU	Lighting switch ≡D Dimmer switch Hi.	Check for voltage to ground: should be battery voltage.	• Blown No.5 (10A) fuse. • An open in the wire.
6	BLK/YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.16 (10A) fuse. • An open in the wire.
7	RED/BLK	Connect the WHT terminal to the RED/BLK terminal.	Front position lights, taillights and license plate lights should come on.	• Blown bulbs. • An open in the wire.
8	RED/WHT	Connect the WHT terminal to the RED/WHT terminal.	Headlights (Lo) should come on.	• Blown bulbs. • Blown No.10 (10A) or No.11 (10A) fuse. • Poor ground (G201, G301, G401).

(cont'd)

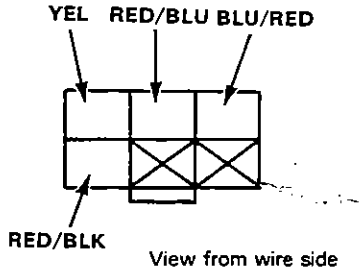
Integrated Control Unit (With Daytime and Dim-Dip Light)

Input Test (cont'd)

Dim-Dip Headlight System:



View from wire side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	BLU/RED	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.7 (10A) fuse. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the wire.
4	RED/BLK	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • An open in the wire.
5	RED/BLU	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Faulty Dim-Dip resistor. • Blown No.10 (10A) and No.11 (10A) fuse. • Faulty lighting relay. • An open in the wire.

Seat Belt Reminder System

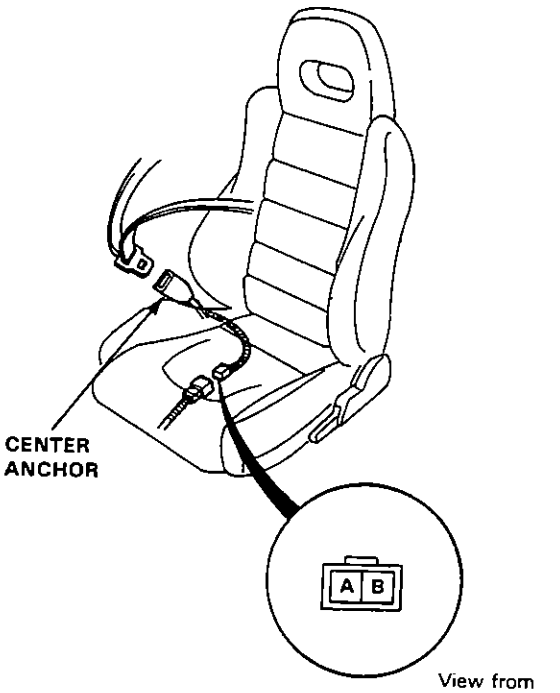
Description

NOTE: Refer to page 16-81 for wiring description of the seat belt beeper/timer circuit.

With the ignition switch in "Run" or "Start", Voltage is applied to the beeper/timer of the integrated control unit. When you unbuckle the driver's seat belt, the beeper/timer circuit senses ground at the A1 terminal. With voltage at the "B6" terminal and ground at the "B14" terminal, the seat belt beeper sunds and the timer contacts close and open. This causes the seat belt reminder light to flash on and off. After 5 seconds the alarm stops and the contacts remain open.

Seat Belt Switch Test

1. Remove the center console and disconnect the 2-P connector from the seat belt switch.
2. There should be continuity between the A and B terminals when the seat belt is not buckled.



Oil Pressure Warning System

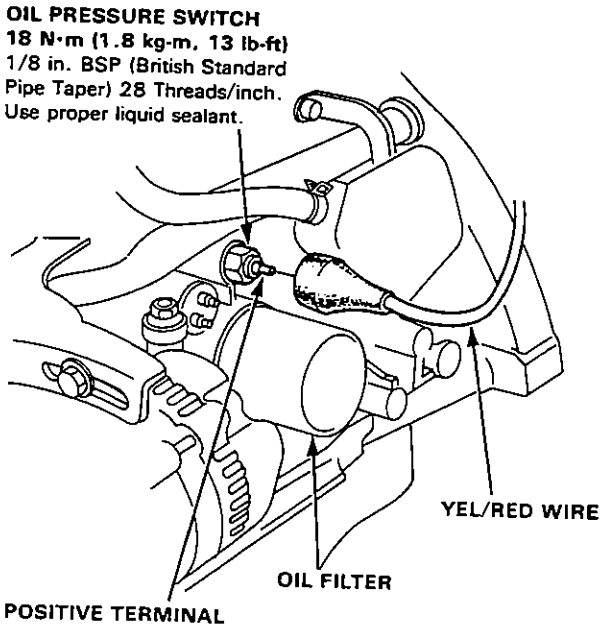
Description

NOTE: Refer to page 16-70 for wiring description of the oil pressure warning circuit.

With the engine running and normal oil pressure, the oil pressure switch is open and the oil pressure warning light does not operate. If engine oil pressure falls below 29kpa (0.3 kg/cm², 4.3 psi), the oil pressure switch is closed, current flows through the oil pressure warning light and the oil pressure switch to ground, and the oil pressure light goes on.

Oil Pressure Switch Test

1. Disconnect the YEL/RED wire from the oil pressure switch.
2. There should be continuity between the positive terminal and the engine(ground) with the engine stopped. There should be no continuity when the engine runs.



3. If the switch fails to operate, check the engine oil level, then inspect the oil pump and pressure if the oil level in correct (see section 8).

Brake Warning System

Description

NOTE: Refer to page 16-81 for wiring description of the circuit check system.

Description:
The brake warning light goes on if the parking brake is applied, if the brake fluid level is low, and as a circuit test while cranking the engine.

Parking Brake:
With the ignition switch in "Run" or "Start", and the parking brake switch closed, the brake warning light operates to remind the driver that the parking brake is applied.

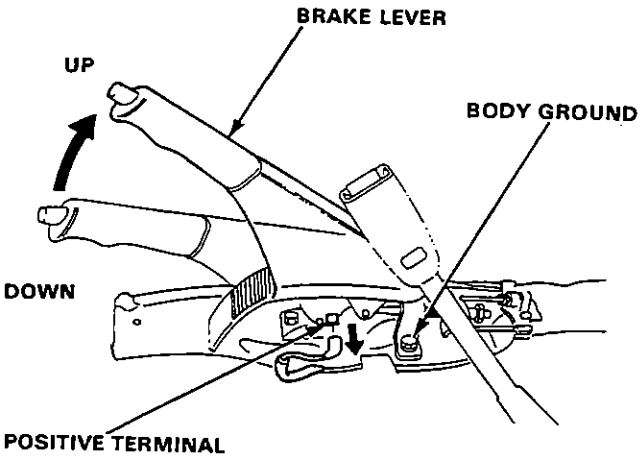
Brake Fluid Level:
With the ignition switch in "Run" or "Start", and the brake fluid level switch closed, the brake warning light operates to warn the driver of low brake fluid level in the brake master cylinder.

NOTE: Low fluid level indicates brake wear or system leaks; check brake pad wear before adding fluid.

Circuit Check: KQ model only
With the ignition switch in "Start" voltage is applied through the No.2 (10A) fuse in the dash fuse box to the circuit check built into the integrated control unit. The circuit check transistor is on, and current flows through the No.1 (10A) fuse in the dash fuse box, the brake warning light and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and bulb.

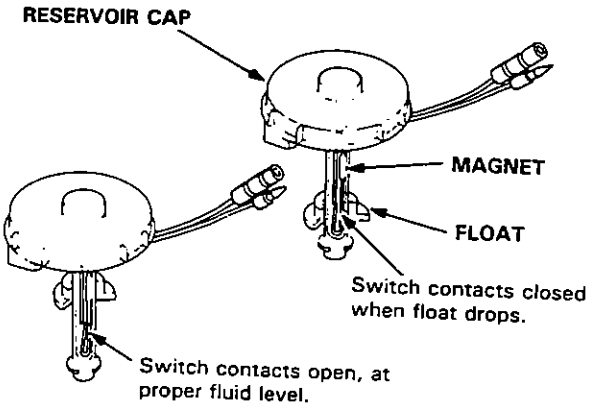
Parking Brake Switch Test

1. Remove the center console and disconnect the connector from the switch.
2. There should be continuity between the positive terminal and body ground with the brake lever up.
   There should be no continuity with the brake lever down.



Brake Fluid Level Switch Test

1. Remove the reservoir cap. Check that the float moves up and down freely.
   Replace the reservoir cap assembly if the float does not move freely.
2. Check for continuity between the terminals with the float up and down.
   There should be continuity with the float down and no continuity with the float up.
   Replace the reservoir cap assembly if necessary.



Light-on Warning System

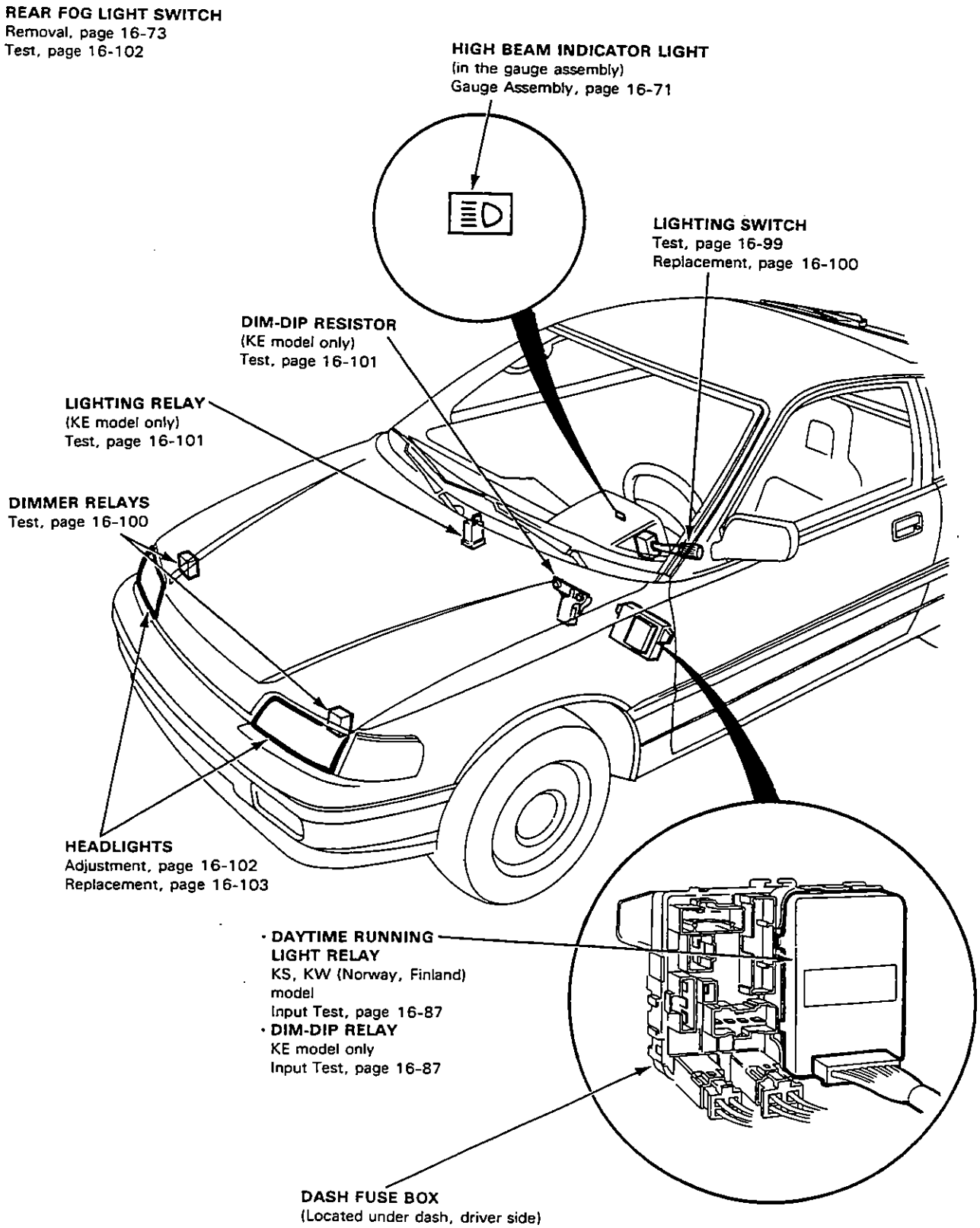
Description

NOTE: Refer to 16-81, [86] for wiring description of the light-on warning circuit, and page 16-82, [87] for the input test of the warning circuit.

When the light on, voltage is applied to the warning circuit on the integrated control unit. When you open the driver's door, the warning circuit senses ground through closed door switch.
With voltage at the "B8, [A4]" terminal, ground at the "A1, [B3]" terminal, the beeper is activated to remind the driver to turn of the lights.
[ ] : KE model

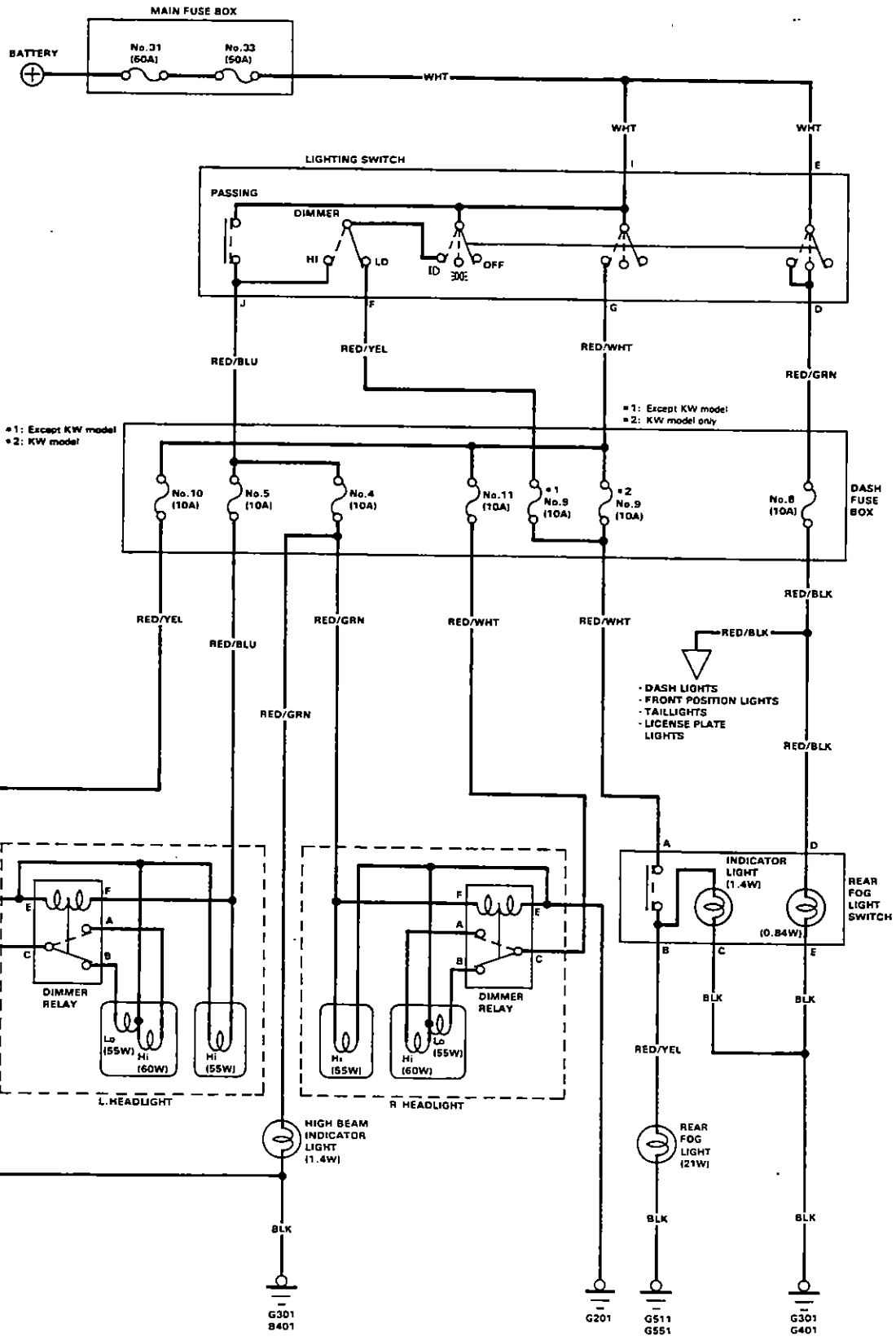
Lighting System

Component Location Index

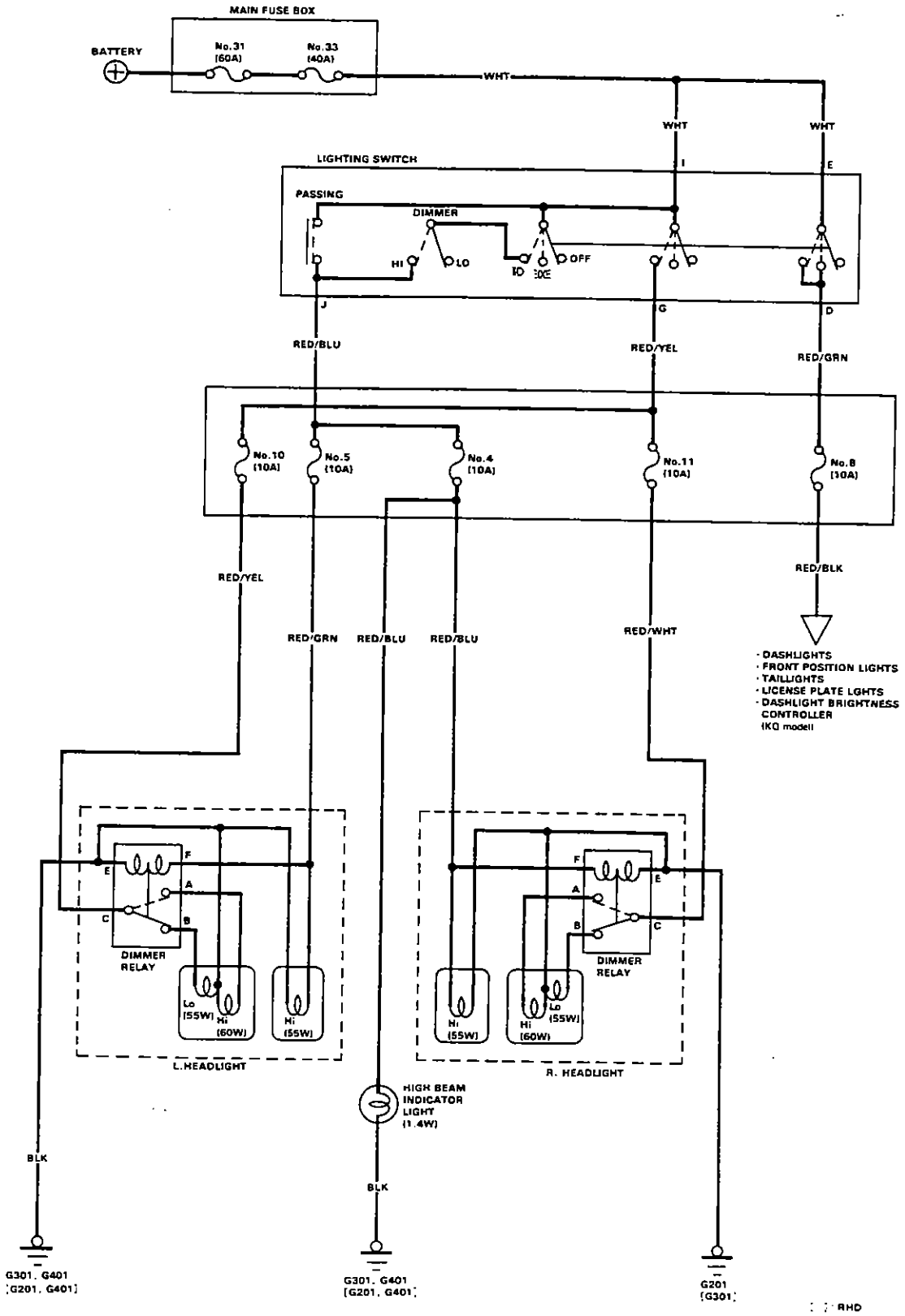


Lighting System

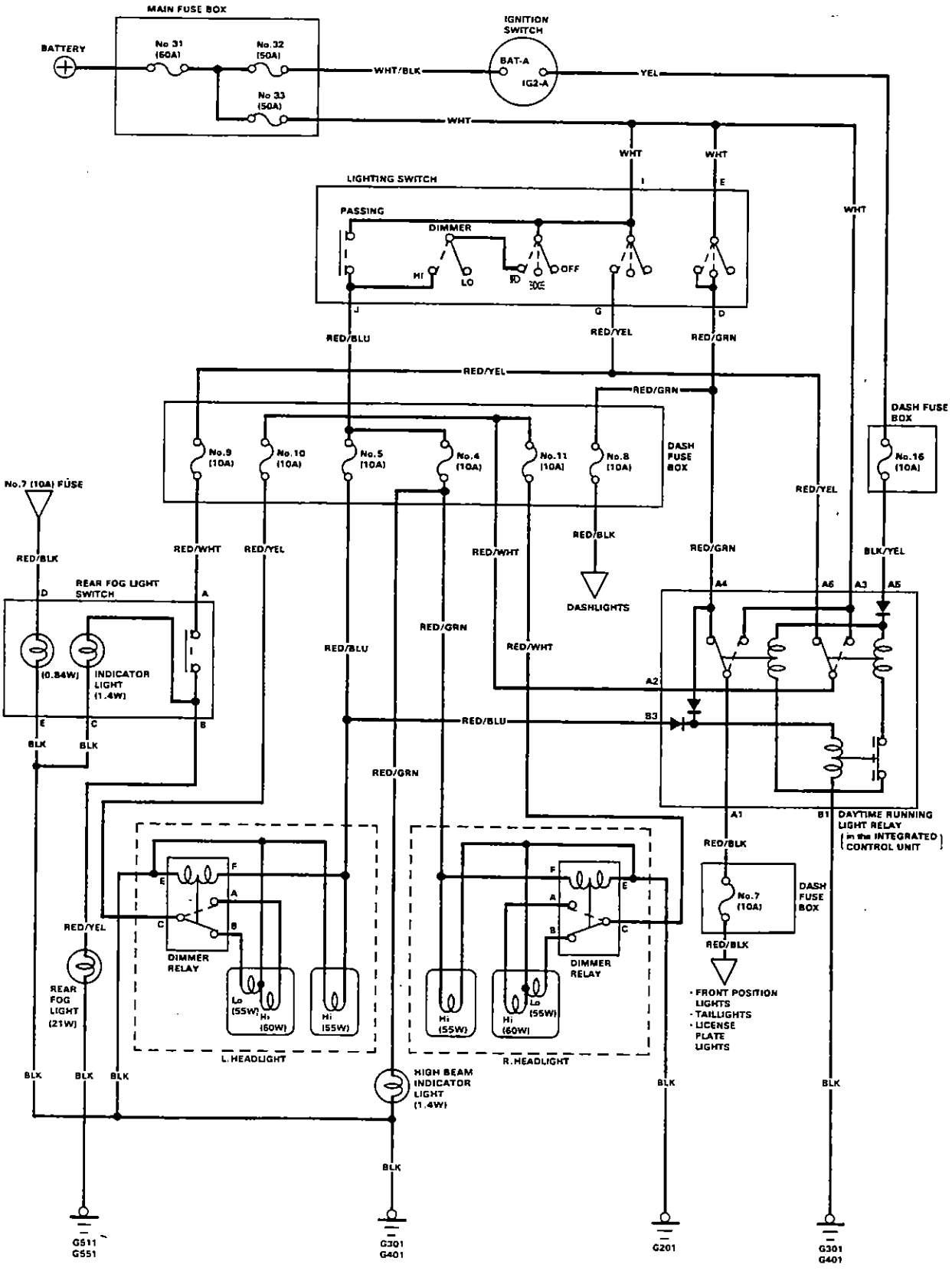
Circuit Diagram (KG, KF, KB, KW and KX models)



Circuit Diagram (KQ and KY models)

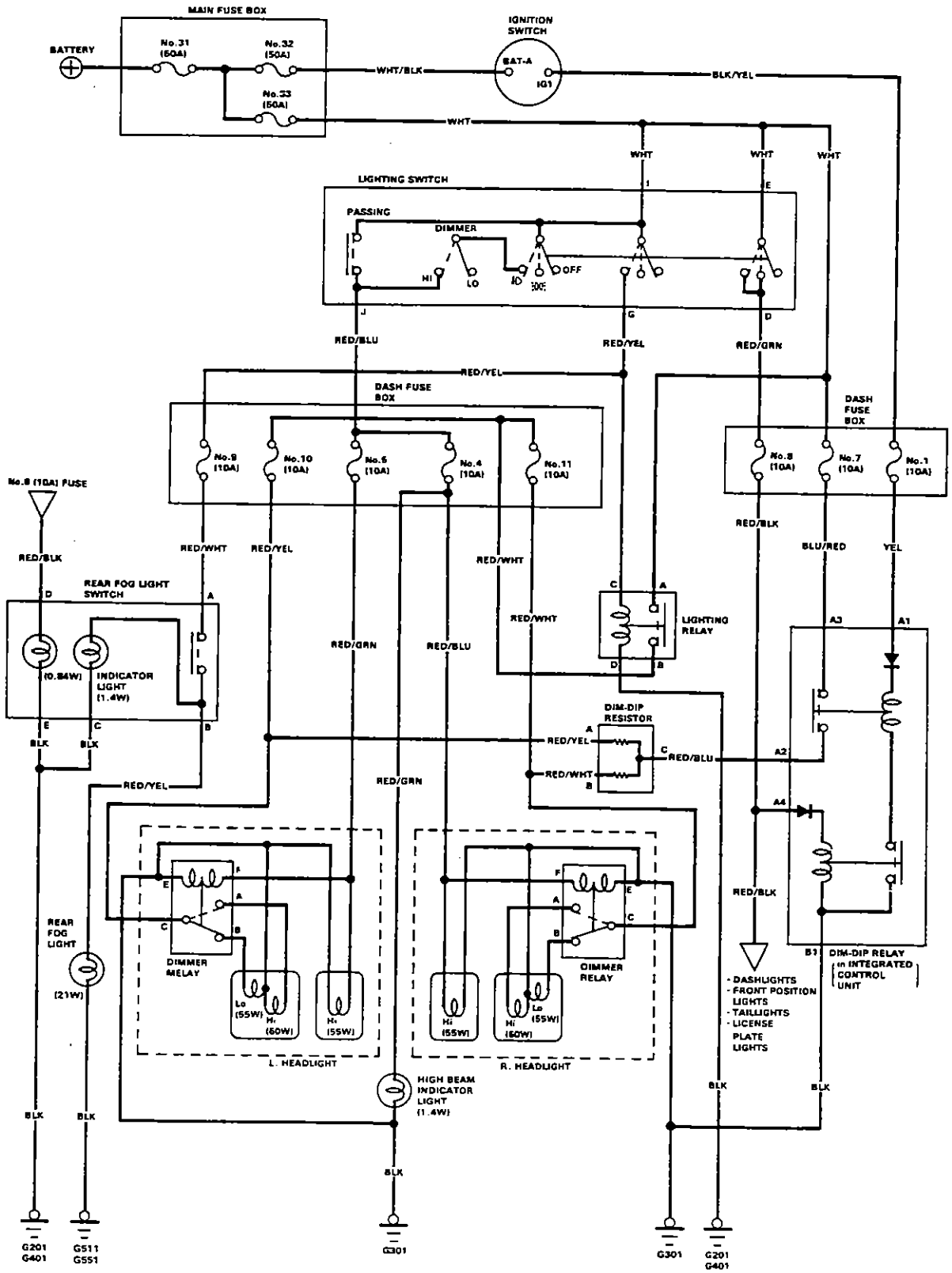


Circuit Diagram(With Daytime Light)



Lighting System

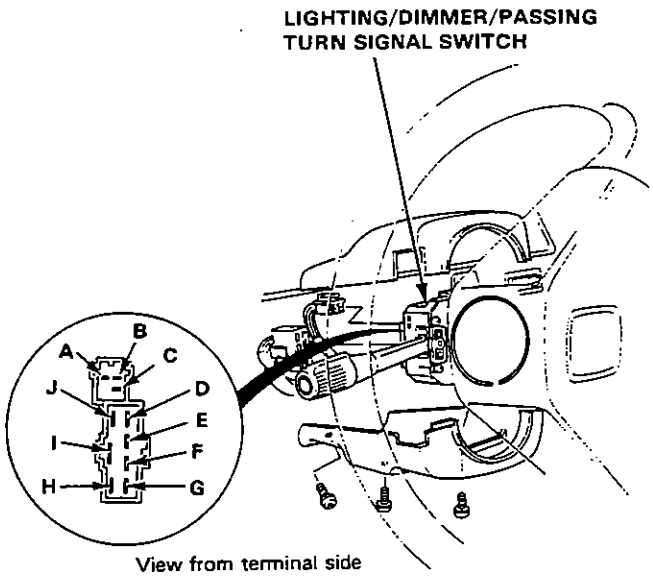
Circuit Diagram (with Dim-Dip Headlight)



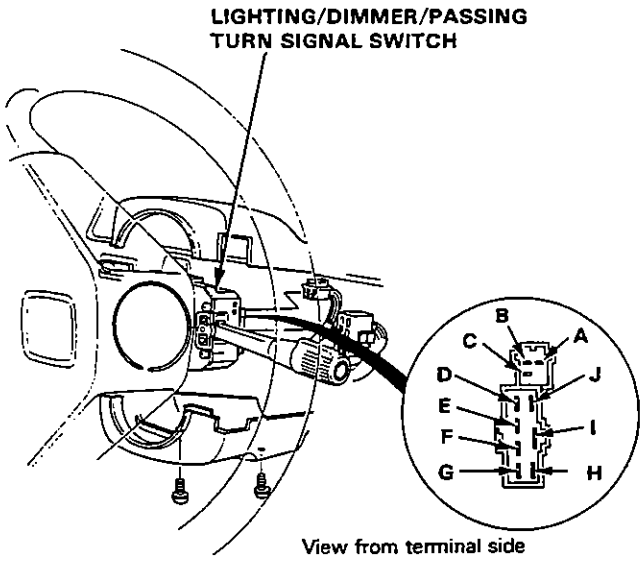
Lighting/Turn Signal Switch Test

1. Remove the column covers.
2. Disconnect the 7-P and 4-P connectors from the switch.
3. Check for continuity between the terminals in each switch position according to the tables.

LHD:



RHD:



Lighting/Dimmer/Passing Switch

Position \ Terminal		D	E	F*	G	I	J
Lighting switch	OFF						
	≡D	○	○				
	≡D				○	○	
Dimmer switch	LOW			○	○	○	
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

Turn Signal Switch

Position \ Terminal		A	B	C
LHD:	R	○		○
	NEUTRAL			
	L	○	○	
RHD:	R	○	○	
	NEUTRAL			
	L	○		○

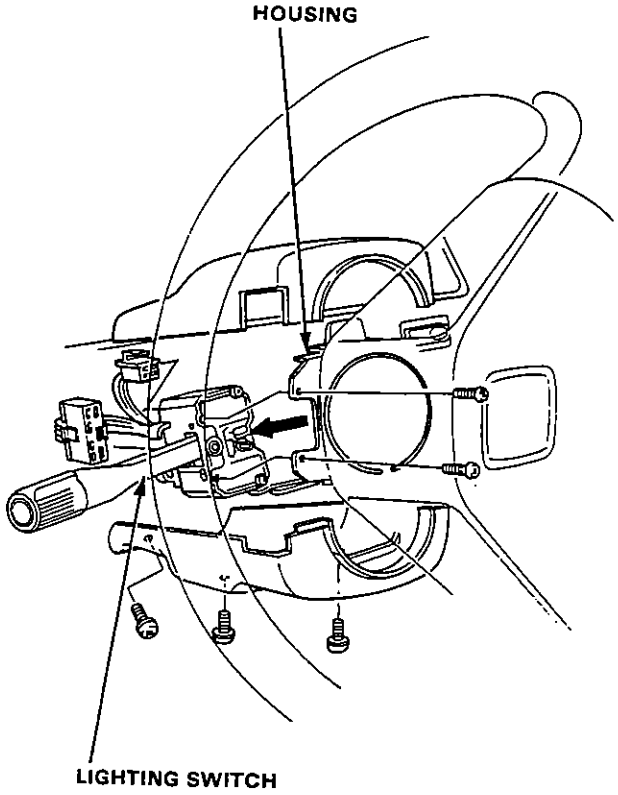
* : KW (Except Norway, Finland) model

Lighting System

Lighting Switch Replacement

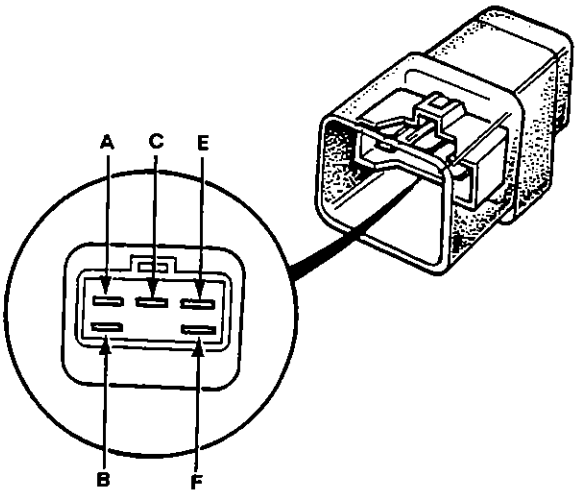
1. Remove the lower and upper covers from the steering column.
2. Disconnect the 7-P and 4-P connectors.
3. Remove the 2 screws and slide the lighting switch out of the housing as shown.

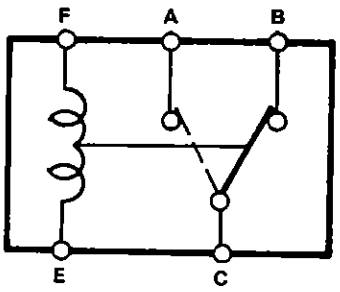
NOTE: Be carefull not to damage the steering wheel cover.



Dimmer Relay Test

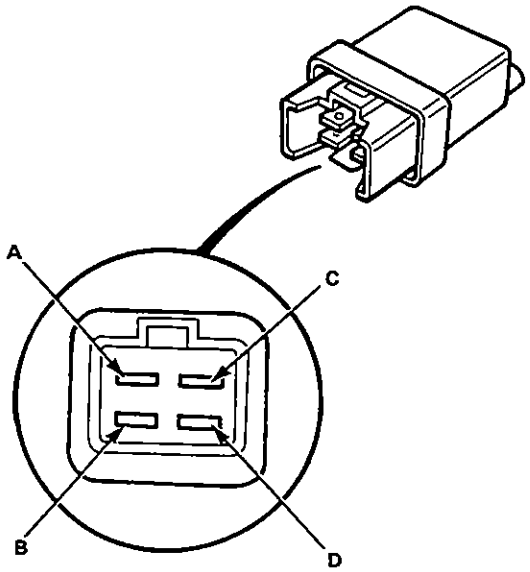
1. Remove the dimmer relays from the headlight units.
2. There should be continuity between the A and C terminals when the battery is connected to the E and F terminals.
   There should be continuity between the B and C terminals when the battery is disconnected.

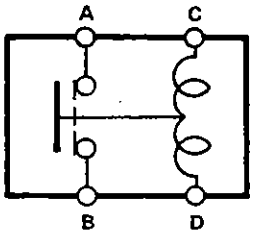




Lighting Relay Test

1. Remove the lighting relay.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.



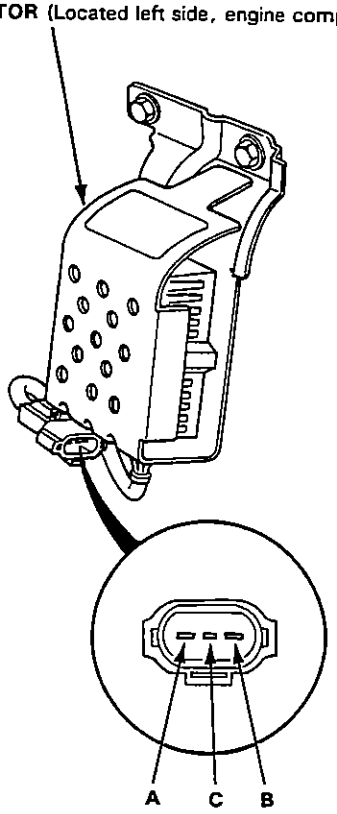


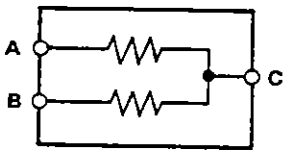
DIM-DIP Resistor Test

CAUTION: Dim-Dip resistor becomes very hot in use of Dim-Dip headlights; do not touch it or the attaching hardware immediately after they have been turned off.

1. Disconnect the 3-P connector from the resistor.
2. There should be continuity between A and C; between B and C terminals.

RESISTOR (Located left side, engine compartment)



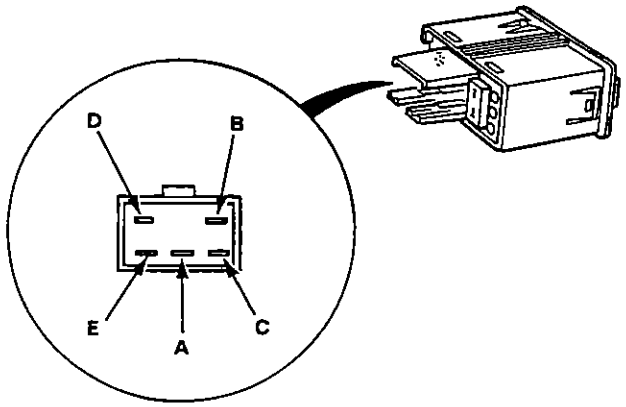


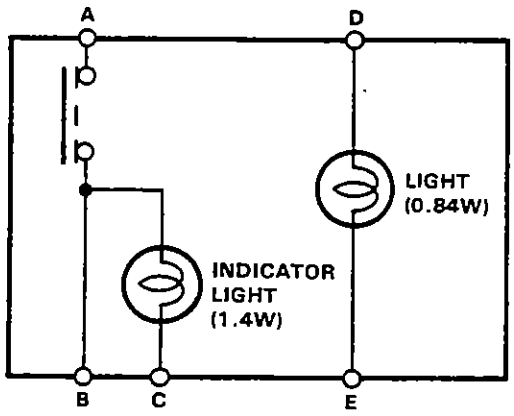
Lighting System

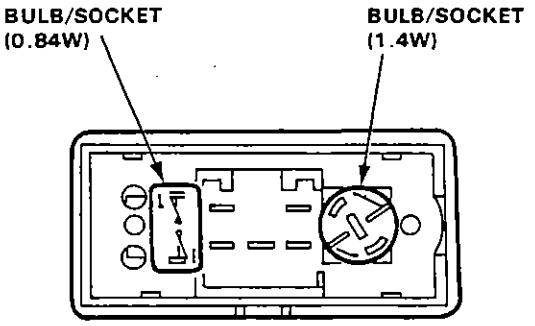
Rear Fog Light Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal / Position	A		B		C	D		E
ON	○	—	○	⊖	○	○	⊖	○
OFF								



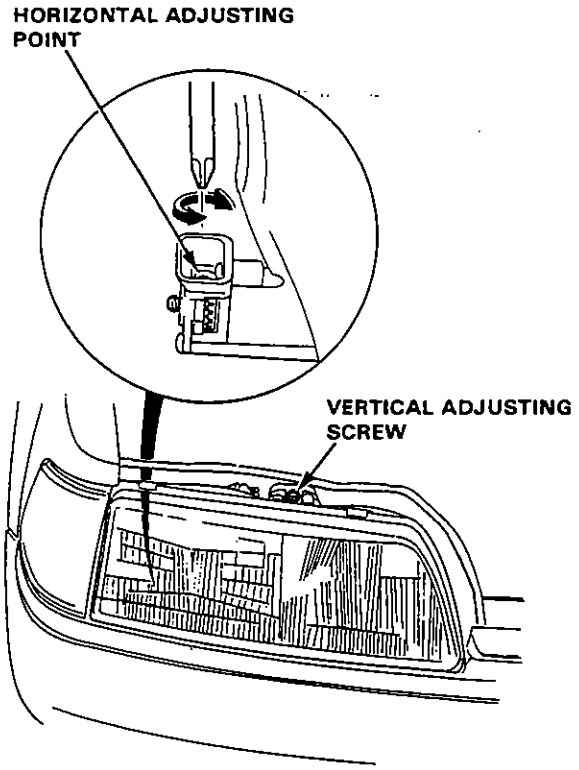




Headlights

Adjustment

NOTE: Adjust the headlights to local requirements.

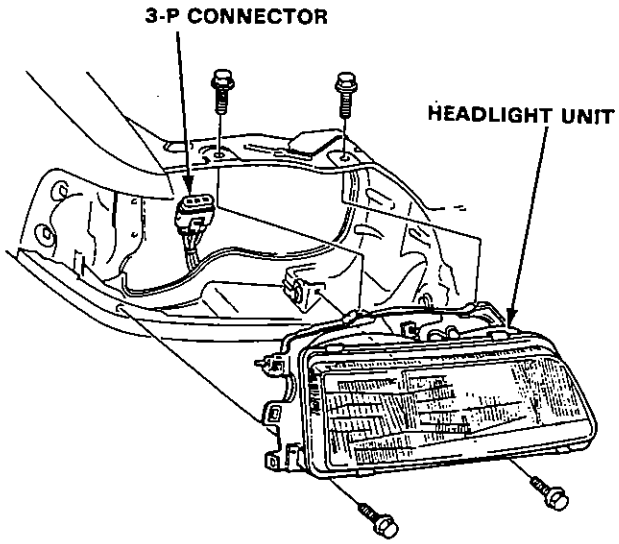


Replacement

CAUTION:

- **Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.**
- **Do not try to replace or clean the headlights with the lights on.**

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and 4 mount bolts, then remove the unit.

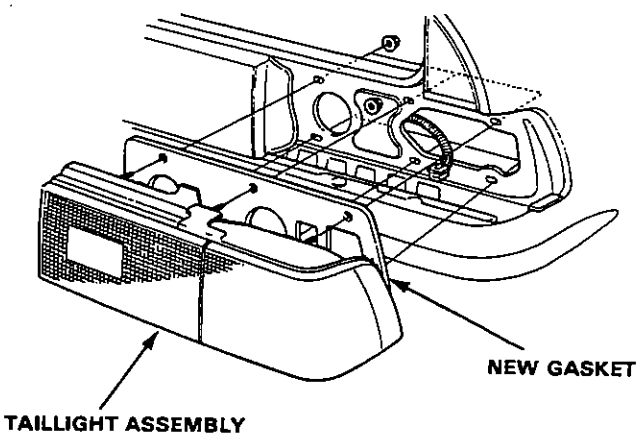


3. After installing the unit, adjust the headlights to local requirements.

Taillight Assembly

Replacement

1. Open the hatch and the maintenance cover of the taillight.
2. Disconnect the 6-P connector from behind the taillight.
3. Remove the 6 mount nuts and the taillight assembly.

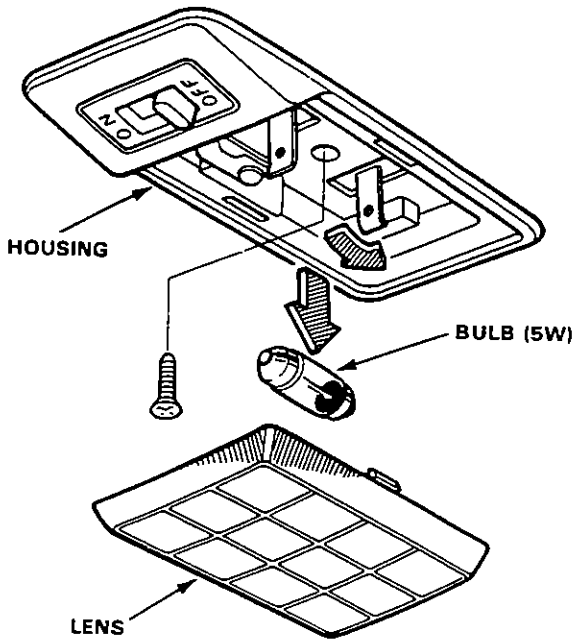


4. Inspect the gasket; replace if it is distorted or overly compressed.

Dome Light

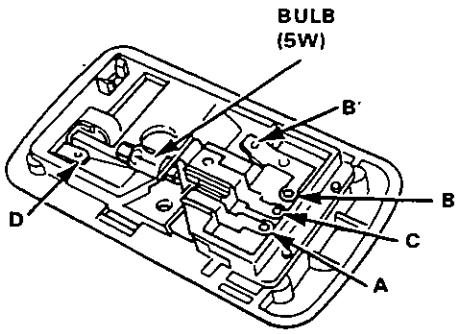
Test

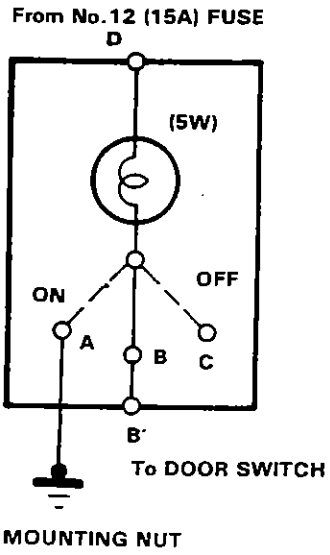
1. Turn the light switch OFF.
2. Pry off the lens.
3. Remove the screw and the housing.
4. Disconnect the two connectors from the housing.



5. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	A	B or B'	C		D
OFF					
MIDDLE					
ON					

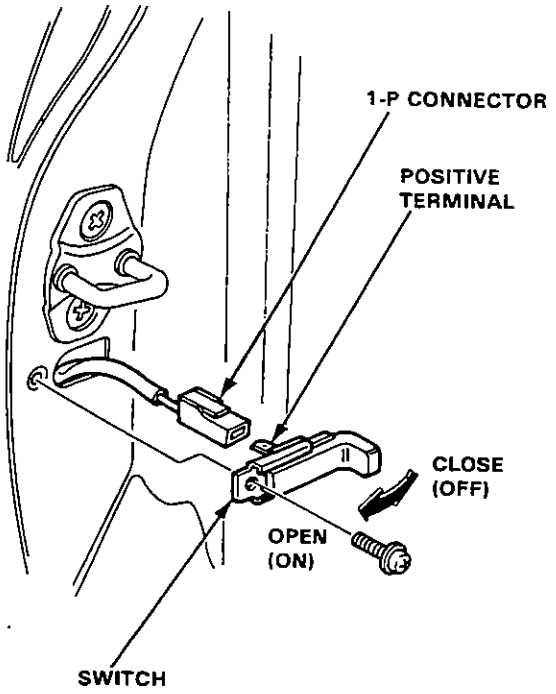




Door Switches

Test

1. Open the door.
2. Remove the screw and pull out the door switch.
3. Disconnect the 1-P connector from the switch.

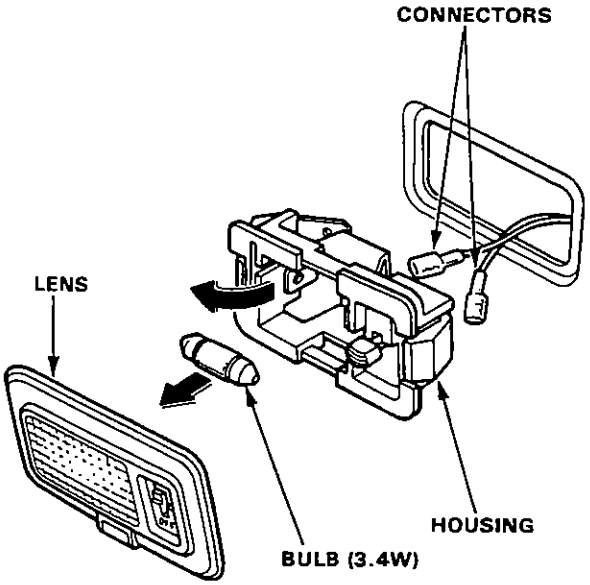


4. There should be continuity between the positive terminal and base plate (ground)with the switch released (door opened).
   There should be no continuity with the switch pushed (door closed).

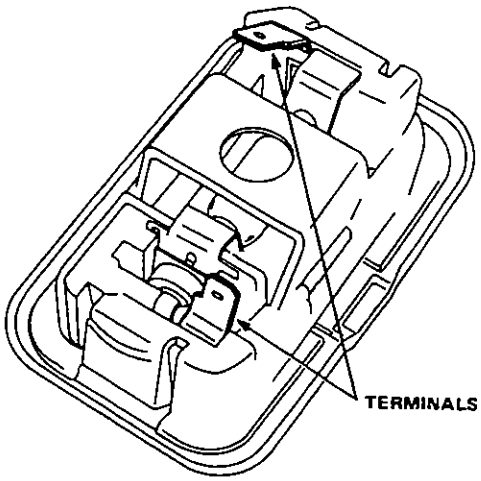
Trunk Light

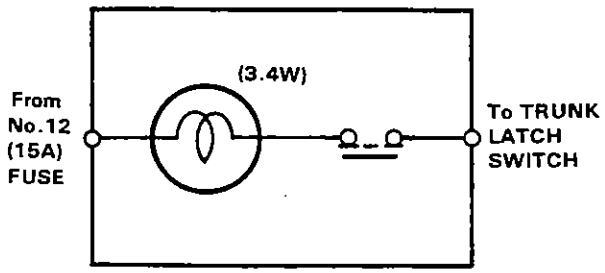
Test

1. Pry off the trunk light lens from the housing.
2. Pry off the light assembly.
3. Disconnect the connectors from the housing.



4. Make sure that the bulb, is in good condition.
   Set the trunk light switch in the ON position and check for continuity between terminals.

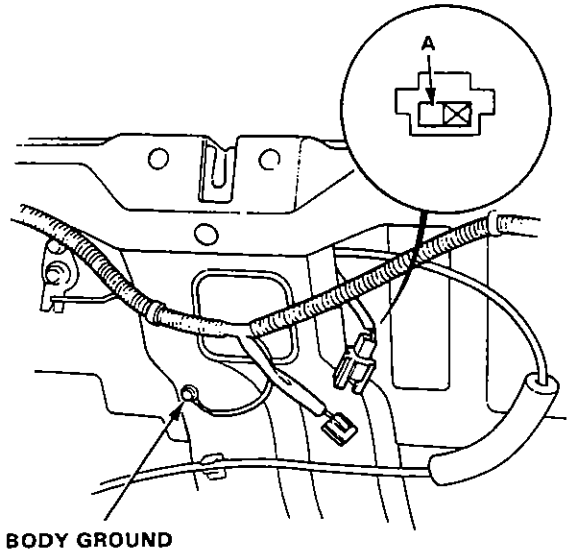




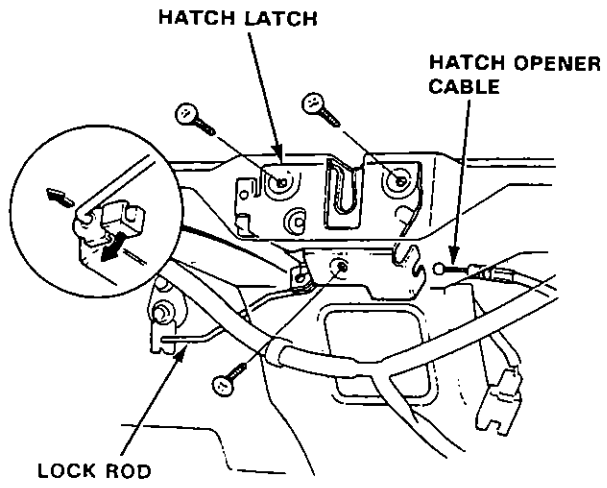
Latch Switch

Test/Replacement

1. Open the hatch and remove the rear panel lining.
2. Disconnect the 2-P connector from the hatch latch.
3. There should be continuity between the A terminal and body ground.

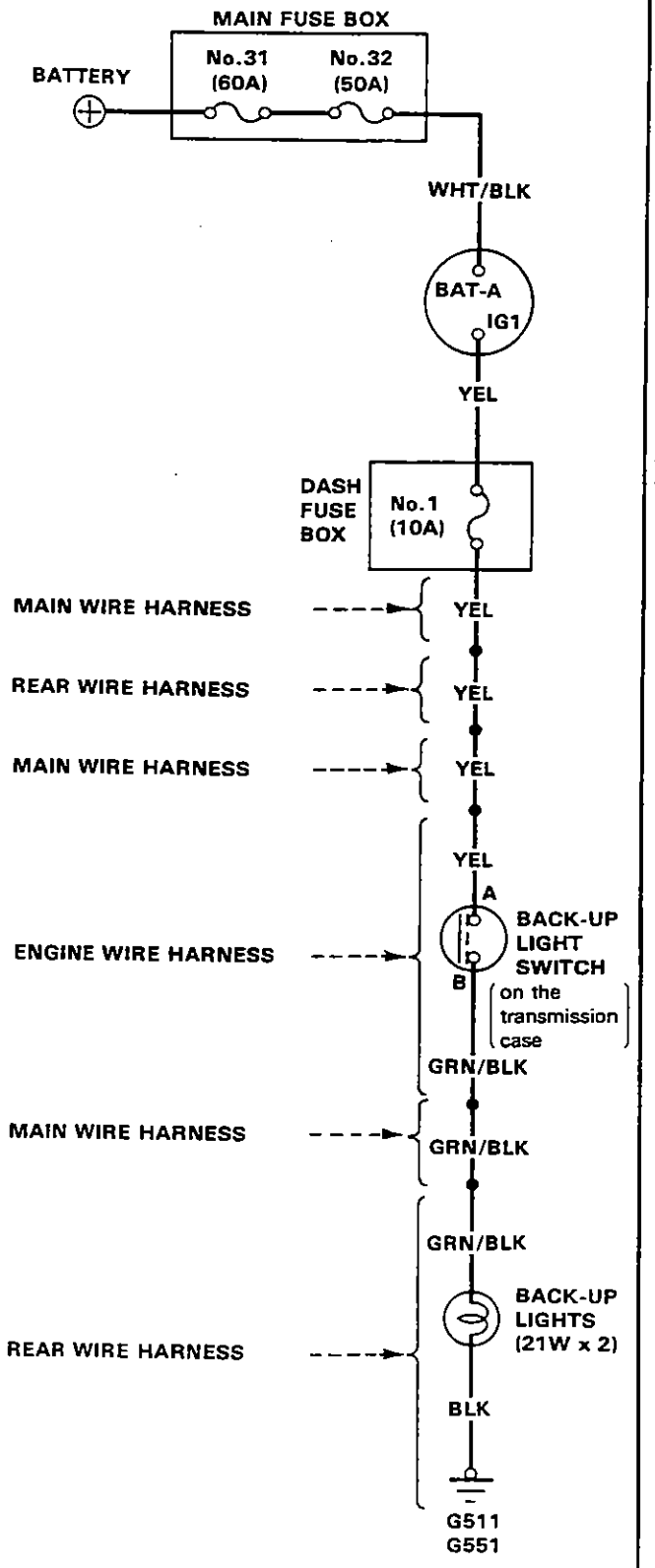


4. If necessary, remove the 3 bolts to pull out the latch from the trunk, then disconnect the lock rod from the latch.
5. Disconnect the hatch opener cable from the latch.



Back-Up Lights

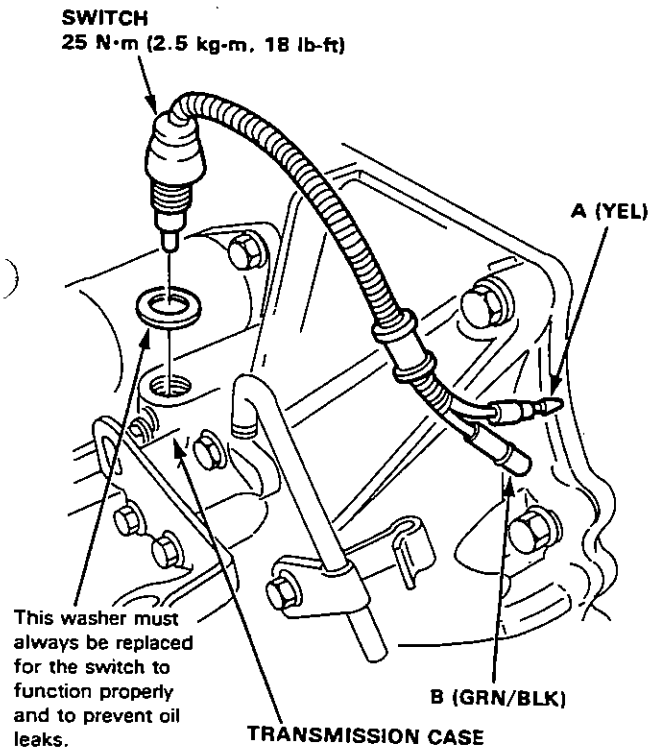
Circuit Diagram



Back-Up/Rear Fog Lights

Test

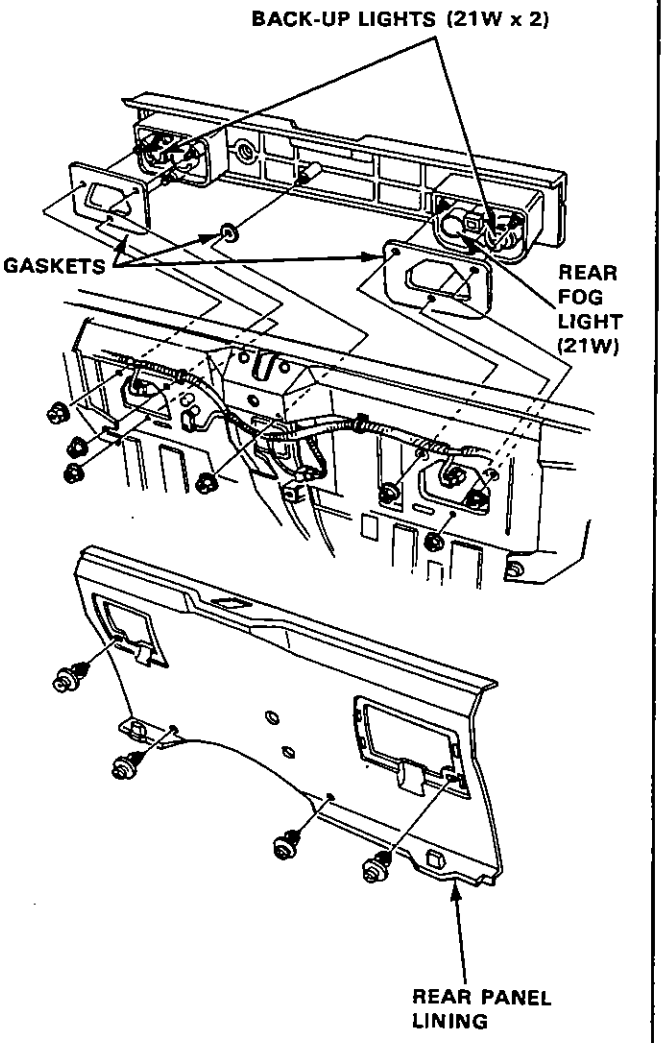
1. Test back-up light switch by placing the select lever in reverse and turning the ignition switch to ON.
2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the taillight assembly.
3. If the fuse and bulbs are OK, disconnect the connectors from the back-up light switch.



4. Check for continuity between the A and B wires with the switch installed to the transmission case. There should be continuity as the select lever engages "R"
   - If no continuity, replace the switch.
   - If there is continuity, but the back-up lights do not go on:
     - Poor ground (G511, G551).
     - An open in the YEL or GRN/BLK wire.

Replacement

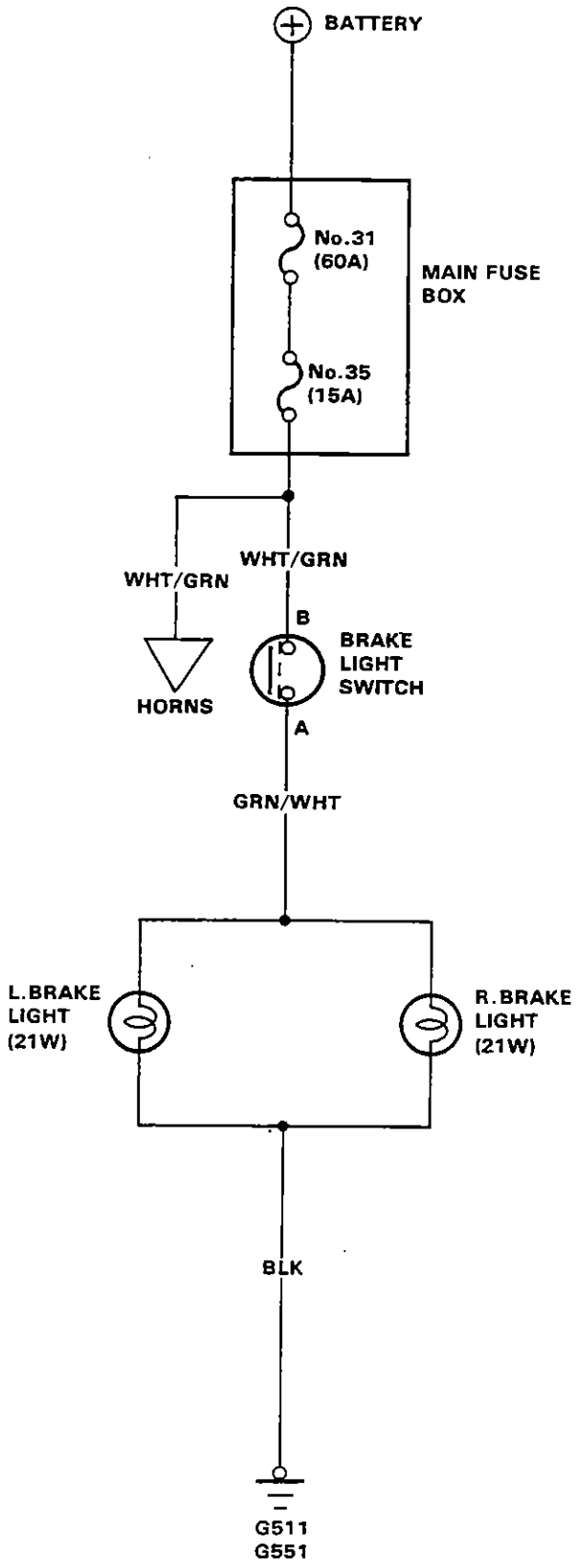
1. Remove the rear panel lining.
2. Disconnect the 4-P connectors from behind the back-up lights.
3. Remove the 7 mount nuts and the back-up light assembly.



4. Inspect the gaskets; replace if distorted or overly compressed.

Brake Lights

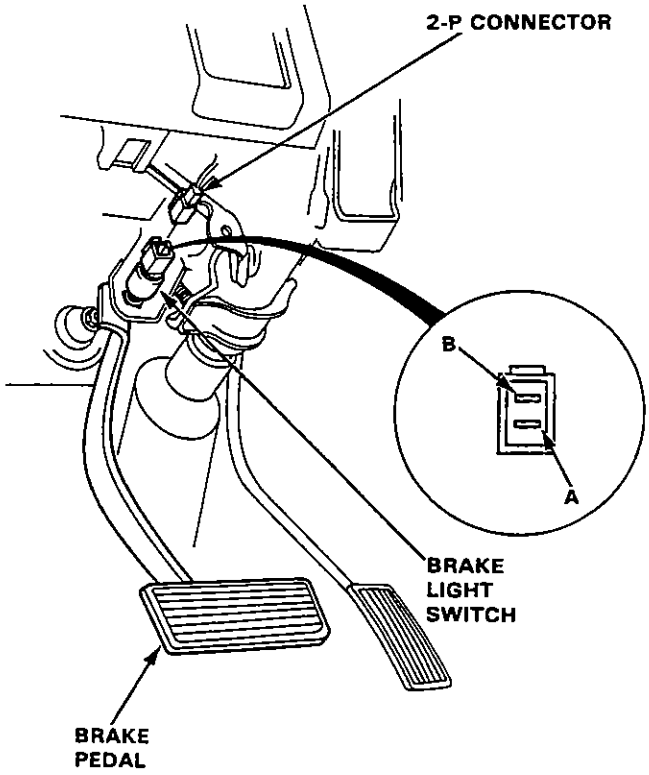
Circuit Diagram



Test

1. If the brake lights do not go on, check the No.35 (15A) fuse in the main fuse box, and the brake light bulbs in the taillight assembly.

2. If the fuse and bulbs are OK, disconnect the 2-P connector from the brake light switch.

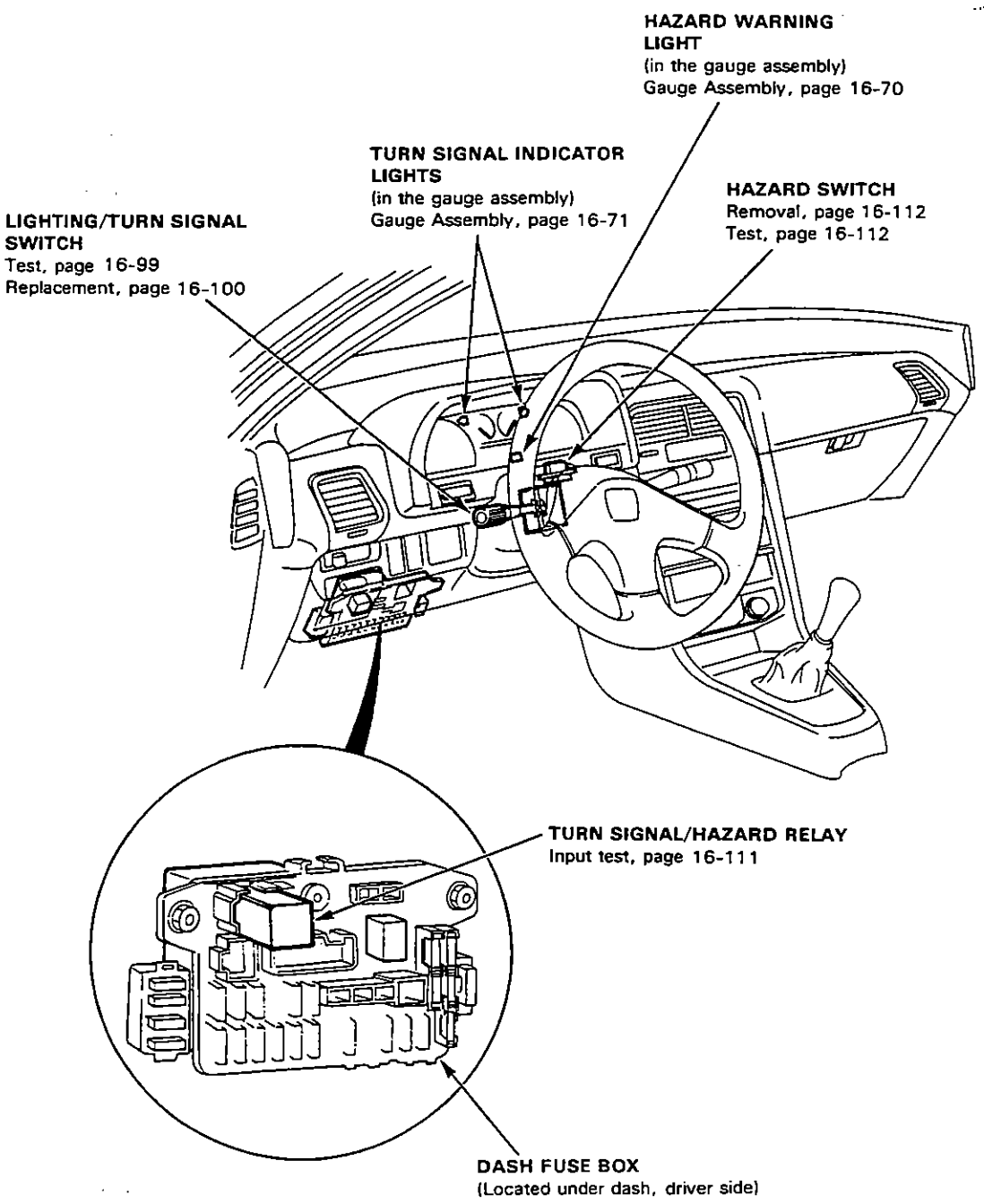


3. Check for continuity between the A and B terminals. There should be continuity with the brake pedal pushed.

   - if no continuity, replace the switch or adjust pedal height (see section 13).
   - If there is continuity, but the brake lights do not go on:
     - Poor ground (G511, G551).
     - An open in the WHT/GRN or GRN/WHT wire.

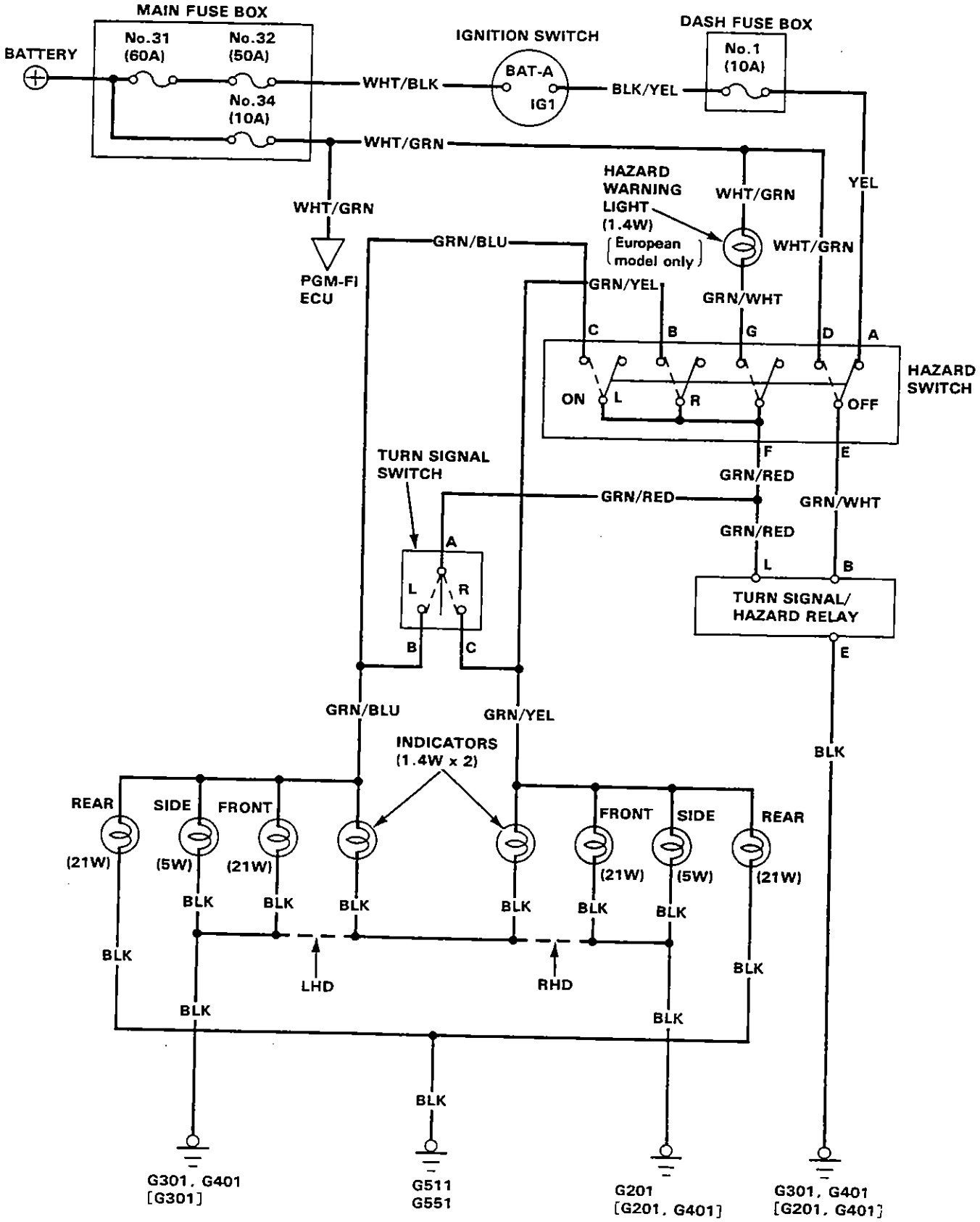
Turn Signal/Hazard Flasher System

Component Location Index



Turn Signal/Hazard Flasher System

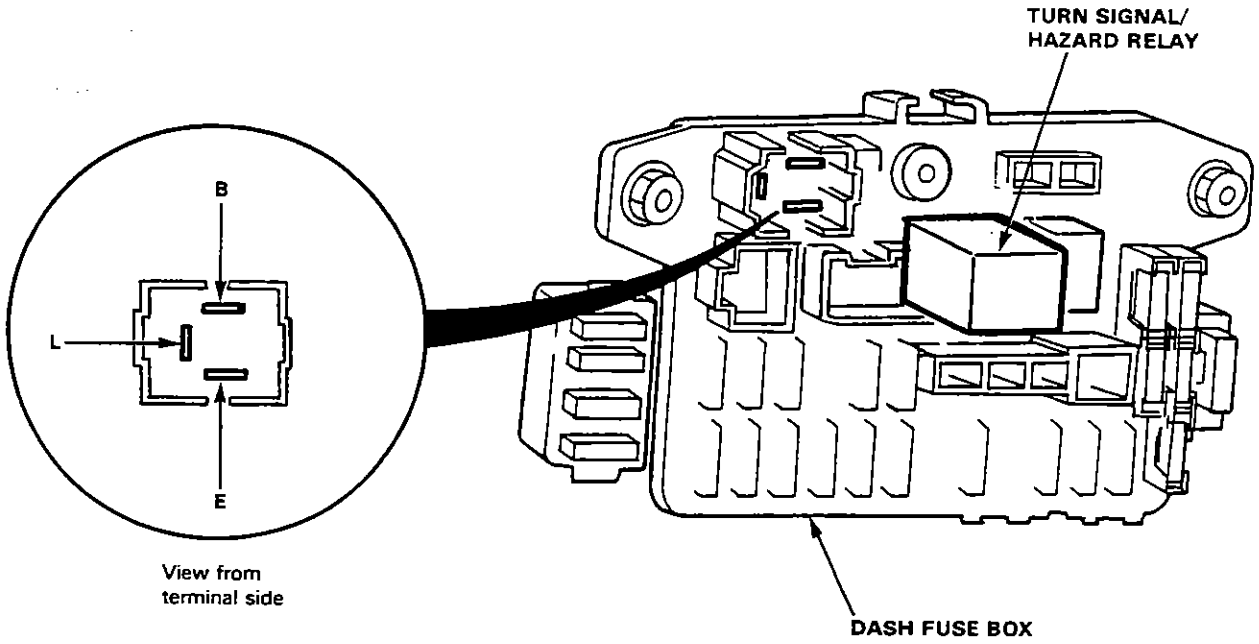
Circuit Diagram



Turn Signal/Hazard Flasher System

Turn Signal/Hazard Relay Input Test

Remove the dashboard lower panel, then remove the turn signal /hazard relay from the dash fuse box.
Make the following input tests at the relay holder pins.
If all tests prove OK, but the relay fails to work, replace the turn signal/hazard relay.



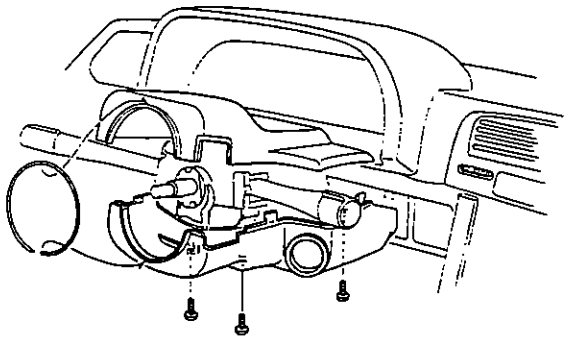
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	E	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor grond (G301, G401 [G201, G401]) • An open in he BLK wire.
2	B	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in he YEL or GRN/WHT wire. • Faulty hazard switch.
3	B and L	Hazard switch ON and connect the B terminal to the L terminal.	Hazard lights should come on.	• Blown No.34 (10A) fuse. • Blown bulb. • Faulty hazard switch. • An open in the WHT/GRN, GRN/RED, GRN/YEL or GRN/BLU wire.
		Ignition switch ON and turn signal switch in R or L and connect the B terminal to the L terminal.	R or L side turn lights should come on.	• Faulty turn signal switch.

[ ]: RHD

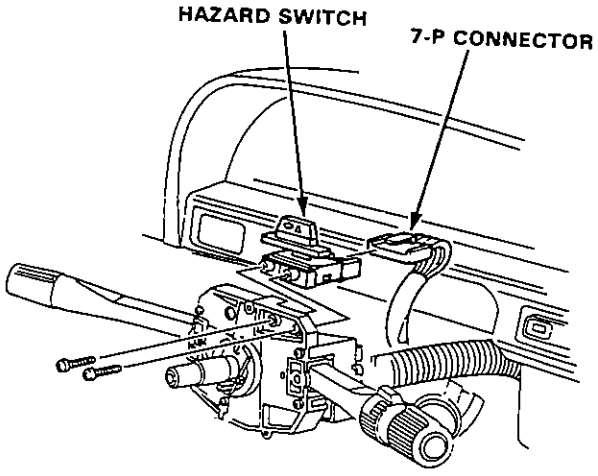
Turn Signal/Hazard Flasher System

Hazard Switch Removal

1. Remove the steering wheel then remove the column covers.



2. Disconnect the 7-P connector, then remove the switch from the combination switch by releasing the 2 mounting screws.

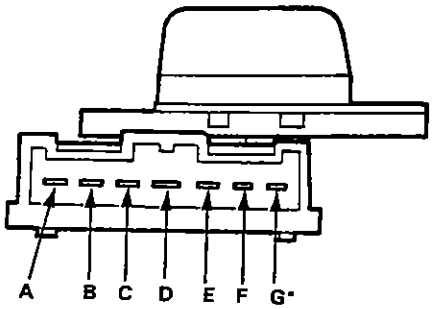


Hazard Switch Test

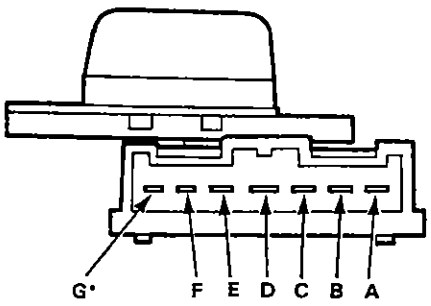
1. Remove the hazard switch
2. Check for continuity between the terminals in each switch position according to the table.

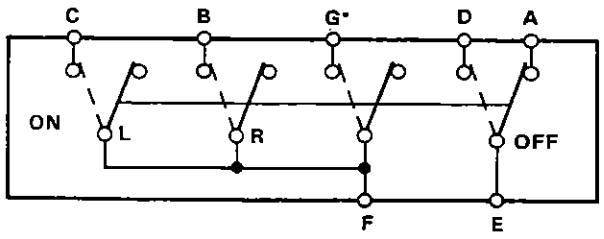
Terminal / Position	A	B	C	D	E	F	G
OFF	○				○		
ON		○	○	○	○	○	○

LHD:



RHD:

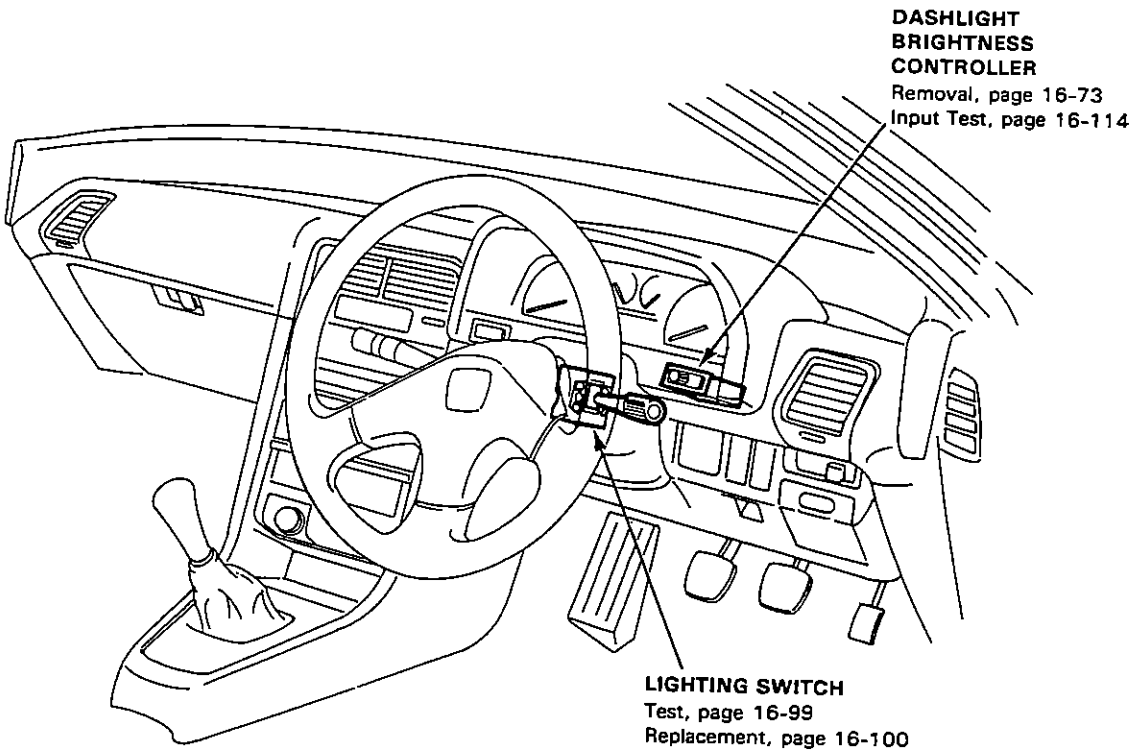




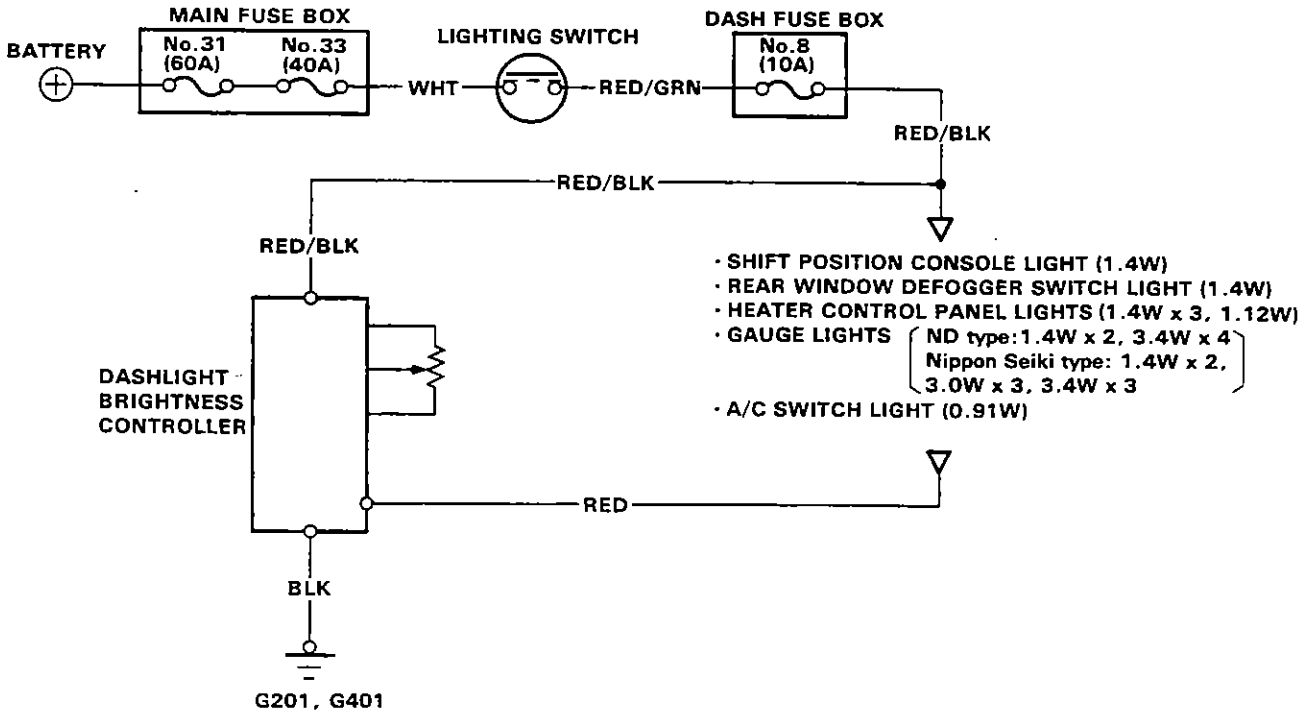
G*·····European model only

Dashlight Brightness Control (KQ model only)

Component Location Index



Circuit Diagram

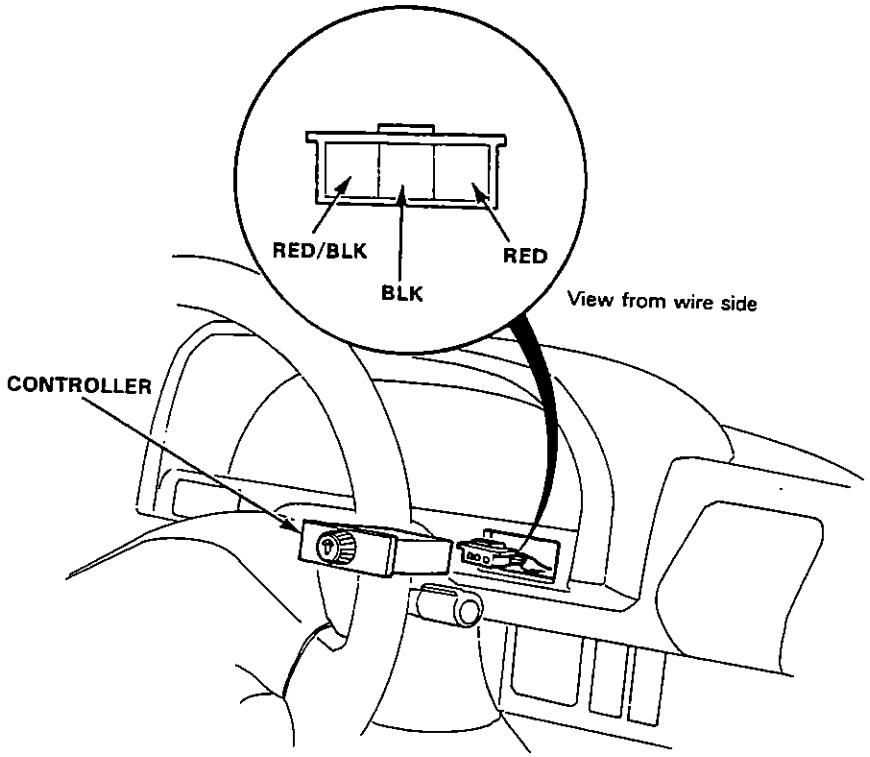


Dashlight Brightness Control (KQ model only)

Controller Input Test

NOTE: The control unit is built in the dashlight brightness controller.

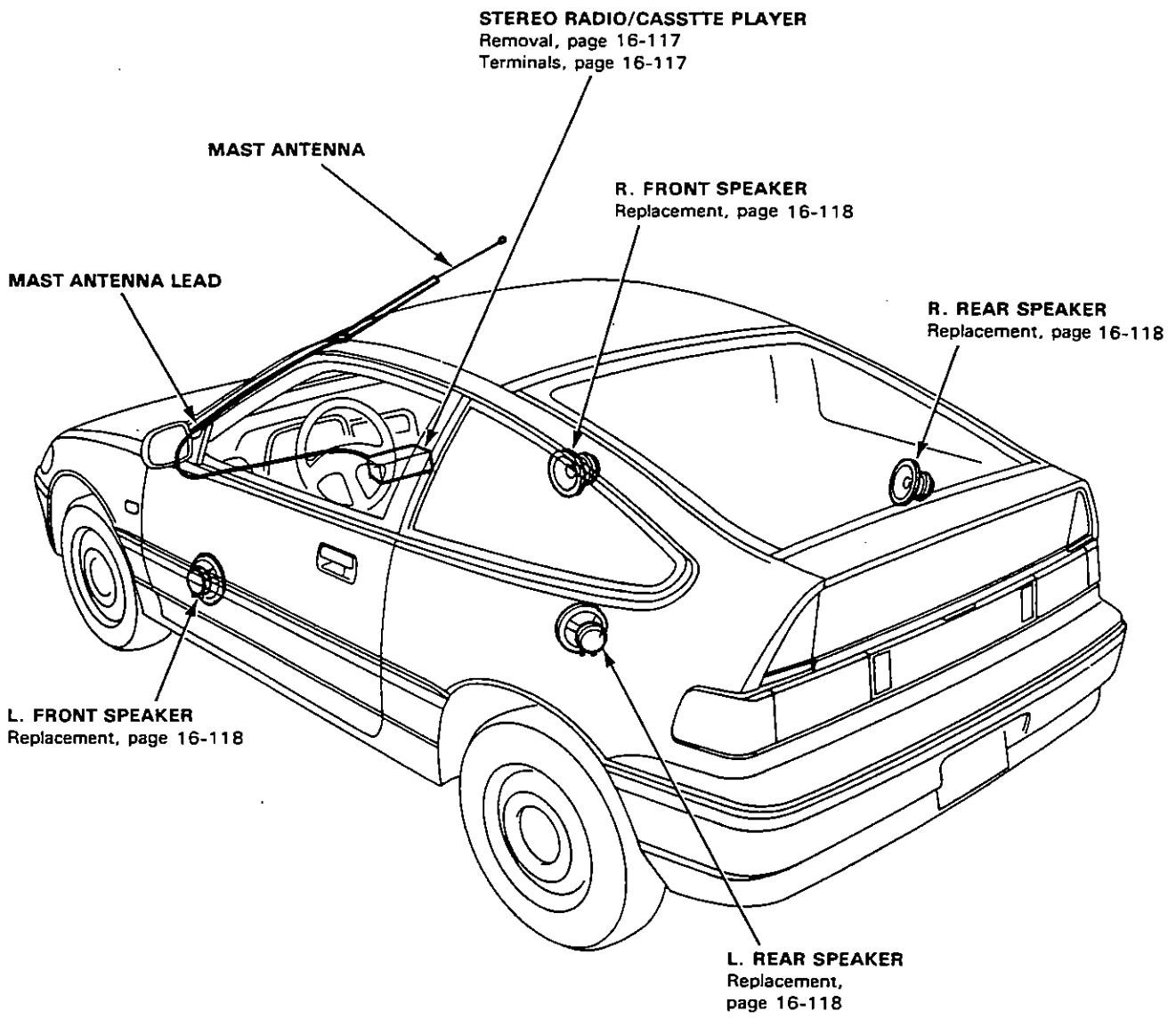
Remove the controller from the instrument panel, then disconnect the 3-P connector from the controller.
connector from the controller.
Make the following input tests at the harness pins. If all tests prove OK, yet the dashlights still can not be controlled, check the connector for good connection. If OK, then replace the controller.



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity,	• Poor ground (G201, G401) • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	RED	Lighting switch ON.	Attach to ground: dashlights should come on full bright. NOTE: If the fuse blows, the RED and the RED/BLK wires are connected.	• An open in the RED/BLK or RED wire.

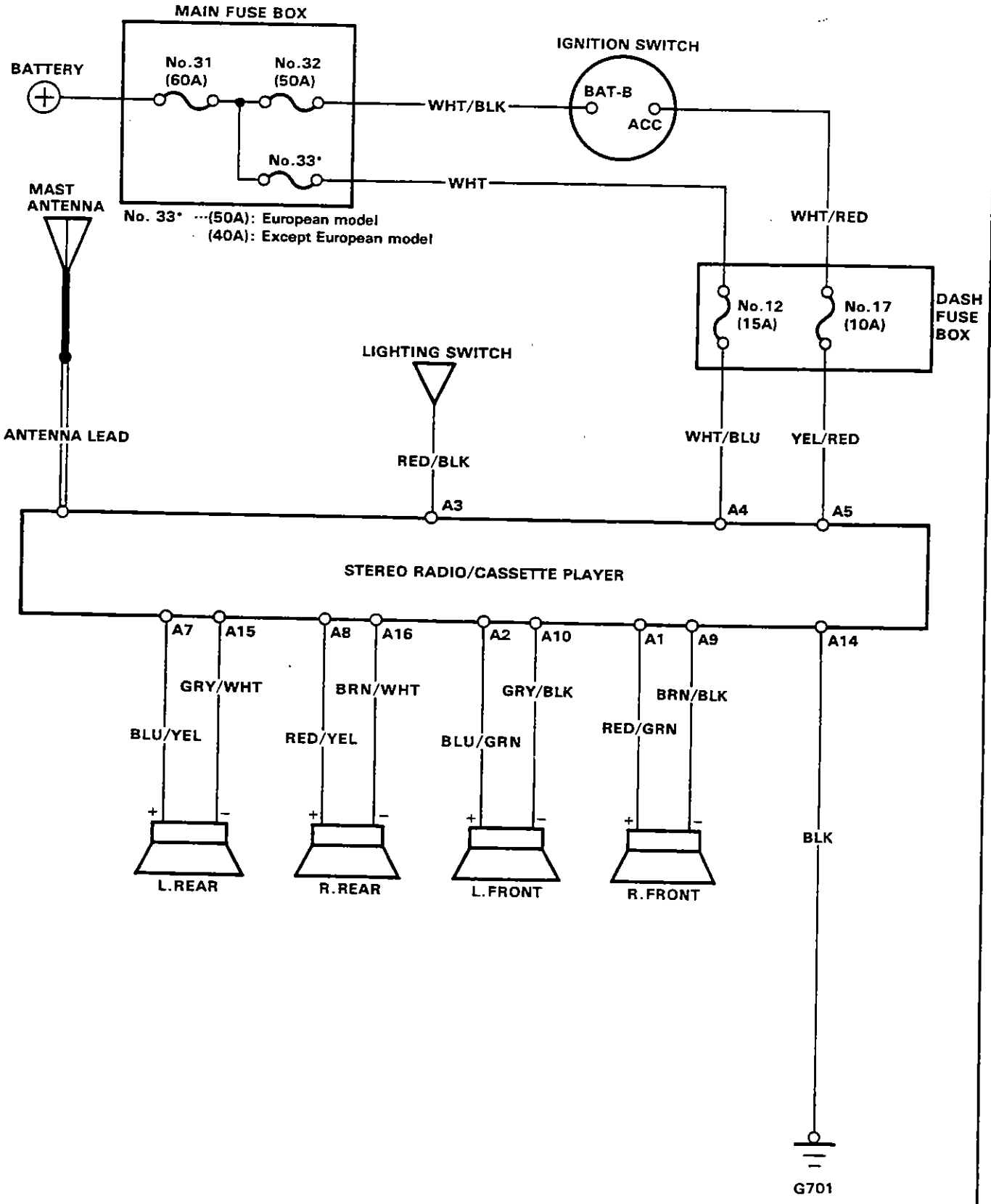
Stereo Sound System

Component Location Index



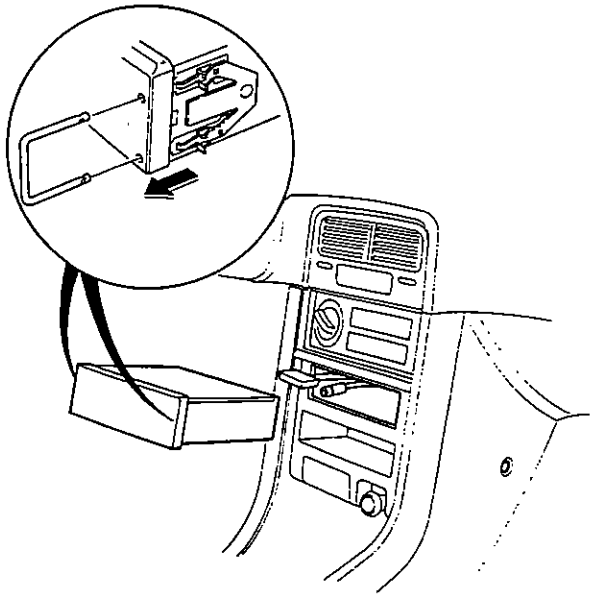
Stereo Sound System

Circuit Diagram



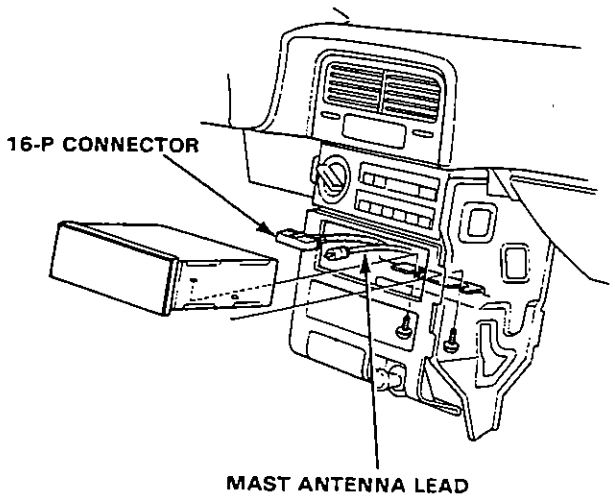
Unit Removal

A-Type:

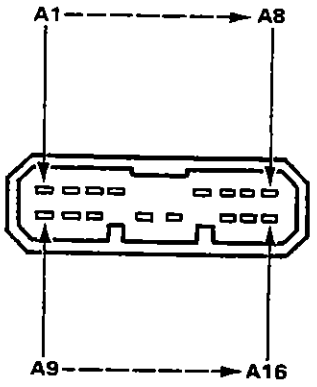


B-Type:

1. Remove the front console.
2. Remove the 2 screws and pull the stereo radio/cassette player out of the center instrument panel, then disconnect the 16-P connector and mast antenna lead from the stereo radio/cassette player.



Unit Terminals



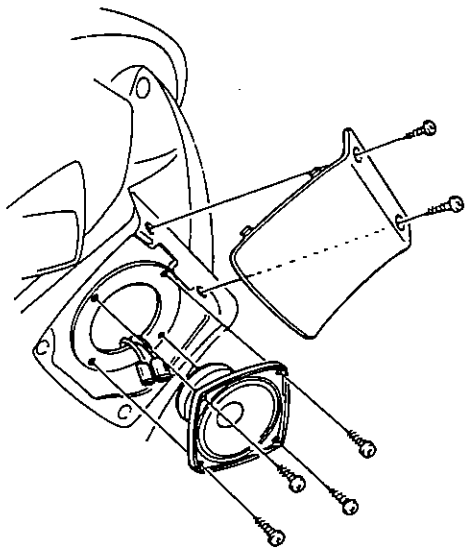
Terminal	Wire	Destination
A1	RED/GRN	Right front speaker ⊕
A2	BLU/GRN	Left front speaker ⊕
A3	RED/BLK	Light-on signal
A4	WHT/BLU	Constant power (Tuning memory)
A5	YEL/RED	ACC (Main stereo power supply)
A6		(Not used)
A7	BLU/YEL	Left rear speaker ⊕
A8	RED/YEL	Right rear speaker ⊕
A9	BRN/BLK	Right front speaker ⊖
A10	GRY/BLK	Left front speaker ⊖
A11		(Not used)
A12		(Not used)
A13		(Not used)
A14	BLK	Ground
A15	GRY/WHT	Left rear speaker ⊖
A16	BRN/WHT	Right rear speaker ⊖

Stereo Sound System

Speaker Replacement

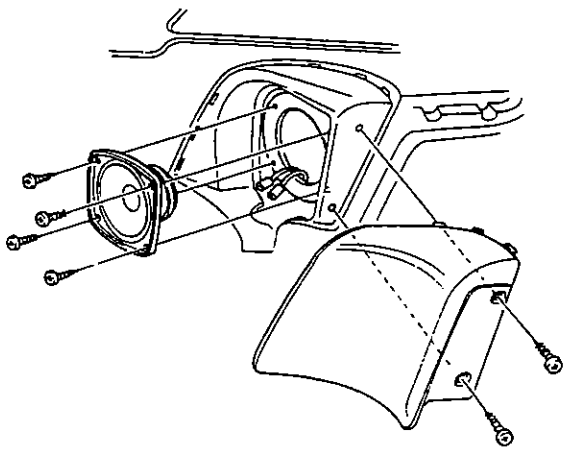
Front Speakers:

1. Remove the 2 screws on the front edge of the grille.
2. Remove the screws, then disconnect the wires from the speaker.



Rear Speakers:

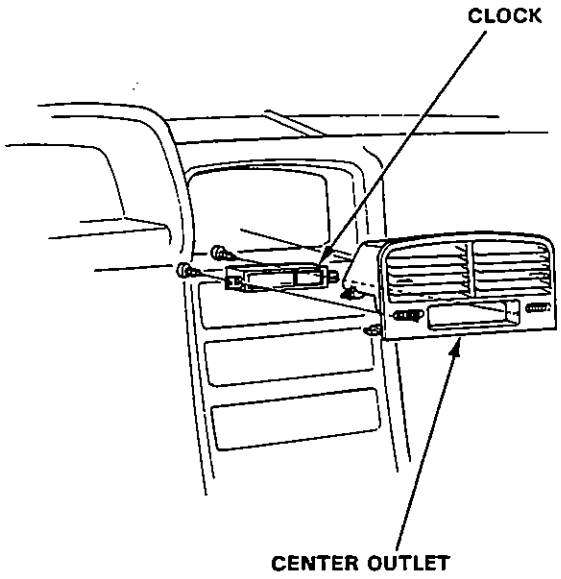
1. Remove the 2 screws on the edge of the grille.
2. Remove the screws, then disconnect the wires from the speaker.



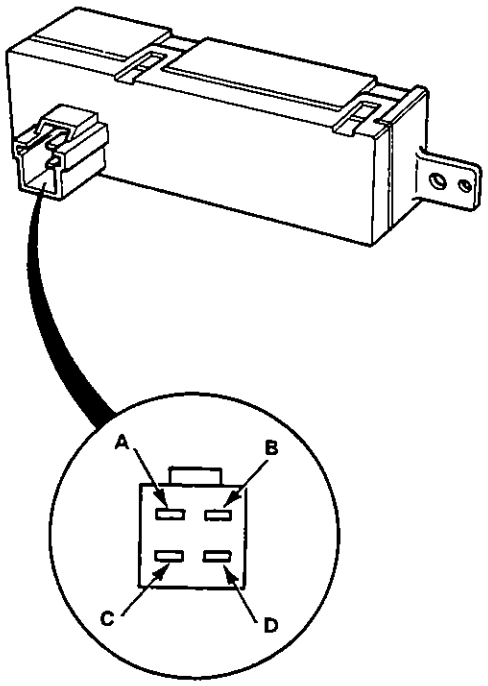
Clock

Removal

1. Remove the center outlet from the dashboard, then disconnect the 4-P connector from the clock.
2. Remove the 2 screws and clock from the center outlet.



Terminals

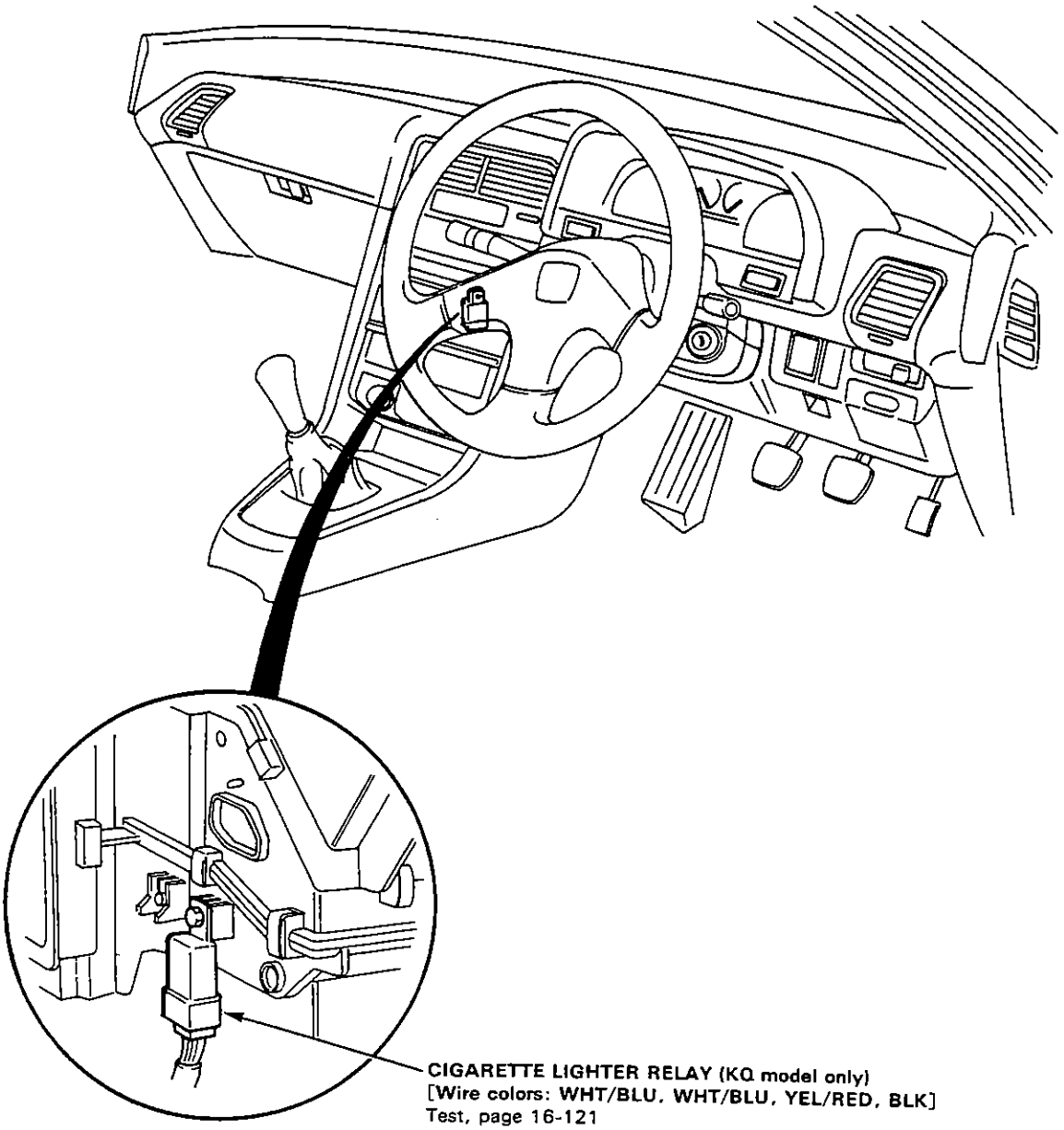


Terminal	Wire	Destination
A	WHT/BLU	Constant power (Time memory)
B	YEL	IG1 (Main clock power supply)
C	RED/BLK	Light-on signal
D	BLK	Ground

Cigarette Lighter

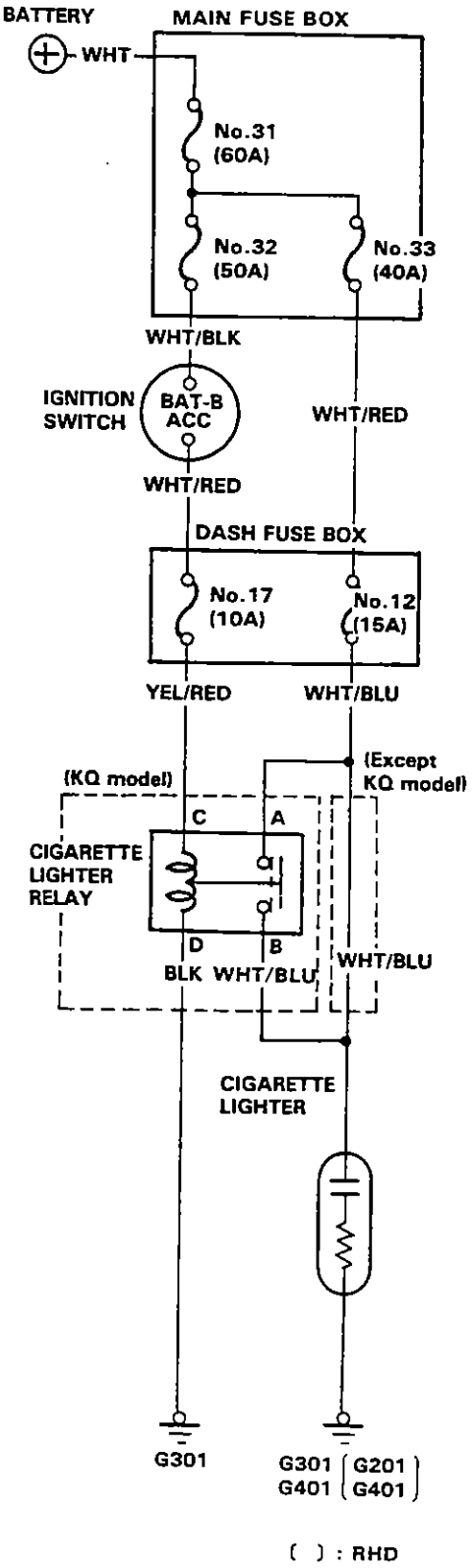
Component Location Index

· **CIGARETTE LIGHTER**
Replacement, page 16-122



CIGARETTE LIGHTER RELAY (KQ model only)
[Wire colors: WHT/BLU, WHT/BLU, YEL/RED, BLK]
Test, page 16-121

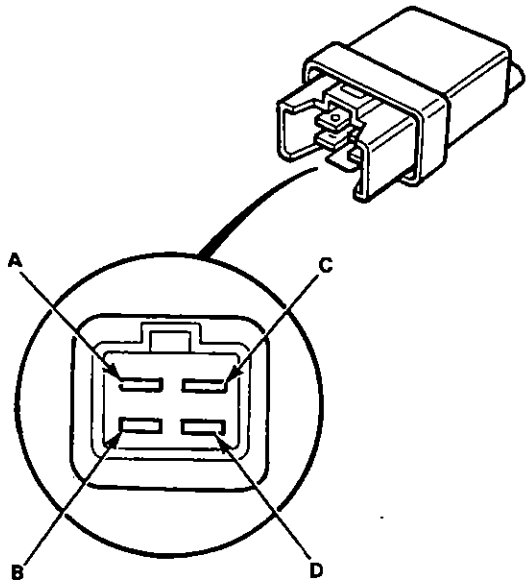
Circuit Diagram

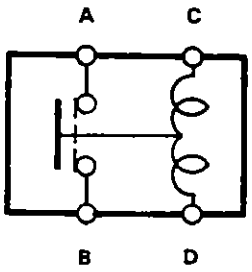


( ) : RHD

Cigarette Lighter Relay Test

There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.



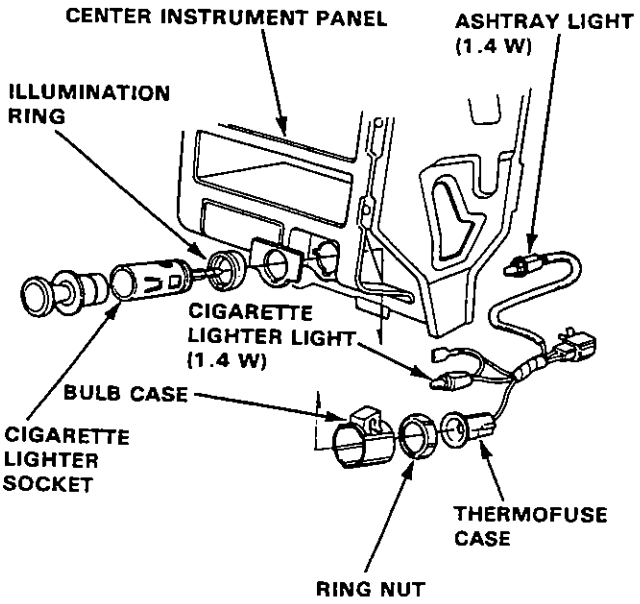


Cigarette Lighter

Replacement

Si model:

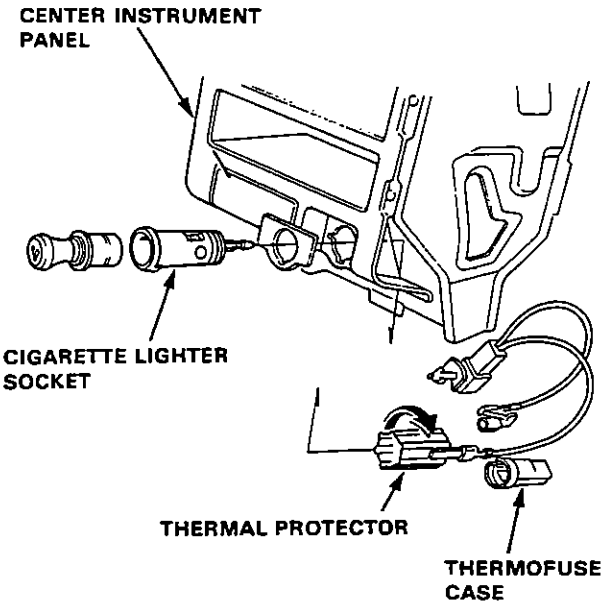
1. Remove the front console.
2. Remove the 6 screws and the center instrument panel with the stereo radio/cassette player, then disconnect the 16-P connector, the mast antenna lead and the 4-P connector.
3. Disconnect the thermofuse case from the socket end.
4. Remove the ring nut and separate the cigarette lighter socket from the thermal protector.



5. When installing the cigarette lighter, align each lug on the illumination ring and cigarette lighter socket with the groove in the hole, then position the bulb case on the thermal protector between the stoppers of the center panel.
6. Make sure that the ground wire, bulb socket and thermofuse case are seated to the cigarette lighter assembly.

Std model:

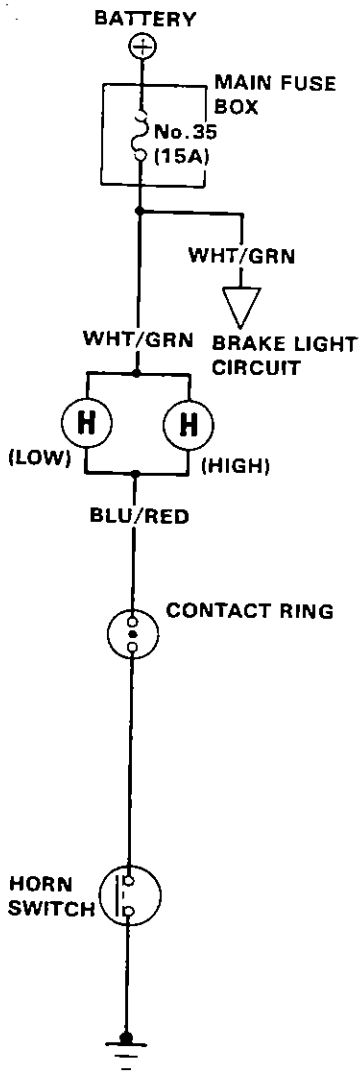
1. Remove the front console.
2. Remove the 6 screws and the center instrument panel with the stereo radio/cassette player, then disconnect the 16-P connector, the mast antenna lead and the 2-P connector from the cigarette lighter.
3. Disconnect the thermofuse case from the socket end.
4. Remove the thermal protector and separate the cigarette lighter socket.



5. When installing the cigarette lighter, align the lug on the cigarette lighter socket with the groove in the hole.
6. Make sure that the ground wire, thermofuse case are seated to the cigarette lighter assembly.

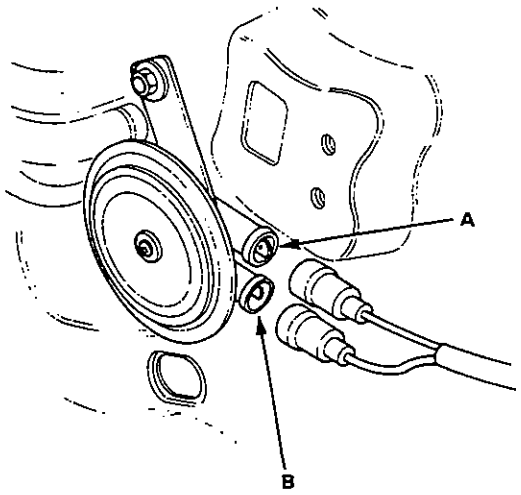
Horns

Circuit Diagram



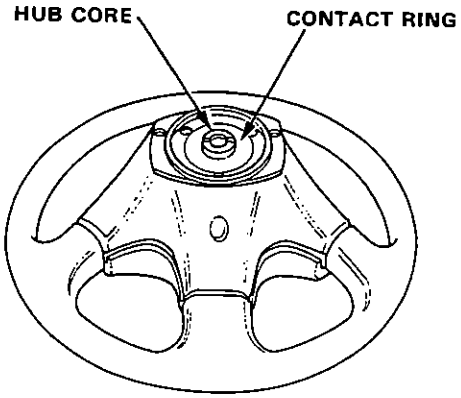
Horn Test

1. Remove the front bumper.
2. Disconnect the wires from the horn.
3. Test the horn by connecting battery voltage to the A and B terminals. The horn should sound.
4. If the horn fails to sound, replace it.



Switch Test

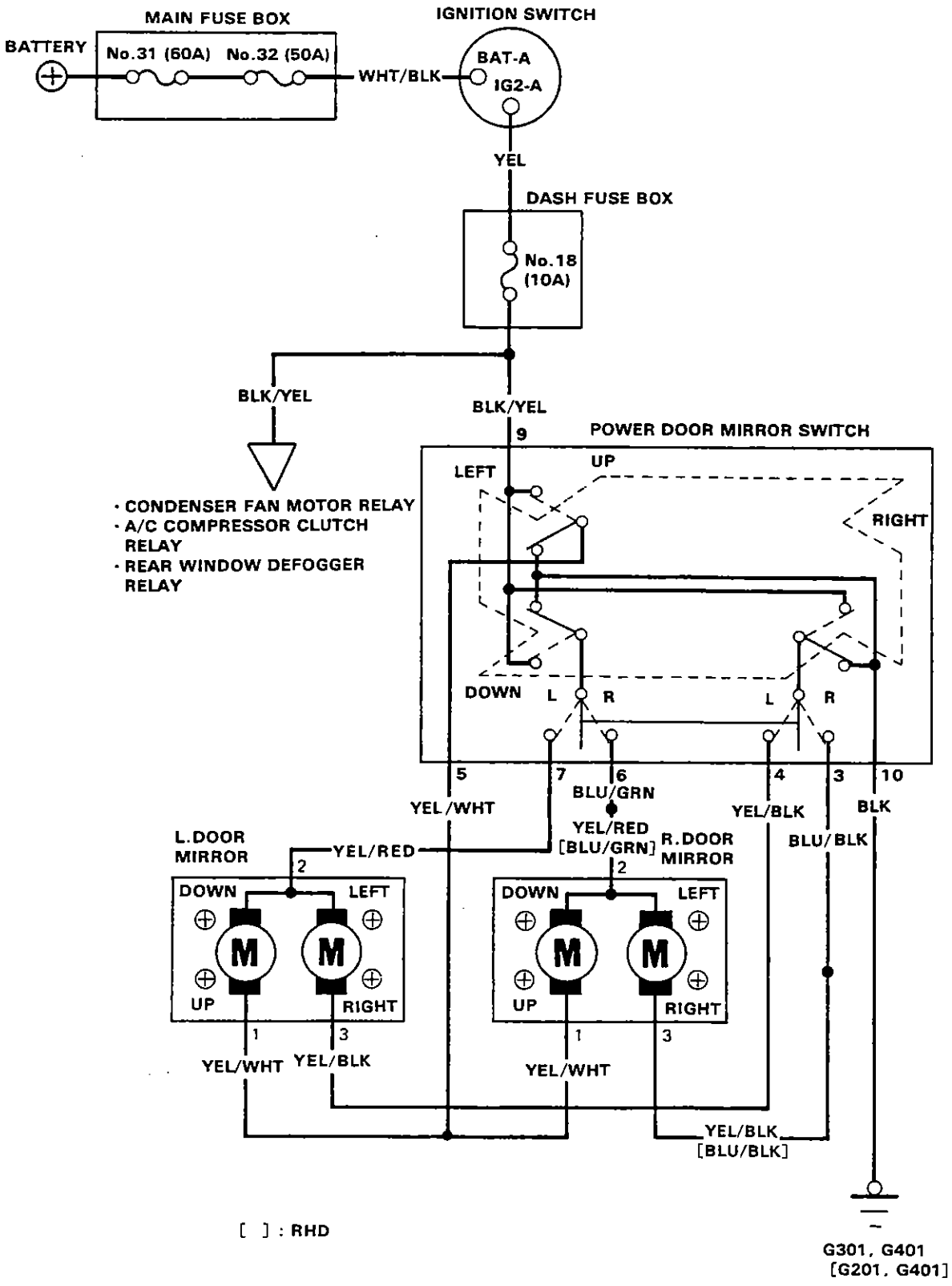
1. Remove the steering wheel, then turn it over.
2. Check for continuity between the contact ring and hub core on the steering wheel with the horn switch pressed.
   There should be continuity.



3. If there is no continuity, repair the horn switch.

Power Door Mirrors

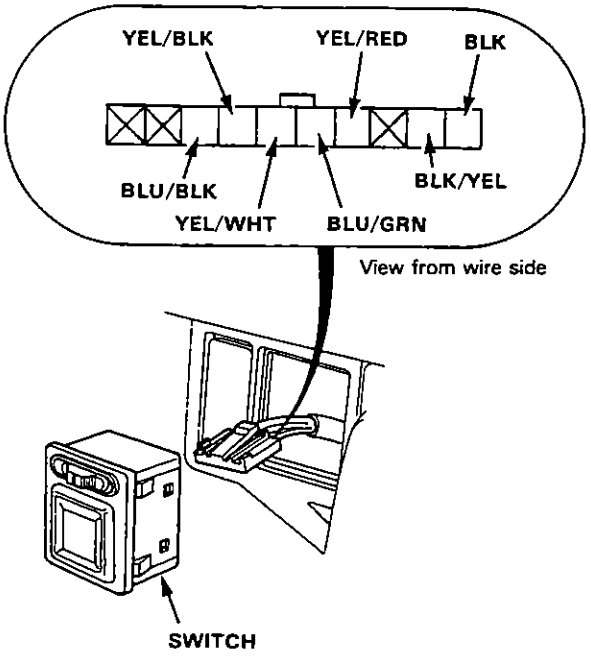
Circuit Diagram



Power Door Mirrors

Function Test

NOTE: Before testing, remove the dashboard lower panel and push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.



Mirror Test

One or both inoperative:

1. Check for voltage between the BLK/YEL terminal and body ground with the ignition switch ON.
   There should be battery voltage.
   - If there is no voltage, check for
     - Blown No.18 (10A) fuse in the dash fuse box.
     - An open in the BLK/YEL wire.
   - If there is battery voltage, go to step 2.
2. Check for continuity between the BLK terminal and body ground.
   There should be continuity.
   - If there is no continuity, check for
     - An open in the BLK wire.
     - Poor ground (G301, G401 [G201, G401]).

Left inoperative:

Connect the BLK/YEL terminal to the YEL/RED terminal and the YEL/WHT (or YEL/BLK) terminal to the body ground with jumper wires.
The left mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the left door trim panel and check for open in the YEL/WHT (or YEL/BLK) wire between the left door mirror and switch.
  If the wire is OK. check the left door mirror.
- If the mirror neither tilts down nor swings left, repair the YEL/RED wire.
- If the mirror operates properly, check the mirror switch.

Right inoperative:

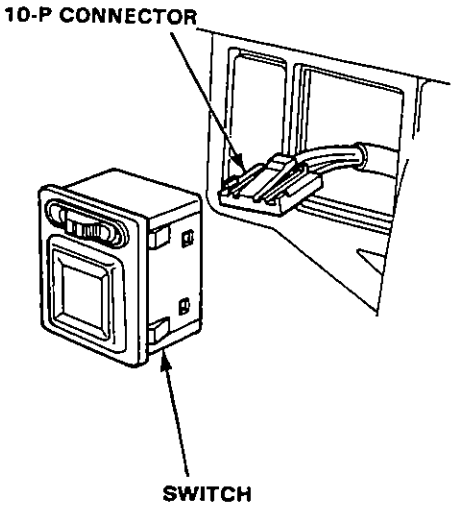
Connect the BLK/YEL terminal to the BLU/GRN terminal and the YEL/WHT (or BLU/BLK) terminal to the body ground with jumper wires.
The right mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the right door trim panel and check for open in the YEL/WHT (or YEL/BLK [BLU/BLK] and BLU/BLK) wire between the right door mirror and the switch.
  If the wire is OK, check the right door mirror.
- If the mirror neither tilts down nor swing left, repair the YEL/RED [BLU/GRN] and BLU/GRN wire.
- If the mirror operates properly, check the mirror switch.

[ ] : RHD

Switch Removal

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.

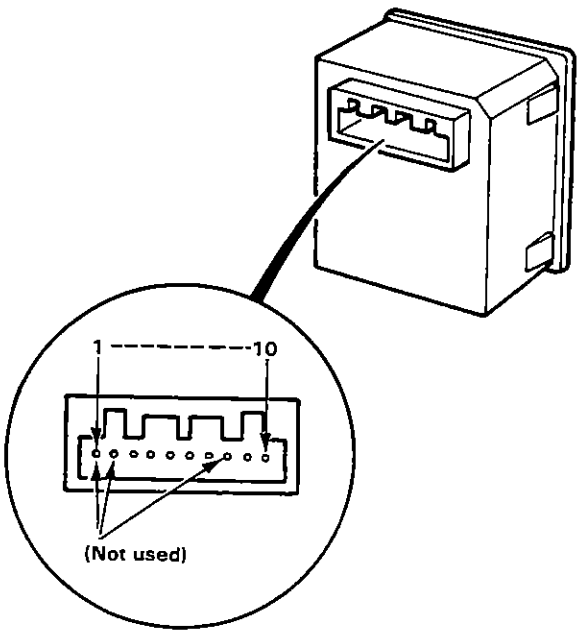


Switch Test

1. Remove the power door mirror switch from the instrument panel.
2. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch

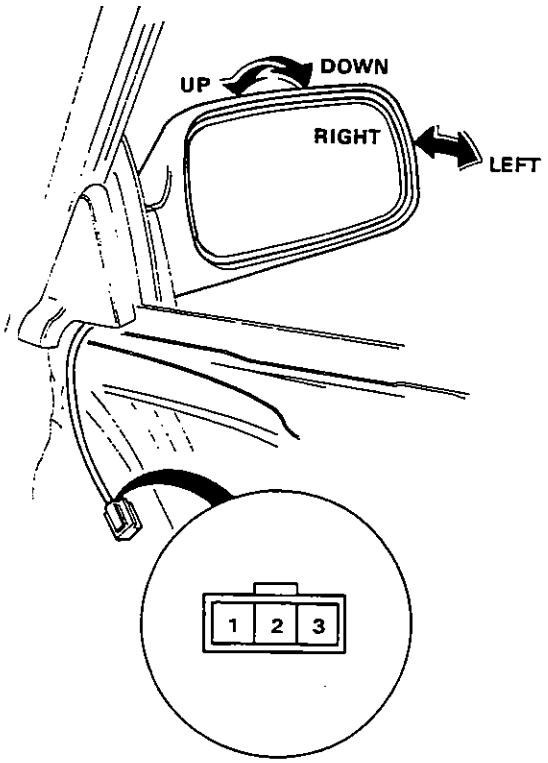
Position		Terminal 3	4	5	6	7	9	10
R	OFF	○		○	○			○
	UP			○			○	
	DOWN	○			○		○	
	LEFT			○	○		○	
	RIGHT	○					○	
L	OFF		○	○		○		○
	UP			○			○	
	DOWN		○			○	○	
	LEFT			○		○	○	
	RIGHT		○				○	



Power Door Mirrors

Door Mirror Test

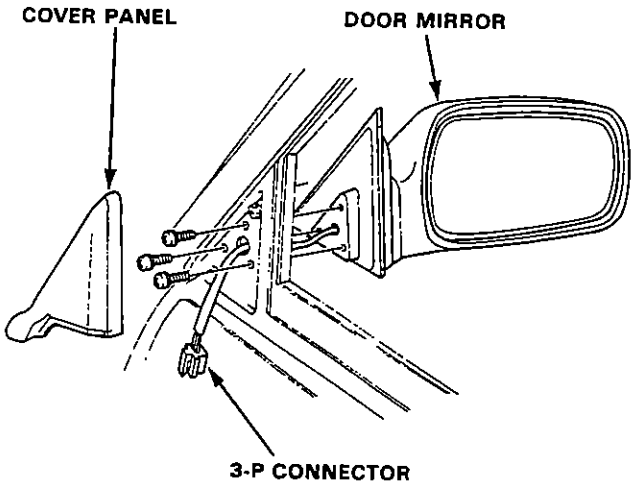
1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Test actuator operation:
   TILP UP: Connect battery positive to the No.1 terminal and negative to the No.2 terminal.
   TILT DOWN: Conncet battery positive to the No.2 terminal and negative to the No.1 terminal.
   SWING LEFT: Connect battery positive to the No.2 terminal and negative to the No.3 terminal.
   SWING RIGHT: Connect battery positive to the No.3 terminal and negative to the No.2 terminal.
3. If the mirror fails to operate properly, replace it.



View from wire side

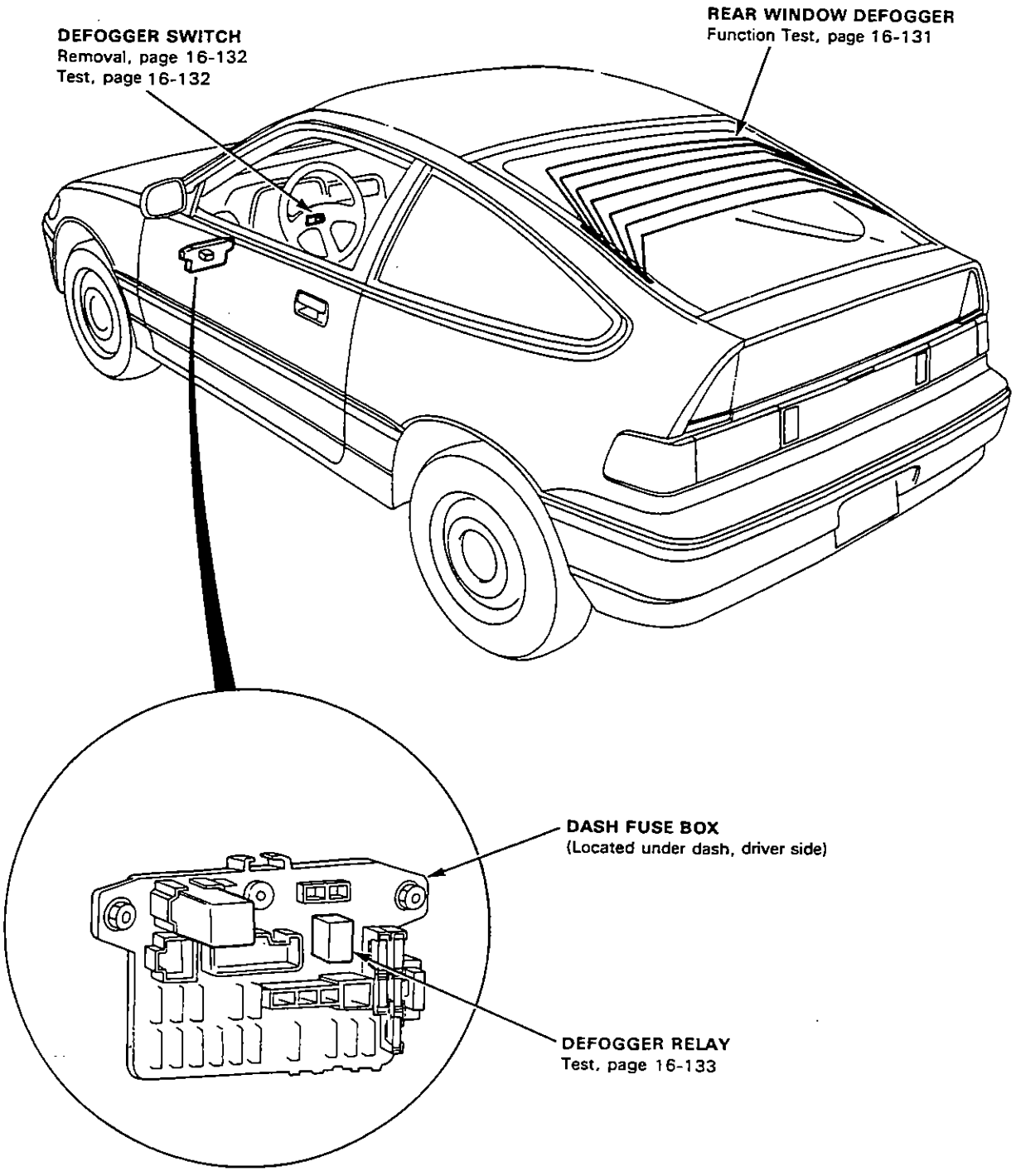
Door Mirror Replacment

1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Carefully pry out the cover panel with a flat tip screwdriver.
3. While holding the mirror with one hand, remove its mount screws with the other.



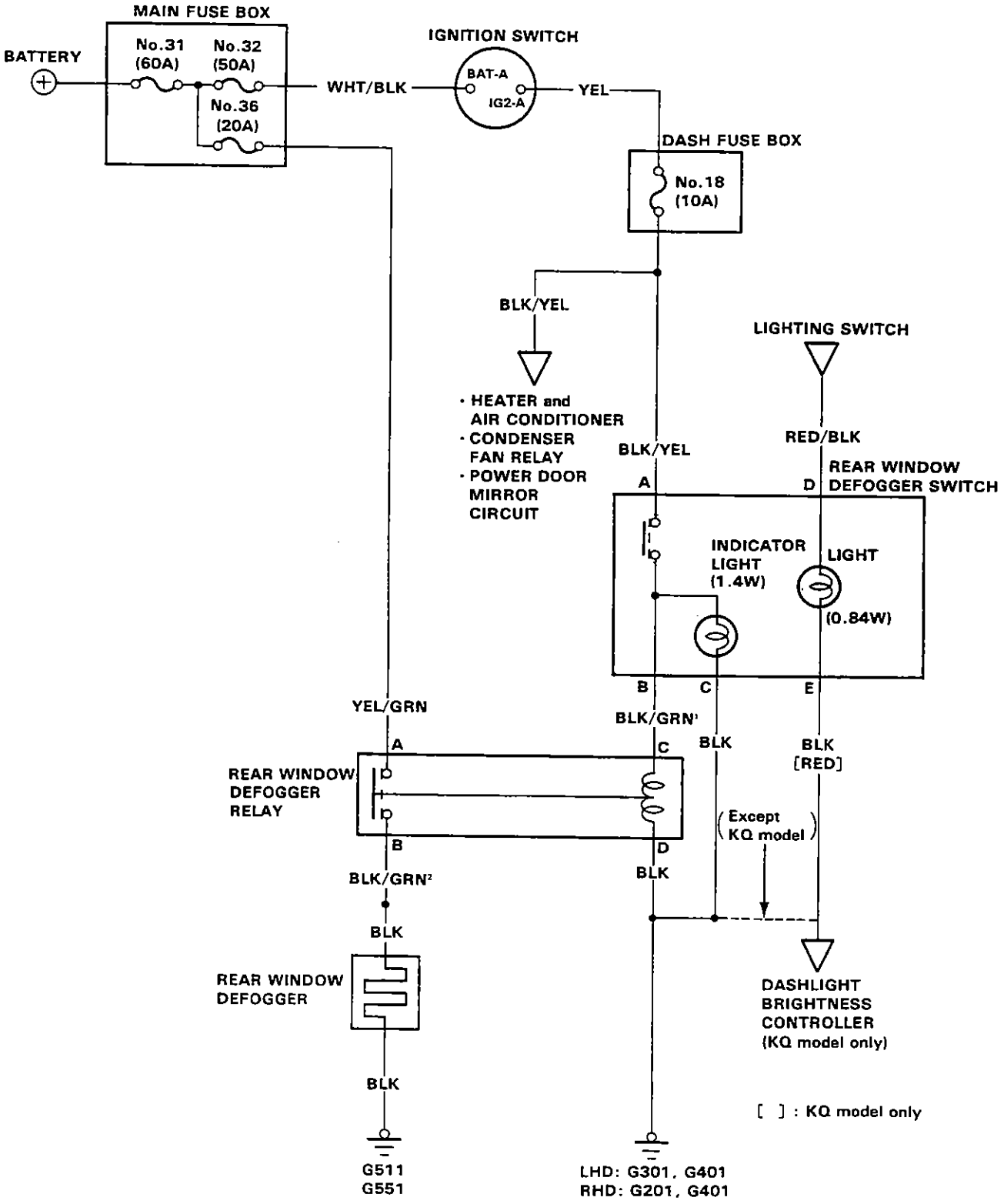
Rear Window Defogger

Component Location Index



Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/GRN[1] and BLK/GRN[2] are not the same).



Rear Window Defogger

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

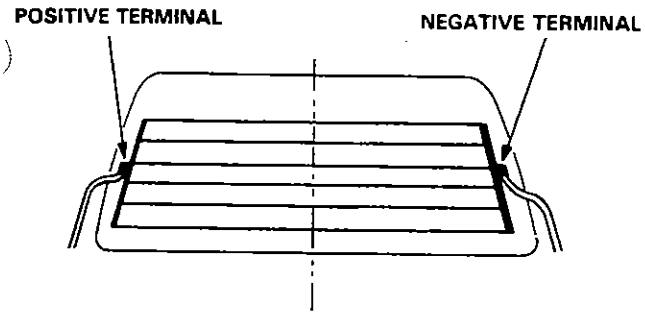
Symptom \ Item to be inspected	Blown indicator light bulb	Blown No.18 (10A) fuse (in the dash fuse box)	Blown No.36 (20A) fuse (in the main fuse box)	Defogger switch	Function test	Defogger relay	Repair defogger wire	Poor ground	Open circuit in wires or loose or disconnected terminals
Defogger operates, but indicator light does not go on.	1								
Defogger does not operate and indicator light does not go on.		1		2				G301, G401 [G201, G401]	BLK/YEL or BLK/GRN[1]
Defogger does not operate, but indicator light goes on.			1		2	3		G511, G551	YEL/GRN or BLK/GRN[2]
Broken defogger wire							1		

[ ] : RHD

Function Test

CAUTION: Be careful not to scratch or damage the defogger wires with the tester probe end.

1. Check for voltage between the positive terminal and body ground with the ignition switch and the defogger switch ON.
   There should be battery voltage.
   - If there is no voltage, check for:
     – Faulty defogger relay.
     – An open in the BLK, BLK/GRN[2] or YEL/GRN wire.
   - If there is battery voltage, go to step 2.



2. Check for continuity between the negative terminal and body ground.
   If no continuity, check for open in the defogger ground wire.

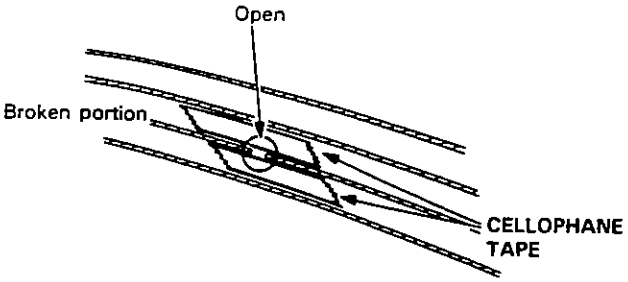
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.
   There should be approximately 6 V with the ignition switch and the defogger switch ON.
   - If the voltage is as specified, the defogger wire is OK.
   - If there is battery voltage, the defogger wire is broken in the negative side from the center.
   - If there is no voltage, the defogger wire is broken is positive side from the center.

Defogger Wire Repair

NOTE: Repair section must be no longer than one inch.

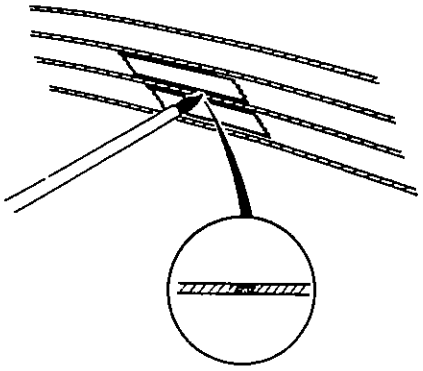
1. Lightly rub area around the break with the fine steel wool, then clean with alcohol.

2. Carefully mask above and below the broken portion defogger wire with cellophane tape.



3. Using a small brush, apply heavy coat of silver conductive paint extending about 1/8 in. on both sides of the break. Allow 30 minutes to dry.

   NOTE: Throughly mix paint before use.



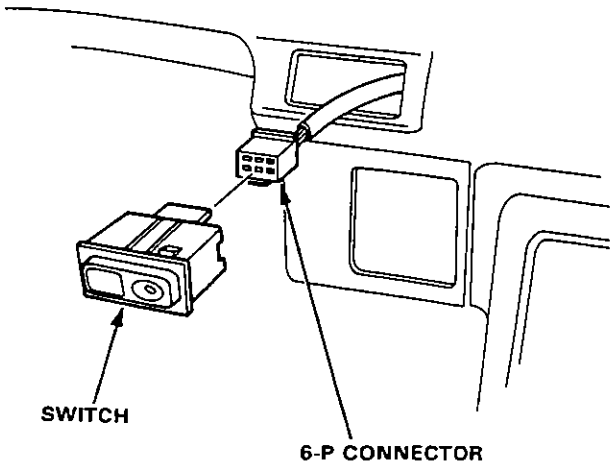
4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).

5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.

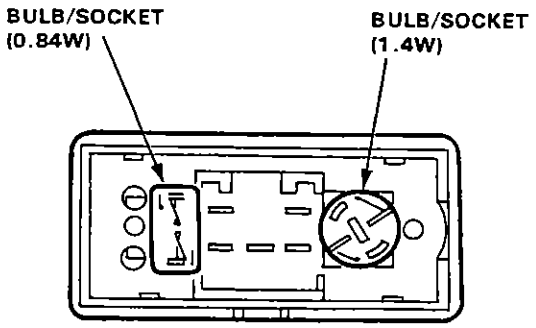
Rear Window Defogger

Switch Removal

1. Pull out the switch from the instrument panel, then disconnect the 6-P connector from the switch.



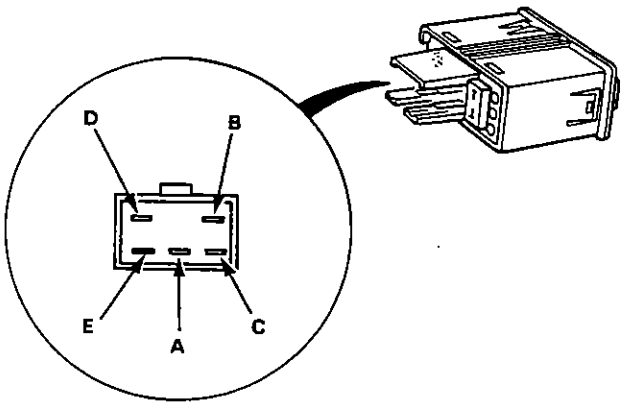
2. Turn the socket 45° counterclockwise (1.4W) and pull out the socket (0.84W) to remove it.

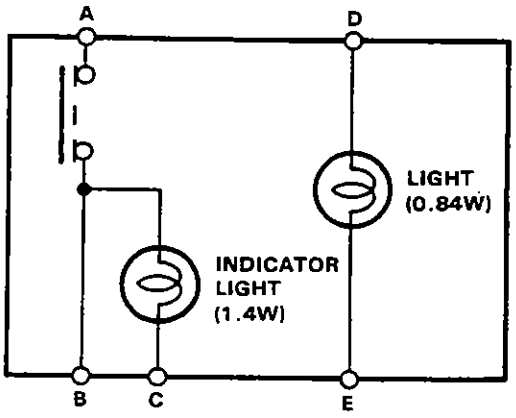


Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

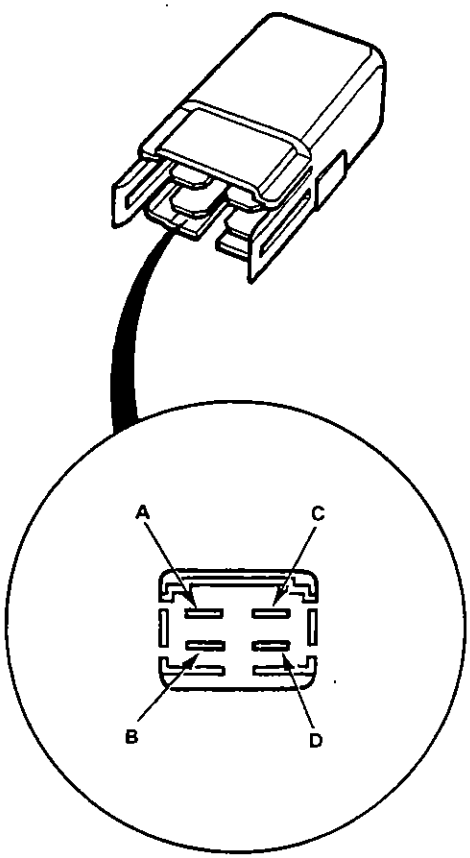
Terminal / Position	A		B		C	D		E
ON	○	—	○	⊖	○	○	⊖	○
OFF								

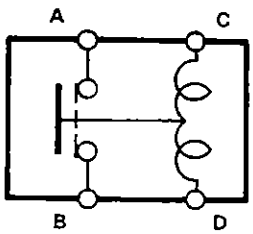




Relay Test

1. Remove the defogger relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.



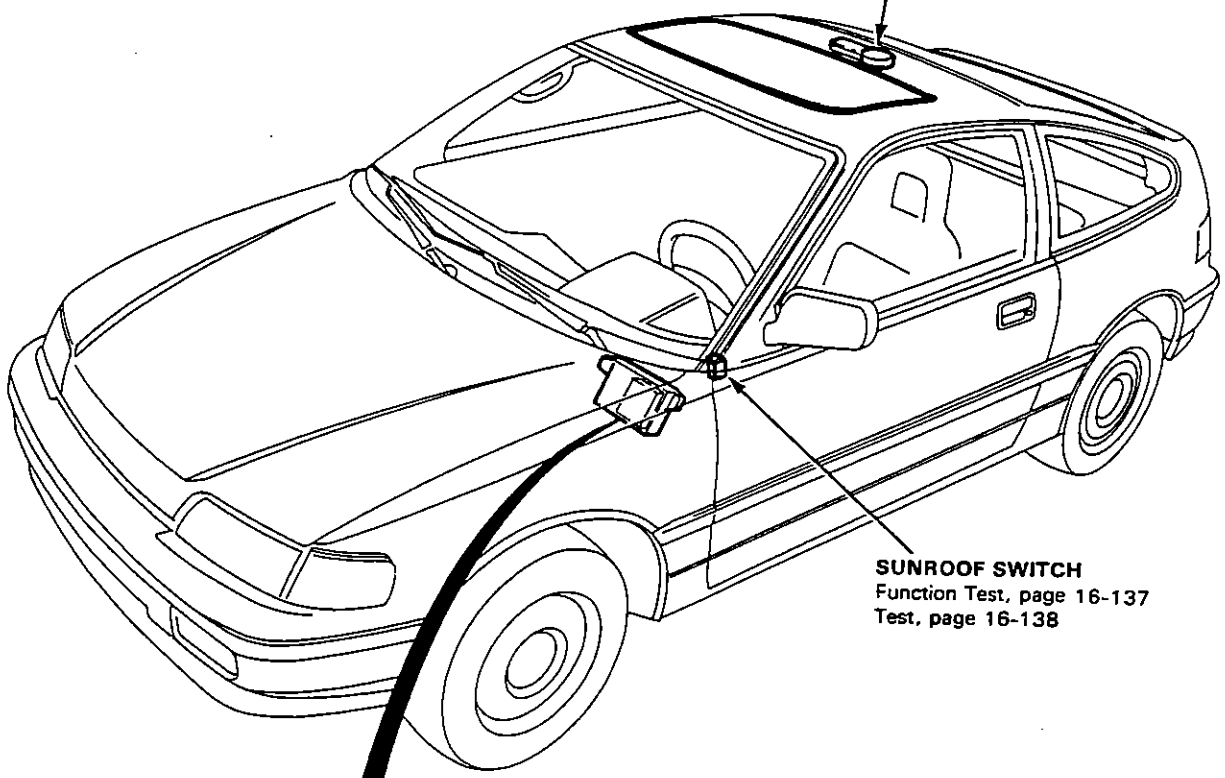


Sunroof

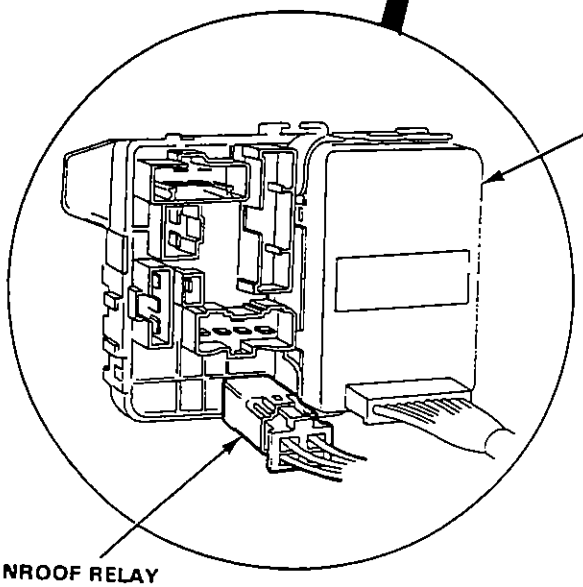
Component Location Index

TILT-UP SWITCH
Test, page 16-138

SUNROOF MOTOR
Test, page 16-139
Replacement, Section 14



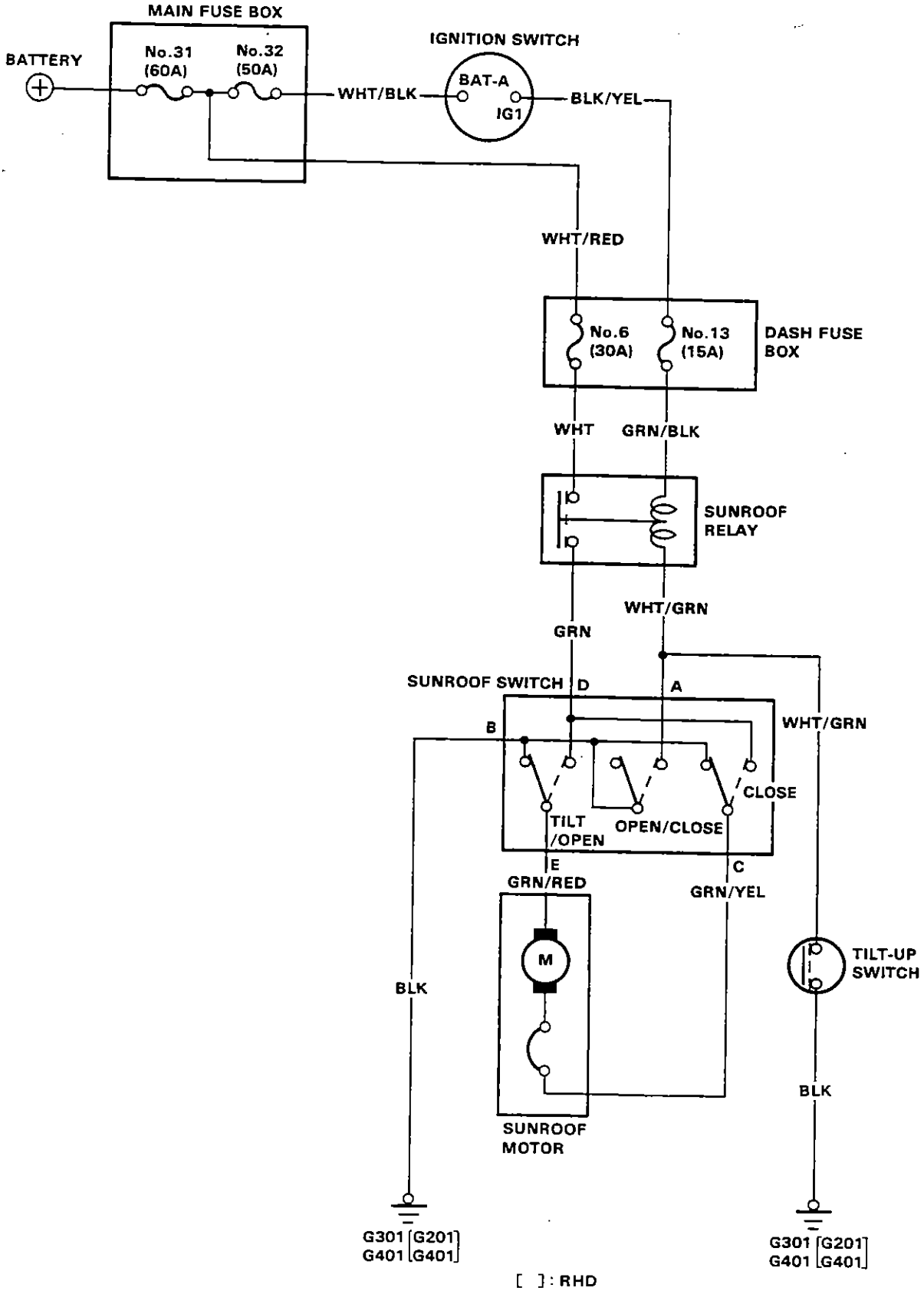
SUNROOF SWITCH
Function Test, page 16-137
Test, page 16-138



DASH FUSE BOX
(Located under dash, driver side)

SUNROOF RELAY
(Wire colors: WHT, GRN
GRN/BLK, WHT/GRN)
Test, page 16-139

Circuit Diagram



Sunroof

Electrical Troubleshooting

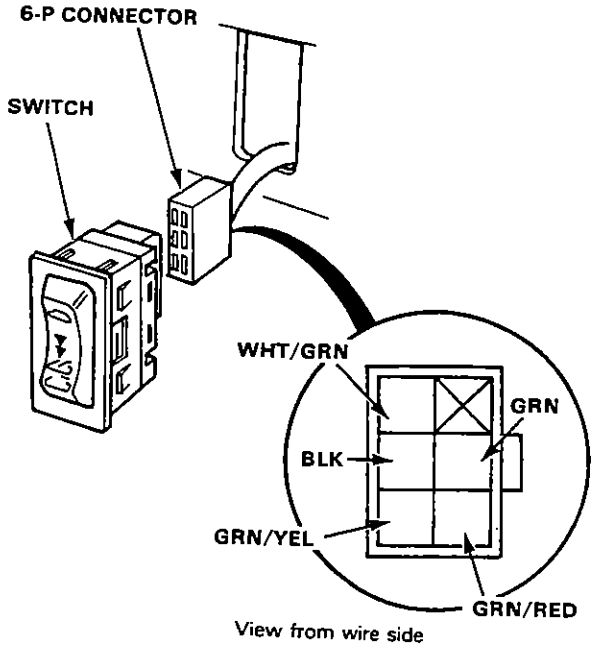
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected		Clutch out of adjustment, foreign matter stuck between guide rail and sunroof, or outer cable not attached properly	Blown No. 6 (30A) fuse (in the dash fuse box)	Blown No. 13 (15A) fuse (in the dash fuse box)	Function test	Sunroof relay	Sunroof motor	Tilt-up switch in the cable assembly	Sunroof switch	Poor ground	Open circuit in wires or loose or disconnected terminals.
Sunroof does not move, but motor turns.		1									
Sunroof does not move and motor does not turn (sunroof can be moved with sunroof wrench).	In all switch positions		1	2	3	4	5			G301,G401 [G201,G401]	WHT, GRN/BLK, GRN WHT/GRN, GRN/RED or GRN/YEL
	With OPEN switch.								1		
	With CLOSE switch.								1		
	With TILT switch.							2	1	G301,G401 [G201,G401]	

[ ]··RHD

Function test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 6-P connector to remove the switch.



View from wire side

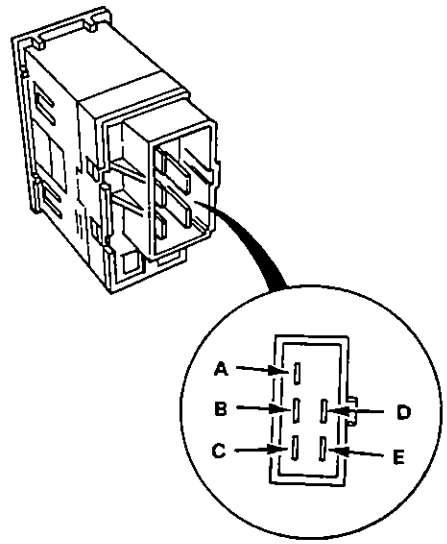
3. Check for continuity between the BLK terminal and body ground.
   If no continuity, check for poor ground (LHD: G301, 401 RHD: G201, 401)
4. Check for continuity between the WHT/GRN terminal and body ground with the ignition switch OFF.
   There should be continuity when the sunroof is closed.
   There should be no continuity when the sunroof is opened.
   - If the continuity is not as specified, check for:
     - Faulty tilt-up switch.
     - Poor ground of the tilt-up switch (LHD: G301, 401 RHD: G201, 401)
   - If the continuity is specified, go to step 5.
5. Check for voltage between the WHT/GRN terminal and the BLK terminal with the ignition switch ON.
   There should be battery voltage when the sunroof is opened.
   - If there is no voltage, check for:
     - Faulty sunroof relay.
     - An open in the GRN/BLK or WHT/GRN wire.
   - If there is battery voltage, go to step 6.
6. Check for voltage between the GRN terminal and BLK terminal with the ignition switch ON.
   There should be battery voltage when the sunroof closed.
   - If there is no voltage, check for:
     - Faulty sunroof relay.
     - An open in the WHT or GRN wire.
   - If there is battery voltage, go to step 7.
7. Connect the WHT/GRN terminal to body ground, and the GRN terminal to the GRN/RED terminal, and the GRN/YEL terminal to the BLK terminal with jumper wires.
   The sunroof should open when the ignition switch is turned ON.
   - If the sunroof opens, check the sunroof switch.
   - If not, remove the headlining and check the motor.

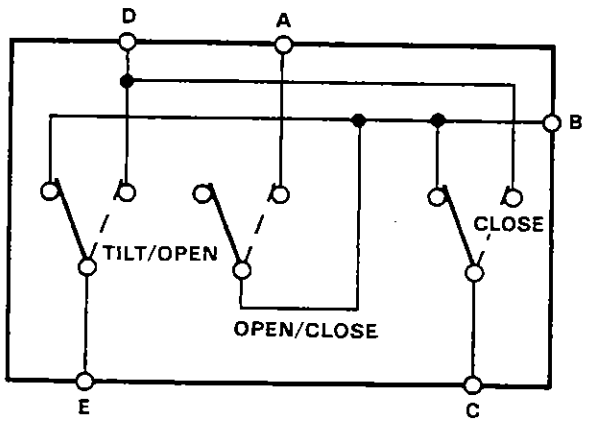
Sunroof

Switch test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 6-P connector to remove the switch.
3. Check for continuity between the terminals in each switch position according to the table.

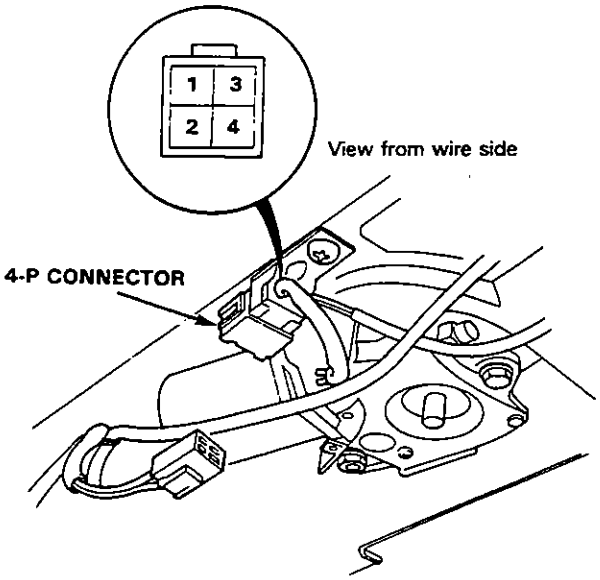
Terminal / Position	A	B	C	D	E
OFF		○	○		○
TILT				○	○
OPEN	○	○		○	○
CLOSE	○	○	○	○	





Tilt Up Switch

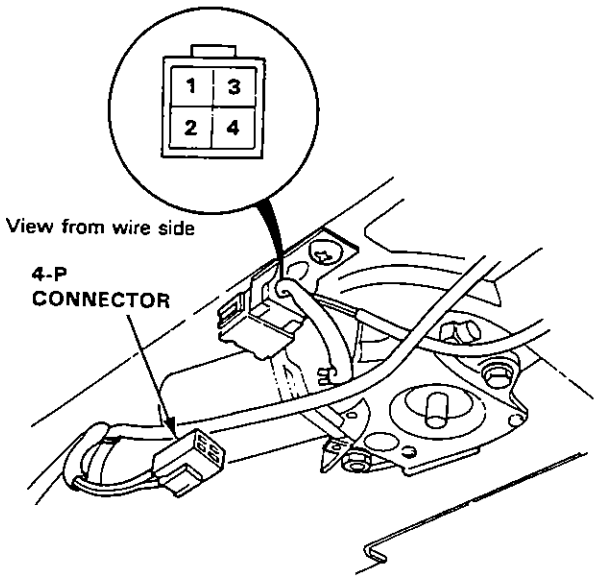
1. Remove the headliner (See section 14).
2. Disconnect the 4-P connector from the sunroof motor.
3. Check for continuity between the No.1 and No.2 terminals. There should be continuity when the sunroof is not tilted. There should be no continuity when the sunroof is the tilt-up position.



Motor Test

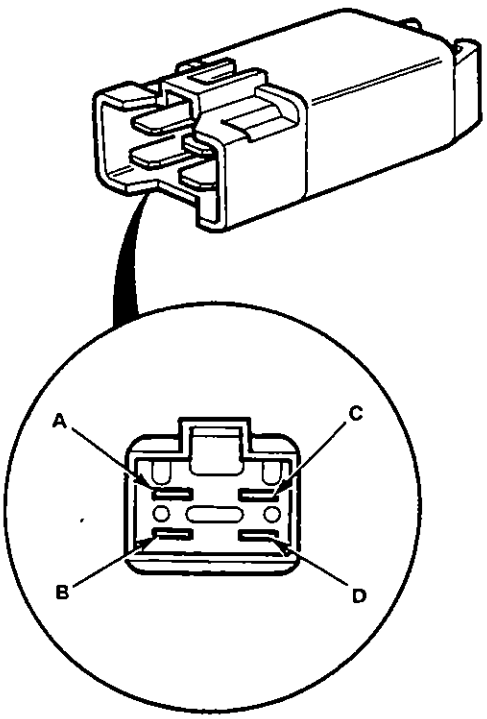
1. Remove the headliner.
2. Disconnect the 4-P connector from the sunroof motor.
3. Test motor operation by connecting battery to the No. 3 and No.4 terminals. Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.

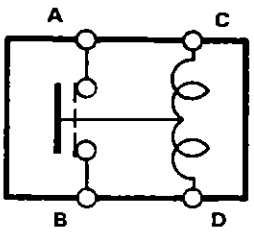
   NOTE: See Closing Force Check in section 20 for motor clutch test.



Relay Test

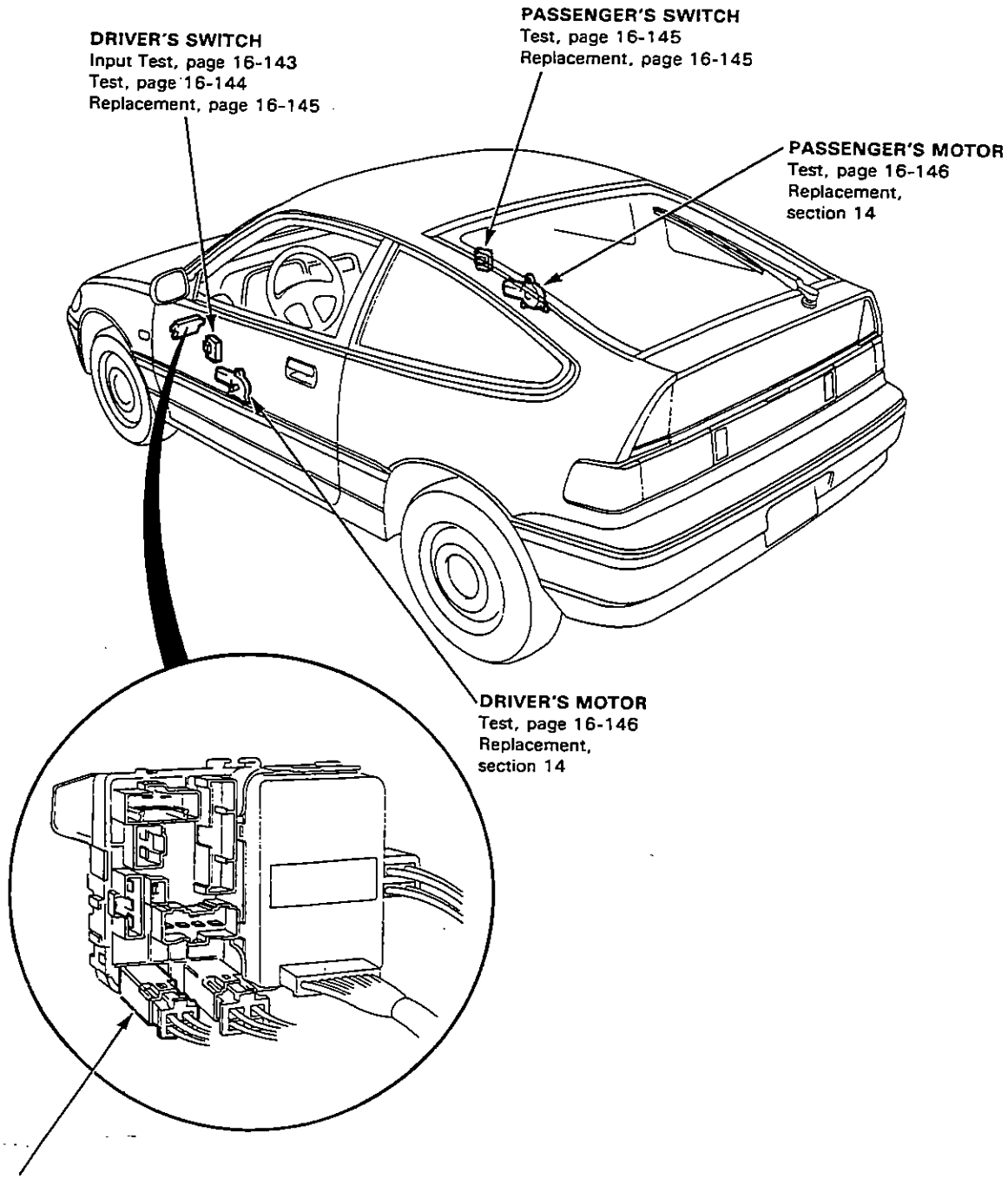
1. Remove the sunroof relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.



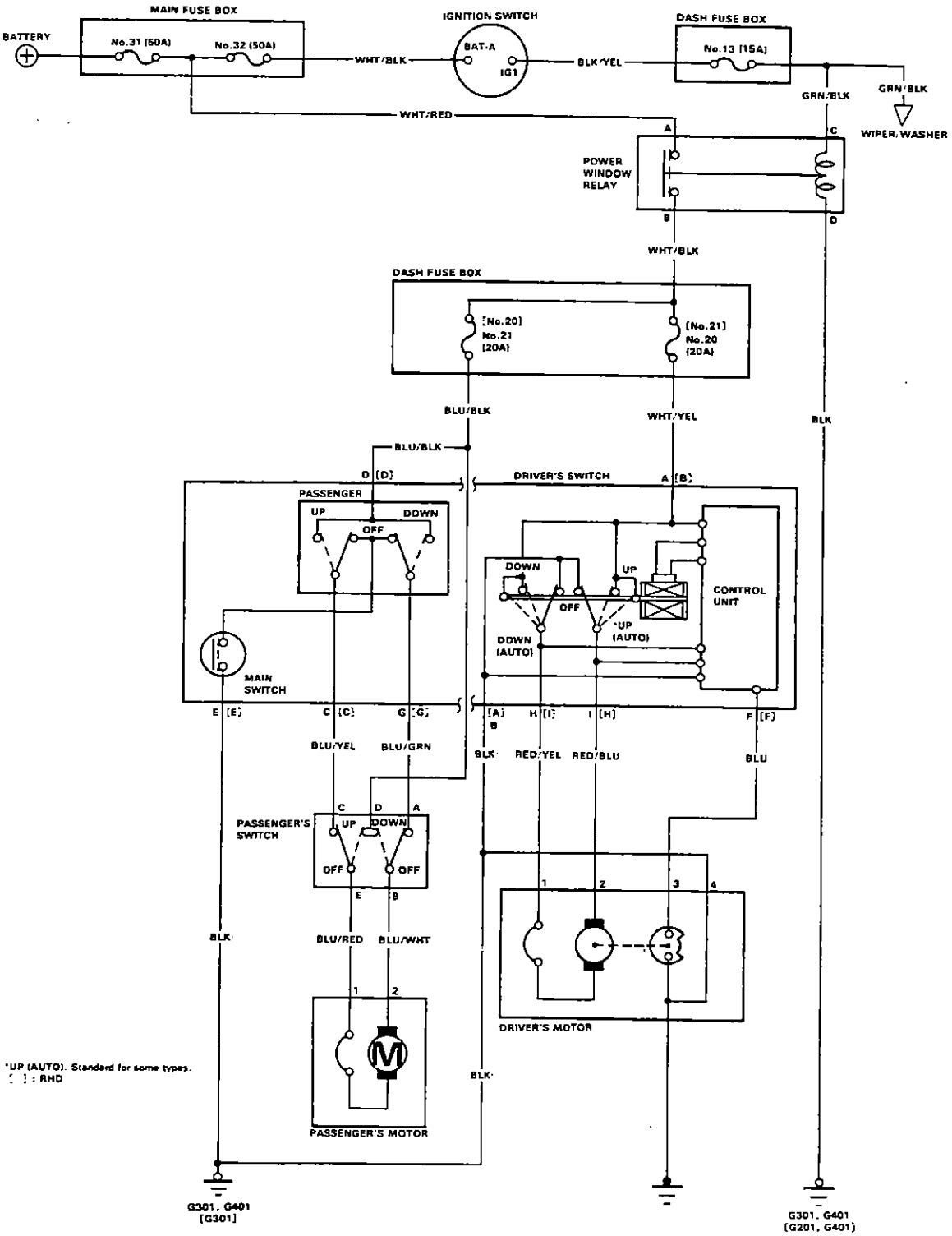


Power Windows

Component Location Index



Circuit Diagram



*UP (AUTO): Standard for some types.
[ ] : RHD

Power Windows

Troubleshooting

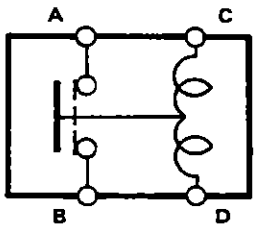
NOTE: The numbers in the table show the troubleshooting sequence.

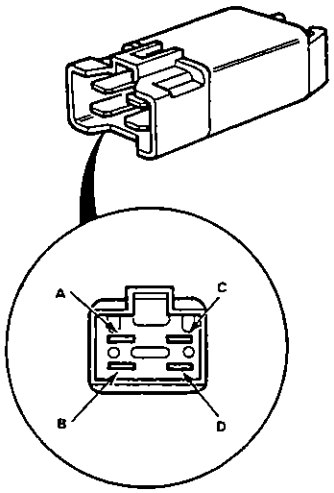
Item to be inspected / Symptom	State of charge and clean and tight connections of battery	Blown No.13 (15A) fuse (in the dash fuse box)	Power window relay	in the dash fuse box: Blown No.21 [No.20] (20A) fuse	in the dash fuse box: Blown No.20 [No.21] (20A) fuse	Driver's door switch	Passenger switch	Driver's motor	Pulser (in driver's motor)	Passenger's motor	Window regulator	Driver's door switch input	Poor ground	Open circuit in wires or loose or disconnected terminals
All windows do not operate.	1	2	3										G301,G401 [G201,G401]	BLK/YEL, WHT/RED, GRN/BLK[1] or WHT/BLK
Driver's window does not operate.				1				2			3	4		WHT/YEL
Driver's window does not operate in AUTO.						1			2			3		BLU
Passenger's window do not operate.					1	2	3			4	5			BLU/BLK

[ ] : RHD

Relay Test

1. Remove the relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.



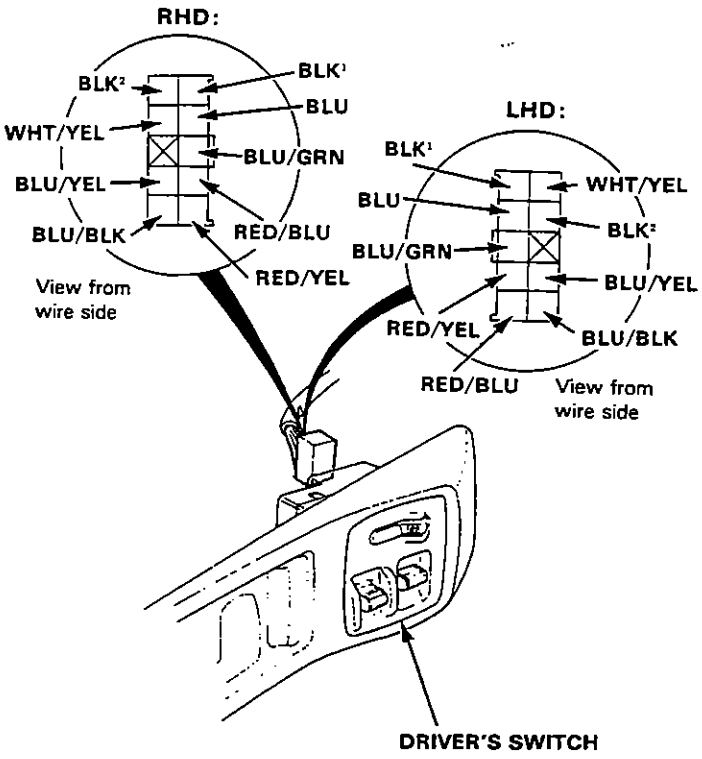


Driver's Switch Input Test

NOTE: The control unit is built into the driver's switch, and only controls driver's door window operation.

Remove the 2 screws. Disconnect the 10-P connector and remove the driver's switch from the door trim panel. Make the following input tests at the harness pins.

NOTE: Recheck the connections between the 10-P connector and the driver's switch, then replace the driver's switch if all input tests prove OK.



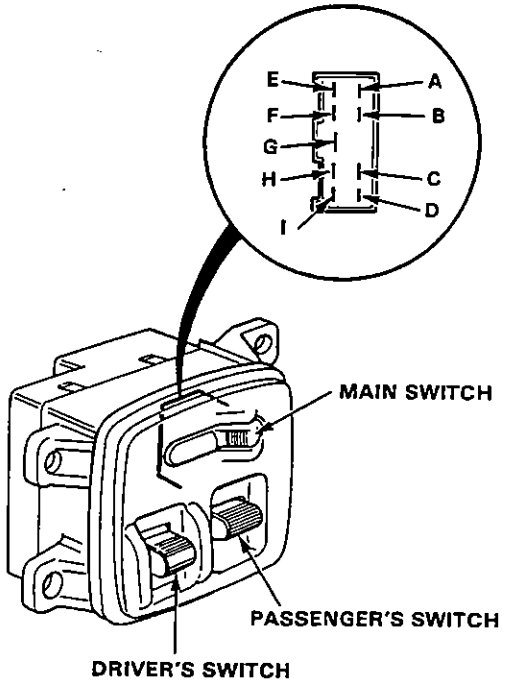
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK¹	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G301]) • An open in the wire.
2	WHT/YEL, BLU/BLK	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.20 or 21 (20A) fuse. • Faulty power window relay. • An open in the wire.
3	RED/BLU and RED/YEL	Connect the WHT/YEL terminal to the RED/BLU terminal, and the RED/YEL terminal to the BLK terminal, then ignition switch ON.	Check the driver's motor operation: should run.	• Faulty driver's motor. • An open in the wire.
4	BLU/YEL and BLU/GRN	Connect the BLU/BLK terminal to the BLU/YEL terminal, and the BLU/GRN terminal to the BLK terminal, then ignition switch ON.	Check the right front motor operation: should run.	• Faulty passenger's motor • Faulty passenger's switch • An open in the wire.
5	BLU and BLK²	Connect the WHT/YEL terminal to the RED/YEL terminal, and the BLK¹ terminal to the RED/BLU terminal, then ignition Switch ON.	Check for resistance between the BLU and BLK² terminals: should indicate between 20-50 ohms as the driver's motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire.

Power Windows

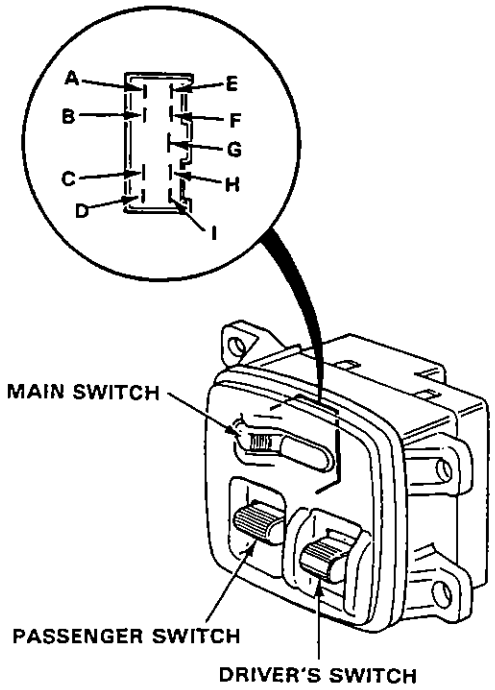
Driver's Switch Test

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the tables.

LHD:



RHD:



LHD:

DRIVER'S SWITCH

Position \ Terminal	A	B	H	I
OFF		○	○	○
UP (AUTO)	○			○
UP	○			○
DOWN	○		○	
DOWN (AUTO)	○		○	

PASSENGER'S SWITCH

Position	Main switch \ Terminal	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○

RHD:

DRIVER'S SWITCH

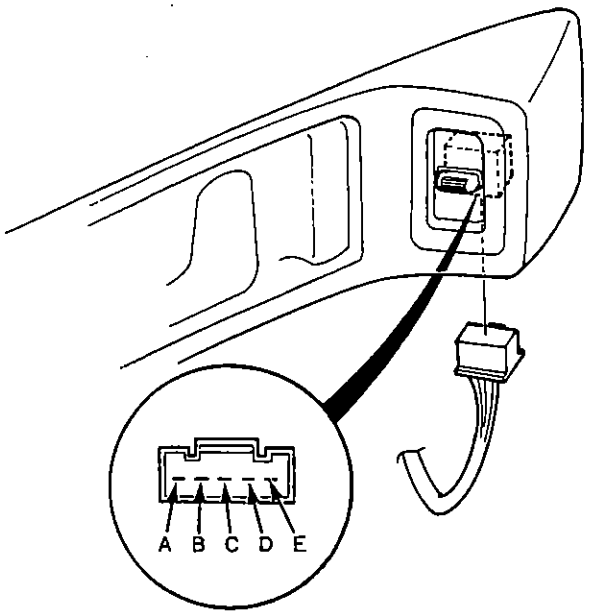
Position \ Terminal	A	B	H	I
OFF	○		○	○
UP (AUTO)		○	○	
UP		○	○	
DOWN		○		○
DOWN (AUTO)		○		○

PASSENGER'S SWITCH

Position	Main switch \ Terminal	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○

Passenger Switch Test

1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.

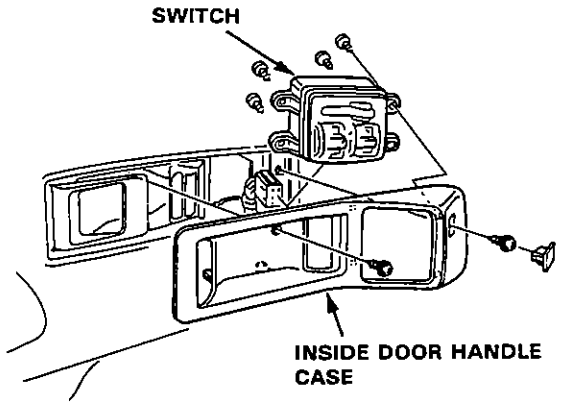


Position \ Terminal	A	B	C	D	E
UP				○—○	
OFF	○—○		○		○
DOWN		○—○			

Switch Replacement

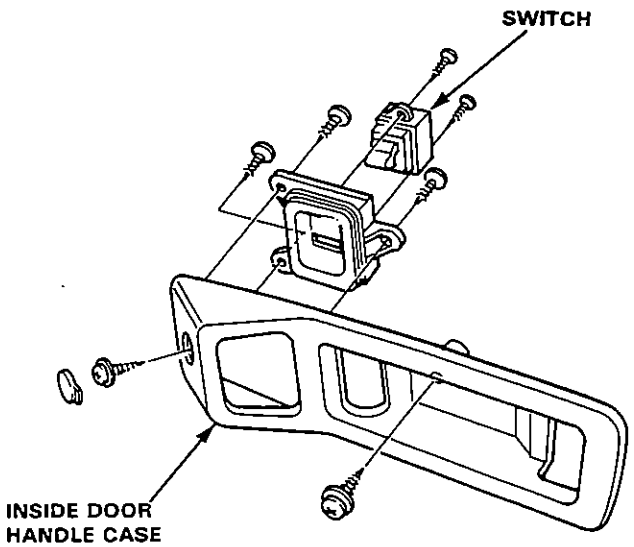
Driver's Switch:

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Remove the 4 screws and switch from the inside door handle case.



Passenger Switch:

1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Remove the 2 screws and switch from the inside door handle case.

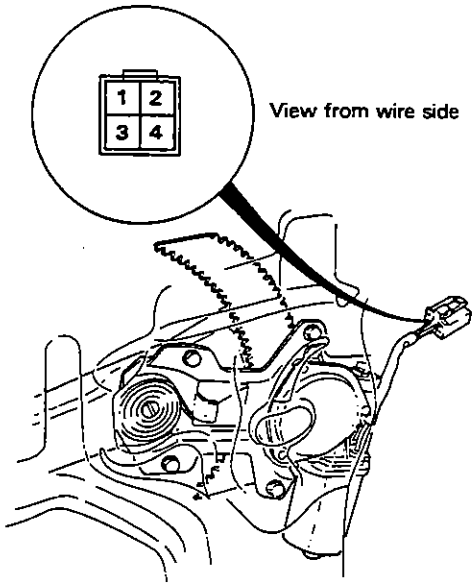


Power Windows

Driver's Motor Test

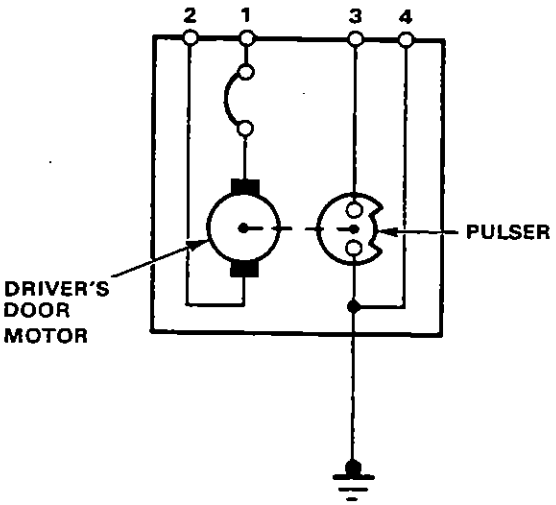
Motor Test:

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Test motor operation by connecting battery voltage to the No.1 and No.2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.



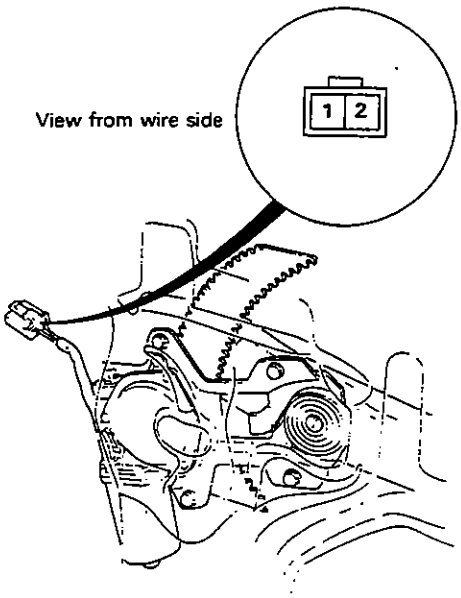
Pulser Test:

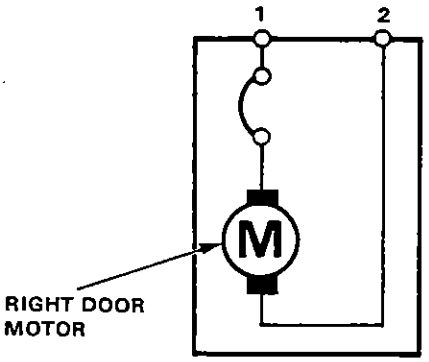
Measure resistance between the No.3 and No.4 terminals when running the motor by connecting battery voltage to the No.1 and No.2 terminals.
Ohmmeter should indicate between 20-50 ohms as the motor runs.



Passenger's Motor Test

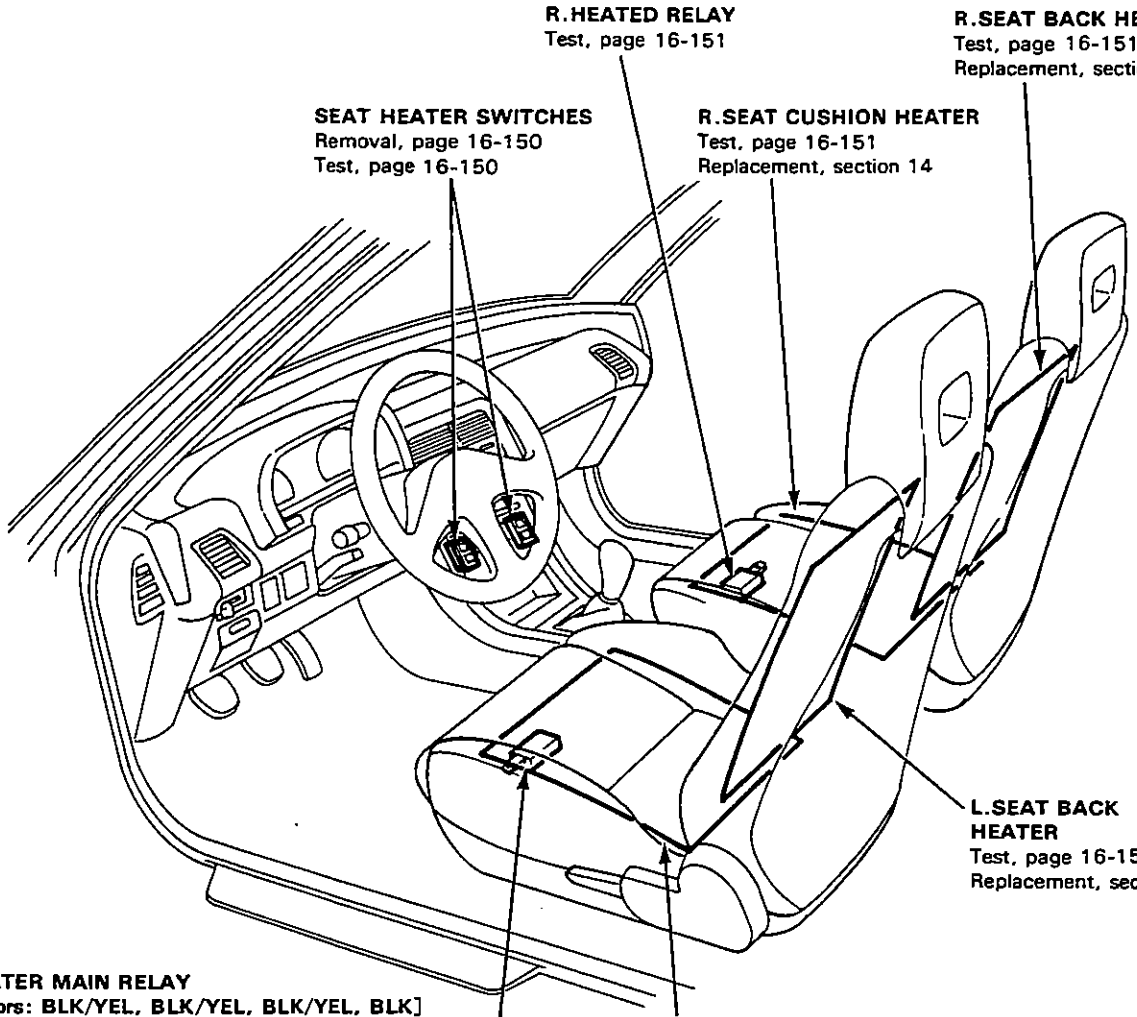
1. Remove the door trim panel.
2. Disconnect the 2-P connector from the motor.
3. Test motor operation by applying battery voltage to the No.1 and No.2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.





Seat Heaters (KS model only)

Component Location Index

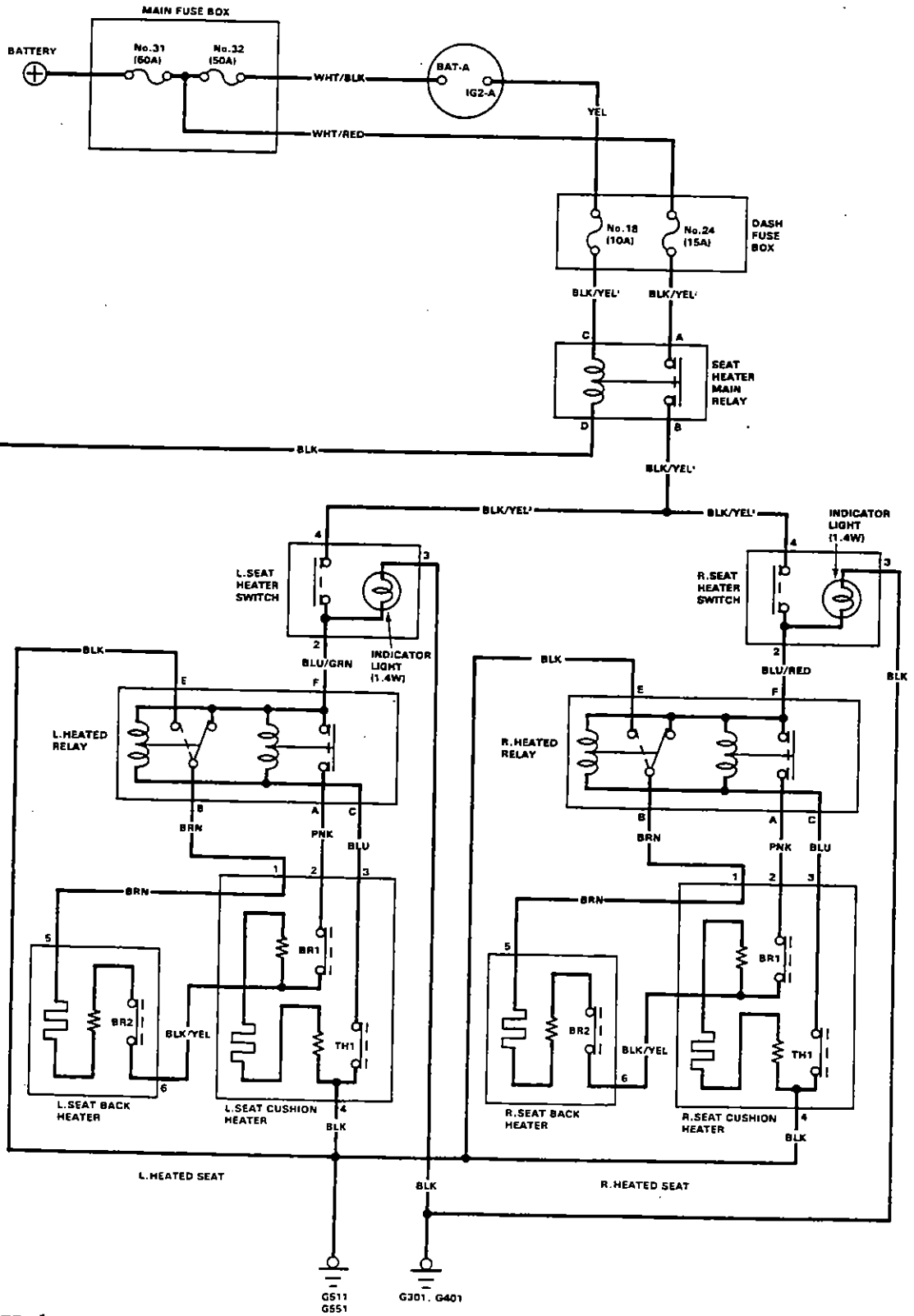


Description

Two heaters are provided in each front seat; one in the seat cushion and one in the seat back. In normal use, temperature is automatically controlled by the thermostat [OFF above 40°C (104°F)] built in each seat cushion heater. In emergency case, the breaker 1 [OFF above 50°C (122°F)] and the breaker 2 [OFF above 70°C (158°F)] cut off the circuit to prevent abnormal temperature rise.

Seat Heaters (KS model only)

Circuit Diagram



BR1: BREAKER [OFF above 50°C (122°F)]
TH1: THERMOSTAT [OFF above 40°C (104°F)]
BR2: BREAKER [OFF above 70°C (158°F)]

Troubleshooting

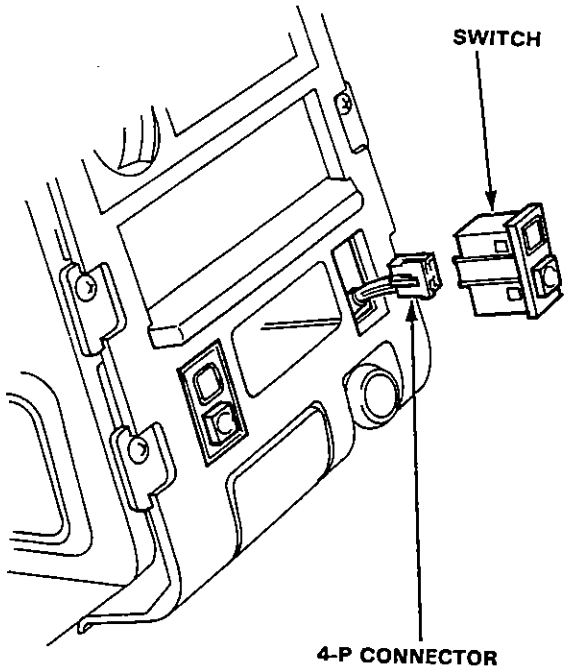
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom / Item to be inspected		Blown No.24 (15A) or No.18 (10A) fuses (in the dash fuse box)	Blown indicator light bulb	Seat heater switch	Seat heater	Heated relay input	Poor ground	Open circuit in wires or loose or disconnected terminals
Seat heaters operate, but indicator light does not go on.			1				G301 G401	
Seat heaters do not operate and indicator light does not go on.		1		2			G301 G401 G511 G551	BLK/YEL[1], BLK/YEL[2]
Seat heaters do not operate, but indicator light goes on.	Left and Right seat					1	G511 G551	BLU/GRN, BLU/RED, BRN, BLK/YEL, PNK, BLU
Seat cushion heater or seat back heater does not operate, but indicator light goes on.					1			

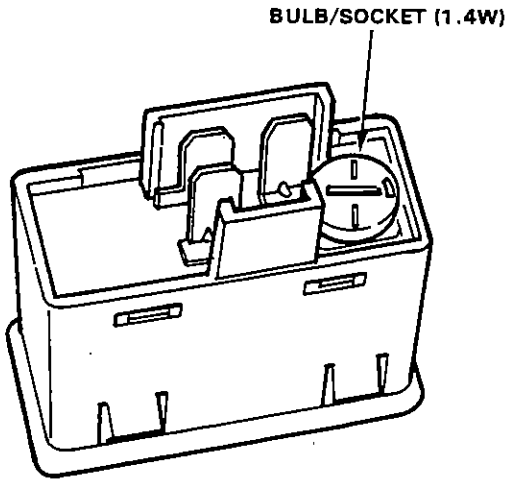
Seat Heaters (KS model only)

Switch Removal

1. Remove the front console.
2. Disconnect the 4-P connector to remove the switch, then push the switch behind the center instrument panel.

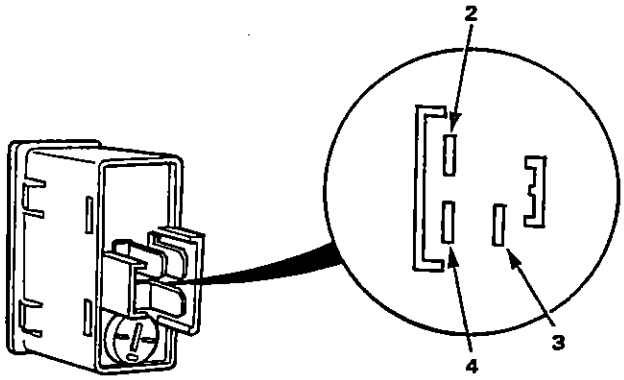


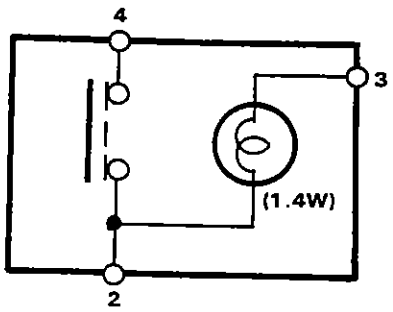
3. Turn the socket 45° counter-clockwise to remove it.



Switch Test

1. Remove the seat heater switch from the center instrument panel.
2. There should be continuity between the No.4 and No. 2 terminals when the switch is clicked into ON. There should be no continuity when the switch is clicked into OFF.

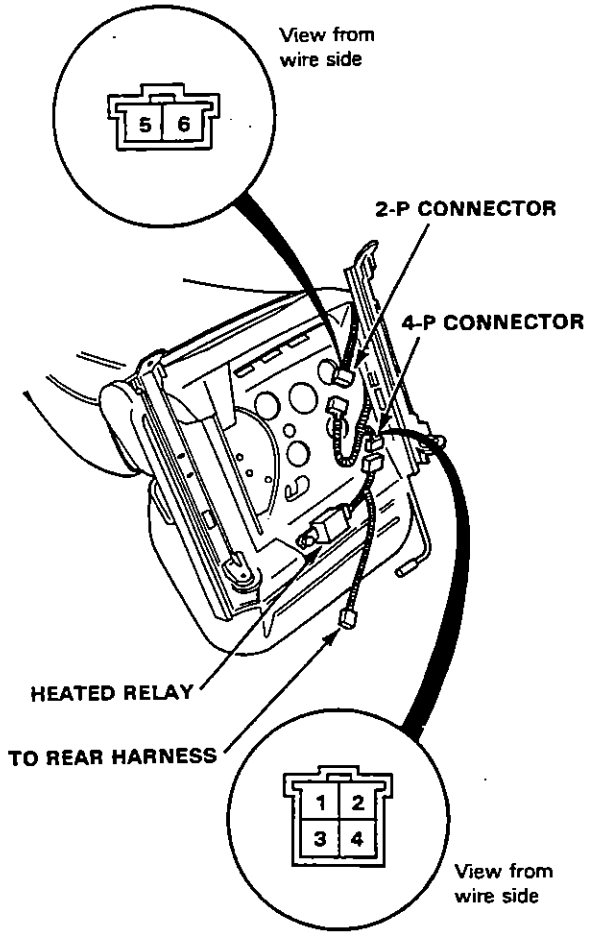




Heater Test

1. Disconnect the 4-P connector and 2-P connector as shown below.

   NOTE: Left front seat is shown. Right front seat is similar.



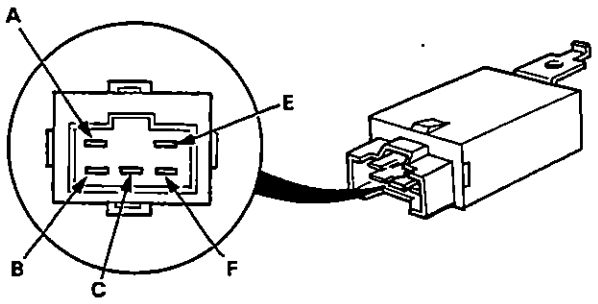
2. Check for continuity between the No.2 and No.3 terminals; between the No.5 and No.6 terminals (R x 10^3 scale)
   There should be continuity.

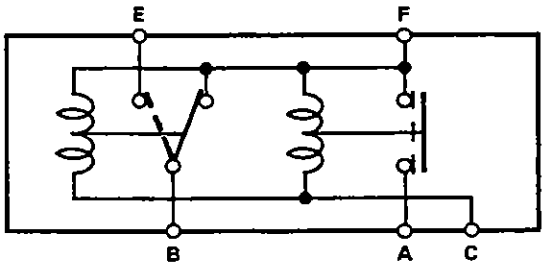
Relay Test

Heated relay:

1. Remove the front seat, then remove the relay from the bottom of the seat.

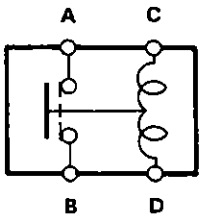
2. There should be continuity between the F and A; between E and B terminals when the battery is connected across the F and C terminals.
   There should be continuity between the F and B terminals when the battery is disconnected.

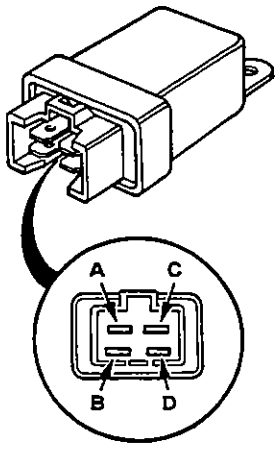




Main relay:

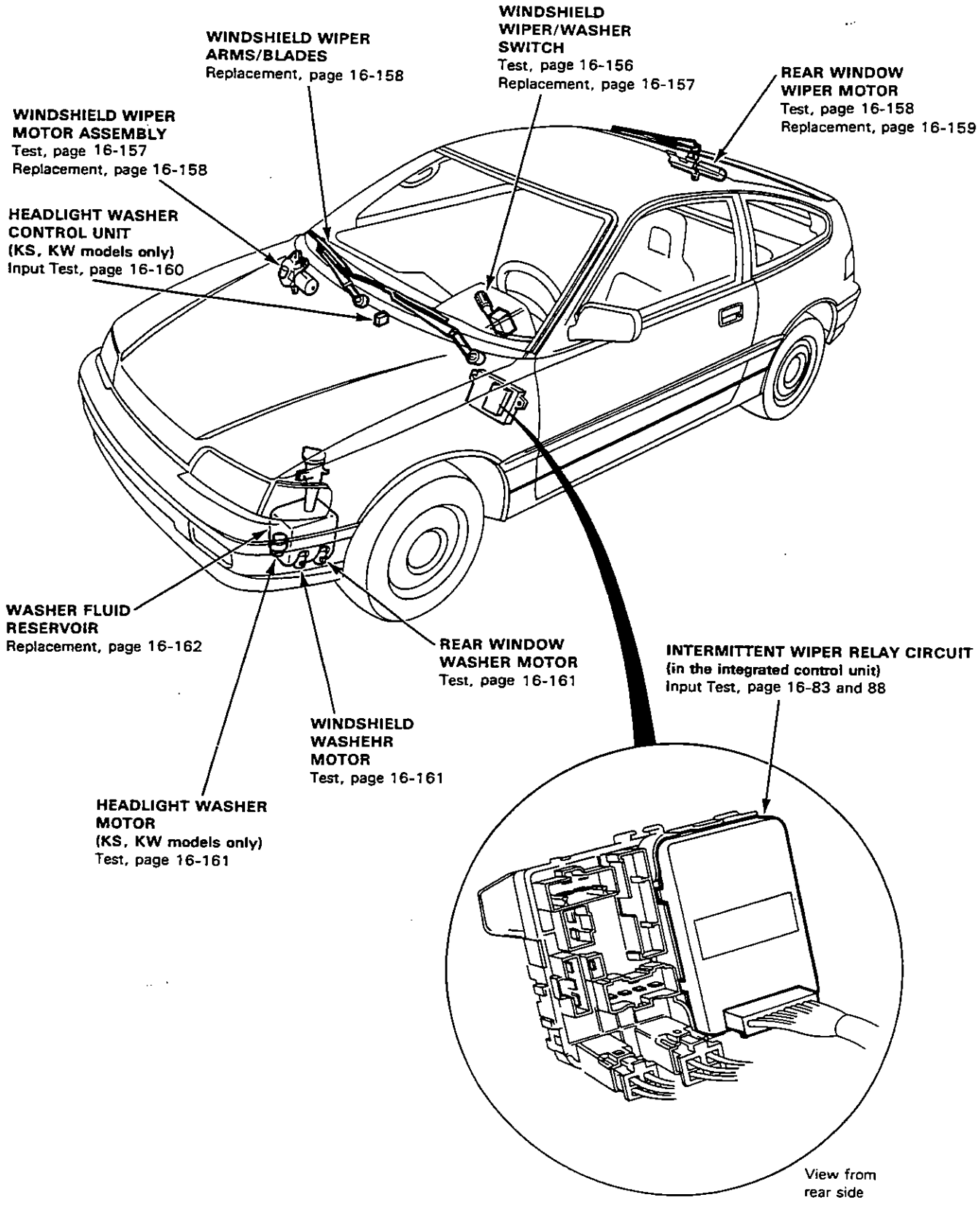
There should be continuity between the A and B terminals when the battery is connected across the C and D terminals.
There should be no continuity when the battery is disconnected.





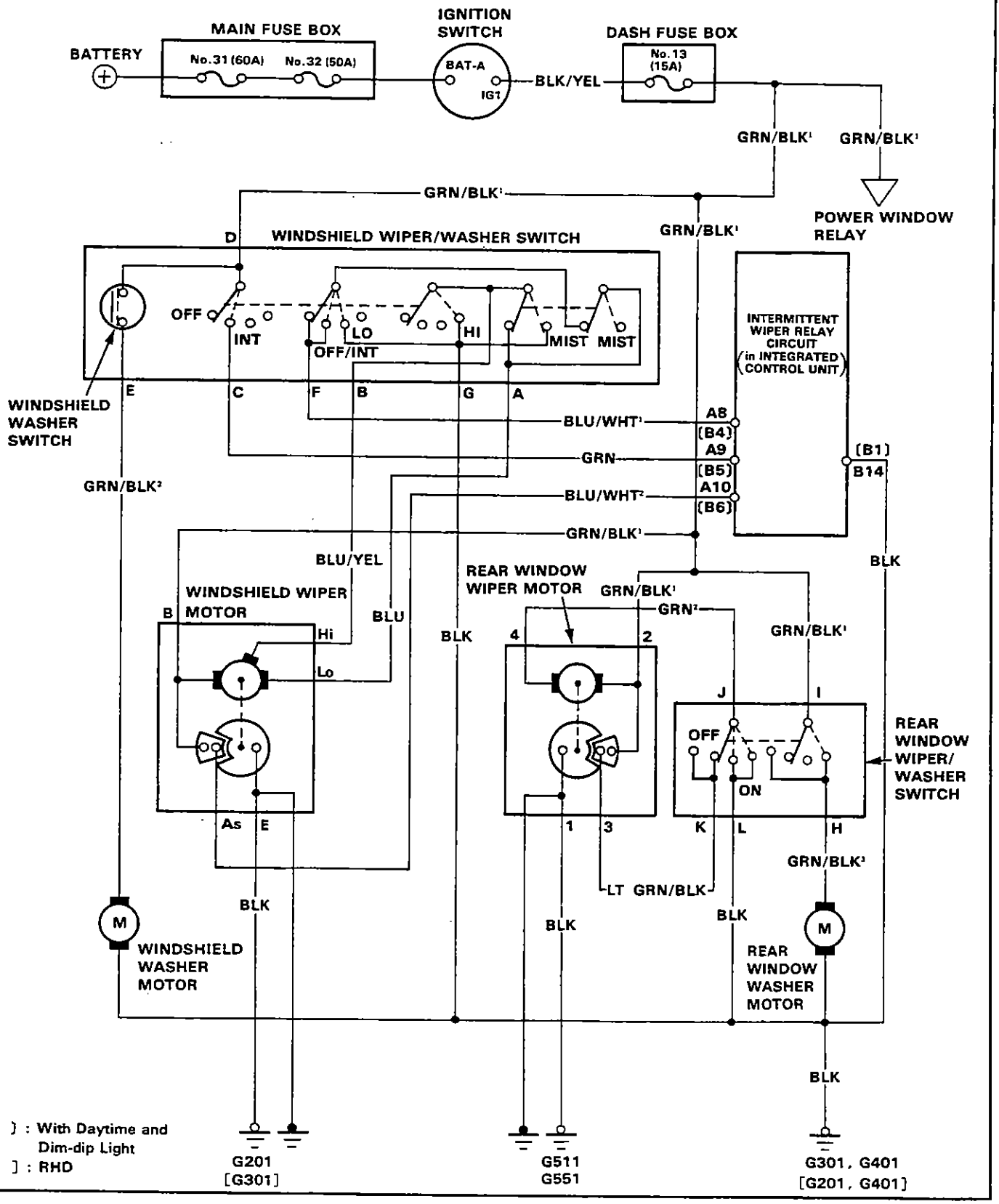
Wipers/Washers

Component Location Index

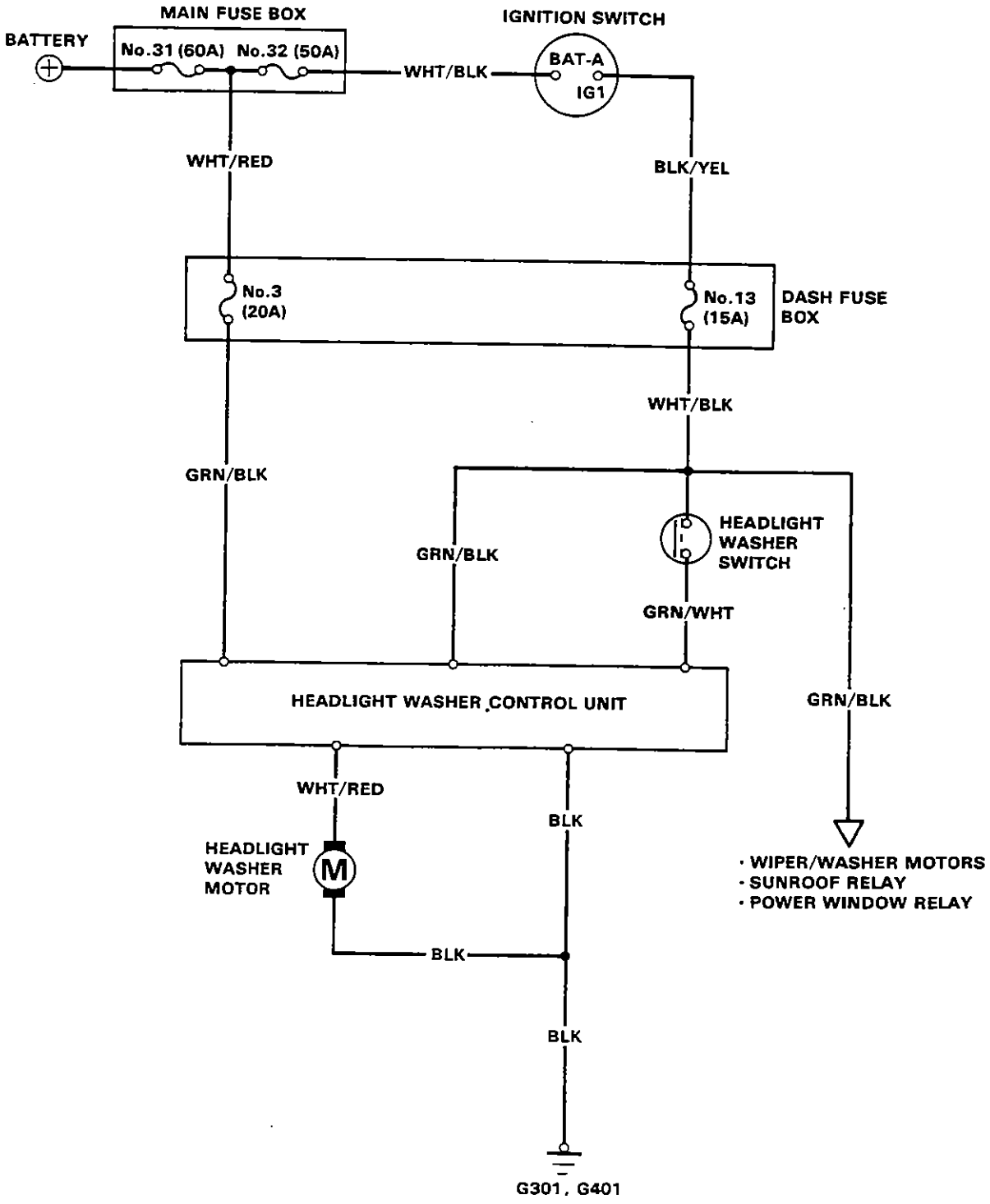


Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/BLK[1] and GRN/BLK[2] are not the same).



Circuit Diagram (Headlight Washer) (KS, KW models only)



NOTE: The numbers in the table show the troubleshooting sequence.

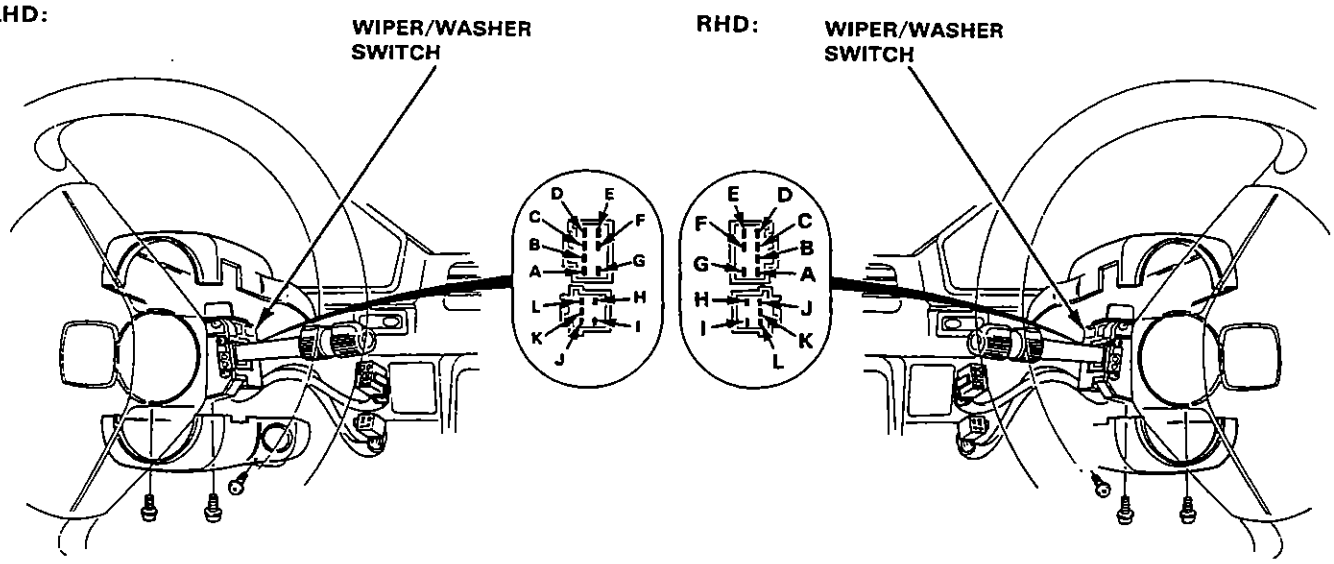
Symptom		Blown No.13 (15A) fuse (in the dash fuse box)	Wiper switch	Wiper motor assembly	Washer switch	Washer motor	Intermittent wiper relay circuit (in the integrated control unit)	Insufficient washer fluid in reservoir	Disconnected, blocked washer hose or clogged outlet	Disconnected wiper linkages	Poor ground	Open circuit in wires or loose or disconnected terminals
Wipers do not operate.	In all positions	1	4	2						3	G301, G401 [G201, G401]	GRN/BLK[1]
	In INT		1				2					GRN, BLU/WHT[1]
	In LO or HI		1	2								
	In Mist		1									
Rear window wiper does not operate.		1	3	2							G301, G401 [G201, G401]	GRN/BLK[1] or GRN[2]
Blades do not return to park position when wipers are turned OFF.			2	1								BLU/WHT[2]
Erratic intermittent cycle or wipers do not operate intermittently.			1				2					GRN/BLK[2] or GRN/BLK[3]
Little or no washer fluid is pumped.					4	3		1	2		G301, G401 [G201, G401]	BLK/YEL

[ ] : RHD

Wiper/Washer Switch Test

1. Remove the steering column covers.
2. Disconnect 8-P and 6-P connectors from the switch.
3. Check for continuity between the terminal in each switch position according to the table.

LHD:



Windshield

Terminal / Position	A	B	C	D	E	F	G
OFF	○					○	
INT	○		○	○		○	
LO	○						○
HI		○					○
Mist Switch "ON"		○					○
Washer Switch "ON"				○	○		

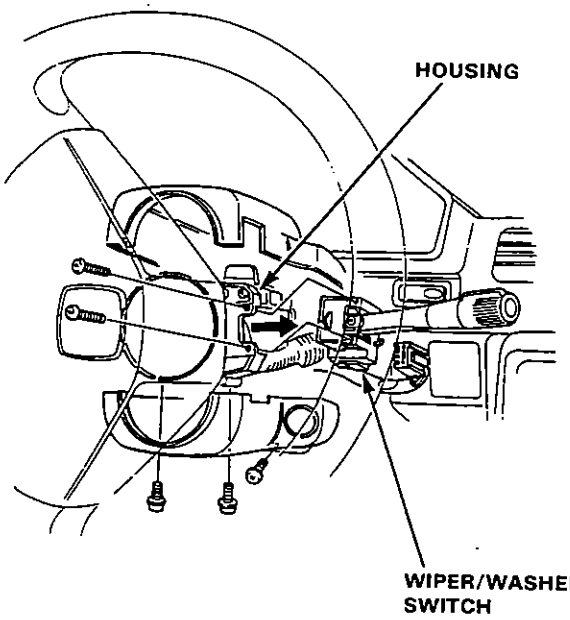
Rear Window

Terminal / Position	H	I	J	K	L
Washer Switch "ON"	○	○			
OFF			○	○	
ON			○		○
Washer Switch "ON"	○	○			

Wiper/Washer Switch Replacement

1. Remove the lower and upper covers from the steering column.
2. Disconnect the 8-P and 6-P connectors from the wiper/washer switch.
3. Remove the 2 screws and slide the wiper/washer switch out of the housing as shown.

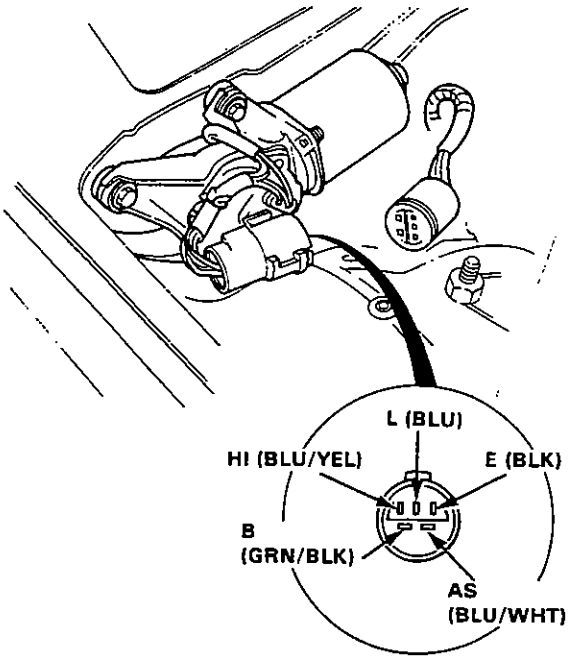
NOTE: Be carefull not to damage the steering wheel cover.



Windshield Wiper Motor Test

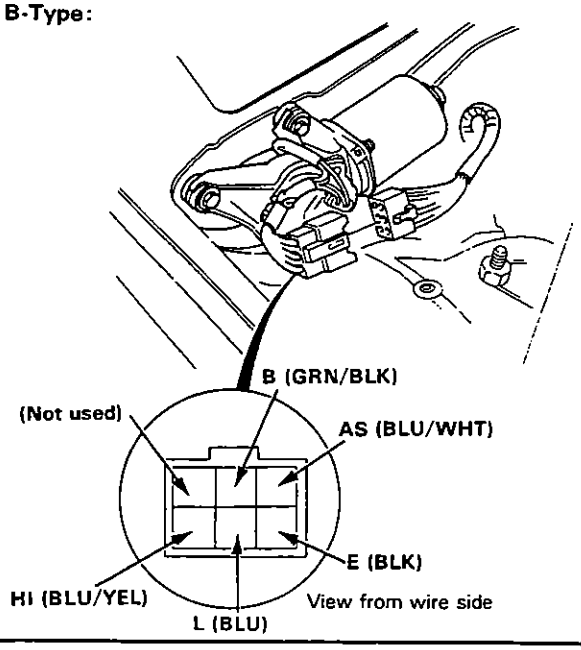
1. Disconnect the 5-P connector of the wiper motor assembly.
2. Test motor operation:
   LOW SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Lo (BLU) terminal.
   HIGH SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Hi (BLU/YEL) terminal.
3. If the motor fails to run smoothly, replace it.

A-Type:



View from terminal side

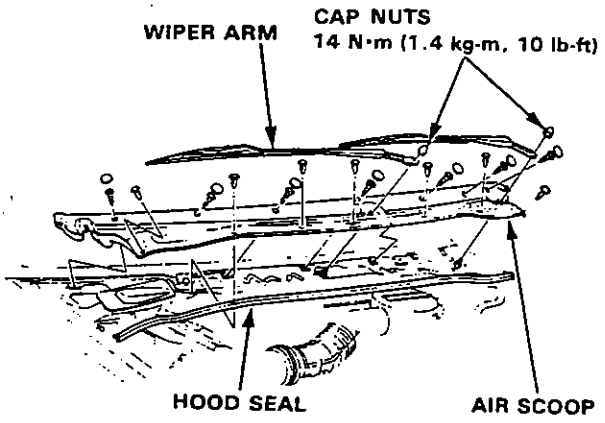
B-Type:



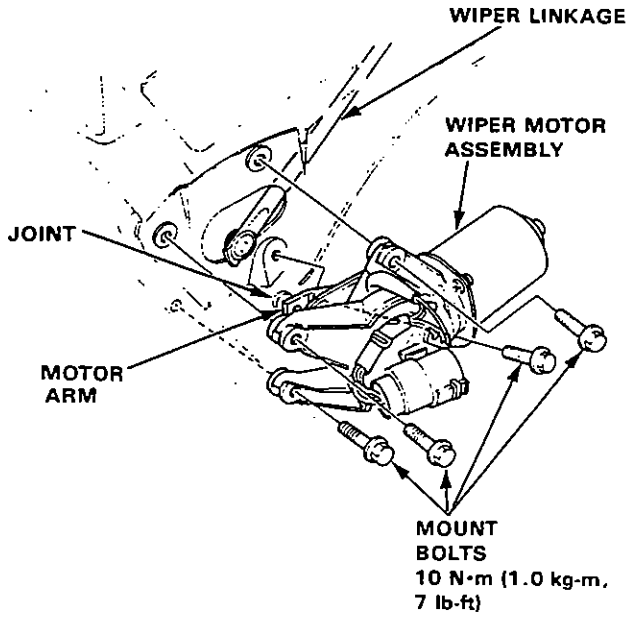
View from wire side

Windshield Wiper Motor Replacement

1. Remove the cap nuts and the wiper arms.
2. Remove the hood seal and air scoop by prying off the trim clips and removing the screws.



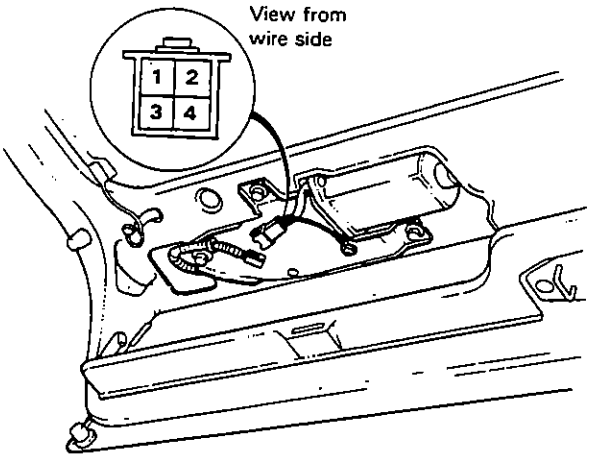
3. Pry the wiper linkage off the motor arm with a screw driver.
4. Disconnect the 5-P connector from the wiper motor assembly, then remove the 4 mount bolts and the wiper motor assembly.



5. Install the wiper motor assembly in the reverse order of removal.

Rear Window Wiper Motor Test

1. Remove the hatch trim panel.
2. Disconnect the 4-P connector.
3. Test wiper motor operation by connecting battery positive wire to the No.2 terminal and negative to the No.4 terminal.
4. If the motor fails to run smoothly, replace it.

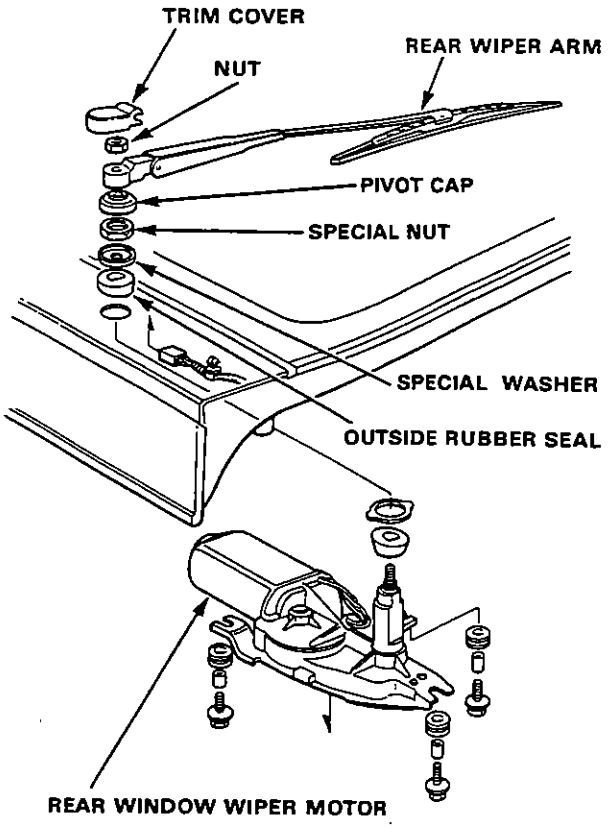


5. Check for continuity between the terminals according to the table.

Wiper Blade \ Terminal	1	2	3
At park position		○	○
At center position	○		○

Rear Window Wiper Motor Replacement

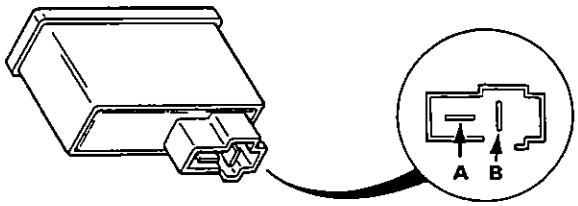
1. Remove the hatch trim panel.
2. Remove the trim cover, nut, wiper arm, special nut, special washer and the outside rubber seal.
3. Disconnect the 4-P connector from the wiper motor.
4. Remove the 3 mount bolts and the wiper motor.



Headlight Washer Switch Test

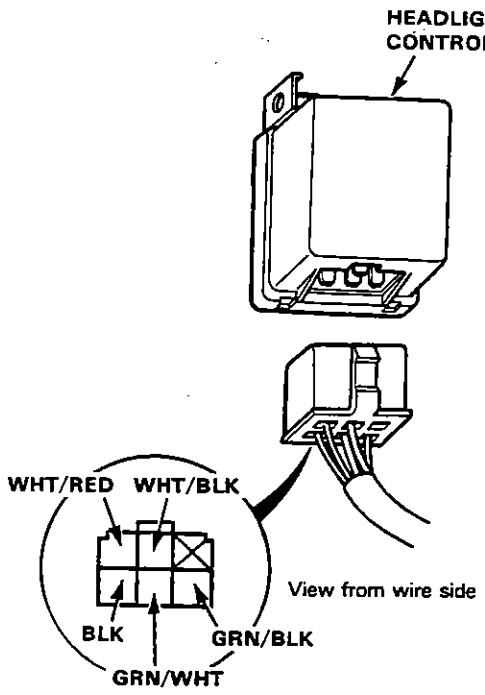
1. Remove the dashboard lower panel. Push out the switch from behind the instrument panel, then disconnect the 2-P connector from the switch.
2. Check for continuity between the terminals according to the table.

Position \ Terminal	A	B
OFF		
ON	○	○



Headlight Washer Control Unit Input Test

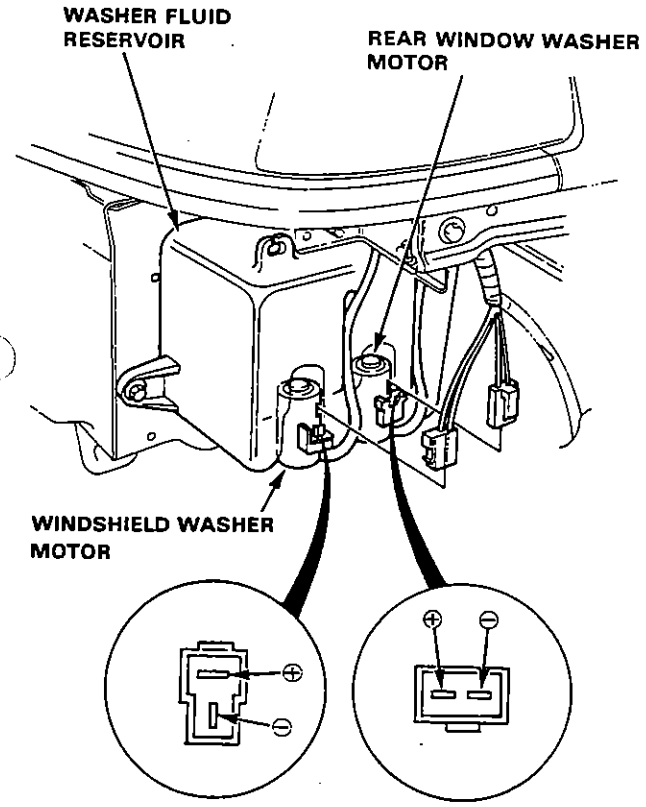
Remove the dashboard lower panel and disconnect the 6-P connector from the control unit.
Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

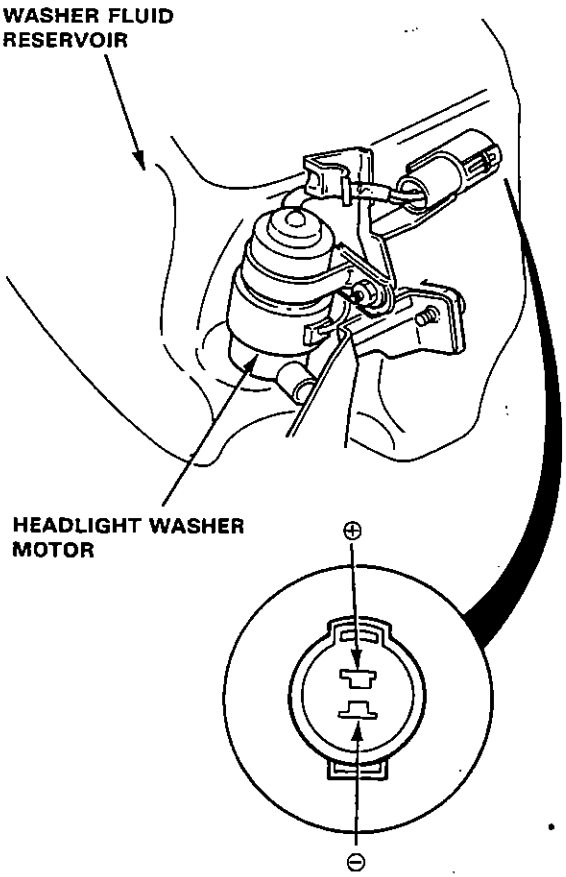


No.	Terminal	Test condition	Test: desired result	Possible cause (If result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT/BLK	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.3 (20A) fuse. • An open in the wire.
3	GRN/WHT	Ignition switch ON and headlight washer switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • Faulty headlight washer switch • An open in the wire.
4	WHT/RED	Connect the WHT/BLK terminal to the WHT/RED terminal.	Check the headlight washer motor operation: should run.	• Faulty headlight washer motor. • Poor ground (G301, G401). • An open in the wire.
5	GRN/BLK	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • An open in the wire.

Washer Motor Test

1. Remove the front bumper and disconnect the 2-P connector from the washer motor.
2. Test either washer motor operation by connecting battery positive to the ⊕ terminal and negative to the ⊖ terminal.





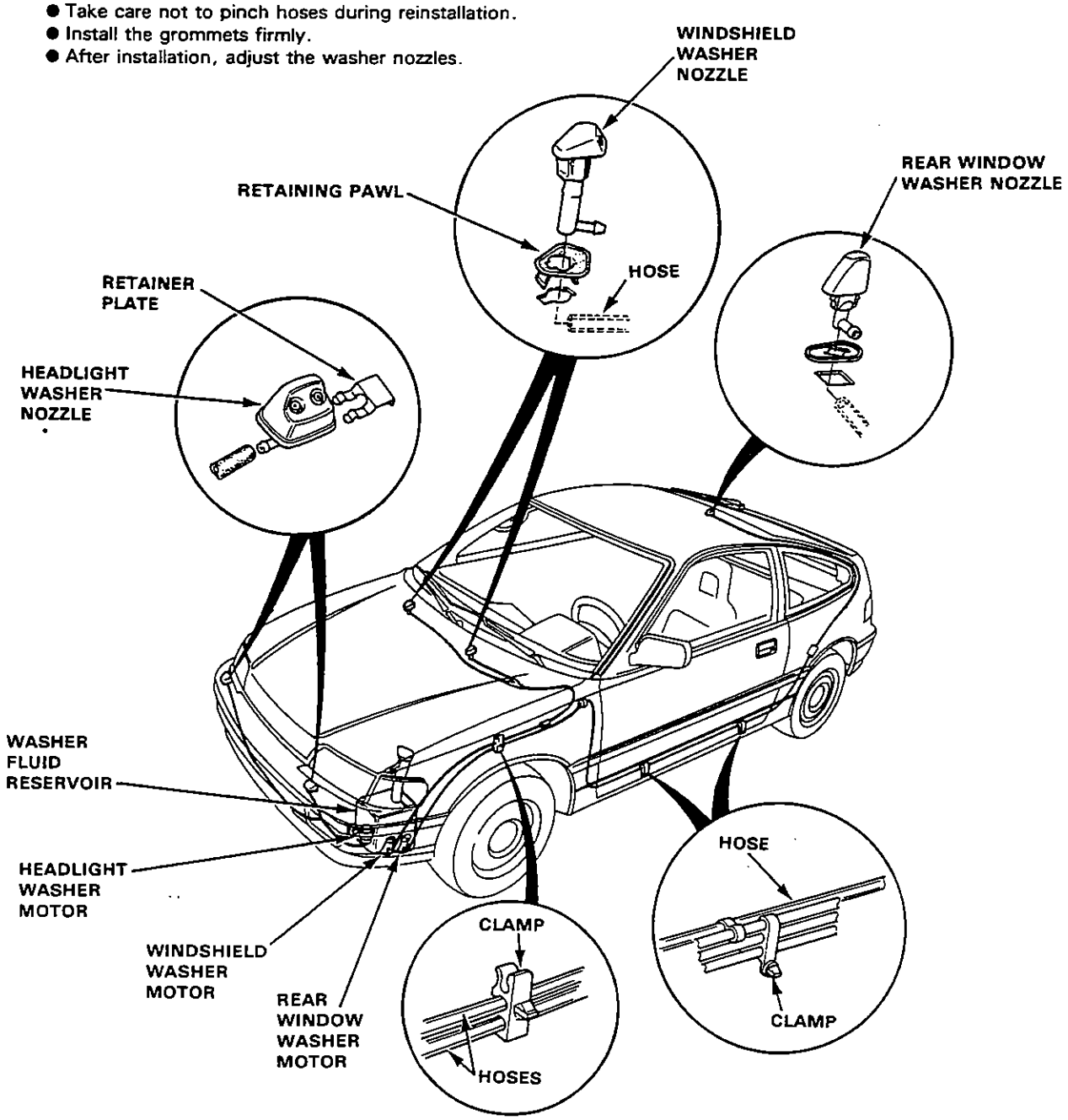
- If the motor fails to run smoothly, replace it.
- If the motor runs smoothly but little or no washer fluid is pumped, check for disconnected or blocked washer-hose, or clogged pump outlet in the motor.

Washer Replacement

1. Remove the bumper, then remove the washer reservoir by removing the 4 mount bolts.
2. Disconnect the hoses and the 2-P connectors from the windshield, rear window and headlight washer motors.
3. Remove the washer nozzles;

Windshield Washer Nozzles:	Releasing the retaining pawls and pushing them out from the under side.
Rear Window Washer Nozzle:	Remove the rear spoiler and pull out the nozzle.
Headlight Washer Nozzles:	Releasing the retainer plate and pushing them out from the inside of bumper.

NOTE:
- Clamp the hoses with the wire harness in the left front fender.
- Take care not to pinch hoses during reinstallation.
- Install the grommets firmly.
- After installation, adjust the washer nozzles.



Wiring Diagrams

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Ignition System 1
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- Windshield 8
- Rear Window 8

HONDA

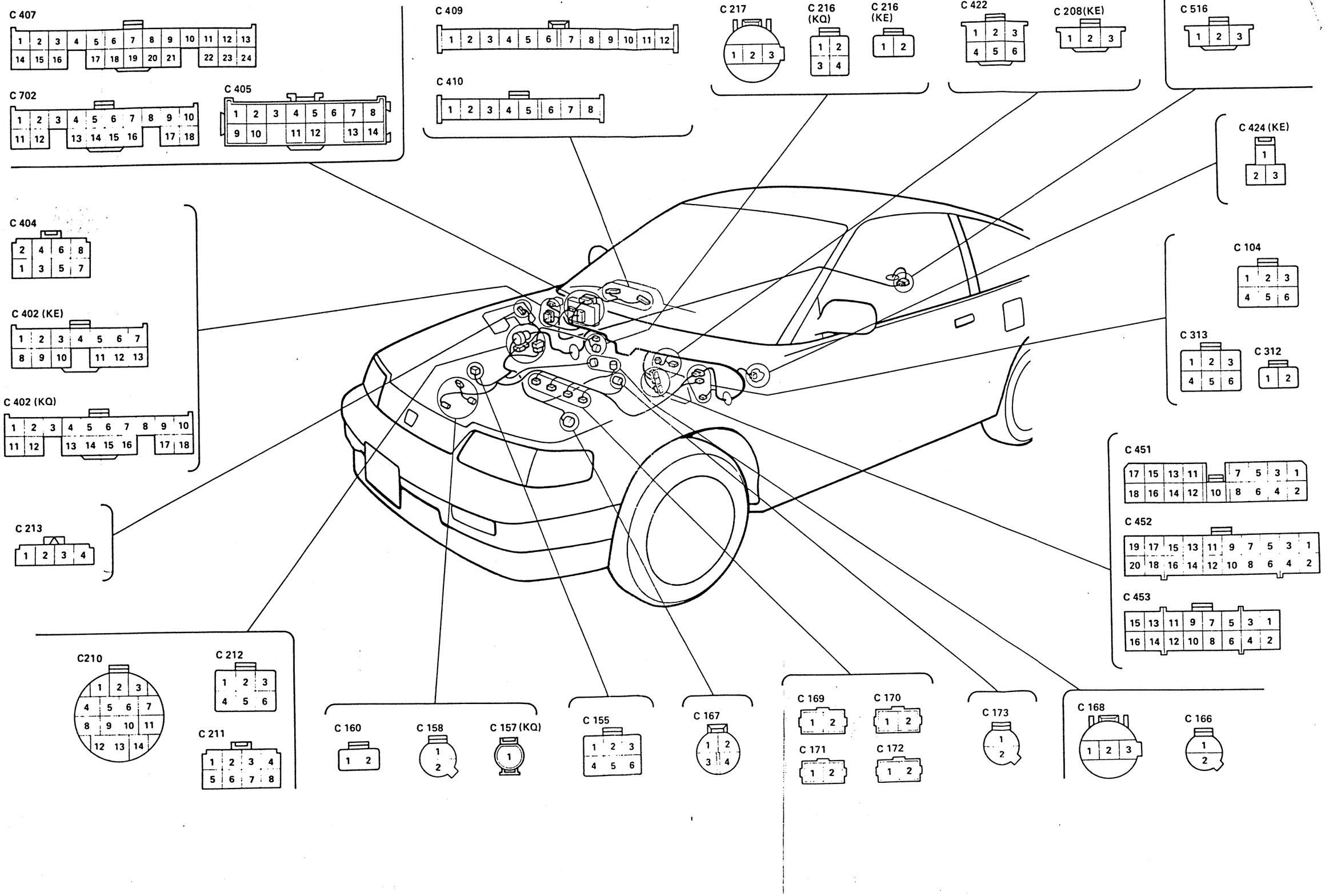
HONDA MOTOR CO., LTD. TOKYO, JAPAN

62SH200

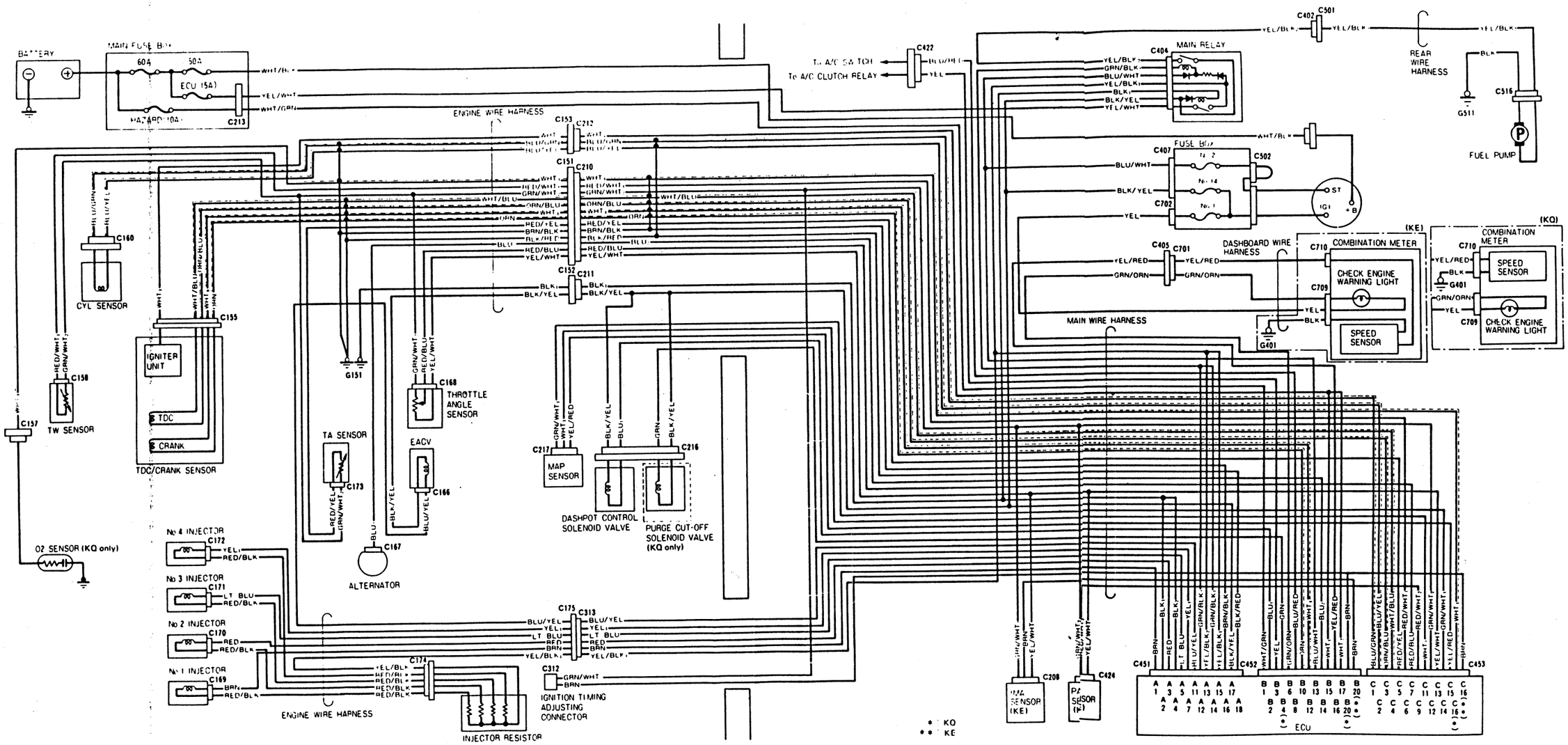
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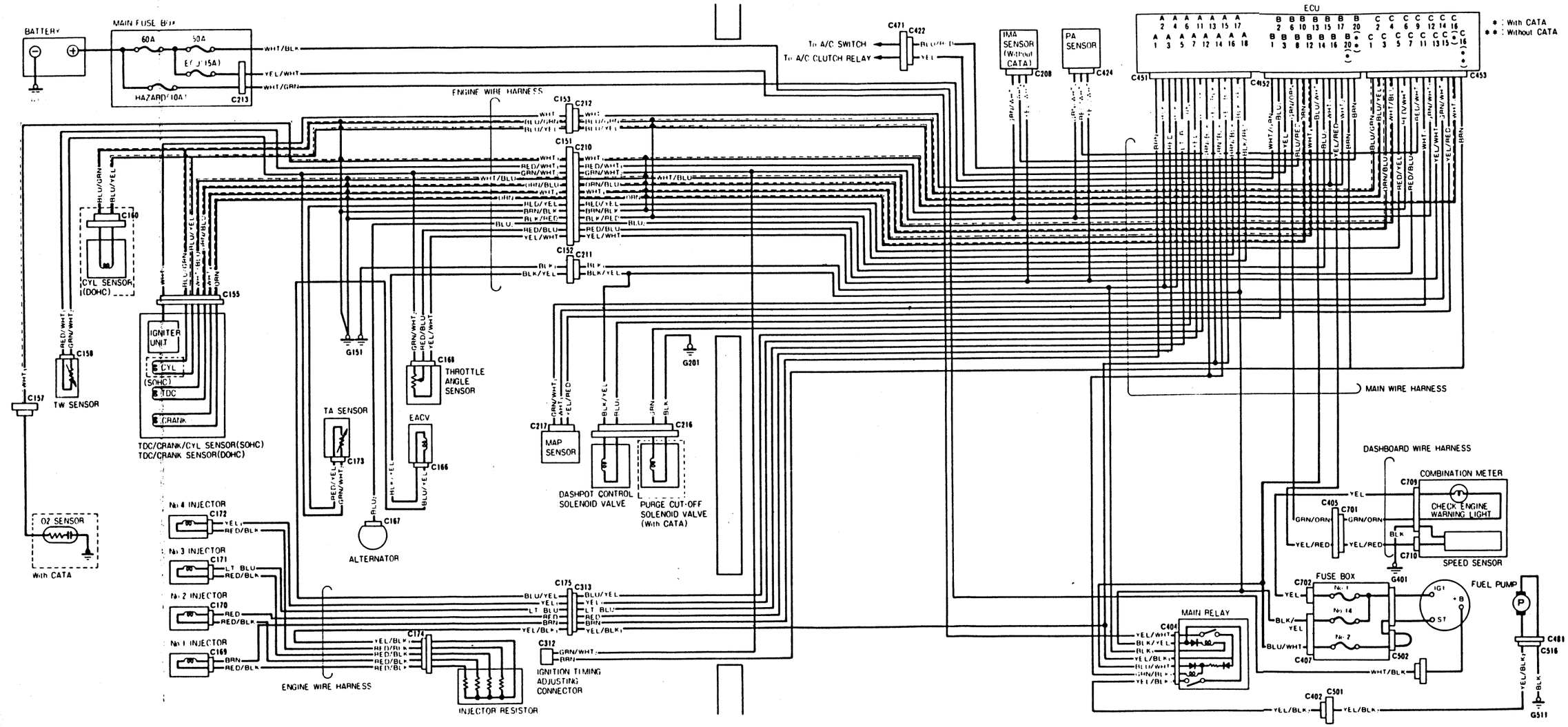
Fuel-Injected System Connectors (RHD)

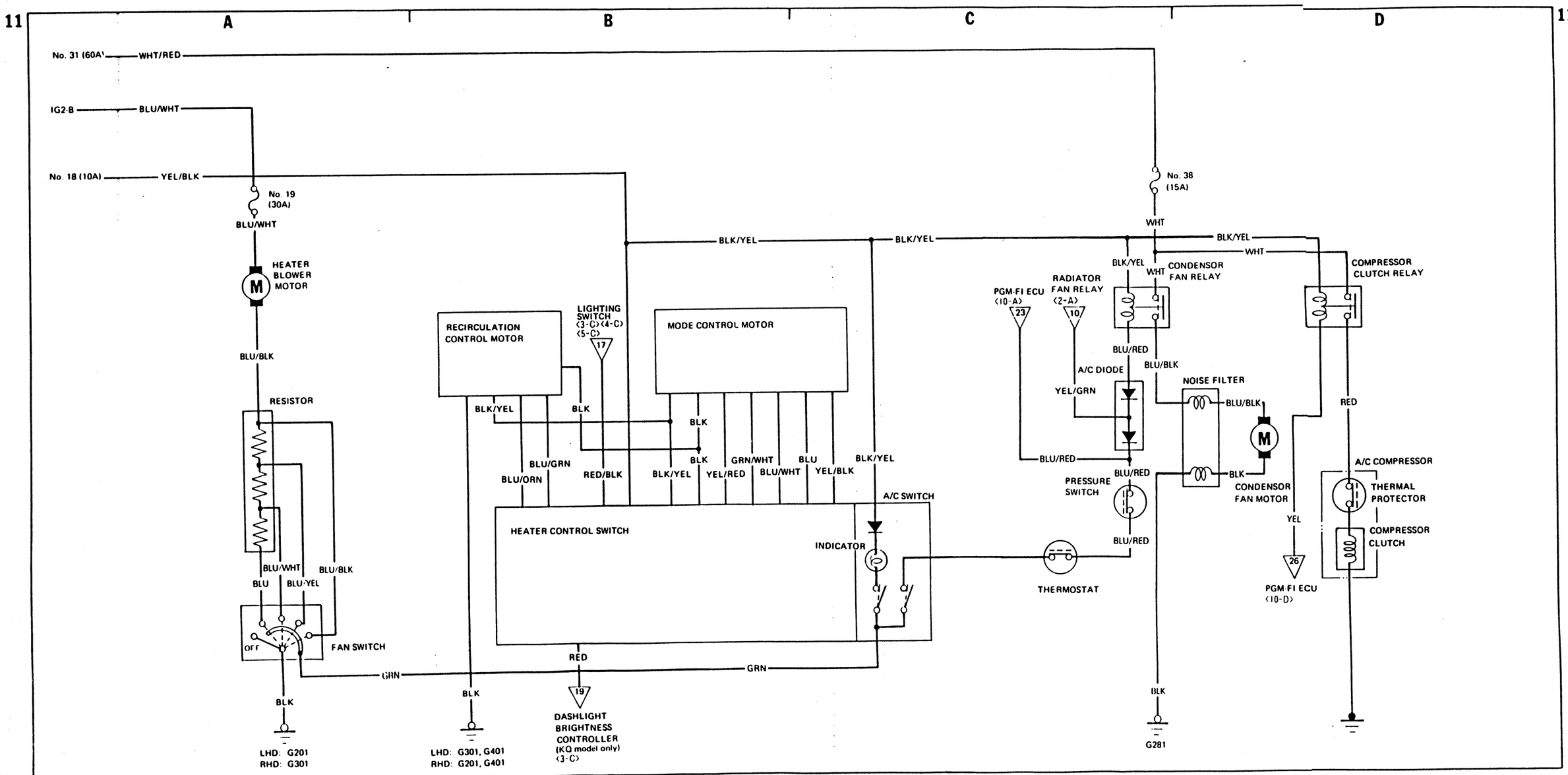


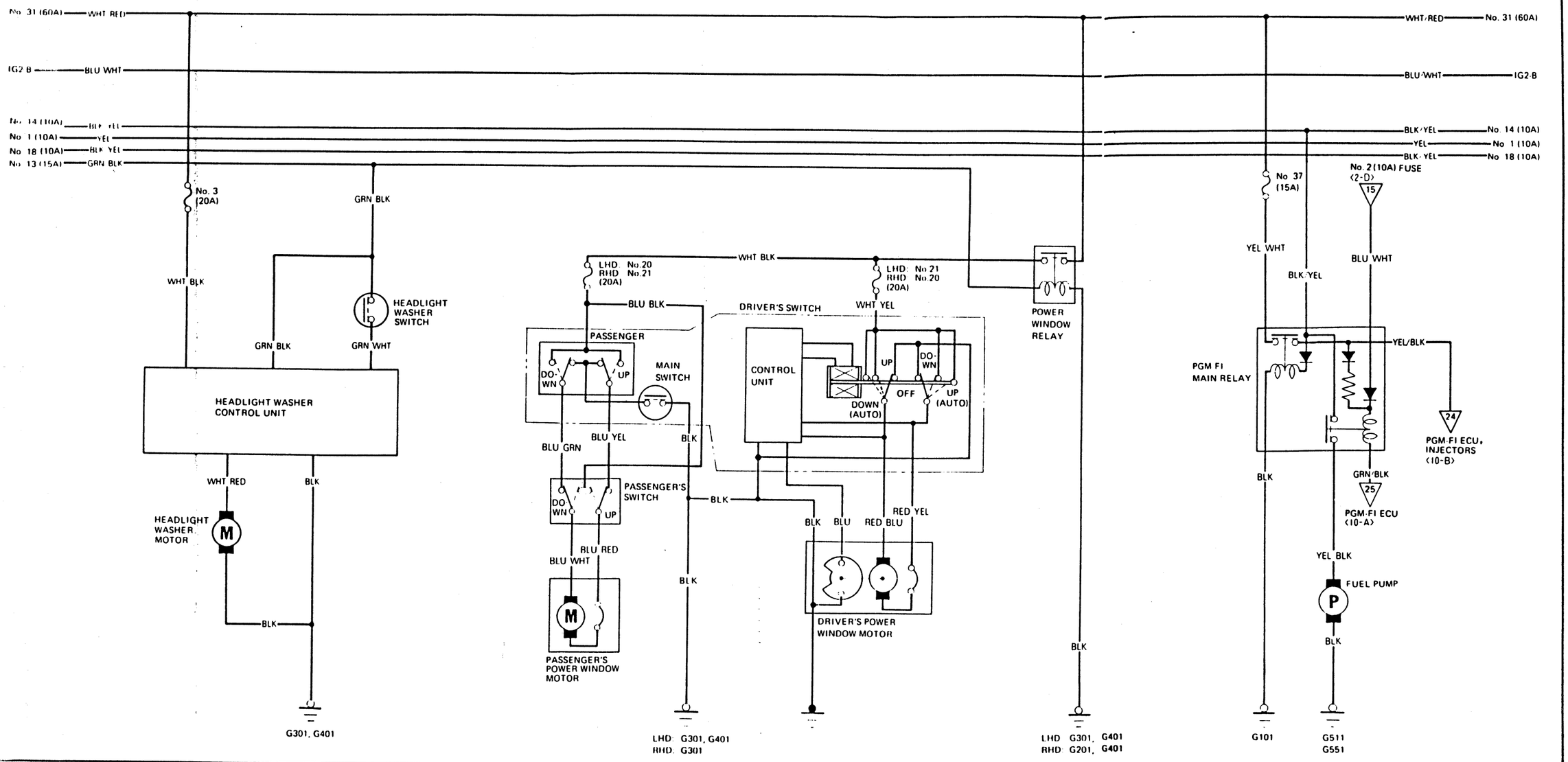
Fuel-Injected System Diagram (RHD)



Fuel-Injected System Diagram (LHD)




11
A
B
C
D
11
No. 31 (60A)
WHT/RED
IG2-B
BLU/WHT
No. 18 (10A)
YEL/BLK
No. 19
(30A)
BLU/WHT
HEATER
BLOWER
MOTOR
M
BLU/BLK
RESISTOR
BLU/WHT
BLU
BLU/YEL
BLU/BLK
OFF
FAN SWITCH
BLK
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RECIRCULATION
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SWITCH
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<5-C>
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MODE CONTROL MOTOR
BLK/YEL
BLK
BLK
BLU/GRN
BLU/ORN
RED/BLK
BLK/YEL
YEL/RED
GRN/WHT
BLU/WHT
BLU
YEL/BLK
BLK/YEL
HEATER CONTROL SWITCH
A/C SWITCH
INDICATOR
RED
GRN
GRN
BLK
LHD: G301, G401
RHD: G201, G401
19
DASHLIGHT
BRIGHTNESS
CONTROLLER
(KQ model only)
<3-C>
No. 38
(15A)
WHT
BLK/YEL
BLK/YEL
WHT
BLK/YEL
WHT
CONDENSOR
FAN RELAY
COMPRESSOR
CLUTCH RELAY
PGM-FI ECU
<10-A>
23
RADIATOR
FAN RELAY
<2-A>
10
BLU/RED
BLU/BLK
A/C DIODE
YEL/GRN
NOISE FILTER
BLU/BLK
BLU/RED
BLU/RED
PRESSURE
SWITCH
BLU/RED
BLK
CONDENSOR
FAN MOTOR
M
THERMOSTAT
BLK
G281
RED
A/C COMPRESSOR
THERMAL
PROTECTOR
COMPRESSOR
CLUTCH
YEL
26
PGM-FI ECU
<10-D>


No. 31 (60A) WHT RED
IG2 B BLU WHT
No. 14 (10A) BLK YEL
No. 1 (10A) YEL
No. 18 (10A) BLK YEL
No. 13 (15A) GRN BLK
WHT/RED No. 31 (60A)
BLU/WHT IG2 B
BLK/YEL No. 14 (10A)
YEL No. 1 (10A)
BLK/YEL No. 18 (10A)
No. 3 (20A)
WHT BLK
GRN BLK
GRN BLK
GRN WHT
HEADLIGHT WASHER SWITCH
HEADLIGHT WASHER CONTROL UNIT
WHT RED
BLK
HEADLIGHT WASHER MOTOR
M
BLK
G301, G401
LHD No. 20 RHD No. 21 (20A)
WHT BLK
LHD No. 21 RHD No. 20 (20A)
WHT YEL
BLU BLK
DRIVER'S SWITCH
PASSENGER
DO-WN
UP
MAIN SWITCH
CONTROL UNIT
UP
DO-WN
OFF
DOWN (AUTO)
UP (AUTO)
BLU GRN
BLU YEL
BLK
PASSENGER'S SWITCH
DO-WN
UP
BLK
BLK BLU
RED BLU
RED YEL
BLU RED
BLU WHT
M
PASSENGER'S POWER WINDOW MOTOR
BLK
DRIVER'S POWER WINDOW MOTOR
LHD G301, G401
RHD G301
POWER WINDOW RELAY
BLK
LHD G301, G401
RHD G201, G401
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BLK/YEL
BLU WHT
PGM-FI MAIN RELAY
YEL/BLK
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PGM-FI ECU, INJECTORS <10-B>
BLK
GRN/BLK
25
PGM-FI ECU <10-A>
YEL BLK
FUEL PUMP
P
BLK
G101
G511
G551

A B C D

WHT RED — No. 31 (60A)

BLU WHT — IG2-B

BLK YEL — No. 14 (10A)

YEL — No. 1 (10A)

BLK YEL — No. 18 (10A)

GRN BLK — No. 13 (15A)

No. 24 (15A)

SEAT HEATER RELAY

(1.4W) L. SEAT HEATER SWITCH — INDICATOR LIGHT

L. HEATED RELAY

L. SEAT CUSHION HEATER

L. SEAT BACK HEATER

(1.4W) R. SEAT HEATER SWITCH — INDICATOR LIGHT

R. HEATED RELAY

R. SEAT CUSHION HEATER

R. SEAT BACK HEATER

BR1: BRAKER (OFF above 50°C)
BR2: BRAKER (OFF above 40°C)
TH1: THERMOSTAT (OFF above 70°C)

G301 G401 — G511 G551 — G301 G401 — G301 G401

WINDSHIELD WIPER MOTOR

INTEGRATED CONTROL UNIT <2-C>

WINDSHIELD WIPER/WASHER SWITCH

MIST SWITCH — WIPER SWITCH — WASHER SWITCH

WINDSHIELD WASHER MOTOR

INTEGRATED CONTROL UNIT <2-C>

LHD: G301, G401
RHD: G201, G401

LHD: G201
RHD: G301

REAR WINDOW WIPER/WASHER SWITCH

REAR WASHER MOTOR

LHD: G301, G401
RHD: G201, G401

G511 G551

No. 31 (60A) — WHT RED
IG2-B — BLU WHT
IG1 — BLK YEL
IG2-A — YEL
No. 14 (10A) — BLK YEL
No. 1 (10A) — YEL
No. 12 (15A) — WHT BLU
No. 17 (10A) — YEL RED

LIGHTING SWITCH ⟨3-C⟩ ⟨4-C⟩ ⟨5-C⟩ 18
MAST ANTENNA
YEL RED
WHT BLU
RED BLK
STEREO RADIO/CASSETTE PLAYER
GRY WHT BLU YEL
BRN WHT RED YEL
GRY BLK BLU GRN
BRN BLK RED GRN
L REAR
R REAR
L FRONT
R FRONT
SPEAKERS
BLK
G701

No. 18 (10A)
BLK YEL
POWER DOOR MIRROR SWITCH
LEFT
UP
RIGHT
DOWN
L
R
YEL WHT
BLU GRN
YEL RED
YEL BLK
BLU BLK
BLK
L DOOR MIRROR
YEL/RED
R DOOR MIRROR
M
BLU WHT
YEL/BLK
LHD: YEL/BLK
RHD: BLU/BLK
LHD G301, G401
RHD G201, G401

No. 36 (20A)
YEL GRN
REAR WINDOW DEFOGGER RELAY
BLK GRN
BLK
REAR WINDOW DEFOGGER
G511
G551
LHD: G301, G401
RHD: G201, G401

LIGHTING SWITCH ⟨3-C⟩ ⟨4-C⟩ ⟨5-C⟩ 17
RED BLK
BLK YEL
REAR WINDOW DEFOGGER SWITCH
INDICATOR
LIGHT
(1.4W)
(0.84W)
(Except KQ model)
RED
19
DASHLIGHT BRIGHTNESS CONTROL UNIT (KQ model only) ⟨3-C⟩

WHT RED — No. 31 (60A)
BLU/WHT — IG2 B
BLK YEL — No. 14 (10A)
YEL — No. 1 (10A)
BLK YEL — No. 18 (10A)
GRN/BLK — No. 13 (15A)
No. 6 (30A)
No. 13 (15A)
WHT
GRN/BLK
SUNROOF RELAY
WHT/GRN
GRN
WHT/GRN
WHT/GRN
OFF
TILT/ OPEN
OPEN/ CLOSE
CLOSE
SUNROOF SWITCH
TILT UP SWITCH
GRN/RED
GRN/YEL
BLK
BLK
BLK
SUNROOF MOTOR
LHD: G301, G401
RHD: G201, G401

A B C D

BAT
No. 31 (60A) — WHT RED
WHT
ACC — WHT RED
IG2-B — BLU WHT
IG1 — BLK YEL
IG2-A — YEL
No. 14 (10A) — BLK YEL
No. 1 (10A) — YEL

WHT RED — No. 31 (60A)
BLU WHT — IG2-B
BLK YEL — IG1
YEL — IG2-A
BLK YEL — No. 14 (10A)
YEL — No. 1 (10A)
WHT BLU — No. 12 (15A)
YEL RED — No. 17 (10A)

No. 12 (15A)
No. 17 (10A)
No. 35 (15A)
No. 34 (10A)

WHT BLU
WHT BLU
YEL RED
WHT BLU
WHT GRN
YEL
WHT GRN
WHT GRN
WHT GRN

TRUNK LIGHT
DOME LIGHT (8W)
(3.4W)
ON OFF
TAILGATE OPEN INDICATOR LIGHT <2-C>
12
INTEGRATED CONTROL UNIT <2-D>
14
GRN BLK
GRN/BLK
GRN/RED
GRN RED
DOOR SWITCH
GRN BLK
TAILGATE LATCH SWITCH
PASSENGER'S DOOR SWITCH

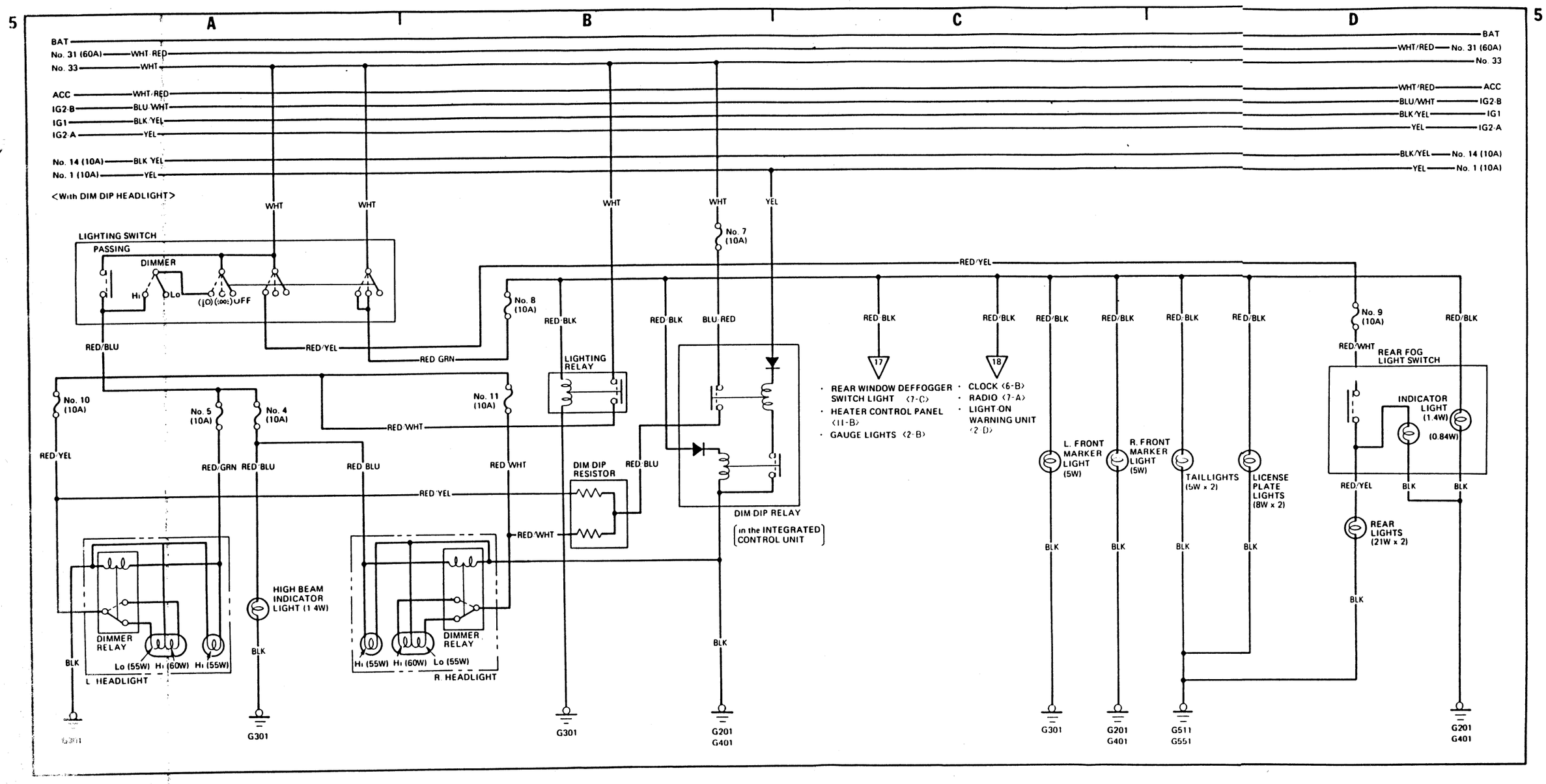
(KQ model)
(Except KQ model)
CIGARETTE LIGHTER RELAY
CIGARETTE LIGHTER
BLK
BLK
LHD G301, G401
RHD G201, G401

LIGHTING SWITCH <3-C> <4-C> <5-C>
18
WHT/BLU
YEL
RED/BLK
CLOCK
BLK
G201
G401
YEL
BACK-UP LIGHT SWITCH
GRN BLK
BACK-UP LIGHTS
BLK (21W x 2)
G511
G551
BRAKE LIGHTS (21W x 2)
BLK

HORNS
H (HIGH) H (LOW)
BLU RED
CONTACT RING
BLU RED
BRAKE LIGHT SWITCH
GRN WHT
BLU RED
HORN SWITCH

YEL
WHT GRN
WHT GRN
HAZARD WARNING LIGHT (1.4W)
GRN/WHT
(European model only)
20
PGM-FI ECU <10-B>
HAZARD SWITCH
OFF ON
GRN/RED
GRN/WHT
TURN SIGNAL/ HAZARD RELAY
L R
GRN BLU
GRN YEL
BLK

L TURN SIGNAL LIGHTS
GRN BLU
GRN YEL
R TURN SIGNAL LIGHTS
REAR SIDE FRONT
(32CP) (32CP) L
FRONT SIDE REAR
R (32CP) (32CP)
BLK BLK BLK BLK
BLK BLK BLK BLK
BLK BLK BLK BLK
(L.H. Drive)
INDICATORS (1.4W×2)
(R.H. Drive)
G511 G551
LHD G301, G401
RHD G301
LHD (G201
RHD (G201, G401
G511 G551
LHD G301, G401
RHD G201, G401


5
A
B
C
D
5
BAT
No. 31 (60A) WHT/RED
No. 33 WHT
ACC WHT/RED
IG2-B BLU/WHT
IG1 BLK/YEL
IG2-A YEL
No. 14 (10A) BLK/YEL
No. 1 (10A) YEL
<With DIM DIP HEADLIGHT>
WHT
WHT
WHT
WHT
YEL
No. 7 (10A)
LIGHTING SWITCH
PASSING
DIMMER
Hi
Lo
OFF
RED/YEL
No. 8 (10A)
RED/BLK
RED/BLK
BLU/RED
RED/BLU
RED GRN
LIGHTING RELAY
No. 10 (10A)
No. 5 (10A)
No. 4 (10A)
No. 11 (10A)
RED/WHT
RED/YEL
RED/GRN
RED/BLU
RED/BLU
RED/WHT
DIM DIP RESISTOR
RED/BLU
RED/YEL
RED/WHT
DIM DIP RELAY
(in the INTEGRATED CONTROL UNIT)
HIGH BEAM INDICATOR LIGHT (1.4W)
DIMMER RELAY
Lo (55W) Hi (60W) Hi (55W)
L HEADLIGHT
DIMMER RELAY
Hi (55W) Hi (60W) Lo (55W)
R HEADLIGHT
BLK
BLK
BLK
BLK
G301
G301
G201
G401
17
REAR WINDOW DEFFOGGER SWITCH LIGHT <7-C>
HEATER CONTROL PANEL <11-B>
GAUGE LIGHTS <2-B>
18
CLOCK <6-B>
RADIO <7-A>
LIGHT-ON WARNING UNIT <2-D>
RED/BLK
RED/BLK
RED/BLK
RED/BLK
RED/BLK
RED/BLK
L. FRONT MARKER LIGHT (5W)
R. FRONT MARKER LIGHT (5W)
TAILLIGHTS (5W x 2)
LICENSE PLATE LIGHTS (8W x 2)
BLK
BLK
BLK
BLK
G301
G201
G401
G511
G551
No. 9 (10A)
RED/WHT
REAR FOG LIGHT SWITCH
INDICATOR LIGHT (1.4W)
(0.84W)
RED/BLK
RED/YEL
BLK
BLK
REAR LIGHTS (21W x 2)
BLK
G201
G401

A B C D

BAT
No. 31 (60A) — WHT RED — WHT RED — No. 31 (60A)
No. 33 — WHT — No. 33
ACC — WHT RED — WHT/RED — ACC
IG2 B — BLU WHT — BLU/WHT — IG2 B
IG1 — BLK YEL — BLK YEL — IG1
IG2 A — YEL — YEL — IG2 A
No. 14 (10A) — BLK YEL — BLK YEL — No. 14 (10A)
No. 1 (10A) — YEL — YEL — No. 1 (10A)

With DAYTIME LIGHT

LIGHTING SWITCH
PASSING
DIMMER
Hi Lo (∞)OFF

WHT WHT WHT

No. 16 (10A)

RED BLK
RED/YEL
BLK YEL
RED YEL
RED GRN
RED BLK
RED/WHT
RED/BLU

No. 10 (10A)
No. 5 (10A)
No. 4 (10A)
No. 8 (10A)
No. 11 (10A)

RED BLU
RED GRN
RED BLU
RED BLU
RED WHT

DAYTIME RUNNING LIGHT RELAY (in the INTEGRATED CONTROL UNIT)

RED BLK — 17
- REAR WINDOW DEFFOGGER SWITCH LIGHT <7-C>
- HEATER CONTROL PANEL <11-B>
- GAUGE LIGHTS <2-B>

RED BLK — 18
- RADIO <6-B>
- CLOCK <7-A>
- LIGHT ON WARNING CIRCUIT <2-D>

No. 7 (10A)

RED BLK RED BLK RED BLK RED/BLK

L FRONT MARKER LIGHT (5W)
R FRONT MARKER LIGHT (5W)
TAILLIGHTS (5W x 2)
LICENSE PLATE LIGHTS (8W x 2)

BLK BLK BLK BLK

G301 G401 | G301 G401 | G201 | G301 G401 | G301 G401 | G201 | G511 G551

No. 9 (10A)

RED/WHT RED/BLK

REAR FOG LIGHT SWITCH

INDICATOR LIGHT (1.4W) (0.84W)

RED/YEL BLK BLK

REAR FOG LIGHTS (21W x 2)

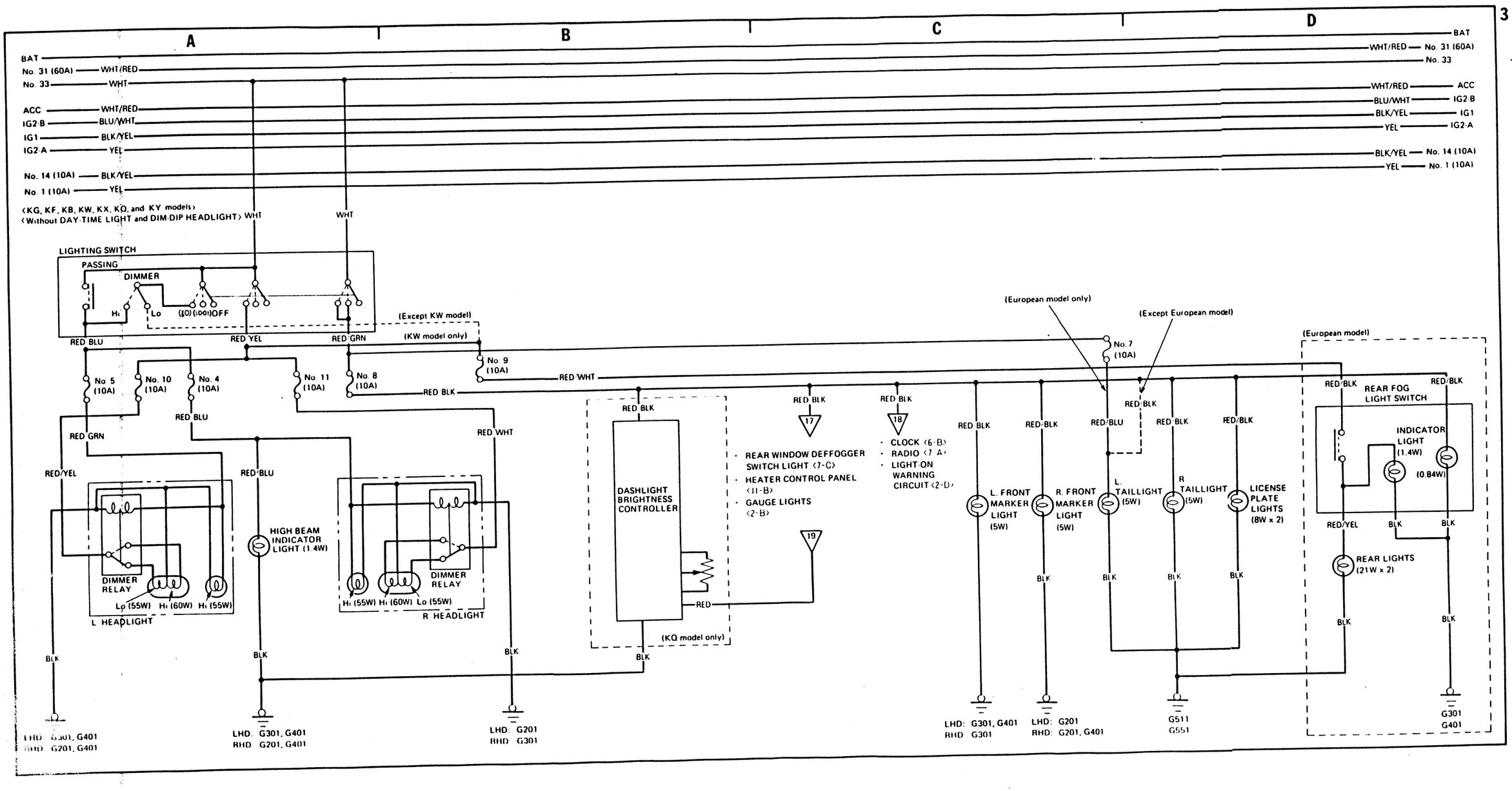
BLK BLK

G301 G401

DIMMER RELAY
Lo (55W) Hi (60W) Hi (55W)
L. HEADLIGHT

HIGH BEAM INDICATOR LIGHT (1.4W)

DIMMER RELAY
Hi (55W) Hi (60W) Lo (55W)
R. HEADLIGHT


3
A
B
C
D
BAT
No. 31 (60A)
WHT/RED
No. 33
WHT
ACC
IG2-B
BLU/WHT
IG1
BLK/YEL
IG2-A
YEL
No. 14 (10A)
No. 1 (10A)
〈KG, KF, KB, KW, KX, KQ, and KY models〉
〈Without DAY-TIME LIGHT and DIM-DIP HEADLIGHT〉
LIGHTING SWITCH
PASSING
DIMMER
Hi
Lo
OFF
RED/BLU
RED/YEL
RED/GRN
(Except KW model)
(KW model only)
No. 5 (10A)
No. 10 (10A)
No. 4 (10A)
No. 11 (10A)
No. 8 (10A)
No. 9 (10A)
RED/WHT
RED/BLK
DIMMER RELAY
Lo (55W)
Hi (60W)
Hi (55W)
L HEADLIGHT
HIGH BEAM INDICATOR LIGHT (1.4W)
R HEADLIGHT
DASHLIGHT BRIGHTNESS CONTROLLER
(KQ model only)
RED
17
18
19
· REAR WINDOW DEFFOGGER SWITCH LIGHT 〈7-C〉
· HEATER CONTROL PANEL 〈11-B〉
· GAUGE LIGHTS 〈2-B〉
· CLOCK 〈6-B〉
· RADIO 〈7-A〉
· LIGHT-ON WARNING CIRCUIT 〈2-D〉
(European model only)
(Except European model)
No. 7 (10A)
L. FRONT MARKER LIGHT (5W)
R. FRONT MARKER LIGHT (5W)
L. TAILLIGHT (5W)
R TAILLIGHT (5W)
LICENSE PLATE LIGHTS (8W x 2)
(European model)
REAR FOG LIGHT SWITCH
INDICATOR LIGHT (1.4W)
(0.84W)
REAR LIGHTS (21W x 2)
BLK
LHD: G301, G401
RHD: G201, G401
LHD: G301, G401
RHD: G201, G401
LHD: G201
RHD: G301
LHD: G301, G401
RHD: G301
LHD: G201
RHD: G201, G401
G511
G551
G301
G401

A B C D

31 (60A) — WHT/RED
33 — WHT
WHT/RED
B — BLU/WHT
IG1 — BLK/YEL
IG2 A — YEL
ST — BLK/WHT
No 14 (10A) — BLK/YEL

BAT — WHT/RED — No 31 (60A)
WHT — No 33
WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT
BLK/YEL — No 14 (10A)
YEL — No 1 (10A)

No 15 (15A)

(Without A/C) (With A/C)

BLK/YEL
BLK/YEL
BLK/YEL

M RADIATOR FAN MOTOR

YEL/GRN

COOLANT TEMPERATURE SWITCH

BLK

G201

RADIATOR FAN RELAY

YEL/GRN

10 A/C DIODE (11-C)

BLK

G201

RADIATOR FAN MOTOR

M

BLK

G281

No.1 (10A)

BLK/YEL

YEL

IGNITION COIL (1-D) 8 BLU

LIGHTING SWITCH (3-C) (4-C) (5-C) 17 RED/BLK

GAUGE LIGHT
ND type:
3.4W x 4
1.4W x 2
Nippon Seiki type:
3.4W x 3
3.0W x 3
1.4W x 2

GAUGE ASSEMBLY

FUEL GAUGE
COOLANT TEMPERATURE GAUGE
TACHO-METER

YEL/WHT
BLK
YEL/GRN

FUEL GAUGE SENDING UNIT

BLK

G511
G551

COOLANT TEMPERATURE GAUGE SENSOR

G301
G401

(Except KQ model)

RED

11 INTEGRATED CONTROL UNIT (KY model only) (2-D)

19 DASHLIGHT BRIGHTNESS CONTROL UNIT (KQ model only) (3-C)

SEAT BELT REMINDER LIGHT (KY model only) (1.4W)
BRAKE WARNING LIGHT (1.4W)
HATCH OPEN INDICATOR LIGHT (1.4W)
OIL PRESSURE WARNING LIGHT (1.4W)

YEL/RED
GRN/RED
GRN/RED
GRN/RED

16 INTEGRATED CONTROL UNIT (2-D) (KQ model only)

PARKING BRAKE SWITCH

BRAKE FLUID LEVEL SWITCH

BLK

LHD: G301, G401
RHD: G201, G401

GRN/BLK
12 TRUNK LATCH SWITCH (6-A)

SPEED ALARM BEEPER (KY model only)

YEL/RED

OIL PRESSURE SWITCH

(ON above 1-6Km/h 72mph)

BLK

G301
G401

BLK/YEL

WINDSHIELD WIPER/WASHER SWITCH (8-C)
21 GRN
22 BLU/WHT

INTEGRATED CONTROL UNIT

INTERMITTENT WIPER RELAY

BLU/WHT

13 WINDSHIELD WIPER MOTOR (8-D)

LIGHTING SWITCH (3-C) (4-C) (5-C)
18 RED/BLK

BEEPER

LIGHT-ON WARNING CIRCUIT (Except KY model)

BLK

LHD: G301, G401
RHD: G201, G401

SEAT BELT REMINDER LIGHT (2-B) 11 YEL/RED
BRAKE WARNING LIGHT (2-C) 16 GRN/RED

SEAT BELT REMINDER SWITCH (KY model only)

BRAKE WARNING BULB CHECK CIRCUIT (KQ model only)

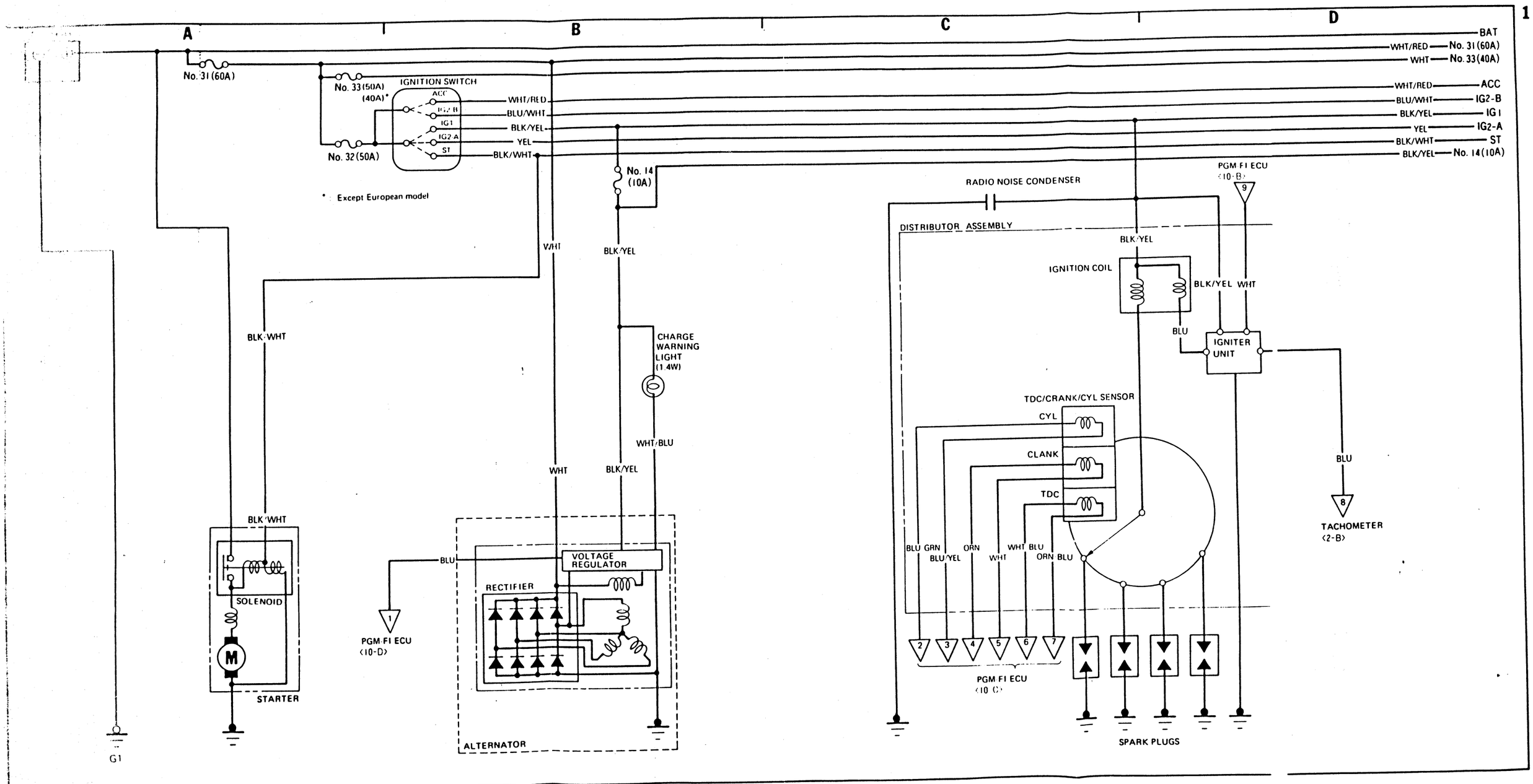
GRN/RED
14 GRN/BLU
L.DOOR SWITCHES (6-A)
R.DOOR SWITCH

RED/BLU
DRIVER'S SEAT BELT SWITCH

G301, G401

No.2 (10A)

15
- PGM-FI ECU (10-A)
- PGM-FI MAIN RELAY (9-D)


A
B
C
D
1
BAT
WHT/RED — No. 31 (60A)
WHT — No. 33 (40A)
WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT — ST
BLK/YEL — No. 14 (10A)
No. 31 (60A)
No. 33 (50A) (40A)*
No. 32 (50A)
IGNITION SWITCH
ACC
IG2-B
IG1
IG2-A
ST
WHT/RED
BLU/WHT
BLK/YEL
YEL
BLK/WHT
* Except European model
No. 14 (10A)
RADIO NOISE CONDENSER
PGM-FI ECU (10-B)
9
DISTRIBUTOR ASSEMBLY
BLK/YEL
IGNITION COIL
BLK/YEL WHT
BLU
IGNITER UNIT
TDC/CRANK/CYL SENSOR
CYL
CLANK
TDC
BLU GRN
BLU/YEL
ORN
WHT
WHT BLU
ORN BLU
2
3
4
5
6
7
PGM-FI ECU (10-C)
SPARK PLUGS
BLU
8
TACHOMETER (2-B)
CHARGE WARNING LIGHT (1.4W)
WHT/BLU
WHT
BLK/YEL
BLK/WHT
SOLENOID
M
STARTER
G1
BLU
1
PGM-FI ECU (10-D)
VOLTAGE REGULATOR
RECTIFIER
ALTERNATOR

SHOP MANUAL

HONDA CIVIC COUPE CRX

SUPPLEMENT 90

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INTRODUCTION

How to Use This Manual

This supplement contains information for the 1990 CIVIC V-TEC. Refer to following shop manuals for service procedures.

Description	Code No.
CIVIC COUPE CRX CHASSIS Maintenance and Repair	62SH200
89 CIVIC COUPE CRX Supplement	62SH220
90 CIVIC COUPE CRX Supplement	62SH221
B16A ENGINE Maintenance and Repair	62PR300
L3 MANUAL TRANSMISSION Maintenance and Repair	62PL300
S1 MANUAL TRANSMISSION Maintenance and Repair	62PS100

The first page of each section is marked with a black tab that lines up with one of the thumb index tabs 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.

Special information

⚠WARNING **Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.**

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard* workshops procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause PERSONAL INJURY, or could damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by Honda Motor, might be done, or of the possible hazardous consequences of each conceivable way, nor could Honda Motor investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda Motor, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

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.

☐ sections are not included in this manual.

HONDA MOTOR CO., LTD.
Service Publication Office

First Edition 5/90 402 pages
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General Info
Special Tools
Specifications
Maintenance
Engine
Fuel and Emissions
Transaxle
Steering
Suspension
Brakes
Body
Heater and Air Conditioner
Electrical

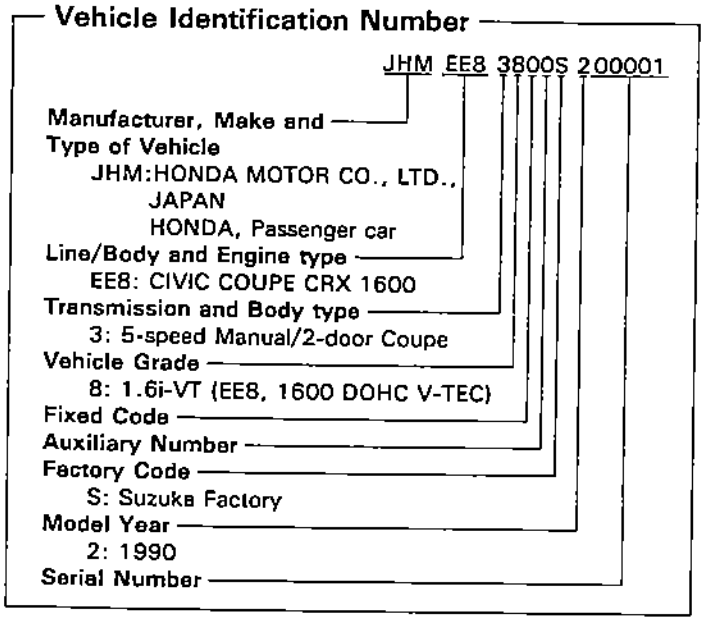
Outline of Model Changes

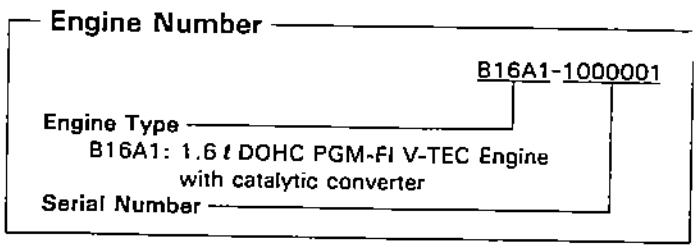
ITEM	DESCRIPTION	89 MODEL	90 MODEL	90 MODEL	REFERENCE SECTION
Engine	Modified • Oil filter • Crankshaft pulley bolt • Engine mounting bolts • Exhaust pipe	○			—
	D14A engine (1.4 ℓ SOHC 2-Carburetor) adopted for KB models		○		—
	Oil filter modified		○		—
	B16A engine (1.6 ℓ DOHC with V-TEC)			○	5
Carburetor	D14A engine (1.4 ℓ SOHC 2-Carburetor) adopted for KB models		○		—
PGM-FI	Fast idle control valve adopted	○			—
	Changed for B16A engine			○	6
Clutch	Changed for B16A engine			○	7
Manual Transmission	Modified • Spring pin added • Mainshaft thrust shim • Countershaft ball bearing	○			—
	Y2 manual transmission adopted for B16A engine			○	8
	Shift fork changed for L3 (2WD) manual transmission			○	8
Automatic Transmission	Automatic Transmission adopted for KB model		○		—
Rear Suspension	Modified	○			—
Driveshaft	Changed for B16A engine			○	10
Intermediate Shaft	Changed for B16A engine			○	10
Front Suspension	Stabilizer linkage Adopted for B16A engine model			○	12
	Front hub changed			○	12
Brake System	3-channel ALB adopted for KE model for some types			○	13
Instrument Panel	Modified		○		—
Air Conditioner	Pipe routing modified	○			—
	NIPPONDENSO compressor adopted for B16A engine model			○	15
Lighting System	Modified	○			—
High Mount Brake Light	Adopted for some types	○			—
Lighting System	Modified		○		—
Gauge Assembly	Modified		○		—
Shift Lever Position Indicator	Modified		○		—
Ignition System	Changed for B16A engine			○	16
Low Fuel Warning System	Adopted for B16A engine			○	16

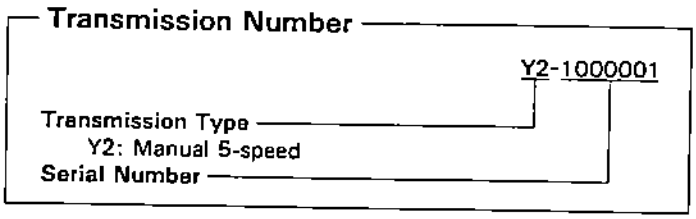
General Information

Chassis and Engine Numbers .....1 – 2
Identification Number Locations .....1 – 3
Label Locations .....1 – 4
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Preparation of Work .....1 – 9
Symbol Marks .....1 – 18
Abbreviation .....1 – 18

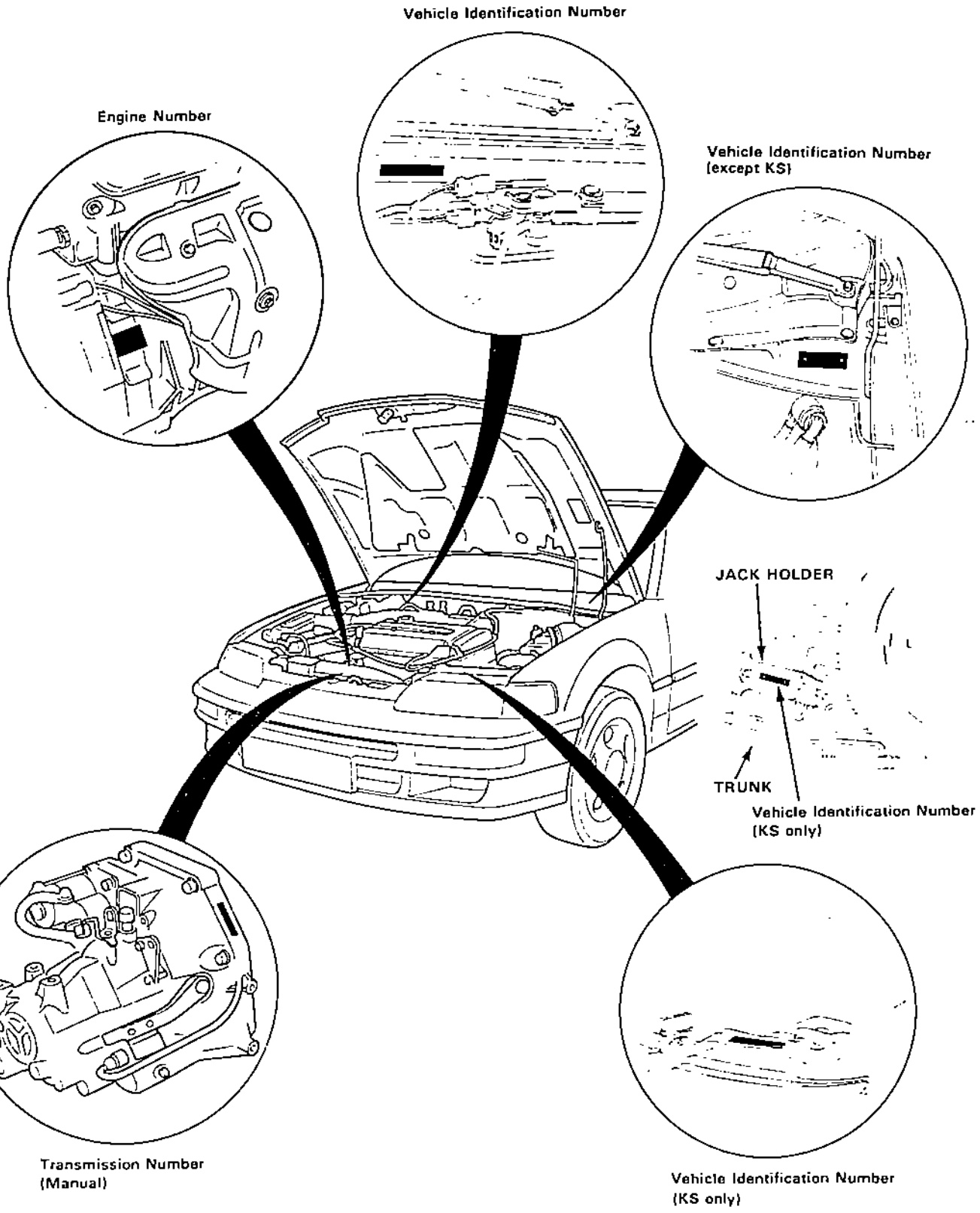
Chassis and Engine Numbers



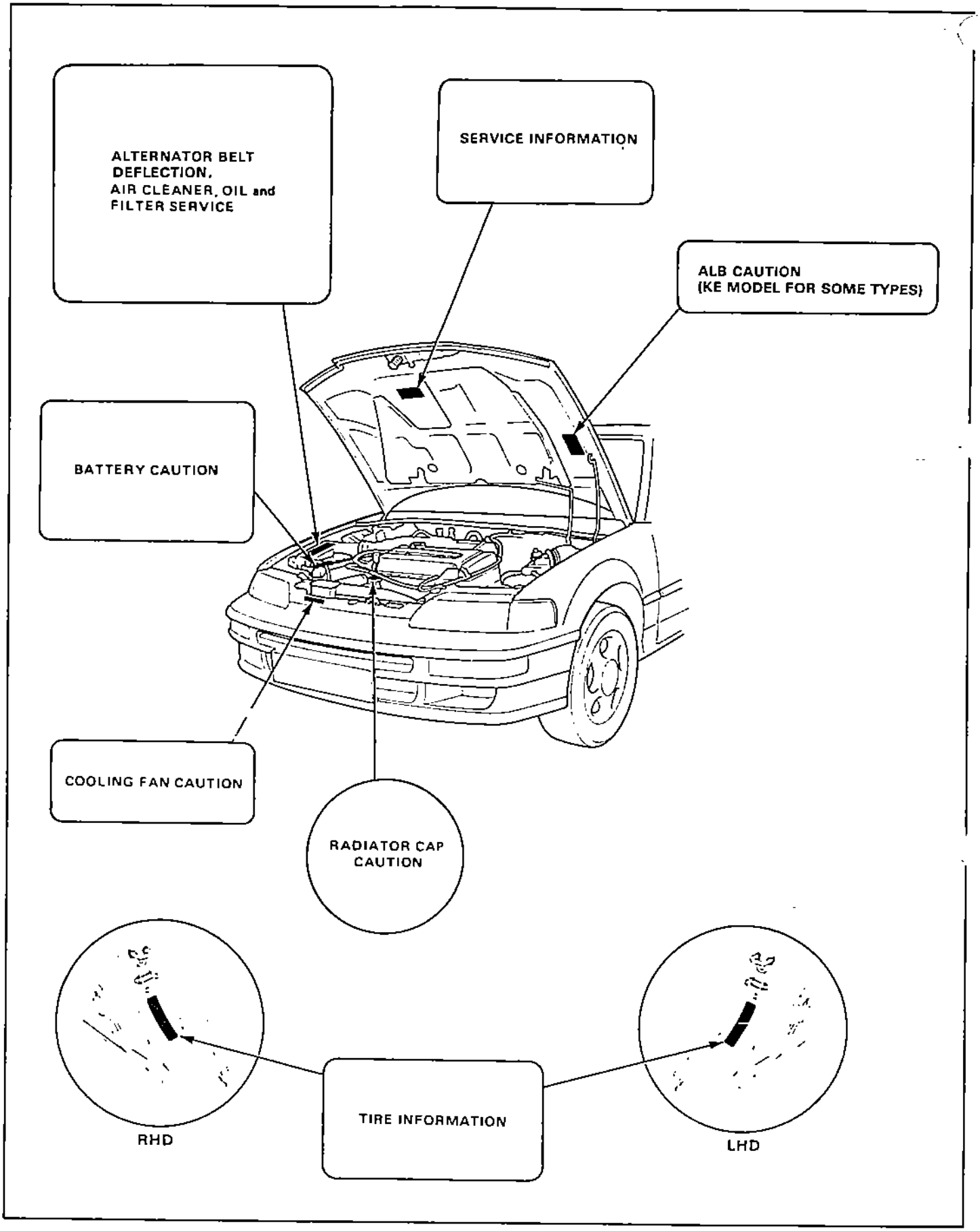




Identification Number Locations



Label Locations



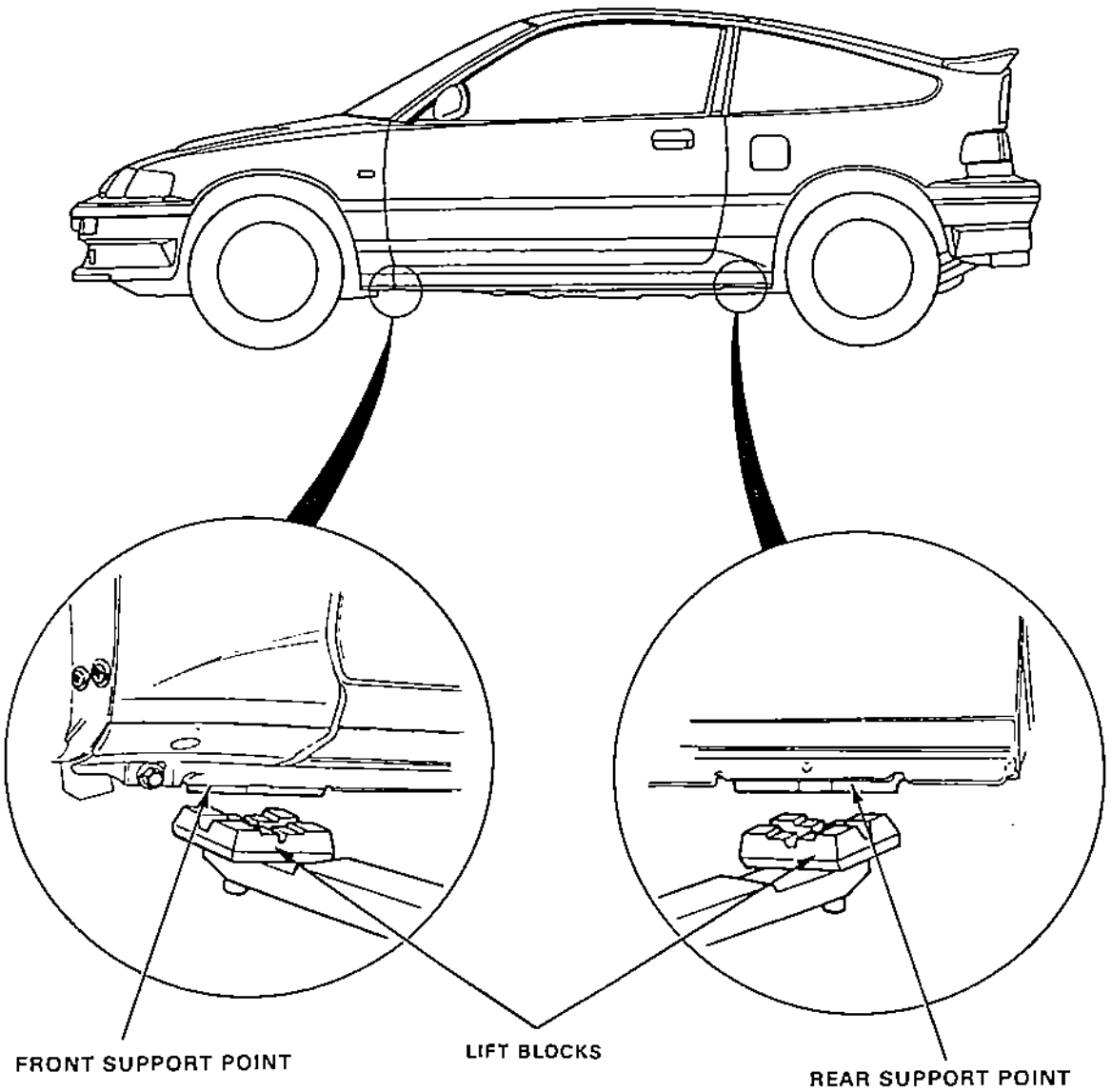
Lift and Support Points

Hoist

1. Place the lift blocks as shown.
2. Raise the hoist a few inches and rock the car to be sure it is firmly supported.
3. Raise the hoist to full height and inspect lift points for solid support.

▲WARNING **When heavy rear components such as suspension, fuel tank, spare tire and hatch are to be removed, place additional weight in the luggage area before hoisting. When substantial weight is removed from the rear of the car, the center of gravity may change and can cause the car to tip forward on the hoist.**

NOTE: Since each tire/wheel assembly weighs approximately 14 kg (30 lbs), placing the front wheels in the trunk will assist with the weight distribution.



(cont'd)

Lift and Support Points (cont'd)

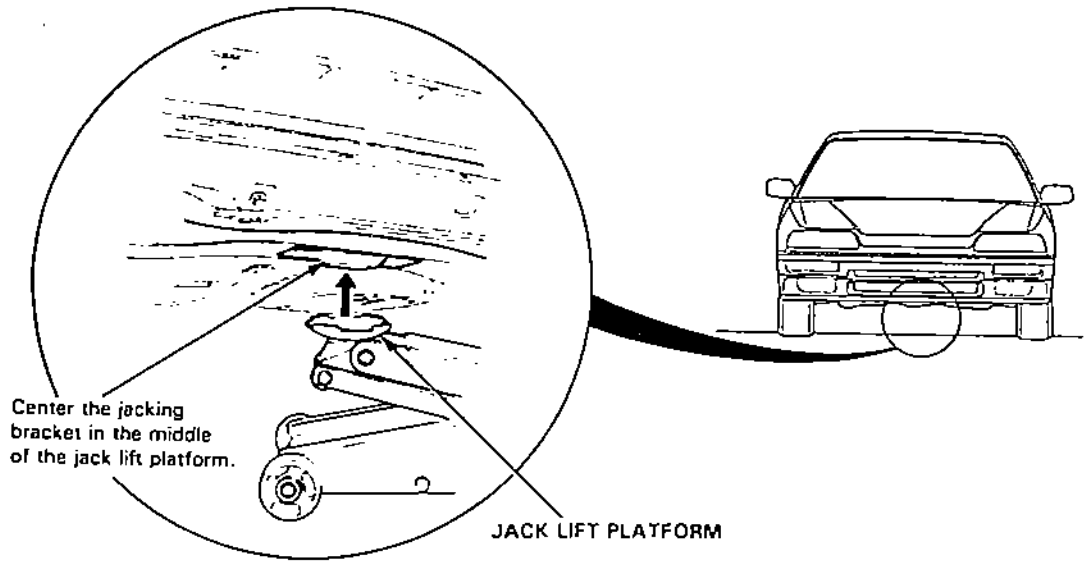
Floor Jack

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse.
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page 1-7 so the car will be approximately level, then lower the car onto the stands.

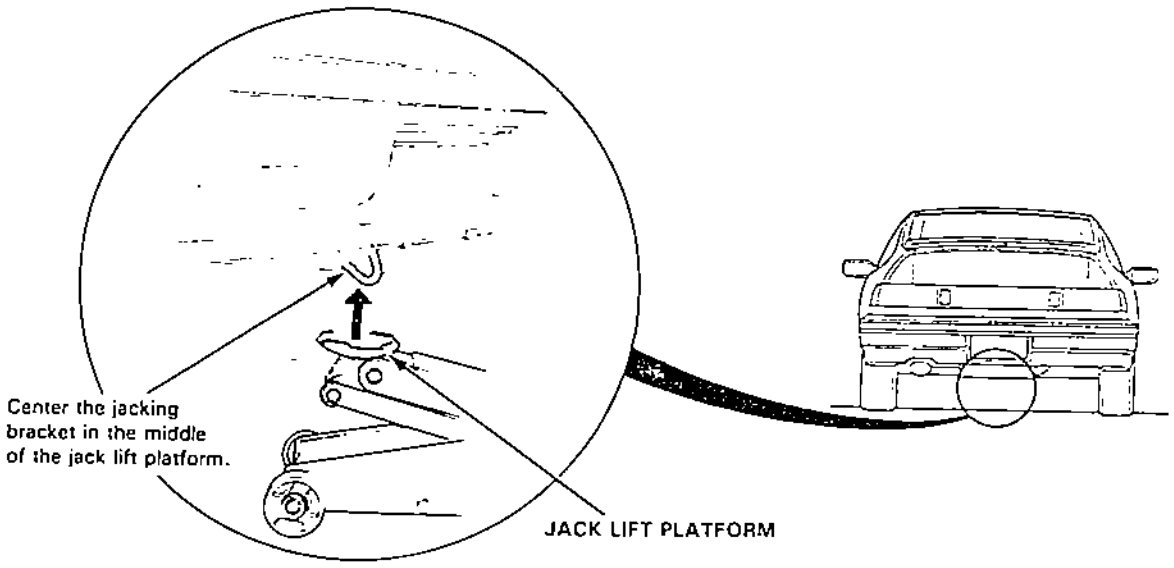
⚠WARNING

- **Always use safety stands when working on or under any vehicle that is supported only by a jack.**
- **Never attempt to use a bumper jack for lifting or supporting the car.**

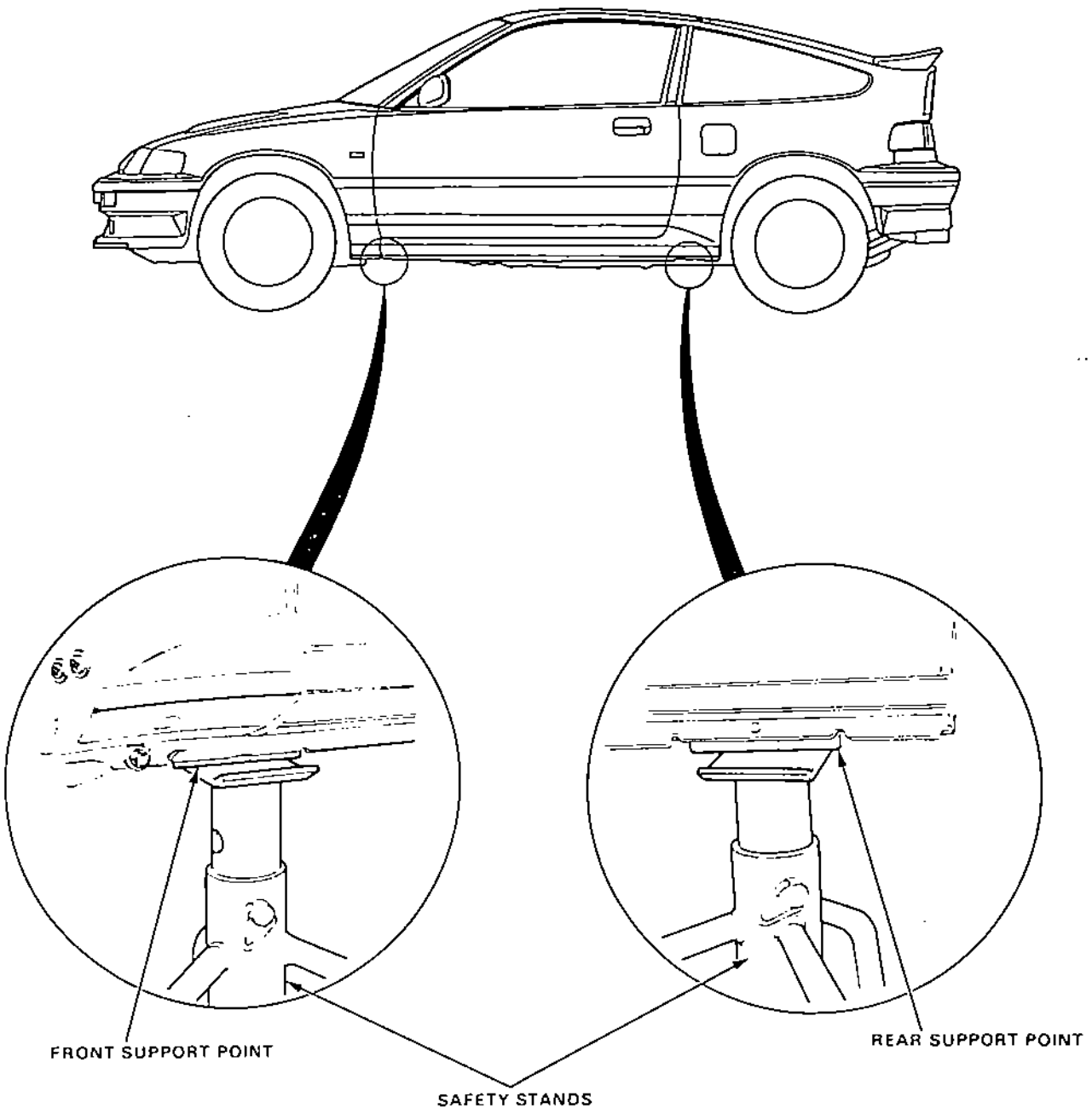
Front



Rear



Safety Stands

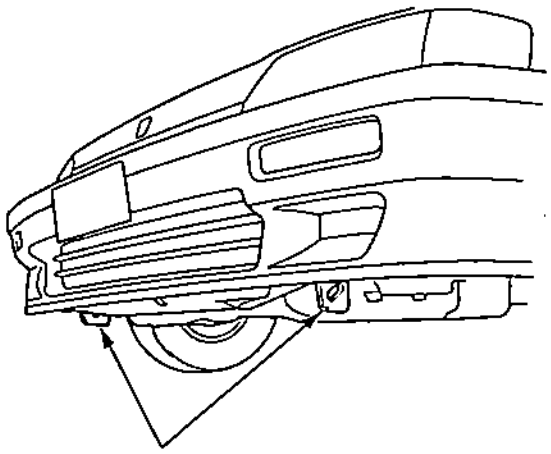


Towing

If possible, always tow the car with the front wheels off the ground. The tow truck driver should position wood spacer blocks between the car's frame and the chains and lift straps, to avoid damaging the bumper and the body.
Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing. A rope may be attached to the hook shown in the illustration. Do not attach a tow bar to either bumper.

⚠WARNING **Do not push or tow a car to start it. The forward surge when the engine starts could cause a collision. Also, under some conditions, the catalytic converter could be damaged.**
If the car is to be towed with the front wheels on the ground, observe the following precautions:
Shift the transmission to Neutral and turn the ignition key to the "I" position.

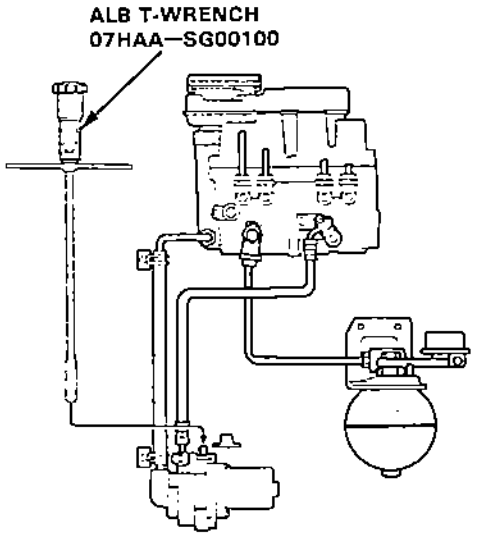
CAUTION: Do not exceed 55 km/h (35 mph) or tow for distances of more than 80 km (50 miles).



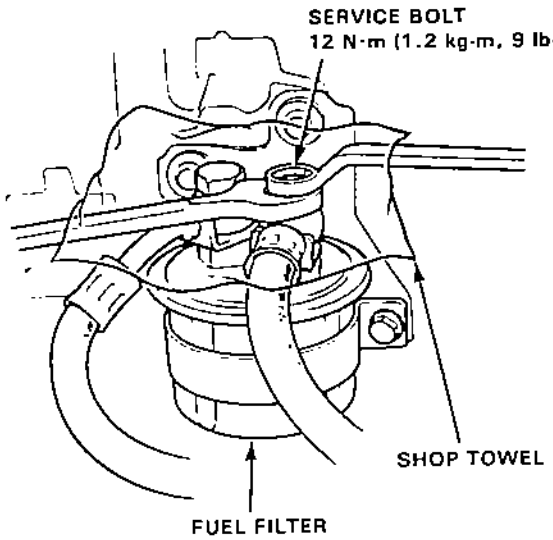
TOWING HOOKS

Special Caution Items For This Car

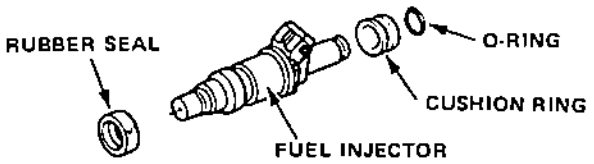
1. ALB piping system servicing (KE model for some types)
   - Disassemble the ALB piping system after relieve the high-pressured brake fluid.
   - Otherwise, the high-pressured brake fluid will burst out and it is very dangerous.
   - See section 13 how to relieve the highpressured brake fluid.



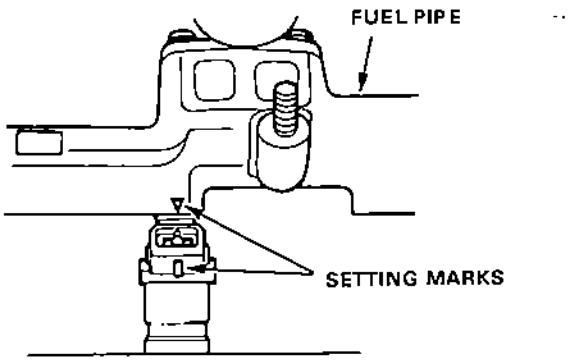
2. Fuel Line Servicing
   - Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



   - Be sure to replace washers, O-rings, and rubber seals with new ones when servicing fuel line parts.
   - Always apply oil to the surfaces of O-rings and seal rings before installation. Never use brake fluid, radiator fluid, vegetable oils or alcoholbased oils.



   - When assembling the flare joint of the high-pressure fuel line, clean the joint and coat with new engine oil.
   - When installing an injector, check the angle of the connector. The center line of the connector should align with the setting mark on the injector holder.



3. Inspection for fuel leakage
   - After assembling fuel line parts, turn ON the ignition switch (do not operate the starter) so that the fuel pump is operated for approximately two seconds and the fuel is pressurized. Repeat this operation two or three times and check whether any fuel leakage has occurred in any of the various points in the fuel line.

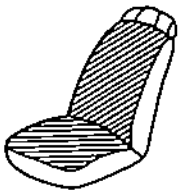
(cont'd)

Special Caution Items For This Car (cont'd)

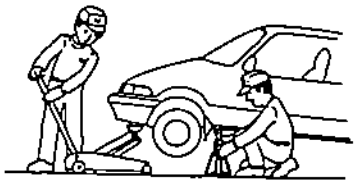
4. Installation of an amateur radio for cars equipped with PGM-FI and ALB.
   Care has been taken for the PGM-FI control unit and its wiring to prevent erroneous operation from external interference, but erroneous operation of the control unit may be caused by extremely strong radio waves. Attention must be paid to the following items to prevent erroneous operation of the control unit.
   - The antenna and the body of the radio must be at least 200 mm (7.9 in.) away from the control unit.
   - PGM-FI control unit location: Passenger's side front lower panel.
   - ALB control unit location: Laggage area Light side panel.
   - Do not lead the antenna feeder and the coaxial cable over a long distance parallel to the car's wiring. When crossing with the wiring is required, execute crossing at a right angle.
   - Do not install a radio with a large output (max. 10W).
5. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use HONDA genuine liquid gasket Part No. OY740-99986.
   - Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
   - Apply liquid gasket evenly, being careful to cover all the mating surface.
   - To prevent leakage of oil, apply liquid gasket to the inner threads of the bolt holes.
   - Do not install the parts if 20 minutes or more have elapsed since applying liquid gasket. Instead reapply liquid gasket after removing the old residue.
   - After assembly, wait at least 30 minutes before filling the appropriate liquid (engine oil, coolant and other similar fluid).

CAUTION: Observe all safety precautions and notes while working.

1. Protect all painted surfaces and seats against dirt and scratches with a clean cloth or vinyl cover.



2. Work safely 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 two or more workers. Do not run the engine unless the shop or working area is well ventilated.



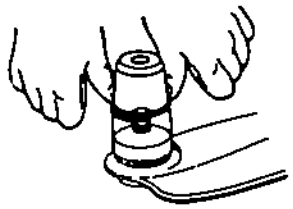
3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



4. Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.

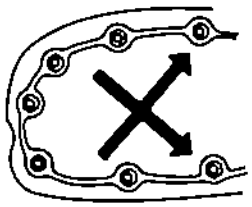


5. Use the special tool when use of such a tool is specified.

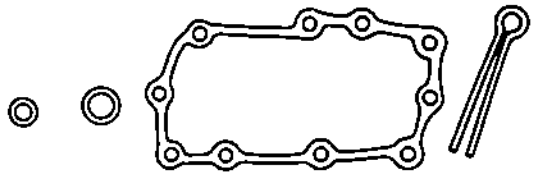


6. Parts must be assembled with the proper torque according to the maintenance standards established.

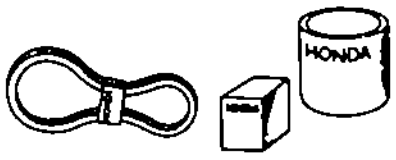
7. When tightening a series of bolts or nuts, begin with the center or large diameter bolts and tighten them in crisscross pattern in two or more steps.



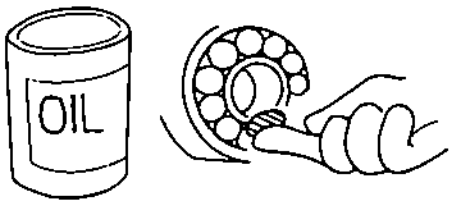
8. Use new packings, gaskets, O-rings and cotter pins whenever reassembling.



9. Use genuine HONDA parts and lubricants or those 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.



10. Coat or fill parts with specified grease as specified (page 4-2). Clean all removed parts with solvent upon disassembly.



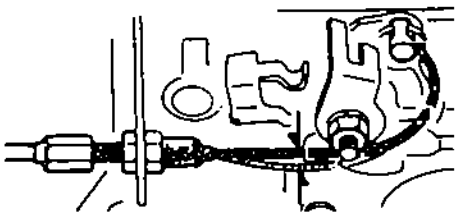
11. Brake fluid and hydraulic components
    - When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
    - Do not mix different brands of fluid as they may not be compatible.
    - Do not reuse drained brake fluid.
    - Because blake fluid can cause damage to painted and resin surfaces, care shoud be taken not to spill it on such materials. If spilled accidentally, quickly rince 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.

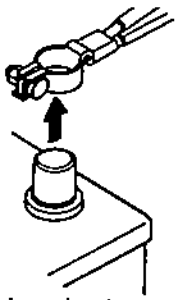
12. Avoid oil or grease getting on rubber parts and tubes, unless specified.

13. Upon assembling, check every part for proper installation and operation.

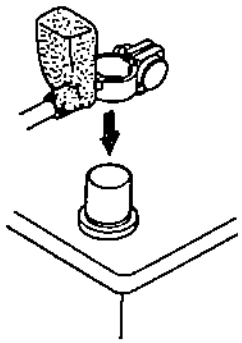


Electrical

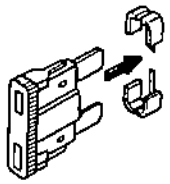
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (−) terminal.



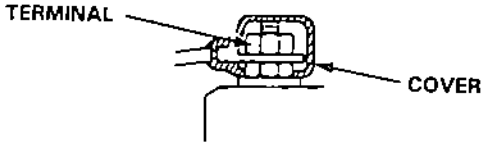
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (−) cable.



- Coat the terminals with clean grease after connecting the battery cables.
- Don't forget to install the terminal cover over the positive battery terminal after connecting.
- Before installing a new fuse, isolate the cause and take corrective measures, particularly when frequent fuse failure occurs.

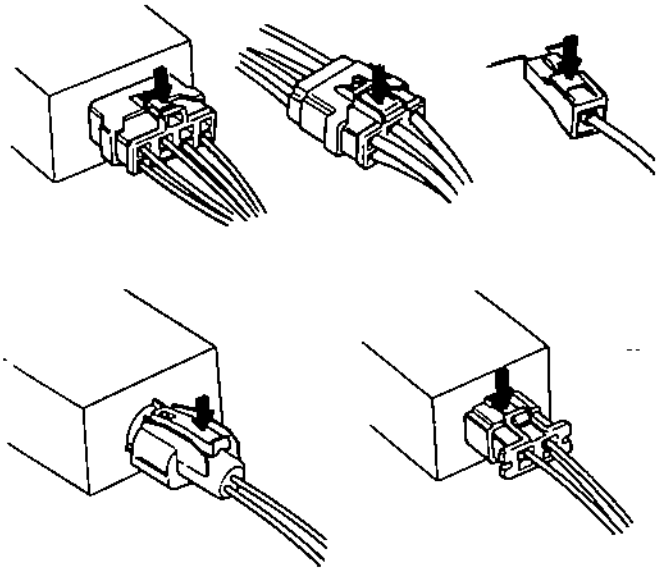


- Be sure to install the terminal cover over the connections after a wire or wire harness has been connected.

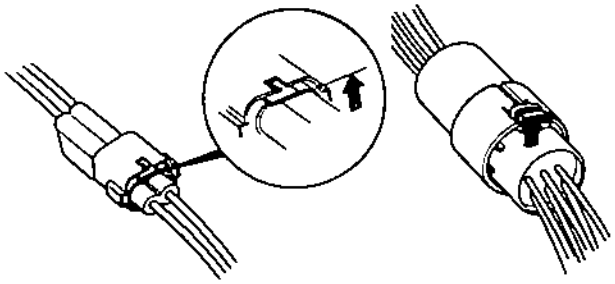


- As to locking connectors, be sure to disengage the lock before disconnecting.
- Conventional connectors may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following is a depiction of the means of disconnecting various typical connectors.

Press to disengage:



Pull up to disengage:

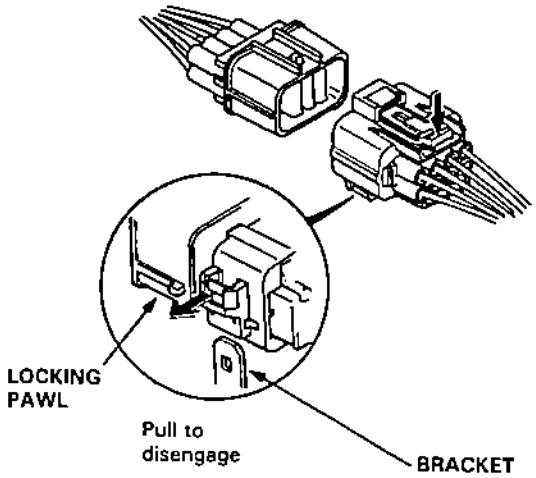


When new type connectors are used, connection and disconnection of them should be done paying attention to the following precautions.

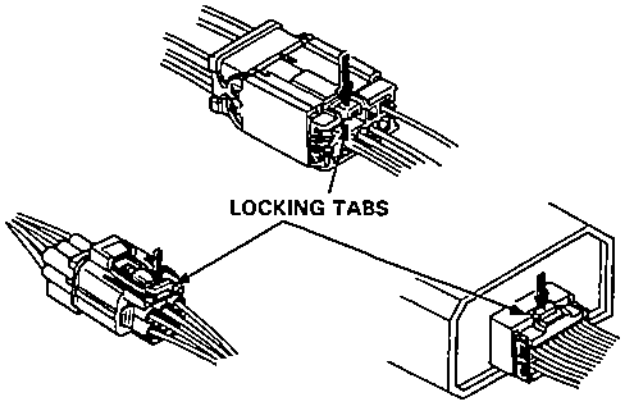
- Because all the connectors except terminal of 1-P are equipped with push-down type locks, unlock them first before disconnecting the connectors.

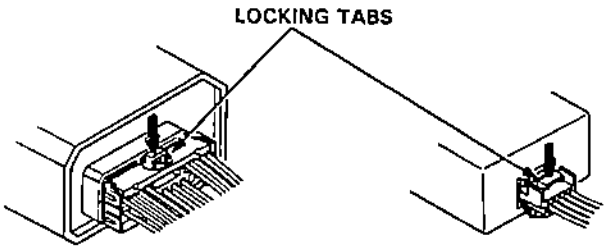
- On the connectors installed on the bracket a pull type lock is equipped between the bracket and the connector.
  Some connectors of this type can not be disconnected unless they are removed from their brackets. When disconnecting, check their shapes.

- On the bracket mounted connector with dual locks, remove the connector from the bracket before disconnecting.



- Push the locking tab to disconnect.

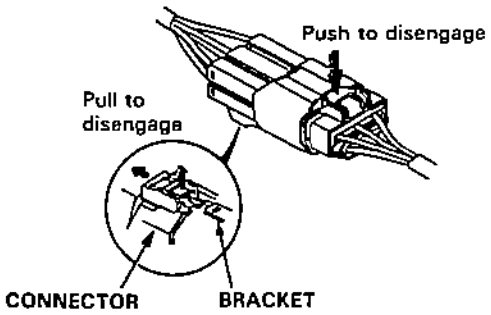




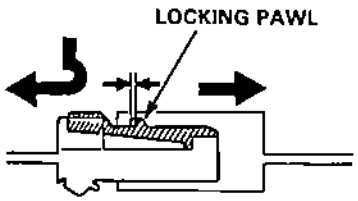
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Electrical (cont'd)

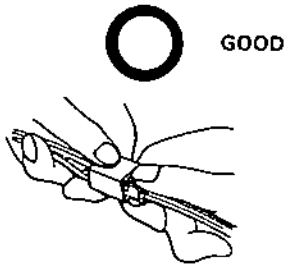
- Pull the locking tab to remove the connector from the bracket.

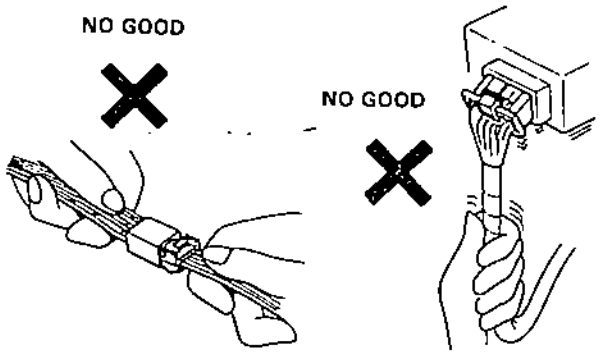


- When disconnecting locks, first press in the connector tightly (to provide clearance to the locking device), then operate the tab fully and remove the connector in the designated manner.

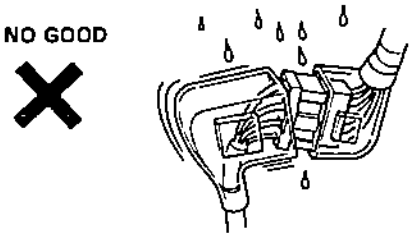


- When disconnecting a connector, pull it off from the mating connector by holding on both connectors.
- Never try to disconnect connectors by pulling on their wires.

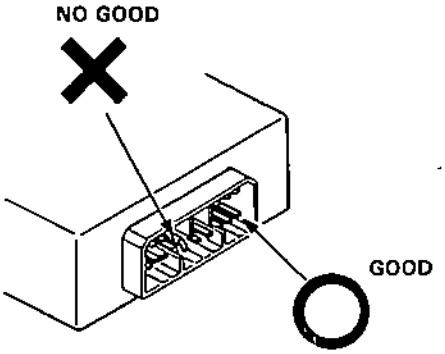




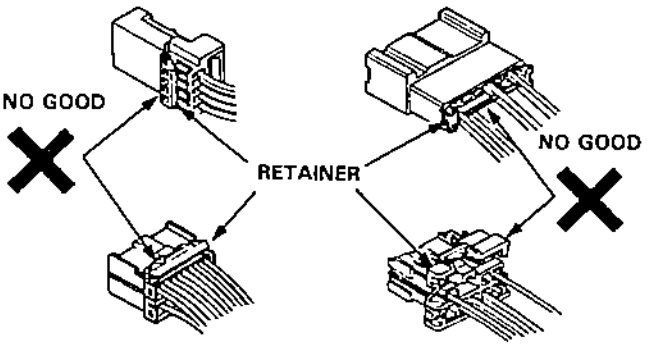
- Place the plastic cover over the mating connector after reconnecting. Also check that the cover is not distorted.



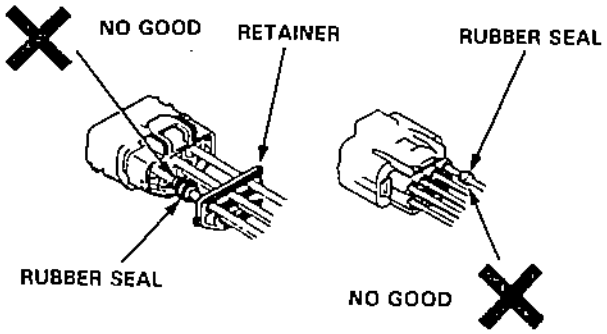
- Before connecting connectors, check to see that the terminals are in place and not bent or distorted.

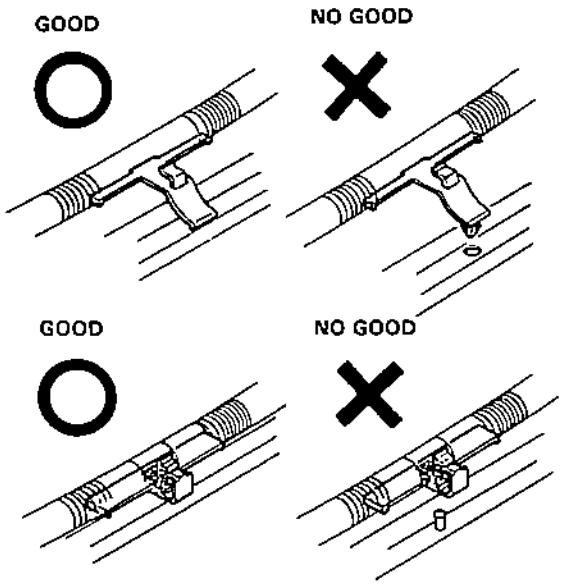


- Check for loose retainer and rubber seals.
  The illustration shows examples of terminal and seal abnormality.

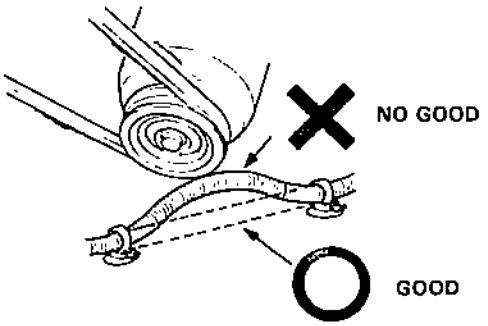


- Example of waterproof connector:

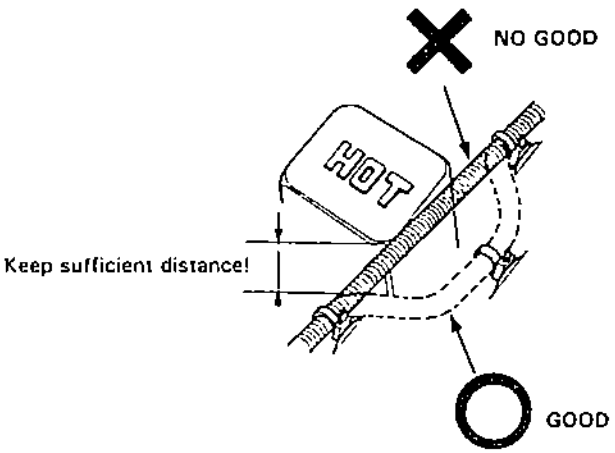




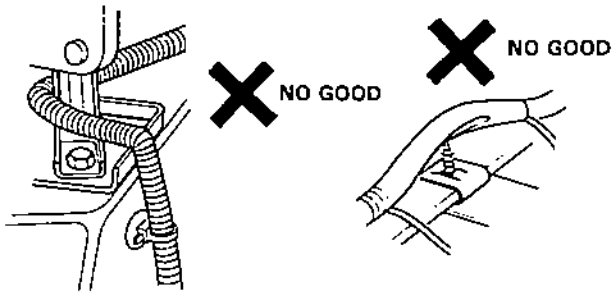
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



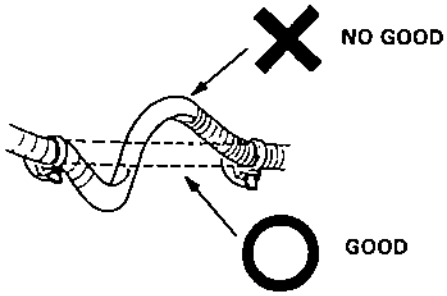
- Always keep a safe distance between wire harnesses and any heated parts.



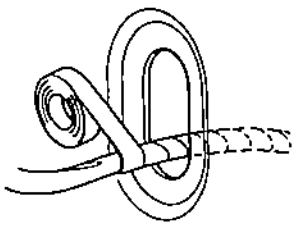
- Do not bring wire harnesses in direct contact with sharp edges or corners.
- Also avoid contact with the projected ends of bolts, screws and other fasteners.



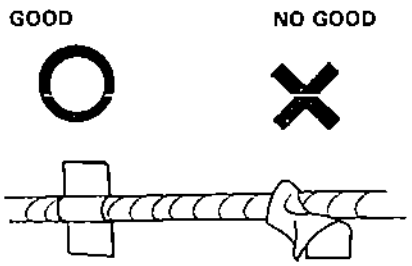
- Route harnesses so they are not pulled taut or slackened excessively.



- Protect wires and harnesses with a tape or a tube if they are in contact with a sharp edge or corner.



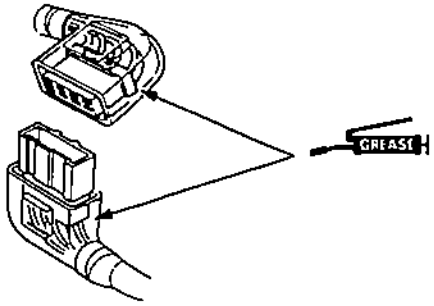
- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol if necessary.



(cont'd)

Electrical (cont'd)

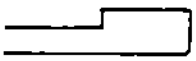
- For the connector which uses insulation grease, clean the connector then apply grease if the grease is insufficient or contaminated.



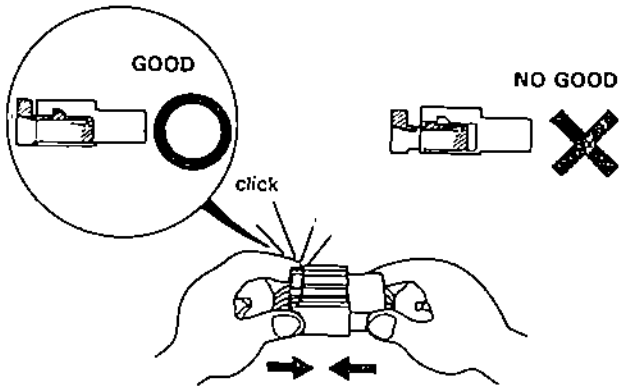
- Insert the connector tightly and make sure it is securely locked.
- Check all the wire harnesses are connected.
- There are two types of locking tab: one that you have to push and the other you should not touch when connecting the connector. Check the shape of the locking tab before connecting.
- The locking tab having a taper end should not be touched when connecting.



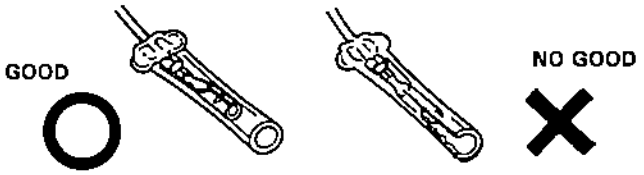
- The locking tab with an angle end should be pushed when connecting.



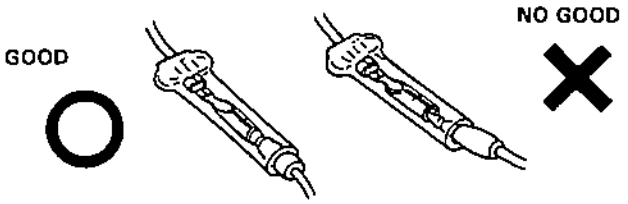
- Insert connectors fully until they will no longer go.
- The connectors must be aligned and engaged securely.
- Do not use wire harnesses with a loose wire or connector.



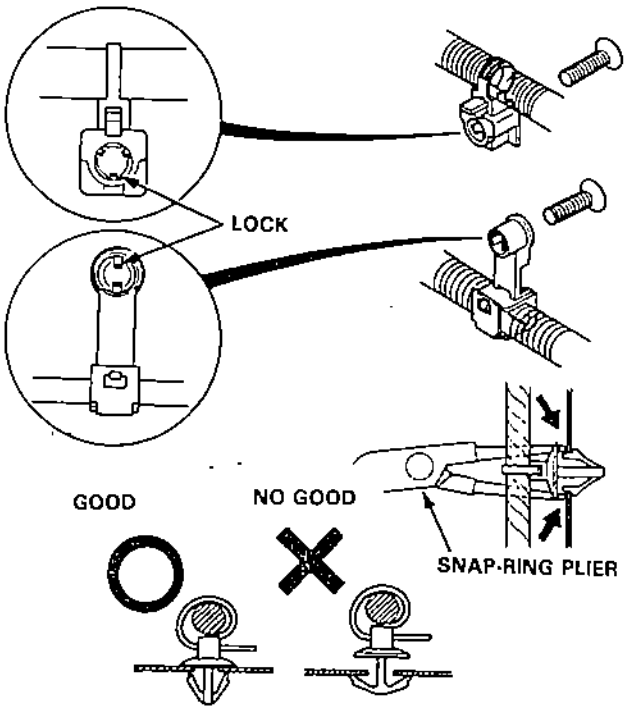
- Before connecting, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



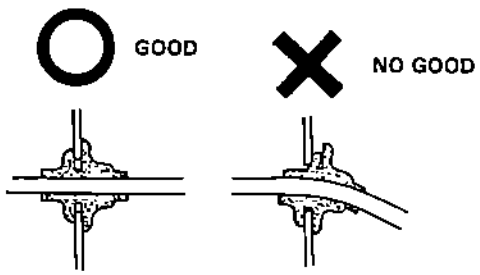
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover faces down.



- Secure wires and wire harness to the frame with their respective wire bands at the designated locations.
  Position the wiring in the bands so that only the insulated surfaces contact the wires or harnesses.
- Remove with care not to damage the lock.

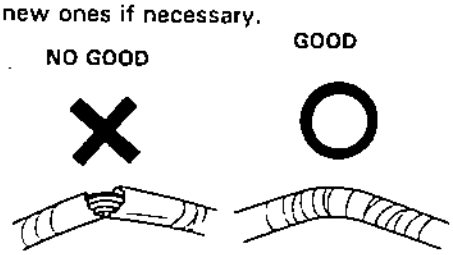


- Seat grommets in their grooves properly.

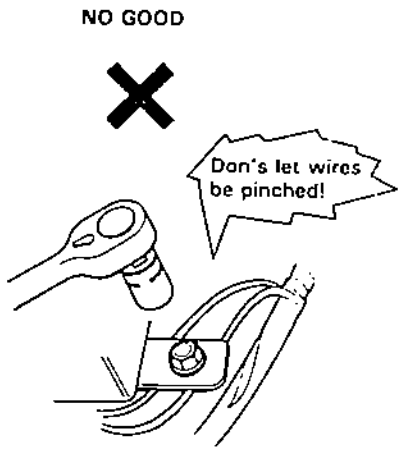


- Do not damage the insulation when connecting a wire.

- Do not use wires or harnesses with a broken insulation.
  Repair by wrapping with protective tape or replace with new ones if necessary.



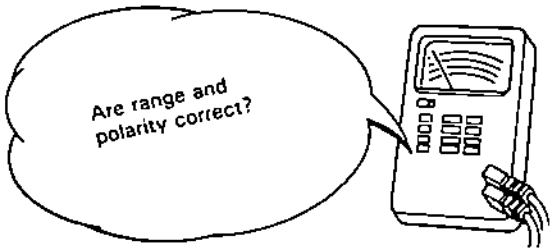
- After installing parts, make sure that wire harnesses are not pinched.



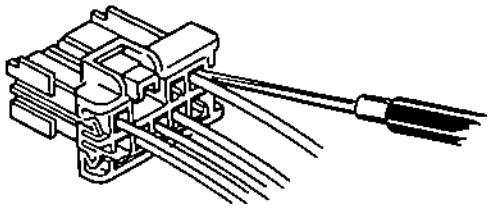
- After routing, check that the wire harnesses are not twisted or kinked.

- Wire harnesses should be routed so that they are not pulled taut, slackened excessively, pinched, or interfering with adjacent or surrounding parts in all steering positions.

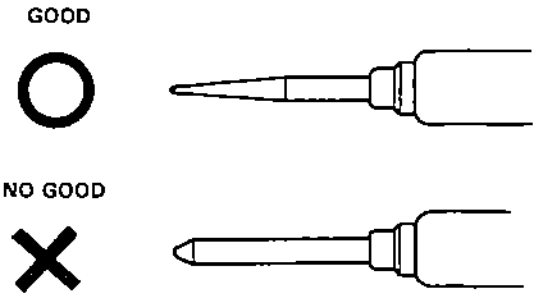
- When using the Service Tester, follow the manufacturer's instructions and those described in the Shop Manual.



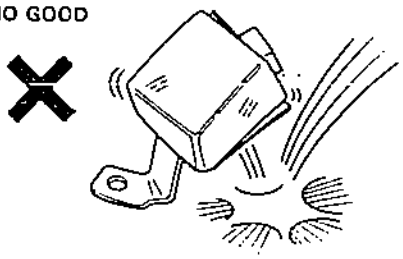
- Always insert the probe of the tester from the wire harness side (except waterproof connector).



- Make sure to use the probe with a tapered tip.



- Do not drop parts.



Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.


:Apply or check vacuum.

1, 2, 3, ·····
❶, ❷, ❸, ····· : Sequence for removal or installation

Abbreviation

A/C	Air Conditioner
ALB	3-channel Anti Lock Brake
Assy	Assembly
ATT	Attachment
B or BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	PGM-FI Electronic Control Unit
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L.	Left
LHD	Left Hand Drive
PCV	Positive Crankcase Ventilation
PGM-FI	Programmed Fuel-Injection
R.	Right
RHD	Right Hand Drive
SW	Switch
SOL. V	Solenoid Valve
TDC	Top Dead Center
V-TEC	HONDA Variable Valve Timing and Lift Electronic Control System

Special Tools

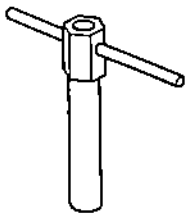
New For This Model 2-2
Existing Tools
(Common with Other Models).....2-3

Special Tools

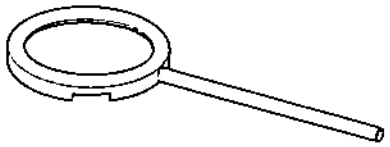
New For This Model

Ref. No.	Tool Number	Description	Q'ty	Remarks	Ref. Section
①	07LAA—PR30100	Tappet Adjusting Wrench	1		5
②	07LAB—SK70100	A/C Clutch Holder	1		15
③	07LAF—PR30100	Pilot Collar	1		—*1
④	07LAF—PR30210	Clutch Alignment Shaft	1		7
⑤	07LAJ—PR30100	Valve Inspection Set	1		5
⑥	07LAJ—PR30200	Air Stopper	1		5
⑦	07LAK—PR30100	Gauge Joint Adaptor	1		5

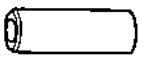
*1 Reference to the Shop Manual B16A ENGINE MAINTENANCE AND REPAIR (62PR300).



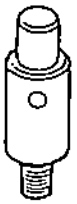
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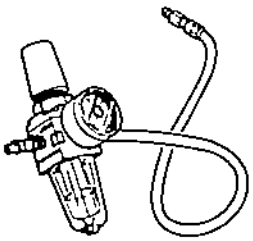
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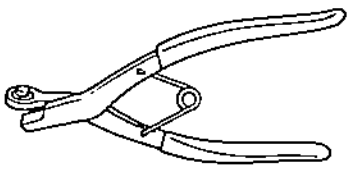
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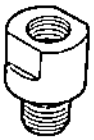
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⑥



⑦

Existing Tools (Common with Other Models)

5. Engine

Number	Tool Number	Description	Q'ty	Remarks
①	07GAF—PH60300	Piston Pin Base Insert	1	
②	07HAD—PJ70200	Stem Seal Driver	1	
③	07HAF—PL20102	Piston Base Head	1	
④	07HAH—PJ70100	Valve Guide Reamer, 5.5 mm	1	
⑤	07JAB—0010000	Crank Pulley Holder Set	1	
⑤-1	07JAA—0010200	Socket Wrench 19 mm	(1)	
⑤-2	07JAB—0010400	Handle	(1)	
⑥	07JAB—0010400	Pulley Holder Attachment HEX 50 mm	1	
⑦	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
⑧	07JGG—0010100	Belt Tension Gauge	1	
⑨	07KAK—SJ40100	Engine Tilt Hanger Set	1	
⑩*	07LAA—PR30100	Tappet Adjusting Wrench	1	
⑪*	07LAF—PR30100	Pilot Collar	1	
⑫*	07LAJ—PR30100	Valve Inspection Set	1	
⑬*	07LAJ—PR30200	Air Stopper	1	
⑭*	07LAK—PR30100	Gauge Joint Adaptor	1	to be used with ⑯
⑮	07406—0030000	Oil Pressure Gauge Attachment	1	
⑯	07406—0070000	Low Pressure Gauge	1	to be used with ⑭
⑰	07742—0010100	Valve Guide Remover, 5.5 mm	1	
⑱	07744—0010400	Pin Driver, 5.0 mm	2	Use to set the camshaft
⑲	07744—0010600	Pin Driver, 8.0 mm	1	07944-6110200 may also be used
⑳	07746—0010400	Attachment, 52 x 55 mm	1	
㉑	07749—0010000	Driver	1	07949-6110000 may also be used
㉒	07757—PJ10200	Valve Spring Compressor Attachment	1	
㉓	07757—0010001	Valve Spring Compressor	1	07957-3290001 may also be used
㉔	07912—6110001	Oil Filter Socket	1	
㉕	07924—PD20003	Ring Gear Holder	1	07924-PD20002 may also be used
㉖	07942—8920000	Valve Guide Driver, 5.0 mm	1	
㉗	07948—SB00101	Oil Seal Driver Attachment	1	
㉘	07973—PE00310	Piston Pin Driver Shaft	1	
㉙	07973—PE00320	Piston Pin Driver Head	1	
㉚	07973—6570500	Piston Base	1	
㉛	07973—6570600	Piston Base Spring	1	
㉜	07999—PD6000A	PGM-FI Test Harness	1	

*New Tools

6. Fuel and Emissions

Number	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting adaptor	1	
②	07406—0040001	Fuel Pressure Gauge Set	1	
②-1	07406—0040100	Pressure Gauge	(1)	Component tools
②-2	07406—0040201	Hose Assy	(1)	Component tools
③	07411—0020000	Digital Circuit Tester	1	
④	07999—PD6000A	PGM-FI Test Harness	1	

Existing Tools (Common with Other Models)

7. Clutch

Number	Tool Number	Description	Q'ty	Remarks
①	07LAF—PR30200	Clutch Alignment Tool	1	
①-1*	07LAF—PR30210	Clutch Alignment Shaft	1	
①-2	07JAF—PM7011A	Clutch Alignment Disc	1	
①-3	07936—3710100	Handle	1	
②	07749—0010000	Driver	1	
③	07746—0010100	Attachment, 32 x 35 mm	1	
④	07924—PD20003	Ring Gear Holder	1	

*New Tool

8. Manual Transmisshon (Y2)

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD—PG40100	Oil Seal Driver	1	
②	07GAJ—PG20102	Mainshaft Thrust Clearance Inspection Tool	1	
②-1	07GAJ—PG20110	Mainshaft Holder	1	
②-2	07GAJ—PG20130	Base	1	
③	07JAC—PH80000	Adjustable Bearing Remover Set	1	
③-1	07JAC—PH80100	Bearing Remover Attachment	1	
③-2	07JAC—PH80200	Remover Handle Assembly	1	
③-3	07741—0010201	Remover Weight	1	
④	07744—0010400	Pin Driver, 5.0 mm	1	
⑤	07744—0010600	Pin Driver, 8.0 mm	1	
⑥	07746—0010200	Attachment, 37 x 40 mm	1	
⑦	07746—0010400	Attachment, 52 x 55 mm	1	
⑧	07746—0030100	Driver	1	
⑨	07746—0041100	Pilot Driver, 28 x 12 mm	1	
⑪	07749—0010000	Driver	1	
⑫	07947—SD90200	Oil Seal Driver Attachment	1	
⑬	07979—PJ40001	Magnet Stand Base	1	

10. Driveshaft

Number	Tool Number	Description	Q'ty	Remarks
①	07GAF—SD40700	Hub Dis/Assembly Base	2	
②	07JAD—SH30100	Oil Seal Driver Attachment	1	
③	07JAD—PG40100	Oil Seal Driver Attachment	1	
④	07JAF—SH20400	Support Base Attachment	1	
⑤	07746—0010300	Attachment, 42 x 47 mm	1	
⑥	07746—0010400	Attachment, 52 x 55 mm	1	
⑦	07746—0030100	Driver, 40 mm I.D.	1	
⑧	07746—0040800	Pilot, 35 mm	1	
⑨	07749—0010000	Driver	1	
⑩	07965—SD90100	Support Base	1	

11. Manual Steering

Number	Tool Number	Description	Q'ty	Remarks
①	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	07916-6920100 may also be used.
②	07941—6920003	Ball Joint Remover	1	
③	07974—SA50800	Ball Joint Boot Clip Guide B	1	

12. Suspension

Number	Tool Number	Description	Q'ty	Remarks
①	07GAE—SE00101	Shock Absorber Spring Compressor	1	07GAE-SE00100 may also be used.
②	07GAF—SE00200	Hub Assembly Driver Attachment	1	
③	07GAF—SE00401	Front Hub Driver Base	1	
④	07HGK—0010100	Wheel Alignment Gauge Attachment	1	
⑤	07JAF—SH20110	Hub Dis/Assembly Pilot, 38 mm	1	
⑥	07JAF—SH20120	Hub Dis/Assembly Shaft 22.4 x 25.4 mm	1	
⑦	07JAF—SH20200	Ball Joint Remover Base	1	
⑧	07746—0010400	Attachment, 52 x 55 mm	1	
⑨	07746—0010600	Attachment, 72 x 75 mm	1	
⑩	07749—0010000	Driver	1	
⑪	07941—6920003	Ball Joint Remover	1	
⑫	07947—6340000	Oil Seal Driver	1	
⑬	07965—SA70100	Hub Dis/Assembly Tool A	1	
⑭	07965—SB00100	Ball Joint Remover/Installer	1	
⑮	07965—SB00200	Ball Joint Installer Base	1	
⑯	07965—6340301	Hub Dis/Assembly Base	1	
⑰	07965—6920201	Hub Dis/Assembly Base	1	
⑱	07965—6920500	Dis/Assembly Tool E	1	
⑲	07974—SA50700	Ball Joint Boot Clip Guide A	1	
⑳	07974—SA50800	Ball Joint Boot Clip Guide B	1	

Existing Tools (Common with Other Models)

13. Brakes

Number	Tool Number	Description	Q'ty	Remarks
①	07HAA—SG00100	ALB T-wrench	1	
②	07HAE—SG00100	Brake Spring Compressor	1	
③	07HAJ—SG00602	ALB Checker	1	
	or			
	07508—SB00000	ALB Checker	1	
	—07HAJ—SG00400	Adaptor	1	
④	07HAK—SG00110	Pressure Gauge Joint Pipe	1	
⑤	07JAG—SD40100	Pushrod Adjustment Gauge	1	
⑥	07404—5790300	Vacuum Gauge	1	
⑦	07406—5790200	Pressure Gauge	2	
⑧	07410—5790100	Pressure Gauge Attachment C	2	
⑨	07410—5790500	Tube Joint Adaptor	1	
⑩	07510—6340101	Pressure Gauge Joint Pipe	1	
⑪	07510—6340300	Vacuum Joint Tube A	1	
	or 07510—6340400	Vacuum Joint Tube B	1	
⑫	07749—0010000	Driver	1	07949-6110000 may also be used.
⑬	07914—SA50001	Snap Ring Pliers	1	
⑭	07921—0010001	Flare Nut Wrench	1	
⑮	07947—6890300	Driver Attachment C	1	

15. Heater and Air Conditioner

Number	Tool Number	Description	Q'ty	Remarks
①	07JGG—0010100	Belt Tension Gauge	1	
②	07LAB—SK70100	A/C Clutch Holder	1	

16. Electrical

Number	Tool Number	Description	Q'ty	Remarks
①	07JGG—0010100	Belt Tension Gauge	1	
②	07920—SB20000	Fuel Sender Wrench	1	

Specifications

spe

Standards and Service Limits 3–2
Design Specifications 3–10
Body Specifications 3–13
Frame Repaire Chart 3–14

Standards and Service Limits

5. Engine/Cylinder Head, Valve Train

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide-open throttle	Nominal Minimum Maximum variation	— — —	1,275 kPa (13.0 kg/cm^2, 185 psi) 932 kPa (9.5 kg/cm^2, 135 psi) 196 kPa (2 kg/cm^2, 28 psi)
Cylinder head	Warpage Height		— 141.95—142.05 (5.589—5.593)	0.05 (0.002) —
Camshaft	End play Oil clearance Runout Cam lobe height	 IN Primary Mid Secondary EX Primary Mid Secondary	0.05—0.15 (0.002—0.006) 0.050—0.089 (0.002—0.004) 0—0.015 (0—0.0006) 33.088 (1.3027) 36.267 (1.4278) 34.987 (1.3774) 32.785 (1.2907) 35.720 (1.4063) 34.691 (1.3658)	0.5 (0.02) 0.15 (0.006) 0.03 (0.0012) — — — — — —
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance	IN EX IN EX IN EX	0.15—0.19 (0.0059—0.0075) 0.17—0.21 (0.0067—0.0083) 5.475—5.485 (0.2156—0.2159) 5.450—5.460 (0.2146—0.2150) 0.035—0.045 (0.0014—0.0018) 0.050—0.080 (0.0020—0.0031)	— — 5.445 (0.2144) 5.420 (0.2134) 0.075 (0.0030) 0.120 (0.0047)
Valve seat	Width Stem installed height	IN and EX IN EX	1.25—1.55 (0.049—0.061) 37.465—37.935 (1.4750—1.4935) 37.165—37.635 (1.4632—1.4817)	2.0 (0.08) 38.185 (1.5033) 37.885 (1.4915)
Valve spring	Free length	IN Outer Inner EX	40.70 (1.6024)*1 40.71 (1.6028)*2 36.70 (1.4449)*1 36.74 (1.4465)*2 41.65 (1.6400)*1 41.64 (1.6394)*2	} 39.61 (1.5594) } 35.69 (1.4051) } 40.63 (1.5996)
Valve guide	I.D. Installed height	IN and EX IN and EX	5.51—5.53 (0.2169—0.2177) 12.55—13.05 (0.4941—0.5138)	5.53 (0.2177) 13.30 (0.5236)
Rocker arm	Arm-to-shaft clearance	In and EX	0.025—0.052 (0.0010—0.0020)	0.080 (0.0031)

*1: NIPPON HATSUJO made
*2: CHUO HATSUJO made

Unit: mm (in.)

5. Engine/Engine Block

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.05 (0.0020)	0.10 (0.004)
	Bore diameter	X	81.000—81.020 (3.1890—3.1898)	81.070 (3.1917)
		Y	81.000—81.015 (3.1890—3.1896)	
	Bore taper		—	0.05 (0.002)
	Reboring limit		—	0.25 (0.01)
Piston	Skirt O.D. At 16 mm (0.63 in) from bottom of skirt		80.98—80.99 (3.1882—3.1886)	80.97 (3.1879)
	Clearance in cylinder		0.01—0.04 (0.0004—0.0016)	0.05 (0.002)
	Ring groove width	Top	1.030—1.040 (0.0406—0.0409)	1.060 (0.0417)
		2nd	1.230—1.240 (0.0484—0.0488)	1.260 (0.0496)
		Oil	2.805—2.820 (0.1104—0.1110)	2.840 (0.1118)
Piston ring	Piston-to-ring clearance	Top	0.045—0.070 (0.0018—0.0028)	0.130 (0.0051)
		2nd	0.045—0.070 (0.0018—0.0028)*1	0.130 (0.0051)
			0.040—0.065 (0.0015—0.0026)*2	
	Ring end gap	Top	0.20—0.35 (0.0079—0.0138)	0.60 (0.0236)
		2nd	0.40—0.55 (0.0157—0.0217)	0.70 (0.0276)
		Oil	0.20—0.45 (0.0079—0.0177)*1	0.80 (0.0315)
			0.20—0.50 (0.0079—0.0197)*2	
Piston pin	Diameter		20.994—21.000 (0.8265—0.8268)	—
	Pin-to-piston clearance		0.010—0.022 (0.0004—0.0009)	—
Connecting rod	Pin-to-rod interference		0.013—0.032 (0.0005—0.0013)	—
	Small end bore diameter		20.968—20.981 (0.8255—0.8260)	—
	Large end bore diameter	Nominal	48.0 (1.89)	—
	End play installed on crankshaft		0.15—0.30 (0.0059—0.0118)	0.40 (0.0157)
Crankshaft	Main journal diameter			
	No. 1, 2, 4 and 5 journals		54.976—55.000 (2.1644—2.1654)	—
	No. 3 journal		54.970—54.994 (2.1642—2.1651)	—
	Rod journal diameter		44.976—45.000 (1.7707—1.7717)	—
	Journal taper		0.005 (0.00020) max.	—
	Journal out of round		0.004 (0.00016) max.	0.006 (0.0002)
	End play		0.10—0.35 (0.0039—0.0138)	0.045 (0.0018)
	Ranout		0.020 (0.0008) max.	0.030 (0.0012)
Bearing	Main bearing-to-journal oil clearance			
	No. 1, 2, 4 and 5 journals		0.024—0.042 (0.0009—0.0017)	0.050 (0.0020)
	No. 3 journal		0.030—0.048 (0.0012—0.0019)	0.050 (0.0024)
	Rod bearing-to-journal oil clearance		0.032—0.050 (0.0013—0.0020)	0.050 (0.0024)

*1: TEIKOKU PISTON RING made
*2: RIKEN made

Standards and Service Limits

5. Engine/Engine Lubrication

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US qt, Imp qt)		4.8 (5.1, 4.2) For engine disassembly 4.0 (4.2, 3.6) For oil change, including oil filter	
Oil pump	Displacement ℓ (US gal, Imp gal)/min@min^{-1} (rpm)		71 (1.87, 1.56)@7,600	
	Inner-to-outer rotor radial clearance Pump body-to-rotor radial clearance Pump body-to rotor side clearance		0.04—0.16 (0.0016—0.0063) 0.10—0.19 (0.0039—0.0075) 0.02—0.07 (0.0008—0.0026)	0.2 (0.0079) 0.2 (0.0079) 0.15 (0.0059)
Relief valve	Pressure seting 80 °C (176 °F) kPa (kg/cm^2, psi)	Idle	69 (0.7, 10) min.	
		3,000 min^{-1}(rpm)	343 (3.5, 50) min.	

5. Engine/Cooling

	MEASUREMENT	STANDARD (NEW)
Radiator coolant	Capacity ℓ (US qt, Imp qt) (Includes reservoir tank 0.4 (0.42, 0.35))	5.7 (6.0, 5.0) For engine disassembly 4.7 (5.0, 4.1) For coolant change
Radiator cap	Pressure cap opening pressure kPa (kg/cm^2, psi)	74—103 (0.75—1.05, 11—15)
Thrermostat	Starts to open °C (°F) Full open °C (°F) Valve lift at full open	76—80 (169—176) 90 (194) 8 (0.31) min.
Water pump	Capacity: ℓ (US gal, Imp gal)/min @ min^{-1} (rpm)	140 (37.0, 30.8) @7,600
Cooling fan	Thermoswitch "ON" temperature °C (°F) Thermoswitch "OFF" temperature °C (°F)	91.5—94.5 (196—202) 88—91 (190—196)

Unit: mm (in.)

6. Fuel and Emission

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure kPa (kg/cm², psi) Displacement cm³ (oz) Relief valve opening pressure kPa (kg/cm², psi)	250 (2.55, 36) 230 (7.8) in 10 seconds at 12 V. 441–588 (4.5–6.0, 64–85)
Pressure regulator	Pressure kpa (kg/cm², psi)	245–255 (2.5–2.6, 36–37)
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)
Fast idle	min⁻¹ (rpm)	1,600–2,000
Idel speed	with headlights and cooling fan off min⁻¹ (rpm)	750±50
Idle CO	%	0.1 max.

7. Clutch

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height to floor	LHD	210 (8.27)	—
		RHD	205 (8.07)	—
	Stroke	LHD	142–147 (5.59–5.79)	—
		RHD	137–142 (5.39–5.59)	—
	Pedal free play		15–20 (0.59–0.79)	—
	Disengagement height to floor	LHD	70 (2.76) min	—
		RHD	65 (2.56) min	—
Clutch release arm	Free play at arm		3.0–4.0 (0.12–0.16)	—
Flywheel	Clutch surface runout		0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth		1.3 (0.05) min.	0.2 (0.008)
	Surface runout		0.8 (0.03) max.	1.0 (0.04)
	Radial play in spline at circumference (200ϕ)		0.2–0.6 (0.008–0.024)	3.4 (0.134)
	Thickness		8.1–8.8 (0.32–0.35)	5.7 (0.224)
Clutch release bearing holder	I.D.		31.00–31.15 (1.220–1.226)	31.2 (1.228)
	Holder-to-guide sleeve clearance		0.05–0.23 (0.002–0.009)	0.30 (0.012)
Clutch cover	Uneveness of diaphragm spring		0.8 (0.03) max.	1.0 (0.04)
	Warpage of pressure plate		0.03 (0.001)	0.15 (0.006)

Standards and Service Limits

8. Manual Transmission

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.1 (2.2, 1.8) For oil change 2.2 (2.3, 1.9) For disassembly	— —
Mainshaft	End play	0.11—0.18 (0.0043—0.0071)	Adjust with a shim
	Diameter of ball bearing contact area (clutch case side)	27.977—27.990 (1.1015—1.1020)	27.930 (1.0996)
	Diameter of third gear contact area	31.984—32.000 (1.2592—1.2598)	31.930 (1.2571)
	Diameter of ball bearing contact area (transmission case side)	21.987—22.000 (0.8656—0.8661)	21.940 (0.8638)
	Runout	0.02 (0.0008) max.	0.05 (0.0020)
Mainshaft third and fourth gears	I.D.	37.009—37.025 (1.4570—1.4577)	37.08 (1.4598)
	End play	0.06—0.21 (0.0024—0.0083)	0.30 (0.0118)
	Thickness 3rd	31.92—31.97 (1.2567—1.2587)	31.85 (1.2539)
	4th	31.42—31.47 (1.2370—1.2390)	31.35 (1.2342)
Mainshaft fifth gears	I.D.	37.009—37.025 (1.4570—1.4577)	37.08 (1.4598)
	End play	0.06—0.21 (0.0024—0.0083)	0.30 (0.0118)
	Thickness	29.42—29.47 (1.1583—1.1602)	29.35 (1.1555)
Countershaft	Diameter of needle bearing contact area	33.000—33.015 (1.2992—1.2998)	32.95 (1.2972)
	Diameter of ball bearing contact area	24.987—25.000 (0.9837—0.9843)	24.94 (0.9819)
	Diameter of low gear contact area	36.984—37.000 (1.4561—1.4567)	36.93 (1.4539)
	Runout	0.02 (0.0008) max.	0.05 (0.0020)
Countershaft low gear	I.D.	42.009—42.025 (1.6539—1.6545)	42.08 (1.6567)
	End play (when torqued properly)	0.04—0.12 (0.0016—0.0047)	Adjust with a shim
Countershaft Second gear	I.D.	47.009—47.025 (1.8507—1.8514)	47.08 (1.8535)
	End play (when torqued properly)	0.05—0.12 (0.0020—0.0047)	Adjust with a collar
	Thickness	32.42—32.47 (1.2764—1.2783)	32.35 (1.2736)
Spacer collar (countershaft second gear)	I.D.	34.995—35.005 (1.3778—1.3781)	35.015 (1.3785)
	O.D.	41.989—42.000 (1.6531—1.6535)	41.94 (1.6512)
	Length A	32.56—32.58 (1.2819—1.2827)	Adjust with a collar
	B	32.59—32.61 (1.2831—1.2839)	
Spacer collar (mainshaft fourth and fifth gears)	I.D.	25.002—25.012 (0.9843—0.9847)	25.06 (0.9866)
	O.D. 	31.989—32.000 (1.2594—1.2598)	31.94 (1.2575)
	Length A	57.95—58.05 (2.2815—2.2854)	—
	B	27.03—27.08 (1.0642—1.0661)	—
Reverse idler gear	I.D.	20.016—20.036 (0.7880—0.7888)	—
	Gear-to-reverse gear shaft clearance	0.036—0.077 (0.0014—0.0030)	0.14 (0.0055)
Synchro ring	Ring-to-gear clearance (ring pushed against gear)	0.85—1.10 (0.0335—0.0433)	0.40 (0.0157)
Shift fork	Shift fork finger thickness	7.40—7.50 (0.2913—0.2953)	—
	Fork-to-synchro sleeve clearance	0.45—0.65 (0.0177—0.0256)	1.0 (0.0394)
Reverse shift fork	Shift fork paul groove width	13.00—13.30 (0.5118—0.5236)	—
	Fork-to-reverse idler gear clearance	0.5—1.1 (0.0197—0.0433)	1.8 (0.0709)
	"L" groove width Reverse side	7.05—7.25 (0.2776—0.2854)	—
	Fifth gear side	7.40—7.70 (0.2913—0.3031)	—
	Fork-to-shaft clearance Reverse side	0.05—0.35 (0.0020—0.0138)	0.5 (0.0197)
	Fifth gear side	0.40—0.80 (0.0157—0.0315)	1.0 (0.0394)
Shift rod guide	Groove width of shift arm contact area	12.05—12.15 (0.4744—0.4783)	—
	Shift rod guide-to-shift arm clearance	0.05—0.35 (0.0020—0.0138)	0.80 (0.0315)
Shift guide	Groove width of shift arm contact area	8.10—8.20 (0.3189—0.3228)	—
	Shift guide-to-shift arm clearance	0.10—0.30 (0.0039—0.0118)	0.60 (0.0236)
	I.D.	14.000—14.068 (0.5512—0.5539)	—
	Shift guide-to-shift fork clearance	0.20—0.50 (0.0079—0.0197)	0.80 (0.0315)

Unit: mm (in.)

8. Manual Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Shift guide	Groove width of shift arm contact area	8.10—8.20 (0.3189—0.3228)	—
	Shift guide-to-shift arm contact area clearance	0.10—0.30 (0.0039—0.0118)	0.50 (0.0236)
	I.D.	14.000—14.068 (0.5512—0.5539)	—
	Shift guide to shaft clearance	0.011—0.092 (0.0004—0.0036)	0.15 (0.0059)
	Diameter of shift fork contact area	11.90—12.00 (0.4685—0.4724)	—
	Shift guide-to-shift fork clearance	0.20—0.50 (0.0079—0.0197)	0.80 (0.0315)
Selector arm	Diameter of shift rod guide contact area	11.90—12.00 (0.4685—0.4724)	—
	Selector arm-to-shift rod guide clearance	0.05—0.25 (0.0020—0.0098)	0.50 (0.0197)
	Gloove width of contact area	10.05—10.15 (0.3957—0.3996)	—
	Selector arm-to-interlock clearance	0.05—0.25 (0.0020—0.0098)	0.50 (0.0197)
Ring gear	Backlash	0.085—0.142 (0.0033—0.0056)	0.20 (0.0079)
Differential carrier	Pinion shaft bore diamater	18.000—18.016 (0.7087—0.7093)	—
	Carrier-to-pinion shaft clearance	0.017—0.045 (0.0007—0.0018)	0.10 (0.0039)
	Driveshaft bore diameter	28.000—28.021 (1.1024—1.1032)	—
	Carrier-to-driveshaft clearance	0.020—0.062 (0.0008—0.0024)	0.12 (0.0047)
	Carrier-to-intermediate shaft clearance	0.050—0.087 (0.0020—0.0034)	0.14 (0.0055)
Differential pinion gear	Backlash	0.05—0.15 (0.0020—0.0059)	Adjust with a washer.
	Pinion gear bore diameter	18.042—18.066 (0.7103—0.7113)	—
	Pinion gear-to-pinion shaft clearance	0.059—0.095 (0.0023—0.0037)	0.15 (0.0059)

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft)	0.39—1.37 (0.04—0.14, 0.29—1.01)	
	Angle of rack-guide-screw loosened from locked position	10—15	
Rack end	Pivoting resistance N·m (kg-m, lb-ft)	0.49—1.96 (0.05—0.20, 0.36—1.45)	

Standards and Service Limits

12. Suspension

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	Toe-in		Front: 0±2 (0±0.08); Rear: 2^{+2}_{-1} ($0.08^{+0.08}_{-0.04}$)	
	Camber		0°00'±1°	−0°30'±1°
	Caster		3°00'±1°	
	Side slip		0±3 (0±0.12)	
	Turning angle (max.)	Inward wheel	38°00'±2°	
		Outward wheel	30°00'±2°	
Wheel	Rim runout	Steel	0—1.0 (0—0.039)	2.0 (0.08)
		Aluminum	0—0.7 (0—0.028)	1.5 (0.06)
Wheel bearing	End play	Front	0	0.05
		Rear	0	0.05

13. Brake

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke 200 N (20 kg, 44 lbs)		To be locked when pulled 6—10 notches	—
Foot brake pedal	Pedal height	RHD	161 (6.3) from floor	—
		LHD	153 (6.0) from floor	—
	Free play		1—5 (0.04—0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance		0—0.4 (0—0.016)	—
Brake disc	Disc thickness	Front	21.0 (0.83)	19.0 (0.75)
		Rear	10.0 (0.39)	8.0 (0.32)
	Disc runout	Front	—	0.1 (0.004)
		Rear	—	0.15 (0.006)
	Disc parallelism		—	0.015 (0.0006)
	Pad thickness	Front	11.0 (0.43)	1.6 (0.06)
		Rear	8.0 (0.32)	1.6 (0.06)

Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure N (kg, lb)	Line Pressure kPa (kg/cm², psi)
		0	196 (20, 44)	990 (10.1, 143) min.
		300	196 (20, 44)	4,560 (46.5, 661) min.
		500	196 (20, 44)	6,933 (70.7, 1,005) min.

15. Air Conditioner

	MEASUREMENT		STANDARD (NEW)
Air conditioner system	Lubricant capacity cc (US oz, Imp oz)	Condenser	10 (0.34, 0.28)
		Evaporator	30 (1.00, 0.84)
		Line or hose	10 (0.34, 0.28)
		Reservoir	10 (0.34, 0.28)
Compressor	Lubricant capacity cc (US oz, Imp oz)		60—100 (2.03—3.38, 1.69—2.82)
	Stator coil resistance at 20 °C (68 °F) Ω		3.4—3.8
	Pulley-to-pressure plate clearance		0.35—0.65 (0.014—0.026)
Compressor belt	Deflection between pulleys with 98 N (10 kg, 22 lb)		7.0—9.0 (0.28—0.35) with used belt 4.5—6.5 (0.18—0.26) with new belt
	Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)		343—490 (35—50, 77—110) with used belt 539—735 (55—75, 121—165) with new belt

Unit: mm (in.)

16. Electrical

	MEASUREMENT	STANDARD (NEW)		
Ignition coil	Rated voltage V	12		
	Primary winding resistance Ω	0.63–0.77		
	Secondary winding resistance Ω	9.760–14.640		
Ignition wire	Resistance Ω	25,000 max.		
Spark plug	Type	Makes	Normal	Option
		NGK	BKR6E–N11	BKR7E–N11
		ND	K20PR–L11	K22PR–L11
	Gap	1.0–1.1 (0.039–0.043)		
Ignition timing	At idling	15° ± 2° (Red) BTDC		
Battery	Lighting capacity (20-hour ratio) AH Starting capacity (5-second ratio)	47 8.6 V min. at 300 Ampere draw		
Altermator belt	Deflection between pulleys with 98 N (10 kg, 22 lb) Belt tension between pulleys N (kg, lb) (measure with belt tension gauge)	8.5–10.5 (0.33–0.41) with used belt 5.5–7.5 (0.22-0.30) with new belt 343–490 (35–50, 77–110) with used belt 588–785 (60–80, 132–176) with new belt		
Alternator	Output	13.5 V/70 A		
	MEASUREMENT	STANDARD (NEW)		SERVICE LIMIT
	Coil resistance (rotor) Ω	2.9		—
	Slip ring O.D.	14.4 (0.57)		14.0 (0.55)
	Brush lenght	10.5 (0.41)		1.5 (0.06)
	Brush spring tension (new) g (oz)	330 (11.64)		—
Starting motor		MITSUBA 1.4 kW		
	MEASUREMENT	STANDARD (NEW)		SERVICE LIMIT
	Mica depth	0.4–0.5 (0.016–0.020)		0.15 (0.006)
	Commutator	0–0.02 (0.0008)		0.05 (0.002)
	Commutator O.D.	28.0–28.1 (1.10–1.11)		27.5 (1.08)
	Brush length	15.8–16.2 (0.62–0.64)		10.0 (0.39)
	Brush spring sension (new) N (kg, lb)	15.7–17.7 (1.6–1.8, 3.5–4.0)		—

Design Specifications

	ITEMS	METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	3,800 mm	149.6 in.	KF, KX
		3,815 mm	150.2 in.	KG, KE, KS
		3,825 mm	150.6 in.	KS (Finland)
	Overall Width	1,675 mm	65.9 in.	
	Overall Height	1,270 mm	50.0 in.	
	Wheelbase	2,300 mm	90.6 in.	
	Track, Front/Rear	1,440/1,445 mm	56.7/56.9 in.	
	Ground Clearance	150 mm	5.9 in.	
	Seating Capacity	2 4		KG (Austria), KS (Sweden) KE, KF, KG, KS, KX
	Overhang, Front/Rear	805/695 mm	31.7/27.4 in.	KF, KX
		820/695 mm	32.3/27.4 in.	KG, KE, KS
	with registration plateguard	830/695 mm	32.7/27.4 in.	KS (Finland) Including bumper
WEIGHTS	Engine Weight (Wet)	140 kg	309 lb.	
	Curb Weight			
		1,010 kg	2,227 lb.	KG
		1,015 kg	2,238 lb.	KE, KX, KS, KF
	Weight Distribution (Front/Rear)	635/375 kg	1,400/827 lb.	KG
		635/380 kg	1,400/838 lb.	KE, KX, KS, KF
	Max. Permissible Weight (EC)	1,470 kg	3,241 lb.	except KS (Sweden)
		1,380 kg	3,042 lb.	KS (Sweden)
ENGINE	Type	Water cooled 4-stroke D.O.H.C. V-TEC		
	Cylinder Arrangement	4-cylinder in-line, transverse		
	Bore and Stroke	81.0 x 77.4 mm	3.19 x 3.05 in.	
	Displacement	1,595 cm^3 (cc)	97.3 cu. in.	
	Compression Ratio	10.2 : 1		
	Valve Train	4 valves per cylinder, double overhead camshafts		
	Lubricathon System	Forced and wet sump.		
	Fuel Required	Unleaded gasoline with 95 R.O.N. or higher		

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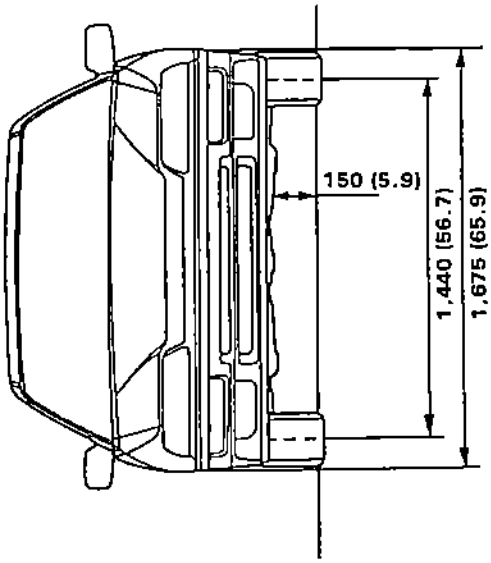
	ITEMS	METRIC	ENGLISH	NOTES
STARTER	Type	Gear reduction		
	Normal Output	1.4 kW		
	Normal Voltage	12 V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weigh: 1.4 kW MITSUBA	3.7 kg	8.2 lb	
TRANSMISSION	Clutch	Single plate dry, diaphragm spring		
	Clutch Facing Area	203 cm^2	31.5 sq in	
	Transmission Type	5-speed forward, synchromesh, 1 reverse,		
	Primary Reduction	1.000		
	Gear Ratio 1st	3.250		
	2nd	2.052		
	3rd	1.416		
	4th	1.103		
	5th	0.870		
	Reverse	3.000		
	Final Reduction	Single helical gear, 4.133		
AIR CONDI-TIONER	Cooling Capacity	4.300 Kcal/h	17.062 BTU/h	
	Conditions:			
	Compressor Revolution Speed	1,800 min^{-1} (rpm)		
	Outside Air Temperature	27.0 °C	81 °F	
	Outside Air Gumidity	50 %		
	Condenser Air Temperature	35 °C	95 °F	
	Condenrer Air Velocity	4.5 m/sec.	14.8 ft/sec.	
	Blower Capacity	440 m^3/h	15,118 cu. ft/h	
	Compressor (NIPPON DENSO) Type	Swash-plate type		
	Number of Cylinders	10		
	Displacement	155.3 cc/rev.	9.47 cu. in./rev	
	Max. Speed	min^{-1} (rpm)		
	Lubricant Capacity	80 cc	2.25 oz (imp)	
	Receiver Dryer With Desiccant	Includes fusible safety plug.		
	Condenser	Corrugated fin type		
	Evaporator	Corrugated fin type		
	Blower Type	Sirocco fan		
	Motor Input	170 W (12 V)		
	Speed Control	4 speed		
	Max. Capacity	390 m^3/h	13,773 cu. ft/h	
	Temp. Control	Air-mix type		

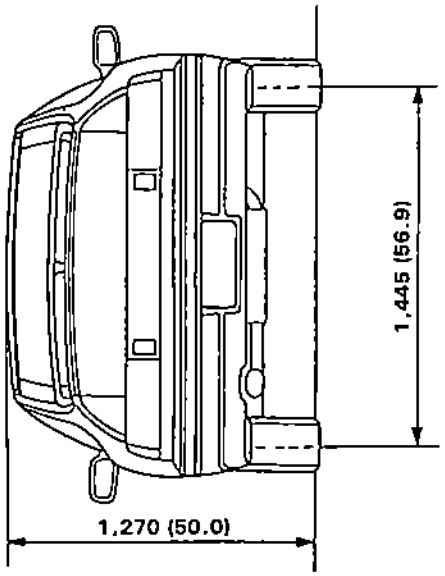
Design Specifications

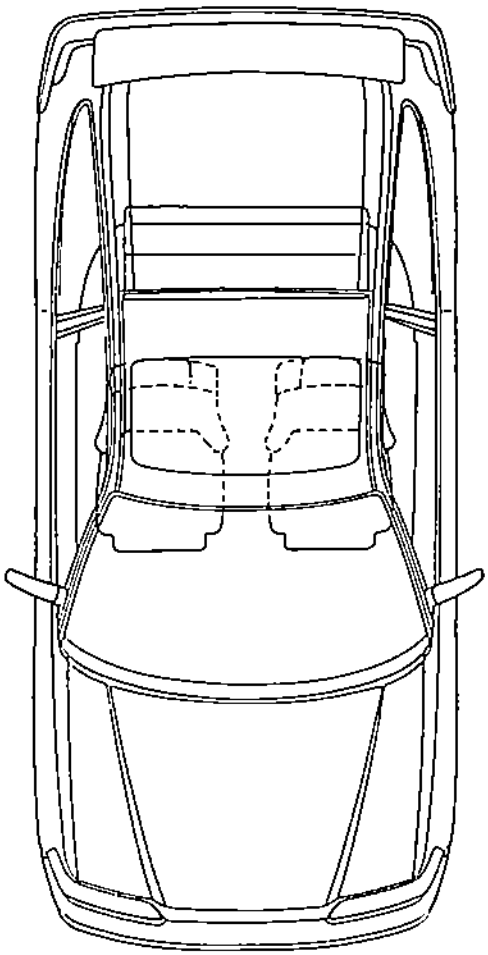
	ITEMS		METRIC	ENGLISH	NOTES
AIR COND-TIONER (cont'd)	Comp. Clutch	Type	Dry, single plate, V-belt		
		Power Consumption	40 W max. 12 V		
	Refrigerant	Type	R-12		
		Quantity	0.9±0.05 kg	1.98±0.11 lb	
STEERING SYSTEM	Type		Rack and pinion		
	Overall Ratio		21.6 (19.6–22.3) : 1		(Variable ratio)
	Turns, Lock-to-lock		4.1		
	Steering Wheel Diameter		372 mm	14.6 in.	
SUSPENSION SYSTEM	Type	Front/Rear	Independent with double wishbone, coil springs with stabilizer		
	Shock Absorber	Front	Telescopic, nitrogen gas-filled		
		Rear	Telescopic, nitrogen gas-filled		
WHEEL ALIGNMENT	Wheel Alignment				
	Camber	Front	0°00'±1°		
		Rear	−0°30'±1°		
	Caster	Front	2°59'±1°		
	Toe-in	Front	0±2 mm	0±0.08 in.	
		Rear	2^{+2}_{-1} mm	$0.08^{+0.08}_{-0.04}$ in.	
BRAKE SYSTEM	Type	Front	Power assisted self-adjusting ventilated discs		
		Rear	Power assisted self-adjusting discs		
	Lining Surface Area	Front	50 mm²	7.75 sq. in.	
		Rear	21 mm²	3.26 sq. in.	
	Effective Disc Diameter	Front	214 mm	8.43 in.	
		Rear	208 mm	8.19 in.	
	Brake Drum ID				
	Parking Brake Kind and Type		Mechanically actuating, rear two-wheel disc brakes		
TIRES	Front/Rear		195/60R14 85V		
	Spare		T135/70 D15		
ELECTRICAL	Battery		12 V–47 AH		
	Starter		12 V–1.4 kW		
	Alternator		12 V–70 amps		
	Fuses	In the dash fuse box	19 A, 15 A, 20 A, 30 A		
		In the main fuse box	10 A, 15 A, 20 A, 50 A, 60 A		
	Headlights High/Low		12 V–60/55 W		
	Front Turn Signal Lights		12 V–21 W		
	Rear Turn Signal Lights		12 V–21 W		
	Side Turn Signal Lights		12 V–5 W		
	Stop/Taillights		12 V–21/5 W		
	Back-up Lights		12 V–21 W		
	License Plate Lights		12 V–5 W		
	Gauge Lights		12 V–3.4 W, 3.0 W, 1.4 W		
	Indicator Lights		12 V–1.4 W		
	Warning Lights		12 V–5 W		
	Dome Light		12 V–5 W		
	Trunk Light		12 V–3.4 W		
	Illumination and Pilot Lights		12 V–1.4 W		
	Heater Illumination Lights		0.91 W, 0.84 W, LED 12 V–1.4 W		

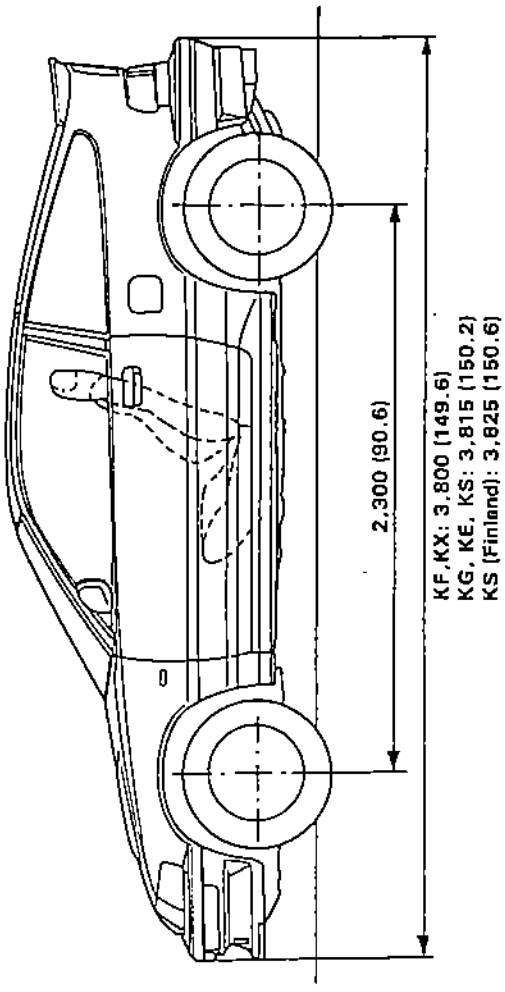
Body Specifications

Unit: mm (in.)

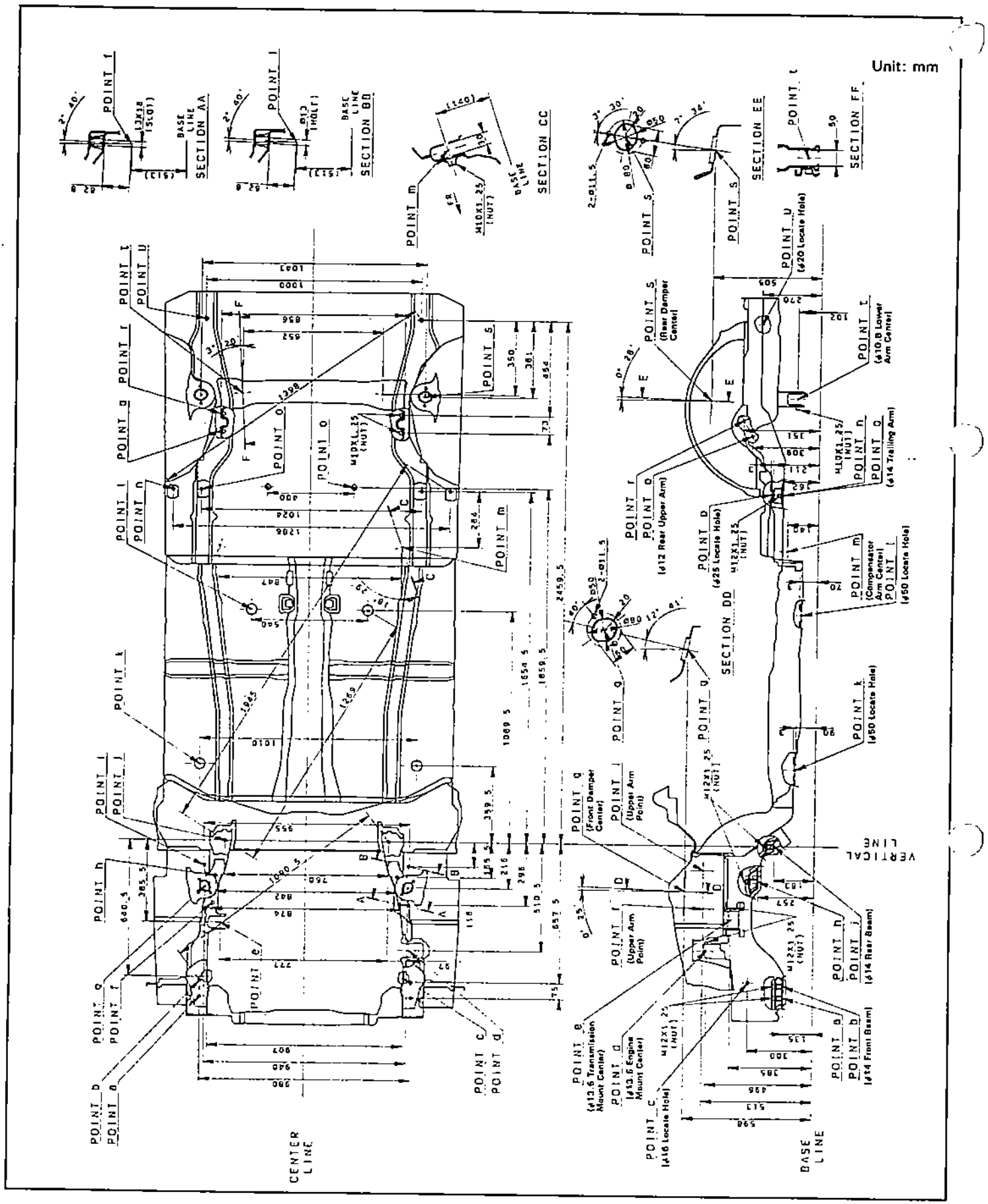








Frame Repair Chart



Maintenance

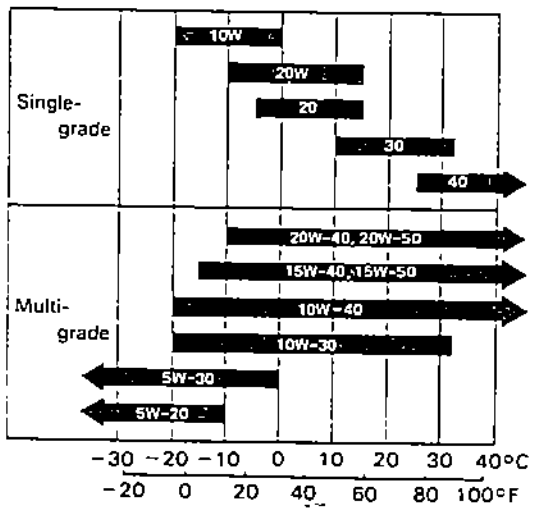
Lubrication Points.....4-2
Maintenance Schedule 4-4



Lubrication Points

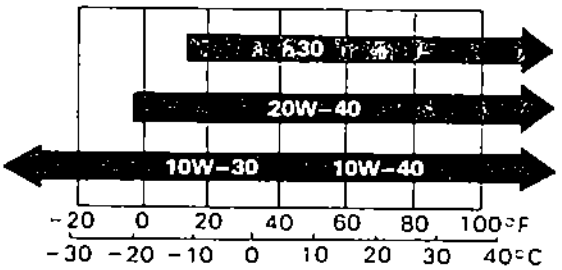
No.	LUBRICATION POINTS	LUBRICANT
1	Engine	API Service Grade: SE, SF or SG 10W—30 SAE Viscosity: See chart below
2	Transmission Manual	API Service Grade: SE or SF SAE Viscosity: See chart below
3	Brake line (ALB line for ALB models)	Brake fluid DOT 3 or DOT 4
4	Shift lever pivot	Silicone grease with molybdenum disulfide
5 6 7 8 9 10 11 12 13 14 15 16 17 18	Tilt steering Steering ball joints Suspension ball joints Steering boots Steering gearbox Steering column bushings Pedal linkage Brake master cylinder push rod Tailgate hinges Door hinges upper and lower Door opening detents Fuel filler lid Engine hood hinges Engine hood latch	Multi- purpose Grease
19	Caliper: Piston seal, Dust seal, Caliper pin, Piston	Silicone Grease

Recommended Engine Oil
(SE, SF or SG Grade 10W—30 only)



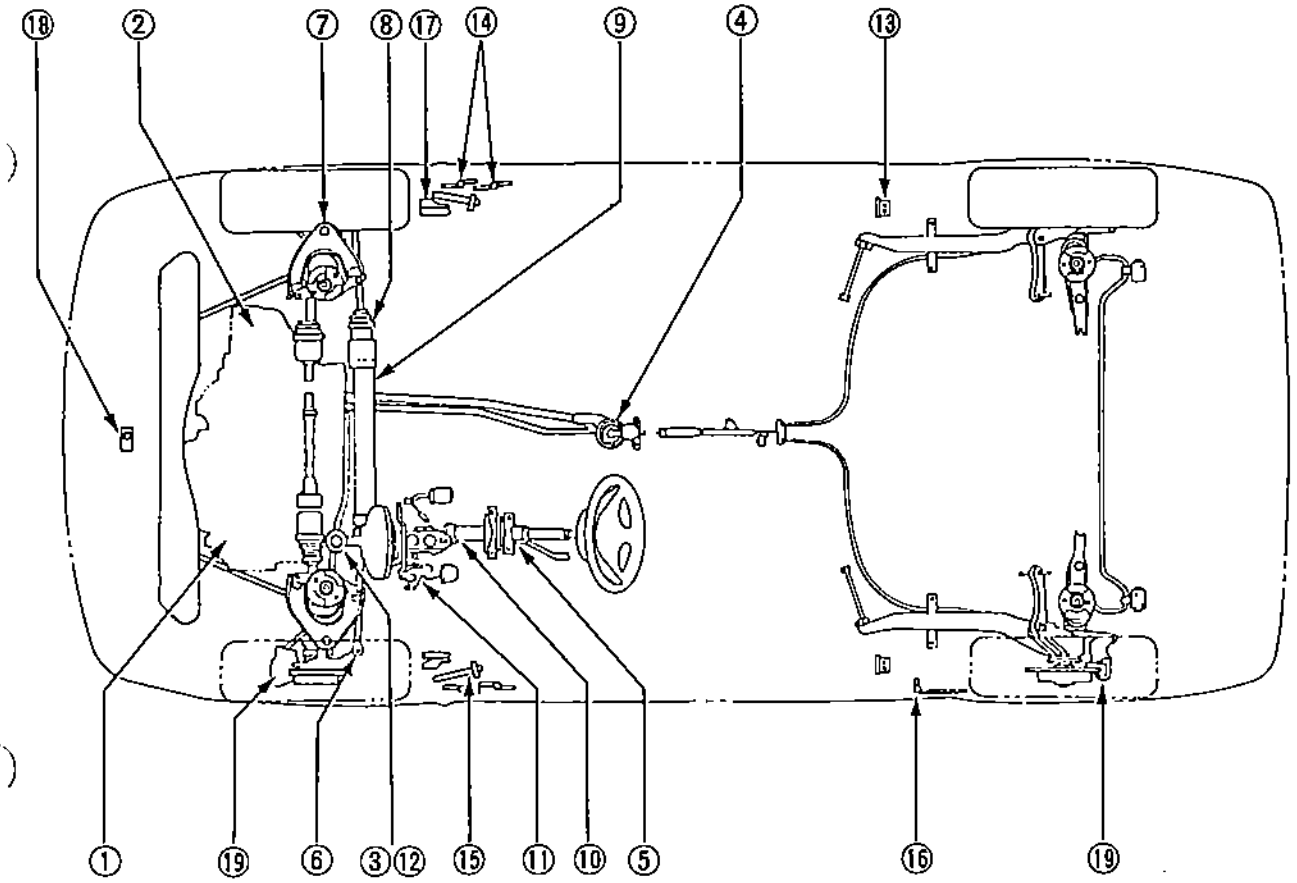
Engine oil viscosity for
ambient temperature ranges

Recommended Manual Transmission Oil
(SE or SF Grade oil)



Transmission 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.


⑱
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Maintenance Schedule

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.	R—Replace	I—Inspect. After inspection, clean, adjust, repair or replace if necessary.				
ITEM	x 1,000 km x 1,000 miles months	20 12 12	40 24 24	60 36 36	80 48 48	100 60 60
Idle speed and idle CO*3		I	I	I	I	I
Idle speed and idle CO*4						I
Valve clearance		I	I	I	I	I
Rocker arms			I		I	
Alternator drive belt			I		I	
Timing belt						R
Water pump						I
■Engine oil and oil filter		Replace every 10,000 km (6,000 miles) or 6 months				
■Transmission oil			R		R	
■Radiator coolant					R*1	
Cooling system hoses and connections			I		I	
Air cleaner element (Viscous type)			R		R	
Fuel filter			R		R	
Tank, fuel line and connections			I		I	
Evaporative emission control system						I
Ignition timing and control system*3			I		I	
Ignition timing and control system*4						I
Spark plugs			R*2		R*2	
Distributor cap and rotor*3			I		I	
Distributor cap and rotor*4						I
Ignition wiring*3			I		I	
Ignition wiring*4						I
Positive crankcase ventilation valve*3			I		I	
Positive crankcase ventilation valve*4						I

■: These service intervals assume routine checking and replenishment has been done, as needed, by the customer.
*1 Thereafter, replace every 2 years or 40,000 km (24,000 miles), whichever comes first.
*2 For KS type, replace every 2 years or 40,000 km (24,000 miles), whichever comes first after 30,000 km (18,000 miles).
*3 Except KS, KX model
*4 KS, KX model

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.	R—Replace		I—Inspect. After inspection, clean, adjust, repair or replace if necessary.			
ITEM	x 1,000 km x 1,000 miles months	20 12 12	40 24 24	60 36 36	80 48 48	100 60 60
Brake hoses and lines (Including ALB hoses and pipes for KE ALB models)		I	I	I	I	I
Brake fluid (Including ALB fluid for KE ALB models)			R		R	
Front brake discs and calipers		I	I	I	I	I
Front brake pads		Inspect every 10,000 km (6,000 miles) or 6 months				
Rear brake discs, calipers and pads			I		I	
Parking brake		I	I		I	
Clutch release arm travel		I	I	I	I	I
Exhaust pipe and muffler		I	I	I	I	I
Suspension mounting bolts		I	I	I	I	I
Front wheel alignment		I	I	I	I	I
Steering operation, tie rod ends, steering gear box and boots		I	I		I	
ALB high pressure hose (for KE ALB models)					R	
ALB operation (for KE ALB models)		I	I		I	
Catalytic converter heat shield					I	

CAUTION: The following items must be serviced more frequently on cars normally used under severe driving conditions. Refer to the chart below for the appropriate maintenance intervals.

Severe driving conditions include:
A : Repeated short distance driving
B : Driving in dusty conditions
C : Driving in severe cold weather
D : Driving in areas using road salt or other corrosive materials
E : Driving on rough and/or muddy roads
F : Towing a trailer
R—Replace.
I— Inspect. After inspection, clean, adjust, repair or replace if necessary.

Condition	Maintenance item	Maintenance operation	Interval
A B • • • F	Engine oil and oil filter	R	Every 5,000 km (3,000 miles) or 3 months
• • • • • F	Transmission oil	R	Every 20,000 km (12,000 miles) or 12 months
A B • D E F	Front brake discs and calipers	I	Every 10,000 km (6,000 miles) or 6 months
A B • D E F	Rear brake discs, calipers and pads	I	Every 20,000 km (12,000 miles) or 12 months
A B C • E F	Clutch release arm travel	I	Every 10,000 km (6,000 miles) or 6 months

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.

Engine

B16A Engine
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Engine Tune-up 5–13
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Cylinder Head Removal/Installation 5–47
Engine Removal/Installation 5–59
Exhaust Pipe and Muffler 5–71
Radiator 5–73



Outline of Model Changes

● The B16A engine has been adopted. The engine is 1,595cc. DOHC with V-TEC*.
*V-TEC : Honda Variable Valve Timing and Lift Electronic Control System.

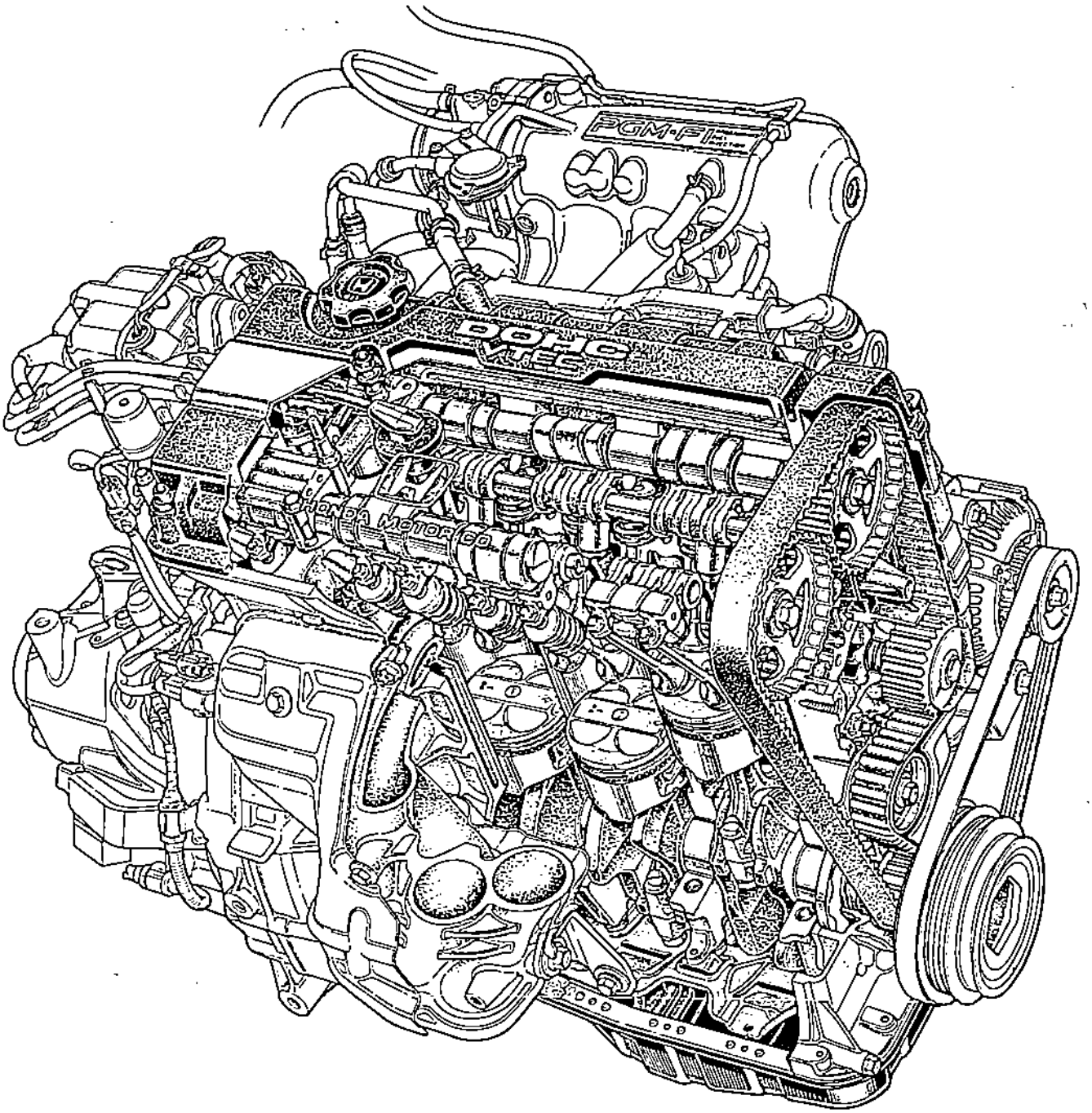
B16A Engine
Construction and Function

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Outline

Description

The engine is a B16A (1,595 cc MPI-Multi Point Injection) in-line 4-cylinder water-cooled, DOHC 2-cam/16-valve, center plug type with pentroof combustion chambers. The engine incorporates a new mechanism called the Honda Variable Valve Timing and Lift Electronic Control System (V-TEC). This is the world's first mechanism allowing, simultaneously changes of both the timing and the degree of lift of the engine intake and exhaust valves.



Features:

- The crankshaft is made by forging, and the main shaft is supported at five points.
- The cylinder head is made of aluminum alloy, a center plug type pentroof shaped combustion chamber is used, and the 4-valve system uses 2 inlet valves and 2 exhaust valves.
- The system is of the DOHC type, uses swing arm type rocker arms and is driven by a timing belt. Belt tension is adjustable.
- The V-TEC type engine has three rocker arms at each intake and exhaust side per cylinder.
- The cylinder block is made of aluminum alloy and uses cast iron sleeves.
- The electronic fuel injection system is of the sequential injection type and injects fuel into all four cylinders, the throttle body is of the one-barrel side draft type.
- The ignition system is of the fully transistorized, contactless type. The spark advance device is of the electronic type.
- The air cleaner is placed at the right front portion of the engine compartment and equipped with a resonator.
- The radiator is of a corrugated type, and the cooling fan is electromotive.

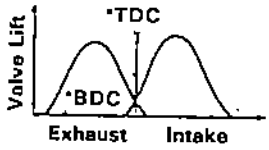
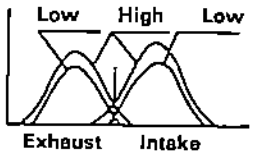
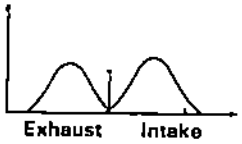
Major Specifications:

Items \ Area code			KE, KG, KF, KX
Engine	Engine Code		B16A
	Transmission type		5-speed Manual
	Type		Water-cooled 4-stroke DOHC in-line 4-cylinder transversely mounted
	Fuel supply system		PGM-FI
	Bore x Stroke		81.0 x 77.4 mm (3.19 x 3.05 in)
	Compression ratio		10.2 : 1
	Displacement		1,595 cm³ (97cu-in)
	Fuel required		95 RON (unleaded)
Electrical	Battery		55B24R
	Starter motor		1.4 kW
	A.C.G.		70 A (MAX)
Service data	Engine oil capacity		4.8 ℓ (5.1 US qt, 4.2 Imp qt) for engine disassembly 4.0 ℓ (4.2 US qt, 3.5 Imp qt) for oil change
	Red zone		8,000 min⁻¹ (rpm)
	Idle speed		750 min⁻¹ (rpm)
	Spark plug	NGK	BKR6E-N11
		ND	K20PR-L11

Variable Valve Timing and Lift Electronic Control System

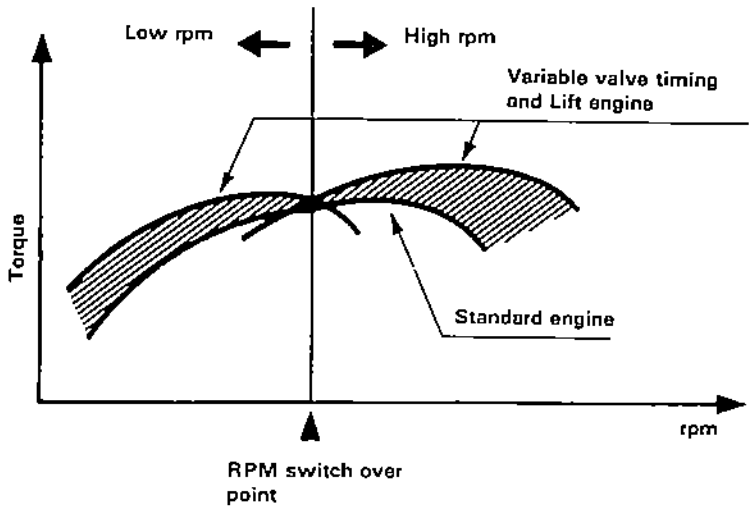
In general, it would be ideal if the high rpm performance of a racing engine and the low rpm performance of a standard passenger car engine could be combined in a single engine. This would result in a maximum performance engine with a wide power band. Two of the major differences between racing engine and standard engines are the timing of the intake/exhaust valves and the degree of valve lift. Racing engines have longer intake/exhaust timing and a longer valve lift than standard engine. The Honda' Variable Valve Timing and Lift Electronic Control System takes this into account. It also can provides the valve timing and valve lift of a standard engine. When valve actuation is adjusted for low rpm timing lift, low rpm torque is better than in a standard engine. When valve actuation is then adjusted for high rpm timing and lift, output also improves to the extent the racing engine can offer. Until now, few variable valve timing systems have been commercialized. In those that have, only the time that both valves are open (intake/exhaust overlap) could be changed. Honda's system is the first in the world in which both the valve timing and the degree of valve lifs can be changed as needed, making it the most advanced valve train mechanism available.

Comparison of Valve Lift of Racing Engines vs. Mass Produced Engines

	Racing Engine	Variable Timing & Lift Engine	Standard Engine
Valve Timing (exhaust/intake) Valve Lift			
Max. Power	○	○	
Low rpm Torque		○	○
Idling Stability		○	○

*TDC = Top Dead Center *BDC = Bottom Dead Center
○ = Optimum P

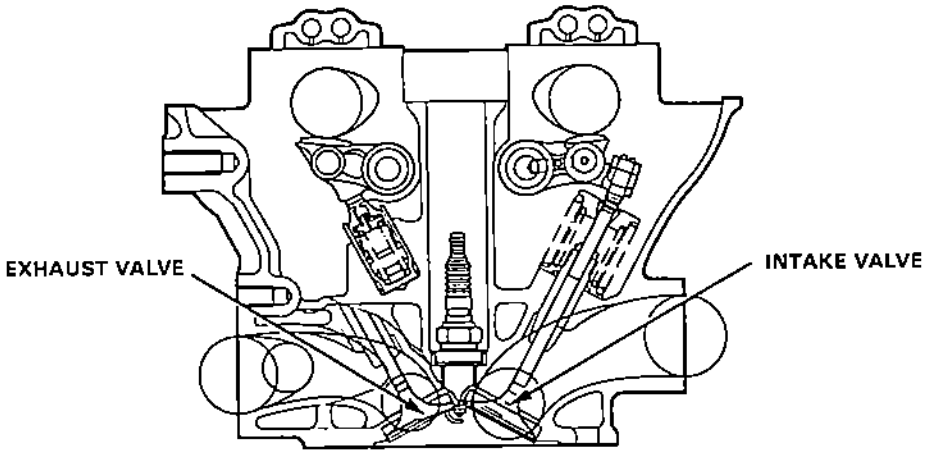
The engine is equipped with two valve timing and lift setting which change according to driving conditions.

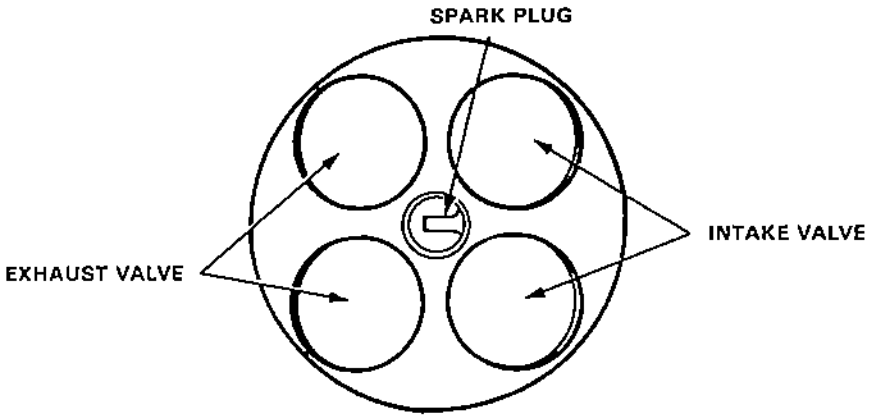


Cam/Valve Mechanism

Cylinder Head :
The cylinder head is a light-weight aluminum alloy one-piece cast head with an excellent heat transmission property. The head is mounted one the cylinder block with a gasket placed between.

Combustion Chamber :
The combustion chamber is a compact center-plug type of pentroof design. Two intake valves and two exhaust valves are positioned to permit cross-flow ventilation. This, together with optimum engine specifications, including ideal values for best ignition timing, compression ratio, and valve timing result in high intake and exhaust efficiency and improved combustion efficiency.

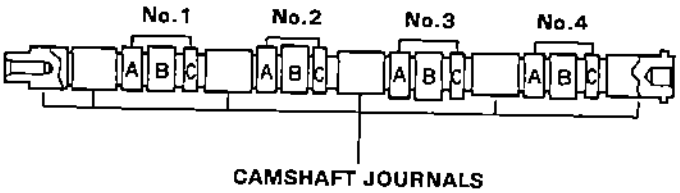




Cylinder Head

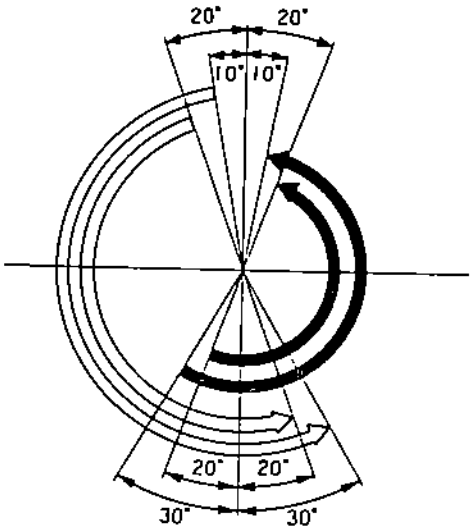
Camshaft

The camshaft is a cast piece. By improving dimensional accuracy, it became possible to achieve minimum space between cams, thus allowing a more campact cylinder head. Main bearings are supported on six journals with forced lubrication. On the left end of each camshaft is a driven pulley. On the right end of the intake camshaft a distributor mounted, and on the exhaust camshaft a spool valve is attached to effect switching between valve lift and timing. The exhaust and intake cycles require a total of 24 cams to open and close the valves.

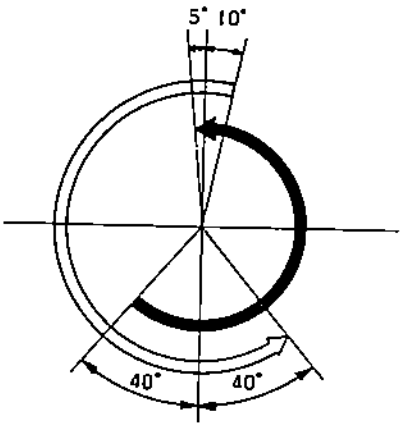


	EX	IN
A	Secondary	Primary
B	Mid	Mid
C	Primary	Secondary

Top dead center



Low-speed valve timing



High-speed valve timing

Bottom dead center

⇦ : Intake valve open
⇦ : Exhaust valve open

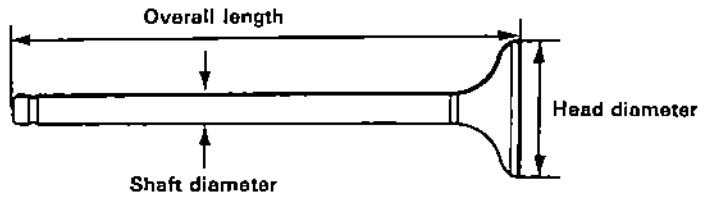
Valves

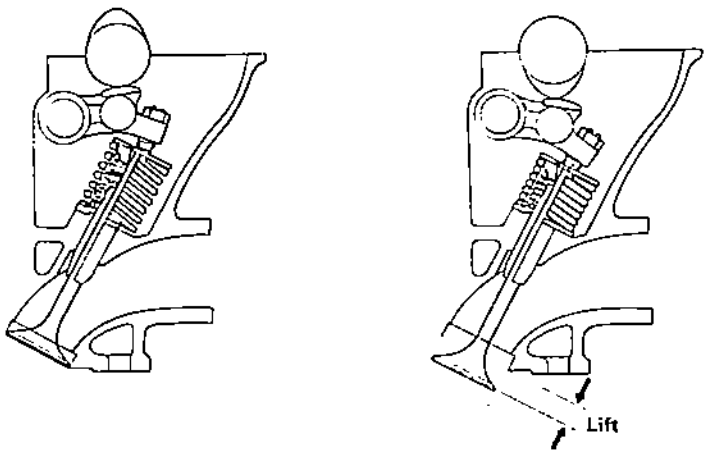
The valves are open and closed by rocker arms driven by the camshaft. The rocker arm lever ratio is set to the optimum value, keeping cam lift to the minimum while increasing valve lift, thus improving intake/exhaust efficiency.

Valve specifications unit: mm (in)

ITEM \ VALVE	INTAKE	EXHAUST
HEAD DIAMETER	ϕ33 (1.30)	ϕ28 (1.10)
SHAFT DIAMETER	5.5 (0.22)	5.5 (0.22)
OVERALL LENGTH	102.35 (4.03)	102.55 (4.04)
VALVE LIFT	8.0/5.0/*10.4 (0.31/0.20/*0.41)	7.5/4.5/*9.4 (0.30/0.18/*0.37)

*indicates high-speed valve

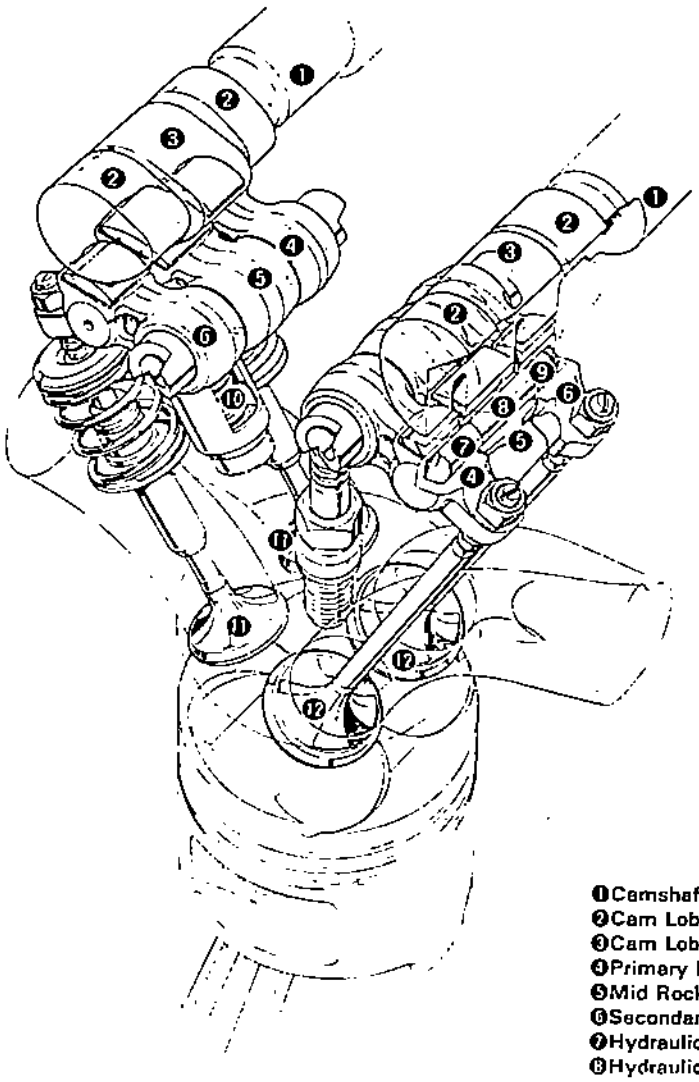




V-TEC System

System Configuration

In the Honda Variable Vable Timing and Lift Electronic Control System, the four valves per cylinder mechanism is equipped with a third rocker arm (the mid rocker arm) and a third cam lobe on both the intake and exhaust sides. Further hydraulic pistons are built into the mid rocker arm and the primary and secodary rocker arms to engage and disengage them. Each of the three cam lobes on the intake side and on the exhaust side are unique. The center cam lobes are for high rpm operation, while the primary and secondary lobes are for low rpm operation. The mid rocker arm is also equipped with a supplementary spring with a lost-motion function for reducing the amount of arm play in the low speed range, and make valve movement smoother in the high speed range.

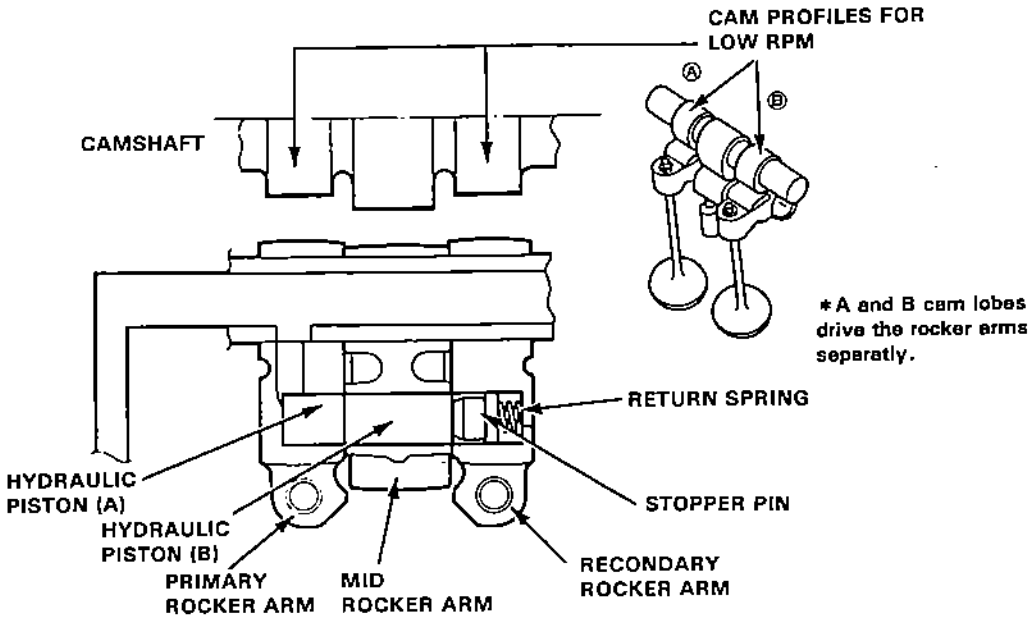


❶Camshaft
❷Cam Lobes For Low Rpm
❸Cam Lobes For High Rpm
❹Primary Rocker Arm
❺Mid Rocker Arm
❻Secondary
❼Hydraulic Piston A
❽Hydraulic Piston B
❾Stopper Pin
❿Lost-motion Spring
⓫Exhaust Valve
⓬Intake Valve

Mechanism

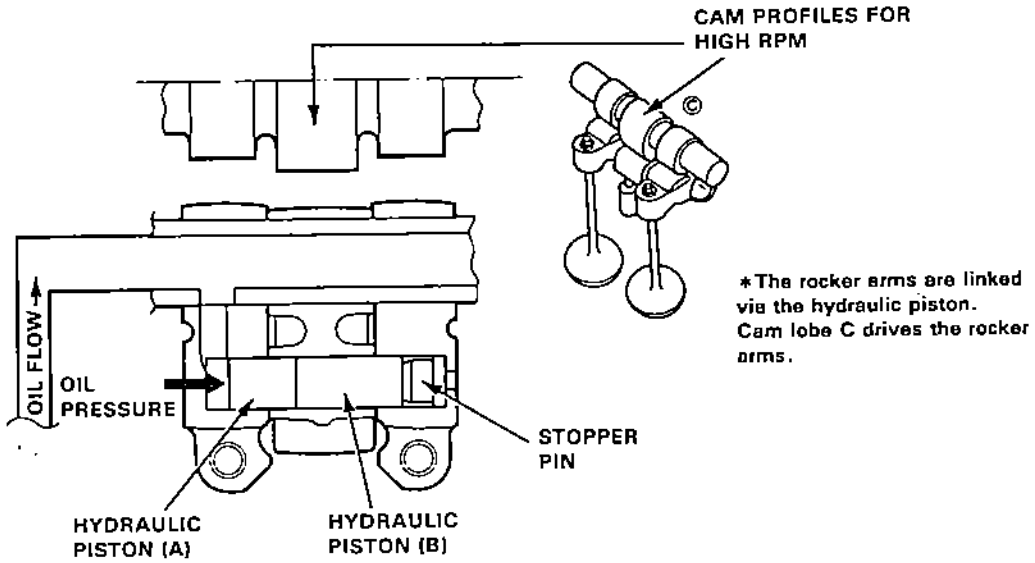
At Low rpm
As shown, the primary and secondary rocker arms locatdd on both sides ard not connected to the mid rocker arms but are driven separately by cam lobes A and B at different timing and lift. It should be noted that although the mid rocker arm is connected to the center cam lobe with the lost-motion spring, it is irrelevant to the opening and closing of the valves in the low rpm range.

At Low rpm



At High rpm
When driving at high rpm, the built-in piston moves in the direction shown by the arrow in the figure below a result, the primary rocker arm and mid rocker arm are linked by 2 hydraulic pistons (like a skewer) and the 3 rocker arms integrate and move as a single unit. In this state, all the rocker arms are driven by cam lobe C at high rpm, which means that the valves are driven at the valve timing and lift set for high rpm operation.

At High rpm



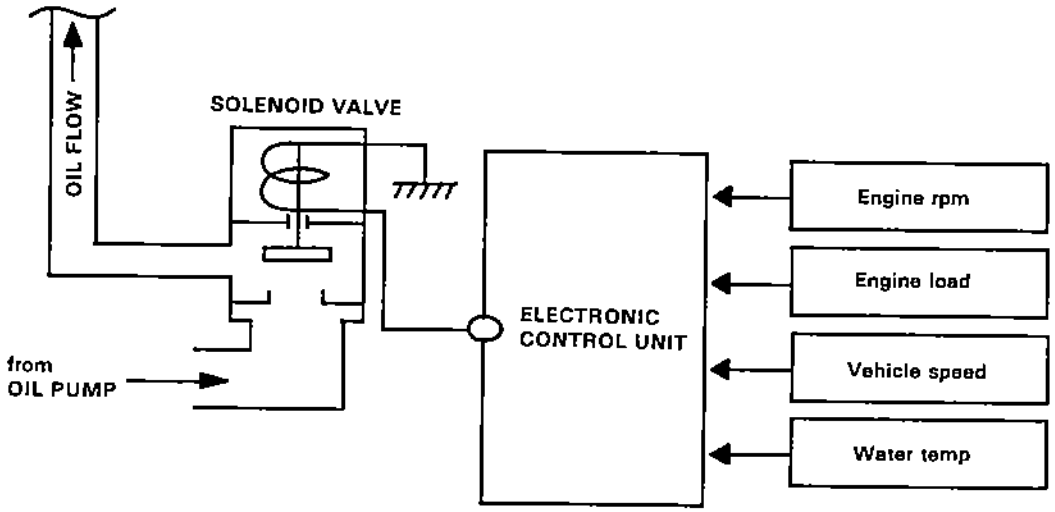
V-TEC System

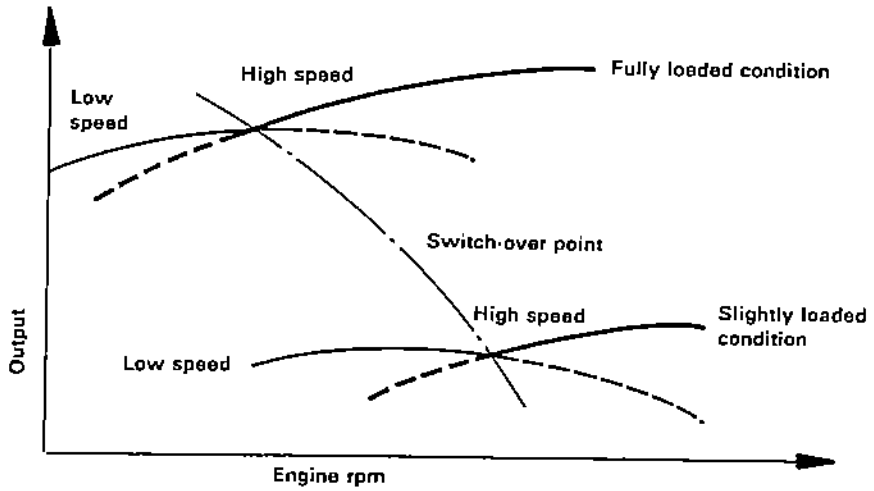
Control System

The control system for this mechanism, as shown below, constantly monitors the changes in engine status such as load, rpm and vehicle speed. This information is transmitted to the Electronic Control System Unit for precise control to assrure smooth operation under any condition.

Valve Timing Change Conditions
Engine RPM : over 5,300 rpm
Vehicle Speed : over 30 km/h
Water Temperature : over 60 °C

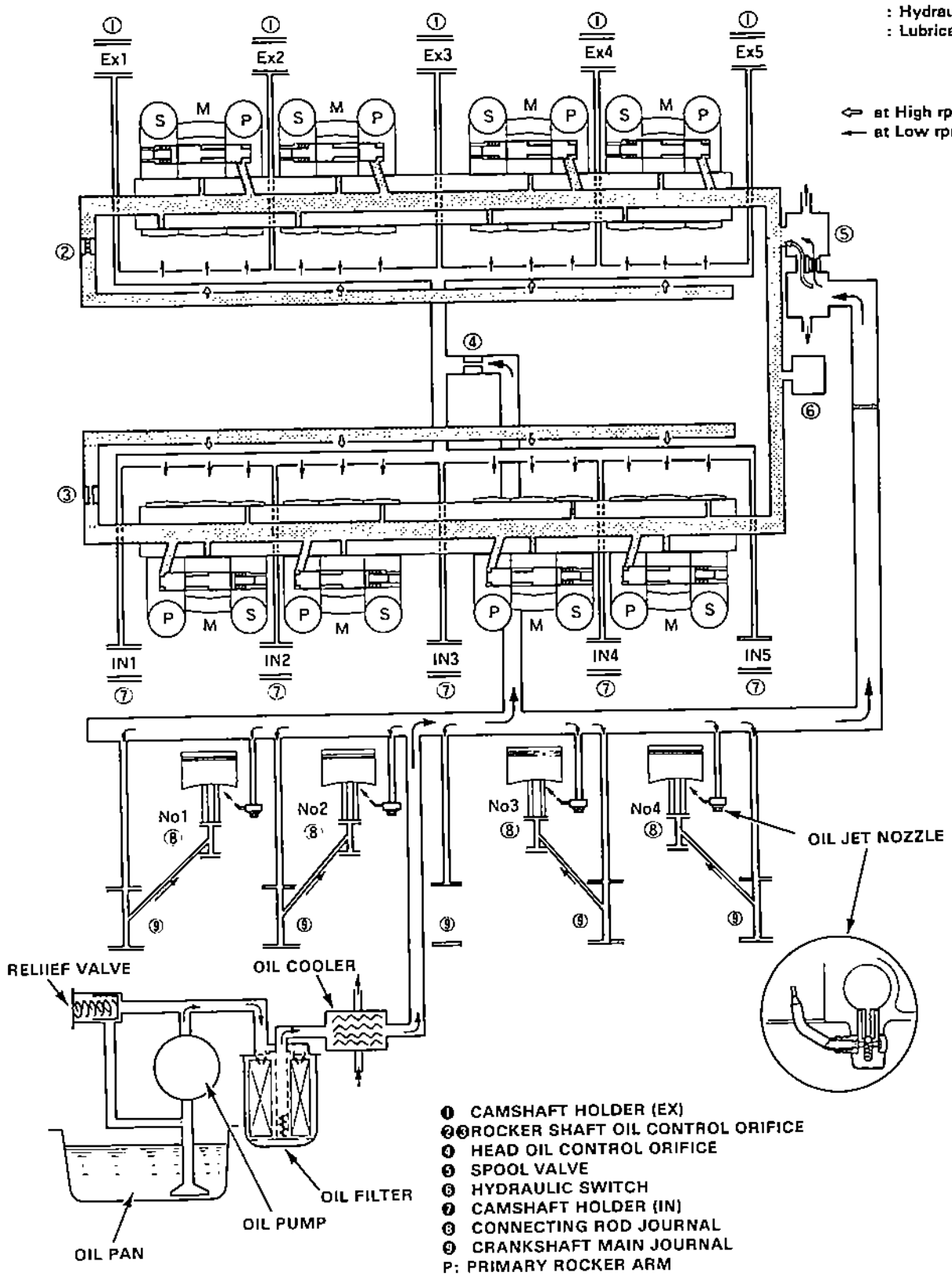
Control System





The above graph shows changes in the switch-over point in relation to engine rpm and load.

Oil Flow

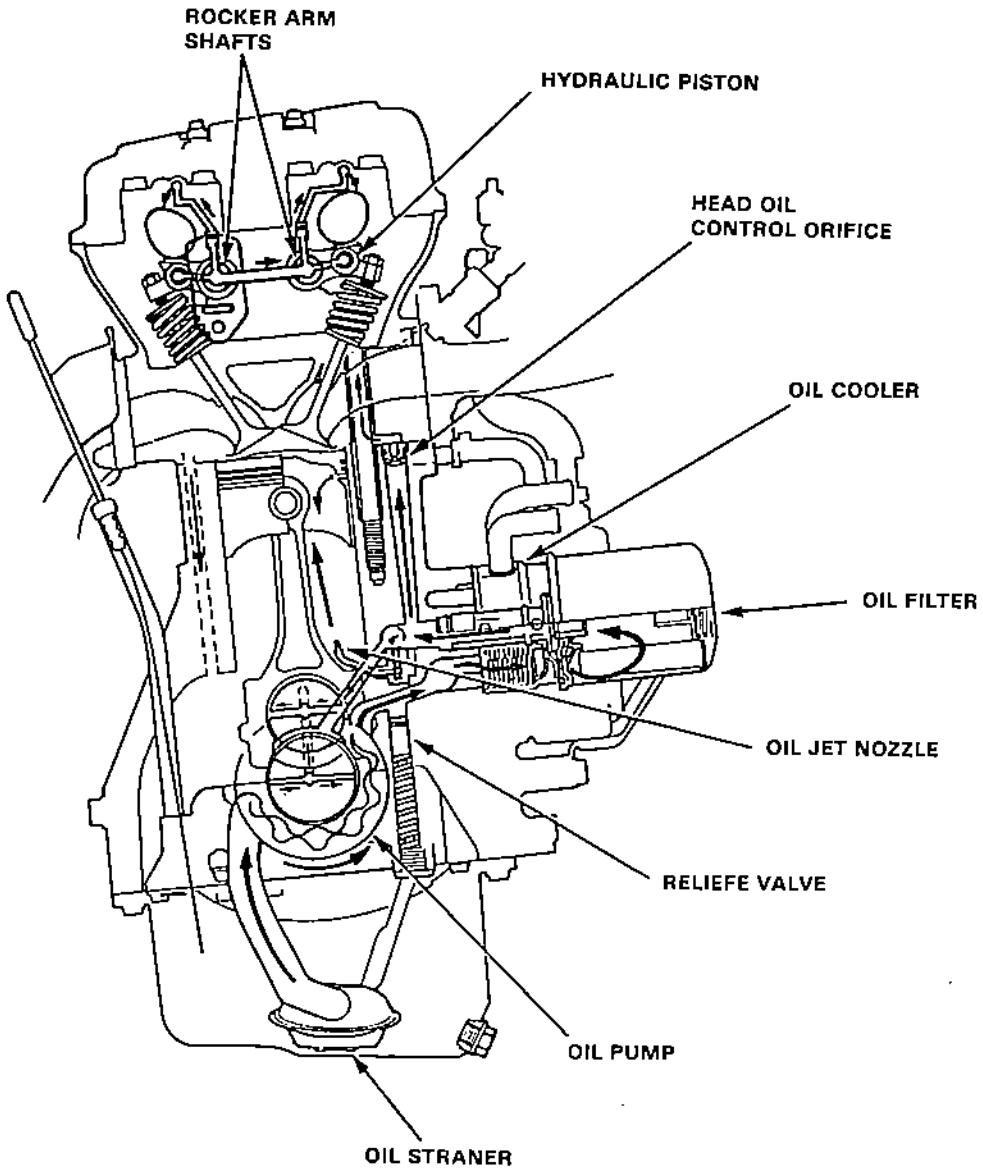


❶ CAMSHAFT HOLDER (EX)
❷❺ROCKER SHAFT OIL CONTROL ORIFICE
❹ HEAD OIL CONTROL ORIFICE
❺ SPOOL VALVE
❻ HYDRAULIC SWITCH
❼ CAMSHAFT HOLDER (IN)
❽ CONNECTING ROD JOURNAL
❾ CRANKSHAFT MAIN JOURNAL
P: PRIMARY ROCKER ARM
M: MID ROCKER ARM
S: SECONDARY ROCKER ARM

Lubrication System

Oil Passage

The lubrication system is a full filtration circulation type. The oil pump is directly linked to the crankshaft; oil collected in the oil pump is passed through the oil strainer, after which pressure is regulated by the pump relief valve. It is then filtered through the oil filter and pumped to the cylinder block and cylinder head. A baffle plate is provided inside the oil pan; the baffle plate helps minimize the chance that changes in oil level produced inside the pan while driving will effect the amount of oil. Jet nozzles on the cylinder block provide lubrication to the pistons and cylinder walls.

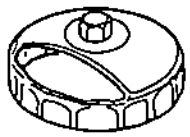


Engine Tune-up

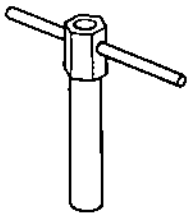
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Special Tools

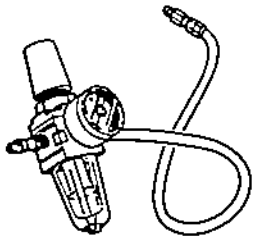
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07912—6110001	Oil Filter Socket	1	
②	07LAA—PR30100	Tappet Adjusting Wreuch	1	New tool
③	07LAJ—PR30100	Valve Inspection Set	1	New tool
④	07LAJ—PR30200	Air Stopper	1	New tool
⑤	07999—PD6000A	PGM-FI Test Harness	1	
⑥	07JAZ—SH20100	RPM Connecting Adapter	1	
⑦	07406—0070000	Low Pressure Gauge	1	
⑧	07LAK—PR30100	Gauge Joint Adaptor	1	New tool



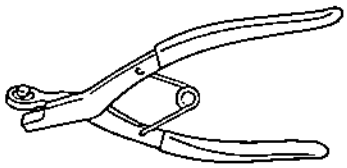
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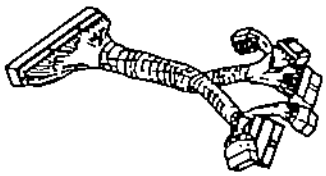
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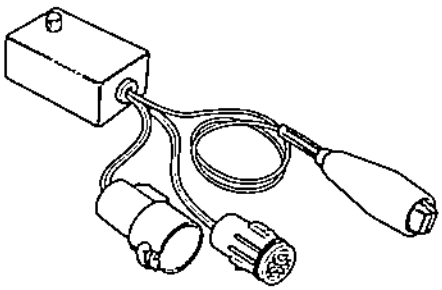
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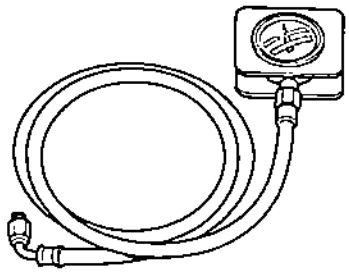
④



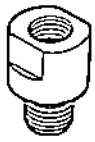
⑤



⑥



⑦

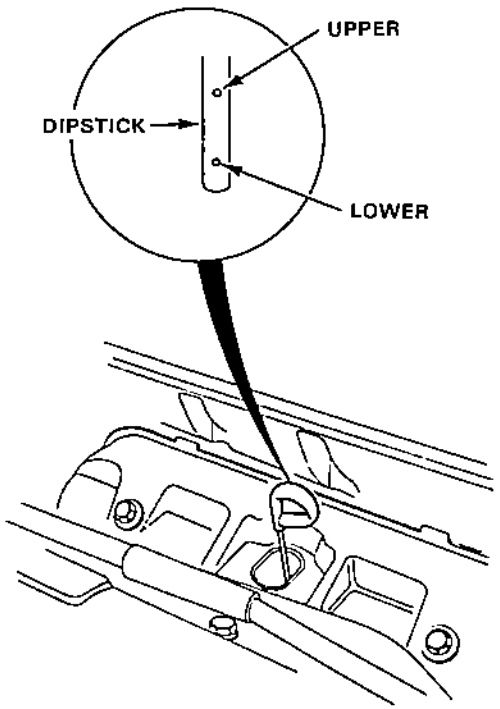


⑧

Engine Oil Level Inspection

1. Check engine oil with the engine off and the car parked on level ground.
2. Make certain that the oil level indicated on the dipstick is between the upper and lower marks.
3. If the level has dropped close to the lower mark, add oil until it reaches the upper mark.

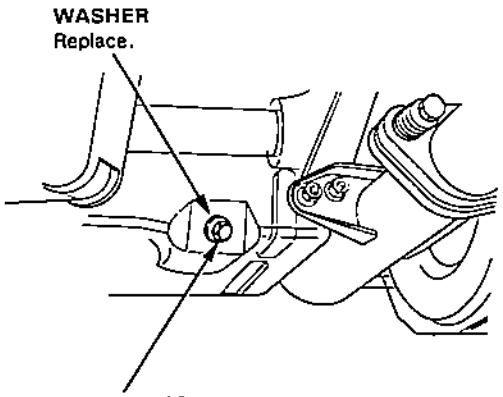
   CAUTION: Insert the dipstick carefully to avoid bending it.



Engine Oil Replacement

1. Warm up the engine.
2. Drain the engine oil.

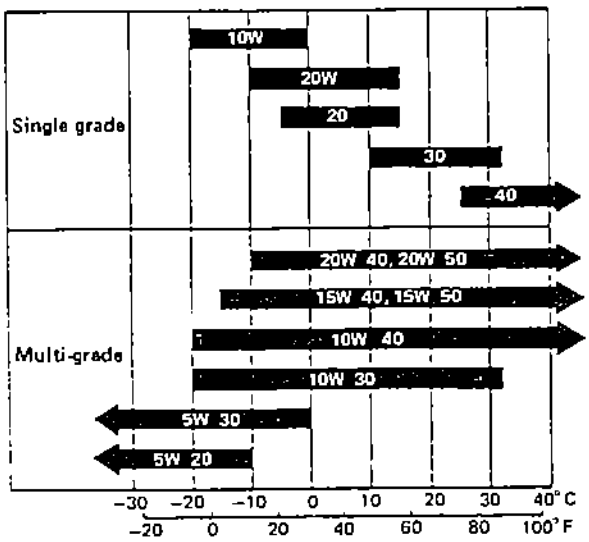
   NOTE: Remove the filler cap to speed draining.



3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

Capacity	4.8 ℓ (5.1 US qt, 4.2 Imp qt) for engine disassembly 4.0 ℓ (4.2 US qt, 3.5 Imp qt) for oil change
Change	Every 10,000 km (6,000 miles) or 6 months, which ever comes first.

Recommended Engine Oil
(SE, SF or SG Grade 10W-30 only)



Expected Ambient Temperature before next oil change

NOTE: Oil filter should be replaced at each oil change.

Oil Filter Replacement

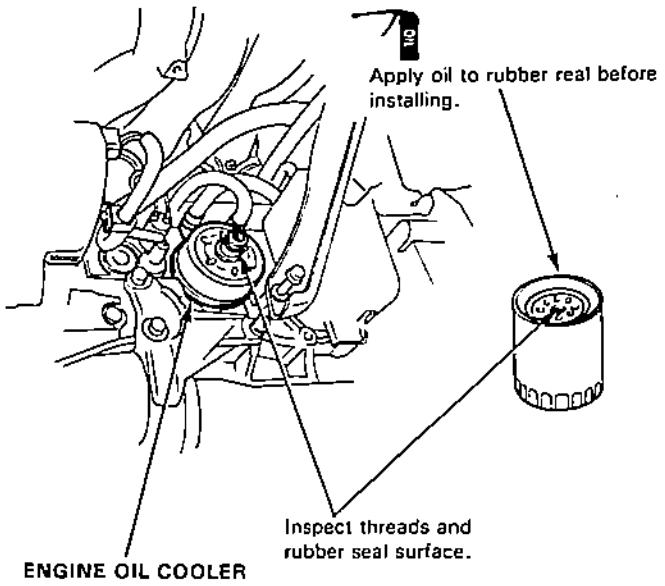
⚠WARNING After the engine has been run, the exhaust pipes will be hot; be careful when working around the exhaust mainfold.

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.

NOTE: Engine Oil and the filter should be changed together 10,000 km (6,000 miles) or 6 months, which ever comes first.

1. Remove the oil filter with the special oil filter socket.
2. Inspect the threads and rubber seal on the new filter. Wipe off the filter seat on the engine oil cooler and apply a light coat of oil to the filter rubber seal.

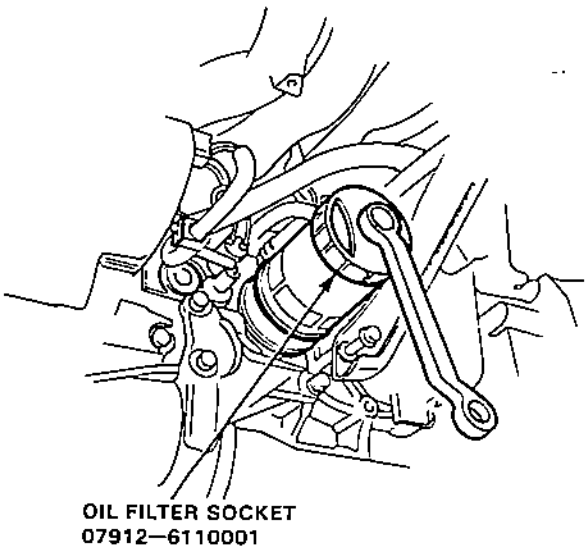
   NOTE: Use only filters with a built-in bypass system.



3. Install the oil filter by hand.
4. After the rubber seal is seated, tighten the oil filter clockwise with the special tool.

   Tighten: 7/8 turn clockwise.
   Tightening torque: 22 N·m (2.2 kg-m, 16 lb-ft)

   CAUTION: Installation other than the above procedure could result in serious engine defects due to oil leakage.

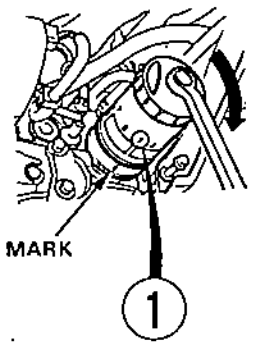


Eight numbers (1 to 8) are printed on the surface of the filter.

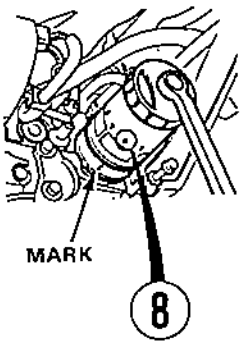
The following explains the procedure for tightening filters using these numbers.

1) Make a mark on the cylinder block under the number that shows at the bottom of the filter when the rubber seal is seated.

2) Tighten the filter by turning it clockwise seven numbers from the marked point. For example, if a mark is made under the number 2 when the rubber seal is seated, the filter should be tightened until the number 1 aligns with the marked point.



Number when rubber seal is seated.



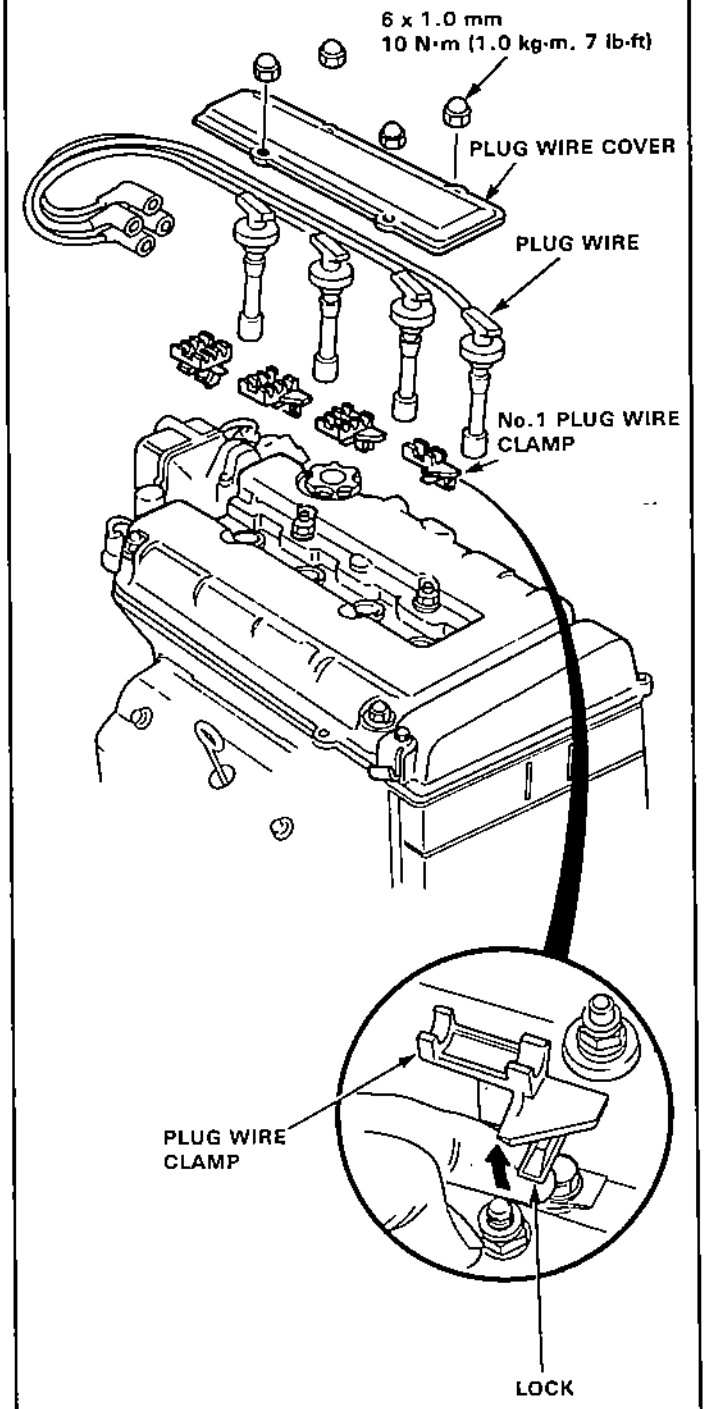
Number after tightening.

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

5. 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.

Spark Plug Inspection

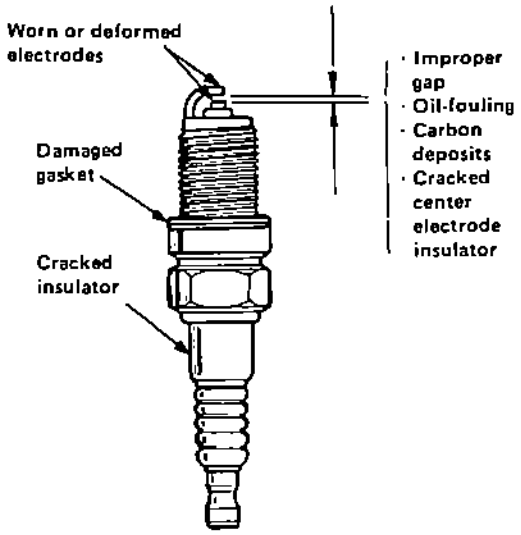
1. Remove the plug wire cover and the plug wires.
2. Remove the plug wire clamps while pulling up on the lock.



(cont'd)

Spark Plug Inspection (cont'd)

3. Inspect the electrodes and ceramic insulator for:



Burned or worn electrodes may be caused by:
- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

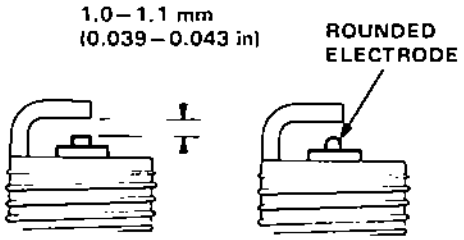
Fouled plug may be caused by:
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

4. Replace the plug if the center electrode is rounded as shown below:

Spark Plug:

CAUTION: Use specified plugs only.

NGK	BKR6E-N11 (standard) BKR7E-N11
ND	K20PR-L11 (standard) K22PR-L11



5. Adjust the gap with a suitable gapping tool.

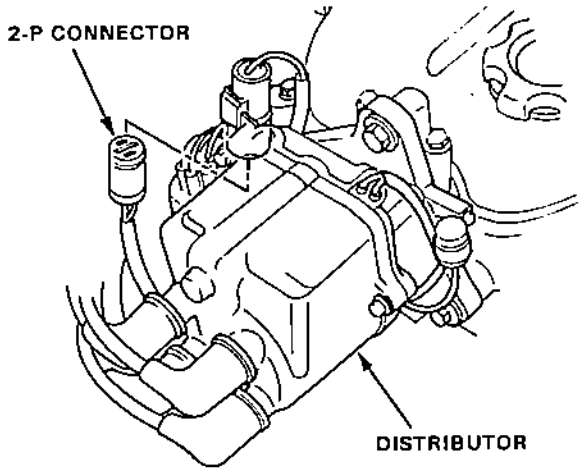
   Electrode Gap: 1.0–1.1 mm (0.039–0.043 in)

6. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

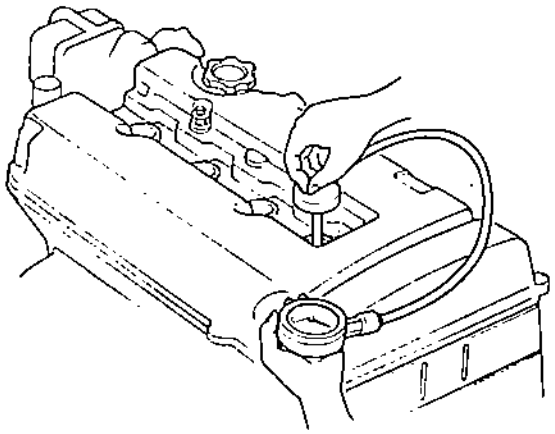
   NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Compression Pressure Inspection

1. Before inspection, run the engine until it warms up (radiator fan comes on).
2. Remove the plug wires (page 5-17).
3. Disconnect spark plugs (4).
4. Disconnect the 2-P connector (ignition coil primary lead) from the distributor.



5. Fit the compression gauge adapter into a plug hole.
   - Measure compression pressure at each cylinder.



Compression pressure:
Standard (new): 1,275 kPa (13.0 kg/cm², 185 psi) at 250 min⁻¹ (rpm)
Limit: 932 kPa (9.5 kg/cm², 135 psi) at 250 min⁻¹ (rpm)
Difference between cylinders: 169 kPa (2.0 kg/cm², 28 psi)

NOTE: Use a full charged battery.

6. If compression pressure is low, it is caused by wear or damage of piston rings or head gasket, and improper seated valves.
7. When the pressure is high, inspect the following item.
   - Accumulated carbon on the piston and the cylinder head.

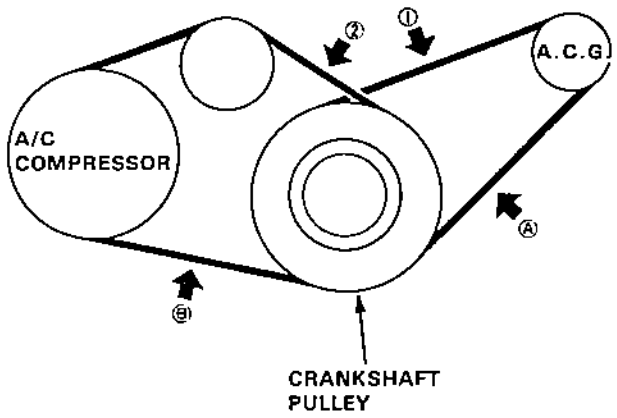
Drive Belts Inspection

Drive Belts Deflection:
(When applying a force of 98 N (10 kg, 22 lb))

	Used Belt	New Belt
①Alternator Belt	8.5–10.5 mm (0.33–0.41 in.)	5.5–7.5 mm (0.22–0.30 in.)
②A/C Compressor Belt	7.0–9.0 mm (0.28–0.35 in.)	4.5–6.5 mm (0.18–0.26 in.)

Measure with the belt tension gauge:

	Used Belt	New Belt
ⒶAlternator Belt	343–490 N (35–50 kg) (77–110 lb)	588–785 N (60–80 kg) (132–176 lb)
ⒷA/C Compressor Belt	343–490 N (35–50 kg) (77–110 lb)	539–735 N (55–75 kg) (121–165 lb)

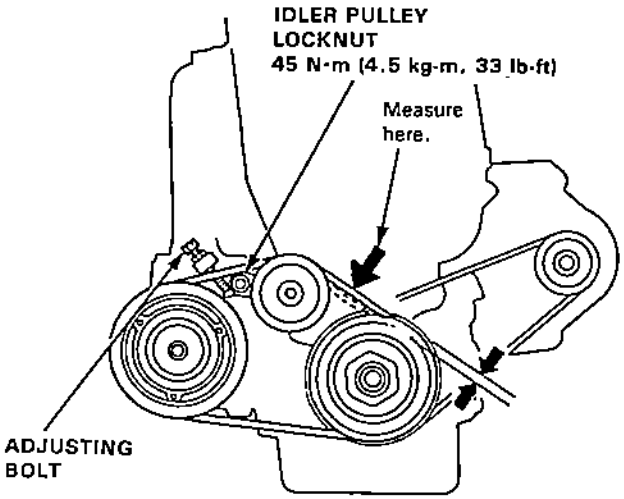


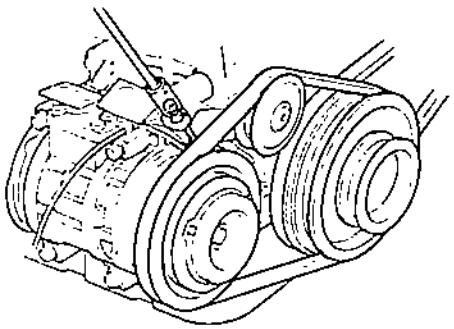
A/C Compressor Belt Adjustment

NOTE: If there are cracks or any damage evident on the belt, replace it with a new one.

1. Apply a force of 98 N (10 kg, 22 lb) and measure the deflection, between the A/C compressor idler pulley and the crankshaft pulley.

   Deflection: 7.0—9.0 mm (0.28—0.35 in.)
   NOTE: On a brand-new belt, the delflection should be 4.5—6.5 mm (0.18—0.26 in.) when first measured.

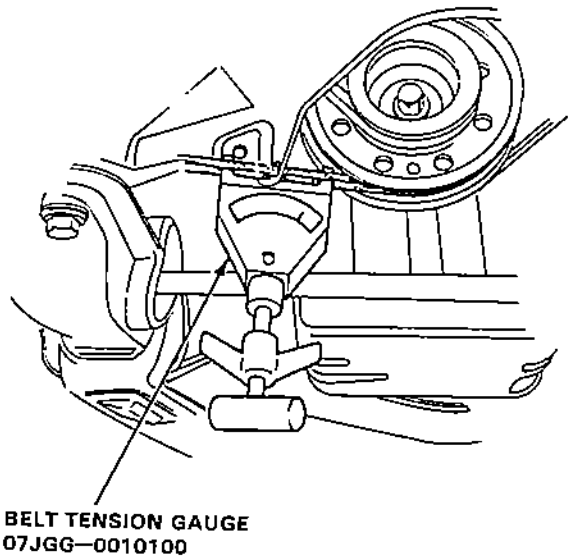




Measure with the belt tension gauge:
Attach the belt tension gauge to the belt and measure the tension of the belt.

Tension: 343—490 IN (35—50 kg, 77—110 lb)

NOTE:
- On a brand-new belt, the tension should be 539—735 N (55—75 kg, 121—165 lb) when first measured.
- See the instruction for the belt tension gauge.

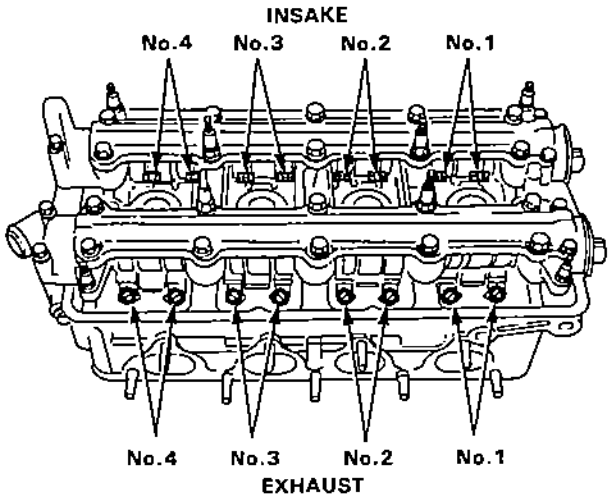


2. Loosen the idler pulley locknut.
3. Turn the adjusting bolt to get the proper belt tension, then retighten the bolt.
4. Recheck the defection of the belt.

Valve Clearance Adjustment

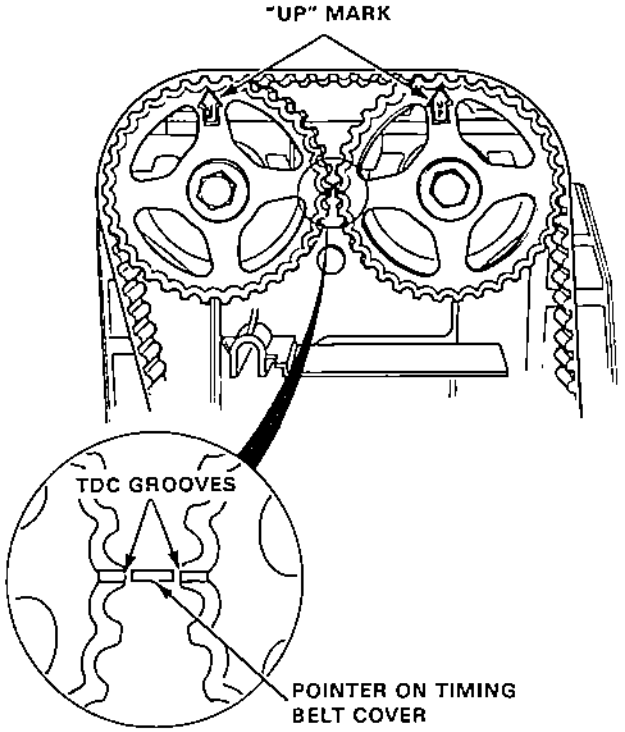
NOTE:
- Valves should be adjusted when the cylinder head temperature is less than 38 °C (100 °F).
  Adjustment is the same for both intake and exhaust valves.
- If the pulley bolt loosens while turning the crank, retorque it to 120 N·m (12.0 kg-m, 87 lb-ft).

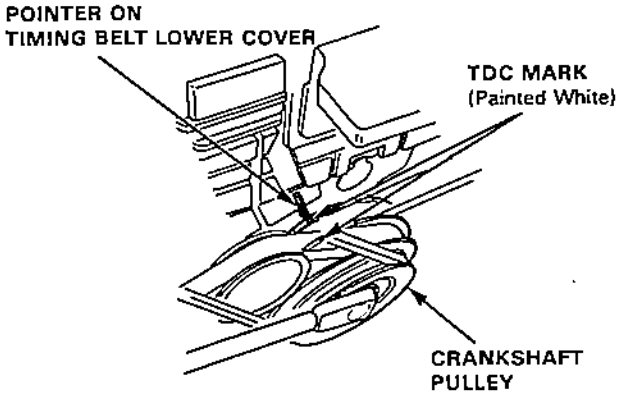
1. Remove valve cover.



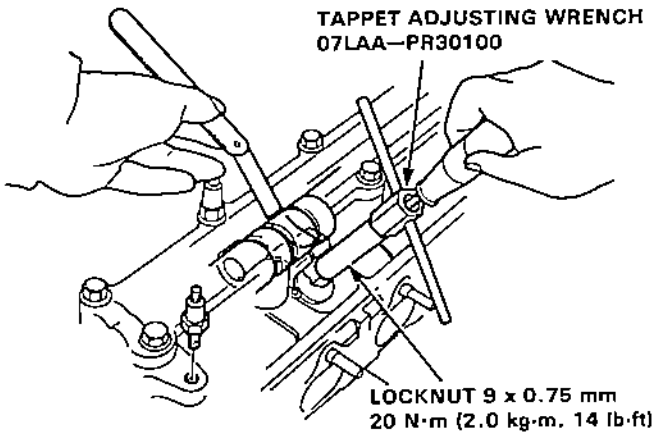
2. Set the No.1 piston at TDC. "UP" mark on the pulley should be at the top, and the TDC grooves on the pulley should align with the pointer on timing belt back cover. TDC grooves (painted white) on the crankshaft pulley should align with pointer on the timing belt lower cover.

Number 1 Piston at TDC





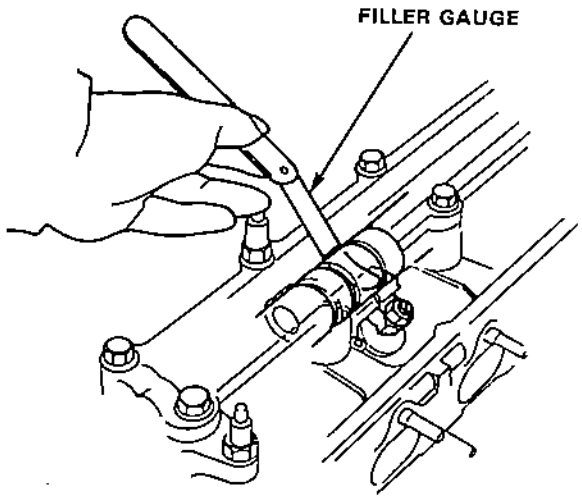
3. Adjust valve clearance on No.1 cylinder.
   Intake: 0.15—0.19 mm (0.006—0.007 in.)
   Exhaust: 0.17—0.21 mm (0.007—0.008 in.)
4. Loosen the locknut and turn the adjusting screw until feeler gauge slides back and forth with a slight amount of drag.



(cont'd)

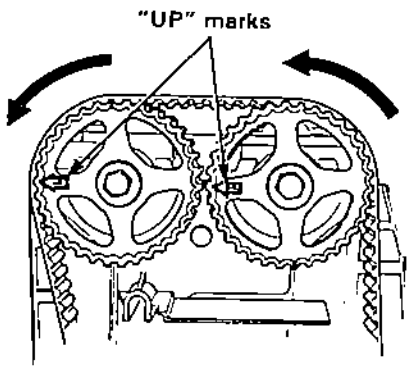
Valve Clearance Adjustment (cont'd)

5. Tighten the locknut and recheck clearance again. Repeat adjustment if necessary.



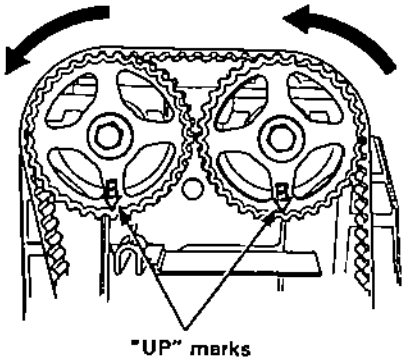
6. Rotate the crankshaft 180° counterclockwise (campulley turns 90°). The "UP" mark should be on the exhaust side. Adjust valve on No.3 cylinder.

Number 3 piston at TDC



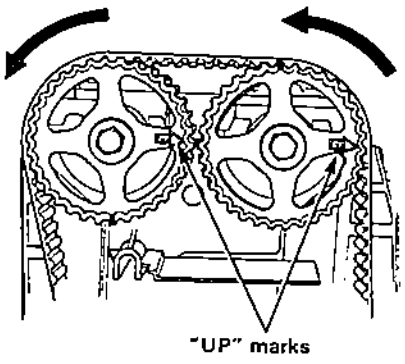
7. Rotate the crankshaft 180° counterclockwise to bring No.4 piston to TDC. Both TDC grooves are once again visible. Adjust valves on No.4 cylinder.

Number. 4 piston at TDC



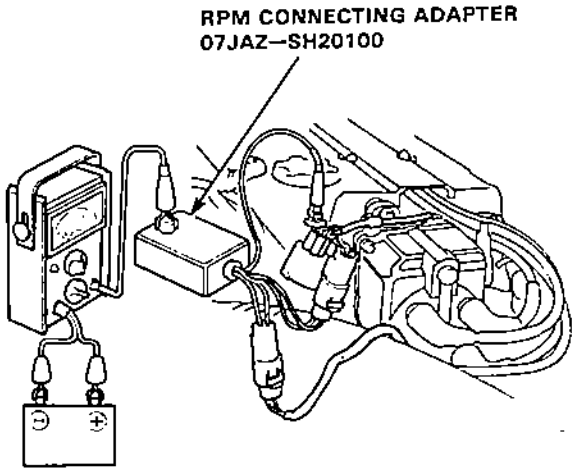
8. Rotate the crankshaft 180° counterclockwise to bring No.2 piston TDC. The "UP" mark should be on the intake side. Adjust valves on No.2 cylinder.

Number 2 piston at TDC.

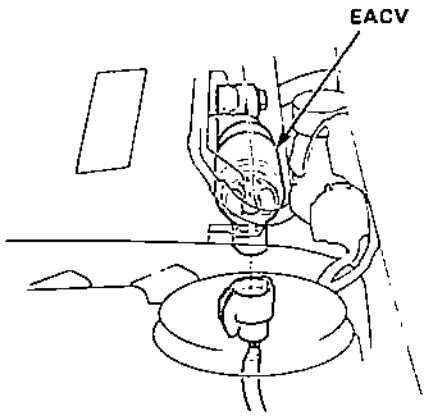


Idle Speed Inspection/Adjustment

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).
2. Connect a tachometer.



3. Disconnect the 2P connector from the EACV.

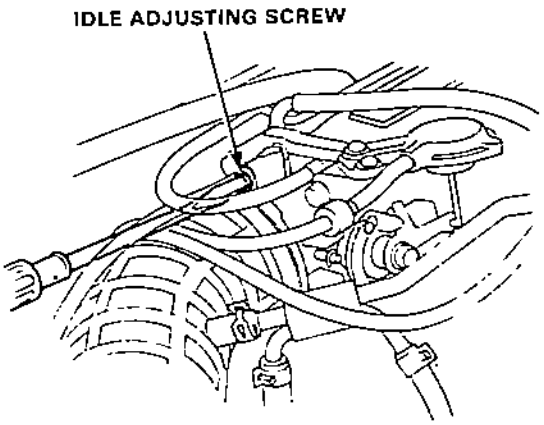


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be: 650±50 min^{-1} (rpm)

   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-78).



5. Turn the ignition switch OFF.
6. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.
7. Restart and idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating for one minute, then check the idle speed.

   Idle speed should be: 750±50 min^{-1} (rpm)

8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle speed should be: 780±50 min^{-1} (rpm)
9. Idle the engine for one minute with heater fan switch at HI and air conditioner on, then check the idle speed.

   Idle speed should be: 810±50 min^{-1} (rpm)

   NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-45.

Tailpipe Emission Inspection

Inspection

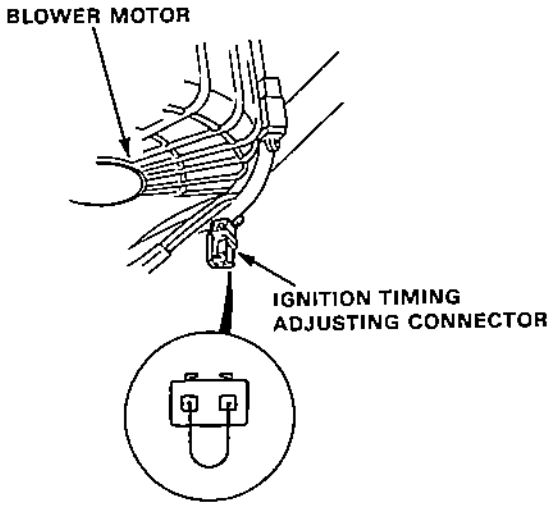
⚠WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect a tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-59).
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.

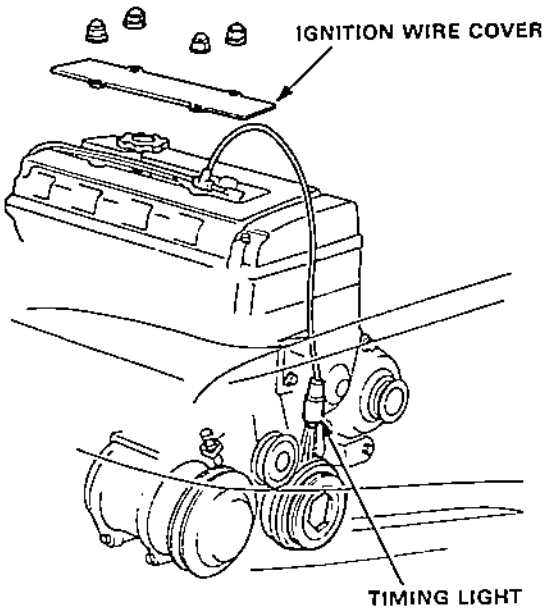
   CO meter should indicate 0.1 % maximum.

Ignition Timing Inspection and Setting

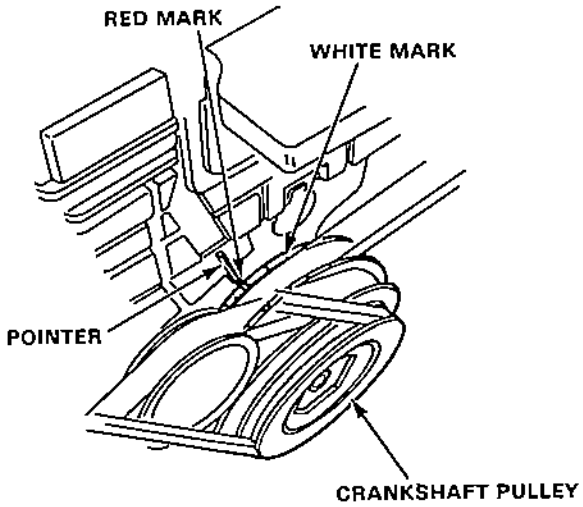
1. Start the engine and allow it to warm up (cooling fan comes on).
2. Connect the BRN and GRN/WHT terminals of the ignition timing adjusting connector (BLU) with a jumper wire.
   NOTE: L.H. drive type shown, R.H. drive type is symmetrical to L.H. drive type.



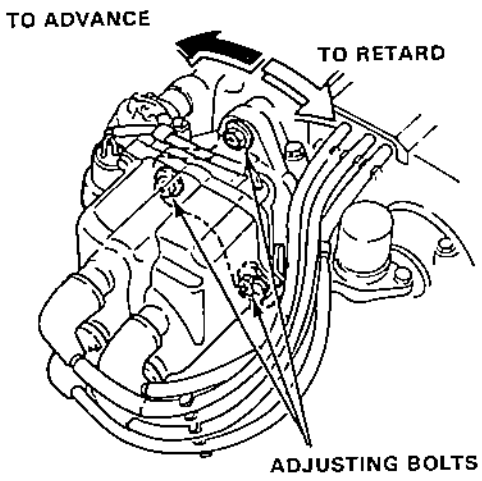
3. Remove the ignition wire cover. Then connect a timing light to the No. 1 ignition wire; while the engine idles, point the light toward the pointer on the timing belt cover.
   NOTE: Do not damage the cover when removing the nuts.



4. Adjust ignition timing, if necessary, to the following specifications:
   Ignition Timing:
   15° ± 2° BTDC (RED) at 750 ± 50 min^{-1} (rpm) in neutral



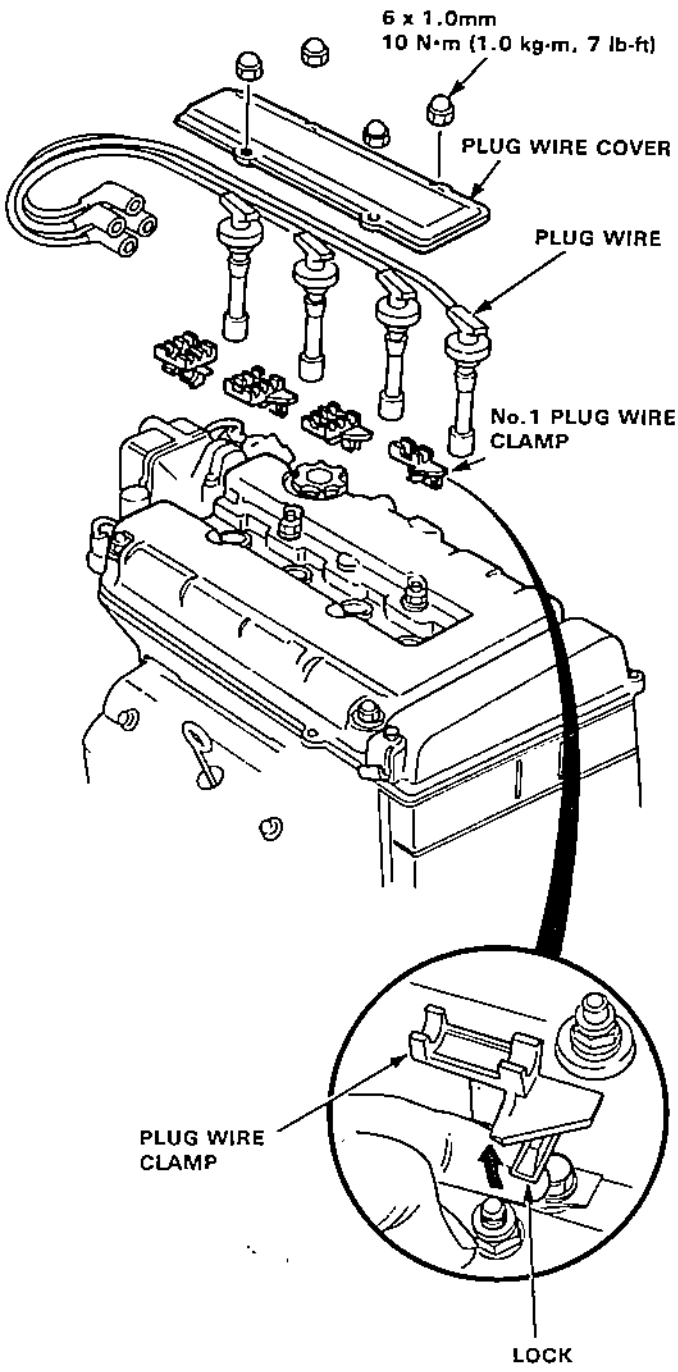
5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counter clockwise to advance the timing, or clockwise to retard the timing.



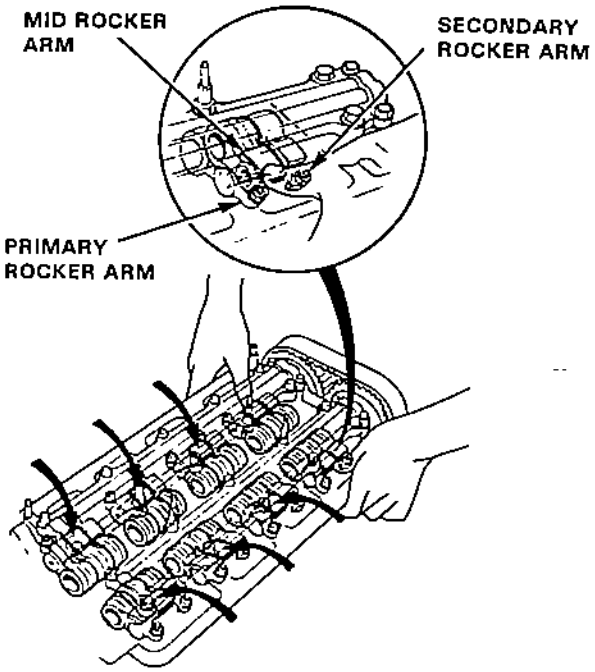
6. Tighten the adjusting bolts recheck the timing.
7. Remove the jumper wire from the ignition timing adjusting connector (BLU).

Manual Inspection of Rocker Arms

1. Set the No.1 cylinder at TDC.
2. Remove the plug wire cover and the plug wires.
3. Remove the plug wire clamps while pulling up on the lock.



4. Remove the valve cover.
5. Push the mid rocker arm on the No.1 cylinder manualy.
6. Check that the mid rocker arm moves independently of the primary and secondary rocker arms.

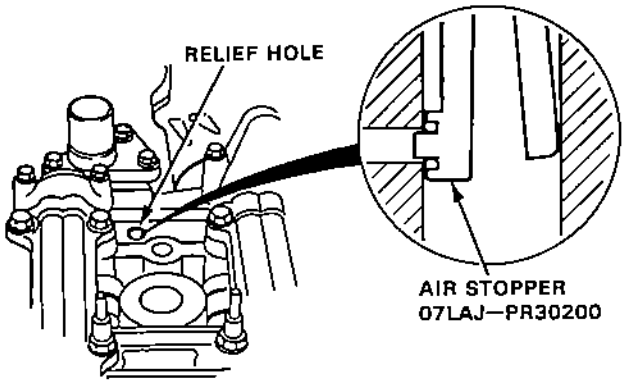


7. Check the mid rocker arm of each cylinder at TDC.
   - If the mid rocker arm does not move, remove the mid primary and secondary rocker arms as an assembly and check that the pistons in the mid and primary rocker arms move smoothly.
   - Replace the rocker arms as an assembly if there is any abnormality.

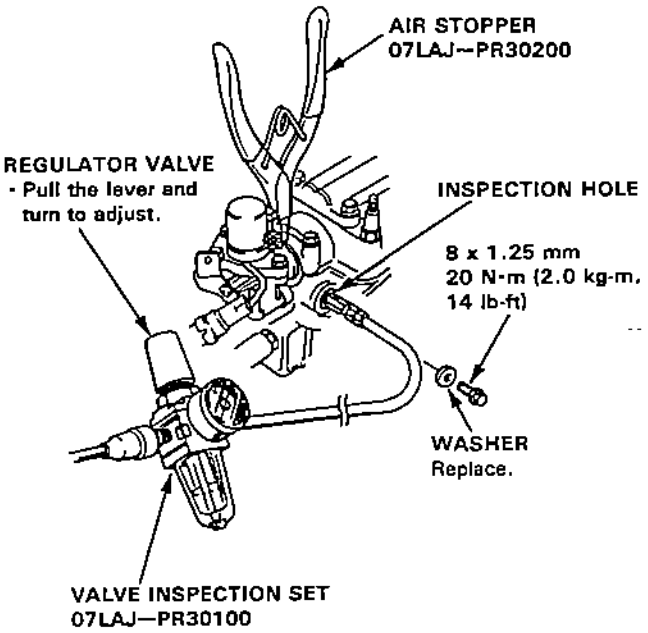
Rocker Arm Inspection Using Special Tools

CAUTION:
- Before using the special tool (Valve Inspection Set), make sure that the air pressure gauge on the air compressor indicates over 245 kPa (2.5 kg/cm², 36 psi).
- Inspect the valve clearance before rocker arm inspection.
- Cover the timing belt with shop towel to prevent the belt.
- Check the mid rocker arm of each cylinder at TDC.

1. Remove the valve cover.
2. Plug the relief hole with the special tool (Air Stopper).



3. Remove the bolt and washer from the inspection hole and connect the special tool (Valve Inspection Set).



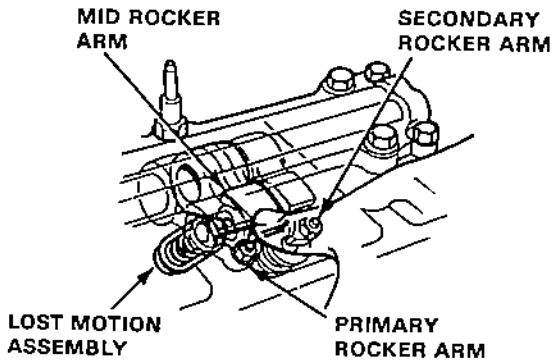
(cont'd)

Rocker Arm Inspection Using Special Tools (cont'd)

4. Apply specified air pressure to the rocker arm pistons after loosening the regulator valve on the valve inspection set.

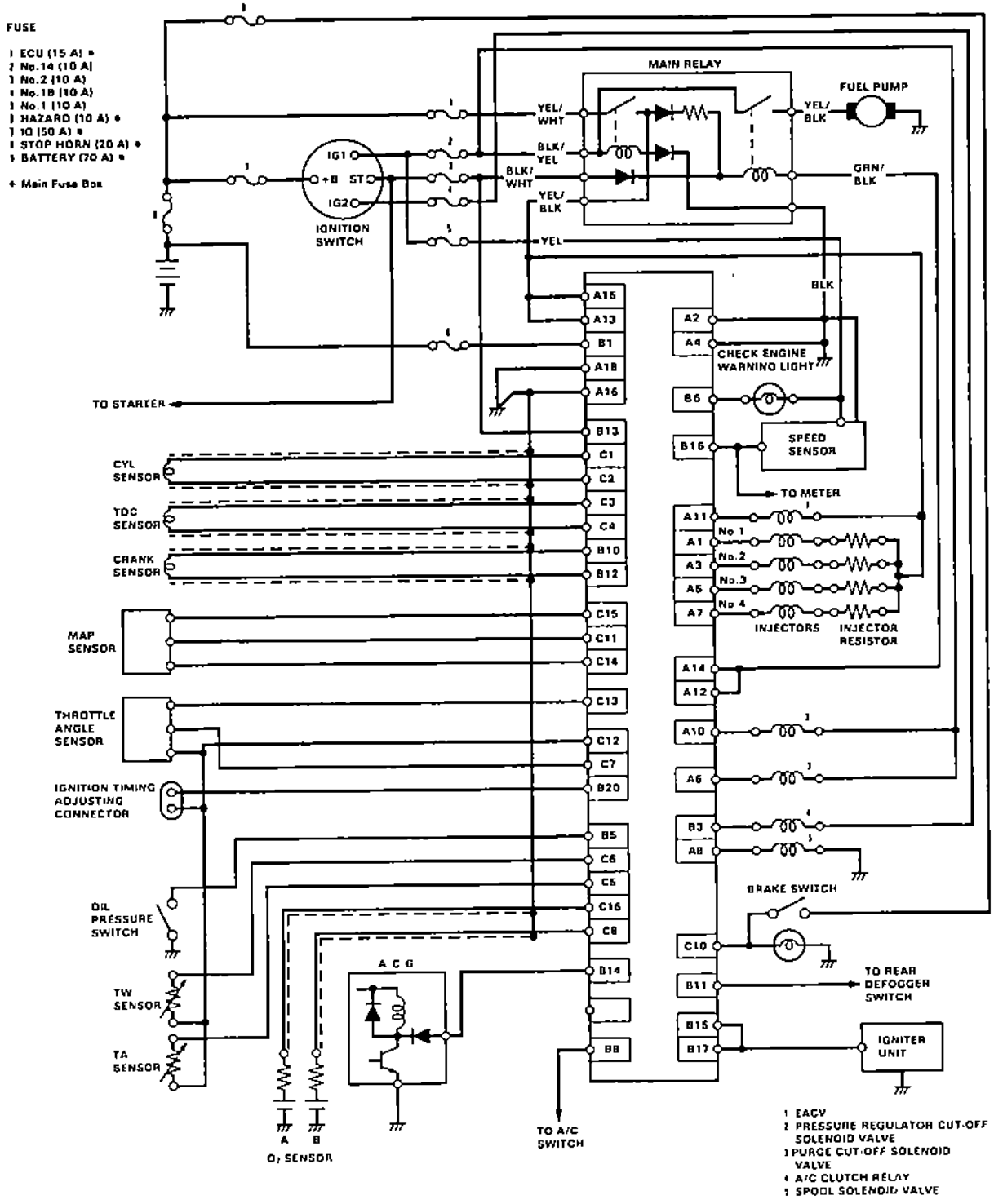
   Specified Air Pressure:
   245 kPa (2.5 kg/cm², 36 psi)
   —490 kPa (5.0 kg/cm², 71 psi)

5. Make sure that the primary and secondary rocker arms are mechanically connected by pistons and that the mid rocker arms do not move when pushed manually.

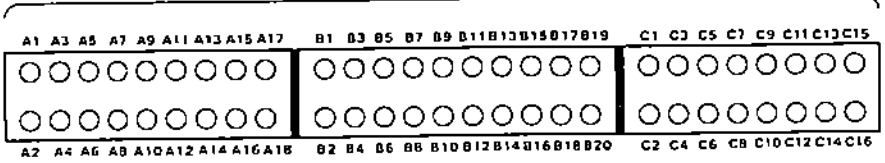


   - If the mid rocker arms indenpendently of the primary and secondary rocker arms, replace the rocker arms as a set.

6. Remove the special tools.
7. Check for smooth operation of the lost motion assembly. It is compressed slightly when the mid rocker arm is lightly pushed and compressed deeply when the mid rocker arm is strongly pushed.
   - Replace the lost motion assembly if it does not move smoothly.
8. After inspection, check that the ECU does not come on.



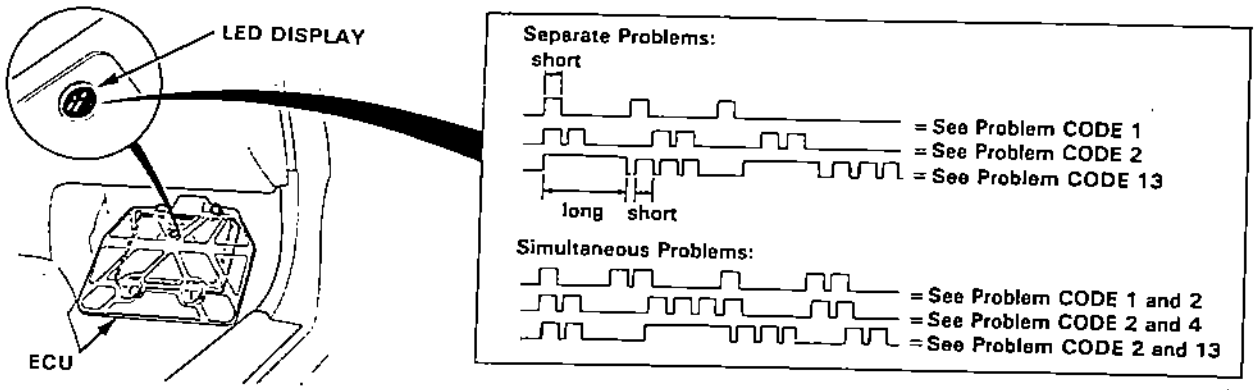
TERMINAL LOCATION



Troubleshooting —— Self-diagnostic Procedure

When the Check Engine warning light has been reported on, turn the ignition on, pull down the passenger's side carpet from under the dashboard and observe the LED on the top of the ECU. The LED indicates a system failure code by blinking frequency. The ECU LED can indicate any number of simultaneous component problems by blinking separate codes, one after another. Problem codes 1 through 9 are indicated by individual short blinks. Problem codes 10 through 44 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 problem code.

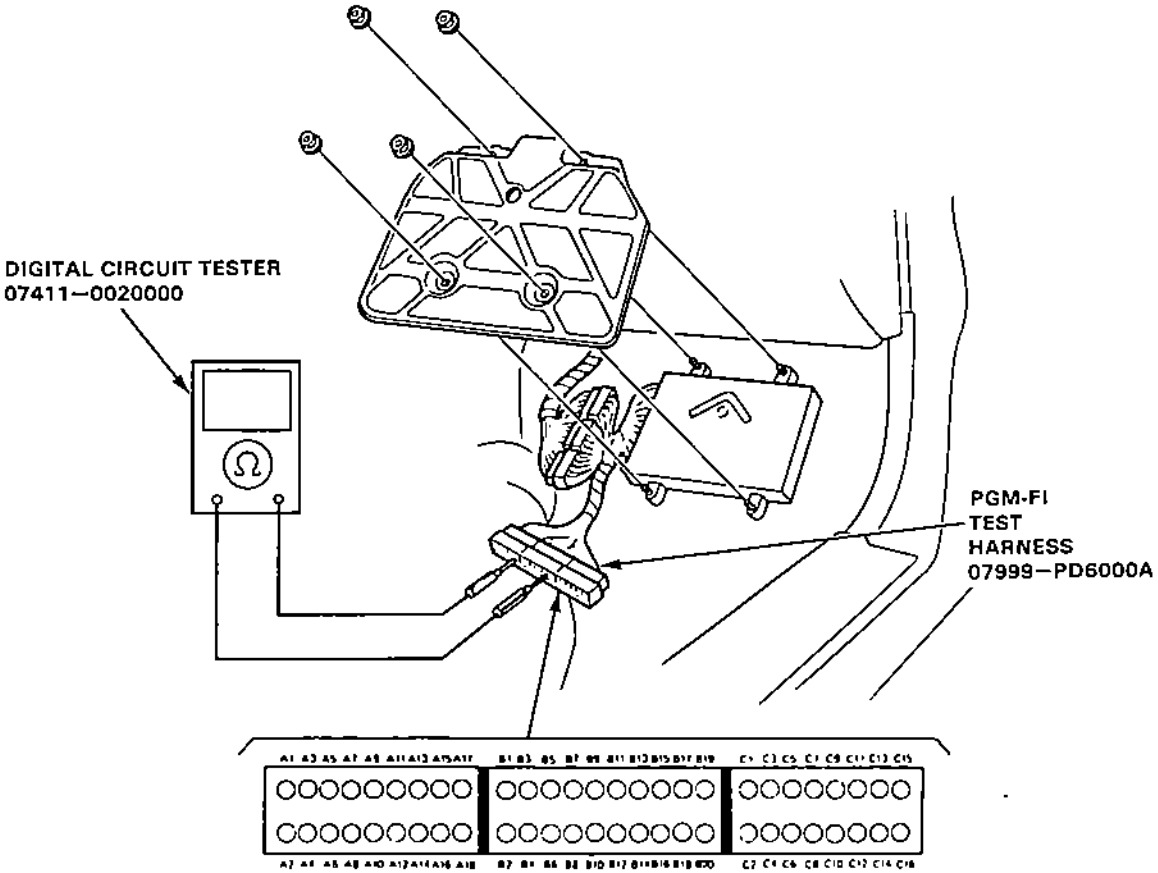
NOTE: Information on this page is for LH and RH models.



SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-15
1, 2	OXYGEN CONTENT	6-18
3	MANIFOLD ABSOLUTE PRESSURE	6-22
5		6-26
4	CRANK ANGLE	6-28
6	COOLANT TEMPERATURE	6-34
7	THROTTLE ANGLE	6-36
8	TDC POSITION	6-30
9	No.1 CYLINDER POSITION	6-32
10	INTAKE AIR TEMPERATURE	6-38
13	ATMOSPHERIC PRESSURE	6-40
14	ELECTRONIC AIR CONTROL	6-47
15	IGNITION OUTPUT SIGNAL	6-42
17	VEHICLE SPEED SENSOR	6-44
21	SPOOL SOLENOID VALVE	5-32
22	OIL PRESSURE SWITCH	5-34
43, 44	FUEL SUPPLY SYSTEM (KX, KS, KG)	6-20

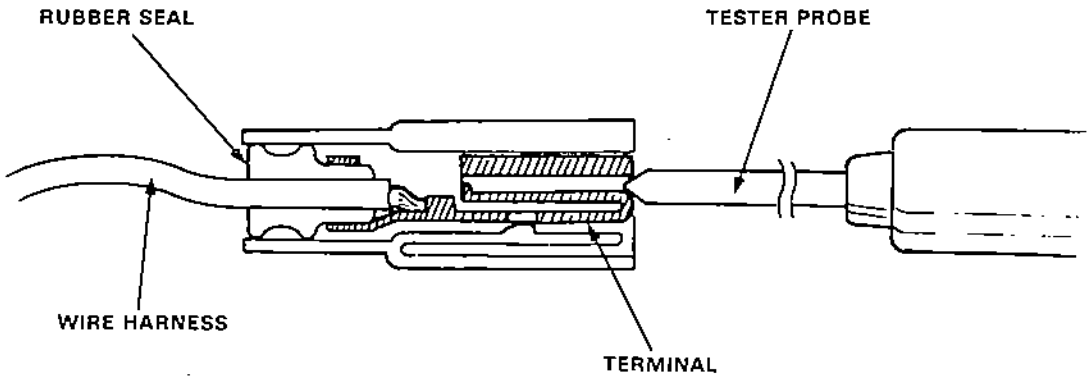
If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking unusual codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.
The Check Engine warning light and ECU LED may come on, indicating a system problem, when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.
If the Check Engine warning light is on and LED stays on, replace the ECU.

If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure described for the appropriate code(s) listed on the following pages.
NOTE: Information on this page is for LH and RH models.



TERMINAL LOCATION

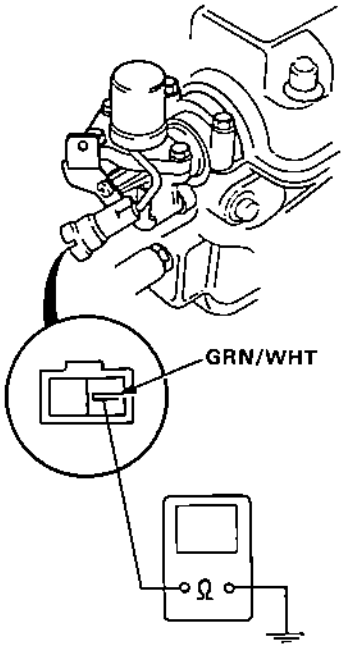
CAUTION:
- Puncturing the insulation on a wire can cause poor or intermittent electrical connections.
- For testing at connectors other than the PGM-FI test harness, bring the tester probe into contact with the terminal from the connector side of wire harness connectors in the engine compartment. For female connectors, just touch lightly with the tester probe and do not insert the probe.



Troubleshooting Flowchart —— Spool Valve

(21) Self-diagnosis LED indicates code 21: A problem in the Spool Valve circuit.

Disconnect the 2P connector from the spool valve.



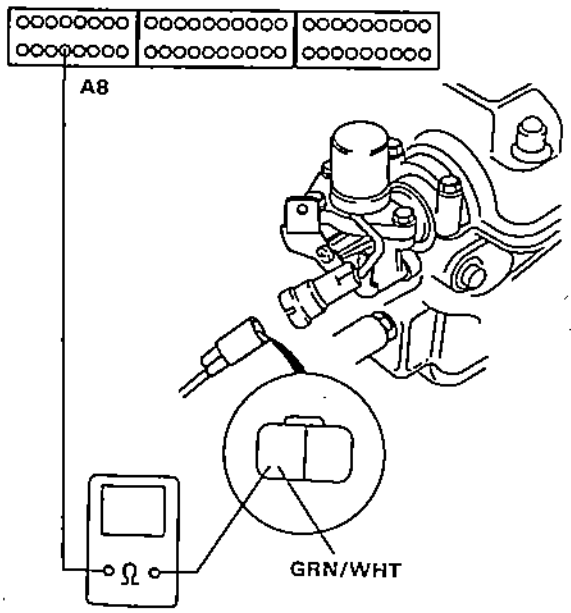
Check for continuity between GRN/WHT terminal and body ground.

Is there 14—30 Ω ?

NO → Replace the spool solenoid valve.

YES

Connect the ECU test harness.



Check for continuity between GRN/WHT terminal and A8 terminal.

Does continuity exist ?

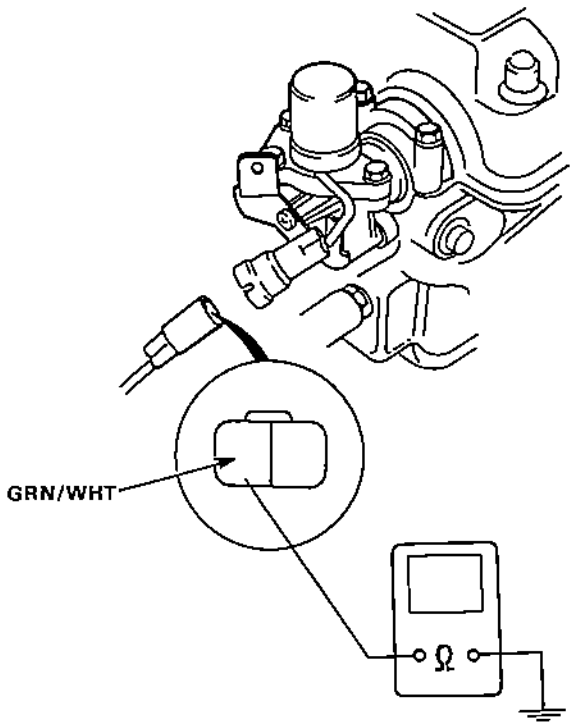
NO → Repair open in GRN/WHT wire between ECU and spool valve connector.

YES

(To page 5-33)

(From page 5-32)

Check for continuity between GRN/WHT terminal (harness side) and body ground.



Does continuity exist ?

YES → Repair short in GRN/WHT wire between ECU and spool valve connector.

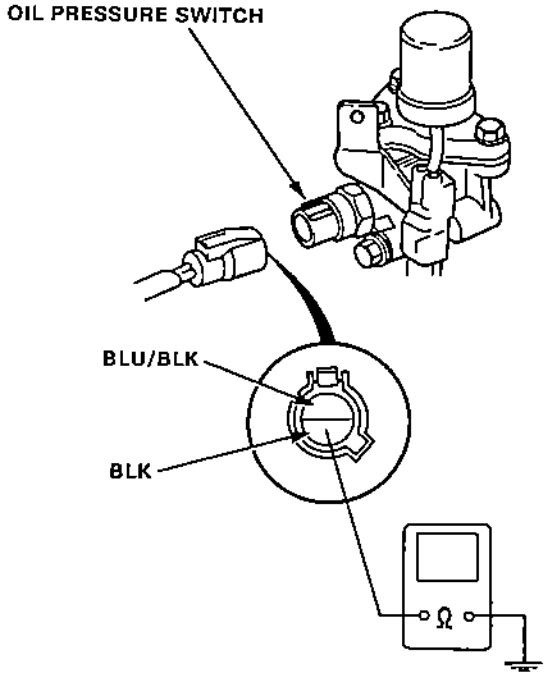
NO

Substitute a known-good ECU and recheck If symptom/indication goes away replace the original ECU.

Troubleshooting Flowchart —— Oil Pressure Switch

(22) Self-diagnosis LED indicates code 22: A problem Oil Pressure Switch circuit.

Disconnect the 2P connector from the oil pressure switch.



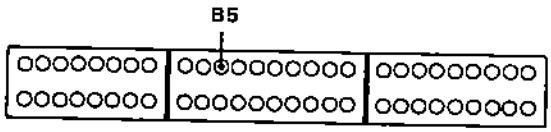
Check for continuity between BLK terminal and body ground.

Does continuity exist ?

NO → Repair open in BLK wire between 2P connector and body ground.

YES

Connect the ECU test harness.



Check for continuity between BLU/BLK terminal and B5 terminal.

Does continuity exist ?

NO → Repair open in BLU/BLK wire between ECU and 2P connector.

YES

(To page 5-35)

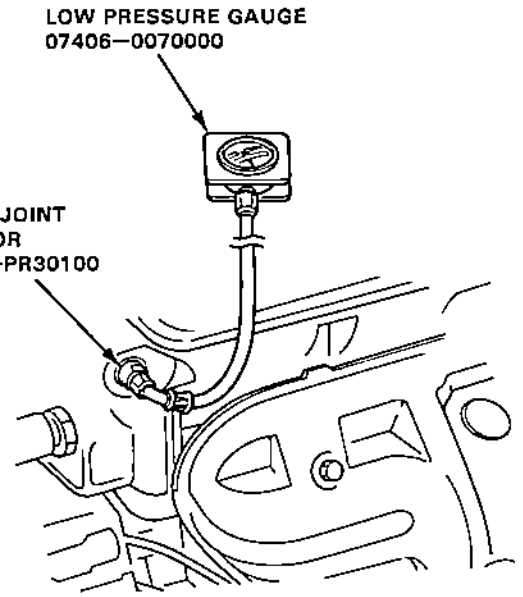
(From page 5-34)

Remove 10 mm sealing bolt and connect oil pressure gauge (for AT oil pressure test).

Connect a tachometer (page 5-23).

Start the engine and warm it up to normal operating temperature.

Check oil pressure at engine speeds of 1,000 min^{-1} (rpm), 3,000 min^{-1} (rpm) and 5,000 min^{-1} (rpm).



NOTE:
Keep measuring time as short as possible because engine is running with no load (within one minute).

Is pressure below 49 kPa (0.5 kg/cm^2, 7 psi) ?

NO → Inspect the spool valve.

YES

Check for continuity between the 2 terminals on the oil pressure switch.

Does continuity exist ?

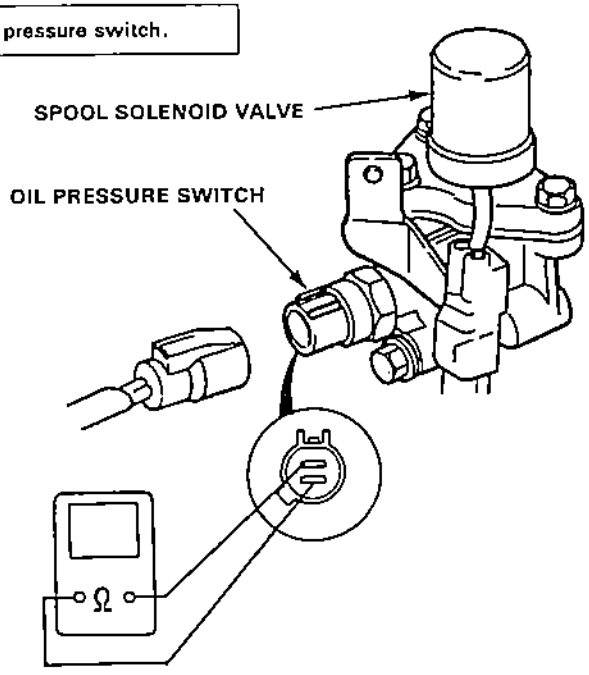
NO → Replace oil pressure switch.

YES

Disconnect the 2P connector from the spool solenoid valve.

Attach the battery positive terminal to the GRN/WHT terminal.

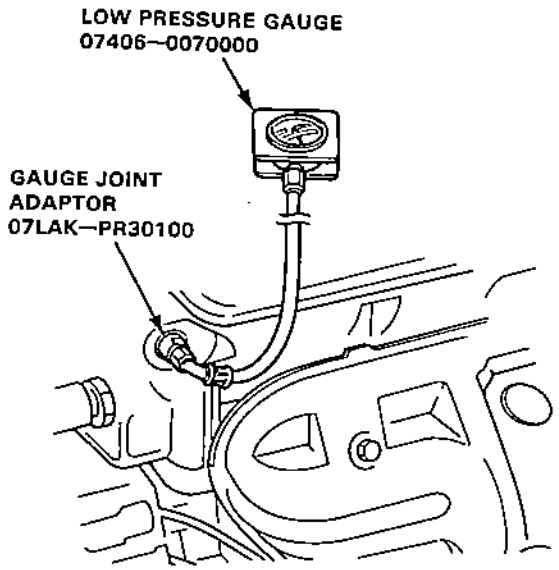
(To pae 5-36)



Troubleshooting Flowchart — Oil Pressure Switch (cont'd)

(From page 5-35)

Start the engine and check oil pressure at engine speeds of 5,000 min^{-1} (rpm).



NOTE:
Keep measuring time as short as possible because engine is running with no load (within one minute).

Is pressure above 392 kPa (4 kg/cm^2, 57 psi) ?

NO → Inspect the spool valve.

YES

Check for continuity between the 2 terminals on the oil pressure switch under above condition.

Does continuity exist ?

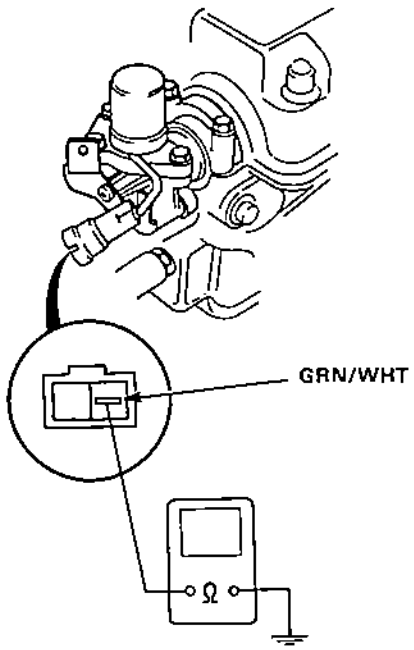
NO → Replace oil pressure switch.

YES

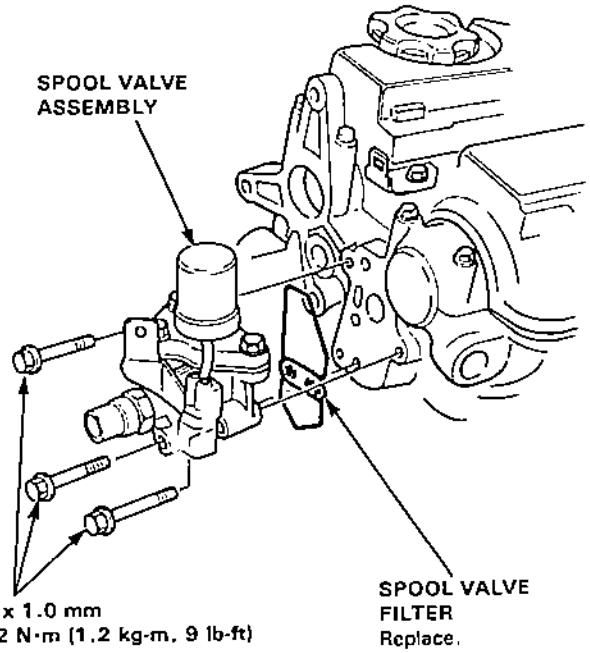
Substitute a known-good ECU and recheck. If symptom/indication goes away replace the original ECU.

Spool Valve Inspection

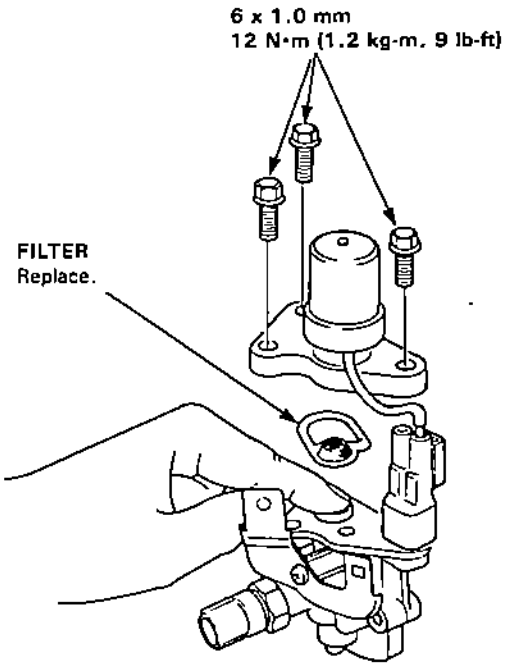
1. Disconnect the 2P connector from the spool solenoid valve.
2. Measure resistance between the GRN/WHT terminal and body ground.
   Resistance: approx 14-30 ohms



3. If the resistance is within specifications, remove the spool valve assembly from the cylinder head, and check the spool valve filter for clogging.
   - If there is clogging, replace the engine oil filter and the engine oil.



4. If filters are normal, push the spool valve with the finger and check its movement.
   - If spool valve is normal, check the engine oil pressure.



Timing Belt

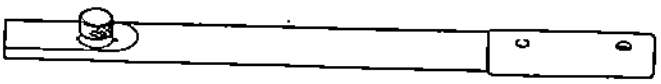
Special Tools 5–40
Illustrated Index.....5–41
Inspection 5–42
Tension Adjustment.....5–42
Replacement 5–43
Positioning Crankshaft
Before Installing Timing Belt 5–45

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB–0010000	Crank Pulley Holder Set	1	
①-1	07JAA–0010200	Socket Wrench 19 mm	1	
①-2	07JAB–0010200	Handle	1	
②	07JAB–0010400	Pulley Holder Attachment HEX 50 mm	1	
③	07744–0010400	Pin Driver, 5.0 mm	2	



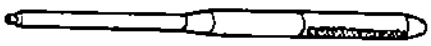
①-1



①-2



②

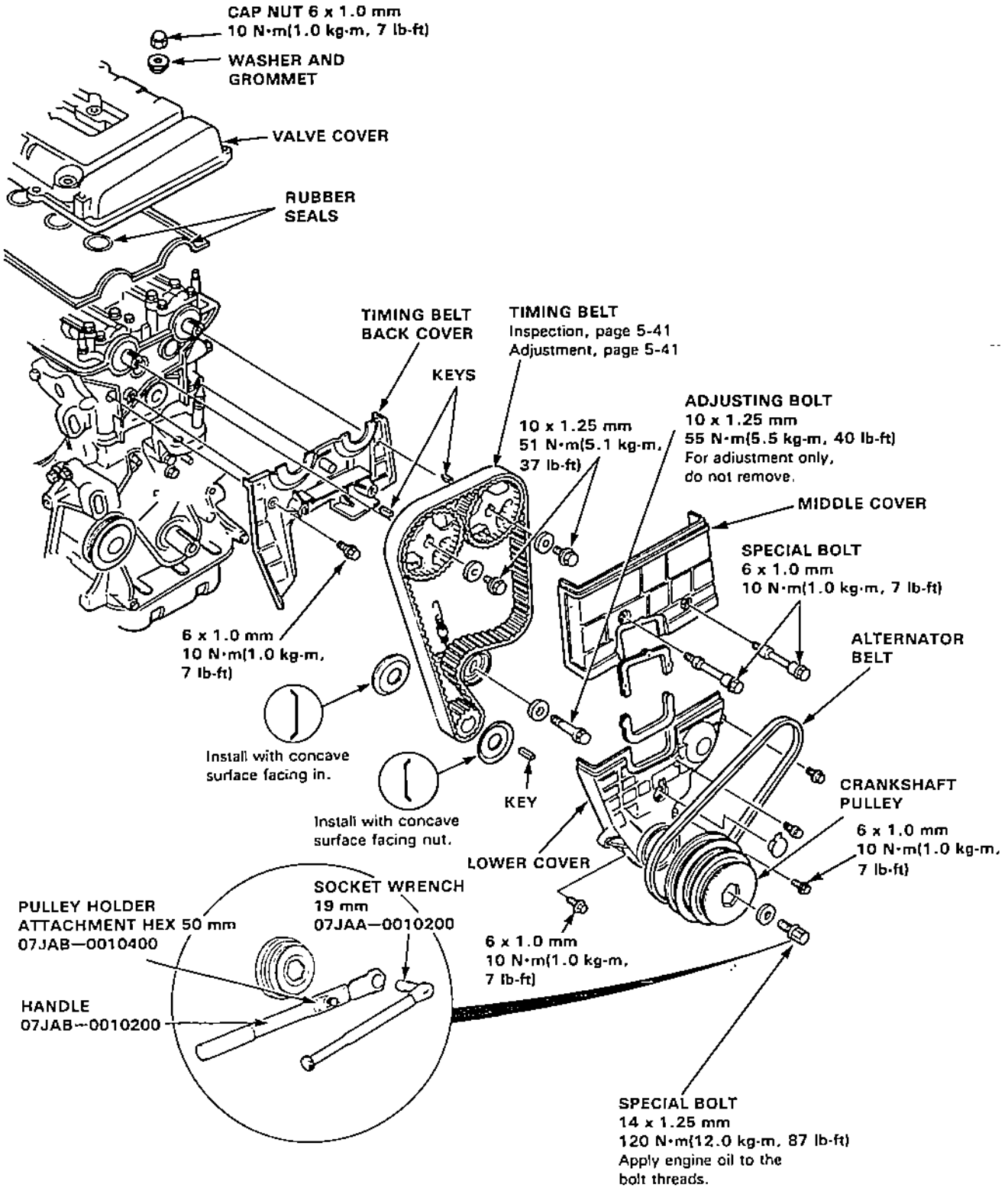


③

Timing Belt

Illustrated Index

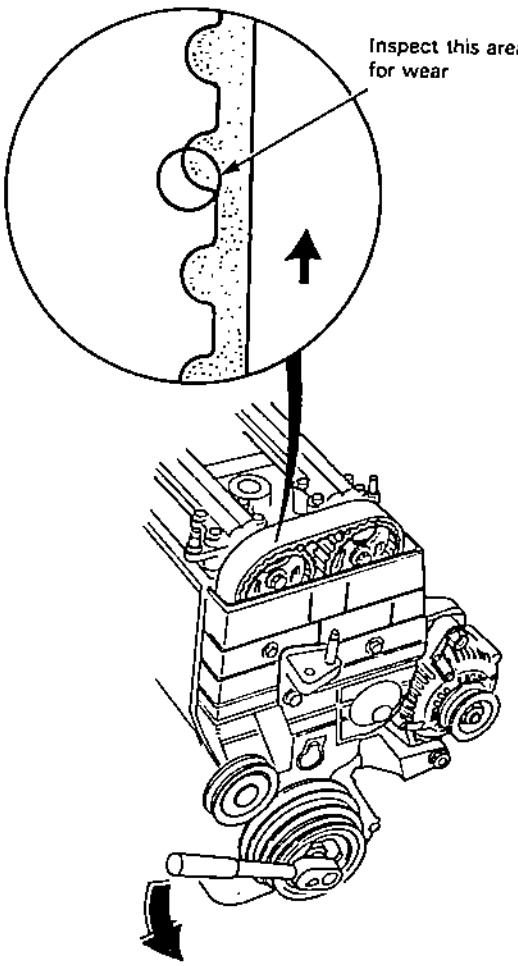
NOTE:
- Refer to page 5-45 for positioning crank and pulley before installing belt.
- Refer to base manual for altermator belt adjustment.
- Refer to page 5-20 for A/C compressor belt adjustment.
- Mark direction of rotation before removing.



Timing Belt

Inspection

1. Remove the ignition wire cover and the ignition wire (page 5-17).
2. Remove the valve cover (page 5-41).
3. Inspect the thming belt for crack and soaking.
   NOTE:
   - Replace the belt if oil soaked.
   - Remove any oil sorvent that gets on the belt.



Rotate pulley and inspect belt

4. If the pulley bolt loosens while turning the crank, retorque it to 120 N·m(12.0 kg-m, 87 lb-ft).

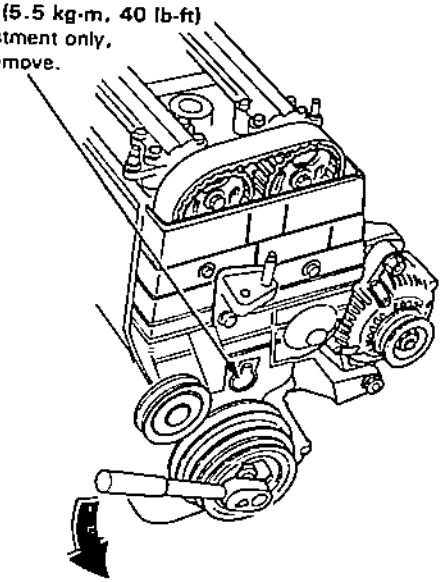
Tension Adjustment

CAUTION: Always adjust timing belt tension with the engine cold.

NOTE: Tensioner is spring-loaded to apply proper tension to the belt automatically after making the following adjustment.

1. Remove the ignition wire cover and the ignithon wire (page 5-17).
2. Remove the valve cover (page 5-41).
3. Set the No.1 piston at TDC (page 5-45).
3. Loosen the adjusting bolt.

ADJUSTING BOLT
10 x 1.25 mm
55 N·m (5.5 kg-m, 40 lb-ft)
For adjustment only, do not remove.



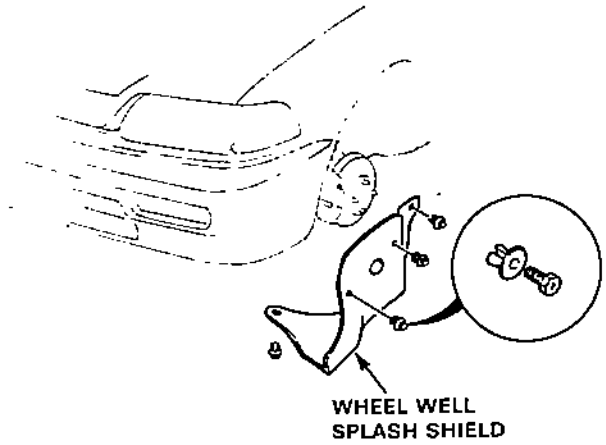
Direction of rotation.

5. Rotate the crankshaft countercrockwise 3-teeth on the crankshaft pulley to create tension on the timing belt.
6. Tighten the adjusting bolt.
7. If the pulley bolt loosens while turning the crank, retorque it to 120 N·m(12.0 kg-m, 87 lb-ft).

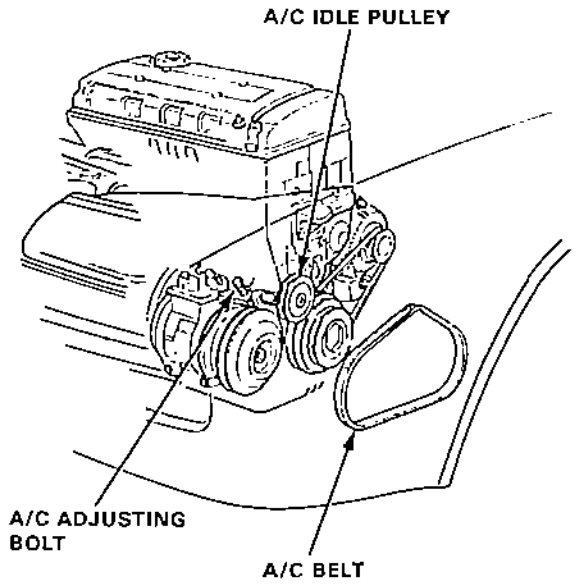
Replacement

NOTE:
- Set the No.1 piston at TDC (page 5-45) before remove the timing belt.
- Inspect the water pump (page 5-77) after remove the timing belt.

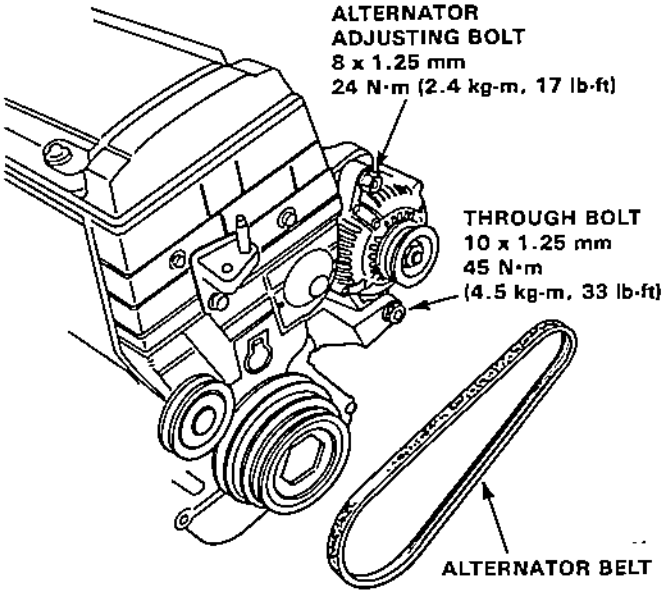
1. Remove the wheel well splash shield.



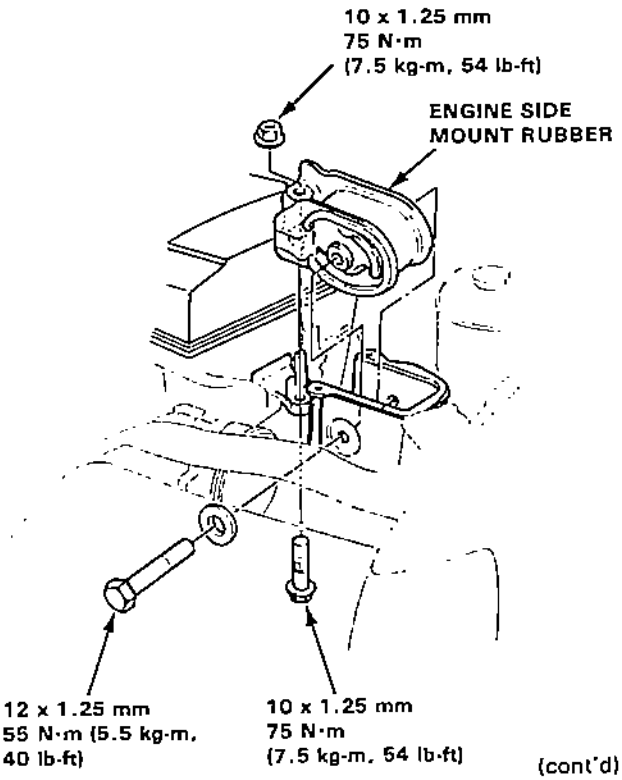
2. Loosen the air conditioner (A/C) adjusting bolt and idel pulley bolt, then remove the A/C belt.



3. Loosen the alternator adjusting bolt and through bolt, then remove the belt.



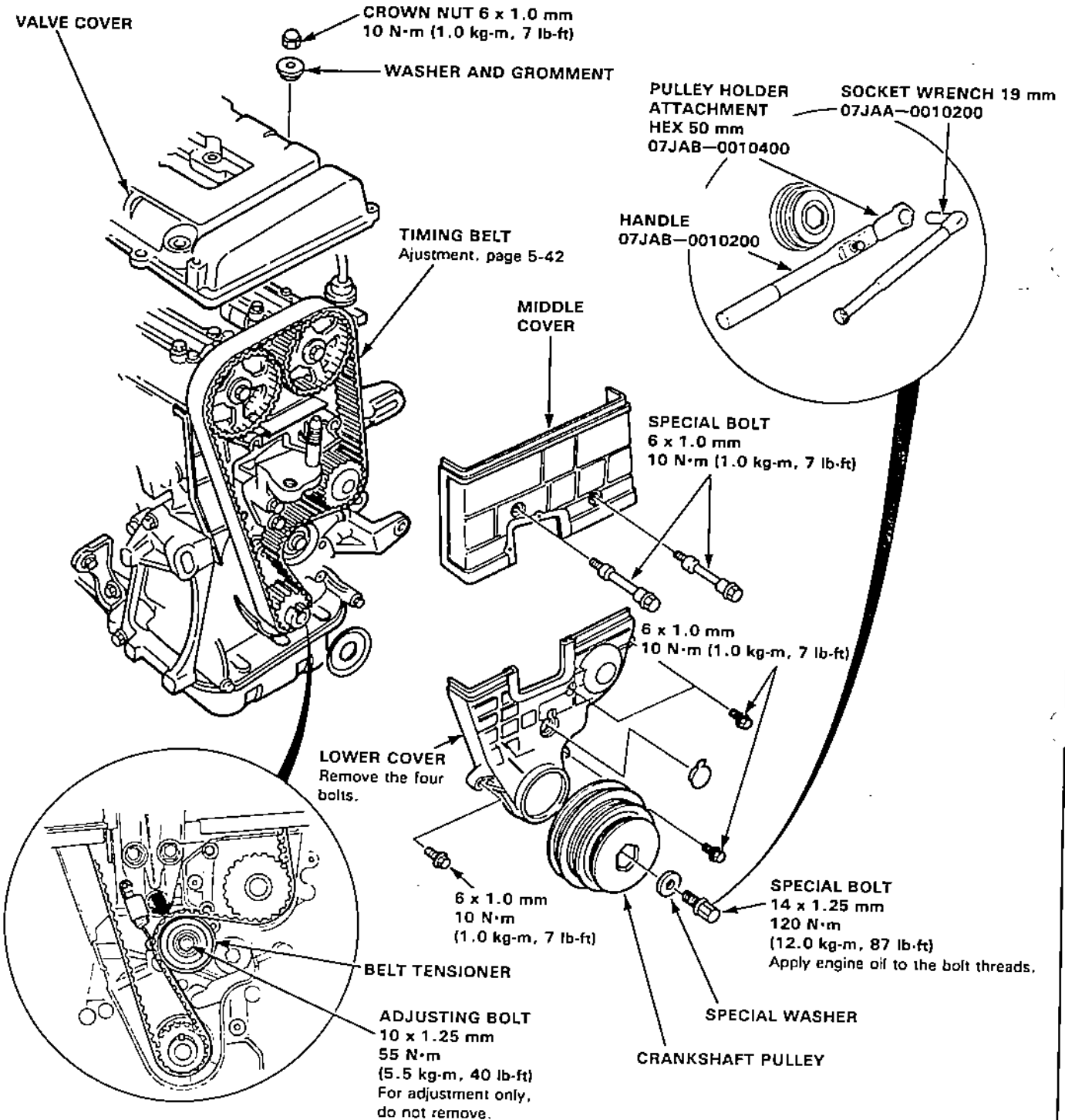
4. After installation, adjust the tension of each belt.
   - See base manual for alternator belt tension adjustment.
   - See page 5-20 for A/C compressor belt tension adjustment.
5. Remove the engine support bolts and nut, then remove the side mount rubber.



(cont'd)

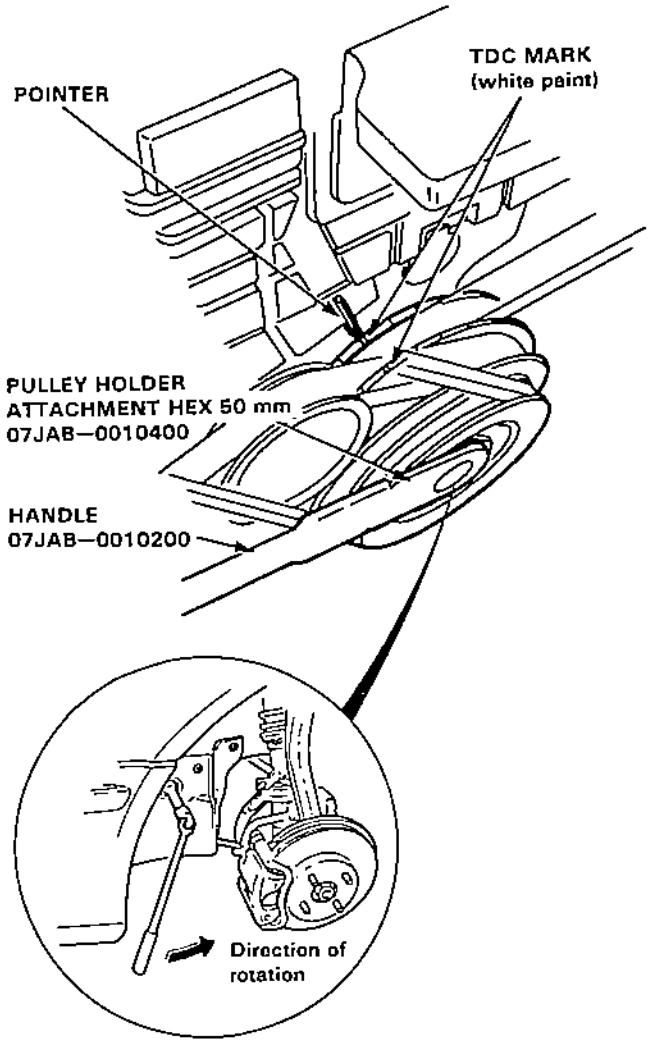
Replacement (cont'd)

6. Remove the ignition wire cover and ignition wire (page 5-17).
7. Remove the valve cover.
8. Remove the timing belt middle cover.
9. Remove the crankshaft pulley with the special tools.
10. Remove the timing belt lower cover.
11. Loosen the adjusting bolt, them remove the timing belt.
12. Install in the reverse order of removal; adjust the valve timing (page 5-45).
13. Carry out timing belt tension adjustment (page 5-42).



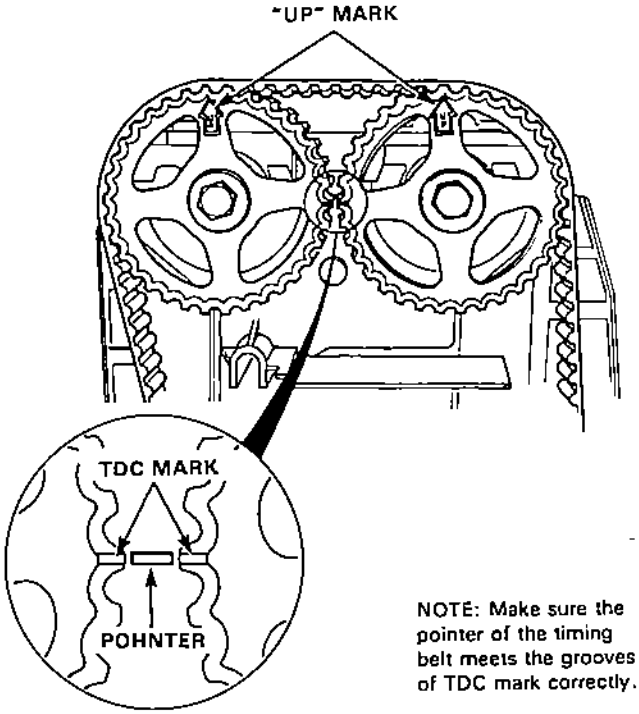
Positioning Crankshaft Before Installing Timing Belt

1. Remove the ignition wire cover and ignition wire (page 5-17).
2. Remove the valve cover (page 5-41).
3. Rosate the crankshaft with special tools, then set the No.1 piston at TDC.



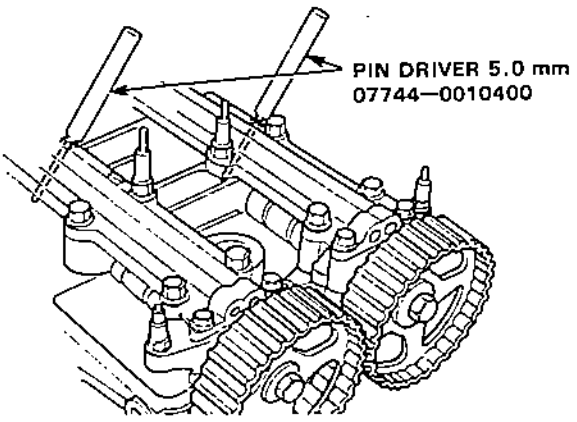
NOTE: If the pully bolt loosens while turning the crank, retorque it to 120 N·m(12.0 kg-m, 87 lb-ft).

4. Make sure that the camshaft pulleys are at the compression top dead center of the No.1 piston.



NOTE: Make sure the pointer of the timing belt meets the grooves of TDC mark correctly.

5. If the camshaft pulleys are not positioned at the compression top dead center of the No.1 piston, remove the timing belt and adjust the position in following procedure, then reinstall the timing belt.
   - Refer to page 5-43 for removal and reinstallation of the timing belt.
   - Bring the "UP" marks of the camshaft pulleys to the top, and adjust the pointer of the timing belt back cover to the groove of the TDC mark on the pulleys.
   - Adjust the holes on the camshaft holder to the camshaft holes, insert pin driver of 5.0 diameter and fix them as the top dead center.
   - Remove the pin-drivers after the belt has been reinstalled.



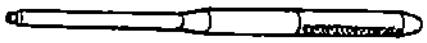
Cylinder Head Removal/Installation

Special Tools 5-48
Removal 5-49
Installation 5-54
Rocker Arm Inspection 5-57

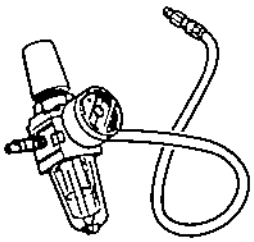


Special Tools

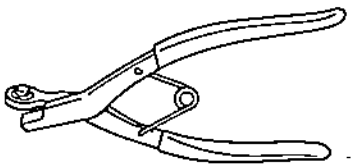
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07944—0010400	Pin Driver 5.0 mm	2	
②	07LAJ—PR30100	Valve Inspection Set	1	New tool
③	07LAJ—PR30200	Air Stopper	1	New tool



①



②

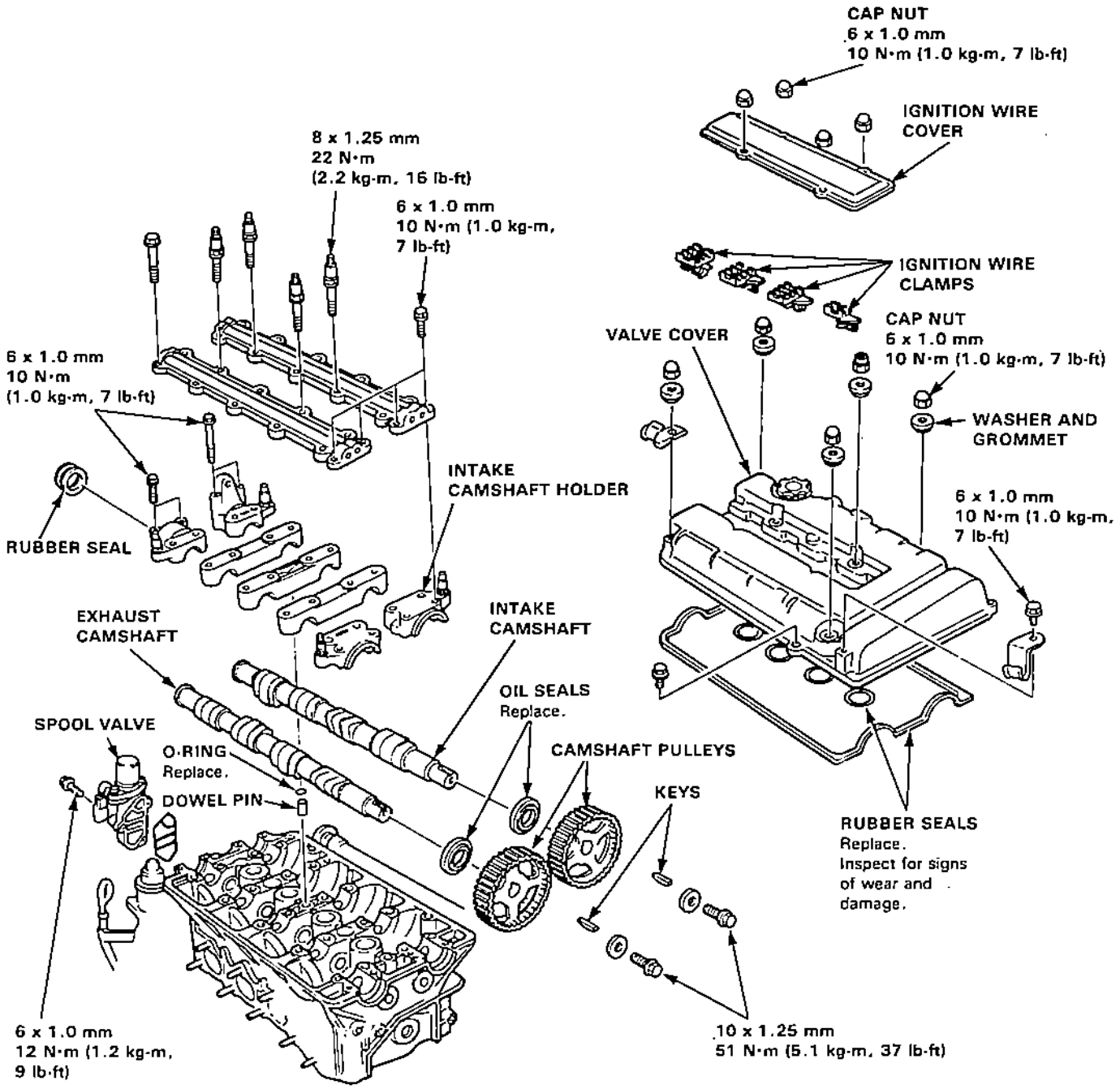


③

Cylinder Head

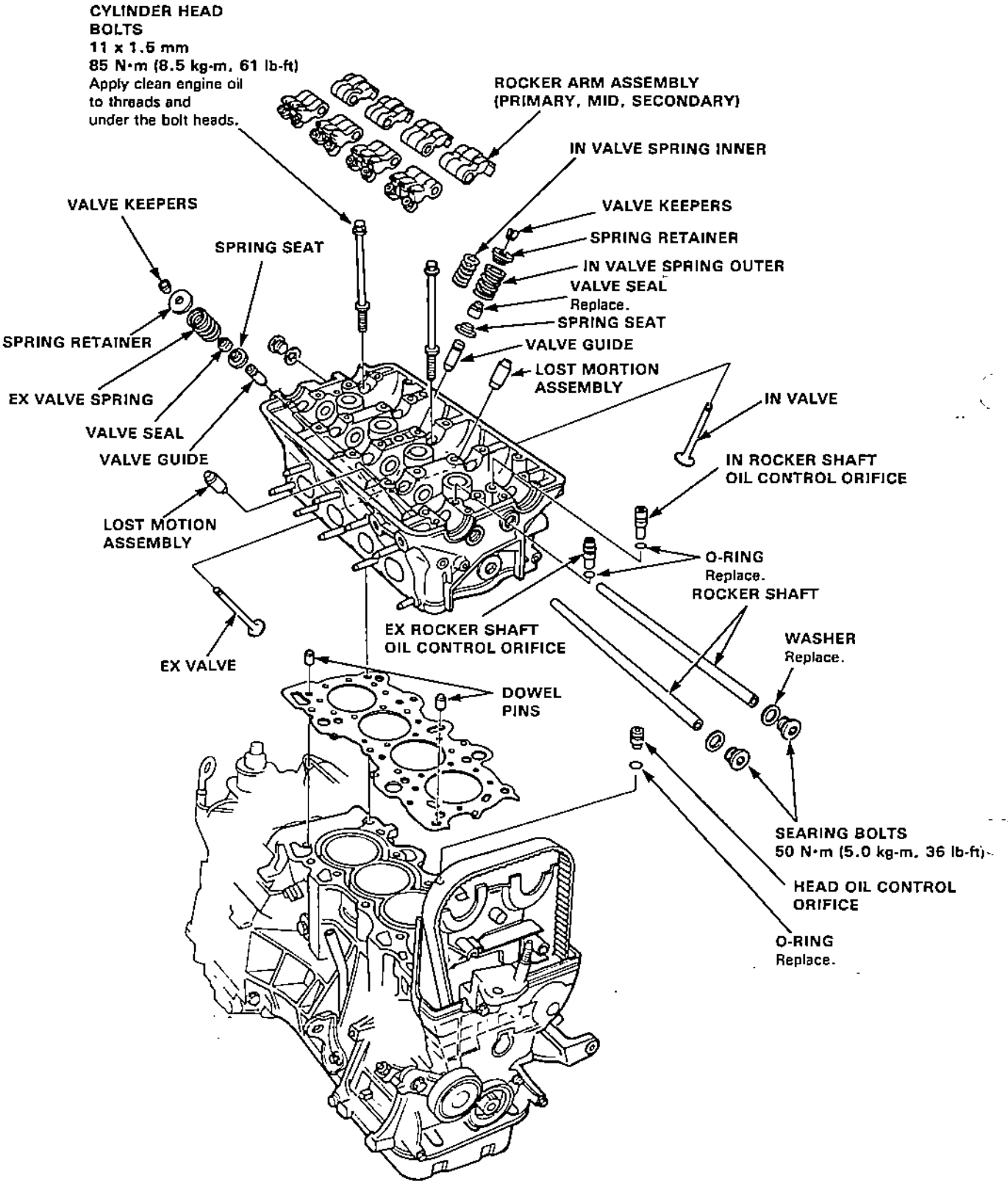
Removal (engine removal not required)

CAUTION:
- To avoid damaging the cylinder head, wait until the coolant temperature drops below 38 °C (100 °F) before removing it.
- In handling a metal gasket, care should be taken not to fold it or damage the contact surface of the gasket.



(cont'd)

Removal (engine removal not required) (cont'd)



⚠WARNING

- **Make sure jacks and safety stands are placed properly (See Section 1).**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the cylinder head, wait until the coolant temperature drops below 38 °C (100 °F) before loosening the retaining bolts.**

NOTE:

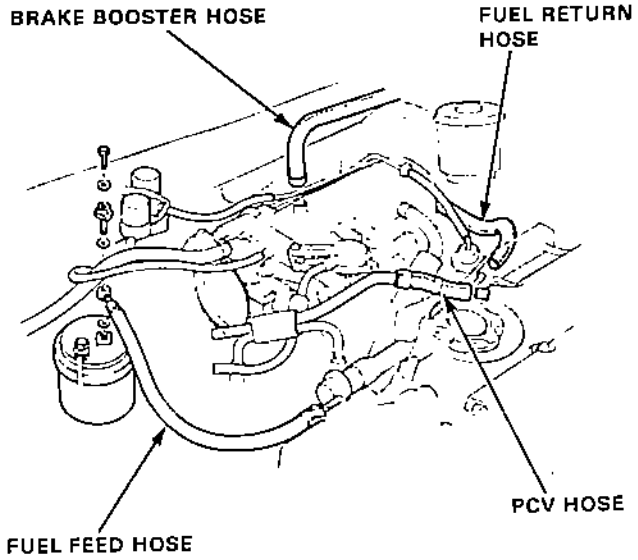
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

1. Disconnect the negative terminal from the battery.
2. Drain the coolant system.
3. Relieve fuel pressure (See Section 6).
4. Disconnect the fuel feeder hose and fuel return hose.

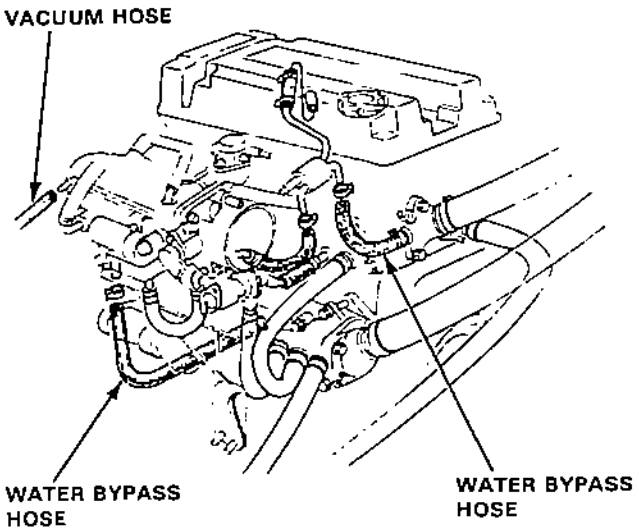
⚠WARNING

- **Do not smoke while working on fuel system, keep open flame or spark away from work area.**
- **Drain fuel only into an approved container.**

5. Remove the brake booster vacuum hose.
6. Disconnect the PCV hose.

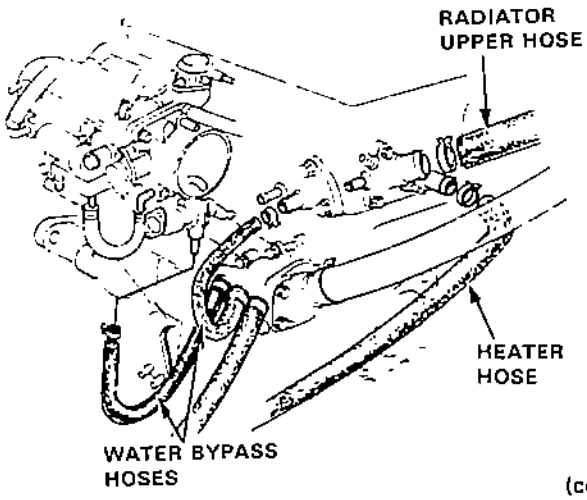


7. Disconnect the breather tube and air intake hose.
8. Disconnect the vacuum hose from the intake manifold.
9. Disconnect the charcoal canister hose.
10. Disconnect the water bypass hose.
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - Ignition coil connector (from distributor)
    - EACV connector
    - Engine ground wire
    - Thermounit connector
    - Coolant temperatuer sensor connector



    - Intake air pressure sensor connector
    - Throttle angle sensor connector
    - Injection connector
    - TDC/CRANK sensor connector

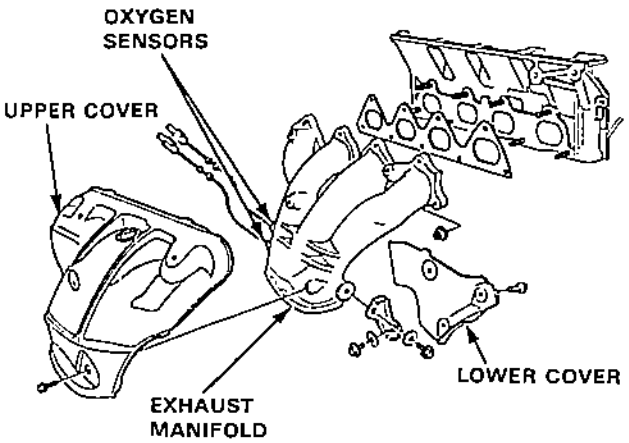
12. Disconnect the radiator upper hose at the engine.
13. Remove the heater hose.



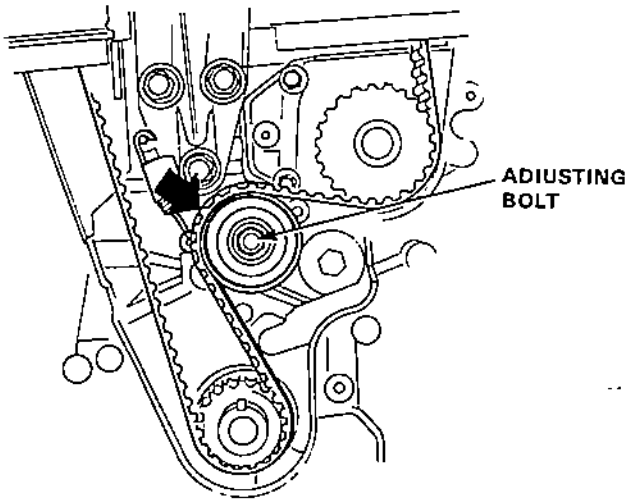
(cont'd)

Removal (engine removal not required) (cont'd)

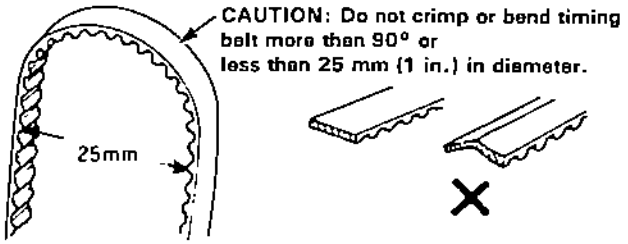
14. Remove the front left wheel and tire.
15. Remove the left splash shield.
16. Remove the mounting bolts of the intake manifold bracket.
    CAUTION:
    - **Remove the oxygen sensors before disconnecting the exhaust manifold and the exhaust pipe A.**
    - **Do not use air wrench or hummer for disconnecting the exhaust manifold and the exhaust pipe A, if the oxygen sensors are not to be removed.**
17. Remove the exhaust manifold upper cover.
18. Remove the exhaust manifold bracket.
19. Remove the self-lock nut of the exhaust pipe A.
20. Remove the exhaust manifold.



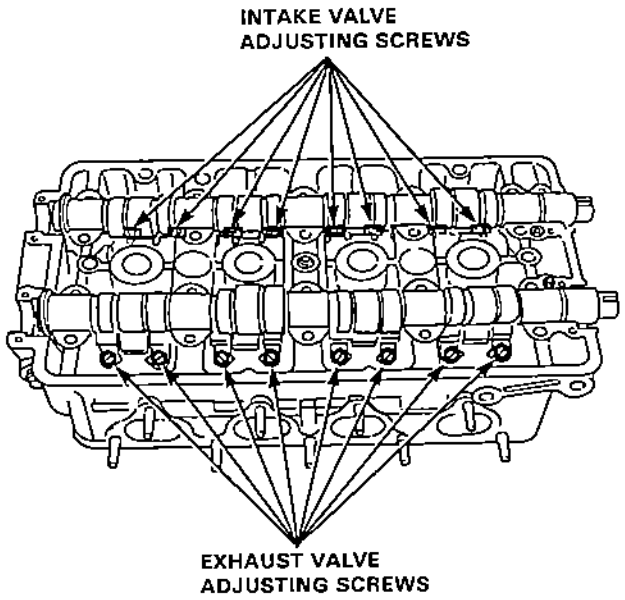
21. Remove the ignition wire cover and ignition wire.
22. Remove the valve cover.
23. Remove the timing belt middle cover.
24. Loosen the timing belt adjusting bolt, releasing the timing belt, and fix the bolt.



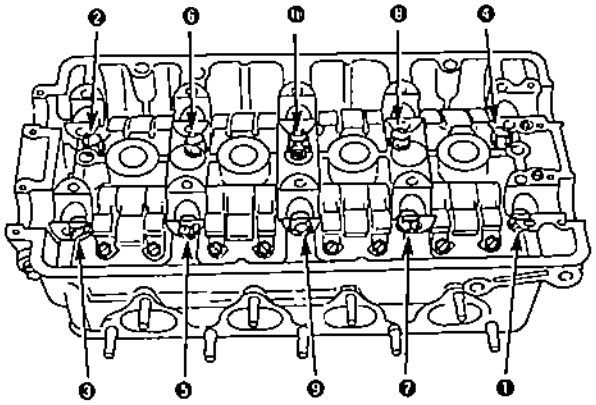
25. Remove the timing belt from the camshaft pulleys.



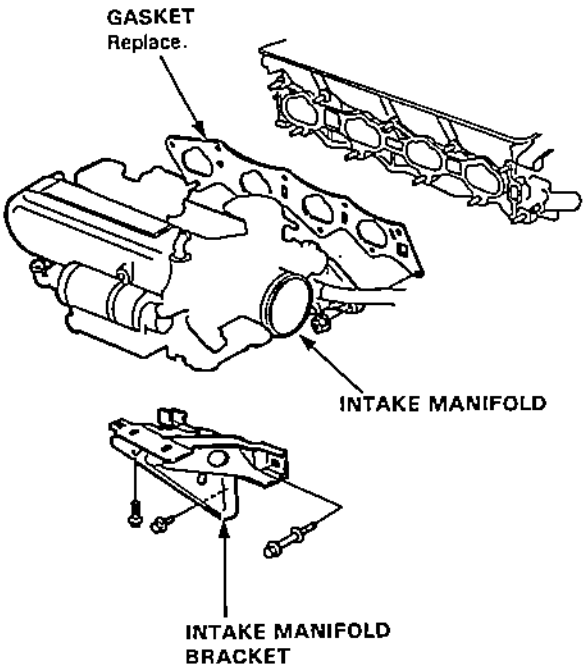
26. Loosen the valve adjusting screws.
27. Remove the camshaft holders, then remove the camshafts.
    NOTE: Loosen the camshaft holder bolts a criss-cross pattarn in 2 or 3 steps, bigining with the outer bolts.



28. Loosen the cylinder head bolts, then remove the cylinder head.
    NOTE: Loosen the bolts a criss-cross pattern in 2 or 3 steps, biginning with the outer nuts.



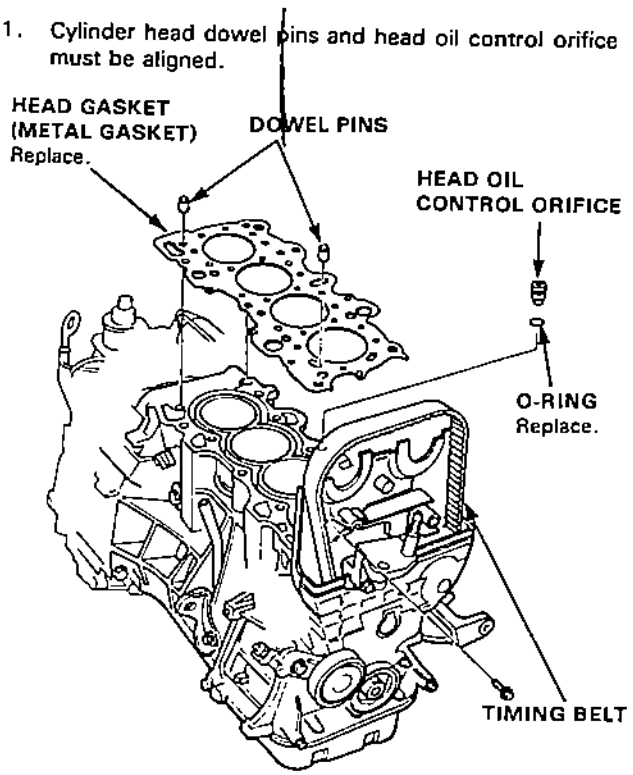
29. Remove the intake manifold from the cylinder head.



Installation

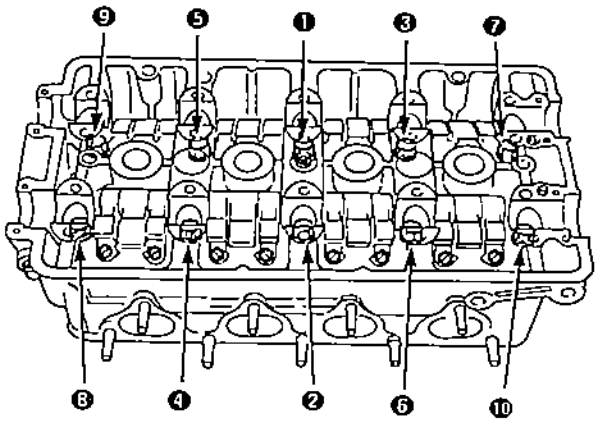
Install the cylinder head in reverse order of removal:
NOTE:
- Always use a new head gasket.
- Cylinder head and engine block surface must be clean.
- "UP" mark on timing belt pulley should be at the top.
- Turn the crankshaft so that No.1 is at TDC (page 5-45).

1. Cylinder head dowel pins and head oil control orifice must be aligned.

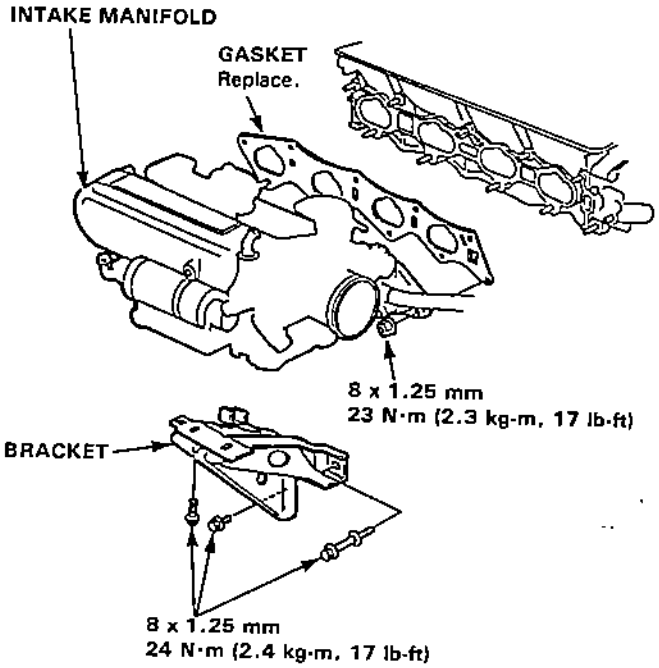


2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 85 N·m (8.5 kg-m, 61 lb-ft)
NOTE: Apply engine oil to the cylinder head bolts and the washers.

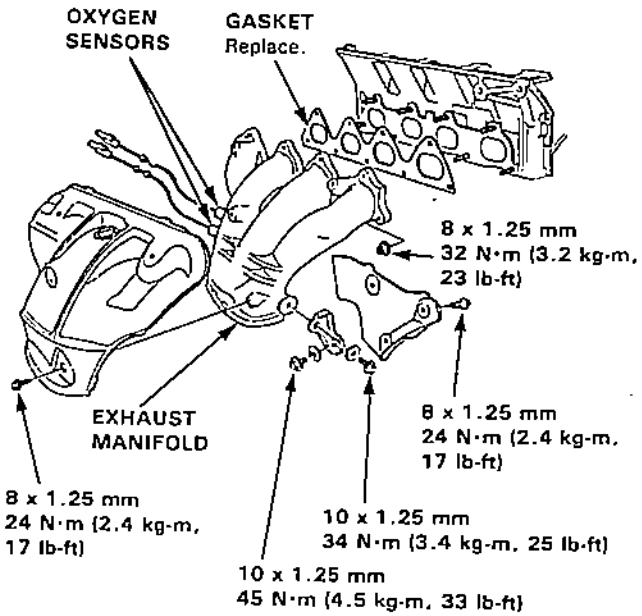
CYLINDER HEAD BOLTS TORQUE SEQUENCE



3. Install the intake manifold and tighten the nuts in a criss-cross pattern in two or three steps, beginning with the inner nuts.

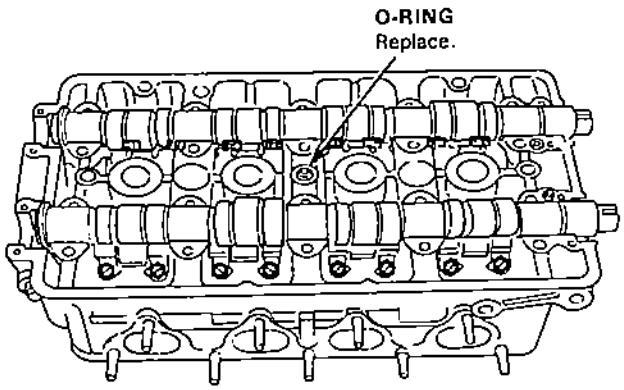


4. Install the exhaust manifold and tighten the new self-locking nuts in a criss-cross pattern in two or three steps, beginning with a inner nuts.
CAUTION:
- Install the oxygen sensors after connecting the exhaust manifold and the exhaust pipe A.
- Do not use air wrench for tightening self-locking nuts of exhaust pipe A, if the oxygen sensors are not to be removed.

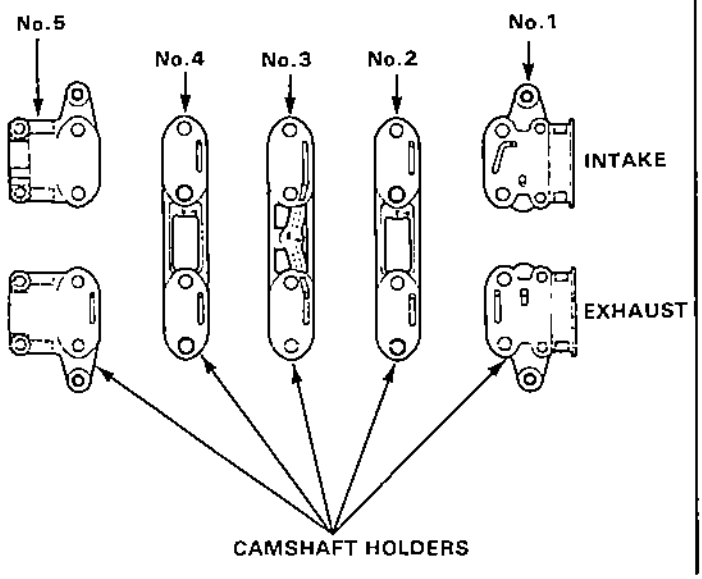


5. Install the camshafts and the camshaft seals with the open side (spring) facing in.

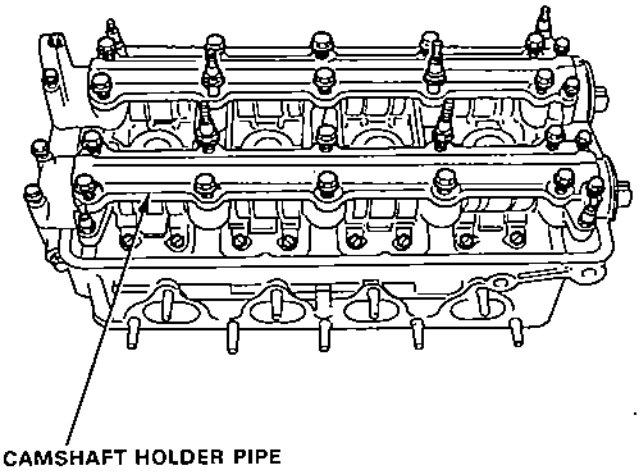
CAUTION:
- Make sure that the keyways on the camshafts are facing up. (NO.1 cylinder TDC).
- Valve locknuts should be loosened and adjust screws backed off before installation.
- Replace the rocker arms in these original positions.
- Set the O-ring and dowel pin to the center of No.3 camshaft holder.
- Seal housing surface should be dry.
- Apply a light coat of oil to camshaft and inner lip of seal.



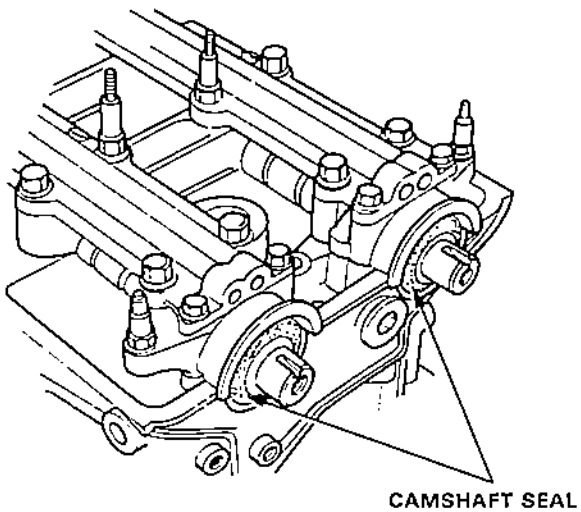
6. Apply liquid gasket to the head mating surfaces of the No.1 and No.5 camshaft holders, then install them, along with the No.2, 3 and 4.
—Apply liquid gasket to the shaded areas.



7. Set the camshaft folders and camshaft holder pipes, then tighten temporaly the bolts.



8. Press the camshaft seals securely.

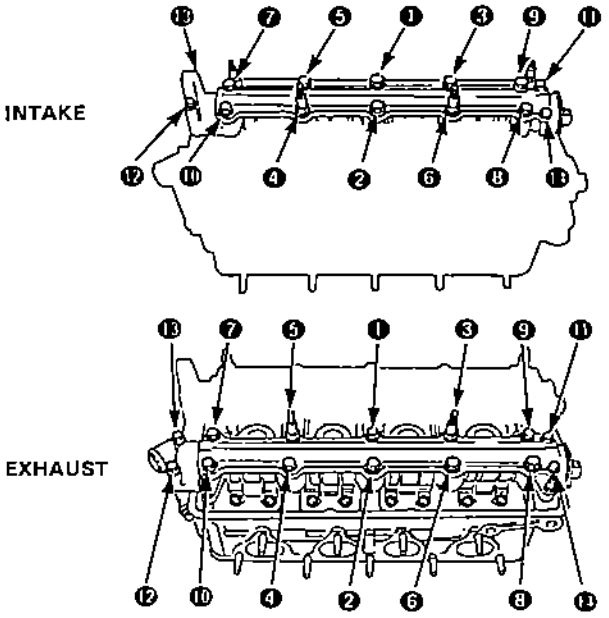


(cont'd)

Installation (cont'd)

9. Tighten each bolt two turns at a time in the sequence shown below to insure that the rockers do not bind on the valves.

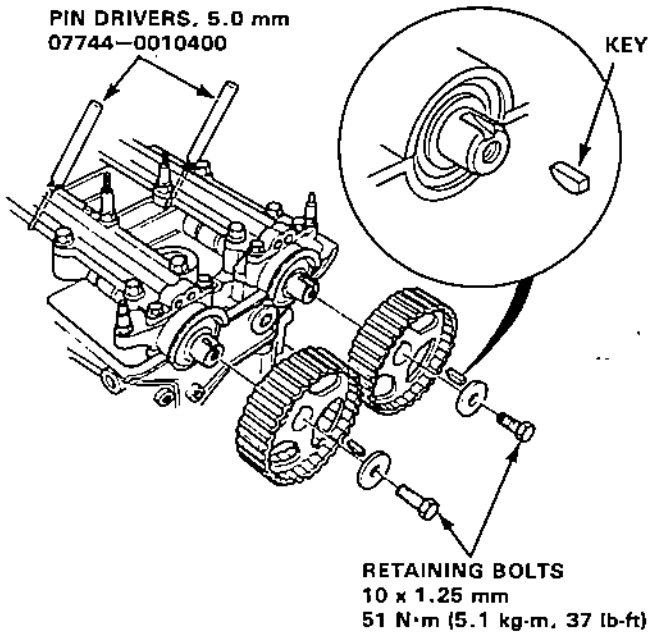
CAMSHAFT HOLDER BOLT TORQUE SEQUENCE



❶~⓾: 8 x 1.25 mm
22 N·m (2.2 kg-m, 16 lb-ft)
⓫~⓭: 6 x 1.0 mm
11 N·m (1.1 kg-m, , 8 lb-ft)

10. Install keys into grooves in camshafts.
11. Push camshaft pulleys onto camshafts, then tighten retaining bolts to torque shown.

NOTE: To set the No.1 piston at TDC, align the hole on the camshaft with the hole in the No.1 camshaft holders and drive 5.0 mm pin drivers into the holes.



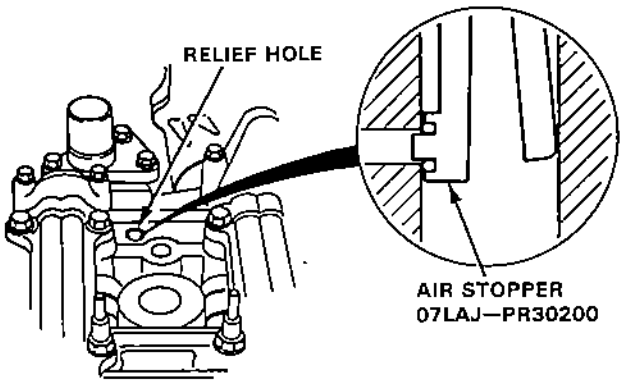
12. Adjust the valve timing (page 5-45).
13. Adjust the valve clearance (page 5-21).
14. Inspect the rocker arms using special tools (page 5-57).
15. After installation, check that all hoses and connectors are installed correctly.

NOTE: Refer to Shop Manual "B16A ENGINE Maintenance and Repair (code No. 62PR300)" for overhall of cylinder head.

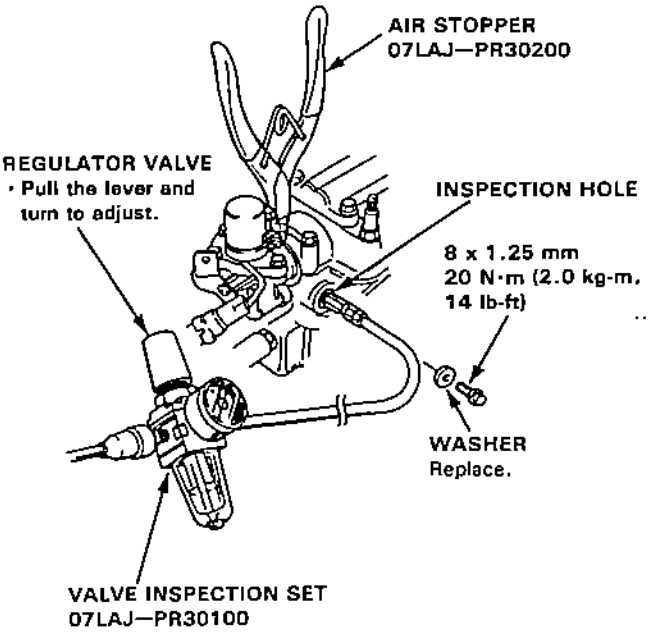
Inspection Using Special Tools

CAUTION:
- Before using the special tool (Valve Inspection Set), make sure that the air pressure gauge on the air compressor indicates over 245 kPa (2.5 kg/cm², 36 psi).
- Inspect the valve clearance before rocker arm inspection.
- Cover the timing belt with shop towel to prevent the belt.
- Check the mid rocker arm of each cylinder at TDC.

1. Remove the valve cover.
2. Plug the relief hole with the special tool (Air Stopper).



3. Remove the bolt and washer from the inspection hole and connect the special tool (Valve Inspection Set).



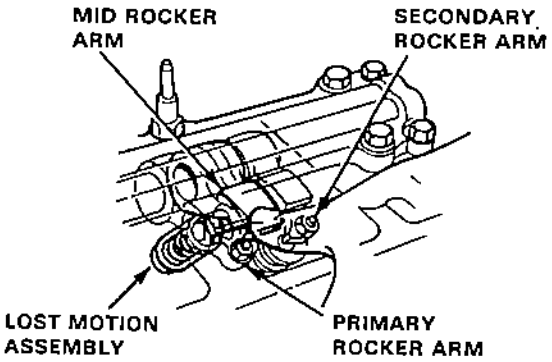
(cont'd)

Inspection Using Special Tools (cont'd)

4. Apply specified air pressure to the rocker arm pistons after loosening the regulator valve on the valve inspection set.

   Specified Air Pressure:
   245 kPa (2.5 kg/cm², 36 psi)
   —490 kPa (5.0 kg/cm², 71 psi)

5. Make sure that the primary and secondary rocker arms are mechanically connected by pistons and that the mid rocker arms do not move when pushed manually.



   - If the mid rocker arms indenpendently of the primary and secondary rocker arms, replace the rocker arms as a set.

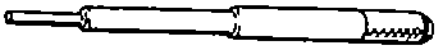
6. Remove the special tools.
7. Check for smooth operation of the lost motion assembly. It is compressed slightly when the mid rocker arm is lightly pushed and compressed deeply when the mid rocker arm is strongly pushed.
   - Replace the lost motion assembly if it does not move smoothly.
8. After inspection, check that the ECU does not come on.

Engine Removal/Installation

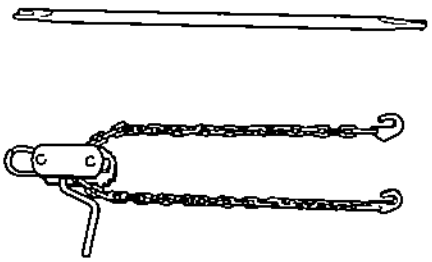


Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07744—0010600	Pin Driver 8.0 mm	1	07944—6110200 may also be used
②	07KAK—SJ40100	Engine Tilt Hanger Set	1	



①



②

⚠WARNING

- **Make sure jacks and safety stands are placed properly and hoist brackets are attached to the correct positions on the engine (See section 1).**
- **Apply parking brake and block rear wheels, so the car will not roll off stands and fall while you are working under it.**

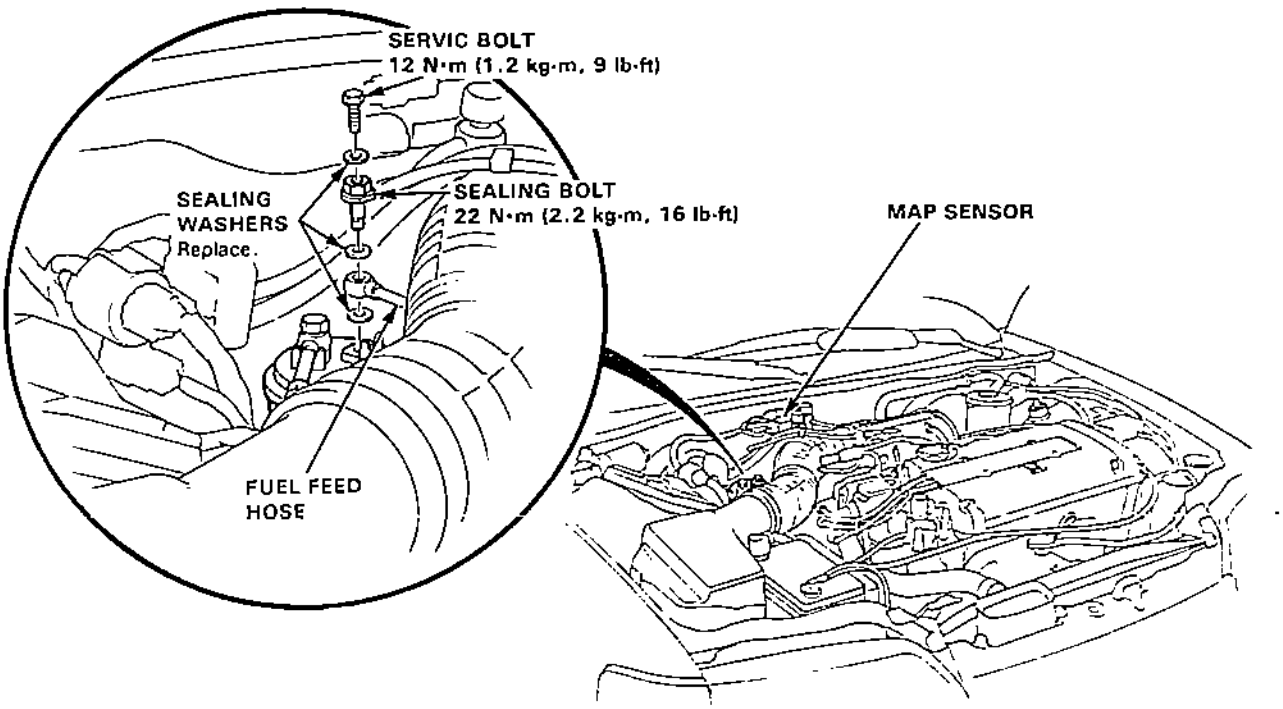
CAUTION:

- **Use fender covers to avoid damaging painted surfaces.**
- **Remove the wiring slowly while holding the connector portion to avoid disconnecting.**
- **Mount the wiring or tubes to avoid mis-connection. Also, be sure that they do not contact other cords or tubes or interference with other parts.**

1. Disconnect the battery negathve terminal first, then the positive terminal. Remove the battery.
   CAUTION: Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.
2. Fix the engine hood in a vertical position.
   - Do not remove the hood.
3. Drain the engine oil. Remove the oil filler cap to speed draining. Reinstall the drain plug using a new washer.
4. Drain the coolant from the radiator into a clean pan so it may be reused. Remove the radiator cap to speed draining.

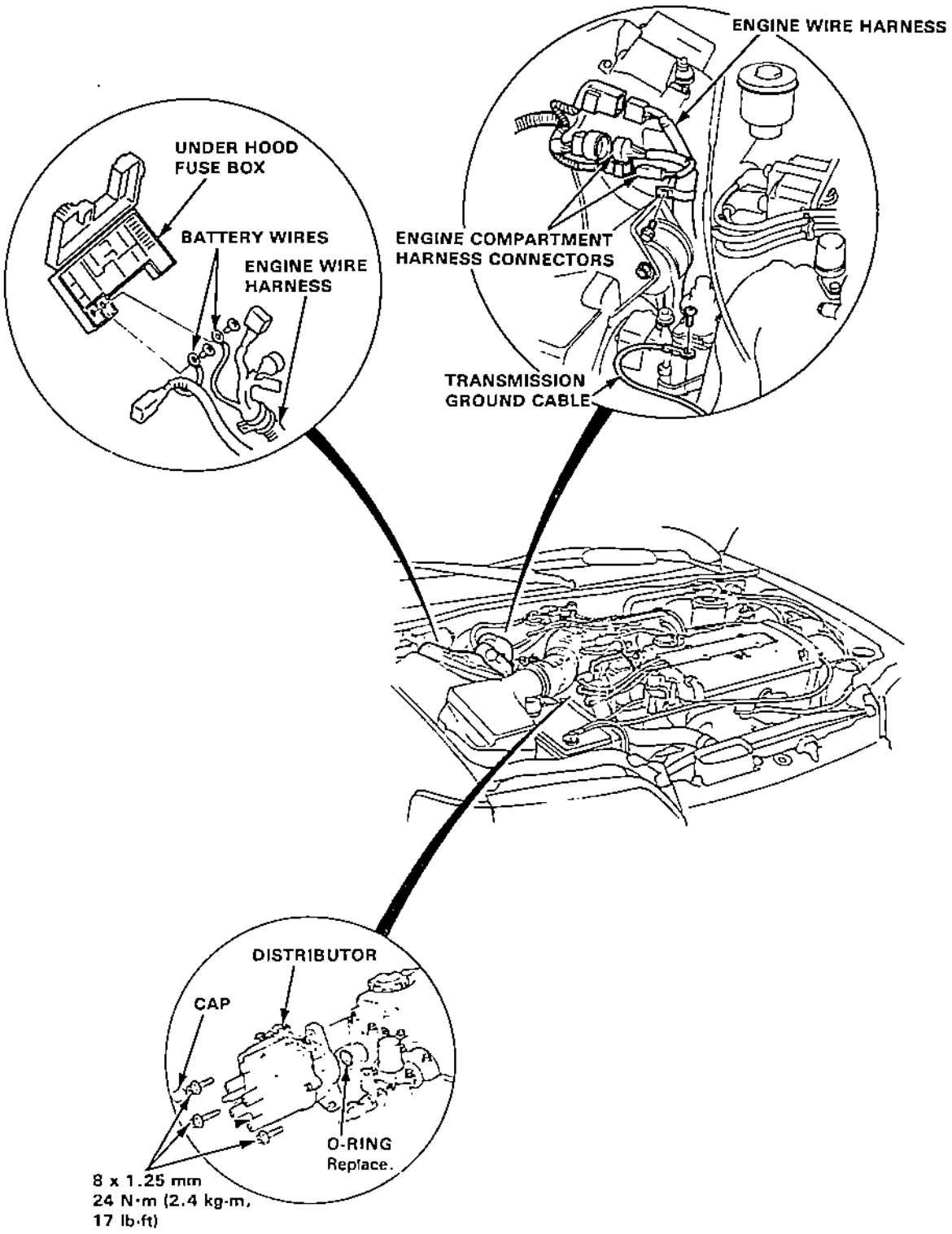
   ⚠WARNING Use care when removing the radiator cap to avoid scalding by hot coolant or steam.
5. Remove the transmission under cover.
6. Drain transmission oil. Use a 3/8" drive socket wrench to remove the drain plug. Remove the oil filler plug or dipstick to speed draining. Reinstall the drain plug using a new washer.
7. Remove the air intake duct and air cleaner case.
8. Remove the battery base.
9. Relieve fuel pressure by slowly loosening the service bolt on the fuel pipe about one turn.

   ⚠WARNING Do not smoke while working on the fuel system. Keep open flame away from work area. Drain fuel only into an approved container.
   CAUTION:
   - **Before disconnecting any fuel line, the fuel pressure should be relieved as described above.**
   - **Place a shop towel over the fuel filter to prevent pressurized fuel from spraying over the engine.**
10. Remove the fuel feed hose.
11. Disconnect the charcoal canister hose from throttle body.
12. Disconnect the MAP sewsor vaccum hose.

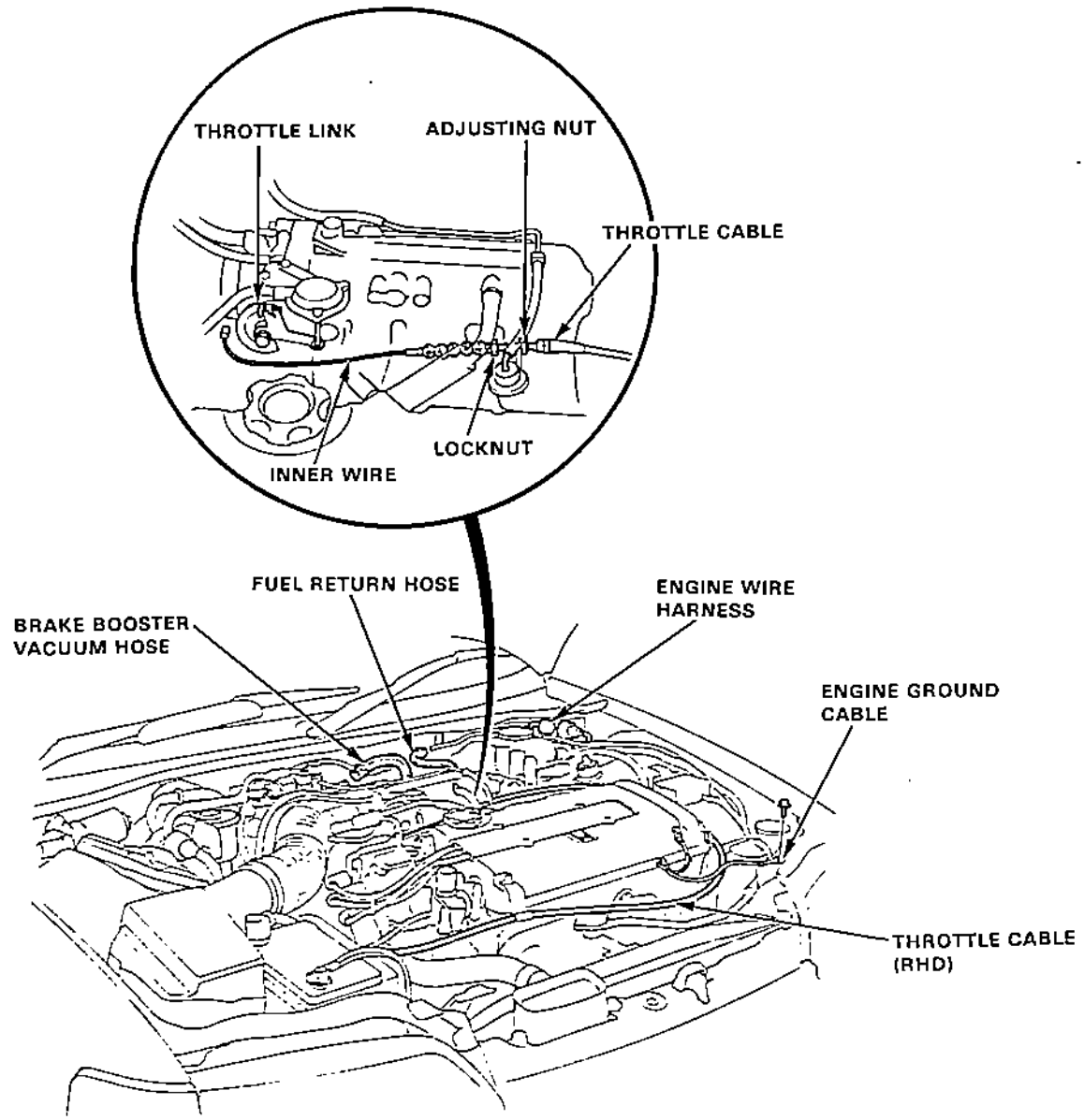


(cont'd)

13. Disconnect the three engine compartment harness connectors, then remove the battery wires from the under hood fuse box.
14. Remove the transmission ground cable.
15. Remove the cap and bolts, then remove distributor from the cylinder head.
    NOTE: Adjust the ignition timing, when installing the distributor.

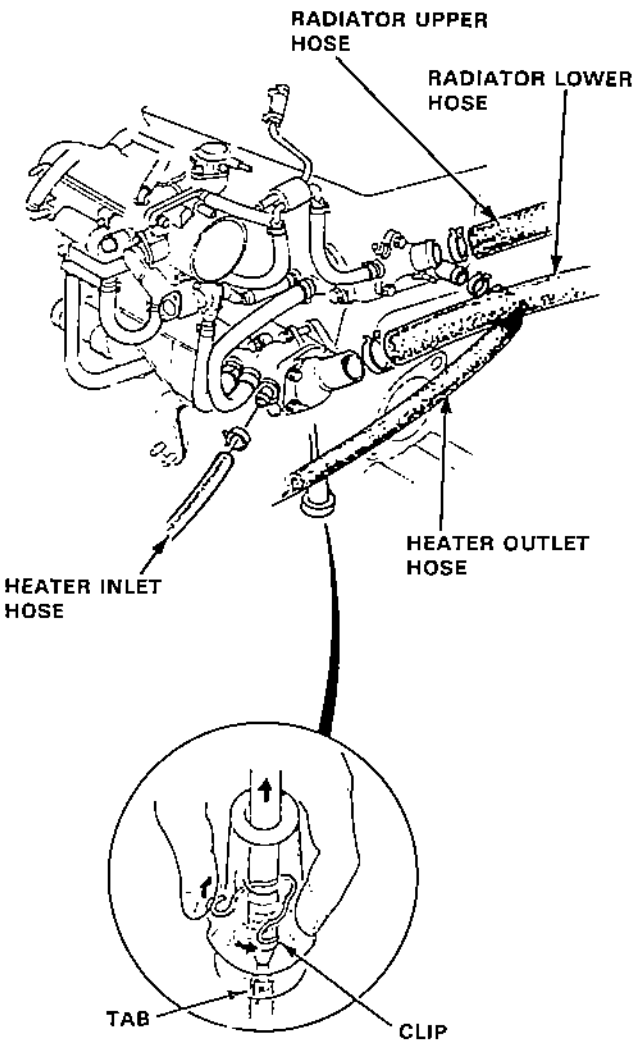


16. Remove the throttle cable by loosening the locknut, then slip the cable end out of the throttle bracket and throttle linkage.
    NOTE: Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.
17. Remove the fuel return hose.
18. Remove the brake booster vacuum hose from the intake manifold.
19. Disconnect the two engine wire harness connectors from main wire harness at the left side of the engine compartment.
20. Remove the engine ground wire from the front upper bulkhead.



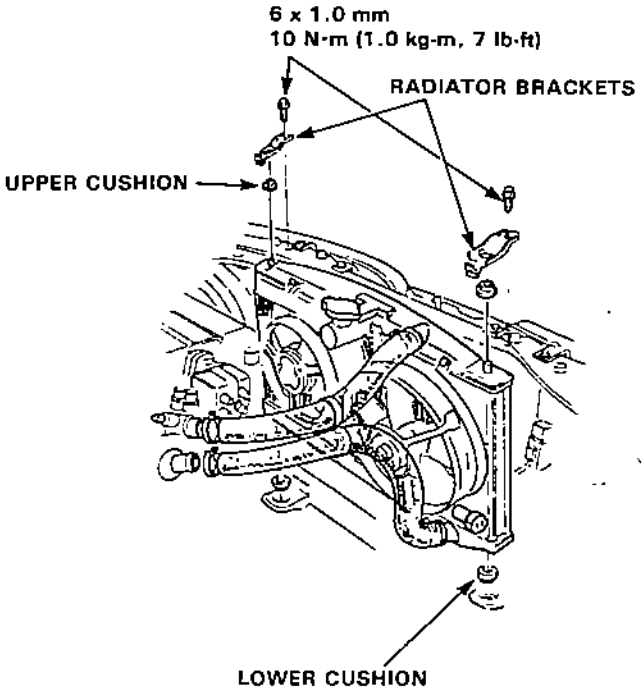
(cont'd)

21. Remove the radiator upper hose and the heater inlet hose from cylinder head, then remove the radiator lower hose and the heater outlet hose from thermstat housing.
22. Remove the speedometer cable.
    CAUTION: Do not remove the holder because the speedometer gear may fall into the transmission housing.



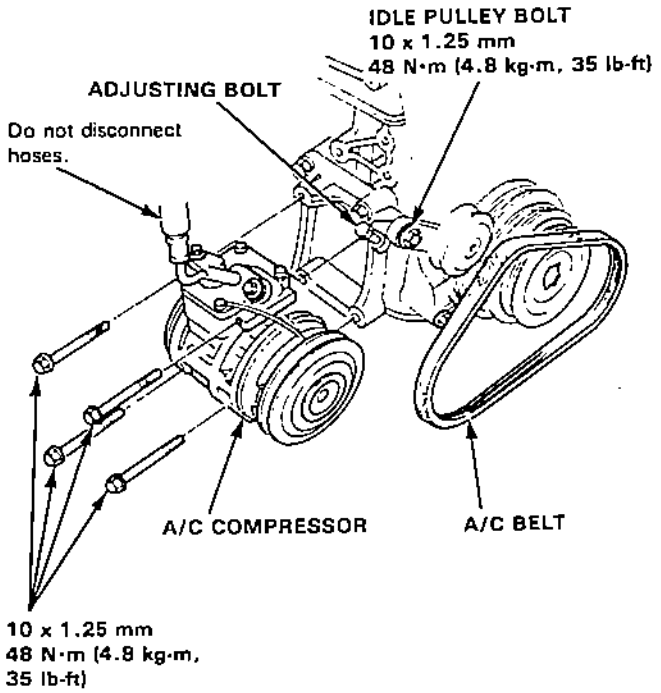
During Installation:
- Align tab on cable end with slot in holder.
- Install clip so bent leg is on groove side. After installing, pull speedometer cable to make sure it is secure.

23. Remove the radiator.



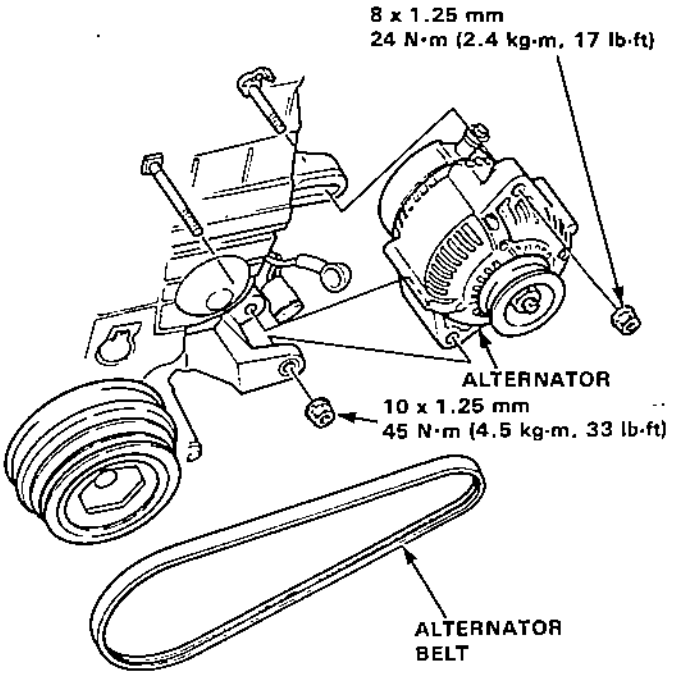
Air conditioner equipped cars:

24. Loosen the belt adjusting bolt and the idle pulley bolt, then remove the A/C belt.
25. Remove the compressor mount bolts, then lift the compressor out of the bracket with hoses attached, and wire it up to the front beam.
    NOTE: The compressor can be moved without discharging the air conditioner system.



26. Remove the alternator: (LHD and RHD with ALB only)

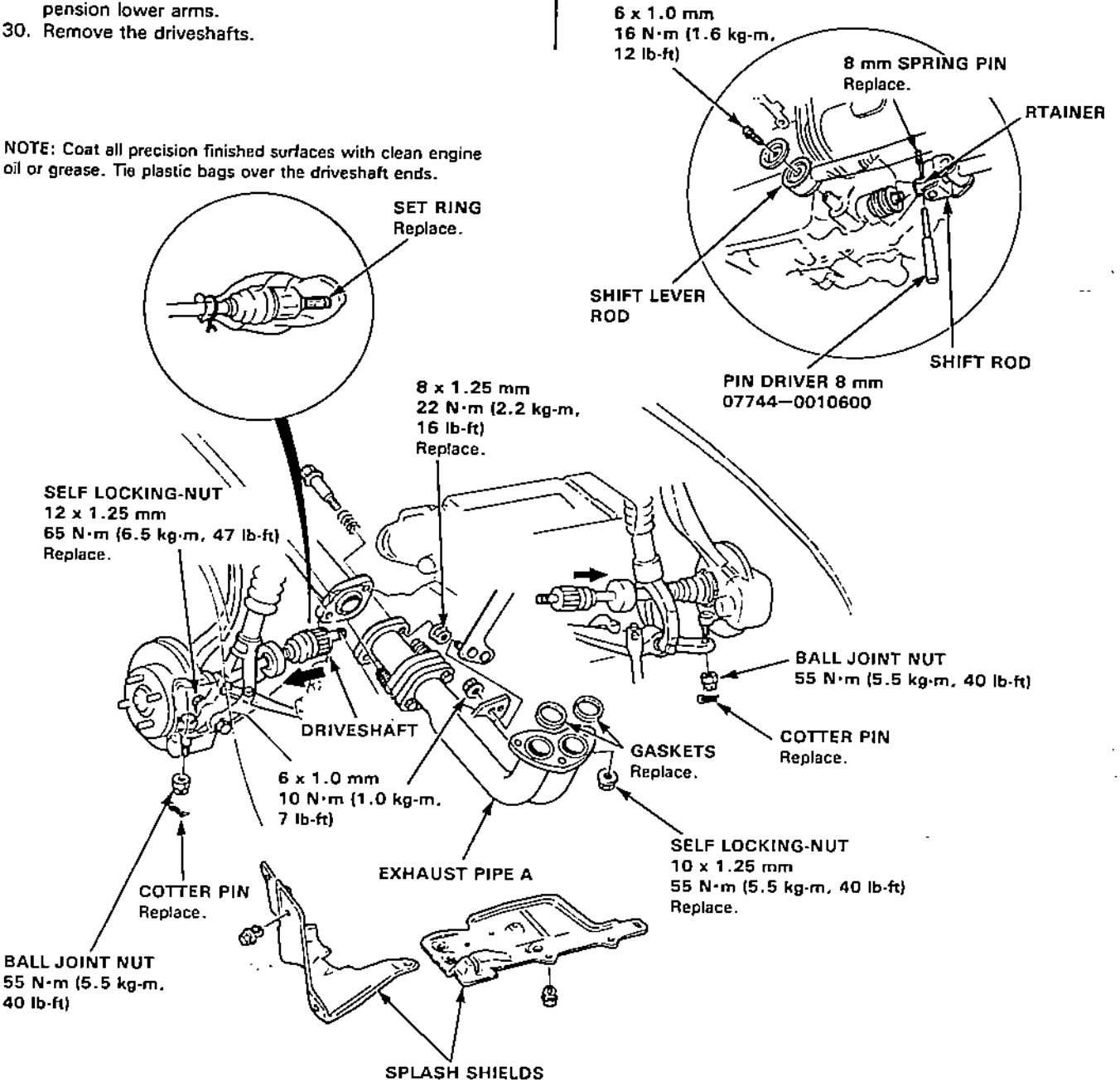
- Disconnect the alternator wire harness connectors.
- Remove the adjust bolt and remove the belt.
- Remove the belt alternator mount bolt and remove the alternator.



(cont'd)

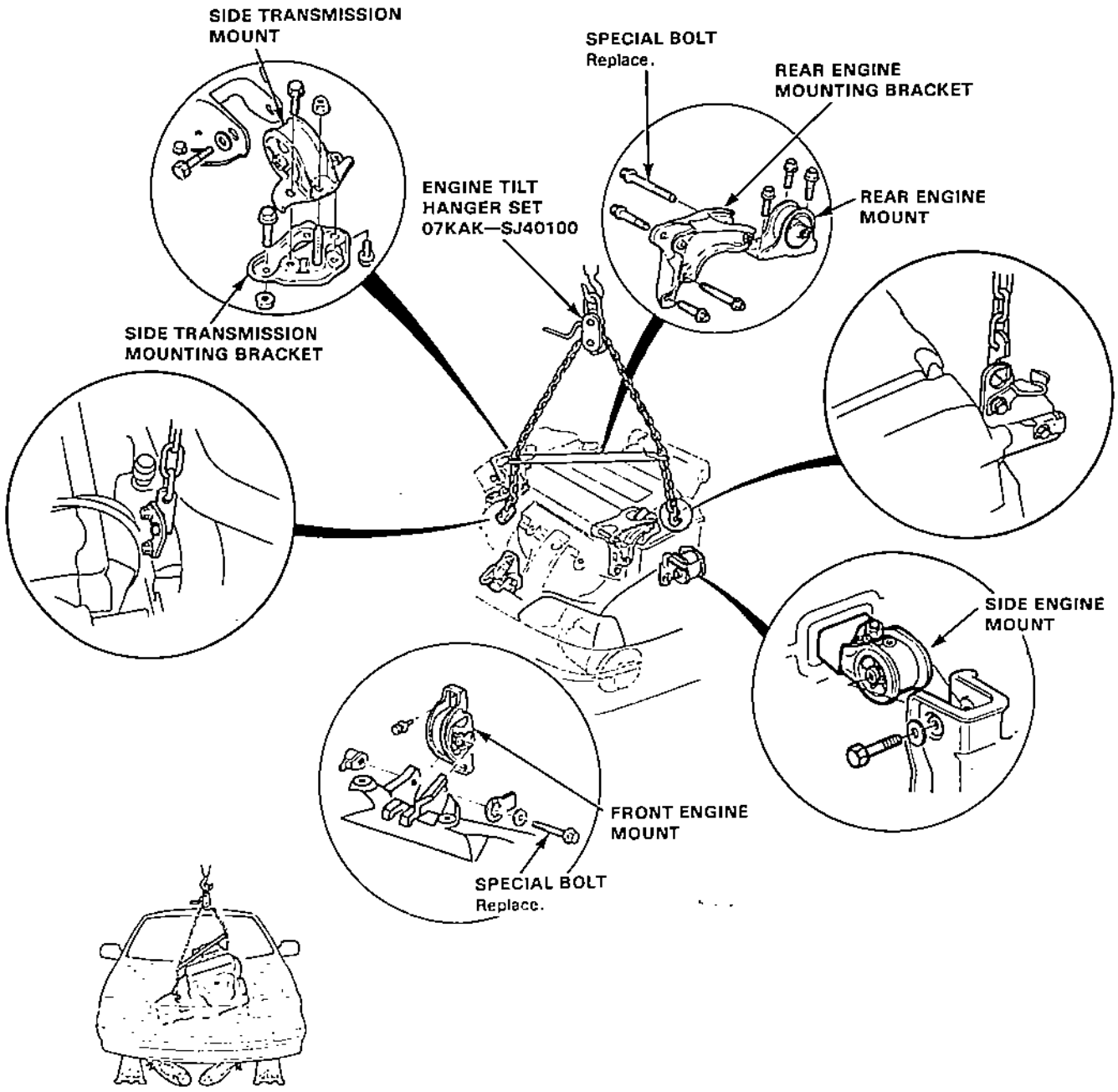
27. Remove the splash shields.
28. Remove the exhaust pipe A self-locking nuts and bracket mounting bolts.
    CAUTION:
    - **Remove the oxygen sensors before disconnecting the exhaust manifold and the exhaust pipe A.**
    - **Do not use air wrench or hummer for disconnecting the exhaust manifond and the exhaust pipe A, if the oxygen sensors are not to be removed.**
29. Remove the ball joints from the tie-rod ends and suspension lower arms.
30. Remove the driveshafts.
31. Remove the clutch cable adjusting nut.
    NOTE: On assembly, check the cable adjustment (Section 7).
32. Remove the shift rod and the shift lever rod.
    NOTE: On assembly, slide the retainer back into place after driving in the spring pin.

NOTE: Coat all precision finished surfaces with clean engine oil or grease. Tie plastic bags over the driveshaft ends.



⚠WARNING **Do not get under the engine when hoisting the engine.**

33. Attach a special tool set to the engine. Raise the hoist to remove all slack from the chain.
34. Remove the rear engine mount, mounting bracket and mounting bolt.
35. Remove the front engine mount and mounting bolt.
36. Remove the side transmission mount, mounting bracket and mounting bolt.
37. Remove the side engine mounting bolt.
38. Check that the engine/transaxle is completely free of vacuum hoses, fuel and coolant hoses, and electric wires.
39. Slowly raise the engine approximately 6"
    Check once again that all hoses and wires have been disconnected from the engine/transaxle.
40. Raise the engine/transaxle all the way and remove it from the car.



—(cont'd)—

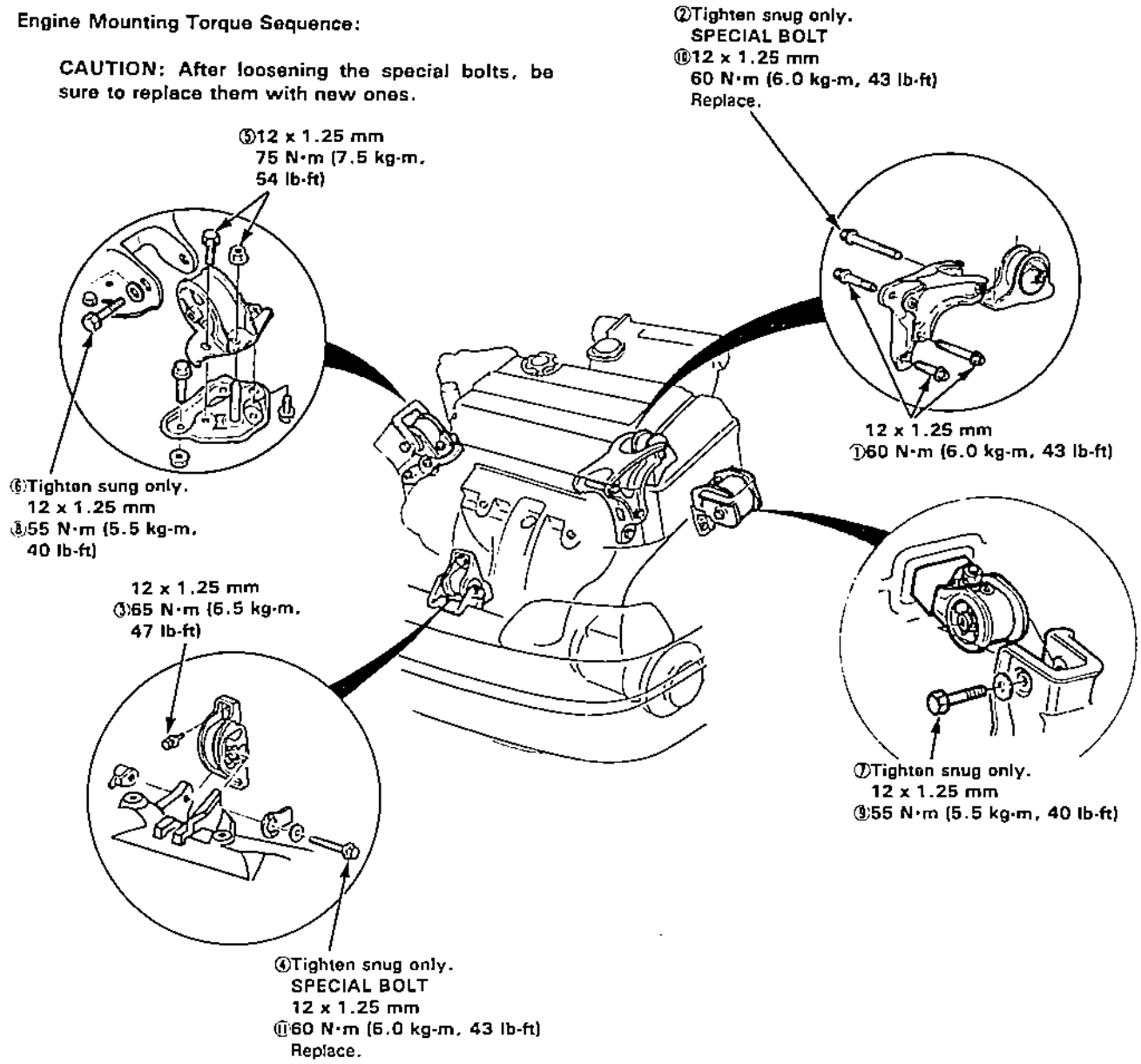
44. Install the engine in the reverse order of removal. After the engine in place:
    - Torque the engine mounting bolts in sequence shown below.

    CAUTION: Failure to tighten the bolts in the proper sequence can cause excessive noise and vibration, and reduce bushing life: check that the bushings are not twisted or offset.
    - Check that the spring clip on the end of each driveshaft clicks into place.

    CAUTION: Use new spring clips on installation.
    - Bleed air from the cooling system at the bleed bolt with the heater valve open.
    - Adjust the throttle cable tension.

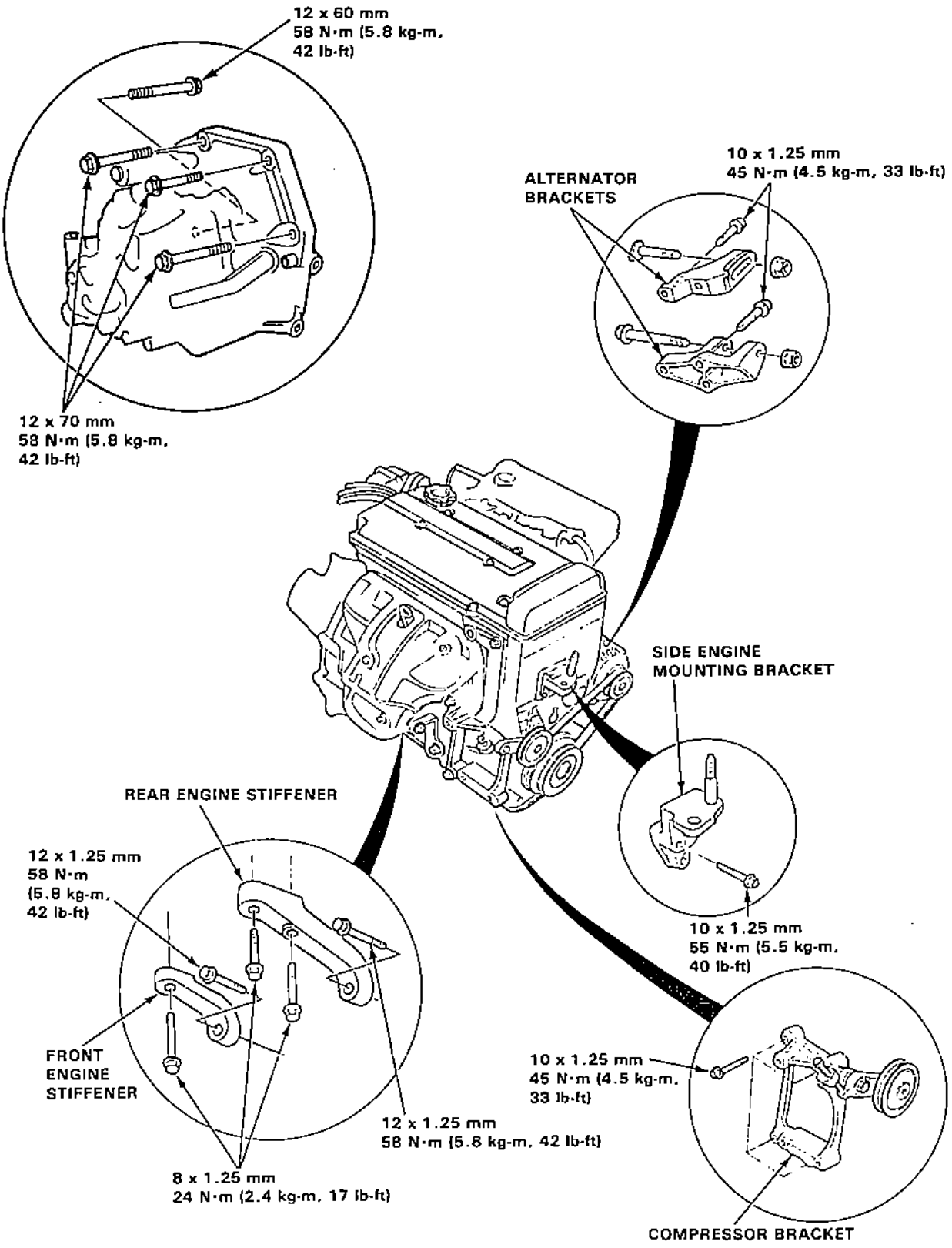
Engine Mounting Torque Sequence:

CAUTION: After loosening the special bolts, be sure to replace them with new ones.



- Check the clutch pedal free play.
- Check that the transmission shifts into gear smoothly.
- Adjust the alternator belt.
- Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.
- Inspection for fuel leakage.
  - After assembling fuel line parts, turn on the ignition switch (do not operate the starter) so that the fuel pump is operated for approximately two seconds and the fuel is pressurized. Repeat this operation two or three times and check whether any fuel leakage has occurred at any point in the fuel line.

Additional Torque Value Specifications:
NOTE: For manifold replacement, refer to page 5-54.

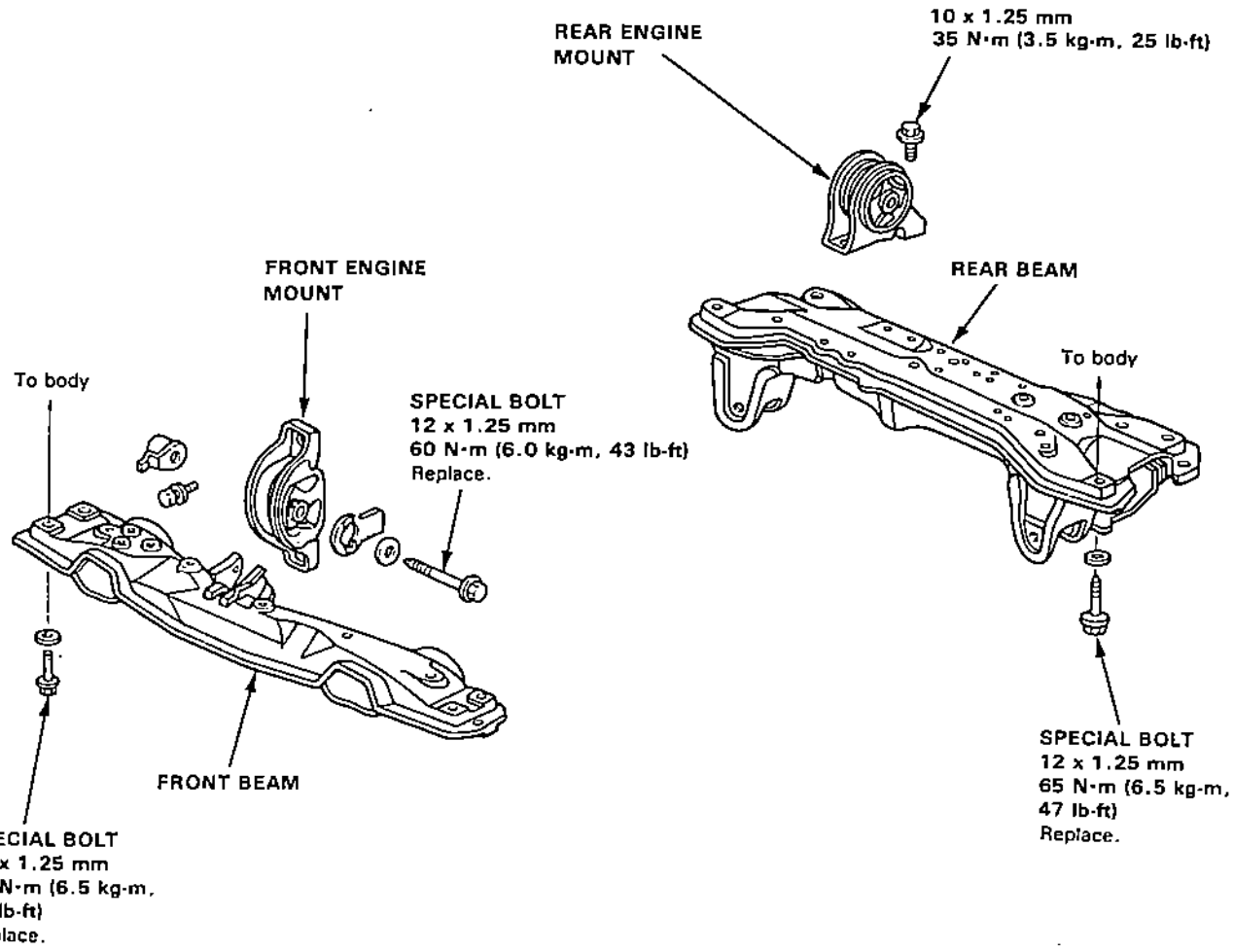


(cont'd)

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Subframe Torque Value Specifications:

CAUTION: After loosening the special bolts, be sure to replace them with new ones.



Exhaust Pipe and Muffler

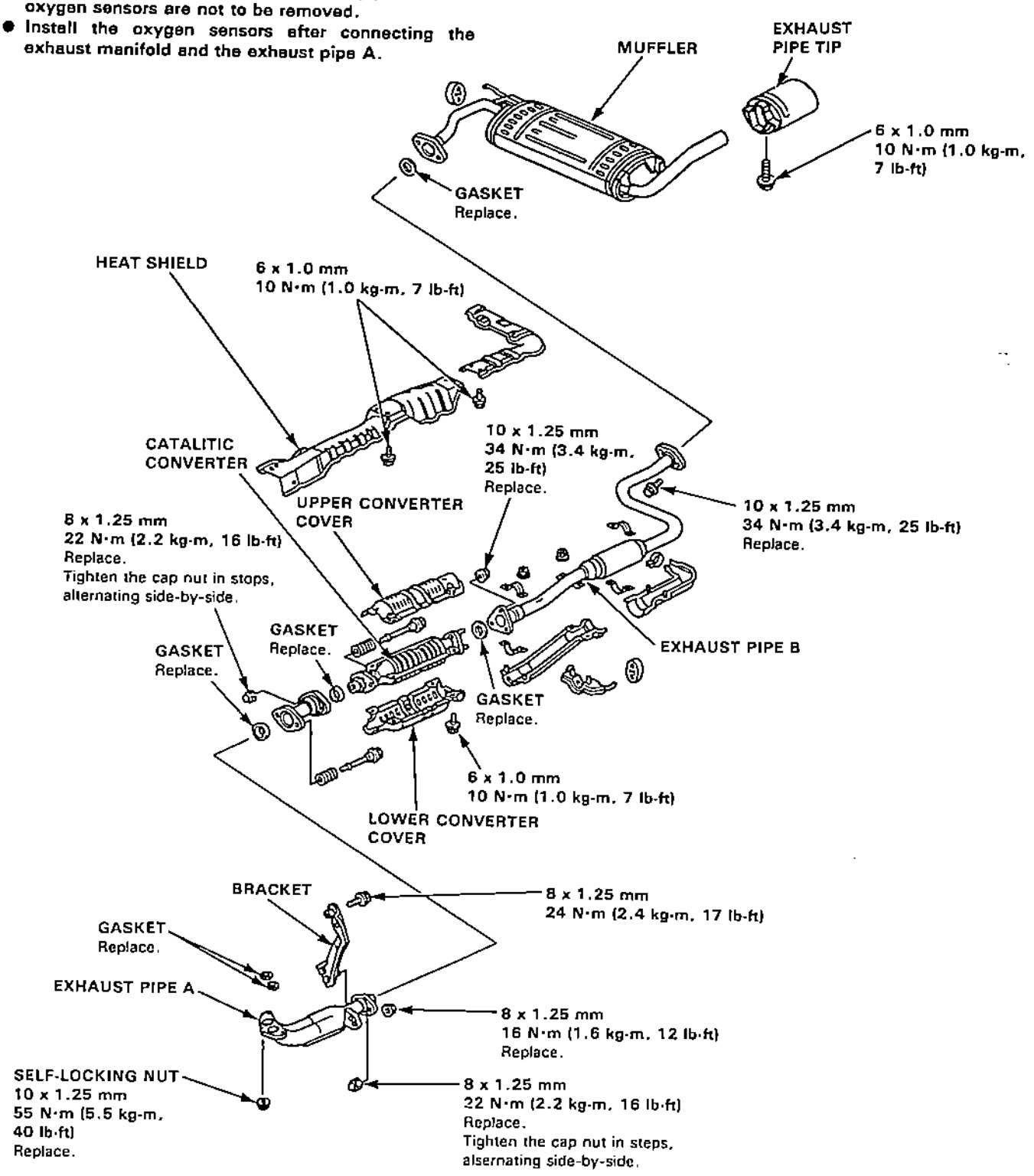


Exhaust Pipe and Muffler

Replacement

CAUTION:
- Remove the oxygen sensors (on the exhaust manifold) before disconnecting the exhaust mainfold and the exhaust pipe A.
- Do not use air wrench or hammer for disconnecting the exhaust manifold and the exhaust pipe A, if the oxygen sensors are not to be removed.
- Install the oxygen sensors after connecting the exhaust manifold and the exhaust pipe A.
- Do not use air wrench for tightening self-locking nuts of the exhaust pipe A, if the oxygen sensors are not to be removed.

NOTE: Use new gaskets and self-locking nuts when reassembly.



Radiator

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Water Pump Inspection 5-77



Radiator

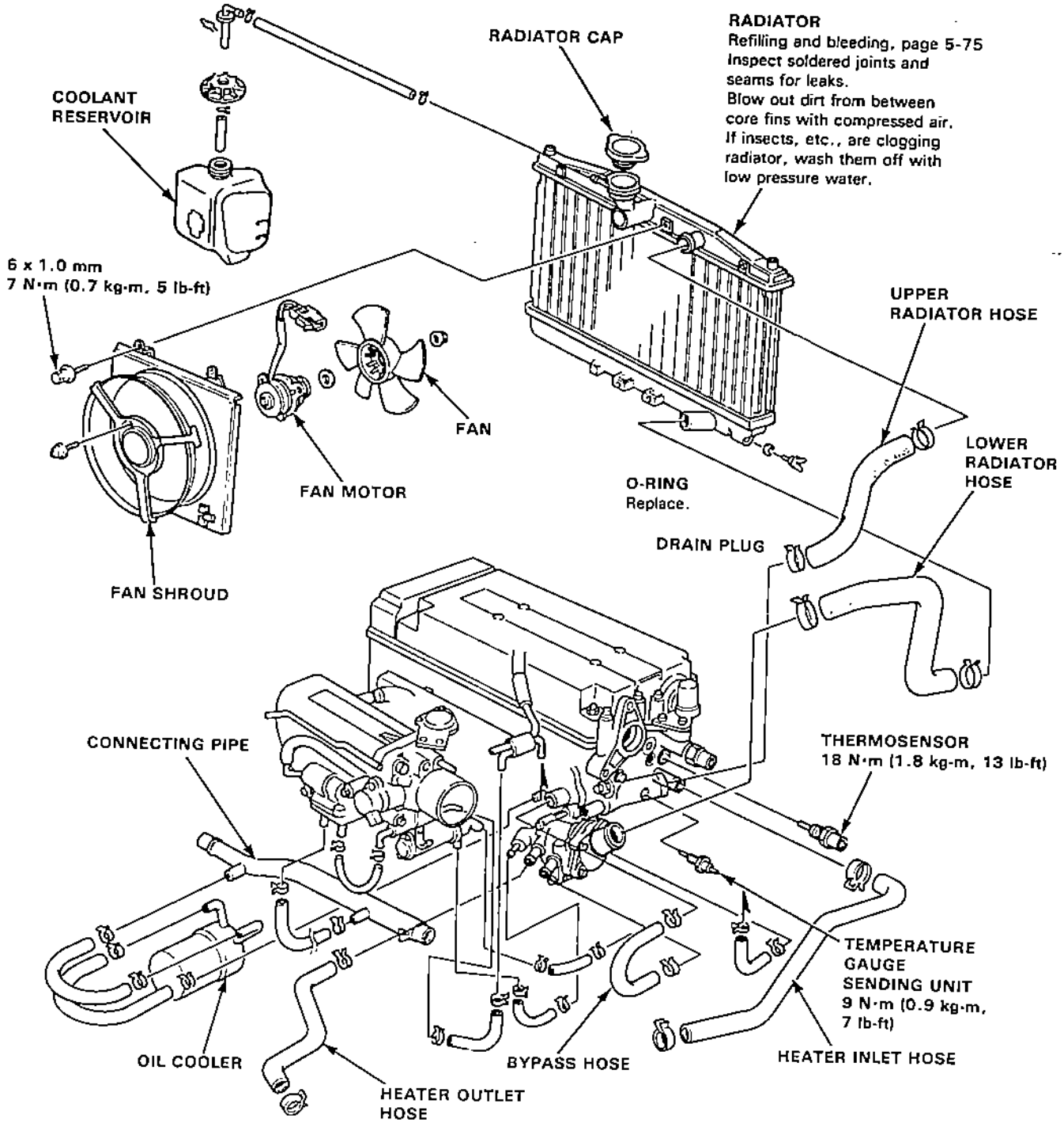
Illustrated Index

⚠WARNING System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.

Total Cooling System Capacity (Including reservoir)
5.7 ℓ (6.0 US qt, 5.0 Imp qt)
Refilling Capacity
4.7 ℓ (5.0 US qt, 4.1 Imp qt)
Heater Capacity, 0.6 ℓ (0.6 US qt, 0.5 Imp qt)
Reservoir Capacity 0.4 ℓ (0.4 US qt, 0.4 Imp qt)

CAUTION: When supplying coolant, be sure to shut he relay box lid and not to let coolant spill on the electrical parts or the painted portion. If any coolant spills, rinse it off immediately.

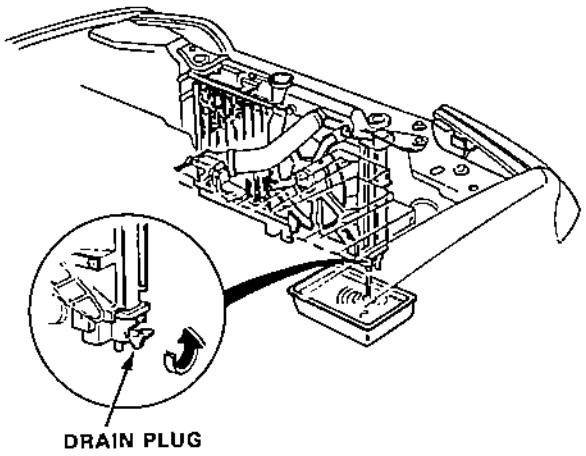
NOTE:
- Check all cooling system hoses for damage, leaks or deterioration and replace if necessary.
- Check all hose clamps and retighten if necessary.
- Use new O-rings when reassembling.



Refilling and Bleeding

CAUTION: When supplying coolant, be sure to shut the relay box lid and not to let coolant spill on the electrical parts or the painted portion. If any coolant spills, rinse it off immediately.

1. Set the heater temperature lever or control dial to maximum heat.
2. Remove the engine splash shield under the engine.
3. When the radiator is cool, remove the radiator cap. Loosen the drain plug, and drain the radiator.
4. Remove the drain bolt from the rear side of the cylinder block and heater.

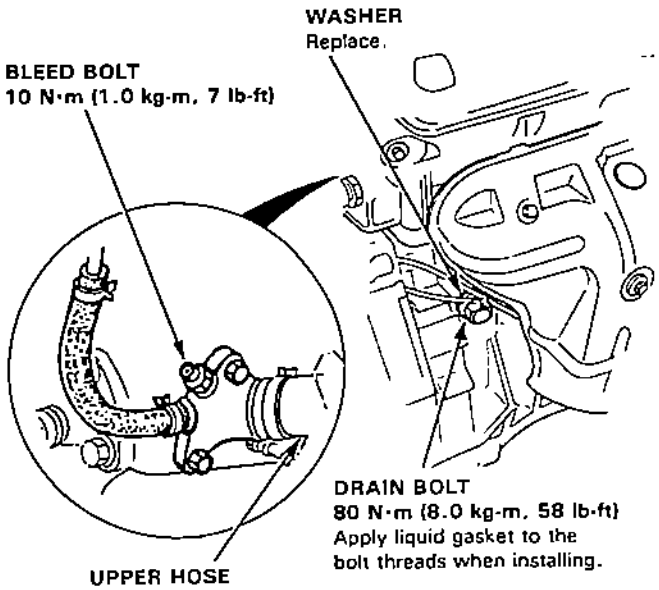


5. Apply liquid gasket to the drain bolt threads, then reinstall the bolt with a new washer and tighten it securely.
6. Tighten the radiator drain plug securely.
7. Remove, drain and reinstall the reservoir. Fill the tank halfway to the MAX mark with water, then up to the MAX mark with coolant.
8. Mix the recommended anti-freeze with an equal amount of water in a clean container.
   NOTE:
   - Use only HONDA-RECOMMENDED anti-freeze/coolant.
   - For best corrosion protection, the coolant concentration must be maintained year-round at 50 % MINIMUM. Coolant concentrations less than 50 % may not provide sufficient protection against corrosion or freezing.
   - Coolant concentrations greater than 60 % will impair cooling efficiency and are not recommended.

CAUTION:
- **Do not mix different brands of anti-freeze/coolants.**
- **Do not use additional rust inhibitors or anti-rust products; they may not be compatible with the recommended coolant.**

Radiator Coolant Refill Capacity: including reservoir (0.4 ℓ (0.4 US qt, 0.4 Imp qt)).
4.7 ℓ (5.0 US qt, 4.1 Imp qt).

9. Loosen the air bleed bolt in the water outlet, then fill the radiator to the bottom of the filler neck with the coolant mixture. Tighten the bleed bolt as soon as coolant starts to run out in a steady stream without bubbles.

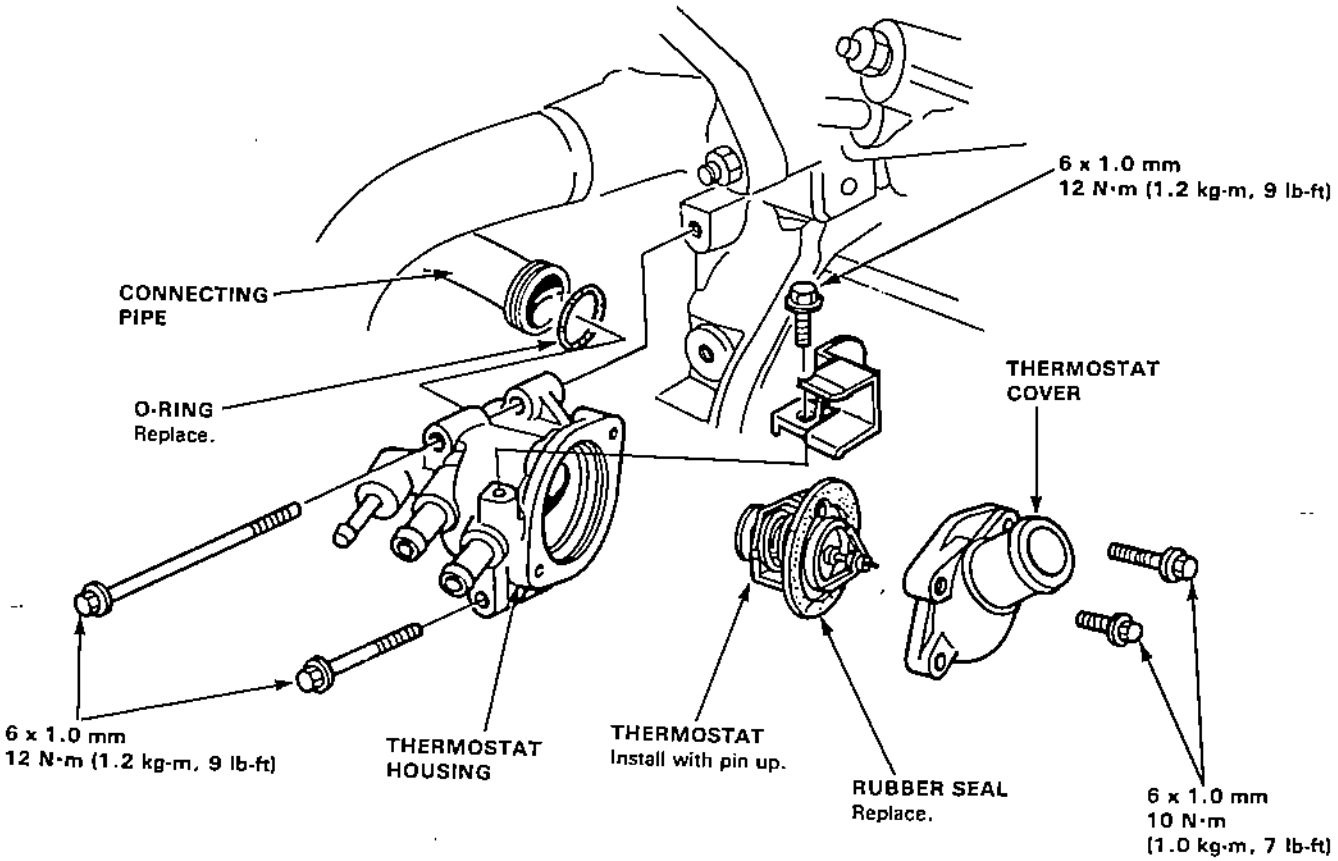


10. With the radiator cap off, start the engine and let it run until warmed up (fan goes on at least twice).
    Then, if necessary, add more coolant mix to bring the level back up to the bottom of the filler neck.
11. Put the radiator cap on, then run the engine again and check for leaks.

Thermostat

Replacement

NOTE: Use new gaskets and O-rings whenever reassembling.

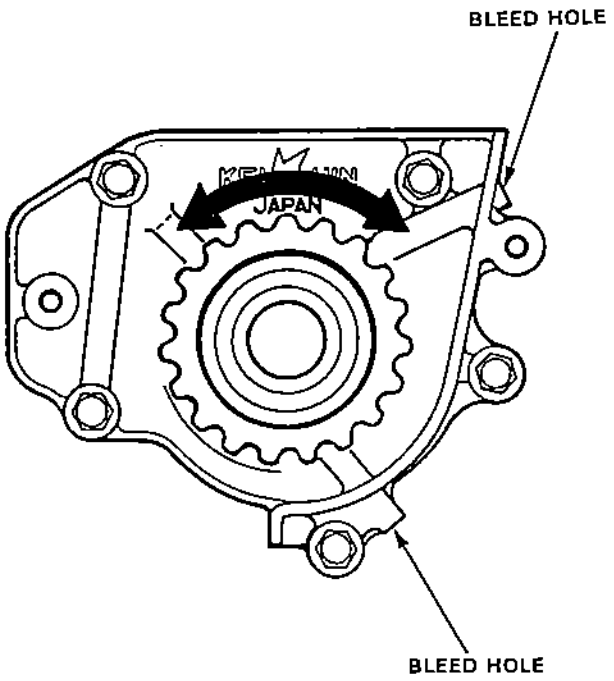


Water Pump

Inspection

1. Remove the timing belt (page 5-43).
2. Check the water pump pulley turn freely.
3. Check the signs of seal leakage.

   NOTE: Small amount of "weeping" from bleed hole is normal.



Fuel and Emissions

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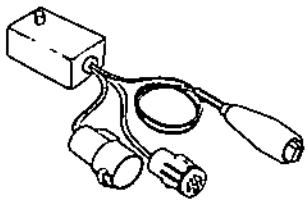


Outline of Model Change

The V-TEC engine has been adopted.

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ–SH20100	R.P.M. Connecting Adaptor	1	
②	07406–0040001	Fuel Pressure Gauge Set	1	
②-1	07406–0040100	Pressure Gauge	(1)	Component Tools
②-2	07406–0040201	Hose Assembly	(1)	Component Tools
③	07411–0020000	Digital Circuit Tester	1	
④	07999–PD6000A	PGM-FI Test Harness	1	



①



②



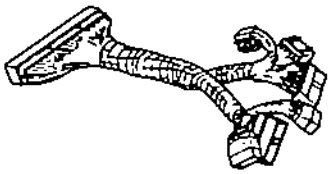
②-1



②-2



③

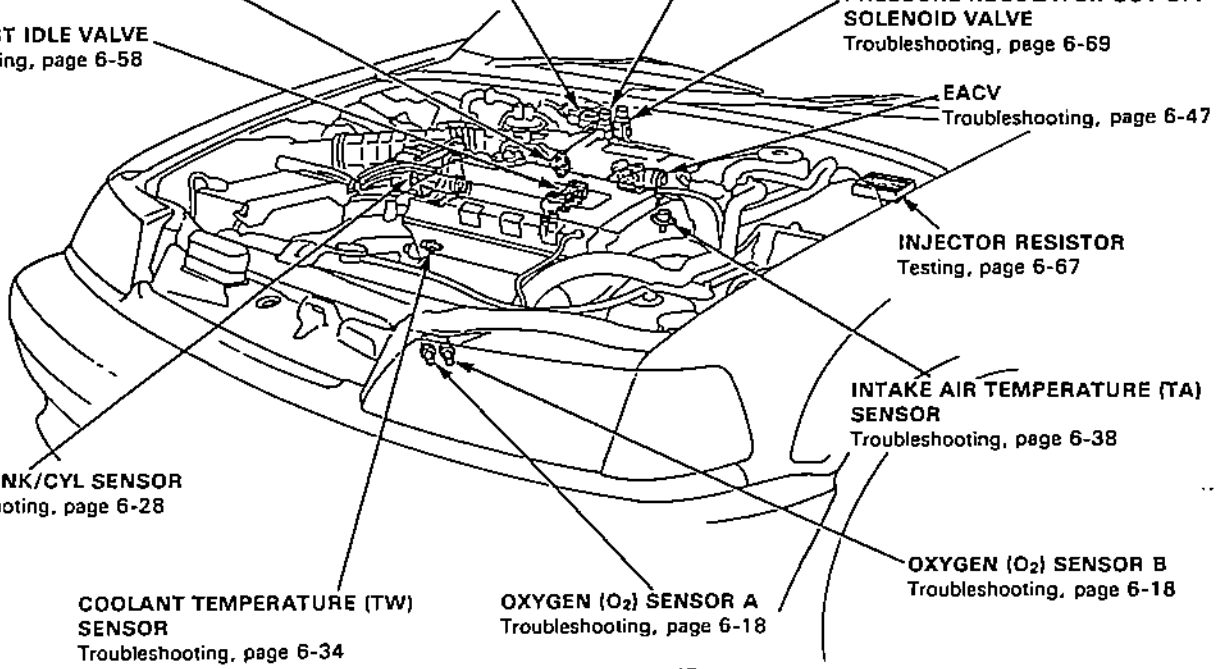


④

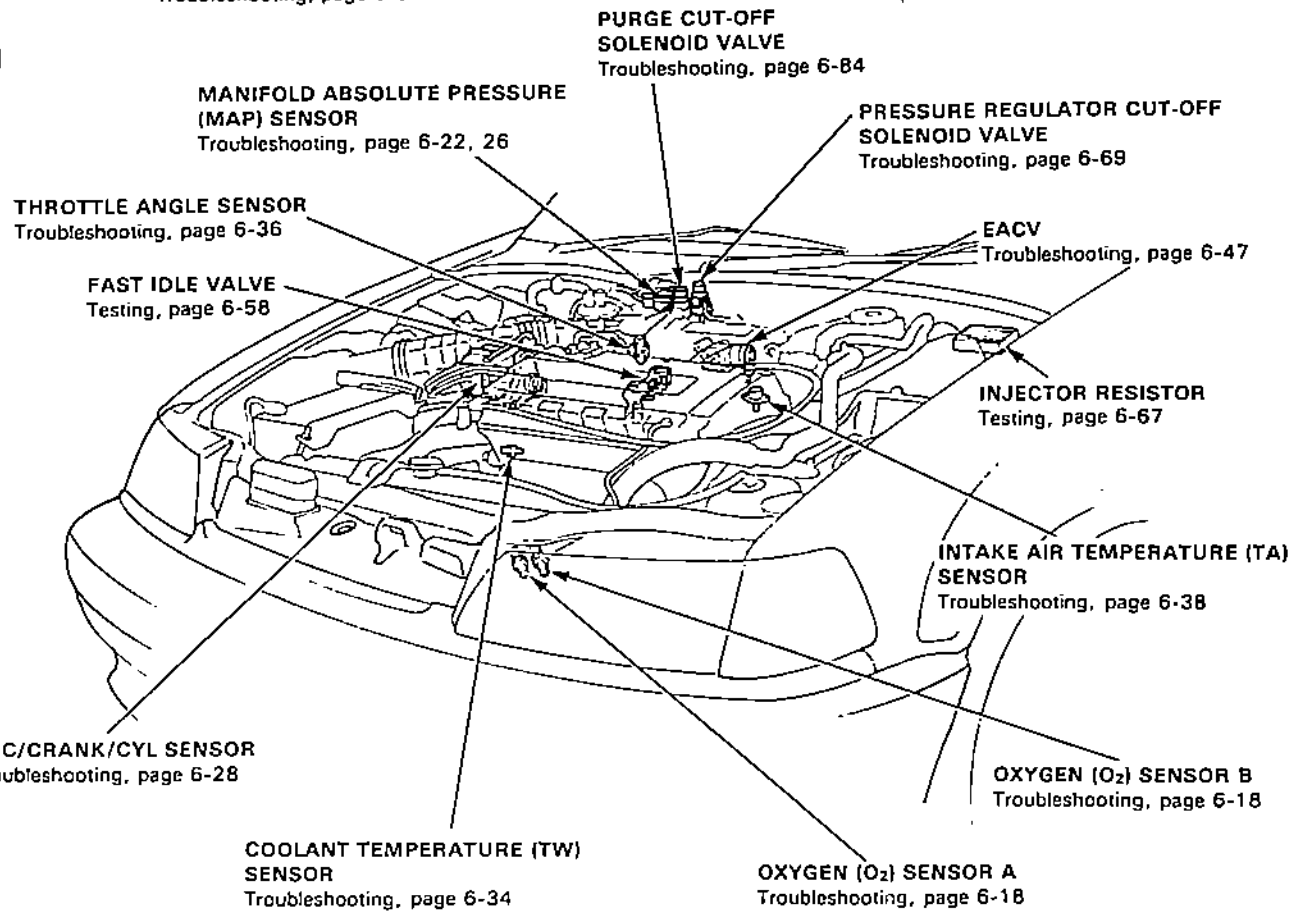
Component Locations

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[LH]



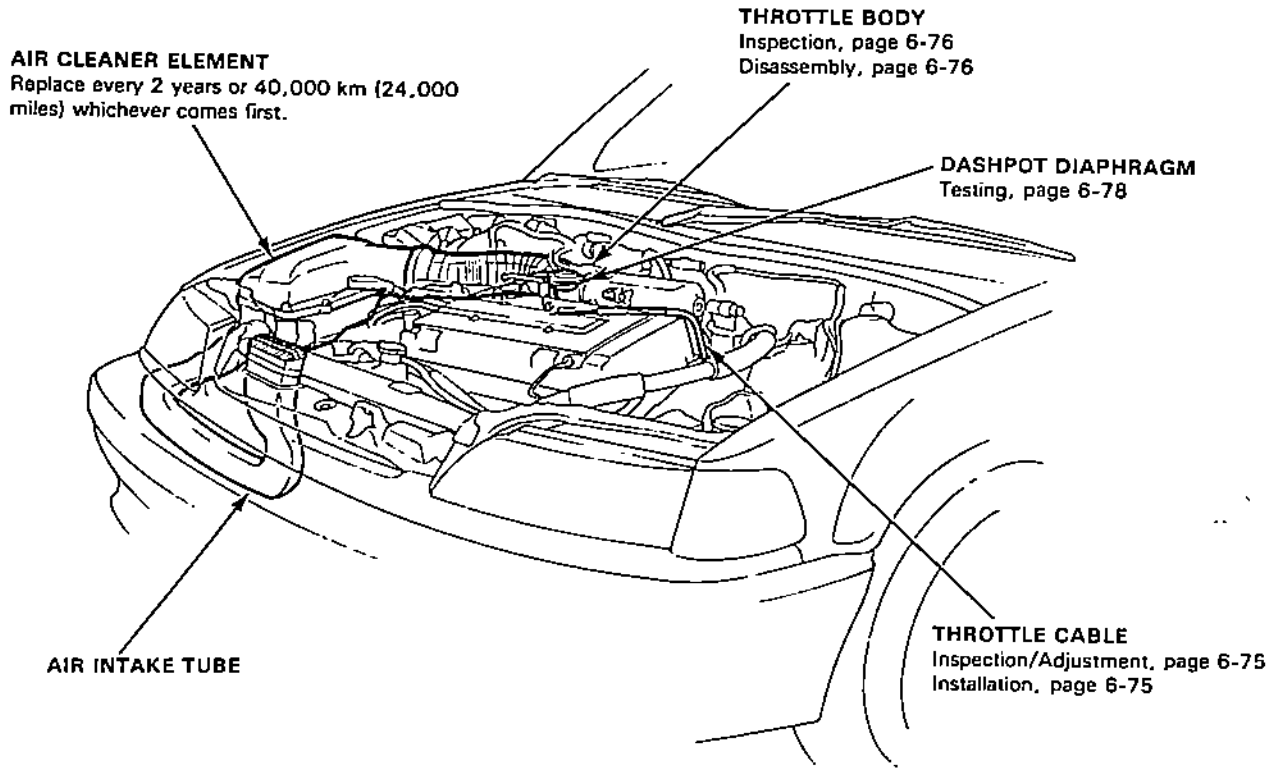
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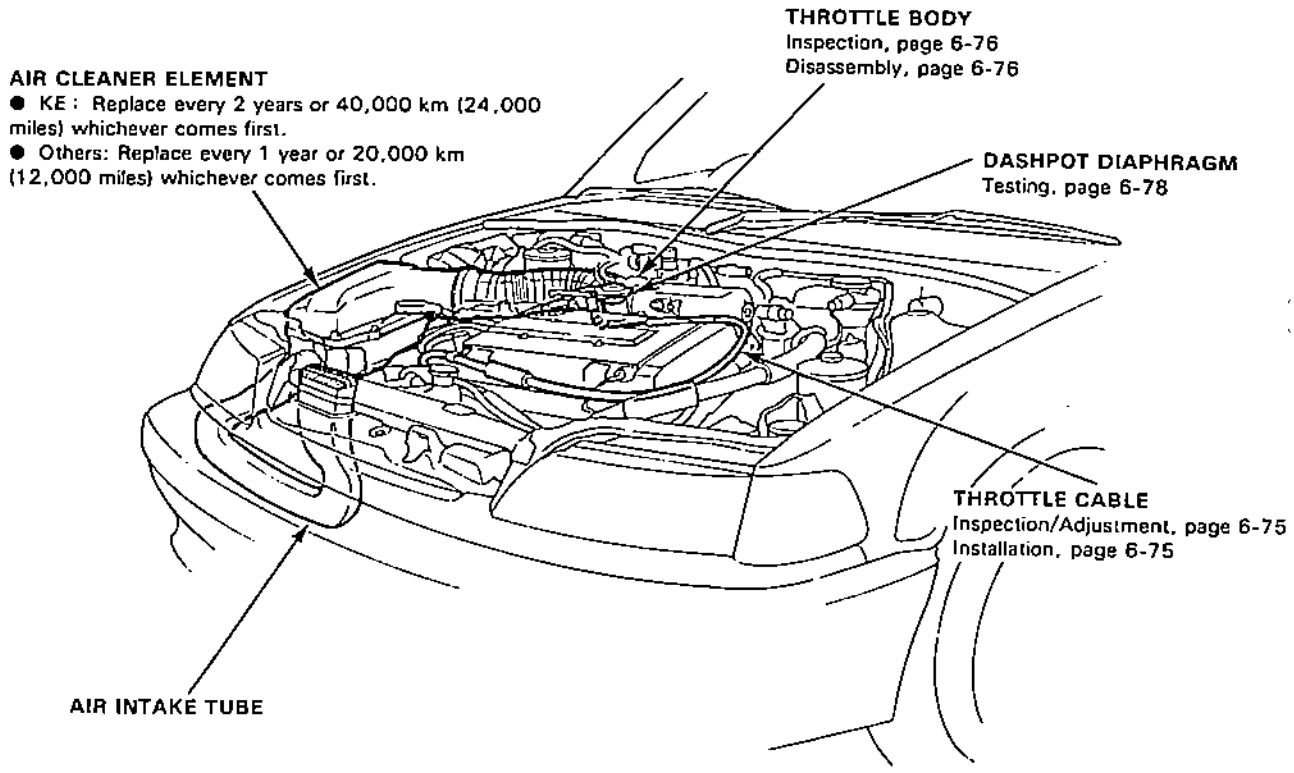
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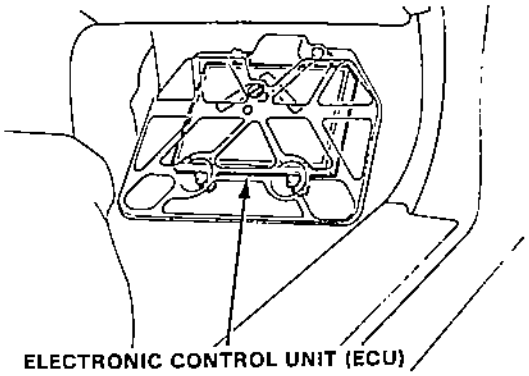
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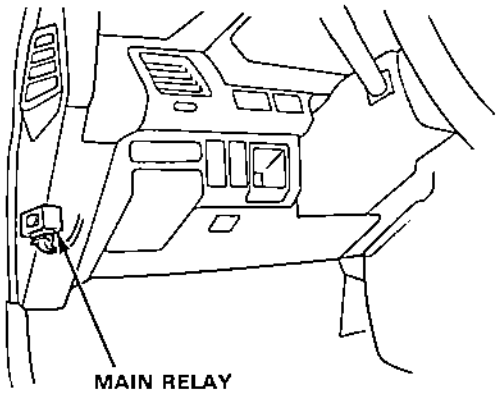
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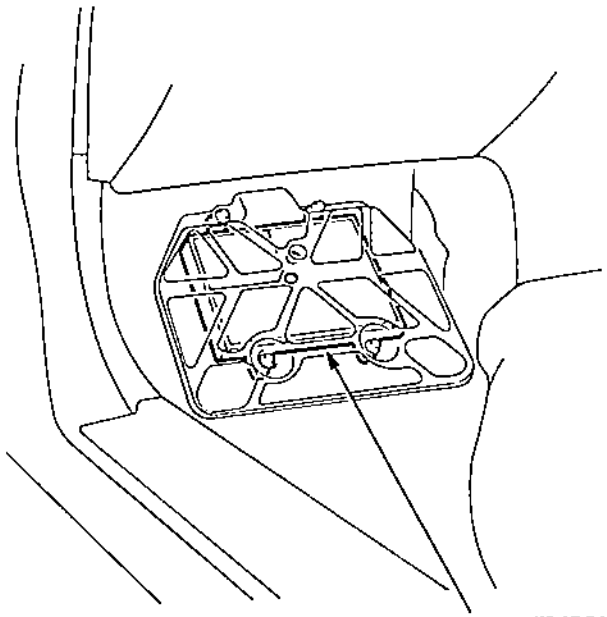


ELECTRONIC CONTROL UNIT (ECU)
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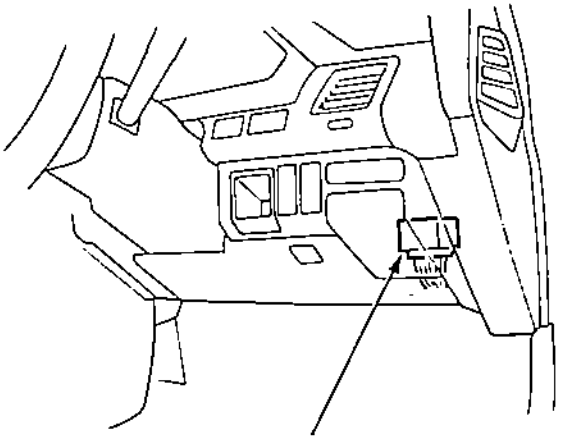


MAIN RELAY

[RH]



ELECTRONIC CONTROL UNIT (ECU)
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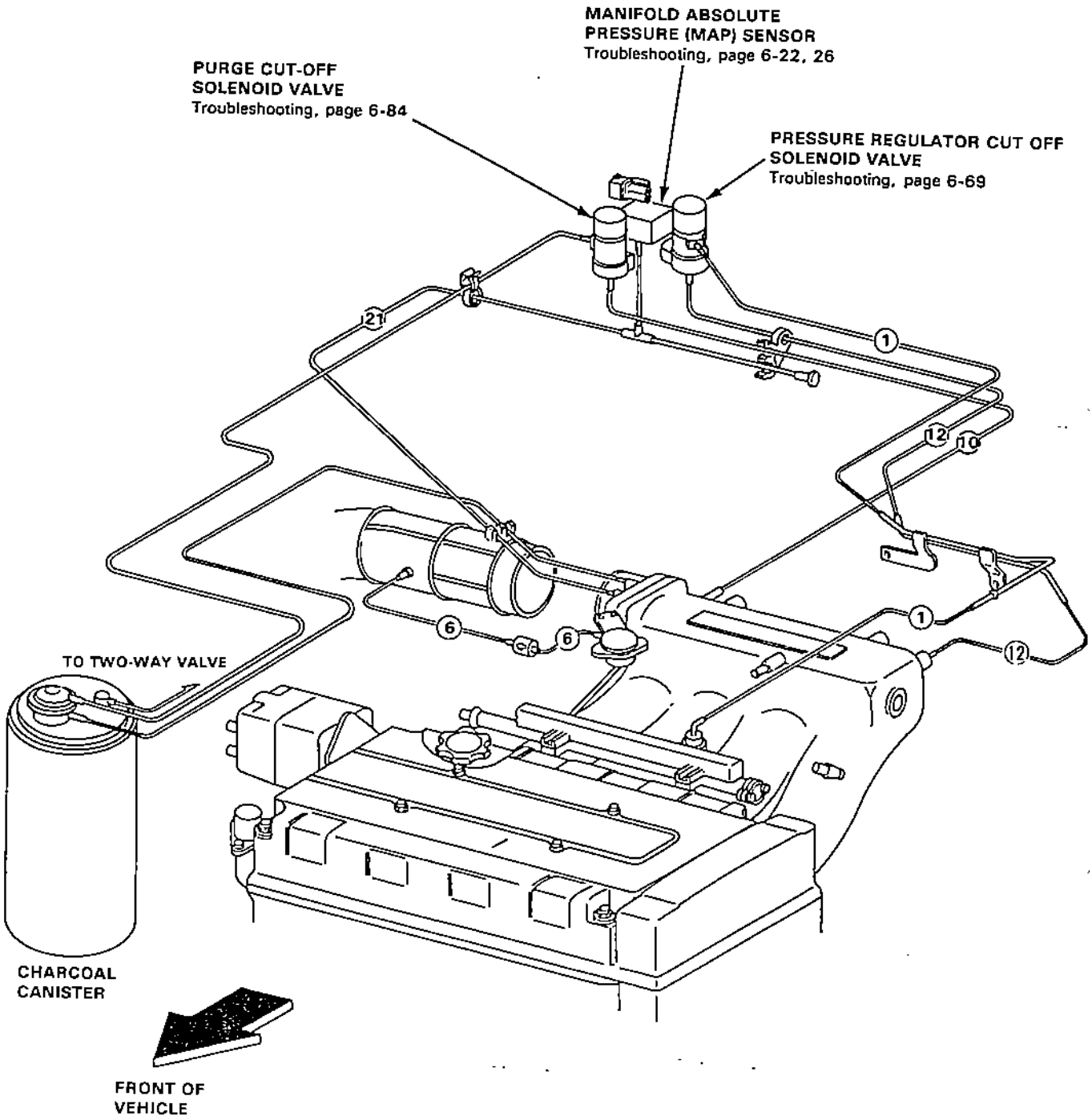


MAIN RELAY

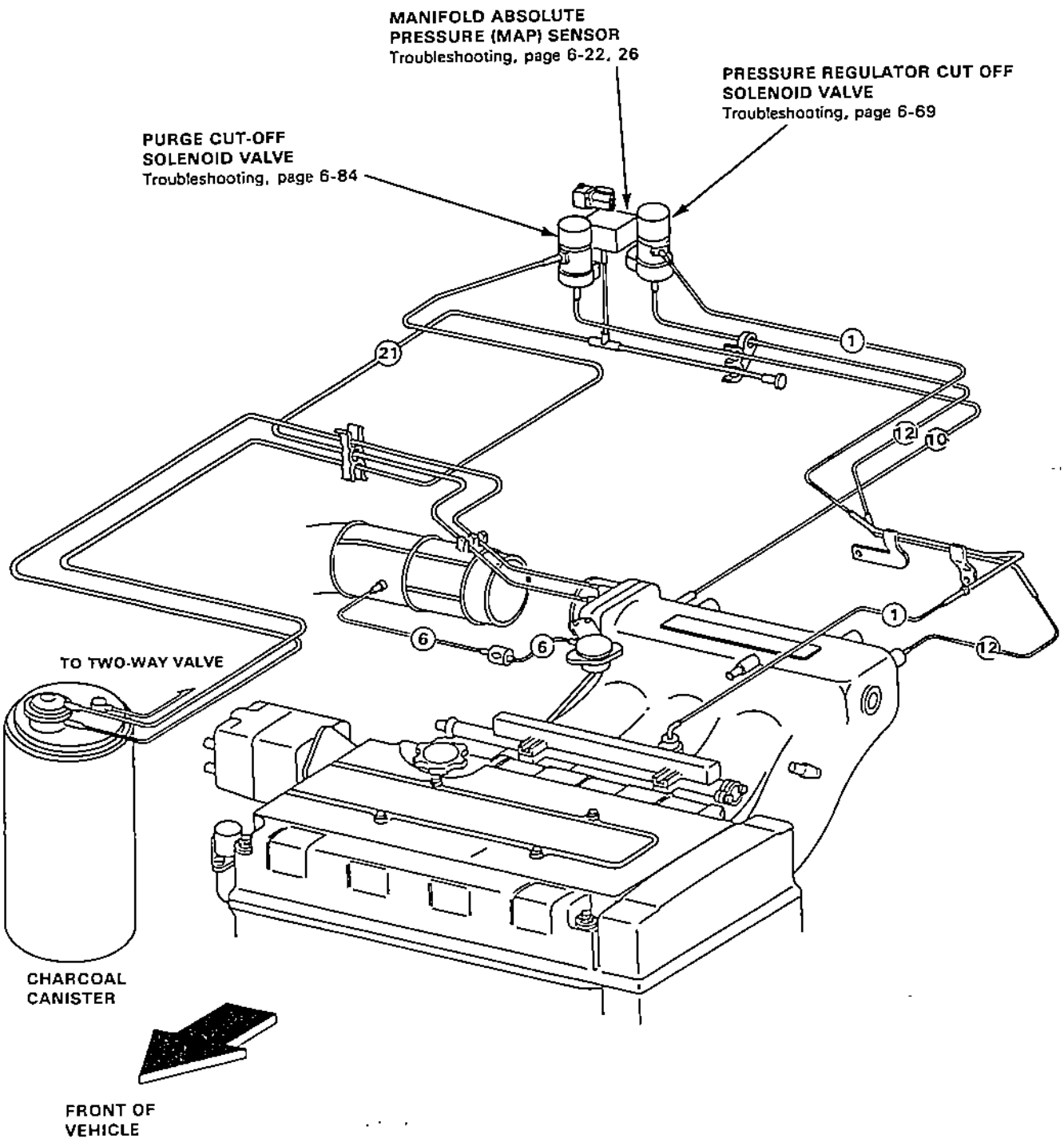
System Description

Vacuum Connections

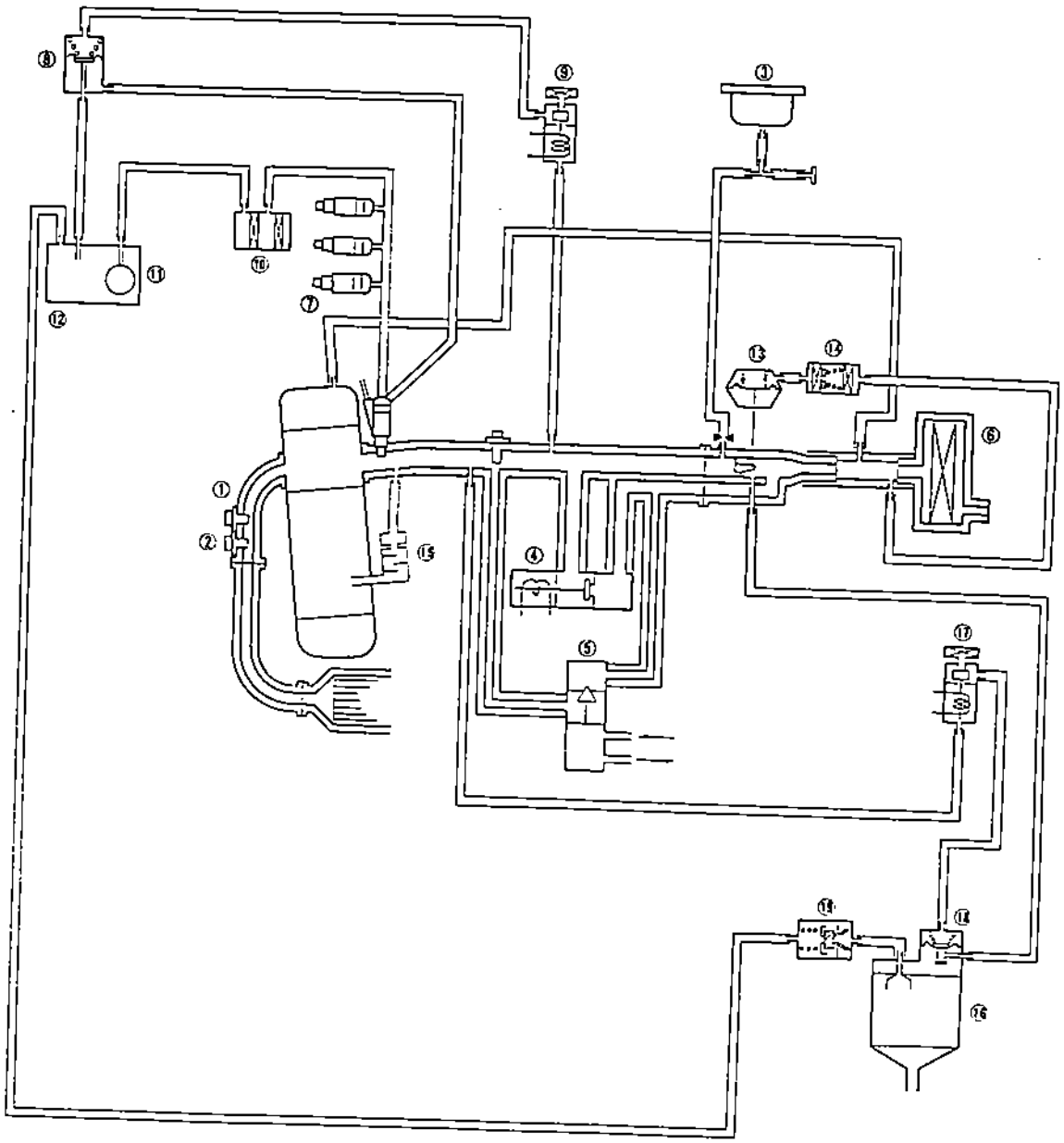
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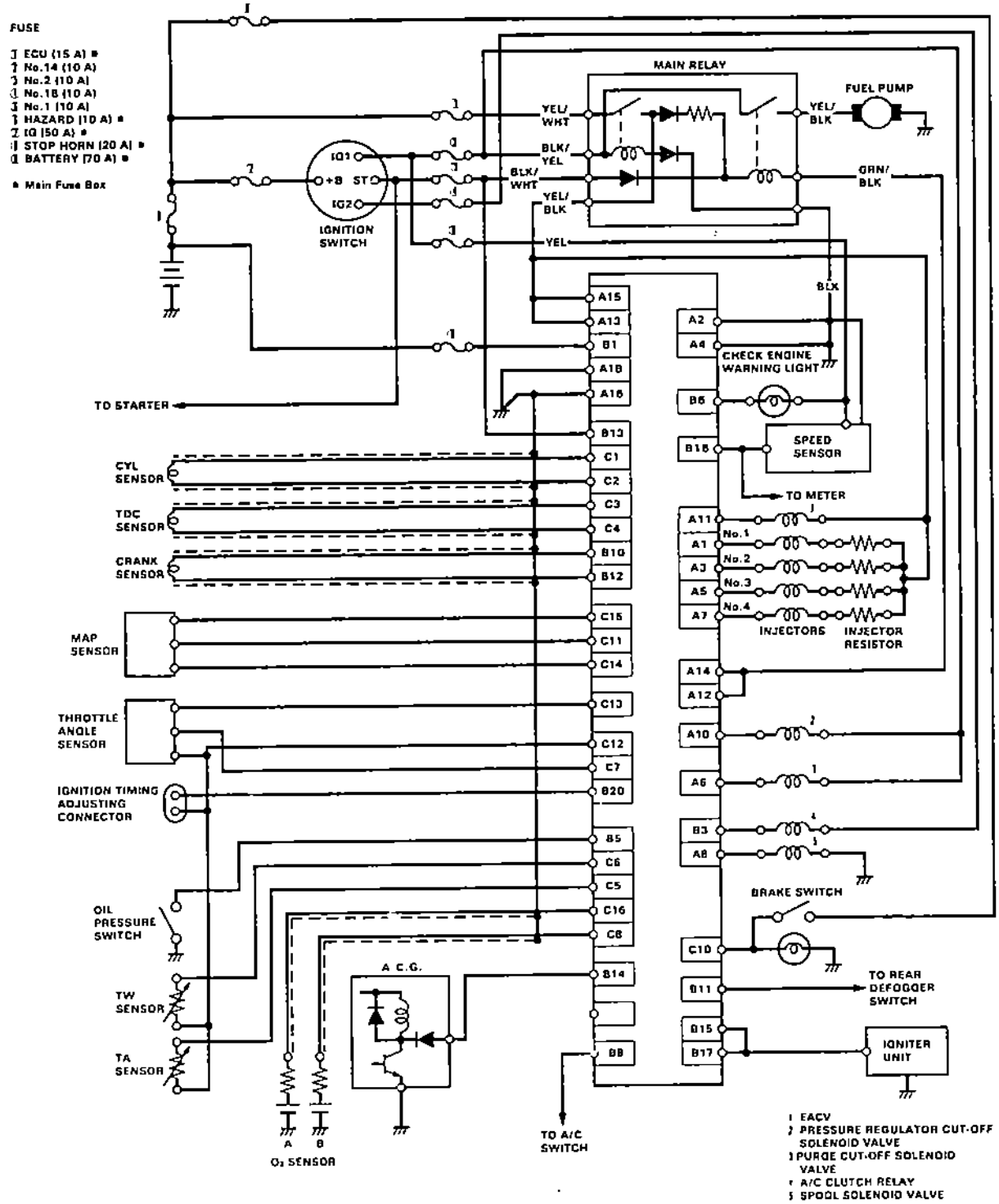
[RH]


MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
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PRESSURE REGULATOR CUT OFF SOLENOID VALVE
Troubleshooting, page 6-69
PURGE CUT-OFF SOLENOID VALVE
Troubleshooting, page 6-84
21
1
12
10
6
6
1
12
TO TWO-WAY VALVE
CHARCOAL CANISTER
FRONT OF VEHICLE

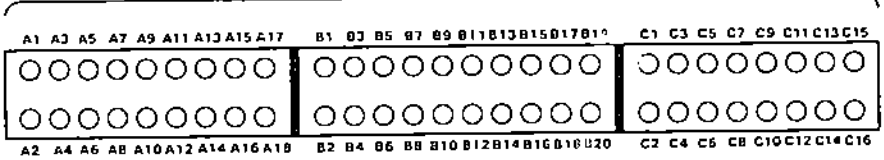
Vacuum Connections



① OXYGEN (O_2) SENSOR A
② OXYGEN (O_2) SENSOR B
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ELECTRONIC AIR CONTROL VALVE (EACV)
⑤ FAST IDLE VALVE
⑥ AIR CLEANER
⑦ FUEL INJECTOR
⑧ PRESSURE REGULATOR
⑨ PRESSURE REGULATOR CUT-OFF SOLENOID VALVE
⑩ FUEL FILTER
⑪ FUEL PUMP
⑫ FUEL TANK
⑬ DASHPOT DIAPHRAGM
⑭ DASHPOT CHECK VALVE
⑮ PCV VALVE
⑯ CHARCOAL CANISTER
⑰ PURGE CUT-OFF SOLENOID VALVE
⑱ PURGE CONTROL DIAPHRAGM VALVE
⑲ TWO-WAY VALVE



TERMINAL LOCATION



Troubleshooting

Troubleshooting Guide

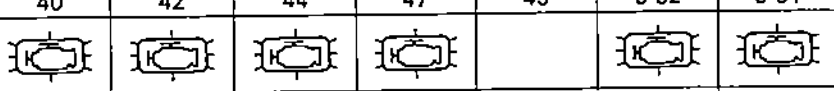
NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

PAGE / SYSTEM / SYMPTOM		PGM-FI						
		ECU	OXYGEN SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/CRANK/CYL SENSOR	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR
		15	18, 20	22, 26	28,30, 32	34	36	38
CHECK ENGINE WARNING LIGHT TURNS ON		▭ or ▭						
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	① or ② or ㊸ or ㊹	③ or ⑤	④ or ⑧ or ⑨	⑥	⑦	⑩
ENGINE WON'T START		③						
DIFFICULT TO START ENGINE WHEN COLD		(BU)		③		①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	(BU)				③		
	ROUGH IDLE	(BU)		③				
	WHEN WARM ENGINE SPEED TOO HIGH	(BU)						
	WHEN WARM ENGINE SPEED TOO LOW	(BU)						
FREQUENT STALLING	WHILE WARMING UP	(BU)						
	AFTER WARMING UP	(BU)						
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING	(BU)						
	FAILS EMISSION TEST	(BU)	③	②				
	LOSS OF POWER	(BU)		③			②	

* If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

(BU): When the Check Engine warning light and the self-diagnosis indicator are on, the back-up system is in operation. Substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

※※;KX, KS, KG only

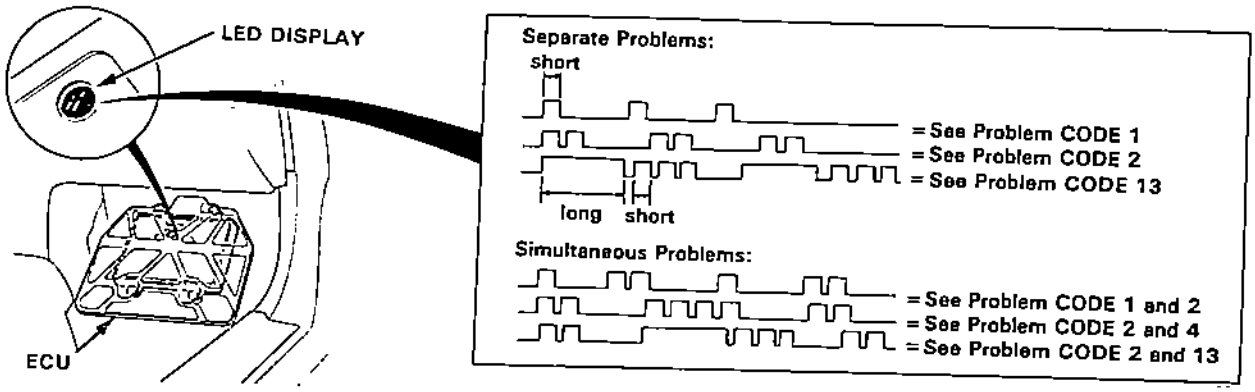
PGM-FI			IDLE CONTROL		VALVE TIMMING CONTROL		FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	SPOOL SOLENOID VALVE	OIL PRESSURE SWITCH			
40	42	44	47	45	5-32	5-34	60	74	80
									
⑬	⑮	⑰	⑭		㉑	㉒			
							①		
				②					
			①	②					
			①				②		
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			①				②		
			①	②			③		
			①	②			③		
			②				①		
							①		
							①		

Troubleshooting

Self-diagnostic Procedure

When the Check Engine warning light has been reported on, turn the ignition on, pull down the passenger's side carpet from under the dashboard and observe the LED on the top of the ECU. The LED indicates a system failure code by blinking frequency. The ECU LED can indicate any number of simultaneous component problems by blinking separate codes, one after another. Problem codes 1 through 9 are indicated by individual short blinks. Problem codes 10 through 44 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 problem code.

NOTE: Information on this page is for LH and RH models.

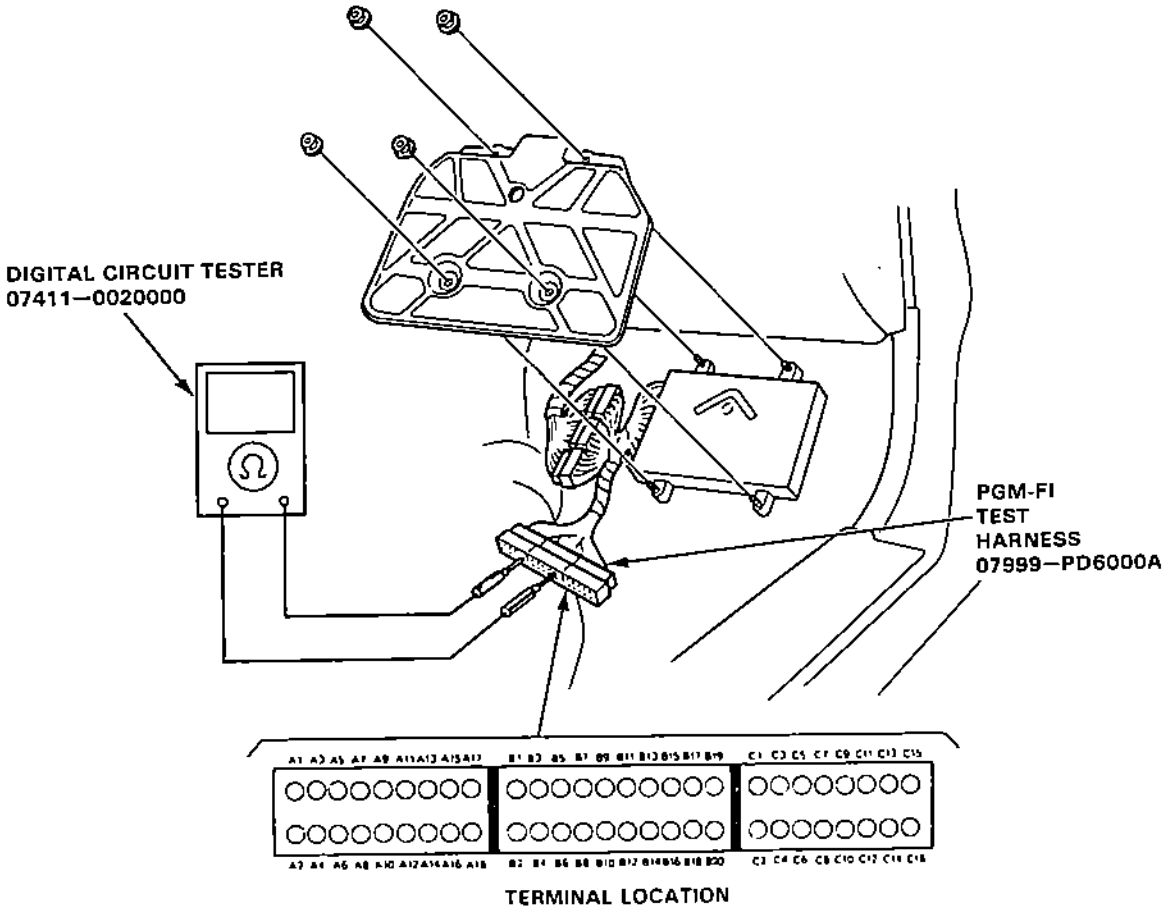


SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-15
1, 2	OXYGEN CONTENT	6-18
3	MANIFOLD ABSOLUTE PRESSURE	6-22
5		6-26
4	CRANK ANGLE	6-28
6	COOLANT TEMPERATURE	6-34
7	THROTTLE ANGLE	6-36
8	TDC POSITION	6-30
9	No.1 CYLINDER POSITION	6-32
10	INTAKE AIR TEMPERATURE	6-38
13	ATMOSPHERIC PRESSURE	6-40
14	ELECTRONIC AIR CONTROL	6-47
15	IGNITION OUTPUT SIGNAL	6-42
17	VEHICLE SPEED SENSOR	6-44
21	SPOOL SOLENOID VALVE	5-32
22	OIL PRESSURE SWITCH	5-34
43, 44	FUEL SUPPLY SYSTEM (KX, KS, KG)	6-20

If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking unusual codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.
The Check Engine warning light and ECU LED may come on, indicating a system problem, when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.
If the Check Engine warning light is on and LED stays on, replace the ECU.

If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure described for the appropriate code(s) listed on the following pages.

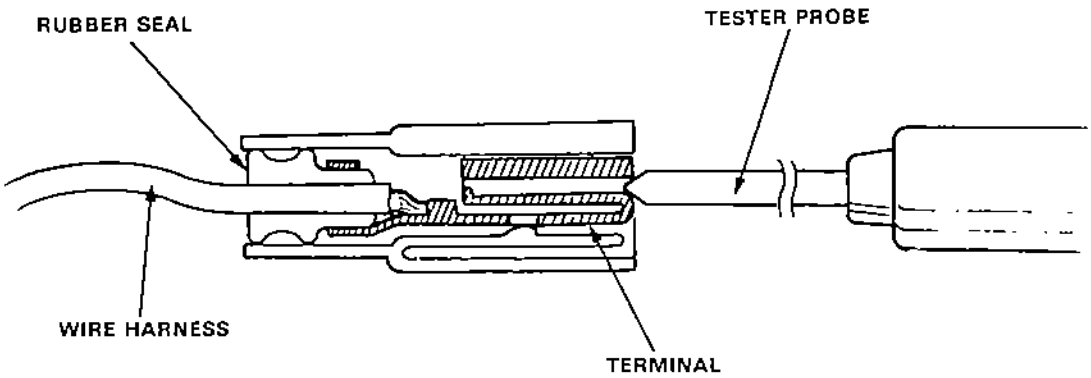
NOTE: Information on this page is for LH and RH models.



TERMINAL LOCATION

CAUTION:

- Puncturing the insulation on a wire can cause poor or intermittent electrical connections.
- For testing at connectors other than the PGM-FI test harness, 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.



How to Read Flowcharts

A flowchart is designed to be used from start to final repair. It's like a map showing you the shortest distance. But beware: if you go off the "map" anywhere but a "stop" symbol, you can easily get lost.

START (bold type) — Describes the conditions or situation to start a troubleshooting flowchart.

ACTION — Asks you to do something: perform a test, set up a condition, etc.

DECISION — Asks you about the result of an action, then sends you in the appropriate troubleshooting direction.

STOP (bold type) — The end of a series of actions and decisions, describes a final repair action and sometimes directs you to an earlier part of the flow to confirm your repair.

NOTE:

- The term "Intermittent Failure" is used several times in these charts. It simply means a system may have had a failure, but it checks out OK through all your tests. You may need to road test the car to reproduce the failure or if the problem was a loose connection, you may have unknowingly solved it while doing the tests. In any event, if the warning light 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.
- Most of the troubleshooting flowcharts have you reset the ECU and try to duplicate the problem code. If the problem is intermittent and you can't duplicate the code, do not continue through the flowchart. To do so will only result in confusion and, possibly a needlessly replaced ECU.
- "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. In simple electronics, this usually means something won't work at all. In complex electronics (like ECUs), this can sometimes mean something works, but not the way it's supposed to.
- If the electrical readings are not as specified when using the PGM-FI test harness, check the test harness connections before proceeding.

Troubleshooting Flowchart — ECU

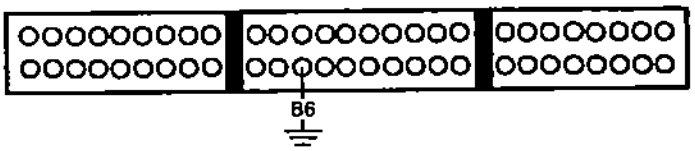
Check Engine warning light isn't on for two seconds after ignition is first turned on.

Is oil pressure warning light on ?
- NO → Inspect No.1 fuse.
  - Is No.1 fuse OK ?
    - NO → Replace fuse.
    - YES → Repair open in YEL wire between No.1 fuse and combination meter.
- YES

Turn the ignition switch OFF.

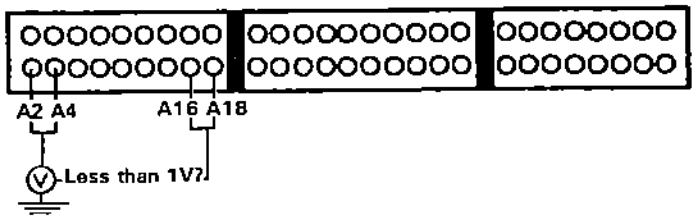
Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Connect B6 terminal to body ground.



Turn the ignition switch ON.

Is Check Engine warning light on ?
- NO → - Replace warning light bulb.
  - Repair open in GRN/ORN wire between ECU (B6) and combination meter.
- YES

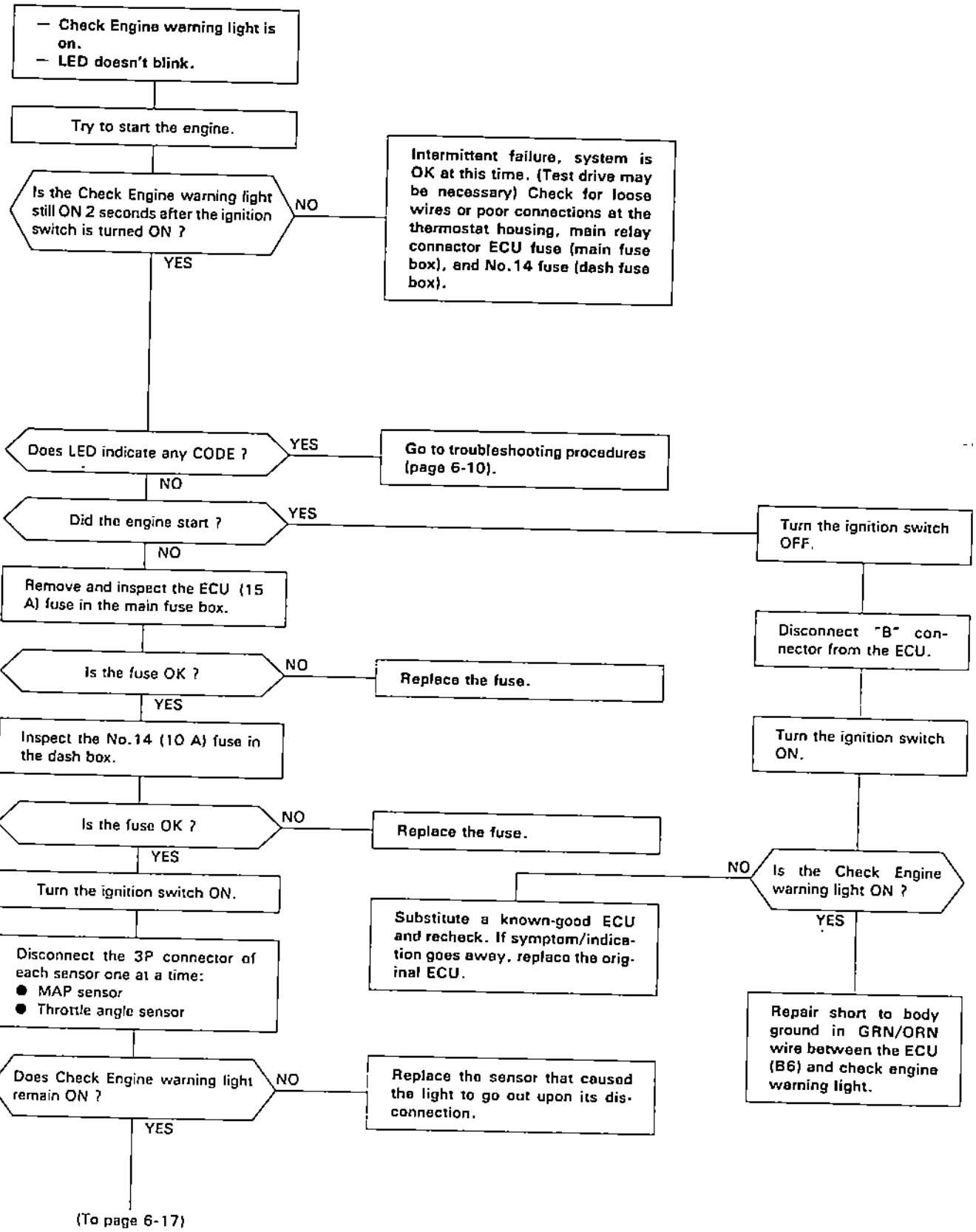


Measure voltage between body ground and the following terminals individually to: •A2, •A4, •A16, •A18

Is there less than 1V?
- NO → Repair open in wire between ECU and thermostat housing (G101) that had more than 1V.
- YES

Substitute a known-good ECU and recheck. If symptom/ indication goes away, replace the original ECU.

Troubleshooting Flowchart — ECU (cont'd)

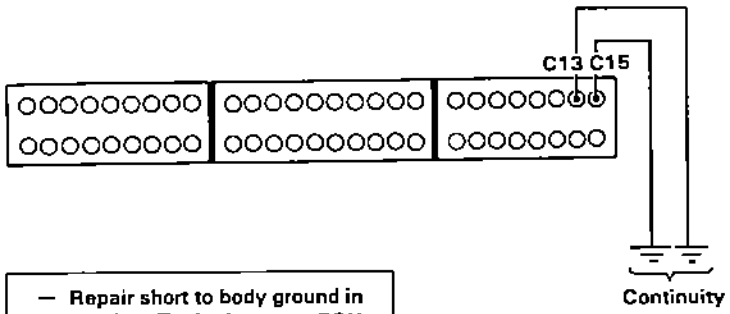


(From page 6-16)

Turn the ignition switch OFF.

Connect the PGM-FI test harness (page 6-13). But disconnect the "C" connector from the ECU only, not the main wire harness.

Check for continuity between body ground and the following terminals: C13, C15.



Does continuity exist ?

YES
- Repair short to body ground in YEL/WHT wire between ECU (C13) and throttle angle sensor.
- Repair short to body ground in YEL/RED wire between ECU (C15) and MAP sensor.

NO

Reconnect the all connectors. Reconnect the "C" connector to the ECU.

Turn the ignition switch ON.

Individually connect the following terminal to Body Ground. A16 · A18

Is the Check Engine warning light still ON after 2 seconds ?

NO
- Repair open in BLK/RED wire between ECU (A18) and G101.
- Repair open in BRN/BLK wire between ECU (A16) and G101.

YES

Measure voltage between A18 (−) and the following: A13 (+) and A15 (+).

Is there battery voltage ?

NO
- Repair open in YEL/BLK wire between ECU (A13, A15) and main relay.
- Check main relay and wiring connectors at main relay.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

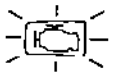
Troubleshooting Flowchart — Oxygen Sensor



① Self-diagnosis LED blinks once: A problem in the Oxygen (O_2) Sensor A circuit.



② Self-diagnosis LED blinks twice: A problem in the Oxygen (O_2) Sensor B circuit.



① or ②

- Check Engine warning light has been reported on.
- LED indicates CODE 1 (O_2 sensor A) or CODE 2 (O_2 sensor B).

↓

Turn the ignition switch OFF.

↓

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

↓

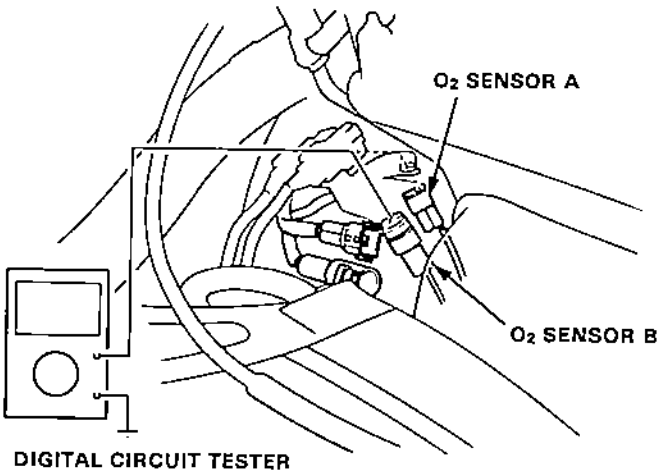
Disconnect engine wire harness from indicated O_2 sensor.

↓

Warm up engine to normal operating temperature (cooling fan comes on), then open the throttle wide open then close it.

↓

Measure voltage between the connector terminal and body ground.



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(To page 6-19)

(From page 6-18)

Is voltage above 0.6 V during wide open acceleration ? Is voltage below 0.4 V during closed throttle deceleration from 5,000 min^{-1} (rpm) ?

NO → Replace O_2 sensor.

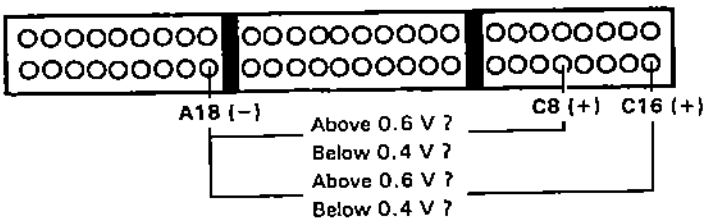
YES

Stop engine.

Reconnect the O_2 sensor connector to engine wire harness.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Restart and warm up engine to normal operating temperature then open the throttle wide open then close it.



Measure voltage between:
- O_2 sensor A
  C16 (+) and A18 (−) terminals
- O_2 sensor B
  C8 (+) and A18 (−) terminals

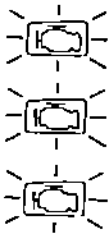
Is voltage above 0.6 V during wide open acceleration ? Is voltage below 0.4 V during closed throttle deceleration from 5,000 min^{-1} (rpm) ?

NO → Repair wire between ECU and O_2 sensor for short or open:
- O_2 sensor A WHT wire to C16.
- O_2 sensor B RED/BLU, ORN wire to C8.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — Fuel Supply System (KX, KS, KG)



(43) Self-diagnosis LED indicates code 43: Most likely a problem in the Oxygen (O_2) Sensor circuit A or a problem in the Fuel Supply System.

(44) Self-diagnosis LED indicates code 44: Most likely a problem in the Oxygen (O_2) Sensor circuit B or a problem in the Fuel Supply System.

(43) or (44)

- Check Engine warning light has been reported on.
- LED indicates CODE 43 (O_2 sensor A) or CODE 44 (O_2 sensor B).
- or continued from CODE 1 (O_2 sensor A) or CODE 2 (O_2 sensor B).

NOTE: If 43 or 44 code is accompanied by poor driveability, go to page 6-60, Fuel Supply System.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Warm up engine to normal operating temperature (cooling fan comes on).

Hold engine at 3,000 min^{-1} (rpm) for 2 minutes.

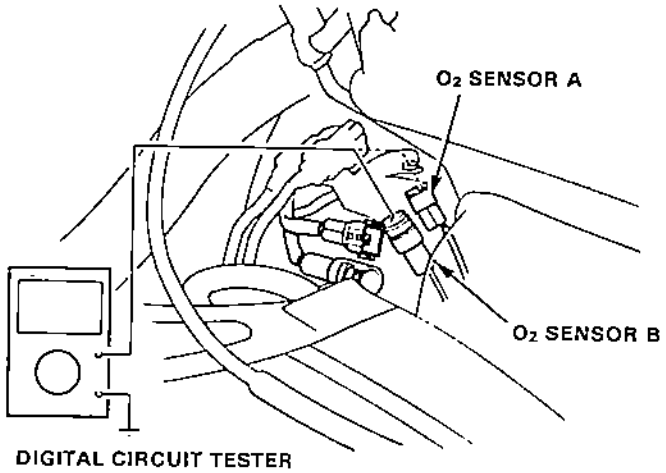
Is the Check Engine warning light on and does LED indicate CODE 43 or 44 ?

NO → Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at O_2 sensor A or B C210 (round connector located at right shock tower), and ECU.

YES

Disconnect the O_2 sensor connector and measure voltage between the O_2 sensor connector and body ground.

(To page 6-21)



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(From page 6-20)

Is voltage above 0.6 V during wide open acceleration ? Is voltage below 0.4 V during closed throttle deceleration from 5,000 min^{-1} (rpm) ?

NO → Replace O_2 sensor.

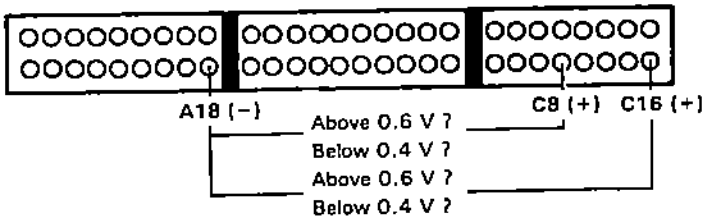
YES

Stop engine.

Reconnect the O_2 sensor connector to engine wire harness.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Restart and warm up engine to normal operating temperature then open the throttle wide open then close it.



Measure voltage between:
- O_2 sensor A
  C16 (+) and A18 (−) terminals
- O_2 sensor B
  C8 (+) and A18 (−) terminals

Is voltage above 0.6 V during wide open acceleration ? Is voltage below 0.4 V during closed throttle deceleration from 5,000 min^{-1} (rpm) ?

NO → Repair wire between ECU and O_2 sensor for short or open:
- O_2 sensor A WHT wire to C16.
- O_2 sensor B RED/BLU, ORN wire to C8.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart —— MAP Sensor

Self-diagnosis LED indicator blinks three times: Most likely an electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

Self-diagnosis LED indicator blinks five times: Most likely a mechanical problem (broken hose) in the Manifold Absolute Pressure (MAP) Sensor system.

- Engine is warm and running.
- Check Engine warning light is on.
- LED indicates CODE 3.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Warm up engine to normal operating temperature (cooling fan comes on).

Is Check Engine warning light on and does LED indicate CODE 3?

NO → Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connection or loose wires at MAP sensor connector and ECU.

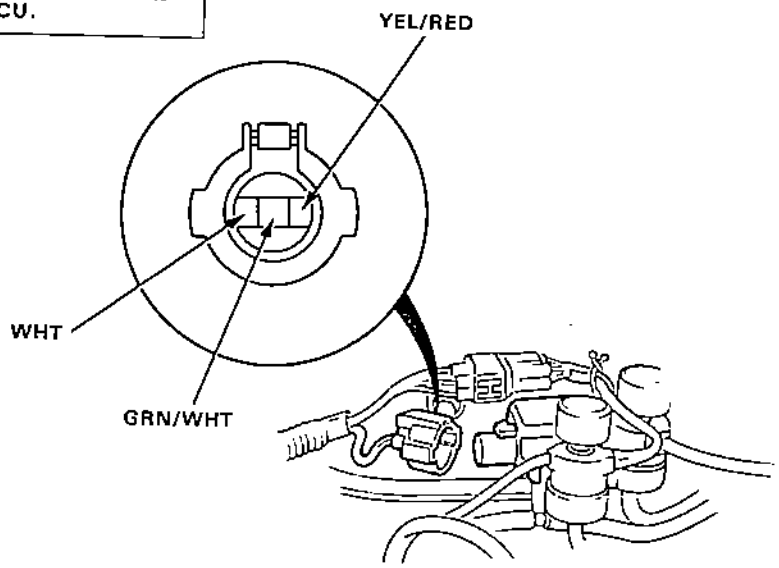
YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

(To page 6-23)



(From page 6-22)

Measure voltage between YEL/RED (+) terminal and body ground.

Is there approx. 5V?

YES → Measure voltage between YEL/RED (+) terminal and GRN/WHT (−) terminal.

NO → Repair open in YEL/RED wire between ECU (C15) and MAP sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

Is there approx. 5V?

NO → Repair open in GRN/WHT wire between ECU (C14) and MAP sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

Measure voltage between WHT (+) terminal and GRN/WHT (−) terminal.

Is there approx. 5V?

NO → Repair open or short in WHT wire between ECU (C11) and MAP sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

Turn the ignition switch OFF.

Reconnect the 3P connector to the MAP sensor.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Turn the ignition switch ON.

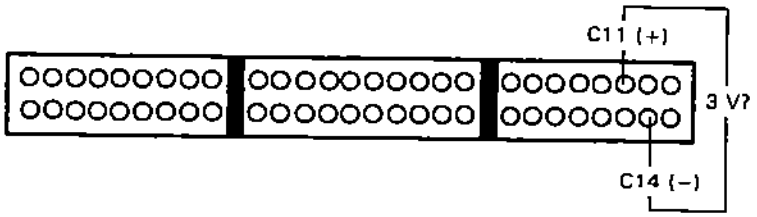
(To page 6-24)

(cont'd)

Troubleshooting Flowchart — MAP Sensor (cont'd)

(From page 6-23)

Measure voltage between C11 (+) terminal and C14 (–) terminal.



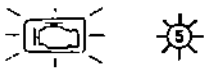
Is there approx. 3 V ?

NO → Replace MAP sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — MAP Sensor (cont'd)



- Check Engine warning light has been reported on.
- LED indicates CODE 5.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start the engine.

Is Check Engine warning light on and does LED indicate CODE 5?

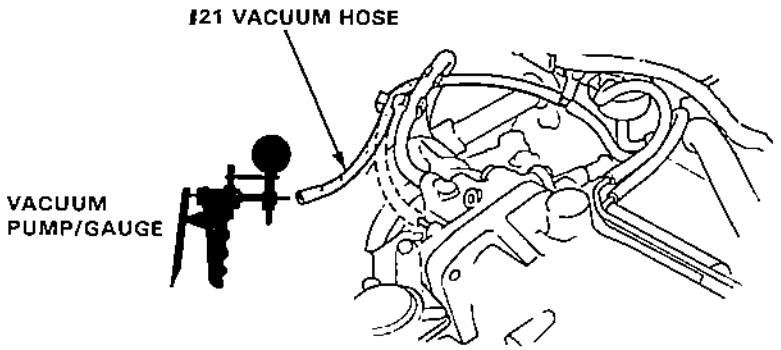
NO

- Intermittent failure, system is OK at this time (test drive may be necessary).
- Check vacuum hoses pipes and connections.
- Make sure all connectors are secure.

YES

Stop engine.

Connect vacuum pump to #21 hose and apply vacuum.



Does it hold vacuum?

NO

Connect a vacuum pump to the MAP sensor and apply vacuum.

YES

Does it hold vacuum?

NO

Replace MAP sensor.

YES

Replace #21 hose.

Disconnect #21 hose from the throttle body and connect a T-fitting from a vacuum gauge between the throttle body and MAP sensor.

(To page 6-27)

(From page 6-26)

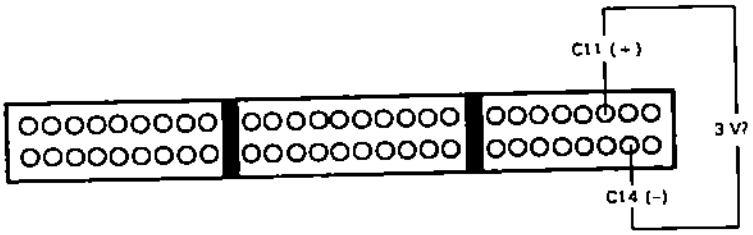
Start engine.

Is there manifold vacuum? NO → -Remove restriction from throttle body. -Replace throttle body.

YES

Stop engine.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).



Turn the ignition switch ON.

Measure voltage between C11 (+) terminal and C14 (-) terminal.

Is there approx. 3 V ? NO → Replace the MAP sensor.

YES

Start the engine and allow it to idle.

Is there approx. 1 V? NO → Replace MAP sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart —— TDC/CRANK/CYL Sensors

Self-diagnosis LED indicator blinks four times: A problem in the circuit of the CRANK Sensor.

Self-diagnosis LED indicator blinks eight times: A problem in the circuit of the TDC Sensor.

Self-diagnosis LED indicator blinks nine times: A problem in the circuit of the CYL Sensor.

- Check Engine warning light has been reported on.
- LED indicates CODE 4.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

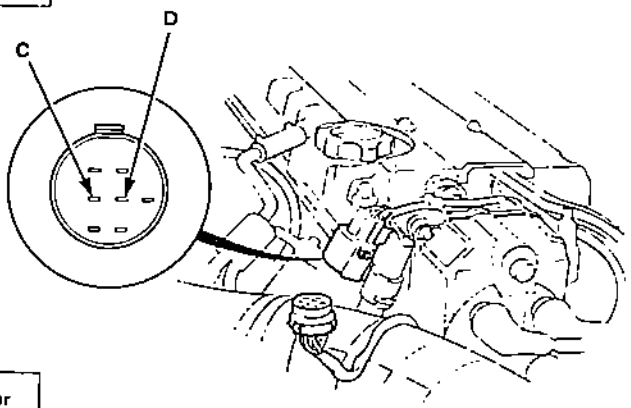
Is Check Engine warning light on and does LED indicate CODE 4?

NO → Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector and C210 (round connector located at the right shock tower).

YES

Stop engine.

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.



Measure resistance between C terminal and D terminal.

Is there 350–700 Ω ?

NO → Replace the distributor assembly (section 16).

YES

(To page 6-29)

(From page 6-28)

Check for continuity to body ground on C terminal and D terminal individually.

Does continuity exist ?

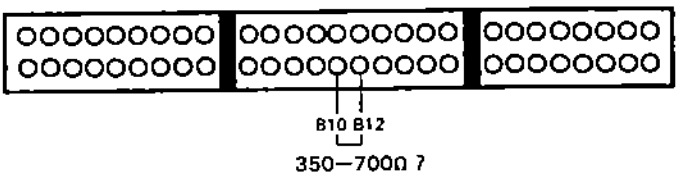
YES → Replace the distributor assembly (section 16).

NO

Reconnect the connector.

Connect the PGM-FI test harness only to the main wire harness, not to the ECU (page 6-13).

Measure resistance between B10 terminal and B12 terminal.



Is there 350—700 Ω ?

NO → Repair open in ORN and/or WHT wires.

YES

Check for continuity to body ground on B10 terminal.

Does continuity exist?

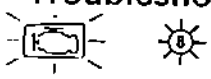
YES → Repair short in ORN wire between ECU (B10) and distributor connector.

NO

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(cont'd)

Troubleshooting Flowchart — TDC/CRANK/CYL Sensors (cont'd)



- Check Engine warning light has been reported on.
- LED indicates CODE 8.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

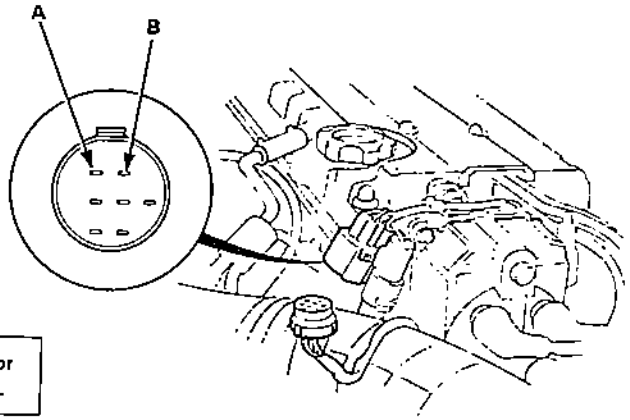
Is Check Engine warning light on and does LED indicate CODE 8?

NO → Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at distributor connector and C210 (round connector located at the right shock tower).

YES

Stop engine.

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.



Measure resistance between A terminal and B terminal.

Is there 350—700 Ω ?

NO → Replace the distributor assembly (section 16).

YES

Check for continuity to body ground on A terminal and B terminal individually.

Does continuity exist ?

YES → Replace the distributor assembly (section 16).

NO

Reconnect the connector.

(To page 6-31)

(From page 6-30)

Connect the PGM-FI test harness only to the main wire harness, not to the ECU (page 6-13).

Measure resistance between C3 terminal and C4 terminal.

Is there 350–700 Ω ?

NO → Repair open in ORN/BLU and/or WHT/BLU wires.

YES

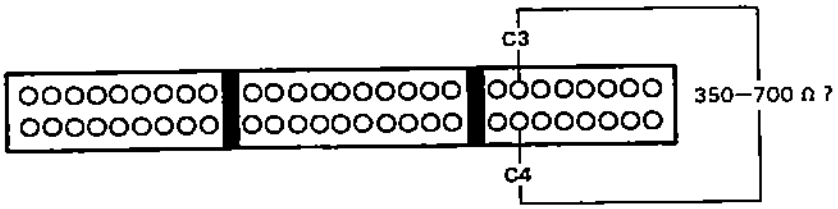
Check for continuity to body ground on C3 terminal.

Does continuity exist?

YES → Repair short in ORN/BLU wire between ECU (C3) and distributor connector.

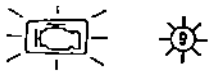
NO

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



(cont'd)

Troubleshooting Flowchart — TDC/CRANK/CYL Sensors (cont'd)



- Check Engine warning light has been reported on.
- LED indicates CODE 9.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

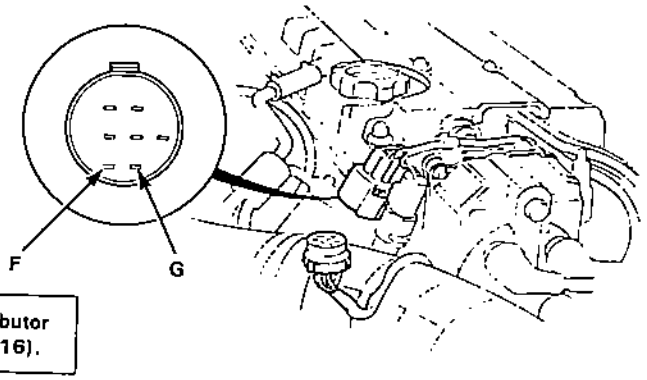
Is Check Engine warning light on and does LED indicate CODE 9?

NO → Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connection or loose wires at the distributor connector and C210 (round connector located at the right shock tower).

YES

Stop engine.

Disconnect the 8P connector from the TDC/CRANK/CYL sensor.



Measure resistance between F terminal and G terminal.

Is there 350—700 Ω ?

NO → Replace the distributor assembly (section 16).

YES

Check for continuity to body ground on F terminal and G terminal individually.

Does continuity exist ?

YES → Replace the distributor assembly (section 16).

NO

Reconnect the connector.

(To page 6-33)

(From page 6-32)

Connect the PGM-FI test harness only to the main wire harness, not to the ECU (page 6-13).

Measure resistance between C1 terminal and C2 terminal.

Is there 350—700 Ω ?

NO → Repair open in BLU/GRN and/or BLU/YEL wires.

YES

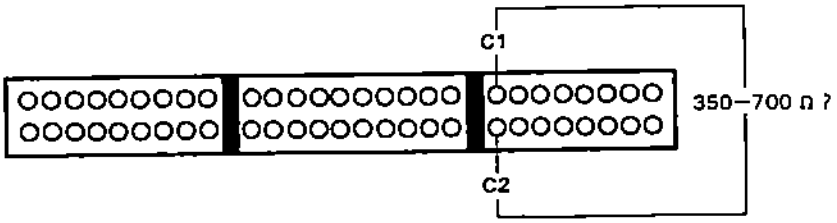
Check for continuity to body ground on C1 terminal.

Does continuity exist?

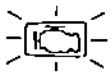
YES → Repair short in BLU/GRN wire between ECU (C1) and distributor connector.

NO

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — TW Sensor



Self-diagnosis LED indicator blinks six times: Most likely a problem in the Coolant Temperature (TW) Sensor circuit.



- Check Engine warning light is on.
- LED indicates CODE 6.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 6?

NO → Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at TW sensor, C210 and C212 (round connector and square connector located at the right shock tower).

YES

Warm up engine to normal operating temperature (cooling fan comes on).

Turn the ignition switch OFF.

Disconnect the 2P connector from the TW sensor.

Measure resistance between the 2 terminals on the TW sensor.

Is there 200—400 Ω ?

NO → Replace TW sensor.

YES

Turn the ignition switch ON.

(To page 6-35)

(From page 6-34)

Measure voltage between RED/WHT (+) and body ground.

Is there approx. 5V ?

NO

Repair open or short in RED/WHT wire between ECU (C6) and TW sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace original ECU.

YES

Measure voltage between RED/WHT (+) terminal and GRN (−) terminal.

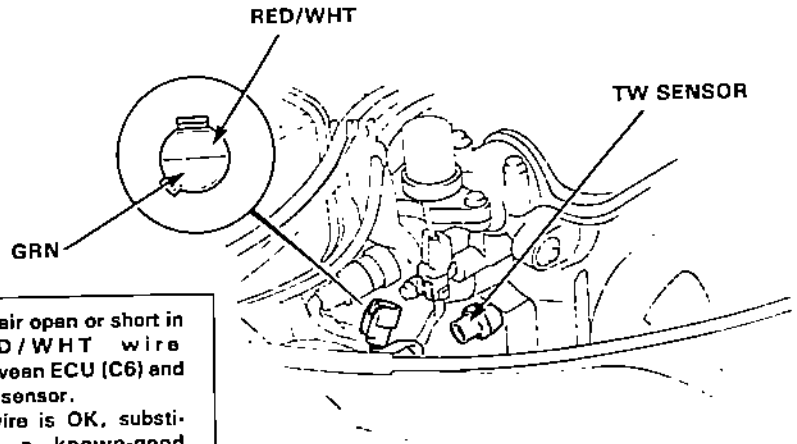
Is there approx. 5V ?

NO

Repair open in GRN, GRN/WHT wire between ECU (C12) and TW sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — Throttle Angle Sensor

Self-diagnosis LED indicator blinks seven times: Most likely a problem in the Throttle Angle Sensor circuit.

- Engine is running.
- Check Engine warning light is on.
- LED indicates CODE 7.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on and does LED indicate CODE 7?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary).**
Check for poor connections or loose wires at throttle angle sensor, C210 (round connector located at the right shock tower) and C313 (round connector located at the left shock tower).

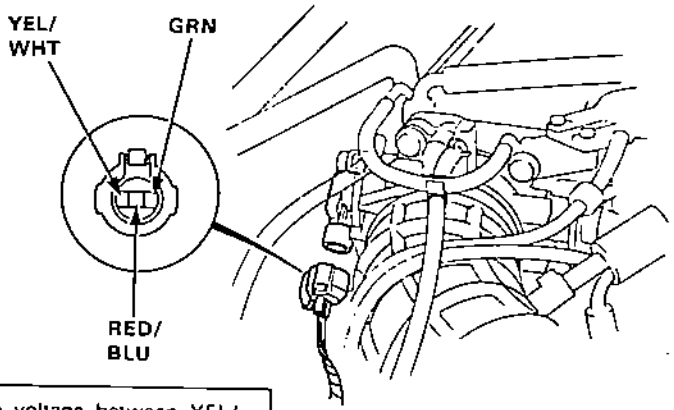
YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the throttle angle sensor.

Turn the ignition switch ON.

Measure voltage between YEL/WHT (+) terminal and GRN (−) terminal.



Is there approx. 5V?

NO → Measure voltage between YEL/WHT (+) terminal and body ground.

YES

(To page 6-37)

(To page 6-37)

(From page 6-36)

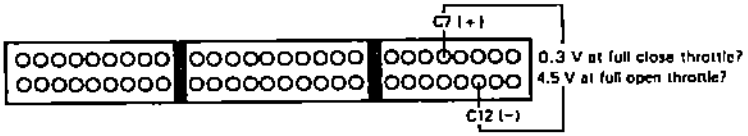
Turn the ignition switch OFF.

Reconnect the 3P connector.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Turn the ignition switch ON.

Measure voltage between C7(+) terminal and C12(–) terminal.



Is voltage approx. 0.3 V at full close throttle, and approx. 4.5 V at full open throttle ?
NOTE: There should be a smooth transmission from 0.3 V to 4.5 V as the throttle is depressed.

NO

- Replace throttle angle sensor.
- Repair open or short in RED/BLU wire between ECU (C7) and throttle angle sensor.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(From page 6-36)

Is there approx. 5V ?

YES

Repair open in GRN, GRN/WHT wire between ECU (C12) and throttle angle sensor.

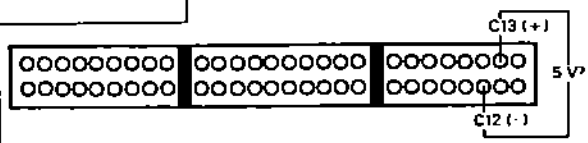
NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Turn the ignition switch ON.

Measure voltage between C13 (+) terminal and C12 (–) terminal.



Is there approx. 5V ?

YES

Repair open in YEL/WHT wire between ECU(C13) and throttle angle sensor.

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

Troubleshooting Flowchart — TA Sensor




Self-diagnosis LED indicates code 10: Most likely a problem in the Intake Air Temperature (TA) Sensor circuit.




- Check Engine warning light is on.
- LED indicates CODE 10.

↓

Turn the ignition switch OFF.

↓

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

↓

Turn the ignition switch ON.

↓

Is Check Engine warning light on and does LED indicate CODE 10?

NO → Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at TA sensor, C210 and C212 (round connector and square connector located at right shock tower).

YES ↓

Turn the ignition switch OFF.

↓

Disconnect the 2P connector from the TA sensor.

↓

Measure resistance between the 2 terminals on the TA sensor.

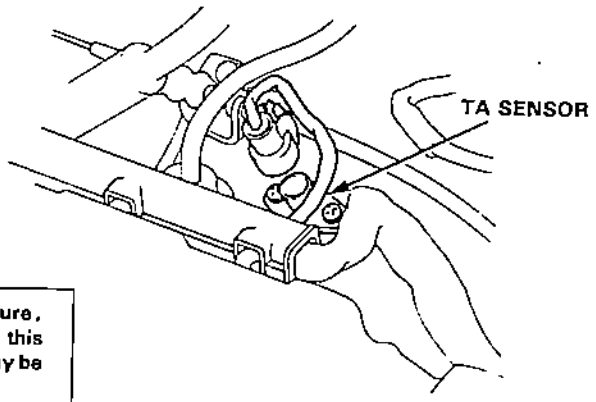
↓

Is there 1–4 kΩ ?

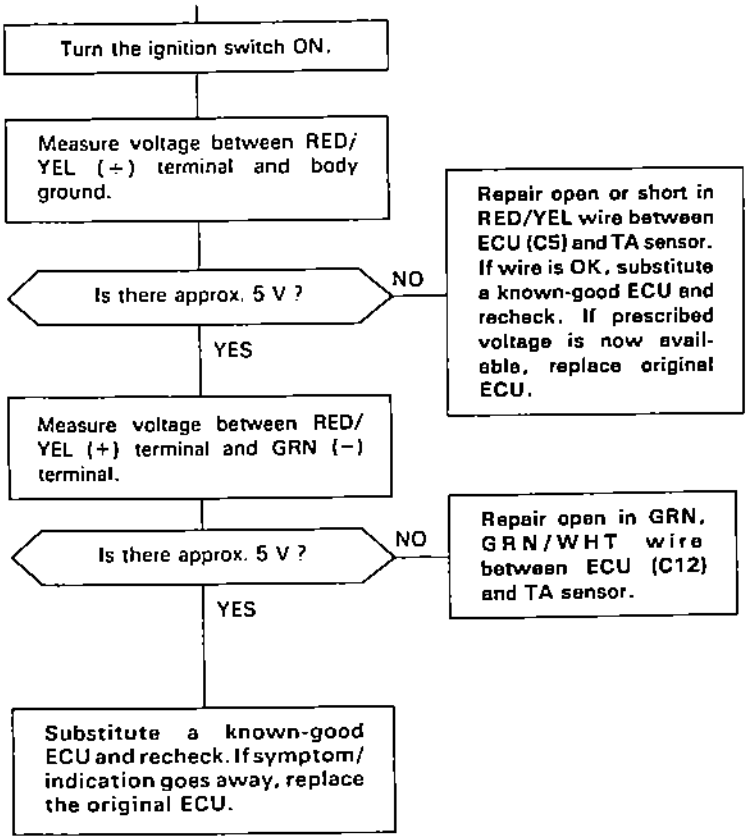
NO → Replace TA sensor.

YES ↓

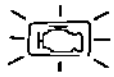
(To page 6-39)



(From page 6-38)



Troubleshooting Flowchart — PA Sensor



(13) Self-diagnosis LED indicates code 13: A problem in the Atmospheric Pressure (PA) Sensor.



(13)

- Check Engine warning light has been reported on.
- LED indicates CODE 13.

↓

Turn the ignition switch OFF.

↓

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

↓

Turn the ignition switch ON.

↓

Is Check Engine warning light on and does LED indicate CODE 13 ?

NO → Intermittent failure, system is OK at this time (test drive may be necessary).

YES ↓

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — Ignition Output Signal

Self-diagnosis LED indicates code 15: A problem in the Ignition Output Signal circuit.

- Check Engine warning light is on.
- LED indicates CODE 15.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

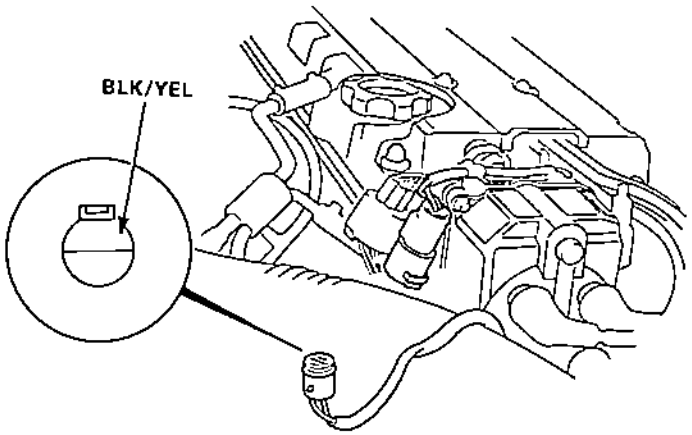
Is Check Engine warning light on and does LED indicate CODE 15? NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector and C212 (square connector located at the right shock tower).

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the distributor



Turn the ignition switch ON.

Measure voltage between BLK / YEL (+) terminal and body ground.

Is there battery voltage ? NO

Repair open in BLK/YEL wire between the 2P connector and ignition switch.

YES

Turn the ignition switch OFF.

Reconnect the 2P connector

(To page 6-43)

(From page 6-42)

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Turn the ignition switch ON.

Measure voltage individually between B15 (+), B17 (+) terminals and A18 (–) terminal.

Is there approx. 10 V?

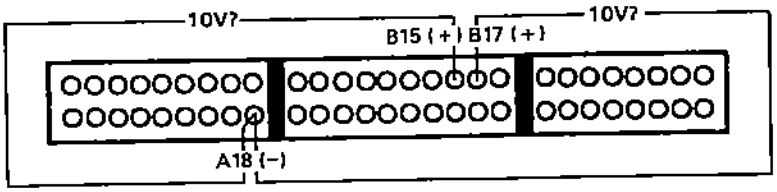
NO

—Replace the igniter unit.
—Repair open or short WHT wires between distributor and ECU (B15 or B17).

NOTE: If the WHT wire was shorted, the ignitor may be damaged.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — Vehicle Speed Sensor



Self-diagnosis LED indicates code 17: A problem in the Vehicle Speed Sensor circuit.

- Check Engine warning light is on.
- LED indicates CODE 17.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Road test necessary.
In 2nd gear accelerate to 3,500 min^{-1} (rpm) and decelerate to 1,500 min^{-1} (rpm) with throttle fully closed.

Is Check Engine warning light on and does LED indicate CODE 17?

NO → Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C405 and C710.

YES

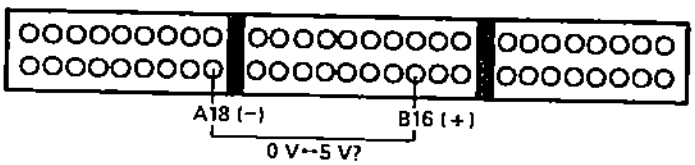
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stands.

⚠ WARNING Block rear wheels before jacking up front of car.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Turn the ignition switch ON.

Slowly rotate left front wheel and measure voltage between B16 (+) terminal and A18 (−) terminal.



Does voltage pulse 0V and 5V ?

NO →
- Repair open or short in YEL/RED wire between ECU (B16) and the speed sensor.
- Faulty speed sensor.
- Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Idle Control System

System Troubleshooting Guide

NOTE:
- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- If the idle speed is out of specification and LED does not blink CODE 14, go to inspection described on page 6-46.

PAGE / SUB SYSTEM / SYMPTOM		IDLE ADJUSTING SCREW	EACV	AIR CONDITIONING SIGNAL	ALTERNATOR FR SIGNAL	BRAKE SWITCH SIGNAL	STARTER SWITCH SIGNAL	REAR DEFOGGER SWITCH SIGNAL	FAST IDLE VALVE	HOSES AND CONNECTIONS
		59	47	50	52	54	56	57	58	*
DIFFICULT TO START ENGINE WHEN COLD		③	②						①	
WHEN COLD FAST IDLE OUT OF SPEC (1,000–2,000 min^{-1} (rpm))		③	②						①	
ROUGH IDLE			②							①
WHEN WARM ENGINE SPEED TOO HIGH		③	①						②	
WHEN WARM ENGINE SPEED TOO LOW	Idle speed is below specified engine speed (no load)	②	①		③					
	Idle speed does not increase after initial start up.		①				②			
	Idle speeds drops when air conditioner in ON		②	①						
	Idle speed fluctuates with electrical local	③	②		①					
FREQUENT STALLING	WHILE WARMING UP		①							
	AFTER WARMING UP	②	①							
FAILS EMISSION TEST										①

1. When the idle speed is out of specification and LED does not blink CODE 14, check the following items:
   - Adjust the idle speed (page 6-59)
   - Air conditioning signal (page 6-50)
   - Alternator FR signal (page 6-52)
   - Brake switch signal (page 6-54)
   - Starter switch signal (page 6-56)
   - Rear defogger switch signal (page 6-57)
   - Fast idle valve (page 6-58)
   - Hoses and connections
   - EACV and its mounting O-rings

2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 6-59).

   ● If the idle speed still cannot be adjusted to specification (and LED does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Troubleshooting Flowchart — EACV

Self-diagnosis LED indicates code 14: A problem in the Electronic Air Control Valve (EACV) circuit.

- Engine is running.
- Check Engine warning light is on.
- LED indicates CODE 14.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on and does LED indicate CODE 14?

NO → Intermittent failure, system is OK at this time (test driving may be necessary). Check for poor connections or loose wires at EACV and at C313 (round connector located at left shock tower).

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

Is there 8—15Ω ?

NO → Replace EACV.

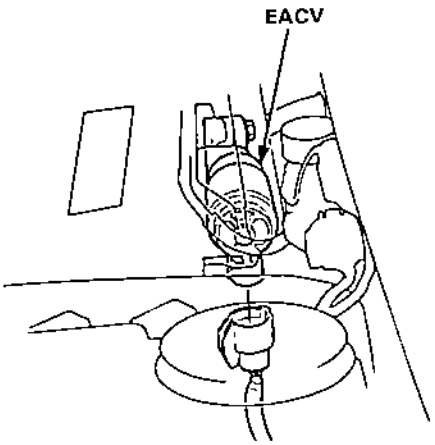
YES

Check for continuity to body ground on each terminal on the EACV.

Does continuity exist ?

YES → Replace EACV.

(To page 6-48)



(cont'd)

Troubleshooting Flowchart — EACV (cont'd)

(From page 6-47)

NO

Turn the ignition switch ON.

Measure voltage between BLK/YEL (+) terminal and BLU/YEL (–) terminal.

Is there battery voltage ?

YES

Disconnect the "A" connector from the ECU.

Measure voltage between BLK/YEL (+) terminal and BLU/YEL (–) terminal.

Is there battery voltage ?

YES

Repair short in BLU/YEL wire between ECU (A11) and EACV.

NO

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.

Is there battery voltage ?

NO

Repair open in BLK/YEL, YEL/BLK wire between the EACV and main relay.

YES

Turn the ignition switch OFF.

Reconnect the 2P connector to EACV.

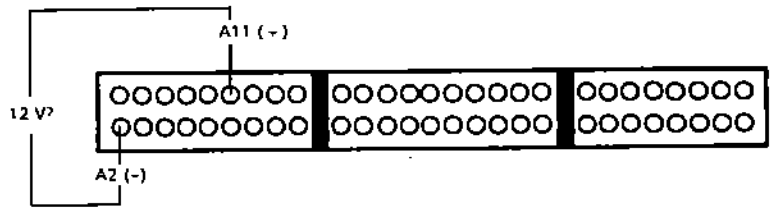
Connect the PGM-FI test harness "A" connector to the main wire harness only, not the ECU (page 6-13).

Turn the ignition switch ON.

(To page 6-49)

(From page 6-48)

Measure voltage between A11 (+) terminal and A2 (–) terminal.

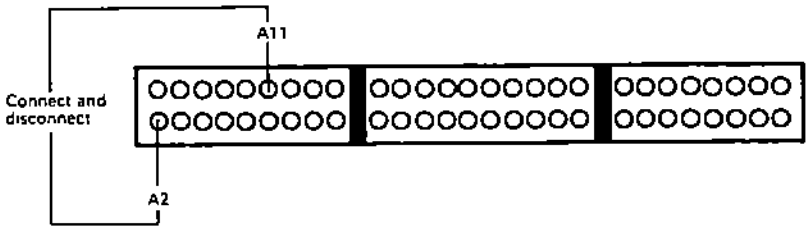


Is there battery voltage ?

NO → Repair open in BLU/YEL wire between ECU (A11) and EACV.

YES

Connect and disconnect A11 terminal to A2 terminal.



Does EACV click when the connector is connected and disconnected ?

NO → Replace EACV.

YES

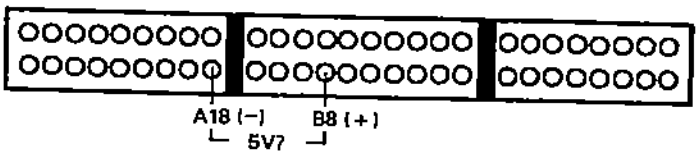
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — Air Conditioning Signal

Inspection of Air Conditioning Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-13). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.



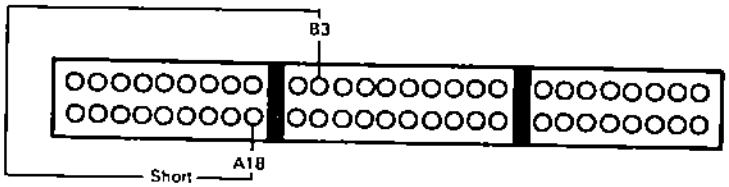
Measure voltage between B8 (+) terminal and A18 (–) terminal.

Is there approx. 5 V ?

NO → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

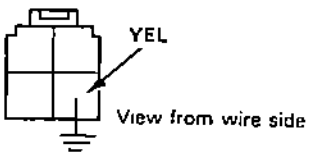
Reconnect "B" connector to the main wire harness.



Momentarily connect B3 terminal to A18 terminal several times.

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

NO → Connect the YEL terminal of the 4P connector on the A/C clutch relay to body ground.



YES

Start engine.

Blower switch ON.

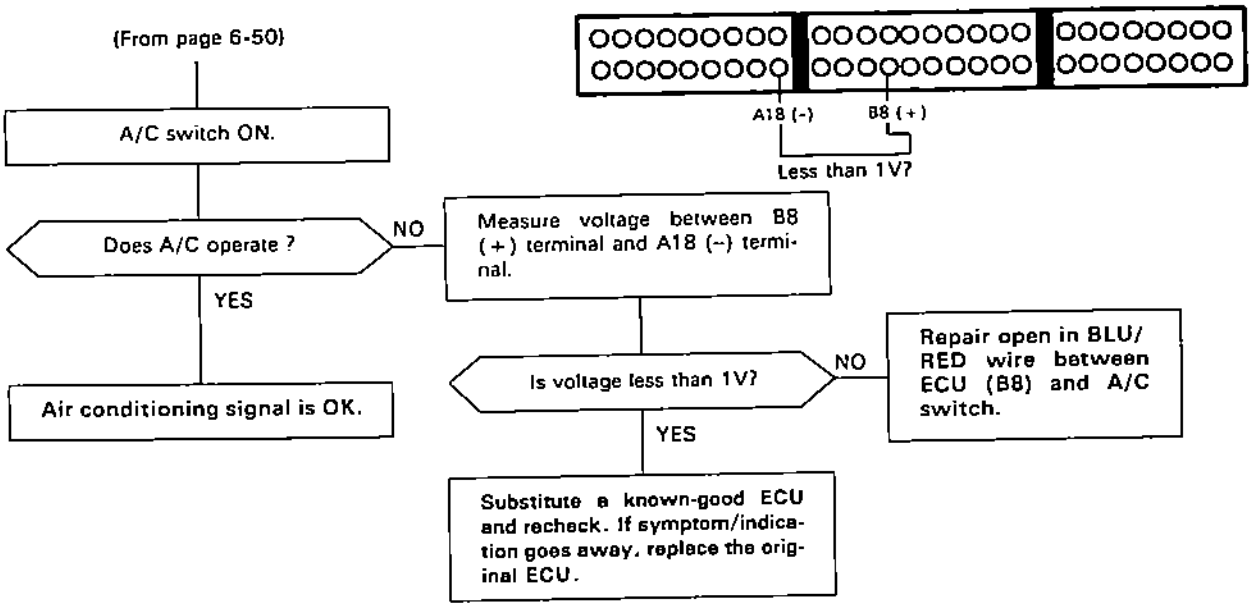
(To page 6-51)

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

NO → See Air conditioner inspection (section 15).

YES

Repair open in YEL wire between ECU (B3) and A/C clutch relay.


(From page 6-50)
A/C switch ON.
Does A/C operate ?
NO
YES
Air conditioning signal is OK.
Measure voltage between B8 (+) terminal and A18 (–) terminal.
Is voltage less than 1V?
NO
YES
Repair open in BLU/RED wire between ECU (B8) and A/C switch.
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.
A18 (-)
B8 (+)
Less than 1V?

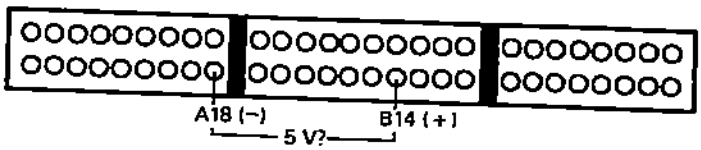
Troubleshooting Flowchart — Alternator FR Signal

Inspection of Alternator FR signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-13). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.

Measure voltage between B14 (+) terminal and A18 (–) terminal.



Is there approx. 5V ?

NO → Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

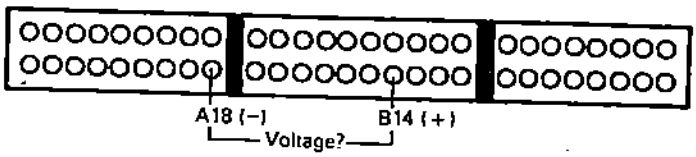
YES

Turn the ignition switch OFF.

Reconnect "B" connector to the main wire harness.

Warm up engine to normal operating temperature (cooling fan comes on).

Measure voltage between B14 (+) terminal and A18 (–) terminal.



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

NO → Stop engine.

YES

Alternator FR signal is OK.

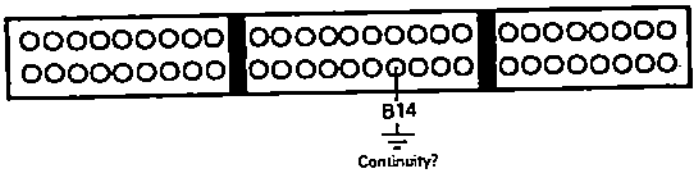
(To page 6-53)

(From page 6-52)

Disconnect "B" connector from ECU only, not the main wire harness.

Disconnect the negative battery cable from the battery.

Check for continuity between B14 terminal and body ground.



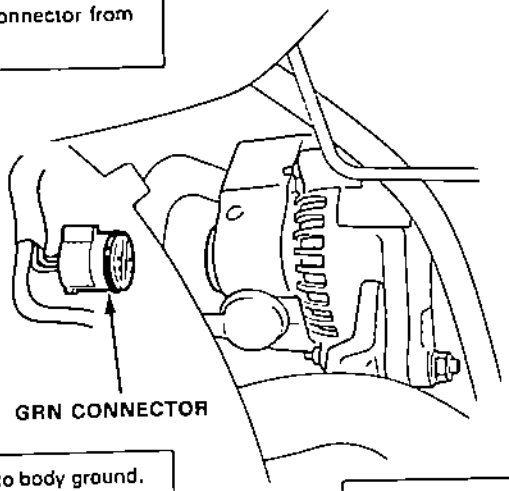
Does continuity exist ?

YES

Disconnect GRN connector from the alternator.

NO

Disconnect GRN connector from the alternator.



Connect BLU wire to body ground.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

NO

Repair open in BLU wire between ECU (B14) and alternator.

See Alternator Inspection (section 16).

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

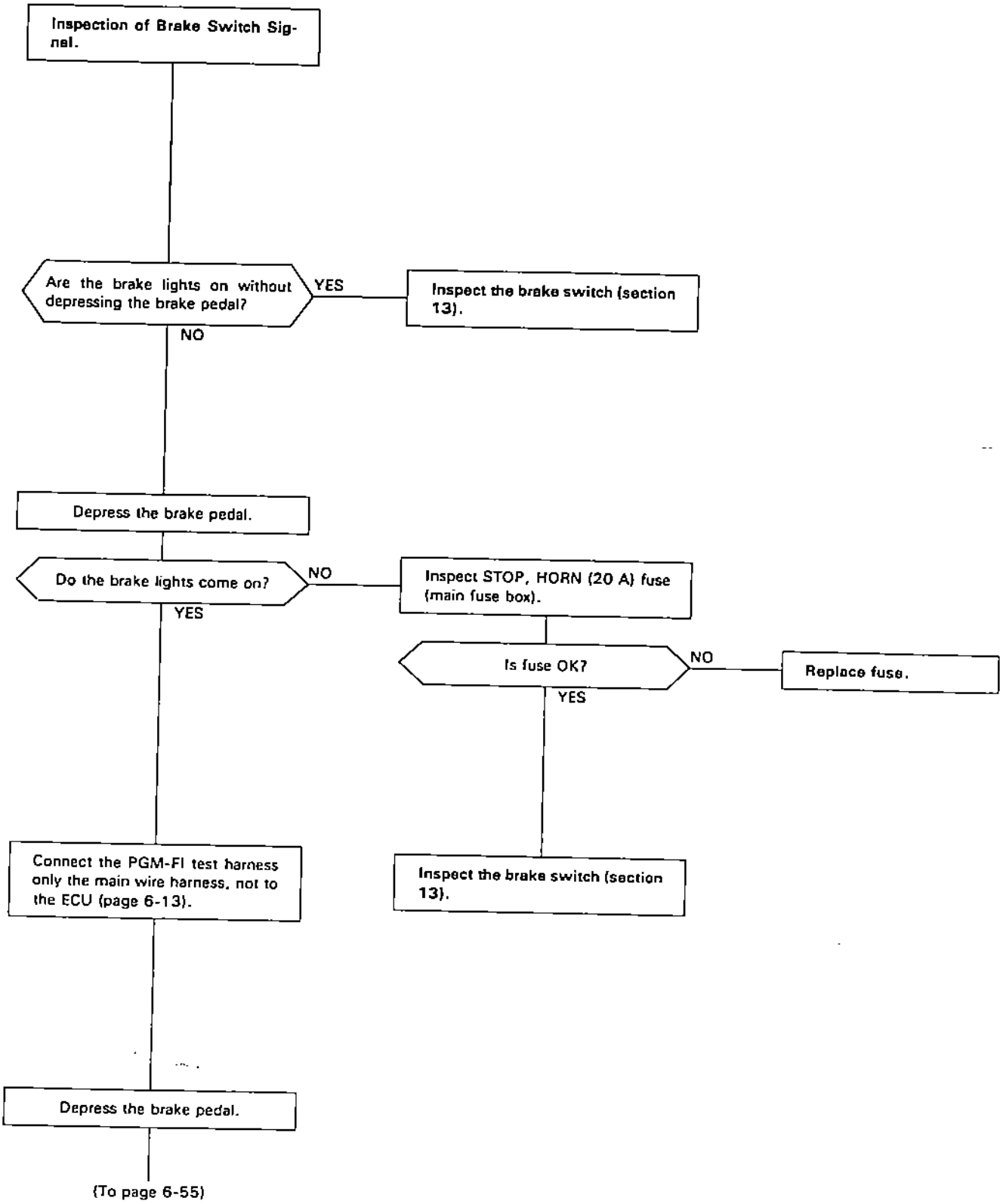
NO

YES

See Alternator Inspection (section 16).

Repair short in BLU wire between ECU (B14) and alternator.

Troubleshooting Flowchart — Brake Switch Signal



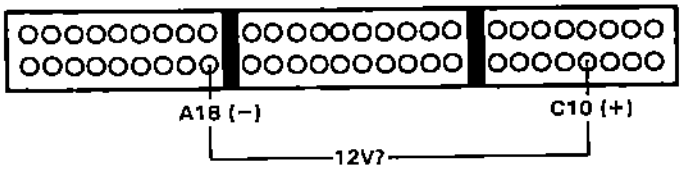
(From page 6-54)

Measure voltage between C10 (+) terminal and A18 (−) terminal.

Is there battery voltage?

NO → Repair open in GRN/WHT wire between the brake switch and ECU (C10).

YES → Brake switch signal is OK.



Troubleshooting Flowchart — Starter Switch Signal

Inspection of Starter Switch Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Measure voltage between B13 (+) terminal and A18 (–) terminal with ignition switch in the start position.

Is there battery voltage ?

NO

Inspect No.2 fuse.

Is No.2 fuse OK ?

NO

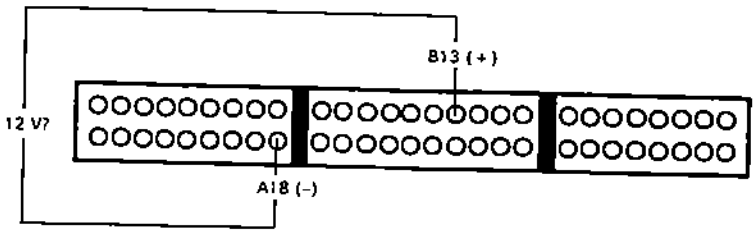
Replace fuse.

YES

Repair open in BLU/WHT wire between ECU (B13) and No.2 fuse.

YES

Starter switch signal is OK.



Inspection of Rear Defogger Switch Signal.

Start the engine.

Rear defogger switch ON.

Does rear defogger operate ?

NO → Inspect the rear defogger (section 16).

YES

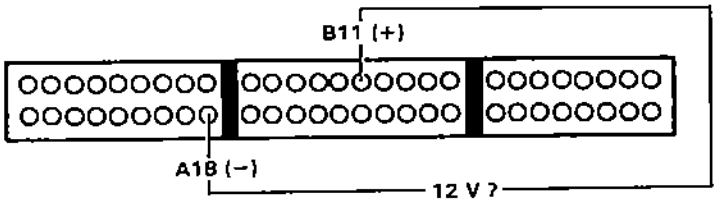
Turn the ignition switch OFF.

Connect the PGM-FI test harness only the main wire harness, not to the ECU (page 6-13).

Start the engine.

Rear defogger switch ON.

Measur voltage between B11 (+) terminal and A18 (−) terminal.



Is there battery voltage ?

NO → Repair open BLK/GRN wire between the rear defogger switch and ECU (B11).

YES

Rear defogger switch signal is OK.

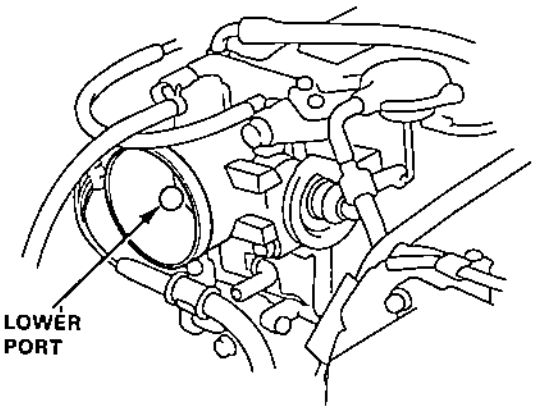
Idle Control System

Fast Idle Valve

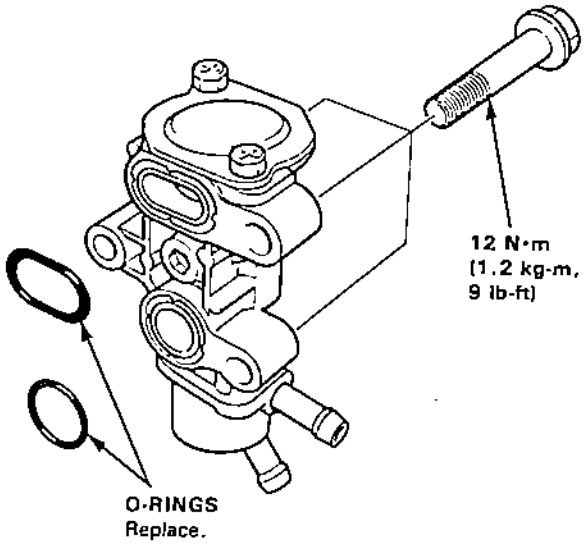
Inspection

NOTE: The fast idle valve is factory adjusted; it should not be disassembled.

1. Remove the intake air duct from the throttle body.
2. Start the engine and allow it to idle.
3. Put your finger over the lower port in throttle body and make sure that there is air flow with the engine cold (coolant temperature below 30°C, 86°F).



- If there is air flow, go to step 4.
- If not, replace the fast idle valve and retest.



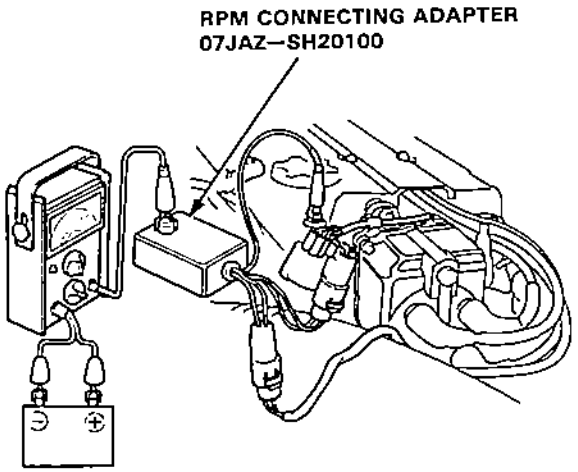
4. Warm up the engine (cooling fan comes on).
5. Check that there is nor air flow at the lower port and nothe any change in idle speed.
   - If the idle speed is lower with the port covered, replace the fast idle valve and retest.
   - If the idle speed remains the same, the fast idle valve is OK.

Idle Speed Setting

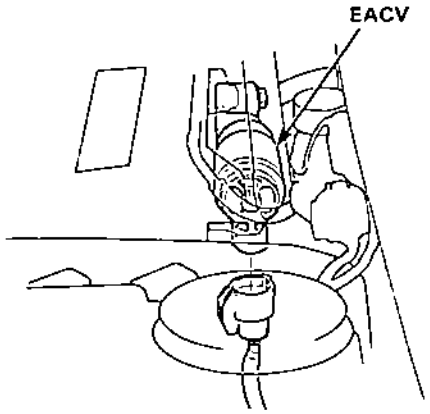
Inspection/Adjustment

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).

2. Connect a tachometer.



3. Disconnect the 2P connector from the EACV.

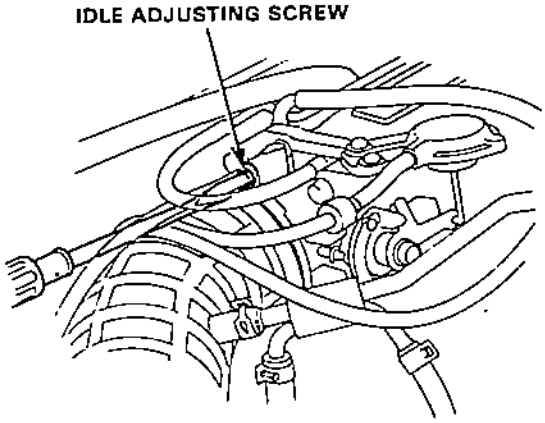


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be: 650±50 min^{-1} (rpm)

   Adjust the idle speed, if necessary, by turning the idle adjusting screw.

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-78).



5. Turn the ignition switch OFF.

6. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

7. Restart and idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating for one minute, then check the idle speed.

   Idle speed should be: 750±50 min^{-1} (rpm)

8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle speed should be: 780±50 min^{-1} (rpm)

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

   Idle speed should be: 810±50 min^{-1} (rpm)

   NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-45.

Fuel Supply System

System Troubleshooting Guide

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

SYMPTOM / SUB SYSTEM		FUEL · INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR (PRESSURE REGULATOR CUT-OFF SOLENOID VALVE)	FUEL FILTER	FUEL PUMP	MAIN RELAY	CONTAMI-NATED FUEL
PAGE		62	67	68	71	72	—	*
ENGINE WON'T START			③		③	①	②	
DIFFICULT TO START ENGINE WHEN COLD OR HOT		③		③ (WHEN HOT)	②	①		
ROUGH IDLE		①		②				③
FREQUENT STALLING	WHILE WARM-ING UP	①			②			
	AFTER WARM-ING UP	①			③	②		
POOR PERFORMANCE	MISFIRE OR ROUGH RUN-NING	①		②				③
	FAILS EMISSION TEST	①		②				
	LOSS OF POWER				①	③		②

* Fuel with dirt, water or a high percentage of alcohol is considered contaminated.

Fuel Pressure

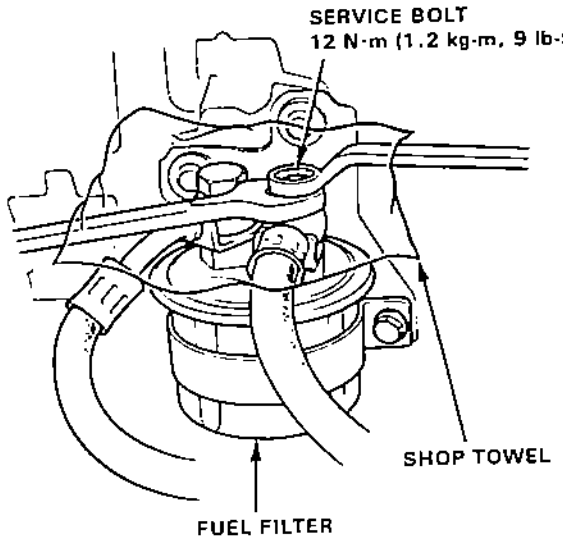
Relieving

⚠ WARNING

- **Do not smoke while working on the fuel system. Keep open flames or sparks away from the work area.**
- **Be sure to relieve fuel pressure while the engine is off.**

NOTE: Before disconnecting fuel pipes or hoses, release pressure from the system by loosening the 6 mm service bolt at top of the fuel filter.

1. Remove fuel filter cap.
2. Disconnect the battery negative cable from the battery negative terminal.
3. Use a box end wrench on the 6 mm service bolt at top of the fuel filter, while holding the special banjo bolt with another wrench.
4. Place a rag or shop towel over the 6 mm service bolt.
5. Slowly loosen the 6 mm service bolt one complete turn.

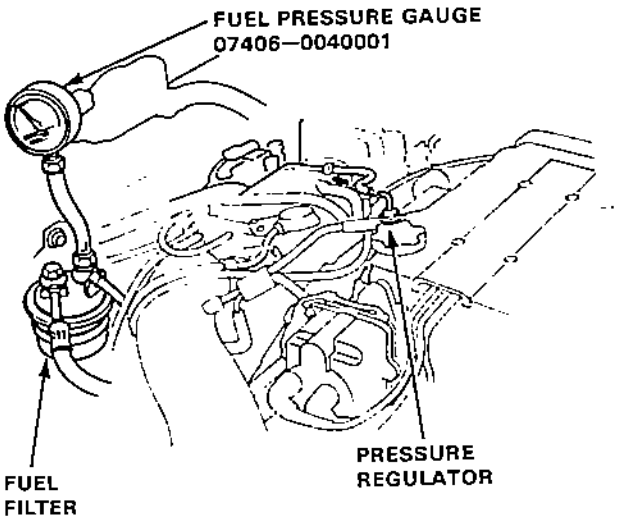


NOTE:
- A fuel pressure gauge can be attached at the 6 mm service bolt hole.
- Always replace the washer between the service bolt and the special banjo bolt, whenever the service bolt is loosened to relieve fuel pressure.
- Replace all washers whenever the bolts are removed to disassemble parts.

Inspection

1. Relieve fuel pressure.
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected.

Pressure should be:
240—279 kPa (2.45—2.85 kg/cm², 35-41 psi)



- If the fuel pressure is not as specified, first check the fuel pump (page 6-72), if the pump is OK, check the following:

— If the pressure is higher than specified, inspect for:
  · Pinched or clogged fuel return hose or piping.
  · Faulty pressure regulator (page 6-68).
— If the pressure is lower than specified, inspect for:
  · Clogged fuel filter.
  · Pressure regulator failure (page 6-68).
  · Leakage in the fuel line.

Fuel Injectors

Fuel injectors Troubleshooting Flowchart

Inspection of Fuel Injector.

Turn the ignition switch OFF.

Remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.

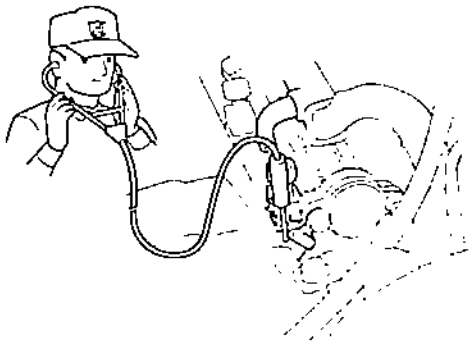
Turn the ignition switch to START position.

Does the engine start ?

NO

YES

Check the clicking sound of each injector by means of a stethoscope when the engine is idling.



Do the injectors click ?

YES

Substitute a known-good ECU and re-check. If symptom/indication goes away, replace the original ECU.

NO

(To page 6-63)

(To page 6-63)

(From page 6-62)

Turn the ignition switch OFF.

Disconnect the 2P connector from the injector that does not click.

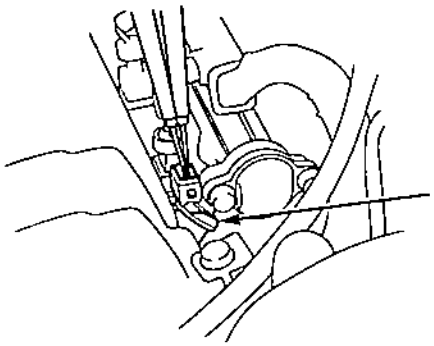
Measure resistance between the 2 terminals of the injector.

(From page 6-62)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



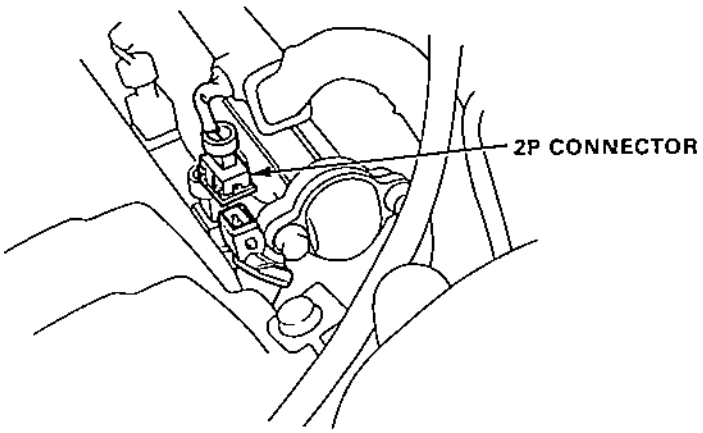
Is there 1.5—2.5Ω ?

NO — Replace the injector.

YES

Turn the ignition switch ON.

Measure voltage between RED/BLK (+) terminal on the 2P connector and body ground.

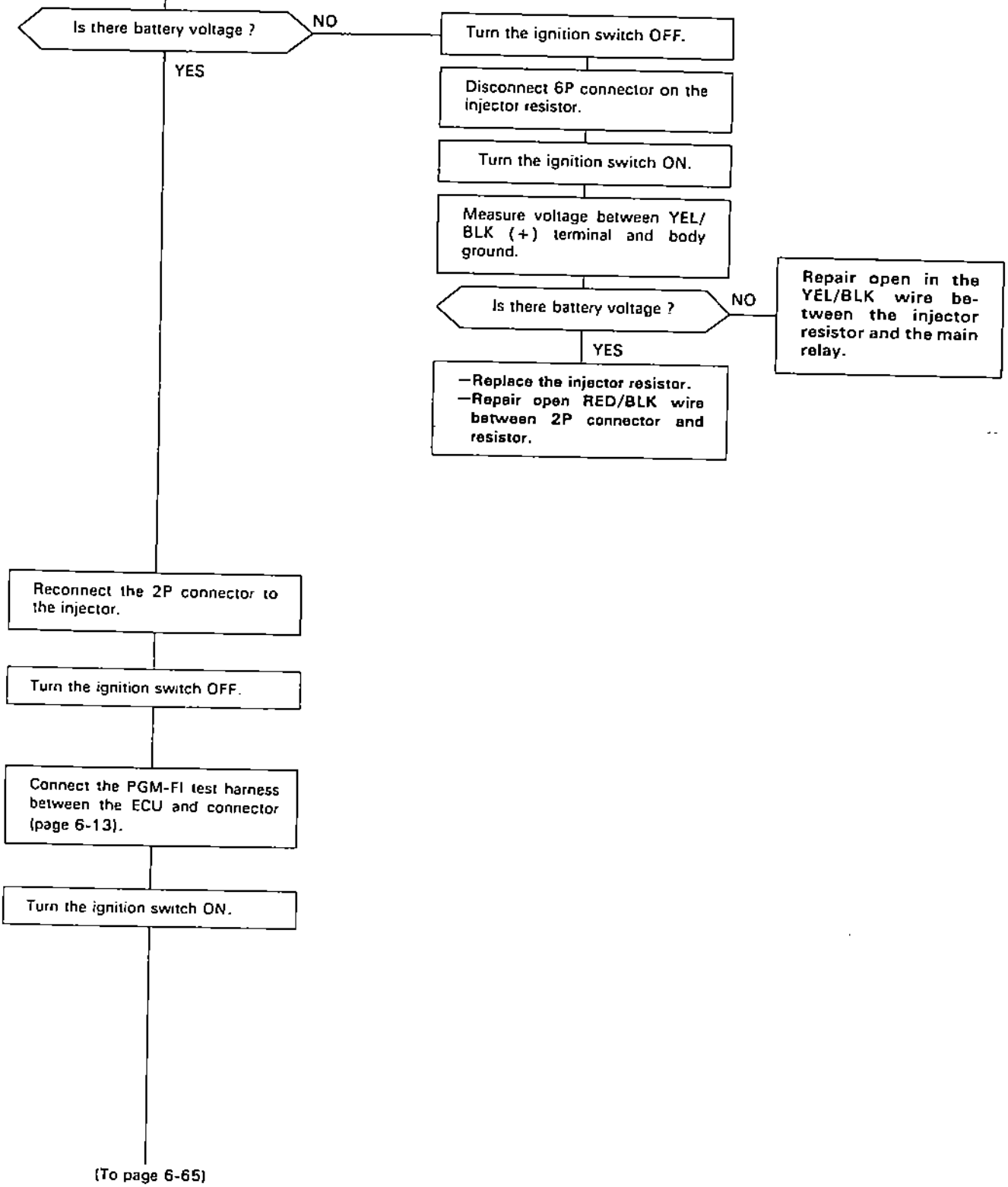


(To page 6-64)

(cont'd)

Fuel Injectors (cont'd)

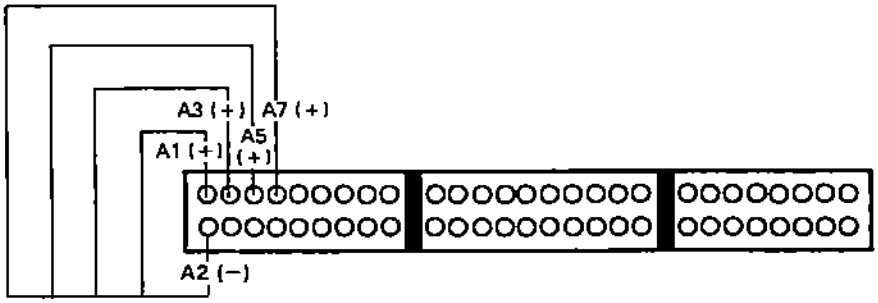
(From page 6-63)



(To page 6-65)

(From page 6-64)

Measure voltage between A2 (–) terminal and following terminals,
- No.1 injector: A1 (+) terminal.
- No.2 injector: A3 (+) terminal.
- No.3 injector: A5 (+) terminal.
- No.4 injector: A7 (+) terminal.



Is there battery voltage ?

NO → Repair open in the wire between the ECU (A1, A3, A5 or A7) and the injector.

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(cont'd)

Fuel Injectors (cont'd)

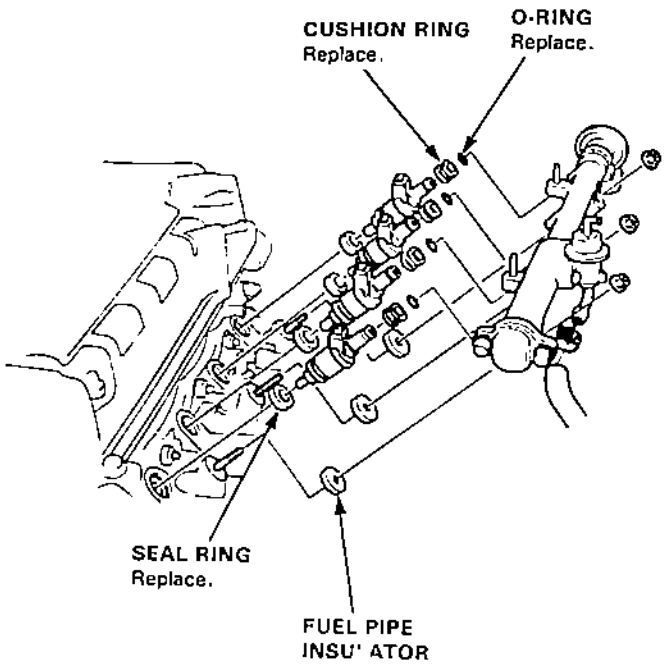
Replacement

⚠WARNING Do not smoke during the work. Keep open flames away from your work area.

1. Relieve fuel pressure (page 6-61).
2. Disconnect the connectors from the injectors.
3. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

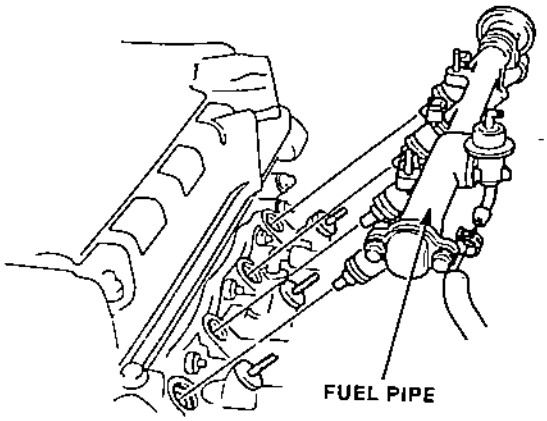
   NOTE: Place a rag or shop towel over the hoses before disconnecting them.

4. Loosen the retainer nuts on the fuel pipe and harness holder.
5. Disconnect the fuel pipe.
6. Remove the injectors from the intake manifold.

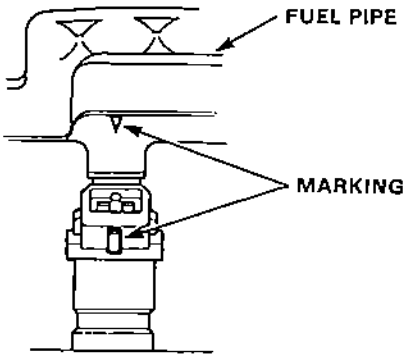


7. Slide new cushion rings onto the injectors.
8. Coat new O-rings with clean engine oil and put them on the injectors.
9. Insert the injectors into the fuel pipe first.
10. Coat new seal rings with clean engine oil and press them into the intake manifold.
11. Install the injectors and fuel pipe assembly in the manifold.

    CAUTION: To prevent damage to the O-ring, install the injectors in the fuel pipe first, then install them in the intake manifold.



12. Align the center line on the connector with the mark on the fuel pipe.



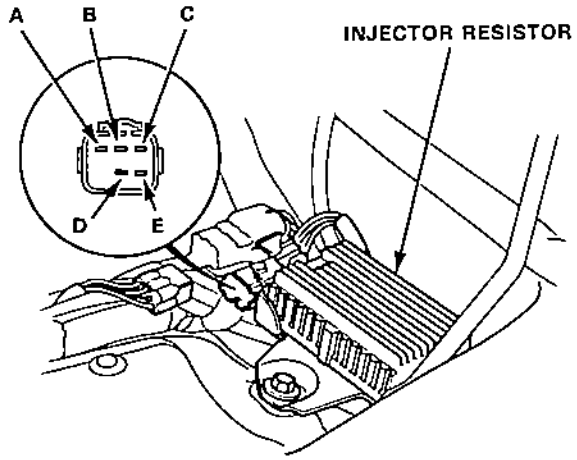
13. Install and tighten the retainer nuts.
14. Connect the vacuum hose and fuel return hose to the pressure regulator.
15. Install the connectors on the injectors.
16. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approximately two seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.

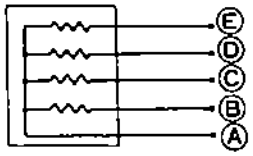
Injector Resistor

Testing

1. Disconnect the resistor connector.
2. Check for resistance between each of the resistor terminals (E, D, C and B) and the power terminal (A).

   Resistance should be: 5—7 Ω





- Replace the resistor with a new one if any of the resistances are outside of the specification.

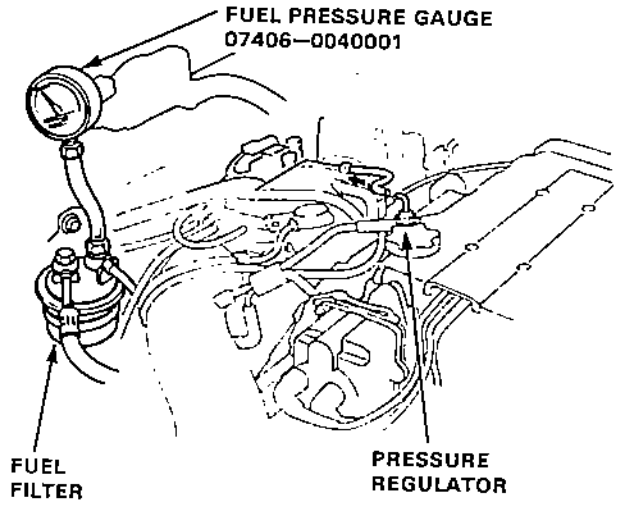
Pressure Regulator

Testing

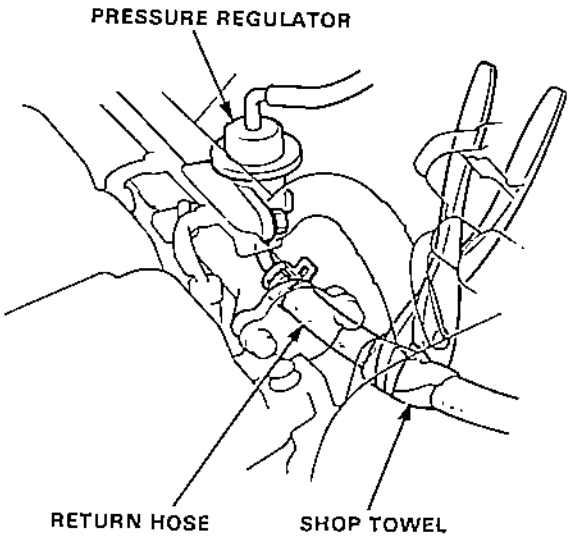
⚠WARNING **Do not smoke during the test. Keep open flames away from your work area.**

1. Attach a pressure gauge to the service port of the fuel filter (page 6-61).

   Pressure should be:
   240—279 kpa (2.45—2.85 kg/cm², 35—41 psi)
   (with the regulator vacuum hose disconnected)



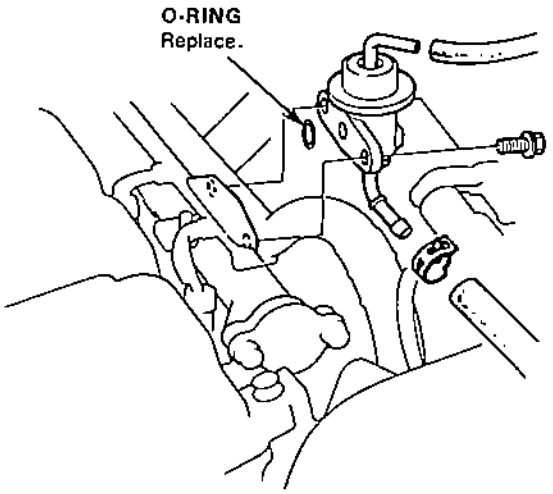
2. Reconnect the vacuum hose to the pressure regulator.
3. Check that the fuel pressure rises when the vacuum hose from the regulator is disconnected again.
   - If the fuel pressure did not rise, replace the regulator and retest.



Replacement

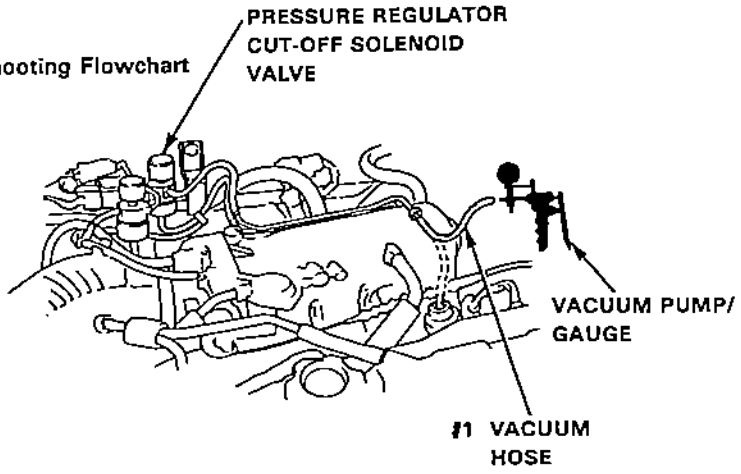
⚠WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Place a shop towel under pressure regulator, then relieve fuel pressure (page 6-61).
2. Disconnect the vacuum hose and fuel return hose.
3. Remove the two 6 mm retainer bolts.



NOTE:
- Replace the O-ring.
- When assembling the regulator, apply clean engine oil to the O-ring and assemble it into its proper position, taking care not to damage the O-ring.

Pressure Regulator Cut-off Solenoid valve Troubleshooting Flowchart



Inspection of Pressure Regulator Cut-off Solenoid Valve.

Start the engine and warm up to normal operating temperature (the cooling fan comes on).

Disconnect the #1 vacuum hose from the pressure regulator and connect a vacuum gauge to the hose.

Is there manifold vacuum ?

NO → Disconnect the 4P connector from the solenoid valve

Is there vacuum ?

NO → Check the #1 and #12 vacuum hose. If hoses are OK, replace the solenoid valve.

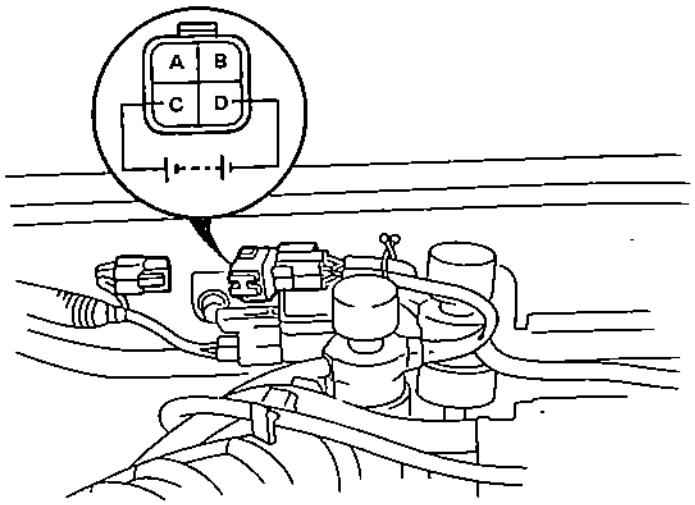
YES → Repair short to ground in GRN wire between ECU (A10) and 4P connector. If wire is OK, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

YES

Turn the ignition switch OFF.

Disconnect the 4P connector from the solenoid valve.

Connect battery positive to terminal C and battery negative to terminal D of the solenoid valve.



Start the engine and allow it to idle.

(To page 6-70)

(cont'd)

Pressure Regulator (cont'd)

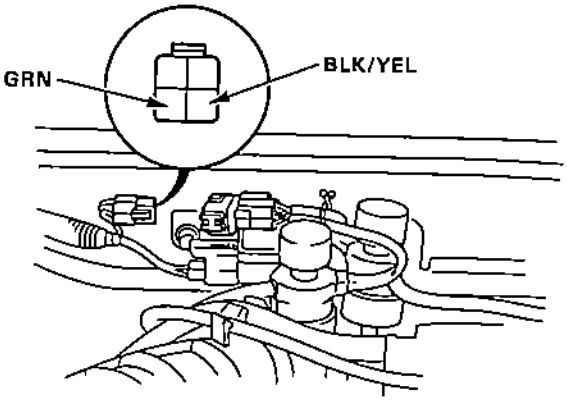
(From page 6-69)

Is there manifold vacuum ?

YES → Replace the solenoid valve.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.



Is there battery voltage ?

NO → Repair in BLK/YEL wire between No. 14 fuse and 4P connector.

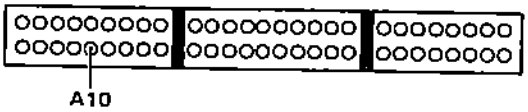
YES

Turn the ignition switch OFF.

Reconnect the 4P connector to the solenoid valve.

Connect the PGM-FI test harness between the ECU and connector (page 6-13).

Start the engine and allow it to idle.



Connect A10 terminal to body ground with a jumper wire.

Is there manifold vacuum ?

YES → Repair open in GRN wire between ECU (A10) and the 4P connector.

NO

Pressure Regulator Cut-Off Solenoid Valve is OK.

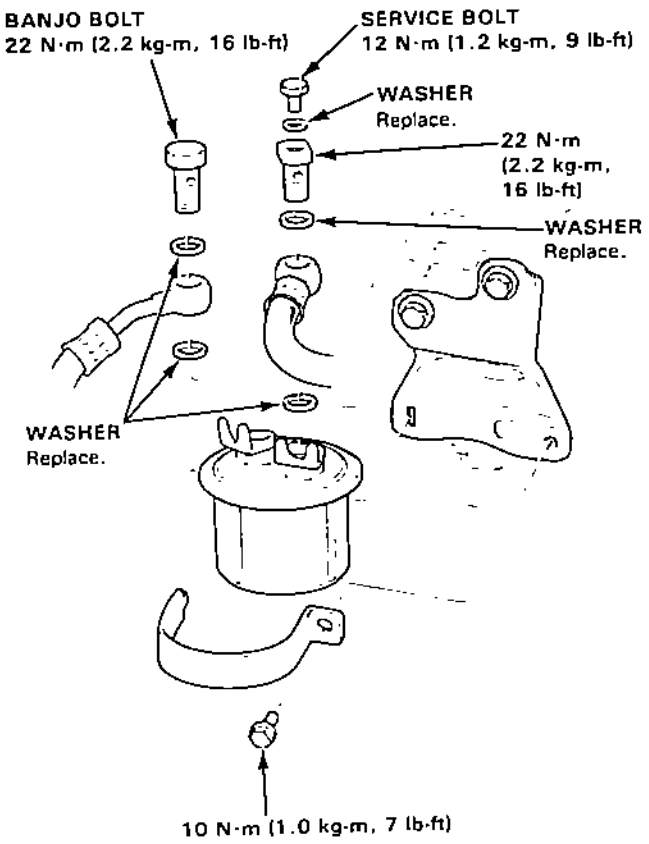
Fuel Filter

Replacement

⚠WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

The filter should be replaced: every 2 years or 40,000 km (24,000 miles), whichever comes first or whenever the fuel pressure drops below the specified value (240—279 kpa, 2.25—2.85 kg-cm², 35—41 psi with the pressure regulator vacuum hose disconnected) after making sure that the fuel pump and the pressure regulator are OK.

1. Place a shop towel under and around the fuel filter.
2. Relieve fuel pressure (page 6-61).
3. Remove the 12 mm banjo bolts and the fuel feed pipe from the filter.
4. Remove the fuel filter clamp and fuel filter.
5. When assembling, use new washers, as shown.



Fuel Pump

Testing

⚠WARNING Do not smoke during the test. Keep open flame away from your work area.

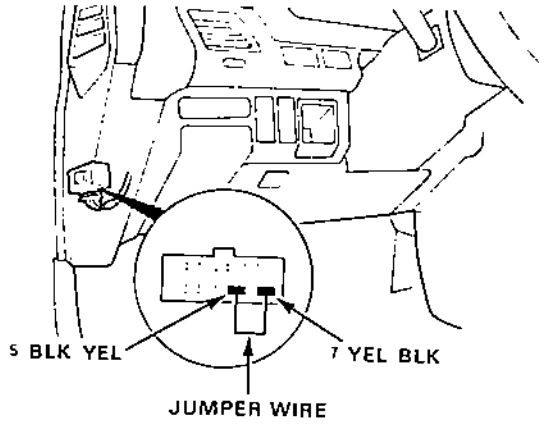
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you hold your ear to the fuel filler port with the fuel filler cap removed. The fuel pump should run for two seconds, when ignition switch is first turned on. If the pump does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

1. Remove the rear seat.
2. Disconnect the 5P connector.

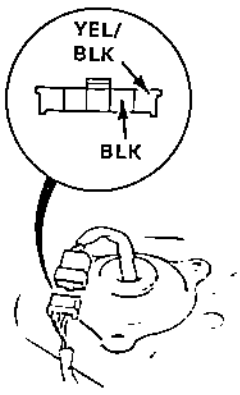
   CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

3. Connect the BLK/YEL ⑤ wire and YEL/BLK ⑦ wire with a jumper wire.

   NOTE: Information on this page is for LH and RH models.



4. Check that battery voltage is available at the fuel pump connector when the ignition switch is turned ON (positive probe to the YEL/BLK wire, negative probe to the BLK wire).

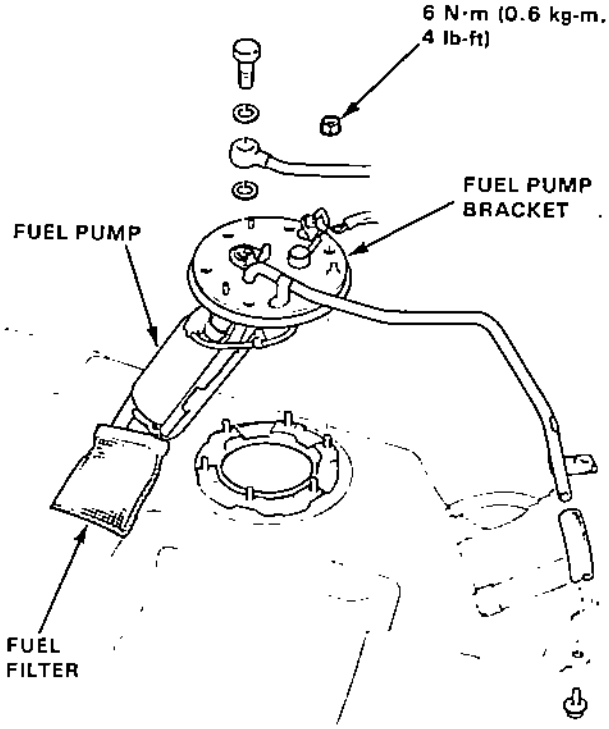


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness.

Replacement

⚠WARNING Do not smoke while working on fuel system. Keep open flames away from your work area.

1. Remove the fuel tank (page 6-73).
2. Remove the fuel pump mounting nuts.
3. Remove the fuel pump from the fuel tank.

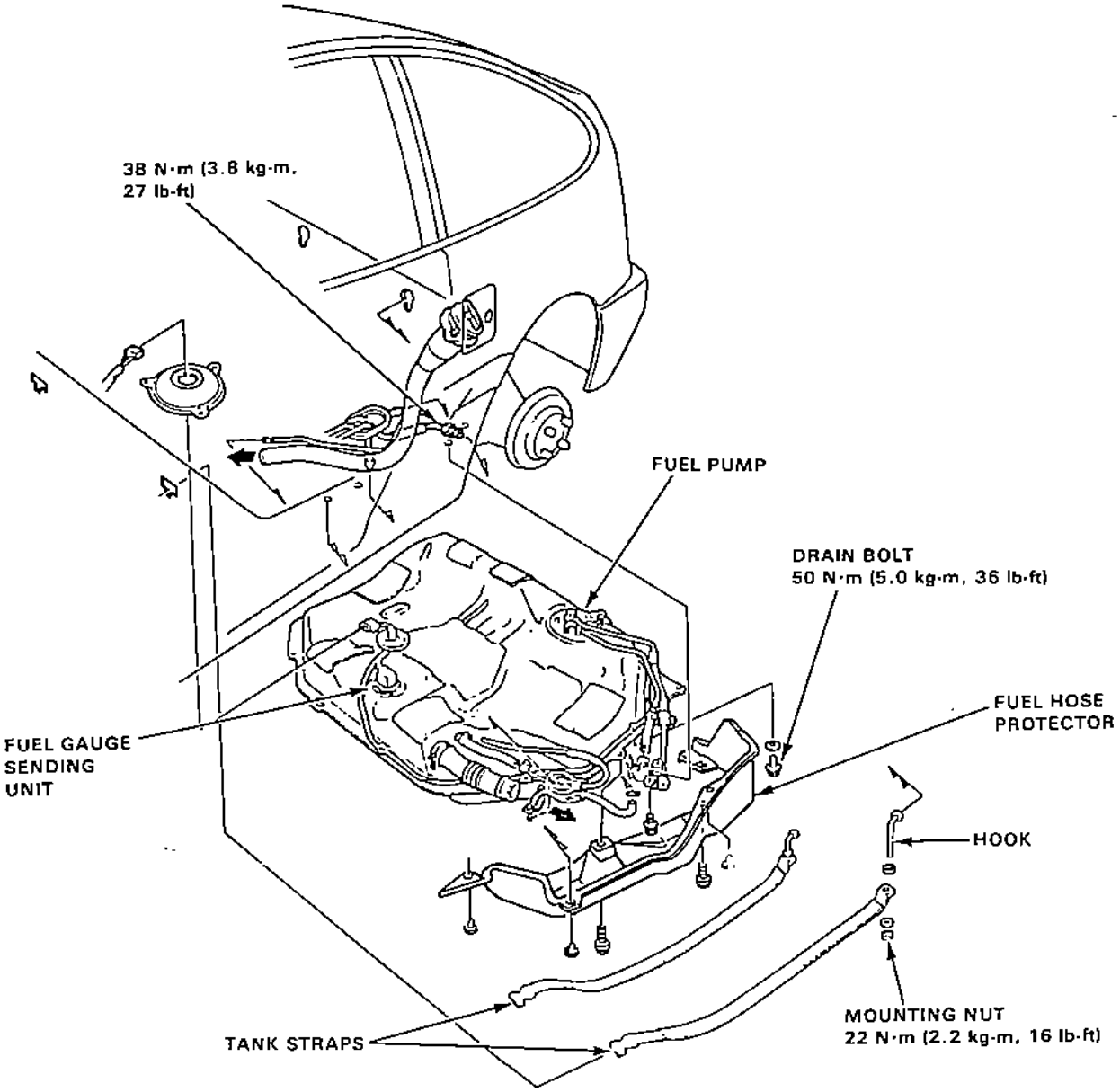


Fuel Tank

Replacement

⚠WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Remove the rear seat and disconnect the 5P connector.
4. Remove the two-way valve cover and fuel hose protector.
5. Disconnect the hoses.
   CAUTION:
   - **When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.**
   - **Clean the flared joint of high pressure hoses thoroughly before reconnecting them.**
6. Place a jack, or other support, under the tank.
7. Remove the strap nuts and let the straps fall free.
8. Remove the fuel tank.
   NOTE: The tank may stick on the undercoat applied to its mount. To remove, carefully pry it off the mount.
9. Install a new washer on the drain bolt, then install parts in the reverse order of removal.



Air Intake System

System Troubleshooting Guide

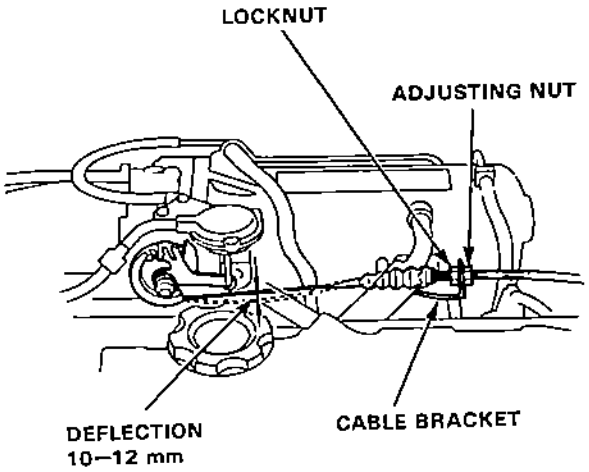
NOTE: Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.

PAGE / SUB SYSTEM / SYMPTOM	THROTTLE CABLE	THROTTLE BODY	THROTTLE CONTROL SYSTEM
	75	76	78
WHEN COLD FAST IDLE OUT OF SPEC	③	②	①
WHEN WARM ENGINE SPEED TOO HIGH	③	②	①
WHEN WARM ENGINE SPEED TOO LOW		①	
FREQUENT STALLING WHILE WARMING UP		①	
LOSS OF POWER	①	②	

Throttle Cable

Inspection/Adjustment

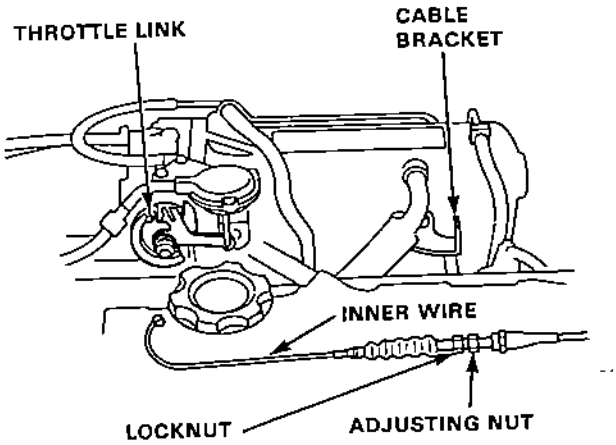
1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Check that the throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. Check cable free play at the throttle linkage. Cable deflection should be 10—12 mm (0.39—0.47 in.)



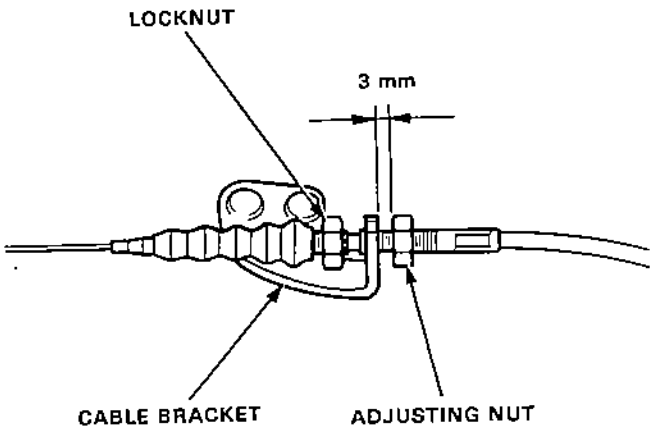
4. If deflection is not within specs, loosen the locknut and turn the adjusting nut until the deflection is as specified.
5. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator.

Installation

1. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the cable bracket.
2. Warm up the engine to normal operating temperature (the cooling fan comes on).



3. Hold the cable sheath, removing all slack from the cable.
4. Turn the adjusting nut until it is 3 mm away from the cable bracket.
5. Tighten the locknut. The cable deflection should now be 10—12 mm. If not, see Inspection/Adjustment.



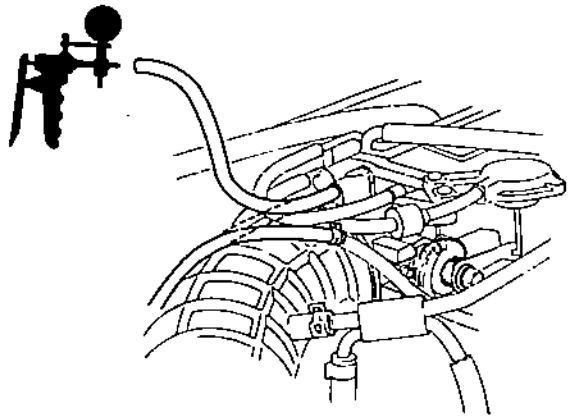
Throttle Body

Inspection

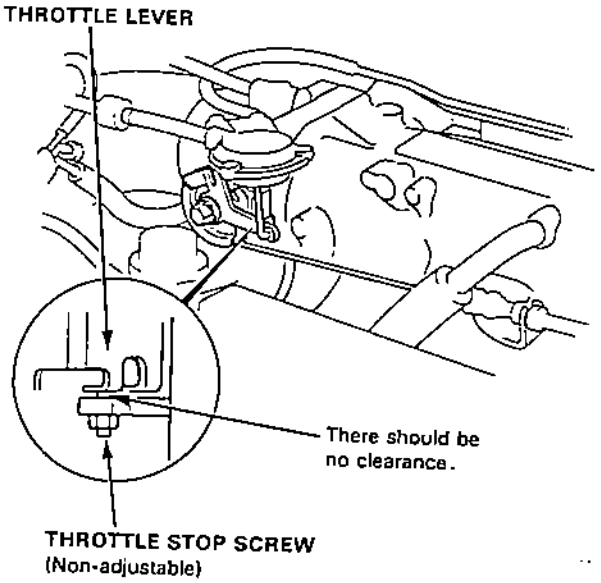
CAUTION: Do not adjust the throttle stop screw since it can not be reset except at the factory.

1. Start the engine and allow to reach normal operating temperature (cooling fan comes on).
2. Disconnect the vacuum hose (to the canister) from the top of the throttle body; connect a vacuum gauge to the throttle body.

VACUUM PUMP/GAUGE

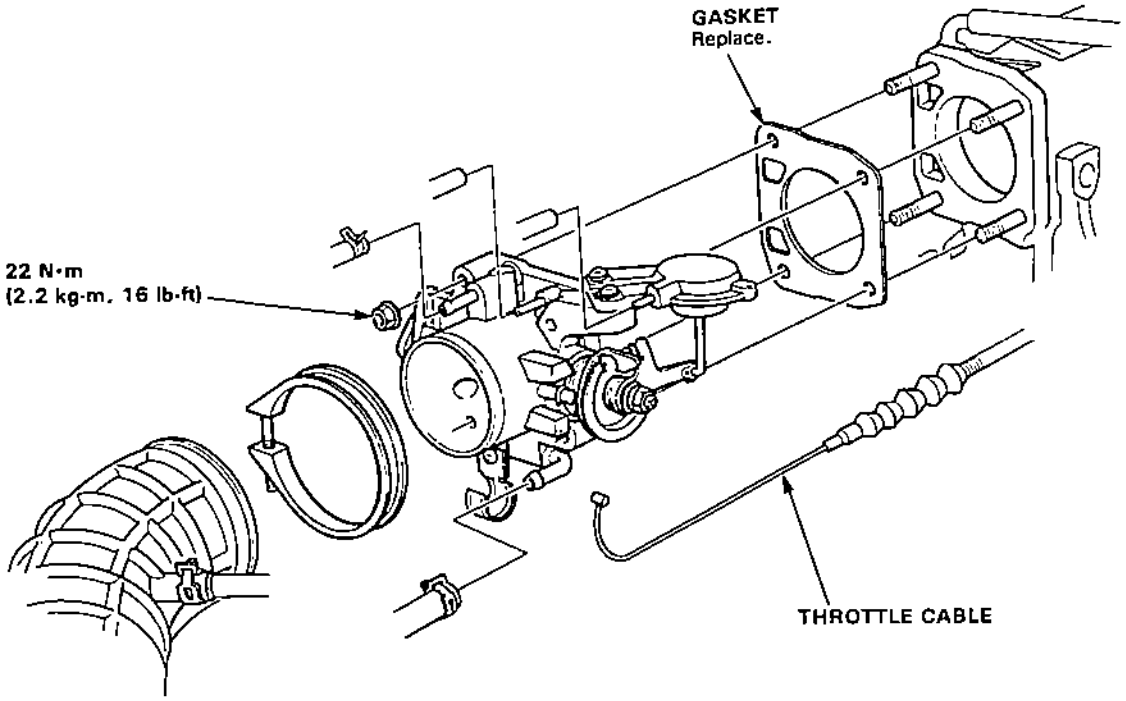


3. Allow the engine to idle and check that the gauge indicates no vacuum.
   - If there is vacuum, check the throttle control system (page 6-78).
4. Check that vacuum is indicated on the gauge when the throttle is opened slightly from idle.
   - If the gauge indicates no vacuum, check the throttle body port. If the throttle body port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly without binding or sticking.
   - If there are any abnormalities in the above steps, check for:
     - Excessive wear or play in the throttle valve shaft.
     - Sticky or binding throttle lever at full close position.
     - Clearance between throttle stop screw and throttle lever at full close position.

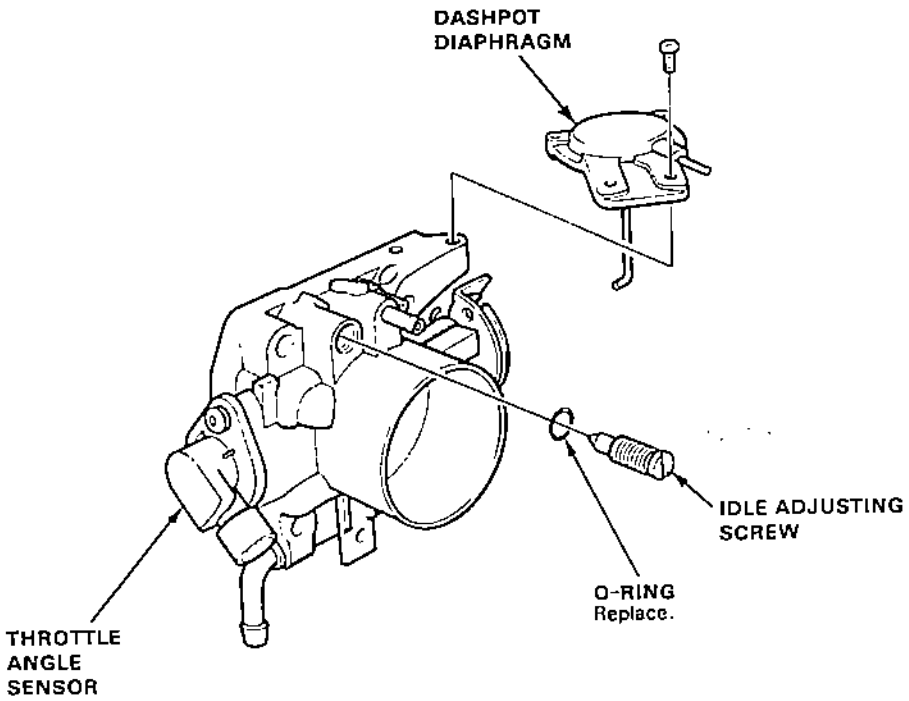


Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.

Disassembly



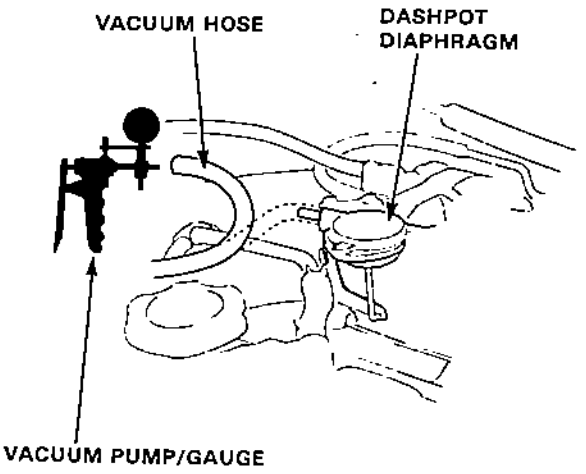
CAUTION:
- The throttle stop screw in non-adjustable.
- After reassembly, adjust the throttle cable (page 6-75).



Throttle Control System

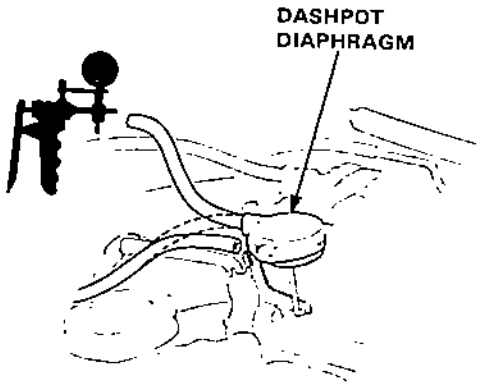
Testing

1. Disconnect vacuum hose from the dashpot diaphragm, and connect vacuum pump to the hose.



2. Apply vacuum and check that vacuum rises, then bleeds off to zero.
   - If the vacuum holds or does not rise, the bleed off, replace the dashpot check valve and retest.

3. Connect a vacuum pump to the dashpot diaphragm.



4. Apply the vacuum and check that the rod pulls in and vacuum holds.
   - If the vacuum does not hold or the rod does not move, replace the dashpot diaphragm, and retest.

System Troubleshooting Guide

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

PAGE / SUB SYSTEM / SYMPTOM		CATALYTIC CONVERTER	POSITIVE CRANKCASE VENTILATION SYSTEM	EVAPORATIVE EMISSION CONTROLS
		82	83	84
ROUGH IDLE			①	
POOR PERFORMANCE	FAILS EMISSION TEST	①		②
	LOSS OF POWER	①		

Tailpipe Emission

Inspection

⚠ WARNING **Do not smoke during this procedure. Keep any open flame away from your work area.**

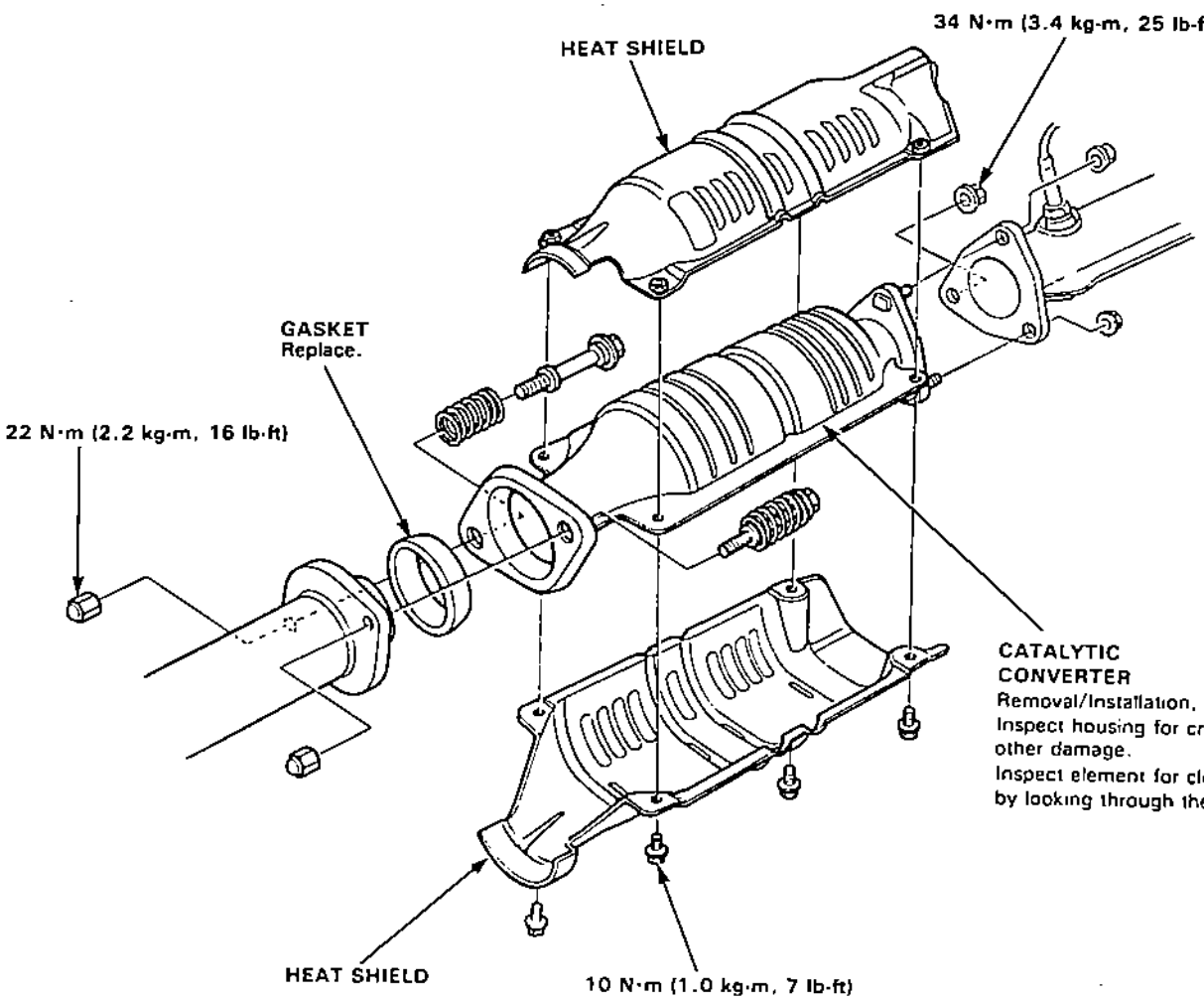
1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect a tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-59).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

   CO meter should indicate 0.1 % maximum.

Catalytic Converter

Inspection

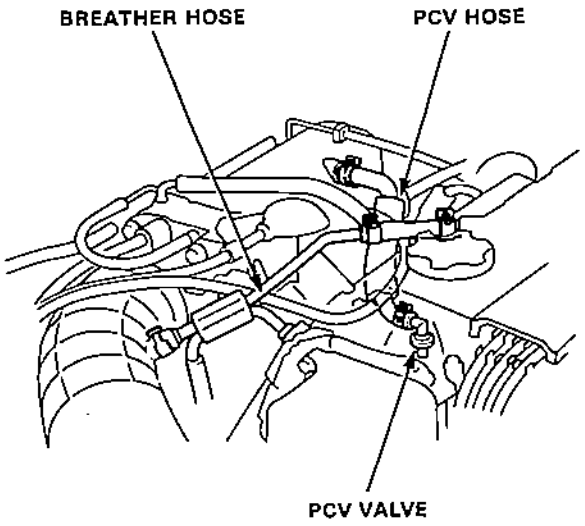
If excessive exhaust system back-pressure is suspected, remove the catalytic converter from the car and make a visual check for plugging, melting or cracking of the catalyst. Replace the catalytic converter if any of the visible area is damaged or plugged.



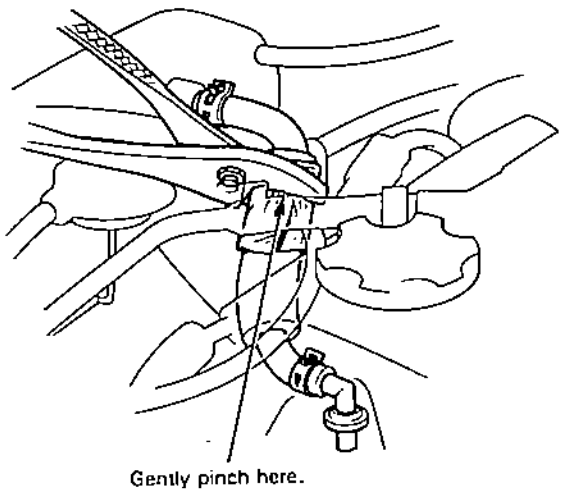
Positive Crankcase Ventilation System

Inspection

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. At idle, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold in lightly pinched with your fingers or pliers.



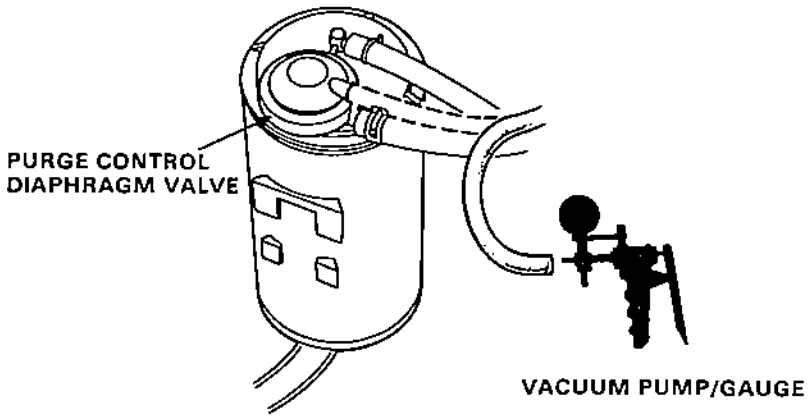
- If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

Evaporative Emission Controls

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

Disconnect #7 vacuum hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

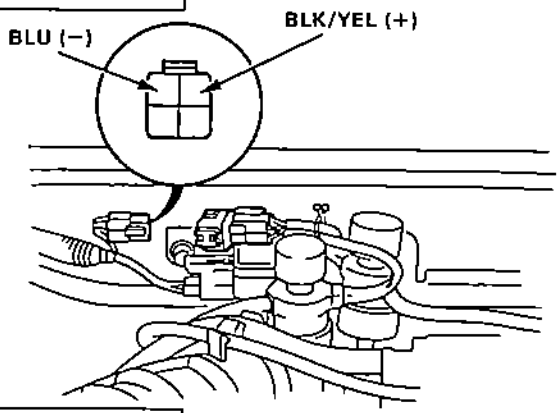


Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 80 °C (176°F).

Is there vacuum ?

YES

Disconnect the 4P connector.



NO

Measure voltage between BLK/YEL (+) terminal and BLU (−) terminal.

Is there battery voltage ?

YES

Inspect #7 vacuum hose routing.
If OK, replace purge cut-off solenoid valve.

NO

Measure voltage between BLK/YEL (+) terminal and body ground.

(To page 6-85)

(To page 6-85)

(From page 6-84)

Warm up the engine to normal operating temperature (cooling fan comes on).

Check for vacuum at #7 vacuum hose 5 seconds after starting the engine.

Is there manifold vacuum? NO

YES

Reconnect the hose.

Remove fuel filler cap.

(To page 6-86)

(From page 6-84)

Is there battery voltage ? NO

Repair open in BLK/YEL wire between No. 14 fuse and the 4P connector.

YES

Inspect BLU wire for a short to body ground between ECU (A6) and the connector.
If wire is OK, substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Disconnect the 4P connector.

Is there manifold vacuum? NO

Inspect #7 vacuum hose routing.
If OK, purge cut-off solenoid valve.

YES

Inspect for an open in BLU wire between ECU (A6) and the connector.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(cont'd)

Evaporative Emission Controls (cont'd)

(From page 6-85)

Connect a vacuum gauge to canister purge air hose.

Start the engine and raise speed to 3,500 min^{-1} (rpm).

Does vacuum appear on gauge within 1 minute ?

NO

Connect a vacuum gauge to the canister purge hose and raise the engine speed to 3,500 min^{-1} (rpm).

YES

See two-way valve test to complete.
Evaporative emission control are OK.

Does vacuum appear on the gauge within 1 minute ?

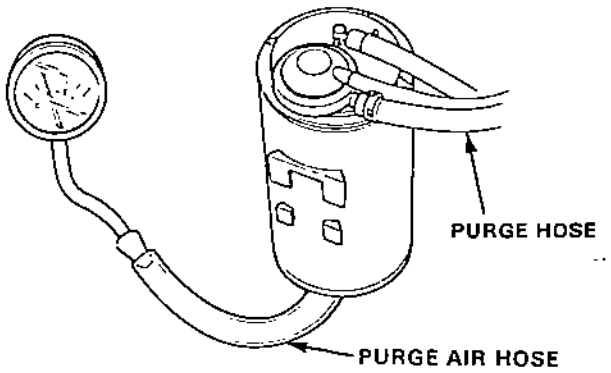
NO

Inspect the purge hose. If hose is OK, replace the throttle body.

YES

Replace the canister.

VACUUM/PRESSURE GAUGE, 0—4 in. Hg

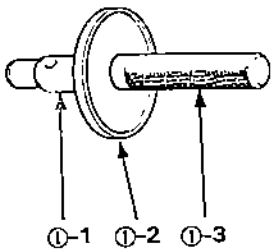


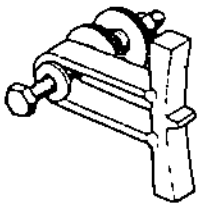
Clutch

Pressure Plate .....7 – 2
Clutch Assembly .....7 – 2

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07LAF–PR30200	Clutch Alignment Tool Assembly	1	
①-1	07LAF–PR30210	Clutch Alignment Shaft	1	
①-2	07JAF–PM7011A	Clutch Alignment Disc	1	
①-3	07936–3710100	Handle	1	
②	07924–PD20003	Ring Gear Holder	1	or 07924–PD20002



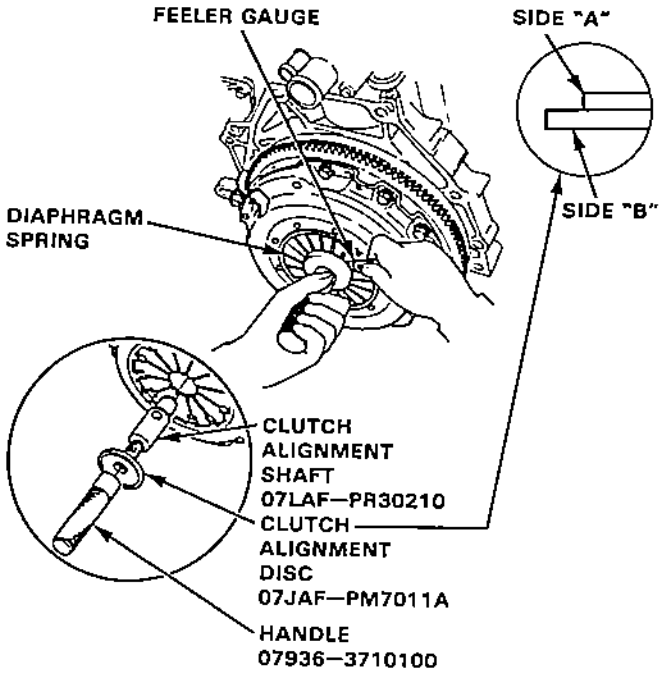


Pressure Plate

Inspection

1. Inspect the fingers of the diaphragm spring for wear at the release bearing contact area.
2. Assemble the special tools as shown.
   NOTE: Assemble the Clutch Alignment Disc with side "A" facing the diaphragm as shown.
3. Check the diaphragm spring fingers for height using the special tools and a feeler gauge.

   Service Limit: 1.0 mm (0.04 in.) Max.

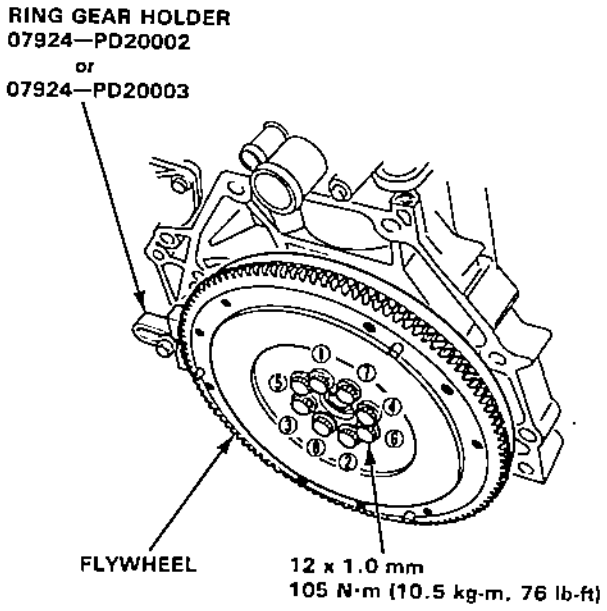


Clutch Assembly

Installation

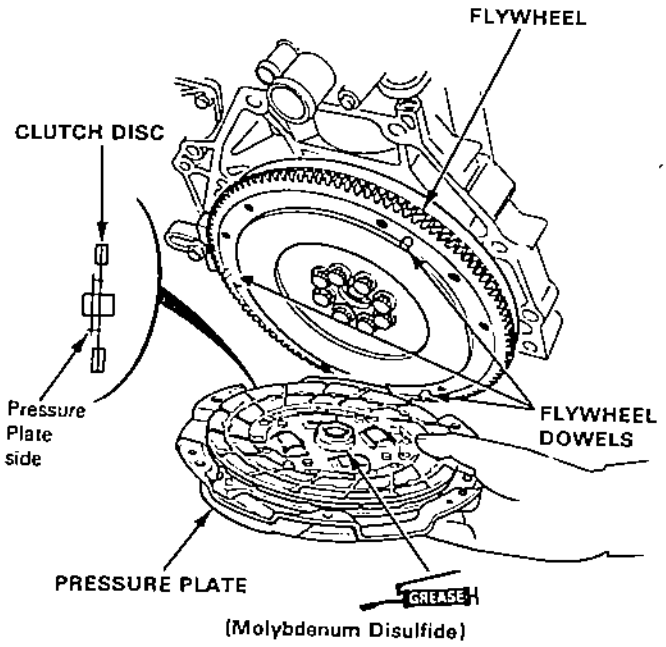
1. Align the hole in the flywheel with the crankshaft dowel pin and install the flywheel. Install the bolts only finger tight.

2. Install the special tool, then torque the flywheel bolts in a crisscross pattern, as shown.



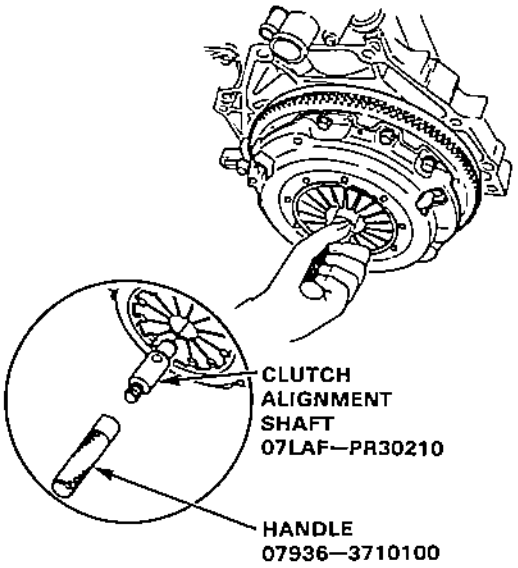
3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.

   NOTE: Apply molybdenum disulfide grease to the spline of the clutch disc.

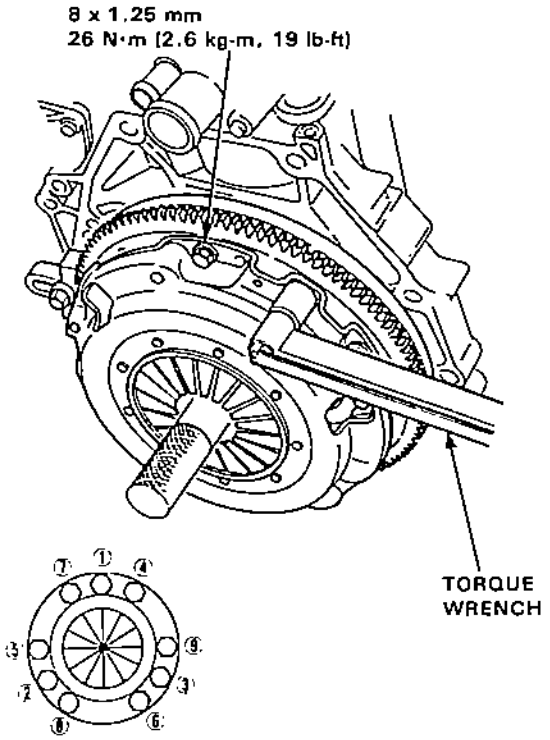


4. Install the attaching bolts finger tight.

5. Insert the special tool into the splined hole in the clutch disc.



6. Torque the bolts in a crisscross pattern as shown. Tighten them two turns at a time to prevent warping the diaphragm spring.



7. Remove the special tools.

Manual Transmission

Y1 (V-TEC) 8-1
L3 (2WD) 8-9

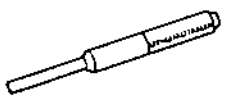
Y1 (V-TEC)

Transmission
Removal/Installation 8-2
Shift Fork Shaft Assembly
Disassembly/Reassembly 8-7

The structure of new type Y1 manual transmission. Therefor regarding way of disassembling or maintenance, the only different points from those of the precedent model have been reported in the manual. In addition to the above, we recommend to you the already published manual "No. 62PS100 FOR MAINTENANCE OF MODEL S1 MANUAL TRANSMISSION" for reference. As a result of a modification newly made on the shift fork, its steel bowl has been changed to a type that disassembly is not practicable.

Special Tool

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07744—0010400	Pin Driver, 5.0 mm	1	



①

Transmission

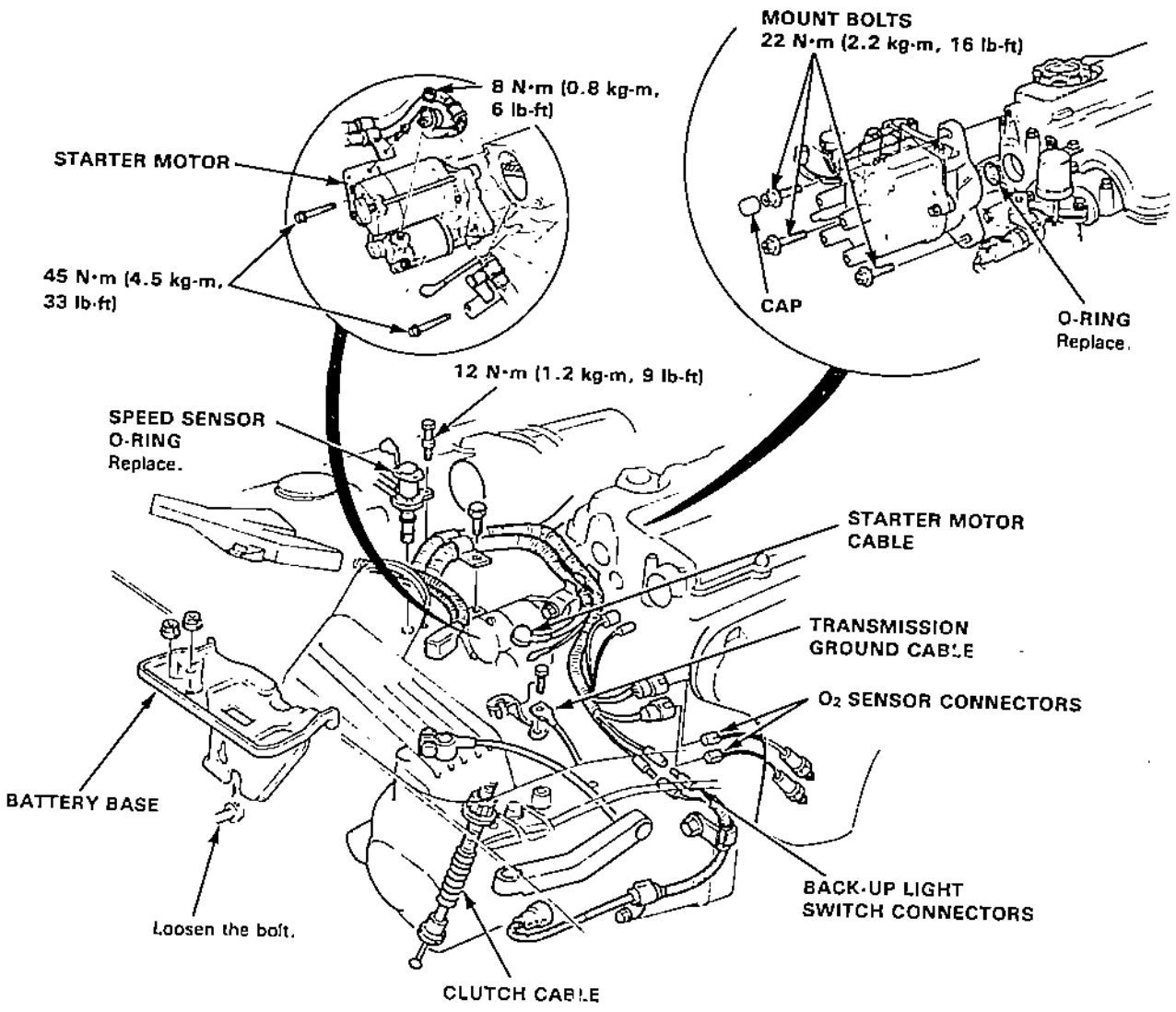
Removal/Installation

⚠WARNING

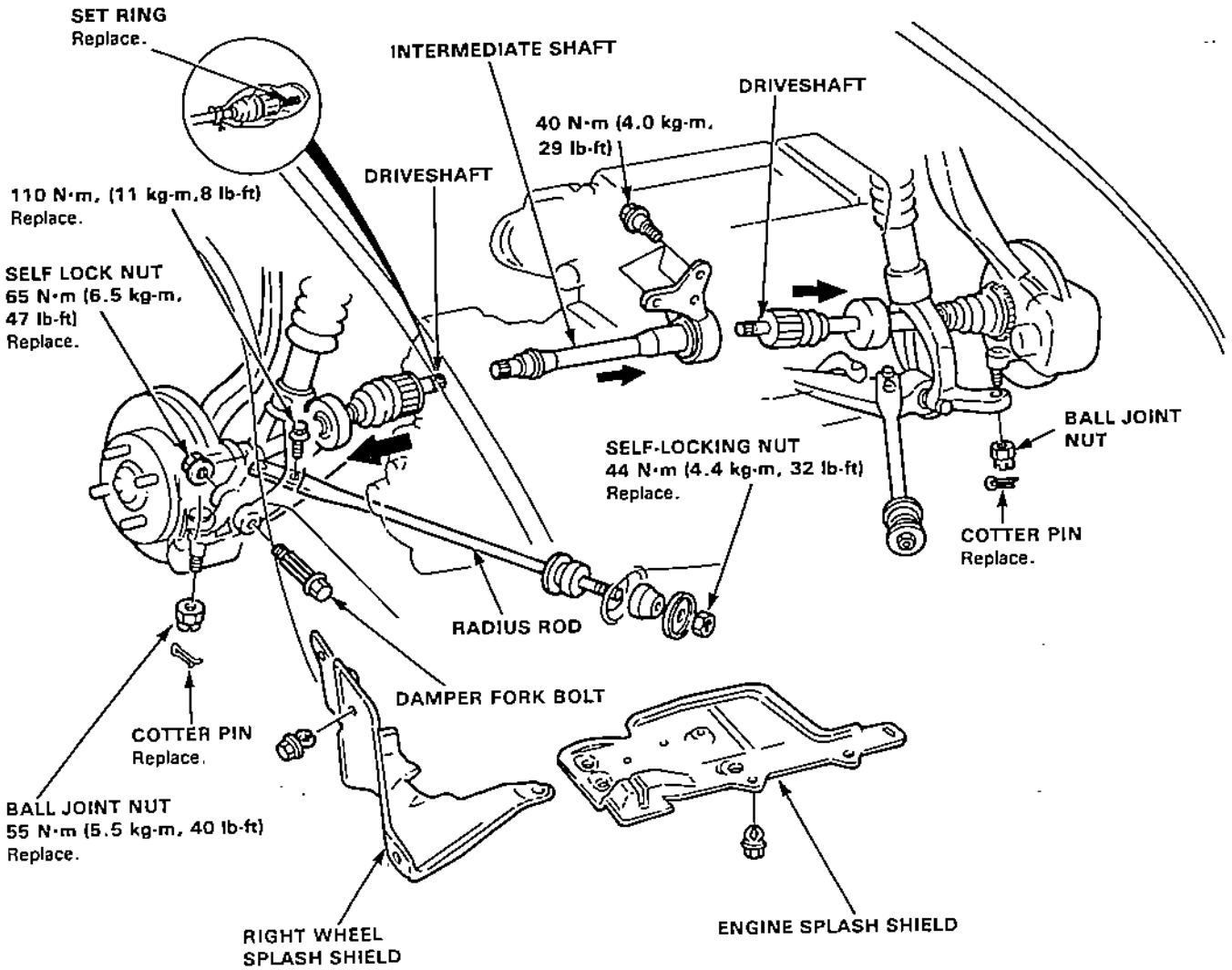
- **Make sure jacks and safety stands are placed properly (See section 1), and hoist brackets are attached to correct positions on the engine (See section 5).**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

1. Disconnect the battery negative (−) and positive (+) cables from the battery.
2. Remove the 2 nuts and loosen the bolt located at the side of the battery base.
3. Remove the battery base.
4. Remove the intake hose.
5. Disconnect the transmission ground cable.
6. Disconnect the cluch cable at the release arm and cable stay.
7. Disconnect the back-up light switch connector.
8. Remove the O_2 sensor connector from the holder, then disconnect the O_2 sensor connector.
9. Remove the speed sensor.
10. Disconnect the starter motor cable, then remove the cable holder.
11. Remove the bolts attaching the startor motor, and remove the starter motor.
12. Disconnect the distributor connectors and remove the distributor mount bolts, then remove the distributor from the cylinder head.

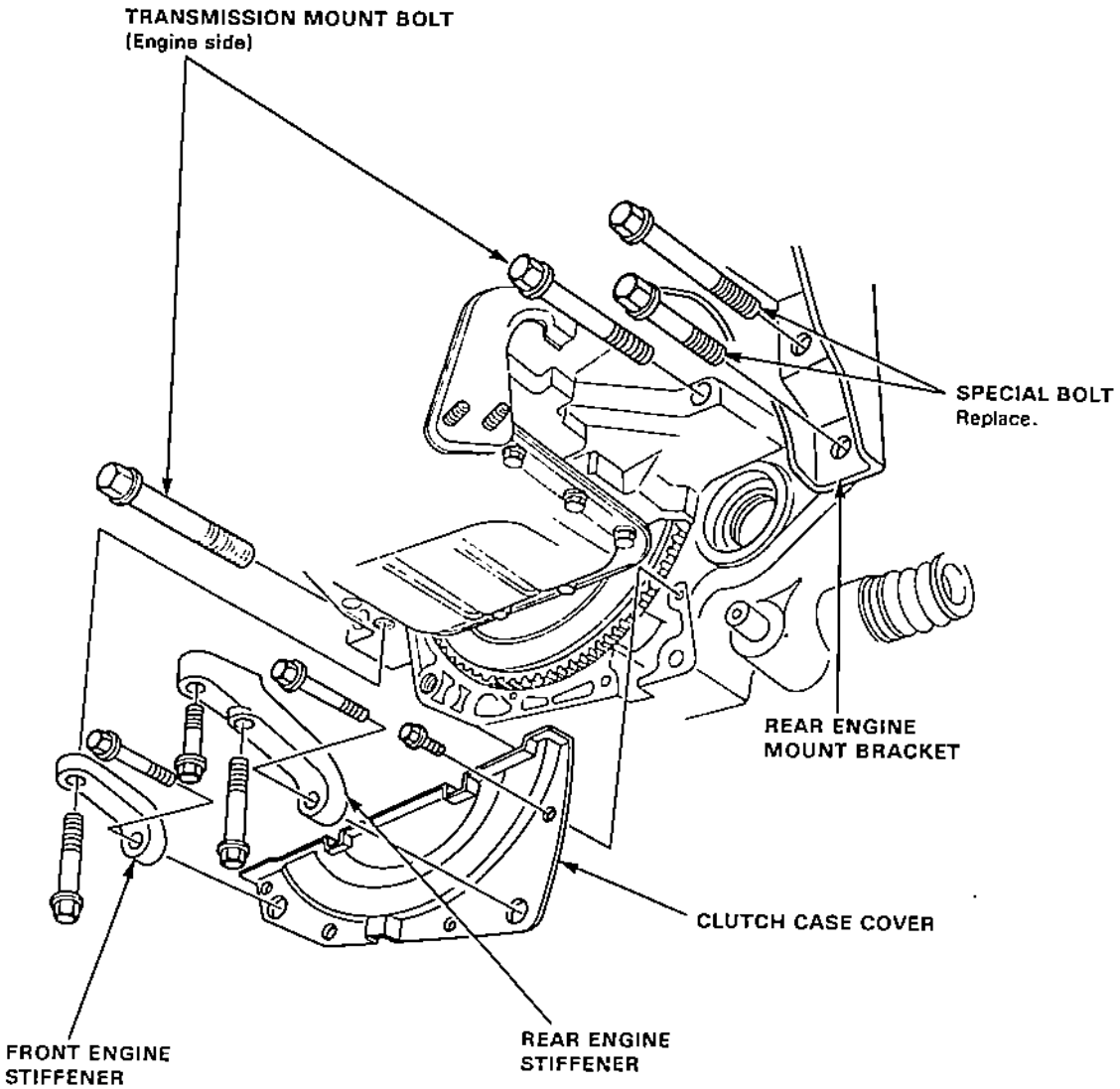


13. Drain transmission oil. Use a socket wrench to remove the drain plug. Remove the oil filler plug to speed draining.
    Reinstall the drain plug with a new washer.
14. Remove the engine splash shield and the right wheel splash shield.
15. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm (See section 12).
16. Remove the self locknut, and remove the damper fork bolt.
17. Remove the nut and bolts. the remove the right radius rod.
18. Remove the right driveshaft (See section 10).
19. Remove the left driveshaft (See section 10).
20. Remove the intermediate shaft (See section 10).
21. Remove the torque rod and shift rod from the clutch housing.

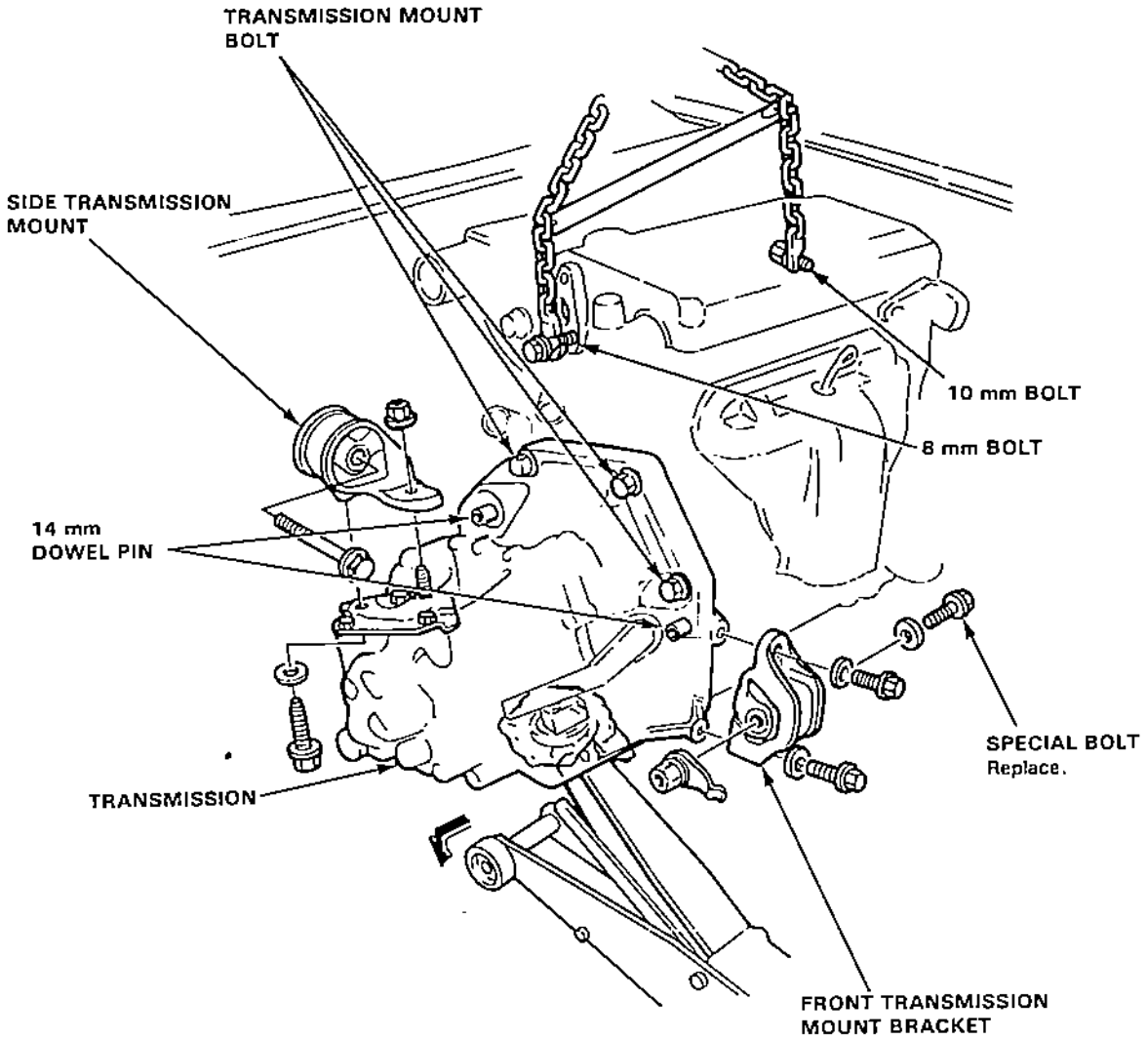


Removal/Installation

22. Remove the front engine stiffener and rear engine stiffener.
23. Remove the clutch case cover.
24. Remove the 2 transmission mount bolts.
25. Remove the 2 transmission mount bolts from the rear engine mount bracket.
26. Remove the bolt of under the side transmission mount.



27. Remove the front transmission mount bracket.
28. Install the bolt at he cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plate, then lift the engine slightly to unload the mounts.
29. Place a jack under the transmission and raise transmission just enough to take the weight off the mounts.
30. Remove the bolts and nut, then remove the side transmission mount.
31. Remove the 3 transmission mount bolts.
32. Pull the transmission away from the engine until it clears the 14 mm dowel pins.
33. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.



Transmission

Removal/Installation

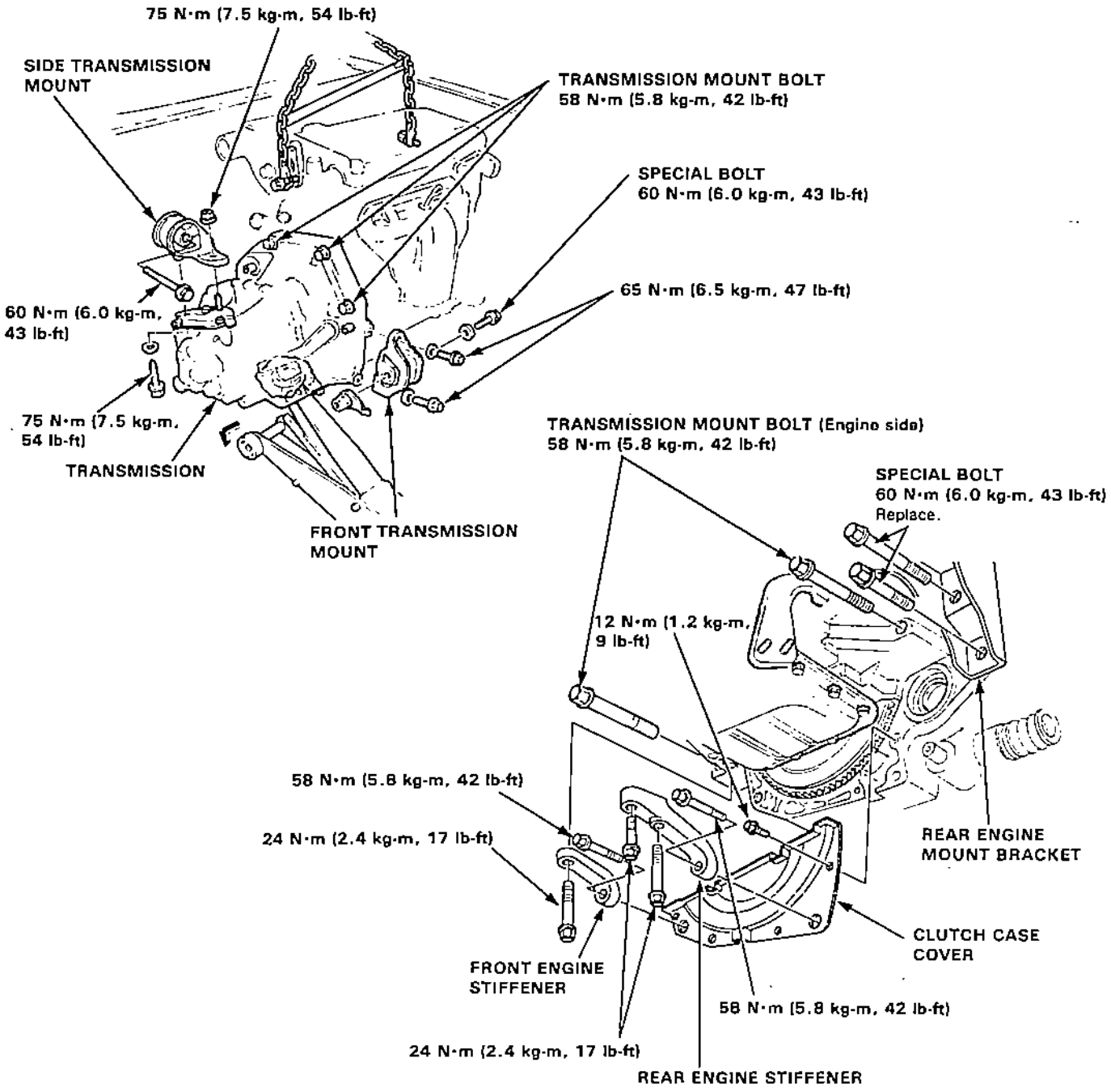
Install the engine in the reverse order of removal.

After the engine is in place:

- Check the transmission oil level.
- Check that the spring clip on the end of each driveshaft clicks into place.

CAUTION: Use new spring clips on installation.

- Check the clutch free play.
- Check the ignition timing (See section 16).
- Check the transmission for smooth operation.

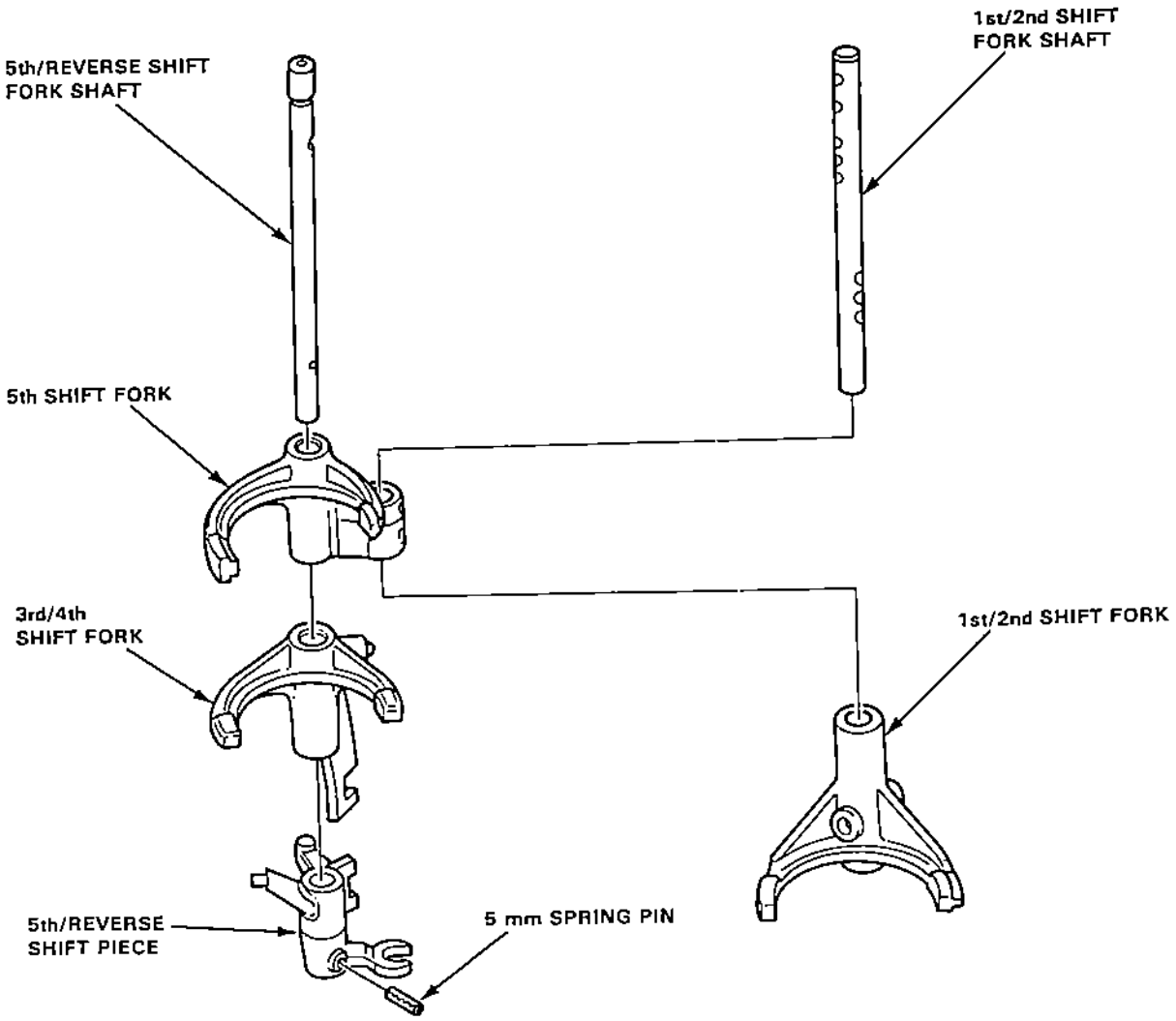


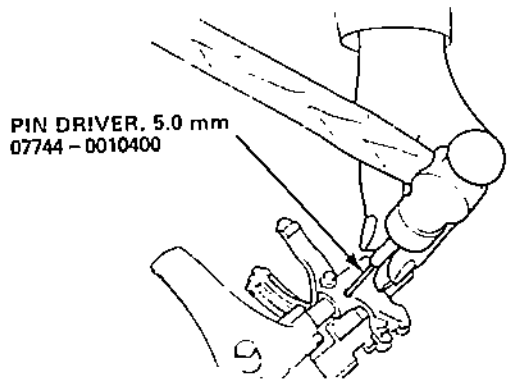
Shift Fork Shaft Assembly

Disassembly/Reassembly

NOTE: When assembling, install the shift fork shaft with its detents facing the hole where the balls are inserted.

Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact parts.





L3 (2WD)

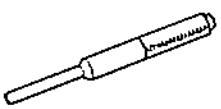
Shift Fork Shaft Assembly
Disassembly/Reassembly 8-10

Outline of Model Change

- The shift fork has been changed.

Special Tool

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07744-0010400	Pin Driver, 5.0 mm	1	



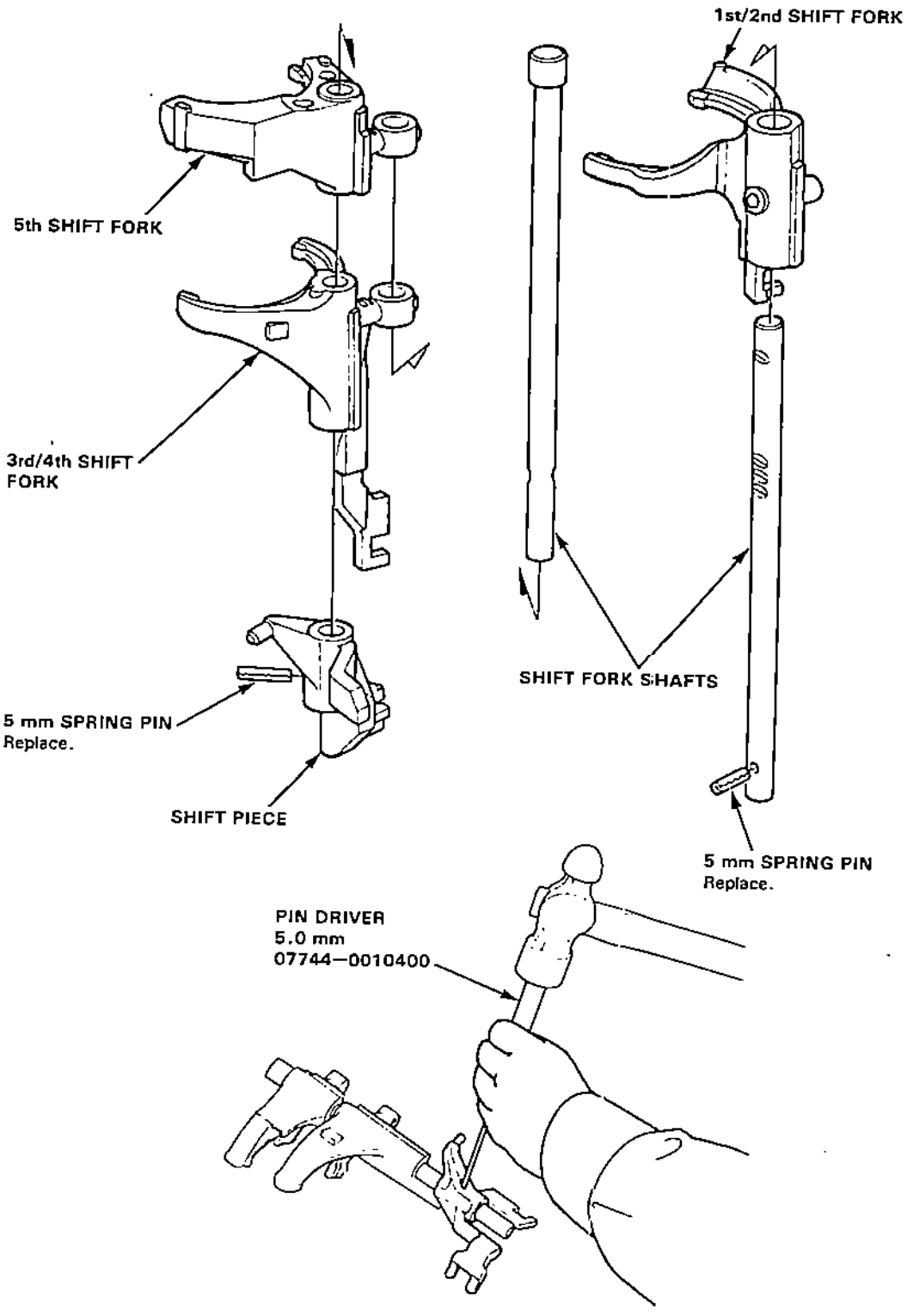
①

Shift Fork Shaft Assembly

Disassembly/Reassembly

NOTE: When assembling, install the shift fork shaft with its detents facing the hole where the balls are inserted.

S Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact parts.



Driveshafts

Special Tools 10-2
Driveshafts
  Disassembly/Inspection 10-4
  Reassembly 10-5
Intermediate Shaft
  Replacement 10-8
  Disassembly 10-8
  Index/Inspection 10-9
  Reassembly 10-10

Outline of Model Changes

- The driveshafts assembly have been changed to V-TEC engine type only.
- The intermediate shaft has been changed to V-TEC engine type only.

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Page Reference
①	07749—0010000	Driver	1	
②	07746—0040800	Pilot, 35 mm	1	
③	07746—0010300	Attachment, 42 x 47 mm	1	
④	07746—0010400	Attachment, 52 x 57 mm	1	
⑤	07JAF—SH20400	Support Base Attachment	1	
⑥	07965—SD90100	Support Base	1	
⑦	07GAF—SD40700	Hub Dis/Assembly Base	2	
⑧	07JAD—SH30100	Oil Seal Driver Attachment	1	
⑨	07746—0030100	Driver, 40 mm I.D.	1	
⑩	07JAD—PG40100	Oil Seal Driver Attachment	1	



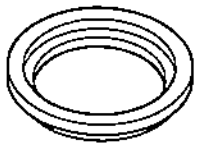
①



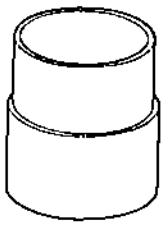
②



③ ④



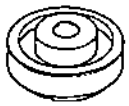
⑤



⑥



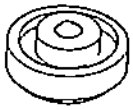
⑦



⑧



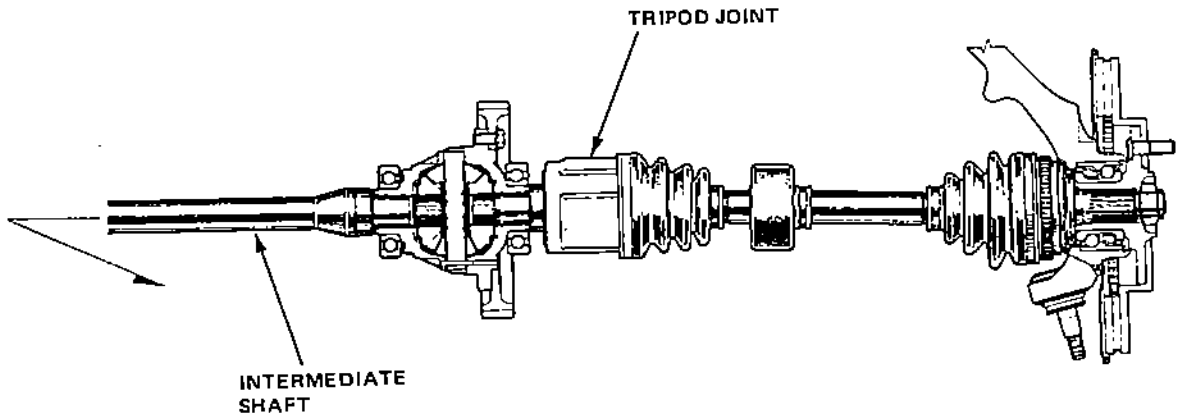
⑨

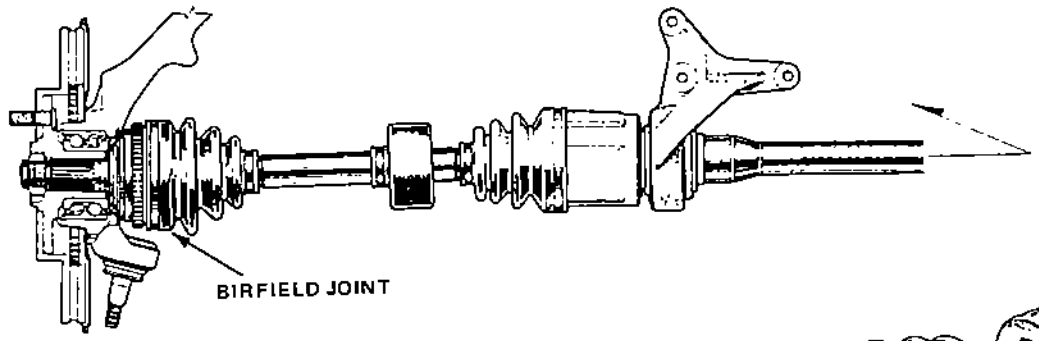


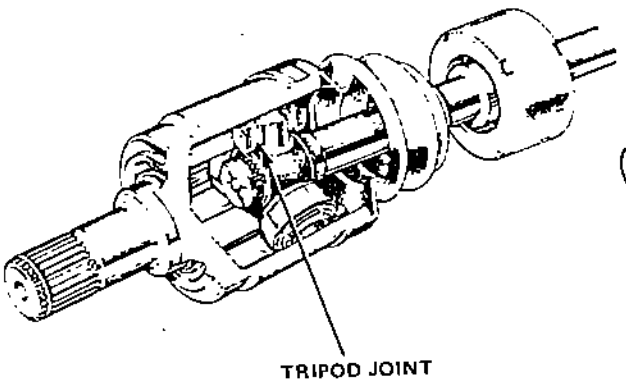
⑩

Driveshafts

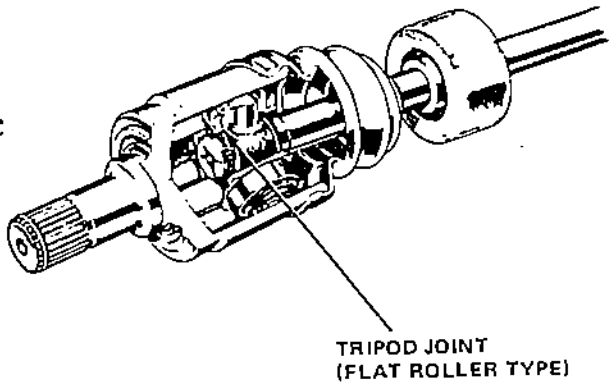
At both ends of the driveshaft, constant velocity joints ensure power transmission are used. At the outboard side, a Birfield joint is used and, at the inboard side, a tripod joint incorporating a spherical bushing and needle bearing inside the roller to considerably reduce slide resistance when loaded with torque.
An intermediate shaft is used between the differential unit and the left-hand driveshaft to allow right- and left-hand driveshafts of the same length. Since the left end of the intermediate shaft is at the same level as the differential unit, the joint angles of the right and left wheels are the same and noise and vibration are reduced as well as less torque steer is generated.*1)
Flat roller, a roller with flat rolling surface provided with a guide, is used as the tripod joint roller of the V-TEC engine model. To reduce the vibration and rolling to the sides when the car is started and accelerated, it regulates the rotating direction of the roller and restricts the tilt to the sliding direction.







Other Engine Type



V-TEC Engine Type

* Torque Steer: Refers to the steering pull to one side when the car under power.

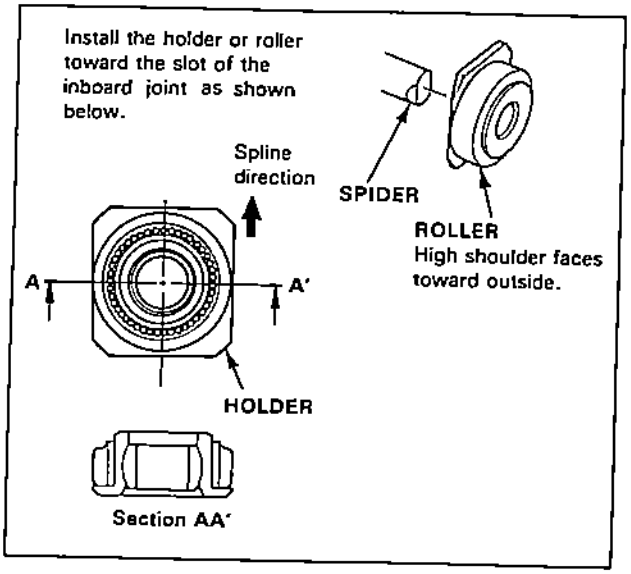
Disassembly/Inspection

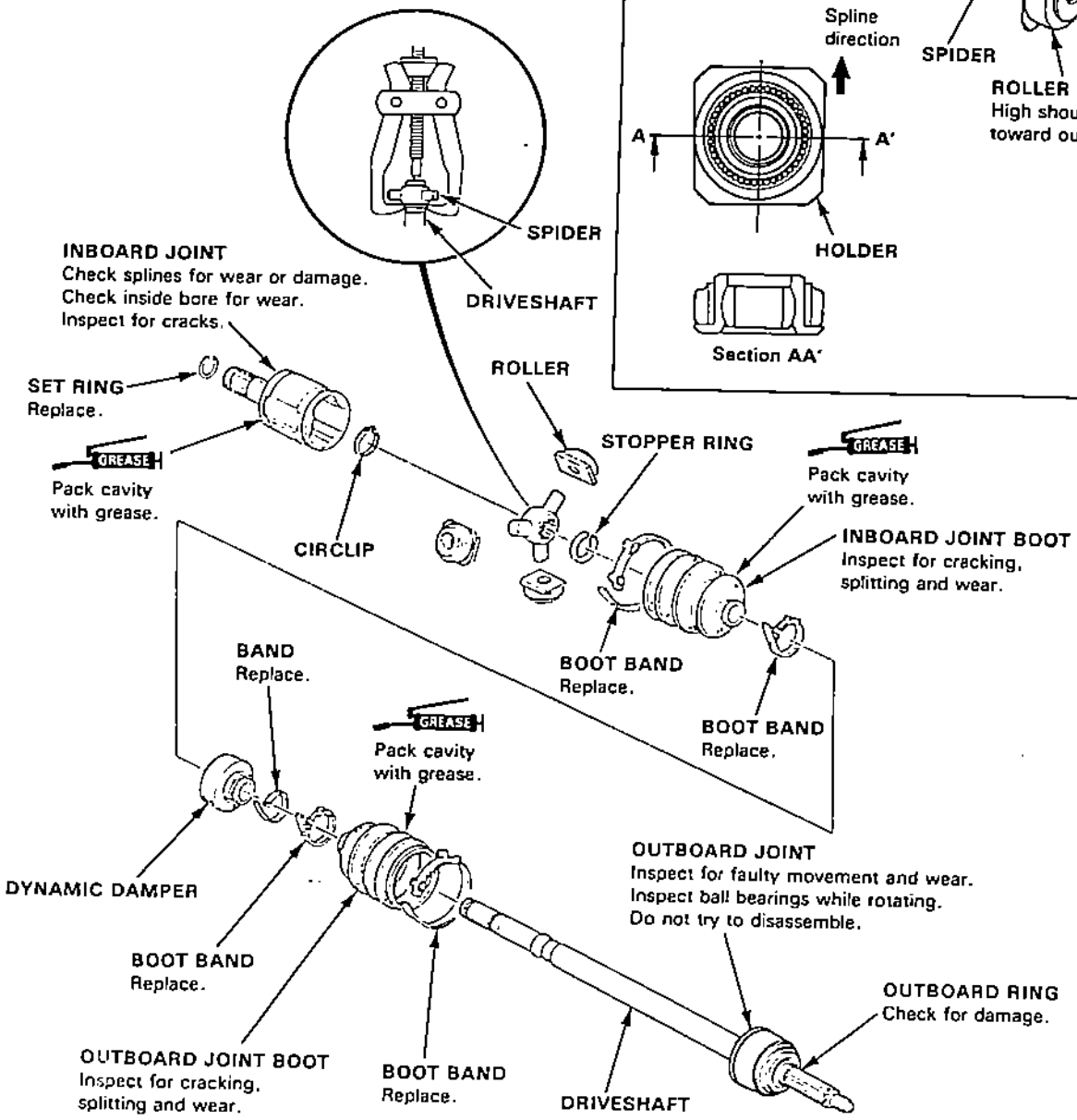
NOTE:
- Mark the rollers and roller grooves during disassembly to ensure proper positioning during reassembly.
- Before disassembly, mark the spider and driveshaft so they can be reinstalled in their original positions.
- The inboard joint must be removed to replace the boots.

GREASE Thoroughly pack the inboard joint and both joint boots with high quality molybdenum disulfide grease when reassembling.

Grease Quantity:

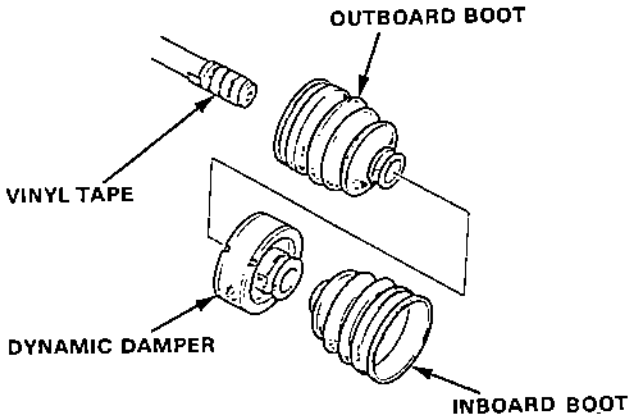
Inboard Joint	120~130 g
Outboard Joint	90~100 g



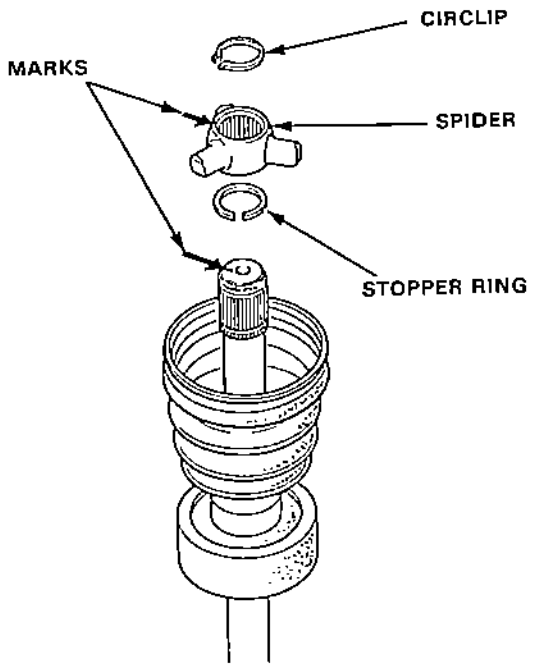


Reassembly

1. Wrap the splines with vinyl tape to prevent damage to the boots and dynamic damper.
2. Install the outboard boot, dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape.

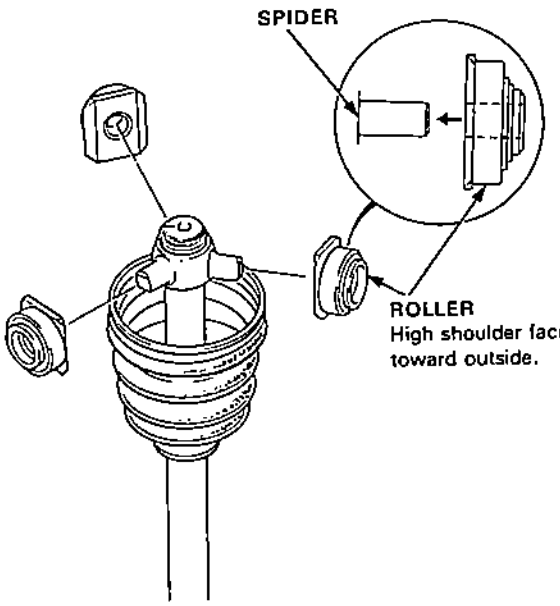


3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the circlip onto the driveshaft groove.



6. Fit the rollers to the spider with their high shoulders facing outward.

CAUTION:
- **Reinstall the rollers to their original positions on the spider.**
- **Hold the driveshaft assembly so the spider and roller points up, to prevent it from falling off.**

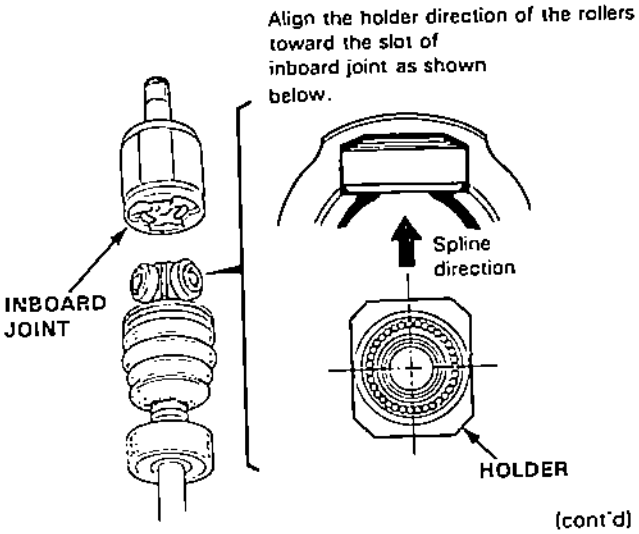


7. Pack the inboard joint with molybdenum disulfide grease.

   Grease Quantity: 120~130g

8. Fit the inboard joint onto the driveshaft.

   CAUTION: Hold the driveshaft assmbly so the inboard joint points up, to prevent it from falling off.

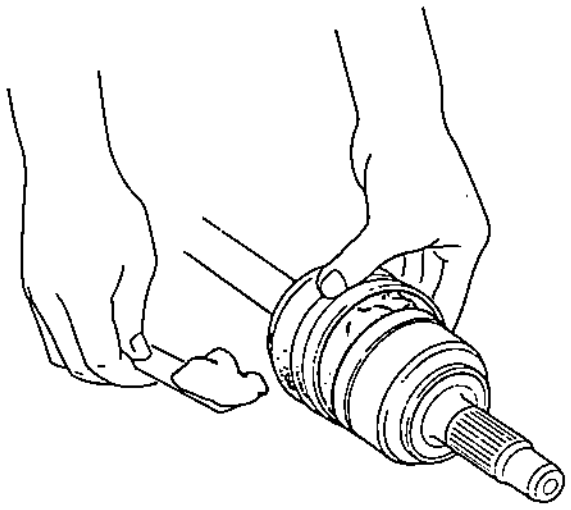


(cont'd)

Reassembly (cont'd)

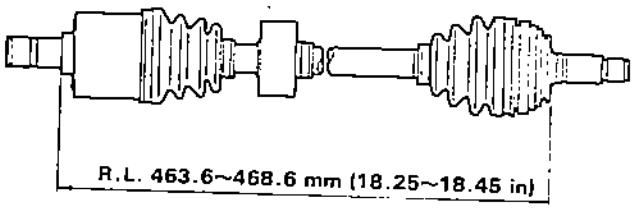
9. Pack the outboard joint boot with molybdenum disulfide grease.

   Grease Quantity: 90~100g

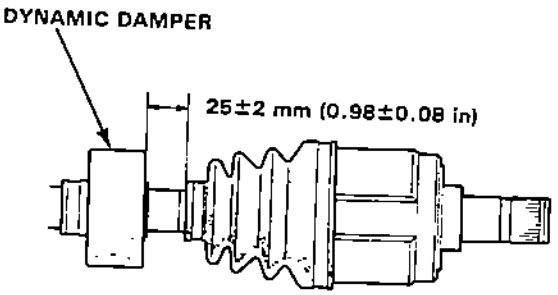


10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and extension.

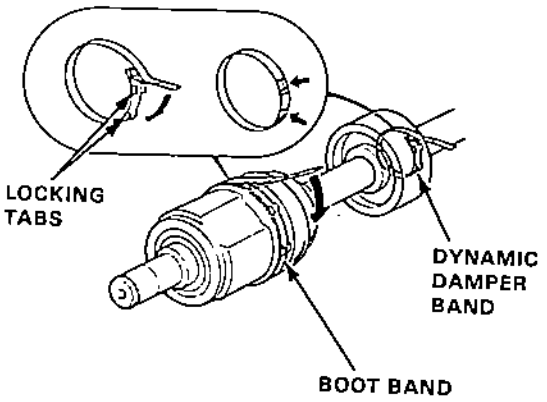
    NOTE: The ends of boots seat in the groove of the driveshaft and joint.



11. Position the dynamic damper as shown below.



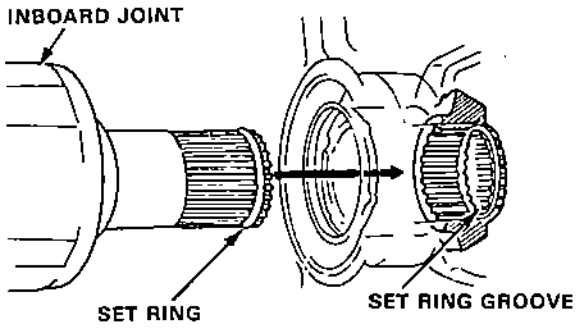
12. Install new boot bands on the boot and bend both sets of locking tabs.
13. Lightly tap on the doubled-over portions to reduce their height.
14. Install a new dynamic damper band and bend down both sets of locking tabs.
15. Lightly tap on the doubled-over portion to reduce its height.



16. Install a new set ring in the driveshaft groove.

17. Install the inboard end of the driveshaft into differential or intermediate shaft.

CAUTION:
- **Always use a new set ring whenever the driveshaft is being installed.**
- **Make sure the driveshaft locks in the differential side gear groove, and the CV joint subaxle bottoms in the differential or intermediate shaft.**

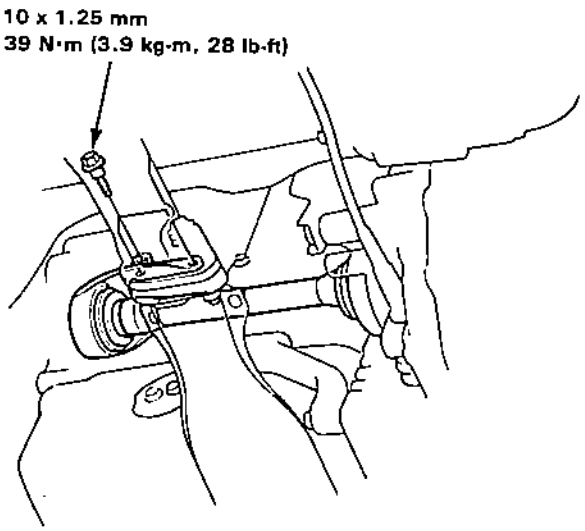


18. Refill the transmission.

Intermediate Shaft

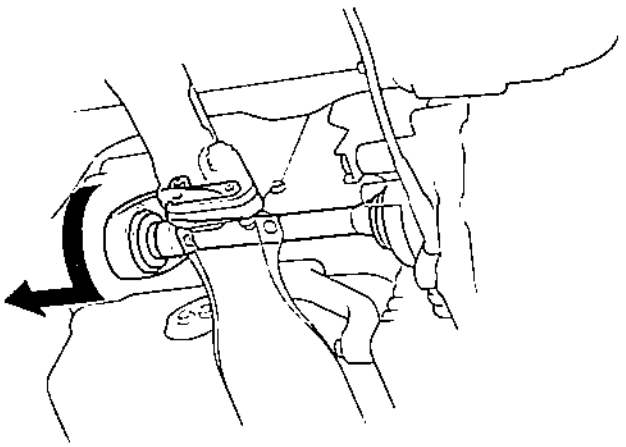
Replacement

1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



3. Lower the bearing support close to the steering gearbox and remove the intermediate shaft from the differential.

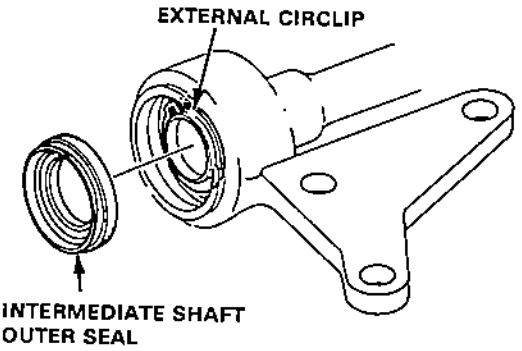
CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



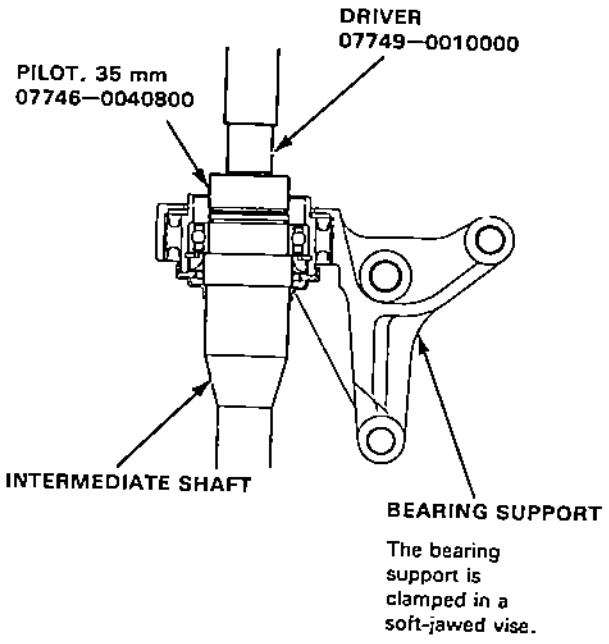
Installation is the reverse order of removal.

Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the external circlip.

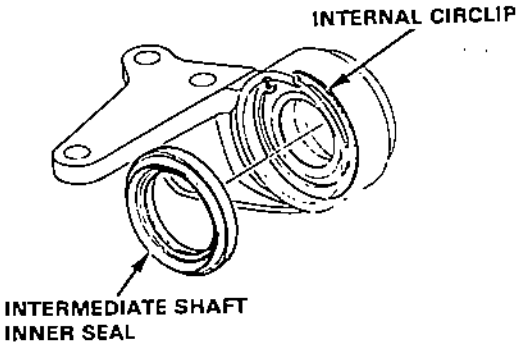


3. Remove the intermediate shaft.
NOTE: The shaft can be hammered out using the driver and pilot, it the bearing support is clamped in a soft-jawed vise.

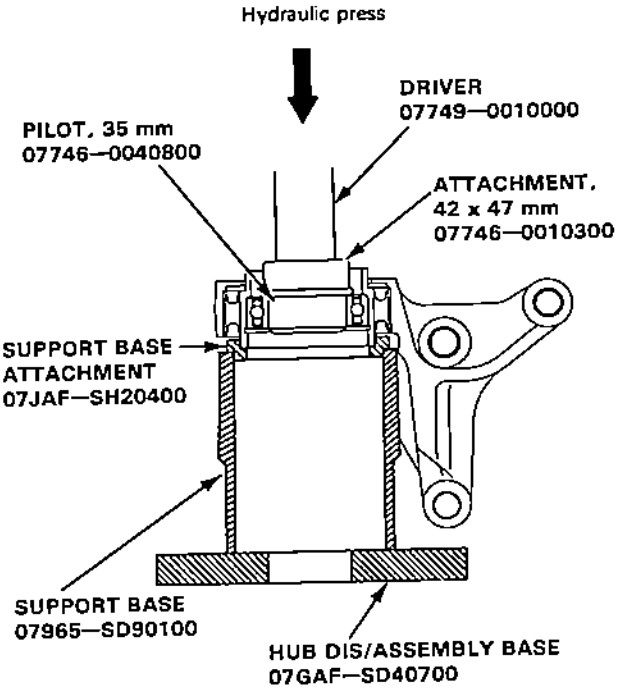


The bearing support is clamped in a soft-jawed vise.

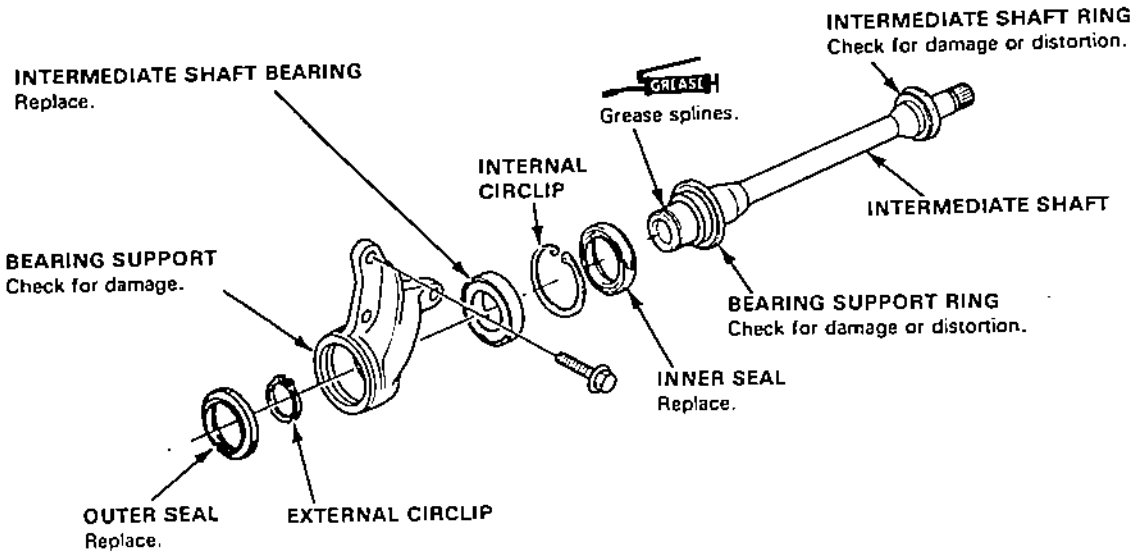
4. Remove the intermediate shaft inner seal.
5. Remove the internal circlip.



6. Press the intermediate shaft bearing out of the bearing support.



Index/Inspection

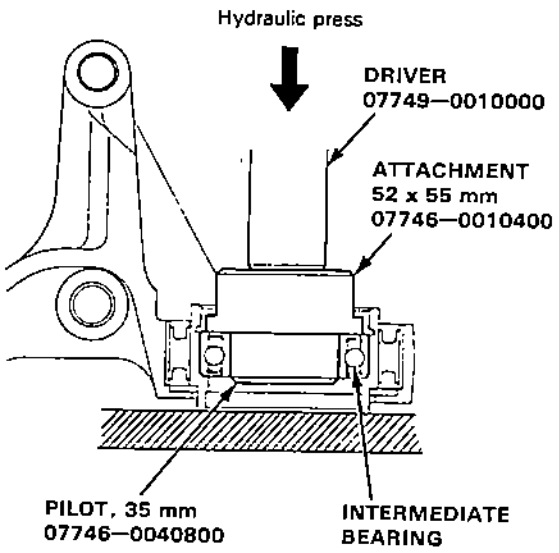


CAUTION: Be careful not to damage the rubber on the bearing support during installation.

Intermediate Shaft

Reassembly

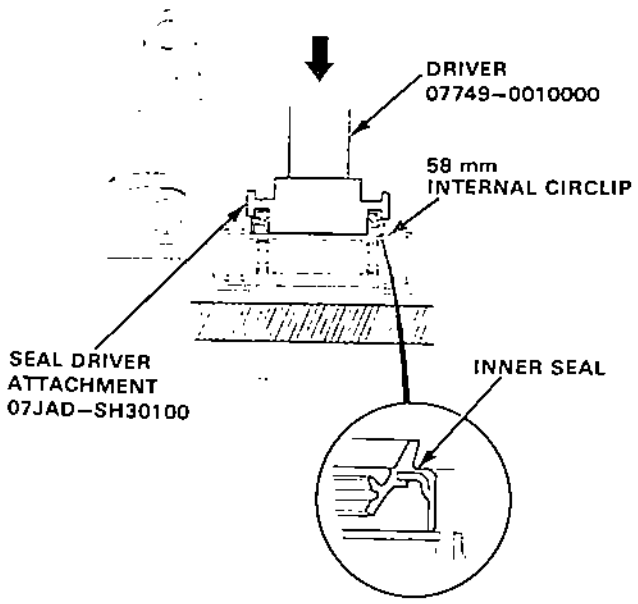
1. Press the intermediate shaft bearing into the bearing support using the special tools.



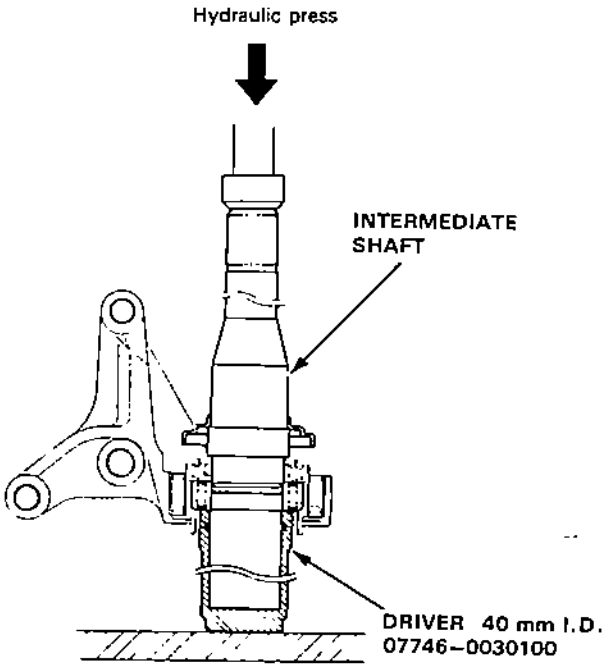
2. Seat the 58 mm internal circlip in the groove of the bearing support.

   CAUTION: Install the circlip with the tapered end facing out.

3. Drive the intermediate shaft inner seal into the bearing support using the special tools.



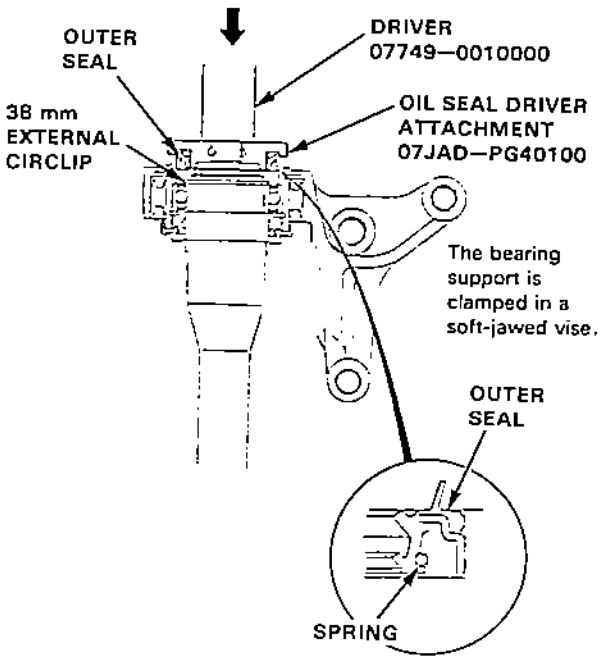
4. Press the intermediate shaft into the shaft bearing.



5. Seat the 38 mm external circlip in the groove of the intermediate shaft.

   CAUTION: Install the circlip with the tapered end facing out.

6. Drive the outer seal into the bearing support using the special tools.



Suspension

Front Suspension
Illustrated Index.....12-2
Knuckle/Hub 12-3

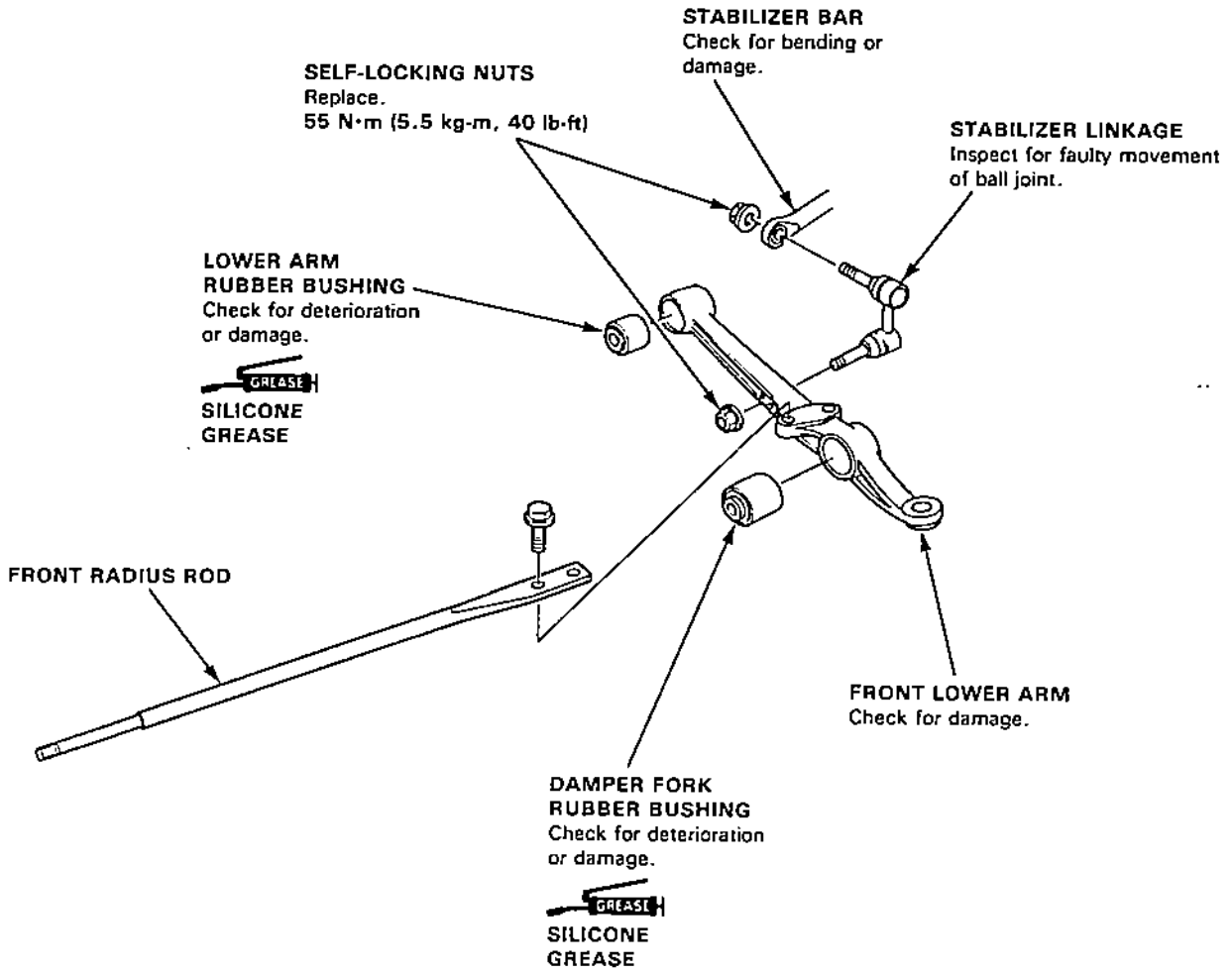
Outline of Model Changes

- The stabilizer linkage has been adopted to V-TEC engine type only.
- The front hub installation has been changed.

Front Suspension

Illustrated Index

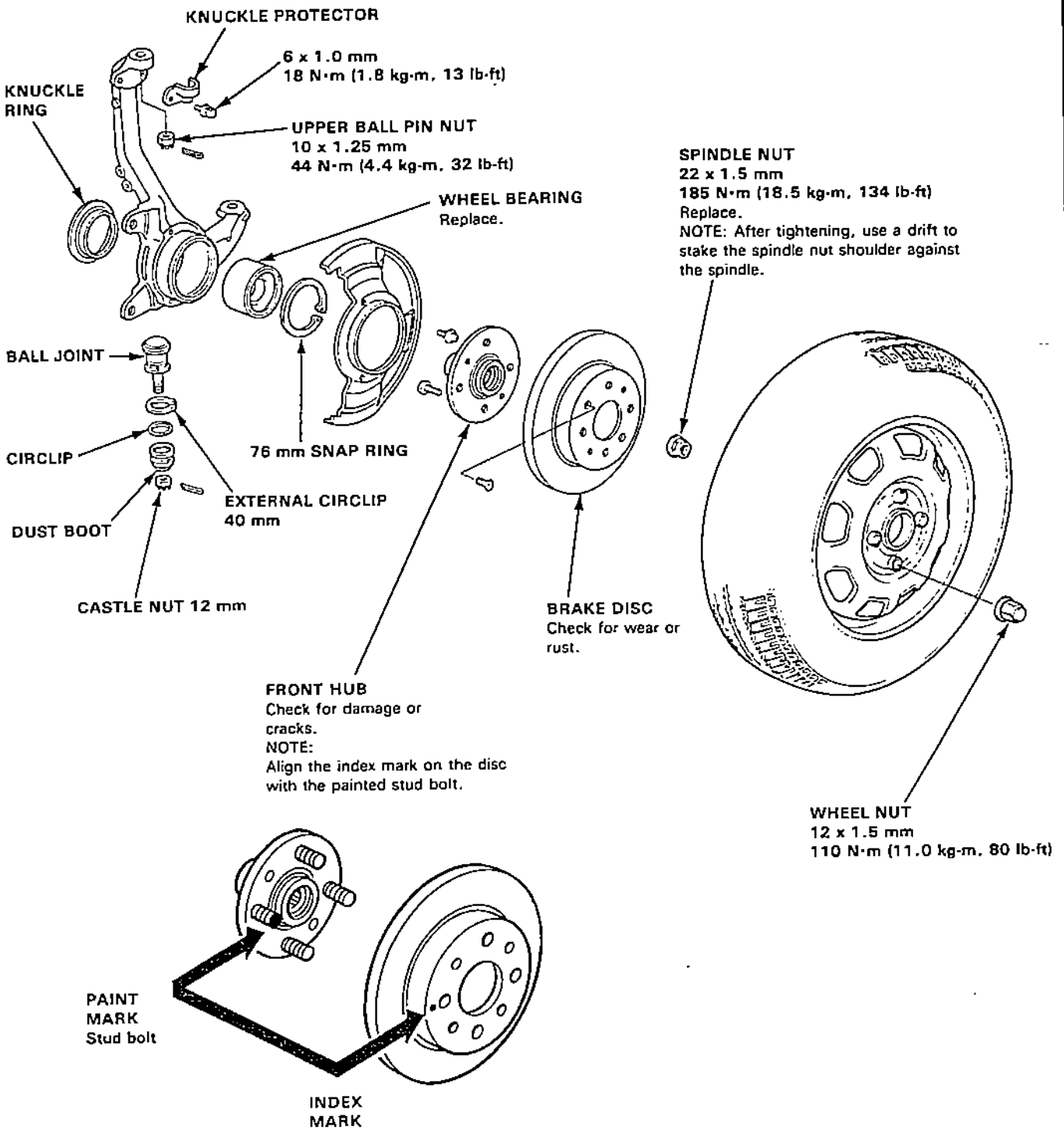
Overall Suspension
CAUTION: Replace the self-locking nuts after removal.
NOTE: Wipe off the grease before tightening the nut at the ball joint.



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

Knuckle/Hub

NOTE:
- Use only genuine Honda aluminum wheel weights. Non-genuine aluminum wheel weights may corrode and damage aluminum wheel.
- Remove the center cap by prying it out with a flat screwdriver. Avoid damage to the cap by not allowing it to fall during removal. Use a rag at the point you are going to pry, because aluminum alloy wheels can be easily damaged.



ALB

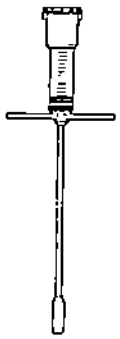
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Outline of Model Change

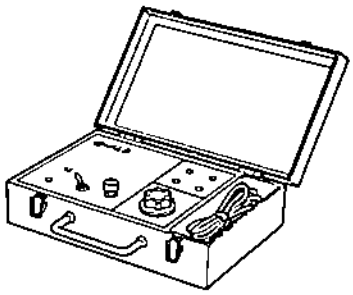
The ALB system has been adopted. (KE model with some types)

Special Tools

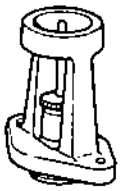
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAA—SG00100	ALB T-Wrench	1	
②	07HAJ—SG00602	ALB Checker	1	
	or			
	07508—SB00000	ALB Checker	1	
	07HAJ—SG00400	Adaptor	1	
③	07JAG—SD40100	Pushrod Adjustment Gauge	1	
④	07404—5790300	Vacuum Gauge	1	
⑤	07410—5790500	Tube Joint Adaptor	1	
⑥	07406—5790200	Pressure Gauges	2	
⑦	07410—5790100	Pressure Gauge Attachment C	2	
⑧	07510—6340101	Pressure Gauge Joint Pipe	1	
⑨	07HAK—SG00110	Pressure Gauge Joint Pipe	1	
⑩	07510—6340300	Vacuum joint tube A	1	
	or			
	07510—6340400	Vacuum joint tube B	1	



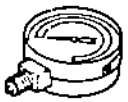
①



②



③



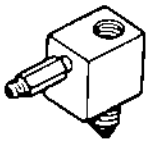
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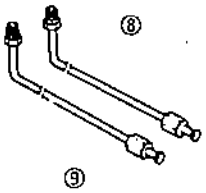
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⑥

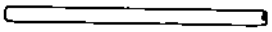


⑦



⑧

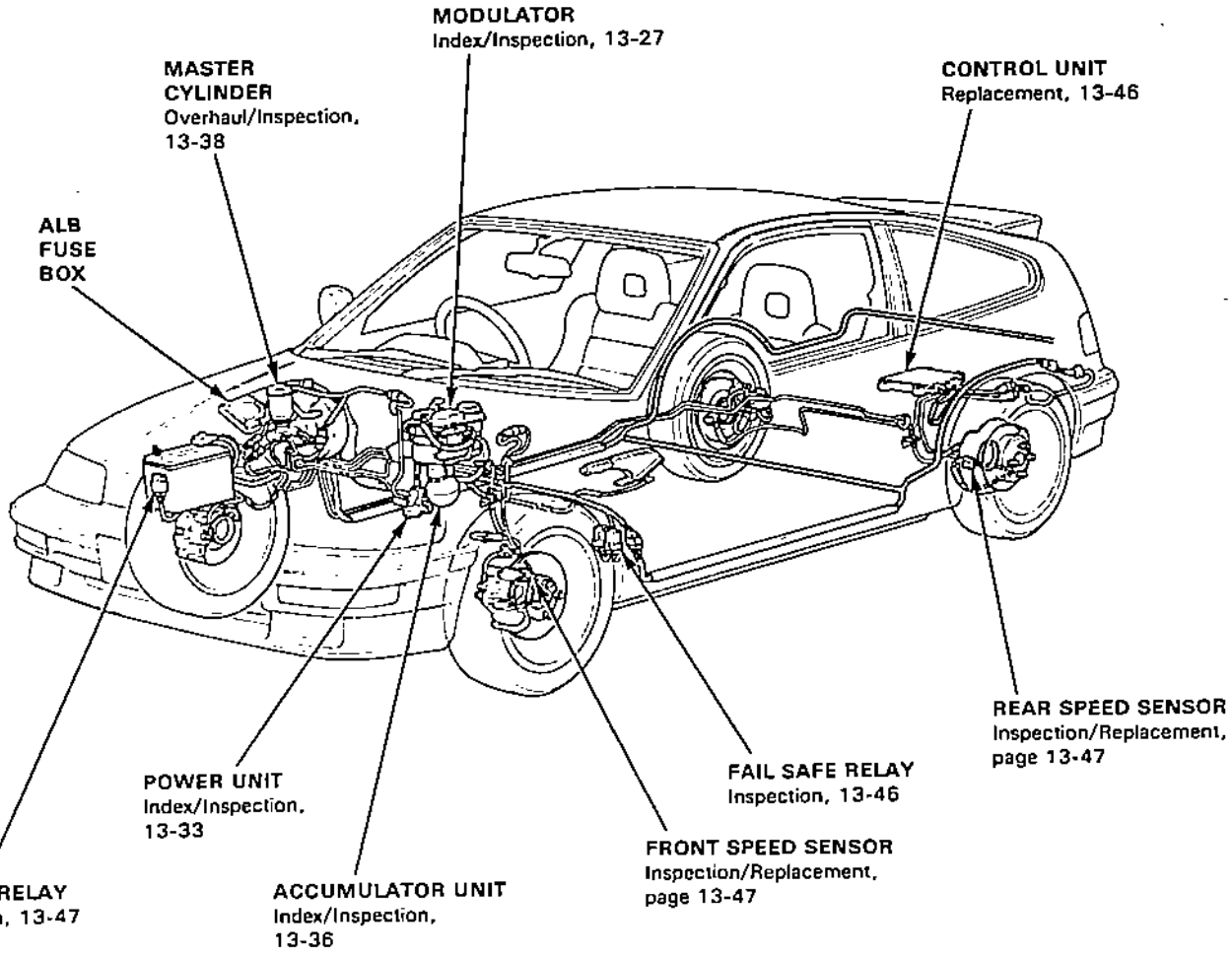
⑨



⑩

Illustrated Index

⚠WARNING The accumlator contains high pressure nitrogen gas, do not puncture expose to flame or attempt to disassemble the accumlator or it may explode; severe personal injury may result.



Description

General/Features/Construction

General

In a conventional brake system, if the brake pedal is depressed excessively, the wheels can lock before the vehicle comes to a stop. In such a case, the stability of the vehicle is reduced if the rear wheels are locked, and maneuverabily of the vehicle is reduced if the front wheels are locked, creating an extremely unstable condition.

The Anti-Lock Brake (ALB) system modulates the pressure of the brake fluid applied to each caliper, thereby preventing the locking of the wheels, whenever the wheels are likely to be locked due to excessive braking. It then restores normal hydraulic pressure when there is no longer any possibility of wheel locking.

Features

- Increased braking stability can be achieved regardless of changing driving conditions.
- The maneuverability of the vehicle is improved as the system prevents the front wheels from locking.
- When the ALB goes into action, kick-back is felt on the brake pedal.
- The ALB system is equipped with a self-diagnosis function. When an abnormality is detected, the dash warning light comes on and the LED display on the control unit blinks. The location of the system's trouble can be diagnosed from the frequency of the LED display blinks.
- This system has individual control of the front wheels and common control ("select low") for the rear wheels."Select Low" means that the rear wheel that would lock first (the one with the lowest resistance to lock-up) determines ALB activation for both rear wheels.

Construction

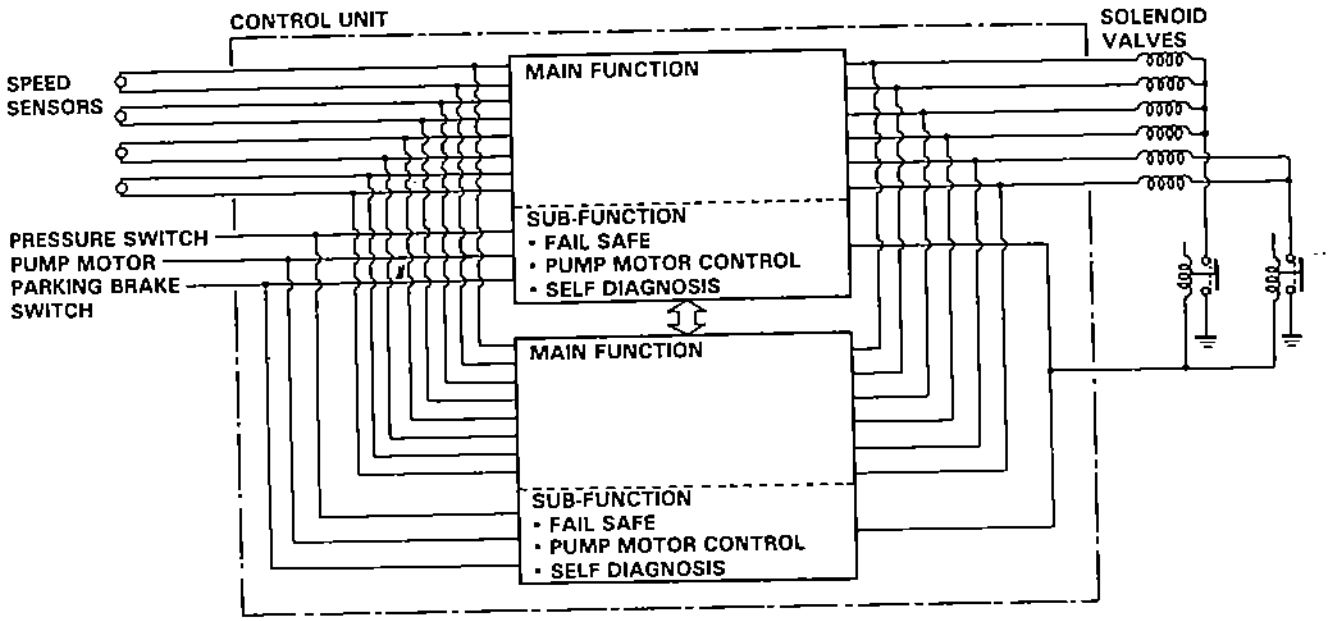
In addition to the conventional braking sysem, the ALB system is composed of: gear pulsers attched to the rotating part of individual wheels; speed sensors, which generate pulse signals in correspondence to the revolution of the gear pulsers; control unit, which controls the working of the ALB system by performing calculations based on the signals from the individual speed sensors and the individual switches; modulator unit, which adjusts the hydraulic pressure applied to each caliper on the basis of the signals received from the control unit; an accumlator, in which high-pressure brake fluid is stored; a pressure switch, which detects the pressure in the accumlator and transmits signals to the control unit; a power unit, which supplies the high-pressure working fluid to the accumlator by means of a pump; a motor relay for driving the power unit; a fail-safe relay, which cuts off the solenoid valve ground circuit when the fail-safe device is at work; and, a dash warning light.

Control Unit

Costruction

The control unit consists of a main function section, which controls the operation of ALB system, and sub-function, which controls the pump motor and "self-diagnosis."

1. Main Function
   The main function section of the control unit performs calculations on the basis of the signals from each speed sensor and controls the operation of the ALB system by putting into action the solenoid valves in the modulator unit for each front brake for the two rear brakes.
2. Sub Function
   The sub-function section gives driving signals to the pump motor and also gives "self-diagnosis" signals, necessary for backing up the ALB system.



Self-Diagnostic Function

Since the ALB system modulates the braking pressure when a wheel is about to lock, regardless of the driver's intention, the system operation and the braking power will be impaired if there is a malfunction in the system. To prevent this possibility, at speeds above 10 km/h (6 mph), the self diagnosis function, monitors the main system functions. When an abnormality is detected, the dash warning light goes on.

There is also a check mode of the self-diagnosis system itself: when the ignition switch is first turned on, the dash warning light comes on and stays on for a few seconds after the engine starts, to signify that the self-diagnosis system is functional.

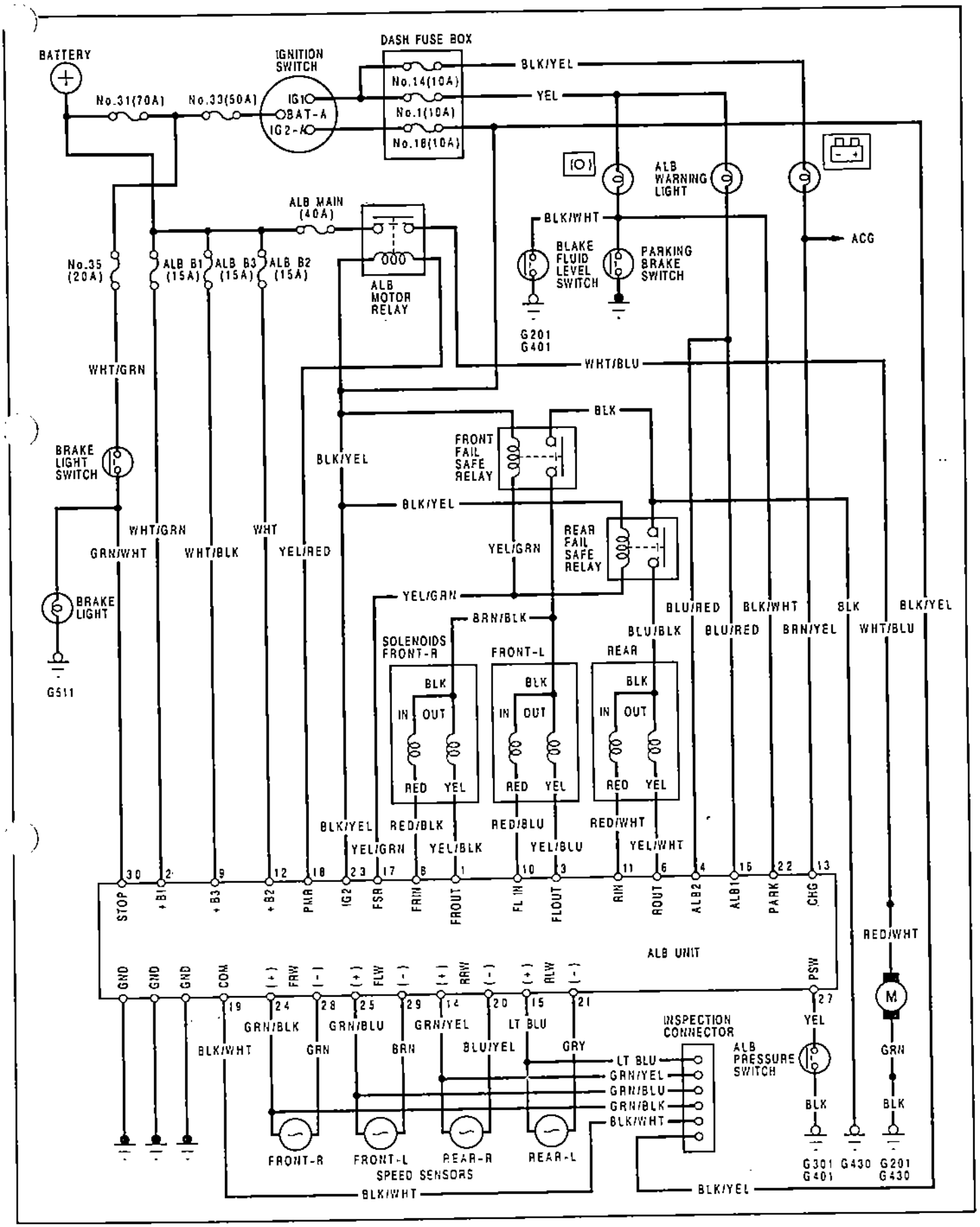
(cont'd)

Control Unit (cont'd)

Fail-Safe Function
If an abnormality is detected, the control unit turns off the fail-safe relays and motor relay. In this condition the ALB system is prevented from functioning, yet the basic system continues to operate normally.

The Dash Warning Light Comes On
1. When the fluid pressure pump runs more than 120 seconds.
2. When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
3. When the rear wheel(s) is (are) locked more than a specified time.
4. When the wheel rotation signal is not transmitted due to faulty wire or senser.
5. When the operation time of the solenoid valve(s) exceeds a predetermined valve and the control unit finds an open in the solenoid circuit.
6. When the output signals from both main functions in the control unit are not transmitted to the solenoid valves(s).

Circuit Diagram



ALB Checker

Function Test

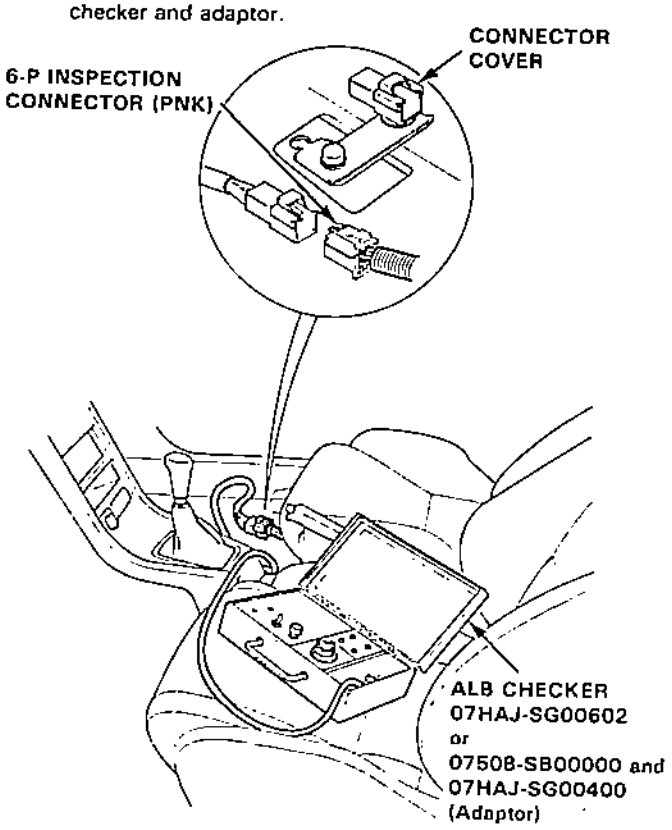
NOTE:

- The ALB checker is designed to confirm proper operation of the ALB system by simulating each system function and operating condition. Before using the checker, confirm that the dash [ALB] warning light is not indicating some other problem with the system. The light should go on when the ignition is first turned on and then go off and stay off two seconds after the engine.
- The checker should be used through all modes, 1 to 6, to confirm proper operation of the system, in any one of the following situations:

—After replacing any ALB system component.
—After replacing or bleeding the system fluid.
—After any body or suspension repair that may have affected the sensors or their wiring.
—As art of P.D.I.

⚠WARNING **Be sure to disconnect the 4w A.L.B checker before driving the vehicle. If you drive the vehicle with the checker left connected, the ALB may operate when it is not otherwise supposed to.**

1. With the ignition switch off, disconnect the 6-P inspection connector (PNK) from the connector cover on the floor of the under the driver's seat.
   Connect the 6-P inspection connector to the ALB checker and adaptor.

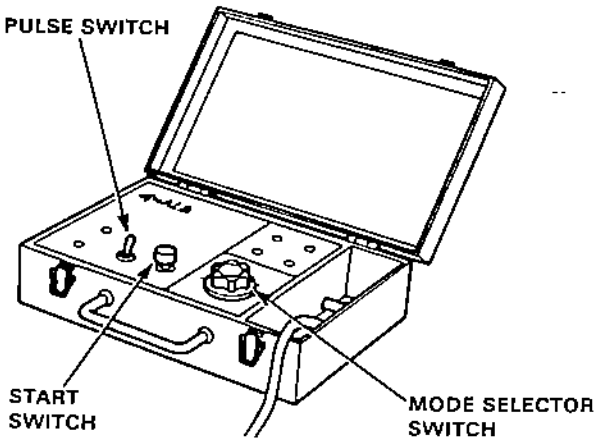


NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG00602.

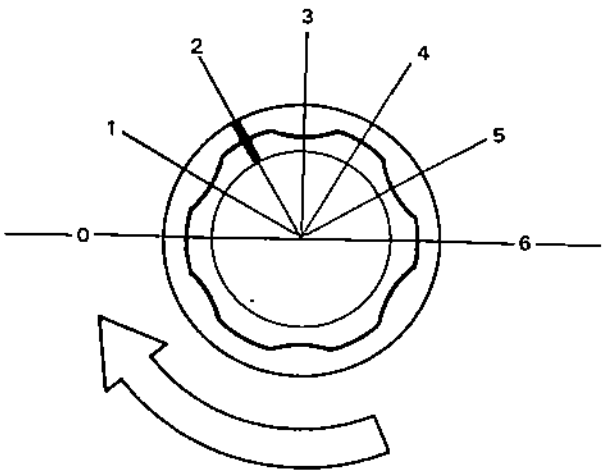
NOTE: Place the vehicle on level ground with the wheels blocked, put the transmission in neutral for manual transmission models, and in P for Automatic transmission models.

2. Start the engine and release the parking brake.

3. Operate the ALB checker as follows.
   (1) For ALB checker 07508-SB00000, turn the power switch ON.
   For ALB checker 07HAJ-SG00602, select the pulse switch to "50 pulse" side.
   (2) Turn the Mode Selector switch to "1."
   (3) Push the Start Test switch:
   —The Busy light should come ON.
   —The dash [ALB] warning light should not come ON (if it comes on, follow the troubleshooting on page 13 -14)

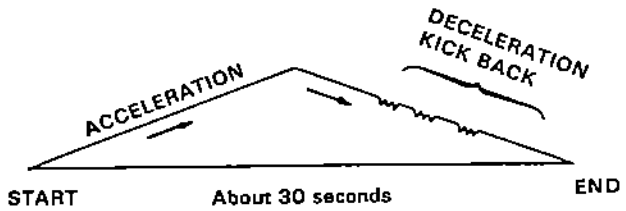


4. Turn the Mode Selector Switch futher to "2".



5. Depress the brake pedal and push the Start Test switch.
   The dash ALB warning light should not go on while the Busy light is ON. There should be kickback on the brake pedal. If not as described, go to trouble-shooting, page 13-11.

   NOTE: The operation sequence simulated by Modes 2, 3, 4 , 5 and 6.



6. Turn the Mode Selector switch to 3, 4 and 5.
   Perform stop 5 for each of the test mode positions.

Mode 1:
Sends the simulated driving signal 0 km/h (0mph) → 180km/h (112.5mph) → 0km/h (0 mph) of each wheel to the control unit to check the control unit self diagnosis circuit. There should be no kickback.

Mode 2:
Sends the driving signal of each wheel, then sends the lock signal of the rear left wheel to the control unit. There should be kickback.

Mode 3:
Sends the driving signal of each wheel, then sends the lock signal of the rear right wheel to the control unit. There should be kickback.

Mode 4:
Sends the driving signal of each wheel, then sends the lock signal of the front left wheel to the control unit. There should be kickback.

Mode 5:
Sends the driving signal of each wheel, then sends the lock signal of the front right wheel to the control unit. There should be kickback.

NOTE: If litte or no kickback is felt from the brake pedal in modes 2-5, repeat the function test of modes 1-5 several times before beginning to troubleshoot other parts of the system.

Inspection points:

1. The [ALB] warning light goes ON in mode 1.
   - Check the wiring. If there is good condition, the control unit is faulty.
     If [ALB] warning light goes on 120 seconds later but the power unit stops, refer to page 13-14.

2. There are no kickback in modes 2 through 5.
   - Faulty pressure switch (remains ON)
   - Shorted wires
   - Faulty or disconnected power unit coupler
   - Faulty power unit realy

3. Weak kickback in modes 2 through 5.
   - Bleed high pressure circuits.

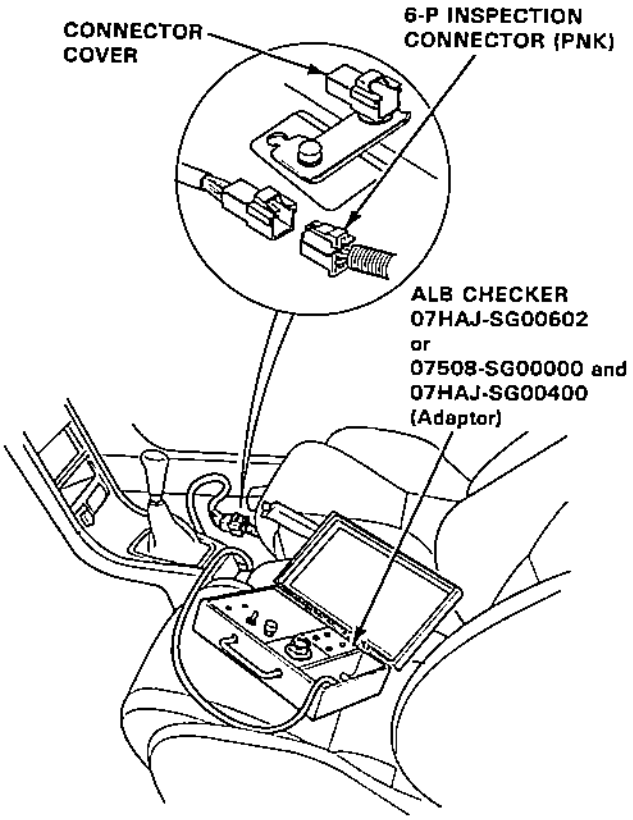
4. Power unit stops in mode 1 but it does not stop and there are no kickback in modes 2 through 5.
   - Brake fuid leakage
   - Bleed power unit
   - Clogged power unit outlet
   - Clogged or deteriorated power unit hose

ALB Checker

Wheel Sensor Signal Confirmation

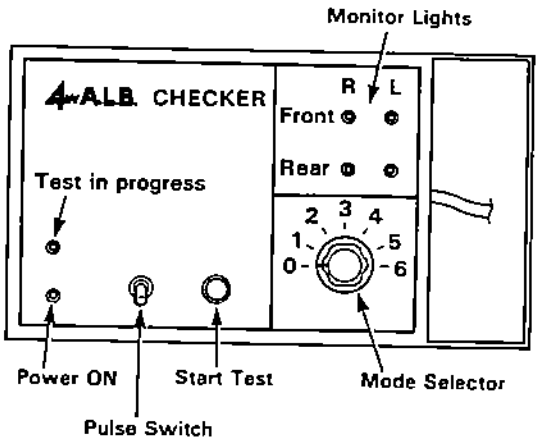
NOTE: Use the ALB checker (mode 0) to confirm proper wheel sensor operation.

1. Concent the 6-P inspection concenctor (PNK) of under the driver's seat to the ALB checker.



NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG00602.

2. Raise the car so that all four wheels are off the ground and support on safety stands.
3. Turn the ignition switch ON.
4. Turn the Mode Selector switch to "0."



5. With the transmission in neutral, rotate each wheel briskly (one revolution per second) by hand and confirm that its respective monitor light on the checker blinks as the wheel rotares.

NOTE:
- Rotating a wheel too slowly will produce only a weak blink of its monitor light that may be difficult to see.
- In bright sunlight, the monitor light may be difficult to see. Perform tests in a shaded area.
- In some instances, it may not be posible to spin the front wheels fast enough to get a monitor indication, if necessary, start the engine and slowly accelerate and decelerate the front wheels.
  The monitor lights should blink indicating a good wheel sensor signal.

If any monitor light fails to blink, check the suspected sensor, its air gap and its wiring/connectors.

Dash Warning Light

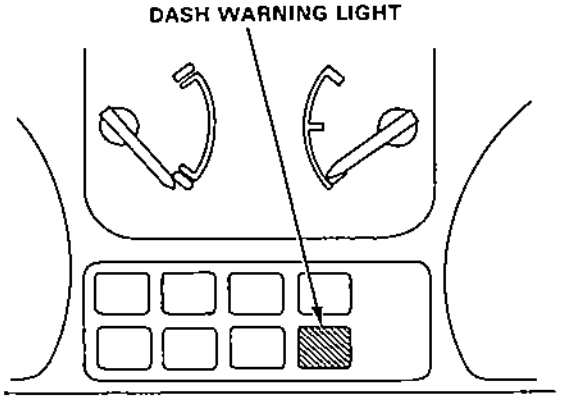
1. The dash warning light will come on and the control unit memorizes the problem under certain conditions.

   NOTE: Problem codes explained on page 13-13.

   - The tire(s) adhesion is lost due to excessive cornering speed.
     Problem codes: 5, 5-4, 5-8.
   - The vehicle loses traction when starting from a stuck condition on a muddy, snowy, or sandy road.
     Problem code: 4.
   - When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
     Problem code: 2.
   - The vehicle is driven on extremely rough road.

   The ALB system is OK, if the dash warning light: goes off after the engine is restared.

DASH WARNING LIGHT



2. If you receive a customer's report that the dash warning light, sometimes comes on, check the system using the ALB checker to confirm whether there is any trouble in the system.
   See page 13-8.

3. The dash warning light will come on and the LED will display a problem code when there is insufficient battery voltage to the control unit. Anexample would be when the battery is so weak that the car must be jump-started.
   After the battery is sufficiently recharged, the dash warning light will work normally after the engine is stopped and restarted.

   However, after recharging the battery, the LED problem code must be cleared from the control unit's memory by disconnecting the ALB B2 fuse for at least 3 seconds.

Warning Light Circuit:

1. The dash warning light, does not go on when the ignition switch is turned on.
   Check the following items. If they are OK, check the control unit connectors.
   If not loose or disconnected, install a new control unit and recheck:

   - Blown dash warning light bulb.
   - Open circuit in YEL lead between No. 1 (10 A)fuse and combination meter.
   - Open circuit in BLU/RED lead between combination meter and control unit.
   - Loose component grounding of the control unit to the body.

2. The dash warning light remains ON or after the engine is started, however the LED on the control unit does not blink any code, check for the following.

   - Loose or poor conection of the wire harness at the control unit.
   - Faulty ALB B2 (15 A) fuse.
   - Open circuit in WHT lead between ALB B2 (15 A) fuse and control unit.
   - Open circuit in BLK/YEL lead between fuse No. 18 (10 A) and fail safe relay(s).
   - Open or short circuit in the YEL/GRN lead between control units.
   - Short circuit in BLU/RED or BLK/WHT lead between combination meter and control unit.
   - Open circuit in BRN/YEL lead between alternator and control unit.

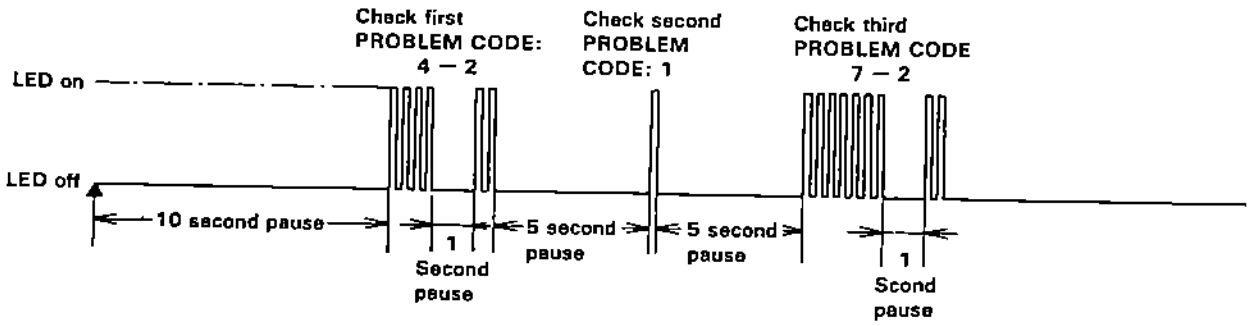
If the problem is not found substitute a known-good control unit and recheck whether the warning light remains ON.

(cont'd)

Dash Warning Light (cont'd)

Comes on and remains on while running:

1. Stop the engine.
2. Turn the ignition switch on and make sure that the dash warning light comes on.
3. Restart the engine and check the dash warning light.
   - There is no problem in the ALB system, if the dash warning light goes off.
   - Go step 4, if the dash warning light remains on.
4. Stop the engine.
5. Remove the control unit cover.
6. Turn the ignition switch on, but do not start the engine.
7. Record the blinking frequency of the LED on the control unit. The blinking frequency indicates the problem code.



NOTE:
- The control unit can indicate up to three problem codes.
- If the LED does not light, see Troubleshooting of warning light Circuit page 13-11.
- If you miscount the blinking frequency, turn the ingition switch off, then turn on to blink the LED again.
- After the repair is completed, disconnect the ALB B2 fuse for at least 3 seconds to erase the control unit's memory. Then turn the ignition key on again and recheck.
- The memory of problem code is erased if the connector is disconnected from the control unit or the control unit is removed from the body.

Symptom-to-System Chart

PROBLEM CODE		PROBLEMATIC COMPONENT/ SYSTEM	AFFECTED				See page	OTHER COMPONENT	See page
MAIN CODE	SUB CODE		FRONT RIGHT	FRONT LEFT	REAR RIGHT	REAR LEFT			
1	—	Hydraulic Controlled Components	—	—	—	—	13-14	—ALB fuse —Motor realey —Pressure Switch —Accumulator —Modulator	13-46
2	—	Parking brake switch-related problem	—	—	—	—	13-17	Brake fluid level switch BRAKE light	
3	1	Pulser(s)	○				13-47		
	2			○					
	4				○	○			
4	1	Speed sensor	○				13-18		
	2			○					
	4				○				
	8					○			
5	—	Speed sensor(s)			○	○	13-19	—Modulator	
5	4				○				
	8					○			
6	—	Fail safe relay	—	—	—	—	13-20 (Function Test)	Front or rear fail safe relay	
6	1		—	—	—	—		Front fail safe relay	
	4		—	—	—	—		Rear fail safe relay	
7	1	Solenoid related problem (Open or short)	○				13-24	ALB B3 fuse	
	2			○				ALB B1 fuse	
	4				○	○		—Rear fail safe relay —Pressure Switch —Motor relay	

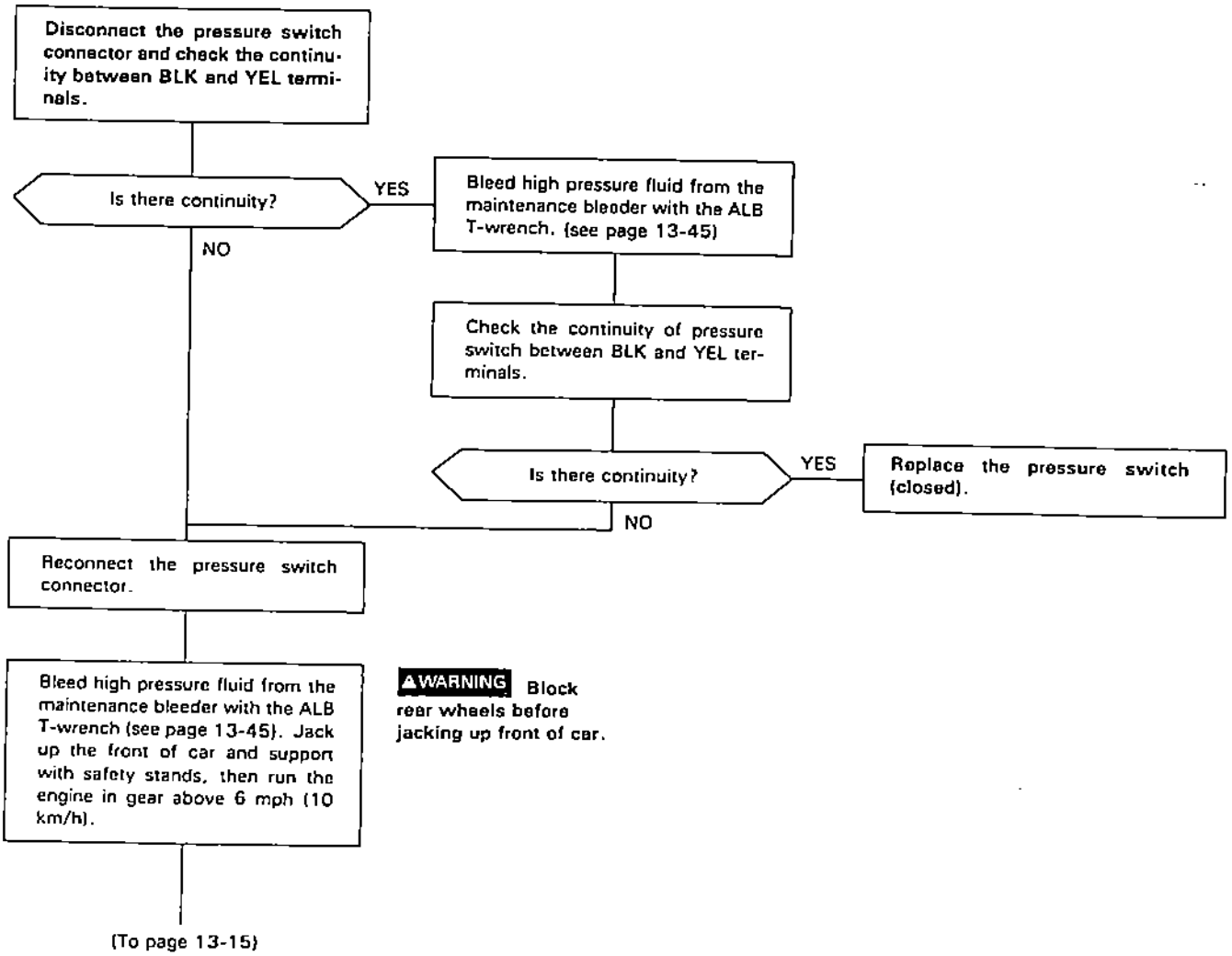
NOTE: In the event of simultaneous speed sensor or solenoid problems (codes 4 or 7), the control unit will only indicate the higher number sub-code.

Flowchart

Problem Code 1: Hydraulic Controlled Components.

NOTE: The LED does not blink when the following failures occur.
- The contact points of the motor relay remain closed (the motor runs continuously even after the ignition key is removed).
- YEL/RED lead is shorted or the control unit is internally shorted the motor stops when the ignition switch is turned lock.

Pre-test steps:
- Check ALB Main (40 A) Fuse.
- Check all brake system hoses and pipes (low and high pressure) for signs of leaking bending or kinking.
- Check reservoir fluid level, and if necessary, fill to the MAX level.



⚠WARNING Block rear wheels before jacking up front of car.

(From page 13-14)

Does the pump motor run?
- YES → (To page 13-16)
- NO →

Disconnect the 18P connector from the control unit.

Check for continuity between the YEL terminal and body ground.

Is there continuity?
- YES → **Repair short in YEL wire between the control unit and pressure switch.**
- NO →

Connect the YEL/RED terminal to body ground using a jumper wire. Turn the ignition switch ON.

Does the pump motor run?
- YES → Faulty control unit.
- NO →

Remove the pump motor relay and check the pump motor relay (page 13-46)

Connect the WHT/RED and WHT/BLU terminals using a jumper wire.

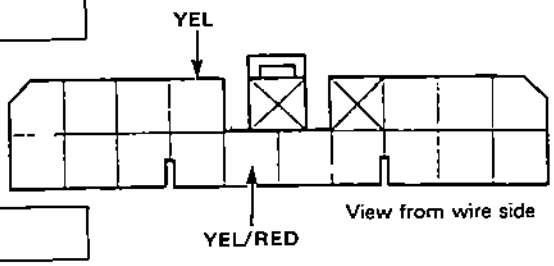
Does the pump motor run?
- NO → (To page 13-17)
- YES →

Check voltage between the pump motor relay motor side (+) terminal and body ground (−).

Is there battery voltage?
- NO → **Repair open in BLK / YEL wire between the No.18 (10A) fuse and pomp motor relay.**
- YES →

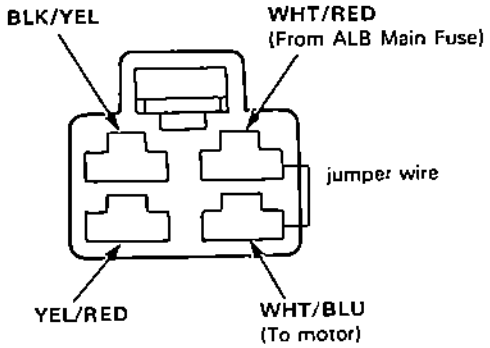
Repair open in YEL/RED wire between the control unit and pump motor relay.

‹CONTROL UNIT: 18P CONNECTOR›



View from wire side

‹PUMP MOTOR RELAY CONNECTOR›



View from terminal side

Flowchart(cont'd)

(From page 13-15)

Does the pump motor run with an increasingly loud, raspy sound?

NO → Pump runs with a constant soft sound:
Bleed air from ALB system using the procedure on page 13-45 and check the pump sound again

YES

Does the pump motor stop after about 60 seconds?

NO → Pump stops after about 120 seconds:
faulty pressure switch (open).

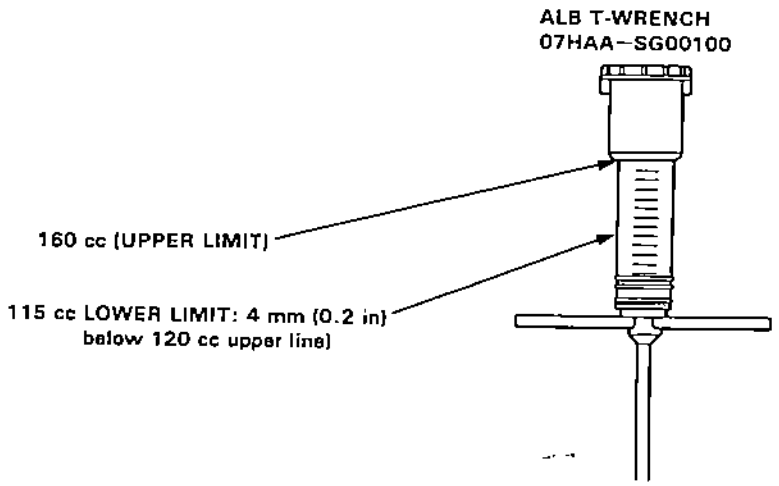
YES

Does the reservoir fluid level go down, and are there no bubbles in the modulator reservoir tank?

NO →
- If level stays the same and there are bubbles in the modulator reservoir tank, check the accumulator fluid quantity by bleeding the high pressure line with the ALB T-wrench:
  - —If over 160 cc (upper limit), faulty accumulator.
  - —If under 115 cc (lower limit), modulator inlet solenoid leak or accumulator leak.
- If level goes up : faulty modulator assembly.

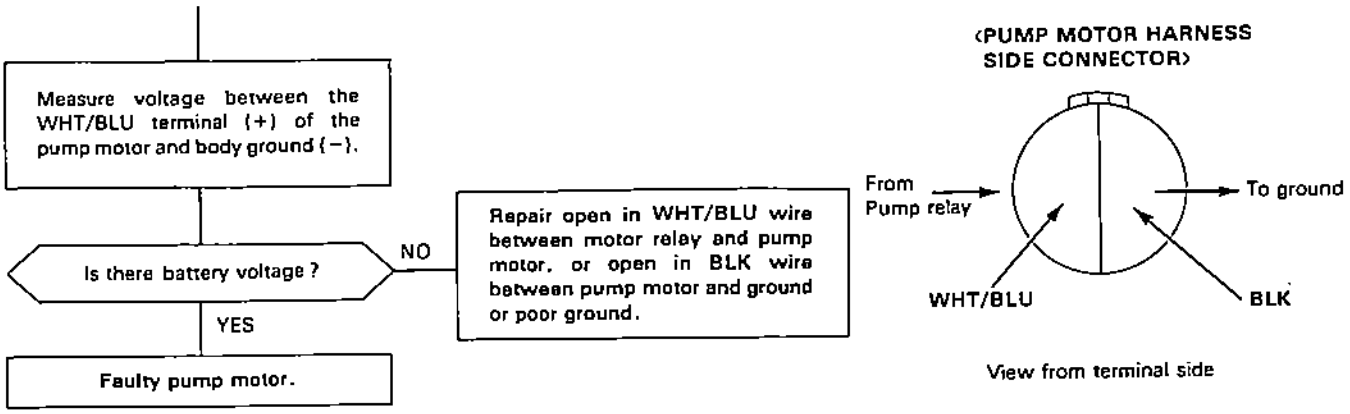
YES

System is OK; recheck pump motor, to confirm no intermittent problem.



NOTE: The fluid enters the reservoir under pressure; wait 1 or 2 miniutes for air bubbles to disappear and level to stabilize.

(From page 13-15)



Problem code 2: Parking Brake Switch Related Problem

If the parking brake has been released, the following items are possible causes. If they are OK, check the control unit connectors for good connection. If not loose or disconnected, substitute a known-good control unit and rechceck.

NOTE: Before Troubleshooting Problem Code 2, remove the ALB B2 fuse for three seconds to clear the control unit's memory, then test drive the car.
If the dash warning light and LED stay off, the probability is that the car was driven with the parking brake applied.

- The parking brake is applied for more than 30 seconds while driving.
- The brake fluid level in the master cylinder is too low.
- BLK/WHT lead is shorted between the BRAKE warning light and parking brake switch.
- BLK/WHT lead is shorted between the BRAKE warning light and brake fluid level switch.
- The BRAKE warning light is blown.
- BLK/WHT has an open between the BRAKE warning light and parking brake.
- BLK/WHT has an open between the parking brake switch and control unit.

(cont'd)

Flowchart (cont'd)

Problem Code 4-1 to 4-8: Speed Sensor

NOTE: Control unit will only indicate the higher number sub-code.

Ignition switch: OFF

Disconnect wire harness from speed sensor.

Check for resistance between sensor terminals.

Is there 500-1,000Ω? — NO → Faulty speed sensor.

YES

Disconnect the 18P connector from the control unit.

Check each wire for continuty between the sensor and control unit:
GRN/BLK: Front Right Positive
GRN/BLU: Front Left Positive
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

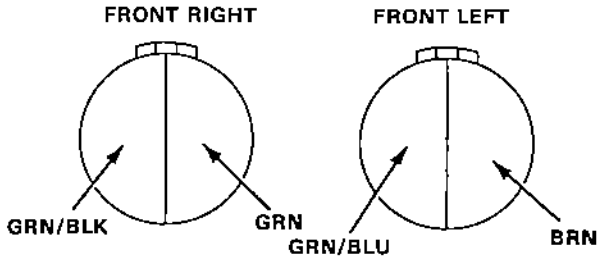
Is there continuity? — NO → Repair open in sensor wire:

GRN/BLK: Front Right Positive
GRN/BLU: Front Left Positive
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

YES

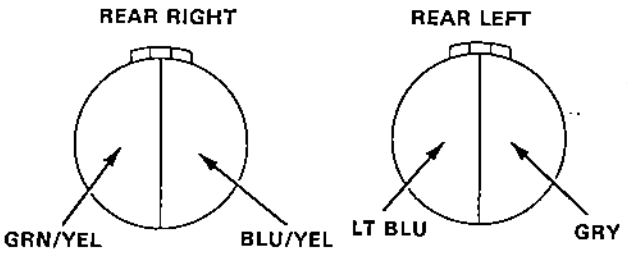
Faulty control unit

‹SENSOR SIDE CONNECTOR›



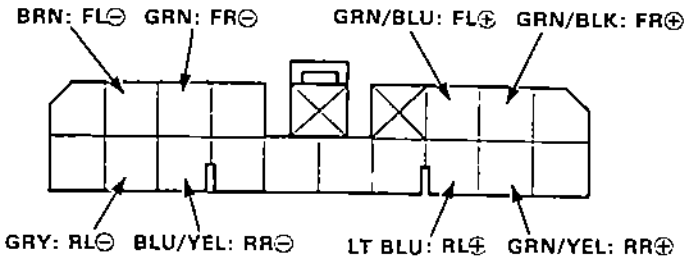
View from terminal side

‹SENSOR SIDE CONNECTOR›



View from terminal side

‹CONTROL UNIT 18P CONNECTOR›



View from wire side

Problem Code 5 to 5-4, 5-8: Speed Sensor(s)

Disconnect wire harness from speed sensor.

Check for resistance between sensor terminals.

Is there 500—1000 Ω? — NO → Faulty speed sensor.

YES

Disconnect the 18P connector from the control unit.

Check each wire for continuity between the sensor and control unit:
GRN/BLK: Front Right Positive
GRN/BLU: Front Left Positive
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

Is there continuity? — NO → Repair open in sensor wire:

GRN/BLK: Front Right Positive
GRN/BLU: Front Left Positive
GRN/YEL: Rear Right Positive
LT BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
GRY: Rear Left Negative

YES

Reconnect the 18P connector to the control unit and connectors to the speed sensors.

Connect ALB checker to inspection connector.

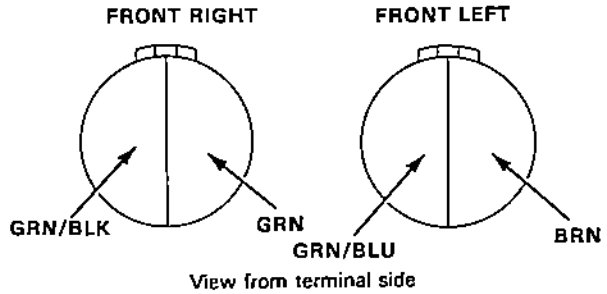
Check ALB function in MODE 2 and 3.

Does it work properly? — NO → Faulty modulator.

YES

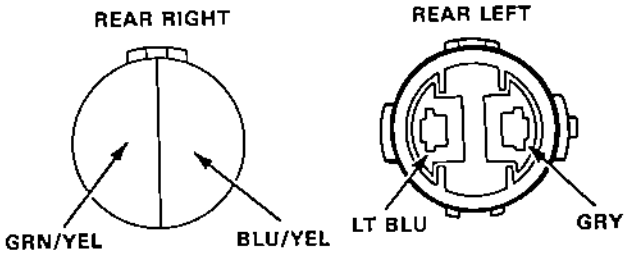
- Incorrect the air gap (page 13-47)
- Faulty control unit.

‹SENSOR SIDE CONNECTOR›

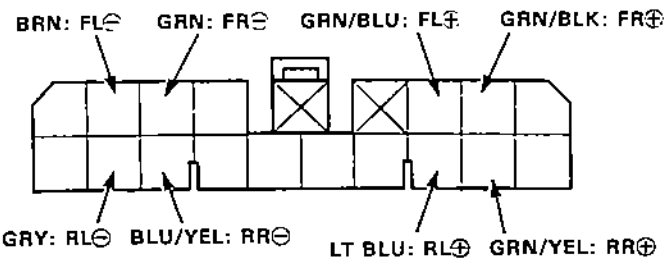


View from terminal side

‹SENSOR SIDE CONNECTOR›



‹CONTROL UNIT 18P CONNECTOR›



View from wire side

Flowchart (cont'd)

Problem Code 6-1: Front Fail Safe Relay Circuit

Remove front fail safe relay

Check relay function (page 13-46)

Does it work properly? — NO → Faulty the front fail safe relay.

YES

Check for continuity between BLK lead of relay connector and body ground.

Is there conitinuity? — NO → Repair open in BLK wire between the fail safe relay and ground or poor ground.

YES

Turn ignition switch ON.

Check for voltage between BLK / YEL lead (+) and body ground (−).

Is battery voltage available? — NO → Repair open in BLK/YEL wire between the fail safe relay and No. 18 fuse (10 A).

YES

Turn ignition switch OFF.

Disconnect the 3P connectors from the front solenoids.

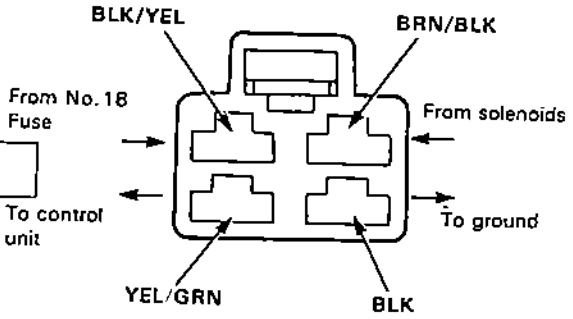
Check for continuity in BRN/BLK lead between fail safe relay and solenoids.

Is there continuity? — NO → Repair open in BRN/BLK wire between the solenoids and fail safe relay.

YES

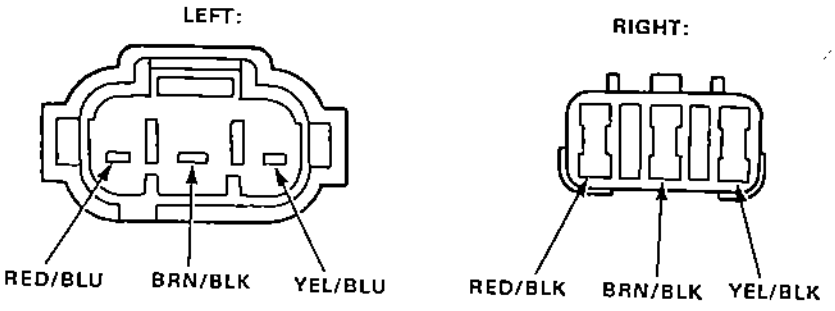
(To page 13-21)

<FRONT FAIL SAFE RELAY CONNECTOR HARNESS SIDE>



View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>



View from terminal side

(From page 13-20)

Check for resistance between RED and BLK terminals of front solenoids.

Is there 1-3 Ω? NO → Faulty solenoid.

YES

Check for resistance between YEL and BLK terminals of front solenoids.

Is there 1-3 Ω? NO → Faulty solenoid.

YES

Disconnect the 12P connector from the control unit.

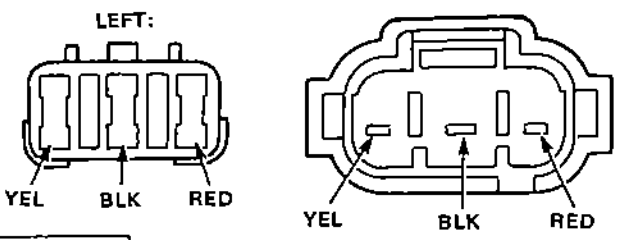
Check for continuity between control unit and front solenoid.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet.

Is there continuity ? NO → Repair open in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

YES

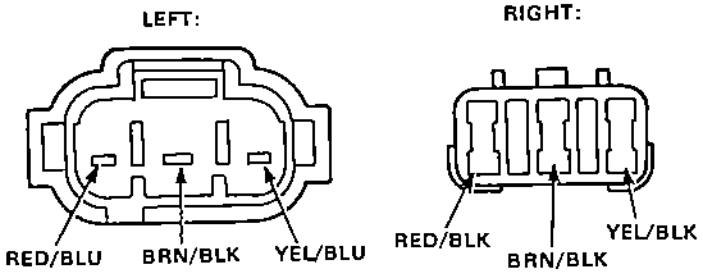
- Faulty control unit.
- Incorrect air gap (page 13-47)

<FRONT SOLENOID CONNECTOR>



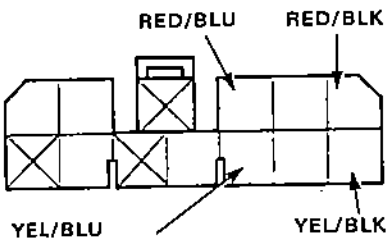
View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>



View from terminal side

<CONTROL UNIT 12P CONNECTOR>



View from wire side.

Flowchart(cont'd)

Problem Code 6-4: Rear Fail Safe Relay Circuit

Remove rear fail safe relay.

Check relay function (page 13-46)

Does it work properly? NO → **Faulty relay.**

YES

Check for continuity between BLK lead of relay connector and body ground.

Is there continuity? NO → **Repair open in BLK wire between the relay and ground or poor ground.**

YES

Turn ignition switch ON.

Check for voltage between BLK/YEL lead (+) of wire harness and body ground (−).

Is battery voltage available? NO → **Repair open in BLK/YEL wire between the relay and No. 18 (10 A) fuse.**

YES

Turn ignition switch off.

Disconnect the 3P connector from the rear solenoid.

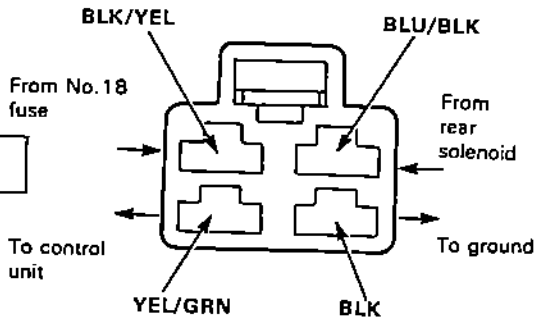
Check for continuity in BLU/BLK lead between fail safe relay and solenoid.

Is there continuity? NO → **Repair open in BLU/BLK wire between the relay and solenoid.**

YES

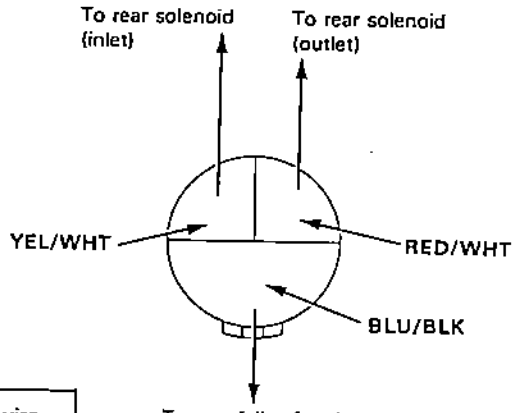
(To page 13-23)

<REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE>



View from terminal side

<REAR SOLENOID CONNECTOR HARNESS SIDE>



View from terminal side

(From page 13-22)

Disconnect the 18P and 12P connectors from the control unit.

Check for continuity in YEL/GRN lead between fail safe relay and control unit.

Is there continuity? — NO → Repair open in YEL/GRN wire between the relay and control unit.

YES

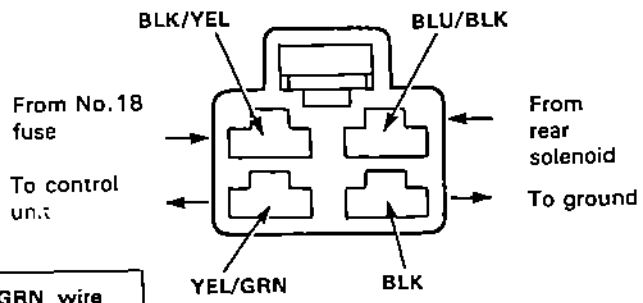
Check for continuity between control unit and rear solenoid.
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

Is there continuity? — NO → Repair open in wire between the solenoid and control unit:
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet.

YES

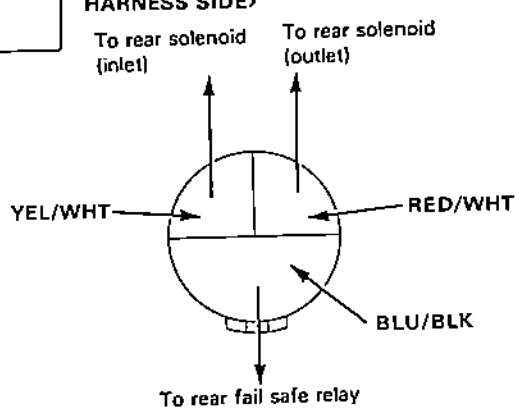
Faulty control unit.

‹REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE›



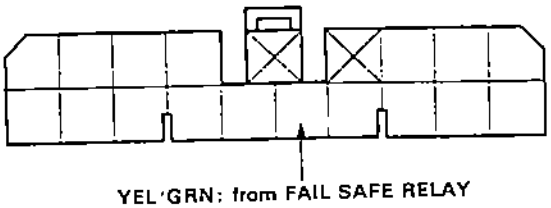
View from terminal side

‹REAR SOLENOID CONNECTOR HARNESS SIDE›

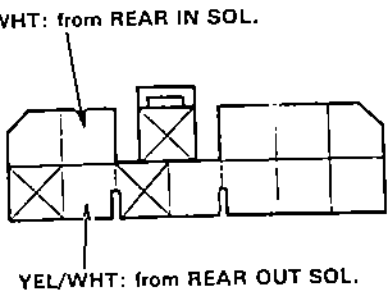


View from terminal side

‹CONTROL UNIT 18P CONNECTOR›



‹CONTROL UNIT 12P CONNECTOR›



View from wire side

Flowchart (cont'd)

Problem Code 7-1 and 7-2 Front Solenoid Related Problem

Disconnect wire harness from front solenoids

Check for resistance between RED and BLK terminals of front solenoid.

Is there 1-3 Ω? — NO → Faulty solenoid.

YES

Check for resistance between YEL and BLK terminals of front solenoid.

Is there 1-3 Ω? — NO → Faulty solenoid.

YES

Disconnect the 12P connector from the control unit.

Check for continuity between control unit and front solenoid:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet.

Is there continuity ? — NO → Repair open in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

YES

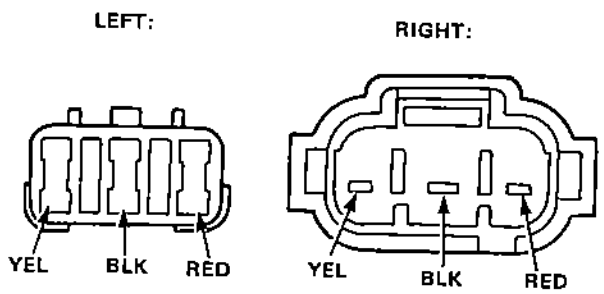
Check for continuity between control unit and body ground.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity? — YES → Repair short in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

NO

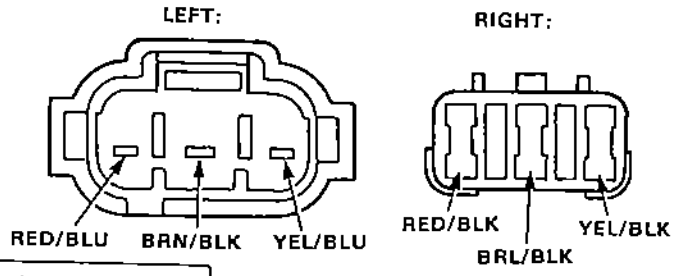
- Faulty control unit.
- Incorrect air gap (page 13-47)

<FRONT SOLENOID CONNECTOR>



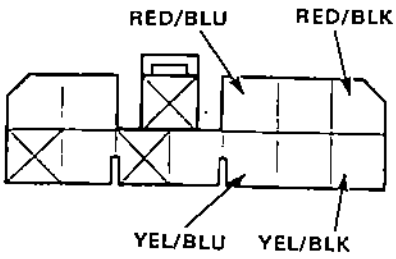
View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>



View from terminal side

<CONTROL UNIT 12P CONNECTOR>



Problem Code 7-4: Rear Solenoid Related Problem

Disconnect wire harness from rear solenoids

Check for resistance between RED and BLK terminals of rear solenoid.

Is there 1-3 Ω? — NO → Faulty solenoid.

YES

Check for resistance between YEL and BLK terminals of rear solenoid.

Is there 1-3 Ω? — NO → Faulty solenoid.

YES

Disconnect the 12P connector from the control unit.

Check for continuity between control unit and rear solenoid.
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

Is there continuity? — NO → Repair open in wire between the rear solenoid and control unit:
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

YES

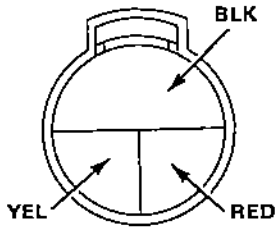
Check for countinuity between control unit and body ground.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity? — YES → Repair short in wiro:
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

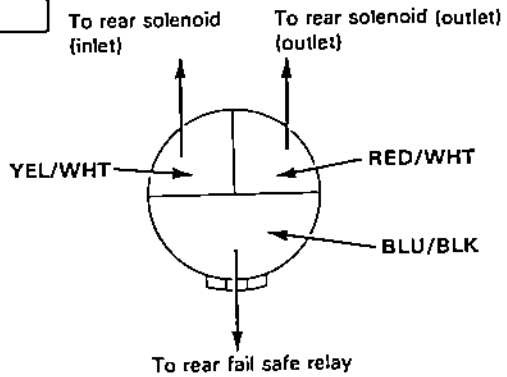
NO

Faulty control unit.

<REAR SOLENOID CONNECTOR>

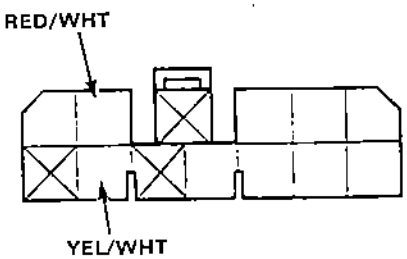


<REAR SOLENOID CONNECTOR HARNESS SIDE>



View from terminal side

<CONTROL UNIT 12P CONNECTOR>



View from wire side.

Index/Relieving Accumulator/Line Pressure

⚠WARNING **Use the ALB T-Wrench befroe disassembling the parts shaded in the illustration.**

1. Drain the brake fluid from the master cyinder and modulator reservoir thoroughly.
2. Remove the red cap from the bleeder on the top fo the power nuit.
3. Install the special tool on the bleeder screw and turn it out slowly 90° to collect high pressure fluid into reservoir. Turn the special tool out one complete turn to drain the brake fluid thoroughly.
4. Retighten the bleeder screw and discard the fluid.
5. Reinstall the red cap.

NOTE: The flare nuts should be tightened to 19 N·m (1.9 kg-m, 14 lb-ft).

BRAKE BOOSTER
Test, page 13-42
Pushrod adjustment, page 13-43
Pushrod clearance adjustment, page 13-43
MASTER CYLINDER
Overhaul/Inspection, page 13-36
Disassembly, page 13-39
Reassembly, page 13-40

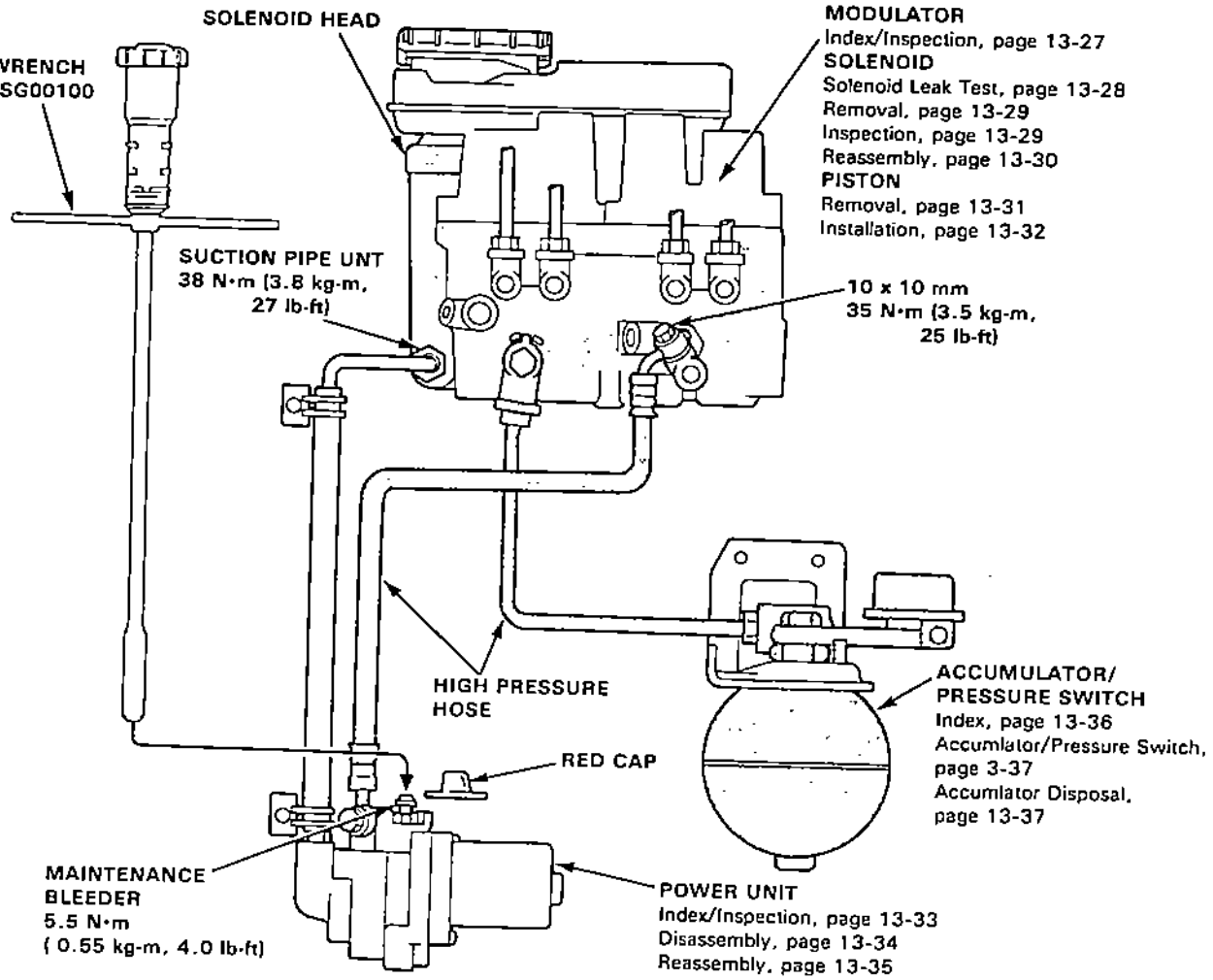
CAUTION: Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

Brake Fluid Draining

1. Draining brake fluid from modulator tank: The brake fluid may be sucked out through the top of the modulator tank with a syringe. It may also be drained through the pump joint after disconnecting the pump hose.
2. Draining brake fluid from master cylinder: Loosen the bleed screw and pump the brake pedal to drain the brake fluid from the master cylinder.

⚠WARNING

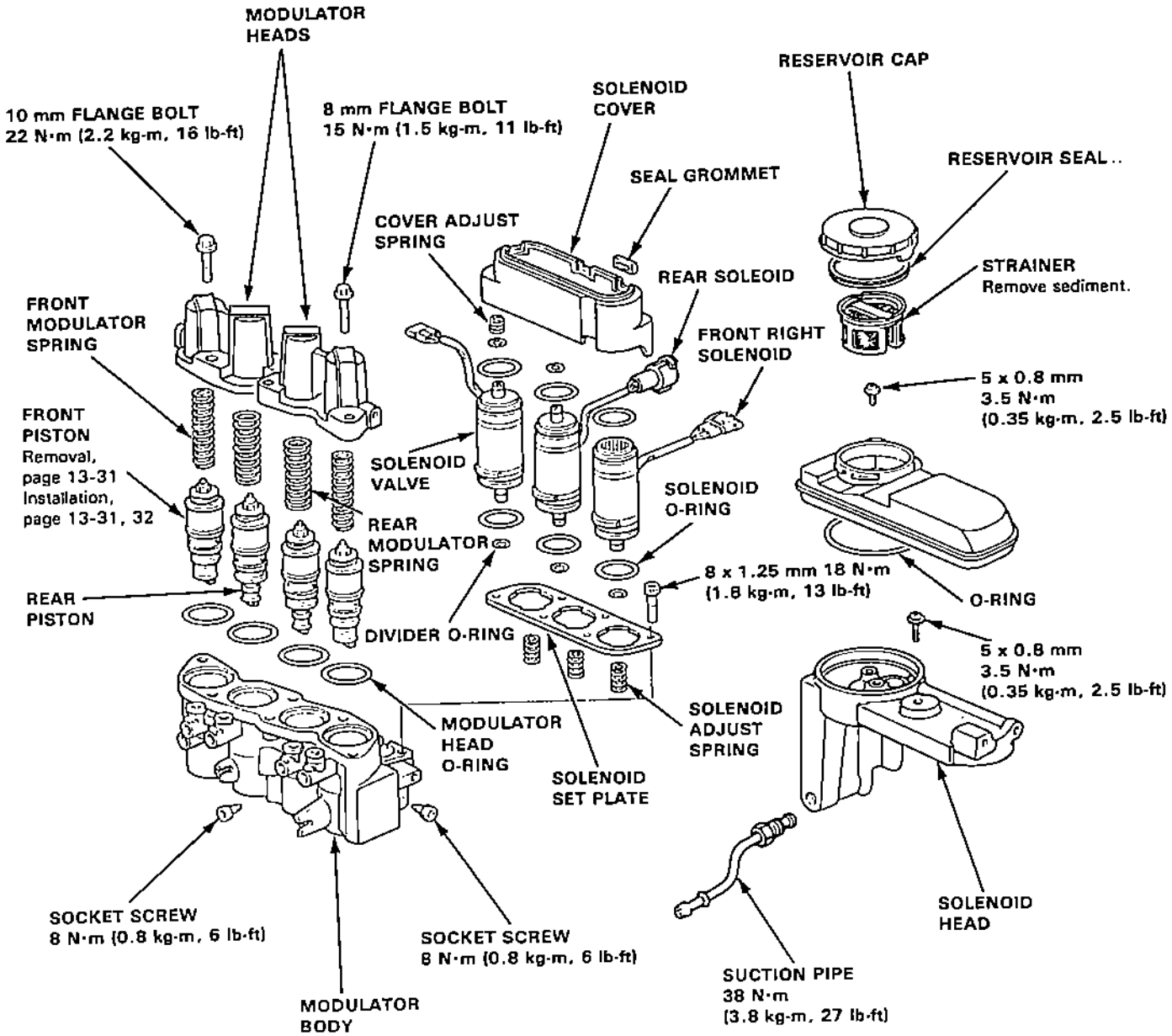
- **High pressure fluid will squirt out if the tube shaded is removed or the solenoid head 8 mm and 10 mm bolts are loosened.**
- **To drain high pressure brake fluid, follow the procedure under Relieving of High Pressure Brake Fluid on this page.**



Modulator

Index/Inspection

CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Use only new DOT3 or DOT4 clean brake fluid.
- 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.
- Replace all rubber parts with new ones whenever the modulator is disassembled.



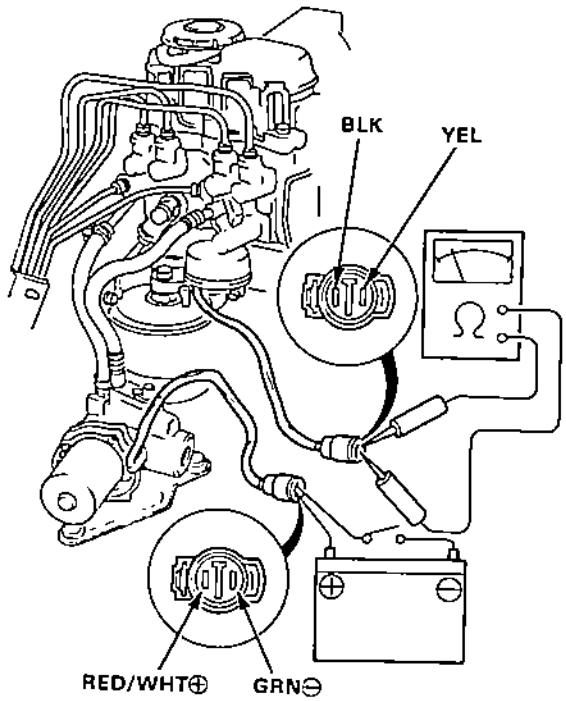
Solenoid

Solenoid Leak Test

1. Connect circuit tester (Ω range) between the BLK and YEL terminals of the accumulator pressure switch connector.

2. Attach the positive (+) lead of a fully charged 12 V battery to the RED/WHT terminal of the power unit motor connector and negative (−) lead to the GRN terminal, and install a switch between as shown.

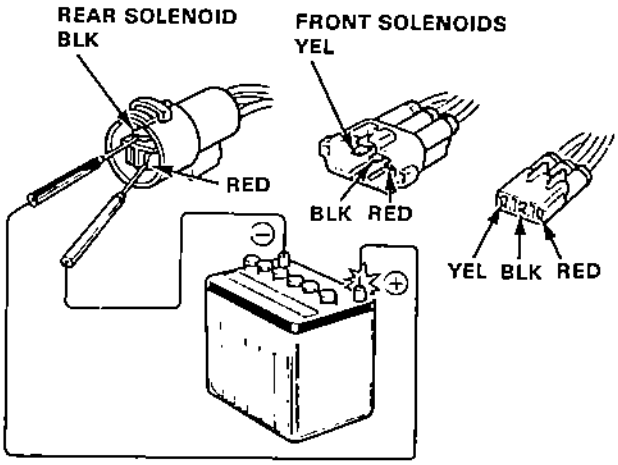
3. Turn the switch on to allow sufficient pressure to build up within the accumulator and check for continuity with the circuit tester. If the circuit tester shows continuity (pressure switch turned on), run the power unit for 4 seconds more, then turn the switch off.



Check for continuity 1 minute after switch was turned off.

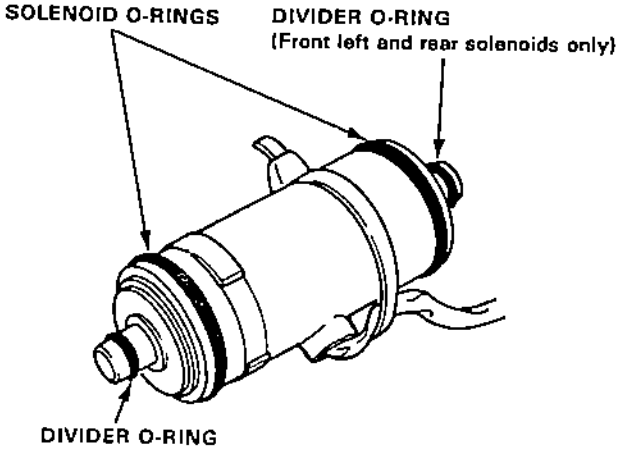
No continuity·····Leaky solenoid (if the pipe joint is tight) or faulty divider O-ring

4. Apply 12 V across the BLK and RED terminals of the solenoid connector momentarily.



NOTE: Modulator reservoir may overflow.

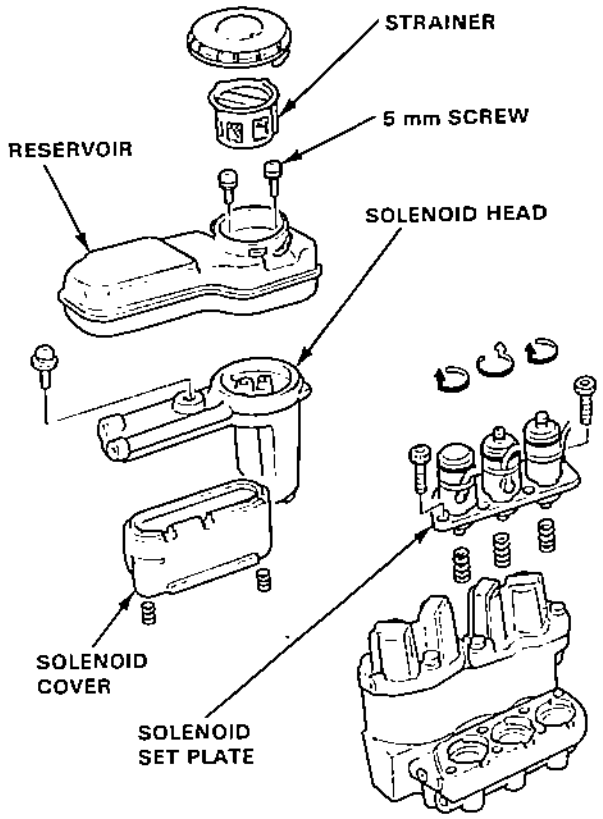
- Check if the solenoid hisses or squeaks. Replace the modulator if the solenoid hisses or squeaks.
- Make sure that the solenoid does not hiss or squeak after it has clicked into position. Replace the modulator if the solenoid hisses or squeaks.
- Check the pressure switch for continuity within one minute. It is normal if there is continuity. If there is no continuity, solenoid is faulty and must be replaced.



Removal

1. Drain the brake fluid from the modulator tank.
2. Drain the high pressure brake hose (page 13-26).
3. Disconnect the inlet hose.
4. Remove the reservoir strainer.
5. Remove the 5 mm screws and remove the reservoir.
6. Screw the 6 mm bolt into the threaded hole in the center of the solenoid head, reaine the solenoid head parallel to the ground and remove it.
7. Remove the solenoid cover.
8. Remove the hexagonal socket screws and loosen the solenoid set plate.
9. Turn the solenoid valves several times until they move freely and turn the solenoid valves 1/2 turn to align their projection with the cutout in the set plate. Remove the solenoid valves together with the set plate.

   CAUTION: The solenoid valves are delicate parts. Be careful not to drop them.



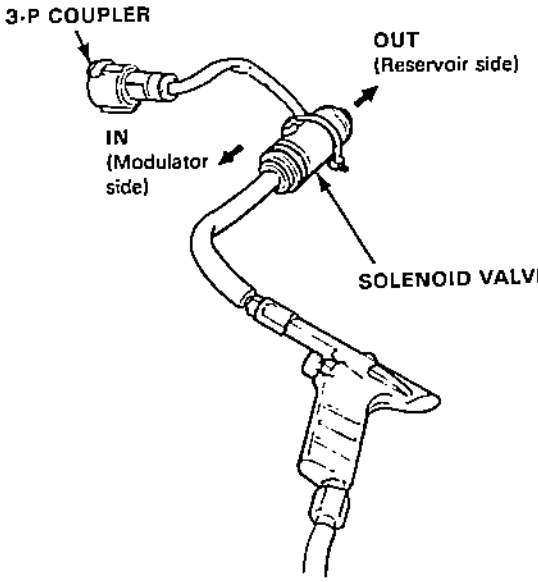
Inspection

1. Connect a tube to the inlet of the solenoid valve. Apply compressed air to the solenoid valve through the tube.
2. Check the solenoid valve for proper operation by connecting a 12 V fully charged battery to the 3-P coupler terminals:

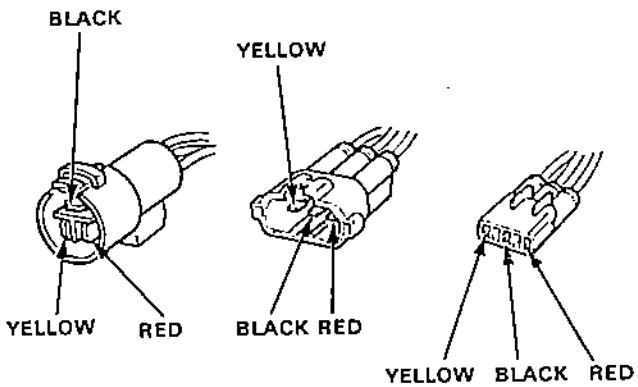
   Voltage not applied: There should be no air flow.

   BLK – RED: There should be air flow through IN and OUT.

   Black-Red and Black-Yellow: There should be air flow through IN.



REAR SOLENOID FRONT SOLENOID

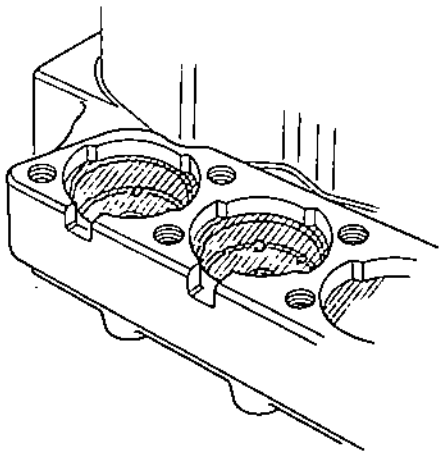


Solenoid

Reassembly

1. Fill the modulator body with brake fluid up to the step in the solenoid mounting hole.

   NOTE: On solenoid valve assembly, place shop rags over the solenoid valve and under the modulator valve to prevent the brake fluid from spilling on the valve.

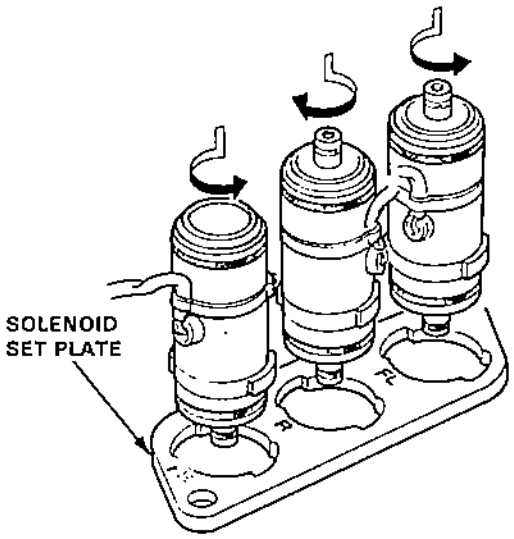


2. Coat the O-ring with the clean brake fluid and install the O-ring onto the solenoid valve.

3. Install the solenoid valves on the set plate.

   ⚠WARNING **Each solenoid valve and set plate are marked for correct installation. If the solenoid valves are interchanged, the system will not work properly. Refer to the marks and be sure to install them in correct positions.**

   - Align the projection on the solenoid valve with the cutout in the set plate and turn the valve 1/2 turn. The solenoid wire should face rearward.



4. Install the solenoid adjust springs on the modulator body.

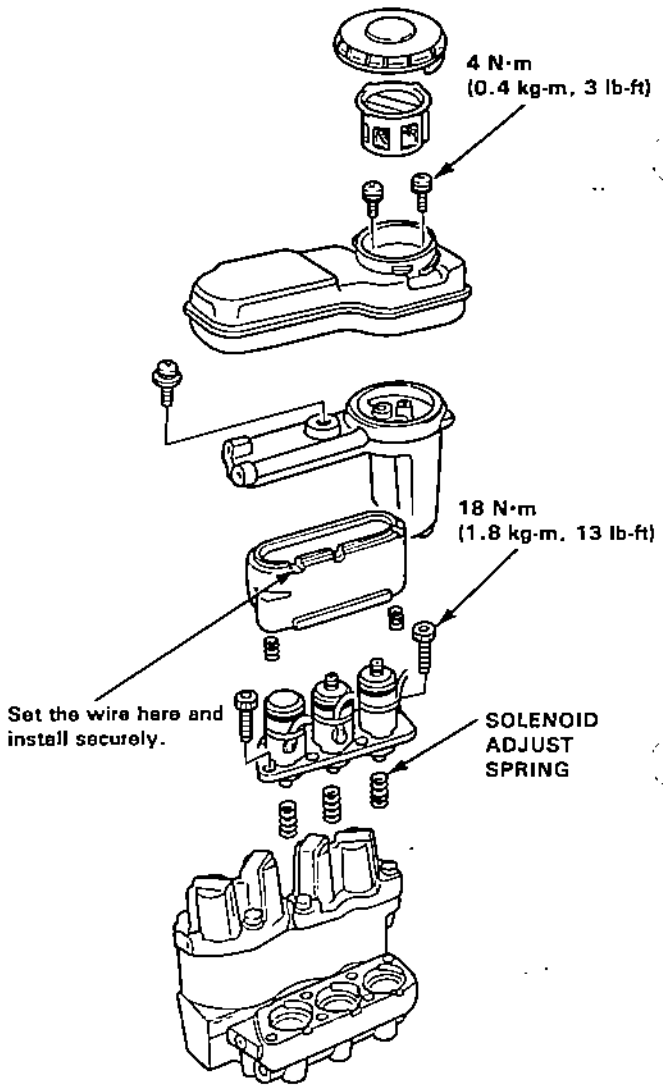
5. Install the solenoid valves and set plate and secure with the hexagonal socket screws.

6. Install the solenoid cover and solenoid head.

7. Install the reservoir tank.

8. Install the tank filter.

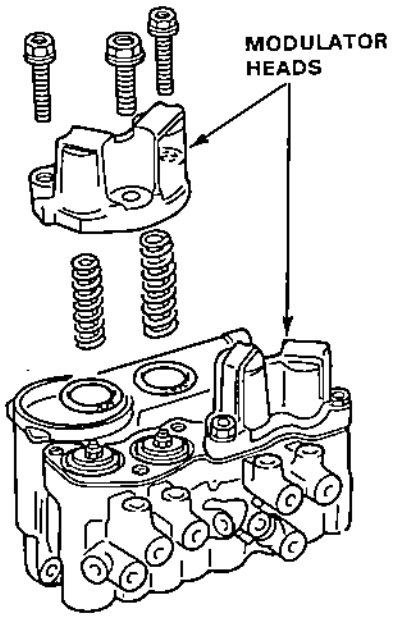
9. Connect the low pressure hose.



Piston

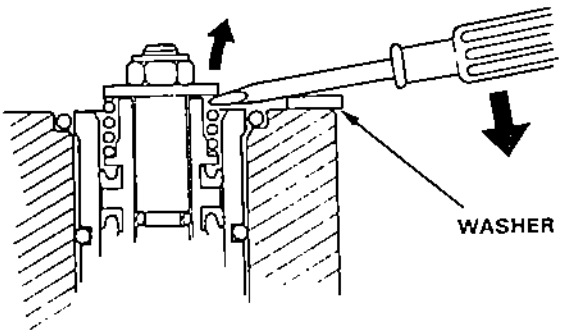
Removal

1. Remove the modulator heads.



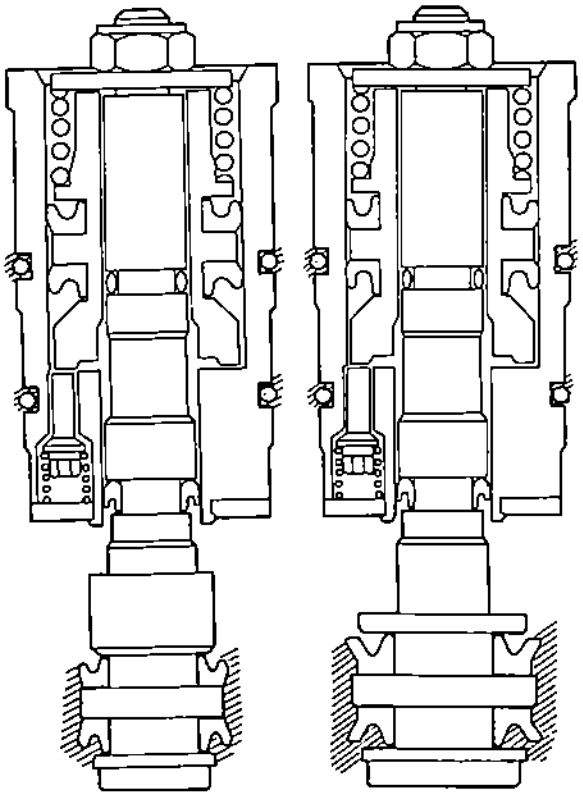
2. Insert the driver into the spring, pry off the piston assembly until it lifts up slightly and pull out the lock nut with a pair of pliers.

CAUTION:
- Set the washer between the driver and modulator body to prevent damage to the body.
- Be careful not to damage the piston sleeve.

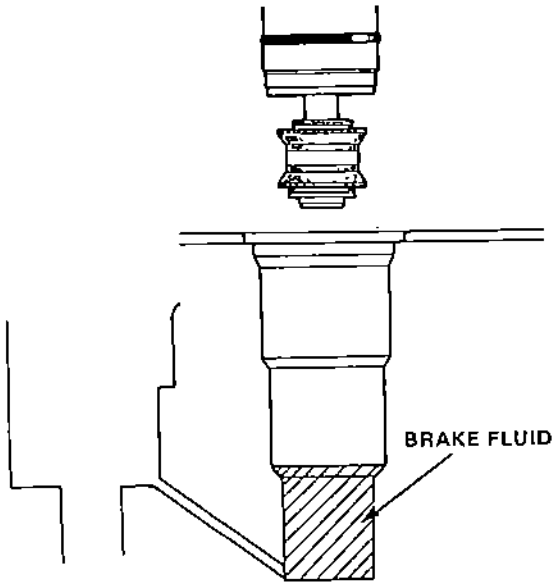


Installation

1. Apply rubber grease to the shaded sections of the piston assembly, shown in the drawing below.



2. Adjust so that the brake fluid flows into the piston mounting hole in the modulator body.



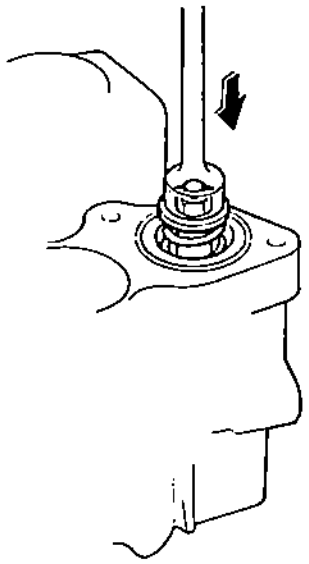
(cont'd)

Piston

Installation (cont'd)

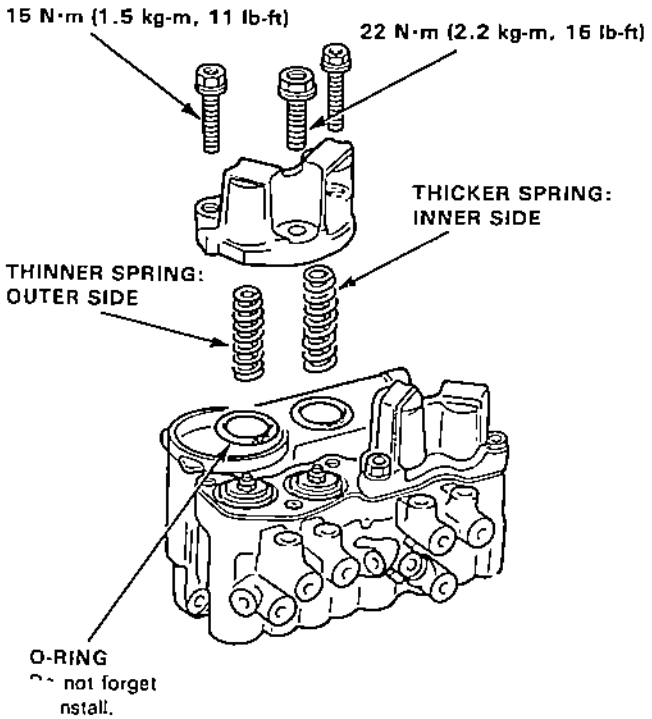
3. Set the piston assembly in the piston mounting hole in the modulator body and push down on the piston.

4. Push on the piston about 5 times until no bubbles come out of the solenoid side.



5. Install the modulator springs.

6. Install the solenoid heads with care not to pinch the O-rings.

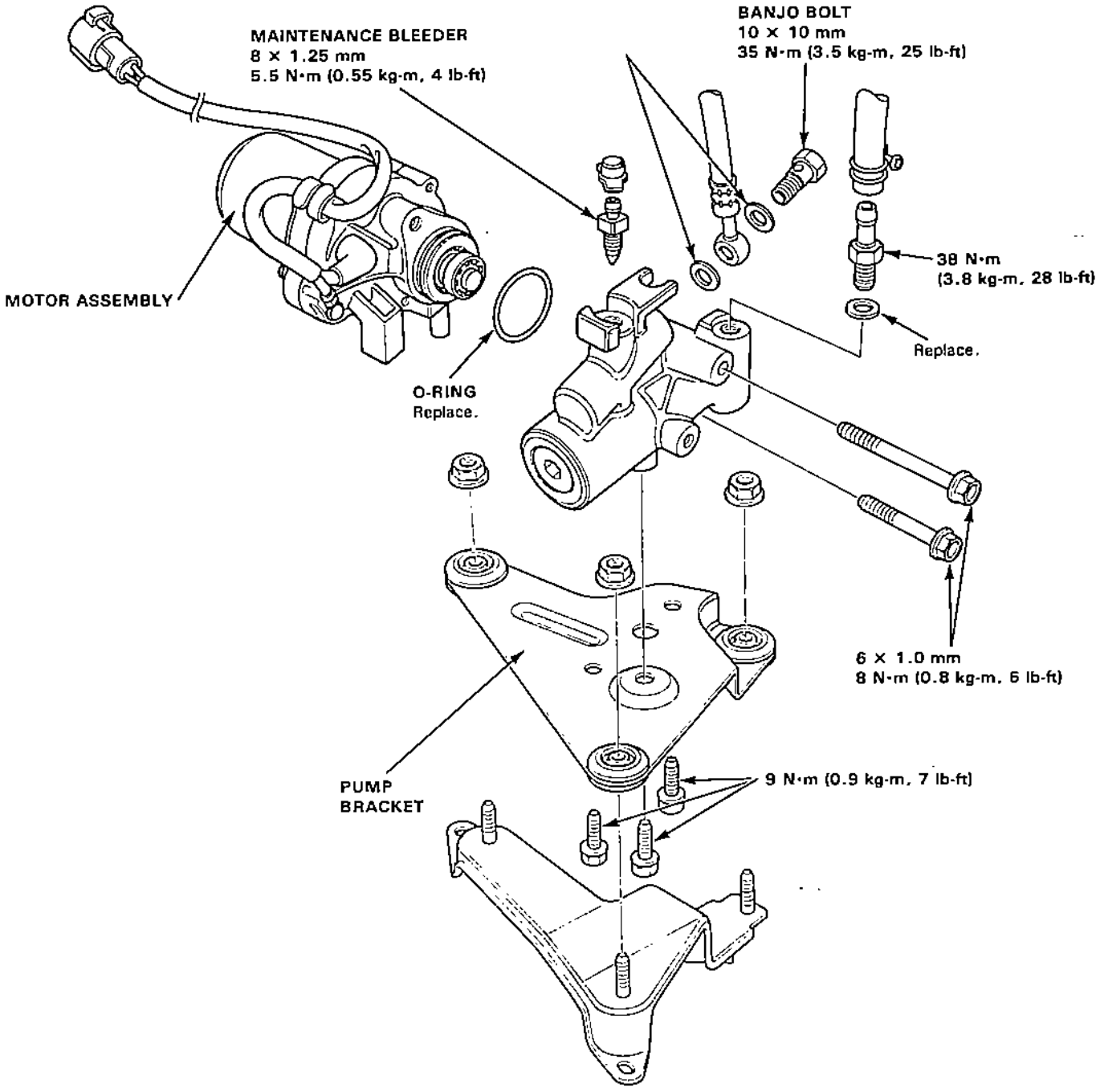


Power Unit

Index/Inspection

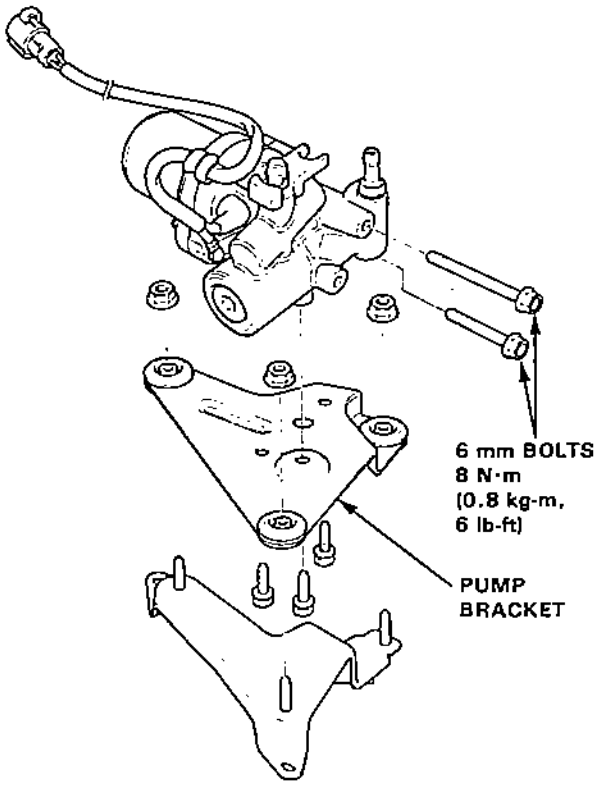
CAUTION:

- Do not attempt to disassemble the power unit parts except for those shown exploded in this illustration.
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembing, 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.

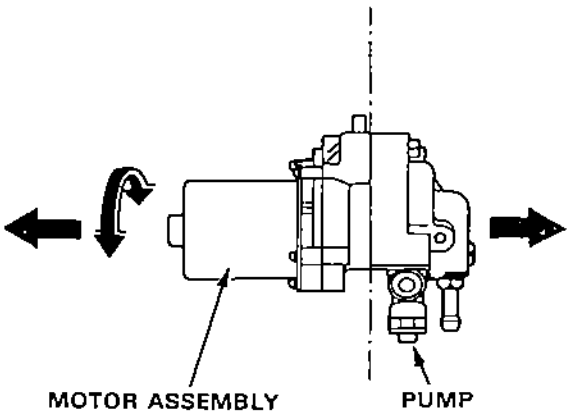


Disassembly

1. Remove the pump bracket.
2. Remove the 6 mm bolts attaching the pump to the pump motor.

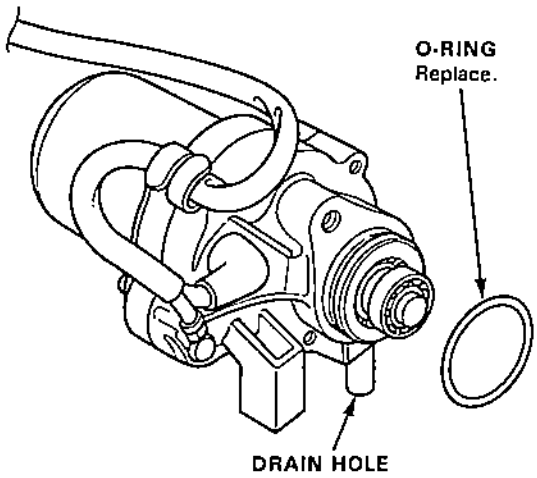


3. Separate the motor from the pump while rotaing the pump right and left.



NOTE: About 10 cc(0.6cu-in)of brake fluid will flow out when the motor is removed from the pump.

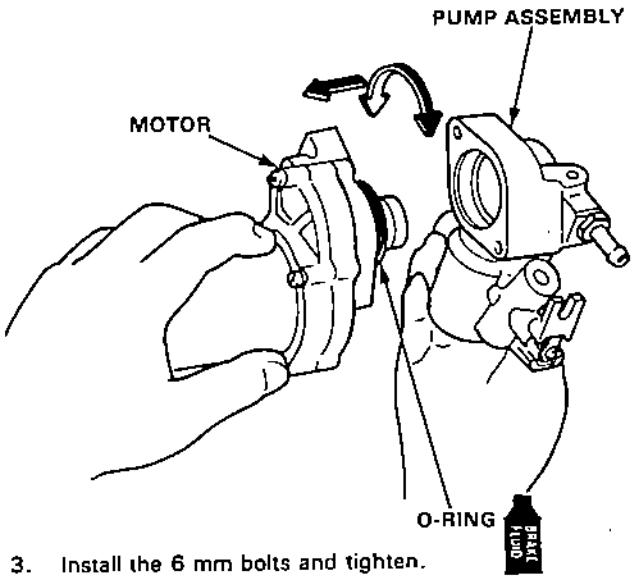
4. Wash the motor with clean brake fluid only on the exposed end and blow dry with compressed air.



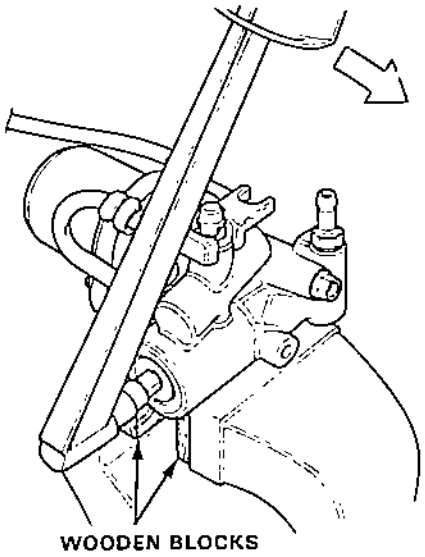
NOTE: Do not wash or dip the motor in brake fluid. Also be careful not to allow oil or water to enter the inside through the water drain hole.

Reassembly

1. Install a new O-ring on the pump motor.
2. Coat the O-ring with clean brake fluid and install the pump assembly on the motor while rotating it right and left by hand.

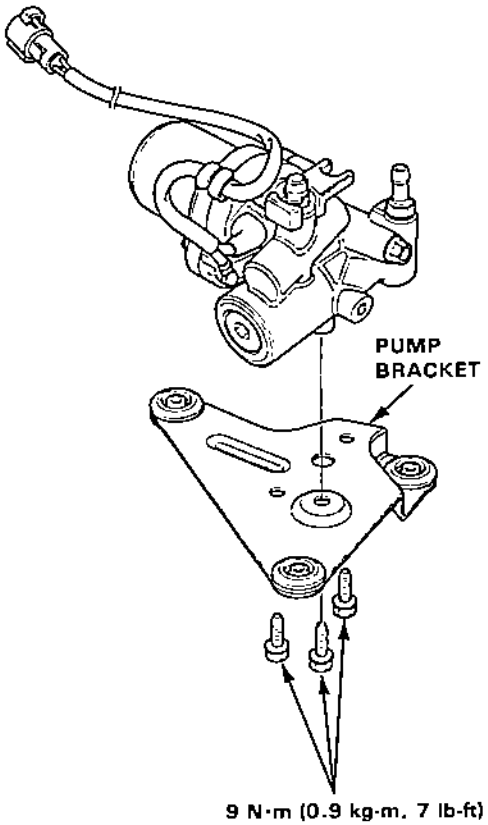


3. Install the 6 mm bolts and tighten.
4. Place the motor in a vise as shown and tighten the outlet plug.



NOTE: Clamp the pump in a vise only as shown adove.

9. Install the pump bracket.



Accumulator Unit

Index

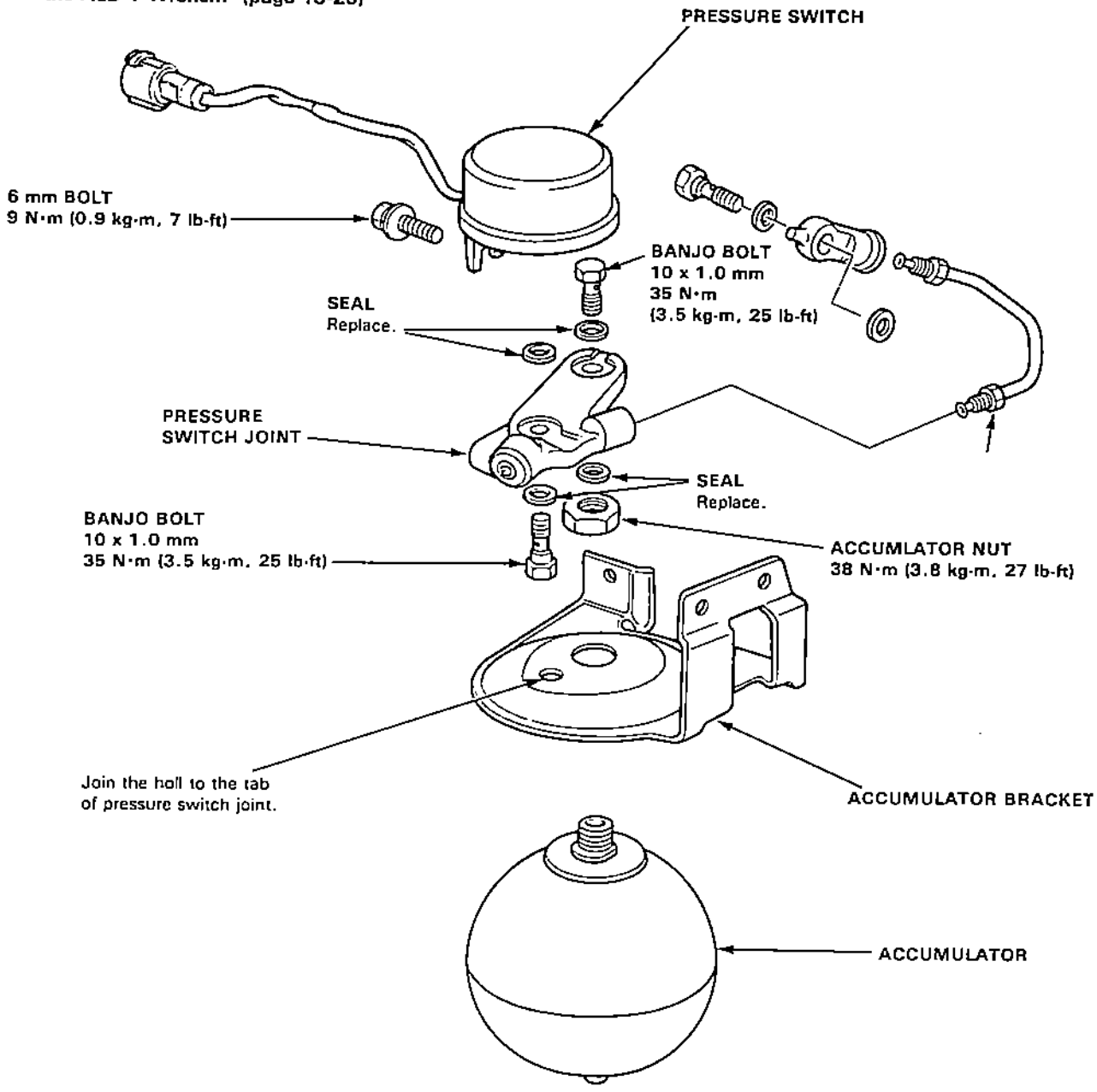
CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed 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.
- Before disassembly, the accumulator unit bleed the high pressure brake fluid out from the system using the ALB T-Wrench. (page 13-26)

- 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.

NOTE:
- Replace O-ring with new one whenever disassembled.

⚠ WARNING The accumulator contains high pressure nitrogen gas, do not puncture expose to flame or attempt to disassemble the accumulator or it may explode; severe personal injury may result.

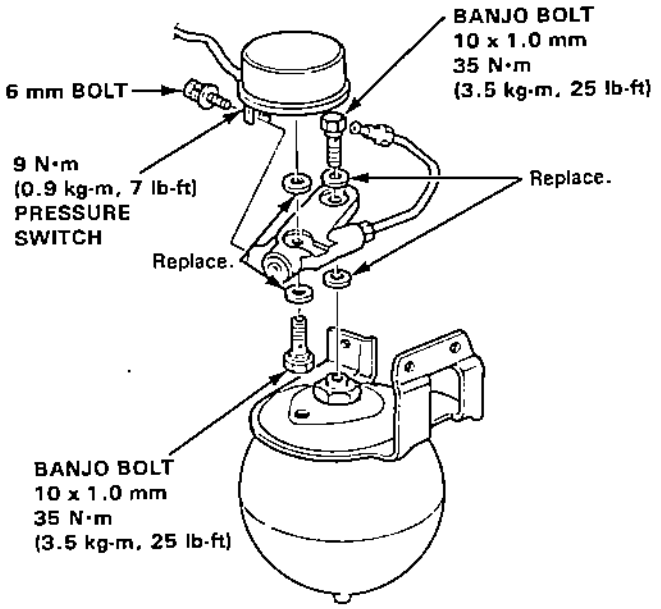


Accumulator

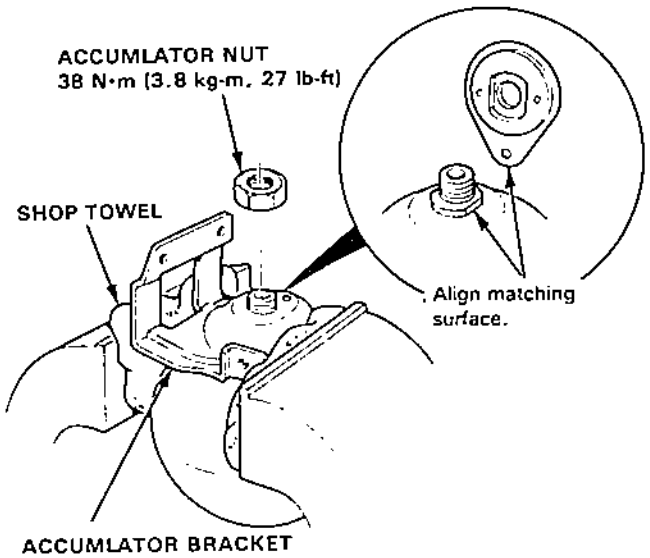
Accumlator/Pressure Switch

⚠WARNING Drain the high pressure brake fluid from the power unit (see page 13-26).

1. Remove the oil bolt, then remove the accumulator from the pressure switch joint.
2. Remove the pressure switch as shown.



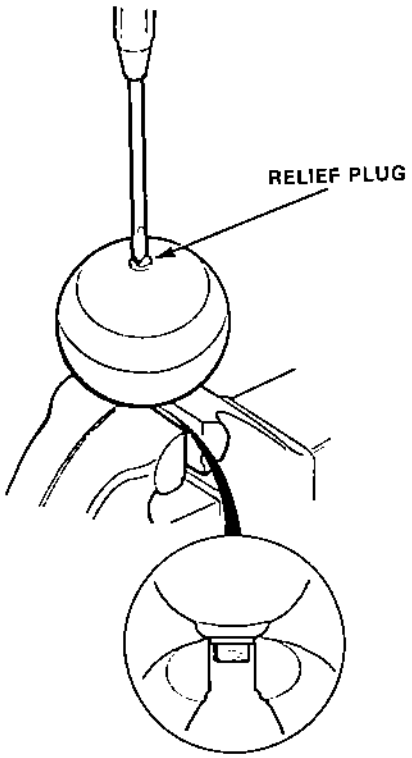
3. Remove the accumlator nut as shown.



Accumulator Disposal

⚠WARNING The accumbllator contains high pressure nitrogen gas. Do not puncture, expose to the flame, or attempt to disasserble the accumulator or it may explode and severe personal injury may result.

1. Secure the accumulator in a vise so that the relief plug points straight up.
2. Slowly turn the plug 3-1/2 turns and then wait 3 minutes for all pressure to escape.
3. Remove the plug completely and dispose of the accumulator unit.

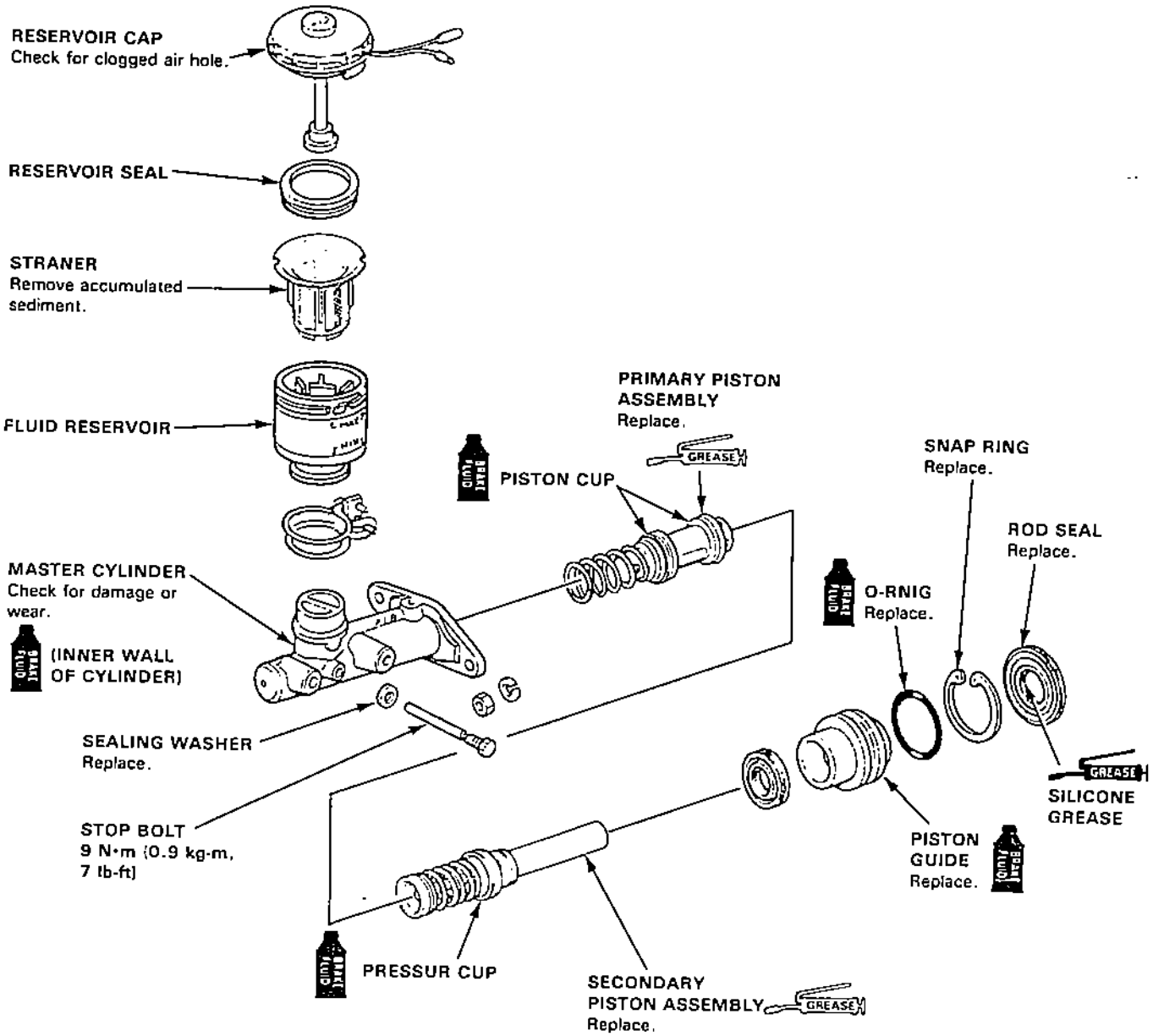


Master Cylinder

Overhaul/Inspection

CAUTION:
- Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at onece and rinse well with clean water.
- This symbol represents brake fluid. Use only DOT 3 or 4 brake fluid.
- Use only HONDA Brake Cylinder Grease (P/N 08733-B020E)or equivalent.
- Carefully inspect the bore of the master cylinder for pits, scratches or scoring.
- Replace the master cylinder if the bore in damaged or worn. Do not hone or attempt to refinish the bore.

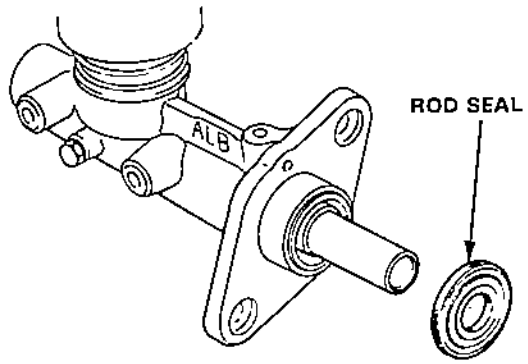
NOTE:
- Wash all removed parts in brake fluid and blow dry with compressed air. Blow open all passages and fluid ports.
- Replace all rubber parts with new ones whenever the cylinder is disassembled.
- To prevent damage, liberally apply clean brake fluid to the piston cups before installation.
- Do not attempt to refinish master cylinder bore. Replace if pitted or worn.



Disassembly

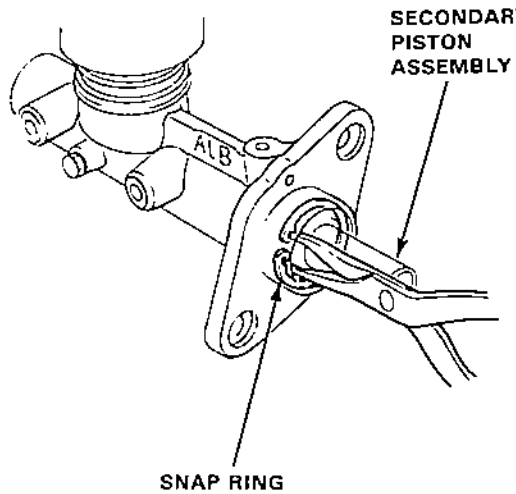
CAUTION:
- Avoid pilling fluid on painted, plastic or rubber parts as it may damage the finish.
- Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.
- Use only new clean DOT3 or DOT 4 brake fluid.
- Clean all parts thoroughly with brake fluid. Blow out all passages with compressed air.
- Do not allow foreign matter to enter the system.
- Be careful not to bend or damage the brake pipe when removing the master cylinder.

1. Remove the rod seal.

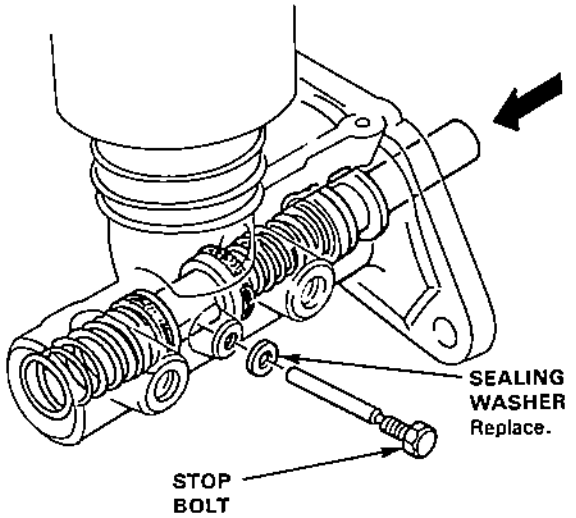


2. Push the secondary piston assembly, then remove the snap ring.

   CAUTION: Avoid damaging the master cylinder wall.



3. Remove the stop bolt while pushing in the secondary piston assembly.



4. Remove the piston guide, secondary piston assembly and pimary piston assembly.

   NOTE: If the primary piston assembly is difficult to remove, apply compressed air from the primary piston side outlet.

   CAUTION:
   - Do not use high pressure air or bring the nozzle too close to the inlet.
   - Place a shop rag over the master cylinder to prevent the primary piston from becoming a projectile.

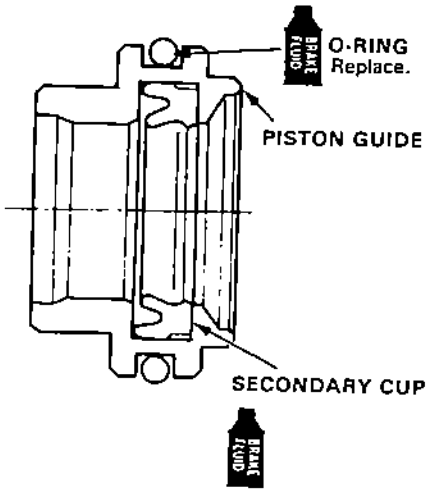
Master Cylinder

Reassembly

CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint; wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Use only new clean DOT3 or DOT4 brake fluid.
- 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.

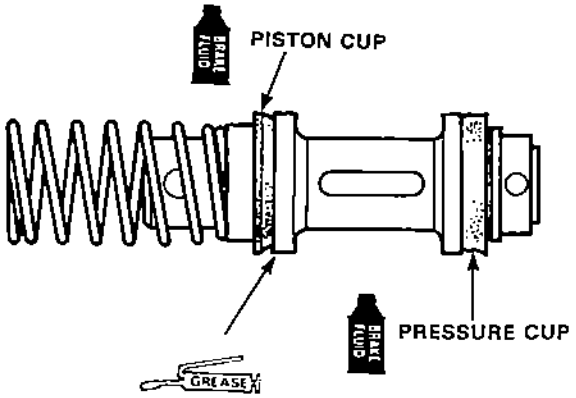
1. Lubricate the new piston parts with brake fluid.
2. Install the new O-ring onto the piston guide.

PISTON GUIDE ASSEMBLY

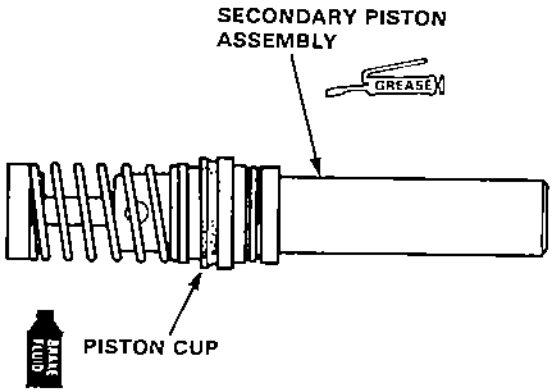


3. Make sure that the primary piston assembly and secondary piston assembly are in good condition.

PRIMARY PISTON ASSEMBLY



NOTE: Reaching through the primary piston stop bolt hole, lightly press on the valve stem to see if it moves smoothly.



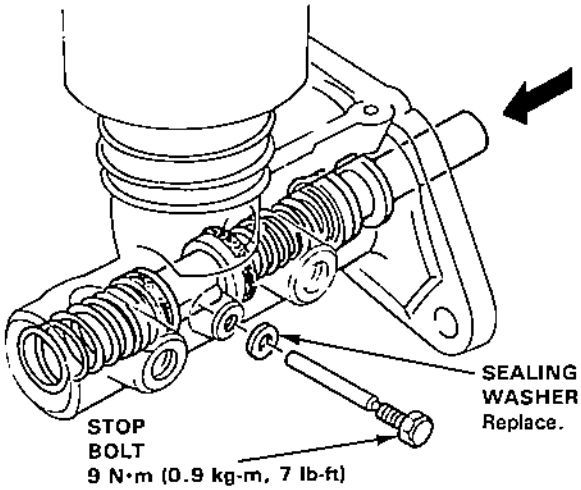
NOTE:Lightly press the stop pin guide to see if the valve stem moves smothly.

4. Assemble the primary piston assembly, secondary piston assembly and piston guide assembly in the master cylinder body.

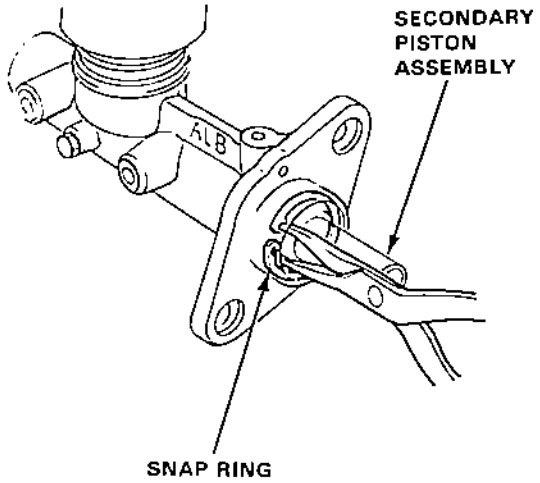
   NOTE:Install the primary piston with the slot on the cylinder facing the stop bolt hole side.

5. Push the secondary piston in until slot aligns with the stop bolt hole, then install and tighten the stop bolt.

   CAUTION:
   - Replace the stop bolt sealing washer with a new one whenever disassembled.
   - Apply brake fluid to the inner wall of the cylinder and piston cups, being careful that they are not turned inside out during installation.

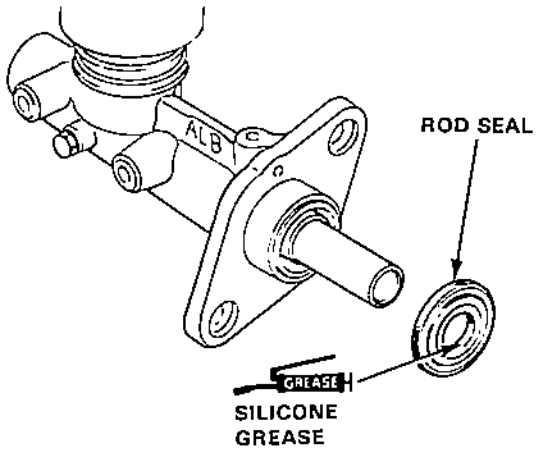


6. Press the secondary piston in and install the new snap ring.



CAUTION:Avoid damaging the sliding surface of the secondary piston when installing the sanp ring.

7. Install the new rod seal.



CAUTION:
- Make sure that there is no interference between the brake pipes and other parts when installing.
- Adjust the pushrod length and clearance (page 13-43 and 44).

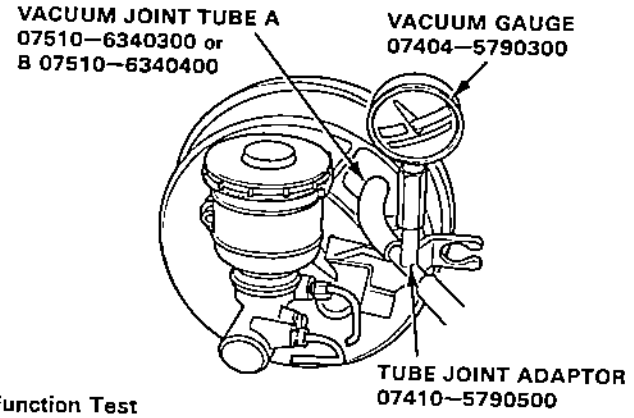
Brake Booster

Test

Leak Test

1. Install the Brake Power Kit (07504–6340100) as shown.
2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 300–500 mmHg (11.8–19.7 inHg), then stop the engine.
3. Read the vacuum gauge.

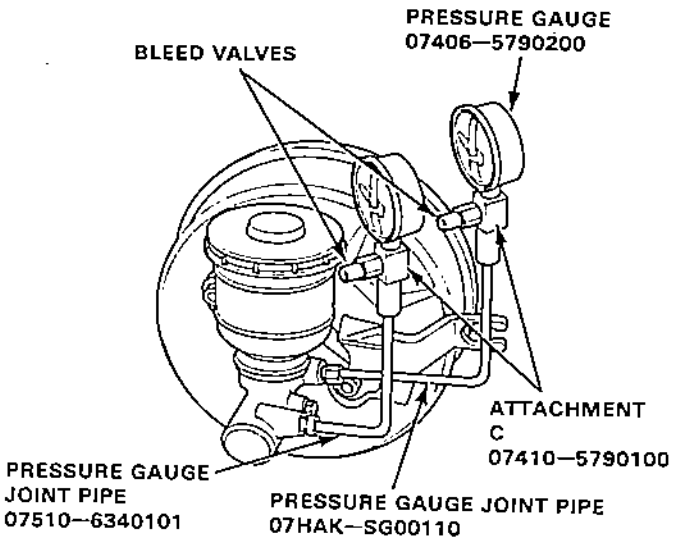
   If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.
   - Check valve
   - Vacuum hose
   - Seals
   - Master cylinder O-ring and cup
   - Diaphragm



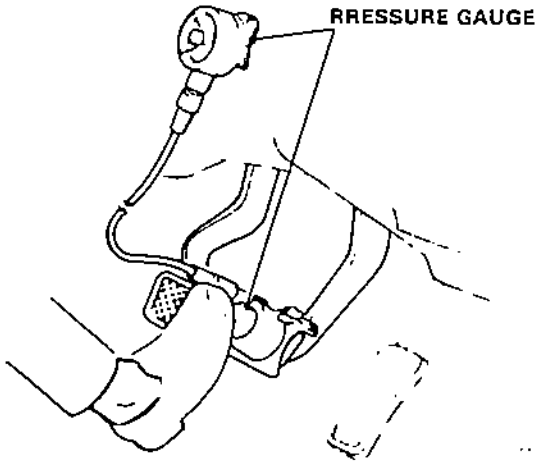
Function Test

1. Install the vacuum gauge as same the leak test.
2. Connect the oil pressure gauges to the master cylinder using the attachments as shown.
3. Bleed air through the valves.

   CAUTION: Avoid spilling brake fluid on painted, plastic or rubber parts as it may damage the finish.



4. Start the engine.
5. Depress the brake pedal with a 200 N (20 kg, 44 lbs) of pressure. The following pressures should be observed at the pressure gauges in each vacuum.

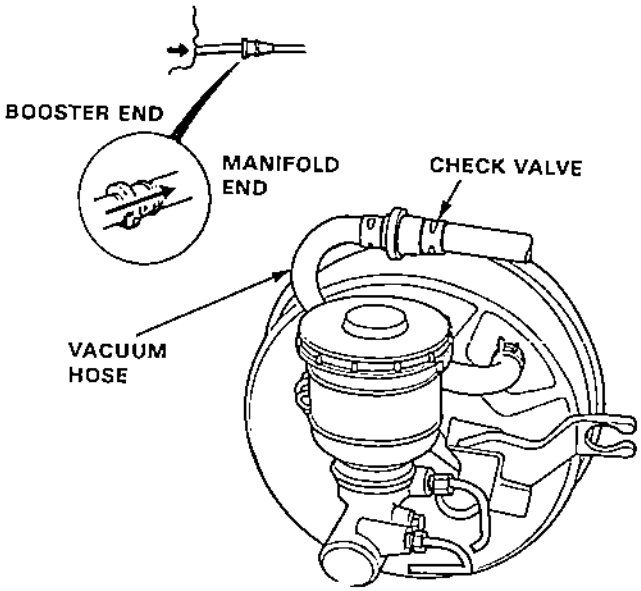


Vacuum mmHg	Line pressure kPa (kg/cm², psi)
0	900 (10.1, 143) min.
300	4,560 (45.5, 661) min.
500	6,933 (70.7, 1,005) min.

6. Inspect the master cylinder pistons and cups in the readings do not fall within the limits shown above.

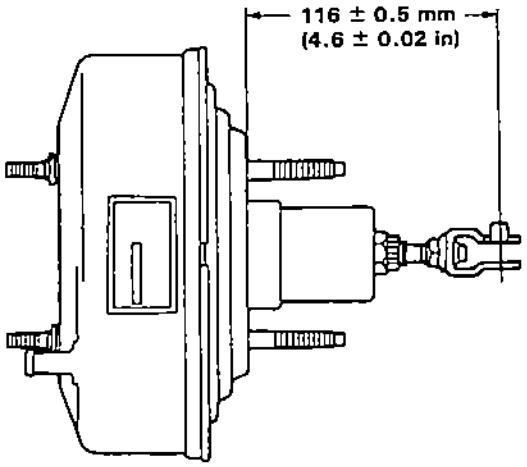
Check Valve Test

1. Remove the check valve, blow on one end of the hose and then the other; if you can blow through the booster end, but not through the manifold end, the check valve is OK.



Pushrod Adjustment

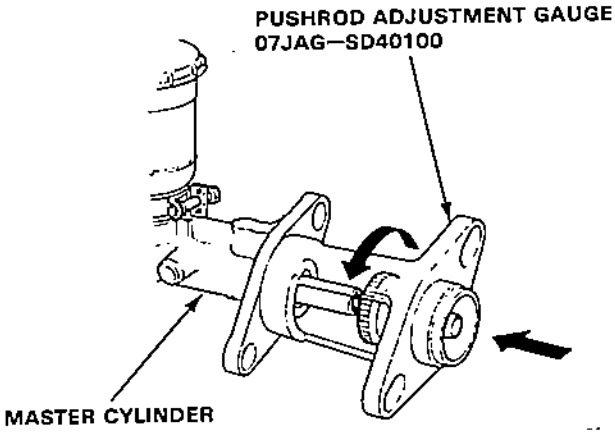
Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.



Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing or when replacing master cylinder or booster.

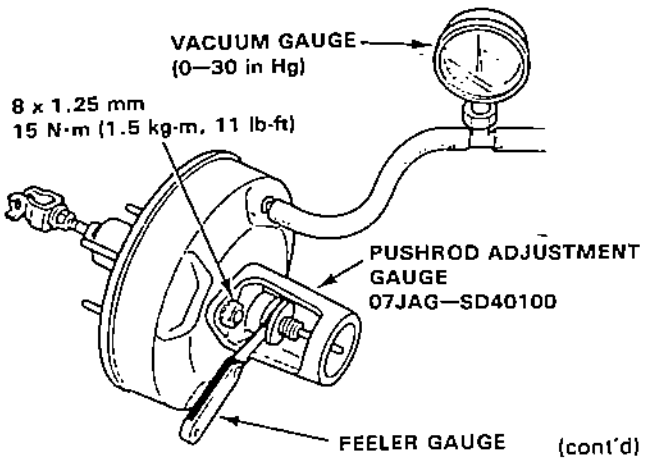
1. Using the special tool, adjust bolt so the top of it is flush with end of master cylinder piston.



2. Install the master cylinder rod seal on the brake booster.
3. Without disturbing the adjusting bolt's position, put the special tool upside down on the booster.
4. Install the master cylinder nuts and tighten to the specified torque.
5. Connect the booster in-line with a vacuum gauge (0—30 in Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 500 mm Hg (20 in Hg) vacuum.
6. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut.

   CLEARANCE: 0—0.4 mm (0—0.016 in)

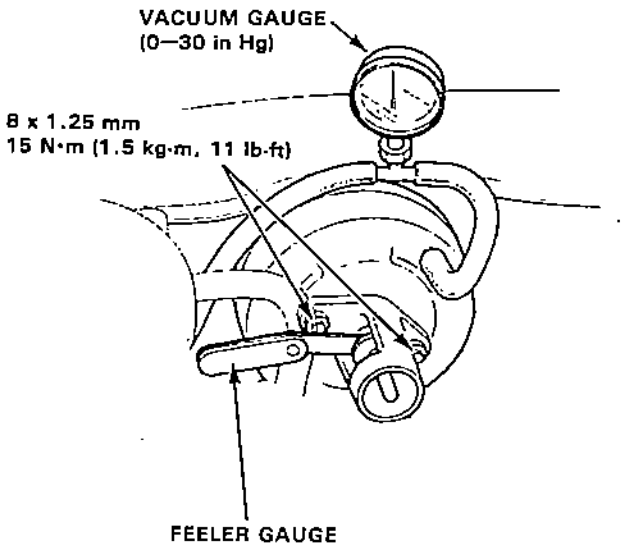
   • Inspection with the booster off the car.



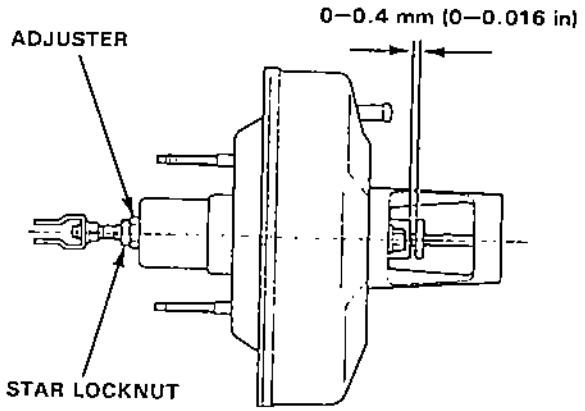
(cont'd)

Pushrod Clearance Adjustment (cont'd)

- Inspection with the booster on the car.



7. If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust. Hold the clevis while adjusting.
8. Tighten the star locknut securely.



NOTE: If the clearance between the gauge body and adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm. If the clearance between the gauge body and adjusting nut is 0.4 mm, the pushrod-to-piston clearance is 0 mm.

9. After adjustment, loosen the clevis end pushrod locknut and turn the pushrod to obtain the correct pedal height.

   PEDAL HEIGHT FROM FLOOR; 161 mm (6.3 in)
   (with floor mat removed)
   The pedal should have
   1—5 mm free play.

10. Check the brake light switch operation.

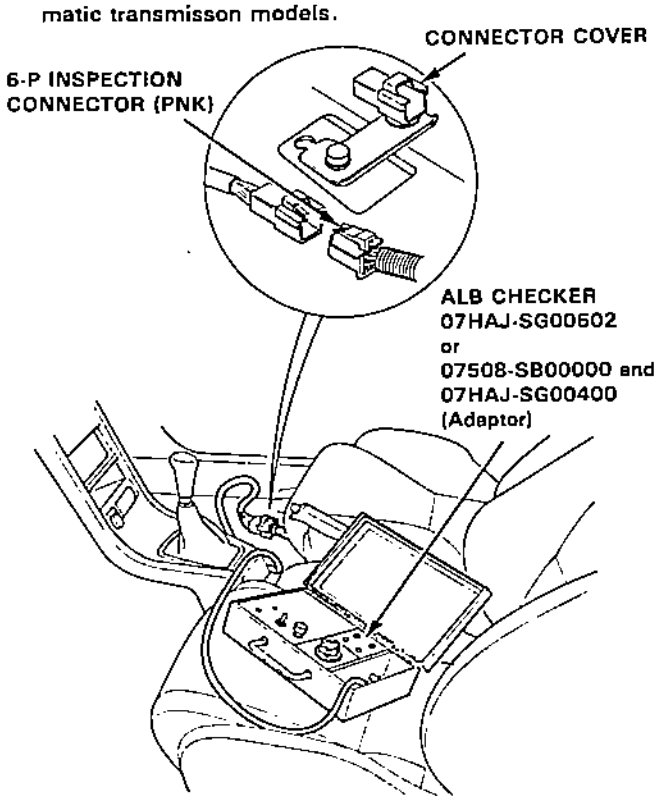
Bleeding

Air Bleeding With ALB Checker

NOTE: Do not depress the pedal during air bleeding. Or the bleeding may be affected.

1. Disconnect the 6-P inspection connector under the driver's seat and connect the inspection connector to the ALB checker.

   CAUTION: Place the vehicle on level ground with the wheels blocked. Put the transmission in neutral for manual transmission models, and in P for automatic transmisson models.

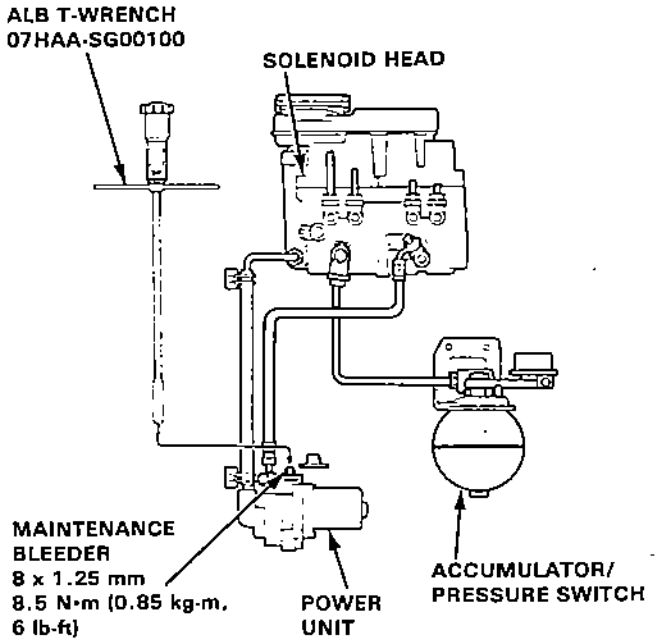


   NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG00602.

2. Fill the modulator reservoir to the MAX level.

   NOTE: Do not reuse aerated brake fluid that has been bled from the power unit.

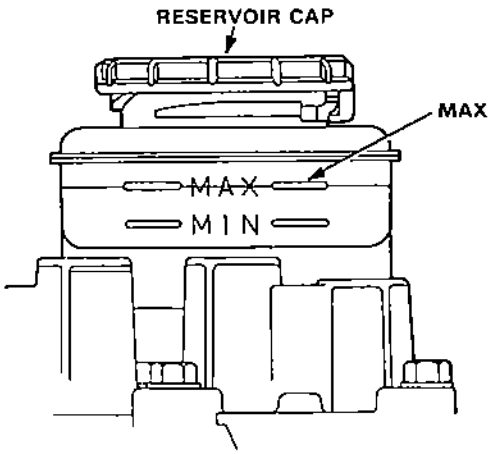
3. Bleed high pressure fluid from the maintenance bleeder with the special tool.



4. Start the engine and release the parking brake.

5. Turn the Mode Selector to 6, depress the brake pedal firmly and press the Start Test button.
   There should be at least two strong kickbacks.
   If not, repeat steps 2 through 5, as necessary.

6. Fill the modulator reservoir up to the MAX level.



7. Install the reservoir cap.

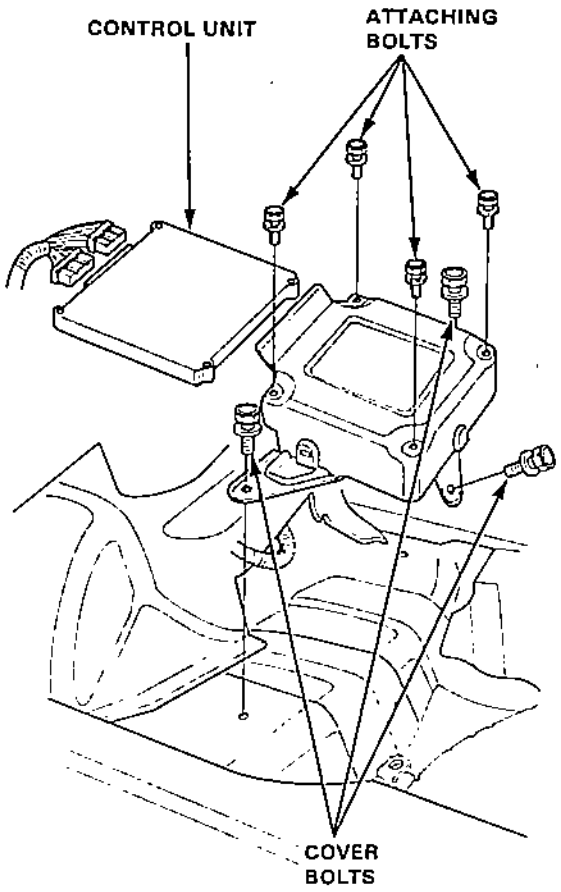
8. Check the ALB function in all modes by using the ALB checker.

   CAUTION:If the kickback is weak, re-bleed air from the system.

Control Unit Replacement

Remove the control unit cover and attaching bolts, then remove the control unit.

CAUTION:
- If the control unit attaching bolts are removed, the control unit's memory is cleared.
- Handle the control unit with care.



Installation is the reverse order of removal.

NOTE: Check the dash warning light function by turning the ignition switch ON.

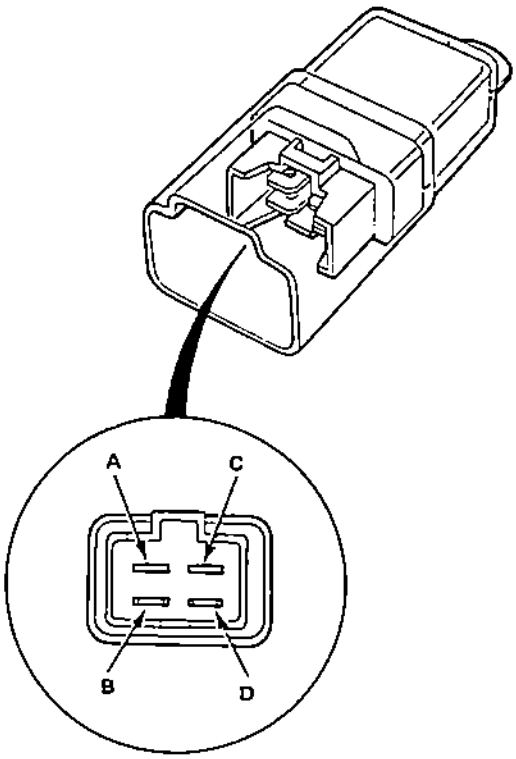
Fail Safe Relays/Motor Relay Inspection

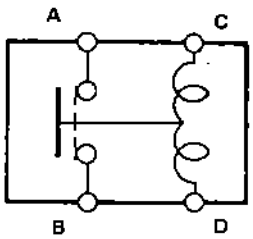
1. Check for continuity between terminals A and B.

   There should be no continuity.

2. Connect a 12 V battery across teminals C and D.

   There should be continuity between terminals A and B.

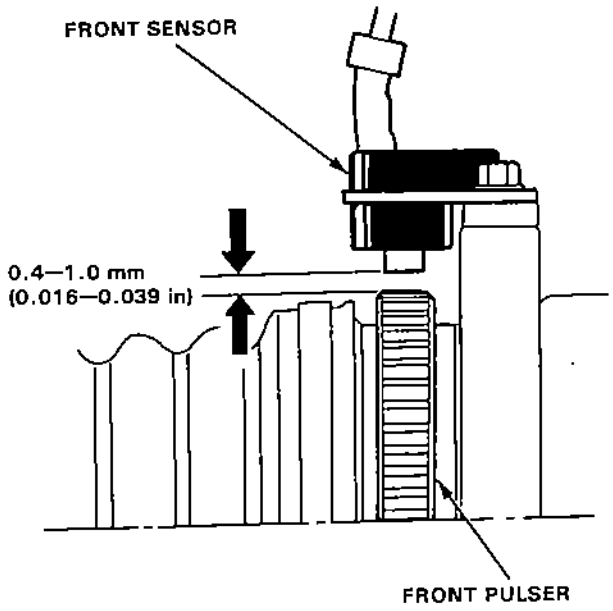




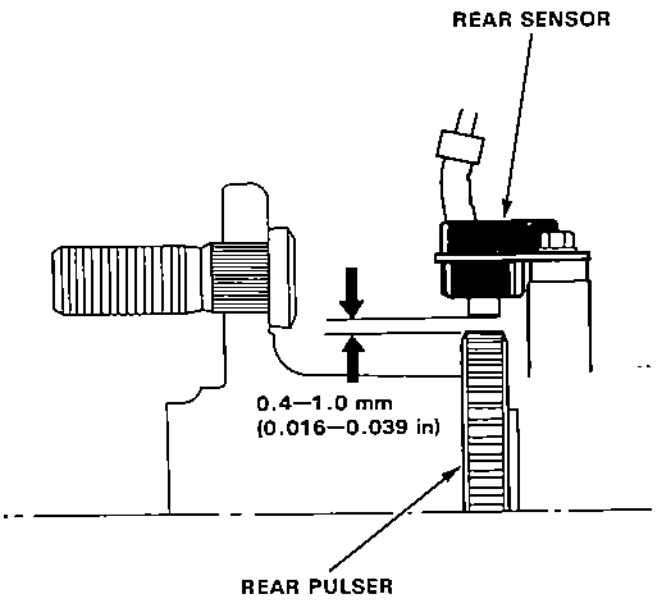
Inspection/Replacement

1. Check the pulser for chipped or damaged teeth.

Front



Rear



2. Measure air gap between the sensor and pulser all the way around while rotating the driveshaft by hand.

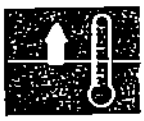
   STANDARD: 0.4—1.0 mm (0.016—0.039 in)

   CAUTION: If the gap exceeds 1.0 mm (0.039 in.), the probability is a distorted knuckle which should be replaced.

   NOTE:
   - Be careful when installing the sensors to avoid twisting the wires.
   - After sensor replacement, confirm proper operation (page 13-10).

Heater and Air Conditioner

Air Conditioner .....15 – 1

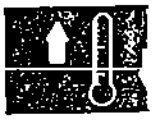


Outline of Model Changes

- "Nippondenso" compressor has been adopted.

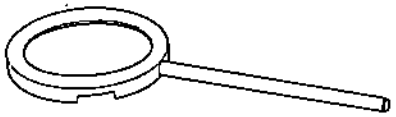
Air Conditioner

Special Tools 15–2
Illustrated Index 15–3
Wire Harness Routing 15–4
Service Tips 15–5
Compressor
  Description 15–6
  Troubleshooting 15–8
  Replacement 15–9
  Clutch Inspection 15–11
  Clutch Overhaul 15–12
Performance Test 15–13



Special Tools

Ref. No.	Tool Number	Description	Q'ty	Page Reference
①	07LAB—SK70100	A/C CLUTCH HOLDER	1	15-12
②	07JGG—0010100	ND TENSION GAUGE	1	15-10



①



②

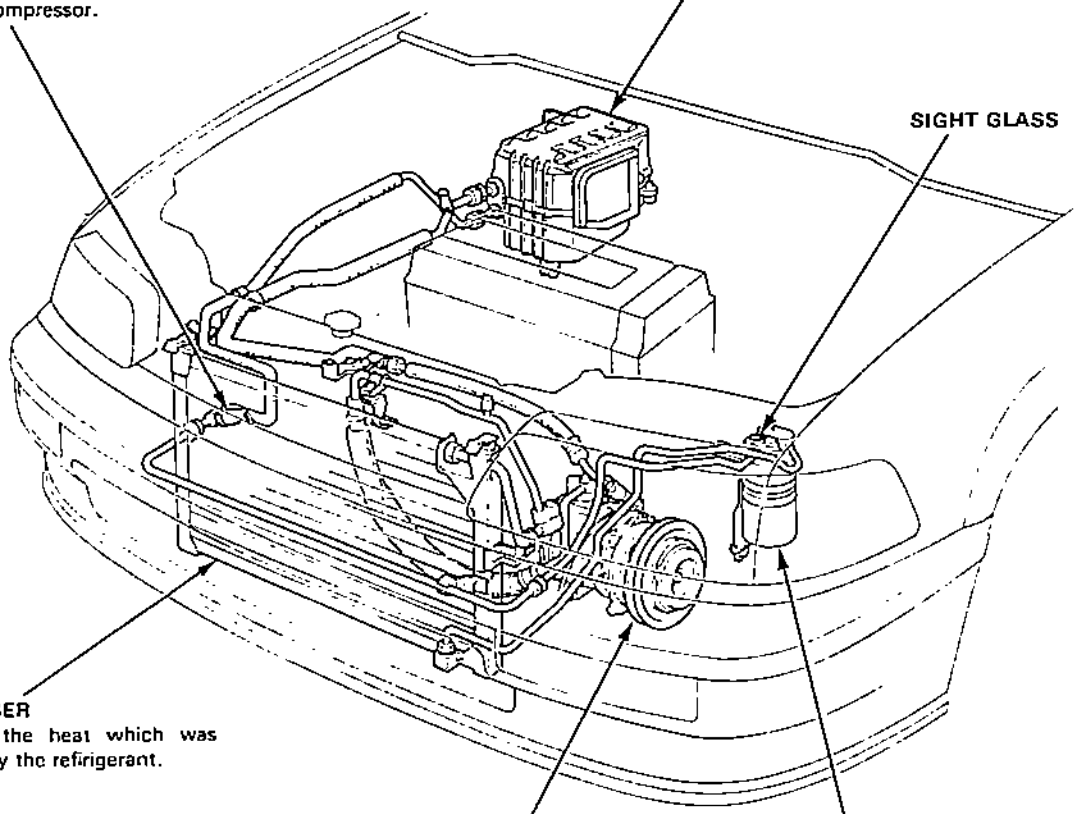
Air Conditioner

Illustrated Index

<LHD>

DUAL PRESSURE SWITCH
When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi)due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to protect the compressor.

EVAPORATOR
As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.



SIGHT GLASS

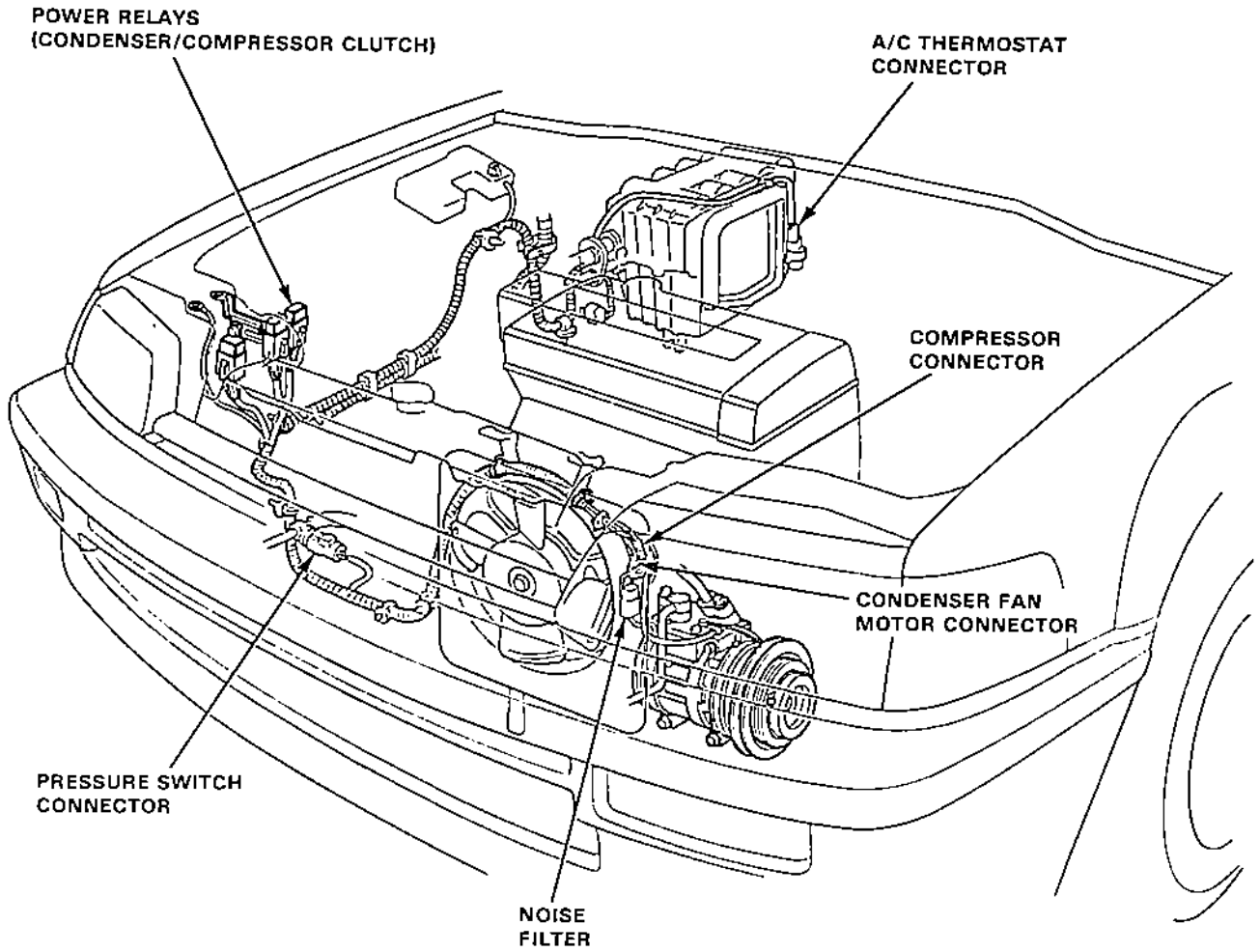
CONDENSER
Dissipates the heat which was absorbed by the refirigerant.

RECEIVER AND FILTER/DRYER
Serves as a reservoir which filters and removes moisture from the refrigerant.

COMPRESSOR
Compresses the refrigerant and then forces it through the condenser.

Wire Harness Routing

<LHD>

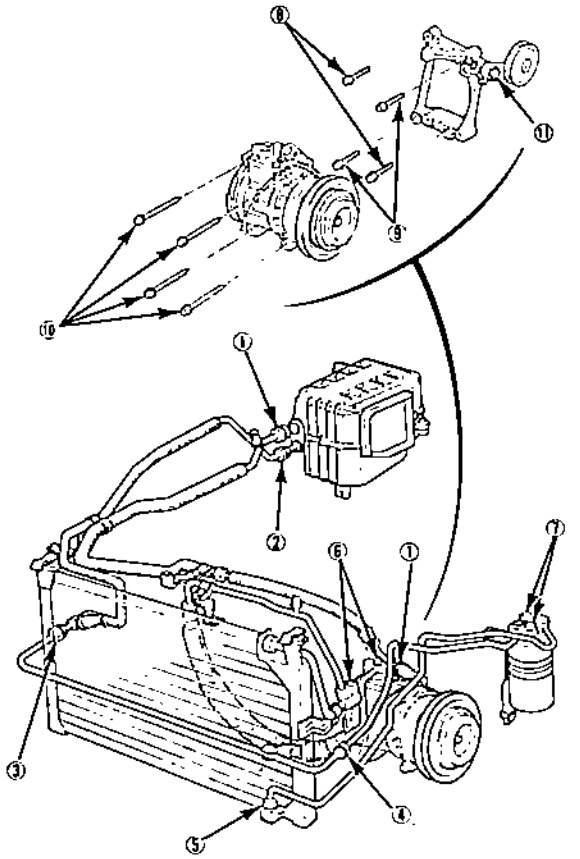


CAUTION:

1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil after replacing the following parts:
   - Condenser ..... 10 cc (1/3 fl oz)
   - Evaporator ..... 30 cc (1 fl oz)
   - Line or hose ..... 10 cc (1/3 fl oz)
   - Receiver ..... 10 cc (1/3 fl oz)
   - Compressor ..... On compressor replacement, subtract the volume of oil drained from the removed compressor from 80 cc (2 2/3 fl oz), and drain the calculated volume of oil from the new compressor: 80 cc (2 2/3 fl oz) — Volume of removed compressor = Draining volume.

7. Torque specifications

①Suction hose evaporator side and compressor side	24N·m (2.4 kg-m, 17 lb-ft)
②Receiver pipe C evaporator side	17 N·m (1.7 kg-m, 12 lb-ft)
③Receiver pipe C to Receiver pipe B	17 N·m (1.7 kg-m, 12 lb-ft)
④Receiver pipe B to Receiver pipe A	17 N·m (1.7 kg-m, 12 lb-ft)
⑤Condenser pipe to Condenser	10 N·m (1.0 kg-m, 7 lb-ft)
⑥Discharge hose condenser side and compressor side	24 N·m (2.4 kg-m, 17 lb-ft)
⑦Receiver tank	10 N·m (1.0 kg-m, 7 lb-ft)
⑧Compressor bracket mounting bolts (10 x 45)	48 N·m (4.8 kg-m, 35 lb-ft)
⑨Compressor bracket mounting bolts (10 x 55)	48 N·m (4.8 kg-m, 35 lb-ft)
⑩Compressor mounting bolts	25 N·m (2.5 kg-m, 18 lb-ft)
⑪Idle pulley stay bolt	48 N·m (4.8 kg-m, 35 lb-ft)



⚠WARNING

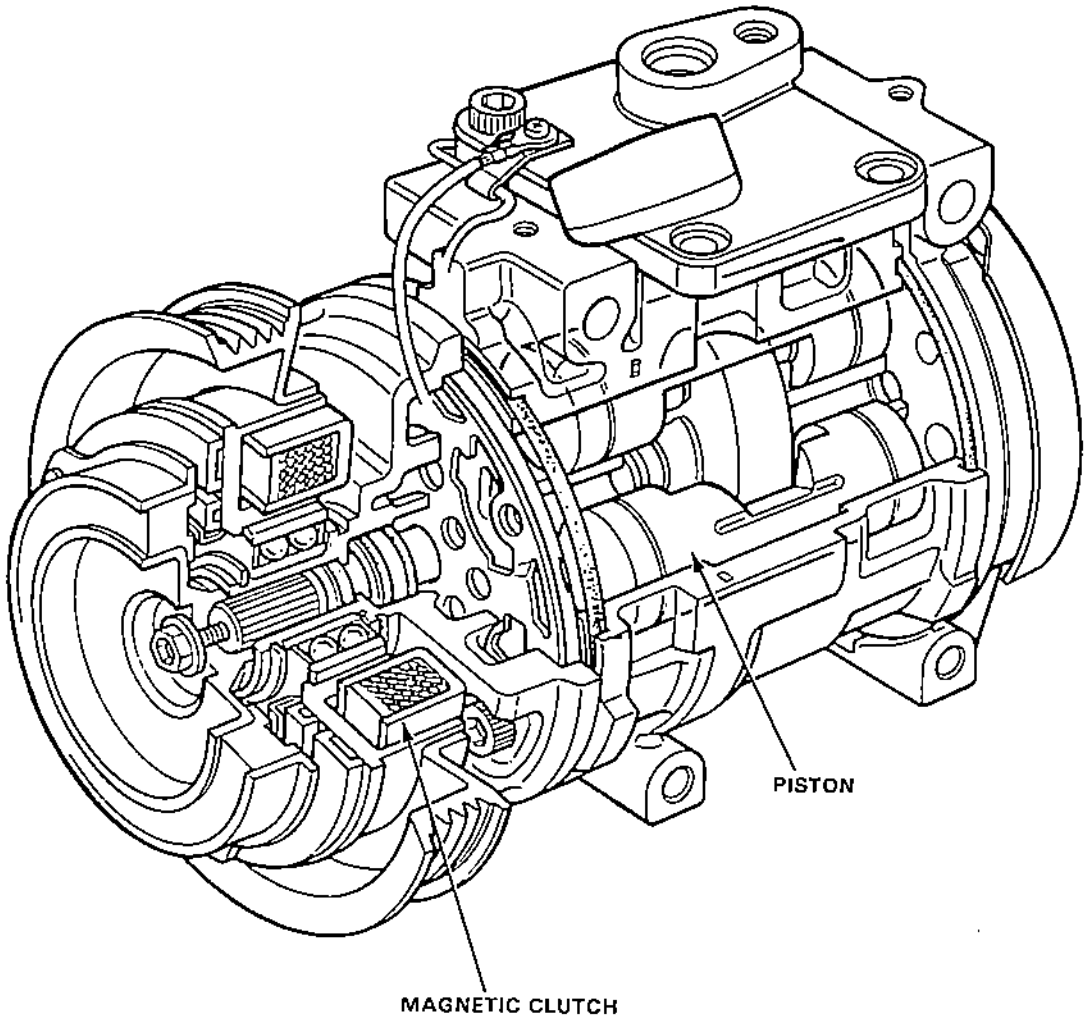
When handling refrigerant (R-12):

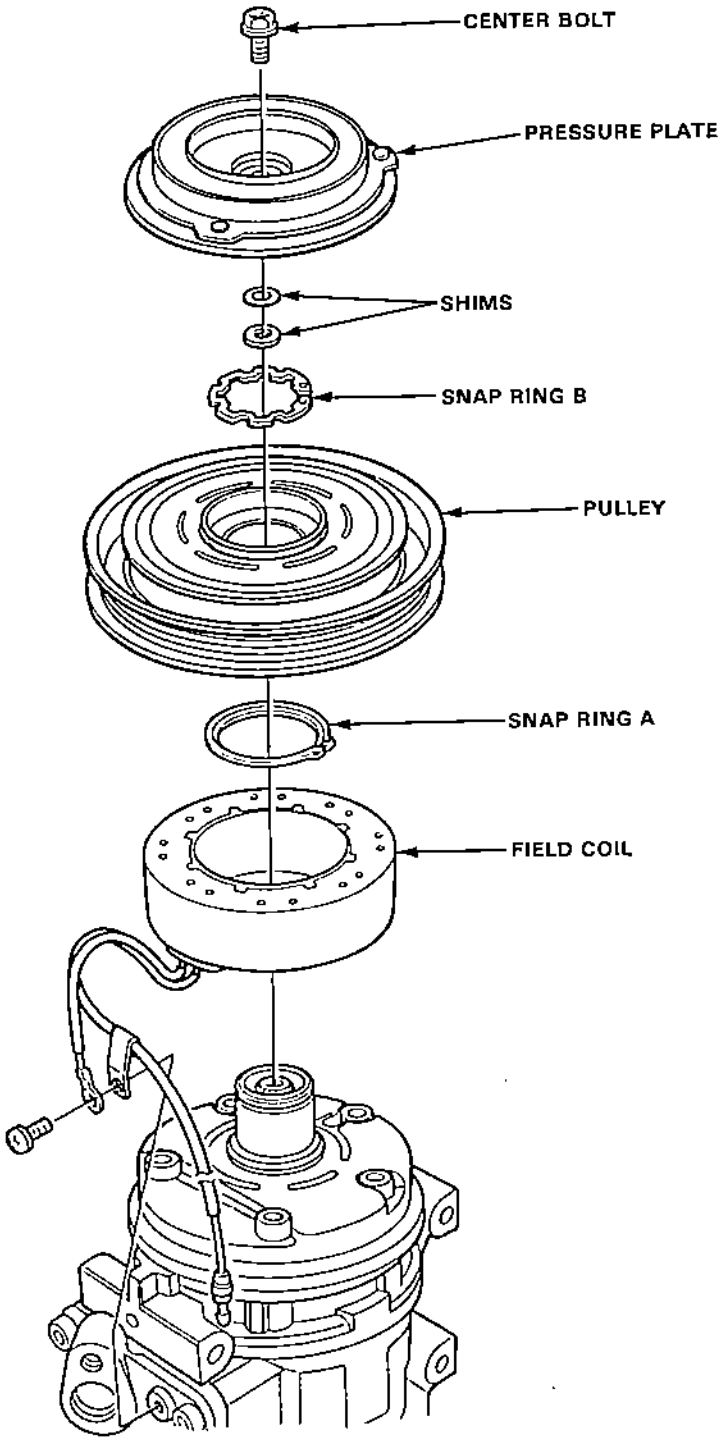
- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
  - —Do not rub your eyes or skin.
  - —Splash large quantities of cool water in your eyes or on your skin.
  - —Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce a poisonous gas.
- The ozone is a fragile layer surrounding the earth which acts as a shield against the sun's ultraviolet radiation. Chlorine from chemicals called Chlorofluorocarbons (CFCs) destroy the ozone in the stratosphere. Automotive air conditioning systems currently use Chlorofluorocarbons as the refrigerant. Auto air conditioning service equipment has been developed to minimize the release of CFCs to the atmosphere. All service procedures should be performed using this equipment and the manufactures instructions.

Compressor (Nippondenso)

Description

This compressor is a piston type. A revolving inclined disc drives the surrounding 10 reciprocating pistons. As the inclined disc revolves, it pushes the pistons, protected by a ceramic shoe, thus compressing the refrigerant.




CENTER BOLT
PRESSURE PLATE
SHIMS
SNAP RING B
PULLEY
SNAP RING A
FIELD COIL

Compressor

Troubleshooting

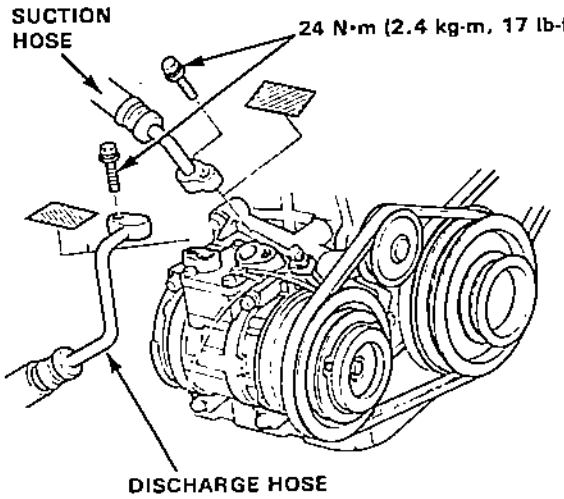
NOTE: Performance Test on page 15-13.

TEST RESULTS	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system; then recharge
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as required
	Reduced or no air flow through condenser.	· Clogged condenser or radiater fins · Condenser or radiator fan not working properly	· Clean · Check voltage and fan rpm
	Line to condenser is excessively hot	Restricted flow of refrigerant in system	Expansion valve
Discharge pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot	Insufficient refrigerant in system	· Check for leaks · Charge system
	High and low pressures are balanced soon after stopping compressor	· Faulty compressor discharge or inlet valve	Replace compressor
	Outlet of expansion valve is not frosted, low pressure gauge indicates vacuum	· Faulty expansion valve	Repair or Replace
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	Insufficient refrigerant · Frozen expansion valve · Faulty expansion valve	Check for leaks. Charge as required. Replace expansion valve
	Discharge temperature is low and the air flow from vents is restricted	Frozen evaporator	Run the fan with compressor off then check the thermostat and capillary tube.
	Expansion valve frosted	Clogged expansion valve	Clean or Replace
	Receiver dryer is cool (should be warm during operation)	Clogged receiver dryer	Replace
Suction pressure abnormally high	Low pressure hose and check joint are cooler than around evaporator	· Expansion valve open too long · Loose expansion valve	Repair or Replace
	Suction pressure is lowered when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary
	High and low pressure are equalized as soon as the compressor is stopped	· Faulty gasket · Faulty high pressure valve · Foreign particle stuck in high pressure valve	Replace 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 condenser and radiator · Check voltage and fan rpm
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary.
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 bolt(s) are dirty	Leaking around bolt(s)	Replace compressor
	Compressor gasket is wet with oil	Gasket leaking	Replace compressor

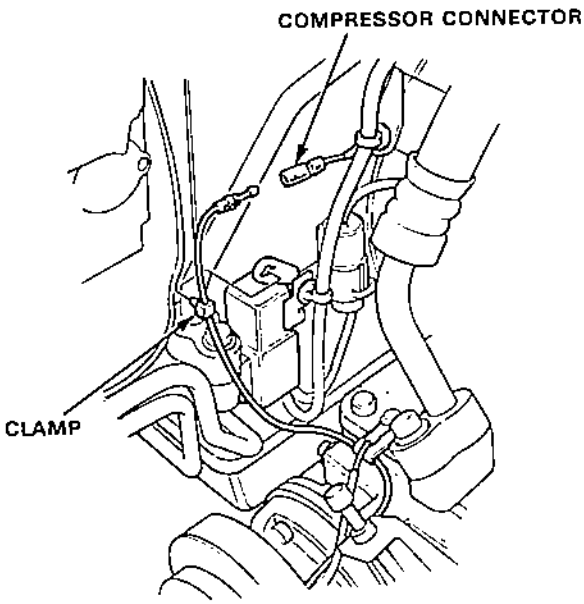
Replacement

1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system.
3. Disconnect the suction and discharge hoses from the compressor.

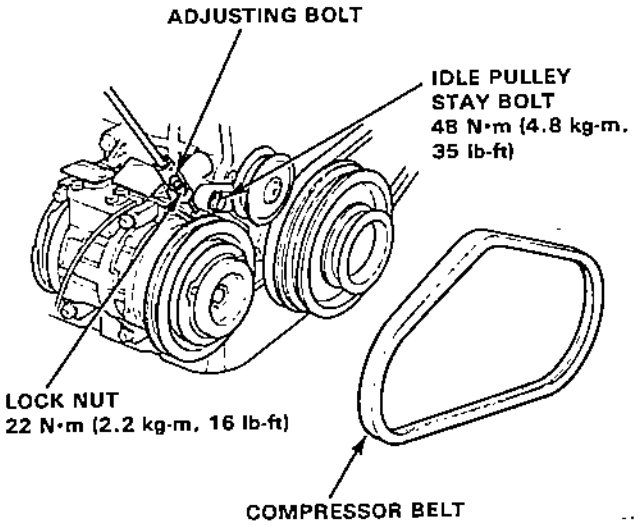
   CAUTION:
   Cap the open fittings immediately to keep moisture and dirt out of the system.



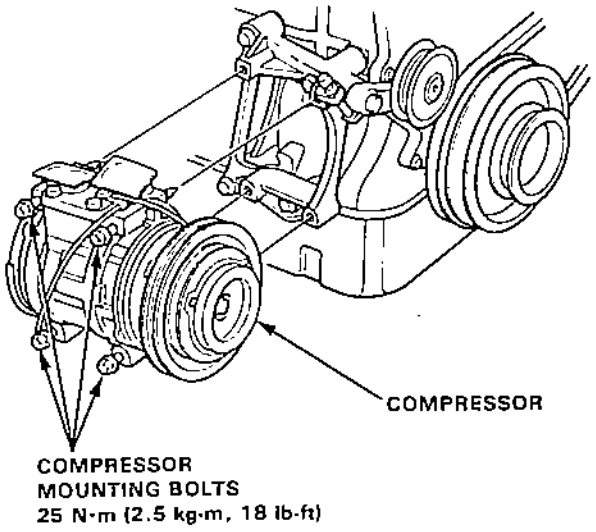
4. Disconnect the compressor connector and the clamp.



5. Loosen the idle pulley stay bolt. Loosen the lock nut and adjusting bolt, then remove the compressor belt.



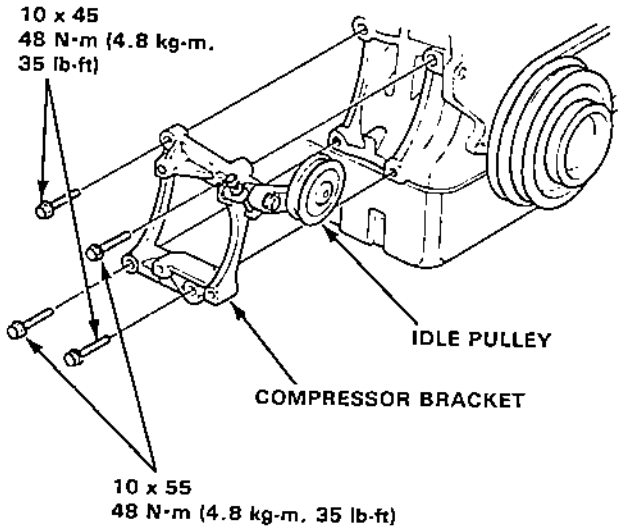
6. Remove the compressor mounting bolts (4) and compressor. Rest the compressor on the front beam.



(cont'd)

Replacement (cont'd)

7. Remove the mounting bolts (4) and compressor bracket with idle pulley.

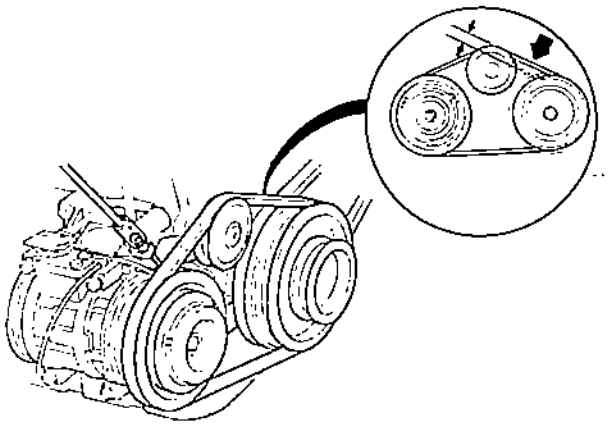


8. Remove the compressor.

9. Install in the reverse order of removal and:
   - If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
     80 cc (2 2/3 fl oz.) minus contents of old compressor, equals amount to drain from new compressor.
   - Adjust the compressor belt.

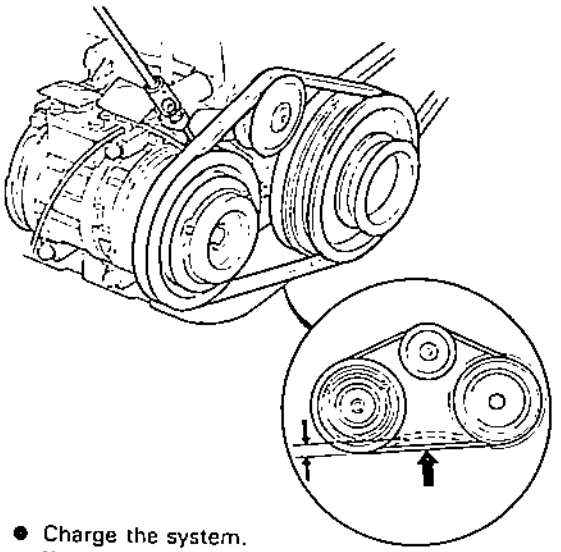
①Measure the deflection when 98 N (10 kg, 22 lb) force is applied between the pulleys.

Belt tension	
New belt	Used belt
4.5—6.5 mm (0.18—0.26 in)	7.0—9.0 mm (0.28—0.35 in)



②When using ND tension gauge;

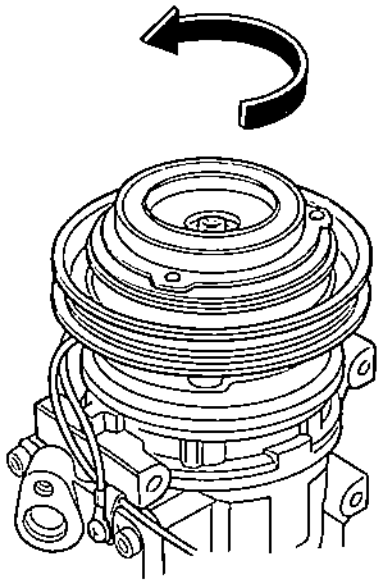
Belt tension	
New belt	Used belt
539—735 N (55—75 kg, 121—165 lb)	343—490 N (35—50 kg, 77—110 lb)



- Charge the system.
- Test the performance.

Clutch Inspection

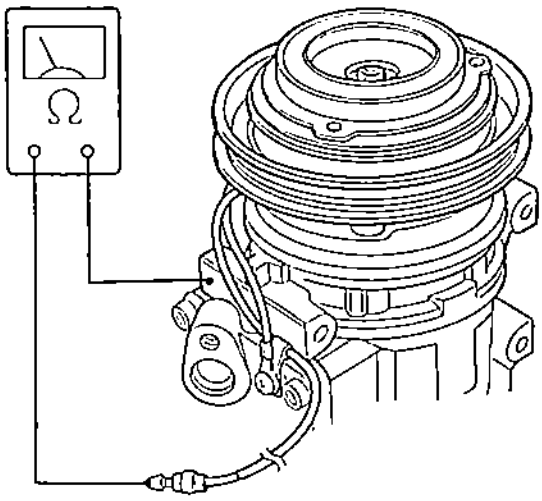
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.



- Check resistance of the field coil:

  Field Coil Resistance: 3.6±0.2 ohm at 20°C (68°C)

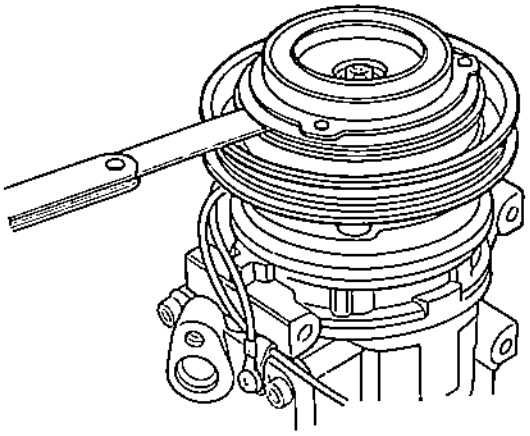
  If resistance is not within specifications, replace the coil.

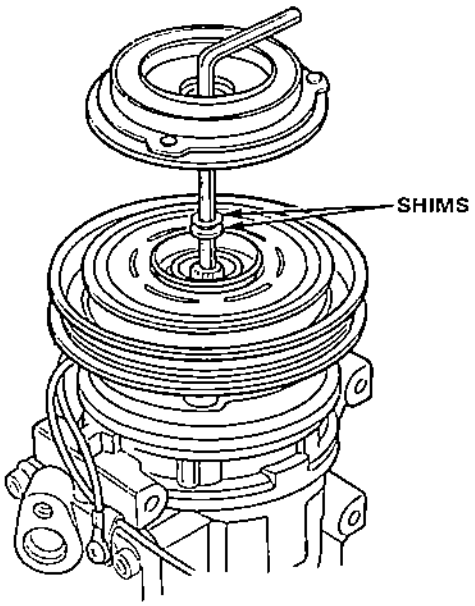


- Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

  CLEARANCE: 0.5±0.15 (0.020±0.006 in.)

  NOTE: The shims are available in six sizes: 0.1 mm, 1.0 mm, 1.25 mm, 1.5 mm, 1.75 mm and 2.0 mm of thickness.

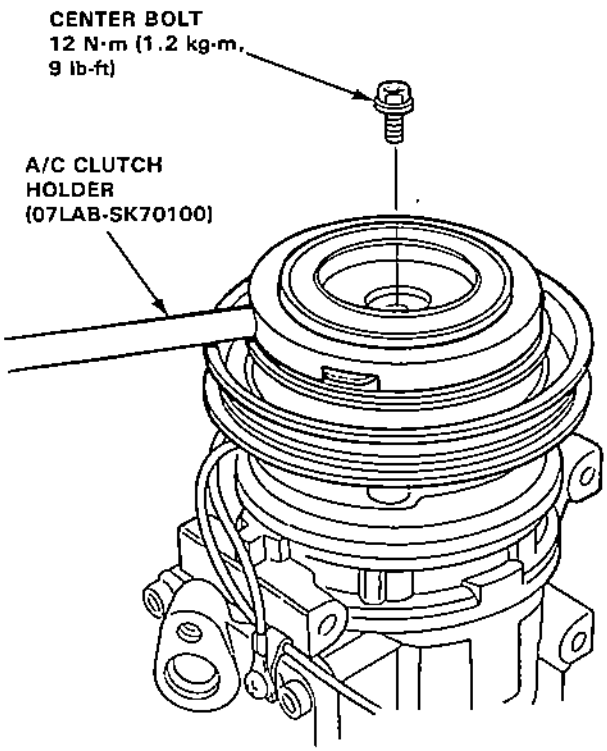




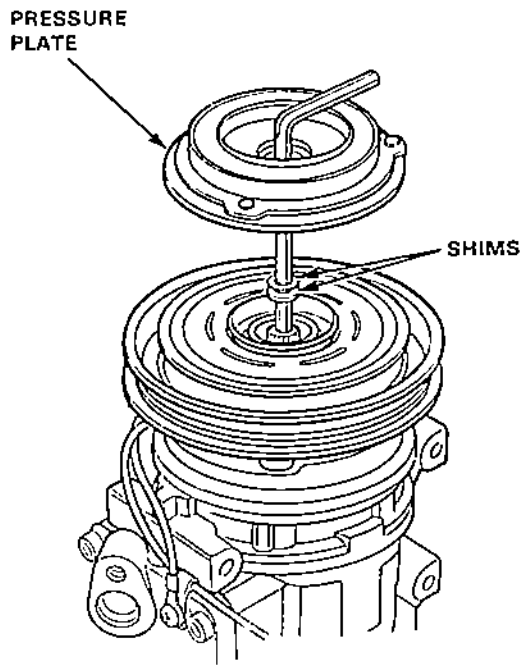
Compressor

Clutch Overhaul

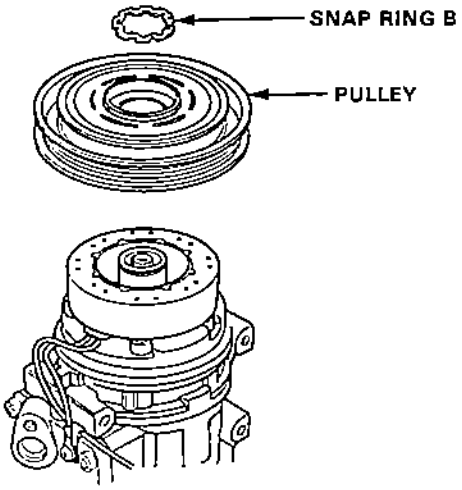
1. Remove the center bolt.



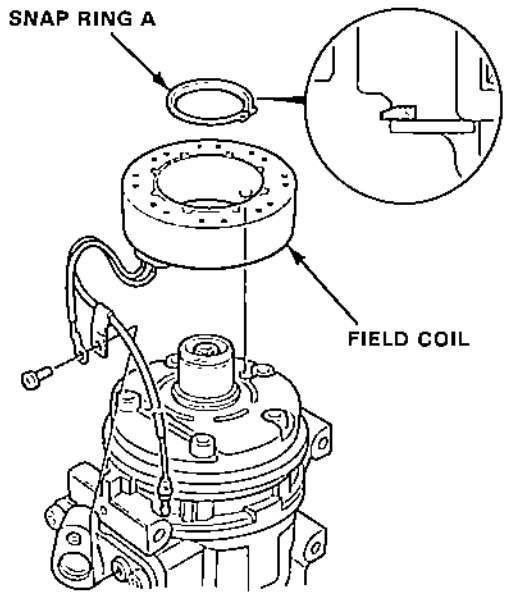
2. Remove the pressure plate and shim(s) taking care not to lose the shims.



3. Use circlip pliers to remove the snap ring B, then remove the pulley.



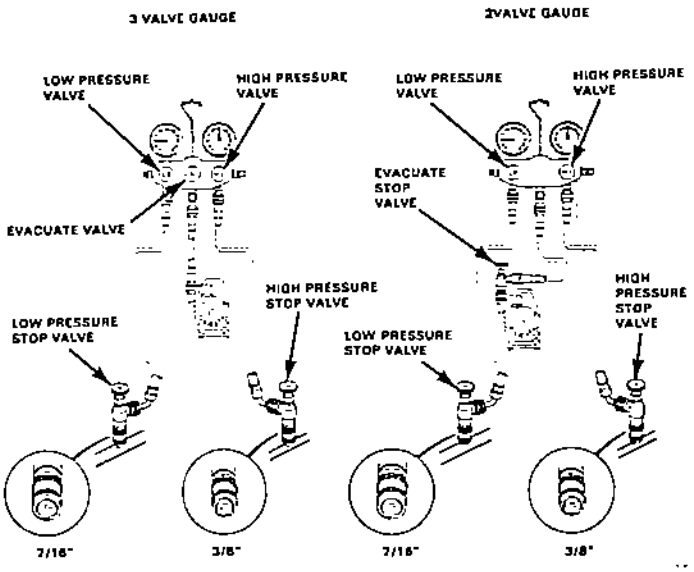
4. Remove the snap ring A and the field coil.

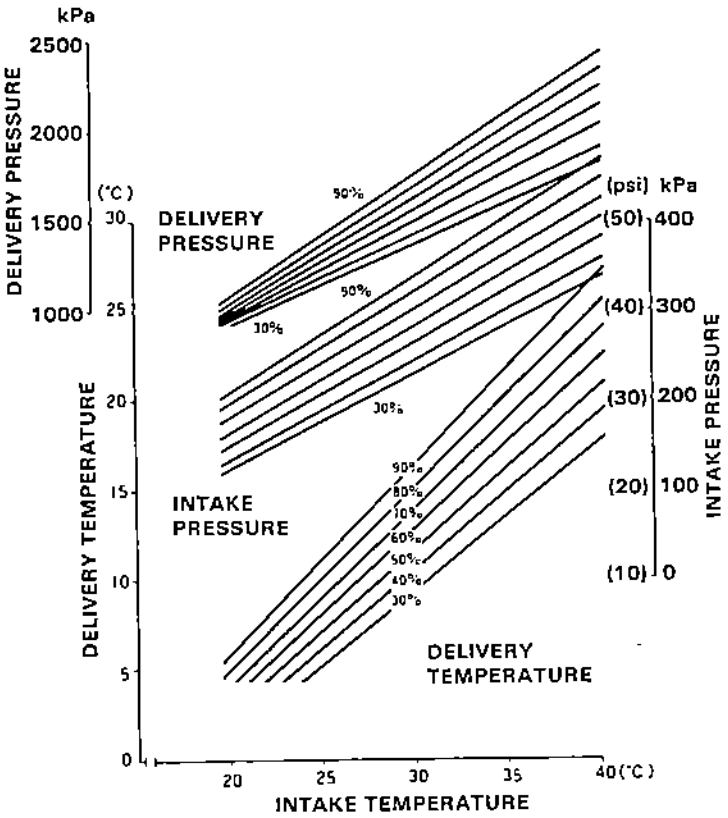


5. Install in the reverse order of removal and:
   - Install the field coil with the wire side facing up (see above).
   - Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
   - Check the pulley bearings for excessive play.
   - Make sure the circlip is fitted to the groove properly.
   - Apply locking agent to the thread of the center bolt and tighten it securely.
   - Make sure that the pulley turns smoothly.

The performance test will help determine if the air conditioning system is operating within specifications.

1. Attach the gauge and pump as shown, connecting the center charging hose to the pump inlet. To purge air from the hose loosen both charging hoses fitting at the stop valves, until they hiss for a few seconds, then tighten them again.
2. Start the pump, then open both gauge valves and the evacuate valve (2 valve gauge: evacuate stop valve). The low gauge should indicate above 700 mmHg (27in-Hg), then run the pump about 1 minute.
3. Close both valves and the evacuate valve (2 valve gauge: evacuate stop valve) and stop the pump. Open both stop valves.
4. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.
5. Test conditions:
   - Avoid direct sunlight.
   - Open engine hood.
   - Open front doors.
   - Temperature control switch: COLD
     Mode switch:
     Recirculation control switch:
   - Turn the fan switch to MAX.
   - Turn the A/C switch ON.
   - Run the engine at 1,500 RPM.
   - No driver or passengers in vehicle.
6. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the dash vent and the high and low system pressure from the A/C gauges.
7. 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 one line above and one line below the humidity level. (10 % above and 10 % below the humidity level)
   - From each point, draw a horizontal line across to 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.





Electrical

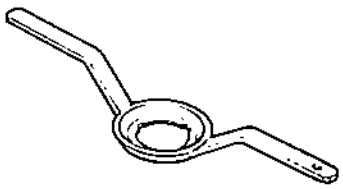
Special Tool 16-2
Fuses
  Main Fuse Box 16-3
  Dash Fuse Box 16-4
Power Distribution 16-8
Ground Distribution 16-14
Ignition System
  Component Location Index 16-20
  Circuit Diagram 16-21
  Ignition Timing Inspection and Setting 16-22
  Igniter Unit Input Test.....16-23
Gauge Assembly
  Circuit Diagram 16-26
  Gauge/Indcator Index 16-28
Fuel Gauge
  Gauge Test 16-32
Low Fuel Warning System
  Warning light Test 16-33

Outline of Model Changes

- The Ignition System has been changed due to the B16 engine (1.6 ℓ DOHC PGM-FI Engine) addition.
- The low fuel warning system has been adopted.
- The ALB System has been adopted to KE model only.

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07920—SB20000	Fuel Sender Wrench	1	

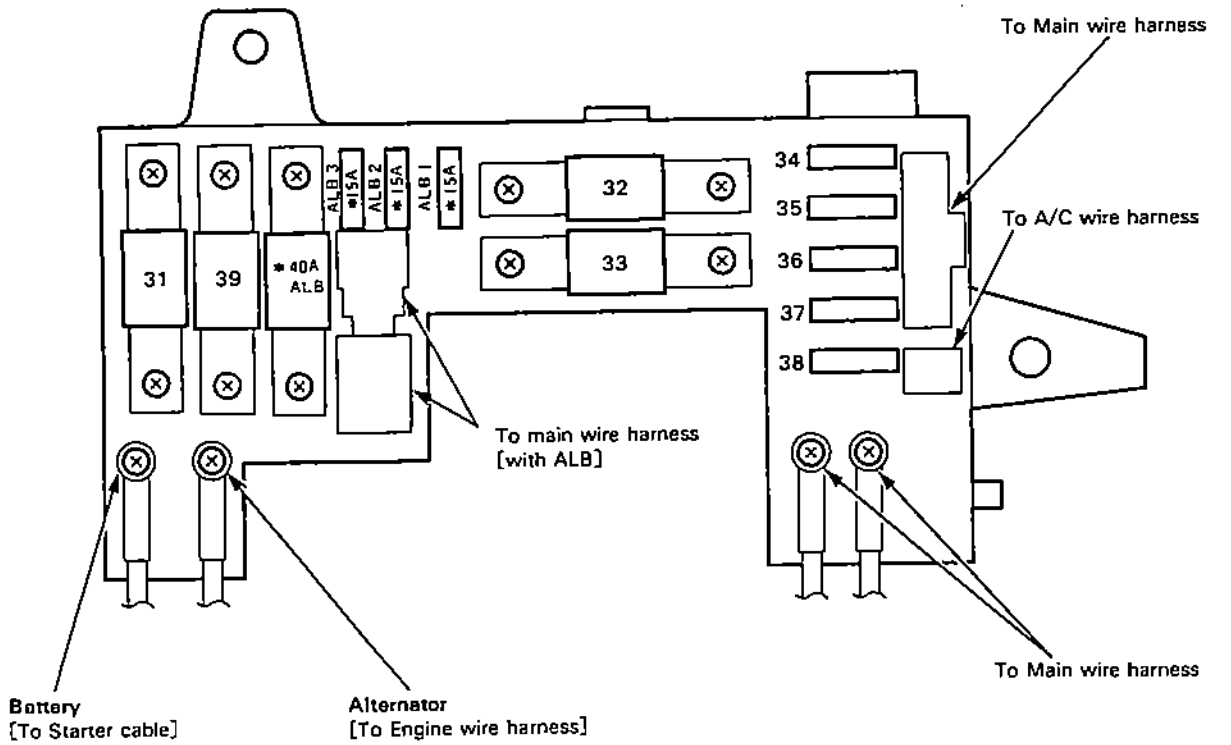


①

Fuses

Main Fuse Box

NOTE: Main fuse box is located right side, engine compartment.

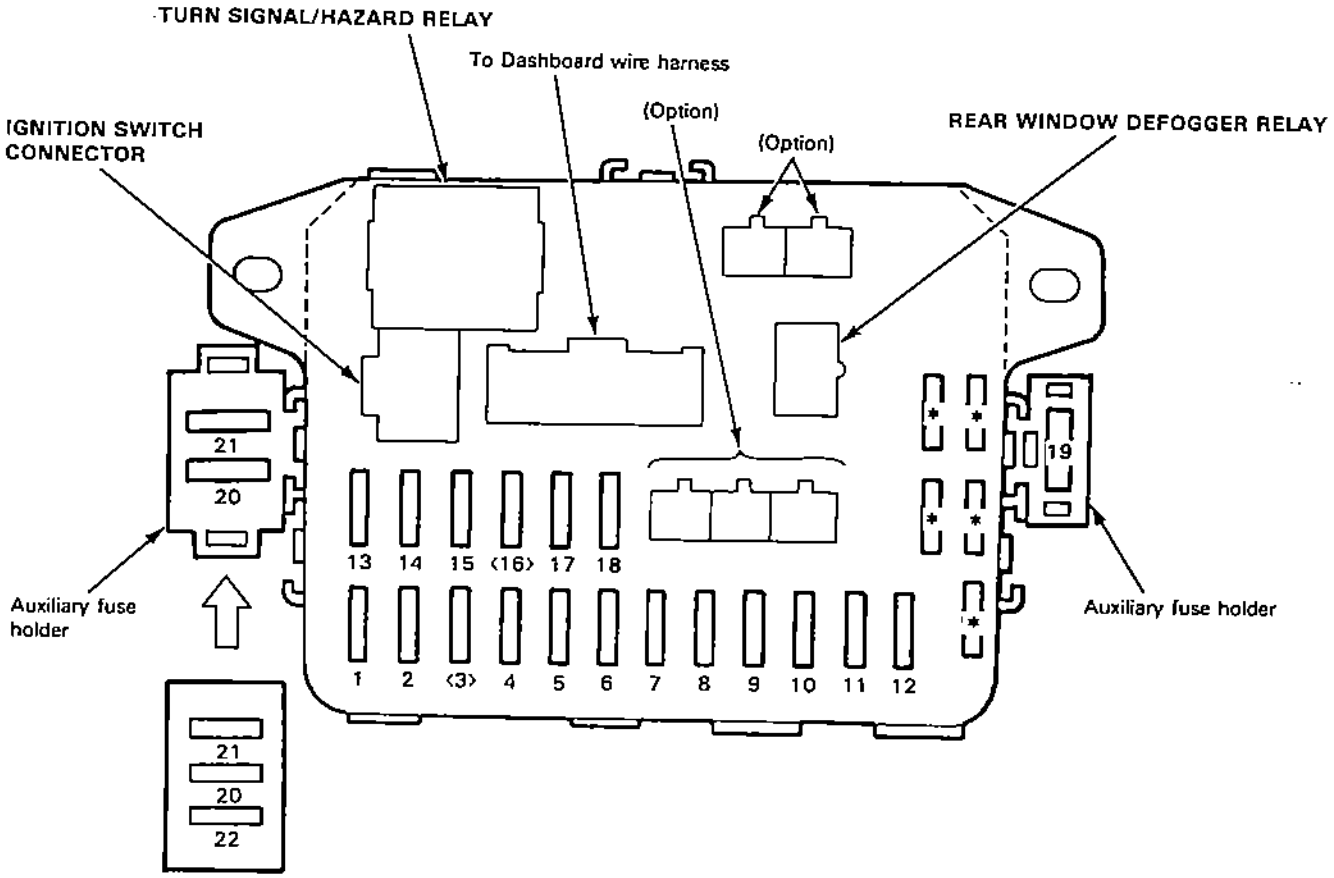


* ····· with ALB

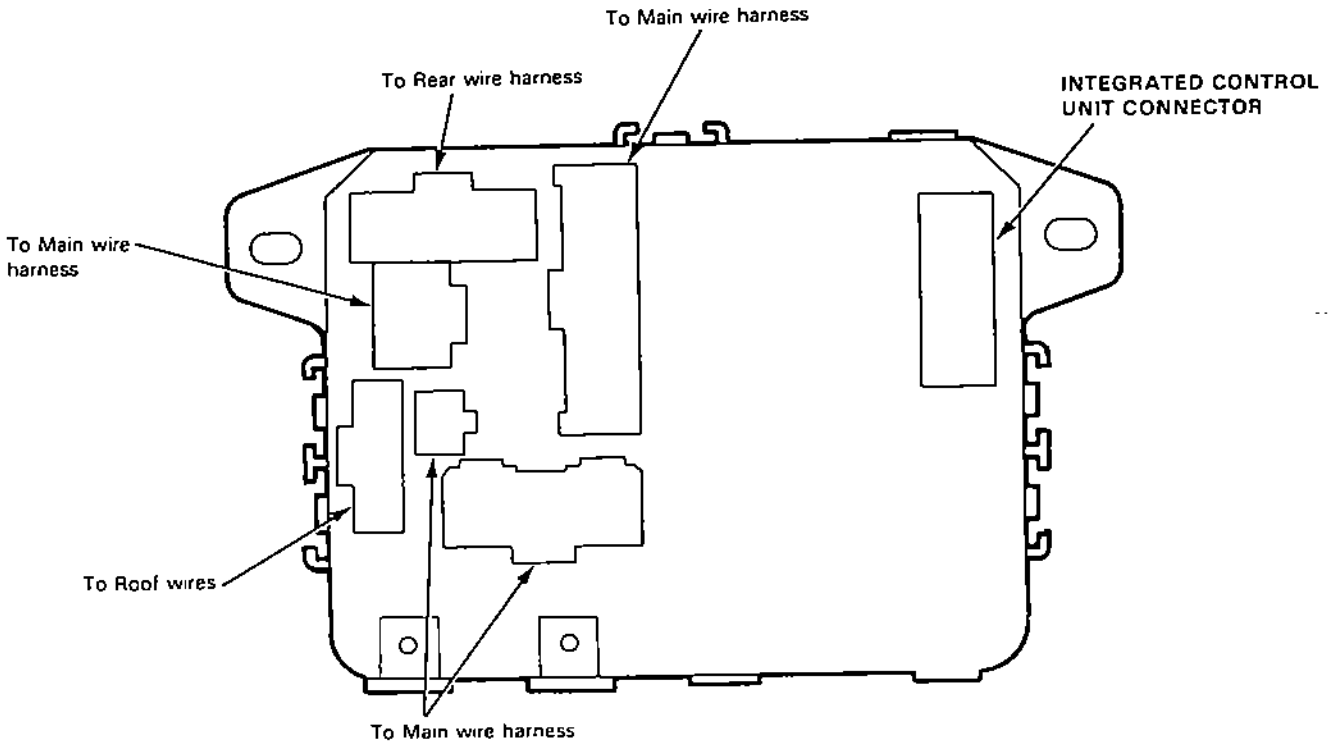
Fuses

Dash Fuse box (LHD)

NOTE: Dash fuse box is located left side, under dash.



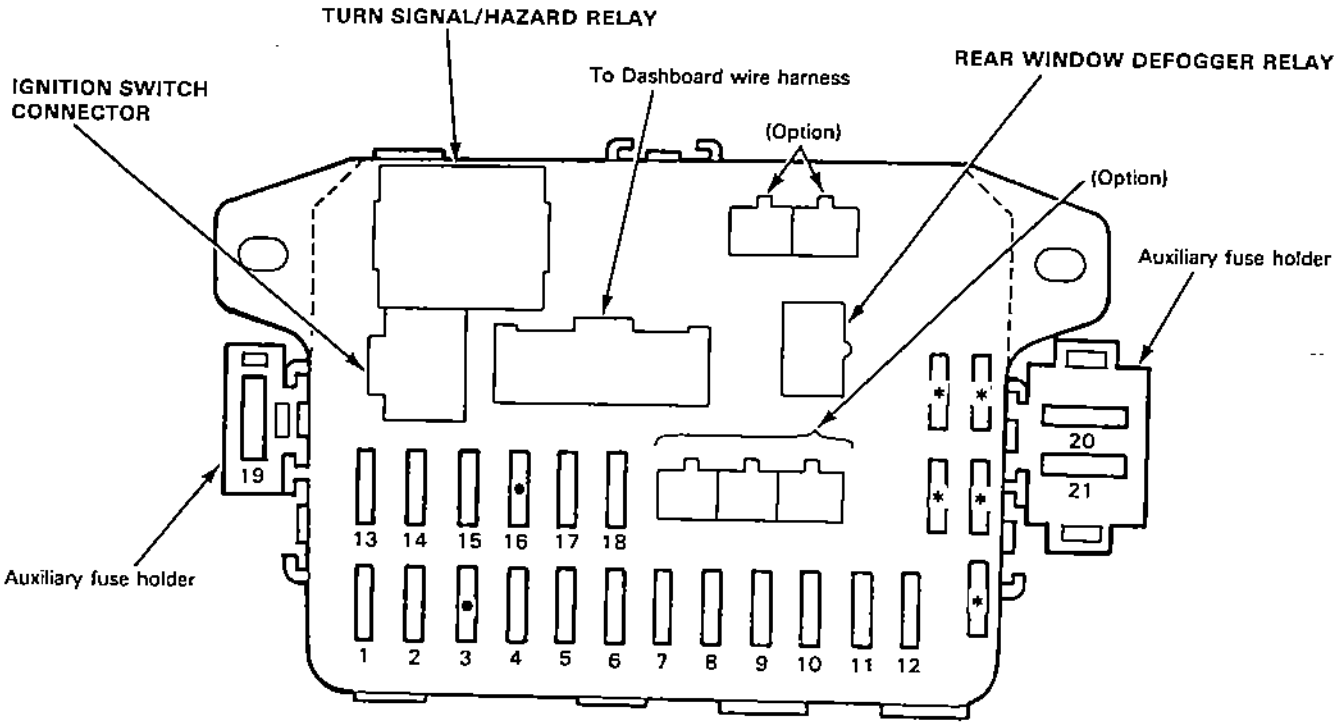
* : SPARE FUSE
< > : KS model only
No.19(30 A)FUSE : Blower motor
No.20(20 A)FUSE : Front passenger's power window
No.21(20 A)FUSE : Driver's power window
No.22(15 A)FUSE : Seat heaters-KS model


To Main wire harness
To Rear wire harness
INTEGRATED CONTROL UNIT CONNECTOR
To Main wire harness
To Roof wires
To Main wire harness

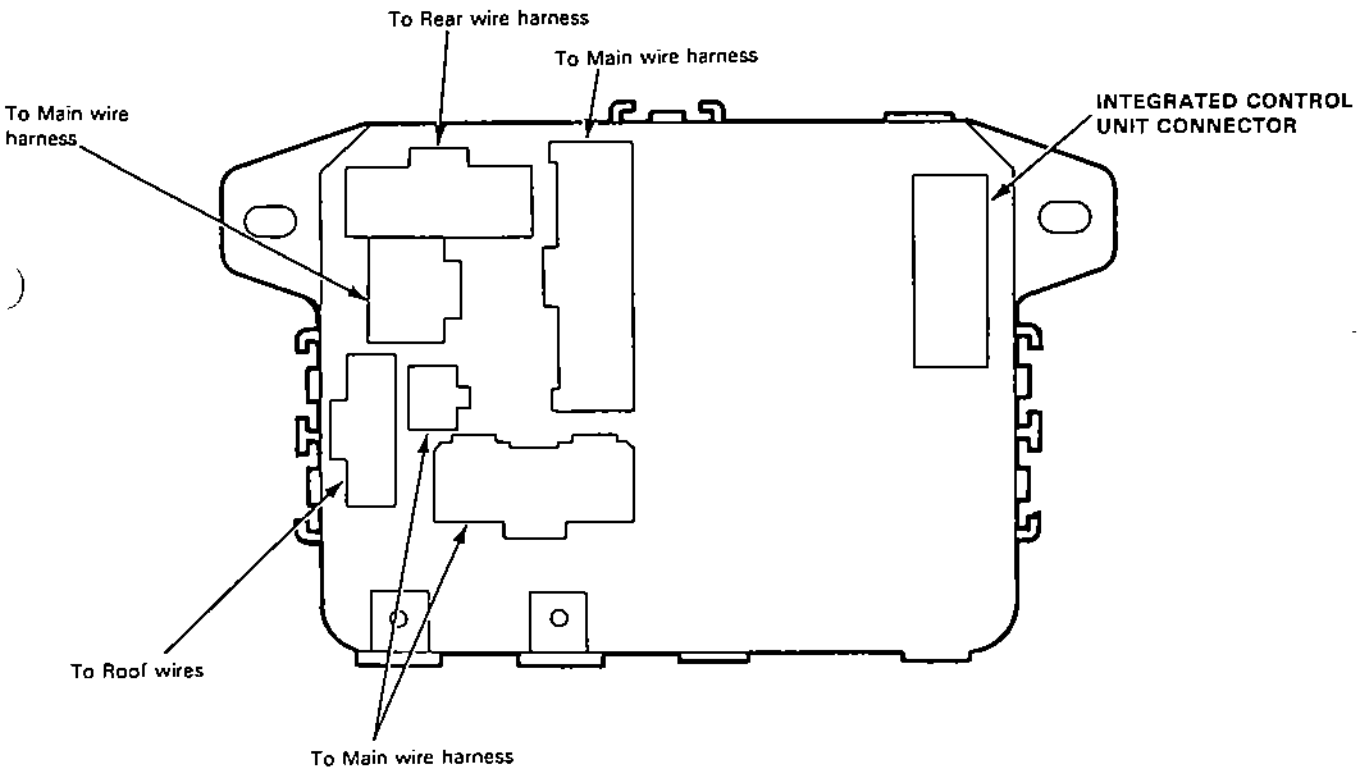
Fuses

Dash Fuse Box (RHD)

NOTE: Dash fuse box is located right side, under dash.

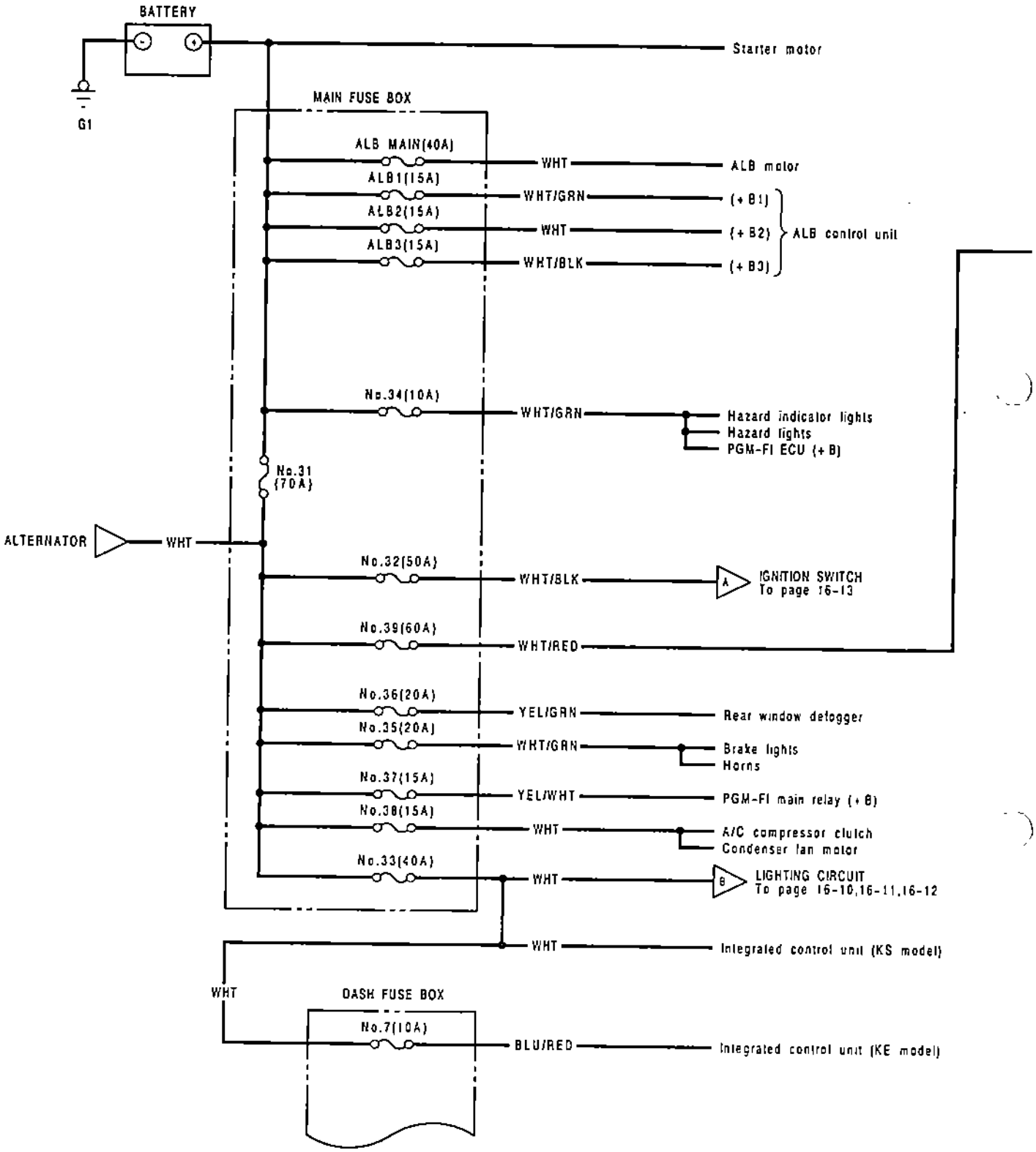


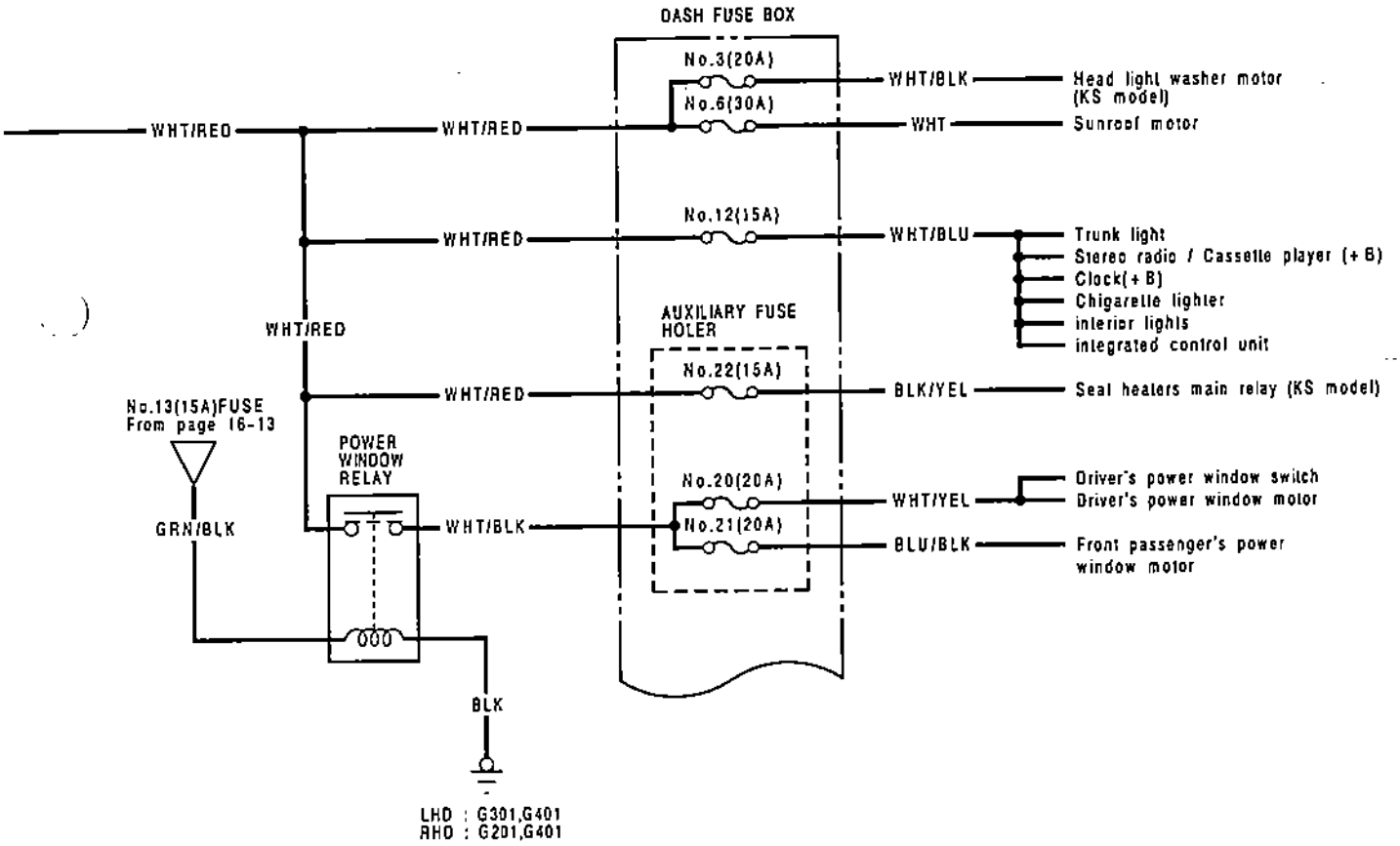
*: SPAER FUSE
●: Not used
No.19(30 A)FUSE : Blower motor
No.20(20 A)FUSE : Driver's power window
No.21(20 A)FUSE : Front passenger's power window


To Rear wire harness
To Main wire harness
To Main wire harness
INTEGRATED CONTROL UNIT CONNECTOR
To Roof wires
To Main wire harness

Power Distribution

Circuit Identification



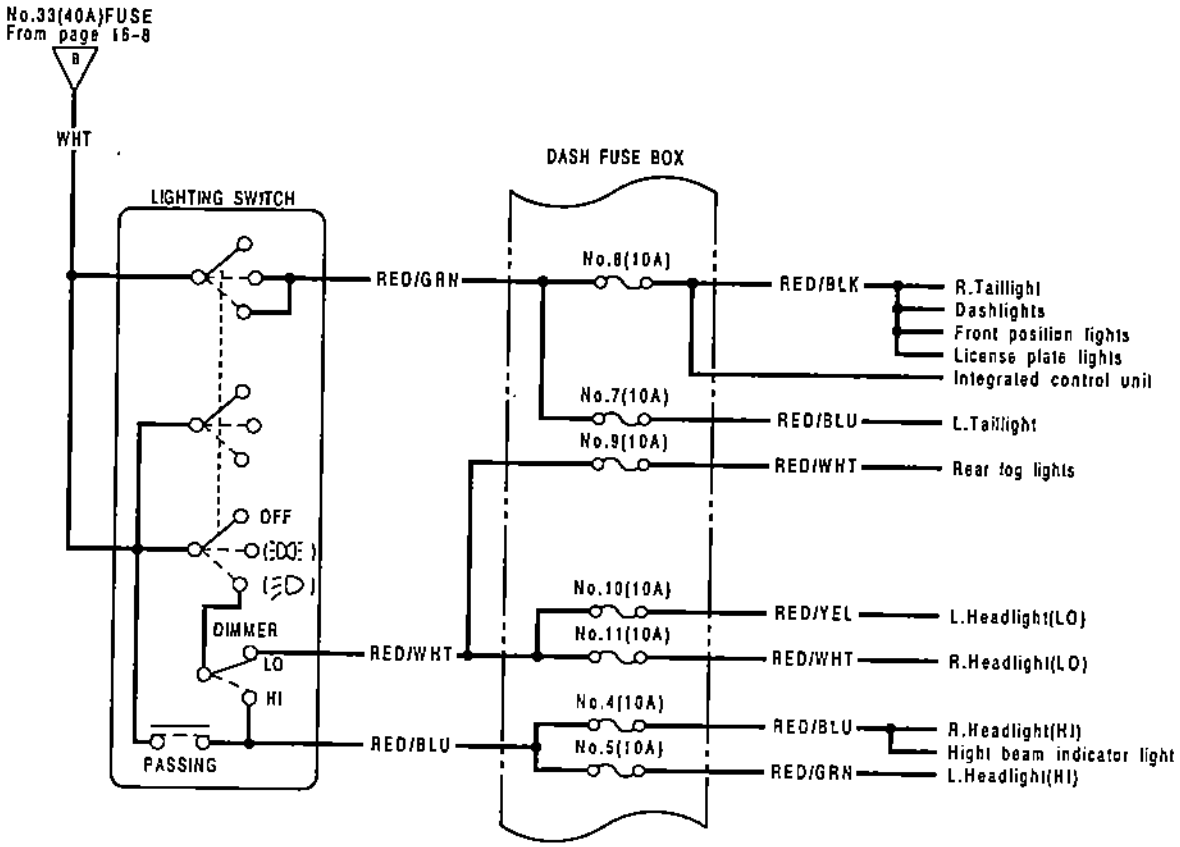

DASH FUSE BOX
No.3(20A)
No.6(30A)
WHT/BLK
Head light washer motor (KS model)
WHT
Sunroof motor
WHT/RED
WHT/RED
No.12(15A)
WHT/BLU
Trunk light
Stereo radio / Cassette player (+B)
Clock(+B)
Chigarette lighter
interior lights
integrated control unit
AUXILIARY FUSE HOLER
No.22(15A)
BLK/YEL
Seat heaters main relay (KS model)
No.13(15A)FUSE
From page 16-13
POWER WINDOW RELAY
No.20(20A)
WHT/YEL
Driver's power window switch
Driver's power window motor
GRN/BLK
WHT/BLK
No.21(20A)
BLU/BLK
Front passenger's power window motor
BLK
LHD : G301,G401
RHD : G201,G401

(cont'd)

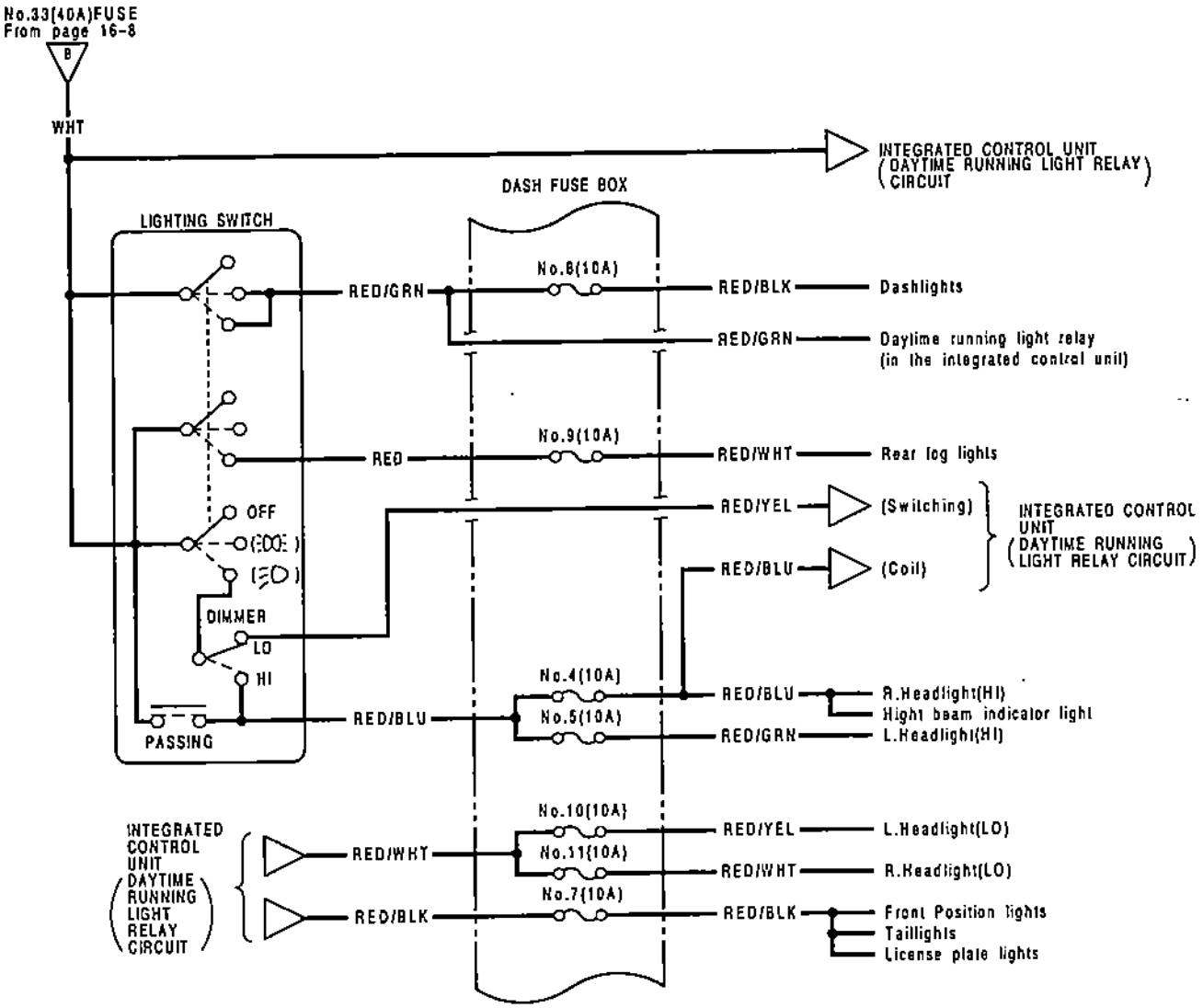
Power Distribution

Circuit Identification (cont'd)

Except KE ,KS model



KS model:

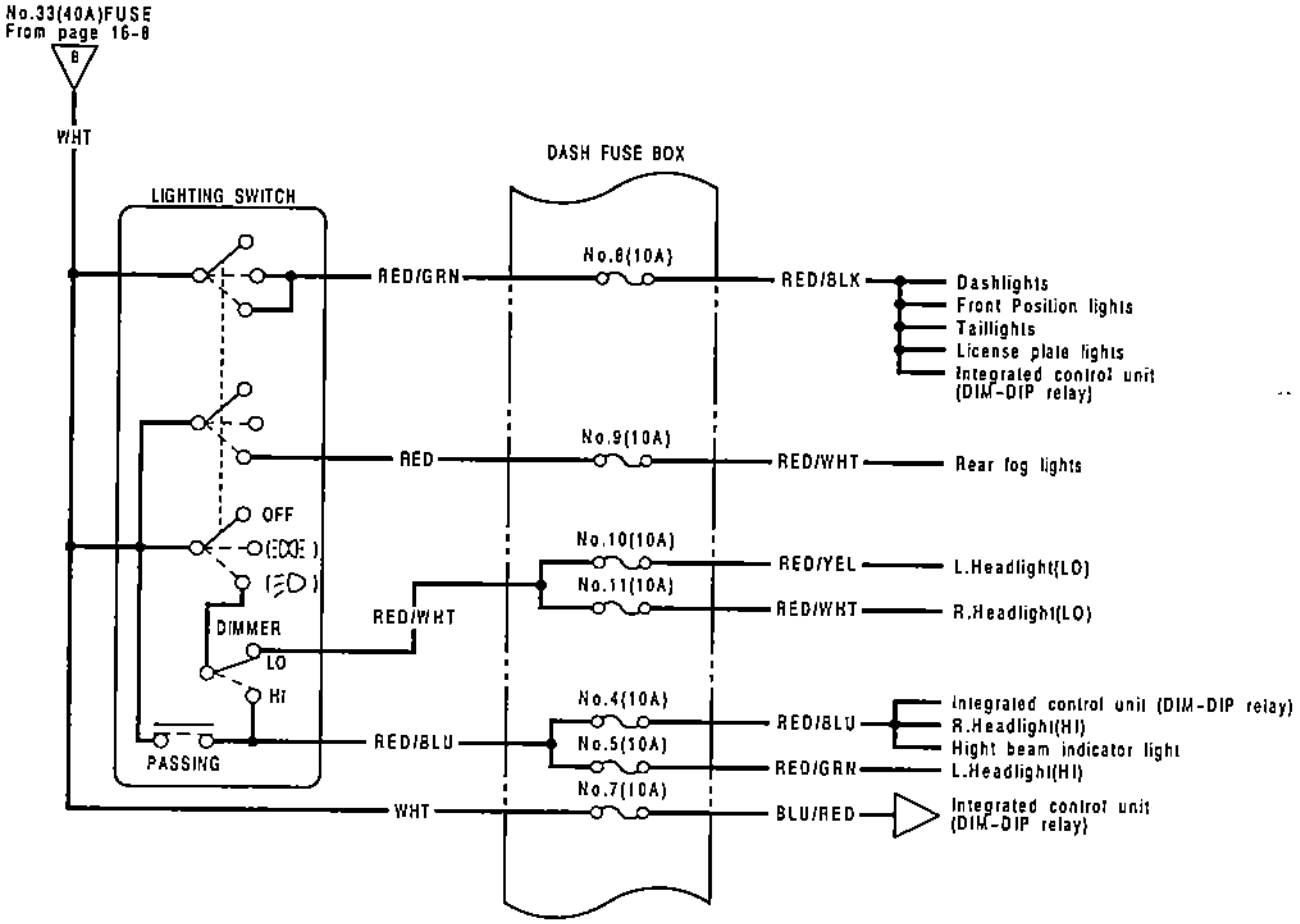


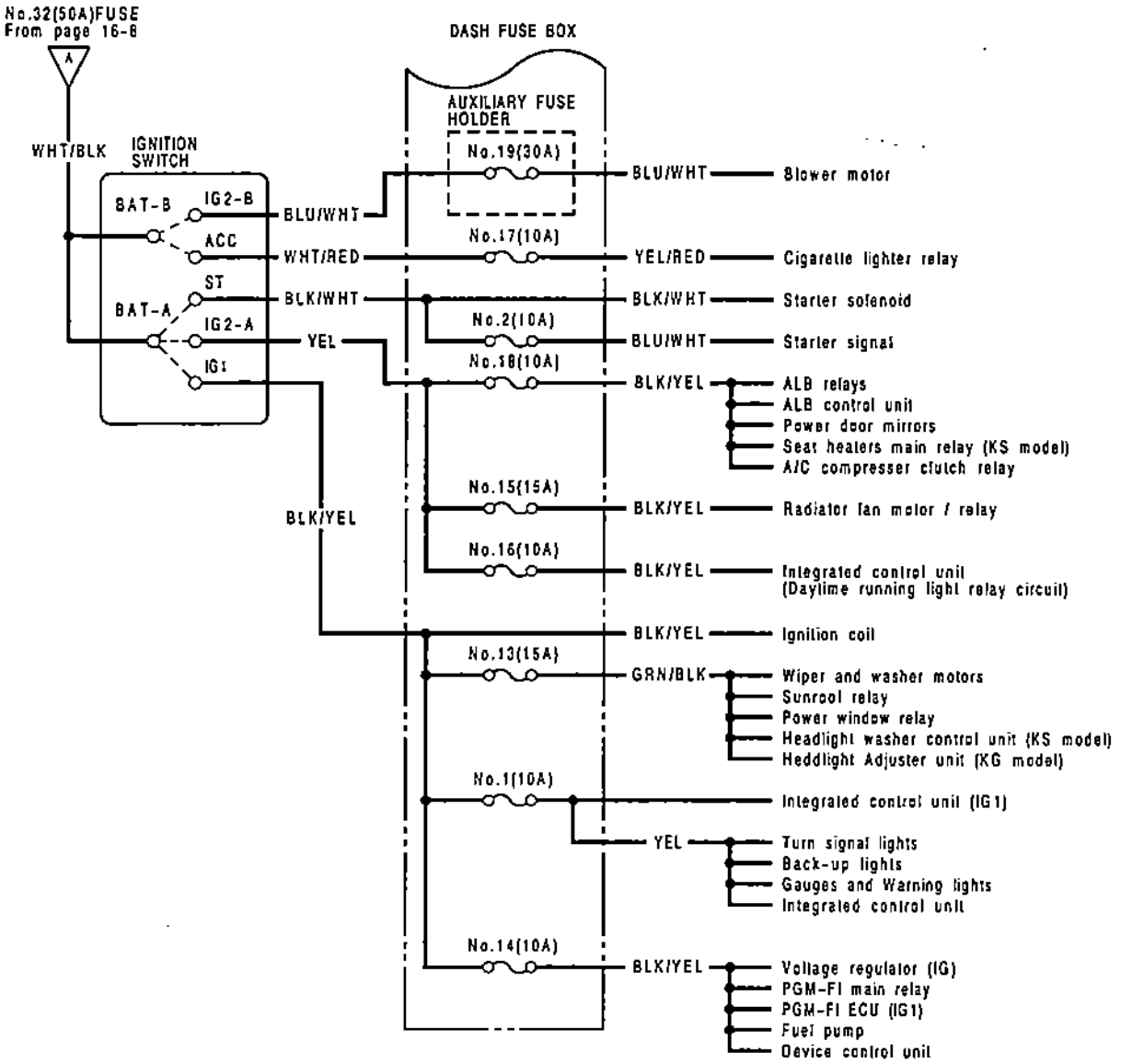
(cont'd)

Power Distribution

Circuit Identification (cont'd)

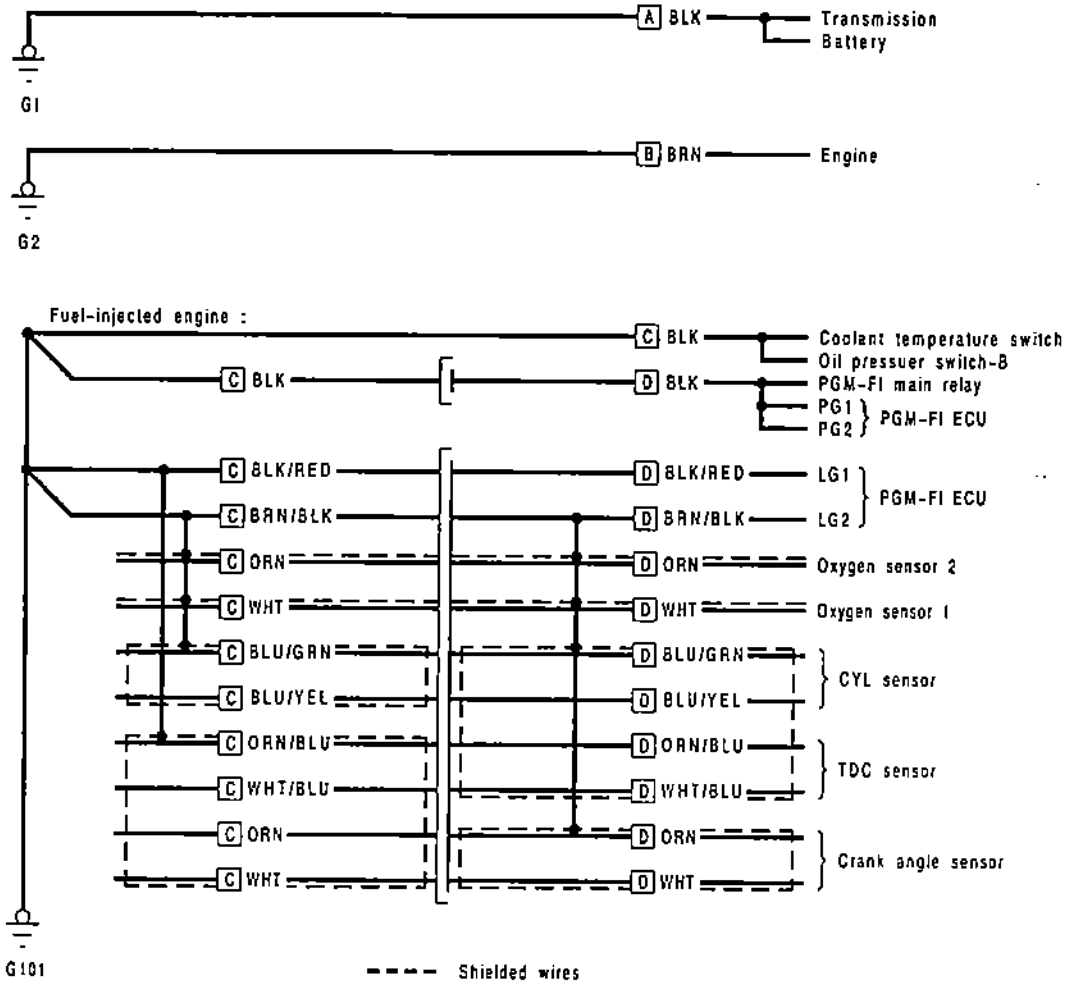
KE model




No.32(50A)FUSE
From page 16-6
A
WHT/BLK
IGNITION SWITCH
BAT-B
IG2-B
ACC
BAT-A
ST
IG2-A
IG1
BLU/WHT
WHT/RED
BLK/WHT
YEL
BLK/YEL
DASH FUSE BOX
AUXILIARY FUSE HOLDER
No.19(30A)
No.17(10A)
No.2(10A)
No.18(10A)
No.15(15A)
No.16(10A)
No.13(15A)
No.1(10A)
No.14(10A)
BLU/WHT
YEL/RED
BLK/WHT
BLU/WHT
BLK/YEL
BLK/YEL
BLK/YEL
GRN/BLK
YEL
BLK/YEL
Blower motor
Cigarette lighter relay
Starter solenoid
Starter signal
ALB relays
ALB control unit
Power door mirrors
Seat heaters main relay (KS model)
A/C compresser clutch relay
Radiator fan motor / relay
Integrated control unit (Daytime running light relay circuit)
Ignition coil
Wiper and washer motors
Sunroof relay
Power window relay
Headlight washer control unit (KS model)
Heddlight Adjuster unit (KG model)
Integrated control unit (IG1)
Turn signal lights
Back-up lights
Gauges and Warning lights
Integrated control unit
Voltage regulator (IG)
PGM-FI main relay
PGM-FI ECU (IG1)
Fuel pump
Device control unit

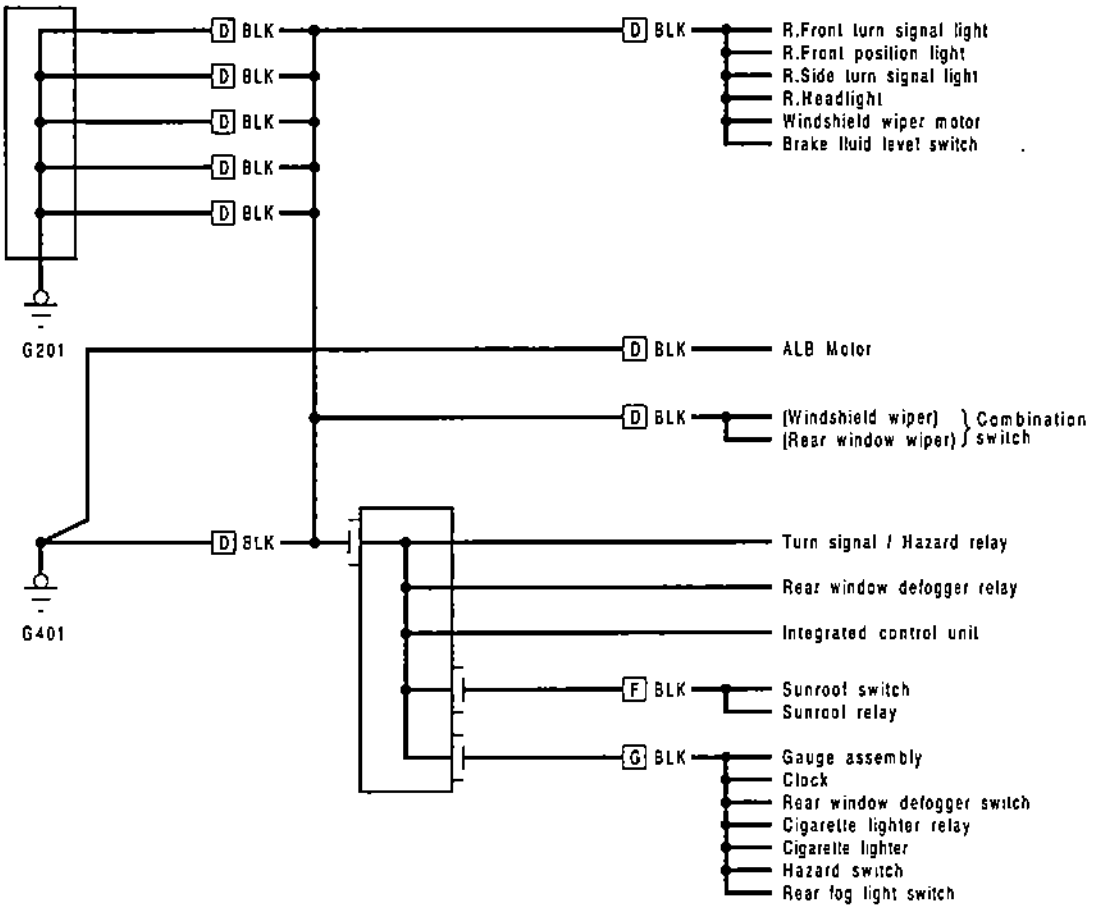
Ground Distribution

Circuit Identification



A : Battery ground wire
B : Engin ground wire
C : Engine wire harness
D : Main wire harness

RHD :



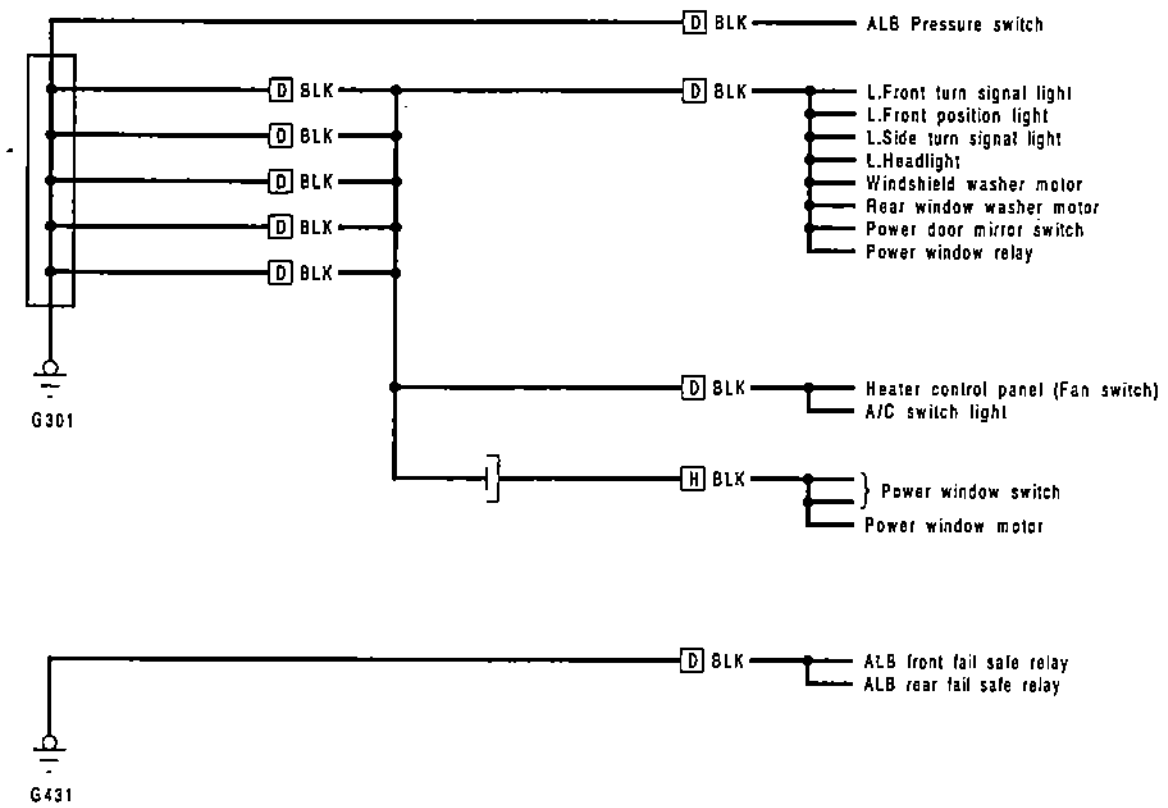
C : Engine wire harness
D : Main wire harness
E : Front Passenger's door wire harness
F : Roof wires
G : Dashboard wire harness
J : Rear wire harness

(cont'd)

Ground Distribution

Circuit Identification (cont'd)

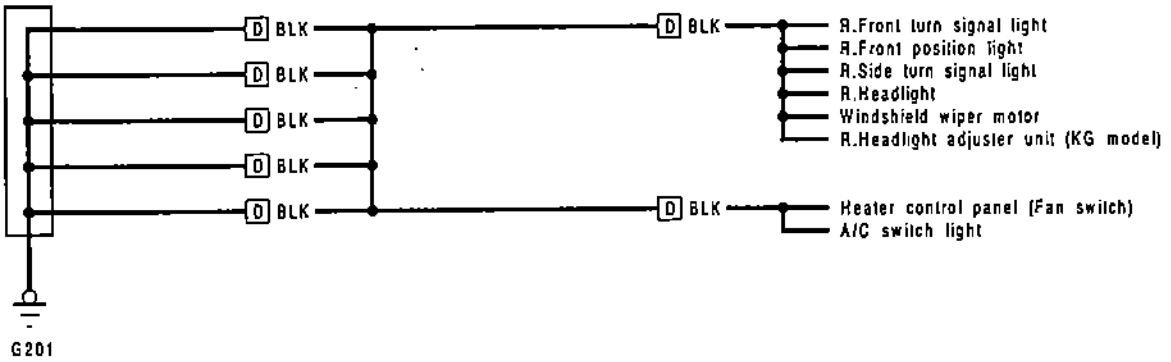
RHD :



(Located left side, on the kick panel)

D : Main wire harness
H : Driver's door wire harness

LHD :



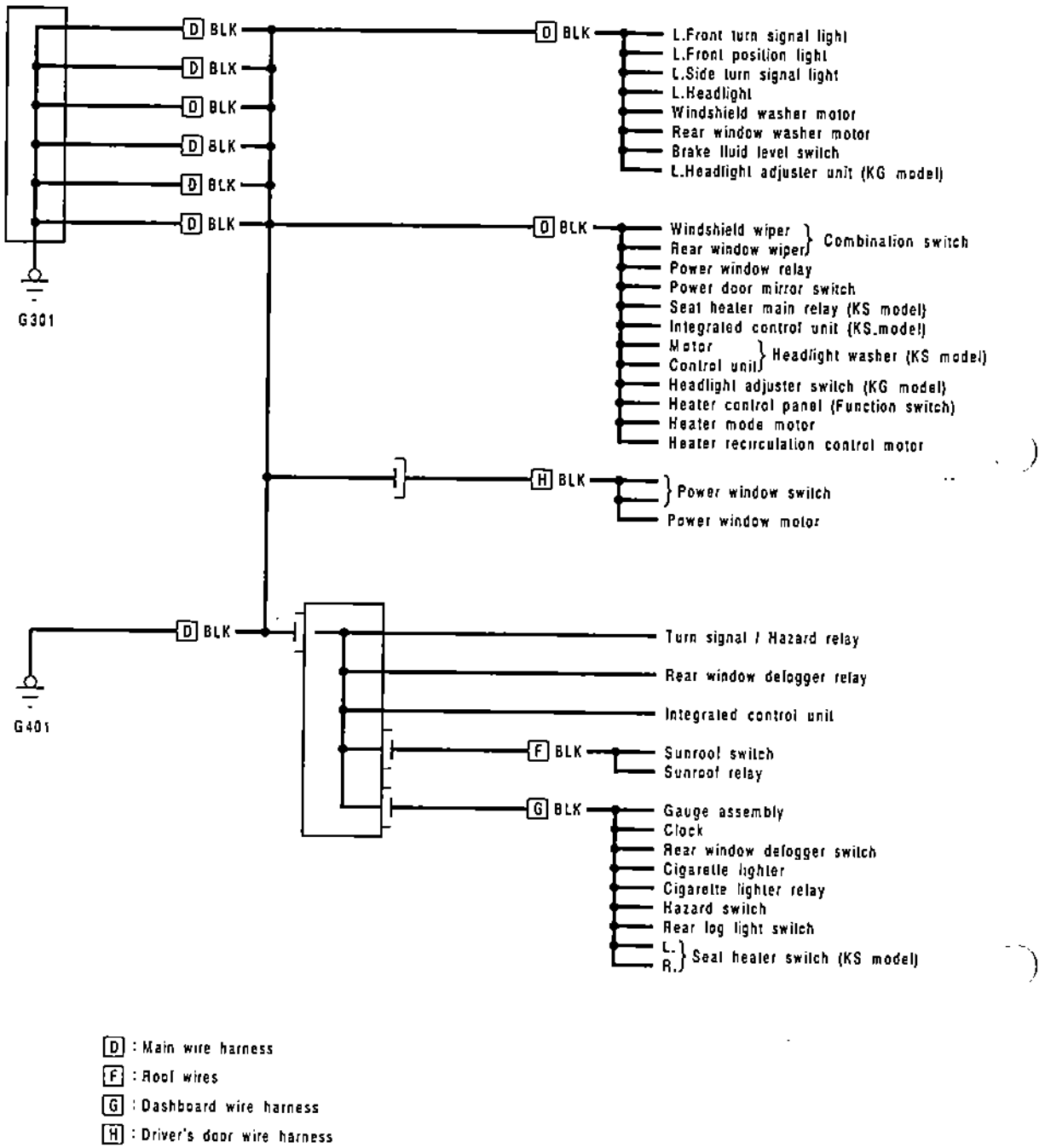
D : Main wire harness

(cont'd)

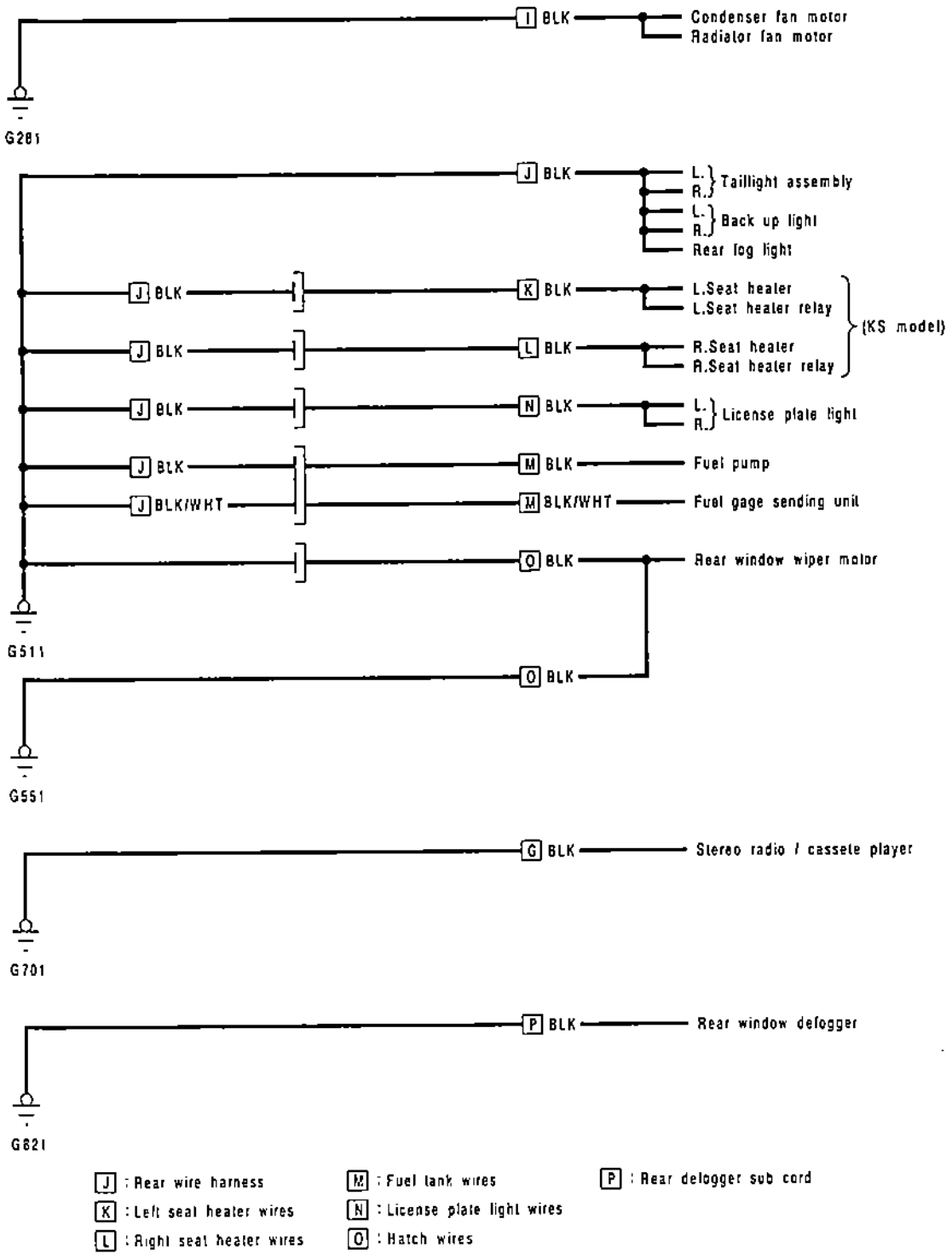
Ground Distribution

Circuit Identification (cont'd)

LHD :

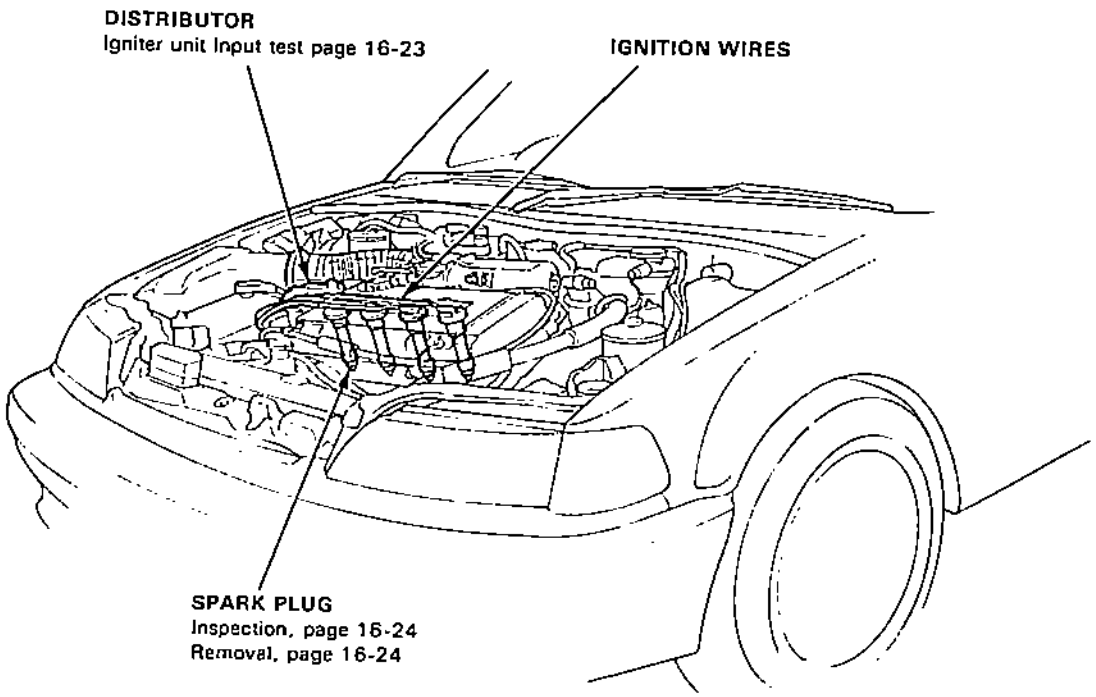


D : Main wire harness
F : Roof wires
G : Dashboard wire harness
H : Driver's door wire harness

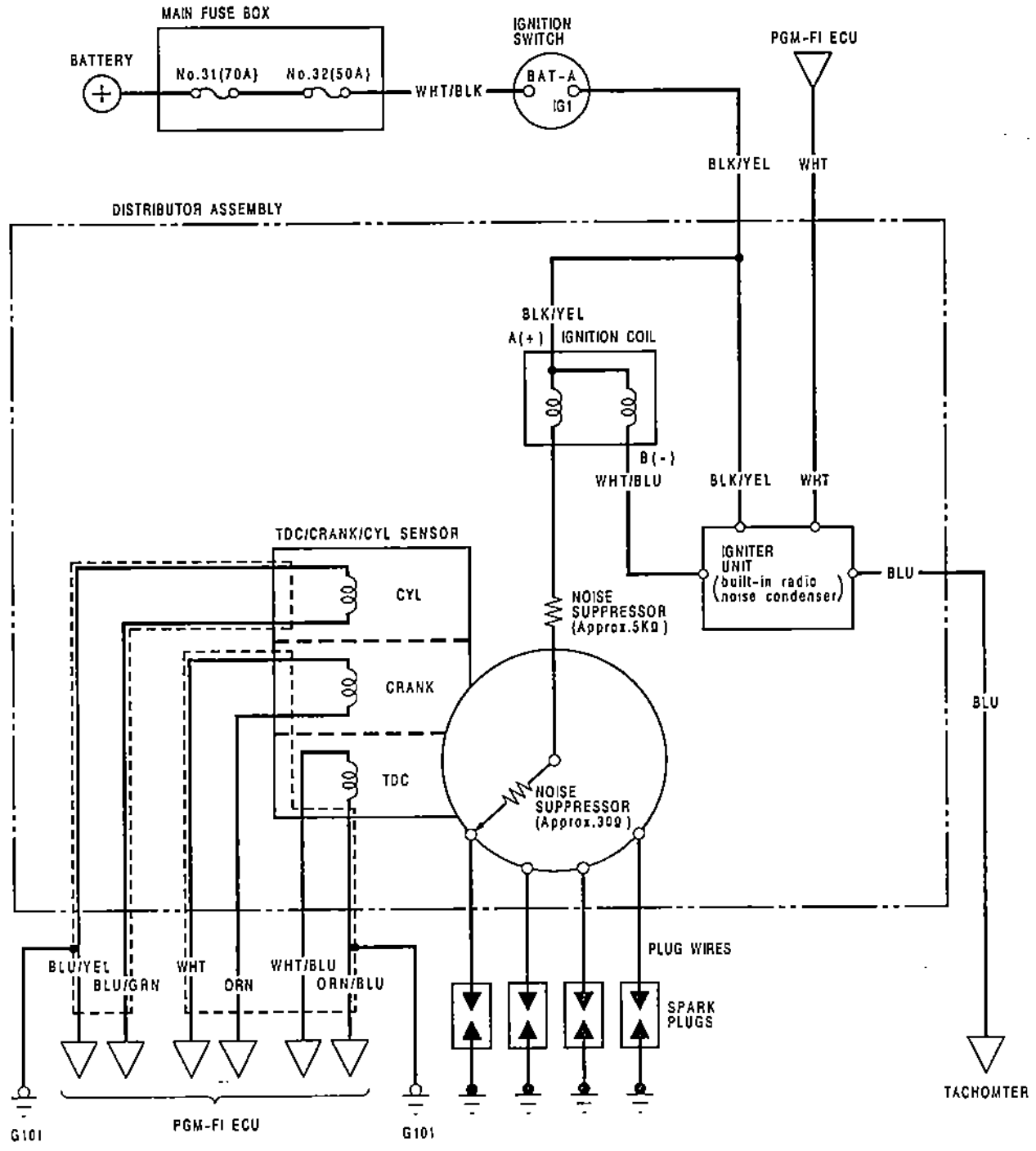

I BLK
Condenser fan motor
Radiator fan motor
G201
J BLK
L.
R.
Taillight assembly
L.
R.
Back up light
Rear fog light
J BLK
K BLK
L.Seat heater
L.Seat heater relay
(KS model)
J BLK
L BLK
R.Seat heater
R.Seat heater relay
J BLK
N BLK
L.
R.
License plate light
J BLK
M BLK
Fuel pump
J BLK/WHT
M BLK/WHT
Fuel gage sending unit
O BLK
Rear window wiper motor
G511
O BLK
G551
G BLK
Stereo radio / cassete player
G701
P BLK
Rear window defogger
G621
J : Rear wire harness
K : Left seat heater wires
L : Right seat heater wires
M : Fuel tank wires
N : License plate light wires
O : Hatch wires
P : Rear delogger sub cord

Component Location Index

IGNITION TIMING CONTROL SYSTEM
Inspection and Setting, page 16-22

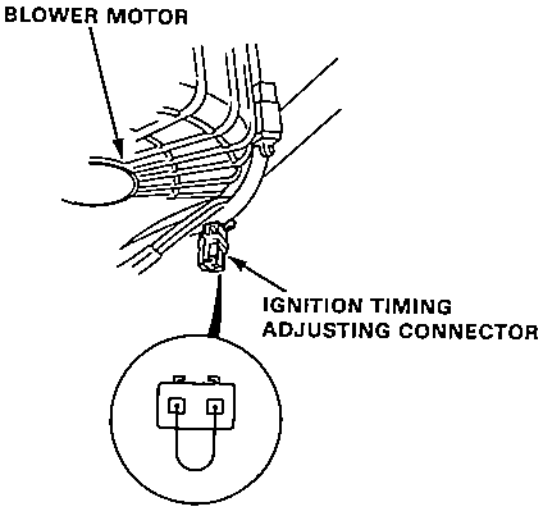


Circuit Diagram

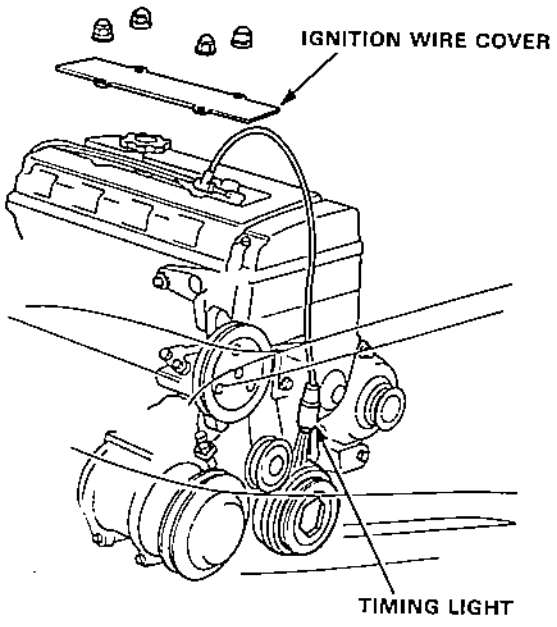


Ignition Timing Inspection and Setting

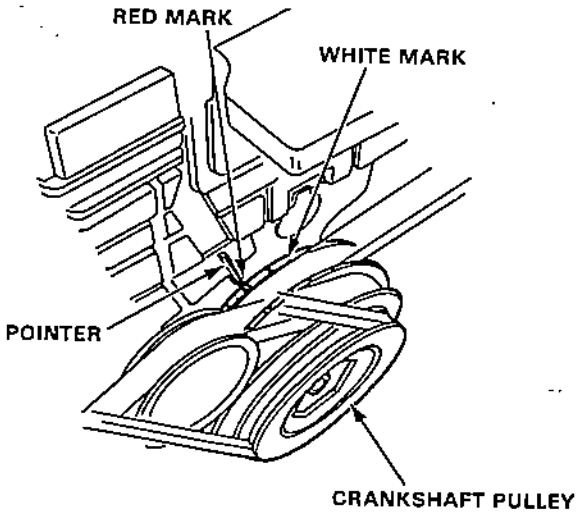
1. Start the engine and allow it to warm up (cooling fan comes on).
2. Connect the BRN and GRN/WHT terminals of the ignition timing adjusting connector (BLU) with a jumper wire.
   NOTE: L.H. drive type shown, R.H. drive type is symmetrical to L.H. drive type.



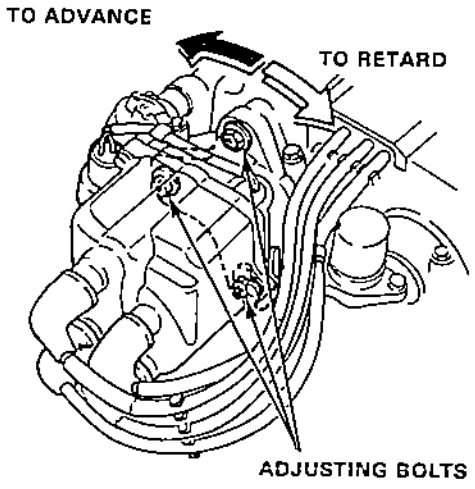
3. Remove the ignition wire cover. Then connect a timing light to the No. 1 ignition wire; while the engine idles, point the light toward the pointer on the timing belt cover.
   NOTE: Do not damage the cover when removing the nuts.



4. Adjust ignition timing, if necessary, to the following specifications:
   Ignition Timing:
   15° ± 2° BTDC (RED) at 750 ± 50 min^{-1} (rpm) in neutral



5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counter clockwise to advance the timing, or clockwise to retard the timing.

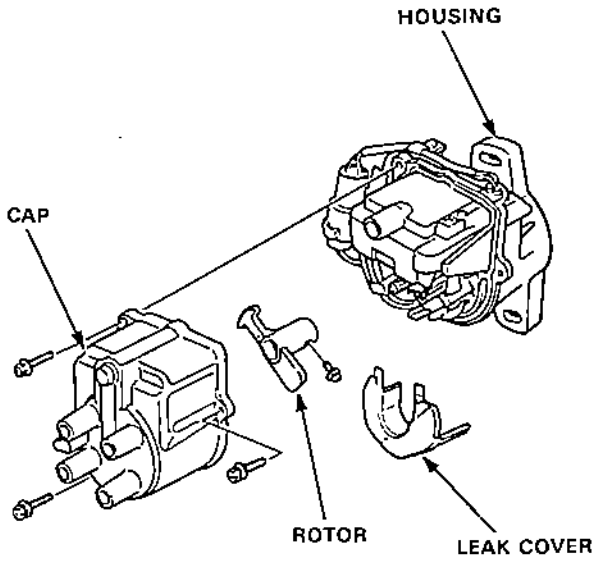


6. Tighten the adjusting bolts recheck the timing.
7. Remove the jumper wire from the ignition timing adjusting connector (BLU).

Igniter Unit Input Test

NOTE:
- See section 6 when the selt-diagnostic indicator blinks.
- Perform an input test for the igniter unit after finishing the fundamental tests for the ignition system and fuel emission system.
- The tachometer should operate normally.

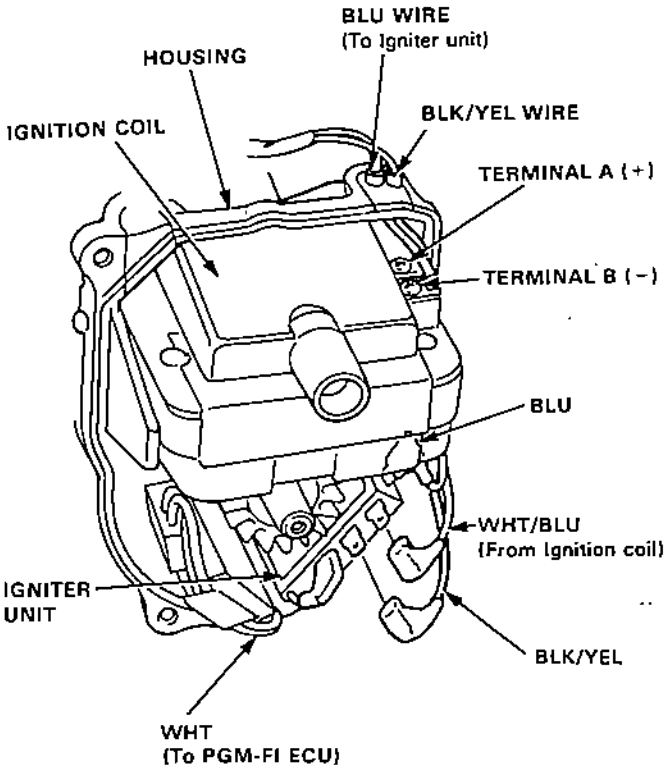
1. Remove the distributor cap.
2. Remove the roter and reak cover.



3. With the ignition switch on, there should be battery voltage between the terminal (+) and body ground.

   - If there is battery voltage, go to step4.
   - If there is no voltage, check for;
     – An open in the WHT wire or BLK/YEL wire.
     – Disconnected terminals.

4. Disconnect the BLK/YEL wire from the igniter unit. There should be battery voltage between the BLK/YEL (+) wire and body ground.
   - If there is battery voltage, go to step 5.
   - If there is no voltage, check for an open in the BLK/YEL wire between the ignition coil and igniter unit.



5. Disconnect the WHT/BLU wire from the Igniter unit. There should be battery voltage between the WHT/BLU (+) wire and body ground.

   - If there is battery voltage, go to step 6.
   - If there is no voltage, check for;
     – Ignition coil test.
     – An open in the WHT/BLU wire between the ignition coil and igniter unit.
     – Disconnected terminals.

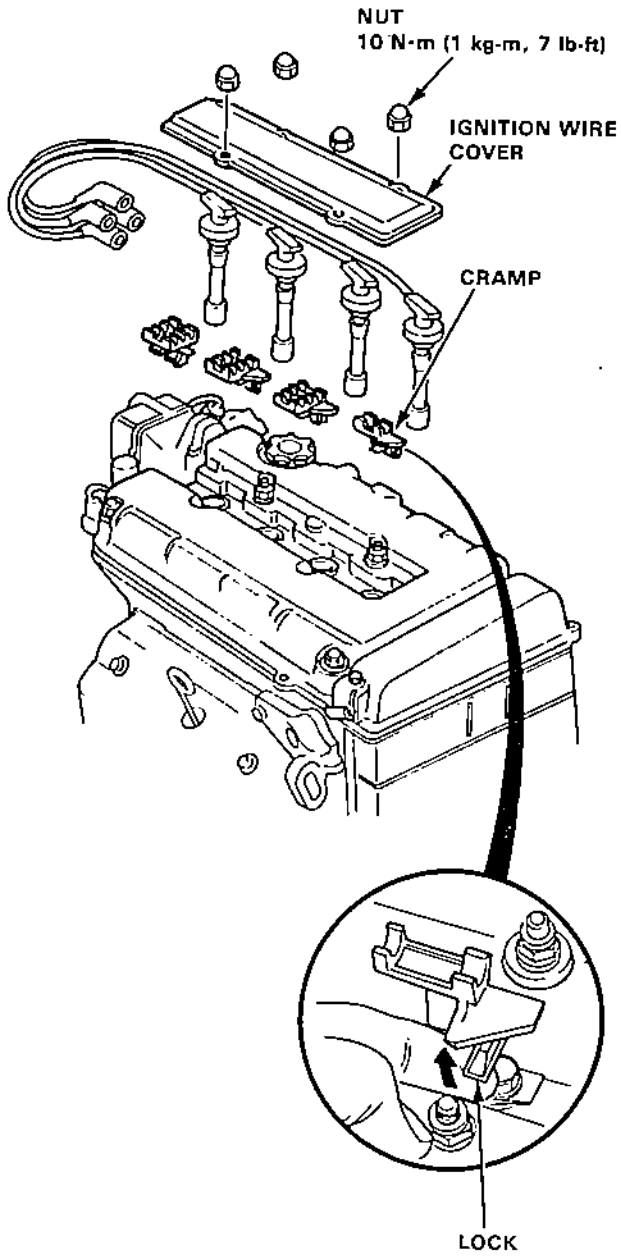
6. Check for continuity between the igniter body and distributor housing.

7. If all tests ok, yet the system still fails to work, replace the igniter unit assembly.

Spark Plug Removal

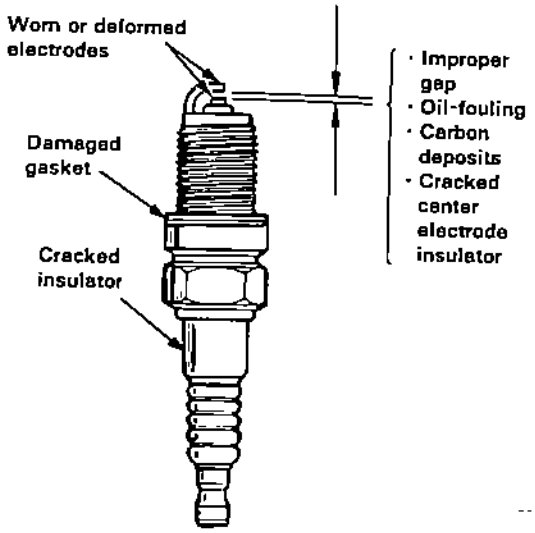
NOTE: Do not damage the cover when removing the nuts.

1. Remove the Ignition wire cover, then remove the ignition wire and cramp from the cylinder head.
2. Remove the spark plug.



Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for :



Burned or worn electrodes may be caused by :
- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

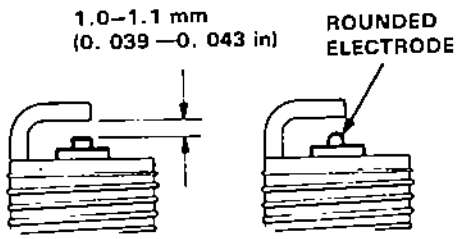
Fouled plug may be caused by :
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below.

Spark Plug :

Standard
BKR6E-N11 (NGK)
K20PR-L11 (ND)

Optional
BKR7E-N11 (NGK)
K22PR-L11 (ND)



3. Adjust the gap with a suitable gapping tool.

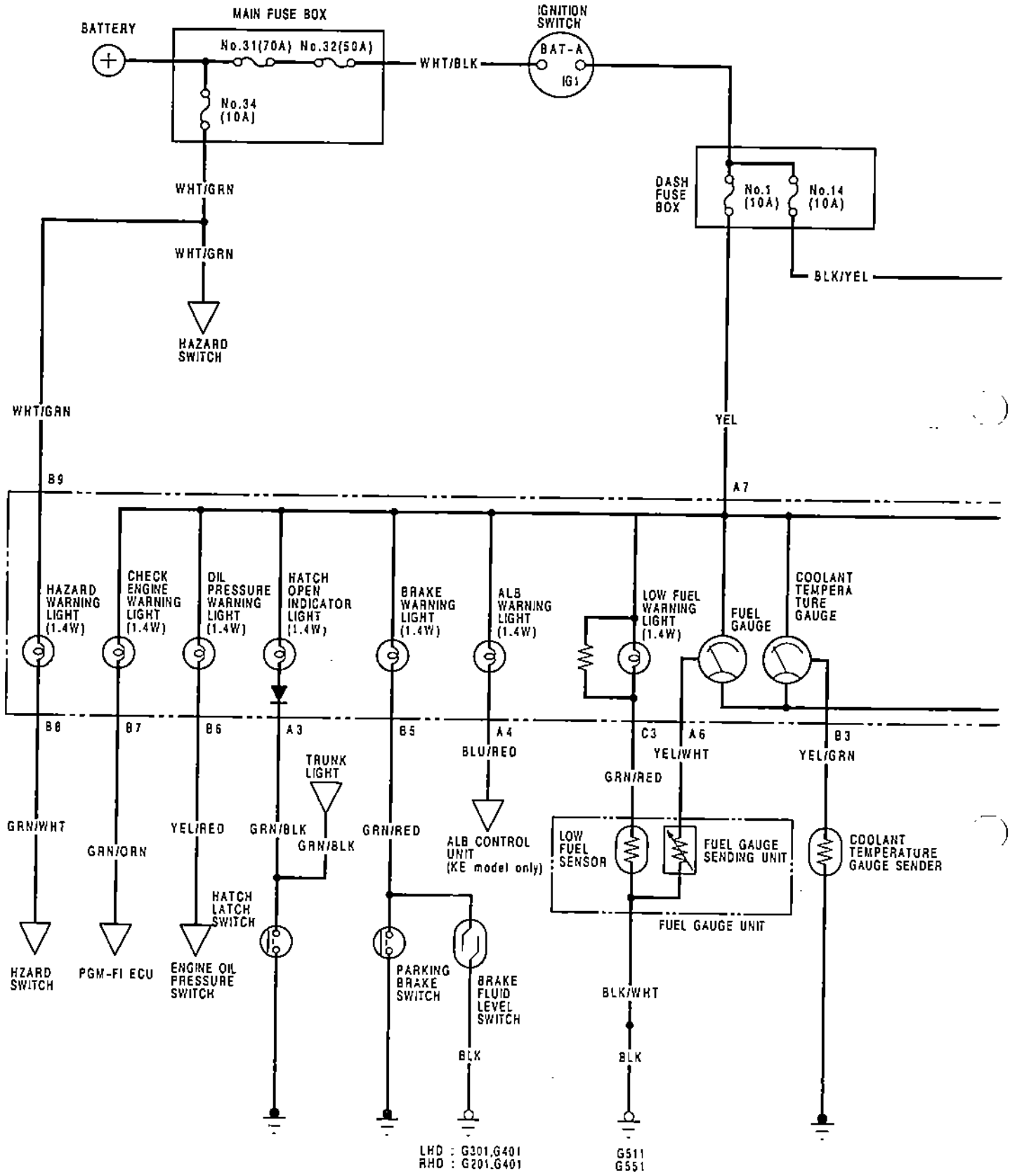
   Electrode Gap: 1.0—1.1 mm (0.039—0.043 in)

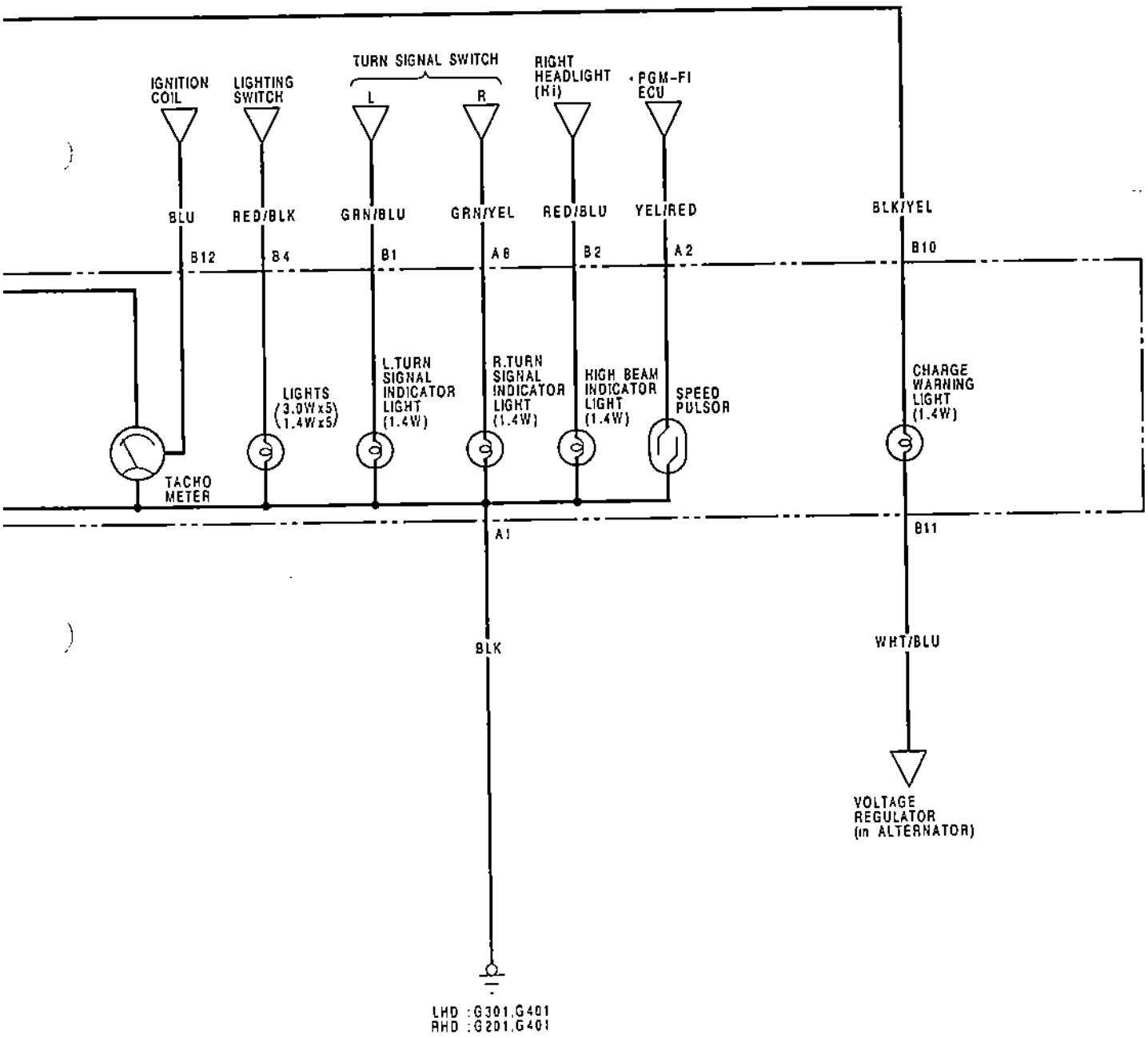
4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft) .

   NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Gauge Assembly

Circuit Diagram

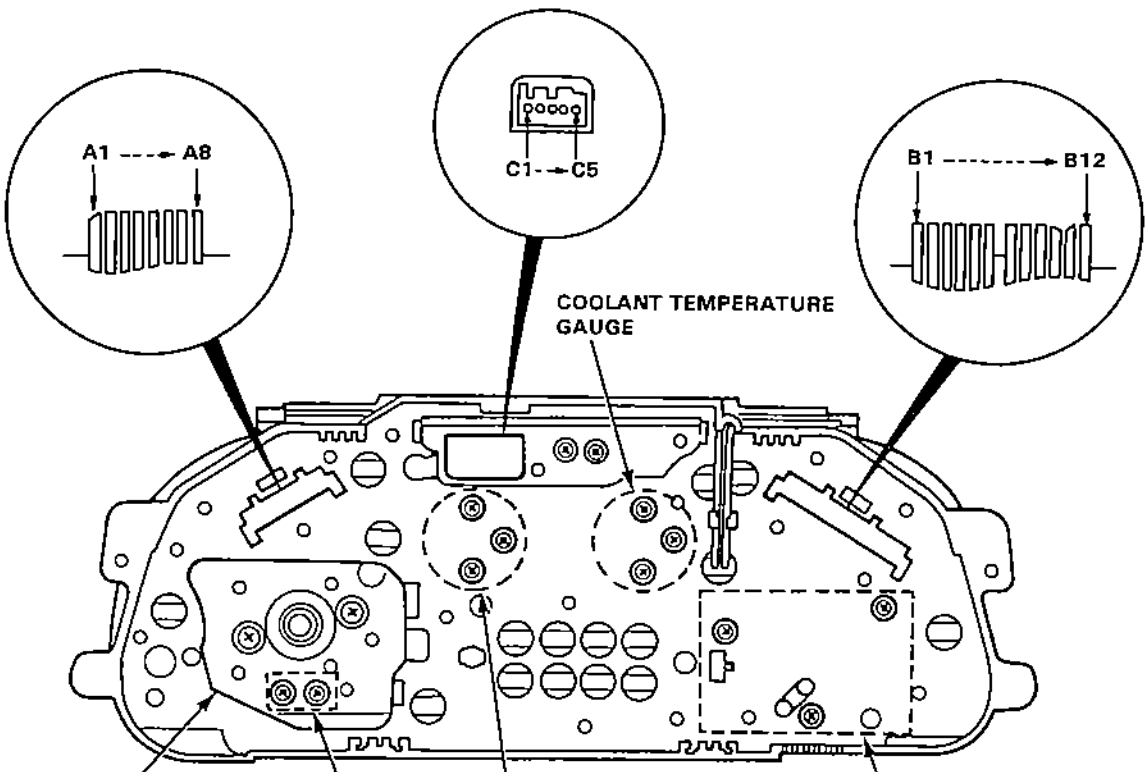



IGNITION COIL
LIGHTING SWITCH
TURN SIGNAL SWITCH
L
R
RIGHT HEADLIGHT (Hi)
PGM-FI ECU
BLU
RED/BLK
GRN/BLU
GRN/YEL
RED/BLU
YEL/RED
BLK/YEL
B12
B4
B1
A6
B2
A2
B10
TACHO METER
LIGHTS (3.0W x5) (1.4W x5)
L.TURN SIGNAL INDICATOR LIGHT (1.4W)
R.TURN SIGNAL INDICATOR LIGHT (1.4W)
HIGH BEAM INDICATOR LIGHT (1.4W)
SPEED PULSOR
CHARGE WARNING LIGHT (1.4W)
A1
B11
BLK
WHT/BLU
VOLTAGE REGULATOR (in ALTERNATOR)
LHD :G301,G401
RHD :G201,G401

Gauge Assembly

Gauge/Indcator Location Index

· Gauge Assembly
Disassembly, page 16-30

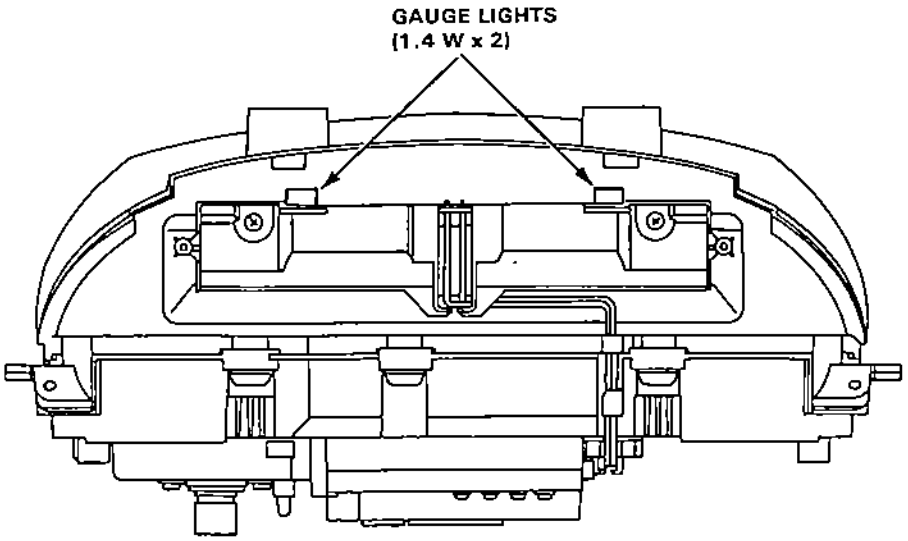


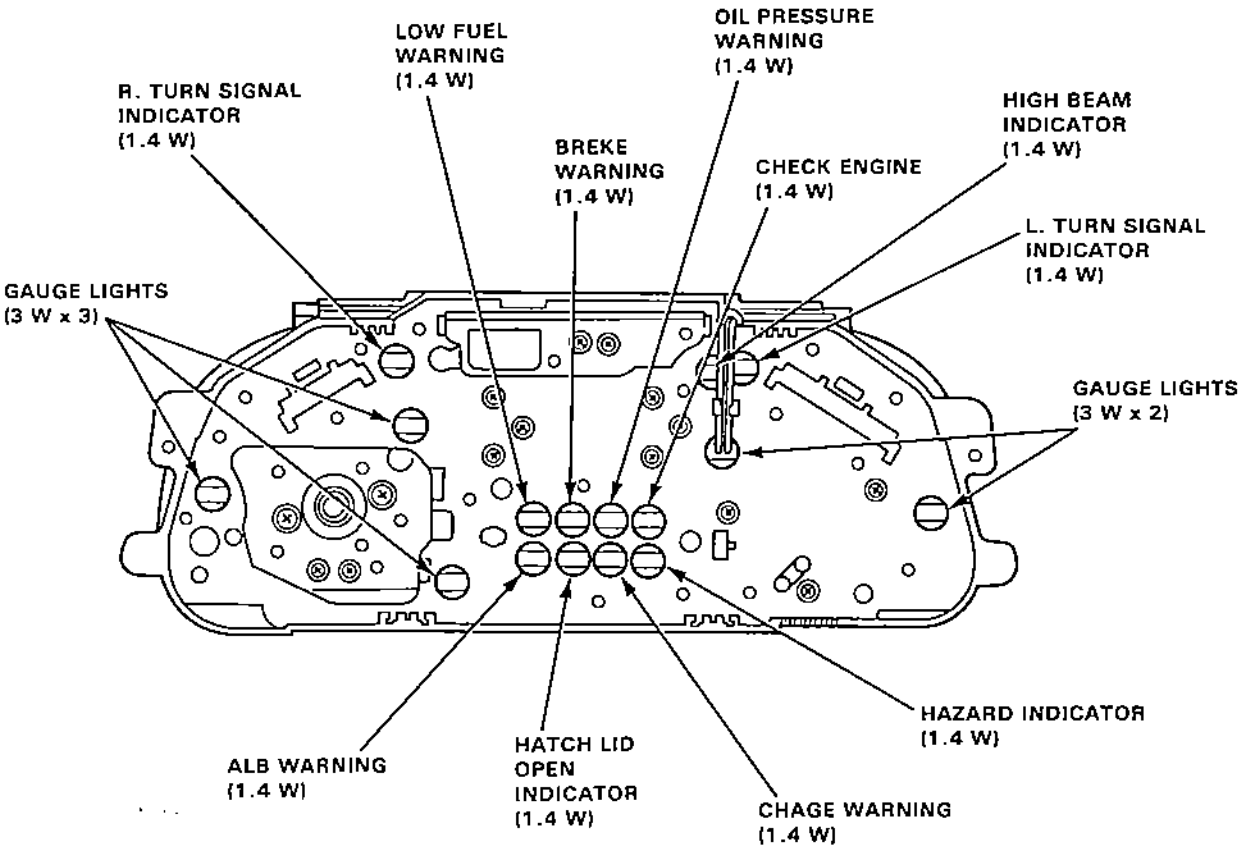
SPEEDMETER
Indicates 60 km/h [mph] at 637 [1,026] min^{-1} (rpm) of the speedometer cable.

SPEED PULSER
Outputs 4 pulses per speedometer cable revolution

TACHOMETER
Indicates 100 min^{-1} (rpm) 200 pulses per minute of the igniter unit.

Bulb Locations



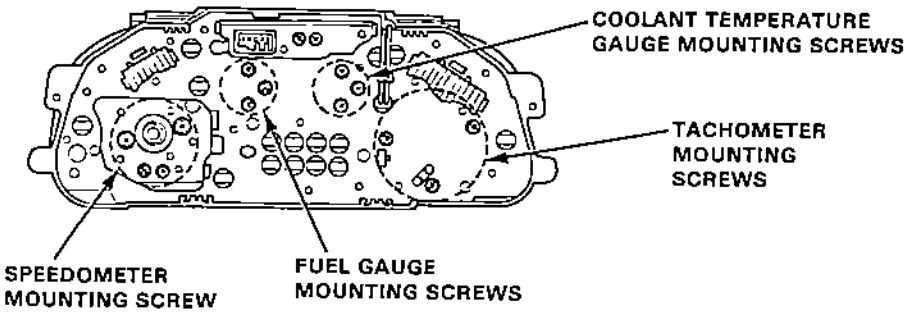


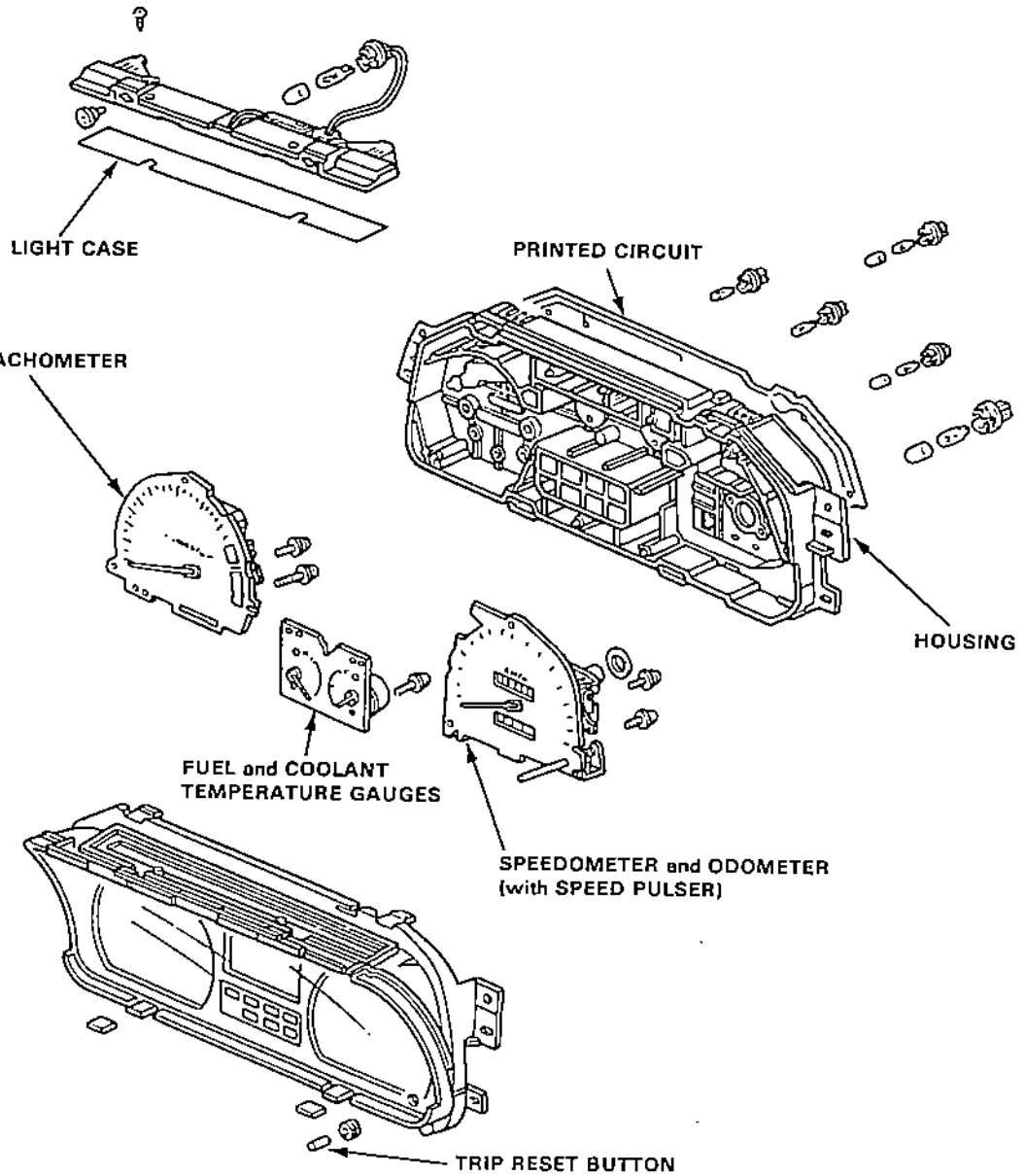
Gauge Assembly

Disassembly

NOTE:

- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is show below.





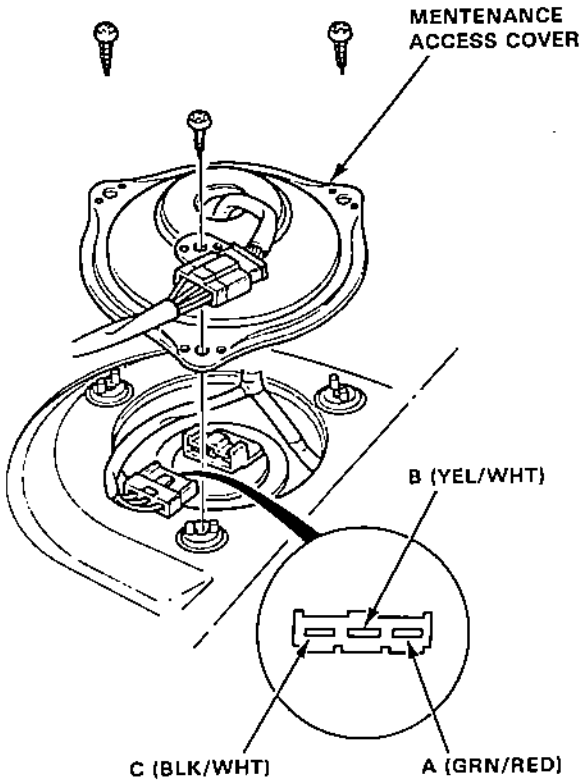
Fuel Gauge

Gauge Test

NOTE:
- Refer to page 16-26 for wiring description of the fuel gauge circuit.
- Check the No. 1 (10 A) fuse in the dash fuse box before testing.

1. Remove the rear seat, then remove the maintenance access cover.

2. Disconnect the 3-P connector from the fuel gauge sending unit.



View from wire side

3. Connect the voltmeter positive probe to the B (YEL/WHT) terminal and the negative probe to the C (BLK/WHT) terminal. Then turn the ignition switch ON. There should be between 5 and 8 V.

   - If the voltage is as specified, go to step 4.

   - If the voltage is not as specified, check for:
     — An open in the YEL/WHT or BLK/WHT wire.
     — Poor ground (G 511, G 551).
     — Defective fuel gauge assembly.

4. Turn the ignition switch OFF. Attach a jumper wire between the B (YEL/WHT) and C (BLK/WHT) terminals.

5. Turn the ignition switch ON.
   Check that the pointer of the fuel gauge starts moving toward "F" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "F" mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F" mark may cause damage to the fuel gauge.

NOTE: The fuel gauge is a bobbin (cross coil) type, heuce the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

- If the pointer of the fuel gauge does not swing at all, replace the gauge.

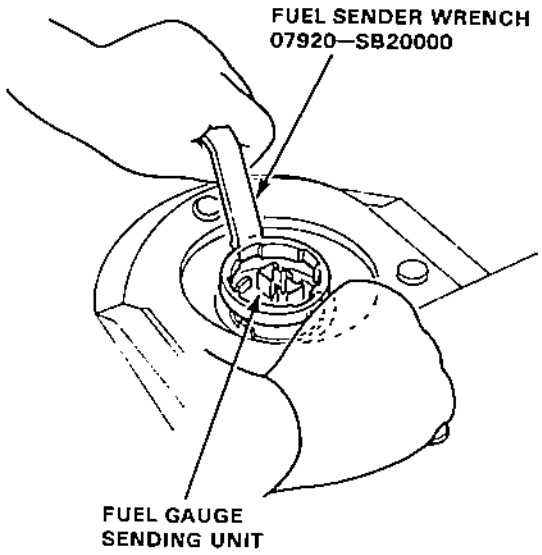
- Inspect the fuel gauge sending unit if the gauge is OK.

Fuel Gauge

Sending Unit Test

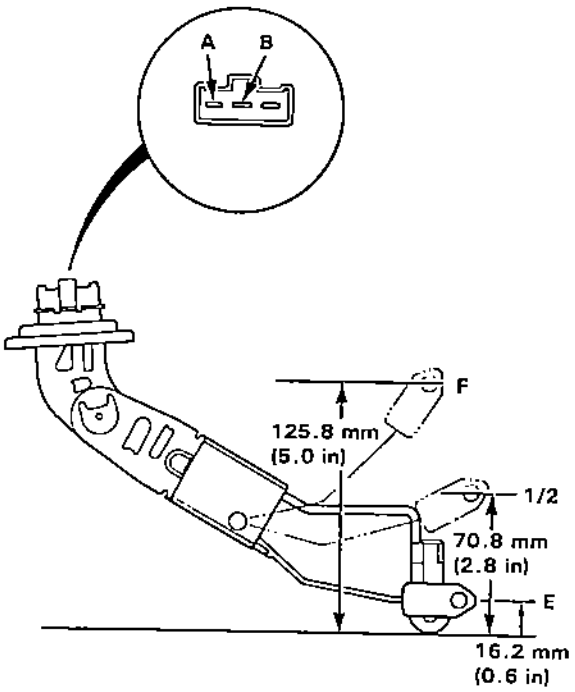
⚠WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

1. Remove the rear seat, them remove the maintenance access cover.
2. Check that the ignition switch OFF, then disconnect the 3-P connector from the fuel gauge sending unit.
3. Remove the fuel gauge sending unit.



4. Measure the resistance between the A and B terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance (Ω)	105—109	27.5—37.5	2—5



5. If unable to obtain the above readings, replace the fuel gauge sending unit.

Low Fuel Warning System

Warning Light Test

NOTE: Refer to page 16-26 for wiring description of the low fuel warning circuit.

1. Park car on level ground.

   ⚠WARNING Do not smoke while working on fuel system. Keep open flame away from work area. Drain fuel only into an approved container.

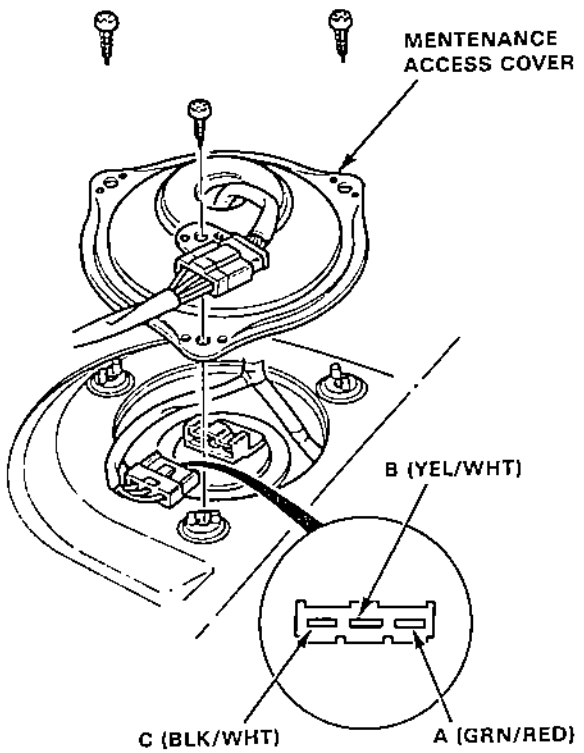
2. Drain fuel tank into an approved container. Then install the drain bolt with a new washer.

3. Add less than 6.5 ℓ (1.7 U.S. Gal, 1.4 Imp. Gal) of fuel and turn the ignition switch on. The low fuel warning light should come on within 3 minutes.

4. Then add one more gallon of fuel [approx. 4 ℓ (1.1 U.S. Gal, 0.9 Imp. Gal)]. The light should go out within 3 minutes.

- If the warning light did not come on in step 3, remove the maintenance access cover and disconnect the 3-P connector from the fuel gauge sending unit. Connect the A (GRN/RED) terminal to the C (BLK/WHT) terminal with a jumper wire.

  — If the light comes on, the problem is either the sending unit or its ground.
  — If the light does not come on, the problem is an open in the GRN/RED wire to the gauge assembly, no power to the gauge or bad bulb.



View from wire side

Wiring Diagrams

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- Hazard Lights 6
- Headlights 3
- License Plate Lights 3
- Marker Lights, Front 3
- Taillights 3
- Turn Signal Lights 6

Lights, Interior
- Room Light 6
- Trunk Light 6

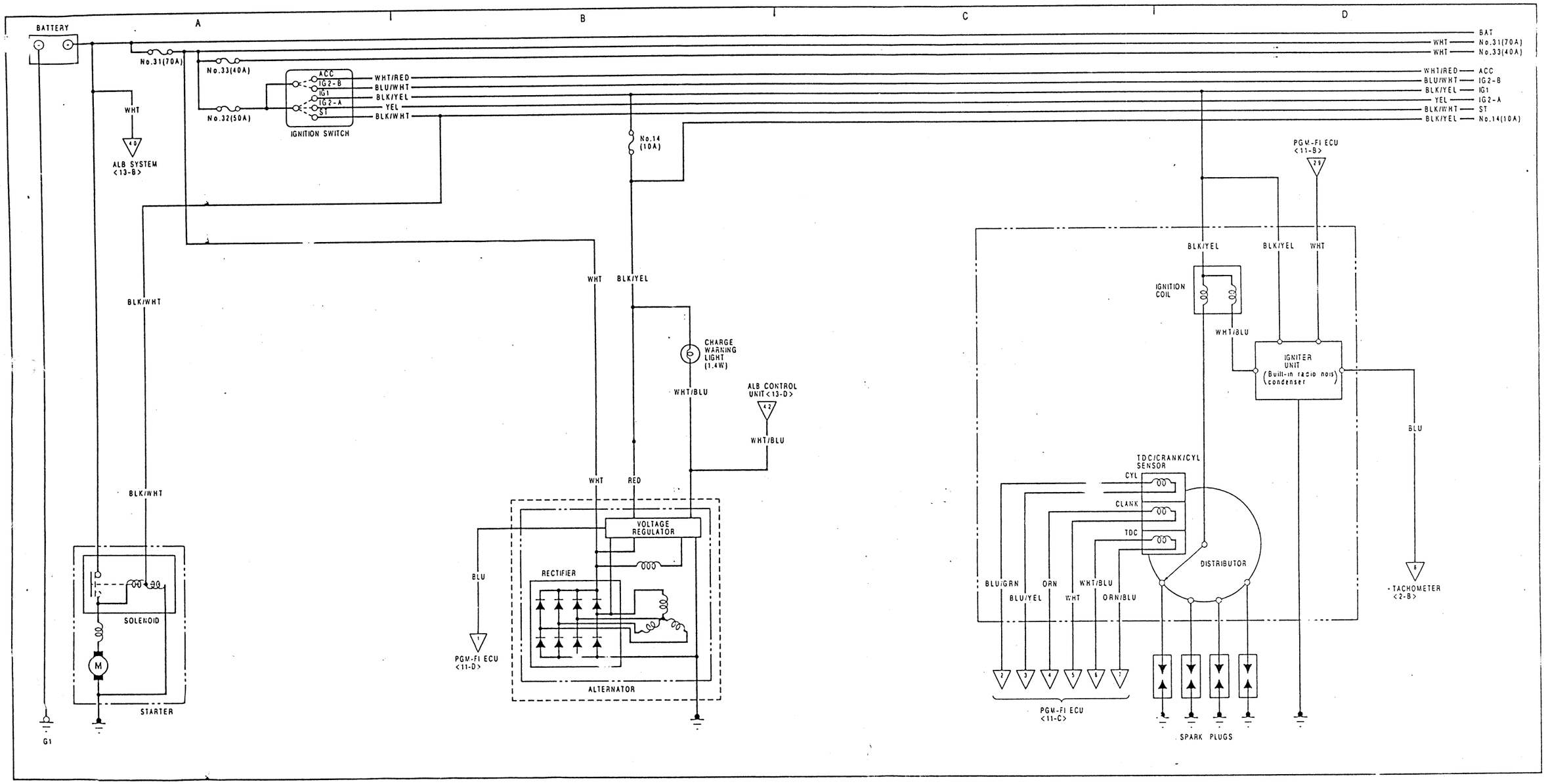
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Mirrors, Power 7
Seat Heaters 9
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Stereo Sound System 7
Sunroof 7
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- Flasher System 6

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BATTERY
A
B
C
D
BAT
WHT — No.31(70A)
WHT — No.33(40A)
WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT — ST
BLK/YEL — No.14(10A)
No.31(70A)
No.33(40A)
No.32(50A)
ACC
IG2-B
IG1
IG2-A
ST
IGNITION SWITCH
WHT
4 0
ALB SYSTEM <13-B>
No.14 (10A)
PGM-FI ECU <11-B>
28
BLK/YEL
BLK/YEL
WHT
IGNITION COIL
WHT/BLU
IGNITER UNIT (Built-in radio noise condenser)
BLU
BLK/WHT
WHT
BLK/YEL
CHARGE WARNING LIGHT (1.4W)
WHT/BLU
ALB CONTROL UNIT <13-D>
4 2
WHT/BLU
TDC/CRANK/CYL SENSOR
CYL
CRANK
TDC
DISTRIBUTOR
BLU/GRN
BLU/YEL
ORN
WHT
WHT/BLU
ORN/BLU
2
3
4
5
6
7
PGM-FI ECU <11-C>
SPARK PLUGS
6
TACHOMETER <2-B>
WHT
RED
VOLTAGE REGULATOR
RECTIFIER
BLU
1
PGM-FI ECU <11-D>
ALTERNATOR
BLK/WHT
SOLENOID
M
STARTER
G1

A B C D

BAT
No.31(70A) — WHT
No.33(40A) — WHT

ACC — WHT/RED
IG2-B — BLU/WHT
IG1 — BLK/YEL
IG2-A — YEL
ST — BLK/WHT
No.14(10A) — BLK/YEL

BAT
WHT — No.31(70A)
WHT — No.33(40A)
WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT — ST
BLK/YEL — No.14(10A)
YEL — No.1(10A)

No.15 (15A)

No.1 (10A)

(Without A/C) (With A/C)

BLK/YEL BLK/YEL BLK/YEL

FAN RELAY

RADIATOR FAN MOTOR

RADIATOR FAN MOTOR

BLU

A/C DIODE <12-B>,<12-C>

YEL/GRN YEL/GRN

COOLANT TEMPERATURE SWITCH (90°C ON)

COOLANT TEMPERATURE SWITCH (90°C ON)

BLK BLK BLK

G101 G101 G281

YEL

43

* ALB WARNING LIGHT <13-C>

IGNITION COIL <1-D>

8

LIGHTING SWITCH <3-C> <4-C> <5-C>

17

YEL BLU RED/BLK

GAUGE ASSEMBLY

LOW FUEL WARNING LIGHT (1.4W)

FUEL GAUGE

COOLANT TEMPERATURE GAUGE

TACHO-METER

GAUGE LIGHT (3.0W×5) (1.4W×5)

BRAKE WARNING LIGHT (1.4W)

HATCH OPEN INDICATOR LIGHT (1.4W)

OIL PRESSURE WARNING LIGHT (1.4W)

GRN/RED YEL/WHT FUEL GAUGE UNIT YEL/GRN BLK GRN/RED GRN/BLK YEL/RED

LOW FUEL SENSOR

FUEL GAUGE SENDING UNIT

BLK/WHT

BLK

COOLANT TEMPERATURE GAUGE SENSOR

G511,G551

LED : G301,G401
RHD : G201,G401

GRN/RED GRN/RED GRN/RED

1E

ALB CONTROL UNIT <13-D>

PARKING BRAKE SWITCH

BRAKE FLUID LEVEL SWITCH

BLK

12

TRUNK LATCH SWITCH <6-A>

ENGINE OIL PRESSURE SWITCH

LHD : G331,G401
RHD : G231,G401

WINDSHIELD WIPER/WASHER SWITCH <9-C>

21 22

LIGHTING SWITCH <3-C> <4-C> <5-C>

19

GRN BLU/WHT RED/BLK

INTEGRATED CONTROL UNIT

BEEPER

INTERMITTENT WIPER RELAY

LIGHT ON WARNING CIRCUIT

BLU/WHT BLK GRN/BLU GRN/RED

13

WINDSHIELD WIPER MOTOR <9-C>

DRIVER'S DOOR SWITCH

14

PASSENGER'S DOOR SWITCH <6-A>

LED : G301,G401
RHD : G201,G401

A B C D

BAT
No.31(70A) — WHT
No.33(40A) — WHT

ACC — WHT/RED
IG2-B — BLU/WHT
IG1 — BLK/YEL
IG2-A — YEL
ST — BLK/WHT
No.14(10A) — BLK/YEL
No.1(10A) — YEL

<KG, KF and KK models>

BAT
WHT — No.31(70A)
WHT — No.33(40A)

WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT — ST
BLK/YEL — No.14(10A)
YEL — No.1(10A)

WHT

COMBINATION SW
PASSING SW
DIMMER SW
HI
LO
OFF
LIGHTING SW

RED/BLU
RED/WHT
RED/WHT
RED/GRN

No.5 (10A)
No.10 (10A)
No.11 (10A)
No.4 (10A)
No.9 (10A)
No.E (10A)
No.7 (10A)

RED/BLU
RED/BLK

RED/GRN
RED/YEL
RED/WHT
RED/BLU
RED/BLU

L. HEADLIGHT
HI (60W)
LO (55W)
R. HEADLIGHT
LO (55W)
HI (60W)
HIGH BEAM INDICATOR LIGHT (1.4W)

BLK
BLK
BLK
BLK
BLK
BLK
BLK

G301, G401
G201
G401

RED/BLK
17
- REAR WINDOW DEFFOGGER SW <7-C>
- GAUGE LIGHTS <2-B>
- A/C SW LIGHT <12-A>

RED/BLK
18
- CLOCK <6-B>
- RADIO <7-A>
- LIGHT-ON WARNING CIRCUIT <2-D>

RED/BLK
RED/BLK
RED/BLK
RED/BLK
RED/BLU
RED/BLK
RED/BLK

L. FRONT MARKER LIGHT(5W)
R. FRONT MARKER LIGHT(5W)
L. TAILLIGHT (5W)
R. TAILLIGHT (5W)
LICENSE PLATE LIGHTS (5W x 2)

BLK
BLK
BLK
BLK
BLK

G301, G401
G201
G511

RED/WHT
REAR FOG LIGHT SW
RED/BLK
INDICATOR LIGHT (1.4W)
LIGHT (0.84W)
REAR FOG LIGHTS (21W x 2)

RED/YEL
BLK
BLK
BLK
BLK

G301, G401

3

A B C D

BAT
No.31(70A) — WHT
No.33(40A) — WHT
ACC — WHT/RED
IG2-B — BLU/WHT
IG1 — BLK/YEL
IG2-A — YEL
ST — BLK/WHT
No.14(10A) — BLK/YEL
No.1(10A) — YEL

<KS model>

COMBINATION SWITCH
PASSING SWITCH
DIMMER SWITCH
LIGHTING SWITCH
HI
LO
OFF

No.16 (10A)

DAYTIME RUNNING LIGHT RELAY (in the INTEGRATED CONTROL UNIT)

RED/BLK
RED
BLK/YEL
RED/BLU
RED/YEL
RED/GRN
RED/WHT

No.10 (10A)
No.5 (10A)
No.4 (10A)
No.8 (10A)
No.11 (10A)

L HEADLIGHT
LO (55W)
HI (60W)
HIGH BEAM INDICATOR LIGHT (1.4W)
R HEADLIGHT
HI (60W)
LO (55W)

BLK

G301,G401
G301,G401
G201
G301,G401

17
- REAR WINDOW DEFFOGGER SWITCH LIGHT<7-C>
- HEATER CONTROL PANEL LIGHTS<13-A>
- GAUGE LIGHTS<2-B>
- A/C SWITCH LIGHT<12-A>
- HAZARD SWITCH<6-D>

18
- RADIO<7-A>
- CLOCK<6-B>
- LIGHT-ON WARNING CIRCUIT <2-D>

No.7 (10A)
No.9 (10A)

L FRONT MARKER LIGHT(5W)
R FRONT MARKER LIGHT(5W)
TAILLIGHTS (5W×4)
LICENSE PLATE LIGHTS (5W×2)

REAR FOG LIGHT SWITCH
INDICATOR LIGHT (0.84W)
LIGHT (0.84W)
REAR FOG LIGHT (21W)

G301,G401
G201
G511
G301,G401

A B C D

BAT
No.31(70A) — WHT
No.33(40A) — WHT

ACC — WHT/RED
IG2-B — BLU/WHT
IG1 — BLK/YEL
IG2-A — YEL
ST — BLK/WHT
No.14(10A) — BLK/YEL
No.1(10A) — YEL

<KE model>

BAT
WHT — No.31(70A)
WHT/RED — ACC
BLU/WHT — IG2-B
BLK/YEL — IG1
YEL — IG2-A
BLK/WHT — ST
BLK/YEL — No.14(10A)
YEL — No.1(10A)

WHT
No.7 (10A)

WHT WHT

COMBINATION SWITCH
PASSING SWITCH
DIMMER SWITCH
LIGHTING SWITCH
HI LO OFF

No.8 (10A)

RED/BLK BLU/RED YEL

RED/BLK
17
- REAR WINDOW DEFFOGGER SWITCH LIGHT<7-C>
- HEATER CONTROL PANEL LIGHTS<13-A>
- GAUGE LIGHTS<2-B>
- A/C SWITCH LIGHT<12-A>
- HAZARD SWITCH<6-D>

RED/BLK
18
- RADIO<7-A>
- CLOCK<5-B>
- LIGHT-ON WARNING CIRCUIT <2-D>

RED/BLK RED/BLK RED/BLK RED/BLK

No.9 (10A)

RED/WHT RED/BLK

RED/BLU RED/WHT

RED
RED/GRN

No.10 (10A) No.5 (10A) No.4 (10A) No.11 (10A)

RED/BLU

DIM-DIP RESISTOR

RED/YEL RED/GRN RED/BLU RED/BLU RED/WHT

RED YEL
RED/WHT

RED/WHT

L HEADLIGHT
LO (55W) HI (60W)

HIGH BEAM INDICATOR LIGHT (1.4W)

R HEADLIGHT
HI (60W) LO (55W)

BLK BLK BLK BLK BLK BLK BLK

G301 G201,G401

DIM-DIP RELAY (in the INTEGRATED CONTROL UNIT)

BLK

G201,G401

L FRONT MARKER LIGHT(5W)
R FRONT MARKER LIGHT(5W)
TAILLIGHTS (5W × 4)
LICENSE PLATE LIGHTS (5W × 2)

BLK BLK BLK BLK

G301 G201,G401 G511

REAR FOG LIGHT SWITCH
INDICATOR LIGHT (0.84W)
LIGHT (0.84W)

RED/YEL BLK BLK

REAR FOG LIGHT (21W)

BLK BLK

G201,G401

A B C D

BAT
No.31(70A) W-T
ACC WHT/RED
IG2-B BLU/WHT
IG BLK/YEL
IG2-A YEL
ST BLK/WHT
No.14(10A) BLK/YEL
No.1(10A) YEL

WHT No.31(70A)
WHT/RED No.39(60A)
BLU/WHT IG2-B
BLK/YEL IG
YEL IG2-A
BLK/WHT ST
BLK/YEL No.14(10A)
YEL No.1(10A)
WHT/BLU No.12(15A)

No.39(60A) No.12(15A) No.17 (10A) No.35 (15A) No.34 (10A)

LIGHTING SW <3-C><4-C><5-C>

PGM-FI ECU <11-A>

WHT/GRN YEL WHT/GRN WHT/GRN RED/BLK

HAZARD INDICATOR LIGHT (1.4W)

GRN/WHT

HAZARD SWITCH

ON OFF

LIGHT (0.84W)

WHT/BLU WHT/BLU YEL/RED WHT/BLU

HORNS

H (R) H (L)

TRUNK LIGHT (3.4W)

INTERIOR LIGHT (8W) ON OFF DOOR

HATCH OPEN INDICATOR LIGHT <2-C>

INTEGRATED CONTROL UNIT <2-D>

GRN/BLK GRN/RED GRN/BLK GRN/BLK GRN/BLK

TAILGATE LATCH SWITCH

PASSENGER'S

CIGARETTE LIGHTER RELAY

RADIO <7-A>

CIGARETTE LIGHTER

LIGHTING SWITCH <3-C> <4-C> <5-C>

CLOCK

BACK-UP LIGHT SWITCH

BACK-UP LIGHTS (21W)

ALB CONTROL UNIT <13-C> PGM-FI ECU <11-D>

BRAKE LIGHT SWITVH

BRAKE LIGHTS (21W x 2)

HORN SWITCH

GRN/RED GRN/WHT

TURN SIGNAL SWITCH L. R.

TURN SIGNAL/ HAZARD RELAY

GRN/BLU GRN/YEL

L.TURN SIGNAL LIGHTS

REAR SIDE FRONT (21W) (5W) (21W)

R.TURN SIGNAL LIGHTS

FRONT SIDE REAR (21W) (5W) (21W)

INDICATORS (1.4W x 2)

BLK

LHD : G301,G401
RHD : G201,G401

LHD : G301,G401
RHD : G201,G401

G511

G511 LHD : G301,G401
RHD : G301

LHD : G301,G401
RHD : G201,G401

LHD : G201
RHD : G201,G401

G511

LHD : G301,G401
RHD : G201,G401

A B C D

No.31(70A) — WHT
No.39(60A) — WHT/RED
IG2-B — BLU/WHT
IG1 — BLK/YEL
IG2-A — YEL
ST — BLK/WHT
No.14(10A) — BLK/YEL
No.1(10A) — YEL
No.12(15A) — WHT/BLU

WHT — No.31(70A)
WHT/RED — No.39(60A)
BLU/WHT — IG2-B
BLK/WHT — ST
BLK/YEL — No.14(10A)
YEL — No.1(10A)
BLK/YEL — No.18(10A)
GRN/BLK — No.13(15A)

MAST ANTENNA

LIGHTING SWITCH <3-C> <4-C> <5-C> 16

CIGARETTE LIGHTER RELAY <6-B> 57

RED/BLK
YEL/RED
WHT/BLU

RADIO / RADIO CASSETTE STEREO PLAYER

GRY/WHT
BRN/WHT
BLU/YEL
RED/YEL
BLU/GRN
GRY/BLK
RED/GRN
BRN/BLK

L REAR
R REAR
L FRONT
R FRONT

with REAR SPEAKERS

BLK

G701

No.18 (10A)

BLK/YEL

POWER DOOR MIRROR SWITCH

UP
LEFT
RIGHT
DOWN
L R L R

YEL/WHT
BLU/GRN
YEL/RED
BLU/BLK
YEL/BLK
BLK

L DOOR MIRROR
R DOOR MIRROR

M M M M

YEL/BLK
BLU/BLK
YEL/WHT
YEL/WHT

No.36 (20A)

YEL/GRN

REAR WINDOW DEFOGGER RELAY

BLK/GRN

55
FGM-FI ECU <11-D>

LHD : G301,G401
RHD : G301

REAR WINDOW DEFOGGER (155W)

BLK

G821

LIGHTING SWITCH <3-C> <4-C> <5-C> 17

BLK/YEL
RED/BLK

REAR WINDOW DEFOGGER SWITCH

INDICATOR (0.84W)
LIGHT (0.84W)

RED

BLK
BLK

LHD : G301,G401
RHD : G201,G401

No.6 (30A)

WHT

SUNROOF RELAY

GRN

WHT/GRN

WHT/GRN
WHT/GRN

SUNROOF SWITCH

OFF
TILT/ OPEN
OPEN/ CLOSE
CLOSE

TILT UP SW

GRN/RED
GRN/YEL
BLK
BLK

SUNROOF MOTOR

M

BLK

LHD G301,G401
RHD G201,G401

No.31(70A) — WHT
No.39(60A) — WHT/RED
IG2-B — BLU/WHT
ST — BLK/WHT
No.14(10A) — BLK/YEL
No.1(10A) — YEL
No.18(10A) — BLK/YEL
No.13(15A) — GRN/BLK

WHT — No.31(70A)
WHT/RED — No.39(60A)
BLU/WHT — IG2-B
BLK/WHT — ST
BLK/YEL — No.14(10A)
YEL — No.1(10A)
BLK/YEL — No.18(10A)
GRN/BLK — No.13(15A)

POWER WINDOW RELAY

WHT/BLK

No.20 : RHD
No.21 : LHD
(20A)

No.21 : RHD
No.20 : LHD
(20A)

BLU/BLK

WHT/YEL

DRIVER'S SWITCH

PASSENGER

DOWN UP

MAIN SWITCH

CONTROL UNIT

UP DN

AUTO OFF AUTO

BLU/GRN BLU/YEL BLK

PASSENGER'S SWITCH

DOWN UP

BLU/WHT BLU/RED

BLK BLU RED/BLU RED/YEL

M

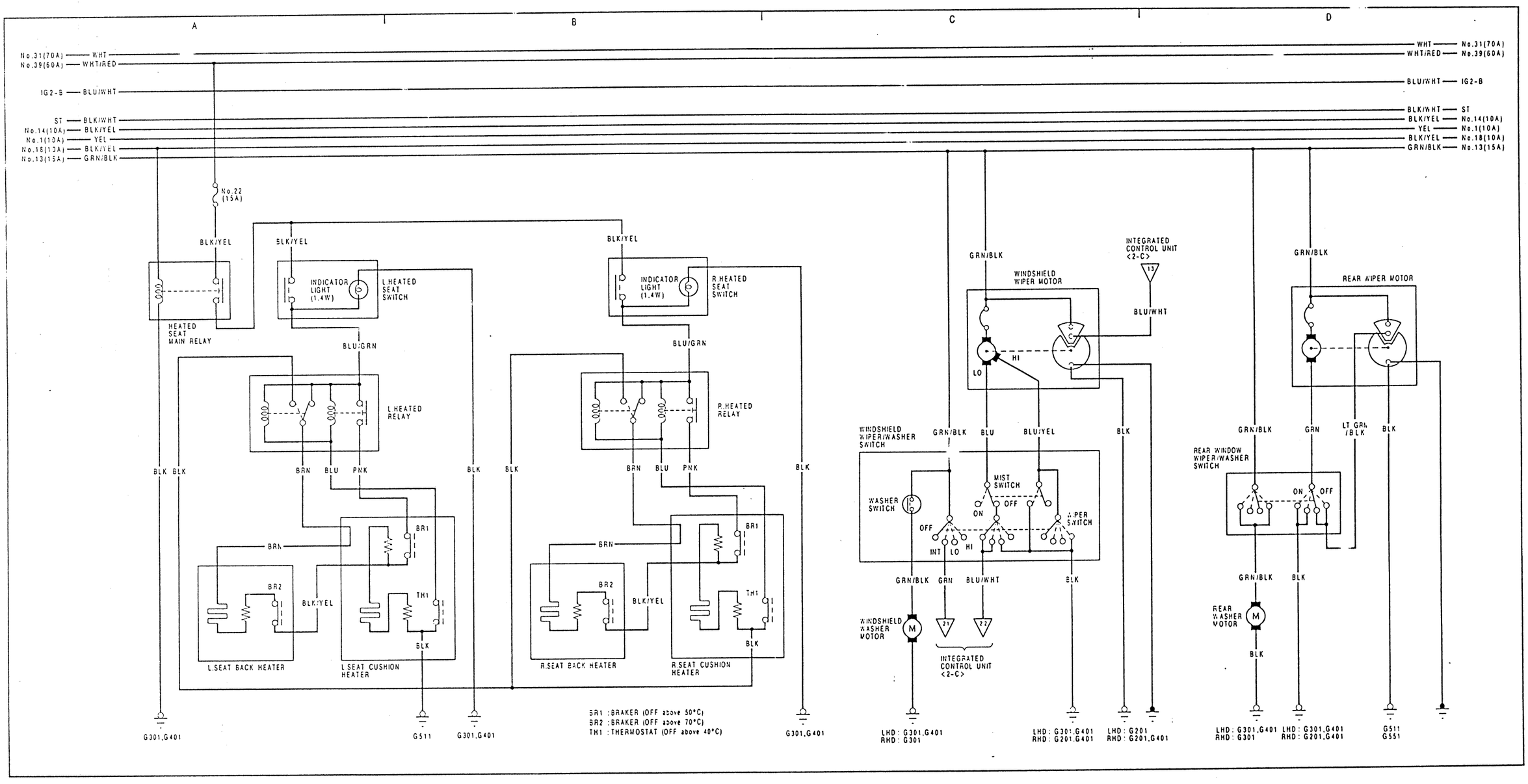
PASSENGER'S MOTOR

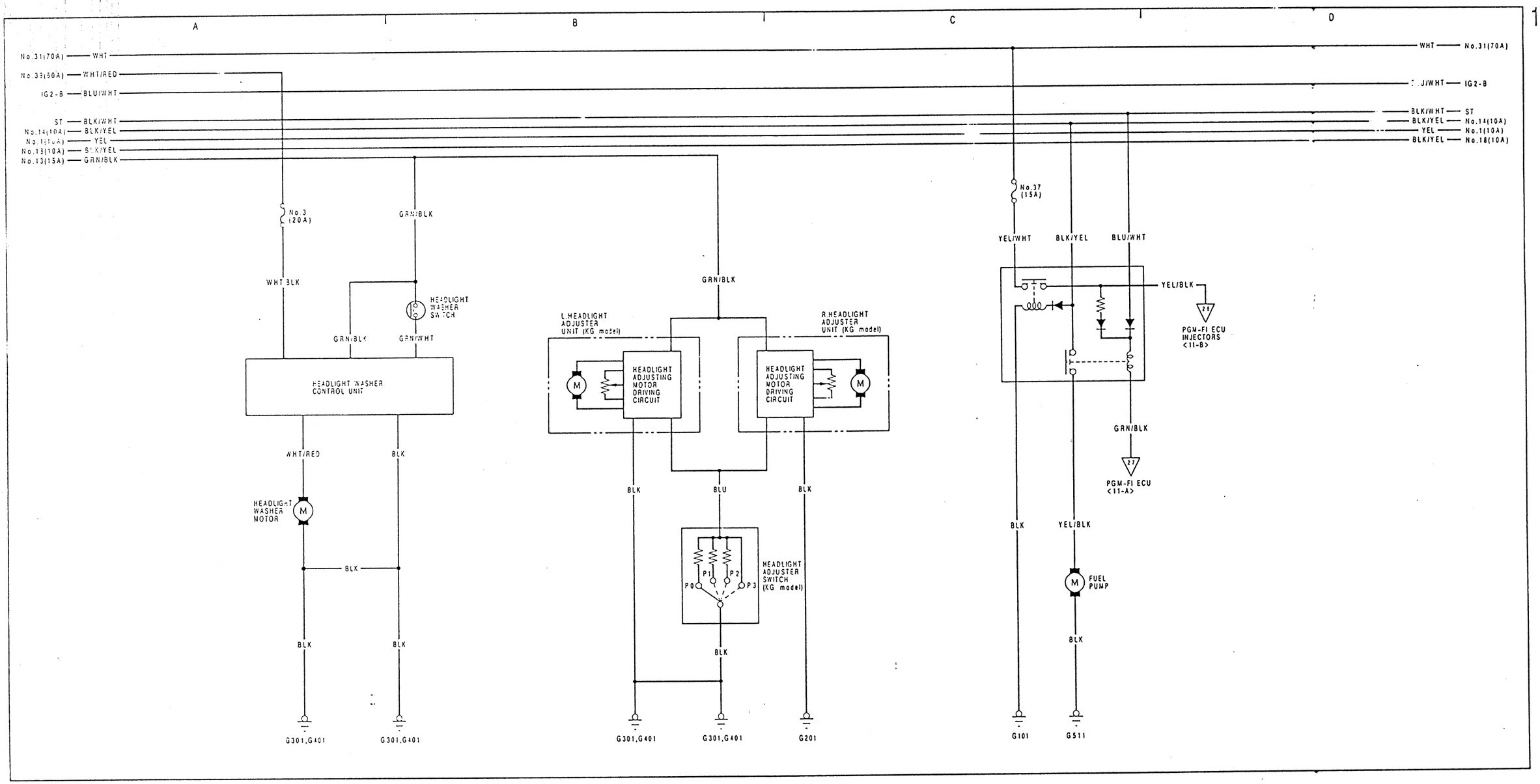
DRIVER'S POWER WINDOW MOTOR

BLK BLK

LHD : G301,G401
RHD : G301

LHD : G301,G401
RHD : G301


A
B
C
D
No.31(70A) WHT
No.39(60A) WHT/RED
IG2-B BLU/WHT
ST BLK/WHT
No.14(10A) BLK/YEL
No.1(10A) YEL
No.18(10A) BLK/YEL
No.13(15A) GRN/BLK
No.22 (15A)
HEATED SEAT MAIN RELAY
INDICATOR LIGHT (1.4W)
L HEATED SEAT SWITCH
R HEATED SEAT SWITCH
L HEATED RELAY
R HEATED RELAY
BLU/GRN
BLK/YEL
BRN
BLU
PNK
BLK
BR1
BR2
TH1
L SEAT BACK HEATER
L SEAT CUSHION HEATER
R SEAT BACK HEATER
R SEAT CUSHION HEATER
BR1 :BRAKER (OFF above 50°C)
BR2 :BRAKER (OFF above 70°C)
TH1 :THERMOSTAT (OFF above 40°C)
G301,G401
G511
WINDSHIELD WIPER MOTOR
INTEGRATED CONTROL UNIT <2-C>
GRN/BLK
BLU/WHT
LO
HI
WINDSHIELD WIPER/WASHER SWITCH
BLU
BLU/YEL
WASHER SWITCH
MIST SWITCH
ON
OFF
INT
WIPER SWITCH
WINDSHIELD WASHER MOTOR
21
22
LHD : G301,G401
RHD : G301
LHD : G301,G401
RHD : G201,G401
LHD : G201
RHD : G201,G401
REAR WIPER MOTOR
REAR WINDOW WIPER/WASHER SWITCH
GRN
LT GRN/BLK
REAR WASHER MOTOR
LHD : G301,G401
RHD : G301
LHD : G301,G401
RHD : G201,G401
G511
G551


No.31(70A) WHT
No.39(50A) WHT/RED
IG2-B BLU/WHT
ST BLK/WHT
No.14(10A) BLK/YEL
No.1(10A) YEL
No.13(10A) BLK/YEL
No.13(15A) GRN/BLK
WHT No.31(70A)
BLU/WHT IG2-B
BLK/WHT ST
BLK/YEL No.14(10A)
YEL No.1(10A)
BLK/YEL No.18(10A)
No.3 (20A)
GRN/BLK
WHT/BLK
HEADLIGHT WASHER SWITCH
GRN/BLK
GRN/WHT
HEADLIGHT WASHER CONTROL UNIT
WHT/RED
BLK
HEADLIGHT WASHER MOTOR
M
BLK
BLK
BLK
G301,G401
G301,G401
GRN/BLK
L.HEADLIGHT ADJUSTER UNIT (KG model)
R.HEADLIGHT ADJUSTER UNIT (KG model)
HEADLIGHT ADJUSTING MOTOR DRIVING CIRCUIT
HEADLIGHT ADJUSTING MOTOR DRIVING CIRCUIT
M
M
BLK
BLU
BLK
HEADLIGHT ADJUSTER SWITCH (KG model)
P0
P1
P2
P3
BLK
G301,G401
G301,G401
G201
No.37 (15A)
YEL/WHT
BLK/YEL
BLU/WHT
YEL/BLK
21
PGM-FI ECU INJECTORS <11-B>
GRN/BLK
27
PGM-FI ECU <11-A>
BLK
YEL/BLK
M
FUEL PUMP
BLK
G101
G511

10

11

A B C D

No.31(70A) — WHT — WHT — No.31(70A)

IG2-B — BLU/WHT — BLU/WHT — IG2-B

ST — BLK/WHT
No.14(10A) — BLU/YEL
No.1(10A) — YEL
No.18(10A) — BLK/YEL — BLU/YEL — No.18(10A)

PGM-FI MAIN RELAY <10-D>

No.34(10A) FUSE <6-C>

CHECK ENGINE WARNING LIGHT (1.4W)

PGM-FI MAIN RELAY <10-D>

INJECTOR RESISTOR

BLK/YEL BLK/YEL

IGNITION TIMING ADJUSTING CONNECTOR

THROTTLE ANGLE SENSOR

RED/BLU

TA SENSOR

TW SENSOR

A/C COMPRESSOR CLUTCH RELAY <12-C>

REAR WINDOW DEFOGGER SWITCH <7-C>

BRAKE LIGHT SWITCH <6-C>

ALTERNATOR <1-B>

YEL RED/BLK RED/BLK RED/BLK RED/BLK

No.1 No.2 No.3 No.4 INJECTORS

MAP SENSOR

PRESSURE REGULATER CONTROL SOL.V

EACV

GRN/BLK BLU/WHT WHT/GRN YEL/BLK GRN/ORN BRN RED LT BLU YEL GRN BLU/YEL YEL/RED WHT GRN/WHT YEL/WHT RED/BLU RED/YEL RED/WHT GRN/WHT BRN GRN/WHT BLK/GRN BLU YEL

PGM-FI ECU

— — — Shielded wire

BLK BLK

GRN/WHT

SPOOL CONTROL SOL.V

BLU/RED

A/C DIODE <12-B>

BLU/BLK

OIL PRESSURE SWITCH.B

BLK

BLU

IGNITER UNIT <1-C>

BLU

PUREG CUT-OFF SOL.V

BLK

YEL/RED

SPEED SENSOR

BLK

BLU/GRN BLU/YEL ORN WHT WHT/BLU ORN/BLU BLK/RED BRN/BLK RED/BLU WHT

CYL SENSOR <1-C>

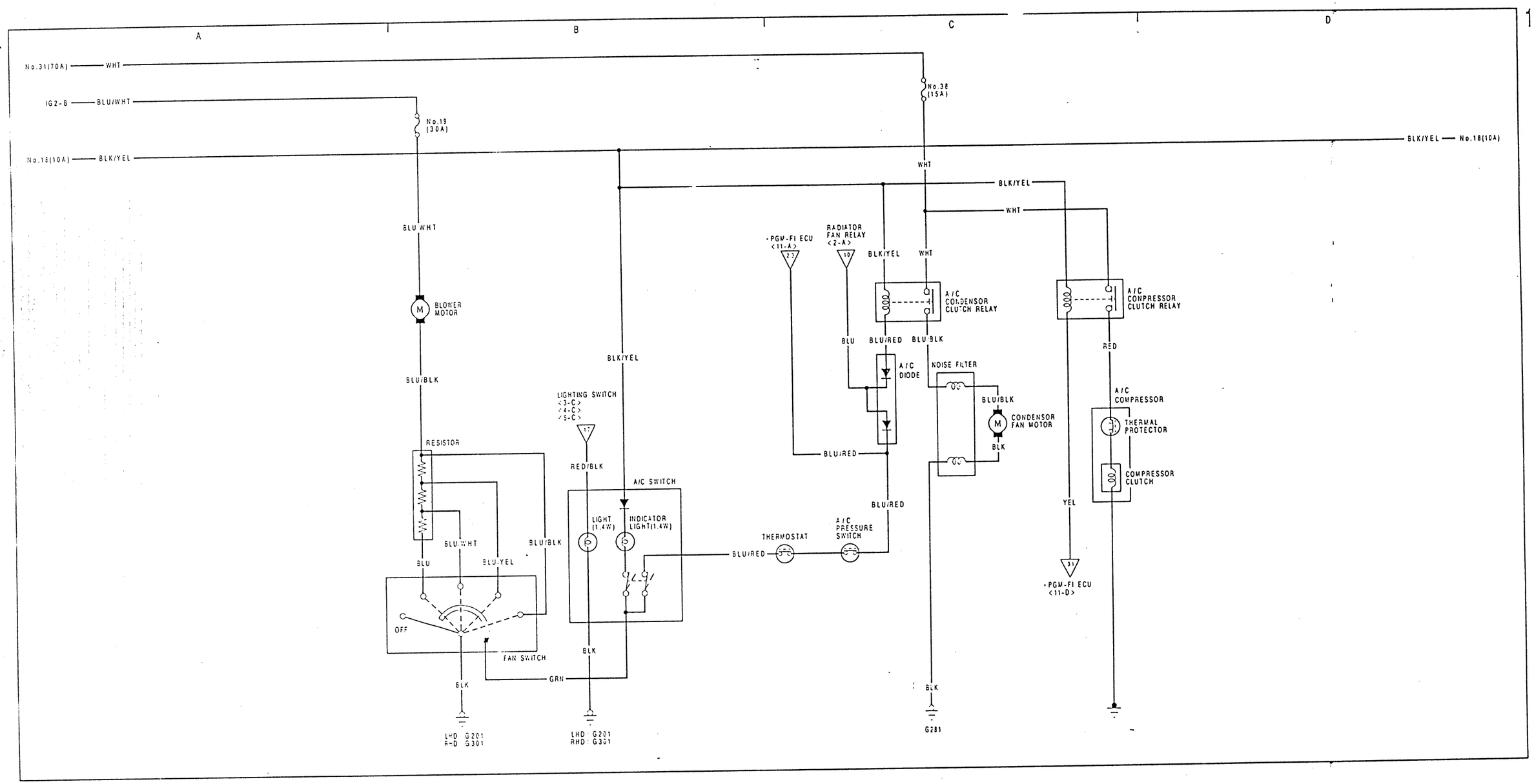
CRANK SENSOR <1-C>

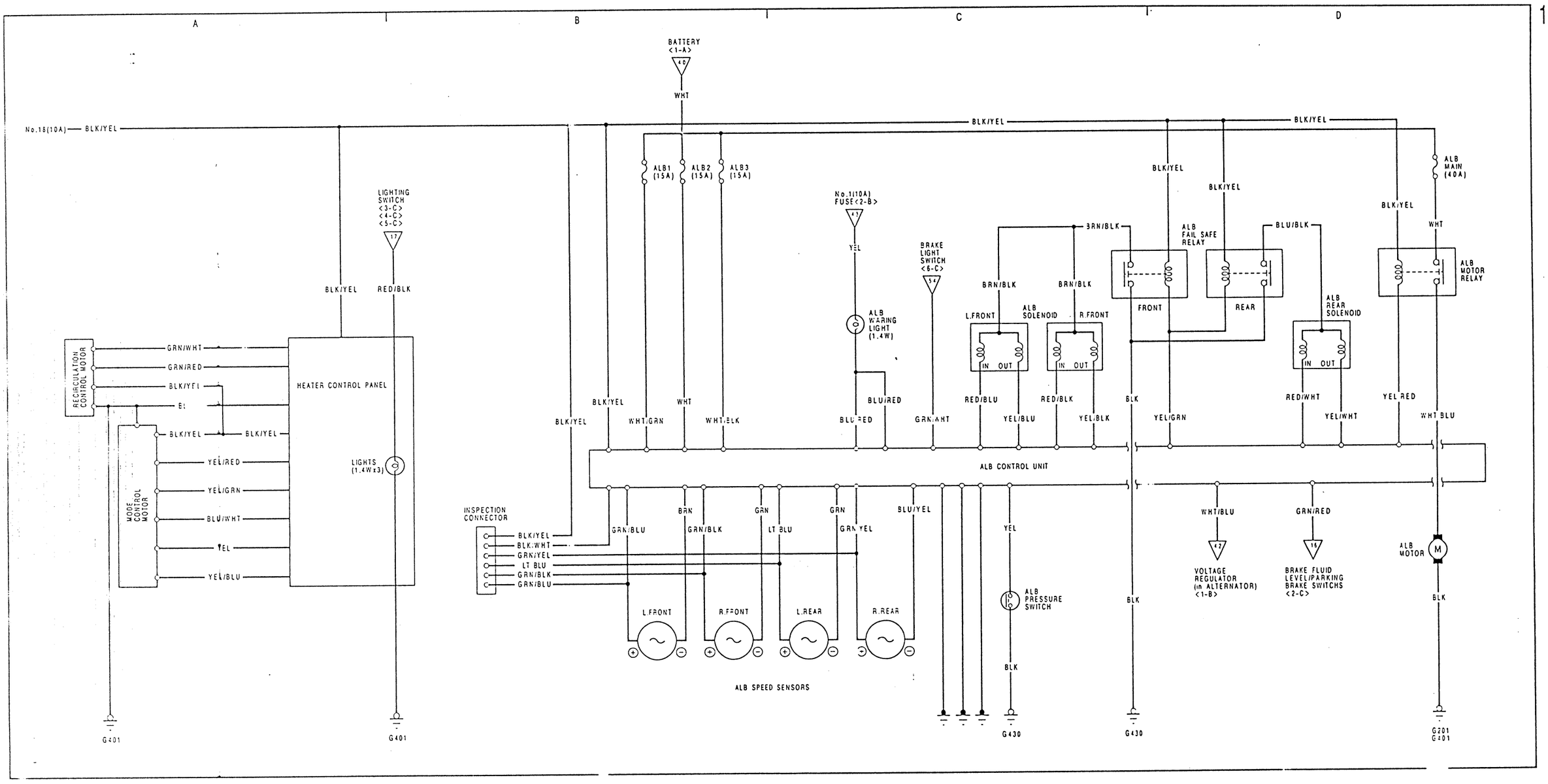
TDC SENSOR <1-C>

OXYGEN SENSOR.2

OXYGEN SENSOR.1

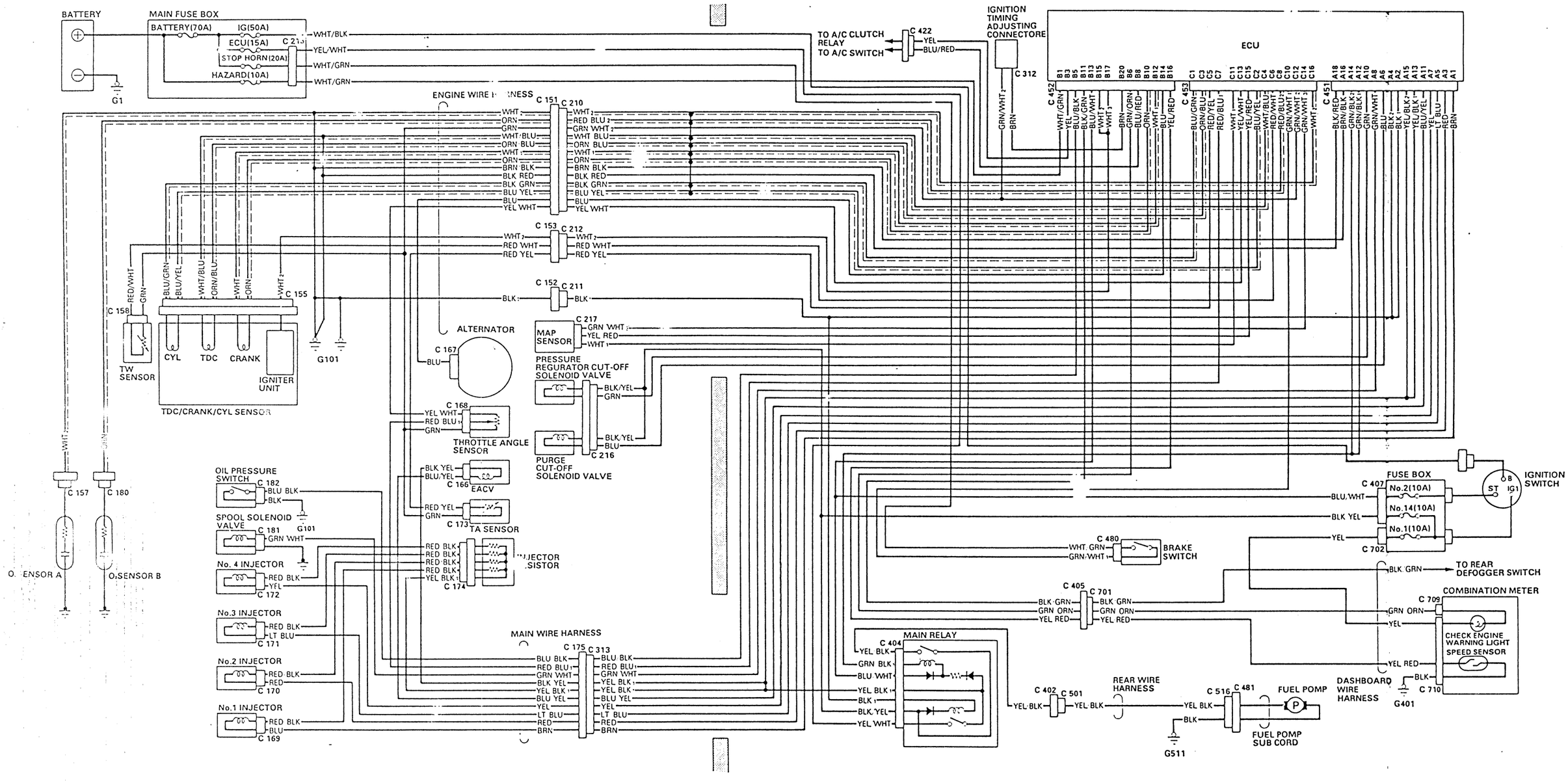
G101 G101 G201 G401 G101


A
B
C
D
No.31(70A)
WHT
IG2-B
BLU/WHT
No.19 (30A)
No.1E(10A)
BLK/YEL
No.38 (15A)
BLK/YEL
No.18(10A)
WHT
BLK/YEL
WHT
BLU/WHT
BLOWER MOTOR
BLU/BLK
RESISTOR
BLK/YEL
LIGHTING SWITCH <3-C> <4-C> <5-C>
17
RED/BLK
A/C SWITCH
LIGHT (1.4W)
INDICATOR LIGHT(1.4W)
BLU/WHT
BLU/BLK
BLU
BLU/YEL
OFF
FAN SWITCH
BLK
GRN
BLK
LHD : G201
RHD : G301
LHD : G201
RHD : G301
PGM-FI ECU <11-A>
23
RADIATOR FAN RELAY <2-A>
10
BLK/YEL
WHT
A/C CONDENSOR CLUTCH RELAY
BLU
BLU/RED
BLU/BLK
A/C DIODE
NOISE FILTER
BLU/BLK
CONDENSOR FAN MOTOR
BLK
BLU/RED
BLU/RED
A/C PRESSURE SWITCH
THERMOSTAT
BLU/RED
BLK
G281
A/C CLUTCH RELAY
RED
A/C COMPRESSOR
THERMAL PROTECTOR
COMPRESSOR CLUTCH
YEL
37
PGM-FI ECU <11-D>

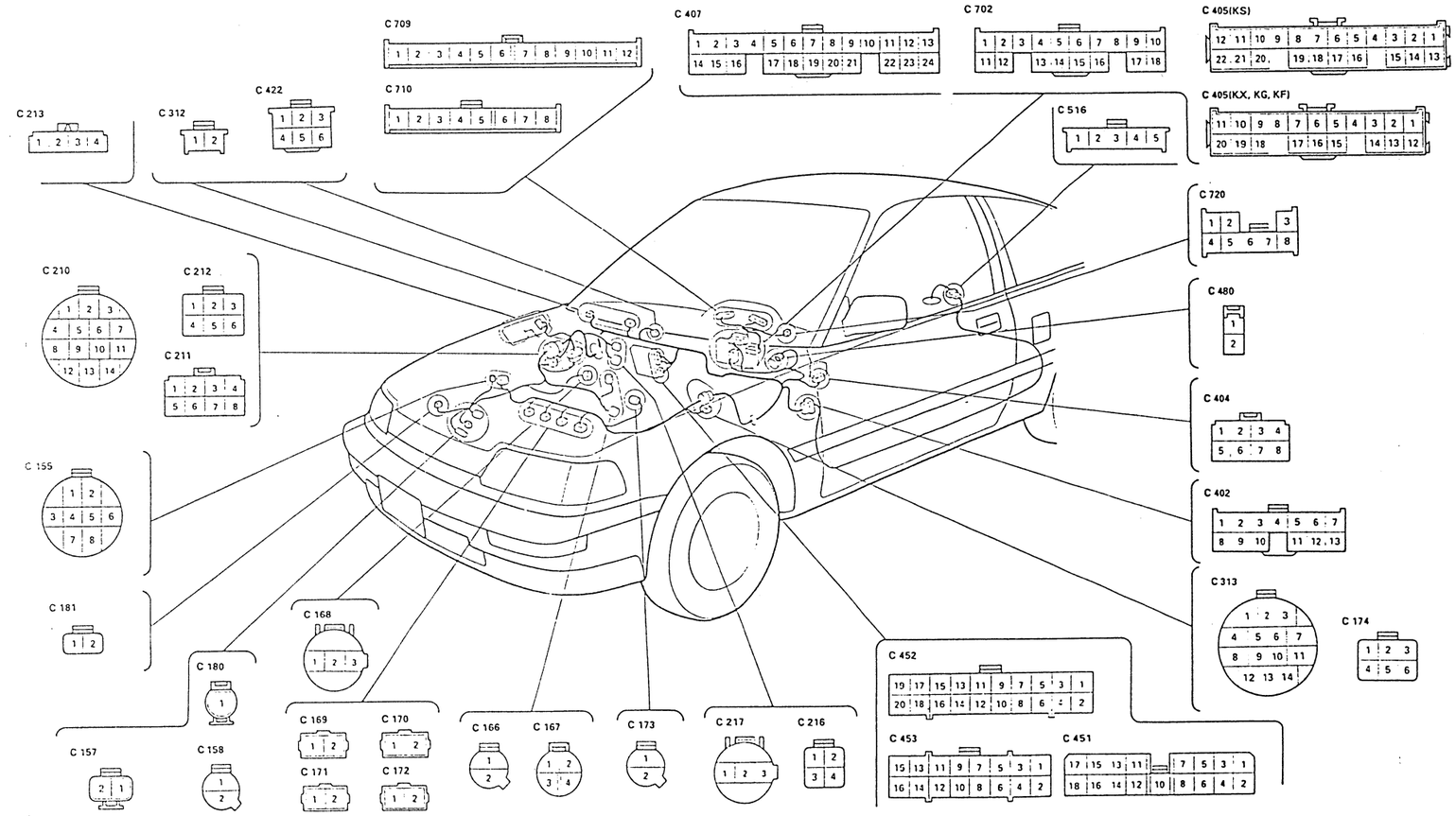

A
B
C
D
BATTERY
<1-A>
WHT
No.18(10A)
BLK/YEL
BLK/YEL
LIGHTING SWITCH
<3-C>
<4-C>
<5-C>
BLK/YEL
RED/BLK
RECIRCULATION CONTROL MOTOR
GRN/WHT
GRN/RED
BLK/YEL
BL
BLK/YEL
BLK/YEL
YEL/RED
YEL/GRN
BLU/WHT
YEL
YEL/BLU
MODE CONTROL MOTOR
HEATER CONTROL PANEL
LIGHTS
(1.4W×3)
G401
G401
ALB1
(15A)
ALB2
(15A)
ALB3
(15A)
No.1(10A)
FUSE<2-B>
YEL
ALB
WARING
LIGHT
(1.4W)
BRAKE
LIGHT
SWITCH
<6-C>
BRN/BLK
BRN/BLK
L.FRONT
ALB
SOLENOID
R.FRONT
IN OUT
IN OUT
BLK/YEL
BLK/YEL
BLK/YEL
BLK/YEL
ALB
FAIL SAFE
RELAY
FRONT
REAR
BLU/BLK
ALB
REAR
SOLENOID
IN OUT
ALB
MAIN
(40A)
WHT
ALB
MOTOR
RELAY
BLK/YEL
WHT/GRN
WHT/BLK
BLU/RED
GRN/WHT
RED/BLU
YEL/BLU
RED/BLK
YEL/BLK
BLK
YEL/GRN
RED/WHT
YEL/WHT
YEL/RED
WHT/BLU
ALB CONTROL UNIT
INSPECTION
CONNECTOR
BLK/YEL
BLK/WHT
GRN/YEL
LT BLU
GRN/BLK
GRN/BLU
GRN/BLU
BRN
GRN/BLK
GRN
LT BLU
GRN
GRN/YEL
BLU/YEL
L.FRONT
R.FRONT
L.REAR
R.REAR
ALB SPEED SENSORS
YEL
ALB
PRESSURE
SWITCH
BLK
G430
BLK
G430
WHT/BLU
VOLTAGE
REGULATOR
(in ALTERNATOR)
<1-B>
GRN/RED
BRAKE FLUID
LEVEL/PARKING
BRAKE SWITCHES
<2-C>
ALB
MOTOR
BLK
G201
G401

13

Fuel-Injected System Diagram (LH)



Fuel-Injected System Connectors (LH)



C155

1	ORN/BLU
2	WHT/BLU
3	WHT²
4	ORN
5	WHT¹
6	—
6	BLU/GRN
7	BLU/YEL

C157

1	WHT²
2	—

C158

1	RED/WHT
2	GRN

C166

1	BLK/YEL
2	BLU/YEL

C167

1	BLU
2	—
3	WHT/BLU
4	RED

C168

1	YEL/WHT
2	RED/BLU¹
3	GRN/WHT

C169

1	RED/BLK
2	BRN

C170

1	RED/BLK
2	RED

C171

1	RED/BLK
2	LT BLU

C172

1	RED/BLK
2	YEL

C173

1	GRN
2	RED/YEL

C174

1	RED/BLK
2	RED/BLK
3	YEL/BLK¹
4	RED/BLK
5	RED/BLK
6	—

C180

1	ORN

C181

1	GRN/WHT
2	—

C182

1	BLU/BLK
2	BLK

C210

1	BLK/RED	8	ORN/BLU
2	BRN/BLK	9	BLU
3	WHT²	10	YEL/WHT
4	BLU/GRN	11	—
5	BLU/YEL	12	WHT¹
6	GRN/WHT²	13	ORN
7	RED/BLU²	14	WHT/BLU

C211

1	BLK/YEL	5	BLU
2	BLK/WHT	6	YEL/GRN
3	WHT/BLU	7	YEL/RED
4	BLK/YEL	8	BLK¹

C212

1	YEL	5	YEL/GRN
2	WHT²	6	WHT/GRN
3	RED/WHT	7	WHT/GRN
4	GRN/BLK	8	RED/YEL

C213

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

C216

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

C217

1	WHT¹	3	YEL/RED
2	GRN/WHT³		

C312

1	GRN/WHT²	2	BRN

C313

1	LT BLU	8	BLU/BLK
2	RED	9	—
3	BRN	10	GRN/WHT
4	YEL/BLK¹	11	RED/BLU¹
5	YEL/BLK¹	12	—
6	BLU/YEL	13	—
7	YEL	14	—

C402

1	GRN/WHT	8	YEL/WHT
2	GRN/BLK	9	GRN/BLU※
3	GRN/RED	10	GRN/BLK
4	GRN/RED	11	RED/YEL
5	YEL/BLK	12	GRN
6	LT GRN/BLK	13	BLU/RED (KS)
7	BLU/GRN (KS)		

C404

1	YEL/WHT	5	BLK/YEL
2	BLK¹	6	—
3	YEL/BLK	7	YEL/BLK¹
4	BLU/WHT	8	GRN/BLK¹

C405 (KX, KG, KF)

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

C405 (KS)

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

C407

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

C422

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

C451(ECU-A)

1	BRN	1	BLU/YEL
2	BLK¹	2	GRN/BLK¹
3	RED	3	YEL/BLK¹
4	BLK²	4	GRN/BLK²
5	LT BLU	5	YEL/BLK²
6	BLU	6	BRN/BLK
7	YEL	7	—
8	GRN/WHT	8	BLK/RED
10	GRN		

C452(ECU-B)

1	WHT/GRN	1	BLK/GRN
2	—	2	WHT¹
3	YEL	3	BLU/WHT
4	—	4	BLU
5	BLU/BLK	5	WHT²
6	GRN/ORN	6	YEL/RED
7	—	7	WHT²
8	BLU/RED	8	—
9	—	9	—
10	ORN	20	BRN

C453(ECU-C)

1	BLU/GRN	9	—
2	BLU/YEL	10	GRN/WHT¹
3	ORN/BLU	11	WHT¹
4	WHT/BLU	12	GRN/WHT²
5	RED/YEL	13	YEL/WHT
6	RED/WHT	14	GRN/WHT³
7	RED/BLU¹	15	YEL/RED
8	RED/BLU²	16	WHT²

C480

1	WHT/GRN
2	GRN/WHT¹

C516

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

C702

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

C709

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

C710

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

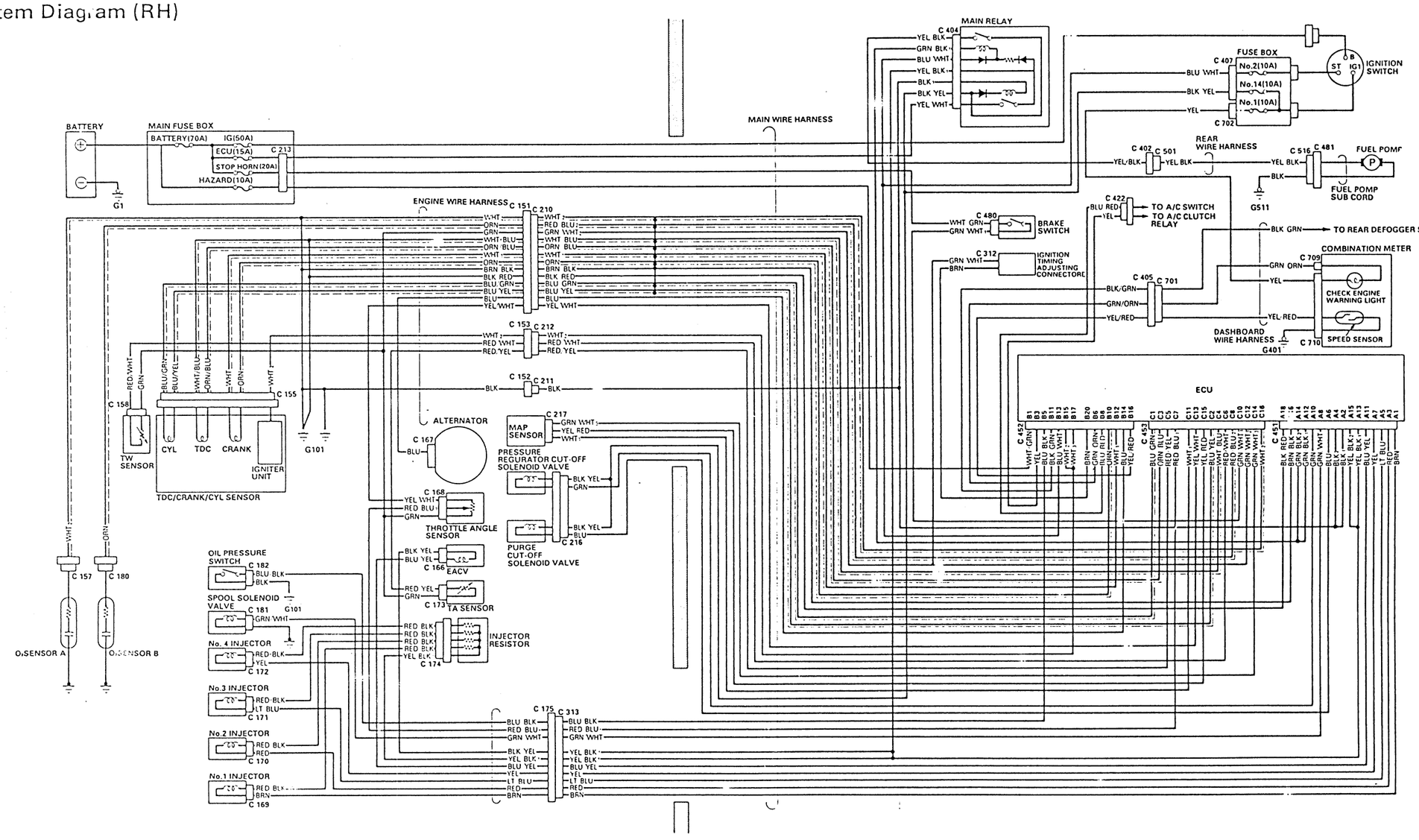
C720

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

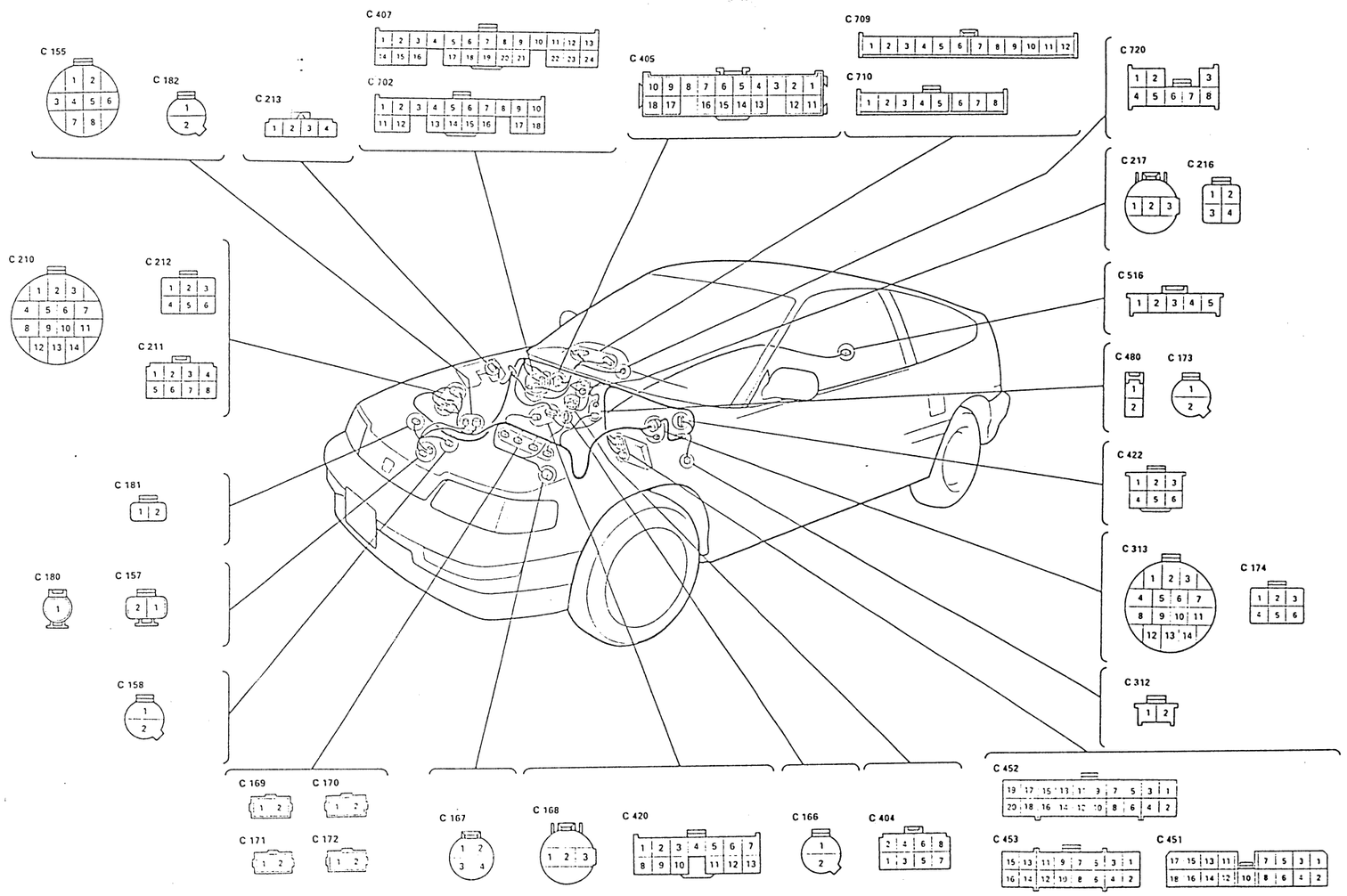
※ : Except KS

NOTE : Several different wires have the same color.
They have been given a number suffix to distinguish them (for example YEL/BLK¹ and YEL/BLK² are not the same)

Fuel-Injected System Diagram (RH)



Fuel-Injected System Connectors (RH)



C155	
1	ORN/BLU
2	WHT/BLU
3	WHT²
4	ORN
5	WHT¹
6	—
6	BLU/GRN
7	BLU/YEL

C157	
1	WHT²
2	—

C158	
1	RED/WHT
2	GRN

C166	
1	BLK/YEL
2	BLU/YEL

C167	
1	BLU
2	—
3	WHT/BLU
4	RED

C168	
1	YEL/WHT
2	RED/BLU¹
3	GRN/WHT

C169	
1	RED/BLK
2	BRN

C170	
1	RED/BLK
2	RED

C171	
1	RED/BLK
2	LT BLU

C172	
1	RED/BLK
2	YEL

C173	
1	GRN
2	RED/YEL

C174	
1	RED/BLK
2	RED/BLK
3	YEL/BLK¹
4	RED/BLK
5	RED/BLK
6	—

C180	
1	ORN

C181	
1	GRN/WHT
2	—

C182	
1	BLU/BLK
2	BLK

C210			
1	BLK/RED	8	ORN/BLU
2	BRN/BLK	9	BLU
3	WHT²	10	YEL/WHT
4	BLU/GRN	11	—
5	BLU/YEL	12	WHT¹
6	GRN/WHT²	13	ORN
7	RED/BLU²	14	WHT/BLU

C211			
1	BLK/YEL	5	BLU
2	BLK/WHT	6	YEL/GRN
3	WHT/BLU	7	YEL/RED
4	BLK/YEL	8	BLK¹

C212	
1	YEL
2	WHT²
3	RED/WHT
4	GRN/BLK
5	YEL/GRN
6	RED/YEL

C213	
1	YEL/WHT
2	YEL/GRN
3	WHT/GRN
4	WHT/GRN

C216	
1	BLU
2	BLK/YEL
3	GRN
4	BLK/YEL

C217	
1	WHT¹
2	GRN/WHT³
3	YEL/RED

C312	
1	GRN/WHT²
2	BRN

C313			
1	LT BLU	8	BLU/BLK
2	RED	9	—
3	BRN	10	GRN/WHT
4	YEL/BLK¹	11	RED/BLU¹
5	YEL/BLK²	12	—
6	BLU/YEL	13	—
7	YEL	14	—

C402			
1	GRN/WHT (KE)	8	YEL/WHT
2	GRN/BLK	9	GRN/BLU
3	GRN/RED	10	GRN/BLK
4	GRN/RED	11	—
5	—	12	YEL/BLK
6	RED/YEL	13	GRN
7	LT GRN/BLK		

C404			
1	YEL/WHT	5	BLK/YEL
2	BLK¹	6	—
3	YEL/BLK	7	YEL/BLK¹
4	BLU/WHT	8	GRN/BLK¹

C405			
1	RED/YEL	10	BLU/GRN
2	BLU/RED (KE)	11	GRN/RED
3	GRN/RED	12	GRN/WHT
4	BLU	13	GRN/ORN
5	YEL/RED	14	GRN/BLK
6	YEL/WHT	15	YEL/GRN
7	BLK/GRN	16	WHT/GRN
8	YEL/RED	17	BRN/BLK
9	RED/GRN	18	GRY/BLK

C407			
1	RED/WHT	13	RED/GRN
2	GRN/BLK	14	GRN/WHT
3	GRN/YEL	15	GRN/RED
4	GRN/BLU	16	WHT/BLU
5	GRN/RED	17	WHT/BLU
6	—	18	BLK/YEL
7	—	19	—
8	BLU/RED	20	BLK/YEL
9	—	21	BLU/WHT
10	YEL	22	RED/BLU
11	RED/BLK	23	—
12	RED/YEL	24	BLK/YEL

C422	
1	BLU/RED
2	BLK/YEL
3	YEL
4	BLU/RED
5	—
6	—

C451(ECU-A)			
1	BRN	11	BLU/YEL
2	BLK¹	12	GRN/BLK¹
3	RED	13	YEL/BLK¹
4	BLK²	14	GRN/BLK²
5	LT BLU	15	YEL/BLK²
6	BLU	16	BRN/BLK
7	YEL	17	—
8	GRN/WHT	18	BLK/RED
10	GRN		

C452(ECU-B)			
1	WHT/GRN	11	BLK/GRN
2	—	12	WHT¹
3	YEL	13	BLU/WHT
4	—	14	BLU
5	BLU/BLK	15	WHT²
6	GRN/ORN	16	YEL/RED
7	—	17	WHT³
8	BLU/RED	18	—
9	—	19	—
10	ORN	20	BRN

C453(ECU-C)			
1	BLU/GRN	9	—
2	BLU/YEL	10	GRN/WHT¹
3	ORN/BLU	11	WHT¹
4	WHT/BLU	12	GRN/WHT²
5	RED/YEL	13	YEL/WHT
6	RED/WHT	14	GRN/WHT³
7	RED/BLU¹	15	YEL/RED
8	RED/BLU²	16	WHT²

C480	
1	WHT/GRN
2	GRN/WHT¹

C516	
1	GRN/RED
2	YEL/WHT
3	BLK/WHT
4	BLK
5	YEL/BLK

C702			
1	YEL	10	BLK
2	—	11	BLK/GRN
3	—	12	YEL/RED
4	RED/BLU	13	GRN/BLU
5	RED/WHT	14	RED/BLK
6	WHT/BLU	15	BLK/YEL
7	WHT/BLU	16	BLK/YEL
8	—	17	GRN/RED
9	—	18	GRN/YEL

C709			
1	BLU	7	YEL/RED
2	WHT/BLU	8	GRN/RED
3	BLK/YEL	9	RED/BLK
4	WHT/GRN	10	YEL/GRN
5	GRN/WHT	11	RED/BLU
6	GRN/ORN	12	GRN/BLU

C710			
1	GRN/YEL	5	BLU/RED
2	YEL	6	GRN/BLK
3	YEL/WHT	7	YEL/RED
4	—	8	BLK

C720			
1	BLK	5	RED/BLK
2	BLK/YEL	6	BLK/GRN
3	—	7	—
4	BLK	8	—

NOTE : Several different wires have the same color.
They have been given a number suffix to distinguish them (for example YEL/BLK¹ and YEL/BLK² are not the :