Chassis and Engine Number

Vehicle Identification Number

SAH HW H L L B A D 100001

Manufacture Code
Rover Group Ltd.

Model Type
HW : Concerto

Grade
H : DX
M : LX
W : SX
Y : EX

Body Type
L : 4-door Saloon
W : 5-door Saloon

Engine Type
L : 1400 SOHC Twin Carb.
M : 1600 SOHC PGM-FI with Catalyst
N : 1600 DOHC PGM-FI with Catalyst
P : 1500 SOHC PGM-FI with Catalyst
U : 1600 DOHC PGM-FI
W : 1600 SOHC Twin Carb.

Transmission and Steering
B : RHD 5MT 1400 Twin Carb.
C : RHD 5MT 1600 SOHC
D : RHD 5MT 1600 DOHC
E : RHD 5MT 1600 Twin Carb.
J : RHD 4AT 1600 SOHC
K : RHD 4AT 1600 DOHC
L : RHD 4AT 1600 Twin Carb.
M : RHD 4AT 1400 Twin Carb.
N : LHD 5MT 1400 Twin Carb.
N : LHD 5MT 1500 SOHC
P : LHD 5MT 1600 SOHC
R : LHD 5MT 1600 DOHC
S : LHD 5MT 1600 Twin Carb.
V : LHD 4AT 1500 SOHC
X : LHD 4AT 1600 SOHC
Y : LHD 4AT 1600 DOHC
W : LHD 4AT 1600 Twin Carb.
Z : LHD 4AT 1400 Twin Carb.

Model Year
A : 1990

Factory Code
D : Longbridge

Serial Number

Engine Number

D14A1-E000001

Engine Type
D14A1: 1.4 ℓ SOHC Cabureted Engine without catalytic converter
D15B2: 1.5 ℓ SOHC PGM-FI Engine with catalytic converter
D16A8: 1.6 ℓ DOHC PGM-FI Engine with catalytic converter
D16A9: 1.6 ℓ DOHC PGM-FI Engine without catalytic converter for manual transmission
D16Z1: 1.6 ℓ SOHC Cabureted Engine without catalytic converter
D16Z2: 1.6 ℓ SOHC PGM-FI Engine with catalytic converter
D16Z4: 1.6 ℓ DOHC PGM-FI Engine without catalytic converter for automatic transmission

Serial Number

Transmission Number

P7-1000001

Transmission Type
P7 : Manual 5-speed
L4 : Automatic 4-speed

Serial Number
P7 : 1000001~
L4 : 4000001~

Downloaded from www.Manualslib.com manuals search engine

MODEL YEAR	DOOR	ENGINE	GRADE	AREA	SHIFT TYPE	FRAME NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
1990	5D	1400 2 Carb.	DX	KB	MT	SAHHW HWLNAD100001~	D14A1-E000001~	P7-1000001~
					AT	SAHHW HWLZAD100001~		L4-4000001~
				KE	MT	SAHHW HWLBAD100001~		P7-1000001~
					AT	SAHHW HWLMAD100001~		L4-4000001~
				KF	MT	SAHHW HWLNAD100001~		P7-1000001~
					AT	SAHHW HWLZAD100001~		L4-4000001~
				KR	MT	SAHHW HWLNAD100001~		P7-1000001~
					AT	SAHHW HWLZAD100001~		L4-4000001~
		1500 PGM-FI		KG	MT	SAHHW HWPNAD100001~	D15B2-E000001~	P7-1000001~
					AT	SAHHW HWPVAD100001~		L4-4000001~
		1600 2 Carb.	LX	KB	MT	SAHHW MWWSAD100001~	D16Z1-E000001~	P7-1000001~
					AT	SAHHW MWWWAD100001~		L4-4000001~
				KE	MT	SAHHW MWWEAD100001~		P7-1000001~
					AT	SAHHW MWWLAD100001~		L4-4000001~
				KF	MT	SAHHW MWWSAD100001~		P7-1000001~
					AT	SAHHW MWWWAD100001~		L4-4000001~
				KR	MT	SAHHW MWWSAD100001~		P7-1000001~
					AT	SAHHW MWWWAD100001~		L4-4000001~
			EX	KE	MT	SAHHW YWWEAD100001~		P7-1000001~
					AT	SAHHW YWWLAD100001~		L4-4000001~
				KF	MT	SAHHW YWWSAD100001~		P7-1000001~
					AT	SAHHW YWWWAD100001~		L4-4000001~
			EX (A.L.B.)	KE	MT	SAHHW YWWEAD100001~		P7-1000001~
					AT	SAHHW YWWLAD100001~		L4-4000001~
		1600 PGM-FI	EX	KG	MT	SAHHW YWMPAD100001~	D16Z2-E000001~	P7-1000001~
					AT	SAHHW YWMXAD100001~		L4-4000001~
				KX	MT	SAHHW YWMPAD100001~		P7-1000001~
					AT	SAHHW YWMXAD100001~		L4-4000001~
			EX (A.L.B.)	KG	MT	SAHHW YWMPAD100001~		P7-1000001~
					AT	SAHHW YWMXAD100001~		L4-4000001~
				KX	MT	SAHHW YWMPAD100001~		P7-1000001~
					AT	SAHHW YWMXAD100001~		L4-4000001~
		1600 DOHC PGM-FI	SX	KB	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KE	MT	SAHHW WWUDAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUKAD100001~	D16Z4-E000001~	L4-4000001~
				KF	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KG	MT	SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~
				KR	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KX	MT	SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~
			SX (A.L.B.)	KB	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KE	MT	SAHHW WWUDAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUKAD100001~	D16Z4-E000001~	L4-4000001~
				KF	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KG	MT	SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~
				KR	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~
				KX	MT	SAHHW WWNRAD100001~	D16A8-E000001~	L4-4000001~

(cont'd)

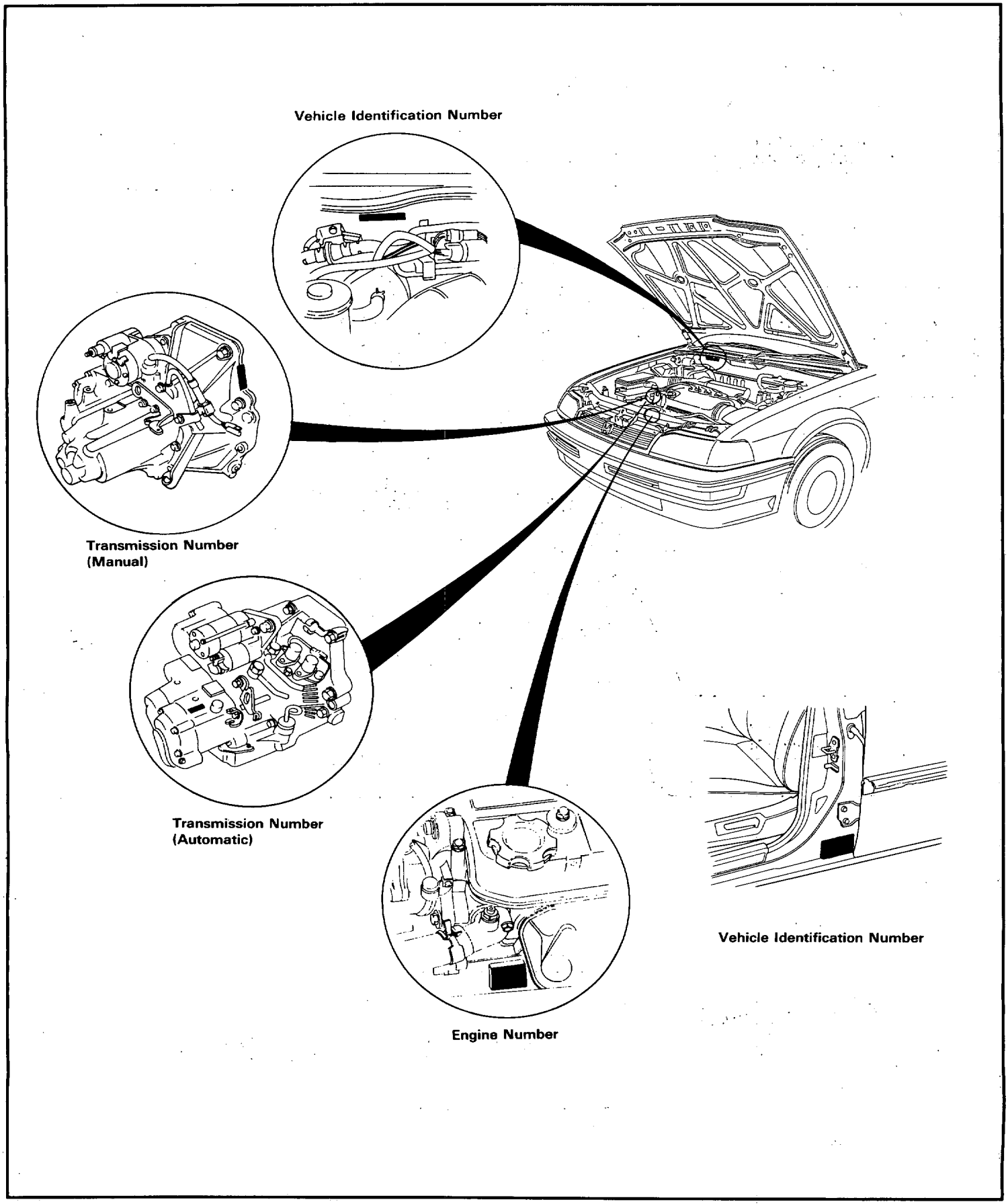
Downloaded from www.Manualslib.com manuals search engine

Chassis and Engine Numbers (cont'd)

MODEL YEAR	DOOR	ENGINE	GRADE	AREA	SHIFT TYPE	FRAME NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER
1990	4D	1400 2 Carb.	DX	KB	MT	SAHHW HLLNAD100001~	D14A1-E000001~	P7-1000001~
					AT	SAHHW HLLZAD100001~		L4-4000001~
				KF	MT	SAHHW HLLNAD100001~		P7-1000001~
					AT	SAHHW HLLZAD100001~		L4-4000001~
		1600 2 Carb.	LX	KB	MT	SAHHW MLWSAD100001~	D16Z1-E000001~	P7-1000001~
					AT	SAHHW MLWWAD100001~		L4-4000001~
				KE	MT	SAHHW MLWEAD100001~		P7-1000001~
					AT	SAHHW MLWLAD100001~		L4-4000001~
				KF	MT	SAHHW MLWSAD100001~		P7-1000001~
					AT	SAHHW MLWWAD100001~		L4-4000001~
				KR	MT	SAHHW MLWSAD100001~		P7-1000001~
					AT	SAHHW MLWWAD100001~		L4-4000001~
			EX	KE	MT	SAHHW YLWEAD100001~		P7-1000001~
					AT	SAHHW YLWLAD100001~		L4-4000001~
				KF	MT	SAHHW YLWSAD100001~		P7-1000001~
					AT	SAHHW YLWWAD100001~		L4-4000001~
			EX (A.L.B.)	KE	MT	SAHHW YLWEAD100001~		P7-1000001~
					AT	SAHHW YLWLAD100001~		L4-4000001~
		1600 DOHC PGM-FI	SX	KB	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~
				KE	MT	SAHHW WLUDAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUKAD100001~	D16Z4-E000001~	L4-4000001~
				KF	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~
				KR	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~
			SX (A.L.B.)	KB	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~
				KE	MT	SAHHW WLUDAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUKAD100001~	D16Z4-E000001~	L4-4000001~
				KF	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~
				KR	MT	SAHHW WLURAD100001~	D16A9-E000001~	P7-1000001~
					AT	SAHHW WLUYAD100001~	D16Z4-E000001~	L4-4000001~

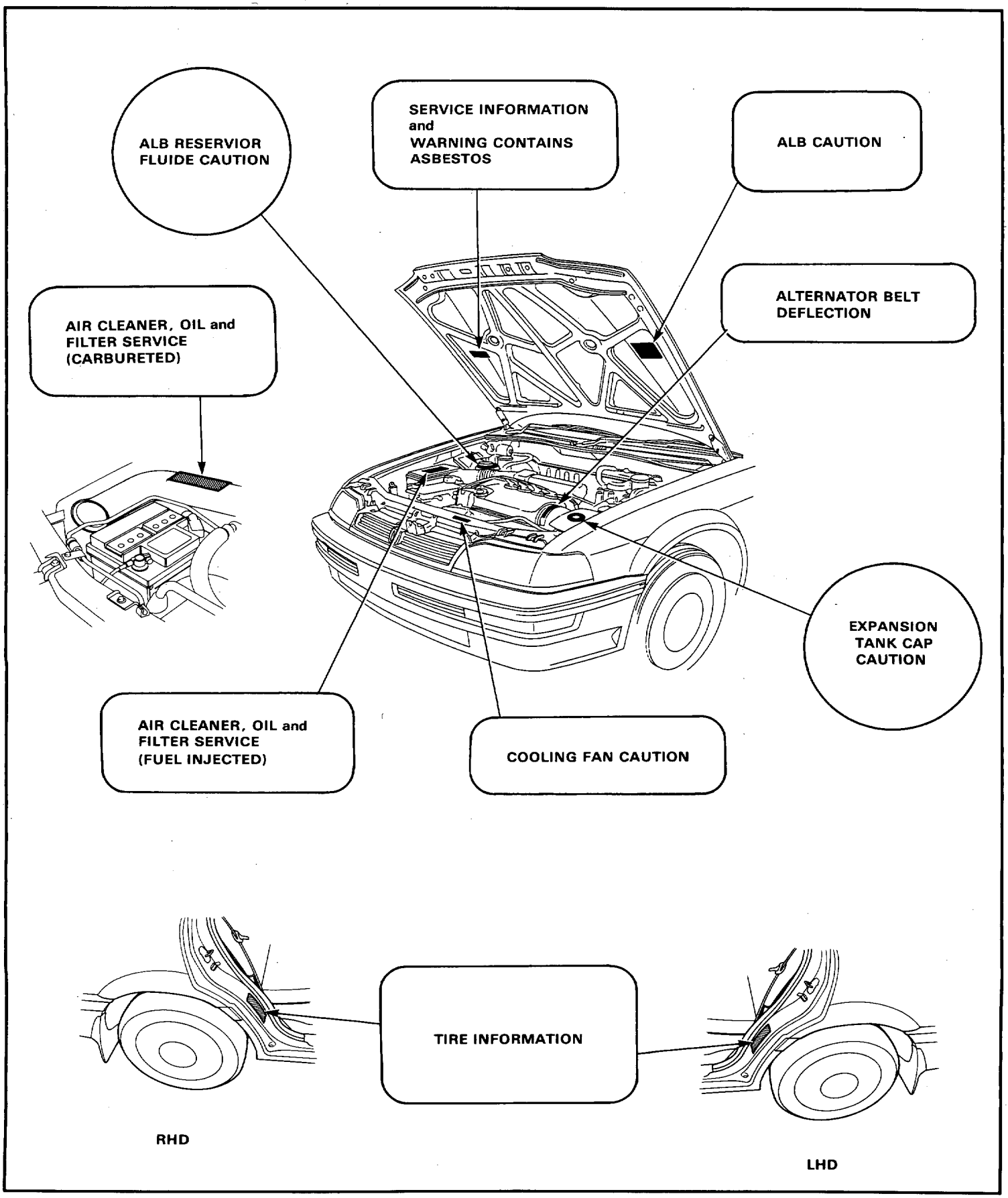
Downloaded from www.Manualslib.com manuals search engine

Identification Number Location



Downloaded from www.Manualslib.com manuals search engine

Label Locations



Downloaded from www.Manualslib.com manuals search engine

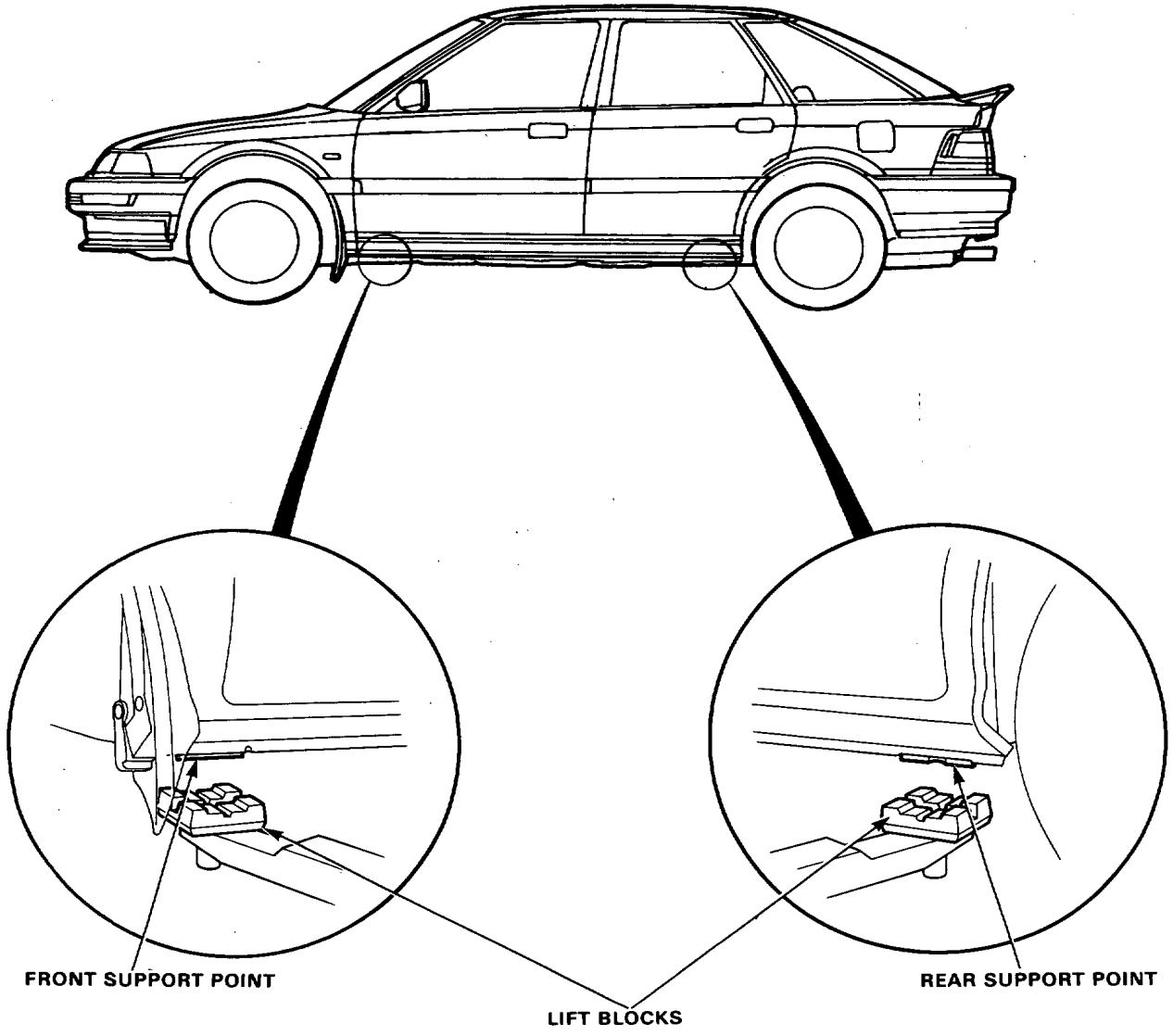
Lift and Support Points

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 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 tailgate 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)

Downloaded from www.Manualslib.com manuals search engine

Lift and Support Points (cont'd)

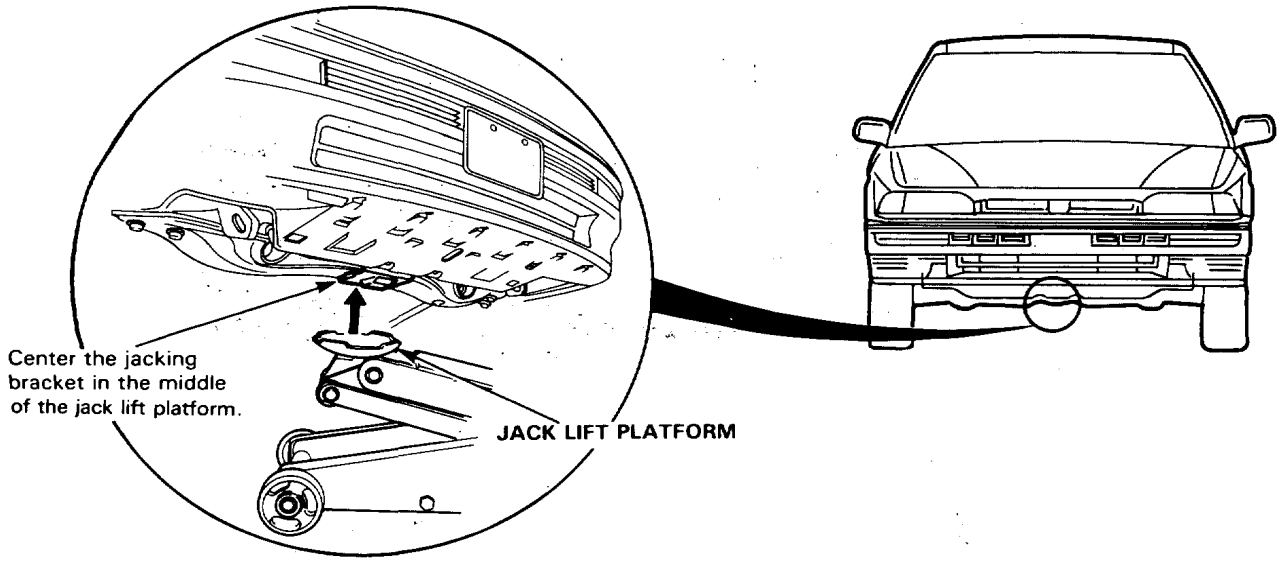
Floor Jack

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 (Automatic in PARK).
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.

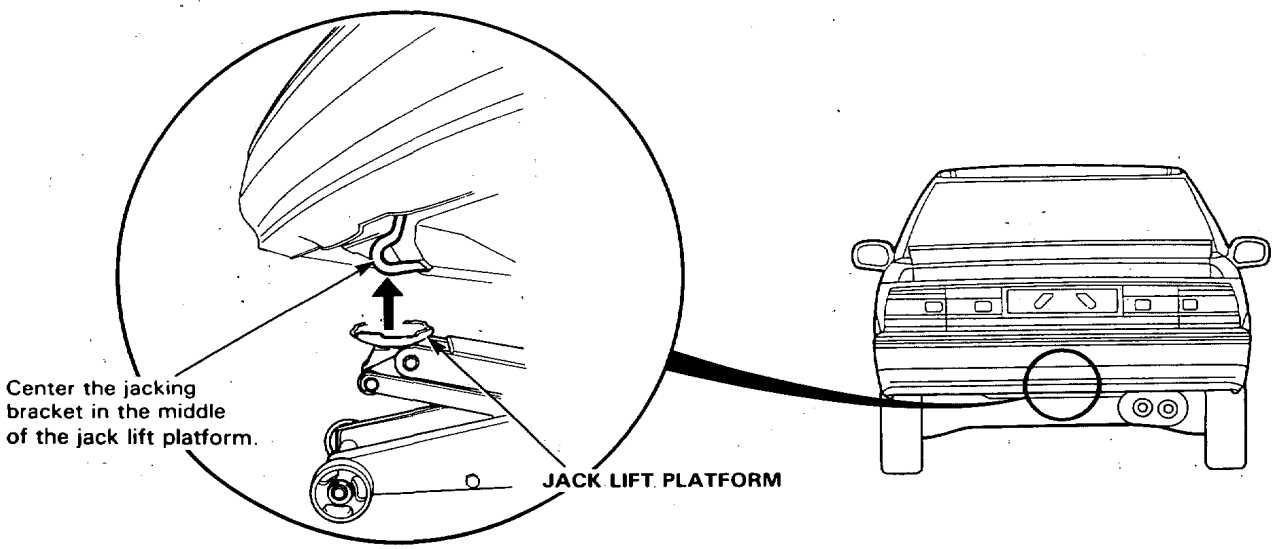
⚠ WARNING

- **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

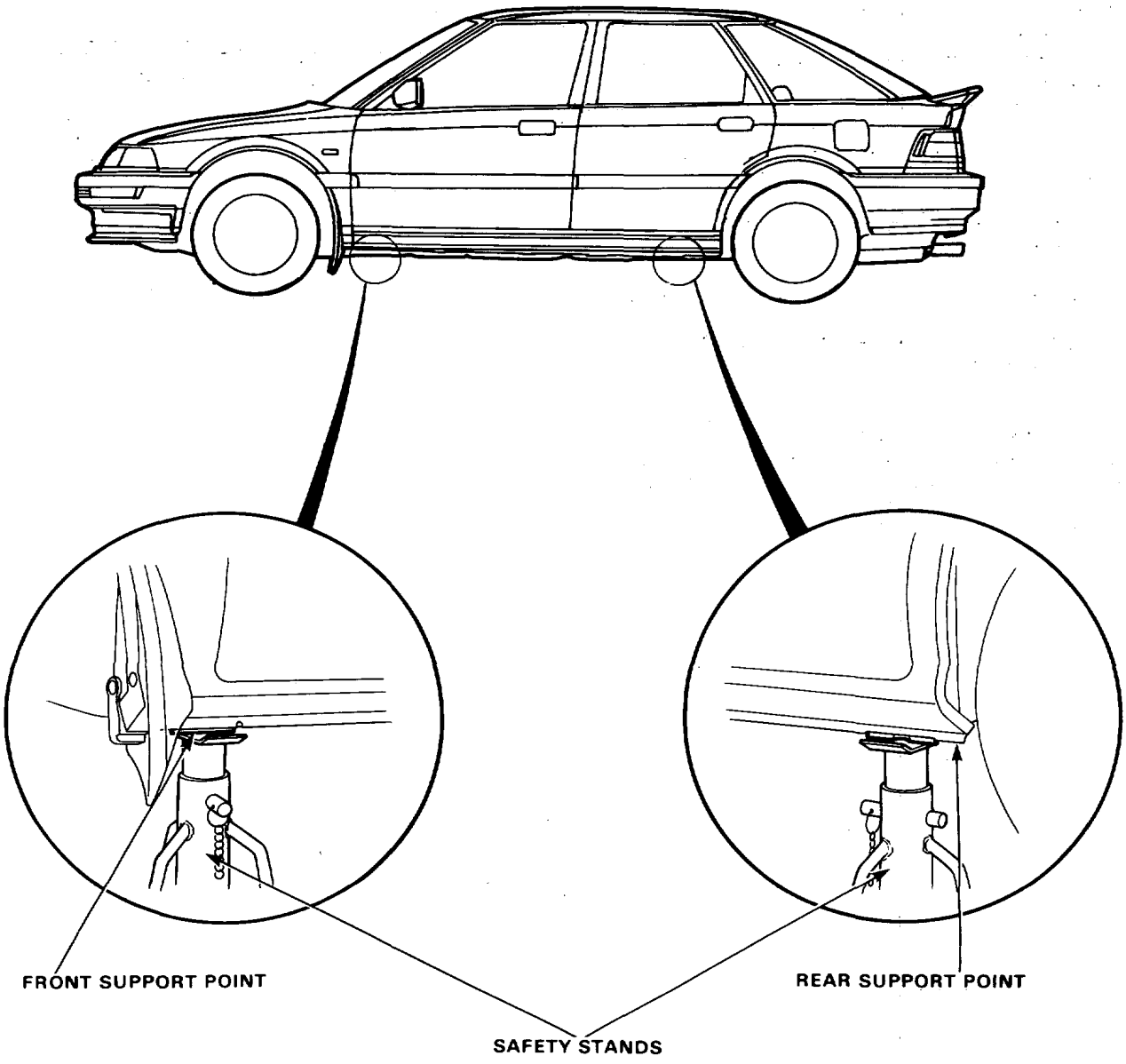


Rear



Downloaded from www.Manualslib.com manuals search engine

Safety Stands



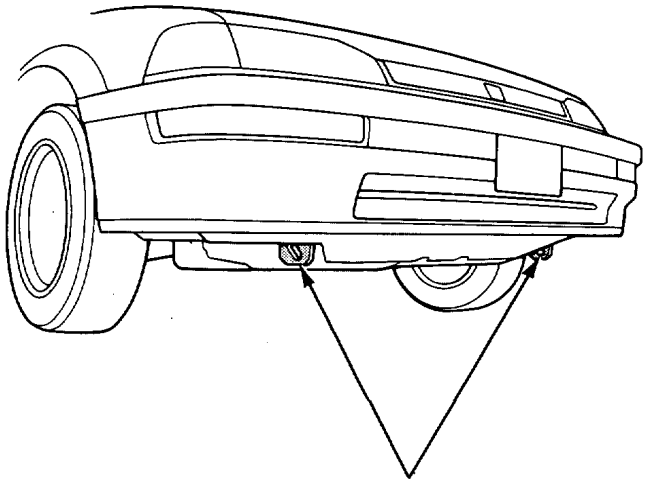
Downloaded from www.Manualslib.com manuals search engine

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 chains and lift straps, to avoid damaging the bumper and the body under it.
Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing. A chain may be attached to the hook as shown in the picture. 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. On some types, also, under some conditions, the catalytic converter could be damaged. A car equipped with an automatic transmission cannot be started by pushing or towing.
If the car is to be towed with the front wheels on the ground, observe the following precautions:
Manual Transmission
Shift the transmission to Neutral and turn the ignition key to the "I" position.
Automatic Transmission
First, check the automatic transmission fluid level (see section 9).
Start the engine and shift to D_4, then to N. Return the ignition key to the "I" position.

CAUTION:
- **Do not tow with front wheels on the ground when the automatic transmission fluid level is low or the transmission cannot be shifted with the engine running.**
- **Do not exceed 55 km/h (35 mph) or tow for distances of more than 80 km (50 miles).**



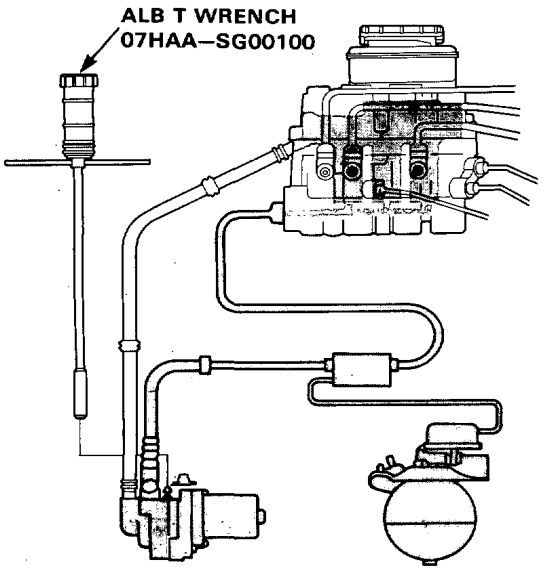
TOWING HOOKS

Downloaded from www.Manualslib.com manuals search engine

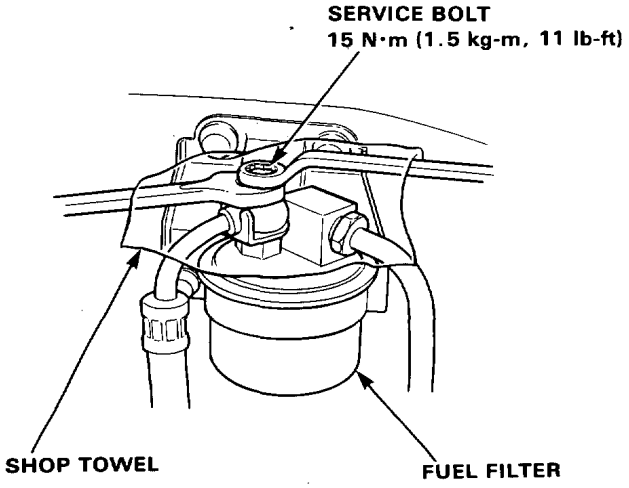
Preparation of Work

Special Caution Items For This Car

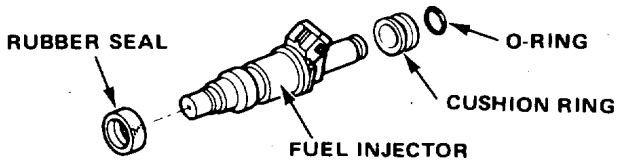
1. ALB piping system servicing
   - Disassemble the ALB piping system after relieve the high-pressured brake fluid.
   - Otherwise, the high-pressured brake fluid will burst out and it is very dangerous.
   - See section 13 how to relieve the highpressured brake fluid.



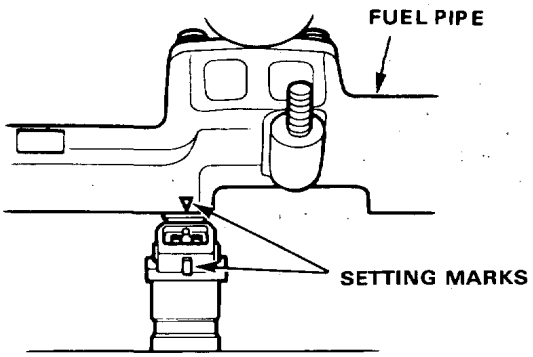
2. Fuel Line Servicing
   - Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



   - 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)

Downloaded from www.Manualslib.com manuals search engine

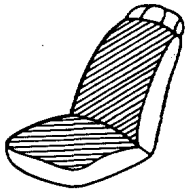
Preparation of Work

Special Caution Items For This Car (cont'd)

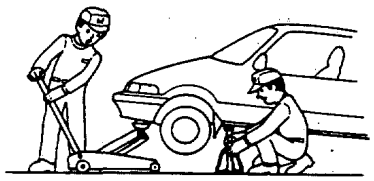
4. Installation of an amateur radio for cars equipped with PGM-FI and ALB.
   Care has been taken for the PGM-FI control unit and its wiring to prevent erroneous operation from external interference, but erroneous operation of the control unit may be caused by extremely strong radio waves. Attention 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.

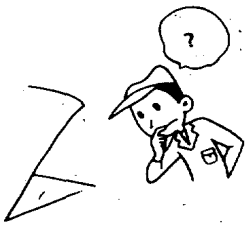
1. Protect all painted surfaces and seats against dirt and scratches with a clean cloth or vinyl cover.



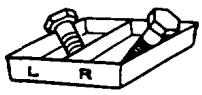
2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate at frequently as possible when work involves two or more workers. Do not run the engine unless the shop or working area is well ventilated.



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.

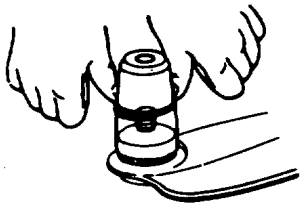


4. Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.



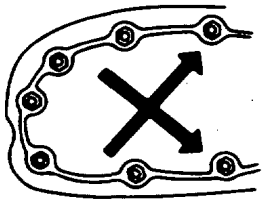
Downloaded from www.Manualslib.com manuals search engine

5. Use the special tool when use of such a tool is specified.

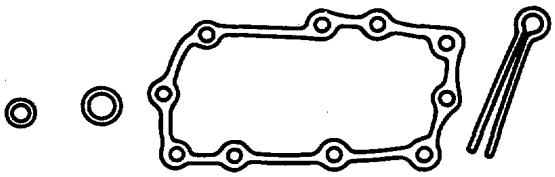


6. Parts must be assembled with the proper torque according to the maintenance standards established.

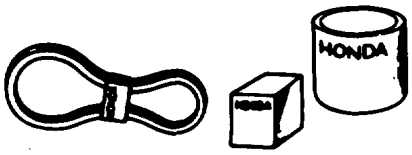
7. When tightening a series of bolts or nuts, begin with the center or large diameter bolts and tighten them in crisscross pattern in two or more steps.



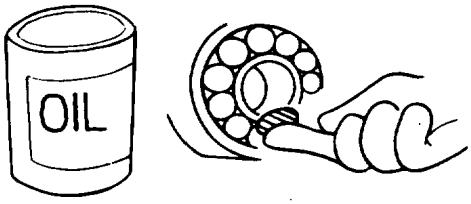
8. Use new packings, gaskets, O-rings and cotter pins whenever reassembling.



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.



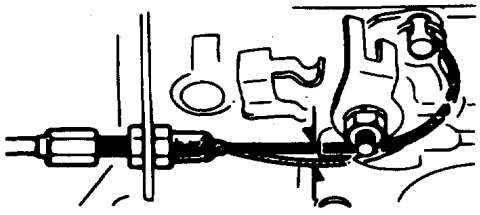
11. Brake fluid and hydraulic components
    - When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
    - Do not mix different brands of fluid as they may not be compatible.
    - Do not reuse drained brake fluid.
    - Because blake fluid can cause damage 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.

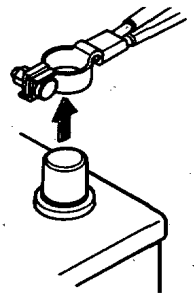
13. Upon assembling, check every part for proper installation and operation.



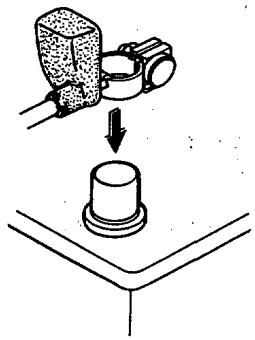
Downloaded from www.Manualslib.com manuals search engine

Electrical

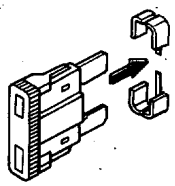
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (−) terminal.



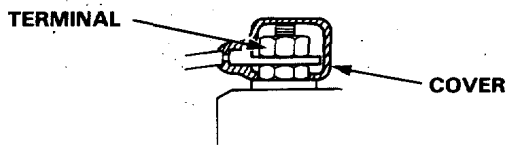
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (−) cable.



- 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.

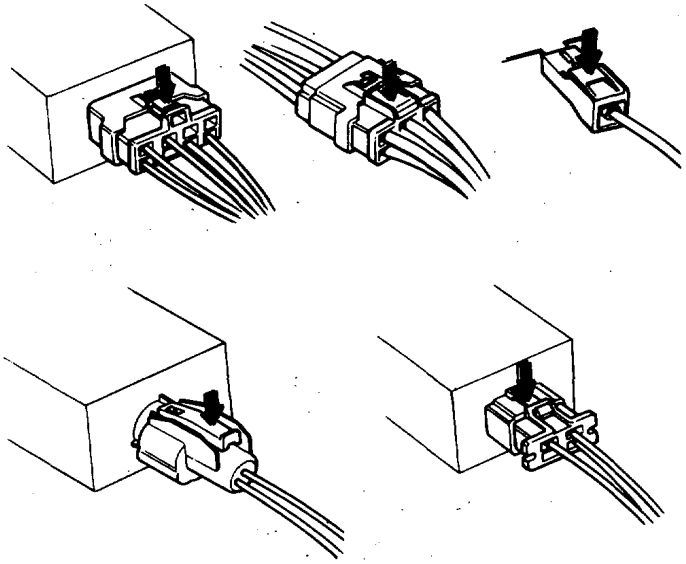


- Be sure to install the terminal cover over the connections after a wire or wire harness has been connected.

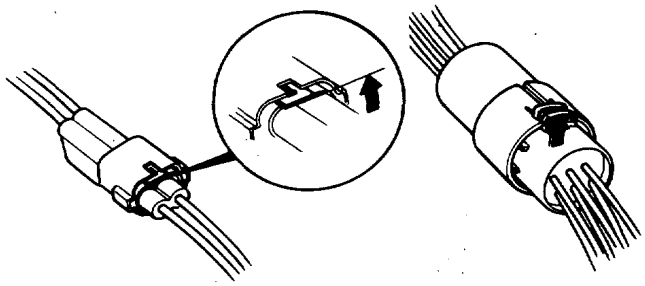


- As to locking connectors, be sure to disengage the lock before disconnecting.
- Conventional connectors may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following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

Press to disengage:



Pull up to disengage:



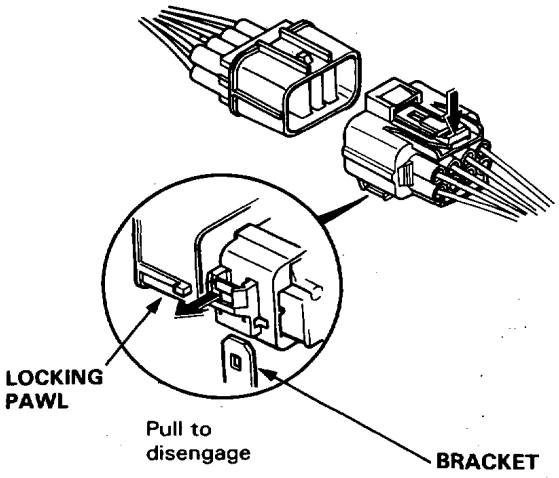
Downloaded from www.Manualslib.com manuals search engine

When new type connectors are used, connection and disconnection of them should be done paying attention to the following precautions.

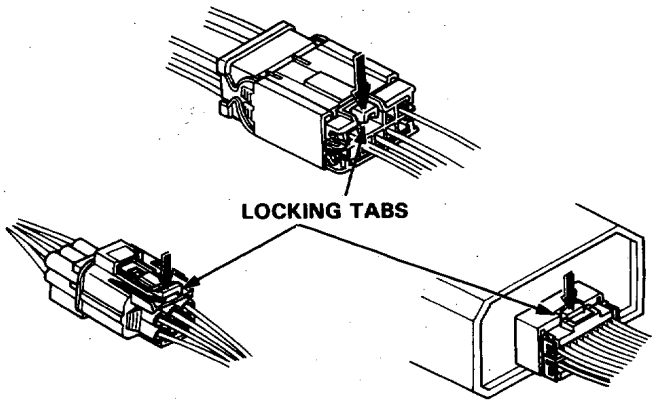
- Because all the connectors except terminal of 1-P are equipped with push-down type locks, unlock them first before disconnecting the connectors.

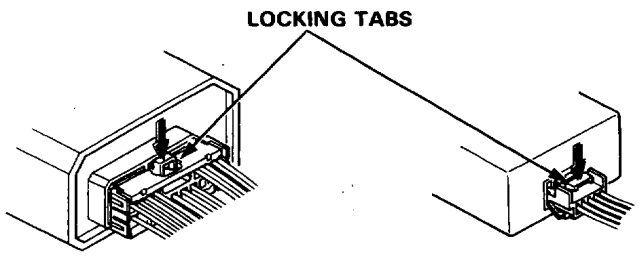
- On the connectors installed on the bracket a pull type lock is equipped between the bracket and the connector.
  Some connectors of this type can not be disconnected unless they are removed from their brackets. When disconnecting, check their shapes.

- On the bracket mounted connector with dual locks, remove the connector from the bracket before disconnecting.



- Push the locking tab to disconnect.



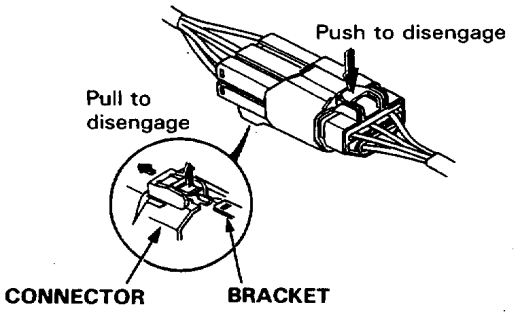


(cont'd)

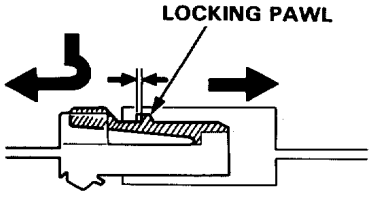
Downloaded from www.Manualslib.com manuals search engine

Electrical (cont'd)

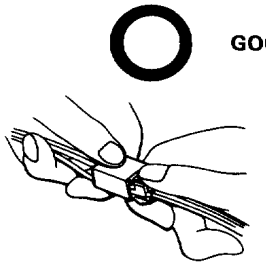
- Pull the locking tab to remove the connector from the bracket.

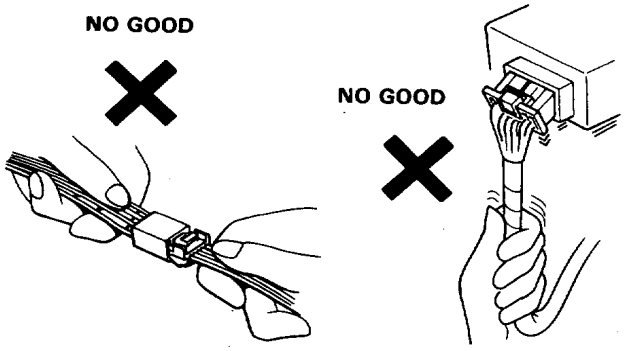


- When disconnecting locks, first press in the connector tightly (to provide clearance to the locking device), then operate the tab fully and remove the connector in the designated manner.

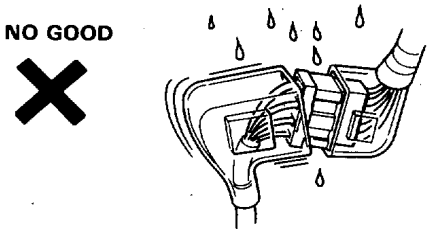


- When disconnecting a connector, pull it off from the mating connector by holding on both connectors.
- Never try to disconnect connectors by pulling on their wires.

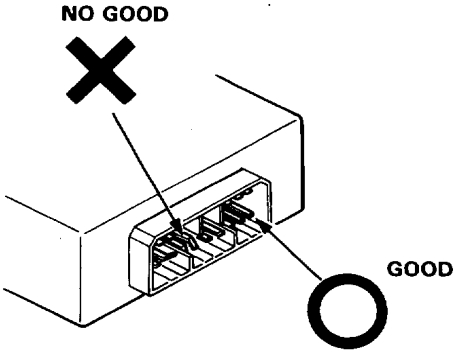




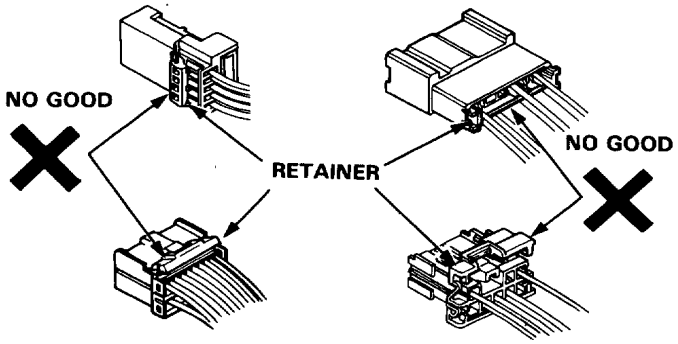
- Place the plastic cover over the mating connector after reconnecting. Also check that the cover is not distorted.



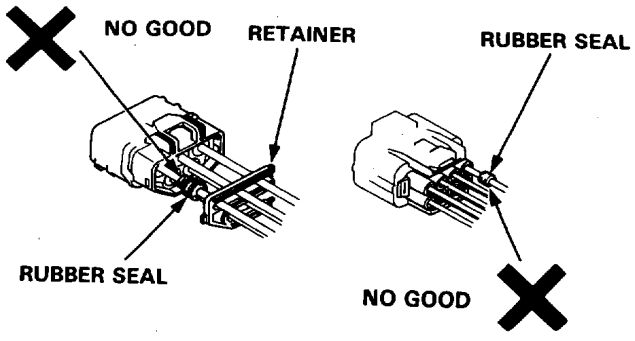
- Before connecting connectors, check to see that the terminals are in place and not bent or distorted.



- Check for loose retainer and rubber seals. The illustration shows examples of terminal and seal abnormality.

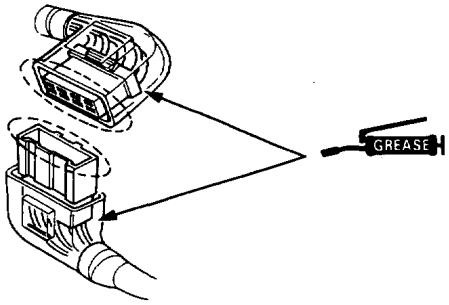


- Example of waterproof connector:



Downloaded from www.Manualslib.com manuals search engine

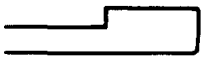
- For the connector which uses insulation grease, clean the connector then apply grease if the grease is insufficient or contaminated.



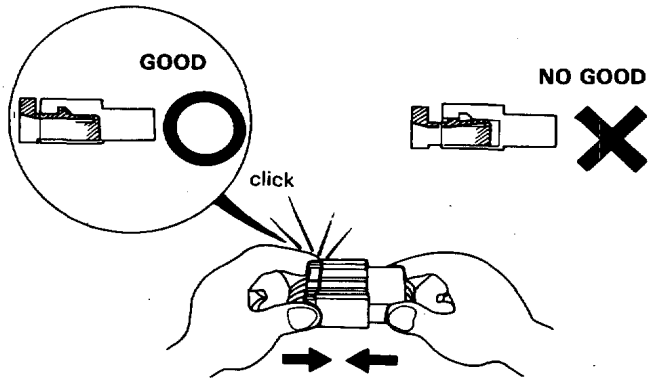
- Insert the connector tightly and make sure it is securely locked.
- Check all the wire harnesses are connected.
- There are two types of locking tab: one that you have to push and the other you should not touch when connecting the connector. Check the shape of the locking tab before connecting.
- The locking tab having a taper end should not be touched when connecting.



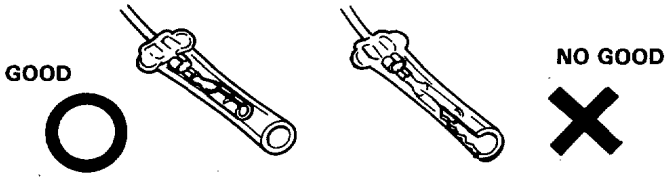
- The locking tab with an angle end should be pushed when connecting.



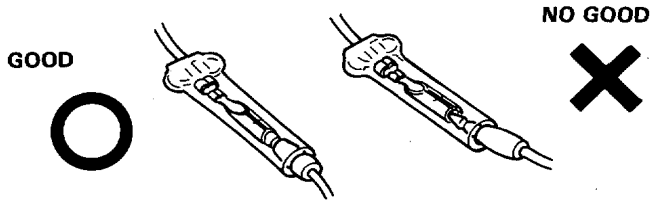
- Insert connectors fully until they will no longer go.
- The connectors must be aligned and engaged securely.
- Do not use wire harnesses with a loose wire or connector.



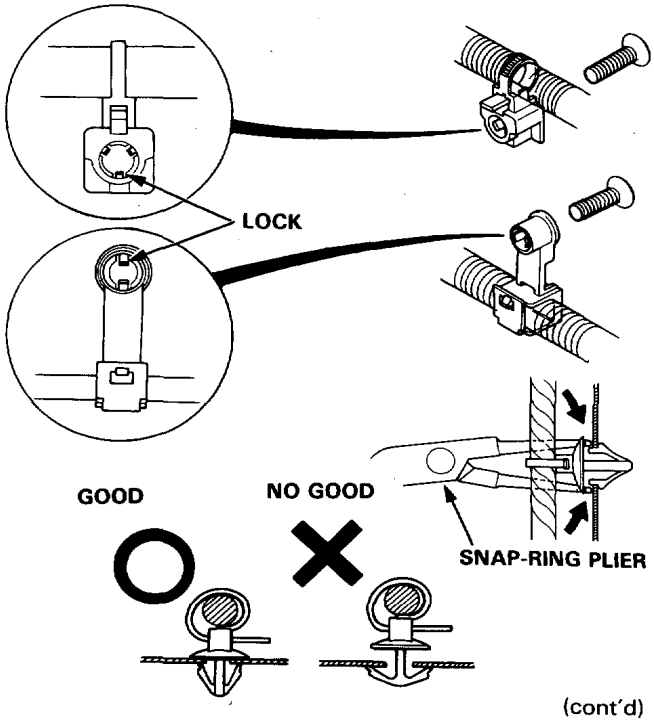
- Before connecting, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



- 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.



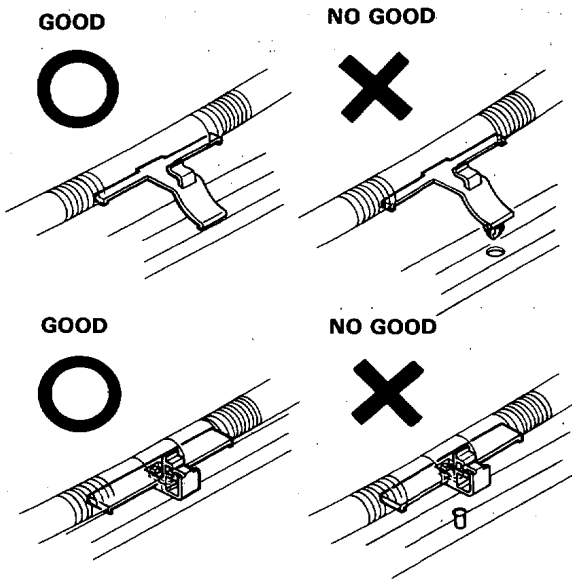
- Secure wires and wire harness to the frame with their respective wire bands at the designated locations.
  Position the wiring in the bands so that only the insulated surfaces contact the wires or harnesses.
- Remove with care not to damage the lock.



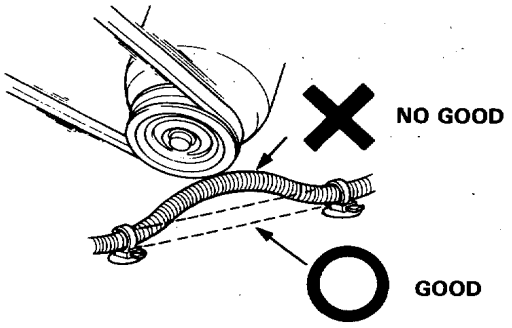
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

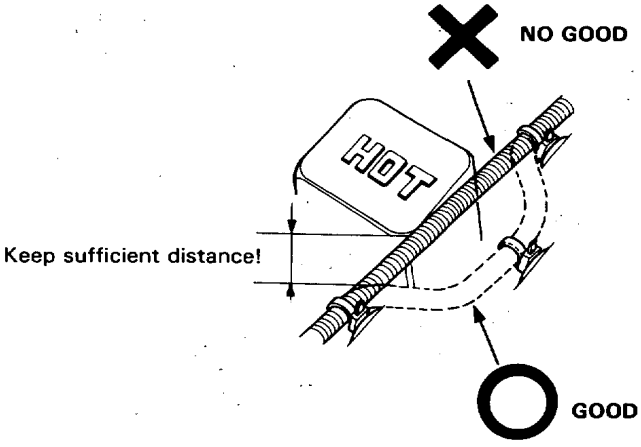
Electrical (cont'd)



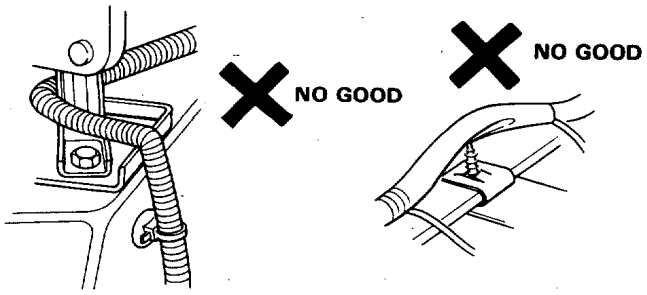
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



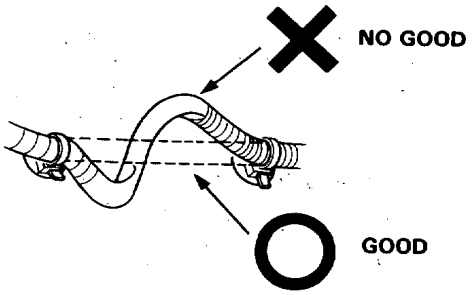
- Always keep a safe distance between wire harnesses and any heated parts.



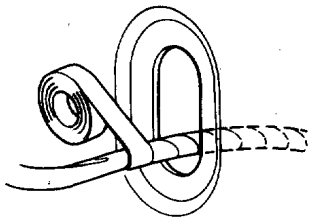
- Do not bring wire harnesses in direct contact with sharp edges or corners.
- Also avoid contact with the projected ends of bolts, screws and other fasteners.



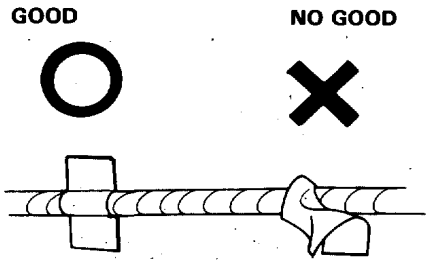
- Route harnesses so they are not pulled taut or slackened excessively.



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

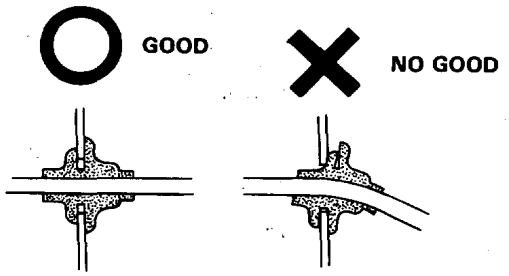


- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol if necessary.



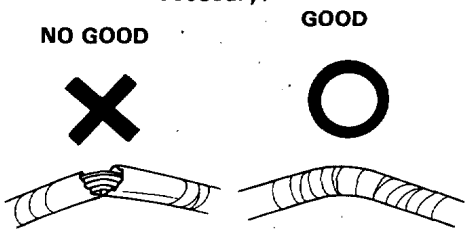
Downloaded from www.Manualslib.com manuals search engine

- Seat grommets in their grooves properly.

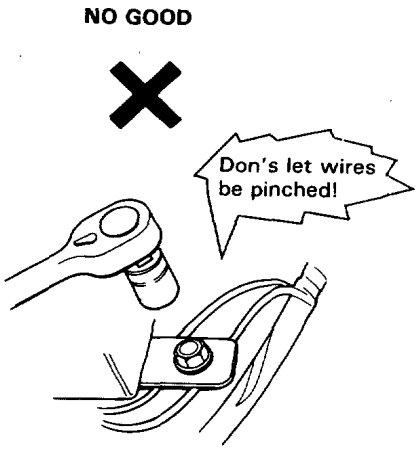


- Do not damage the insulation when connecting a wire.

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



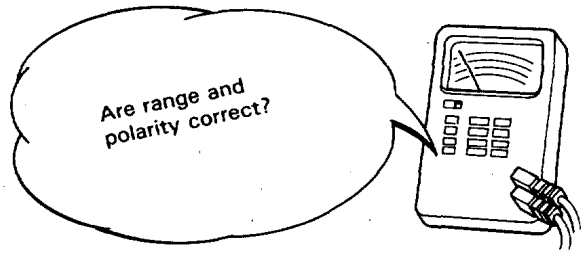
- After installing parts, make sure that wire harnesses are not pinched.



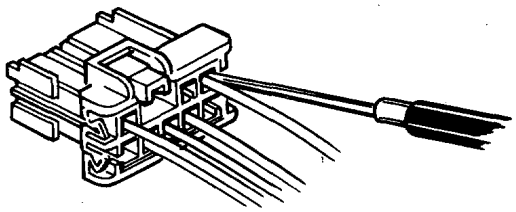
- After routing, check that the wire harnesses are not twisted or kinked.

- 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.

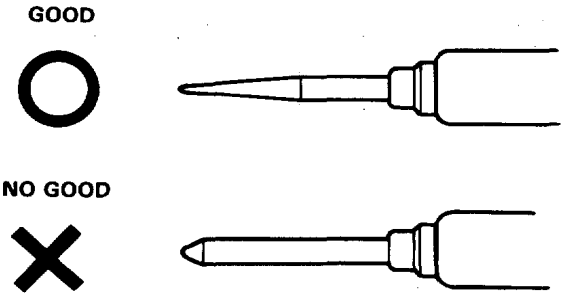
- When using the Service Tester, follow the manufacturer's instructions and those described in the Shop Manual.



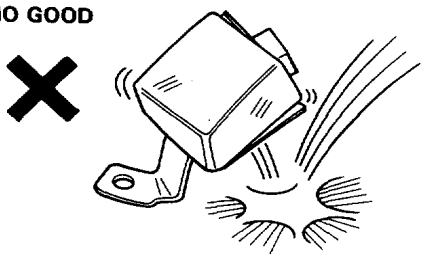
- Always insert the probe of the tester from the wire harness side (except waterproof connector).



- Make sure to use the probe with a tapered tip.



- Do not drop parts.



Downloaded from www.Manualslib.com manuals search engine

Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.



:Apply Automatic Transmission Fluid.



: Apply Power Steering Fluid.


:Apply or check vacuum.

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

Abbreviation

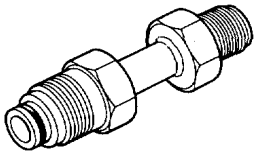
4D	4-door Saloon
5D	5-door Saloon
A/C	Air Conditioner
A/T	Automatic Transmission
ATF	Automatic Transmission Fluid
B or BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	Electronic Control Unit
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L.	Left
LHD	Left Hand Drive
M/T	Manual Transmission
PCV	Positive Crankcase Ventilation
PGM-FI	Programmed Fuel-Injection
P/S	Power Steering
R.	Right
RHD	Right Hand Drive
SW	Switch
SOL. V	Solenoid Valve
TDC	Top Dead Center
P	Parking
R	Reverse
N	Neutral
D4	Drive Position (1st~4th)
D3	Drive Position (1st~3rd)
2	2nd speed

Downloaded from www.Manualslib.com manuals search engine

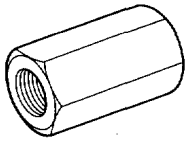
Special Tools

New Tools

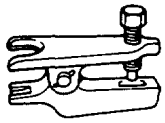
Ref. No.	Tool Number	Description	Q'ty	Remarks	section
①	07LAK-SK30110	P/S Pump Joint Adaptor	1		11
②	07LAK-SK30120	P/S Hose Joint Adaptor	1		11
③	18G 1584	Ball Joint Separator	1		10,11,12
④	18G 1596	Piston Retractor	1		13
⑤	18G 1600	Lower Arm Bush Front Remover/Replacer	1		12
⑥	18G 1602	Lower Arm Bush Rear Remover/Replacer	1		12



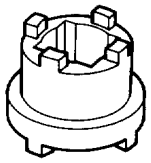
①



②



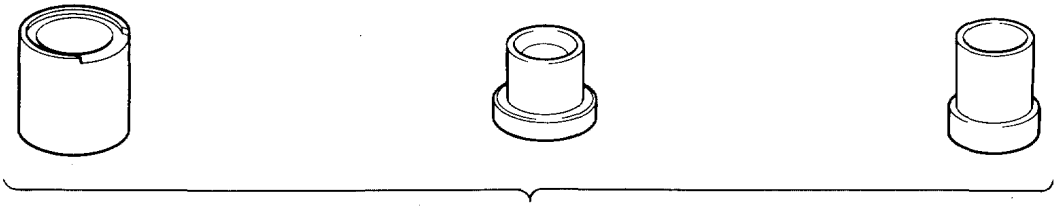
③



④



⑤



⑥

Downloaded from www.Manualslib.com manuals search engine

Special Tools

5. Engine

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD-PH70100	Valve Guide Seal Installer	1	For DOHC
②	07HAD-PJ70100	Driver	1	For crankshaft seal (pulley side)
③	07HAD-PJ70200	Valve Guide Seal Installer	1	For SOHC
④	07HAH-PJ70100	Valve Guide Reamer, 5.5 mm	1	For SOHC
⑤	07HAJ-SG90100	Radiator Tester Attachment A	1	
⑥	07HAJ-SG90200	Radiator Tester Attachment B	1	
⑦	07JAB-0010000	Crank Pulley Holder Set	1	
⑦-1	07JAA-0010100	Socket Wrench 17 mm	(1)	Conponent tools
⑦-2	07JAB-0010100	Pulley Holder Attachment	(1)	
⑦-3	07JAB-0010200	Handle	(1)	
⑧	07JAZ-SH20100	RPM Connecting Adaptor	1	
⑨	07JGG-0010100	Belt tension Gauge	1	
⑩	07KAK-SJ40100	Engine Tilt Hanger Set	1	
⑪	07406-0030000	Oil Pressure Gauge Adaptor	1	For pressure measurement
⑫	07742-0010100	Valve Guide Driver, 5.5 mm	1	For SOHC
⑬	07743-0020000	Adjustable Valve Guide Driver	1	
⑭	07744-0010400	Pin Driver 5.0 mm	2	For DOHC
⑮	07749-0010000	Driver	1	
⑯	07757-0010001	Valve Spring Compressor	1	07957-3290001 may also be used.
⑰	07912-6110001	Oil Filter Socket Wrench	1	Used for Japan-made oil filter
⑱	————	Oil Filter Wrench (Apply from LABINAL S.A.)	1	Used for France-made oil filter
⑲	07924-PD20003	Ring Gear Holder	1	07924-PD20002 may also be used.
⑳	07942-0010200	Valve Guide Driver 6.6 mm	1	For DOHC
㉑	07942-0110000	Valve Guide Driver 6.6 mm	1	For DOHC
㉒	07944-6110200	Pin Driver, 8 mm	1	
㉓	07948-SB00800	Driver Seal Attachment	1	For crankshaft seal (Clutch side)
㉔	07973-PE00200	Pilot Collar	1	
㉕	07973-PE00302	Adjustable Piston Pin Driver	1	
㉖	07973-PE00400	Piston Pin Base Insert	1	
㉗	07973-SB00100	Piston Base Head	1	
㉘-1	07973-6570500	Piston Base	(1)	Component tools
㉘-2	07973-6570600	Base Spring	(1)	
㉚	07984-657010C	Valve Guide Reamer 6.6 mm	1	For DOHC

6. Fuel and Emissions

Number	Tool Number	Description	Q'ty	Remarks
①	07JAZ-SH20100	RPM Connecting Adaptor	1	
②	07401-0010000	Float Level Gauge	1	
③	07406-0040001	Fuel Pressure Gauge Set	1	
④-1	07406-0040100	Pressure Gauge	1	Component tools
④-2	07406-0040201	Hose Assy	1	
⑤	07411-0020000	Digital Circuit Tester	1	
⑥	07614-0050100	Fuel Line Clip	1	

Downloaded from www.Manualslib.com manuals search engine

Special Tools

7. Clutch

Number	Tool Number	Description	Q'ty	Remaks
①	07JAF-PM70100	Clutch Disc Alignment Tool	1	
②	07746-0010100	Attachment, 32 x 35 mm	1	
③	07749-0010000	Driver	1	
④	07924-PD20003	Ring Gear Holder	1	07924-PD20002 may also be used.

8. Manual Transmission

Number	Tool Number	Description	Q'ty	Remarks
①	07GAJ-PG20102	Mainshaft Clearance Inspection Tool Set	1	
②	07JAC-PH80000	Adjustable Bearing Remover Set	1	07936-6340000 may also be used.
③	07744-0010200	Pin Driver, 3 mm	1	
④	07744-0010400	Pin Driver, 5 mm	1	07944-6110100 may also be used.
⑤	07744-0010600	Pin Driver, 8 mm	1	
⑥	07746-0010300	Attachment, 42 x 47 mm	1	07974-6110100 may also be used.
⑦	07746-0010401	Attachment, 52 x 55 mm	1	07974-6340200 may also be used.
⑧	07746-0030100	Driver	1	
⑨	07746-0030400	Driver, 35 mm	1	
⑩	07749-0010000	Driver	1	07949-6110000 may also be used.
⑪	07944-SA00000	Pin Driver, 4 mm	1	
⑫	07947-6110500	Oil Seal Driver	1	
⑬	07947-6340500	Oil Seal Driver Attachment E	1	
⑭	07948-SC20200	Oil Seal Driver	1	
⑮	07979-PJ40001	Magnet Stand Base	1	

9. Automatic Transmission

Number	Tool Number	Description	Q'ty	Remarks
①	07GAC-PF40210	Bearing Remover Attachment	1	Use in place of 07936-6340000 attachment
②	07GAE-PG40001	Clutch Spring Compressor Set	1	
②-1	07GAE-PG40200	Compressor Bolt Assembly	(1)	Component tools
②-2	07HAE-PL50100	Compressor Attachment	(1)	Component tools
②-3	07960-6120100	Compressor Attachment	(1)	Component tools
③	07HAC-PK40100	Transmisson Housing Puller	1	
④	07HAD-SF10100	Driver Attachment	1	
⑤	07JAD-PH80400	Pilot Driver 28 x 30 mm	1	
⑥	07406-0020003	Oil Pressure Gauge Set	1	
⑥-1	07406-0020201	Oil Pressure Gauge Hose Attachment	(1)	Component tools
⑦	07406-0070000	Low Pressure Gauge	1	
⑧	07746-0010500	Attachment, 62 x 68 mm	1	07947-6340400 may also be used.
⑨	07746-0030100	Driver C	1	
⑩	07923-6890202	Mainshaft Holder	1	
⑪	07749-0010000	Driver	1	07949-6110000 may also be used.
⑫	07936-6340000	Bearing Remover Set	1	
⑬	07944-SA00000	Pin Driver, 4 mm	1	
⑭	07947-6110500	Driver Attachment E	1	
⑮	07947-6340201	Oil Seal Driver	1	
⑯	07947-6340500	Driver Attachment E	1	

Downloaded from www.Manualslib.com manuals search engine

10. Driveshafts

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07GAD-PG40100	Seal Driver Attachment	1	
②	07GAF-SD40700	Hub Dis/Assembly Bass	2	
③	07JAD-SH30100	Seal Driver Attachment	1	
④	07746-0010200	Attacment 37 x 40 mm	1	
⑤	07746-0010300	Attachment 42 x 47 mm	1	
⑥	07746-0030100	Driver 40 mm I.D.	1	
⑦	07749-0010000	Driver	1	
⑧	07947-SD90101	Seal Driver Attachment	1	
⑨	07965-MA60000	Attachment	1	
⑩	07965-SD90100	Support Base	1	
⑪	18G-1584	Ball joint remover	1	

11. Steering

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JGG-0010100	Belt Tension Gauge	1	Not Shown
②	07LAK-SK30100	P/S Pressure Gauge Adaptor Set	1	Not Shown
②-1	07LAK-SK30110	P/S Pump Joint Adaptor	1	
②-2	07LAK-SK30120	P/S Hose Joint Adaptor	1	
③	07406-0010001	P/S Pressure Gauge Set	1	
③-1	07406-0010300	Pressure Control Valve	1	
③-2	07406-0010400	Pressure Gauge	1	
④	18G-1584	Ball Joint Remover	1	

Downloaded from www.Manualslib.com manuals search engine

Special Tools

12. Suspension

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07GAE—SE00100	Spring Compressor	1	
②	07GAF—SE00100	Hub Dis/Assembly Shaft	1	
③	07GAF—SE00200	Hub Assembly Guide Attachment	1	
④	07HGK—0010100	Wheel Alignment Gauge Attachment	1	
⑤	07JAF—SH20110	Hub Dis/Assembly Pilot	1	
⑥	07JAF—SH20310	Bush Driver	1	
⑦	07JAF—SH20330	Bush Base A	1	
⑧	07JAF—SH20340	Bush Base B	1	
⑨	07941—6920003	Ball Joint Remover	1	
⑩	07947—SD90200	Attachment	1	
⑪	07959—SA50000	Spring Compressor	1	
⑫	07965—6340301	Hub Dis/Assembly Base	1	
⑬	07965—6340341	Hub Dis/Assembly Base	1	
⑭	07965—6920201	Hub Dis/Assembly Base	1	
⑮	18G 1584	Ball Joint Separator	1	
⑯	18G 1600	Lower Arm Bush Front Remover/Replacer	1	
⑯-1	18G 1600/1	Bush Base	(1)	Component tools
⑯-2	18G 1600/2	Bush Dirver	(1)	
⑰	18G 1602	Lower Arm Bush Rear Remover/Replacer	1	
⑰-1	18G 1602/1	Bush Base	(1)	Component tools
⑰-2	18G 1602/2	Bush Driver	(1)	
⑰-3	18G 1602/3	Bush Driver	(1)	

13. Brakes (without ALB)

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAE—SG00100	Brake Spring Compressor	1	
②	07JAG—SD40100	Pushrood Adjustment Gauge	1	
③	07404—5790300	Vacuum Gauge	1	
④	07406—5790200	Pressure Gauges	2	
⑤	07410—5790100	Pressure Gauge Attachment C	2	
⑥	07410—5790500	Tube Joint Adaptor	1	
⑦	07510—6340300	Vacuum Joint Tube A	1	
⑧	07510—6340101	Pressure Gauge Joint Pipes	2	
⑨	07749—0010000	Driver	1	
⑩	07914—SA50001	Snap Ring Pliers	1	
⑪	07921—0010001	Flare Nut Wrench	1	
⑫	07947—6890300	Driver Attachment C	1	
⑬	07973—SA50000	Rear Caliper Guide	1	
⑭	18G 1596	Piston Retractor	1	

13. Brakes (with ALB)

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAA—SG00100	ALB T-Wrench	1	
②	07HAJ—SG00601	ALB Checker	1	
	or			
	07508—SB00000	ALB Checker	1	
	—07HAJ—SG00400	Adaptor	1	
③	07JAG—SD40100	Pushrod Adijustment Gauge	1	
④	07404—5790300	Vacuum Gauge	1	
⑤	07406—5790200	Pressure Gauges	2	
⑥	07410—5790500	Tube Joint Adaptor	1	
⑦	07410—5790100	Pressure Gauge Attachment	2	

Downloaded from www.Manualslib.com manuals search engine

15. Heater and Air Conditioner

Number	Tool Number	Description	Q'ty	Remarks
①	07HAF-SF10300	Seal Seat Remover	1	Cover plate removal
②	07HAF-SF10400	Seal Remover/Installer	1	Shaft seal removal/inntallation

16. Electrical

Number	Tool Number	Description	Q'ty	Remarks
①	07GAC-SE00200	Fuel Sender Wrench	1	
②	07JGG-0010100	Belt Tension Gauge	1	

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

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

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide-open throttle	Normal	———	1,275 kPa (13.0 kg/cm^2, 185 psi)
		Minimum	———	932 kPa (9.5 kg/cm^2, 135 psi)
		Maximum variation	———	196 kpa (2 kg/cm^2, 28 psi)
Cylinder head	Warpage		———	0.05 (0.002)
	Height		94.95-95.05 (3.7381-3.7421)	———
Camshaft	End play		0.05-0.15 (0.002-0.006)	0.5 (0.02)
	Oil clearance		0.050-0.089 (0.002-0.004)	0.15 (0.006)
	Runout		0-0.03 (0-0.001) max.	0.06 (0.002)
	Cam lobe height			———
	1.4ℓ (2-Carb.) / 1.5ℓ (PGM-FI)	IN	36.603 (1.4411)	———
		EX M/T	36.747 (1.4467)	———
		A/T	36.750 (1.4468)	———
	1.6ℓ (2-Carb.)	IN	36.782 (1.4481)	———
		EX	36.947 (1.4546)	———
	1.6ℓ (PGM-FI)	IN	36.782 (1.4481)	———
		EX	36.947 (1.4546)	———
Valve	Valve clearance	IN	0.17-0.22 (0.007-0.009)	———
		EX	0.22-0.27 (0.009-0.011)	———
	Valve stem O.D.	IN	5.48-5.49 (0.2157-0.2161)	5.45 (0.2146)
		EX	5.45-5.46 (0.2147-0.2150)	5.42 (0.2134)
	Stem-to-guide clearance	IN	0.02-0.05 (0.001-0.002)	0.08 (0.003)
		EX	0.45-0.08 (0.002-0.003)	0.11 (0.004)
	Stem installed height	IN	46.985-47.455 (1.8498-1.8683)	47.705 (1.8781)
		EX	48.965-49.435 (1.9278-1.9562)	49.685 (1.9561)
Valve seat	Width	IN	0.85-1.15 (0.033-0.045)	1.6 (0.06)
		EX	1.25-1.55 (0.049-0.061)	2.0 (0.08)
Valve spring	Free length			
	1.4ℓ (2-Carb.)	IN	48.58 (1.9126)	47.64 (1.8756)
		EX	48.49 (1.9091)	47.68 (1.8772)
	Others	IN	48.58 (1.9126)	47.64 (1.8756)
		EX	49.19 (1.9366)	48.32 (1.9024)
Valve guide	I.D.	IN and EX	5.51-5.53 (0.2169-0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-ahaft clearance	IN	0.017-0.050 (0.0007-0.0020)	0.08 (0.003)
		EX	0.018-0.054 (0.0007-0.0021)	0.08 (0.003)

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in.)

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

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide-open throttle	Nominal	—	1,324 kPa (13.5 kg/cm², 192 psi)
		Minimum	—	932 kPa (9.5 kg/cm², 135 psi)
		Maximum variation	—	196 kPa (2 kg/cm², 28 psi)
Cylinder head	Warpage		—	0.05 (0.002)
	Height		131.95—132.05 (5.1949—5.1988)	—
Camshaft	End play		0.05—0.15 (0.002—0.006)	0.5 (0.02)
	Oil clearance		0.050—0.089 (0.002—0.004)	0.15 (0.006)
	Runout		0—0.03 (0—0.001) max.	0.06 (0.002)
	Cam lobe height	IN	33.021 (1.3000)	—
		EX	32.382 (1.2749)	—
Valve	Valve clearance	IN	0.12—0.17 (0.005—0.007)	—
		EX	0.14—0.19 (0.006—0.008)	—
	Valve stem O.D.	IN	6.58—6.59 (0.2591—0.2595)	6.55 (0.2579)
		EX	6.55—6.56 (0.2579—0.2583)	6.52 (0.2567)
	Stem-to-guide clearance	IN	0.02—0.05 (0.001—0.002)	0.08 (0.003)
		EX	0.05—0.08 (0.002—0.003)	0.11 (0.005)
	Stem installed height	IN	45.545—46.015 (1.7931—1.8116)	46.265 (1.8215)
		EX	44.735—45.205 (1.7612—1.7797)	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	IN	47.49 (1.8697)	46.46 (1.8291)
		EX	46.89 (1.8461)	45.93 (1.8083)
Valve guide	I.D.	IN and EX	6.61—6.63 (0.2602—0.2610)	6.55 (0.2579)

5. Engine/Engine Block

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		—	0.10 (0.004)
	Bore diameter		75.00—75.02 (2.9528—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 (2.9516)
	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—0.30 (0.006—0.012)	0.6 (0.02)
		2nd	0.30—0.45 (0.012—0.018)	0.6 (0.02)
		Oil	0.20—0.80 (0.008—0.031)	0.9 (0.04)
Connecting rod	Pin-to-rod interference		0.014—0.040 (0.0006—0.0016)	—
	Large end bore diameter	1.4 ℓ	Nominal 43.0 (1.69)	—
		1.5 ℓ	Nominal 45.0 (1.77)	—
		1.6 ℓ	Nominal 48.0 (1.89)	—
	End play installed on crankshaft		0.15—0.30 (0.006—0.012)	0.40 (0.016)
Crankshaft	Main journal diameter	except 1.6 ℓ	44.976—45.000 (1.7707—1.7718)	—
		1.6 ℓ	54.976—55.000 (2.1644—2.1654)	—
	Taper/out-of-round, main journal		0.0025 (0.0001) max.	0.010 (0.004)
	Rod journal diameter	1.4 ℓ	39.976—40.000 (1.5739—1.5748)	—
		1.5 ℓ	41.976—42.000 (1.6526—1.6535)	—
		1.6 ℓ	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		0.03 (0.0012) max.	0.06 (0.0024)
Bearings	Main bearing-to-journal oil clearance			
	except 1.6ℓ	(No. 1, 5 journals)	0.018—0.036 (0.0007—0.0014)	0.05 (0.002)
		(No. 2, 3, 4 journals)	0.024—0.042 (0.0010—0.0017)	0.05 (0.002)
	1.6ℓ	(No. 1, 5 journals)	0.018—0.036 (0.0007—0.0014)	0.05 (0.002)
		(No. 2, 4 journals)	0.024—0.042 (0.0010—0.0017)	0.05 (0.002)
		(No. 3 journal)	0.030—0.048 (0.0012—0.0019)	0.05 (0.002)
	Rod bearing-to-journal oil clearance		0.020—0.038 (0.0008—0.0015)	0.05 (0.002)

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

5. Engine/Engine Lubrication

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (U S qt, Imp qt) (Includes oil filter 0.5 (0.53, 0.44))	SOHC DOHC	4.0 (4.2, 3.5) for engine disassembly 3.5 (3.7, 3.1) for oil change 4.3 (4.5, 3.8) for engine disassembly 3.8 (4.0, 3.3) for oil change	
Oil pump	Displacement ℓ (US qt, Imp qt) @min^{-1} (rpm)	SOHC DOHC	44 (11.6, 9.7) @ 6,250 62 (16.3, 13.6) @ 6,750	
	Inner-to-outer rotor radial clearance Pumb body-to-rotor radial clearance Pump body-to-rotor side clearance		0.14 (0.006) 0.100-0.175 (0.004-0.007) 0.03-0.08 (0.001-0.003)	0.2 (0.008) 0.2 (0.008) 0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F) kPa (Kg/cm^2, psi)	Idle	69 (0.7, 10) min.	
		3,000min^{-1}(rpm)	343 (3.5, 50) min.	

5. Engine/Cooling

	MEASUREMENT	STANDARD (NEW)	
Radiator	Capacity (incl. heater) ℓ (US qt, Imp qt) (Includes expantion tank 0.55 (0.58, 0.48)) 1.4ℓ (2-Carb.), 1.6 ℓ (PGM-FI) 1.5 ℓ (PGM-FI), 1.6ℓ (2-Carb.), 1.6 ℓ DOHC	 M/T 5.4 (5.7, 4.8) M/T 5.5 (5.8, 4.8)	 A/T 5.3 (5.6, 4.7) A/T 5.4 (5.6, 4.8)
Expantion tank cap	Pressure cap opening pressure kPa (kg/cm^2, psi)	74-103 (0.75-1.05, 11-15)	
Thermostat	Starts to open Full open Valve lift at full open	76-80°C (169-176°F) 90°C (194°F) 8 (0.31) min.	
Water pump	Pulley ratio (crankshaft) Capacity ℓ (US gal, Imp gal) per min @ min^{-1} (rpm) SOHC DOHC	1 : 1 85 (22.4, 18.7) @ 4,000 76 (20.0, 16.7) @ 4,000	
Cooling fan	Thermoswith "ON" temperature Thermoswitch "OFF" temperature	91.5-94.5°C (197-202°F) Subtract 3.5 ± 1.5°C (6 ± 2.7°F) from actual "ON" temperature.	

6. Fuel and Emission (PGM-FI)

	MEASUREMENT	STANDARD (NEW)	
Fuel pump	Delivery pressure kPa (kg/cm^2, psi) Displacement cc/10 seconds Relief valve opening pressure kPa (kg/cm^2, psi)	250 (2.55, 36) 236 min. 441-588 (4.5-6.0, 64-85)	
Pressure regulator	Pressure kPa (kg/cm^2,psi)	245-255 (2.5-2.6, 36-37)	
Fuel Tank	Capacity ℓ (US gal, Imp gal)	55 (14.5, 12.1)	
Fast idle	min^{-1} (rpm)	M/T 1,000-2,000 A/T 1,000-2,000	
Idle speed min^{-1} (rpm)	with headlights and cooling fan off 1.5 ℓ 1.6 ℓ 1.6 ℓ DOHC	 800 ± 50 780 ± 50 M/T: 800 ± 50	 A/T without CATA: 750 ± 50
Idle CO %	With CATA Without CATA	below 0.1 0.5 $^{+0.5}_{-0.3}$	

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in)

6. Fuel and Emissions (Carbureted Engine)

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure kPa (kg/cm², psi) Displacement cc/minutes	6.8-22.6 (0.07-0.23, 1.0-3.2) 833.3 min.
Fuel Tank	Capacity ℓ (US gal, Imp gal)	55 (14.5, 12.1)
Fast idle		See section 6
Idle speed	With headlights and cooling fan off min^{-1} (rpm)	750 ± 50 700 ± 50
Idle CO	%	below 1.0

7. Clutch

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height from floor from carpet Stroke Disengagement height from floor Pedal play from carpet	208 (8.19) 194 (7.64) 135–145 (5.31–5.71) 52 (2.01) 25 (0.98) 15–20 (0.59–0.79)	— — — — — —
Clutch release arm	Free play at arm	3.5–4.5 (0.14–0.18)	—
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth Surface runout Radial play in spline at circumference (200φ) Thickness	1.3 (0.05) min. 0.8 (0.03) max. 0.1–0.5 (0.004–0.020) 8.4–8.9 (0.331–0.350)	0.2 (0.008) 1.0 (0.04) 3.4 (0.134) 6.2 (0.244)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance	31.00–31.15 (1.220–1.226) 0.05–0.23 (0.002–0.009)	31.2 (1.228) 0.3 (0.012)
Clutch cover	Uneveness of diaphragm spring Pressure disc parallelism	0.8 (0.03) max. 0.03 (0.0012) max.	1.0 (0.04) 0.15 (0.006)

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 1.9 (2.0, 1.7) at assembly	
Mainshaft	End play Diameter of ball bearing contace area Diameter of third gear contact area Diameter of 4th, 5th gear contact area Diameter of ball bearing contact area Runout	0.11–0.18 (0.004–0.007) 25.977–25.990 (1.0227–1.0232) 33.984–34.000 (1.3380–1.3386) 26.980–26.993 (1.0622–1.0627) 21.987–22.000 (0.8656–0.8661) 0.02 (0.0008) max.	Adjust with a shim 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 (0.0024–0.008) 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)	37.07(1.459) 0.31 (0.012) 28.35 (1.116)
Countershaft	End play Diameter of needle bearing contact area Diameter of ball bearing contact area 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, after tightening with specified torque Thickness	41.009–41.025 (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)

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

8. Manual Transmission (cont'd)

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Countershaft second gear	I.D. End play, after tightening with specified torque 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)
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	0.070—0.130 (0.0028—0.0051)	0.18 (0.007)
Differential carrier	Pinionshaft bore diamater Carrier-to-pinionshaft clearance Driveshaft bore diameter 1.4 ℓ (2-Carb.), 1.5 ℓ (PGM-FI), 1.6 ℓ (2-Carb.) 1.6 ℓ (PGM-FI), 1.6 ℓ DOHC Carrier-to-driveshaft clearance Carrier-to-intermediate shaft clearance 1.6 ℓ (PGM-FI), 1.6 ℓ DOHC only Side clearance	18.000—18.018 (0.7087—0.7094) 0.017—0.047 (0.0007—0.0019) 26.025—26.045 (1.0246—1.0254) 28.025—28.025 (1.1033—1.1041) 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)	Adjust with a washer — 0.15 (0.006)

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in.)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.4 (2.5, 2.1) at oil change 5.4 (5.7, 4.8) at assembly	
Hydraulic pressure	Line pressure at 2,000 min^{-1} (rpm)	785-834 kPa (8.0-8.5 kg/cm^2, 114-121 psi)	736 kPa (7.5 kg/cm^2, 107 psi)
	2nd, 3rd, 4th clutch pressure at 2,000 min^{-1} (rpm) in D$_3$ and D$_4$	412 kPa (4.2 kg/cm^2, 60 psi) Throttle control lever full closed 785-834 kPa (8.0-8.5 kg/cm^2, 114-121 psi) Throttle control lever open 2/8 or more	363 kPa (3.7 kg/cm^2, 53 psi) (closed) 736 kPa (7.5 kg/cm^2, 107 psi) (2/8 open)
	2nd clutch pressure at 2,000 min^{-1} (rpm) in 2	785-834 kPa (8.0-8.5 kg/cm^2, 114-121 psi)	736 kPa (7.5 kg/cm^2, 107 psi)
	1st clutch pressure at 2,000 min^{-1} (rpm)		
	Governor pressure at 60 km/h (37.5 mph) 1.4 ℓ (2-Carb.) 1.6 ℓ (2-Carb.) 1.5 ℓ (PGM-FI), 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC	151-161 kPa (1.54-1.64 kg/cm^2, 22-23 psi) 148-158 kPa (1.51-1.61 kg/cm^2, 21-23 psi) 161-171 kPa (1.64-1.75 kg/cm^2, 23-25 psi) 165-176 kPa (1.68-1.78 kg/cm^2, 24-25 psi)	146 kPa (1.49 kg/cm^2, 21 psi) 143 kPa (1.46 kg/cm^2, 21 psi) 156 kPa (1.59 kg/cm^2, 23 psi) 160 kPa (1.63 kg/cm^2, 23 psi)
	Throttle pressure B — Full closed Full open	0 785-834 kPa (8.0-8.5 kg/cm^2, 114-121 psi)	—— 736 kPa (7.5 kg/cm^2, 107 psi)
	Throttle pressure A — Full closed Full open 1.4 ℓ (2-Carb.) 1.6 ℓ (2-Carb.) 1.5 ℓ (PGM-FI) 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC	0-4.9 kPa (0-0.05 kg/cm^2, 0-0.7 psi) 505-520 kPa (5.15-5.30 kg/cm^2, 73-75 psi) 456-471 kPa (4.65-4.80 kg/cm^2, 66-68 psi) 477-490 kPa (4.85-5.00 kg/cm^2, 69-71 psi)	—— 500 kPa (5.1 kg/cm^2, 73 psi) 451 kPa (4.6 kg/cm^2, 65 psi) 471 kPa (4.8 kg/cm^2, 68 psi)
Stall speed	min^{-1} (rpm)	2,300-2,900	——
Clutch	Clutch inital clearance — 1 st 2 nd 3 rd, 4 th	0.65-0.85 (0.026-0.033) 0.65-0.85 (0.026-0.033) 0.40-0.60 (0.016-0.024)	—— —— ——
	Clutch return spring free length — 1 st except 1 st	31.0 (1.22) 30.5 (1.20)	29.0 (1.14) 28.5 (1.12)
	Clutch disc thickness	1.88-2.0 (0.074-0.079)	Until grooves worn out
	Clutch plate thickness — 1 st	1.55-1.65 (0.061-0.065)	Discoloration
	Clutch plate thickness — except 1 st	1.95-2.05 (0.077-0.081)	
	Clutch end plate thickness 1.4 ℓ (2-Carb.) — Mark 1 Mark 2 Mark 3 Mark 4 Mark 5 Mark 11 Mark 12 Mark 13 Mark 14 Mark 15 Mark 16	2.05-2.15 (0.081-0.085) 2.20-2.30 (0.087-0.091) 2.35-2.45 (0.093-0.096) 2.50-2.60 (0.098-0.102) 2.65-2.75 (0.104-0.108) 2.80-2.90 (0.110-0.114) 2.95-3.05 (0.116-0.120) 3.10-3.20 (0.122-0.126) 3.25-3.35 (0.128-0.132) 3.40-3.50 (0.134-0.138) 3.55-3.65 (0.140-0.144)	Discoloration

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

9. Automatic Transmission (cont'd)

Unit: mm (in)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch (cont'd)	Clutch end plate thickness except 1.4 ℓ (2-Carb.)		
	Mark 1	2.3—2.4 (0.091—0.094)	Discoloration
	Mark 2	2.4—2.5 (0.094—0.098)	
	Mark 3	2.5—2.6 (0.098—0.102)	
	Mark 4	2.6—2.7 (0.102—0.106)	
	Mark 5	2.7—2.8 (0.106—0.110)	
	Mark 6	2.8—2.9 (0.110—0.114)	
	Mark 7	2.9—3.0 (0.114—0.118)	
	Mark 8	3.0—3.1 (0.118—0.122)	
	Mark 9	3.1—3.2 (0.122—0.126)	
	Mark 10	3.2—3.3 (0.126—0.130)	
	Mark 11	2.0—2.1 (0.079—0.083)	
	Mark 12	2.1—2.2 (0.083—0.087)	
	Mark 13	2.2—2.3 (0.087—0.091)	Discoloration
Transmission	Diameter of needle bearing contact area on main and stator shaft	19.980—19.993 (0.7866—0.7871)	Wear or damage
	Diameter of needle bearing contact area on mainshaft 2nd gear	35.975—35.991 (1.4163—1.4169)	
	Diameter of needle bearing contact area on mainshaft 4th gear collar	31.975—31.991 (1.2589—1.2595)	
	Diameter of needle bearing contact area on mainshaft 1st gear coller	27.975—27.995 (1.1014—1.1022)	
	Diameter of needle bearing contact area on countershaft (L side)	36.004—36.017 (1.4175—1.4180)	
	Diameter of needle bearing contact area on countershaft 3rd gear	31.975—31.991 (1.2589—1.2595)	
	Diameter of needle bearing contact area on countershaft 4th gear	27.980—27.993 (1.1016—1.1021)	
	Diameter of needle bearing contact area on countershaft reverse gear collar	29.980—29.993 (1.1803—1.1808)	
	Diameter of needle bearing contact area on countershaft 1st gear collar	29.980—29.993 (1.1803—1.1808)	
	Diameter of needle bearing contact area on reverse idle gear	13.990—14.000 (0.5508—0.5512)	
	Mainshaft 2nd gear I.D.	41.000—41.016 (1.6142—1.6148)	
	Mainshaft 1st gear I.D.	33.000—33.016 (1.2992—1.2998)	
	Mainshaft 4th gear I.D.	38.000—38.016 (1.4961—1.4967)	
	Countershaft 4th gear I.D.	33.000—33.016 (1.2992—1.2998)	
	Countershaft 3rd gear I.D.	38.000—38.016 (1.4961—1.4967)	
	Countershaft 1st gear I.D.	35.000—35.016 (1.3780—1.3786)	
	Countershaft reverse gear I.D.	36.000—36.016 (1.4173—1.4179)	
	Reverse idler gear I.D.	18.007—18.020 (0.7089—0.7094)	
	Stator shaft (R side) ID of needle bearing contact area	26.000—26.013 (1.0236—1.0241)	
	Stator shaft (Stator side) ID of needle bearing contact area	24.000—24.021 (0.9449—0.9457)	
	Reverse idler shaft holder I.D.	14.416—14.434 (0.5676—0.5683)	Wear or damage

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 4th gear end play	0.10—0.22 (0.0039—0.0087)	—
	Mainshaft 2nd gear end play	0.07—0.15 (0.0028—0.0059)	—
	Mainshaft 1st gear end play	0.08—0.24 (0.0031—0.0094)	—
	Countershaft 4th gear end play	0.07—0.15 (0.0028—0.0059)	—
	Countershaft 3rd gear end play	0.07—0.15 (0.0028—0.0059)	—
	Countershaft 1st gear end play	0.10—0.45 (0.0039—0.0177)	—
	Reverse idler gear end play	0.05—0.18 (0.0020—0.0071)	—
	Countershaft reverse gear end play	0.10—0.45 (0.0039—0.0177)	—
	Selector hub O.D.	51.87—51.90 (2.0421—2.0433)	Wear or damage
	Thrust washer thickness		
	Mainshaft 2nd gear A	3.47—3.50 (0.1366—0.1378)	Wear or damage
	B	3.52—3.55 (0.1386—0.1398)	
	C	3.57—3.60 (0.1406—0.1417)	
	D	3.62—3.65 (0.1425—0.1437)	
	E	3.67—3.70 (0.1445—0.1457)	
	F	3.72—3.75 (0.1465—0.1476)	
	G	3.77—3.80 (0.1484—0.1496)	
	H	3.82—3.85 (0.1504—0.1516)	
	I	3.87—3.90 (0.1524—0.1535)	
	Mainshaft L side bearing	2.95—3.05 (0.1161—0.1201)	Wear or damage
	Mainshaft 4th gear	4.45—4.55 (0.1752—0.1791)	—
	Mainshaft R side 1st gear	2.43—2.50 (0.0957—0.0984)	—
	Mainshaft L side 1st gear	1.45—1.50 (0.0571—0.0591)	—
	Countershaft 3rd gear A	2.97—3.00 (0.1169—0.1181)	—
	B	3.02—3.05 (0.1189—0.1201)	
	C	3.07—3.10 (0.1209—0.1220)	
	D	3.12—3.15 (0.1228—0.1240)	
	E	3.17—3.20 (0.1248—0.1260)	
	F	3.22—3.25 (0.1268—0.1280)	
	G	3.27—3.30 (0.1287—0.1299)	
	H	3.32—3.35 (0.1307—0.1319)	
	I	3.37—3.40 (0.1327—0.1339)	Wear or damage
	Countershaft distance collar length	38.97—39.00 (1.5342—1.5354)	—
		39.02—39.05 (1.5362—1.5374)	—
		39.07—39.10 (1.5382—1.5394)	—
		39.12—39.15 (1.5402—1.5413)	—
		39.17—39.20 (1.5421—1.5433)	—
		39.22—39.25 (1.5441—1.5453)	—
		39.27—39.30 (1.5461—1.5472)	—
	Mainshaft 4th gear collar length	40.00—40.05 (1.5748—1.5768)	—
	Mainshaft 1st gear collar length	25.00—25.15 (0.9843—0.9902)	—
	Mainshaft 1st gear collar flange thickness	2.5—2.6 (0.098—0.102)	Wear or damage
	Countershaft reverse gear collar length	14.50—14.55 (0.5709—0.5728)	—
	Countershaft reverse gear collar flange thickness	2.45—2.55 (0.0965—0.1004)	Wear or damage
	Countershaft 1st gear collar length	14.50—14.55 (0.5709—0.5728)	—
	Countershaft 1st gear collar flange thickness	2.45—2.55 (0.0965—0.1004)	Wear or damage
	Diameter of countershaft one-way clutch contact area	74.414—74.440 (2.9297—2.9307)	Wear or damage
	Diameter of parking gear one-way clutch contact area	57.755—57.768 (2.2738—2.2743)	Wear or damage
	Mainshaft feed pipe A O.D. (at 15 mm from end)	8.97—8.98 (0.353—0.354)	8.95 (0.3524)
	Mainshaft feed pipe B O.D. (at 12 mm from end)	5.97—5.98 (0.2350—0.2354)	5.95 (0.2343)
	Countershaft feed pipe O.D. (at 20 mm from end)	7.97—7.98 (0.3138—0.3142)	7.95 (0.3130)
	Mainshaft sealing ring 32 mm thickness	1.980—1.995 (0.0780—0.0785)	1.800 (0.0709)
	Mainshaft bushing I.D.	6.018—6.030 (0.2369—0.2374)	6.045 (0.2380)
	Mainshaft bushing I.D.	9.000—9.015 (0.3543—0.3549)	9.030 (0.3555)
	Countershaft bushing I.D.	8.000—8.015 (0.3150—0.3156)	8.030 (0.3161)
	Mainshaft sealing ring groove width	2.025—2.060 (0.0797—0.0811)	2.080 (0.0819)
	Statorshaft distance collar 20 mm I.D.	26.000—26.013 (1.0236—1.0241)	26.030 (1.0248)
Regulator valve body	Sealing ring contact area diameter	32.000—32.025 (1.2598—1.2608)	32.050 (1.2618)
Shifting device and parking brake control	Reverse shift fork thickness	5.90—6.00 (0.2323—0.2362)	5.40 (0.2126)
	Parking brake ratchet pawl	—	Wear or other defect
	Parking gear	—	Wear or other defect
	Throttle cam stopper	18.5—18.6 (0.728—0.732)	—
Servo body	Shift fork shaft bore. I.D. A	14.000—14.005 (0.5512—0.5514)	—
	B	14.006—14.010 (0.5514—0.5516)	—
	C	14.011—14.015 (0.5516—0.5518)	—
	Shift fork shaft valve bore I.D.	37.000—37.039 (1.4567—1.4582)	37.045 (1.4585)
Valve body	Oil pump gear side clearance	0.03—0.05 (0.0012—0.0020)	0.07 (0.0028)
	Oil pump gear-to-body clearance	Drive: 0.240—0.266 (0.0094—0.0105)	—
		Driven: 0.063—0.088 (0.0025—0.0035)	—
	Oil pump driven gear I.D.	14.016—14.034 (0.5518—0.5525)	Wear or damage
	Oil pump shaft O.D.	13.980—13.990 (0.5504—0.5508)	Wear or damage

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

Automatic Transmission (cont'd)

Unit: mm (in)

MEASUREMENT		STANDARD (NEW)			
		Wire Diameter	O.D.	Free Length	No. of Coils
Springs					
Regulator valve spring A		1.58 x 2.00 (0.06 x 0.08)	14.7 (0.58)	86.5 (3.41)	20.9
Regulator valve spring B		1.8 (0.07)	9.6 (0.38)	44 (1.73)	7.5
Stator reaction spring		6 (0.24)	38.4 (1.51)	30.3 (1.20)	2
Throttle modulator spring	Carbureted	1.2 (0.05)	9.4 (0.37)	{27.2 (1.07) / 26.3 (1.04)}	8
	Fuel-Injected	1.2 (0.05)	9.4 (0.37)	{26.3 (1.04) / 26.4 (1.04)}	8
Torque converter check valve spring		1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
Cooler releaf valve spring		1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
Releaf valve spring		1.0 (0.04)	8.4 (0.33)	52 (2.05)	23
Governer spring A	except 1.4 ℓ	1.0 (0.04)	18.8 (0.74)	38.1 (1.50)	4
	1.4 ℓ	1.0 (0.04)	18.8 (0.74)	20.4 (0.80)	4
Governer spring B	except 1.4 ℓ	0.9 (0.04)	11.8 (0.46)	27.8 (1.09)	6
	1.4 ℓ	0.9 (0.04)	11.8 (0.46)	26.7 (1.05)	6
2nd orifice control spring		0.8 (0.03)	6.6 (0.26)	43.8 (1.72)	27.6
Servo orifice control spring		0.9 (0.04)	6.1 (0.24)	35.9 (1.41)	20
Throttle spring A		1.0 (0.04)	8.5 (0.33)	{22.2 (0.87) / 22.1 (0.87)}	{6 / 5.5}
Throttle adjust spring A (throttle B pressure)		0.8 (0.03)	6.2 (0.24)	30 (1.18)	8
Throttle adjust spring A		0.8 (0.03)	6.2 (0.24)	27 (1.06)	8.5
Throttle spring B	except 1.4 ℓ	1.6 (0.06)	8.5 (0.33)	41.3 (1.63)	13.9
	1.4 ℓ	1.4 (0.06)	8.5 (0.33)	41.4 (1.63)	8.4
1—2 shift spring	DOHC	0.5 (0.02)	4.4 (0.17)	48.5 (1.91)	35.1
	1.5 ℓ, 1.6 ℓ (FI)	0.6 (0.02)	6.1 (0.24)	41.3 (1.63)	16.5
	Carbureted	0.5 (0.02)	4.5 (0.18)	46.8 (1.84)	35.1
1—2 shift ball spring	1.4 ℓ, DOHC	0.45 (0.02)	4.5 (0.18)	12.7 (0.50)	11
	1.5 ℓ, 1.6 ℓ (FI)	0.4 (0.02)	4.5 (0.18)	14.4 (0.57)	8.2
	1.6 ℓ (Carb)	0.4 (0.02)	4.5 (0.18)	11.3 (0.44)	8
2—3 shift spring	Fuel-Injected	0.9 (0.04)	7.6 (0.23)	46.5 (1.83)	20.7
	Carbureted	0.7 (0.03)	7.6 (0.23)	43 (1.69)	12.7
2—3 shift ball spring	except DOHC	0.4 (0.02)	4.5 (0.18)	14.7 (0.58)	7.3
	DOHC	0.45 (0.02)	4.5 (0.18)	13.3 (0.52)	8
3—4 shift spring	1.5 ℓ, 1.6 ℓ (FI)	0.9 (0.04)	9.6 (0.38)	38.1 (1.50)	10
	DOHC	0.9 (0.04)	9.6 (0.38)	33.9 (1.33)	11.3
	Carbureted	0.7 (0.03)	9.6 (0.38)	32.9 (1.30)	6.4
3—4 shift ball spring	1.5 ℓ, 1.6 ℓ (FI)	0.5 (0.02)	4.5 (0.18)	11.2 (0.44)	7
	DOHC	0.5 (0.02)	4.5 (0.18)	10.8 (0.43)	7.4
	Carbureted	0.45 (0.02)	4.5 (0.18)	12.0 (0.47)	6.7
Low accumulator spring A		2.34 x 2.9 (0.09 x 0.1)	21.5 (0.85)	66.7 (2.63)	10.2
Low accumulator spring B		2.8 (0.11)	13.1 (0.52)	40 (1.57)	8.8
Top accumulator spring		3.2 (0.13)	18.6 (0.73)	78.3 (3.08)	10
2nd accumulator spring		3.5 (0.14)	20.2 (0.80)	76.7 (3.02)	9.6
3rd accumulator spring		2.7 (0.10)	15.5 (0.61)	80.0 (3.15)	14.8
L/C shift spring	Fuel-Injected	1.1 (0.04)	8.1 (0.32)	51.8 (2.04)	22.3
L/C shift spring	1.4 ℓ	0.7 (0.03)	8.1 (0.32)	39.0 (1.54)	15.4
	1.6 ℓ (Carb.)	0.9 (0.04)	8.1 (0.32)	44.5 (1.75)	18.3
L/C timing spring B	except 1.4 ℓ	1.0 (0.04)	6.6 (0.26)	55.6 (2.19)	30
	1.4 ℓ	1.0 (0.04)	6.6 (0.26)	52.3 (2.06)	30.1
L/C control valve spring	DOHC	0.7 (0.03)	6.6 (0.26)	35.3 (1.39)	15.8
	Carbureted	0.7 (0.03)	6.6 (0.26)	32.5 (1.28)	14
	1.5 ℓ, 1.6 ℓ (FI)	0.7 (0.03)	6.6 (0.26)	33.8 (1.33)	15.8
CPC valve spring		1.4 (0.06)	9.4 (0.37)	31.6 (1.24)	10.9

(FI): (Fuel-Injected)

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in.)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)			
Springs		Wire Diameter	O.D.	Free Length	No. of Coils
	Shift timing valve spring	0.9 (0.04)	8.6 (0.34)	42.9 (1.69)	21.4
	Kick down valve spring	0.9 (0.04)	10.1 (0.40)	40.8 (1.61)	14.5
	Reverse control spring	0.7 (0.03)	7.6 (0.30)	37.2 (1.46)	15.3
	L/C cut spring	0.7 (0.03)	7.6 (0.30)	29 (1.14)	18
	3-2 timing valve spring	1.2 (0.05)	7.7 (0.30)	45.1 (1.78)	19.8
	Low oneway ball spring	0.29 (0.01)	4.0 (0.16)	14 (0.55)	13
	4th exhaust spring	0.9 (0.04)	6.1 (0.24)	43.7 (1.72)	20.3
	Servo control valve spring	1.0 (0.04)	7.6 (0.30)	44 (1.73)	18.2
	Reverse timing spring	0.7 (0.03)	5.6 (0.22)	43.8 (1.72)	21.7

		STANDARD (NEW)	SERVICE LIMIT
Ring gear	Backlash	0.086-0.143 (0.0034-0.0056)	0.25 (0.01)
Differential carrier	Pinionshaft bore diamater	18.000-18.018 (0.7087-0.7094)	———
	Carrier-to-pinionshaft clearance	0.017-0.047 (0.0007-0.0019)	0.095 (0.004)
	Driveshaft bore diameter		
	1.4 ℓ, 1.5 ℓ, 1.6 ℓ (2-Carb.)	26.025-26.045 (1.0246-1.0254)	———
	1.6 ℓ (PGM-FI), 1.6 ℓ DOHC	28.025-26.045 (1.1033-1.1041)	———
	Carrier-to-driveshaft clearance	0.045-0.111 (0.0030-0.0044)	0.14 (0.006)
	Carrier-to-intermediate shaft clearance		
	1.6 ℓ (PGM-FI), 1.6 DOHC only	0.075-0.111 (0.0030-0.0044)	0.16 (0.006)
	Side clearance	0.15 max.	
Differential pinion gear	Backlash	0.05-0.15 (0.002-0.006)	Adjust with a washer
	Pinion gear bore diameter	18.042-18.066 (0.7103-0.7113)	———
	Pinion gear to pinionshaft clearance	0.059-0.095 (0.0023-0.0037)	0.15 (0.006)

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	———
	Starting torque of power steering wheel N (kg, lb)	27-30 (2.7-3.0, 6.0-6.6)	———
Gear box	Pinion starting torque N·m (kg-m, lb-ft)	0.49-1.67 (0.05-0.17, 0.36-1.27)	———
	with P/S	0.98 (0.1, 0.72) max.	———
Pump	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)	6,566–7,154 (67–73, 952–1,038)	
Power steering fluid	Fluid capacity ℓ (US qt, Imp qt)	Reservoir·····0.4 (0.42, 0.35) At change ·····approx. 1.2 (1.3, 1.1)	
Power steering belt	Deflection between pulleys with 98N (10kg, 22lb) force	9-12 (0.35-0.47) for used belt 7-10 (0.28-0.39) for new belt	
	Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)	343-490 (35-50, 77-110) for used belt 441-686 (45-70, 99-154) for new belt	

Downloaded from www.Manualslib.com manuals search engine

Standards and Service Limits

12. Suspension

	MEASUREMENT		STANDARD (NEW)	
Wheel alignment	Total toe (°)		Front OUT 0°04′±8′ OUT 0.7±1.4 (0.028±0.055)	Rear IN 0°13.5′±8′ IN 2.3±1.4 (0.091±0.055)
	Camber		−0°20′±30′	−0°26′±30′
	Side slip		0±3 (0±0.12)	——
	Turning angle (max.)			
	Inward wheel		41°30′±2°	
	Outward wheel		33°30′±2°	
			STANDARD (NEW)	SERVICE LIMIT
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 200N (20 kg, 44 lbs)		To be locked when pulled 6–10 notches	
Foot brake pedal	Pedal height		161 (6.3) 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	21.0 (0.827)	19.0 (0.748)
		Rear	10.0 (0.394)	8.0 (0.315)
	Disc runout	Front	——	0.10 (0.004)
		Rear	——	0.15 (0.006)
	Disc parallelism		——	0.015 (0.0006)
	Pad thickness	Front	11.0 (0.433)	1.6 (0.063)
		Rear	8.0 (0.315)	1.6 (0.063)
Brake Drum	I.D.		203 (7.99)	204 (8.03)
	Lining thickness		5.0 (0.20)	2.0 (0.08)
Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kg/cm² (psi)
				without ALB / with ALB
		0	20 (44)	13.0 (184) min. / 10.0 (142) min.
		300	20 (44)	50.0 (711) min. / 56.6 (805) min.
		500	20 (44)	74.0 (1,052) min. / 87.7 (1,247) min.

15. Air Conditioner

	MEASUREMENT	STANDARD (NEW)
Compressor		MATSUSHITA
	Cooling capacity	3,850 kcal/h
	Refrigerant qwantity	0.9 ± 0.05 kg (1.98 ± 0.11 lb.)
	Lubricant capacity	130 cc
	Clutch resistance	3.33 ± 0.17 ohm at 20 °C (68 °F)
	Clutch clearance	0.4–0.6
Compressor belt	Deflection between pulleys with 98N (10kg, 22lb) force	9—11 (0.35—0.43) for used belt 7—9 (0.28—0.35) for new belt
	Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)	343-441 (35—45, 77—99) for used belt 441—686 (45—70, 99—154) for new belt

Downloaded from www.Manualslib.com manuals search engine

Unit: mm (in.)

16. Electrical

	MEASUREMENT	STANDARD (NEW)			
Ignition coil	Rated voltage	12 Volts			
	Primary winding resistance	PGM-FI: 0.3—0.5 ohms		2-Carb: 0.6—0.7 ohms	
	Secondary wisding resistance	PGM-FI: 9,440—14,160 ohms		2-Carb: 14,400—21,600 ohms	
Ignition wire	Resistance	25,000 ohms max.			
Spark plug	Type	Engine type	Standard	Optional	
	NGK	1.5ℓ,1.6ℓ (PGM-FI) 1.6ℓ DOHC*1	BCPR6E-11	BCPR7E-11, BCPR6EY-N11 BCPR7EY-N11	
	NGK	1.4ℓ,1.6ℓ (2-Carb)	BCPR6E-11	BCPR7E-11	
	NGK	1.6ℓ DOHC*2	BCPR6E-11	BCPR7E-11	
	ND	1.5ℓ,1.6ℓ (PGM-FI), 1.6ℓ DOHC*1	Q20PR-U11	Q22PR-U11	
	ND	1.4ℓ,1.6ℓ (2-Carb)	Q20PR-U11	Q22PR-U11	
	ND	1.6ℓ DOHC*2	Q20PR-UL11	Q20PR-U11, Q22PR-U11 Q22PR-UL11	
	*1: with CATA *2: without CATA				
	Gap	1.0—1.1 (0.039—0.043)			
Ignition timing	At idling PGM-FI engine	SOHC: 18° ± 2° (Red) BTDC		DOHC: 16° ± 2° (Red) BTDC	
	At idling Carbureted engine	16° ± 2° (Red) BTDC			
Battery	Lighting capacity (20-hour rate) Starting capacity (Voltage after 5 sec.)	47 ampere hours 8.6 V min. at 300 ampere draw /—15°C			
Alternator		ND		MITSUBISHI	
	Output	13.5V/60A			
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Coil resistance (rotor)	2.8—3.0 ohm	±0.1 ohm	3.4—3.8 ohm	±0.2 ohm
	Slip ring O.D.	32.5 (1.28)	32.1 (1.26)	22.7 (0.89)	22.2 (0.87)
	Brush length	13.5 (0.53)	4.5 (0.18)	22 (0.87)	8 (0.31)
	Brush Spring tension	300—500 g (10.6—17.6 oz)	—	300—450 g (10.6—15.9 oz)	—
Alternator belt	Deflection between pulleys with 98N (10kg, 22lb) force	9—11 (0.35—0.43) for used belt 7—9 (0.28—0.35) for new belt			
	Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)	294—392 (30—40, 66—88) with used belt 392—588 (40—60, 88—132) with new belt			
Starting motor		ND 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—23.5 N (1.85—2.4 kg, 4.1—5.3 lb)	—	20.1—26.5 N (2.05—2.7 kg, 4.5—6.0 lb)	—

Downloaded from www.Manualslib.com manuals search engine

Design Specifications

	ITEM		METRIC	ENGLISH	NOTES
DEMENSIONS	Overall Length	5D	4,265 mm	167.9 in	
		4D	4,410 mm	173.6 mm	
	Overall Width		1,690 mm	66.5 in	
	Overall Height		1,395 mm	54.9 in	
	Wheelbase		2,550 mm	100.4 in	
	Track, Front/Rear		1,475/1,470 mm	58.1/57.9 in	
	Ground Clearance		160 mm	6.3 in	KE, KF, KB, KR
			150 mm	5.9 in	KX, KS, KG
	Turning Circle Diameter (at body end)		10,2 m	33.5 ft	
	Seating Capacity		Five		
Weight (5-door)	Curb Weight				
	DX 1.4ℓ 2-Carb.	M/T	1,030 kg	2,271 lb	KB,KE,KF
		A/T	1,050 kg	2,315 lb	
	DX 1.5ℓ PGM-FI	M/T	1,035 kg	2,282 lb	KG
		A/T	1,055 kg	2,326 lb	
	LX 1.6ℓ 2-Carb.	M/T	1,060 kg	2,337 lb	KR
		A/T	1,080 kg	2,381 lb	KB, KE, KF
	EX 1.6ℓ 2-Carb.	M/T	1,075 kg	2,370 lb	KE, KF
		A/T	1,095 kg	2,414 lb	
	EX 1.6ℓ PGM-FI	M/T	1,085 kg	2,391 lb	KG, KX
		A/T	1,105 kg	2,436 lb	KS
	SX 1.6ℓ DOHC	M/T	1,100 kg	2,425 lb	KB,
		A/T	1,120 kg	2,469 lb	KR, KE, KF
	SX 1.6ℓ DOHC with CATA	M/T	1,100 kg	2,425 lb	KG, KX
		M/T	1,110 kg	2,447 lb	KS
	Weight Distribution (Front/Rear)				
	DX 1.4ℓ 2-Carb.	M/T	590/440 kg	1,301/ 970 lb	KB
		A/T	610/440 kg	1,345/ 970 lb	KE, KF
	DX 1.5ℓ PGM-FI	M/T	595/440 kg	1,312/ 970 lb	KG
		A/T	615/440 kg	1,356/ 970 lb	
	LX 1.6ℓ 2-Carb.	M/T	615/445 kg	1,356/ 981 lb	KR
		A/T	635/445 kg	1,400/ 981 lb	KB, KE, KF
	EX 1.6ℓ 2-Carb.	M/T	620/455 kg	1,367/ 981 lb	KE,KF
		A/T	640/455 kg	1,411/ 981 lb	
	EX 1.6ℓ PGM-FI	M/T	625/460 kg	1,378/1,014 lb	KG, KX
		A/T	645/460 kg	1,422/1,014 lb	KS
	SX 1.6ℓ DOHC	M/T	635/465 kg	1,400/1,025 lb	KB,
		A/T	655/465 kg	1,444/1,025 lb	KR, KE, KF
	SX 1.6ℓ DOHC with CATA	M/T	635/465 kg	1,400/1,025 lb	KG, KX
		M/T	640/470 kg	1,411/1,036 lb	KS
	Max. Permissible Weight (European)				
	DX, LX		1,530 kg	3,373 lb	
	EX, SX		1,580 kg	3,483 lb	
	EX*1	M/T	1,520 kg	3,351 lb	*1 KS (Sweden)
		A/T	1,540 kg	3,395 lb	
	SX*1	M/T	1,540 kg	3,395 lb	
Weight (4-door)	Curb Weight				
	DX 1.4ℓ 2-Carb.	M/T	1,020 kg	2,249 lb	
		A/T	1,040 kg	2,293 lb	KB,KF
	LX 1.6ℓ 2-Carb.	M/T	1,050 kg	2,315 lb	KB,KE
		A/T	1,070 kg	2,359 lb	KF,KR
	EX 1.6ℓ 2-Carb.	M/T	1,065 kg	2,348 lb	
		A/T	1,085 kg	2,392 lb	KE,KF
	SX 1.6ℓ DOHC	M/T	1,090 kg	2,403 lb	KB,KE
		A/T	1,110 kg	2,447 lb	KF,KR
	Weight Distribution (Front/Rear)				
	DX 1.4ℓ 2-Carb.	M/T	590/430 kg	1,301/948 lb	
		A/T	610/430 kg	1,345/948 lb	KB,KF
	LX 1.6ℓ 2-Carb.	M/T	615/435 kg	1,356/959 lb	KB,KE
		A/T	635/435 kg	1,400/959 lb	KF,KR
	EX 1.6ℓ 2-Carb.	M/T	620/445 kg	1,367/981 lb	
		A/T	640/445 kg	1,411/981 lb	KE,KF
	SX 1.6ℓ DOHC	M/T	635/455 kg	1,400/1,003 lb	KB,KE
		A/T	655/455 kg	1,440/1,003 lb	KF,KR
	Max. Permissible Weight (European)				
	DX, LX		1,530 kg	3,373 lb	
	EX, SX		1,580 kg	3,483 lb	

Downloaded from www.Manualslib.com manuals search engine

	ITEM	METRIC	ENGLISH	NOTES
ENGINE	Type SOHC	Water-cooled 4-stroke SOHC 16-valve		
	DOHC	Water-cooled 4-stroke DOHC 16-valve		
	Cylirder arrangement	4-cylinder in-line transversly mounted		
	Bore and Stroke 1.4ℓ	75x79 mm	2.95x3.11 in	
	1.5ℓ	75x84.5mm	2.95x3.33 in	
	1.6ℓ	75x90 mm	2.95x3.54 in	
	Displacement 1.4ℓ	1,396 cm^3	85.2 cu in	
	1.5ℓ	1,493 cm^3	91.1 cu in	
	1.6ℓ	1,590 cm^3	97.0 cu in	
	Conpression Ratio 1.4ℓ, 1.6ℓ 2-Carb.	9.3		
	1.5ℓ	9.2		
	1.6ℓ	9.1		
	DOHC	9.5		
	Valve Train SOHC	4valves per cylinder, single overhead camshaft.		
	DOHC	4valves per cylinder, dual overhead camshafts.		
	Fuel Supply System 1.4ℓ, 1.6ℓ 2-Carb.	CV Dual carburetors		
	1.5	Dual-point PGM-FI		
	1.6ℓ PGM-FI, 1.6ℓ DOHC	Multi-point PGM-FI		
	Lubrication System	Forced and wet sump		
	Fuel Required			
	1.4ℓ 2-Carb, 1.6ℓ 2-Carb.	Leaded gasoline or unleaded gasoline with 91 R.O.N. or higher		KB, KE, KF
	1.5ℓ PGM-FI, 1.6ℓ PGM-FI	Unleaded gasoline with 91 R.O.N. or higher		KG, KX, KS
	1.6ℓ DOHC with CATA	Unleaded gasoline with 95 R.O.N. or higher		KG, KX, KS
	1.6ℓ DOHC with out CATA	Leaded gasoline with 97 R.O.N. or higher or unleaded gasoline with 95 R.O.N. or higher		KB, KE

Downloaded from www.Manualslib.com manuals search engine

Design Specifications

	ITEMS		METRIC	ENGLISH	NOTES
STARTER	Type	1.0kW, 1.2kW, 1.4kW	Gear reduction type		
	Normal Output		1.0kW, 1.2kW, 1.4kW		
	Normal Voltage		12V		
	Hour Rating		30 seconds		
	Direction of Rotation		Clockwise as viewed from gear end		
	Weight	1.0kW MITSUBA	3.4 kg	7.5 lb	
		1.0kW, 1.2kW ND	3.85 kg	8.5 lb	
		1.4kW MITSUBA	3.7 kg	8.2 lb	
TRANSMISSION	Clutch	M/T	Single plate dry, diaphram spring		
		A/T	Torque converter		
	Clutch Facing Area	M/T	160 cm^2	24.8 sp. in.	
	Transmission Type	M/T	5-speed forward, synchromesh, 1 reverse		
		A/T	4-speed forward, with lock-up clutch, 1 reverse		
	Primary Reduction		1.000		
	Type		5-speed manual except DOHC	5-speed manual DOHC	
	Gear Ratio	1st	3.250	3.250	
		2nd	1.894	1.944	
		3rd	1.259	1.346	
		4th	0.937	1.033	
		5th	0.771	0.848	
		Reverse	3.153	3.153	
		Final	4.437	4.250	
	Type		4-speed automatic except DOHC	4-speed automatic DOHC	
		1st	2.705	2.705	
		2nd	1.560	1.560	
		3rd	1.027	1.085	
		4th	0.780	0.825	
		Reverse	1.954	1.954	
		Final	3.933*1	4.124	*1 Carbureted
			4.214*2		*2 Fuel-Injected
	Final Reduction Gear Type		Single helical gear		
AIR CONDITIONER	Compressor		MATSUSHITA		
	Cooling Capacity —Conditions:		3,850 kcal/h		
	Compression min^{-1} (rpm)		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	Type	Vane rotary type		
		Number of Vane	3		
		Displacement	130cc/rev.	7.93 cu. in./rev	
		Max. min^{-1} (rpm)	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	170W (12V)		
		Speed control	4 speeds		
		Max. capacity	390 m^3/h	13,773 cu ft/h	
	Temp. Control		Air-mix type		
	Comp. Clutch	Type	Dry, single plate, V-belt		
		Power consumption	32W max. 12V		
	Refrigerant	Type	R-12		
		Quantity	0.90±0.05 kg	1.98±0.11 lbs	
STEERING SYSTEM	Type		Rack and pinion		
	Overall Ratio		19.95: 1, 16.96 (with power assist)		
	Turn, lock-to-lock		4.0, 3.4 (with power assist)		
	Steering Wheel Dia		370 mm	14.6 in	
	Power Steering Fluid Capacity		1.2 lit.	13 US. qt., 1.1 Imp. qt.	
	Power Steering Fluid		Use only DEXRON®II Automatic Transmission Fluid(A.T.F.)		
SUSPENSION SYSTEM	Type, Front		Independent strut with coil spring and stabiliger		
	Rear		Independent double wishbone with coil spring (SX: with coil spring and stabiliger)		
	Shock Absarber	Front/Rear	Telescopic, Nitrogen gas filled.		

Downloaded from www.Manualslib.com manuals search engine

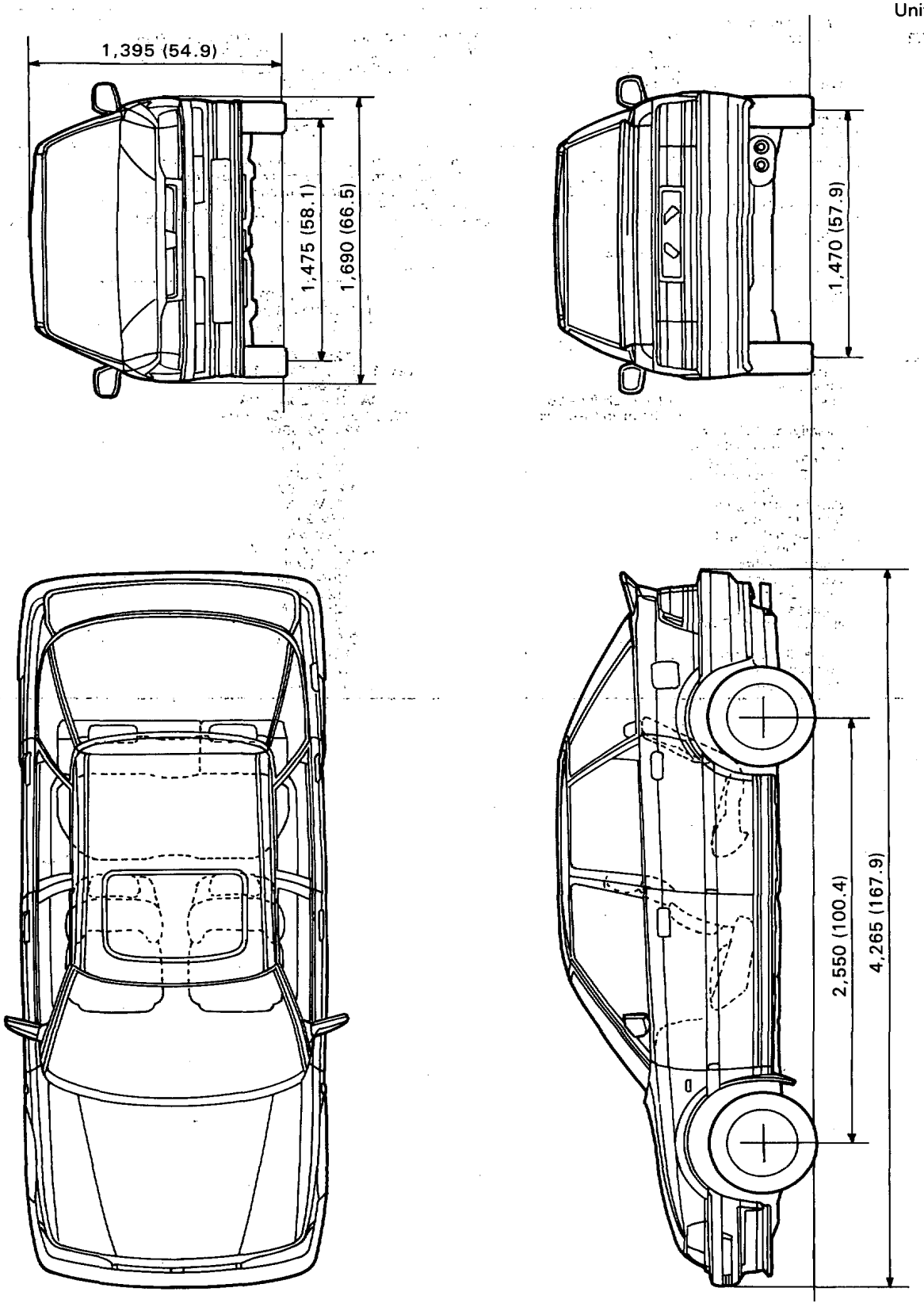
	ITEMS		METRIC	ENGLISH	NOTES
WHEEL ALIGNMENT	Wheel alignment				
	Total Toe	Front	OUT 0.7±1.4 mm	OUT 0.028±0.055	
		Rear	IN 2.3±1.4 mm	IN 0.091±0.055	
	(°)	Front/Rear	OUT 0°04′±8′/IN 0°13.5′±8′		
	Camber	Front	−0°20′±30′		
		Rear	−0°26′±30′		
	Caster		1°38′±30′		
	Kingpin Inclination		12°07′		
BRAKE SYSTEM	Type	Front	Power assisted self-adjusting ventilated discs		
		Rear DX, LX	Power assisted leading/trailing shoe drums		
		EX, SX	Power assisted self-adjusting solid discs		
	Lining Surface Area	Front	49.2 cm^2 X4	7.63 sq.in.X4	
		Rear	65.6 (21.0) cm^2 X4	10.17 (3.25) sq.in.X4	( ): EX,SX
	Effeetive Diameter	Front	214 mm	8.43 in.	
		Rear (EX,SX)	208 mm	8.19 in.	
	Brake Drum (DX, LX)		203 mm	7.99 in.	
TIRES	Size	DX, LX	175/65R14 82T		
		EX	175/65R14 82H		
		SX	185/60R14 82H		
ELECTRICAL	Battery		12V-47AH		
	Starter		12V-1.0kW, 1.2kW, 1.4kW		
	Alternator		12V-60 amps		
	Fuses	In the dash fuse box	10A, 15A, 20A, 30A		
		In the main fuse box	10A, 15A, 30A, 40A, 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		
	Side Marker Lights		12V-5W		
	Back-up Lights		12V-21W		
	License Plate Lights		12V-5W		
	Gauge Lights		12V-3.0W, 1.4W		
	Indicator Lights		12V-1.4W		
	Warning Lights		12V-1.4W		
	Dome Light		12V-5W		
	Laggage Area Light		12V-3.4W		
	Illumination and Pilot Lights		12V-1.4W 0.91W, LED		
	Heater Illumination Lights		12V-1.4W		
	Coutesy Lights		12V-3.4W		
	Rear fog lights		12V-21W		

Downloaded from www.Manualslib.com manuals search engine

Body Specifications

5D

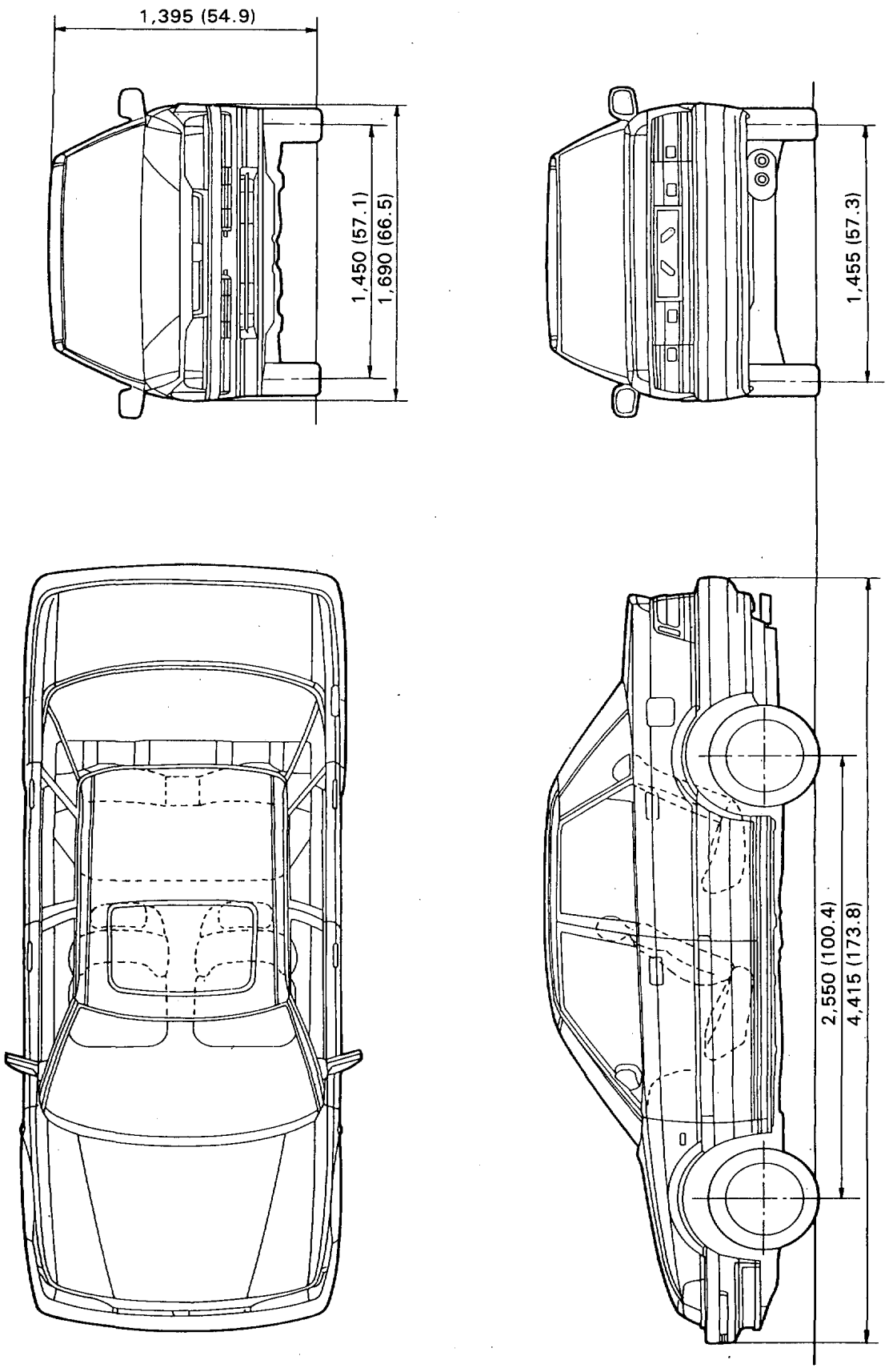
Unit: mm (in.)



Downloaded from www.Manualslib.com manuals search engine

4D

Unit: mm (in.)

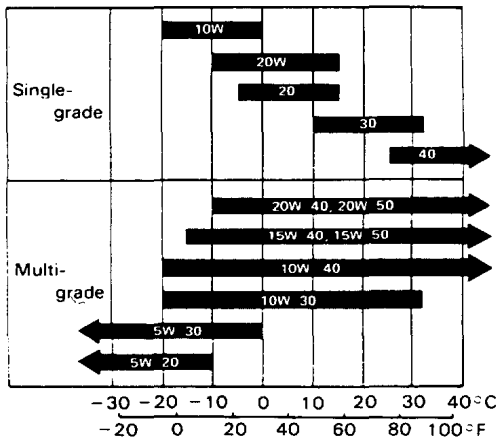


Downloaded from www.Manualslib.com manuals search engine

Lubrication Points

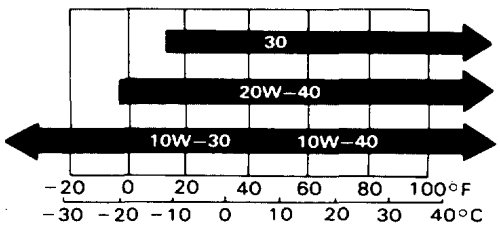
No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SE, SF or SG SAE Viscosity : See chart below
2	Transmission	Manual Automatic	API Service Grade: SE or SF SAE Viscosity: See chart below DEXRON® or DEXRON® II Automatic transmission fluid
3	Brake line (ALB Line for ALB models)		Brake fluid DOT 3 or DOT4
4	Power steering system		Honda power steering fluid P/N 08208—99961
5	Steering gearbox		Honda steering grease P/N 08733—B070E
6	Shift lever pivot (Manual transmission)		Silicone grease with molybdenum disulfide
7 8 9 10 11 12 13 14 15 16 17 18 19 20	Steering ball joints Suspension ball joints Steering boots Tilt steering Steering column bushdngs Select lever (Automatic transmission) Pedal linkage Brake master cylinder push rod Tailgate hinges or trunk hinges Door hinges upper and lower Door opening detents Fuel filler lid Engine hood hinges Engine hood latch		Multi-purpose grease
21	Caliper	Piston seal Dust seal Caliper pin Piston	Silicone grease

Recommended Engine Oil
(SE,SF or SG Grade oil)



Engine oil viscosity for
ambient temperature ranges

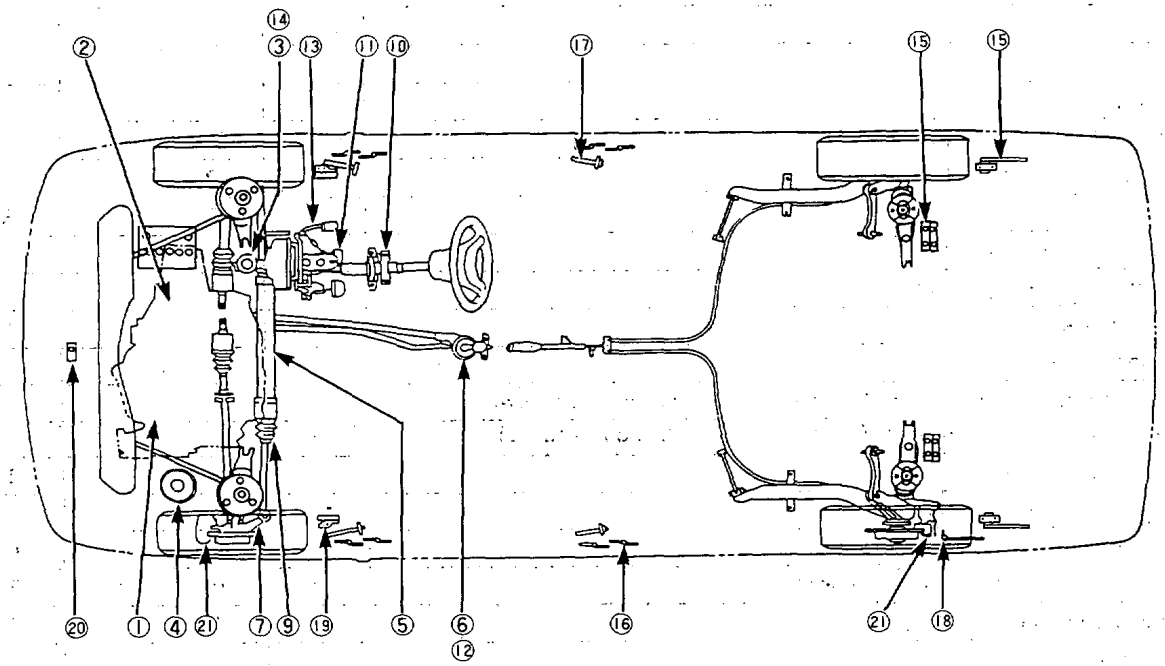
Recommended Manual Transmission Oil
(SE or SF Grade oil)



Transmission oil viscosity for
ambient temperature ranges

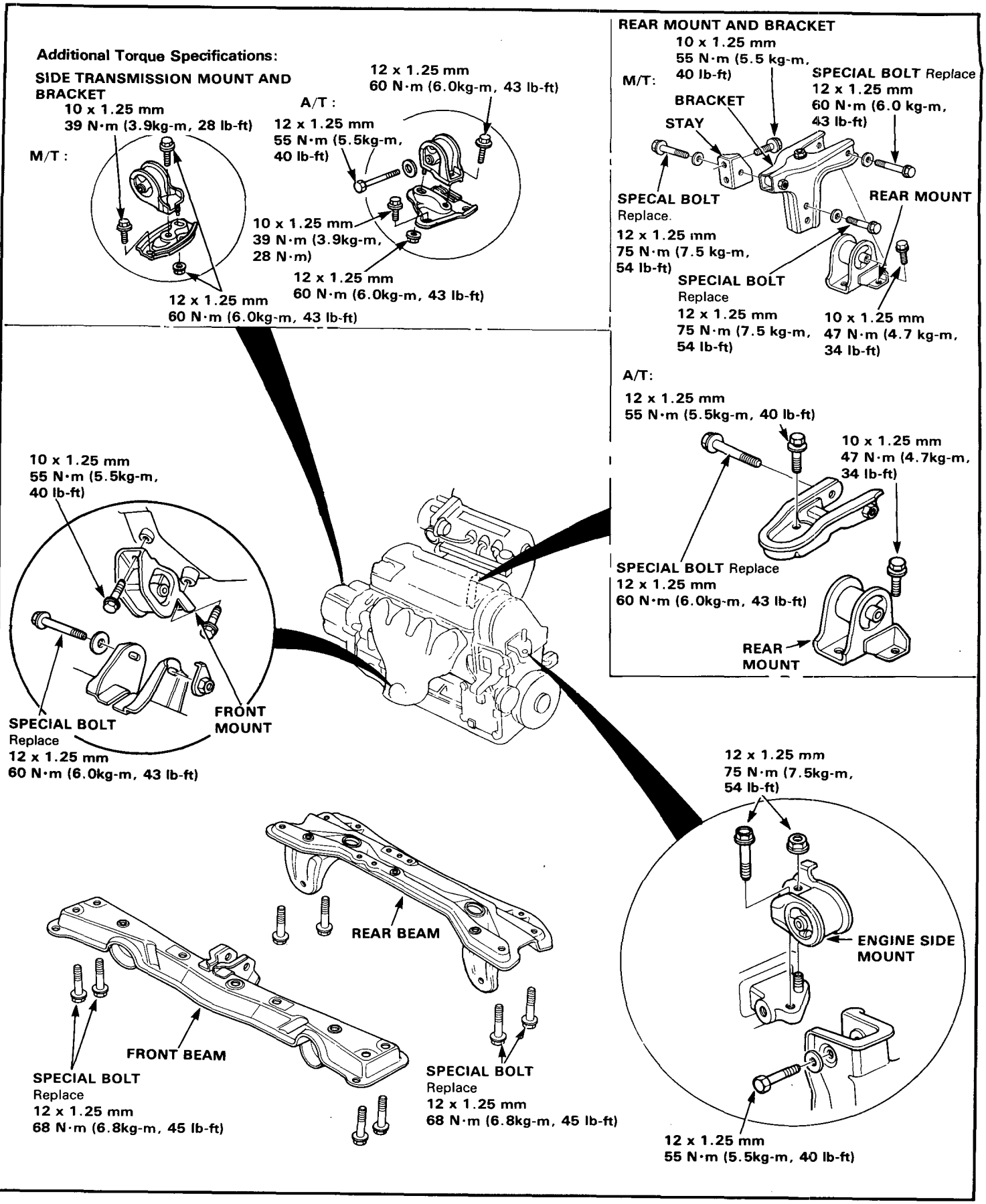
CAUTION: Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

Engine Removal/Installtion



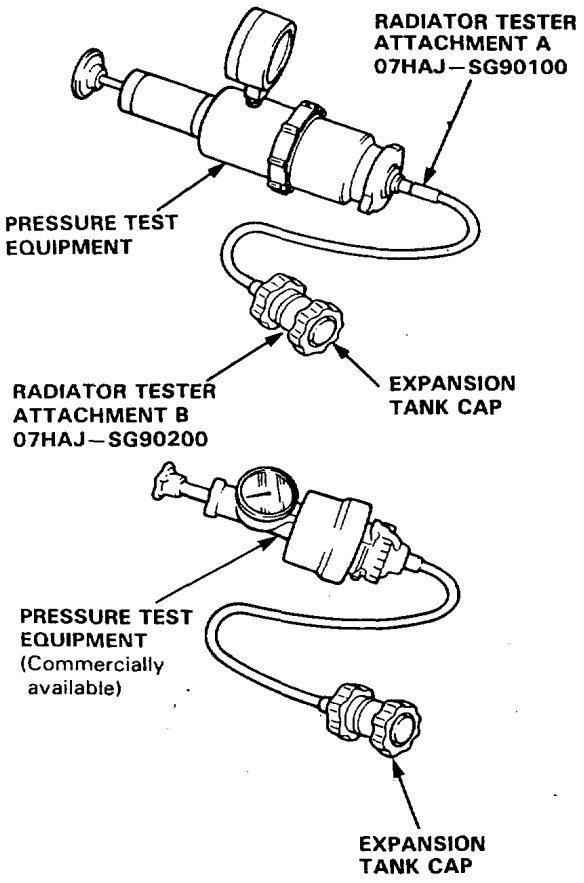
Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

Expansion Tank 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.**

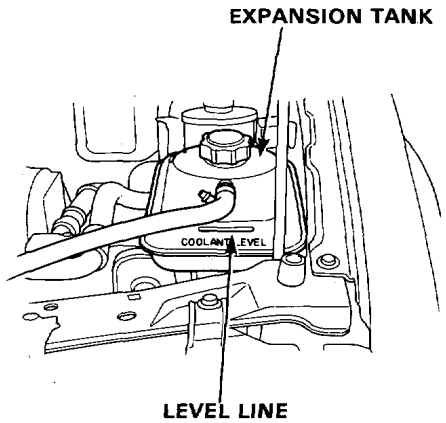
1. Remove the expansion tank cap, wet its seal with coolant, then install it on the pressure tester.
2. Apply pressure of 74—103kpa (0.75—1.05kg/cm², 11—15psi).
3. Check for a drop in pressure.
4. If there is a drop in pressure, replace the cap.



Coolant Level Inspection

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. Check the coolant level.



2. Supply the coolant expansion tank with coolant to the level line.

NOTE :
- Use only HONDA-RECOMMENDED anti-freeze/coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 50% MINIMUN. 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 antirust products ; they may not be compatible with the recommended coolant.**

Rediator Coolant Refill Capacity :

1.4 ℓ and 1.6 ℓ SOHC Fuel-Injected	M/T 4.4 ℓ (4.6 US qt, 3.9 Imp qt)
	A/T 4.3 ℓ (4.5 US qt, 3.8 Imp qt)
1.5 ℓ, 1.6 ℓ Carb. and 1.6 ℓ DOHC	M/T 4.5 ℓ (4.7 US qt, 4.0 Imp qt)
	A/T 4.4 ℓ (4.6 US qt, 3.9 Imp qt)

(including expansion tank capacity: 0.55 ℓ (0.58 US qt., 0.48 Imp qt))

3. See page 5-84 for refilling.

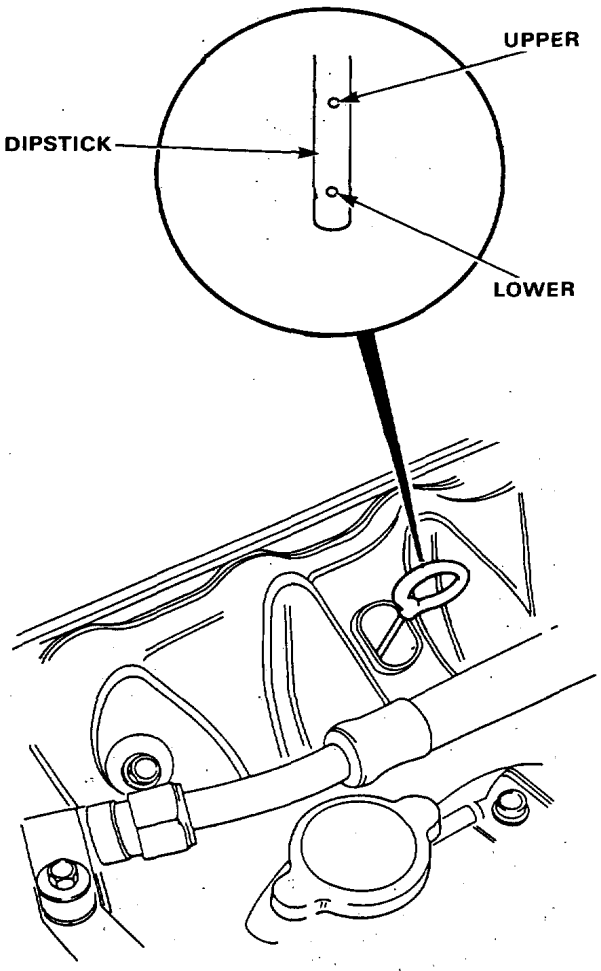
Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

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.



CAUTION: Do not mix the oils of different brands or grades and do not use low-quality oil.

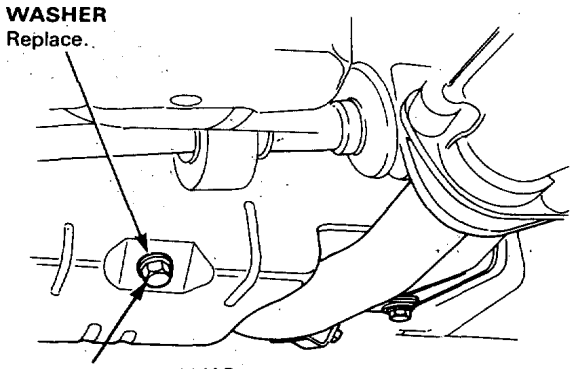
Engine Oil Replacement

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

⚠ WARNING Be careful when loosening the drain bolt while the engine is hot. Burns can result because the oil temperature is very high.

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 : Remove the filler cap to speed draining.



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

Engine oil capacity ℓ (US qt, Imp qt)
(Includes oil filter 0.50 (0.53, 0.44))

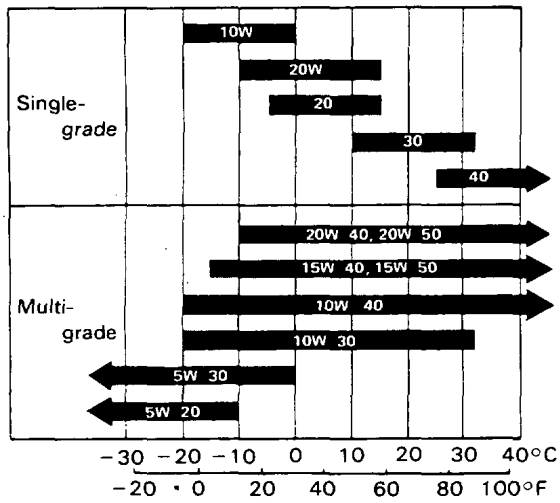
SOHC engine	3.5 (3.7, 3.1) for oil change 4.0 (4.2, 3.5) for engine disassembly
DOHC engine	3.8 (4.0, 3.3) for oil change 4.3 (4.5, 3.8) for engine disassembly

Engine oil change interval

Every 10,000 km (6,000 miles) or 6 months

Downloaded from www.Manualslib.com manuals search engine

Recommended Engine Oil
(SE, SF or SG Grade Oil)



Engine oil viscosity for
ambient temperature ranges

NOTE:
- Oil filter should be replaced at each oil change.
- Because the oil will deteriorate rapidly under the following conditions, it should be changed sooner than usual.
  - Frequent traveling on unpaved roads.
  - Use in cold climates.
  - Frequent idling.
  - Repeated short distance travel.
  - Use as a tractor.

Oil Filter Replacement

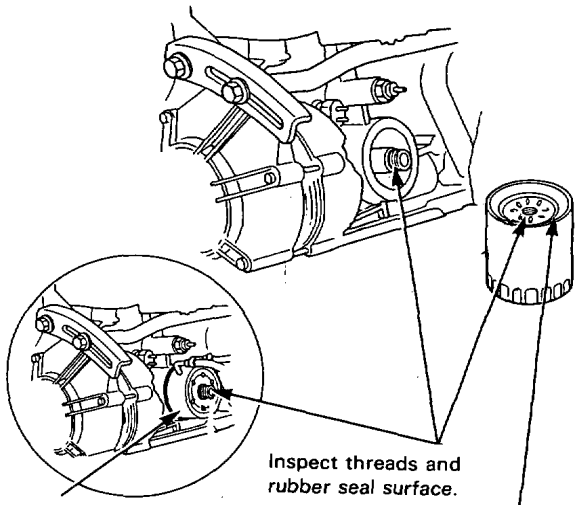
JAPAN-MADE TYPE

⚠ WARNING After the engine has been run, the exhaust pipes will be hot ; be careful when working around the exhaust manifold.

CAUTION : Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

1. Remove the oil filter with the special oil filter socket.
2. Inspect the threads and rubber seal on the new filter. Wipe off seat on engine block, then apply a light coat of oil to the filter rubber seal.

   NOTE : Use only filters with a built-in bypass system.



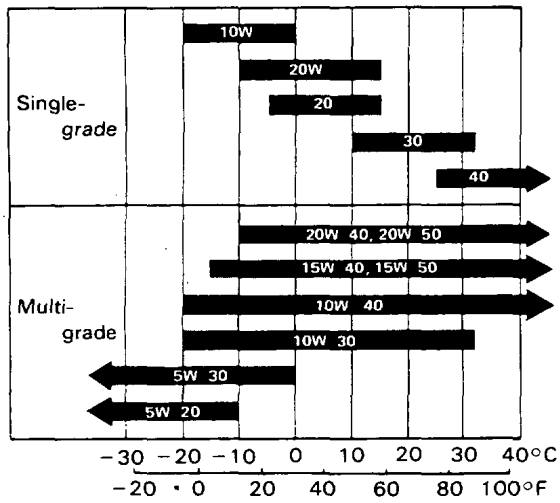
ENGINE OIL COOLER
(Standard for some types)

Apply oil to rubber seal before installing.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Recommended Engine Oil
(SE, SF or SG Grade Oil)



Engine oil viscosity for
ambient temperature ranges

NOTE:
- Oil filter should be replaced at each oil change.
- Because the oil will deteriorate rapidly under the following conditions, it should be changed sooner than usual.
  - Frequent traveling on unpaved roads.
  - Use in cold climates.
  - Frequent idling.
  - Repeated short distance travel.
  - Use as a tractor.

Oil Filter Replacement

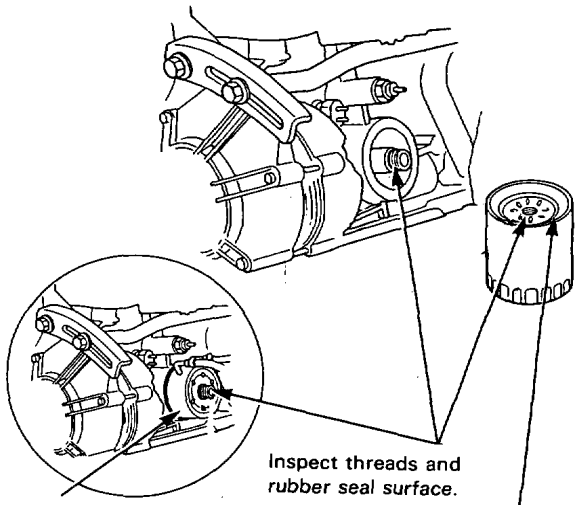
JAPAN-MADE TYPE

⚠ WARNING After the engine has been run, the exhaust pipes will be hot ; be careful when working around the exhaust manifold.

CAUTION : Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

1. Remove the oil filter with the special oil filter socket.
2. Inspect the threads and rubber seal on the new filter. Wipe off seat on engine block, then apply a light coat of oil to the filter rubber seal.

   NOTE : Use only filters with a built-in bypass system.



ENGINE OIL COOLER
(Standard for some types)

Apply oil to rubber seal before installing.

(cont'd)

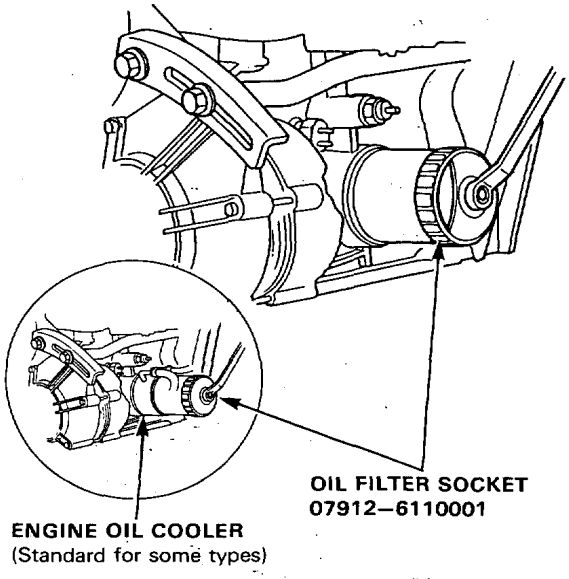
Downloaded from www.Manualslib.com manuals search engine

Oil Filter Replacement (cont'd)

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.

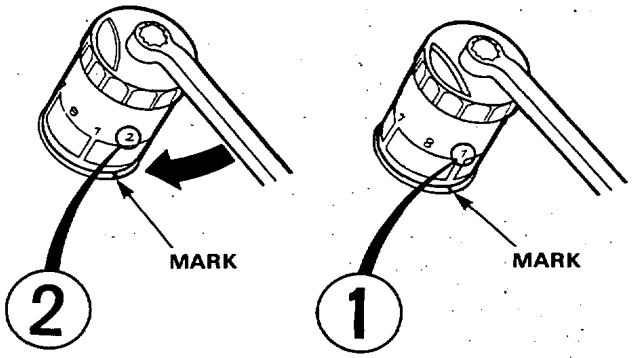


Eight numbers (1 to 8) are printed on the surface of the filter.

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 comes up to 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.

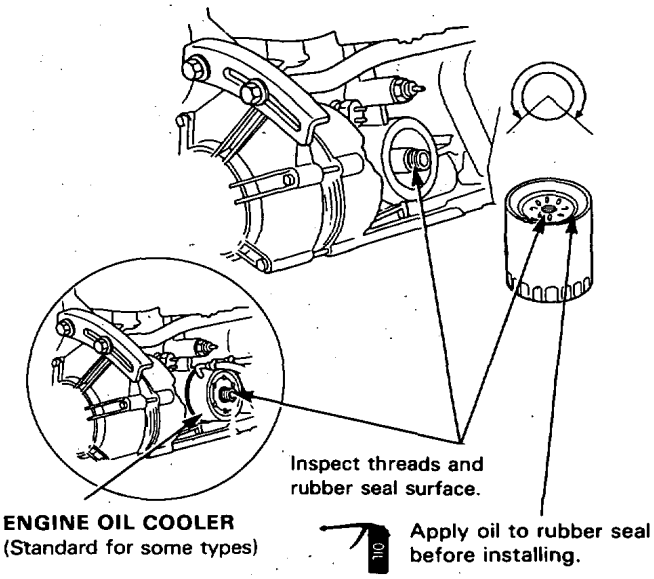
Downloaded from www.Manualslib.com manuals search engine

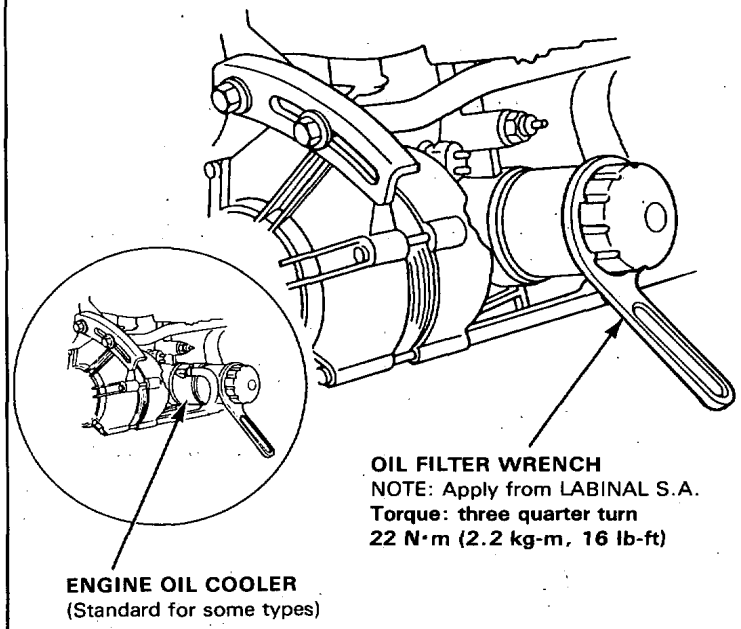
FRANCE-MADE TYPE

⚠ WARNING: After the engine has been run, the exhaust pipes will be hot, be careful when working around the exhaust manifold.

CAUTION: Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

1. Remove the oil filter with the special oil filter socket or wrench.
2. Inspect the threads and rubber seal on the new filter. Wipe off seat on engine block, then apply a light coat of oil to the rubber seal, and install filter.
3. After the rubber seal is seated, tighten the filter by turning approximately three quarter turn.





4. Start the engine and check the filter for oil leakage.

Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

Air Cleaner Element Inspection/ Replacement

Inspection

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

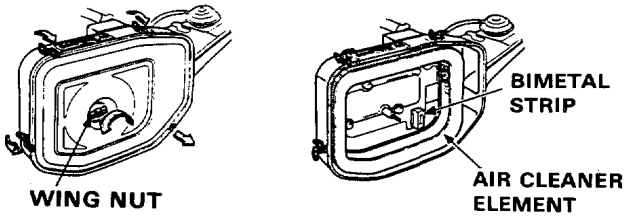
   NOTE : No cleaning is necessary for the air cleaner element, because its filter takes in oil (: viscous type). Replace the air cleaner element every 40,000 km (24, 000 miles) or 24 months, whichever comes first (more often in extremely dusty conditions).

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

Replacement

Carbureted Engine:

To change the air cleaner element, unsnap the clips and remove the wing nut, then remove the air cleaner cover. Replace the air cleaner element.

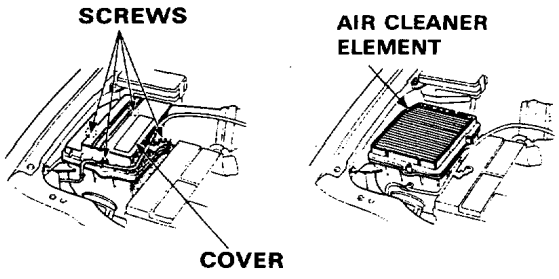


CAUTION: Care should be taken not to damage bimetal strip.

Fuel-Injected Engine:

Remove the four screws holding the air cleaner cover halves together.

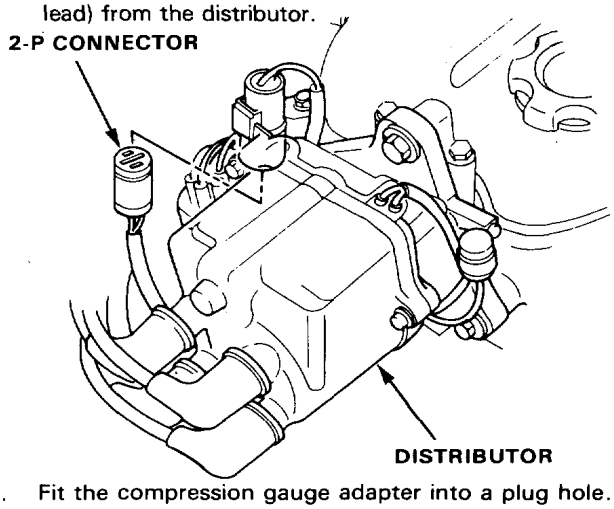
Remove the top half of the air cleaner cover. Replace the air cleaner element.



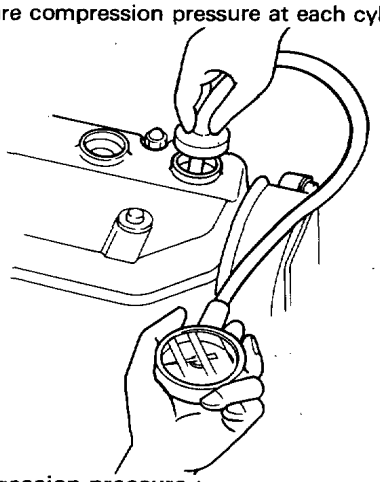
2. Install the air cleaner cover and tighten the clips, nut or bolts securely.

Compression Pressure Inspection

1. Before inspection, run the engine until it warms up (the cooling 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.
5. Open the throttle valve fully, then run the engine with starter motor.
   NOTE: Use a full charged battery.
6. Measure compression pressure at each cylinder.



Compression pressure :

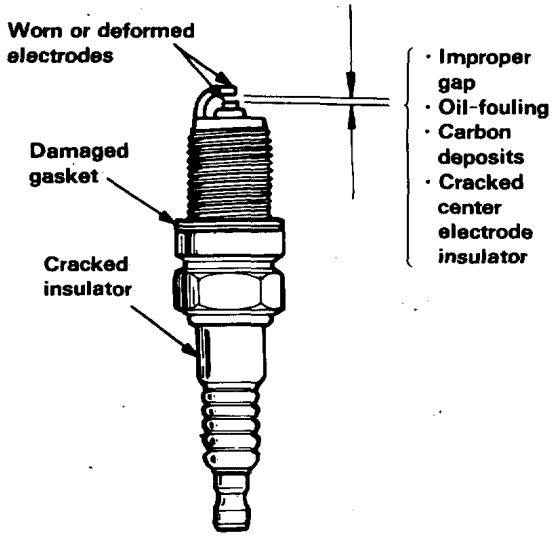
SOHC :	**1,275 kPa (13.0 kg/cm², 185 psi) at 250 min⁻¹(rpm)**
DOHC :	**1,324 kPa (13.5 kg/cm², 192 psi) at 250 min⁻¹(rpm)**
Limit :	**932 kPa (9.5 kg/cm², 135 psi) at 250 min⁻¹(rpm)**
Difference between cylinders :	**169 kPa (2.0 kg/cm², 28 psi)**

5. If compression pressure is low, it is caused by wear or damage of piston rings or head gasket, and improper seated valves.
6. When the pressure is high, inspect the following items.
   - Accumulated carbon on the piston head and the cylinder head.

Downloaded from www.Manualslib.com manuals search engine

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

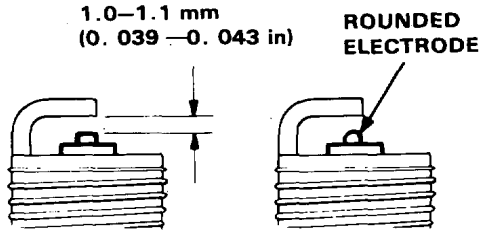
Fouled plug may be caused by :
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

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

Spark Plug:

	Engine type	Standard	Optional
NGK	1.5 ℓ , 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC*1	BCPR6E-11	BCPR7E-11 BCPR6EY-N11 BCPR7EY-N11
	1.4 ℓ , 1.6 ℓ (2-Carb)	BCPR6E-11	BCPR7E-11
	1.6 ℓ DOHC*2	BCPR6E-11	BCPR7E-11
ND	1.5 ℓ , 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC*1	Q20PR-U11	Q22PR-U11
	1.4 ℓ , 1.6 ℓ (2-Carb)	Q20PR-U11	Q22PR-U11
	1.6 ℓ DOHC*2	Q20PR-UL11	Q20PR-U11 Q22PR-U11 Q22PR-UL11

*1: with CATA
*2: without CATA



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.

Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

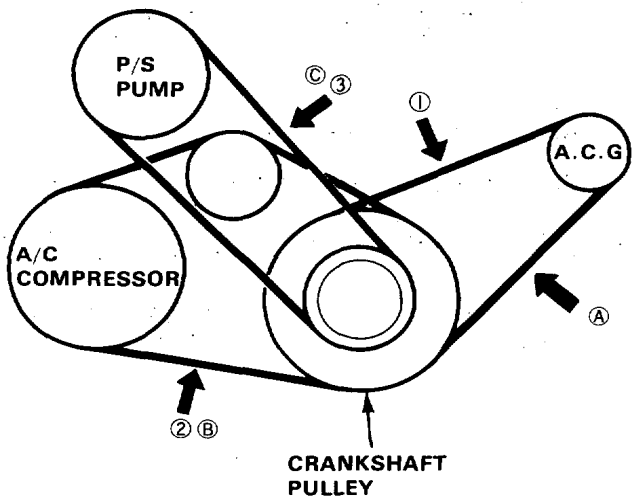
Drive Belts Inspection

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

	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 Pump Belt	9—12 mm (0.35—0.47 in.)	7—10 mm (0.28—0.39 in.)

Measure with the belt tension gauge :

	Used Belt	New Belt
ⒶAlternator Belt	294—392N (30—40kg 66—88 lb)	392—588N (40—60 kg 66—132 lb)
ⒷA/C Compressor Belt	343—490N (35—50 kg 77—110 lb)	441—686N (45—70 kg 99—154 lb)
ⒸP/S Pump Belt	343—490N (35—50 kg 77—110 lb)	441—686N (45—70 kg 99—154 lb)



Alternator 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 alternator and the crankshaft pulley.

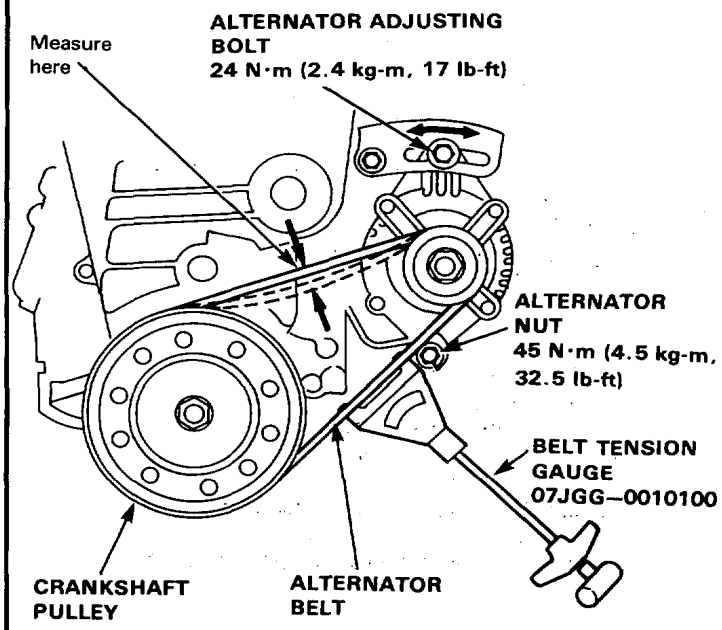
   Deflection: 9—11 mm (0.35—0.43 in)

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

Measure with the belt tension gauge:
Attach the tension gauge to the alternator belt as shown. Measure the belt tension.

Tension: 294—392 N (30—40 kg, 66—88 lb)

NOTE: On a brand-new belt, the tension should be 392—588 N (40—60 kg, 66—132 lb) 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.

Downloaded from www.Manualslib.com manuals search engine

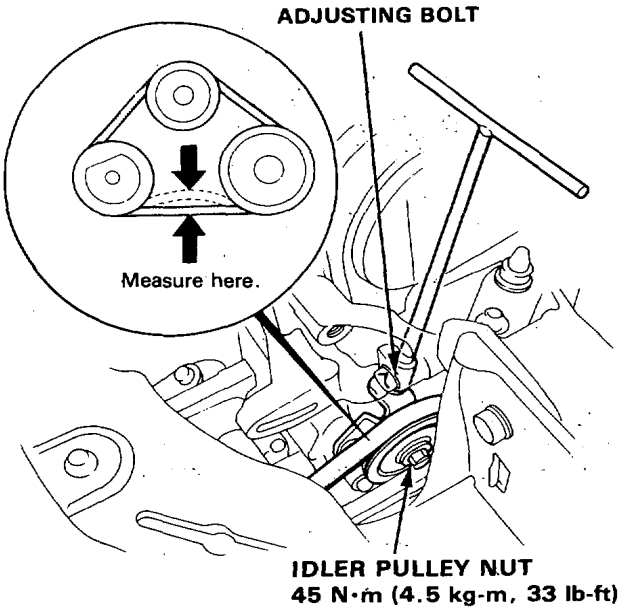
A/C Compressor Belt Adjustment

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 meassure the deflection, between the A/C compressor idler pulley and the crankshaft pulley.

Deflection: 9—11 mm (0.35—0.43 in.)

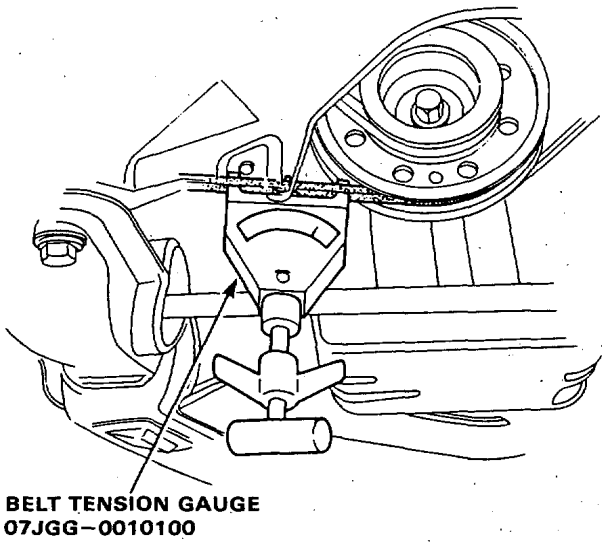
NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.28—0.35 in.) when first measured.



Measure with the belt tension gauge:
Attach the belt tension gauge to the belt and measure the tension of the belt.

Tension: 343—490 N (35—50 kg, 77—110 lb)

NOTE:
- On a brand-new belt, the tension should be 441—686 N (45—70 kg, 99—154 lb) when first measured.
- See the instruction for the belt tension guge.



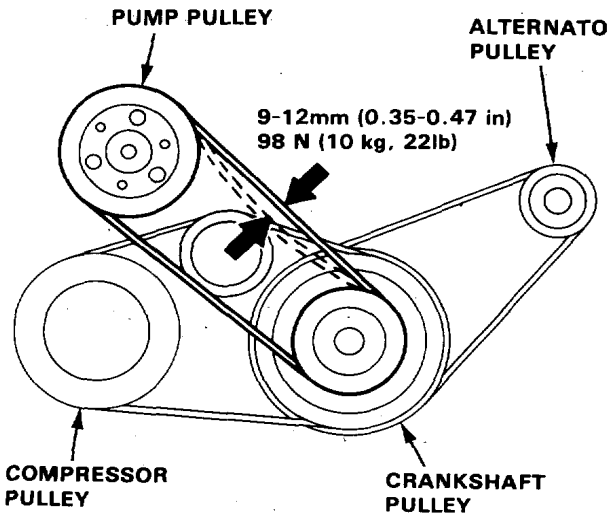
2. Loosen the idler pulley nut.
3. Turn the adjusting bolt to get the proper belt tension, then retighten the idler pulley nut.
4. Recheck the deflection of the belt.

Downloaded from www.Manualslib.com manuals search engine

P/S Pump Belt Adjustment

A properly adjusted belt should deflect about 9.0-12.0 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 7.0-10.0 mm (0.28-0.39 in.) when first measured.

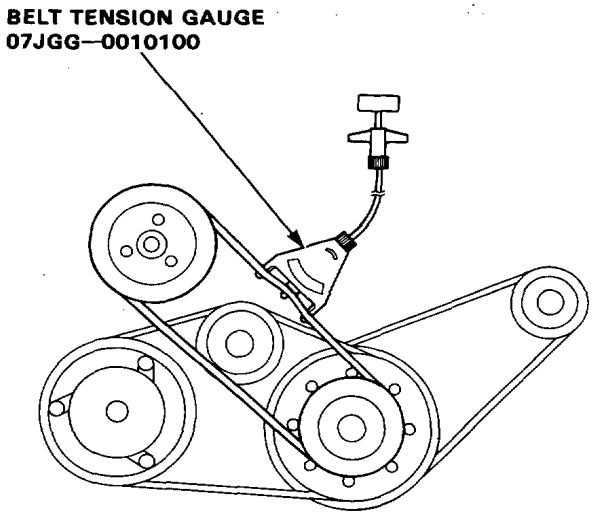


Test by the Belt Tension Gauge; 07JGG—0010100.
Attach the tension gauge to the belt and measure the tension of the belt.

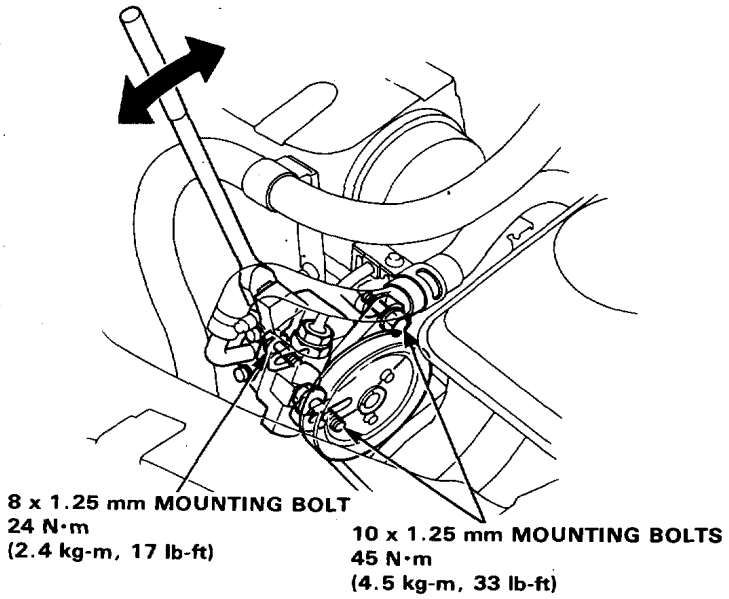
Tension: 343-490 N (35-50 kg, 77-110 lb)

NOTE:

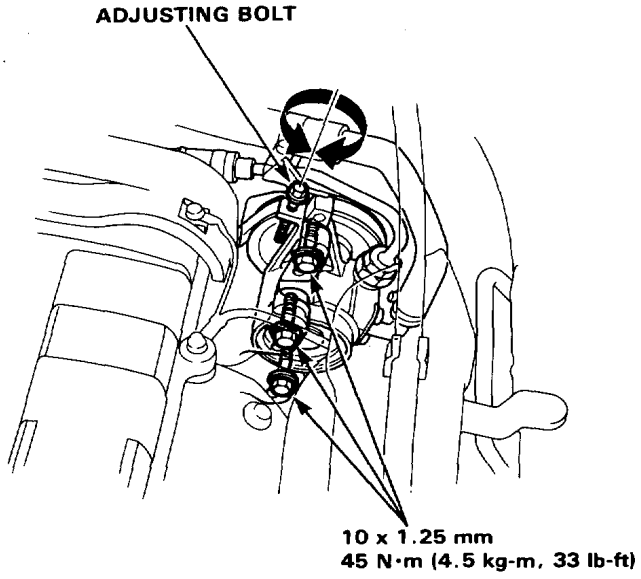
- On a brand-new belt, the tension should be 441-686 N (45-70 kg, 99-154 lb) when first measured.
- See the instructions for the tension gauge.



SOHC Engine:
Loosen the three mounting bolts and more the pump to get proper tension, then retighen the mounting bolts.



DOHC Engine:
Loosen the three mounting bolts and turn the adjusting bolt to get proper tension, then retighten the mounting bolts.



Start the engine and turn the steering wheel from lock-to-lock serveral times, then recheck the belt tension.

Downloaded from www.Manualslib.com manuals search engine

Valve Clearance Adjustment

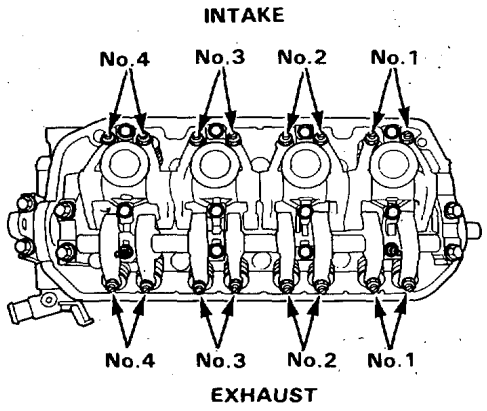
SOHC Engine :

CAUTION: Do not overtighten the locknuts, for the locker arms are made of aluminum.

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.**
- **If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).**

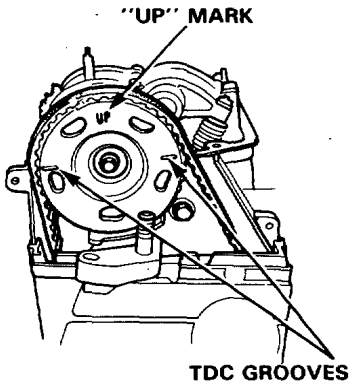
1. Remove the valve cover.



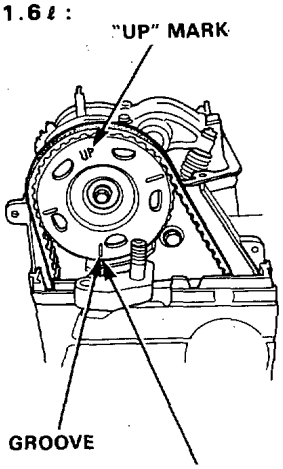
2. Set No. 1 piston at TDC "UP" mark on the pulley should be at top, and TDC groove on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

Number 1 piston at TDC

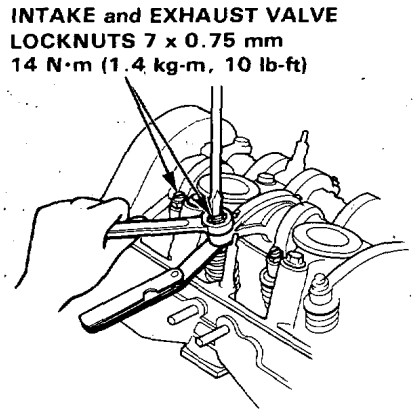
1.4ℓ :



1.6ℓ :



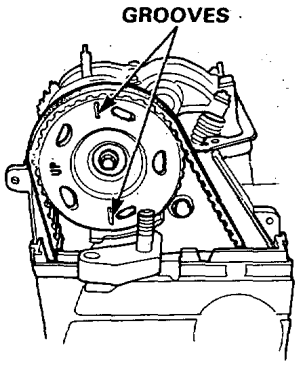
3. Adjust valves on No. 1 cylinder.
   Intake : 0.17—0.22 mm (0.007—0.009 in.)
   Exhaust : 0.22—0.27 mm (0.009—0.011 in.)
4. Loosen locknut and turn adjusting screw until feeler gauge slides back and forth with slight amount of drag.



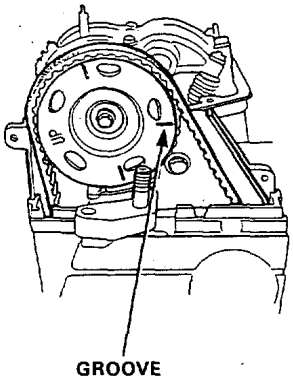
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC

1.4ℓ :



1.6ℓ :



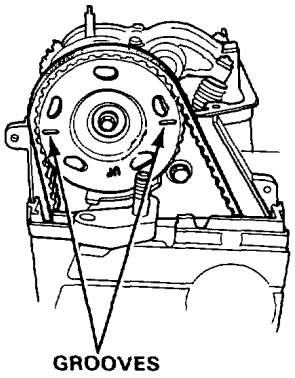
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

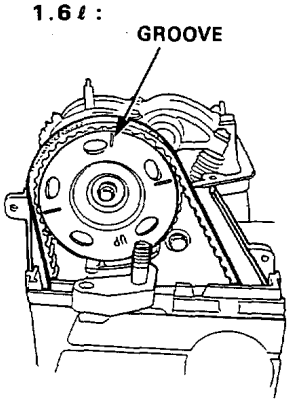
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No. 4 plug wire. Adjust valves on No. 4 cylinder.

Number 4 piston at TDC

1.4ℓ :



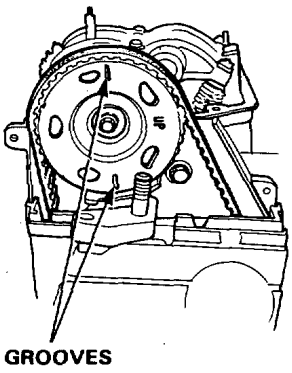
1.6ℓ :



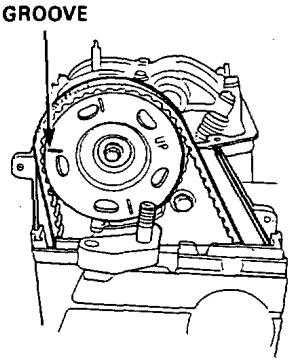
8. Rotate crankshaft 180° counterclockwise to bring No. 2 piston to TDC. The "UP" mark should be at intake side. Distributor rotor should point to No. 2 plug wire. Adjust valves on No.2 cylinder.

Number 2 piston at TDC

1.4ℓ :



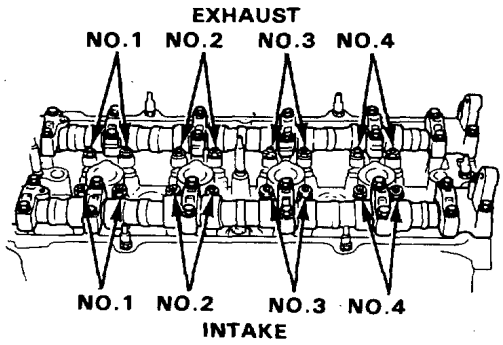
1.6ℓ :



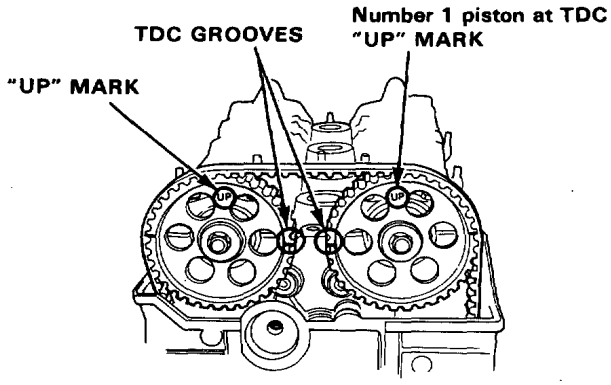
DOHC Engine:

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.
- If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

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.

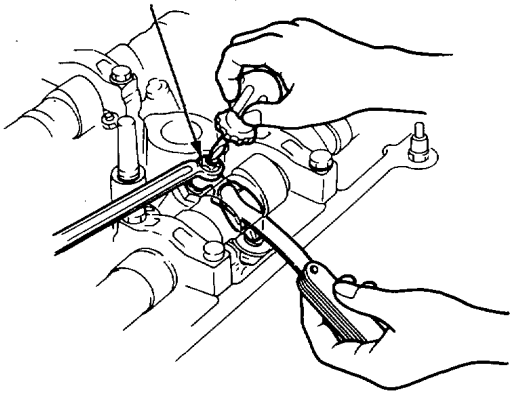


Downloaded from www.Manualslib.com manuals search engine

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.)

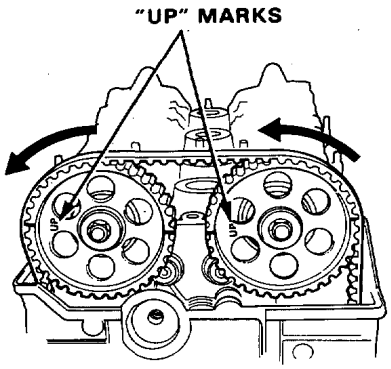
4. Loosen locknut and turn adjusting screw until feeler gauge slides back and forth with slight amount of drag.

LOCKNUT 7 x 0.75 mm
25 N·m (2.5 kg-m, 13 lb-ft)



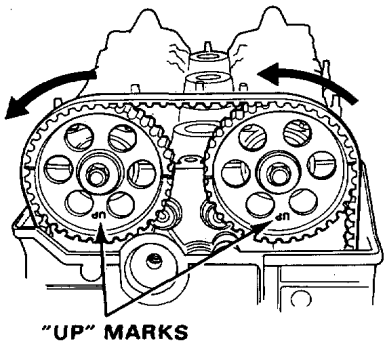
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" marks should be at exhaust side. Distributor rotor should point to No.3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



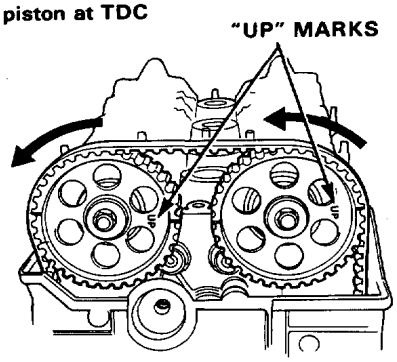
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both "UP" marks should be at bottom and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

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



Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

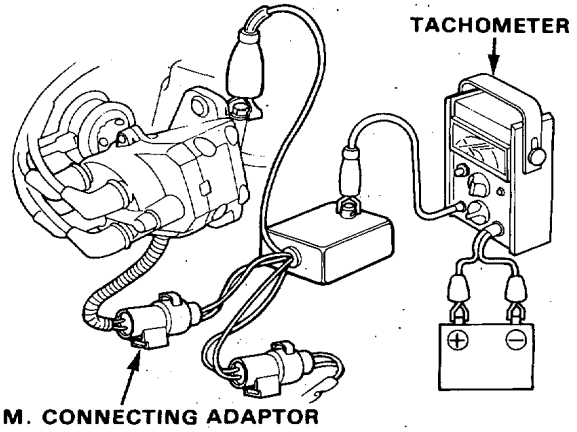
Idle Speed Inspection/Adjustment (Carbureted Engine)

NOTE:
- Ignition timing and valve clearance must be correct, and engine must be normal operating temperature; the cooling fan will come on.
- Snap the accelerator pedal serveral times and check the idle speed with the accelerator pedal fully returned.
- Check the clutch pedal (section 7) before making idle speed and mixture inspections.

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

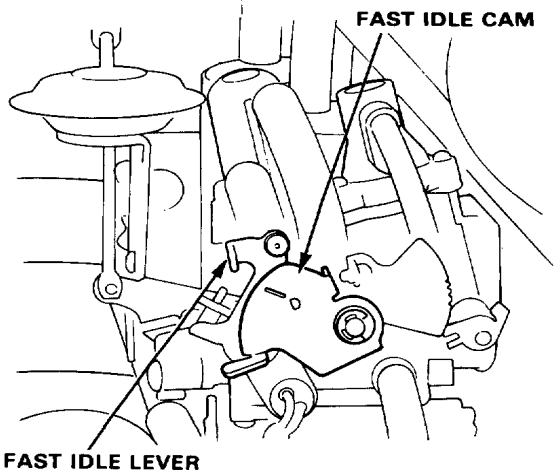
CO Meter Method

1. Warm up and calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm and connect a tachometer.



3. (1.6 ℓ Engine)
   Check the fast idle lever.

   Fast idle lever should not be seated against fast idle cam.



   - If the fast idle lever is against the fast idle cam, replace the fast idle cam (page 6-19).

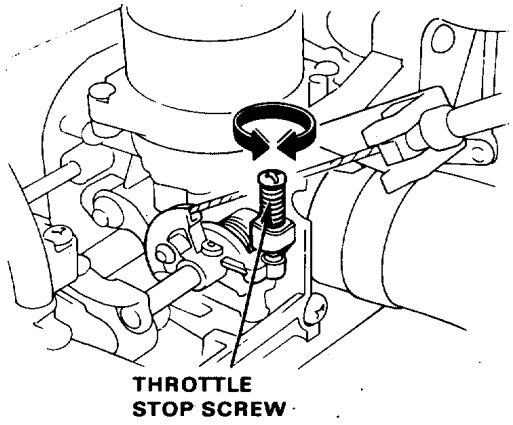
4. Check the idle speed with no load.

   Idle speed should be:

Manual	750±50 min⁻¹ (rpm)
Automatic	700±50 min⁻¹ (rpm) (N or P)

5. If not within specification, adjust by turning throttle stop screw to obtain proper idle speed.

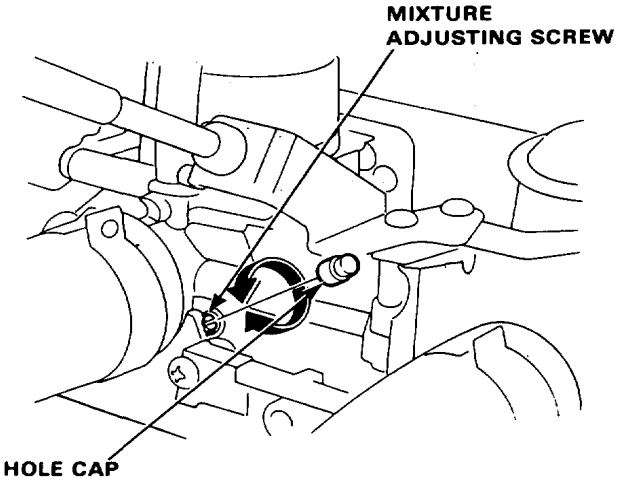
   If idle speed cannot be adjusted properly, check for proper throttle cable adjustment.



6. Check specification for idle CO with no load.

   Spcified CO %: below 1.0 %

7. If not within specification, remove mixture adjusting screw hole plugs and adjust by turning mixture adjusting screws to obtain proper CO reading.



Turning both mixture adjusting screws.
clockwise: CO reading decreases
counterclockwise: CO reading increases

- Readjust idle speed if necessary, and recheck idle CO.

Downloaded from www.Manualslib.com manuals search engine

8. Install the hole plugs.

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

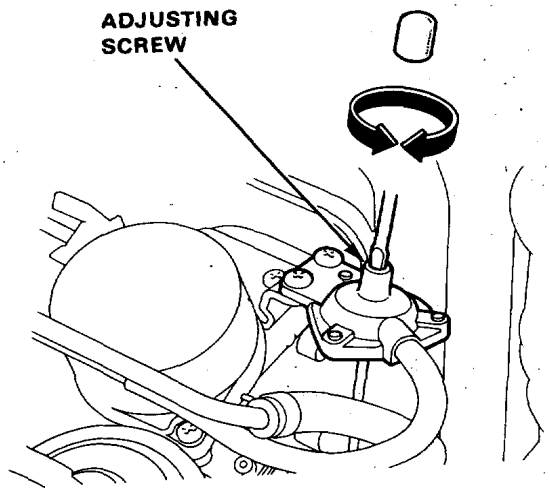
9. If equipped with air conditioner, check the idle speed with the A/C on.

   Idle speed should be:

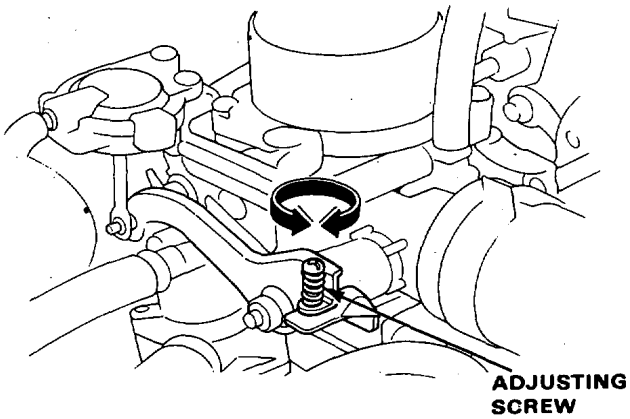
Manual	750±50 min^{-1} (rpm)
Automatic	750±50 min^{-1} (rpm) (N or P)

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

(1.4 ℓ Engine)



(1.6 ℓ Engine)



Tailpipe Emissions (Carbureted Engine)

Inspection

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

1. Follow steps the CO meter method. (page 6-15).
2. Warm up and calibrate the CO meter according to the meter manufacture's instructions.
3. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

   Specified CO% ; 1.0%

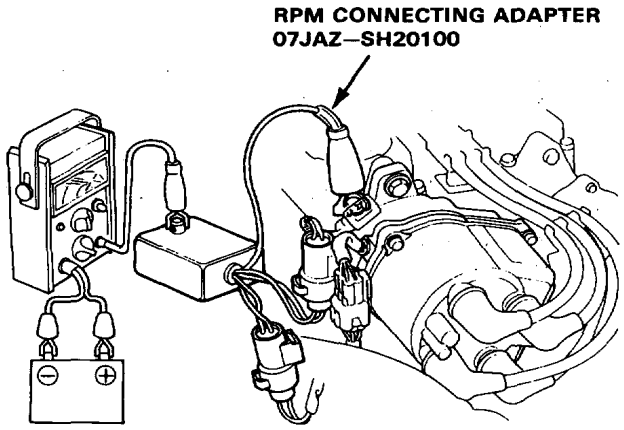
Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

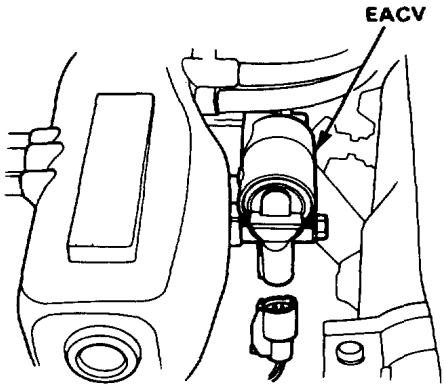
Idle Speed Inspection/Adjustment (Fuel-Injected Engine)

1.6 ℓ Fuel-Injected Engine:

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.



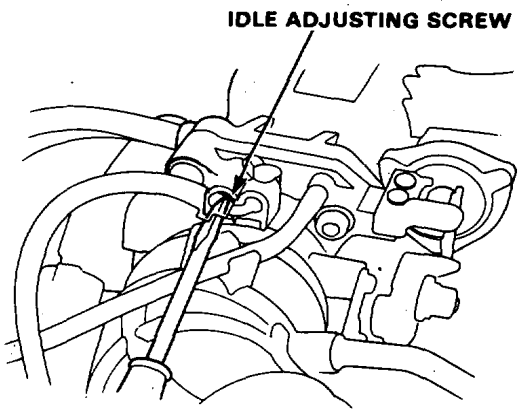
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be:

(SOHC)
680 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
(DOHC with CATA)
700 ± 50 min^{-1} (rpm)
(DOHC without CATA)
M/T: 700 ± 50 min^{-1} (rpm)
A/T: 650 ± 50 min^{-1} (rpm) (in [N] or [P])

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 6-169).



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:
(SOHC)
780 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
(DOHC with CATA)
800 ± 50 min^{-1} (rpm)
(DOHC without CATA)
M/T: 800 ± 50 min^{-1} (rpm)
A/T: 750 ± 50 min^{-1} (rpm) (in [N] or [P])

8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.

Idle speed should be:
(SOHC)
780 ± 50 min^{-1} (rpm)
(DOHC with CATA)
800 ± 50 min^{-1} (rpm)
(DOHC without CATA)
M/T: 800 ± 50 min^{-1} (rpm)
A/T: 750 ± 50 min^{-1} (rpm)

9. 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)
810 ± 50 min^{-1} (rpm)
(DOHC with CATA)
800 ± 50 min^{-1} (rpm)
(DOHC without CATA)
M/T: 800 ± 50 min^{-1} (rpm)
A/T: 750 ± 50 min^{-1} (rpm)

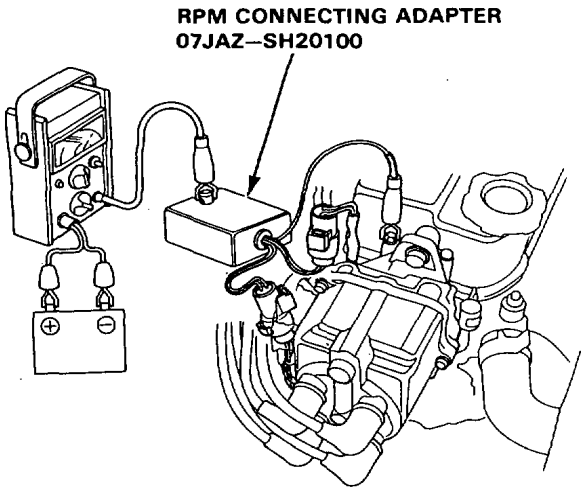
NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-120.

Downloaded from www.Manualslib.com manuals search engine

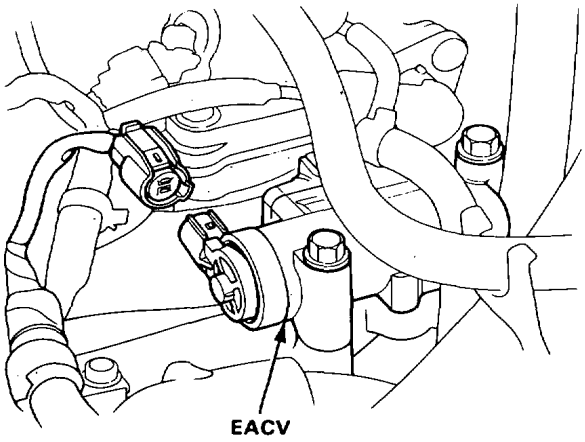
1.5 ℓ Fuel-Injected Engine:

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

2. Connect a tachometer.



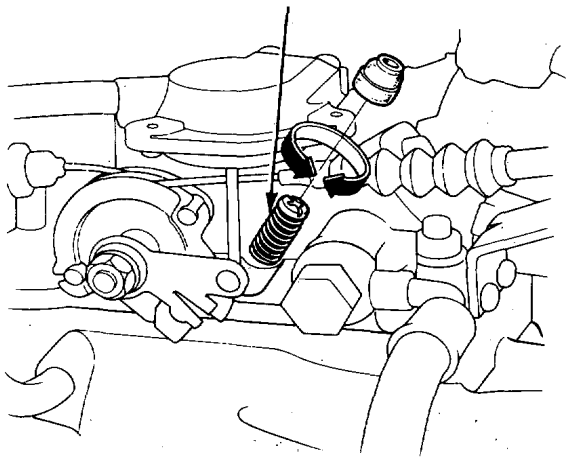
3. Disconnect the 2P connector from the EACV.



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:
   700 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
   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 6-126)



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:
   800 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])

8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle speed should be: 800 ± 50 mim^{-1} (rpm)

9. 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: 800 ± 50 mim^{-1} (rpm)

   NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-120.

Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

Tailpipe Emission (Fuel-Injected Engine)

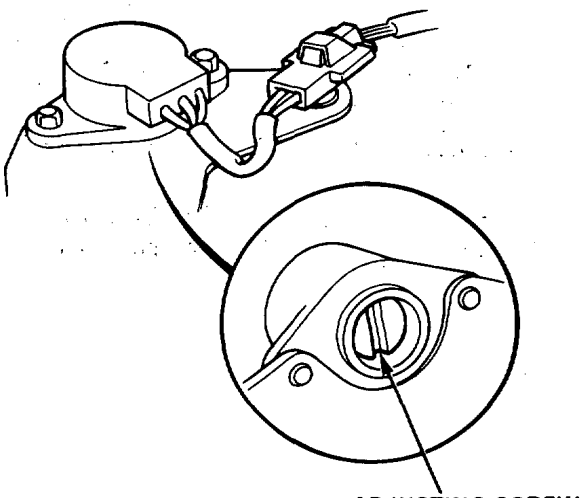
Inspection

⚠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 6-133, 134).
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: 0.5 $^{+\ 0.5\%}_{-\ 0.3\%}$

- If unable to obtain this reading;
  On With CATA, see ECU troubleshooting (page 6-54).
  On other models, adjust by turning the adjusting screw of the IMA sensor.



ADJUSTING SCREW

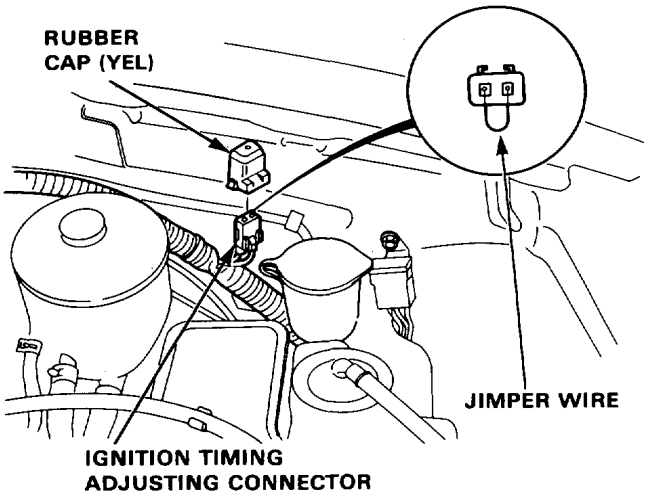
– If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

Downloaded from www.Manualslib.com manuals search engine

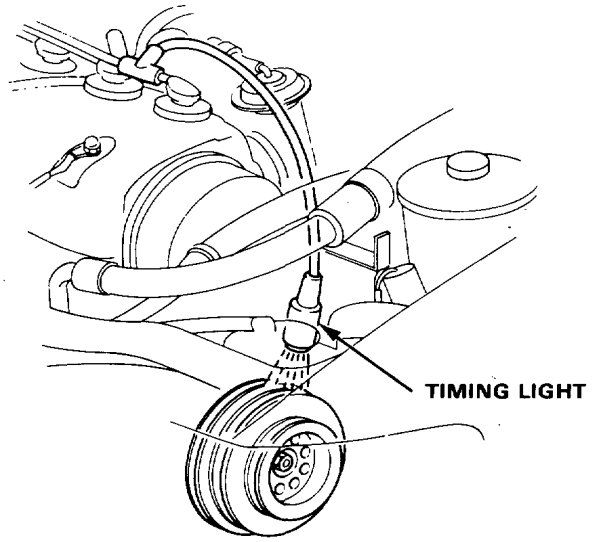
Ignition Timing Inspection and Setting (Fuel-Injected Engine)

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 front 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.

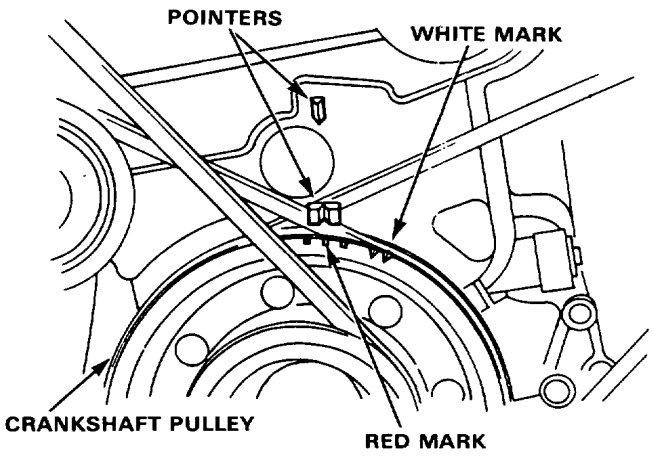
Ignition Timing

1.5 ℓ SOHC (MT, AT)
18°±2°BTDC (RED) at 800±50 min^{-1} (rpm) in neutral

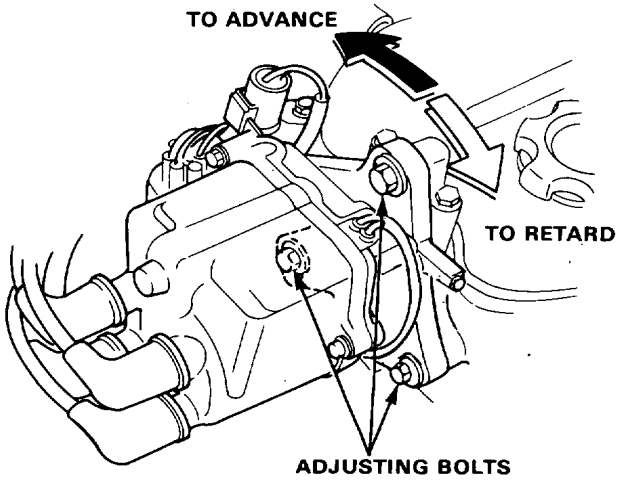
1.6 ℓ SOHC (MT, AT)
18°±2°BTDC (RED) at 780±50 min^{-1} (rpm) in neutral

1.6 ℓ DOHC (MT):
16°±2°BTDC (RED) at 800±50 min^{-1} (rpm) in neutral

1.6 ℓ DOHC (AT):
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.

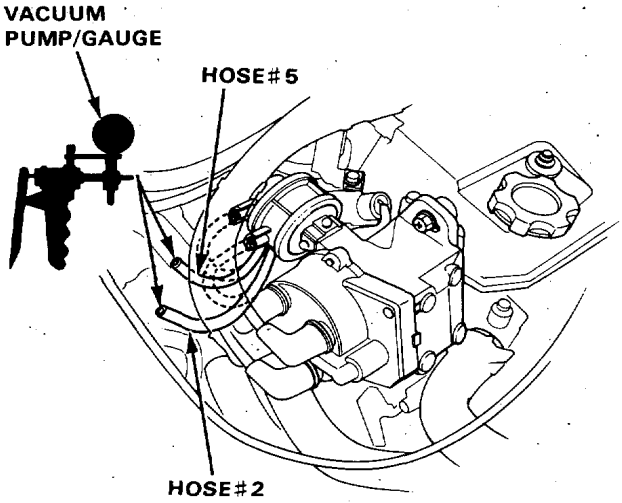
7. Remove the jumper wire and install the rubber cap to the ighition timing adjusting connector.

Downloaded from www.Manualslib.com manuals search engine

Engine Tune-up

Ignition Timing Inspection and Setting (2-Carbureted Engine)

1. Disconnect the vacuum hoses from the vacuum advance diaphragm, then connect the vacuum pump/gauges to the vacuum hoses.



2. Start the engine and let it idle.

3. When the engine is cool.
Coolant temperature is below [45°C (113°F)].
Check each hose for vacuum. The #2 and #5 hoses should have vacuum.

   - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
   - If the #5 hose has no vacuum, check the #5 hose for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged. If the #5 hose, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

4. Connect the vacuum hoses to the vacuum advance diaphragm and allow the engine to warm up. (cooling fan comes on).

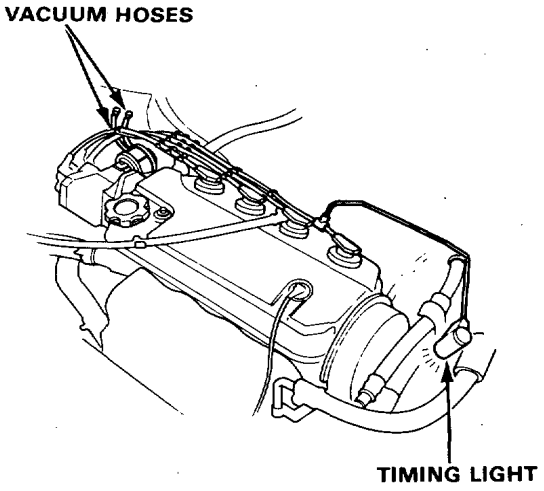
5. Disconnect the #5 hose from the vacuum advance diaphragm and connect the vacuum pump/gauge to the #5 hose.

6. Check the #5 hose for vacuum.
The #5 hose should have no vacuum.

   - If the #5 hose has vacuum, replace the thermovalve and recheck the #5 hose for vacuum.

7. Disconnect the vacuum hoses from the vacuum advance diaphragm and plug them.

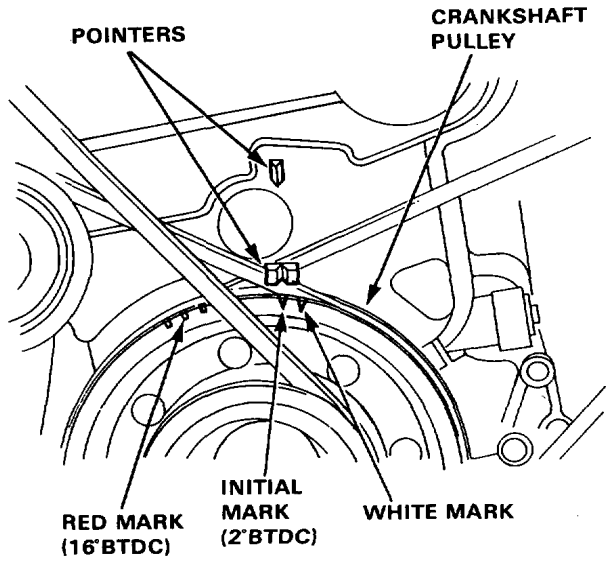
8. Connect a timing light.



9. While the engine idles, point the light toward the pointer on the timing belt cover.

Downloaded from www.Manualslib.com manuals search engine

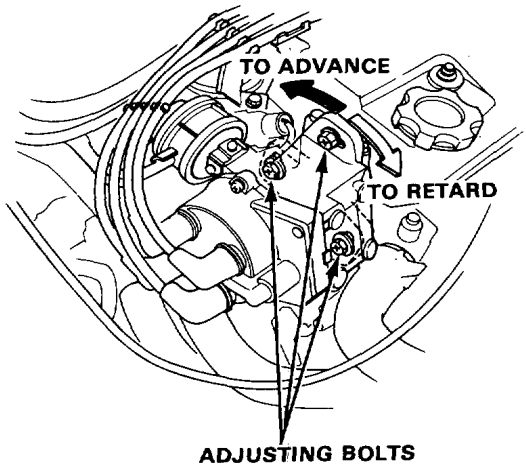
10. Align the timing initial mark on the crankshaft pulley to the pointer.



11. Timing when initial timing mark is aligned to the pointer.

Initial Timing
2° BTDC
- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

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



13. Tighten the distributor adjusting bolts, then recheck the timing.

14. Connect the vacuum hose to the vacuum advance diaphragm and inspect ignition timing at idle.

Ignition Timing
1.6ℓ : 16° ± 2° BTDC (Red)
1.4ℓ : 18° ± 2° BTDC (Red)

- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

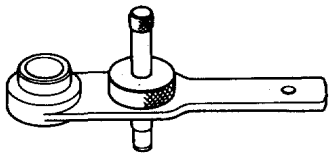
Downloaded from www.Manualslib.com manuals search engine

Special Tools

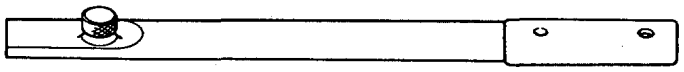
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB-0010000	Crank Pulley Holder Set	1	for Crankshaft pulley bolt
①-1	07JAA-0010100	Socket Wrench 17 mm	(1)	
①-2	07JAB-0010100	Pulley Holder Attachment	(1)	
①-3	07JAB-0010200	Handle	(1)	



①-1



①-2



①-3

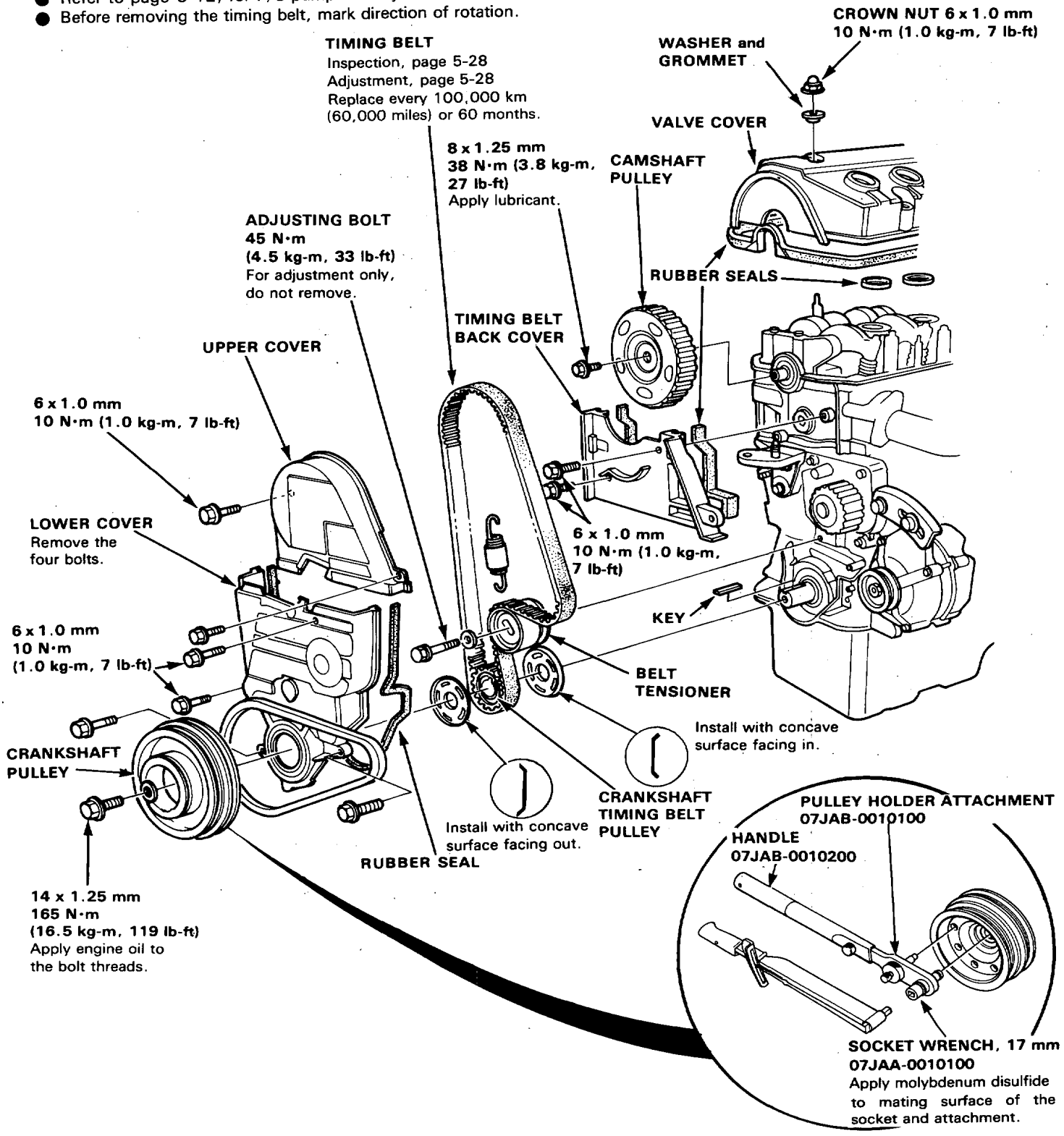
Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Illustrated Index

NOTE :

- Refer to page 5-31 for positioning crank and pulley before installing belt.
- Refer to page 5-10, for alternator belt adjustment.
- Refer to page 5-11, for A/C compressor belt adjustment.
- Refer to page 5-12, for P/S pump belt adjustment.
- Before removing the timing belt, mark direction of rotation.



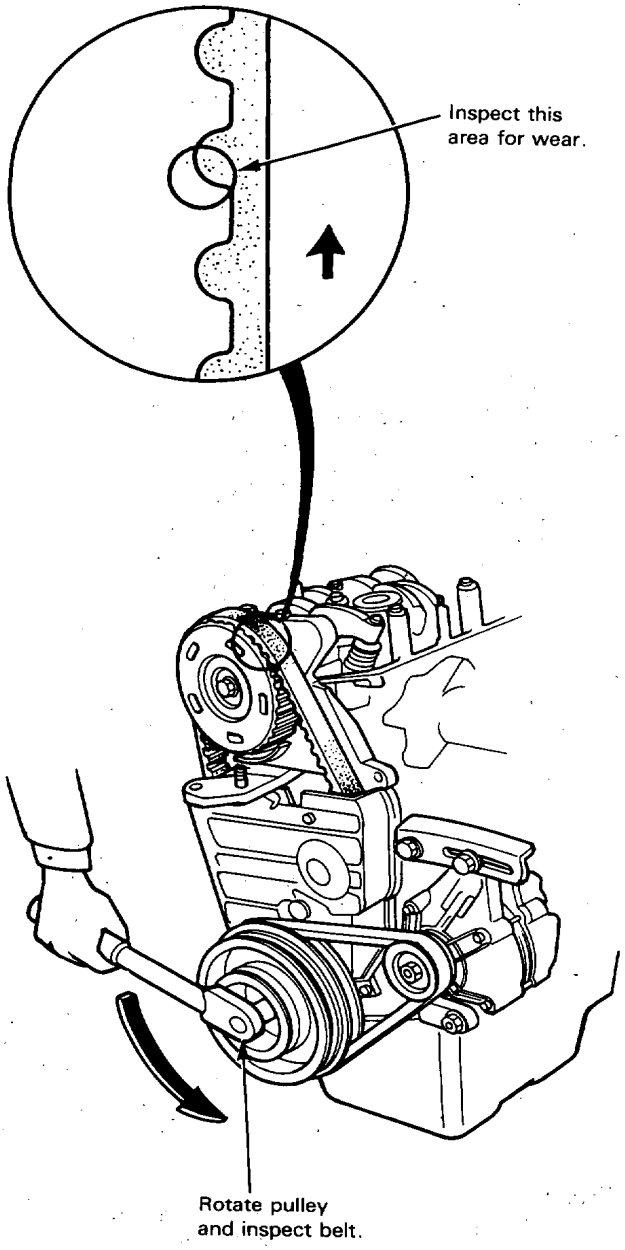
Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Inspection

1. Remove the valve cover.
2. Remove the timing belt upper cover.
3. Inspect the timing belt for cracks and oil soaking.

NOTE :
- Replace belt if oil soaked.
- Remove any oil or solvent that gets on the belt.
- If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).



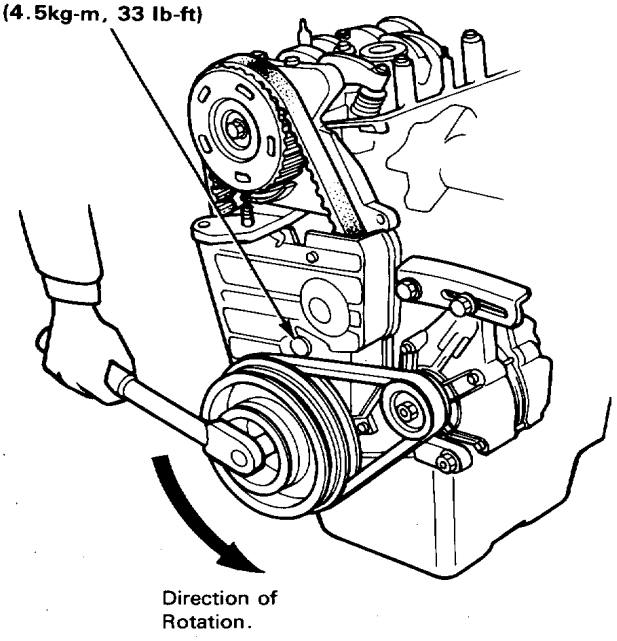
Tension Adjustment

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

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

1. Remove the valve cover.
2. Remove the timing belt upper cover.
3. Set the No. 1 piston at TDC.
4. Loosen, but do not remove, the ajusting bolt.

ADJUSTING BOLT
45 N·m
(4.5kg-m, 33 lb-ft)



5. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
6. Tighten the adjust bolt.
7. If pulley bolt broke loose while turning crank, retorque it to 165 N·m (16.5kg-m, 119 lb-ft).

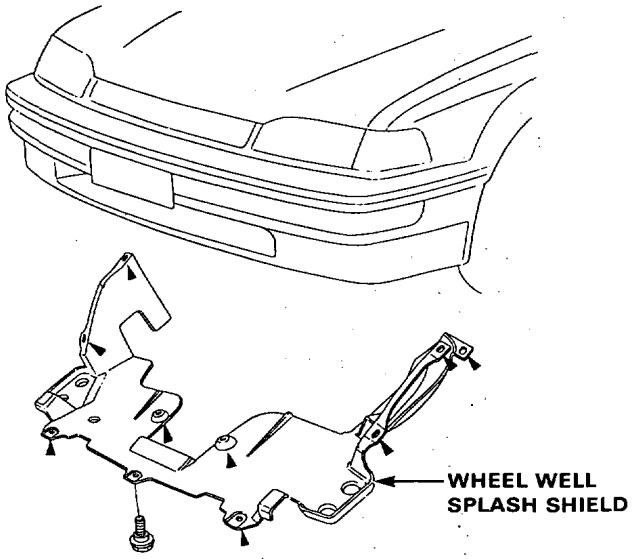
NOTE: Put the transmission in gear and set the parking brake before retorquing pulley bolt.

Downloaded from www.Manualslib.com manuals search engine

Replacement

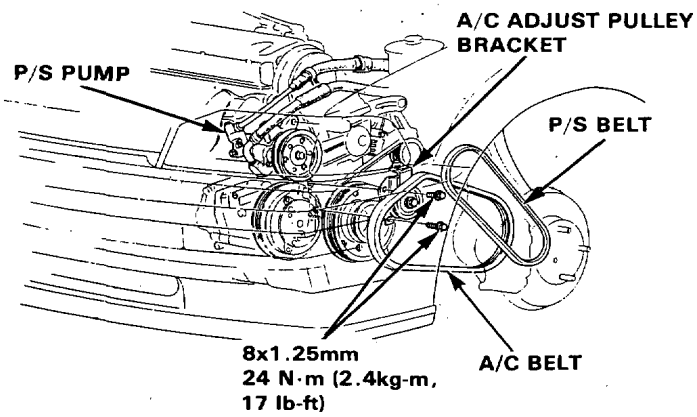
NOTE:
- Turn the crankshaft pulley so that the No. 1 cylinder is at TDC before removing the timing belt (5-31).
- Inspect the water pump after removing the timing belt.

1. Remove the wheel well splash shield.



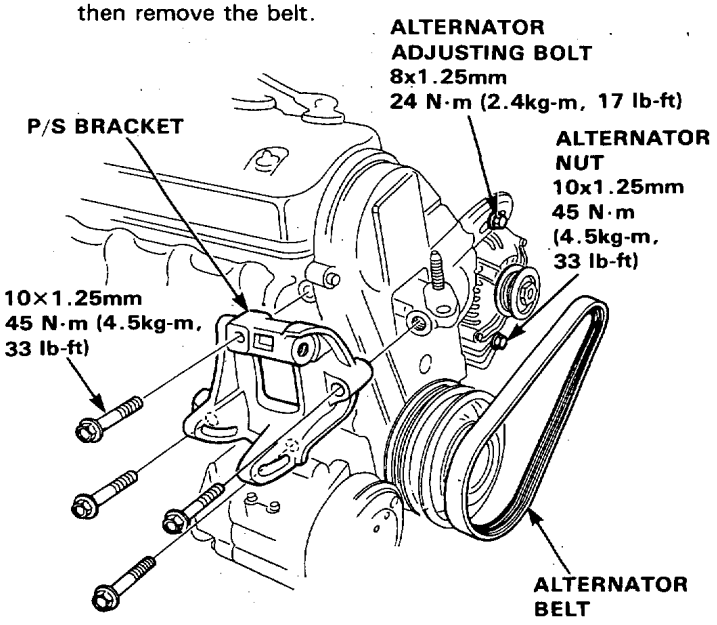
2. Remove the power steering pump (5-61 and 63).

3. Remove the A/C compressor adjust pulley with bracket and the belt (standard for some types).



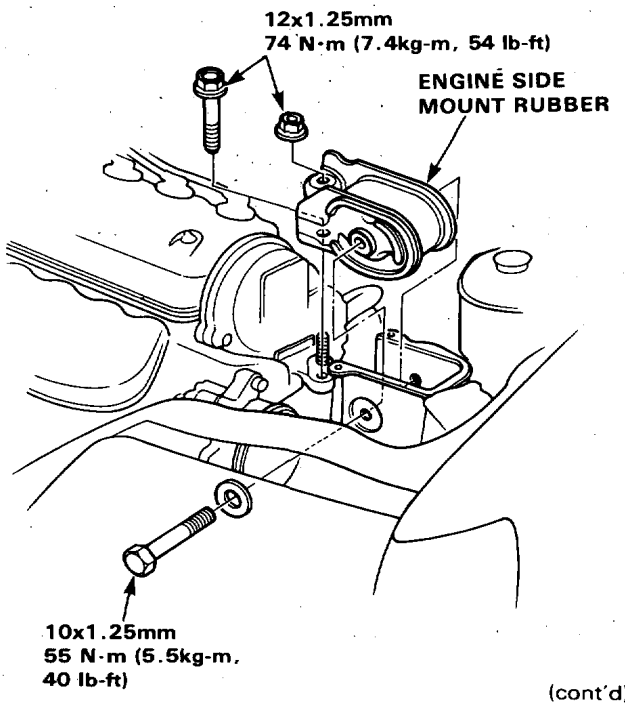
4. Remove the power steering bracket.

5. Loosen the alternator adjusting bolt and through bolt, then remove the belt.



6. After installation, adjust the tension of each belt.
See page 5-10 for alternator belt tension adjustment.
See page 5-11 for A/C compressor belt tension adjustment.
See page 5-12 for power steering pump belt tension adjustment.

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



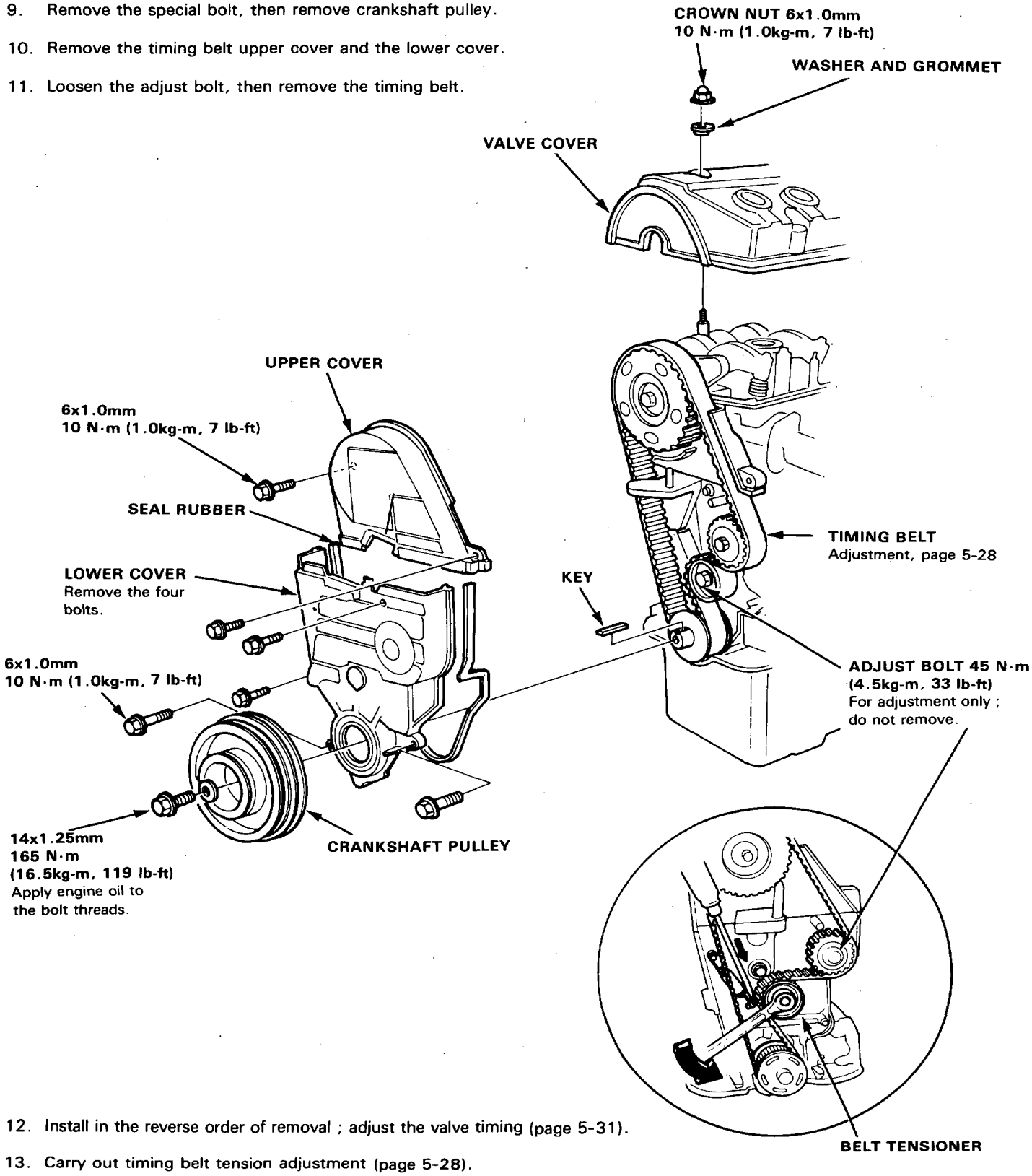
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Replacement (cont'd)

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.



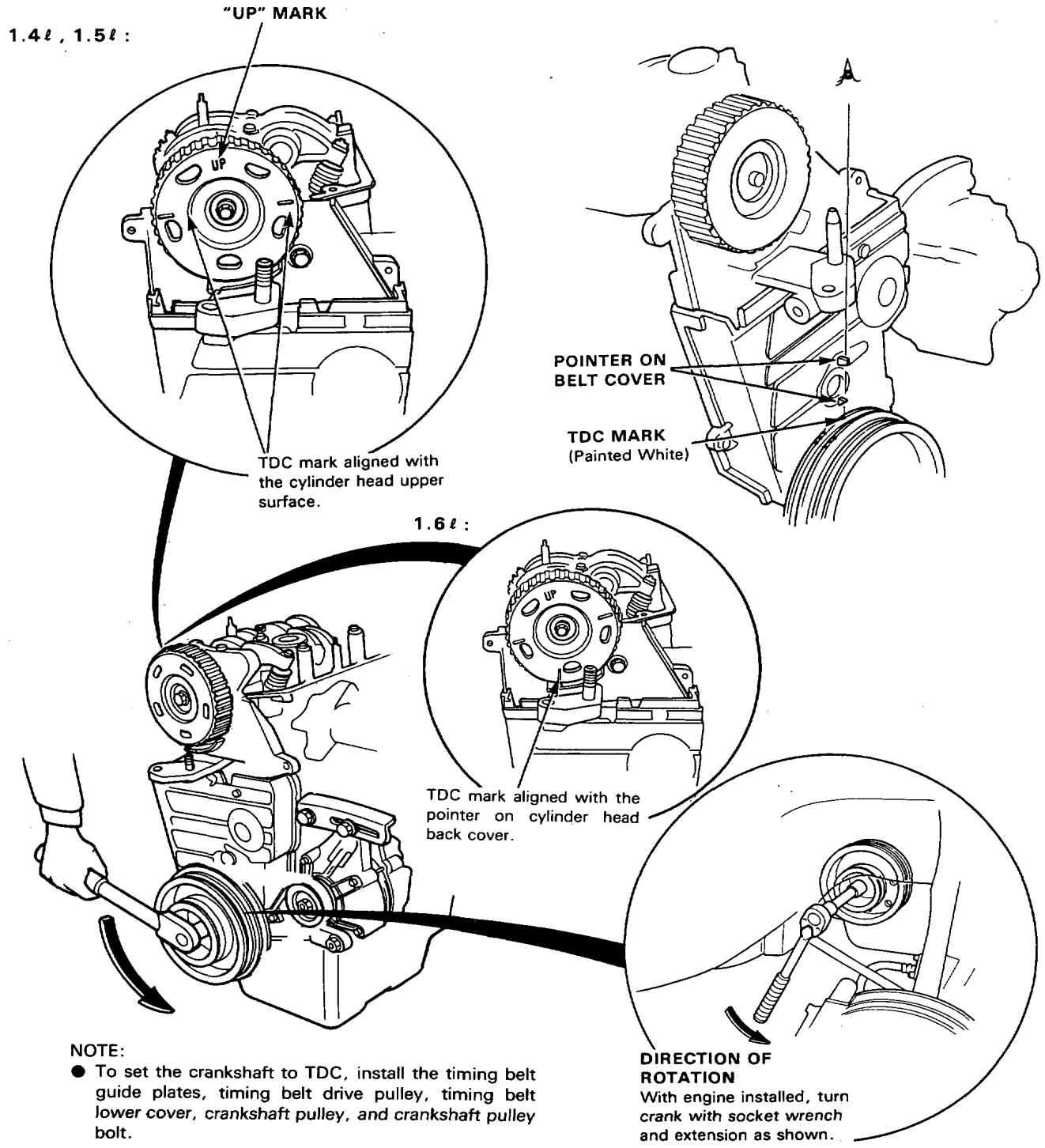
12. Install in the reverse order of removal ; adjust the valve timing (page 5-31).
13. Carry out timing belt tension adjustment (page 5-28).

Downloaded from www.Manualslib.com manuals search engine

Positioning Crankshaft Before Installing Timing Belt

NOTE:

- Install the timing belt with the No. 1 piston at TDC *(Top Dead Center) on the compression stroke.*
- If pulley bolt broke loose while turnig the crank, retorque it to 16.5 N·m (16.5 kg-m, 119 lb-ft.).



NOTE:

- To set the crankshaft to TDC, install the timing belt guide plates, timing belt drive pulley, timing belt lower cover, crankshaft pulley, and crankshaft pulley bolt.

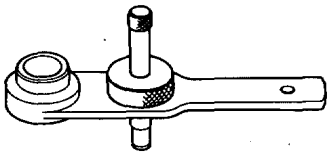
Downloaded from www.Manualslib.com manuals search engine

Special Tools

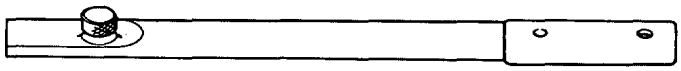
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB-0010000	Crank Pulley Holder Set	1	for Crankshaft pulley bolt
①-1	07JAA-0010100	Socket Wrench 17 mm	(1)	
①-2	07JAB-0010100	Pulley Holder Attachment	(1)	
①-3	07JAB-0010200	Handle	(1)	



①-1



①-2



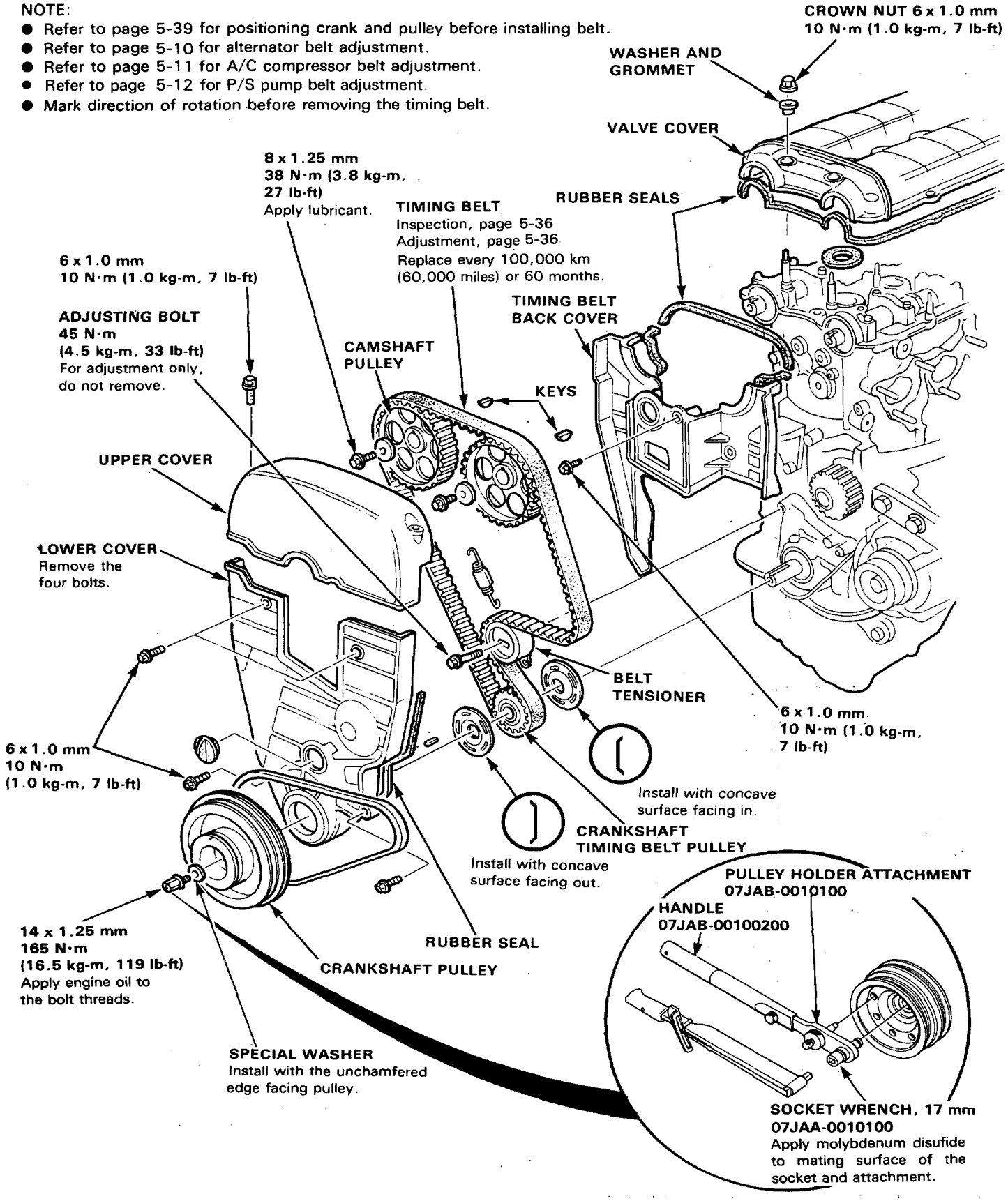
①-3

Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Illustrated Index

NOTE:
- Refer to page 5-39 for positioning crank and pulley before installing belt.
- Refer to page 5-10 for alternator belt adjustment.
- Refer to page 5-11 for A/C compressor belt adjustment.
- Refer to page 5-12 for P/S pump belt adjustment.
- Mark direction of rotation before removing the timing belt.



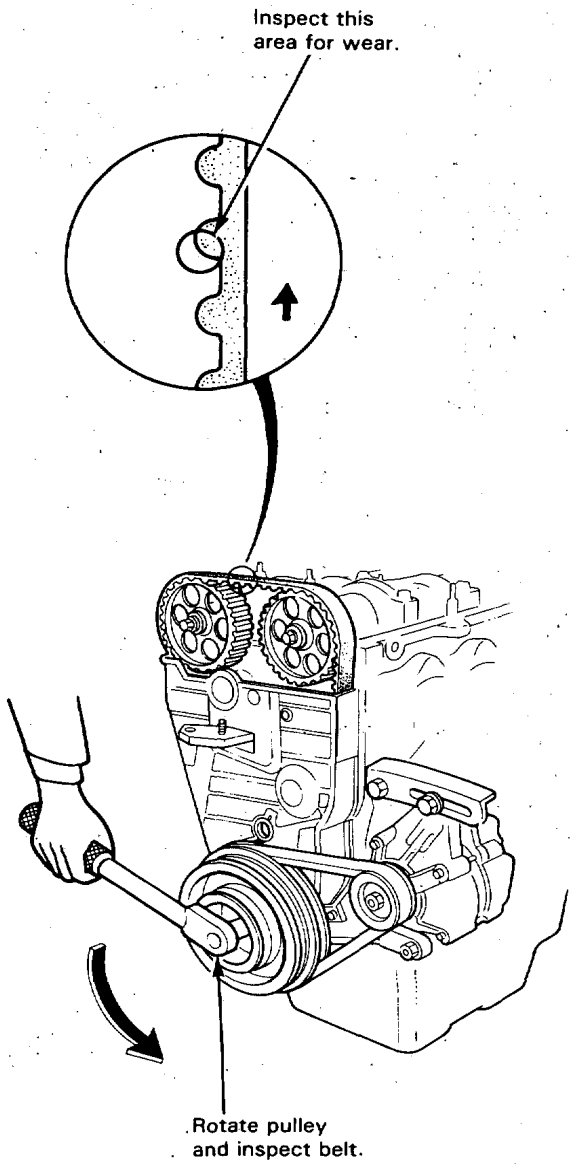
Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Inspection

1. Remove the timing belt upper cover.
2. Remove the valve cover.
3. Inspect the timing belt for cracks and oil soaking.

NOTE:
- Replace belt if oil soaked.
- Remove any oil or solvent that gets on the belt.
- If pulley bolt broke loose while turnig the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

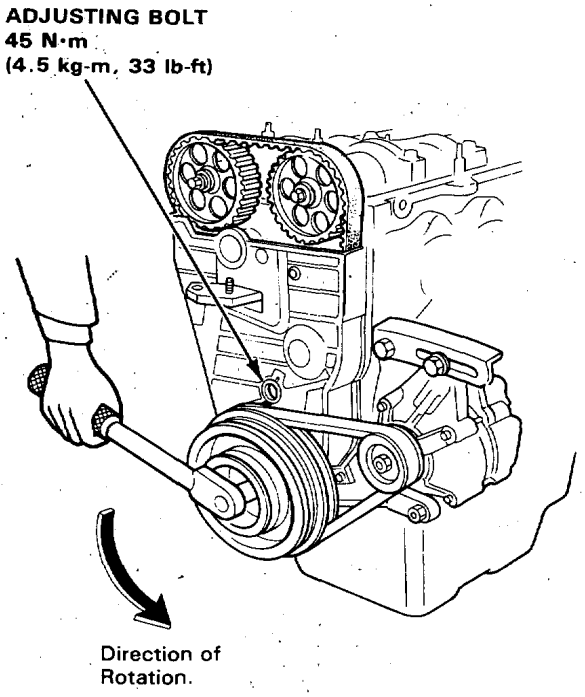


Tension Adjustment

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

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

1. Remove the timing belt upper cover.
2. Remove the valve cover.
3. Set the No. 1 piston at TDC.
4. Loosen, but do not remove, the adjusting bolt.



5. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
6. Tighten the adjust bolt.
7. If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

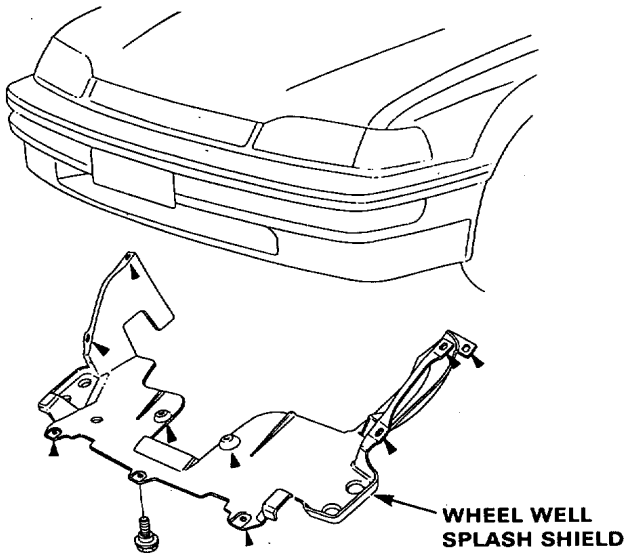
NOTE: Put transmission in gear and set parking brake before retorquing pulley bolt.

Downloaded from www.Manualslib.com manuals search engine

Replacement

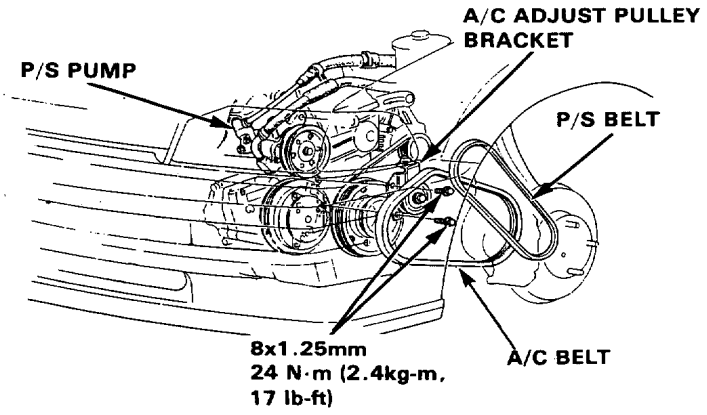
NOTE:
- Turn the crankshaft pulley so that the No. 1 cylinder is at TDC before removing the timing belt (5-39).
- Inspect the water pump after removing the timing belt.

1. Remove the wheel well splash shield.



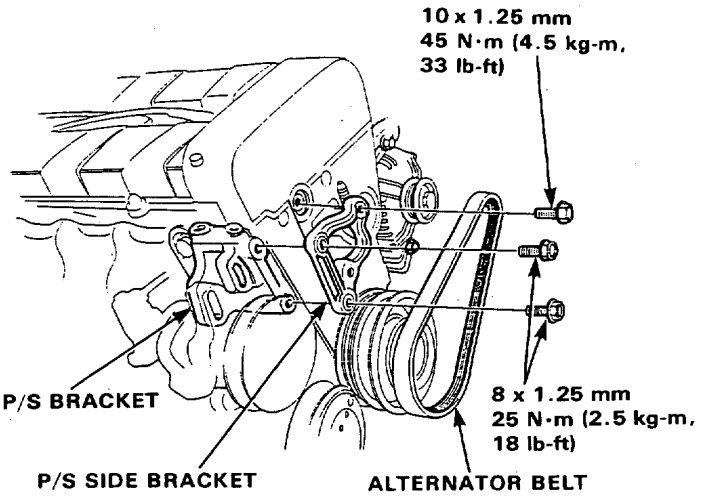
2. Remove the power steering pump (5-61 and 63).

3. Remove the A/C compressor adjust pulley with bracket and the belt (standard for some types).



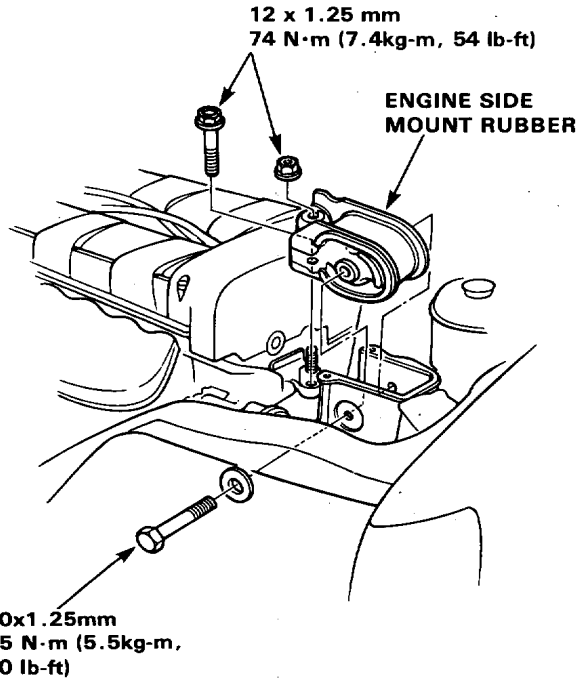
4. Remove the power steering bracket.

5. Loosen the alternator adjust bolt and through bolt, then remove the belt.



6. After installation, adjust the tension of each belt.
   See page 5-10 for alternator belt tension adjustment.
   See page 5-11 for A/C compressor belt tension adjustment.
   See page 5-12 for power steering pump belt tension adjustment.

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



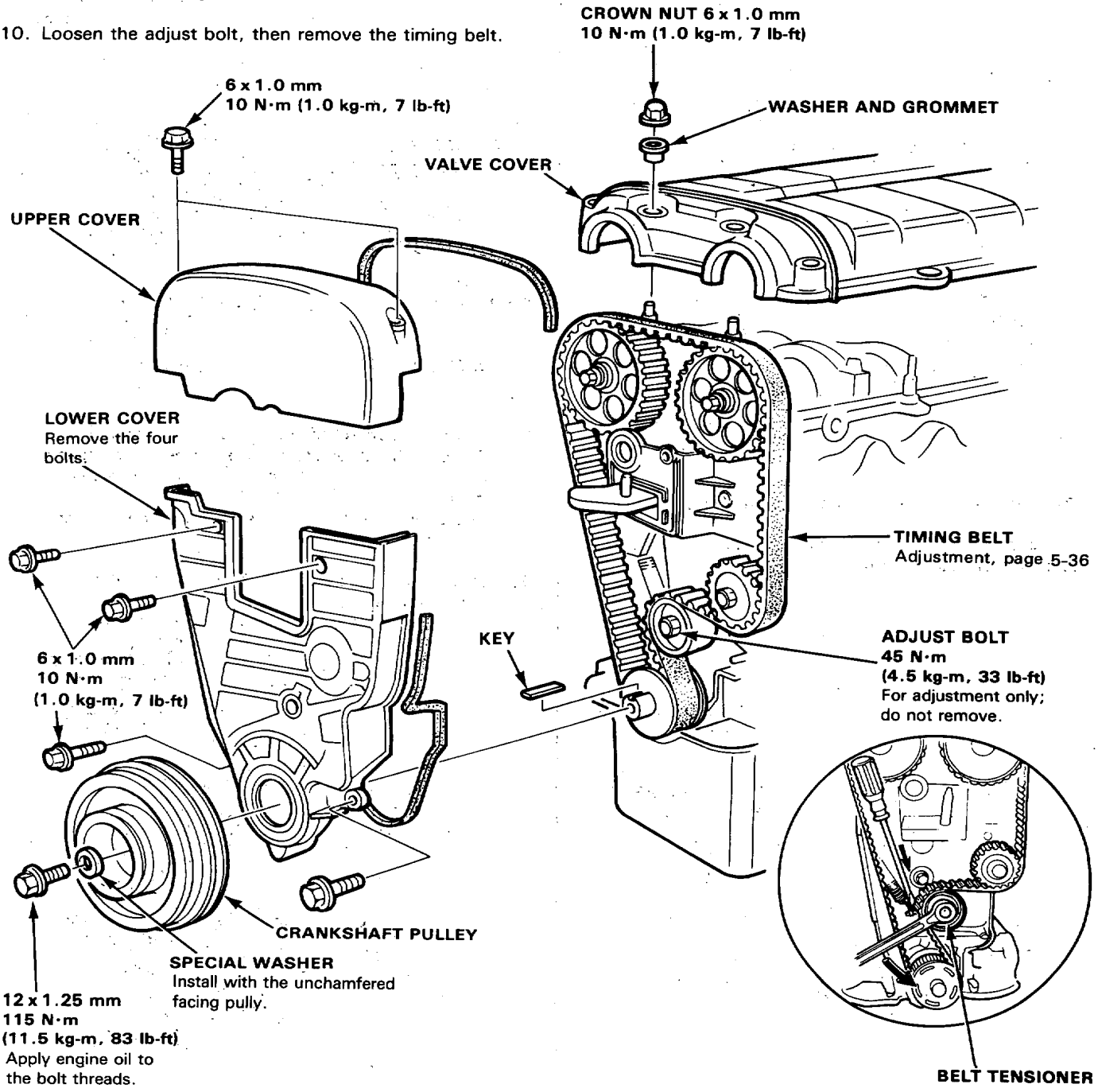
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Timing Belt

Replacement (cont'd)

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

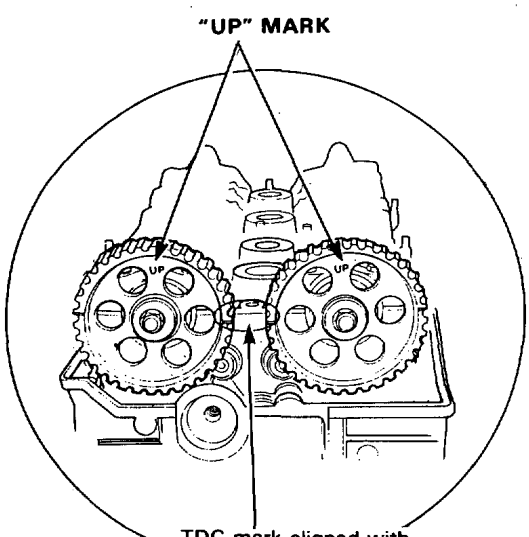


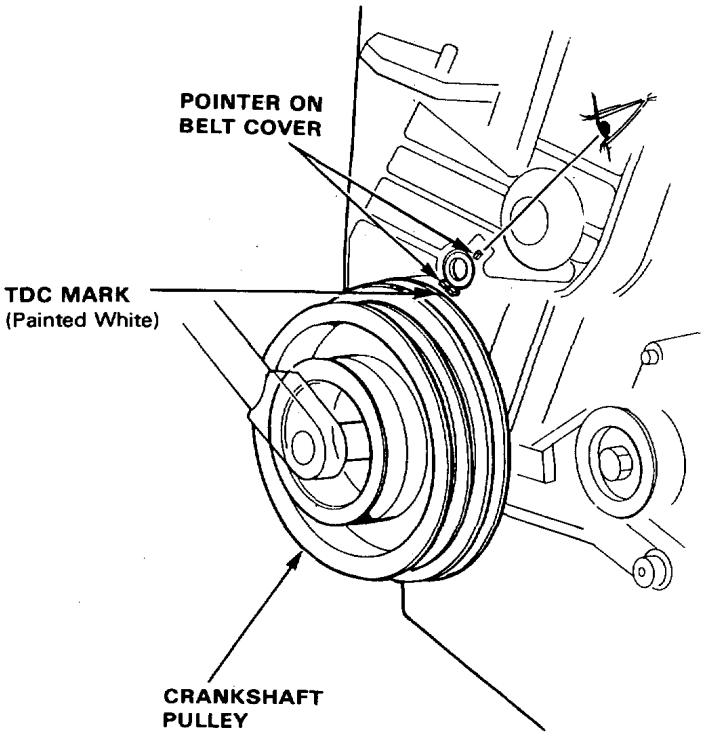
11. Install in the reverse order of removal; adjust the valve timing (page 5-39).
12. Carry out timing belt tension adjustment (page 5-36).

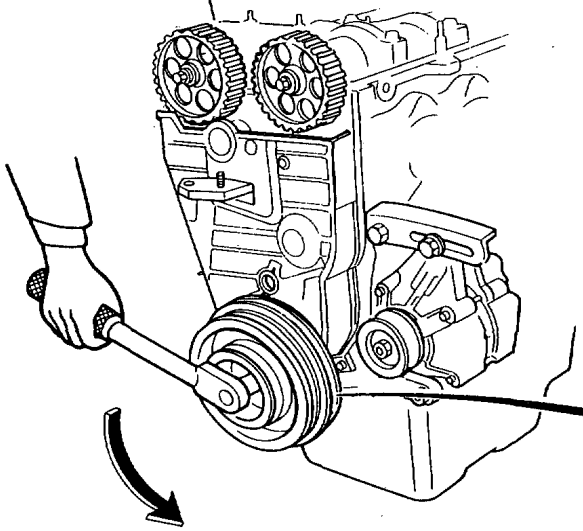
Downloaded from www.Manualslib.com manuals search engine

Positioning Crankshaft Before Installing Timing Belt

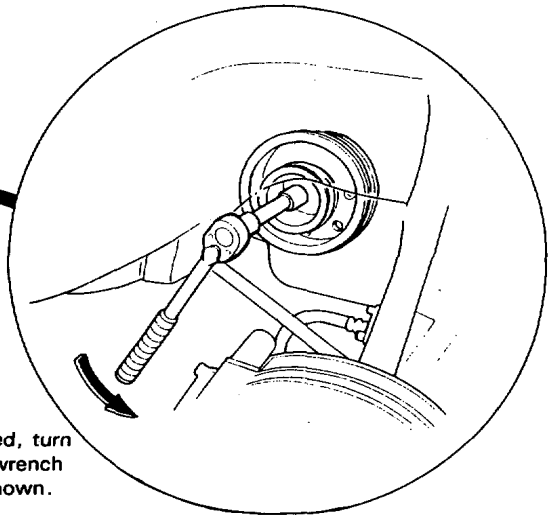
NOTE:
- Install the timing belt with the No. 1 piston at TDC (Top Dead Center) on the compression stroke.
- If pully bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).







NOTE:
- To set the crankshaft to TDC, install the timing belt guide plates, timing belt drive pulley, timing belt lower cover, crankshaft pulley, and crankshaft pulley bolt.



DIRECTION OF ROTATION
With engine installed, turn crank with socket wrench and extension as shown.

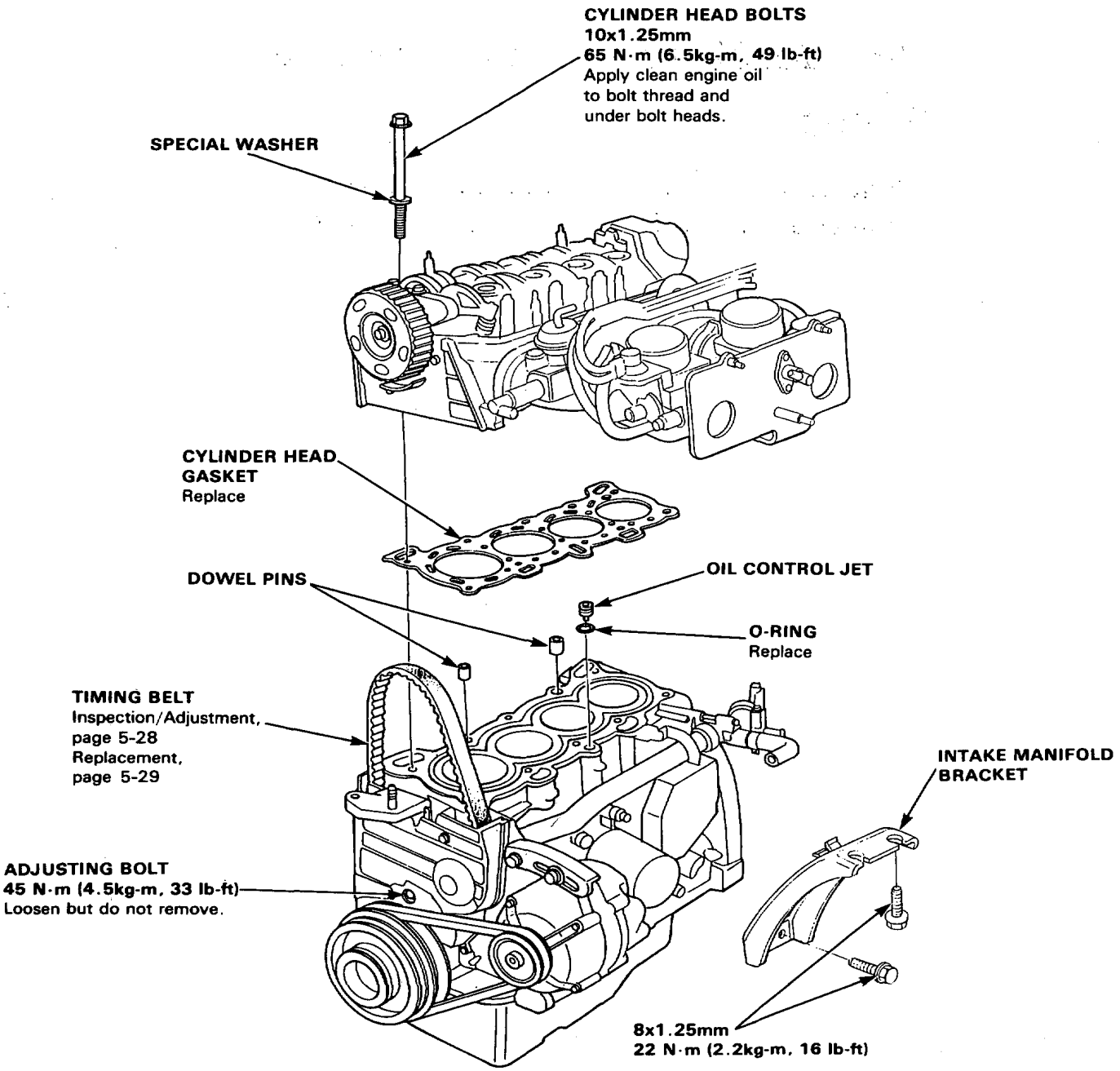
Downloaded from www.Manualslib.com manuals search engine

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 when reassembling.



Downloaded from www.Manualslib.com manuals search engine

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 tubes before disconnecting them.
- Be careful not to damage the cylinder head and engine block mating surface, and keep them clean.

1. Disconnect the negative terminal from the battery.
2. Drain the cooling system (See page 5-84).
3. Remove the brake booster vacuum hose from the brake booster.
4. Remove the engine secondary ground cable from the valve cover.
5. Remove the air cleaner cover and air cleaner (carbureted engine).

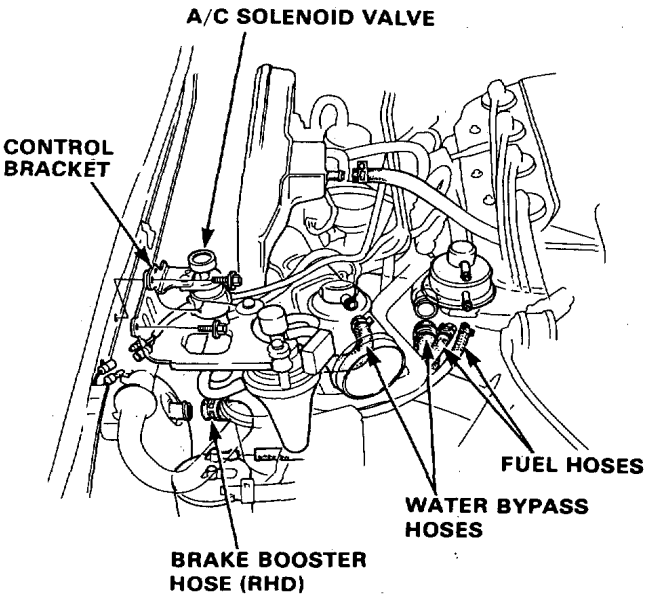
⚠ WARNING Do not smoke while working on fuel system, keep open flame or spark away from work area. Drain fuel only into an approved container.

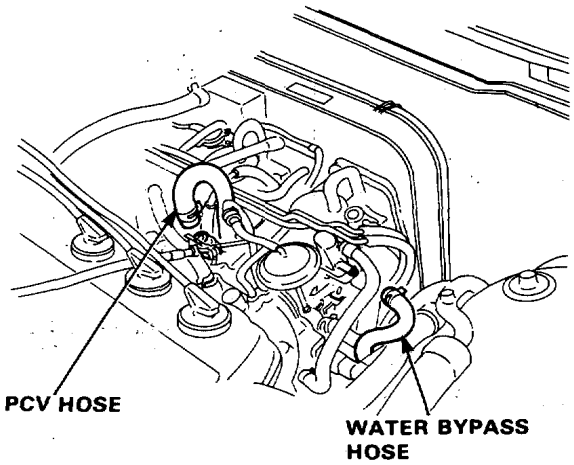
6. Disconnect the fuel hose and fuel return hose.
7. Remove the air intake pipe and air cleaner pipe joint.
8. Disconnect the throttle cable at the throttle body (5-63 and 65).
9. Discnnect the throttle control cable at the throttle body (A/T only).

CAUTION: Be careful not to damage the throttle cable during engine removal. On installation, check the cable is not kinked or binding.

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.

10. Disconnect the charcoal canister hose at the throttle valve.
11. Disconnect the vacuum hose and the water bypass hoses from intake manifold and the throttle body.
12. Remove the PCV hose, charcoal canister hose and vacuum hose from intake manifold, and remove the vacuum hose from the brake booster.





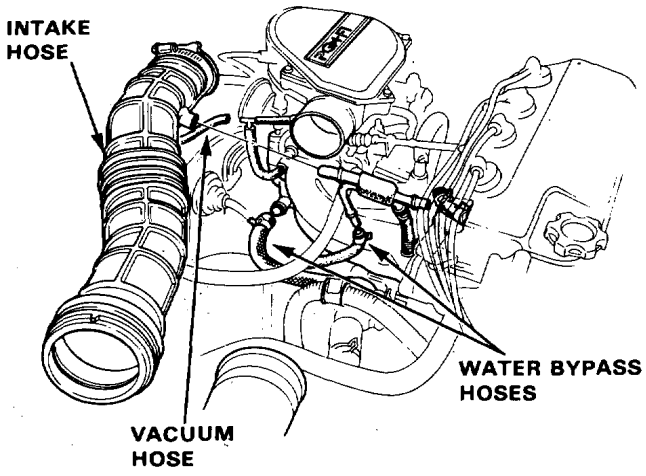
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

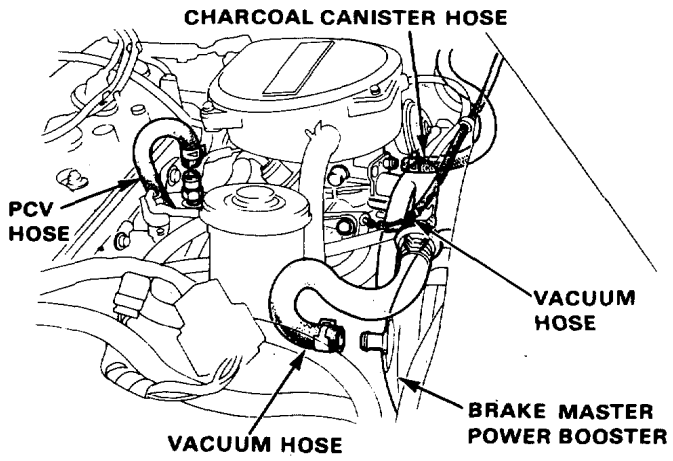
Cylinder Head

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

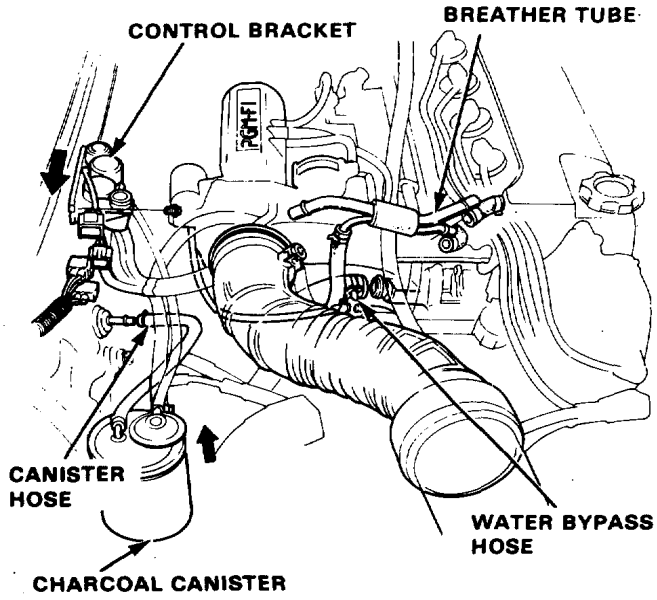
1.5 ℓ PGM-FI Engine:



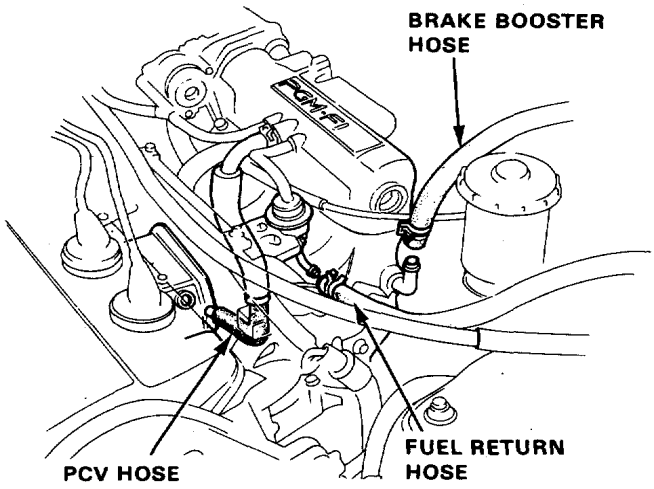
1.5 ℓ PGM-FI Engine:



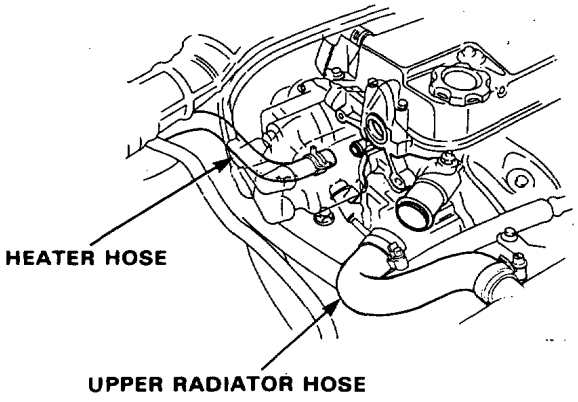
1.6 ℓ PGM-FI Engine:



1.6 ℓ PGM-FI Engine:



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

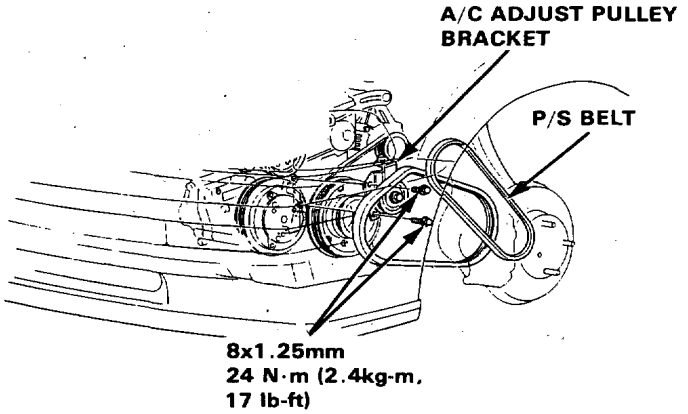


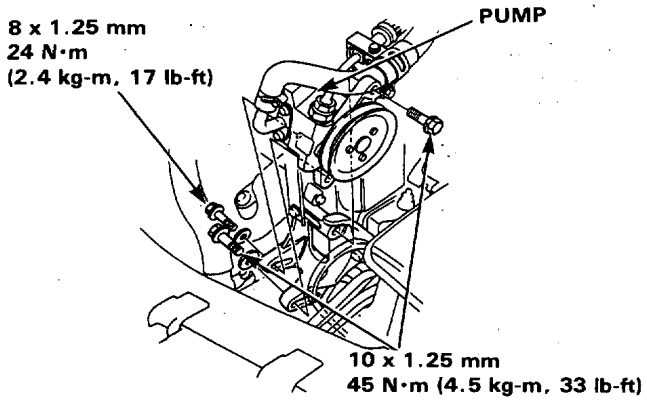
14. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - Ignition coil connector (from distributor)
    - EACV connector
    - Engine ground wire
    - Thermounit connector
    - Coolant temperature sensor connector
    - Carburetor solenoid valve, inner bent solenoid valve connector (Carbureted)
    - Air leak solenoid valve connector (Carbureted)
    - L.carburetor solenoid valve connector (Carbureted)
    - TDC/CRANK sensor connector (from distributor)

Downloaded from www.Manualslib.com manuals search engine

15. Remove the power steering belt.

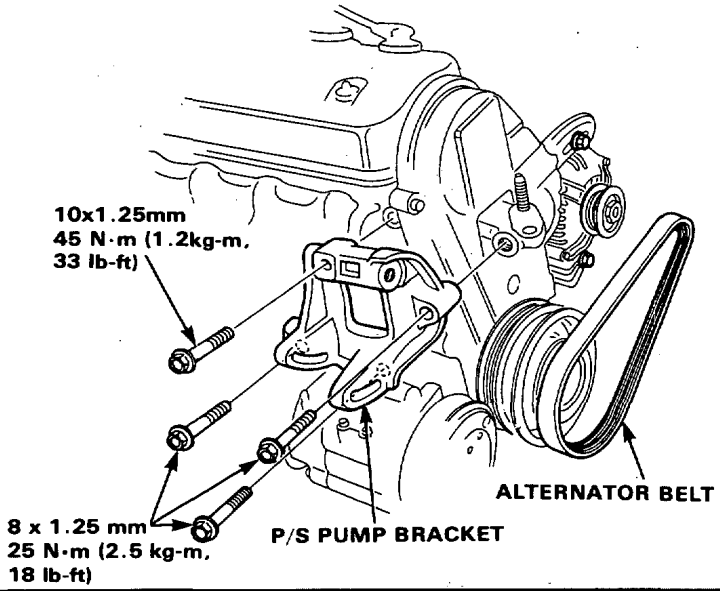
16. Remove the power steering pump.
    - Do not disconnect the power steering hoses.





17. Remove the power steering bracket.

18. Remove the alternator belt.



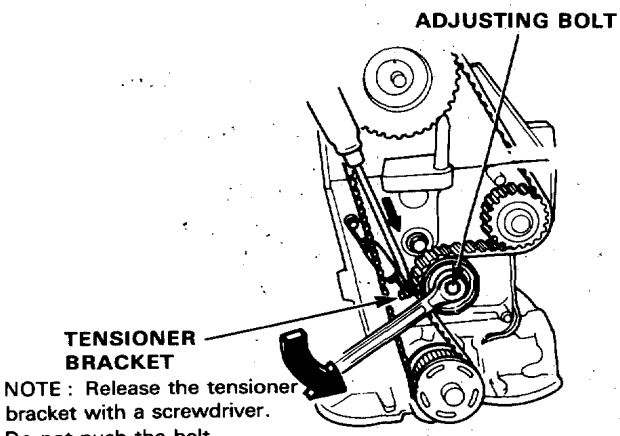
19. Jack-up and set the rigid rack.

20. Remove the L.tire and L.wheel.

21. Remove the L.wheel well splash shield.

22. Remove the intake manifold bracket.

23. Remove the exhaust manifold bracket, then remove the exhaust pipe A.



NOTE : Release the tensioner bracket with a screwdriver. Do not push the belt.

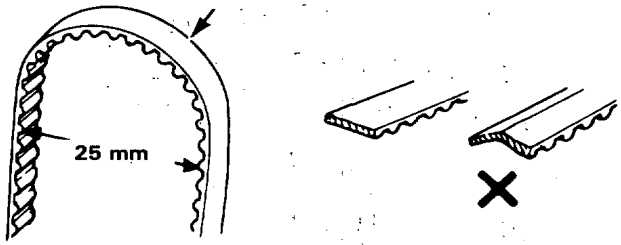
24. Remove the exhaust manifold shroud, then remove exhaust manifold.

25. Remove the distributor and valve cover.

26. Remove the timing belt upper cover.

27. 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.



28. Remove the cylinder head.

    CAUTION: Do not loosen one head bolt completely but loosen the bolts gradually from the outside diagonally.

29. Remove the intake manifold from the cylinder head.

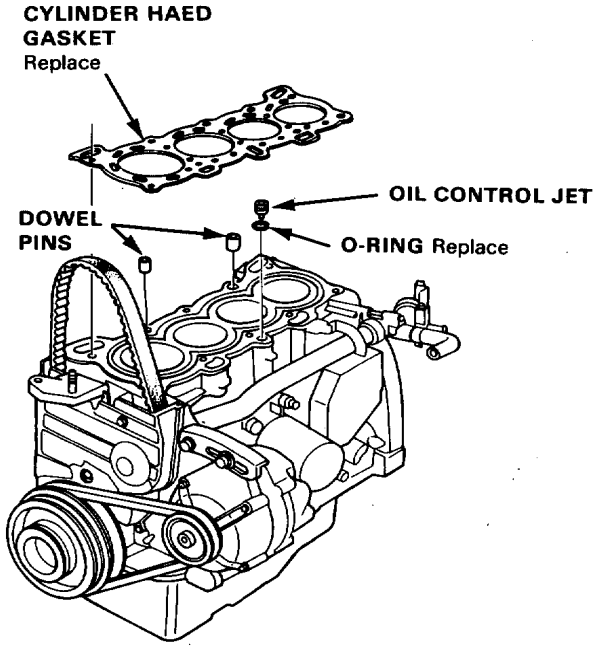
Downloaded from www.Manualslib.com manuals search engine

Cylinder Head

Installation

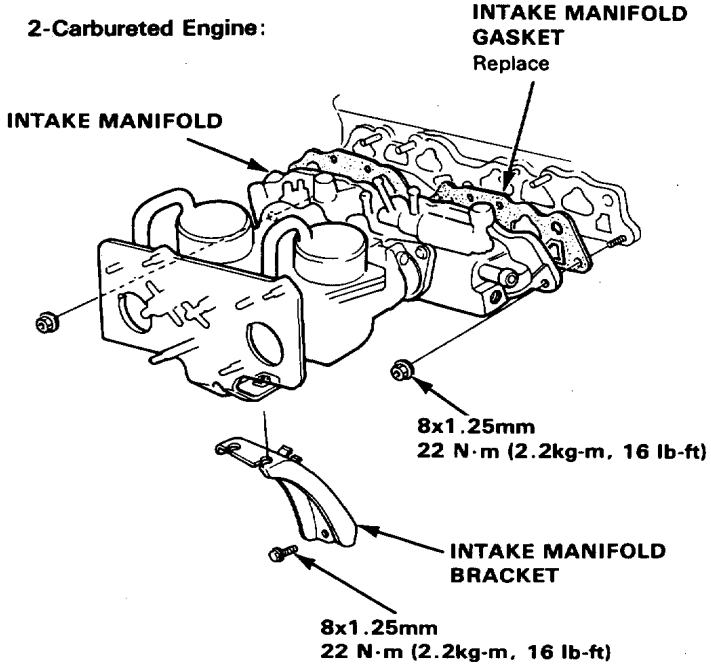
1. Install the cylinder head in the reverse order of removal:
   - Always use a new head gasket.
   - Cylinder head and engine block surface must be clean.
   - "UP" mark on timing belt pulley should be at the top.

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

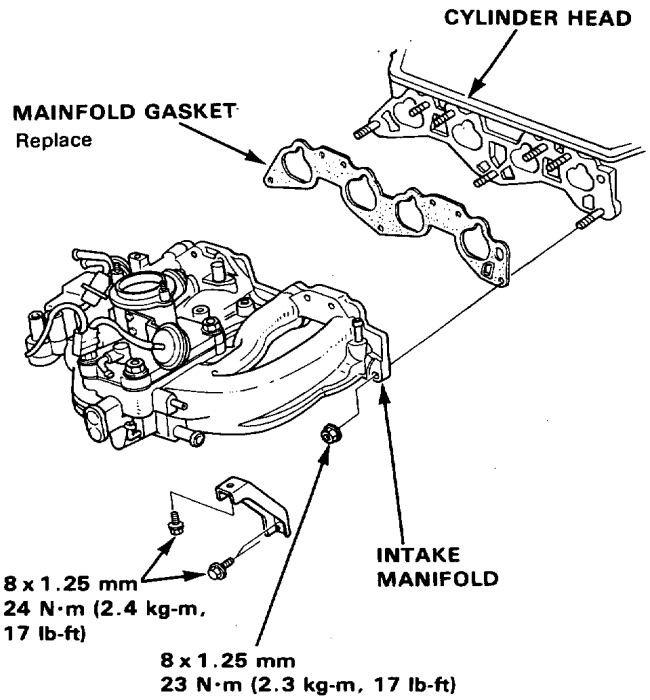


3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.

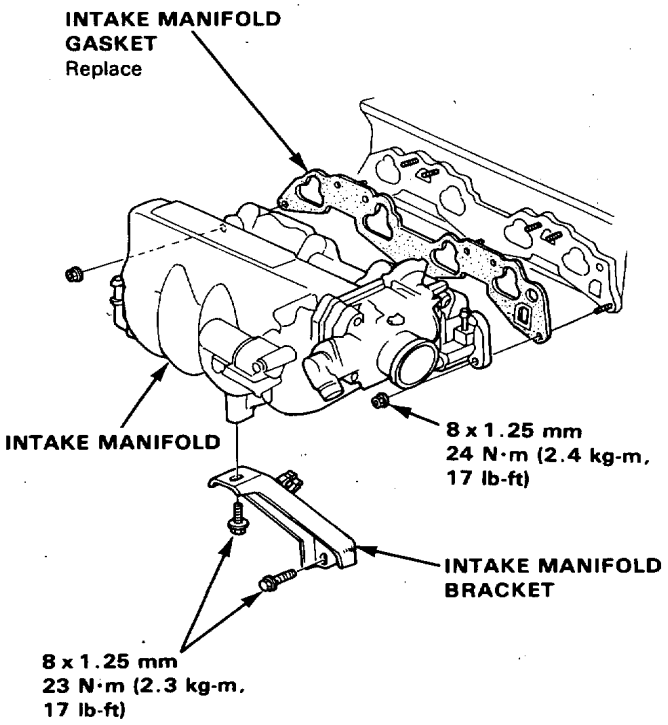
2-Carbureted Engine:



1.5 ℓ PGM-FI Engine:



1.6 ℓ PGM-FI Engine:

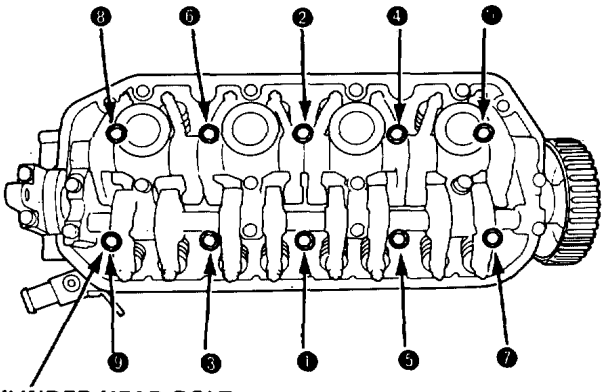


Downloaded from www.Manualslib.com manuals search engine

4. Tighten cylinder head bolts in two steps.
In the first step tighten all bolts and nuts, in sequence, to about 30 N·m (3.0kg, 22 lb-ft) ; in the final step tighten, in same sequence, to 65 N·m (6.5kg-m, 47 lb-ft).

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

CYLINDER HEAD TORQUE SEQUENCE

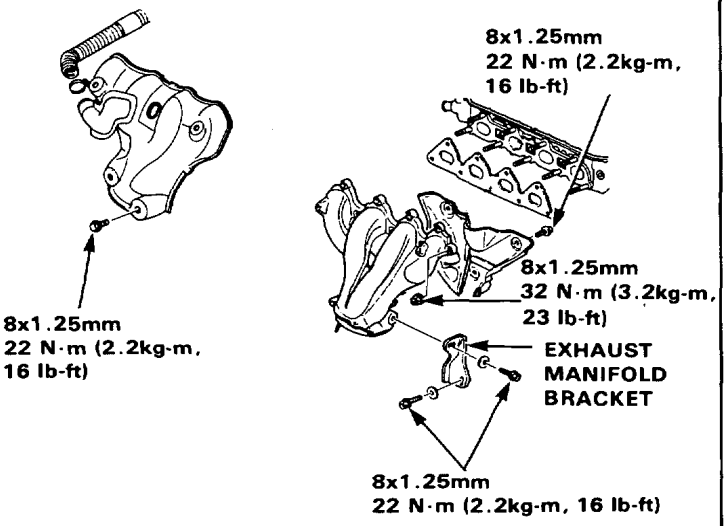


CYLINDER HEAD BOLT
10x1.25mm
65 N·m (6.5kg-m, 47 lb-ft)

5. Adjust the valve timing.

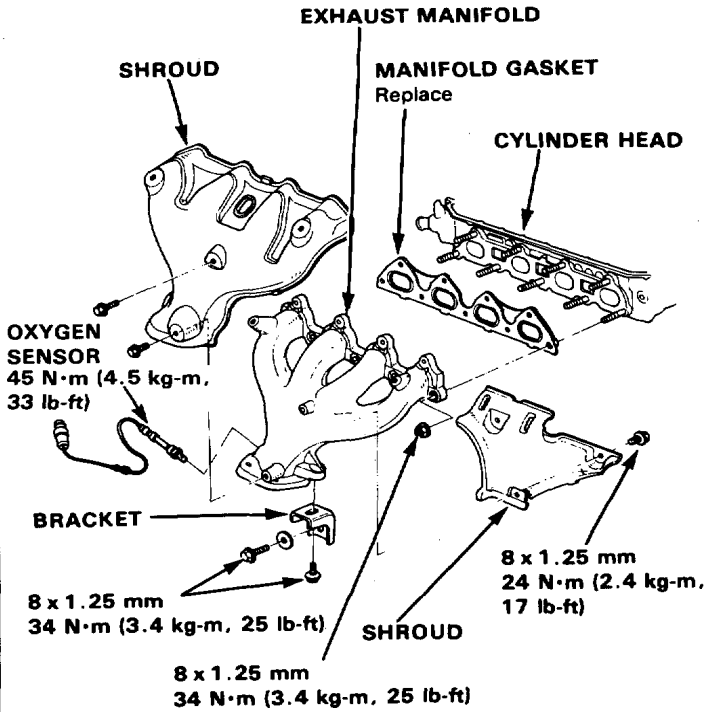
6. Install the exhaust manifold and bracket.

Carbureted Engine:

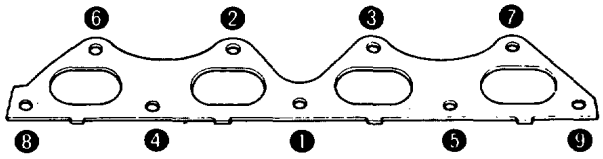


NOTE:
- Remove the oxygen sensor prior to disconnecting the exhaust pipe A and the exhaust manifold.
- Do not use the inpact wrench or hammer when the oxygen sensor is not to be removed.
- Reinstallation of oxygen sensor should be carried out after connecting the exhaust pipe A and the exhaust manifold.
- Do not tighten the connection with the inpact wrench if the oxygen sensor has not been removed.

1.5ℓ , 1.6ℓ PGM-FI with CATA:



EXHAUST MANIFOLD TORQUE SEQUENCE



Downloaded from www.Manualslib.com manuals search engine

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07744–0010400	Pin Driver 5.0 mm	2	



①

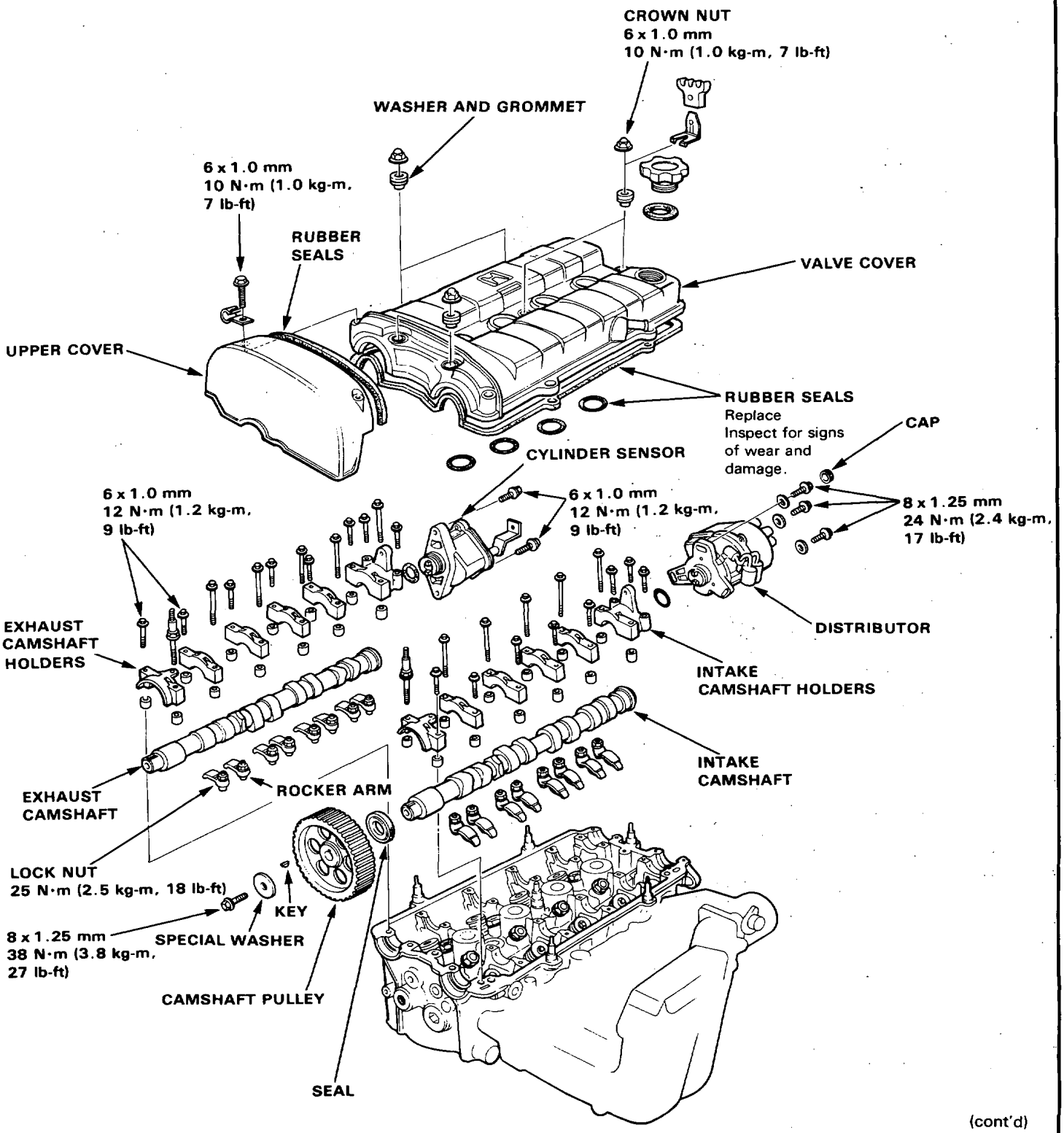
Downloaded from www.Manualslib.com manuals search engine

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.

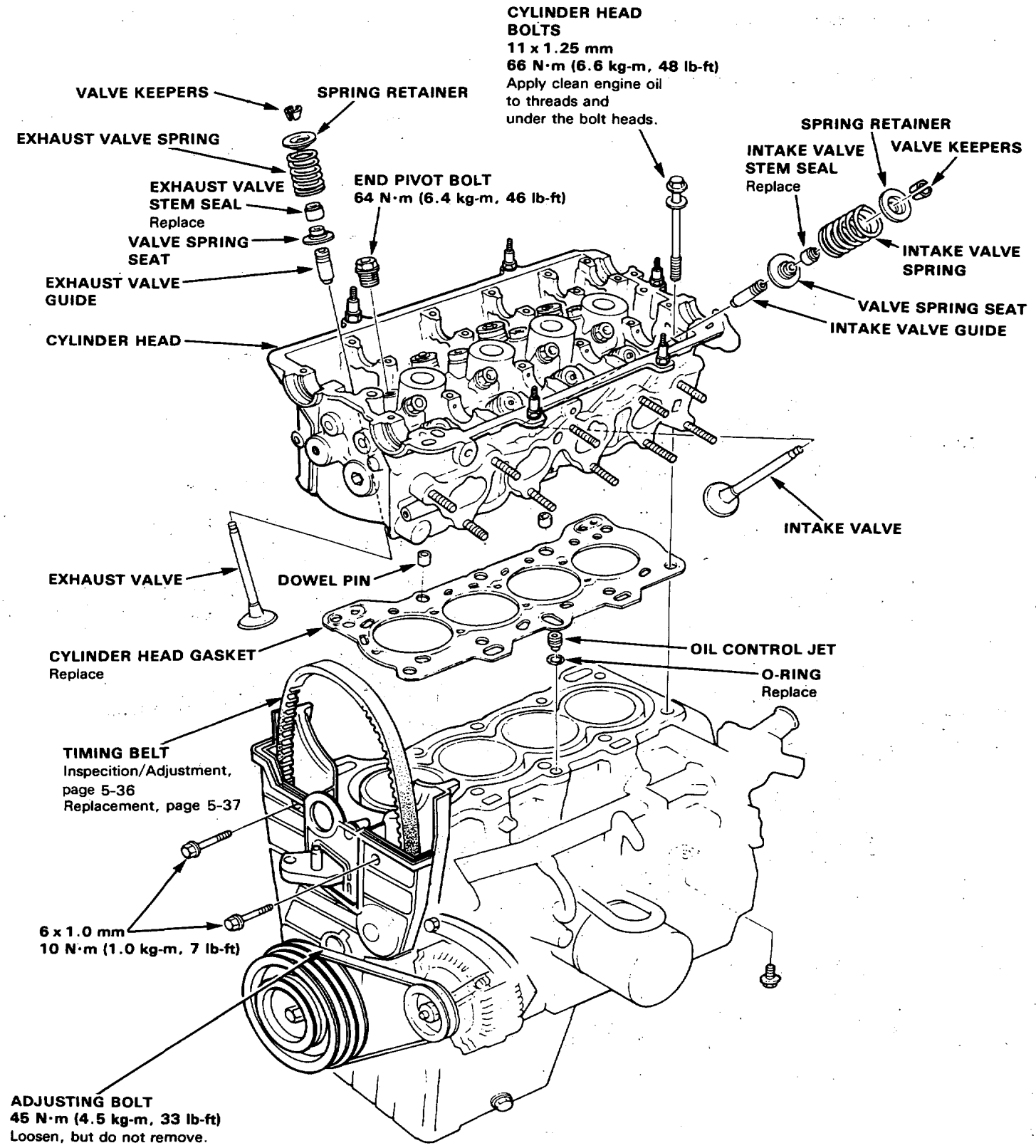


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Cylinder Head

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



Downloaded from www.Manualslib.com manuals search engine

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

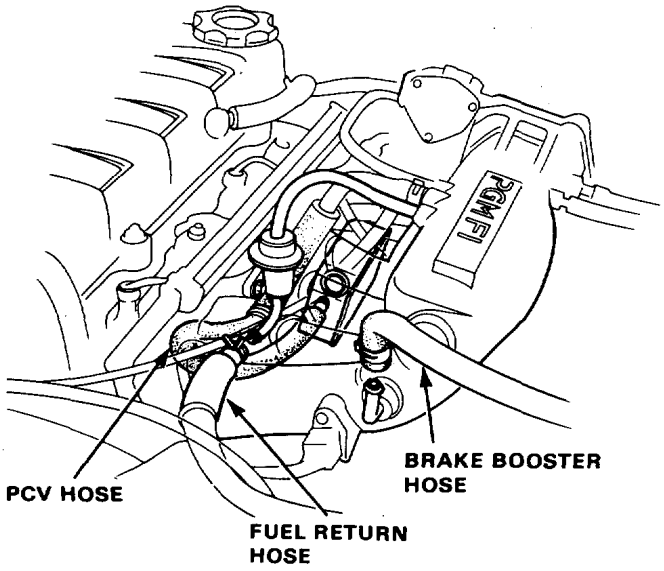
NOTE:
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emission hoses before disconnecting them.

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.

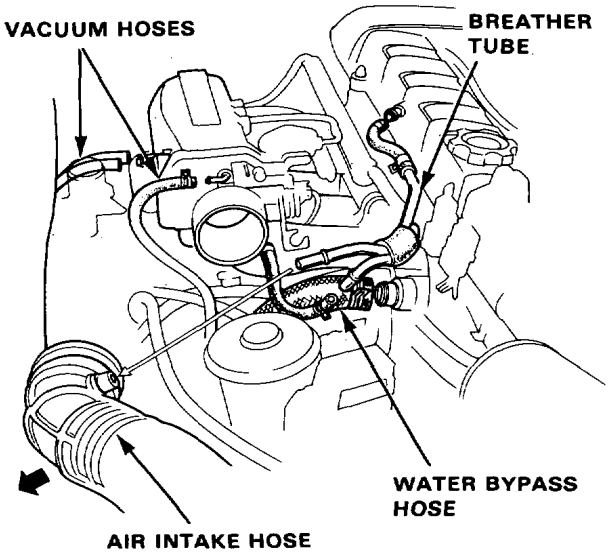
⚠WARNING

- **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.

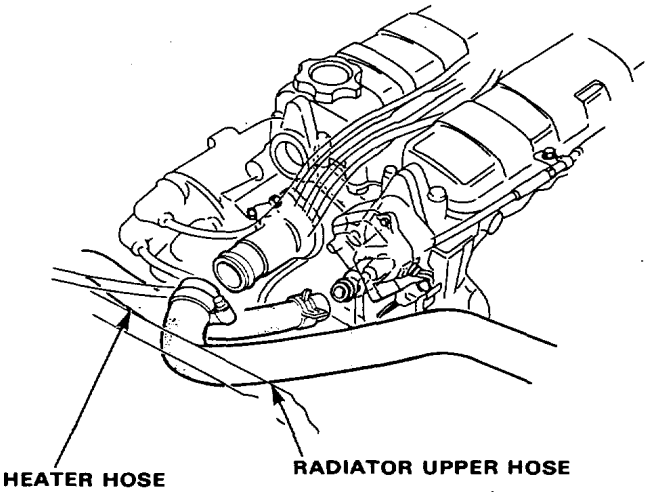


7. Disconnect the breather tube and air intake hose.
8. Disconnect the vacuum hose from the intake manifold.
9. Disconnect the charcoal canister hose.
10. Disconnect the water bypass hose.
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - 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 and the heater hose at the engine.



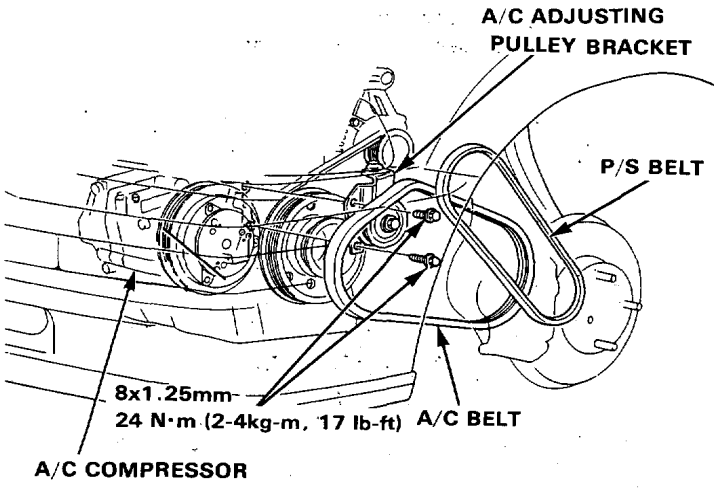
(cont'd)

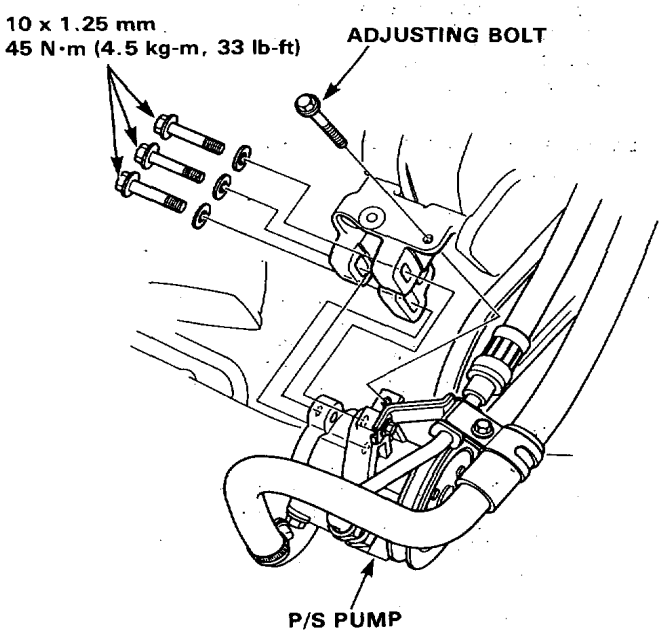
Downloaded from www.Manualslib.com manuals search engine

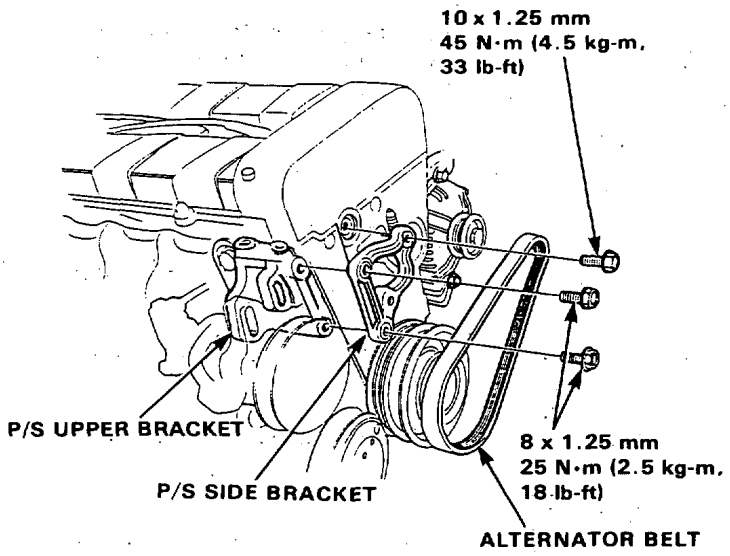
Cylinder Head

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

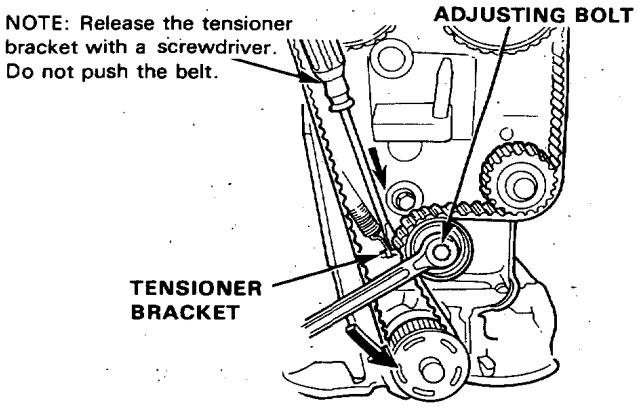
13. Loosen the air conditioning (A/C) adjusting pulley bracket and remove the A/C belt.
14. Remove the P/S pump.
    - Do not disconnect the P/S hoses.
15. Remove the P/S pump bracket and the alternator belt.



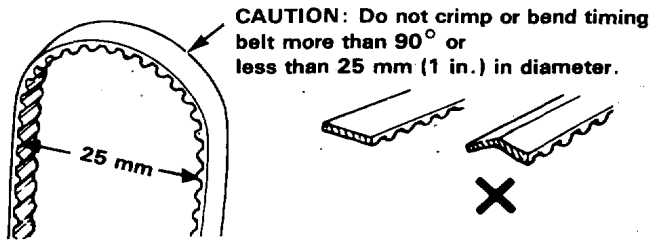




16. Remove the bolts from the intake manifold bracket.
17. Remove the exhaust manifold shroud.
18. Remove the bolts from the exhaust manifold bracket.
19. Remove the self-locking nut from the exhaust pipe A.
20. Remove the exhaust manifold assy.
21. Remove the timing belt upper cover.
22. Remove the valve cover.
23. Loosen the timing belt adjusting bolt, releasing the timing belt, and fix the bolt.



24. Remove the timing belt from the driven pulleys.



25. Remove the cylinder head.

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

26. Remove the intake manifold from the cylinder head.

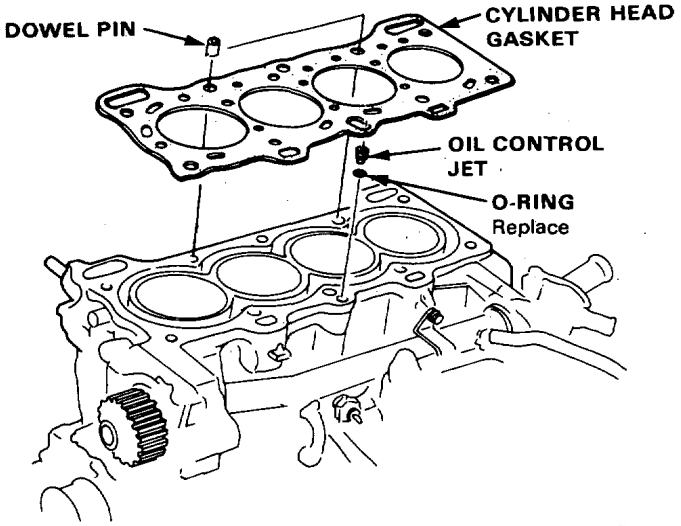
Downloaded from www.Manualslib.com manuals search engine

Installation

1. Install the cylinder head in the revese 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.

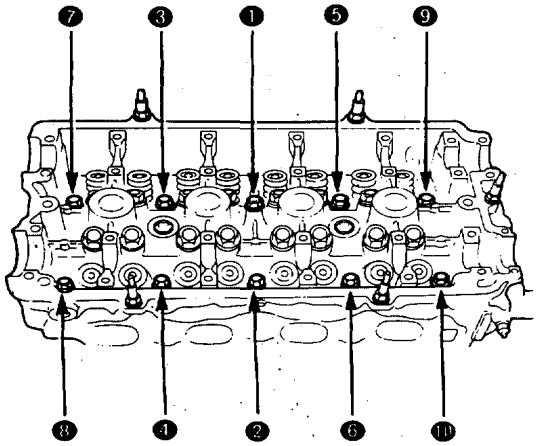
   NOTE: Cylinder head dowel pins and oil control jet must be aligned.



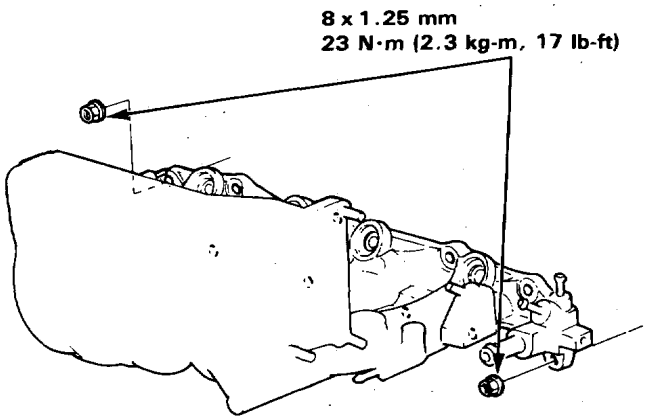
2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft)

   NOTE:
   - Apply engine oil to the cylinder head bolts and the washers.
   - Use the longer bolts at the position ❶ and ❷ as shown.

CYLINDER HEAD BOLTS TORQUE SEQUENCE

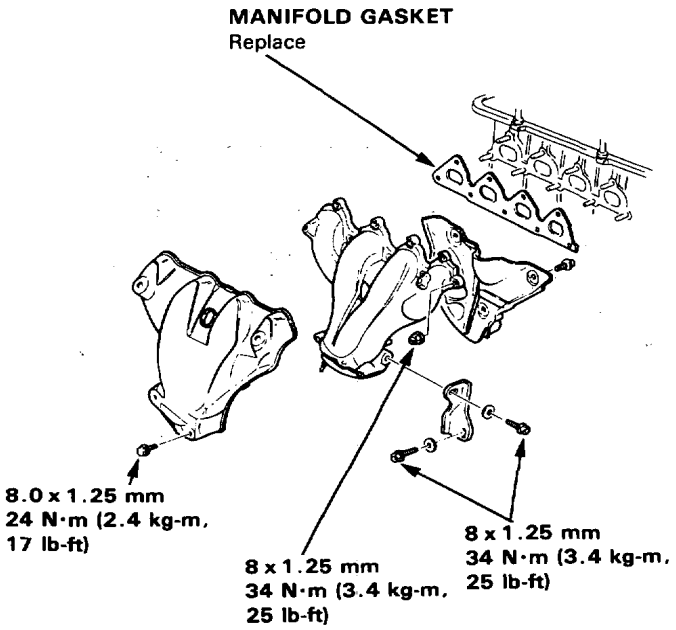


3. Install the intake manifold and tighten the nuts in a criss-cross pattern in 2 or 3 steps, beginning with the inner nuts.



4. Install the exhaust manifold and bracket.

Without CATA:



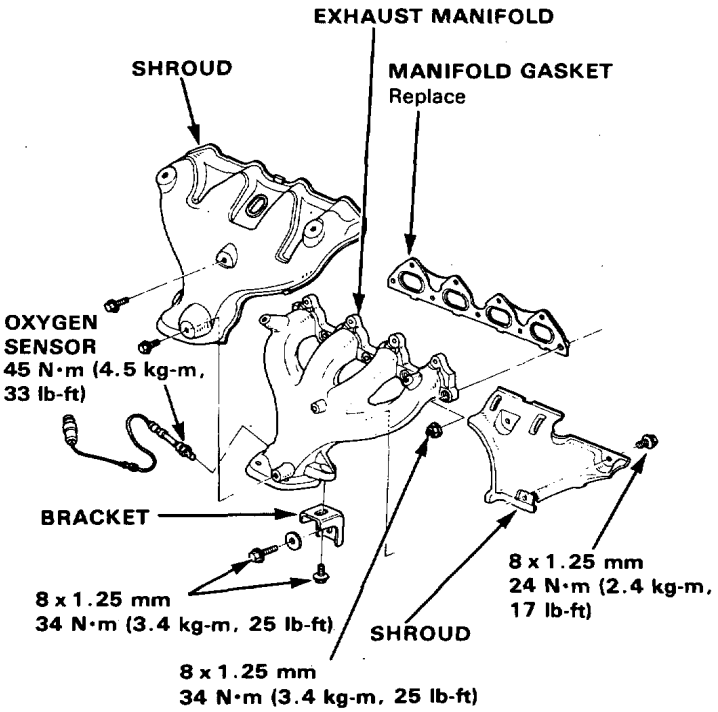
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

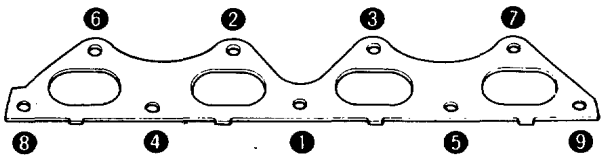
Installation (cont'd)

NOTE:
- Remove the oxygen sensor prior to disconnecting the exhaust pipe A and the exhaust manifold.
- Do not use the inpact wrench or hammer when the oxygen sensor is not to be removed.
- Reinstallation of oxygen sensor should be carried out after connecting the exhaust pipe A and the exhaust manifold.
- Do not tighten the connection with the inpact wrench if the oxygen sensor has not been removed.

With CATA:

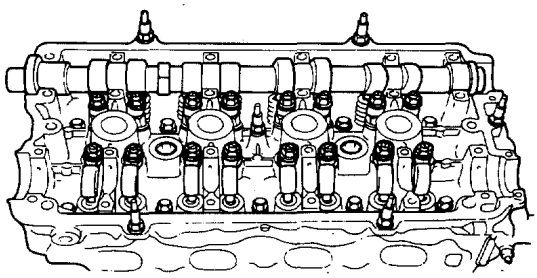


EXHAUST MANIFOLD TORQUE SEQUENCE



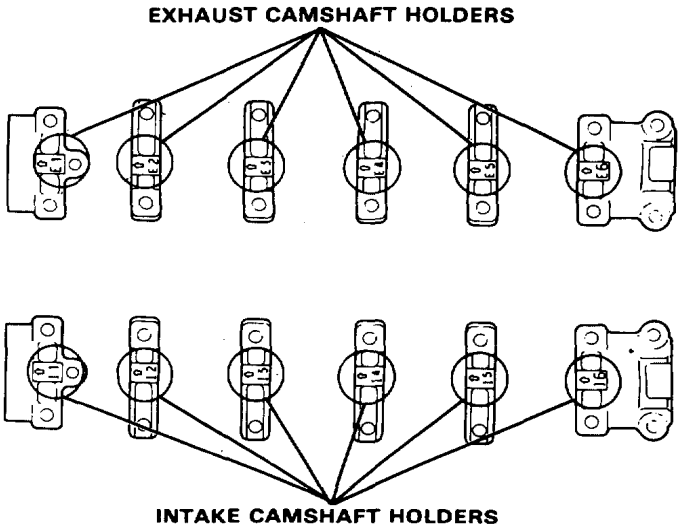
CAUTION:
- **Make sure that the keyways on the camshafts are facing up. (NO. 1 cylinder TDC).**
- **Valve locknuts should be loosened and adjust screws backed off before installation.**
- **Replace the rocker arms in these original positions.**

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.

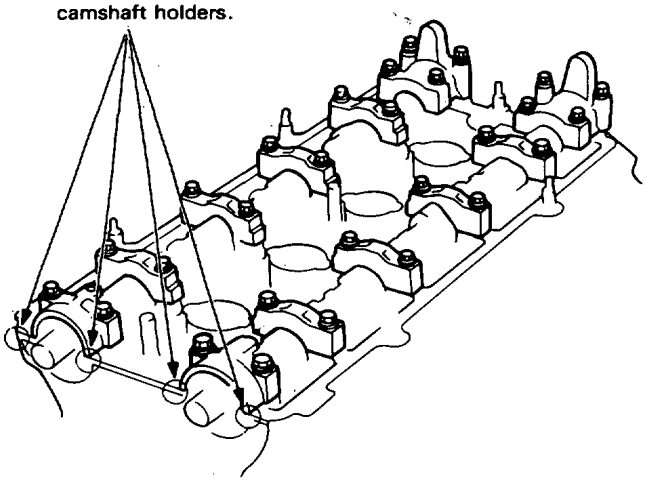


Downloaded from www.Manualslib.com manuals search engine

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.

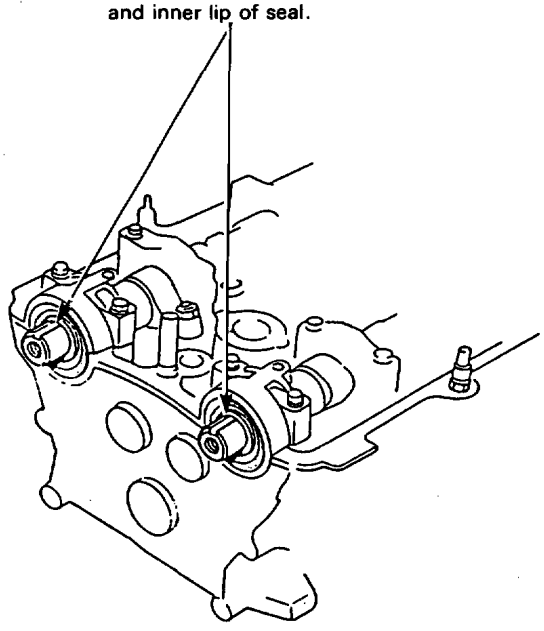
8. Tighten the camshaft holders temporarily.
   - Make sure that the rocker arms are properly positioned on the valve stems.

Apply non-hardening sealant to these areas (also opposite sides) before installing camshaft holders.

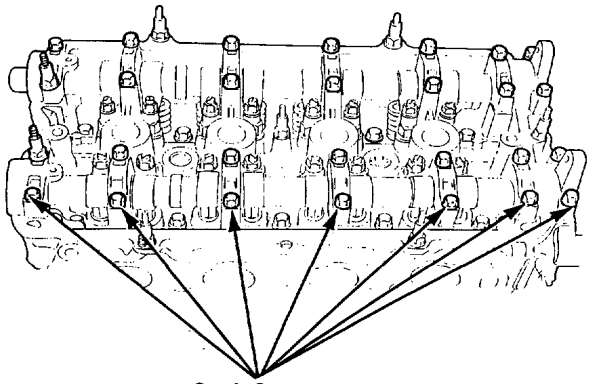


9. Press in the camshaft oil seal securely with the special tool.

Seal housing surface should be dry. Apply a light coat of oil to camshaft and inner lip of seal.



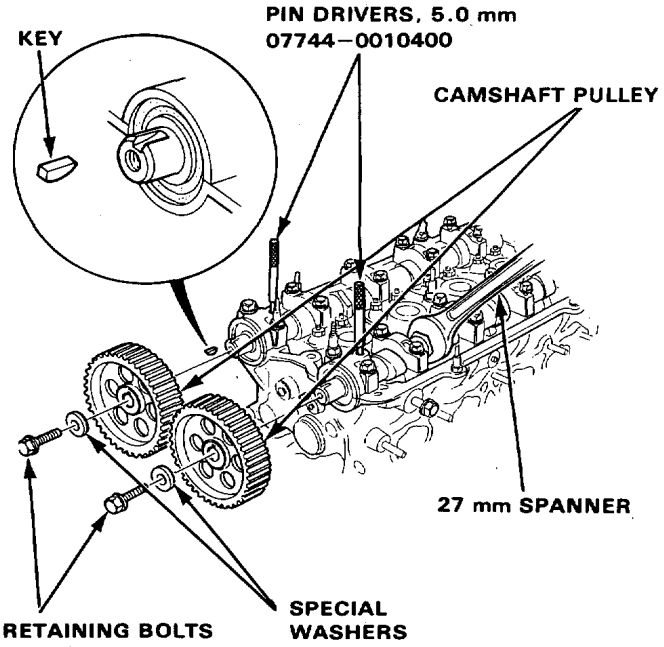
10. Tighten each bolt two turns at a time in the sequence shown below to insure that the rockers do not bind on the valves.



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.

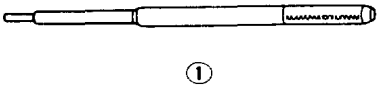


12. Push camshaft pulleys onto camshafts, then tighten retaining bolts to torque shown.
13. Adjust the valve timing (page 5-39).
14. After installation, check that all hoses and connectors are installed correctly.

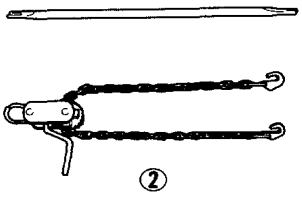
Downloaded from www.Manualslib.com manuals search engine

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07944-6110200	Pin Driver 8 mm	1	for shift rod
②	07KAK-SJ40100	Engine Tilt Hanger Set	1	



①



②

Downloaded from www.Manualslib.com manuals search engine

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.**
- **Unspecified items are common for the carburetor cars, PGM-FI cars, M/T cars, A/T cars, and the A/C equipped cars.**
- **Remove the wiring slowly while holding the coupler and the connector portion to avoid disconnecting.**
- **Mount the wiring or tubes to avoid mis-connection. Also, be sure that they do not get contact with other cords or tubes, or do not interfere with other parts.**

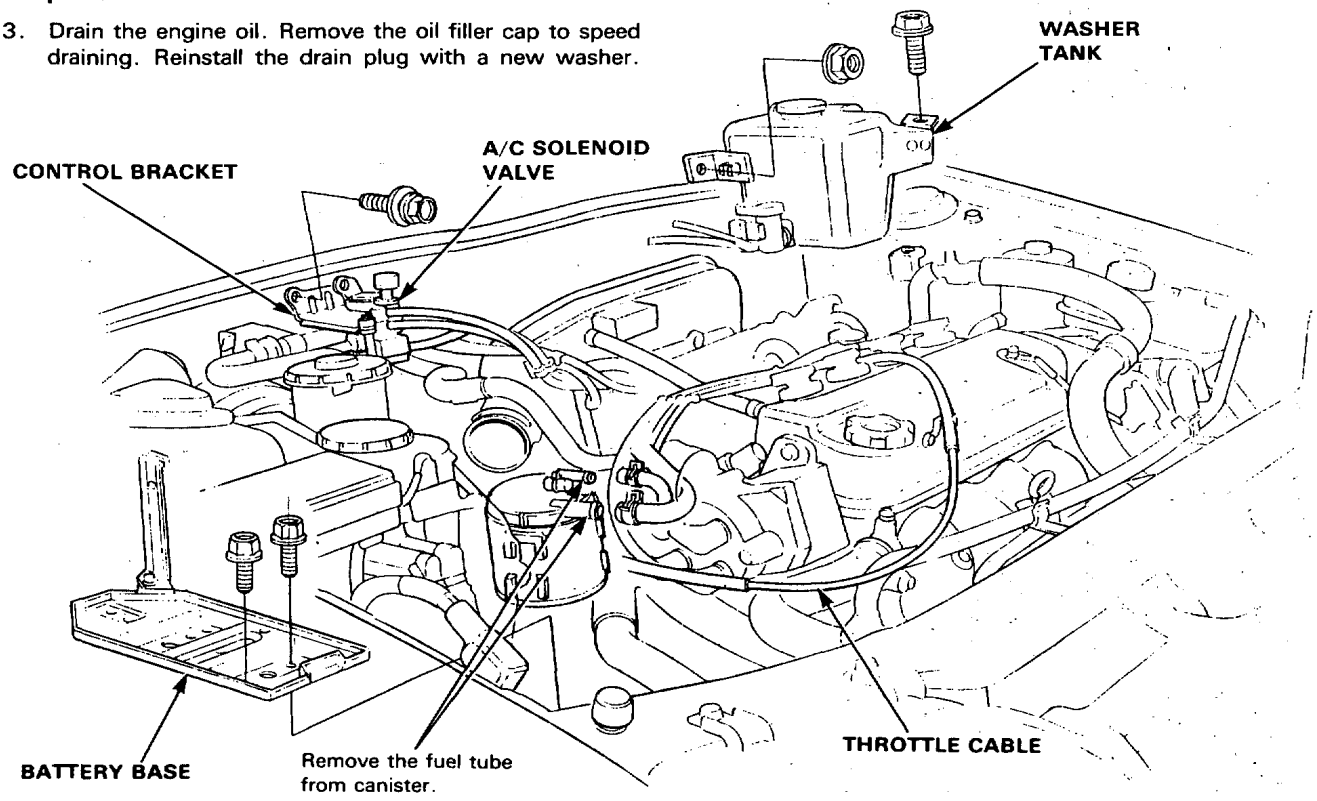
1. Do not remove the hood but hang it using ropes, etc. to secure it fully open.
2. Disconnect the battery negative terminal first, then the positive terminal. Remove the battery.

   CAUTION: Clean battery posts and cable terminals *with sandpaper, assemble, then apply grease to* prevent corrosion.
3. Drain the engine oil. Remove the oil filler cap to speed draining. Reinstall the drain plug with a new washer.

   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.
4. Drain the coolant from the radiator into a clean pan so it may be re-used. Remove the radiator cap to speed draining.

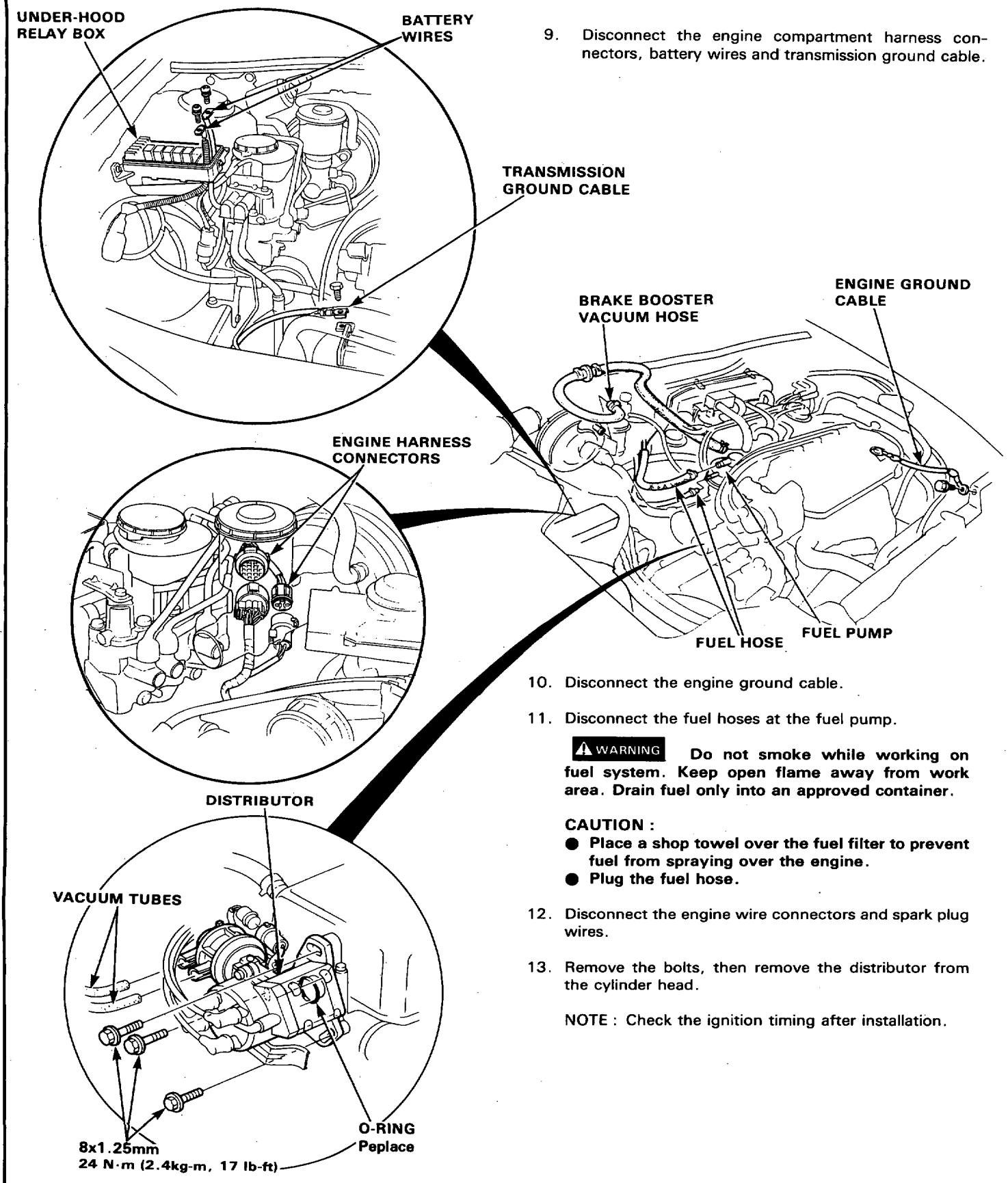
   ⚠ WARNING **Use care when removing expansion tank cap to avoid scalding by hot coolant or steam.**
5. Drain transmission oil/fluid. Use a 3/8" drive ratchet wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a *new washer*.
6. Remove the air intake duct and front air intake duct.
7. Remove the battery base.

   Carbureted engine: Go to steps 8 through 15.
   PGM-FI engine: Go to steps 16 through 23.
8. Disconnect the coupler connection to remove the bolts, and put the emission control box on the engine.
   - Don't remove the tubes.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine



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

10. Disconnect the engine ground cable.

11. Disconnect the fuel hoses at the fuel pump.

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

CAUTION :
- **Place a shop towel over the fuel filter to prevent fuel from spraying over the engine.**
- **Plug the fuel hose.**

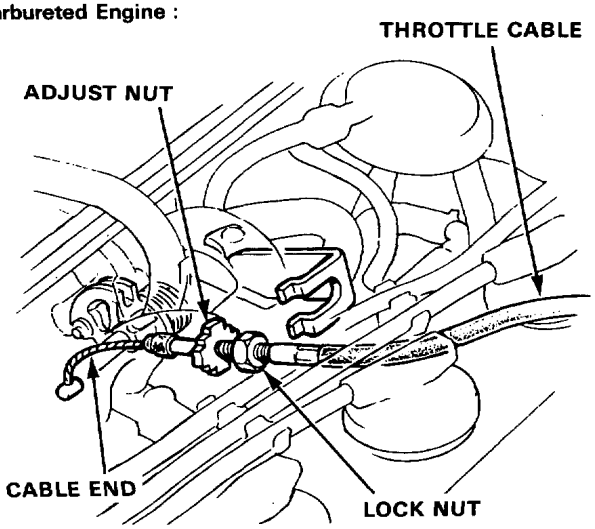
12. Disconnect the engine wire connectors and spark plug wires.

13. Remove the bolts, then remove the distributor from the cylinder head.

NOTE : Check the ignition timing after installation.

Downloaded from www.Manualslib.com manuals search engine

Carbureted Engine :



14. Remove the throttle cable by loosening the lock nut, then slip the cable end out of the throttle bracket and accelerator linkage.

CAUTION: Be careful not to damage the throttle cable during engine removal. On installation, check the cable is not kinked or binding.

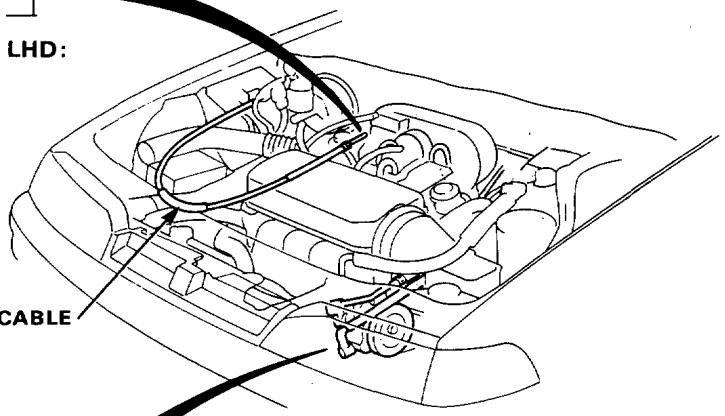
NOTE :

- 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.
- Adjust the throttle cable tension after installation.

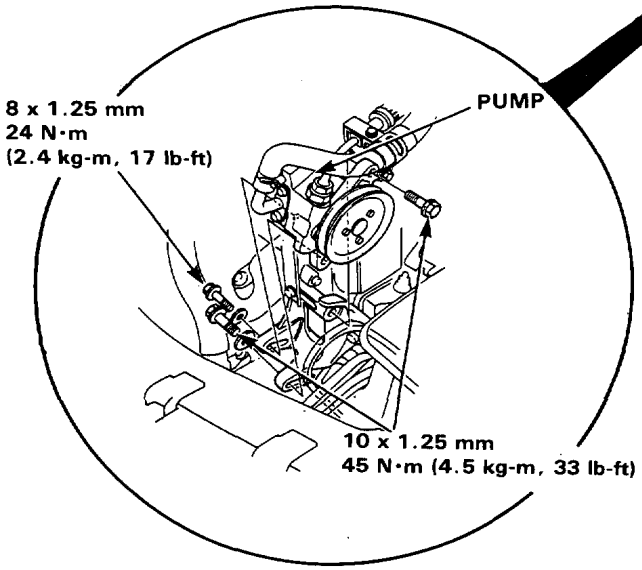
15. Remove the mounting bolts and V-belt for the power steering pump, then without disconnecting the hose, pull the pump away from its mounting bracket.

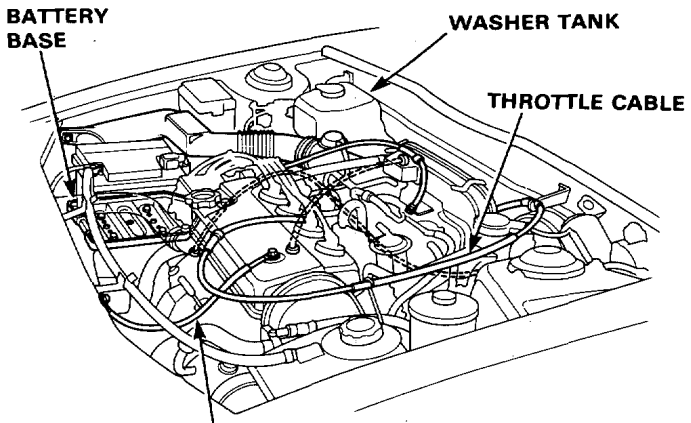
CAUTION: Put the removed power steering pump in a location where removal or installation of the engine is not disturbed.

LHD:



RHD:

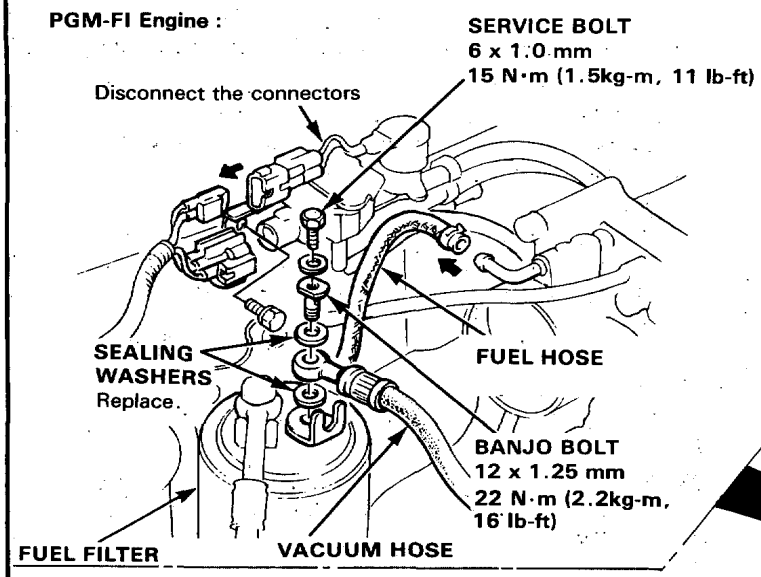




(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Engine Removal/Installation (cont'd)

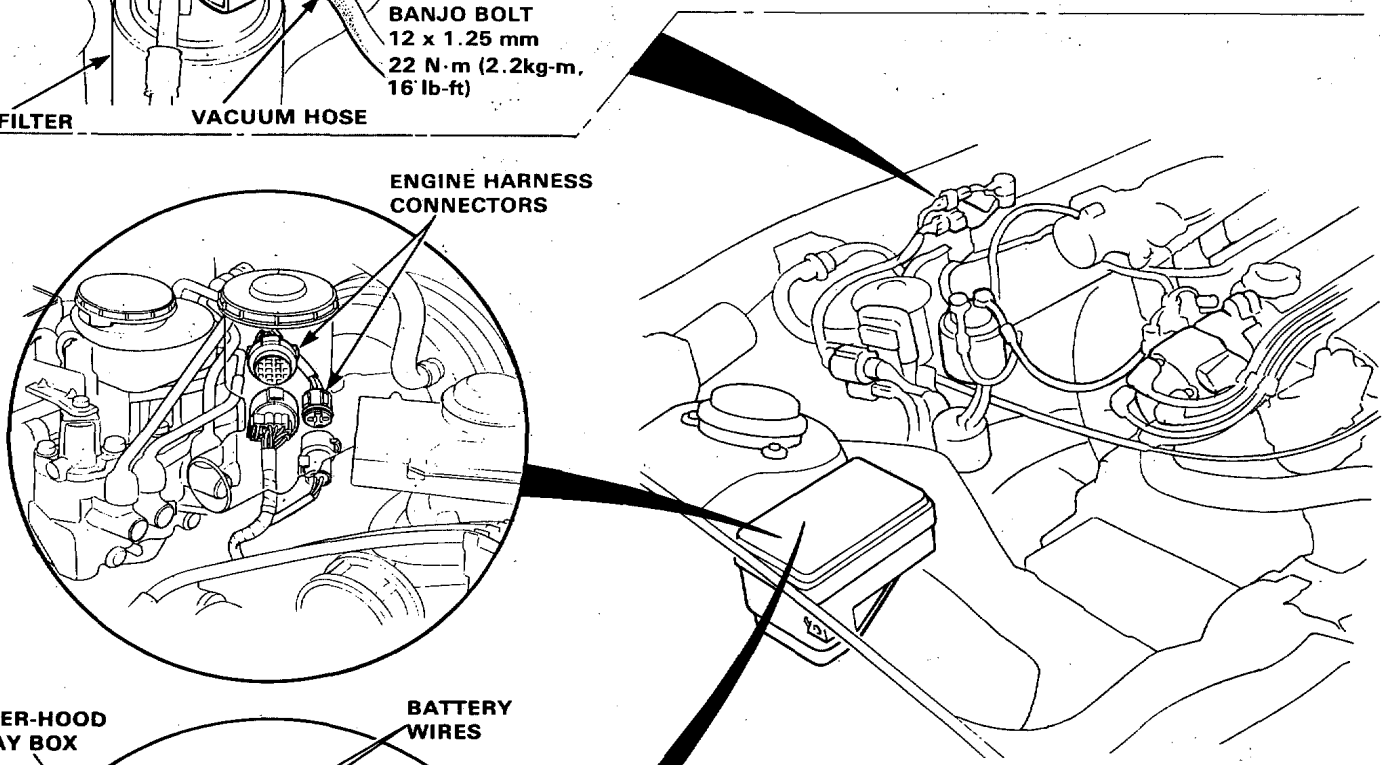


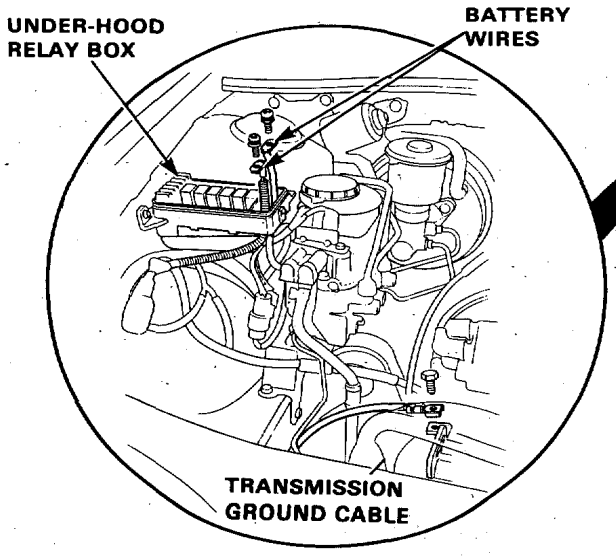
16. Relieve fuel pressure by slowly loosening the service bolt on the fuel filter about one turn. (Section 6).

⚠ 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 filter to prevent pressurized fuel from spraying over the engine.**





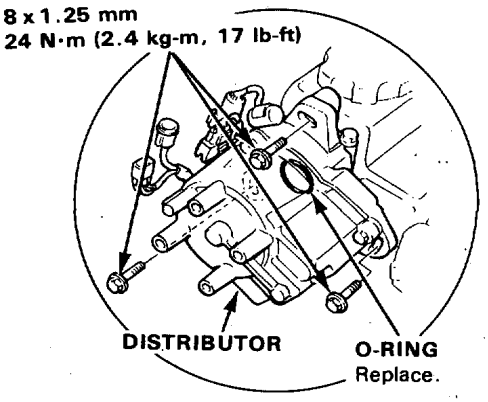
17. Disconnect the engine compartment harness connectors, battery wires and transmission ground cable.

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

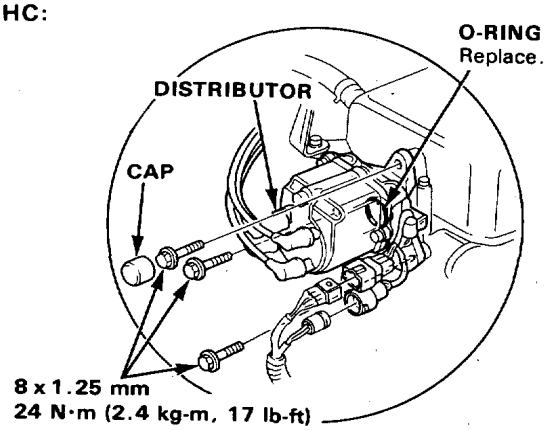
Downloaded from www.Manualslib.com manuals search engine

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

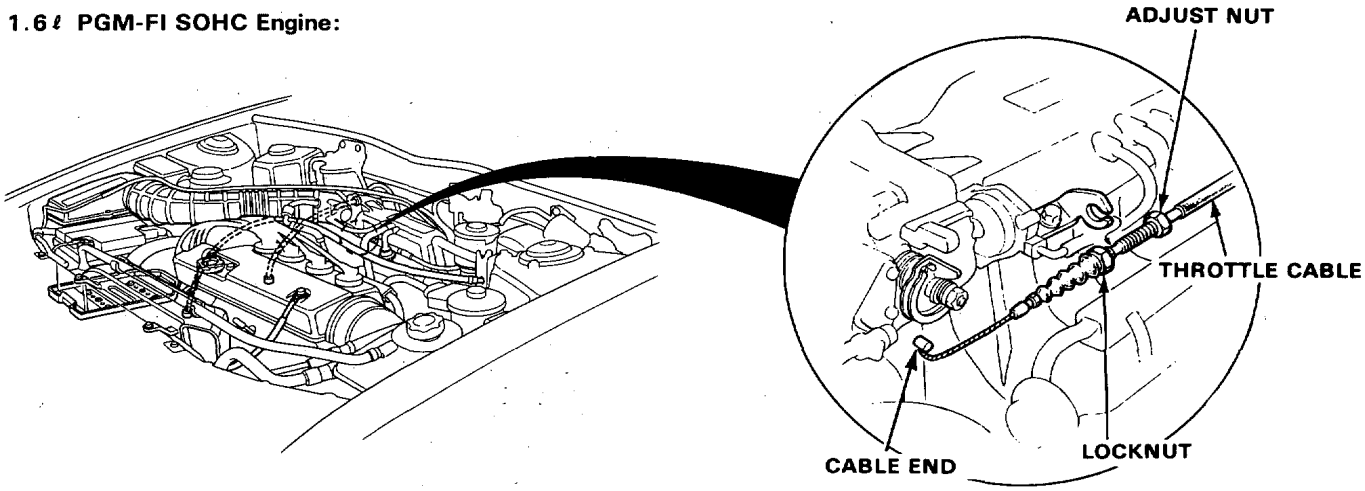
DOHC:



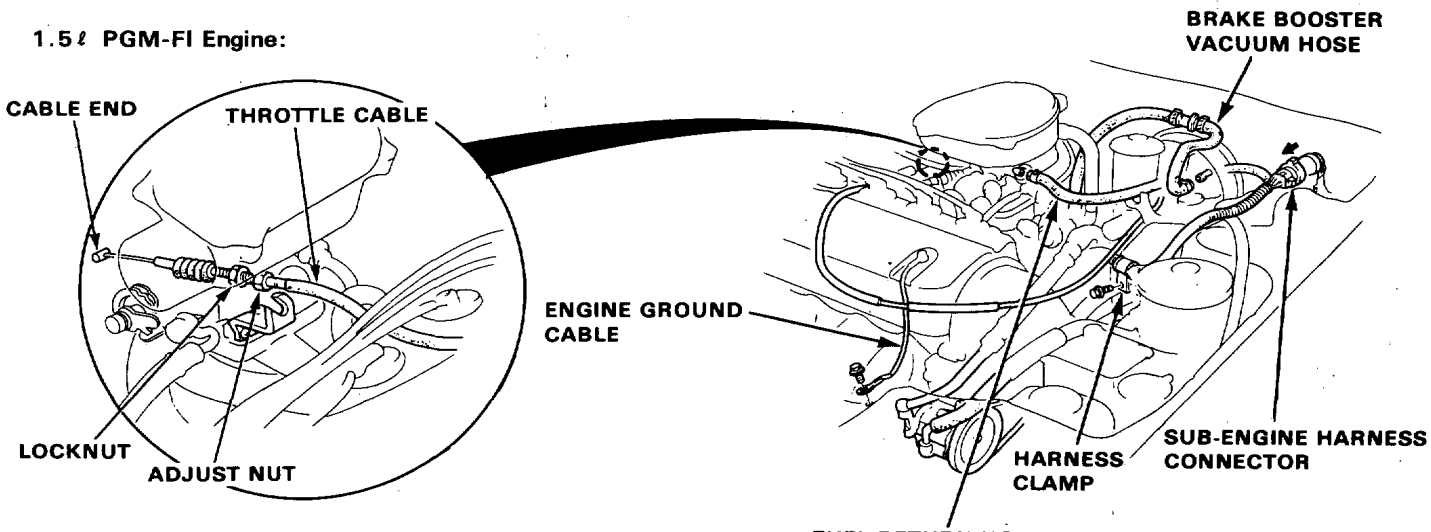
SOHC:



1.6ℓ PGM-FI SOHC Engine:



1.5ℓ PGM-FI Engine:



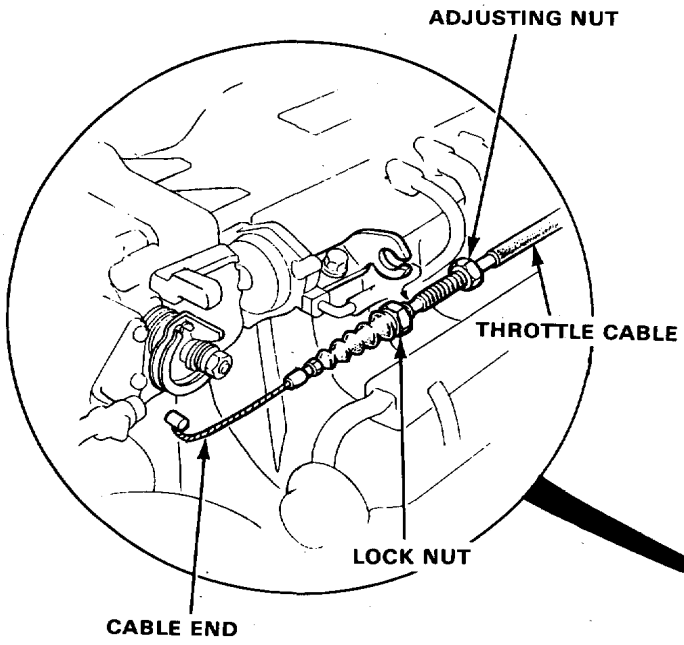
⚠ WARNING **Do not smoke while working on fuel system. Keep open flame away from work area.**

Drain fuel only into an approved container.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

PGM-FI DOHC Engine:



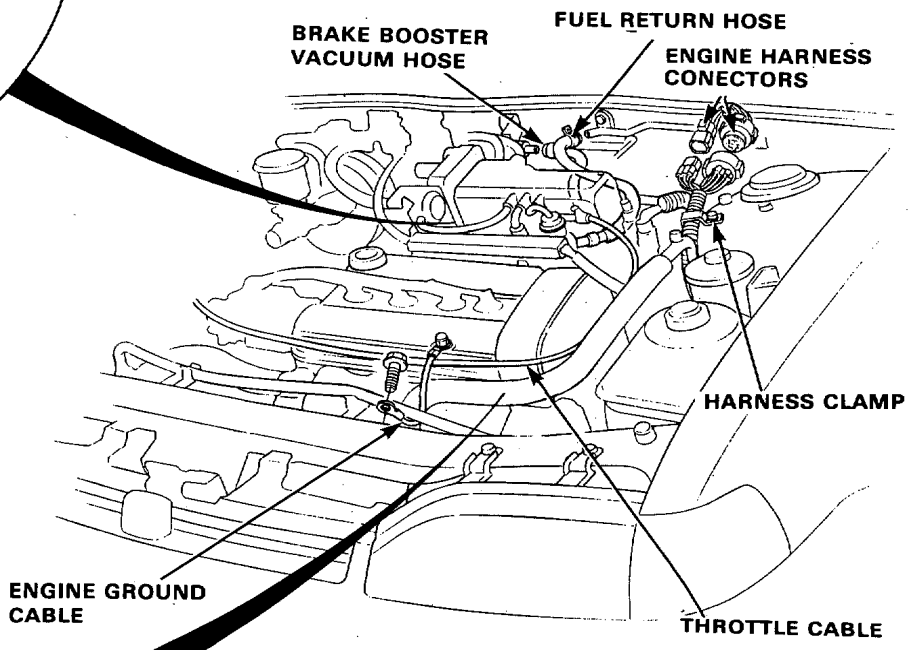
20. Remove the throttle cable by loosening the lock nut, then silp the cable end out of the throttle bracket and accelerator linkage.

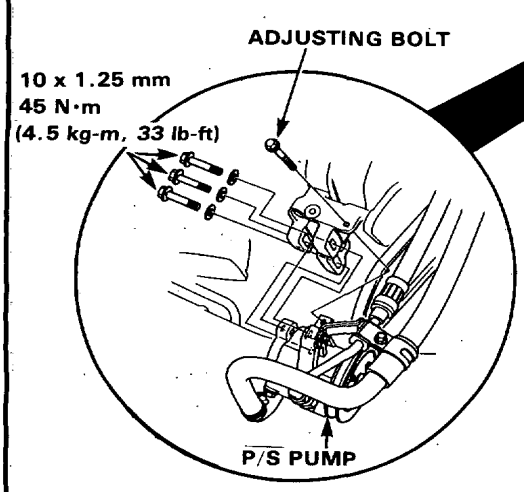
CAUTION: Be careful not to damage the throttle cable during engine removal. On installation, check the cable is not kinked or binding.

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.
- Adjust the throttle cable tension after installation.

21. Disconnect the engine ground cable.
22. Disconnect the fuel return hose.

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





23. Remove the mounting bolts and V-belt for the power steering pump, then without disconnecting the hose, pull the pump away from its mounting bracket.

CAUTION: Put the removed power steering pump in a location where removal or installation of the engine is not disturbed.

Downloaded from www.Manualslib.com manuals search engine

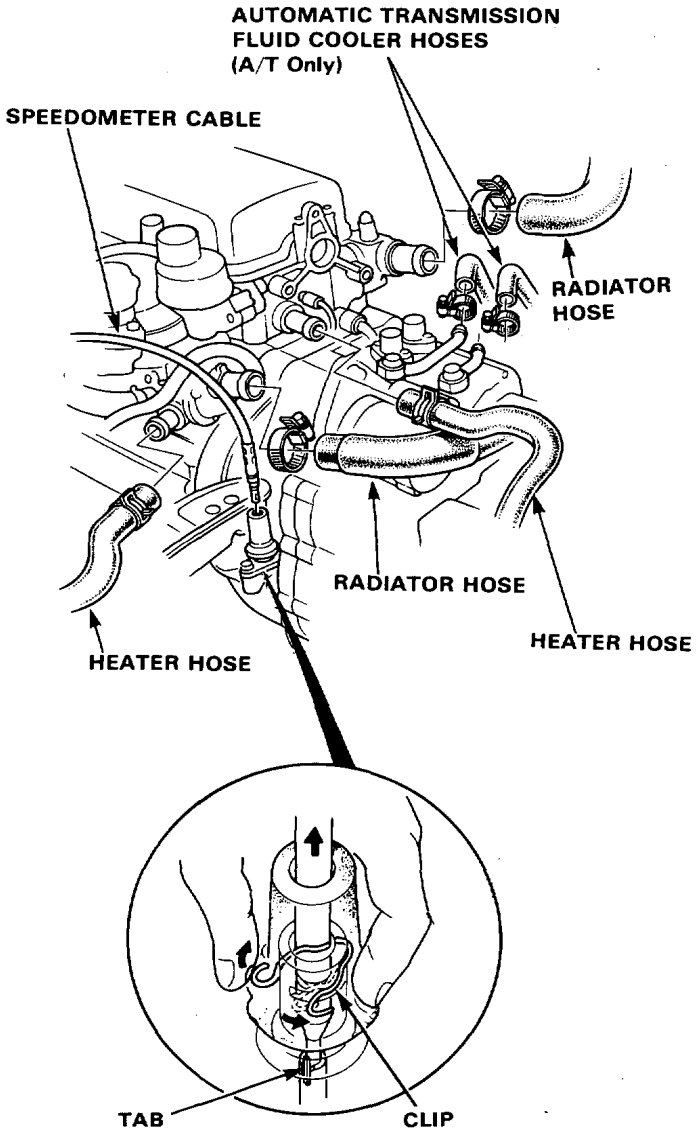
24. Disconnect the radiator hoses and heater hoses.

CAUTION: When the engine is lifted, apply waste, etc. so that the radiator solution in the engine does not leak.

25. Disconnect the transmission fluid cooler hoses. (A/T)

CAUTION: Mount the blank cap on the hose and the hose mounting portion to check that the oil does not leak.

26. Remove the speedometer cable.

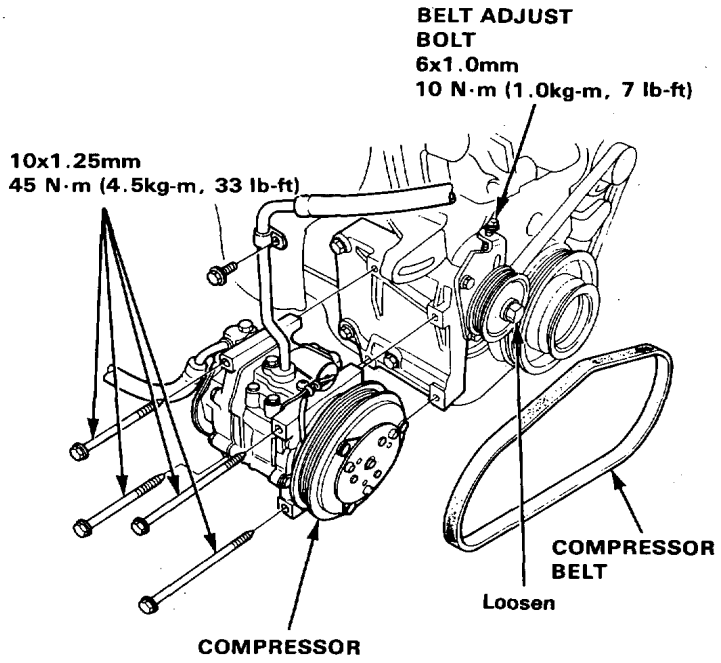


CAUTION:
- **Do not remove the holder because the speedometer gear may fall into the transmission housing.**
- **Turn the clip from the top of the boots, and pull out the speedometer cable.**

27. On cars with A/C:

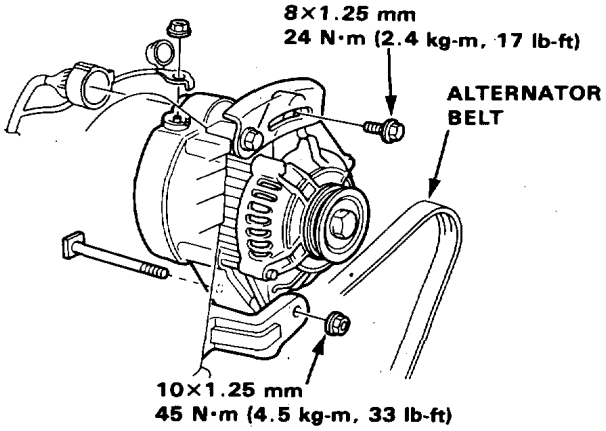
- Loosen the belt adjust bolt and idle pulley nut.
- Remove the compressor mount bolts, then lift the compressor out of the bracket with hoses attached, and wire it up to the front beam.

NOTE:
- The compressor can be moved without discharging the air conditioner system.
- Put the removed compressor on the front beam so as not to damage the body, etc.



28. Remove the alternator.

- 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)

Downloaded from www.Manualslib.com manuals search engine

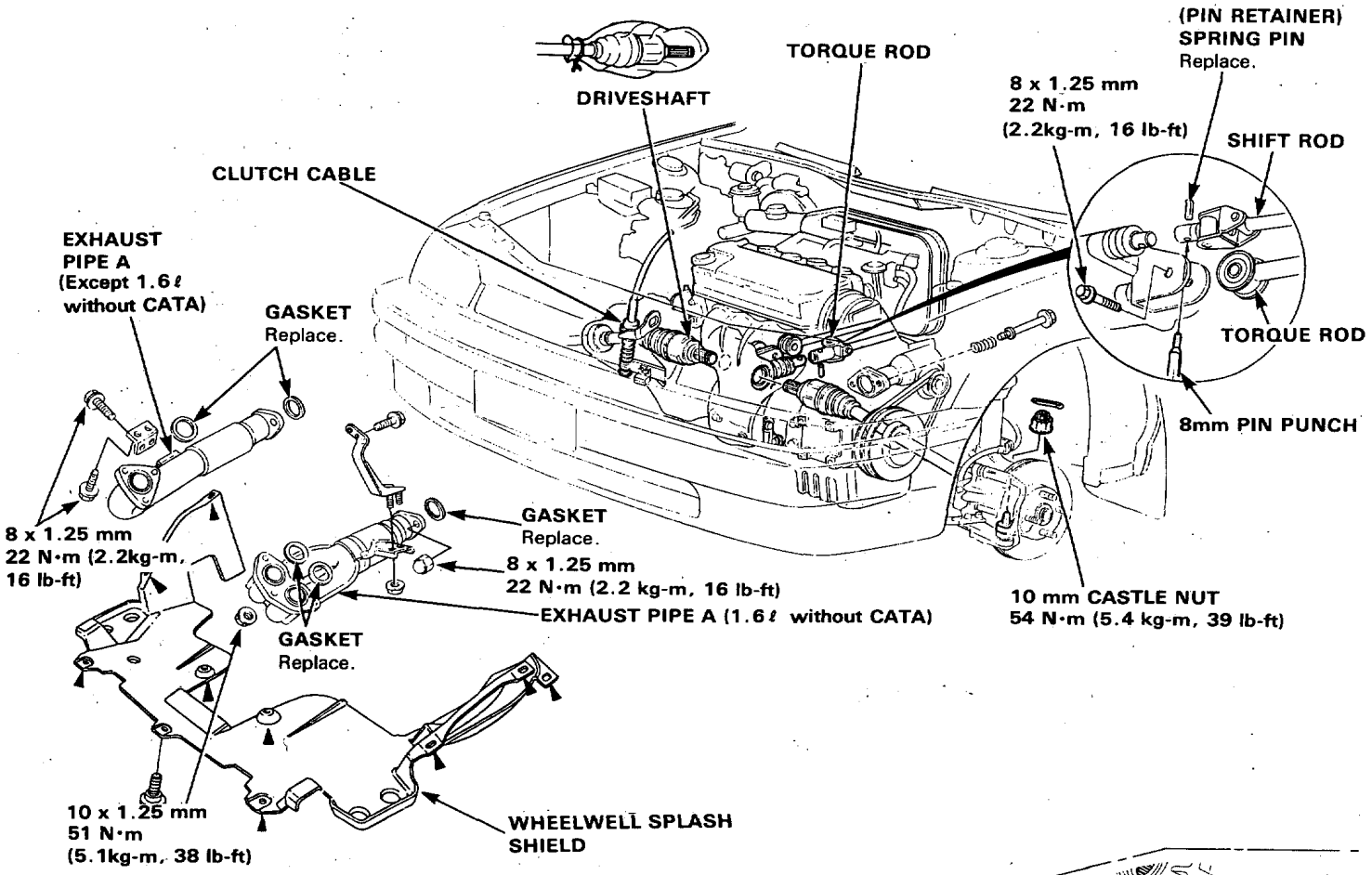
Engine Removal/Installation (cont'd)

29. Remove the exhaust pipe A with bracket from exhaust pipe B and then from engine block. (cabureted engine)
30. 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 driveshaft ends.

(On Manual Transmission Cars:)
31. Remove the shift lever torque rod, shift rod and clutch cable.

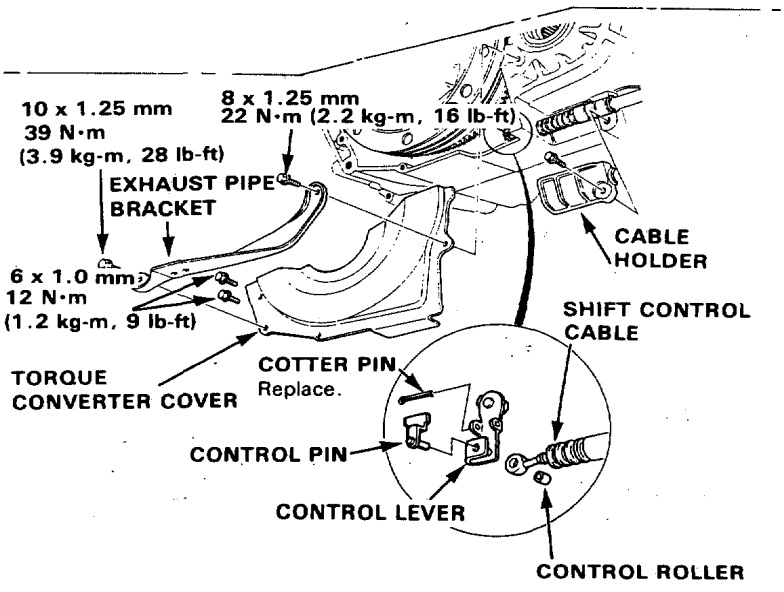
NOTE: On reassembly, slide the retainer back into place after driving in the spring pin.



(On Automatic Transmission Cars:)
32. Remove the torque converter cover and cable holder.
33. Remove the shift control cable by removing the cotter pin, control pin and control lever roller from the control lever.

CAUTION: Be careful not to damage the shift control cable during engine removal. On installation, check the cable is not kinked or binding.

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.
- On reassembly, check the cable adjustment. (see section 9)



Downloaded from www.Manualslib.com manuals search engine

34. 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.*

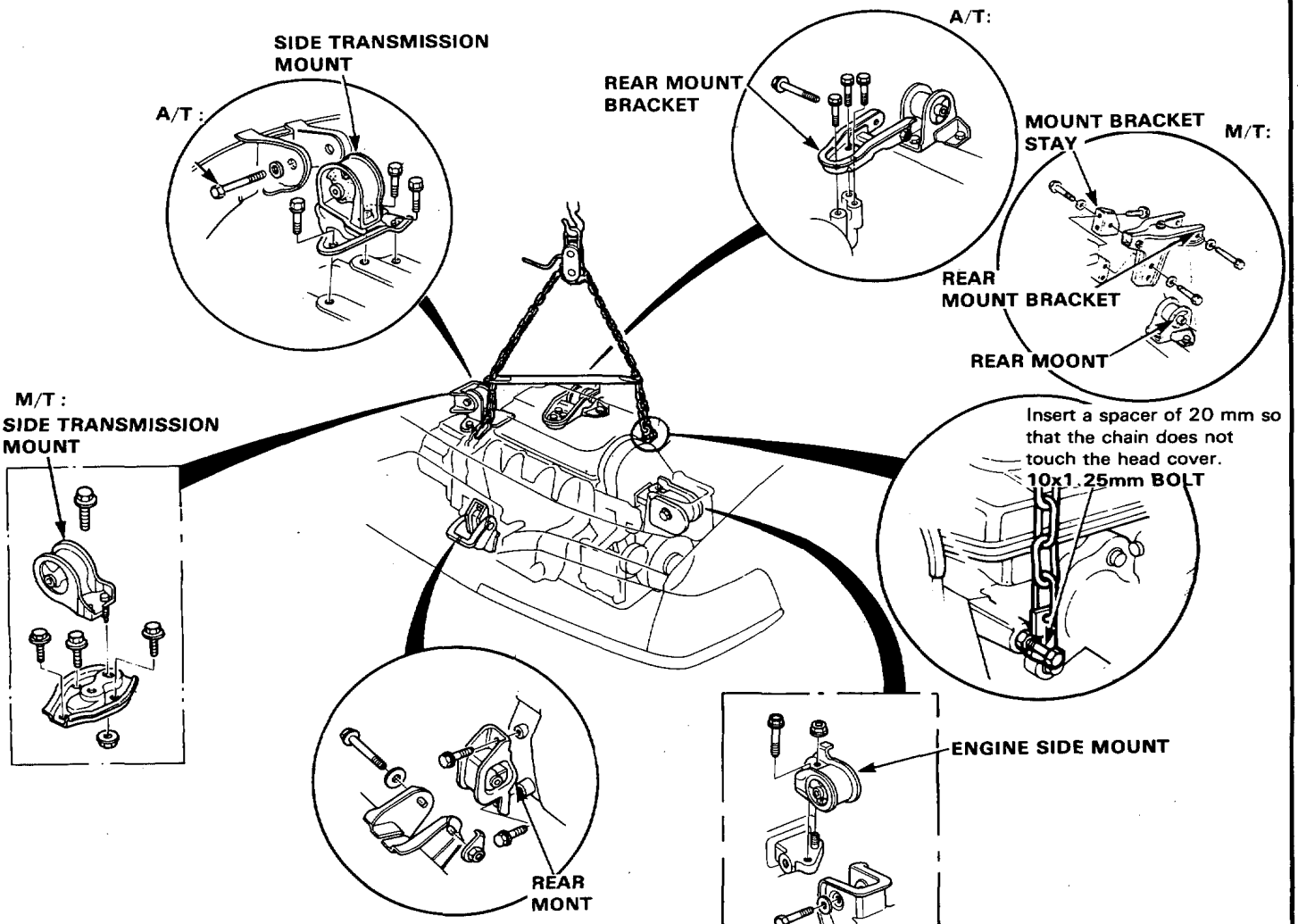
35. Remove the rear transmission mount bracket.

36. Remove the bolts from the front transmission mount.

37. Remove the bolts from the engine side mount.

38. Remove the bolts from the side transmission mount (A/T).

39. First remove the mount nut from under the transmission mount (M/T).

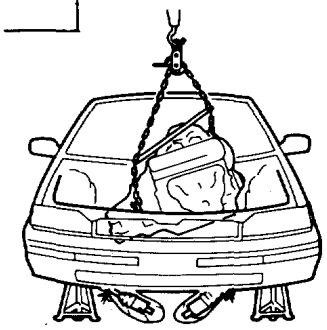


40. Check that the engine/transaxle is completely free of vacuum, fuel, and coolant hose, and electrical wires.

41. Slowly raise the engine approximately 6" and stop. Check once again that all wires and hoses have been disconnected from the engine/transaxle.

42. Raise the engine/transaxle all the way and remove it from the car.

CAUTION: When the engine is suspended, do not *crawl under the car*.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Engine Removal/ Installation (cont'd)

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.

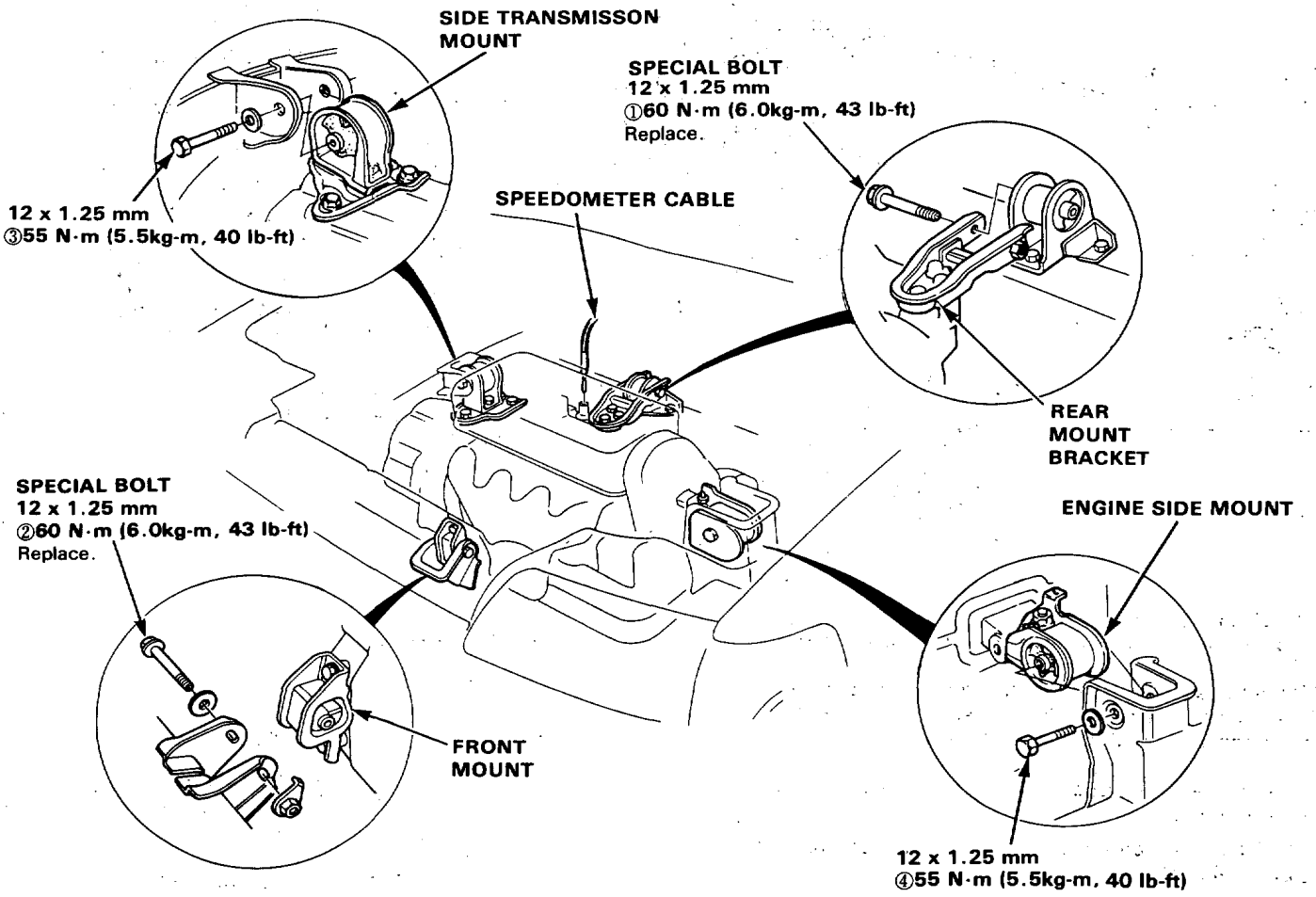
CAUTION : Use new spring clips on installation.

- Inspection for fuel leakage.
  After 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.
- 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).

Speedometer cable Installation:

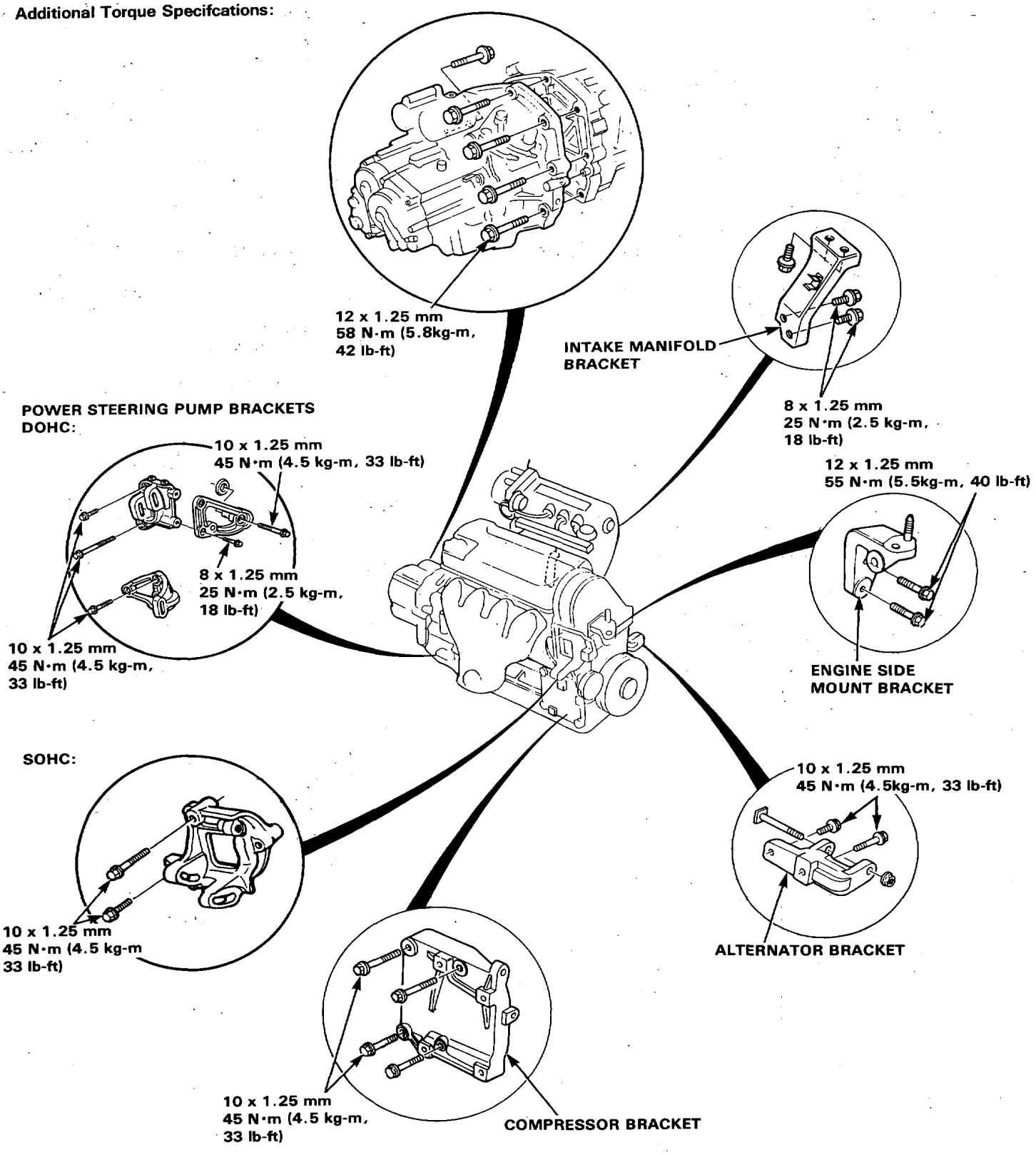
- Align tab on cable end with slot in holder (page 5 -67).
- Install clip so bent leg is on groove side.
  After installing, pull speedometer cable to make sure it is secure.

ENGINE MOUNT TORQUE SEQUENCE
NOTE : Check the mount and bracket for damage.



Downloaded from www.Manualslib.com manuals search engine

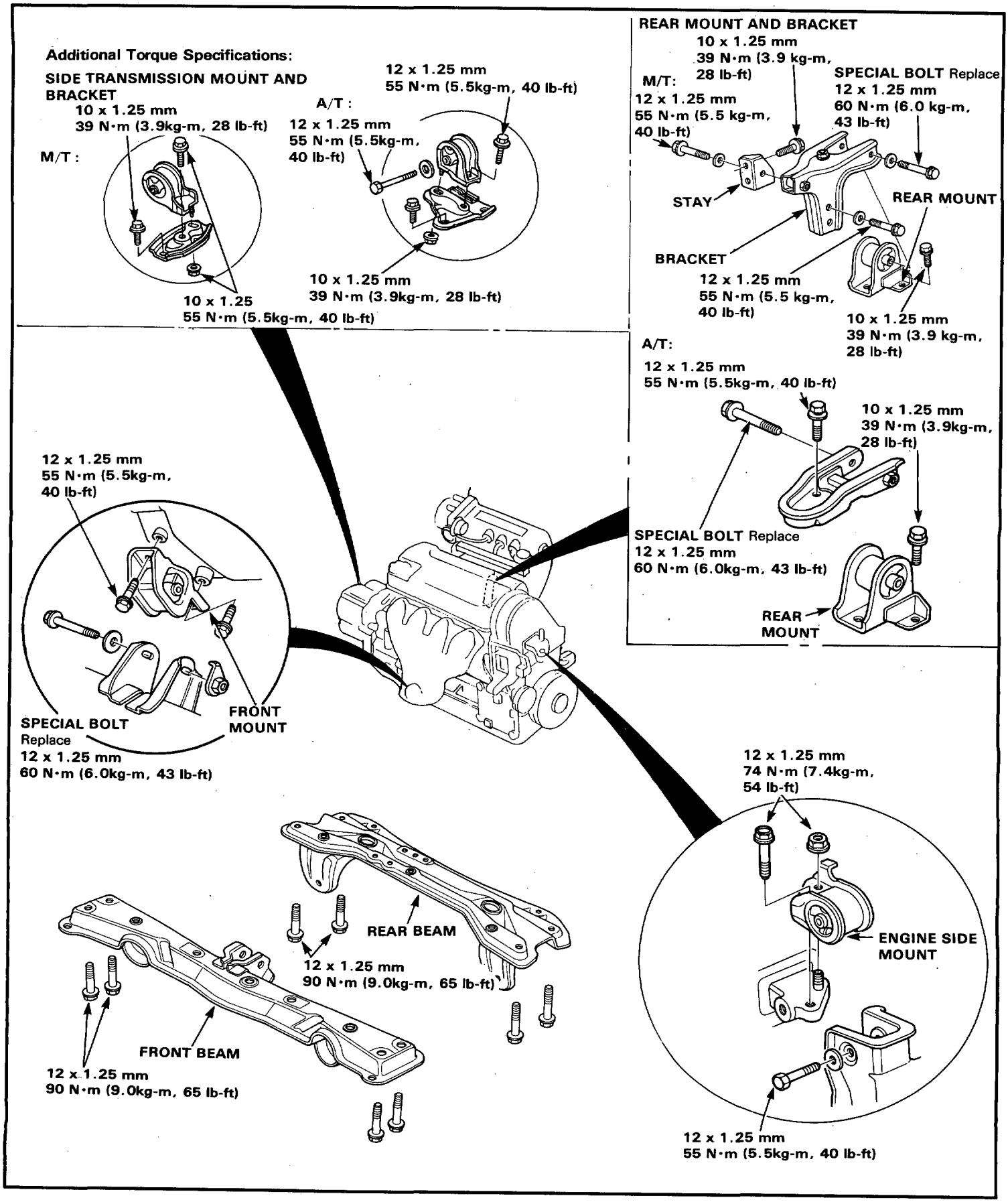
Additional Torque Specifcations:



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

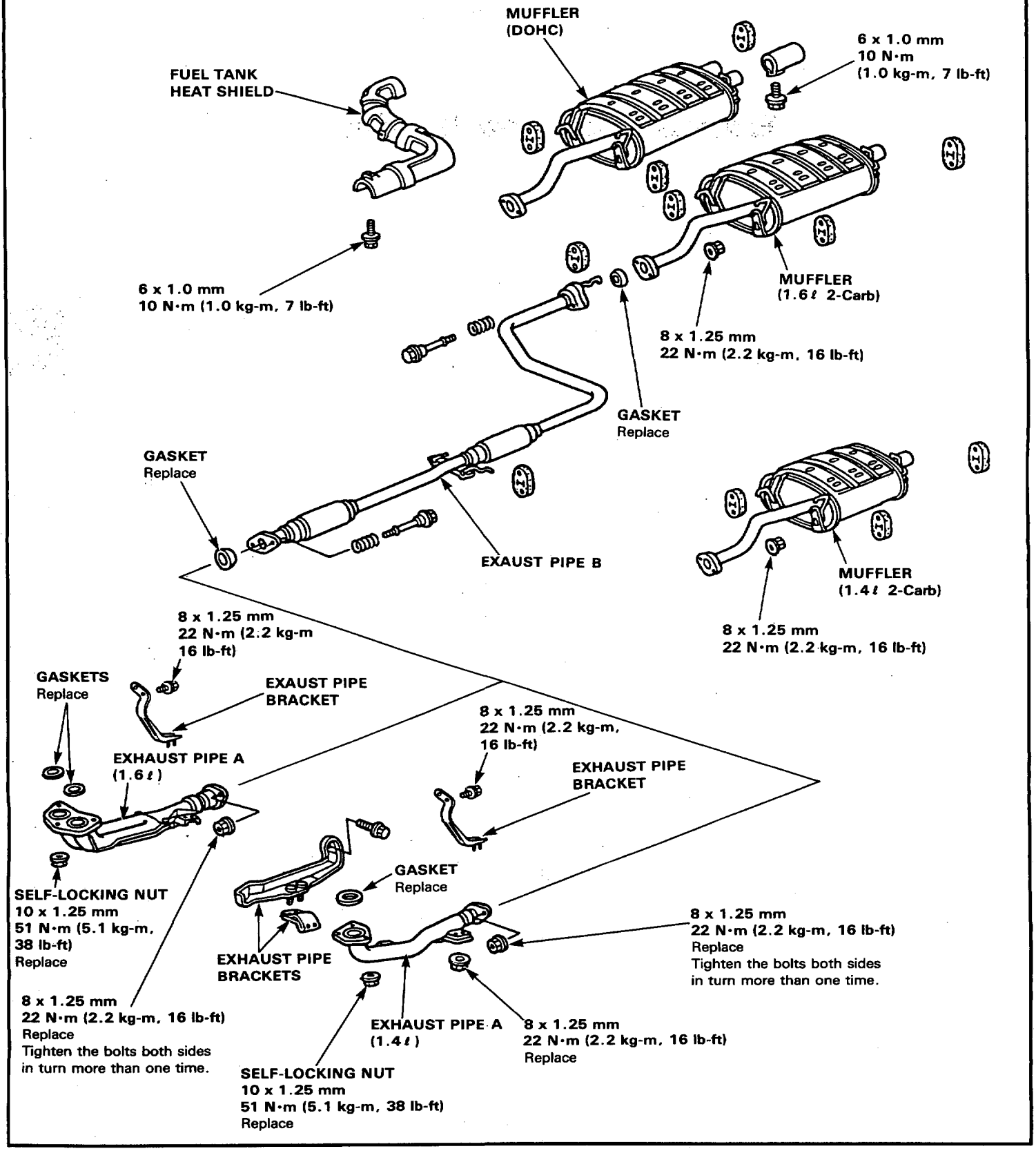
Engine Removal/Installtion (cont'd)



Downloaded from www.Manualslib.com manuals search engine

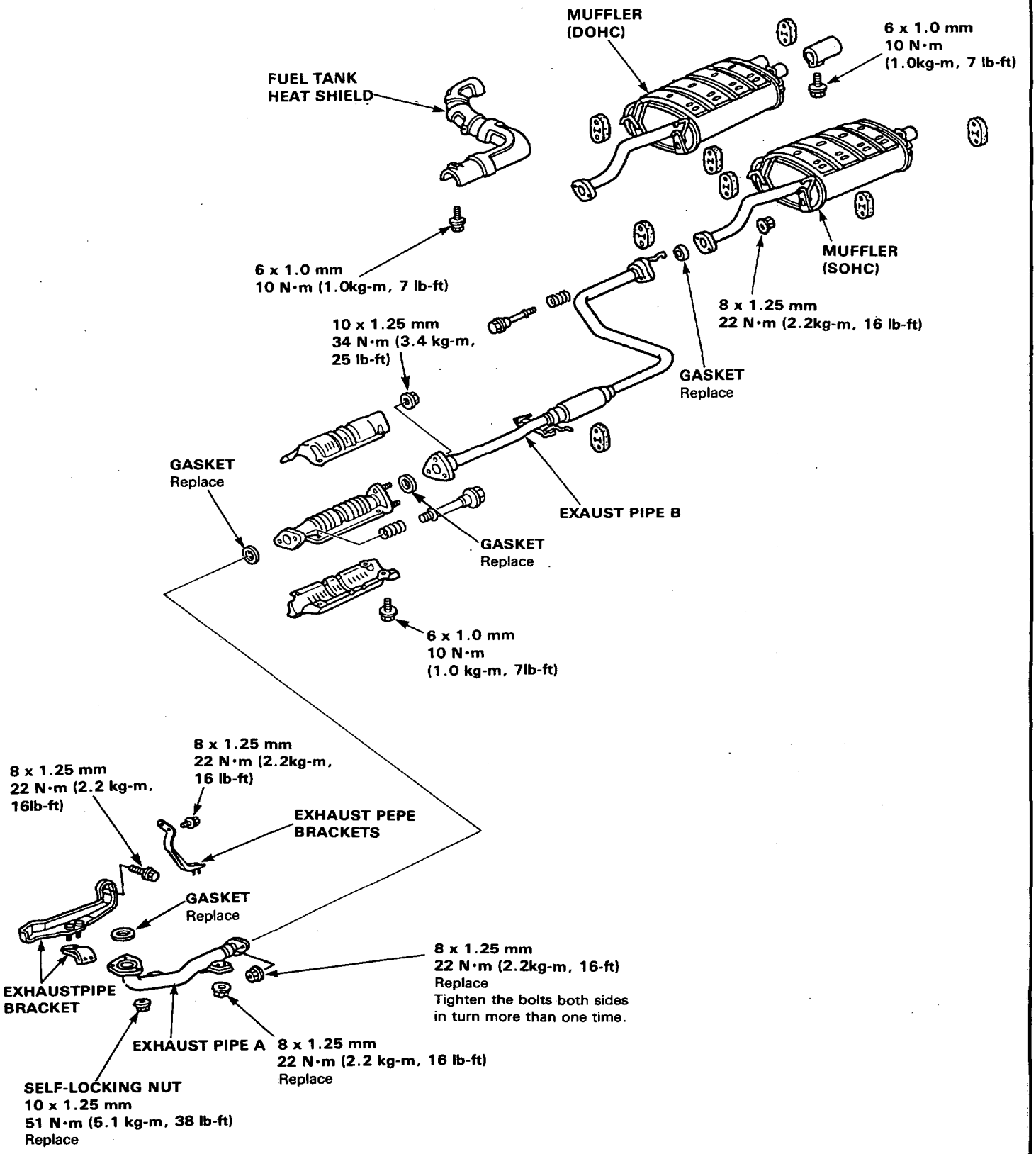
Exhaust Pipe and Muffler

Replacement (without CATA)



Downloaded from www.Manualslib.com manuals search engine

Replacement (with CATA)

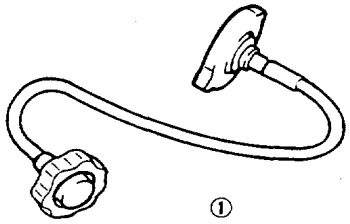


Downloaded from www.Manualslib.com manuals search engine

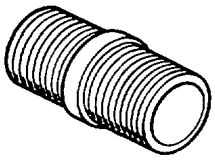
Special Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAJ–SG90100	Radiator Tester Attachment, B	1	
②	07HAJ–SG90200	Radiator Tester Attachment, A	1	



①



②

Downloaded from www.Manualslib.com manuals search engine

Radiator

Illustrated Index

Carbureted Engine:

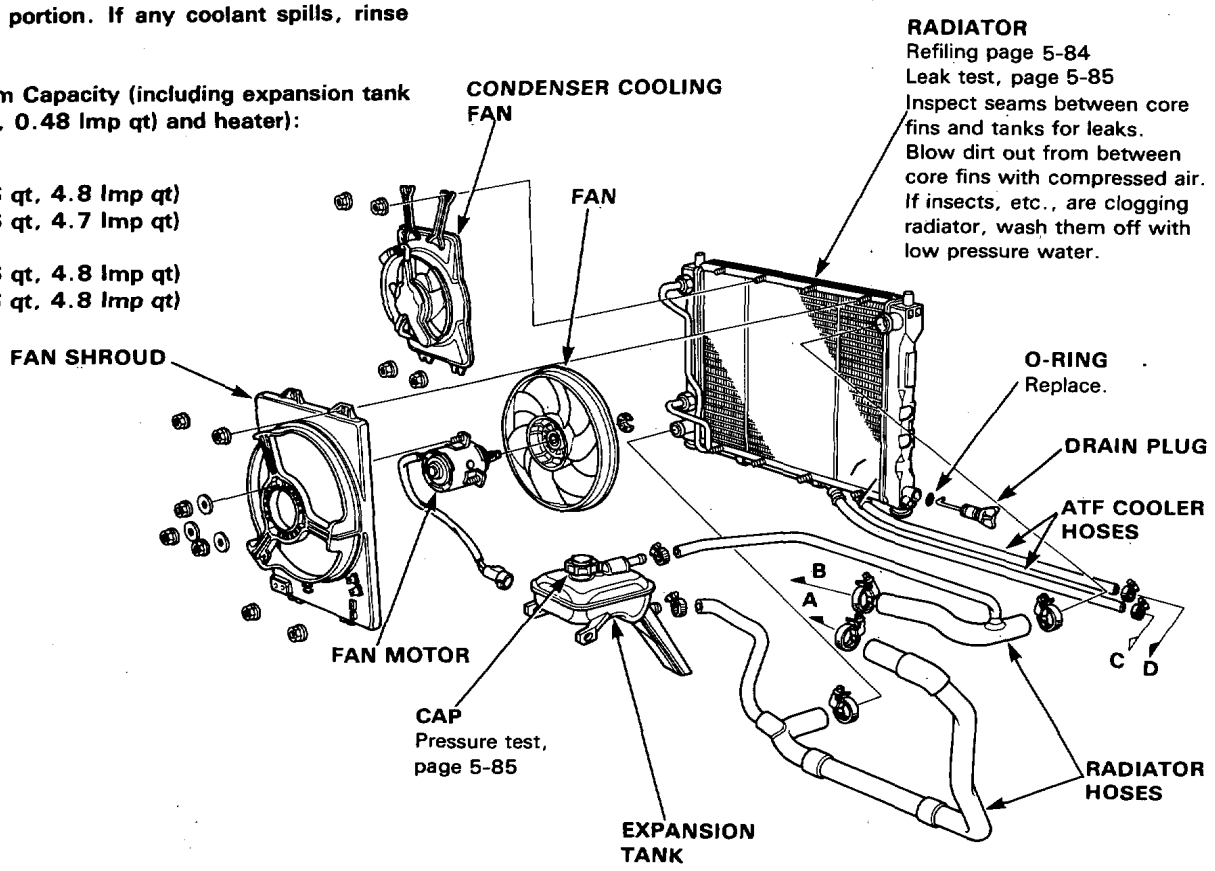
⚠ WARNING **System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.**

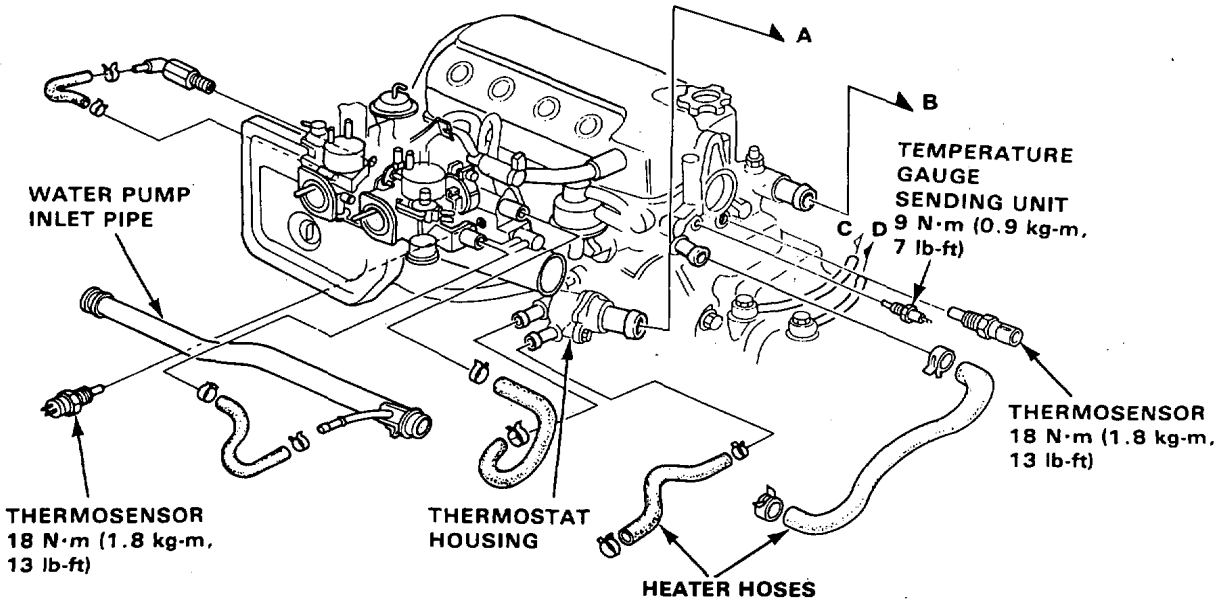
CAUTION: When supplying coolant, be sure to shut the relay box lid and not to let coolant spill on the electrical parts or the painted portion. If any coolant spills, rinse it off immediately.

Total Cooling System Capacity (including expansion tank 0.55 ℓ (0.58 US qt, 0.48 Imp qt) and heater):

1.4 ℓ
M/T: 5.4 ℓ (5.7 US qt, 4.8 Imp qt)
A/T : 5.3 ℓ (5.6 US qt, 4.7 Imp qt)
1.6 ℓ
M/T: 5.5 ℓ (5.8 US qt, 4.8 Imp qt)
A/T : 5.4 ℓ (5.7 US 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 when reassembling.





Downloaded from www.Manualslib.com manuals search engine

Radiator

Illustrated Index

DOHC Fuel-Injected Engine:

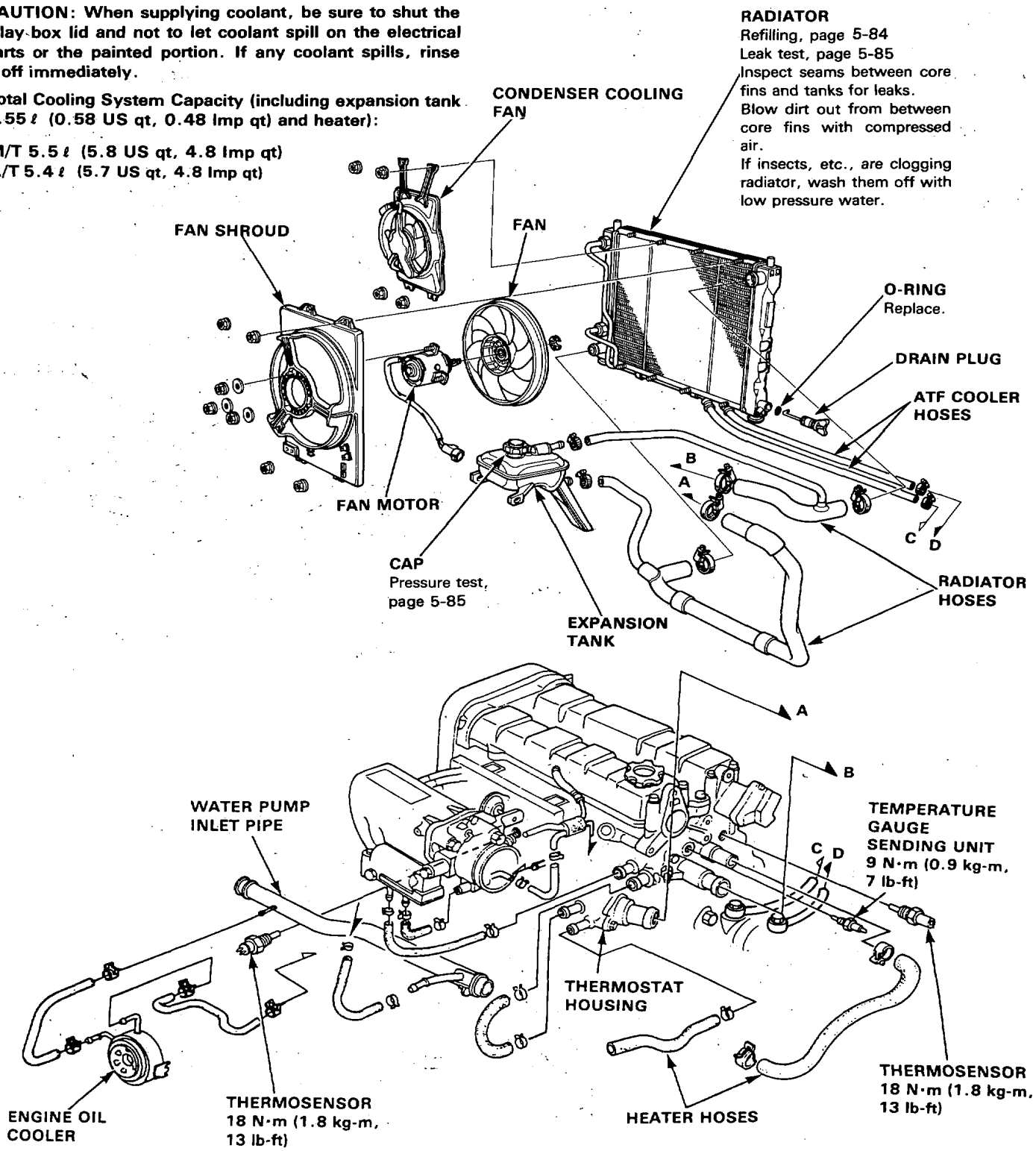
⚠WARNING System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.

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.

Total Cooling System Capacity (including expansion tank 0.55ℓ (0.58 US qt, 0.48 Imp qt) and heater):

M/T 5.5ℓ (5.8 US qt, 4.8 Imp qt)
A/T 5.4ℓ (5.7 US 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.



Downloaded from www.Manualslib.com manuals search engine

1.5ℓ Fuel-Injected

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

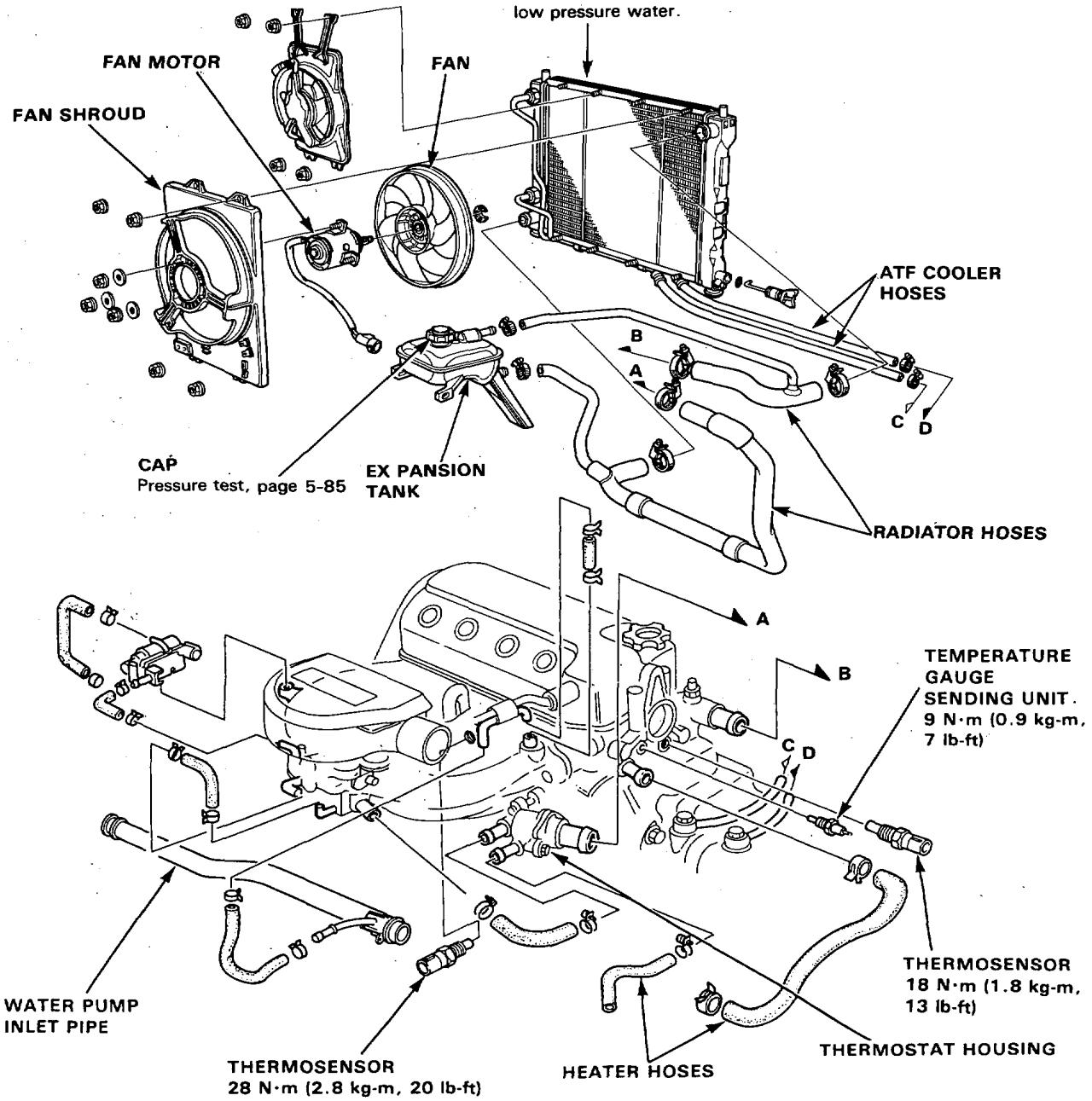
CAUTION: When supplying coolant, be sure to shut the relay box lid and not to let coolant spill on the electrical parts or the painted portion. If any coolant spills, rinse it off immediately.

Total Cooling System Capacity (including expansion tank 0.55ℓ (0.58 US qt, 0.48 Imp qt) and heater):

M/T: 5.5ℓ (5.8 US qt, 4.8 Imp qt)
A/T : 5.4ℓ (5.7 US 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 when reassembling.

RADIATOR
Refilling, page 5-84
Leak test, page 5-85
Inspect seams between core fins and tanks for leaks.
Blow dirt out from between core fins with compressed air. if insects, etc., are clogging radiator, wash them off with low pressure water.



Downloaded from www.Manualslib.com manuals search engine

Radiator

Illustrated Index

1.6 SOHC Fuel-Injected

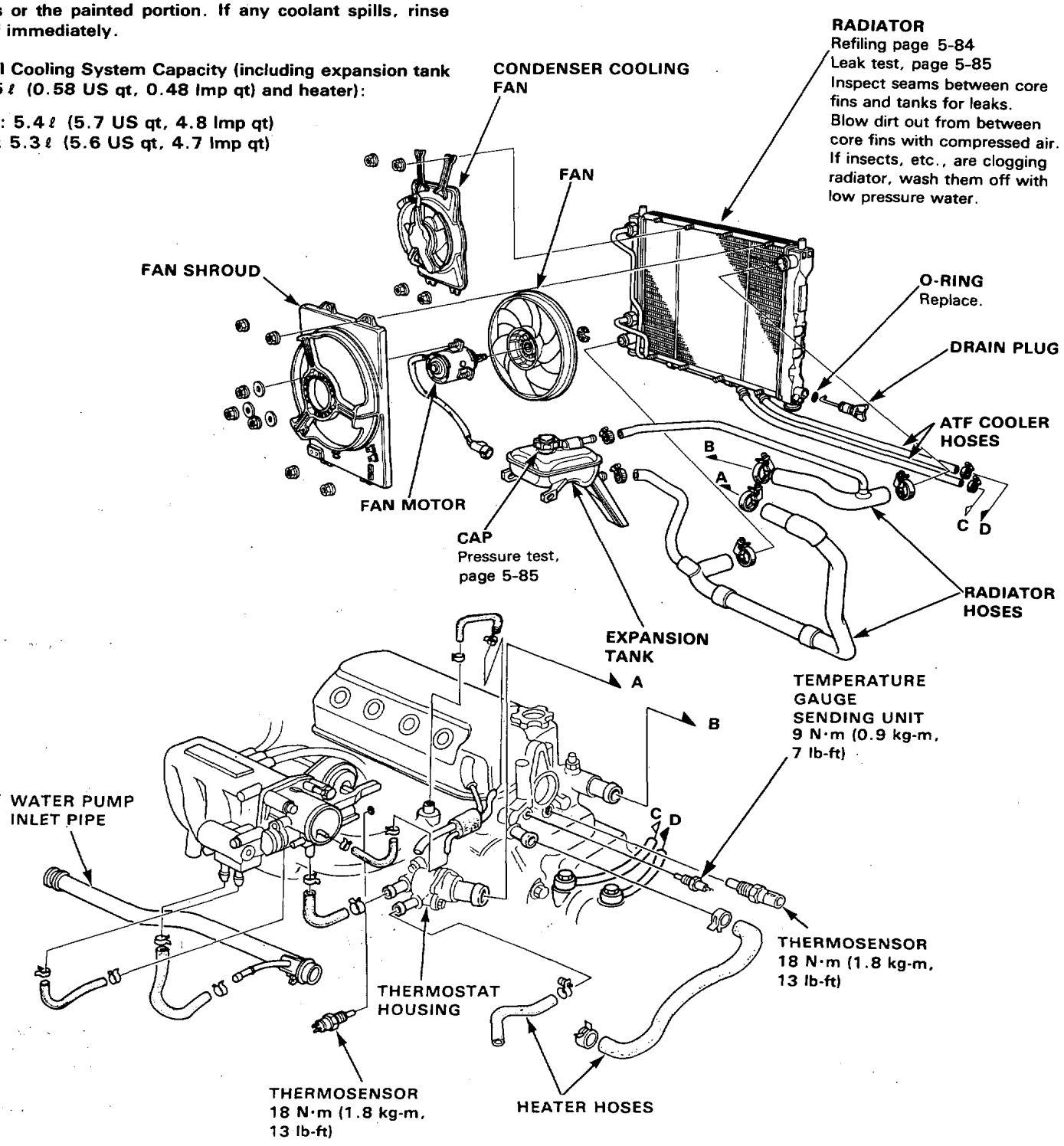
⚠WARNING System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.

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.

Total Cooling System Capacity (including expansion tank 0.55ℓ (0.58 US qt, 0.48 Imp qt) and heater):

M/T: 5.4ℓ (5.7 US qt, 4.8 Imp qt)
A/T: 5.3ℓ (5.6 US qt, 4.7 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 when reassembling.



Downloaded from www.Manualslib.com manuals search engine

Replacement

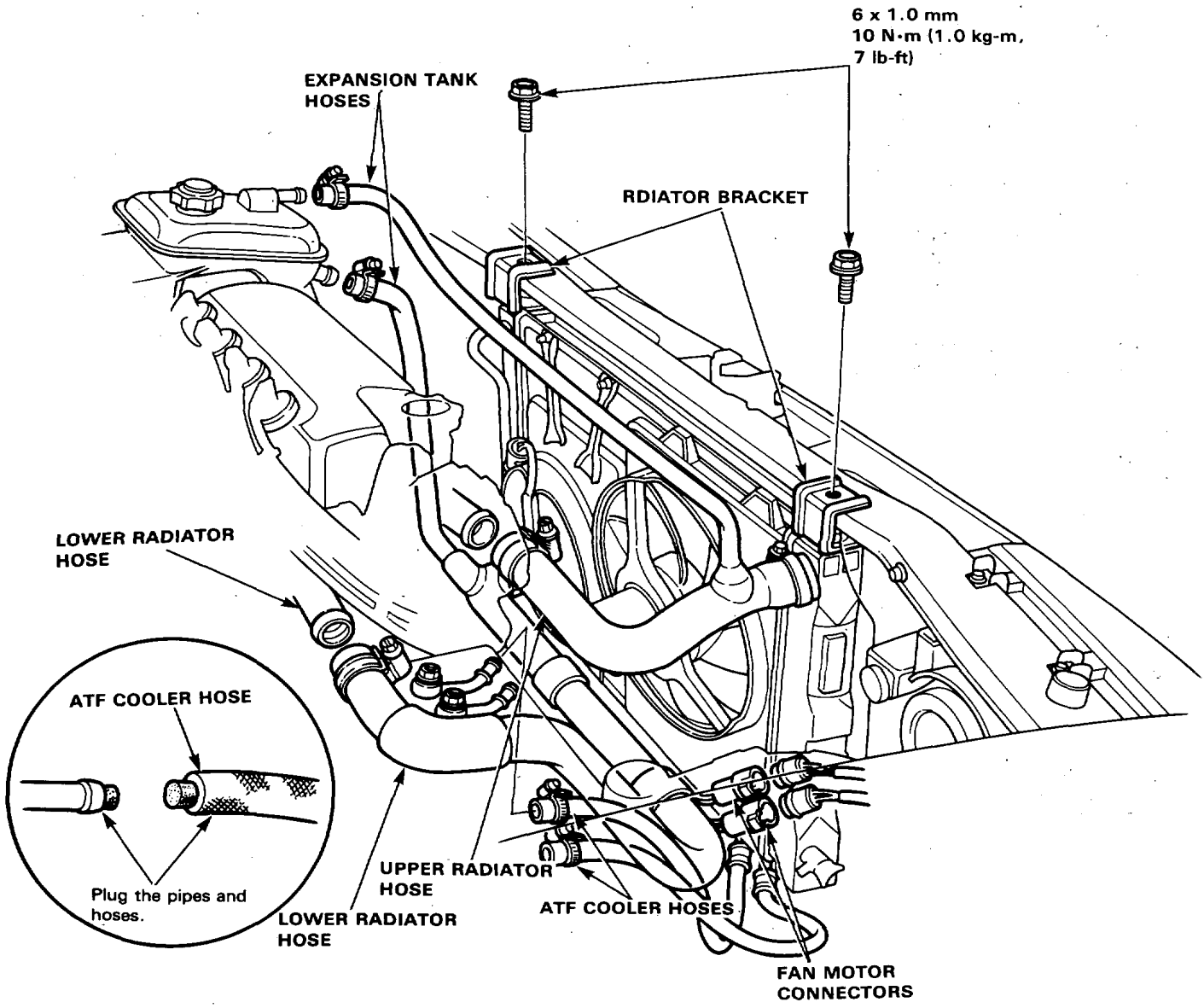
1. Drain the coolant from the radiator.
   - Remove the expansion tank cap to speed draining.

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

2. Remove the connectors from the cooling fan motor and thermoswitch.
3. Disconnect the upper and lower radiator hoses from cylinder head.
4. Disconnect the expansion tank hoses.
5. Disconnect the ATF cooler hose (A/T).

   NOTE: Plug the hoses and pipes.

6. Remove the radiator bracket and radiator.



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

Downloaded from www.Manualslib.com manuals search engine

Radiator

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

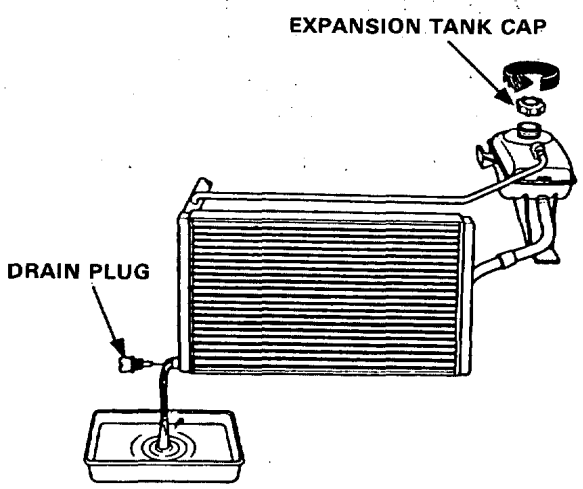
NOTE :
- Use only HONDA-RECOMMENDED anti freeze/coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 50% MINIMUM. Coolant concentrations less than 50% may not provide sufficient protection against corrosion or freezing.
- Coolant concentrations greater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

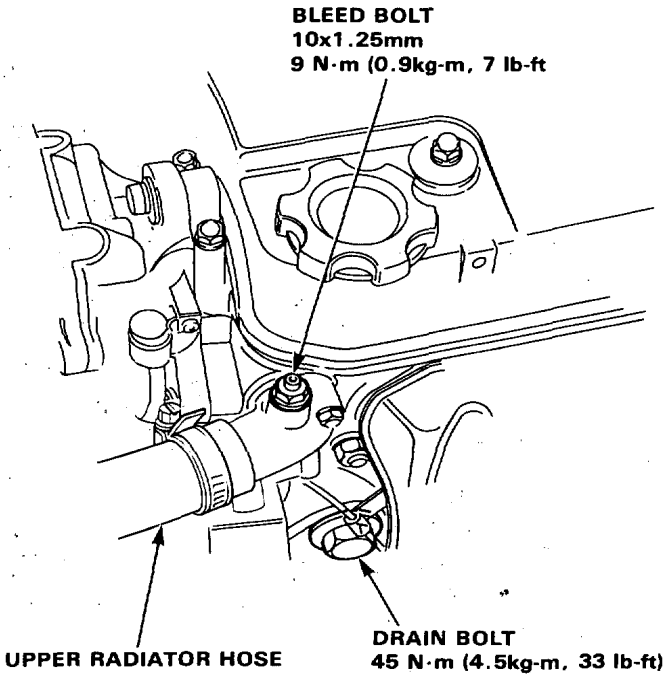
Radiator Coolant Refill Capacity :

(Including expansion tank 0.55 ℓ (0.58 US qt, 0.48 Imp qt))

1.4 ℓ 1.6 ℓ SOHC PGM-FI	M/T 4.4 ℓ (4.6 US qt, 3.9 Imp qt)
	A/T 4.3 ℓ (4.5 US qt, 3.8 Imp qt)
1.5 ℓ 1.6 ℓ 2-Carb. 1.6 ℓ DOHC	M/T 4.5 ℓ (4.7 US qt, 4.0 Imp qt)
	A/T 4.4 ℓ (4.6 US qt, 3.9 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.

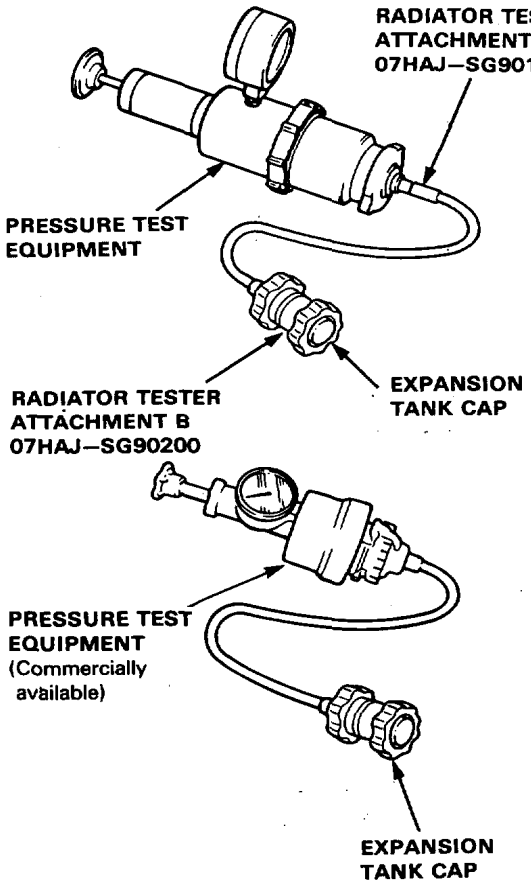


7. With the expansion tank cap off, start the engine and let it run until warmed up (fan goes on at least twice). If necessary, add more coolant mixture to bring the level back up to the bottom of the filler neck.
8. Put the expansion tank cap on, then run the engine again and check for leaks.

Downloaded from www.Manualslib.com manuals search engine

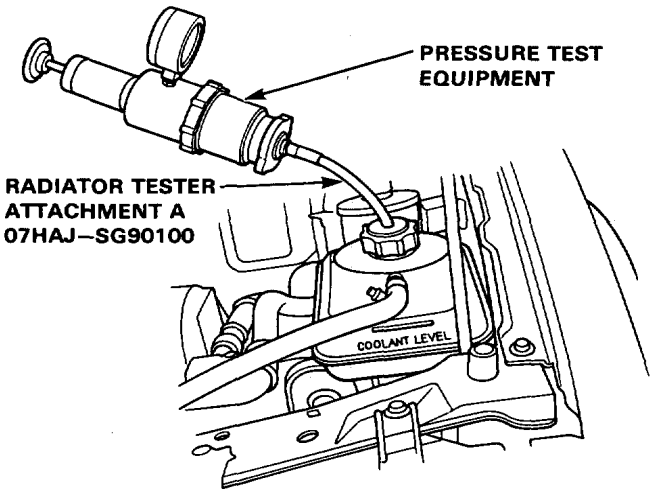
Expansion Tank Cap Testing

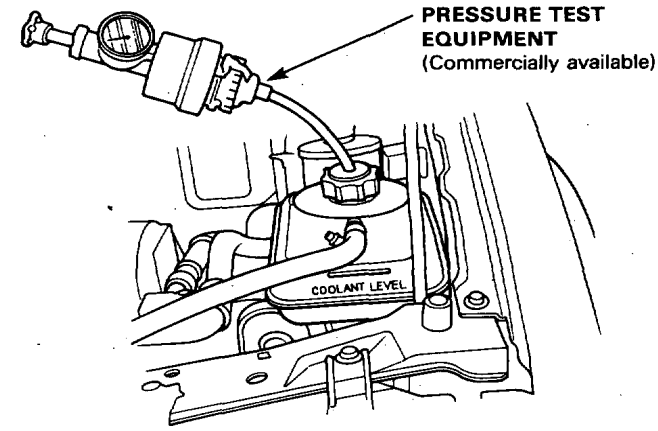
1. Remove the expansion tank cap, wet its seal with coolant, then install it on the pressure test equipment.
2. Apply pressure of 74-103 kPa (0.75—1.05 kg/cm², 11-15 psi).
3. Check for a drop in pressure.
4. If there is a drop in pressure, replace the cap.



Leak Testing

1. Wait until the engine is cool, then carefully remove the expansion tank cap and fill the expansion tank with coolant to "LEVEL line".
2. Fit the pressure test equipment to the expansion tank and apply a pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).





3. Check the system for leakage: there should not be a drop in pressure. If it does, locate the leak and repair it.

NOTE:

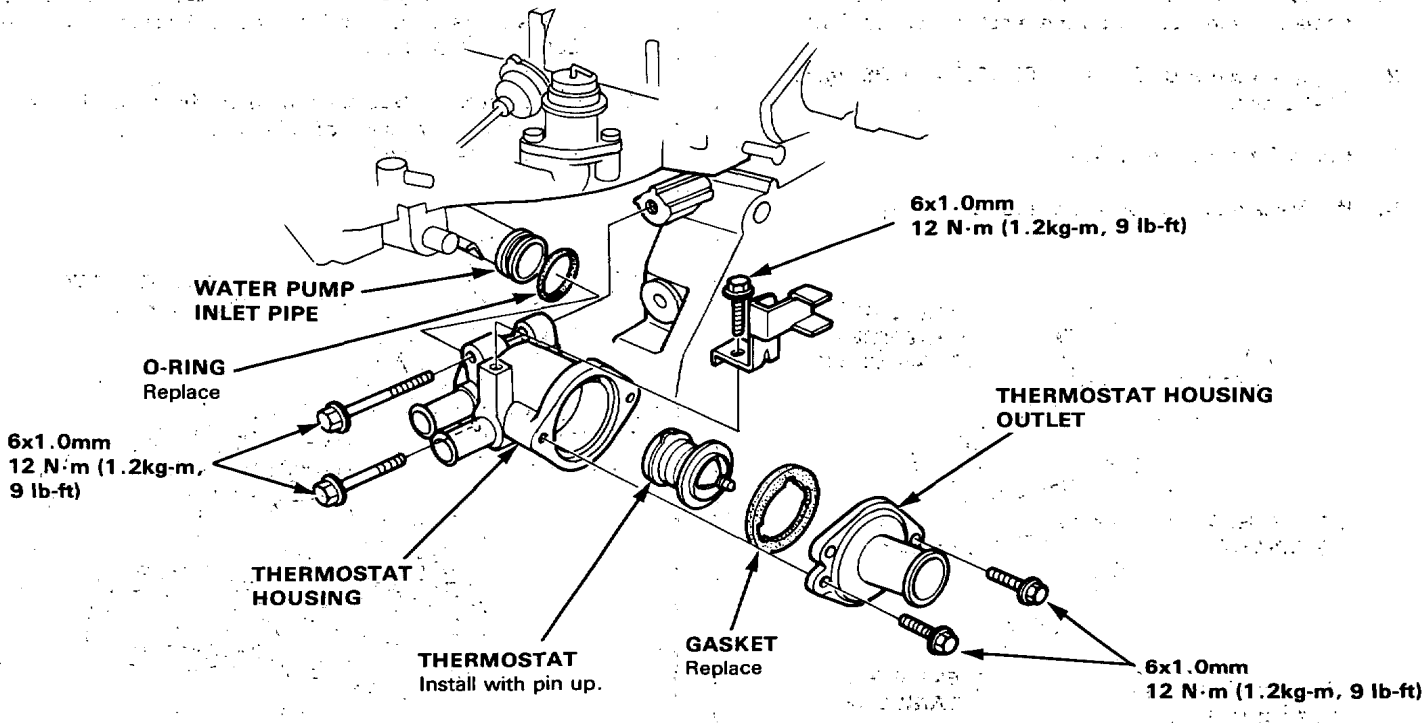
- Check for engine oil in coolant and/or coolant in engine oil.
- When the pressure drops in a short time, it means that either the tester is incorrectly mounted or solution is leaking.
- Inspect to ensure that the engine oil is not mixed with the radiator solution.
  - When the oil is mixed, it means that the engine seal is defective.
- Inspect to ensure that the radiator solution is not mixed with ATF.
  - When ATF is mixed, it means the ATF cooler is defective.

Downloaded from www.Manualslib.com manuals search engine

Thermostat

Replacement

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



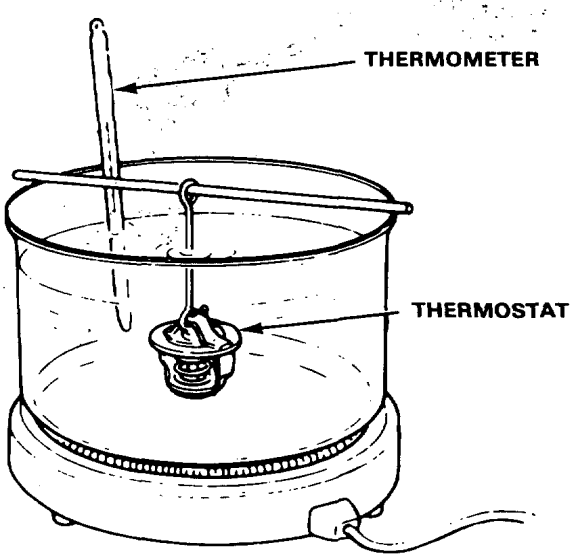
Testing

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 which it is fully open.

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

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



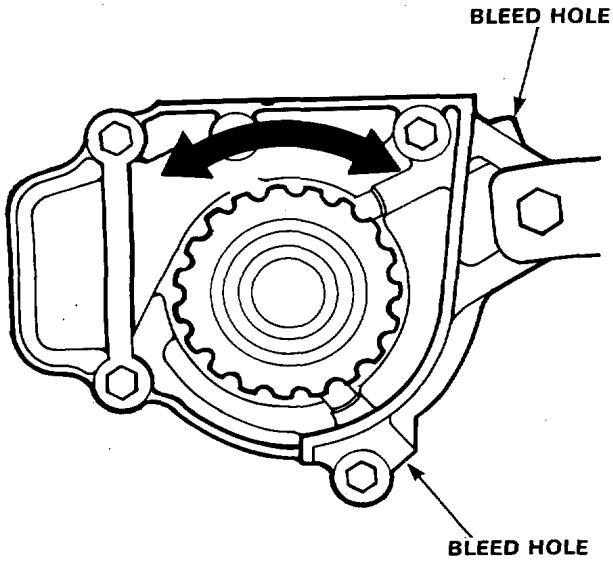
Downloaded from www.Manualslib.com manuals search engine

Water Pump

Inspection

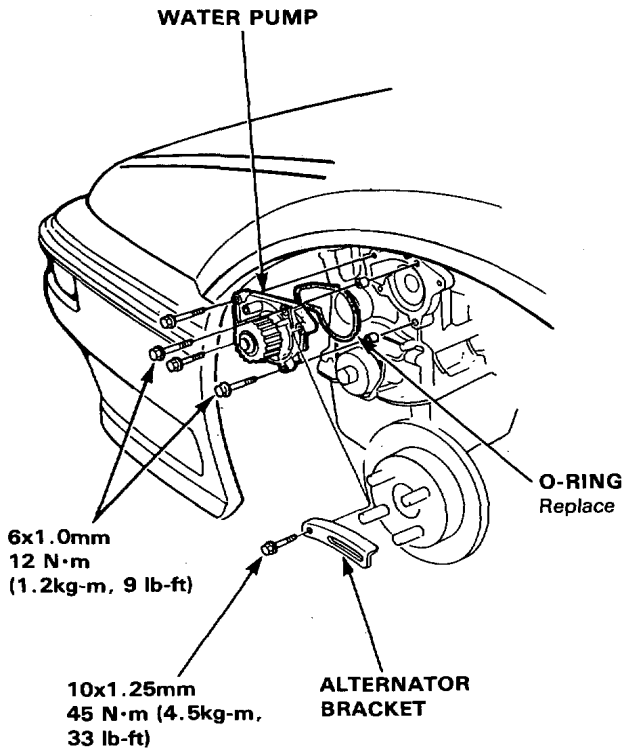
1. Remove the timing belt (SOHC, page 5-29), (DOHC, page 5-37).
2. Check the water pump pulley turns freely.
3. Check the signs of seal leakage.

   NOTE: Small amount of "weeping" from the bleed hole is normal.



Replacement

1. Remove the timing belt (SOHC, page 5-29), (DOHC, page 5-37).
2. Remove the water pump by removing five bolts.



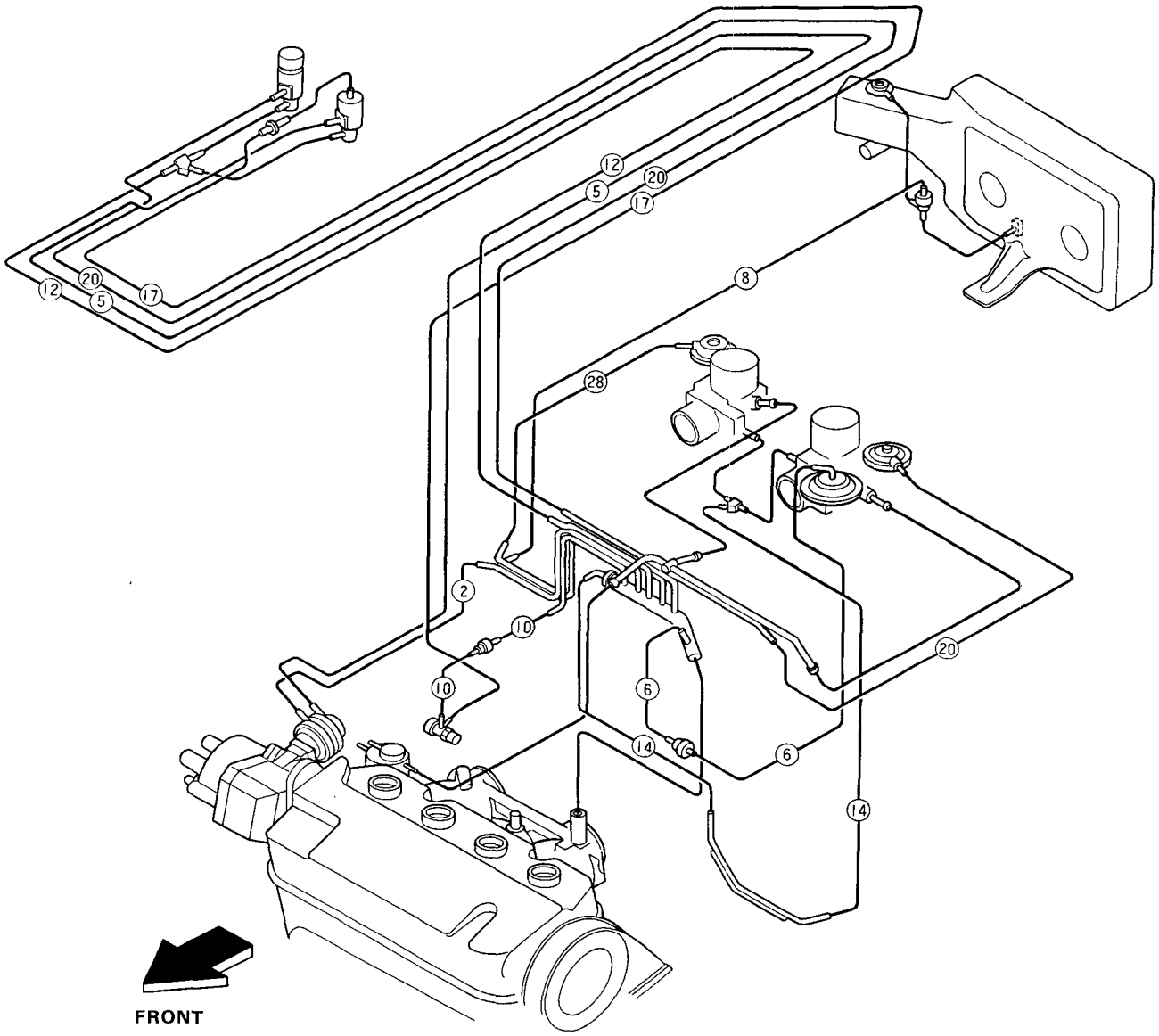
3. Install the water pump in the reverse order of removal.

Downloaded from www.Manualslib.com manuals search engine

System Description

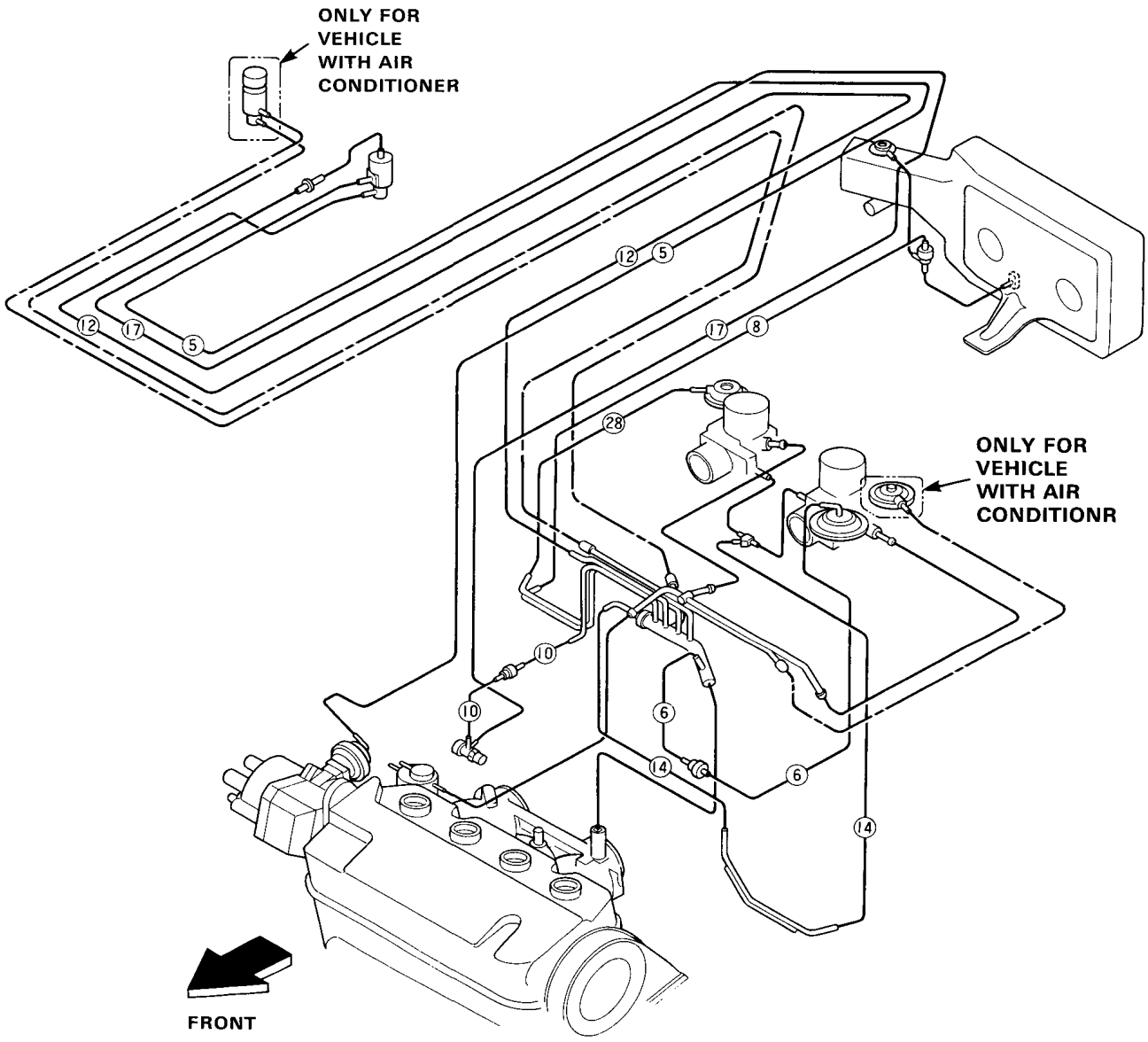
Vacuum Connections

M/T:



Downloaded from www.Manualslib.com manuals search engine

A/T:

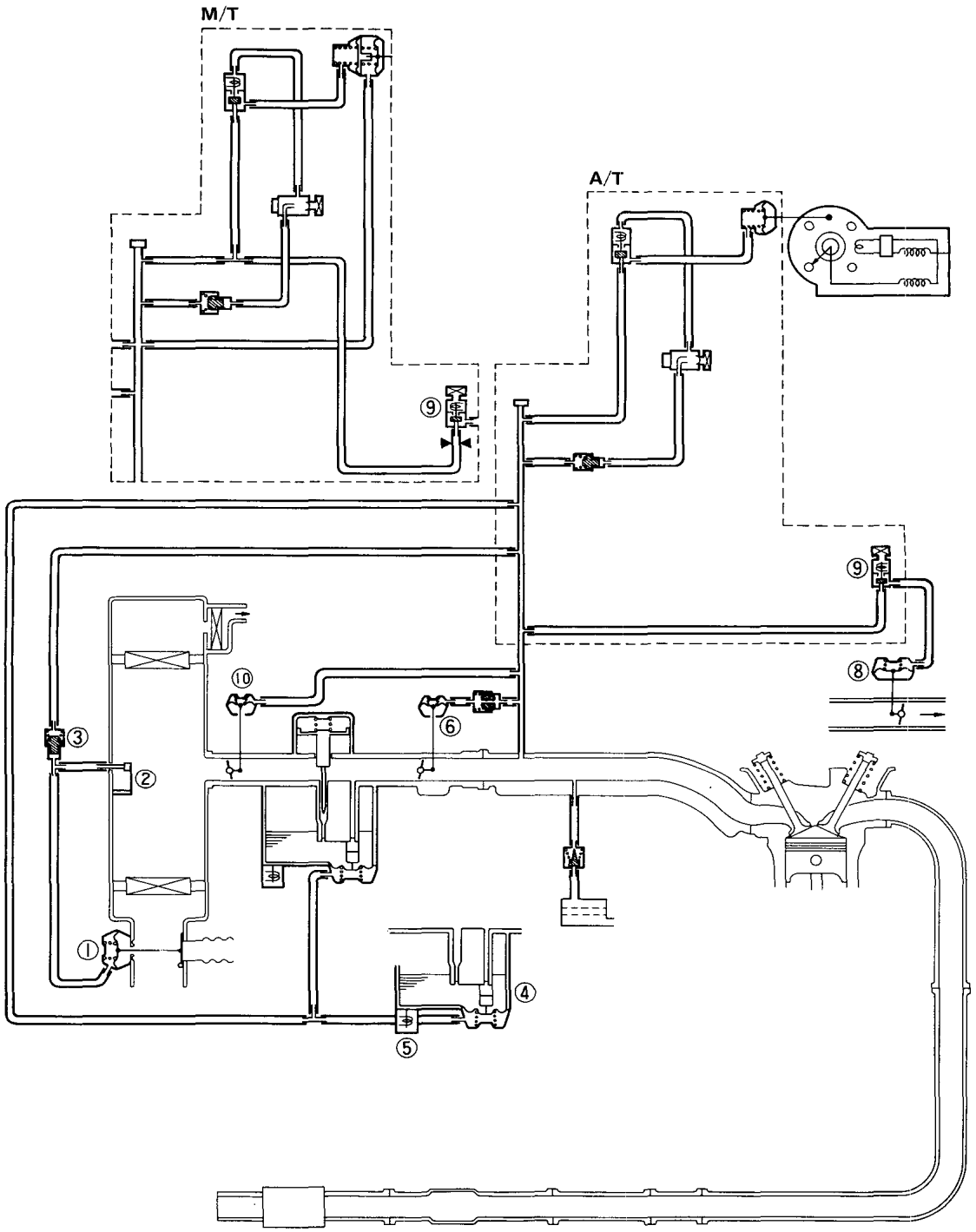


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

System Description

Vacuum Connections (cont'd)

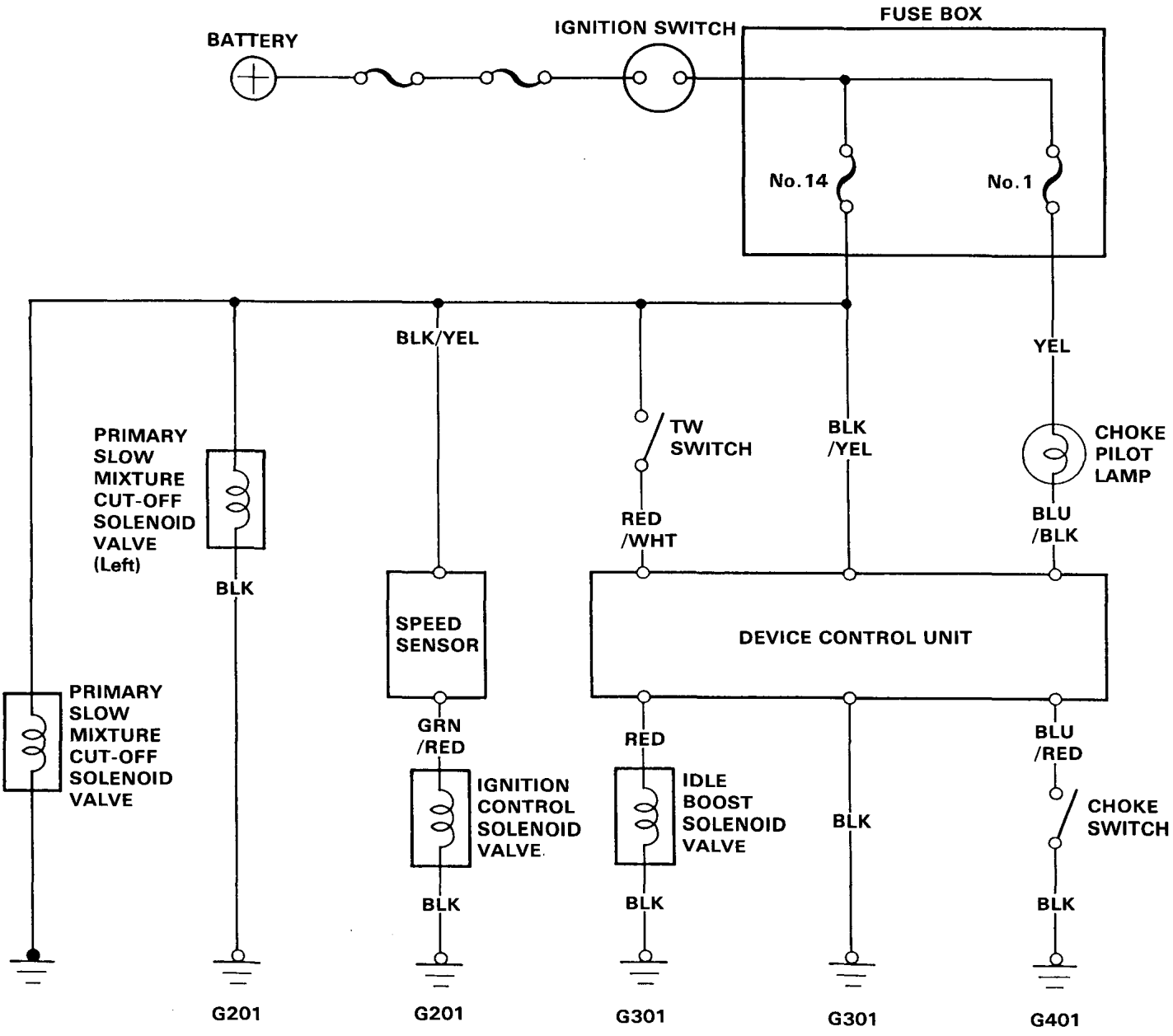


① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE
④ POWER VALVE
⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE
⑥ THROTTLE CONTROLLER
⑦ CHECK VALVE
⑧ IDLE BOOST THROTTLE CONTROLLER
⑨ IDLE BOOST SOLENOID VALVE (M/T)
A/C IDLE BOOST SOLENOID VALVE
⑩ CHOKE OPENER

Downloaded from www.Manualslib.com manuals search engine

Electrical Connections

M/T:



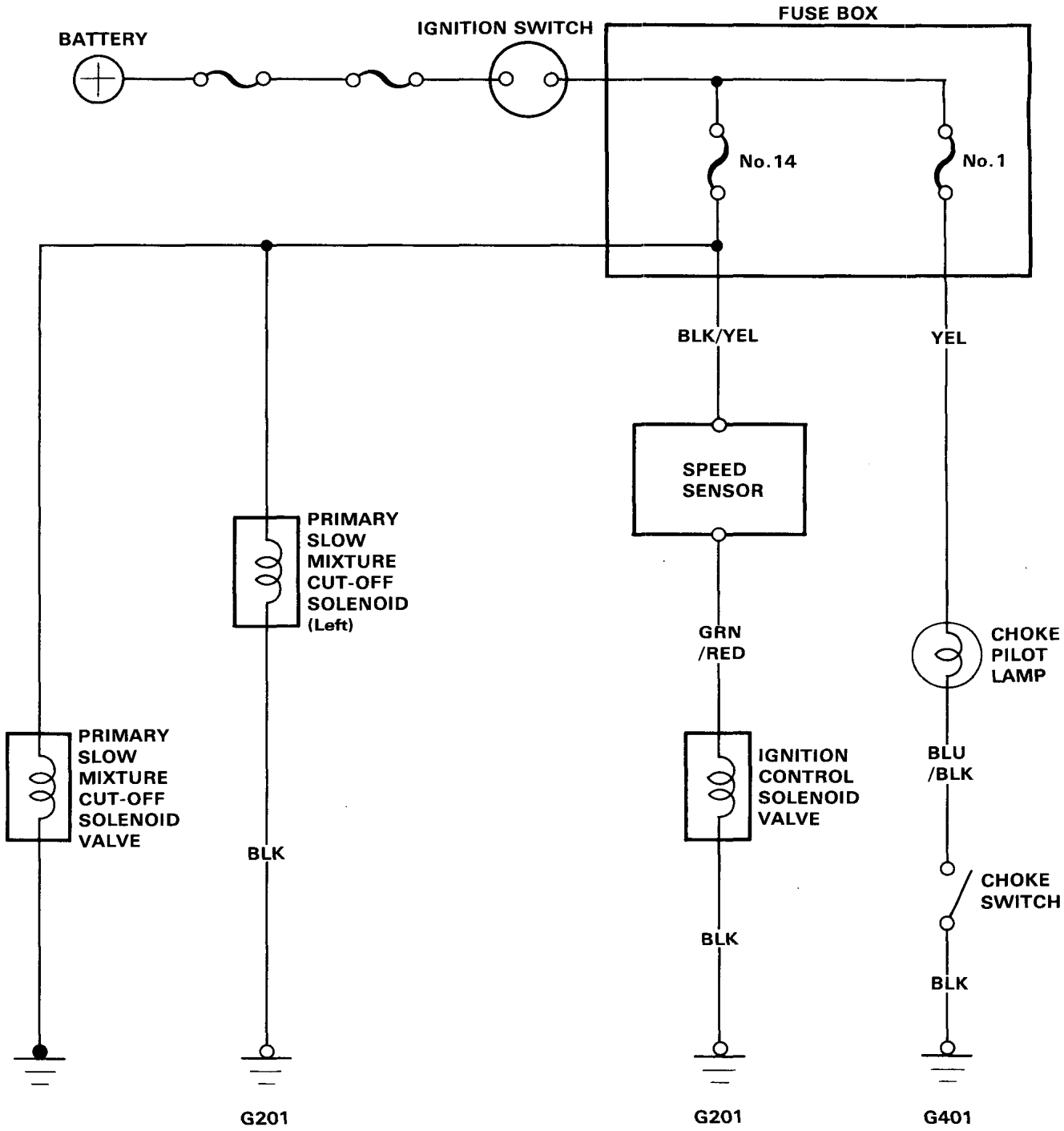
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

System Description

Electrical Connections (cont'd)

A/T:

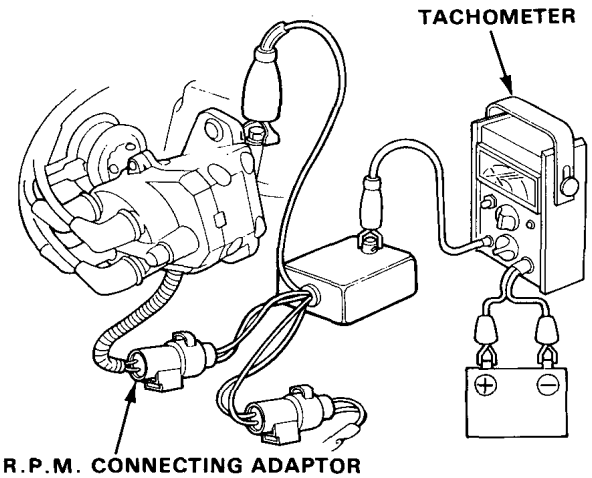


Downloaded from www.Manualslib.com manuals search engine

Idle Control System

[M/T]
NOTE: Snap the accelerator pedal several times and check the idle speed with the accelerator pedal fully returned.

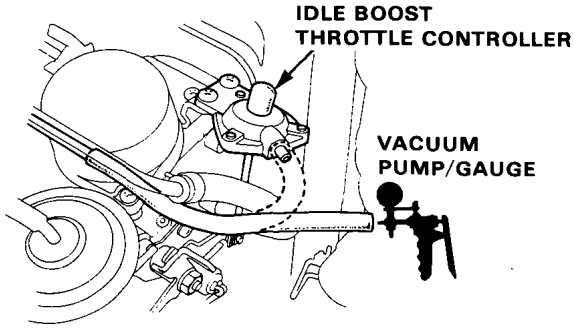
1. Connect a tachometer.



2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
   And warm up the engine further for more than 4 minutes with the engine speed 2,000 min^{-1} (rpm).

3. Disconnect the #20 vacuum hose from the idle boost throttle controller and check the vacuum.

   There should be no vacuum.



   - *If there is vacuum, go to troubleshooting (page 6-10).*

4. Place choke control knob in 1/8 position, then check the vacuum.

   There should be no vacuum.

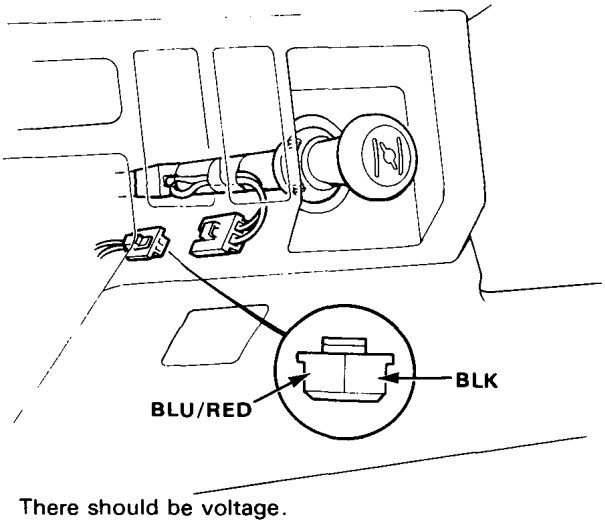
   - If there is vacuum, go to troubleshooting (page 6-10).

5. Check the choke lamp.

   The choke lamp should come on.

   - If it does not come on, go to step 6 through 8.
   — If OK, replace the device control unit and retest.

6. Disconnect the 2P connector on the choke switch, and measure voltage between BLU/RED (+) terminal and body ground.



   There should be voltage.

   - If there is voltage, inspect open in BLK wire between the choke switch and G-401. If OK, replace the choke switch and retest.
   - If there is no voltage, inspect open in BLU/RED wire between the choke switch and the device control unit.

7. Check the choke lamp bulb.

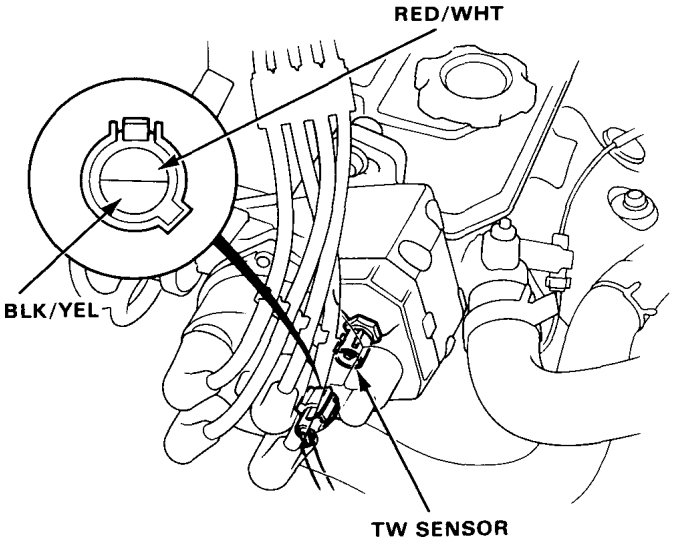
   - If not, inspect open in BLU/BLK wire between the combination meter and device control unit, and inspect open in YEL wire between the combination meter and ignition switch as well as No.1 fuse. If OK, replace the choke lamp bulb and retest.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Idle Control System (cont'd)

8. Disconnect the 2P connector on the TW switch, and measure voltage between BLK/YEL (+) terminal and body ground.



There should be voltage.

- If there is voltage, inspect open in RED/WHT wire between the TW switch and the control unit. If OK, replace the TW switch and retest.
- If there is no voltage, inspect open in BLK/YEL wire between the TW swich and the ignition switch as well as No. 14 fuse.

9. Disconnect the 2P connector on the TW swich and check the choke lamp.

   The choke lamp should not come on.

   - If it comes on, inspect short in BLU/BLK wire between the combination meter and the device control unit.

10. Check the vacuum.

    There should be vacuum.

    - If there is no vacuum, go to troubleshooting (page 6-10).

11. Warm up the engine further for more than 2 minutes with the engine speed 2,000 min^{-1} (rpm).

12. Connect the TW swich and place choke control knob in 1/8 position, then check the choke lamp and vacuum.

    The choke lamp should not come on and there should be vacuum.

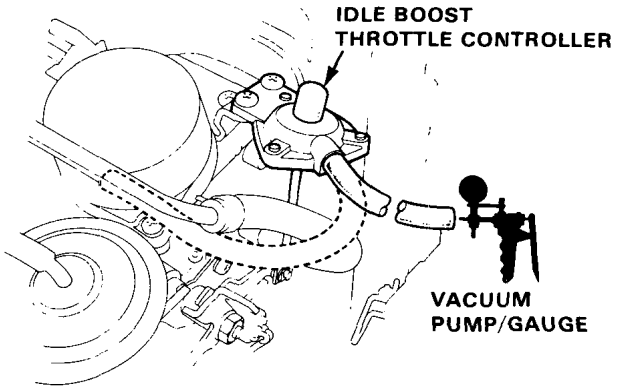
    - If not, replace the device control unit and retest.

13. Recheck the choke lamp and the vacuum.

    The choke lamp should come on and there should be no vacuum within 4 minutes.

    - If not, replace the device control unit and retest.

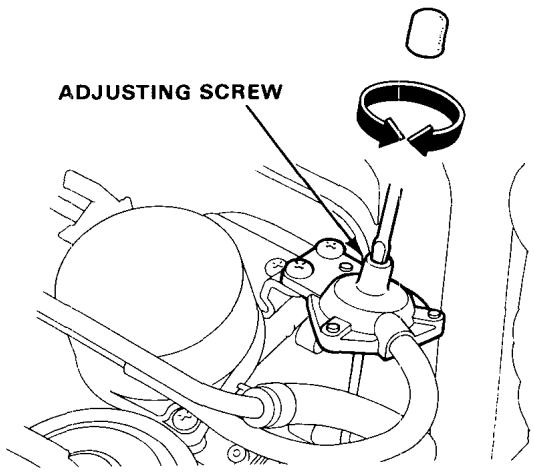
14. Place choke control knob in full open position. Connect a vacuum pump to the idle boost throttle controller.



15. Apply 400 mm Hg (16 in.Hg) vacuum to the idle boost throttle controller, then check the idle speed.

    Idle speed should be: 1,500 ± 100 min^{-1} (rpm)

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



Downloaded from www.Manualslib.com manuals search engine

[A/T]

NOTE: Snap the accelerator pedal several times and check the idle speed with the accelerator pedal fully returned.

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

2. Check the idle speed with headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

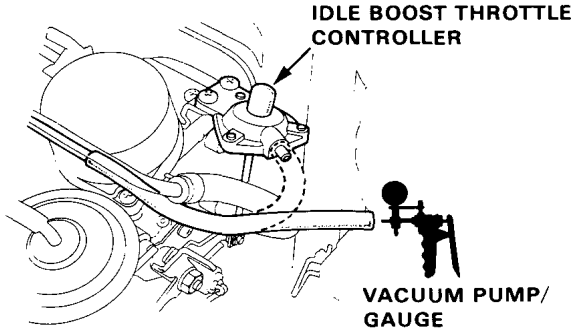
   Idle speed should be:

   700±50 min^{-1} (rpm) (except [N] or [P])

   - If OK, go to step 4.
   - If not, go to step 3.

3. Disconnect the vacuum hose from the idle boost throttle controller and check the vacuum.

   There should be no vacuum.



   - If there is no vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.
   - If there is vacuum, go to troubleshooting (page 6-12).

4. Check the idle speed with the A/C on.

   Idle speed should be: 750±50 min^{-1} (rpm)

   - If not, disconnect the vacuum hose from the idle boost throttle controller and check the vacuum.

     There should be vacuum.

     — If there is vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.

     — If there is no vacuum, go to troubleshooting (page 6-12).

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Idle Control System (cont'd)

[M/T]

Troubleshooting Flow Chart Idle Boost Solenoid Valve

Inspection of Idle Boost Solenoid Valve.

Disconnect the #20 vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum gauge.

Disconnect the upper vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum pump.

Start the engine and warm up to normal operating temperature (the cooling fan comes on).
And warm up the engine further for more than 4 minutes with the engine speed 2,000 min^{-1} (rpm).

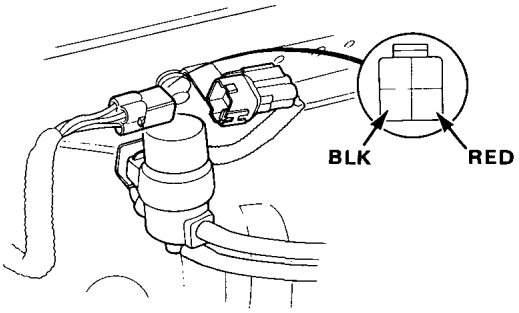
Apply vacuum.

Does solenoid valve hold vacuum?

NO

Disconnect the 4P connector near the solenoid valve.

Measure voltage between RED (+) terminal and BLK (−) terminal on the wire harness.



Is there voltage?

YES

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

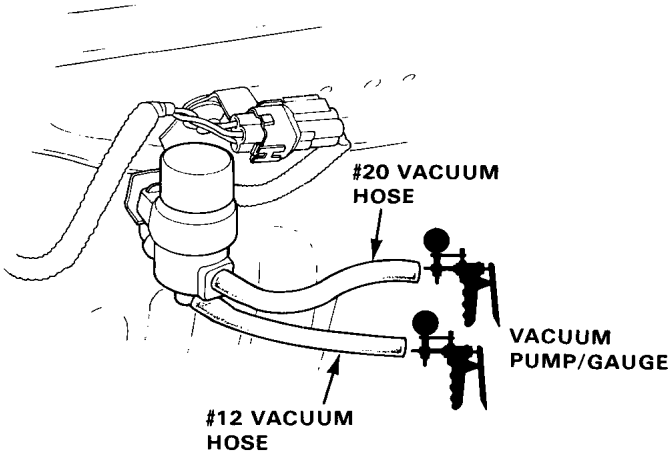
NO

Replace the solenoid valve.

YES

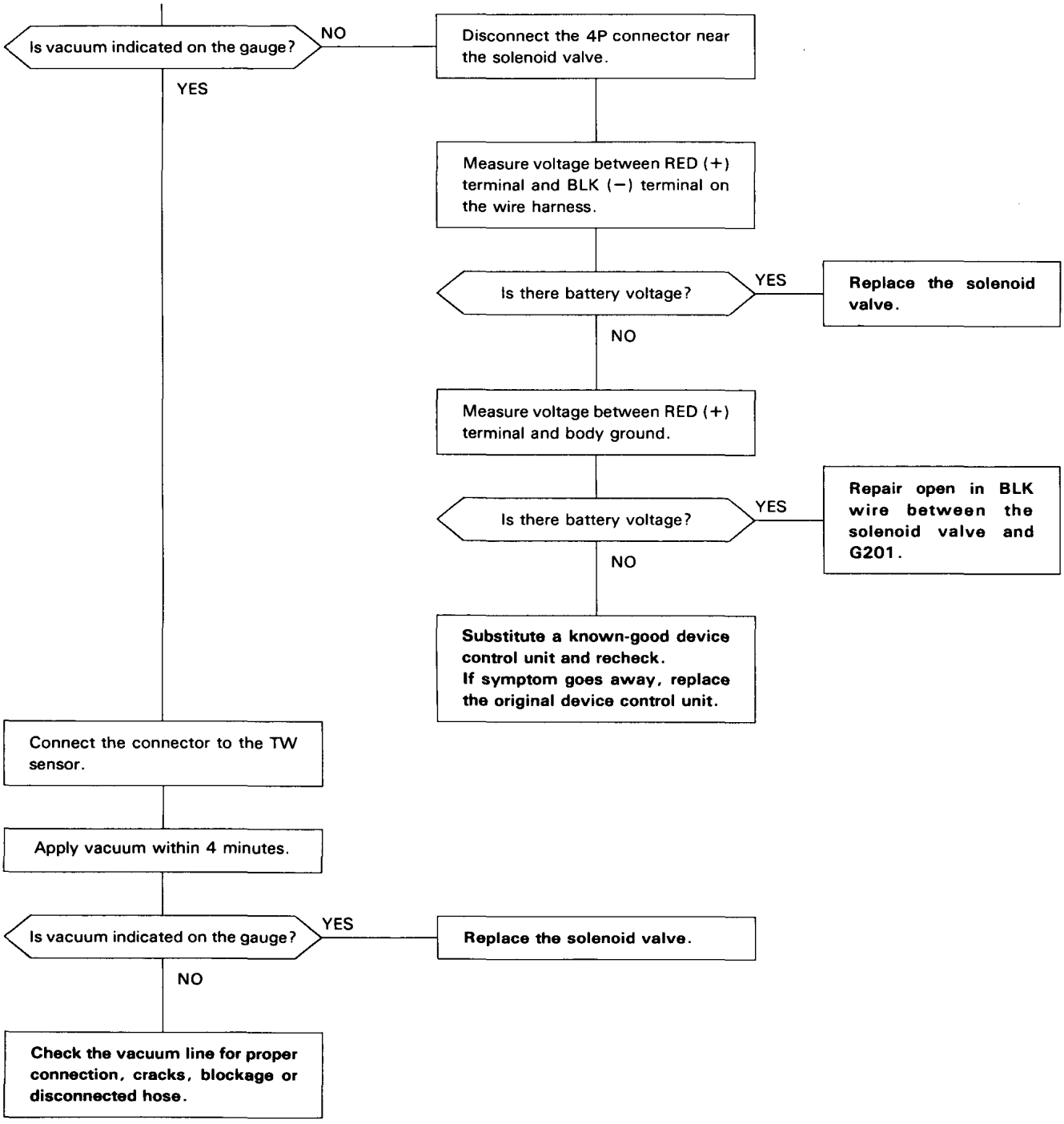
Disconnect the connector from the TW sensor and place choke control knob in 1/8 position, then apply vacuum.

(To page 6-11)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-10)



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Idle Control System (cont'd)

[A/T]

Troubleshooting Flow Chart A/C Idle Boost Solenoid Valve

Inspection of A/C Idle Boost Solenoid Valve.

Disconnect the lower vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum pump.

Disconnect the upper vacuum hose of the solenoid valve from the idle boost throttle controller and connect a vacuum gauge.

Start the engine.

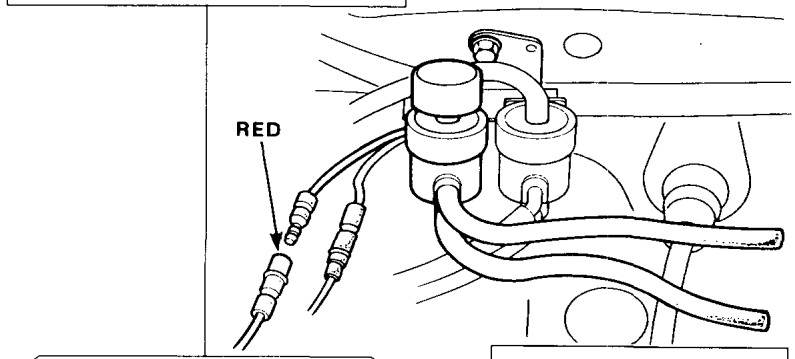
Apply vacuum.

Does solenoid valve hold vacuum?

NO

Disconnect the connector near the solenoid valve.

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



Is there voltage?

YES

Check the compressor control unit.

NO

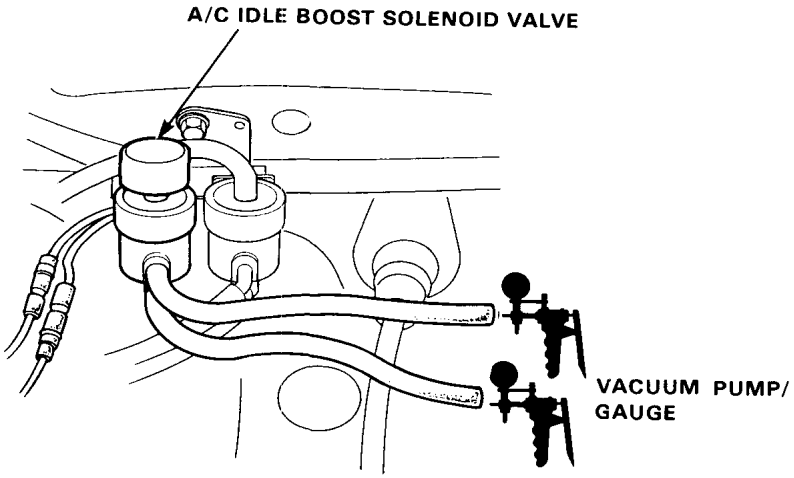
Replace the solenoid valve.

YES

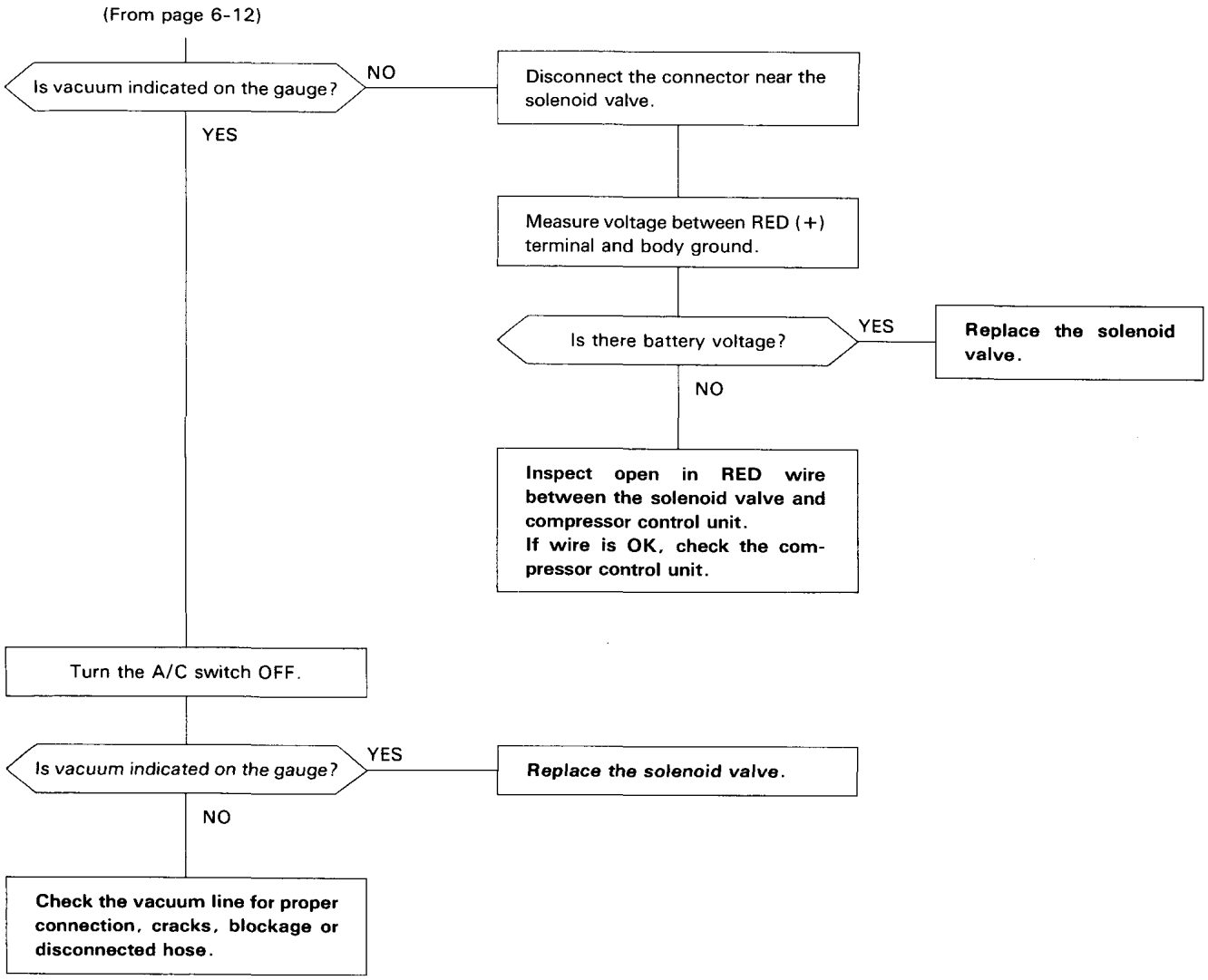
Turn the A/C switch ON.

Apply vacuum.

(To page 6-13)



Downloaded from www.Manualslib.com manuals search engine

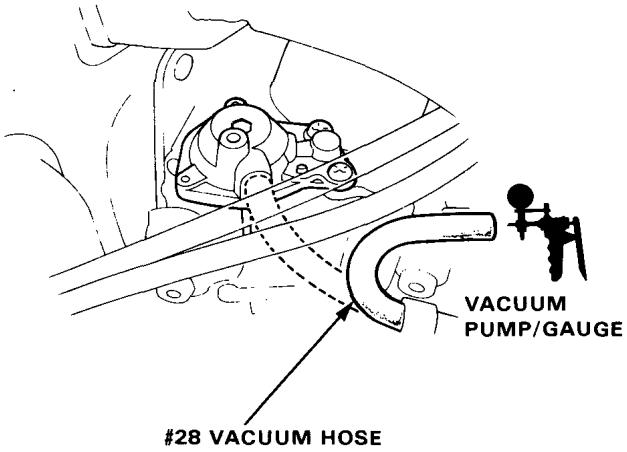


Downloaded from www.Manualslib.com manuals search engine

Choke Opener

Testing

1. Disconnect the #28 vacuum hose from the choke opener and connect a vacuum pump.



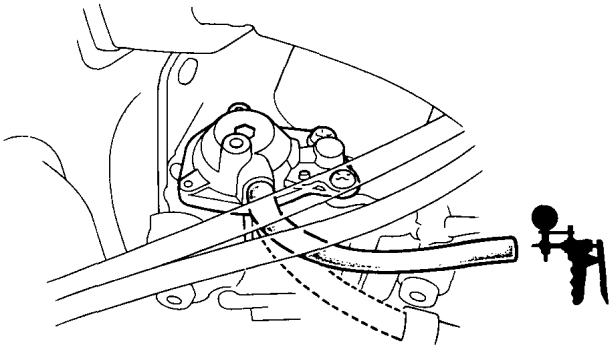
2. Start the engine and check the vacuum.

   There should be vacuum.

   - If there is no vacuum, check the #28 vacuum hose for proper connection, cracks, brockage or disconnected hose.

Choke Opener Diaphragm Testing

1. Disconnect the #28 vacuum hose from the vacuum hose manifold and connect a vacuum pump.



2. Apply vacuum.

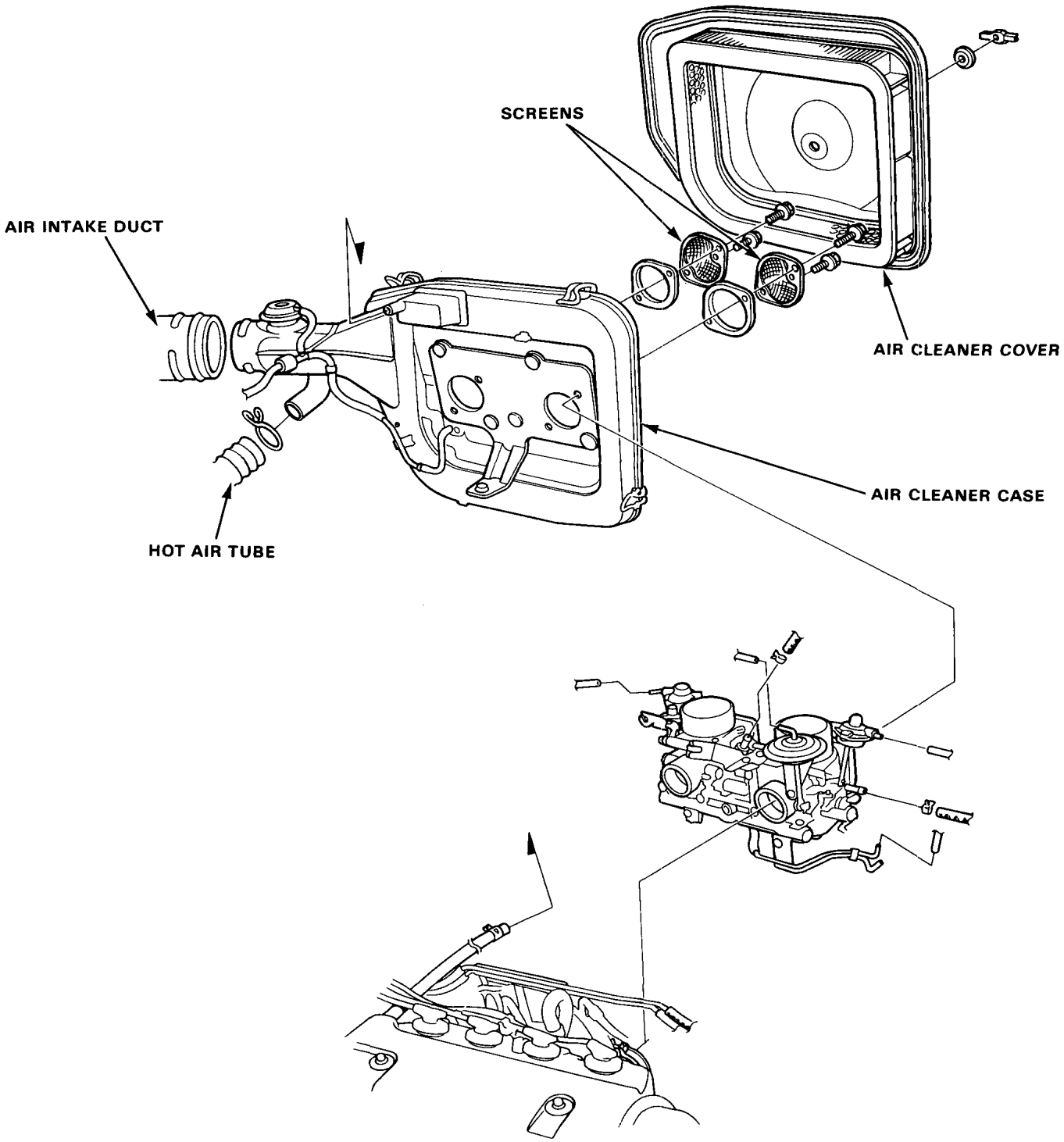
   Vacuum should stabilize at 100 to 200 mm Hg (4 to 8 in. Hg) and it should pull the opener rod.

   - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-16).

Downloaded from www.Manualslib.com manuals search engine

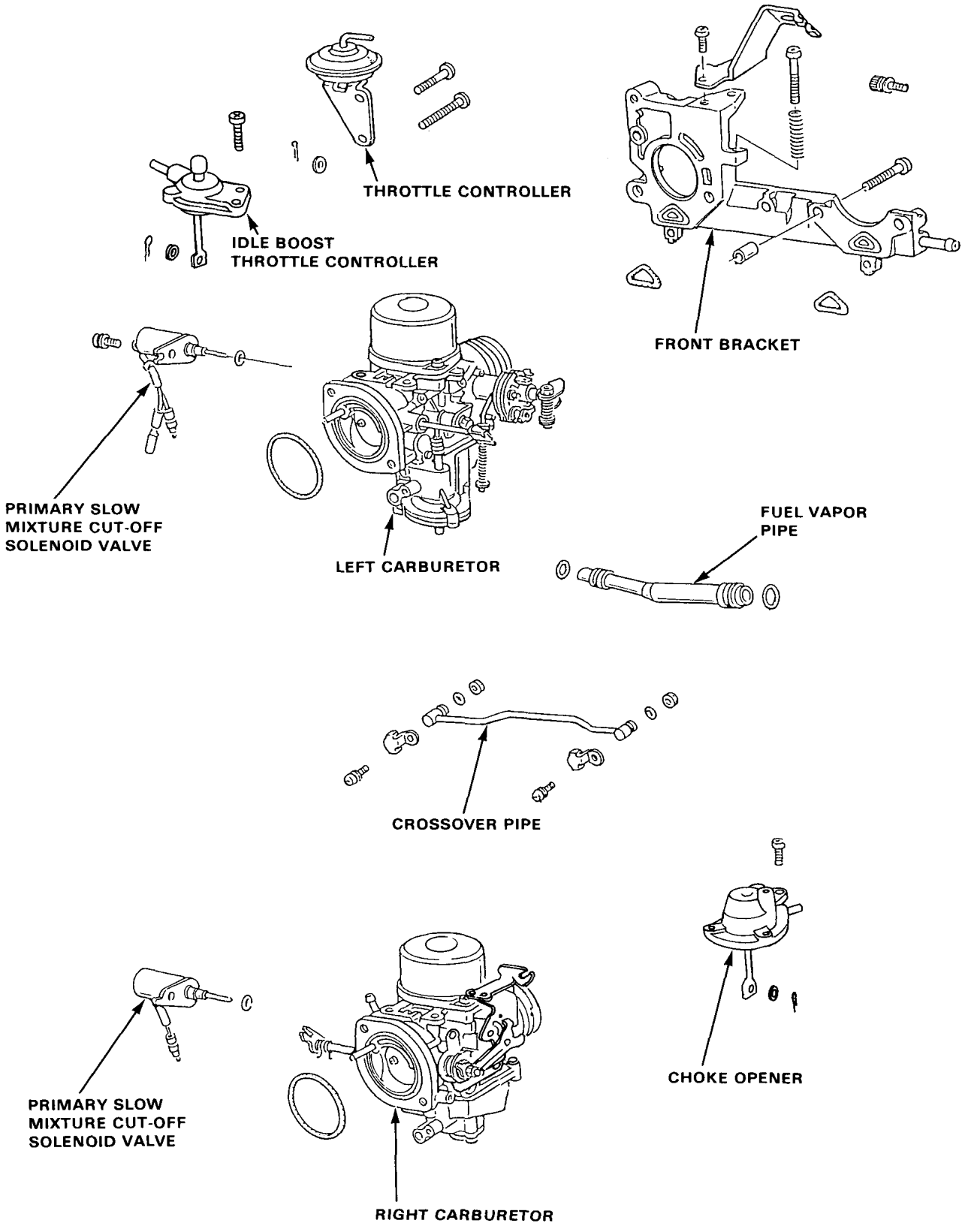
Carburetor

Removal



Downloaded from www.Manualslib.com manuals search engine

Replacement

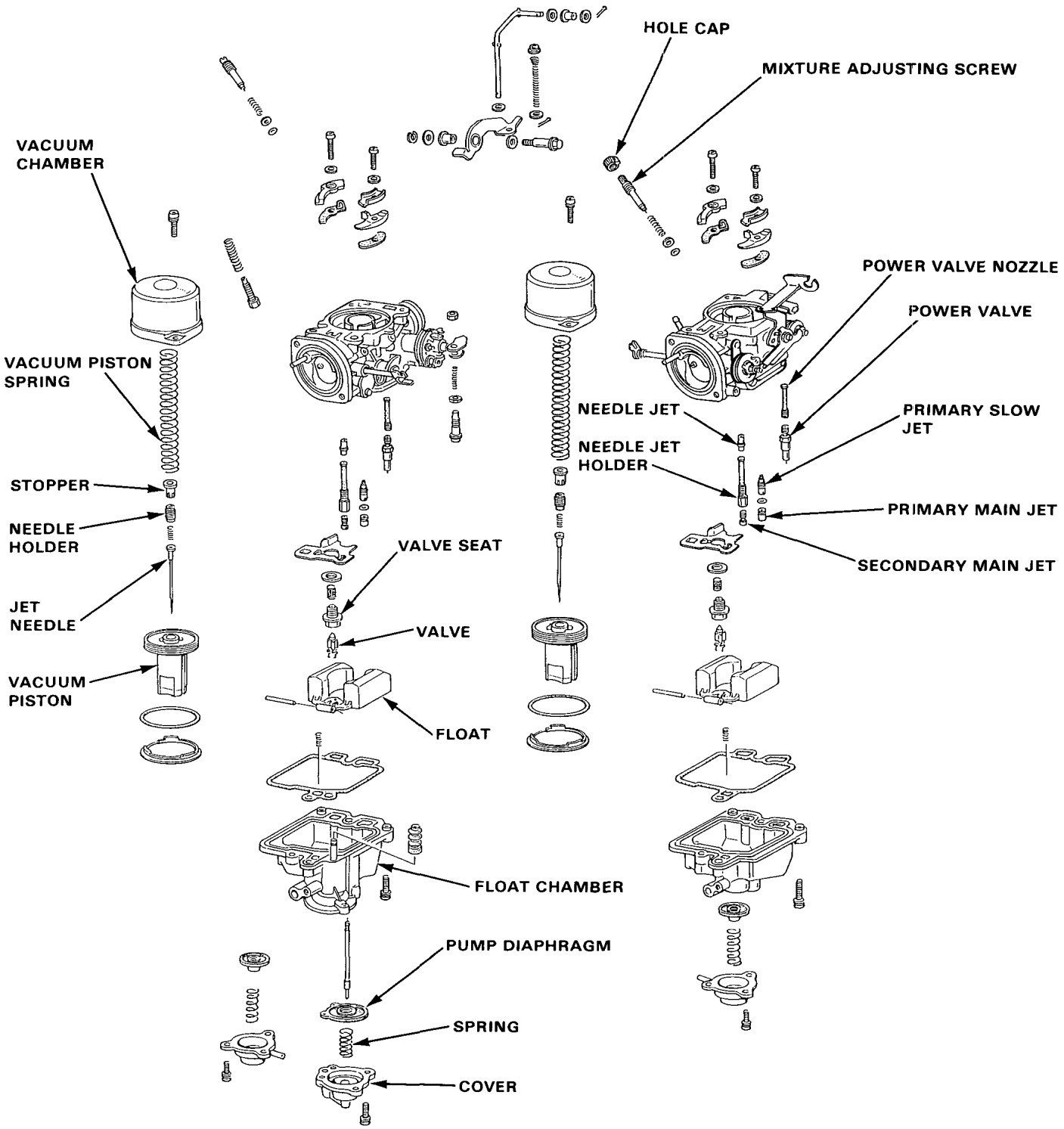


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Carburetor

Replacement (cont'd)

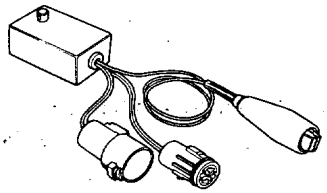


Downloaded from www.Manualslib.com manuals search engine

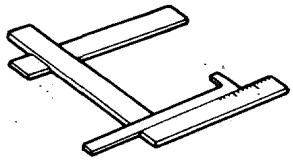
Special Tools

Special Tools

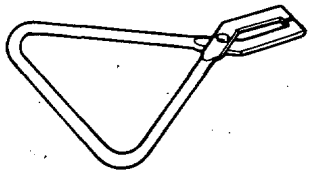
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07401—0010000	Float Level Gauge	1	
③	07614—0050100	Fuel Line Clamp	1	



①



②

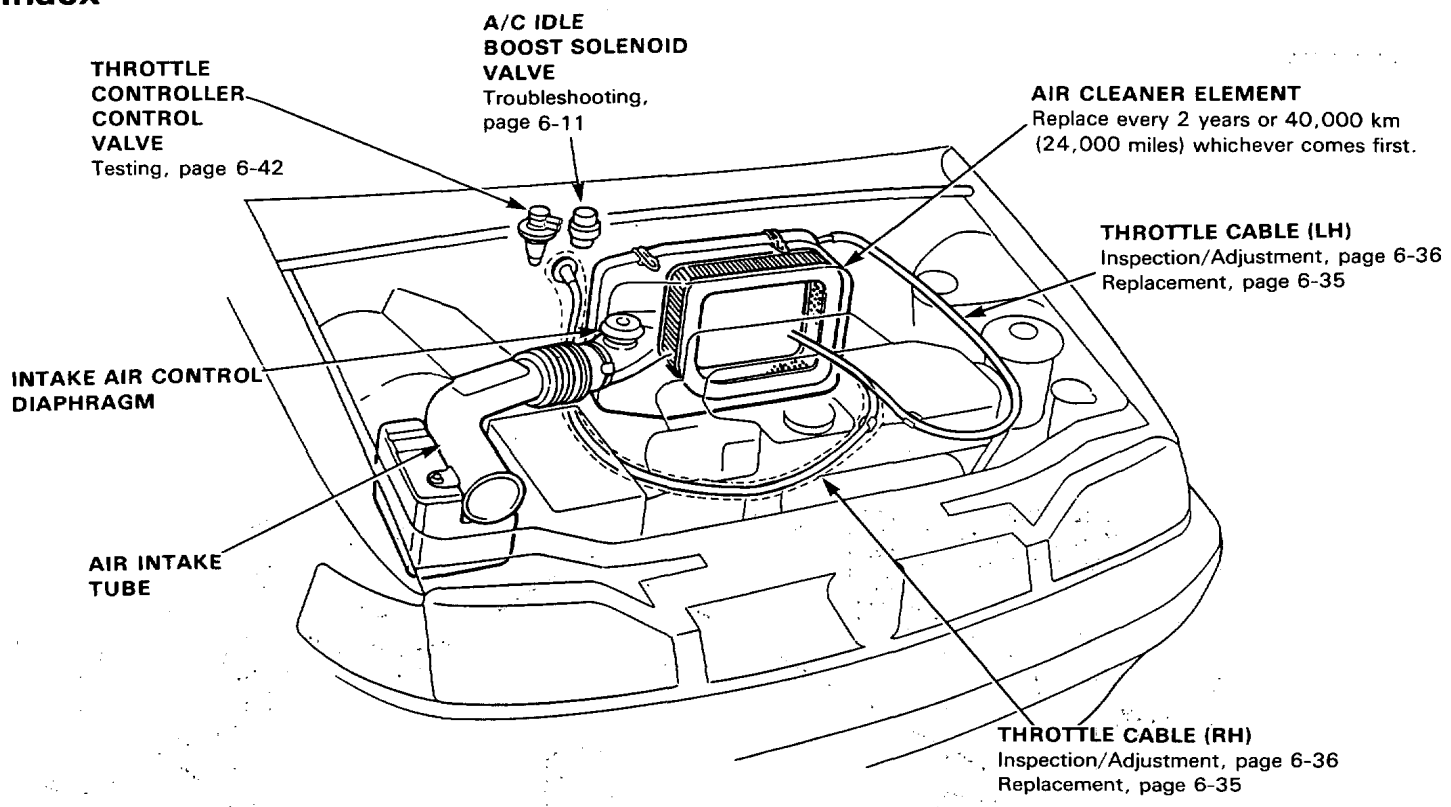


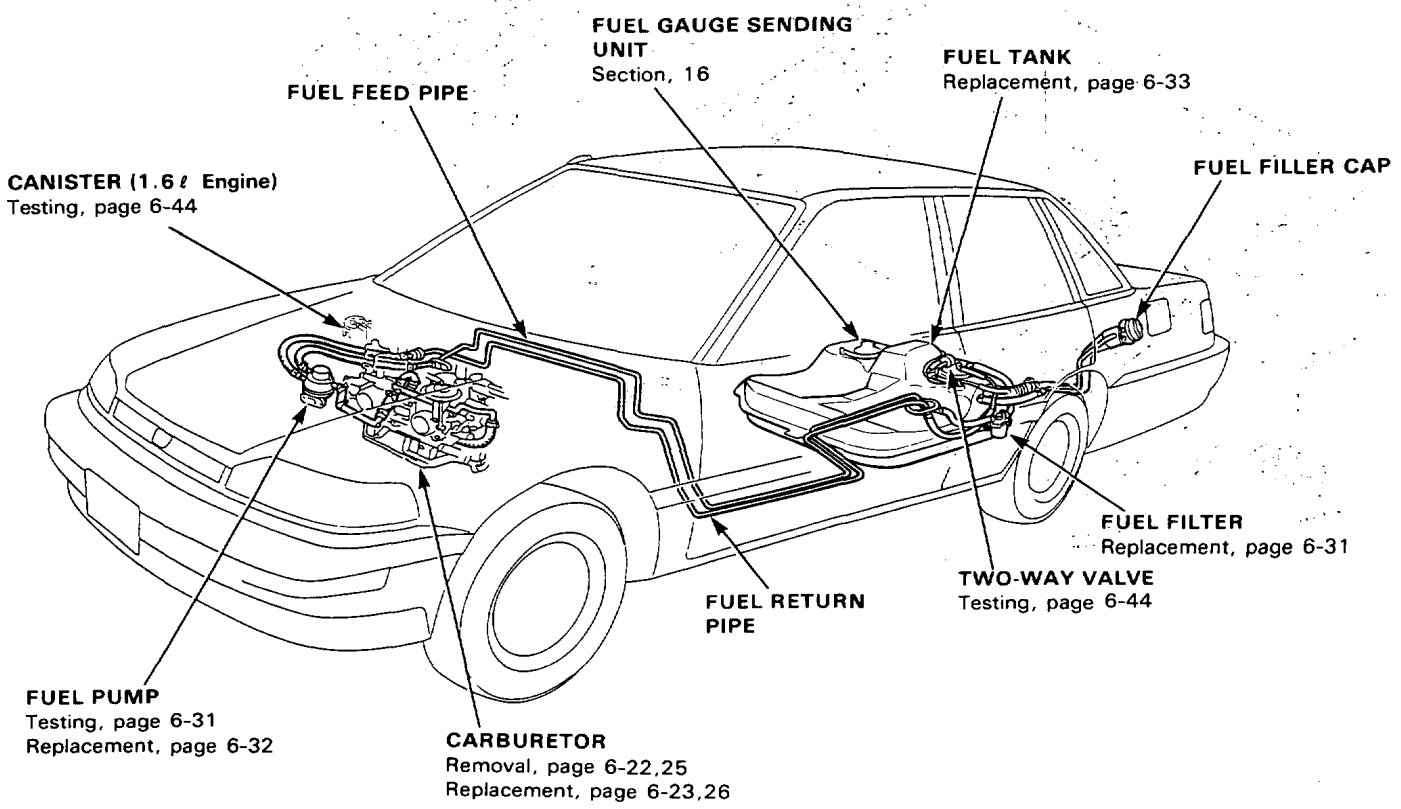
③

Downloaded from www.Manualslib.com manuals search engine

Component Locations

Index



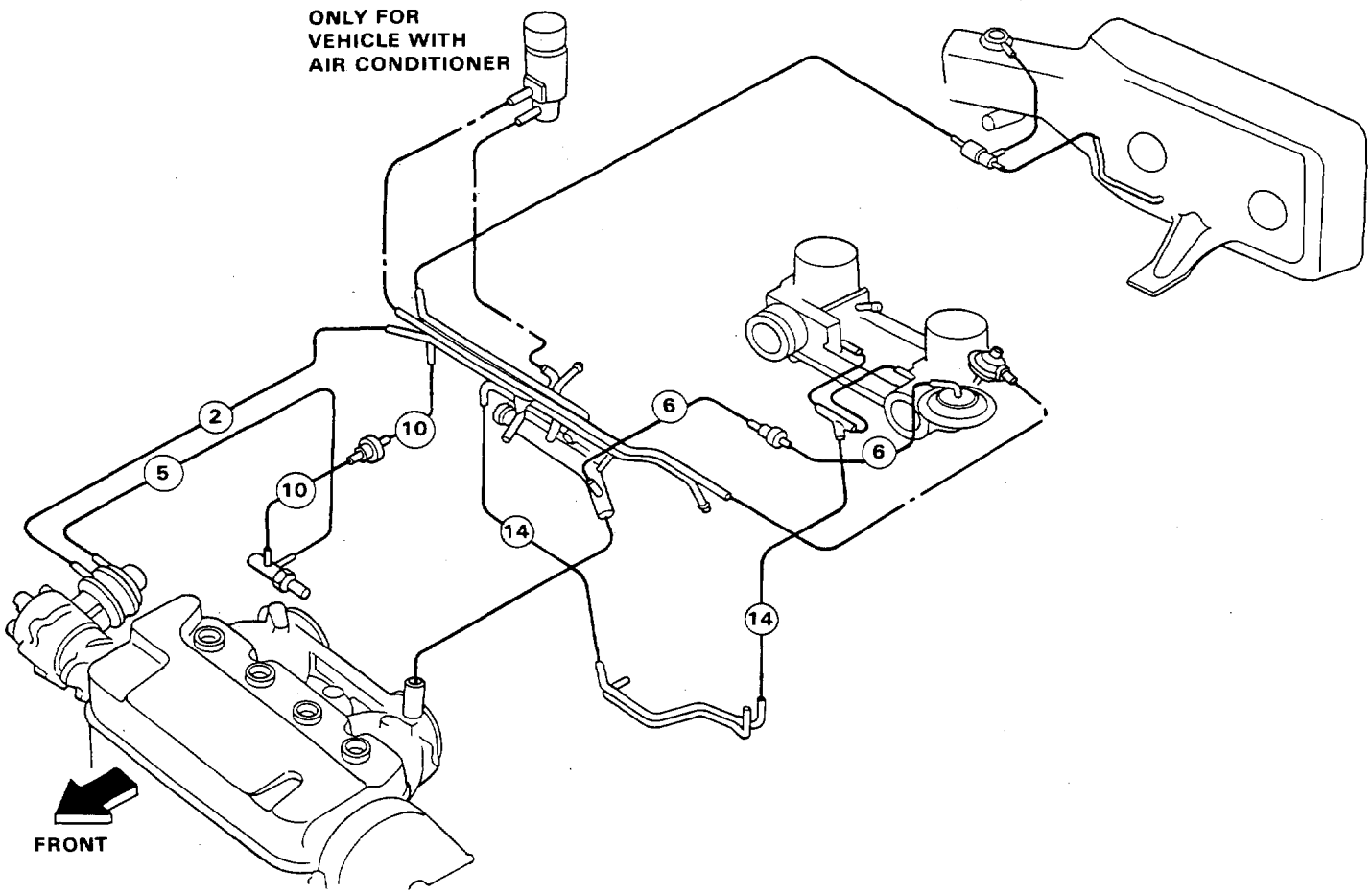


Downloaded from www.Manualslib.com manuals search engine

System Description

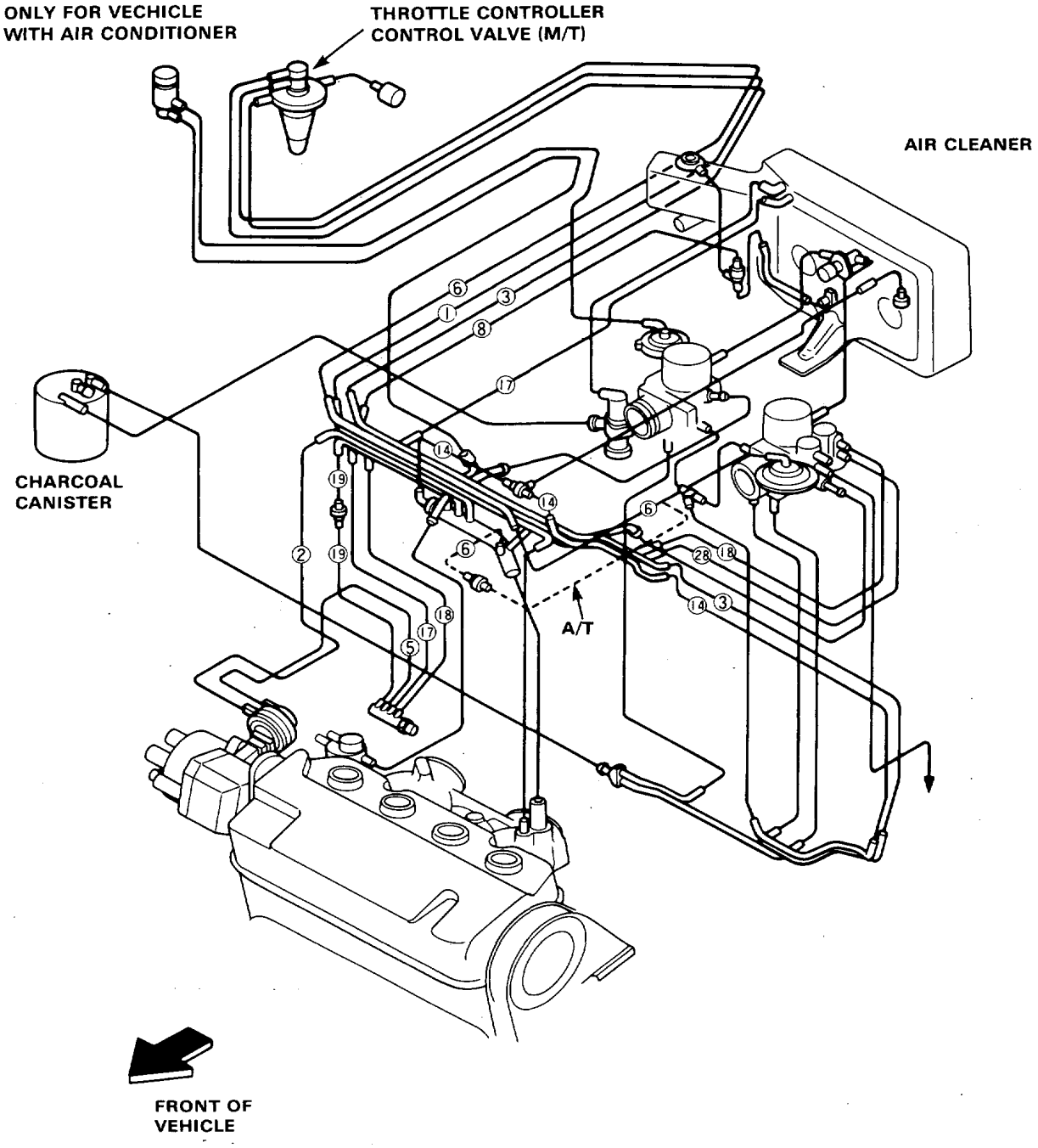
Vacuum Connections

(1.4 ℓ Engine)



Downloaded from www.Manualslib.com manuals search engine

(1.6 ℓ Engine)



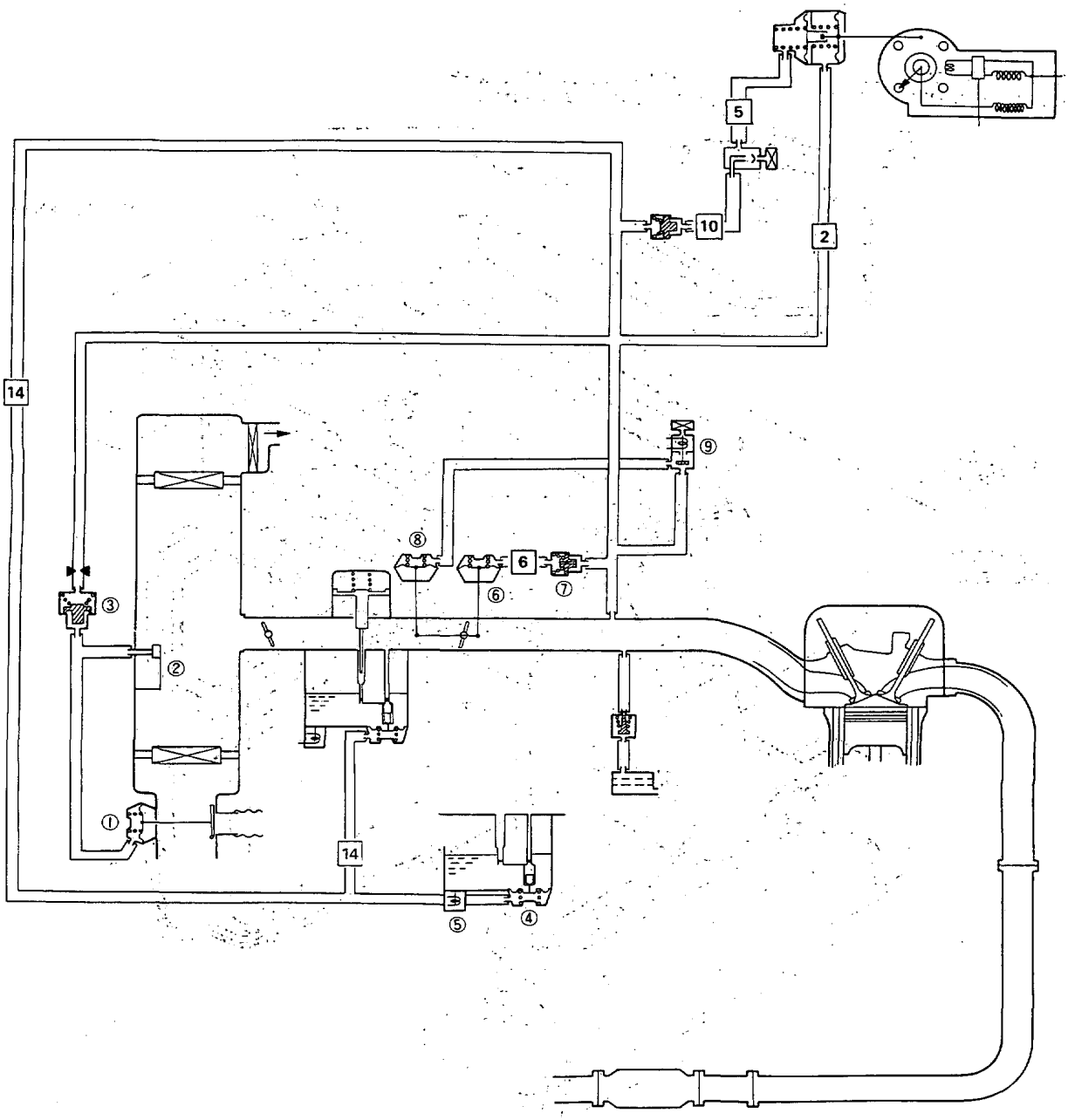
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

System Description

Vacuum Connections (cont'd)

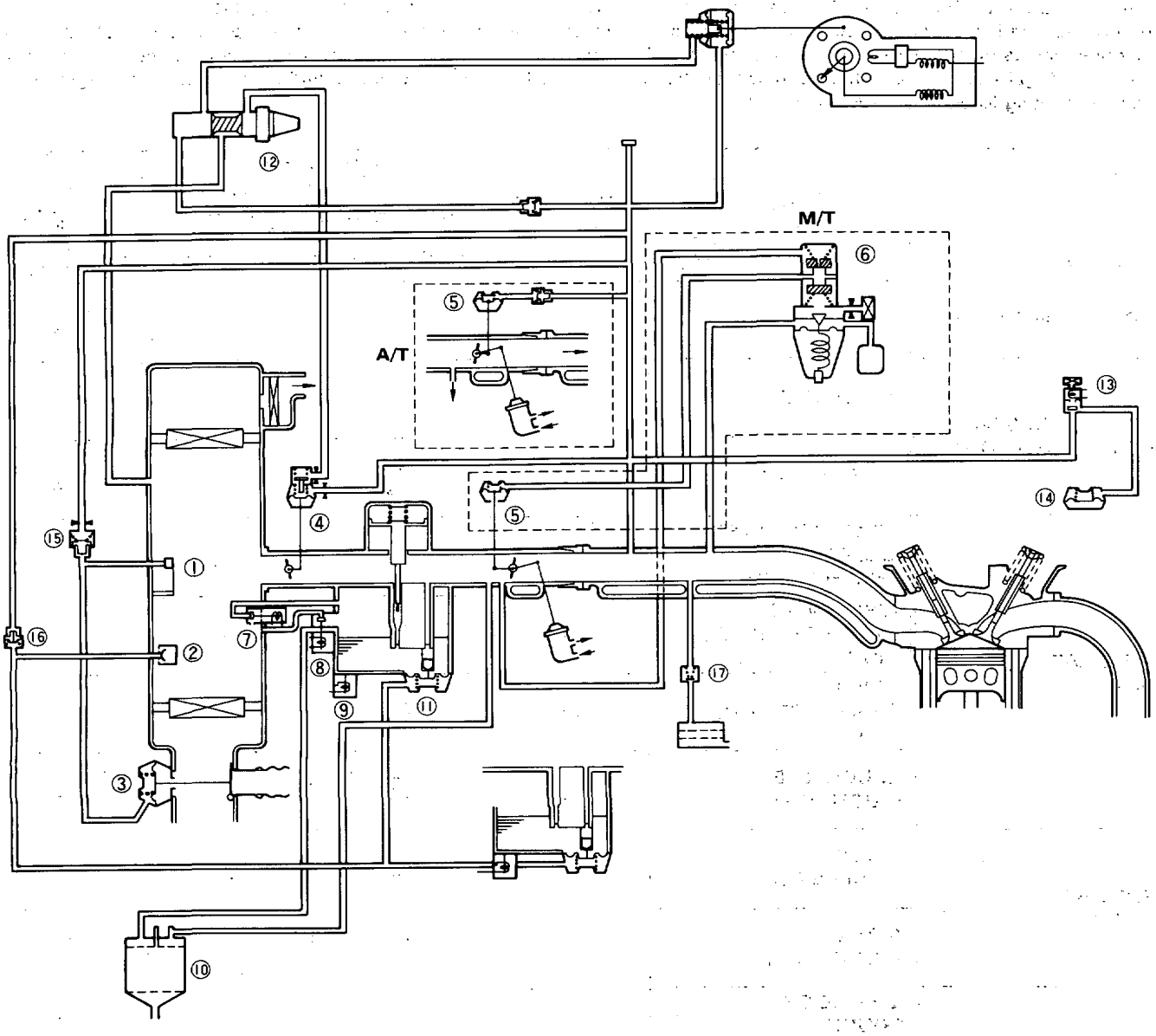
(1.4 ℓ Engine)



① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE
④ POWER VALVE
⑤ *PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE*
⑥ THROTTLE CONTROLLER
⑦ CHECK VALVE
⑧ IDLE BOOST THROTTLE CONTROLLER
⑨ A/C IDLE BOOST SOLENOID VALVE

Downloaded from www.Manualslib.com manuals search engine

(1.6 ℓ Engine)



① AIR BLEED VALVE A
② AIR BLEED VALVE B
③ AIR CONTROL DIAPHRAGM
④ CHOKE OPENER
⑤ THROTTLE CONTROLLER
⑥ THROTTLE CONTROLLER CONTROL VALVE
⑦ INNER VENT SOLENOID VALVE
⑧ AIR VENT CUT-OFF SOLENOID VALVE
⑨ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE
⑩ CANISTER
⑪ POWER VALVE
⑫ THERMOVALVE
⑬ A/C IDLE BOOST SOLENOID VALVE
⑭ A/C IDLE BOOST THROTTLE CONTROLLER
⑮ CHECK VALVE A
⑯ CHECK VALVE B
⑰ PCV VALVE

Downloaded from www.Manualslib.com manuals search engine

Carburetor

Symptom-to-System Chart

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.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the self-diagnosis indicator, valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in page 6-8 and 6-9

PAGE / SYSTEM / SYMPTOM		CARBURETOR			
		IDLE SPEED/ MIXTURE	IDLE CONTROL	CHOKE/ FAST IDLE SYSTEM	AIR VENT CUT-OFF (INNER VENT) SOLENOID VALVE (1.6 ℓ Engine)
		13	8	15	40, 42
ENGINE WON'T START					①
DIFFICULT TO START ENGINE WHEN COLD	WHEN COLD			①	②
	WHEN WARM		②		②
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPECIFICATION			①	
	WHEN WARM ENGINE SPEED TOO HIGH	①	②	③	
	WHEN WARM ENGINE SPEED TOO LOW	①	①		
	ROUGH IDLE/ FLUCTUATION	①	②		②
FREQUENT STALLING	WHILE WARMING UP		③	②	
	AFTER WARMING UP	①	②		②
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING			①	①
	LOSS OF POWER				②
	AFTERBURN		①		
	HESITATION/ SURGE	①			

Downloaded from www.Manualslib.com manuals search engine

CARBURETOR			FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
POWER VALVE	PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE	ACCELE-RATOR PUMP			
11	12	—	24	28	32
	②		①		
	①	②			
	①				③
	②				③
					③
	①				
	①				
			③		
①		③	②	①	
				②	①
		②		②	

Downloaded from www.Manualslib.com manuals search engine

Idle Control System (A/C only)

Testing

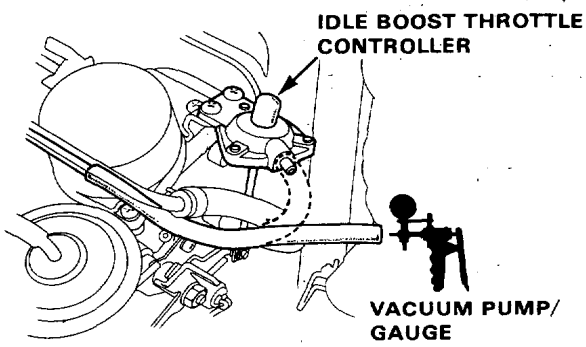
Idle speed too high in no-load conditions

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

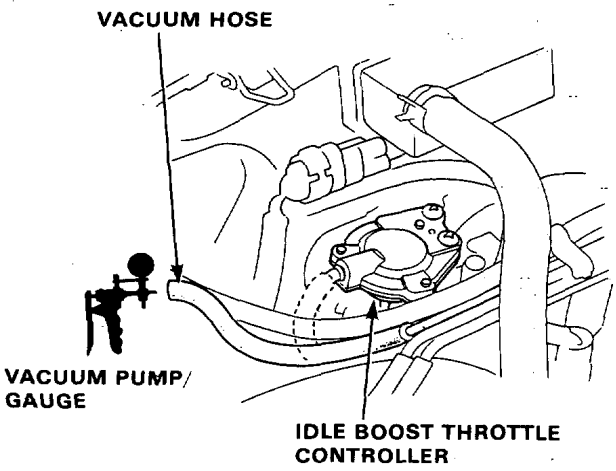
2. Disconnect the vacuum hose from the idle boost throttle controller and check for vacuum.

   There should be no vacuum.

(1.4 ℓ Engine)



(1.6 ℓ Engine)



- If there is no vacuum, check the throttle valve shaft for binding or sticking, and replace the idle boost throttle controller.

- If there is vacuum, go to troubleshooting (page 6-11).

Idle speed is low with A/C on

1. Disconnect the vacuum hose from the idle boost throttle controller and check for vacuum with the A/C on.

   There should be vacuum.

- If there is vacuum, check the throttle valve shaft for binding or sticking, and replace the idle boost throttle controller.

- If there is no vacuum, go to troubleshooting (page 6-11).

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flow Chart

Inspection of A/C Idle Boost System

Disconnect the upper vacuum hose of the solenoid valve from the idle boost throttle controller and connect a vacuum gauge.

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

Is there vacuum ?

YES → Disconnect the connector near the solenoid valve.

Is there vacuum ?

YES → **Replace the solenoid valve.**

NO → **Inspect the A/C Signal (section 15).**

NO

Turn the blower switch ON.

Turn the A/C switch ON.

Is there vacuum ?

NO → Disconnect the connector near the solenoid valve.

YES

A/C Idle Boost Solenoid Valve and A/C signal are OK.

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

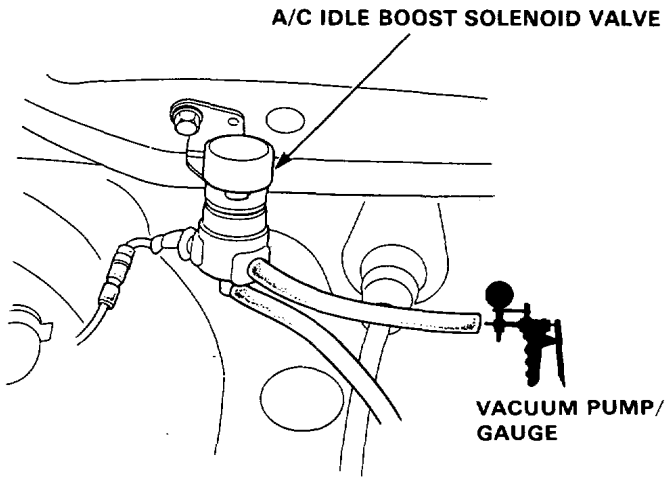
Is there battery voltage ?

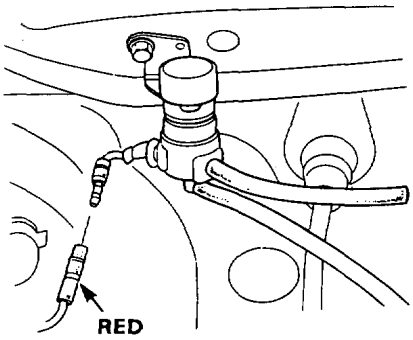
NO → **Repair open or short in RED wire between the solenoid valve and compressor control unit.**

YES

(To page 6-12)

A/C Idle Boost Solenoid Valve



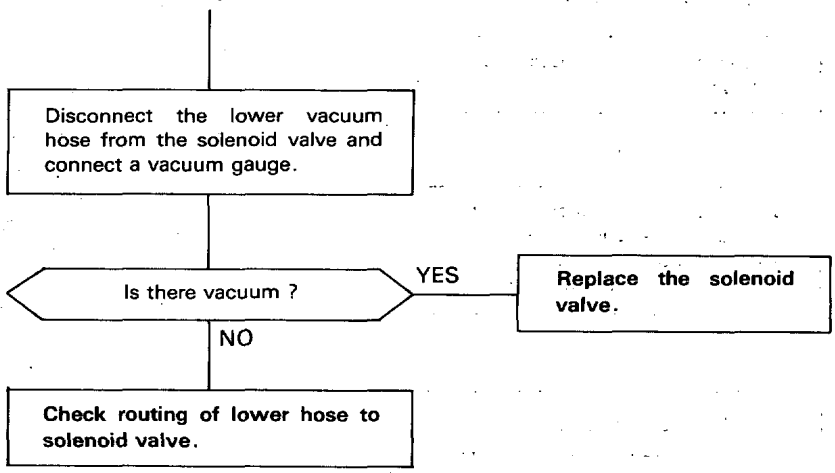


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Idle Control System (A/C only) (cont'd)

(From page 6-11)

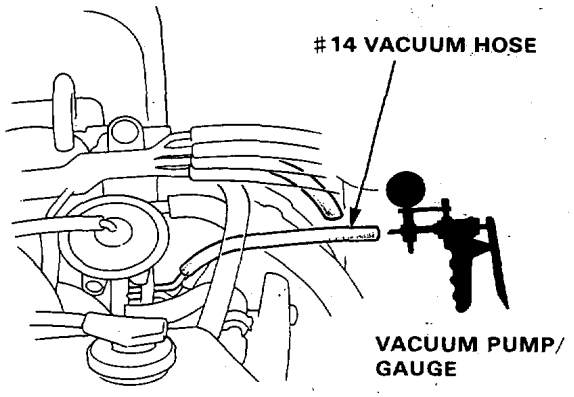


Downloaded from www.Manualslib.com manuals search engine

Testing (COLD ENGINE)

1. Disconnect the #14 vacuum hose from the vacuum hose manifold and connect a vacuum pump. Apply vacuum.

   It should hold vacuum.

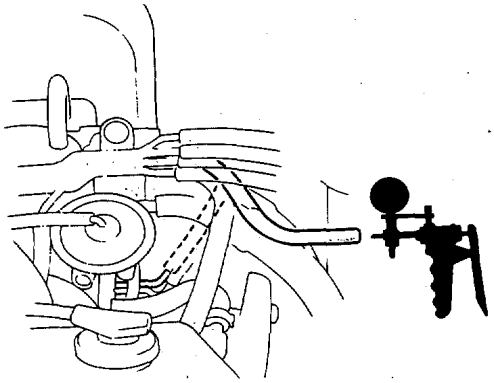


- If it does not hold vacuum, replace the diaphragm and retest (page 6-24,27).

2. (1.6 ℓ Engine)
   Start the engine and disconnect the #14 vacuum hose from the vacuum hose manifold, and connect a vacuum pump/gauge to the manifold.

   NOTE: Intake air temperature must be below 21°C (69.8 °F).

   There should be no vacuum.



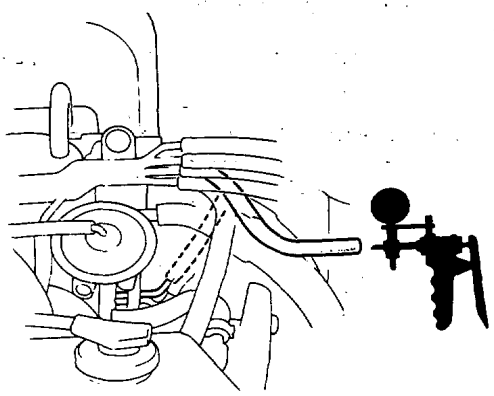
- If there is vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, then, if necessary, replace the air bleed valve B.

Testing (HOT ENGINE)

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

2. Disconnect the #14 vacuum hose from the vacuum hose manifold and connect a vacuum pump/gauge.

   There should be vacuum.



- If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose.
  1.6 ℓ Engine: then, if necessaly, replace the air bleed valve B.

Downloaded from www.Manualslib.com manuals search engine

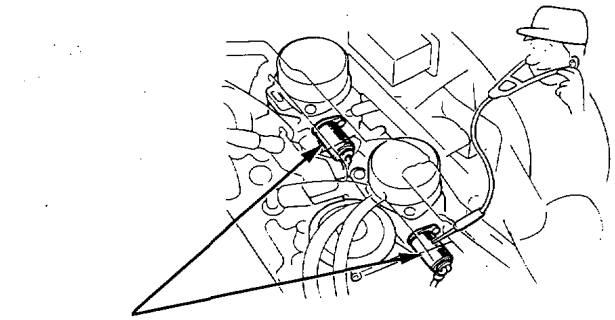
Primary Slow Mixture Cut-off Solenoid Valve

Troubleshooting Flow Chart Primary Slow Mixture Cut-off Solenoid Valve

Inspection of Primary Slow Mixture Cut-off Solenoid Valve

Turn the ignition switch ON.

Check the clicking sound of each solenoid valve by means of a stethoscope.



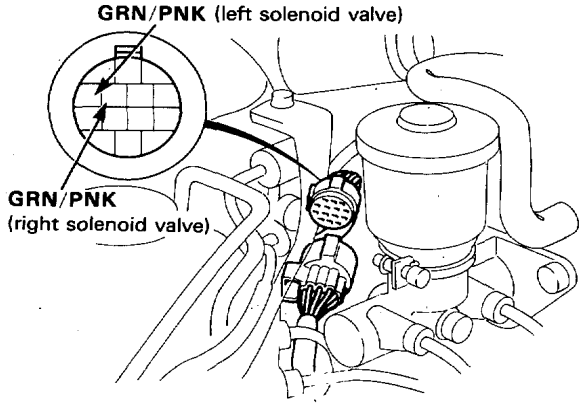
PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE

Does the solenoid valve click?

NO

Turn the ignition switch OFF.

YES



Disconnect the 14P connector.

Turn the ignition switch ON.

Measure voltage between GRN/PNK (+) terminal and body ground.

Is there battery voltage?

YES

Repair open or short in BLK/YEL wire between the solenoid valve and the 14P connector.
If OK;
right solenoid valve: replace the solenoid valve.
left solenoid valve: inspect open in BLK wire between the solenoid valve and G201, and replace the solenoid valve.

NO

Repair open or short in GRN/PNK wire between the 14P connector and the ignition switch as well as No. 14 fuse.

Solenoid valve is OK.

Downloaded from www.Manualslib.com manuals search engine

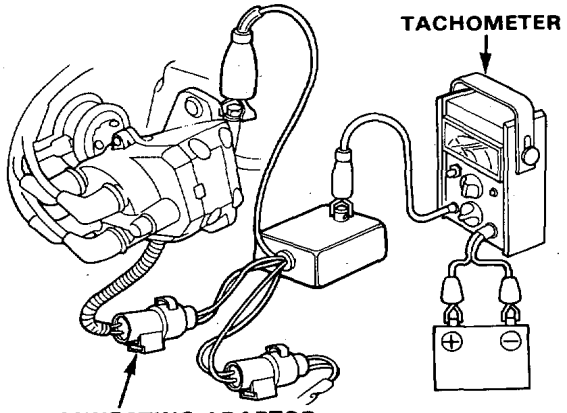
Idle Speed/Mixture

NOTE:
- Ignition timing and valve clearance must be correct, and engine must be normal operating temperature; the cooling fan will come on.
- Snap the accelerator pedal serveral times and check the idle speed with the accelerator pedal fully returned.
- Check the clutch pedal (section 7) before making idle speed and mixture inspections.

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

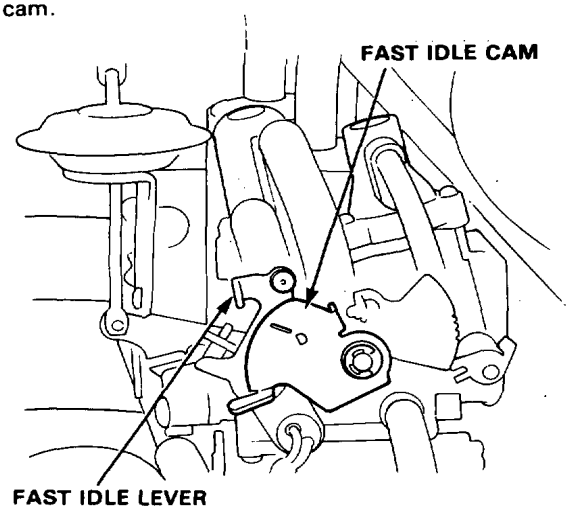
CO Meter Method

1. Warm up and calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm and connect a tachometer.



3. (1.6 ℓ Engine)
   Check the fast idle lever.

   Fast idle lever should not be seated against fast idle cam.



   - If the fast idle lever is against the fast idle cam, replace the fast idle cam (page 6-19).

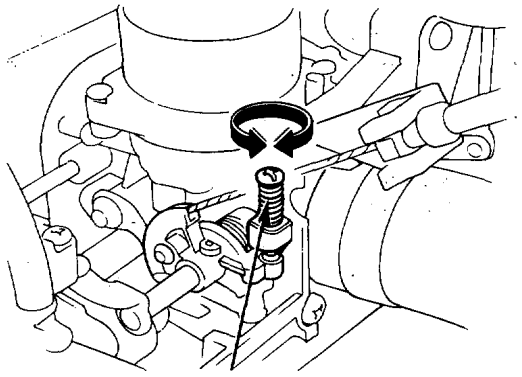
4. Check the idle speed with no load.

   Idle speed should be:

Manual	750±50 min⁻¹ (rpm)
Automatic	700±50 min⁻¹ (rpm) (N or P)

5. If not within specification, adjust by turning throttle stop screw to obtain proper idle speed.

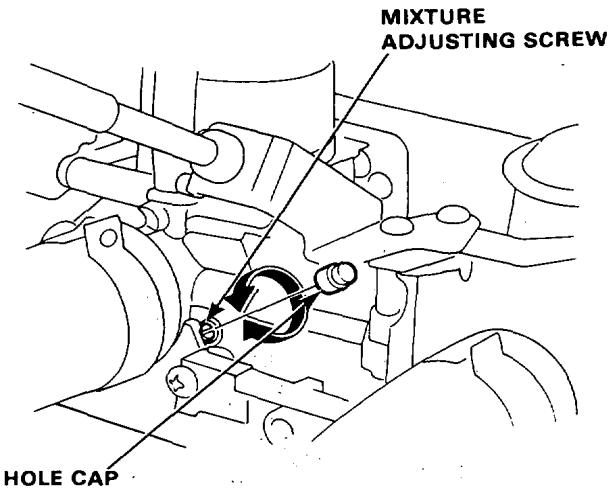
   If idle speed cannot be adjusted properly, check for proper throttle cable adjustment.



6. Check specification for idle CO with no load.

   Spcified CO %: below 1.0 %

7. If not within specification, remove mixture adjusting screw hole plugs and adjust by turning mixture adjusting screws to obtain proper CO reading.



   Turning both mixture adjusting screws.
   clockwise: CO reading decreases
   counterclockwise: CO reading increases

   - *Readjust idle speed if necessary, and recheck idle CO.*

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Carburetor

Idle Speed/Mixture (cont'd)

8. Install the hole plugs.

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

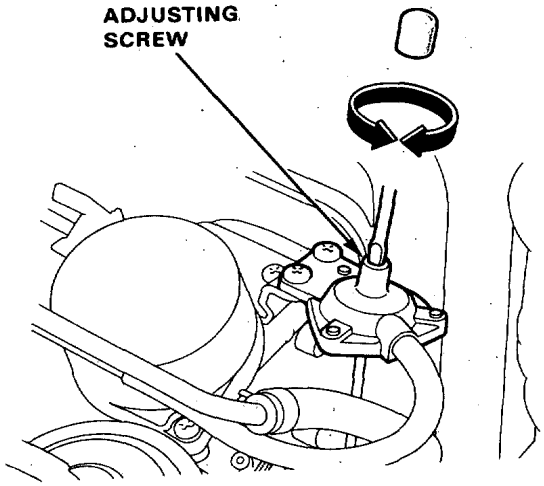
9. If equipped with air conditioner, check the idle speed with the A/C on.

   Idle speed should be:

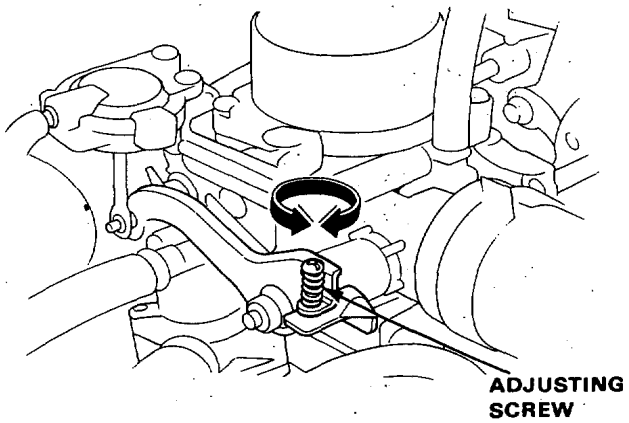
Manual	750±50 min^{-1} (rpm)
Automatic	750±50 min^{-1} (rpm) (N or P)

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

(1.4 ℓ Engine)



(1.6 ℓ Engine)



Float Level

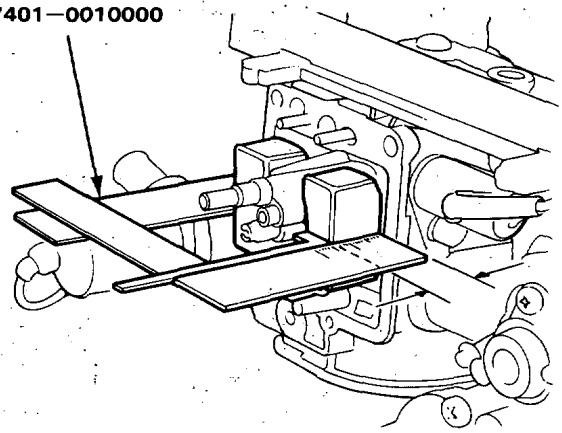
Inspection

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

1. Remove the carburetors (page 6-22,25).
2. Remove the float chambers.
3. Using the float level gauge, measure the float level with the float tip lightly contacting the float valve and the carburetor float chamber surface inclined about 30° from vertical.

   Float Level: 16±1 mm (0.6 ±0.04 in.)

FLOAT LEVEL GAUGE 07401—0010000



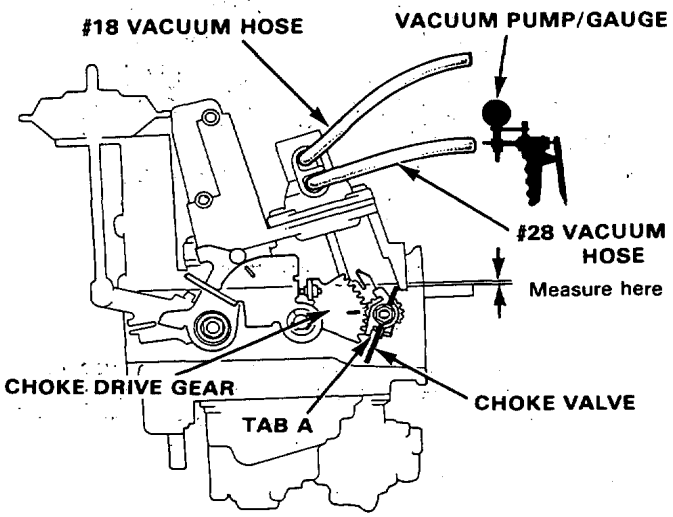
Downloaded from www.Manualslib.com manuals search engine

Choke Linkage (1.6 ℓ Engine)

Adjustment

1. Remove the carburetor (page 6-25).
2. Disconnect the #18 vacuum hose from the choke opener and leave open to atmosphere. Disconnect the #28 vacuum hose and connect a vacuum pump. Apply at least 200 mm Hg (8 in. Hg).

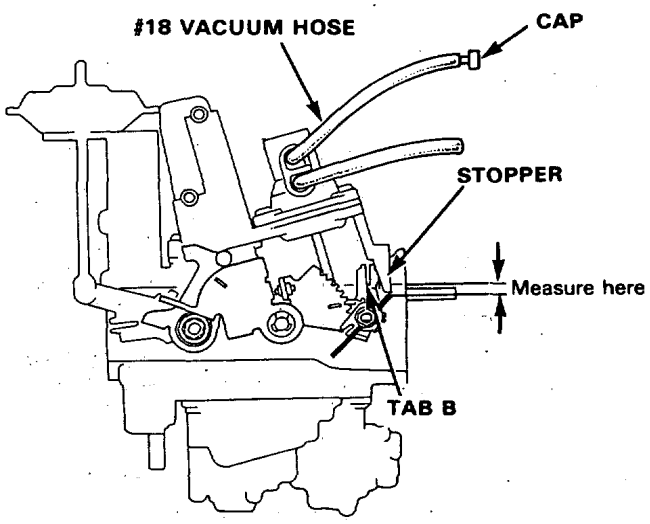
   NOTE: If vacuum drops below 200 mm Hg (8 in. Hg), slowly reapply vacuum until you can maintain the highest level without losing vacuum.
3. Turn the choke drive gear clockwise and measure the clearance between the choke valve and the casting.



1st Stage Clearance:
1.37±0.15 mm (0.054±0.006 in.)

Adjust clearance by bending Tab A.

4. Cap the end of the #18 vacuum hose and apply vacuum.
5. Turn the choke drive lever clockwise until Tab B seats against the stopper, and measure clearance between the choke valve and casting.



2nd Stage Clearance:
M/T: 3.53±0.2 mm (0.139±0.008 in.)
A/T: 3.70±0.2 mm (0.146±0.008 in.)

Adjust clearance by bending Tab B.

If the clearance can not adjust, replace the left carburetor (page 6-25).

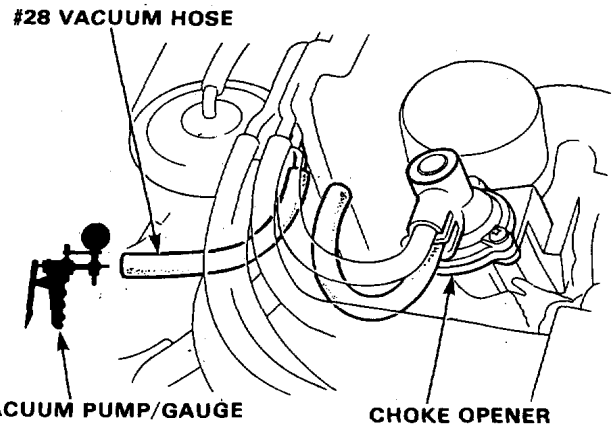
Downloaded from www.Manualslib.com manuals search engine

Choke Opener

Testing (COLD ENGINE)

NOTE: Engine coolant temperature must be below 18°C (64.4°F)

1. Disconnect the #28 vacuum hose from the choke opener and connect a vacuum pump.

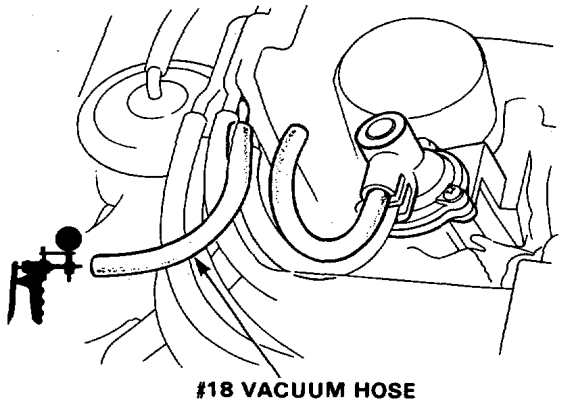


2. Start the engine and check the vacuum.

   There should be vacuum.

   - If there is no vacuum, check the #28 vacuum hose for proper connection, cracks, brockage or disconnected hose.

3. Disconnect the #18 vacuum hose from the choke opener, then connect a vacuum pump.



   It should not hold vacuum.

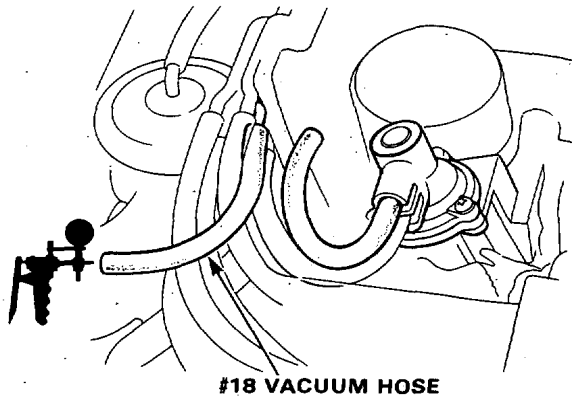
   - If it holds vacuum, check the #18 vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the thermovalve and retest.

Testing (HOT ENGINE)

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

2. Disconnect the #18 vacuum hose from the choke opener and connect a vacuum pump.

   It should hold vacuum.

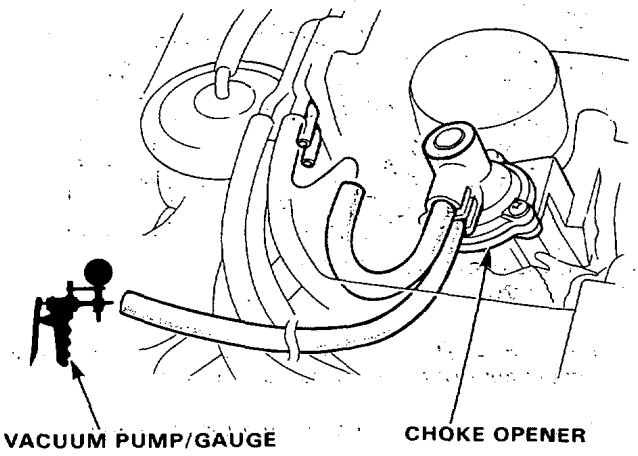


   - If it does not hold vacuum, check the #18 vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the thermovalve and retest.

Downloaded from www.Manualslib.com manuals search engine

Choke Opener Diaphragm Testing

1. Disconnect the #18 vacuum hose from the vacuum hose manifold.
2. Disconnect the #28 vacuum hose from the vacuum hose manifold and connect a vacuum pump.



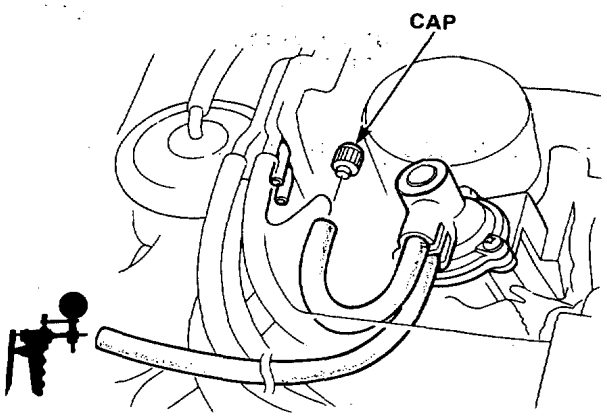
3. Apply vacuum.

   Vacuum should stabilize at 100 to 200 mm Hg (4 to 8 in. Hg) and it should pull the opener rod.

   - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-25).

4. Cap the end of the #18 vacuum hose and apply vacuum.

   It should pull the opener rod.

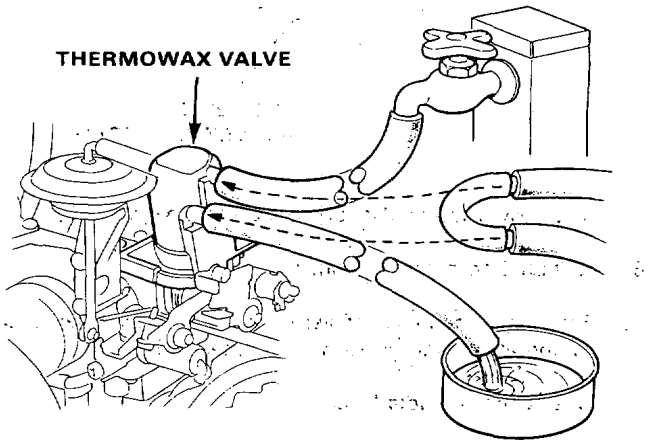


- If not, replace the left carburetor (page 6-25).

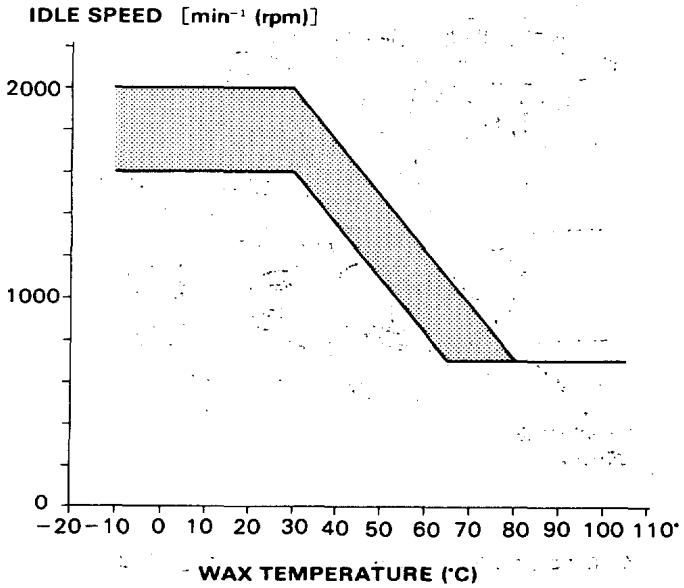
Fast Idle (1.6 ℓ Engine)

Inspection/Adjustment

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Stop the engine.
3. Disconnect both coolant hoses from the thermowax valve and cap the end of hoses.
4. Apply cold water and cool down the wax.



5. Connect a tachometer and check the idle speed.



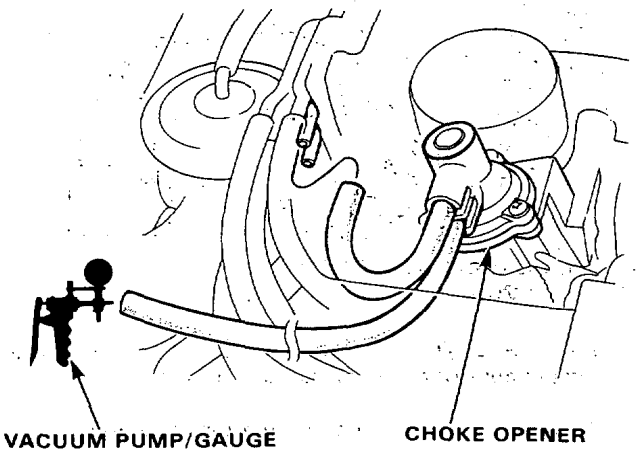
Adjust the idle speed, if necessary, by turning the fast idle adjusting screw.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Choke Opener Diaphragm Testing

1. Disconnect the #18 vacuum hose from the vacuum hose manifold.
2. Disconnect the #28 vacuum hose from the vacuum hose manifold and connect a vacuum pump.



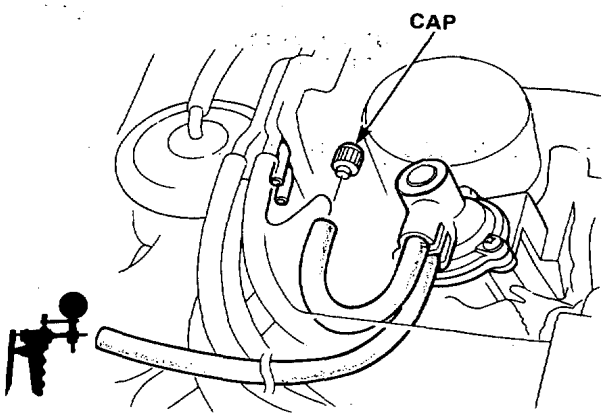
3. Apply vacuum.

   Vacuum should stabilize at 100 to 200 mm Hg (4 to 8 in. Hg) and it should pull the opener rod.

   - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-25).

4. Cap the end of the #18 vacuum hose and apply vacuum.

   It should pull the opener rod.

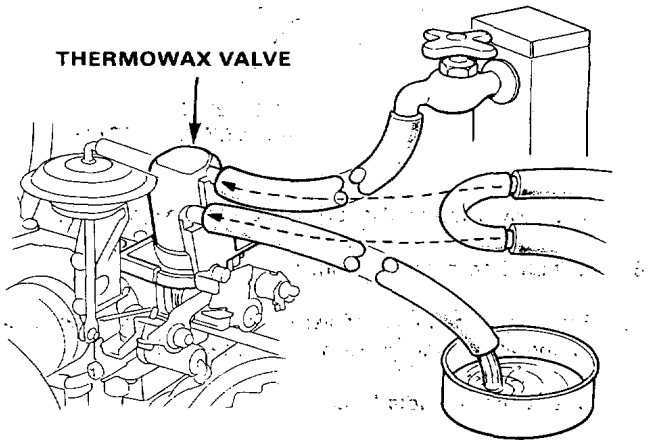


- If not, replace the left carburetor (page 6-25).

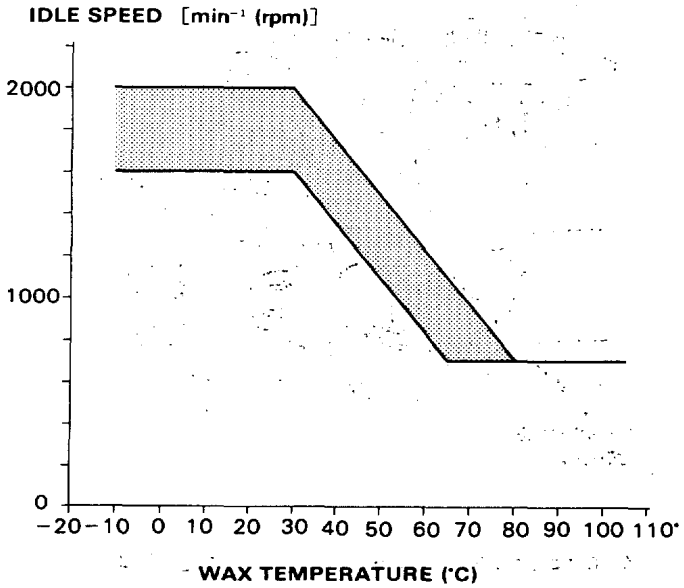
Fast Idle (1.6 ℓ Engine)

Inspection/Adjustment

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Stop the engine.
3. Disconnect both coolant hoses from the thermowax valve and cap the end of hoses.
4. Apply cold water and cool down the wax.



5. Connect a tachometer and check the idle speed.

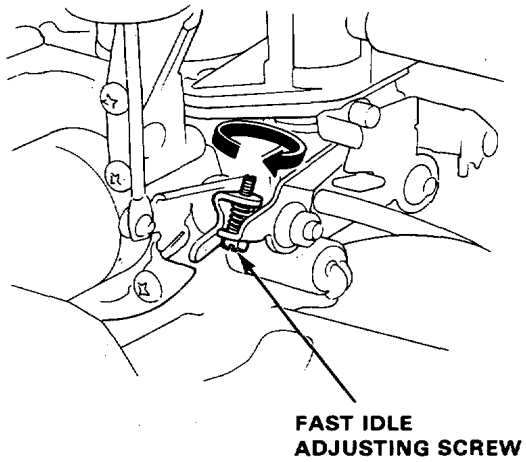


Adjust the idle speed, if necessary, by turning the fast idle adjusting screw.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

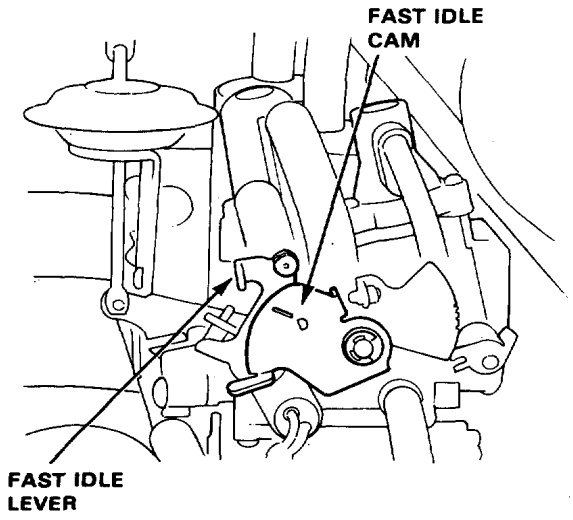
Fast Idle (1.6 ℓ Engine) (cont'd)



- If not, replace the left carburetor (page 6-25).

6. Reinstall both coolant hose.
7. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
8. Check the fast idle lever.

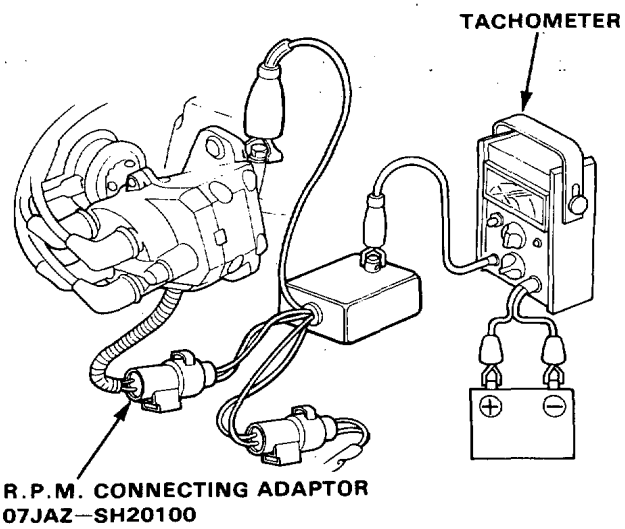
   Fast idle lever should not be seated against fast idle cam.



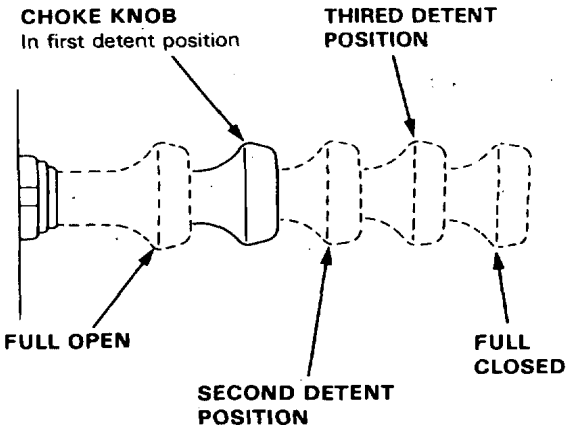
- If not, replace the left carburetor (page 6-25).

Manual Choke /Fast Idle (1.4 ℓ Engine)

1. Connect a tachometer.



2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
3. Place choke control knob in first detent position.

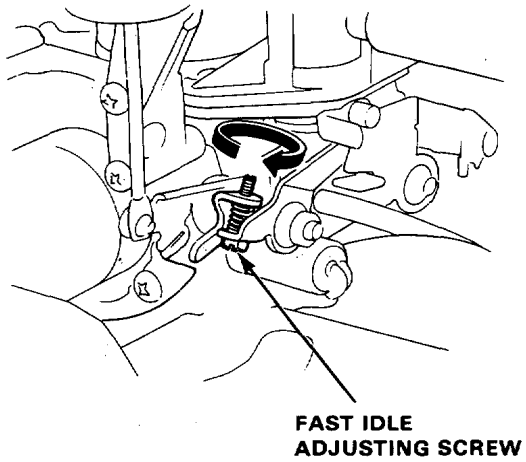


Fast idle should be: 1,500—2,500 min⁻¹ (rpm)

Downloaded from www.Manualslib.com manuals search engine

Carburetor

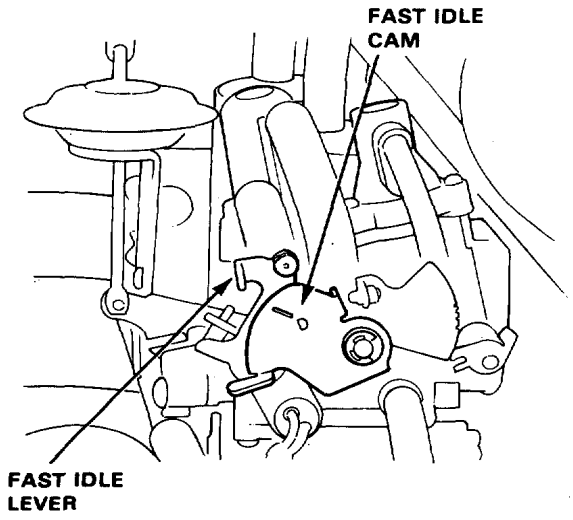
Fast Idle (1.6 ℓ Engine) (cont'd)



- If not, replace the left carburetor (page 6-25).

6. Reinstall both coolant hose.
7. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
8. Check the fast idle lever.

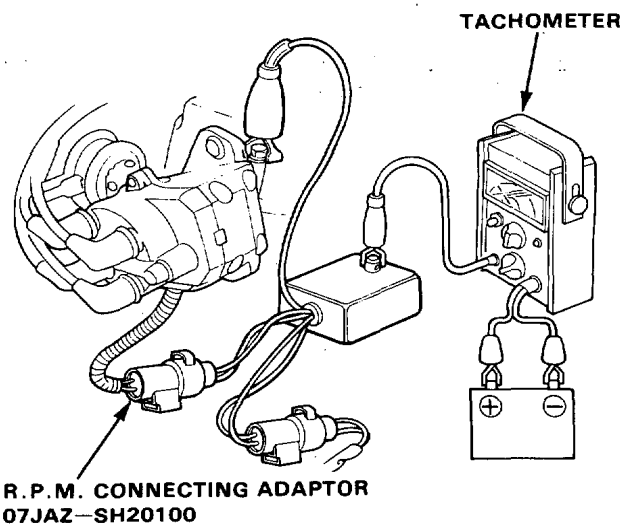
   Fast idle lever should not be seated against fast idle cam.



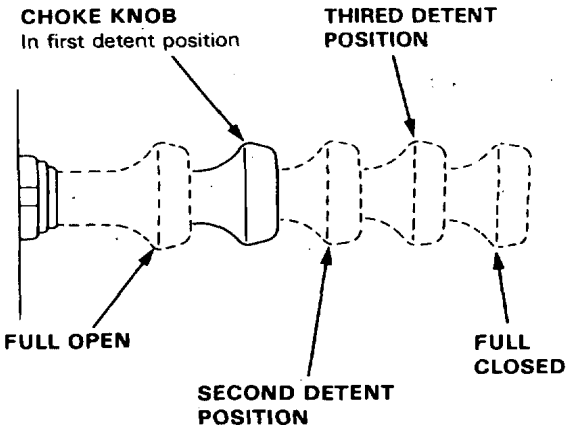
- If not, replace the left carburetor (page 6-25).

Manual Choke /Fast Idle (1.4 ℓ Engine)

1. Connect a tachometer.



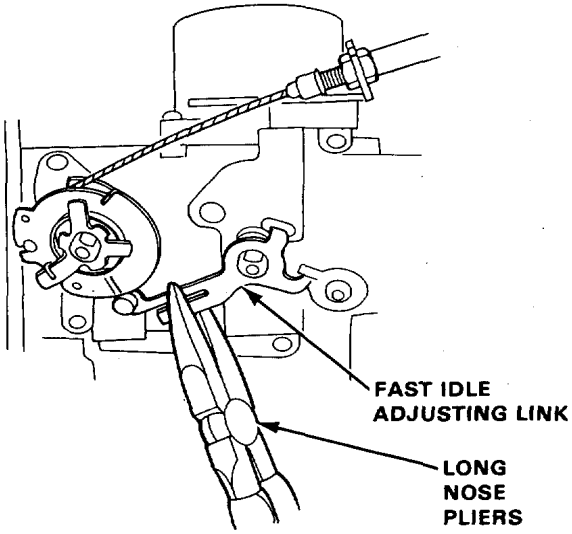
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
3. Place choke control knob in first detent position.



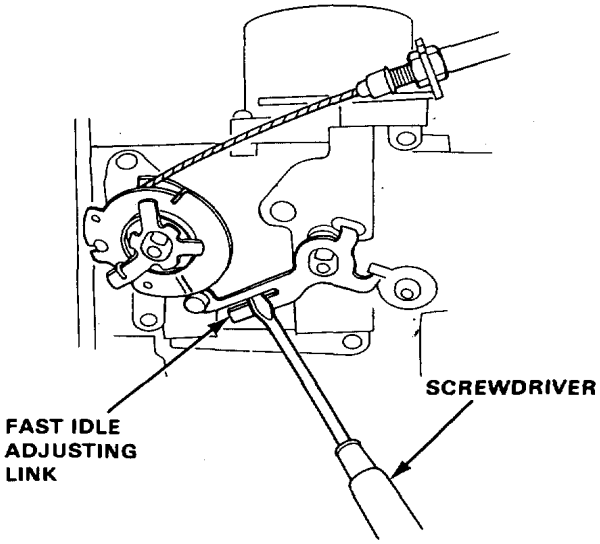
Fast idle should be: 1,500—2,500 min⁻¹ (rpm)

Downloaded from www.Manualslib.com manuals search engine

- If the engine speed is too high, use long nose pliers to narrow the slot in the fast idle adjusting link. Make the adjustment in small increments.



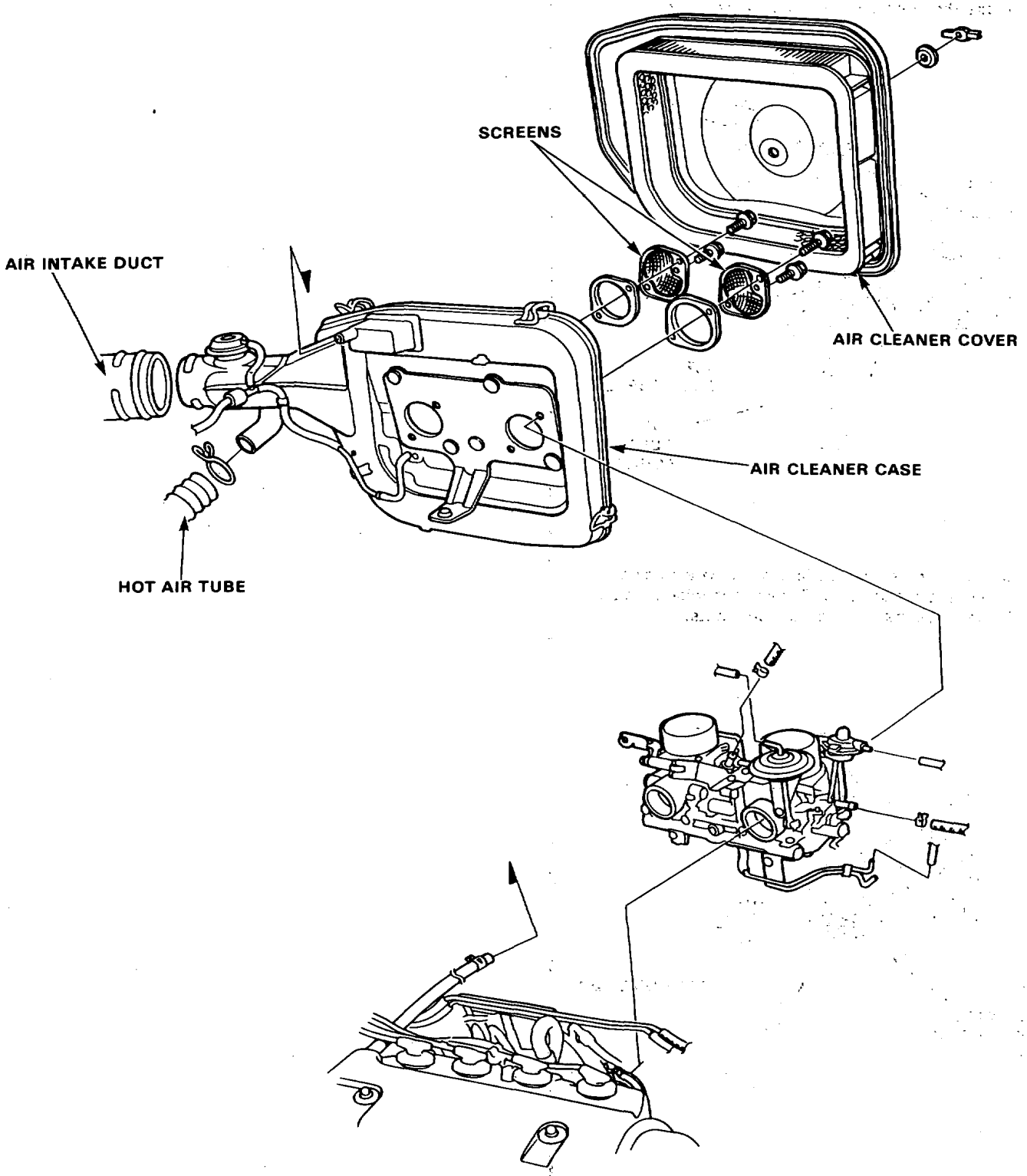
- If the engine speed is too low, insert a screwdriver in the fast idle adjusting link slot and widen the slot. Make adjustments in small increments.



Downloaded from www.Manualslib.com manuals search engine

Carburetor

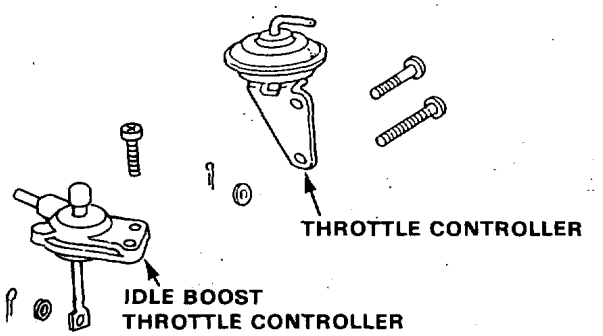
Removal (1.4 ℓ Engine)

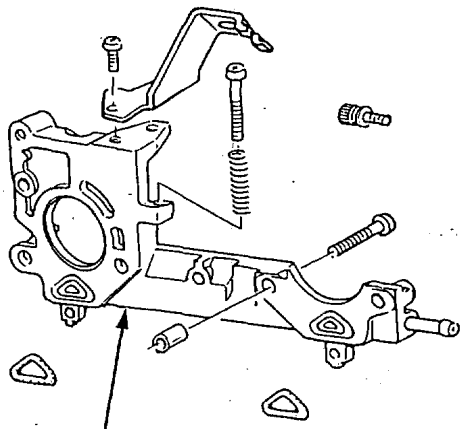


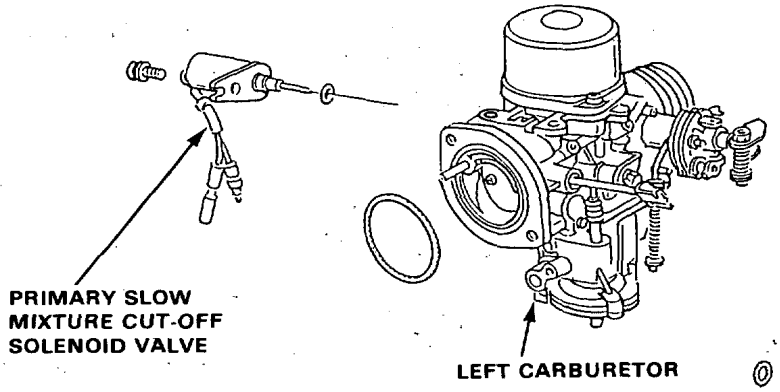
Downloaded from www.Manualslib.com manuals search engine

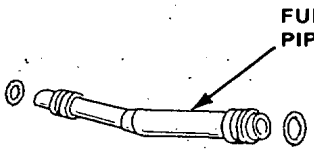
Replacement (1.4 ℓ Engine)

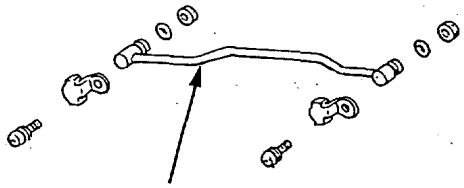
⚠ WARNING Do not smoke while working on fuel system. Keep any open flame away from your work area. Drain fuel in to an approved container.

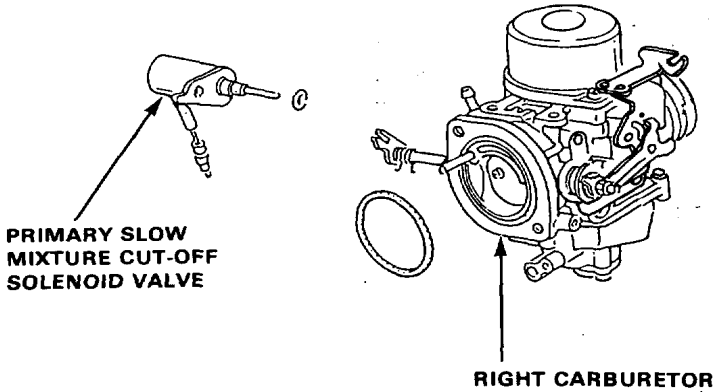










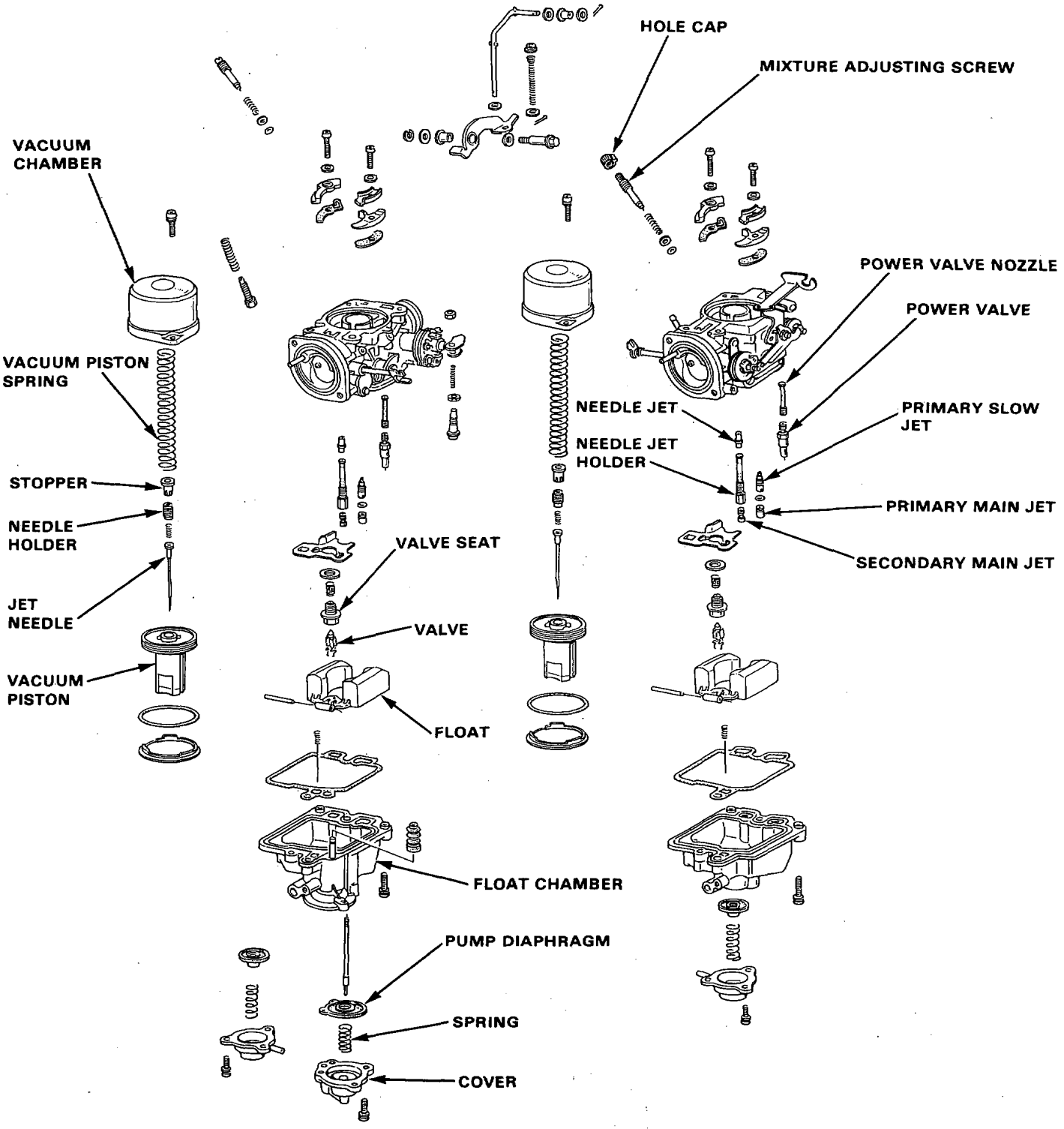


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

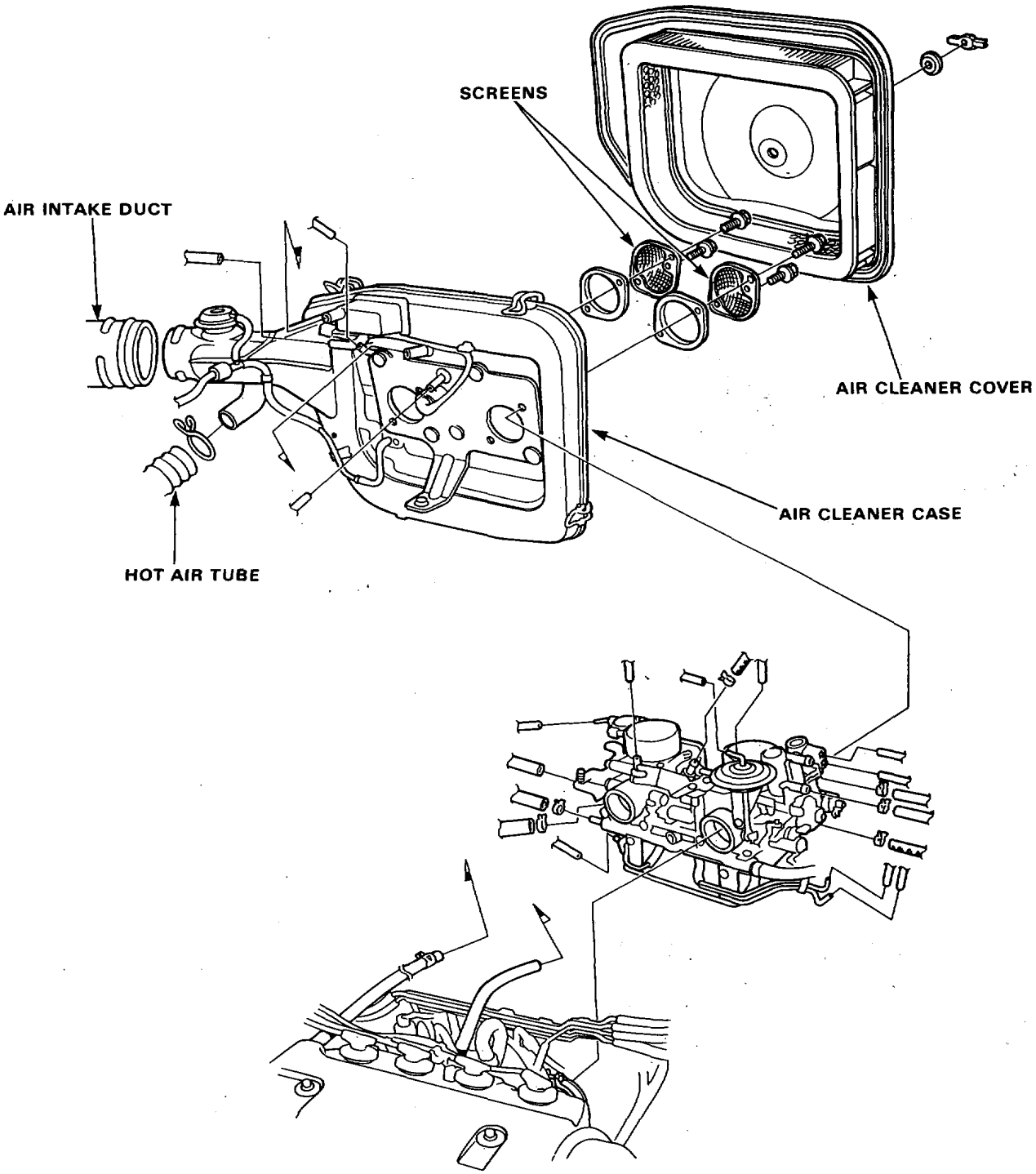
Carburetor

Replaccment (cont'd) (1.4 ℓ Engine)



Downloaded from www.Manualslib.com manuals search engine

Removel
(1.6 ℓ Engine)

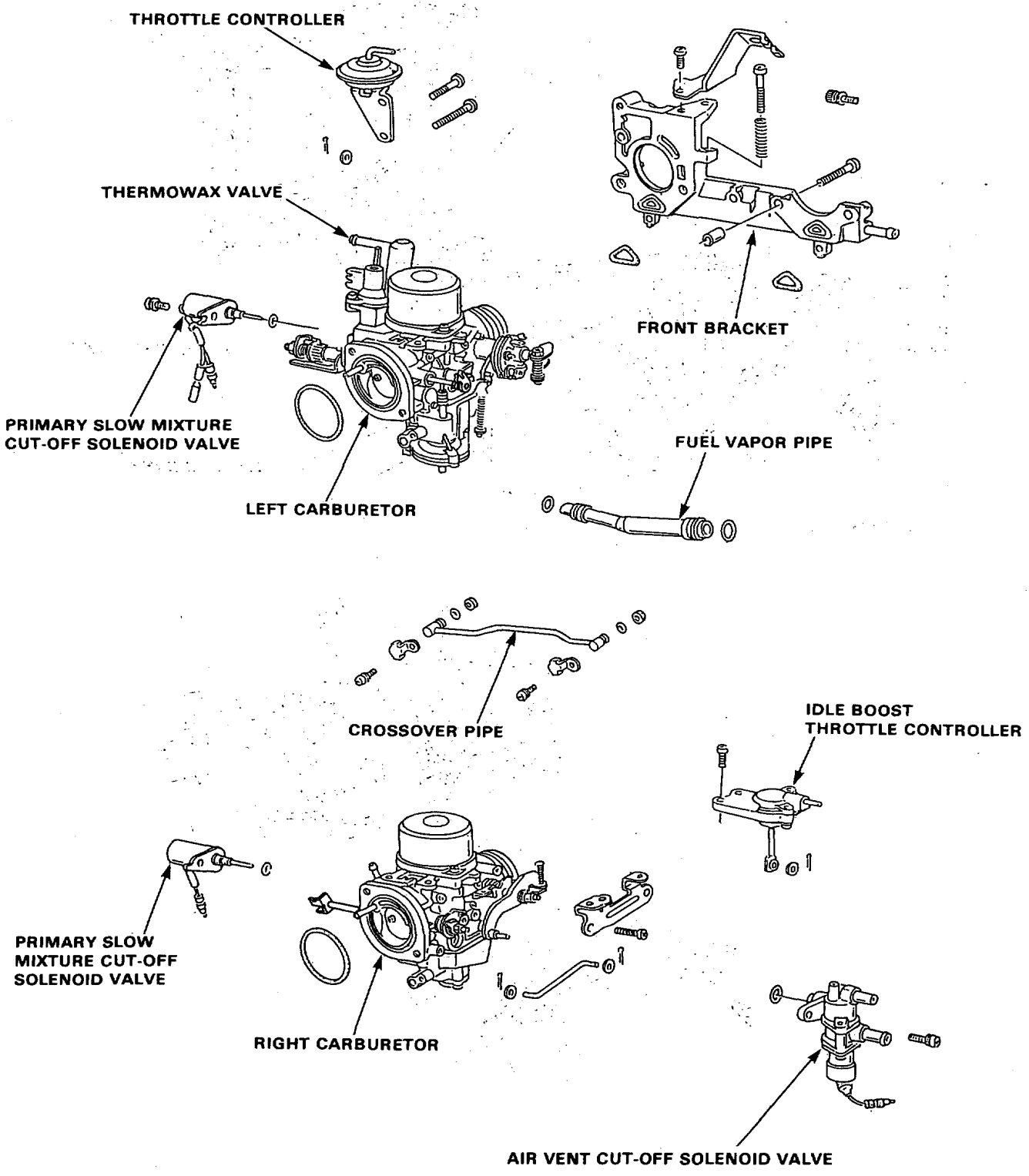


Downloaded from www.Manualslib.com manuals search engine

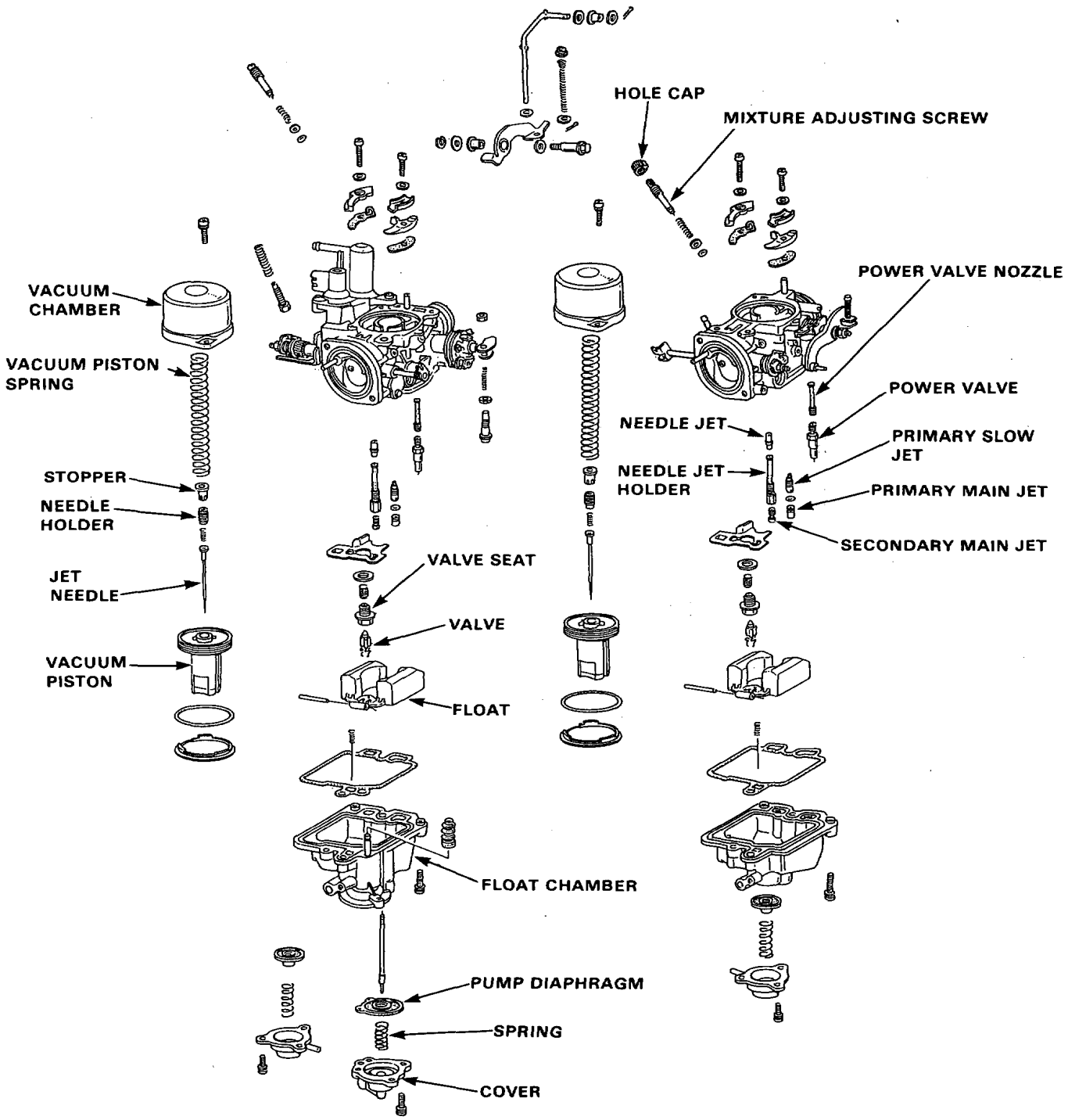
Carburetor

Replacement (1.6 ℓ Engine)

⚠WARNING **Do not smoke while working on fuel system. Keep any open flame away from your work area. Drain fuel in to an approved container.**



Downloaded from www.Manualslib.com manuals search engine

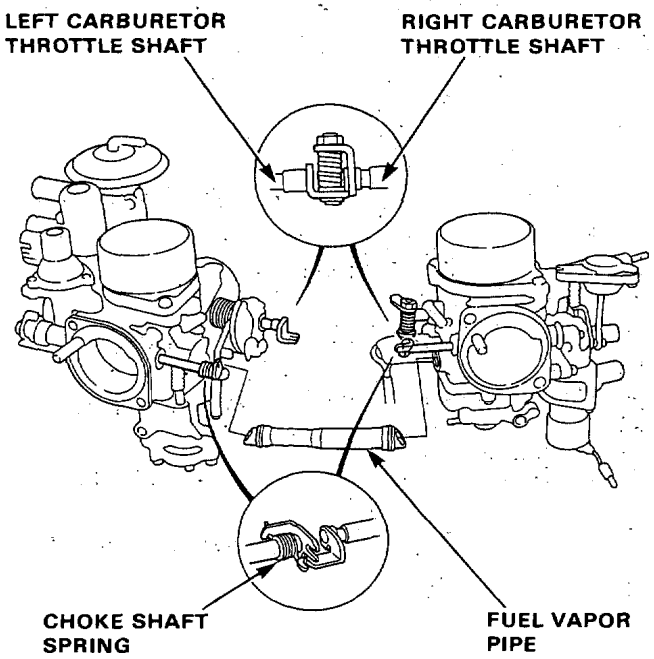


Downloaded from www.Manualslib.com manuals search engine

Carburetor

Reassembly

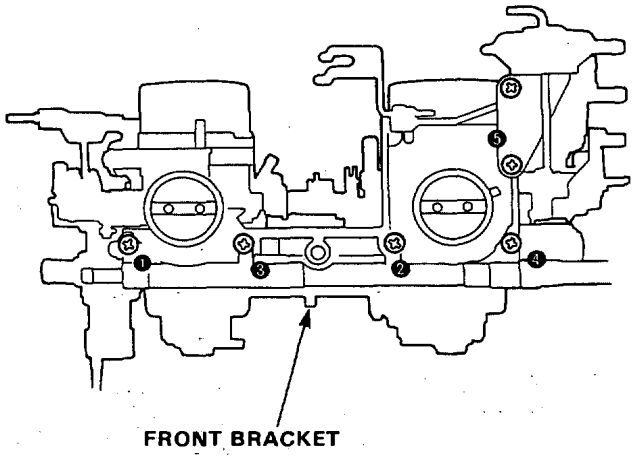
1. Insert the left carburetor's throttle shaft end (forked), between the washers on the right carburetor's throttle shaft end.
2. Install new O-rings on the fuel vapor pipe, then install it.
3. Set the left and right carburetors up.



4. Connect the choke shaft spring.
5. Install the front bracket, with new gaskets, but don't tighten its screws yet.

   CAUTION: Make sure the screw length is correct or you may damage the carburetors.

6. Check that the choke and throttle shafts move smoothly without binding.
7. Tighten the screws in the sequence shown.



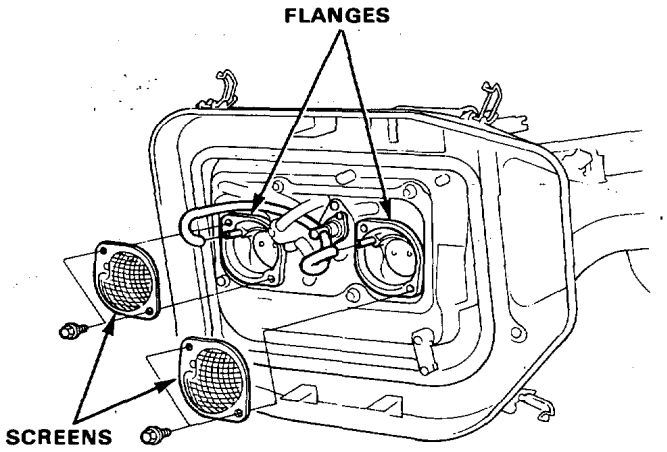
Downloaded from www.Manualslib.com manuals search engine

Synchronization

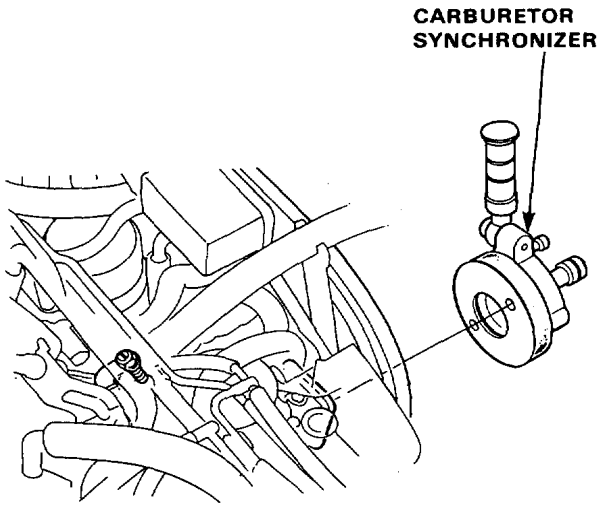
1. Remove the air cleaner cover and element.

   CAUTION: Care should be taken not to damage bi metal strip.

2. Remove the air intake screens and air intake flanges.



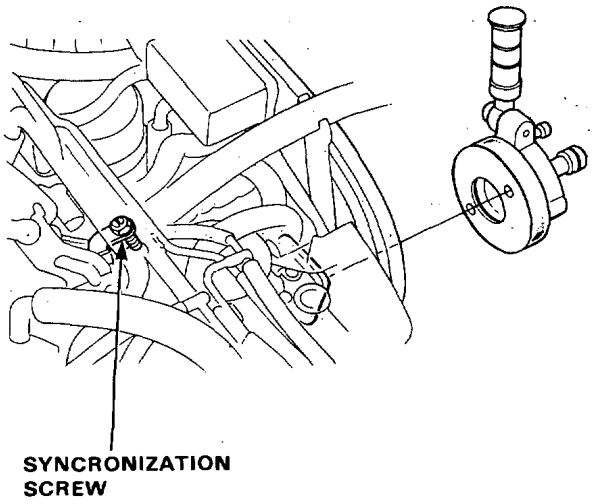
3. Install the carburetor synchronizer.



4. Connect a tachometer, start the engine and allow it to reach its normal operating temperature; the cooling fan will come on.

5. Measure the air flow using the carburetor synchronizer.

   - If the flow rates are identical, remove the synchronizer and reinstall the remaining parts in the reverse order of disassembly.
   - If the air flow rates are different, loosen the adjusting screw lock nut and adjust as necessary.
     The adjusting screw only affects the right carburetor; turning the screw clockwise decreases air flow and counterclockwise increases air flow.
     If the flow rates can't be balanced, check for air leaks or carbon build-up on a throttle valve.



6. Tighten the adjusting screw lock nut and recheck the flow rates. Adjust as necessary.

7. Remove the carburetor synchronizer and reinstall the remaining parts in the reverse order of disassembly.

Downloaded from www.Manualslib.com manuals search engine

Fuel Supply System

Sympom-to-sub System Chart

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.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

PAGE / SYSTEM / SYMPTOM		FUEL FILTER	FUEL PUMP	FUEL TANK	CONTAMI-NATED FUEL
		31	31	33	*
ENGINE WON'T START		③	①		②
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	①			①
	LOSS OF POWER	①			①

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

Downloaded from www.Manualslib.com manuals search engine

Fuel Filter

Replacement

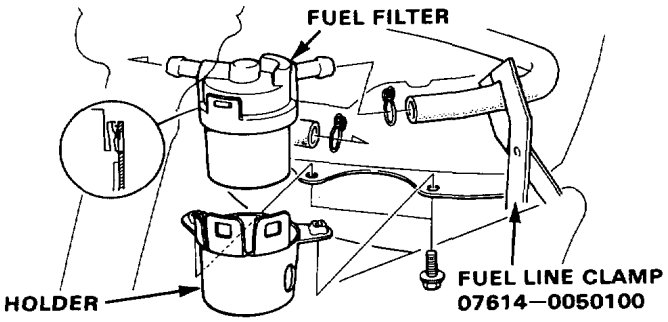
Replace rear filter at every 2 years or 40,000 km (24,000 miles) whichever comes first.

⚠WARNING Do not smoke while working on the 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. Push in the tab of the fuel filter to release the holder, then remove the filter from its bracket.
3. Attach fuel line clamps to the fuel lines and disconnect the lines from the fillter.

   CAUTION: To avoid damaging the fuel lines when disconnecting, slide back the clamps then twist the lines as you pull.

4. Install in the reverse order of removal.



Fuel Pump

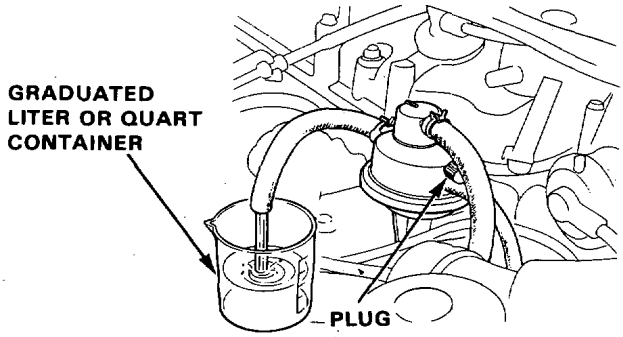
Testing

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

NOTE: Check for a clogged fuel filter and/or fuel line before checking fuel pump pressure.

1. Disconnect the fuel line, and hold a graduated container under the hose as shown.
2. Disconnect the fuel return line at the fuel pump and plug the return fitting with a cap.
3. Start the engine, and allow it to idle for 60 seconds, then stop the engine.
   Fuel flow should be more than 833.3 cm³ (27.9 oz).
   - If fuel flow is less than specified, replace the fuel pump and retest.

NOTE: Check for a clogged fuel filter and/or fuel line before replacing pump.



4. Remove the plug from fuel pump return fitting and reconnect return line.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Fuel Filter

Replacement

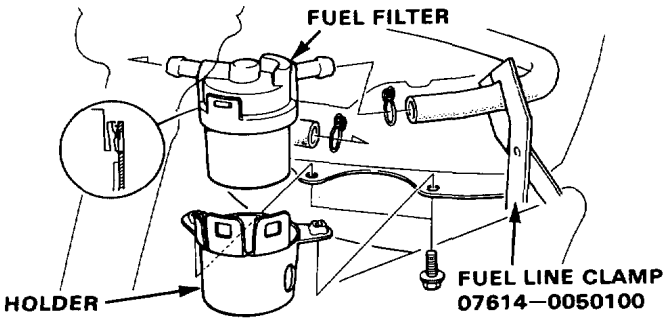
Replace rear filter at every 2 years or 40,000 km (24,000 miles) whichever comes first.

⚠WARNING Do not smoke while working on the 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. Push in the tab of the fuel filter to release the holder, then remove the filter from its bracket.
3. Attach fuel line clamps to the fuel lines and disconnect the lines from the fillter.

   CAUTION: To avoid damaging the fuel lines when disconnecting, slide back the clamps then twist the lines as you pull.

4. Install in the reverse order of removal.



Fuel Pump

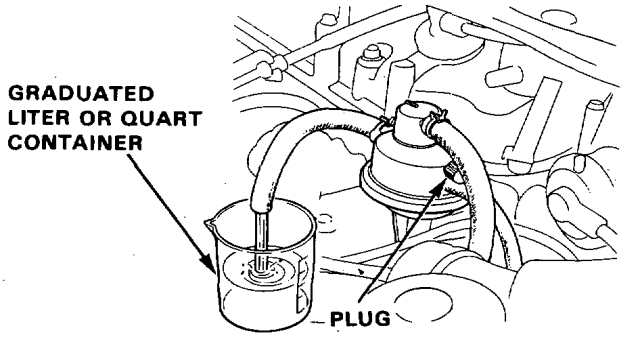
Testing

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

NOTE: Check for a clogged fuel filter and/or fuel line before checking fuel pump pressure.

1. Disconnect the fuel line, and hold a graduated container under the hose as shown.
2. Disconnect the fuel return line at the fuel pump and plug the return fitting with a cap.
3. Start the engine, and allow it to idle for 60 seconds, then stop the engine.
   Fuel flow should be more than 833.3 cm³ (27.9 oz).
   - If fuel flow is less than specified, replace the fuel pump and retest.

NOTE: Check for a clogged fuel filter and/or fuel line before replacing pump.



4. Remove the plug from fuel pump return fitting and reconnect return line.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

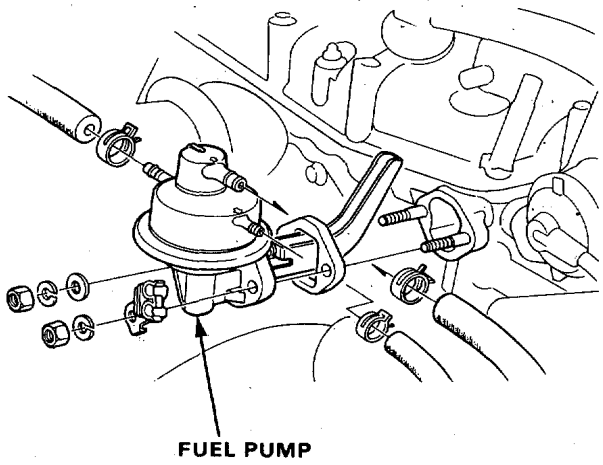
Fuel Pump (cont'd)

Replacement

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

1. Attach fuel line clamps to fuel pump lines.
2. Disconnect fuel lines at fuel pump.

CAUTION: When disconnecting fuel lines, slide back clamps then twist lines as you pull, to avoid damaging them.



3. Remove fuel pump.
4. Install in the reverse order of removal.

CAUTION: Make sure that the fuel lines are connected properly and securely.

Downloaded from www.Manualslib.com manuals search engine

Fuel Tank

Replacement

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

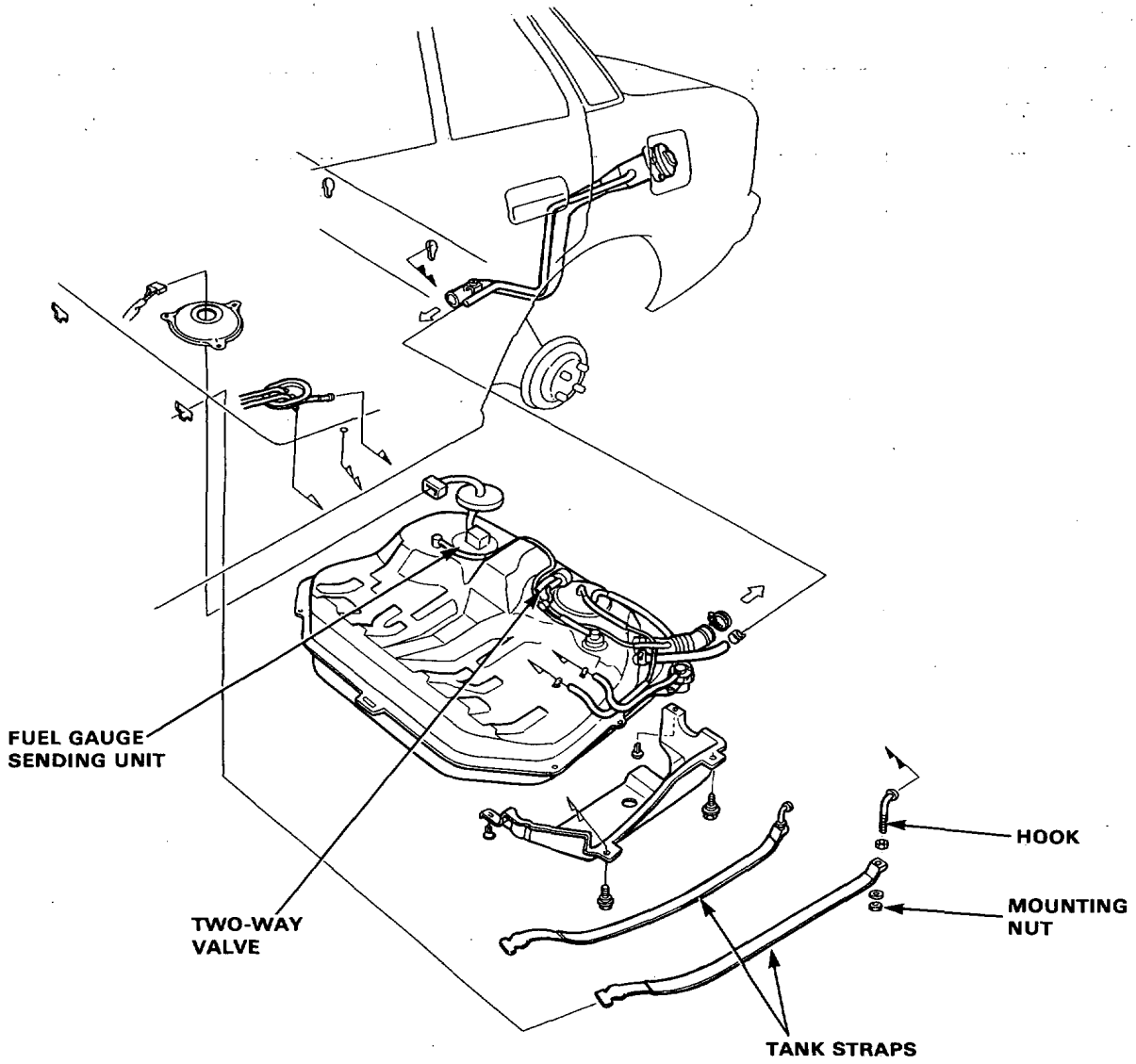
1. Block front wheels. Jack up up the rear of the car and support with jackstands.
2. Disconnect the fuel gauge sending unit connector.
3. Disconnect the hoses.

CAUTION: When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.

4. Place a jack, or other support, under the tank.
5. Remove the strap nuts and let the straps fall free.
6. Remove the fuel tank.

NOTE: The tank may stick on the undercoat applied to its mount. To remove, carefully pry it off the mount.

7. Install parts in the reverse order of removal.



Downloaded from www.Manualslib.com manuals search engine

Air Intake System

Symptom-to-sub System Chart

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.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

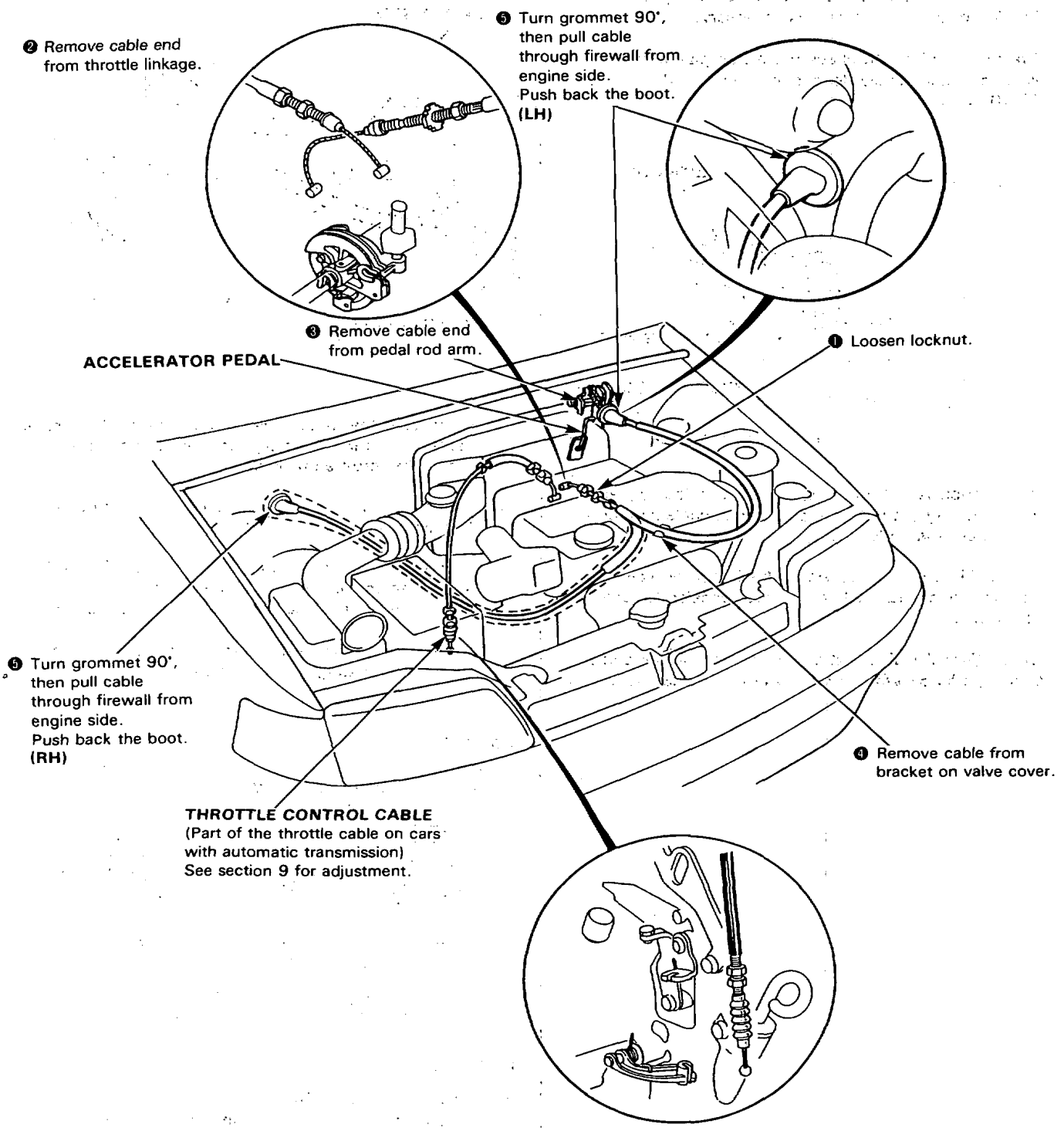
PAGE / SYSTEM / SYMPTOM	THROTTLE CABLE	AIR INTAKE CONTROL
	35	38
LOSS OF POWER		①
AFTERBURN		①
HESITATION/SURGE		①

Downloaded from www.Manualslib.com manuals search engine

Throttle Cable

Replacement

NOTE:
- Detach cable in the numbered sequence shown.
- Information on this page is for RH and LH models.



❻ Install the cable in reverse order of removal.
Apply sealant to grommet mating surface, when installing cable.

(cont'd)

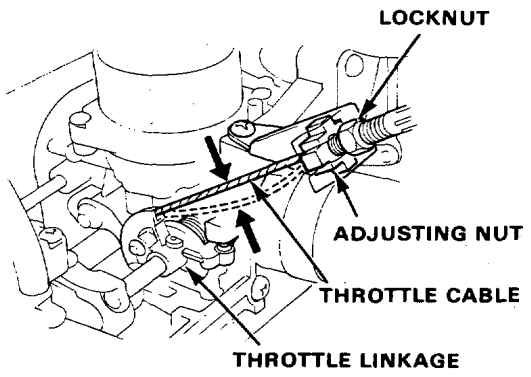
Downloaded from www.Manualslib.com manuals search engine

Air Intake System

Throttle Cable (cont'd)

Inspection/Adjustment

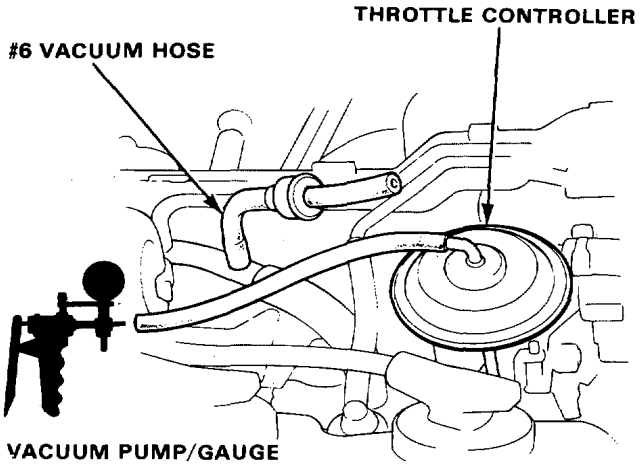
1. Warm up the engine to normal operating temperature (the cooling fan comes on).
2. Check that throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. Start the engine and check cable free-play at throttle linkage at idle. Cable deflection should be 4—10 mm (3/16—3/8 in.).



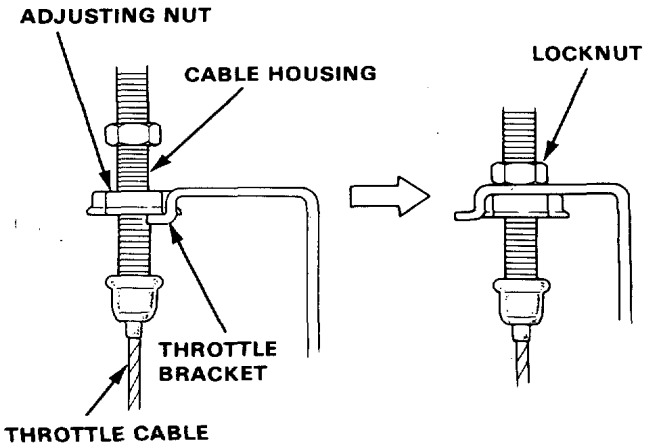
4. If deflection is not within specs, loosen locknut and turn adjusting nut until you can deflect cable as specified. Then tighten locknut.
5. With cable properly adjusted, check throttle valve to be sure it opens fully when you push accelerator pedal to the floor.

CAUTION: Check throttle valve to be sure it returns to idle position whenever you release accelerator.

1. (Except 1.6 ℓ M/T Engine)
Disconnect the #6 vacuum hose from the throttle controller and connect a vacuum pump to the controller, the apply vacuum.



2. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the throttle bracket.
3. Warm up the engine to normal operating temperature (the cooling fan comes on).
4. Remove the cable housing from the throttle bracket, set the adjusting nut on the throttle bracket.
Adjust the adjuting nut so that its free play is 0 mm.
5. Remove the cable housing from the throttle bracket, reset the adjusting nut and tighten the locknut.

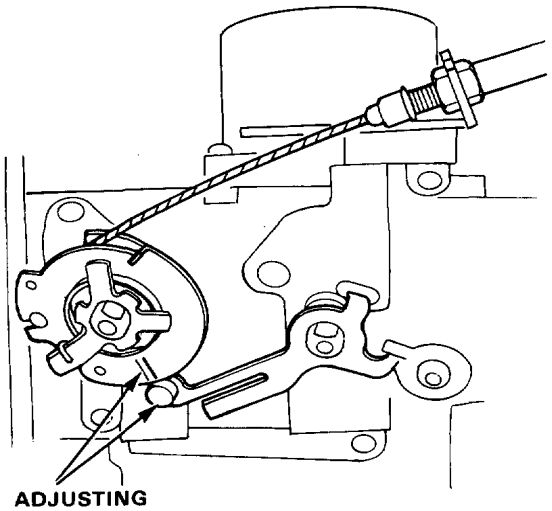


6. (Except 1.6 ℓ M/T Engine)
Disconnect the vacuum pump and connect the #6 vacuum hose.

Downloaded from www.Manualslib.com manuals search engine

Choke Cable (1.4 ℓ Engine)

1. Check that choke control operates smoothly with no evidence of binding or sticking.
2. Set choke knob in the second detent position and check that the marks are aligned.



3. If not aligned, loosen the locknut and adjust the adjusting nut, then retighten the locknut.

Downloaded from www.Manualslib.com manuals search engine

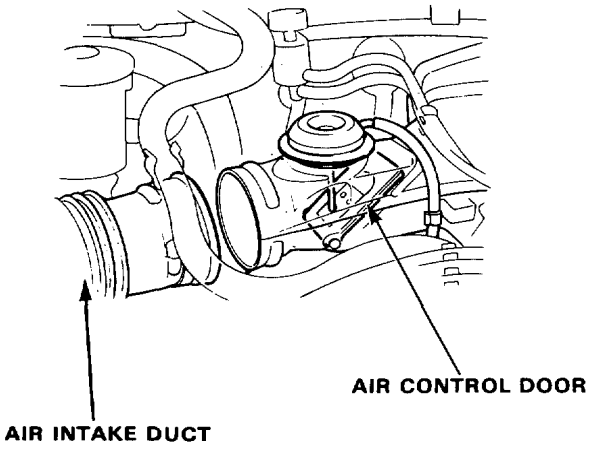
Intake Air Control System

Testing (COLD ENGINE)

NOTE: Intake air temperature must be below 25°C (77°F).

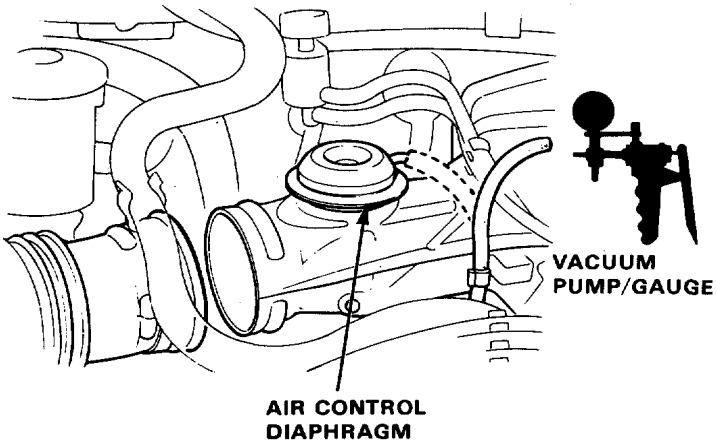
1. Disconnect the air intake duct and start the engine.

   The air control door should rise.



- If not, disconnect the vacuum hose from the air control diaphragm, and connect a vacuum pump.

  There should be vacuum.

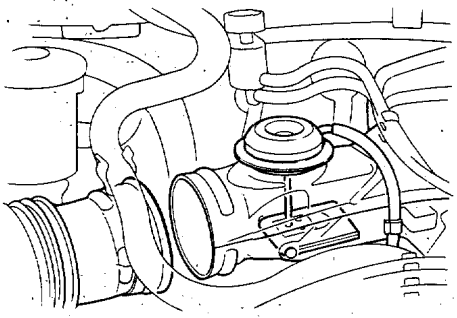


  — If there is vacuum, replace the air control diaphragm and retest.
  — If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve A.

Testing (HOT ENGINE)

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

   The air control door should be down.



- If not, disconnect the vacuum hose from the air control diaphragm, and connect a vacuum pump.

  There should be no vacuum.

  — If there is no vacuum, replace the air control diaphragm and retest.
  — If there is vacuum, replace the air bleed valve A and retest.

Downloaded from www.Manualslib.com manuals search engine

Emission Control System

Sympton-to-sub System Chart

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.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

PAGE / SYSTEM / SYMPTOM		THROTTLE CONTROL	EVAPORATIVE CONTROL
		41	44
ENGINE WON'T START			
DIFFICULT TO START ENGINE	WHEN COLD		
	WHEN WARM	②	
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPECIFICATION	②	
	WHEN WARM ENGINE SPEED TOO HIGH	①	
	WHEN WARM ENGINE SPEED TOO LOW		
	ROUGH IDLE/ FLUCTUATION		
FREQUENT STALLING	WHILE WARMING UP		
	AFTER WARMING UP		
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING		
	LOSS OFF POWER		
	AFTERBURN	②	
	HESITATION/SURGE		

Downloaded from www.Manualslib.com manuals search engine

Tailpipe Emissions

Inspection

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

1. Follow steps the CO meter method. (page 6-15).
2. Warm up and calibrate the CO meter according to the meter manufacture's instructions.
3. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

   Specified CO% ; 1.0%

Downloaded from www.Manualslib.com manuals search engine

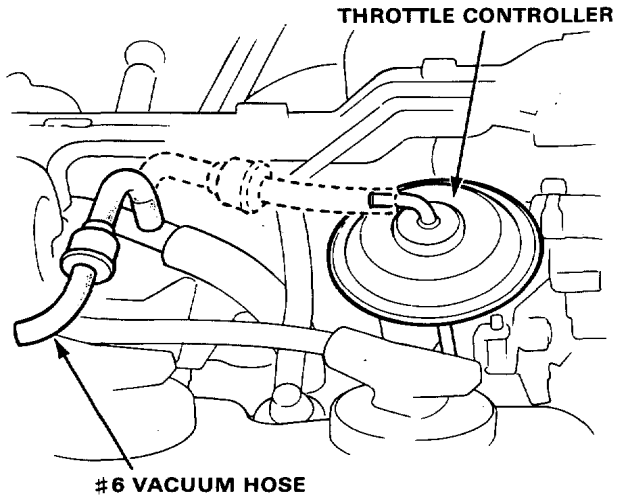
Testing (HOT ENGINE)

(1.4 ℓ Engine and 1.6 ℓ A/T Engine)

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #6 vacuum hose from the throttle controller and check the engine speed.

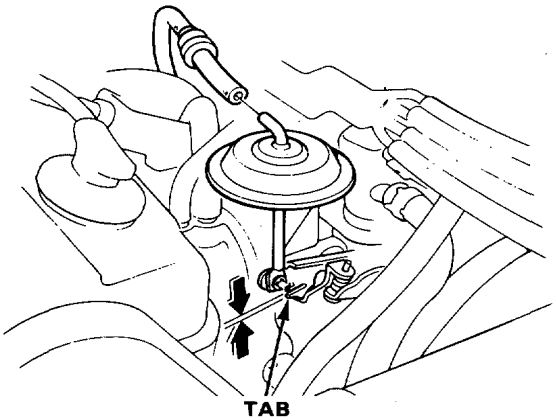
Engine speed should be:

Manual	2,200±500 min^{-1} (rpm)
Automatic	1,900±500 min^{-1} (rpm)

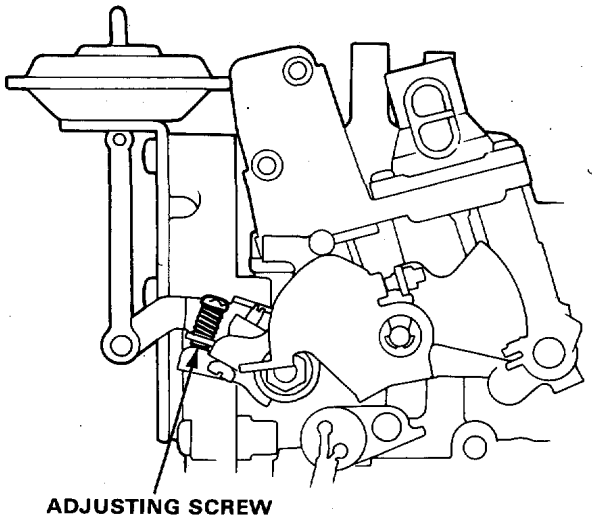


- If the engine speed is excessively high:
  1.4 ℓ Engine; adiust by bending TAB.
  1.6 ℓ Engine; adjust by turning the adjusting screw.

(1.4 ℓ Engine)

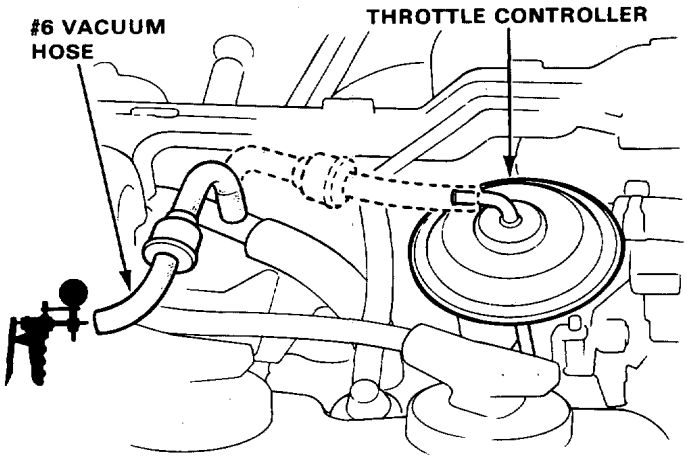


(1.6 ℓ A/T Engine)



- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose and check vacuum.

There should be vacuum.



- If there is no vacuum, check the #6 vacuum hose for proper connection cracks, brockage or disconnected hose and replace the check valve.
- If there is vacuum, replace the throttle controller and retest.

3. Reconnect the #6 vacuum hose and check the idle speed.

Idle speed should be within specification (page 6-15).

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Emission Conttol System

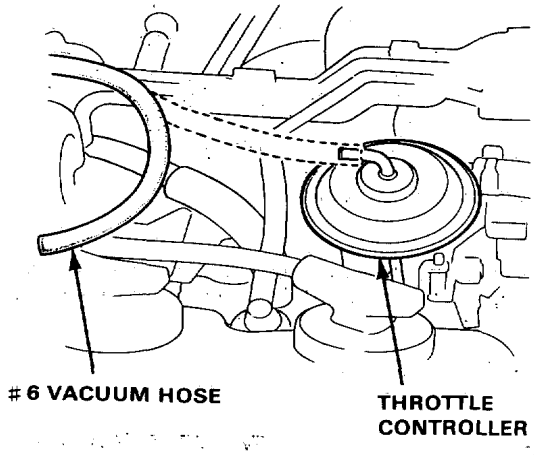
Throttle Control System (cont'd)

(1.6 ℓ M/T Engine)

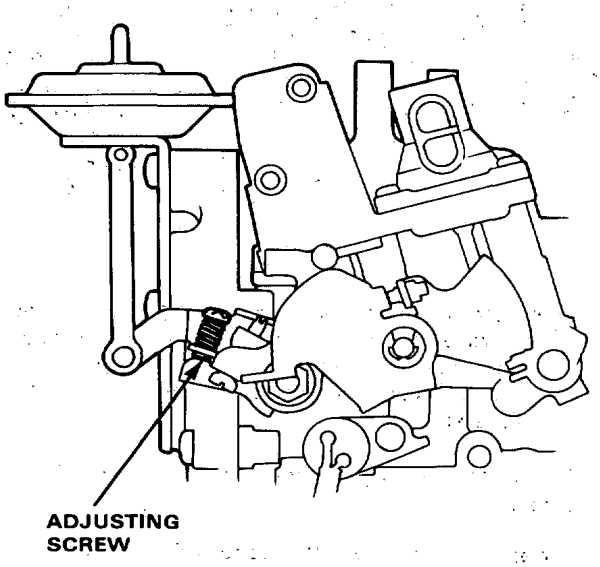
1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).

2. Disconnect #6 vacuum hose from the throttle controller, connect a vacuum pump to the controller and apply 400 mmHg (16 in. Hg) vacuum.

   Engine speed should rise to 1,500–2,500 min^{-1} (rpm) with in 1 minute.

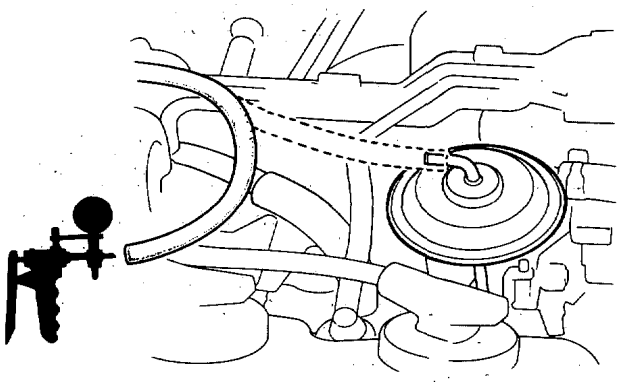


- If the engine speed is excessively high, adjust the engine speed by turning adjusting screw.



- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose.
  Raise the engine speed to 3,500 min^{-1} (rpm) and close the throttle suddenly, then check vacuum.

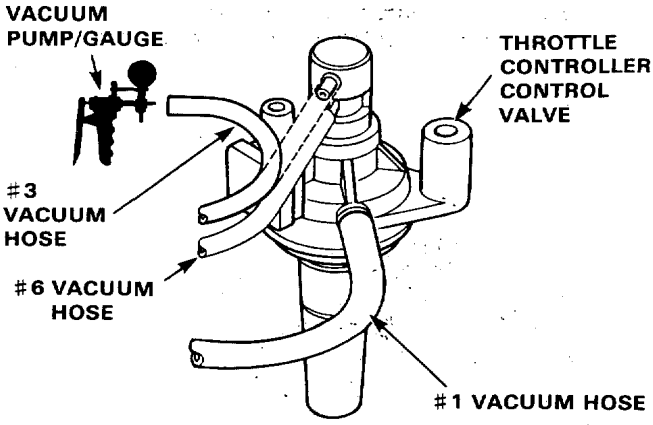
  There should be vacuum.



  — If there is vacuum, replace the throttle controller and retest.

  — If there is no vacuum, check the #6 vacuum hose for proper connection, cracks, blockage or disconnected hose, and disconnected the #3 vacuum hose from the throttle controller control valve. Raise the engine speed and close the throttle suddenly, then check vacuum.

  There should be vacuum.



- If there is vacuum, chek the #1 vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the throttle controller control valve.
- If there is no vacuum, check the #3 vacuum hose for proper connection, cracks, blockage or disconnected hose.

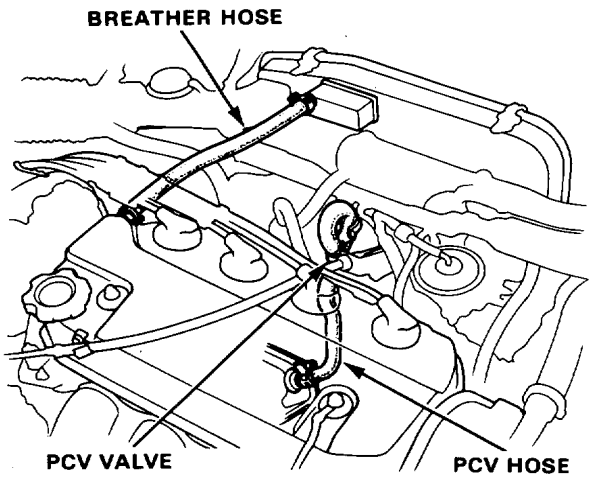
3. Reconnect the #6 vacuum hose and check the idle speed.
   Idle speed should be within specification (page 6-15).

Downloaded from www.Manualslib.com manuals search engine

Positive Crankcase Ventilation

PCV Valve Test

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 you lightly pinch the PCV hose with your fingers or pliers.

   - If no clicking sound is heard, replace PCV valve and recheck.

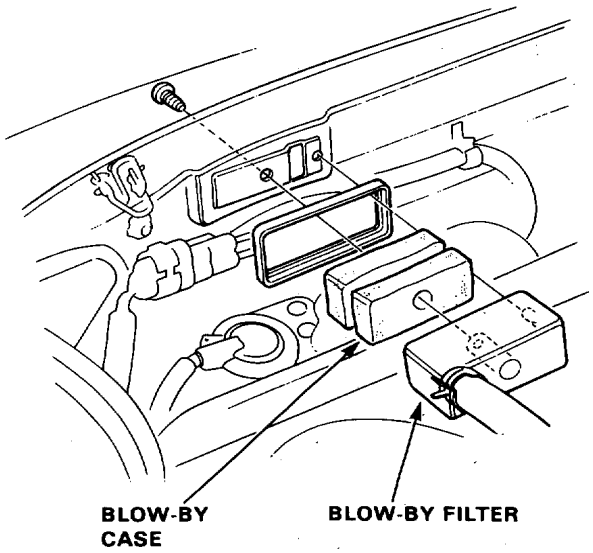
Blow-by Filter Test

Inspect the condition of the blow-by filter.

- Replace the filter in the following instances:

  — When the filter is stuck fast and oil is dripping or seeping through.

  — When the filter is covered with dust and dirt so that clogging is evident.

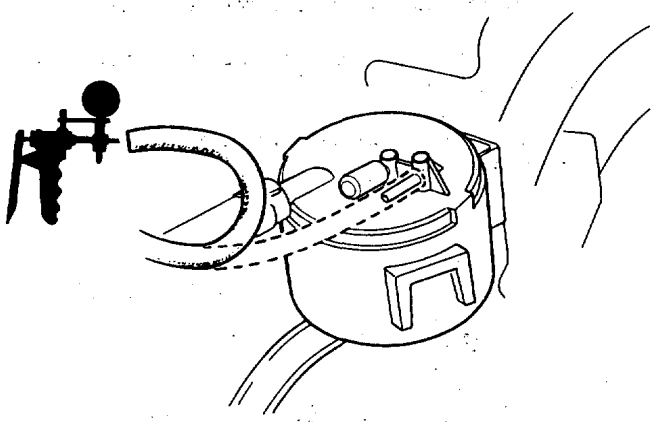


Downloaded from www.Manualslib.com manuals search engine

Emission Control System

Evaporative Emission Controls (1.6 ℓ Engine)

1. Disconnect vacuum hose at the charcoal canister, connect a vacuum pump/gauge to hose.



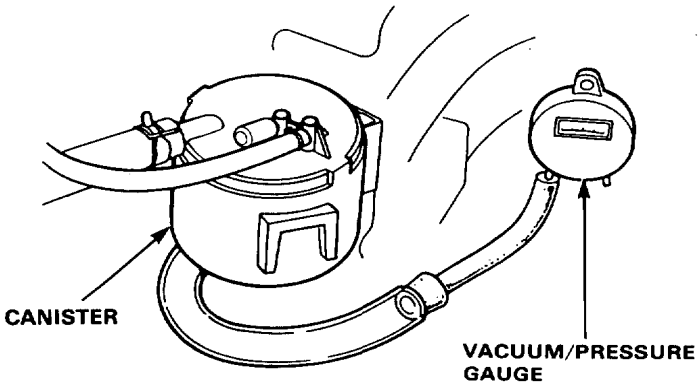
2. Start the engine and raise speed to 3,500 min^{-1} (rpm).

   There should be vacuum.

   - If vacuum is available, go on to step 3.
   - If vacuum is not available, check the vacuum line.

3. Disconnect a vacuum pump/gauge and reconnect hose. Remove fuel filler cap.

4. Remove canister purge air hose from frame and connect hose to a vacuum gauge as shown.



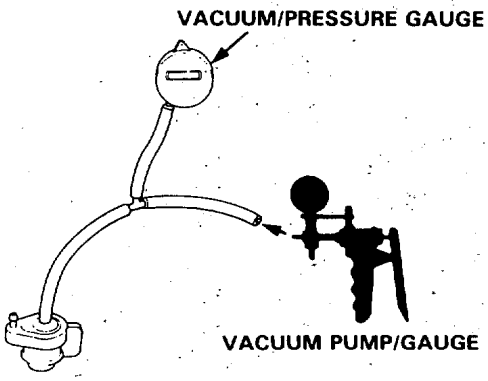
5. Raise engine speed to 3,500 min^{-1} (rpm).
   Vacuum should appear on gauge within 1 minute.

   - If no vacuum, replace the charcoal canister.

Two-way Valve Testing

1. Remove the fuel filler cap.

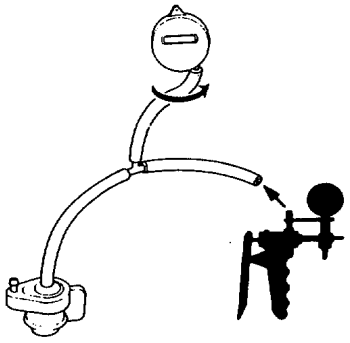
2. Remove the vapor line from the canister or frame, and connect to a T-fitting from the vacuum gauge and the vacuum pump as shown.



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 retest.

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

Emission Control System

Evaporative Emission Controls (1.6 ℓ Engine)

Troubleshooting Flow Chart

Inspection of Inner Vent Solenoid Valve.

Remove the air cleaner cover and filter element.

Disconnect two vacuum hose from the carburetor and connect a vacuum pump.

Apply vacuum.

Does solenoid valve hold vacuum? — NO → **Replace the solenoid valve.**

YES

Turn the ignition switch ON

Apply vacuum.

Does solenoid valve hold vacuum? — YES → Turn the ignition switch OFF.

NO

Solenoid valve is OK.

Disconnect the 2P connector near the air cleaner.

Turn the ignition switch ON.

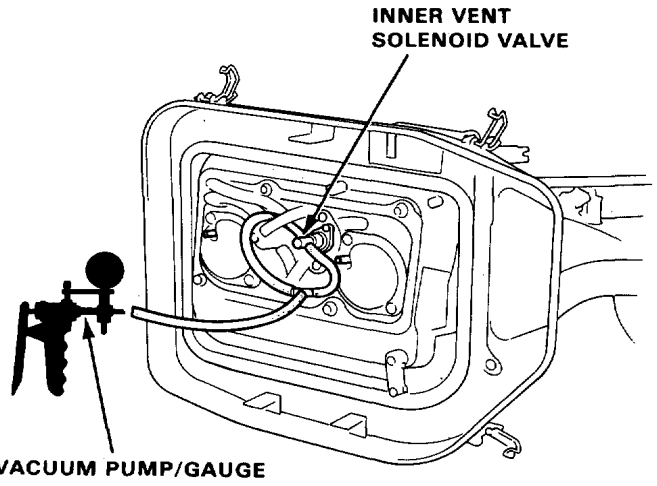
Measure voltage between BLK/YEL (+) terminal and BLK (−) terminal.

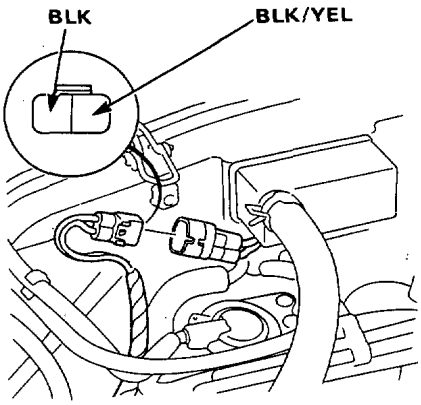
Is there voltage? — YES → **Replace the solenoid valve.**

NO

(To page 6-47)

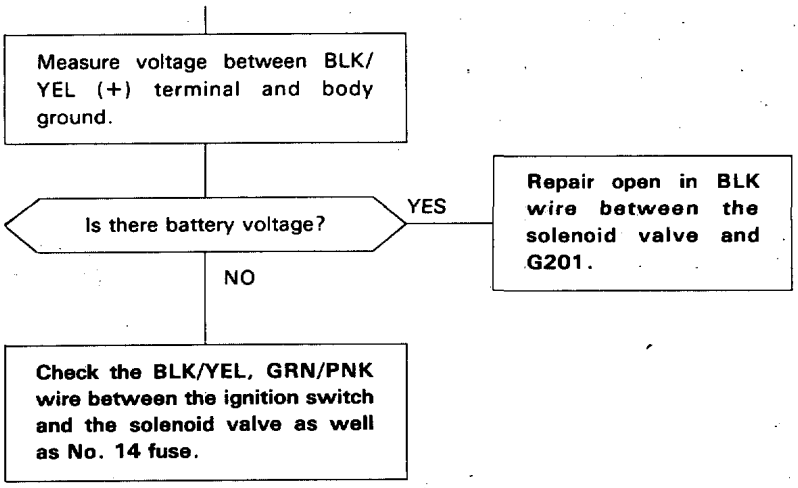
Inner Vent Solenoid Valve





Downloaded from www.Manualslib.com manuals search engine

(From page 6-46)



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Controls (cont'd)
(1.6 ℓ Engine)

Troubleshooting Flow Chart

Inspection of Air Vent Cut-off Solenoid Valve.

Disconnect the upper hose of the solenoid valve from the air cleaner and connect a vacuum pump.

Apply vacuum.

Does solenoid valve hold vacuum ? — NO → **Replace the solenoid valve.**

YES

Turn the ignition switch ON.

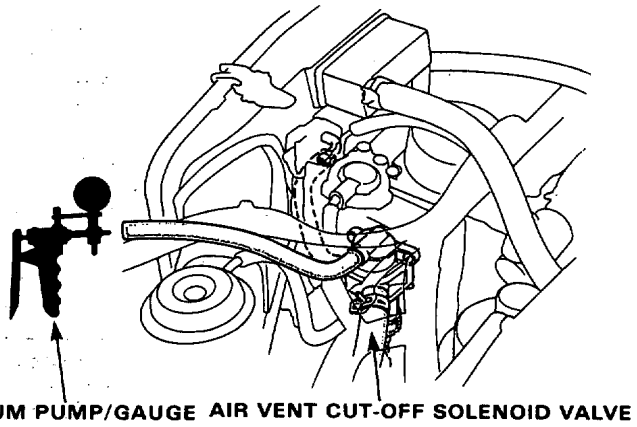
Apply vacuum.

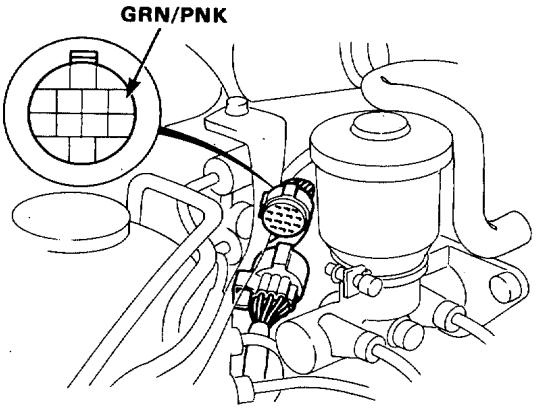
Does solenoid valve hold vacuum? — YES → Turn the ignition switch OFF.

NO

Solenoid valve is OK.

Air Vent Cut-off Solenoid Valve





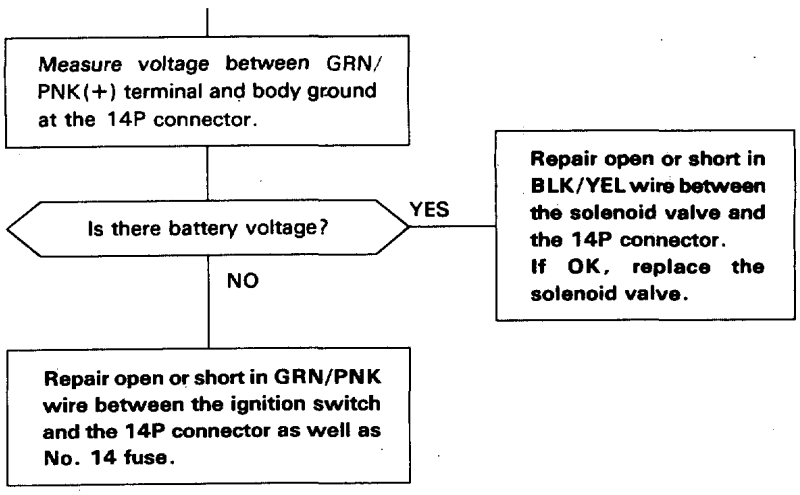
Disconnect the 14P connector.

Turn the ignition switch ON.

(To page 6-49)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-48)

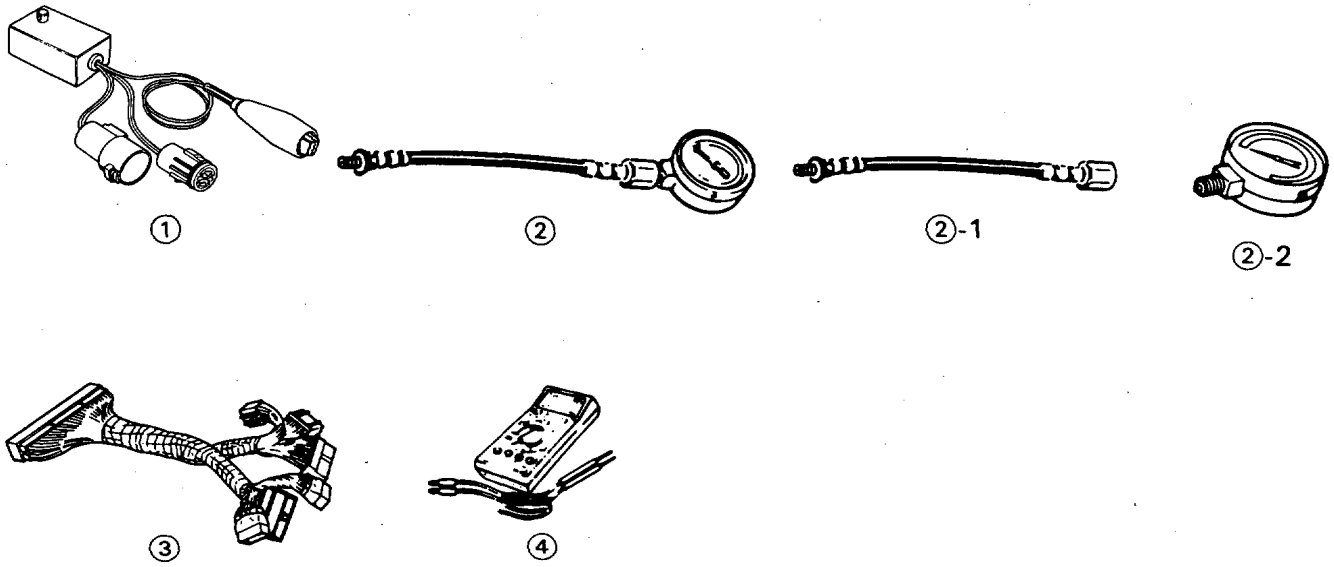


Downloaded from www.Manualslib.com manuals search engine

Special Tools

Special Tools

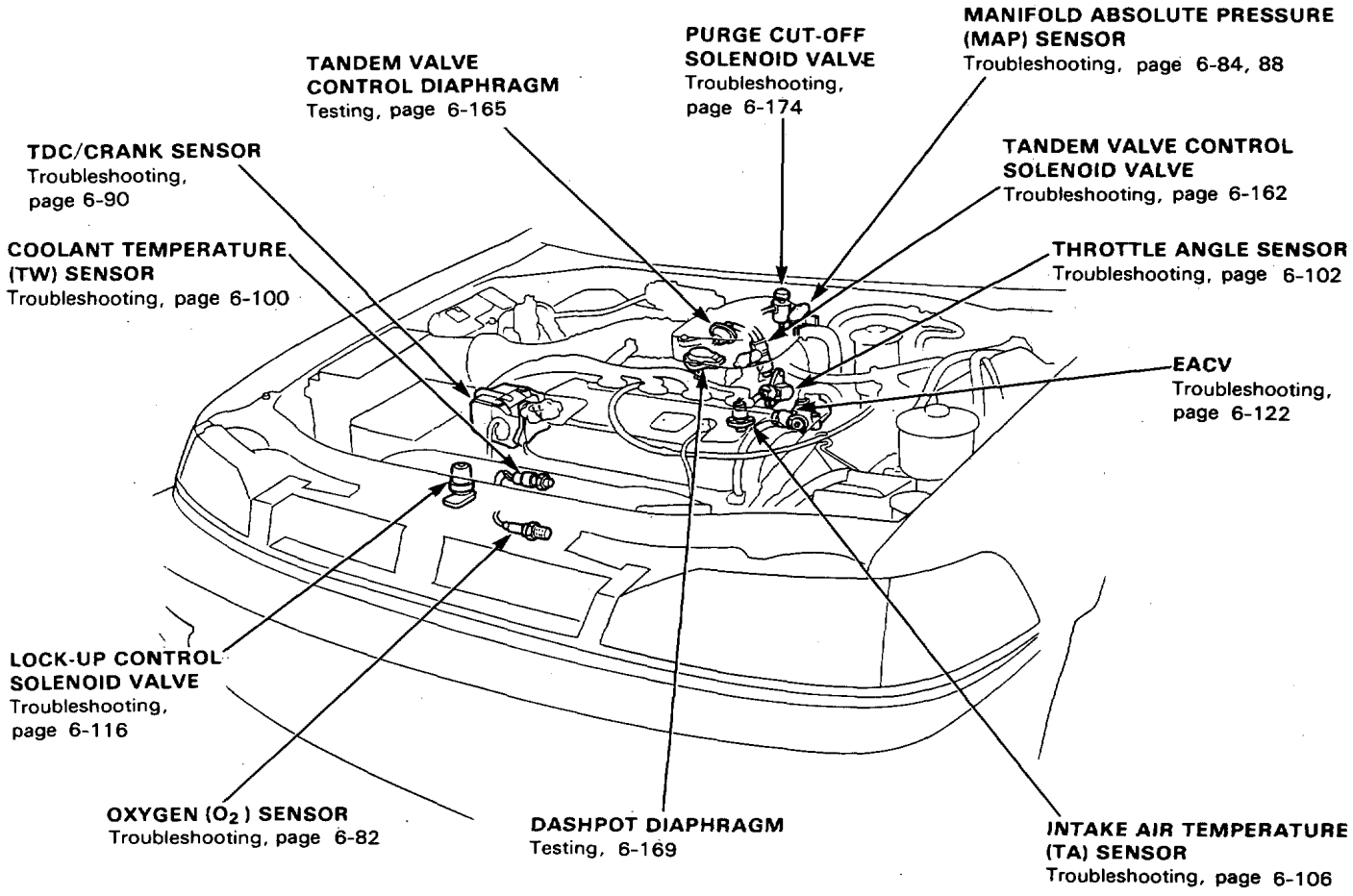
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07406—0040001	Fuel Pressure Gauge Set	1	
②-1	07406—0040100	Pressure Gauge	(1)	Component Tools
②-2	07406—0040201	Hose Assy	(1)	Component Tools
③	07999—PD6000A	Test Harness	1	
④	07411—0020000	Digital Circuit Tester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

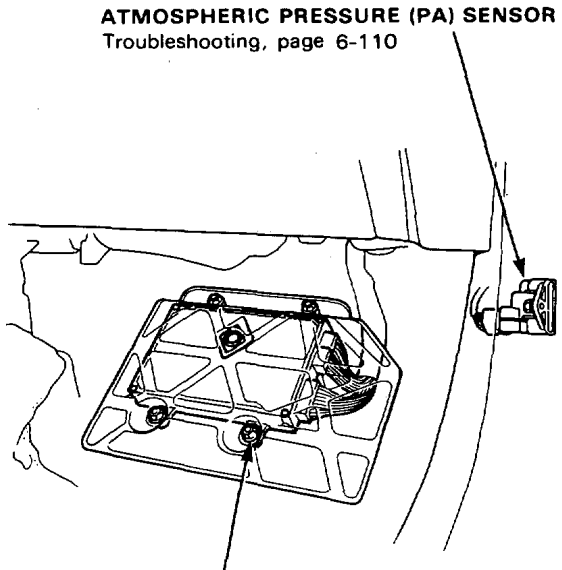


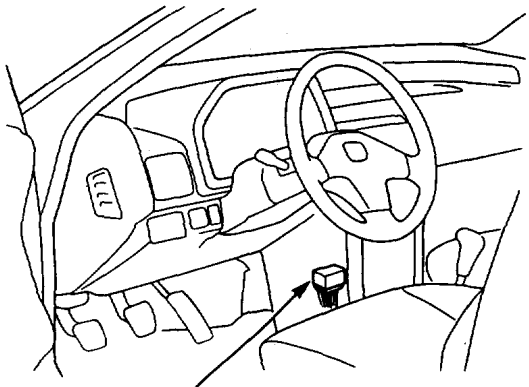
Downloaded from www.Manualslib.com manuals search engine

Component Locations

Index [1.5 ℓ]





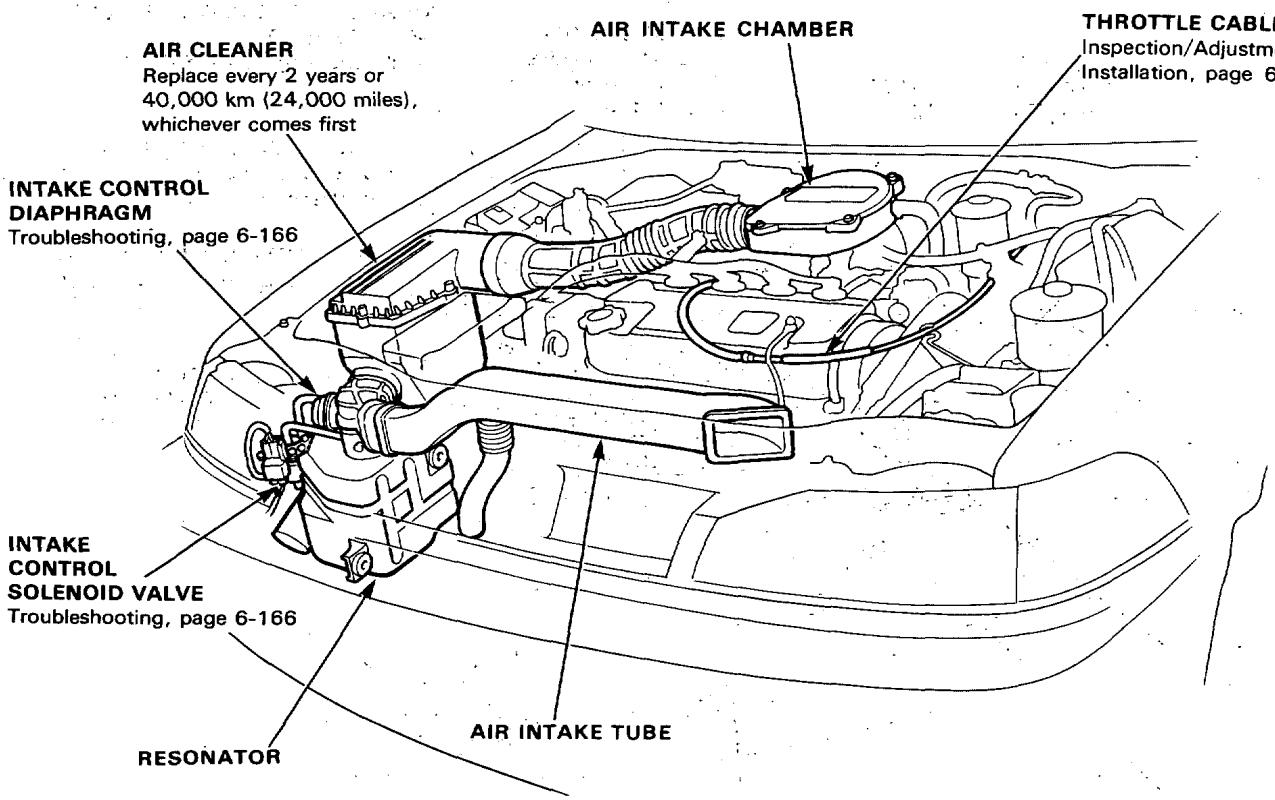


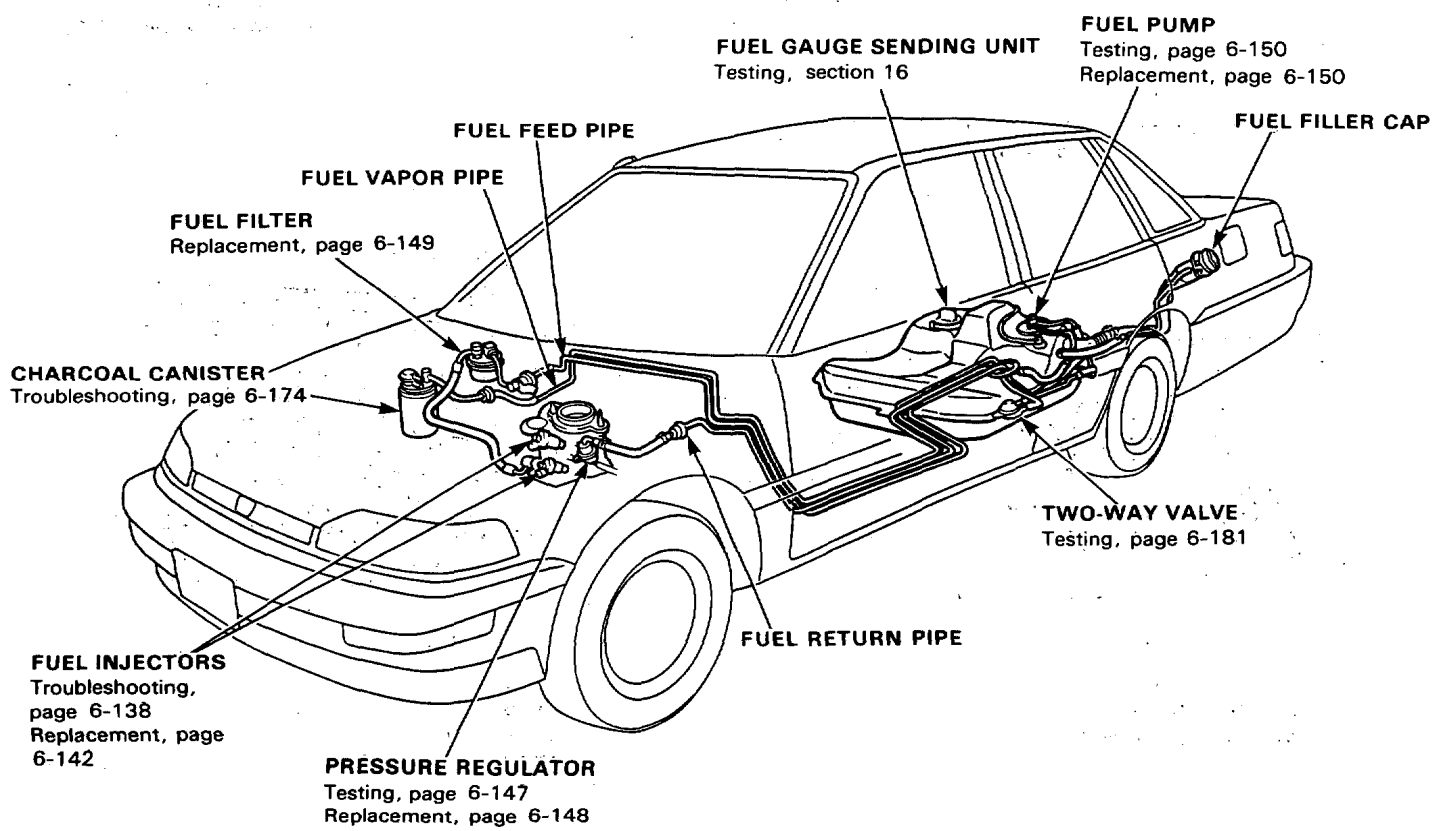
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

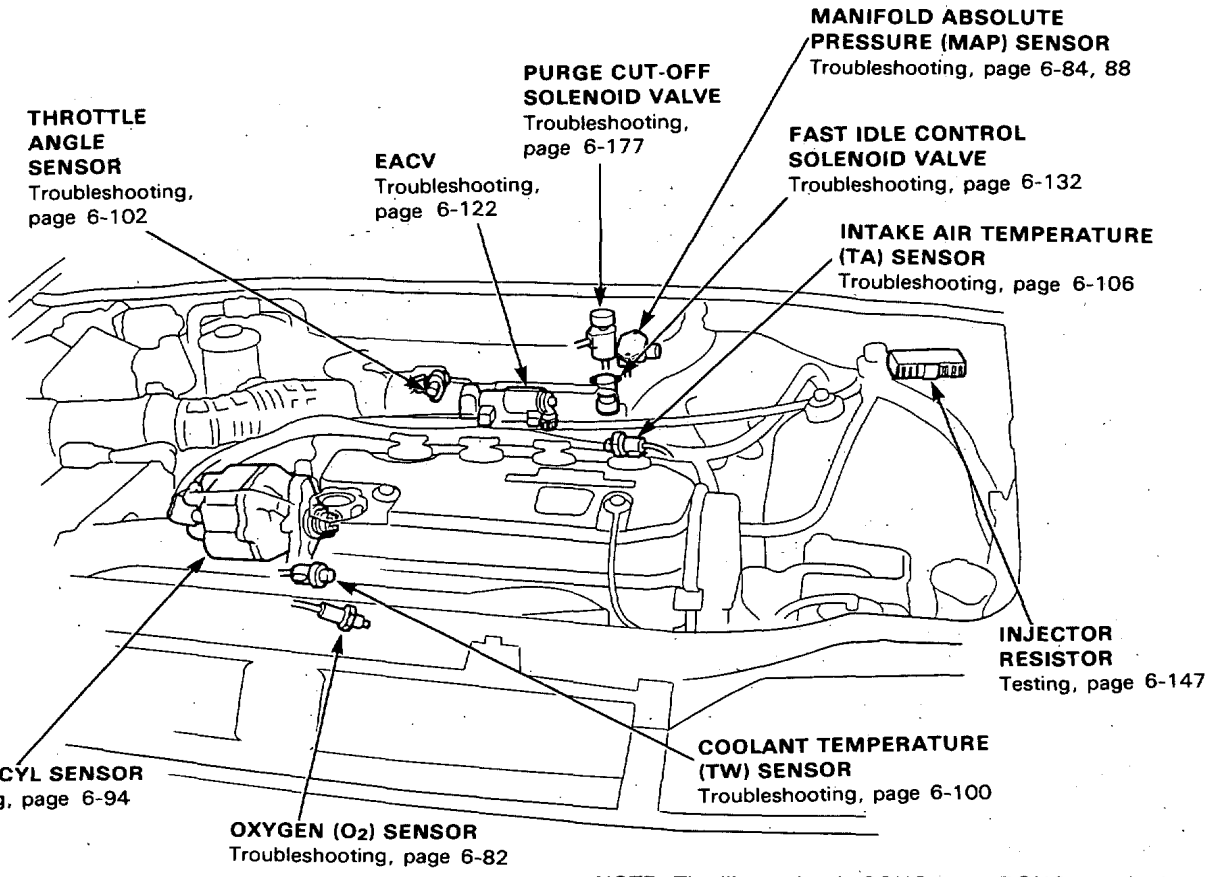
Component Locations

Index [1.5 ℓ] (cont'd)

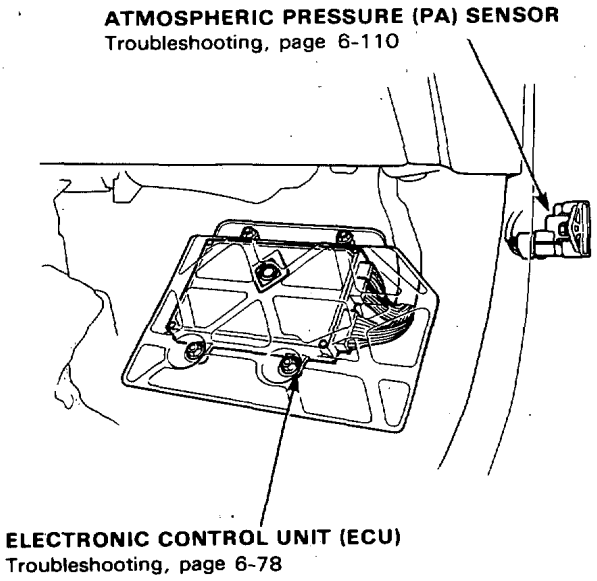


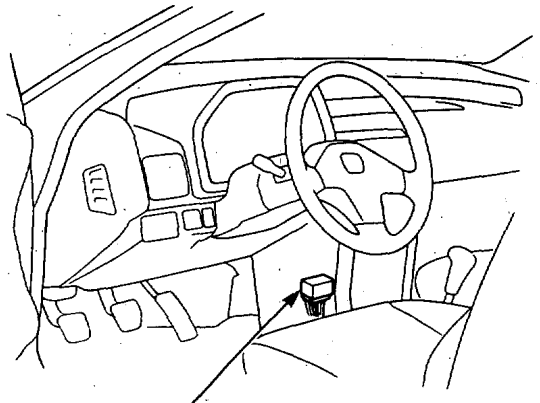


Downloaded from www.Manualslib.com manuals search engine



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



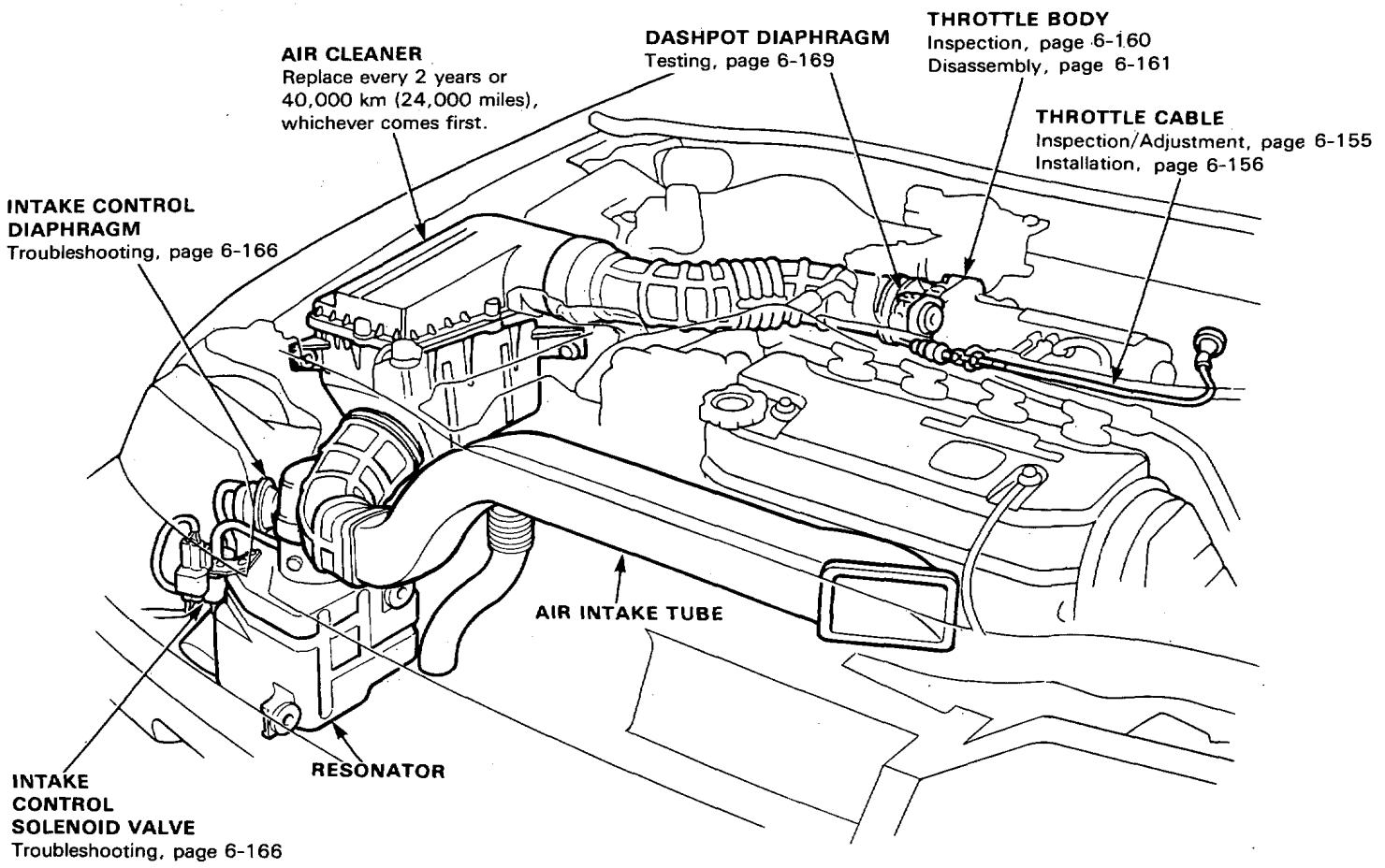


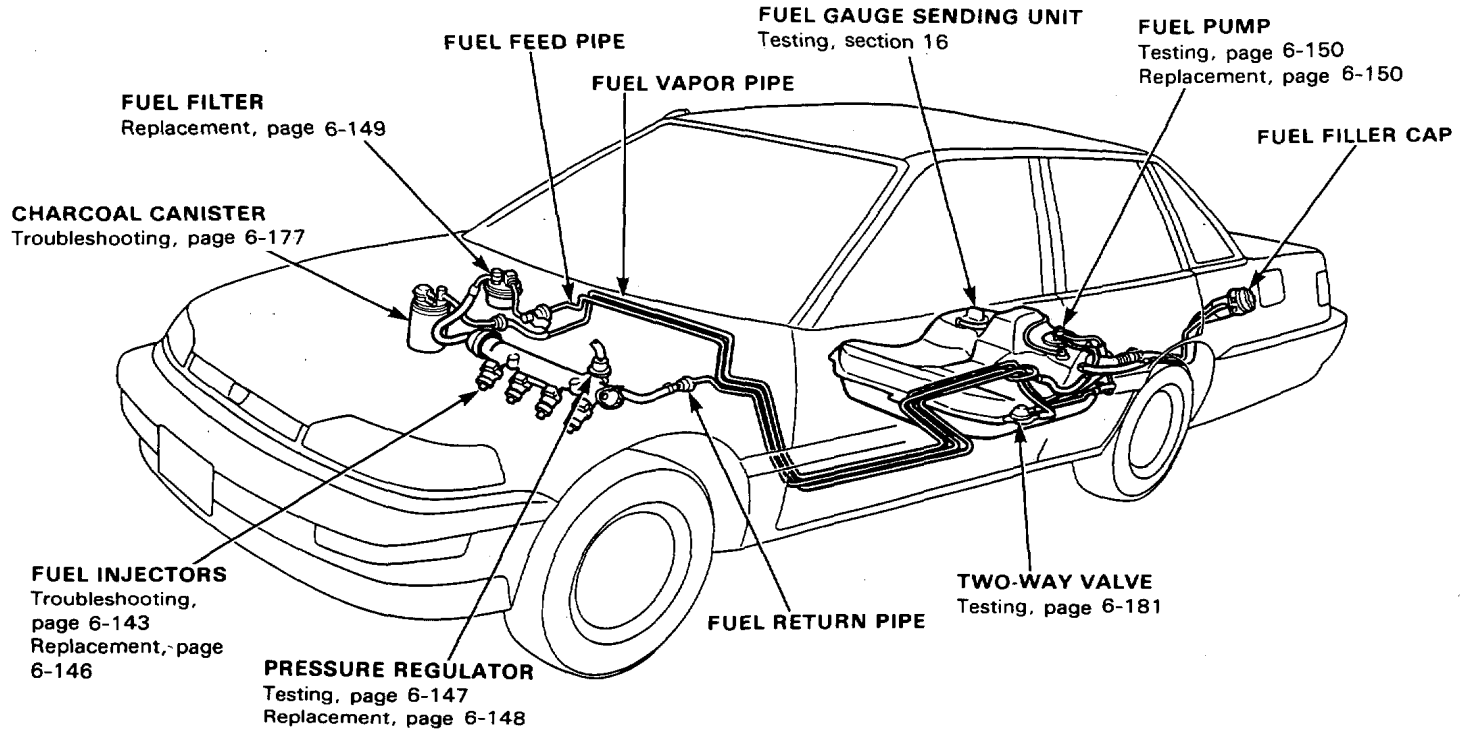
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

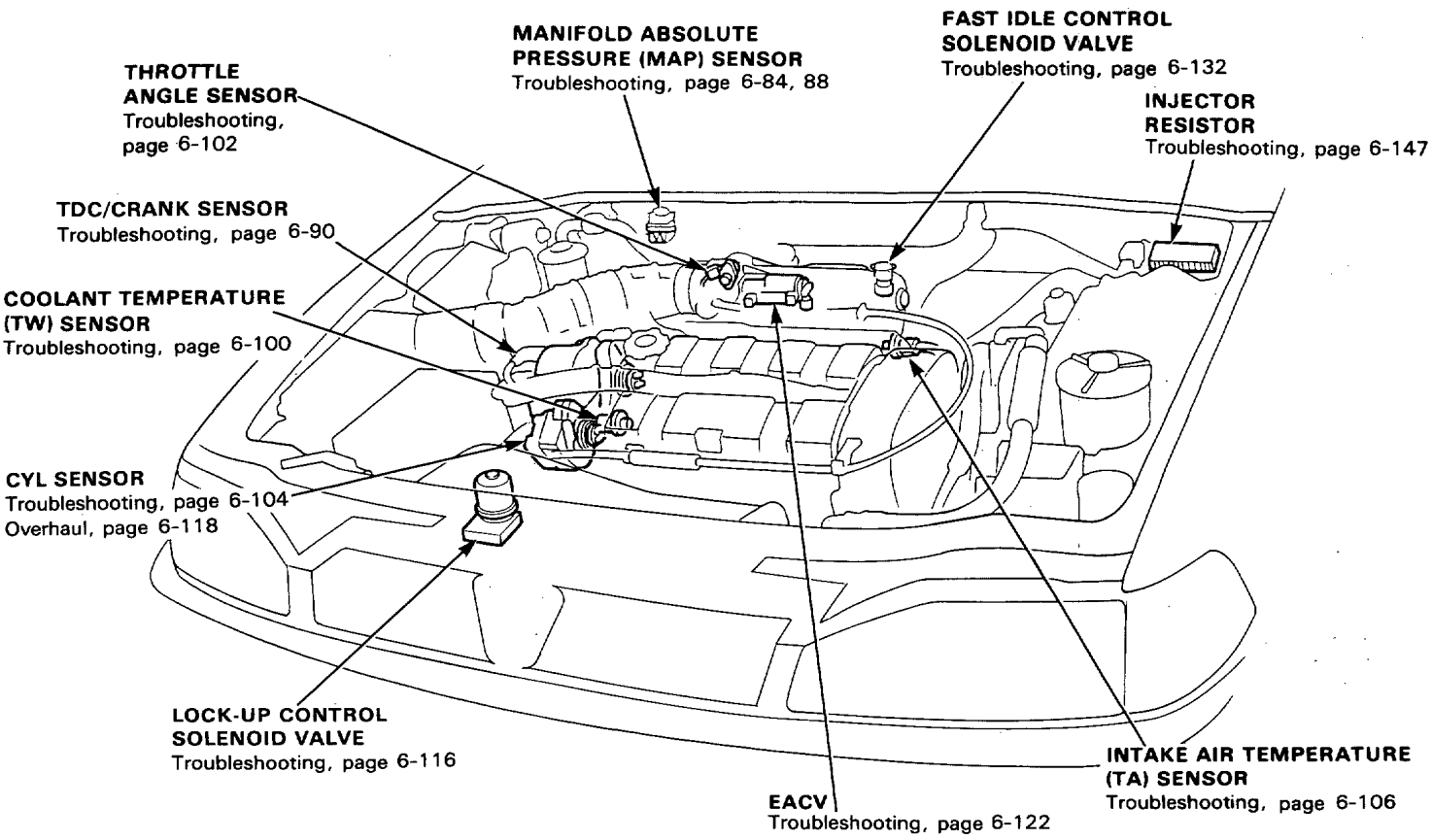
Component Locations

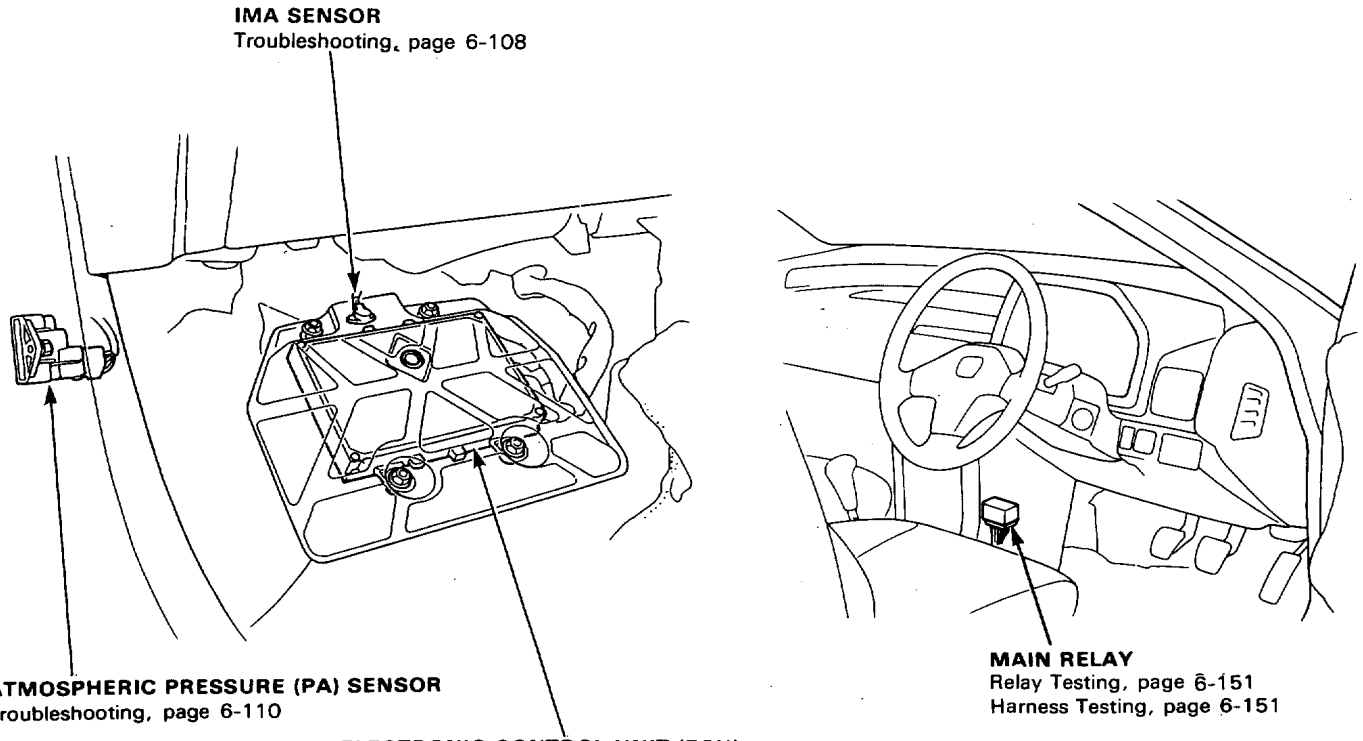
Index [1.6 ℓ with CATA] (cont'd)





Downloaded from www.Manualslib.com manuals search engine



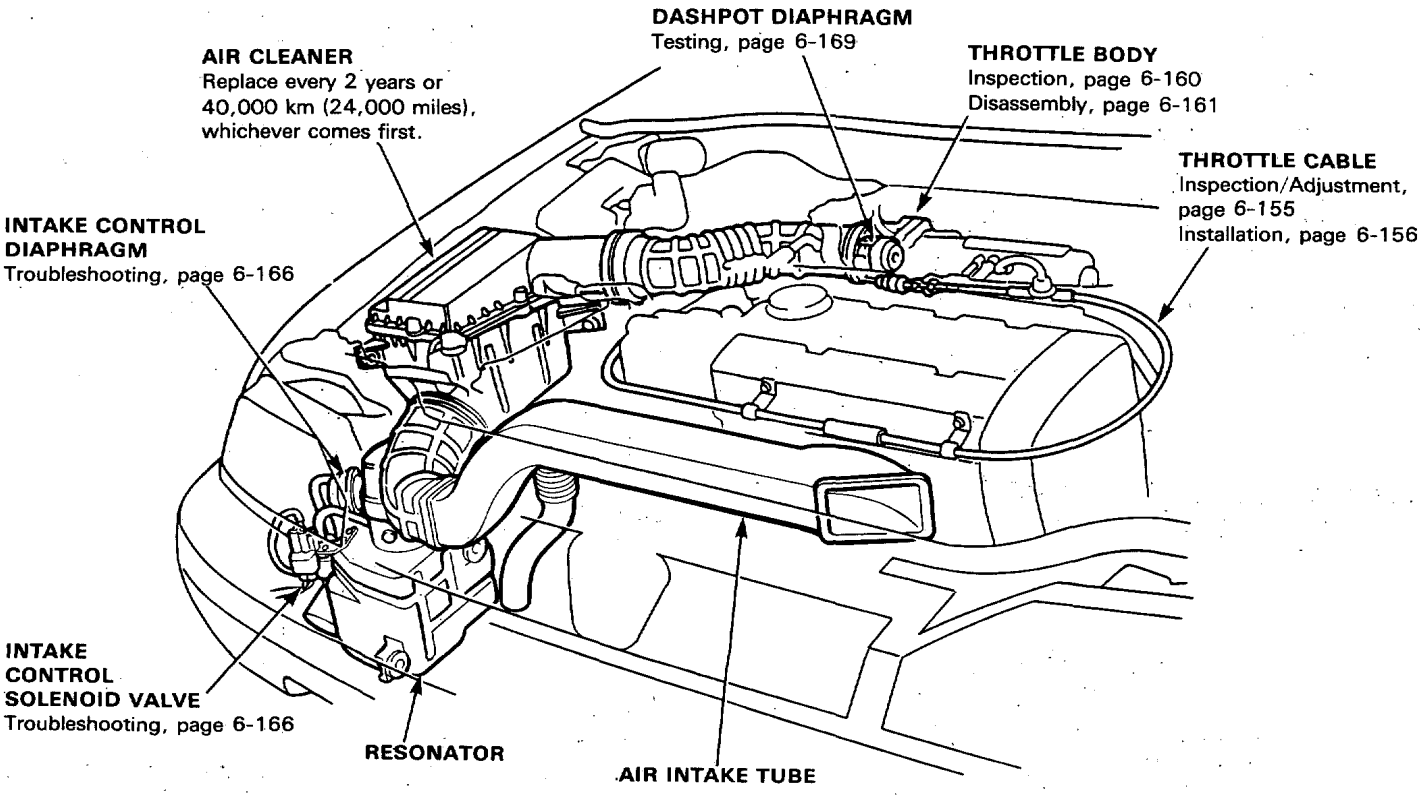


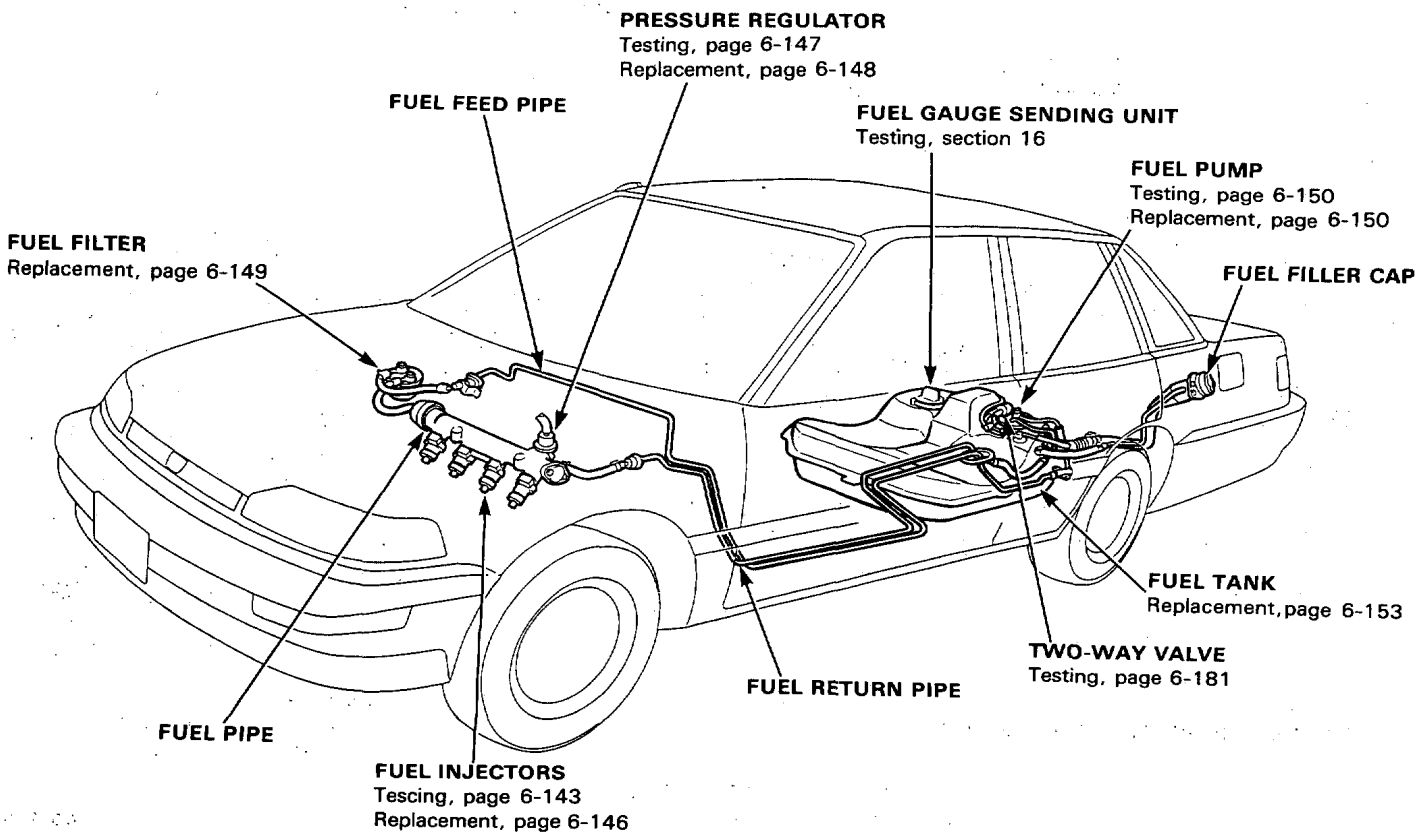
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Component Locations

Index [1.6 ℓ with out CATA] (cont'd)

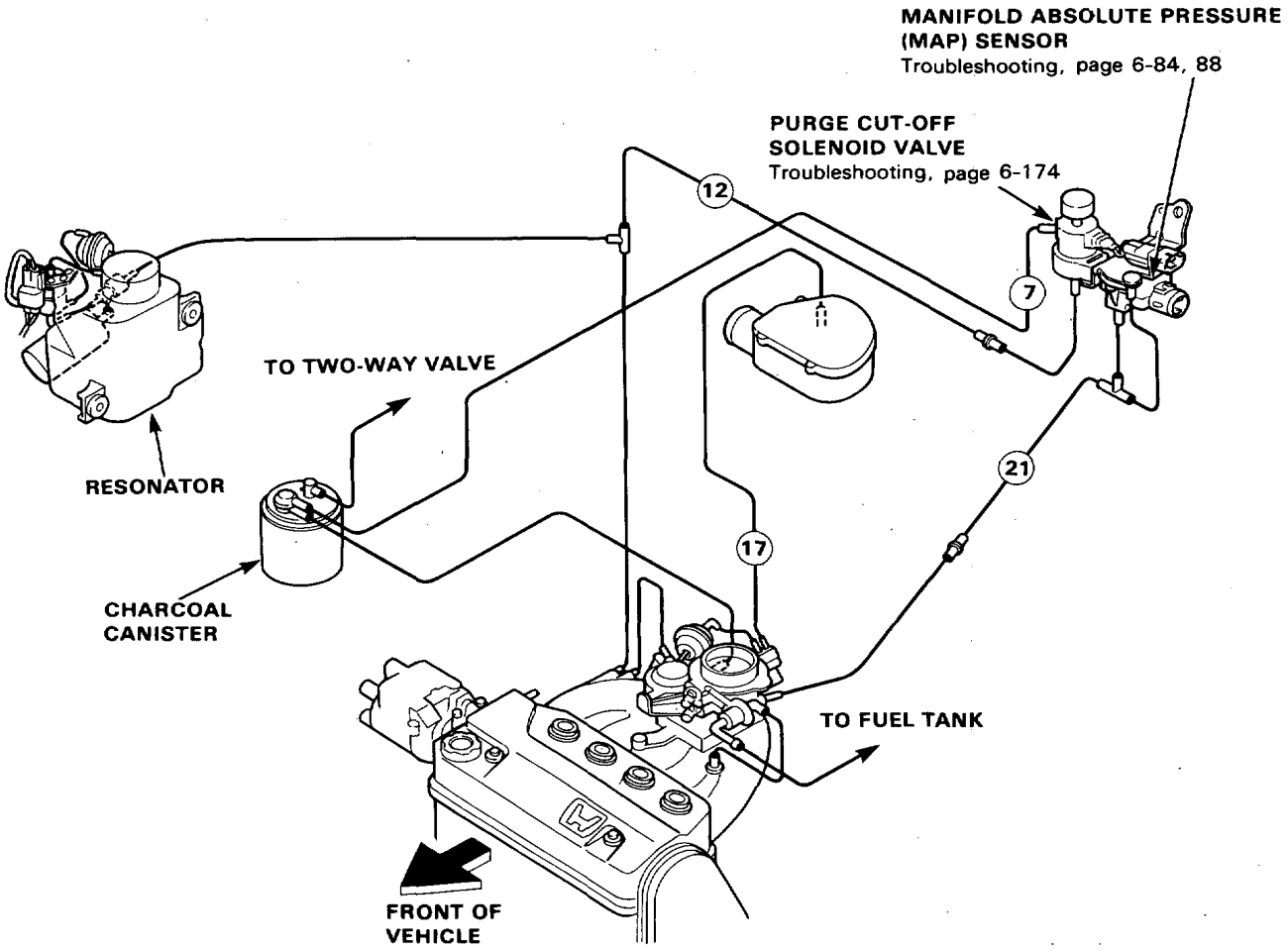




Downloaded from www.Manualslib.com manuals search engine

System Description

Vacuum Connections [1.5 ℓ]

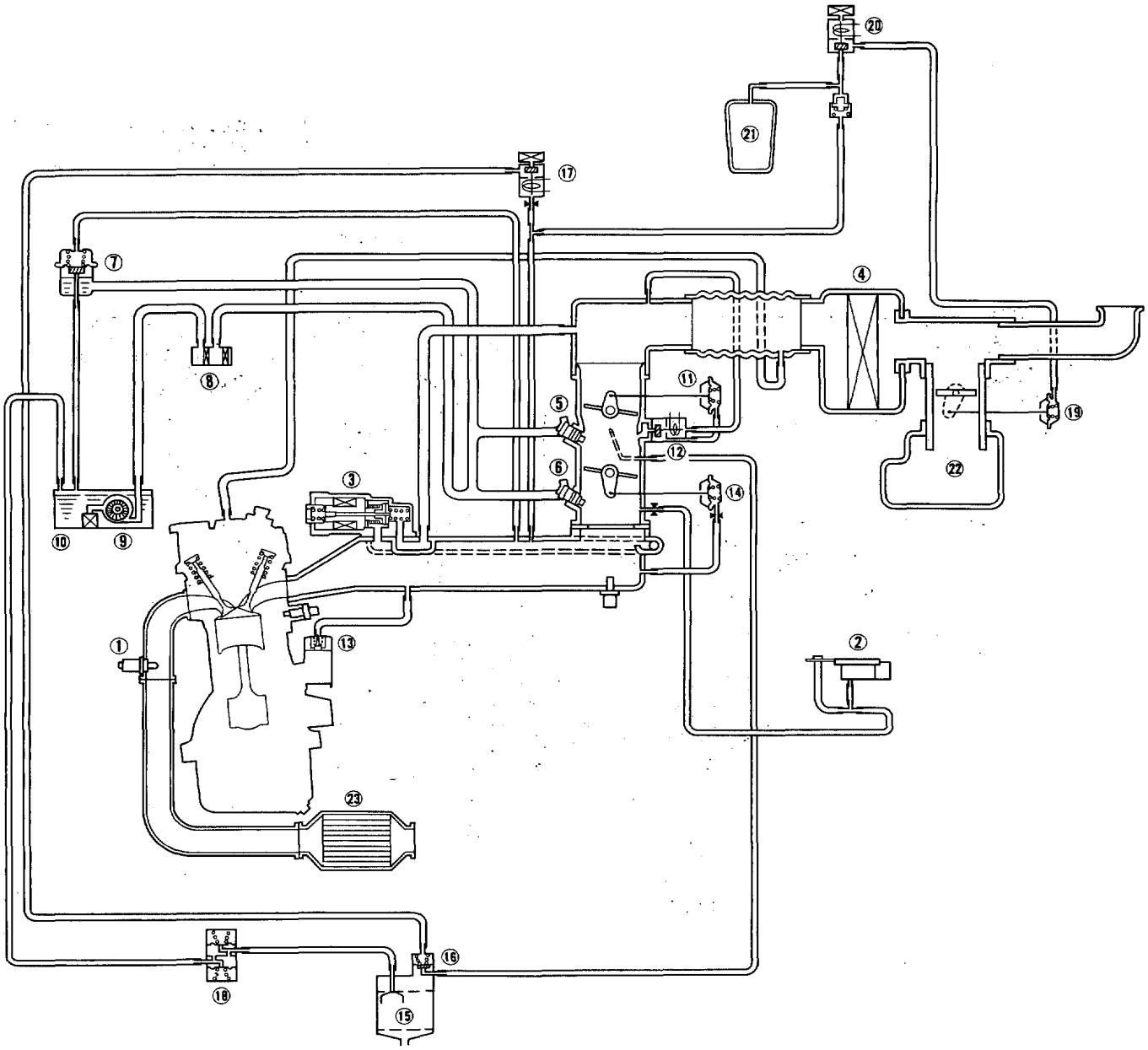


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

System Description

Vacuum Connections [1.5 ℓ] (cont'd)

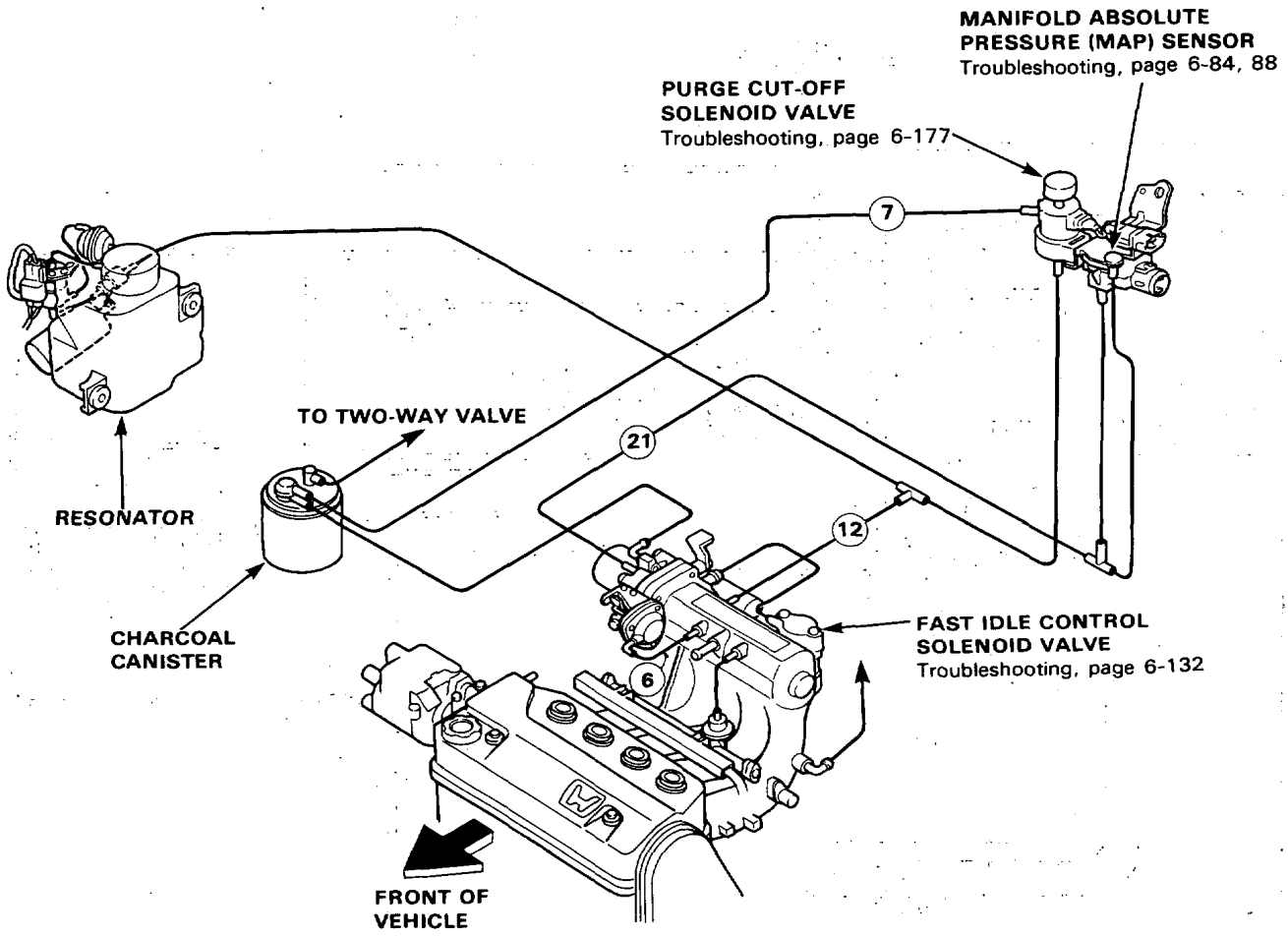


① OXYGEN (O_2) SENSOR
② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
③ ELECTRONIC AIR CONTROL VALVE (EACV)
④ AIR CLEANER
⑤ MAIN INJECTOR
⑥ AUX. INJECTOR
⑦ PRESSURE REGULATOR
⑧ FUEL FILTER
⑨ FUEL PUMP
⑩ FUEL TANK
⑪ TANDEM VALVE CONTROL DIAPHRAGM
⑫ TANDEM VALVE CONTROL SOLENOID VALVE
⑬ PCV VALVE
⑭ DASHPOT DIAPHRAGM
⑮ CHARCOAL CANISTER
⑯ PURGE CONTROL DIAPHRAGM VALVE
⑰ PURGE CUT-OFF SOLENOID VALVE
⑱ TWO-WAY VALVE
⑲ INTAKE CONTROL DIAPHRAGM
⑳ INTAKE CONTROL SOLENOID VALVE
㉑ VACUUM TANK
㉒ RESONATOR
㉓ CATALYTIC CONVERTER

Downloaded from www.Manualslib.com manuals search engine

Vacuum Connections [1.6 ℓ with CATA]

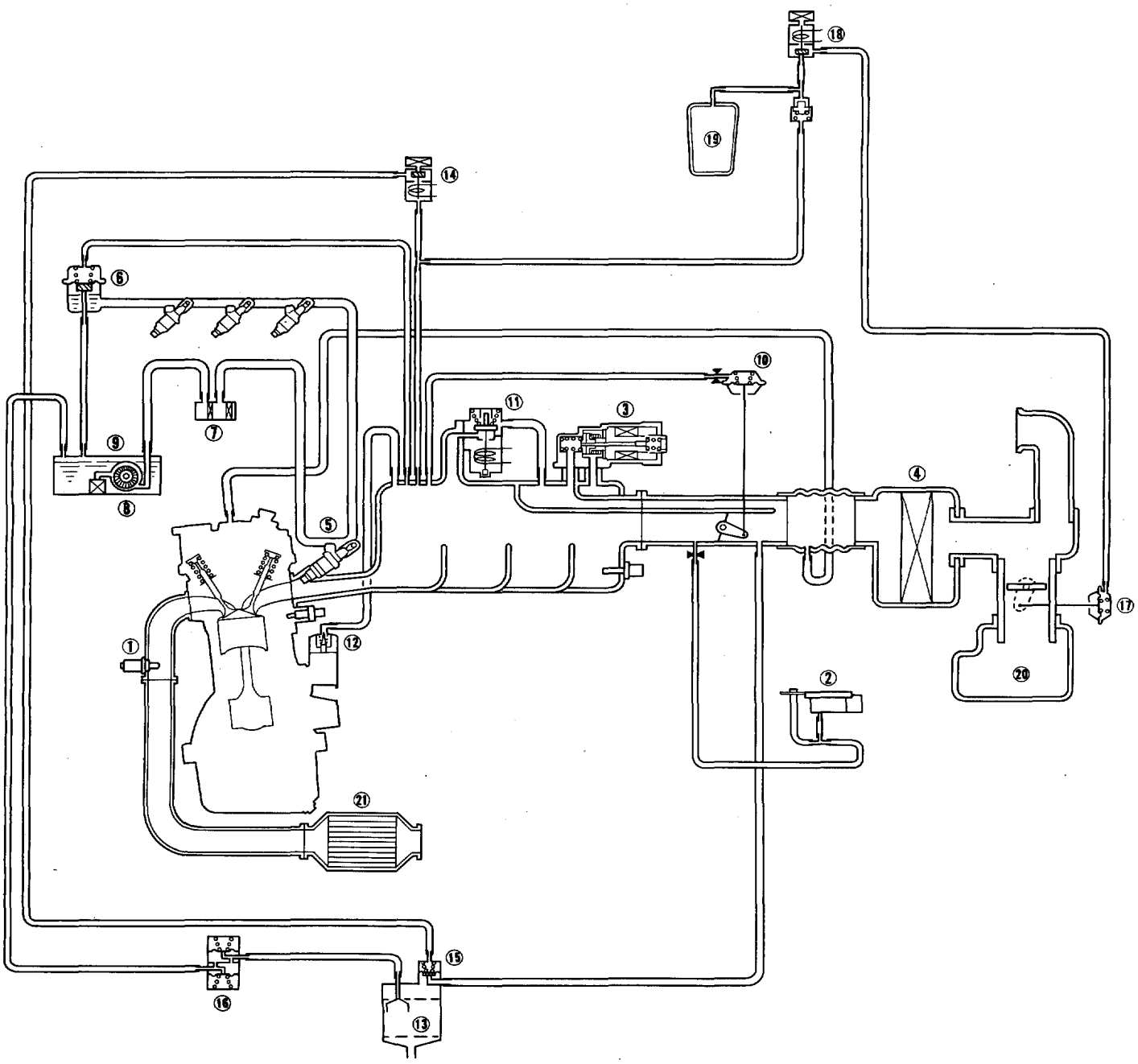
NOTE: The illustration is SOHC type. DOHC type is the same as of SOHC type, except for the cylinder head.



Downloaded from www.Manualslib.com manuals search engine

System Description

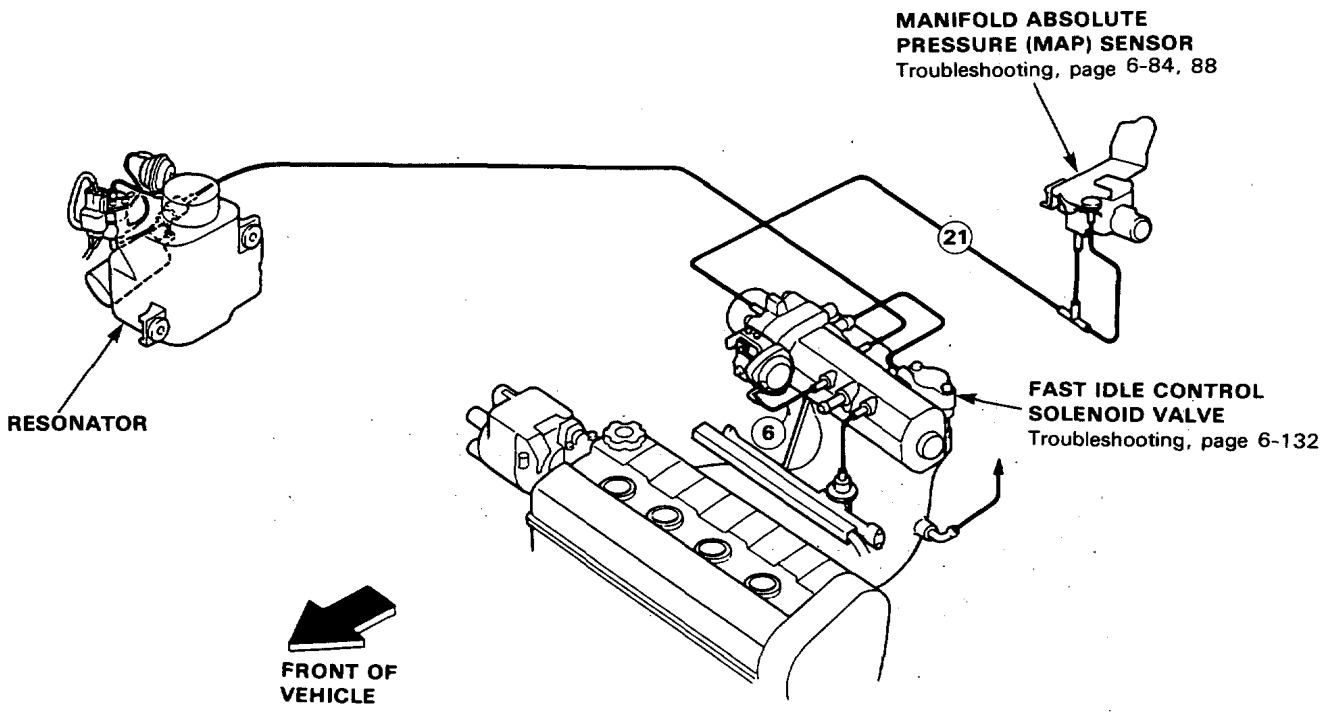
Vacuum Connections [1.6 ℓ] (cont'd)



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 FAST IDLE CONTROL SOLENOID VALVE
⑫ PCV VALVE
⑬ CHARCOAL CANISTER
⑭ PURGE CUT-OFF SOLENOID VALVE
⑮ PURGE CONTROL DIAPHRAGM VALVE
⑯ TWO-WAY VALVE
⑰ INTAKE CONTROL DIAPHRAGM
⑱ INTAKE CONTROL SOLENOID VALVE
⑲ VACUUM TANK
⑳ RESONATOR
㉑ CATALYTIC CONVERTER

Downloaded from www.Manualslib.com manuals search engine

Vacuum Connections [1.6 ℓ with out CATA]

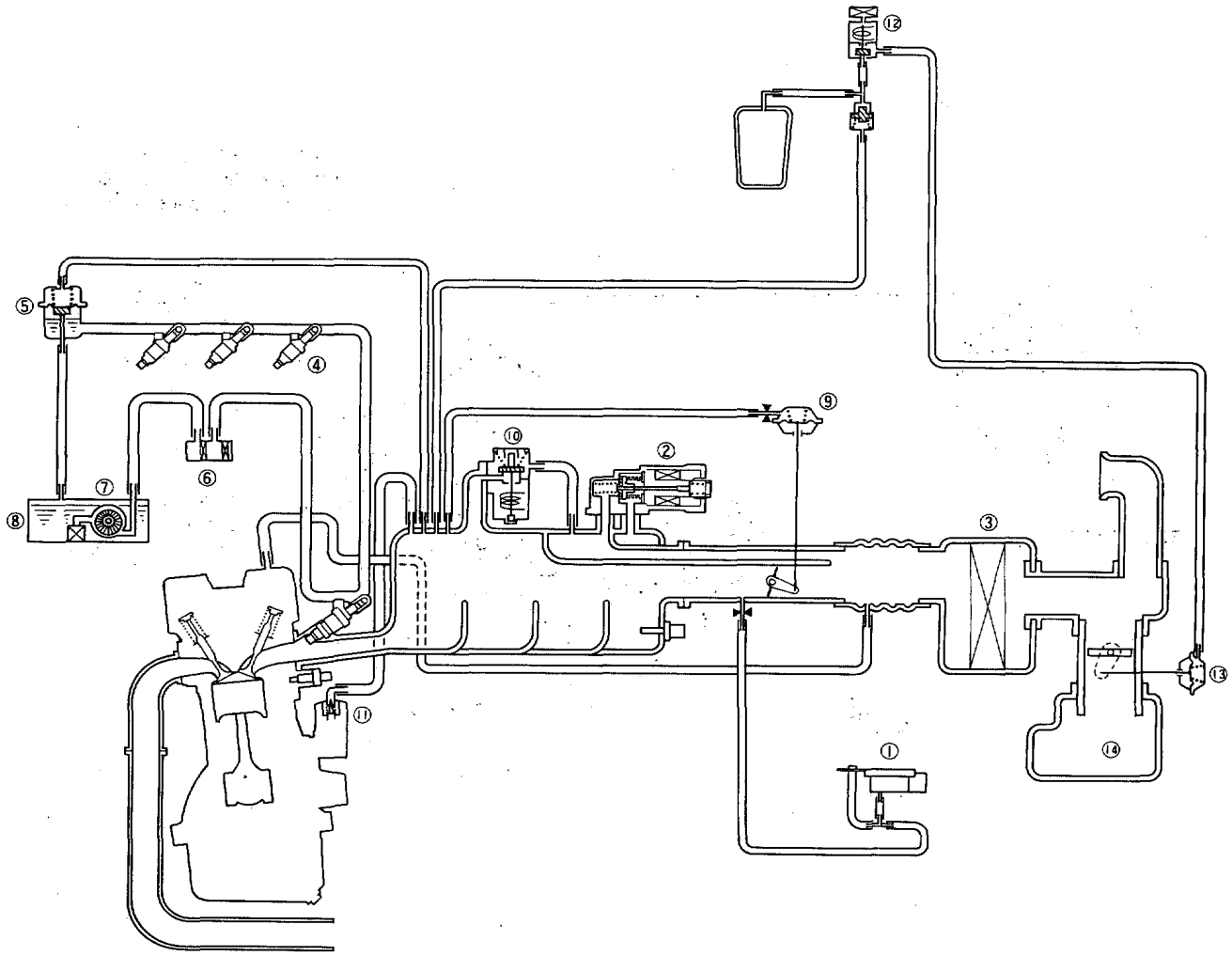


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

System Description

Vacuum Connections [1.6 ℓ without CATA] (cont'd)



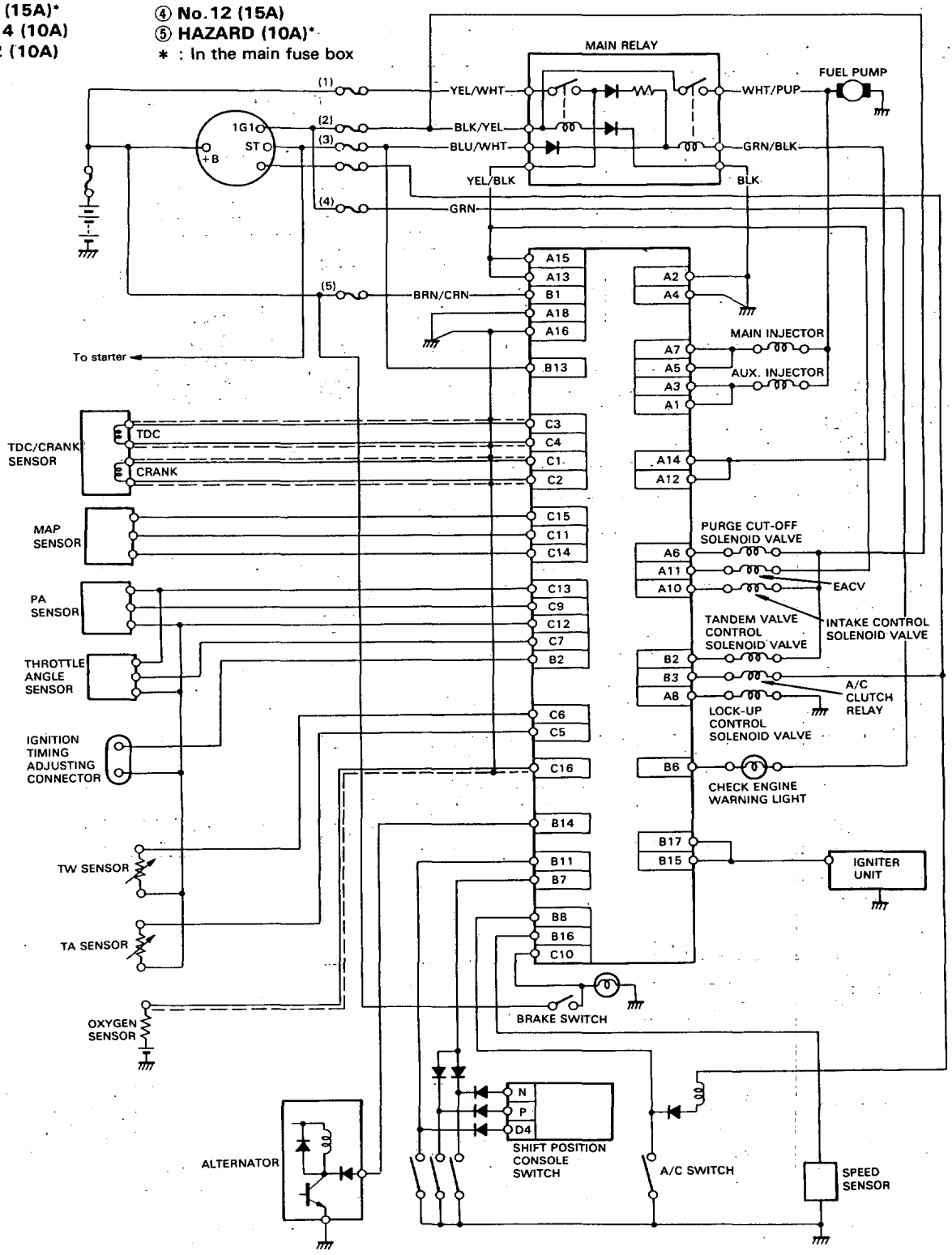
① MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
② ELECTRONIC AIR CONTROL VALVE (EACV)
③ AIR CLEANER
④ FUEL INJECTOR
⑤ PRESSURE REGULATOR
⑥ FUEL FILTER
⑦ FUEL PUMP
⑧ FUEL TANK
⑨ DASHPOT DIAPHRAGM
⑩ FAST IDLE CONTROL SOLENOID VALVE
⑪ PCV VALVE
⑫ INTAKE CONTROL SOLENOID VALVE
⑬ INTAKE CONTROL DIAPHRAGM
⑭ RESONATOR

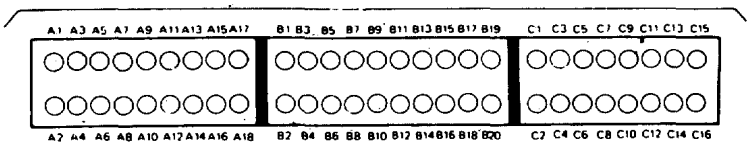
Downloaded from www.Manualslib.com manuals search engine

Electrical Connections [1.5 ℓ]

FUSES

① ECU (15A)*
② No.14 (10A)
③ No.2 (10A)
④ No.12 (15A)
⑤ HAZARD (10A)*
* : In the main fuse box





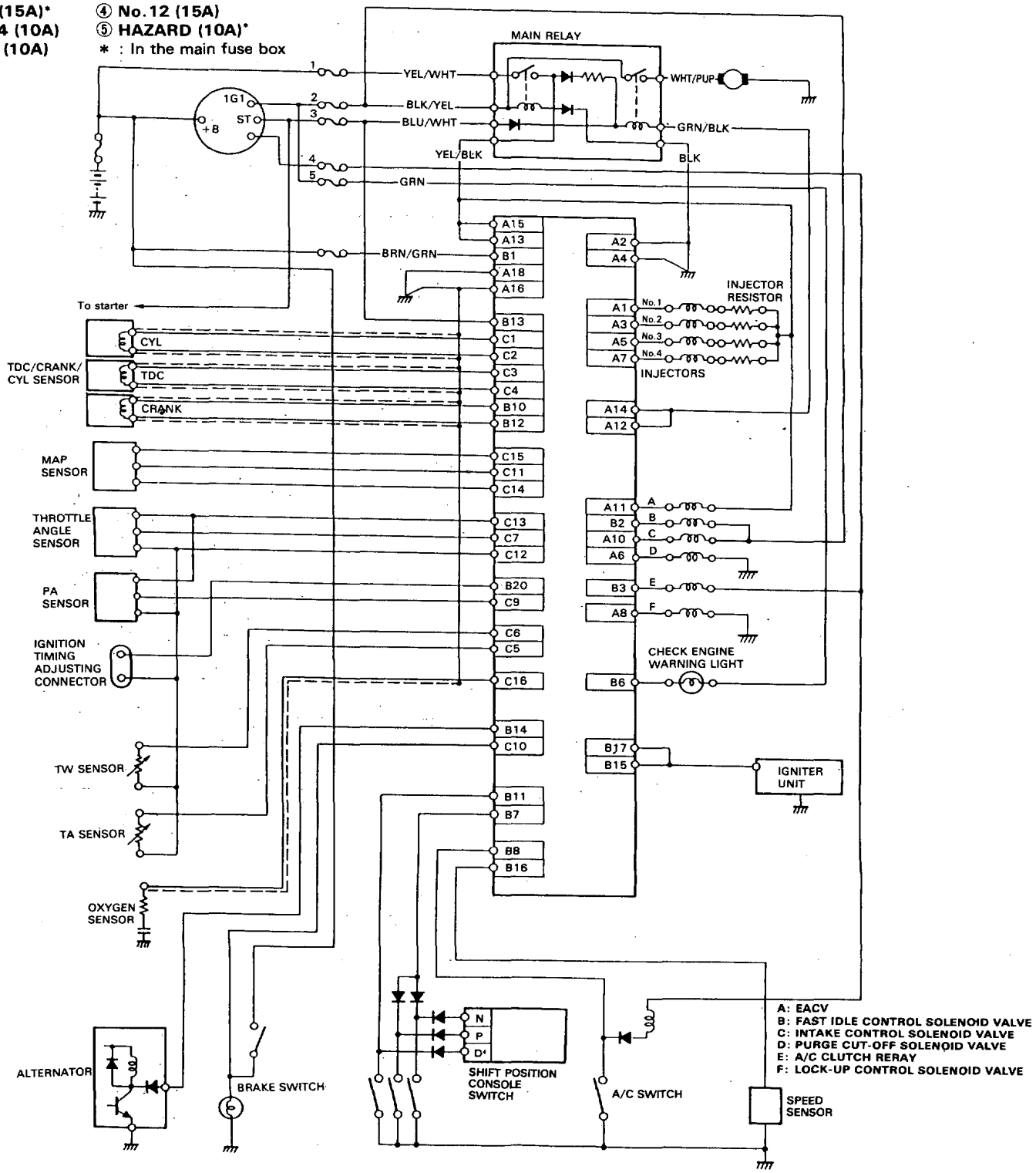
TERMINAL LOCATION

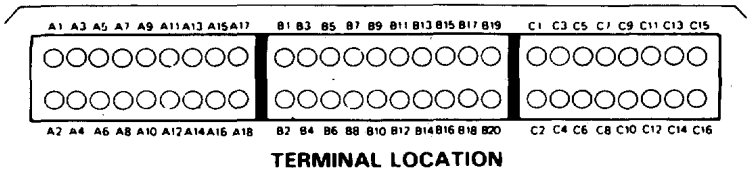
Downloaded from www.Manualslib.com manuals search engine

System Description

Electrical Connections [1.6 ℓ with CATA]

FUSES
① ECU (15A)*
② No.14 (10A)
③ No.2 (10A)
④ No.12 (15A)
⑤ HAZARD (10A)*
* : In the main fuse box



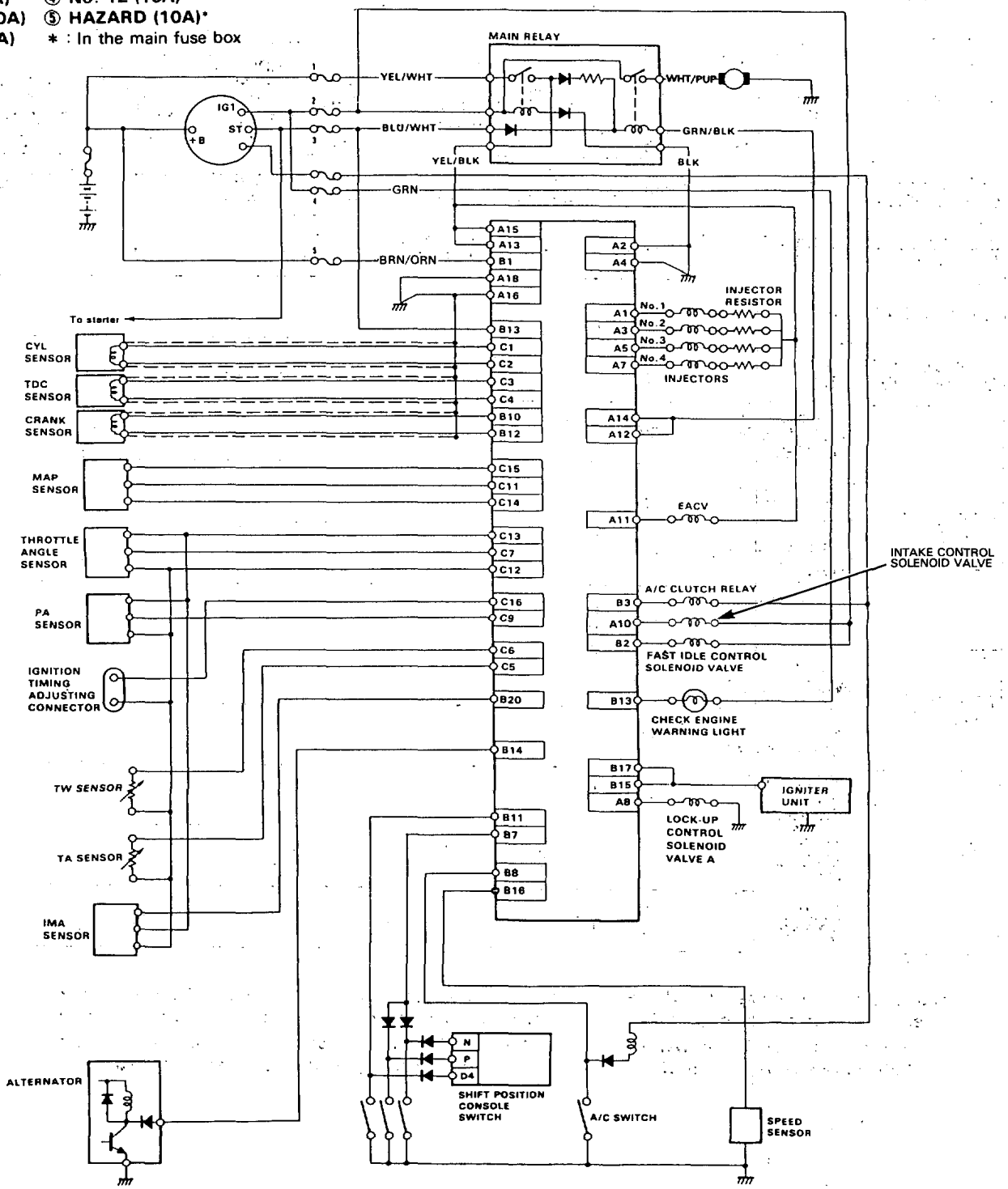


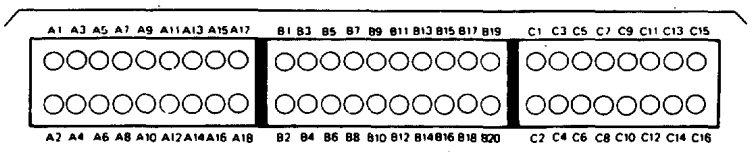
TERMINAL LOCATION

Downloaded from www.Manualslib.com manuals search engine

Electrical Connections [1.6 ℓ without CATA]

FUSES
① ECU (15A)* ④ No. 12 (15A)
② No.14 (10A) ⑤ HAZARD (10A)*
③ No.2 (10A) * : In the main fuse box





TERMINAL LOCATION

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Troubleshooting Guide [1.5 ℓ]

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 SENSOR	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR	ATMOSPHERIC PRESSURE SENSOR
		78	82	84, 88	90	100	102	106	110
CHECK ENGINE WARNING LIGHT TURNS ON		▭ or ☼							
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	①	③ or ⑤	④ or ⑧	⑥	⑦	⑩	⑬
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 IDLE SPEED TOO HIGH	(BU)				③			
	WHEN WARM IDLE SPEED TOO LOW	(BU)							
FREQUENT STALLING	WHILE WARMING UP	(BU)		③					
	AFTER WARMING UP	(BU)							
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	(BU)							
	FAILS EMISSION TEST	(BU)	③	②					
	LOSS OF POWER	(BU)					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.

Downloaded from www.Manualslib.com manuals search engine

PGM-FI			IDLE CONTROL		FUEL SUPPLY			
IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	LOCK-UP CONTROL SOLENOID VALVE	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL INJECTOR	OTHER FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
112	114	116	122	120	138	135	154	171
								
⑮	⑰	⑲	⑭		⑯			
					②	①		
			②					
			①	②				
			①		②			
			②	①				
			①		②			
②			①					
			①		②	③		
			③		①	②		
						①		
					③	①		

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Troubleshooting Guide [1.6 ℓ 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 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 SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR
		78	82	84, 88	90	118	94	100	102
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		(BU)						①	
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	(BU)						②	
	ROUGH IDLE	(BU)		②					
	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 PERFORM-ANCE	MISFIRE OR ROUGH RUNNING	(BU)		③					
	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

Downloaded from www.Manualslib.com manuals search engine

PGM-FI					IDLE CONTROL		FUEL SUPPLY			
INTAKE AIR TEMPERATURE SENSOR	ATMOSPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	LOCK-UP CONTROL SOLENOID VALVE	ELECTRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL INJECTOR	OTHER FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
106	110	112	114	116	122	120	143	135	154	171
⑩	⑬	⑮	⑰	⑲	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		

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Troubleshooting Guide [1.6 ℓ Without 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 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	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR	CYL SENSOR	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR
		78	84, 88	90	118	100	102	106
CHECK ENGINE WARNING LIGHT TURNS ON		□ or						
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	③ or ⑤	④ or ⑧	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 PERFORM-ANCE	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.

Downloaded from www.Manualslib.com manuals search engine

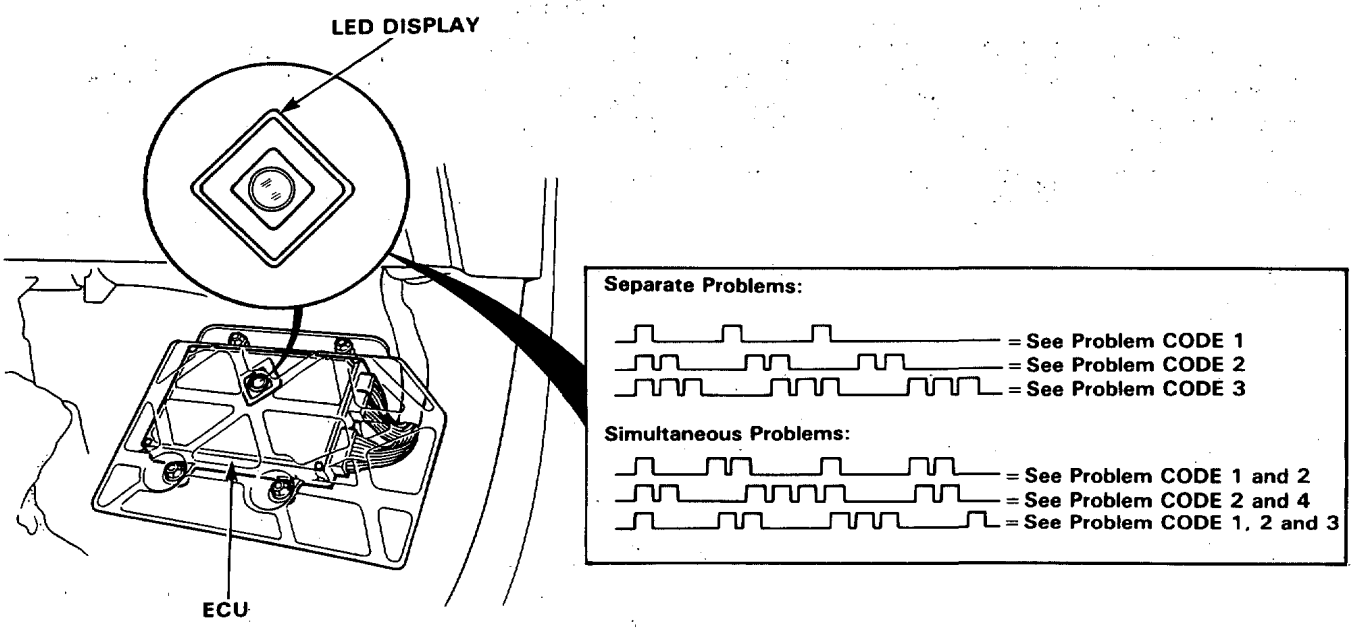
PGM-FI					IDLE CONTROL				
IMA SENSOR	ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	LOCK-UP CONTROL SOLENOID VALVE	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
108	110	112	114	116	122	120	135	154	171
(11)	(13)	(15)	(17)	(19)	(14)				
		(2)					(1)		
						(2)			
					(1)	(2)			
					(3)	(1)			
					(2)	(1)			
					(1)	(2)			
					(1)	(2)			
					(1)	(2)	(3)		
							(1)		
							(1)		
							(1)		

Downloaded from www.Manualslib.com manuals search engine

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.

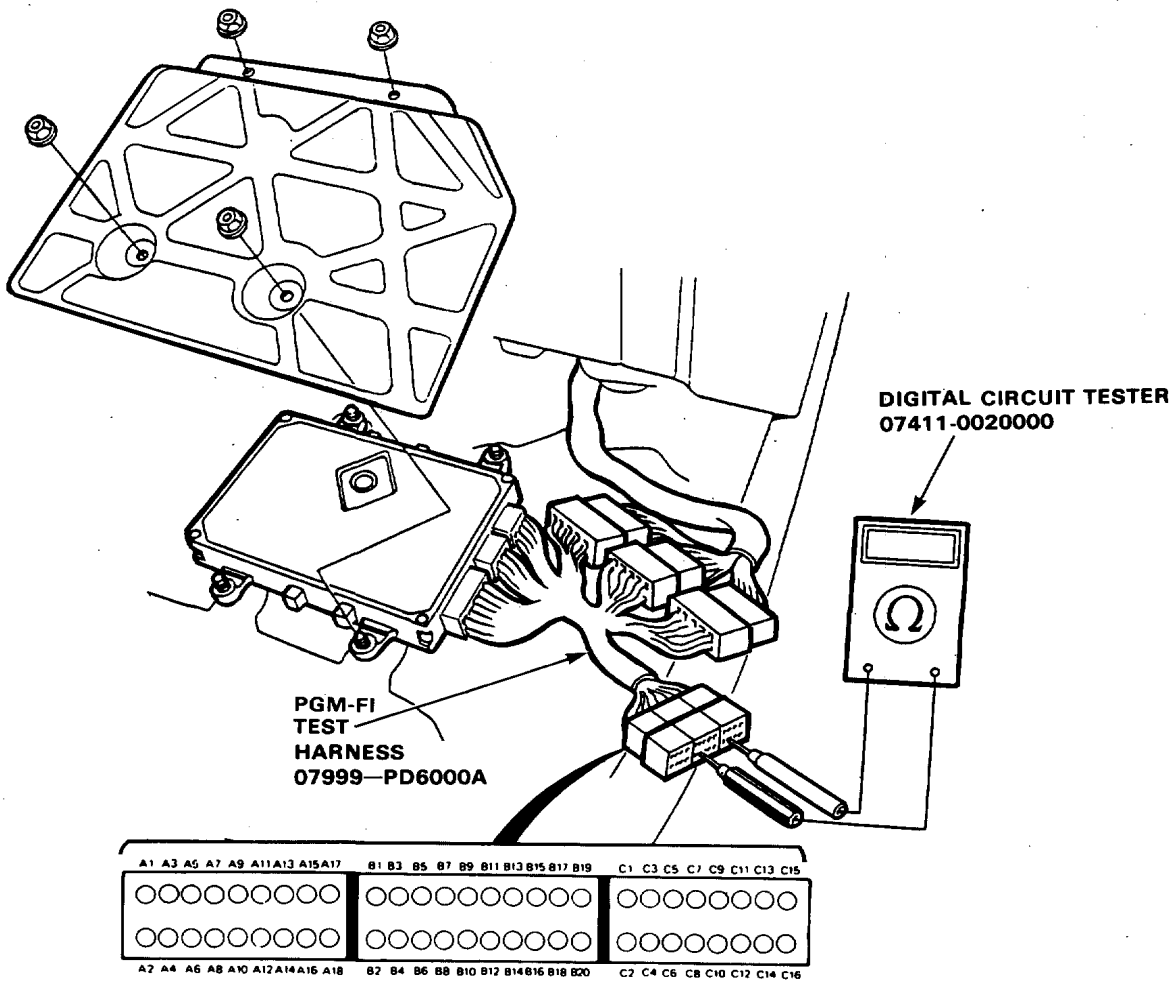


SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-78
1	OXYGEN CONTENT (With CATA)	6-82
3	MANIFOLD ABSOLUTE PRESSURE	6-84
5		6-88
4	CRANK ANGLE	6-90, 94
6	COOLANT TEMPERATURE	6-100
7	THROTTLE ANGLE	6-102
8	TDC POSITION	6-92, 96
9	No. 1 CYLINDER POSITION (Ex. 1.5 ℓ)	6-98, 104
10	INTAKE AIR TEMPERATURE	6-106
11	IMA (Without CATA)	6-108
13	ATMOSPHERIC PRESSURE	6-110
14	ELECTRONIC AIR CONTROL	6-122
15	IGNITION OUTPUT SIGNAL	6-112
16	FUEL INJECTOR (With CATA)	6-138, 143
17	VEHICLE SPEED SENSOR	6-114
19	LOCK-UP CONTROL SOLENOID VALVE (A/T)	6-116

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.
The Check Engine warning light and ECU LED may come on, indicating an 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.

Downloaded from www.Manualslib.com manuals search engine

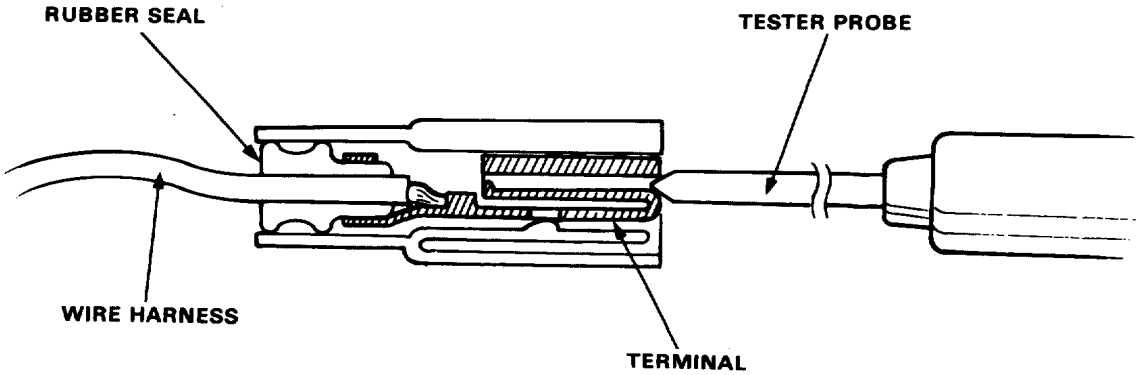
If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure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



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

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.
- "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.

Downloaded from www.Manualslib.com manuals search engine

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. 12 fuse.

Is No. 12 fuse OK ?

NO → **Replace fuse.**

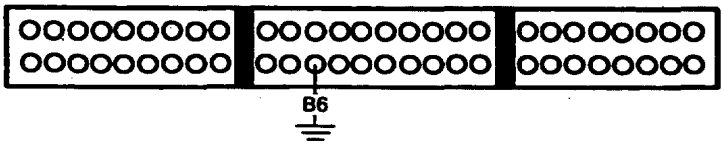
YES → **Repair open in GRN wire between No. 12 fuse and combination meter.**

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

Connect B6 terminal to body ground.

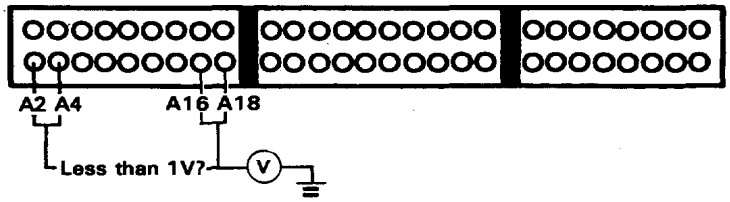


Turn the ignition switch ON.

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 : ●A2, ●A4, ●A16 ●A18

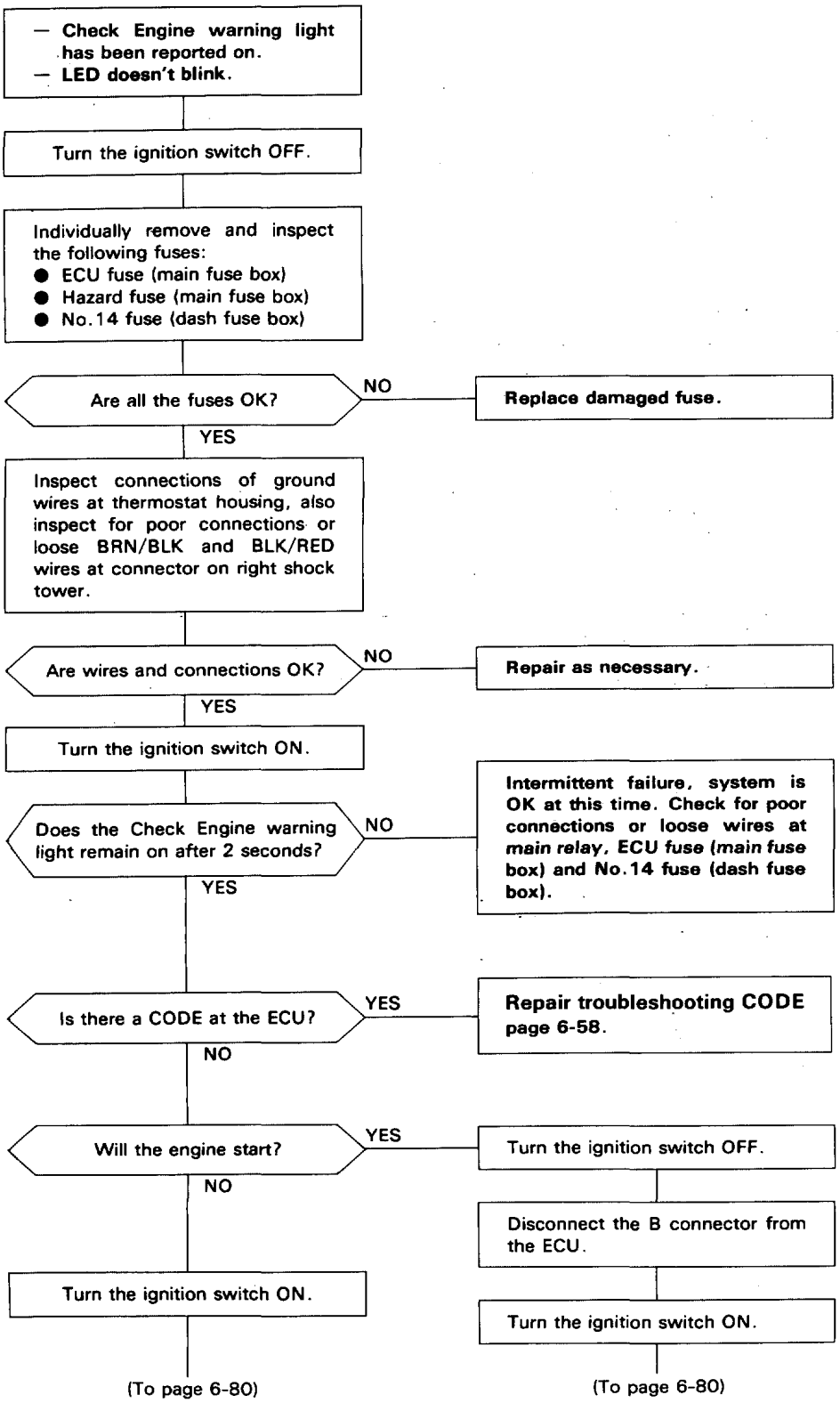
Is there less than 1V?

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.

Downloaded from www.Manualslib.com manuals search engine



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — ECU (cont'd)

(From page 6-79)

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

Does Check Engine light remain on? — NO → **Replace the sensor that, when disconnected caused the light to go out.**

YES

Disconnect the PA sensor

Does LED indicate CODE 13? — YES → **Replace PA sensor.**

NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness to the main harness only, not to the ECU (page 6-75)

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 or throttle angle sensor.**
- **Repair short to ground in YEL/WHT wire between ECU (C13) and IMA sensor.**

NO

Reconnect the 3P connectors of all sensors.
Connector the A, B and C connectors of PGM-FI test harness to ECU.

Turn the ignition switch ON.

Measure voltage between the following terminals individually to body ground: ●A16 ●A18

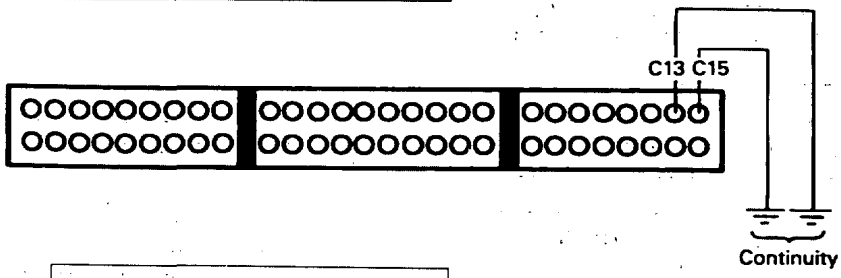
(To page 6-81)

(From page 6-79)

Is Check Engine warning light on? — YES → **Repair short to ground in GRN/ORN wire between ECU (B6) and combination meter.**

NO

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



Downloaded from www.Manualslib.com manuals search engine

(From page 6-80)

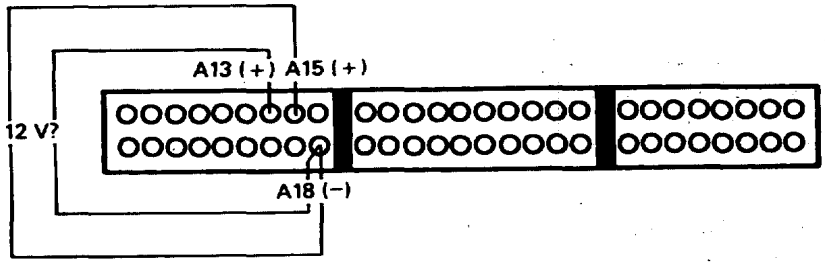
Is there less than 1V?

NO

Repair open in wire that between ECU (A16, A18) and thermostat housing (G101) that had more than 1V.

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.

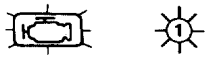
YES

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

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — Oxygen Sensor

Self-diagnosis LED indicates code 1.: 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 11-101).

Is it normal ? — NO → **Replace the pressure regulator (page 6-148).**

YES

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

1.6 ℓ

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 and does LED indicate CODE 1? — NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at the thermostat housing, O_2 sensor.**

YES

Inspect for poor connection or loose ground wires at thermostat housing.

Are connections and wires OK? — NO → **Repair as necessary.**

YES

(To page 6-83)

1.5 ℓ

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

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

Warm up engine to normal operating temperature again, then put the transmission into second gear and run the engine at 2,000 min^{-1} (rpm) for 15 minutes.
NOTE: Do not close throttle completely during this time.

Downloaded from www.Manualslib.com manuals search engine

(From page 6-82)

Disconnect engine wire harness from O_2 sensor.

Connect a voltmeter between the O_2 sensor (+) and body ground (−).

Warm up engine to normal operating temperature again, then hold engine speed at 4,000 for 10 seconds then release throttle completely while watching the voltmeter.

Was voltage above 0.6V at 4,000 min^{-1} (rpm)? Was voltage below 0.4V during closed throttle deceleration from 4,000 min^{-1} (rpm)?

NO → **Replace O_2 sensor.**

YES

Stop engine.

Reconnect O_2 sensor.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

Connect a voltmeter between C16 (+) and A18 (−) terminals.

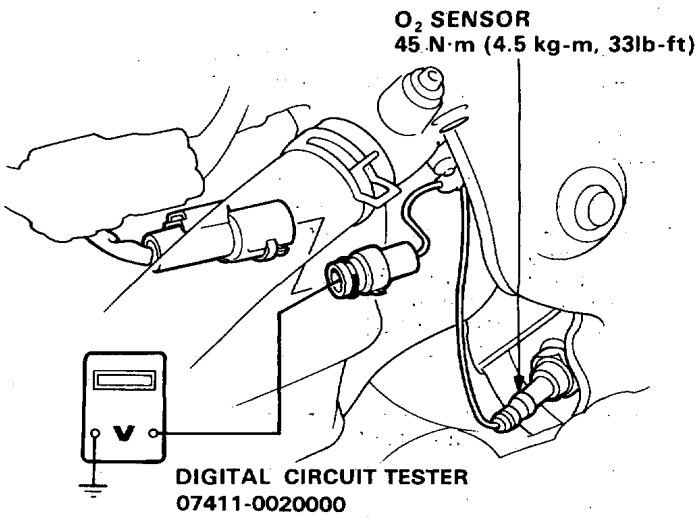
Restart and warm up engine to normal operating temperature, then hold engine rpm at 4,000 min^{-1} (rpm) for 10 seconds then release throttle completely while watching the voltmeter.

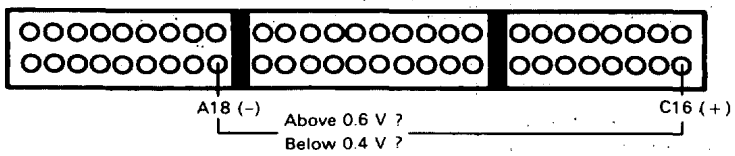
Was voltage above 0.6V at 4,000 min^{-1} (rpm)? Was voltage below 0.4V during closed throttle deceleration from 4,000 min^{-1} (rpm)?

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.





Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — MAP Sensor

Self-diagnosis LED indicates code 3: Most likely an electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

Self-diagnosis LED indicates code 5: Most likely a mechanical problem (broken hose) in the Manifold Absolute Pressure (MAP) Sensor system.

- **Engine is warm and running.**
- **Check Engine warning light hos been reported 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.

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

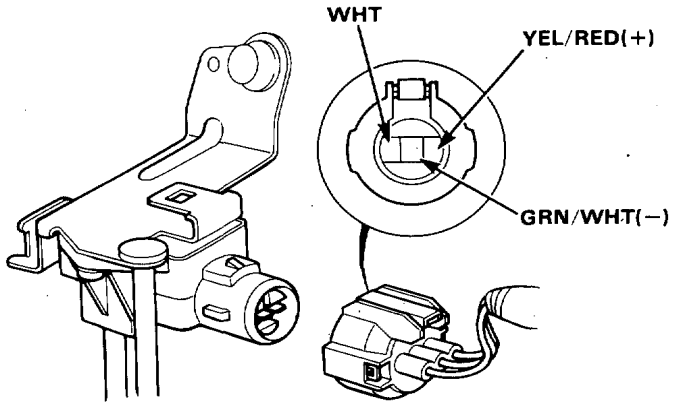
Is there approx. 5V?

YES → Measure voltage between YEL/RED (+) terminal and GRN/WHT (−) terminal.

NO

(To page 6-85)

(To page 6-85)



Downloaded from www.Manualslib.com manuals search engine



(From page 6-84)

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.

(From page 6-84)

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 6-75)

Turn the ignition switch ON.

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

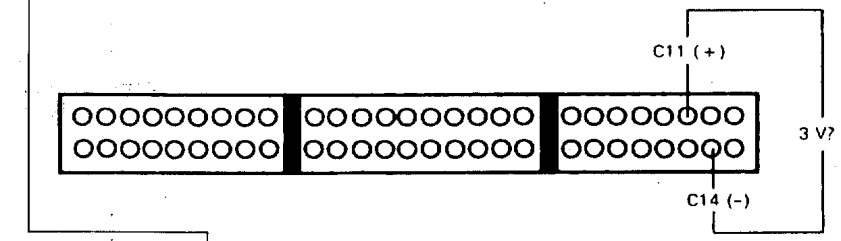
(To page 6-86)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — MAP Sensor (cont'd)

(From page 6-85)



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.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

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

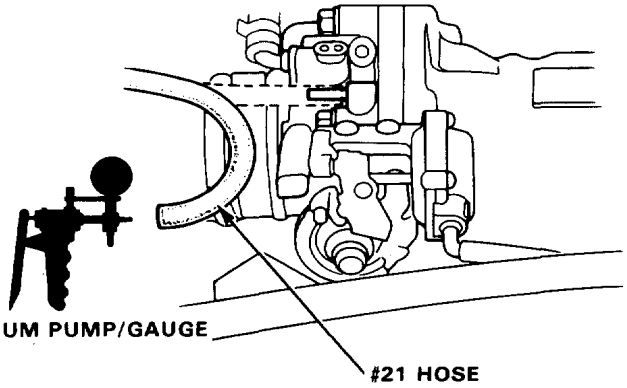
- Intermittent failure, system is OK at this time (test drive may be necessary).
- Check vacuum hoses, pipes and connections.
- Make sure all connectors are secure.

(1.6 ℓ)

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.

Does it hold vacuum?

NO

Replace MAP sensor.

YES

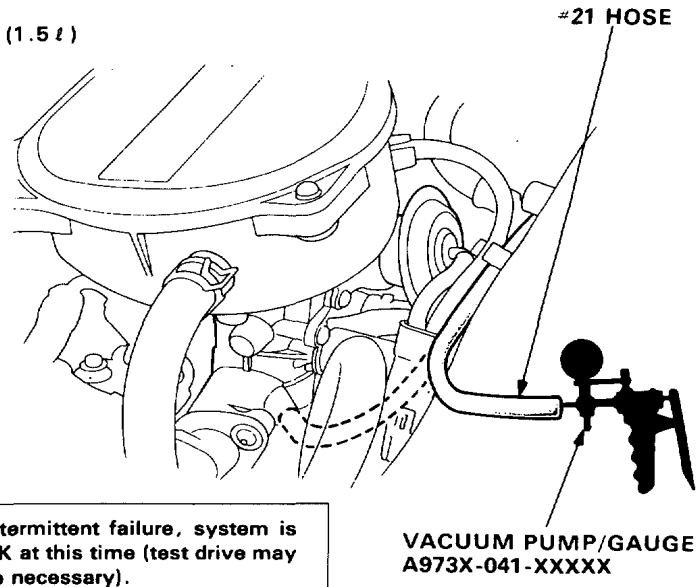
Replace #21 hose.

YES

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 6-89)

(1.5 ℓ)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-88)

Start engine.

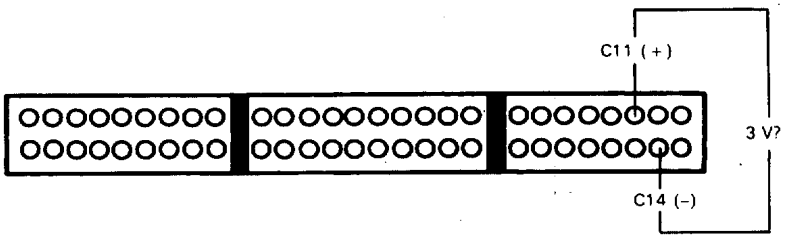
Is there manifold vacuum? NO → **–Remove restriction from throttle body. –Replace throttle body.**

YES

Stop engine.

Connect the PGM-FI test harness between the ECU and connector (page 6-75)

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

Start the engine and allow it to idle..

Is there approx 1V? NO → **Replace MAP sensor.**

YES

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

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart– TDC/CRANK Sensor [1.5 ℓ and 1.6 ℓ DOHC]

Self-diagnosis LED indicates code 4: A problem in the CRANK circuit of the TDC/CRANK Sensor.

Self-diagnosis LED indicates code 8: 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 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.**

YES

Stop engine.

Disconnect 6P connector from the TDC/CRANK sensor.

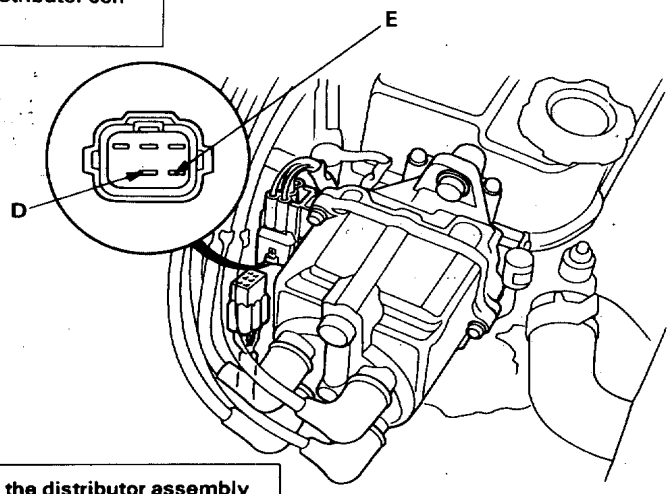
Measure resistance between D terminal and E terminal.

Is there 350–550 Ω ?

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

YES

(To page 6-91)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-90)

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

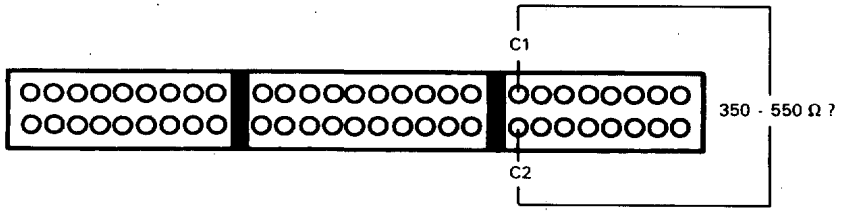
Does continuity exist ? YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

Connect the ECU test harness only to the main wire harness, not to the ECU (page 6-75).

Measure resistance between C1 terminal and C2 terminal.



Is there 350–550 Ω ? NO → **Repair open in ORN and/or WHT wires.**

YES

Check for continuity to body ground on C1 terminal.

Does continuity exist? YES → **Repair short in ORN wire between ECU (C1) and distributor connector.**

NO

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

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — TDC/CRANK sensor [1.5 ℓ and 1.6 ℓ DOHC] — (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.

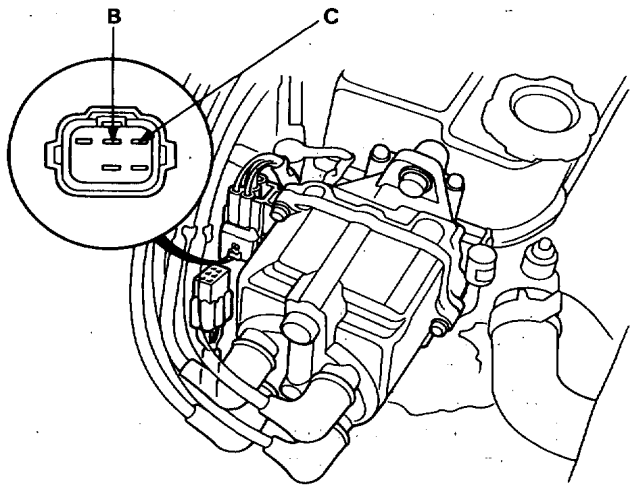
Is Check Engine warning light on and does LED indicate CODE 8?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at distributor connector.**

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 6-93)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-92)

Connect the ECU test harness only to the main wire harness, not to the ECU (page 6-75).

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

Check for continuity to body ground on C3 terminal.

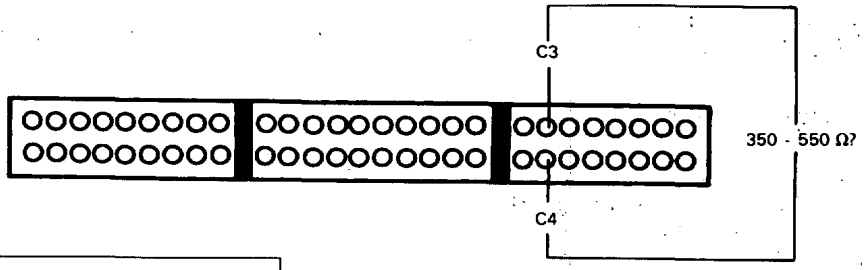
Does continuity exist?

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.



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — TDC/CRANK/CYL Sensor [1.6 ℓ SOHC]

Self-diagnosis LED indicates code 4: A problem in the CRANK circuit of the TDC/CRANK/CYL Sensor.

Self-diagnosis LED indicates code 8: A problem in the TDC circuit of the TDC/CRANK/CYL Sensor.

Self-diagnosis LED indicates code 9: 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 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.

YES

Stop engine.

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

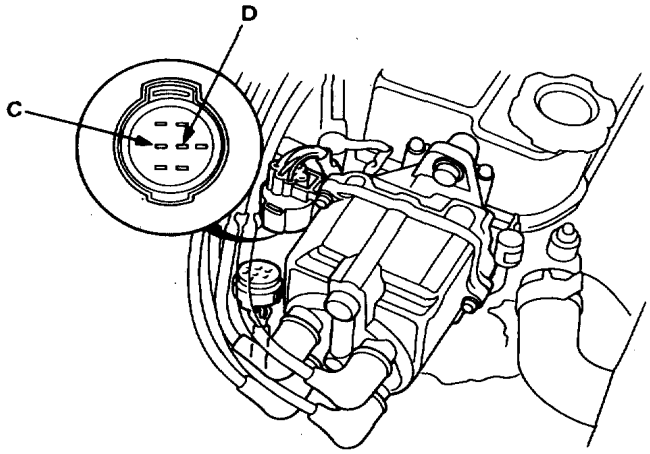
Measure resistance between C terminal and D terminal.

Is there 350–550 Ω ?

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

YES

(To page 6-95)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-94)

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

Does continuity exist ?

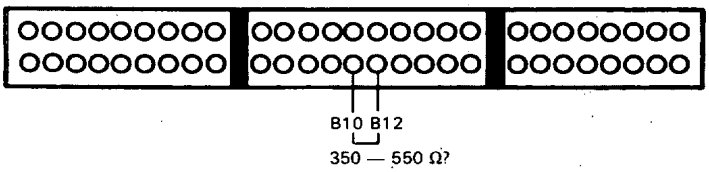
YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

Connect the ECU test harness only to the main wire harness, not to the ECU (page 6-75).

Measure resistance between B10 terminal and B12 terminal.



Is there 350–550 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)

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — TDC/CRANK/CYL sensor [1.6 ℓ SOHC] (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.

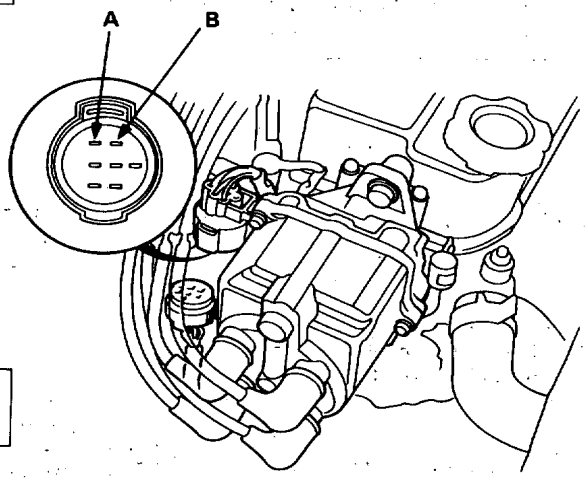
Is Check Engine warning light on and does LED indicate CODE 8?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at the distributor connector.**

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 6-97)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-96)

Connect the ECU test harness only to the main wire harness, not to the ECU (page 6-75).

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

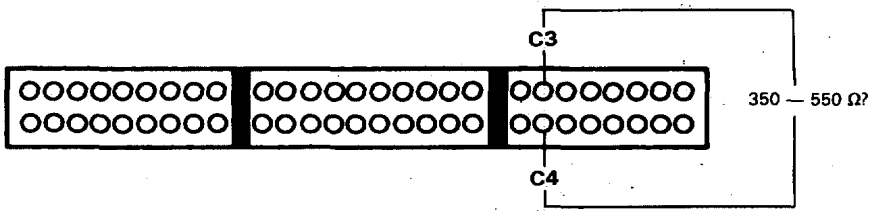
Check for continuity to body ground on C3 terminal.

Does continuity exist?

YES → **Repair short in ORN/BLU wire between ECU (C3) and distributor connector.**

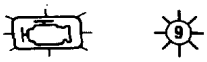
NO

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



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — TDC/CRANK/CYL Sensor [1.6 ℓ SOHC] (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.

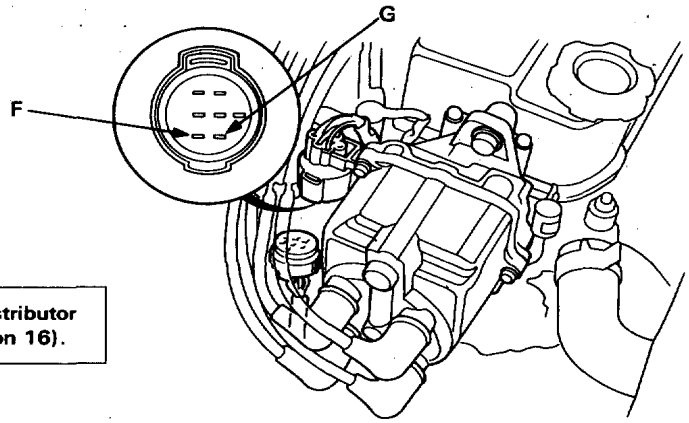
Is Check Engine warning light on and does LED indicate CODE 9?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at the distributor connector.**

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 6-99)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-98)

Connect the ECU test harness only to the main wire harness, not to the ECU (page 6-75).

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

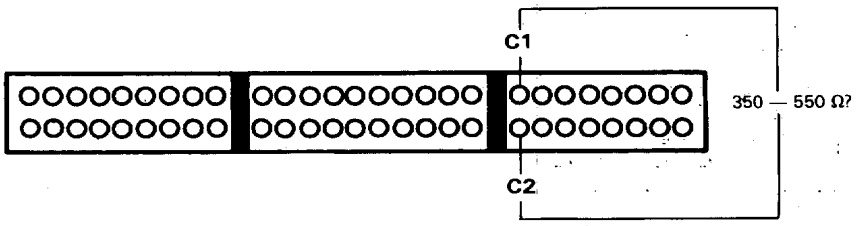
Check for continuity to body ground on C1 terminal.

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.



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — TW Sensor

Self-diagnosis LED indicates code 6: Most likely a problem in the Coolant Temperature (TW) Sensor circuit.

- **Check Engine warning light has been reported 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.**

(SOHC)

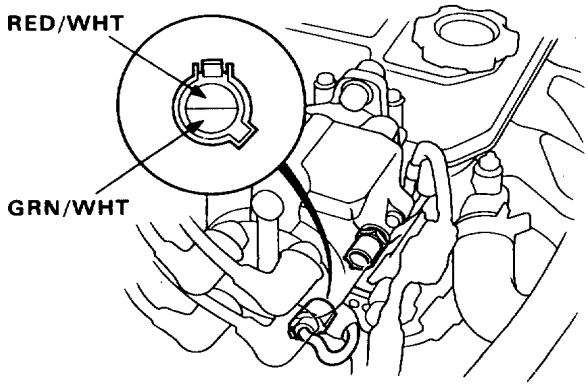
YES

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 ?

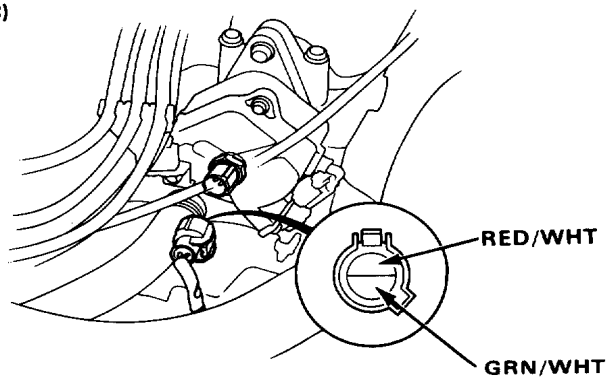
NO → **Replace the TW sensor.**

(DOHC)

YES

Turn the ignition switch ON.

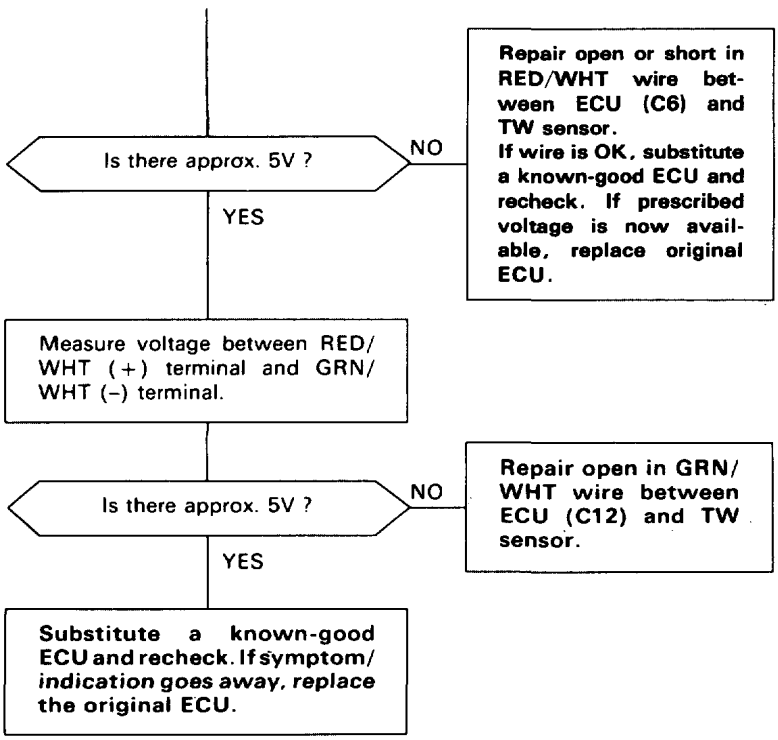
Measure voltage between RED/WHT (+) and body ground.



(To page 6-101)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-100)



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — Throttle Angle Sensor

Self-diagnosis LED indicates code 7: Most likely a problem in the Throttle Angle Sensor circuit.

- **Engine is running**
- **Check Engine warning light has been reported 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.**

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.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

(To page 6-103)

Is there approx. 5V ?

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

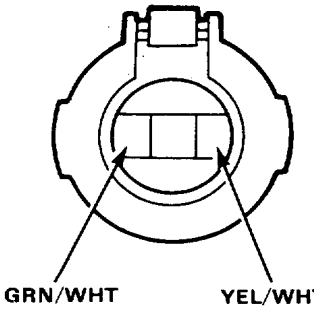
NO

Turn the ignition switch OFF.

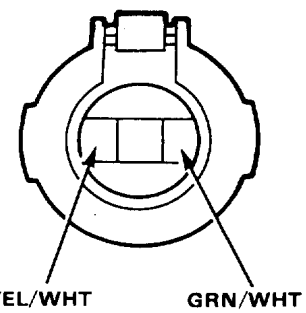
Connect the PGM-FI test harness between the ECU and connector (page 6-75).

(To page 6-103)

(1.5 ℓ)



(1.6 ℓ)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-102)

Turn the ignition switch ON.

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

Apply 500 mm Hg to the diaphragm.

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

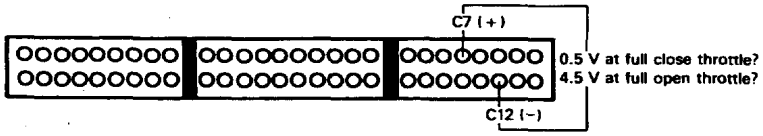
Is voltage approx. 0.5 V at full close throttle (applying vacuum to the dashpot diaphragm), and approx. 4.5 V at full open throttle?
NOTE: There should be a smooth transition from 0.5 V to 4.5 V as the throttle is depressed.

NO

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

YES

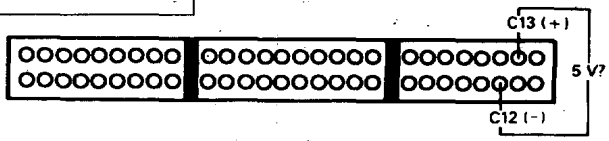
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



(From page 6-102)

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.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — CYL Sensor [1.6 ℓ DOHC only]

Self-diagnosis LED indicates code 9: 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 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.**

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 6-118).**

YES

↓

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

↓

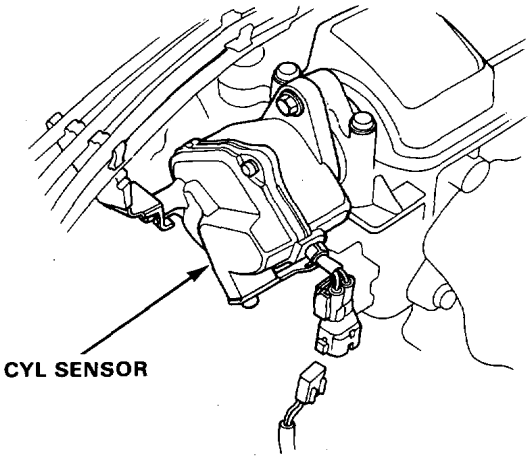
Does continuity exist ? — YES → **Replace CYL sensor (page 6-118).**

NO

↓

Reconnect the connector.

(To page 6-105)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-104)

Connect the PGM-FI test harness only to the main wire harness, not to the ECU (page 6-75).

Measure resistance between C1 terminal and C2 terminal.

Is there 700-1000 Ω ?

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

YES

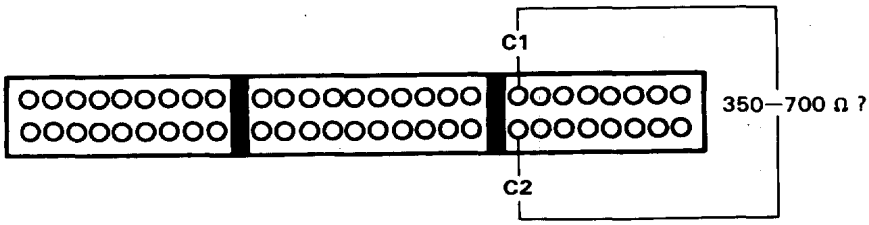
Check for continuity to body ground on C1 terminal.

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.



Downloaded from www.Manualslib.com manuals search engine

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 has been reported 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.**

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

Turn the ignition switch ON.

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

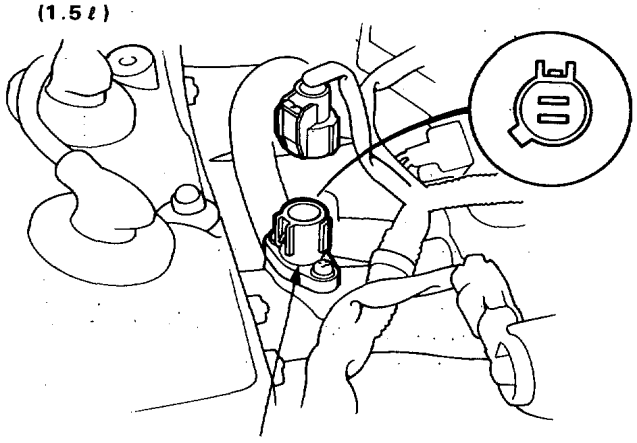
Is there approx. 5 V ?

NO → **Repair open or short in RED/YEL wire between ECU (C5) and TA sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

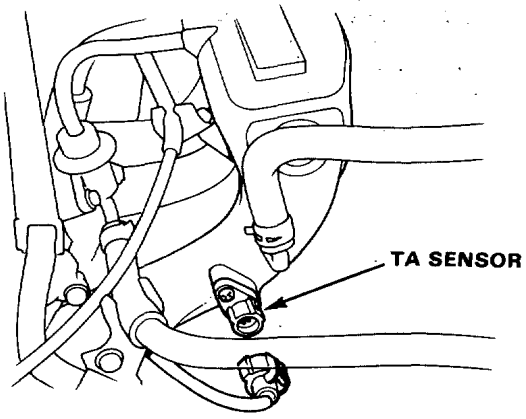
(To page 6-107)

(1.5 ℓ)

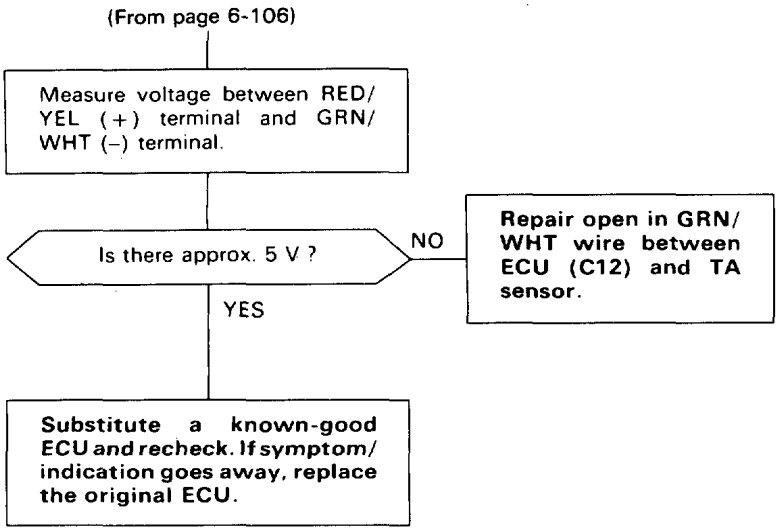


TA SENSOR

(1.6 ℓ)



Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart —— IMA Sensor

Self-diagnosis LED indicates code 11: Most likely a problem in the IMA Sensor circuit.

–Check Engine warning light is has been reported 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.

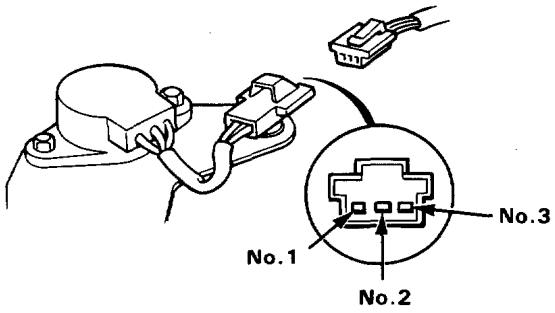
Is Check Engine warning light on and does LED indicate CODE 11?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at the IMA sensor.**

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the IMA sensor.



Measure resistance between No.1 terminal and No.3 terminal on IMA sensor harness.

Is there 4—6 kΩ?

NO → **Replace IMA sensor.**

YES

Measure resistance between No.1 and No.2 terminals and between No.3 and No.2 terminals.

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

NO → **Replace IMA sensor.**

YES

(To page 6-109)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-108)

Turn the ignition switch ON.

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

Is there approx. 5V?

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

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

Turn the ignition switch ON.

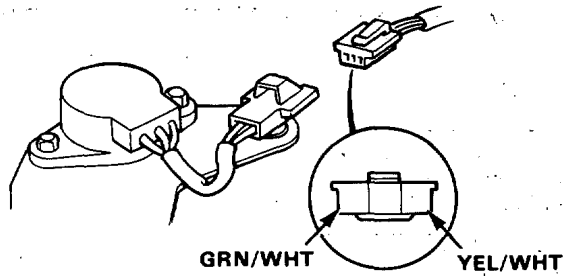
Measure voltage between B20 (+) terminal and C12 (−) terminal.

Is voltage 0.5—4.5V?

NO → **Repair open or short in GRN/YEL wire between ECU (B20) and IMA sensor.**

YES

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



Is there approx. 5V?

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

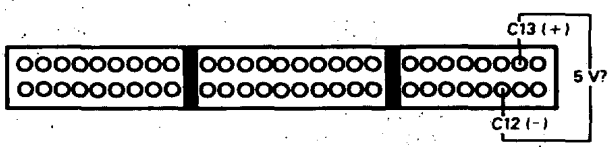
NO

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

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 IMA sensor.**

NO

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

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — PA Sensor

Self-diagnosis LED indicates code 13: A problem in the Atmospheric Pressure (PA) Sensor circuit.

- **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). Check for poor connections or loose wires at the PA sensor.**

YES

Turn the ignition switch OFF.

Disconnect the main wire harness from PA sensor.

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

Is there approx. 5V?

YES → Measure voltage between YEL/WHT (+) terminal and GRN/WHT (−) terminal.

NO → **Repair open in YEL/WHT wire between ECU (C13) and the 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 or short in GRN/WHT wire between ECU (C12) and the sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

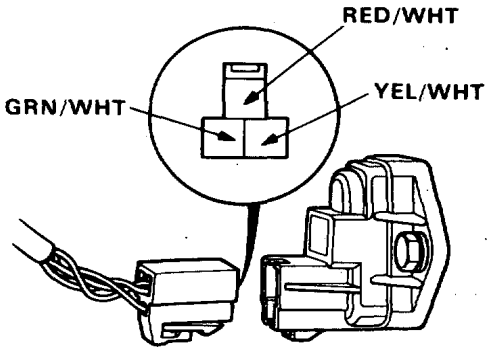
Measure voltage between RED/WHT (+) terminal and GRN/WHT (−) terminal.

Is there approx. 5V?

NO → **Repair open or short in RED/WHT wire between ECU (C9) and PA sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

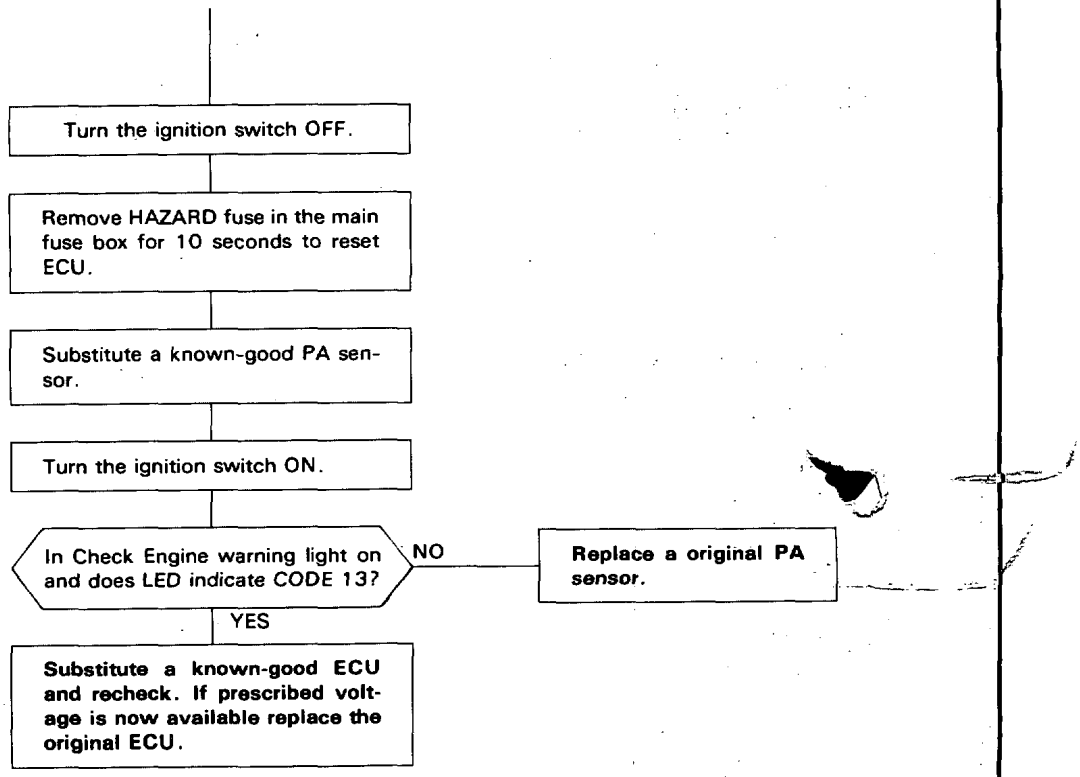
YES

(To page 6-111)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-110)



Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — Ignition Output Signal

Self-diagnosis LED indicates code 15: A problem in the Ignition Output Signal circuit.

- **Check Engine warning light has been reported 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.**

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

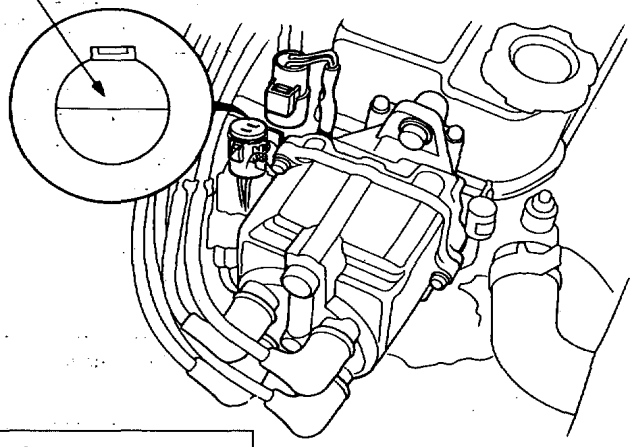
Turn the ignition switch OFF.

Reconnect the 2P connector.

(To page 6-113)

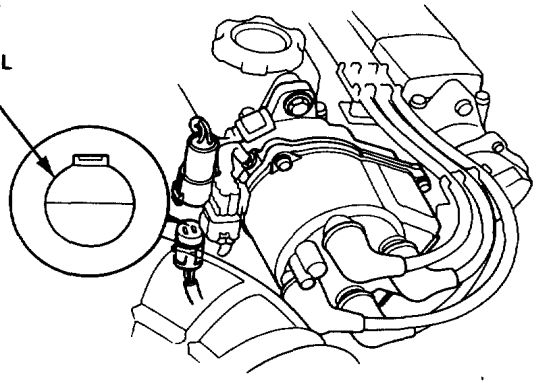
(SOHC)

BLK/YEL



(DOHC)

BLK/YEL



Downloaded from www.Manualslib.com manuals search engine

(From page 6-112)

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

Turn the ignition switch ON.

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

Is there approx. 10 volts?

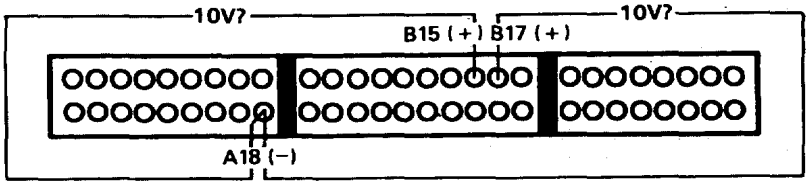
NO

—**Replace the igniter unit.**
—**Repair open or short in 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.



Downloaded from www.Manualslib.com manuals search engine

PGM-FI Control System

Troubleshooting Flowchart — Vehicle Speed Sensor

Self-diagnosis LED indicates code 17: A problem in the Vehicls Speed Sensor circuit.

- Check Engine warning light has been reported 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 if 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 and does LED indicate CODE 17?

NO → **Intermittent failure, system is OK at this time. Check for poor connections or loose wires.**

YES

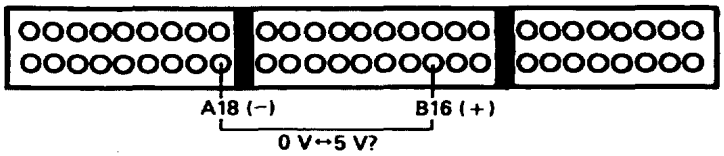
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stands.

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

Connect the PGM-FI test harness between the ECU and connector (page 6-61).

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

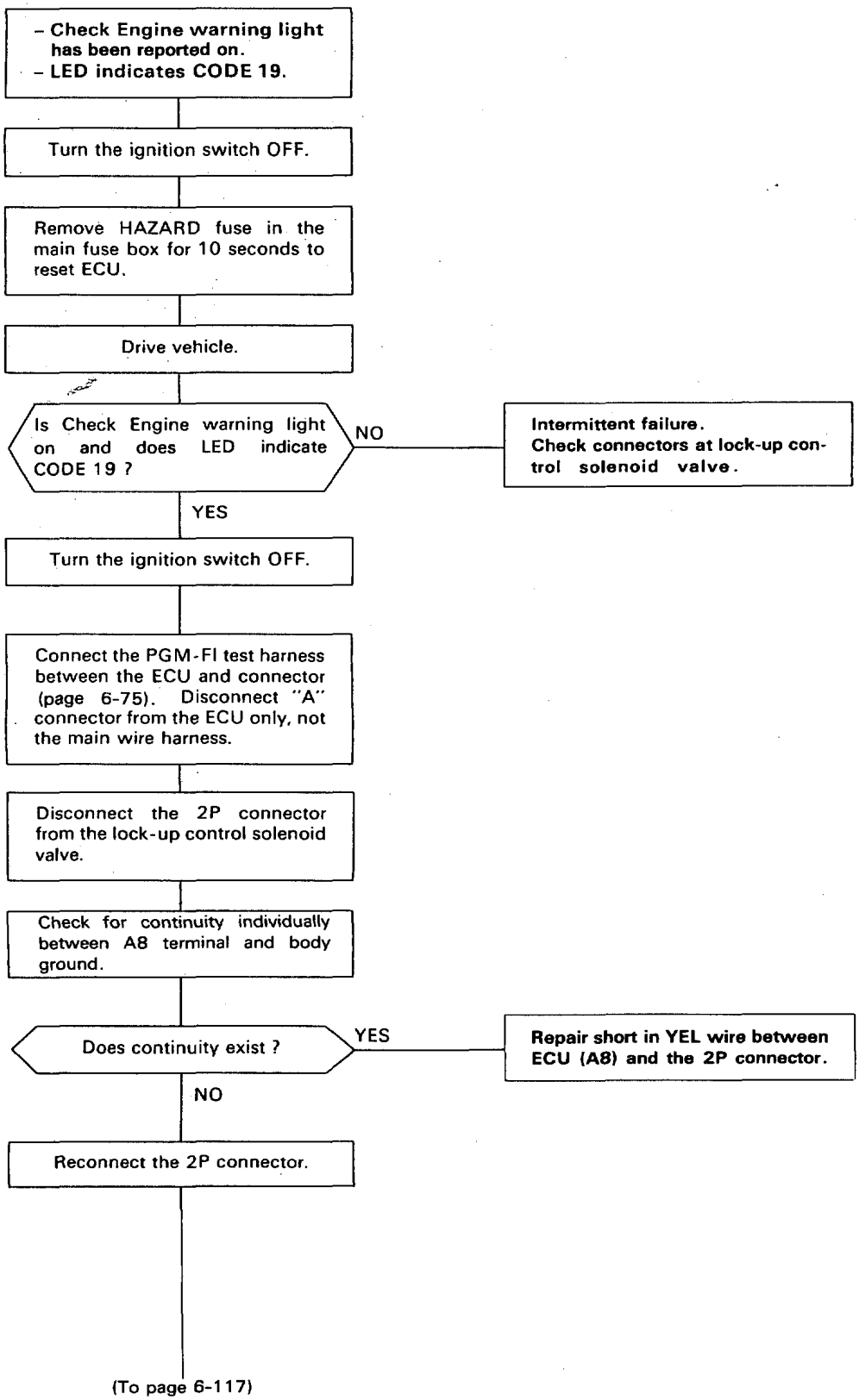
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Downloaded from www.Manualslib.com manuals search engine

PGM-FI Control System

Troubleshooting Flowchart — Lock-up Control Solenoid Valve (A/T only)

Self-diagnosis LED indicates code 19: A problem in the Lock-up Control Solenoid Valve circuit.



(To page 6-117)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-116)

Measure resistance between A8 terminal and A18 terminal.

Is there 14 — 25 Ω ?

NO

Check for continuity in YEL wire between ECU (A8) and the 2P connector.

Does continuity exist ?

YES

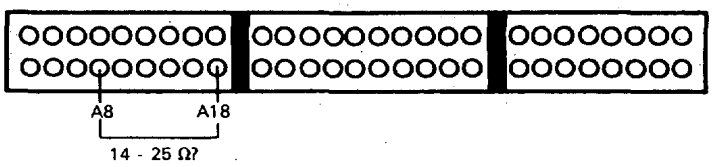
Faulty lock-up control solenoid valve.

NO

Repair open in YEL wire between ECU (A8) and the 2P connector.

YES

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

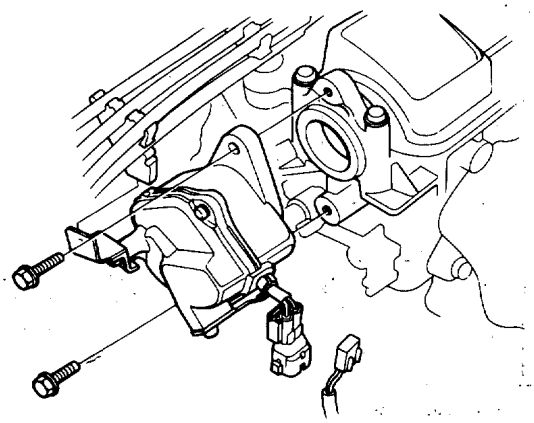


Downloaded from www.Manualslib.com manuals search engine

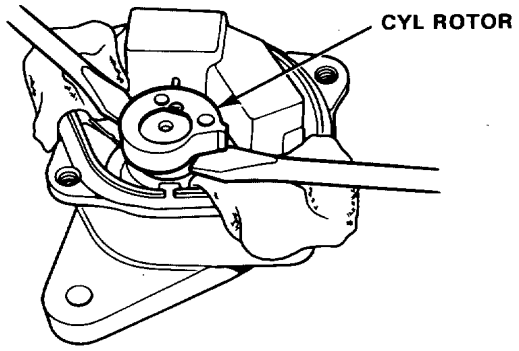
CYL Sensor Overhaul [1.6 ℓ DOHC only]

Disassembly

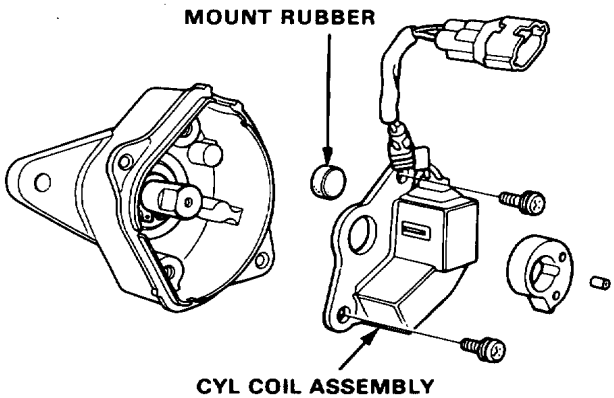
1. Remove the CYL sensor from the engine.



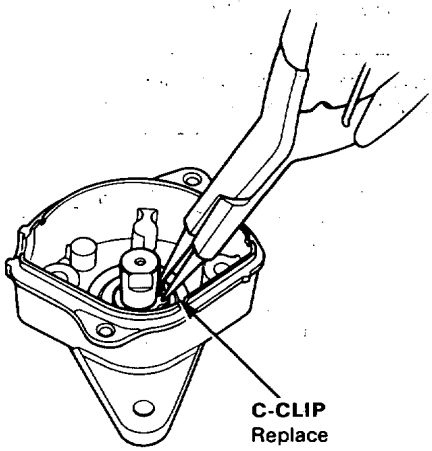
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



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

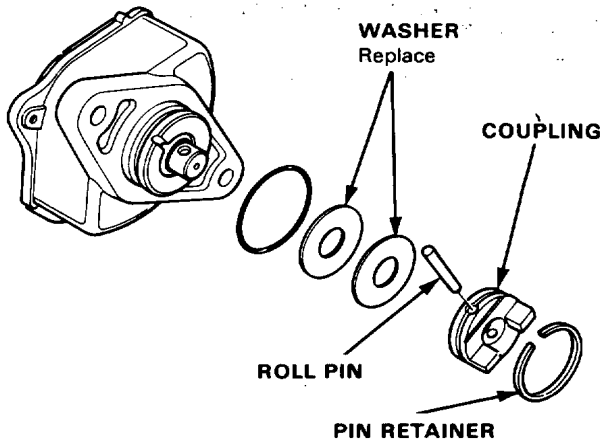


4. Remove the C-clip.

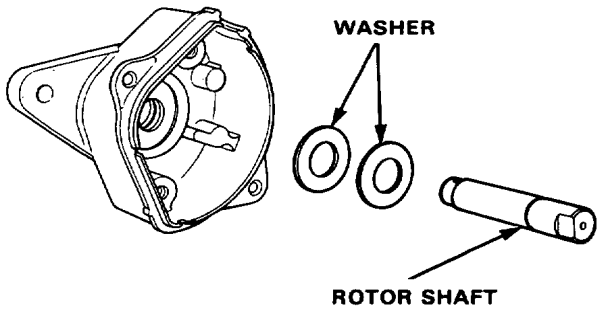


5. Slide off the pin ratainer being careful not to stretch it.

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



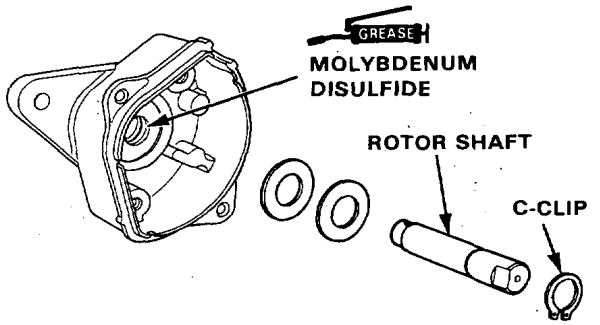
7. Remove the rotor shaft.



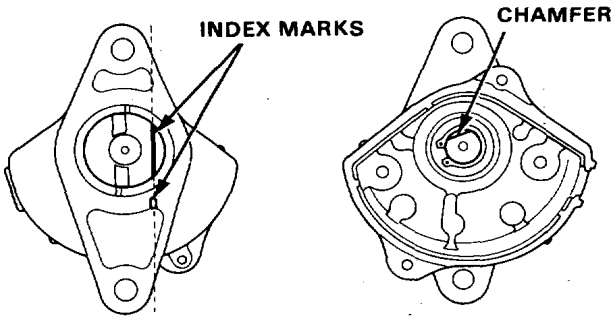
Downloaded from www.Manualslib.com manuals search engine

Reassembly

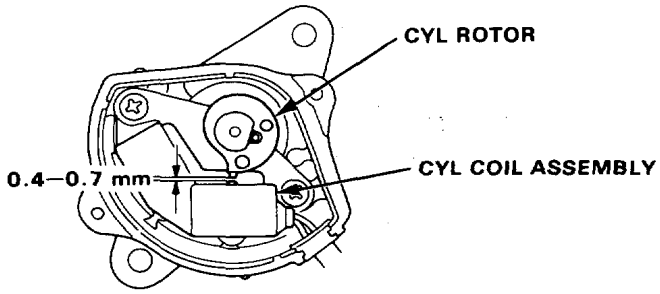
1. Apply molybdenum disulfide grease to the sensor housing, install the washers on the rotor shaft, then install it in the sensor housing. Install a new C-clip.



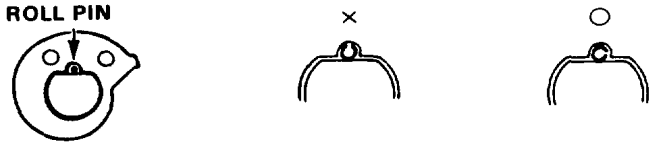
2. Install the coupling with its index mark facing in the direction shown, install the pin, and install the pin retainer.



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.



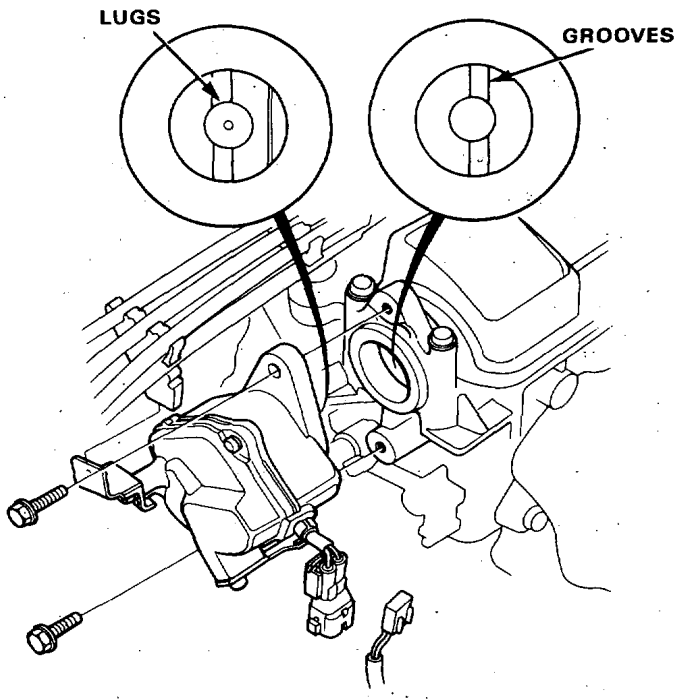
NOTE:
- Install the rotor with the part number facing up.
- Install the roll pin so that it faces as shown below.



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.



Downloaded from www.Manualslib.com manuals search engine

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 6-121.

PAGE / SUB SYSTEM / SYMPTOM		IDLE ADJUSTING SCREW	EACV	AIR CONDITIONING SIGNAL	ALTERNATOR FR SIGNAL	A/T SHIFT POSITION SIGNAL (Automatic)	STARTER SWITCH SIGNAL	FAST IDLE CONTROL (1.6 ℓ)	HOSES AND CONNECTIONS
		133, 134	122	125	127	129	131	132	*
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						③
ROUGH IDLE		③	②						①
WHEN WARM IDLE SPEED TOO HIGH		③	②						①
WHEN WARM IDLE SPEED TOO LOW	Idle speed is below specified (no load)	②	①		③				
	Idle speed does not increase after initial start up.		①				②		
	On models with automatic transmission, the idle speed drops in gear	③	②			①			
	Idle speeds drops when air conditioner in ON	③	②	①					
FREQUENT STALLING	WHILE WARMING UP	②	①						
	AFTER WARMING UP	②	①						
FAILS EMISSION TEST									①

Downloaded from www.Manualslib.com manuals search engine

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 6-133, 134)
   - Air conditioning signal (page 6-125)
   - Alternator FR signal (page 6-127)
   - A/T shift position signal (page 6-129)
   - Starter switch signal (page 6-131)
   - Fast idle control (page 6-132)
   - 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 133, 134)

   ● 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.

Downloaded from www.Manualslib.com manuals search engine

Idle Control System

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 has been reported 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.**

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 ?

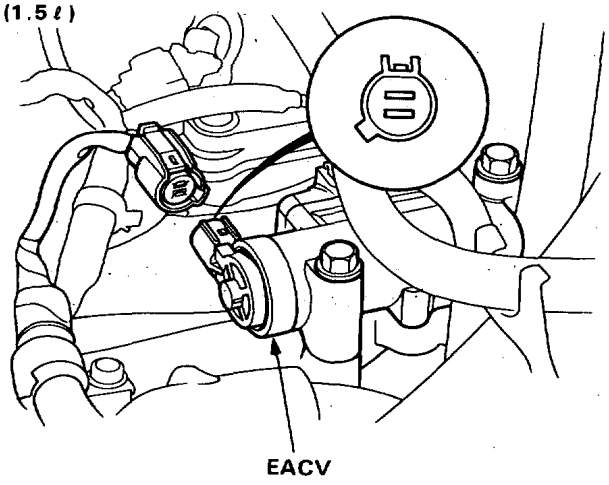
YES → **Replace EACV.**

NO

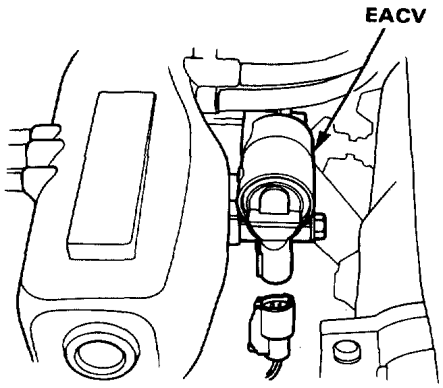
Turn the ignition switch ON.

(To page 6-123)

(1.5 ℓ)



(1.6 ℓ)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-122)

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

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

Is there battery voltage ?

NO → **1.5ℓ : Repair open in BLK/YEL, YEL/BLK Wire between the EACV and Main Relay.**
1.6ℓ : Repair open in BLK/YEL, GRN/PNK wire between the EACV and No. 14 fuse.

YES

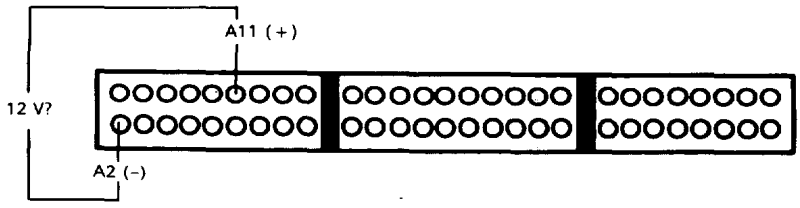
Turn the ignition switch OFF.

Reconnect the 2P connector to EACV.

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

Connect the PGM-FI test harness "A" connector to the main wire harness only, not the ECU (page 6-75).

Turn the ignition switch ON.



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

(To page 6-124)

(cont'd)

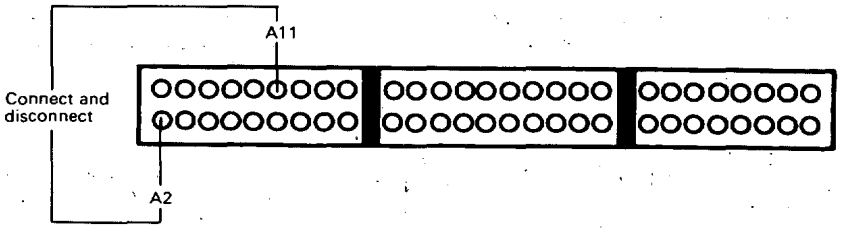
Downloaded from www.Manualslib.com manuals search engine

Idle Control System

Troubleshooting Flowchart — EACV (cont'd)

(From page 6-123)

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.

Downloaded from www.Manualslib.com manuals search engine

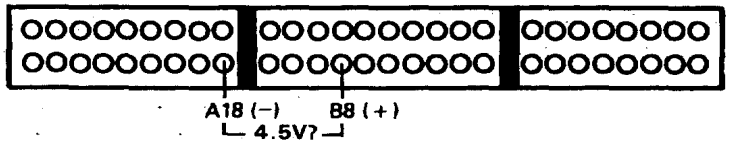
Troubleshooting Flowchart——Air Conditioning Signal

Inspection of Air Conditioning Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). 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.



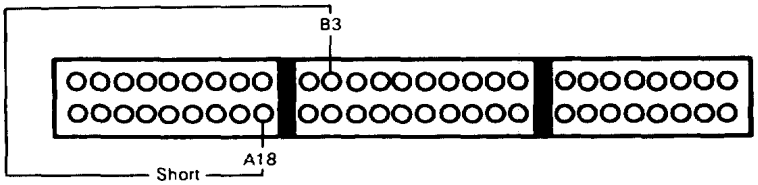
Is there approx. 4.5 V?

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.

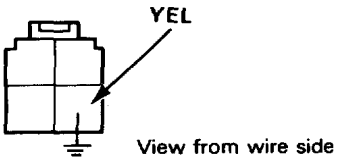
Momentarily connect B3 terminal to A18 terminal several times.



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 6-126)

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.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — Air Conditioning Signal (cont'd)

(From page 6-125)

A/C switch ON.

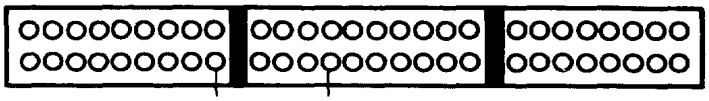
Does A/C operate ?

NO

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

YES

Air conditioning signal is OK.



Is voltage less than 1V ?

NO

Repair open in BLU/RED wire between ECU (B8) and A/C switch.

YES

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

Downloaded from www.Manualslib.com manuals search engine

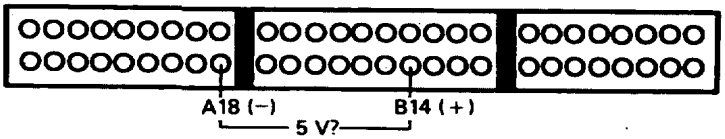
Troubleshooting Flowchart — Alternator FR Signal

Inspection of Alternator FR signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). 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.**

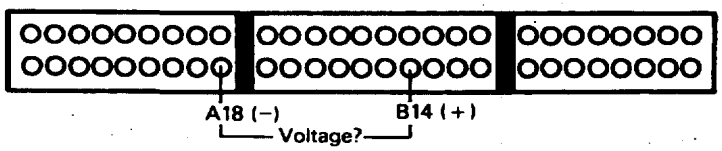
YES

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 6-128)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

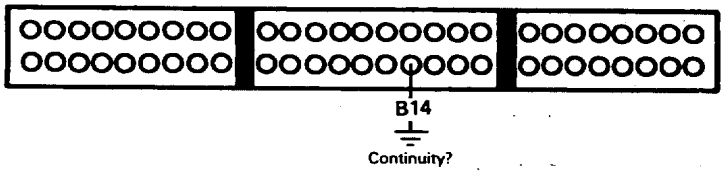
Troubleshooting Flowchart — Alternator FR Signal (cont'd)

(From page 6-127)

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

Disconnect the negative battery cable from the battery.

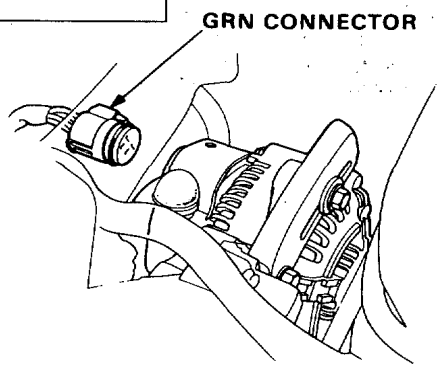
Check for continuity between B14 terminal and body ground.



Does continuity exist ?

YES → Disconnect GRN connector from the alternator.

NO → Disconnect GRN connector from the alternator.



Connect YEL wire to body ground.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES → Repair short in YEL, BLU wire between ECU (B14) and alternator.

NO → See Alternator Inspection (section 16).

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES → See Alternator Inspection (section 16).

NO → Repair open in YEL, BLU wire between ECU (B14) and alternator.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — A/T Shift Position Signal

Inspection of A/T Shift Position Signal

Turn the ignition switch ON.

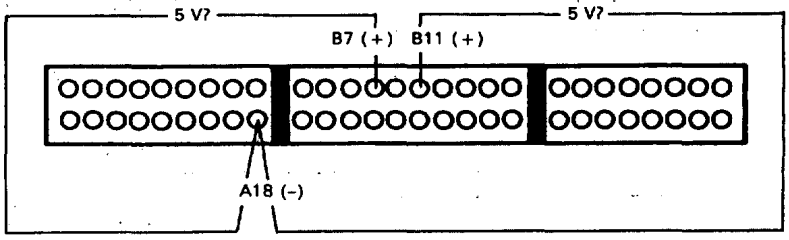
Observe the A/T shift indicator and select each position separately.

Does the indicator light properly? NO → **See A/T shift position Indicator Inspection (section 16).**

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). Disconnect "B" connector from the main wire harness only, not the ECU.

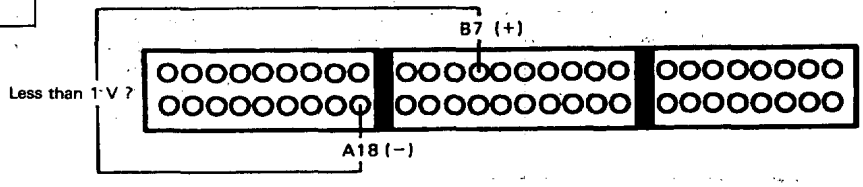


Turn the ignition switch ON.

Measure voltage individually between B7 (+), B11 (+) terminals 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



Turn the ignition switch OFF.

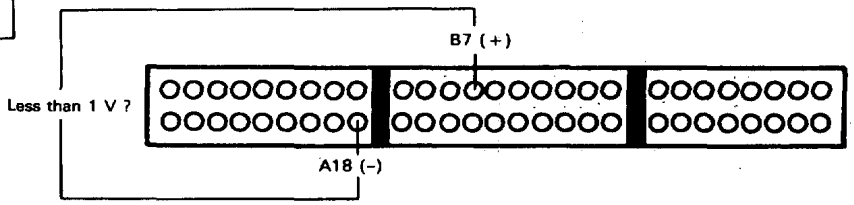
Reconnect "B" connector to the main wire harness.

Turn the ignition switch ON.

Measure voltage between B7 (+) terminal and A18 (–) terminal in Neutral position.

Is voltage less than 1 V ? NO →
- **Repair open in GRN wire between ECU (B7) and combination meter.**
- **Repair open in GRN wire between the combination meter and shift position console switch.**

YES



Measure voltage between B7 (+) terminal and A18 (–) terminal in Park position.

(To page 6-130)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Idle Control System

Troubleshooting Flowchart — A/T Shift Position Signal (cont'd)

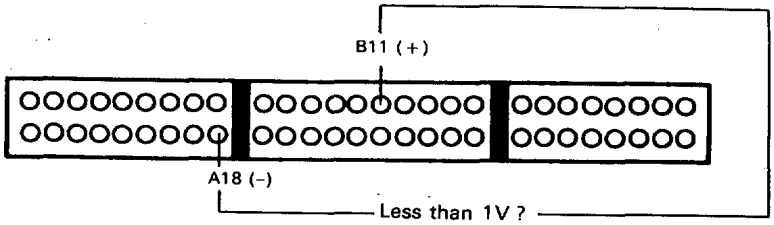
(From page 6-129)

Is voltage less than 1V ?

NO → Repair open in GRN/WHT wire between combination meter and shift position console switch.

YES

Measure voltage between B11 (+) terminal and A18 (–) terminal in D4 position.



Is voltage less than 1V ?

NO → Repair open in GRN/BLK wire between ECU (B11) and shift position console switch.

YES

Measure voltage between B7 (+) terminal and A18 (—) except in Park and Neutral.

Is there approx. 5V?

NO → Repair short in GRN wire between ECU (B7) and combination meter.

YES

Measure voltage between B11 (+) terminal and A18 (–) except in D4 position.

Is there approx. 5V?

NO → Repair short in GRN/BLK wire between ECU (B11) and shift position console switch.

YES

A/T shift position signal is OK.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting Flowchart — Starter Switch Signal

Inspection of Starter Switch Signal

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

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

Is there battery voltage ?

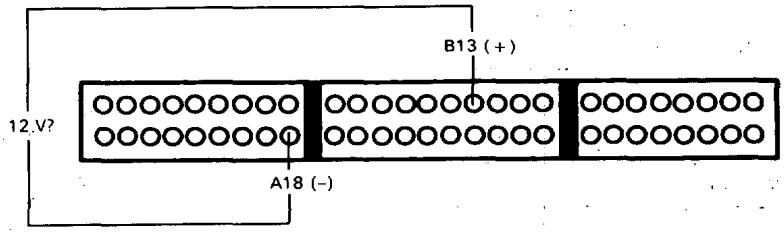
NO → Inspect No. 2 fuse.

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.**



Downloaded from www.Manualslib.com manuals search engine

Idle Control System

Fast Idle Control [1.6 ℓ only]

Troubleshooting Flow Chart

Inspection of Fast Idle Control Solenoid Valve.

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

Disconnect the upper vacuum hose from the fast idle control solenoid valve and connect a vacuum gauge to the valve.

Is there any vacuum?

YES → Disconnect the 2P connector from the solenoid valve

Is there any vacuum?

YES → **Replace the fast idle control solenoid valve.**

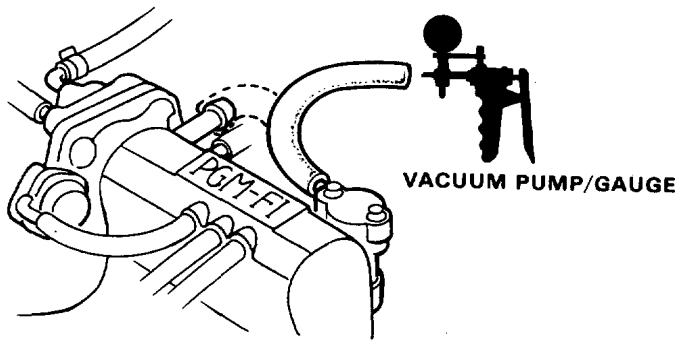
NO → **Repair short to ground at BLU wire between ECU (B2) and the 2P connector. If wire is OK, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.**

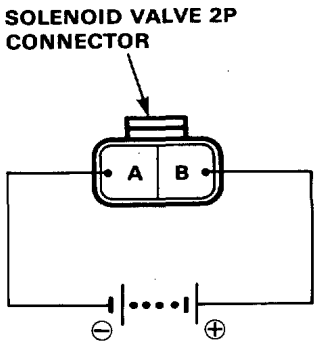
NO

Turn the ignition switch OFF.

Disconnect the 2P connector from the solenoid valve.

Connect battery positive to terminal B and battery negative to terminal A of the solenoid valve.





Is there mainfold vacuum?

NO → **Replace the fast idle control solenoid valve.**

YES

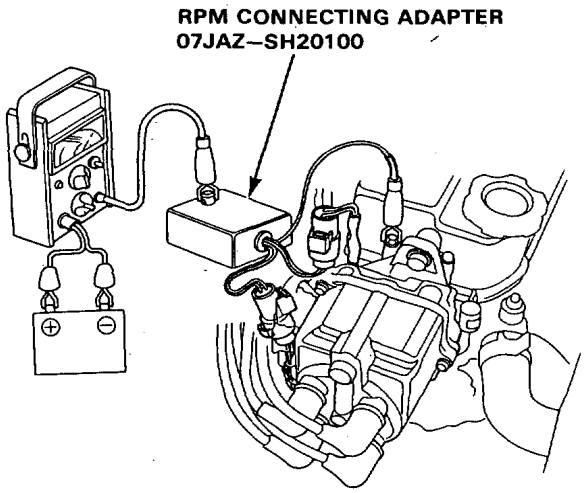
Fast Idle Control Solenoid valve is OK.

Downloaded from www.Manualslib.com manuals search engine

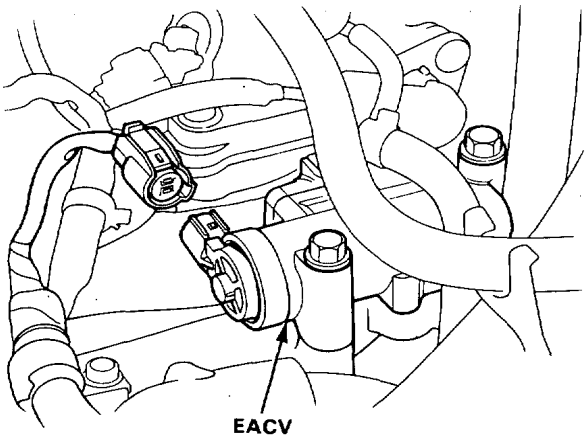
Idle Speed Setting [1.5 ℓ]

Inspection/Adjustment

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



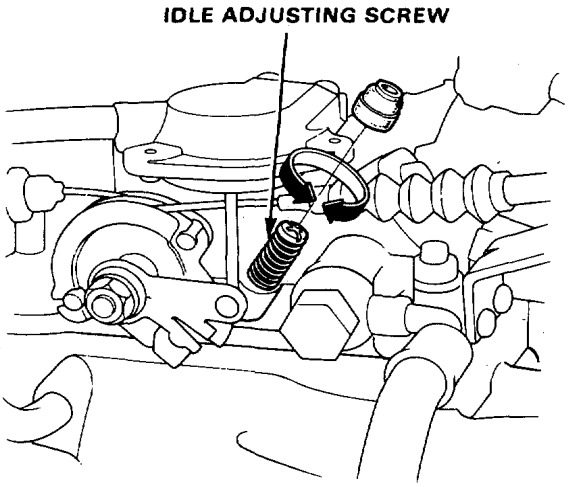
3. Disconnect the 2P connector from the EACV.



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:
   700 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
   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 6-126)



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:
   800 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   Idle speed should be: 800 ± 50 mim^{-1} (rpm)
9. 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: 800 ± 50 mim^{-1} (rpm)

NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-120.

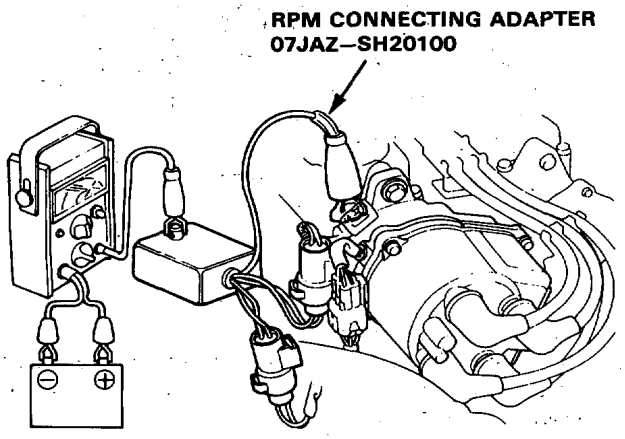
Downloaded from www.Manualslib.com manuals search engine

Idle Control System

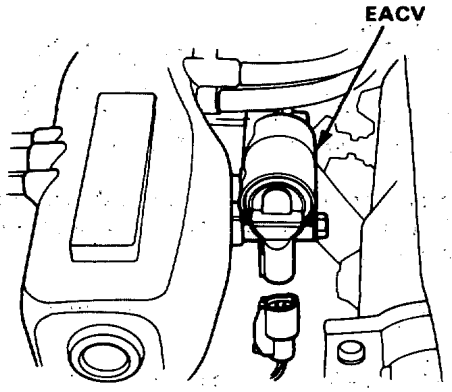
Idle Speed Setting [1.6 ℓ]

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.



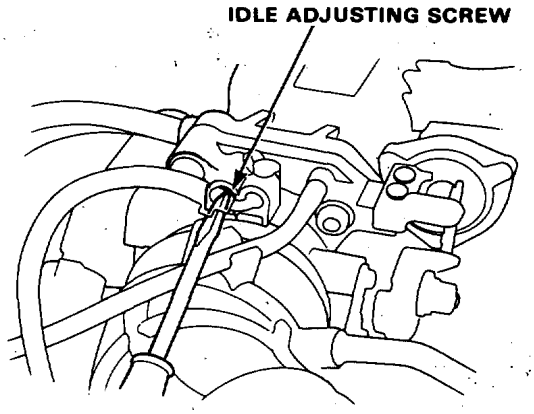
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be:

   (SOHC)
   680 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
   (DOHC with CATA)
   700 ± 50 min^{-1} (rpm)
   (DOHC without CATA)
   M/T: 700 ± 50 min^{-1} (rpm)
   A/T: 650 ± 50 min^{-1} (rpm) (in [N] or [P])

   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 6-169).



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:
   (SOHC)
   780 ± 50 min^{-1} (rpm) (A/T: in [N] or [P])
   (DOHC with CATA)
   800 ± 50 min^{-1} (rpm)
   (DOHC without CATA)
   M/T: 800 ± 50 min^{-1} (rpm)
   A/T: 750 ± 50 min^{-1} (rpm) (in [N] or [P])
8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.

   Idle speed should be:
   (SOHC)
   780 ± 50 min^{-1} (rpm)
   (DOHC with CATA)
   800 ± 50 min^{-1} (rpm)
   (DOHC without CATA)
   M/T: 800 ± 50 min^{-1} (rpm)
   A/T: 750 ± 50 min^{-1} (rpm)
9. 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)
   810 ± 50 min^{-1} (rpm)
   (DOHC with CATA)
   800 ± 50 min^{-1} (rpm)
   (DOHC without CATA)
   M/T: 800 ± 50 min^{-1} (rpm)
   A/T: 750 ± 50 min^{-1} (rpm)

   NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-120.

Downloaded from www.Manualslib.com manuals search engine

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.

1.5ℓ

PAGE / SUB SYSTEM / SYMPTOM		FUEL INJECTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	CONTAMI-NATED FUEL
		138	147	149	150	151	*
ENGINE WON'T START		③		③	①	②	
DIFFICULT TO START ENGINE WHEN COLD		②	③	①			
ROUGH IDLE		①	②				
FREQUENT STALLING	WHILE WARM-ING UP	①		②	③		
	AFTER WARM-ING UP	①	③	③	②		③
POOR PERFORMANCE	MISFIRE OR ROUGH RUN-NING	①	②				③
	FAILS EMISSION TEST	①	②				
	LOSS OF POWER	③		①	③		②

1.6ℓ

PAGE / SUB SYSTEM / SYMPTOM		FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	CONTAMI-NATED FUEL
		143	147	147	149	150	151	*
ENGINE WON'T START			③		③	①	②	
DIFFICULT TO START ENGINE WHEN COLD		③			②	①		
ROUGH IDLE		①		②				
FREQUENT STALLING	WHILE WARM-ING UP	①			②	③		
	AFTER WARM-ING UP	①		③	③	②		
POOR PERFORMANCE	MISFIRE OR ROUGH RUN-NING	①		②				
	FAILS EMISSION TEST	①		②				
	LOSS OF POWER				①	③		

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

Downloaded from www.Manualslib.com manuals search engine

Fuel Supply System

Fuel Pressure

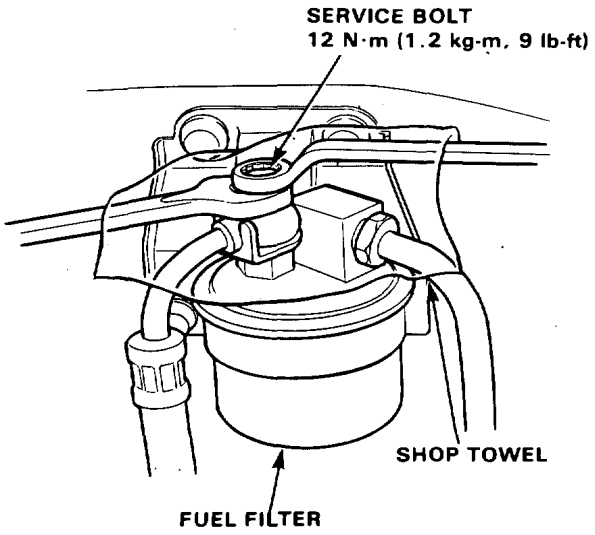
Relieving

⚠ 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 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:

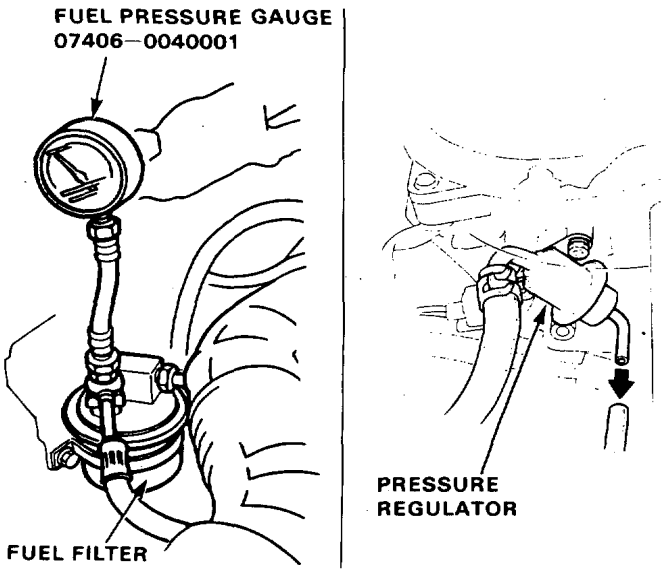
- A fuel pressure gauge can be attached at the 6 mm service bolt hole.
- Always replace the washer between the service bolt and the special banjo bolt, whenever the service bolt is loosened to relieve fuel pressure.
- Replace all washers whenever the bolts are removed to disassemble parts.

Inspection

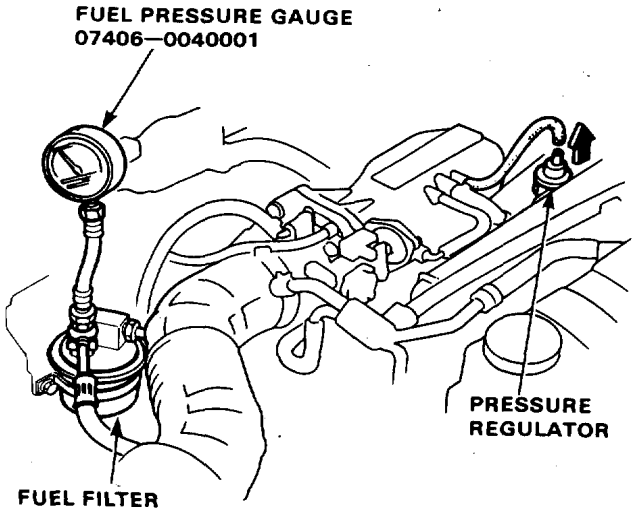
1. Relieve fuel pressure.
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected.

Pressure should be:
240—279 kPa (2.45—2.85 kg/cm², 35-41 psi)

(1.5 ℓ)



(1.6 ℓ)



Downloaded from www.Manualslib.com manuals search engine

- If the fuel pressure is not as specified, first check the fuel pump (page 6-150). If the pump is OK. check the following:

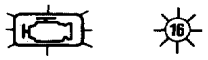
— If the pressure is higher than specified, inspect for:
  - Pinched or clogged fuel return hose or piping.
  - Faulty pressure regulator (page 6-147).
— If the pressure is lower than specified, inspect for:
  - Clogged fuel filter.
  - Pressure regulator failure (page 6-147).
  - Leakage in the fuel line.

Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.5 ℓ]

Troubleshooting Flowchart

Self-diagnosis LED indicates code 16: A problem in the fuel injector circuit.



—**Check Engine warning light has been reported on.**
—**LED indicates CODE 16.**

Turn the ignition switch OFF.

Check for loose wires or connectors at injectors.

Are connections OK? NO → **Repair as necessary.**

YES

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

Start engine and hold at 2000 min^{-1} (rpm) for 1 minute.

NOTE: If engine will not start, continue cranking for at least 15 seconds to reproduce CODE on ECU.

Does the engine start and run at 2000 min^{-1} (rpm) for 1 minute. NO → Is Check Engine warning light on and does LED indicate CODE 16 ? NO → **See Troubleshooting Guide (page 6-135).**

YES

Is Check Engine warning light on and does LED indicate CODE 16 ? NO → **Intermittent failure (test drive may be necessary).**

YES

Turn the ignition switch OFF.

(To page 6-139)

Turn the ignition switch OFF.

(To page 6-139)

Downloaded from www.Manualslib.com manuals search engine



(From page 6-138)

Disconnect the 2P connector from the main injector.

Measure resistance between the 2 terminals of the injector.

Is resistance 0.6—1.6 Ω? NO → **Replace the injector.**

YES

Connect voltmeter positive to the main injector's YEL/BLK wire and the negative to body ground.

Turn the ignition switch ON.

Is there battery voltage for two seconds? NO → **Repair open in YEL/BLK wire between main injector and main relay.**

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the auxiliary injector.

Measure resistance between the 2 terminals of the injector.

Is resistance 6-10 Ω? NO → **Replace the injector.**

YES

Connect voltmeter positive to YEL/BLK wire of auxiliary injector and negative to body ground.

Turn the ignition switch ON.

(To page 6-140)

(From page 6-138)

Disconnect the 2P connector from the auxiliary injector.

Measure resistance between the 2 terminals of the injector.

Is resistance 6-10 Ω? NO → **Replace the injector.**

YES

Turn the ignition switch ON.

Measure voltage between the auxiliary injectors YEL wire and body ground.

Is there approx. 10V? NO →

- **Repair open or short in YEL wire between aux. injector and ECU (A1, A3).**
- **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

Disconnect the 2P connector from the main injector.

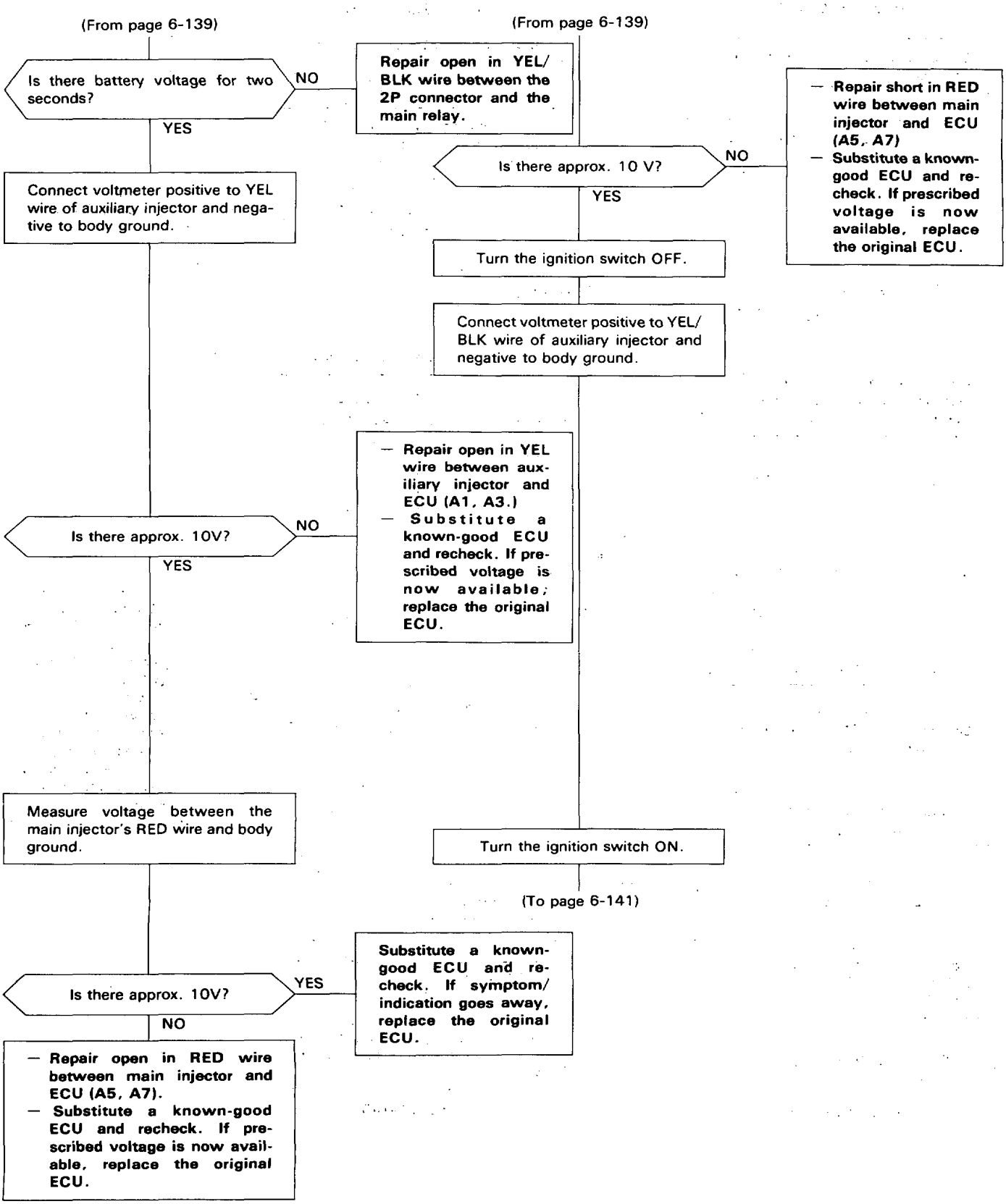
Measure voltage between the main injector's RED wire and body ground.

(To page 6-140)

(cont'd)

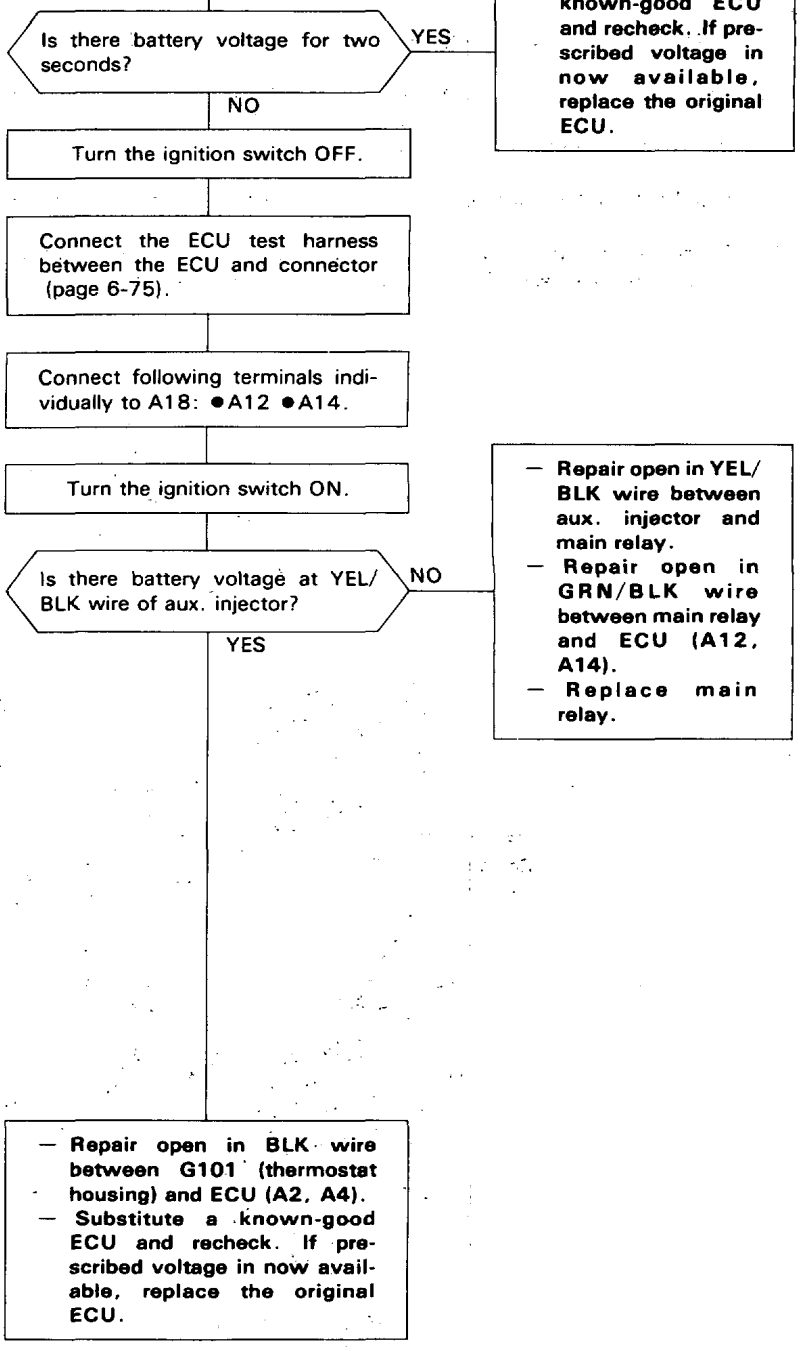
Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.5 ℓ] (cont'd)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-140)



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.5 ℓ] (cont'd)

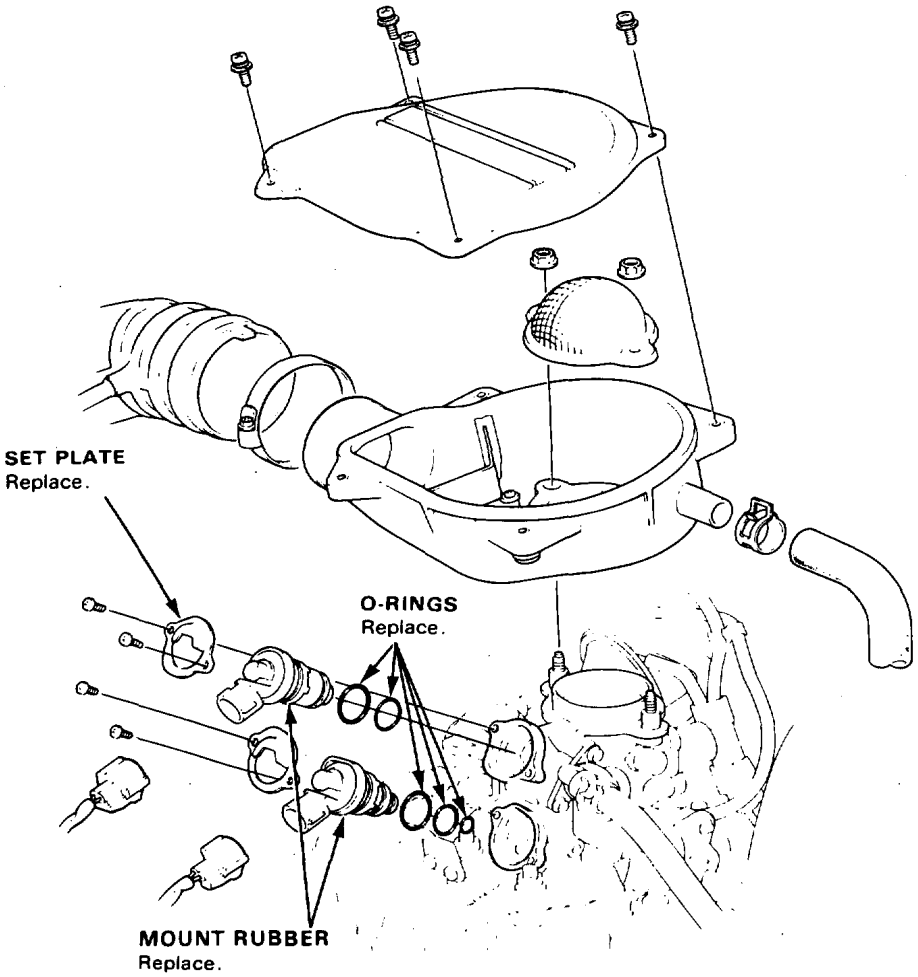
Replacement

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

1. Relieve fuel pressure (page 6-136).
2. Remove the air intake chamber.
3. Disconnect the 2P connector from the injector.
4. Loosen the screws, then remove the injector from the throttle body.

   NOTE: Place a rag or shop towel over the throttle body.
5. Coat new O-rings with clean engine oil and put them on the injector.
6. Insert the injector into the throttle body.

   NOTE: After the injector is inserted, be sure that it turns smoothly about 30°.
7. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approx. 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.



Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.6 ℓ]

Troubleshooting Flowchart

Self-diagnosis LED indicates code 16: A problem in the fuel injector circuit (with CATA).

(With CATA)

—Check Engine warning light has been reported on.
—LED indicates CODE 16.

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 → **(With CATA)**

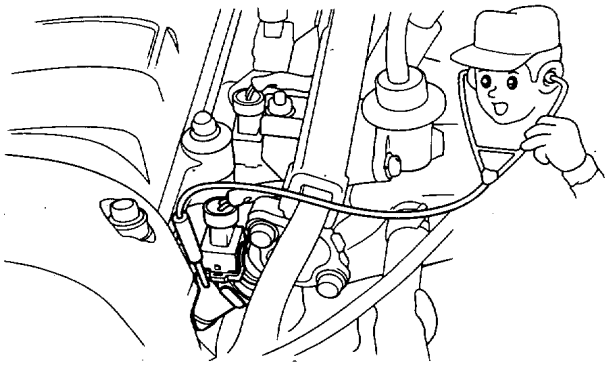
YES

Is Check Engine warning light on and does LED indicate CODE 16?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at injectors, injector resistor.**

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 6-144)

(To page 6-144)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.6 ℓ] (cont'd)

(From page 6-143)

Turn the ignition switch OFF.

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

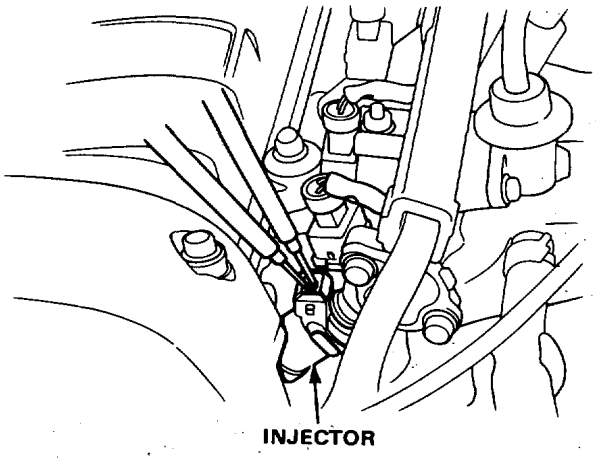
Measure resistance between the 2 terminals of the injector.

(From page 6-143)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



INJECTOR

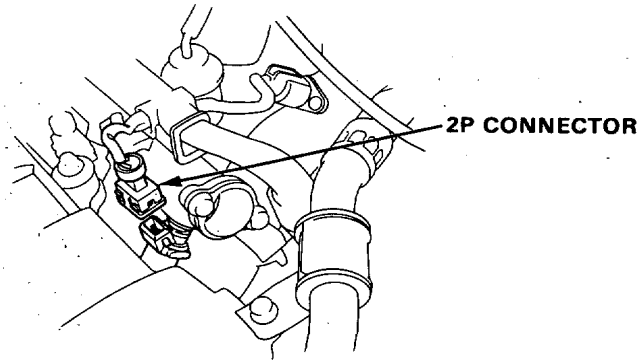
Is there 1.5—2.5Ω ?

NO → **Replace the injector.**

YES

Turn the ignition switch ON.

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



2P CONNECTOR

Is there battery voltage ?

NO → Turn the ignition switch OFF.

YES

(To page 6-145)

(To page 6-145)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-144)

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 (17P) connector from the ECU.

NO → Reconnect the 2P connector to the injector.

Turn the ignition switch OFF.

Connect the ECU test harness between the ECU and connector (page 6-75).

Turn the ignition switch ON.

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.**

Disconnect (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.**

Disconnect 6P connector on the injector resistor.

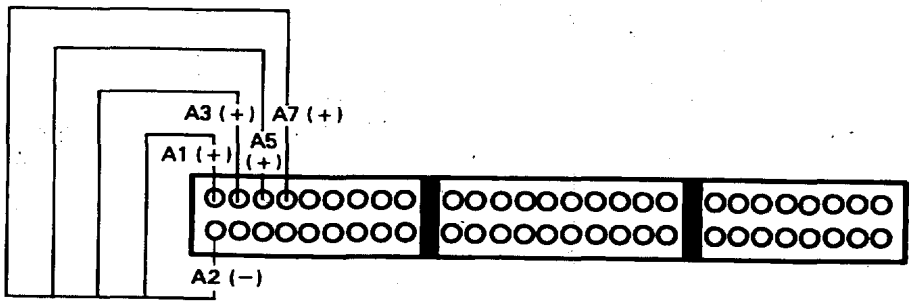
Turn the ignition switch ON.

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.**
– Repair open in RED/BLK wire between 2P connector and resistor.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Fuel Injectors [1.6 ℓ] (cont'd)

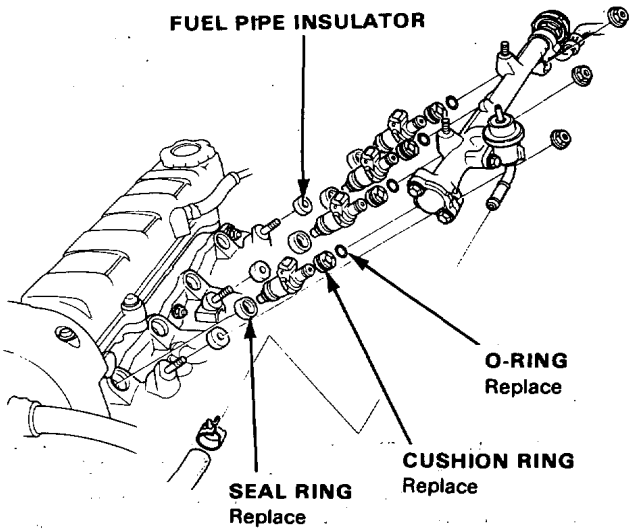
Replacement

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

1. Relieve fuel pressure (page 6-136).
2. Disconnect the connectors from the injectors.
3. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

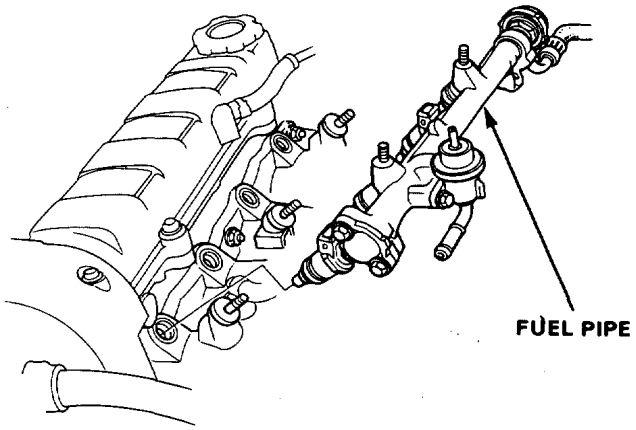
   NOTE: Place a rag or shop towel over the hoses before disconnecting them.

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.

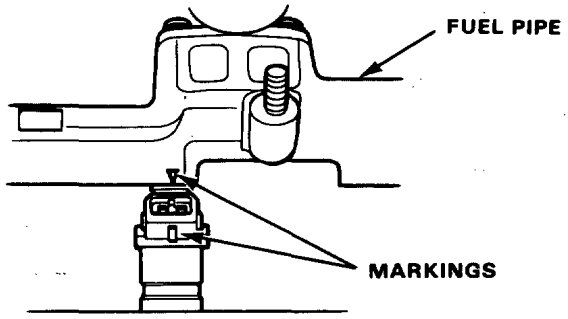


7. Slide new cushion rings onto the injectors.
8. Coat new O-rings with clean engine oil and put them on the injectors.
9. Insert the injectors into the fuel pipe first.
10. Coat new seal rings with clean engine oil and press them into the intake manifold.
11. Install the injectors and fuel pipe assembly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

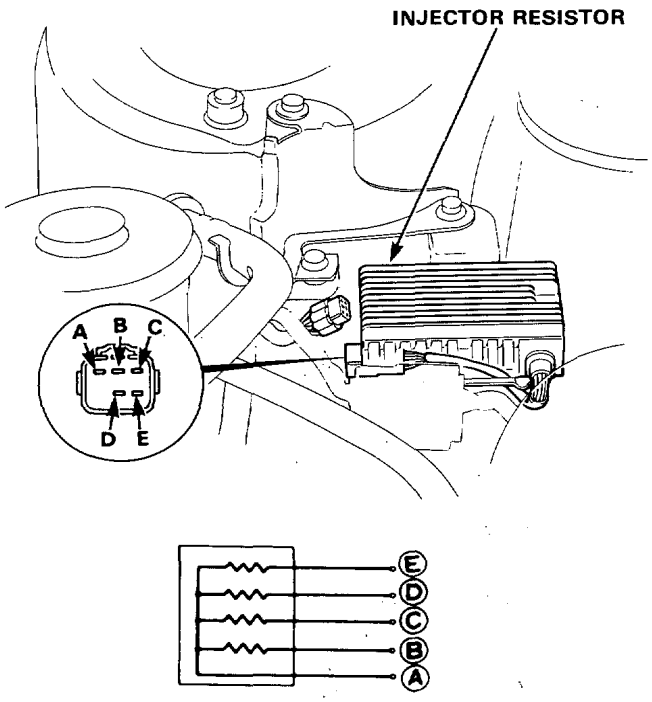
Downloaded from www.Manualslib.com manuals search engine

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

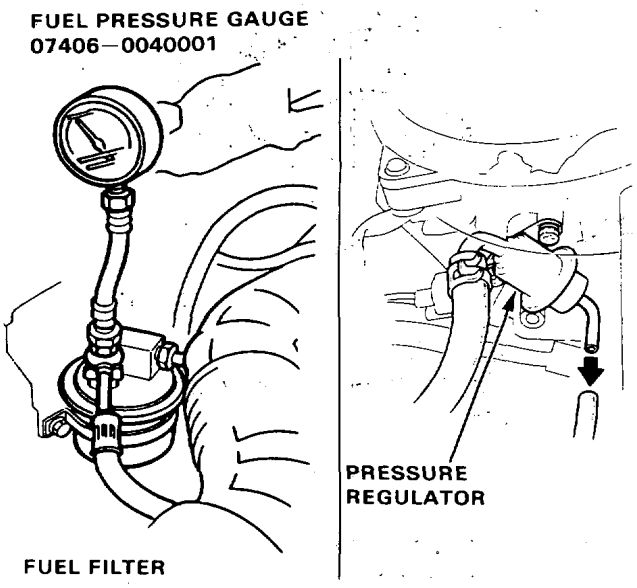
Testing

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

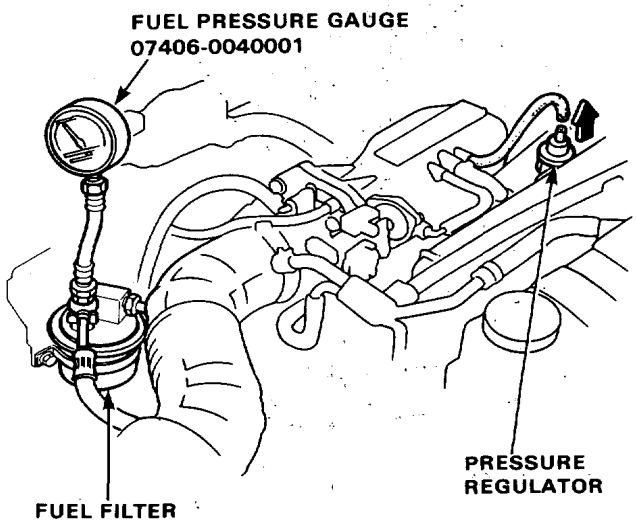
1. Attach a pressure gauge to the service port of the fuel filter (page 6-136).

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

(1.5 ℓ)



(1.6 ℓ)



(cont'd)

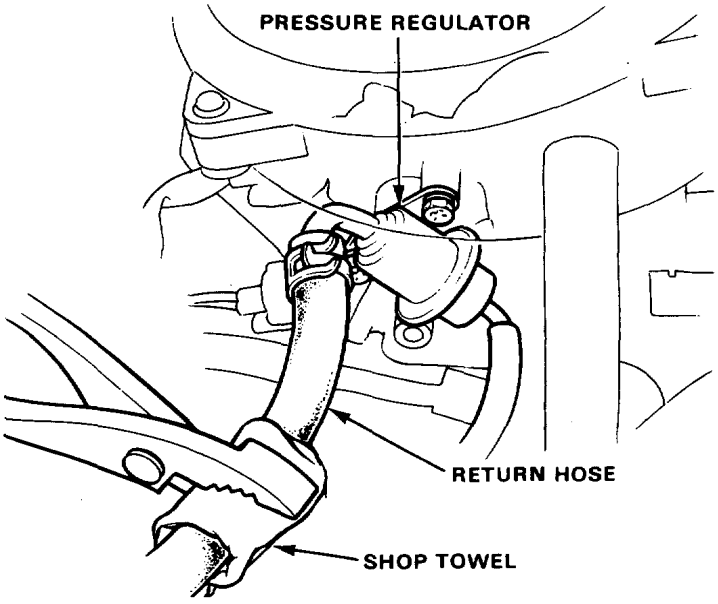
Downloaded from www.Manualslib.com manuals search engine

Pressure Regulator (cont'd)

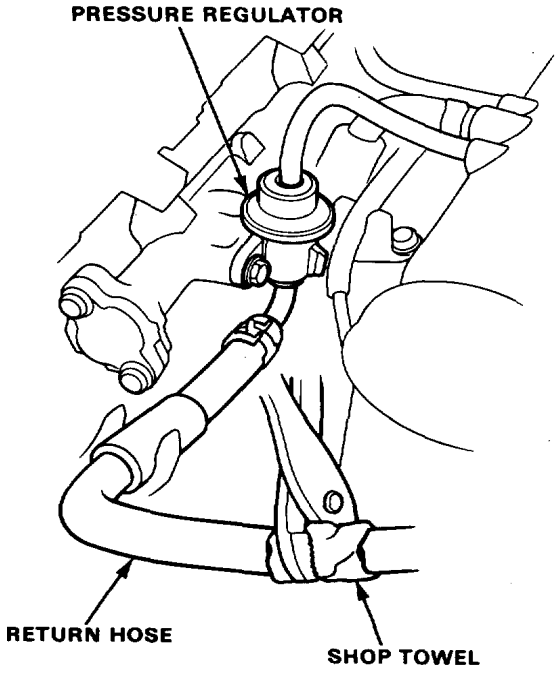
2. Check that the fuel pressure rises when the vacuum hose from the regulator is disconnected.

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

(1.5 ℓ)



(1.6 ℓ)



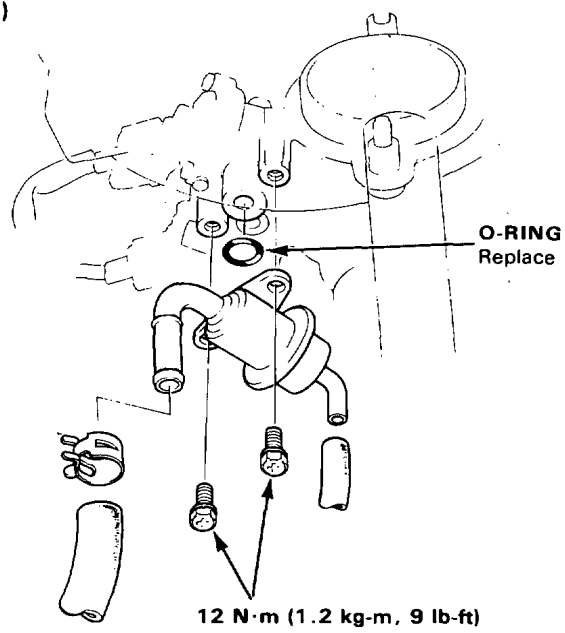
— If the pressure does not rise, replace the regulator and retest.

Replacement

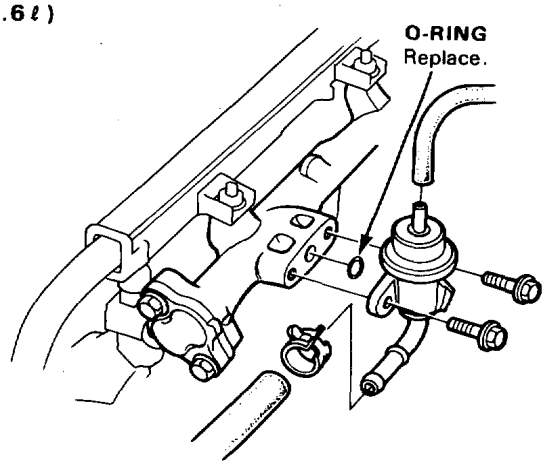
⚠WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Place a shop towel under pressure regulator, then relieve fuel pressure (page 6-136).
2. Disconnect the vacuum hose and fuel return hose.
3. Remove the two 6 mm retainer bolts.

(1.5 ℓ)



(1.6 ℓ)



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.

Downloaded from www.Manualslib.com manuals search engine

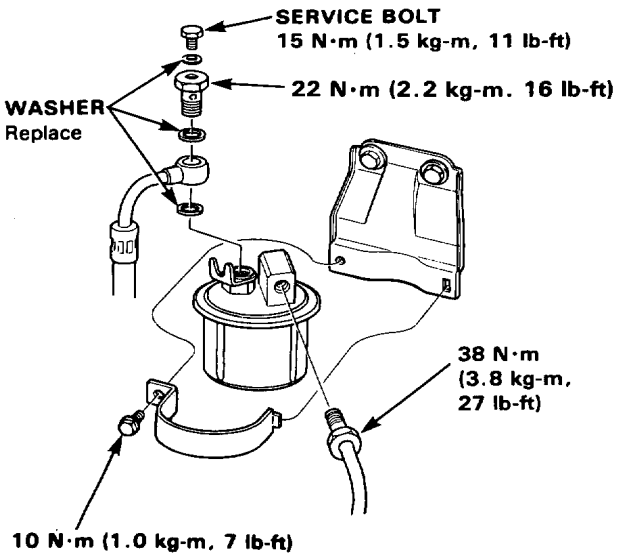
Fuel Filter

Replacement

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

The filter should be repiaced: 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 requlator vacuum hose disconnected) after making sure that the fuel pump and the pressure requlator are OK.

1. Place a shop towel under and around the fuel filter.
2. Relieve fuel pressure (page 6-136).
3. Remove the 12 mm banjo bolt 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.



CAUTION: Clean the flared joint of high pressure hoses throughly before reconnecting them.

Downloaded from www.Manualslib.com manuals search engine

Fuel Supply System

Fuel Pump

Testing

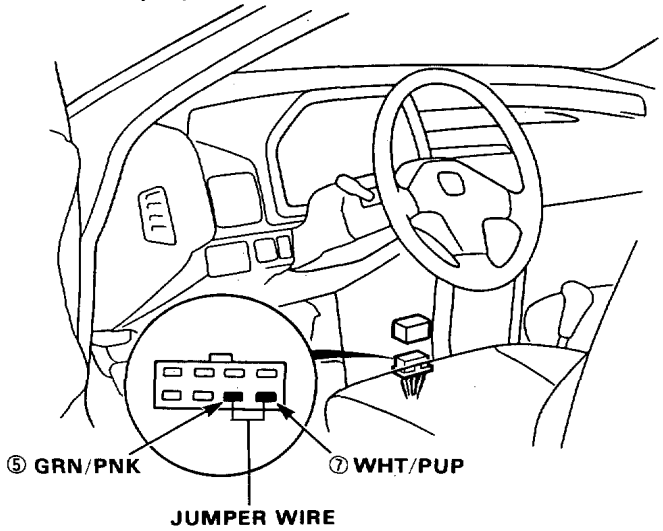
⚠WARNING Do not smoke during the test. Keep open flame away from your work area.

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:

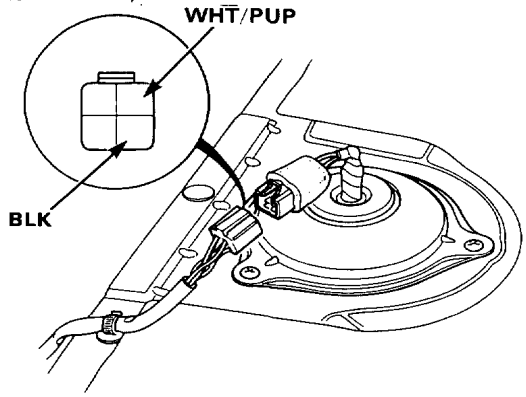
1. Remove the rear seat.
2. Disconnect the 4P connector.

   CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

3. Connect the GRN/PNK ⑤ wire and WHT/PUP ⑦ wire with a jumper wire.



4. Check that battery voltage is available at the fuel pump connector when the ignition switch is turned ON (positive probe to the WHT/PUP wire, negative probe to the BLK wire).

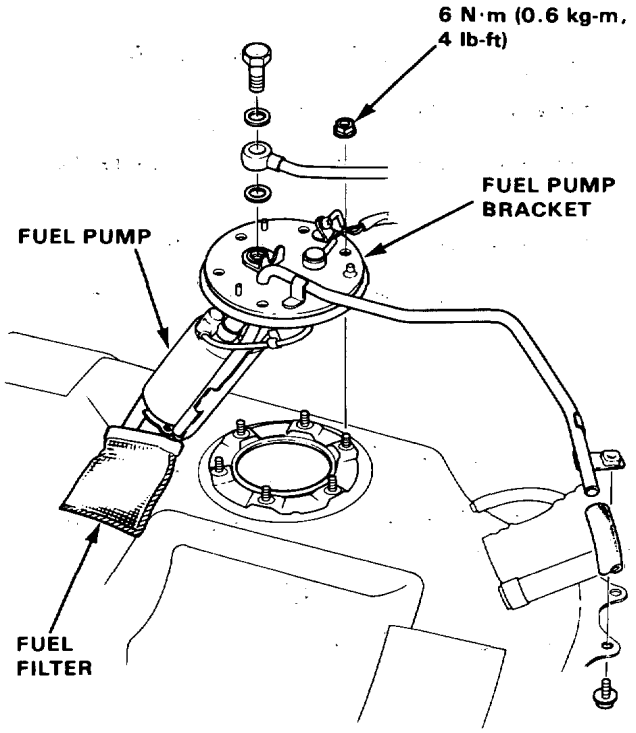


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness (page 6-151).

Replacement

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

1. Remove the fuel tank (page 6-153).
2. Remove the fuel pump mounting nuts.
3. Remove the fuel pump from the fuel tank.



Downloaded from www.Manualslib.com manuals search engine

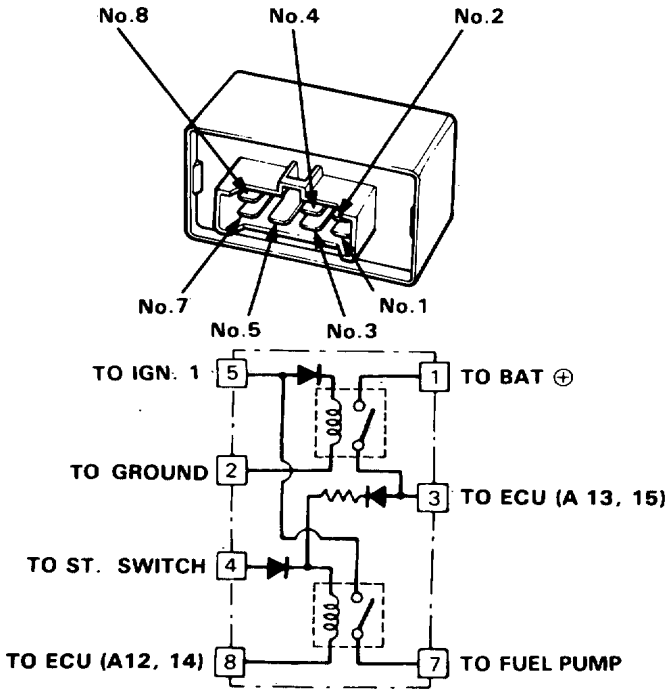
Main Relay

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.

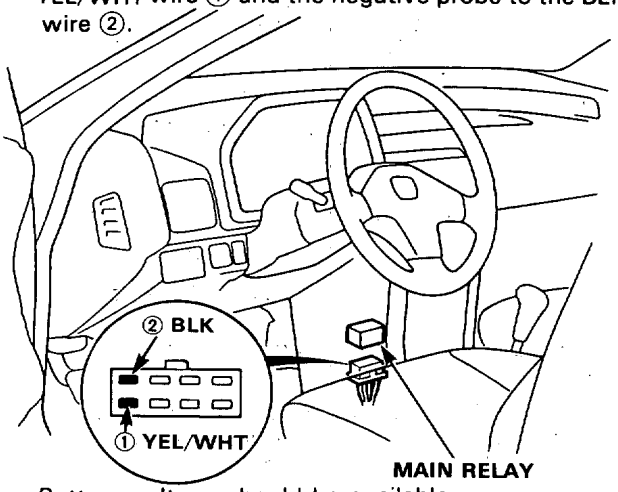
Harness Testing

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.

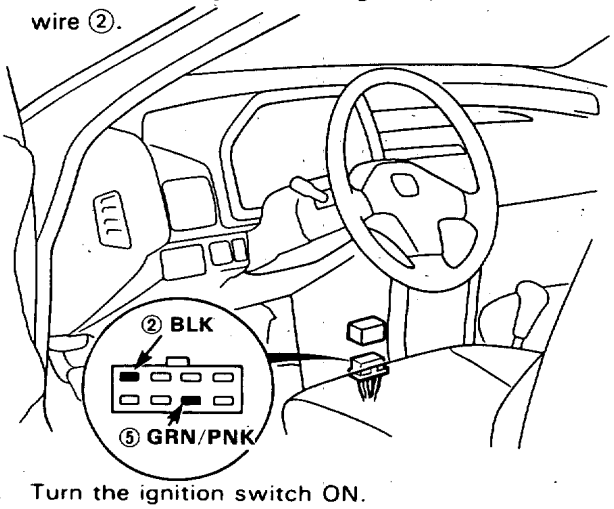
4. Attach the positive probe of voltmeter to the YEL/WHT wire ① and the negative probe to the BLK wire ②.



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 GRN/PNK wire ⑤ and the negative probe to the BLK wire ②.



6. Turn the ignition switch ON.

   Battery voltage should be available.

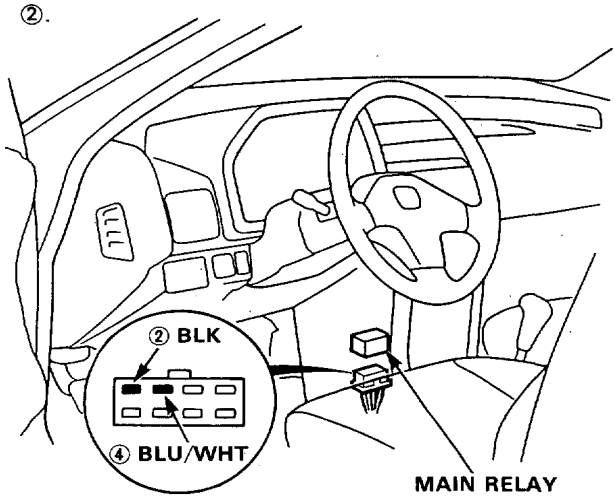
   - If there is no voltage, check No. 14 fuse and the wiring from the ignition switch to the fuse box and the wiring from the fuse box to the main relay.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Main Relay (cont'd)

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

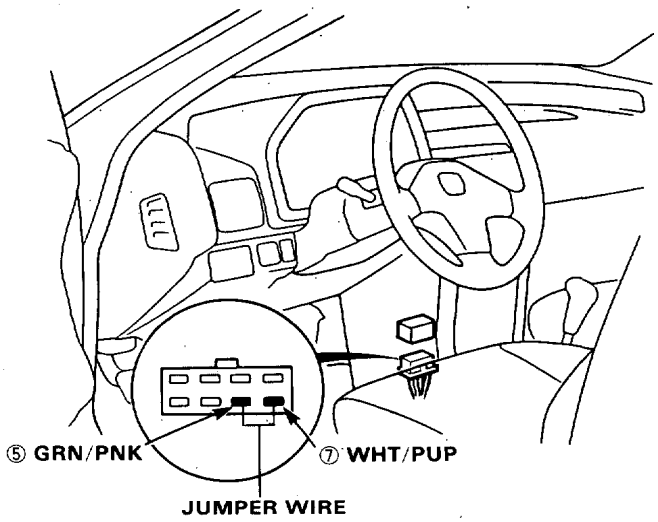


8. Turn the ignition switch to START position.

   Approximately 10 volts should be available.

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

9. Connect a jumper wire between the GRN/PNK wire ⑤ and WHT/PUP 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).

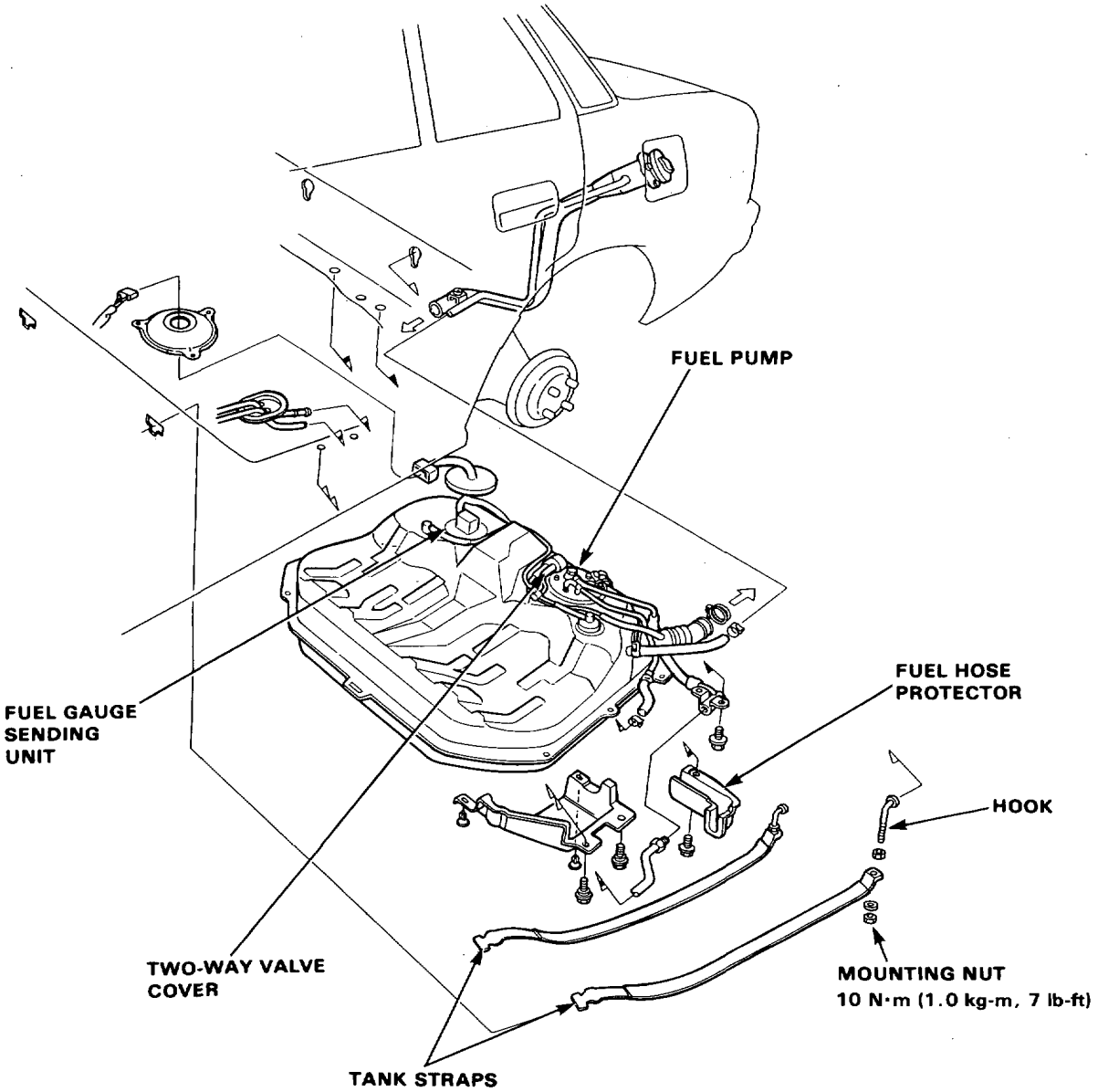
Downloaded from www.Manualslib.com manuals search engine

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 rear seat and disconnect the 4P connector.
3. Remove the two-way valve cover and fuel hose protector.
4. 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 throughly before reconnecting them.**
5. Place a jack, or other support, under the tank.
6. Remove the strap nuts and let the straps fall free.
7. Remove the fuel tank.
   NOTE: The tank may stick on the undercoat applied to its mount. To remove, carefully pry it off the mount.
8. Install parts in the reverse order of removal.



Downloaded from www.Manualslib.com manuals search engine

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	TANDEM CONTROL SYSTEM (1.5 ℓ)	THROTTLE CONTROL SYSTEM
	155	157,160	162	169
DIFFICULT TO START ENGINE WHEN COLD			①	
WHEN COLD FAST IDLE OUT OF SPEC	③	②		①
WHEN WARM RPM TOO HIGH	③	②		①
WHEN WARM RPM TOO LOW		①		
FREQUENT STALLING WHILE WARMING UP	③	②	①	
LOSS OF POWER	③	②	①	

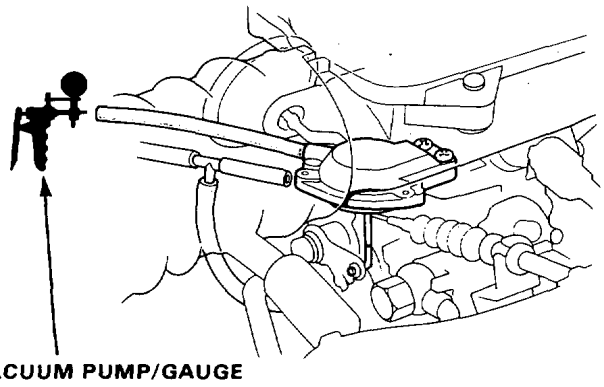
Downloaded from www.Manualslib.com manuals search engine

Throttle Cable

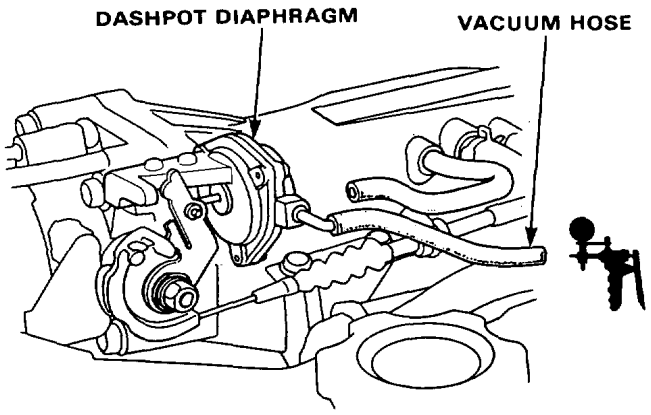
Inspection/Adjustment

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 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.

(1.5 ℓ)

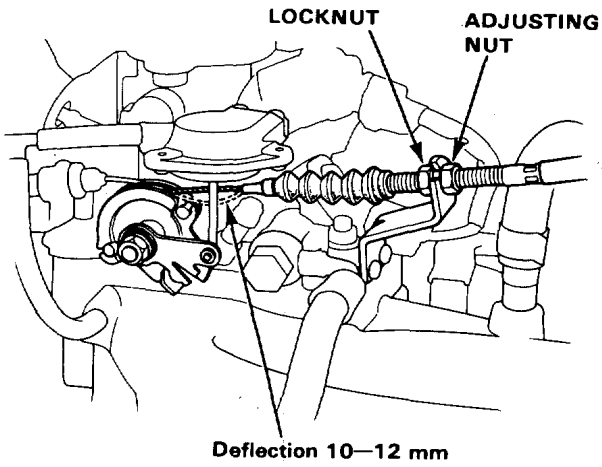


(1.6 ℓ)

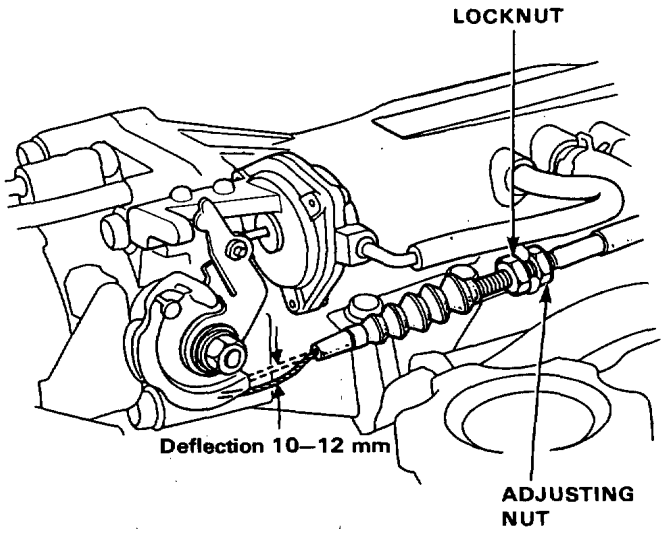


4. Check cable free play at the throttle linkage. Cable deflection should be 10—12 mm

(1.5 ℓ)



(1.6 ℓ)



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.

(cont'd)

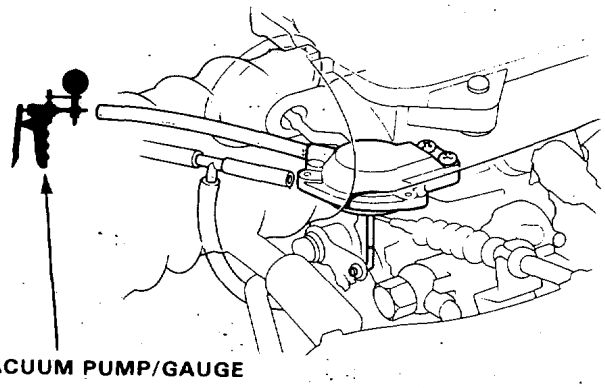
Downloaded from www.Manualslib.com manuals search engine

Throttle Cable (cont'd)

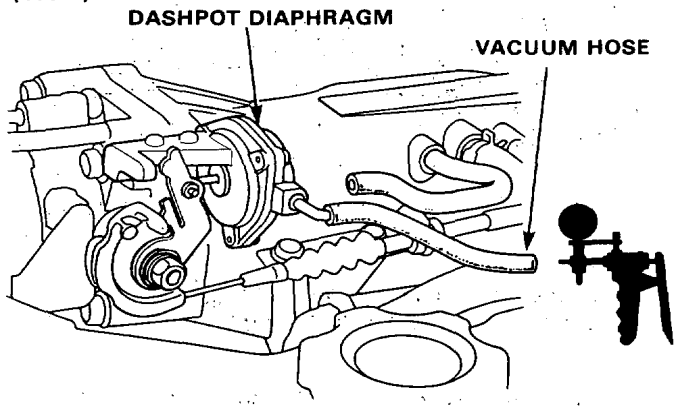
Installation

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 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.

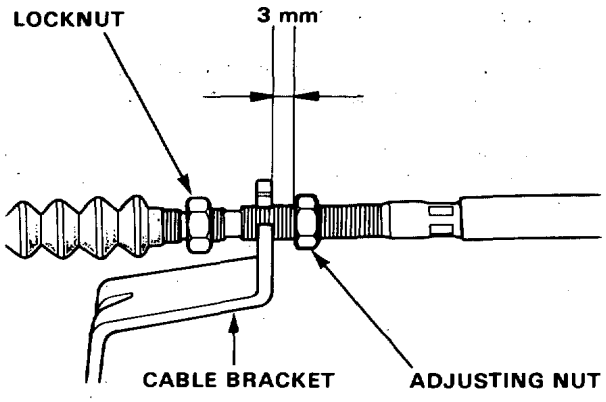
(1.5 ℓ)



(1.6 ℓ)



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 vacuum hose.

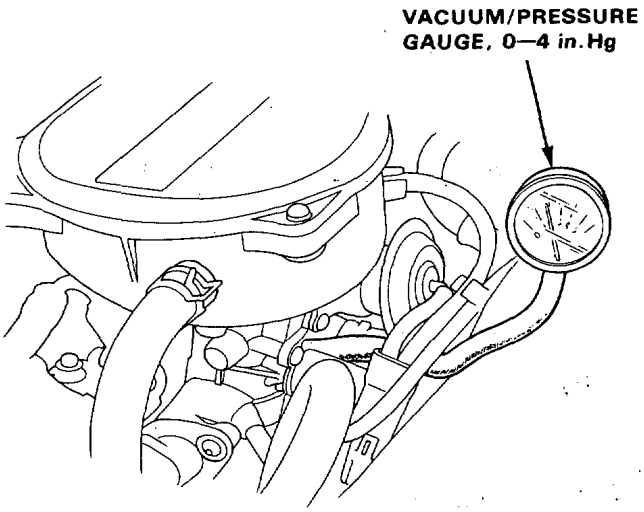
Downloaded from www.Manualslib.com manuals search engine

Throttle Body [1.5 ℓ]

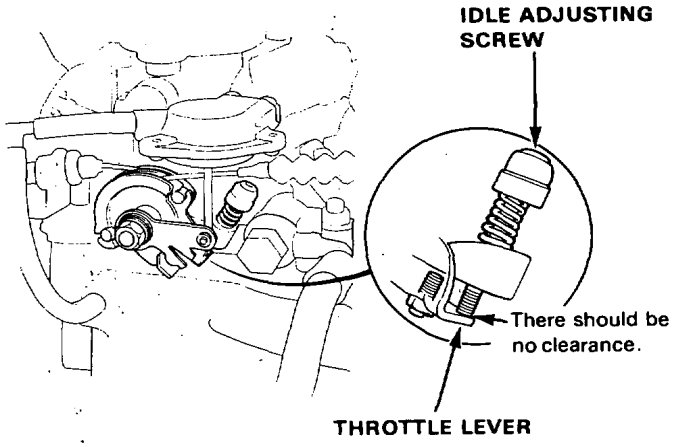
Inspection

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

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).
2. Disconnect the vacuum hose (to the canister) from the throttle body and connect a vacuum gauge to the throttle body.



3. Allow the engine to idle and check that the gauge indicates little or no vacuum.
   - If there is measurable vacuum, check the throttle control system (page 6-169).
4. Check that vacuum increases when the throttle is opened slightly from idle.
   - If there is no increase in 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 idle adjusting 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.

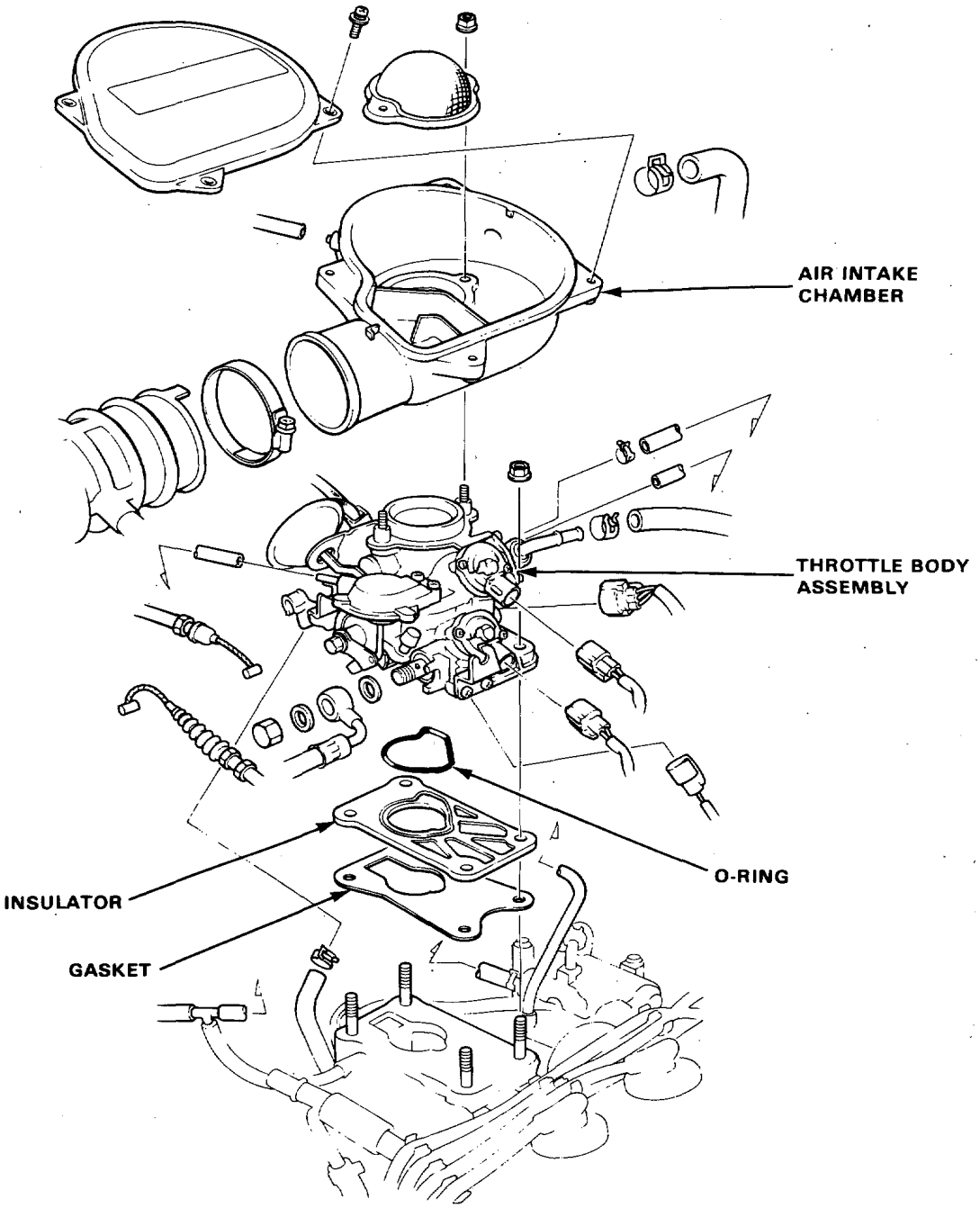
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

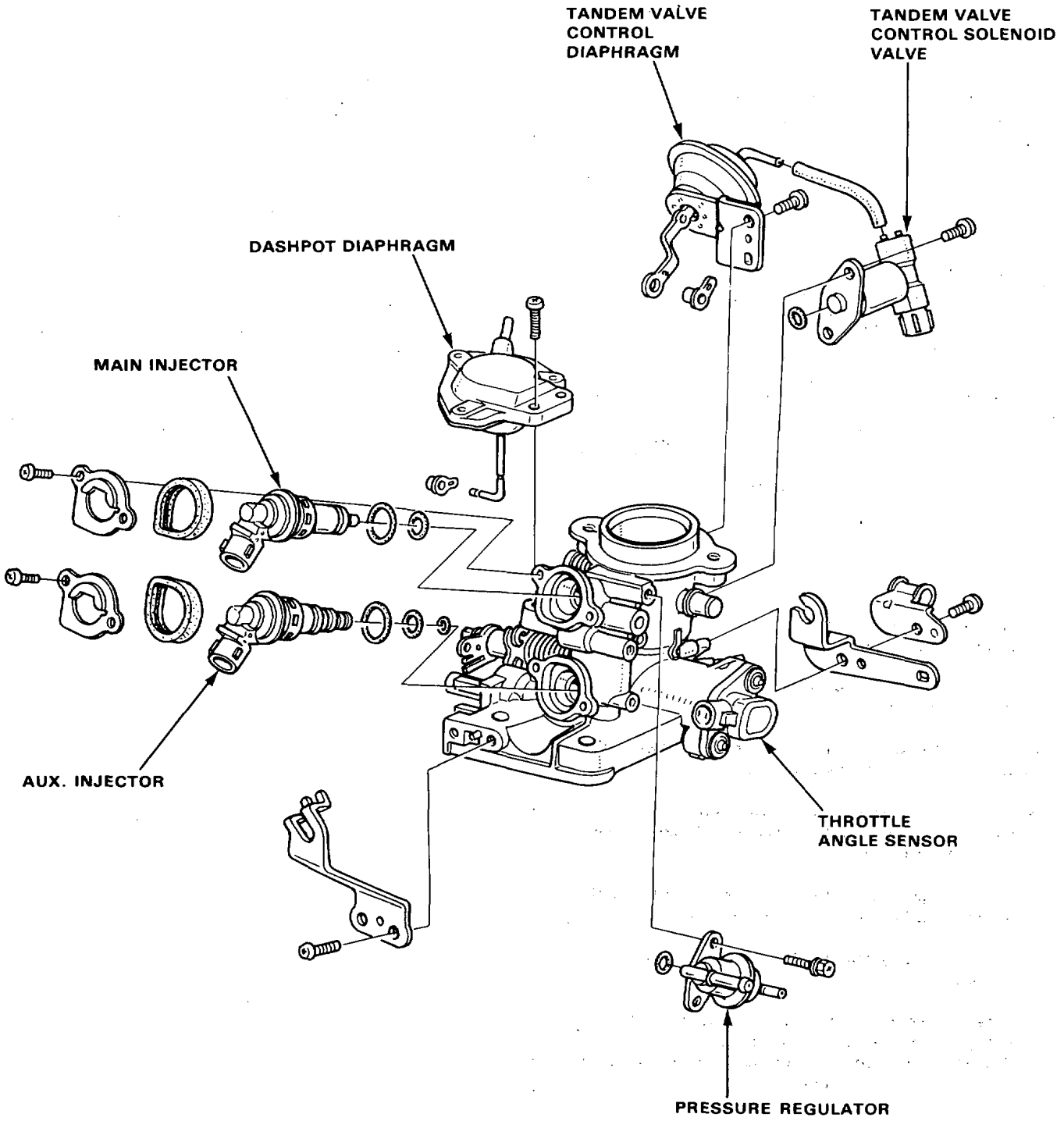
Air Intake System

Throttle Body [1.5 ℓ] (cont'd)

Disassembly



Downloaded from www.Manualslib.com manuals search engine



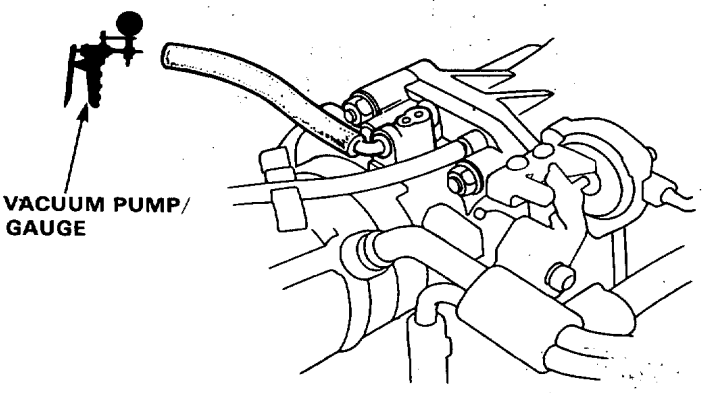
Downloaded from www.Manualslib.com manuals search engine

Throttle Body [1.6 ℓ]

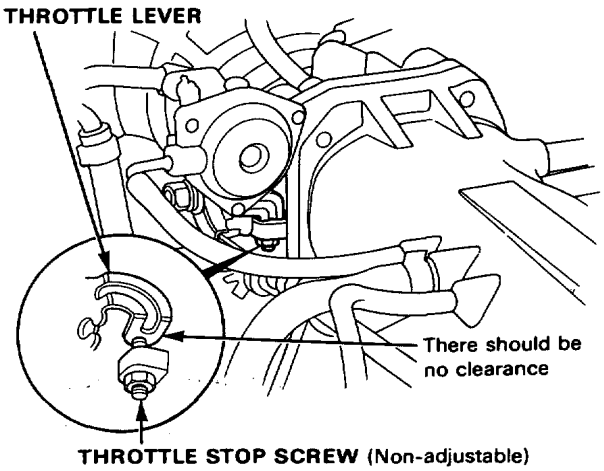
Inspection

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 is vacuum, check the throttle control system (page 6-169).
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 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.

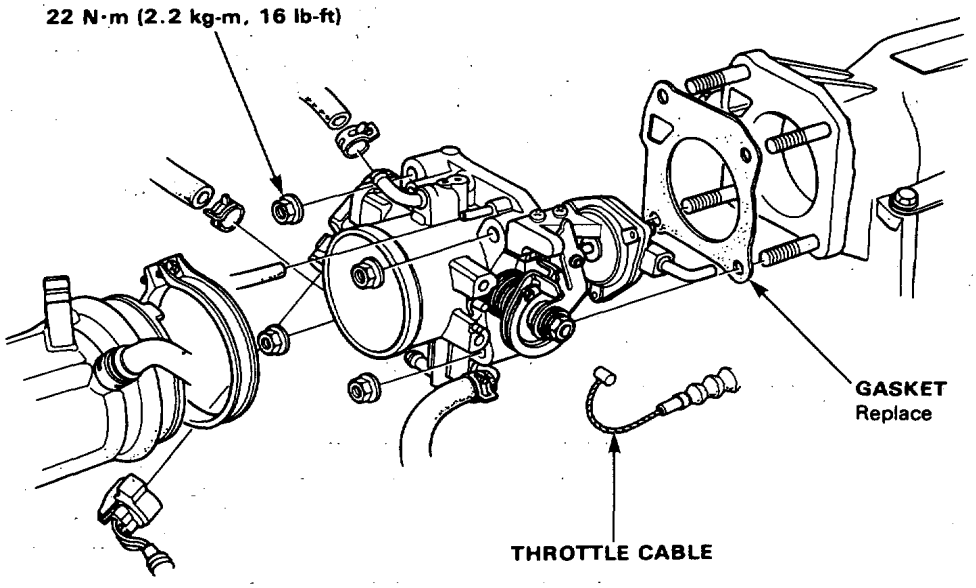


Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.

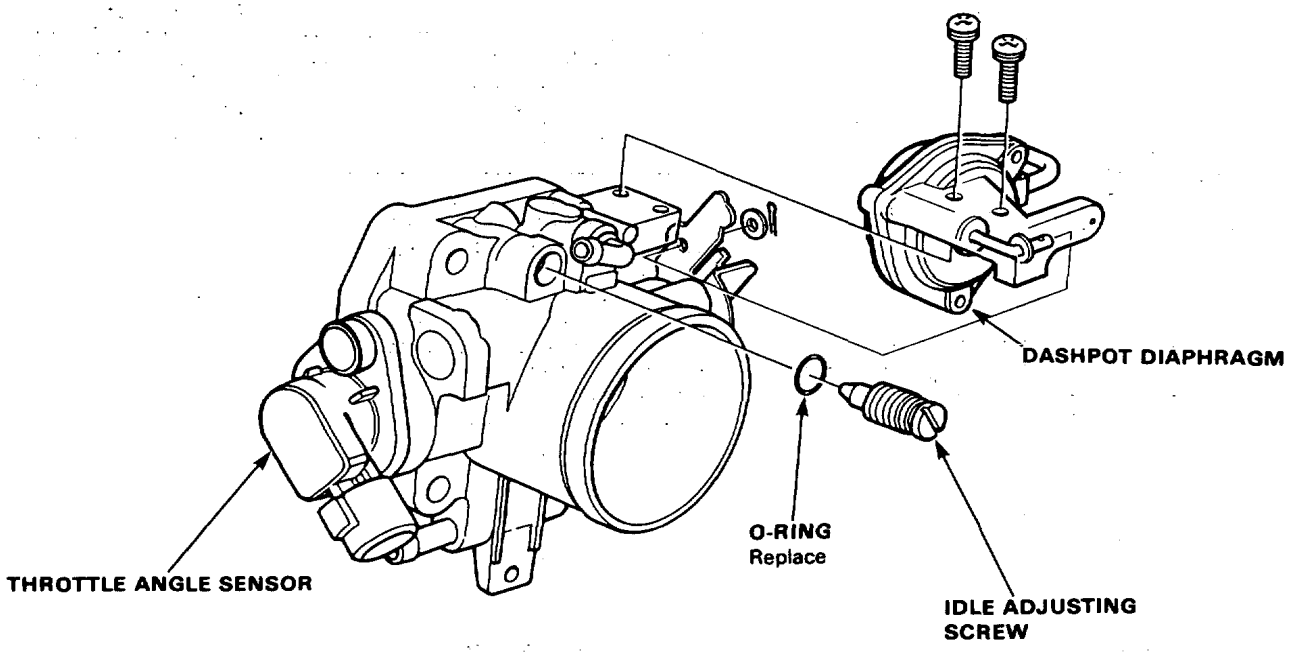
Downloaded from www.Manualslib.com manuals search engine

— Throttle Body [1.6 ℓ]

Disassembly



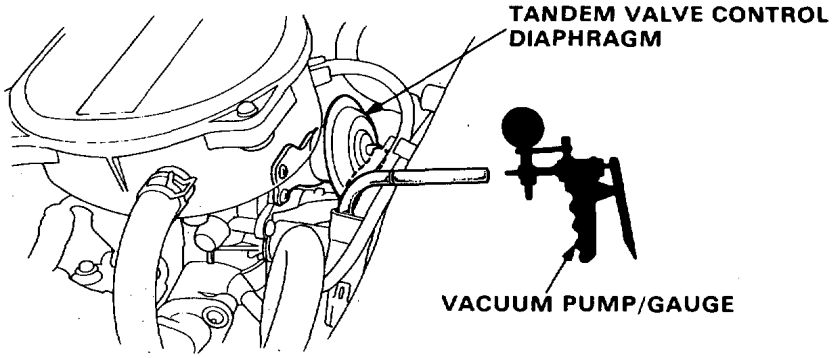
CAUTION:
- **The throttle stop screw in non-adjustable.**
- **After reassembly, adjust the throttle cable (page 6-155).**



Downloaded from www.Manualslib.com manuals search engine

Tandem Control System [1.5 ℓ]

Troubleshooting Flowchart



Inspection of Tandem Control System

Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum gauge to the hose.

Start engine and allow to idle.
NOTE: Coolant temperature must be below 70°C (160°F).

Is there vacuum ?
- YES → Disconnect the 2P connector from the tandem valve control solenoid valve.
  - Is there vacuum ?
    - YES → **Replace the solenoid valve.**
    - NO → Turn the ignition switch OFF.
      - Disconnect "B" connector from ECU.
      - Check for continuity to ground on the ORN wire.
      - Is there continuity to ground ?
        - YES → **Repair short to ground at ORN wire between ECU (B2) and the 2P connector.**
        - NO → **Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.**
- NO → Raise engine speed to,
  - Manual: 3,000 min^{-1} (rpm)
  - Automatic: 2,000 min^{-1} (rpm)

  Is there vacuum ?
  - NO → Disconnect the 2P connector from the tandem valve control solenoid valve.
  - YES

(To page 6-163)

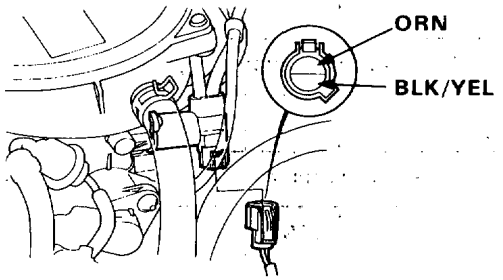
(To page 6-163)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-162)

(From page 6-162)

Measure voltage between BLK/YEL (+) terminal and ORN (–) terminal at 3,000 min^{-1} (rpm)



Is there battery voltage ?

YES

Remove the solenoid valve from the throttle body and check the port for blockage. If the port is OK, replace the solenoid valve.

NO

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

Is there battery voltage ?

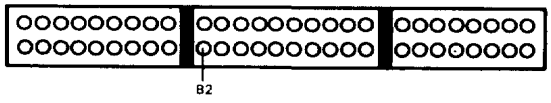
NO

Repair open in BLK/YEL wire between the 2P connector and No. 14 fuse.

YES

Turn the ignition switch OFF.

Connect the ECU test harness between the ECU and connector (page 6-75).



Check for continuity of ORN wire between ECU (B2) and the 2P connector.

Does continuity exist ?

NO

Repair open in ORN wire between ECU (B2) and the 2P connector.

YES

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

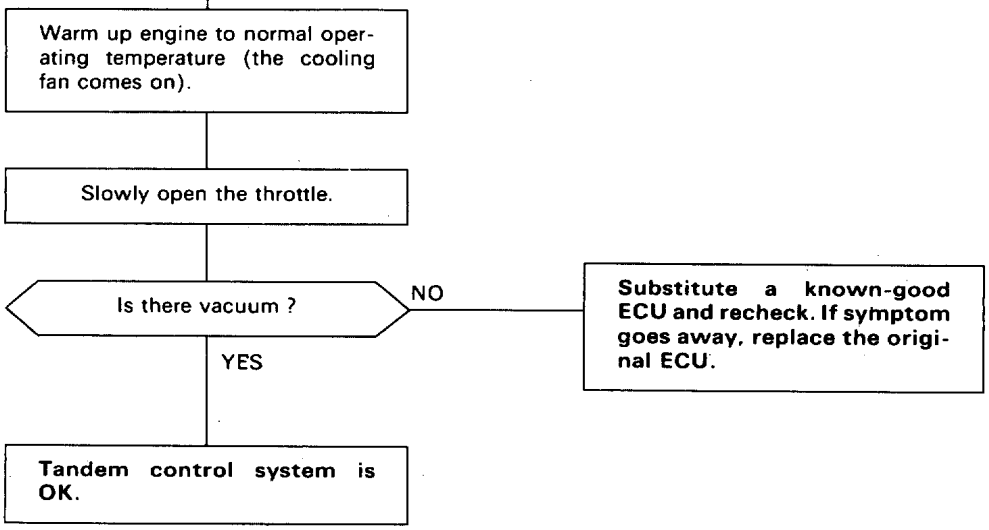
(To page 6-164)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Tanden Control System [1.5 ℓ] (cont'd)

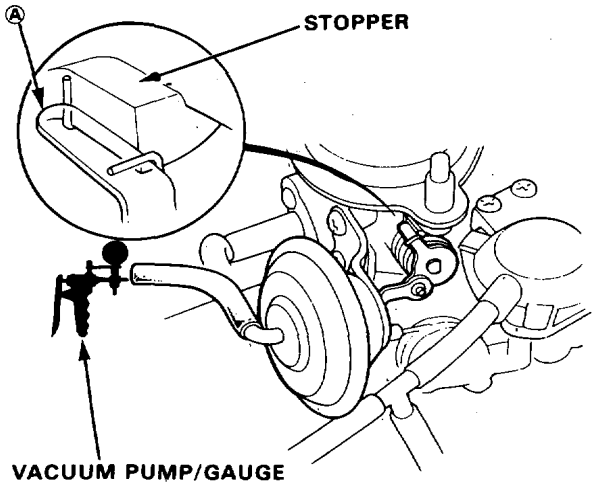
(From page 6-163)



Downloaded from www.Manualslib.com manuals search engine

Tandem Valve Control Diaphragm Testing

1. Check the tandem valve shaft for binding or sticking.
2. Check the bypass valve for smooth movement.
   - If any fault is found, clean the linkage and shafts with carburetor cleaner.
3. Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum pump to the diaphragm.
4. Apply vacuum and check that Ⓐ of the tandem valve is in close contact with the stopper when the tandem valve is fully open.



   - If any fault is found, replace the tandem valve control diaphragm.

Downloaded from www.Manualslib.com manuals search engine

Intake Control System

Troubleshooting Flow Chart

Inspect of Intake Control System.

Start engine and allow to idle.

Remove the vacuum hose from the intake control diaphragm and connect a vacuum gauge to the hose.

Is there vacuum?

NO

Disconnect the lower vacuum hose of the solenoid valve from the check valve and connect a vacuum pump.

Is there vacuum?

NO

Check the vacuum line for proper connection, cracks, blockage or disconnected hose.

YES

Disconnect the connector from the resonator control solenoid valve.

Measure voltage between GRN/PNK (+) terminal and RED (−) terminal.

Is there battery voltage?

YES

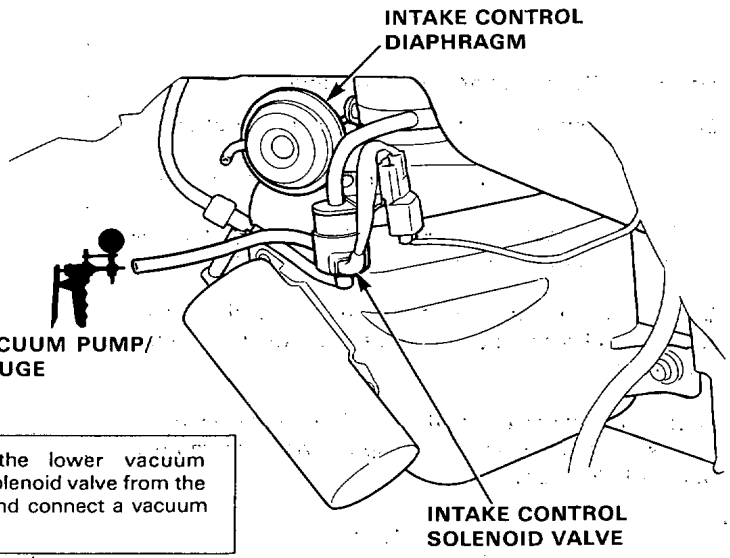
Replace the intake control solenoid valve.

NO

Measure voltage between GRN/PNK (+) terminal and body ground.

(To page 6-167)

(To page 6-167)



Downloaded from www.Manualslib.com manuals search engine

(From page 6-166)

Raise engine speed to 3,000 min^{-1} (rpm).

(From page 6-166)

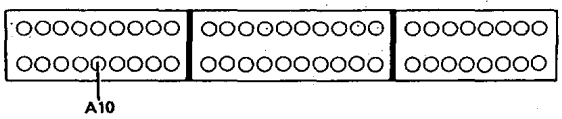
Is there battery voltage? NO → **Repair open in wire between the 2P connector and No. 14 fuse.**

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75).

Check for continuity of RED wire between ECU (A10) and the 6P connector.



Does continuity exist? NO → ***Repair open in RED wire between ECU (A10) and the connector.***

YES

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

Is there vacuum? YES → Disconnect the connector

NO

Is there vacuum? YES → **Replace intake control solenoid valve.**

NO

Turn the ignition switch OFF.

Disconnect "A" connector from ECU.

Check for continuity to ground on RED wire.

(To page 6-168)

(To page 6-168)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Intake Control System (cont'd)

(From page 6-167)

(From page 6-167)

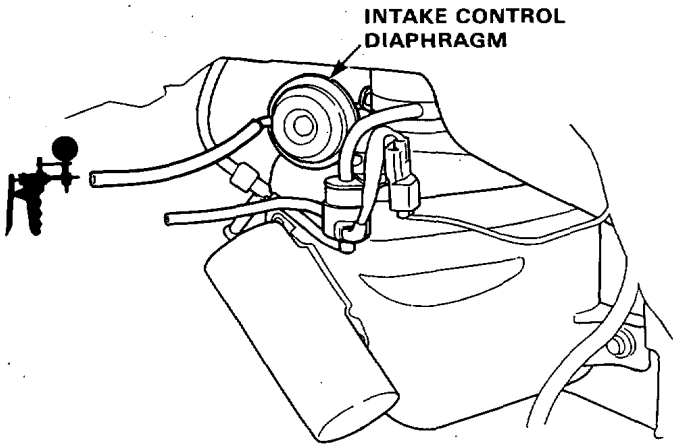
Is there continuity to ground?

YES

Repair short to ground in RED wire between ECU (A10) and the connector.

NO

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



Connect the vacuum hose to the vacuum hose manifold and connect a vacuum pump to the hose.

Apply vacuum.

Does it hold vacuum?

NO

Check the vacuum line for proper connection or disconnected hose.
If OK, replace the intake control diaphragm.

YES

Intake control system is OK.

Downloaded from www.Manualslib.com manuals search engine

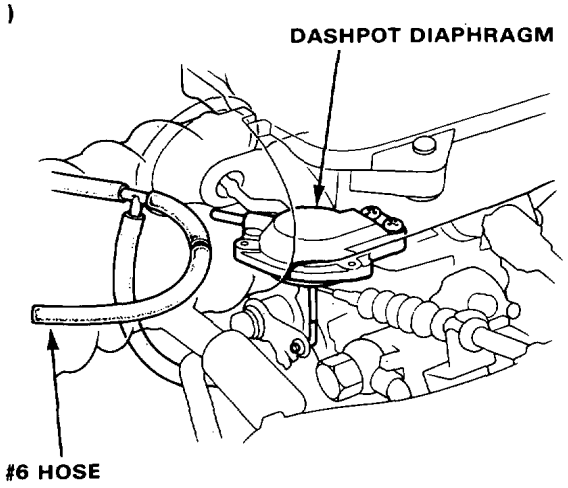
Testing

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #6 vacuum hose from the dashpot diaphragm and check the engine speed.

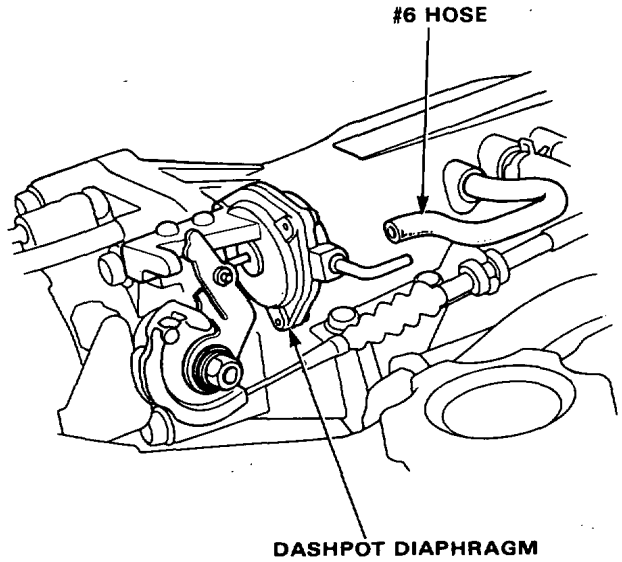
Engine speed should be:

Manual	2,500 ± 500 min^{-1} (rpm)
Automatic	2,500 ± 500 min^{-1} (rpm)

(1.5 ℓ)

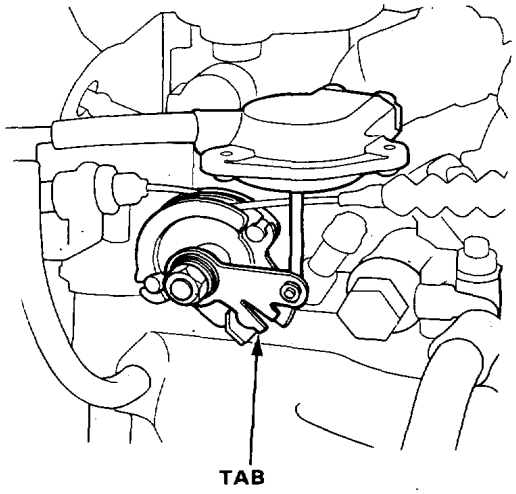


(1.6 ℓ)

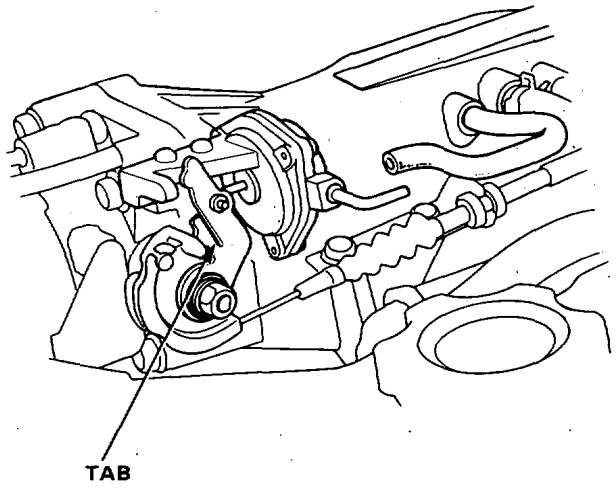


- If the engine speed is excessively high, adjust the engine speed by bending TAB.

(1.5 ℓ)



(1.6 ℓ)



(cont'd)

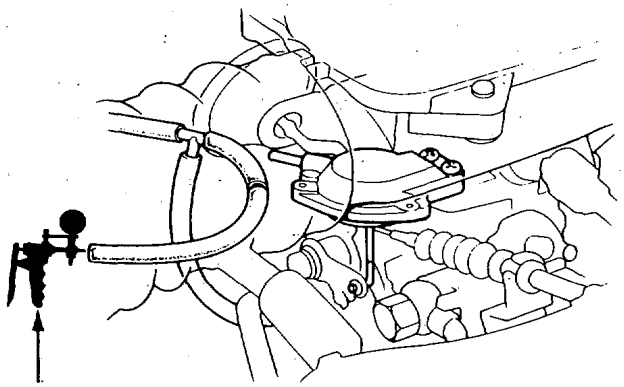
Downloaded from www.Manualslib.com manuals search engine

Tandem Control System (cont'd)

- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose and check vacuum.

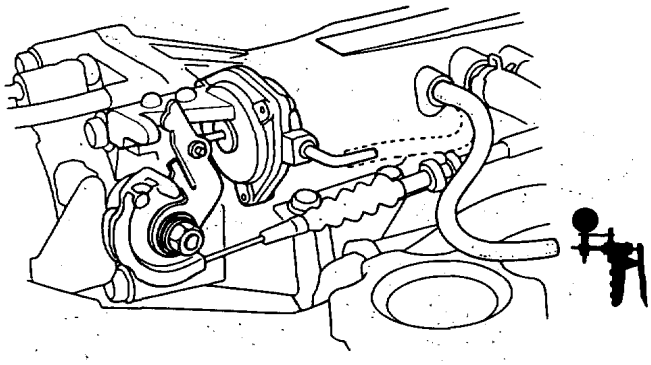
  There should be vacuum.

(1.5ℓ)



VACUUM PUMP/GAUGE

(1.6ℓ)



— If there is no vacuum, check the #6 vacuum hose for proper connection, cracks, blockage or disconnected hose and replace the 3-way joint (1.5ℓ).
— If there is vacuum, replace the dashpot diaphragm and retest.

3. Reconnect the #6 vacuum hose and check the idle speed.

   Idle speed should be within specification (page 6-133 or 134).

Downloaded from www.Manualslib.com manuals search engine

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
		172	173	174,177
ROUGH IDLE			①	
POOR PERFORMANCE	FAILS EMISSION TEST	①		②
	LOSS OF POWER	①		

Downloaded from www.Manualslib.com manuals search engine

Emission Control System

Tailpipe Emission

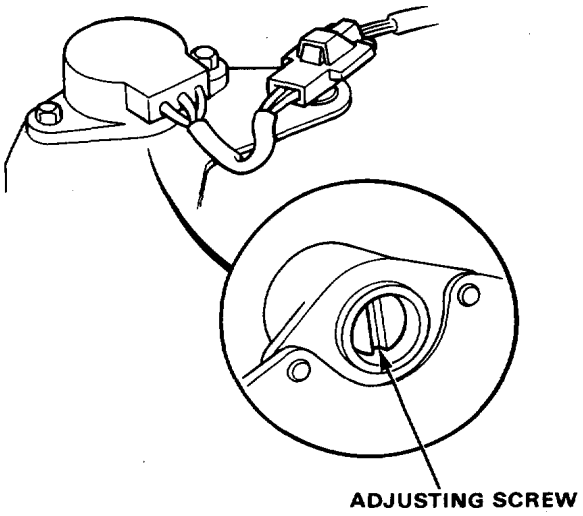
Inspection

⚠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 6-133, 134).
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: 0.5 $^{+0.5\%}_{-0.3\%}$

- If unable to obtain this reading;
  On With CATA, see ECU troubleshooting (page 6-54).
  On other models, adjust by turning the adjusting screw of the IMA sensor.

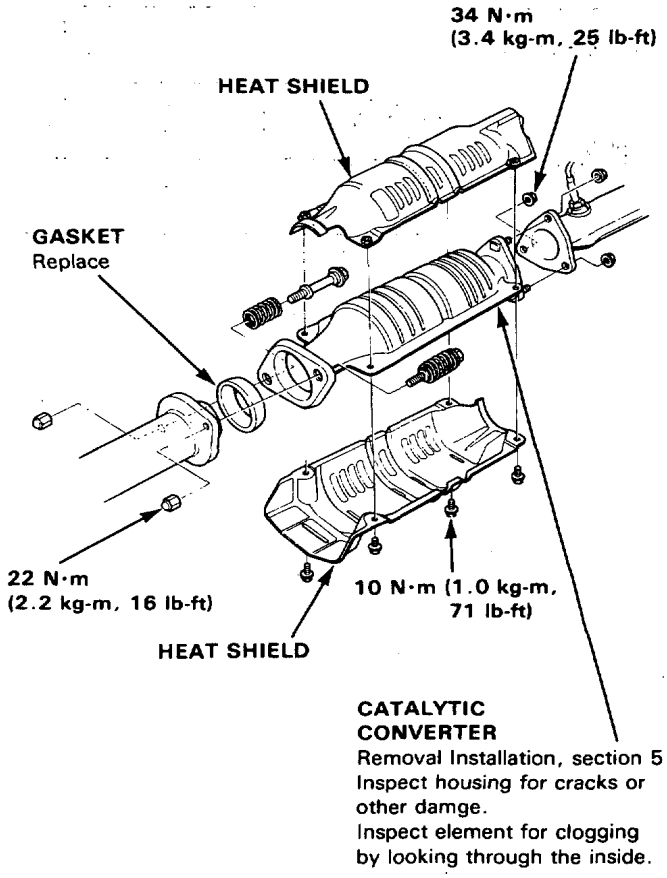


– If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

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 more than 50% of the visible area is damaged or plugged.

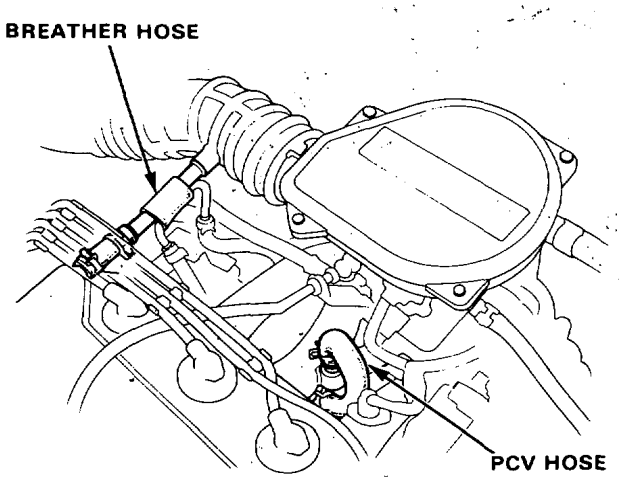


Downloaded from www.Manualslib.com manuals search engine

Positive Crankcase Ventilation System

Inspection (1.5 ℓ)

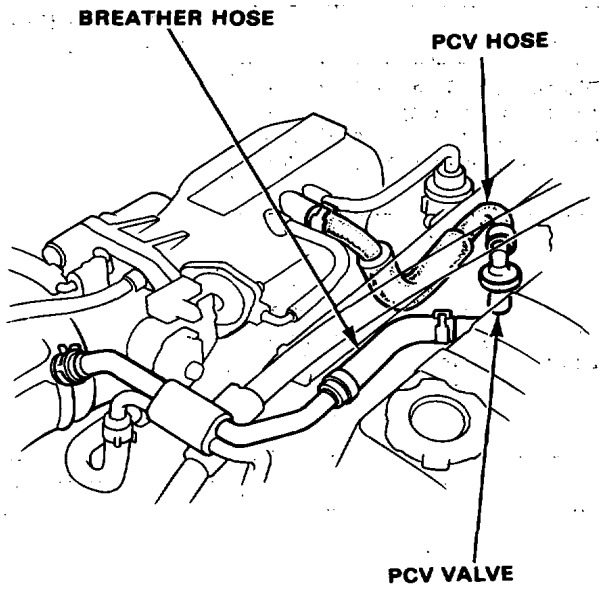
1. Check the crankcase ventilation hoses and connections for leaks and clogging.



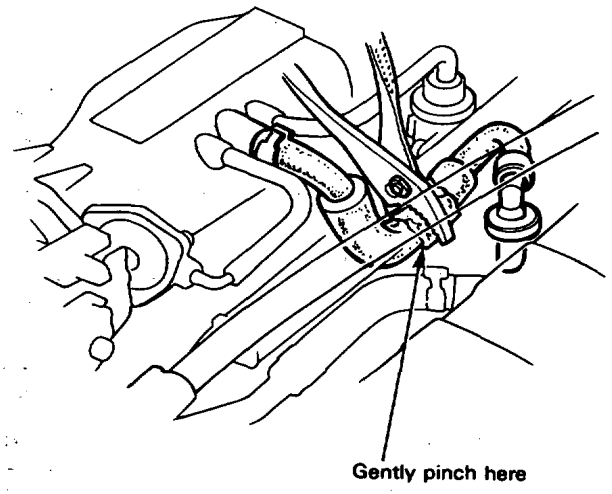
2. At idle, make sure there is a clicking sound from the PCV valve when you lightly pinch the PCV hose with your fingers or pliers.
   - If no clicking sound is heard, replace PCV valve and recheck.

Inspection (1.6 ℓ)

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.

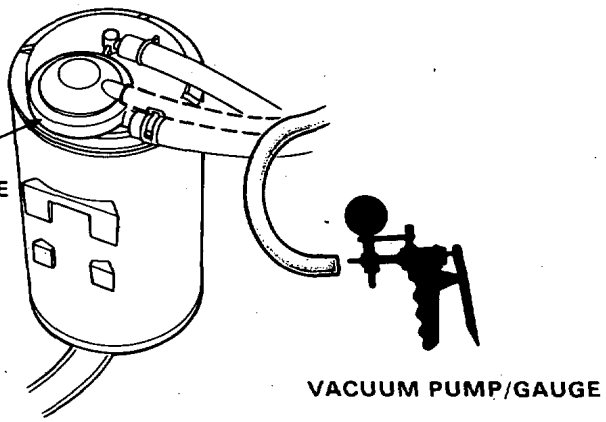


- If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Controls [1.5 ℓ]

Troubleshooting Flowchart



Inspection of Evaporative Emission Controls

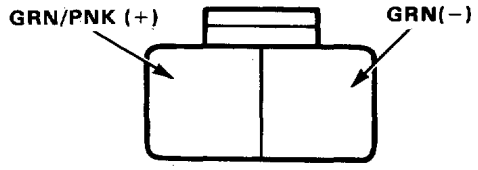
Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

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 GRN/PNK (+) terminal and GRN (−) terminal.

Is there battery voltage ?

YES → **Inspect #7 hose routing. If OK, replace purge cut-off solenoid valve.**

NO

Measure voltage between GRN/PNK (+) terminal and body ground.

(To page 6-175)

(To page 6-175)

Downloaded from www.Manualslib.com manuals search engine

(From page 6-174)

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

Check for vacuum at #7 hose 10 *seconds after starting the engine.* NOTE: Check with the throttle valve slightly opened.

Is there manifold vacuum?

NO

YES

Reconnect the hose.

Remove fuel filler cap.

(To page 6-176)

(From page 6-174)

Is there battery voltage ?

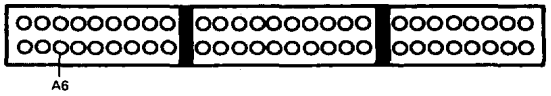
NO

Repair in GRN/PNK wire between No. 14 fuse and the 2P connector.

YES

Turn the ignition switch OFF.

Connect the ECU test harness to the main wire harness only, not the ECU (page 6-75).



Check for continuity of GRN wire between ECU (A6) and the 2P connector.

Does continuity exist ?

NO

Repair open in GRN wire between ECU (A6) and the connector.

YES

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

Disconnect the 2P connector.

Is there manifold vacuum?

NO

Inspect #7 hose routing. If OK, replace purge cutoff solenoid valve.

YES

Turn the ignition switch OFF.

Disconnect "A" connector from ECU.

Check for continuity to ground *on GRN wire.*

(To page 6-176)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Control [1.5 ℓ] (cont'd)

(From page 6-175)

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 → **Replace the canister.**

YES

See two-way valve test (page 6-181) to complete. Evaporative emission conrtols are OK.

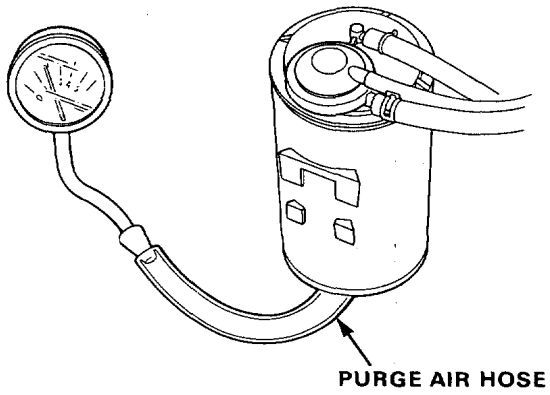
(From page 6-175)

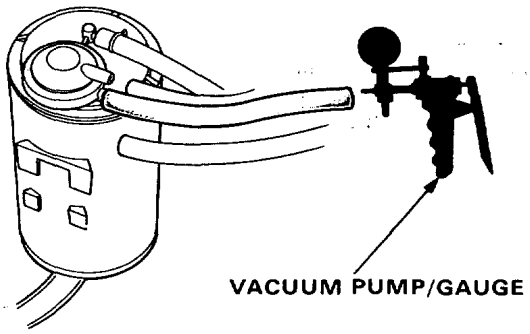
Is there continuity to ground ?

YES → **Repair short to ground in GRN wire between ECU (A6) and the connector.**

NO

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





Downloaded from www.Manualslib.com manuals search engine

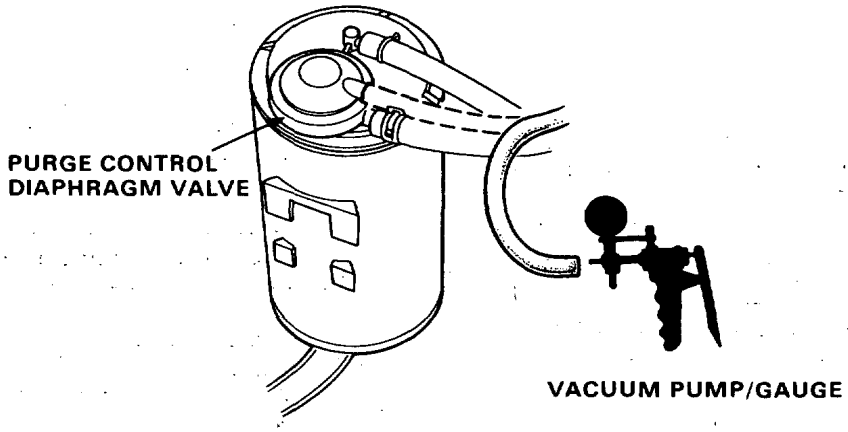
Evaporative Emission Control [1.6 ℓ]

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.

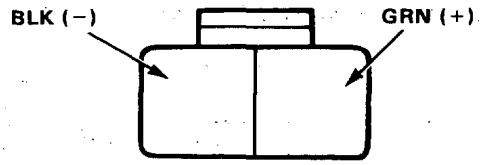
Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 57 °C (135 °F).



Is there vacuum ?

YES → Disconnect the 2P 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 6-178)

(To page 6-178)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Controls [1.6 ℓ] (cont'd)

(From page 6-177)

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

Check for vacuum at #7 hose 5 seconds after starting the engine.

(To page 6-179)

(From page 6-177)

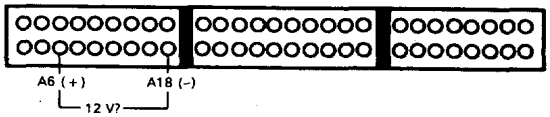
Is there battery voltage ?

YES → **Repair open in BLK wire between the 2P connector and G201.**

NO

Turn the ignition switch OFF.

Connect the ECU test harness between the ECU and connector (page 6-75).



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 2P connector.**

NO

Inspect for a short on GRN wire between ECU (A6) and 2P connector. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

Downloaded from www.Manualslib.com manuals search engine

(From page 6-178)

Is there manifold vacuum?

NO

Disconnect the 2P connector.

Is there manifold vacuum?

NO

Replace purge cut-off solenoid valve.

YES

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 GRN wire between ECU (A6) and the 2P connector.

NO

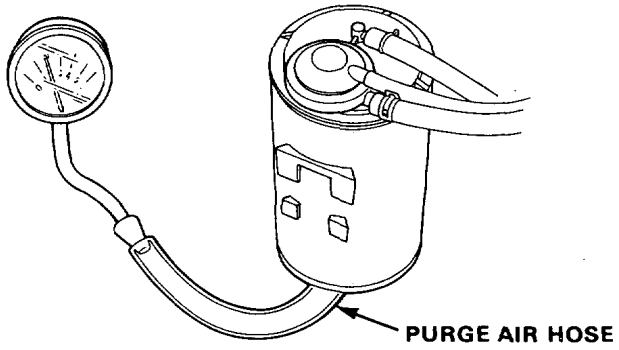
Substitute a known good ECU and recheck. If symptom goes away, replace the original ECU.

YES

Remove fuel filter cap.

Connect a vacuum gauge to canister purge air hose.

Start the engine and raise speed to 3,500 min^{-1} (rpm).



(To page 6-180)

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Control [1.6 ℓ] (cont'd)

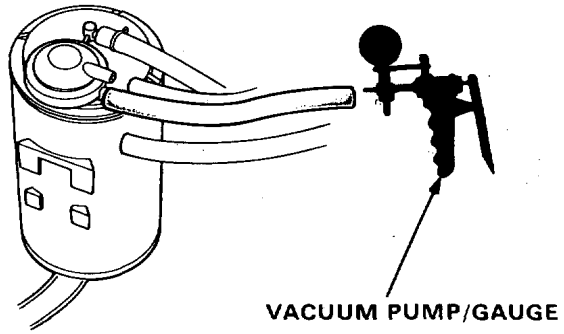
(From page 6-179)

Does vacuum appear on gauge within 1 minute ?

NO → **Replace the canister.**

YES

Evaporative emission controls are OK.

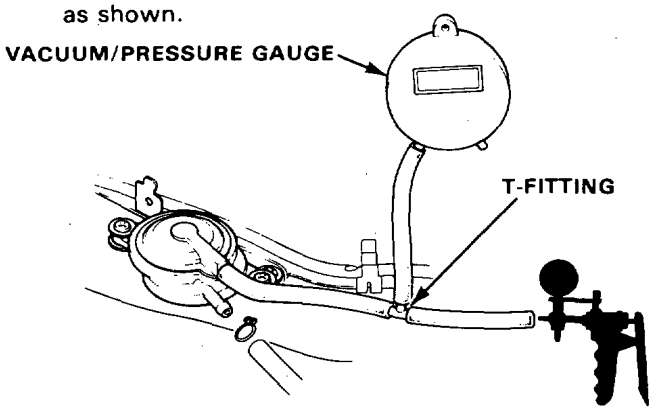


Downloaded from www.Manualslib.com manuals search engine

Evaporative Emission Controls [With CATA]

Two-Way Valve Test

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.

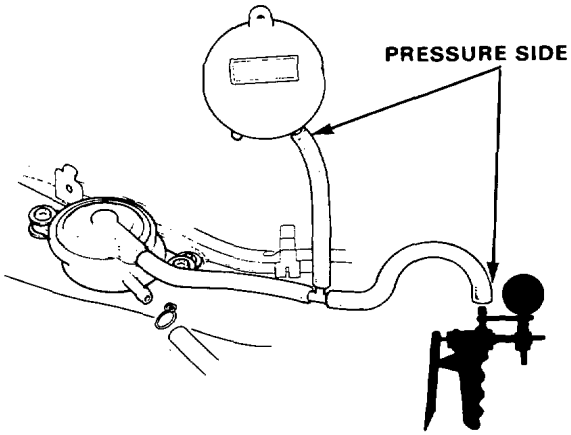


3. Slowly apply vacuum while watching the gauge.

   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.

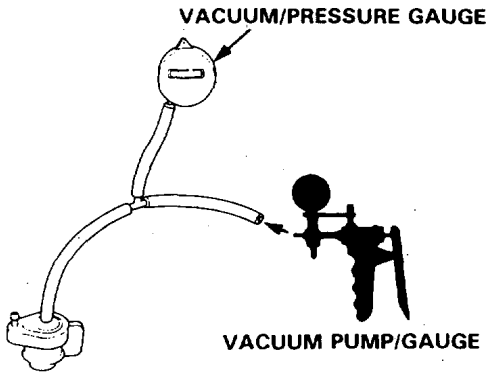
   Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in. Hg).

   - 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]

Test

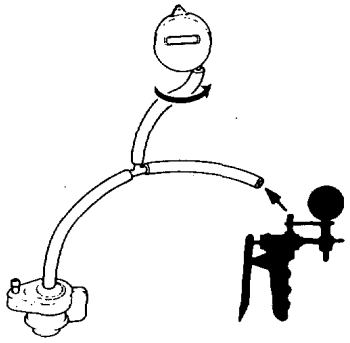
1. Remove the fuel filler cap.
2. Remove the vapor line from the canister or frame, and connect to a T-fitting from the vacuum gauge and the vacuum pump as shown.



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.



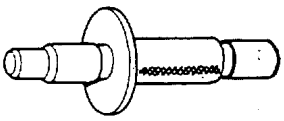
5. Slowly pressurize the vapor line while watching the gauge.
   Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in.Hg).

   - 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.

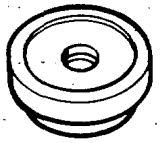
Downloaded from www.Manualslib.com manuals search engine

Special Tools

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07JAF-PM70100	Clutch Disc Alignment Tool	1	
②	07746—0010100	Attachment 32 x 35 mm	1	
③	07749—0010000	Driver	1	
④	07924—PD20003	Ring Gear Holder	1	or 07924—PD20002



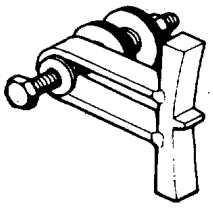
①



②



③

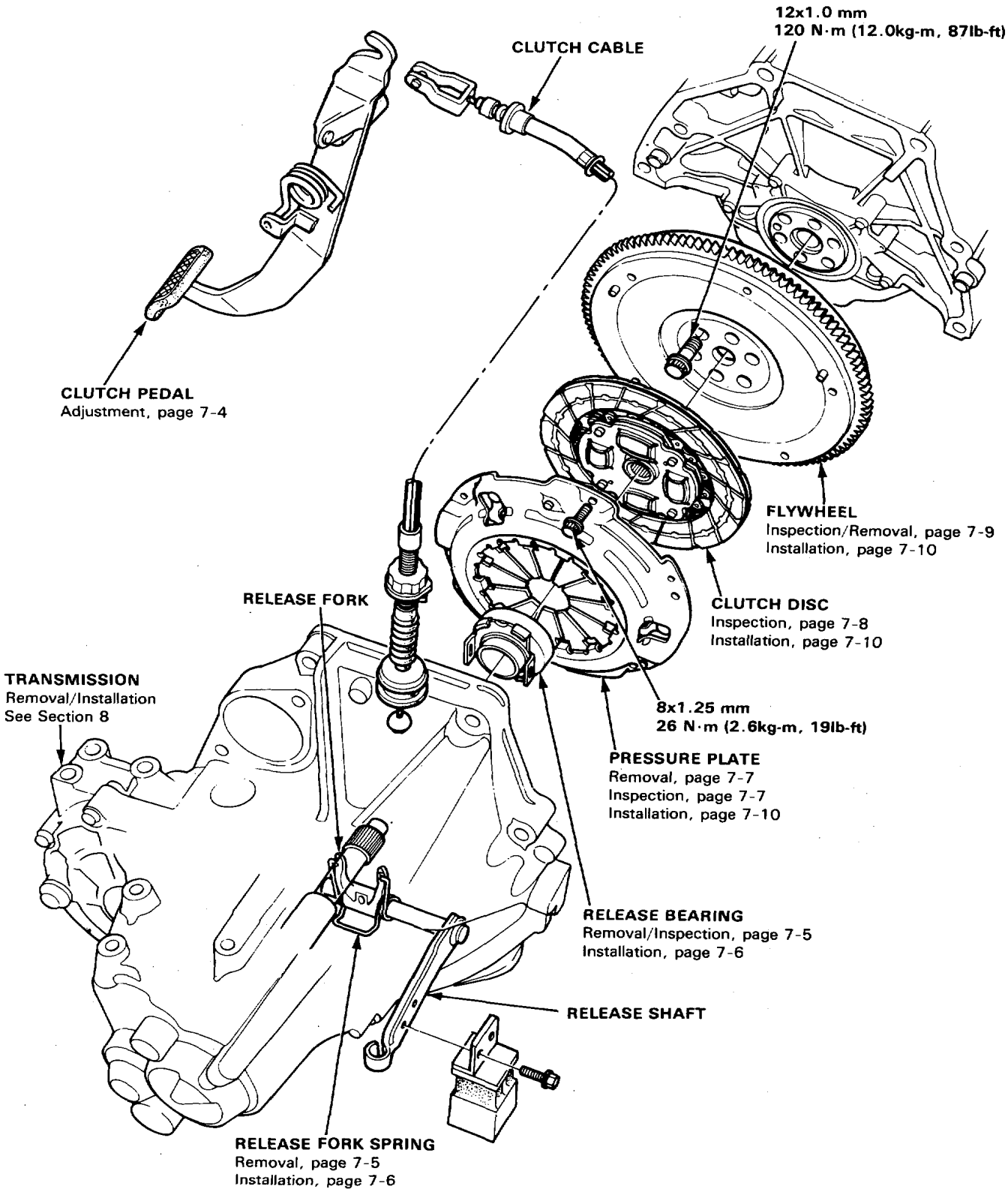


④

Downloaded from www.Manualslib.com manuals search engine

Illustrated Index

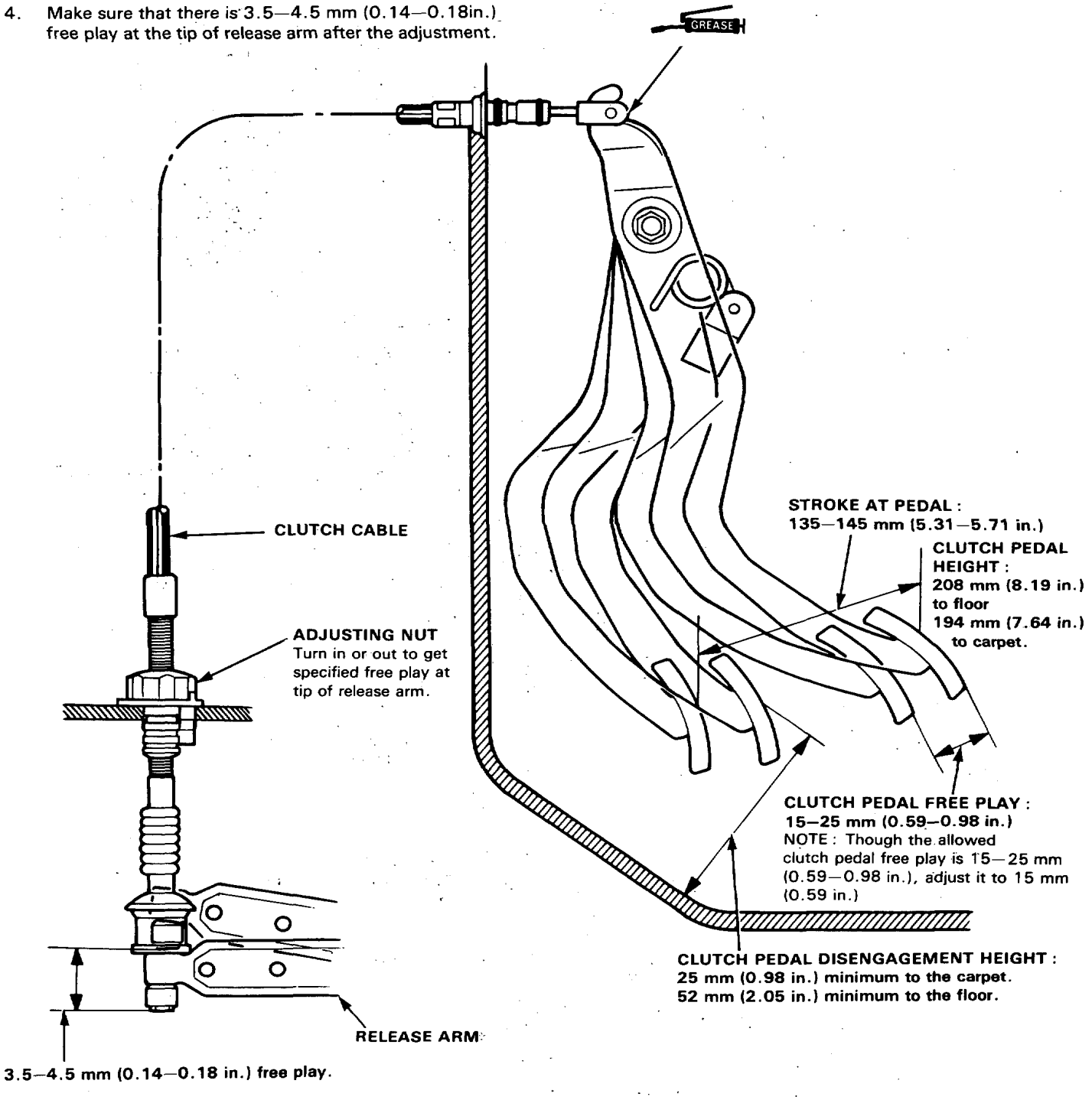
NOTE : Whenever the transmission is removed, the release bearing sliding surfface should be cleaned and greased (Molybdenum Disulfide).



Downloaded from www.Manualslib.com manuals search engine

Clutch 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 3.5—4.5 mm (0.14—0.18in.) free play at the tip of release arm after the adjustment.

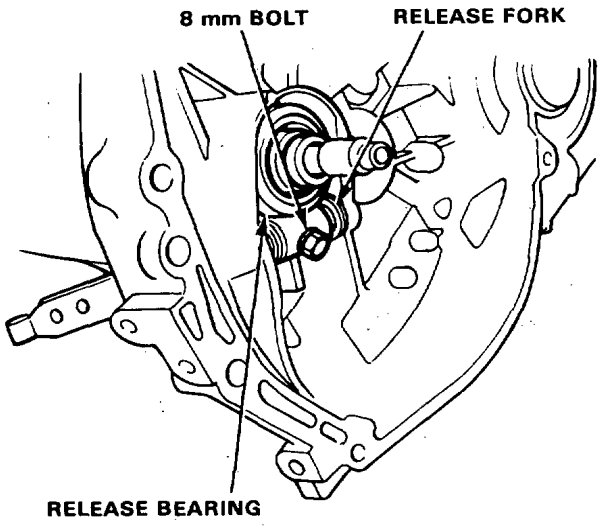


Downloaded from www.Manualslib.com manuals search engine

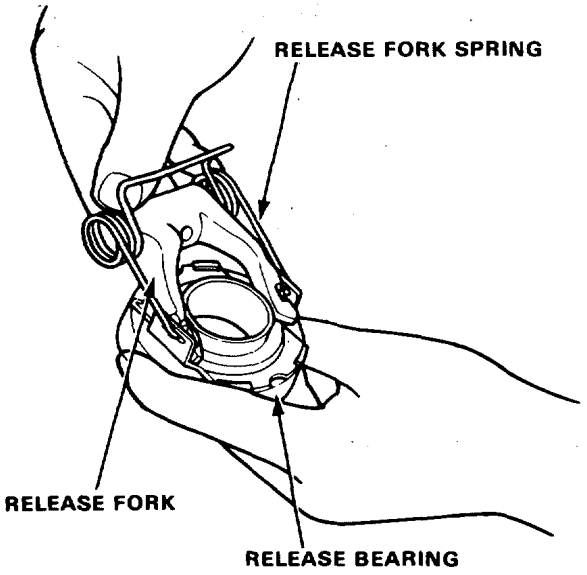
Release Bearing

Removal

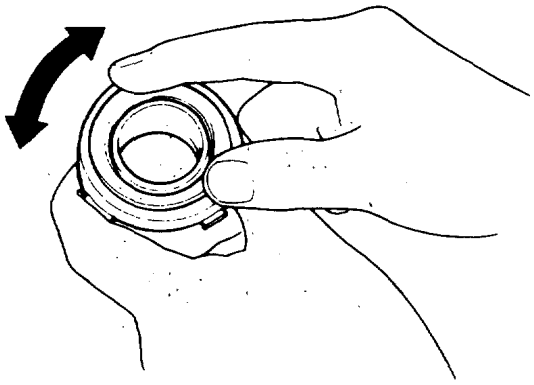
1. Remove the 8 mm special bolt.
2. Remove the release shaft and release bearing assembly.



3. Separate the release fork from the bearing by removing the release fork spring 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.

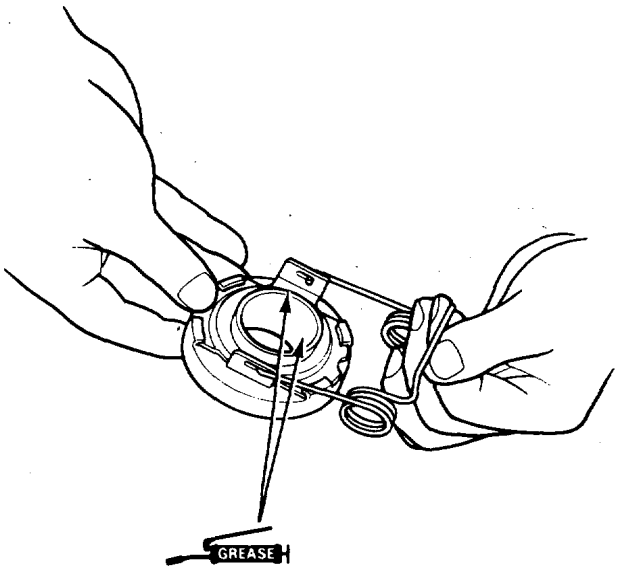
CAUTION : The bearing is packed with grease. Do not wash it in solvent.

Downloaded from www.Manualslib.com manuals search engine

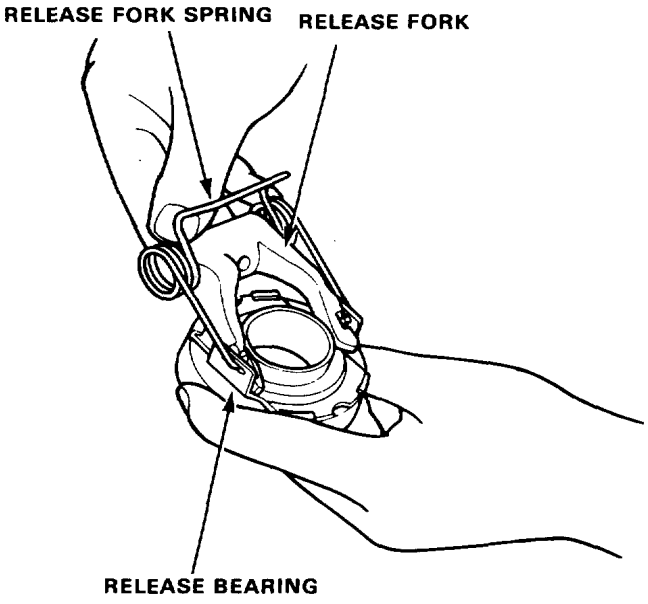
Release Bearing

Installation

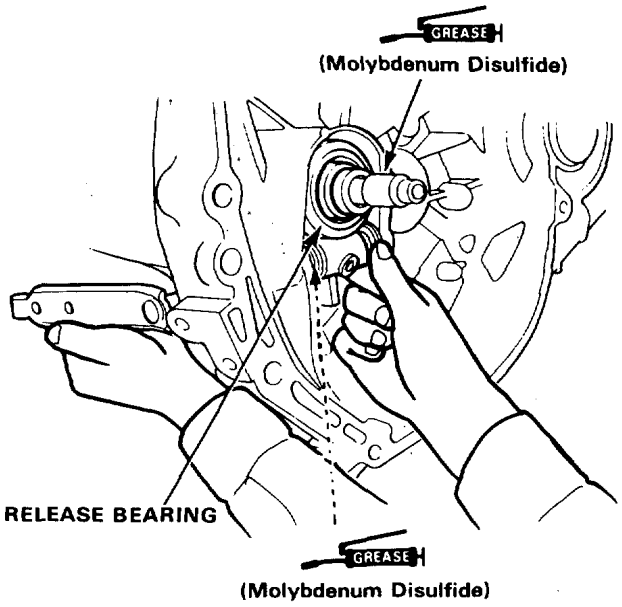
1. Install the release fork spring in the locating holes as shown.



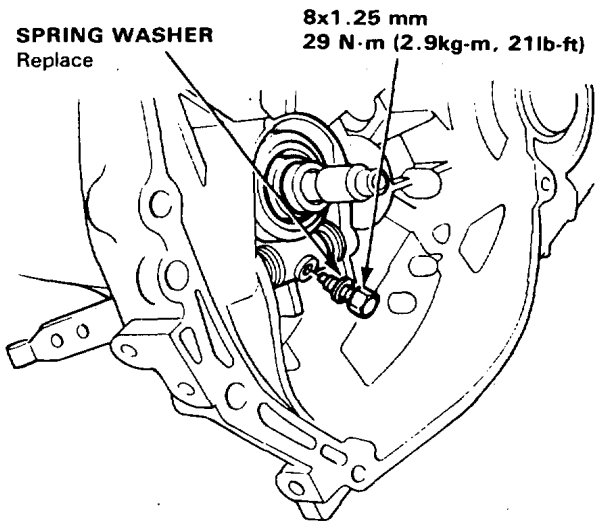
2. Align the release fork with the locating holes of the release bearing.



3. Install the release shaft and the release bearing.
NOTE : Apply molybdenum disulfide grease to the release shaft.



4. Align the release shaft and release fork, then install a new spring washer and bolt.



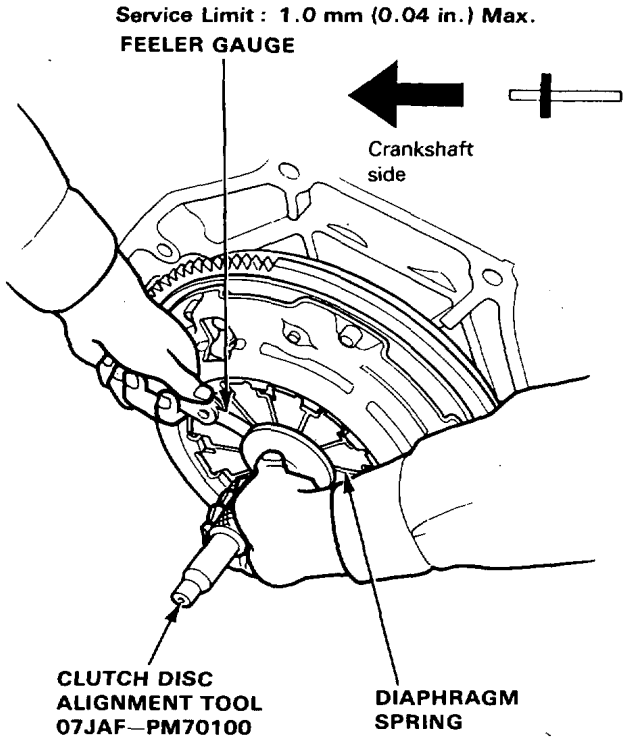
5. Move the release fork up and down to make sure the fork fits properly against the bearing, and that the bearing slides freely.

Downloaded from www.Manualslib.com manuals search engine

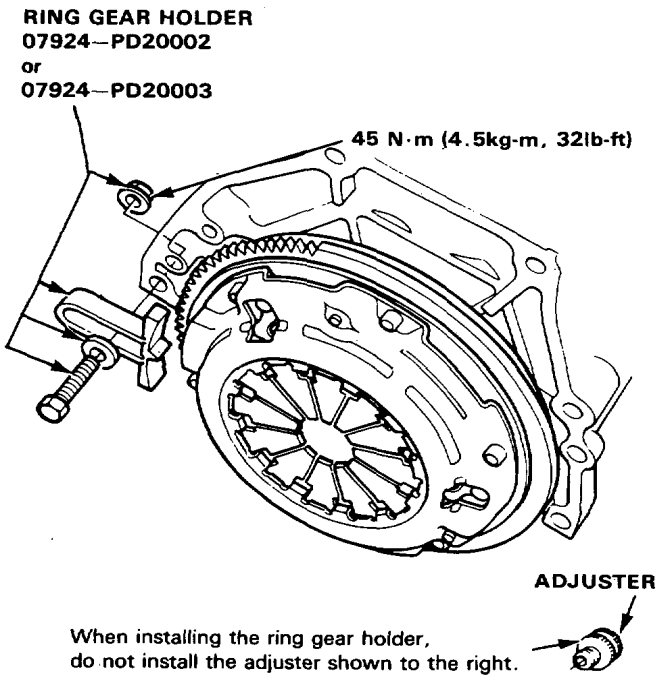
Pressure Plate

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.

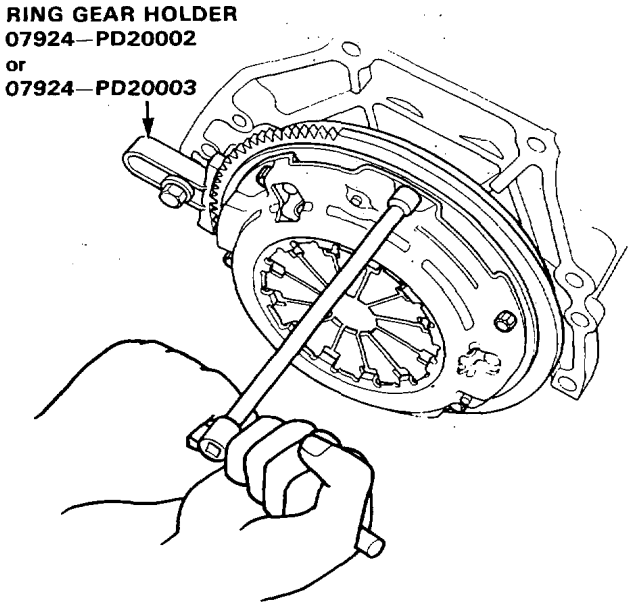


3. Install the Ring Gear Holder.



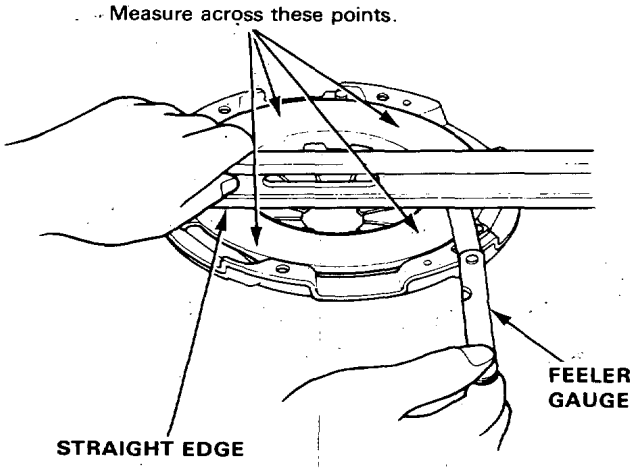
When installing the ring gear holder, do not install the adjuster shown to the right.

4. To prevent warping, loosen 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.



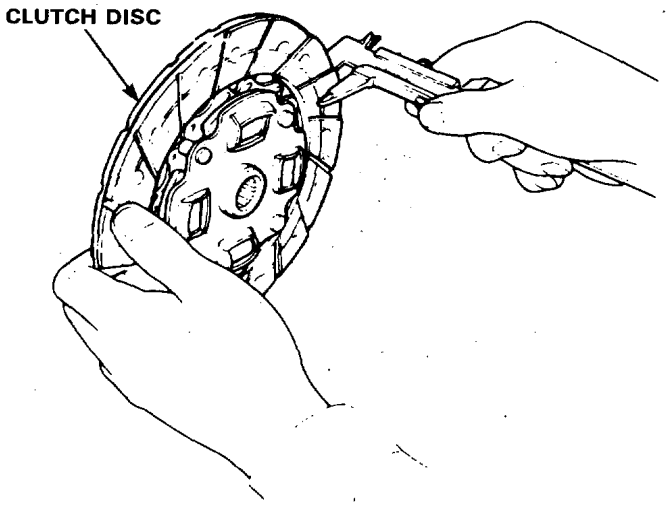
Downloaded from www.Manualslib.com manuals search engine

Clutch Disc

Inspection

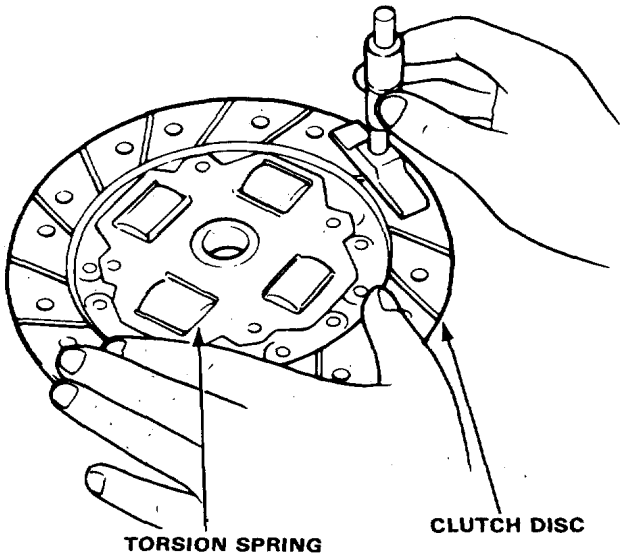
1. Inspect lining of the clutch disc for signs of slipping or oil. Replace it if it is burned black or oil soaked.
2. Measure the clutch disc thickness.

Clutch Disc Thickness :
Standard (New) : 8.4—8.9 mm (0.331—0.350 in.)
Service Limit : 5.9 mm (0.232 in.)



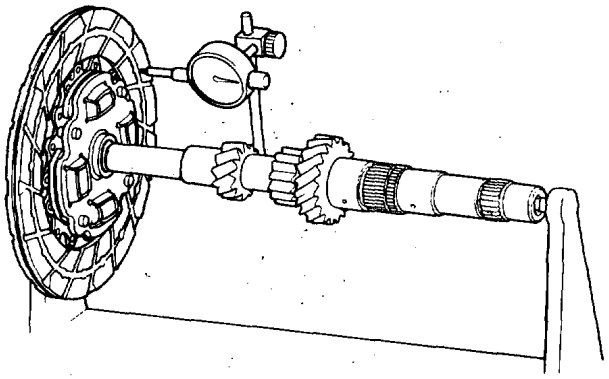
3. Check for loose torsion springs. Replace the clutch disc if any are loose.
4. Measure the depth from the lining surface to the rivets, on both sides.

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.)



Downloaded from www.Manualslib.com manuals search engine

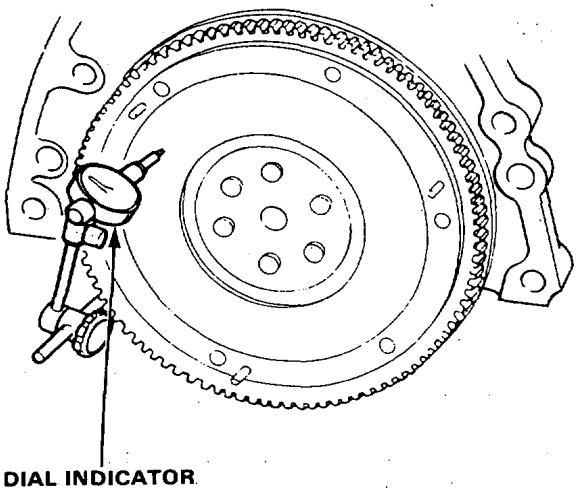
Flywheel

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.

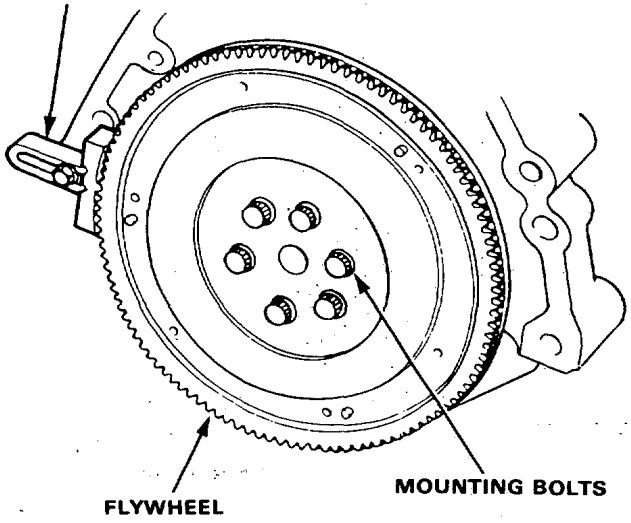
   NOTE : The runout can be measured with engine installed.

   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.

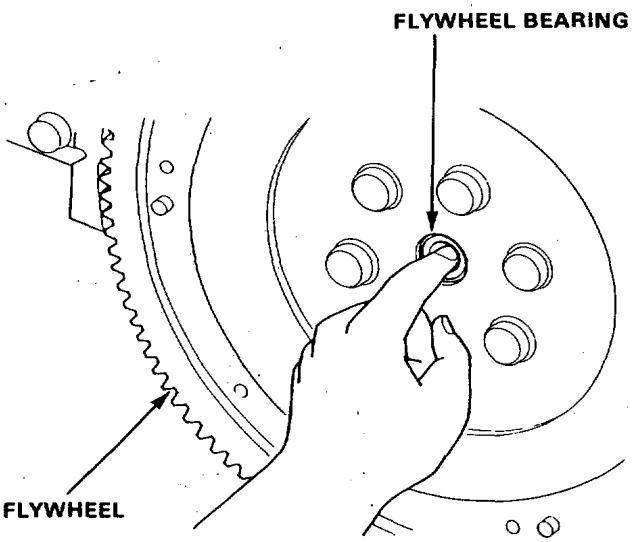
RING GEAR HOLDER
07924—PD20002
or
07924—PD20003



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.



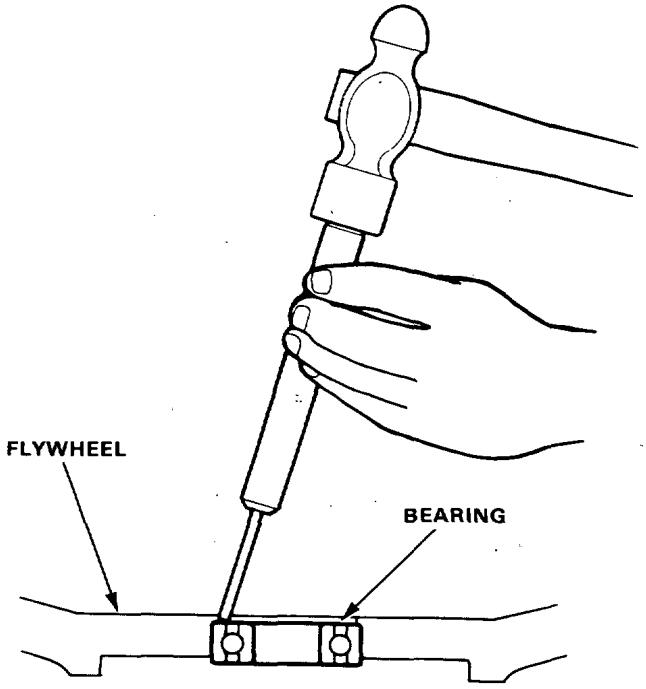
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

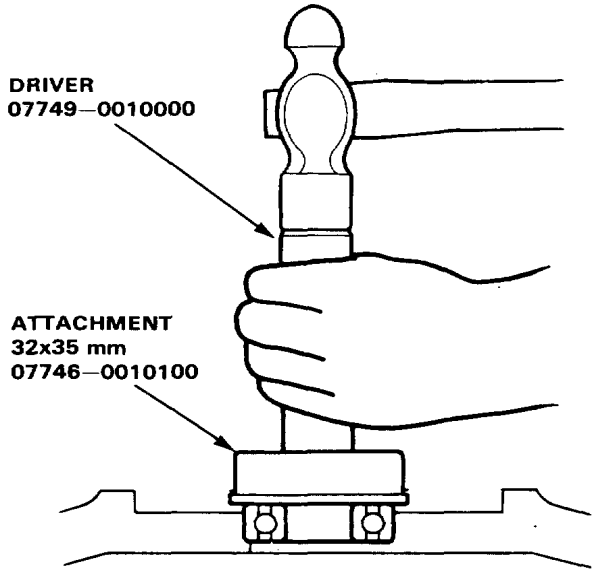
Flywheel Bearing

Inspection/Replacement (cont'd)

2. Remove the bearing from the flywheel.



3. Drive in the new bearing in the flywheel.

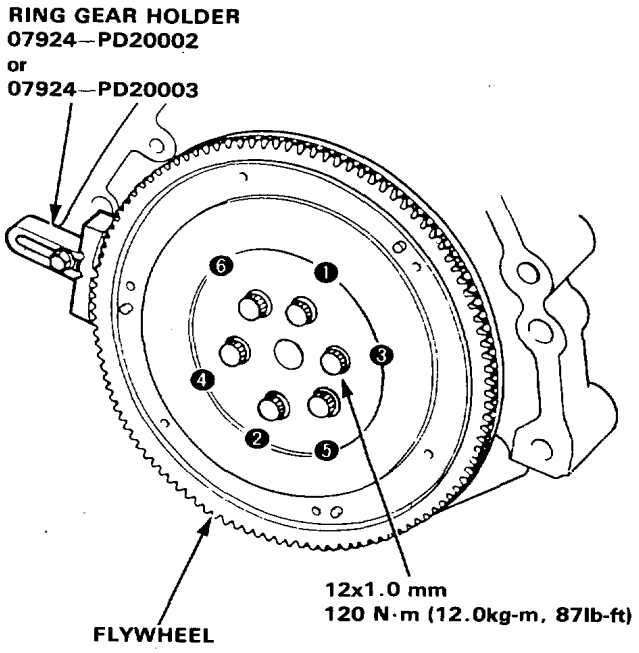


Flywheel and Clutch

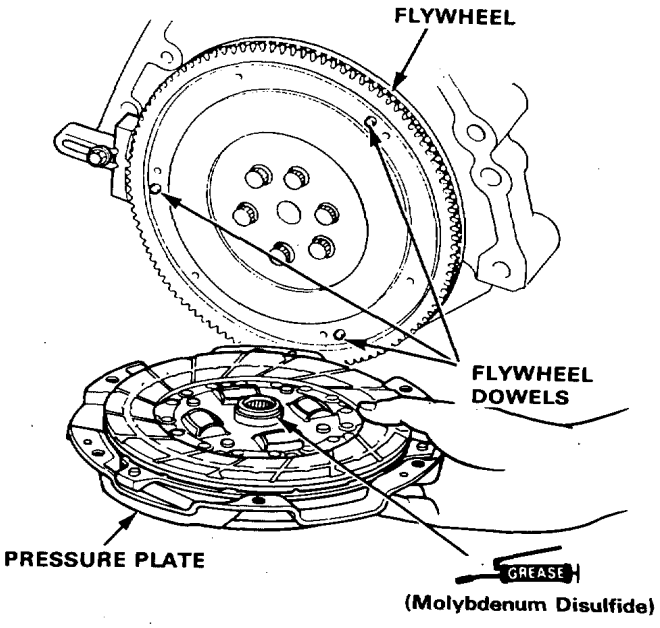
Installation

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.



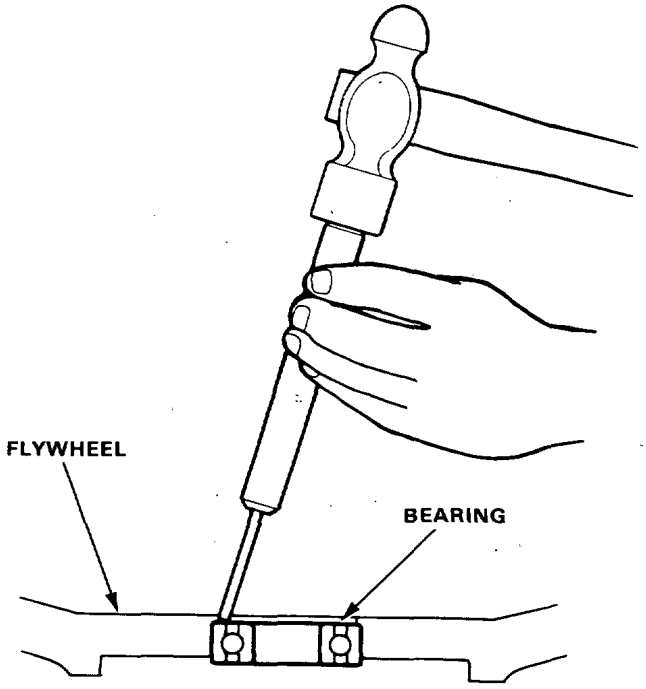
4. Install the attaching bolts finger tight.

Downloaded from www.Manualslib.com manuals search engine

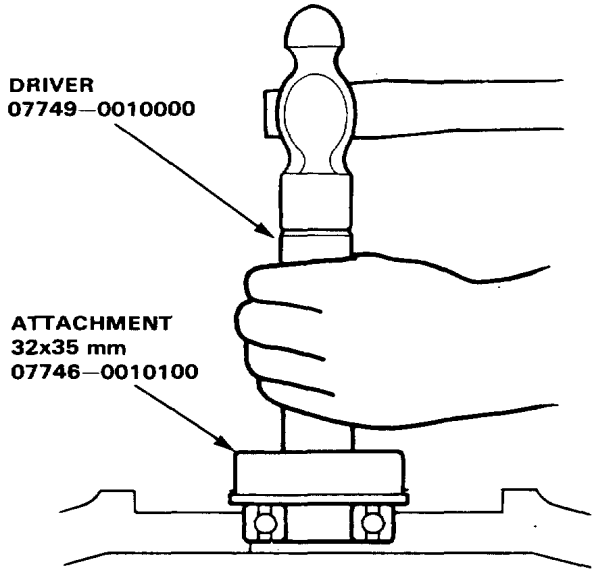
Flywheel Bearing

Inspection/Replacement (cont'd)

2. Remove the bearing from the flywheel.



3. Drive in the new bearing in the flywheel.

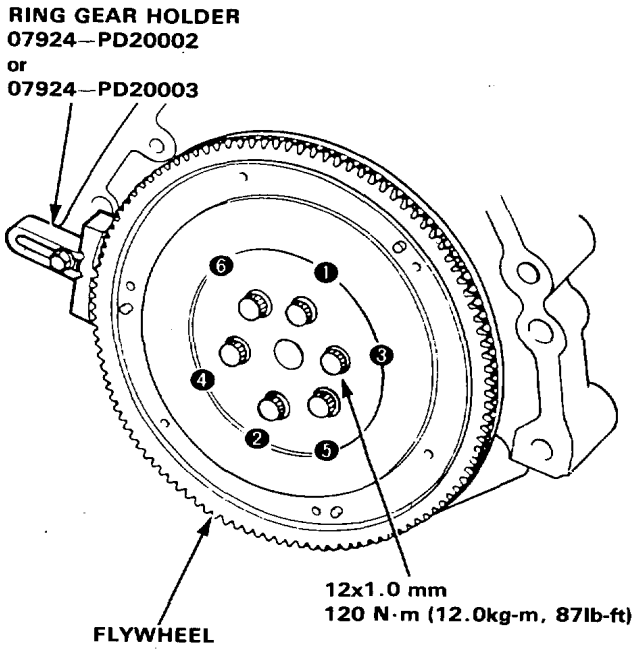


Flywheel and Clutch

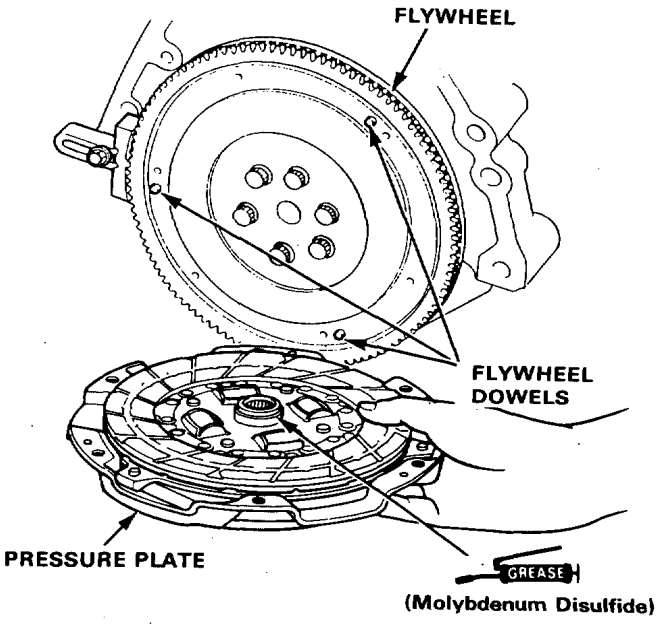
Installation

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.



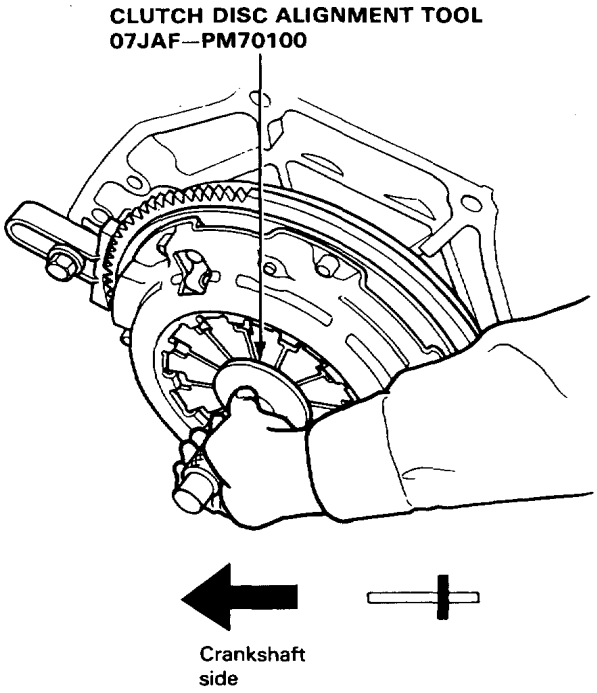
3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.



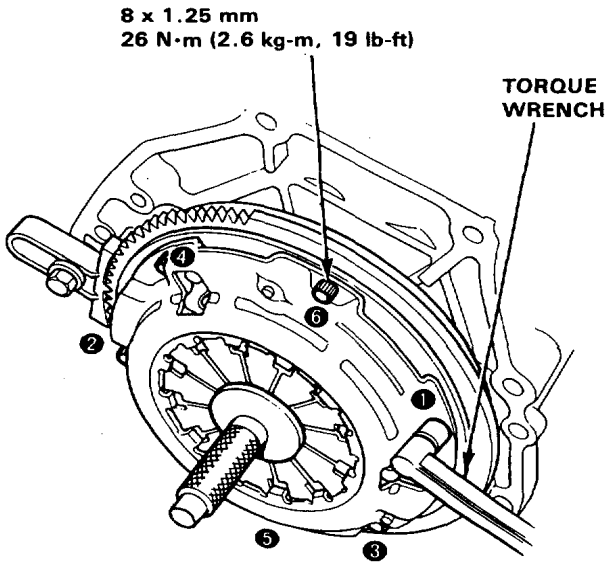
4. Install the attaching bolts finger tight.

Downloaded from www.Manualslib.com manuals search engine

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.



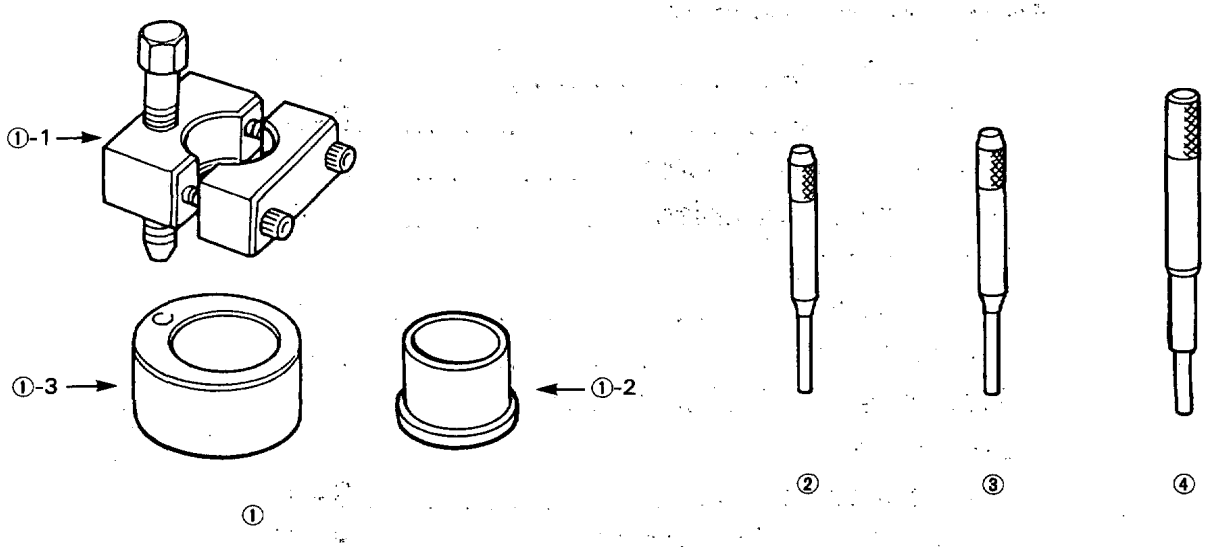
7. Remove the Alignment Tool and Ring Gear Holder.

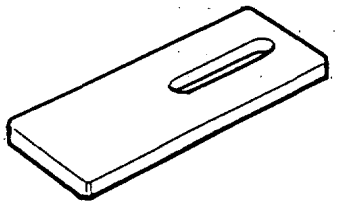
Downloaded from www.Manualslib.com manuals search engine

Special Tools

Special Tools

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07GAJ–PG20102	Mainshaft Clearance Inspection Tool Set	1	
①-1	07GAJ–PG20110	Mainshaft Holder	1	
①-2	07GAJ–PG20120	Collar	1	
①-3	07GAJ–PG20130	Mainshaft Base	1	
②	07744–0010200	Pin Driver 3.0 mm	1	
③	07744–0010400	Pin Driver 5.0 mm	1	
④	07744–0010600	Pin Driver 8.0 mm	1	
⑤	07979–PJ40001	Magnet Stand Base	1	





Downloaded from www.Manualslib.com manuals search engine

Maintenance

Transmission Oil

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

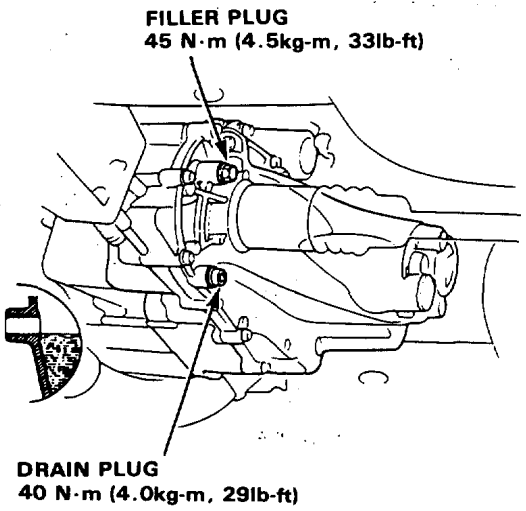
Use only SAE 10W-30 or 10W-40 oil rated SE or SF grade.

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

1.8 ℓ (1.9 U.S.qt.) after drain.
1.9 ℓ (2.0 U.S.qt.) after overhaul.

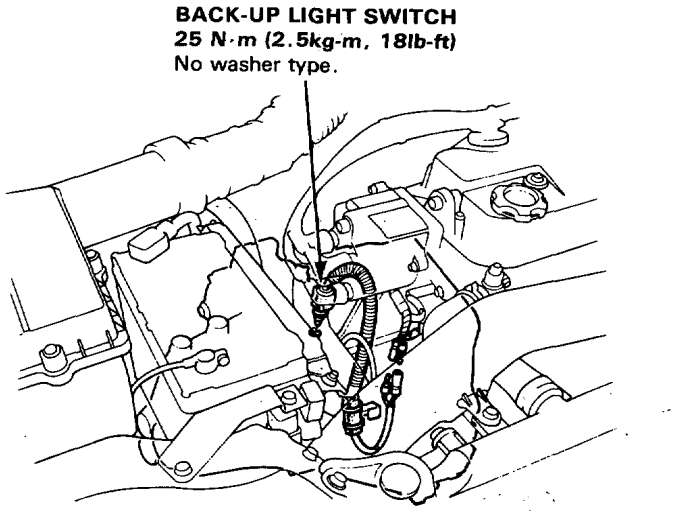


Back-up Light Switch

Replacement

NOTE : Check the switch see Section 16.

1. Disconnect the back-up light switch wire connectors.
2. Remove the back-up light switch.

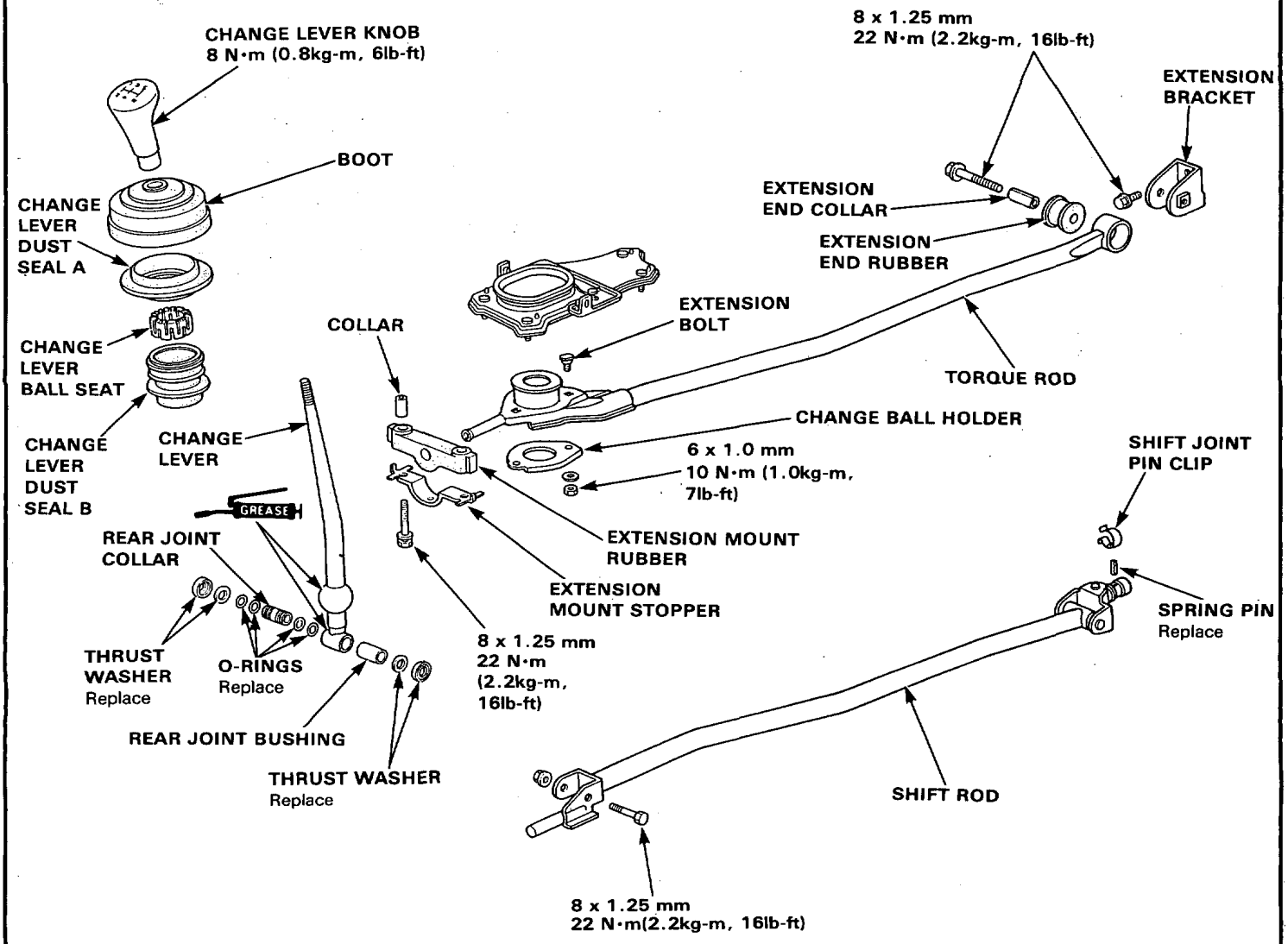


3. Install the back-up light switch.

Downloaded from www.Manualslib.com manuals search engine

Gearshift Mechanism

Overhaul



Downloaded from www.Manualslib.com manuals search engine

Transmission

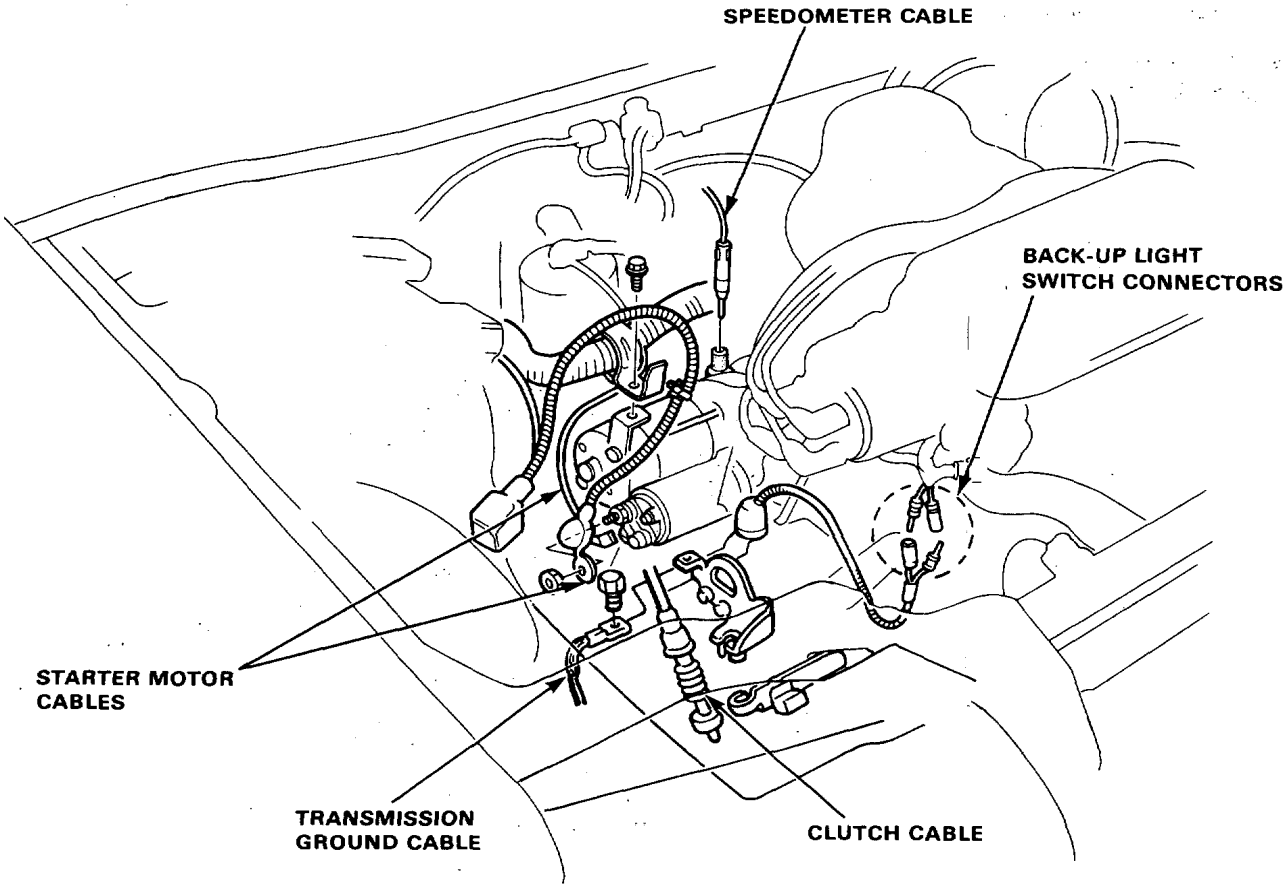
Removal

⚠ 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, and remove the battery.
2. Remove the battery base. Remove the intake hose.
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 (See Section 5).
   NOTE : Do not disassemble speedometer gear holder.
6. Disconnect the back-up light switch connector.
7. Disconnect the clutch cable at release arm.
8. 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.

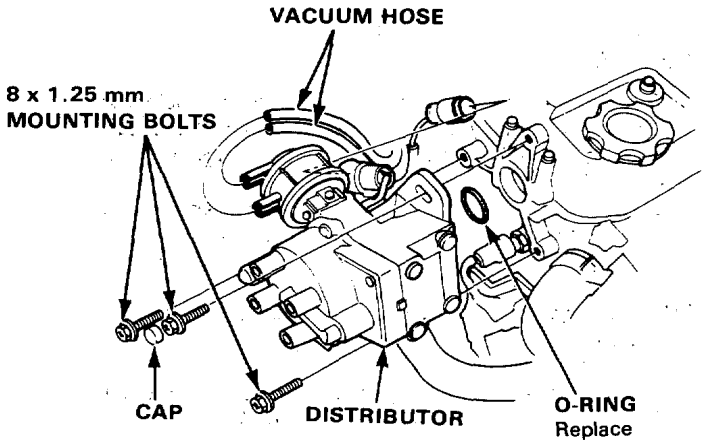


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Removal (cont'd)

9. Disconnect the connectors and remove the mounting 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.

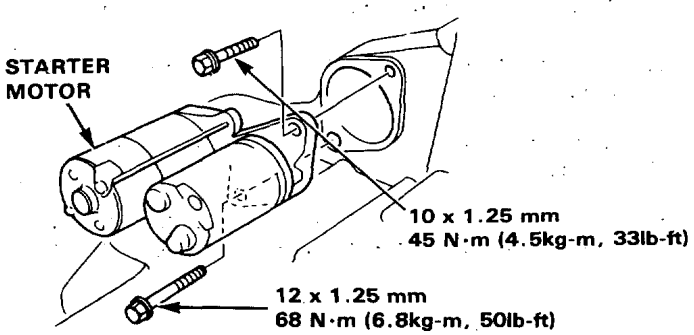
12. Remove the exhaust pipe A. (page 5-72, 73)

13. Remove the cotter pin and front lower arm ball joint nut, separate the ball joint and lower arm. (page 12-11)

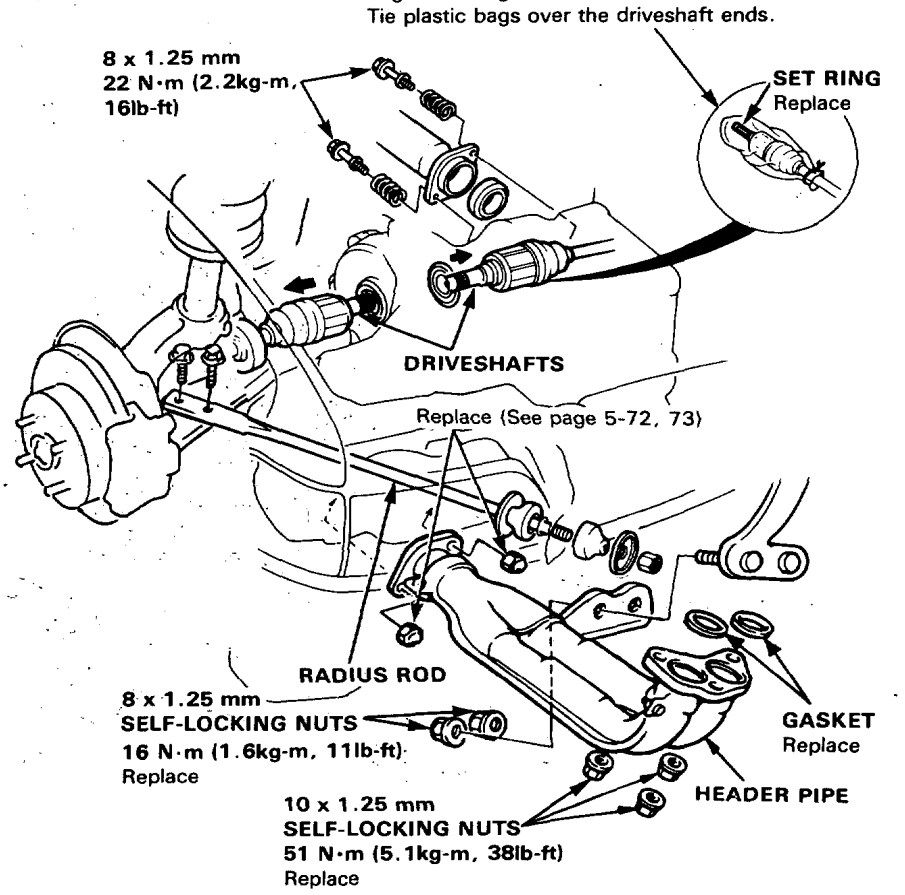
14. Remove the self locknut, and remove the damper fork bolt. (page 12-12)

15. Remove the bolts and nut, then remove the right radius rod. (page 12-8, 9)

16. Remove the driveshaft (intermediate shaft). (See Section 10)



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



Downloaded from www.Manualslib.com manuals search engine

17. Remove the 2 clutch cover mounting bolts.

18. Remove the shift lever torque rod and shift rod from clutch housing.

19. 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.

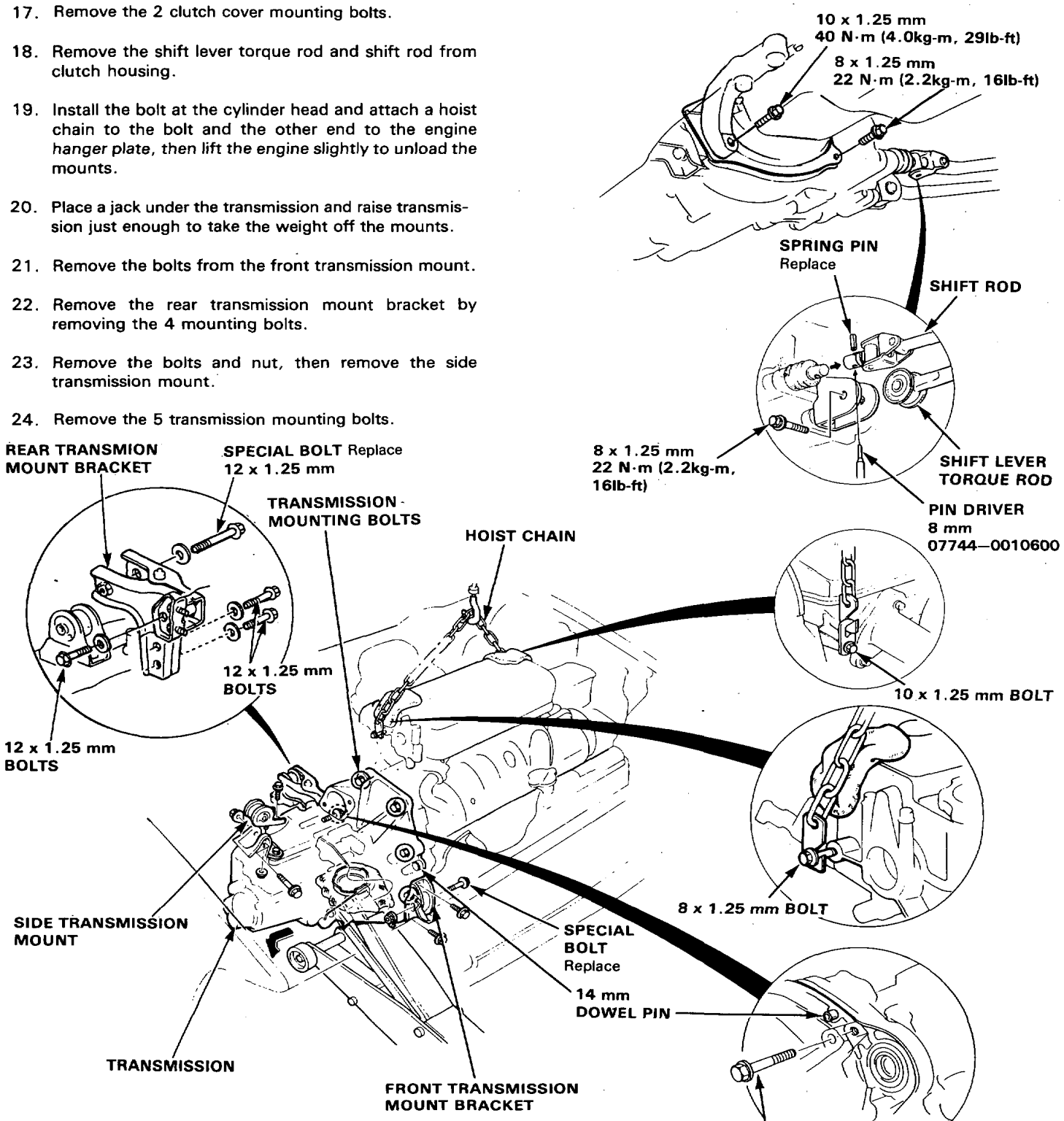
20. Place a jack under the transmission and raise transmission just enough to take the weight off the mounts.

21. Remove the bolts from the front transmission mount.

22. Remove the rear transmission mount bracket by removing the 4 mounting bolts.

23. Remove the bolts and nut, then remove the side transmission mount.

24. Remove the 5 transmission mounting bolts.



25. Pull the transmission away from the engine until it clears the 14 mm dowel pins.

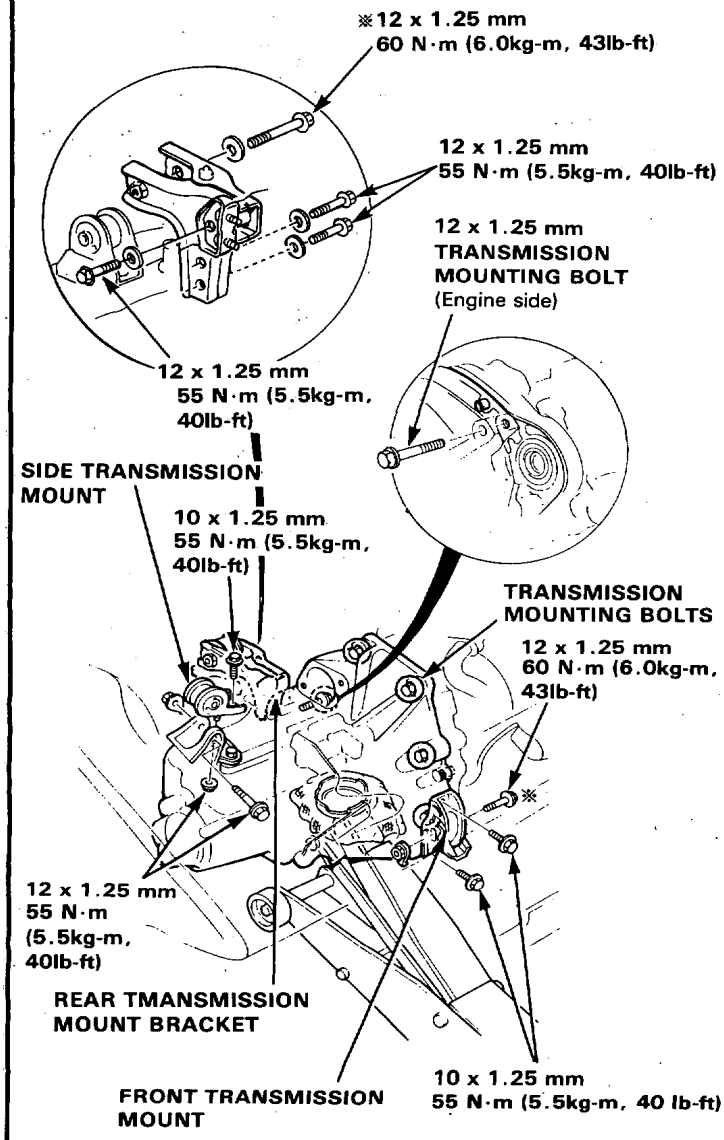
26. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.

Downloaded from www.Manualslib.com manuals search engine

Transmission

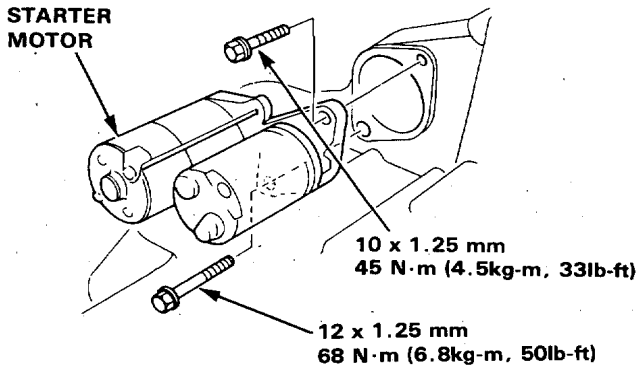
Installation

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 mounting bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12x1.25x70 mm) and torque to 68 N·m (6.8kg-m, 50lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to front and side transmission mounts.

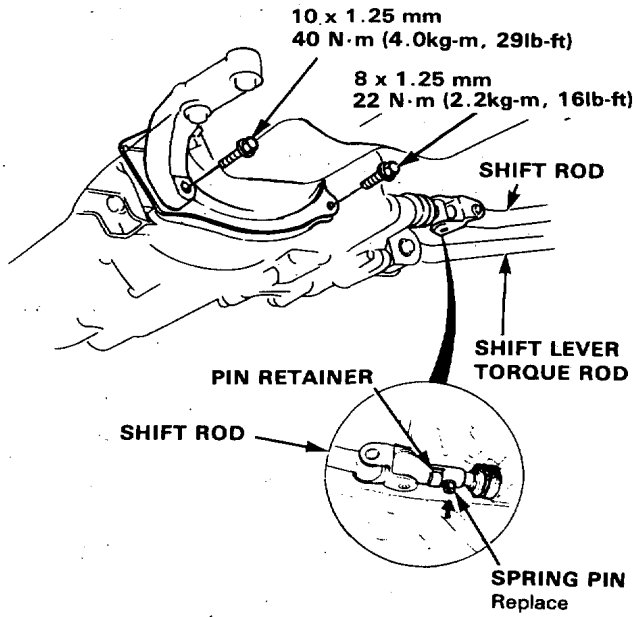


※Special bolt : Replace.

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 clutch cover mounting bolts.

Downloaded from www.Manualslib.com manuals search engine

12. Install a new set rings on the end of each driveshaft.

13. Install the driveshaft (intermediate shaft) (See Section 10).

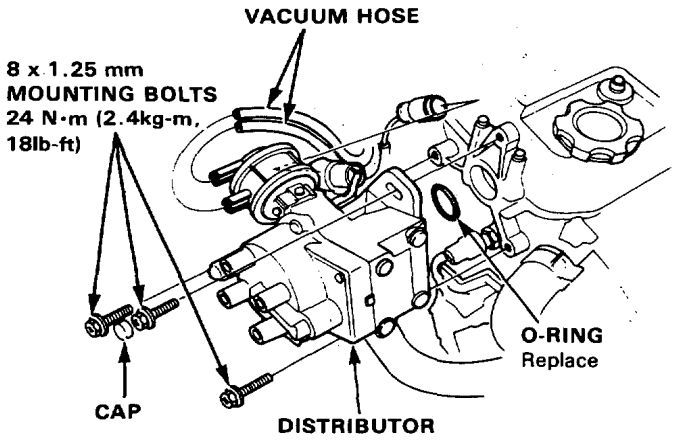
    NOTE : Turn the right steering knuckle fully outward, and slide axle into the differential untily you feel its spring clip engage side gear.

14. Install the damper swivel bolt and radius rod. (page 12-8, 9, 12)

15. Install the ball joints to the front lower arm. (page 12-12)

16. Install the splash shields and exhaust pipe A. (page 5-66)

17. Install the distributor and ignition timing inspection (See Section 16 Ignition Timing Control).

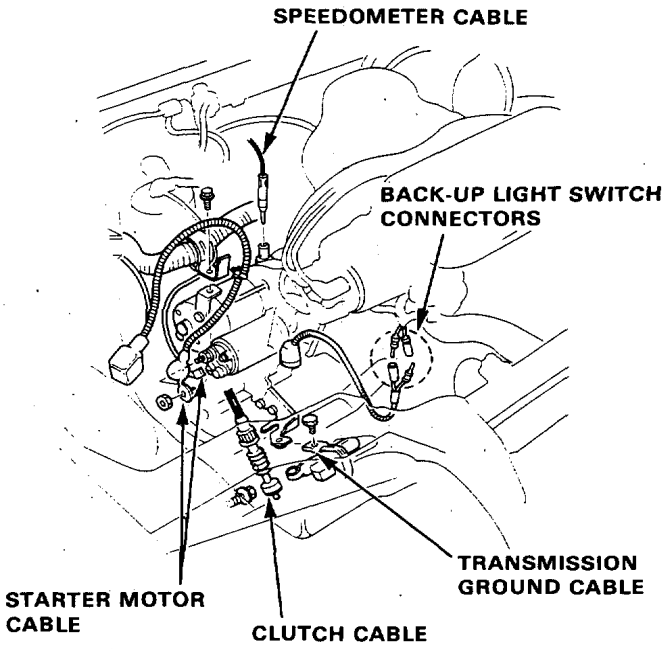


18. Connect the speedometer cable.

19. Connect the clutch cable to release arm.

20. Connect the back-up light switch connector.

21. Install the battery base. Install the intake hose.



22. Refill the transmission with oil.

23. Connect the starter motor and transmission ground cables.

24. Connect the battery positive (+) and negative (−) cables to the battery.

25. Install the air cleaner case and intake hose.

26. Check the ignition timing (See Section 16).

27. Check the transmission for smooth operation.

Downloaded from www.Manualslib.com manuals search engine

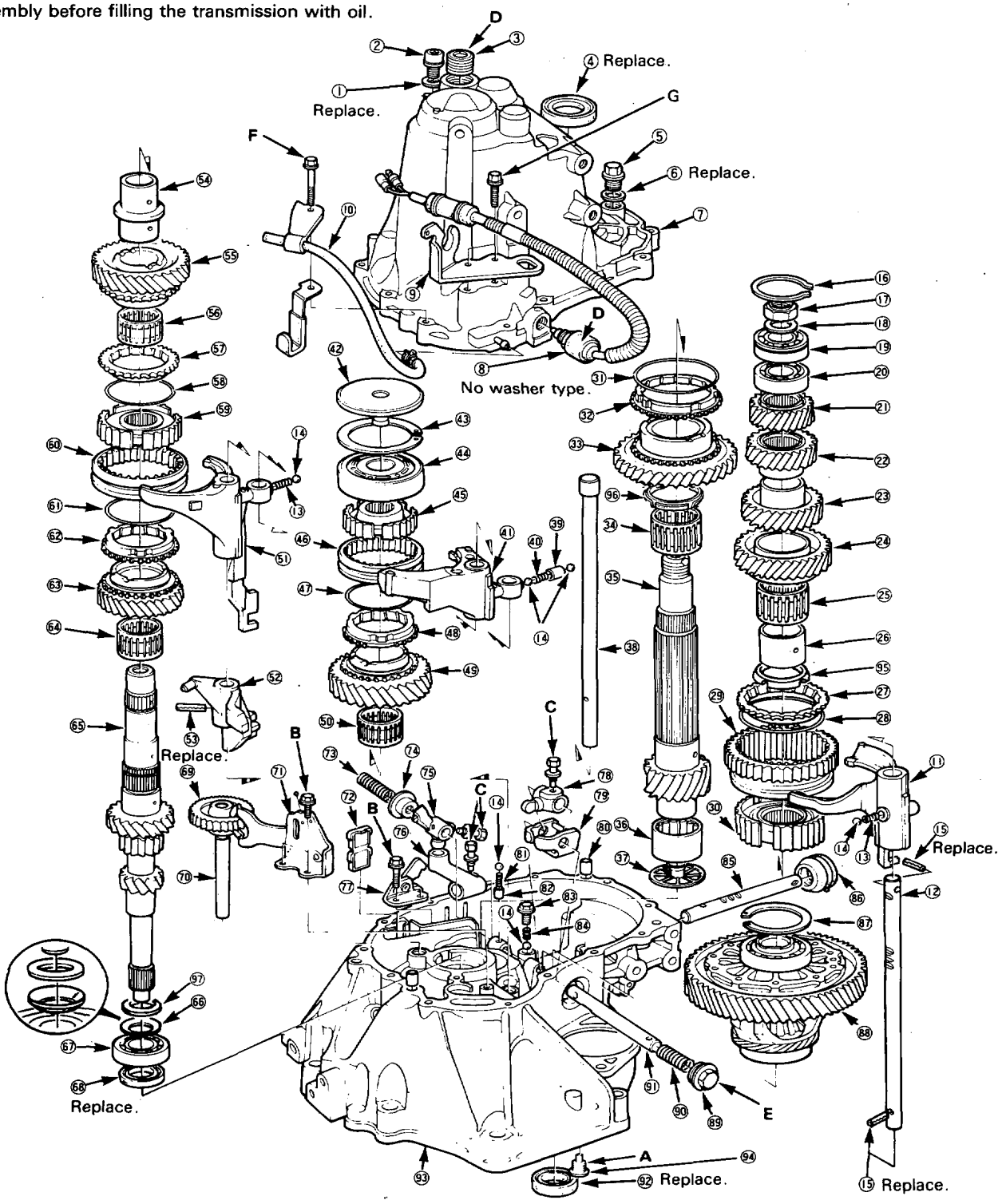
Transmission Maintenance and Repair

Illustrated Index

Refer to the drawing below for the transmission disassembly/reassembly.
Clean all parts thoroughly in solvent and dry with compressed air.

OIL Lubricate all parts with oil before reassembly.

NOTE: This transmission uses no gaskets between the major housings; use PART NO. ÖY746-99986 for the liquid gasket. Assemble the housings within 20 minutes after applying the liquid gasket and allow it to cure at least 30 minutes after assembly before filling the transmission with oil.



Downloaded from www.Manualslib.com manuals search engine

Torque Value
A —40 N·m (4.0 kg-m, 29 lb-ft)
B —15 N·m (1.5 kg-m, 11 lb-ft)
C —29 N·m (2.9 kg-m, 21 lb-ft)
D —25 N·m (2.5 kg-m, 18 lb-ft)
E —55 N·m (5.5 kg-m, 40 lb-ft)
F —28 N·m (2.8 kg-m, 21 lb-ft)
G —26 N·m (2.6 kg-m, 19 lb-ft)

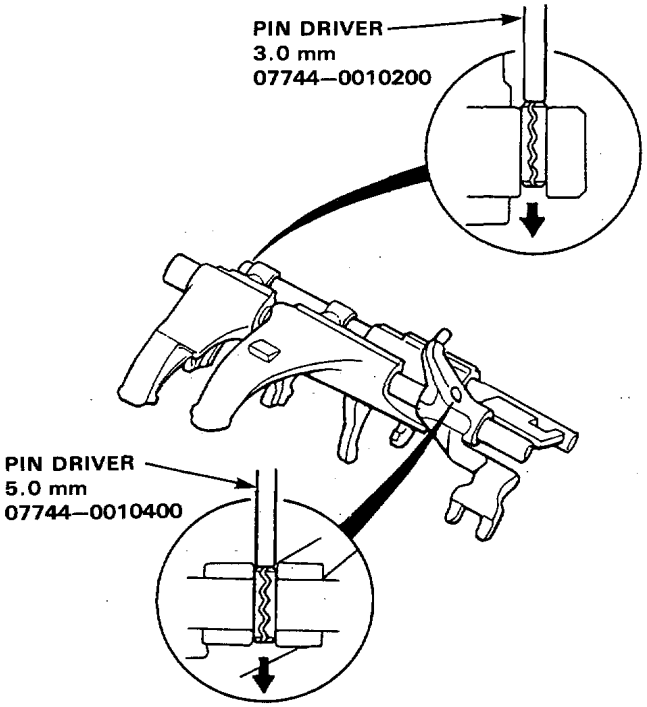
NOTE: Always clean the magnet ⑫ whenever the transmission housing is disassembled.

① SEALING WASHER
② OIL DRAIN PLUG
40 N·m (4.0 kg-m, 29 lb-ft)
③ 32 mm SEALING BOLT
④ OIL SEAL
⑤ OIL FILLER PLUG
45 N·m (4.5 kg-m, 33 lb-ft)
⑥ SEALING WASHER
⑦ TRANSMISSION HOUSING
⑧ BACK-UP LIGHT SWITCH
25 N·m (2.5 kg-m, 18 lb-ft)
⑨ CLUTCH CABLE BRACKET
⑩ BREATHER TUBE
⑪ 1st/2nd SHIFT FORK
⑫ 1st/2nd SHIFT FORK SHAFT
⑬ SHIFT FORK SPRING
⑭ STEEL BALL
⑮ SPRING PIN
⑯ SNAP RING
⑰ COUNTERSHAFT LOCKNUT
110→0→110 N·m (11.0→0→11.0 kg-m, 80→0→80 lb-ft)
⑱ WASHER
⑲ BALL BEARING
Disassembly, page 8-16
Reassembly, page 8-17
⑳ NEEDLE BEARING
㉑ COUNTERSHAFT 5th GEAR
㉒ COUNTERSHAFT 4th GEAR
㉓ COUNTERSHAFT 3rd GEAR
㉔ COUNTERSHAFT 2nd GEAR
㉕ NEEDLE BEARING
㉖ DISTANCE COLLAR
㉗ SYNCHRO RING
㉘ SYNCHRO SPRING
㉙ REVERSE GEAR
㉚ SYNCHRO HUB
㉛ SYNCHRO SPRING
㉜ SYNCHRO RING
㉝ COUNTERSHAFT 1st GEAR
㉞ NEEDLE BEARING
㉟ COUNTERSHAFT
㊱ NEEDLE BEARING
㊲ OIL GUIDE PLATE
㊳ 5th/REVERSE SHIFT FORK SHAFT
㊴ ROLLER
㊵ 5th DETENT SPRING
㊶ 5th SHIFT FORK
㊷ OIL GUIDE PLATE
㊸ THRUST SHIM
Selection, page 8-13
㊹ BALL BEARING
㊺ SYNCHRO HUB
㊻ SYNCHRO SLEEVE
㊼ SYNCHRO SPRING
㊽ SYNCHRO RING
㊾ 5th GEAR
㊿ NEEDLE BEARING
(51) 3rd/4th SHIFT FORK
(52) SHIFT PIECE
(53) SPRING PIN
(54) SPACER COLLAR
(55) 4th GEAR
(56) NEEDLE BEARING
(57) SYNCHRO RING
(58) SYNCHRO SPRING
(59) SYNCHRO HUB
(60) SYNCHRO SLEEVE
(61) SYNCHRO SPRING
(62) SYNCHRO RING
(63) 3rd GEAR
(64) NEEDLE BEARING
(65) MAINSHAFT
(66) SPRING WASHER
(67) BALL BEARING
(68) OIL SEAL
(69) REVERSE IDLER GEAR
(70) REVERSE IDLER SHAFT
(71) REVERSE SHIFT HOLDER
(72) MAGNET
(73) REVERSE SELECT SPRING
(74) REVERSE RETURN SELECT
(75) SHIFT ARM C
(76) SHIFT ARM A
(77) REVERSE LOCK CAM
(78) SHIFT ARM B
(79) INTERLOCK
(80) DOWEL PIN
(81) SPRING
(82) SPRING COLLAR
(83) SPRING BOLT
(84) SPRING
(85) SHIFT ROD
(86) BOOT
(87) SHIM
(88) DIFFERENTIAL ASSEMBLY
(89) 28 mm PLUG
(90) 1st/2nd SELECT SPRING
(91) SHIFT ARM SHAFT
(92) OIL SEAL
(93) CLUTCH HOUSING
(94) INTERLOCK GUIDE BOLT
(95) FRICTION DAMPER (2nd gear side)
Disassembly, page 8-16
Reassembly, page 8-17
(96) FRICTION DAMPER (1st gear side)
Disassembly, page 8-16
Reassembly, page 8-17
(97) THRUST WASHER

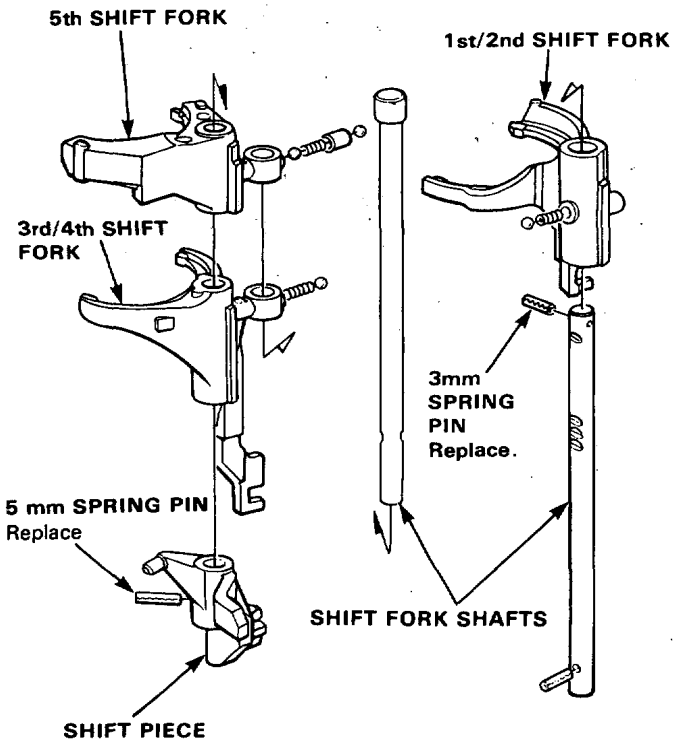
Downloaded from www.Manualslib.com manuals search engine

Shift Fork Disassembly

1. Remove the shift fork shaft by removing the spring pins from the shift forks.



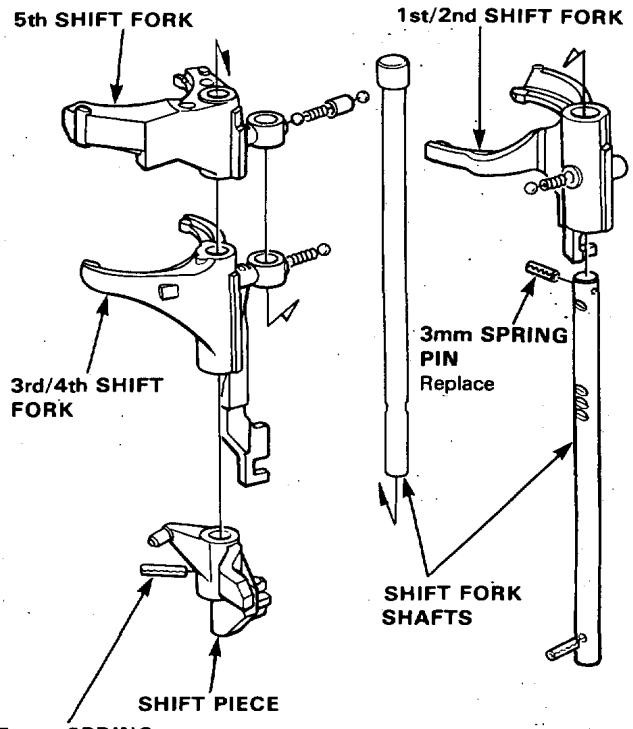
CAUTION: Do not lose the spring-loaded detent while disassembling the shift forks and shift fork shafts.

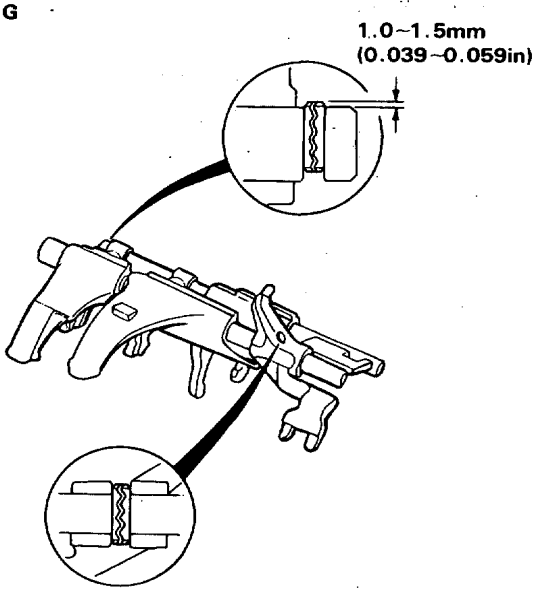


Shift Fork Reassembly

1. Insert the shift fork shaft into the shift forks and drive in the spring pins.

NOTE: Do not lose the steel balls and spring when rsassembling.

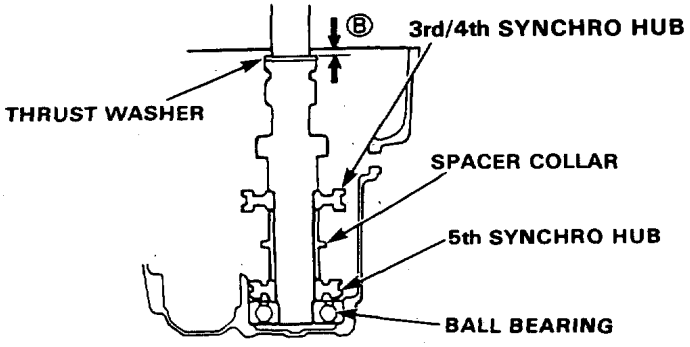




Downloaded from www.Manualslib.com manuals search engine

Mainshaft Thrust Shim Adjustment

1. Remove the thrust shim and oil guide plate from the transmission housing.
2. Install the 3rd/4th synchro hub, spacer collar, 5th synchro hub, ball bearing and thrust washer on the mainshaft. Install the assembly in the transmission housing.

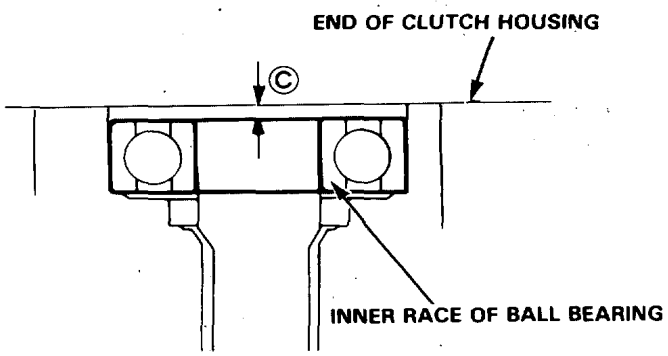


3 Measure the distance B between the end of the transmission housing and thrust washer.

NOTE:
- Use a straight edge and feeler gauge.
- Measure at three locations and average the readings.

4. Measure the distance C between the surfaces of the clutch housing and bearing inner race.

NOTE:
- Use a straight edge and feeler gauge.
- Measure at three locations and average the readings.



5. Select the proper shim (or shim pair) on the basis of the following calculations:

NOTE: Do not use more than two shims.

(Basic Formula)
(B) + (C) − 0.95 = shim thickness

Example of calculation:
Distance B (2.00mm) + Distance C (0.09mm) = 2.09mm
subtract the spring washer height (0.95mm) = the required thrust shim (1.14mm)

D14A, D15B: 65 mm Thrust Shim

	PART NUMBER	THICKNESS
A	23931—PL3—A10	0.60 mm (0.0236 in.)
B	23932—PL3—A10	0.63 mm (0.0284 in.)
C	23933—PL3—A10	0.66 mm (0.0260 in.)
D	23934—PL3—A10	0.69 mm (0.0272 in.)
E	23935—PL3—A10	0.72 mm (0.0283 in.)
F	23936—PL3—A10	0.75 mm (0.0295 in.)
G	23937—PL3—A10	0.78 mm (0.0307 in.)
H	23938—PL3—A10	0.81 mm (0.0319 in.)
I	23939—PL3—A10	0.84 mm (0.0331 in.)
J	23940—PL3—A10	0.87 mm (0.0343 in.)
K	23941—PL3—A10	0.90 mm (0.0354 in.)
L	23942—PL3—A10	0.93 mm (0.0366 in.)
M	23943—PL3—A10	0.96 mm (0.0378 in.)
N	23944—PL3—A10	0.99 mm (0.0390 in.)
O	23945—PL3—A10	1.02 mm (0.0402 in.)
P	23946—PL3—A10	1.05 mm (0.0413 in.)
Q	23947—PL3—A10	1.08 mm (0.0425 in.)
R	23948—PL3—A10	1.11 mm (0.0437 in.)
S	23949—PL3—A10	1.14 mm (0.0449 in.)
T	23950—PL3—A10	1.17 mm (0.0461 in.)
U	23951—PL3—A10	1.20 mm (0.0472 in.)
V	23952—PL3—A10	1.23 mm (0.0484 in.)
W	23953—PL3—A10	1.26 mm (0.0496 in.)
X	23954—PL3—A10	1.29 mm (0.0508 in.)
Y	23955—PL3—A10	1.32 mm (0.0520 in.)
Z	23956—PL3—A10	1.35 mm (0.0531 in.)
AA	23957—PL3—A10	1.38 mm (0.0543 in.)
AB	23958—PL3—A10	1.41 mm (0.0555 in.)
AC	23959—PL3—A10	1.44 mm (0.0567 in.)
AD	23960—PL3—A10	1.47 mm (0.0579 in.)
AE	23961—PL3—A10	1.50 mm (0.0591 in.)
AF	23962—PL3—A10	1.53 mm (0.0602 in.)
AG	23963—PL3—A10	1.56 mm (0.0614 in.)
AH	23964—PL3—A10	1.59 mm (0.0626 in.)
AI	23965—PL3—A10	1.62 mm (0.0638 in.)
AJ	23966—PL3—A10	1.65 mm (0.0650 in.)
AK	23967—PL3—A10	1.68 mm (0.0661 in.)
AL	23968—PL3—A10	1.71 mm (0.0673 in.)
AM	23969—PL3—A10	1.74 mm (0.0685 in.)
AN	23970—PL3—A10	1.77 mm (0.0697 in.)
AO	23971—PL3—A10	1.80 mm (0.0709 in.)

(cont'd)

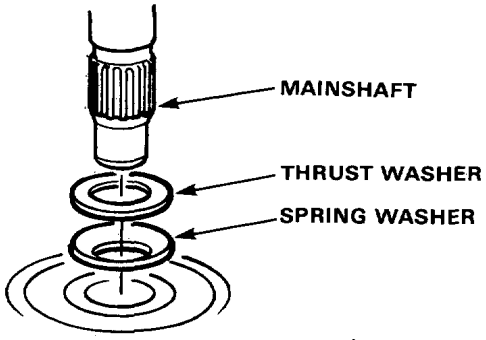
Downloaded from www.Manualslib.com manuals search engine

Mainshaft Thrust Shim Adjustment (cont'd)

D16A: 70 mm Thrust Shim

	PART NUMBER	THICKNESS
A	23931—PL3—B00	0.60 mm (0.0236 in.)
B	23932—PL3—B00	0.63 mm (0.0284 in.)
C	23933—PL3—B00	0.66 mm (0.0260 in.)
D	23934—PL3—B00	0.69 mm (0.0272 in.)
E	23935—PL3—B00	0.72 mm (0.0283 in.)
F	23936—PL3—B00	0.75 mm (0.0295 in.)
G	23937—PL3—B00	0.78 mm (0.0307 in.)
H	23938—PL3—B00	0.81 mm (0.0319 in.)
I	23939—PL3—B00	0.84 mm (0.0331 in.)
J	23940—PL3—B00	0.87 mm (0.0343 in.)
K	23941—PL3—B00	0.90 mm (0.0354 in.)
L	23942—PL3—B00	0.93 mm (0.0366 in.)
M	23943—PL3—B00	0.96 mm (0.0378 in.)
N	23944—PL3—B00	0.99 mm (0.0390 in.)
O	23945—PL3—B00	1.02 mm (0.0402 in.)
P	23946—PL3—B00	1.05 mm (0.0413 in.)
Q	23947—PL3—B00	1.08 mm (0.0425 in.)
R	23948—PL3—B00	1.11 mm (0.0437 in.)
S	23949—PL3—B00	1.14 mm (0.0449 in.)
T	23950—PL3—B00	1.17 mm (0.0461 in.)
U	23951—PL3—B00	1.20 mm (0.0472 in.)
V	23952—PL3—B00	1.23 mm (0.0484 in.)
W	23953—PL3—B00	1.26 mm (0.0496 in.)
X	23954—PL3—B00	1.29 mm (0.0508 in.)
Y	23955—PL3—B00	1.32 mm (0.0520 in.)
Z	23956—PL3—B00	1.35 mm (0.0531 in.)
AA	23957—PL3—B00	1.38 mm (0.0543 in.)
AB	23958—PL3—B00	1.41 mm (0.0555 in.)
AC	23959—PL3—B00	1.44 mm (0.0567 in.)
AD	23960—PL3—B00	1.47 mm (0.0579 in.)
AE	23961—PL3—B00	1.50 mm (0.0591 in.)
AF	23962—PL3—B00	1.53 mm (0.0602 in.)
AG	23963—PL3—B00	1.56 mm (0.0614 in.)
AH	23964—PL3—B00	1.59 mm (0.0626 in.)
AI	23965—PL3—B00	1.62 mm (0.0638 in.)
AJ	23966—PL3—B00	1.65 mm (0.0650 in.)
AK	23967—PL3—B00	1.68 mm (0.0661 in.)
AL	23968—PL3—B00	1.71 mm (0.0673 in.)
AM	23969—PL3—B00	1.74 mm (0.0685 in.)
AN	23970—PL3—B00	1.77 mm (0.0697 in.)
AO	23971—PL3—B00	1.80 mm (0.0709 in.)

6. Check the thrust clearance in the manner described below.
   a. Install the shims selected in the transmission housing.
   b. Install the thrust washer and spring washer in the mainshaft.



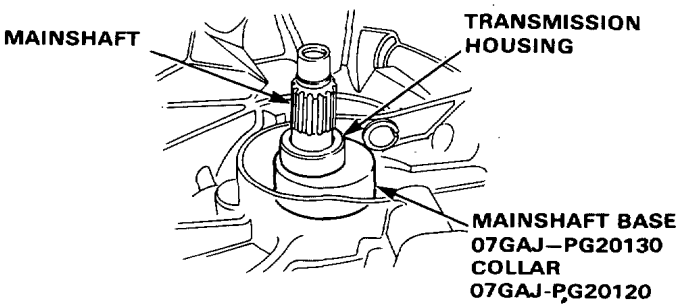
NOTE:
- Clean the thrust washer, spring washer and shim thoroughly before installation.
- Install the thrust washer, spring washer and shim properly.

   c. Install the mainshaft in the clutch housing.
   d. Place the transmission housing over the mainshaft and onto the clutch housing.
   e. Tighten the clutch and transmission housings with several 10mm bolts.
   f. Tap the mainshaft with a plastic hammer.

7. Check the thrust clearance in the manner described below.

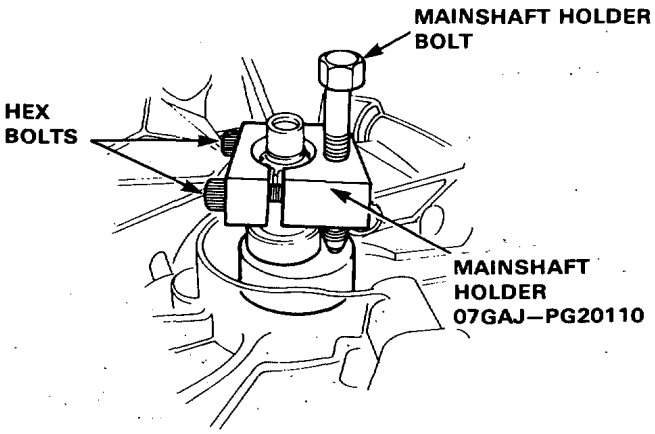
CAUTION: Mesurement should be made at room temperature.

   a. Slide the mainshaft base and the collar over the mainshaft.



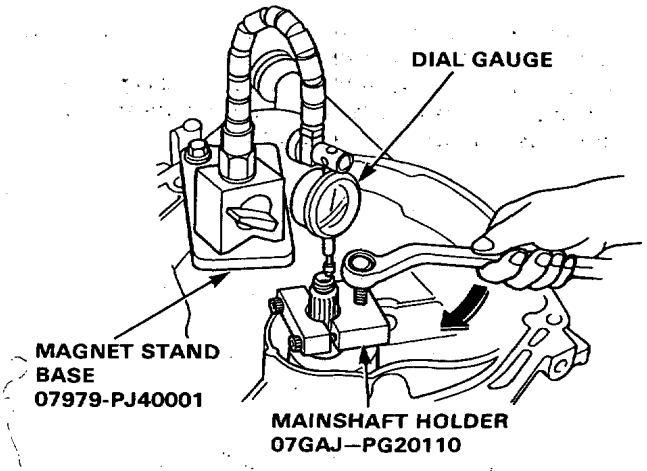
Downloaded from www.Manualslib.com manuals search engine

b. Attach the mainshaft holder to the mainshaft as follows:
   - Back-out the mainshaft holder bolt and loosen the two hex bolts.
   - Fit the holder over the mainshaft so its lip is towards the transmission.
   - Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



c. Seat the mainshaft fully by tapping its end with a plastic hammer.
d. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.

e. Zero a dial gauge on the end of the mainshaft.



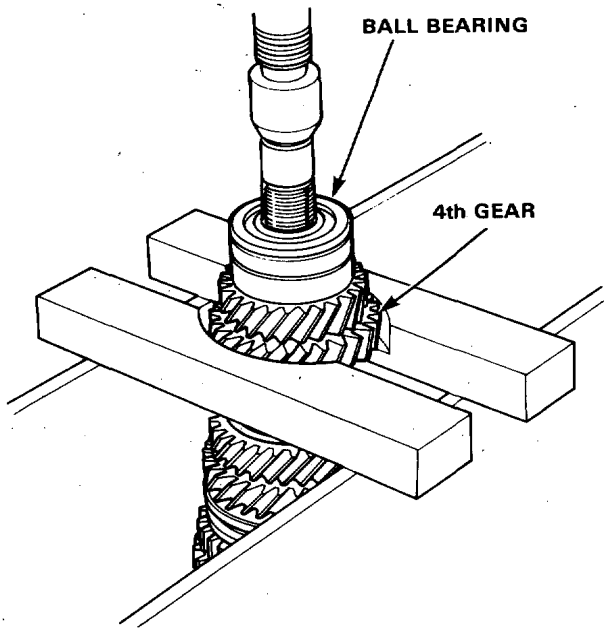
f. Turn the mainshaft holder bolt clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft end play.
   CAUTION: Turning the shaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving may damage the transmission.
g. Clearance is correct if reading is between 0.13—0.20mm (0.0051—0.0079 in).
   If not, recheck necessary shim thickness.

Downloaded from www.Manualslib.com manuals search engine

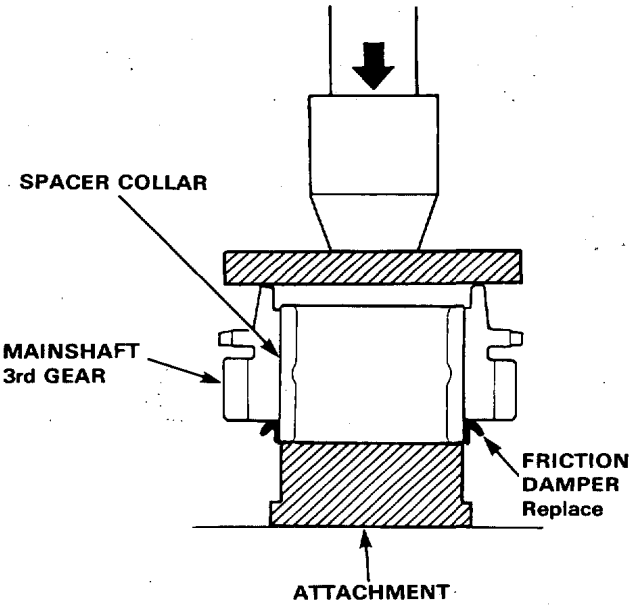
Countershaft Disassembly

1. Raise the locknut tab from the groove of the shaft and remove the locknut and the spring washer.

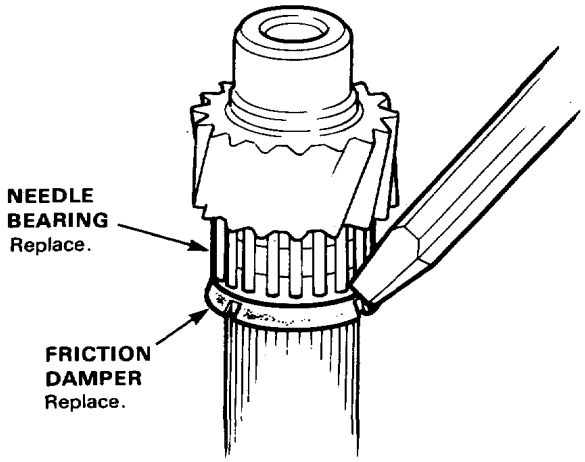
2. Support 4th gear on steel blocks as shown and press the shaft out of ball bearing.
CAUTION: Remove the ball bearing using a press and steel blocks as shown. Use of a jaw-type puller can cause damage to the gear teeth.



3. Using a press as shown, remove the friction damper (2nd gear side) from the spacer collar.



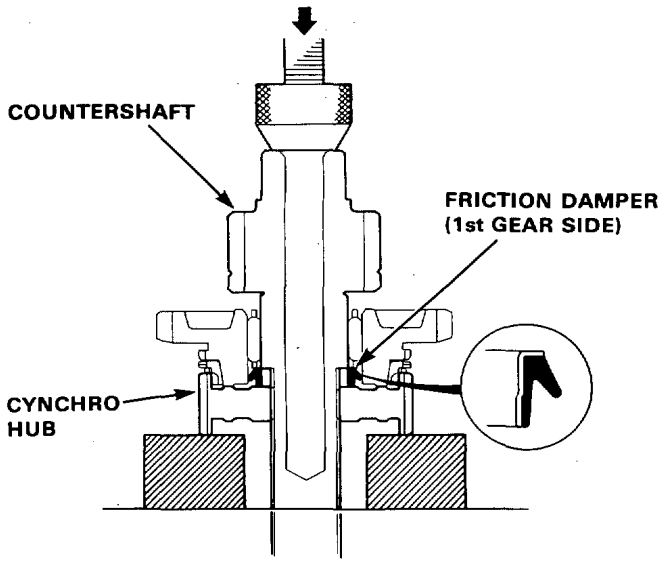
4. Remove the friction damper (1st gear side) and needle bearing from the countershaft.



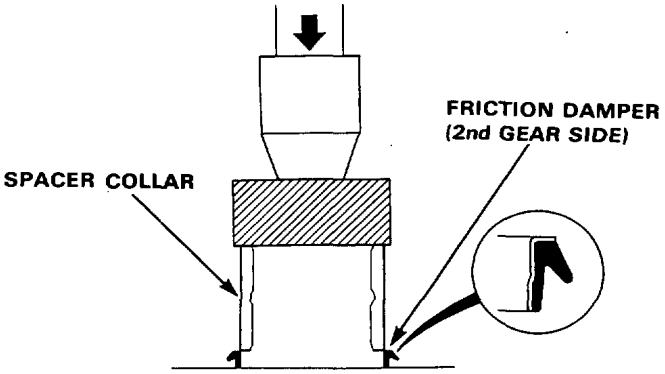
Downloaded from www.Manualslib.com manuals search engine

Countershaft Reassembly

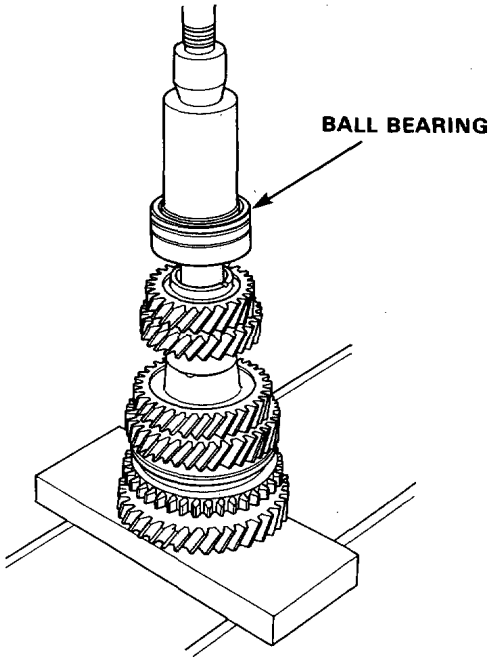
1. Using a press, install the friction damper (1st gear side) to the countershaft as shown.



2. Using a press, install the friction damper (2nd gear side) to the spacer collar.



3. Install the ball bearing using a press as shown.



4. Install the spring washer, tighten the locknut and then stake the locknut tab into the groove.

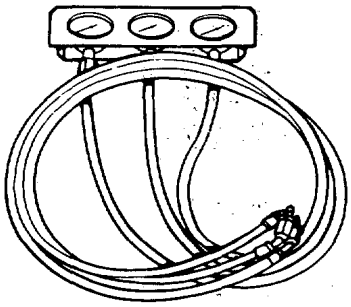
LOCKNUT
110 → 0 → 110 N·m (11.0 → 0 → 11.0kg-m, 80 → 0 → 80 lb-ft)

Downloaded from www.Manualslib.com manuals search engine

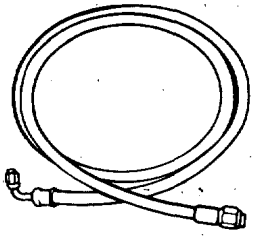
Special Tools

Special Tools

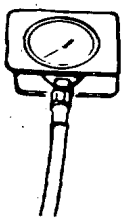
Ref. No	Tool Number	Description	Q'ty	Remaks
①	07406-0020003	Oil Pressure Gauge Set	1	
①-1	07406-0020201	Oil Pressure Gauge Hose Attachment	1	Component Tool
②	07406-0070000	Low Pressure Gauge	1	
③	07749-0010000	Driver	1	
④	07947-6110501	Oil Seal Driver Attachment E	1	
⑤	07JAD-PH80400	Pilot Driver 28 x 30 mm	1	
⑥	07HAD-SF10100	Driver Attachment	1	



①



①-1



②



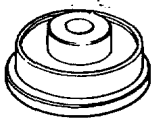
③



④



⑤



⑥

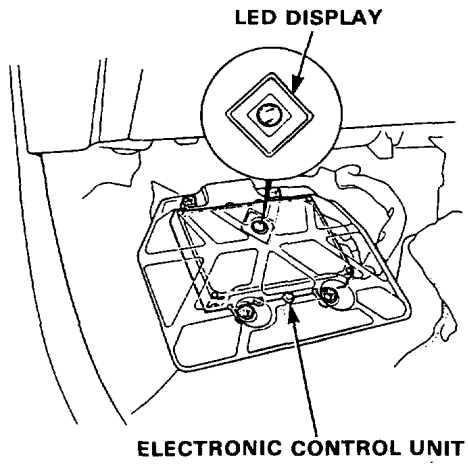
Downloaded from www.Manualslib.com manuals search engine

If the look-up control electrical system is suspected to be faulty according to the symptom charts on pages 9-4 and 9-5, check the following.

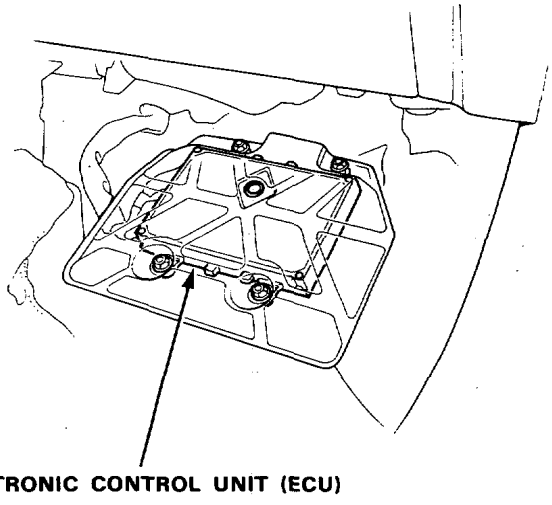
1. **PGM-FI engine type :**
   Check the LED of ECU under the instrument panel.
   If it blinks, count the number of blinks according to the troubleshooting chart.

   **The drawing below is for the PGM-FI engine type.*

RHD:



LHD:



2. Check and adjust the throttle control cable (page 9-43).
3. Check for power input signal of the lock-up control solenoid valve (See section 6).
4. Check the lock-up control solenoid valve (page 9-6).
5. Check the hydraulic system according to the troubleshooting in pages 9-4 and 9-5.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Symptom-to-System

SYMPTOM	Check these items on PROBABLE CAUSE LIST	Check these items on NOTES PAGE
Engine runs, but car does not move in any gear.	1, 6, 7, 16	K, L, R, S
Car moves in R and 2, but not in D3 or D4.	8, 29, 45, 49	C, M, O
Car moves in D3, D4 and R, but not in 2.	9, 30, 50	C, L
Car moves in D3, D4 and 2, but not in R.	1, 11, 12, 22, 39, 40, 41	C, L, Q
Car moves in N.	1, 8, 9, 10, 11 47, 48	C, D
Excessive idle vibration.	5, 17	B, K, L
Slips in all gears.	6, 7, 16	C, L, U
Slips in low gear.	8, 29, 45, 46, 49	C, N, O, U
Slips in 2nd gear.	9, 20, 23, 30, 46, 50	C, L, U
Slips in 3rd gear.	10, 21, 23, 31, 45, 46	C, L, U
Slips in 4th gear.	11, 23, 32, 46	C, L, U
Slips in reverse gear.	11, 32	C
Slips on 2 – 3 upshift.	3, 15, 24	E, L, V
Slips on 3 – 4 upshift.	3, 15, 25	E, L, V
No upshift; trans stays in low gear.	12, 13, 14, 19, 23	E, F, G, L
No downshift to low gear.	12, 19	G, L
Late upshift.	2, 12, 13, 14	E, F, L, V
Early upshift.	3, 13, 14	E, F, L, V
Erratic shifting.	2, 14, 26	E, F, V
Harsh shift (up & down shifts).	2, 4, 15, 23, 24, 25, 27, 48	A, E, H, I, L, V
Harsh shift (1 – 2).	2, 9	C, D, V
Harsh shift (2 – 3).	2, 10, 23, 24	C, D, H, L, V
Harsh shift (3 – 4).	2, 11, 23, 25	C, D, I, L, V
Harsh kickdown shifts.	2, 23, 27	L, V, Q
Harsh kickdown shift (2 – 1).	48	O
Harsh downshift (3 – 2) at closed throttle.	15	E, T
Axle(s) slips out of trans on turns.	44, 51	L, P, Q
Axle(s) stuck in trans.	44	L, Q
Ratcheting noise when shifting into R.	6, 7, 39, 40, 41	K, L, Q
Loud popping noise when taking off in R.	39, 40, 41	L, Q
Ratcheting noise when shifting from R to P, or from R to N.	39, 40, 41, 52	L, Q
Noise from trans in all selector lever positions.	6, 17	K, L, Q
Noise from trans only when wheels rolling.	40, 43	L, Q
Gear whine, rpm related (pitch changes with shifts).	6, 42	K, L, Q
Gear whine, speed related (pitch changes with speed).	40, 43	L, Q
Trans will not shift into 4th gear in D4.	1, 21, 28	L
Engine stalls on emergency stops (shift lever in D4 only).	2, 33	L, V
Lockup clutch does not lock up smoothly.	35, 37, 17	L
Lockup clutch does not operate properly.	2, 3, 12, 15, 18, 33, 34, 35, 36, 37, 38	E, L, V
Transmission has multitude of problems shifting, at disassembly large deposits of metal found on magnet.	44	L, Q
Hard to shift into 3rd and 4th in D4 range.	53	
Hard to shift into 3rd in D3 range.	53	
Slow to shift into R range from D3 and D4 ranges.	54	
Excessive shock when shifting into R range from P and N ranges.	54	

The following symptoms can be caused by improper repair or assembly.	Check these items on PROBABLE CAUSE DUE TO IMPROPER REPAIR	Check these ITEMS ON NOTES PAGE
Car creeps in N.	R1, R2	
Car does not move in D3 or D4.	R5	
Trans locks up in R.	R4	
Trans has no park.	R3	
Excessive drag in trans.	R8	R, K
Excessive vibration, rpm related.	R9	
Noise with wheels moving only.	R7	
Main seal pops out.	R10	S
Various shifting problems.	R11, R12	
Harsh upshifts.	R13	
In D3 or D4 trans starts in 2nd gear.	R6	

	PROBABLE CAUSE
1.	Shift cable broken/out of adjustment
2.	Throttle cable too short
3.	Throttle cable too long
4.	Wrong type ATF
5.	Idle rpm too low high
6.	Oil pump worn or seized
7.	Pressure regulator stuck
8.	Low clutch defective
9.	2nd clutch defective
10.	3rd clutch defective
11.	4th clutch defective
12.	Governor valve stuck
13.	Throttle A valve stuck
14.	Modulator valve stuck
15.	Throttle B valve stuck
16.	Oil screen clogged
17.	Torque convertor defective
18.	Torque governor check valve stuck
19.	1 – 2 shift valve stuck
20.	2 – 3 shift valve stuck
21.	3 – 4 shift valve stuck
22.	Reverse control valve stuck
23.	Clutch pressure control valve stuck
24.	2nd oriffice control valve stuck
25.	Orifice control valve stuck
26.	3 – 2 timing valve stuck
27.	kickdown valve stuck
28.	Shift timing valve accumulator stuck
29.	Low clutch accumulator defective
30.	2nd clutch accumulator defective
31.	3rd clutch accumulator defective
32.	4th/reverse accumulator defective
33.	Lockup clutch cut valve stuck
34.	Lockup clutch timing valve A stuck
35.	Lockup clutch timing valve B stuck
36.	Lockup clutch shift valve stuck
37.	Lockup clutch control valve stuck
38.	Lockup control solenoid valve broken
39.	Shift fork bent
40.	Reverse gears worn damaged (3 gears)
41.	Reverse selector worn
42.	3rd gears worn damaged (2 gears)
43.	Final gears worn damaged (2 gears)
44.	Differential pinion shaft worn
45.	Feedpipe O-ring broken

Downloaded from www.Manualslib.com manuals search engine

	PROBABLE CAUSE
46.	Servo valve check valve loose
47.	Gear clearance incorrect
48.	Clutch clearance incorrect
49.	Sprag clutch defective
50.	Sealing rings 'guide worn
51.	Axle-inboard joint clip missing
52.	4th gears worn 'damaged (2 gears)
53.	Servo control valve stuck
54.	Reverse timing valve stuck

	PROBABLE CAUSES DUE TO IMPROPER REPAIR
R1	Improper clutch clearance
R2	Improper gear clearance
R3	Parking pawl installed upside down
R4	Parking shift arm installed upside down
R5	Sprag clutch installed upside down
R6	Feed pipe missing in governor shaft
R7	Reverse hub installed upside down
R8	Oil pump binding
R9	Torque converter not fully seated in oil pump
R10	Main seal improperly installed
R11	Springs improperly installed
R12	Valves improperly installed
R13	Ball check valves not installed
R14	Shift fork bolt not installed

	NOTES
A	Flushing procedure (repeat 3 times): 1. Drain the trans. 2. Refill with 3 qts. of Dexron recommended type ATF. 3. Start the engine and shift trans to D4. 4. Let trans shift through gears at least 5 times. 5. Shift to reverse and neutral at least 5 times. 6. Drain and refill.
B	Set idle rpm in gear to specified idle speed. If still no good, adjust the motor mounts as outlined in engine section of service manual.
C	If the large clutch piston O-ring is broken, inspect the piston groove for rough machining.
D	If the clutch pack is seized, or is excessively worn, inspect the other clutches for wear, and check the orifice control valves and throttle valves for free movement.
E	If throttle valve B is stuck, inspect the clutches for wear.
F	If the modulator valve is stuck open (does not modulate line pressure), the trans will shift normally with less than 5 8 throttle but will shift up very late over 5 8 throttle. If the modulator valve is stuck closed, throttle valve A pressure will be zero and result in early upshifts and no forced downshift.
G	If the 1 – 2 valve is stuck closed, the transmission will not upshift. If stuck open, the transmission has no low gear.
H	If the 2nd orifice control valve is stuck, inspect the 2nd and 3rd clutch packs for wear.
I	If the 3rd orifice control valve is stuck, inspect the 3rd and 4th clutch packs for wear.
J	If the clutch pressure control valve is stuck closed, the transmission will not shift out of low gear.

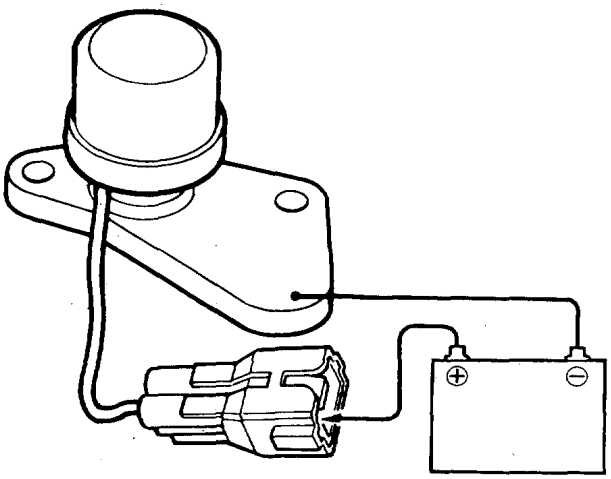
	NOTES
K	Improper alignment of main valve body and torque converter case may cause oil pump seizure. The symptoms are mostly an rpm related ticking noise high pitched squeak. In severe instances, it may stall the engine. Follow instruction procedure
L	If the oil screen is clogged with particles of steel or aluminum, inspect the oil pump and differential pinion shaft. If both are OK, and no cause for the contamination is found, replace the torque converter.
M	If the low clutch feedpipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If OK, replace the end cover as it is dented. The O-ring under the guide is probably broken.
N	Replace the mainshaft if the bushings for the low-and 4th feedpipe are loose or damaged. If the low feedpipe is damaged or out of round, replace it. If the 4th feedpipe is damaged or out of round, replace the end cover.
O	A worn or damaged sprag clutch is mostly a result of shifting the trans in D3 or D4 while the wheels rotate in reverse, such as rocking the car in snow.
P	Inspect the frame for collision damage.
Q	Inspect for damage or wear: 1. Governor shaft woodruff key 2. Reverse selector gear teeth chamfers 3. Engagement teeth chamfers of countershaft 4th & reverse gear 4. Shift fork, for scuff marks in center 5. Differential pinion shaft for wear under pinion gears 6. Bottom of 3rd clutch for swirl marks Replace items 1, 2, 3 and 4 if worn or damaged. If trans makes clicking, grinding or whiring noise, also replace mainshaft 4th gear and reverse idler gear and counter 4th gear in addition to 1, 2, 3, or 4. If differential pinion shaft is worn, overhaul differential assembly and replace oil screen and throughly clean trans, flush torque converter and cooler and lines. If bottom of 3rd clutch is swirled and trans makes gear noise, replace countershaft and ring gear.
R	Be very careful not to damage the torque converter case when replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body; this will result in oil pump seizure if not detected. Use proper tools.
S	Install the main seal flush with the torque converter ease. If you push it into the torque converter case until it bottoms out, it will block the oil return passage and result in damage.
T	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer/cam stopper. Throttle control cable adjustment may clear this problem. See page 9-43.
U	Check if servo valve check valve stopper cap is installed. If it was not installed, the check valve may have been pushed out by hydraulic pressure causing a leak (internal) affecting all forward gears.
V	Throttle cable adjustment is essential for proper operation of the transmission. Not only does it affect the shift points if misadjusted but also the shift quality and lockup clutch operation. A too long adjusted cable will result in throttle pressure being too low for the amount of engine torque input into the transmission, and may cause clutch slippage. A too short adjusted cable will result in too high throttle pressures which may cause harsh shifts, erratic shifts and torque converter hunting.

Downloaded from www.Manualslib.com manuals search engine

Lock-up Control Solenoid Valve (PGM-FI)

Inspection

1. Disconnect the lock-up control solenoid valve connector.
2. Connect the yellow terminal of the lock-up control solenoid valve to the battery positive (+) terminal and the battery negative (−) terminal to the body ground. A clicking sound should be heard.

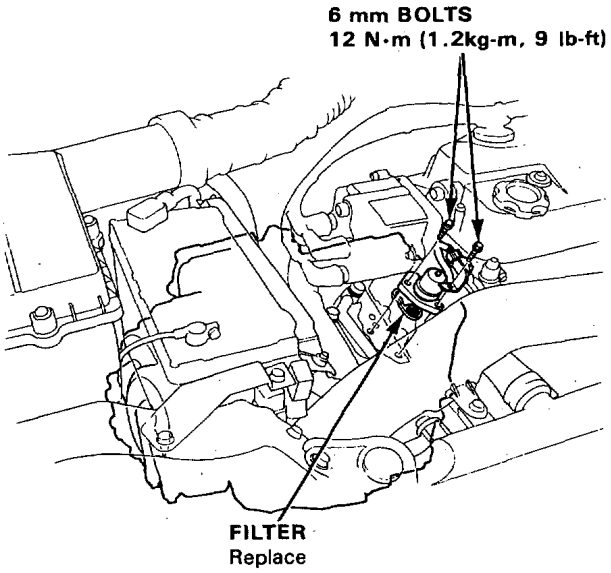


3. If not, check for continuity between the harness and body ground.
4. Replace the lock-up control solenoid valve if there is continuity between the harness and body ground.

Replacement

NOTE : Be sure to replace the lock-up control solenoid valve only when it is suspected to be faulty.

1. Remove the 6x1.0 mm bolts and lock-up control solenoid valve.
2. Check the oil passage in the lock-up control solenoid valve body and replace if is clogged with dirt.



3. Clean the lock-up control solenoid valve mounting suface and oil passage.
4. Install a new filter O-ring and the lock-up control solenoid valve.

   CAUTION : Do not use the glove while installing the filter.

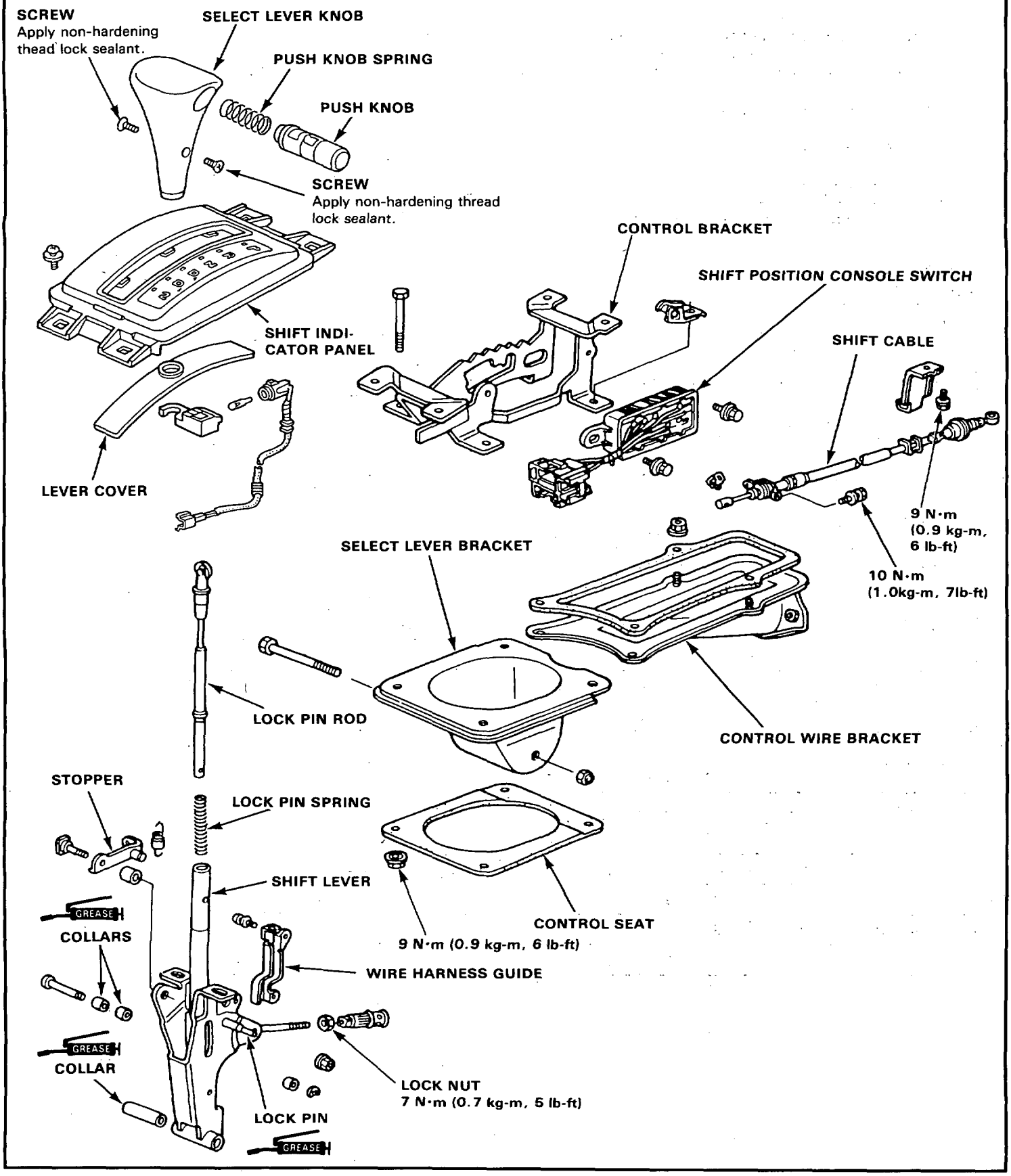
5. Be sure that the connector is not rusted or contaminated with dirt or oil and connect it securely.

   NOTE : To ease installation of the bolt, the filter is provided with a cutout as shown in the drawing.

Downloaded from www.Manualslib.com manuals search engine

Gear Shift Selector (RHD)

Disassembly/Reassembly



Downloaded from www.Manualslib.com manuals search engine

NOTE : After transmission is installed :
- Make sure the floor mat does not interfere with accelerator pedal travel. Fully depress accelerator pedal and check to make sure the throttle lever is fully opened.
- Release the accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up the engine to operating temperature.

D3 and D4 Range

1. Apply parking brake and block the wheels. Start the engine, then move the selector to D4 while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.
2. Check that shift points occur at approximate speeds shown. Also check for abnormal noise and clutch slippage.

Upshift

1.4 ℓ engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8-throttle	km/h	18.2—20.9	31.2—37.9	48.2—54.9	46.0—55.0
	mph	11.3—13.0	19.4—23.6	30.0—34.1	28.6—34.2
Half-throttle	km/h	31.6—40.6	56.7—69.7	91.5—104.5	——
	mph	19.6—25.2	35.2—43.3	56.9—64.9	——
Full-throttle	km/h	53.8—59.3	96.0—104.5	148.1—156.6	147.5—155.5
	mph	33.4—36.9	59.7—64.9	92.0—97.3	91.7—96.6

1.6 ℓ carburetor engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8-throttle	km/h	17.3—20.0	31.7—38.4	49.2—55.9	46.7—55.7
	mph	10.8—12.4	19.7—23.9	30.6—34.7	29.0—34.6
Half-throttle	km/h	30.2—39.2	57.7—70.7	96.2—109.2	——
	mph	18.8—24.4	35.9—43.9	59.8—67.9	——
Full-throttle	km/h	53.5—59.0	97.5—106.5	155.3—163.8	149.7—157.7
	mph	33.3—36.7	60.6—66.2	96.5—101.8	93.0—98.0

DOHC engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8 throttle	km/h	17.8—20.5	31.1—37.8	48.0—54.7	63.9—70.9
	mph	11.1—12.7	19.3—23.5	29.8—34.0	39.7—44.1
Half-throttle	km/h	34.2—43.2	57.9—70.9	93.5—106.5	——
	mph	21.3—26.8	36.0—44.1	58.1—66.2	——
Full-throttle	km/h	55.2—60.7	97.8—106.3	144.8—153.3	129.0—137.0
	mph	34.3—37.7	60.8—66.1	90.0—95.3	80.2—85.1

Downloaded from www.Manualslib.com manuals search engine

Downshift

1.4 ℓ engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 16.4—19.4		10.1—12.6
	mph	4th—2nd: 10.2—12.1		6.3—7.8
Half-throttle	km/h	——	——	——
	mph	——	——	——
Full-throttle	km/h	129.4—138.4	83.1—92.1	41.2—46.7
	mph	80.4—86.0	51.6—57.2	25.6—29.0

1.6 ℓ carburetor engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 16.6—19.6		12.0—14.5
	mph	4th—2nd: 10.3—12.2		7.5—9.0
Half-throttle	km/h	——	——	——
	mph	——	——	——
Full-throttle	km/h	137.1—146.1	84.4—93.4	43.3—48.8
	mph	85.2—90.8	52.5—58.0	26.9—30.3

DOHC engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 15.2—18.2		10.4—12.9
	mph	4th—2nd: 9.4—11.3		6.5—8.0
Half-throttle	km/h	——	——	——
	mph	——	——	——
Full-throttle	km/h	126.5—135.5	85.0—94.0	37.7—43.2
	mph	78.6—84.2	52.8—58.4	23.4—26.8

3. Accelerate to about 56 km/h (35mph) so the transmission is in 4th, then shift from [D4] to [2]. The car should immediately begin slowing down from engine braking.

   CAUTION : Do not shift from [D4] or [D3] to [2] at speeds over 100km/h (62.5mph) ; you may damage the transmission.

[2] (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

[R] (Reverse)

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

[P] (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake ; the car should not move.

Downloaded from www.Manualslib.com manuals search engine

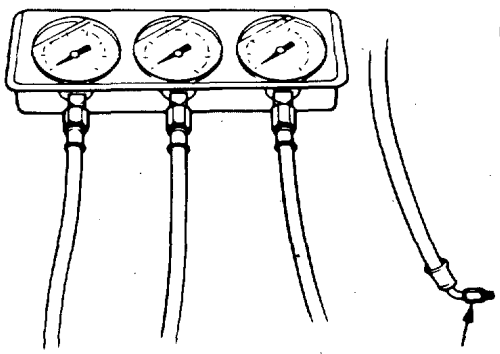
Pressure

Testing

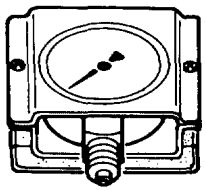
CAUTION: Before testing, be sure transmission is filled to proper level.

NOTE :
- Stop engine when attaching hoses for pressure tests.
  Torque hose fitting to 18 N·m (1.8kg-m, 12lb-ft).
- Do not reuse aluminum washers.

GAUGE SET 07406—0020003
(includes pressure hose set 07406—0020201)

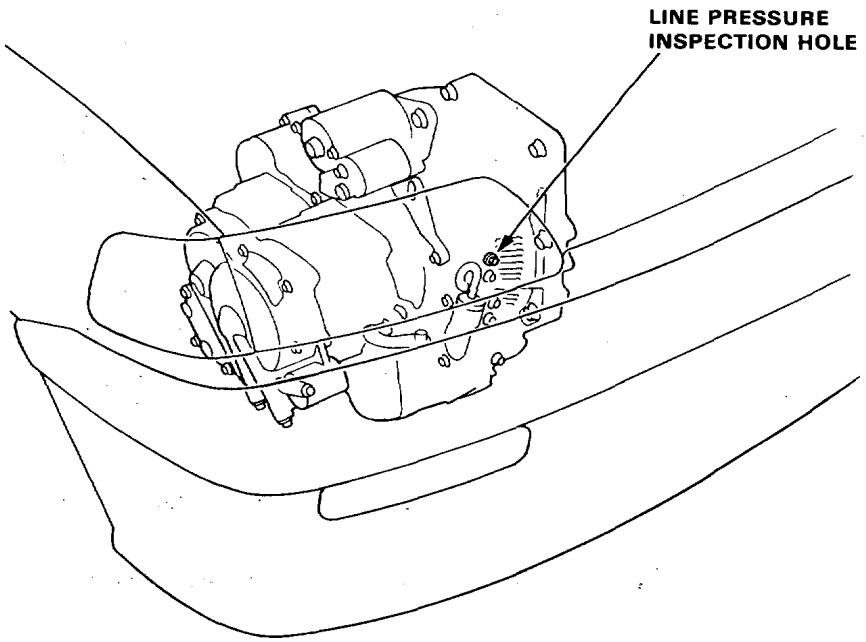


LOW PRESSURE GAUGE (07406—0070000)



HOSE FITTING

Line Pressure Measurement
1. Set the parking brake securely and block the rear wheels.
2. Run the engine at 2,000 min^{-1} (rpm).

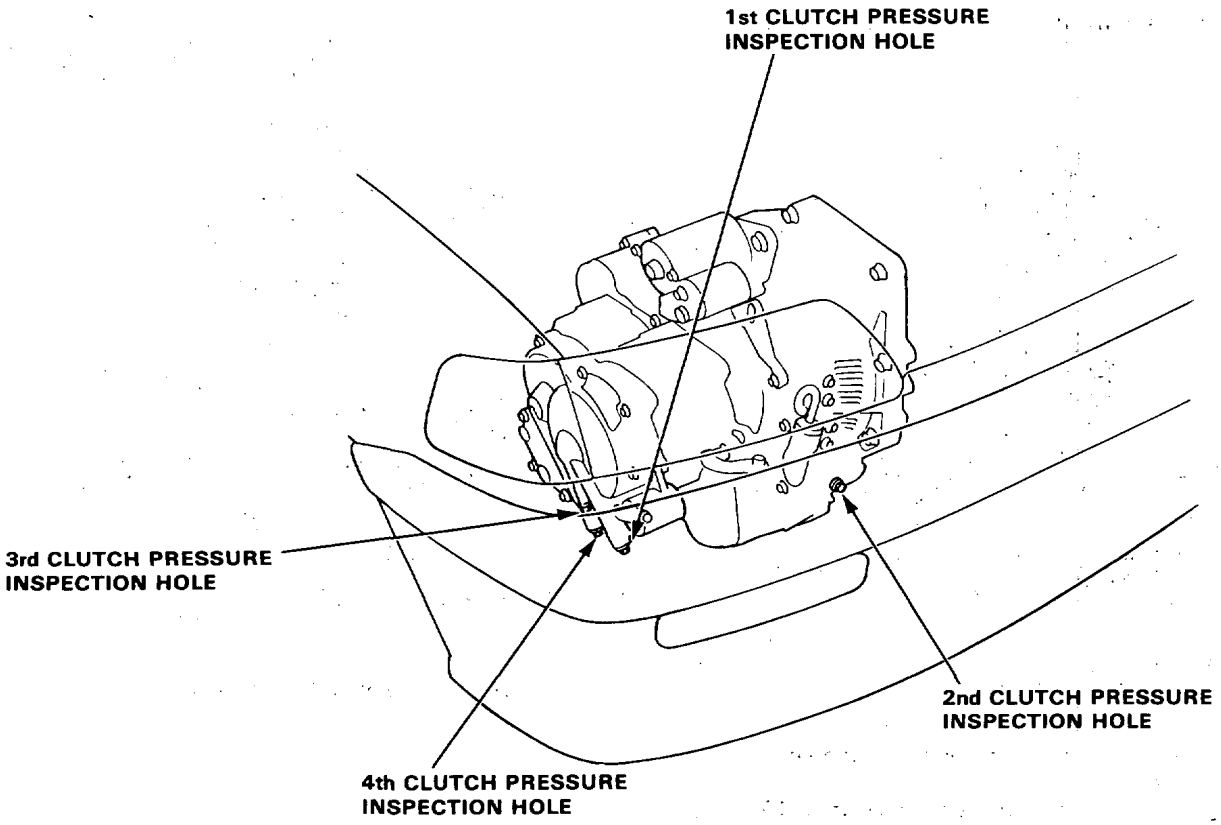


PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Line	N or P	No (or low) Line pressure	Torque converter, oil pump pressure regulator, torque converter check valve, oil pump	785—834 kPa (8.0—8.5 kg/cm², 114—121 psi)	736kPa (7.5 kg/cm², 107 psi)

Downloaded from www.Manualslib.com manuals search engine

Clutch Pressure Measurment

1. Set the parking brake securely and block the rear wheels.
2. Jack the up front of the car and support it with jack stands.
3. Run the engine at 2,000 min^{-1} (rpm).



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
1st Clutch	D3 or D4	No or low 1st pressure	1st Clutch	785—834 kPa (8.0—8.5 kg/cm², 114—121 psi)	736 kPa (7.5 kg/cm², 107 psi)
2nd Clutch (2nd hold)	2	No or low 2nd pressure	2nd Clutch	785—834 kPa (8.0—8.5 kg/cm², 114—121 psi)	736 kPa (7.5 kg/cm², 107 psi)
2nd Clutch 3rd Clutch 4th Clutch	D3 or D4	No or low 2nd, 3rd or 4th pressure	2nd, 3rd and 4th Clutch	412 kPa (4.2 kg/cm², 60psi) (throttle control lever fully closed) 785—834 kPa (8.0—8.5 kg/cm² 114—121 psi) (throttle open more than 1/4)	363 kPa (3.7 kg/cm², 53 psi) (throttle control lever fully closed) 736 kPa (7.5 kg/cm², 107 psi) (throttle open more than 1/4)
4th Clutch	R	No or low 4th pressure	Servo valve or4th Clutch	785—834 kPa (8.0—8.5 kg/cm², 114—121 psi)	736 kPa (7.5 kg/cm², 107 psi)

(cont'd)

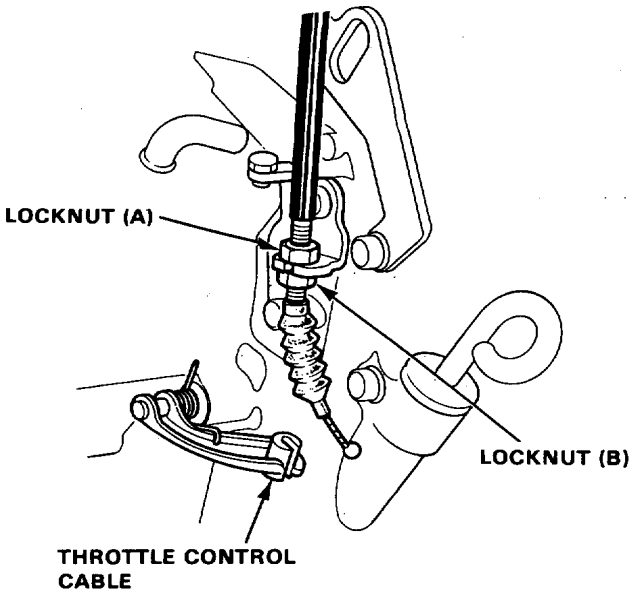
Downloaded from www.Manualslib.com manuals search engine

Pressure

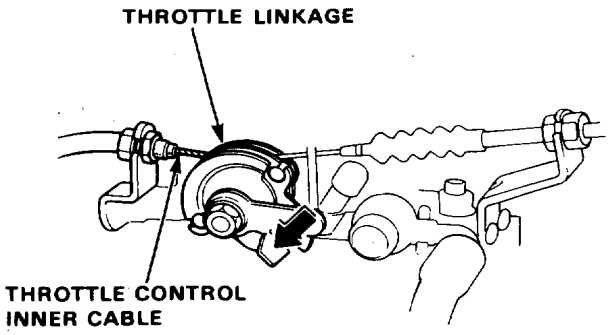
Testing (cont'd)

Low/High Pressure Test

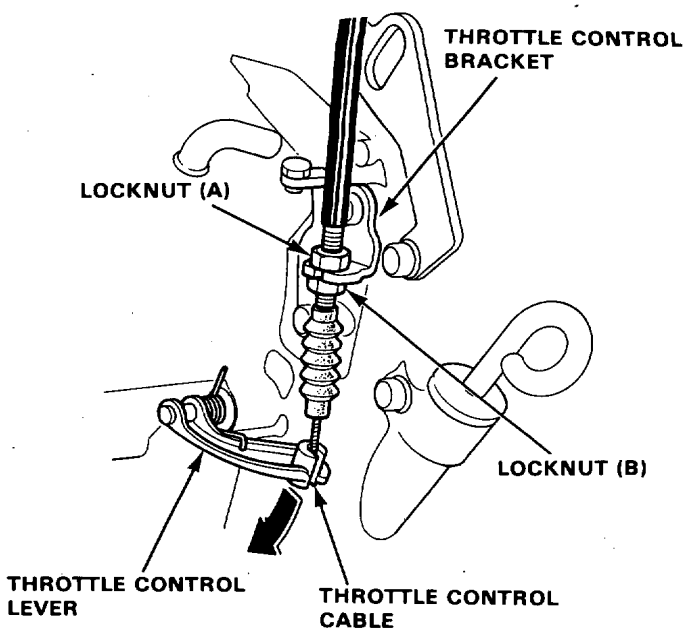
1. Raise car and support with safety stands.
2. Attach the gauge set to the appropriate pressure test port.
3. Remove the cable end of the throttle control cable from the throttle control lever.
   NOTE: Do not loosen the locknuts, simply unhook the cable end.



4. Warm up engine to normal operating temperature (cooling fan comes on).
5. With the engine idling, move the selector lever to D3 or D4.
6. Slowly move the throttle linkage to increase engine rpm until pressure is indicated on the appropriate gauge. Then release the throttle linkage, allowing the engine to return to an idle, and record the pressure reading.
7. Repeat step 6 for each clutch pressure being inspected.

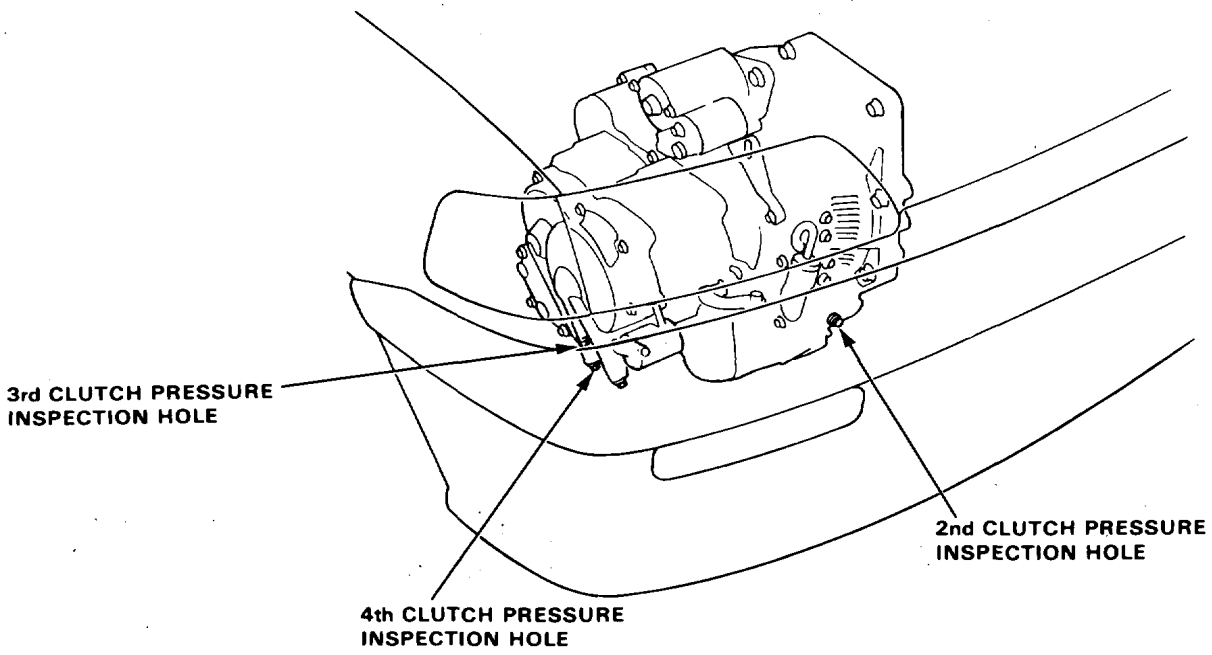


8. With the engine idling, lift the throttle control lever up approximately 1/2 of its possible travel and increase the engine rpm until pressure is indicated on the appropriate gauge. Record the highest pressure reading obtained.



9. Repeat step 8 for each clutch pressure being inspected.

Downloaded from www.Manualslib.com manuals search engine



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
2nd Clutch	D3 or D4	No or low 2nd pressure	2nd Clutch	412—834 kPa (4.2—8.5 kg/cm², 60—121 psi) varies with throttle opening	363 kPa (3.7 kg/cm², 53 psi) with lever released. 736 kPa (7.5 kg/cm², 107 psi) with lever in full throttle position.
3rd Clutch	D3 or D4	No or low 3rd pressure	3rd Clutch		
4th Clutch	D4	No or low 4th pressure	4th Clutch		

(cont'd)

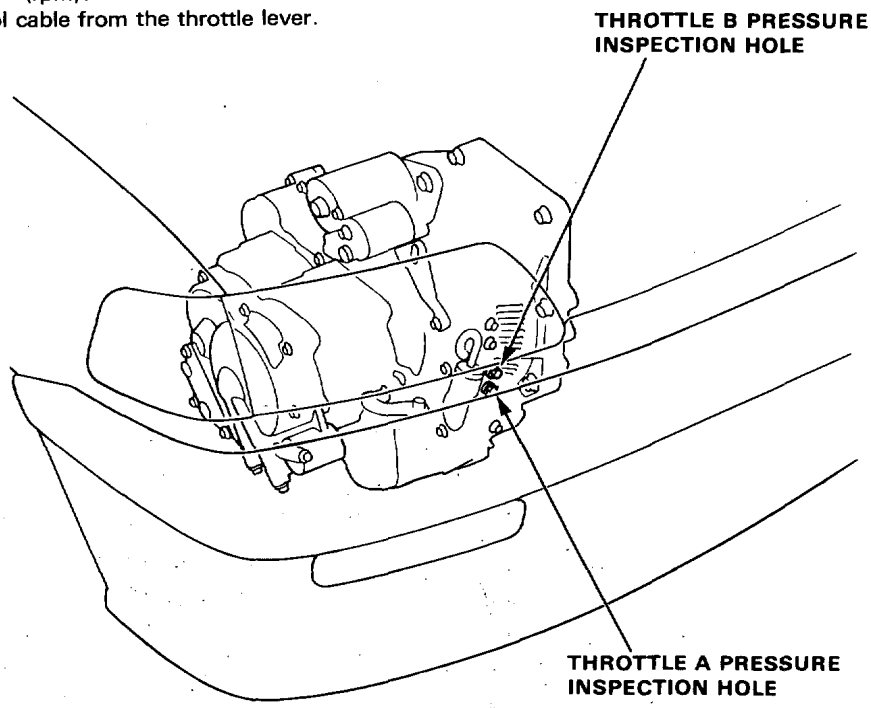
Downloaded from www.Manualslib.com manuals search engine

Pressure

Testing (cont'd)

Throttle Pressure Measurement

1. Set the paking brake securely and block the wheels.
2. Run the engine at 1,000 min^{-1} (rpm).
3. Disconnect the throttle control cable from the throttle lever.

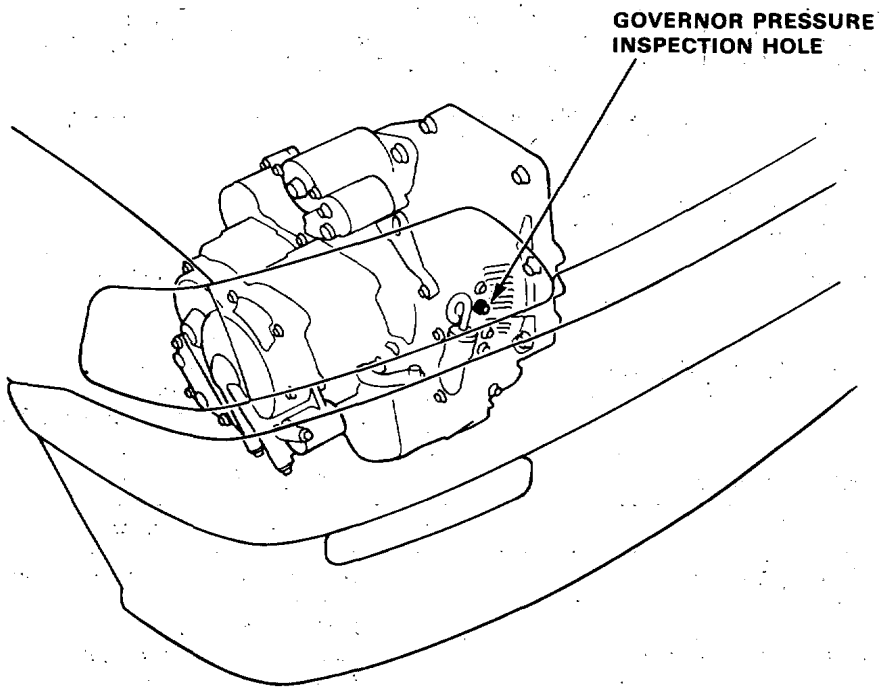


PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Throttle A	D3 or D4	No (or low) throttle pressure	Throttle valve A Throttle modulator valve	0–4.9 kPa (0–0.05 kg/cm², 0–70 psi) with lever released. Carburetor engine: 505–520 kPa (5.15–5.30 kg/cm², 73.2–75.4 psi) PGM-FI engine: 456–471 kPa (4.65–4.80kg/cm², 66–68 psi) DOHC engine: 477–490 kPa (4.85–5.00kg/cm², 69–71 psi)	Carburetor engine: 500 kPa (5.1 kg/cm², 72.5 psi) PGM-FI engine: 451 kPa(4.60kg/cm², 65 psi) DOHC engine: 471 kPa(4.8kg/cm², 68 psi) With lever in full throttle position.
Throttle B	D3 or D4	No (or low) throttle pressure	Throttle valve B	0 kPa (0 kg/cm², 0 psi) with lever released. 785–834 kPa (8.0–8.5 kg/cm², 114–121 psi) with lever in full throttle position.	736 kPa (7.5 kg/cm², 107 psi) with lever in full throttle position.

Downloaded from www.Manualslib.com manuals search engine

Governor Pressure Measurement

1. Set the parking brake securely and block the rear wheels.
2. Jack up the front of the car and support it with jack stands.
3. Run vehicle at 60 km/h (38 mph).



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Governor	D3 or D4	No (or low) governor pressure	Governor valve	1.4 ℓ engine: 151-161 kPa (1.54-1.64 kg/cm², 22-23 psi) 1.6 ℓ Carburetor engine: 148-158 kPa (1.51-1.61 kg/cm², 21-23 psi) PGM-FI engine: 220-229 kPa (2.24-2.34 kg/cm², 32-33 psi) DOHC engine: 165-176 kPa (1.68-1.78 kg/cm², 24-25 psi)	1.4 ℓ engine: 146 kPa (1.49 kg/cm², 21 psi) 1.6 ℓ Caburetor engine: 143 kPa (1.46 kg/cm², 21 psi) PGM-FI engine: 215 kPa (2.19 kg/cm², 31 psi) DOHC engine: 160 kPa (1.63 kg/cm², 23 psi)

Downloaded from www.Manualslib.com manuals search engine

Stall Speed

Test

CAUTION :

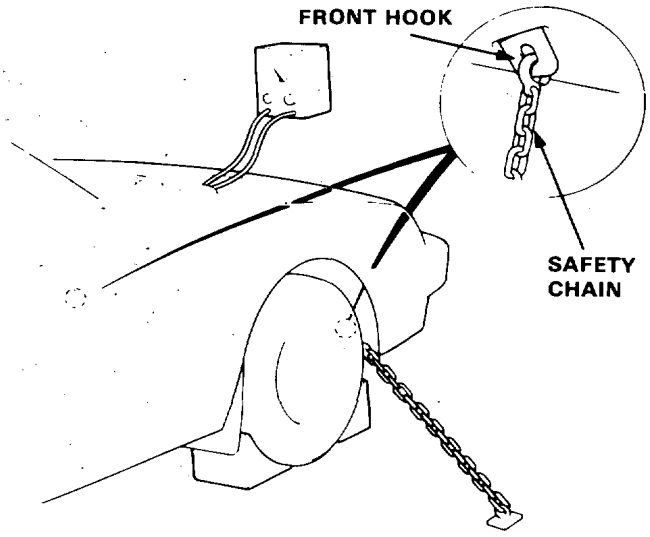
- **To prevent transmission damage, do not test stall speed for more than 10 seconds at a time.**
- **Do not shift the lever while rising the engine speed.**
- **Be sure to remove the pressure gauge before testing stall speed.**

1. Engage parking brake and block the front wheels.
2. Connect safety chains to both front two hooks and attach, with minimum slack, to some strong stationary object.
3. Connect tachometer, and start the engine.
4. After the engine has warmed up to normal operating temperature, shift into [2] .
5. Fully depress the brake pedal and accelerator for 6 to 8 seconds, and note engine speed.
6. Allow 2 minutes for cooling, then repeat same test in [D4] , and [R] .

NOTE: Stall speed in [D4] , [2] and [R] must be the same, and must also be within limits:

Stall Speed RPM :
Specification : 2,750 min^{-1} (rpm)
Service Limit : 2,300—2,900 min^{-1} (rpm)

TROUBLE	PROBABLE CAUSE
Stall rpm high in [2] , [D4] and [R] .	• Low fluid level • Faulty oil pump • Clogged oil strainer • Pressure regulator valve stuck closed
Stall rpm high in [R] only	• Slippage of 4th clutch
Stall rpm high in [2] only	• Slippage of 2nd clutch
Stall rpm high in [D4] only	• Slippage of 1st clutch or one-way clutch
Stall rpm high in [2] , [D4] and [R] .	• Engine output low • Engine throttle valve not in full open position • Torque converter one-way clutch slipping



Downloaded from www.Manualslib.com manuals search engine

Fluid Level

Checking/Changing

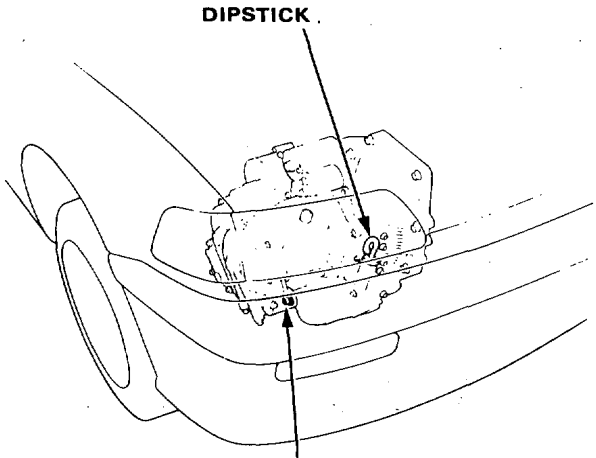
Checking

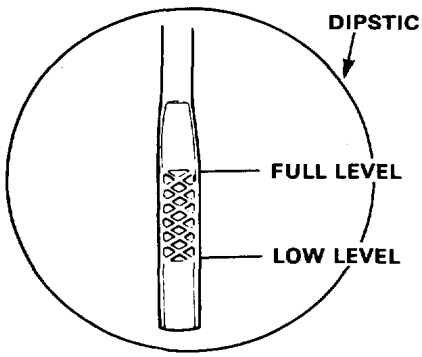
With the car on level ground, pull the transmission dipstick and check the level of fluid immediately after the engine is shut off (within one minute). The fluid level should be between the full and low marks. Push the dipstick all the way in to check the fluid level. If the level is at, or below, the low mark, add DEXRON-II type automatic transmission fluid.

Changing

1. Bring the transmission up to operating temperature by driving the car. Park the car on level ground, turn the engine off, then remove drain plug.
2. Reinstall the drain plug with a new washer, then refill the transmission to the full mark on the dipstick.

Automatic transmission Capacity:
2.4ℓ (2.5 U.S.qts, 2.1 Imp.qt) at change
5.4ℓ (5.7 U.S.qts, 4.8 Imp.qt) after overhaul



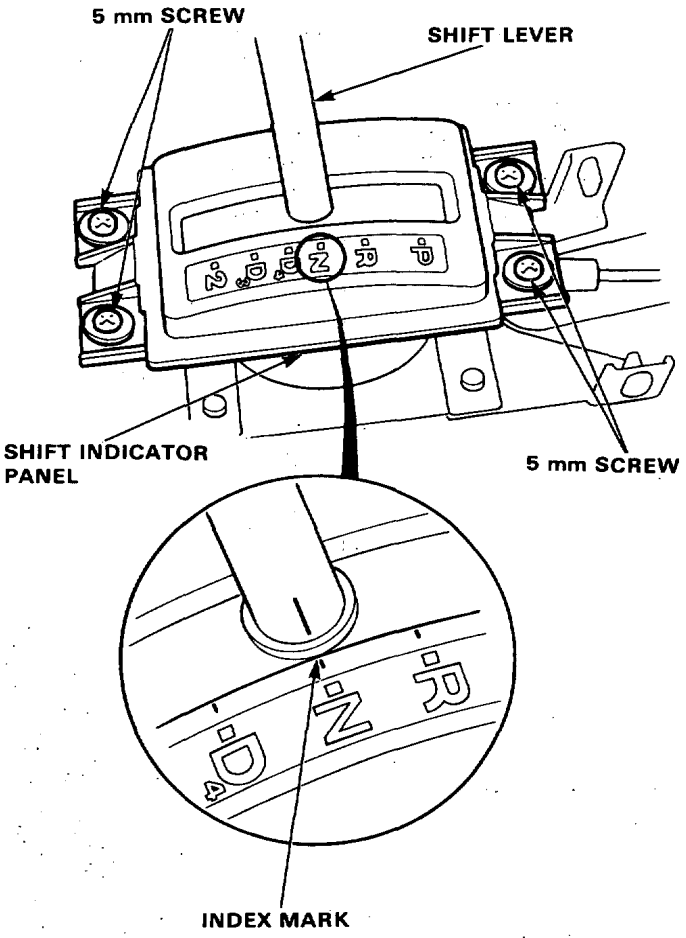


Shift Indicator Panel

Adjustment

1. Check that the index mark of the indicator aligns with the N mark of the shift indicator panel with the transmission in NEUTRAL.
2. If not aligned, remove the panel mounting screws and adjust by moving panel.

NOTE : Whenever escutcheon is removed for indicator bulb replacement etc., reinstall the panel as described above.



Downloaded from www.Manualslib.com manuals search engine

Transmission

Removal

⚠ WARNING

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

CAUTION :
- **Use the fender covers to avoid damaging the painted surfaces.**
- **Disconnect the wires and harnesses by holding the connectors.**
- **Reconnect the wires, harnesses and hoses properly. Be sure that the hoses and harnesses are not pinched or interfered with any parts.**

1. Discnnect the battery negative (−) and positive (+) cables from the battery, and remove the battery.

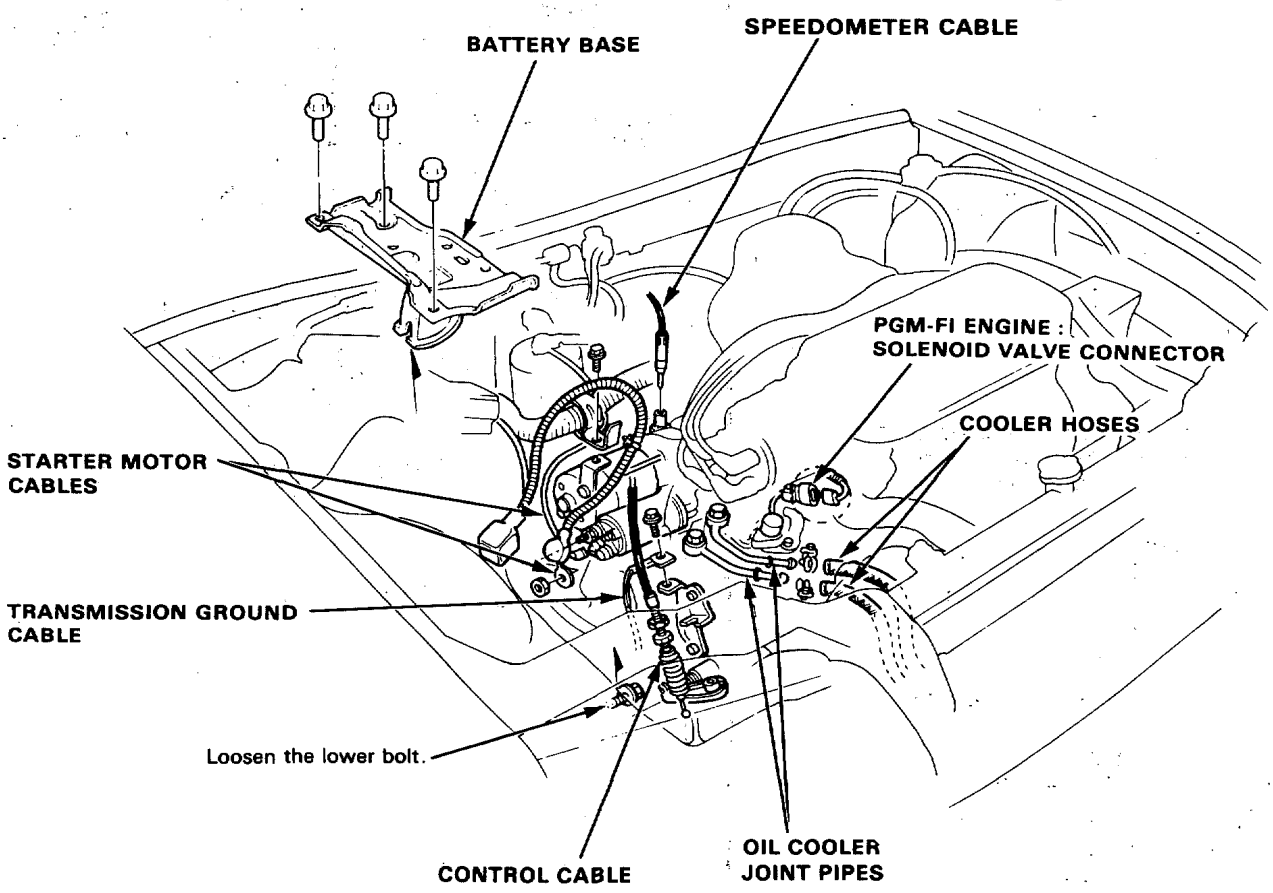
CAUTION:
- **Disconnect the battery negative (−) cable first, then the positive (+) cable from the battery.**

NOTE : Clean the battery terminals with an emery paper and coat with grease before reconnection.

2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base, and 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 (See Section 5).

   NOTE: Do not disassemble speedometer gear holder.
6. **PGM-FI engine :**
   Disconnect the lock-up control solenoid valve wire connector.
7. Disconnect the control cable at the control lever.
8. Drain transmission oil/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 cooler hoses at the joint pipes. Turn the ends up to prevent ATF from flowing out.

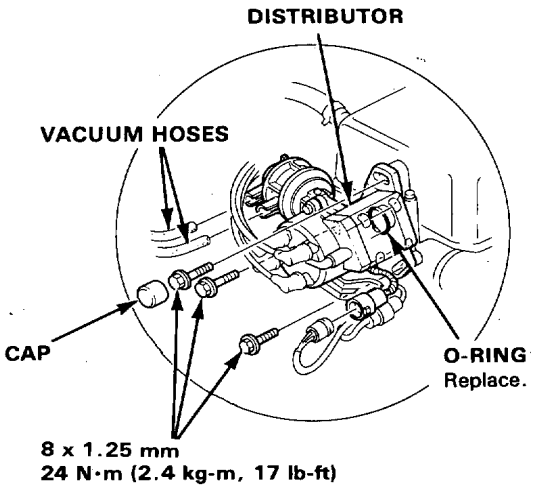
   NOTE: Check for any signs of leak at the hose joints.

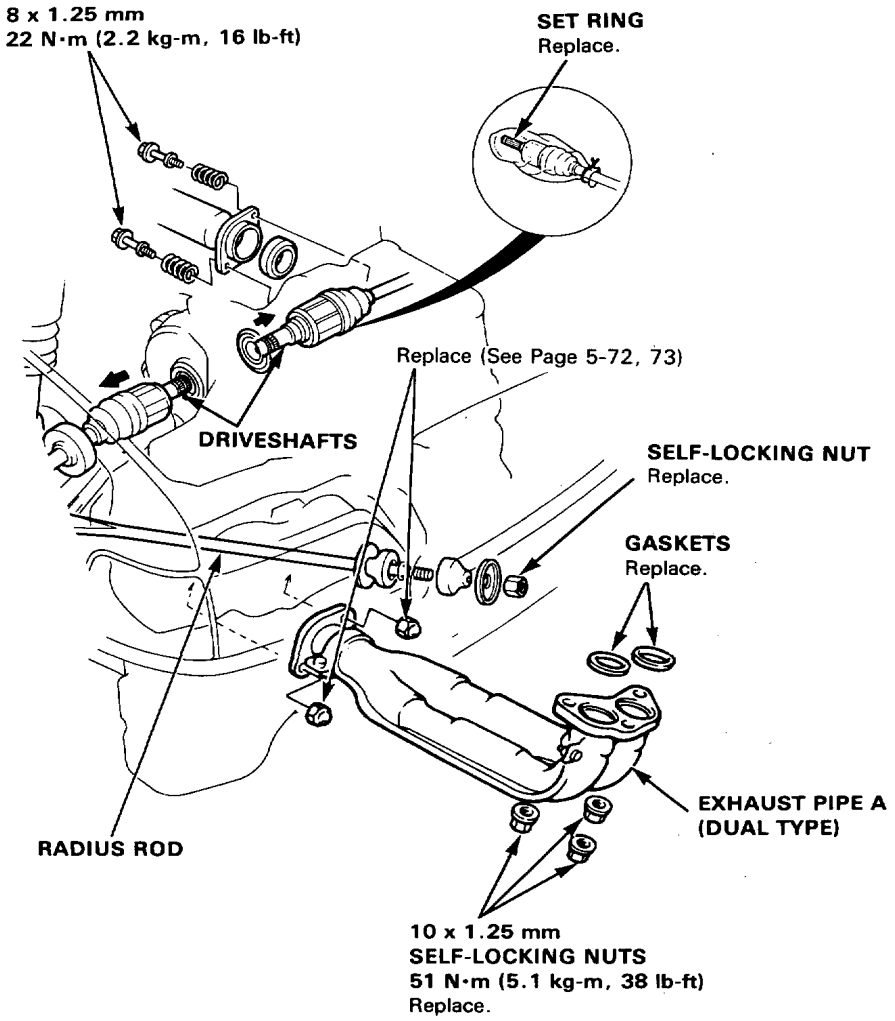


Downloaded from www.Manualslib.com manuals search engine

10. Disconnect the vacuum hoses and connectors and remove the mount bolts, then remove the distributor from the cylinder head.
    NOTE: Adjust the ignition timing on reinstallation.
11. Remove the right front splash shield.
12. Remove the exhaust pipe A.
13. Remove the cotter pin and front lower arm ball joint nut. Separate the lower arm and ball joint. (page 12-11)
14. Remove the self-locking nut and damper fork bolt. (page 12-12)
15. Remove the two bolts and front side self-locking nut, then remove the right radius rod. (page 12-8, 9)
16. Remove the right and left driveshafts (See section 10).

    NOTE: Coat all precision finished surfaces of the driveshaft with clean engine oil or grease. Tie the plastic bags over the driveshaft ends.



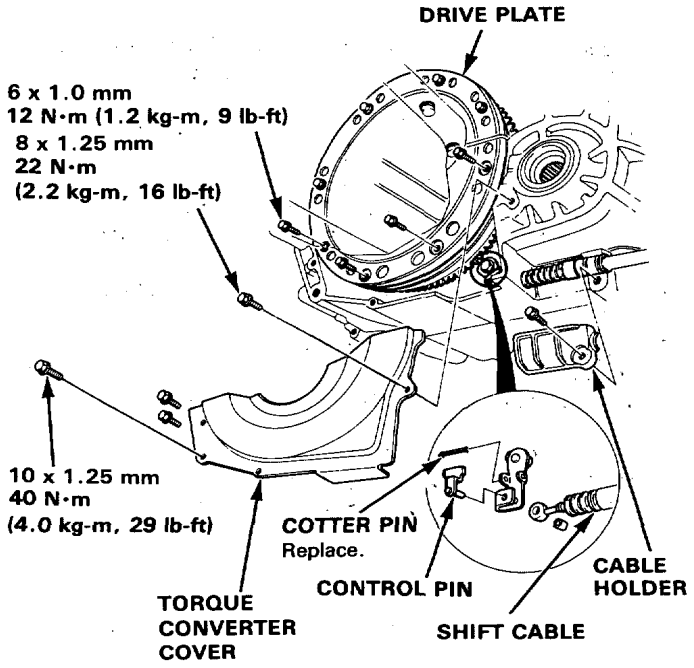


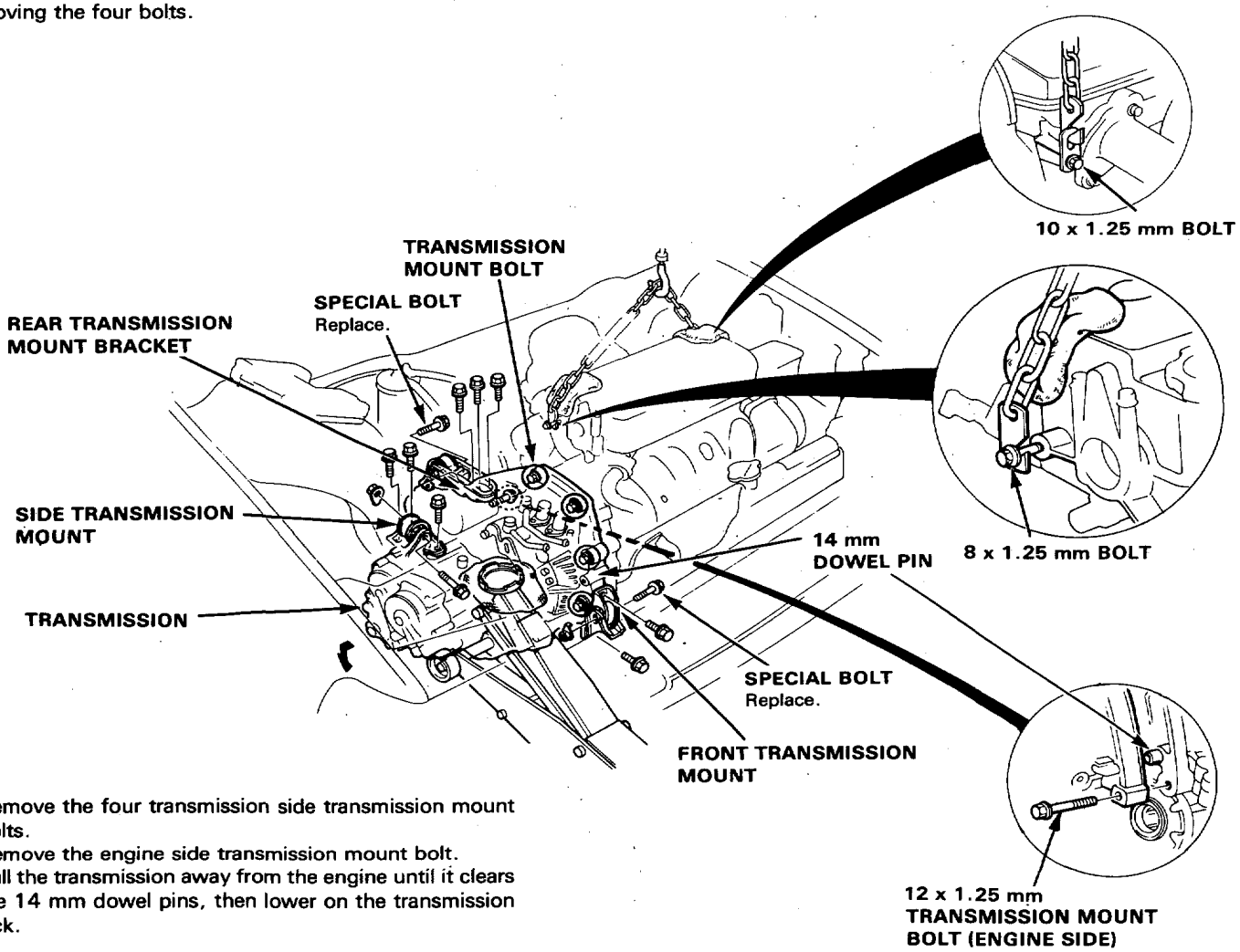
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Removal (cont'd)

17. Remove the header pipe bracket and torque converter cover.
18. Remove the cable holder.
19. Remove the shfit control cable by removing the cotter pin, control pin and control lever roller from the control lever.
20. Remove the drive plate bolts one at a time while rotating the crankshaft pulley counterclockwise.
    CAUTION: The pulley mount bolt has the right hand threads and it might come loose while rotating the pulley. Check the bolt for tightness.
21. Set the 8 mm bolt in the hole at the right side of the cylinder head and 10 mm bolt in the hole at the left side of the cylinder head. Attach the hoist chain to the bolts and lift the engine slightly to unload the mounts.
    NOTE: Be sure to set the bolts securely. Protect the cylinder head and cover with a shop towel while lifting.
22. Place a jack under the transmission and raise the transmission just enough to take weights off the mounts.
23. Remove the side transmission mount and bracket by removing the four bolts.
24. Remove the front transmission mount by removing the three bolts.
25. Remove the rear transmission mount bracket by removing the four bolts.





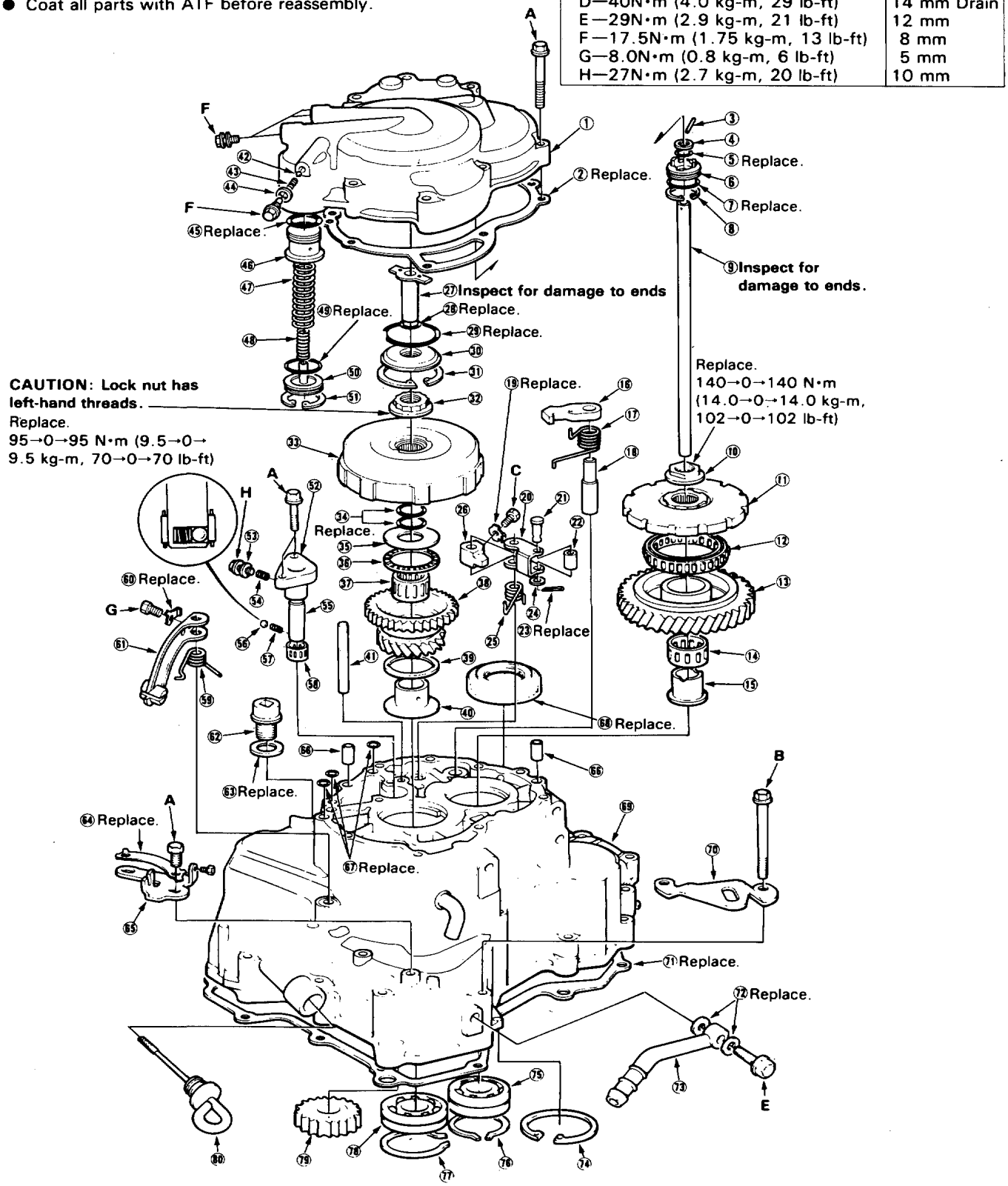
26. Remove the four transmission side transmission mount bolts.
27. Remove the engine side transmission mount bolt.
28. Pull the transmission away from the engine until it clears the 14 mm dowel pins, then lower on the transmission jack.

Downloaded from www.Manualslib.com manuals search engine

Illustrated Index

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Coat all parts with ATF before reassembly.

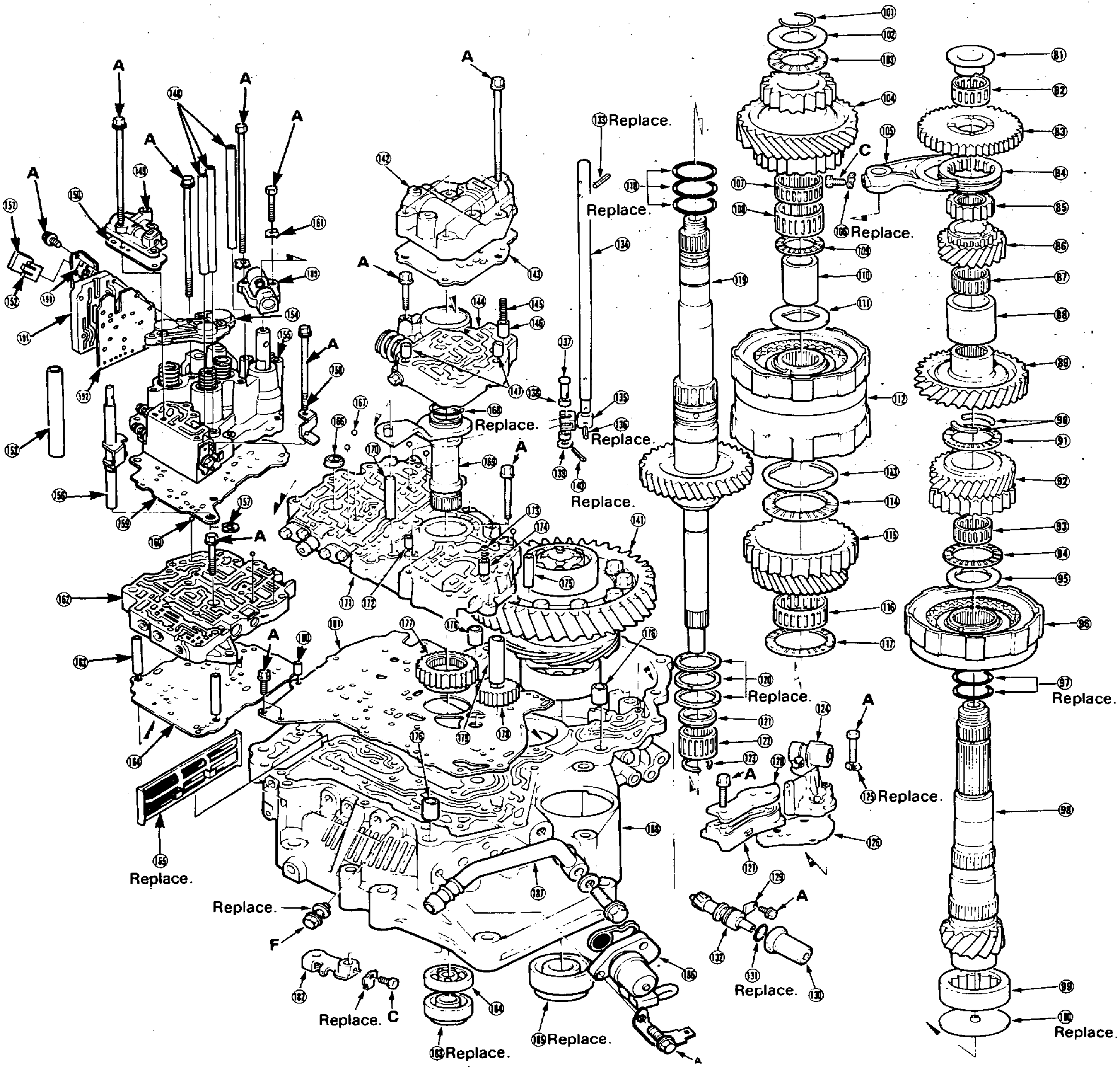
Torque Value	Bolt Size
A—12N·m (1.2 kg-m, 9 lb-ft)	6 mm
B—34N·m (3.4 kg-m, 25 lb-ft)	8 mm
C—14N·m (1.4 kg-m, 10 lb-ft)	6 mm
D—40N·m (4.0 kg-m, 29 lb-ft)	14 mm Drain
E—29N·m (2.9 kg-m, 21 lb-ft)	12 mm
F—17.5N·m (1.75 kg-m, 13 lb-ft)	8 mm
G—8.0N·m (0.8 kg-m, 6 lb-ft)	5 mm
H—27N·m (2.7 kg-m, 20 lb-ft)	10 mm



Downloaded from www.Manualslib.com manuals search engine

① END COVER
② GASKET
③ PIN 19.8 mm
④ FEED PIPE WASHER
⑤ O-RING 7.7 x 1.9 mm
⑥ FEED PIPE FLANGE
⑦ O-RING 19.8 x 1.9 mm
⑧ SNAP RING 26 mm
⑨ 3rd CLUTCH FEED PIPE
⑩ LOCKNUT 23 mm
⑪ PARKING GEAR
⑫ ONE-WAY CLUTCH
⑬ COUNTERSHAFT 1st GEAR
⑭ NEEDLE BEARING
31 x 36 x 14 mm
⑮ COLLAR
⑯ PARKING PAWL
⑰ PARKING PAWL SPRING
⑱ PARKING PAWL SHAFT
⑲ LOCK WASHER
⑳ PARKING SHIFT ARM
㉑ ROLLER PIN
㉒ PARKING BRAKE ROLLER
㉓ COTTER PIN 1.6 mm
㉔ WASHER 6 mm
㉕ PARKING BRAKE SPRING
㉖ PARKING BRAKE STOPPER
㉗ 1st CLUTCH FEED PIPE
㉘ O-RING 8.5 x 1.9 mm
㉙ O-RING 34 x 1.9 mm
㉚ FEED PIPE GUIDE A
㉛ SNAP RING 38 mm
㉜ LOCKNUT 19 mm
㉝ 1st CLUTCH ASSEMBLY
㉞ O-RINGS 18.8 x 1.9 mm
㉟ THRUST WASHER 23 mm
㊱ THRUST NEEDLE BEARING
35 x 49 x 2 mm
㊲ NEEDLE BEARING
28 x 33 x 16.8 mm
㊳ MAINSHAFT 1st GEAR
㊴ THRUST WASHER
28 x 40 x 1.5 mm
㊵ COLLAR 26 mm
㊶ STOP PIN
㊷ STEEL BALL
㊸ SPRING
㊹ SEALING WASHER
㊺ O-RING 29 x 2.4 mm
㊻ 1st ACCUMULATOR
PISTON
㊼ OUTER SPRING
㊽ INNER SPRING
㊾ O-RING 29 x 2.4 mm
㊿ 1st ACCUMULATOR COVER
(51) SNAP RING 38 mm
(52) IDLER SHAFT HOLDER
(53) WASHER
(54) IDLER SHAFT SPRING A
(55) IDLER SHAFT
(56) STEEL BALL
(57) IDLER SHAFT SPRING B
(58) NEEDLE BEARING
14 x 18 x 15 mm
(59) THROTTLE LEVER SPRING
(60) LOCK WASHER
(61) THROTTLE CONTROL LEVER
(62) DRAIN PLUG
(63) SEALING WASHER
(64) LOCK PLATE
(65) THROTTLE CABLE BRACKET
(66) DOWEL PIN 8 x 14 mm
(67) O-RING 7.7 x 2.3 mm
(68) OIL SEAL 35 x 63 x 9 mm
(69) TRANSMISSION HOUSING
(70) TRANSMISSION HOOK
(71) GASKET
(72) SEALING WASHER
(73) COOLER PIPE
(74) SNAP RING 72 mm
(75) BALL BEARING
25 x 64 x 16 mm
(76) SNAP RING 64 mm
(77) SNAP RING 70 mm
(78) BALL BEARING
26 x 70 x 17 mm
(79) REVERSE IDLER GEAR
(80) OIL LEVEL GAUGE

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

81 REVERSE GEAR COLLAR
82 NEEDLE BEARING
31 x 36 x 14 mm
83 COUNTERSHAFT REVERSE GEAR
84 REVERSE GEAR SELECTOR
85 SELECTOR HUB
86 COUNTERSHAFT 4th GEAR
87 NEEDLE BEARING
28 x 33 x 20 mm
88 DISTANCE COLLAR 28 mm
89 COUNTERSHAFT 2nd GEAR
90 COTTER WASHER
91 THRUST NEEDLE BEARING
39 x 54 x 2 mm
92 COUNTERSHAFT 3rd GEAR
93 NEEDLE BEARING
32 x 38 x 20 mm
94 THRUST NEEDLE BEARING
35 x 52 x 2 mm
95 THRUST WASHER
96 3rd CLUTCH ASSEMBLY
97 O-RING
31.2 x 1.9 mm
98 COUNTERSHAFT
99 NEEDLE BEARING
36 x 62 x 18 mm
100 OIL GUIDE PLATE
101 SNAP RING 26 mm
102 THRUST WASHER
26 x 45 x 3 mm
103 THRUST NEEDLE BEARING
32 x 44 x 2 mm
104 4th GEAR
105 REVERSE SHIFT FORK
106 LOCK WASHER
107 NEEDLE BEARING
32 x 38 x 14 mm
108 NEEDLE BEARING
32 x 38 x 20 mm
109 THRUST NEEDLE BEARING
39 x 54 x 2 mm
110 4th GEAR COLLAR
111 THRUST WASHER
26 x 53 x 4.5 mm
112 2nd/4th CLUTCH ASSEMBLY
113 THRUST WASHER 36.5 mm
114 THRUST NEEDLE BEARING
36 x 52 x 11 mm
115 2nd GEAR
116 NEEDLE BEARING
36 x 41 x 14.8 mm
117 THRUST NEEDLE BEARING
42 x 58 x 2 mm
118 O-RING 31.2 x 1.9 mm
119 MAINSHAFT
120 SEALING RING 32 mm
121 DISTANCE COLLAR 20 mm
122 NEEDLE BEARING
20 x 26 x 20 mm
123 SNAP RING 20 mm
124 GOVERNOR
125 LOCK WASHER ASSEMBLY
126 SEPARATOR PLATE
127 BY-PASS BODY
128 BY-PASS BODY COVER
129 LOCK PLATE
130 BOOT
131 O-RING
132 SPEED SENSOR ASSEMBLY
133 PIN
134 CONTROL SHAFT
135 SHIFT LEVER
136 PIN
137 MANUAL VALVE PIN
138 ROLLERS
139 WASHER
140 PIN
141 DIFFERENTIAL ASSEMBLY
142 LOCK-UP VALVE ASSEMBLY
143 LOCK-UP SEPARATOR PLATE
144 REGULATOR VALVE ASSEMBLY
145 SPRING
146 TORQUE CONVERTER CHECK VALVE
147 DOWEL PIN
148 CLUTCH PIPE
149 MODULATOR VALVE ASSEMBLY
150 MODULATOR SEPARATOR PLATE
151 MAGNET
152 MAGNET HOLDER
153 SUCTION PIPE
154 ACCUMULATOR COVER
155 SERVO VALVE BODY ASSEMBLY
156 THROTTLE CONTROL SHAFT
157 E-CLIP Replace
158 LOCK PLATE
159 SERVO SEPARATOR PLATE
160 STEEL BALL
161 LOCK WASHER Replace
162 SECONDARY VALVE BODY ASSEMBLY
163 DOWEL PIN
164 SECONDARY SEPARATOR PLATE
165 FILTER SCREEN
166 FILTER
167 STEEL BALL
168 O-RING 27.5 x 1.7 mm
169 STATOR SHAFT
170 STOP PIN
171 MAIN VALVE BODY ASSEMBLY
172 DOWEL PIN
173 CHECK VALVE SPRING
174 CHECK VALVE
175 SUCTION PIPE
176 DOWEL PIN
177 OIL PUMP DRIVE GEAR
178 OIL PUMP DRIVEN GEAR
179 OIL PUMP SHAFT
180 DOWEL PIN 8 x 14 mm
181 MAIN VALVE SEPARATOR PLATE
182 CONTROL LEVER
183 OIL SEAL 44 x 68 x 8 mm
184 BALL BEARING
185 OIL SEAL 35 x 56 x 8 mm
186 LOCK-UP CONTROL SOLENOID VALVE
187 COOLER PIPE
PGM-FI engine only
188 TORQUE CONVERTER HOUSING
189 SERVO VALVE HOLDER
190 MAGNET COVER
191 SERVO COVER
192 SERVO COVER SEPARATOR PLATE

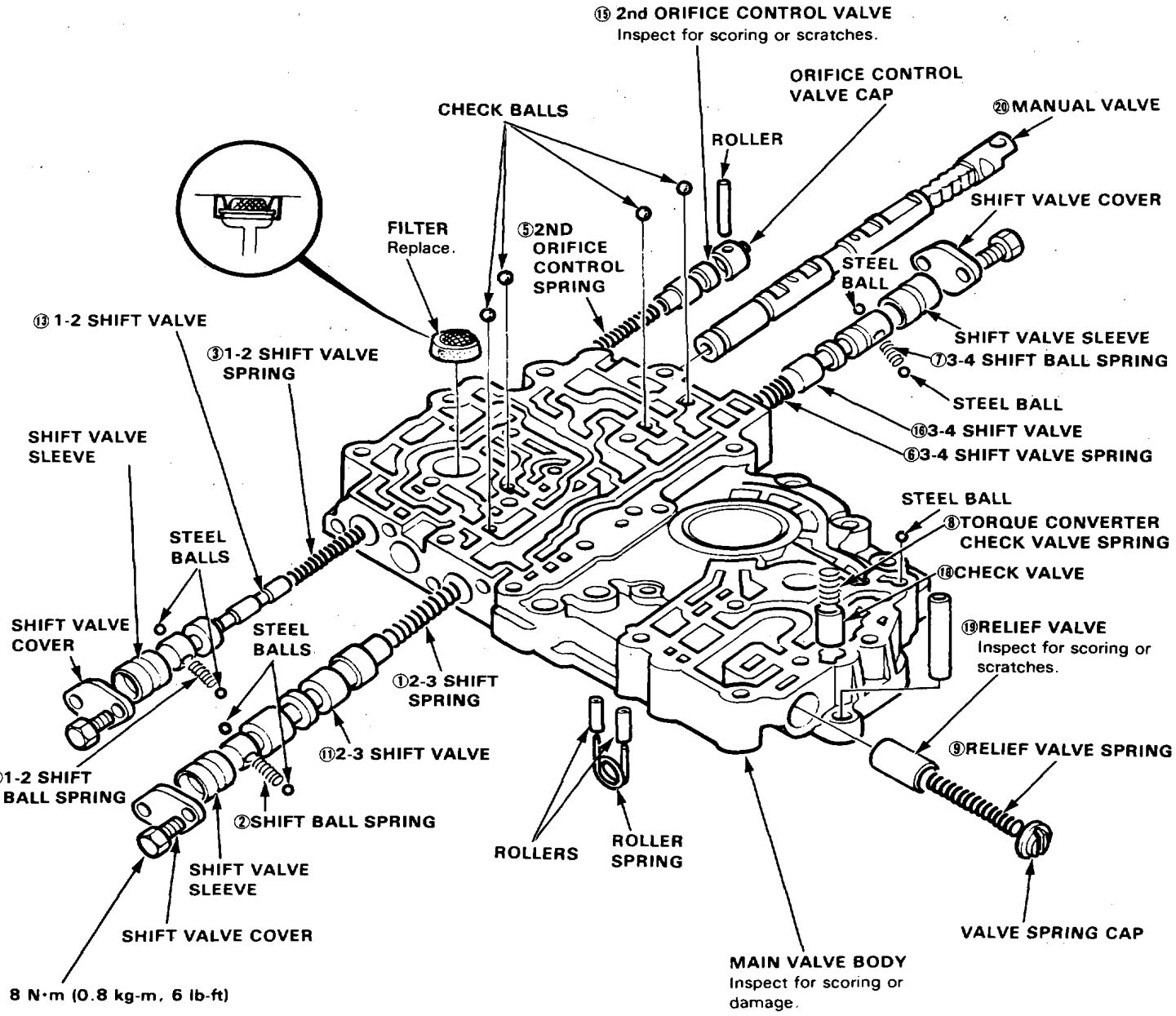
Downloaded from www.Manualslib.com manuals search engine

Main Valve Body

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.



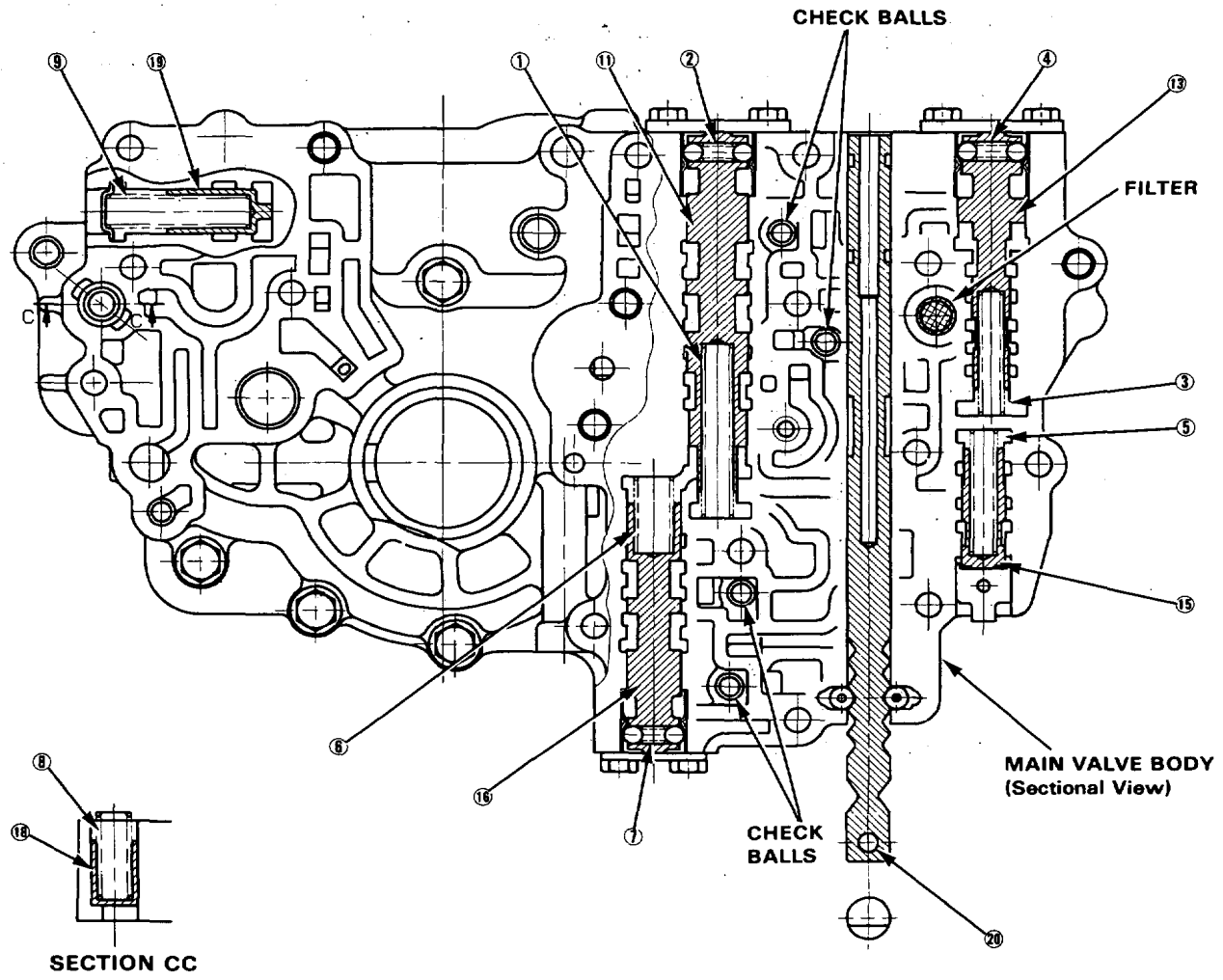
Downloaded from www.Manualslib.com manuals search engine

Spring Specifications

Unit of length: mm (in)

No.	Spring		Standard (New)			
			Wire Dia	O. D.	Free Length	No. of Coils
①	2-3 shift spring		0.7 (0.028)	7.6 (0.299)	43.0 (1.693)	12.7
②	2-3 Shift ball spring	Carburetor	0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
		DOHC	0.45 (0.018)	4.5 (0.177)	13.3 (0.524)	8
③	1-2 shift spring	Carburetor	0.5 (0.020)	4.5 (0.177)	46.8 (1.843)	35.1
		DOHC	0.5 (0.020)	4.4 (0.173)	48.5 (1.909)	35.1
④	1-2 shift ball spring	1.6 ℓ Carburetor	0.4 (0.016)	4.5 (0.177)	11.3 (0.445)	8
		1.4 ℓ and DOHC	0.45 (0.018)	4.5 (0.177)	12.7 (0.500)	11
⑤	2nd orifice control spring		0.8 (0.031)	6.6 (0.260)	46.3 (1.823)	27.6
⑥	3-4 shift spring	Carburetor	0.7 (0.028)	9.6 (0.378)	32.9 (1.295)	6.4
		DOHC	0.8 (0.031)	9.6 (0.378)	33.9 (1.335)	11.3
⑦	3-4 shift ball spring	Carburetor	0.45 (0.018)	4.5 (0.177)	12.0 (0.472)	6.7
		DOHC	0.5 (0.020)	4.5 (0.177)	10.8 (0.25)	7.4
⑧	Torgue converter check spring		1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12
⑨	Relief valve spring		1.0 (0.039)	8.4 (0.331)	52.0 (2.047)	23

Sectional View



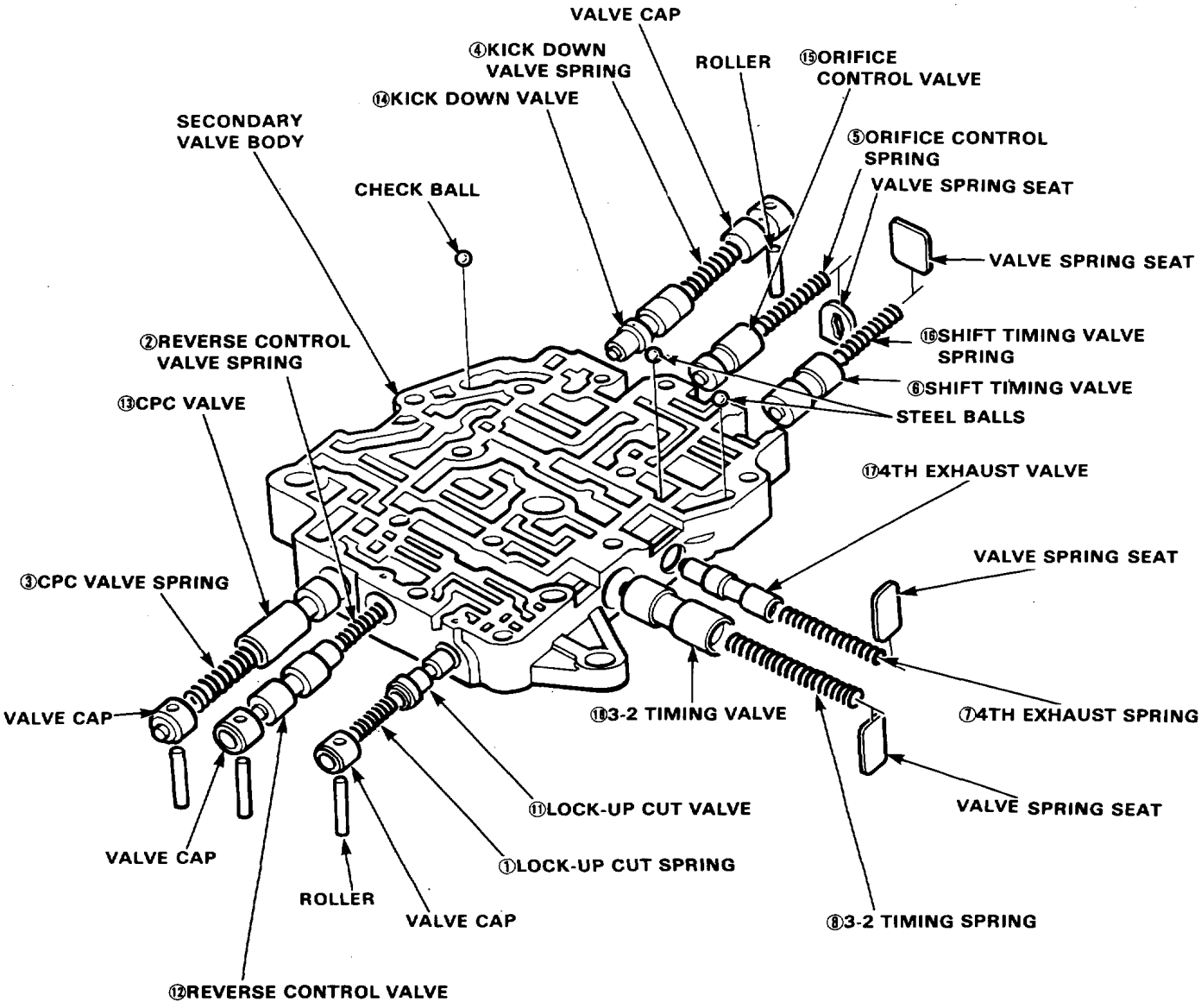
Downloaded from www.Manualslib.com manuals search engine

Secondary Valve

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.
- Replace as an assembly if any parts are worn or damaged.

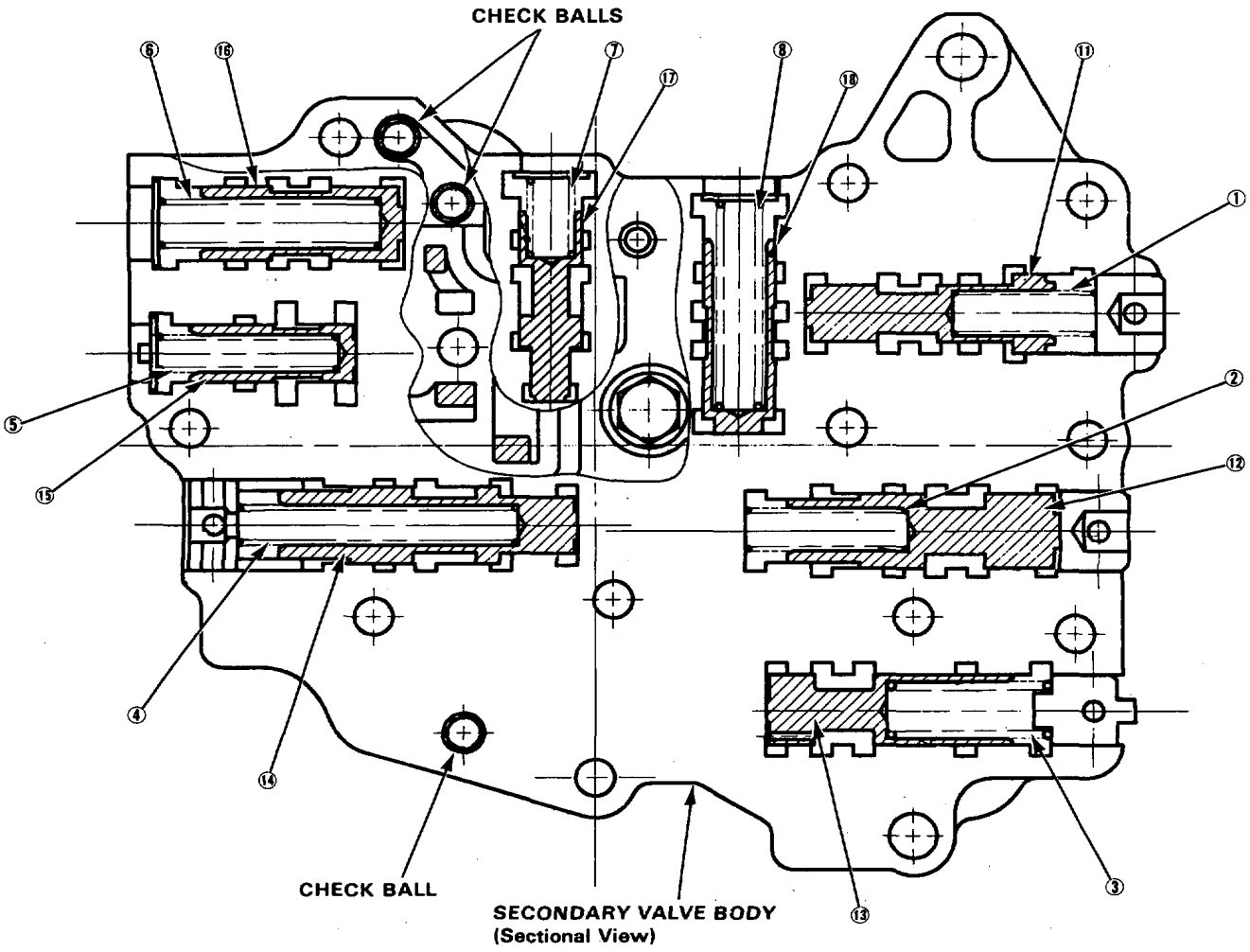


Downloaded from www.Manualslib.com manuals search engine

Spring Specifications

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Lock-up cut spring	0.7(0.028)	7.6(0.299)	29.0(1.142)	18
②	Reverse control spring	0.7(0.028)	7.6(0.299)	37.2(1.465)	15.3
③	CPC valve spring	1.4(0.055)	9.4(0.370)	31.6(1.244)	10.9
④	Kick down valve spring	0.9(0.035)	10.1(0.398)	40.8(1.606)	14.5
⑤	Orifice control spring	0.9(0.035)	6.1(0.240)	35.9(1.413)	20
⑥	Shift timing spring	0.9(0.035)	8.6(0.339)	42.9(1.689)	21.4
⑦	4th exhaust spring	0.9(0.035)	6.1(0.240)	43.7(1.720)	20.3
⑧	3-2 timing spring	1.2(0.047)	7.7(0.303)	45.1(1.776)	19.8

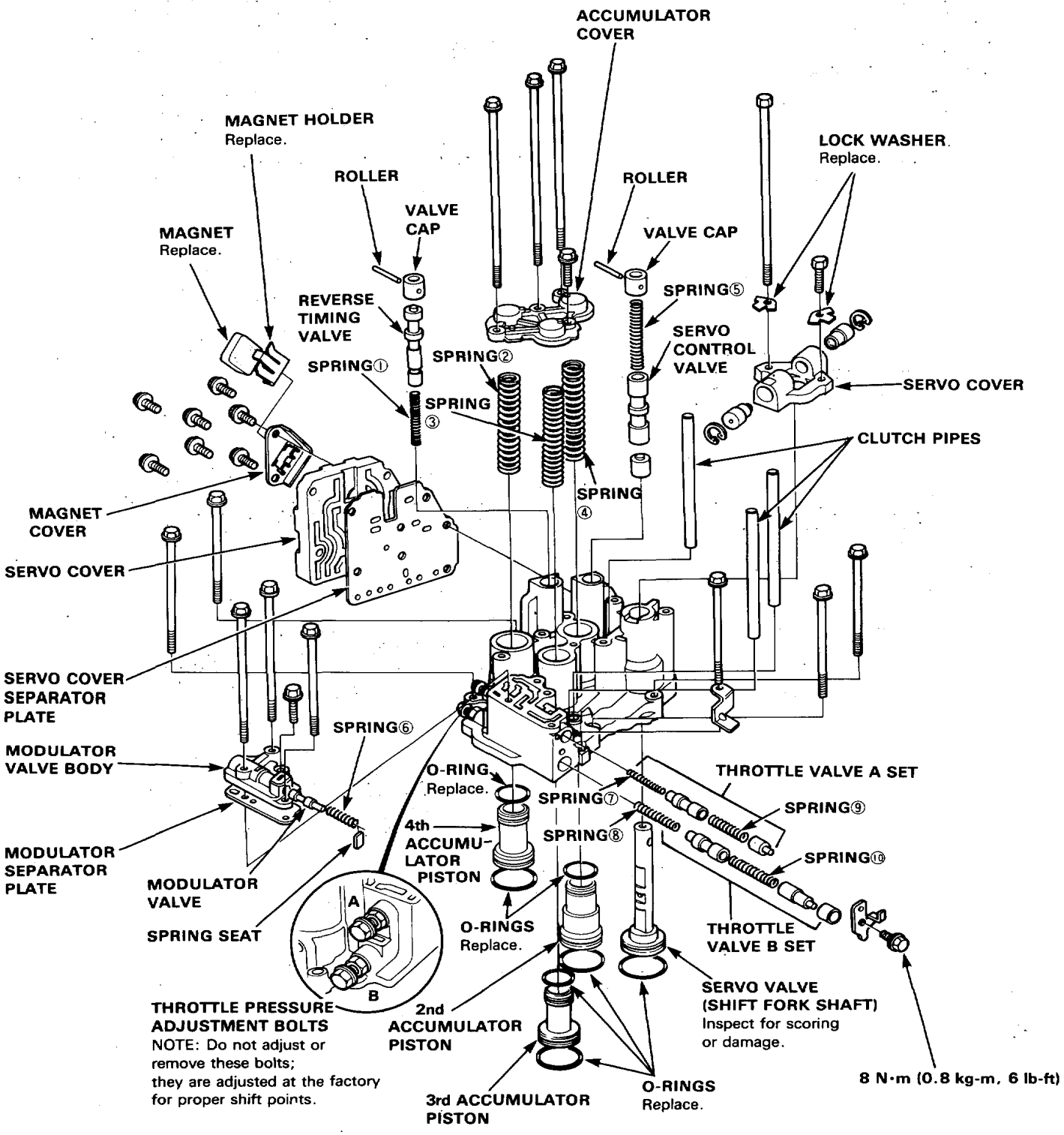


Downloaded from www.Manualslib.com manuals search engine

Servo Valve Body

Disassembly/Inspection/Reassembly

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.



*All Bolts Torque: 12 N·m (1.2 kg-m, 9 lb-ft)

Downloaded from www.Manualslib.com manuals search engine

Spring Specifications

Unit of length mm (in.)

No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	Reverse timing spring		0.7(0.028)	5.6(0.220)	43.8(1.724)	21.7
②	4th accumulator spring		3.2(0.126)	18.6(0.732)	78.3(3.083)	10
③	3rd accumulator spring		2.7(0.106)	15.5(0.610)	80.0(3.150)	14.8
④	2nd accumulator spring		3.5(0.138)	20.2(0.795)	76.7(3.020)	9.6
⑤	Servo control spring		1.0(0.039)	7.6(0.299)	44.0(1.732)	18.2
⑥	Modulator spring	Carburetor	1.2(0.047)	9.4(0.370)	{27.2(1.071) / 26.3(1.035)}	8
		PGM-FI	1.2(0.047)	9.4(0.370)	{26.3(1.035) / 26.4(1.039)}	8
⑦	Throttle A adjusting spring		0.8(0.031)	6.2(0.244)	27.0(1.063)	8.5
⑧	Throttle B adjusting spring		0.8(0.031)	6.2(0.244)	30.0(1.181)	8
⑨	Throttle A spring		1.0(0.039)	8.5(0.335)	22.2(0.874)	6
⑩	Throttle B spring		1.0(0.039)	8.5(0.335)	22.1(0.870)	5.5
		Except 1.4 ℓ	1.6(0.063)	8.5(0.335)	41.3(1.626)	13.9
		1.4 ℓ	1.4(0.055)	8.5(0.335)	41.4(1.630)	8.4

Downloaded from www.Manualslib.com manuals search engine

Regulator Valve Body

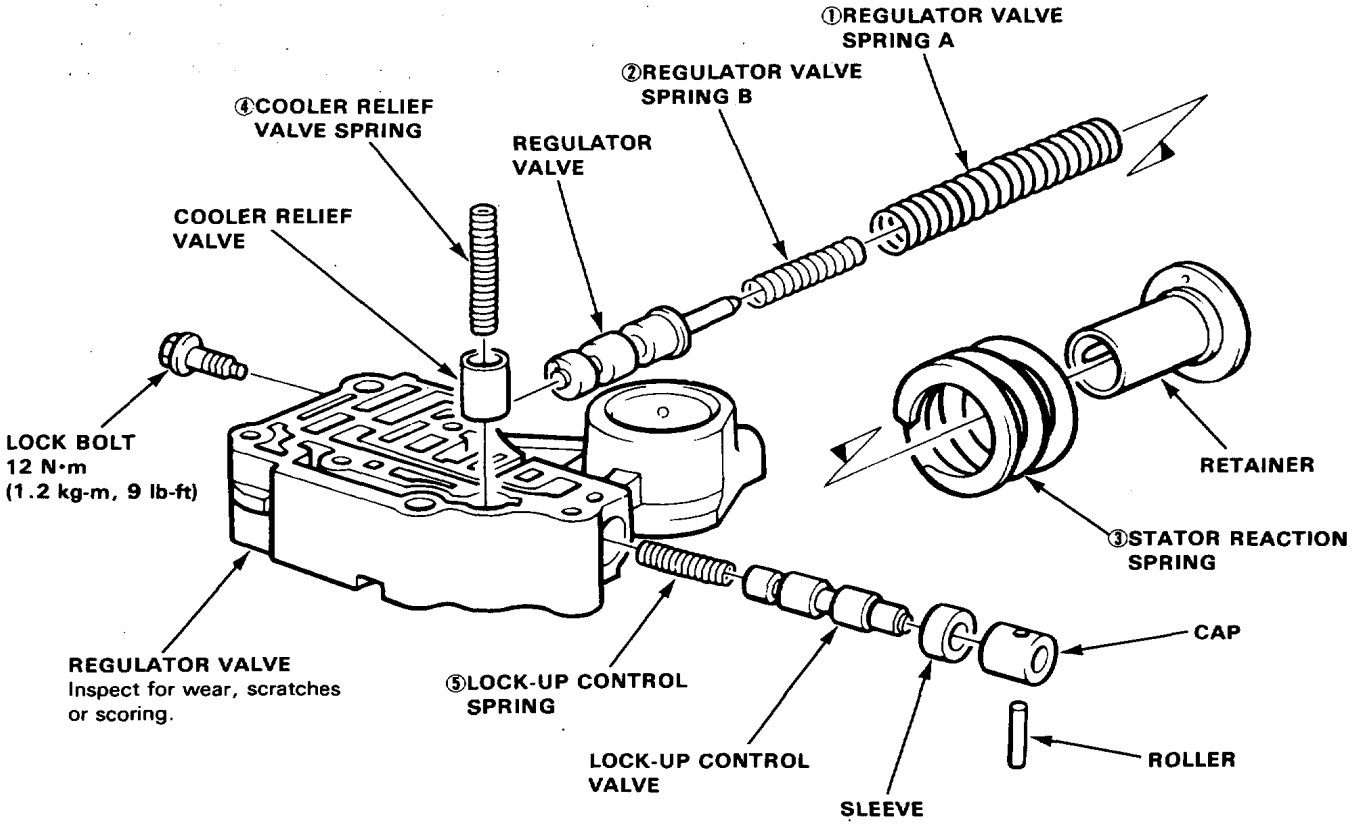
Disassembly/Inspection/Reassembly

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement; if any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.

1. Hold the retainer in place while removing the lock bolt. Once the bolt is removed, release the retainer slowly.

2. Reassembly is in the reverse order of disassembly.
NOTE: Align the hole in the retainer with the hole in the valve body, then press the retainer into the valve body and tighten the lock bolt.

PGM-FI engine:



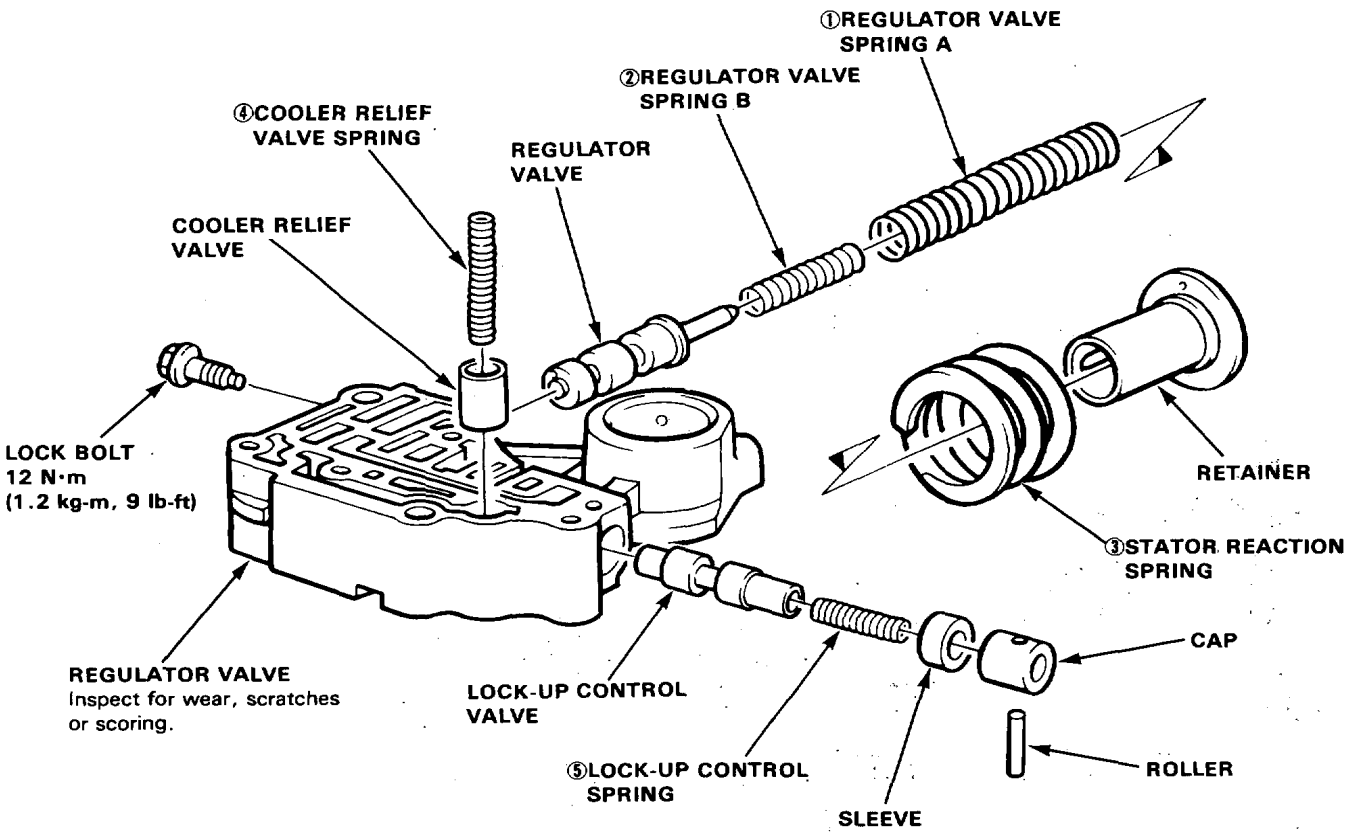
Spring Specifications

Unit of length mm (in.)

No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A		1.58 x 2.00 (0.062 x 0.079)	14.7(0.579)	86.5(3.406)	20.9
②	Regulator valve spring B		1.8(0.071)	9.6(0.378)	44.0(1.732)	7.5
③	Stator reaction spring		6.0(0.236)	38.4(1.512)	30.3(1.193)	2
④	Cooler relief valve spring		1.1(0.043)	8.4(0.331)	36.4(1.433)	12
⑤	Lock-up control spring	DOHC	0.7(0.028)	6.6(0.260)	35.3(1.390)	15.8
		1.5ℓ, 1.6ℓ	0.7(0.028)	6.6(0.260)	33.8(1.331)	15.8

Downloaded from www.Manualslib.com manuals search engine

Carburetor engine:



Spring Specifications

Unit of length mm (in.)

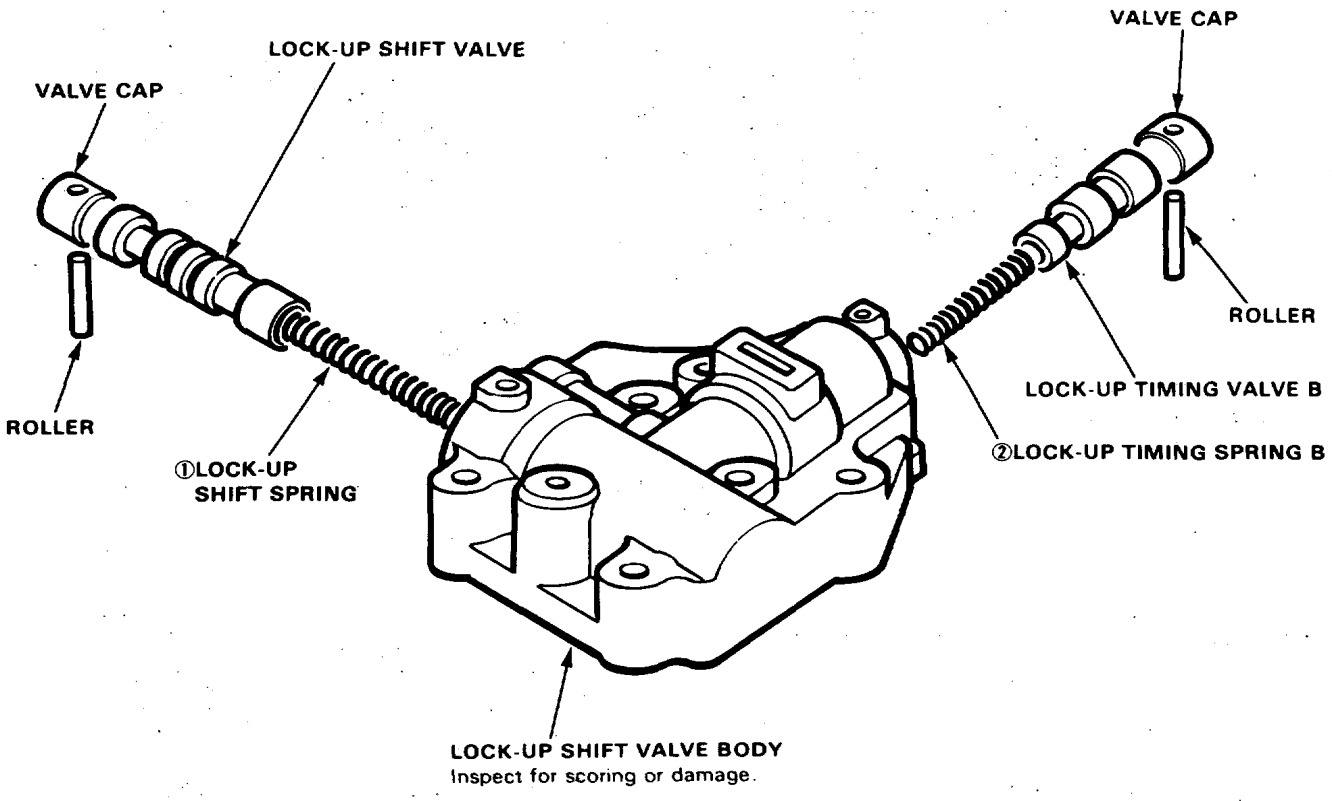
No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A	1.58 x 2.00 (0.062 x 0.079)	14.7(0.579)	86.5(3.406)	20.9
②	Regulator valve spring B	1.8(0.071)	9.6(0.378)	44.0(1.732)	7.5
③	Stator reaction spring	6.0(0.236)	38.4(1.512)	30.3(1.193)	2
④	Cooler relief valve spring	1.1(0.043)	8.4(0.331)	36.4(1.433)	12
⑤	Lock-up control spring	0.7(0.028)	6.6(0.260)	32.5(1.280)	14

Downloaded from www.Manualslib.com manuals search engine

Lock-Up Shift Valve Body

Disassembly/Inspection

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement; if any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.



Spring Specifications

Unit of length mm (in.)

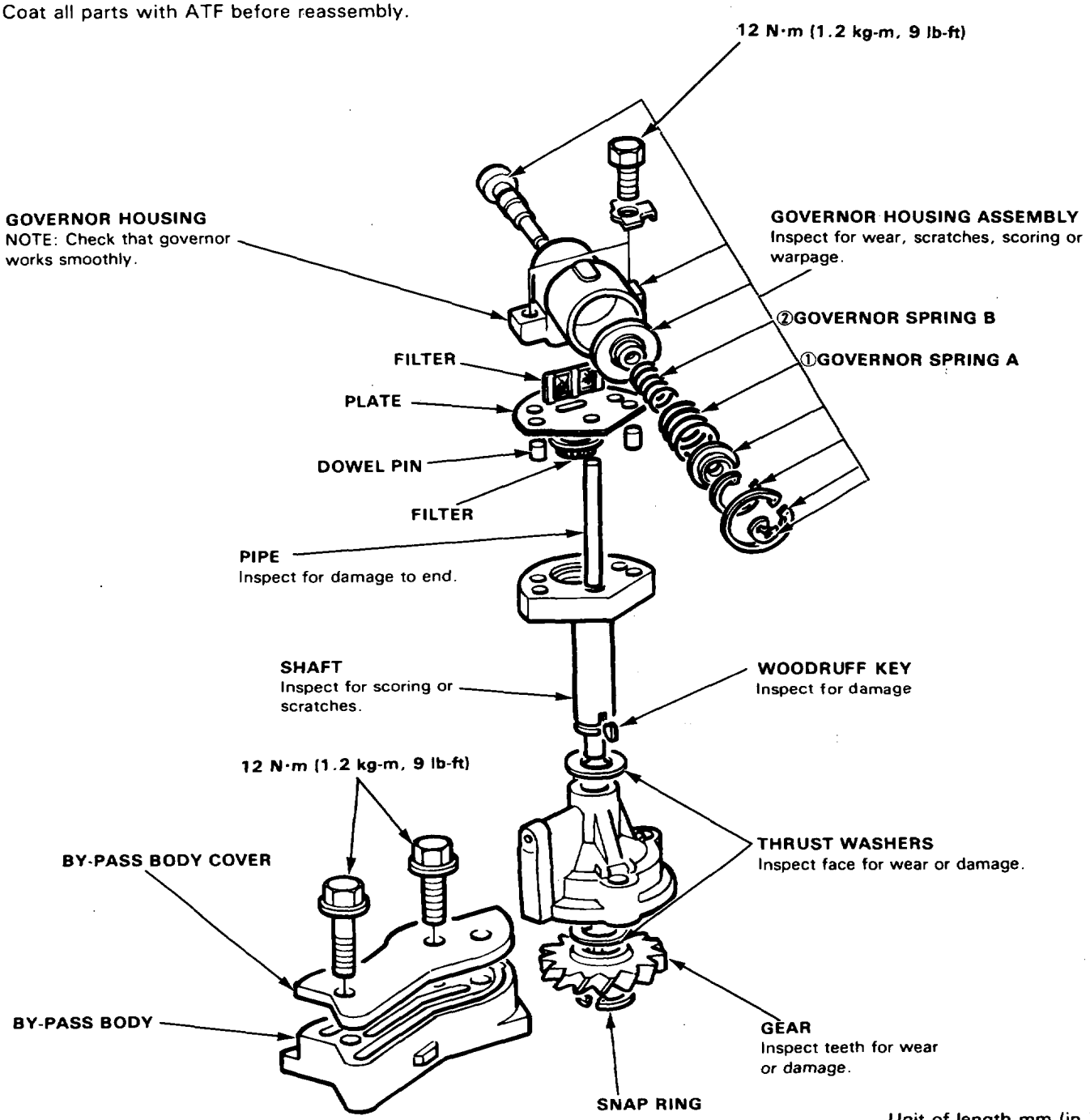
No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	Lock-up shift spring	1.4 ℓ	0.7(0.028)	8.1(0.319)	39.0(1.535)	15.4
		1.6 ℓ Carburetor	0.9(0.035)	8.1(0.319)	44.5(1.752)	18.3
		PGM-FI	1.1(0.043)	8.1(0.319)	51.8(2.039)	22.3
②	Lock-up timing spring B	1.4 ℓ	1.0(0.039)	6.6(0.260)	52.3(2.059)	30.1
		1.5 ℓ, 1.6 ℓ	1.0(0.039)	6.6(0.260)	55.6(2.189)	30

Downloaded from www.Manualslib.com manuals search engine

Governor Valve

Disassembly/Inspection/Reassembly

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check that the governor works smoothly; replace it if it does not.
- Coat all parts with ATF before reassembly.



Spring Specifications

Unit of length mm (in.)

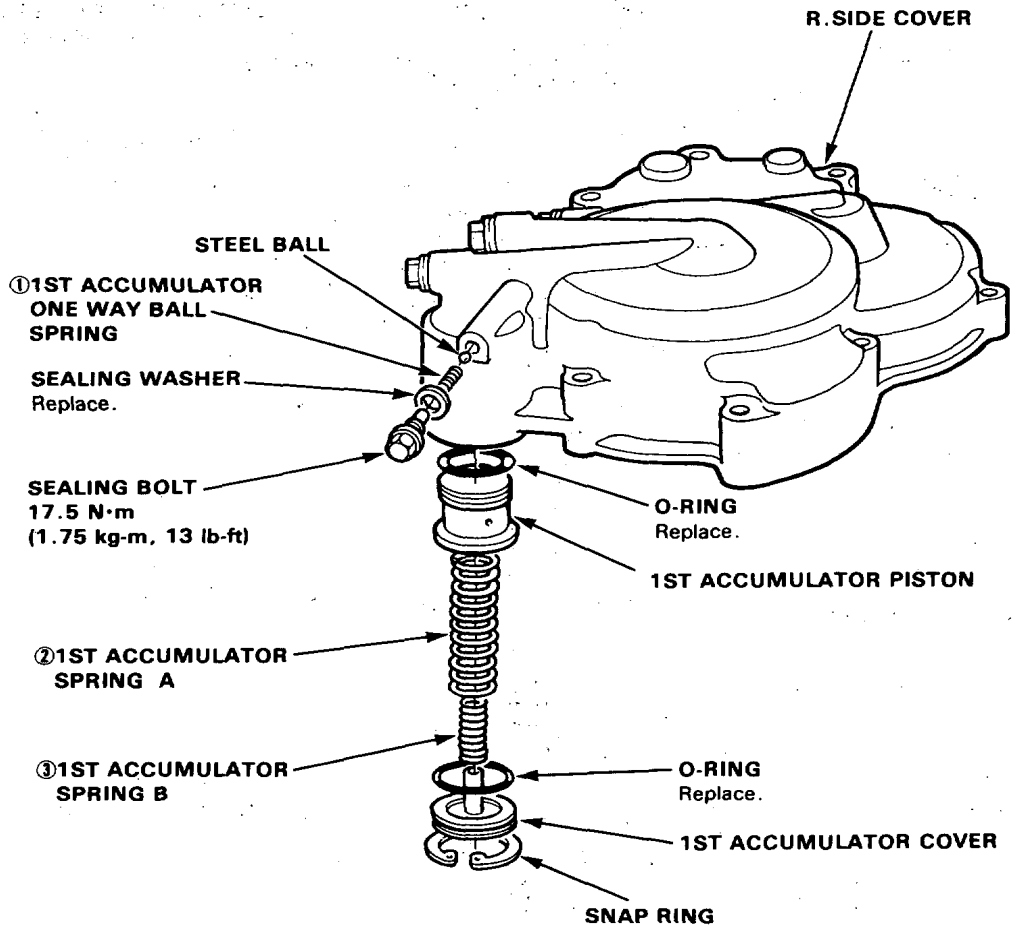
No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	Governor spring A	1.4 ℓ	1.0(0.039)	18.8(0.740)	20.4(0.803)	4
		1.5 ℓ, 1.6 ℓ	1.0(0.039)	18.8(0.740)	38.1(1.500)	4
②	Governor spring B	1.4 ℓ	0.9(0.035)	11.8(0.465)	26.7(1.051)	6
		1.5 ℓ, 1.6 ℓ	0.9(0.035)	11.8(0.465)	27.8(1.094)	6

Downloaded from www.Manualslib.com manuals search engine

1st Accumulator

Disassembly/Inspection/Reassembly

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Coat all parts with ATF before reassembly.



Unit of length mm (in.)

Spring Specifications

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	1st accumulator one way ball spring	0.29(0.011)	4.0(0.157)	14.0(0.551)	13
②	1st accumulator spring A	2.34 x 2.90 (0.092 x 0.114)	21.5(0.846)	66.7(2.626)	10.2
③	1st accumulator spring B	2.8(0.110)	13.1(0.516)	40.0(1.575)	8.8

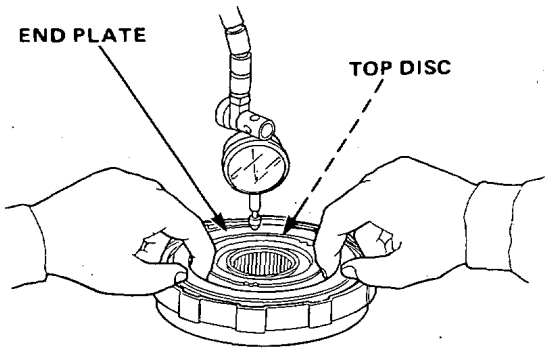
Downloaded from www.Manualslib.com manuals search engine

Reassembly

1. *Measure the clearance between the clutch end plate* and top disc with a dial indicator.
   Zero the dial indicator with the clutch end plate lowered and lift it up to the snap ring. Distance where the clutch end plate moves is the clearance between the clutch end plate and top disc.
   NOTE: Measure at three locations.

End Plate-to-Top Disc Clearance:

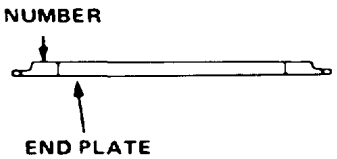
	Service Limit	
1ST	0.65—0.85 mm	(0.026—0.033 in.)
2ND	0.65—0.85 mm	(0.026—0.033 in.)
3RD	0.40—0.60 mm	(0.016—0.024 in.)
4TH	0.40—0.60 mm	(0.016—0.024 in.)



2. If the clearance is not within the service limits, select a new clutch end plate from the following table.

   NOTE: If the thickest clutch and plate is installed but the clearance is still over the standard, replace the clutch discs and clutch plates.

P/N	PLATE NO.	THICKNESS
1	22551—PC9—000	2.4 mm (0.094 in.)
2	22552—PC9—000	2.5 mm (0.098 in.)
3	22553—PC9—000	2.6 mm (0.102 in.)
4	22554—PC9—000	2.7 mm (0.106 in.)
5	22555—PC9—000	2.8 mm (0.110 in.)
6	22556—PC9—000	2.9 mm (0.114 in.)
7	22557—PC9—000	3.0 mm (0.118 in.)
8	22558—PC9—000	3.1 mm (0.122 in.)
9	22559—PC9—000	3.2 mm (0.126 in.)
10	22560—PC9—000	3.3 mm (0.130 in.)
11	22561—PC9—000	2.1 mm (0.082 in.)
12	22562—PC9—000	2.2 mm (0.086 in.)
13	22563—PC9—000	2.3 mm (0.090 in.)



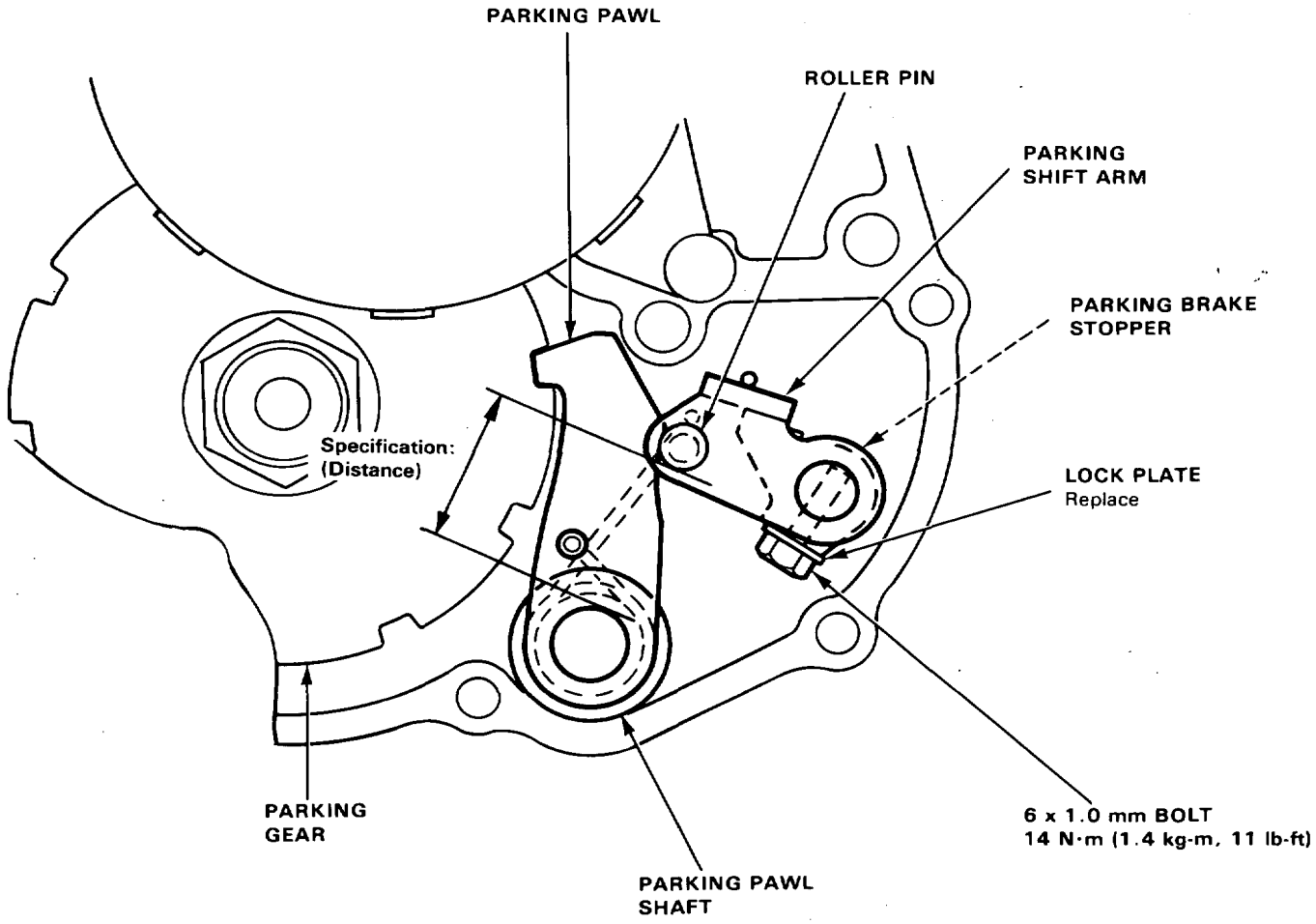
Downloaded from www.Manualslib.com manuals search engine

Parking Brake Stopper

Inspection/Adjustment

1. Set the parking shift arm in PARKING position.
2. Measure the distance between the outer face of the parking pawl shaft and outer face of the parking shift arm roller pin.

SPECIFICATION (distance): 28.7–29.7 mm (1.130–1.169 in.)



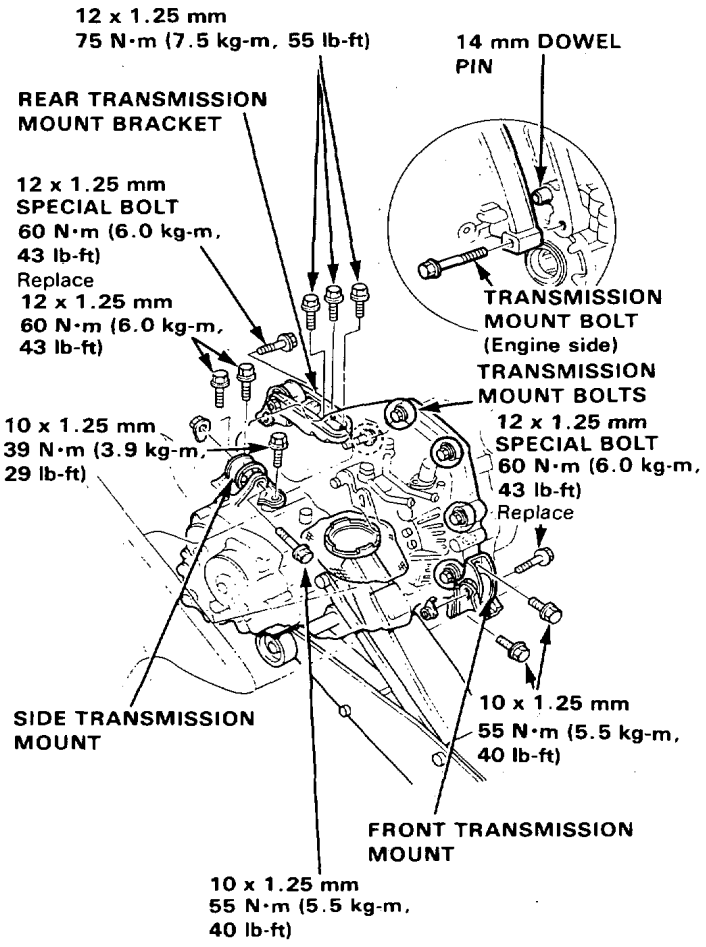
3. If the measurement is out of the specification (distance), select the appropriate parking stopper using the table below, and install it on the parking shift arm.

No.	PART NUMBER
1	24537–PA9–003
2	24538–PA9–003
3	24539–PA9–003

Downloaded from www.Manualslib.com manuals search engine

Installation

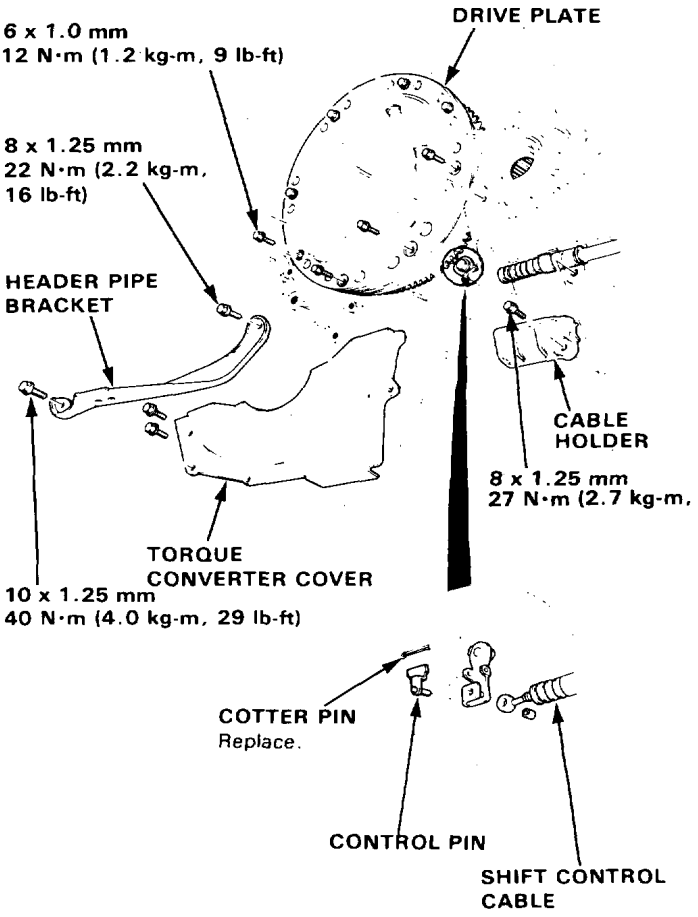
1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the torque converter housing.
3. Loosely install the 4 transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the 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 the front and side transmission mounts.



7. Remove the transmission jack.
8. Remove the chain hoist by removing the hanger plates and bolts.
9. Attach the torque converter to the drive plate with eight (6 x 1.0 x 12 mm) bolts, and torque to 12 N·m (1.2 kg-m, 9 lb-ft). Rotate the crank as necessary to tighten bolts to 1/2 torque, then final torque, in a criss-cross pattern. Check for free rotation after tightening the last bolt.

   CAUTION: The pulley mount bolt has the right hand threads and it might come loose while rotating the pulley. Check the bolt for tightness.

10. Intall the shift control cable and cable holder.



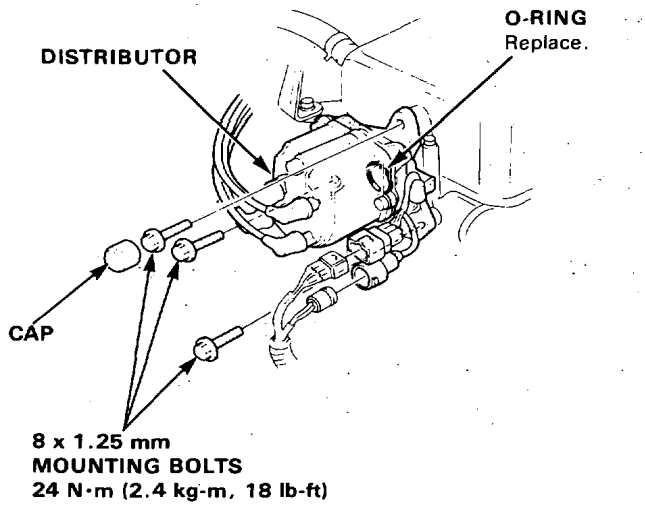
11. Install the torque converter cover and header pipe bracket.

(cont'd)

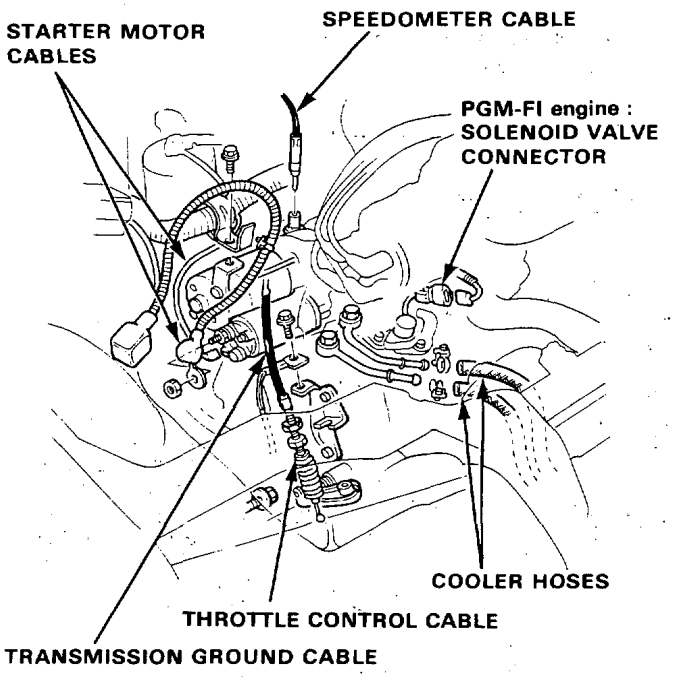
Downloaded from www.Manualslib.com manuals search engine

Installation (cont'd)

12. Install a new set ring on the end of each driveshaft.
13. Install the right and left driveshafts (See Section 10). NOTE: Turn the right and left steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage the side gear.
14. Install the damper swivel bolt and radius rod. (page 12 -8, 9, 12)
15. Install the ball joints to the front lower arm. (page 12-12)
16. Install the splash shields and exhaust pipe A. (page 5-66)
17. Install the distributor and ignition timing inspection (See Section 16 Ignition Timing Control)



18. **PGM-FI engine :**
Connect the lockup control solenoid valve wire connector.
19. Connect the cooler hoses to the joint pipes.
20. Connect the throttle control cable to the control lever.
21. Connect the speedometer cable.
22. Install the 3 bolts located at the side of the battery base, and retighten the intake hose band of the throttle body.



23. Refill the transmission with ATF.
24. Connect the starter motor and transmission ground cables.
25. Connect the battery positive (+) and negative (−) cables to the battery.
26. Install the air cleaner case and intake hose.
27. Start the engine, set the parking brake, and shift the transmission through all gears three times. Check for proper control cable adjustment.
28. Check the ignition timing (See Section 16).
29. Let the engine reach operating temperature with the transmission in Neutral or Park, then turn it off and check the fluid level.
30. Road test as described on pages 9-8, 9 and 9-46, 47.

Downloaded from www.Manualslib.com manuals search engine

Shift Cable

Removal/Installation

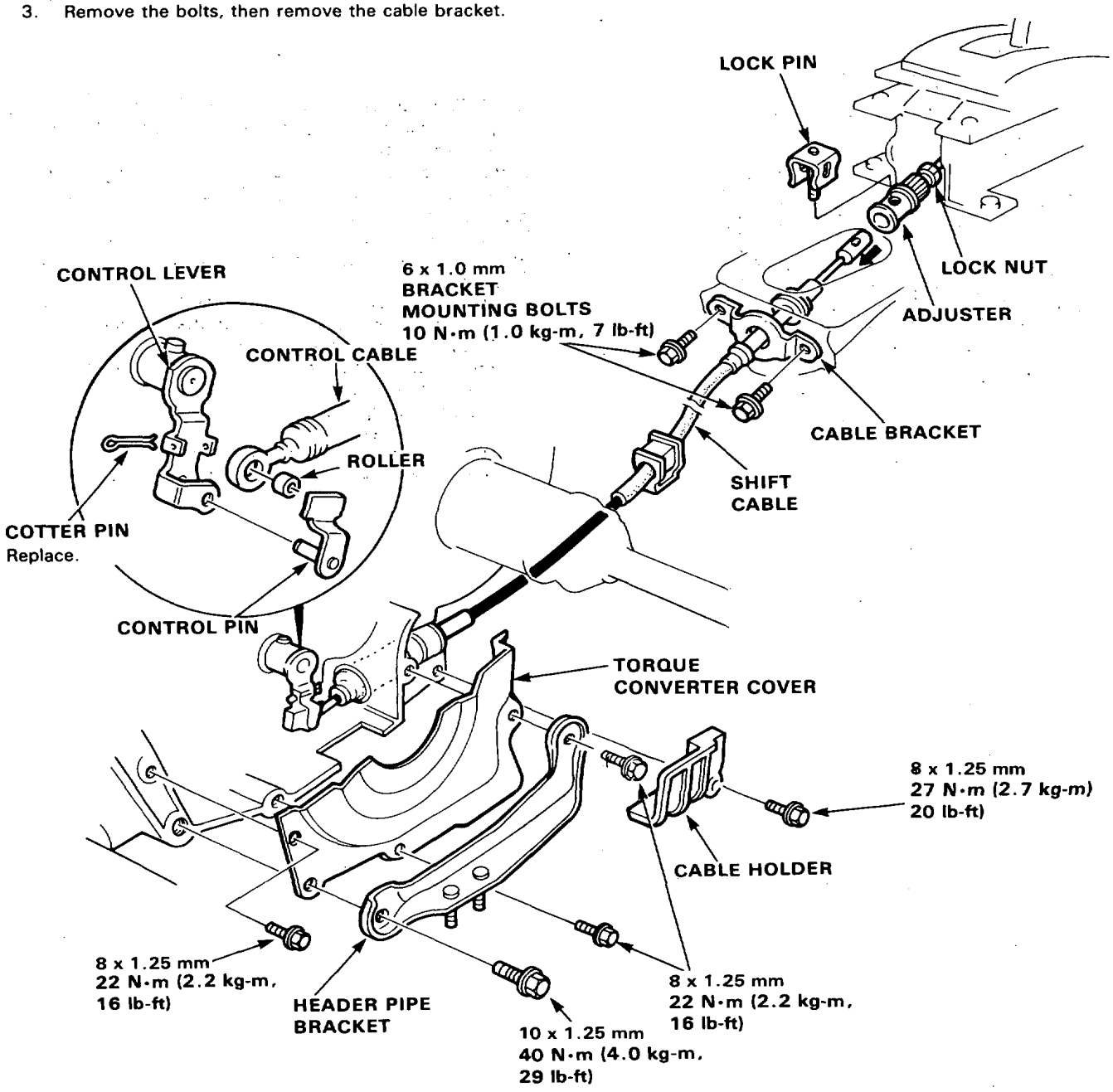
⚠ WARNING

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

1. Remove the header pipe, header pipe bracket, torque converter cover and cable holder.
2. Remove the shift cable by removing the cotter pin, control pin and control lever roller from the control lever.
3. Remove the bolts, then remove the cable bracket.
4. Remove the front console.
5. Remove the lock pin from the cable adjuster, then remove the shift cable.

   CAUTION: Take care not to bend the cable when removing it.

6. Install the shift cable in the reverse order of removal. NOTE: On reassembly, check the cable adjustment (page 9-42).

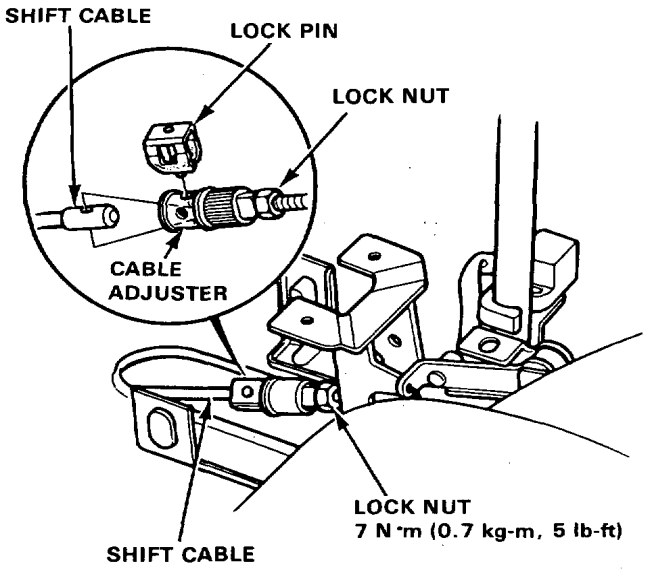


Downloaded from www.Manualslib.com manuals search engine

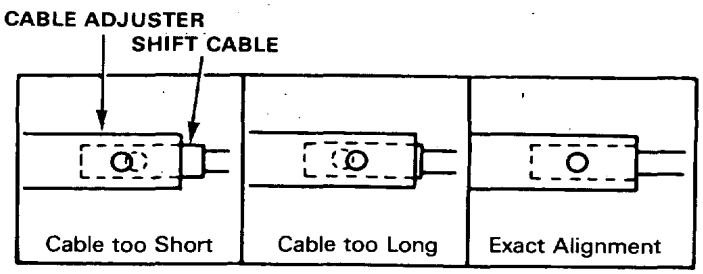
Shift Cable

Adjustment

1. Start the engine. Shift to reverse to see if the reverse gear engages.
   If it does not engage, refer to the Troubleshooting on pages 9-4 and 9-5 and check for its cause.
2. Stop the engine and remove the center console.
3. Shift to neutral and remove the lock pin from the cable adjuster.



4. Check that the hole in the adjuster is perfectly aligned with the hole in the shift cable.



NOTE: There are two holes in the end of the shift cable. They are positioned 90° apart to allow cable adjustments in 1/4 turn increments.

5. If not perfectly aligned, loosen the lock nut on the shift cable and adjust by turning the cable adjuster. Insert the lock pin securely.
6. Tighten the lock nut.
7. Start the engine and shift to each gear to check the following.
   - Move the shift lever from neutral to reverse without pressing the push button on the shift lever. The reverse gear should not engage.
   - Engine does not start with the shift lever other than in neutral and park.
   - The back-up light does not come on unless the shift lever is in reverse.
   - Park the car on the inclined surface and shift to park. Check the parking brake for proper operation.

Downloaded from www.Manualslib.com manuals search engine

Throttle Control Cable

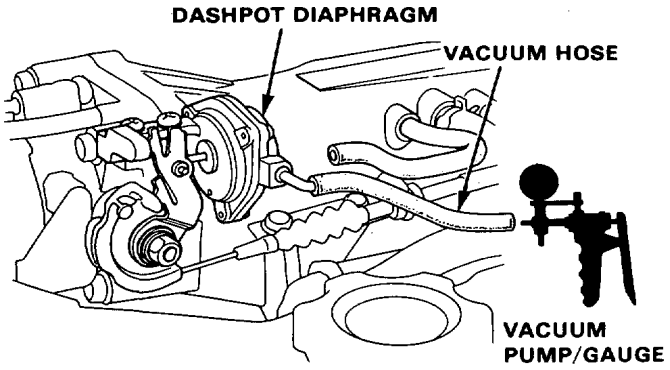
Adjustment/Inspection

NOTE: Before adjusting the throttle control cable, make sure:

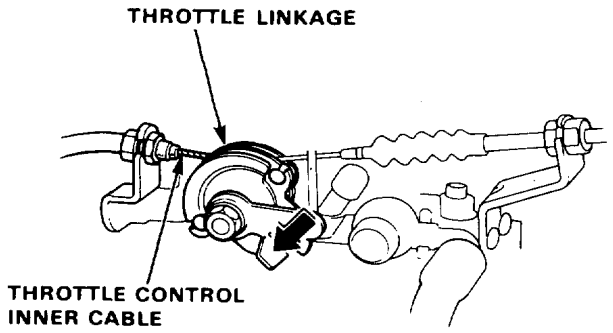
- The throttle cable free play is correct. (See Section 6)
- The engine is at normal operating temperature (cooling fan comes on).
- The idle speed is correct. (See Section 6)

Inspection:
NOTE: You can work the throttle linkage body with your hand.

1. Remove the throttle cable free play.
2. **Carburetor engine:**
   Make sure that the choke is released.
   PGM-FI engine:
   Disconnect #6 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.



3. Apply light thumb pressure to the throttle control lever, then work the accelerator or throttle linkage. The lever should move just as the engine speed increases above idle. If not, proceed to Adjustment.

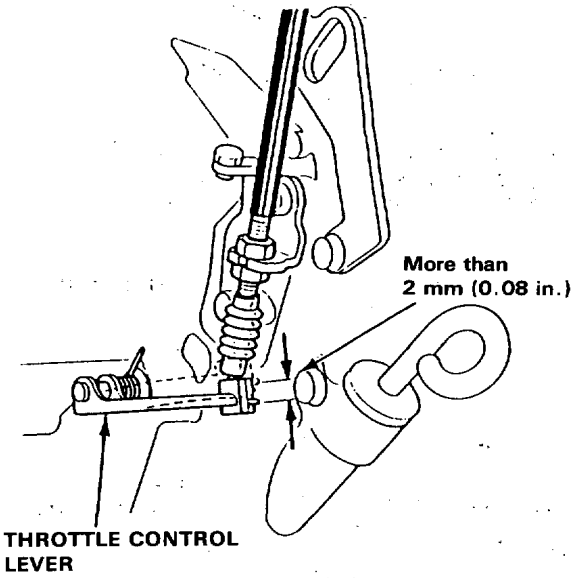


Adjustment:
1. Loosen the nuts on the control cable at the transmission end and synchronize the control lever to the throttle.

NOTE:
- While continuing to press down the throttle control lever, the throttle linkage is open.
  The control lever should begin to move at precisely the same time as the linkage.
- Correct "Fine Tune" adjustment of the throttle control cable is critical for proper operation of the transmission and lock-up torque convertor.

2. Check the following items before starting the engine:

   Depress the accelerator to the floor. While depressed, check that there is play in the throttle control lever.

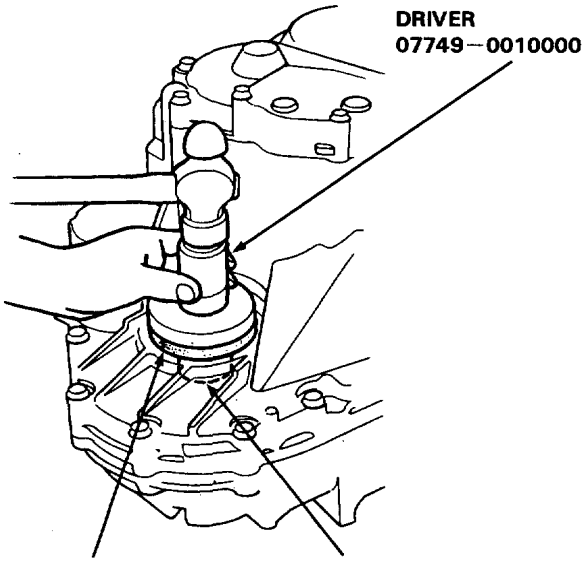


- Check that the cable moves freely by depressing the accelerator.

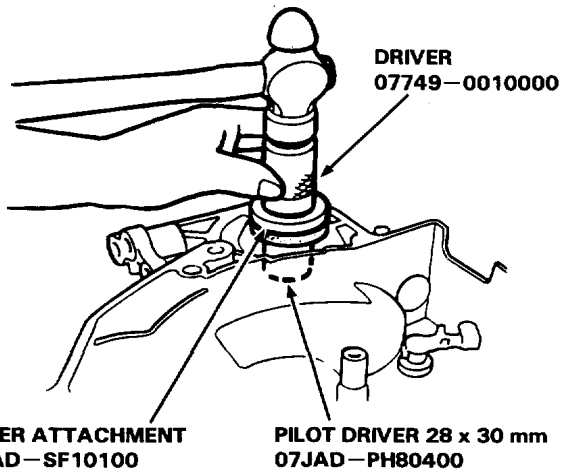
Downloaded from www.Manualslib.com manuals search engine

Oil Seal Installation

1. Install the oil seal in the transmission housing.



2. Install the oil seal in the torque converter housing.



Downloaded from www.Manualslib.com manuals search engine

NOTE : After transmission is installed :

- Make sure the floor mat does not interfere with accelerator pedal travel. Fully depress accelerator pedal and check to make sure the throttle lever is fully opened.
- Release the accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up the engine to operating temperature.

D3 and D4 Range

1. Apply parking brake and block the wheels. Start the engine, then move the selector to D4 while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.
2. Check that shift points occur at approximate speeds shown. Also check for abnormal noise and clutch slippage.

Upshift

1.6 ℓ SOHC PGM-FI engine: and 1.5 ℓ engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8-throttle	km/h	20.1—22.8	33.6—40.3	48.3—55.0	61.3—68.3
	mph	12.5—14.2	20.9—25.0	30.0—34.2	38.1—42.4
Half-throttle	km/h	28.8—37.8	57.8—70.8	90.7—103.7	———
	mph	17.9—23.5	35.9—44.0	56.4—64.4	———
Full-throttle	km/h	49.8—55.3	90.2—98.7	144.5—153.0	124.9—132.9
	mph	31.0—34.4	56.1—61.3	89.8—95.1	77.6—82.6

Downloaded from www.Manualslib.com manuals search engine

Downshift
1.6 ℓ SOHC PGM-FI engine: and 1.5 ℓ engine:

		4th-3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 29.2—32.2		12.0—14.5
	mph	4th—2nd: 18.1—20.0		7.5—9.0
Half-throttle	km/h	———	———	———
	mph	———	———	———
Full-throttle	km/h	122.6—131.6	76.5—85.5	41.3—46.8
	mph	76.2—81.8	47.5—53.1	25.7—29.1

3. Accelerate to about 56 km/h (35mph) so the transmission is in 4th, then shift from D4 to 2. The car should immediately begin slowing down from engine braking.

CAUTION : Do not shift from D4 or D3 to 2 at speeds over 100km/h (62.5mph) ; you may damage the transmission.

2 (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

R (Reverse)

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake ; the car should not move.

Downloaded from www.Manualslib.com manuals search engine

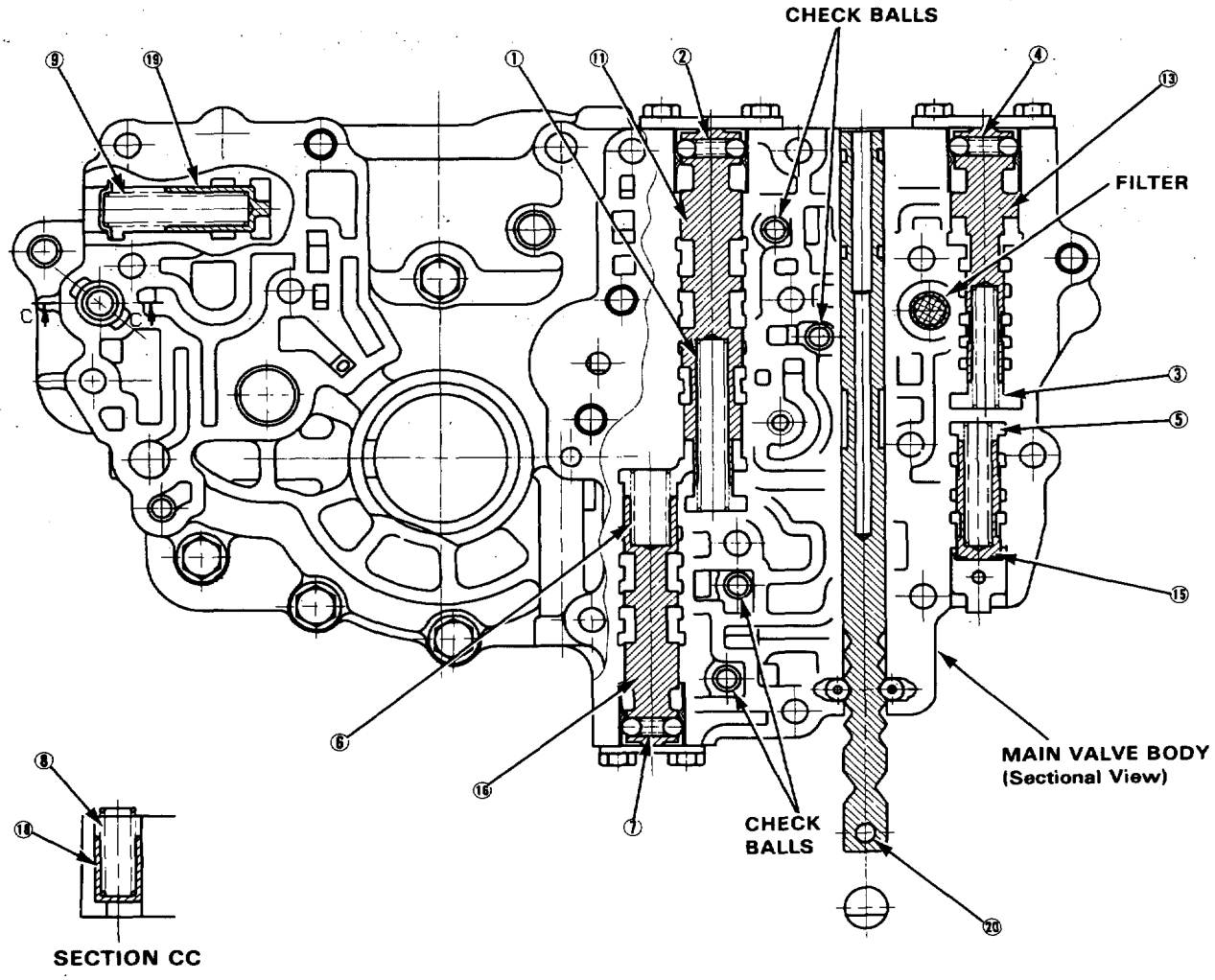
Main Valve Body

1.6 ℓ SOHC PGM-FI engine: and 1.5 ℓ engine:

Unit of length: mm (in)

No.	Spring	Standard (New)			
		Wire Dia	O.D.	Free Length	No. of Coils
①	2-3 shift spring	0.9 (0.035)	7.6 (0.299)	46.5 (1.831)	20.7
②	2-3 Shift ball spring	0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
③	1-2 shift spring	0.6 (0.024)	6.1 (0.240)	41.3 (1.626)	16.5
④	1-2 shift ball spring	0.4 (0.016)	4.5 (0.177)	14.4 (0.567)	8.2
⑤	2nd orifice control spring	0.8 (0.031)	6.6 (0.260)	46.3 (1.823)	27.6
⑥	3-4 shift spring	0.9 (0.035)	9.6 (0.378)	33.1 (1.303)	10
⑦	3-4 shift ball spring	0.5 (0.020)	4.5 (0.177)	11.2 (0.441)	7
⑧	Torgue converter check spring	1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12
⑨	Relief valve spring	1.0 (0.039)	8.4 (0.331)	52.0 (2.047)	23

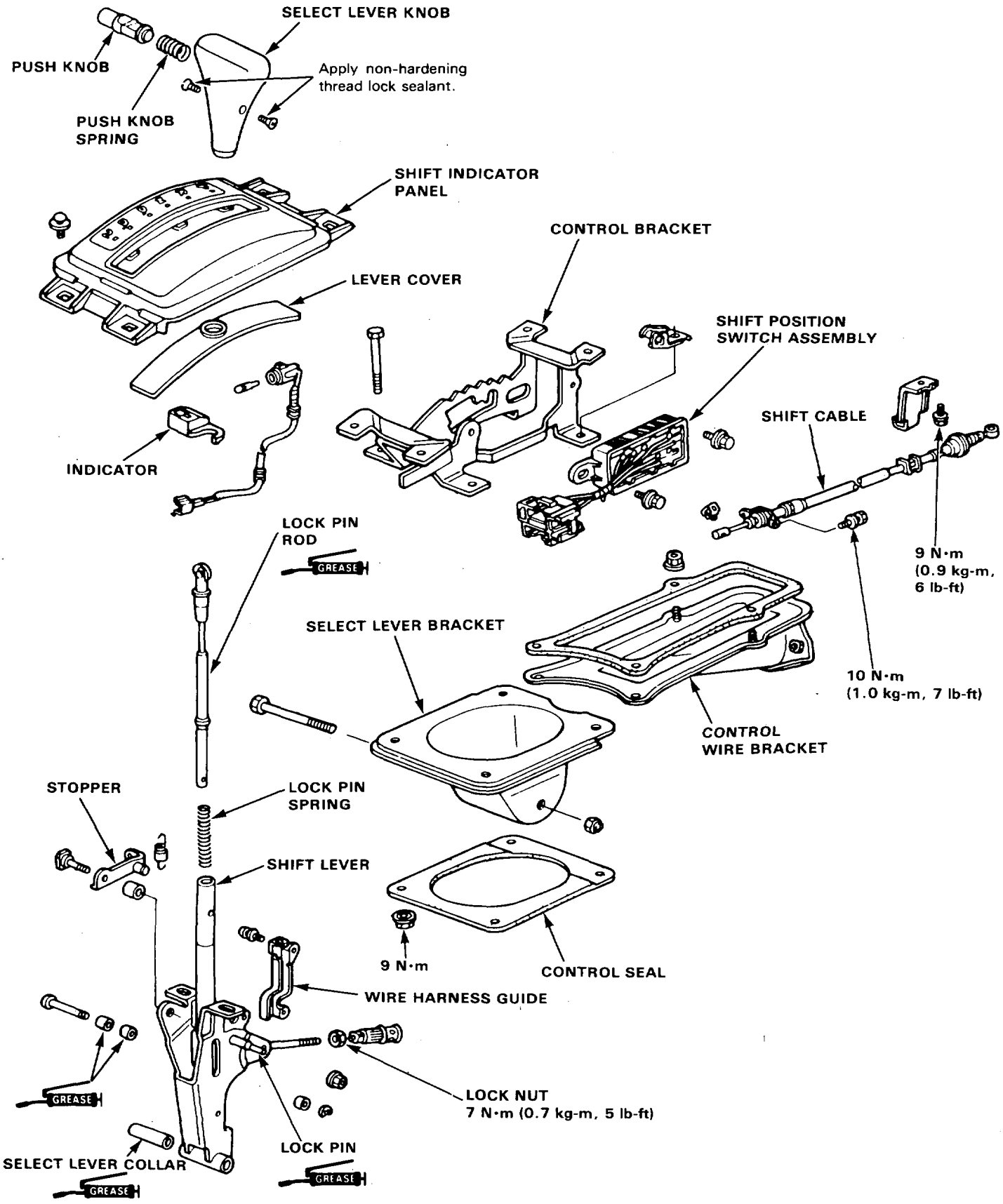
Sectional View



Downloaded from www.Manualslib.com manuals search engine

Gear Shift Selector (LHD)

Disassembly/Reassembly



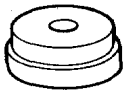
Downloaded from www.Manualslib.com manuals search engine

Special Tools

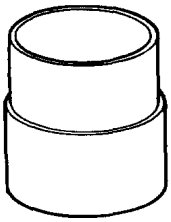
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07749-00100000	Driver	1	
②	07746-0010200	Attacment 37 x 40 mm	1	
③	07965-SD90100	Support Base	1	
④	07GAF-SD40700	Hub Dis/Assembly Bass	2	
⑤	07746-0010300	Attachment 42 x 47 mm	1	
⑥	07965-MA60000	Attachment	1	
⑦	07947-SD90101	Seal Driver Attachment	1	
⑧	07JAD-SH30100	Seal Driver Attachment	1	
⑨	07746-0030100	Driver 40 mm I.D.	1	
⑩	07GAD-PG40100	Seal Driver Attachment	1	
⑪	18G1584	Ball Joint Remover	1	



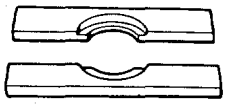
①



②



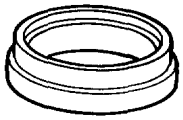
③



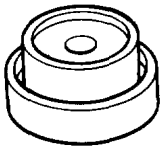
④



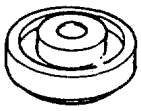
⑤



⑥



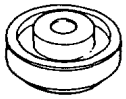
⑦



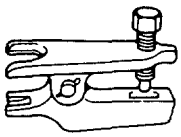
⑧



⑨



⑩



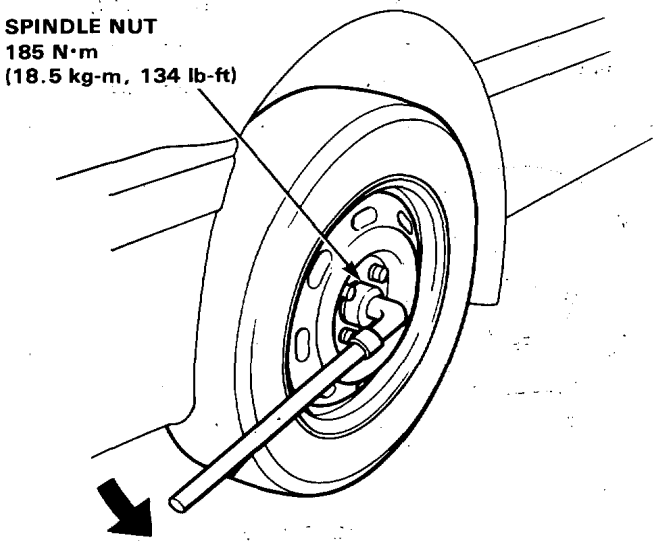
⑪

Downloaded from www.Manualslib.com manuals search engine

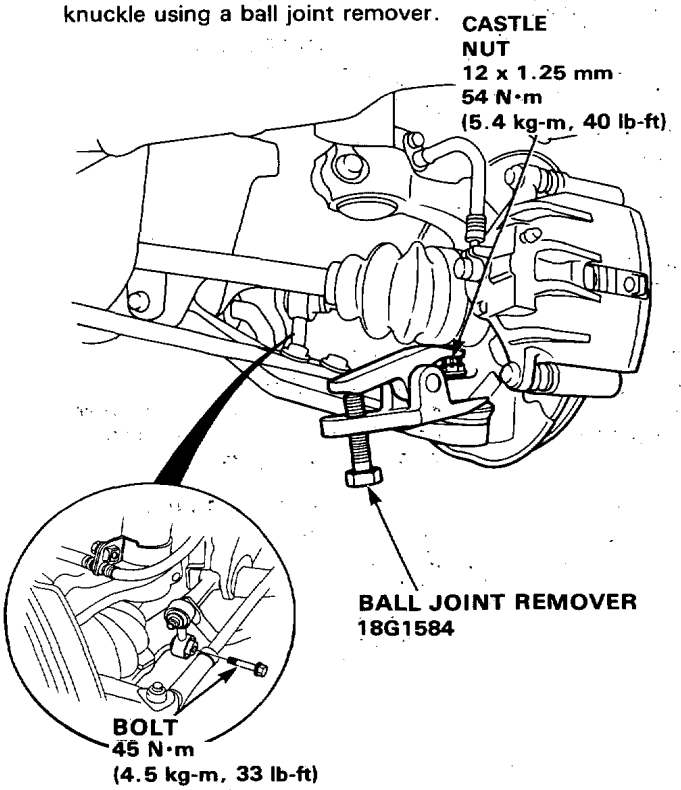
Driveshafts

Removal

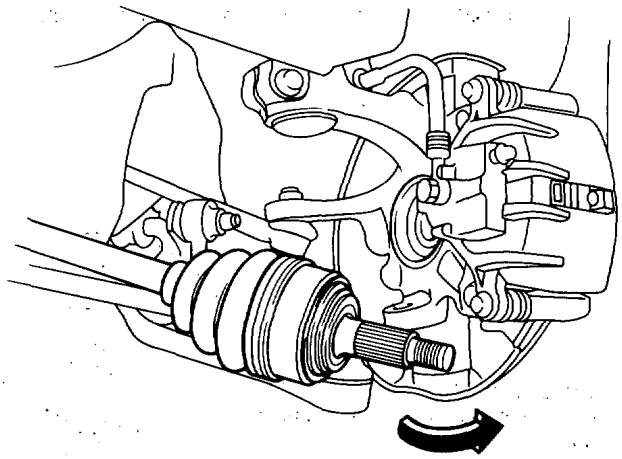
1. Raise the locking tab on the spindle nut and remove it.
2. Loosen the front wheel lug nuts.
3. Raise the front end of the car and place safety stands in the proper locations. Remove the front wheels.
4. Drain the transmission oil.



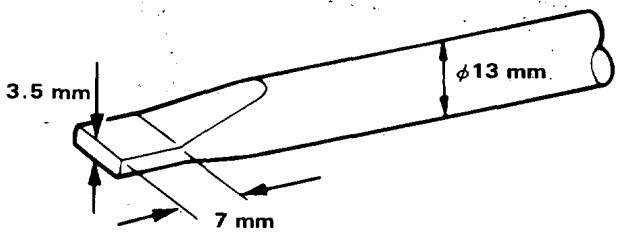
5. Remove the bolt that connects the front stabiliser link and lower arm.
6. Remove the cotter pin and loosen the Knuckle-to-lower arm castle nut, and separate the lower arm from the knuckle using a ball joint remover.

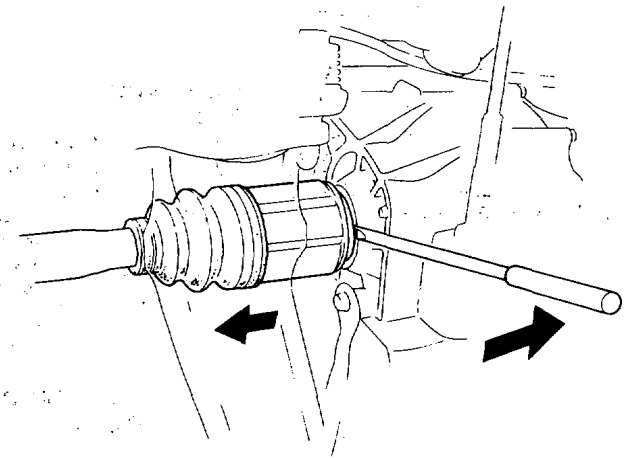


7. Pull the knuckle outward and remove the driveshaft outboard joint from the knuckle using a plastic hammer.



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.**

Downloaded from www.Manualslib.com manuals search engine

Driveshafts

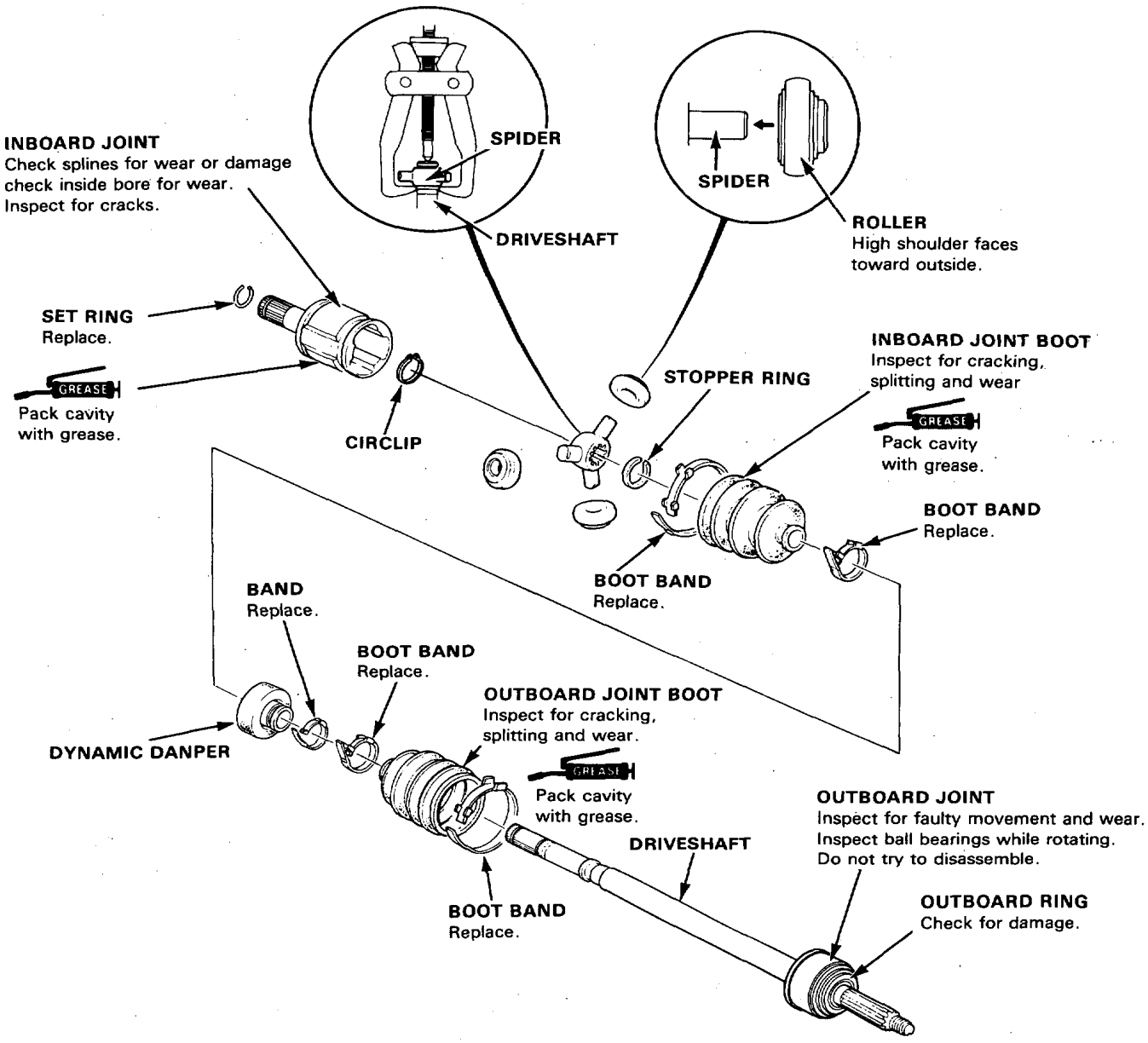
Disassembly/Inspection

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 Grease is used on the inside surface of the joint boots. Do not mix the two joint boot. The type of grease used on each boot is different.

Grease Quantity:

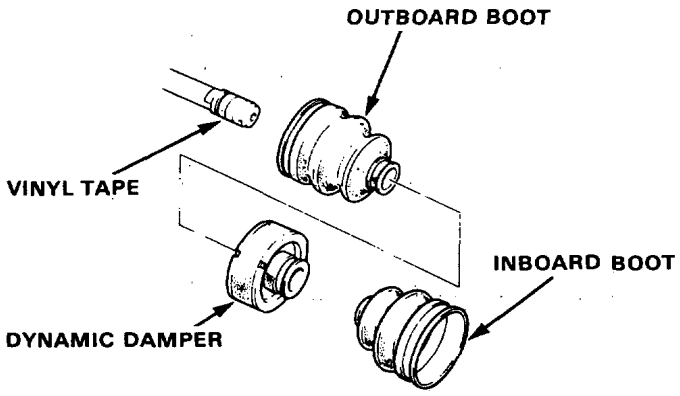
	L. Driveshaft	R. Driveshaft
Inboard Joint	120~130g	120~130g
Outboard Joint	90~100g	90~100g



Downloaded from www.Manualslib.com manuals search engine

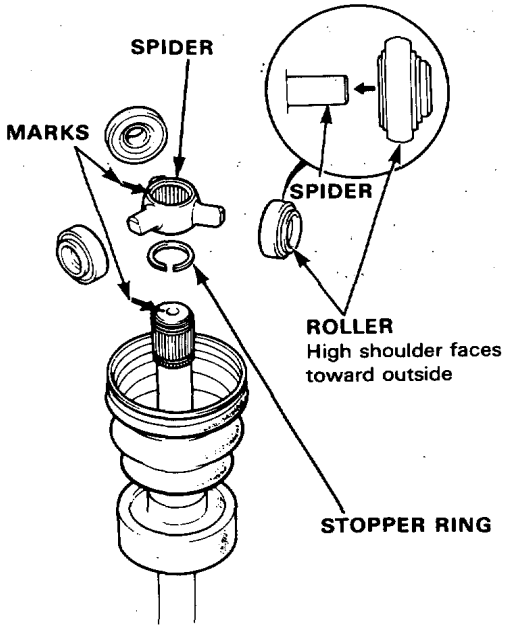
Reassembly

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.

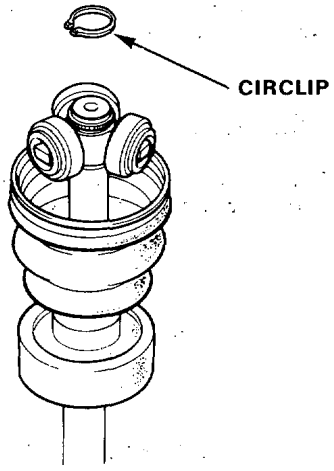


3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the rollers to the spider with their high shoulders facing outward.

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.**



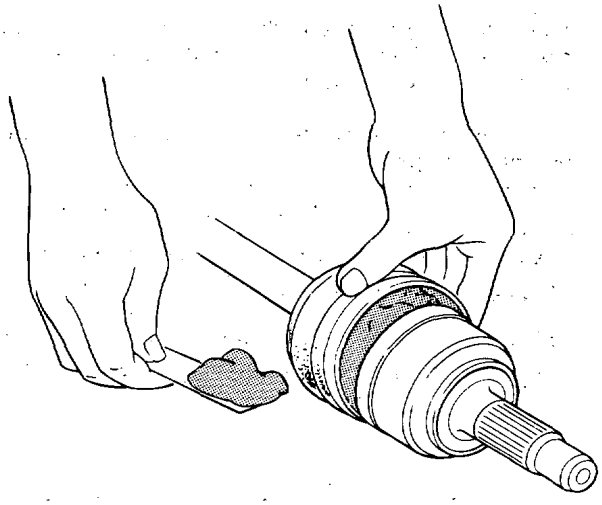
6. Fit the circlip onto the driveshaft groove.



7. Pack the outboard joint boot with greese.

CAUTION:
- **Use grease sold with the inboard joint boot.**
- **Do not use the grease of inboard joint for outboard joint. It may shorten the life of the boot.**

Grease Quantity: **90~100g**



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Reassembly (cont'd)

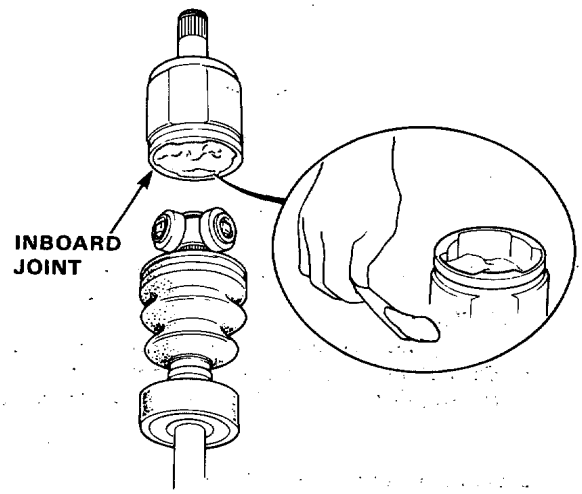
8. Pack the inboard joint with molybdenum disulfide grease.

   Grease Quantity: 120~130g

   CAUTION:
   - **Use grease sold with the inboard joint boot.**
   - **Do not use the grease of outboard joint for inboard joint. It may shorten the life of the boot.**

9. Fit the inboard joint onto the driveshaft.

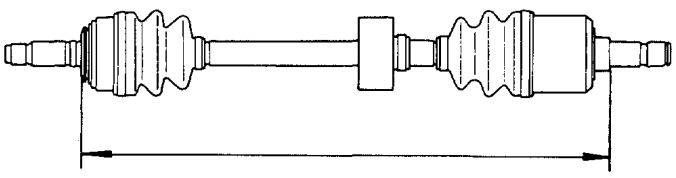
   CAUTION: Hold the driveshaft assmbly so the inboard joint points up, to prevent it from falling off.



10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and extension.

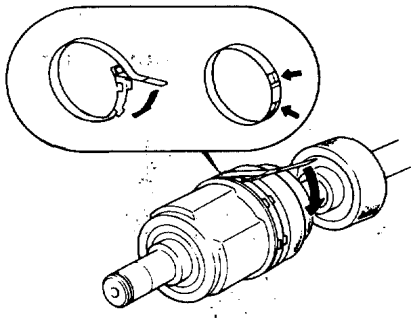
    NOTE: The ends of boots seat in the groove of the driveshaft and joint.

	L. Driveshaft	R. Driveshaft
DOHC Engine	497.6–502.6 mm (19.59–19.79 in)	497.6–502.6 mm (19.59–19.79 in)
SOHC Engine	793.8–798.8 mm (31.25–31.45 in)	496.3–501.3 mm (19.54–19.74 in)

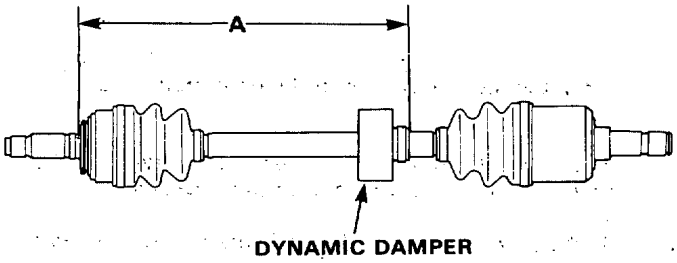


11. Install new boot bands on the boot and bend both sets of locking tabs.

12. Lightly tap on the doubled-over portions to reduce their height.



13. Position the dynamic damper as shown below.



DISTANCE (A):

	L. Driveshaft	R. Driveshaft
DOHC Engine	222±2 mm (8.7±0.08 in)	222±2 mm (8.7±0.08 in)
SOHC Engine	564±2 mm (22.2±0.08 in)	222±2 mm (8.7±0.08 in)

14. Lightly tap on the doubled-over portion to reduce its height.

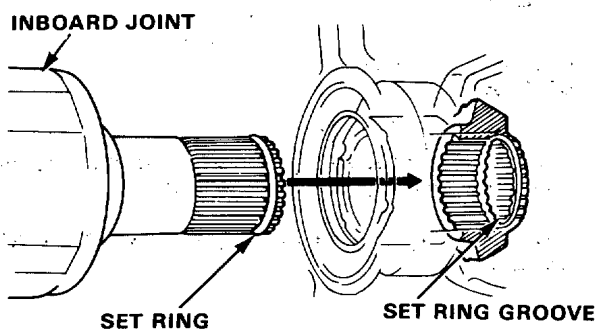
15. Install a new dynamic damper band and bend down both sets of locking tabs.

Downloaded from www.Manualslib.com manuals search engine

16. Install a new set ring in the driveshaft groove.

17. Install the inboard end of the driveshaft into differential.

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.**



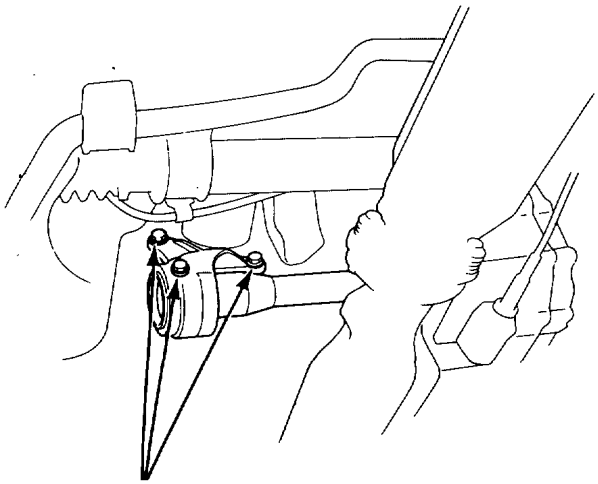
18. Refill the transmission.

Downloaded from www.Manualslib.com manuals search engine

Intermediate Shaft

Replacement

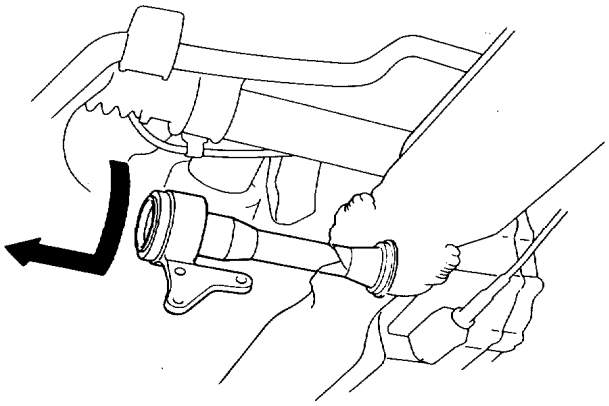
1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



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.

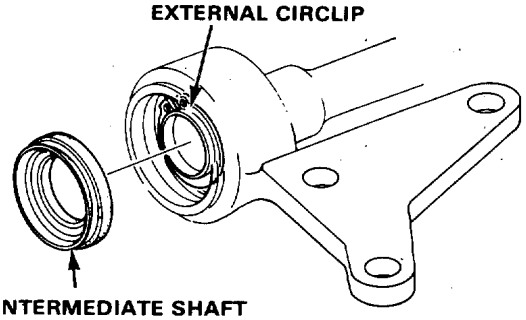
CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



4. Installation is the reverse order of removal.

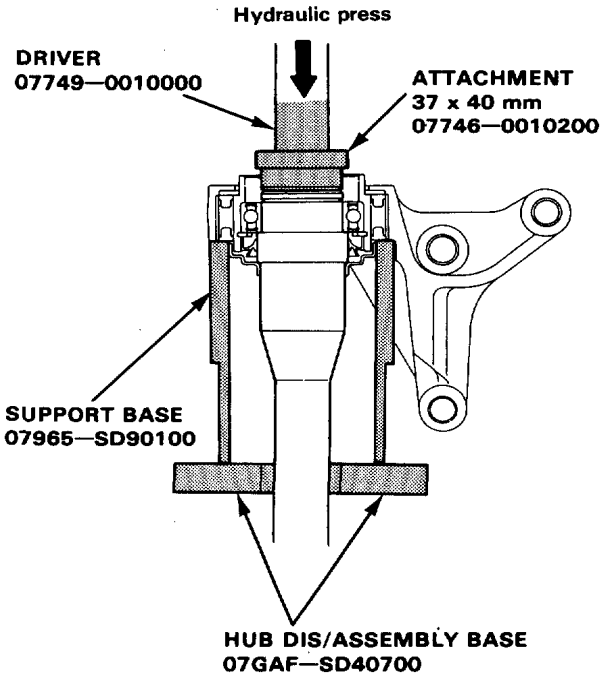
Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the external circlip.



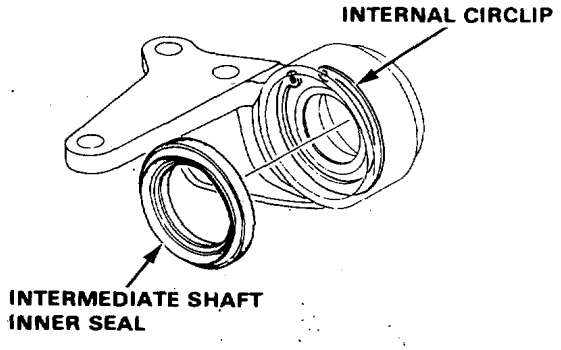
3. Press the intermediate shaft out of the shaft bearing using the special tools.

NOTE: Be sure that the bearing carrier is centered with the tool.

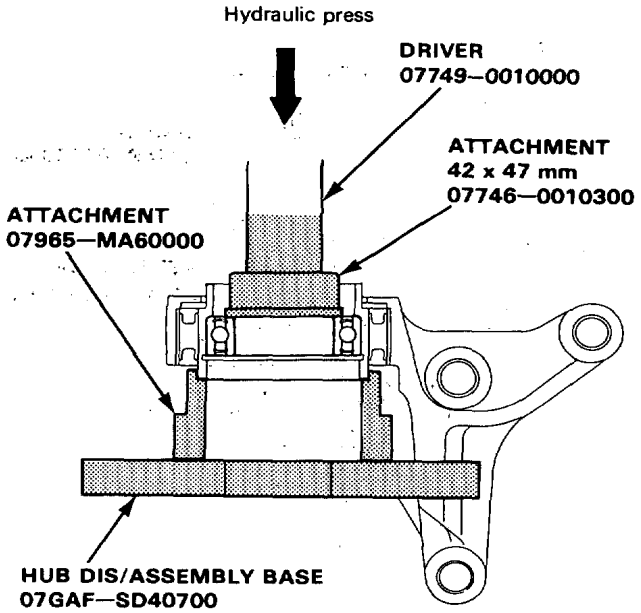


Downloaded from www.Manualslib.com manuals search engine

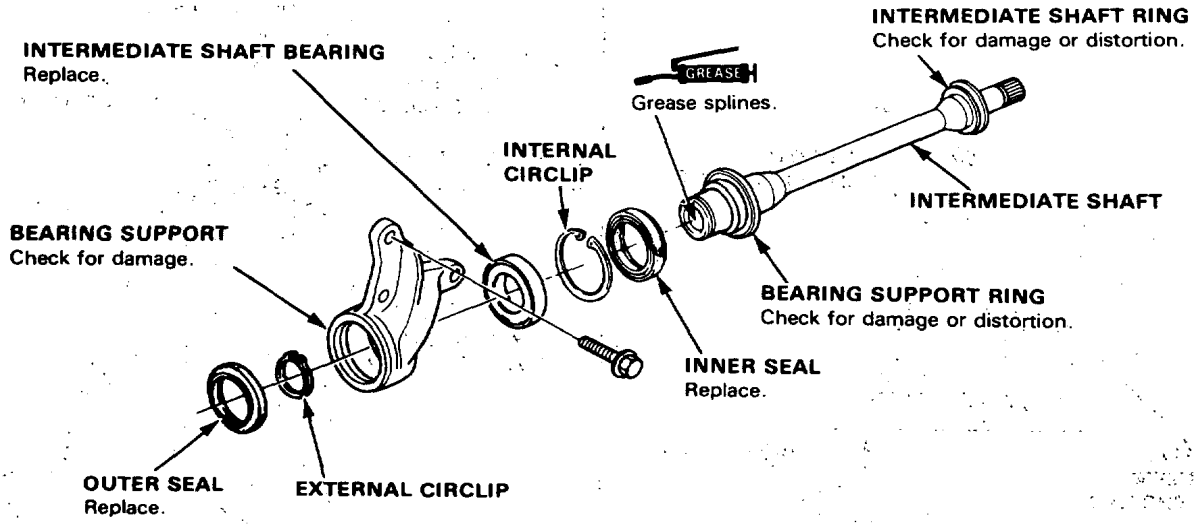
4. Remove the intermediate shaft inner seal.
5. Remove the internal circlip.



6. Press the intermediate shaft bearing out of the bearing support using the special tools.



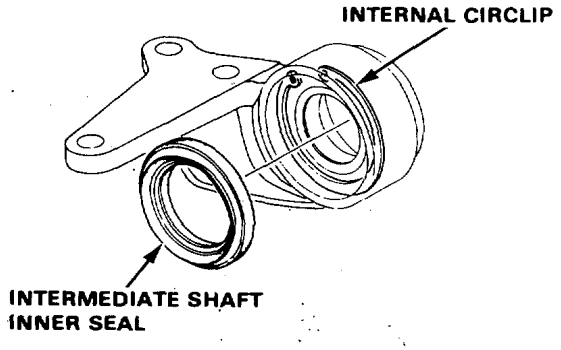
Index/Inspection



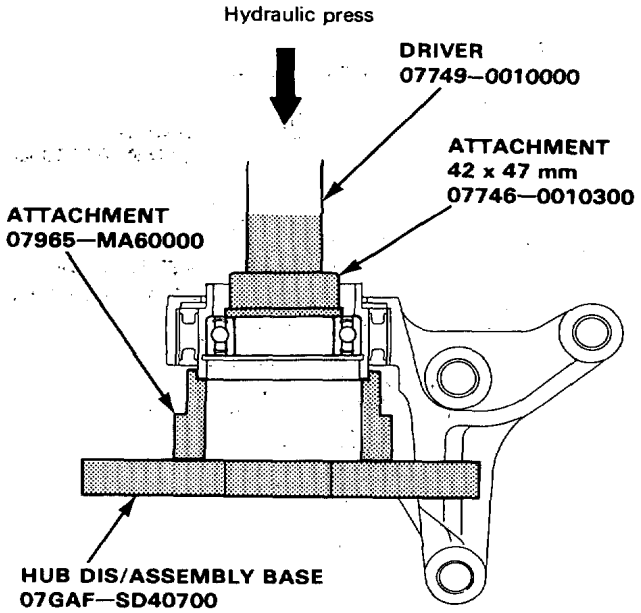
CAUTION: Be careful not to damage the rubber on the *bearing support during installation.*

Downloaded from www.Manualslib.com manuals search engine

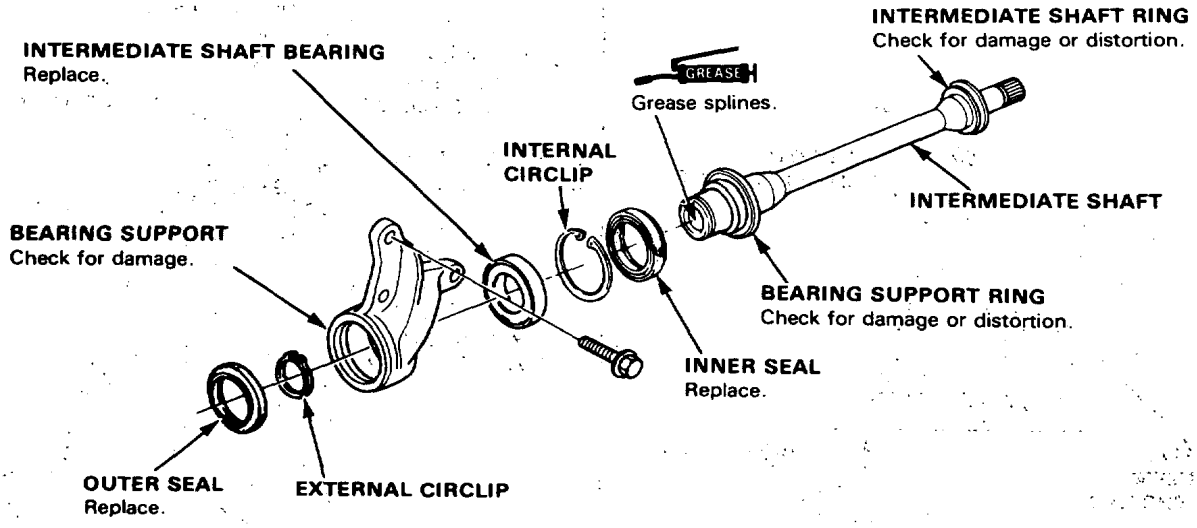
4. Remove the intermediate shaft inner seal.
5. Remove the internal circlip.



6. Press the intermediate shaft bearing out of the bearing support using the special tools.



Index/Inspection



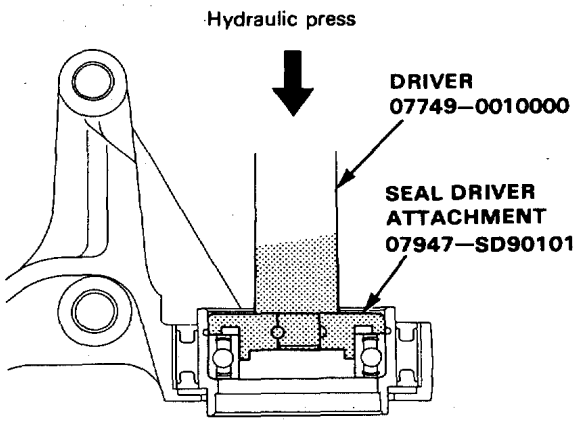
CAUTION: Be careful not to damage the rubber on the *bearing support during installation.*

Downloaded from www.Manualslib.com manuals search engine

Intermediate Shaft

Reassembly

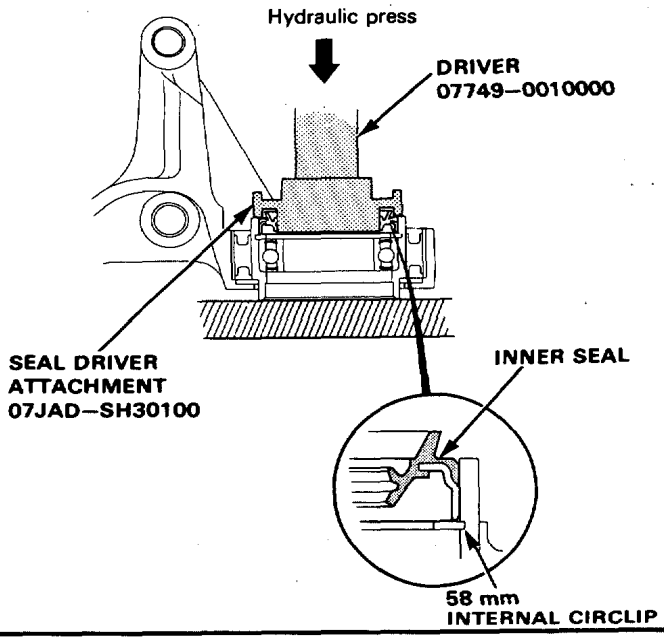
1. Press the intermediate shaft bearing into the bearing support using the special tools.



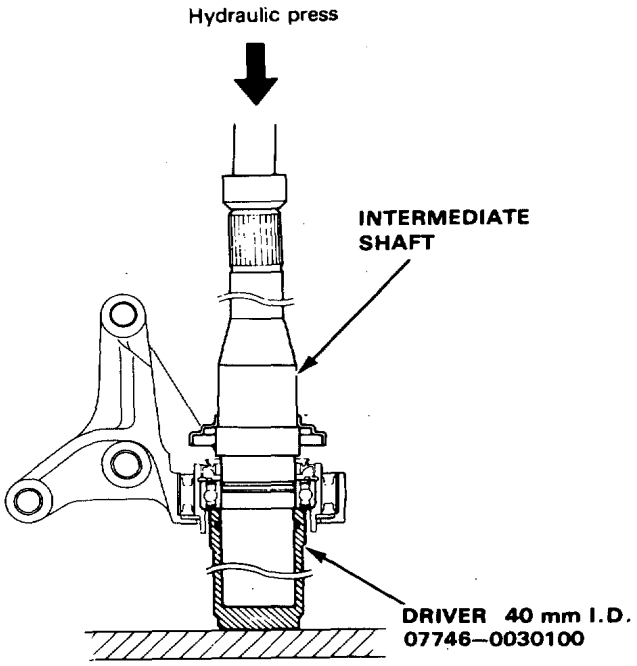
2. Seat the 58 mm internal circlip in the groove of the bearing support.

   CAUTION: Install the circlip with the tapered end facing out.

3. Press the intermediate shaft inner seal into the bearing support using the special tools.



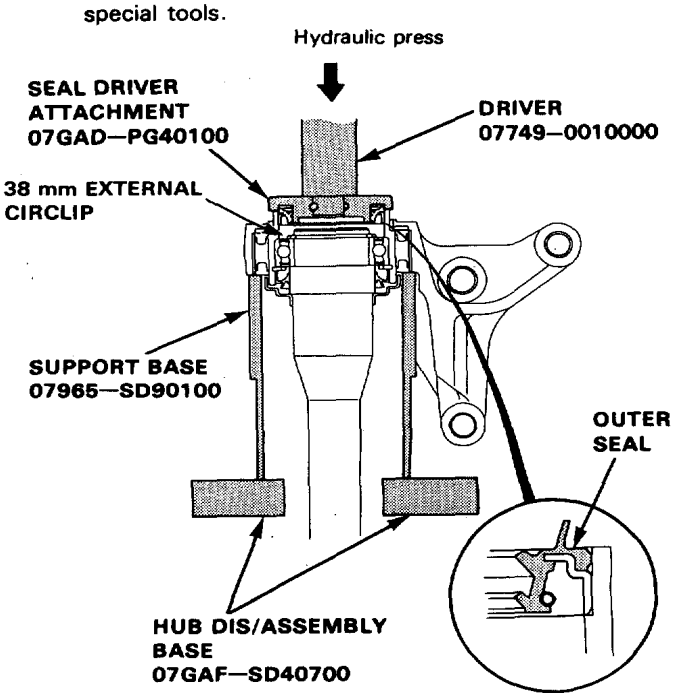
4. Press the intermediate shaft into the shaft bearing using the special tool.



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 using the special tools.

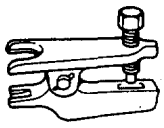


Downloaded from www.Manualslib.com manuals search engine

Special Tool

Special Tool

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	18G1584	Ball Joint Remover	1	



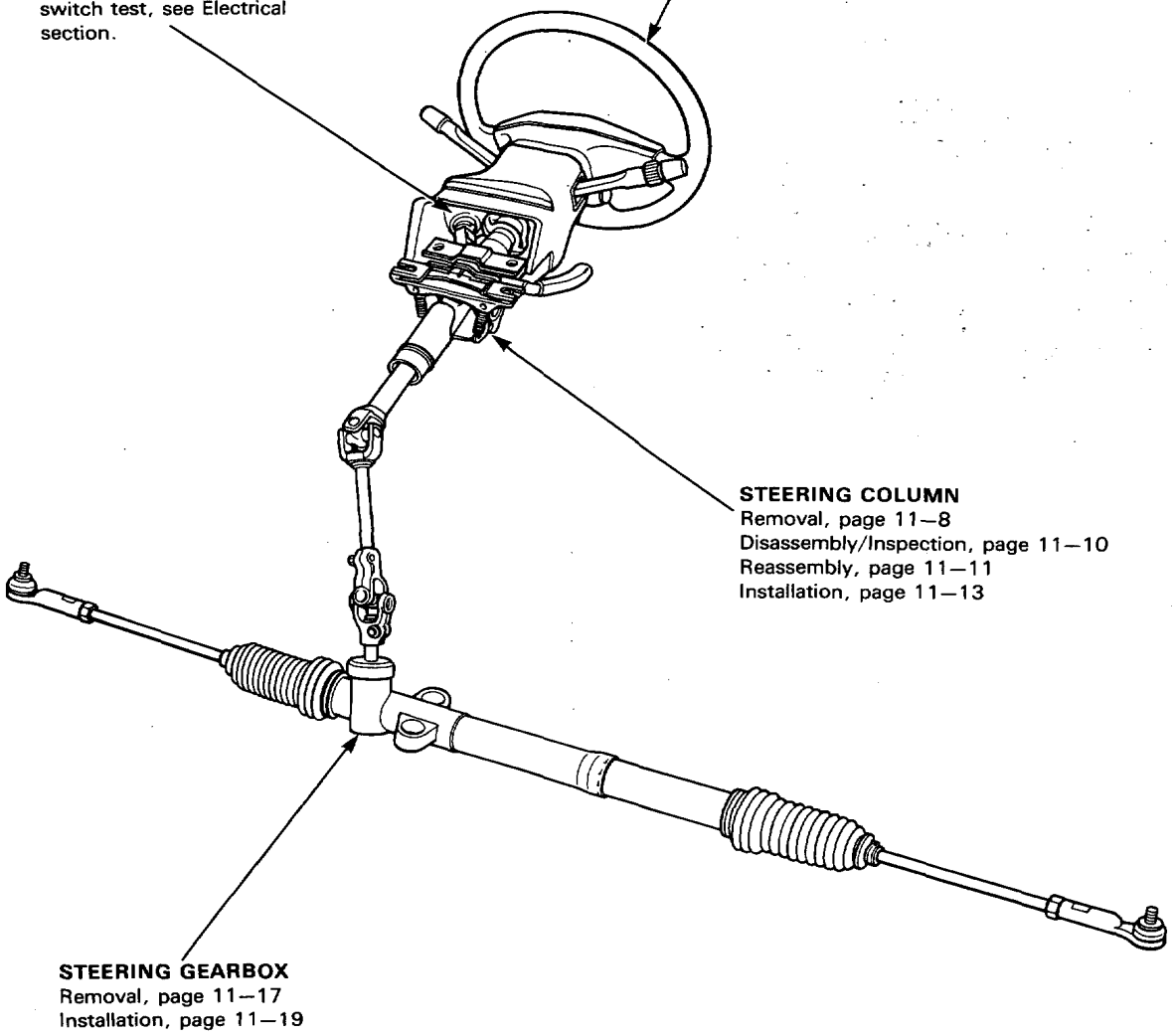
①

Downloaded from www.Manualslib.com manuals search engine

Component Location

Index

NOTE: RH Drive shown, LH Drive is similar.

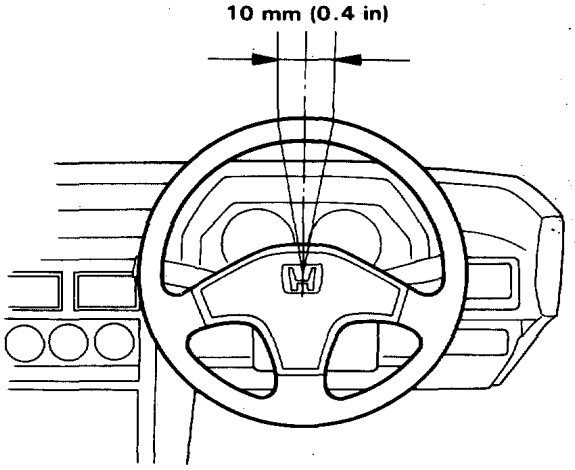


Downloaded from www.Manualslib.com manuals search engine

Inspection

Steering Wheel Rotational Play

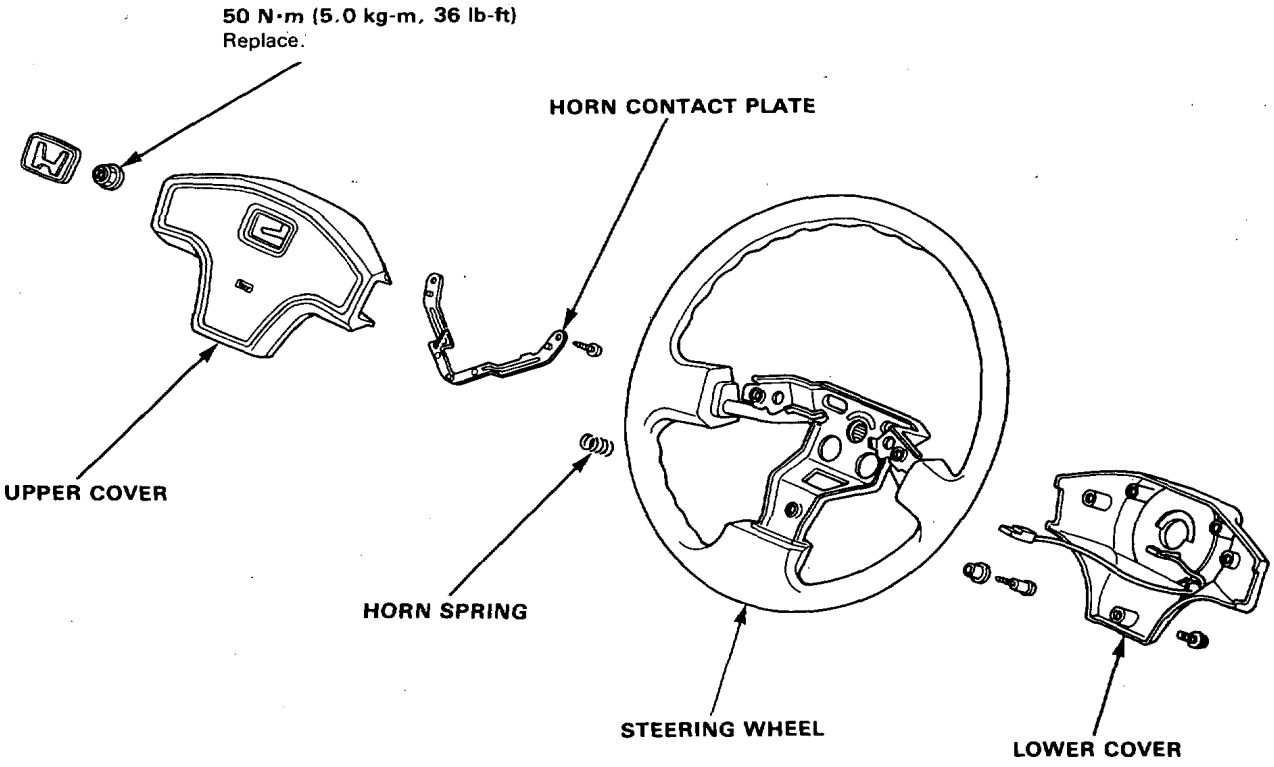
1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.
   Service Limit: 10 mm (0.4 in)



Downloaded from www.Manualslib.com manuals search engine

Steering Wheel

Disassembly/Reassembly

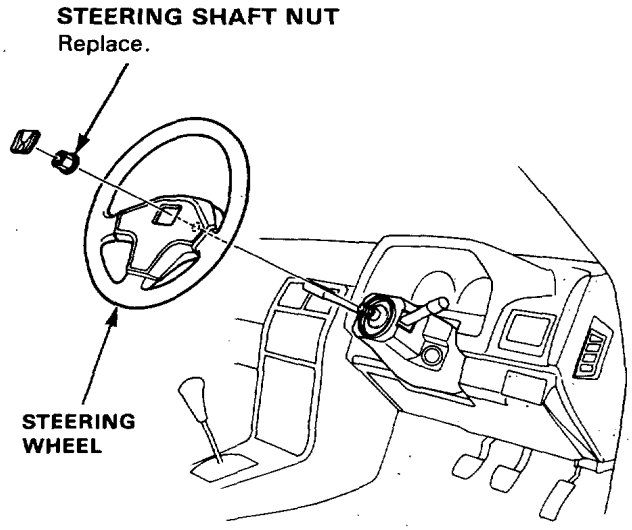


Downloaded from www.Manualslib.com manuals search engine

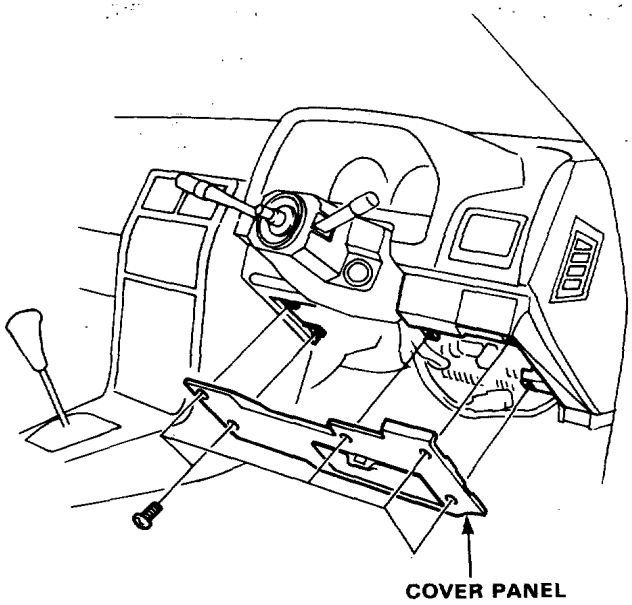
Steering Column

Removal

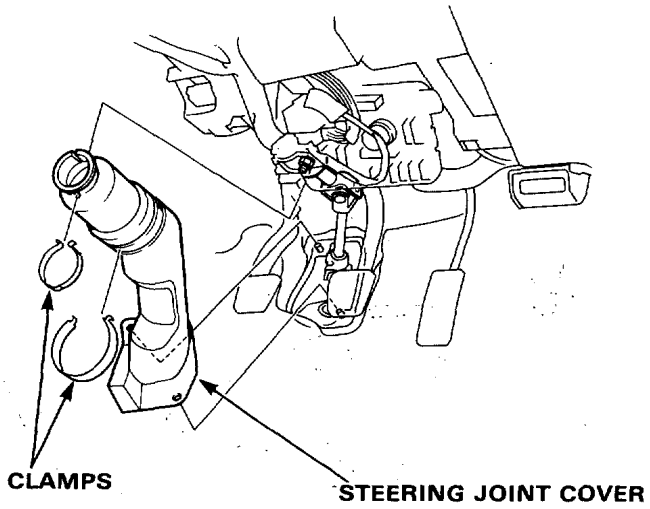
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



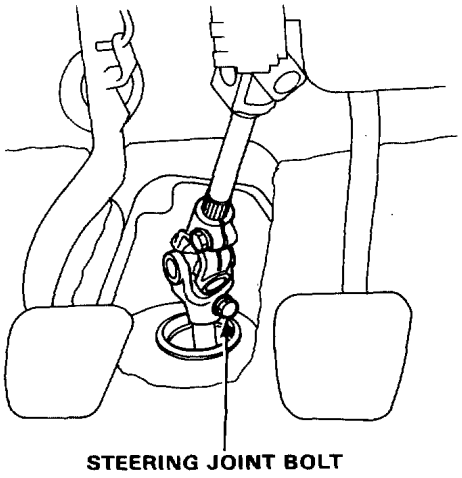
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.

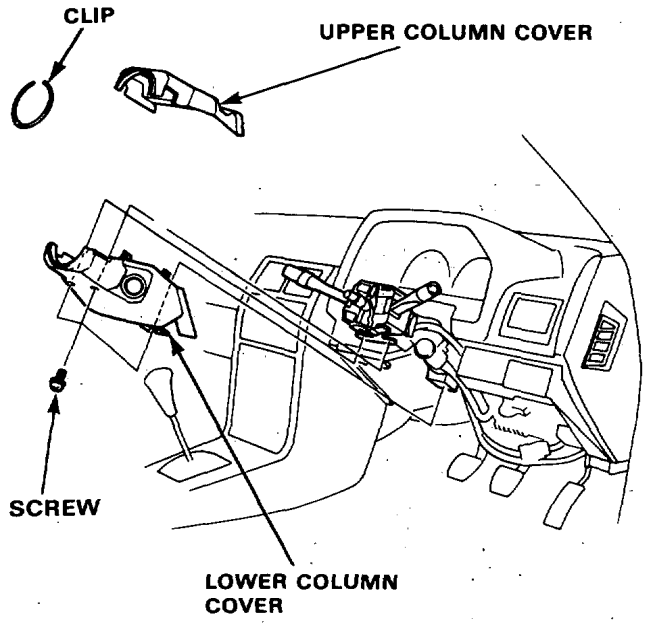


6. Remove the steering joint bolt, and move the joint toward the column.



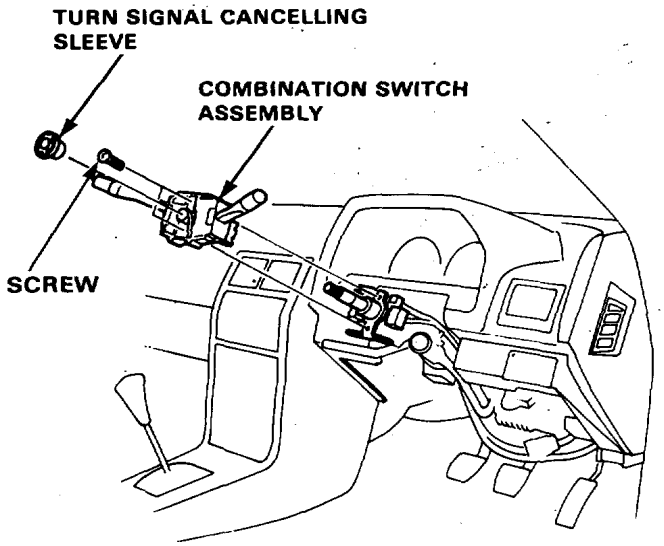
Downloaded from www.Manualslib.com manuals search engine

7. Remove the clip and three screws, then remove the upper and lower column covers.

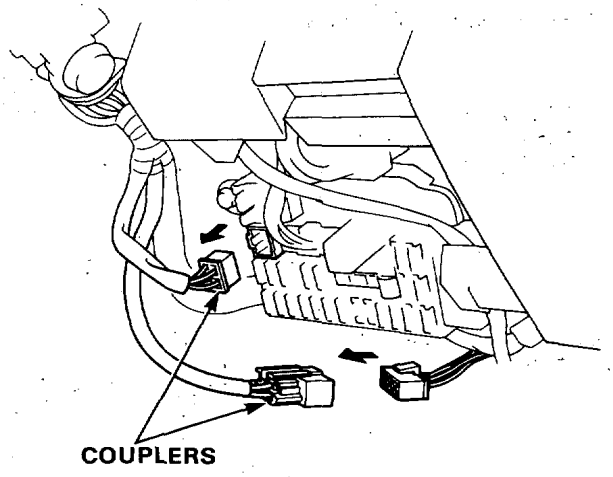


8. Disconnect each wire coupler from the combination switch.

9. Remove the turn signal canceling sleeve. Remove the two screws and combination switch assembly.



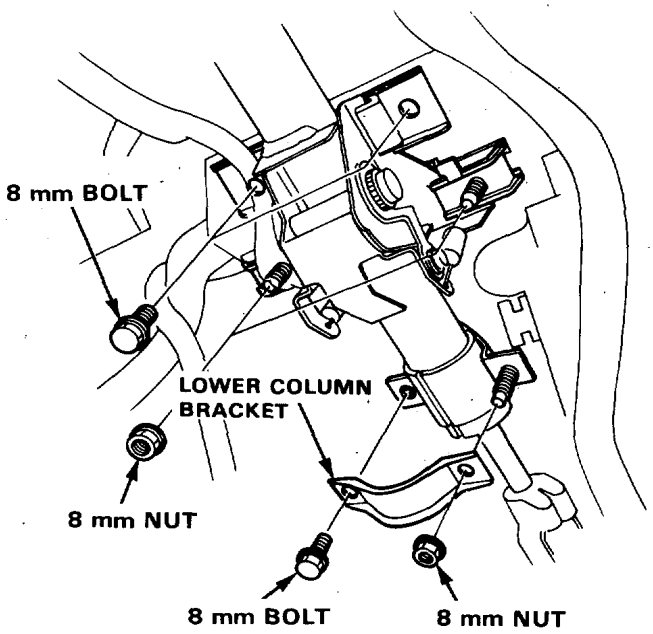
10. Disconnect each wire coupler from the fuse box at under dash right side.



11. Remove the lower column bracket.

12. Remove the bolts and nuts attaching the bending plate guide and bending plate.

13. Remove the steering column assembly.

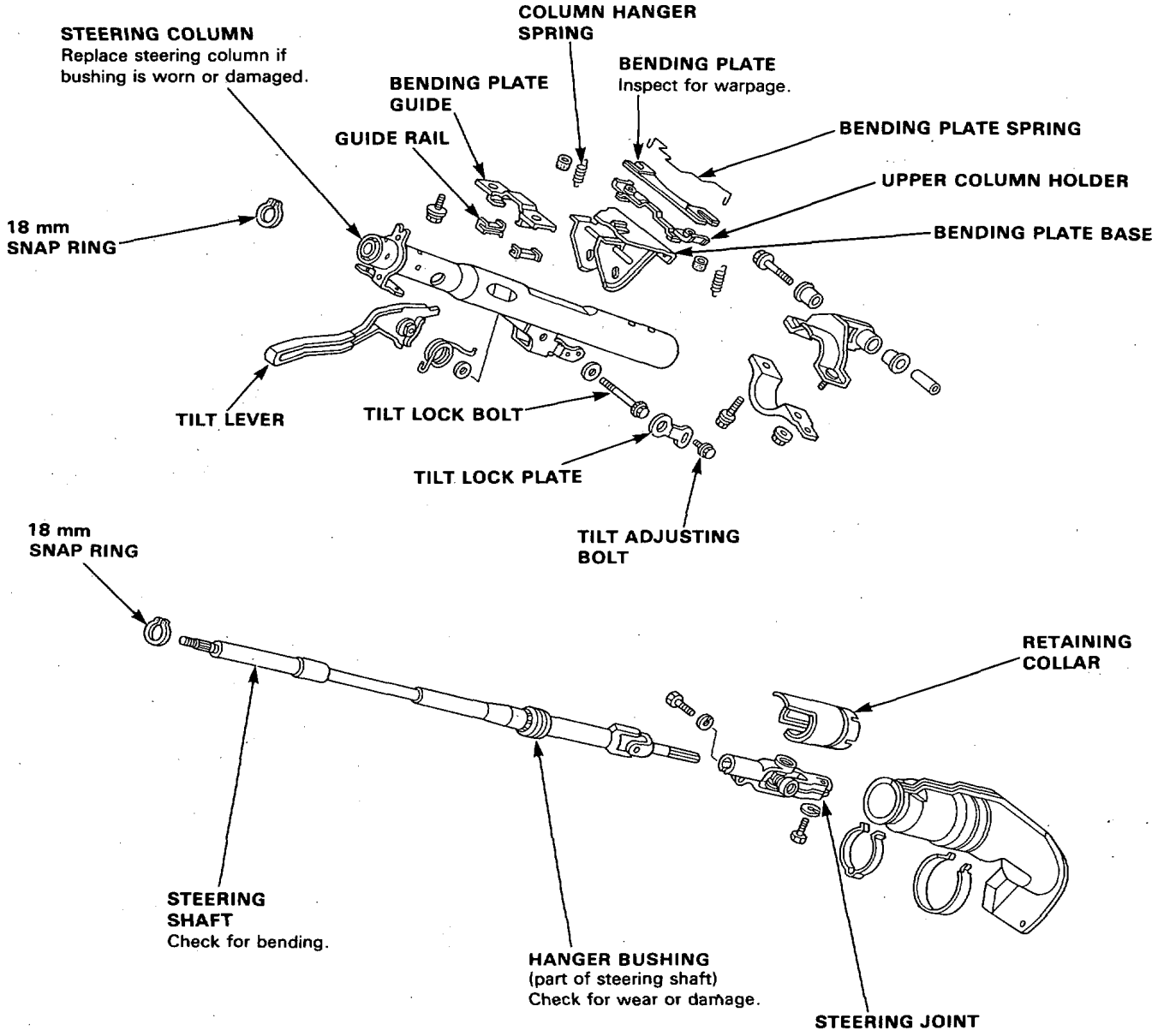


Downloaded from www.Manualslib.com manuals search engine

Steering Column

Disassembly/Inspection

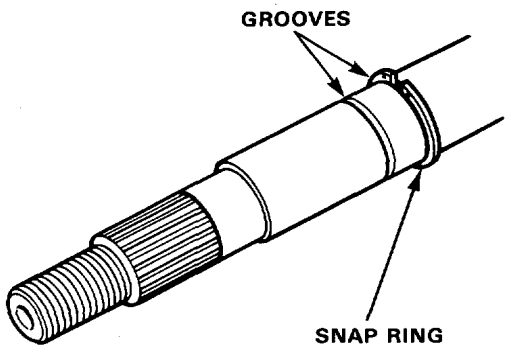
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in " I ".
5. Remove the snapring, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.



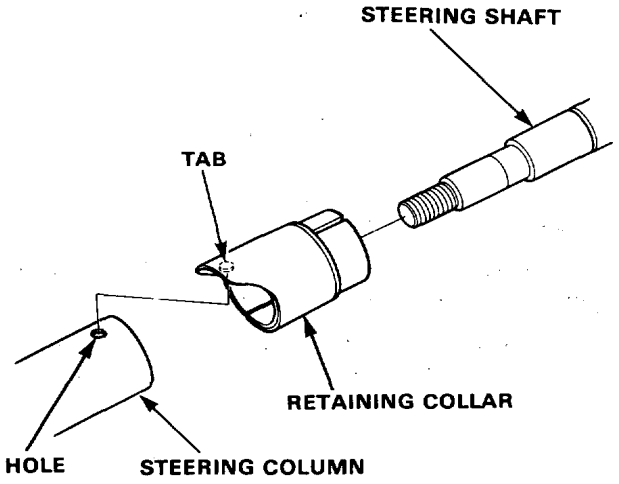
Downloaded from www.Manualslib.com manuals search engine

Reassembly

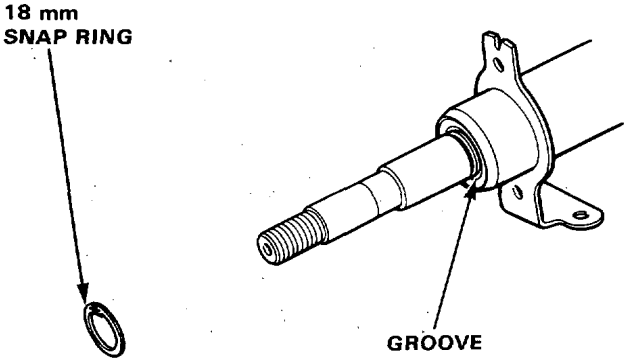
1. Install the snap ring on the groove of the steering shaft as shown.



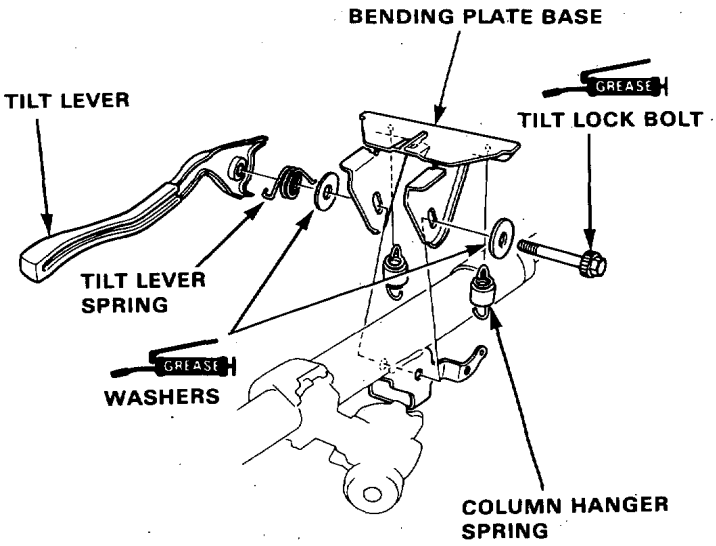
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



3. Insert the steering shaft into the steering column from the bottom.
4. Install the 18 mm snap ring on the groove of the steering shaft.



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. Instll the column hanger springs between the bending plate base and steering column.

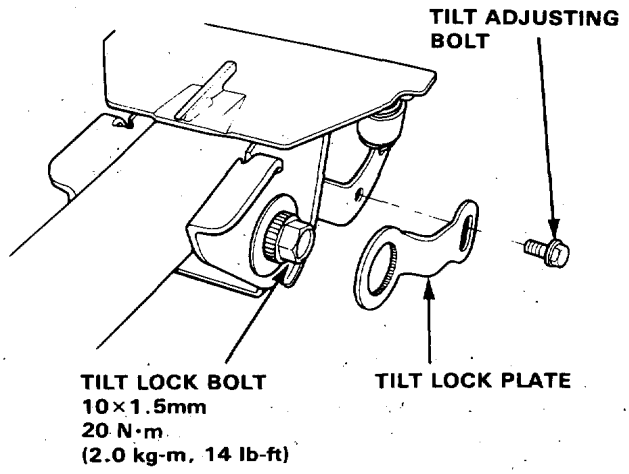


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

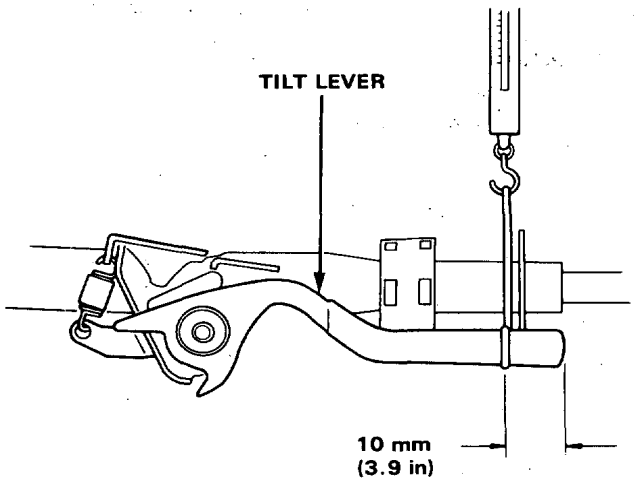
Reassembly (cont'd)

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.

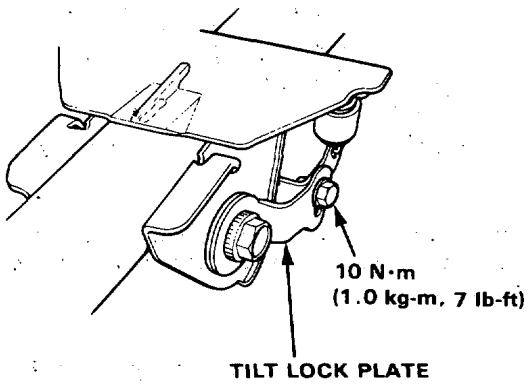


9. Attach a spring scale 10 mm (3.9 in) from the end of the knob. Measure the force required to move the lever.

Preload: 80 N (8.0 kg, 18 lbs)



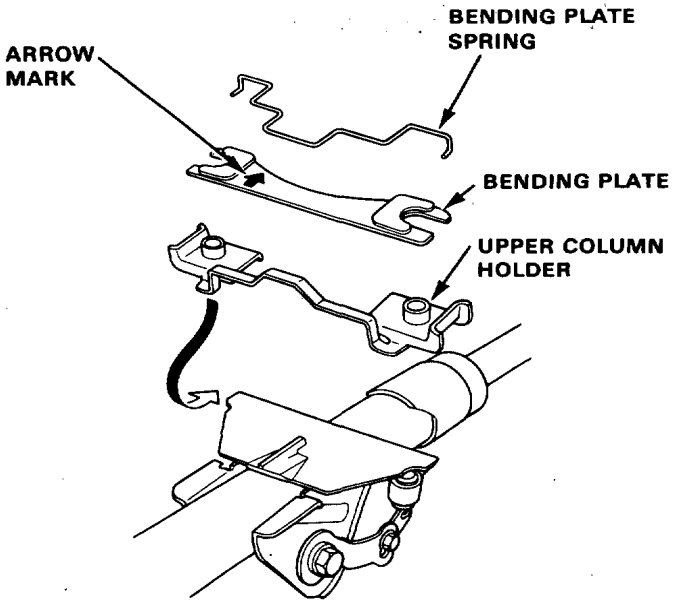
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

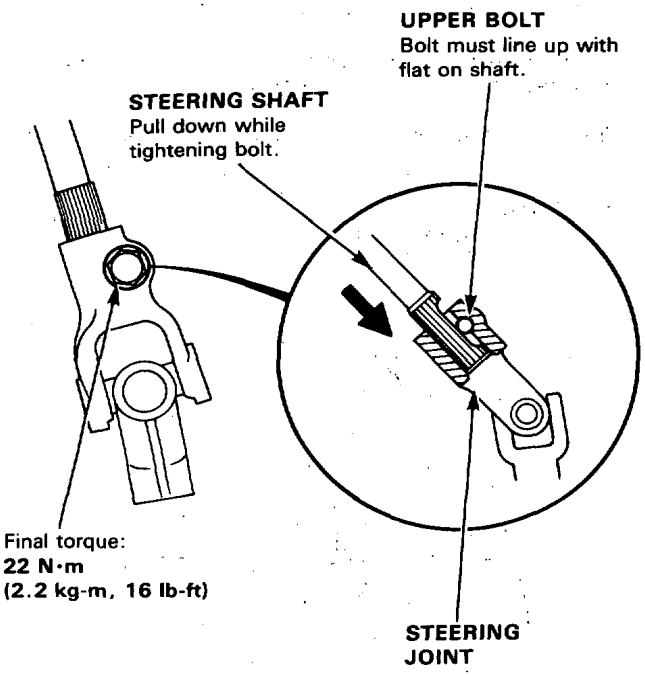
12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

NOTE: Install the bending plate with arrow mark facing the steering gearbox.



Downloaded from www.Manualslib.com manuals search engine

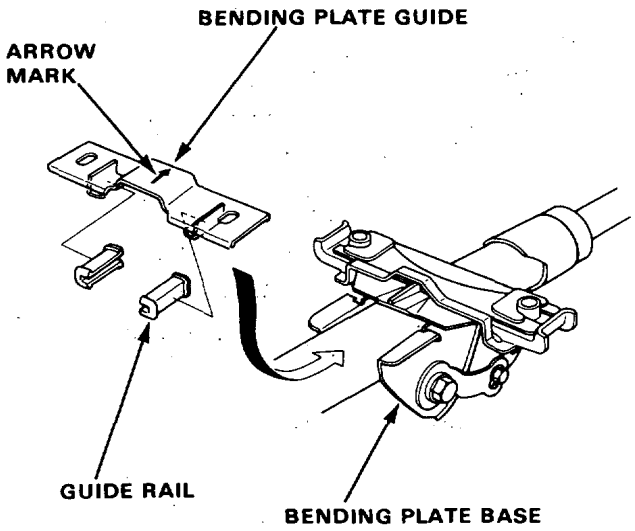
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



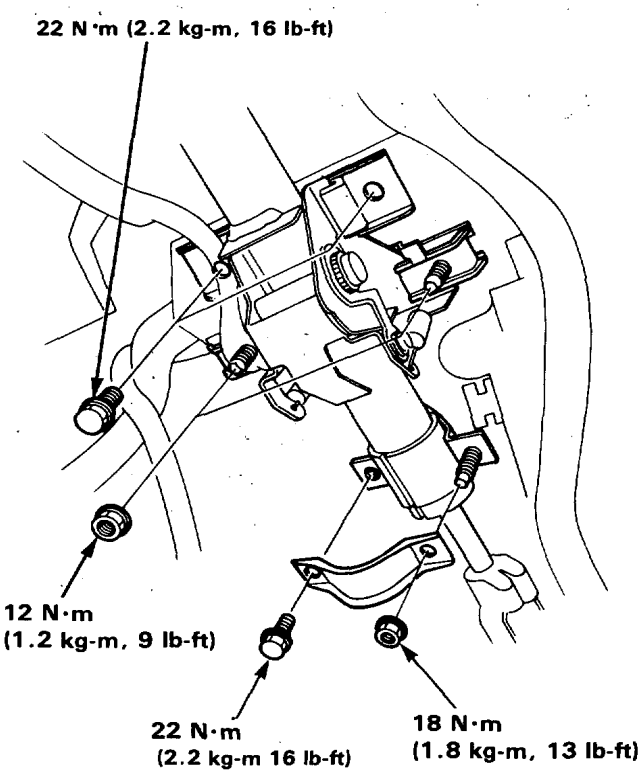
Installation

1. Set the guide rails in the bending plate guide and install the bending plate guide on the bnding plate base.

   NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



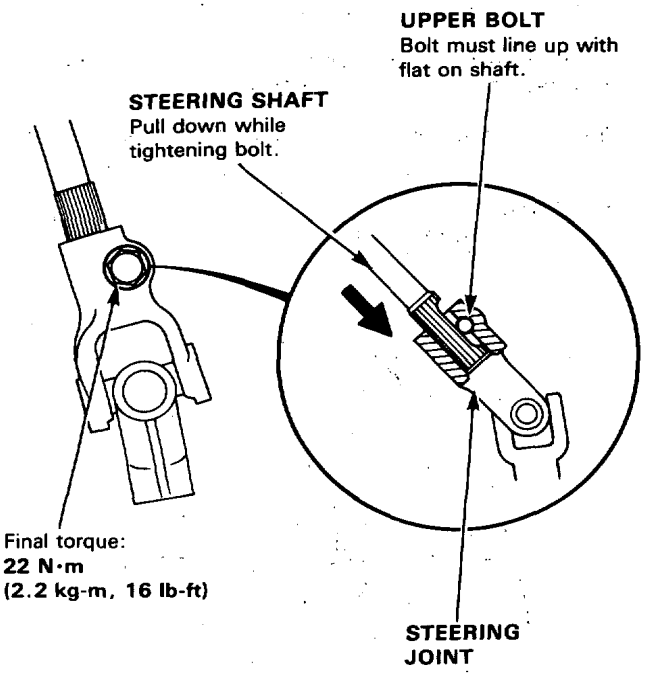
2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket.
   Tighten to these torques in step 7, page 11—14.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

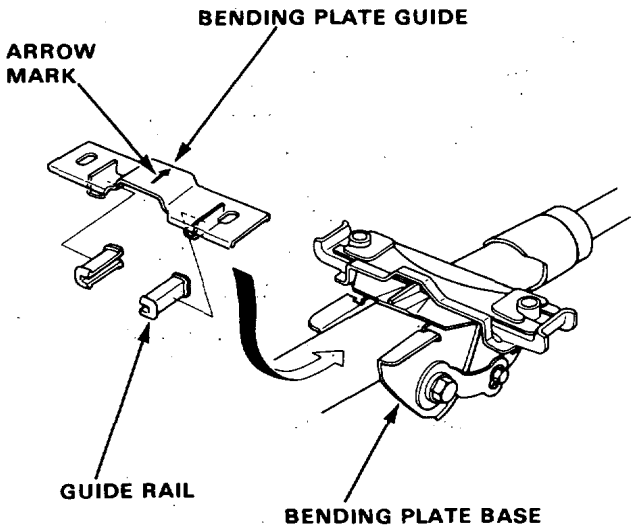
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



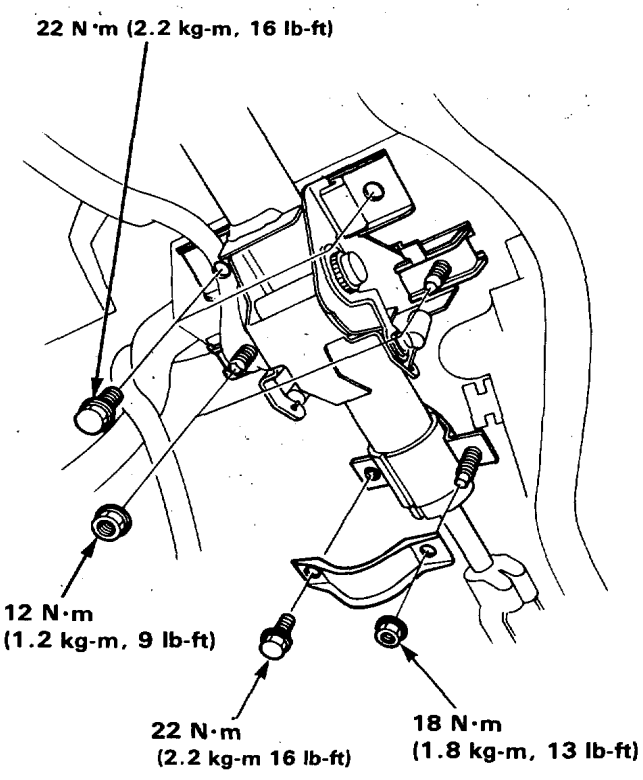
Installation

1. Set the guide rails in the bending plate guide and install the bending plate guide on the bnding 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.
   Tighten to these torques in step 7, page 11—14.



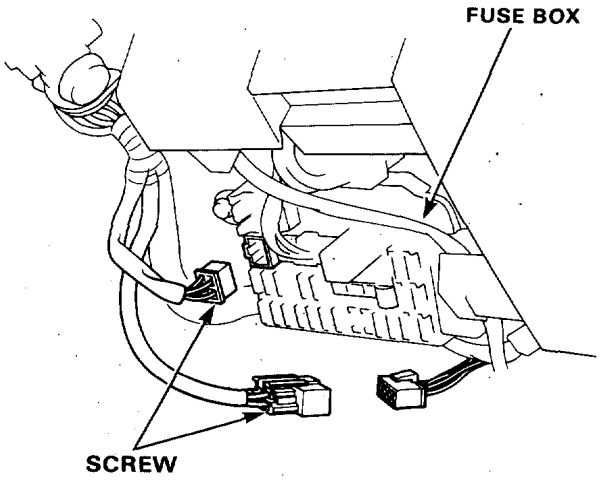
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Steering Column

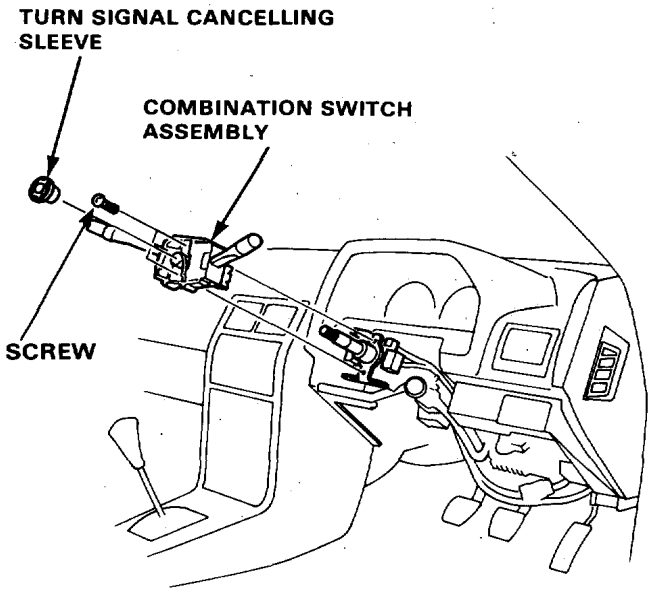
Installation (cont'd)

3. Connect each wire coupler to the fuse box at the under dash right side.



4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.

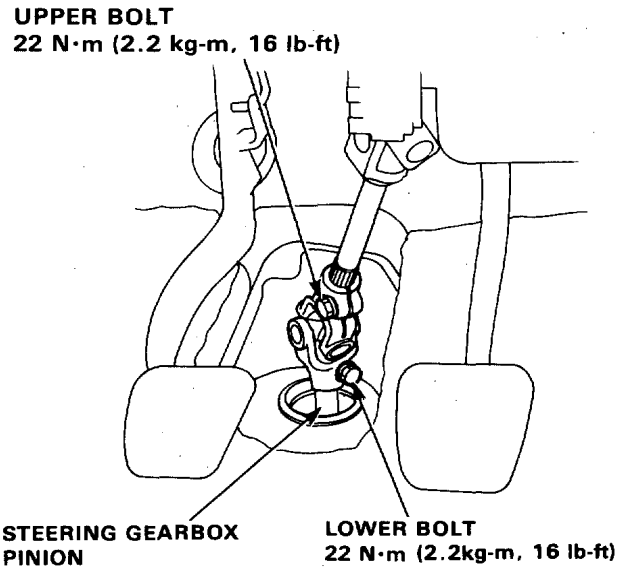


6. Loosely install the steering joint on the steering gearbox pinion.

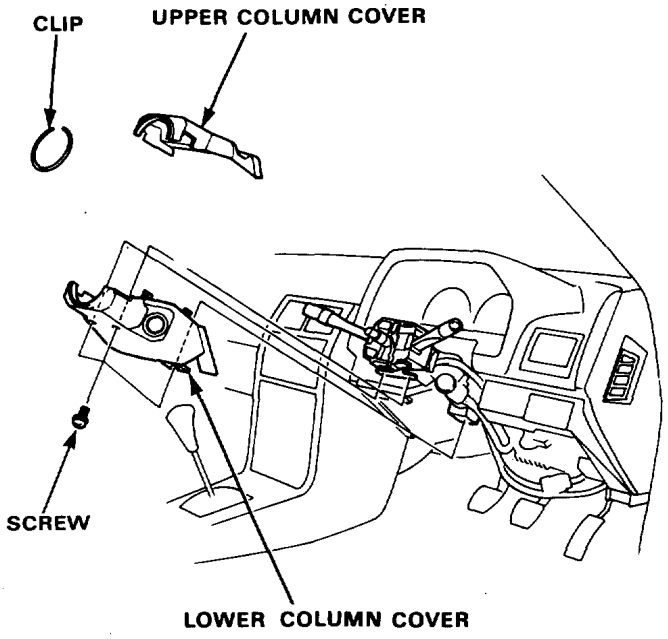
   NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

7. Tighten the steering column mountion bolts, nuts and bracket loosely installed in step 2.

8. Tighten the lower and upper steering joint bolts.

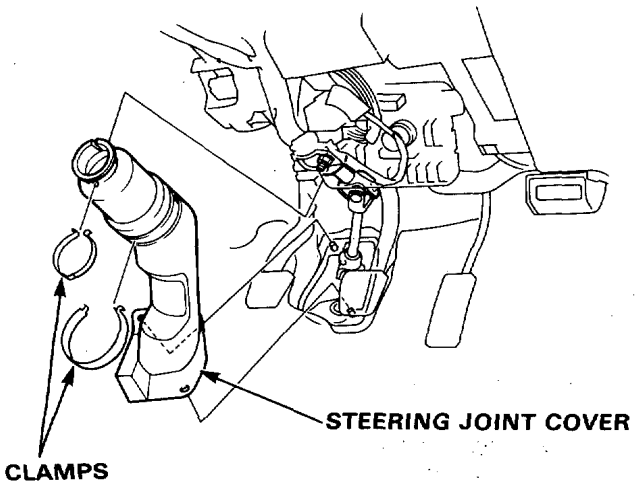


9. Install the upper column cover and lower column cover.

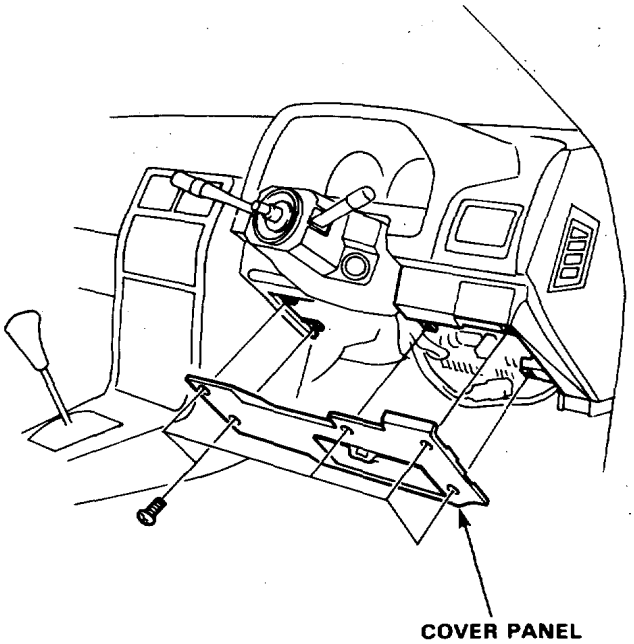


Downloaded from www.Manualslib.com manuals search engine

10. Install the steering joint cover with the clamps and clips.



11. Install the cover panel.

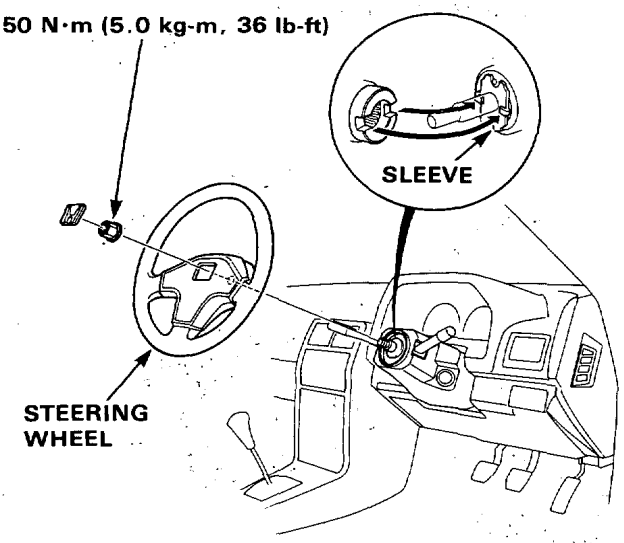


12. Install the steering wheel in a straight ahead position.

NOTE: Align the tabs on the turn signal cancelling sleeve with the grooves on the steering wheel boss.

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.



Downloaded from www.Manualslib.com manuals search engine

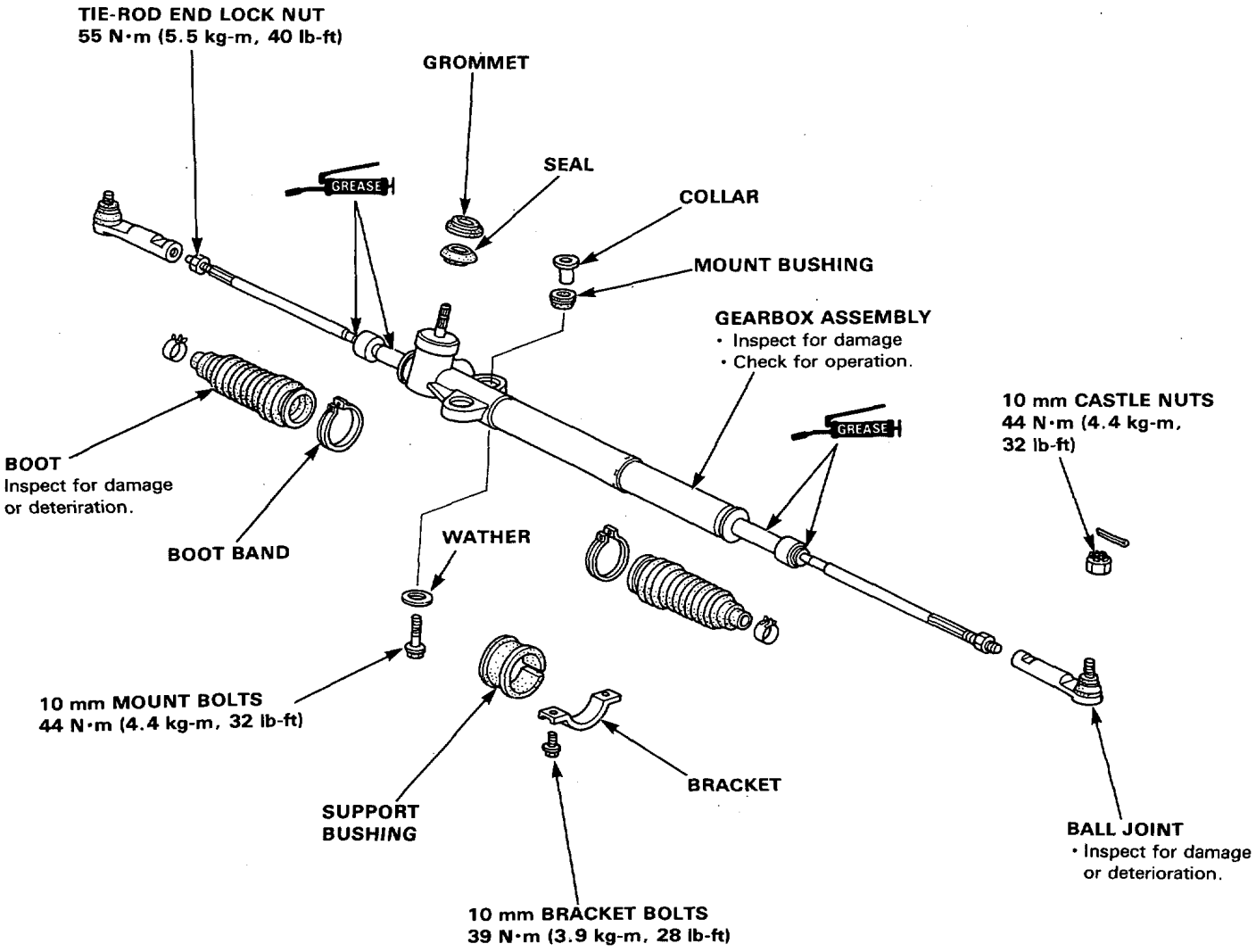
Steering Gearbox

Illustrated Index

CAUTION:

- **Before disassembling the gearbox, wash it off with solevent and a brush.**
- **Thorougly clean all disassembled parts.**
- **Replace parts with damaged sliding surfaces or deterioration.**
- **Do not try to disassemble the gearbox assembly. If the gearbox is faulty, replace the whole gearbox as an assembly.**

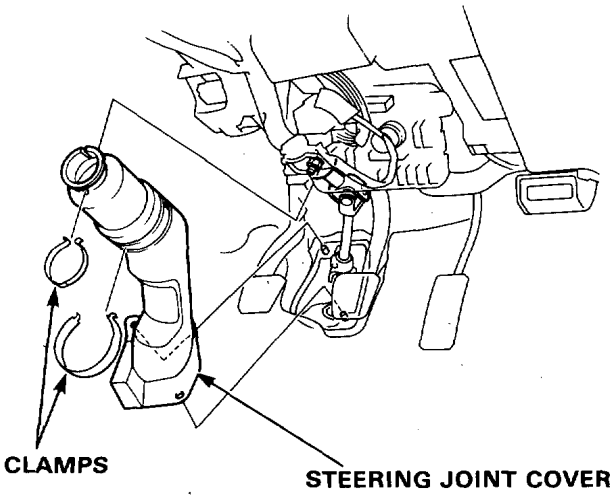
NOTE: RH Drive shown, LH Drive is similar.



Downloaded from www.Manualslib.com manuals search engine

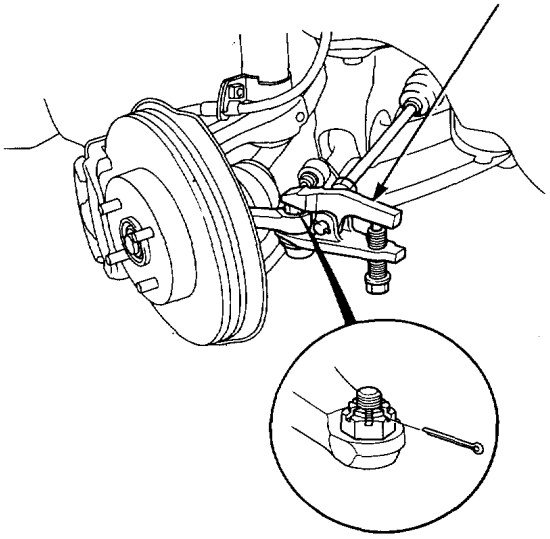
Removal

1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.

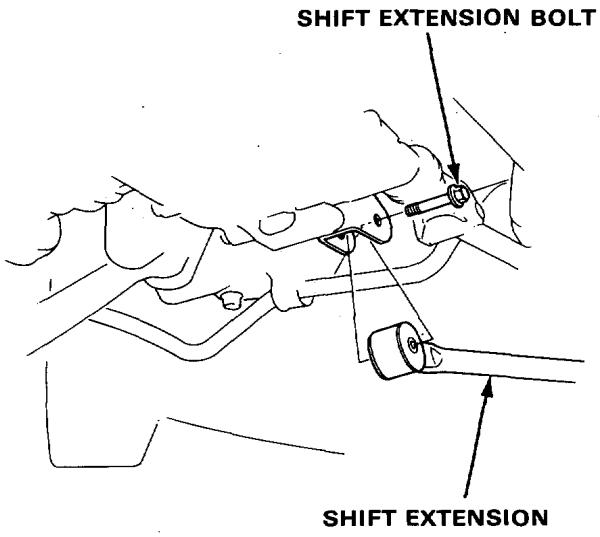


2. Raise the front of car and support on safety stands in the proper locations.
3. Remove the front wheels.
4. Disconnect the tie-rods from the steering knuckles using the special tool shown.

BALL JOINT REMOVER
18G1584

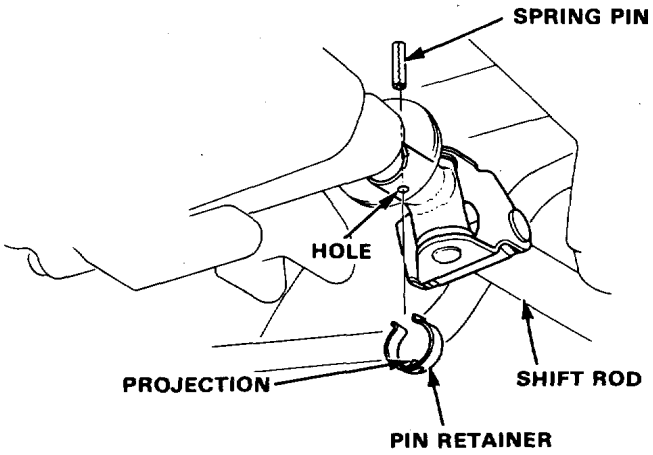


5. (Manual transmission model only)
   - Remove the shift extension from the transmission case.



   - Slide the boot at the connecting position of the gear shift rod.
   - 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.



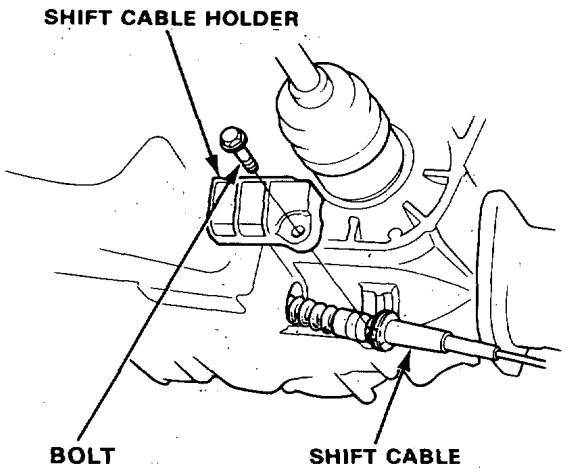
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Removal (cont'd)

6. (Automatic transmission only)

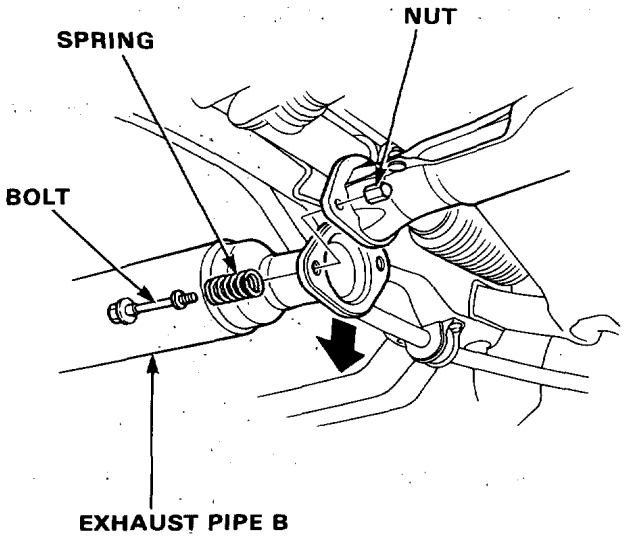
   - Remove the shift cable holder and cable from the transmission case.



7. Remove the self-locking nuts connecting the exhaust pipe to exhaust pipe B, then separate exhaust pipe B from the exhaust pipe.

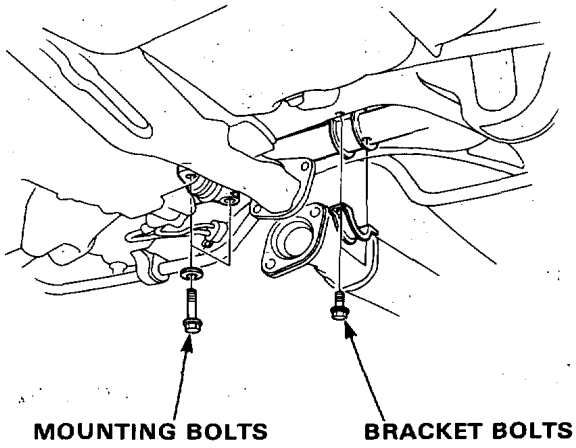
   CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

8. Move the exhaust pipe B to dawnward.

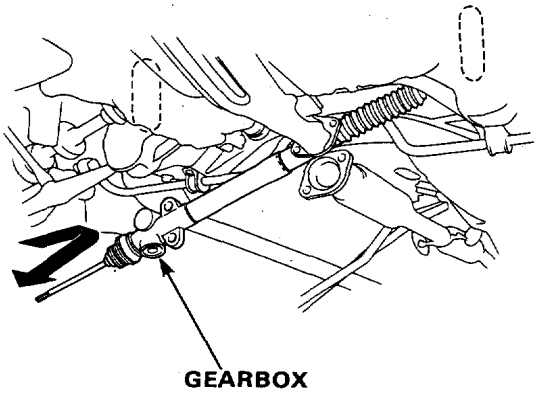


9. Slide the tie-rod all the way to the left side.

10. Remove the steering geardox mounting and bracket bolts.



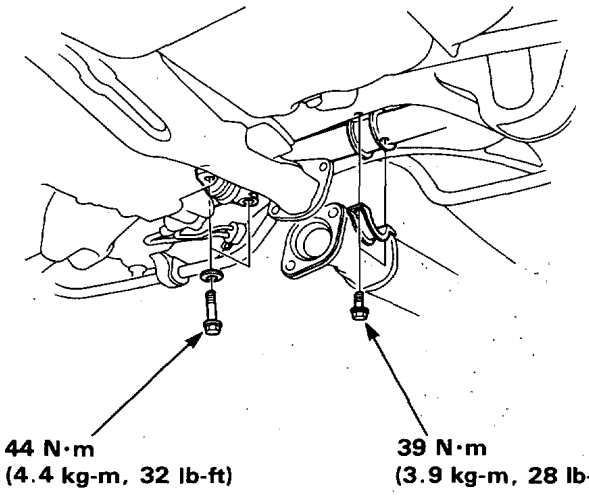
11. Slide the gearbox left so that the right tie-rod clears the bottom of the rear beam, then remove the gearbox.



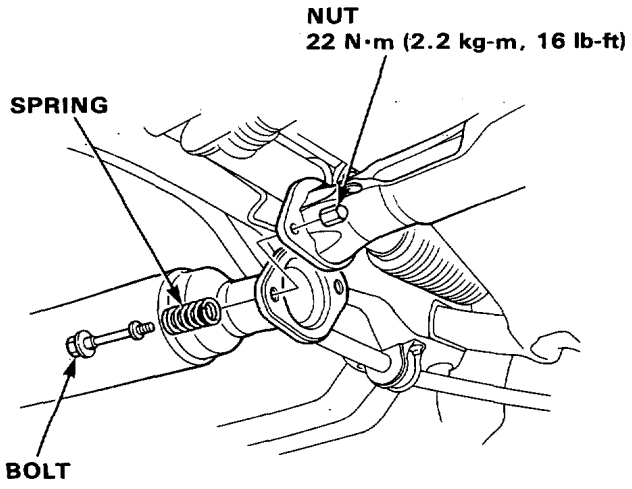
Downloaded from www.Manualslib.com manuals search engine

Installation

1. Reinstall the gearbox in the reverse order of removal.
2. Tighten the gearbox mounting and bracket bolts.

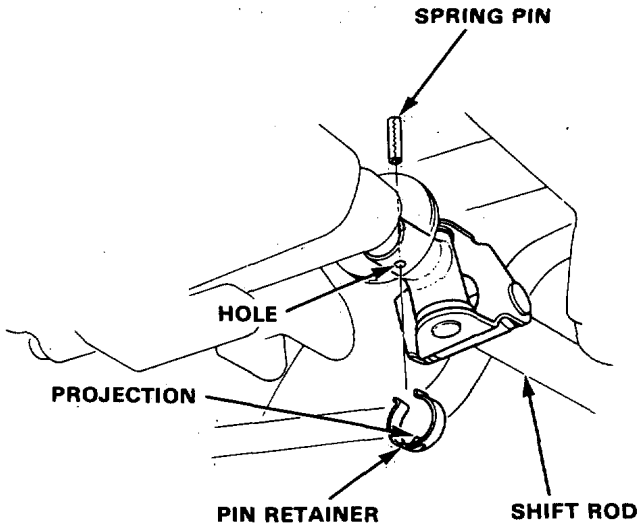


3. Connect the exhaust pipes with new gasket, and tighten the bolts and nuts.

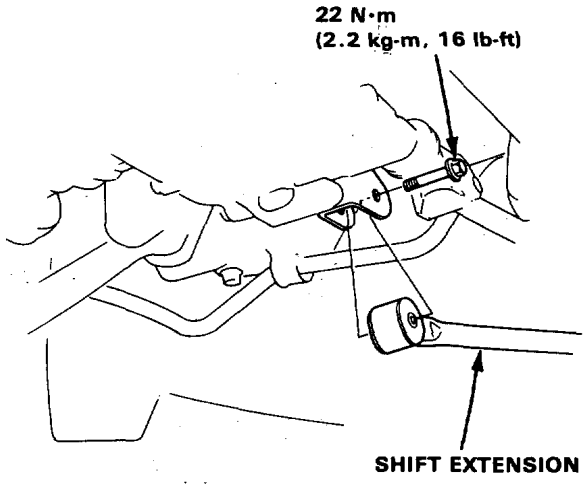


4-1. (Manual transmission model only)

- 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.



- Install the shift extension to the transmission case.



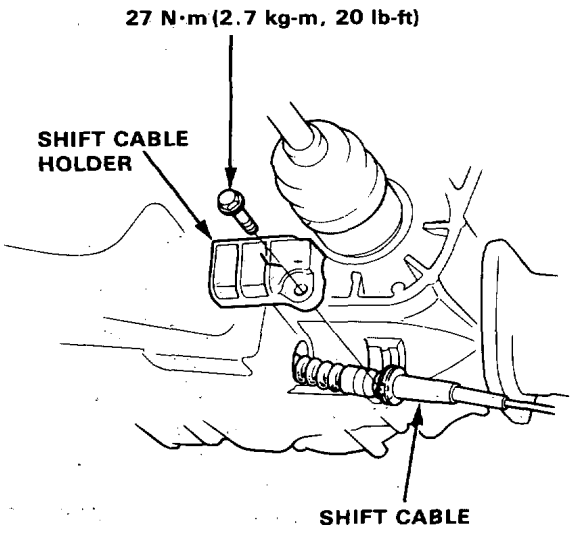
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

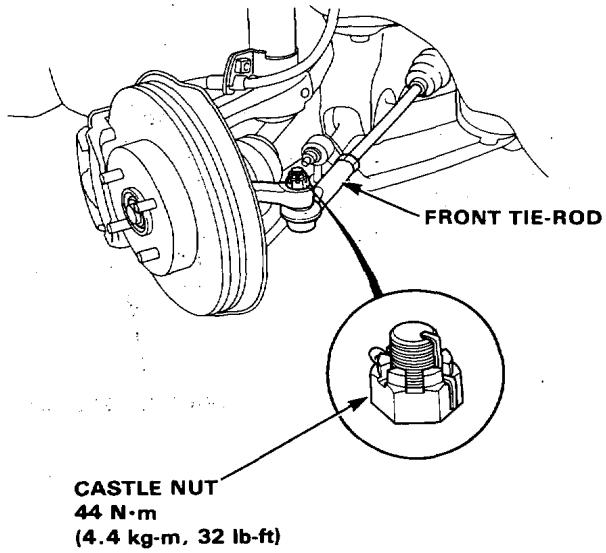
Installation (cont'd)

4-2. (Automatic transmission model only).

- Connect the shift cable to the transmission and install the cable holder.



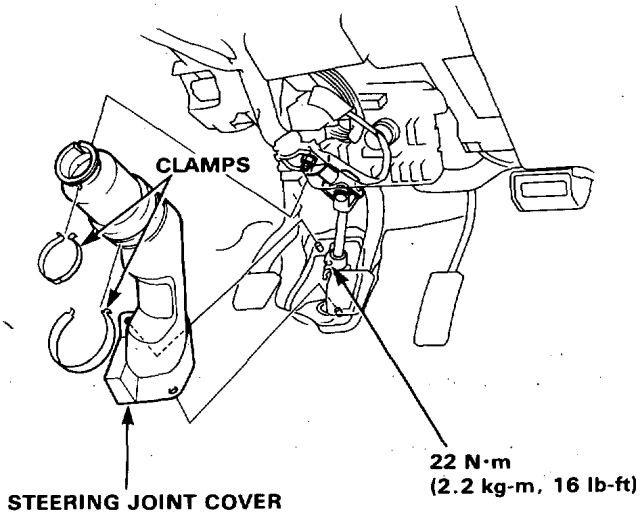
5. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.



6. Reconnect the steering shaft to the gearbox.

7. 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.



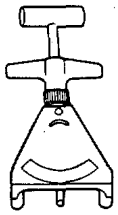
8. Reinstall the front wheels.

Downloaded from www.Manualslib.com manuals search engine

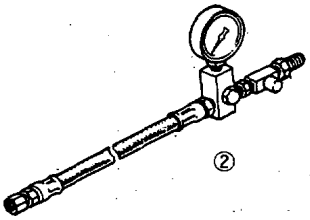
Special Tools

Special Tools

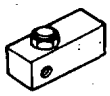
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JGG-0010100	Belt Tension Gauge	1	
②	07406-0010001	P/S Pressure Gauge Set	1	
②-1	07406-0010300	Pressure Control Valve	1	
②-2	07406-0010400	Pressure Gauge	1	
③	07LAK-SK30100	P/S Pressure Gauge Adapter Set	1	Not Shown
③-1	07LAK-SK30110	P/S Pump Joint Adapter	1	
③-2	07LAK-SK30120	P/S Hose Joint Adapter	1	
④	18G1584	Ball Joint Remover	1	



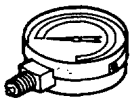
①



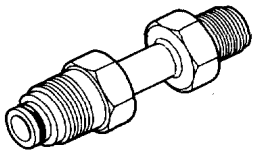
②



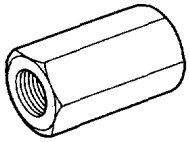
②-1



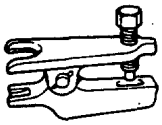
②-2



③-1



③-2



④

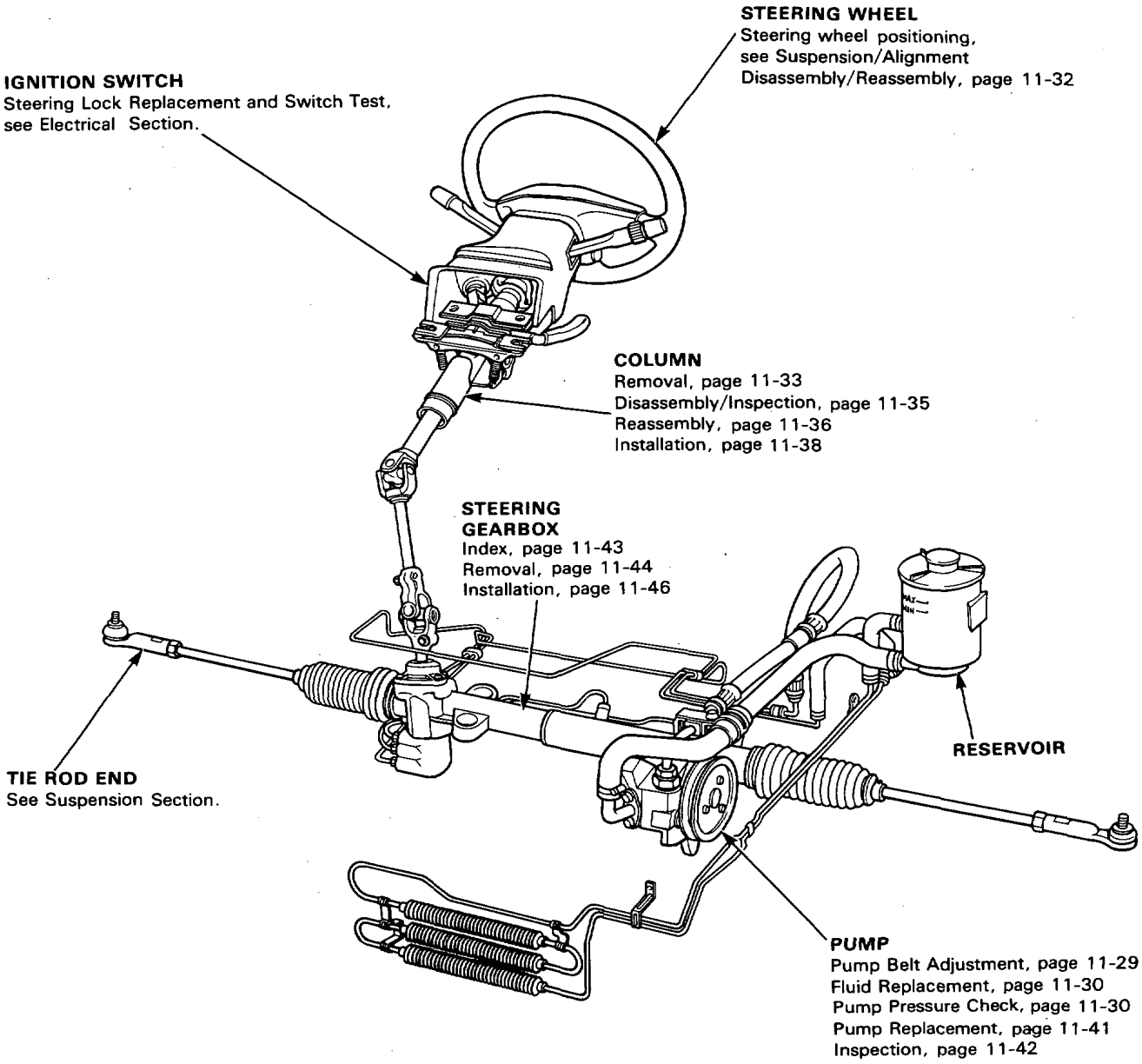
Downloaded from www.Manualslib.com manuals search engine

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.

NOTE: RH Drive shown, LH Drive is similar.



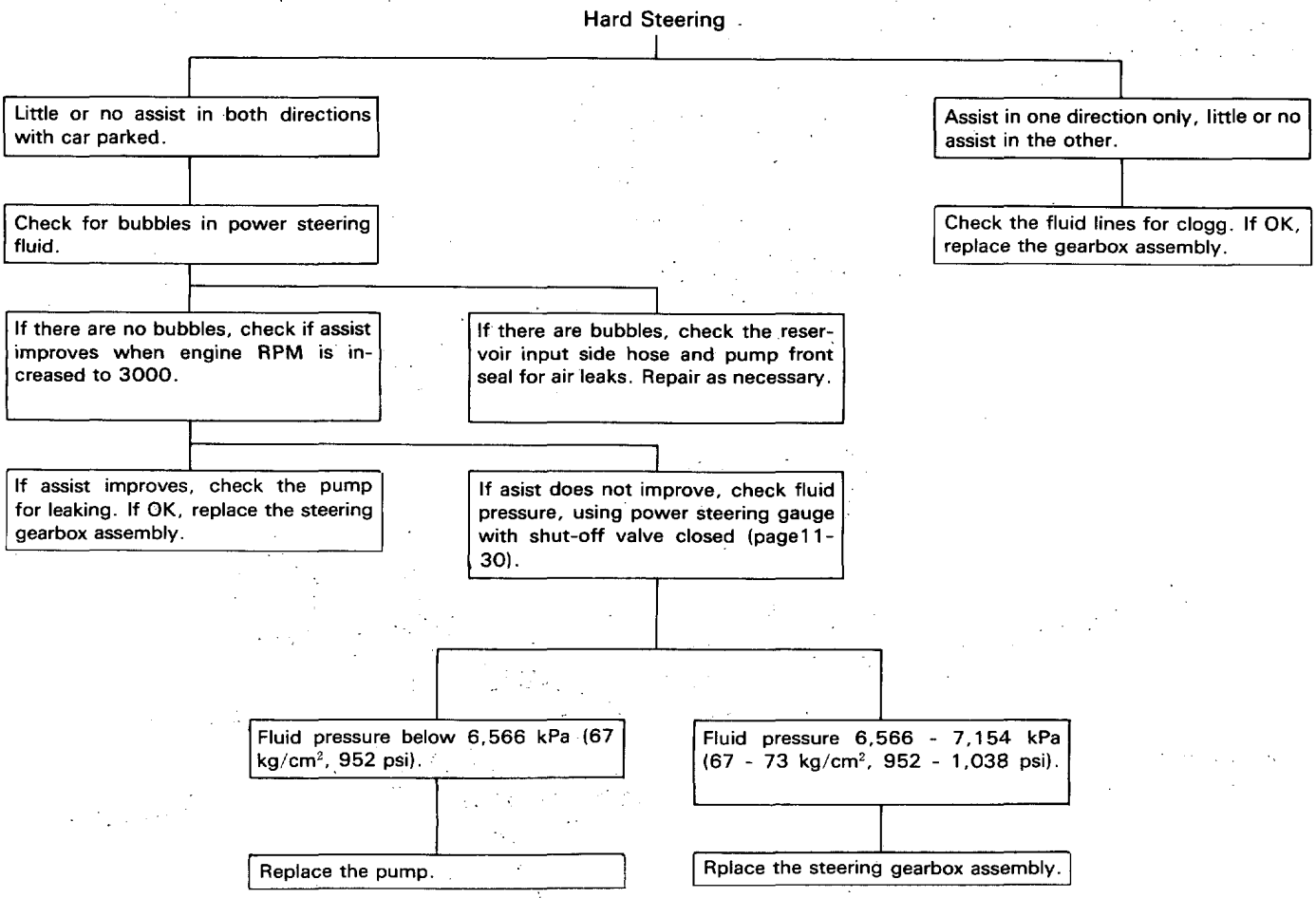
Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

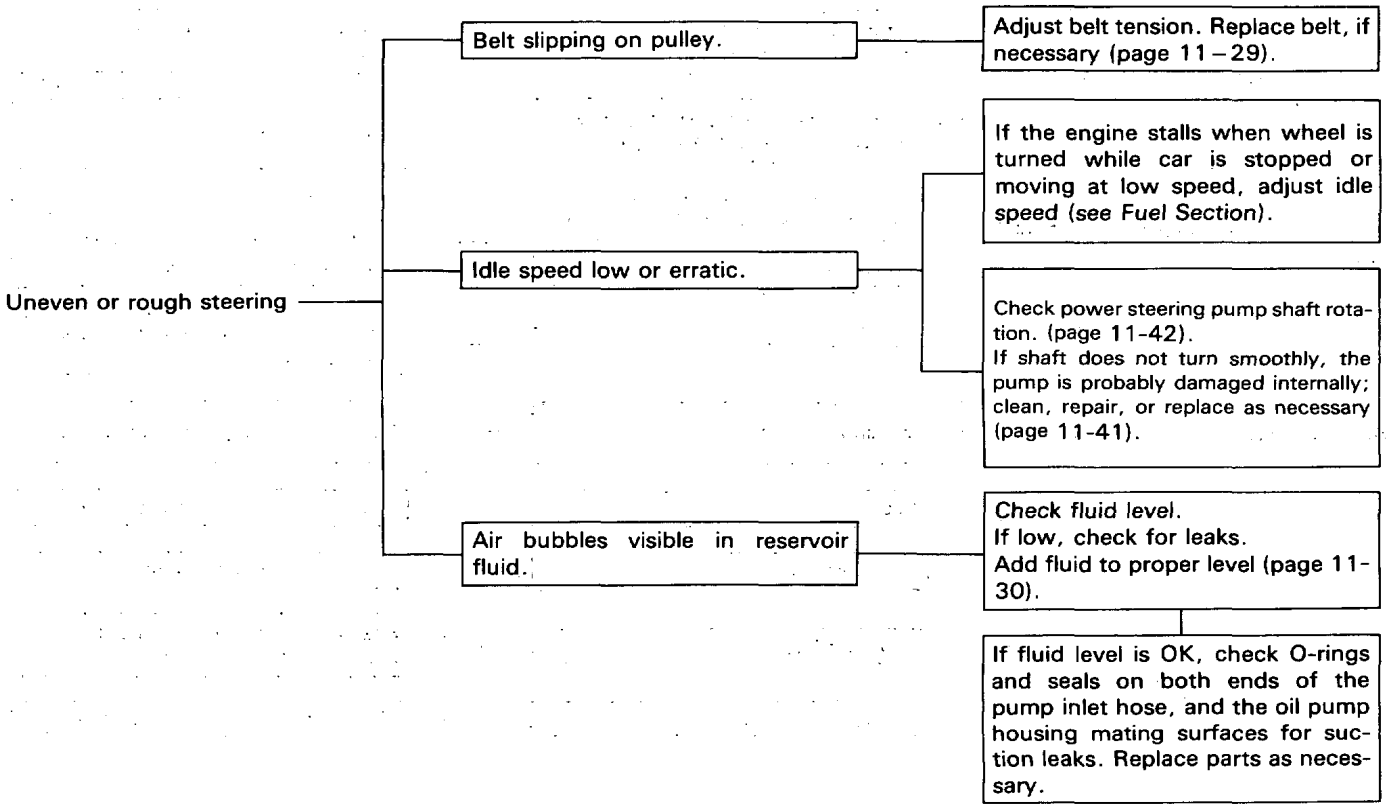
General Troubleshooting

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?



Downloaded from www.Manualslib.com manuals search engine



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

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 11-29) or replace belt.
	Sticking relief valve; pulsation exceeds 980 kPa (10 kg/cm^2, 142 psi).	Replace the pump.
Assist (excessively light steering) at high speed.	Measure force required to turn wheel with car parked on dry paved surface (page 11-31).	If below 27-30N (2.7-3.0 kg, 6.0-6.6 lb) check the gearbox and pump. Replace parts as necessary.
Steering kicks back during wide turns.	Pump belt slipping.	Adjust belt tension (page 11-29) or replace belt.
	Sticking power valve machanism.	Replace steering gearbox assembly.
	Rack guide too loose.	Replace steering gearbox assembly.
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 rack clearance.	Replace steering gearbox assembly.

Downloaded from www.Manualslib.com manuals search engine

Noise and Vibration

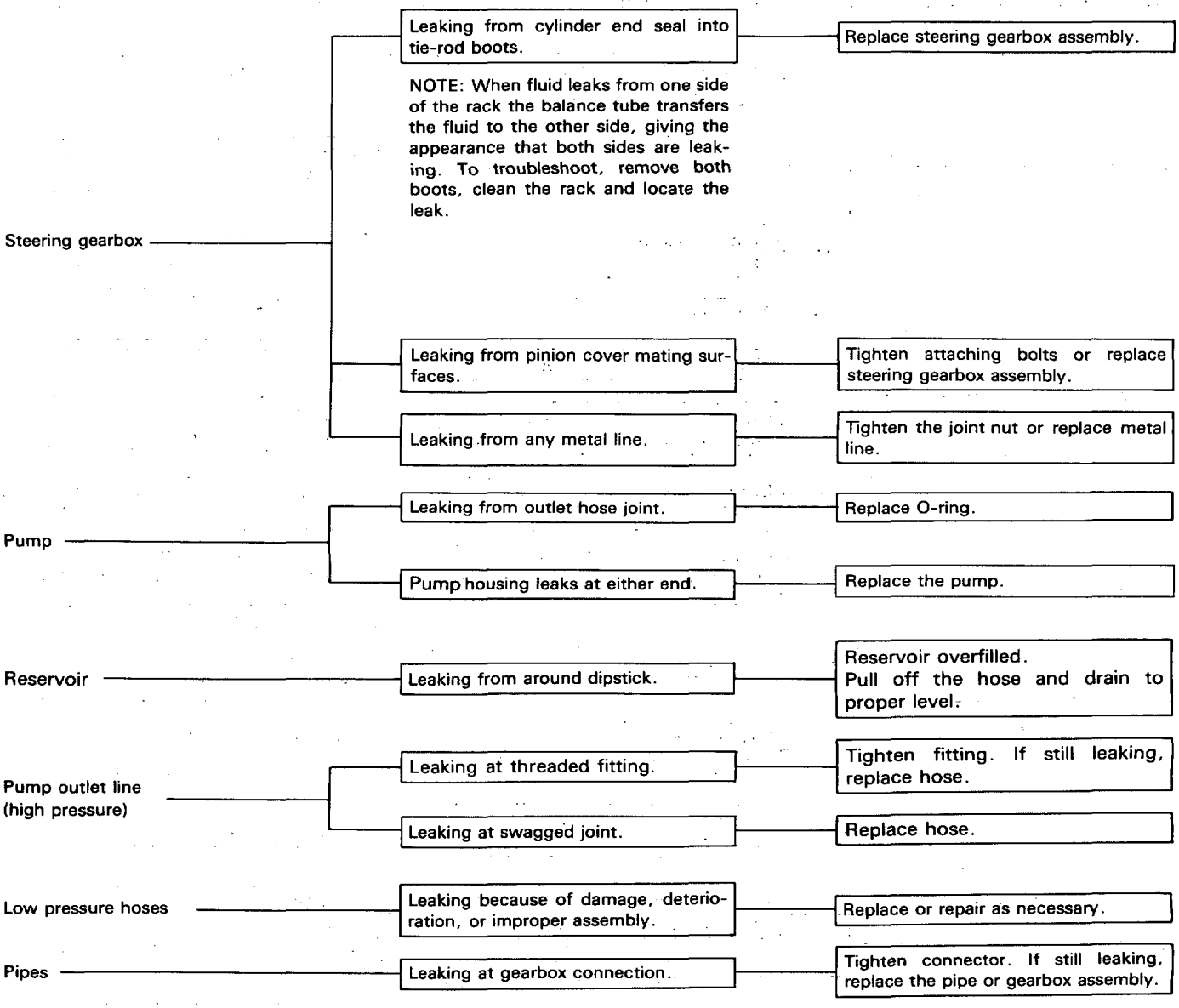
NOTE: Pump noise in first 2–3 minutes after starting in cold weather (–20°C, –4°F or colder) is normal.

Humming	Humming, due to pulsation of fluid, is normal, particularly when wheel is turned with car stopped.	
	If equipped with Automatic transmission, the hum could be torque converter of pump noise.	Confirm by temporarily removing pump belt.
	High pressure line touching the frame.	Reposition the line.
Squeaking	Pump belt slipping.	Adjust belt tension (page 11-29) or replace belt.
	Pinion shaft seal not lubricated.	Grease it.
	Horn contact not lubricated, or under too much pressure.	Grease the contact, or bend it to reduce the pressure.
	Burrs on the pinion gear.	Replace steering gearbox assembly.
Rattle or chattering	NOTE: A single "clunk" may be a normal amount of linkage clearance. To distinguish this type of clunk, turn the wheel back and forth with the engine OFF.	
	Loose pump pulley.	Tighten or replace pulley. If shaft is loose, replace the pump.
	Loose steering shaft connector, tie-rod, or ball joint.	Check and tighten, or replace parts as necessary.
	Column hanger bushing damaged.	Replace steering shaft.
Hissing	Lines or hoses from the control unit touching each other.	Reposition lines so they don't touch.
	Noise from control valve.	Replace the steering gearbox assembly.
Pump noise	NOTE: Pump noise up 2–3 minutes after starting in cold weather (–20°C, –4°F or colder) is normal. Compare pump noise at operating temperature to another car.	If pump shaft does not turn smoothly, replace the pump.
Grating noise from pump	Cavitation caused by air bubbles in fluid.	Check fluid level. If low, fill reservoir to proper level, and check for leaks. Tighten or replace as necessary.
		Check for crushed suction hose or a loose hose clamp allowing air into the system. Tighten or replace as necessary.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Fluid Leaks

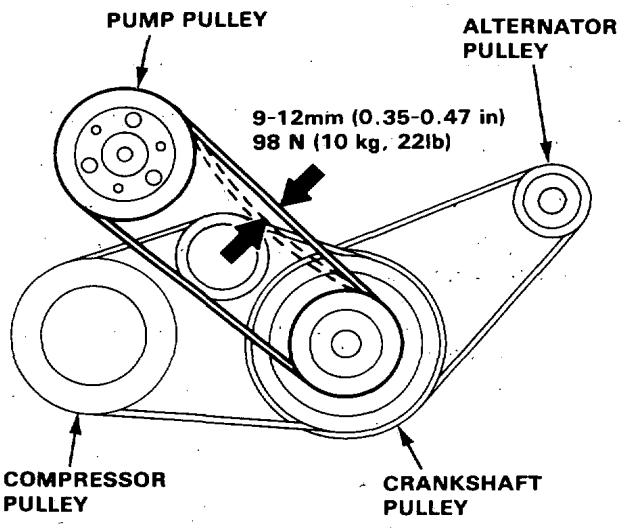


Downloaded from www.Manualslib.com manuals search engine

Pump Belt Adjustment

A properly adjusted belt should deflect about 9.0-12.0 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 7.0-10.0 mm (0.28-0.39 in.) when first measured.

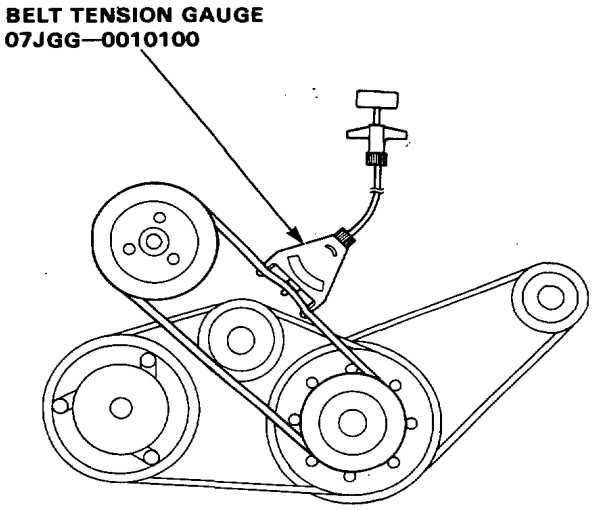


Test by the Belt Tension Gauge; 07JGG—0010100.
Attach the tension gauge to the belt and measure the tension of the belt.

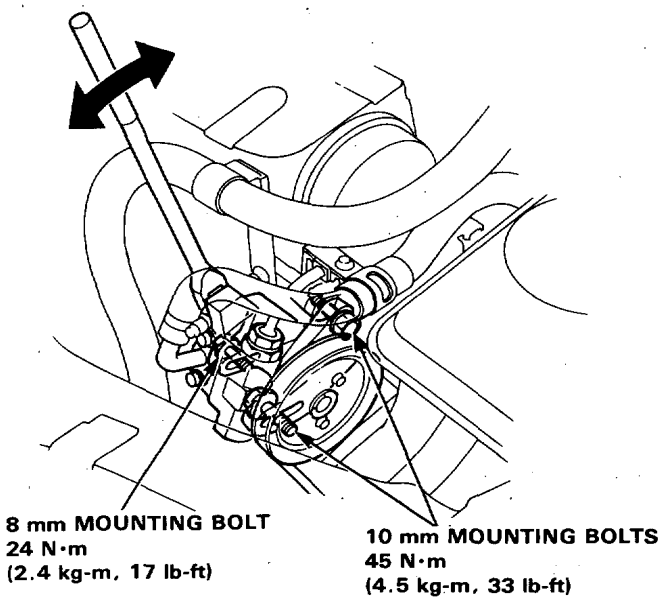
Tension: 35—50 kg (77—110 lb)

NOTE:

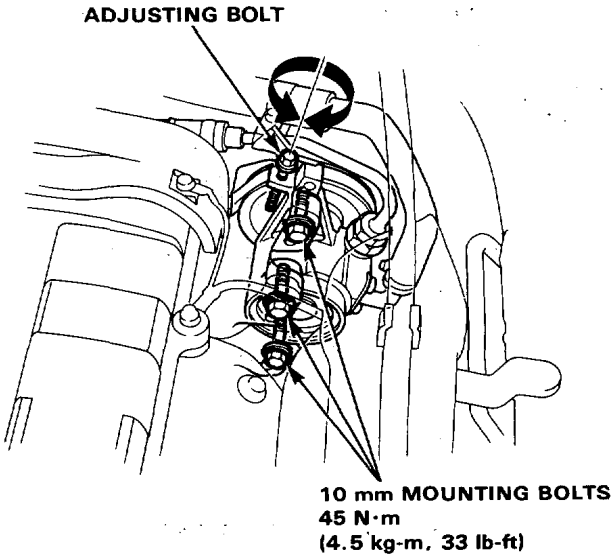
- On a brand-new belt, the tension should be 45—70 kg (99—154 lb) when first measured.
- See the instructions for the tension gauge.



SOHC Engine:
Loosen the three mounting bolts and more the pump to get proper tension, then retighen the mounting bolts.



DOHC Engine:
Loosen the three mounting bolts and turn the adjusting bolt to get proper tension, then retighten the mounting bolts.



Start the engine and turn the steering wheel from lock-to-lock serveral times, then recheck the belt tension.

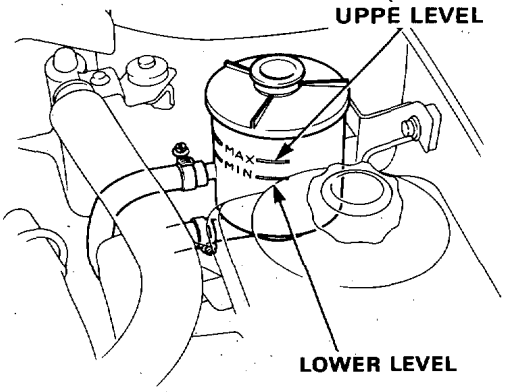
Downloaded from www.Manualslib.com manuals search engine

On-Car Checks

Fluid Replacement

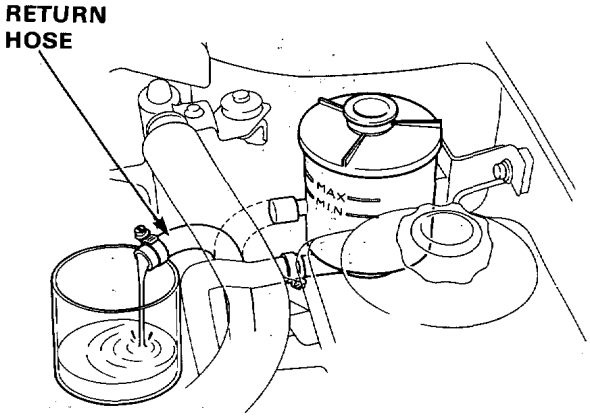
Check the reservoir at regular intervals, and add fluid sasa necessary.

CAUTION: Use only DEXRON® II Automatic Transmission Fluid (ATF). Using other fluids such as ATF or other manufacturer's power steering fluid will damage the system.



Fluid Replacement
CAPACITY: 1.2 liter (1.3 US qt., 1.1 Imp qt.) at change

1. Drain the fluid from the reservoir.
2. Disconnect the return hose from the gearbox at the reservoir, and put the end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.



4. Re-fit the return hose on the reservoir.
5. Fill the reservoir to the upper level mark.
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add 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.

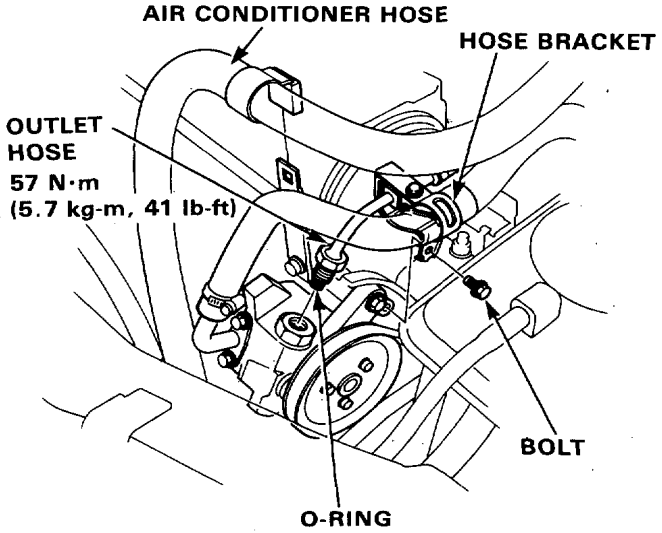
CAUTION: Use fender covers to avoid damaging painted surfaces.

NOTE: First check the power steering fluid level and pump belt tension.

1. Remove the air conditioner hose from the bracket.
2. Remove the hose bracket from the pump bracket by removing the mounting bolt.
3. Disconnect the outlet hose from the pump.

CAUTION: Be careful not to damage the O-ring when disconnecting the hose.

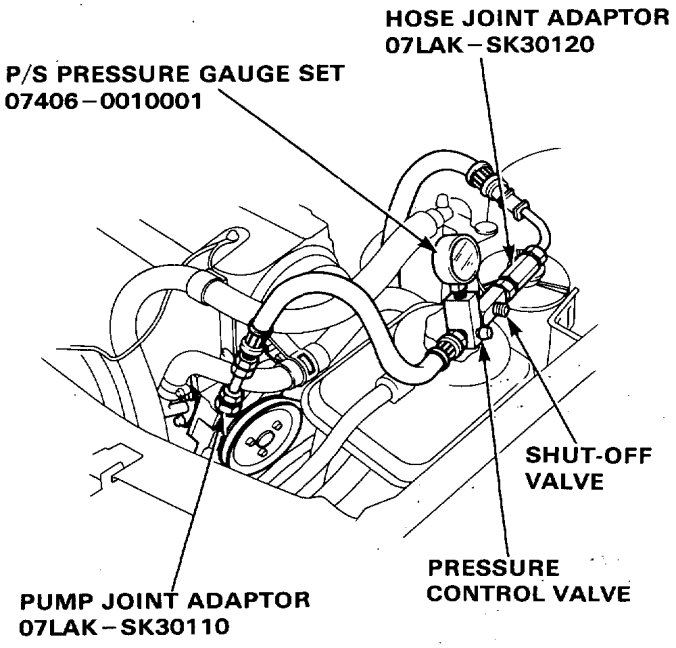
NOTE: Place the shop towel around the pipe fitting to catch the spilled fluid.



Downloaded from www.Manualslib.com manuals search engine

4. Install the pump joint adaptor into the pump outlet and tighten it securely.

5. Install the power steering pressure gauge set between the pump and hose joint adaptors as shown.



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.

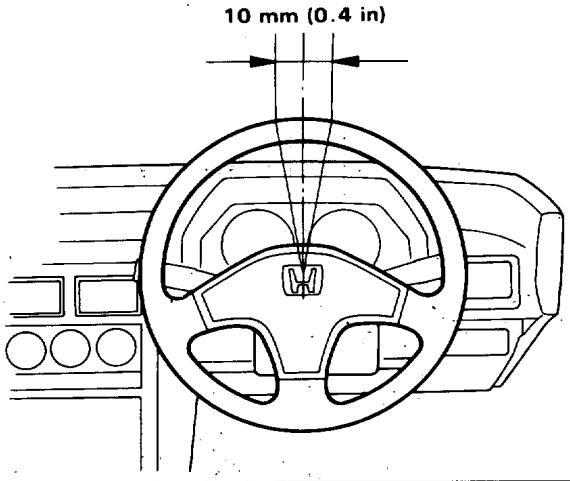
CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

If the pump is in good condition, the gauge should read at least 6,566—7,154 kPa (67—73 kg/cm², 952—1,038 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.

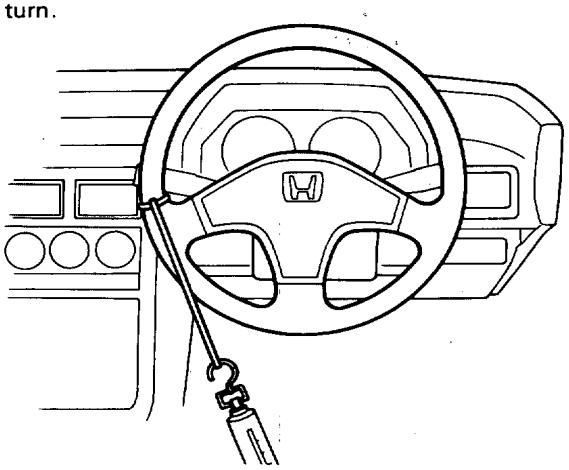


Power Assist Check with Car Parked

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.



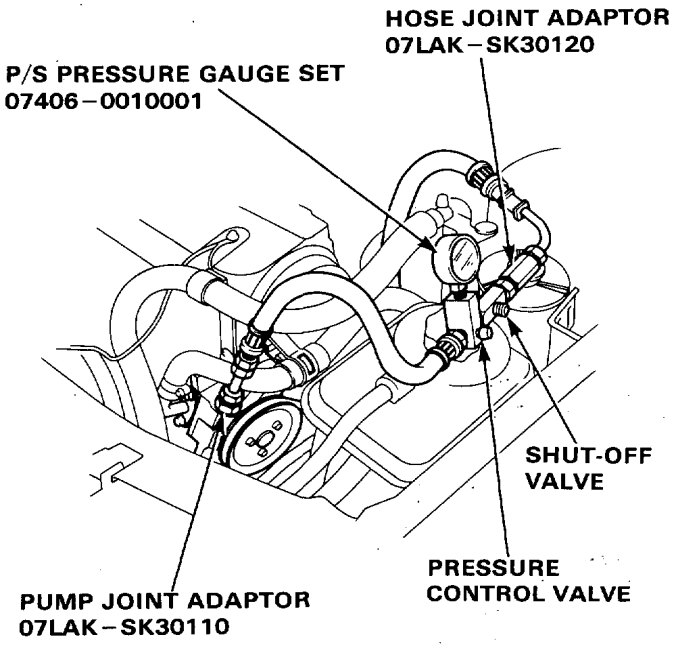
4. The scale should read approximately 27-30N (2.7-3.0 kg, 6.0-6.6 lb)
If the reading is significantly greater or less, check the gearbox and pump.

NOTE: The reading may differ depending on the surface on which the tires lie.

Downloaded from www.Manualslib.com manuals search engine

4. Install the pump joint adaptor into the pump outlet and tighten it securely.

5. Install the power steering pressure gauge set between the pump and hose joint adaptors as shown.



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.

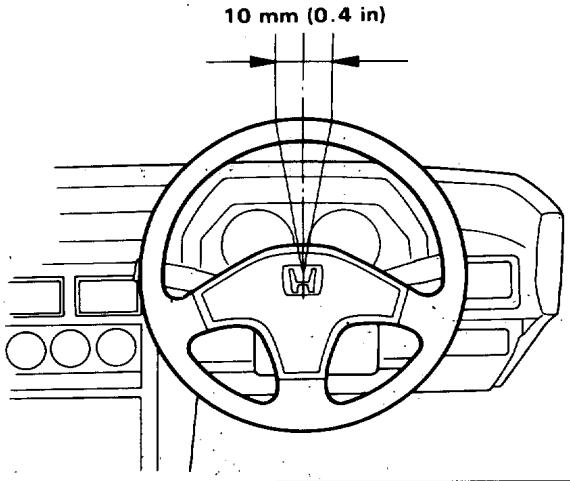
CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

If the pump is in good condition, the gauge should read at least 6,566—7,154 kPa (67—73 kg/cm², 952—1,038 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.

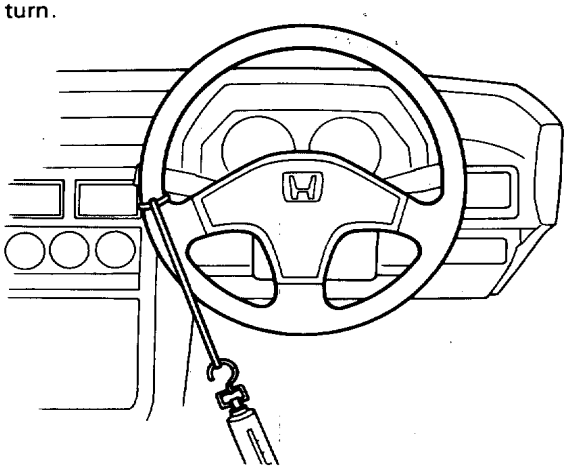


Power Assist Check with Car Parked

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.



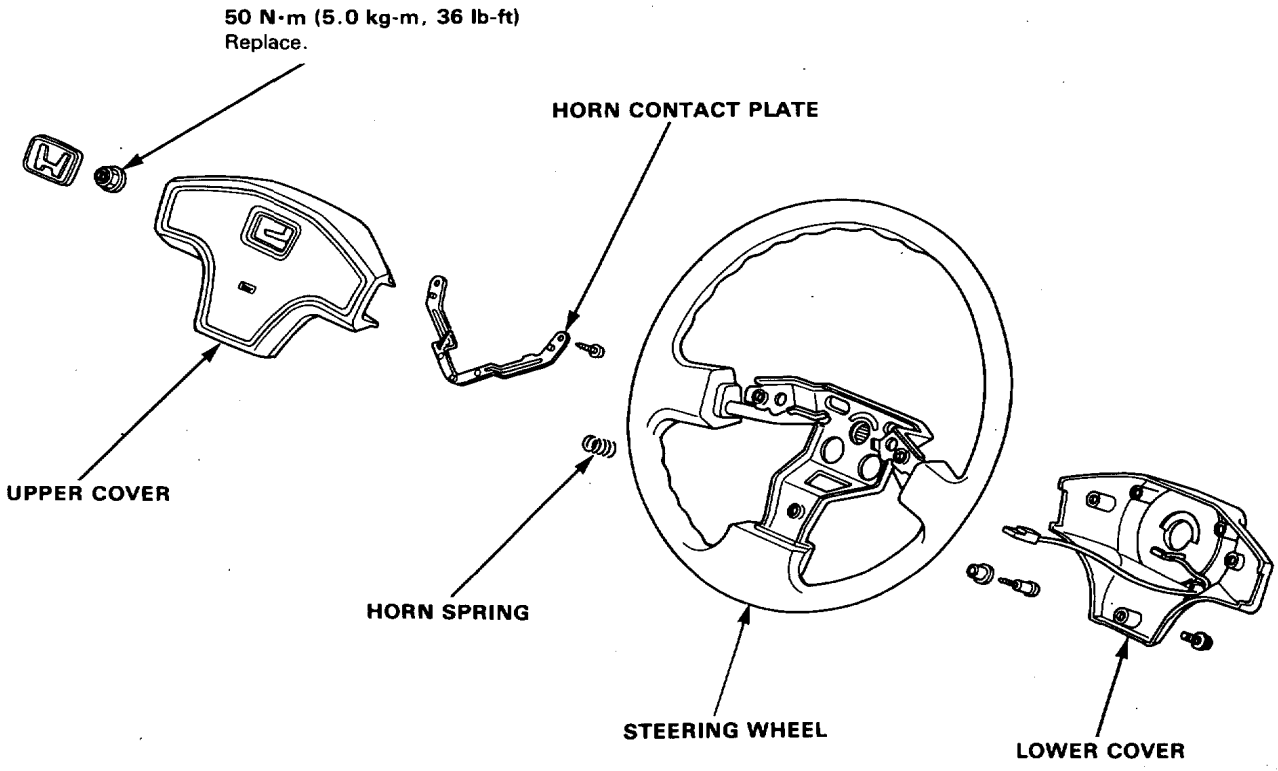
4. The scale should read approximately 27-30N (2.7-3.0 kg, 6.0-6.6 lb)
If the reading is significantly greater or less, check the gearbox and pump.

NOTE: The reading may differ depending on the surface on which the tires lie.

Downloaded from www.Manualslib.com manuals search engine

Steering Wheel

Disassembly/Reassembly

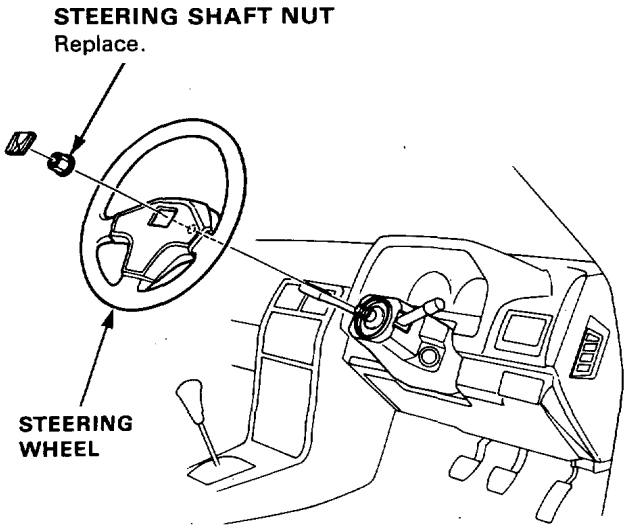


Downloaded from www.Manualslib.com manuals search engine

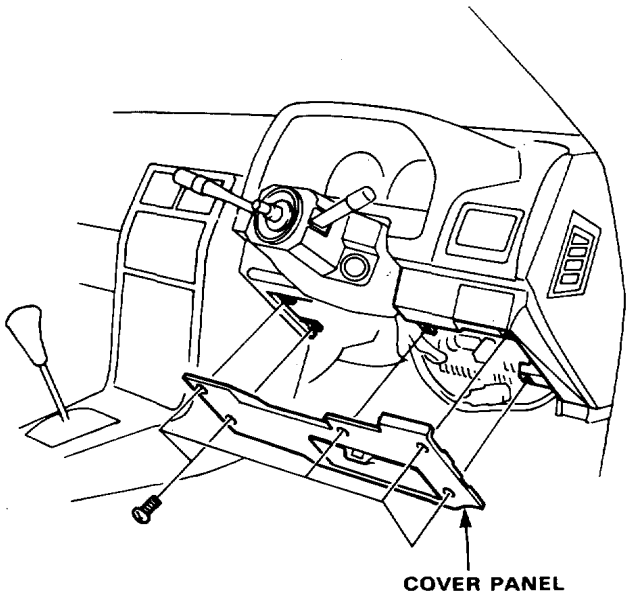
Steering Column

Removal

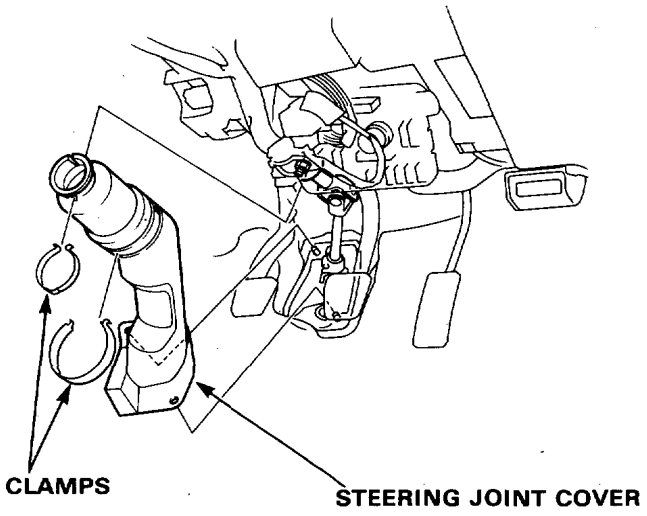
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



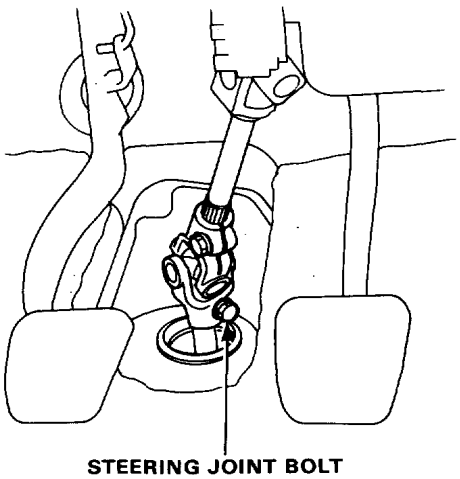
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.



6. Remove the steering joint bolt, and move the joint toward the column.



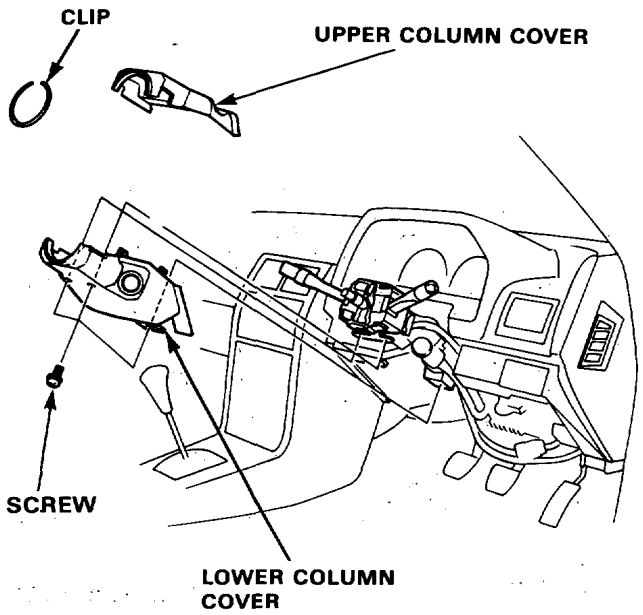
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Steering Column

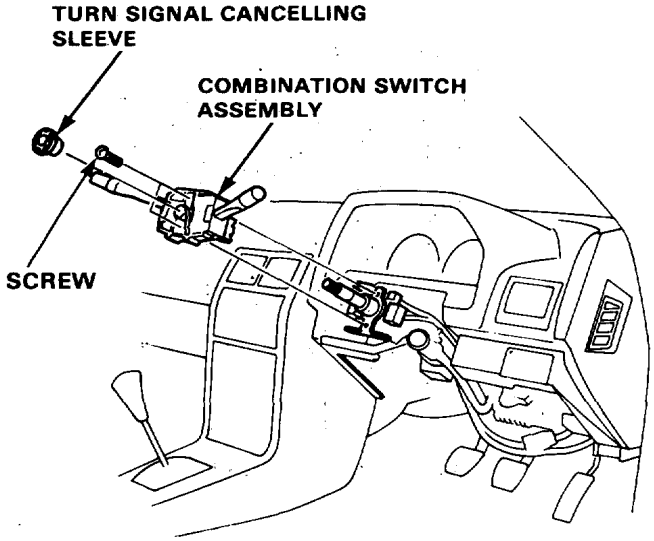
Removal (cont'd)

7. Remove the clip and three screws, then remove the upper and lower column covers.

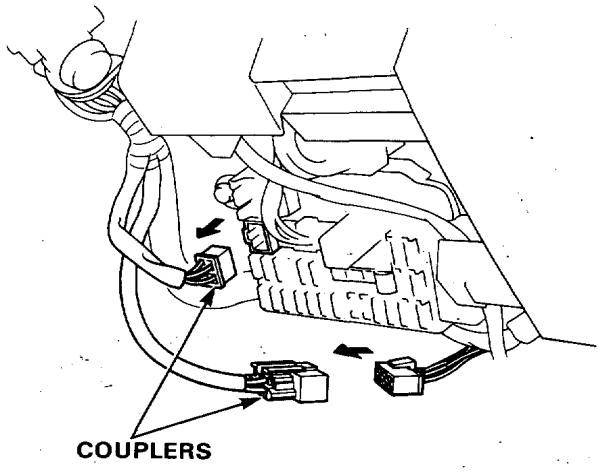


8. Disconnect each wire coupler from the combination switch.

9. Remove the turn signal canceling sleeve. Remove the two screws and combination switch assembly.



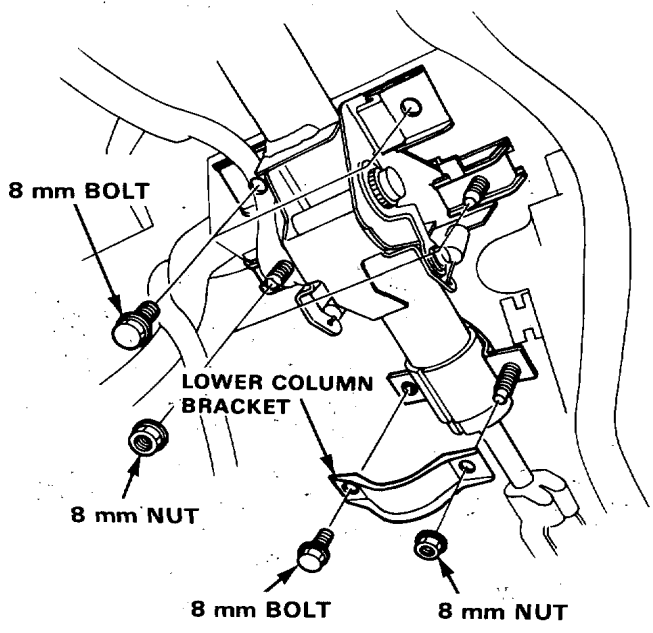
10. Disconnect each wire coupler from the fuse box at under dash right side.



11. Remove the lower column bracket.

12. Remove the bolts and nuts attaching the bending plate guide and bending plate.

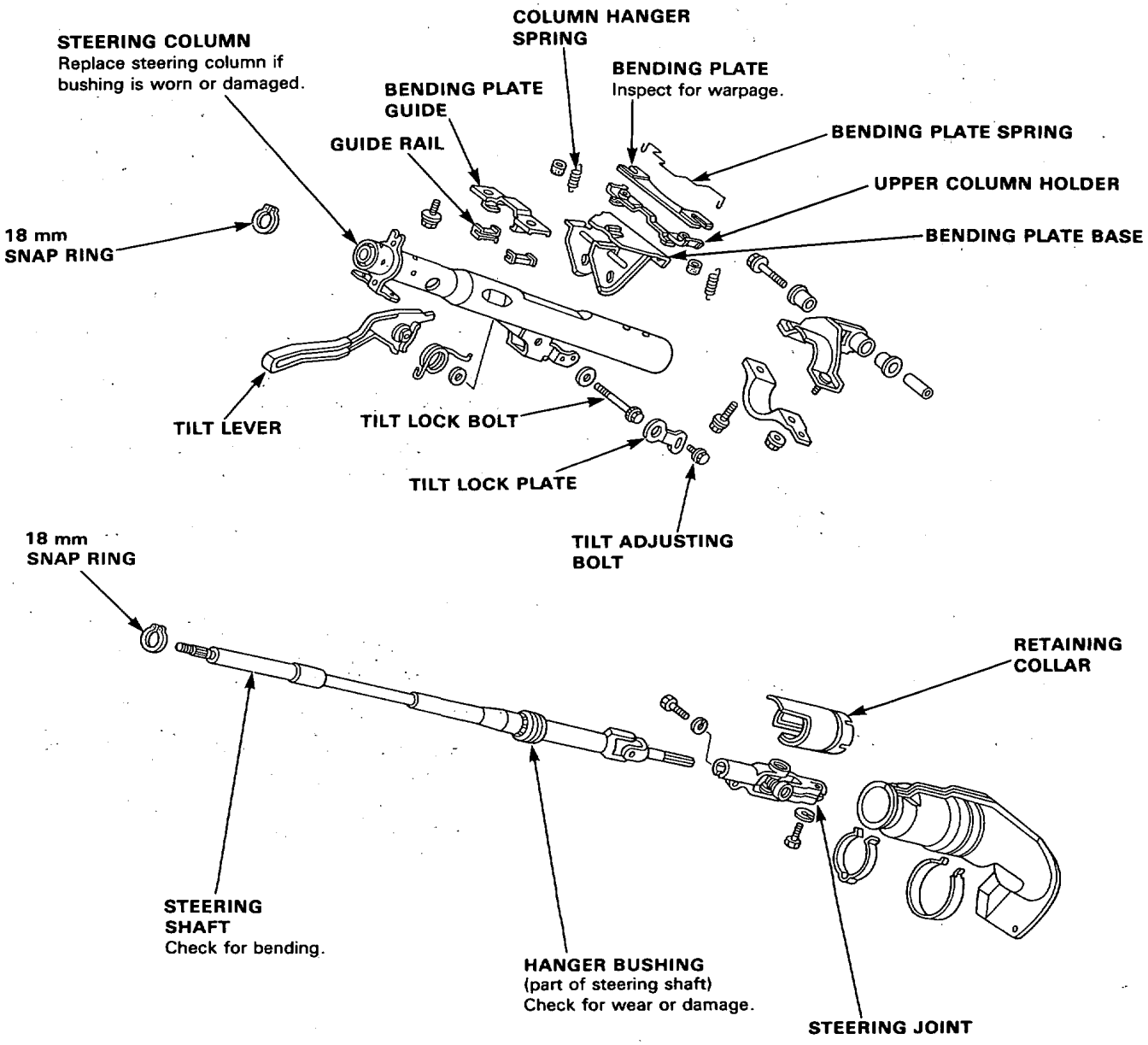
13. Remove the steering column assembly.



Downloaded from www.Manualslib.com manuals search engine

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.

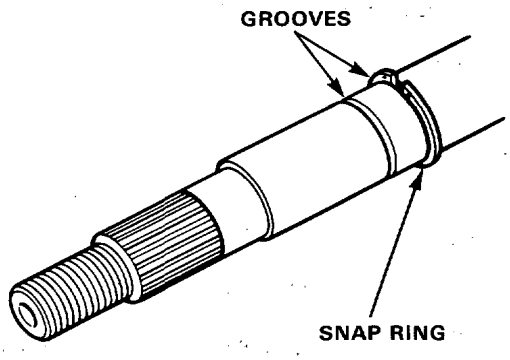


Downloaded from www.Manualslib.com manuals search engine

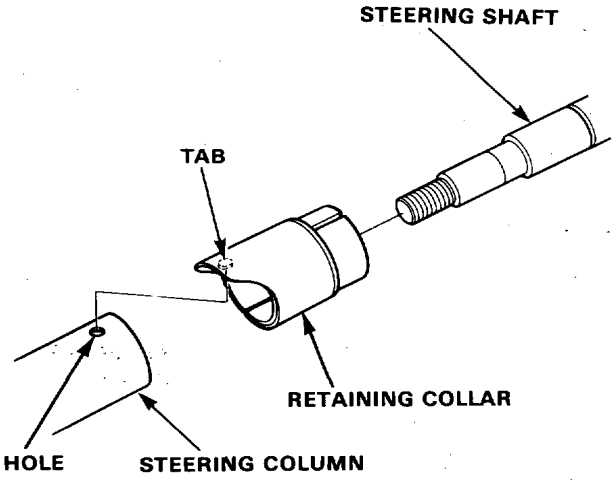
Steering Column

Reassembly

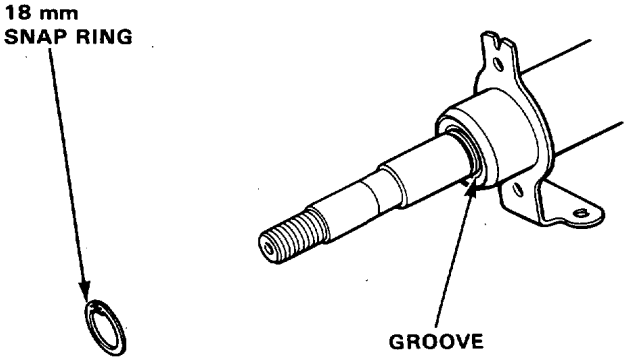
1. Install the snap ring on the groove of the steering shaft as shown.



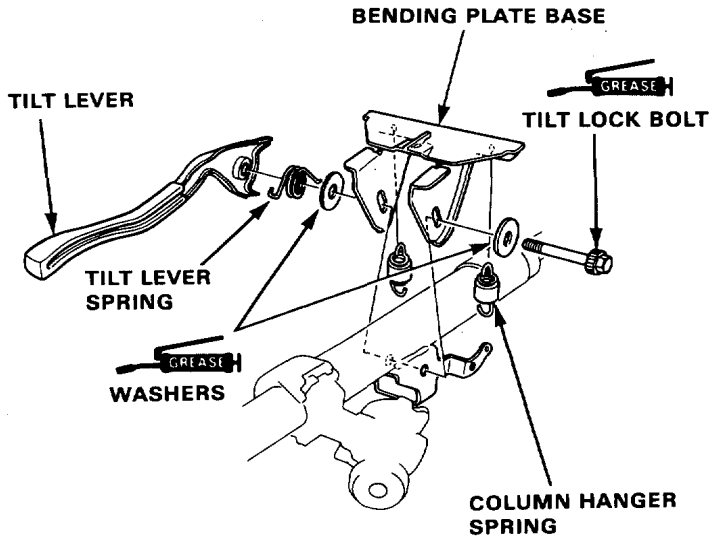
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



3. Insert the steering shaft into the steering column from the bottom.
4. Install the 18 mm snap ring on the groove of the steering shaft.

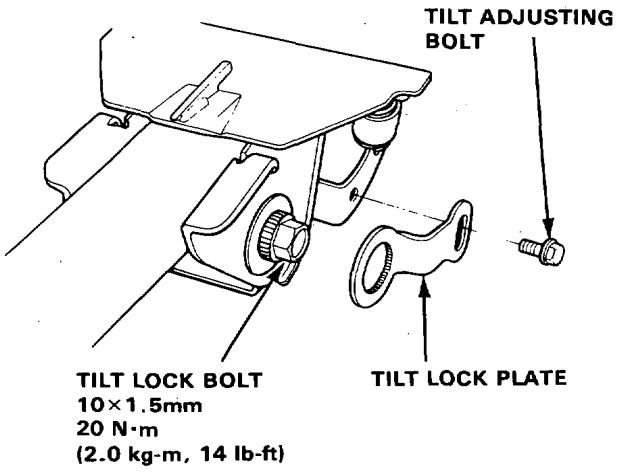


5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, spring, washers, and bending plate guide on the steering column with the tilt lock bolt.
7. Instll the column hanger springs between the bending plate base and steering column.



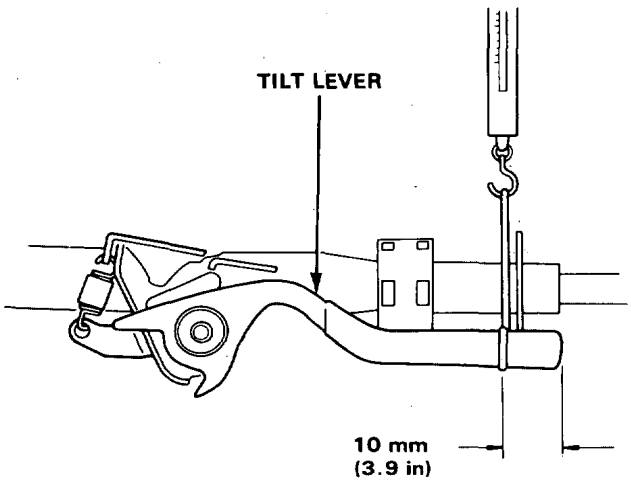
Downloaded from www.Manualslib.com manuals search engine

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.

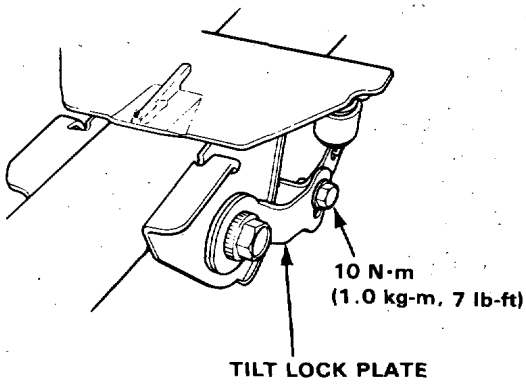


9. Attach a spring scale 10 mm (3.9 in) from the end of the knob. Measure the force required to move the lever.

Preload: 80 N (8.0 kg, 18 lbs)



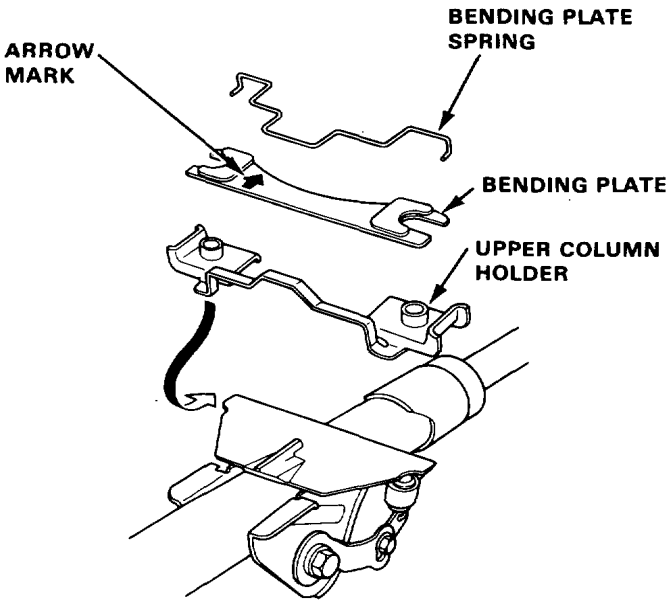
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



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.



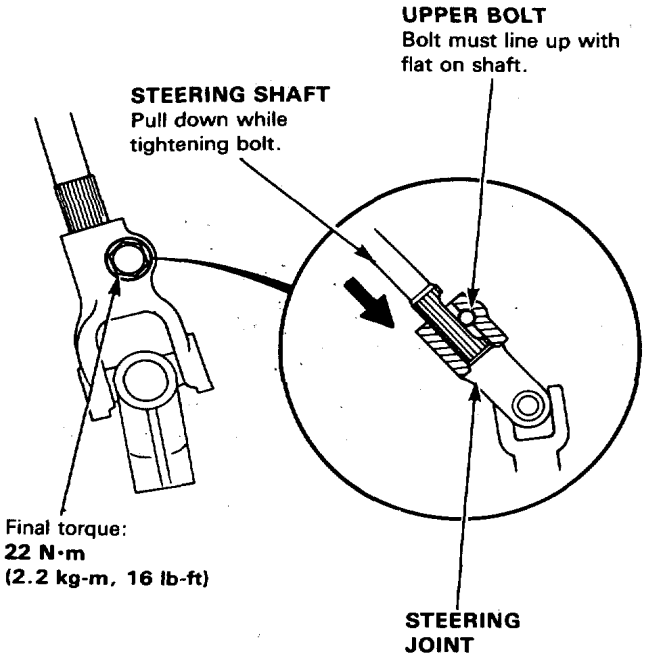
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Steering Column

Reassembly (cont'd)

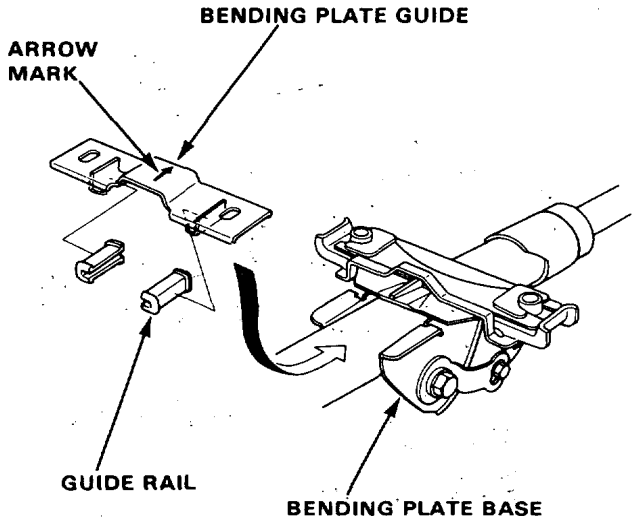
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



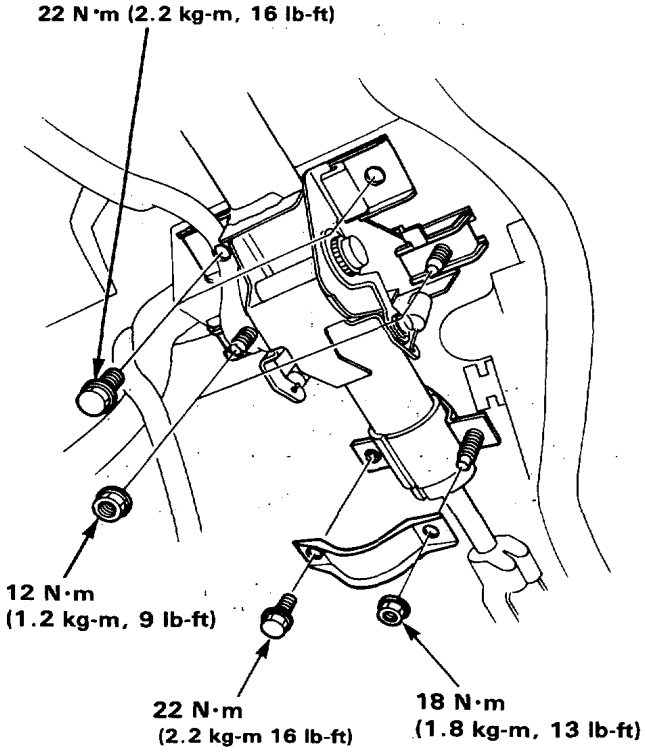
Installation

1. Set the guide rails in the bending plate guide and install the bending plate guide on the bnding plate base.

   NOTE: Install the bending plate guide with its arrow mark toward the gearbox.

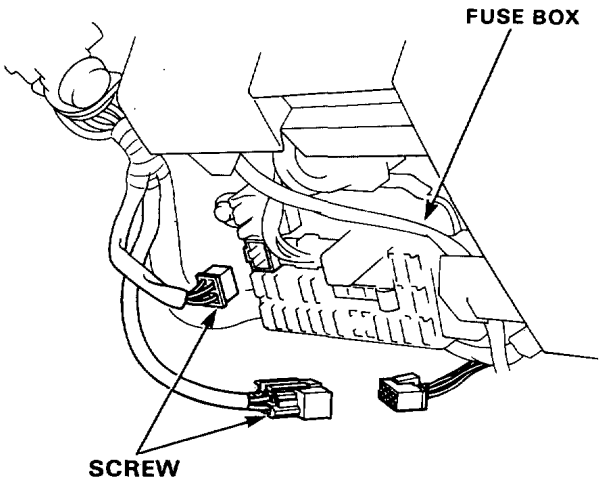


2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket.
   Tighten to these torques in step 7, page 11-39.



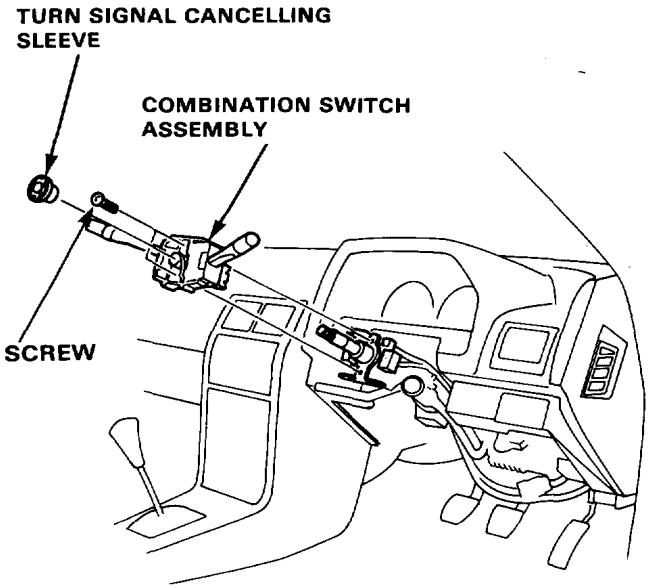
Downloaded from www.Manualslib.com manuals search engine

3. Connect each wire coupler to the fuse box at the under dash right side.



4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.

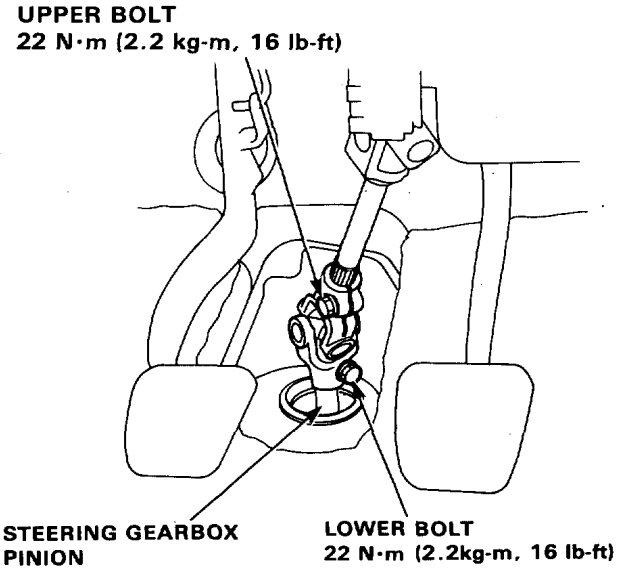


6. Loosely install the steering joint on the steering gearbox pinion.

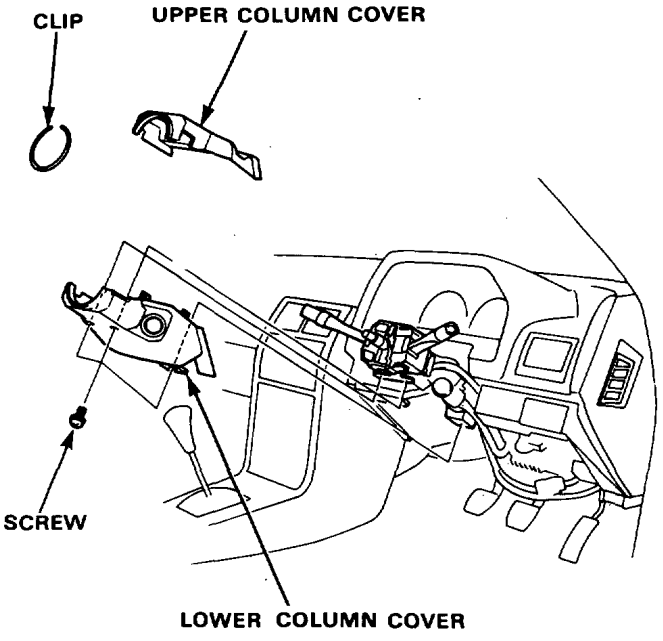
   NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

7. Tighten the steering column mountion bolts, nuts and bracket loosely installed in step 2.

8. Tighten the lower and upper steering joint bolts.



9. Install the upper column cover and lower column cover.

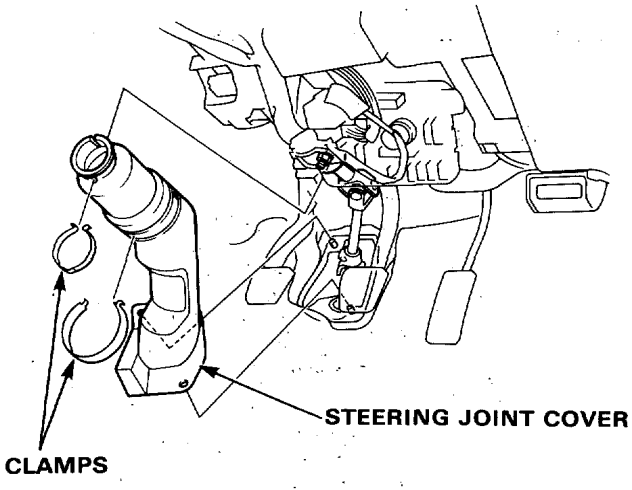


(cont'd)

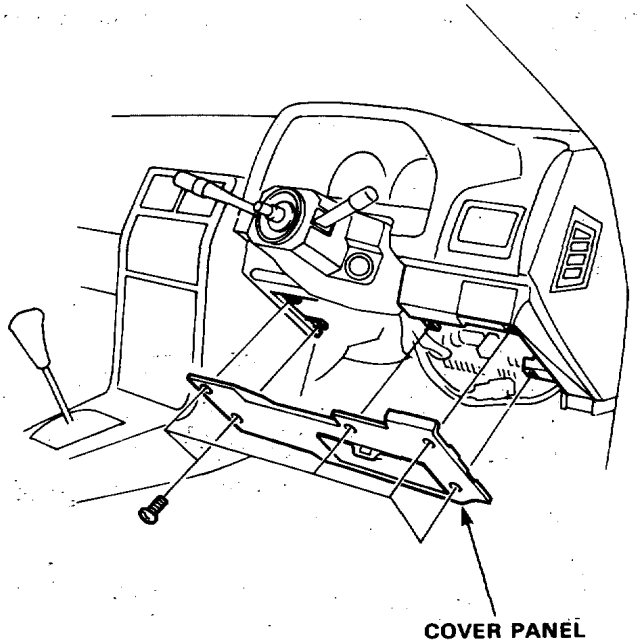
Downloaded from www.Manualslib.com manuals search engine

Installation (cont'd)

10. Install the steering joint cover with the clamps and clips.



11. Install the cover panel.

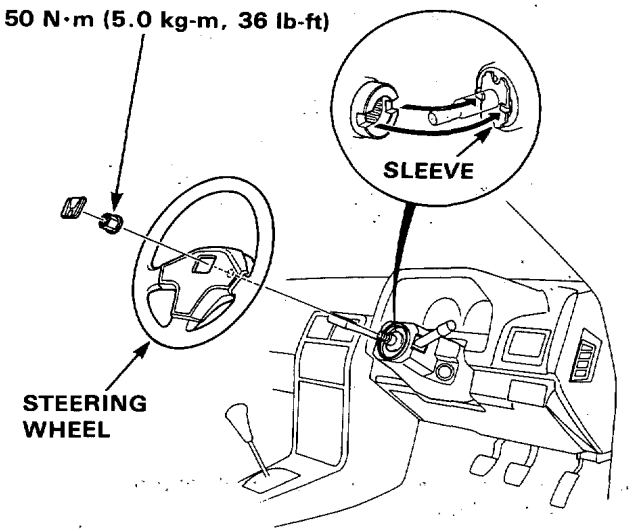


12. Install the steering wheel in a straight ahead position.

    NOTE: Align the tabs on the turn signal cancelling sleeve with the grooves on the steering wheel boss.

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.



Downloaded from www.Manualslib.com manuals search engine

Steering Pump

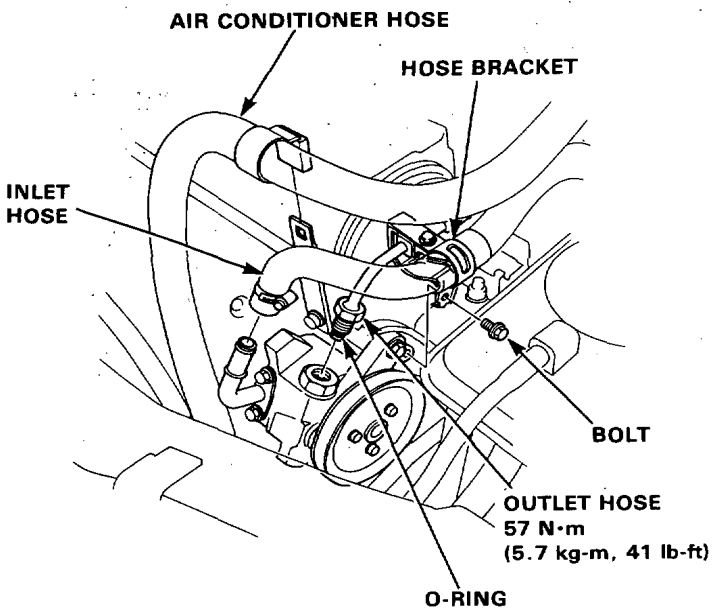
Replacement

CAUTION: Do not allow foreign matter to enter the system.

1. Drain the fluid from the system (page 11-30).
2. Remove the air conditioner hose from the bracket.
3. Remove the hose bracket from the pump bracket by removing the mounting bolt.
4. Disconnect the outlet hose from the pump.

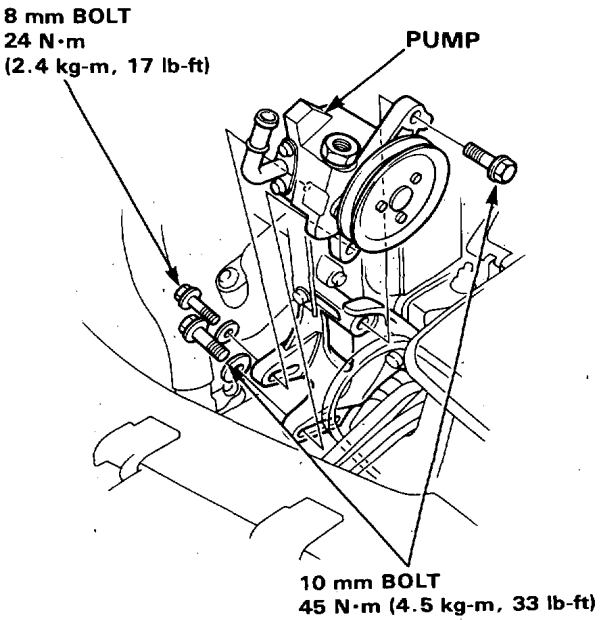
   CAUTION: Be careful not to damage the o-ring when disconnecting the hose.

   NOTE: Place the shop towel around the pipe fitting to catch the spilled fluid.

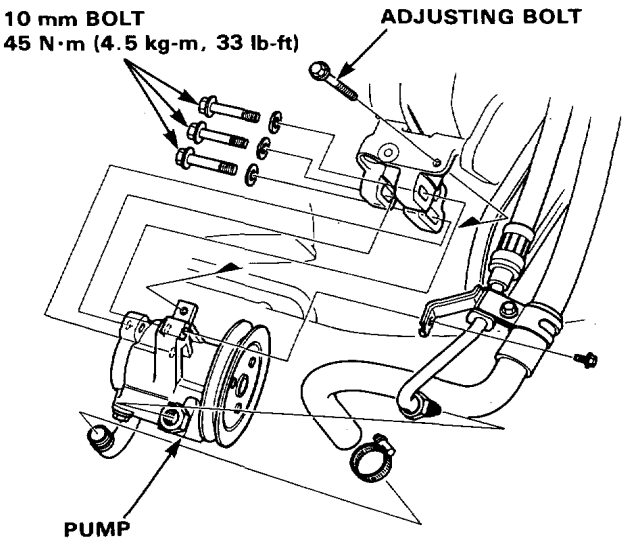


5. Disconnect the inlet hose from the pump.
6. Remove the belt by loosening the pump attaching bolts.
7. Remove the bolts, then remove the pump.

SOHC Engine:



DOHC Engine:

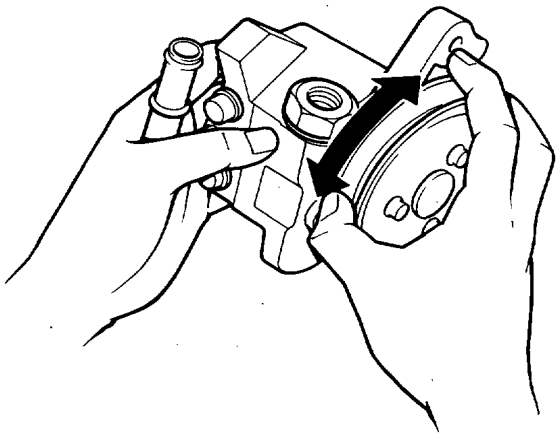


8. Loosely install the new pump on the bracket.
9. Connect the inlet and outlet hoses to the pump.
10. Install and adjust the belt (page 11-29).
11. Fill the reservoir with new fluid to the UPPER LEVEL on the reservoir.
12. Start the engine and fill the system with new fluid (page 11-30).
13. Check the reservoir and add fluid if necessary.

Downloaded from www.Manualslib.com manuals search engine

Inspection

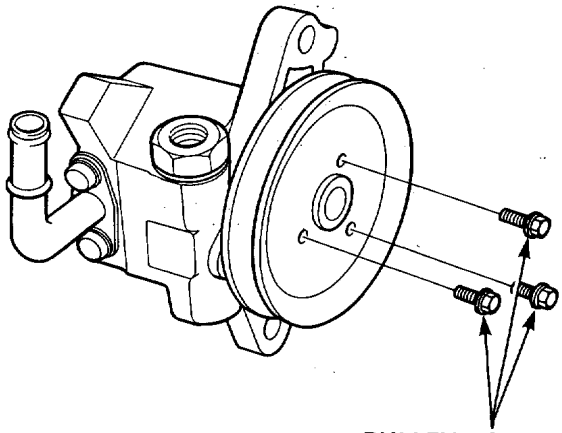
Inspect the steering pump for leak or damage.
Turn the pulley and check that the pump shaft turns smoothly.



Pulley Replacement

Hold the pulley in a vise with soft jaws, and remove the three pulley bolt, then remove the pulley.

CAUTION: Do not try to disassemble the pump. If the pump is faulty, replace the whole pump as an assembly.



PULLEY BOLT
10 N·m
(1.0 kg-m, 7 lb-ft)

Downloaded from www.Manualslib.com manuals search engine

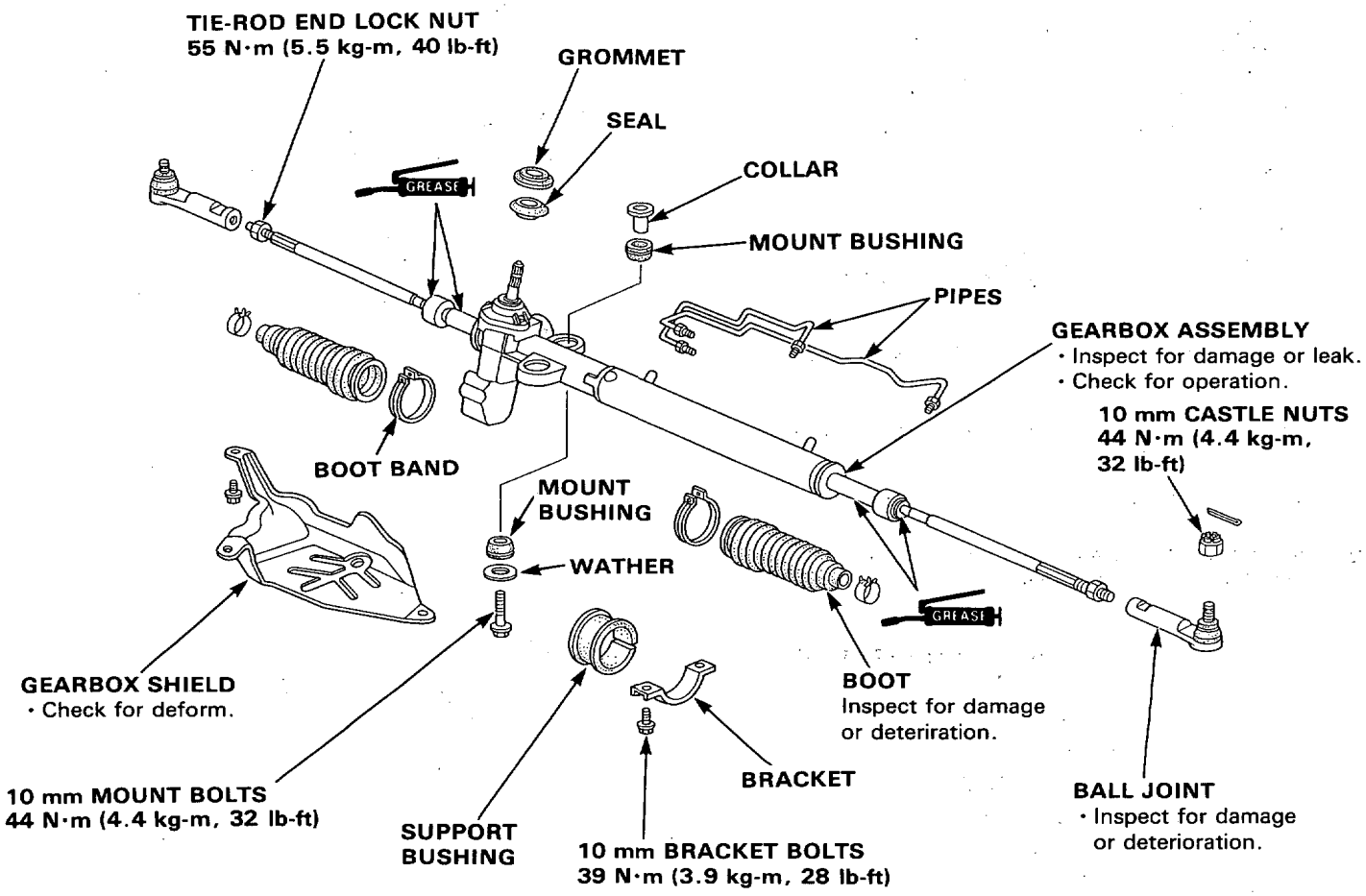
Steering Gearbox

Illustrated Index

CAUTION:

- **Before disassembling the gearbox, wash it off with solevent and a brush.**
- **Thorougly clean all disassembled parts.**
- **Replace parts with damaged sliding surfaces or deterioration.**
- **Do not try to disassemble the gearbox assembly. If the gearbox is faulty, replace the whole gearbox as an assembly.**
- **Do not allow foreign matter to enter the system.**

NOTE: RH Drive shown, LH Drive is similar.

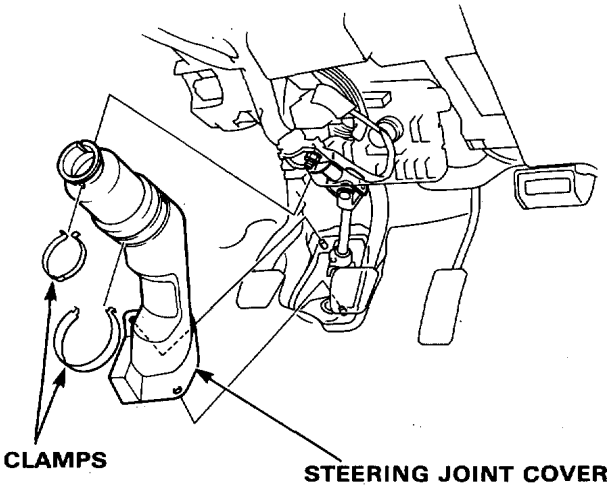


Downloaded from www.Manualslib.com manuals search engine

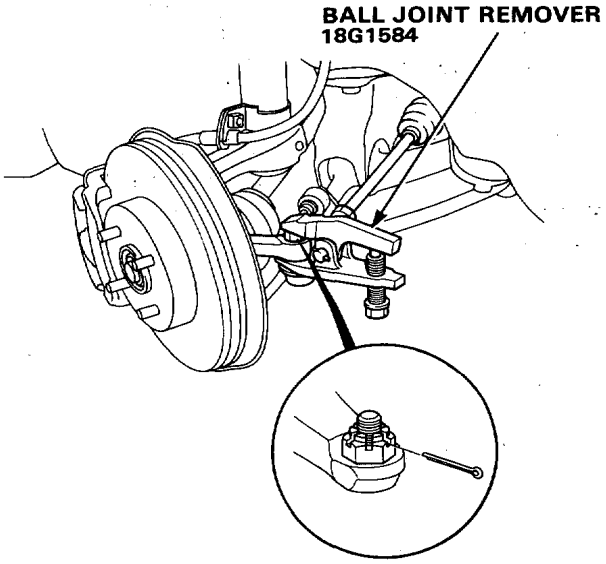
Steering Gearbox

Removal

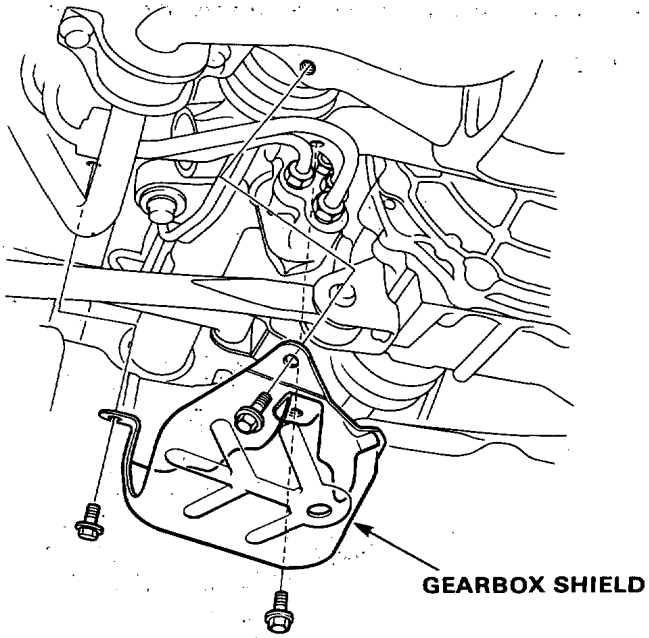
1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.



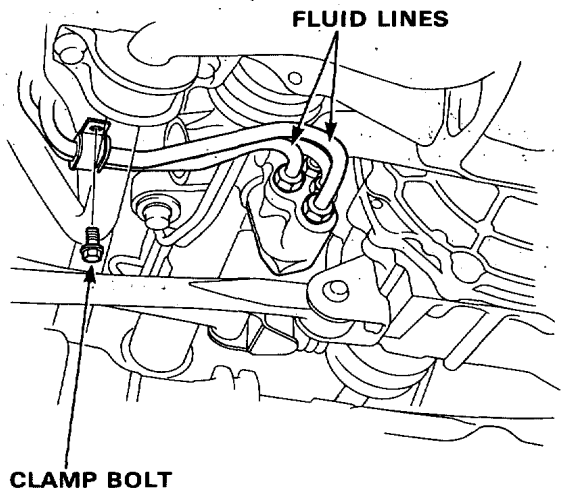
2. Drain the power steering fluid as described on page 11 -30.
3. Raise the front of car and support on safety stands in the proper locations.
4. Remove the front wheels.
5. Disconnect the tie-rods from the steering knuckles using the special tool shown.



6. Remove the gearbox shield.
7. 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.



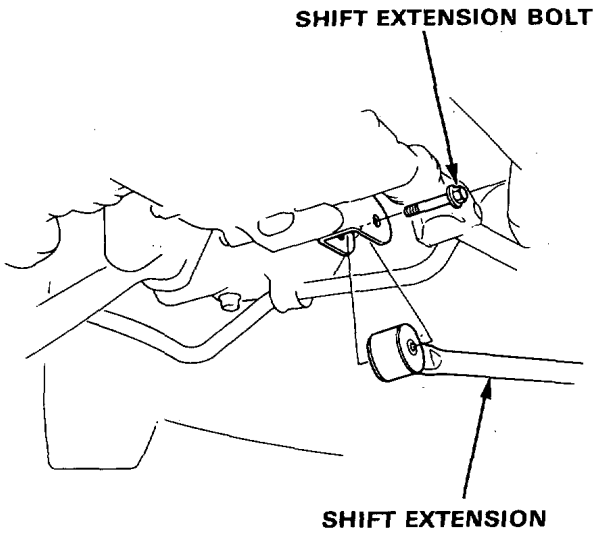
8. Using flare nut wrenches, disconnect the two lines from the control unit. Remove the hose clamp bolt and move the lines outward slightly.



Downloaded from www.Manualslib.com manuals search engine

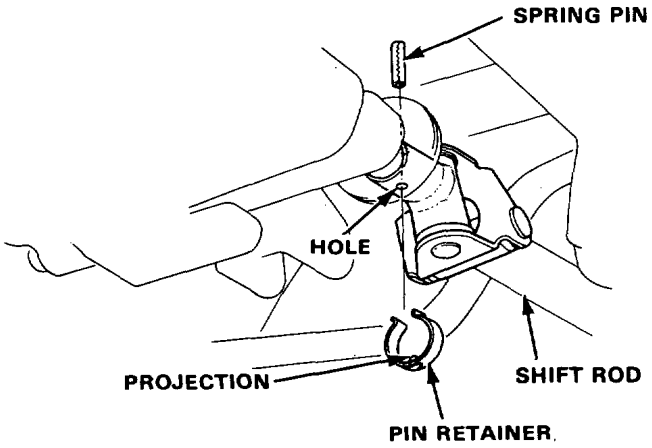
9. (Manual transmission model only)

- Remove the shift extension from the transmission case.



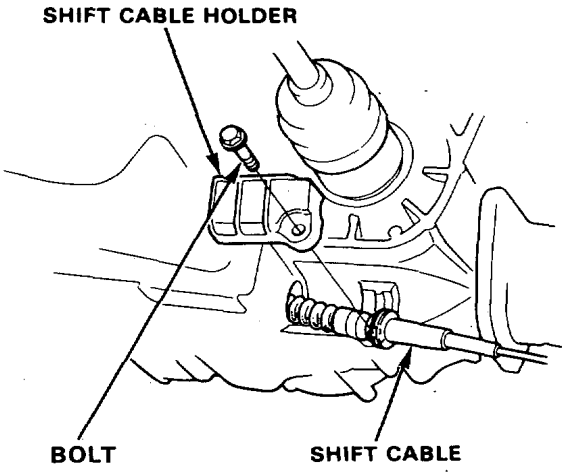
- Slide the boot at the connecting position of the gear shift rod.
- Drive out the spring pin with a punch, then disconnect the shift rod.

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



10. (Automatic transmission only)

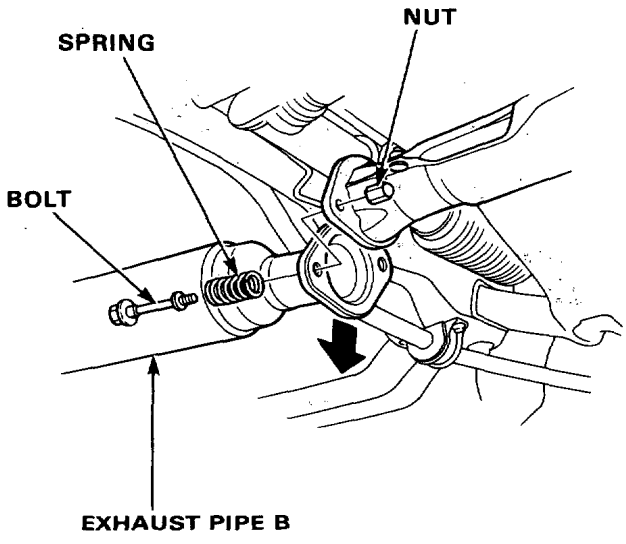
- Remove the shift cable holder and cable from the transmission case.



11. Remove the self-locking nuts connecting the exhaust pipe to exhaust pipe B, then separate exhaust pipe B from the exhaust pipe.

CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

12. Move the exhaust pipe B to dawnward.



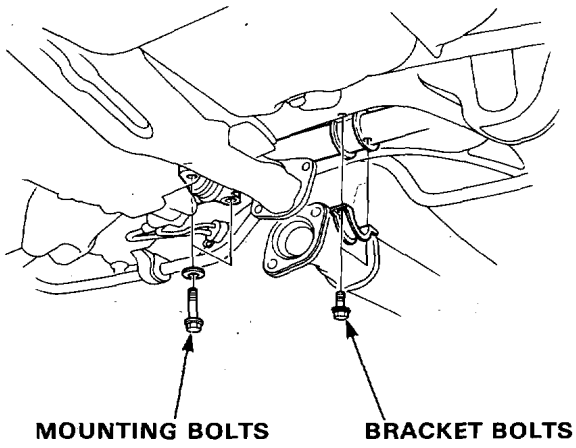
Downloaded from www.Manualslib.com manuals search engine

Steering Gearbox

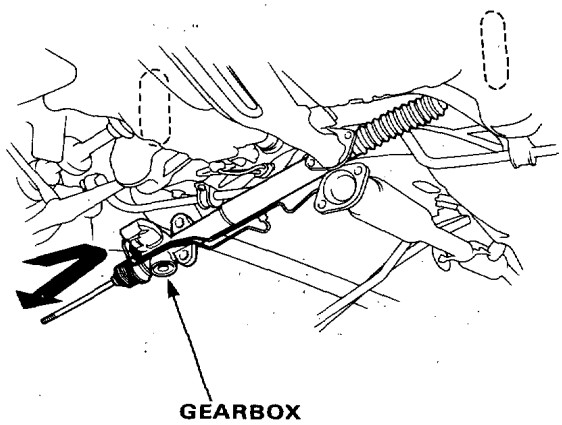
Removal (cont'd)

13. Slide the tie-rod all the way to the left side.

14. Remove the steering geardox mounting and bracket bolts.



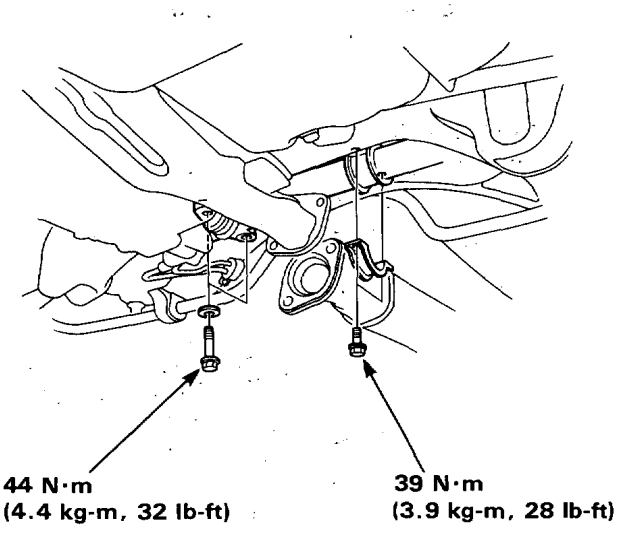
15. Slide the gearbox left so that the right tie-rod clears the bottom of the rear beam, then remove the gearbox.



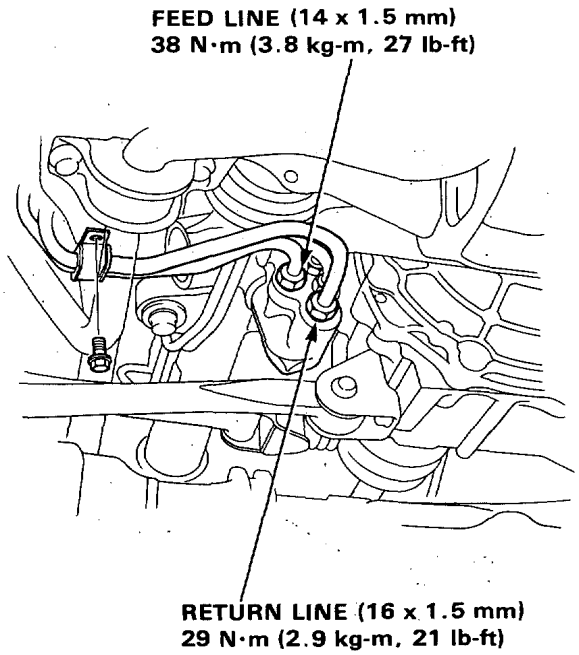
Downloaded from www.Manualslib.com manuals search engine

Installation

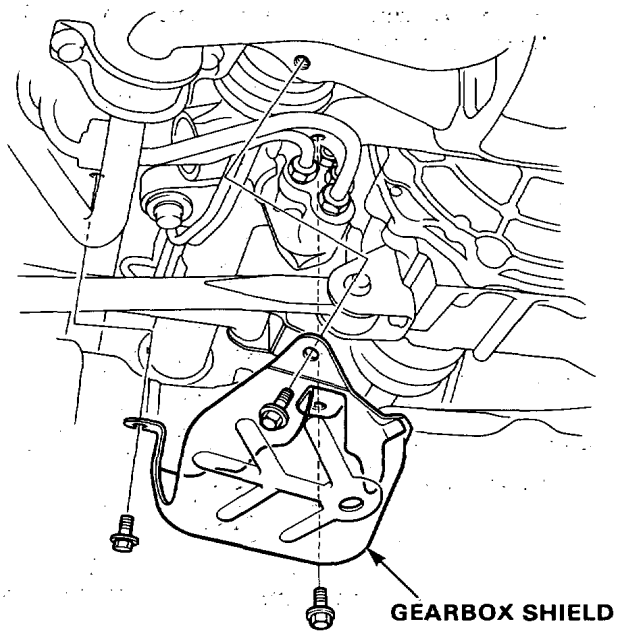
1. Reinstall the gearbox in the reverse order of removal.
2. Tighten the gearbox mounting and bracket bolts.



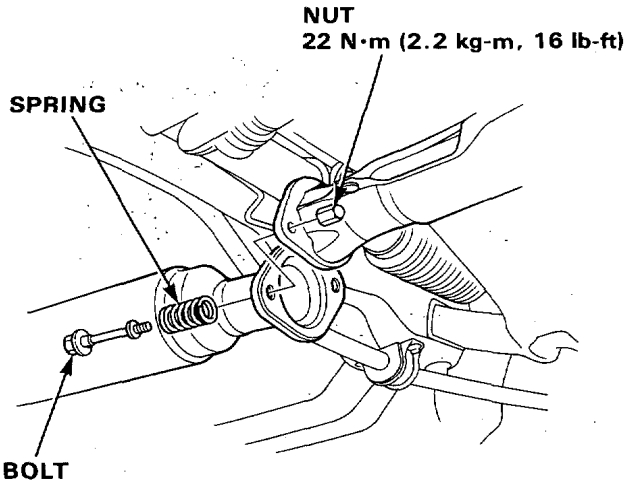
3. Connect the fluid lines to the control unit. Then tighten the clamp bolt.



4. Install the gearbox shield.



5. Connect the exhaust pipes with new gasket, and tighten the bolts and nuts.

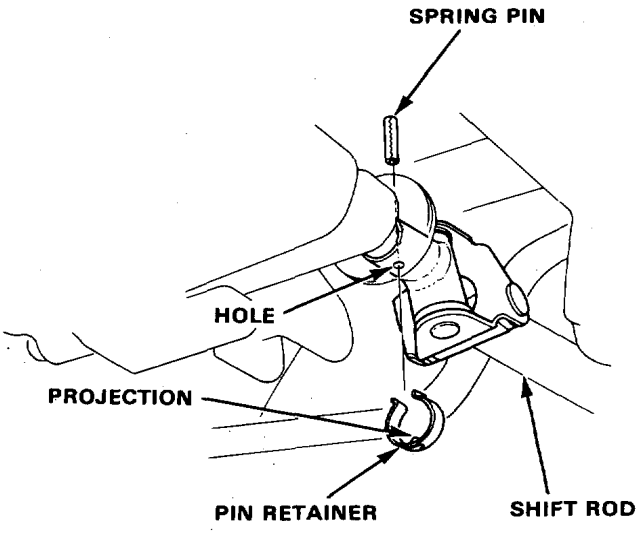


Downloaded from www.Manualslib.com manuals search engine

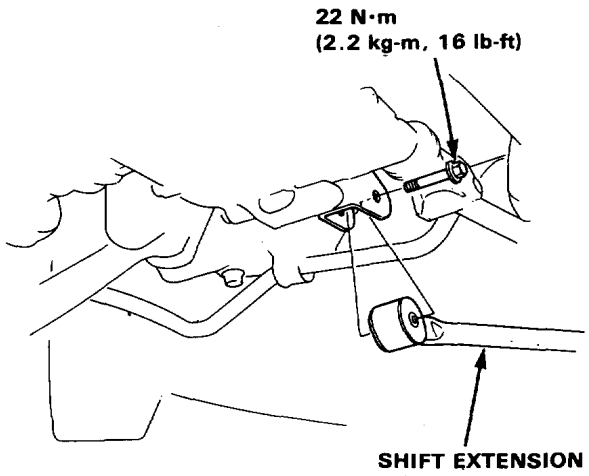
Installation (cont'd)

6-1. (Manual transmission model only)

- 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.

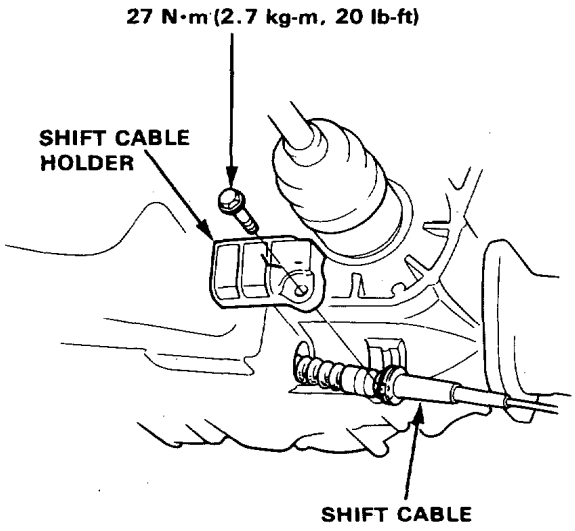


- Install the shift extension to the transmission case.

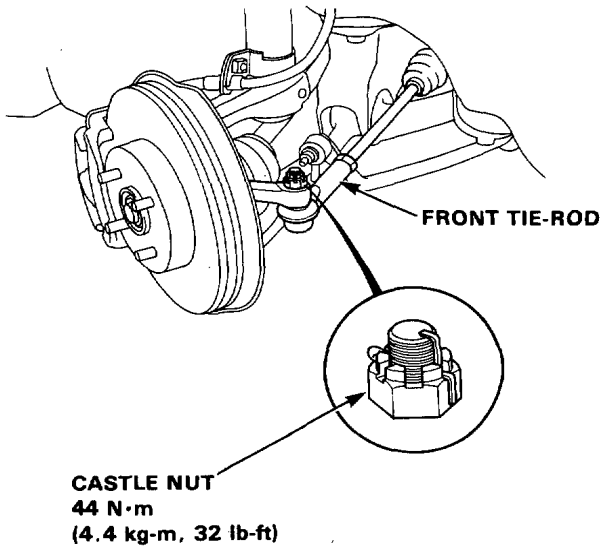


6-2. (Automatic transmission model only).

- Connect the shift cable to the transmission and install the cable holder.



7. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.

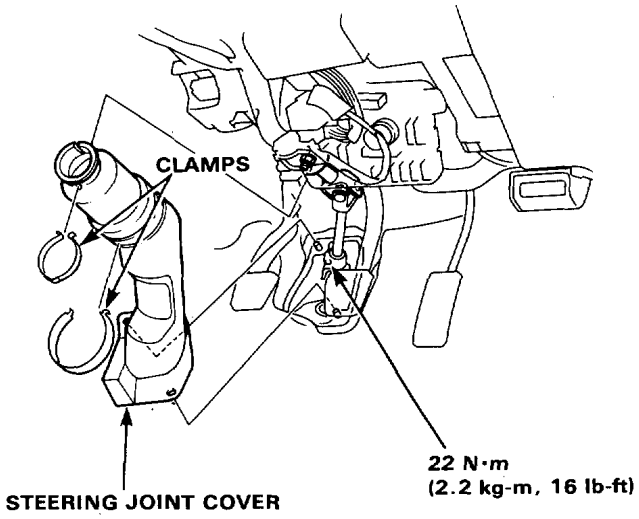


Downloaded from www.Manualslib.com manuals search engine

8. Reconnect the steering shaft to the gearbox.

9. 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.



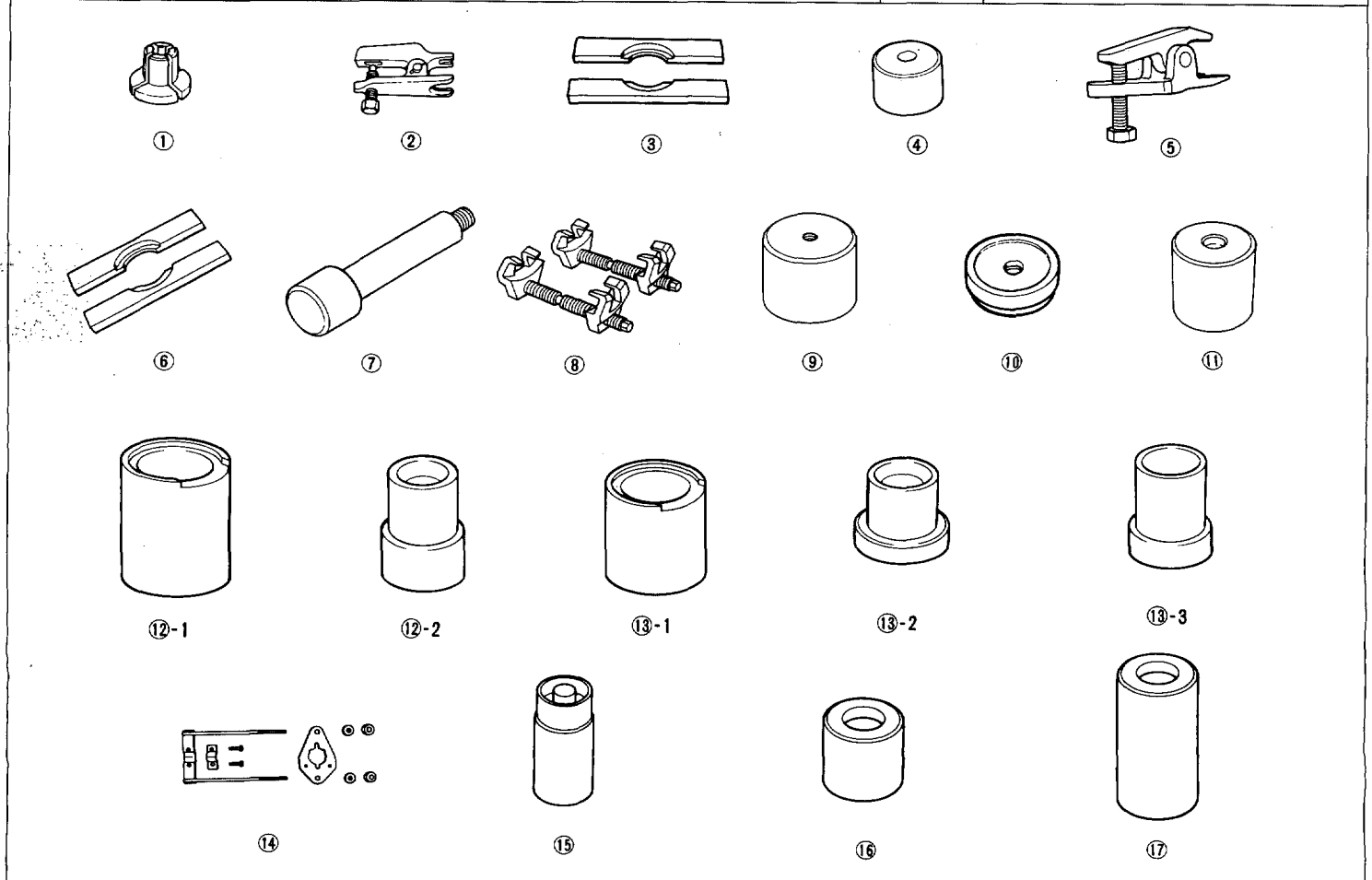
10. Fill the system:
    - Fill the reservoir with new Power Steering Fluid.
    - Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
    - Check the fluid again, and add more if necessary.
11. Check the gearbox for leaks, then reinstall the shield.
12. Reinstall the front wheels.

Downloaded from www.Manualslib.com manuals search engine

Special Tools

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	1	
⑤	18G1584	Ball Joint Remover	1	
⑥	07965-6340341	Hub Dis/Assembly Base	1	
⑦	07GAF-SE00100	Hub Dis/Assembly Shaft	1	
⑧	07959-SA5000	Spring Compressor	1	
⑨	07965-6920201	Hub Dis/Assembly Base	1	
⑩	07947-SD90200	Attachment	1	
⑪	07GAF-SE00200	Hub Assembly Guide Attachment	1	
⑫	18G1600	Lower Arm Bush Front Remover/Replacer	1	
⑫-1	18G1600/1	Bush Base	1	Component tools
⑫-2	18G1600/2	Bush Dirver	1	
⑬	18G1602	Lower Arm Bush Rear Remover/Replacer	1	
⑬-1	18G1602/1	Bush Base	1	
⑬-2	18G1602/3	Bush Driver	1	Component tools
⑬-3	18G1602/2	Bush Driver	1	
⑭	07GAE-SE00100	Spring Compressor	1	
⑮	07JAF-SH20310	Bush Driver	1	
⑯	07JAF-SH20340	Bush Base B	1	
⑰	07JAF-SH20330	Bush Base A	1	

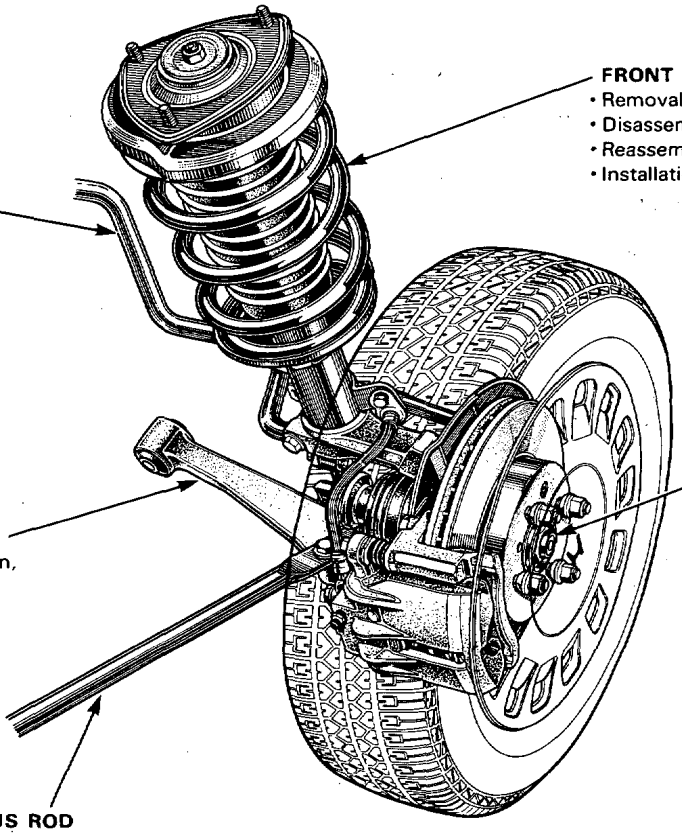


Downloaded from www.Manualslib.com manuals search engine

Component Location

Index

Front Suspension:



FRONT DAMPER
- Removal, page 12-18
- Disassembly/Inspectios, page 12-17
- Reassembly, page 12-19
- Installation, page 12-19

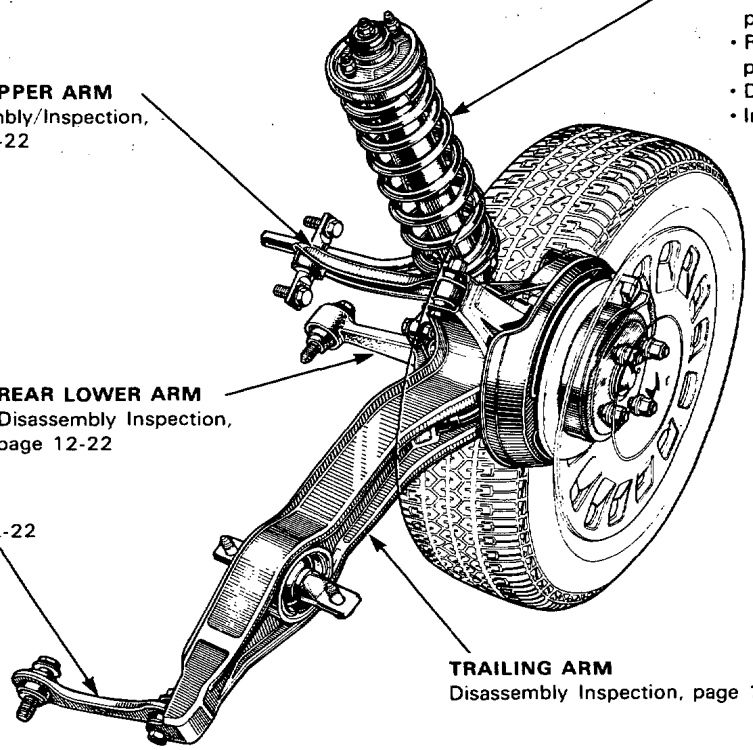
STABILIZER BAR
Disassembly/Inspection, page 12—9

KNUCKLE/HUB
- Replacement, page 12-10
- Bearing Replacement, page 12-11

FRONT LOWER ARM
Disassembly/Inspection, page 12—9

RADIUS ROD
Disassembly/Inspection, page 12—9

Rear Suspension:



REAR DAMPER
- Removal 12-27
- Disasserbly/Inspection, page 12-28
- Reassembly page 12-30
- Disposal,page 12-30
- Installation, page 12-31

REAR UPPER ARM
Disassembly/Inspection, page 12-22

REAR LOWER ARM
Disassembly Inspection, page 12-22

COMPENSATOR ARM
Disassembly Inspection, page 12-22

TRAILING ARM
Disassembly Inspection, page 12-22

Downloaded from www.Manualslib.com manuals search engine

Wheel Alignment

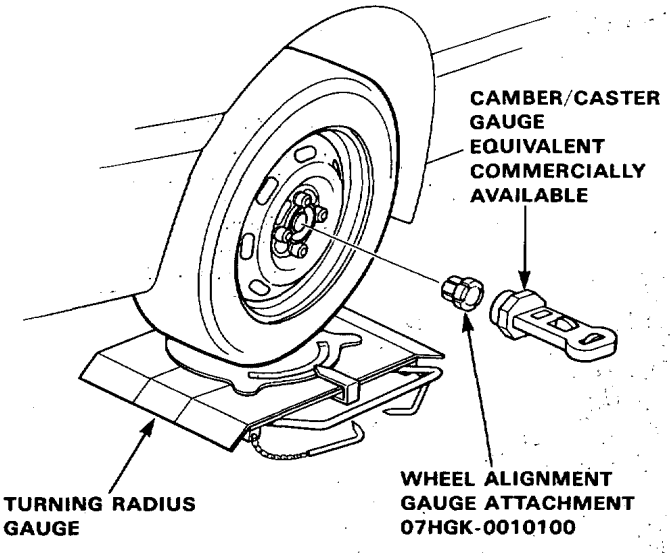
Caster

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 special tool on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the special tool.
4. Install a camber/caster gauge on the special tool 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 : 1°38′ ± 1°



7. If out of specification, check for bent or damaged suspension components.

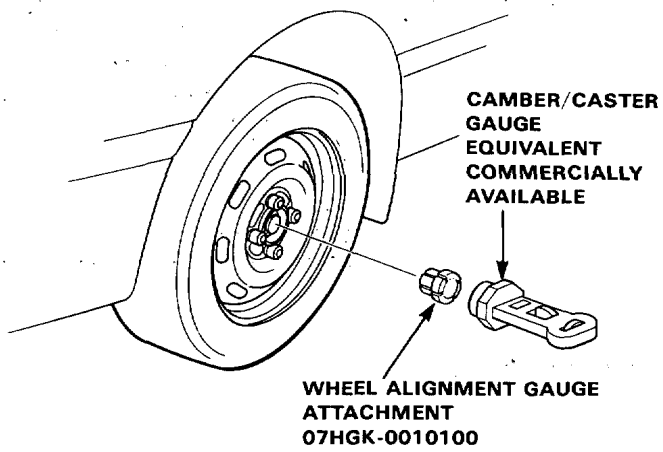
Camber

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 special tool on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the special tool.
4. Read the camber on the gauge with the bubble at the center of the gauge.

   Camber angle : Front : −0°20′ ± 1°
   Rear : −0°26′ ± 1°



5. If out of specification, check for bent or damaged suspension components.

Downloaded from www.Manualslib.com manuals search engine

Rear Toe Inspection/ Adjustment

1. Release parking brake.

   NOTE: If the parking brake is engaged, you may get an incorrect reading.

   Rear toe in: 2.3±1.4mm (0.09±0.05in)

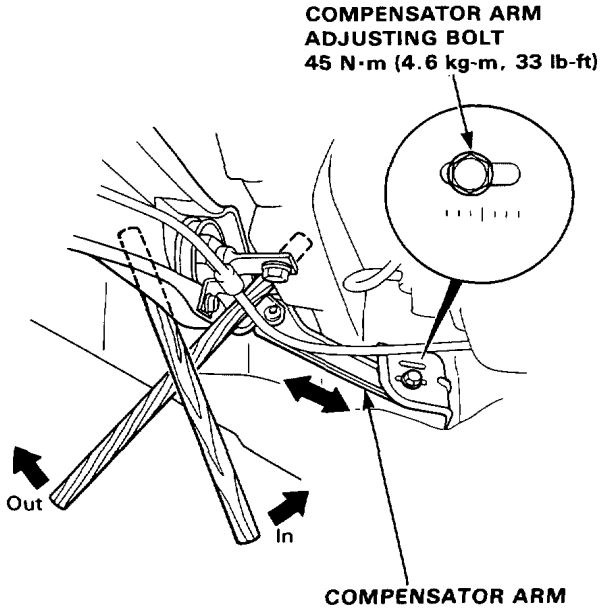
   — If adjustment is required, go to step 2.

   — 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-out: 0.7±1.4mm (0.027±0.05in)

   — If adjustment is required, go on to step 2.

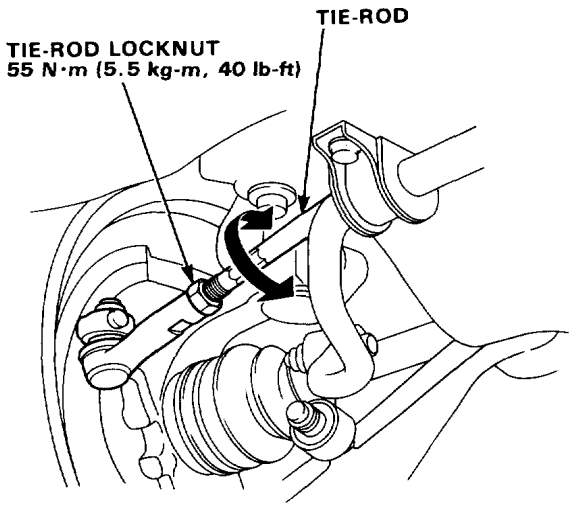
   — If no adjustment is required, remove alignment equipment.

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.



Downloaded from www.Manualslib.com manuals search engine

Wheel Alignment

Turning Angle Inspection/ Adjustment

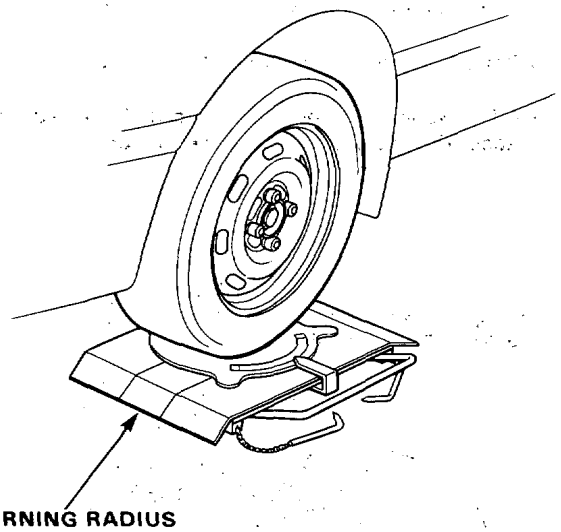
1. Jack up the front of the car, set the turning radius gauges beneath the front wheels, then lower the car.

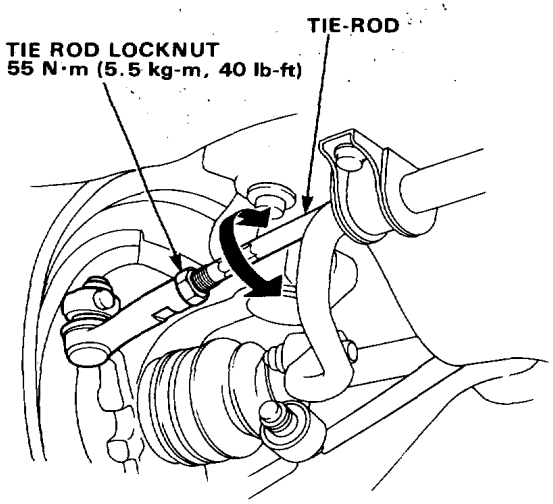
2. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   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 twisted or displaced after adjustment has been made.





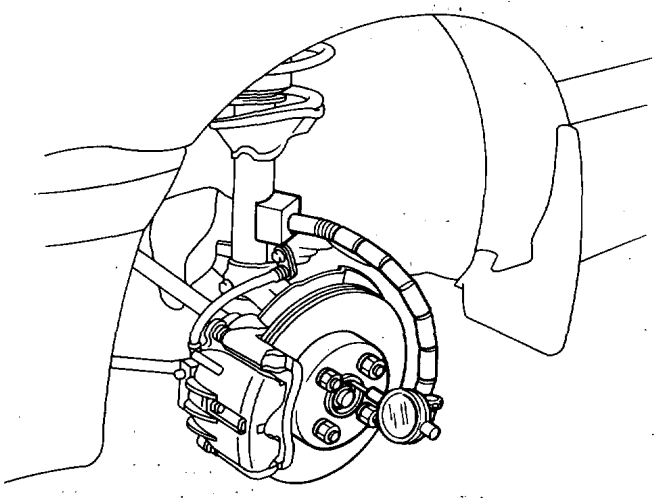
Downloaded from www.Manualslib.com manuals search engine

Wheel Measurements

Bearing End Play

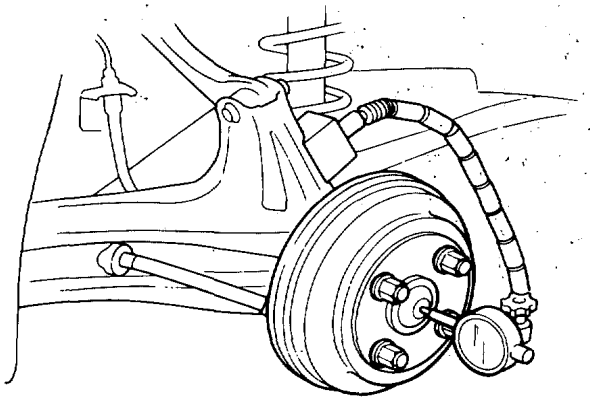
Front Wheel End Play

Standard: 0—0.05 mm (0—0.002 in.)



Rear Wheel End Play

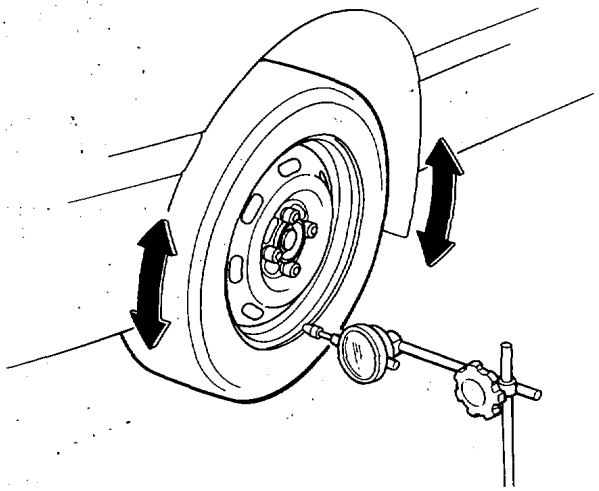
Standard: 0—0.05 mm (0—0.002 in)



Runout

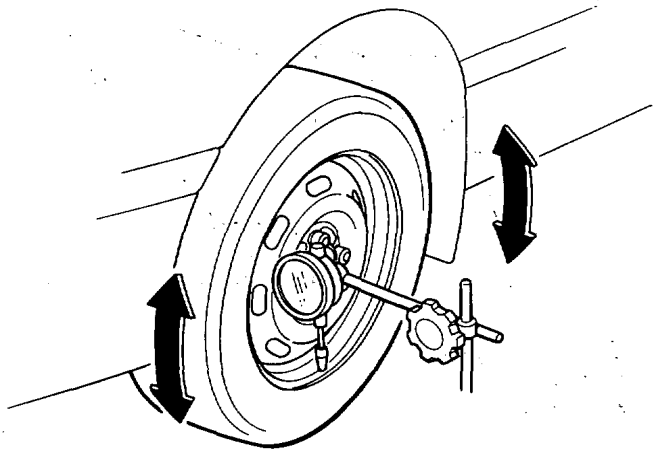
Front and Rear Wheel Axial Runout

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)

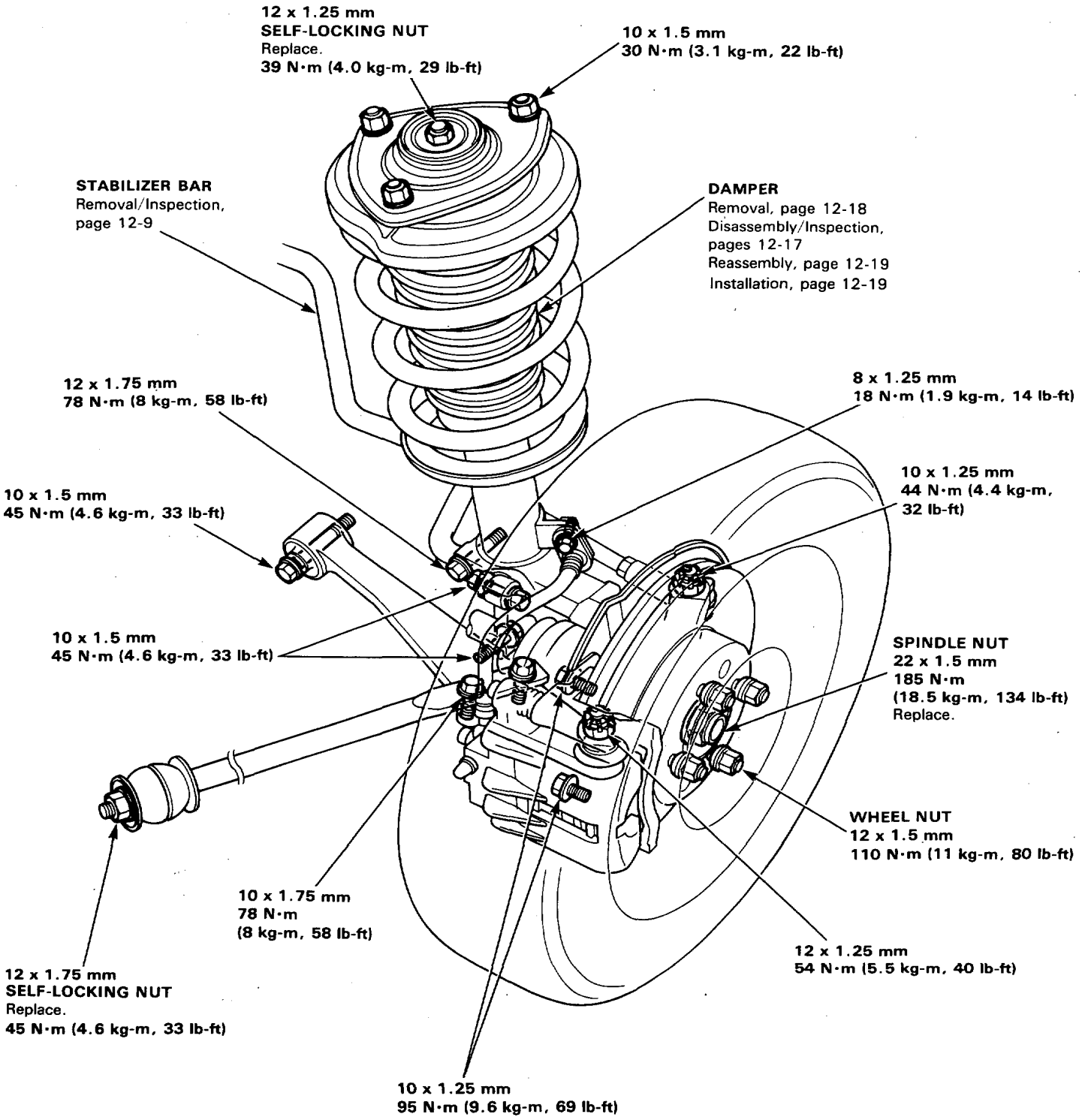


Downloaded from www.Manualslib.com manuals search engine

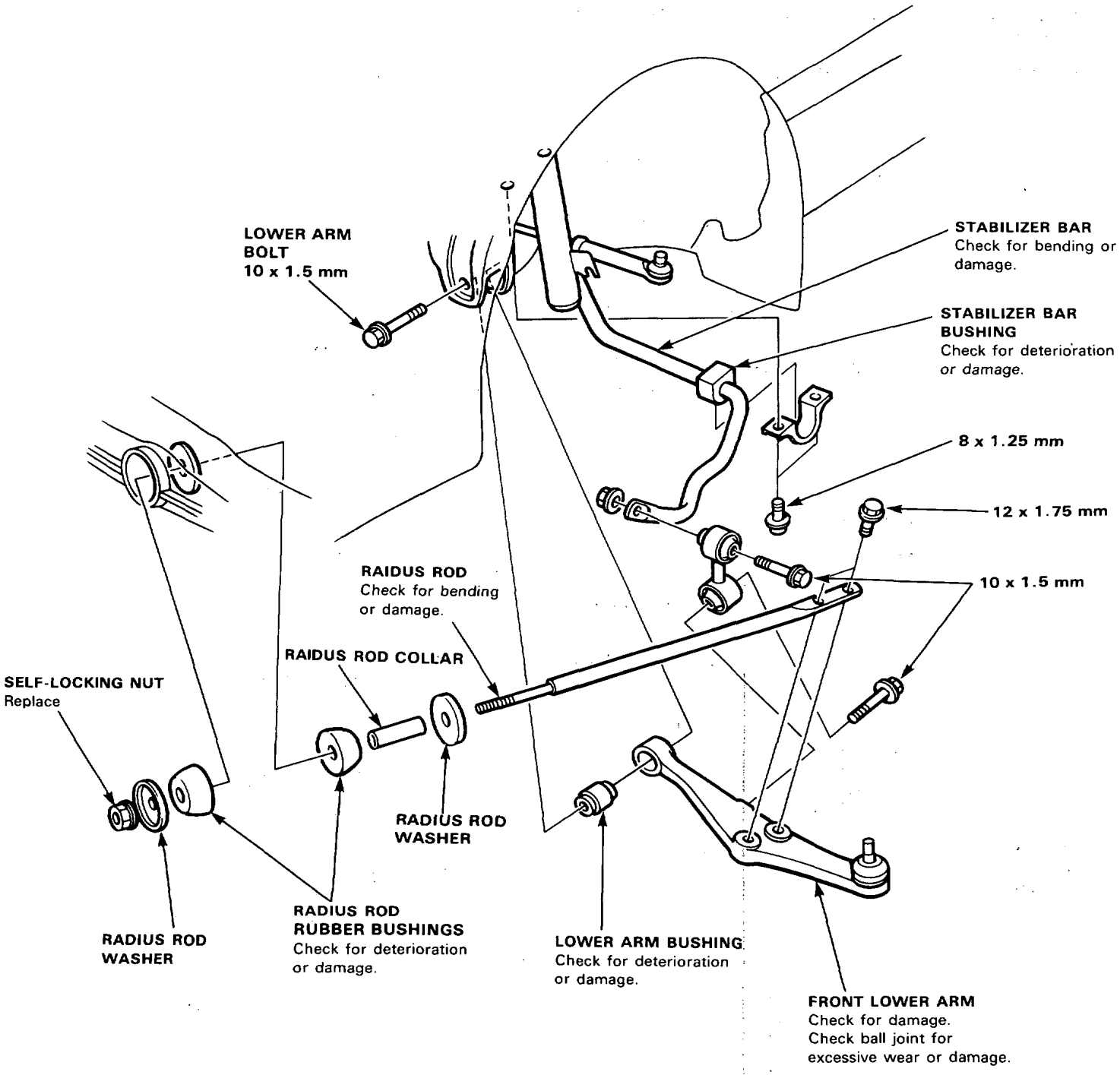
Front Suspension

Torque Specifications

CAUTION:
- **Replace the self-locking nuts after removal.**
- **The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.**



Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

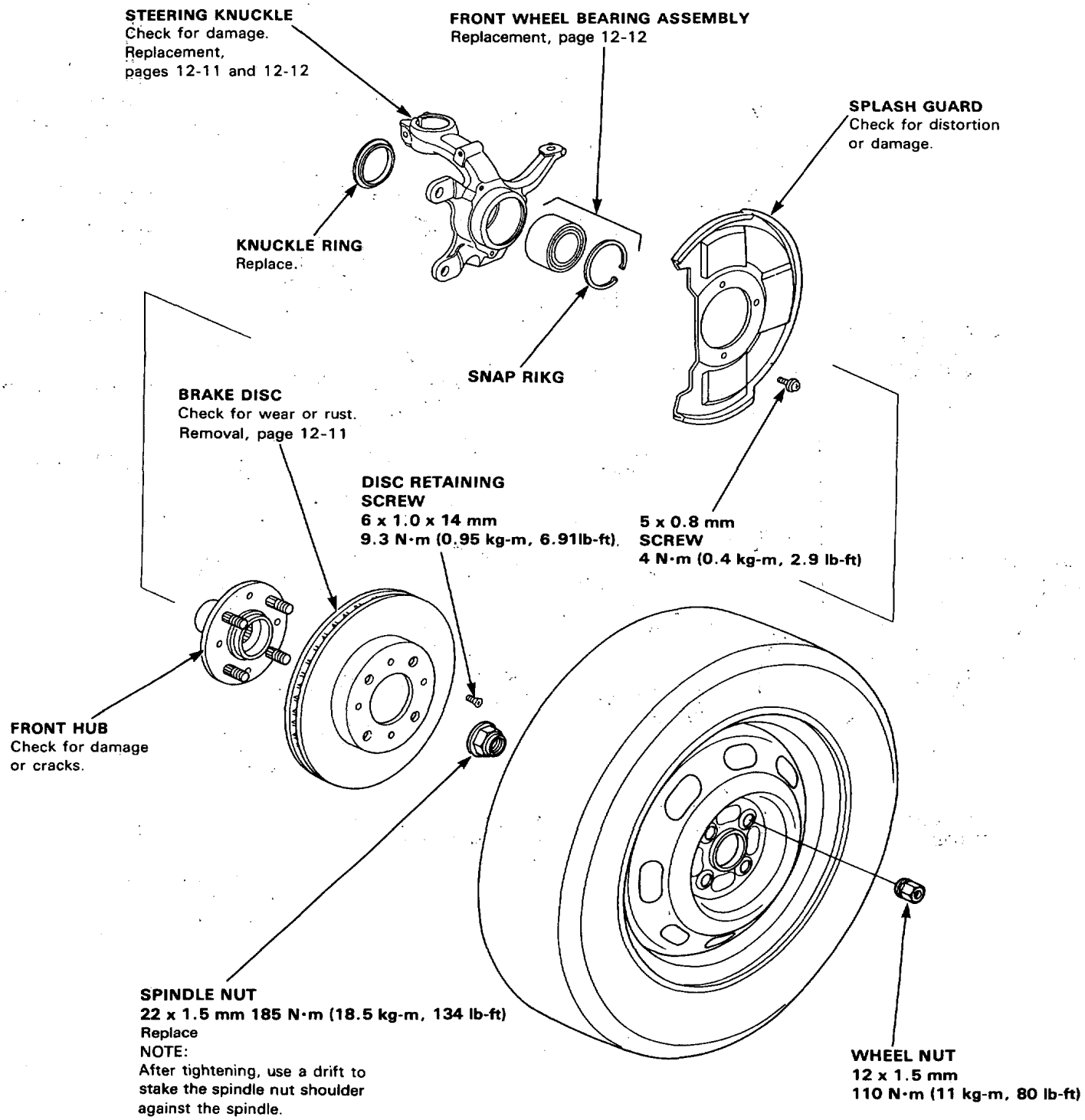
Front Suspension

Knuckle/Hub

NOTE:

- Use only genuine Honda aluminum wheel weights. Non-genuine aluminum wheel weights may corrode and damage aluminum wheels.
- 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.

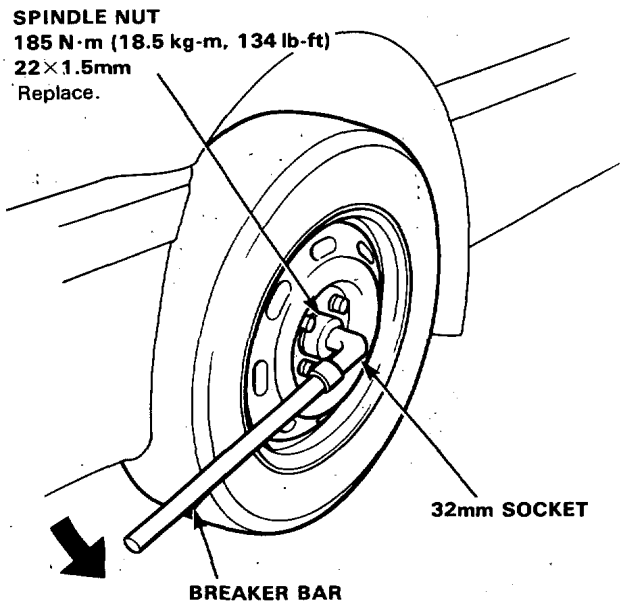
CAUTION: Use a rag at the point you are going to pry, because aluminum alloy wheels can be easily damaged.



Downloaded from www.Manualslib.com manuals search engine

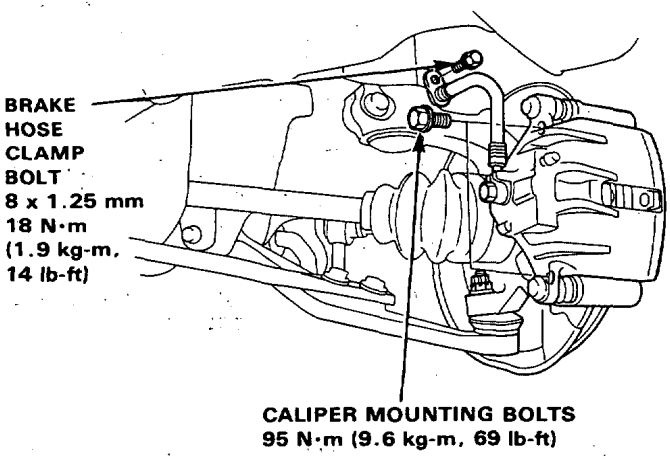
Knuckle/Hub Replacement

1. Pry nut lock tab away from spindle, then loosen nut using 32 mm socket and breaker bar.



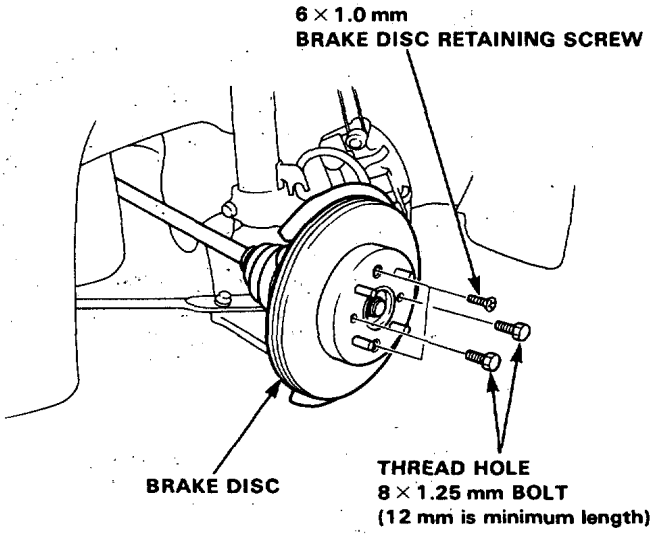
2. Loosen the wheel nuts slightly.
3. Jack up the front of car and support on safety stands in proper locations.
4. Remove the wheel nuts, wheel, and spindle nut.
5. Remove the brake hose clamp bolt.
6. Remove the caliper mounting bolts and hang the caliper assembly to one side.

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 under-*carriage.



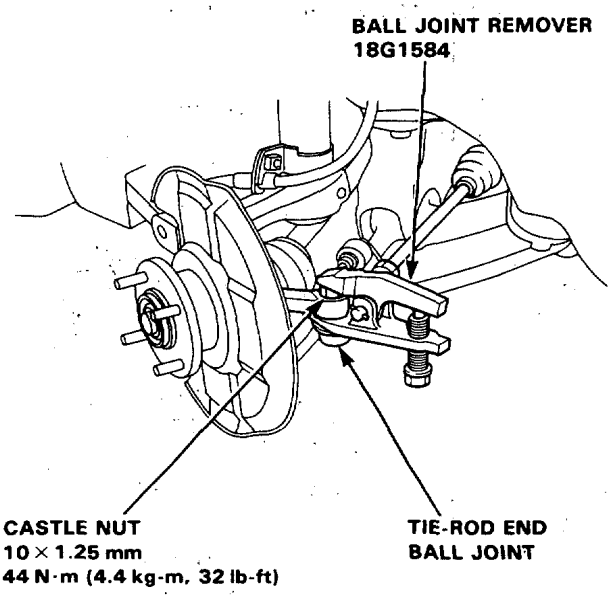
7. Remove the 6 mm brake disc retaining screws.
8. Screw two 8 × 1.25 mm bolts into the disc to push it away from the hub.

   NOTE: Turn each bolt two turns at a time to prevent cocking disc excessively.



9. Remove the cotter pin from the tie-rod end and remove the castle nut.
10. Break loose the tie-rod ball joint using the Ball Joint Remover, then lift tie-rod out of the knuckle.

CAUTION: Avoid damage the ball joint boot.



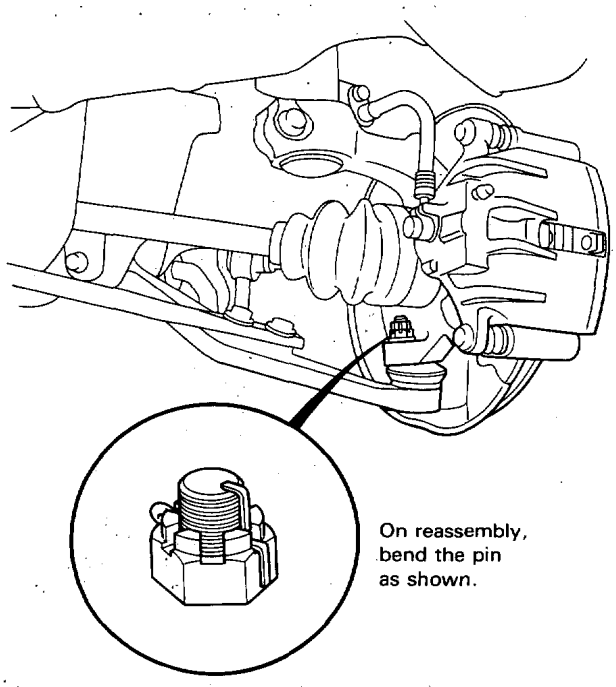
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Knuckle/Hub Replacement (cont'd)

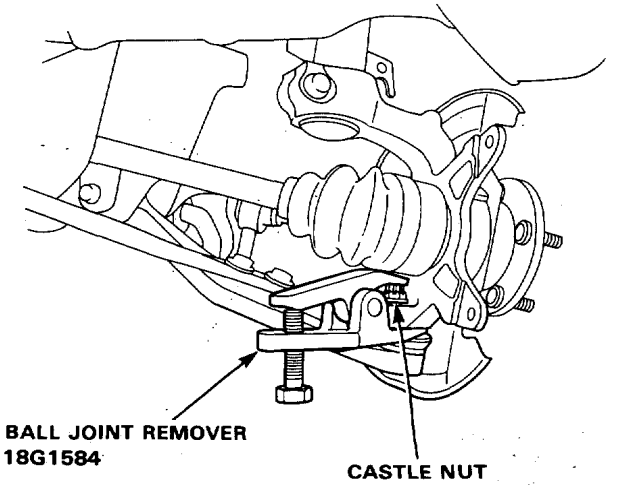
11. Remove the stabilizer link from the front lower arm.

12. Remove the cotter pin from the front lower arm and remove the castle nut.

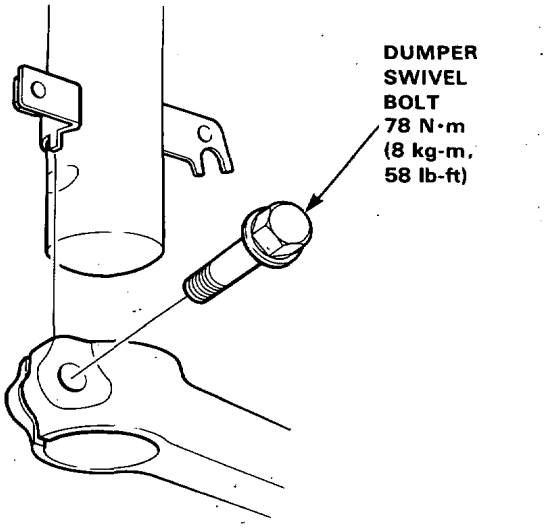


13. Break loose the front lower arm ball joint using the Ball Joint Remover, then down the lower arm out of the knuckle.

CAUTION: Avoid damaging the ball joint boot.



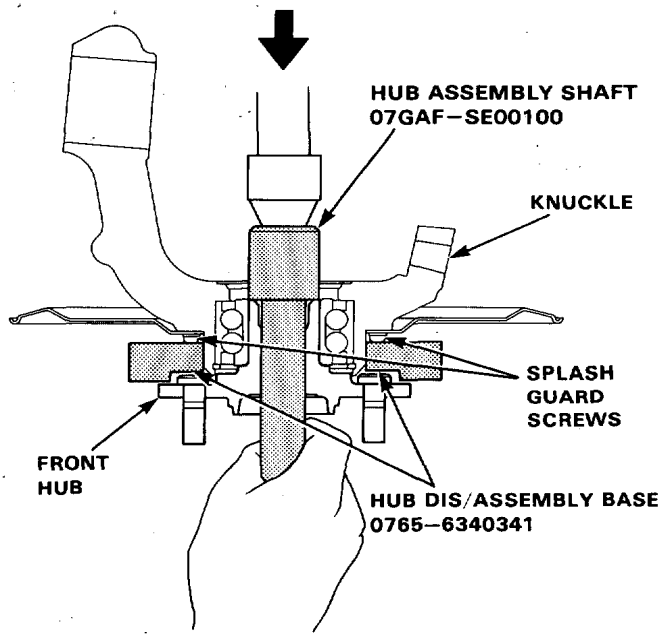
14. Remove the damper swivel bolt, then use a brass or lead hammer to tap knuckle down until it comes off damper.



15. Remove the knuckle and hub by sliding them off the drive shaft.

16. Remove the hub from the knuckle using special tools and a hydraulic press.

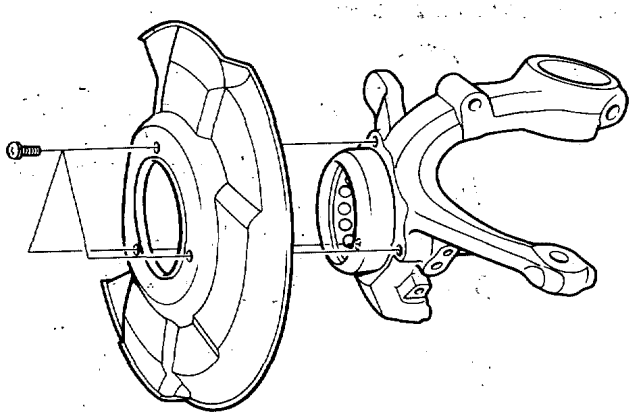
CAUTION:
- **Take care not to distort splash guard.**
- **Hold on to the hub to keep it from falling when pressed clear.**
- **To prevent damage to the tool make sure the threads are fully engaged before pressing.**



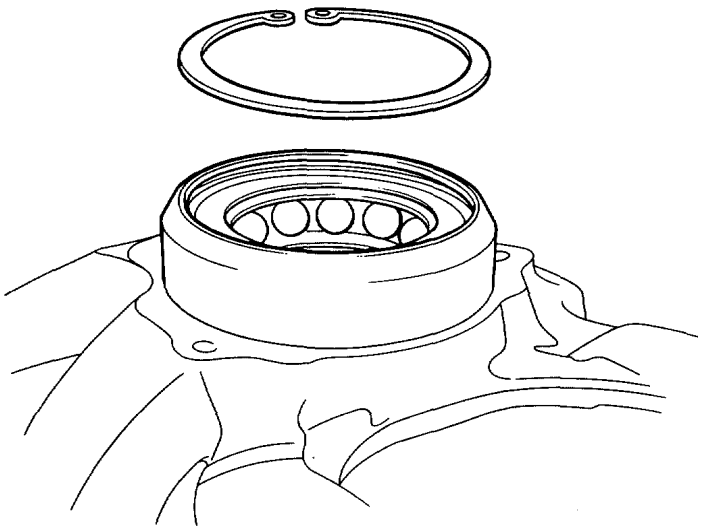
NOTE: Install hub and knuckle in reverse order of disassembly. Use new spindle nut, and stake after torguing.

Downloaded from www.Manualslib.com manuals search engine

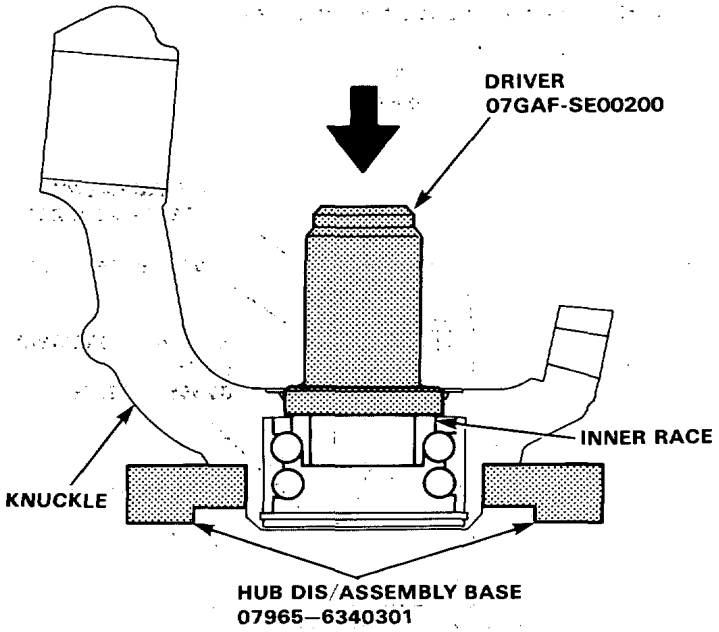
17. Remove the three screws fromè the splash guard.



18. Remove the knuckle ring and snapring.

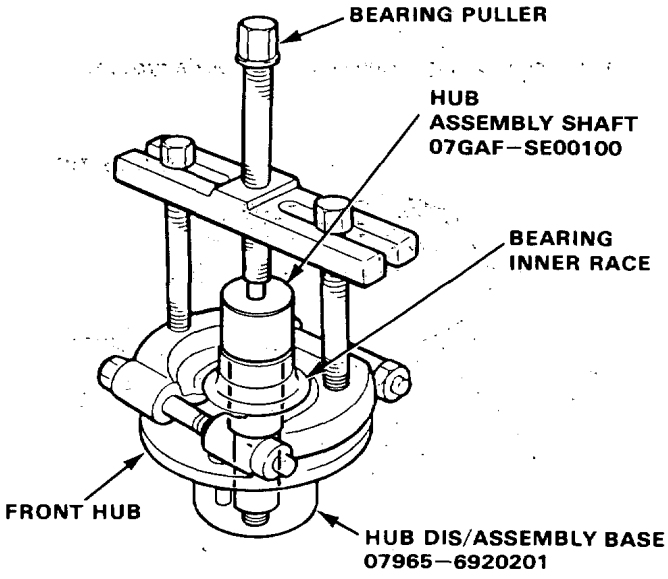


19. Press the wheel bearing out of the knuckle using the special tools, inner race and a hydraulic press as shown below.



20. Remove the out board bearing inner race from the hub, using special tools 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.

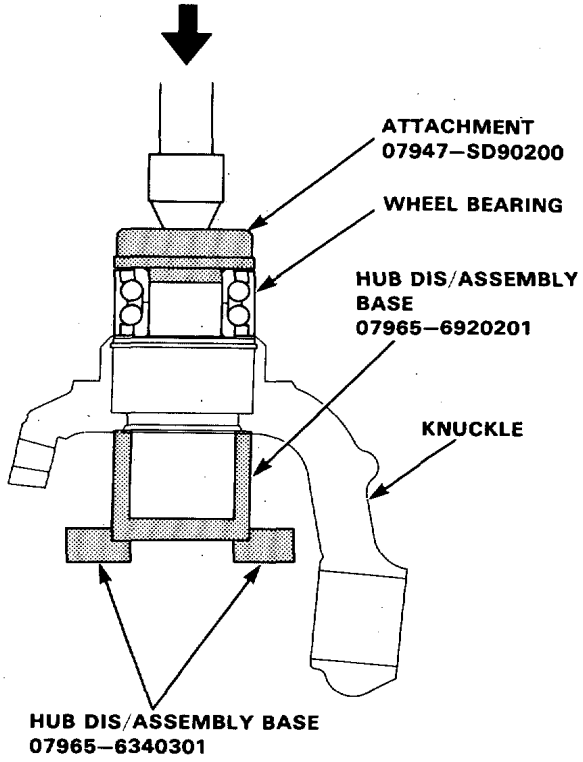
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

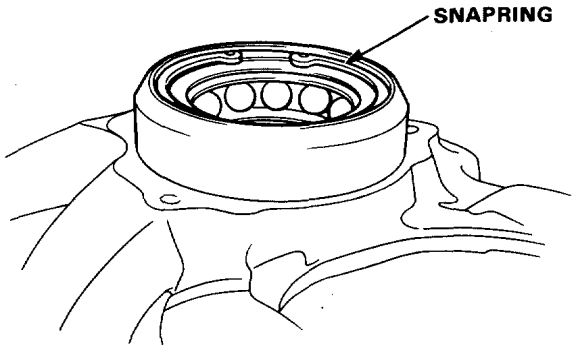
Knuckle/Hub Replacement (cont'd)

NOTE: Replace the bearing with a new one after removal.

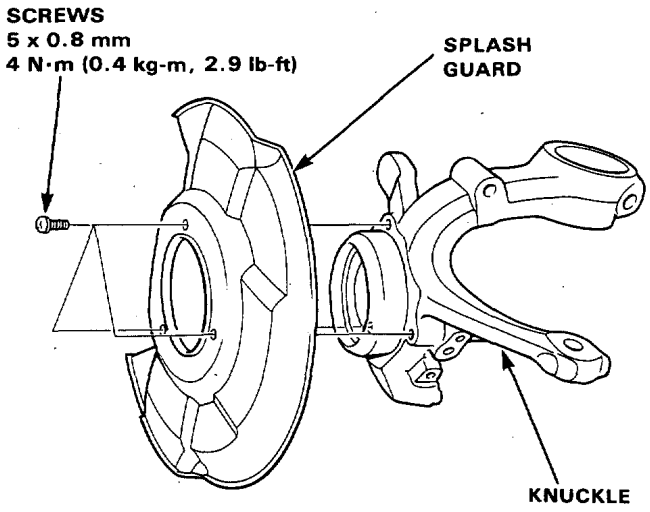
21. Press a new wheel bearing into the hub using the special tools shown and a hydraulic press.



22. Install the snapring securely in the knuckle groove.



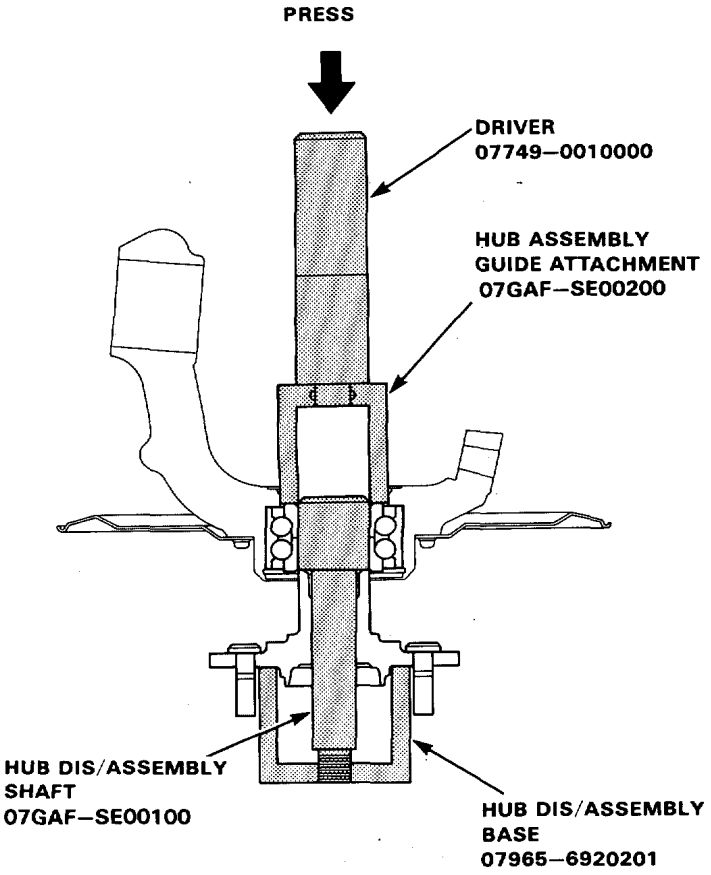
23. Install the splash guard and tighten the screws.



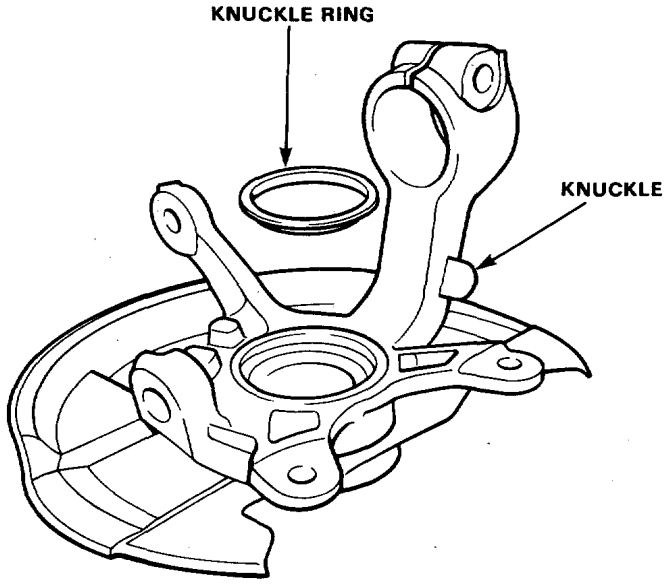
Downloaded from www.Manualslib.com manuals search engine

24. Place front hub in special tool fixture, then set knuckle in position and apply downward pressure with hydraulic press.

CAUTION:
- **Maximum press load: 2.0 tons**
- **To prevent damage to the tool make sure the threads are fully engaged before pressing.**



25. Install the front knuckle ring on the knuckle.

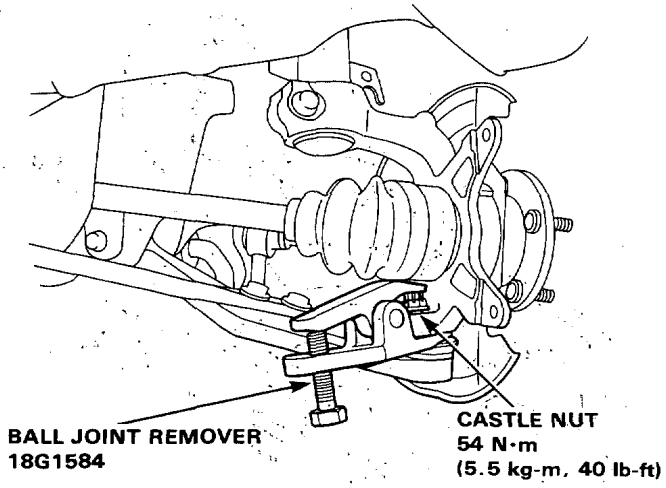


Downloaded from www.Manualslib.com manuals search engine

Front Suspension

Lower Arm Busing Replacement

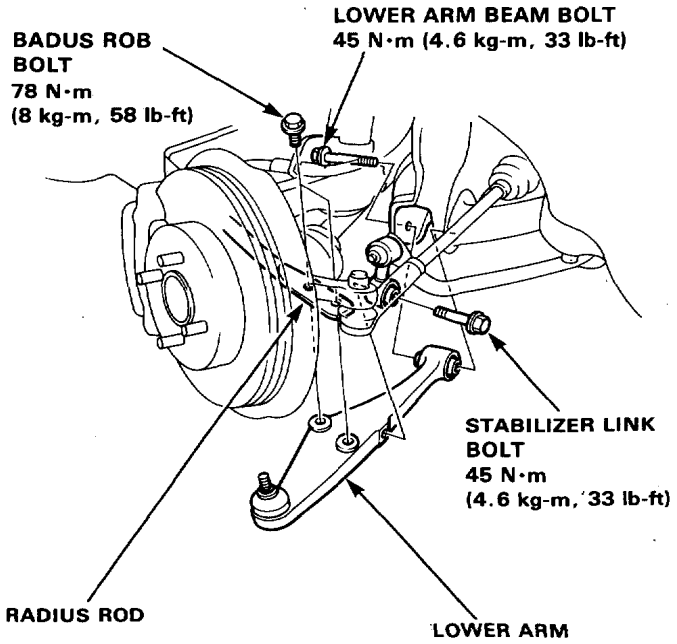
1. Remove the front wheels.
2. Remove the cotter pin from the knuckle and loosen the lower arm ball joint castle nut half the length of the joint threads.



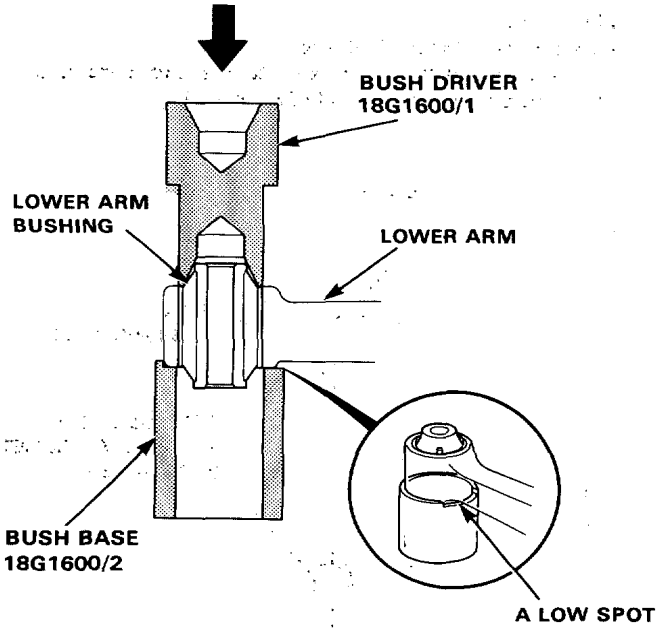
3. Separate the ball joint and knuckle using a ball joint remover.

   CAUTION: Avoid damaging the ball joint boot.

4. Remove the stabilizer link bolt from the lower arm.
5. Remove the radius rod bolt from the lower arm.
6. Remove the lower arm beam bolt then remove the lower arm.

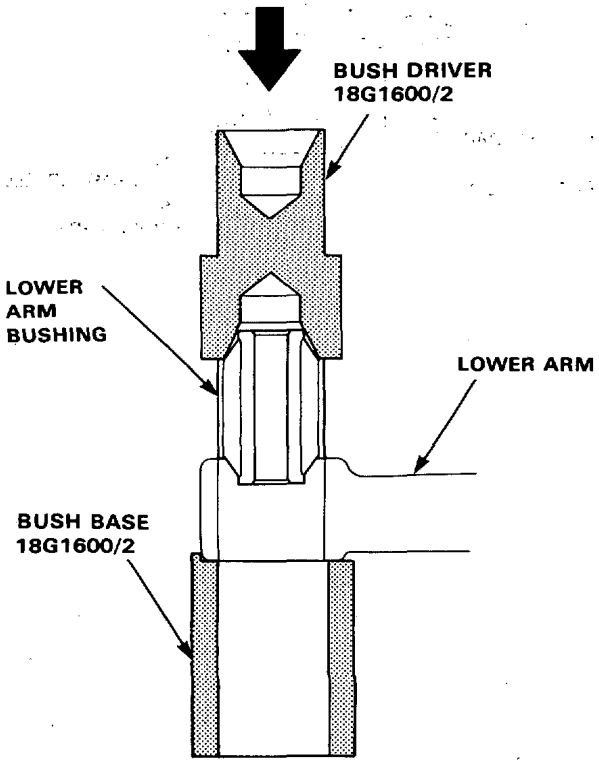


7. Remove the lower arm bushing out of the lower arm from the direction indicated.



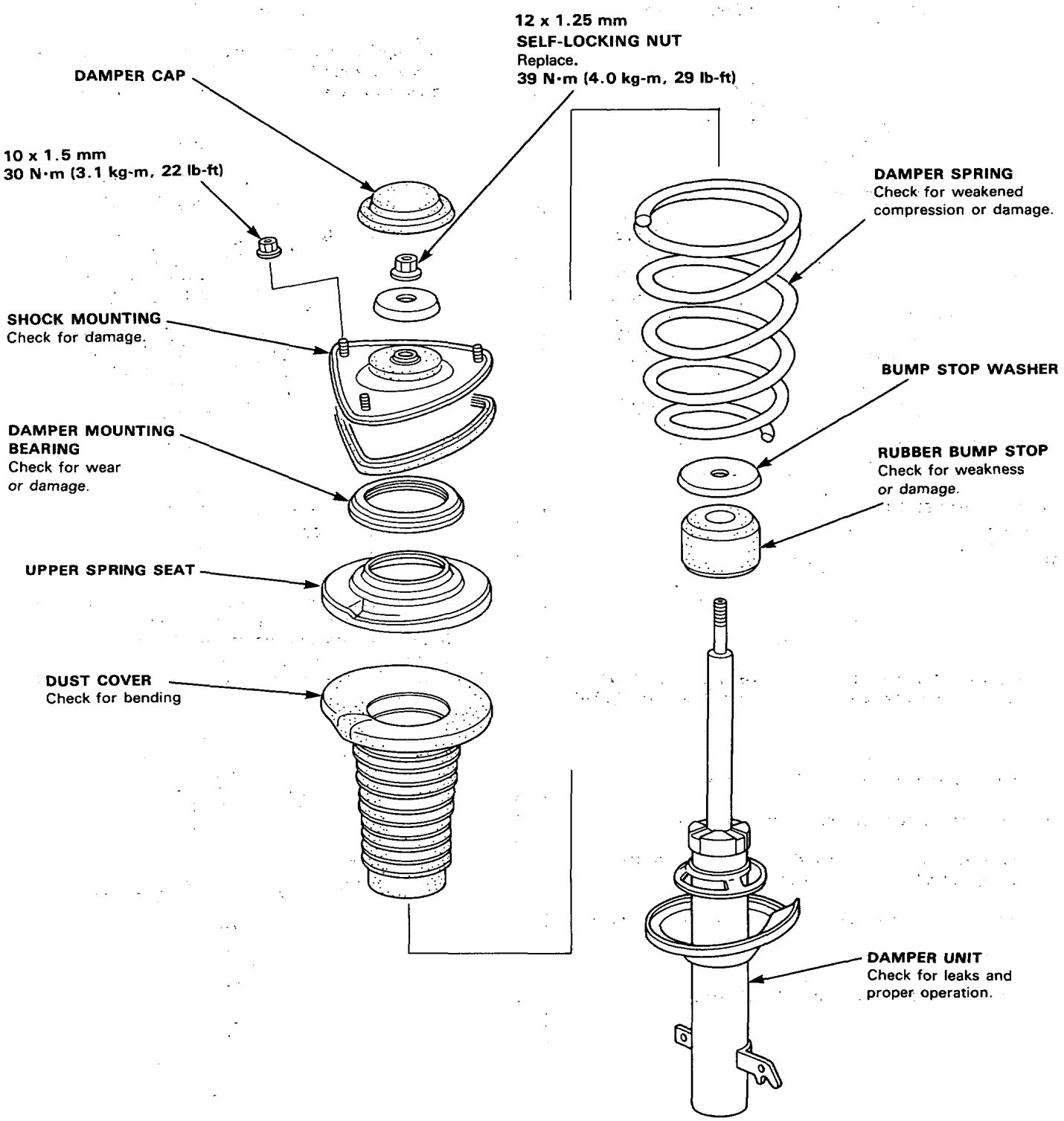
8. Drive the lower arm bushing from the direction indicated.

   NOTE: Drive in the lower arm bushing so that their leading edges are flush with the lower arm.



Downloaded from www.Manualslib.com manuals search engine

Damper Disassembly/Inspection

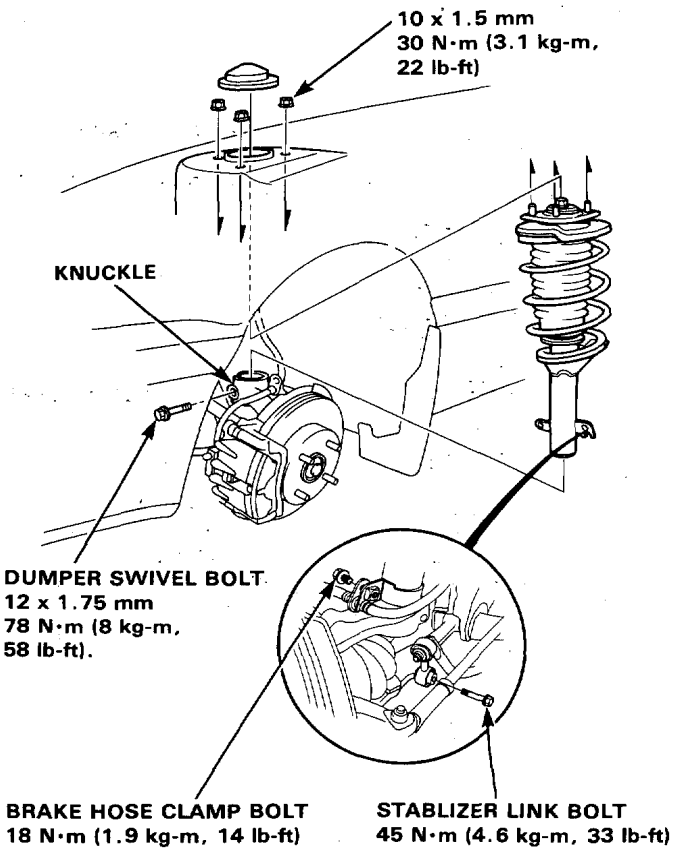


Downloaded from www.Manualslib.com manuals search engine

Front Suspension

Damper Removal

1. Jack up the front of car and support with safety stands in proper locations, then remove front wheels.



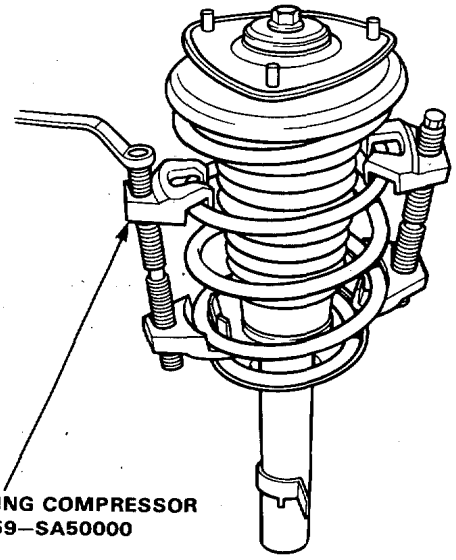
2. Remove brake hose clamp from Damper.
3. Remove the stabilizer link from lower arm.
4. Remove the Damper swivel bolt, then use a hammer to tap knuckle down until it comes off Damper.
5. Remove the rubber cap and nuts from top of Damper.
6. Remove the Damper.

NOTE: Reinstall in reverse order of removal.

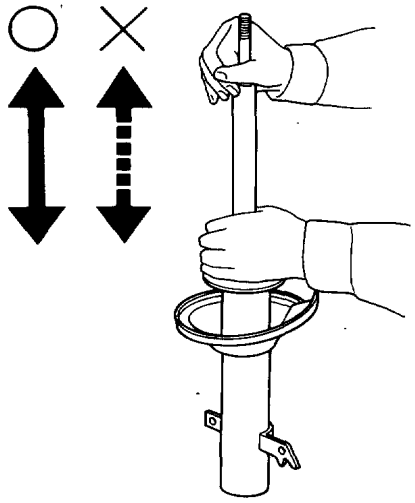
Damper Disassembly

1. Compress damper spring using spring compressor, then remove spring seat nut.

WARNING **Follow spring compressor manufacturer's instructions carefully. Do not compress spring more than necessary for access to seat nut.**



2. Remove the spring compressor and disassemble the damper as shown in the next column.
3. Check for smooth operation through full stroke, both compression and extension.
4. Also check for smooth operation in short strokes of 5—10cm (2—4in.)



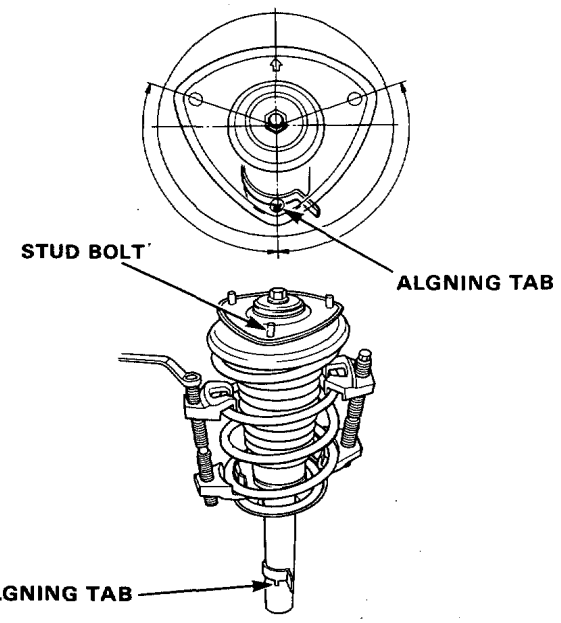
5. Replace the damper if resistance is uneven or jerky.
6. Check for abnormal noise or binding during above tests.
7. Check for oil leaks.

Downloaded from www.Manualslib.com manuals search engine

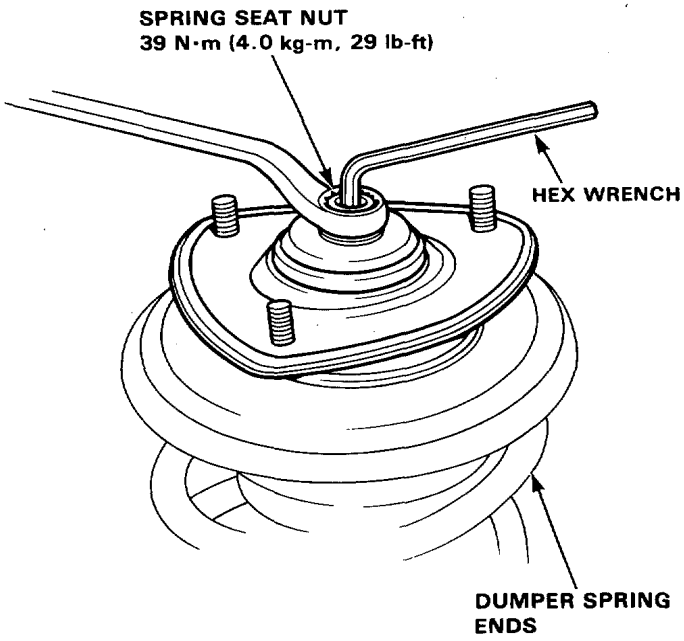
Damper Reassembly

NOTE: Ressemble damper in reverse order of disassembly, noting following.

1. Mark the damper at tow points by measuring around from the damper fork aligning tab. Align the two point with the stud bolts on the mounting base.



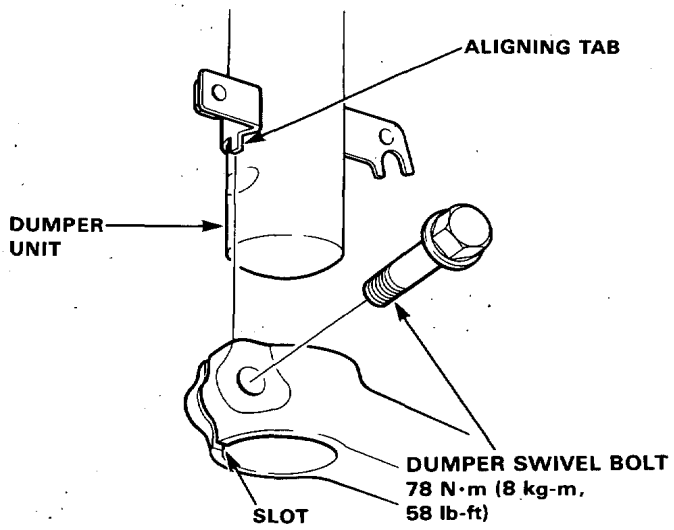
2. Position damper spring ends against steps in upper spring seat and damper unit.
3. To tighten new self locking nut, hold damper rod with hex wrench to keep it from turning.



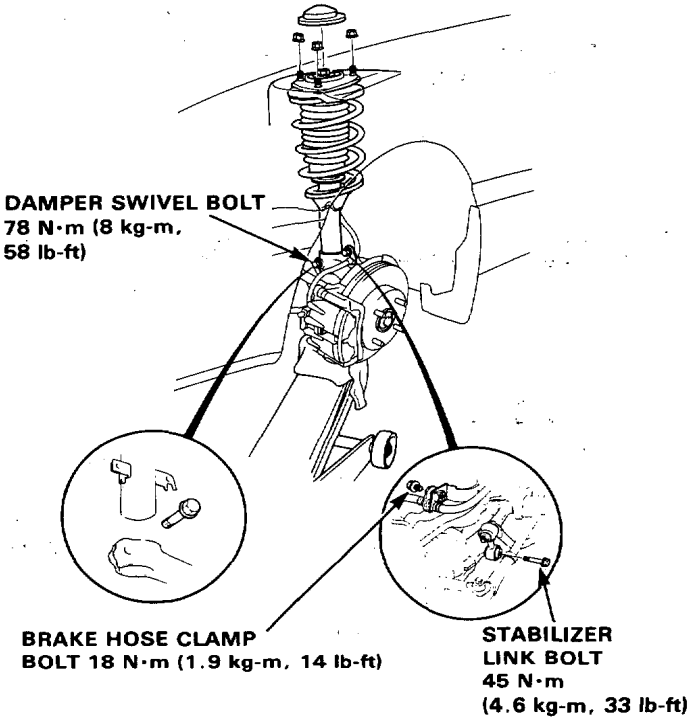
Damper Installation

NOTE: Install front suspension in reverse order of removal, noting the following:

1. Install lower arms loosely in frame.
2. Align tab on damper unit with slot in knuckle and assemble as shown.



3. Place jack under knuckle and raise until car just lifts off of safety stand.



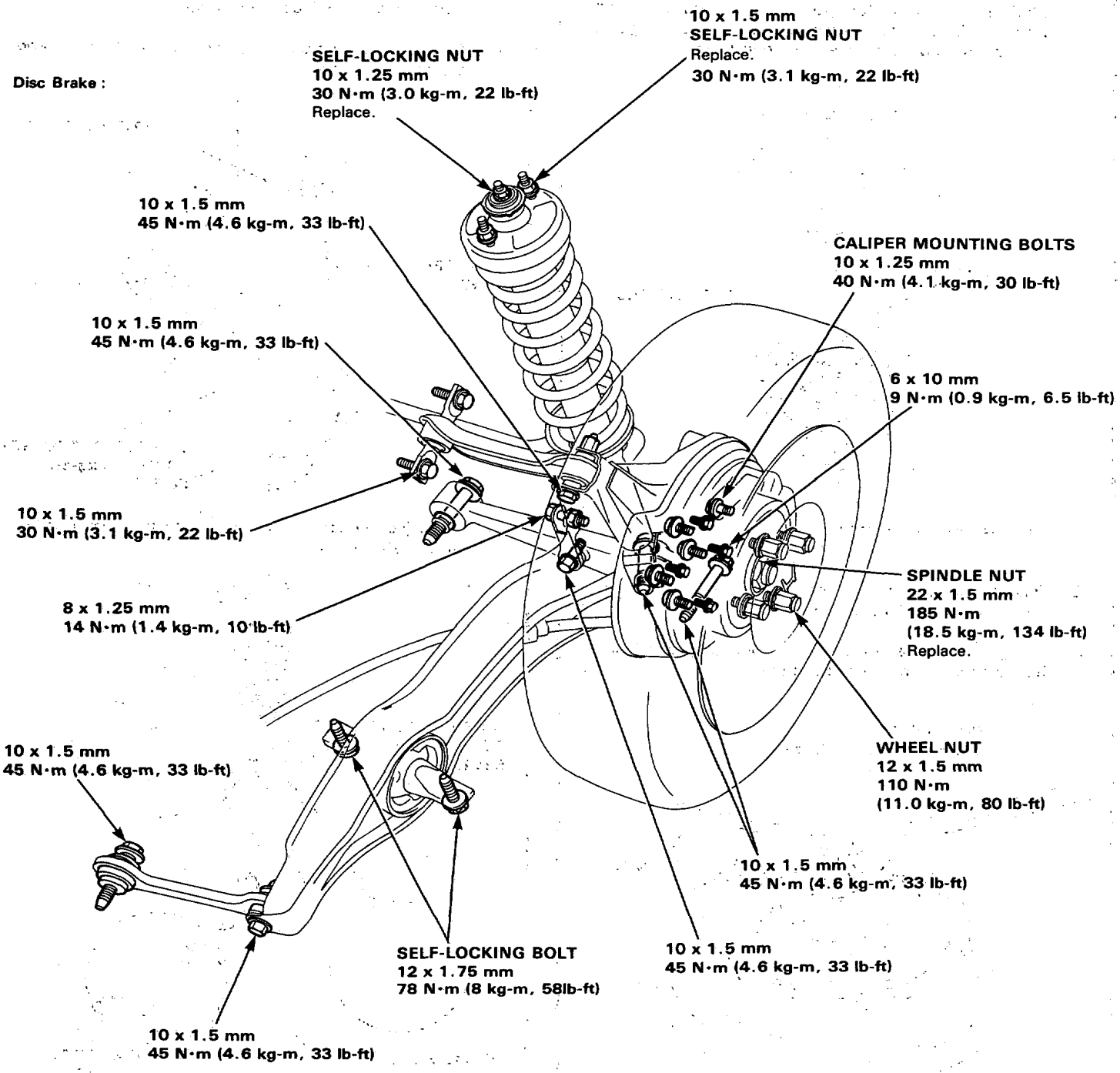
4. Tighten the damper swivel bolt to specified torque.
5. Tighten the stabilizer link bolts.
6. Tighten the brake hose clamp bolt.

Downloaded from www.Manualslib.com manuals search engine

Rear Suspension

Torque specifications

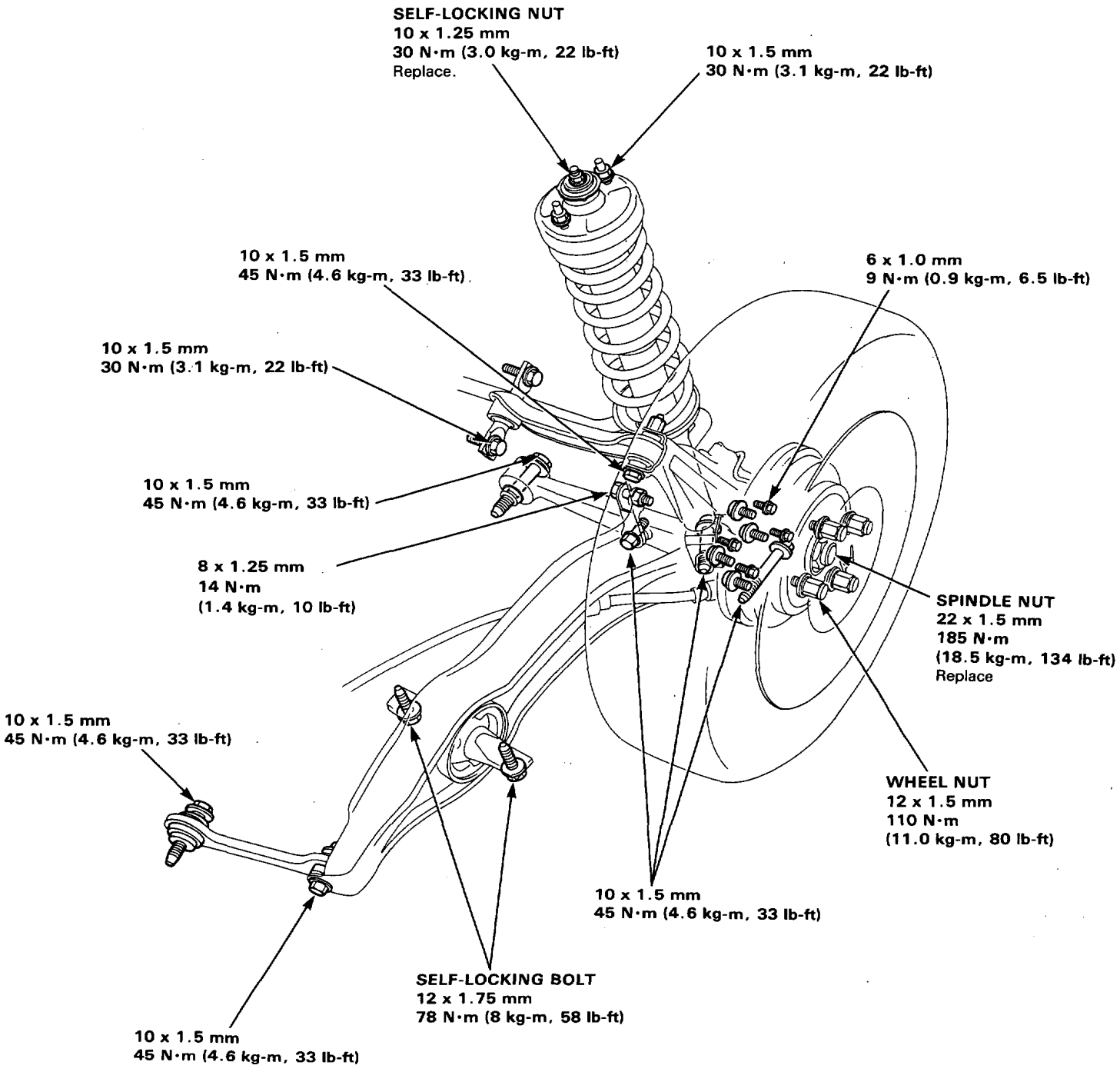
CAUTION:
- Replace the self-locking nuts after removal.
- Replace the self-locking bolts after removal.



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

Downloaded from www.Manualslib.com manuals search engine

Drum Brake:



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

Downloaded from www.Manualslib.com manuals search engine

Rear Suspension

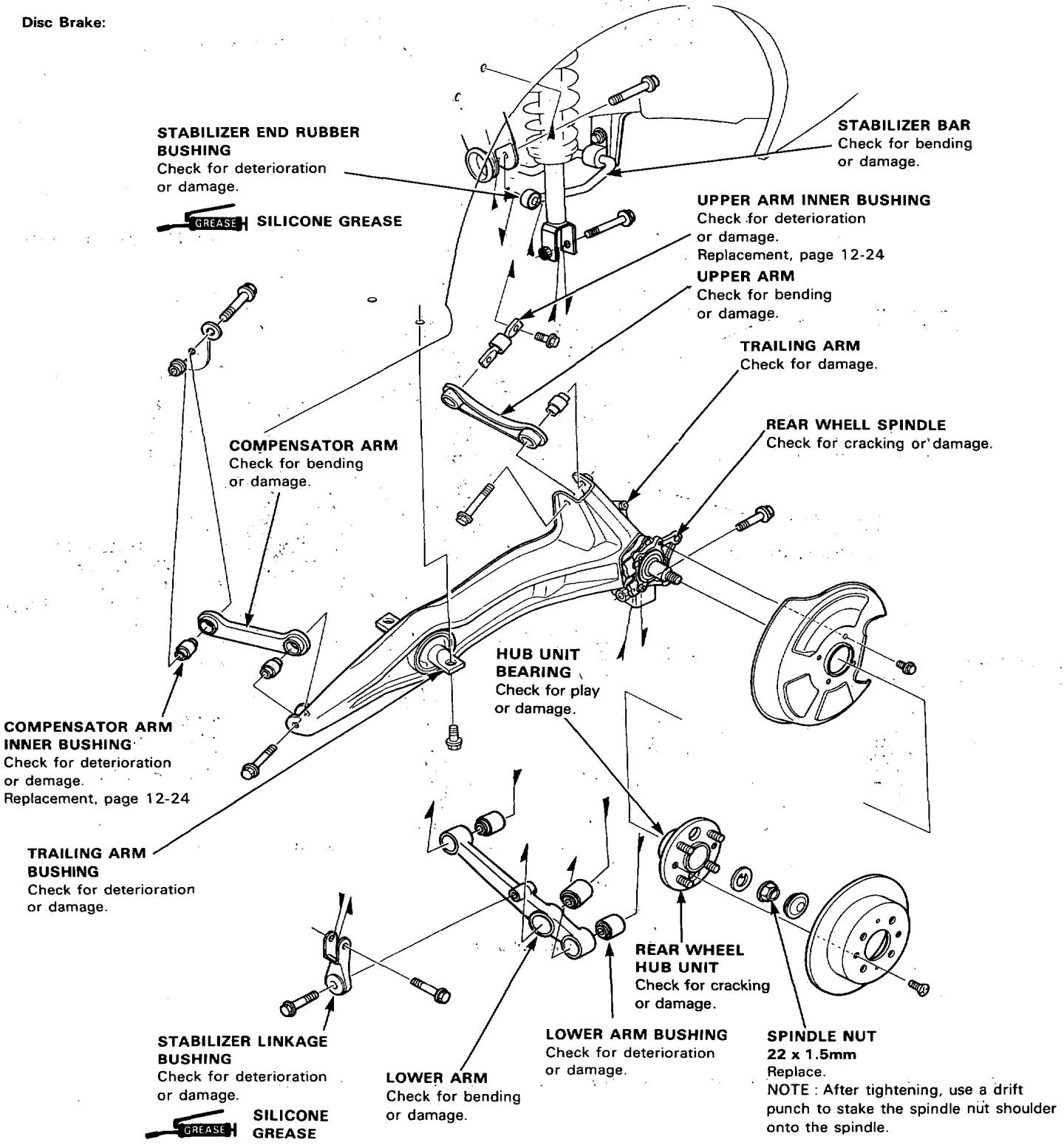
Illustrated Index

NOTE:

- Use only genuine Honda aluminum wheel weights. Non-genuine aluminum wheel weights may corrode and damage aluminum wheels.
- 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.

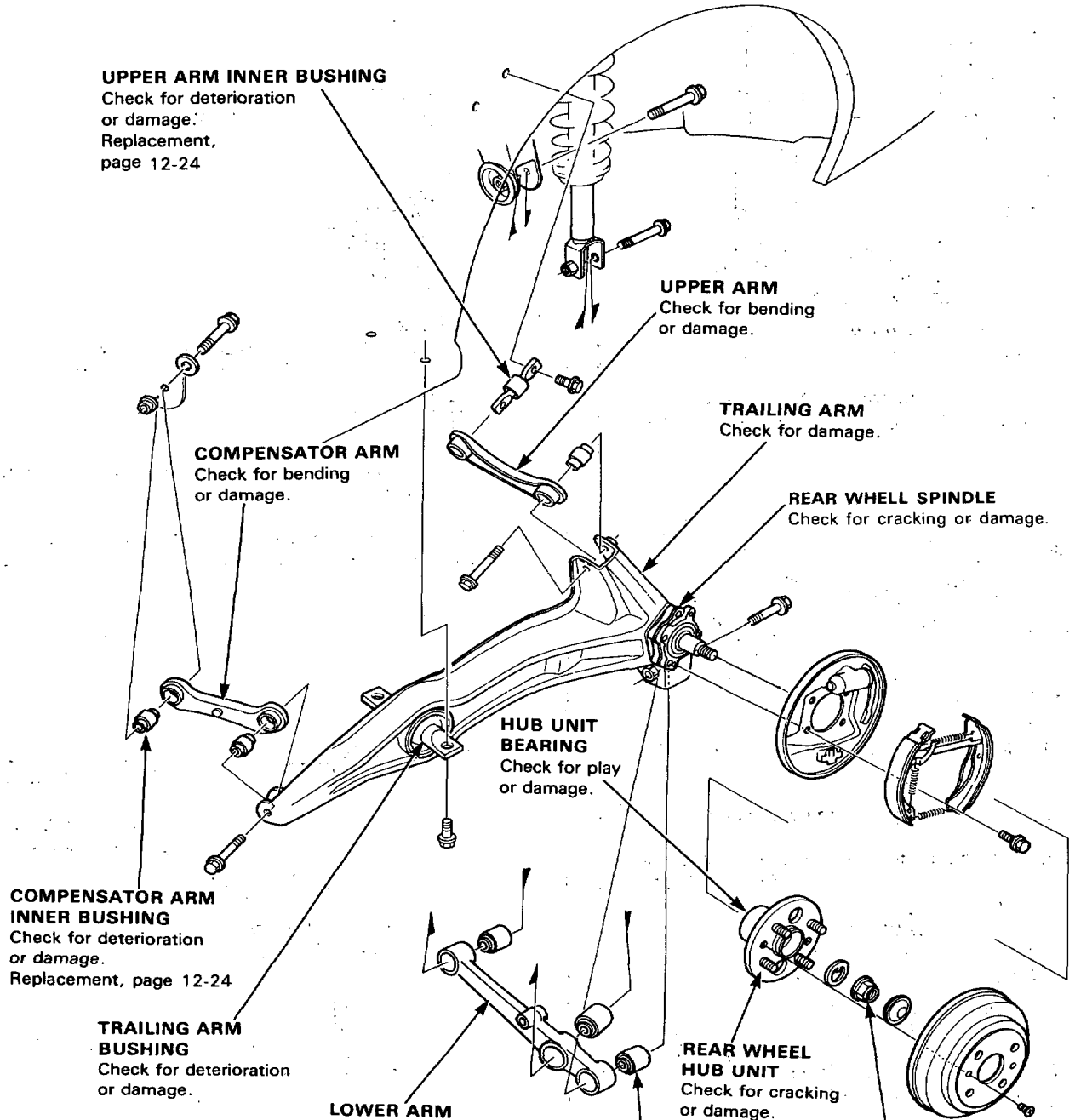
CAUTION: Use a rag at the point you are going to pry, because aluminum alloy wheels can be easily damaged.

Disc Brake:



Downloaded from www.Manualslib.com manuals search engine

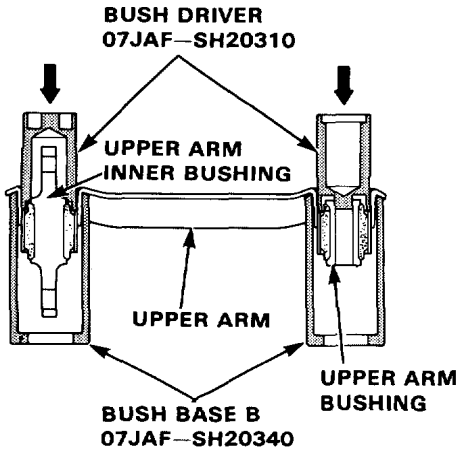
Drum Brake:



Downloaded from www.Manualslib.com manuals search engine

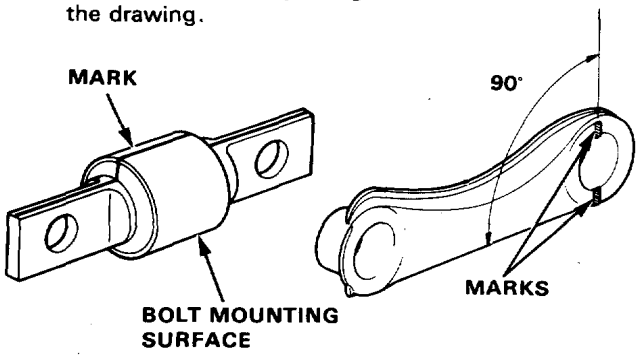
Upper Arm Bushing Replacement

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.

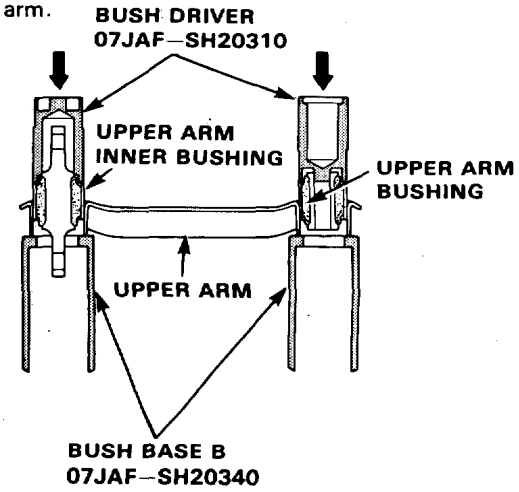
3. Mark on the upper arm at two points so that they are in line and make a right angle with the arm as shown in the drawing.



4. Drive in the upper arm inner bushing with the marks aligned.

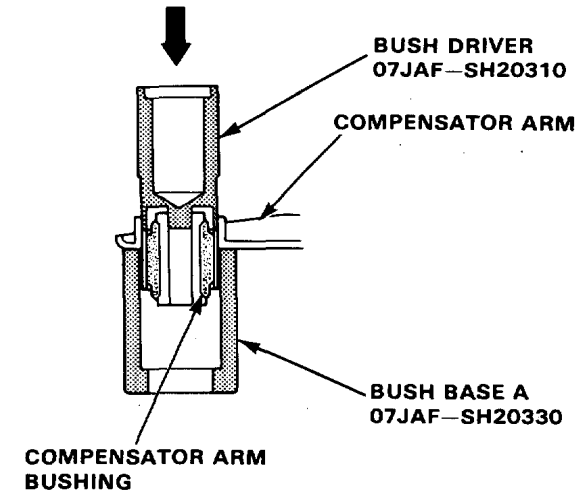
5. Drive the upper arm bushing into the upper arm.

   NOTE : Drive in the upper arm bushing and inner bushing until their leading edges are flush with the upper arm.



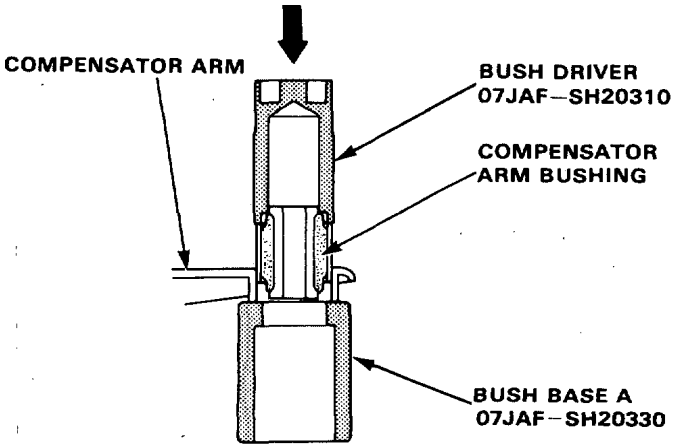
Compensator Arm Bushing Replacement

1. Remove the compensator arm bushings out of the compensator arm from the direction indicated.



2. Drive the compensator arm bushings from the direction indicated.

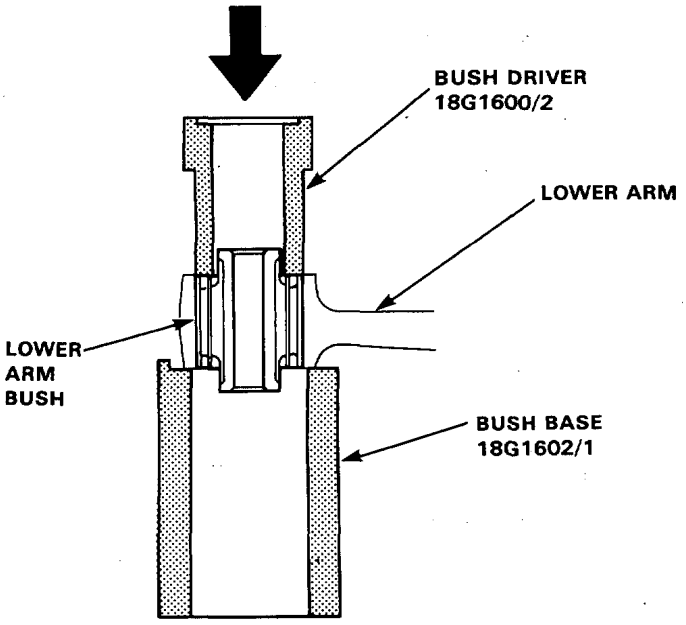
   NOTE : Drive in the compensator arm bushings so that their leading edges are flush with the compensator arm.



Downloaded from www.Manualslib.com manuals search engine

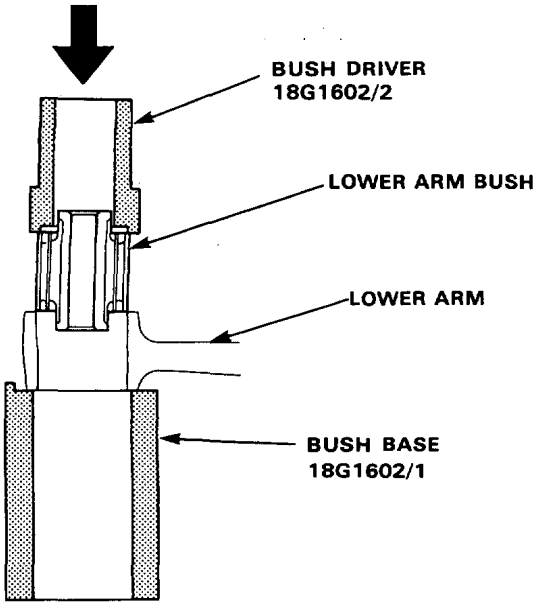
Rear Lower Arm Bushing Replacement

1. Remove the rear lower arm bushings out of the rear lower arm from the direction indicated.



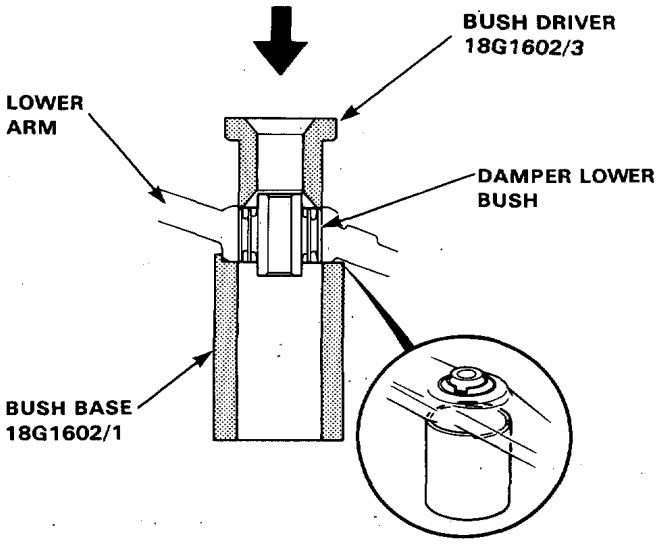
2. Drive the rear lower arm bushings from the direction indicated.

   NOTE: Drive in the rear lower arm bushings so that their leading edges are flush with the rear lower arm.



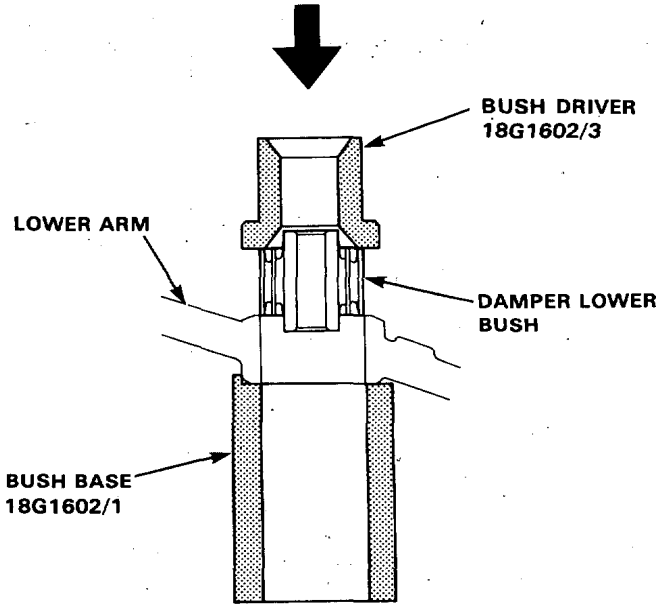
Rear Damper Lower Bushing Replacement

1. Remove the rear damper lower bushing out of the rear lower arm from the direction indicated.



2. Drive the rear damper lower bushing from the direction indicated.

   NOTE: Drive in the rear damper lower bushing so that their leading edges are flush with the rear lower arm.



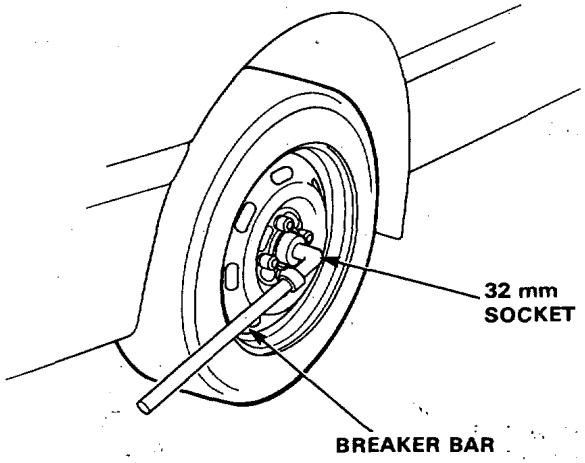
Downloaded from www.Manualslib.com manuals search engine

Rear Suspension

Hub Unit Bearing Replacement

Disc Brake:

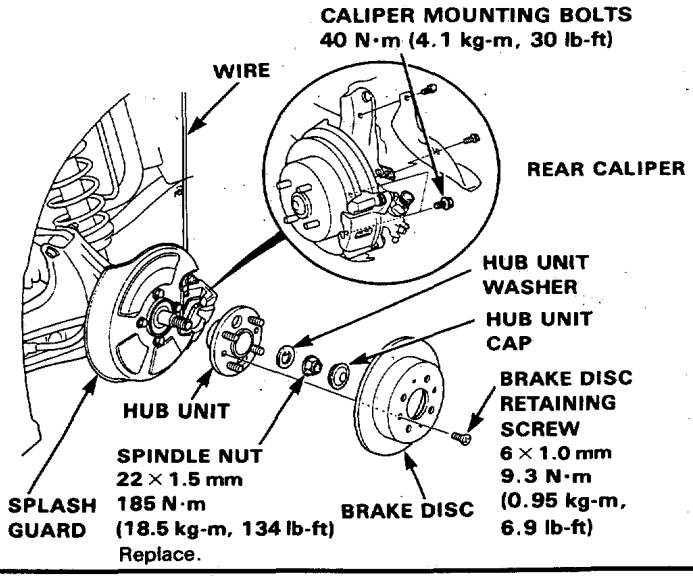
1. Pry nut lock tab away from spindle, then loosen nut using 32 mm socket and breaker bar.



2. Loosen the wheel nuts slighly.
3. Jack up the rear of car and support on safty stands in proper location.
4. Remove the wheel nuts, wheel, and spindle nut.
5. Remove the caliper shield.
6. Remove the caliper mounting bolts and hang the caliper assembly to one side.

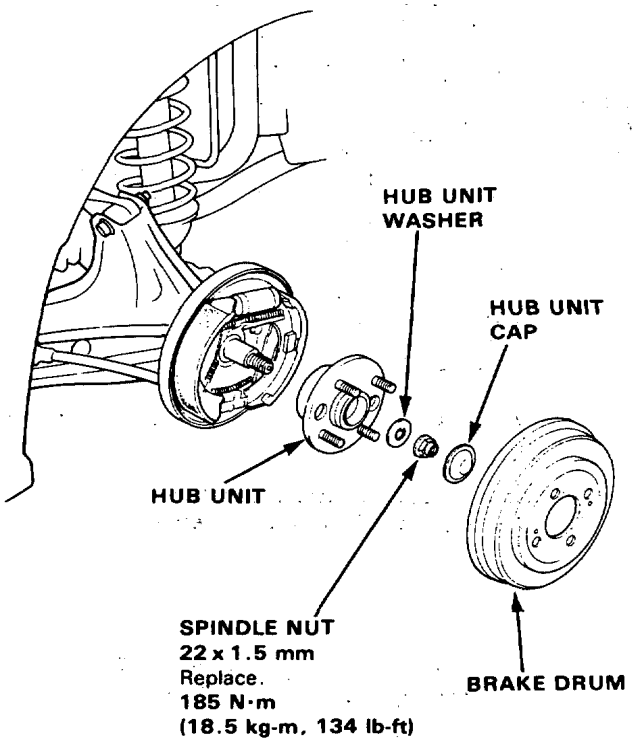
   CAUTION: To prevent accidental damage to the caliper assembly or brake hose, use a short pieace of wire to hang the caliper assembly from the under carriage.

7. Remove the brake disc retaining screws and brake disc.
8. Remove the hub unit and hub unit bearing.



Drum Brake:

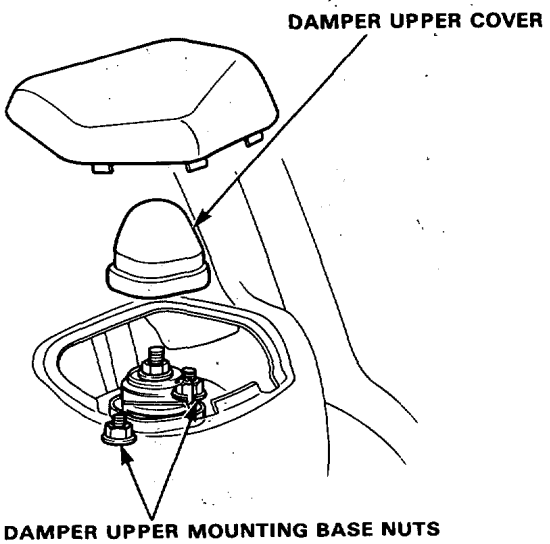
1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel and brake drum.
3. Remove the hub unit cap, unstake the spindle nut, then loosen the spindle nut.
4. Remove the hub unit and hub unit bearing.

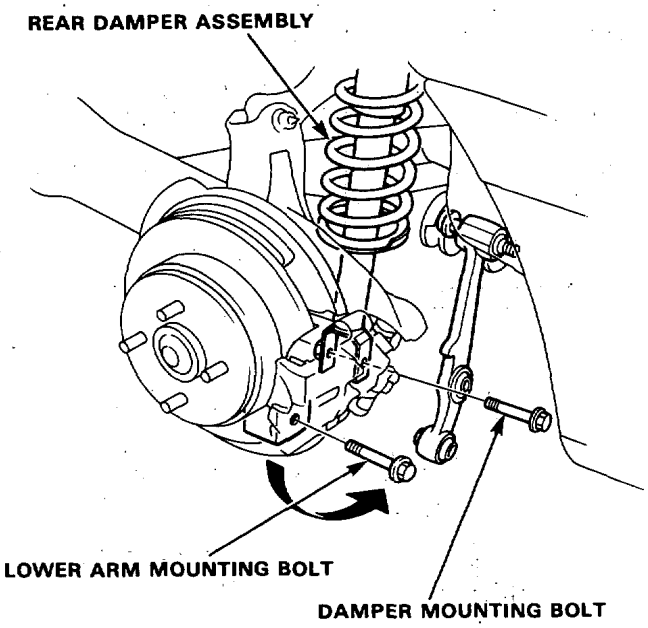


Downloaded from www.Manualslib.com manuals search engine

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. Remove the lower arm mounting bolt.
6. Lower the lower arm and remove the damper assembly.

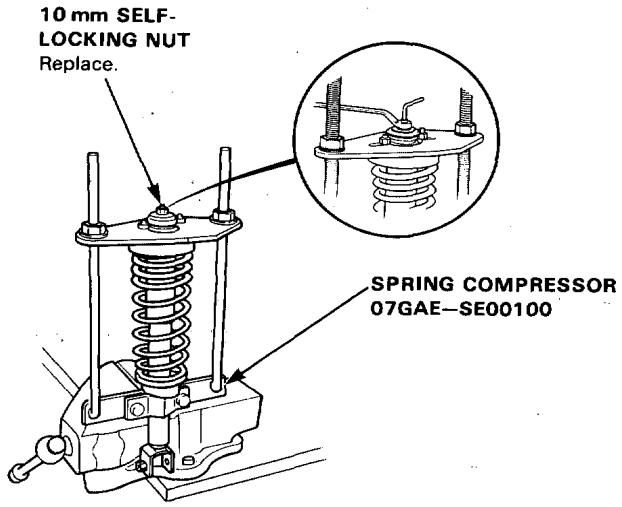
Downloaded from www.Manualslib.com manuals search engine

Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions.

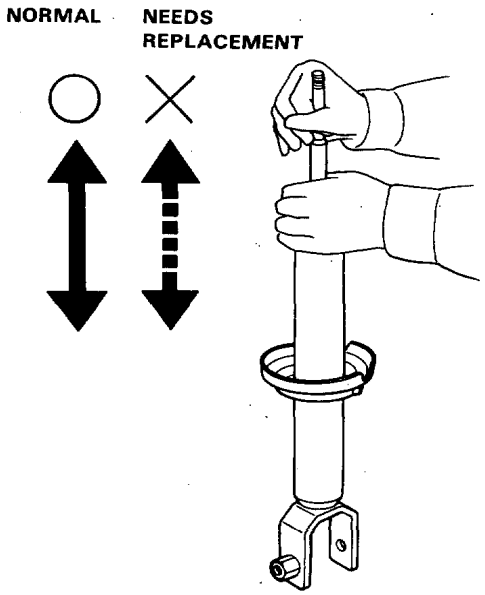
   CAUTION: Do not compress the spring more than necessary to remove the 10 mm self locking nut.

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.

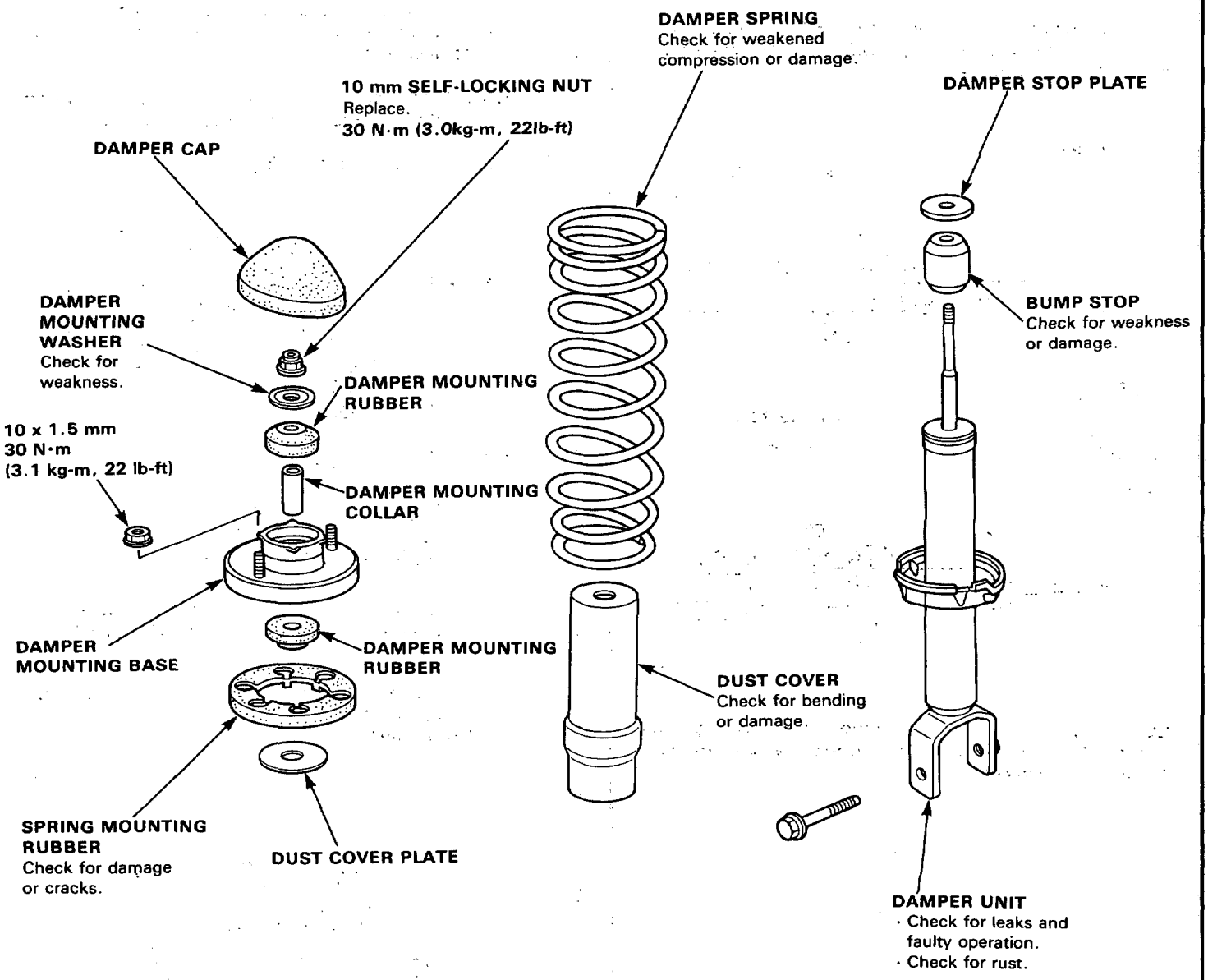
4. Check for smooth operation through a full stroke, both compression and extension.



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.

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

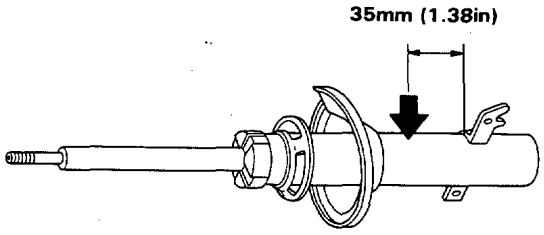
Rear Suspension

Damper Disposal

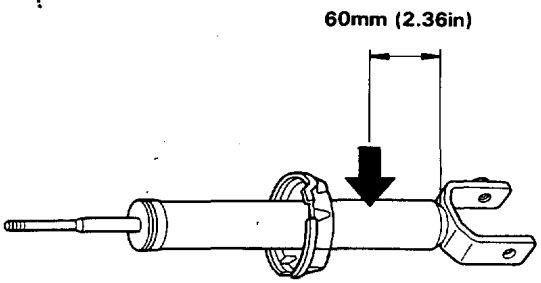
WARNING **The rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal to prevent possible injury due to explosion.**

Place the damper on a level surface with its rod extended and drill a holl or 2~3 mm (0.078—0.118in) diameter in the body to release the gas.

Front Damper



Rear Damper

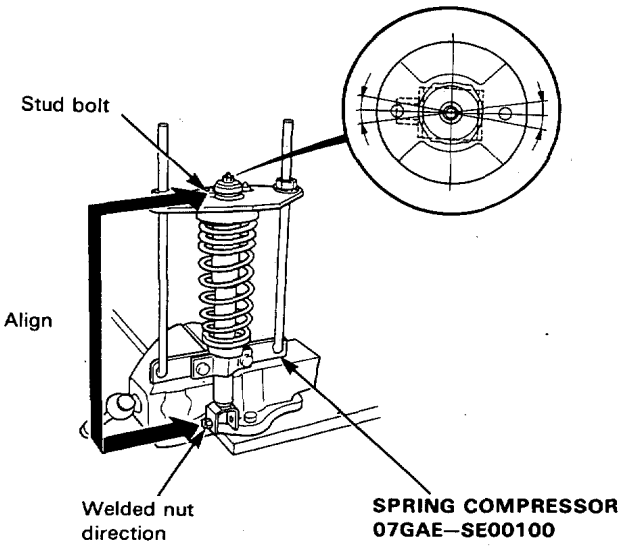


WARNING **Always wear eye protection to avoid getting metal shavings in your eyes when the gas damper pressure is relieved.**

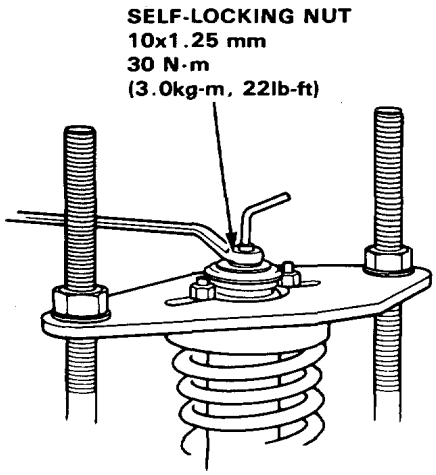
Damper Reassembly

1. Install the damper unit on a spring compressor.
2. Install the damper spring, bump stop, stop plate, dust cover, dust cover plate, mounting rubber, damper mounting rubber, collar and damper mounting base on the damper unit.

   CAUTION : Install the damper mounting base so that the angle of the stud bolt is as shown.
3. Compress the damper spring.



4. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self-locking nut.
5. Hold the damper shaft and tighten the 10 mm self-locking nut.

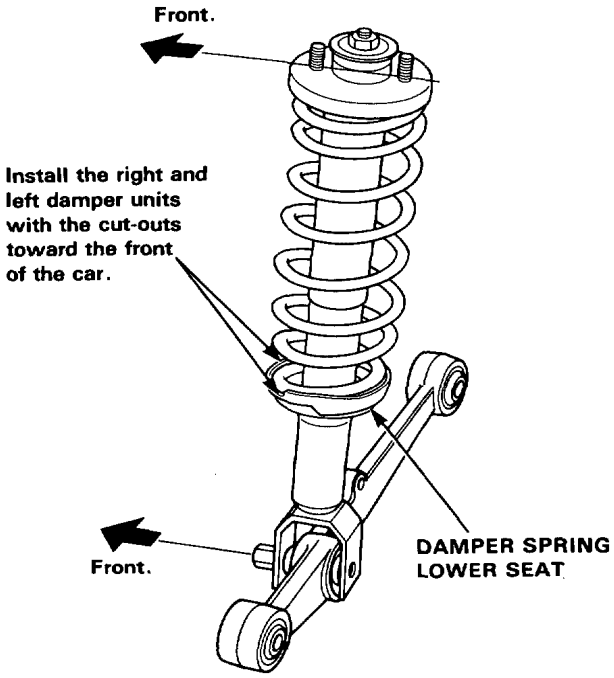


Downloaded from www.Manualslib.com manuals search engine

Damper Installation

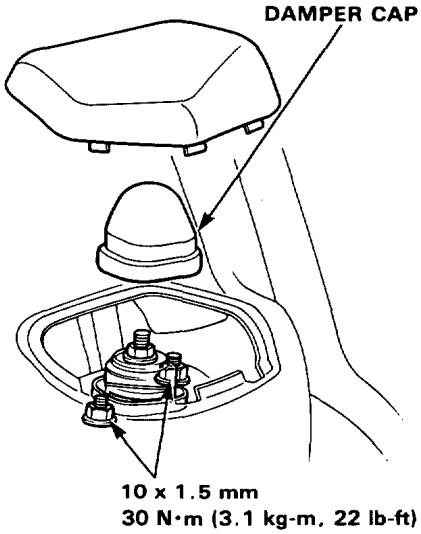
1. Lower the rear suspension and set the damper assembly.

   CAUTION: Be sure that the two cut-outs in the damper spring lower seat are toward the front of the car as shown below.



2. Loosely install the damper mounting bolt.

3. Install the damper upper base mounting nuts and tighten them.

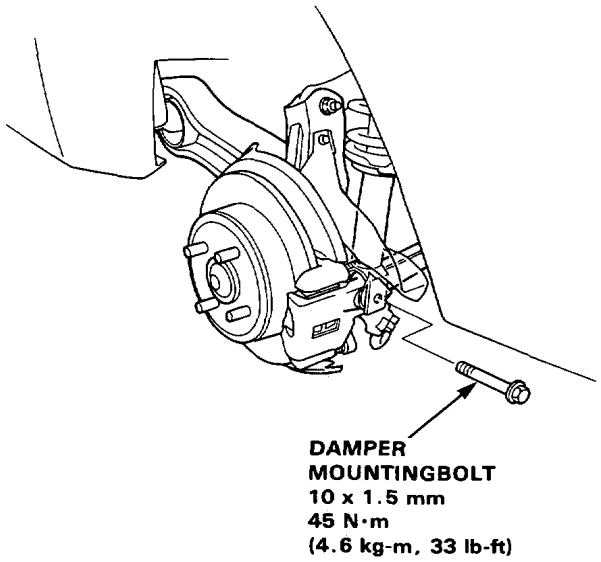


4. Install the damper cap.

5. Raise the rear suspension with a floor jack until the weight of the car is on the damper.

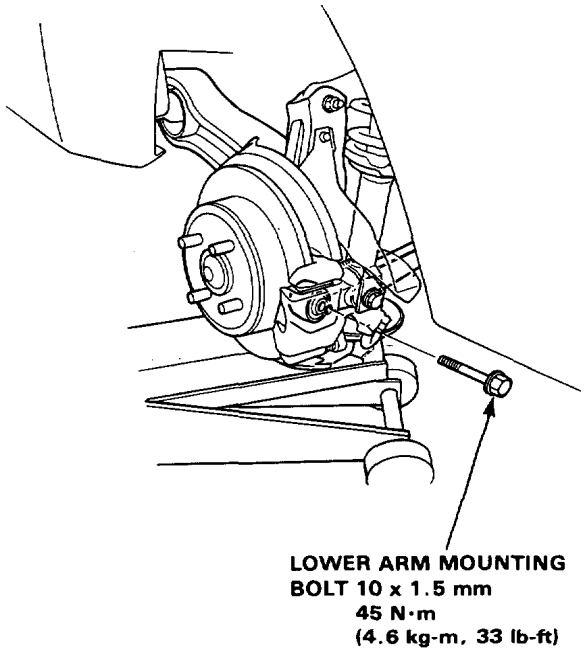
   NOTE: The damper mounting bolts and lower arms mounting bolt should be tightened with the damper under vehicle load.

6. Tighten the damper mounting bolt.



7. Install the lower arm mounting bolt.

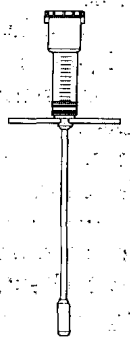
8. Tighen the lower arm mounting bolt.

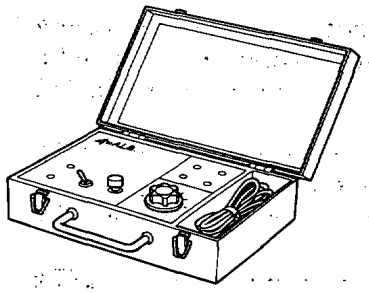


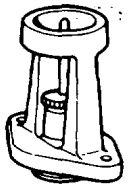
Downloaded from www.Manualslib.com manuals search engine

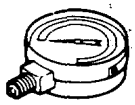
Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAA—SG00100	Bleeder T-Wrench	1	
②	07HAJ—SG00601	ALB Checker	1	
	or			
	07508—SB00000	ALB Checker	1	
	07HAJ—SG00400	Adaptor	1	
③	07JAG—SD40100	Push Rod Adjustment Gauge	1	
④	07404—5790300	Vacum 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—6340100	Pressure Gauge Joint Pipe	1	
⑨	07HAK—SG00110	Pressure Gauge Joint Pipe	1	

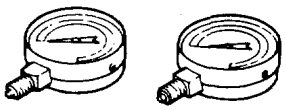

①

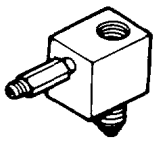

②

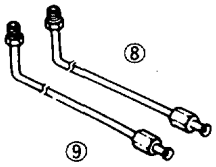

③


④


⑤


⑥

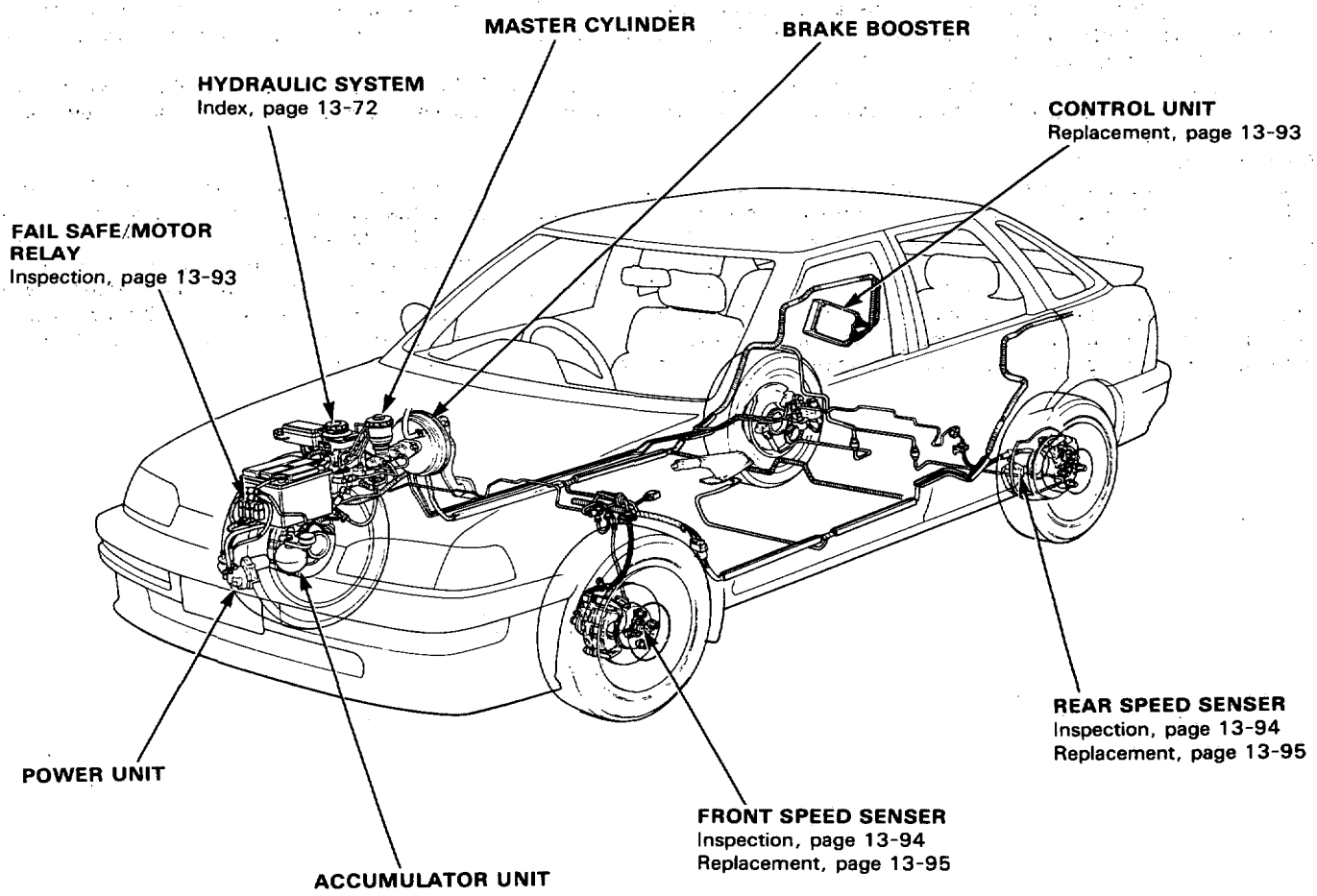

⑦


⑧
⑨

Downloaded from www.Manualslib.com manuals search engine

Illustrated Index

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.



Downloaded from www.Manualslib.com manuals search engine

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 swithch, 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.

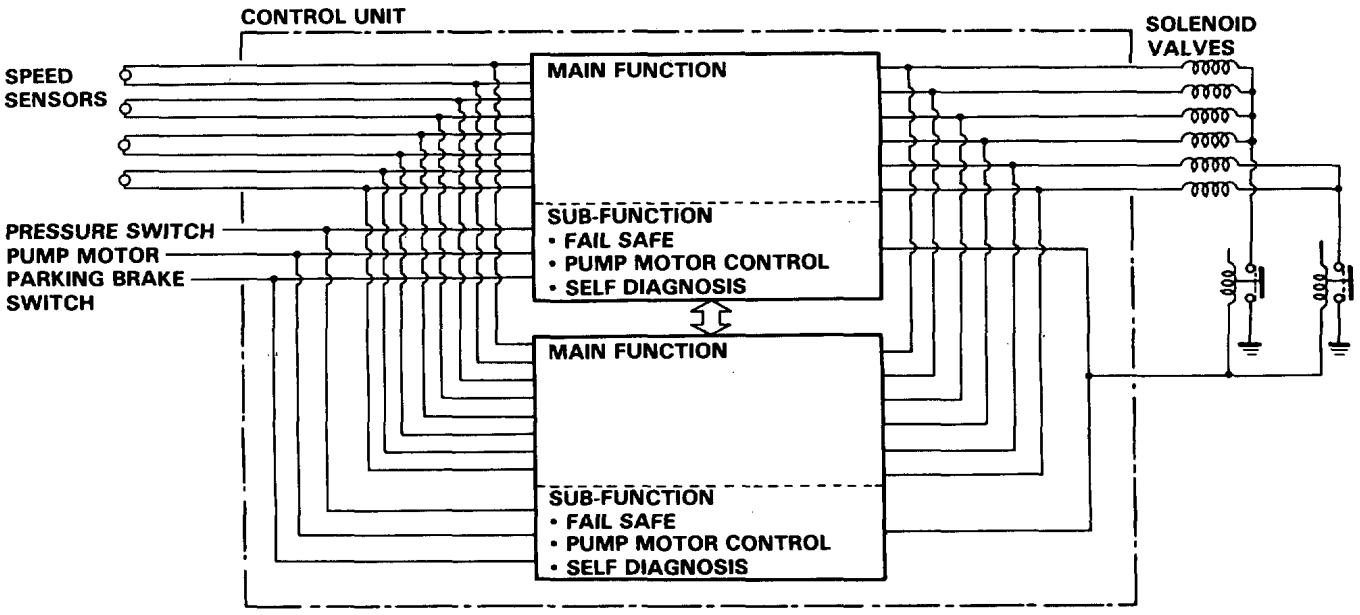
Downloaded from www.Manualslib.com manuals search engine

Control Unit

Costruction

The control unit cosists 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 powr will be impaired if there is a malfunction in the system. To prevnt this possibildty, 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 n.

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)

Downloaded from www.Manualslib.com manuals search engine

Description

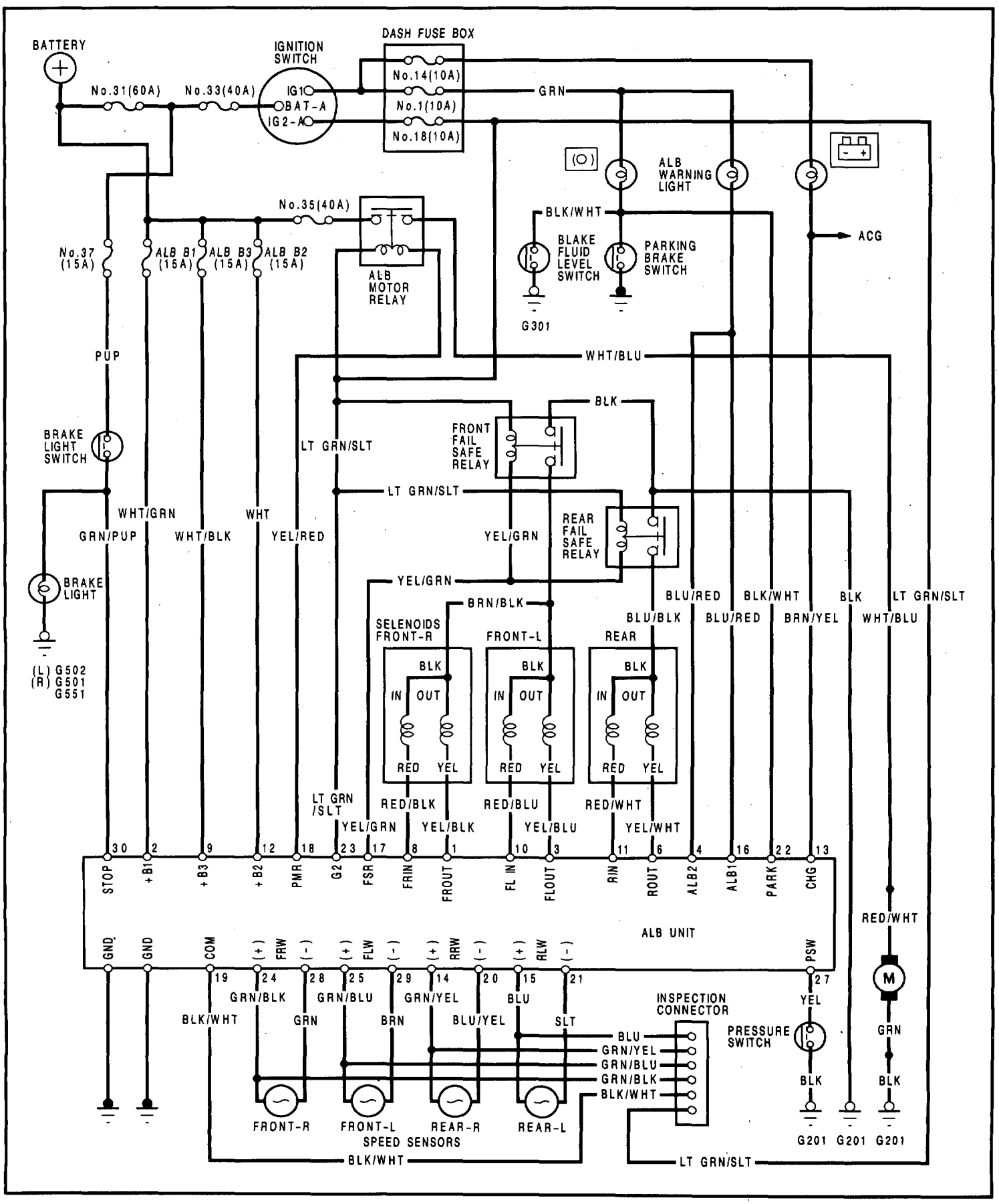
Control Unit (cont'd)

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 parkdng 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 tranmitted to the solenoid valve(s).

Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

ALB Checker

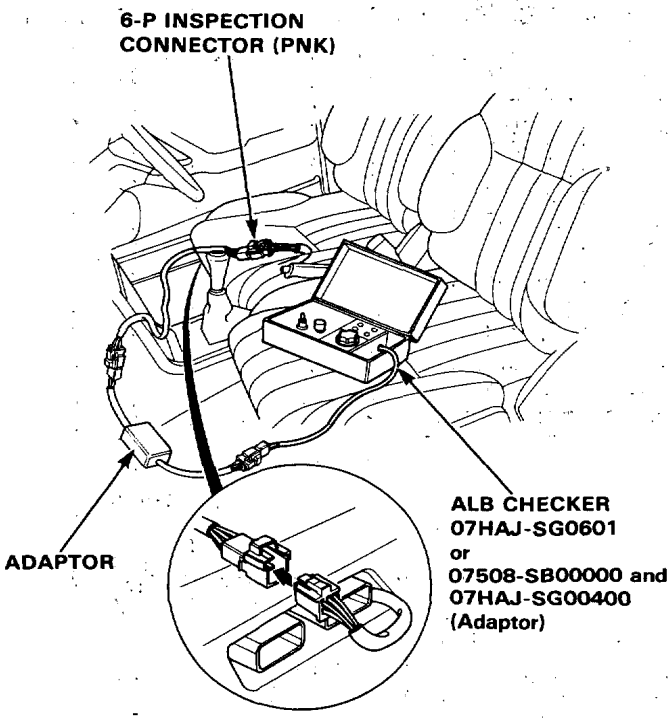
Function Test

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 withe 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 right front seat.
   Connect the 6-P inspection connector to the ALB checker and adaptor.

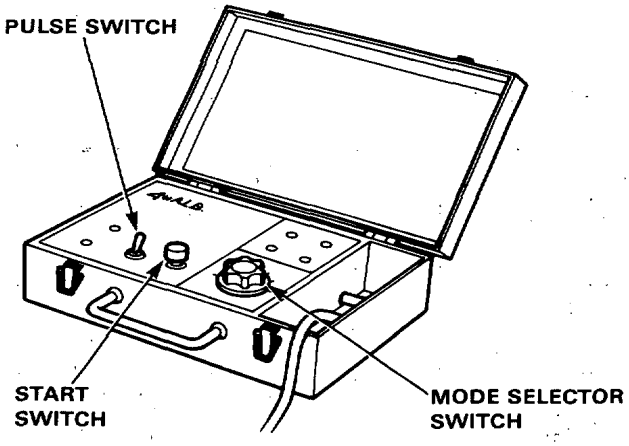


NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG0601.

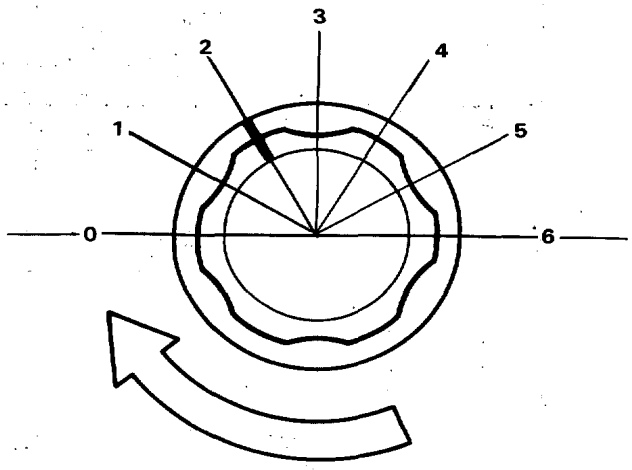
NOTE: Place the vehicle on level ground with the wheels blocked, put the transmission in neutral for manual transmission models, and in P for Automatic transmission models.

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-SG0601, 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 -60)



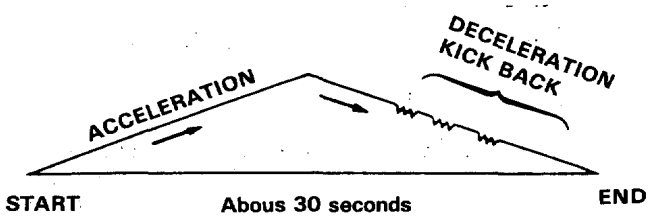
4. Turn the Mode Selector Switch futher to "2".



Downloaded from www.Manualslib.com manuals search engine

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 13-60.

   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.

   NOTE: If little or no kickback in 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.

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.

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 13-50.

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

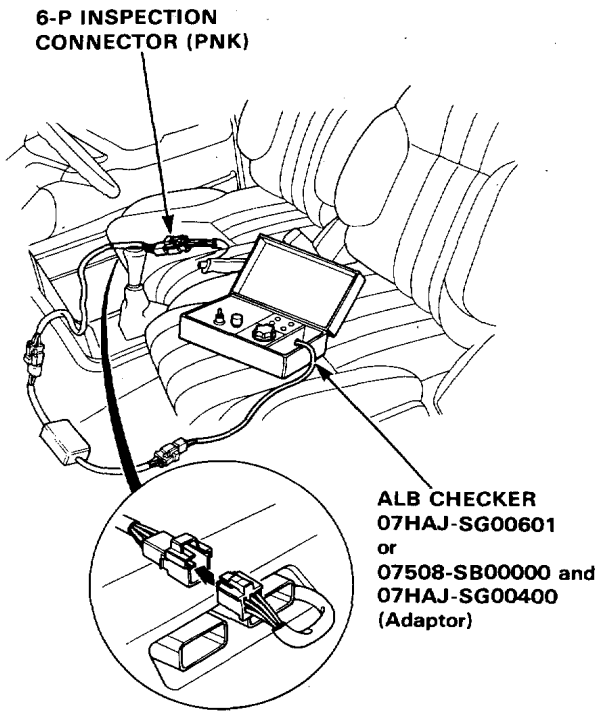
Downloaded from www.Manualslib.com manuals search engine

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 right front seat to the ALB checker.

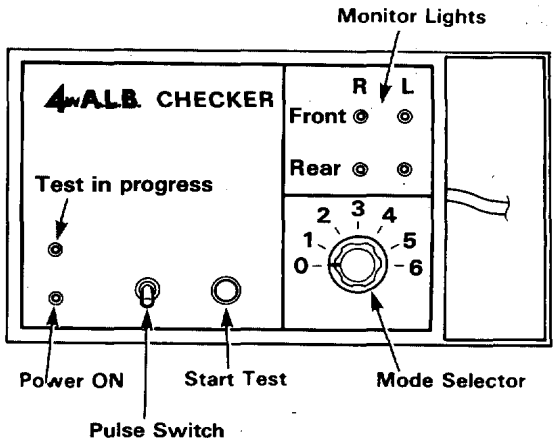


NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG0601.

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.

Downloaded from www.Manualslib.com manuals search engine

Dash Warning Light

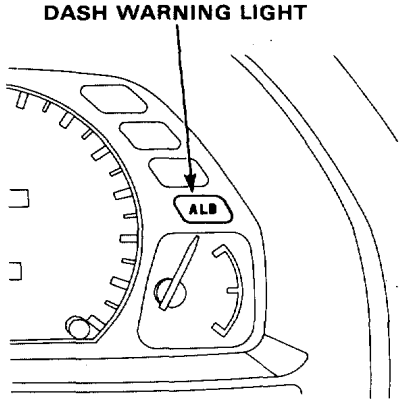
1. The dash warning light will come on and the control unit memorizes the problem under certain conditions.

   NOTE: Problem codes explained on page 13-59.

   - 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 13-54.

3. The dash warning light will come on and the LED (see page 13-56) 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 discounnected, install a new control unit and recheck:

   - Blown dash warning light bulb.
   - Open circuit in GRN lead between No.1 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 LT GRN/SLT 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 lead between combination meter and control unit.
   - Open circuit in WHT/BLU or 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.

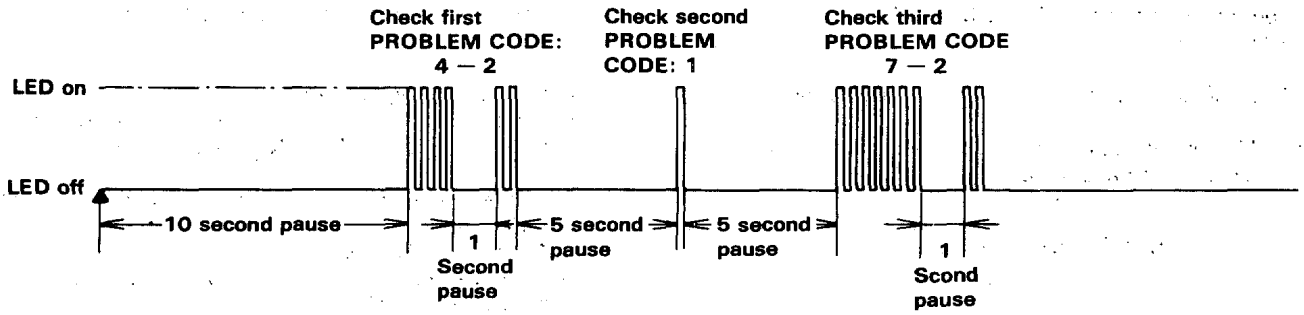
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

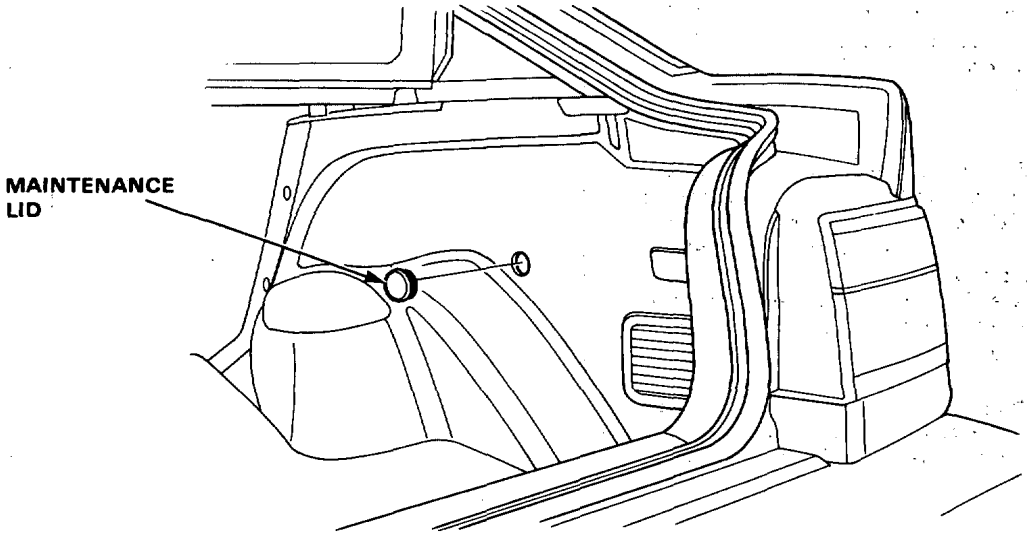
Dash Warning Light (cont'd)

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 maintenance lid.
6. Turn the ignititon 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 13-53.
- If you miscount the blinking frequency, turn the ignition twitch 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.



Downloaded from www.Manualslib.com manuals search engine

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	—	—	—	—	13-60	—ALB fuse —Motor realey —Pressure Switch —Accumulator —Modulator	13-93
2	—	Parking brake switch-related problem	—	—	—	—	13-63	Brake fluid level switch BRAKE light	
3	1	Pulser(s)	○				13-94		
	2			○					
	4				○	○			
4	1	Speed sensor	○				13-64		
	2			○					
	4				○				
	8					○			
5	—	Speed sensor(s)			○	○	13-65	—Modulator	
5	4				○				
	8					○			
6	—	Fail safe relay	—	—	—	—	13-66 (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)	○				13-70	ALB 3 fuse	
	2			○				ALB 1 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.

Downloaded from www.Manualslib.com manuals search engine

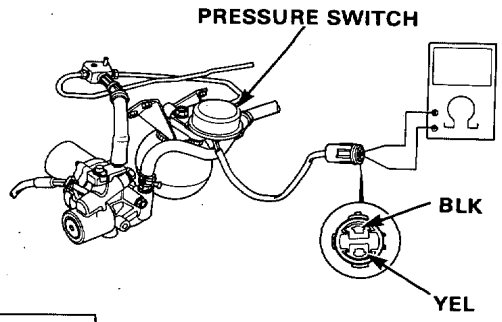
Troubleshooting

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 No.35 (40A) 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.



Disconnect the pressure switch connector and check the continuity between BLK andYEL terminals.

Is there continuity?

YES → Bleed high pressure fluid from the maintenance bleeder with the ALB T-wrench. (see page 13-92)

NO

Check the continuity of pressure switch between BLK and YEL terminals.

Is there continuity?

YES → **Replace the pressure switch (closed).**

NO

Reconnect the pressure switch connector.

Bleed high pressure fluid from the maintenance bleeder with the ALB T-wrench (see page 13-92). Jack up the front of car and support with safety stands, then run the engine in gear above 6 mph (10 km/h).

WARNING Block rear wheels before jacking up front of car.

(To page 13-61)

Downloaded from www.Manualslib.com manuals search engine

(From page 13-60)

Does the pump motor run?
- YES → (To page 13-62)
- 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 13-93)

Connect the WHT/RED and WHT/BLU terminals using a jumper wire.

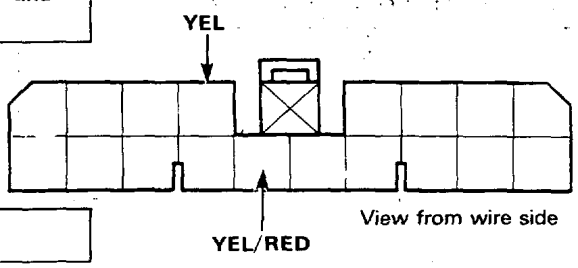
Does the pump motor run?
- NO → (To page 13-63)
- YES →

Check voltage between the pump motor relay motor side ⊕ terminal and body ground (−).

Is there battery voltage?
- NO → **Repair open in LT GRN/SLT wire between the No.18 (10A) fuse and pomp motor relay.**
- YES →

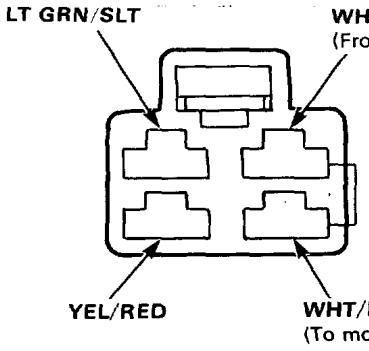
Repair open in YEL/RED wire between the control unit and pump motor relay.

<CONTROL UNIT: 18P CONNECTOR>



View from wire side

<PUMP MOTOR RELAY CONNECTOR>



View from terminal side

Downloaded from www.Manualslib.com manuals search engine

Flowchart(cont'd)

(From page 13-61)

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 13-92 and check the pump sound again**

YES

Does the pump motor stop after after about 60 seconds?

NO → **Pump stops after about 120 seconds: faulty pressure switch (open).**

YES

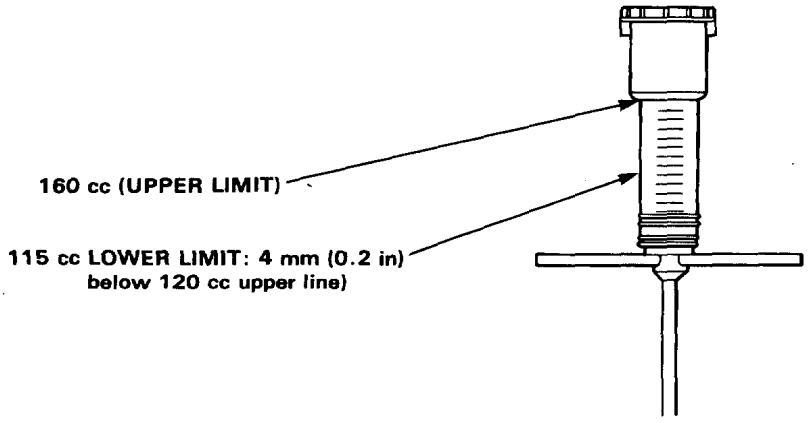
Does the reservoir fluid level go down, and are there no bubbles in the modulator reservoir tank?

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 Bleeder 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.

BLEEDER T-WRENCH
07HAA—SG00100



NOTE: The fluid enters the reservoir under pressure; wait 1 or 2 miniutes for air bubbles to disappear and level to stabilize.

Downloaded from www.Manualslib.com manuals search engine

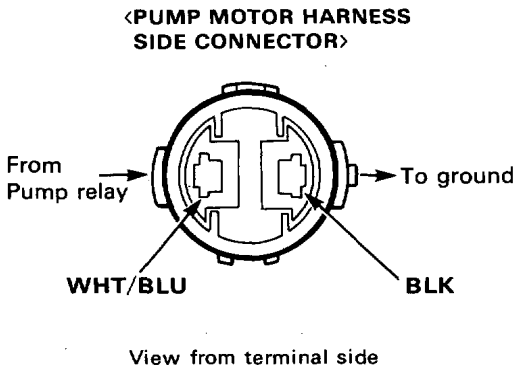
(From page 13-61)

Measure voltage between the WHT/BLU terminal (+) of the pump motor and body ground (−).

Is there battery voltage?

NO → **Repair open in WHT/BLU wire between motor relay and pump motor, or open in BLK wire between pump motor and ground or poor ground.**

YES → **Faulty pump motor.**



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 2 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.
- WHT/BLU lead is shorted between the BRAKE warning light and parking brake switch.
- WHT/BLU lead is shorted between the BRAKE warning light and brake fluid level switch.
- The BRAKE warning light is blown.
- WHT/BLU has an open between the BRAKE warning light and parking brake.
- WHT/BLU has an open between the parking brake switch and control unit.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

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
BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
SLT: Rear Left Negative

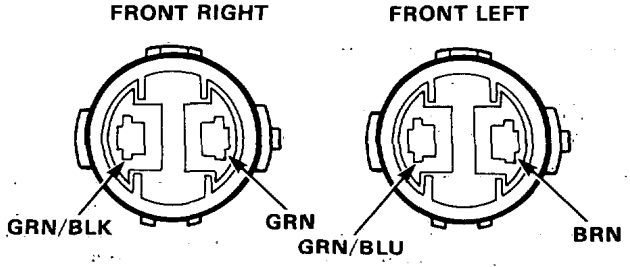
Is there continuity? — NO → **Repair open in sensor wire:**

GRN/BLK: Front Right Positive
GRN/BLU: Front Left Positive
GRN/YEL: Rear Right Positive
BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
SLT: Rear Left Negative

YES

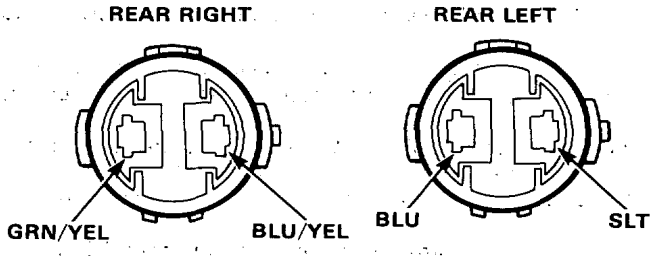
Faulty control unit

<SENSOR SIDE CONNECTOR>



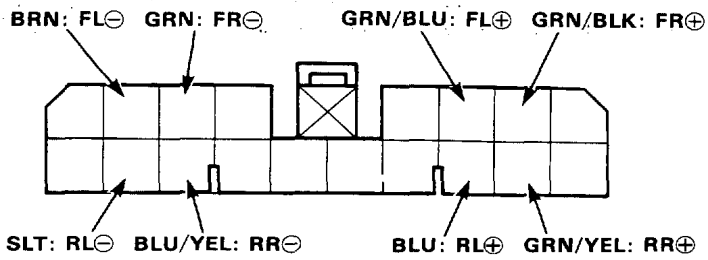
View from terminal side

<SENSOR SIDE CONNECTOR>



View from terminal side

<CONTROL UNIT 18P CONNECTOR>



View from wire side

Downloaded from www.Manualslib.com manuals search engine

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
BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
SLT: 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
BLU: Rear Left Positive
GRN: Front Right Negative
BRN: Front Left Negative
BLU/YEL: Rear Right Negative
SLT: 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.

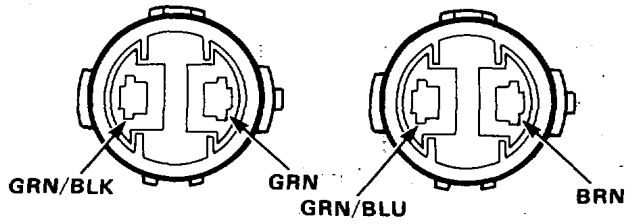
Does it work properly?

NO → **Faulty modulator.**

YES

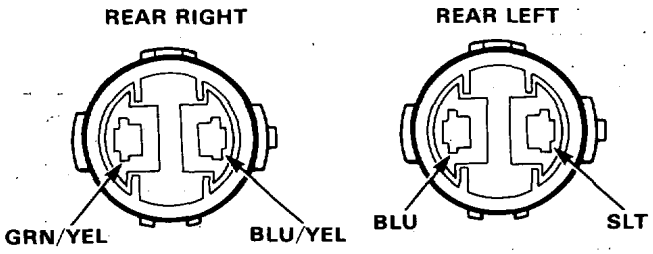
- **Incorrect the air gap (page 13-94)**
- **Faulty control unit.**

<SENSOR SIDE CONNECTOR>

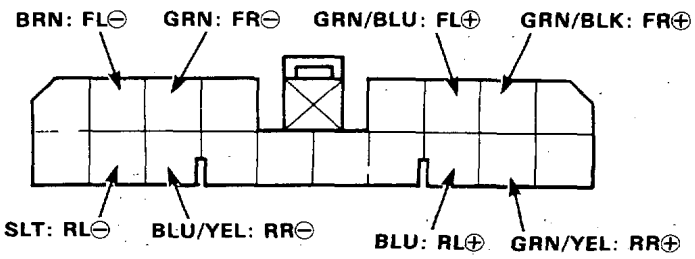


View from terminal side

<SENSOR SIDE CONNECTOR>



<CONTROL UNIT 18P CONNECTOR>



View from wire side.

Downloaded from www.Manualslib.com manuals search engine

Flowchart (cont'd)

Problem Code 6-1: Front Fail Safe Relay Circuit

Remove front fail safe relay

Check relay function (page 13-93)

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 LT GRN/SLT lead (+) and body ground (−).

Is battery voltage available? NO → **Repair open in LT GRN/SLT 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.

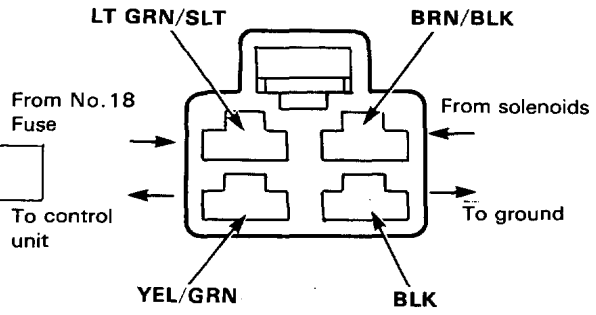
Check for continuity in BRN/BLK lead between fail safe relay and solenoids.

Is there continuity? NO → **Repair open in BRN/BLK wire between the solenoids and fail safe relay.**

YES

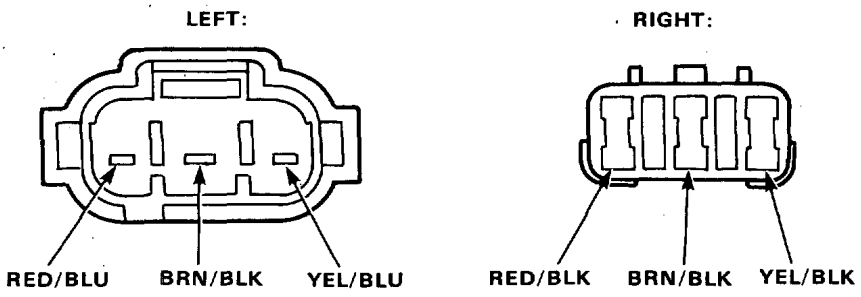
(To page 13-67)

<FRONT FAIL SAFE RELAY CONNECTOR HARNESS SIDE>



View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>



View from terminal side

Downloaded from www.Manualslib.com manuals search engine

(From page 13-66)

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.

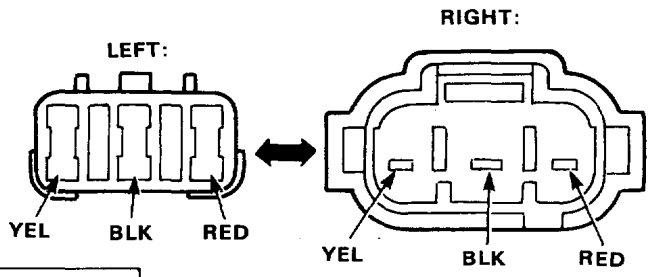
Check for continuity between control unit and front solenoid.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet.

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

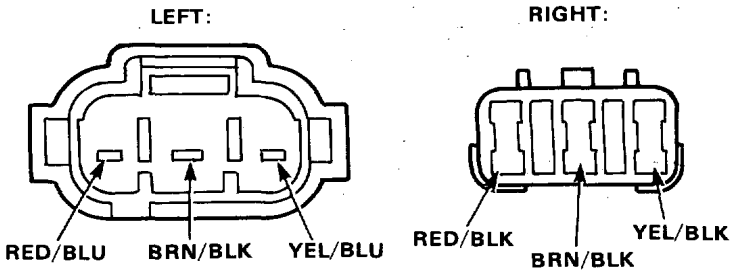
- **Faulty control unit.**
- **Incorrect air gap (page 13-94)**

<FRONT SOLENOID CONNECTOR>



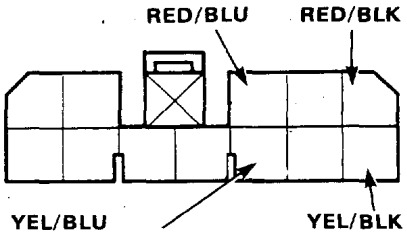
View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>



View from terminal side

<CONTROL UNIT 12P CONNECTOR>



View from wire side.

Downloaded from www.Manualslib.com manuals search engine

Flowchart(cont'd)

Problem Code 6-4: Rear Fail Safe Relay Circuit

Remove rear fail safe relay.

Check relay function (page 13-93)

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 LT GRN/SLT lead (+) of wire harness and body ground (−).

Is battery voltage available? NO → **Repair open in LT GRN/SLT wire between the relay and No.18 fuse.**

YES

Turn ignition switch off.

Disconnect the 3P connector from the rear solenoid.

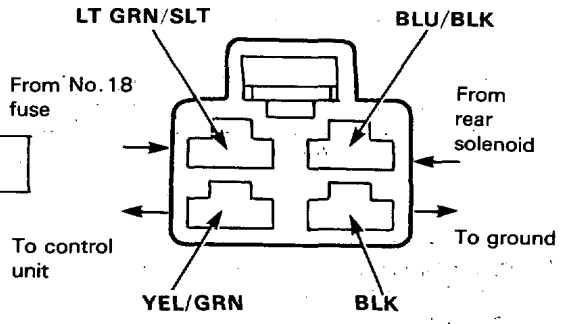
Check for continuity in BLU/BLK lead between fail safe relay and solenoid.

Is there continuity? NO → **Repair open in BLU/BLK wire between the relay and solenoid.**

YES

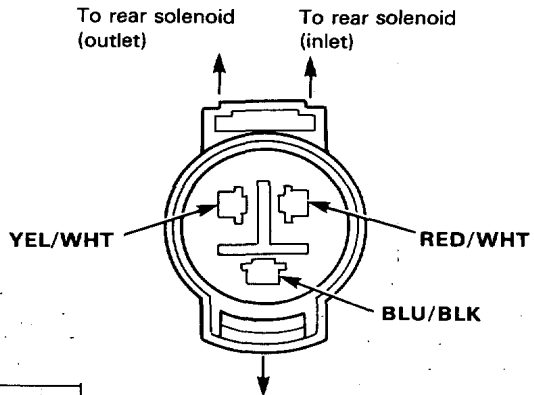
(To page 13-69)

<REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE>



View from terminal side

<REAR SOLENOID CONNECTOR HARNESS SIDE>



View from terminal side

Downloaded from www.Manualslib.com manuals search engine

(From page 13-68)

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

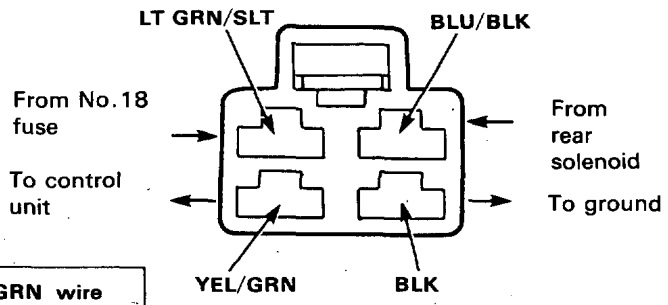
Check for continuity between control unit and rear solenoid.
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

Is there continuity: NO → **Repair open in wire between the solenoid and control unit:**
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet.

YES

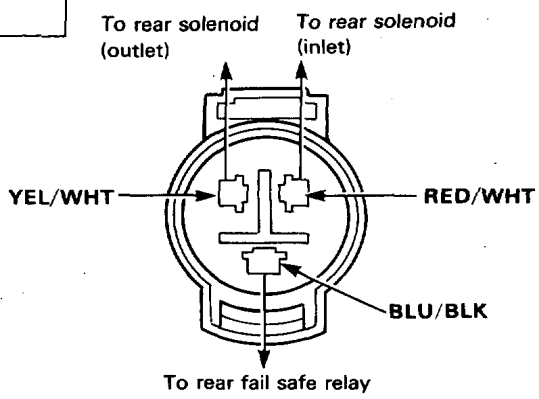
Faulty control unit.

<REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE>



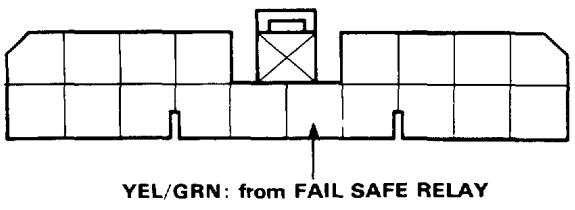
View from terminal side

<REAR SOLENOID CONNECTOR HARNESS SIDE>

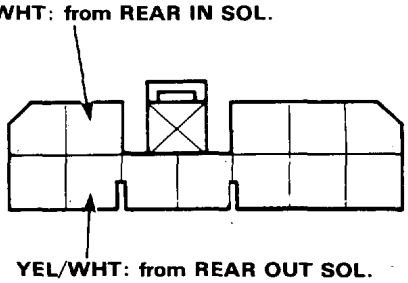


View from terminal side

<CONTROL UNIT 18P CONNECTOR>



<CONTROL UNIT 12P CONNECTOR>



View from wire side

Downloaded from www.Manualslib.com manuals search engine

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

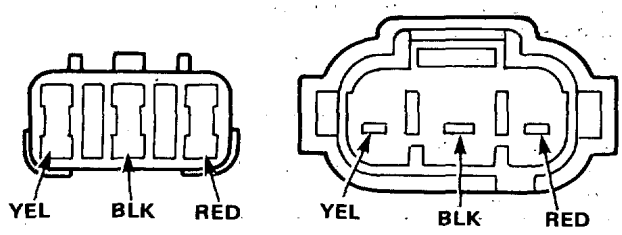
Check for continuity between control unit and body ground.
RED/BLK: Front Right Intel
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Intel
YEL/BLU: Front Left Outlet

Is there continuity? — YES → **Repair short in wire:**
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Intel
YEL/BLU: Front Left Outlet

NO

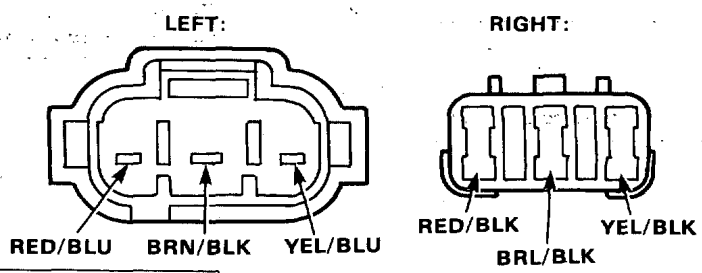
- **Faulty control unit.**
- **Incorrect air gap (page 13-94)**

‹FRONT SOLENOID CONNECTOR›



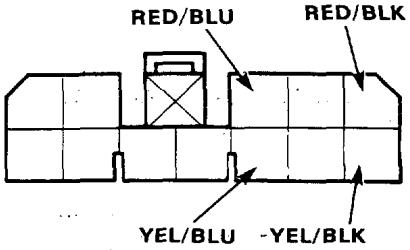
View from terminal side

‹FRONT SOLENOIDS CONNECTOR HARNESS SIDE›



View from terminal side

‹CONTROL UNIT 12P CONNECTOR›



Downloaded from www.Manualslib.com manuals search engine

Problem Code 7-4: Rear Solenoid Related Problem

Disconnect wire harness from rear solenoid

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

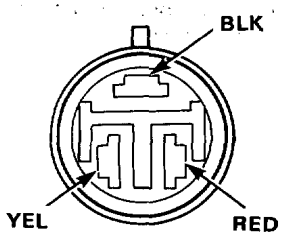
Check for countinuity between control unit and baby ground.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

Is there continuity? — YES → **Repair short in wire:**
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

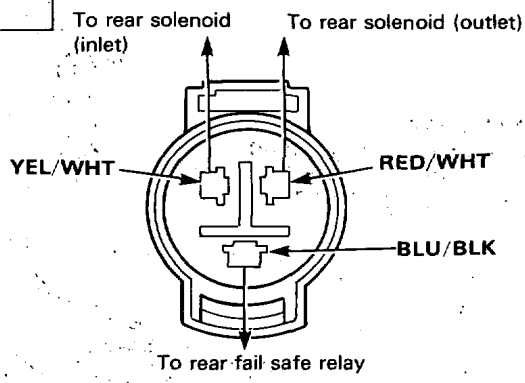
NO

Faulty control unit.

<REAR SOLENOID CONNECTOR>

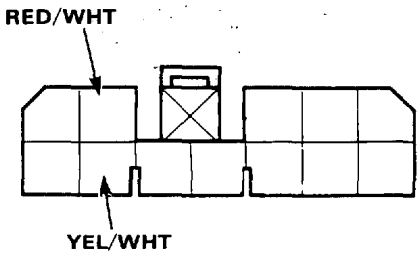


<REAR SOLENOID CONNECTOR HARNESS SIDE>



View from terminal side

<CONTROL UNIT 12P CONNECTOR>



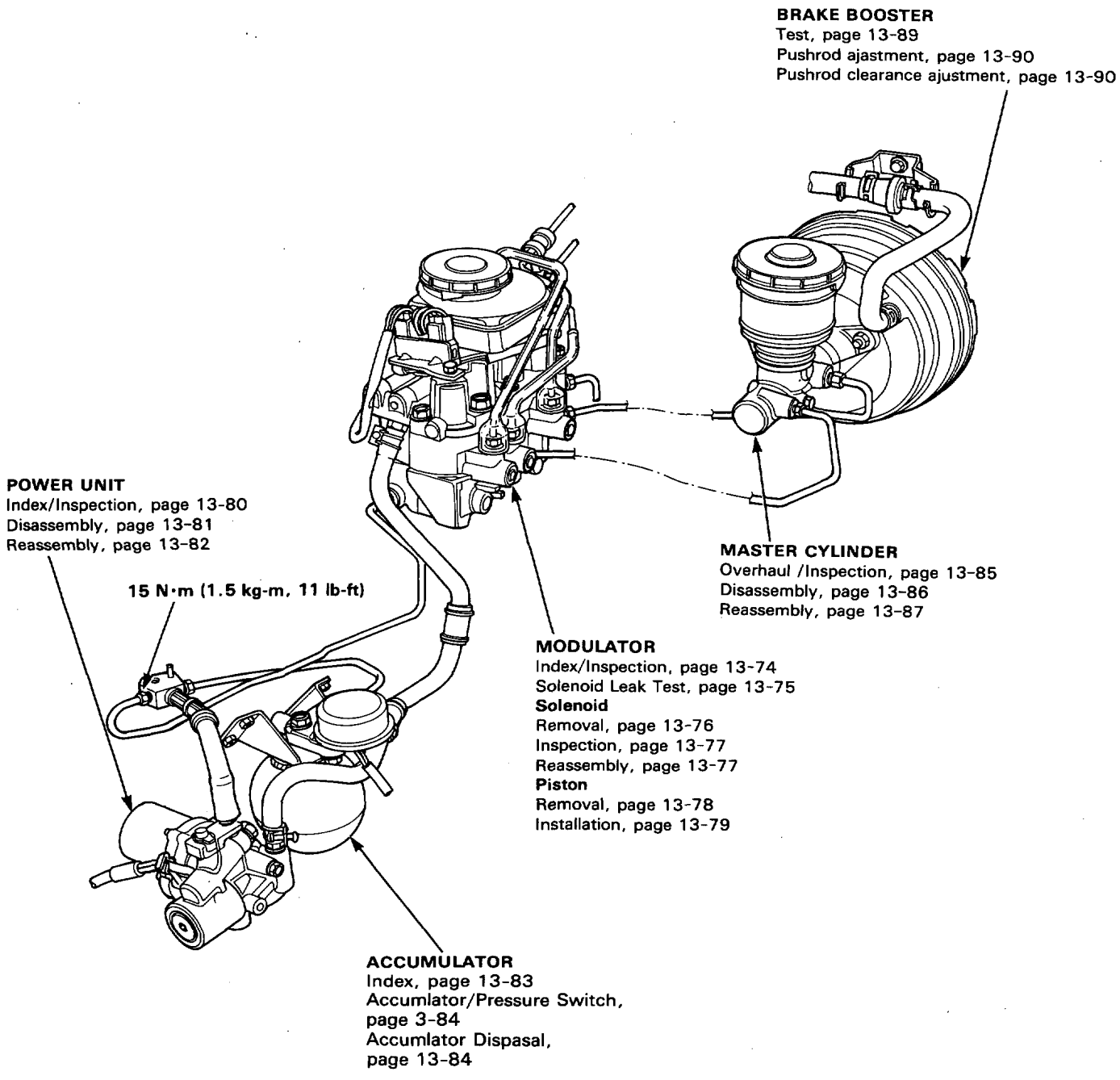
View from wire side.

Downloaded from www.Manualslib.com manuals search engine

Hydraulic System

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.
- The flare nuts should be tightened to **19 N·m (1.9 kg-m, 14 lb-ft)**.
- The brake pipes and modulator pipe fittings are color coded.



Downloaded from www.Manualslib.com manuals search engine

Relieving Accumulator/Line Pressure

WARNING Use the Bleeder T-Wrench before disassembling the parts shaded in the illustration.

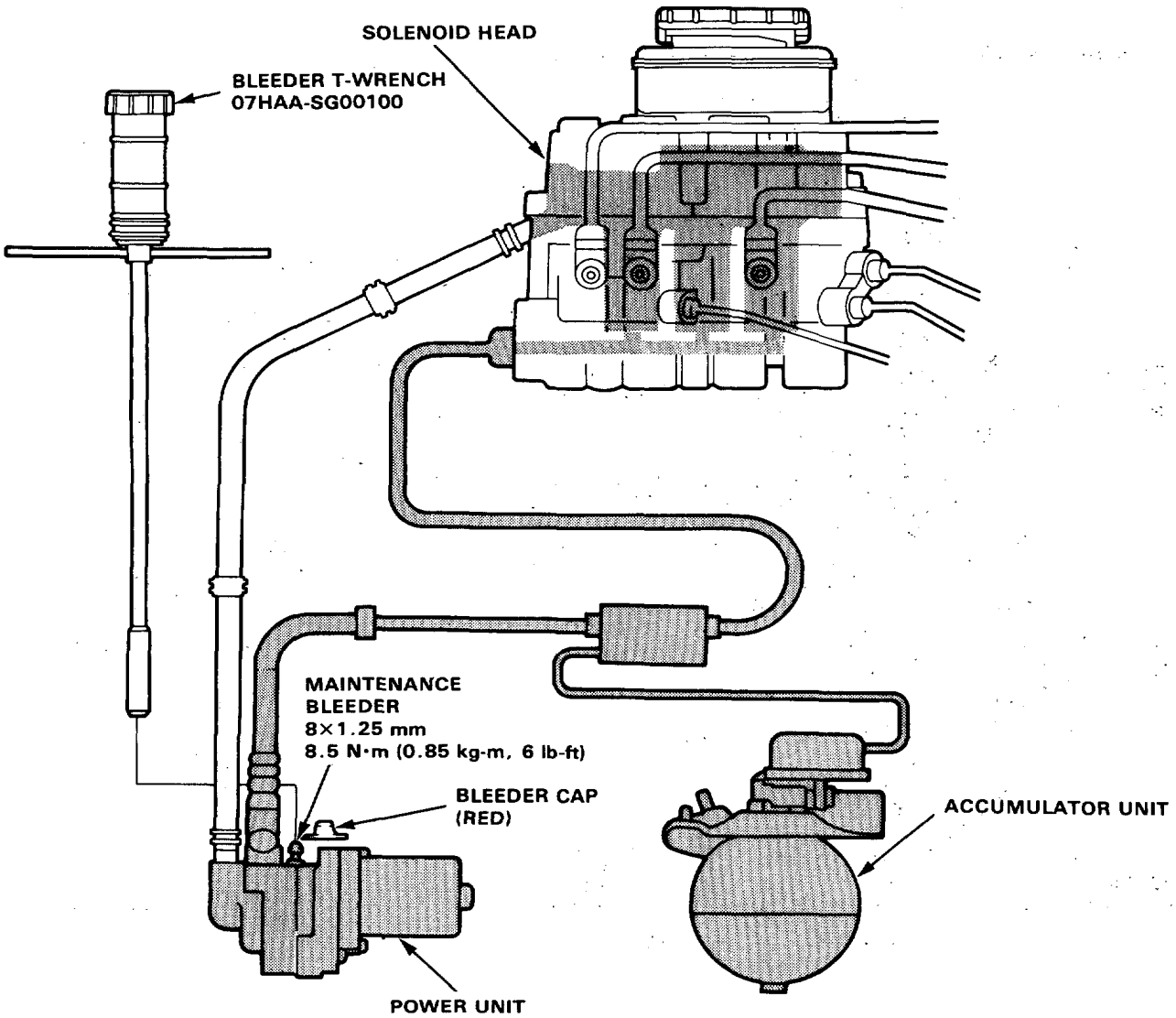
1. Drain the brake fluid from the master cylinder and modulator reservoir thoroughly.
2. On the Fuel-Injected engine, remove the air intake tube.
3. Remove the red cap from the bleeder on the top of the power unit.
4. Install the special tool on the bleeder screw and turn it out slowly 90° to collect high pressure fluid into reservoir. Turn the special tool out one complete turn to drain the brake fluid thoroughly.
5. Retighten the bleeder screw and discard the fluid.
6. Reinstall the red cap.

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 breke fluid, follow the procedure under Relieving of High Pressure Brake Fluid on this page.**



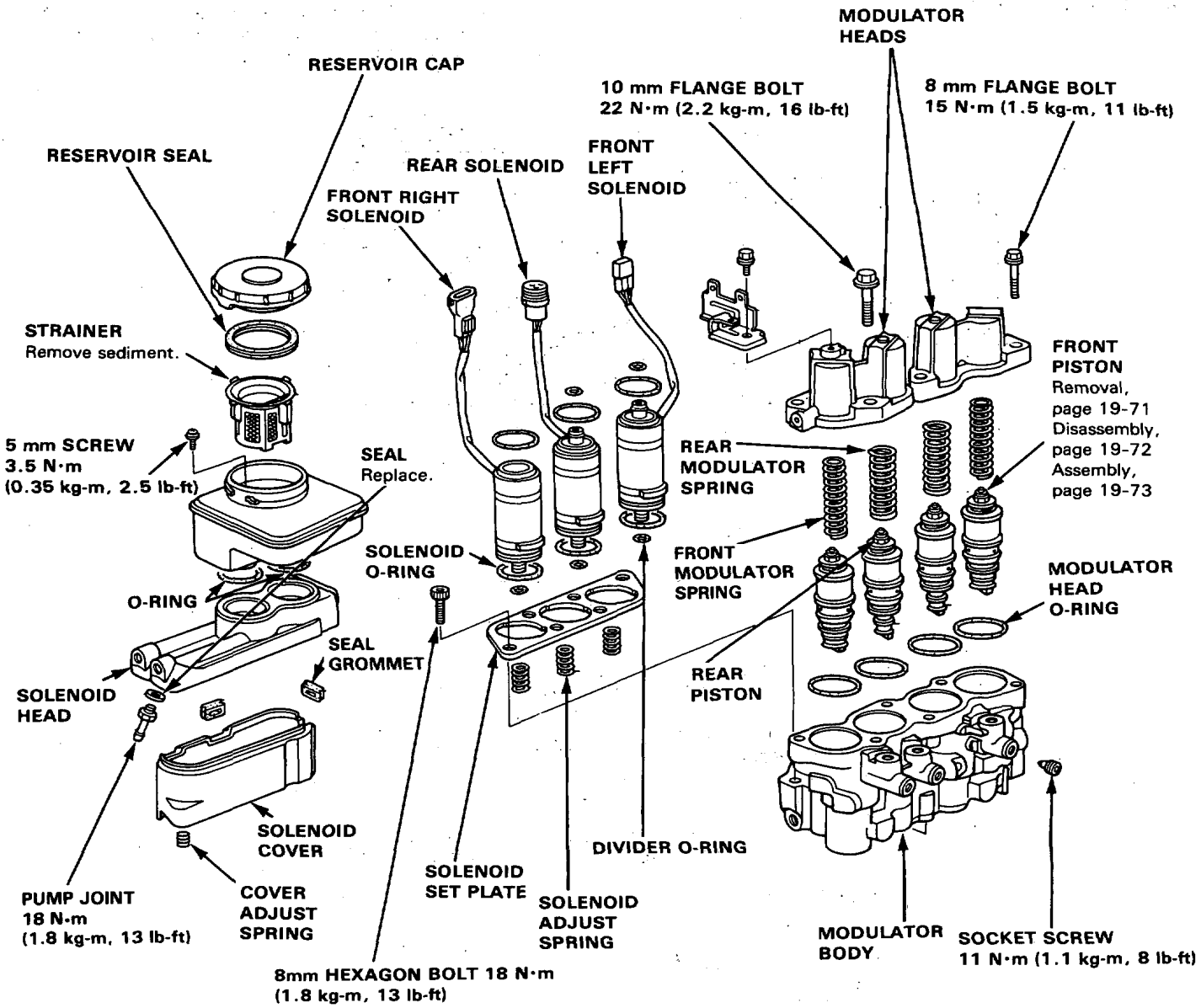
Downloaded from www.Manualslib.com manuals search engine

Modulator

Index/Inspection

CAUTION:

- Do not spill brake fluid on the car; it may demage 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.



Downloaded from www.Manualslib.com manuals search engine

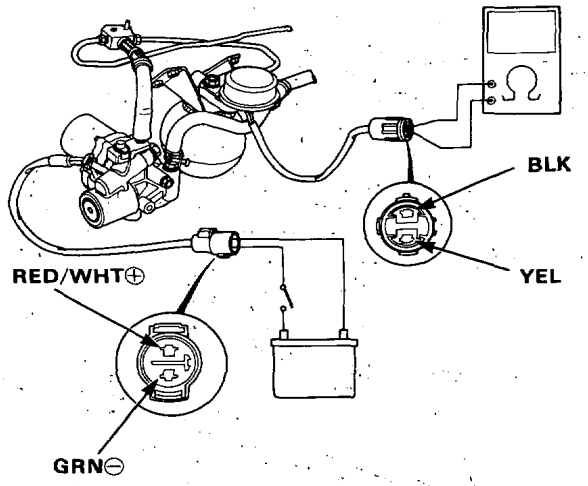
Solenoid

Solenoid Leak Test

1. Connect circuit tester (Ω range) between the BLK and YEL terminels of the accumulator pressure switch connector.

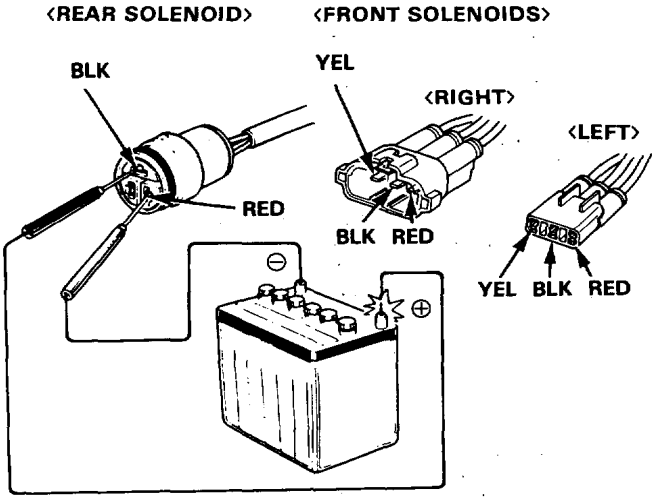
2. Attach the positive (+) lead of a fully charged 12v bettery to the RED/WHT terminal of the power unit motor connector and ndgative (−) lead to the GRN terminal, and install a switch between as shown.

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.

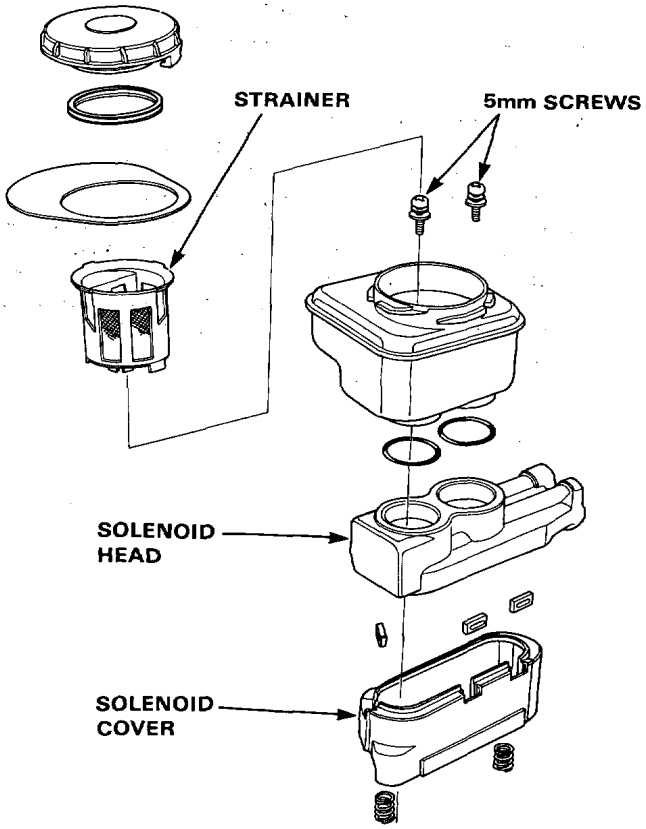
- Check if the solenoid hisses or squeaks. Replace the modulator if the solenid hisses or squeaks.
- Make sure that the solenoid does not hiss or squeak after it has clicked into position. Replace the modulator if the solenoid hisses or squeaks.
- Check the pressure switch for continuity within one minute. It is normal if there is continuity. If there is no continuity, solenoid is faulty and must be replaced.

Downloaded from www.Manualslib.com manuals search engine

Solenoid

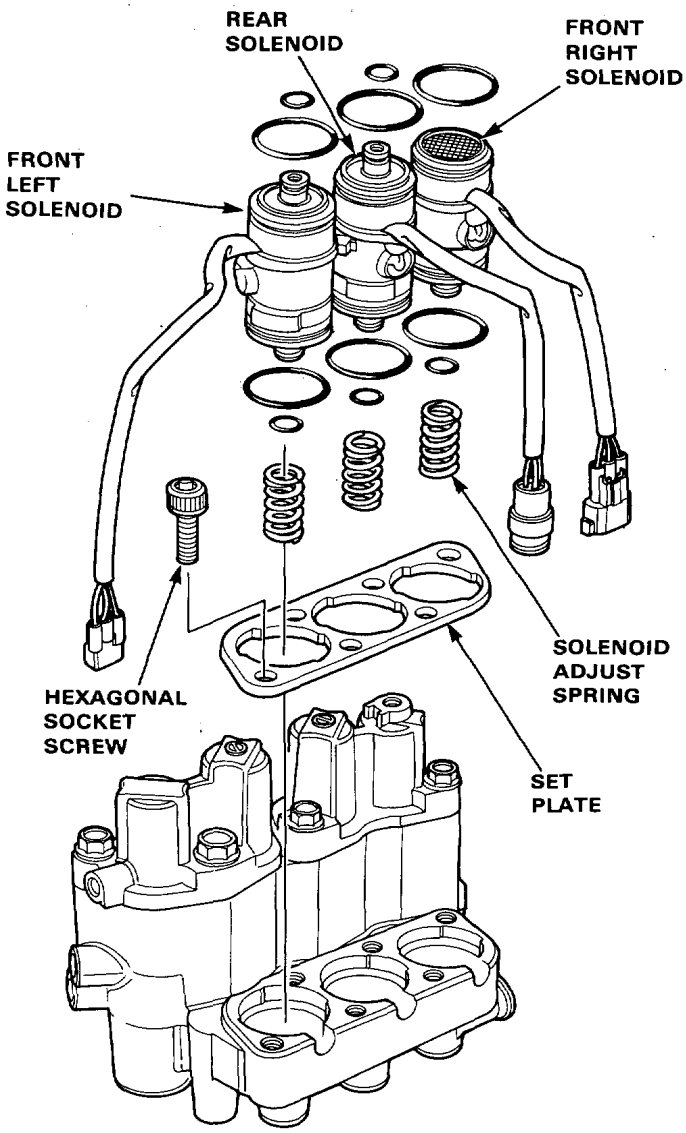
Removal

1. Drain the brake fluid from the modulator tank.
2. Drain the high pressure brake hose (page 13-73).
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.



Downloaded from www.Manualslib.com manuals search engine

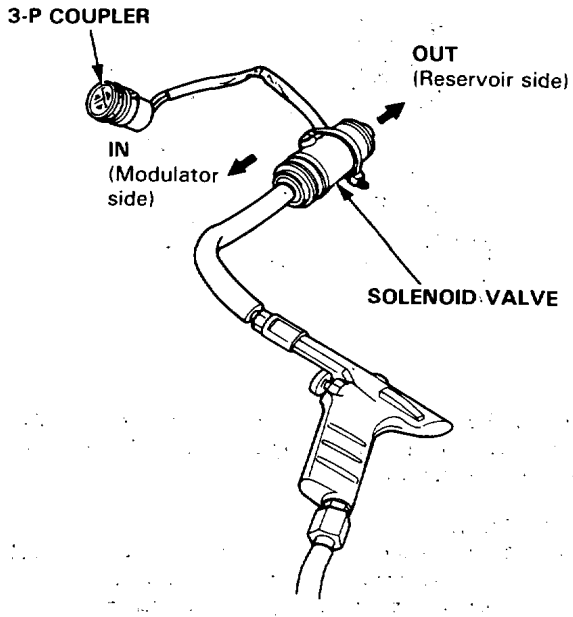
Inspection

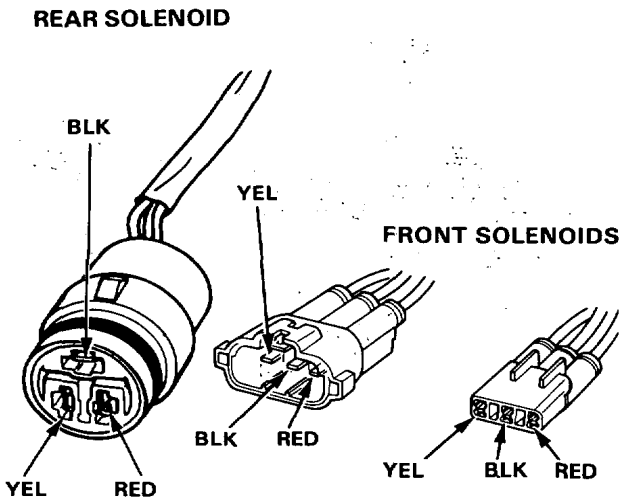
1. Connect a tube to the inlet of the solenoid valve. Apply compressed air to the solenoid valve through the tube.
2. Check the solenoid valve for proper operation by connecting a 12 V fully charged battery to the 3-P coupler terminals:

   Voltage not applied: There should be no air flow.

   BLK — RED: There should be air flow through IN and OUT.

   BLK — YEL: There should be air flow through IN.

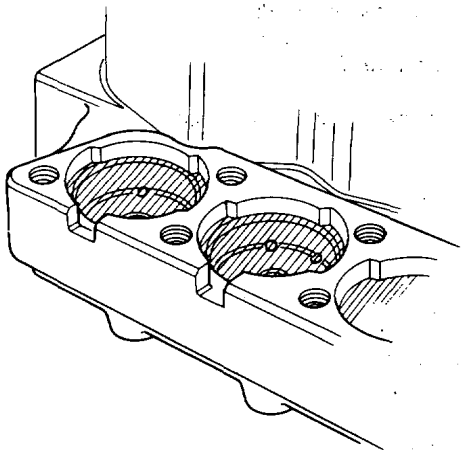




Reassembly

1. Fill the modulator body with brake fluid up to the step in the solenoid mounting hole.

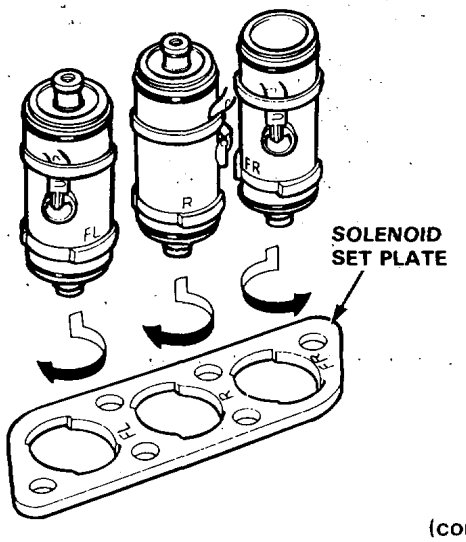
   NOTE: On solenoid valve assembly, place shop rags over the solenoid valve and under the modulator valve to prevent the brake fluid from spilling on the valve.



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.



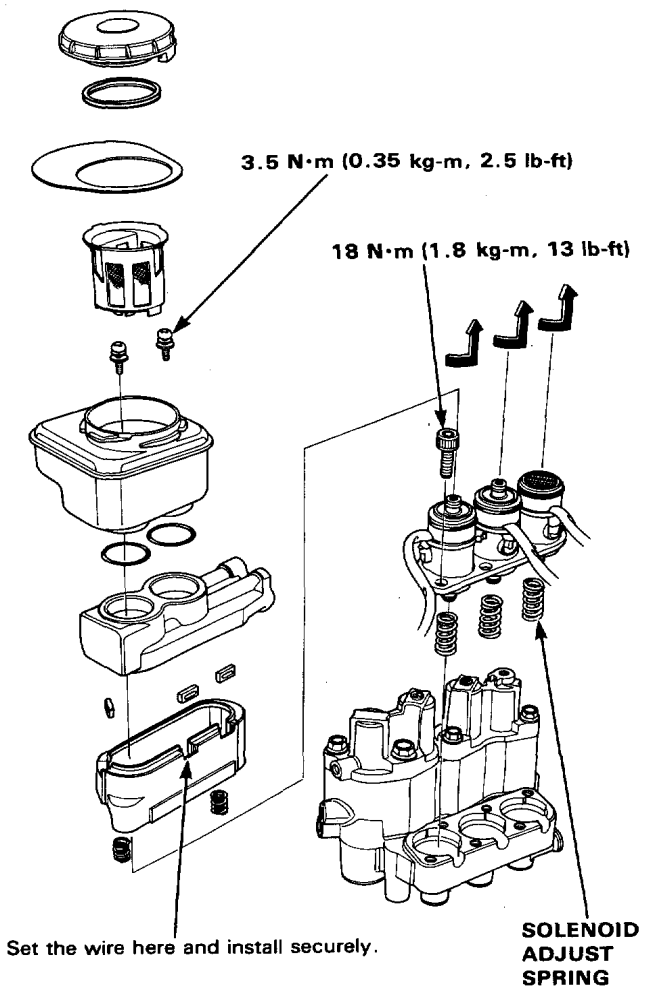
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Solenoid

Reassembly (cont'd)

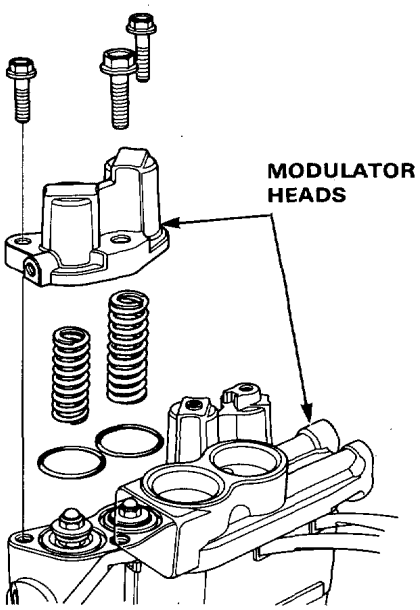
4. Install the solenoid adjust springs on the modulator body.
5. Install the solenoid valves and set plate and secure with the hexagonal socket screws.
6. Install the solenoid cover and solenoid head.
7. Install the reservoir tank.
8. Install the tank filter.
9. Connect the low pressure hose.



Piston

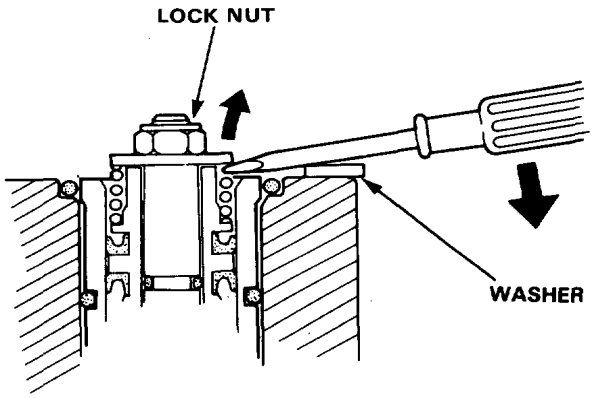
Removal

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.**

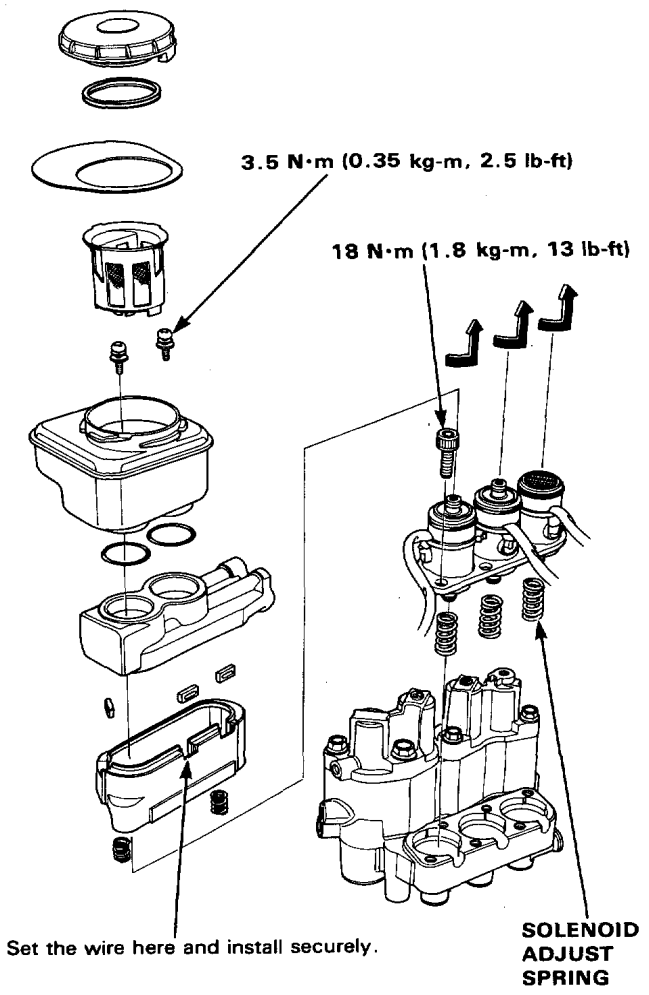


Downloaded from www.Manualslib.com manuals search engine

Solenoid

Reassembly (cont'd)

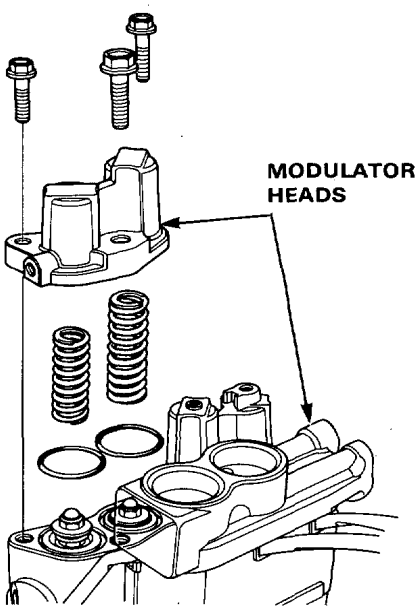
4. Install the solenoid adjust springs on the modulator body.
5. Install the solenoid valves and set plate and secure with the hexagonal socket screws.
6. Install the solenoid cover and solenoid head.
7. Install the reservoir tank.
8. Install the tank filter.
9. Connect the low pressure hose.



Piston

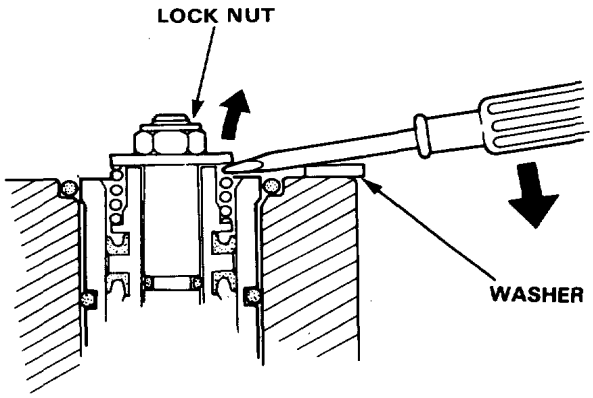
Removal

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.

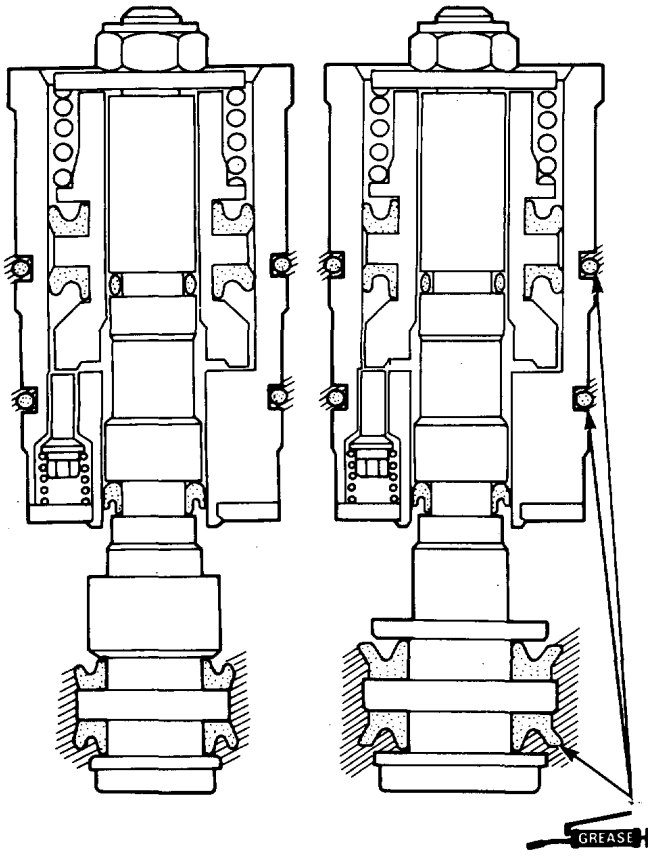
CAUTION:
- **Set the washer between the driver and modulator body to prevent damage to the body.**
- **Be careful not to damage the piston sleeve.**



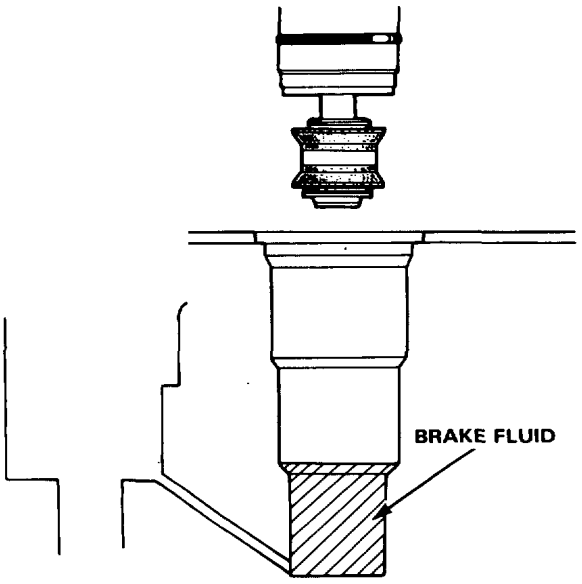
Downloaded from www.Manualslib.com manuals search engine

Installation

1. Apply rubber grease to the shaded sections of the piston assembly, shown in the drawing below.

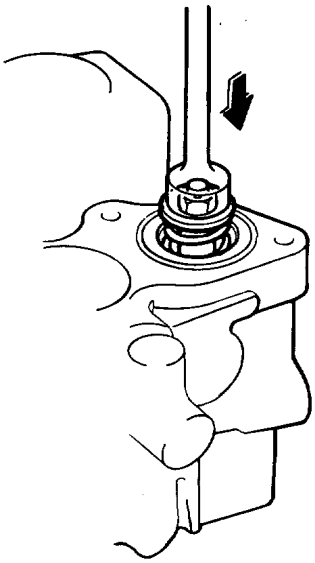


2. Adjust so that the brake fluid flows into the piston mounting hole in the modulator body.



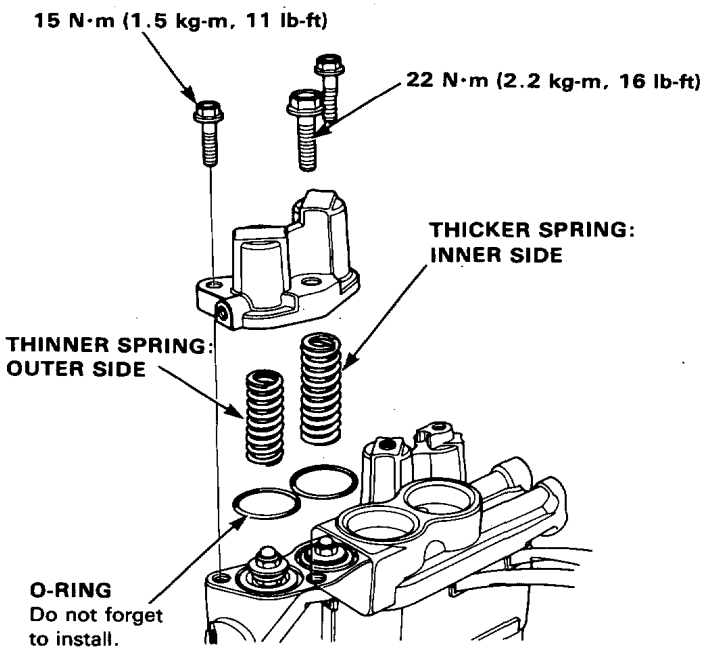
3. Set the piston assembly in the piston mounting hole in the modulator body and push down on the piston.

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.



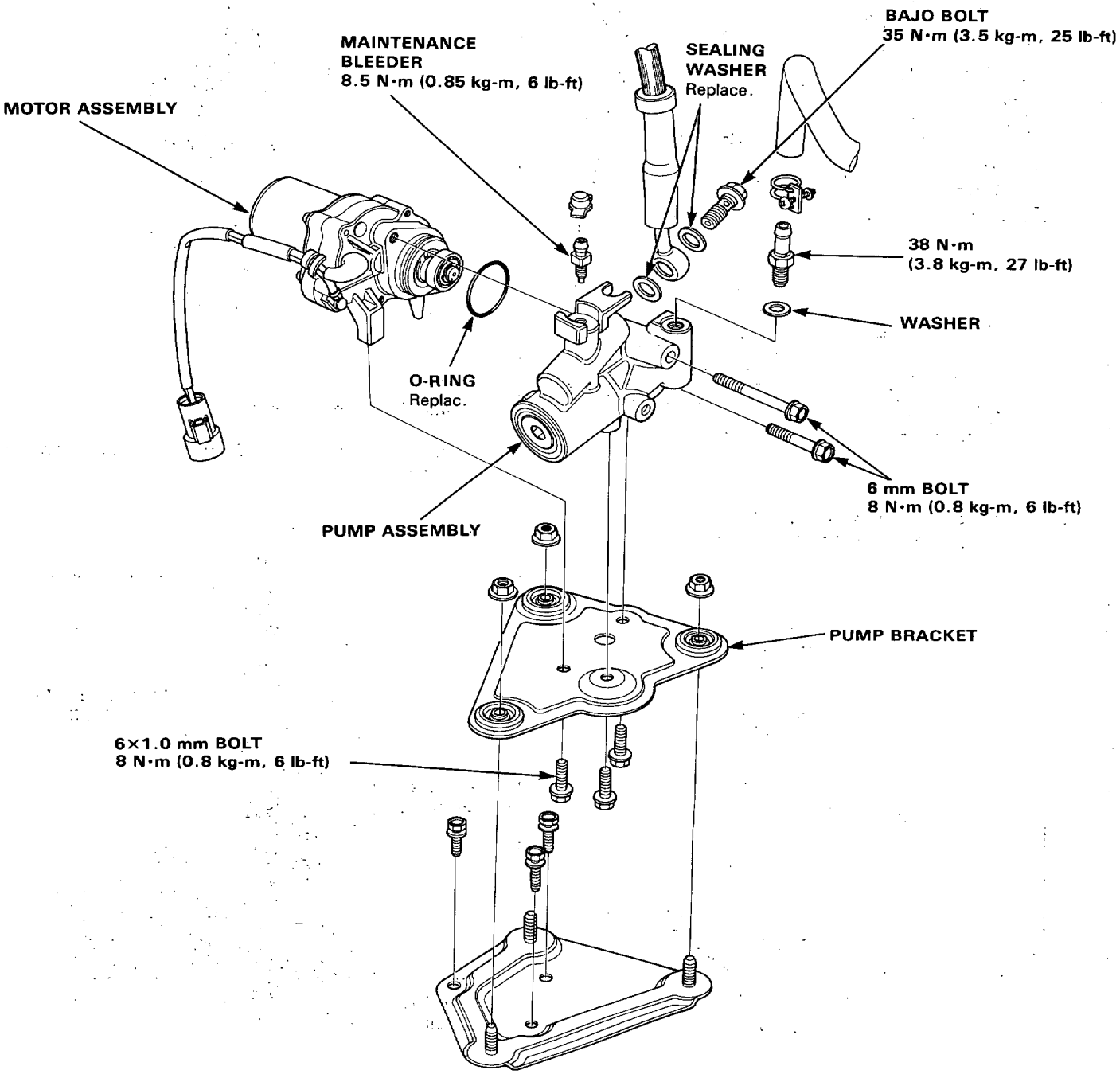
Downloaded from www.Manualslib.com manuals search engine

Power Unit

Index/Inspection

CAUTION:

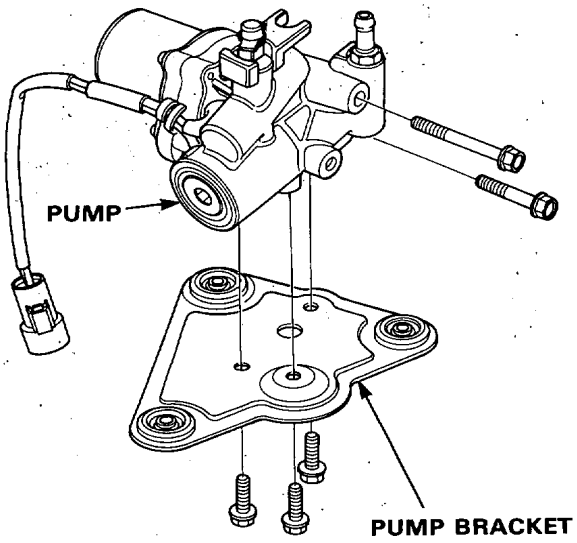
- Do not attempt to disassemble the power unit parts except for those shown exploded in this illustration.
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before 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.



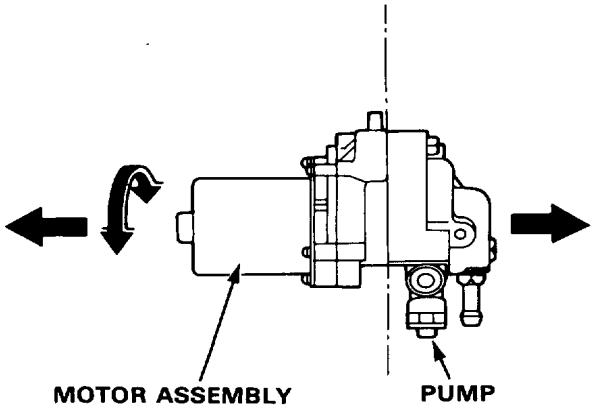
Downloaded from www.Manualslib.com manuals search engine

Disassembly

1. Remove the pump bracket.
2. Remove the 6 mm bolts attaching the pump to the pump motor.

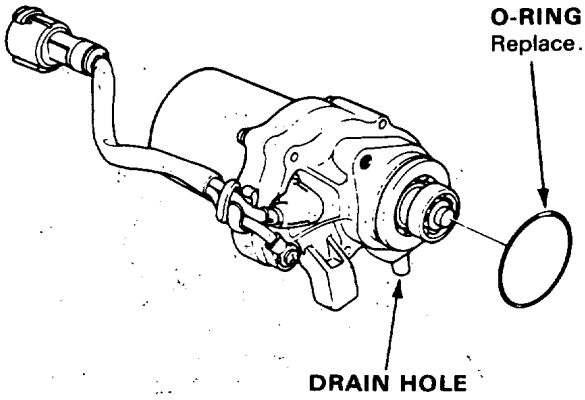


3. Separate the motor from the pump while rotaing the pump right and left.



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.

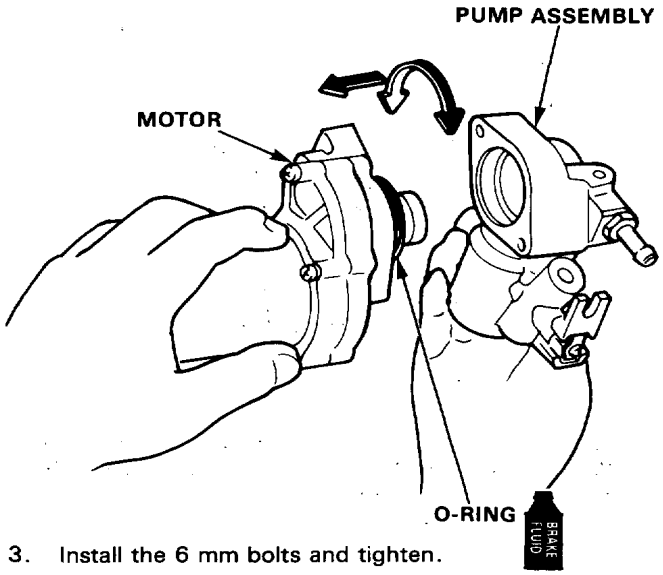


NOTE: Do not wash or dip the motor in brake fluid. Also be careful not to allow oil or water to enter the inside through the water drain hole.

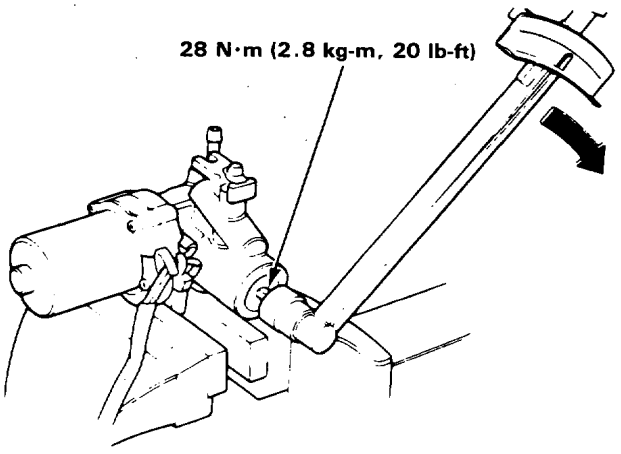
Downloaded from www.Manualslib.com manuals search engine

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.

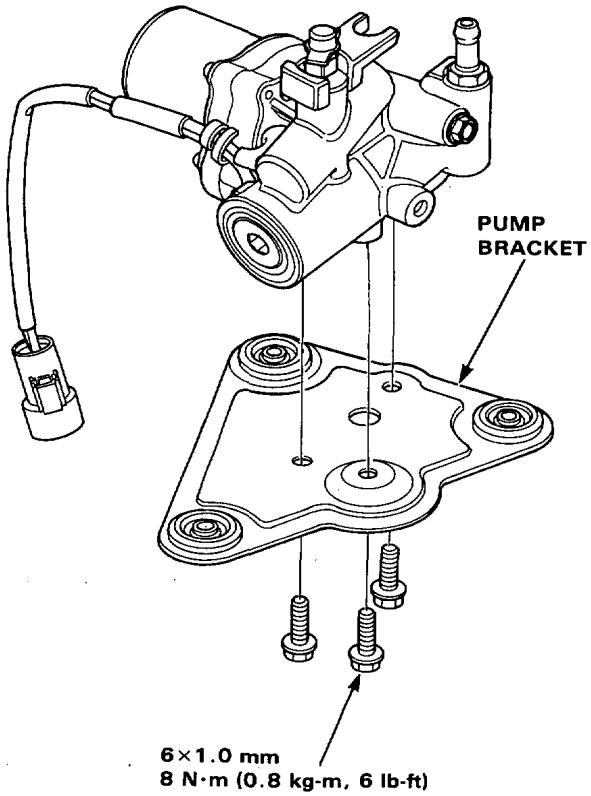


3. Install the 6 mm bolts and tighten.
4. Place the motor in a vise as shown and tighten the outlet plug.



NOTE: Clamp the pump in a vise only as shown above.

9. Install the pump bracket.



Downloaded from www.Manualslib.com manuals search engine

Accumulator Unit

Index

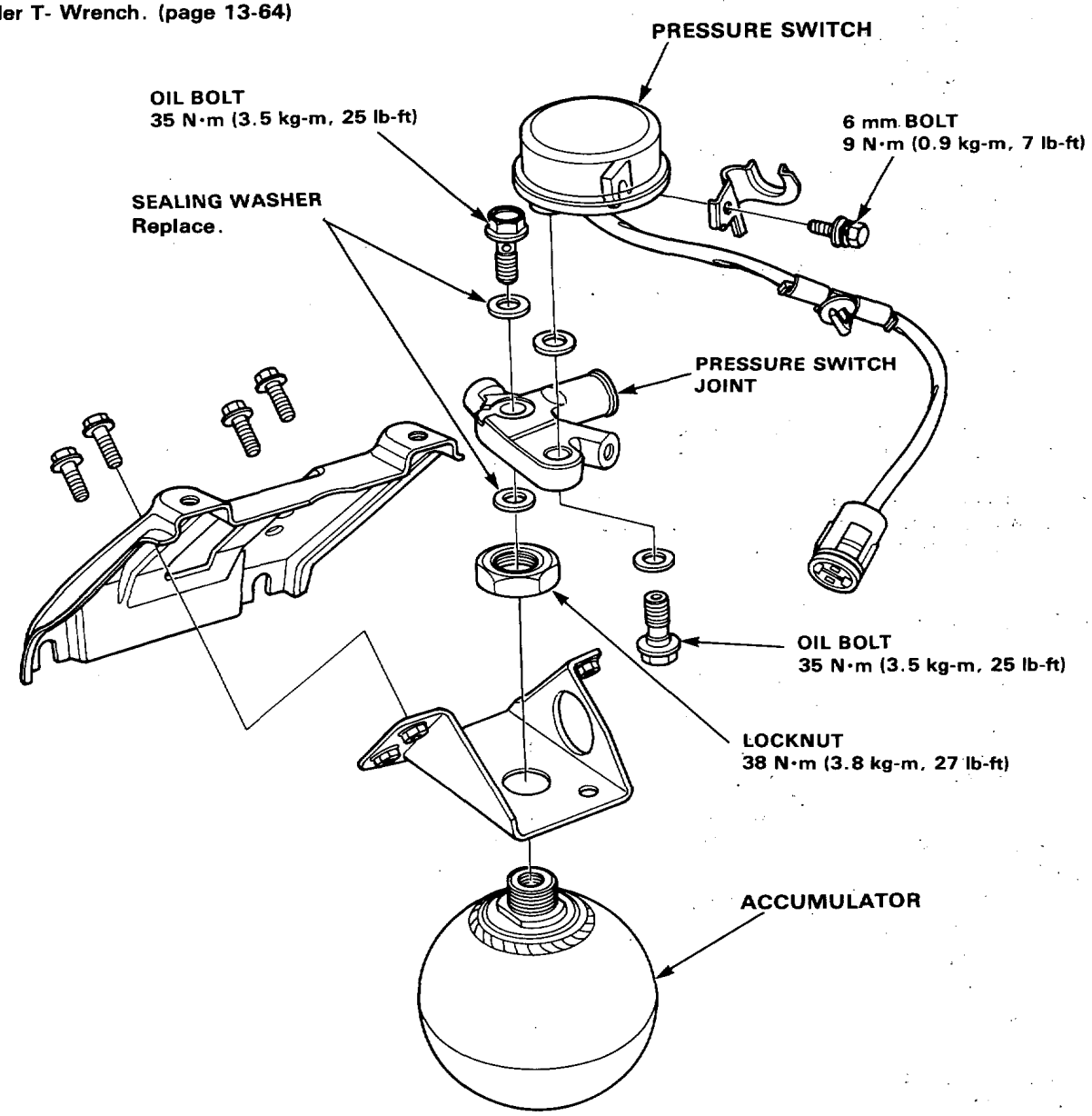
CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed 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 Bleeder T- Wrench. (page 13-64)

- 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.



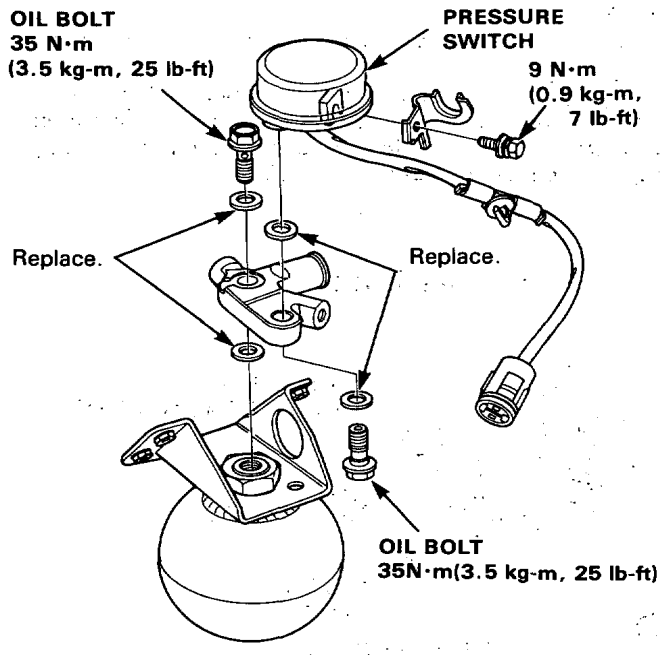
Downloaded from www.Manualslib.com manuals search engine

Accumulator

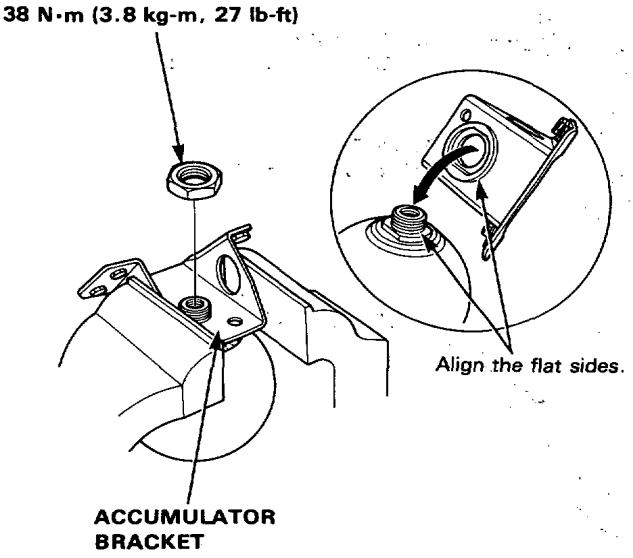
Accumlator/Pressure Switch

WARNING **Drain the high pressur brake fluid from the power unit (see page13-73).**

1. Remove the oil bolt, then remove the accumulator from the pressure switch joint.



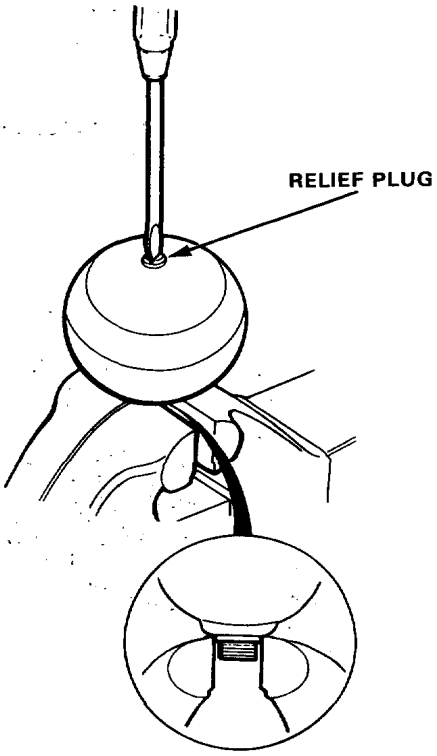
2. Remove the oil bolt, then remove the pressure switch from the pressure switch joint.
3. Set the accumulator bracket in a vise, hold the accumulator with your hand, and remove the accumulator nut with 27 mm socket and impact wrench.



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.



Downloaded from www.Manualslib.com manuals search engine

Master Cylinder

Overhaul/Inspection

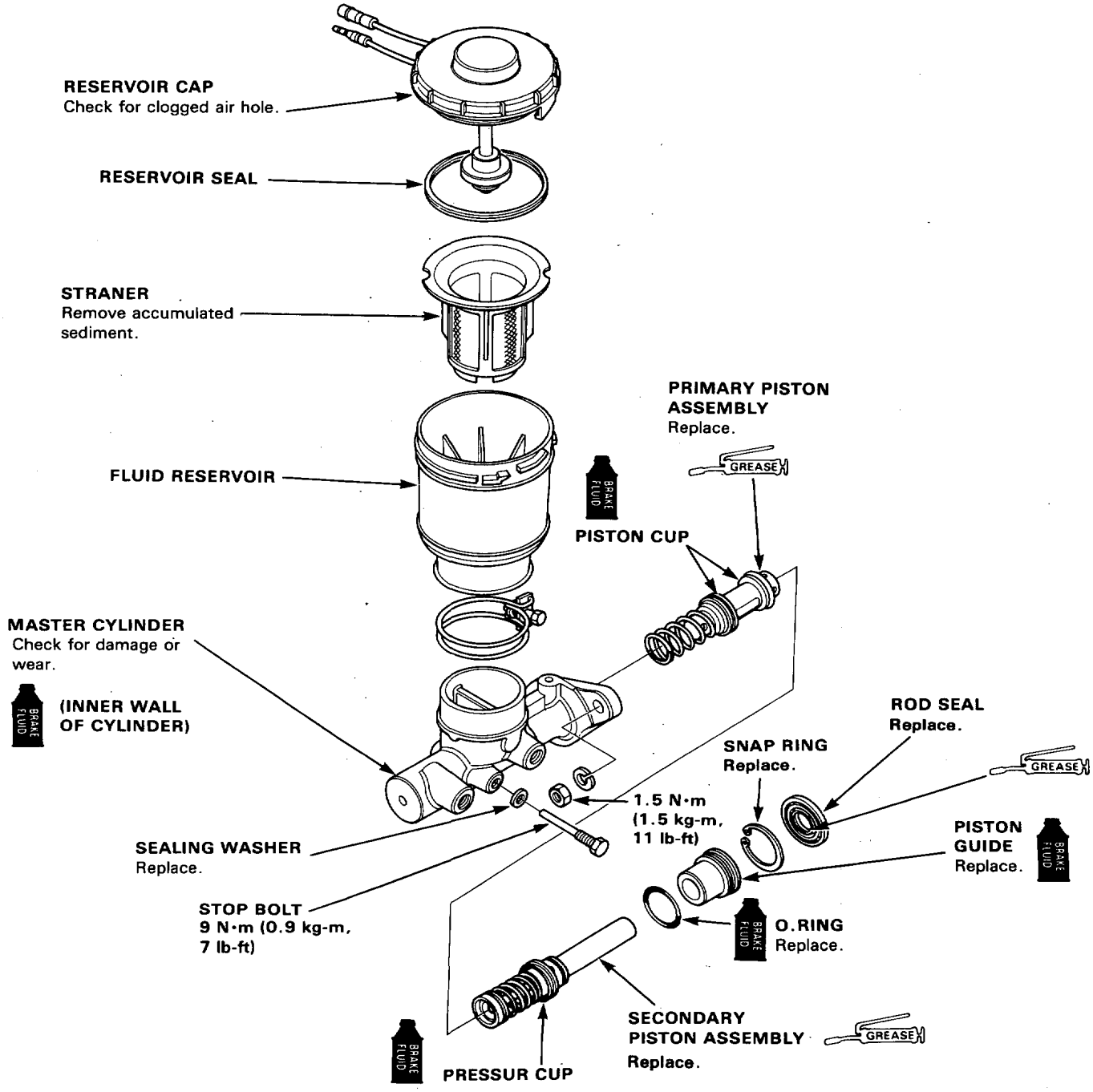
CAUTION:

- **Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at onece and rinse well with clean water.**
- **BRAKE FLUID This symbol represents brake fluid. Use only DOT 3 or 4 brake fluid.**
- **GREASE 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.



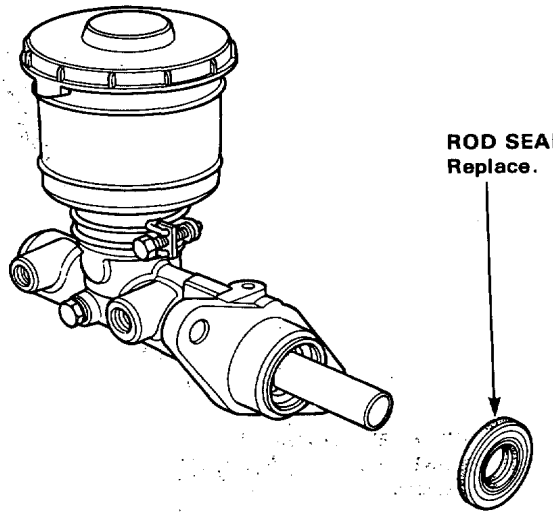
Downloaded from www.Manualslib.com manuals search engine

Master Cylinder

Disassembly

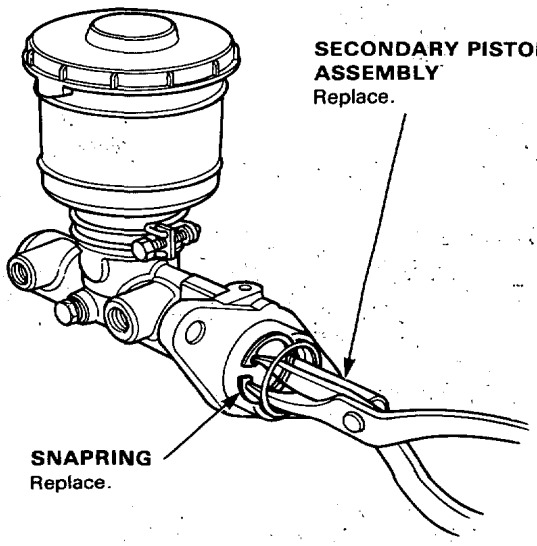
CAUTION:
- **Avoid spilling fluid on painted, plastic or rubber parts as it may damage the finish.**
- **Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.**
- **Use only new clen DOT 3 or DOT 4 brake fluid.**
- **Clean all parts 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.

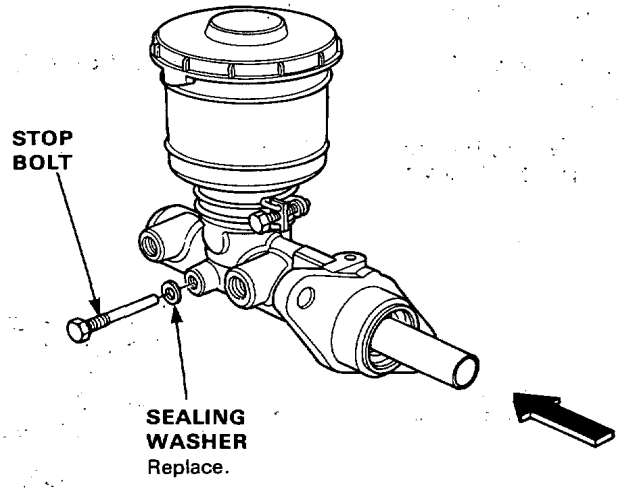


2. Push the secondary piston assembly, then remove the snap ring.

CAUTION:Avoid damaging the master cylinder wall.



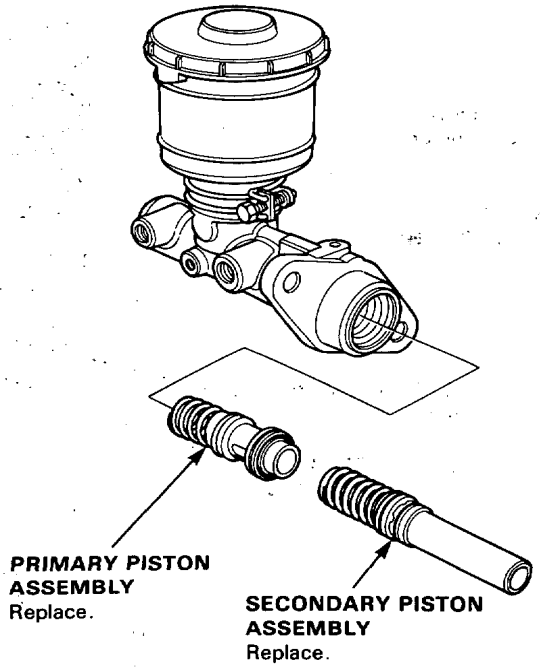
3. Remove the stop bolt while pushing in the secondary piston assembly.



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.**



Downloaded from www.Manualslib.com manuals search engine

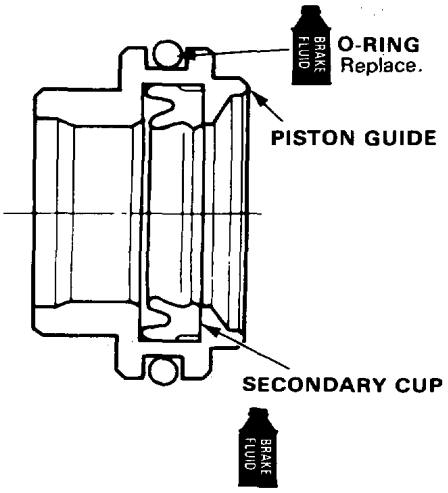
Reassembly

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 ressembling, 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.**

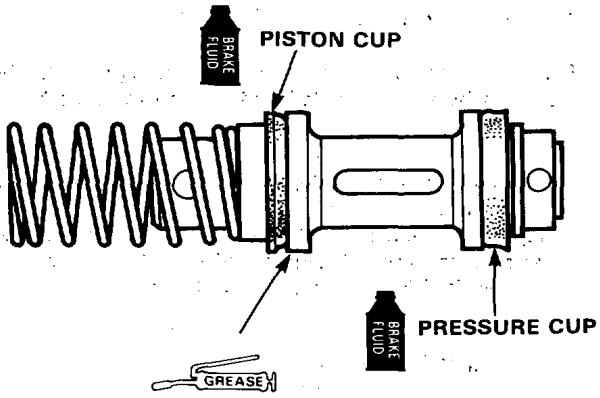
1. Lubricate the new piston parts with brake fluid.
2. Install the new O-ring onto the piston guide.

PISTON GUIDE ASSEMBLY

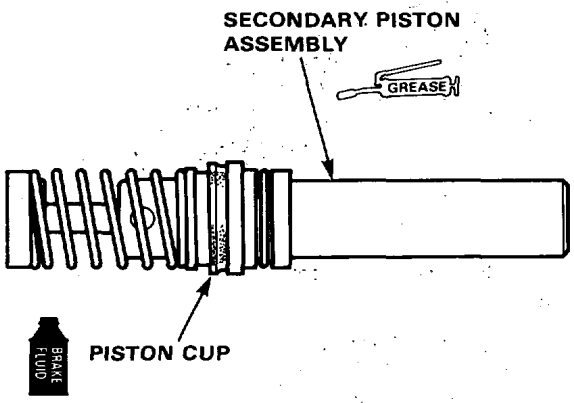


3. Make sure that the primary piston assembly and secondary piston assembly are in good condition.

PRIMARY PISTON ASSEMBLY



NOTE: Reahing 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.

Downloaded from www.Manualslib.com manuals search engine

Master Cylinder

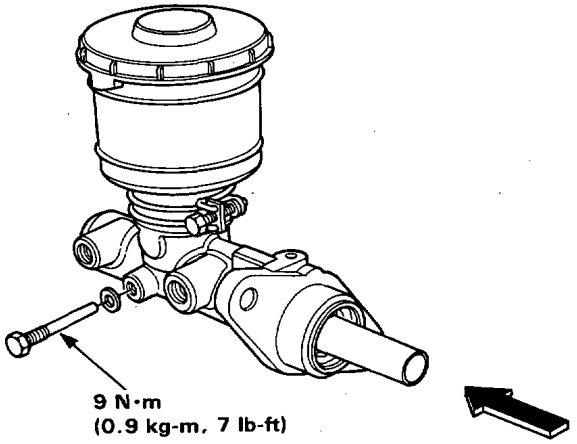
Reassembly(cont'd)

4. Assemble the primary piston assembly, secondary piston assembly and piston guide assembly in the master cylinder body.

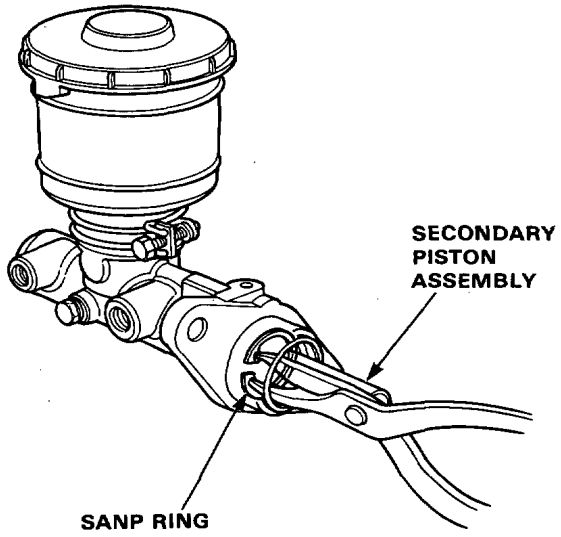
   NOTE: Install the primary piston with the slot on the cylinder facing the stop bolt hole side.

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 seal 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.**

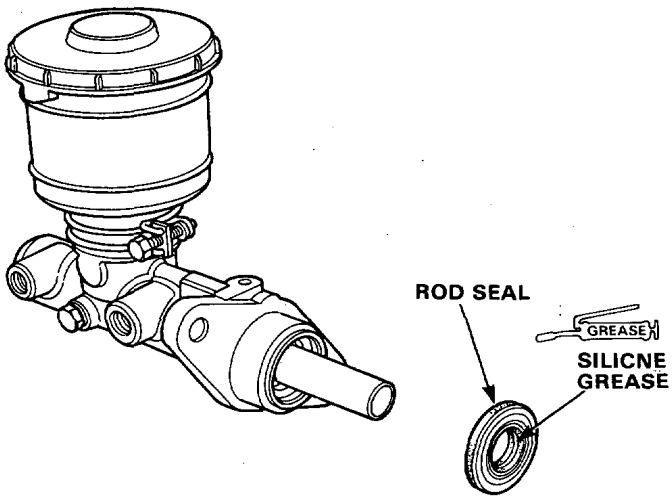


6. Press the secondary piston in and install the new snap ring.



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 13-90 and 91).**

Downloaded from www.Manualslib.com manuals search engine

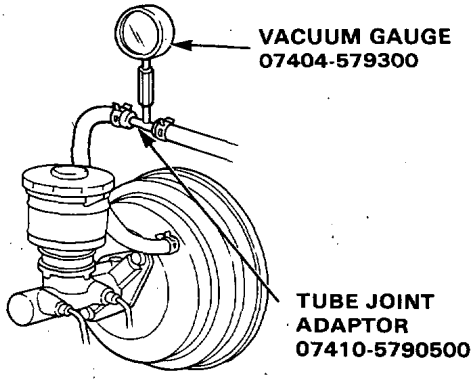
Brake Booster

Test

Leak Test

1. Install the Brake Power Pit (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.

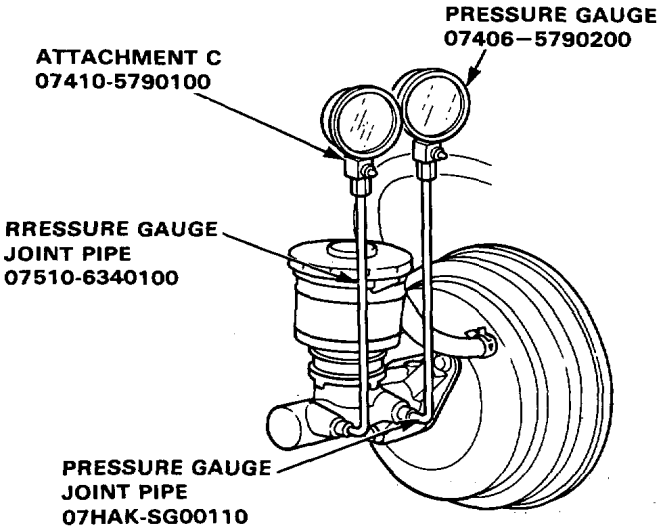
   If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.
   - Check valve
   - Vacuum hose
   - Seals
   - Master cylinder O-ring and cup
   - Diaphragm



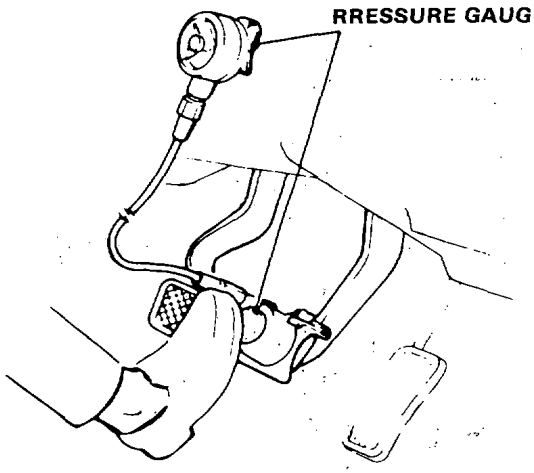
Function Test

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 pagnted, 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.

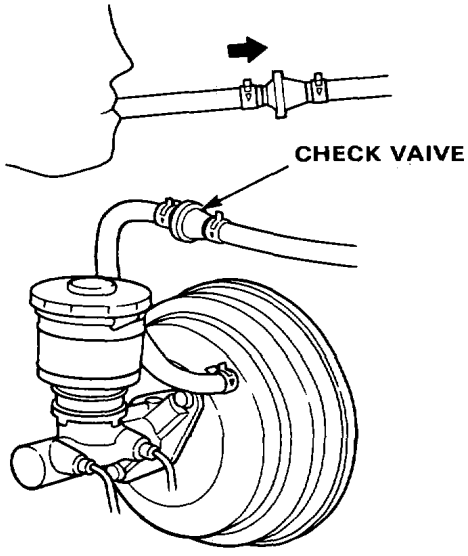


Vacuum mmHg	Line pressure kPa (kg/cm², psi)
0	980 (10.0, 142) minimum
300	5,547 (56.6, 804) minimum
500	8,595 (87.7, 1247) minimum

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.

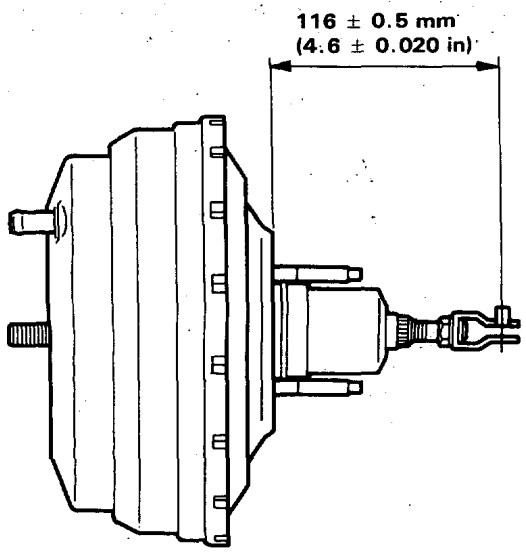


Downloaded from www.Manualslib.com manuals search engine

Brake Booster

Pushrod Adjustment

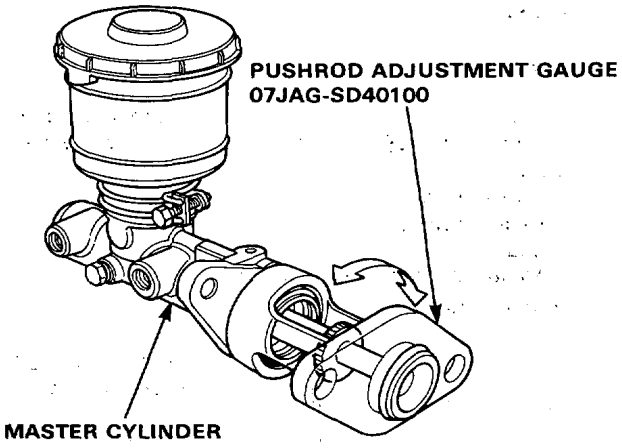
Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.



Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing or when replacing master cylinder or booster.

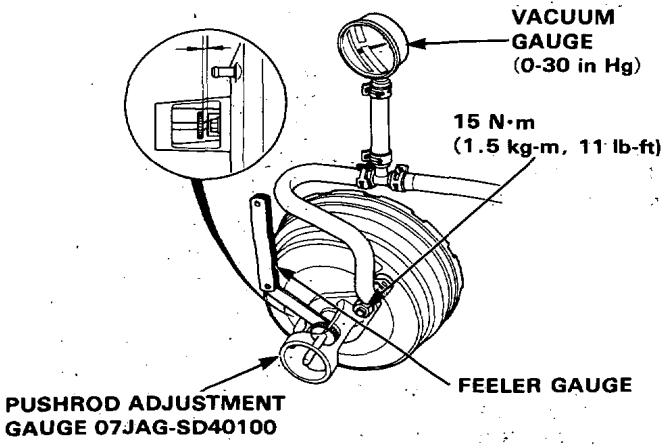
1. Using the special tool, adjust bolt so the top of it is flush with end of master cylinder piston.



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.

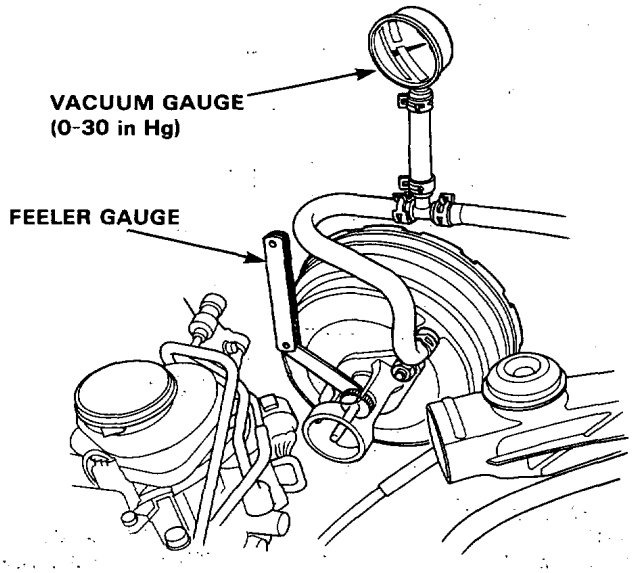
CLEARANCE: 0—0.4 mm (0—0.016 in)

- Inspection with the booster off the car.

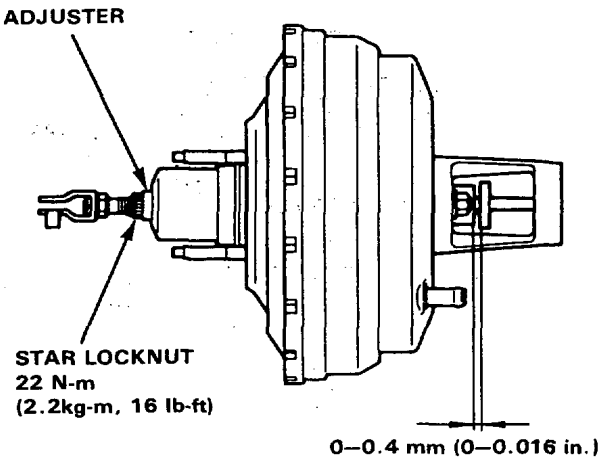


Downloaded from www.Manualslib.com manuals search engine

- 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-pston 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;
(with floor mat removed)
The pedal should have
1–5 mm free play.

10. Adjust the brake light switch (page 13-4).

Downloaded from www.Manualslib.com manuals search engine

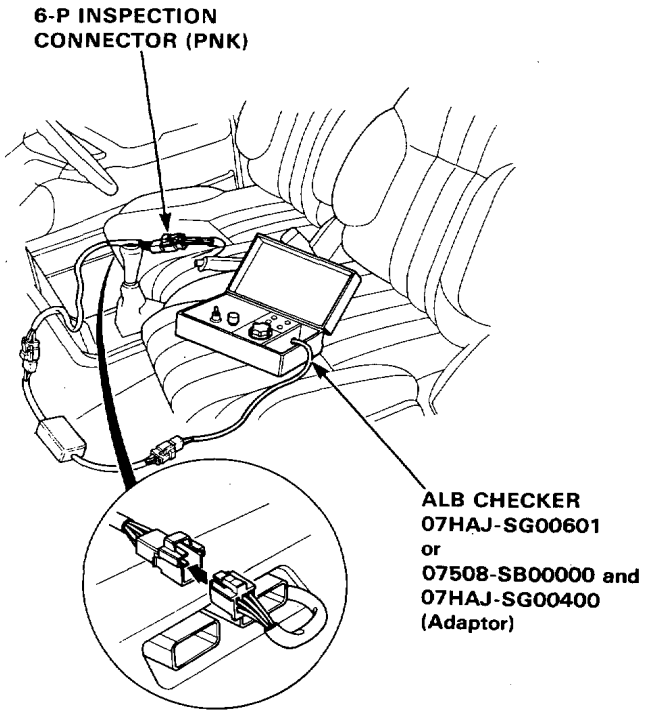
Bleeding

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 right front 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.

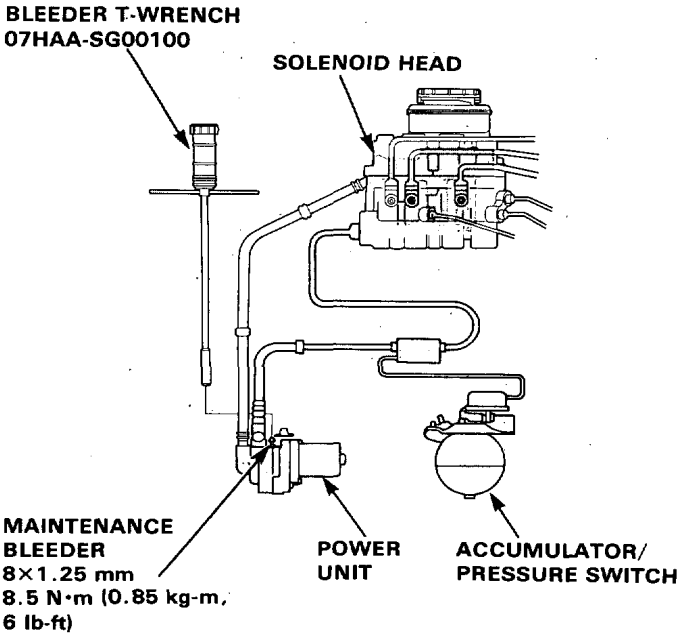


   NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG0601.

2. Fill the modulator reservoir to the MAX level.

   NOTE: Do not reuse aerated brake fluid that has been bled from the power unit.

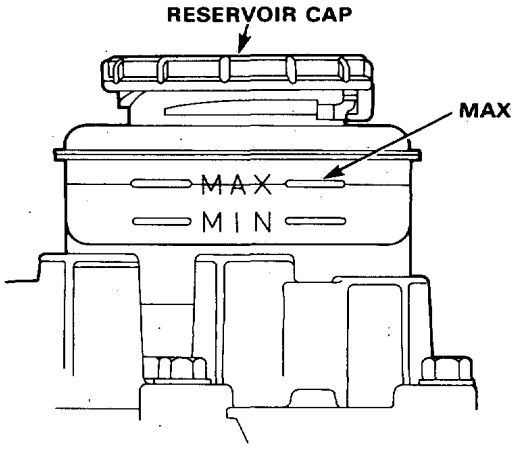
3. Bleed high pressure fluid from the maintenance bleeder with the special tool.



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.

Downloaded from www.Manualslib.com manuals search engine

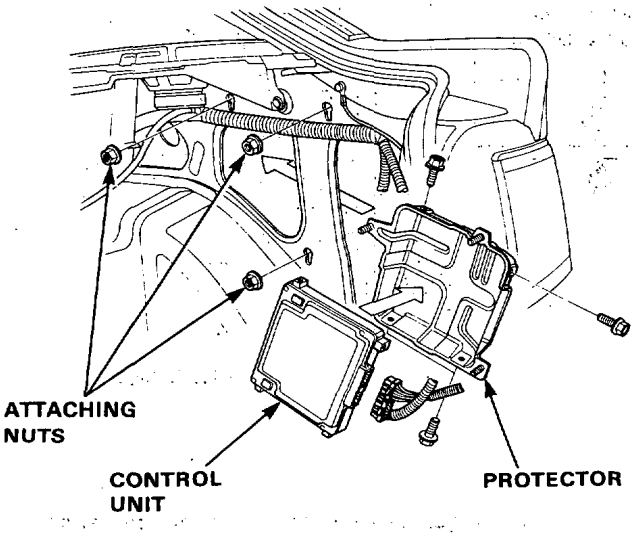
Electronic Components

Control Unit Replacement

CAUTION:
- **Disconnect the battery ground tarminal before remove the control unit.**
- **The memory of the problem code is erased, if disconnect the battery ground tarminal.**

Remove the control unit attaching nuts, then remove the control unit.

CAUTION:
- **Handle the control unit with care.**



Intallation is the reverse order of removal.

NOTE:Check the dash warning light function by turning the ignition switch ON.

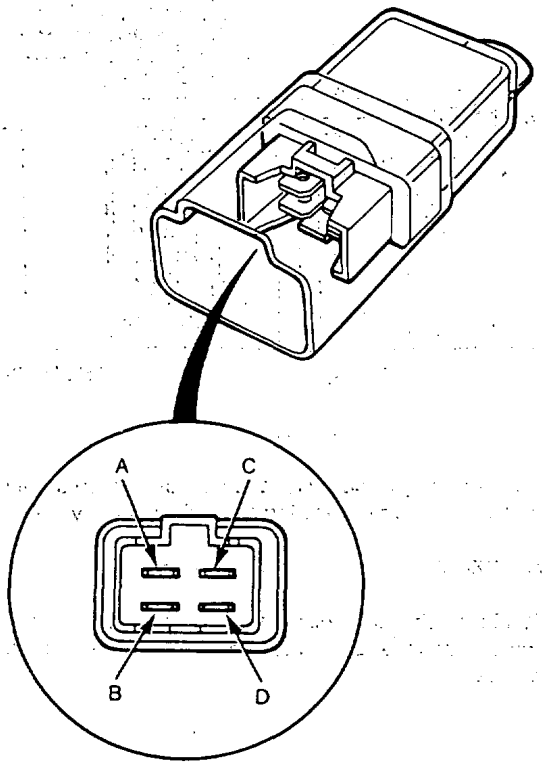
Fail Safe Relays/Motor Relay Inspction

1. Check for continuity between terminals A and B.

   There should be no continuity.

2. Connect a 12V battery across teminals C and D.

   There should be continuity between terminals A and B.



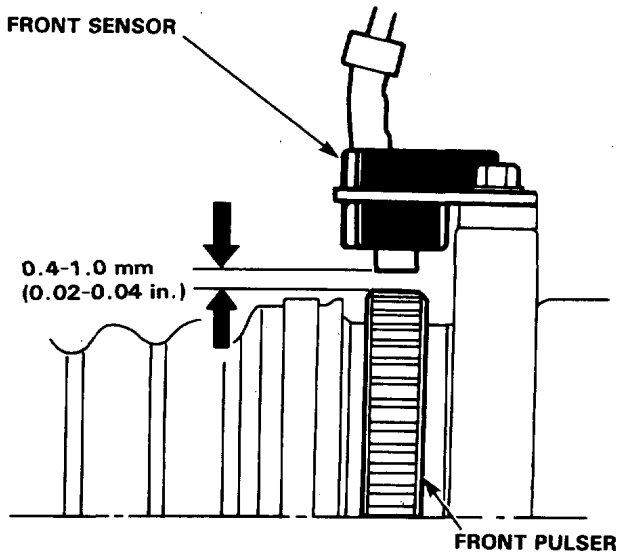
Downloaded from www.Manualslib.com manuals search engine

Pulsers/Sensors

Inspection

Front

1. Check the pulser for chipped or damaged teeth.



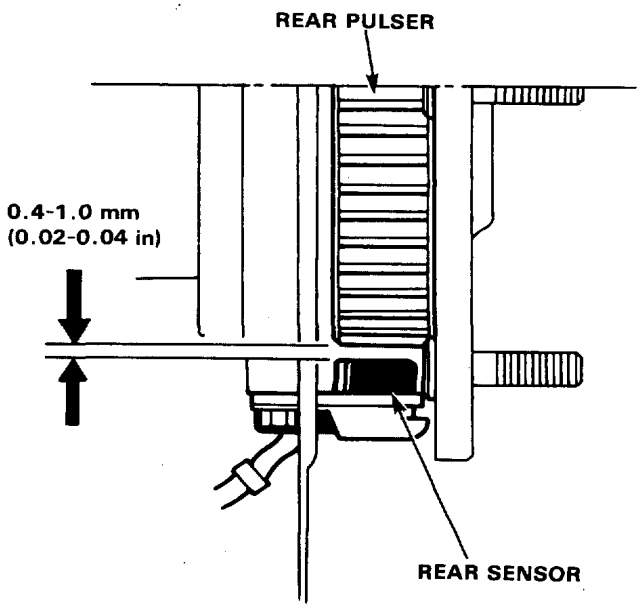
2. Measure air gap between the sensor and pulser all the way around while rotating the driveshaft by hand.

STANDARD: 0.4-1.0 mm (0.02-0.04 in.)

NOTE: If the gap exceeds 1.0 mm (0.04 in), the probability is a distorted knuckle which should be replaced.

Rear

1. Check the rear pulser for chipped or damaged teeth.



2. Measure the air gap between the sensor and pulser all the way around while rotating the hab bearing unit by hand.

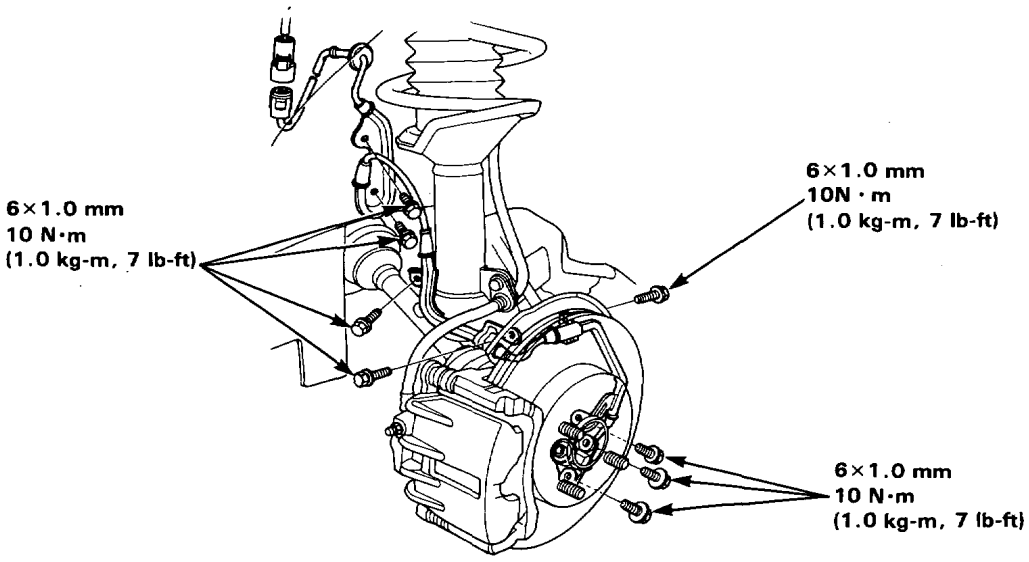
Standard: 0.4-1.0 mm (0.02-0.04 in)

NOTE: If the gap exceeds 1.0 mm (0.04 in.) the probability is a distorted knuckle which should be replaced.

Downloaded from www.Manualslib.com manuals search engine

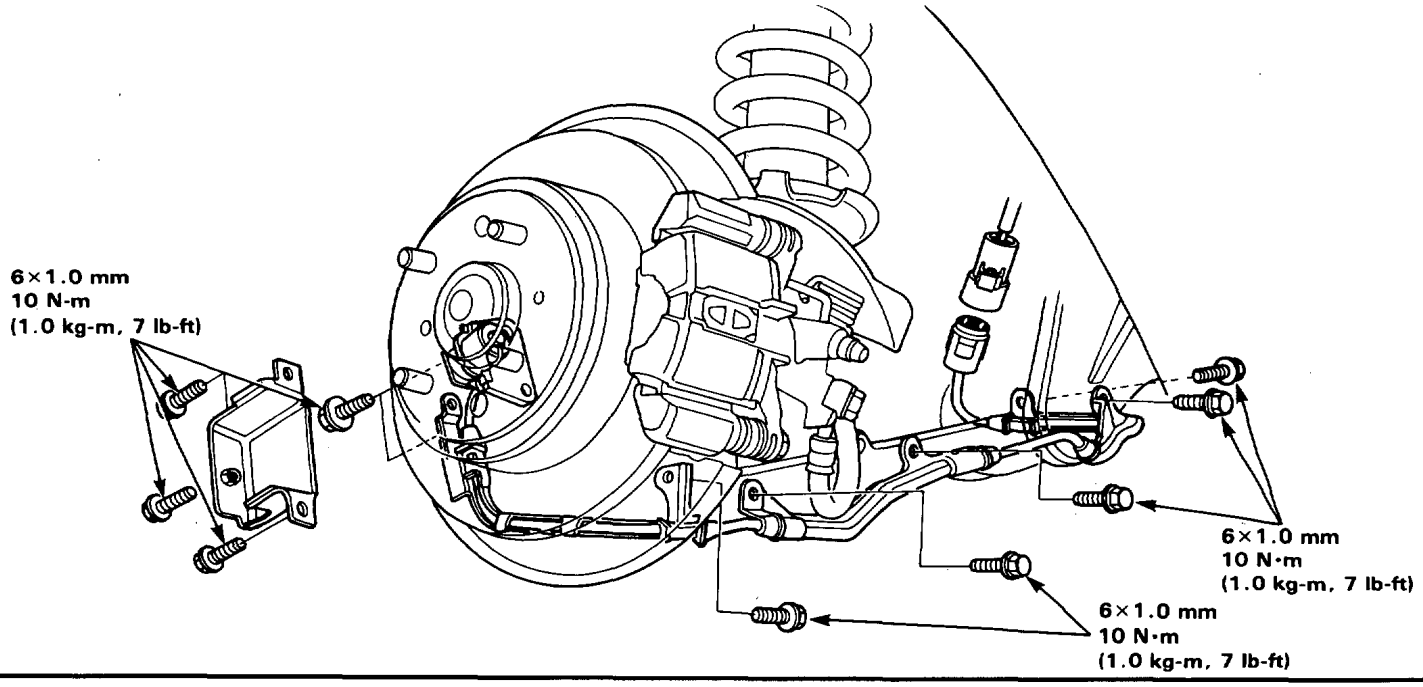
Front Sensor Replacement

NOTE:
- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement confirm proper operation (page 13-56).



Rear Sensor Replacement

NOTE:
- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement, confirm proper operation (page 13-56)

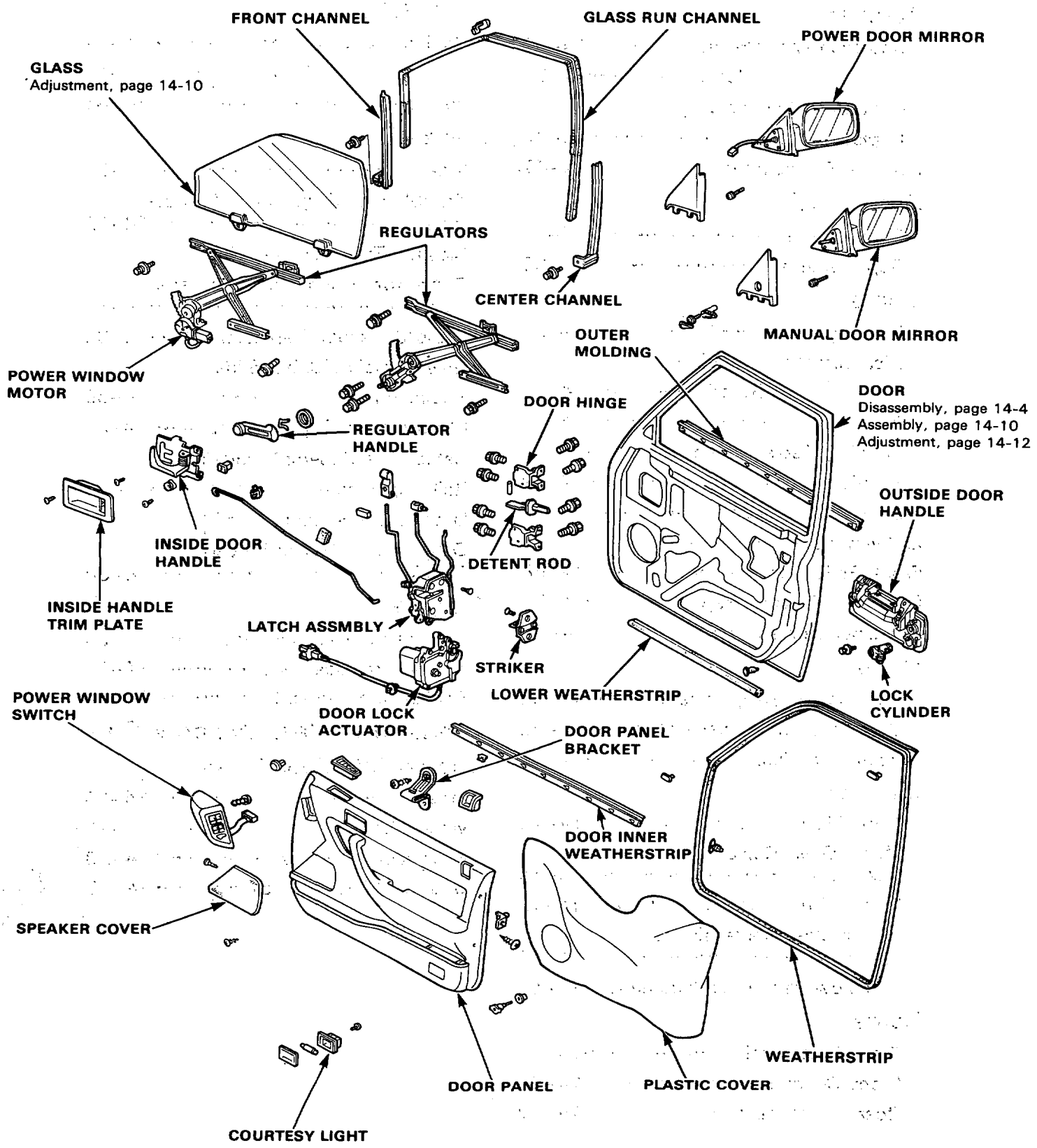


Downloaded from www.Manualslib.com manuals search engine

Doors

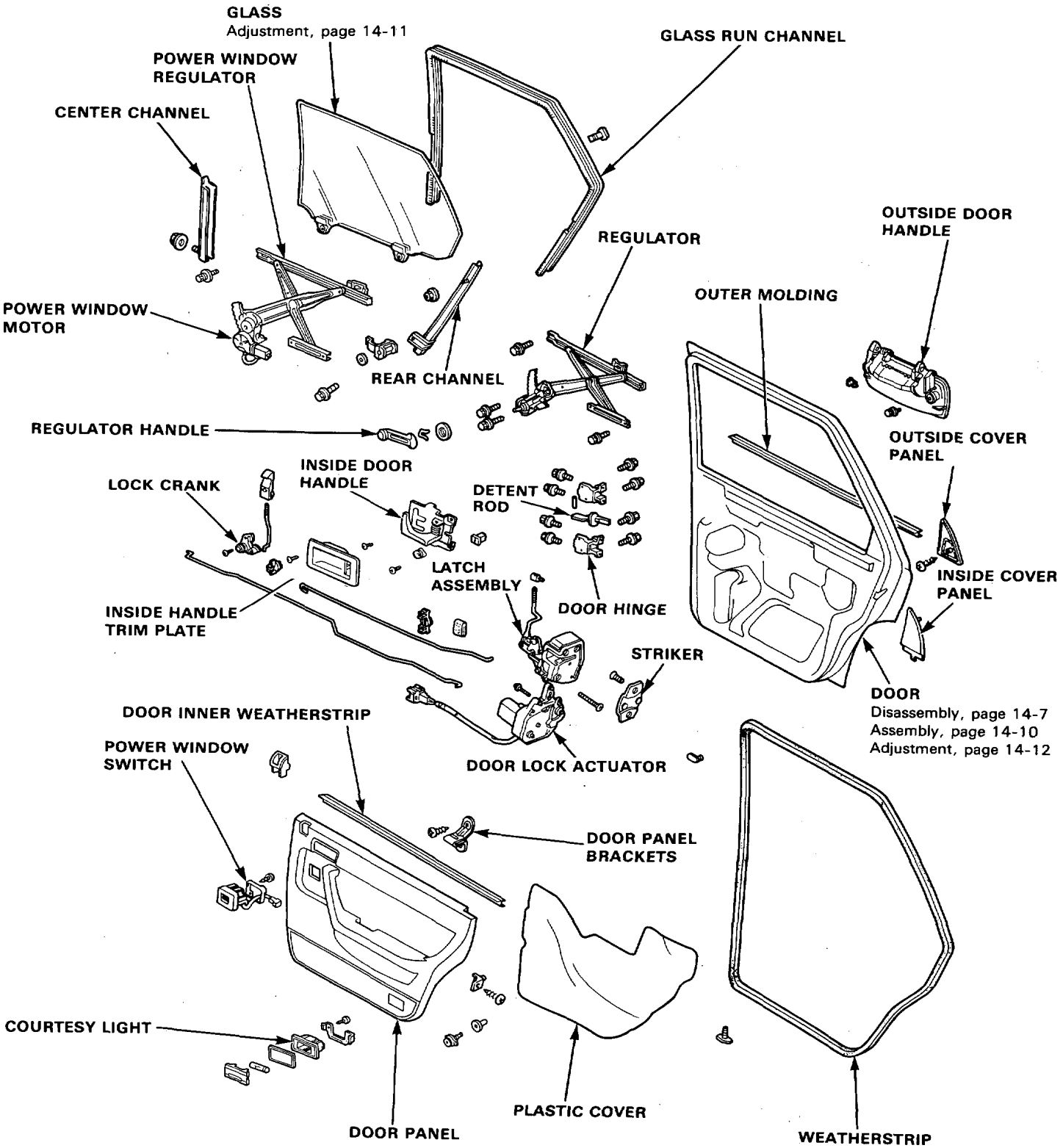
Index

Front:



Downloaded from www.Manualslib.com manuals search engine

Rear:

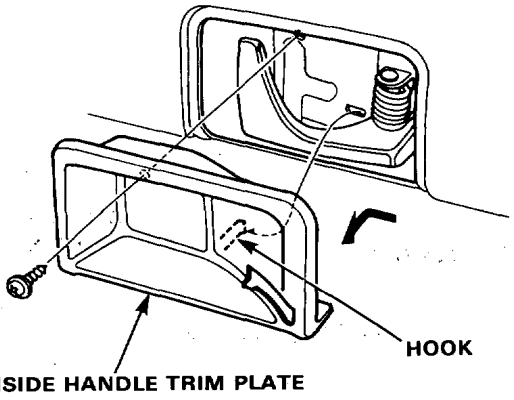


Downloaded from www.Manualslib.com manuals search engine

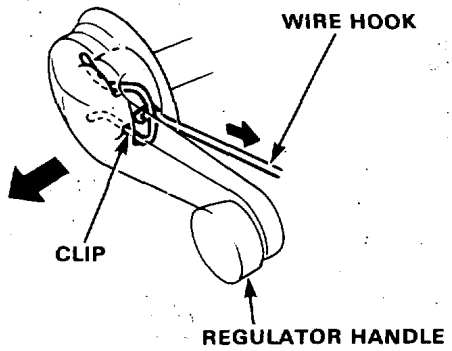
Front Door

Disassembly

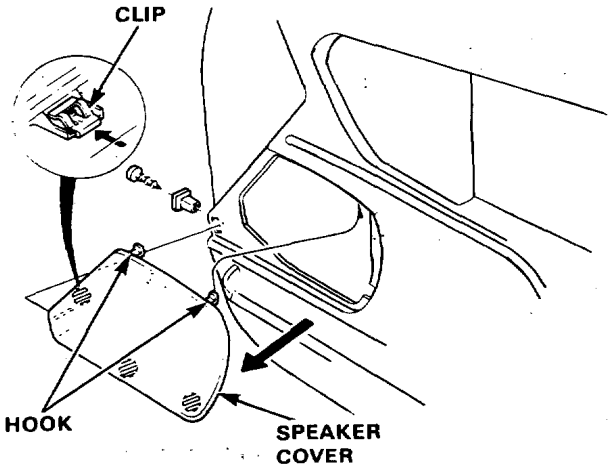
1. Remove the trim plate screw, then carefully remove the inside handle trim plate.



2. If applicable, remove the regulator handle by pulling the clip out with a wire hook.



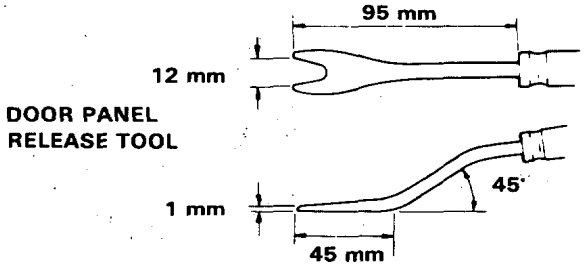
3. Remove the screw and detach the clips, then remove the speaker cover.

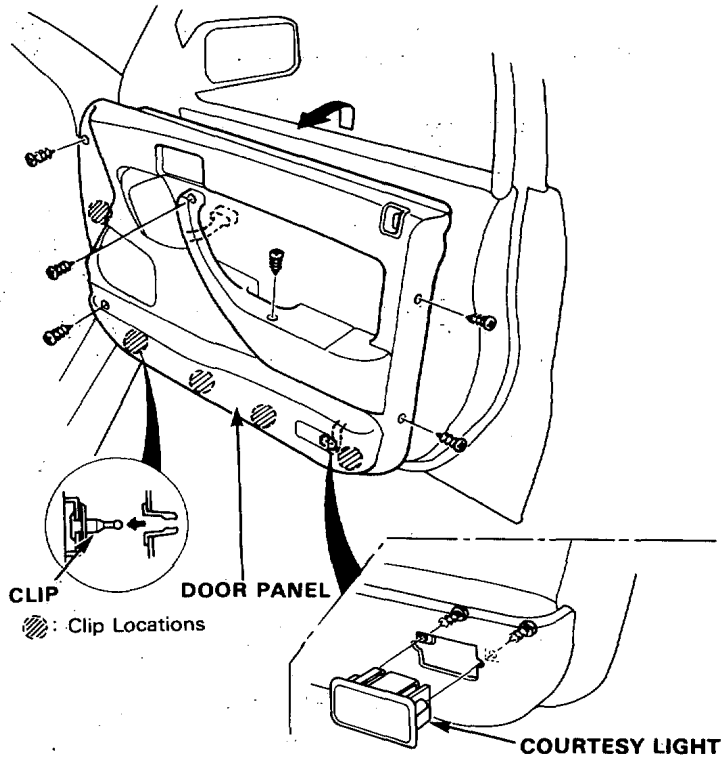


4. Remove the door mirror cover panel (pages 14-13, 14).

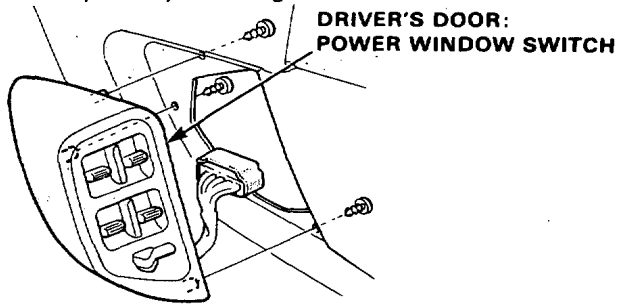
5. Remove the screws and clips (See door panel release tool) attaching the door panel.
Remove the door panel by pulling it upward and disconnect the power window and courtesy light wires.

NOTE: Remove the panel with as little bending as possible to avoid creasing or breaking it.





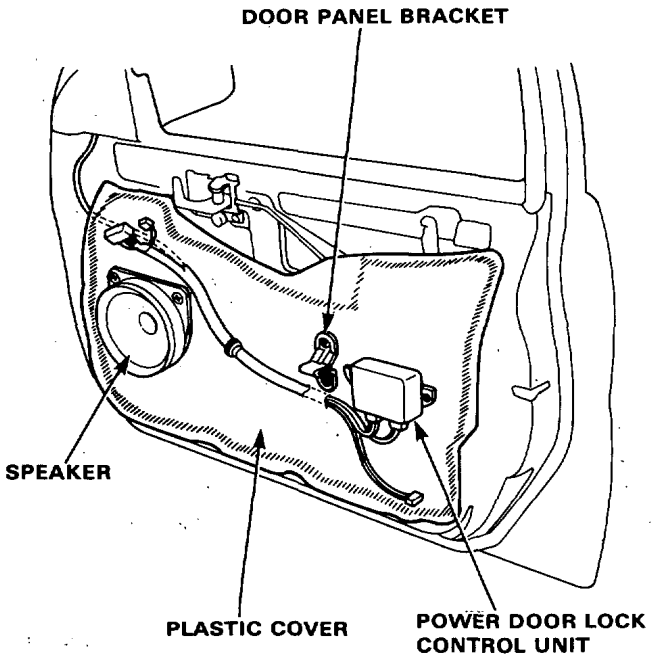
6. Remove the power window switch, if equipped, from the door panel by removing the screws.



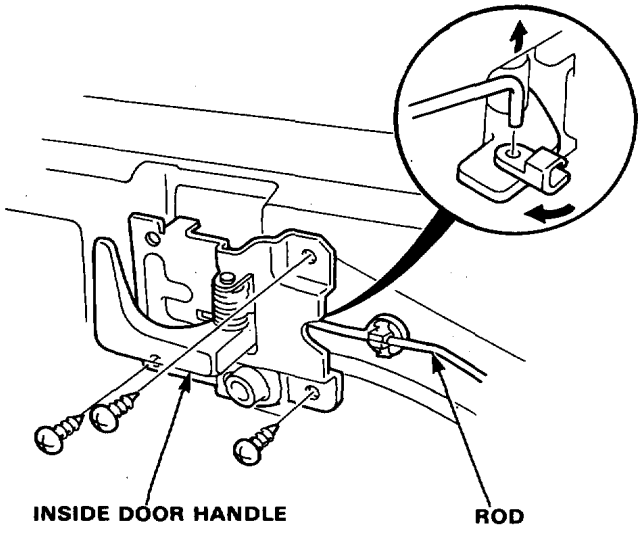
Downloaded from www.Manualslib.com manuals search engine

7. Remove the screws, then remove the power door lock control unit, speaker and door panel bracket.

8. Carefully remove the plastic cover.



9. Remove the 3 screws, disconnect the latch rod, then remove the inside door handle.

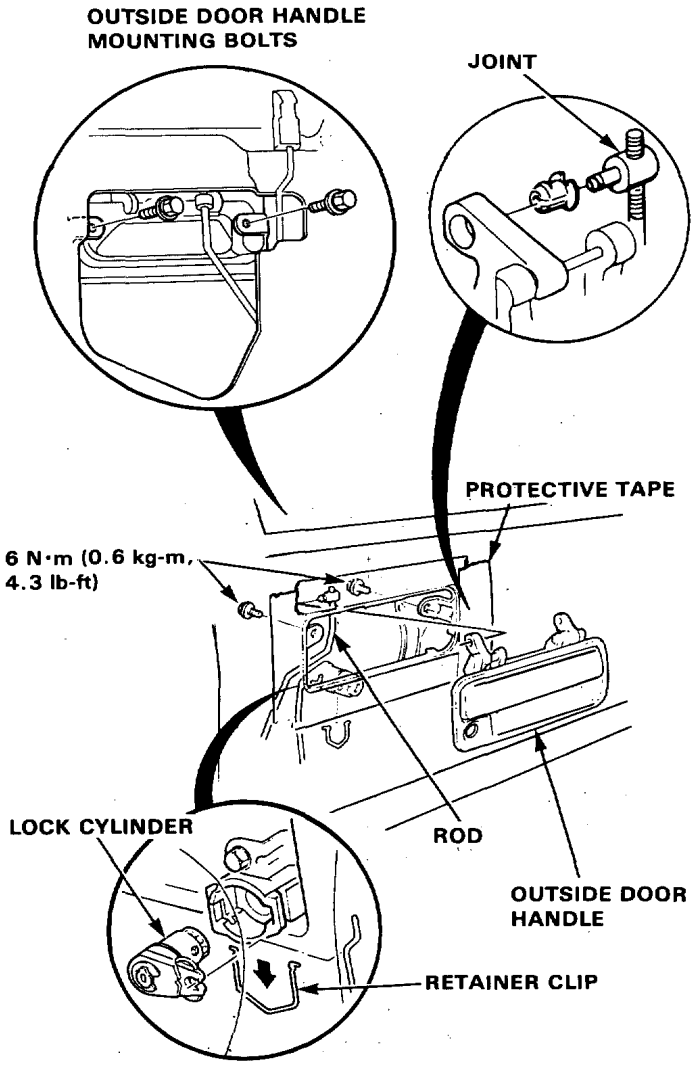


10. Reconnect the window switch or use 12 V battery to operate the window regulator.

11. Raise the window fully.

12. Pull out the retainer clip, and take out the lock cylinder, then disconnect the lock rod.

NOTE: Use protective tape around the edge of the outside door handle to prevent scratching the paint.



13. Remove the mounting bolts for the outside door handle.

14. *Pull the outside door handle out, and pry the joint off* the handle with a flat tip screwdriver. Remove the handle from the rod.

(cont'd)

Downloaded from www.Manualslib.com manuals search engine

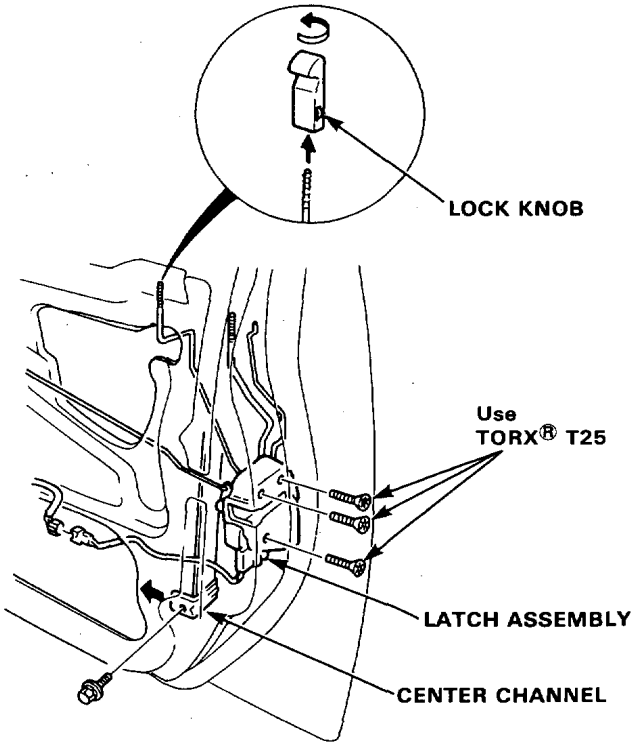
Front Door

Disassmbly (cont'd)

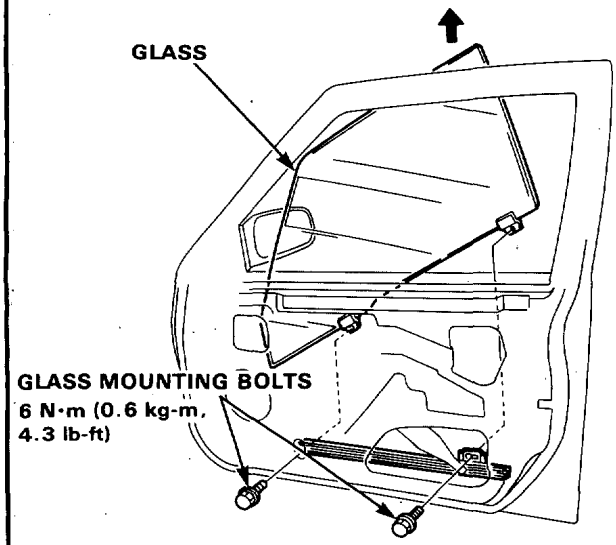
15. Remove the screws and disconnect the wire.

16. Take the door latch off the door, then push the door latch and rod inside the door.

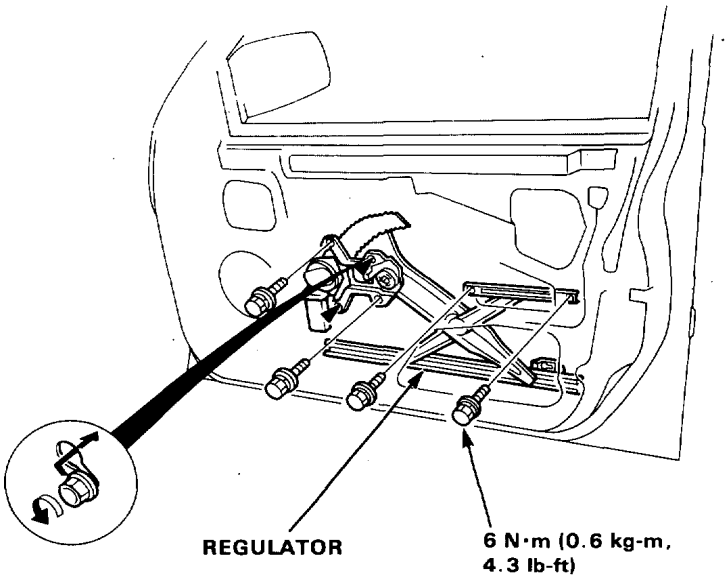
    NOTE:
    - Remove the lower bolt of the rear channel and slide the rear channel.
    - Take care not to bend the latch rods.



17. Carefully lower the window until you can see its mounting bolts. Remove the bolts and pull the door glass out through the window slot.



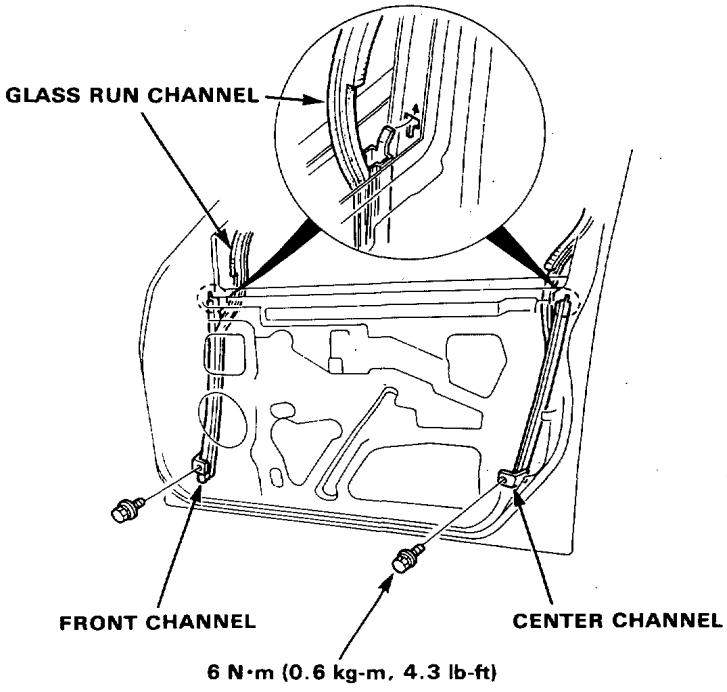
18. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.



19. Remove the glass run channel.

20. Remove the front and center channels by removing the bolts.

    NOTE: Before installation, insert the glass run channel into the front and center channels.



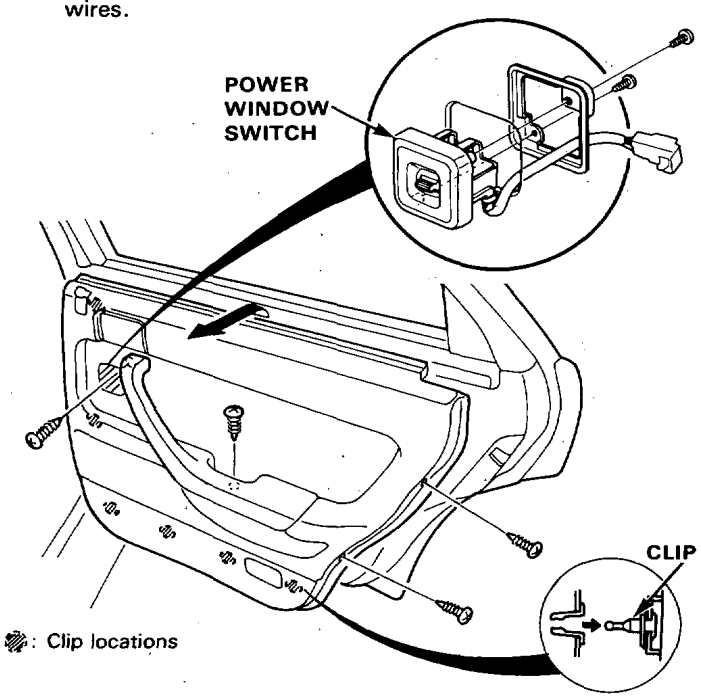
Downloaded from www.Manualslib.com manuals search engine

Rear Door

Disassembly

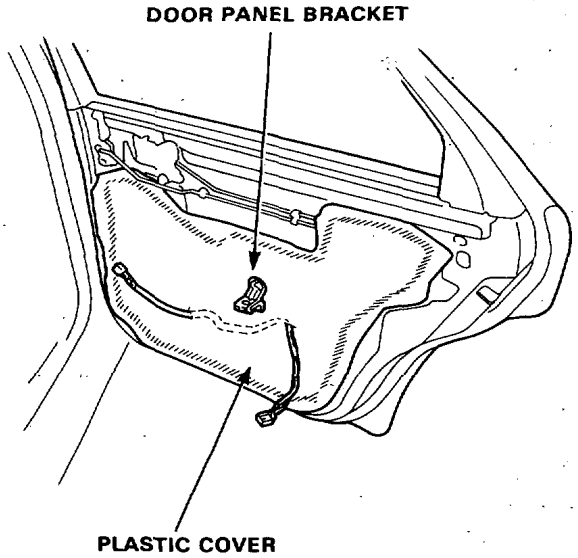
1. Remove the inside handle trim plate and regulator handle (page 14-4).

2. Remove the screws and clips (See door panel release tool) attaching the door panel (page 14-4). Remove the door panel by pulling it upward and disconnect the power window and courtesy light wires.

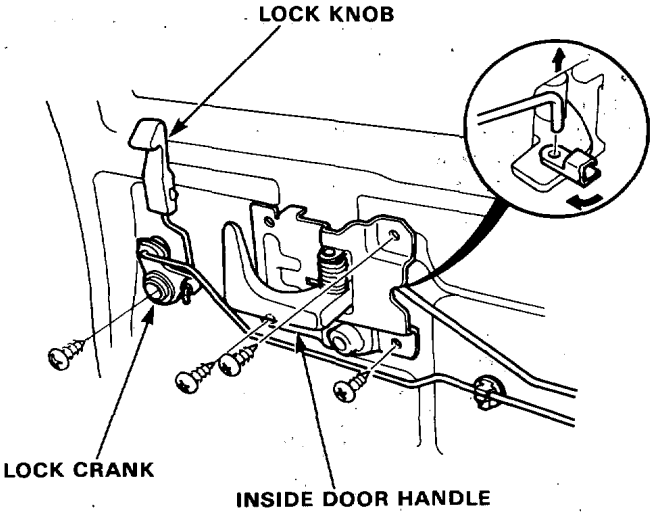


3. Remove the screws, then remove the door panel brackets.

4. Carefully remove the plastic cover.



5. Remove the 3 screws of the inside door handle and the screw of the lock crank, then remove it from the door.

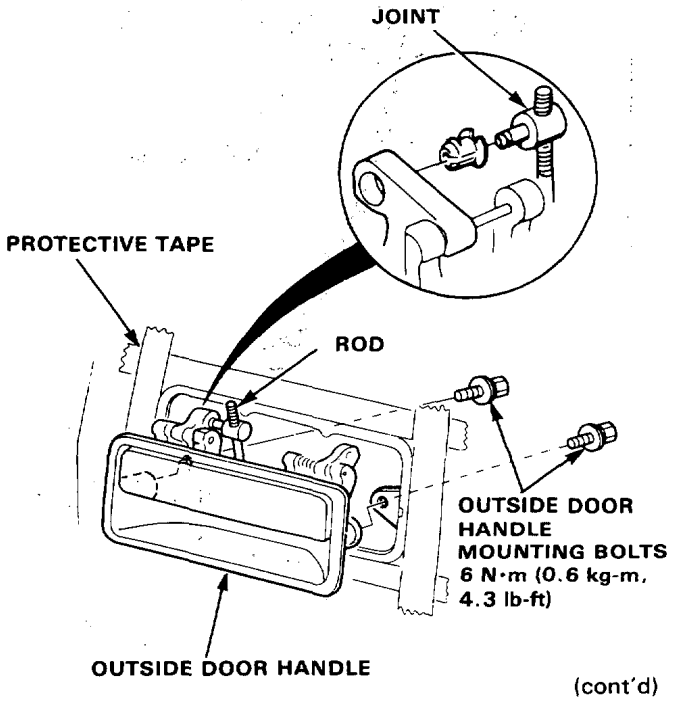


6. Reconnect the window switch or use 12 V battery to operate the window regulator.

7. Raise the window fully.

8. Pull the outside door handle out, and pry the joint off the handle with a flat tip screwdriver. Remove the handle from the rod.

   NOTE: Use protective tape around the edge of the outside door handle to prevent scratching the paint.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

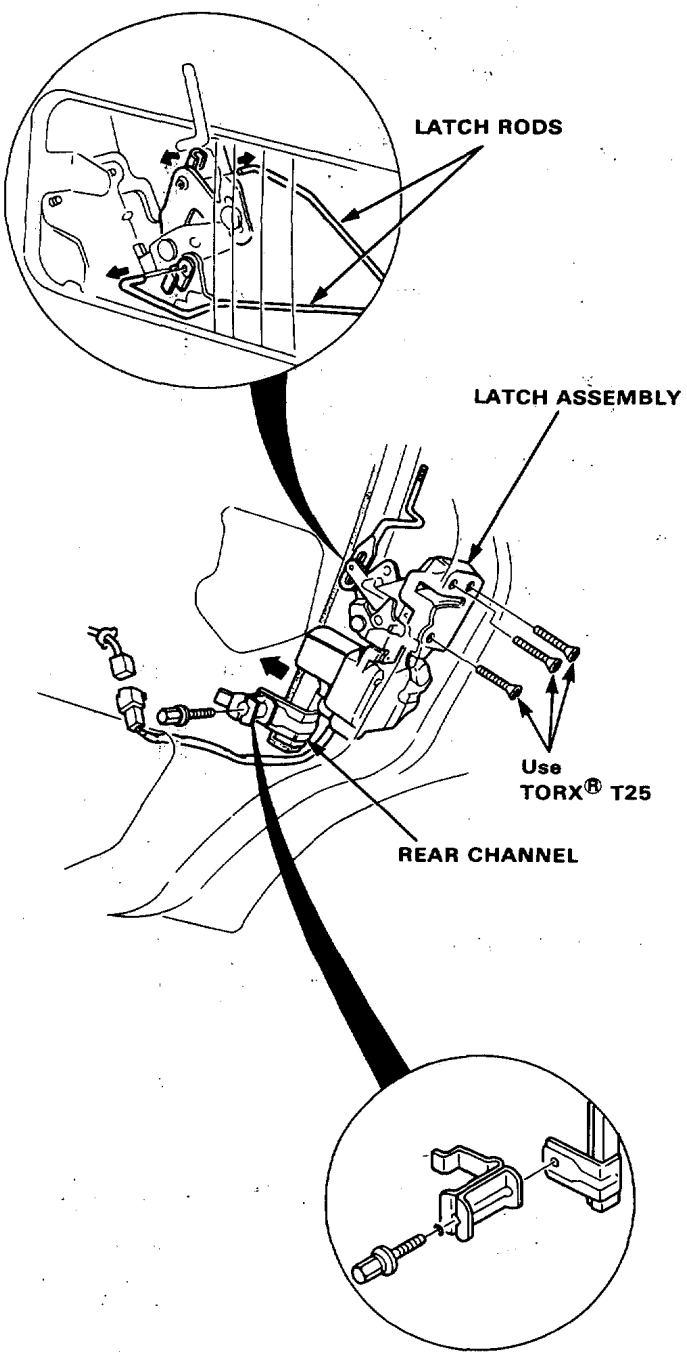
Rear Door

Disassembly (cont'd)

9. Remove the screws and disconnect the latch rod and wire.

10. Take the latch assembly off the door, then push the latch assembly inside the door.

NOTE:
- Remove the lower bolt of the rear channel and slide the rear channel.
- Take care not to bend the latch rods.

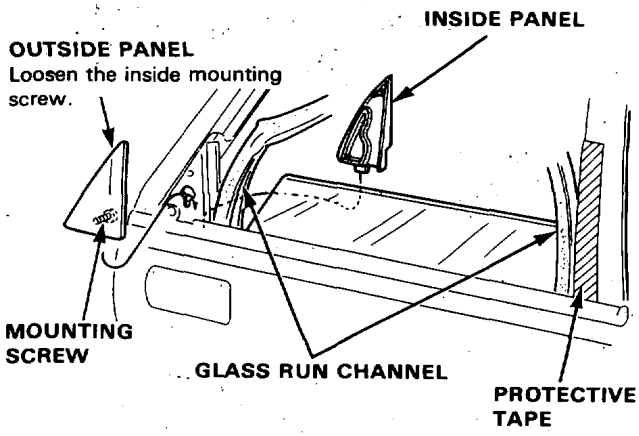


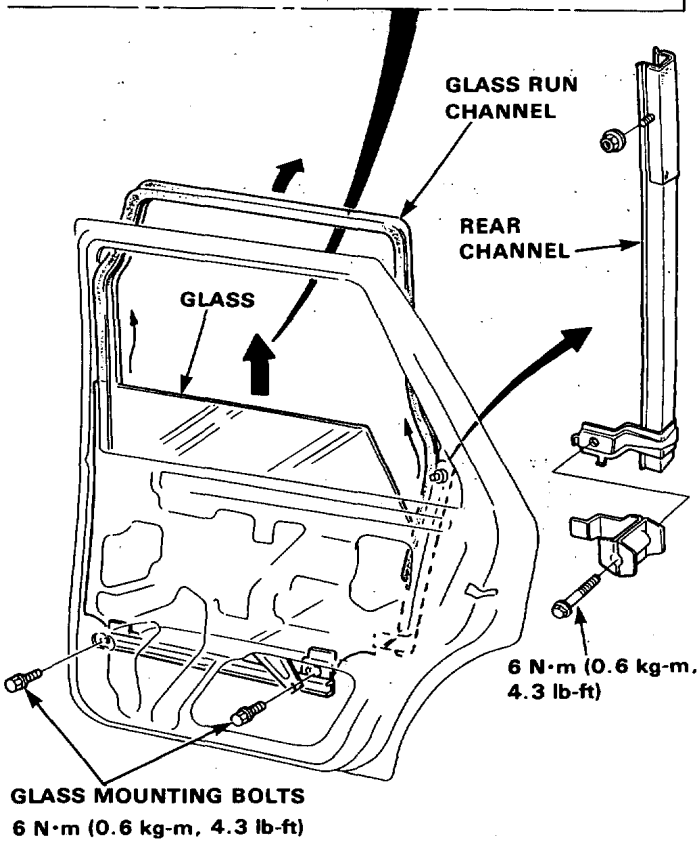
11. Carefully lower the door glass until you can see its mounting bolts.

12. Remove the outside and inside cover panels.

13. Remove the glass run channel and rear channel.

14. Use protective tape as shown to prevent scratching the paint.

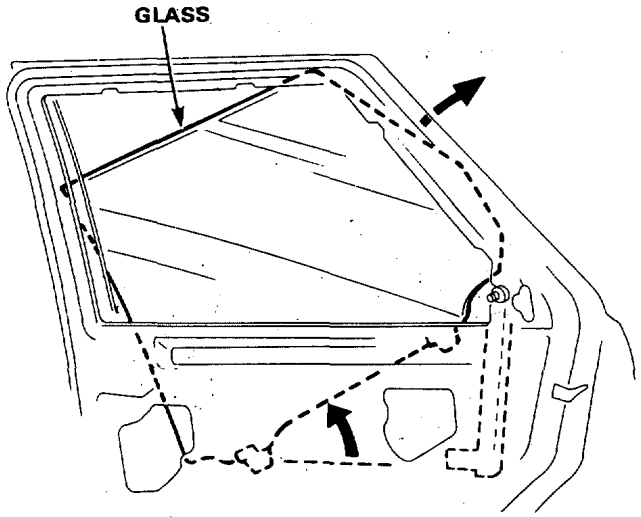




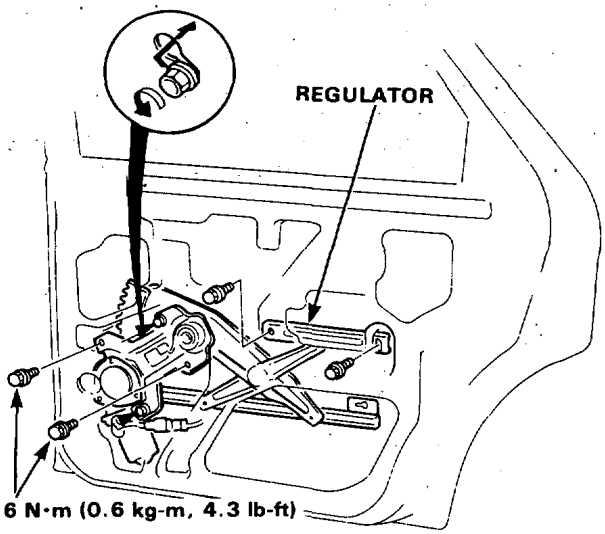
15. Remove the glass mounting bolts.

Downloaded from www.Manualslib.com manuals search engine

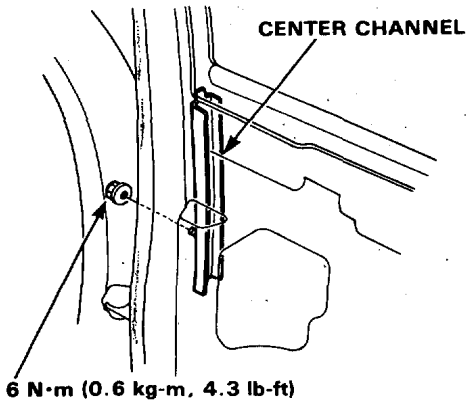
16. Stand next to the outside of the door, tilt the glass as shown, and pull it out through the window opening.



17. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.



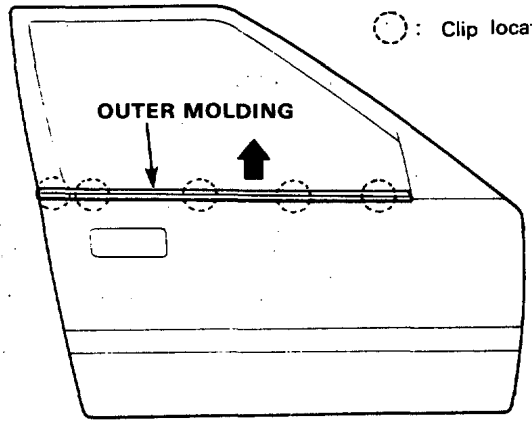
18. Remove the nut, then remove the center channel.

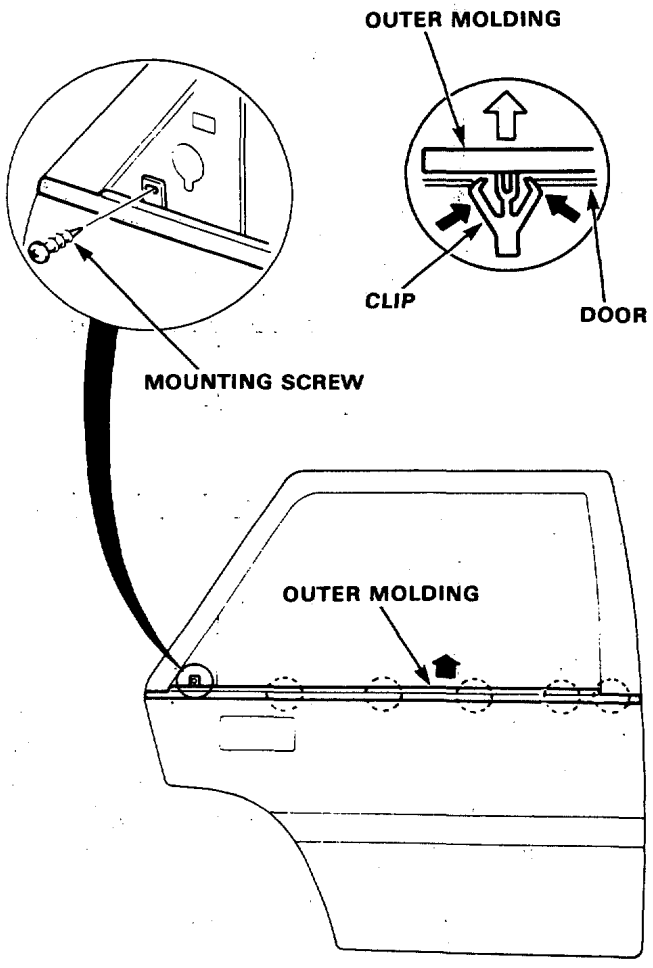


Molding Replacement

Outer Molding:

1. Lower the window fully.
2. Remove the door mirror (pages 14-13, 14).
3. Remove the screw and detach the clips, then remove the outer molding prying up on the molding starting at the rear.

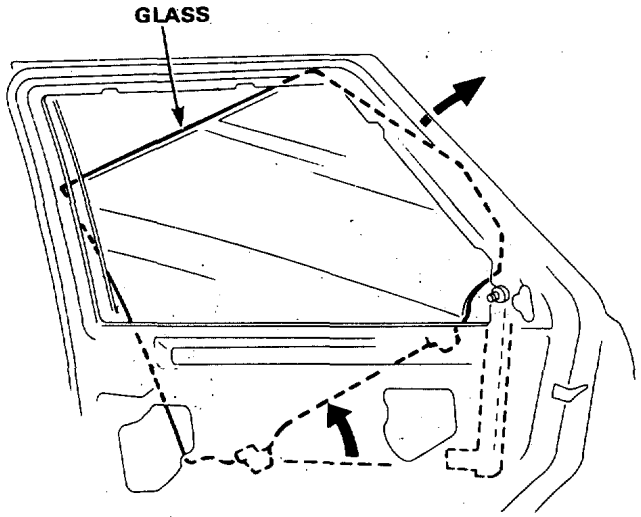




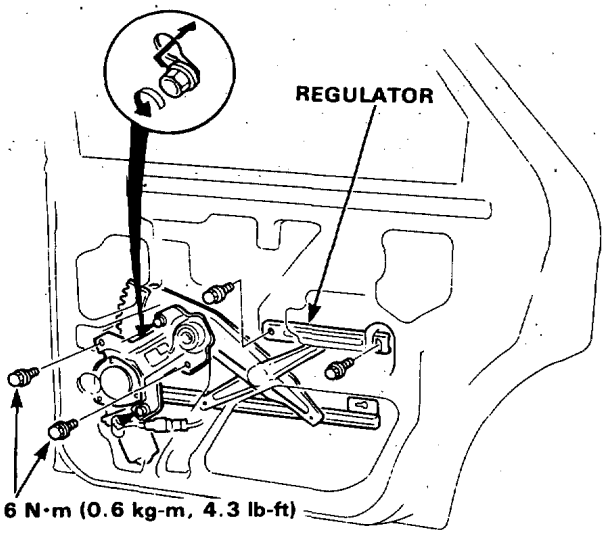
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

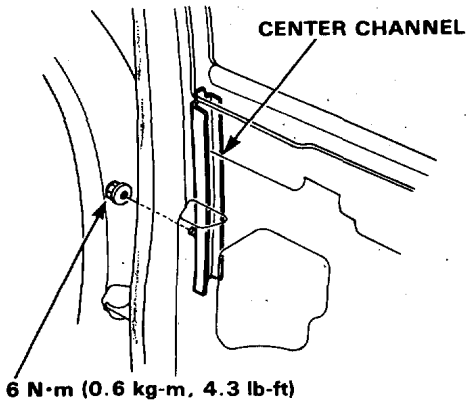
16. Stand next to the outside of the door, tilt the glass as shown, and pull it out through the window opening.



17. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.



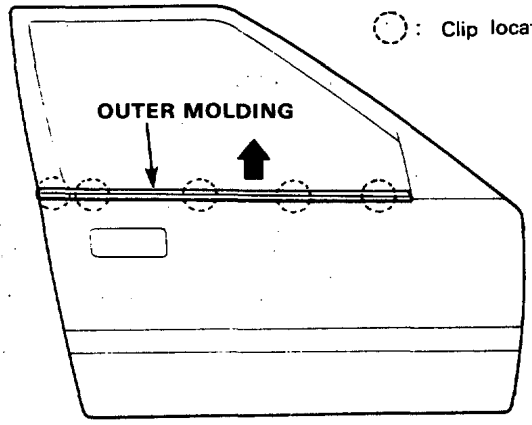
18. Remove the nut, then remove the center channel.

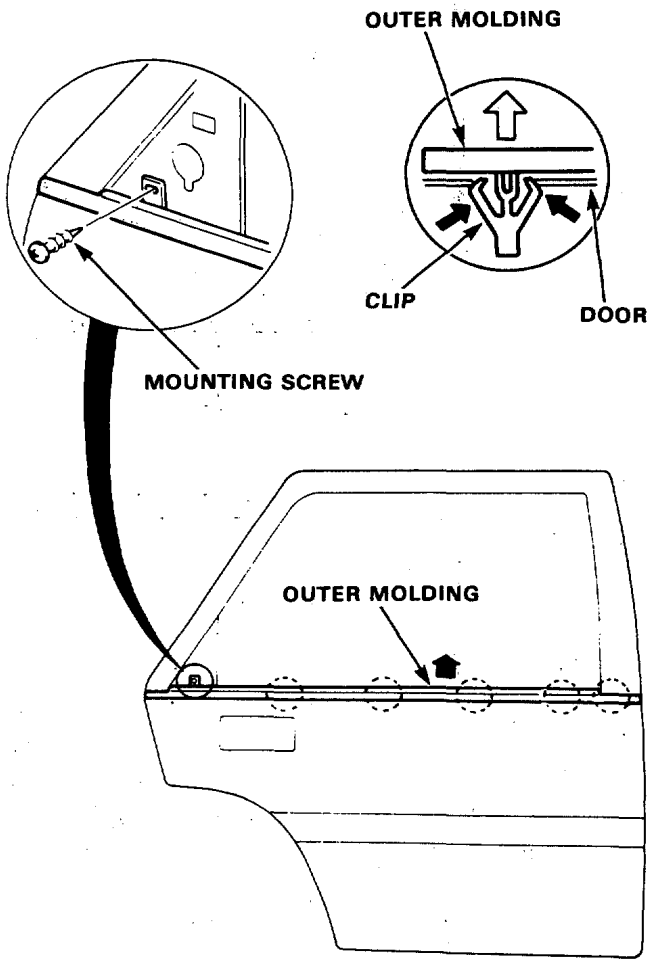


Molding Replacement

Outer Molding:

1. Lower the window fully.
2. Remove the door mirror (pages 14-13, 14).
3. Remove the screw and detach the clips, then remove the outer molding prying up on the molding starting at the rear.





(cont'd)

Downloaded from www.Manualslib.com manuals search engine

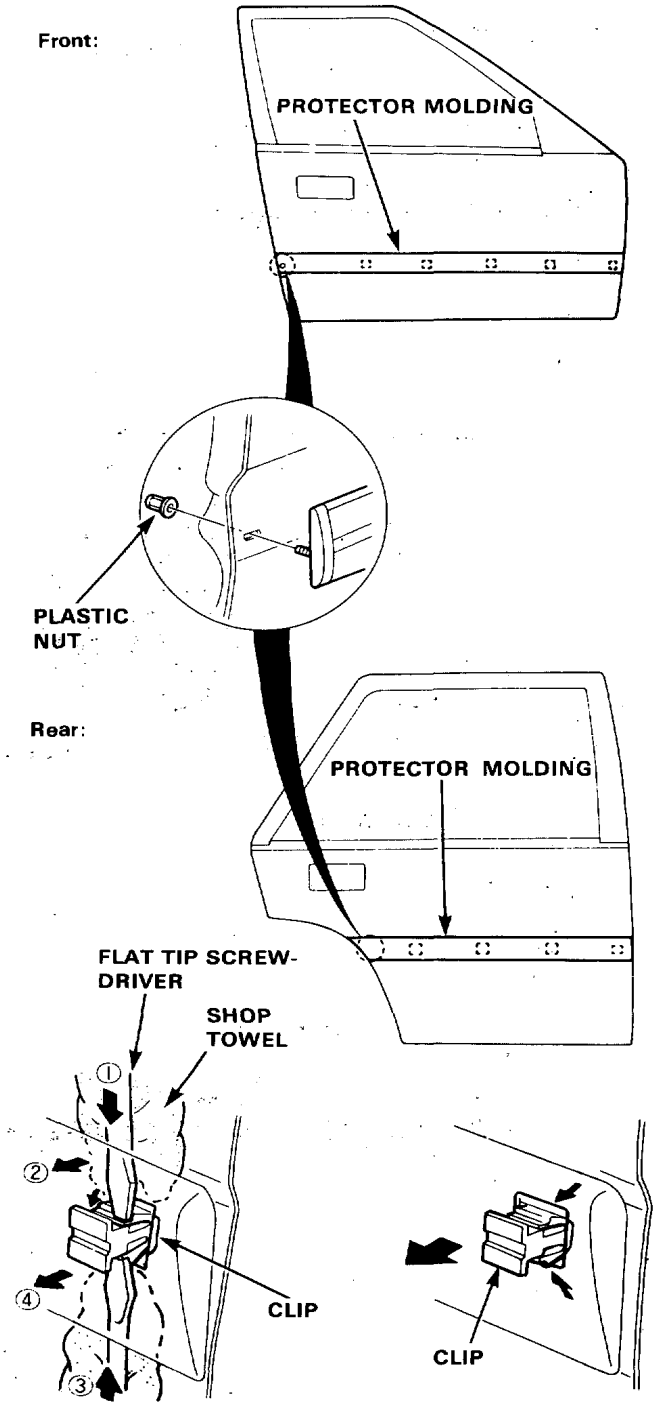
Molding Replacement (cont'd)

Door Protector Molding:

4. Remove the door protector molding by removing the nut and detach the clips from the inside, or outside.

⬚ : Clip locations.

Front:

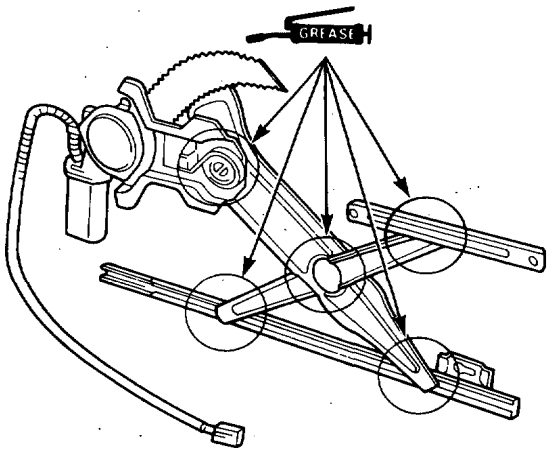


5. Set the clips on to the moldings and protectors, then attaching the moldings and protectors.

Assembly

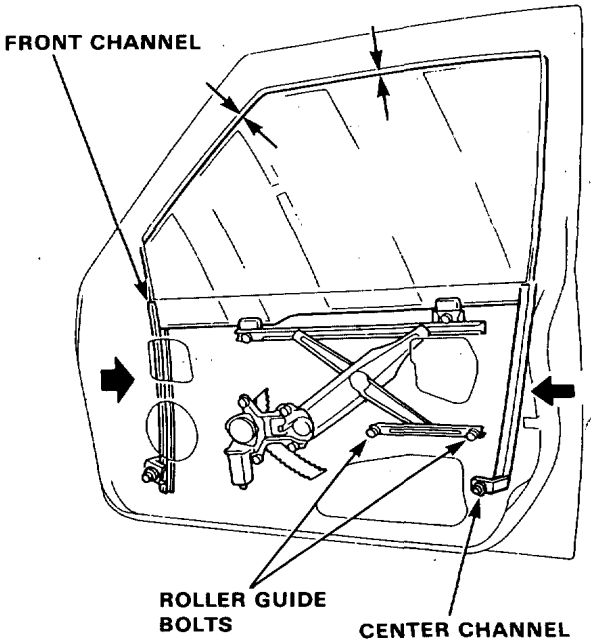
Assemble the door in the reverse order of disassembly, and also:

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. Lower the window until there is a small gap between the door glass and the glass run channel.
4. Loosen the roller guide bolts and adjust the window glass so it parallel with the glass run channel.

Front:



Downloaded from www.Manualslib.com manuals search engine

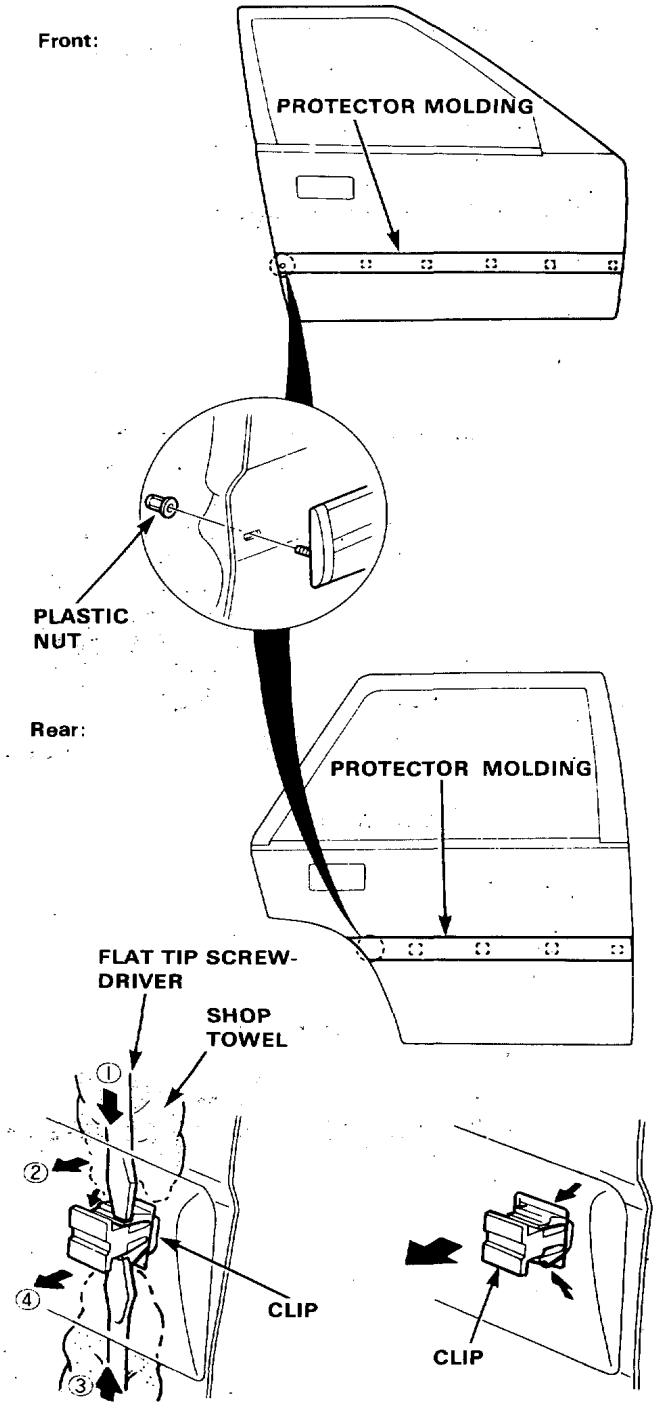
Molding Replacement (cont'd)

Door Protector Molding:

4. Remove the door protector molding by removing the nut and detach the clips from the inside, or outside.

⬚ : Clip locations.

Front:

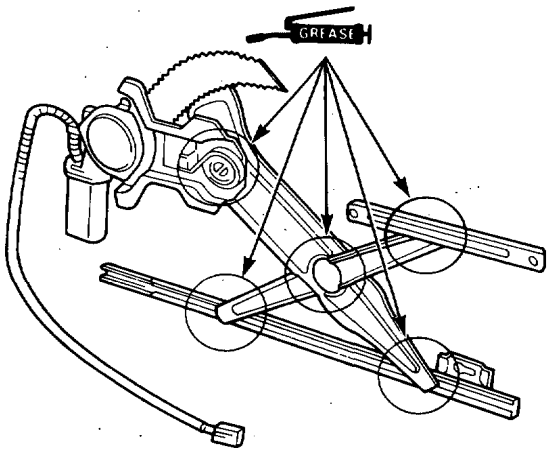


5. Set the clips on to the moldings and protectors, then attaching the moldings and protectors.

Assembly

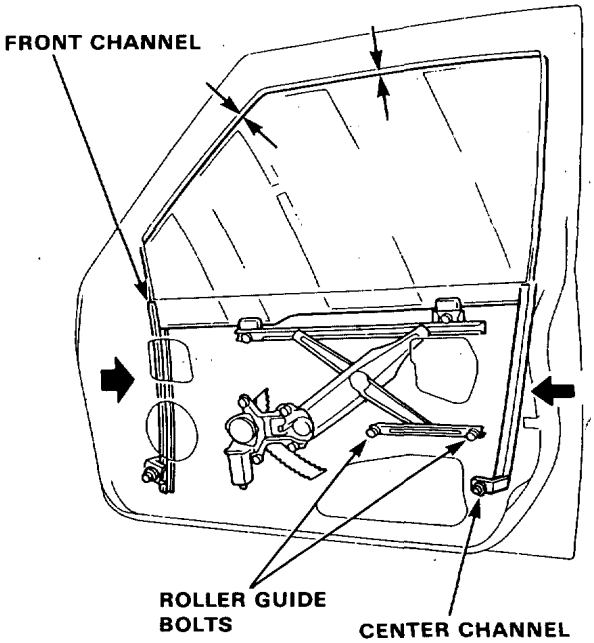
Assemble the door in the reverse order of disassembly, and also:

1. Grease all the sliding surfaces of the window regulator where shown.



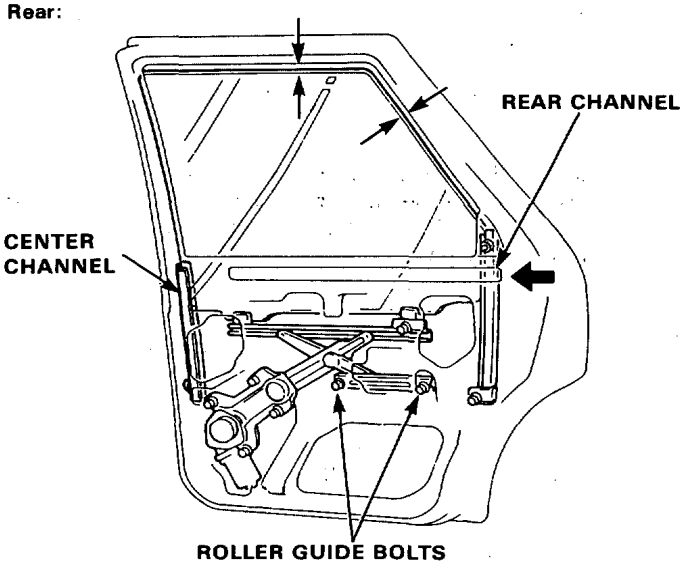
2. To adjust window fit in the door, raise the window as far up as possible and hold it against the door sash. Then, tighten the roller guide bolts.
3. Lower the window until there is a small gap between the door glass and the glass run channel.
4. Loosen the roller guide bolts and adjust the window glass so it parallel with the glass run channel.

Front:



Downloaded from www.Manualslib.com manuals search engine

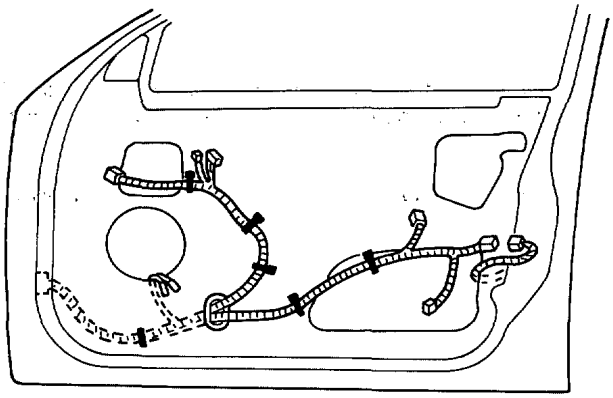
Rear:



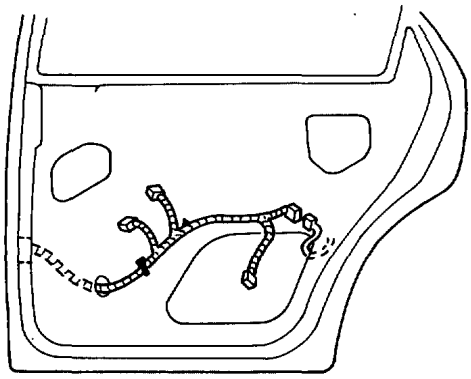
NOTE: Make sure the glass moves smothly.

5. Raise the door glass fully and check gap.
6. Fix the wire harness correctly on the door.

Front:



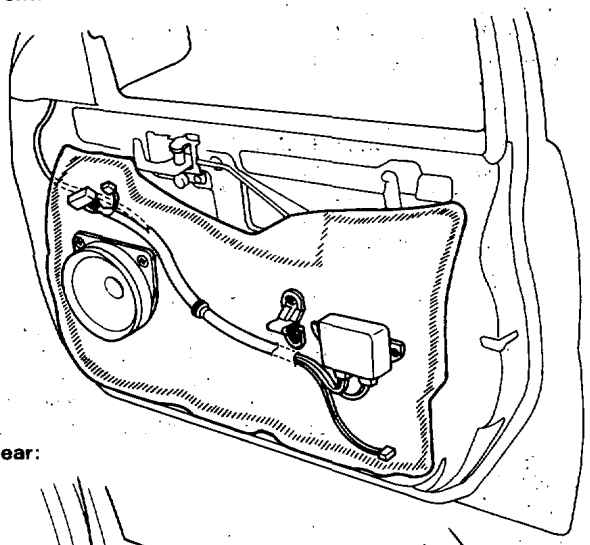
Rear:



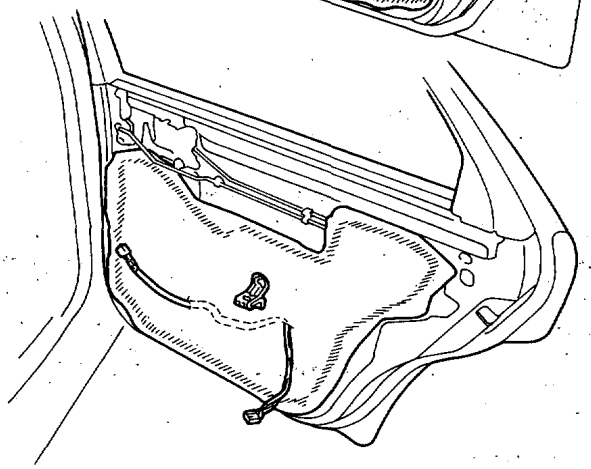
7. When reinstalling the plastic cover, apply adhesive along the edge where necessary to maintain a continuous seal and prevent air/water leaks.

NOTE: Repair any torn section of the plastic cover.

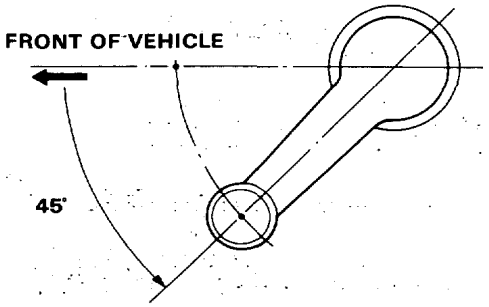
Front:



Rear:



8. Install the regulator handle so it points forward, and down at a 45 degree angle with the window closed.



9. With the door and glass closed fully, check for water and air leaks.

NOTE: Dont use high pressure water.

Downloaded from www.Manualslib.com manuals search engine

Doors

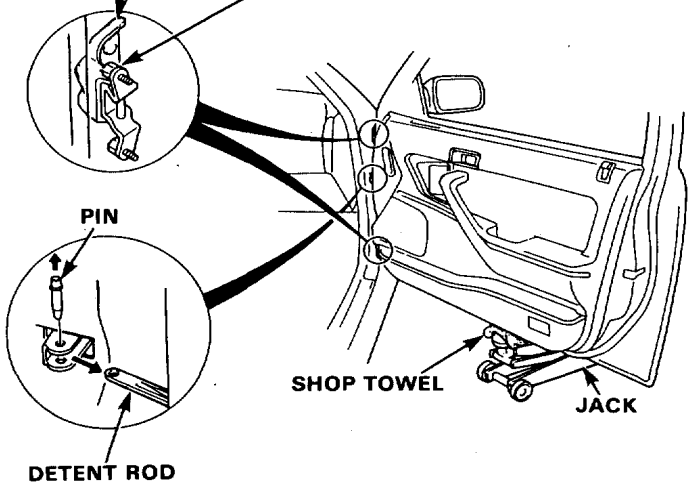
Door Position Adjustment

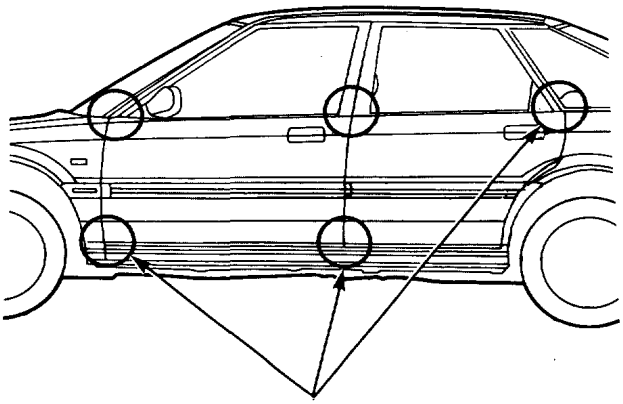
After installing the door, check for a flush fit with the body, then check for equal gap between the front and rear, and top and bottom door edges and the body.
The door and body edges should also be parallel. Adjust at the hinges as shown.

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.

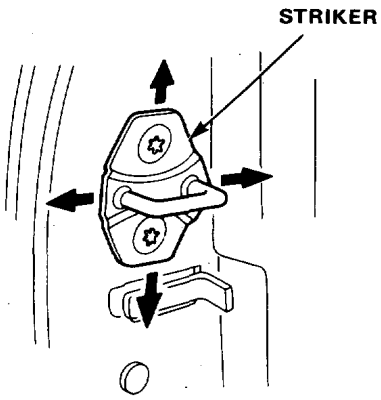
NOTE: Check for water and air leaks.

Door Striker Adjustment

Make sure the door latches securely without slamming. If it needs adjustment:

1. Draw a line aroung 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.

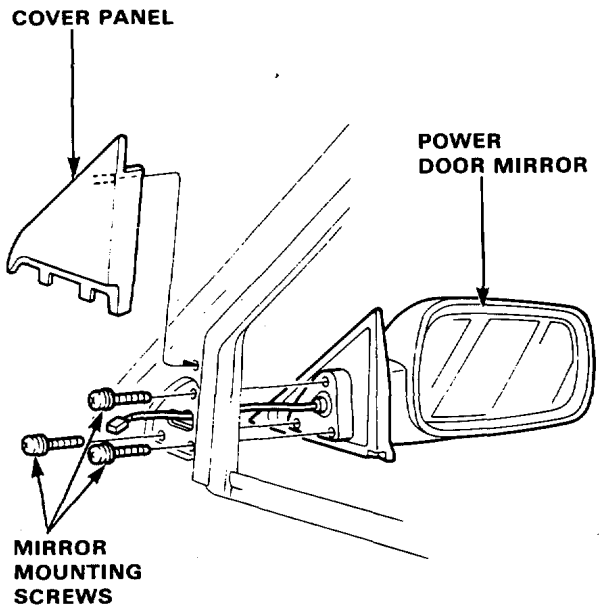
3. If the door latches properly, tighten the screws and recheck.

Downloaded from www.Manualslib.com manuals search engine

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.

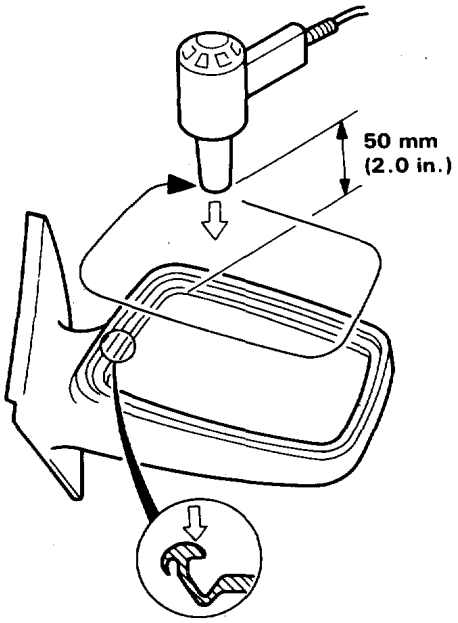


4. Install the door mirror in the reverse order of removal.
5. With the door and door glass closed fully, check for water and air leaks.

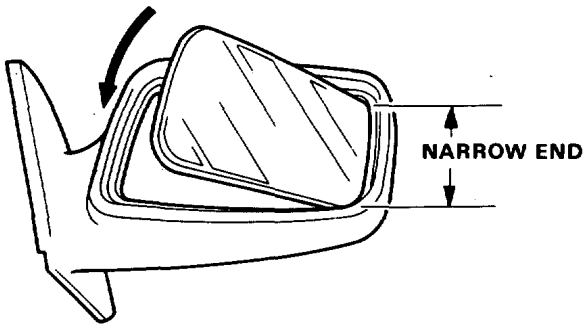
   NOTE: Do not use high pressure water.

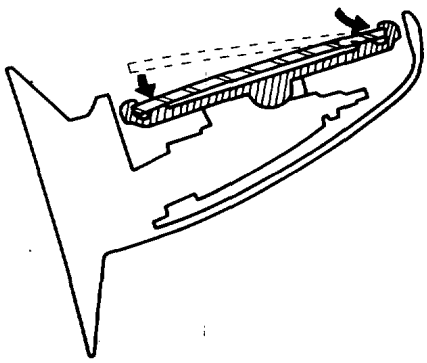
Mirror Glass Replacement

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.



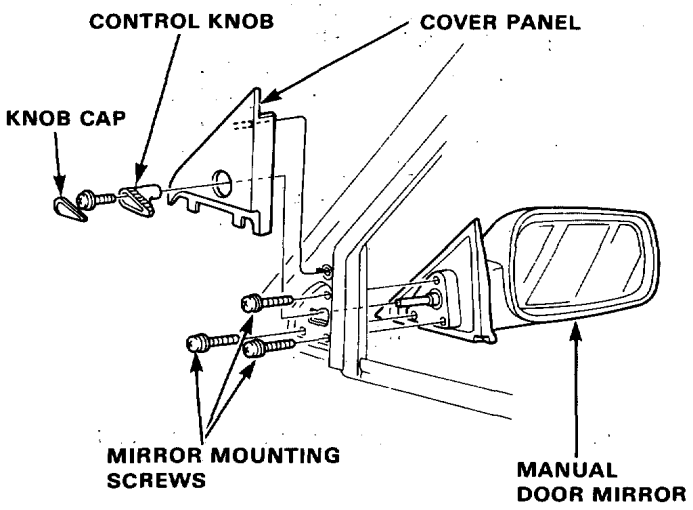


Downloaded from www.Manualslib.com manuals search engine

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.

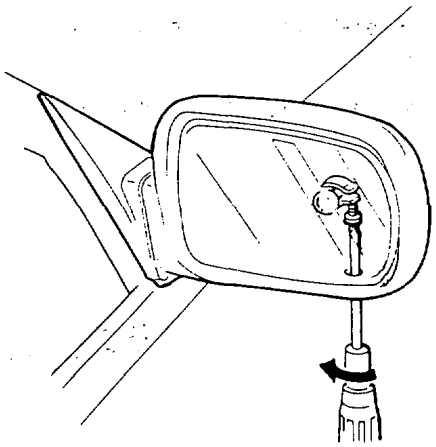


4. Install the door mirror in the reverse order of removal.
5. With the door and door glass closed fully, check for water and air leaks.

   NOTE: Do not use high pressure water.

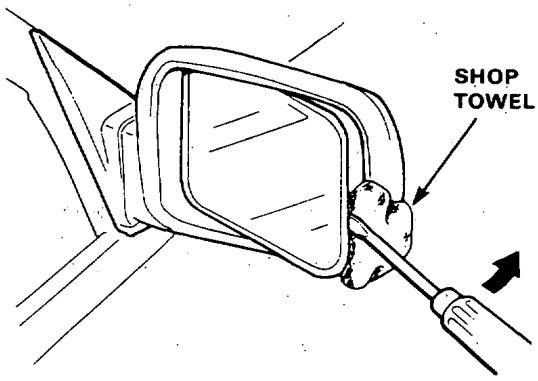
Mirror Glass Replacement

1. Insert a screwdriver in the mirror through the service hole, and loosen the glass retaining screw.

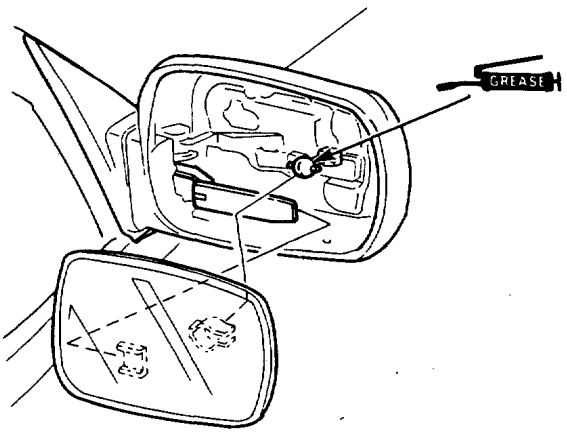


2. Carefully pry out the mirror with a flat tip screwdriver as shown.

   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.

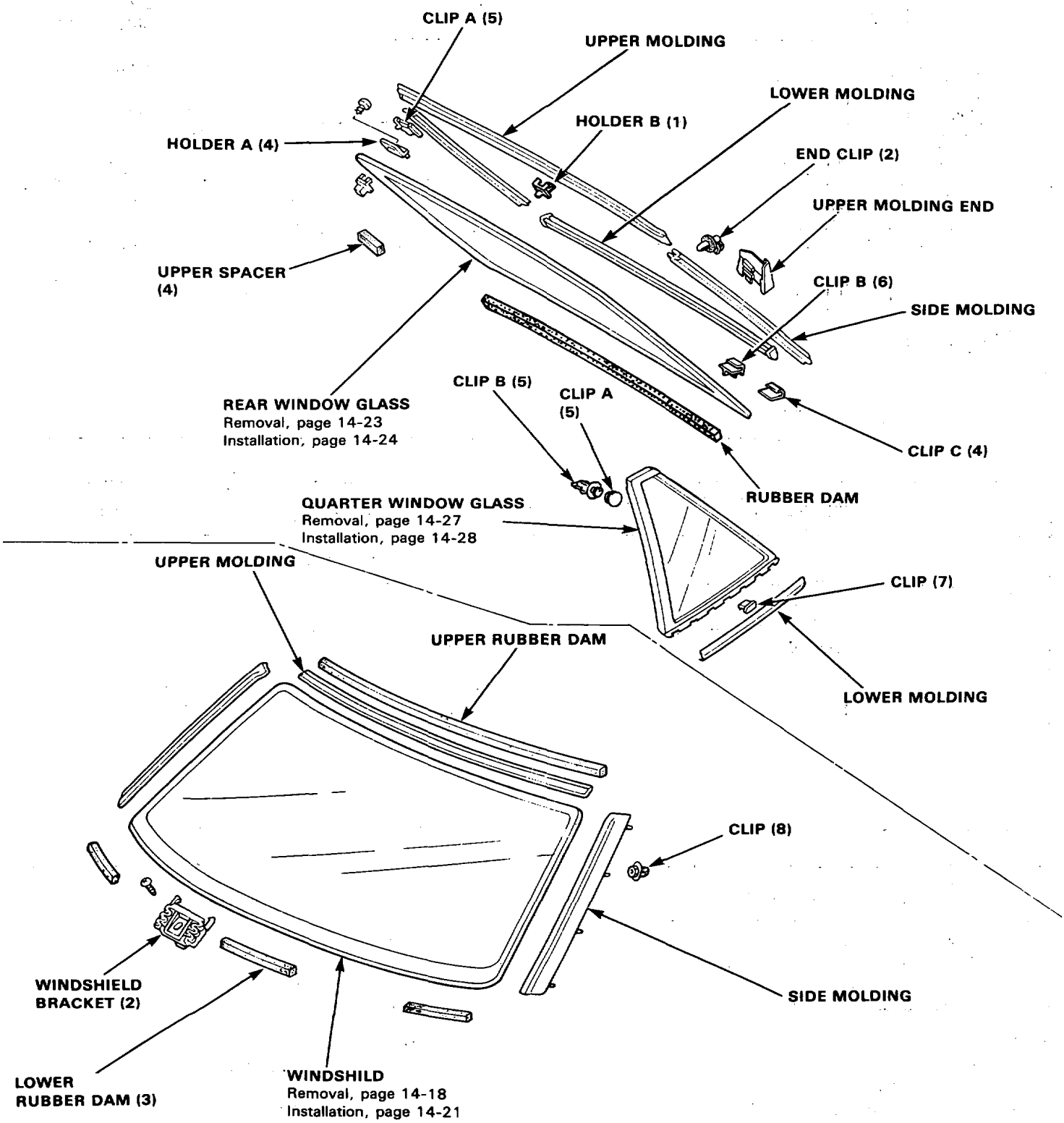


Downloaded from www.Manualslib.com manuals search engine

Windshield, Rear Window Glass, Quarter Window Glass

Index

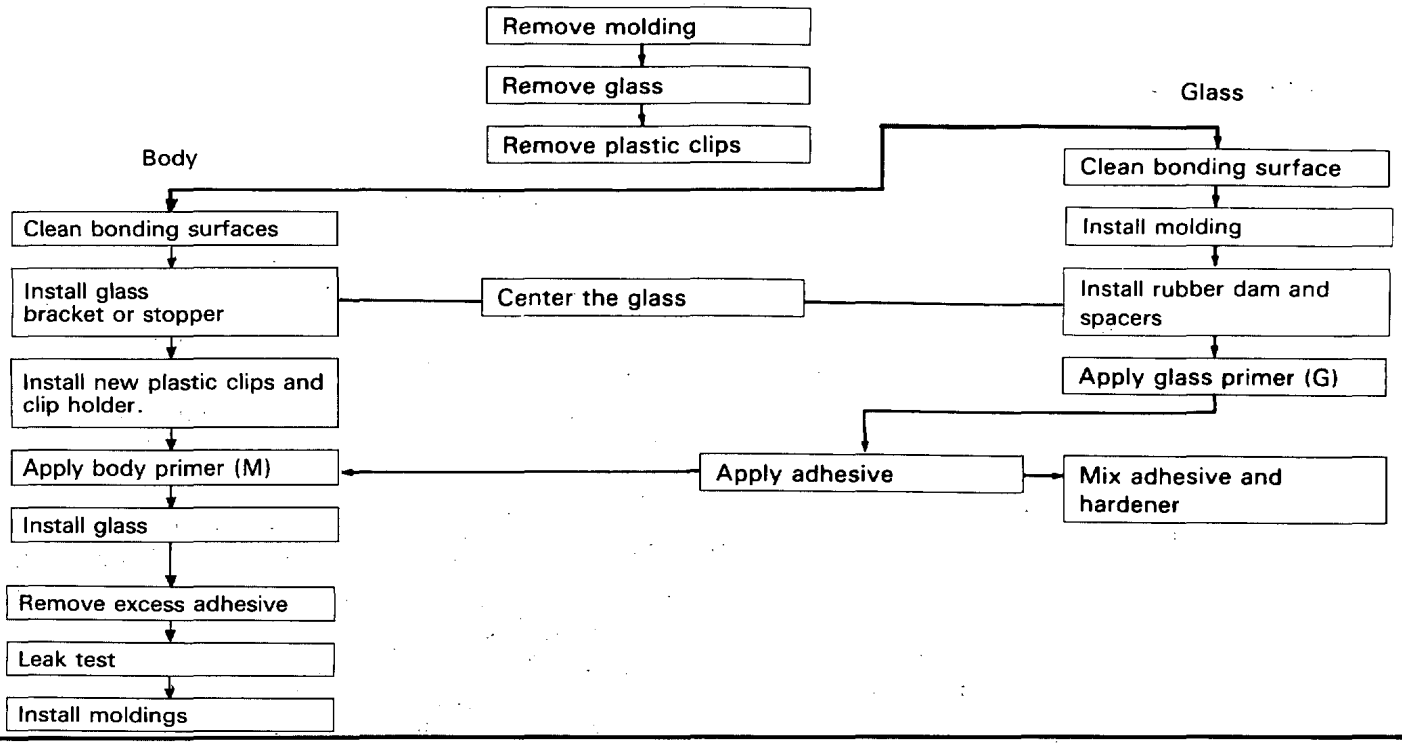
( ): Quantity of part used.



Downloaded from www.Manualslib.com manuals search engine

Windshield, Rear Window Glass, Quarter Window Glass

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

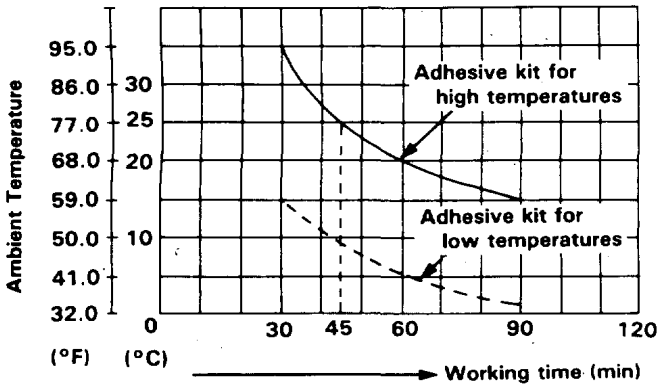
Tool/Material	Remarks
Glass or steel plate	To mix adhesive and hardener on
Putty knife	To mix adhesive and remove excess
Caulking gun	To apply bead of adhesive to windshield
Suction cups	To install windshield
Knife	To scrape bonding surface around window opening
Awl	To make hole through existing adhesive for piano wire
Two wood sticks	To hold piano wire
Toluene or alcohol	To clean bonding surfaces

Downloaded from www.Manualslib.com manuals search engine

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.



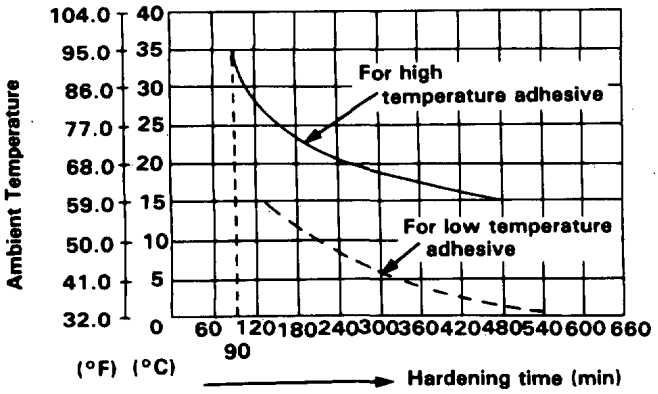
Notes

- 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. Set the mode knob to HEAT/DEF.
3. Set the FRESH/REC lever to REC.
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.

Downloaded from www.Manualslib.com manuals search engine

Windshield

Removal

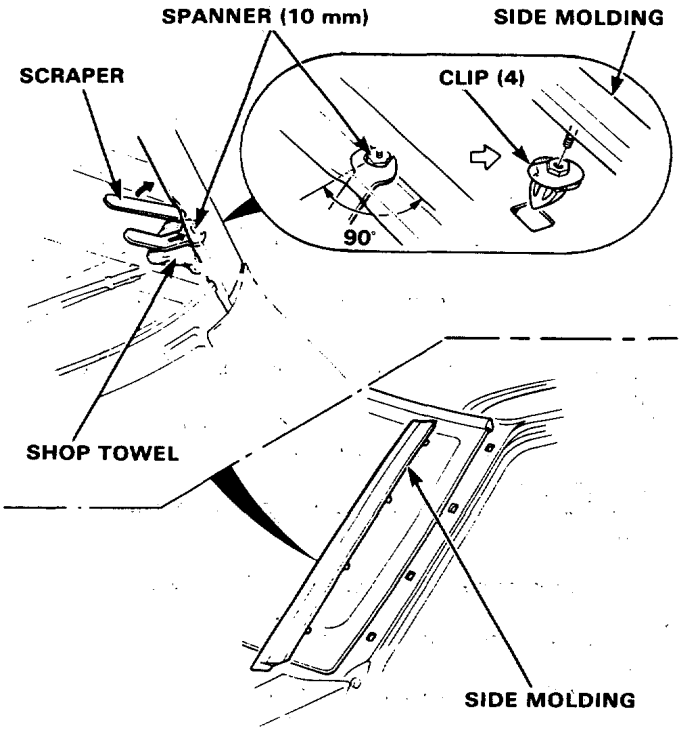
CAUTION:
- **Wear gloves to remove and install the glass.**
- **Use seat covers to avoid damaging surface.**

1. To remove the windshield, first remove the:
   - Front pillar trim (page 14-39)
   - Rearview mirror (page 14-47)
   - Sun visors and holders.
   - Front wiper and air scoop.
   - Front of weatherstrip.

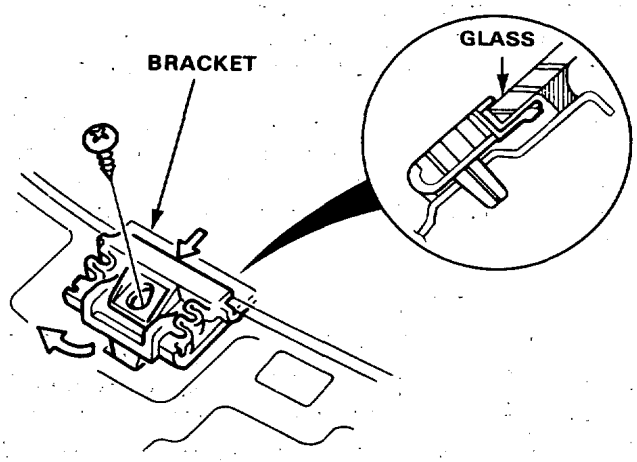
   NOTE: Do not damage the painted surface.

2. Pry out the side molding with a scraper.

3. Remove the clips by turning it 90° with a thin spanner, starting at the under side.



4. Remove the screws, then remove the right and left glass brackets.

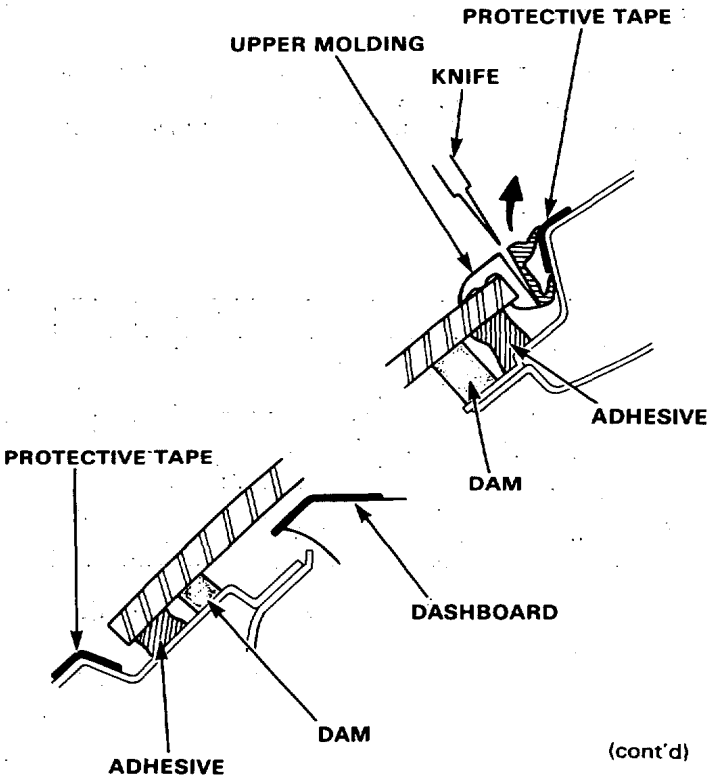


5. Lower the front of the headliner (page 14-40).

   CAUTION: Take care not to bend the headliner excessively.

6. Cut the end of upper molding.

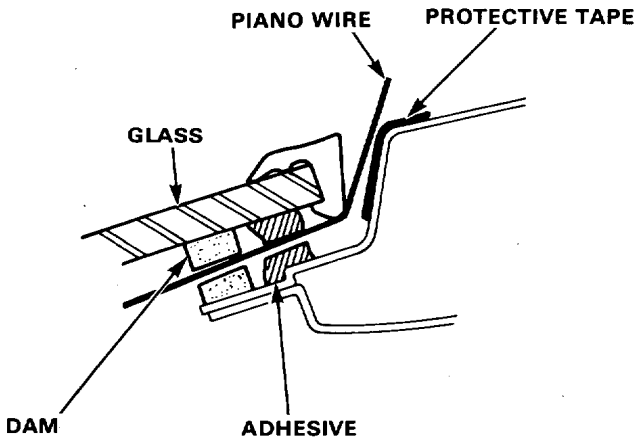
7. Apply protective tape along the edge of the dashboard and body next to the glass as shown.



(cont'd)

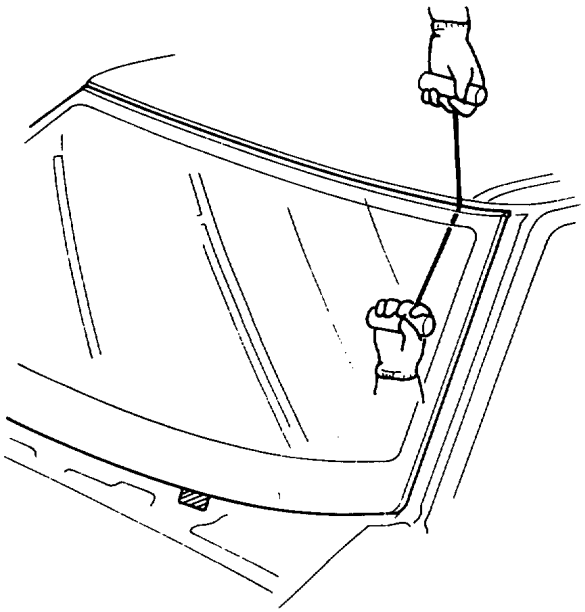
Downloaded from www.Manualslib.com manuals search engine

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 trough 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 molding and the dam.

Installation

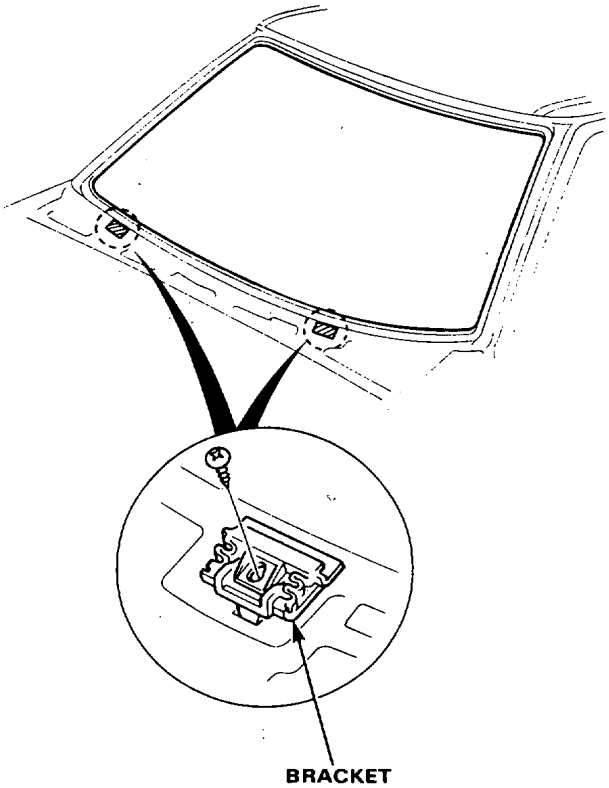
1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

   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 damer 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.



(cont'd)

Downloaded from www.Manualslib.com manuals search engine

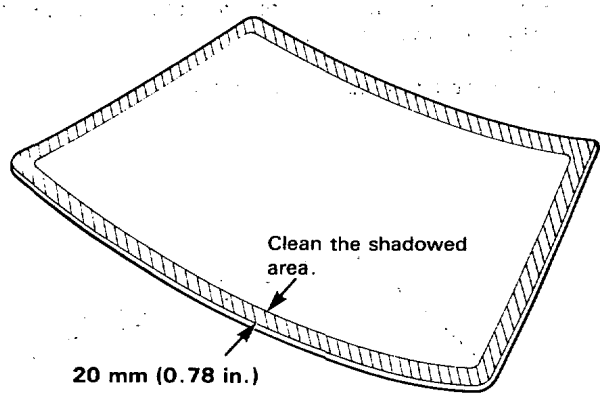
Windshield

Removal (cont'd)

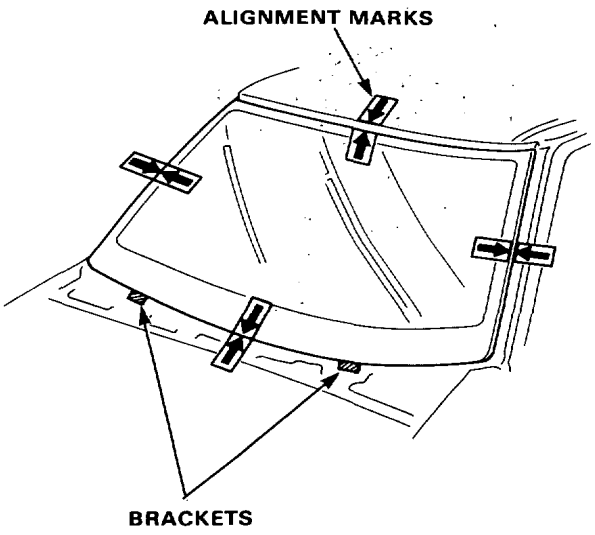
4. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

   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.

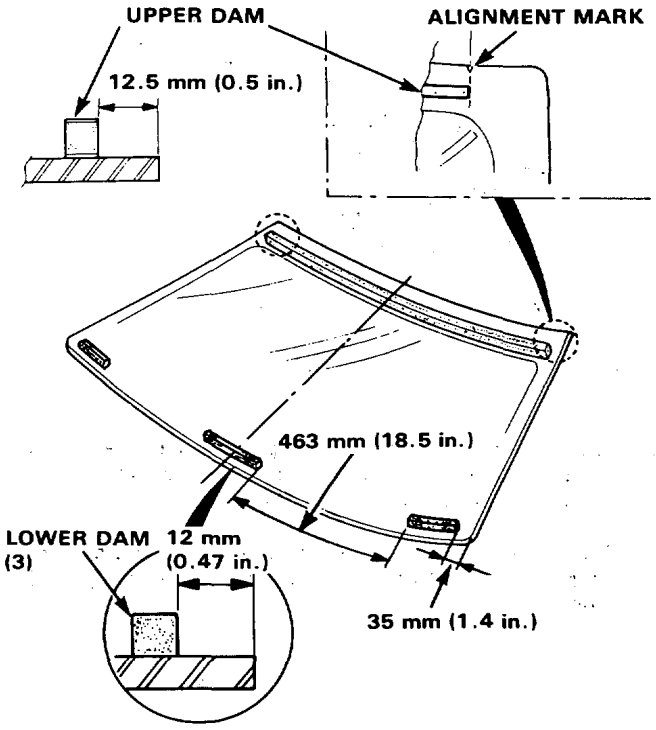


5. Set the glass upright on the spacers, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.

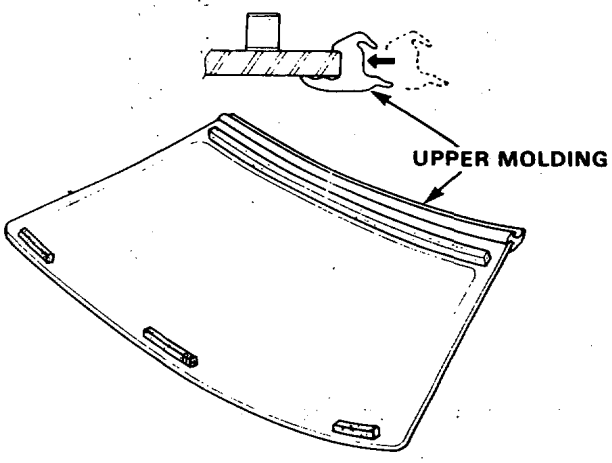


6. Center and glue the rubber dam to the inside face of the glass as shown, to contain the adhesive during installation.

   NOTE: Be careful not to touch the glass where adhesive will be applied.



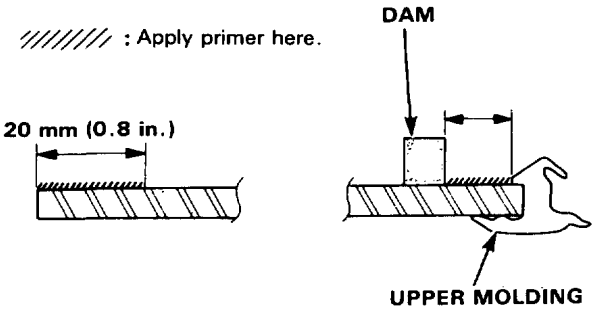
7. Apply the upper molding to the glass as shown.



Downloaded from www.Manualslib.com manuals search engine

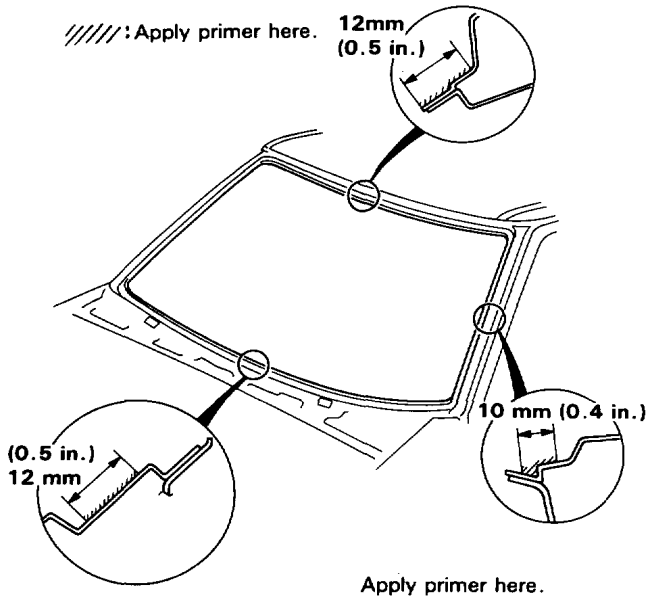
8. With a sponge, apply a light coat of glass primer around the edge of the glass, then lightly wipe it off with gauze or cheesecloth.

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.

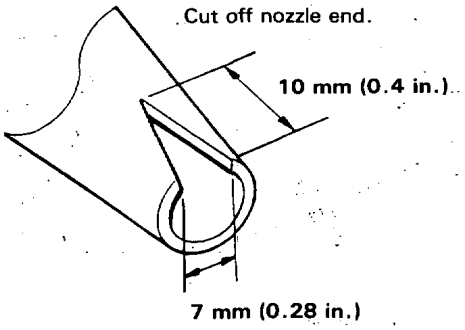
NOTE:
- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.
- Mask off the dashboard before painting the flange.



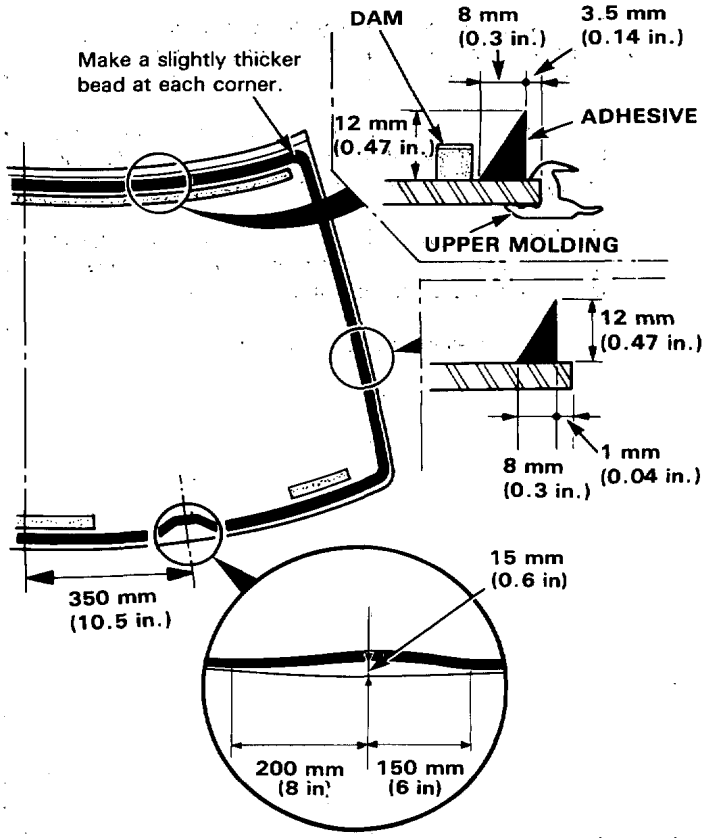
10. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

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.



(cont'd)

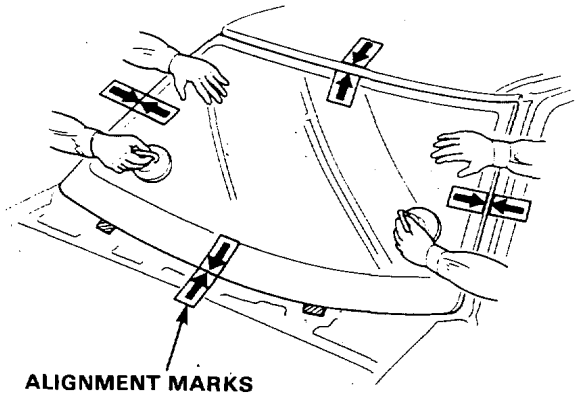
Downloaded from www.Manualslib.com manuals search engine

Windshield

Installation (cont'd)

13. Use suction cups to hold the glass over the opening, align it with the marks made in step 5 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. Install the front side moldings.

15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a soft 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.

Downloaded from www.Manualslib.com manuals search engine

Rear Window Glass

Removal

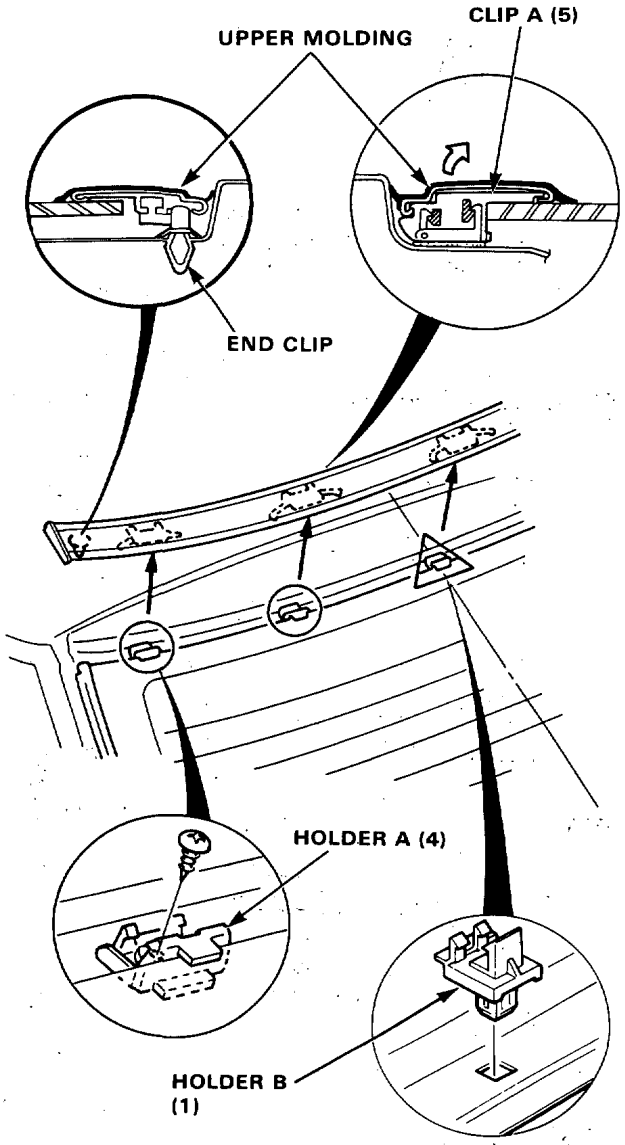
CAUTION:
- **Wear gloves to remove and install the glass.**
- **Do not damage the defroster grid lines.**
- **Use seat covers to avoid damaging surface.**

1. To remove the rear window glass, first remove the:
   - Tailgate trim panel (page 14-56).
   - Rear wiper (See section 16).

2. Disconnect the defroster leads, and remove their holders.

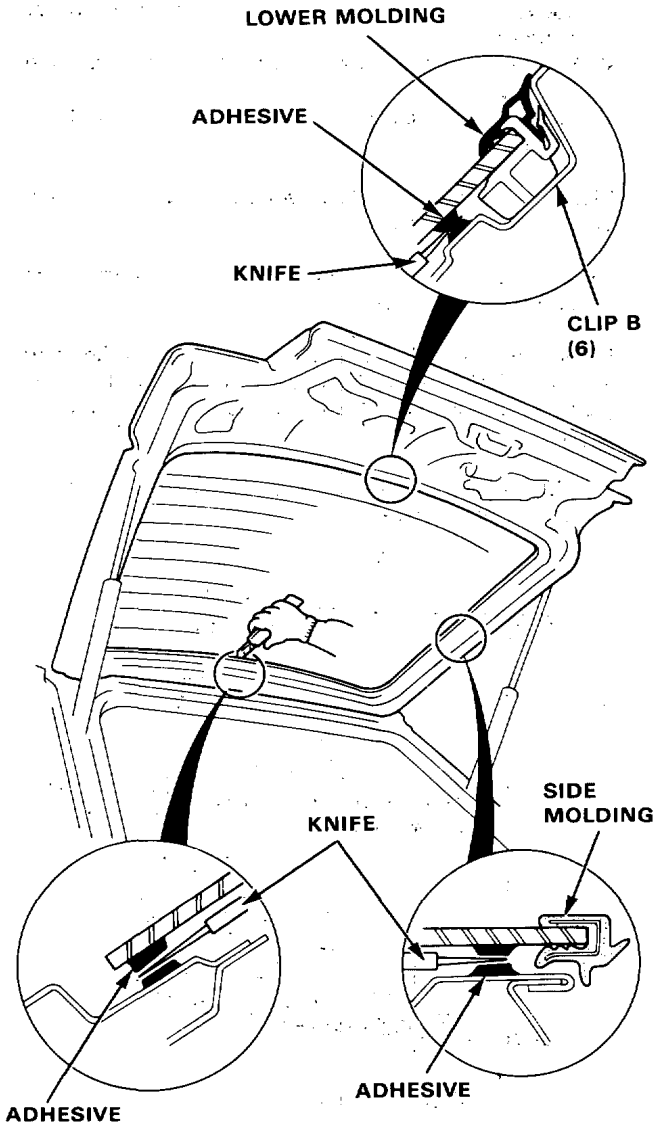
   NOTE: Take care not scratch or score the glass with the cutter blade.

3. Detach the clips and remove the upper molding.



4. Remove the screw, then remove the holder A.

5. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area.



6. If the glass is to be reinstalled, remove the side moldings and lower molding.

Downloaded from www.Manualslib.com manuals search engine

Rear Window 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.

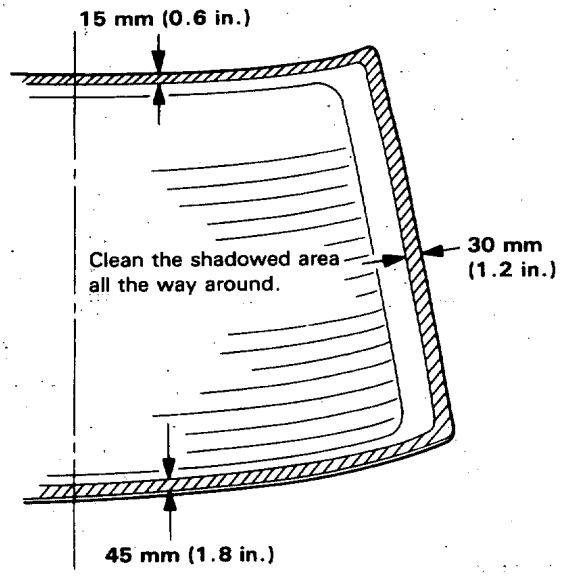
   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

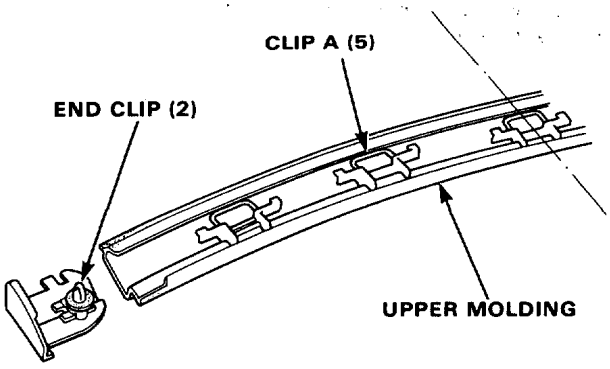
   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

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.

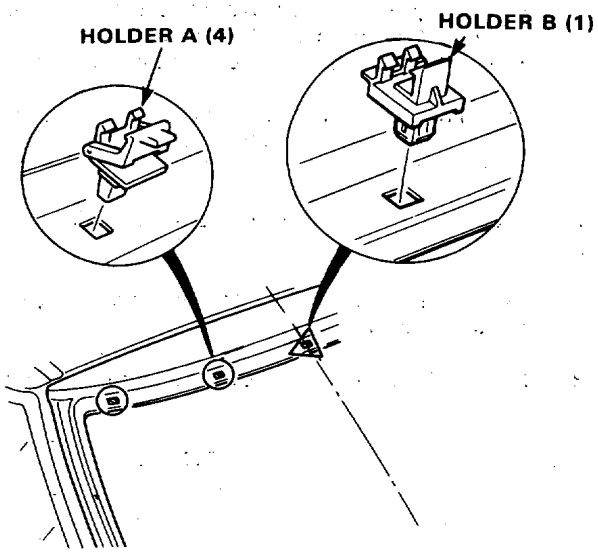
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.



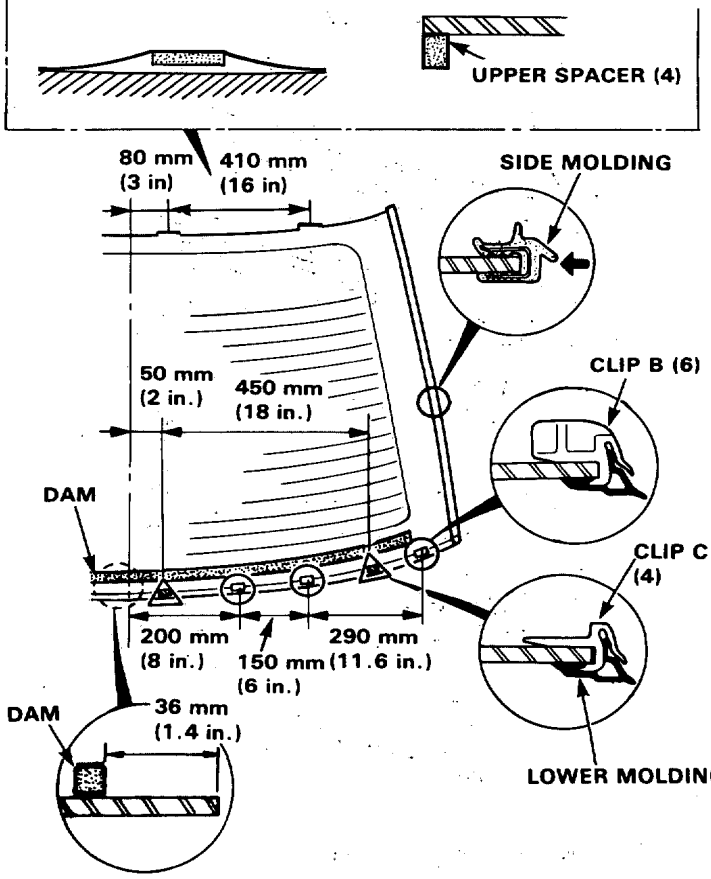
4. Attach the clips to the upper molding as shown.



5. Install the holders to the tailgate.

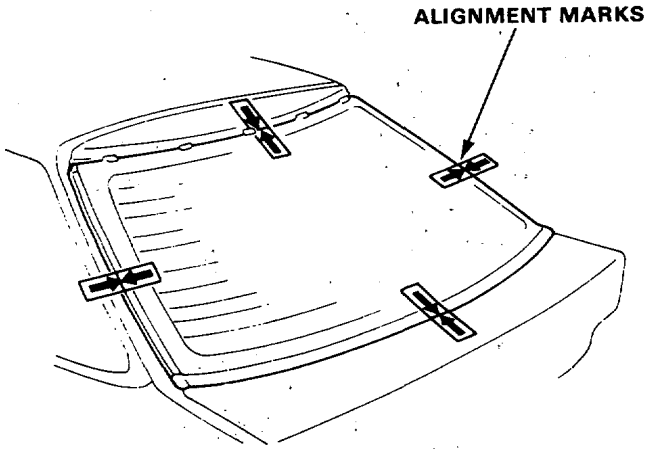


6. Center and glue the rubber dam and upper spacers to the inside face of the glass as shown, to contain the adhesive during installation.
   Install the lower and side moldings to the glass as shown.



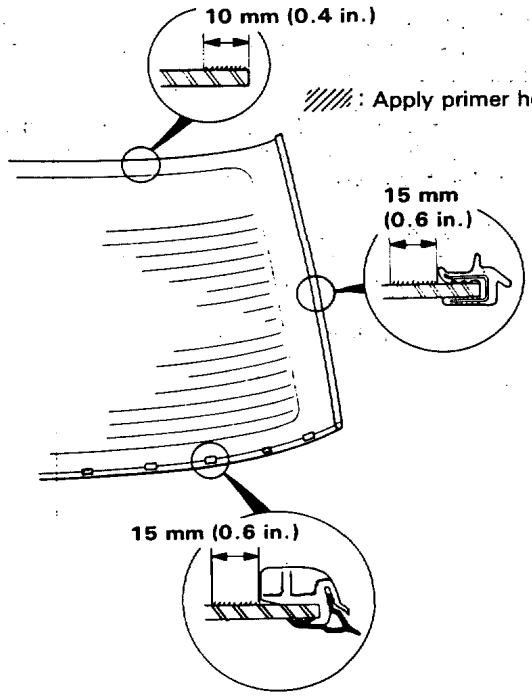
Downloaded from www.Manualslib.com manuals search engine

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.



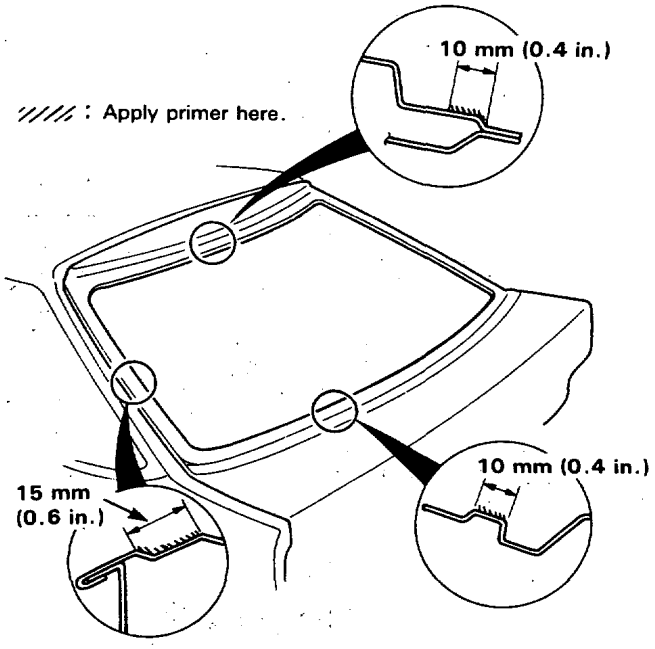
8. With a sponge, apply a light coat of glass primer around the edge of glass as shown, then lightly wipe it off with gauze or cheesecloth.

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.

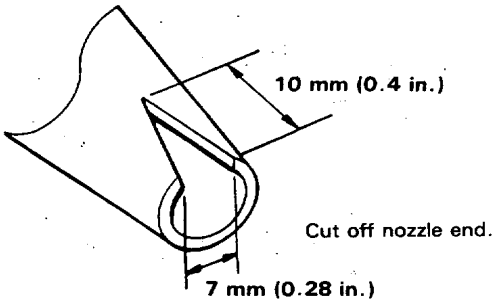
NOTE:
- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.



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.



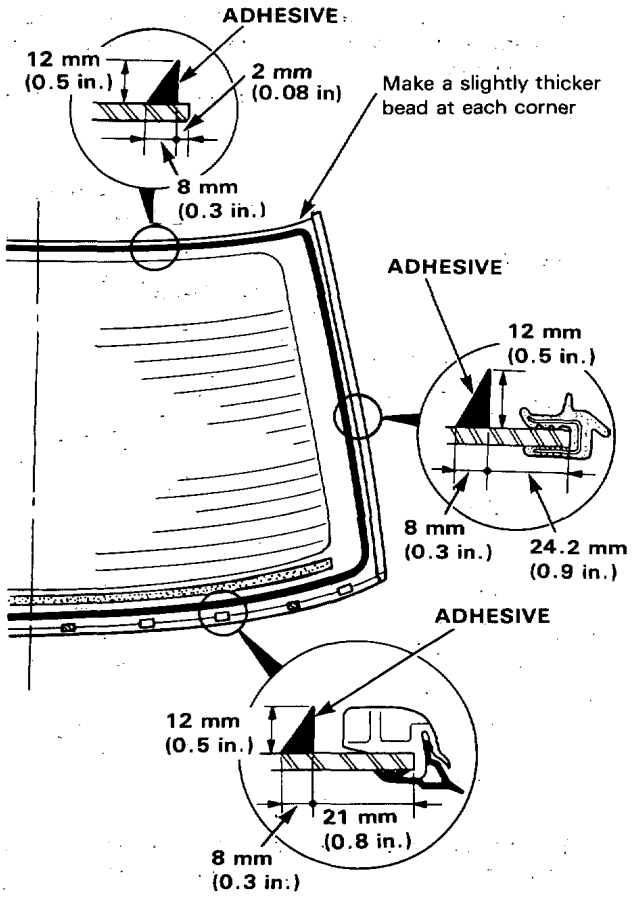
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Rear window Glass

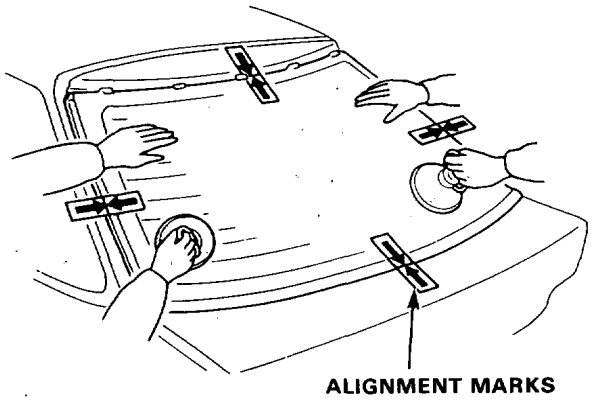
Installation (cont'd)

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.

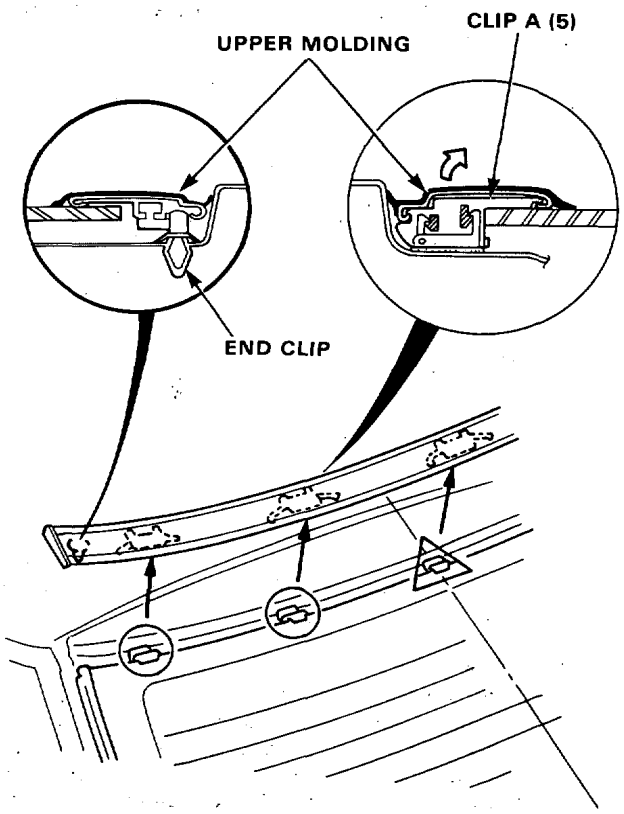


13. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open and close the doors until the adhesive is dry.



14. Install the upeer molding as shown.



15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a soft 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.*

Downloaded from www.Manualslib.com manuals search engine

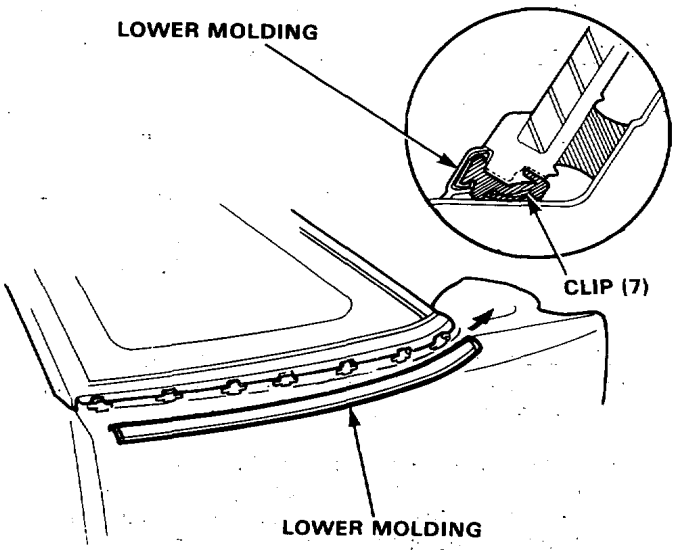
Quarter Window Glass

Removal

CAUTION:
- **Wear gloves to remove and install the glass.**
- **Take care not scratch or score the quarter window moldings.**
- **Use seat covers to avoid damaging surface.**

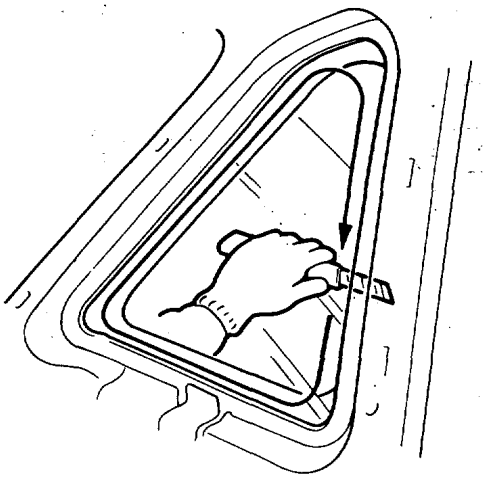
1. Remove the quarter window trim panel (pages 14-39).

2. Remove the quarter lower molding.



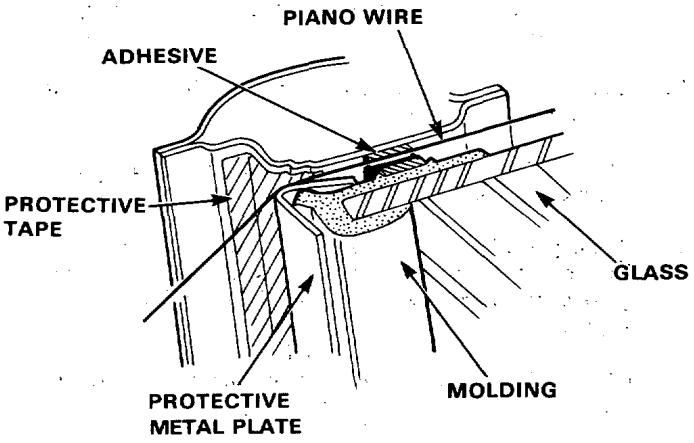
3. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area.

   NOTE: Be careful not to cut the molding.

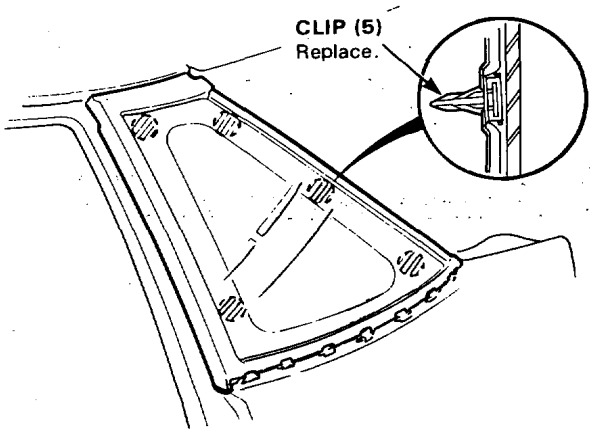


4. Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.

   NOTE: Apply protective metal plate along the edge of the body next to the glass.



5. Use a knife to cut the clips from inside the car.
   NOTE: Be careful not to cut the molding.



6. Carefully take off the clips.

Downloaded from www.Manualslib.com manuals search engine

Quarter Window 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.
   - Mask off surrounding surfaces before applying primer.

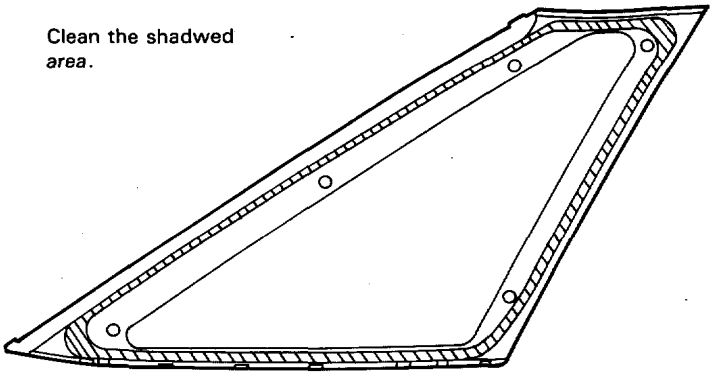
2. Clean the body bonding surface with a sponge dampened in alcohol.

   NOTE After cleaning, keep oil, grease or water from getting on the surface.

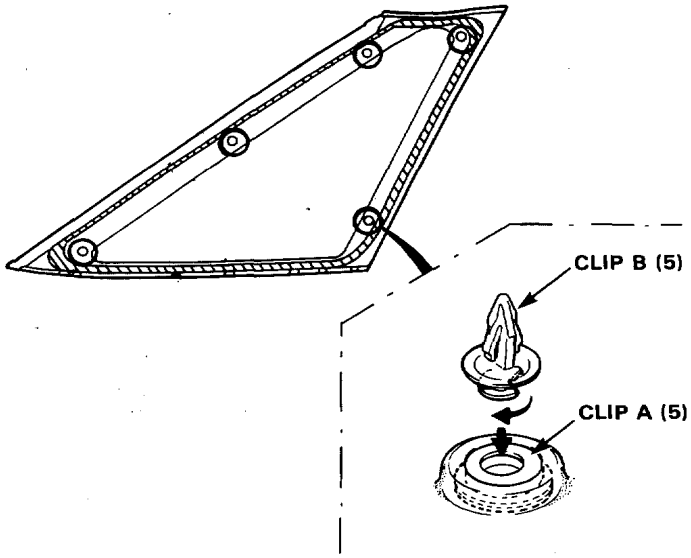
3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

   NOTE: Make sure the bonding surface is kept free of water, oil and grease.

Clean the shadwed *area*.

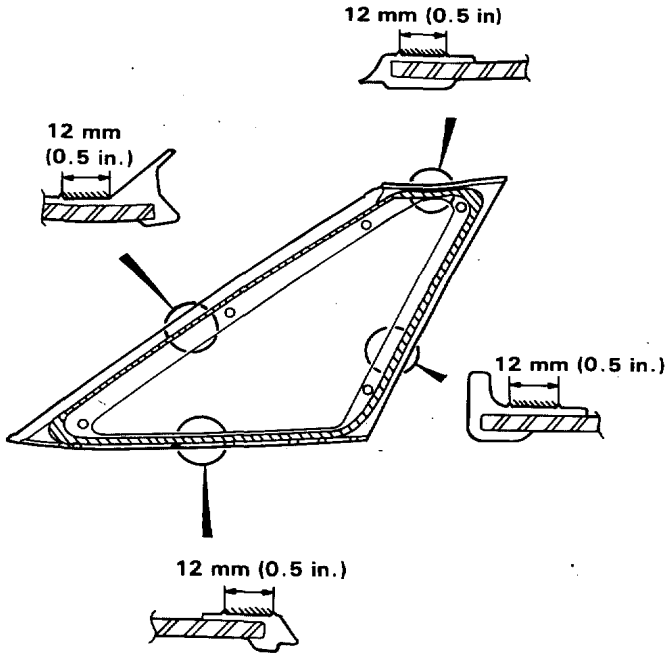


4. Install the clips on the quarter glass as shown.



5. With a sponge, apply a light coat of glass primer around the edge of 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.

: Apply primer here.

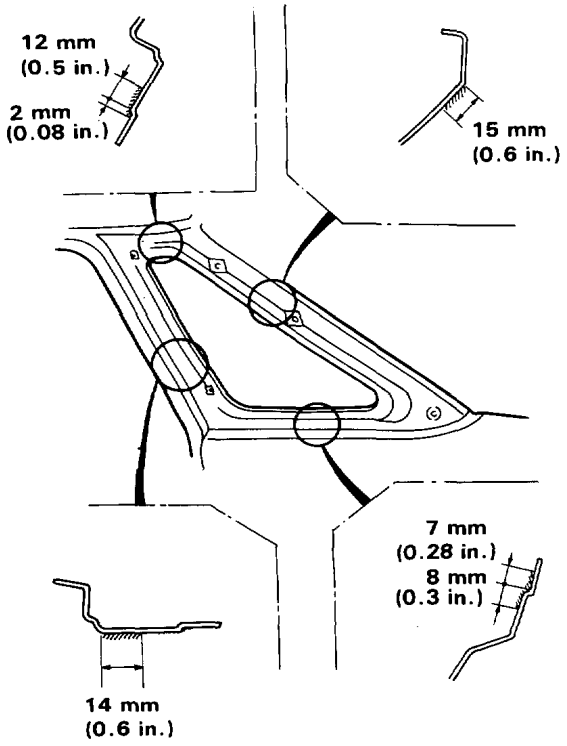


Downloaded from www.Manualslib.com manuals search engine

6. 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.

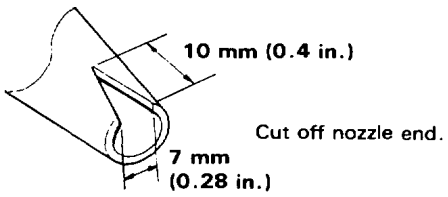
▨ : Apply primer here.



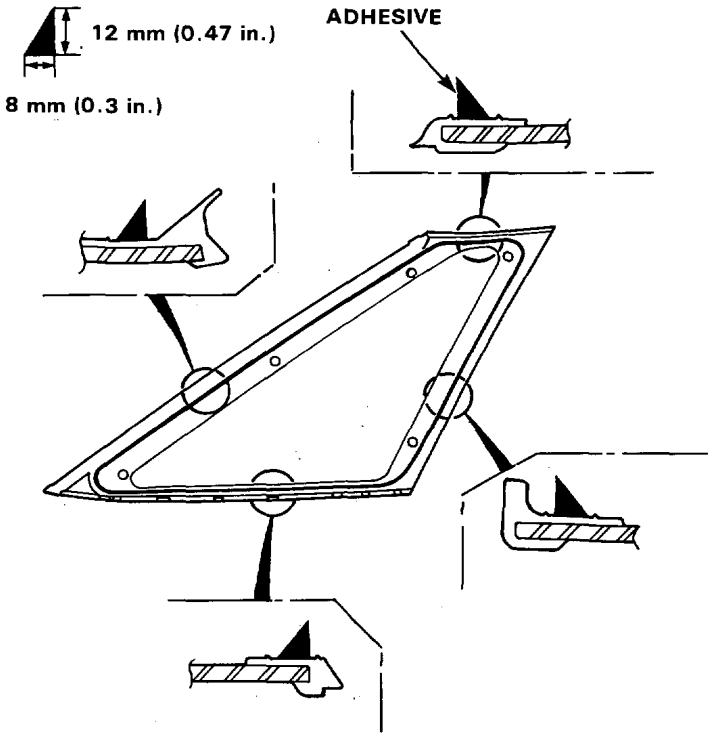
7. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE:
- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

8. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

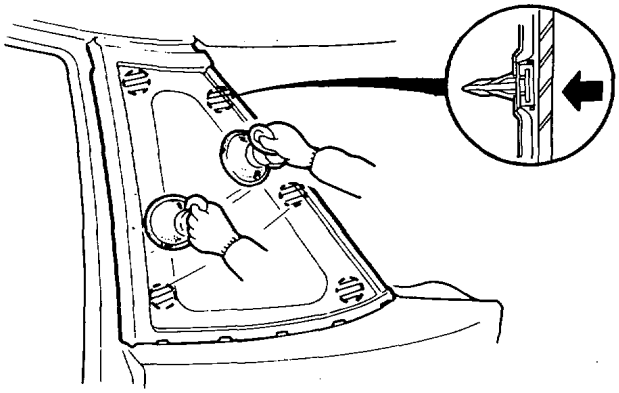


9. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



10. 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 and close the doors until the adhesive is dry.



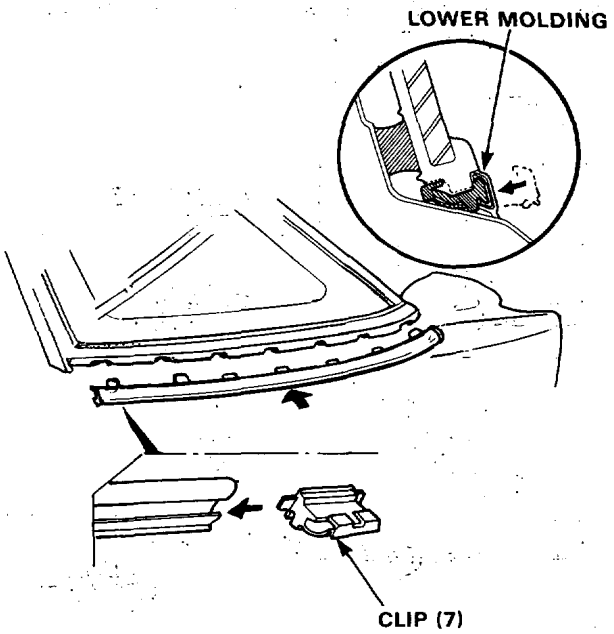
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Quarter Window Glass

Installation (cont'd)

11. Install the quarter lower molding.



12. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

13. 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.

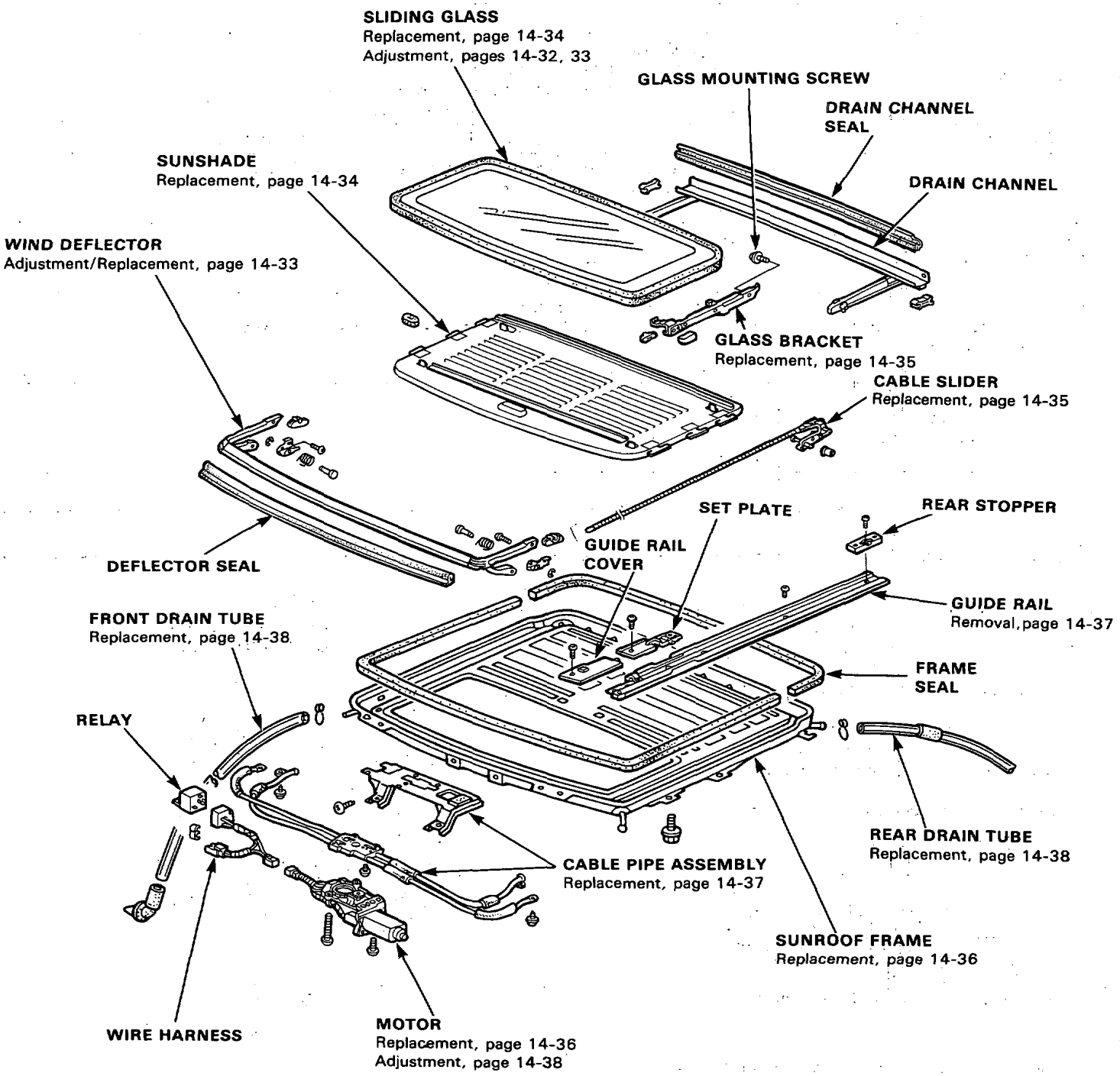
    NOTE: Let the car stand for least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

14. Reassemble all remaining removed parts.

Downloaded from www.Manualslib.com manuals search engine

Sunroof

Index



Downloaded from www.Manualslib.com manuals search engine

Sunroof

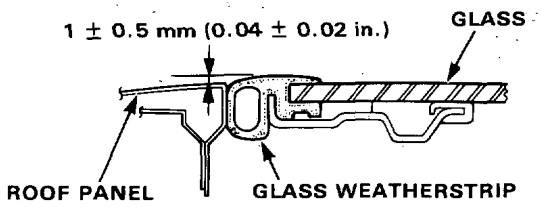
Troubleshooting

Symptom	Probable Cause
Water leak	1. Clogged drain tube. 2. Gap between glass weatherstrip and roof panel. 3. Defective or improperly installed glass weatherstrip. 4. Defective or impropery installed guide rail.
Wind noise	1. Excessive clearance between glass weatherstrip and roof panel.
Deflector noise	1. Improper clearance between deflector seal and roof panel. 2. Insufficient deflector extension. 3. Deformed deflector.
Motor noise	1. Loose motor. 2. Worn gear or bearing. 3. Outer cable deformed.
Sliding glass does not move, bot motor turns	1. Clutch out of adjustment. 2. Foreign matter stuck between guide rail and sliding glass panel. 3. Outer cable loose. 4. Outer cable not attached properly.
Sliding glass does not move and motor does not turn (Sliding glass can be moved with sunroof wrench)	1. Blown fuse. 2. Faulty switch. 3. Battery run down. 4. Defective motor.

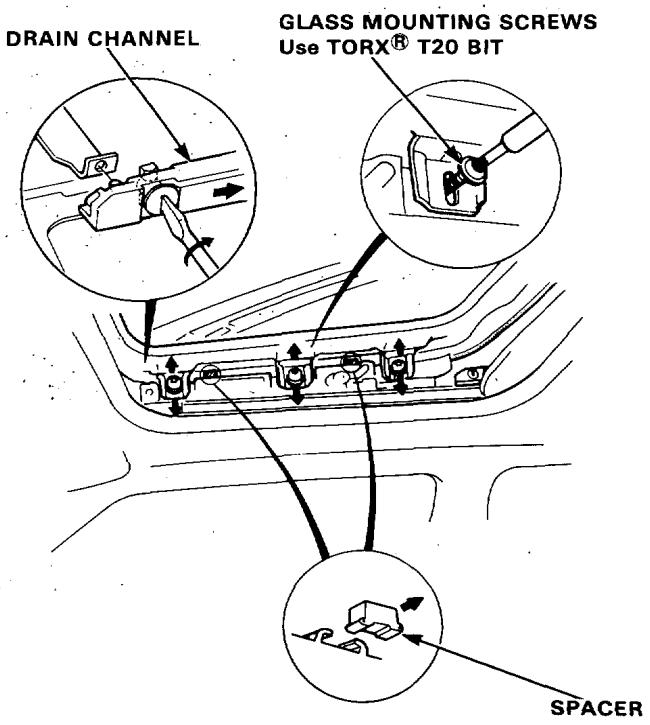
Glass Adjustment

Roof panel should be even with the glass weatherstrip, to within 1 ± 0.5 mm (0.04 ± 0.02 in.) all the way around. If not, slide sunshade back, and:

1. Slide the drain channel to the backward.
2. Loosen the mounting screws and adjust the sliding glass up or down to the gap between the glass weatherstrip and at the roof panel.
3. Repeat on opposite side if necessary.



4. Side-to-side fit of glass weatherstrip can be adjusted by loosen the sunroof frame mounthing bolts and moving the frame right or left and forward or backward by hand (page 14-36).

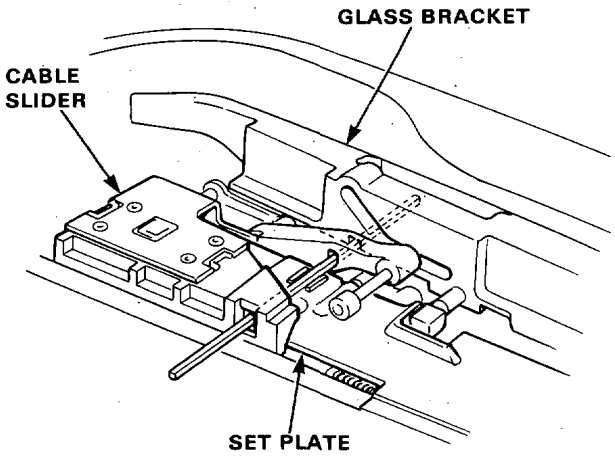


Downloaded from www.Manualslib.com manuals search engine

Closing Fit Adjustment

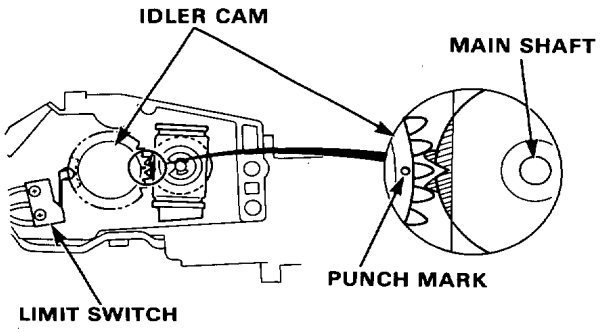
Open the glass about a foot then close it to check where rear edge begins to rise.
If it rises too soon and seats too tightly against the roof panel, or too late and does not seat tightly enough, adjust it.

1. Remove the sliding glass (page 14-34).
2. Remove the sunroof motor (page 14-36).
3. Aligh the fully closed position of the cable slider, set plat and glass bracket by inserting the 3.5~4 mm square rod as shown.



4. Check that the alignment left and right, then install the sunroof motor.

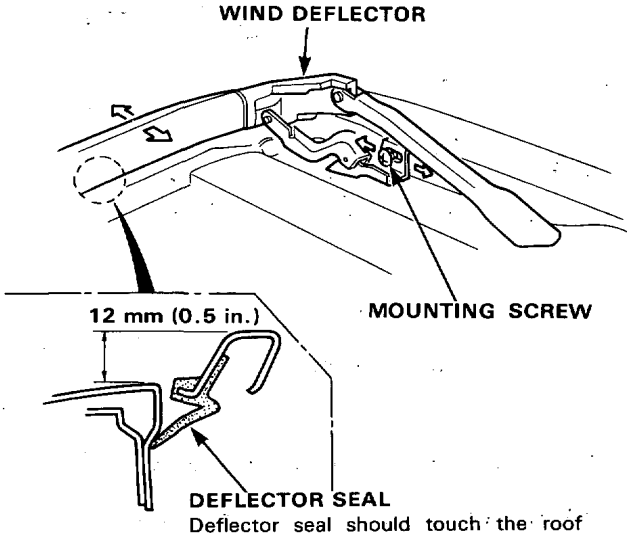
   NOTE: If necessary; check that the closed position of sunroof motor (idler cam) as shown.



Wind Deflector Adjustment and Replacement

NOTE: A gap between deflector seal and roof panel will cause wind noise when driving at high speed with the sunroof open.

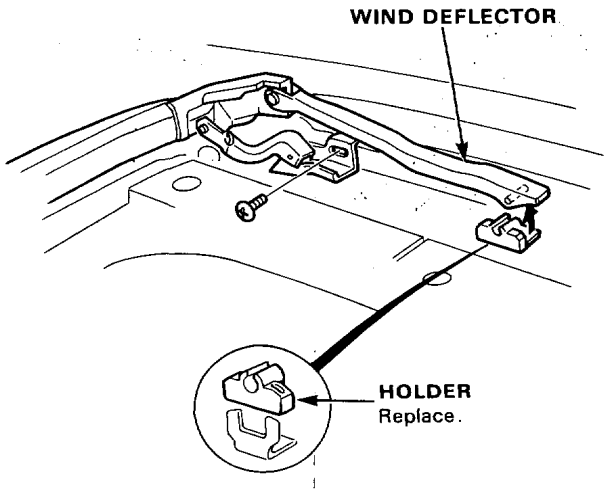
1. Open the sliding glass.
2. Loosen deflector mounting screws.
3. Adjust deflector forward or backward so the edge of its seal touches the roof panel evenly.



Deflector seal should touch the roof panel across entire front edge.

NOTE: The height of the deflector when open can not be adjusted, If damaged or deformed, replace it.

4. If necessary, remove the wind deflector by removing the mounting screws and pry the rear edge of deflector off the holder.



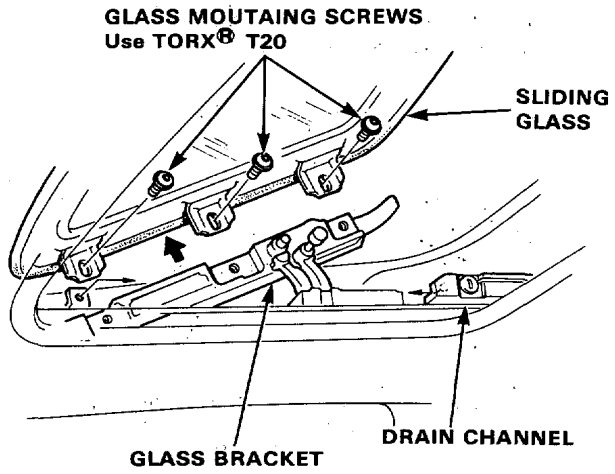
5. Installation is done in the reverse order of removal.

Downloaded from www.Manualslib.com manuals search engine

Sunroof

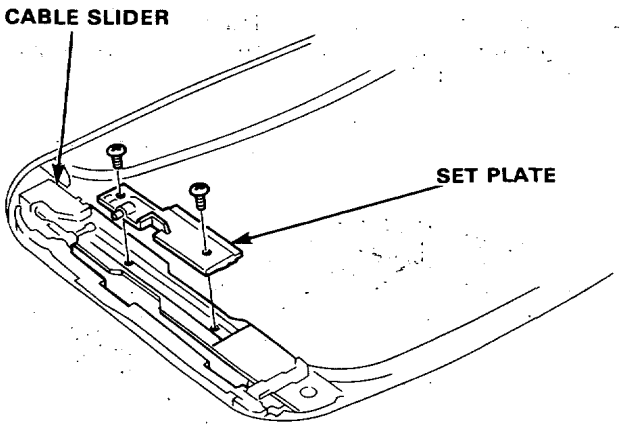
Glass and Sunshade Replacement

1. Tilt-up the sliding glass and open the sunshade.
2. Slide the drain channel to the backward by removing the mounting screws.
3. Remove the glass mounting screws, then lift off the sliding glass from the mounting bracket.

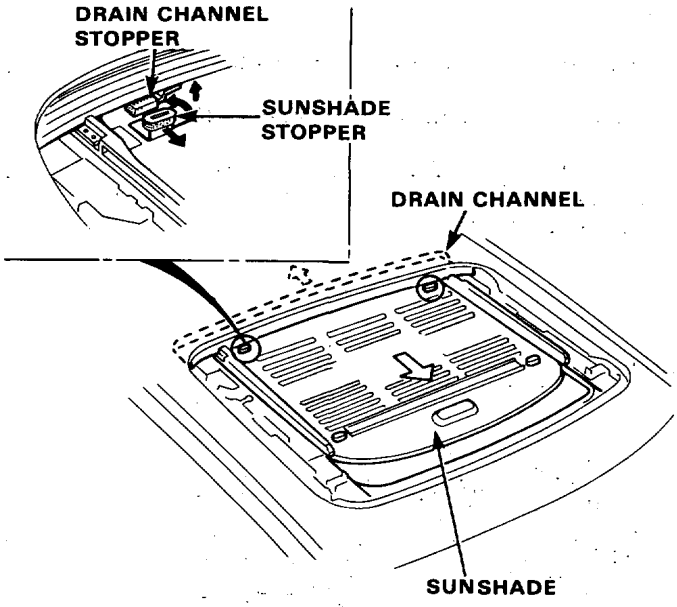


4. Remove the screws, then remove the set plates.

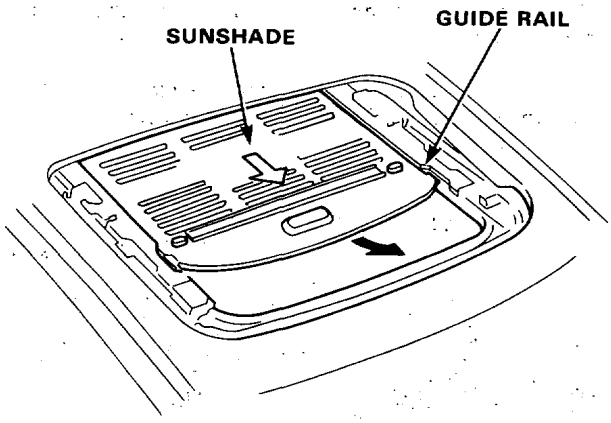
   NOTE: Slide the cable slider to the backward.



5. Slide the sunshade fully to the forward by lifting the drain channel stoppers.



6. Pull out and remove the sunshade from the cut -out of the guide rails.



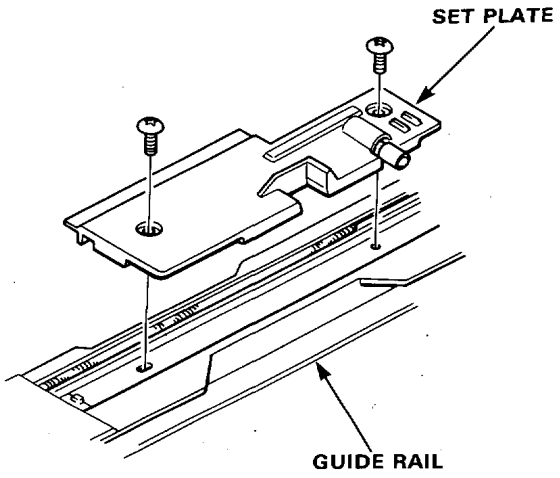
7. To attach, follow the steps described for removal in reverse.

NOTE:
- Check that the sunshade moves smoothly.
- After attachment, check the glass height and alignment.
- Check for water and air leaks.

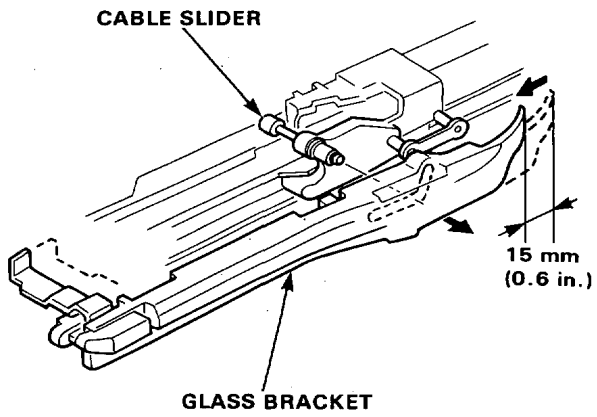
Downloaded from www.Manualslib.com manuals search engine

Glass Bracket and Cable Slider Replacement

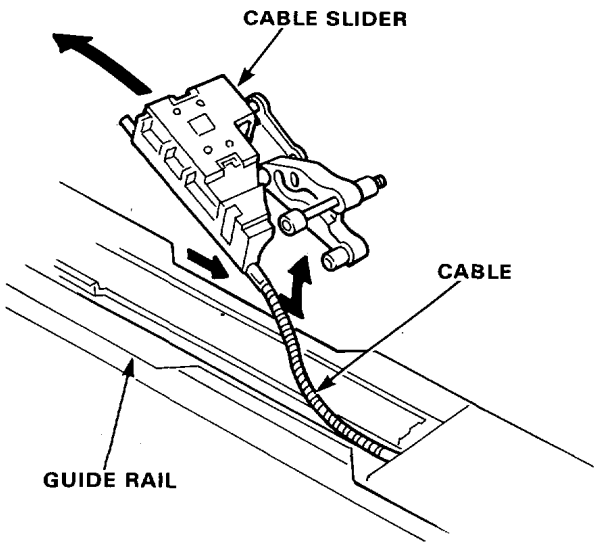
1. Remove the wind deflector (page 14-33).
2. Remove the sliding glass (page 14-34).
3. Pull down the front of headliner.
4. Remove the 3 screws and disconnect the connector, then remove the sunroof motor (page 14-36).
5. Remove the screws, then remove the set plates from the guide rails.



6. Move just the glass bracket backward, then remove the glass brackets from cable sliders as shown below.



7. Lift off the cable sliders from the cut-out of guide rails.
8. Remove the cables from cable pipes.



9. Installation sequence is essentially the reverse order of removal.

NOTE:
- Check the cables for wear or damage.
- Grease all the moving surfaces of the cable sliders and glass brackets.
- Before installing the sunroof motor, check that the cable sliders and glass brackets with the glass tilt-up position.
- Take care not to bend the cable.

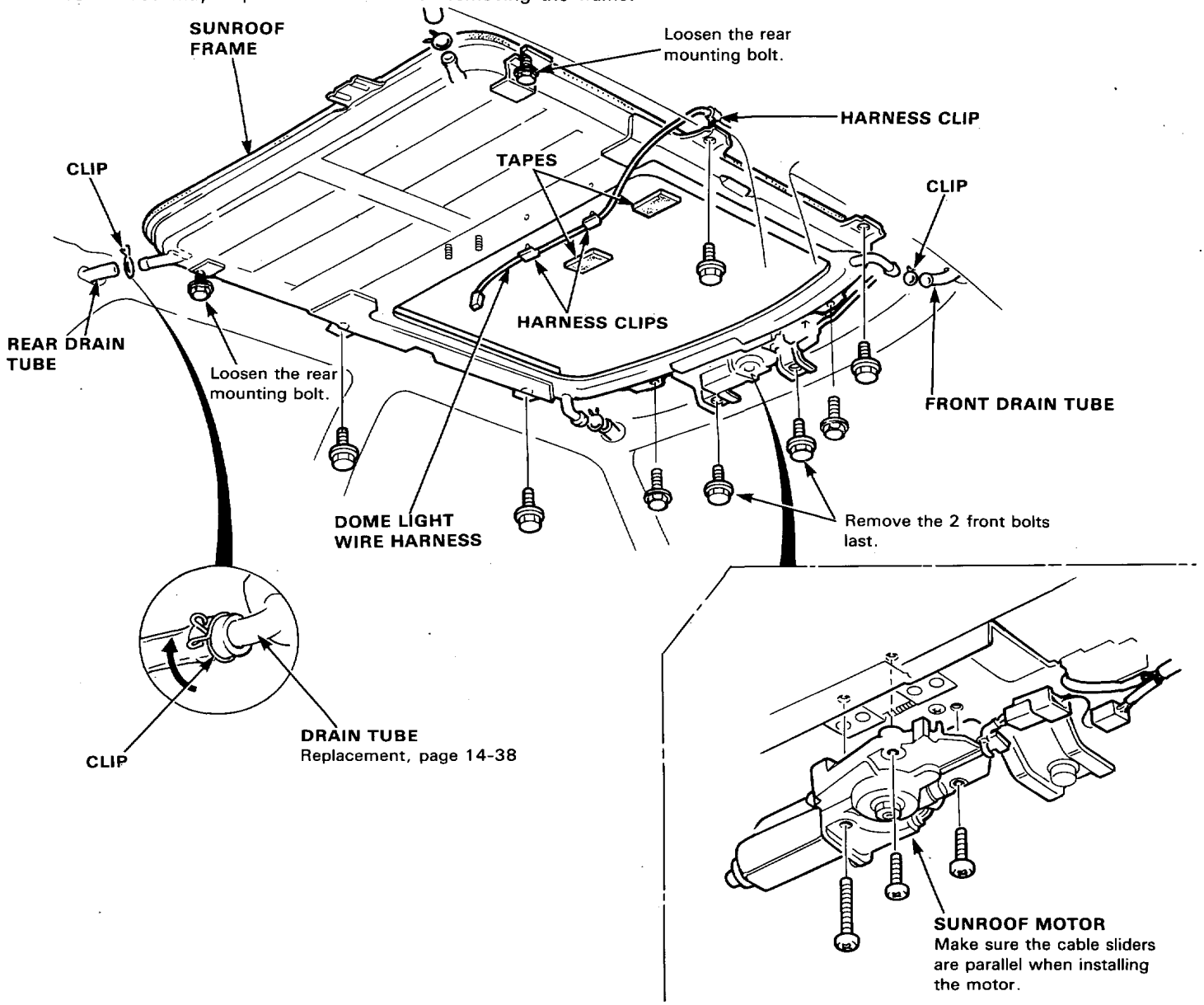
Downloaded from www.Manualslib.com manuals search engine

Sunroof

Motor and Frame Replacement

CAUTION: Be careful not to damage the seats or other interior trim.

1. Remove the sliding glass (page 14-34) and the headliner (page 14-40).
2. Disconnect the motor and relay wire harness; remove the clips securing the dome light wire harness.
   NOTE: When removing the sunroof motor, remove the 3 mounting screws.
3. Disconnect the drain tubes.
4. Remove the 6 × 16 mm mounting bolts from the frame, and loosen the 2 rear mounting bolts.
5. Remove the sunroof frame from the car.
   NOTE: You may require assistance when removing the frame.



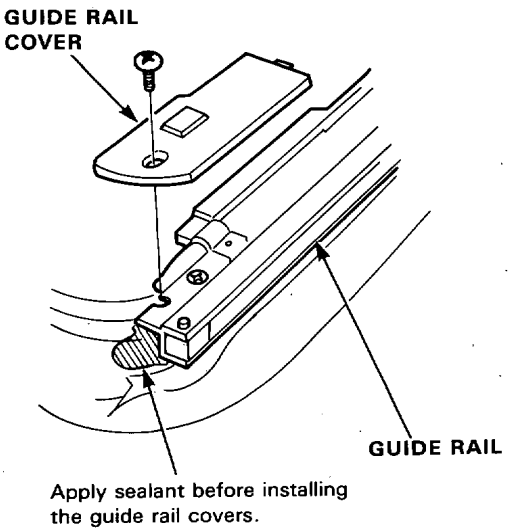
6. To install, insert the frame's rear hooks into the rear mounting bolts, then install parts in the reverse order of removal.

NOTE:
- Install the tube clips with the ends facing the side to ease installation of the headliner.
- Insert over 10 mm of the drain tube onto the nozzle.
- Check for water and air leaks.

Downloaded from www.Manualslib.com manuals search engine

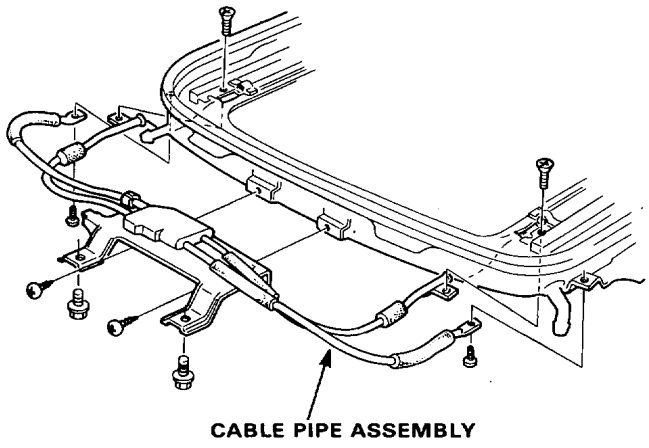
Cable Pipe Assembly Replacement

1. Remove the cable sliders (page 14-35).
2. Remove the guide rail covers.



3. Remove the screws and 2 bolts, then remove the cable pipe assembly from the sunroof frame.

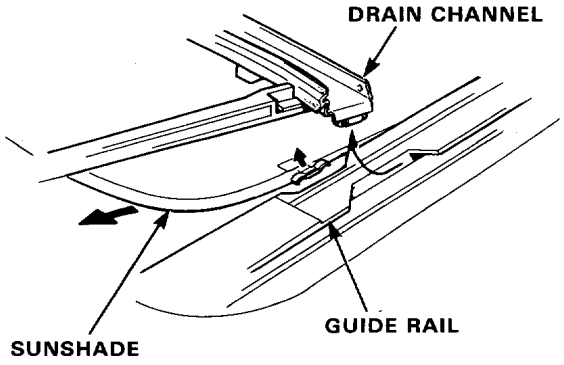
   NOTE: Take care not to deform the cable pipes.



4. Install the cable pipe assembly in the reverse order of removal.

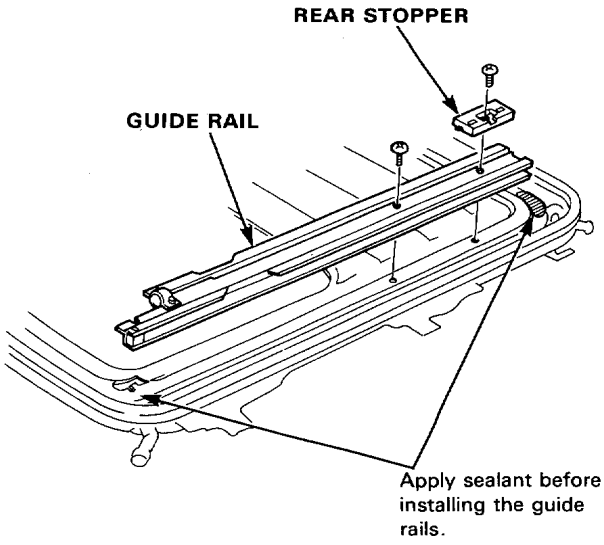
Guide Rail Replacement

1. Remove the sunroof frame (page 14-36).
2. Remove the cable sliders (page 14-35).
3. Lift off the sunshade and drain channel from the cut-out of guide rails.



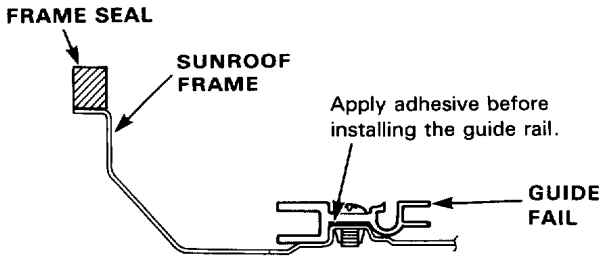
4. Remove the screws and rear stoppers, lift off the gulde rails from the frame.

   NOTE: Remove the guide rail slowly and carefully; it is cemented to the frame.



5. Install the guide rail in the reveres order of removal.

   NOTE: Apply adhesive to guide rails mount faces of the frame.



Downloaded from www.Manualslib.com manuals search engine

Sunroof

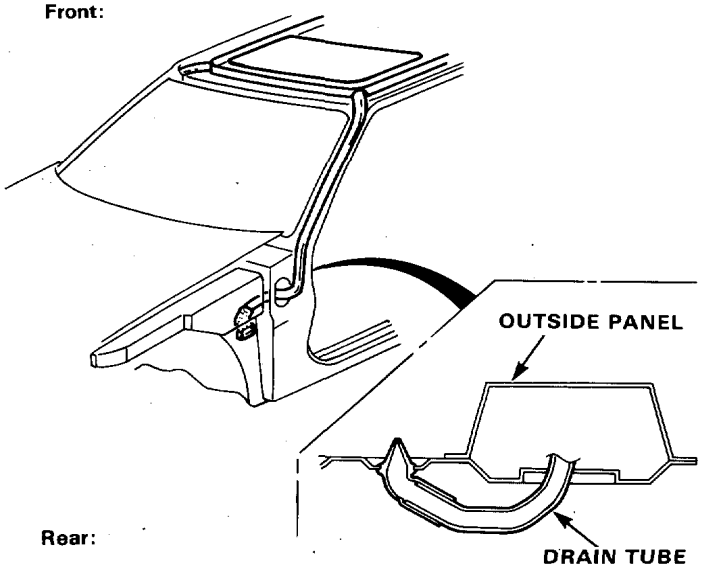
Drain Tube Replacement

1. Detach the clips and grommets.
2. Pull the drain tubes out the front and rear pillars.

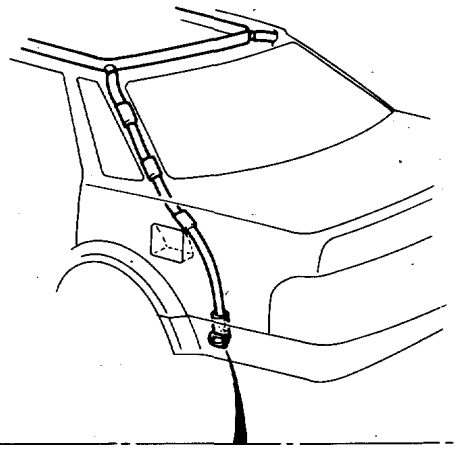
   NOTE: Before pulling out the drain tube, tie a string to the end of it so you can pull it back in when the pillar is reinstalled.
3. Install the drain tube in the revers order of removal.

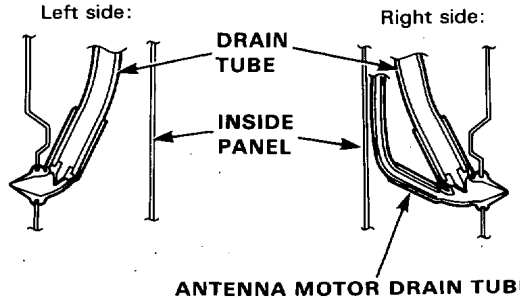
NOTE:
- Take care not to pinch tube during reinstallation.
- Install the grommets firmly.

Front:



Rear:





Drag Check/Closing Force Check

CAUTION: When using the spring scale, protect the leading edge of the sliding glass with a shop towel.

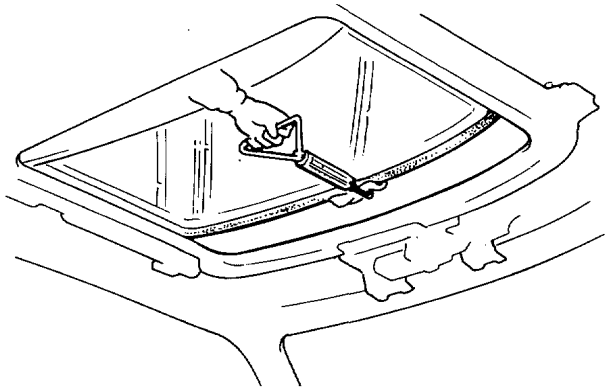
Motor Removed:

1. Before installing the sunroof motor, measure effort required to open sliding glass using a spring scale as shown.
2. If load is over 98 N (10 kg, 22 lb), check side clearance and glass adjustment (page 14-32).

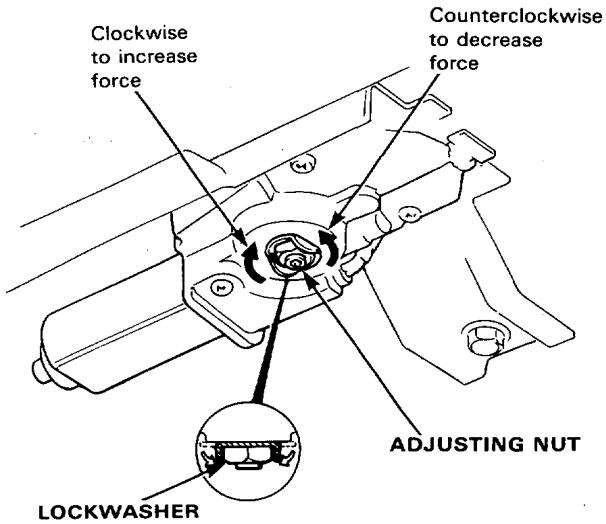
Motor Installed:

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 glass stops moving, then immediately release the switch and *spring scale*.

   Closing Force: 196–245 N (20–30 kg, 44–55 lb)



2. If force is not within specification, install a new lockwasher, adjust the tension by turning the sunroof motor clutch adjusting nut, and bend the lockwasher against the adjusting nut.

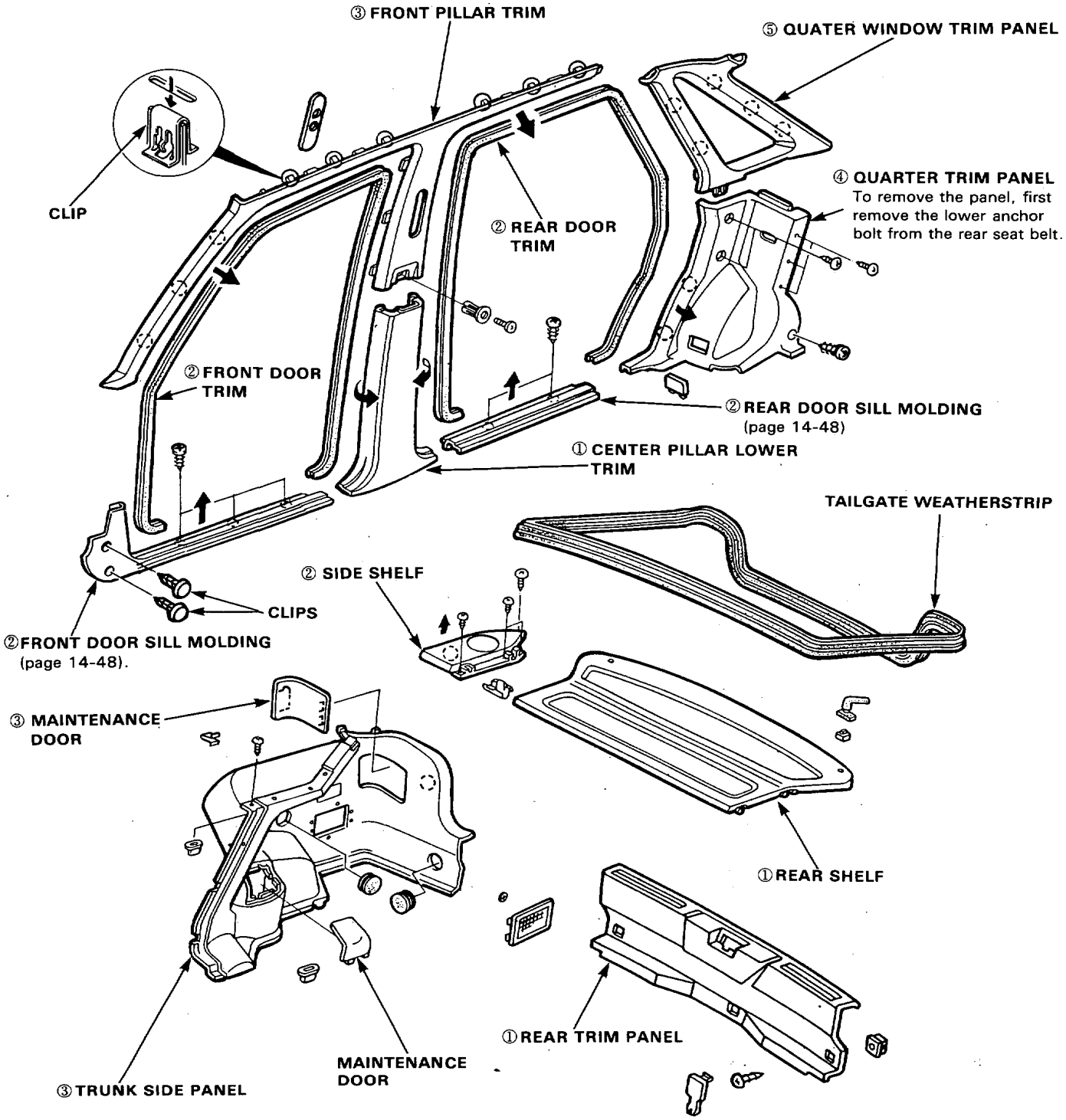


Downloaded from www.Manualslib.com manuals search engine

Interior Trim

Replacement

Disassemble in nurbered sequence.
○ : Clip locations



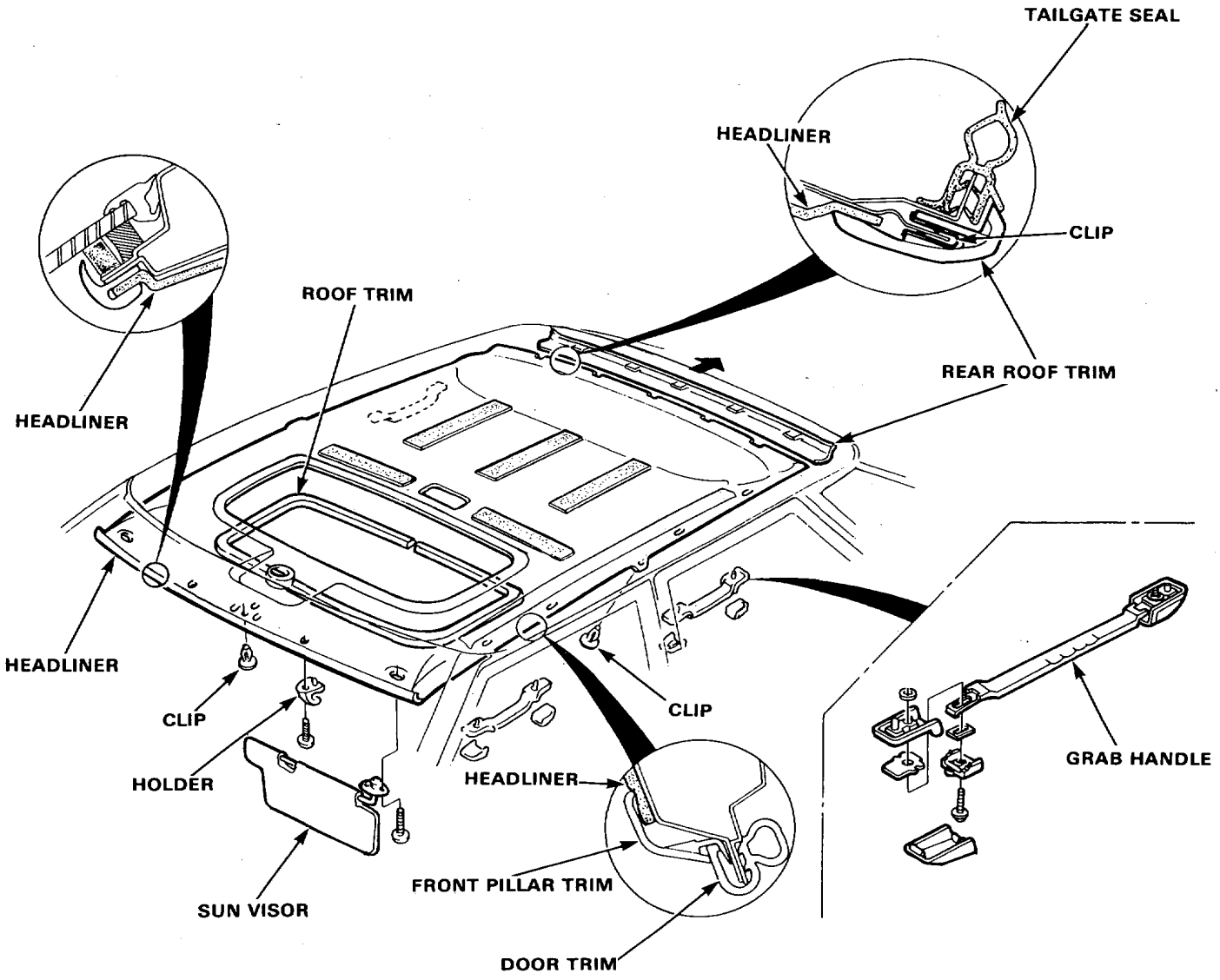
Downloaded from www.Manualslib.com manuals search engine

Headliner

Replacement

1. Remove:
   - Sun visors and holders.
   - Front pillar trim (page 14-39).
   - Quarter window trim panel (page 14-39).
   - Dome light.
   - Grab handles.

2. Remove the clips and rear roof trim, then remove the headliner.



3. Assemble the headliner in the reverse order of disassembly.

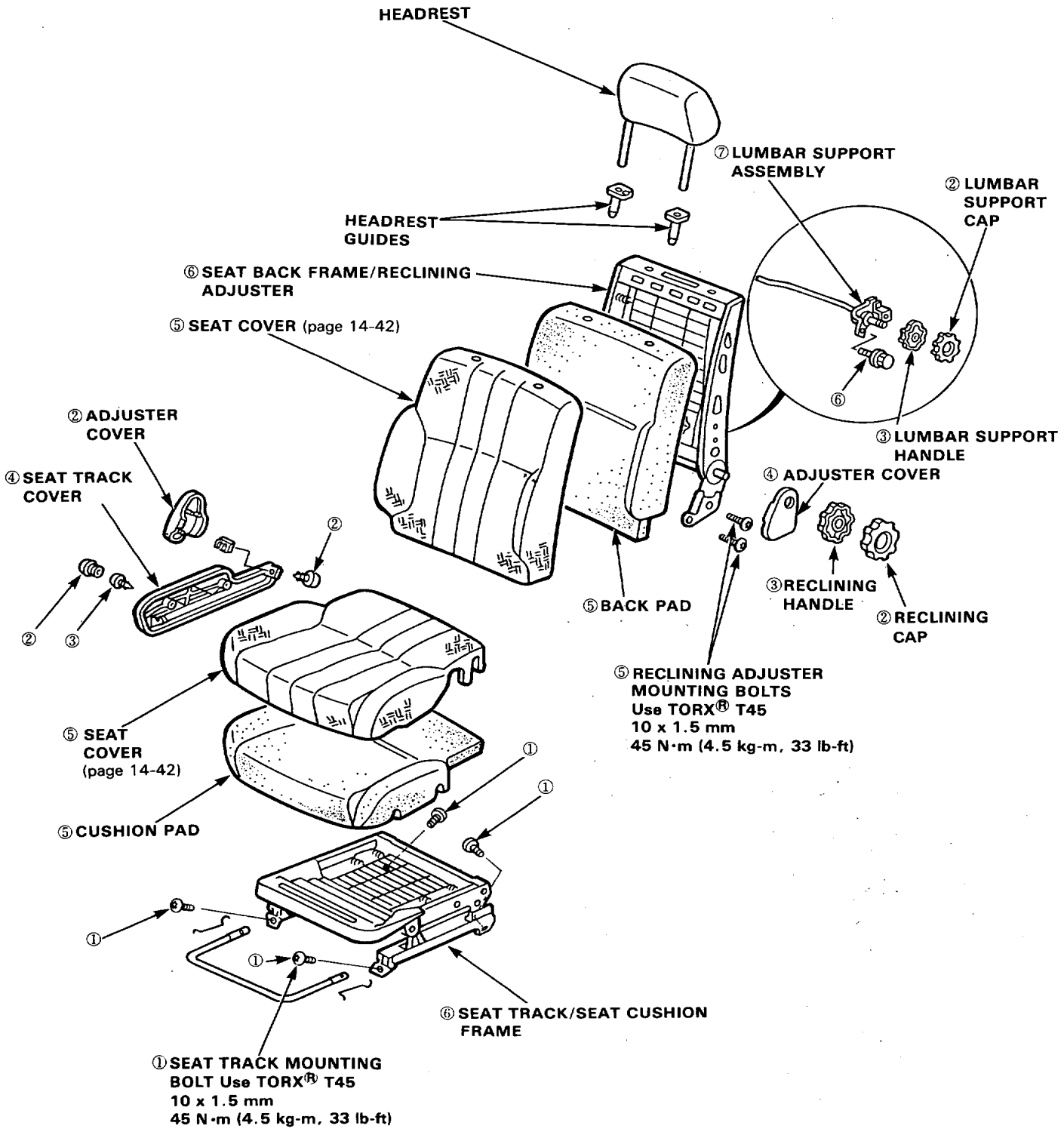
NOTE:
- When installing the headliner inside the passenger cabin, be careful not fold or bend it. Also, be careful not to scratch the body.
- Check that the two sides of the headliner are securely attached to the trim.
- When installing the roof trim, install the joint towards the rear (Sunroof model).

Downloaded from www.Manualslib.com manuals search engine

Front Seats

Disassembly

Disassemble in numbered sequence.



Downloaded from www.Manualslib.com manuals search engine

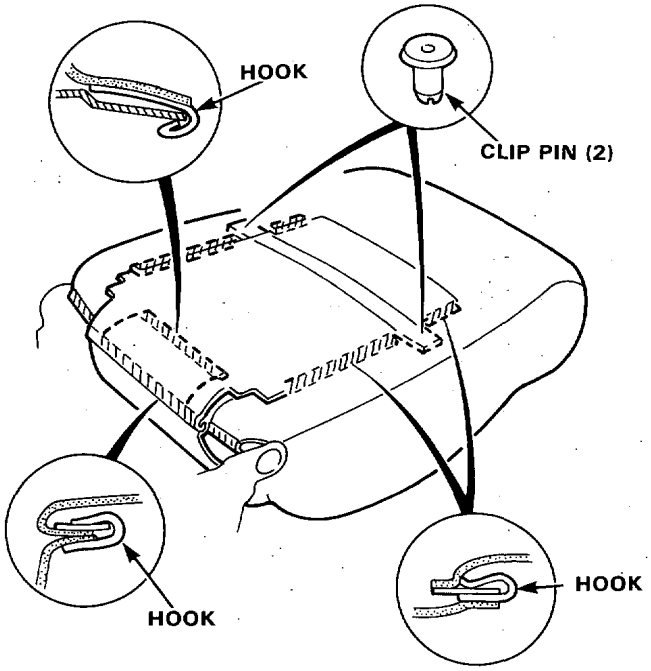
Front Seats

Cover Replacement

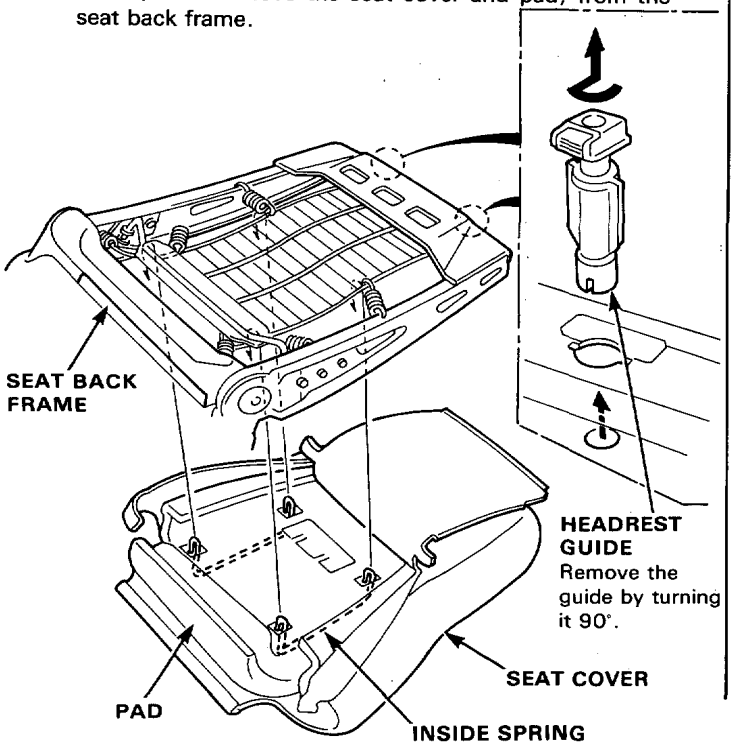
CAUTION: Wear gloves to remove and install the seat cover.

Seat Back removal:

1. Remove the seat assembly from the car.
2. Remove the reclining handle, lumbar support handle and adjuster covers.
3. Remove the clip pins and turn over the seat cover by releasing all the hooks.

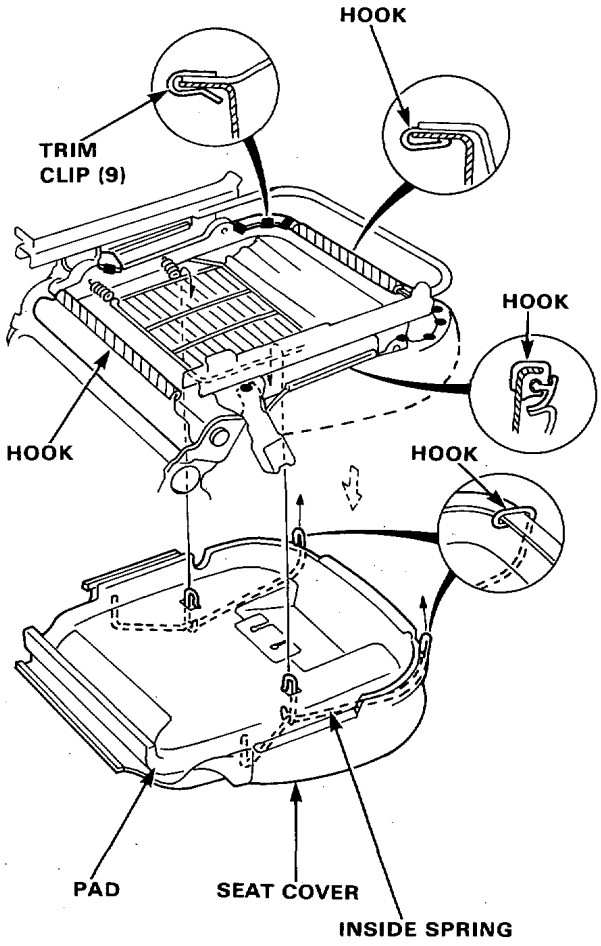


4. Remove the headrest guides and seat back spring hooks, then remove the seat cover and pad, from the seat back frame.



Seat Cushion removal:

1. Remove the the seat track cover.
2. Pry off the clips and turn over the seat cover by releasing all the hooks and inside spring hooks.
3. Remove the seat cover and pad from the cushion frame.



NOTE: To prevent wrinkles when installing a seat cover, make sure the material is stretched evenly over the frame before securing all the clips.

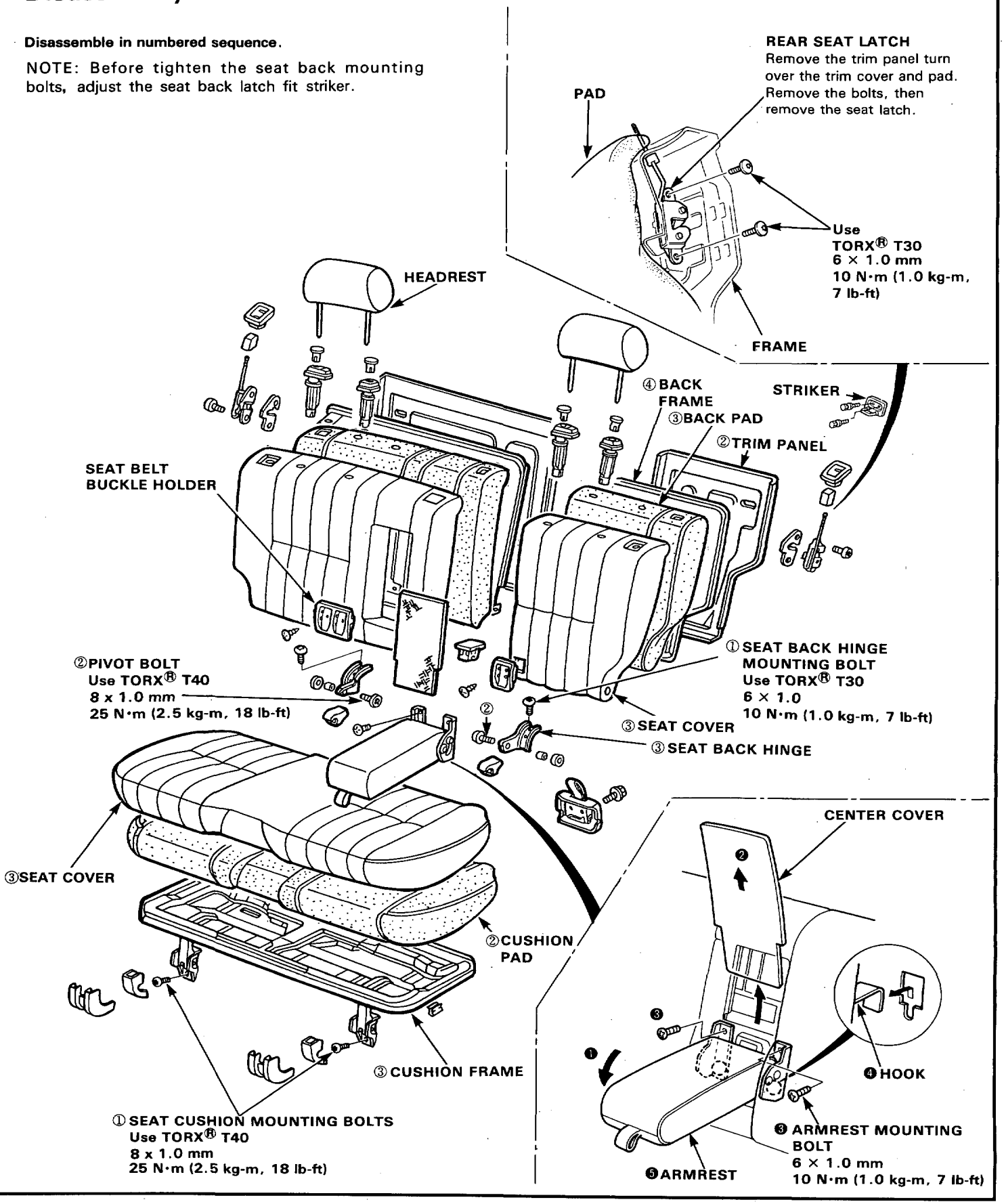
Downloaded from www.Manualslib.com manuals search engine

Rear Seats

Disassembly

Disassemble in numbered sequence.

NOTE: Before tighten the seat back mounting bolts, adjust the seat back latch fit striker.



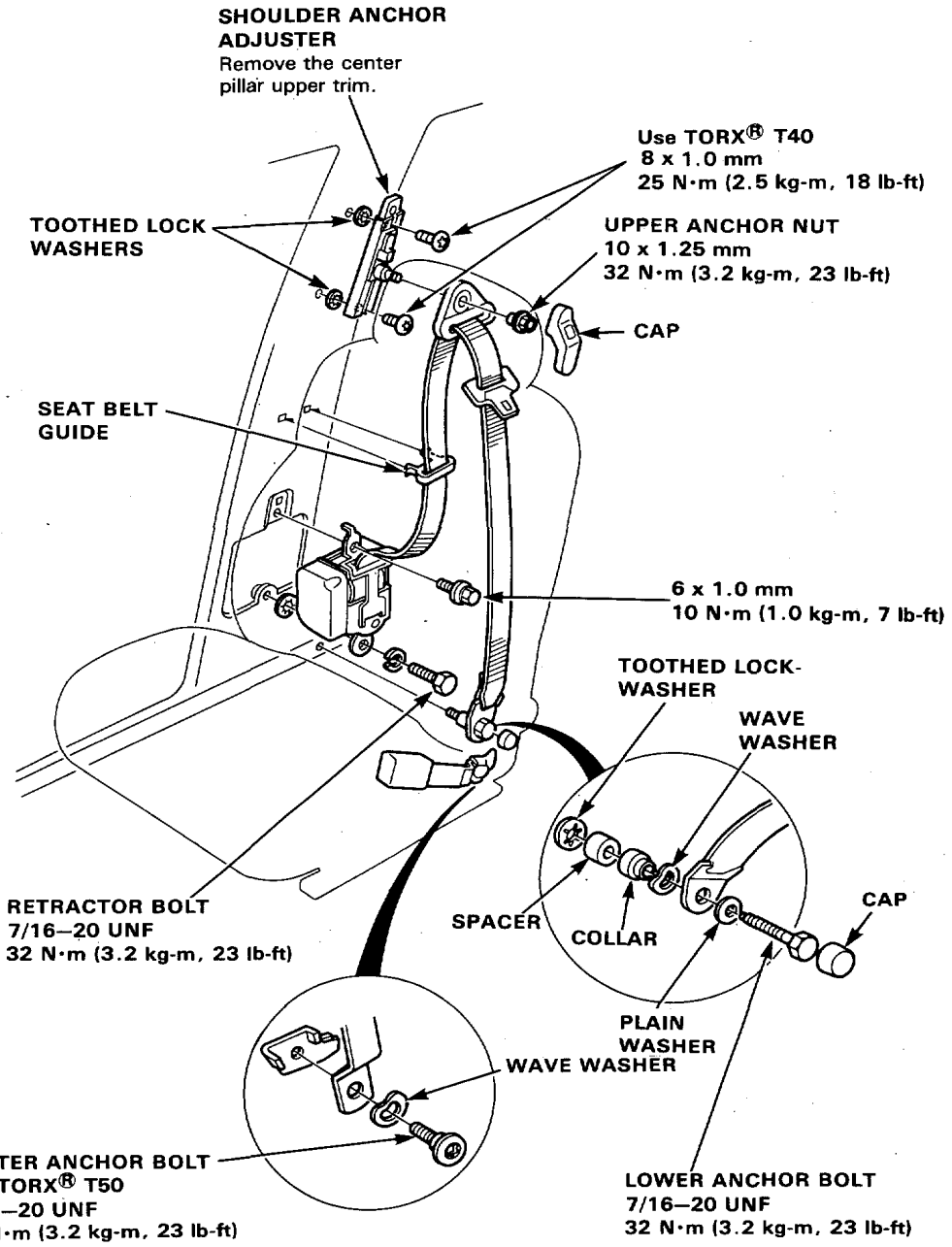
Downloaded from www.Manualslib.com manuals search engine

Front Seat Belts

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 center pillar lower trim.
2. Remove the upper anchor nut, lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.
3. Remove the front seat, then remove the bolt and the center anchor.



4. Check that the retractor locking mechanism functions as described on page 14-46.
5. Install the front 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.
- Before attaching the center pillar lower trim, make sure there are no twists or kinks in the belts.

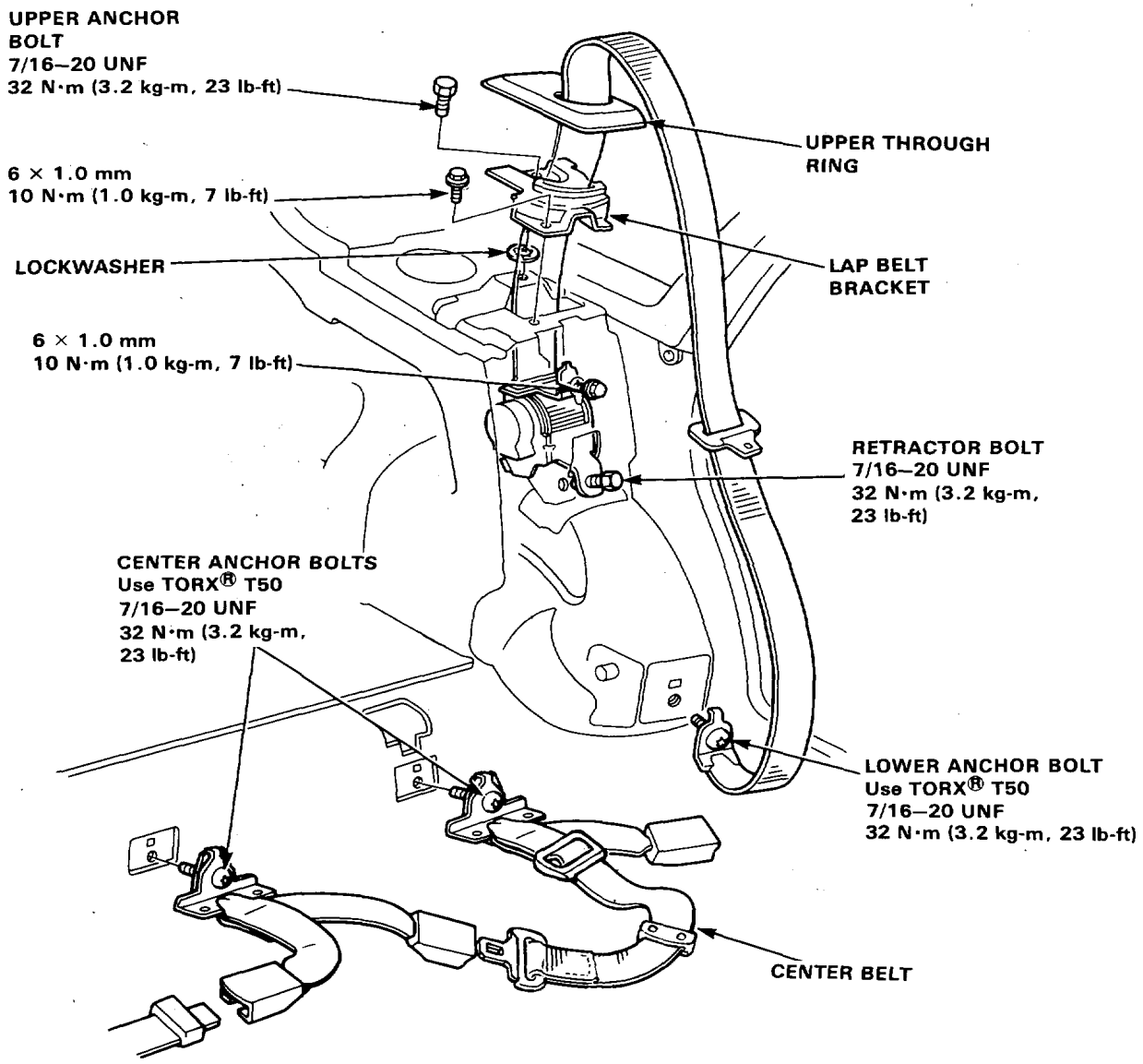
Downloaded from www.Manualslib.com manuals search engine

Rear Seat Belts

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 14-43).
2. Remove the quarter trim panel and side shelf (page 14-39).
3. Remove the upper anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.



4. Remove the lower anchor bolt and center anchor bolt, the remove the rear seat belts.
5. Check that the retractor locking mechanism functions as described on page 14-46.
6. Install the seat belt in the reverse order of removal.

NOTE: Before attaching the quarter trim panel and rear seat, maek sure there are no twists in the belts.

Downloaded from www.Manualslib.com manuals search engine

Seat Belts

Inspection

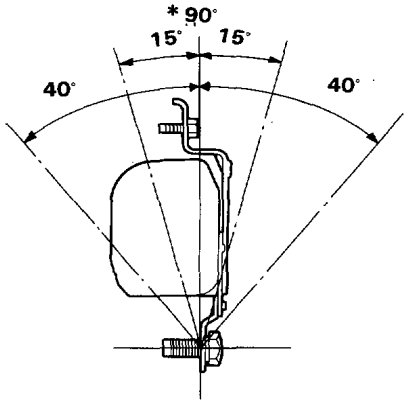
Retractor Inspection

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 slowl, up to 15° from the mounted position. The belt should lock when the retractor is leaned over 40°.

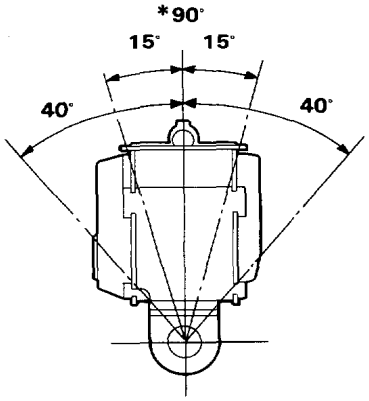
   CAUTION: Do not attempt to disassemble the retractor.

*** : Mounted Position.**

Front:



Rear:

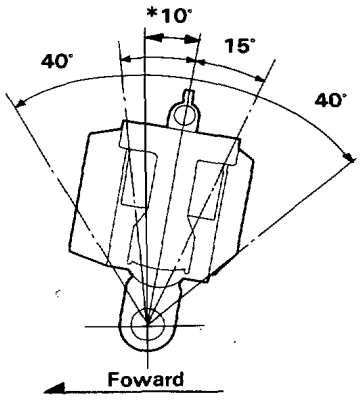


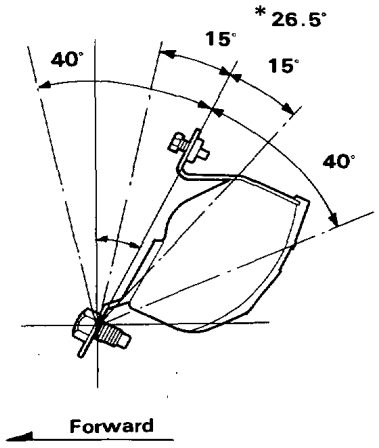
3. Replace the belt with a new one if there is any abnormality.

On the Car Belt Inspection

1. Check that the belt is not twisted or caught on anything.
2. After installing the anchors, 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.





Downloaded from www.Manualslib.com manuals search engine

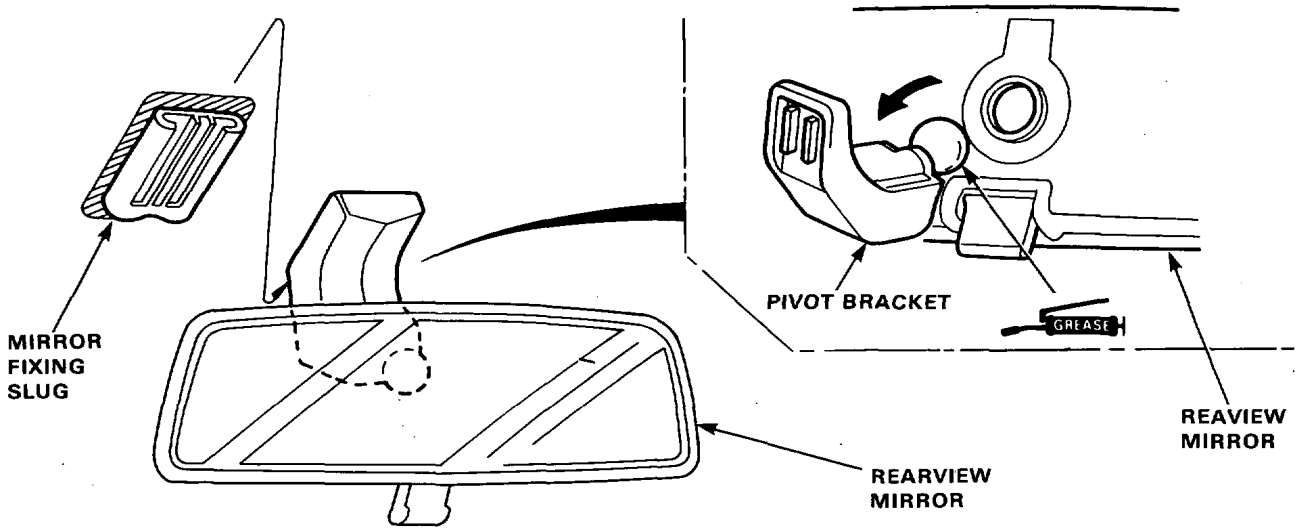
Rearview Mirror/Console

Rearview Mirror Replacement

1. Carefllly slide up the rearview mirror pivot bracket from the slug.

   NOTE: Take care not to scratch the windshield.

2. Install the rearview mirror, heat the pivot and mirror side with a low powered heater gun for several minutes.

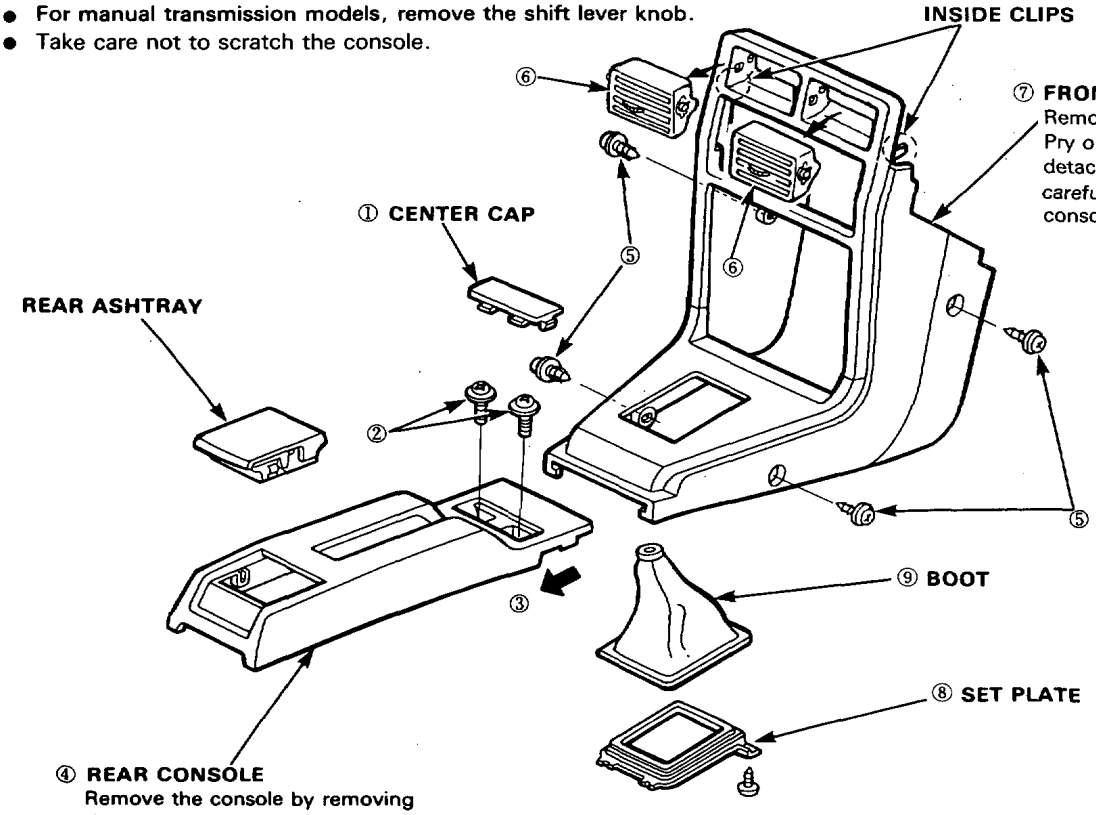


Console Replacement

Disassemble in numbered sequence:

NOTE:

- Lift up the parking brake lever.
- For manual transmission models, remove the shift lever knob.
- Take care not to scratch the console.



Downloaded from www.Manualslib.com manuals search engine

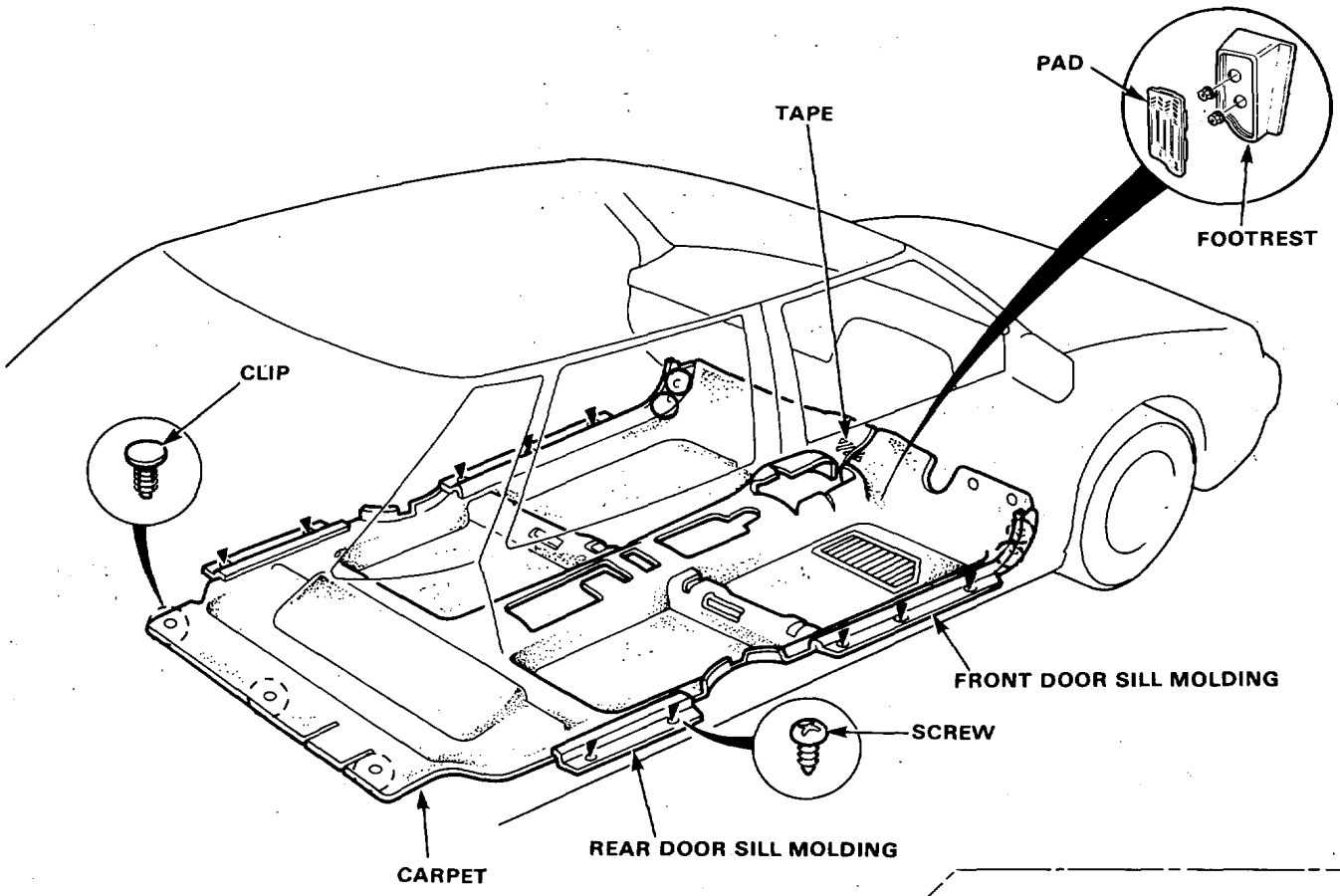
Carpet/Door Sill Moldings

Replacement

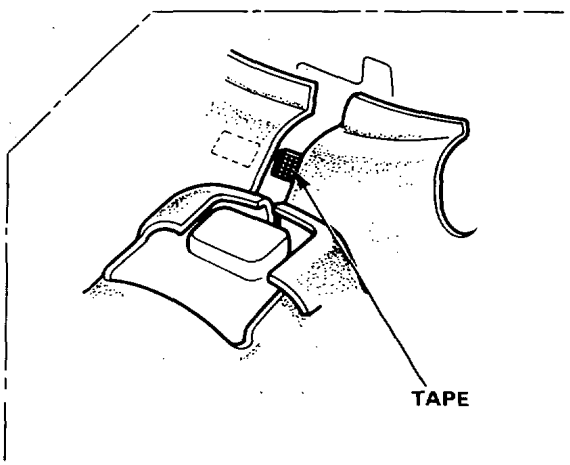
1. Remove:
   - Front seats.
   - Rear seat cushion.
   - Console.
   - Opener cover (page 14-57).

2. Remove the screws, then pull up the door sill moldings.

3. Pry out the clips at the rear edge and under the dashboard, peel off the tape and remove the clip.



◌: Clip Locations
►: Screw Locations



4. Remove the carpet.

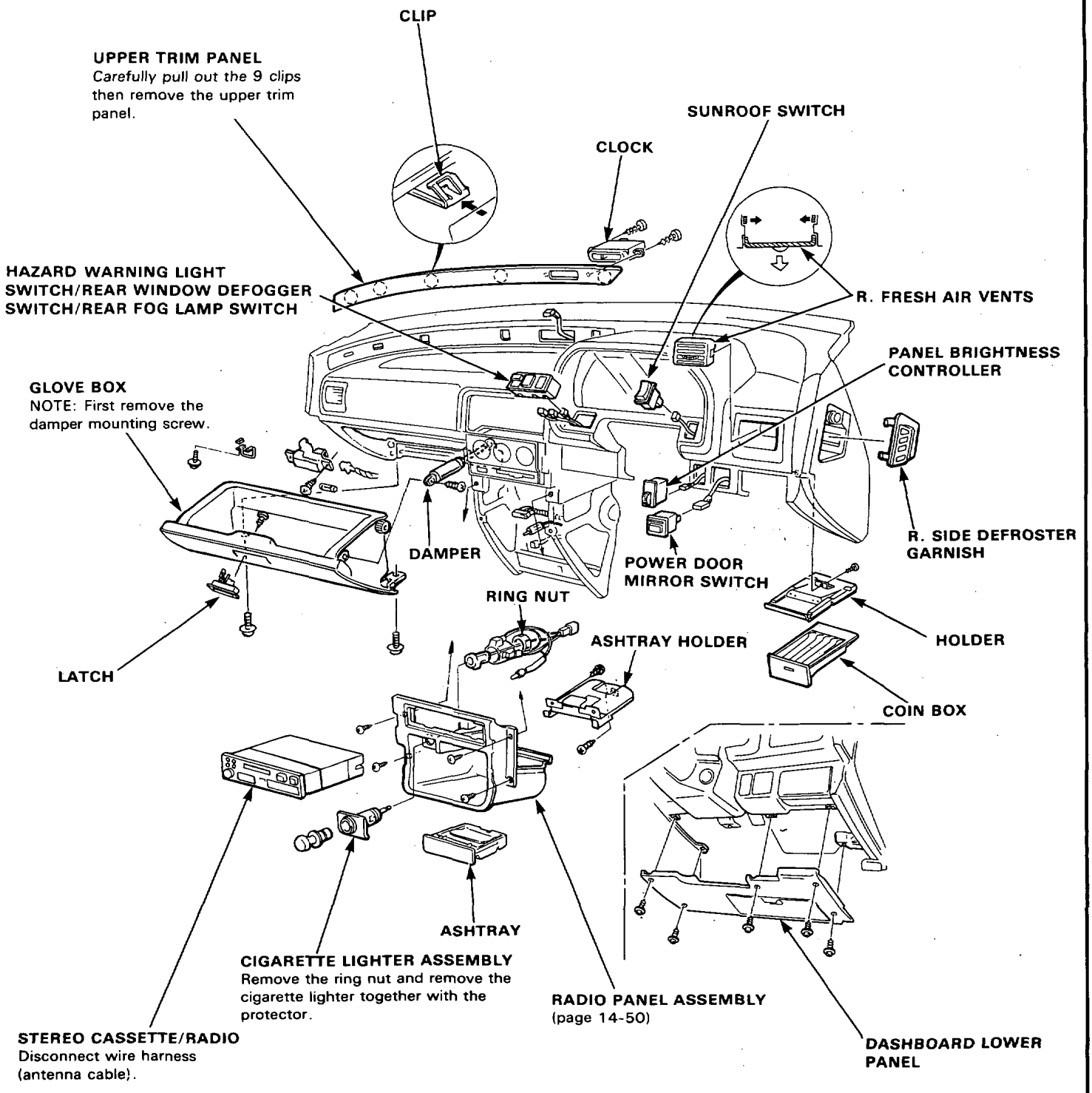
5. Install the carpet in the reverse order of removal.

NOTE:
- Reattach the cut areas with tape and tie bands.

Downloaded from www.Manualslib.com manuals search engine

Dashboard

Component Removal/Installation



Downloaded from www.Manualslib.com manuals search engine

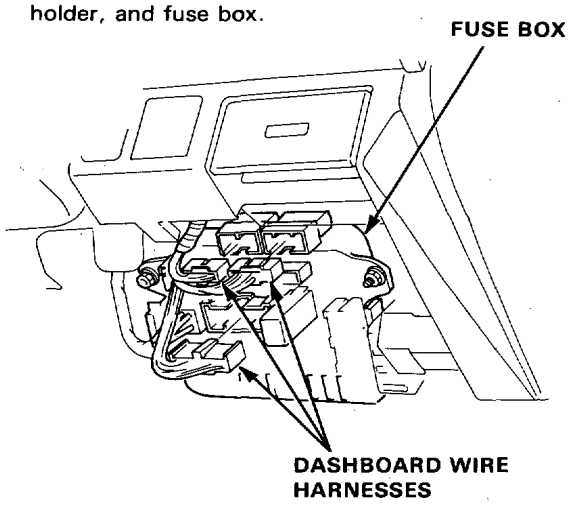
Dashboard

Replacement

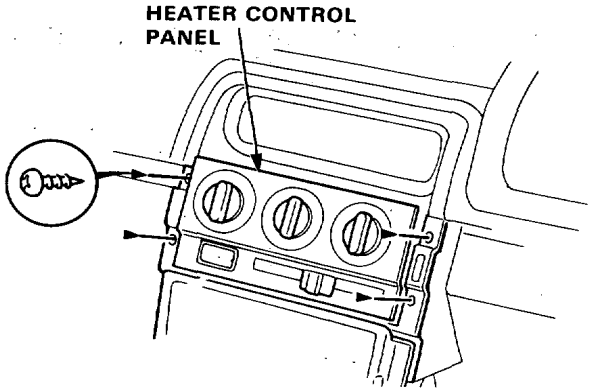
NOTE: Take care not to scratch or score the dashboard and use protective tape on the bottom of the front pillar trim.

1. To remove the dashboard, first slide the seats back fully and remove the:
   - Dashboard lower panel (page 14-49).
   - Center console (page 14-47).

2. Disconnect the wire harnesses from the connector holder, and fuse box.

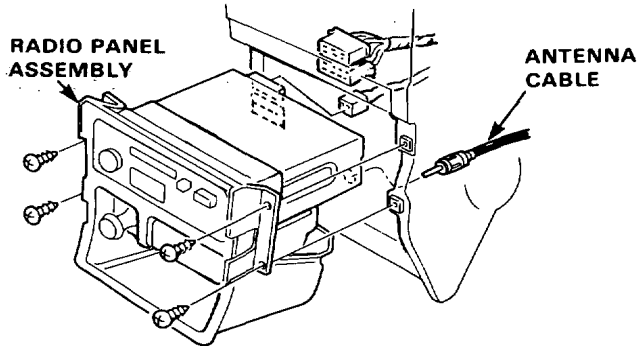


3. Remove the 4 screws attaching the heater control panel to the dashboard.



4. Remove the 4 screws and radio panel, then disconnect the wire connectors and antenna cable.

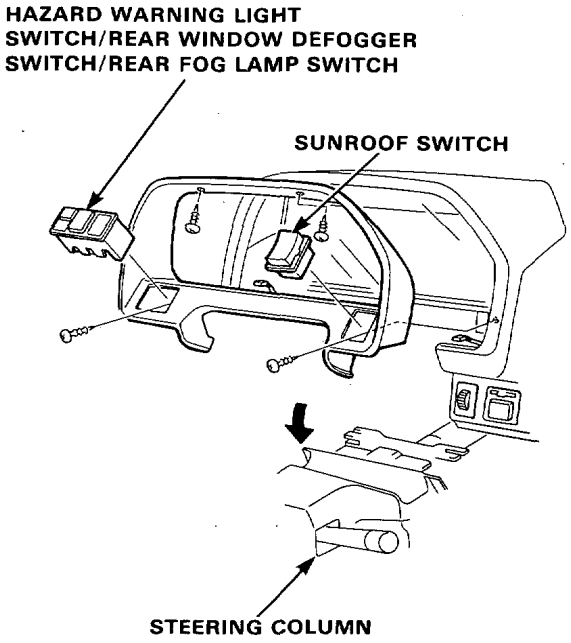
5. Remove the radio panel assembly.



6. Lower the steering column (See section 11).

7. Remove the switches from the dashboard and instrument panel, then disconnect the connectors.

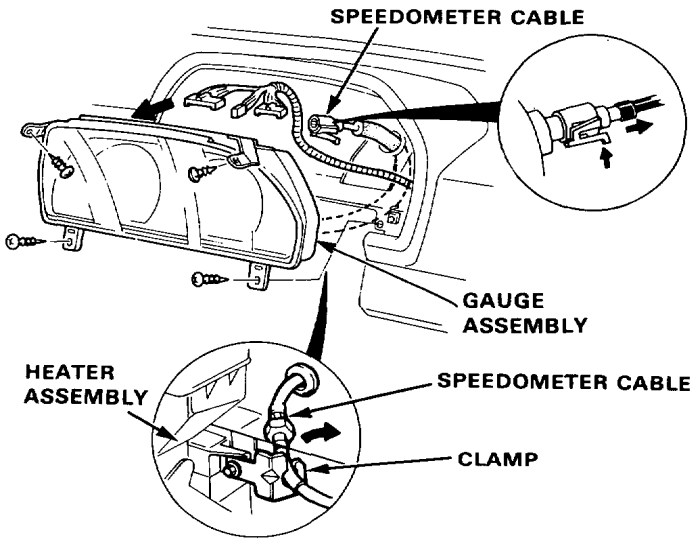
8. Remove the 4 screws, then remove the instrument panel.



9. Disconnect the speedometer cable from the speed sensor (See section 5).

10. Remove the speedometer cable from the cable clamp.

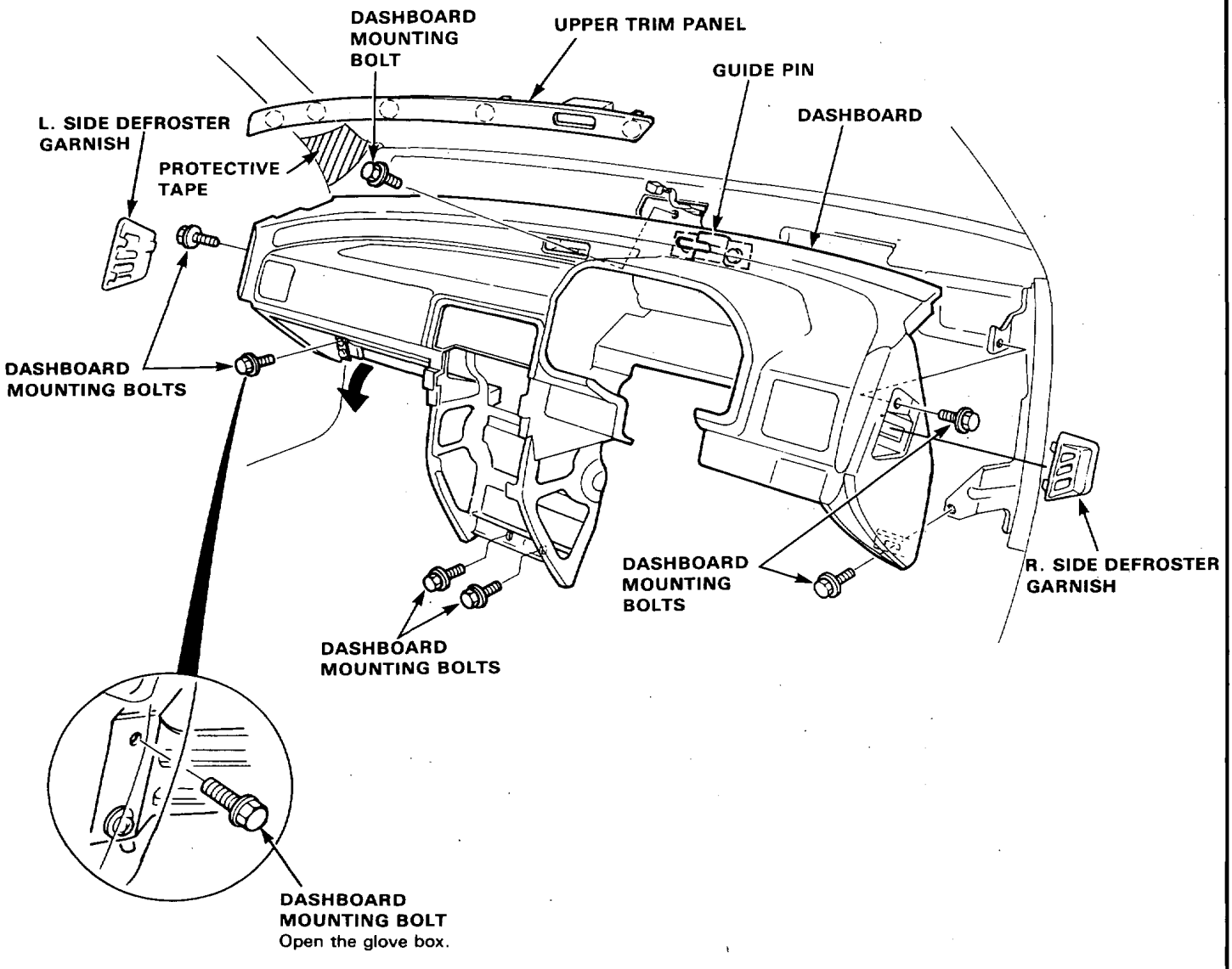
11. Remove the 4 screws, then remove the gauge assembly half-way disconnect the speedometer cable and connectors.



Downloaded from www.Manualslib.com manuals search engine

12. Disconnect the main wire harness connectors.
13. Remove the upper trim panel from the top of the dashboard.
14. Remove the side defroster garnishes from both ends of the dashboard.
15. Remove the dashboard mounting bolts.
16. Lift and remove the dashboard.

Reassembly NOTE:
- Make sure the dashboard fits onto the guide pin correctly.
- Before tightening the dashboard mounting bolts, make sure the dashboard wires are not pinched, and that the dashboard is not interfering with the heater control cable.
- Pull speedometer cable to make sure it is secure.



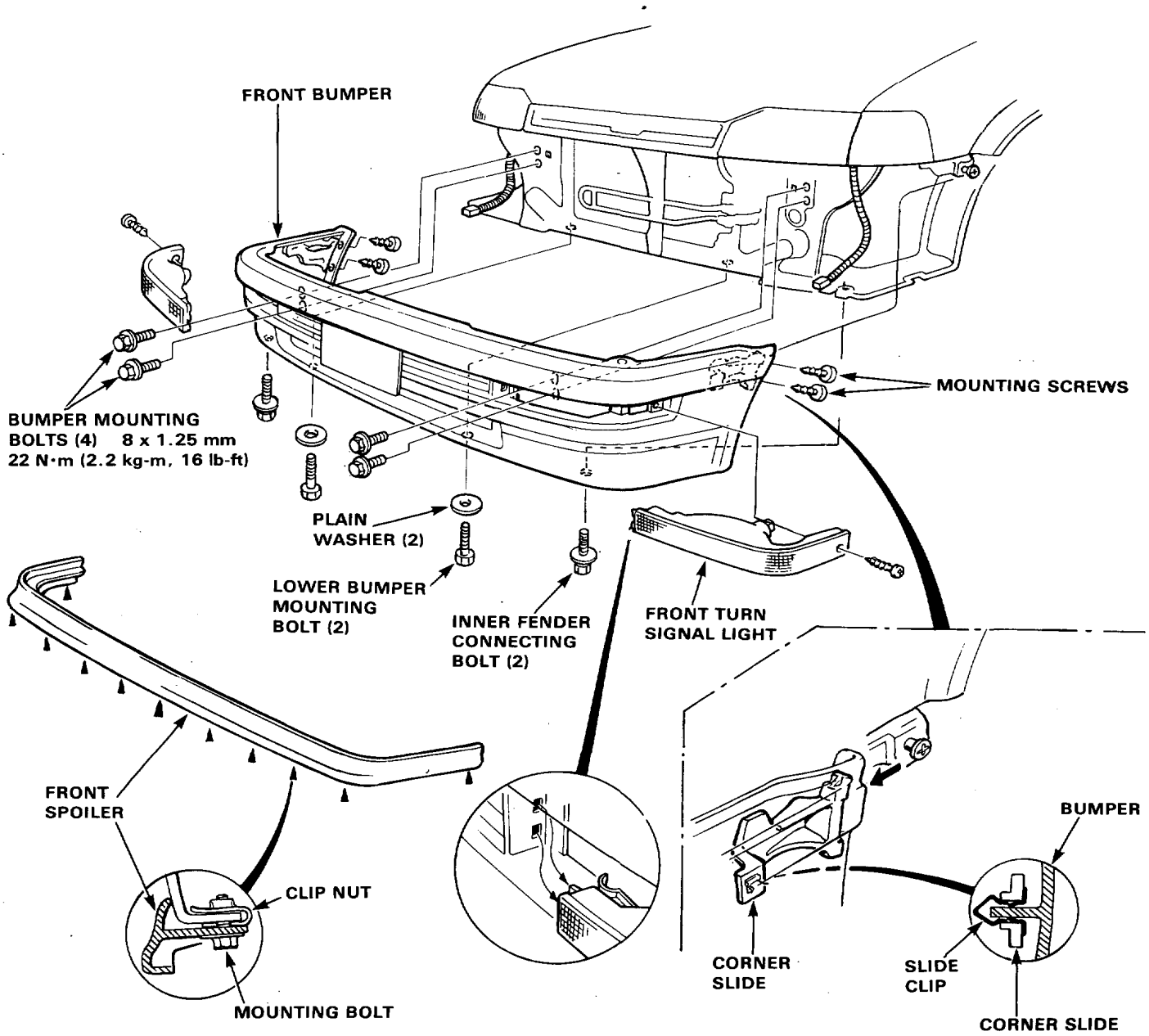
Downloaded from www.Manualslib.com manuals search engine

Front Bumper

Replacement

1. Remove the right and left front turn signal lights.
2. Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
3. Remove the 2 lower bumper mounting bolts and inner fender connecting bolts.
4. Remove the 4 bumper mounting bolts and bumper by sliding it forward.
5. Installation sequence is essentially the reverse order of removal.

NOTE: Tkae care not to scratch the bumper face.



6. Installation sequence is essentially the reveres order of removal.

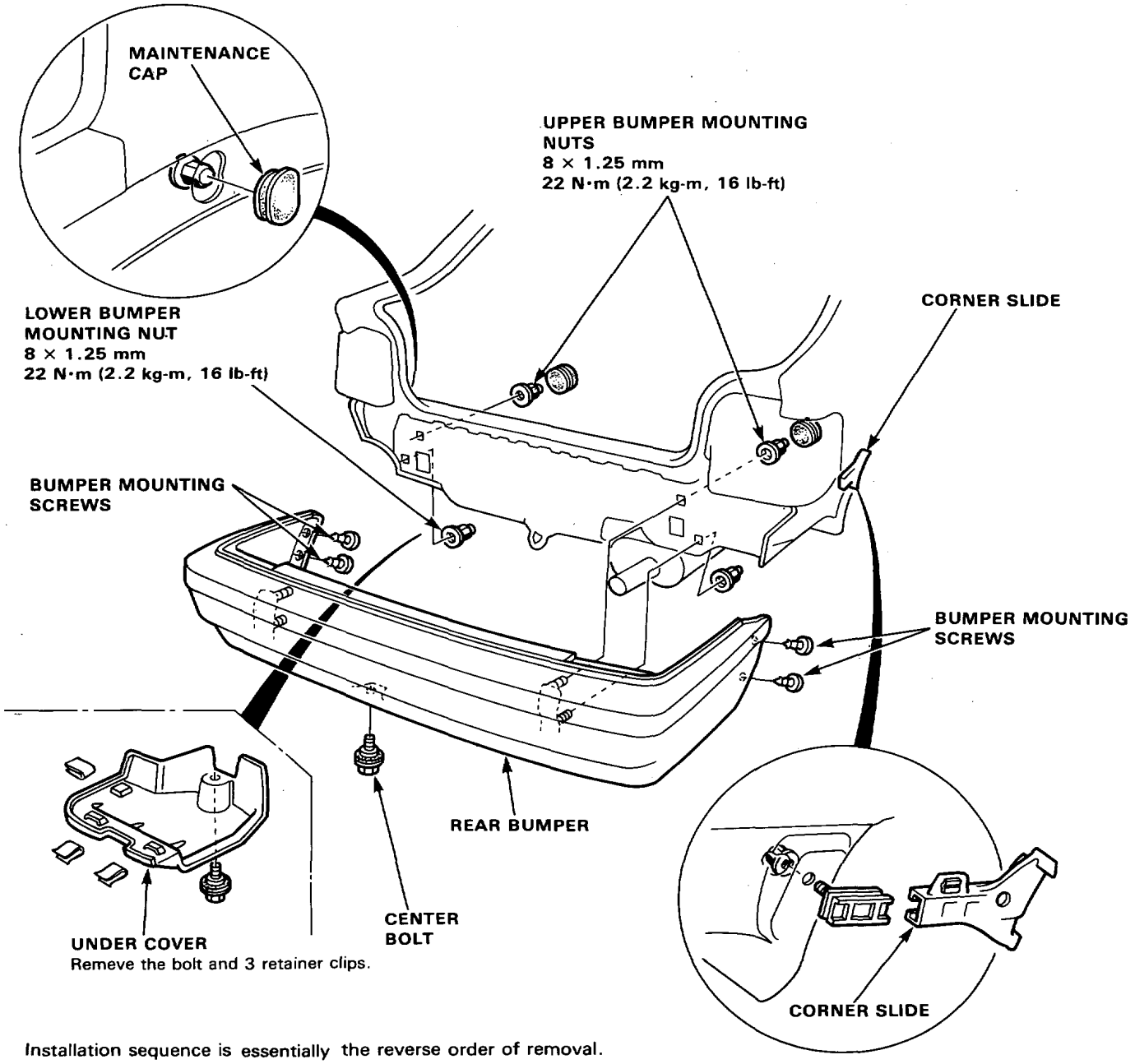
Downloaded from www.Manualslib.com manuals search engine

Rear Bumper

Replacement

1. Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
2. Remove the under cover (left side), then remove the 2 lower bumper mounting nuts from under the trunk floor and center bolt.
3. Pry off the maintenance caps, then remove the 2 upper bumper mounting nuts from the trunk area.
4. Remove the bumper by sliding it to the rear.

NOTE:
- Do not damage the threads of the bumper bolts.
- Take care not to scratch the bumper face.



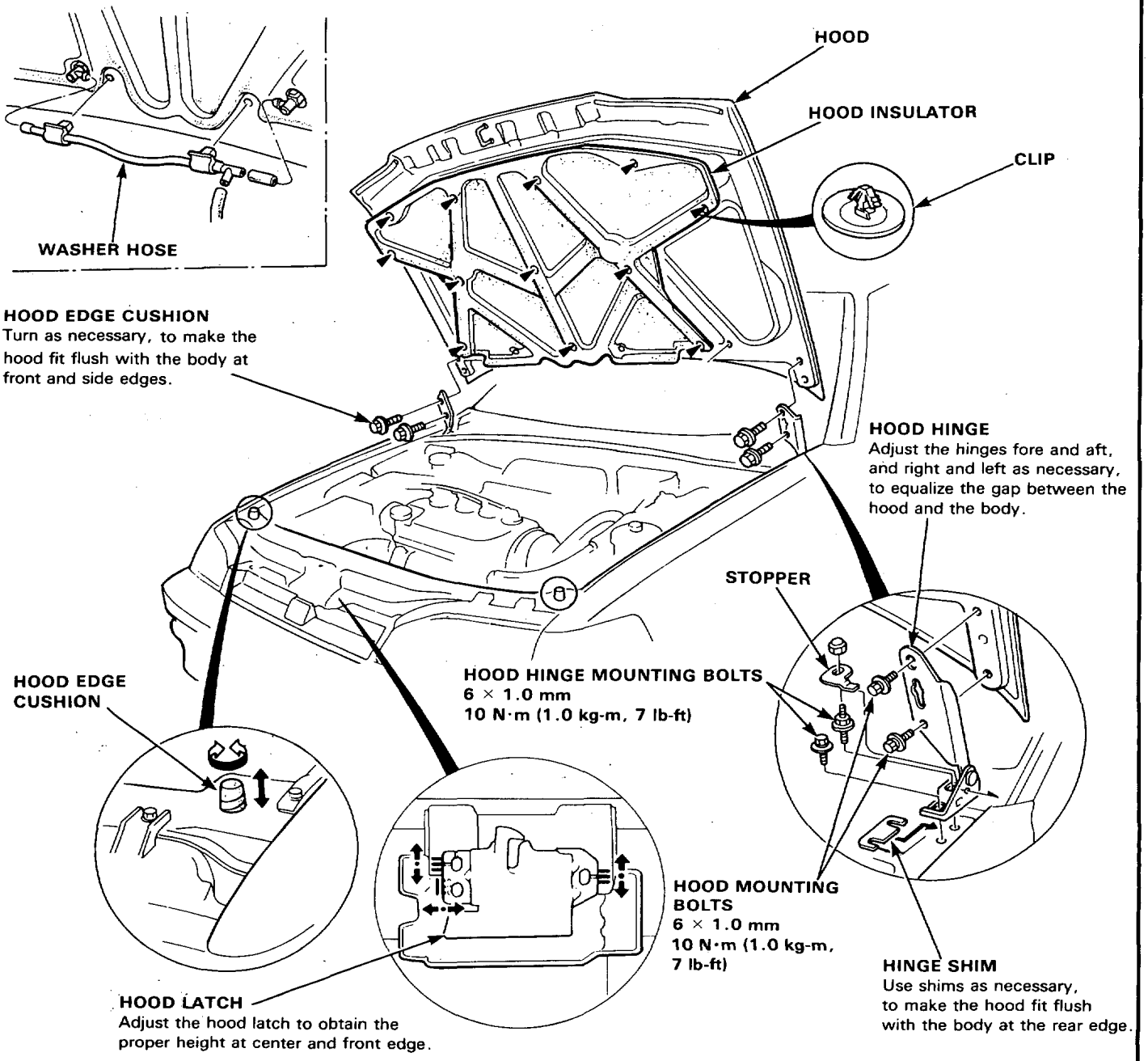
5. Installation sequence is essentially the reverse order of removal.

Downloaded from www.Manualslib.com manuals search engine

Hood

Replacement/Adjustment

1. Pull the windshield washer hose out of the bood.
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.

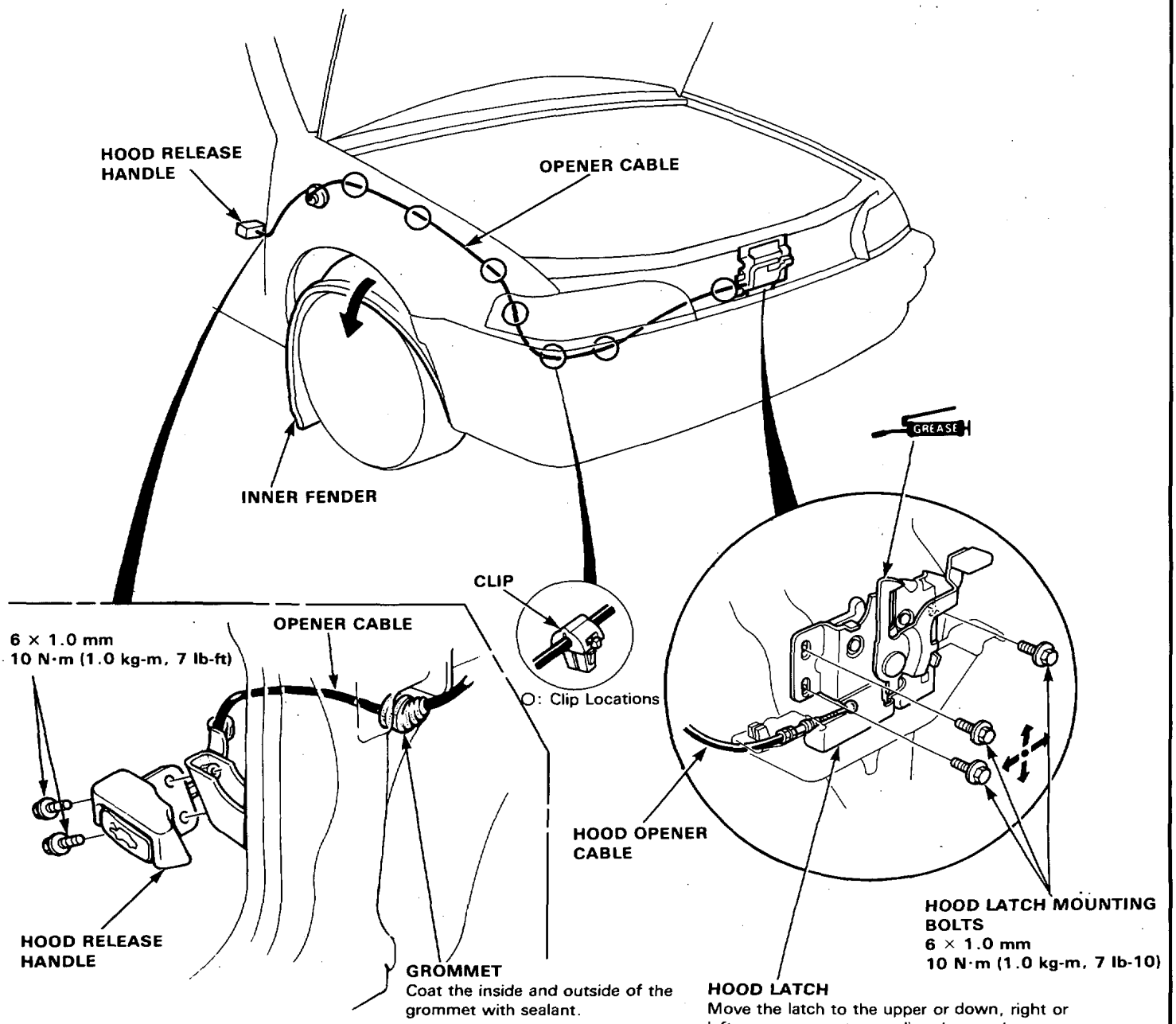


Downloaded from www.Manualslib.com manuals search engine

Opener and Latch Replacement

1. Remove the bolts, then remove the hood release handle and disconnect the opener cable.
2. Remove the front grille (page 14-58).
3. Remove the 3 mounting bolts, then remove the hood latch and disconnect the opener cable.
4. Remove the right 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.

Downloaded from www.Manualslib.com manuals search engine

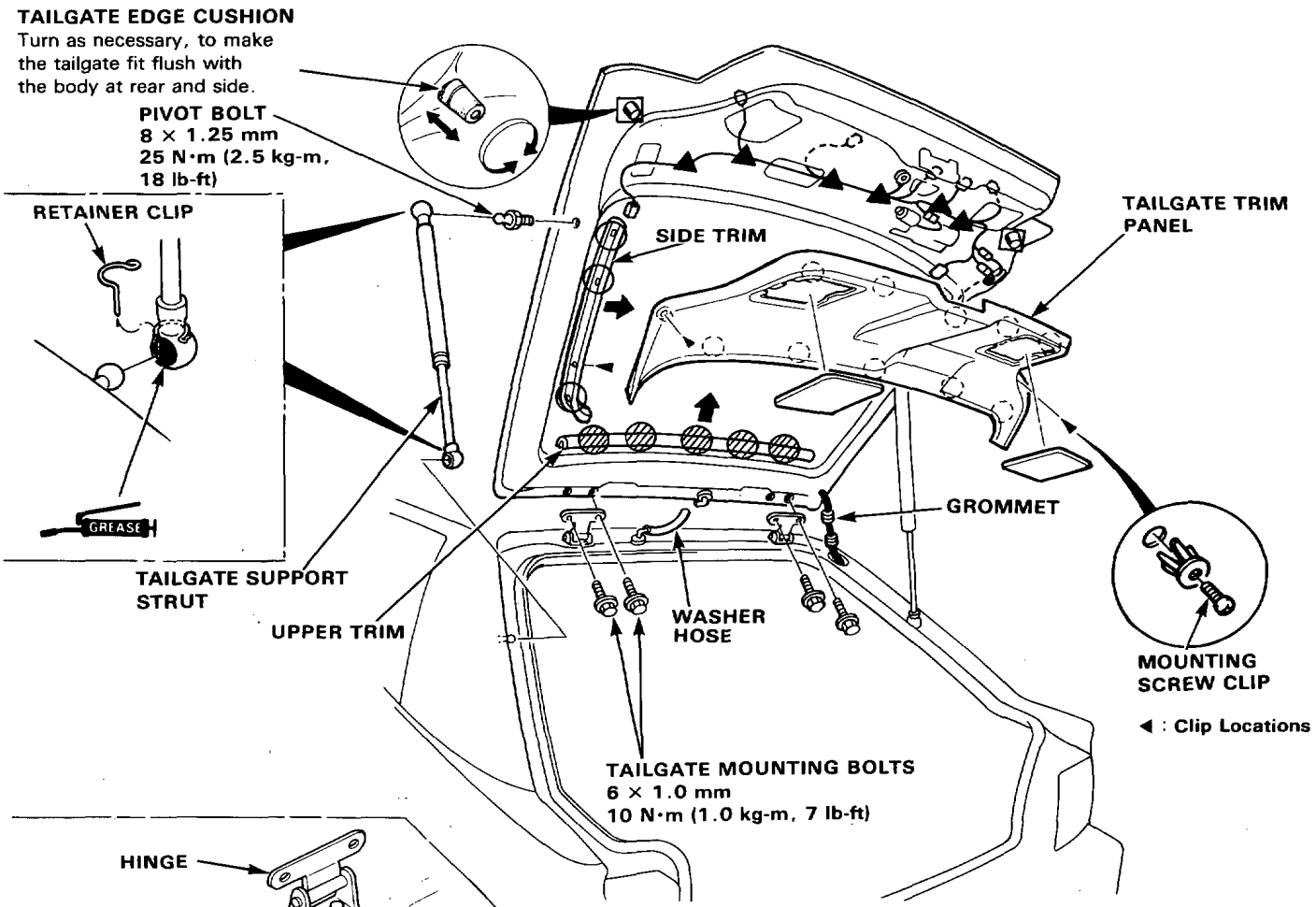
Tailgate

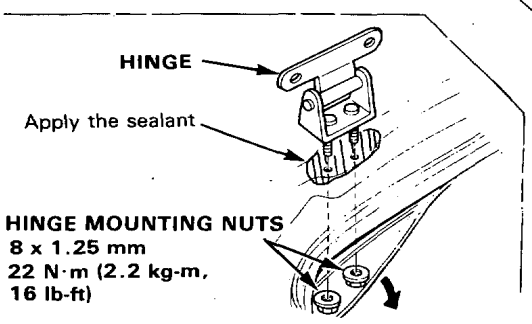
Replacement/Adjustment

1. Remove the screws and detach the clips, then remove the tailgate trim panel.
2. Pull the wire harness out of the tailgate and disconnect the washer hose.
   NOTE: Before pulling out the wire harness, tie a string to the end of it so you can pull it back in when the tailgate is reinstalled.
3. Turn and pull off the retainer clips, then remove the tailgate support struts.
   NOTE: Let an assistant hold the tailgate when removing the struts.
4. Remove the tailgate by removing the tailgate mounting bolts.
   NOTE: Take care not to damage the roof panel.

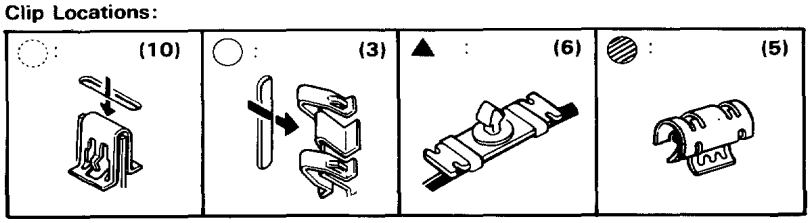
If necessary:

- Lower the rear of the headliner just enough to gain access to the hinge mounting nuts, then remove the hinge by removing the hinge mounting nuts.





Clip Locations:



5. Installation sequence is essentially the reverse order of removal. However, observe the following:
   - Before tightening the mounting bolts, adjust the tailgate fit and striker (page 14-57).
   - Use care when pulling the wire harness back in to avoid damaging the body.
   - Coat the inside and outside of the grommet with sealant.

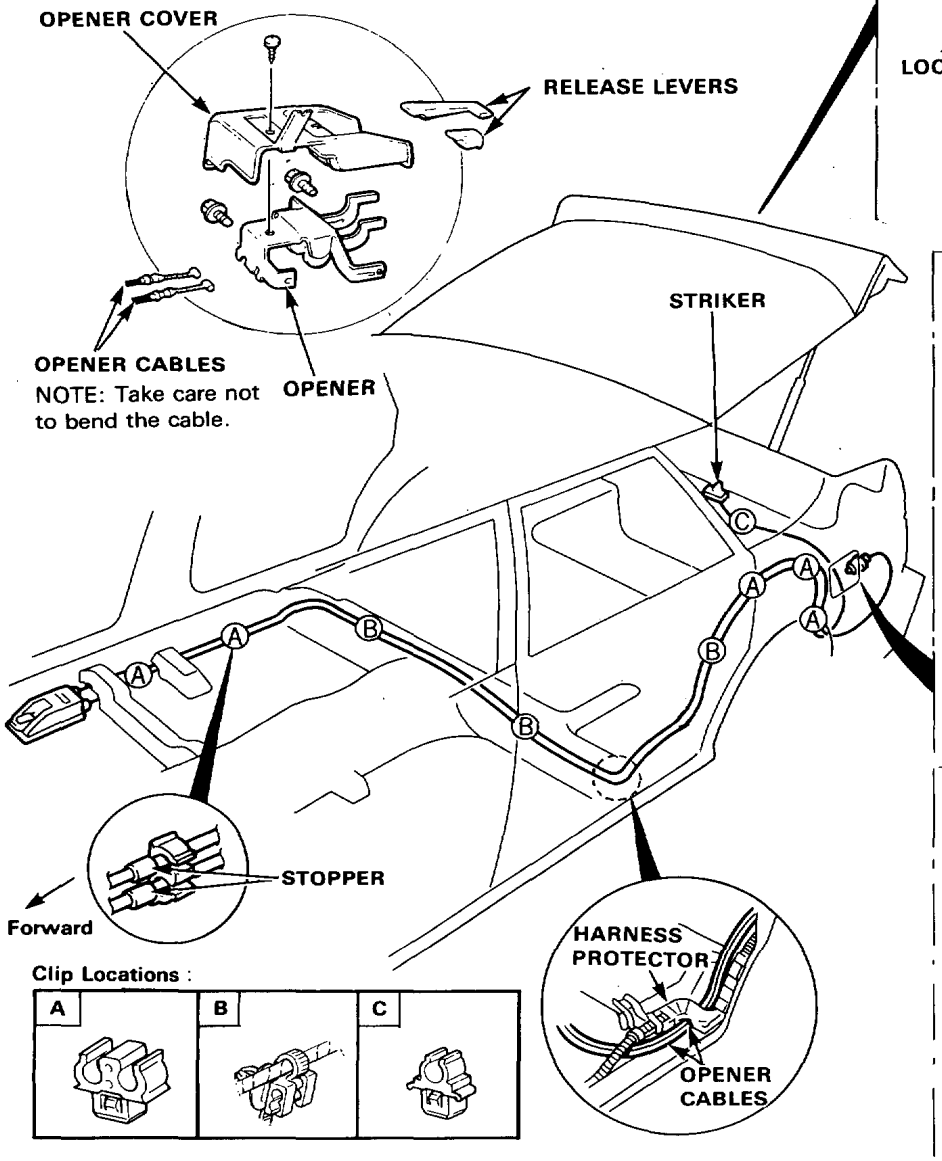
Downloaded from www.Manualslib.com manuals search engine

Fuel Filler Opener/Tailgate Opener

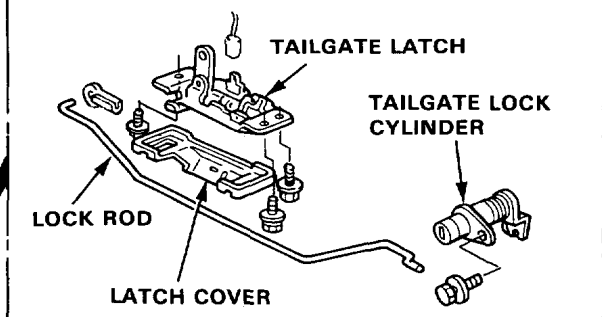
Replacement

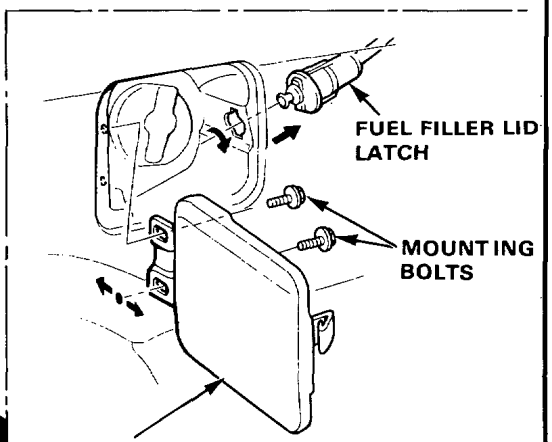
RHD:

1. To remove the opener cables, remove the following parts:
   - Right side door sill moldings, right and rear half of carpet.
   - Left quarter trim panel, trunk side 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 filler lid latch by turning it 90°.
4. Remove the bolt, then remove the tailgate lock cylinder.
5. Remove the latch cover and 3 bolts, then remove the tailgate latch.
6. Disconnect the opener cable, connector and lock rod.

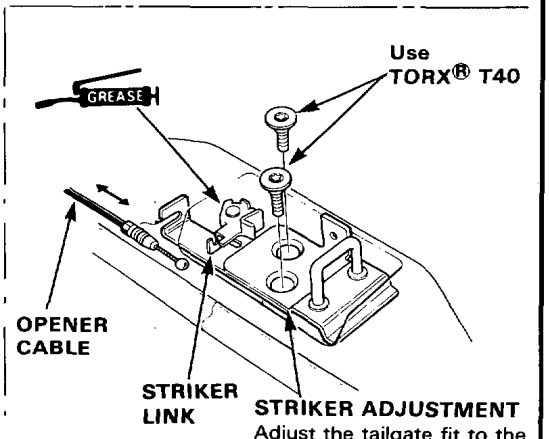


Clip Locations :





FUEL FILLER LID
Before tightening the mounting bolts, adjust the filler lid fit and latch.



STRIKER ADJUSTMENT
Adjust the tailgate fit to the gate opening by moving the striker.

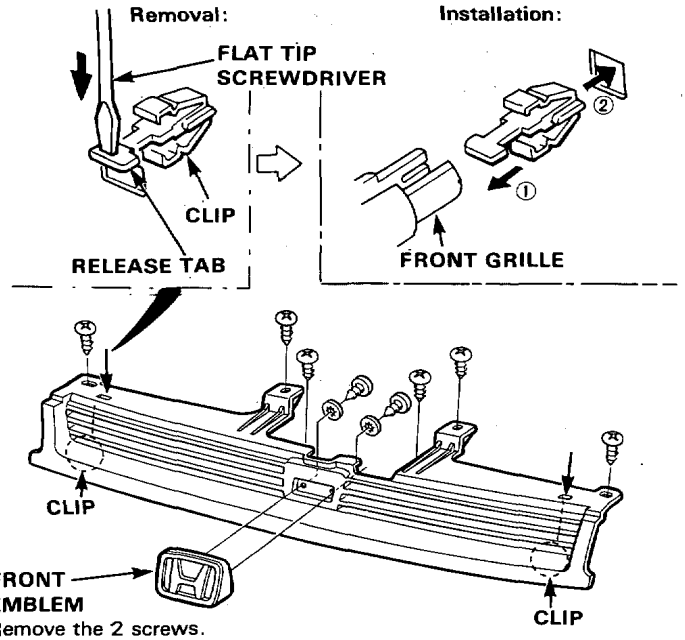
7. To install, reverse the removal procedure.
   Check that the tailgate and fuel filler lid opener cables are routed and connected properly.

Downloaded from www.Manualslib.com manuals search engine

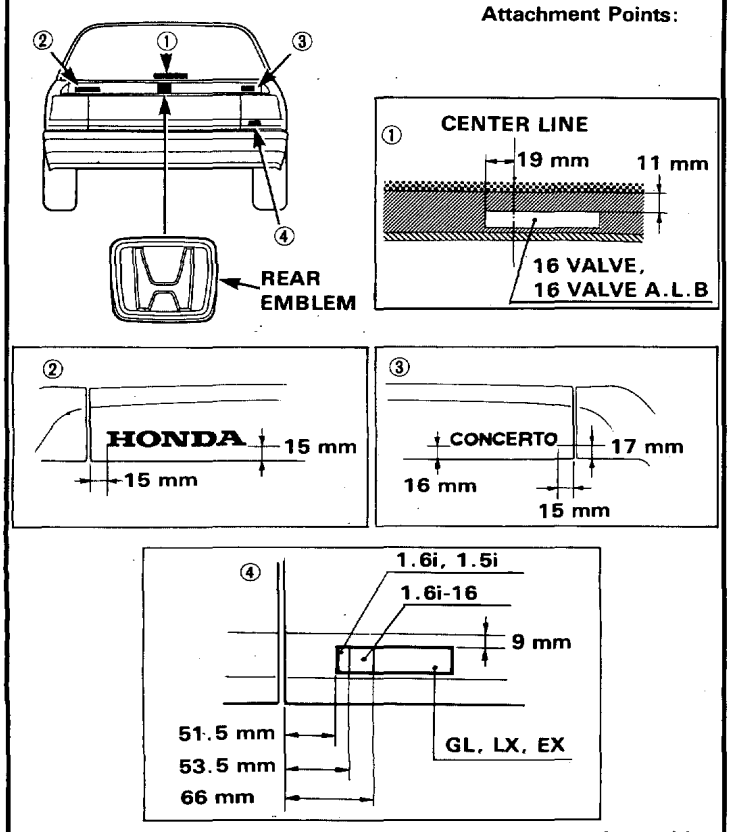
Front Grille/Emblem

Front Grille Replacement

◯ : Clip Locations



Emblem Installation



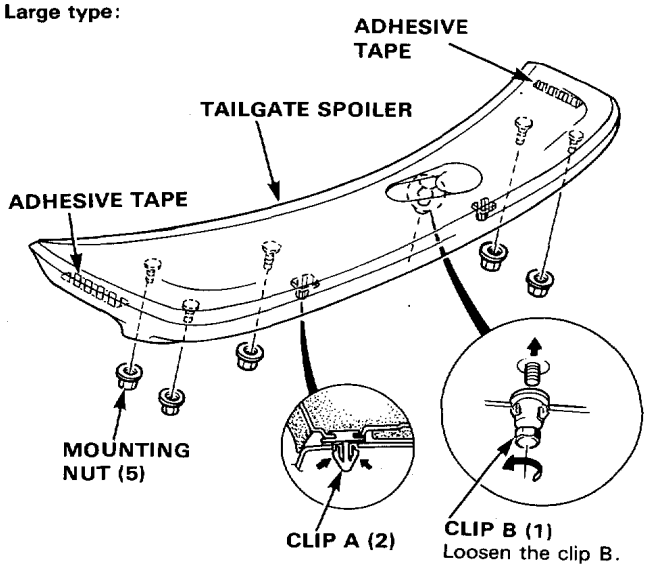
NOTE: Before sticking, clean the body bonding surface with a sponge dampened in alcohol.

Tailgate Spoiler

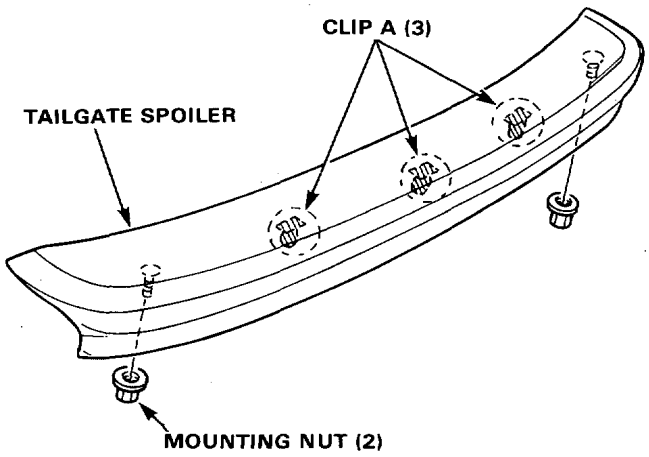
Replacement

1. Detach the clips and remove the mounting nuts, then carefully pull the spoiler and off of the tailgate.
   NOTE: Take care not to scratch or score the tailgate.

Large type:



Small type:



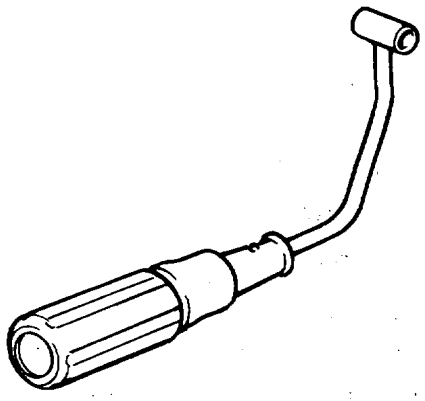
2. Install the spoiler in the reverse order removal.

NOTE:
- If necessary, replace any damaged clips.
- Before installing, clean the tailgate bonding surface with a sponge dampened in alcohol.

Downloaded from www.Manualslib.com manuals search engine

Special Tools

No.	Tool Number	Description	Q'ty	Remarks
①	07GAZ—SE30100	Torsion Bar Assembly Tool	1	



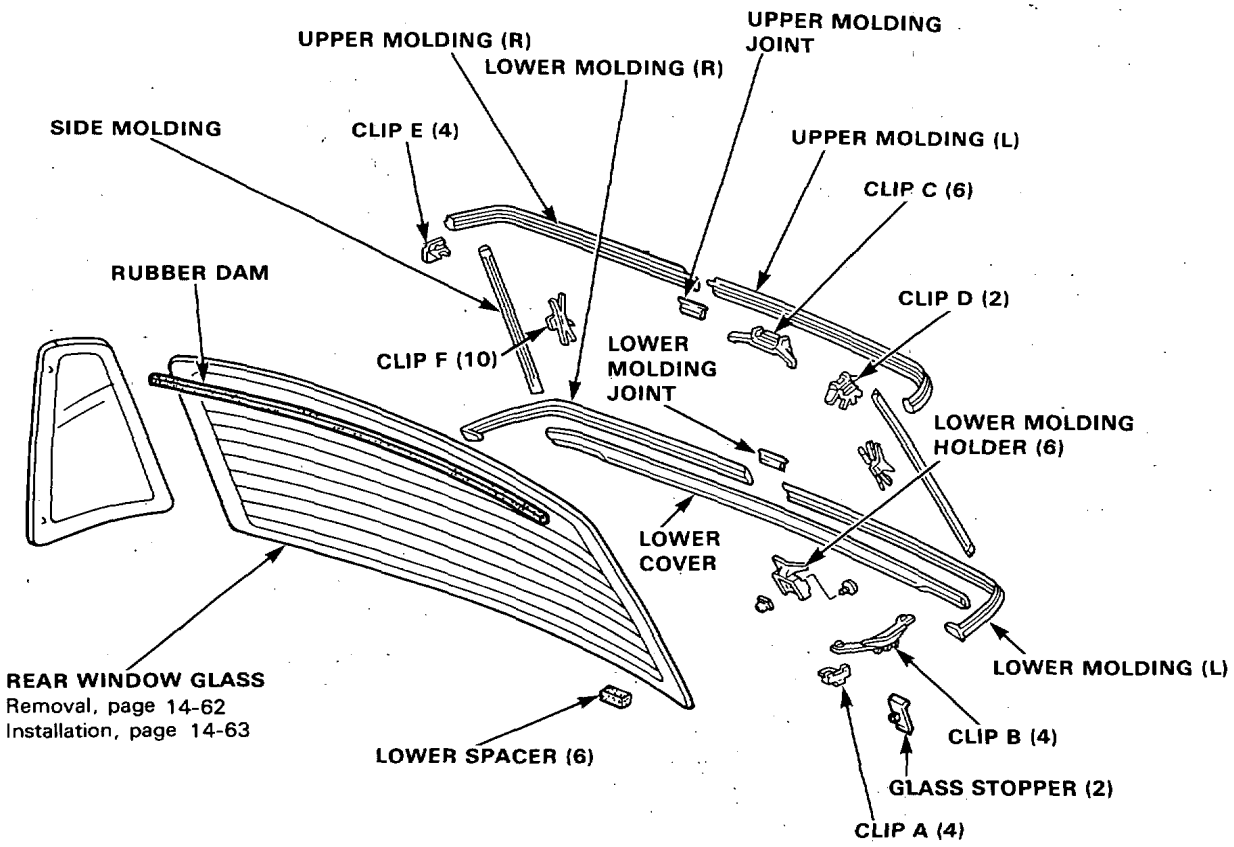
①

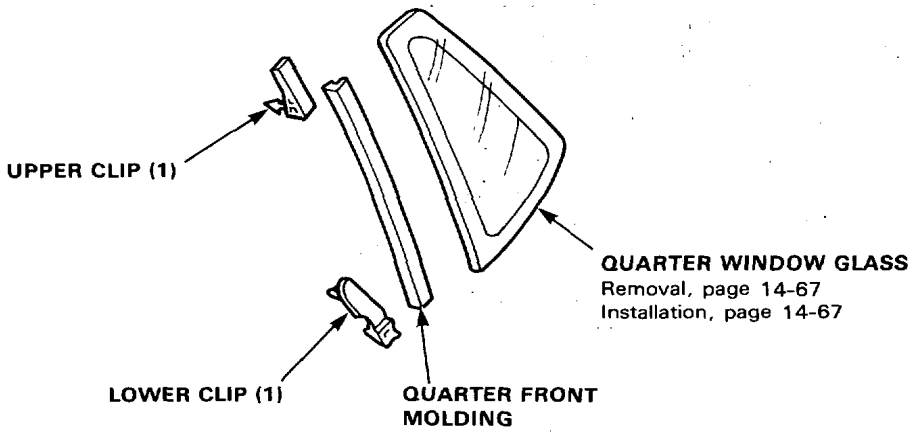
Downloaded from www.Manualslib.com manuals search engine

Rear Window Glass, Quarter Window Glass

Index

( ): Quantity of part used.





Downloaded from www.Manualslib.com manuals search engine

Rear Window Glass

Removal

CAUTION:
- **Wear gloves to remove and install the glass.**
- **Do not damage the defroster grid lines.**
- **Use seat covers to avoid damaging surface.**

1. Remove the trunk rid (page 14-72).

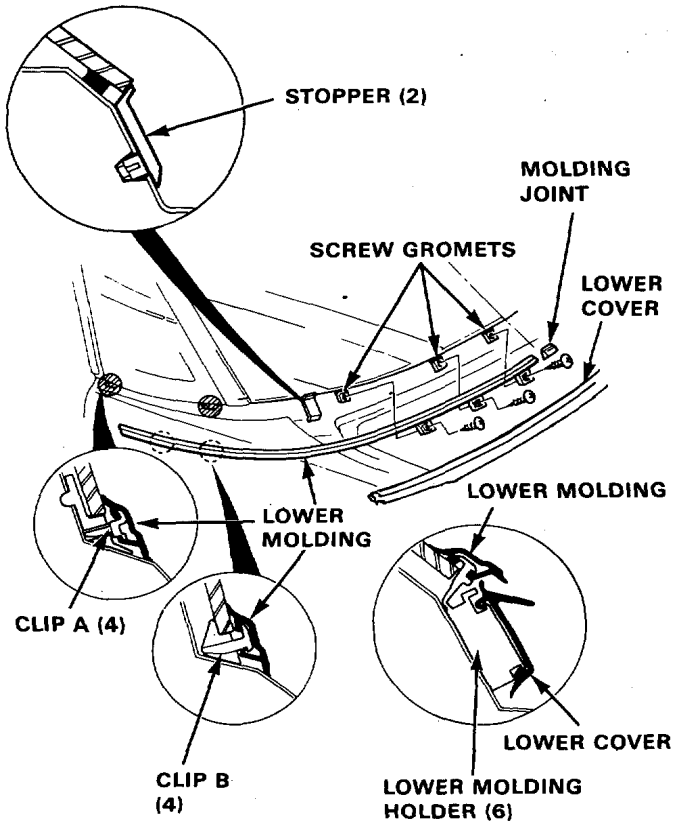
2. To remove the rear glass, first remove:
   - Quarter window trim panel (page 14-70).
   - Rear shelf (page 14-70).

3. Disconnect the defroster leads, and remove their holders.

   NOTE: Avoid scratching or scoring the glass with the cutter blade.

4. Remove the lower cover and screws, then remove the lower moldings.

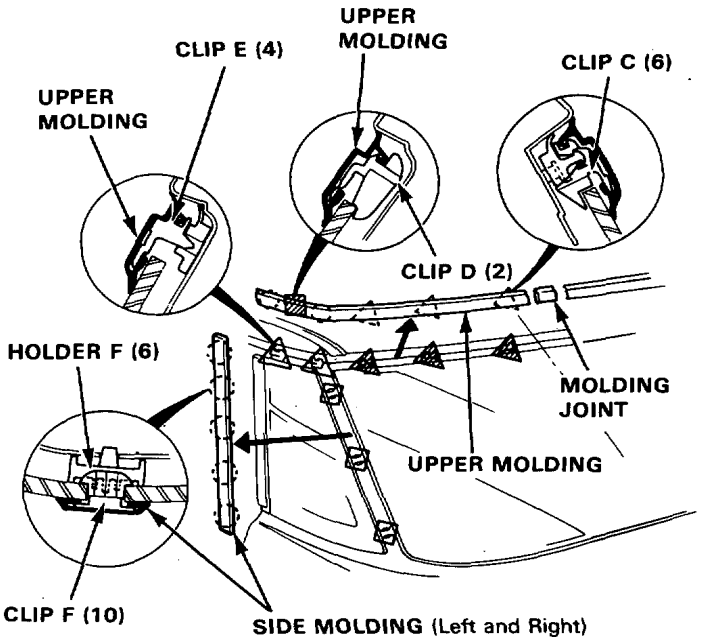
5. Remove the left and right stoppers.



6. If necessary remove the screw gromets.

7. Detach the 12 clips and remove the upper moldings.

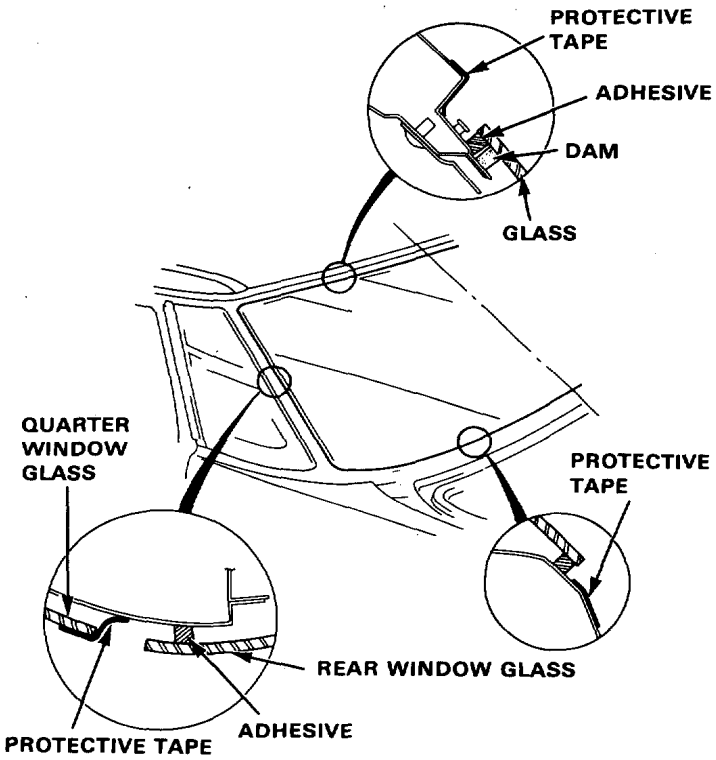
8. Detach the 10 clips and remove the side moldings.



9. Lower the rear of the headliner (page 14-40).

   CAUTION: Take care not to bend the headliner excessively.

10. Apply protective tape along the edge of the body next to the glass as shown.

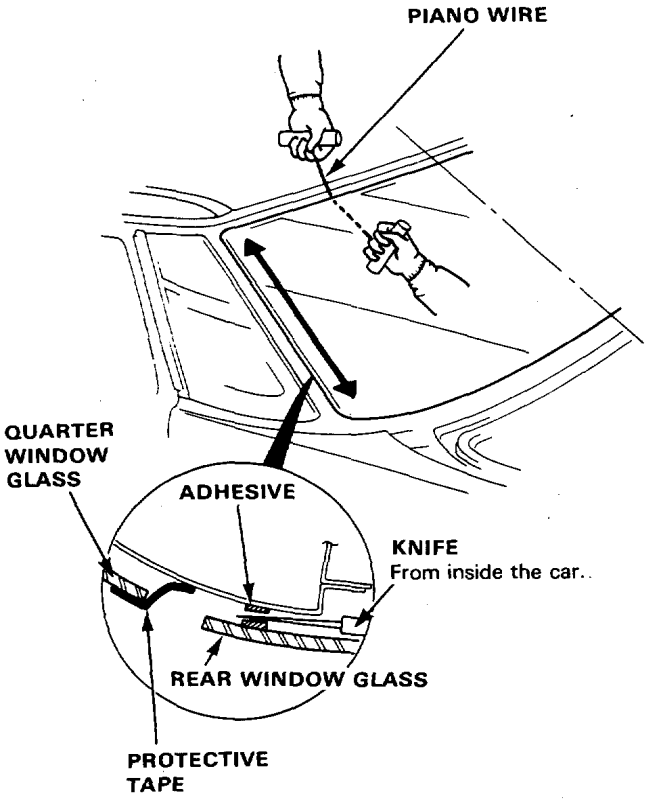


Downloaded from www.Manualslib.com manuals search engine

11. Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.

12. 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.



13. Remove the molding clips and the rubber dam and spacers.

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 and dam material from the body.
- Mask off surrounding surfaces before applying primer.

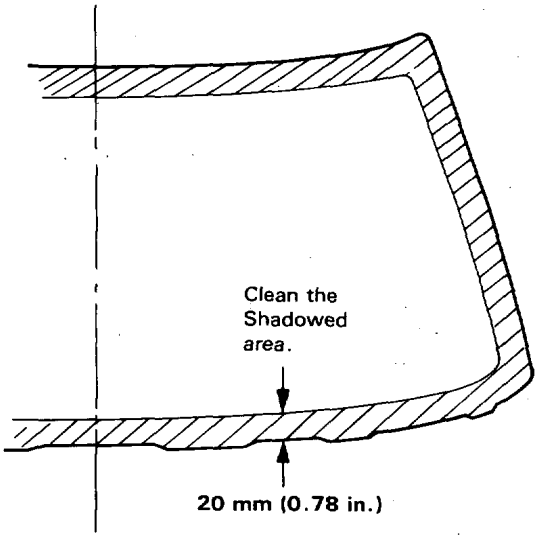
2. Clean the body bonding surface with a sponge dampened in alcohol.

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.

CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.



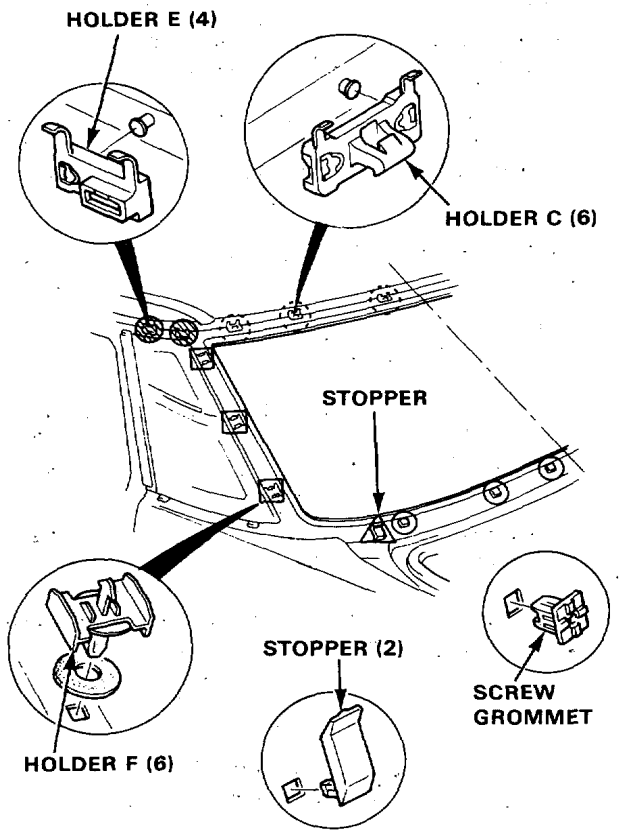
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

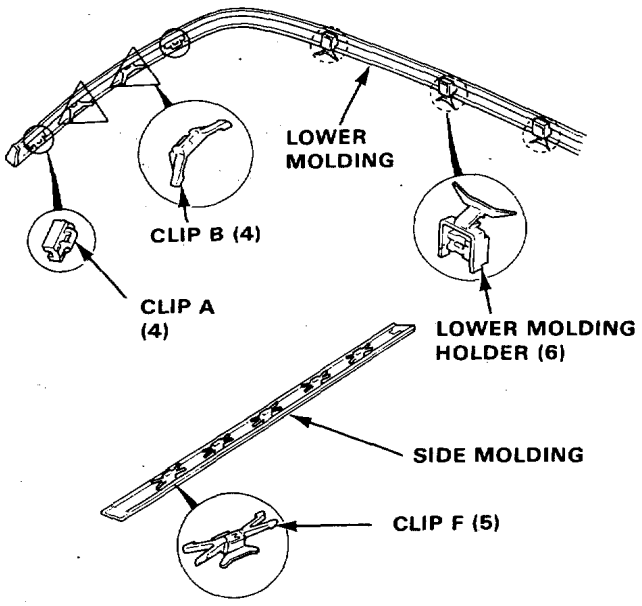
Rear Window Glass

Installation (cont'd)

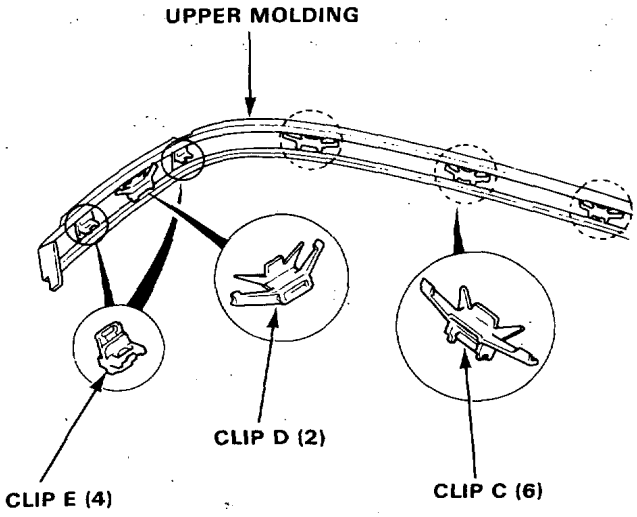
4. Install the screw grommets, stoppers and holders as shown.



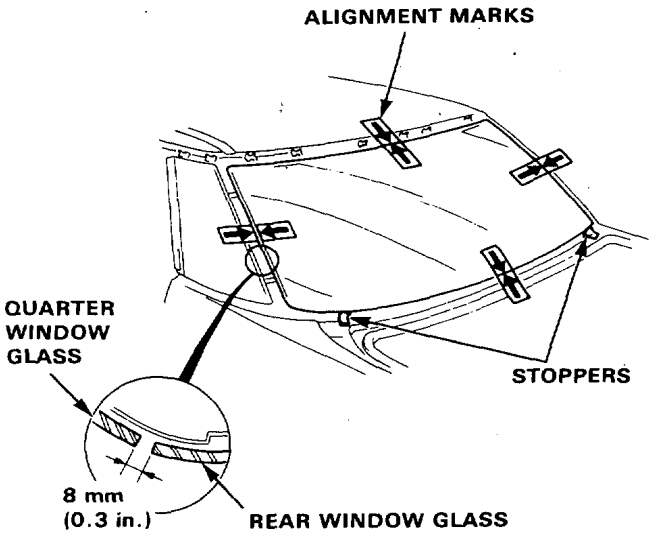
5. Attach the clips to the side and lower moldings as shown.



6. Attach the clips to the upper moldings as shown.



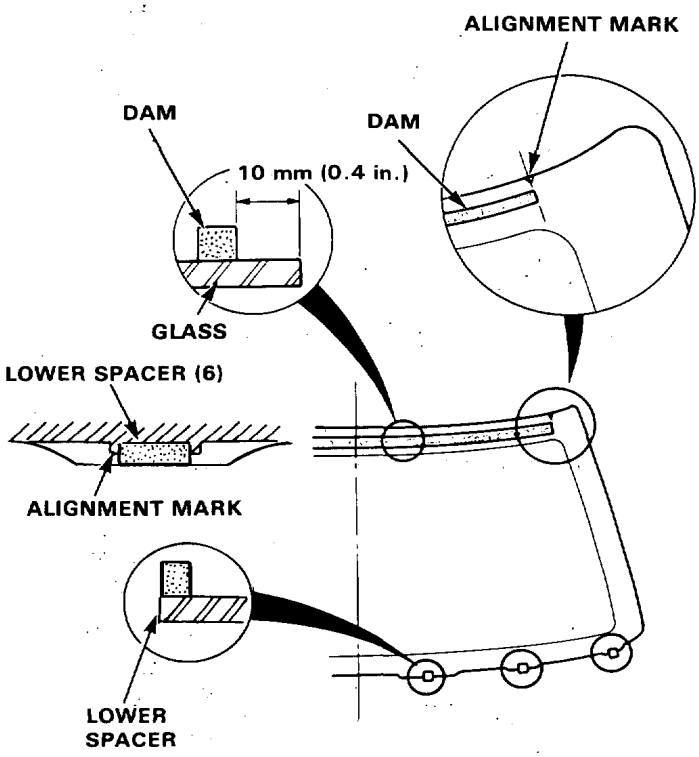
7. Set the glass upright on the stoppers, and center it in the opening. Make the location by marking lines across the glass and body with a grease pencil at the four points shown.



Downloaded from www.Manualslib.com manuals search engine

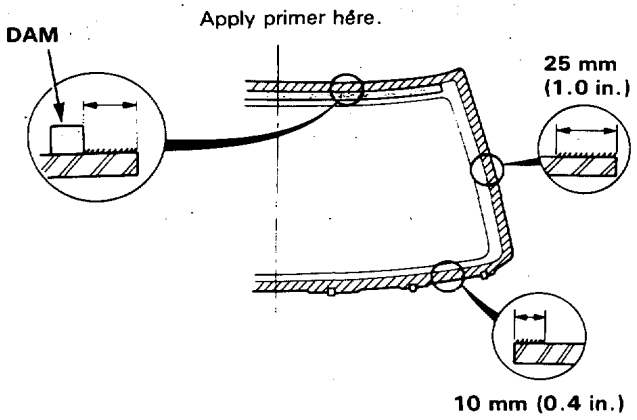
8. Glue the rubber dam and lower spacers to the inside face of the glass as shown, to contain the adhesive during installation.

NOTE: Be careful not to touch the glass where adhesive will be applied.



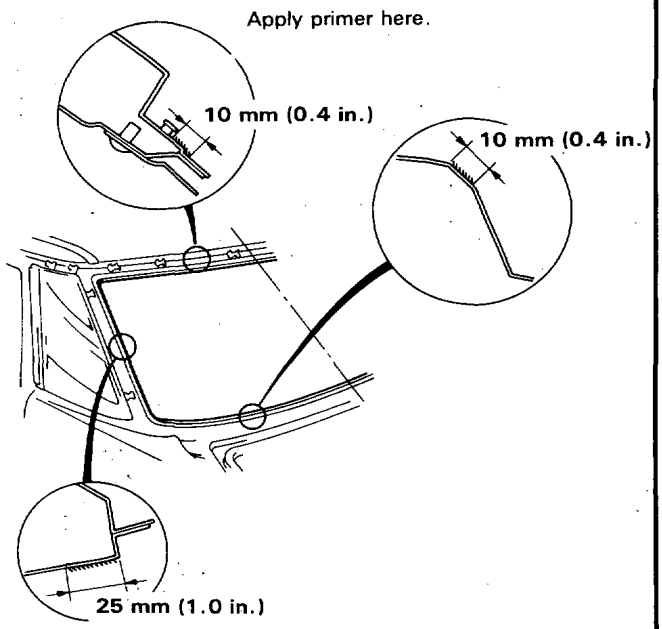
9. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

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.



10. 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.

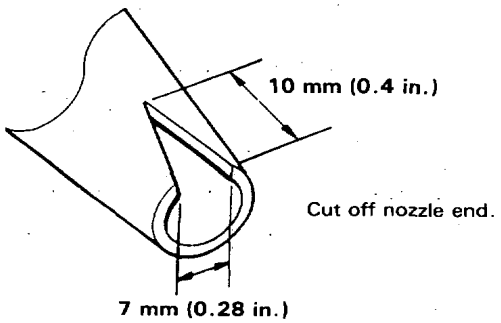


11. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a puttty knife.

NOTE: Clean the plate with a sponge and alcohol before mixing.

12. Follow the instructions that came with the adhesive

13. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



(cont'd)

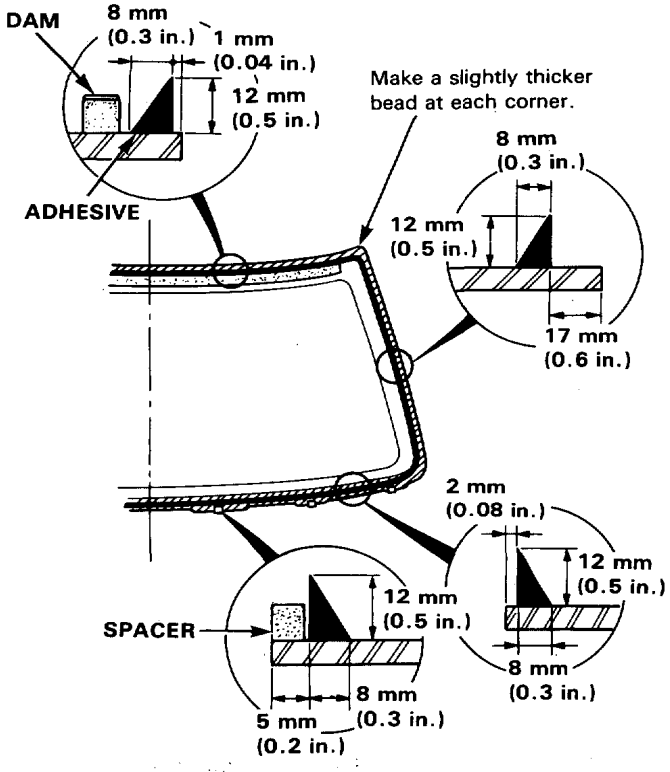
Downloaded from www.Manualslib.com manuals search engine

Rear Window Glass

Installation (cont'd)

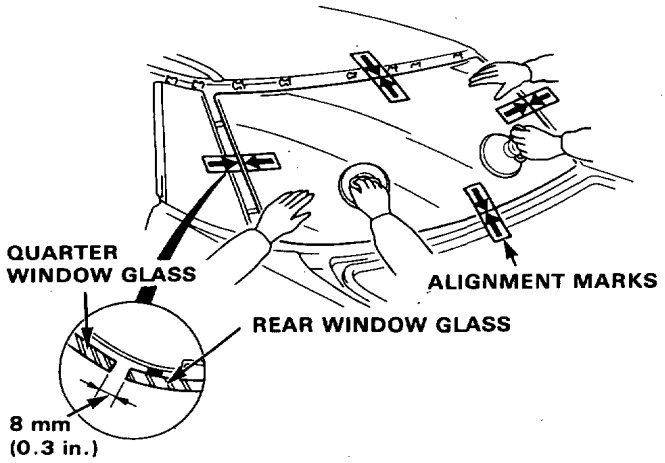
14. Pack adhesive into the cartridge whithout air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

    NOTE: Peel off the backing of dam.



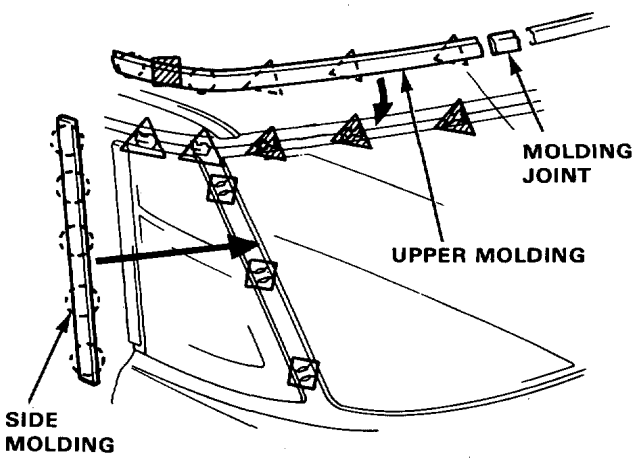
15. Use suction cups to hold the glass over the opening, align it with the marks made in step 7 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not close or open the doors until adhesive is dry.

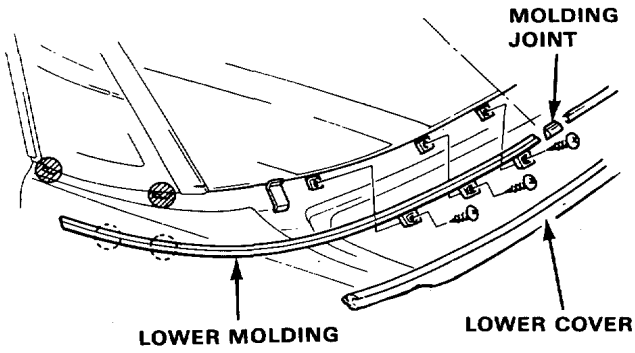


16. Install the right and left side moldings.

17. Install the molding joint and the upper moldings.



18. Install the lower moldings and lower cover.



19. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a soft shop towel dampend with alchol or unleaded gasoline to remove adhesive from a painted surface or glass.

20. 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.

21. Fix the headliner back into position then install:

    - Quarter window trim panel.
    - Rear shelf.

Downloaded from www.Manualslib.com manuals search engine

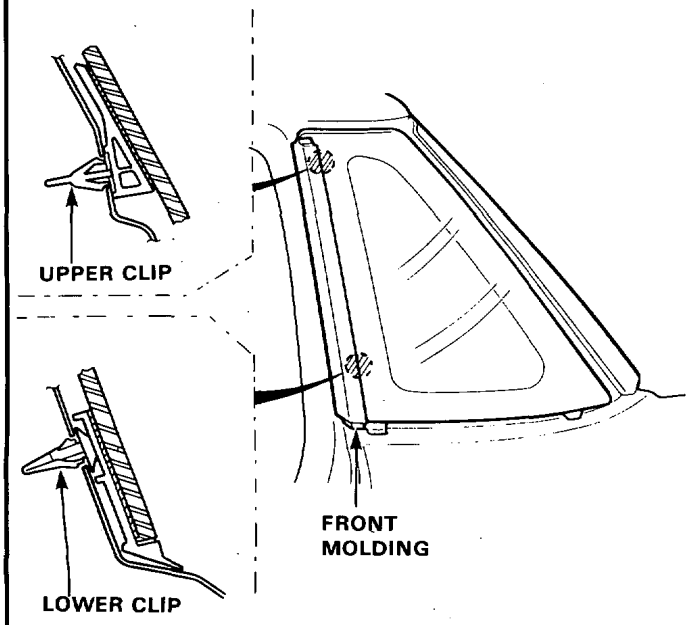
Quarter Window Glass

Removal

CAUTION:
- **Wear gloves to remove and install the glass.**
- **Take care not scratch or score the quarter window moldings.**
- **Use seat covers to avoid damaging surface.**

1. Remove the quarter window trim panel (page 14-70).
2. Remove the rear upper molding, side molding and lower molding (page 14-62).
3. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area (page 14 -27).
4. *Use a knife to cut the clips from inside the car,* then remove the quarter glass.

   NOTE: Be careful not to cut the molding.



NOTE: Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.

NOTE: Apply protective plate along the edge of the body next to the glass (page 14-27).

5. If necessary, remove the quarter front molding.
6. Carefully take off the clips.

   NOTE: Before removing the clips, note the upper and lower clip locations.

Installation

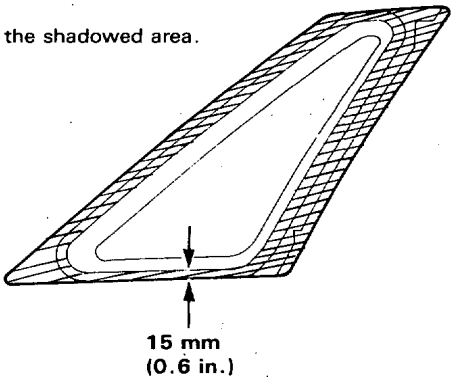
1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - 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.

Clean the shadowed area.



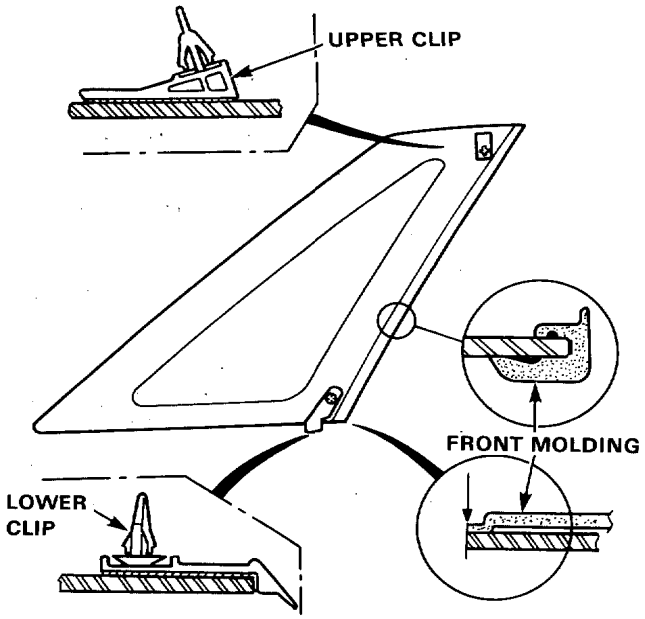
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Quarter Window Glass

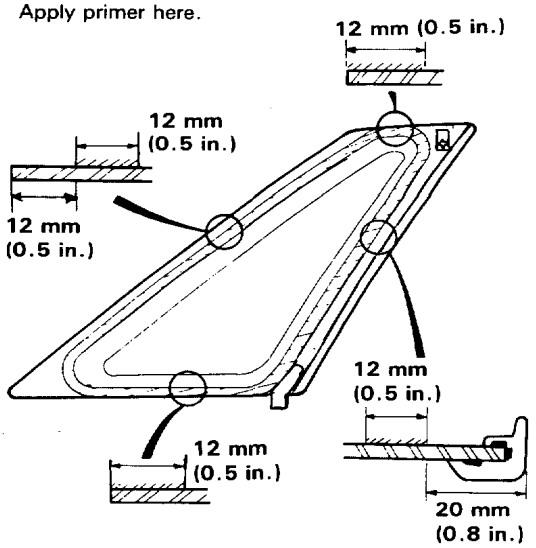
Installation (cont'd)

4. Glue the upper, lower and front molding to the glass as shown.



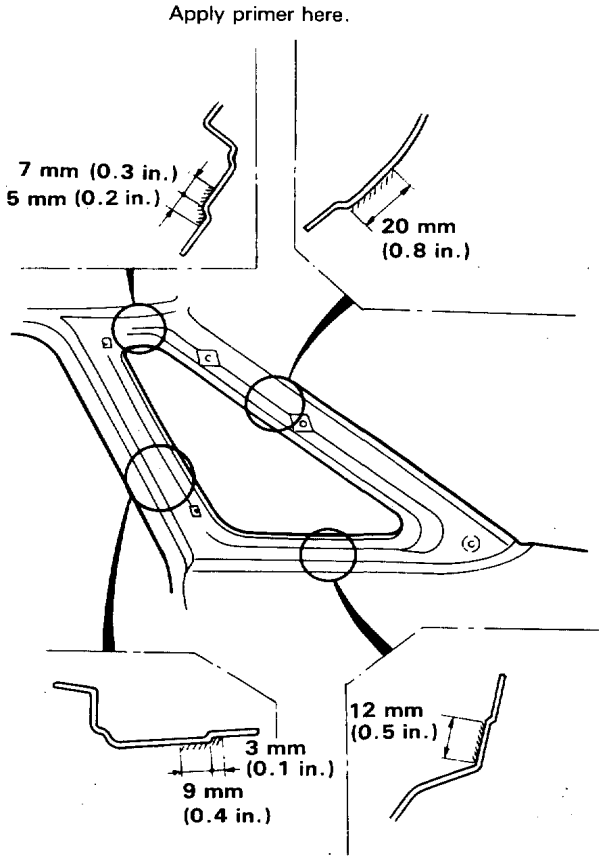
5. With a sponge, apply a light coat of glass primer around the edge of glass as shown, then lightly wipe it off with gauze or cheesecloth.

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.



6. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

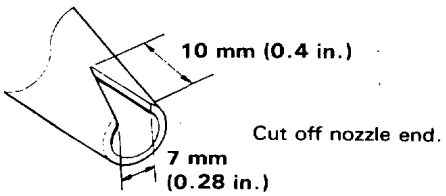
NOTE:
- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.



7. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

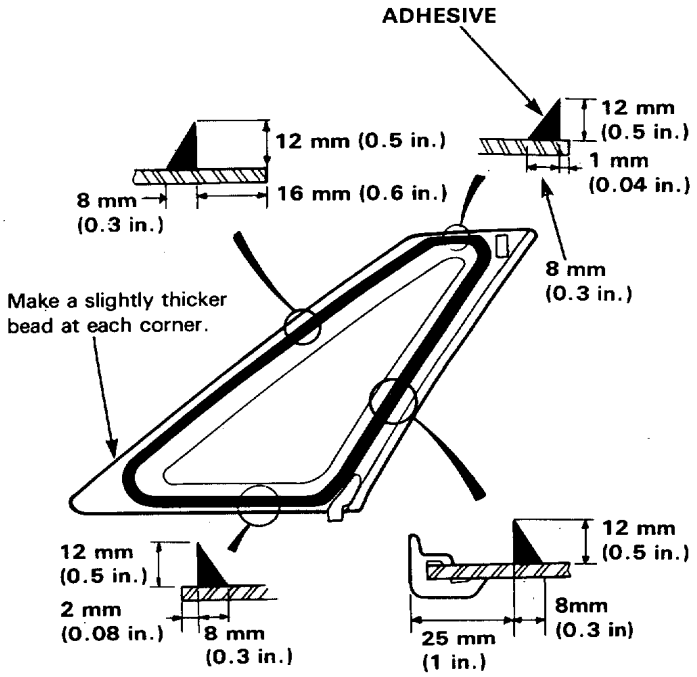
NOTE:
- Clean hthe plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

8. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



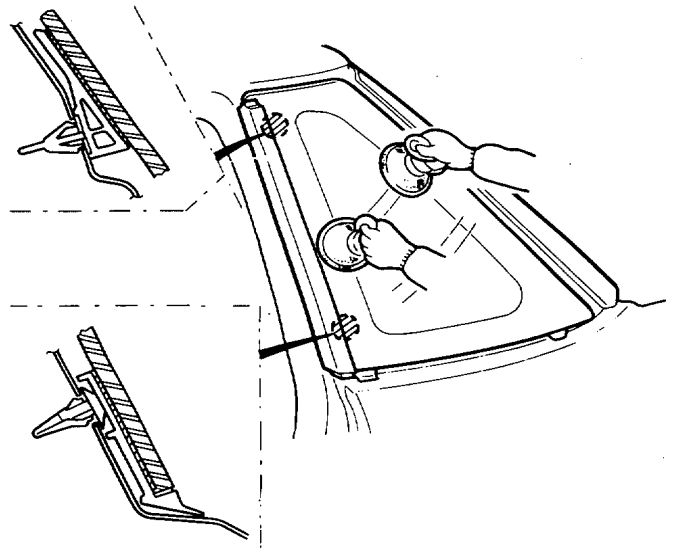
Downloaded from www.Manualslib.com manuals search engine

9. 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.



10. 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 and close the doors until the adhesive is dry.



11. Scrape or wipe the excess adhesive off with a putty knife or gauze.

12. Install the rear upper molding, side molding and lower molding.

    NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

13. 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 least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

14. Reassemble all remaining removed parts.

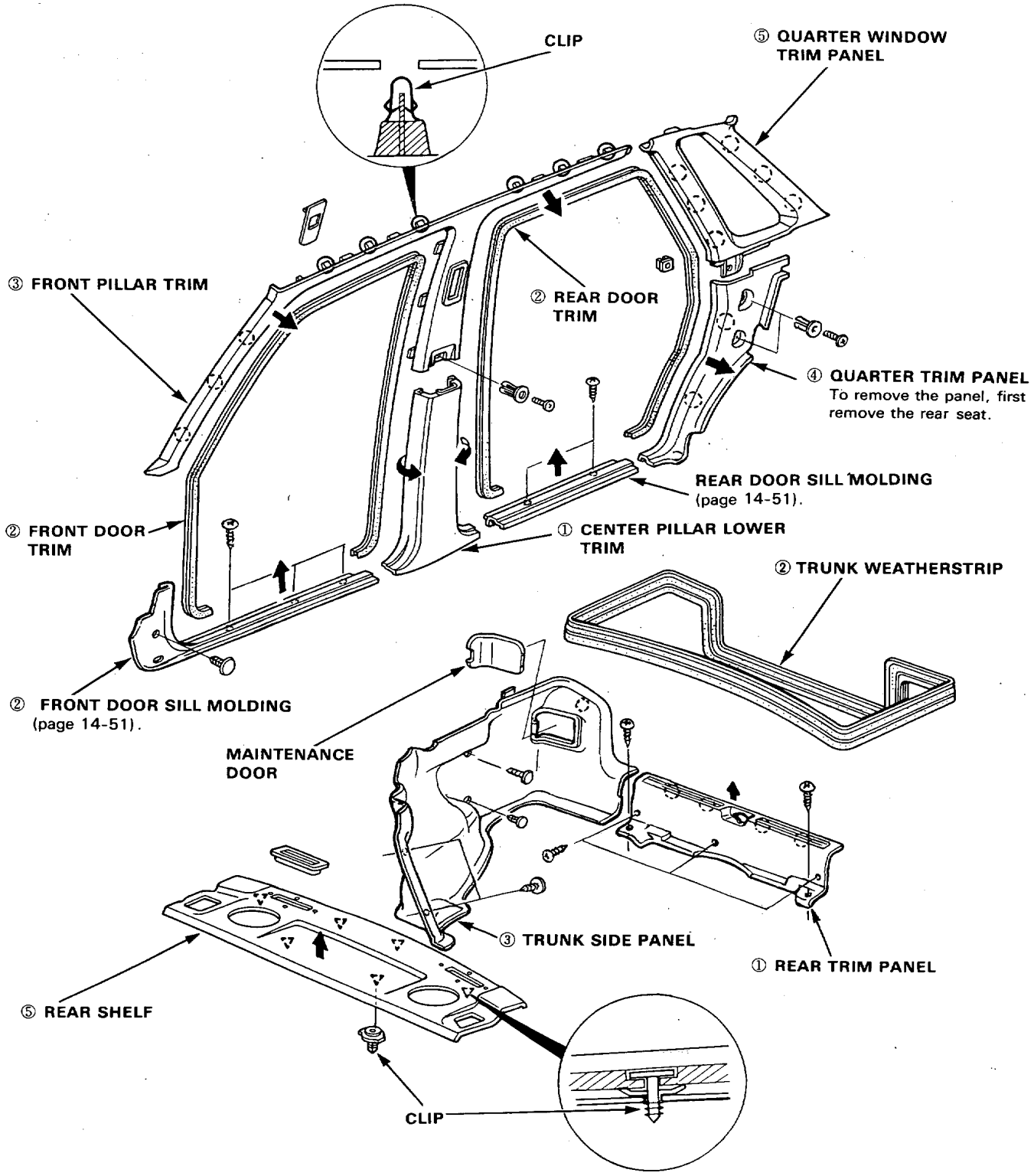
Downloaded from www.Manualslib.com manuals search engine

Interior Trim

Replacement

Disassemble in numbered sequence.

○ : Clip locations.

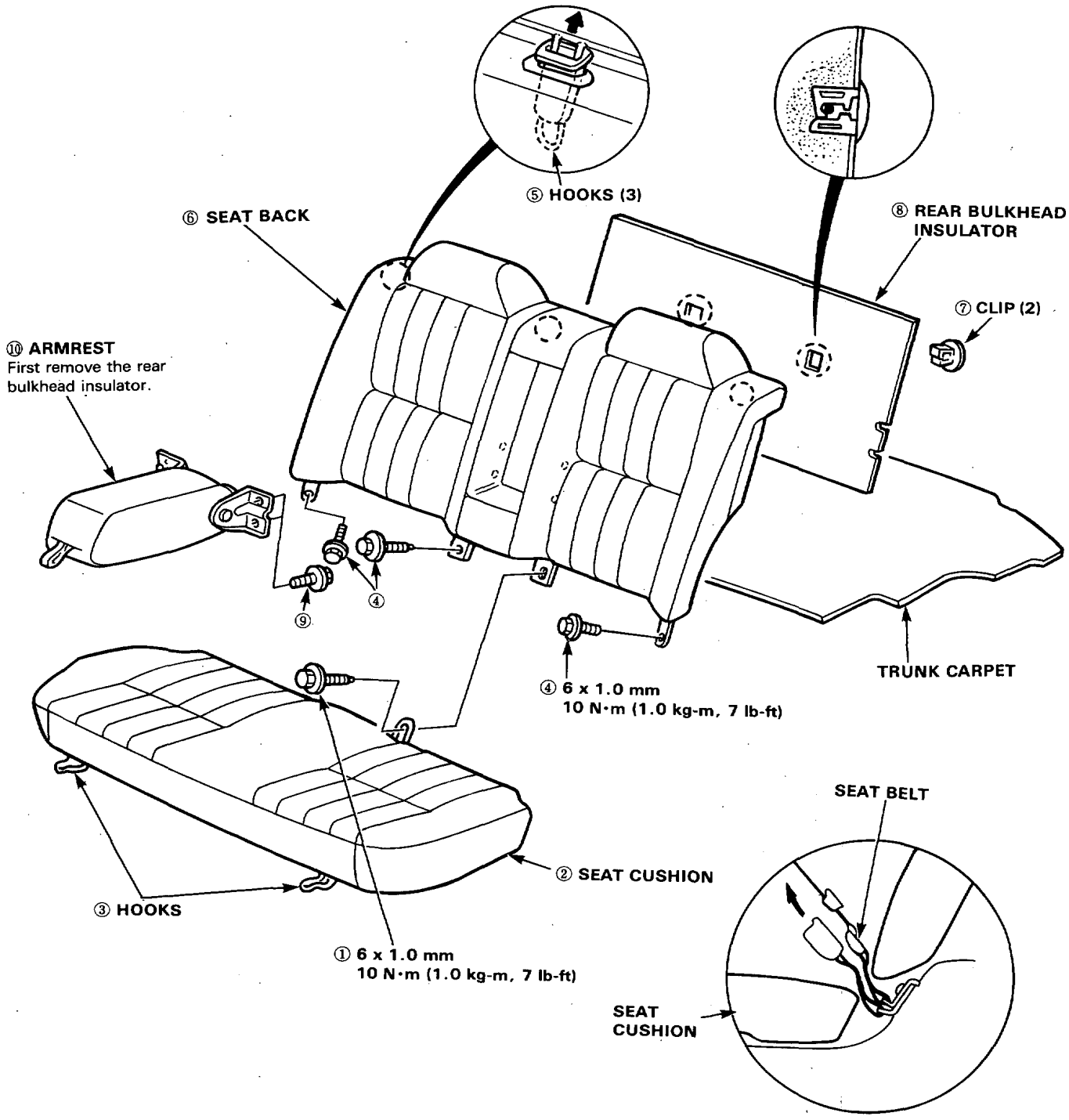


Downloaded from www.Manualslib.com manuals search engine

Rear Seats

Replacement

Disassemble in numbered sequence.



NOTE: Attaching the seat cushion, make sure there are no twists in the seat belts.

Downloaded from www.Manualslib.com manuals search engine

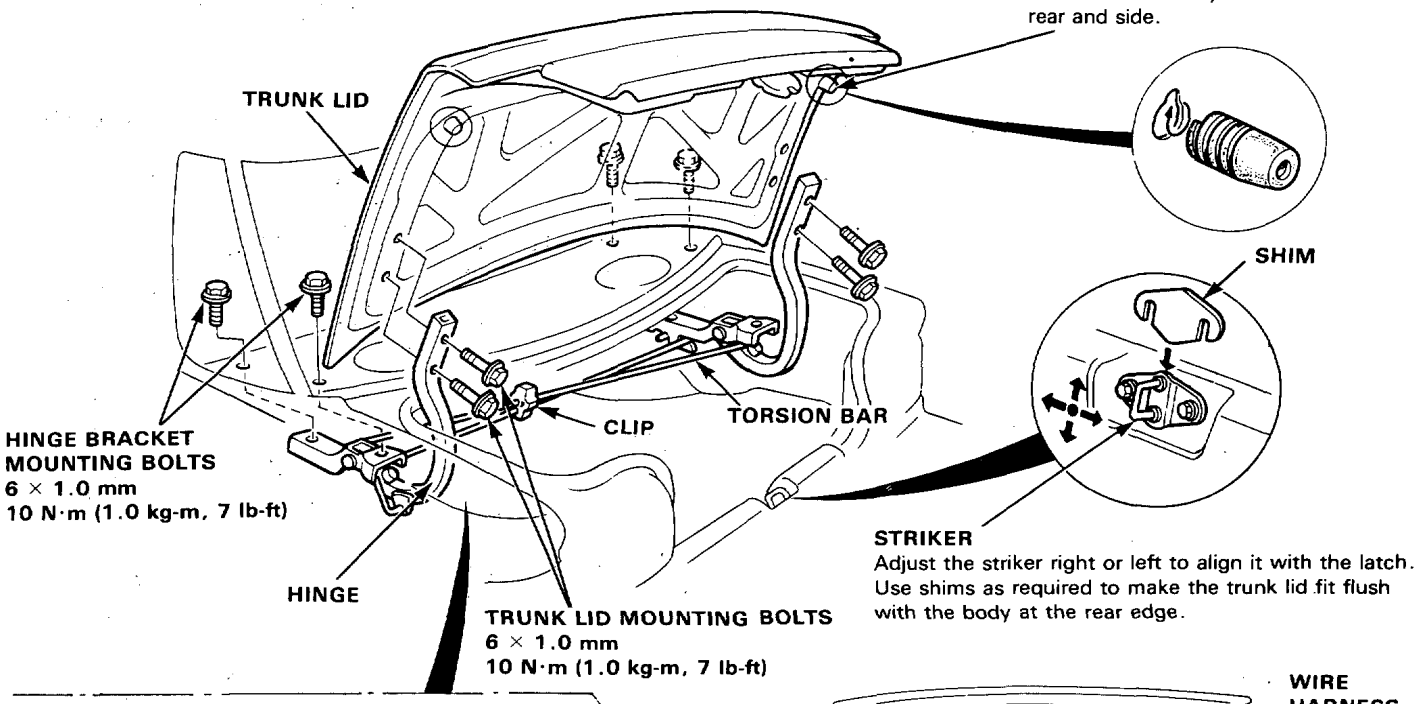
Trunk Lid

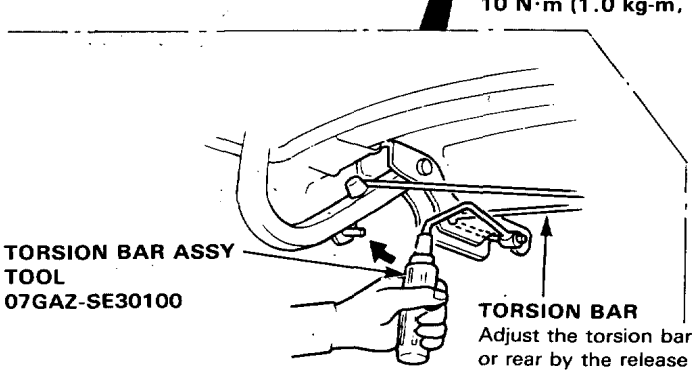
Replacement/Adjustment

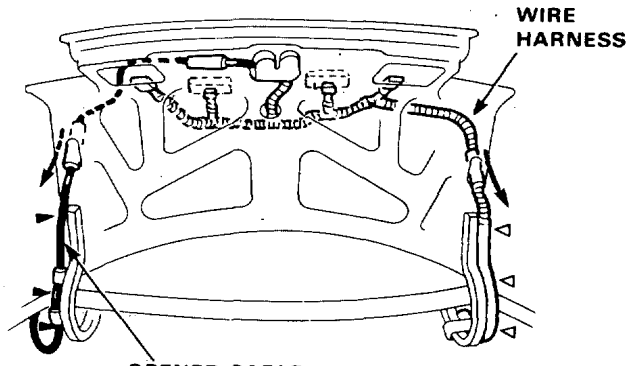
1. Pull the harness and trunk lid opener cable (page 14-73) out of the trunk lid.

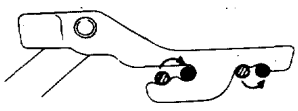
   NOTE: Before pulling out the wire harness and opener cable, tie a string to the end of it so you can pull it back in when the trunk lid is reinstalled.

2. Remove the trunk lid mounting bolts, then lift off the lid.
3. Remove the torsion bar using a assembly tool.
4. Remove the rear shelf.
5. Remove the hinge bracket mounting bolts, then remove the hinges from the trunk.

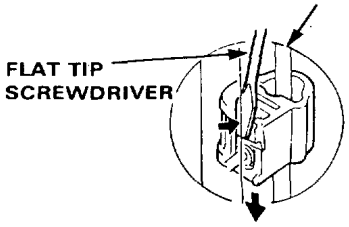




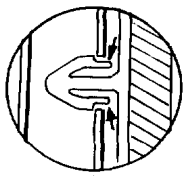




◍ = Normal tension
● = Higher tension



▶: Locations



▷: Locations

6. Assemble in the reverse order.

   NOTE: Before tightening the trunk lid mounting bolts, adjust the trunk lid fit and striker.

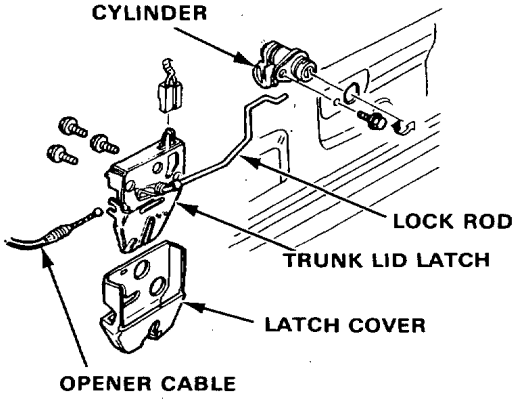
Downloaded from www.Manualslib.com manuals search engine

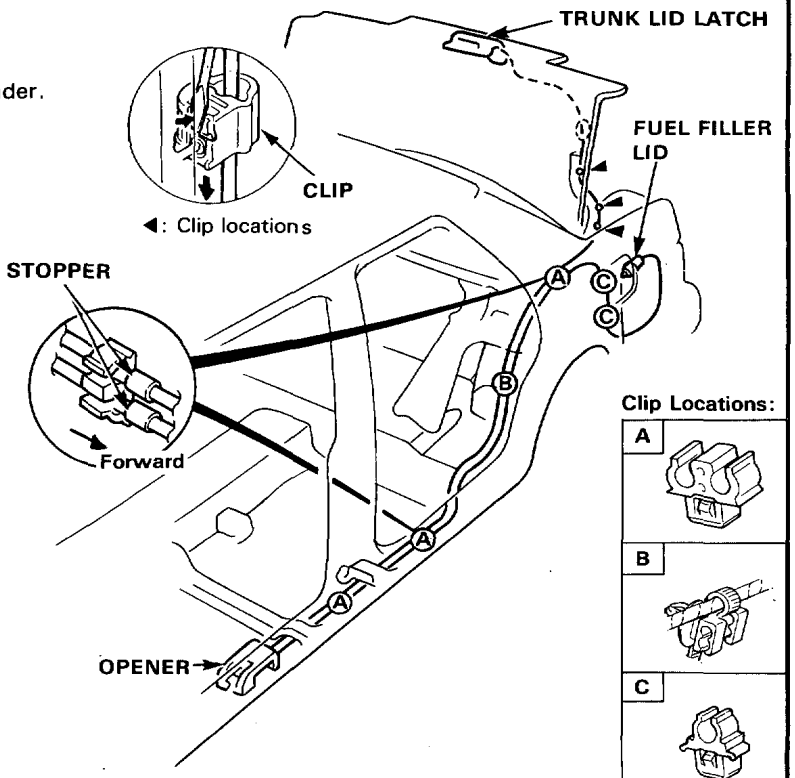
Trunk Lid Opener/Emblem

Trunk Lid Opener Replacement

LHD:

1. To remove the opener cables, remove the following parts:
   - Left side door sill moldings, left and rear half of carpet.
   - Left quarter trim panel, and left trunk side panel.
2. Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts (page 14—57)
3. Remove the fuel filler lid latch by turning it 90° (page 14—57).
4. Remove the rear panel garnish.
5. Remove the bolt, then remove the trunk lid lock cylinder.
6. Remove the 3 bolts, then remove the trunk lid latch.
7. Disconnect the opener cable, connector and lock rod.

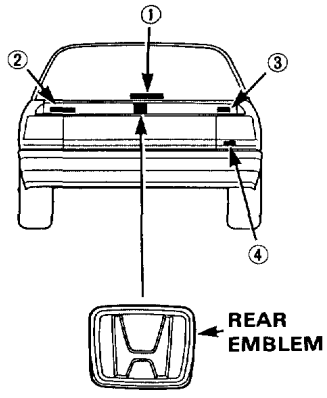


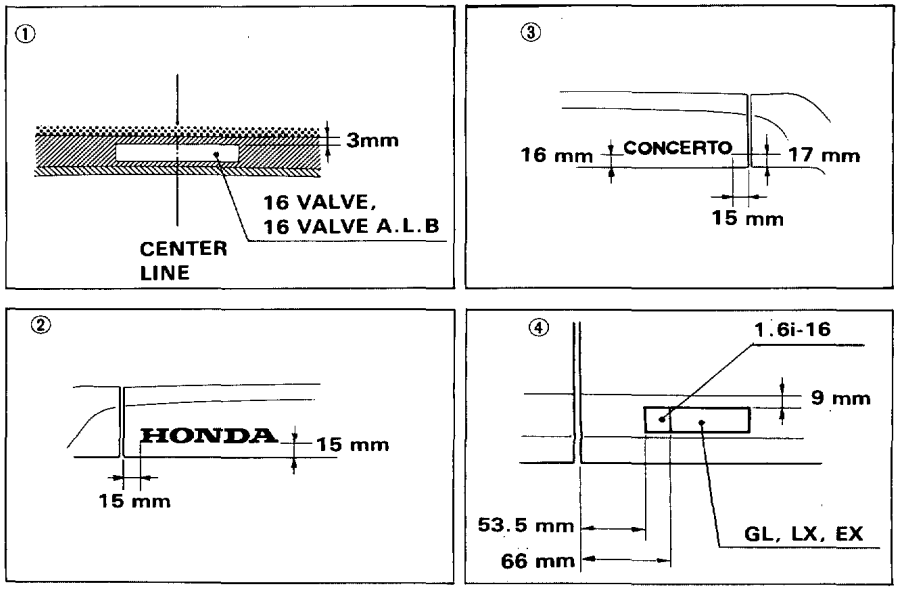


8. To install, reverse the removal procedure. Check that the trunk lid and fuel filler lid opener cables are routed and connected properly.

Emblem Installation

Attachment Points:





NOTE: Before sticking, clean the body bonding surface with a sponge dampened in alcohol.

Downloaded from www.Manualslib.com manuals search engine

Discharge Procedure

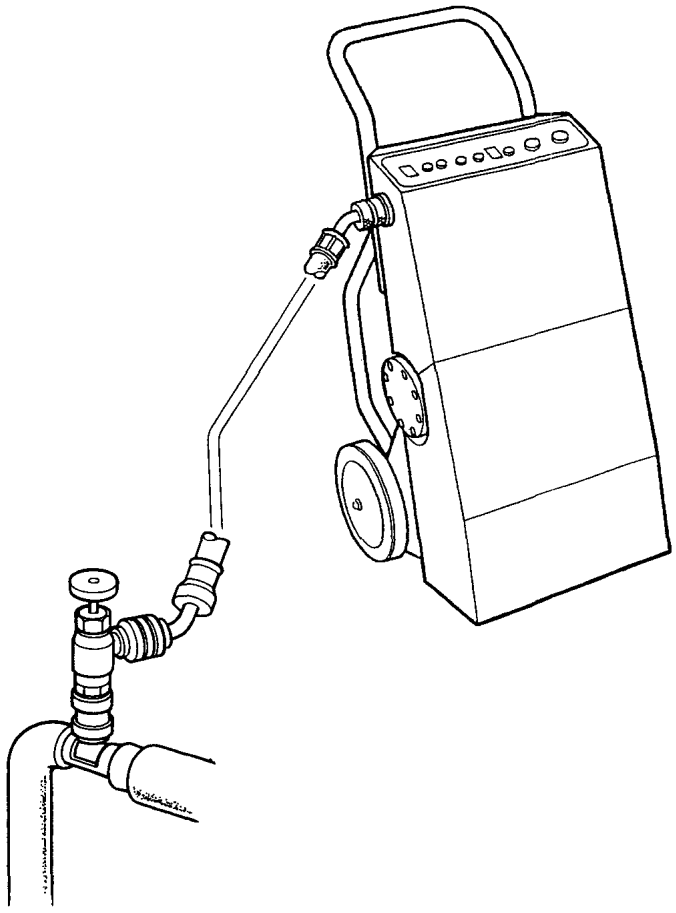
Discharge

⚠ 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 a Refrigerant Recovery System to the A/C system.
2. Operate the Refrigerant Recovery System according to the manufacturer's instractions.
   IMPORTANT: Do not vent refrigerant to the at mosphere. The chlorofluorocarbons (CFCs) used in conventional refrigerant (R-12) may damage the earth's ozone layer. Always use UL-listed, refrigerant recovery/recycling equipment to extract the refrigerant before you open an A/C system to make repairs. Follow the equipment manufacturer's instructions.

Refrigerant Recovery/Recycling System.



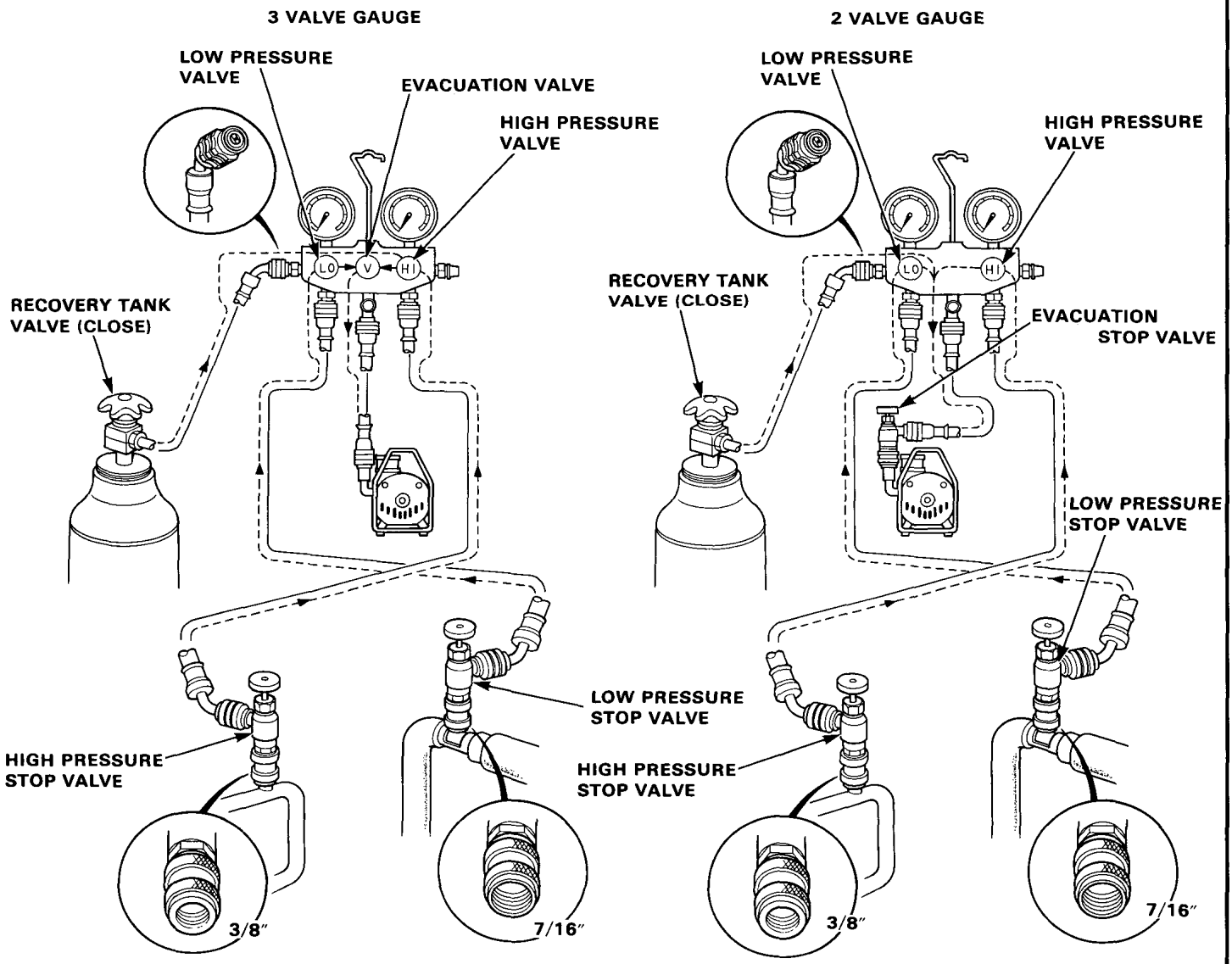
Downloaded from www.Manualslib.com manuals search engine

System Charging

System Evacuation

The followinag are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

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. Connect a gauge, pump and refrigerant containers (recovery tank of R12) as shown.
   NOTE: Do not open the recovery tank.
3. Start the pump, then open the both pressure valves, both pressure stop valves and evacuation valve (2 valve gauge: evacuation stop valve). Run the pump for about 15 minutes. Close the both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve) and stop the pump. The low gauge should indicate above 700mmHg. (27 in-Hg) and remain steady with the valves closed.
   NOTE: If low pressure does not reach more than 700 mmHg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test).
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.



Downloaded from www.Manualslib.com manuals search engine

System Charging

Leak Test

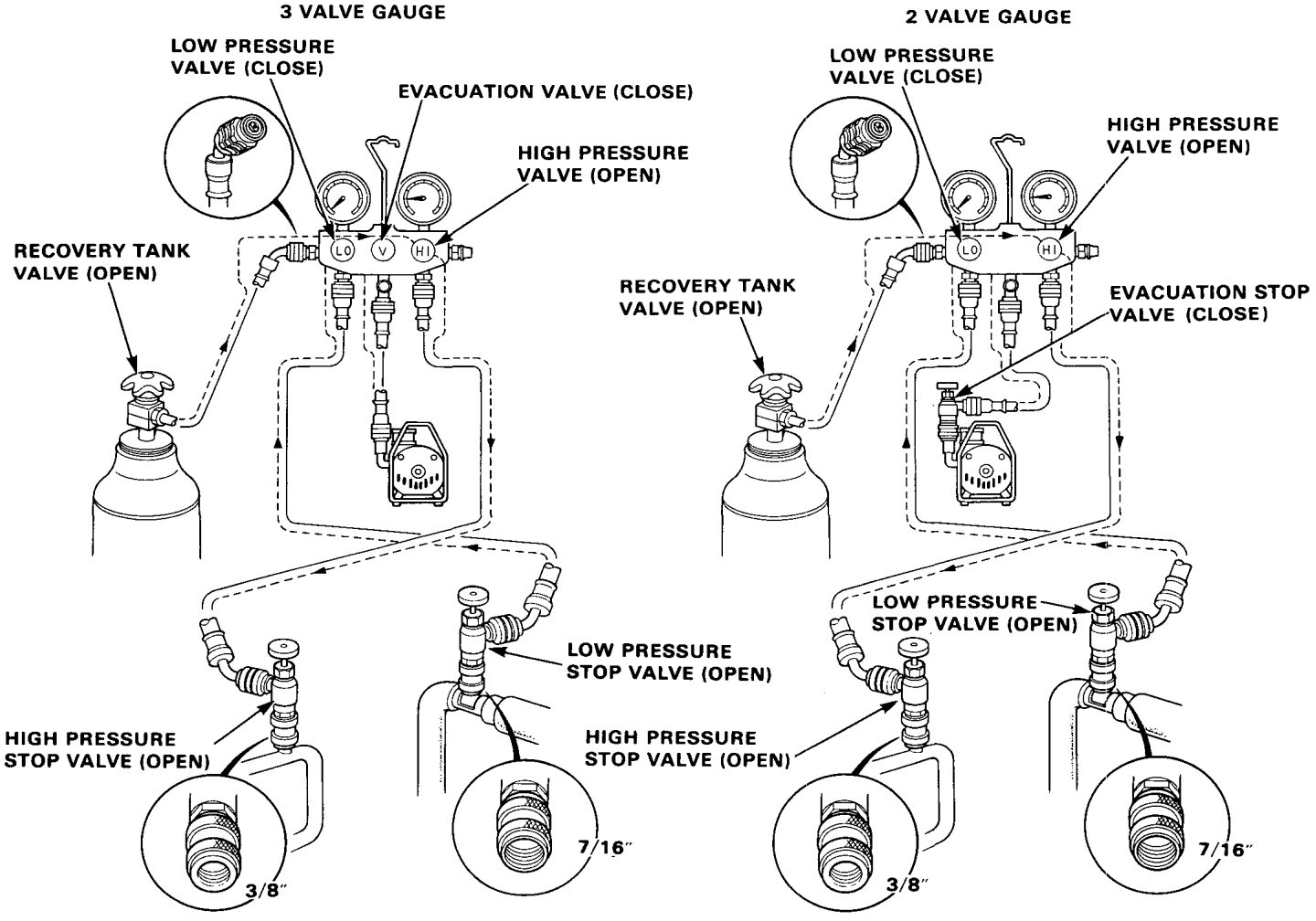
The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

⚠ 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 (recovery tank 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.

NOTE: Check for leaks after evacuation.

1. Close the evacuation valve (2 valve gauge; evacuation stop valve).
2. Open the recovery tank.
3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.
   NOTE: Close the low pressure valve.
4. Check the system for leaks using a leak detector.
   NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.
5. If you find any leaks, tighten the joint nuts and bolts to the specified torque.
6. Recheck the system for leaks using a leak detector.
7. If you find leaks that require the system to be opened (to repair or replace hoses,fittings, etc.), release any charge in the system according to the Discharge Procedure on page.
8. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page).



Downloaded from www.Manualslib.com manuals search engine

Charging Procedures

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

⚠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 (recovery tank 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.

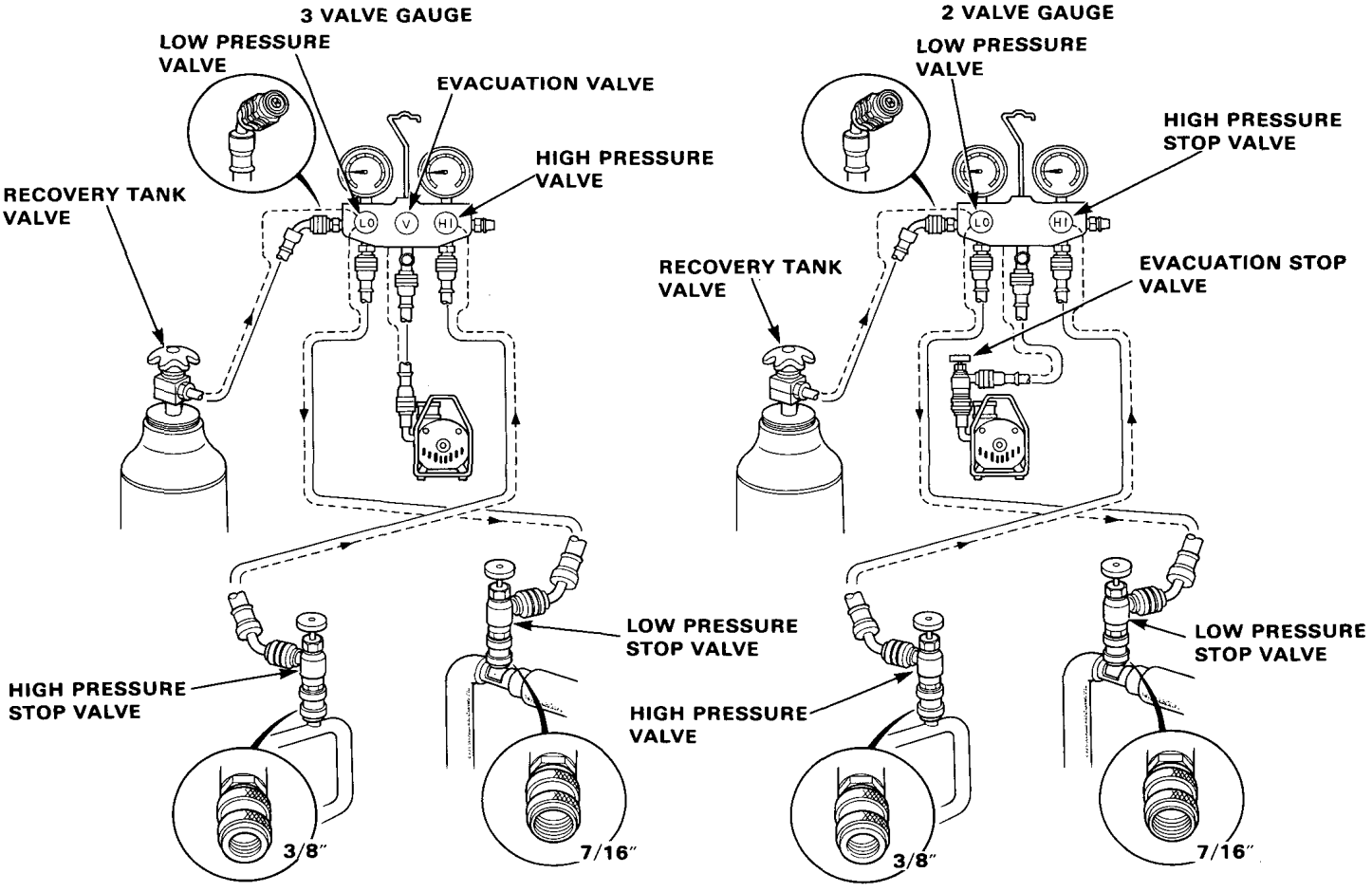
CAUTION: Do not overcharge the system; the compressor will be damaged.

1. After leak test, check that the high pressure valve is closed and start the engine.
   NOTE: Run the engine below 1500 rpm.
2. Open the front door.
   Turn the A/C switch on.
   Turn the air mix dial (lever) to COOL.
   Turn function control switch (lever) on
   Turn the heater fan switch on "E" (MAX).
3. Open the low pressure valve and charge with refrigerant.

⚠WARNING

- Do not open the high gauge valve.
- Do not turn the cans upside down.

4. Charge the system with refrigerant capacity.
   Refrigerant capacity: 900^{+0}_{-509} (32^{+0}_{-50} oz)
   ★Measvre the charged refrigerant capacity using a weighing instrament.
5. When fully charged, close the low pressue valve and the refrigerast cans. Check the system.
6. Close the high pressure stop valve.
7. Open the low pressure valve and gradually open the high pressure valve. When both pressure gauge are the same, close the low pressure stop valve and stop the engine.
8. Disconnect the charge hose quickly.
9. Check the system for leaks using a leak detector.
   NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.



Downloaded from www.Manualslib.com manuals search engine

Supplement

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

⚠ 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 (recovery tank of R-12) stored below 40°C (100°F)
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas ia burned.
- Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect the gauge as shown, close both pressure stop valves. Purge air from the charge hose A, then loosen the stop valve connector.
2. Attach a pump and refrigerant containers as shown.
   NOTE: Do not open recovery tank.
3. Open both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve), start the pump. The low gauge should indicate above 700 mmHg (27 in-Hg), then run the pump about 1 minute.
4. Close both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve). Open both pressure stop valve.
5. Start the engine and turn on A/C switch.
6. Stop the engine and check for leaks using a leak detector.
   NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.
7. Test the system using the pressure test and inspection data.
   Test condition:
   - Start the engine.
   - Turn the air mix dial (lever) to COOL.
   - Turn the function control switch (lever) on .
   - Turn the recirculation control switch on .
   - Turn the heater fan switch on "E" (MAX).

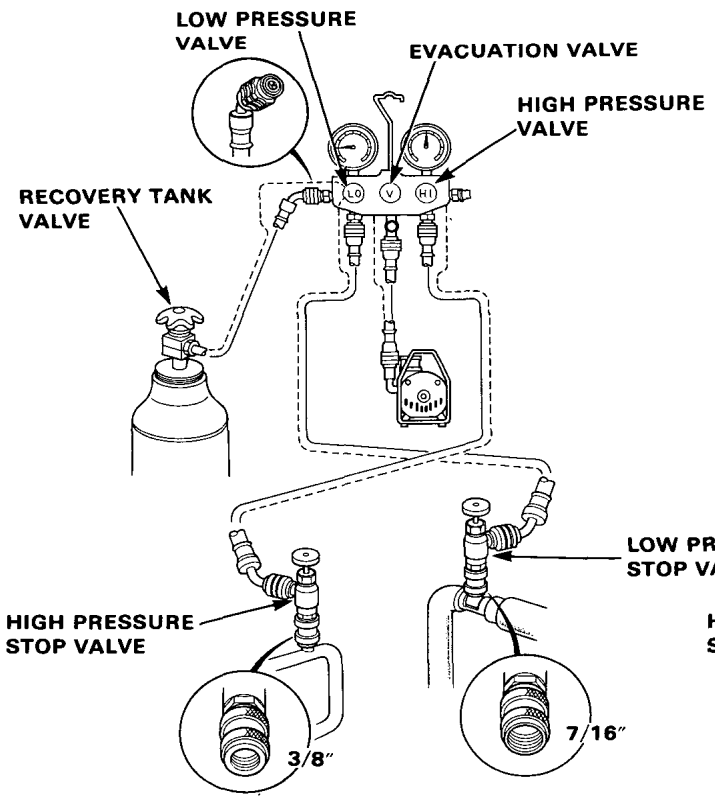
   If there is insufficient refrigerant in system, continue to charge system.
8. Open one or recovery tank, open the low pressure gauge. Charge the system until there are no bubbles in the sight glass.

⚠ WARNING

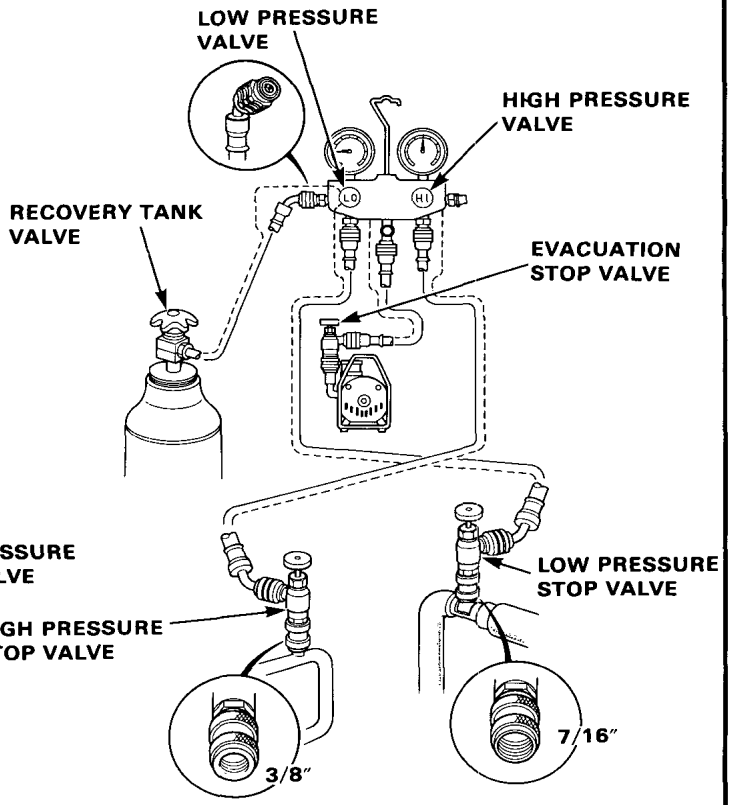
- Do not open the high gauge valve.
- Do not turn the recovery tank upside down.

9. After adding supplemental refrigerant, close the high pressure stop valve. Open the low pressure valve and gradually open the high pressure valve. When pressure gauges read same, close the low pressure stop valve and stop the engine.
10. Disconnect the charge hose quickly.
11. Check the system for leaks using a leak detector.

3 VALVE GAUGE



2 VALVE GAUGE



Downloaded from www.Manualslib.com manuals search engine

Performance Test

The performance test will help determine if the air conditioning system is operating within specifications.

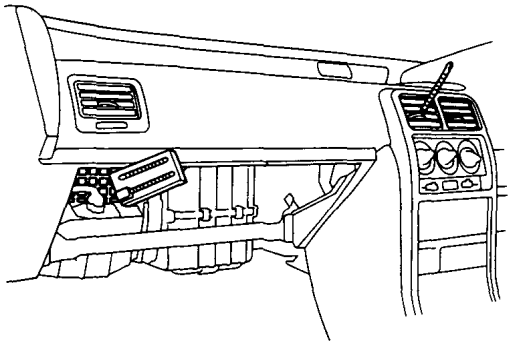
1. Connect the gauges as shown.

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.

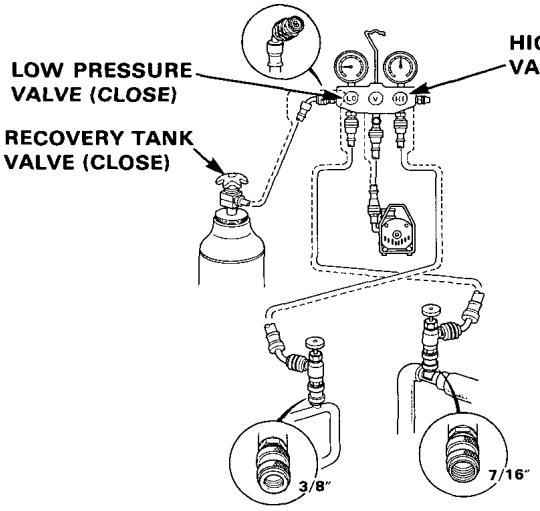
3. Test conditions:
   - Avoid direct sunlight.
   - Open engine hood.
   - Open front doors.
   - Set the temperature control dial to max and push the vent and fresh air buttons.
   - Turn the fan switch to MAX.
   - Run the engine at 1,500 RPM.
   - No driver or passengers in vehicle

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.

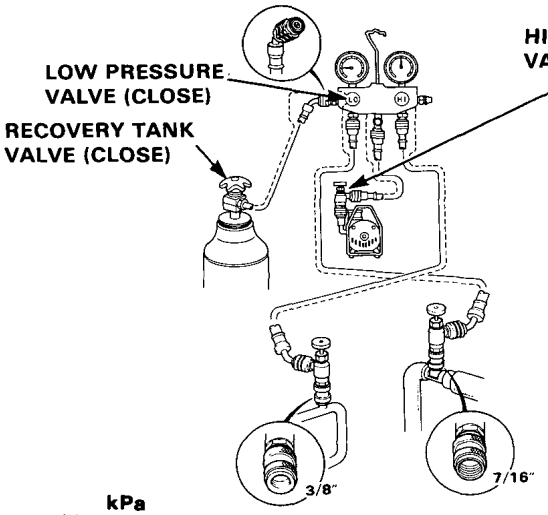
5. To complete the charts:
   - Make the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) aolng the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - Mark a point one line above and one line below the humidity 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.

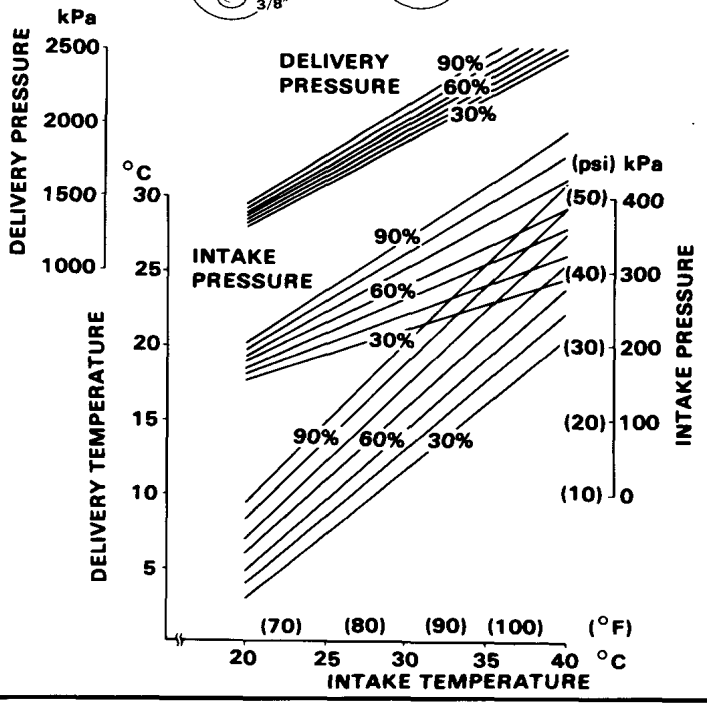


3 VALVE GAUGE



2 VALVE GAUGE

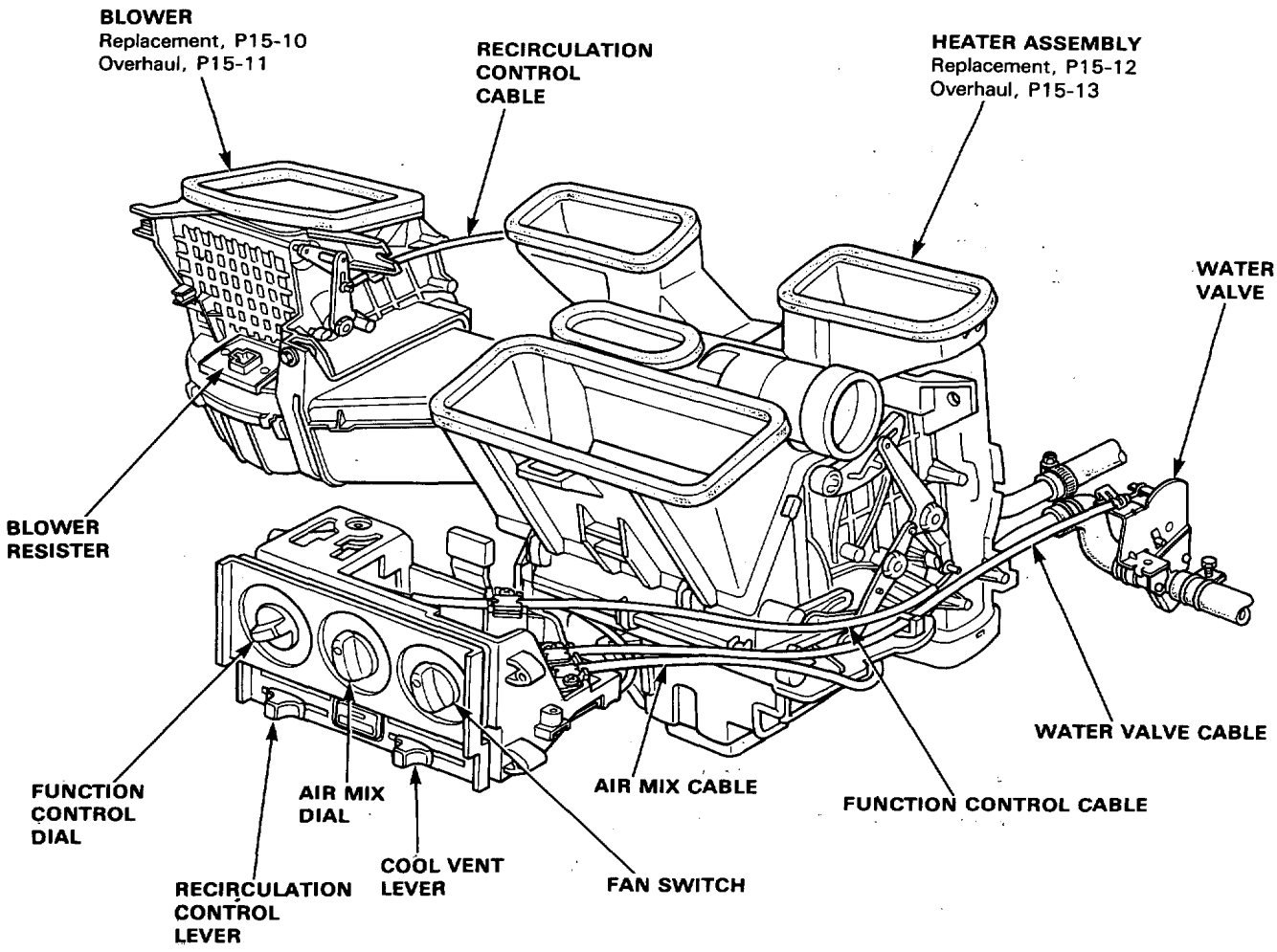




Downloaded from www.Manualslib.com manuals search engine

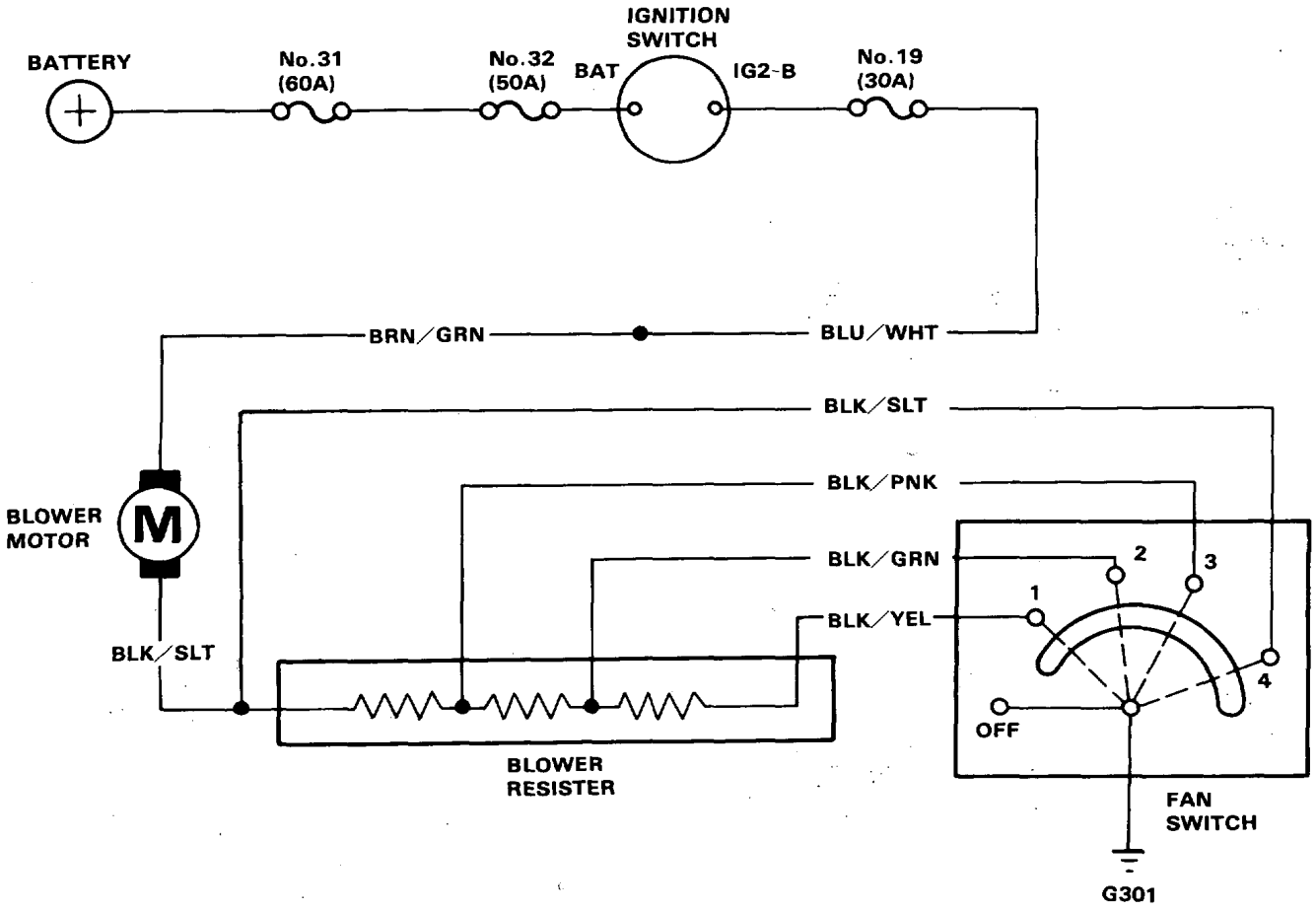
Heater

Illustrated Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Troubleshooting

Symptom Chart

SYMPTOM		REMEDY
No hot air flow	Blower motor does not run	Perform the flowchart(page 15-6)
	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 15-8)
	Blower runs properly	Check following: • Clogged heater duct • Clogged blower outlet • Incorrect door position

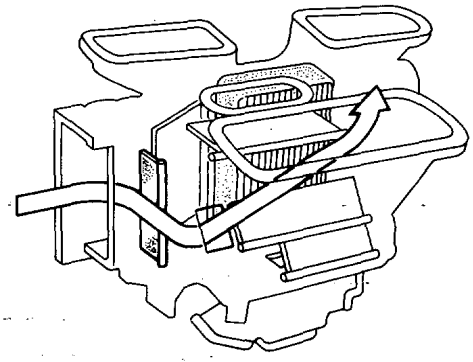
Downloaded from www.Manualslib.com manuals search engine

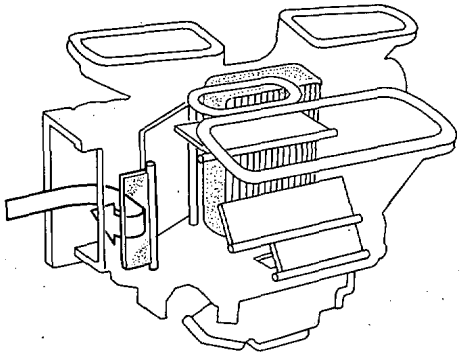
Heater Door Position

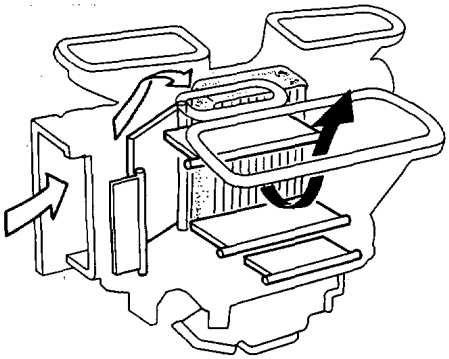
HOT

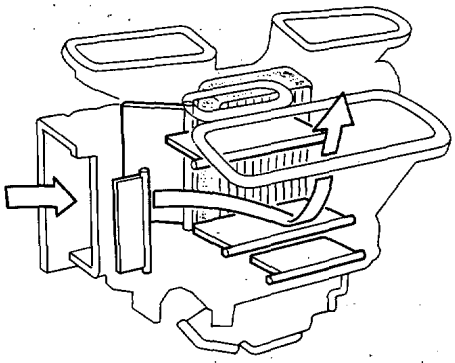
COLD

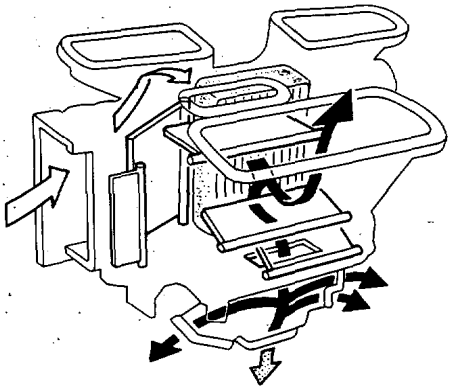
COOL VENT

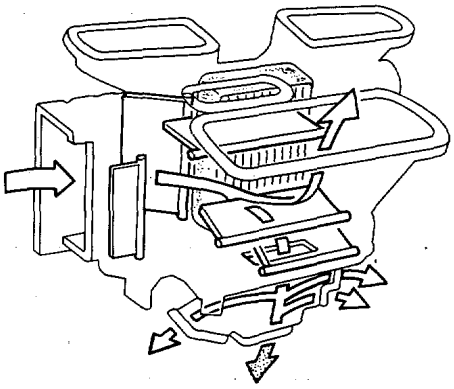






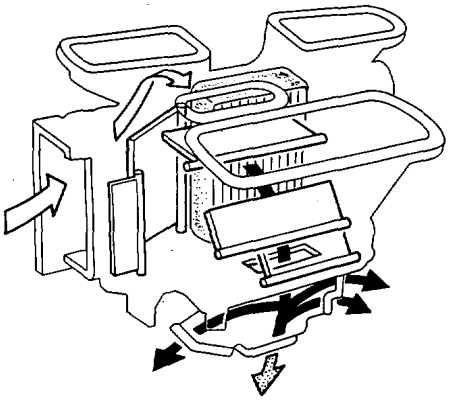


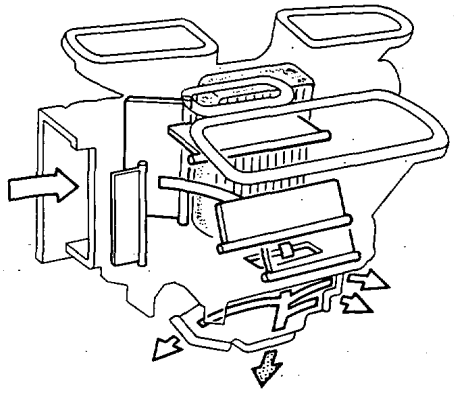




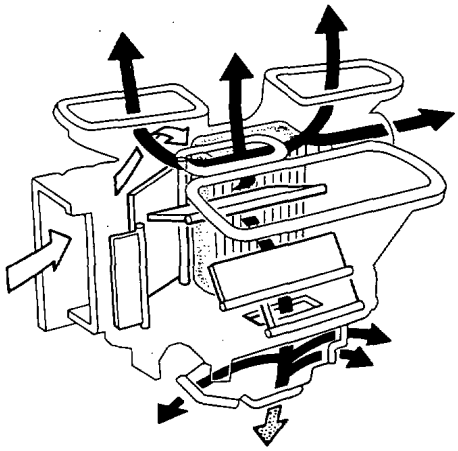
Downloaded from www.Manualslib.com manuals search engine

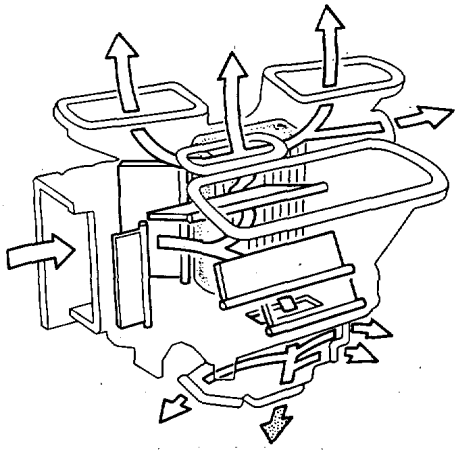




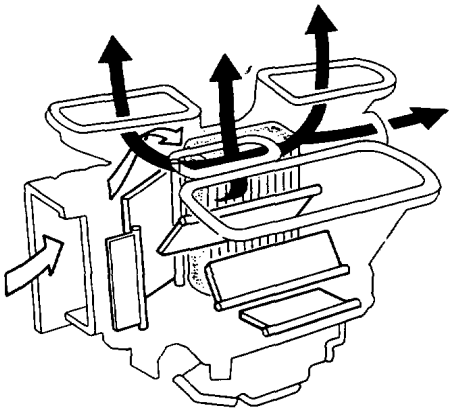


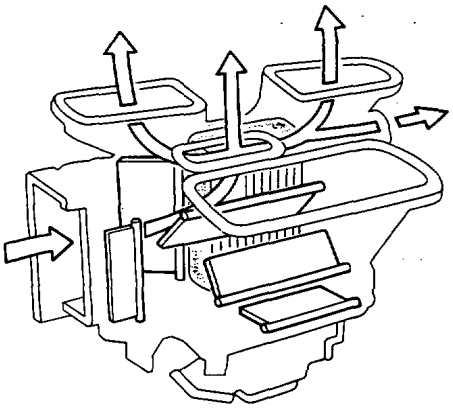












Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Flow Chart-Blower

Blower motor does not run at all.

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 BRN/GRN terminal (+) and body ground (−).

Is there battery voltage? — NO → **Repair open in BRN/GRN wire between blower and ignition switch.**

YES

Turn the ignition switch OFF.

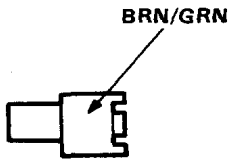
Reconnect the 2P connector to the blower motor.

Connect a jumper wire between the BLK/SLT terminal and body ground. Turn the ignition switch ON.

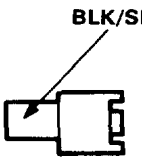
Does blower motor run? — NO → **Replace the blower motor.**

YES

(To page 15-7)



View from wire side



View from wire side

Downloaded from www.Manualslib.com manuals search engine

(From page 15-6)

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the 6P connector from the fan switch.

Connect the jumper wire between the BLK/SLT terminal and body ground.

Turn the ignition switch ON.

Does the blower motor run?

NO → **Repair open in BLK/SLT wire between blower and fan switch.**

YES

Turn the ignition switch OFF.

Remove the jumper wire.

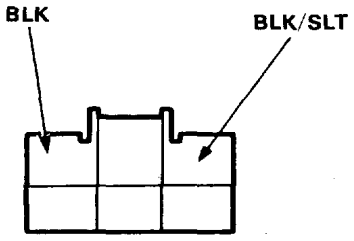
Inspect the fan switch (page 15-9)

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

Downloaded from www.Manualslib.com manuals search engine

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:
- BLK/PNK terminal and body ground.
- BLK/GRN terminal and body ground.
- BLK/YEL terminal and body ground.

Is there battery voltage? NO → **Repair open in BLK/PNK, BLK/GRN and/or BLK/YEL wire(s) between the fan switch and resistor.**

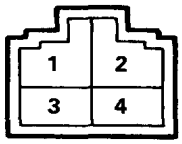
YES

Check for continuity from BLK terminal to body ground.

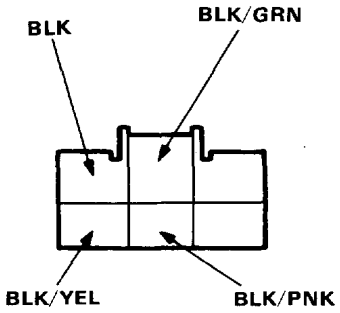
Is there continuity? NO → **Repair open in BLK wire between the fan switch and body ground or poor ground (G301).**

YES

Replace the fan switch.



View from terminal side



View from wire side

Downloaded from www.Manualslib.com manuals search engine

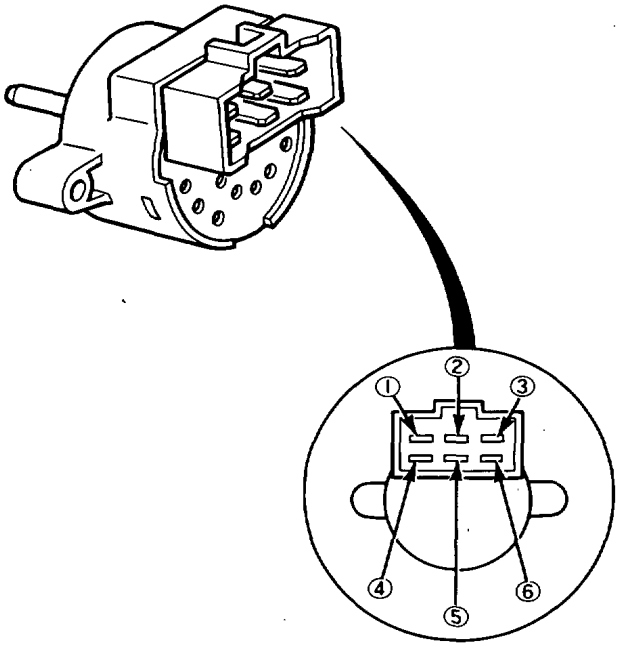
Test

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 CONNECTION

Position \ Terminal	①	②	③	④	⑤	⑥
OFF						
1	○			○		○
2	○	○				○
3	○				○	○
4	○		○			○

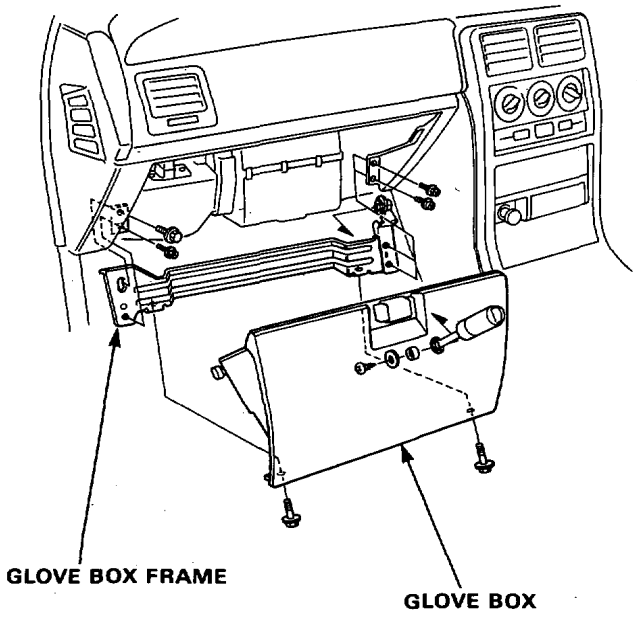


Downloaded from www.Manualslib.com manuals search engine

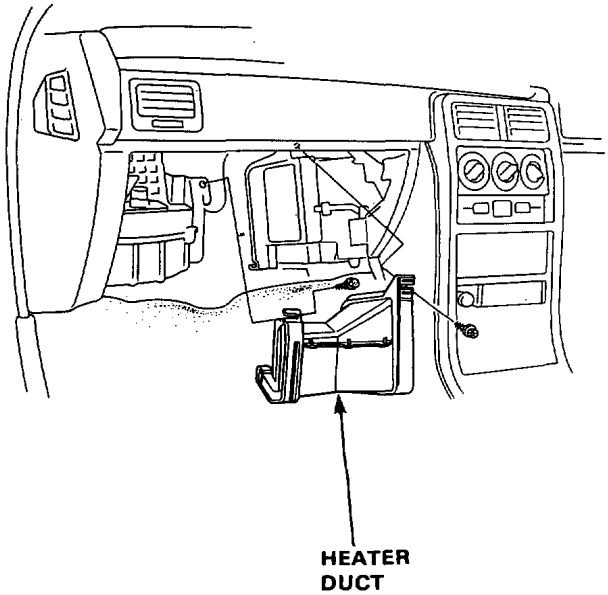
Blower

Replacement

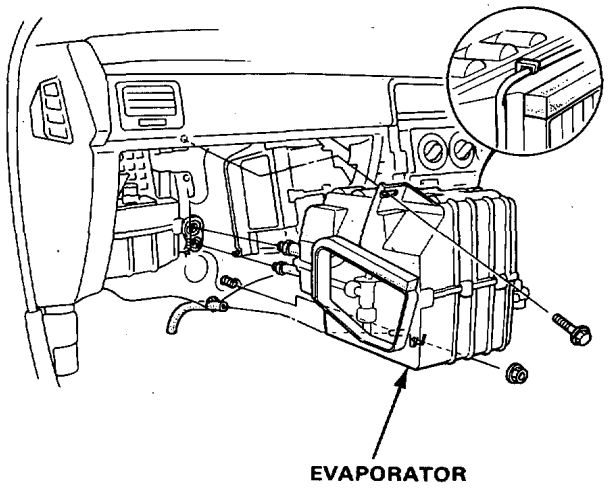
1. Disconnect the battery negative terminal.
2. Remove the glove box and glove box frame.



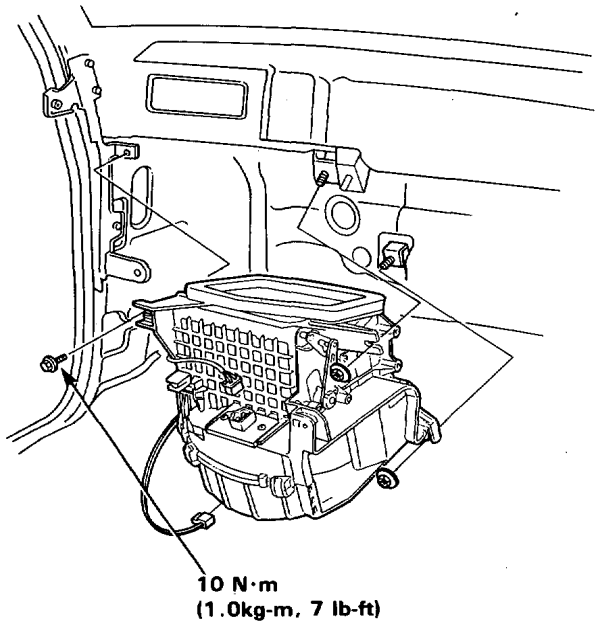
3-a. Remove the tapping screws (2) and remove the heater duct.



3-b. Remove the A/C band and the evaporator.



4. Remove the mounting bolts (3).
5. Disconnect the connectors from the blower motor, resistor then remove the blower.



6. Install the blower in the reverse order of removal and make sure there is no air leakage.

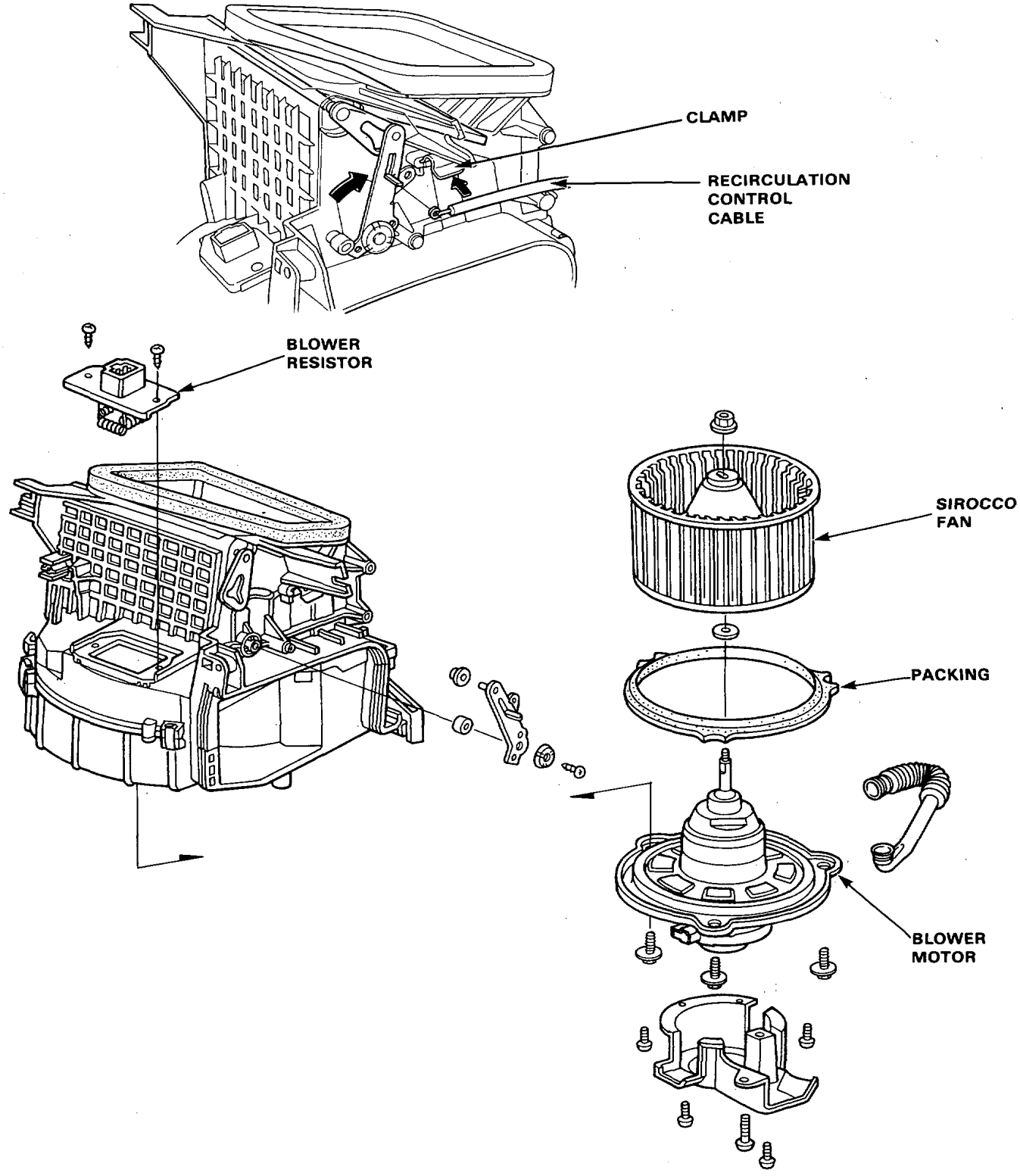
Downloaded from www.Manualslib.com manuals search engine

Overhaul

NOTE:

- Before reassembly, make sure that the air door and linkage move smoothly without binding.

- RECIRCULATION CONTROL CABLE ADJUSTMENT
  Side the recirculation control lever to "RECIRC". Then connect the control cable to the arm while holding the air doors shut.



Downloaded from www.Manualslib.com manuals search engine

Heater assembly

Replacement

1. When the engine is cool, drain coolant from the radiator (Section 5).

⚠ WARNING

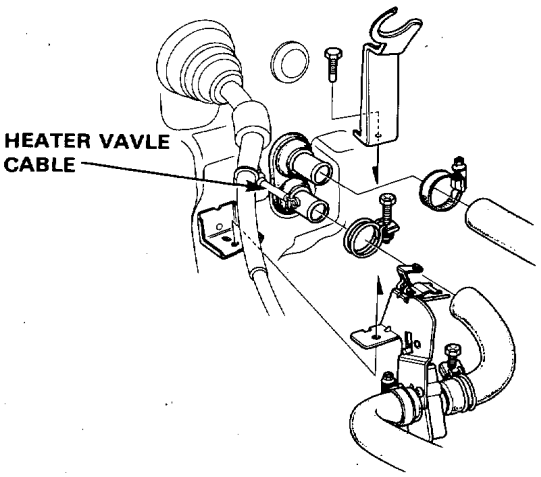
- **Do not remove the radiater cap when the engine is hot; the coolant is under pressure and could severely scald you.**
- **Keep hands away from the radiator fan. The fan may start automatically without warning and run for up/to 30 minutes, even after the engine is turned off.**

CATION: 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.

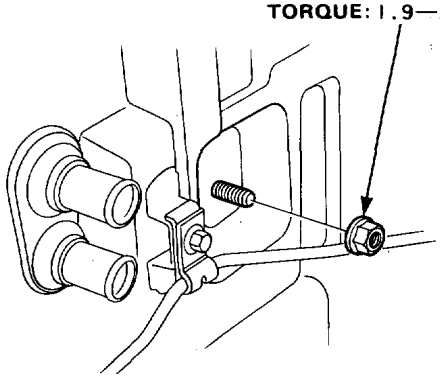
3. Disconnect the heater valve cable from the heater valve.



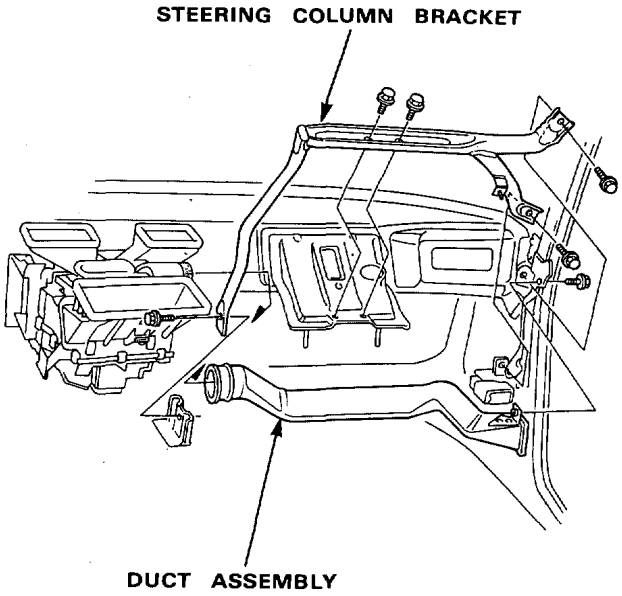
4. Remove the dashboard (Section 14).

5. Remove the heater duct (page 15-10).

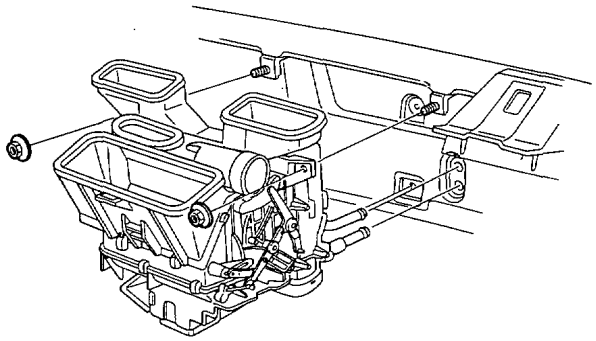
6. Remove the heater lower mounting nut.



7. Remove the steering column bracket and duct assembly.



8. Remove the heater mounting bolts (2) and clip, then remove the heater assembly.



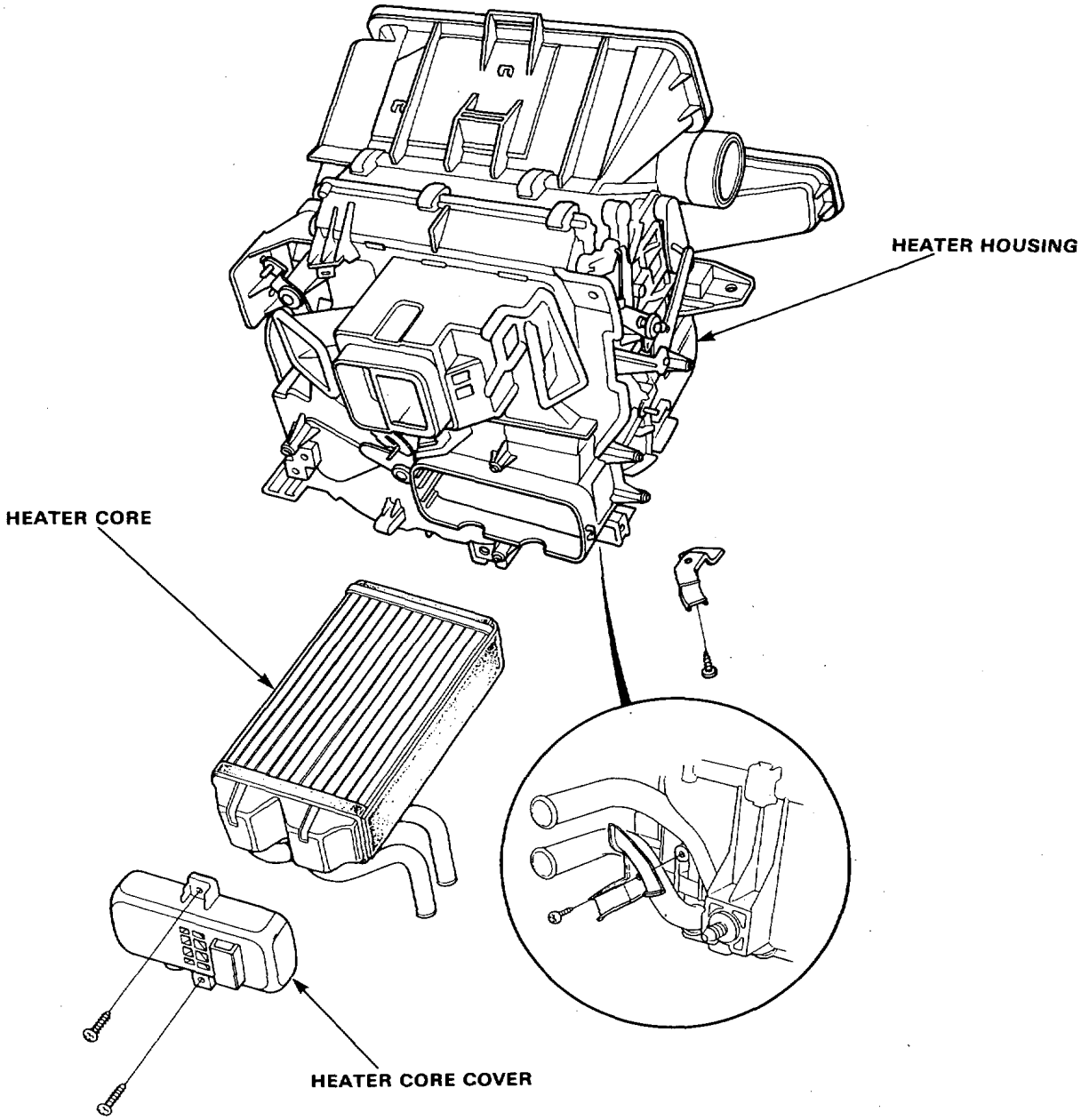
9. Install in the reverse order of removal, and:

- Apply a sealand 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).

Downloaded from www.Manualslib.com manuals search engine

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.



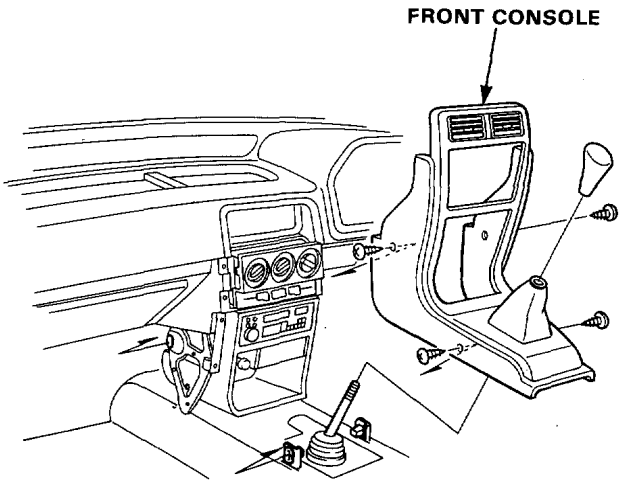
Install in the reverse order of removal and:
Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trpped air has escaped and coolant begins to flow from it.

Downloaded from www.Manualslib.com manuals search engine

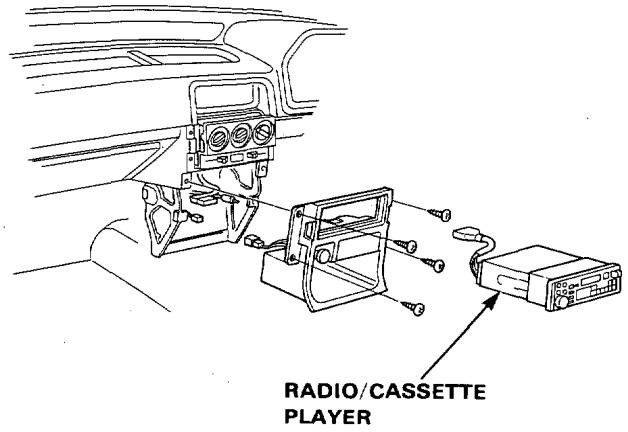
Heater Control Panel

Replacement

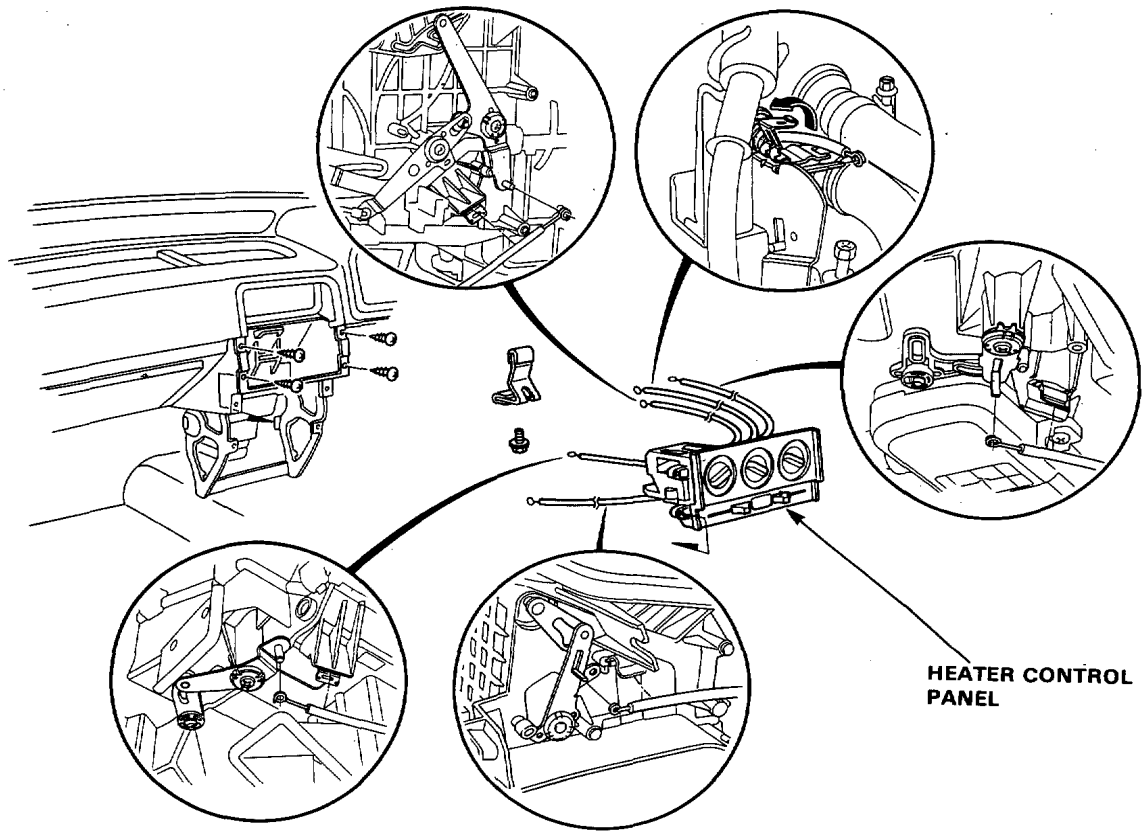
1. Remove the front console.



2. Remove the radio/cassette player.

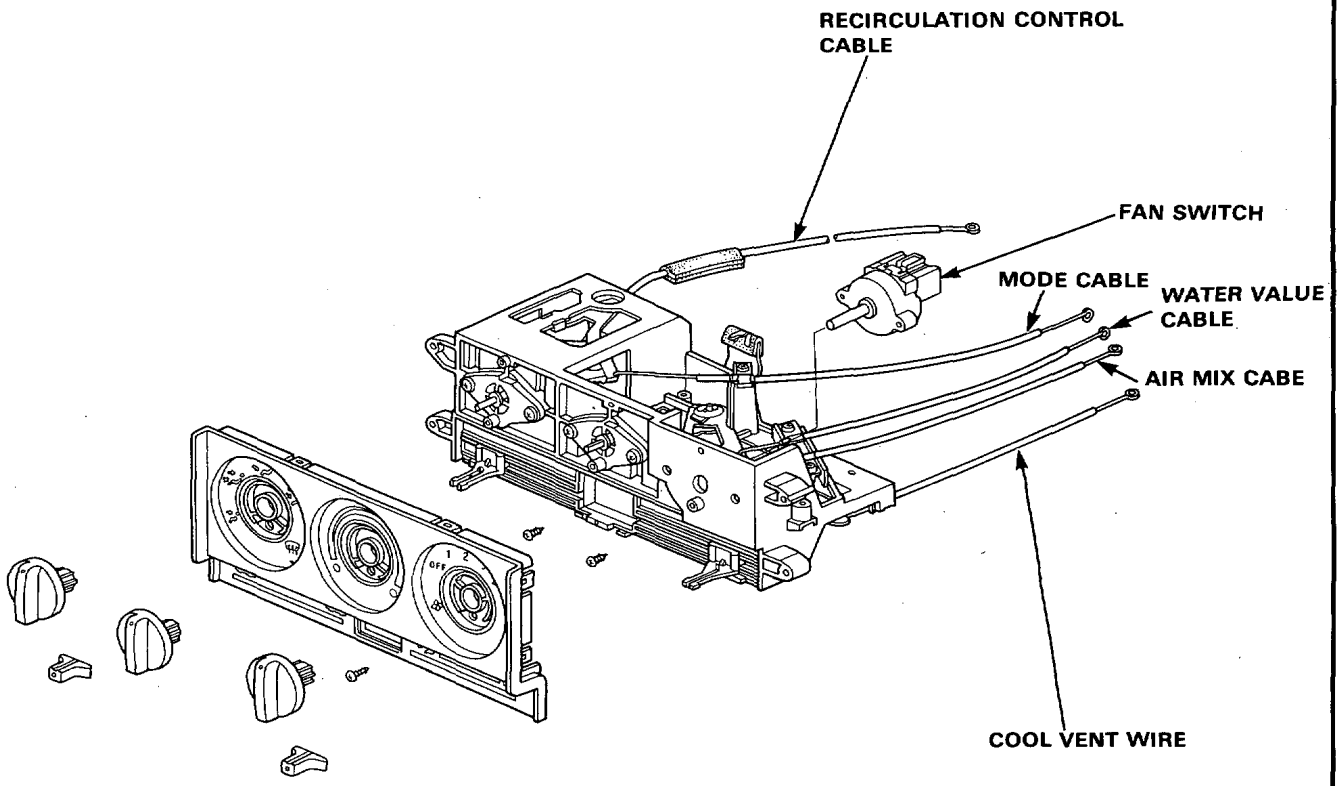


3. Remove the heater control panel.



Downloaded from www.Manualslib.com manuals search engine

Overhaul



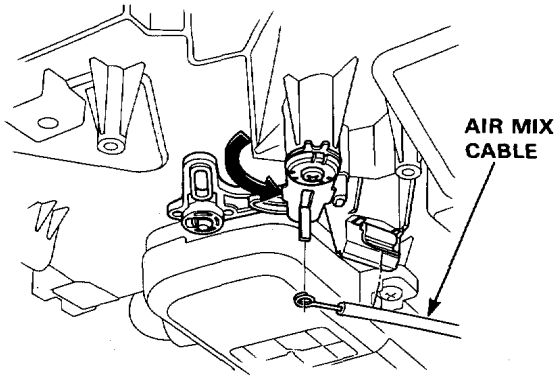
Downloaded from www.Manualslib.com manuals search engine

Heater Control Cables

Adjustment

- Air Mix Cable

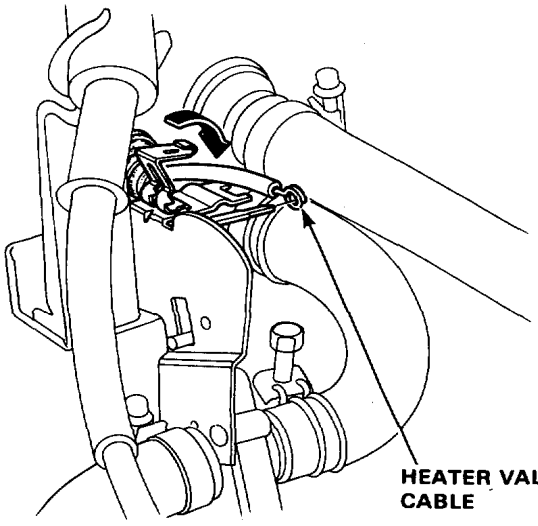
1. Slide the temperature control lever to HOT.
2. Turn the air mix door shaft arm to the left and connect the end of the cable to the arm.
3. Gently slide the cable outer housing back from the end enough to take up any any slack in the cable, but not enough to make temperature control lever move, then 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

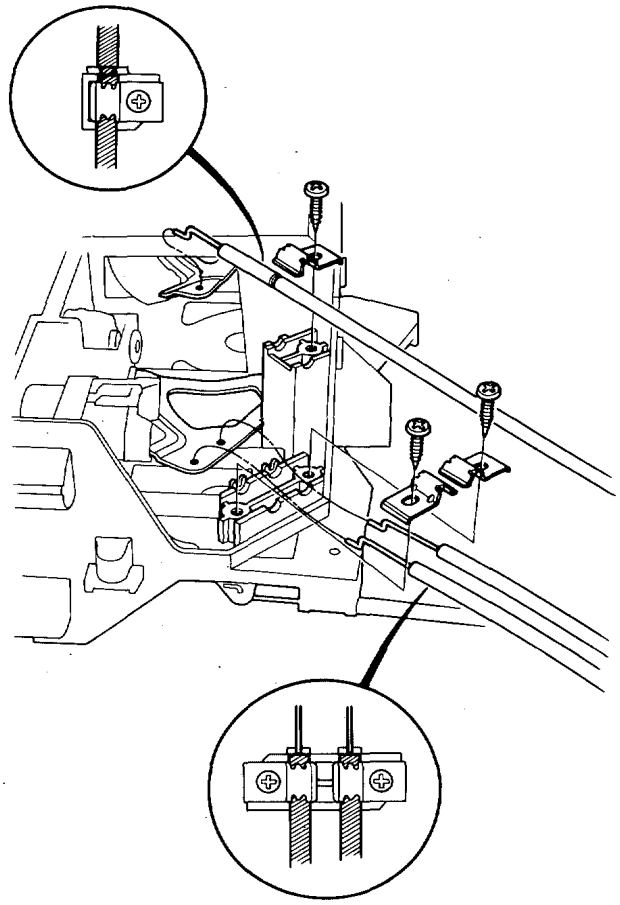
1. Slide the temperature control lever to HOT.
2. Gently slide the cable housing back from the end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then hold the cable housing and snap it in the clamp.



NOTE: Air mix cable should be adjusted if the heater valve cable has been disconnected.

Replacement

Remove the tapping screw, then replace the control cable.



Downloaded from www.Manualslib.com manuals search engine

Air Conditioner

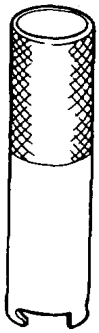
Illustrated Index 15-19
Circuit Diagram 15-20
Service Tips 15-22
Torque Specifications 15-23
Wire Harness Routing 15-24
Troubleshooting
  Symptom Chart 15-25
  Flow Chart 15-26
Discharge Procedure..... 15-36
Condenser Replacement 15-37
Evaporator
  Replacement 15-38
  Overhaul 15-39
Compressor
  Description 15-40
  Replacement 15-41
  Clutch Inspection 15-44
  Clutch Overhaul 15-45
  Thermal Protector Inspection ... 15-47
  Thermal Protector Replacement 15-47
  Shaft Seal Replacement 15-48
System Charging
  System Evacuation 15-50
  Leak Test 15-51
  Charging Procedure 15-52
  Supplement 15-53
Test
  Thermo Switch 15-54
  Relay 15-54
  A/C Switch 15-55
  Diode 15-55
  Performance Test 15-56
Idle Speed Setting 15-57

Special Tools

Ref. No.	Tool Number.	Description	Q'ty	Page Reference
①	07HAF-SF10300	SHAFT SEAL REMOVER	1	15-48
②	07HAF-SF10400	SEAL REMOVER/INSTALLER	1	15-48,49



①

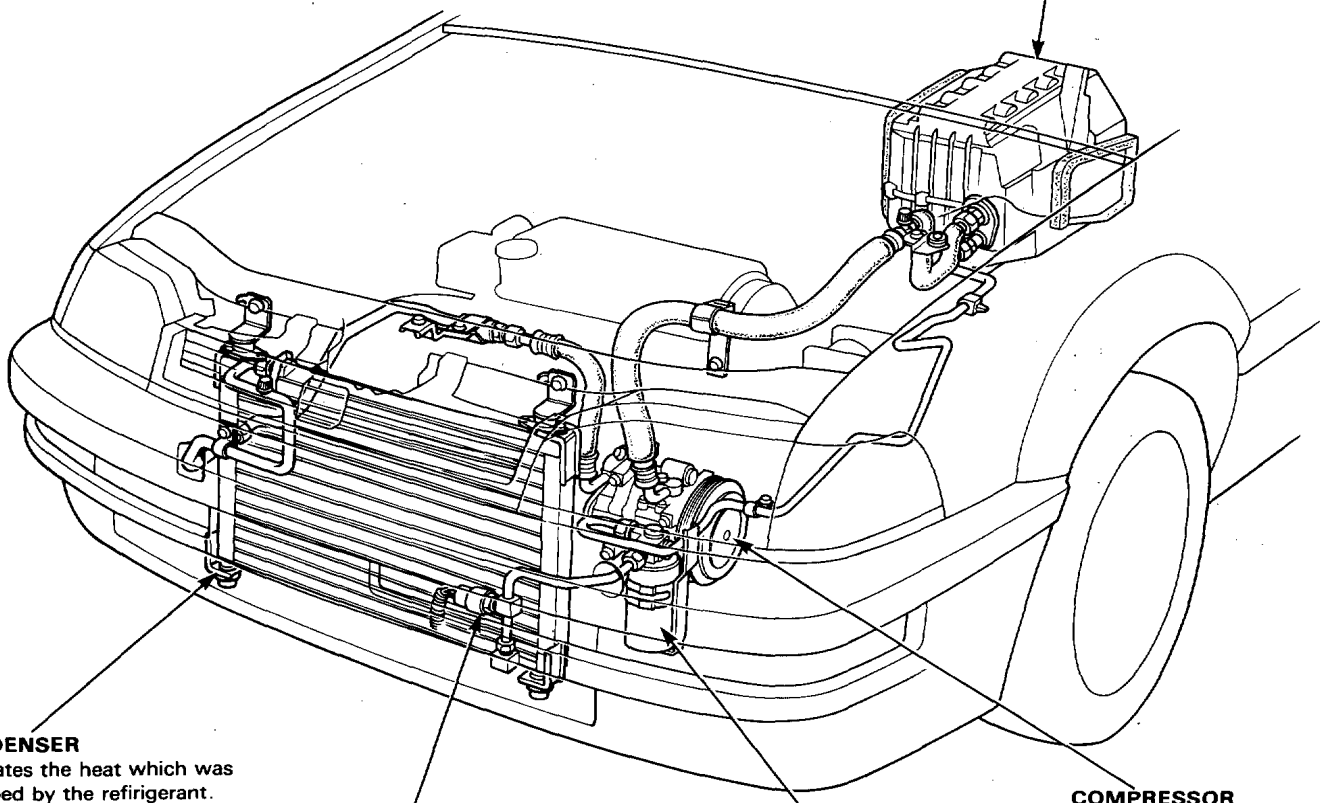


②

Downloaded from www.Manualslib.com manuals search engine

Illustrated Index

<RHD>



EVAPORATOR
As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.
Replacement, page 15-38
Overhaul, page 15-39

CONDENSER
Dissipates the heat which was absorbed by the refirigerant.
Replacement, page 15-37

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.

COMPRESSOR
Compresses the refrigerant and then forces it through the condenser.
Replacement, page 15-41

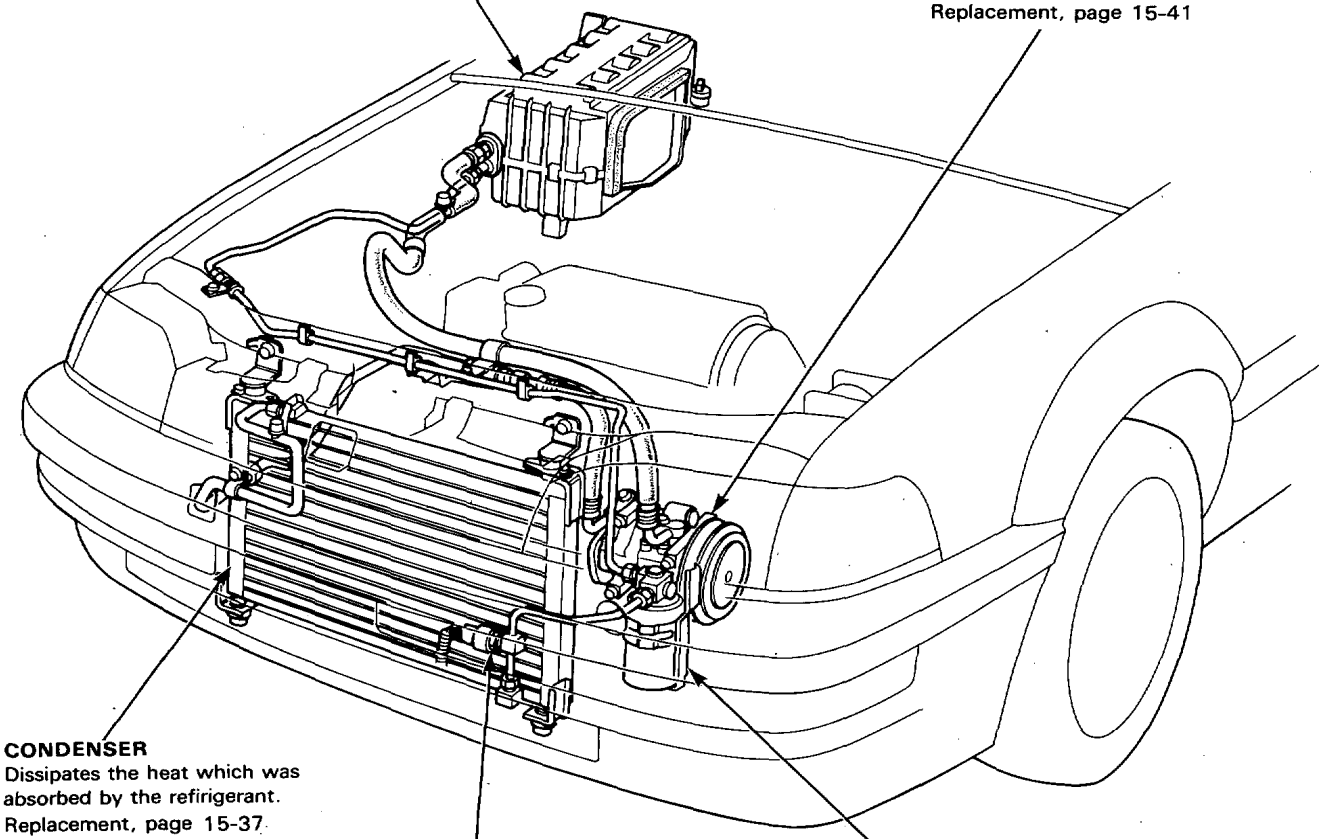
RECEIVER AND FILTER/DRYER
Serves as a reservoir which filters and removes moisture from the refrigerant.

* Delay control unit is installed on heater unit assembly side. (Carbureted engine only)

Downloaded from www.Manualslib.com manuals search engine

EVAPORATOR
As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.

COMPRESSOR
Compresses the refrigerant and then forces it through the condenser.
Replacement, page 15-41



CONDENSER
Dissipates the heat which was absorbed by the refirigerant.
Replacement, page 15-37

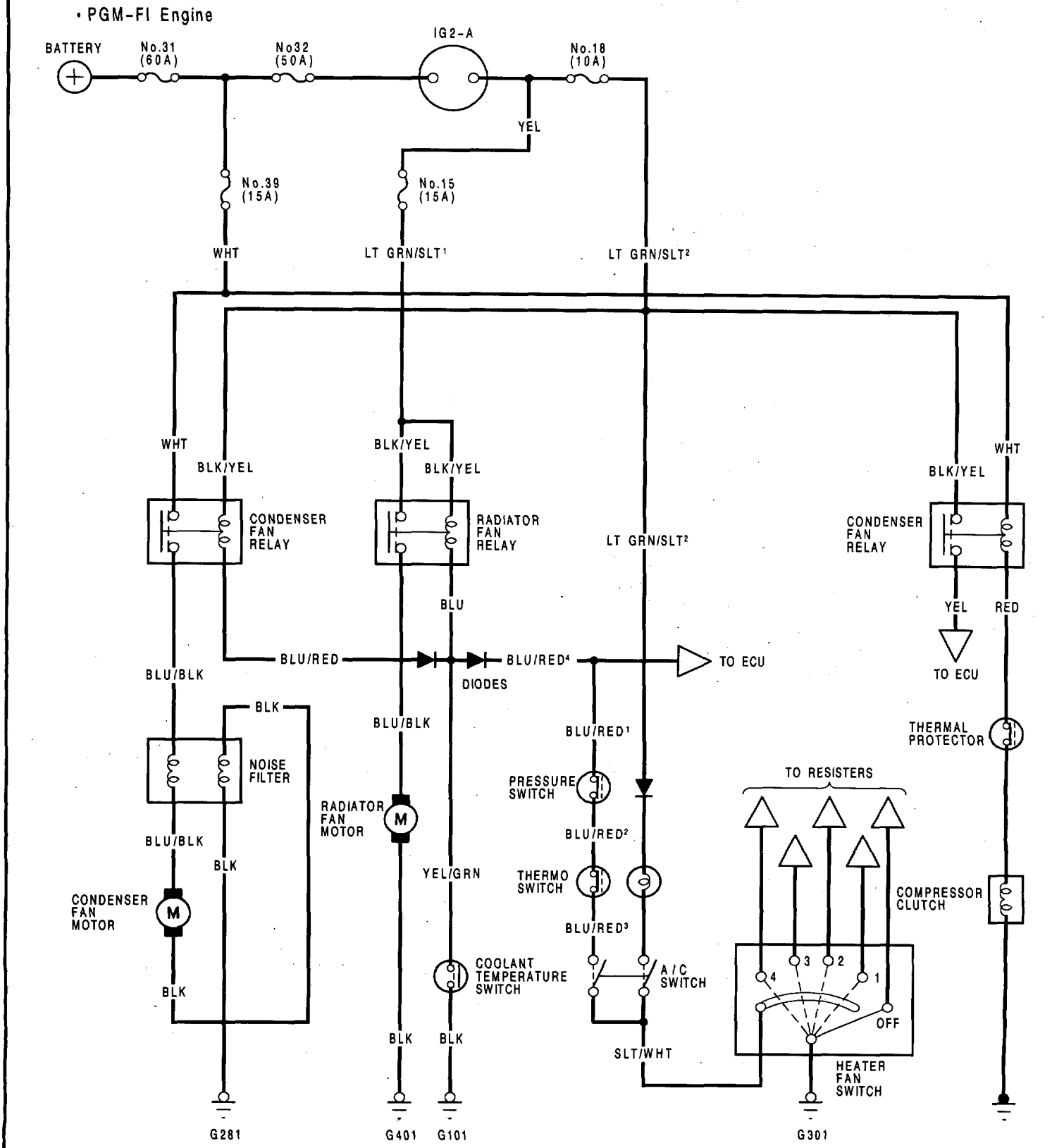
DUAL PRESSURE SWITCH
When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi) due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to protect the compressor.

RECEIVER AND FILTER/DRYER
Serves as a reservoir which filters and removes moisture from the refrigerant.

* Delay control unit is installed on heater unit assembly side. (Carbureted engine only)

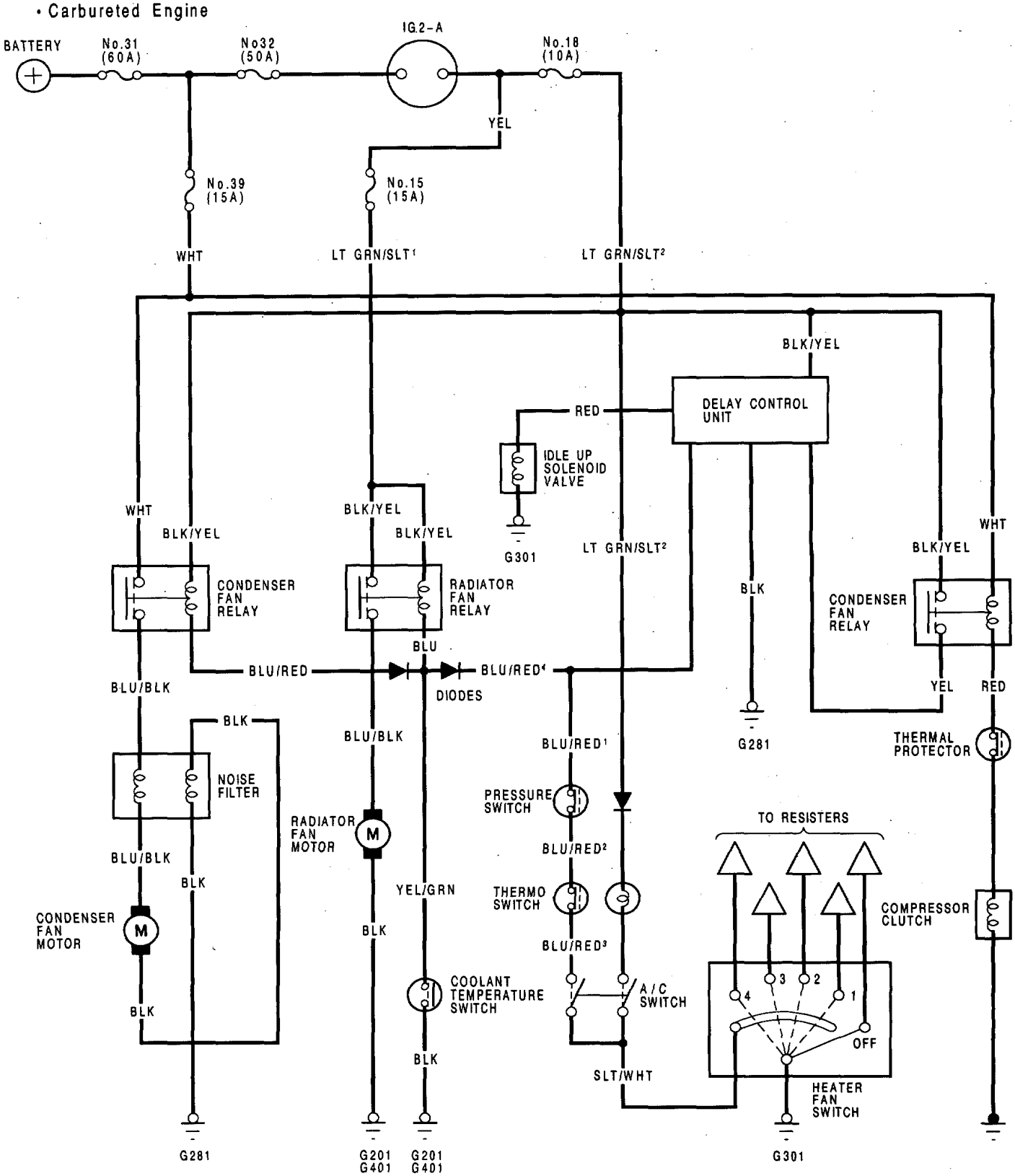
Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

• Carbureted Engine

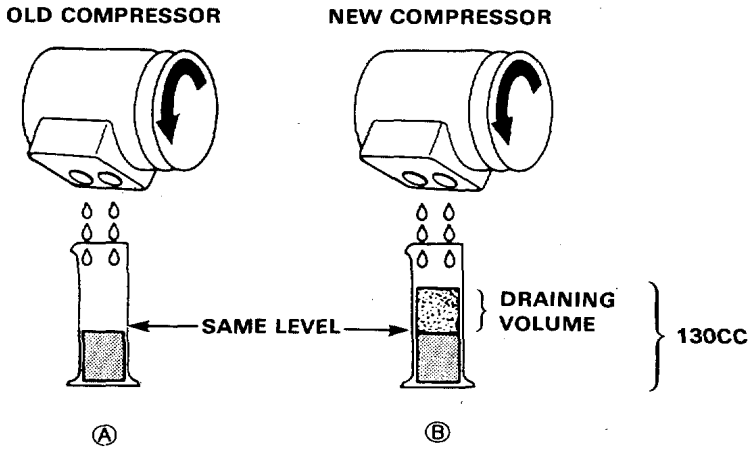


Downloaded from www.Manualslib.com manuals search engine

Service Tips

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 130 cc (3.7 fl oz), and drain the calculated volume of oil from the new compressor:
     130 cc (3.7 fl oz)-Volume of removed compressor=Draining volume.

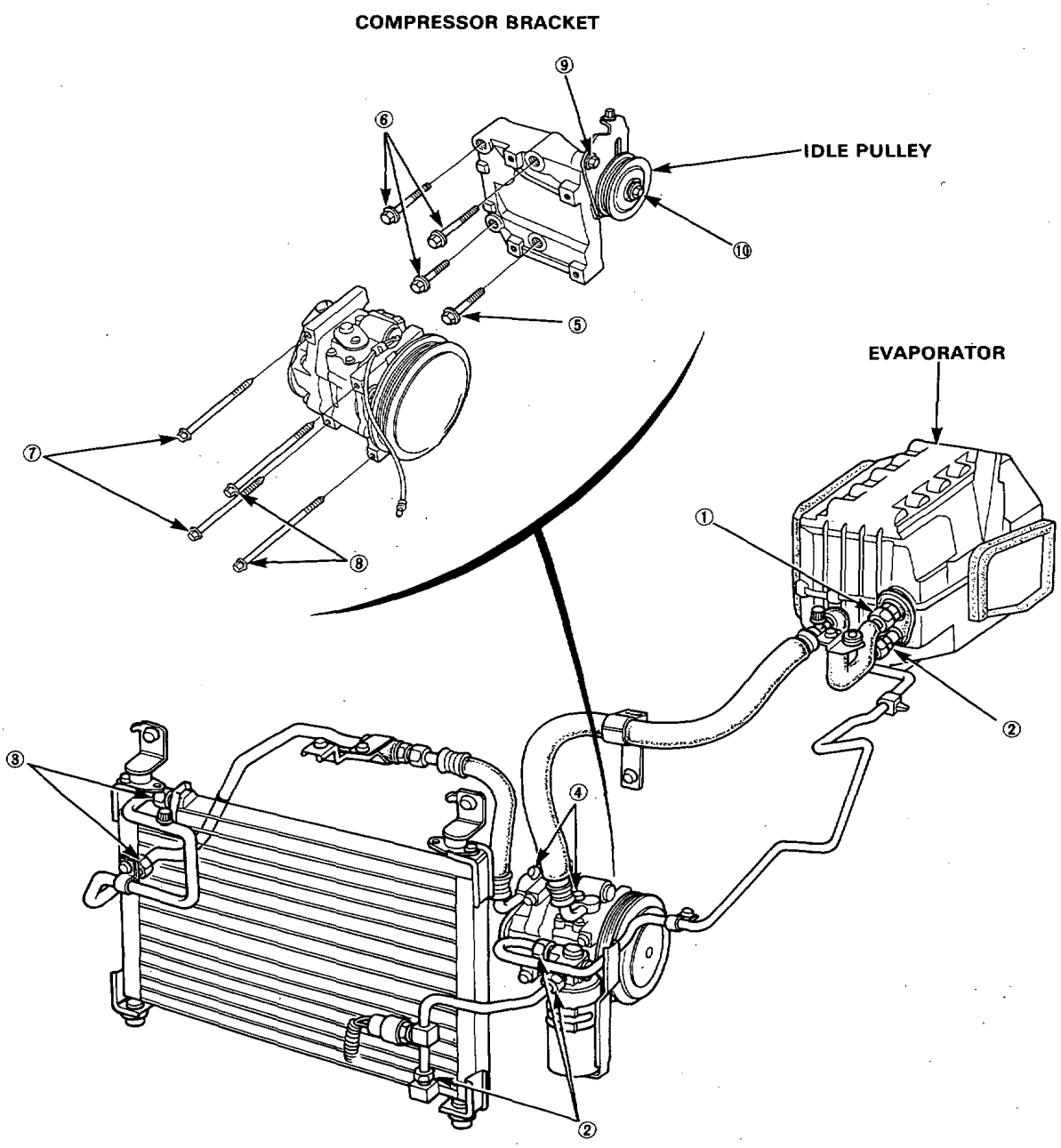


⚠WARNING When handling refrigerant (R-12):

- 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.

Downloaded from www.Manualslib.com manuals search engine

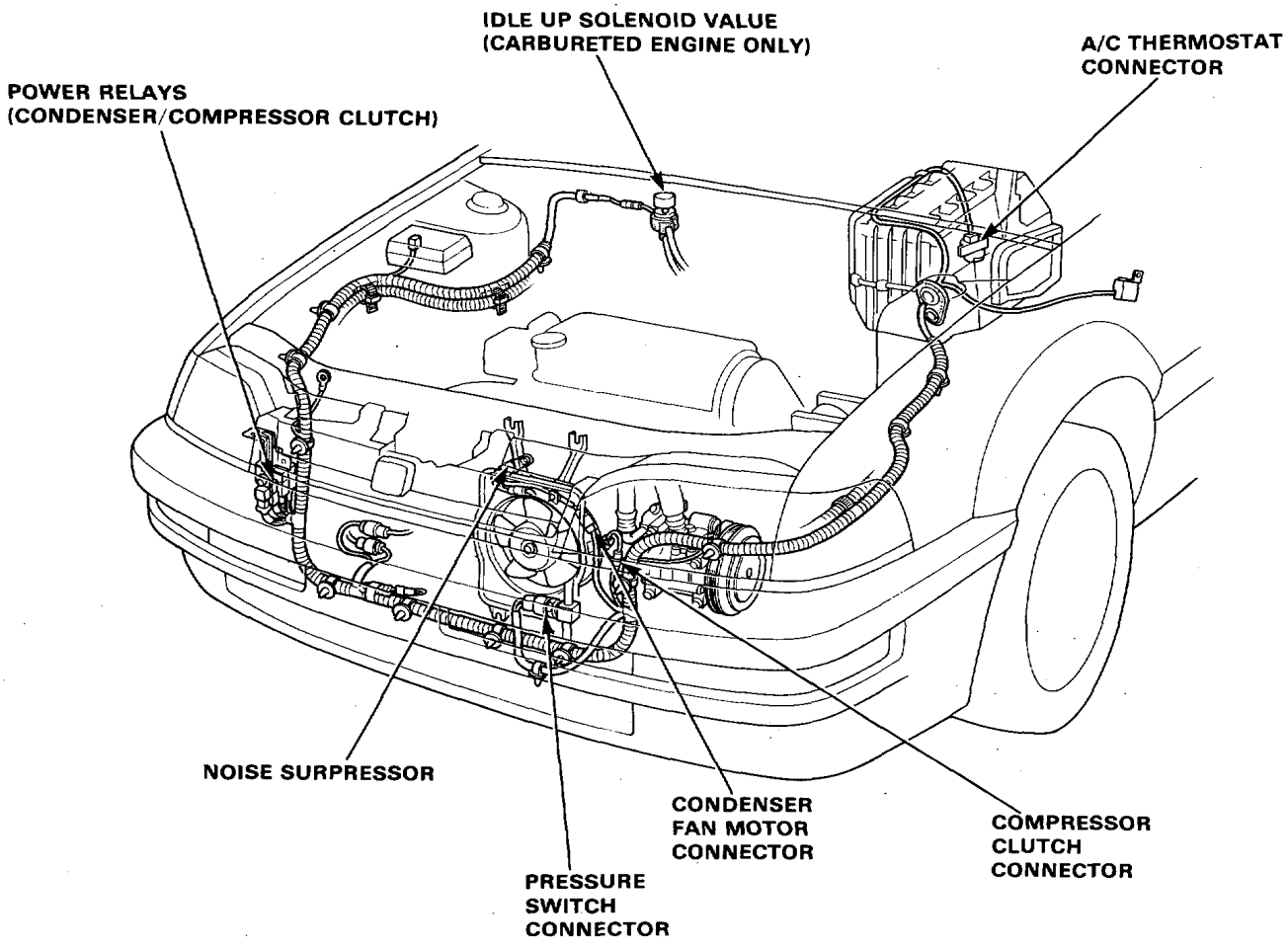
Torque Specifications



① Suction hose (evaporator side)	3.0–3.5kg-m
② Condenser pipe (both side)/Receiver pipe (both side)	1.6–1.8kg-m
③ Discharge hose to condenser	2.0–2.5kg-m
④ Compressor hose mounting bolts	2.8–3.2kg-m
⑤ Compressor bracket mounting bolts(10×50)	4.5–5.0kg-m
⑥ Compressor bracket mounting bolts(10×60)	4.5–5.0kg-m
⑦ Compressor mounting bolts(8×105)	2.0–3.0kg-m
⑧ Compressor mounting bolts(8×120)	2.0–3.0kg-m
⑨ Idle pulley stay bolts(8×16)	2.0–3.0kg-m
⑩ Idle pulley nut (10 mm)	4.5–5.0kg-m

Downloaded from www.Manualslib.com manuals search engine

Wire Harness Routing



* Diodes are taped with A/C harness.

Downloaded from www.Manualslib.com manuals search engine

- Any abnormality must be corrected before continuing to the next test.
- Because of the precise measurements needed, use a digital voltmeter and ohmmeter when testing.

Before performing any troubleshooting procedures check:

Fuses	Grounds
No.32 No.31 No.18, 39 (Condenser & Compressor) No.15 (Cooling fan)	G301 G101 G201 G281 G401

- All electrical connetions are clean and tight.

Symptom Chart

SYMPTOM	PAGE	CHART NO.
Only cooling fan does not run.	15-26	1
Only condenser fan does not run.	15-28	2
Compressor and cooling fans do not run.	15-30	3
A/C compressor does not come on. Cooling fans operate normally.	15-32	4

Downloaded from www.Manualslib.com manuals search engine

Flow Chart: 1

Only cooling fan does not come on

Check the cooling fan relay.

Is the relay OK? — NO — **Replace the relay.**

YES

A/C switch: ON
Fan switch: ON
Turn ignition: ON

Mesure voltage between BLK/YEL(+)terminal and body round.

Is there battery voltage? — NO — **Repair open in BLK/YEL wire.**

YES

Reconnect the cooling fan relay.

Turn ignition OFF.

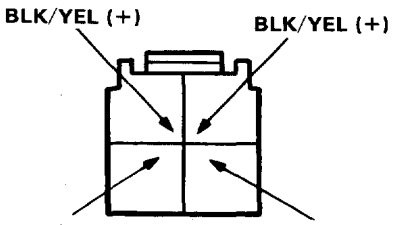
Connect BLU terminal to body ground.

Turn ignition to RUN.

Does cooling fan operate? — YES —
- **Check BLU wire.**
- **Check coolant temperature switch.**

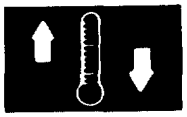
NO

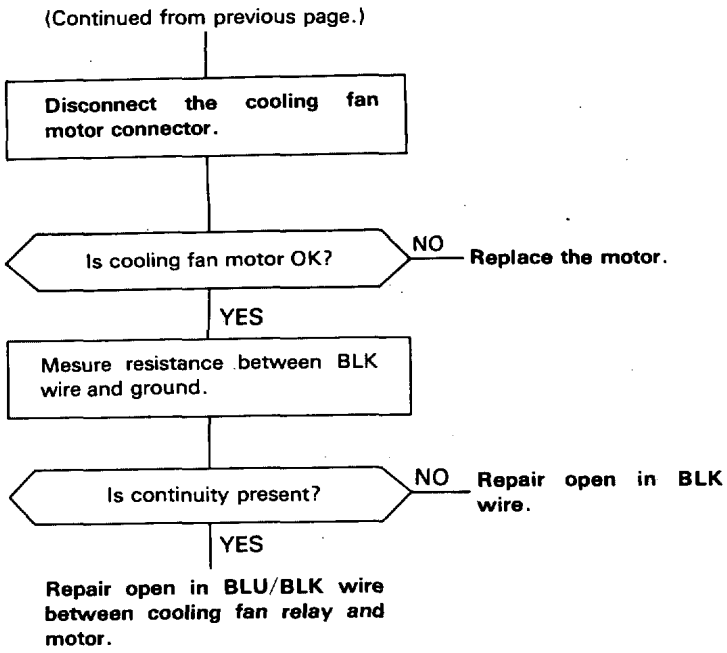
(Continued to next page.)



COOLING FAN RELAY CONNECTOR
View from wire side

Downloaded from www.Manualslib.com manuals search engine





Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

Flow Chart: 2

Only condenser fan does not operate at all.

Check the condenser fan relay.

Is the relay OK? — NO — **Replace the relay.**

YES

Mesure voltage between WHT (BLK/YEL) wire and ground.

Turn ignition to RUN

Is battery voltage present? — NO — **Repair open in WHT(BLK/YEL) wire.**

YES

Turn ignition OFF

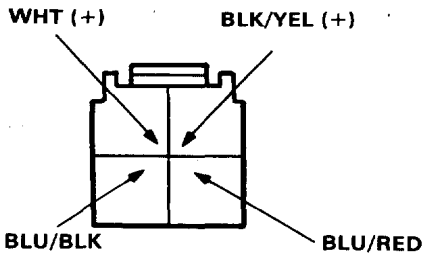
Turn A/C switch ON.

Turn fan switch ON.

Measure resistance between BLU/RED wire and ground.

Is continuity present? — NO — **Repair open in BLU/RED wire between condenser fan relay and pressure switch.**

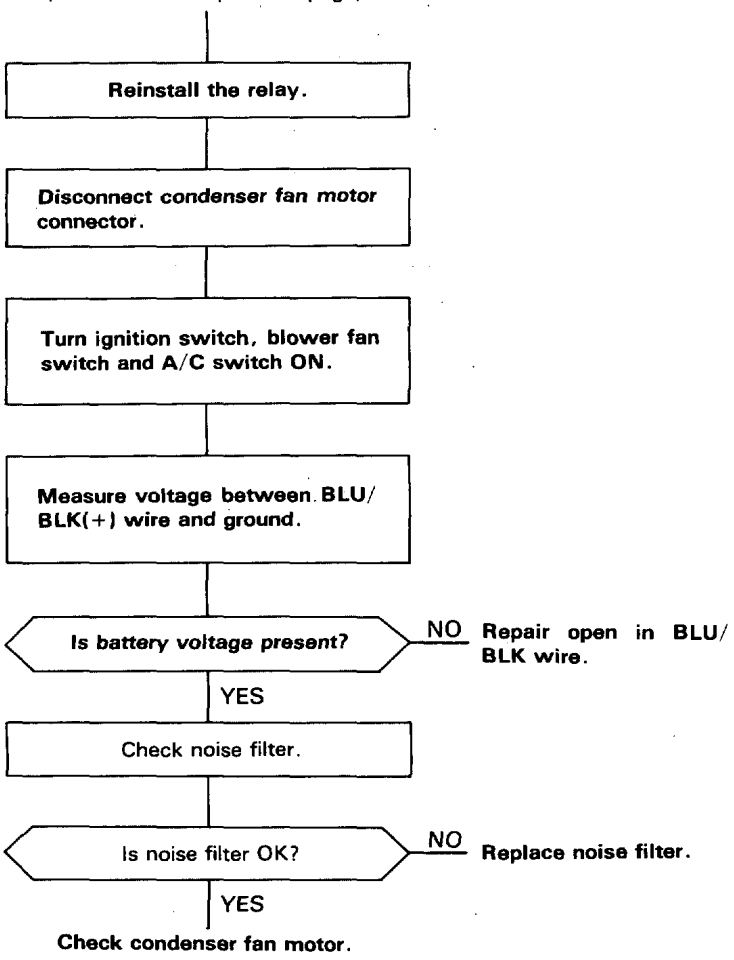
(Continued on next page.)



CONDENSER FAN RELAY CONNECTOR
View from wive side

Downloaded from www.Manualslib.com manuals search engine

(Continued from previous page)



Downloaded from www.Manualslib.com manuals search engine

Flow Chart: 3

A/C compressor clutch does not engage and cooling fans do not run.

- Ignition SW:ON
- A/C SW:ON
- FAN SW:ON

Does A/C ON indicator light?

NO → B

(Continued on next page.)

YES

Is A/C pressure switch open? (should be closed)

YES → **Check refrigerant pressure. If pressure is good, replace A/C pressure switch.**

Is A/C thermostat open?(should be closed)

YES → **Check evaporator temperature. If temperature is above 41°F, replace A/C thermostat.**

NO

Measure resistance BLU/RED$_2$ wire between pressure switch and A/C thermostat.

Is there continuity?

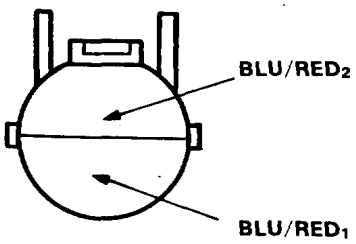
NO → **Repair open is BLU/RED$_2$ wire**

YES

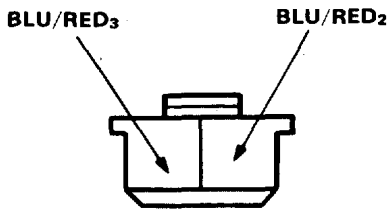
Measure resistance BLU/RED$_3$ wire between thermostat and A/C switch

A

(Continued on next page.)



PRESSURE SWITCH CONNECTOR



View from wire side

A/C THERMOSTAT CONNECTOR

Downloaded from www.Manualslib.com manuals search engine

(Continued from previous page.)

A

Is there continuity? — NO — **Repair open in BLU/RED$_3$ wire**

YES

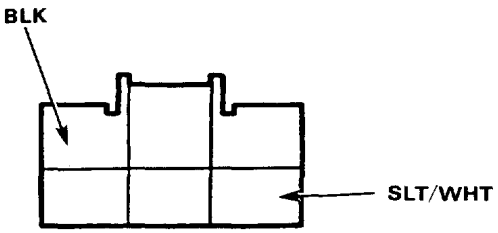
- Check BLU/RED wire between pressure switch and condeser fan relay
  or
- Check diodes

(Continued from previous page.)

B

Disconnect fan switch connector.

Connect voltmeter between SLT/WHT wire (+) and ground (−).



FAN SWITCH CONNECTOR
View from wire side.

Is battery voltage present? — NO — **Check SLT/WHT wire. If wire is good, replace A/C switch.**

YES

Check BLK wire from fan switch. If wire is good, replace fan switch.

Downloaded from www.Manualslib.com manuals search engine

Flow Chart: 4

Compressor does not come on.

Isspect No. 18 and 31 fuses.

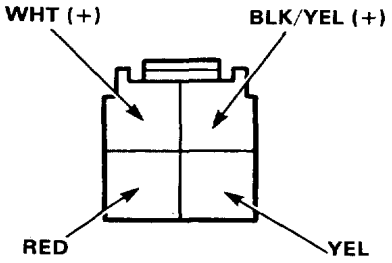
Are the fuses OK? NO → Replace the fuse(s).

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.



CLUTCH RELAY
View from wire side.

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 15-33 page)

(To page 15-34)

Downloaded from www.Manualslib.com manuals search engine

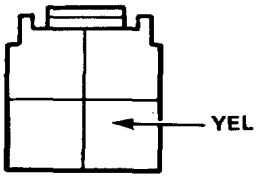
(from 15-32 page)

Turn the ignition switch OFF and reconnet the 4-P reconnector 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



CLUTCH RELAY
View from wire side.

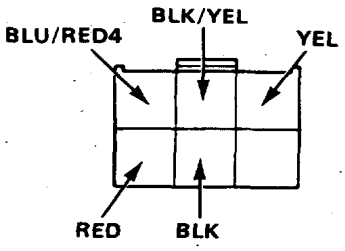
- PGM-FI Engine

Check the A/C signals.
Compressor clutch relay ↔ ECU
A/C switch ↔ ECU
See fuel and emissions section.

- Carbureteb Engine

Disconnect 6P connector from the delay control unit.

Connect a jumper wire between YEL terminal and body ground..



Does the compressor clutch engage? NO → **Repair open in YEL wire between compressor relay and delay control unit.**

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 delay control unit.**

YES

Check the continuity between BLK terminal and body ground.

Is there continuity? NO → **Repair open in BLK wire between delay control unit and body ground or poor ground.**

YES

Check the continuity BLU/RED4 terminal between delay control unit and body ground. Then A/C, heater fan switches ON.

Is there continuity? NO → **Repair open in BLU/RED4 wire between delay control unit and body ground.**

YES

Faulty delay control unit.

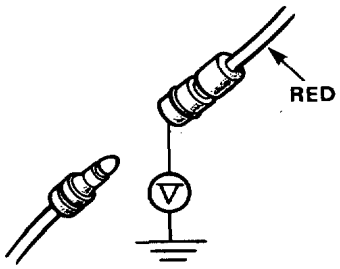
Downloaded from www.Manualslib.com manuals search engine

Flow Chart: 4 (cont'd)

(From page 15-32)

Disconnect the RED terminal and turn the ignition switch on.

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



Is ther 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 22-32, 35).

Is the themal protector OK?

NO → **Replace the thermal protector.**

YES

Replace the compressor clutch.

Downloaded from www.Manualslib.com manuals search engine

Pressure Check

NOTE: Performance Test on page 15-56

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 15-50 Recharging: 15-52
	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

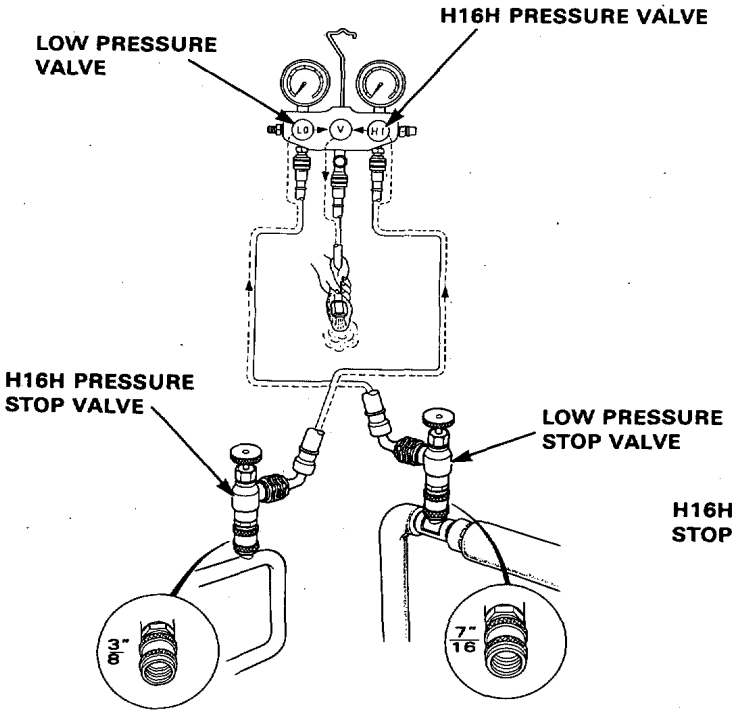
Downloaded from www.Manualslib.com manuals search engine

Discharge Procedure

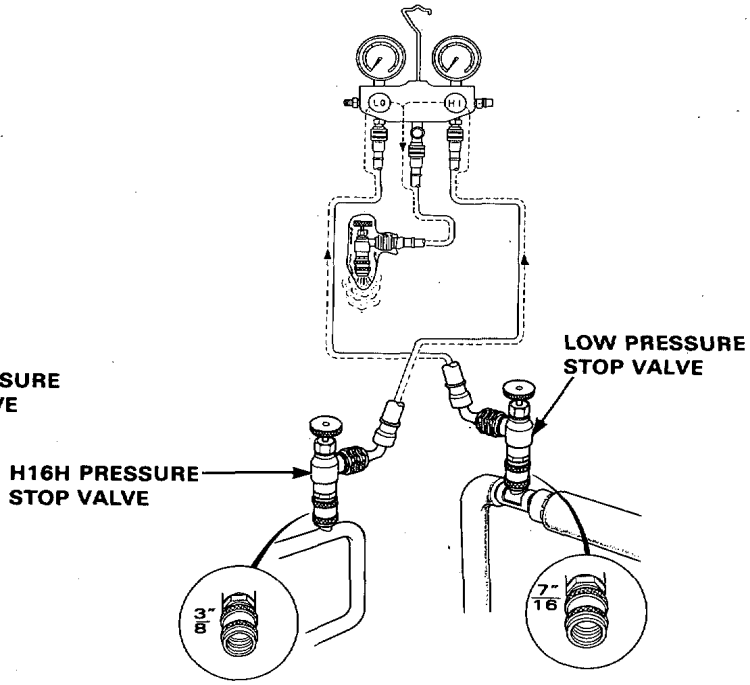
- **Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.**
- **Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.**

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. Open the both stop valves and the evacuation valve (2 valve gauge: evacuate stop valve).
4. 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 renger-ant.
   CAUTION: If refrigerant is allowed to escape too fast. compressor oil will be drawn out of the system.
5. After the higl, 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.
6. Notr the gauge reading and, as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 psi).

(3 valve gauge)



(2 valve gauge)

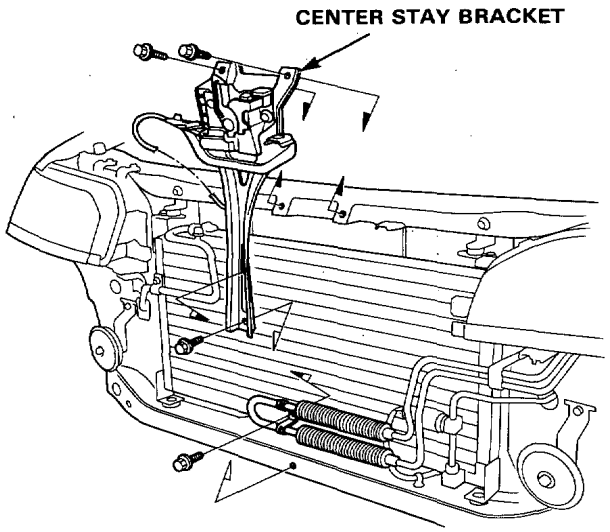


Downloaded from www.Manualslib.com manuals search engine

Condenser

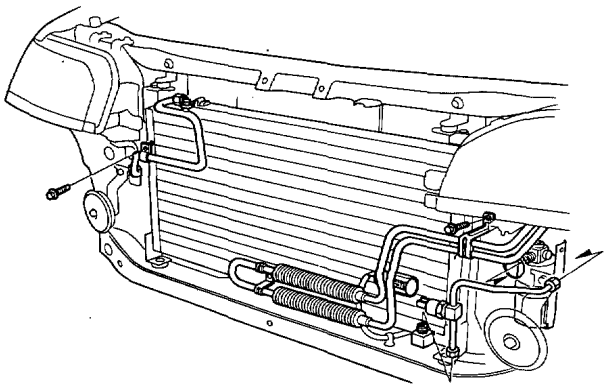
Replacement

1. Discharge the refrigerant.
2. Remove the bumper.
3. Remove the center stay bracket.

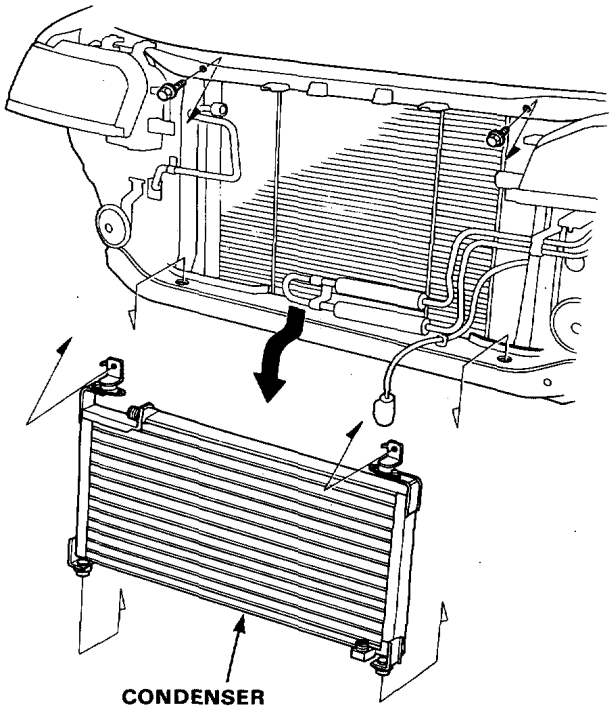


4. Disconnect the condenser pipe and discharge pipe from the condenser.

   CAUTION: Cap the open fittings immediately to keep moisture and dirt out of system.



5. Remove the mounting bolts (2) and condenser.



Install in the reverse order of removal, charge the system (page 15-50) and test performance (page 15-56).

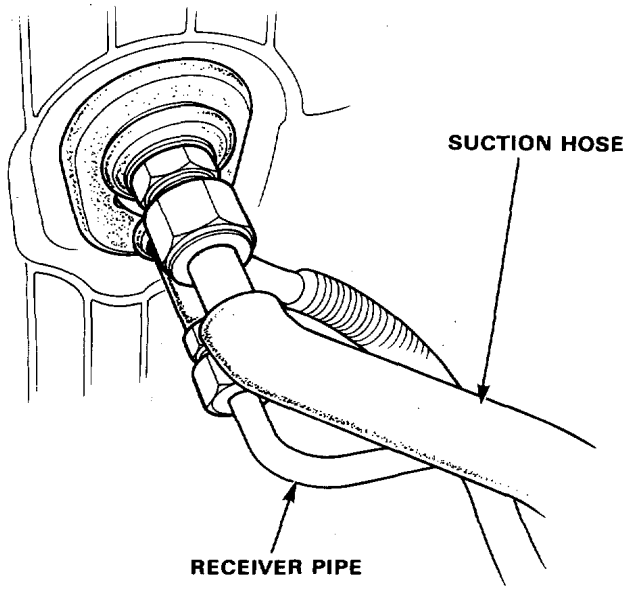
Downloaded from www.Manualslib.com manuals search engine

Evaporator

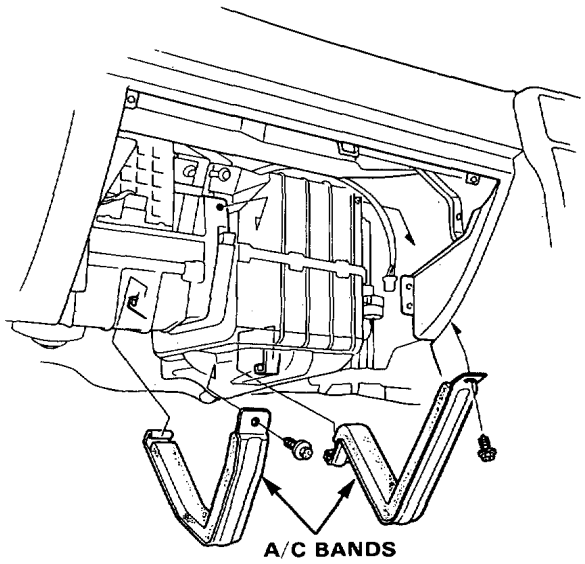
Replacement

1. Disconnect the battery negative terminal.
2. Discharge the refrigerant (page 15-36).
3. Ddiconnect the receiver line and suction hose from the evaporator.

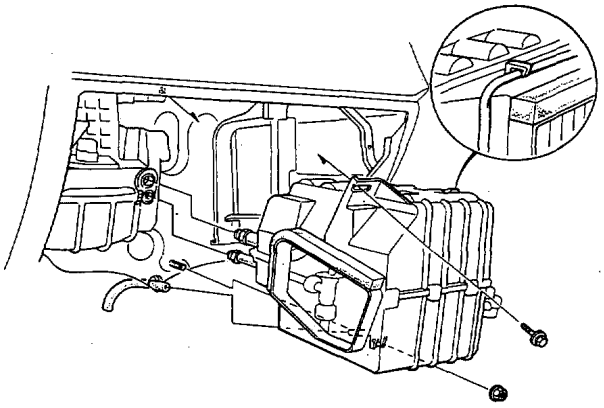
CAUTION: Cap the open fittings immediately to keep moisture out of the system.



4. Remove the glove box.
5. Disconnect the connector from the A/C thermostat 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.



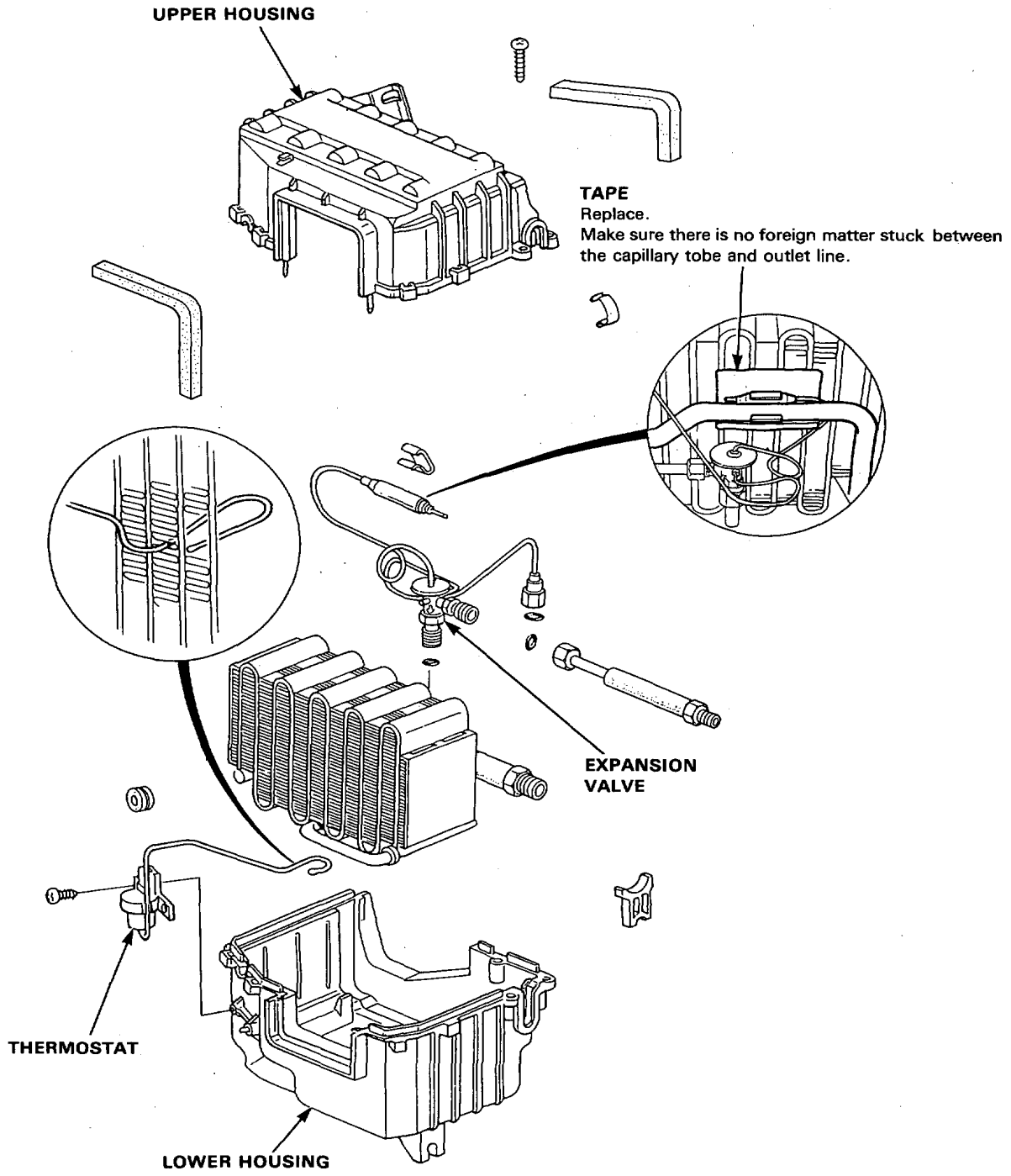
8. Install in the reverse order of removal, and:
   - Apply a sealant to the grommets.
   - Make sure that there is no air leakage.
   - Charge the system (page 15-50) and test performance (page 15-56).

Downloaded from www.Manualslib.com manuals search engine

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 A/C thermostat in its original location.



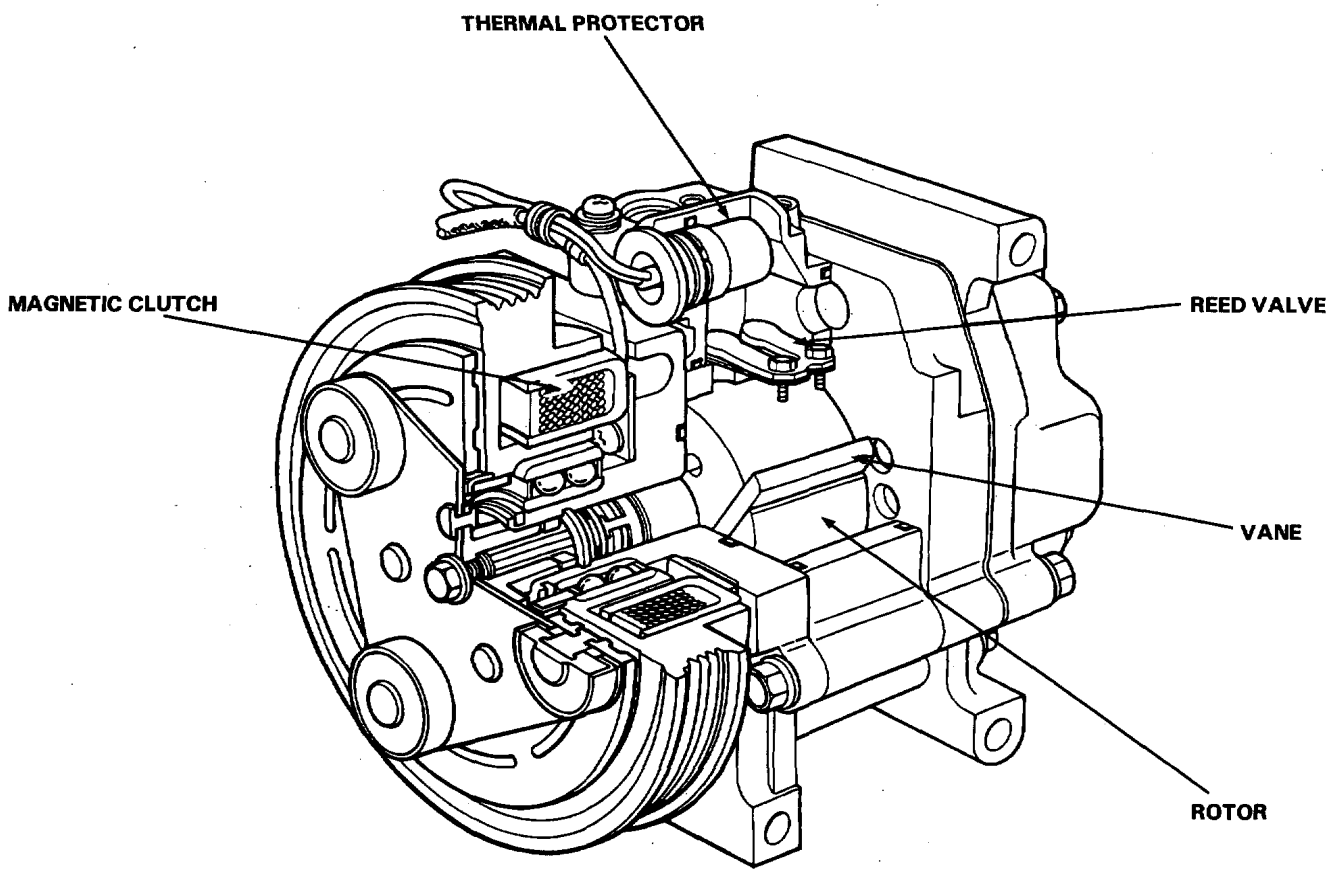
Downloaded from www.Manualslib.com manuals search engine

Compressor

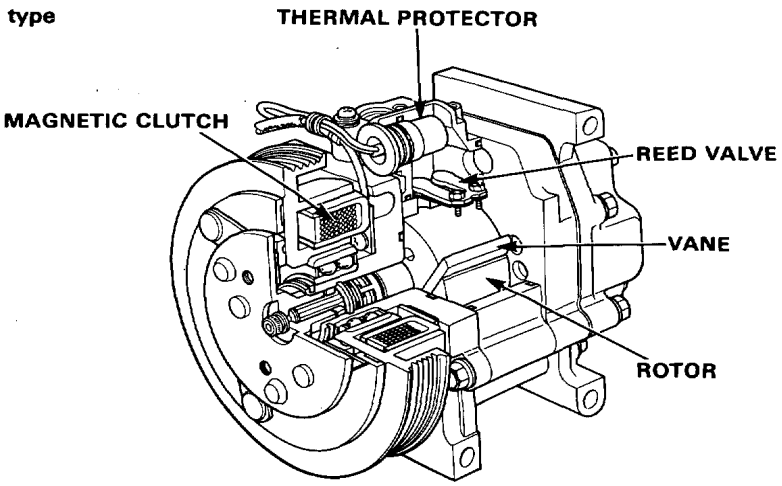
Description (Matsushita)

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.

A type



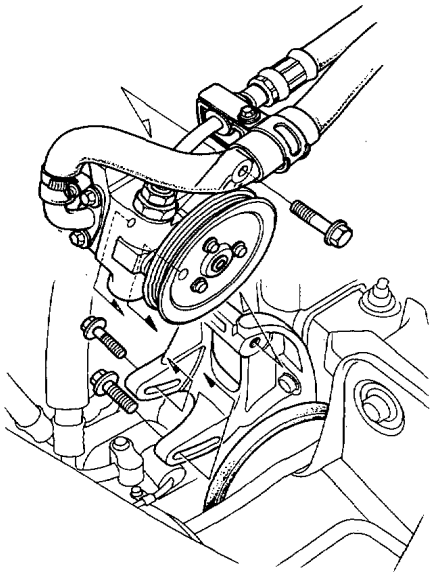
B type



Downloaded from www.Manualslib.com manuals search engine

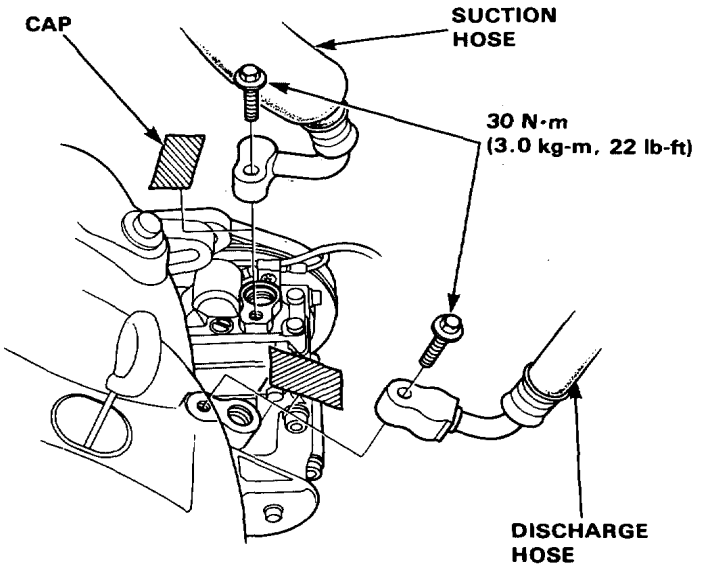
Replacement

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 disconect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system page(15-36).
3. Remove the mounting bolts (2) the power stearing pump belt, and the power stearing pump.

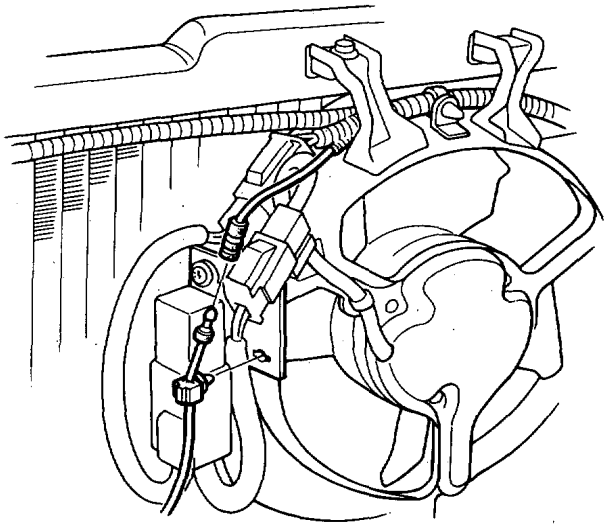


4. Disconnect the suction and discharge hoses from the compressor.

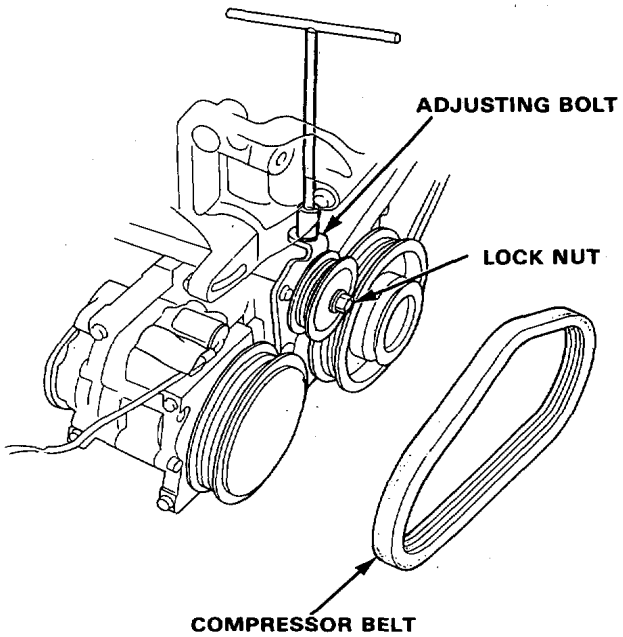
   CAUTION: *Cap the open fittings immediately to keep moisture and dirt out of the system.*



5. Disconnect the compressor connector and the clamp.



6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.

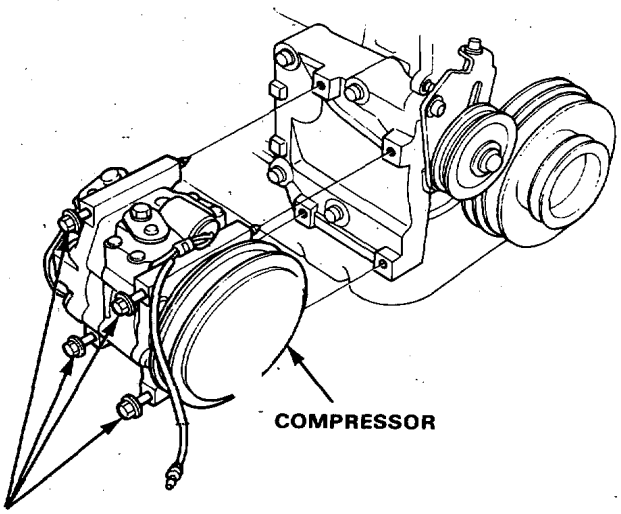


Downloaded from www.Manualslib.com manuals search engine

Compressor

Replacement (cont'd)

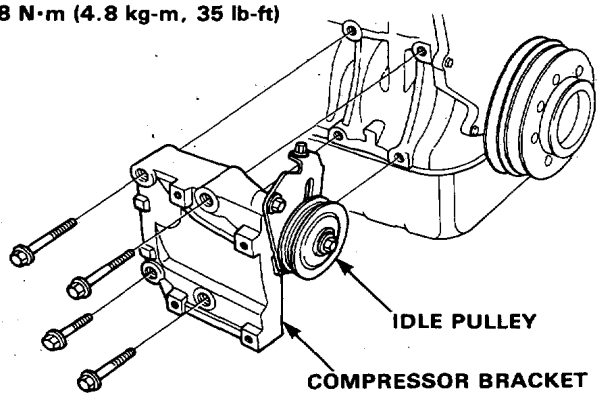
7. Remove the compressor mounting bolts(4)and compressor. Rest the compressor on the front beam.



COMPRESSOR MOUNTING BOLTS
25 N·m
(2.5 kg-m, 18 lb-ft)

8. Remove the mounting bolts (4) and compressor bracket with idle pulley.

ALL TORQUE:
48 N·m (4.8 kg-m, 35 lb-ft)



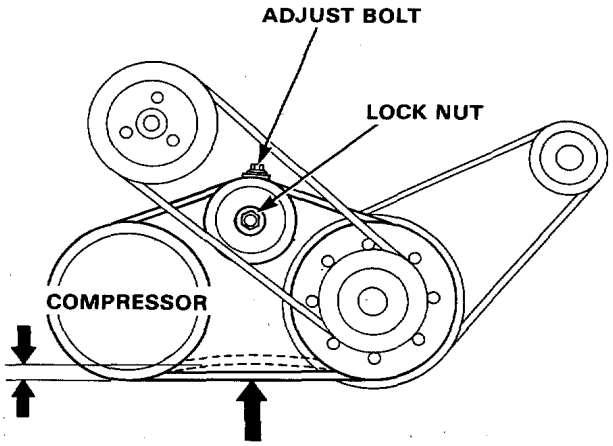
9. Remove the compressor.

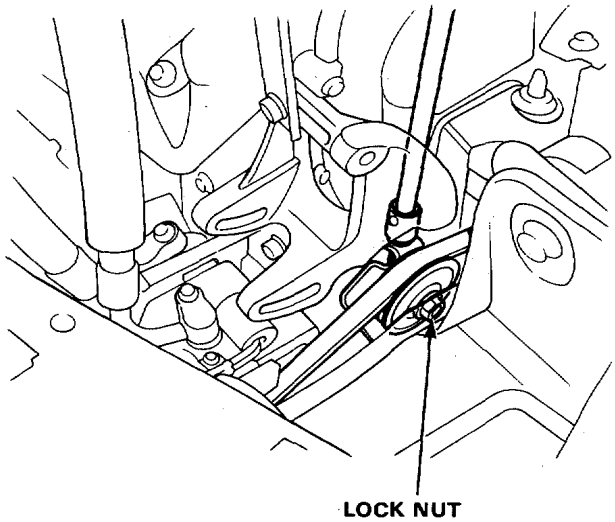
10. Install in the reverse order of removal and:
    - If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
      150cc (5fl oz,) minus contents of old compressor, equals amount to drain from new compressor.
    - Adjust the compressor belt and the power steering belt.

NOTE: Measure the deflection when 98 N (10kg, 22lb) force is applied between the pulleys.

Compressor belt Adjustment.
9–11 mm (0.35–0.43 in)

{ 7–9 mm (0.28–0.35 in) when new belt is intalled }



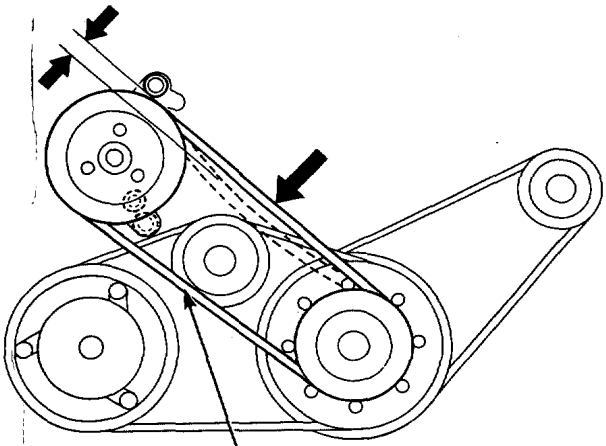


- Charge the system (page 15-50).
- Test the performance (page 15-56).

Downloaded from www.Manualslib.com manuals search engine

11. 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)



POWER STEERING BELT

Downloaded from www.Manualslib.com manuals search engine

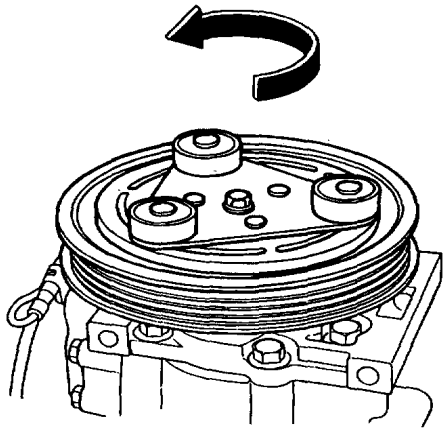
Compressor (Matsushita)

Clutch Inspection

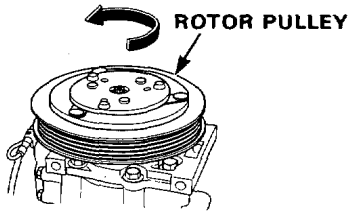
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.

ROTOR PULLEY

A type



B type

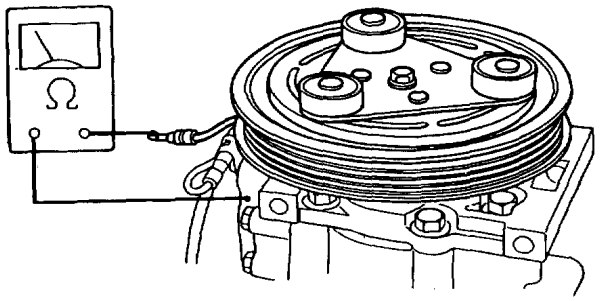


- Check resistance of the field coil:

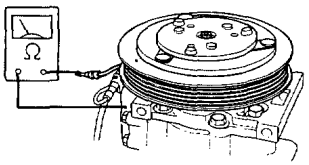
Field Coil Resistance:
3.33 ± 0.17 ohm at 20°C (68°F)

If resistance is not within specifications, replace the coil.

A type



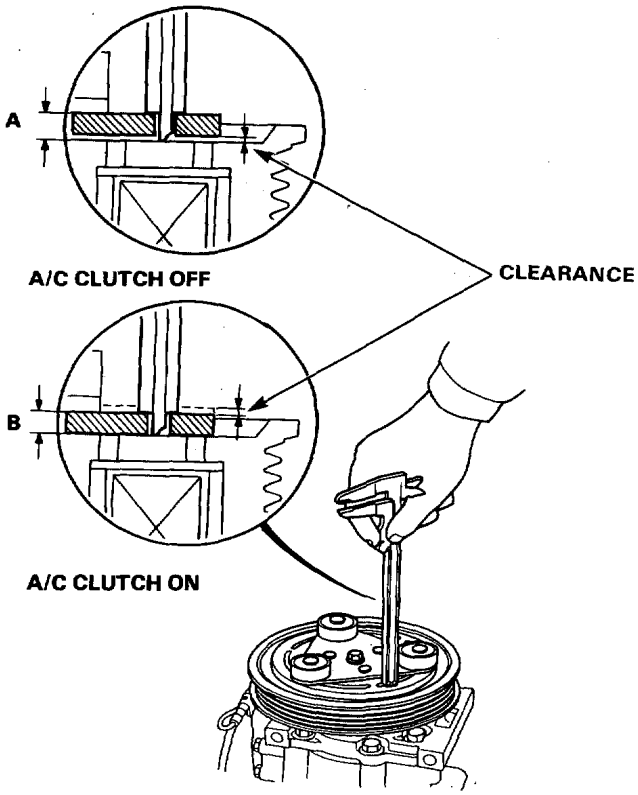
B type



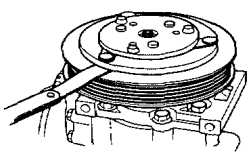
- Measure the clearance between the pulley and pressure plate. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

A type:
CLEARANCE: 0.4–0.6 mm (0.016–0.024 in)

CLEARANCE=A(CLUTCH OFF)−B(CLUTCH ON)



B type:
CLEARANCE: 0.4–0.6 mm (0.016–0.024 in)

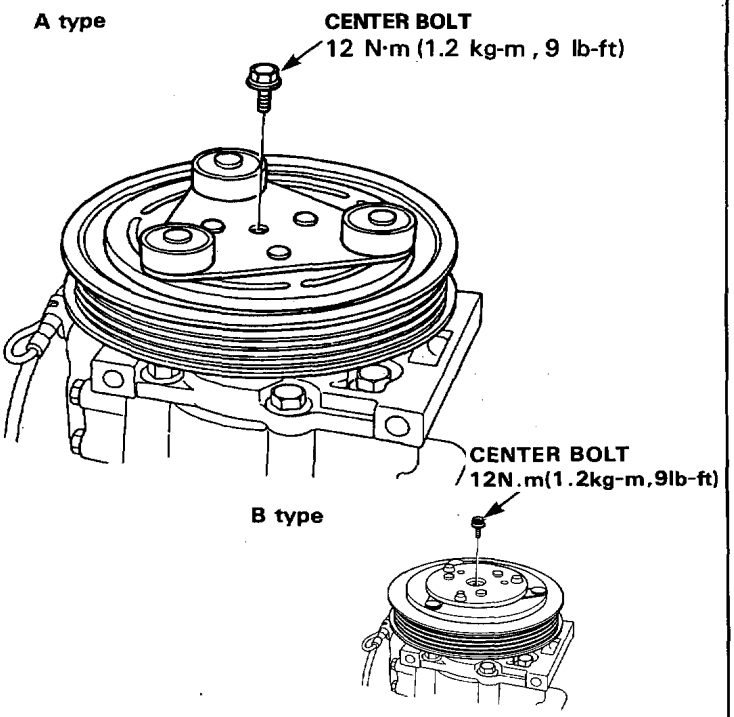


NOTE:
The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

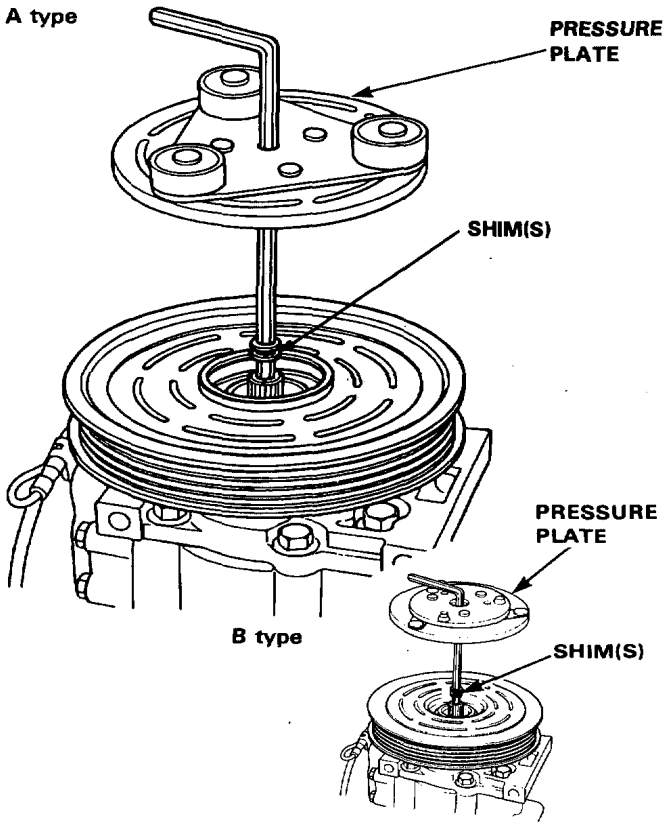
Downloaded from www.Manualslib.com manuals search engine

Clutch Overhaul

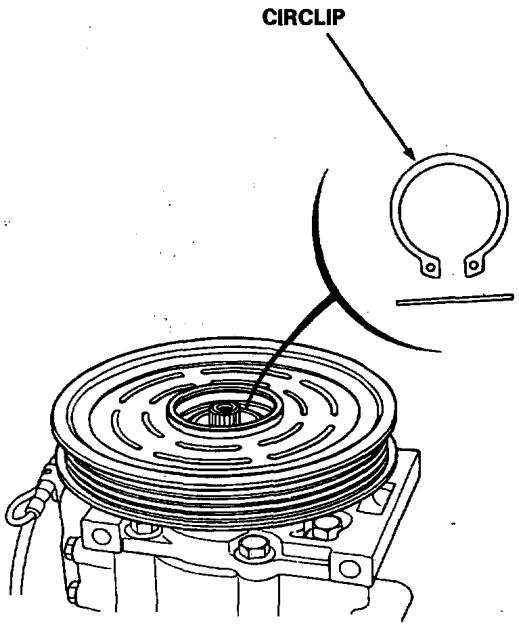
1. Remove the center bolt and washers.



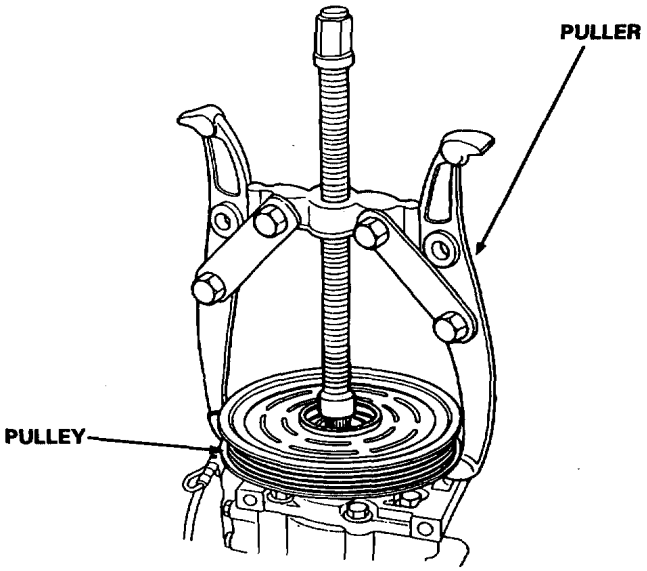
2. Remove the pressure plate and shim(s) taking care not to lose the shims.



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.

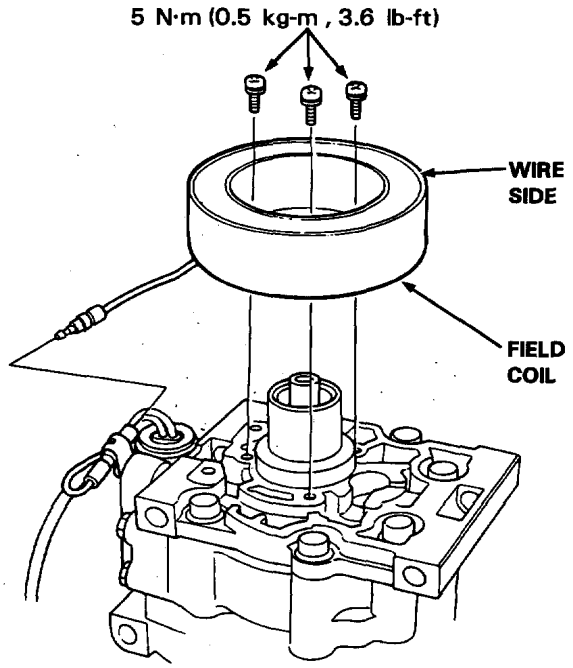


Downloaded from www.Manualslib.com manuals search engine

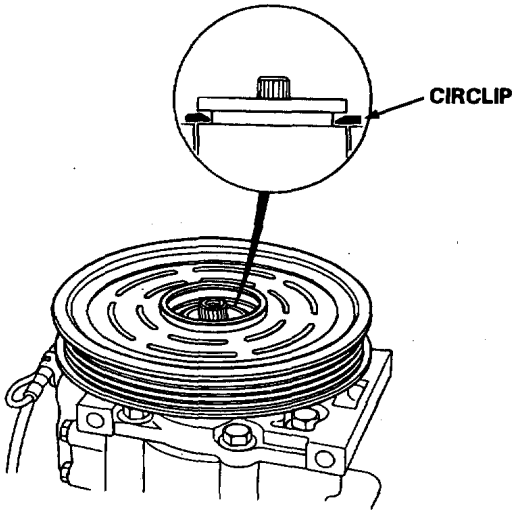
Compressor (Matsushita)

Clutch Overhaul (cont'd)

6. Disconnect the field coil connector and remove the screws (3) and field coil.

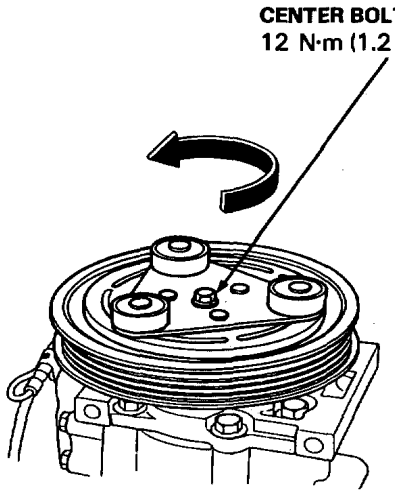


7. Install in the reverse order of removal and:
   - Install the field coil with the wire side facing up (see above).
   - Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
   - Check the pulley bearings for excessive play.
   - Make sure the circlip is fitted to the groove properly.

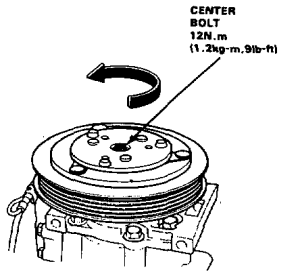


   - Apply locking agent to the thread of the center bolt and tighten it securely.
   - Make sure that the pulley turns smoothly.

A type



B type



Downloaded from www.Manualslib.com manuals search engine

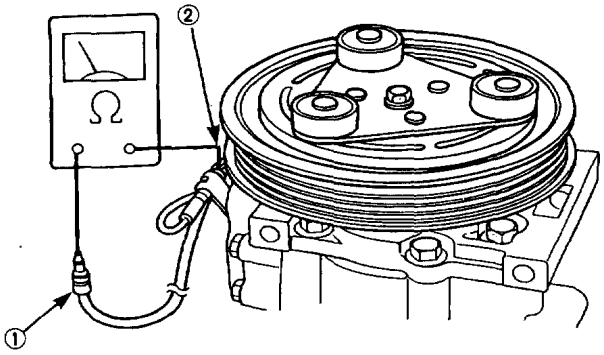
Thermal Protector Inspection

Check for continuity between the 1 and 2 terminals of the compressor connector.

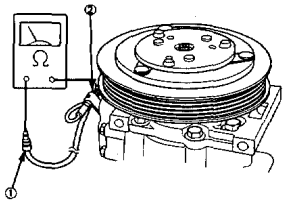
There should be continuity.

- If no continuity, replace the thermal protector.

A type

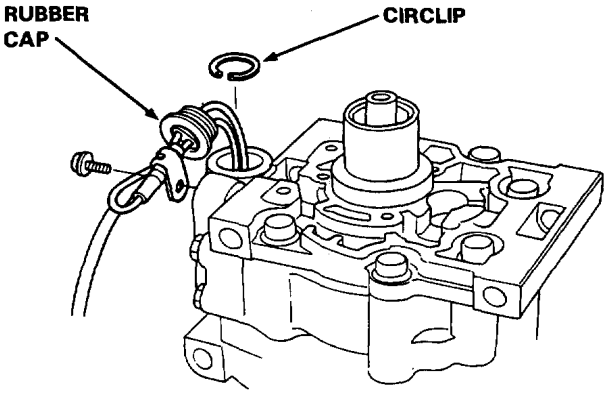


B type



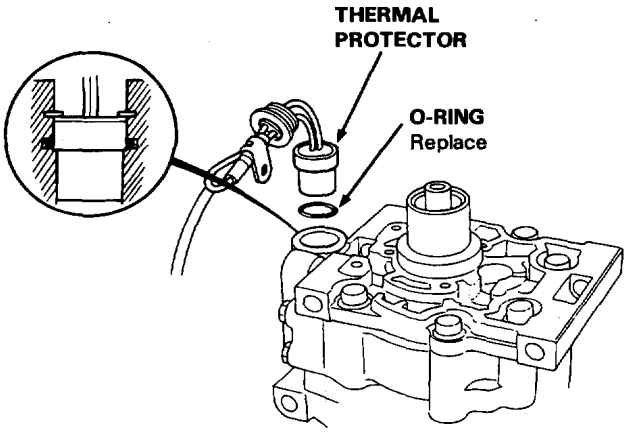
Thermal Protector Replacement

1. Remove the pressure plate and field coil (page 22-29).
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.



Downloaded from www.Manualslib.com manuals search engine

Compressor (Matsushita)

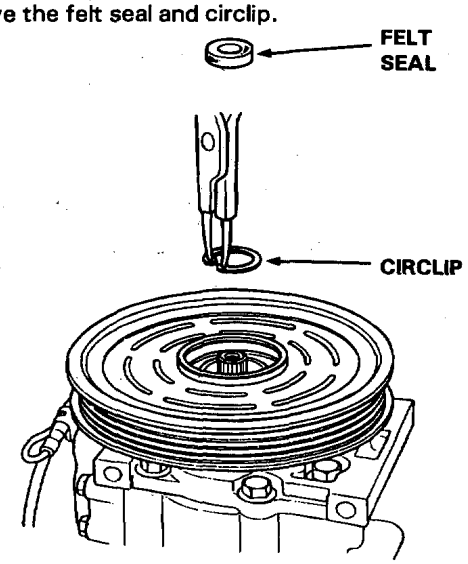
Shaft Seal Replacement

NOTE:
Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate (page 24-29).

   NOTE:
   Removal of the clutch pulley and coil is not necessary.

2. Remove the felt seal and circlip.



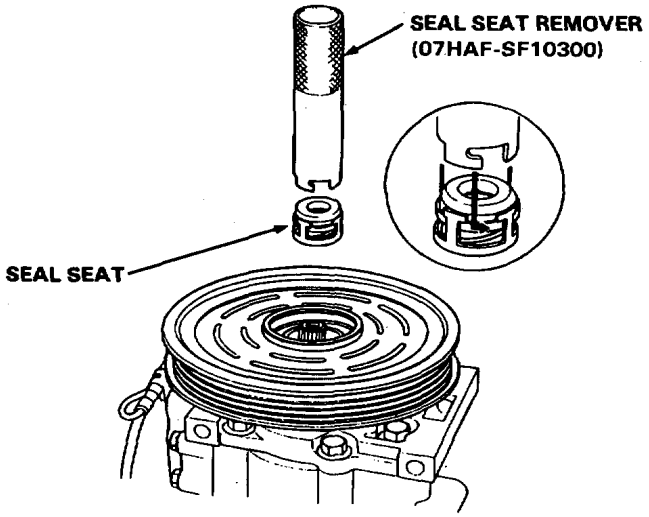
3. Remove the shim(s).

   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.

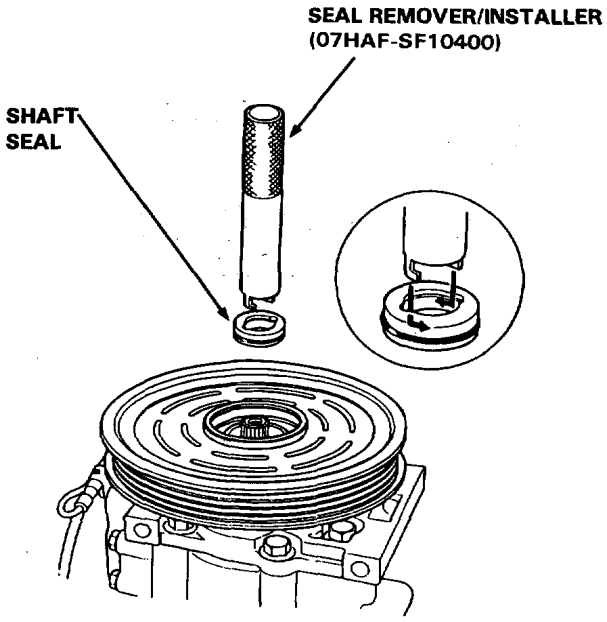
5. Rotate the special tool counterclockwise to make sure that the cutout is engaged with the seal seat.

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.

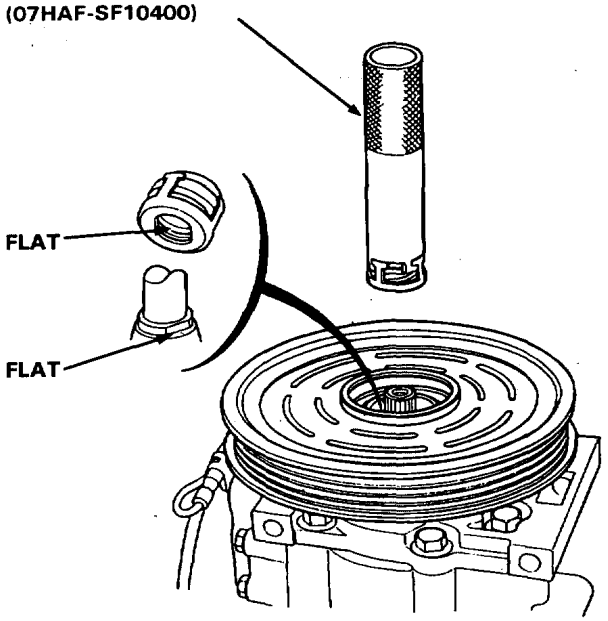
    NOTE:
    - Use only clean refrigerant oil.
    - Do not touch the sealing surfaces of the shaft seal after lubricating.

Downloaded from www.Manualslib.com manuals search engine

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.

SEAL REMOVER/INSTALLER (07HAF-SF10400)



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, [0.4—0.6 mm (0.016—0.024)] shims must be added or removed as required.

Downloaded from www.Manualslib.com manuals search engine

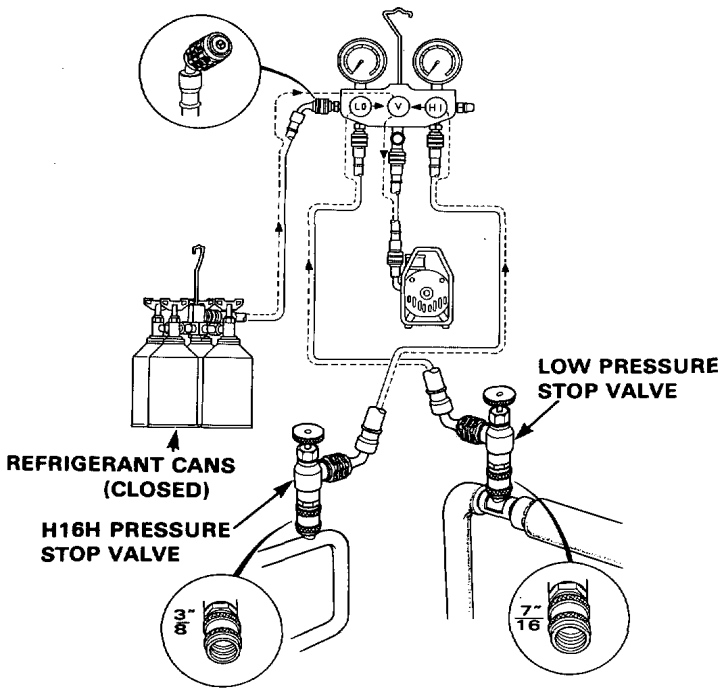
System Charging

System Evacuation

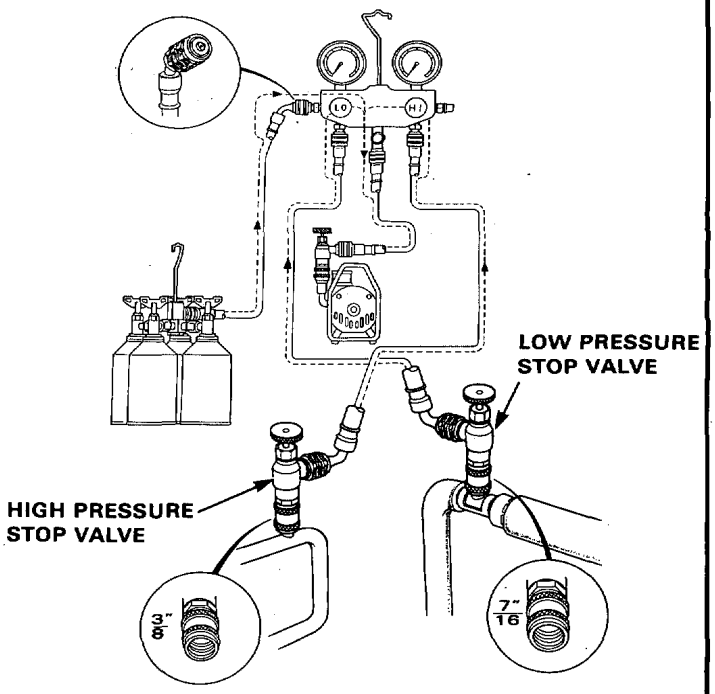
The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

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. Connect a gauge, pump and refrigerant containers (cans of R-12) as shown.
   NOTE: Do not open the cans.
3. Start the pump, then open the both pressure valves, both pressure stop valves and evacuation valve (2 valve gauge: evacuation stop valve). Run the pump for about 15 minutes. Close the both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve) and stop the pump. The low gauge should indicate above 700mmHg (27 in-Hg) and remain steady with the valves closed.
   NOTE: If low pressure does not reach more than 700 mmHg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test).
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.

3 VALVE GAUGE



2 VALVE GAUGE



Downloaded from www.Manualslib.com manuals search engine

Leak Test

The following are the procedures to be adhered to when servicing air conditionditioners to reduce the amount of R-12 into the atmoshpere.

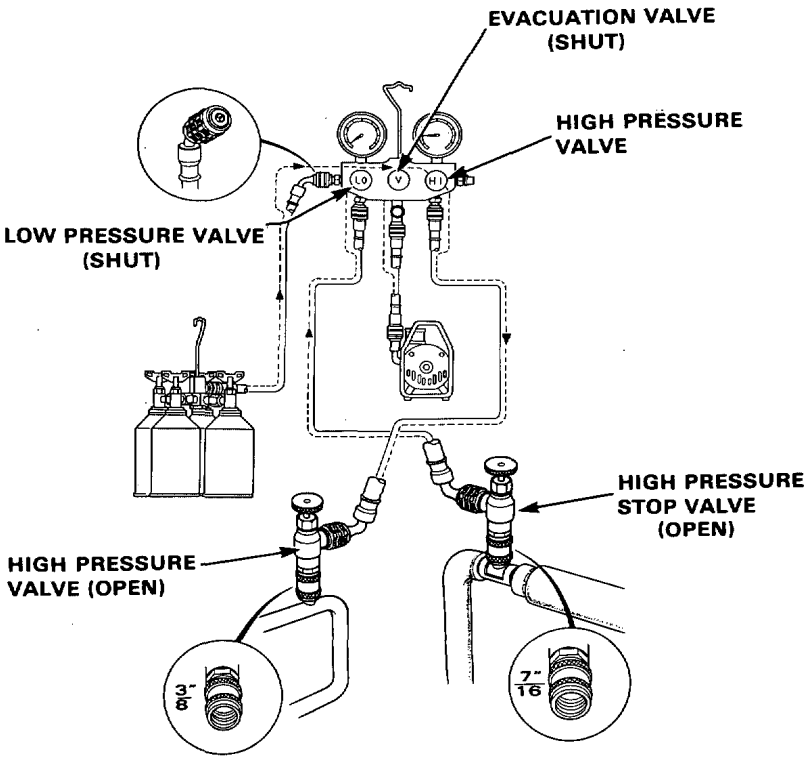
⚠ WARNING When handling refrigerant (R-12):

- **Always wear eye protection.**
- **Do not let refrigerant get on your skin or in your eyes. If it does:**
  - **Do not rubyour 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.**

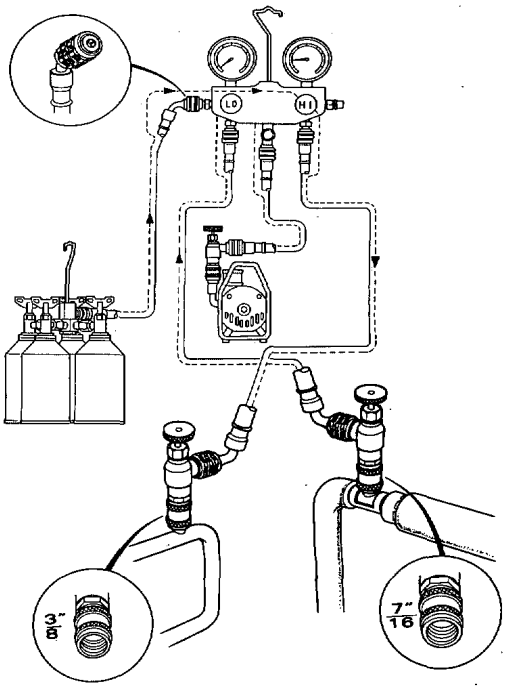
NOTE: Check for leaks after evacuation.

1. Close the evacuation valve (2 valve gauge; evacuation stop valve).
2. Open the cans.
3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve. NOTE: Close the low pressure valve.
4. Check the system for leaks using a leak detector. NOTE: Particularly check for leaks around the compressor, condensenser, and receiver-dryer.
5. If you find any leaks, tighten the joint nuts and bolts to the specified torque.
6. Recheck the system for leaks using a leak detector.
7. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system.
8. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 15-81).

3 VALVE GAUGE



2 VALVE GAUGE



Downloaded from www.Manualslib.com manuals search engine

System Charging

Charging Procedures

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

⚠ 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.**

CAUTION: Do not overcharge the system; the compressor will be damaged.

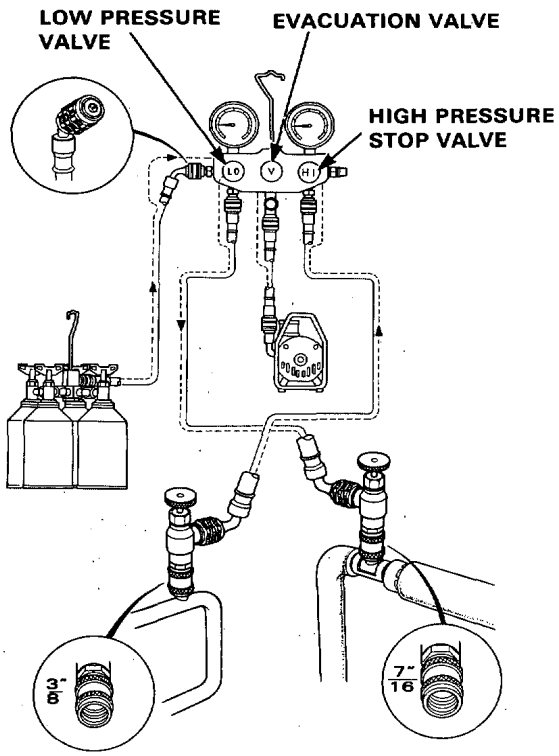
1. After leak test, check that the high pressure valve is closed and start the engine.
   NOTE: Run the engine below 1500 rpm.
2. Open the front door.
   Turn the A/C switch on.
   Turn the air mix dial (lever) to COOL.
   Turn function control switch (lever) on
   Turn the heater fan switch on "E" (MAX).
3. Open the low pressure valve and charge with refrigerant.

⚠ WARNING

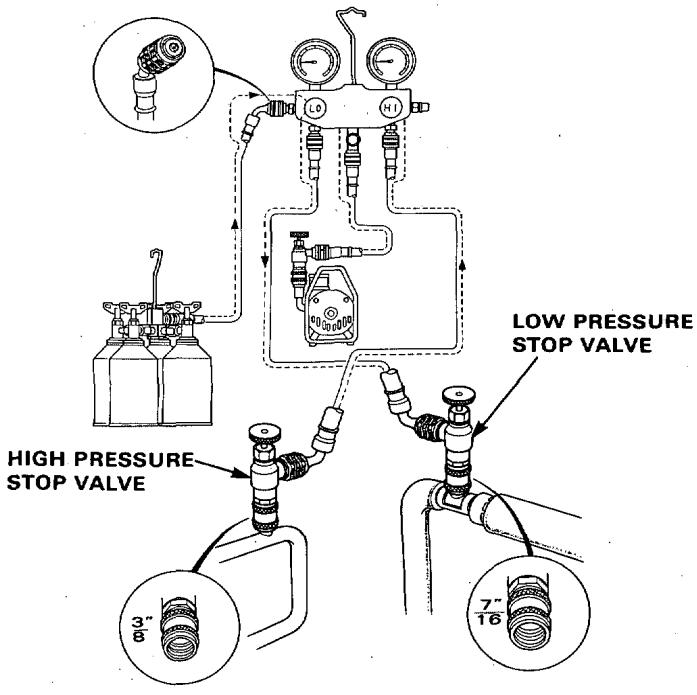
- **Do not open the high gauge valve.**
- **Do not turn the cans upside down.**

4. Charge the system with refrigerant capacity.
   Refrigerant capacity: 900^{+0}_{-50}g (32^{+0}_{-2}oz)
5. When fully charged, close the low pressure valve and the refrigerant cans. Check the system.
6. Close the high pressure stop valve.
7. Open the low pressure valve and gradually open the high pressure valve. When both pressure gauge are the same, close the low pressure stop valve and stop the engine.
8. Disconnect the charge hose quickly.
9. Check the system for leaks using a leak detector.
   NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.

3 VALVE GAUGE



2 VALVE GAUGE



Downloaded from www.Manualslib.com manuals search engine

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Fron R-12 into the atmoshpere.

⚠ WARNING When handling rerigerant (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 tratment. 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.**

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect the gauge as shown, close both pressure stop valves. Purge air from the charge hose A, then loosen the stop valve connector.
2. Attach a pump and refrigerant containers (can: 250 g x 2) as shown.
   NOTE: Do not open cans.
3. Open both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve), start the pump. The low gauge should indicate above 700 mmHg (27 in-Hg), then run the pump about 1 minute.
4. Close both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve). Open both pressure stop valve.
5. Start the engine and turn on A/C switch.
6. Stop the engine and check for leaks using a leak detector.
   NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.
7. Test the system using the pressure test and inspection data.
   Test condition:
   - Start the engine.
   - Turn the air mix dial (lever) to COOL.
   - Turn the function control switch (lever) on .
   - Turn the recirculation control switch on .
   - Turn the heater fan switch on MAX.

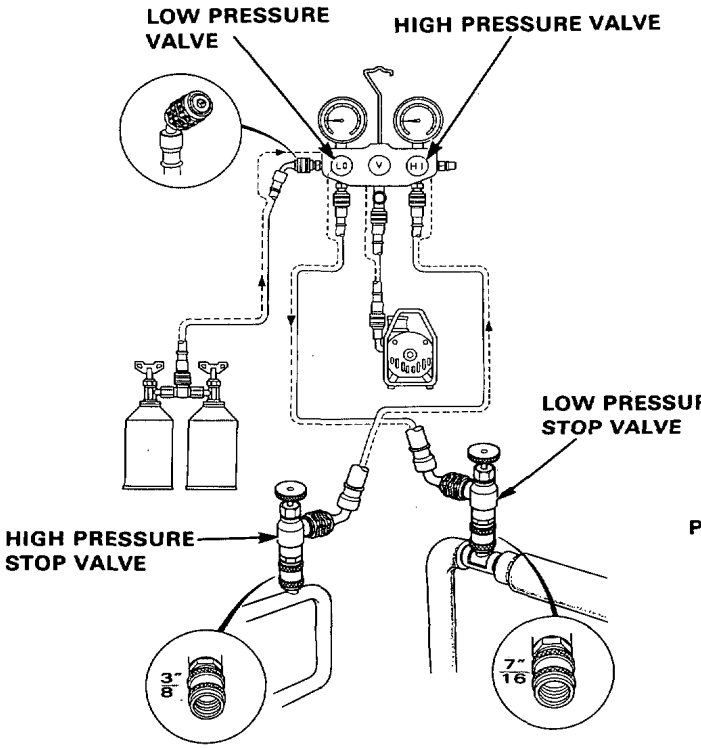
   If there is insufficient refrigerant in system, continue to charge system.
8. Open one or two cans, open the low pressure gauge. Charge the system unitl there are no bubbles in the sight glass.

⚠ WARNING

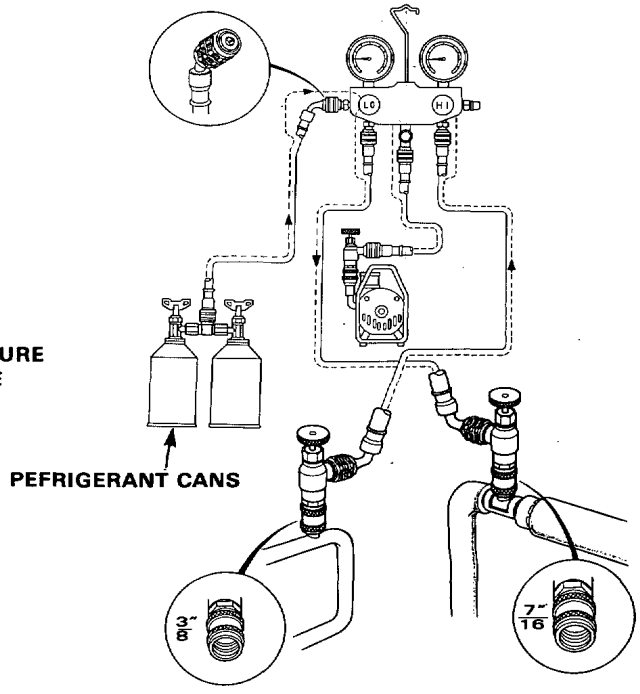
- **Do not open the high gauge valve.**
- **Do not turn the cans upside down.**

9. After adding supplemental refrigerant, close the high pressure stop valve. Open the low pressure valve and gradually open the high pressure valve. When pressure gauges read same, close the low pressure stop valve and stop the engine.
10. Disconnect the charge hose quickly.
11. Check the system for leaks using a leak detector.

3 VALVE GAUGE



2 VALVE GAUGE



Downloaded from www.Manualslib.com manuals search engine

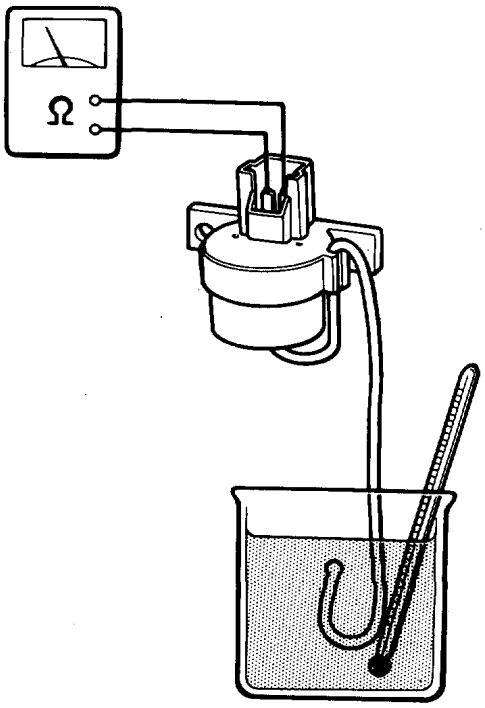
Test

A/C Thermostat

Dip A/C thermostat 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)

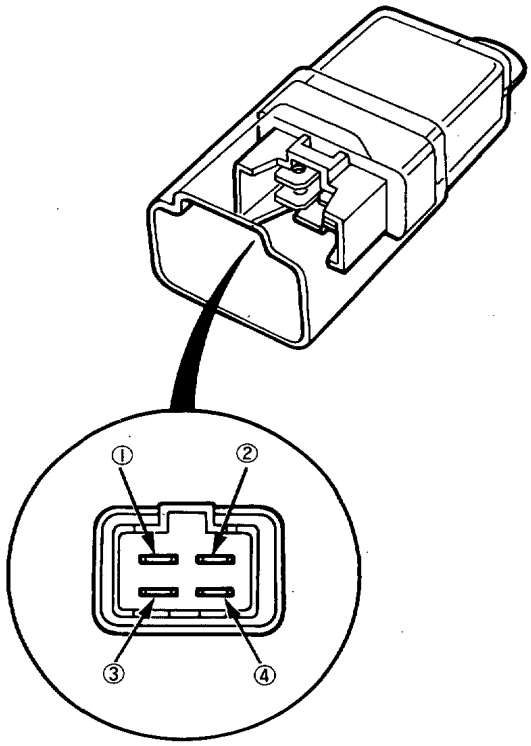
If cut off or cut in temperature is too low or too high, replace the thermostat switch.



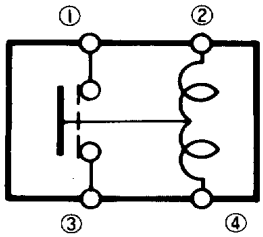
Relay

NOTE: All A/C system ralay 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 terminls ① and ③.



Relay circuit

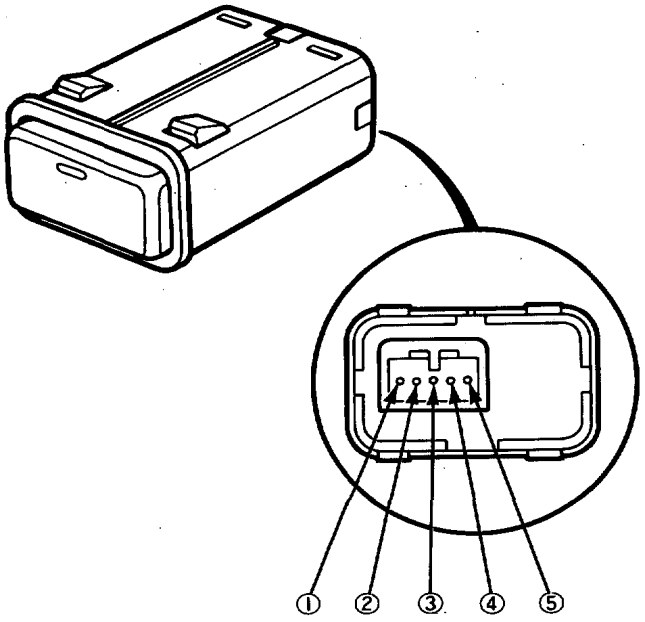


Downloaded from www.Manualslib.com manuals search engine

A/C Switch

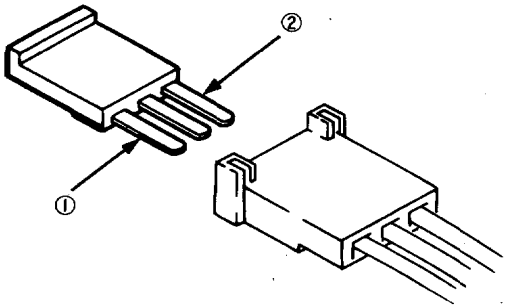
Check for continuity between the reminals according to the table.

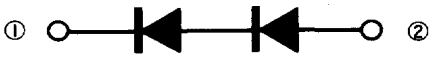
Terminal No. / Position	①	②	③	④	⑤
OFF	○—⊙—○		○—⊙—▶—		○
ON	○—⊙—○			○—⊙—▶—	○
			○—○		



Diodes

Check for continuity to ① from ② terminals.





* Diodes are taped with A/C harness.

Downloaded from www.Manualslib.com manuals search engine

Performance Test

The performance test will help determine if the air conditioning system is operating within specifications.

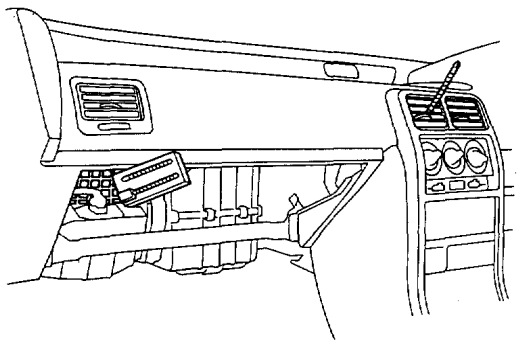
1. Connect the gauges as shown.

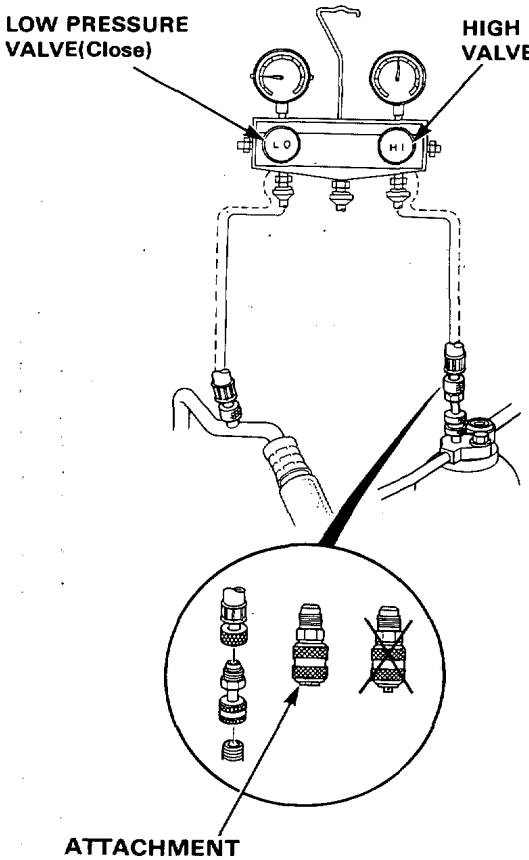
2. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.

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.

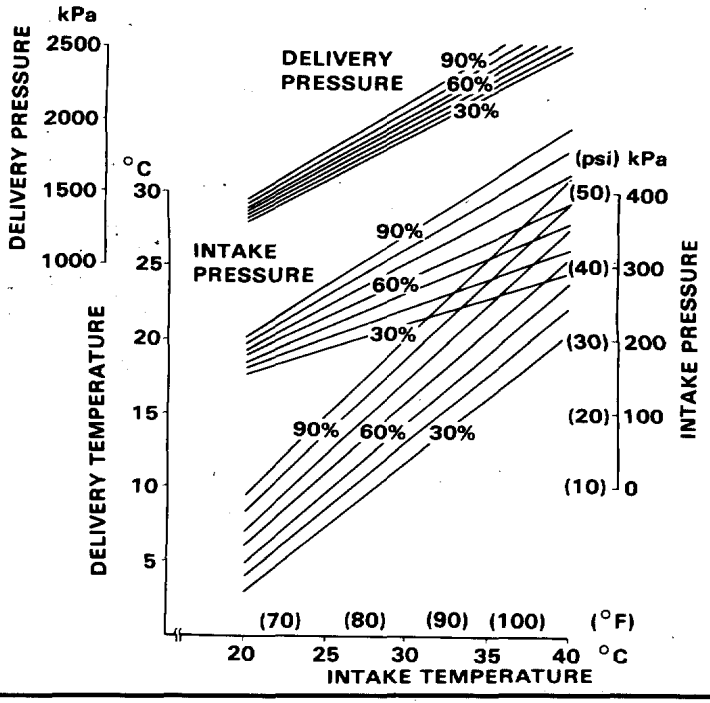
5. To complete the charts:
   - Make the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) aolng the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - Mark a point one line above and one line below the humidity 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.





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.



Downloaded from www.Manualslib.com manuals search engine

Idle Speed Setting

1. Before setting (with A/C ON), check that the idle speed is adjusted properly (Section 6).

2. After charging, adjust the idle speed by turning the idle adjusting screw in or out as required with the air conditioner ON.
   - Apply the parking brake and block the wheels.
   - Headlights ..... OFF
   - A/C temperature dial ..... MAX COLD
   - Function lever ..... VENT
   - Fan switch ..... MAX
   - Recirculation lever ..... RECIRC

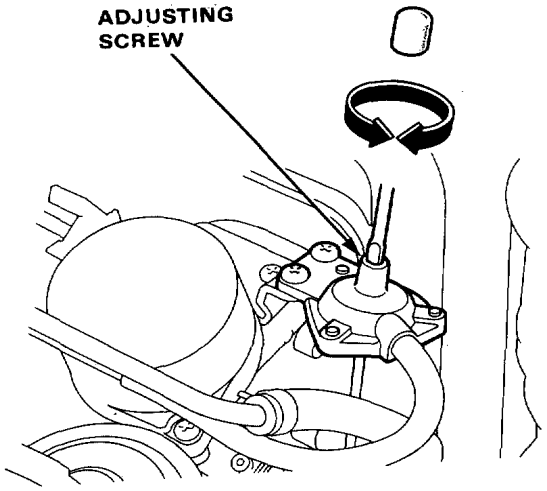
● Carbureted Engine

Idle speed should be:

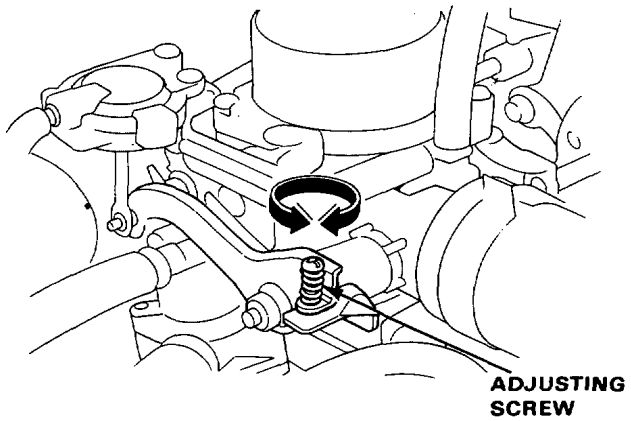
Manual	750±50 min^{-1} (rpm)
Automatic	750±50 min^{-1} (rpm) (N or P)

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

(1.4 ℓ Engine)



(1.6 ℓ Engine)



● Fuel-Injected Engine

(1.5 ℓ Engine)
Idle speed shoud be:
800±50 min^{-1} (rpm)

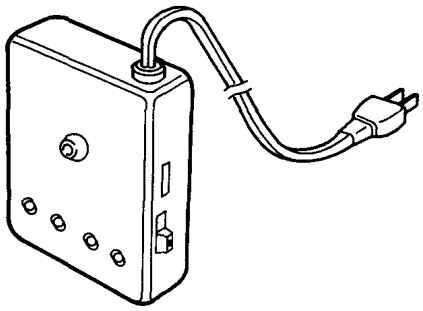
(1.6 ℓ Engine)
Idle speed should be:
(SOHC)
810 ± 50 min^{-1} (rpm)
(DOHC with CATA)
800 ± 50 min^{-1} (rpm)
(DOHC without CATA)
M/T: 800 ± 50 min^{-1} (rpm)
A/T: 750 ± 50 min^{-1} (rpm)

NOTE: If the idle speed is not within specifications, see section 6.

Downloaded from www.Manualslib.com manuals search engine

Special Tools

Ref. No.	Tool Number	Description	Qty	Page Reference
①	07MAJ—SP00100	Keyless Entry Checker	1	16-14



①

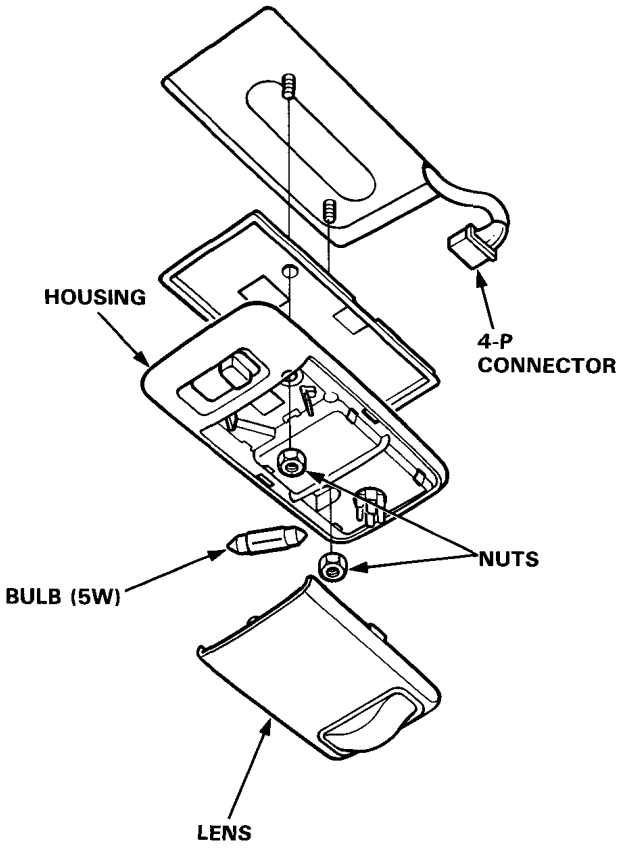
Downloaded from www.Manualslib.com manuals search engine

Interior Light (With Security Alarm System)

Test/Replacement

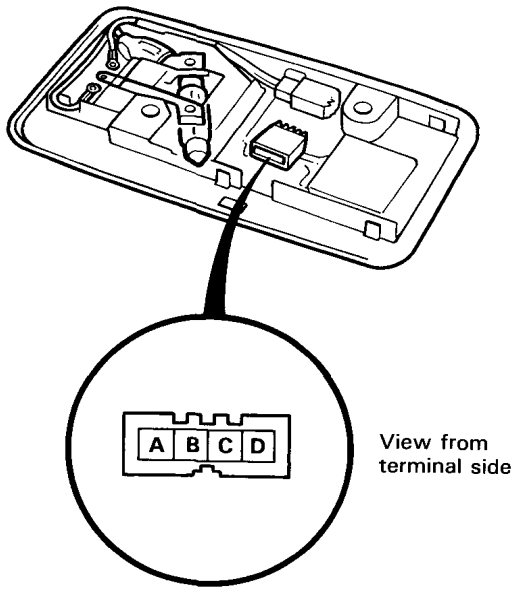
NOTE:
- When replacing the bulb, only take the lens off from the housing, and replace it.
- To test the infra-red signal receiving sensor, see page 16-15.

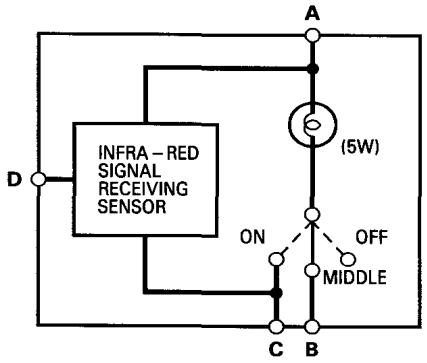
1. Turn the switch OFF.
2. Pry off the lens.
3. Remove the two nuts and disconnect the 4-P connector, then remove the housing.



4. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	A		B	C
OFF				
MIDDLE	○	∿	○	
ON	○	∿		○





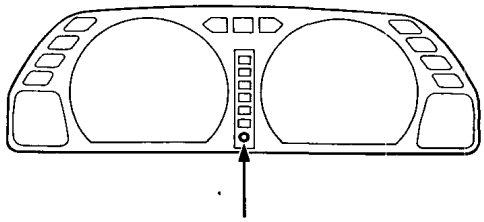
- If the interior light fails to operate properly, replace it.

Downloaded from www.Manualslib.com manuals search engine

Keyless Entry and Security Alarm System

Component Location Index

NOTE: RHD type is shown, LHD type is symmetrical.



SECURITY ALARM SYSTEM INDICATOR LIGHT
Test, page 16-16

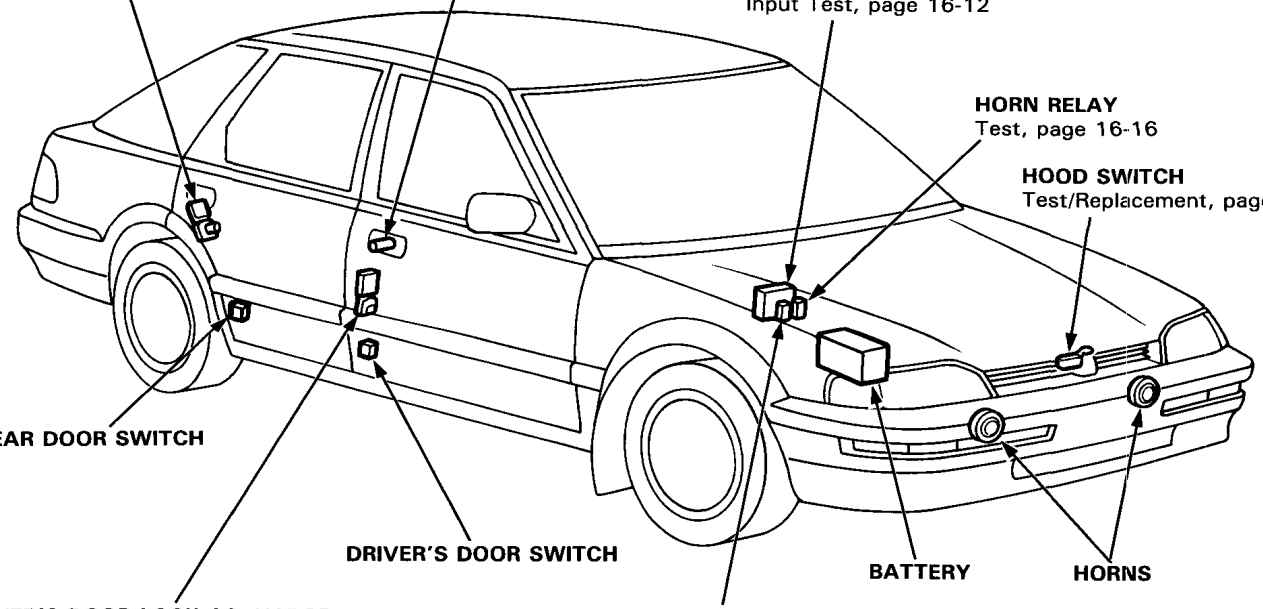
DRIVER'S DOOR KEY CYLINDER SWITCH
Test, page 16-18

R.REAR DOOR LOCK ACTUATOR
Test, page 16-21

SECURITY CONTROL UNIT
Input Test, page 12-12

HORN RELAY
Test, page 16-16

HOOD SWITCH
Test/Replacement, page 16-17



R.REAR DOOR SWITCH

DRIVER'S DOOR SWITCH

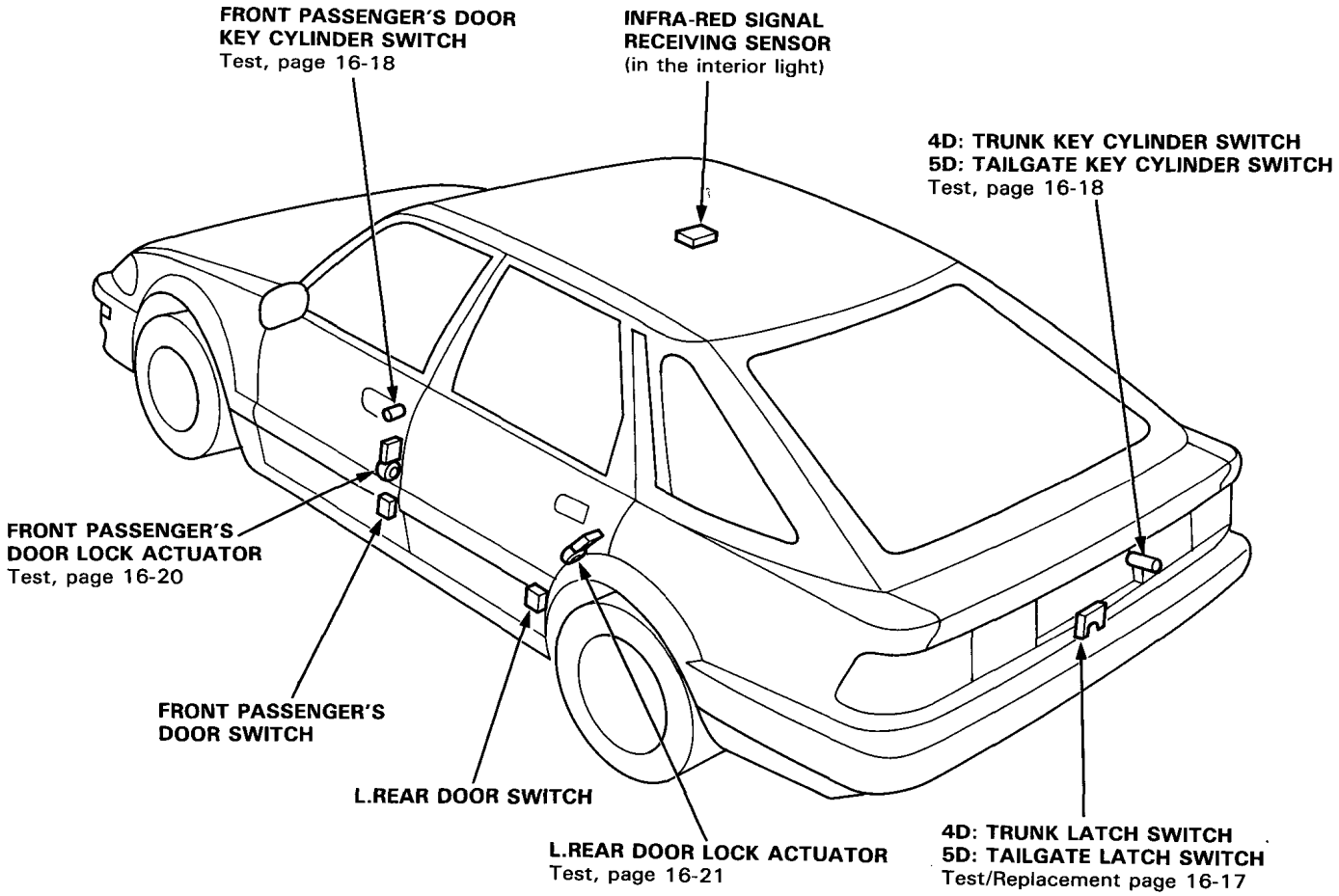
DRIVER'S DOOR LOCK ACTUATOR
Test, page 16-19

STARTER CUT RELAY
Test, page 16-16

BATTERY

HORNS

Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

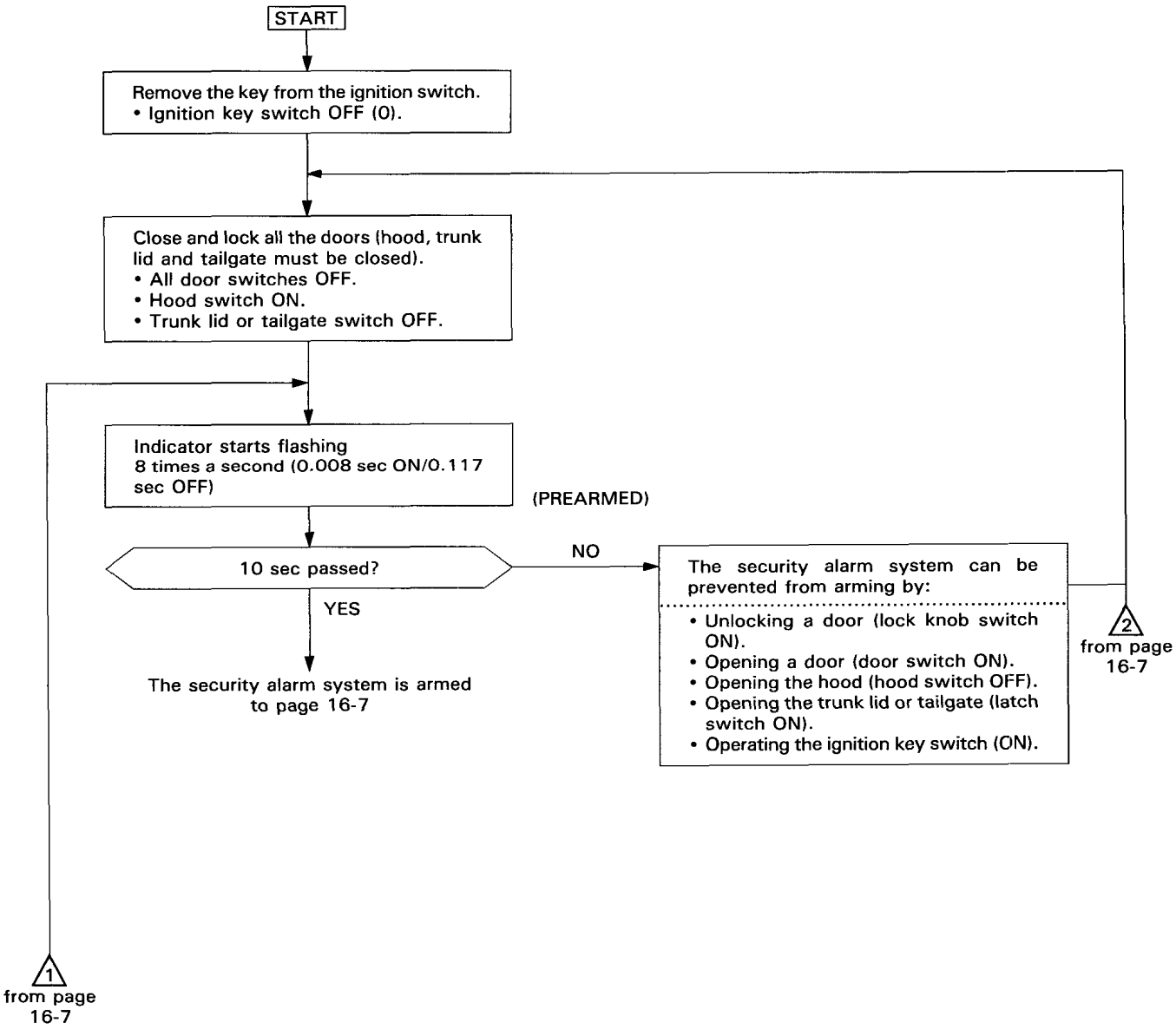
Keyless Entry and Security Alarm System

Description

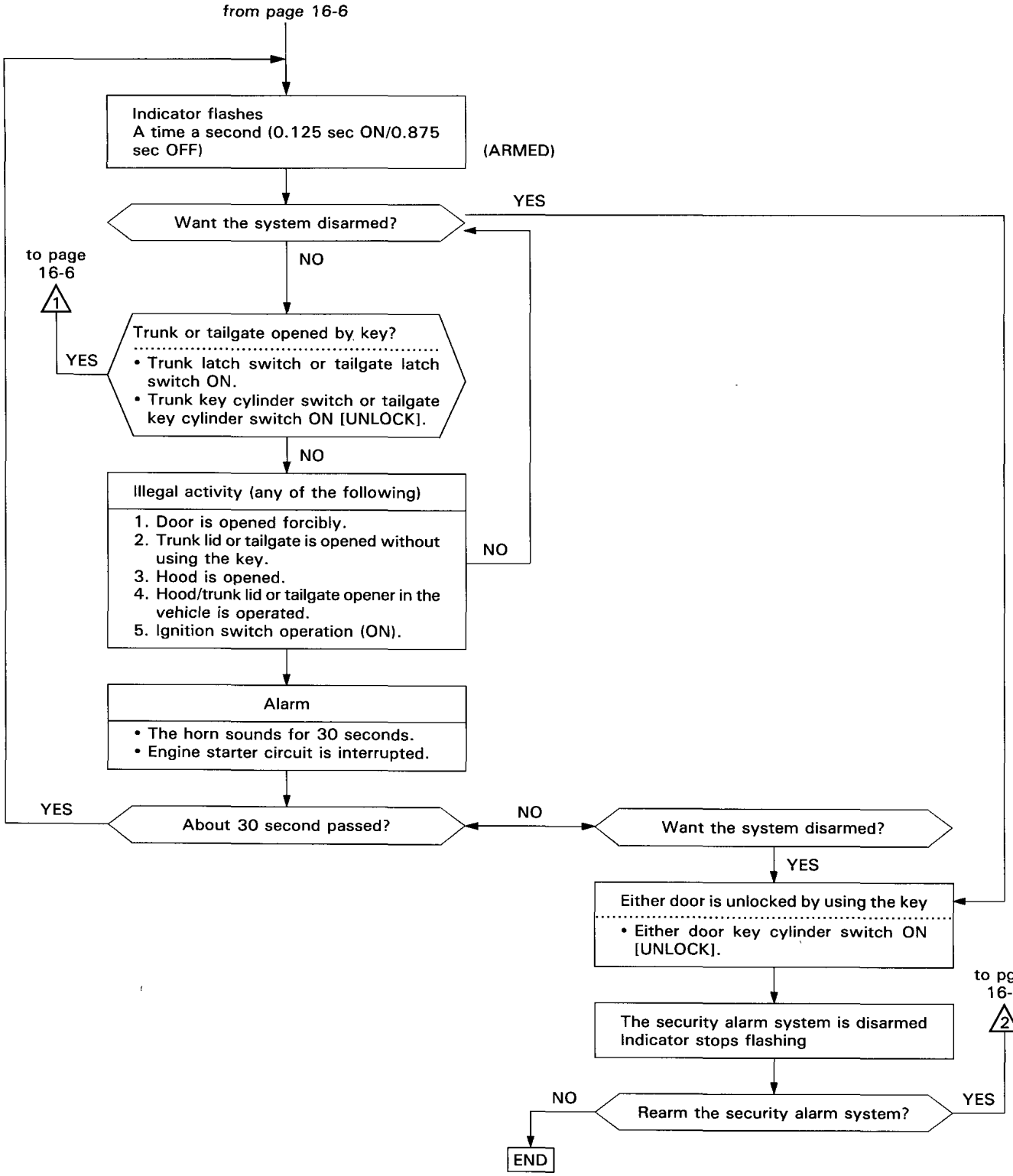
This system is activated automatically 10 seconds after everything has been closed and locked (by key or by *remote*). The security alarm system indicator light located in the gauge assembly will flash after the doors are properly locked. If any of the following conditions occur, the horns will sound for about 30 seconds, or until the system is disarmed by unlocking doors from the outside with the key and transmitter.

① Door is opened forcibly.
② Trunk lid or tailgate is opened without using the key.
③ Hood is opened.
④ Hood/trunk lid or tailgate opened in the vehicle is operated.

Flowchart of the security alarm system operation:



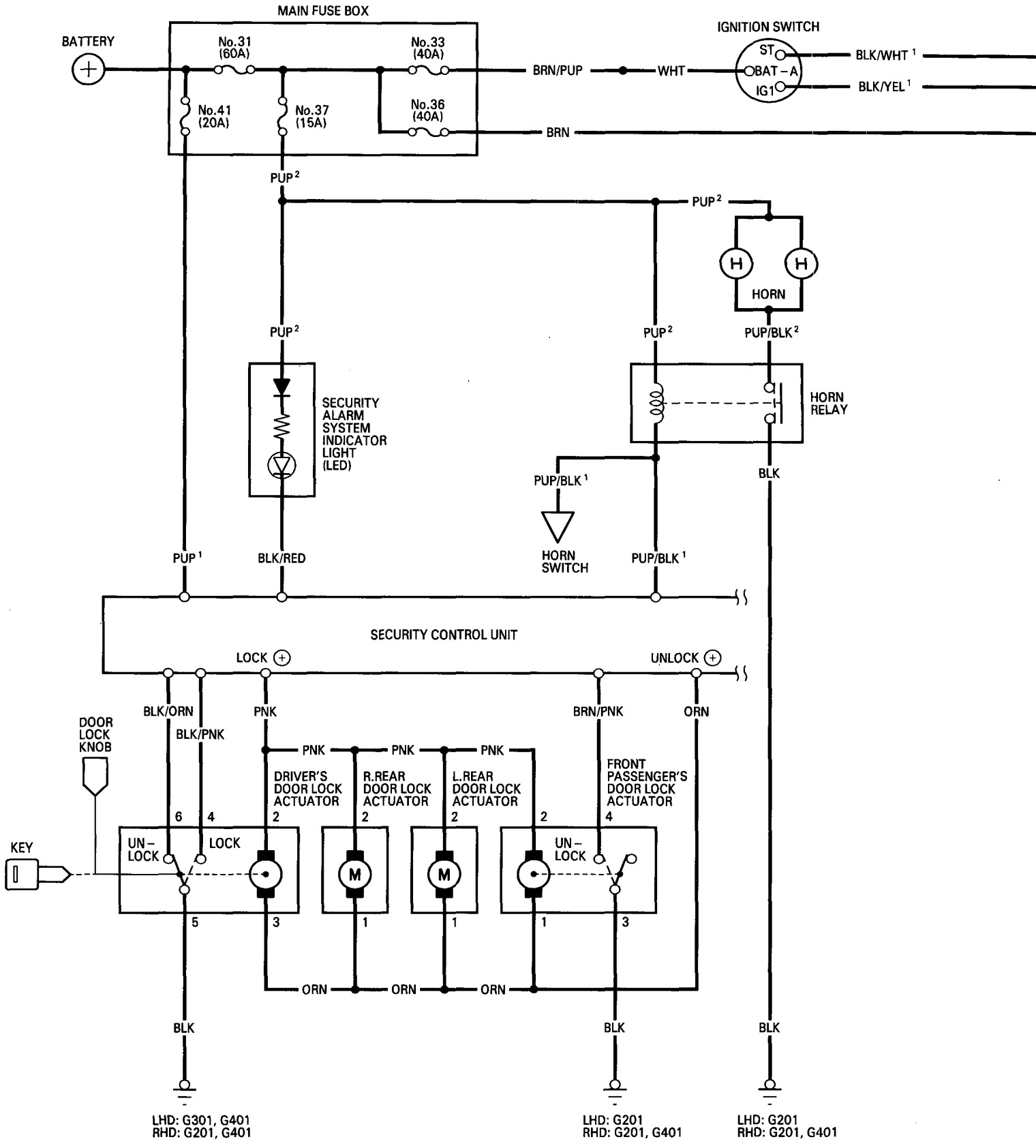
Downloaded from www.Manualslib.com manuals search engine



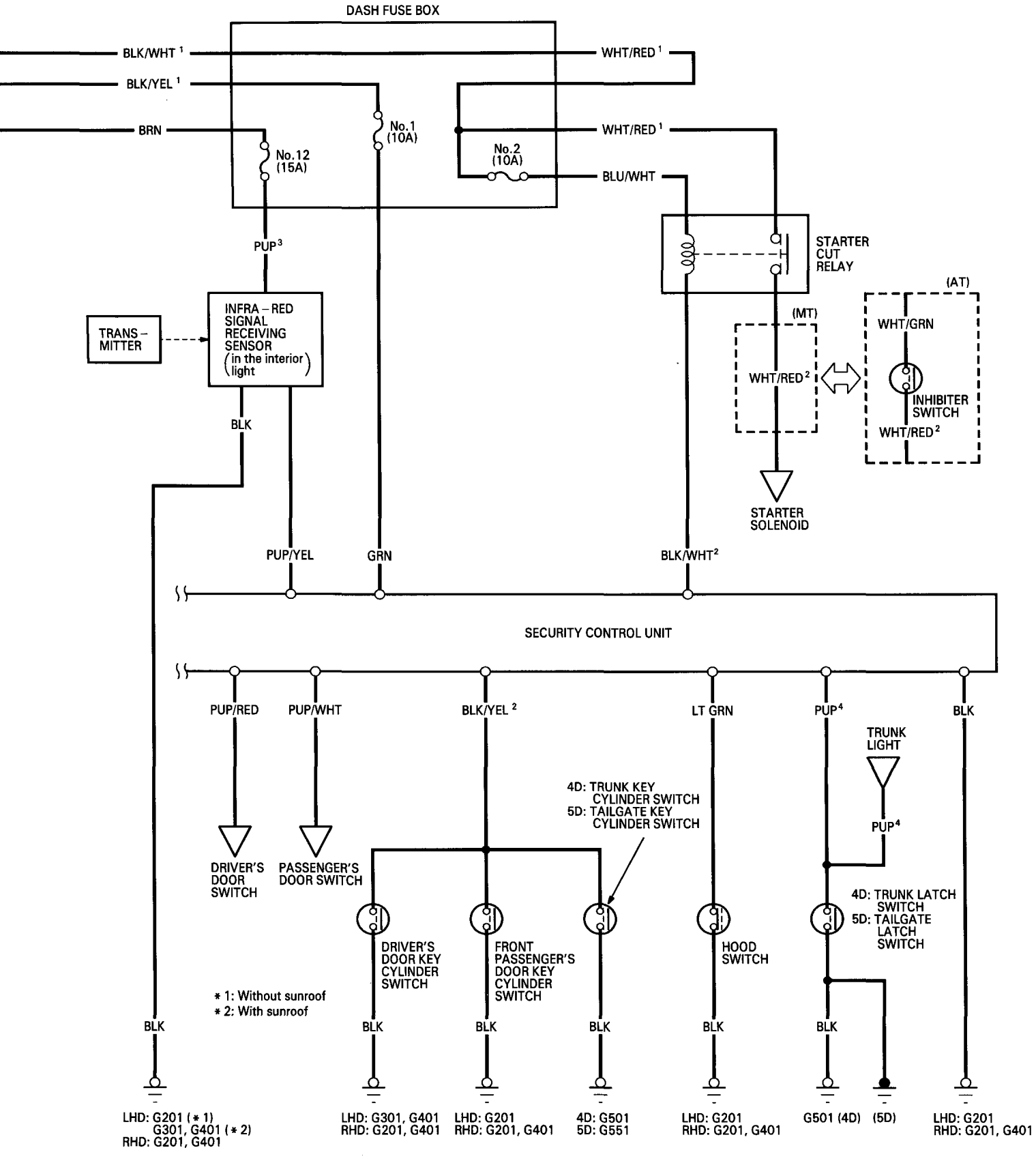
Downloaded from www.Manualslib.com manuals search engine

Keyless Entry and Security Alarm System

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine



Downloaded from www.Manualslib.com manuals search engine

Keyless Entry and Security Alarm System

Troubleshooting

Security Alarm System:

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected	Blown No. 41 (20 A) fuse in the main fuse box	Blown No. 37 (15 A) fuse in the main fuse box	Blown No. 1 (10 A) fuse in the dash fuse box	Blown No. 2 (10 A) fuse in the dash fuse box	Faulty indicator light (LED)	Horn circuit	Starting system	Door key cylinder switch	Ignition key switch	Trunk or tailgate key cylinder switch	Trunk or tailgate latch switch	Receiver/transmitter	Hood switch	Door switch	Control unit input	Poor ground	Open circuit, loose or disconnected terminals.
Security alarm cannot be set and indicator light does not flash.	1	2	3		4				5						6	LHD: G201 RHD: G201, G401	PUP[1] PUP[2] GRN BLK/RED
Starting system does not operate.				1			2								3	LHD: G201 RHD: G201, G401	WHT/RED[1] BLU/WHT BLK/WHT[2] WHT/GRN WHT/RED[2]
Security alarm can be set, but alarm does not operate when the doors, hood, trunk lid or tailgate is opened without the key.						1									2	LHD: G201 RHD: G201, G401	PUP[1] PUP/BLK[1]
Alarm does not cancelled when the doors, trunk lid or tailgate is opened with the key or transmitter.								1		2	3	4			5	LHD: G201, G301 G401 RHD: G201, G401 4D: G501 5D: G551	BLK/YEL[2] PUP[4]
Alarm does not operate when the hood is opened.													1		2	LHD: G201 RHD: G201, G401	LT GRN
Alarm does not operate when the door is opened.														1	2		PUP/RED PUP/WHT

Downloaded from www.Manualslib.com manuals search engine

Keyless Entry System:

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom / Item to be inspected		Blown No. 41 (20 A) fuse in the main fuse box	Blown No. 12 (15 A) fuse in the dash fuse box	Door lock knob switch	Passenger's door actuator	Disconnected or obstructed door lock rod/linkage	Receiver unit/transmitter	Control unit input	Poor ground	Open circuit, loose or disconnected terminals
Power door lock system does not work at all.		1						2	LHD: G201 RHD: G201, G401	PUP[1]
Doors do not lock or unlock with driver's door lock knob.	All doors.			1				2	LHD: G301, G401 RHD: G201, G401	BLK/ORN BLK/PNK PNK, ORN
	One or more door.				1	2				PNK ORN
The power door lock system work properly but keyless entry system does not work.			1				2		LHD: G201, G301(*1) G401(*2) RHD: G201, G401	PUP[3] PUP/YEL

*1: Without sunroof
*2: With sunroof

Downloaded from www.Manualslib.com manuals search engine

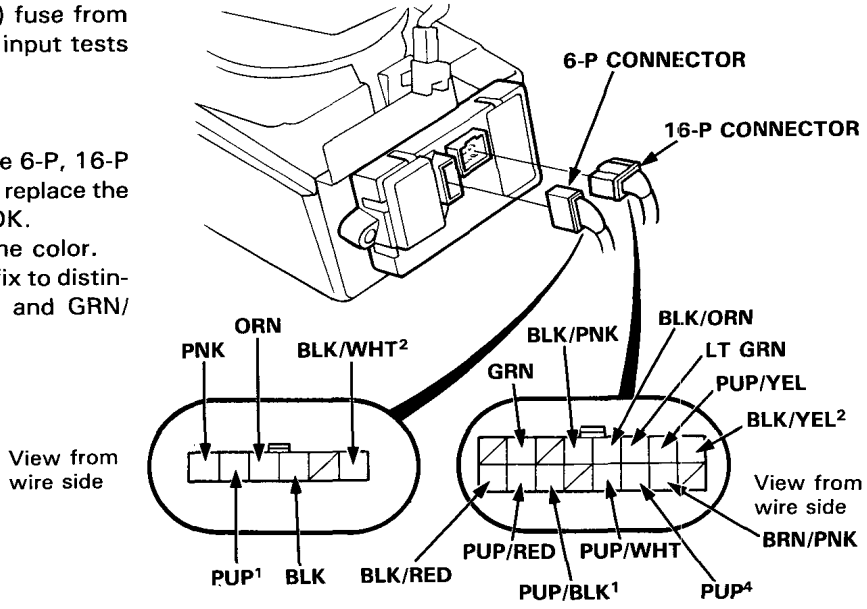
Keyless Entry and Security Alarm System

Control Unit Input Test

Security Alarm System:

1. Remove the rear console, front console, and radio panel assembly (see section 14).
2. Remove the two screws and the control unit from the radio panel assembly.
3. Disconnect the 6-P and 16-P connectors from the control unit. Remove the No. 12 (15 A) fuse from the main fuse box. Make the following input tests at the connector terminals.

   NOTE:
   - Recheck the connections between the 6-P, 16-P connectors, and the control unit, then replace the control unit if all input tests prove OK.
   - Several different wires have the same color. They have been given an number suffix to distinguish them (for example GRN/YEL[1] and GRN/YEL[2] are not the same).



No.	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions.	Check for continuity to ground: There should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	PUP[1]	Under all conditions.	Check for voltage to ground: There should be battery voltage.	• Blown No. 41 (20 A) fuse in the main fuse box. • An open in the wire.
3	BLK/RED	Ignition switch ON.	Connect to ground: Security indicator light should come on.	• Blown No. 37 (15 A) fuse in the main fuse box. • Faulty security indicator light. • An open in the wire.
4	GRN	Ignition switch ON.	Check for voltage to ground: There should be battery voltage.	• Blown No. 1 (10 A) fuse in the dash fuse box. • An open in the wire.
5	PUP/BLK[1]	Under all conditions.	Connect to ground: All horns should sound.	• Blown No. 37 (15 A) fuse in the main fuse box. • Faulty horn relay. • Either horn faulty. • Poor ground (G201, G401). • An open in the wire.
6	BLK/WHT[2]	Ignition switch at START.	Check for voltage to ground: There should be battery voltage.	• Blown No. 2 (10 A) fuse in the dash fuse box. • Faulty starter cut relay. • An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

No.	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
7	LT GRN	Hood open.	Check for continuity to ground: There should be no continuity.	• Faulty hood switch. • Misadjusted hood switch. • Poor ground (G201, G401). • An open in the wire.
		Hood closed.	Check for continuity to ground: There should be continuity.	
8	PUP[4]	Trunk lid or tailgate open.	Check for continuity to ground: There should be continuity.	• Faulty trunk or tailgate latch switch. • Misadjusted trunk or tailgate latch switch. • Poor ground (4D: G501). • An open in the wire.
		Trunk lid or tailgate closed.	Check for continuity to ground: There should be no continuity.	
9	PUP/RED	Driver's door opened.	Check for continuity to ground: When the door is opened, there should be continuity, and when the door is closed, there should be no continuity.	• Faulty driver's or passenger's door switches. • An open in the wire.
		Driver's door closed.		
10	PUP/WHT	Passenger's door opened.		
		Passenger's door closed.		
11	BLK/YEL[2]	Driver's door key in UNLOCK.	Check for continuity to ground: There should be continuity, as the door key is turned in UNLOCK.	• Faulty driver's, front passenger's, trunk or tailgate key switches. • Poor ground (G201, G301, G401, G501, G551). • An open in the wire.
		Front passenger's door key in UNLOCK.		
		Trunk or tailgate key in UNLOCK.		
		Driver's door key in LOCK.	Check for continuity to ground: There should be no continuity, as the door key is turned in LOCK.	
		Front passenger's door key in LOCK.		
		Trunk or tailgate key in LOCK.		
12	BLK/ORN	Driver's door lock knob in UNLOCK.	Check for continuity to ground: There should be continuity, as the door key is turned in UNLOCK.	• Faulty driver's door lock knob switch (built in the actuator). • Poor ground (G201, G301, G401). • An open in the wire.
13	BLK/PNK	Driver's door lock knob in LOCK.	Check for continuity to ground: There should be continuity, as the door key is turned in LOCK.	
14	BRN/PNK	Front passenger's door lock knob in UNLOCK.	Check for continuity to ground: There should be continuity.	• Faulty front passenger's door lock knob switch (built in the actuator). • Poor ground (G201, G401). • An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Keyless Entry and Security Alarm System

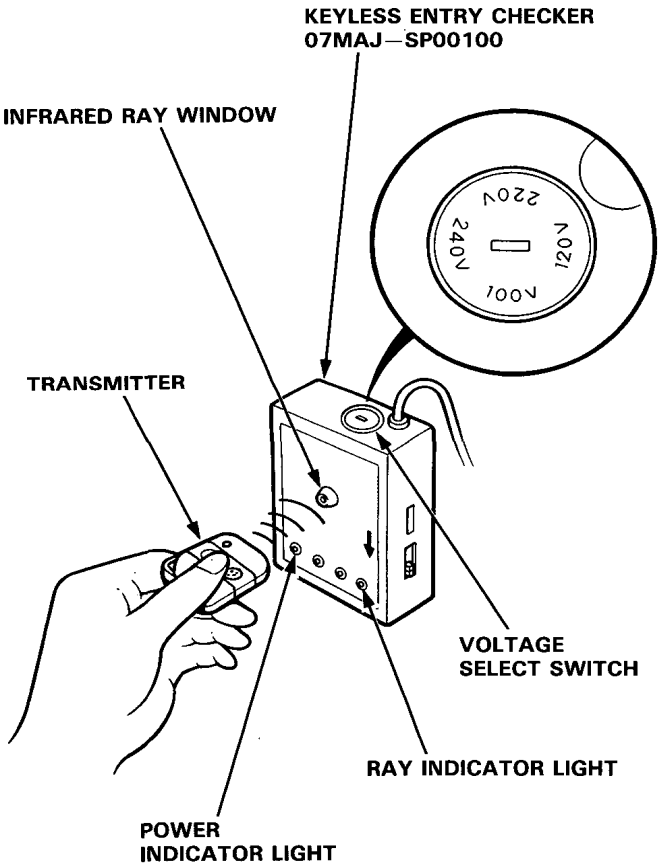
Keyless Entry System Test

NOTE: Before testing, make sure that the power door lock system works properly.

1. Turn the voltage select switch and connect the Keyless Entry Checker to AC power outlet.
   The power indicator light should go on.

2. Push the button on the transmitter within 500 mm (19.7 in) from the front of the infrared ray window.

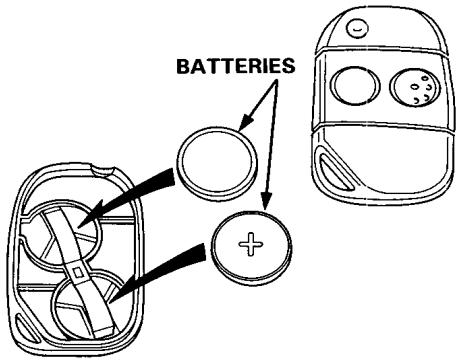
   - If the ray indicator light does not go on,
     - Lack of the battery power.
     - Faulty transmitter.
   - If the ray indicator light go on, go to step 3.



Battery Replacement:

- Pry the two parts of the transmitter apart and remove the used batteries. Install new batteries ensuring the correct polarity is maintained.

  Batteries: CR2032 lithium button battery



NOTE: With the transmitter, you will be provided with a plate on which your transmitter number is stamped. You will need this number if you have to get a lost key replaced. Keep the plate in a safe plate.

Downloaded from www.Manualslib.com manuals search engine

3. Pry the lens with the interior light switch OFF.

4. Remove the two nuts from the interior light.

5. Check the receiver output level varies when the transmitter button pushed.

Test Method:

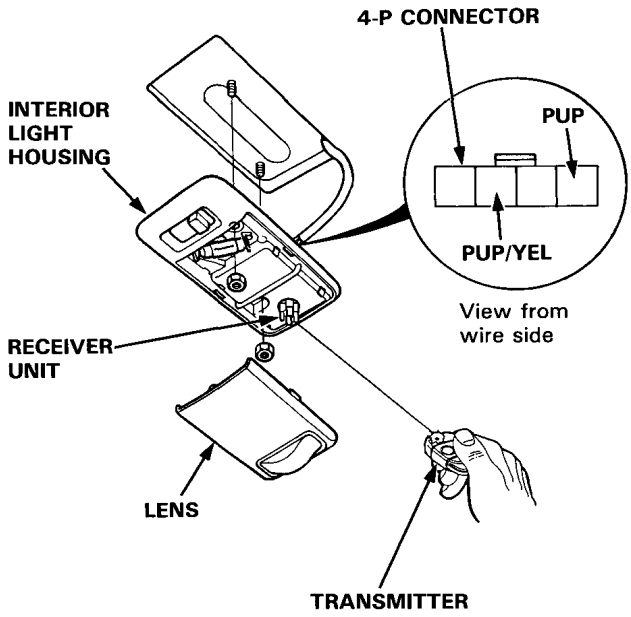
— Use a digital multimeter.

— Connect positive (+) probe to the PUP/YEL terminal and negative (−) probe to the ground.

— Keep on the 4-P connector connecting.

- If the output voltage momentarily varies to the range of approximate. Instantaneous battery voltage, the system is OK.

- If there is no voltage, check for:
  — Open in the PUP and PUP/YEL wires.
  — Faulty receiver unit.



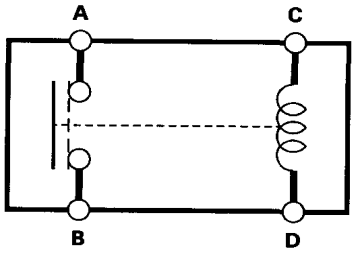
Downloaded from www.Manualslib.com manuals search engine

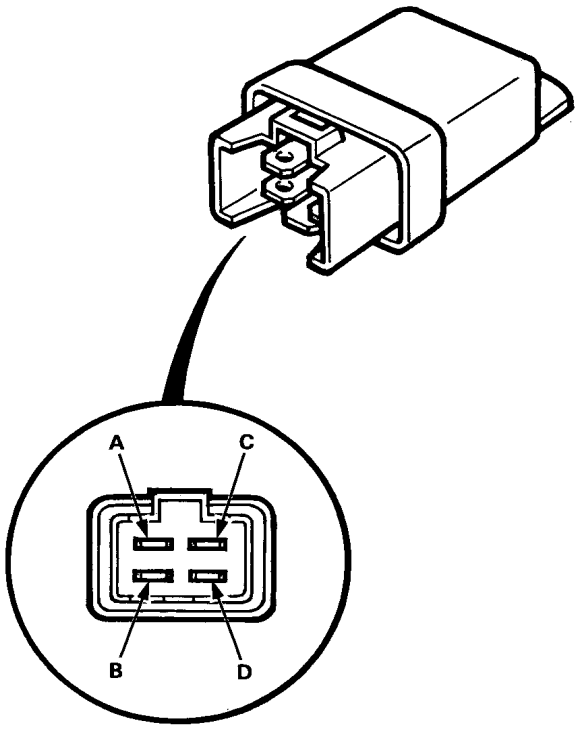
Keyless Entry and Security Alarm System

Horn and Starter Cut Relays Test

1. Remove the rear console, front console, and radio panel assembly.
2. Disconnect the connector, and remove the relay.
3. There should be continuity between the A and B terminals when power and ground are connected to the C and D terminals. There should be no continuity when power is disconnected.

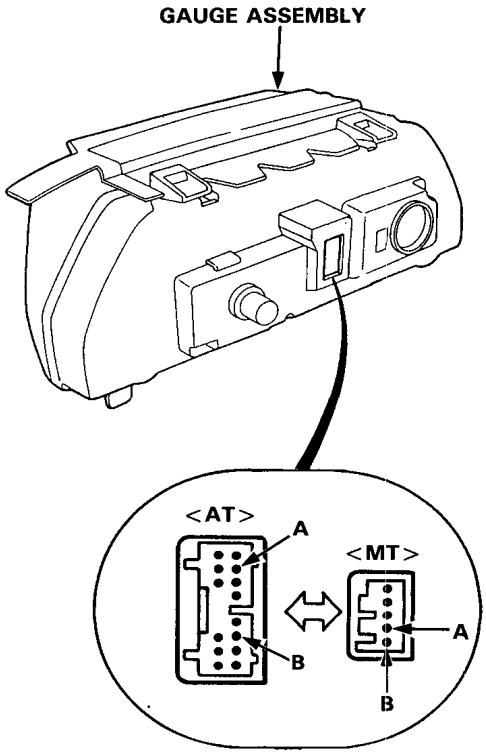
Terminal / Power (C – D)	A	B
Disconnected		
Connected	○	○

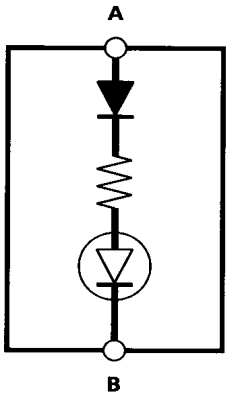




Indicator Light Test

1. Remove the gauge assembly.
2. Test the indicator light by connecting battery power to the A terminal and ground to the B terminal.
3. If the indicator light does not com on, replace it.



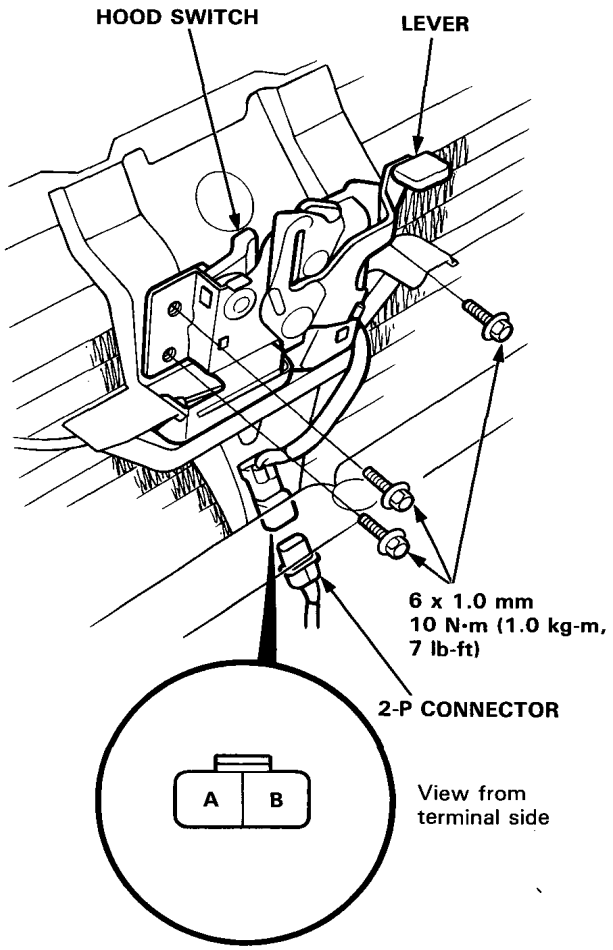


Downloaded from www.Manualslib.com manuals search engine

Hood Switch Test/Replacement

1. Open the hood.
2. Disconnect the 2-P connector from the hood switch.
3. Check for continuity between the terminals in each switch position according to the table.

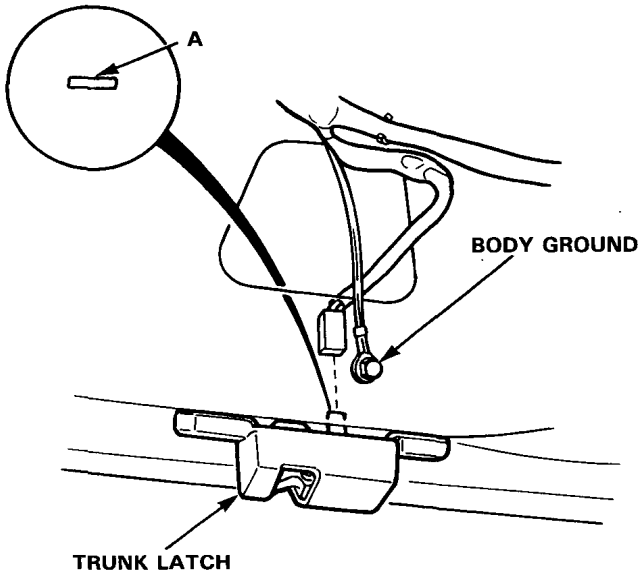
Position \ Terminal	A	B
Hood open (Lever released)		
Hood closed (Lever pushed down)	○	○



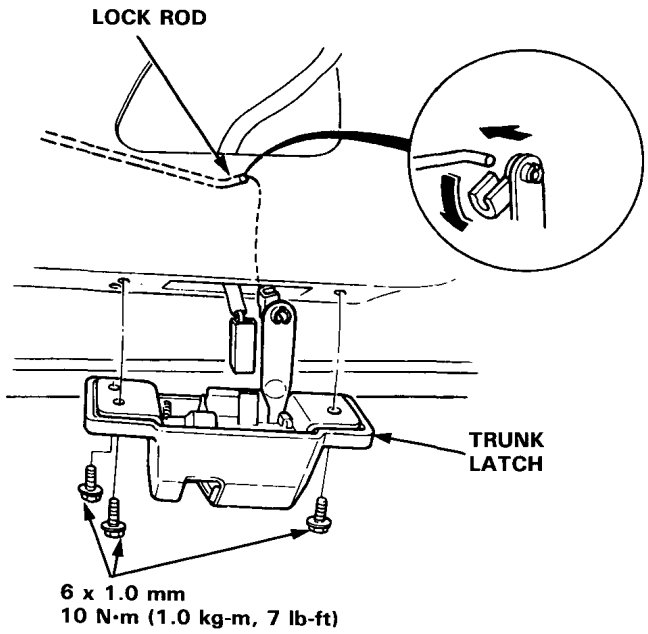
- If the switch fails to operate properly, replace it.

Trunk or Tailgate Latch Switch Test/Replacement

1. Open the trunk lid or tailgate.
2. Disconnect the connector from the latch switch.
3. There should be continuity between the A terminal and body ground.



4. If necessary, remove the three bolts to pull out the latch from the trunk lid or tailgate, then disconnect the lock rod from the latch.



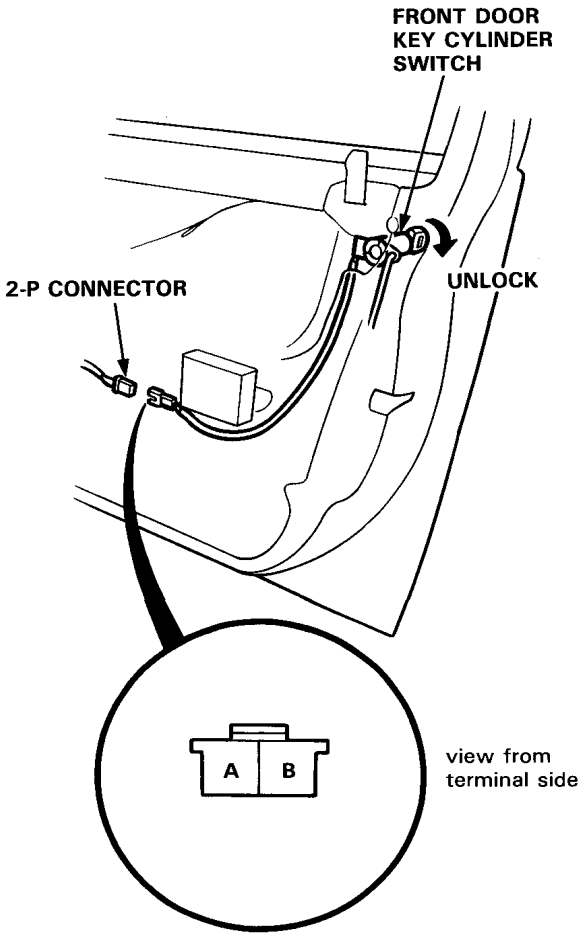
Downloaded from www.Manualslib.com manuals search engine

Keyless Entry and Security Alarm System

Front Door Key Cylinder Switch Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the front door key cylinder switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	A	B
LOCK (Close)		
UNLOCK (Open)	○	○

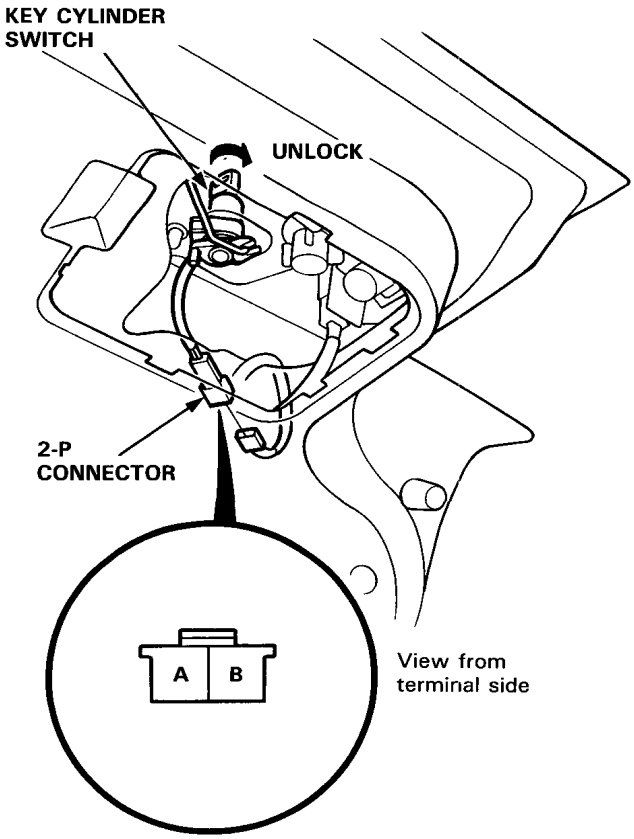


- If the switch fails to operate properly, replace it.

Trunk or Tailgate Key Cylinder Switch Test

1. Remove the tailgate trim panel.
2. Disconnect the 2-P connector from the front door key cylinder switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	A	B
LOCK (Close)		
UNLOCK (Open)	○	○



- If the switch fails to operate properly, replace it.

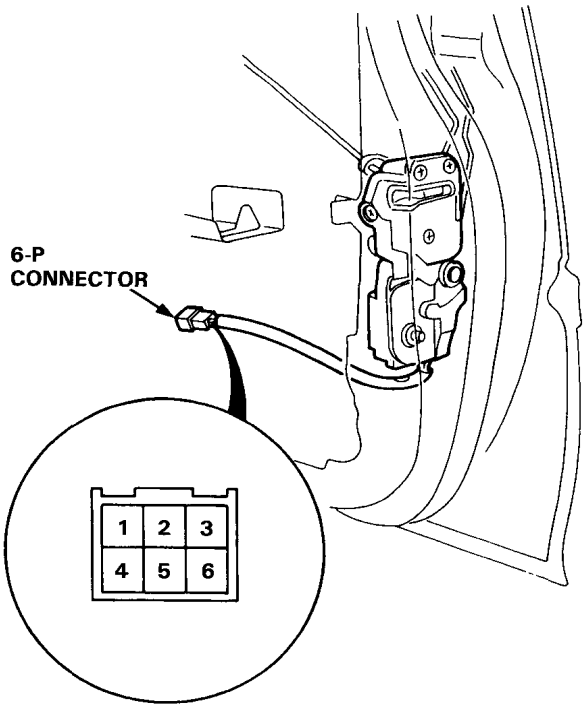
Downloaded from www.Manualslib.com manuals search engine

Driver's Door Lock Actuator Test

1. Remove the door trim panel.
2. Disconnect the 6-P connector from the actuator.
3. Test actuator operation:

LOCK	Connect battery power to No. 2 (+) terminal and ground to No. 3 (−) terminal.
UNLOCK	Connect battery power to No. 3 (+) terminal and ground to No. 2 (−) terminal.

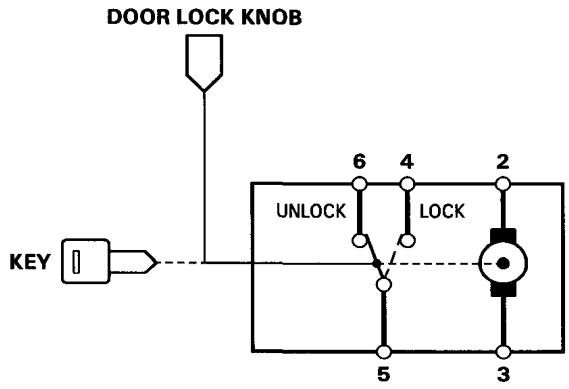
CAUTION: To prevent damage to the actuator, connect power only momentarily.



View from wire side

4. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	6	5	4
LOCK		○	○
UNLOCK	○	○	



5. If the actuator fails to operate properly, replace it.

Downloaded from www.Manualslib.com manuals search engine

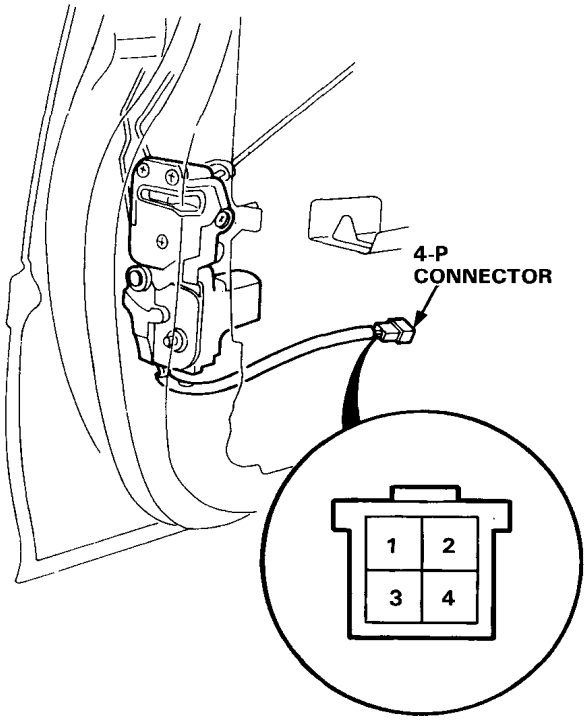
Keyless Entry and Security Alarm System

Front Passenger's Door Lock Actuator Test

1. Remove the door trim.
2. Disconnect the 4-P connector from the actuator.
3. Test actuator operation:

LOCK	Connect battery power to No. 1 (+) terminal and ground to No. 2 (−) terminal.
UNLOCK	Connect battery power to No. 2 (+) terminal and ground to No. 1 (−) terminal.

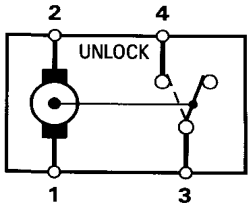
CAUTION: To prevent damage to the actuator, connect power only momentarily.



View from wire side

4. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	3	4
LOCK		
UNLOCK	○	○



5. If the actuator fails to operate properly, replace it.

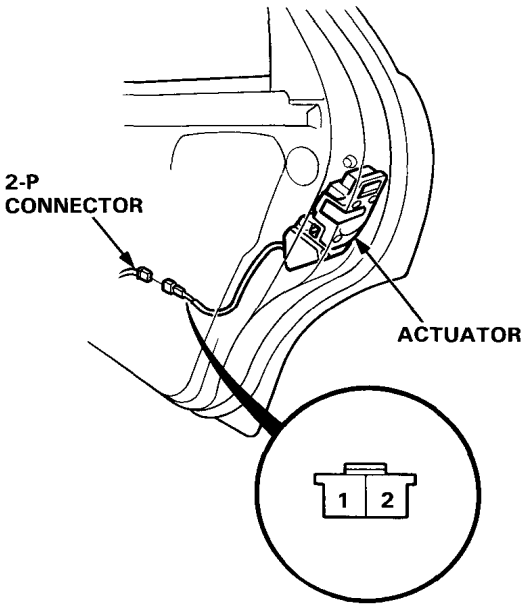
Downloaded from www.Manualslib.com manuals search engine

Rear Door Lock Actuator Test

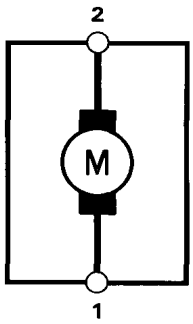
1. Remove the door trim.
2. Disconnect the 2-P connector from the actuator.
3. Test actuator operation:

LOCK	Connect battery power to No. 1 (+) terminal and ground to No. 2 (−) terminal.
UNLOCK	Connect battery power to No. 2 (+) terminal and ground to No. 1 (−) terminal.

CAUTION: To prevent damage to the actuator, connect power only momentarily.



View from wire side

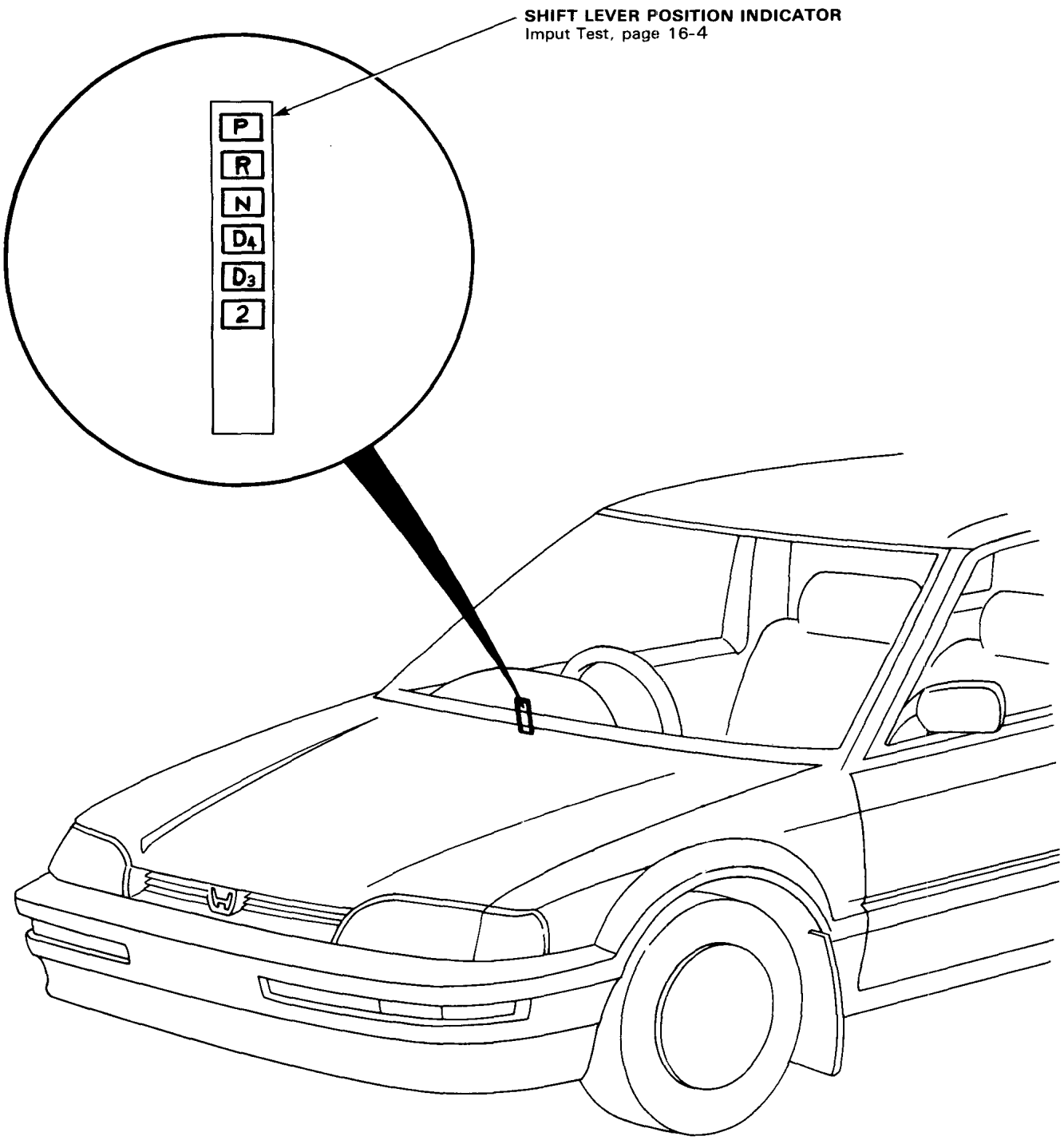


4. If the actuator fails to operate properly, replace it.

Downloaded from www.Manualslib.com manuals search engine

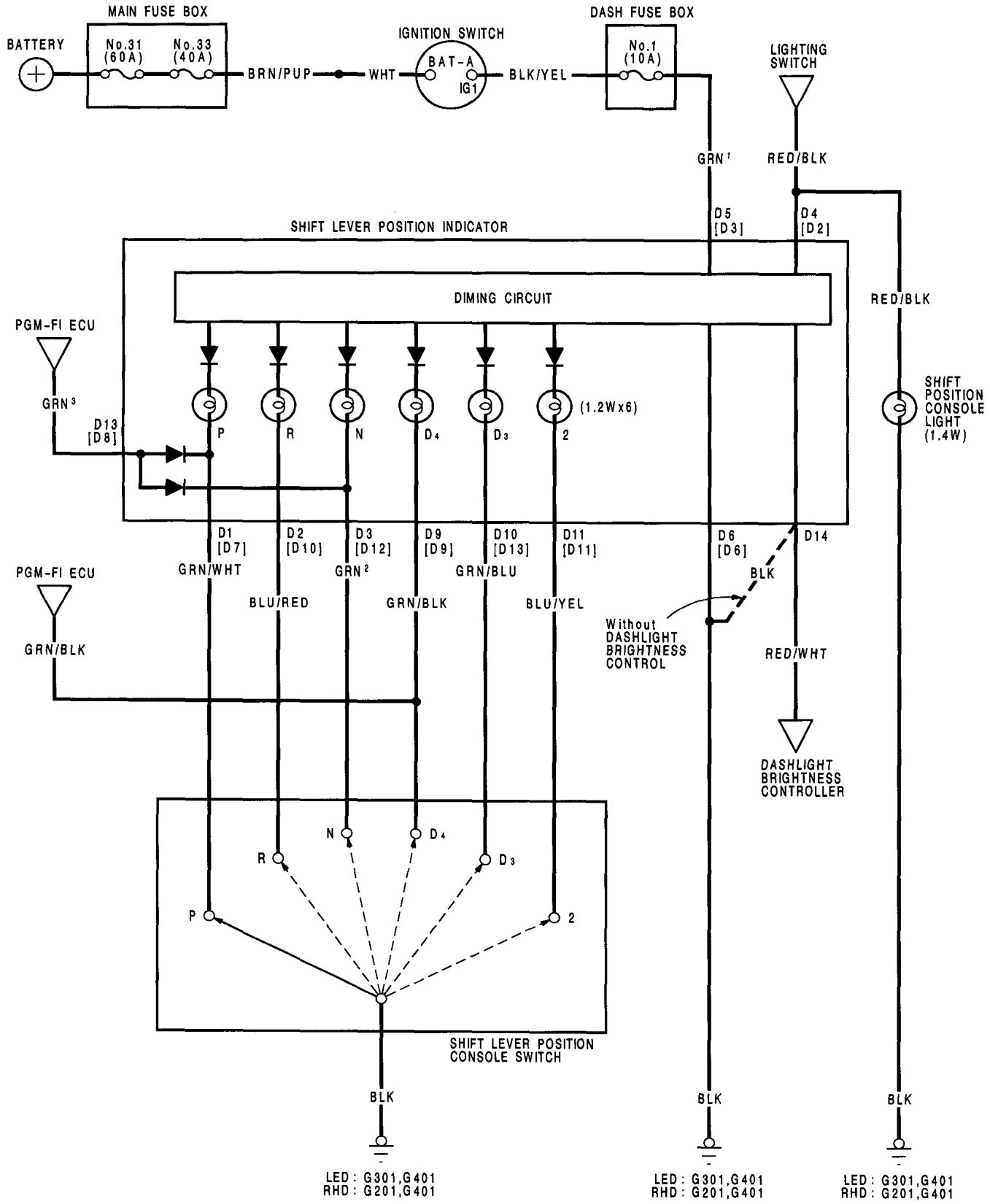
Shift Lever Position Indicator

Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



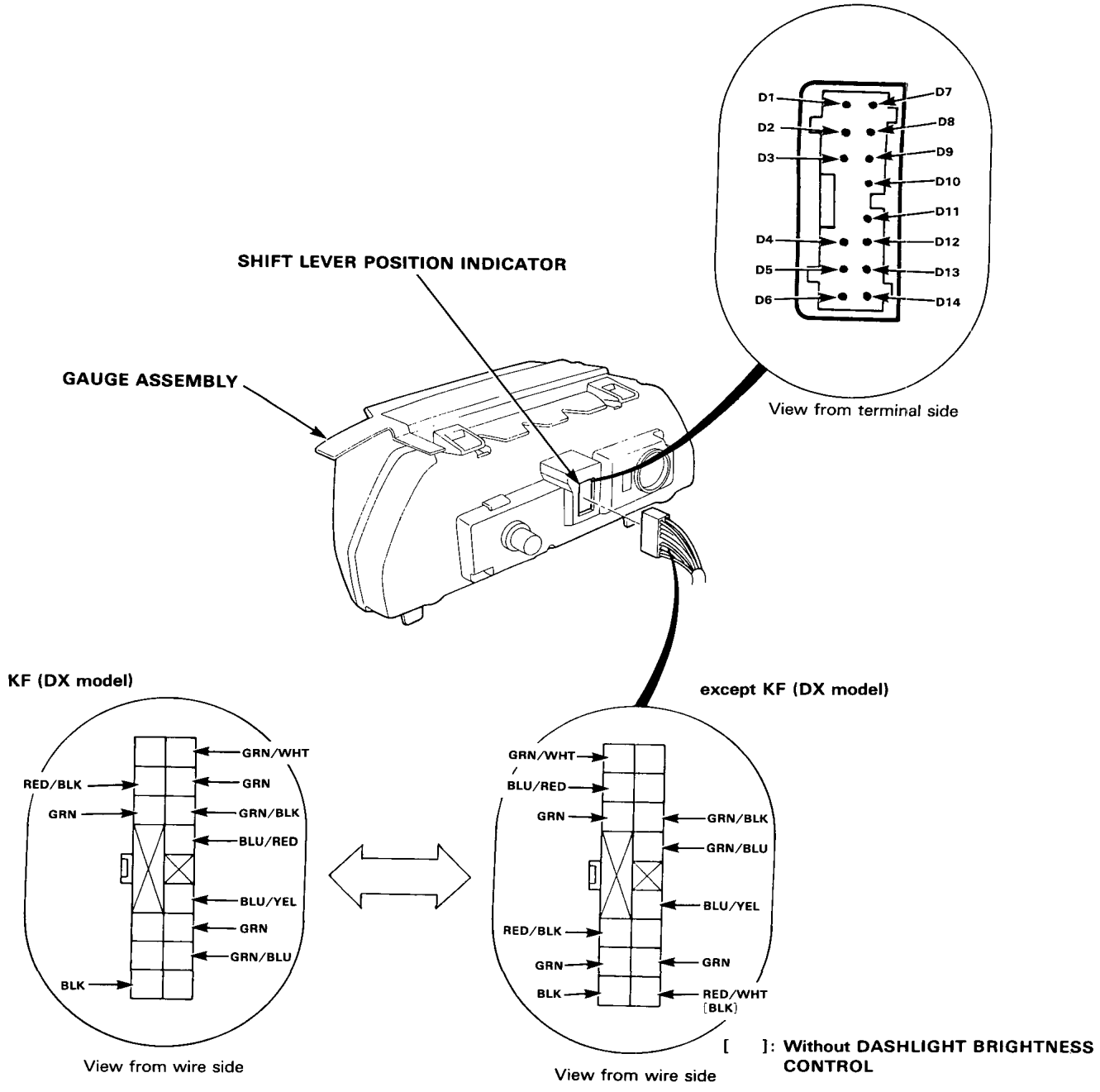
[ ] : KF (DX model only)

Downloaded from www.Manualslib.com manuals search engine

Shift Lever Position Indicator

Indicator Input Test

Remove the gauge assembly from the dashboard and disconnect the 14-P connector from the indicator.
Make the following input tests at the harness pins. If all tests prove OK, yet the indicator still fails to work, replace the indicator assembly.



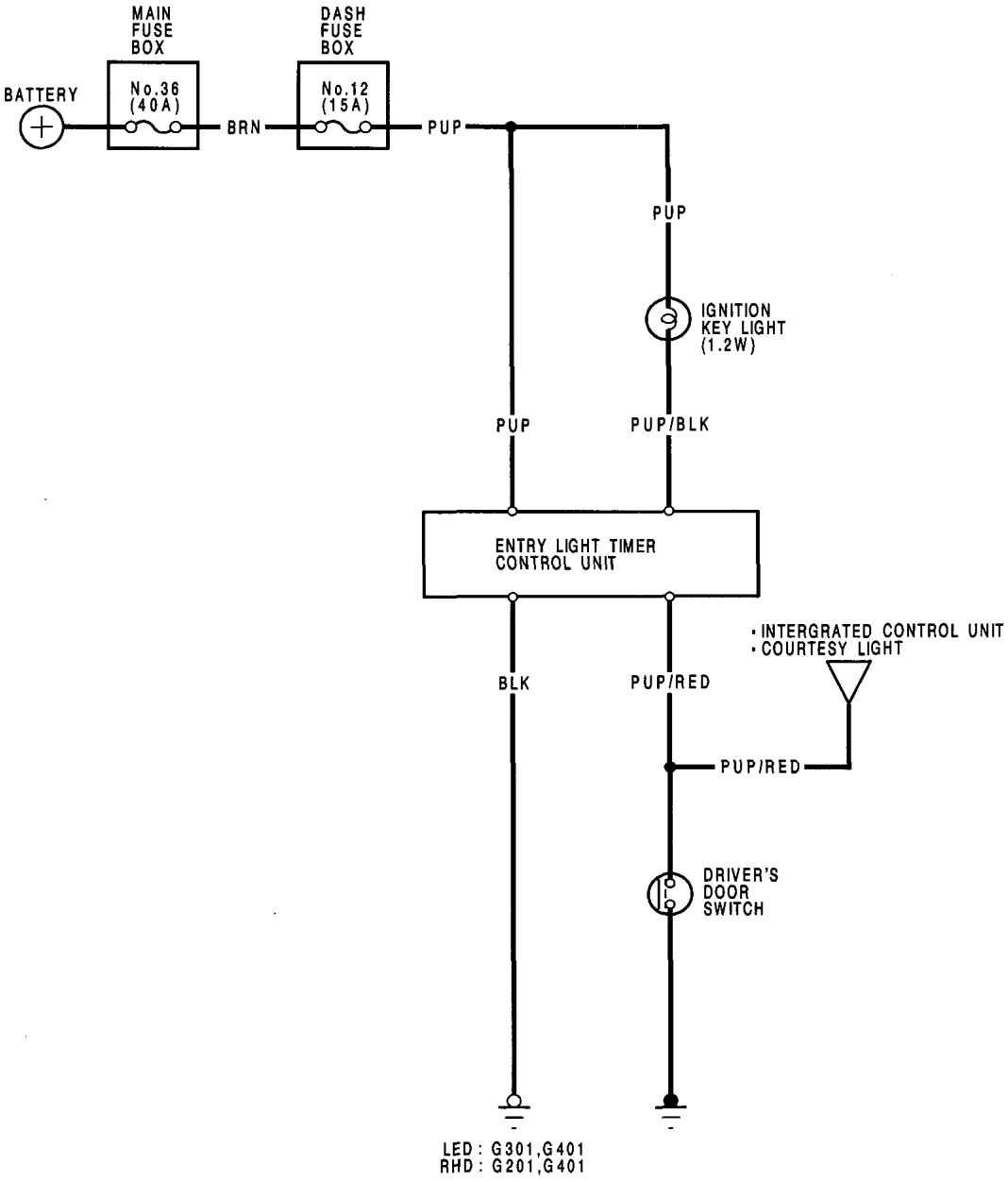
Downloaded from www.Manualslib.com manuals search engine

No.	Wire	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	GRN[1]	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	· Blown No. 1 (10 A)fuse. · An open in the wire.
3	GRN/WHT	Shift lever position in P.	Check for continuity to ground: should be continuity.	· Faulty shift position console switch. · Poor ground (G201, G401) · An open in the wire.
	BLU/RED	Shift lever position in R.		
	GRN[2]	Shift lever position in N.		
	GRN/BLK	Shift lever position in D_4 .		
	GRN/BLU	Shift lever position in D_3 .		
	BLU/YEL	Shift lever position in 2.		
4	RED/BLK and RED/WHT	Lighting switch ON and dashlight brightness control dial on full bright.	Check for voltage between RED/BLK and RED/WHT terminals: should be battery voltage. NOTE: If the fuse blows, the RED/WHT and the RED/BLK wires are connected.	· Faulty dashlight brightness control system. · An open in the wire.
5	GRN[3]	Ignition switch ON.	Check for voltage to ground: should be about 5 V.	· Faulty PGM-FI system. · An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Entry Light Timer System

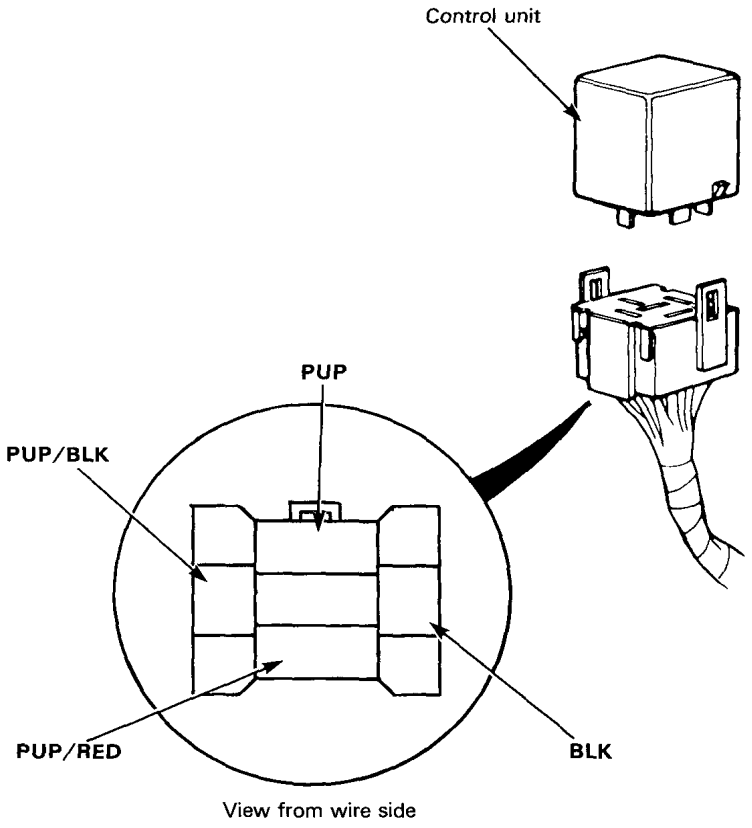
Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

Control Unit Input Test

Disconnect the 4-P connector from the control unit, located under center console panel.
Make the following input tests at the harness pins. If all tests prove OK, yet system still fails to work, check the connector for good connection. If OK, then replace the control unit.



Entry Light Timer 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) · An open in the wire.
2	PUP	Under all conditions.	Check for voltage to ground: should be battery voltage.	· Blown No. 12 (15 A) fuse. · An open in the wire.
3	PUP/BLK	Under all conditions.	Check ignition key light operation: connect the PUP/BLK terminal to the BLK terminal.	· Blown bulb · An open in the wire.
4	PUP/RED	Driver's door opened.	Check for voltage to ground: should be 1 V or less. NOTE: Before testing, remove No. 12 (15 A) fuse.	· Faulty driver's door switch. · An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Entry Light Timer System

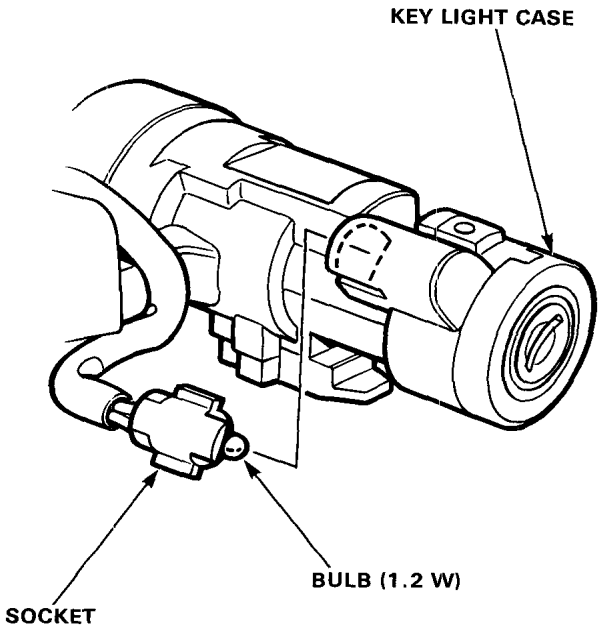
Description

NOTE: Refer to page 16-6 for wiring description of the entry light timer circuit, and page 16-7 for the input test of the timer circuit.

If the driver's door has been opened, the ignition key light goes on and stays on for about 8 seconds after the driver's door is closed.

Ignition Key Light Replacement

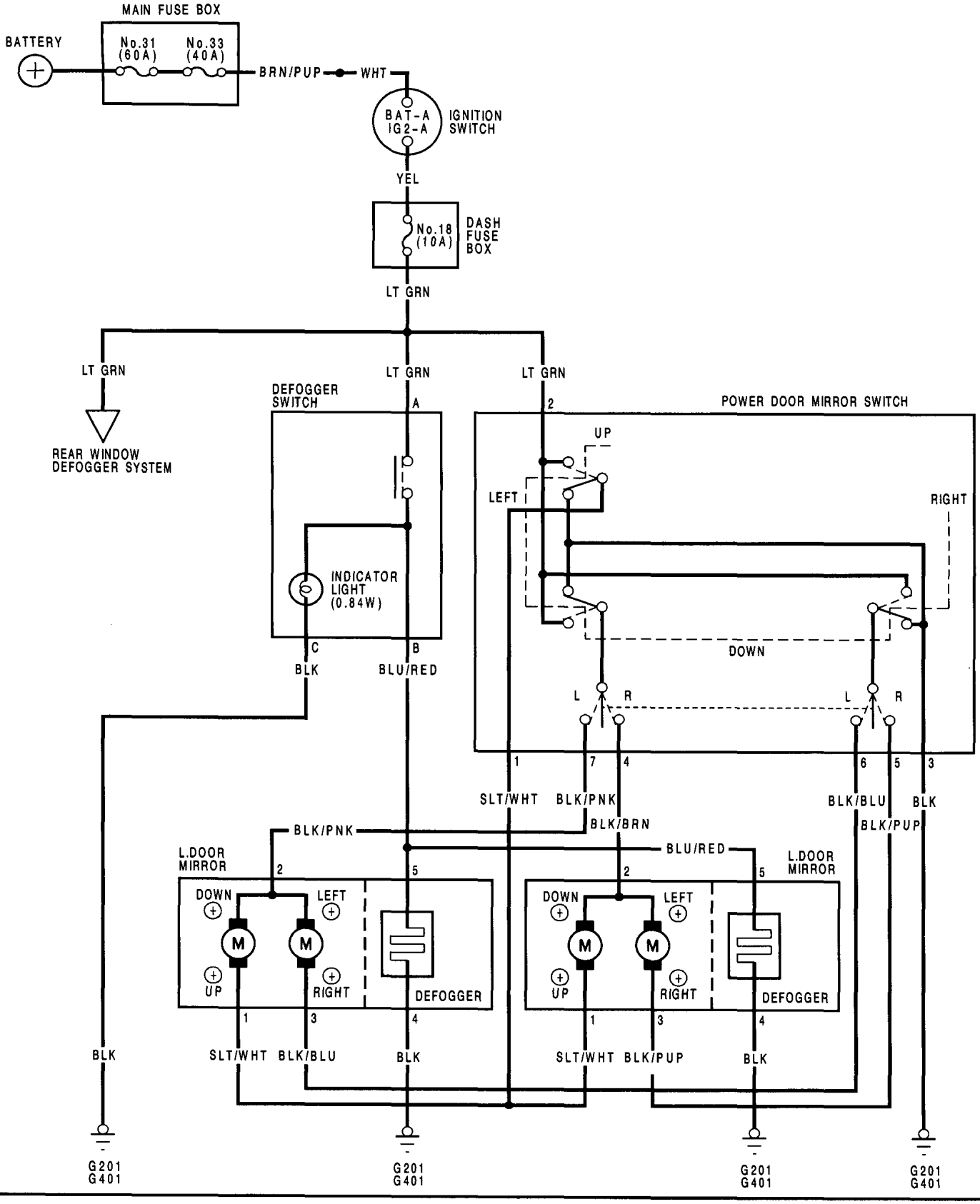
1. Remove the steering wheel and the steering column covers.
2. Remove the bulb/socket from the key light case.



Downloaded from www.Manualslib.com manuals search engine

Power Door Mirrors

Circit Diagram (with Defogger)



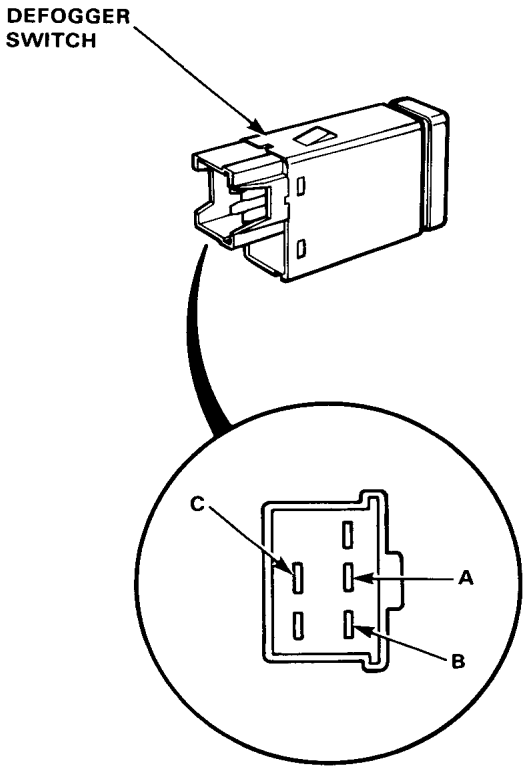
Downloaded from www.Manualslib.com manuals search engine

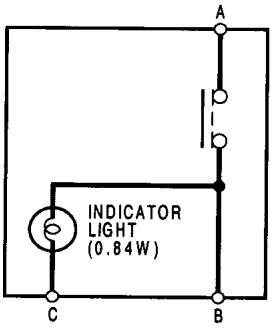
Power Door Mirrors

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
ON	○	○	⊖	○
OFF		○	⊖	○



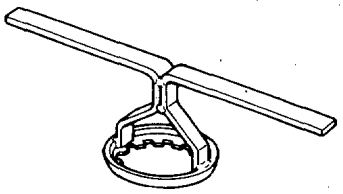


Downloaded from www.Manualslib.com manuals search engine

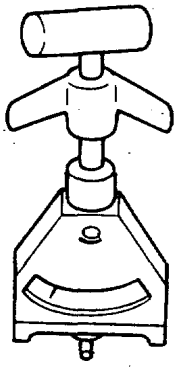
Special Tool/Troubleshooting

Special Tool

Ref. No	Tool Number	Description	Q'ty	Page Reference
①	07GAC-SE0020	Fuel Sender Wrench	1	16-89
②	07JGG-0010100	Belt Tension Gauge	1	16-76



①



②

Troubleshooting Precautions

Before Troubleshooting

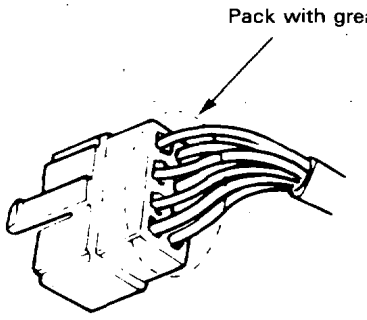
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

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).

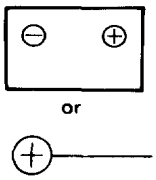
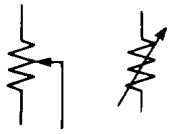
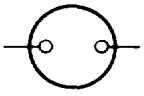


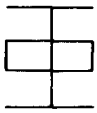
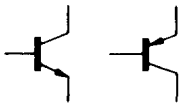
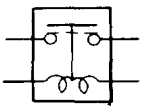
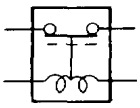
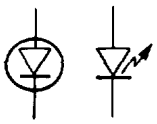
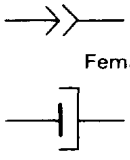
CAUTION:

- **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.**

Downloaded from www.Manualslib.com manuals search engine

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**
					

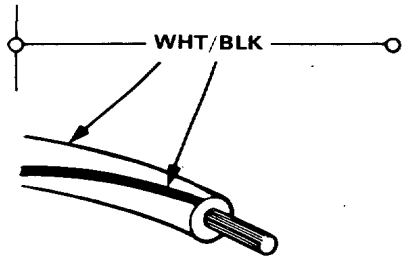
ANTENNA		TRANSISTOR (Tr)
Mast 	Window 	
RELAY (In normal condition)		**CONDENSER**
Normal open relay 	Normal closed relay 	
SWITCH (In normal condition)		**LUMINOUS DIODE (LED)**
Normal open switch 	Normal closed switch 	
CONNECTION	**CONNECTOR**	**REED SWITCH**
Input  Output 	 Male Female	

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics.

WHT	White	SLT	SLATE
YEL	Yellow	PUP	RURPLE
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.

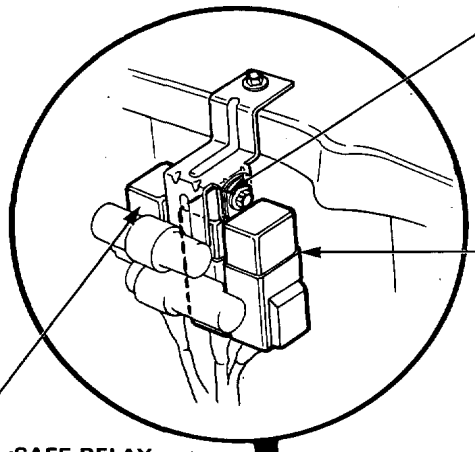


Downloaded from www.Manualslib.com manuals search engine

Relays and Control Unit Locations

Engine Compartment

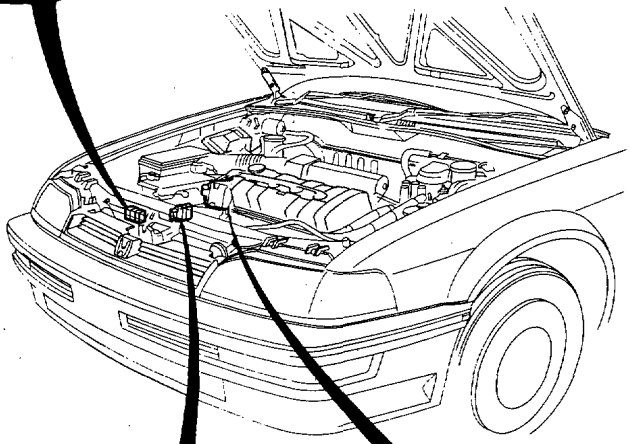
NOTE: RH Drive type shown. LH Drive type is similar.



ALB MOTOR RELAY
Wire colors: WHT/RED, WHT/BLU, LT GRN/SLT and YEL/RED

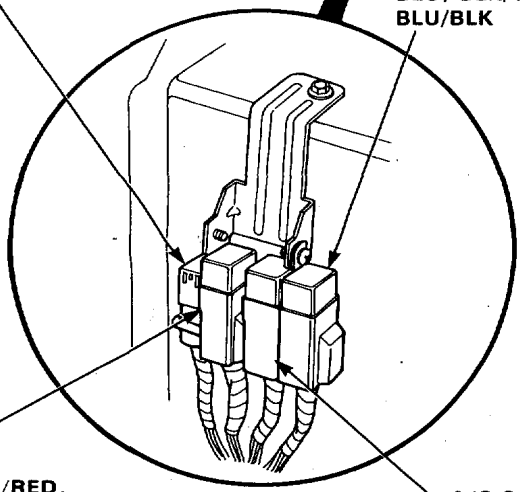
ALB REAR FAIL SAFE RELAY
Wire colors: BLU/BLK, BLK, LT GRN/SLT and YEL/GRN

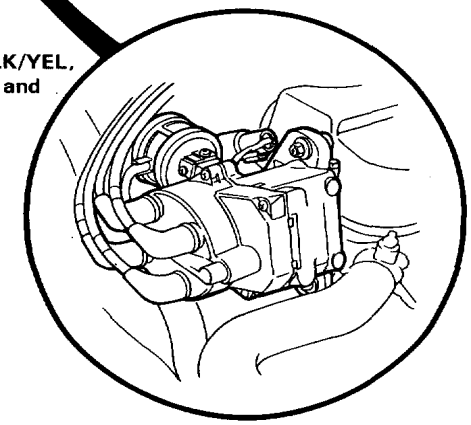
ALB FRONT FAIL SAFE RELAY
Wire colors: BRN/BLK, BLK, LT GRN/SLT and YEL/GRN



A/C DIODE

RADIATOR FAN RELAY
Wire colors: BLK/YEL, BLU, BLK/YEL and BLU/BLK





DISTRIBUTOR
(Built-in ignition coil and igniter unit)

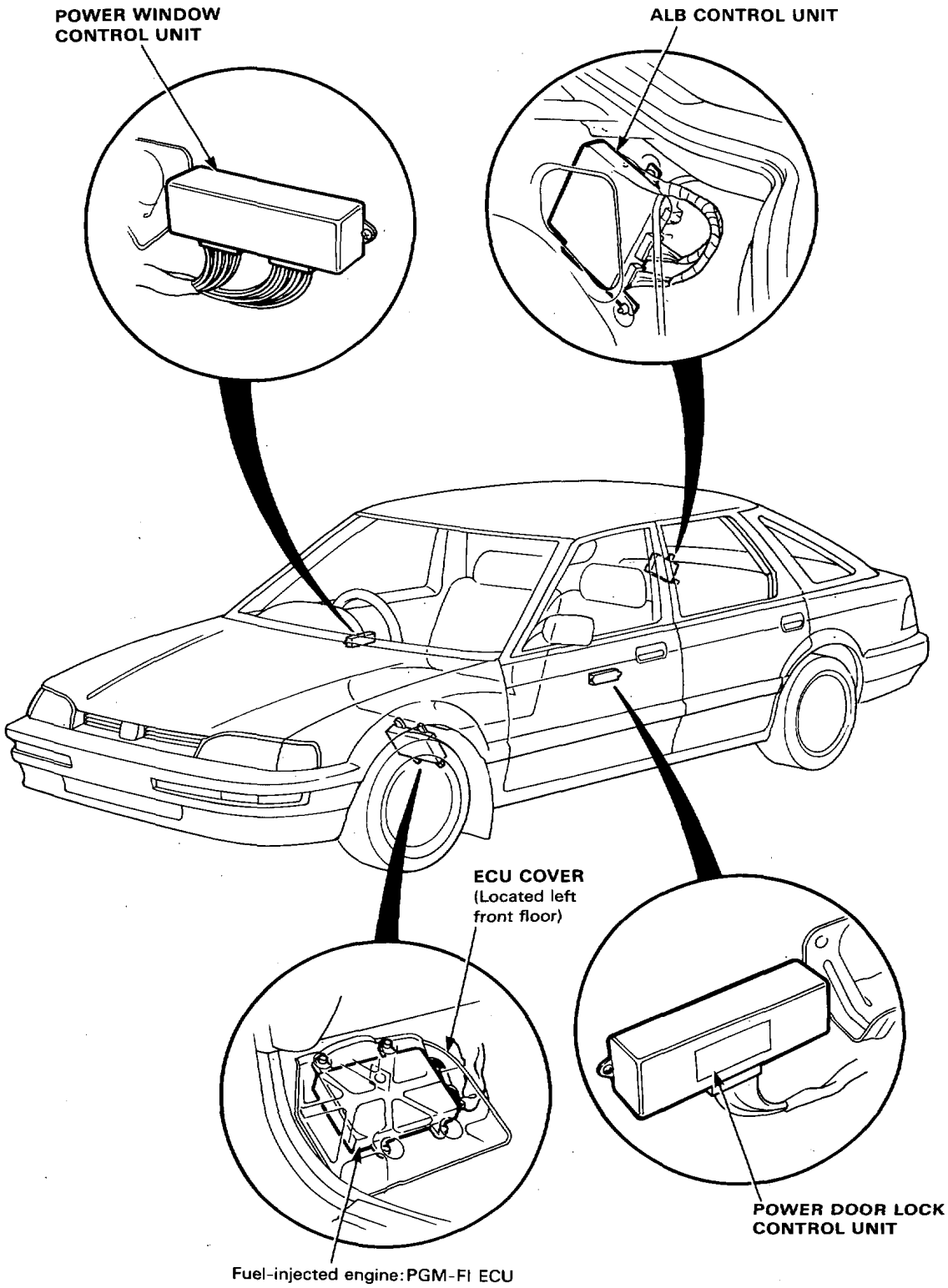
CONDENSER FAN RELAY
Wire colors: BLU/RED, BLU/BLK, WHT and BLK/YEL

A/C COMPRESSOR CLUTCH RELAY
Wire colors: YEL, RED, WHT and BLK/YEL

Downloaded from www.Manualslib.com manuals search engine

Door and Floor

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.

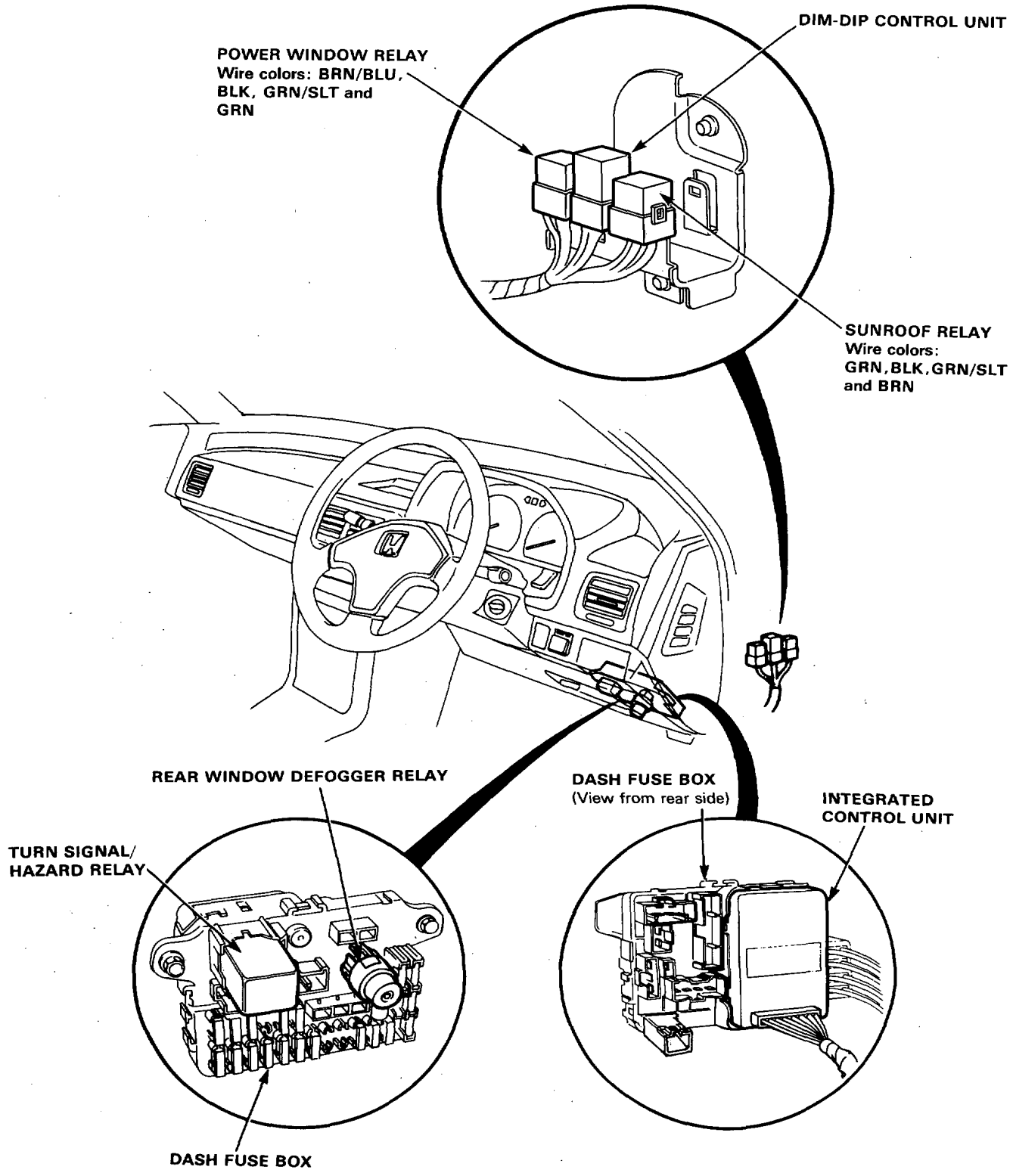


Downloaded from www.Manualslib.com manuals search engine

Relays and Control Unit Locations

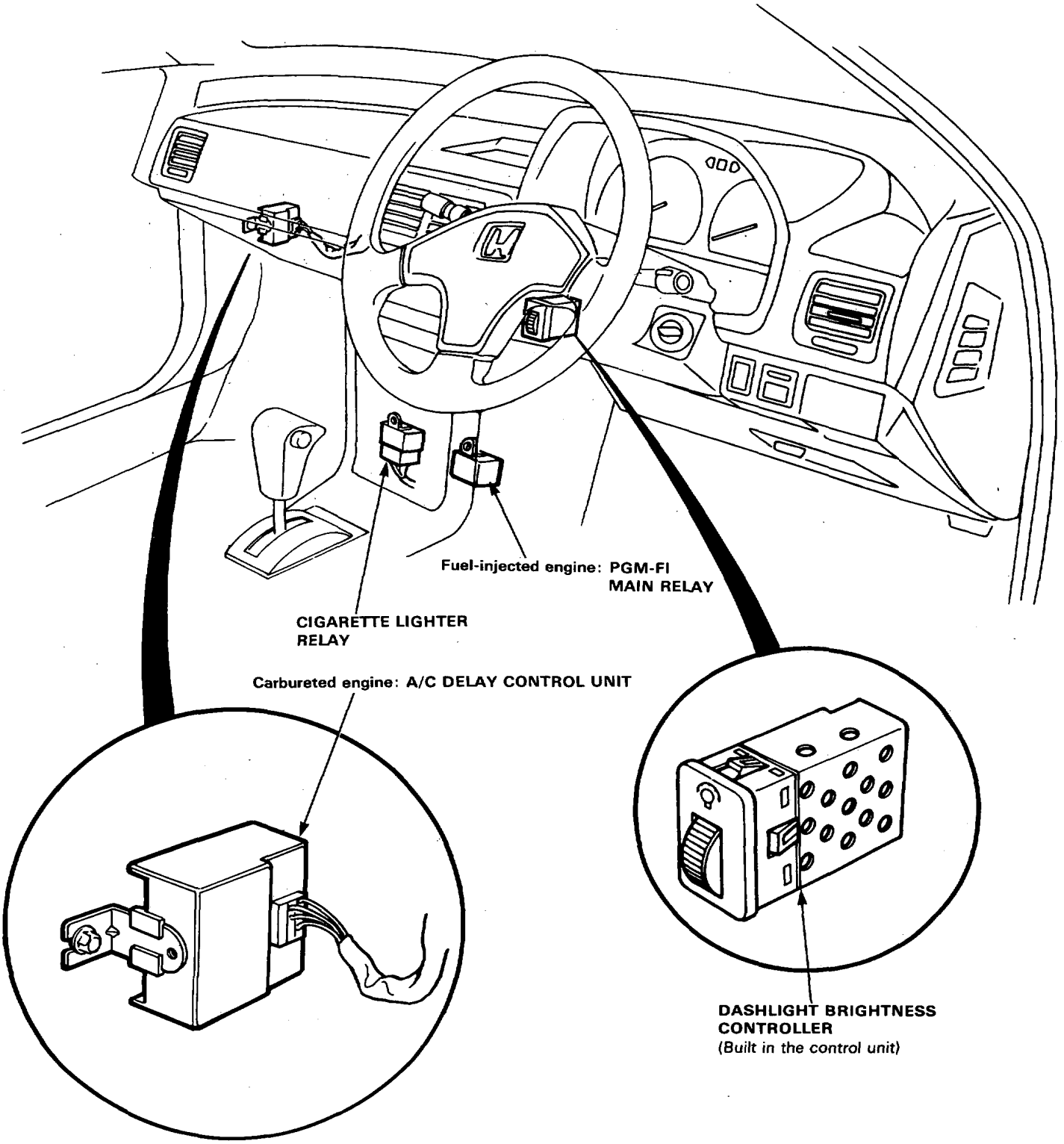
Dashboard

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.



Downloaded from www.Manualslib.com manuals search engine

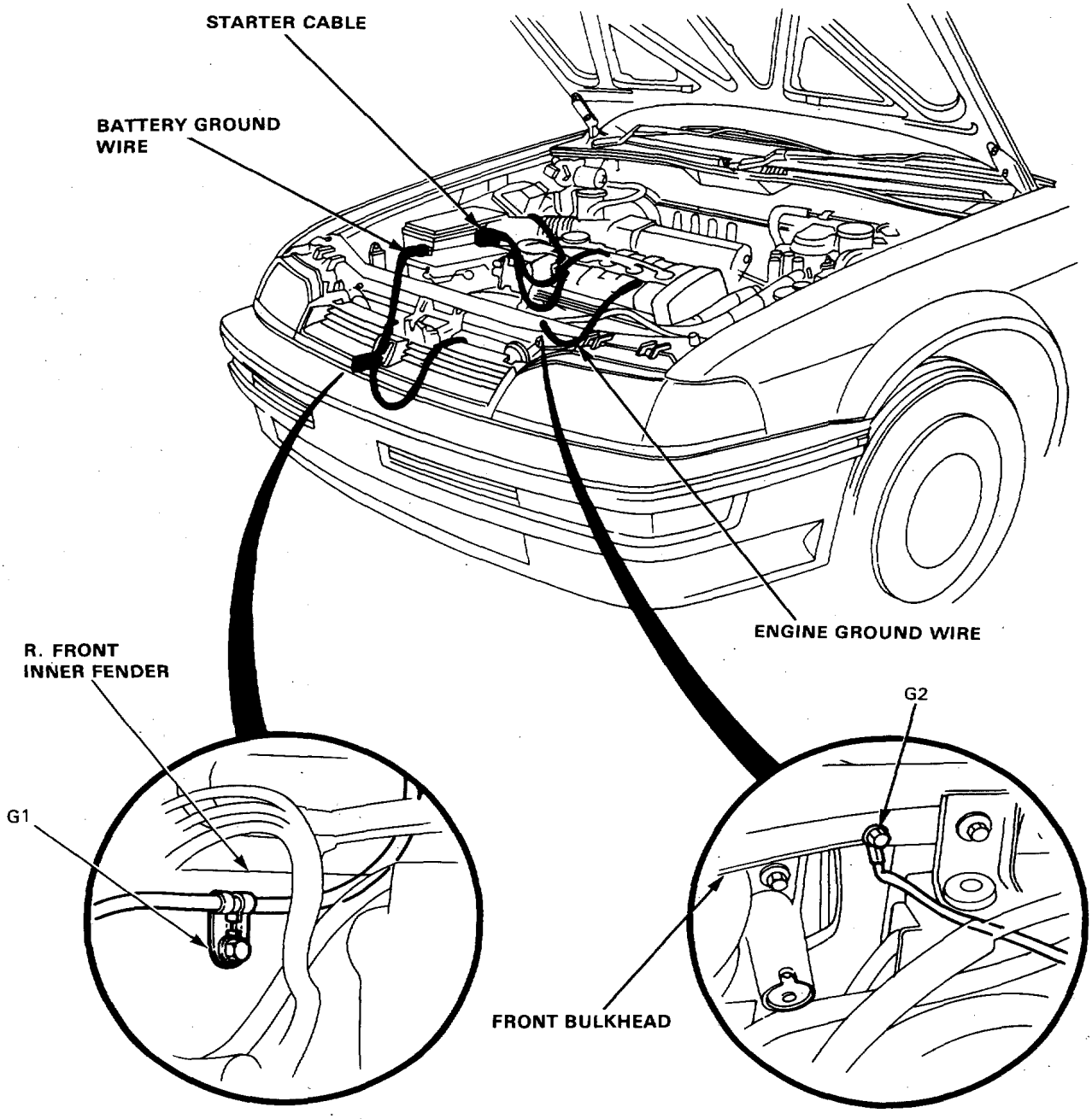
NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.



Downloaded from www.Manualslib.com manuals search engine

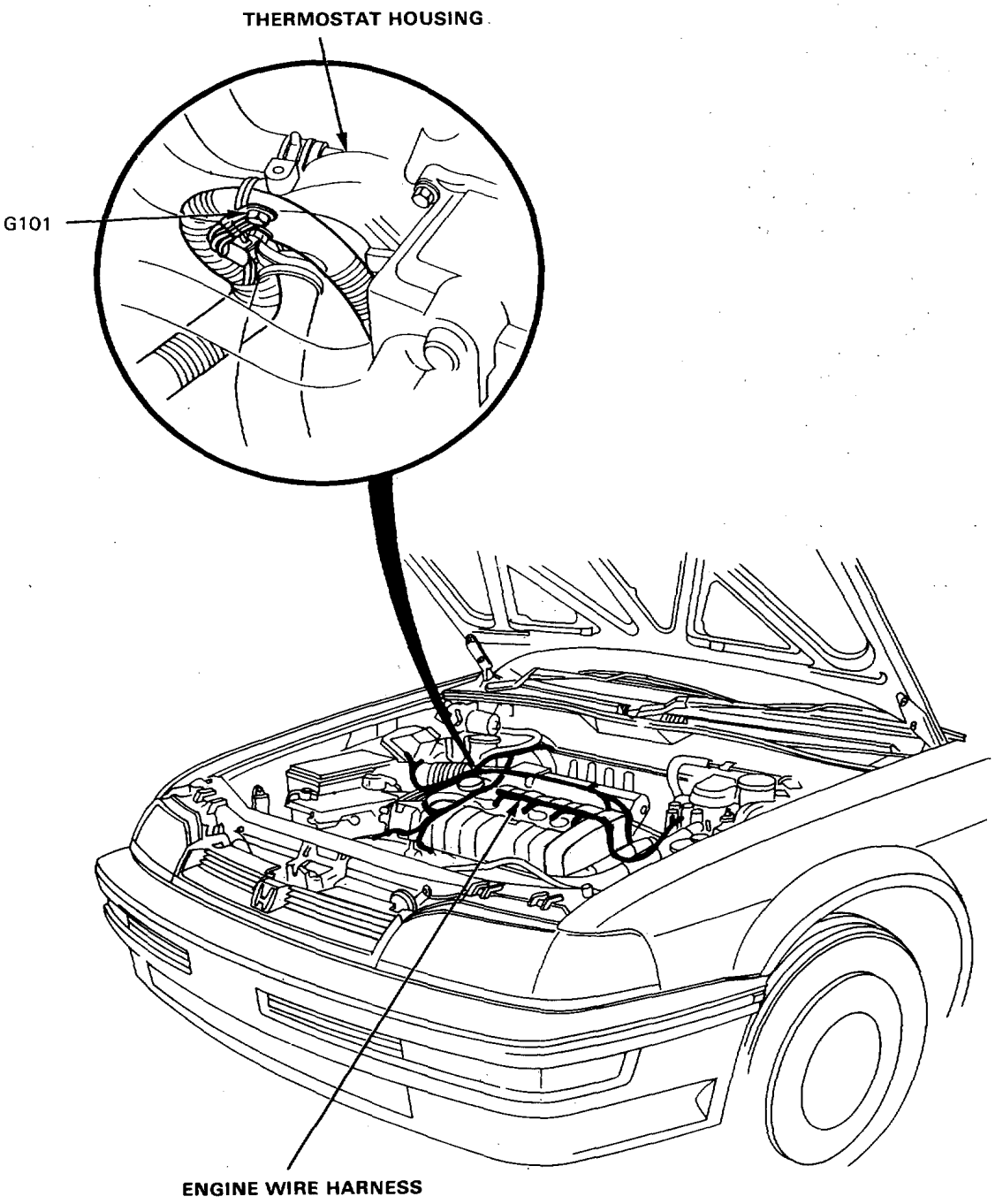
Ground and Wire Harness Routing

NOTE: RH Drive type shown. LH Drive type is similar.



Downloaded from www.Manualslib.com manuals search engine

NOTE: RH Drive type shown. LH Drive type is similar.

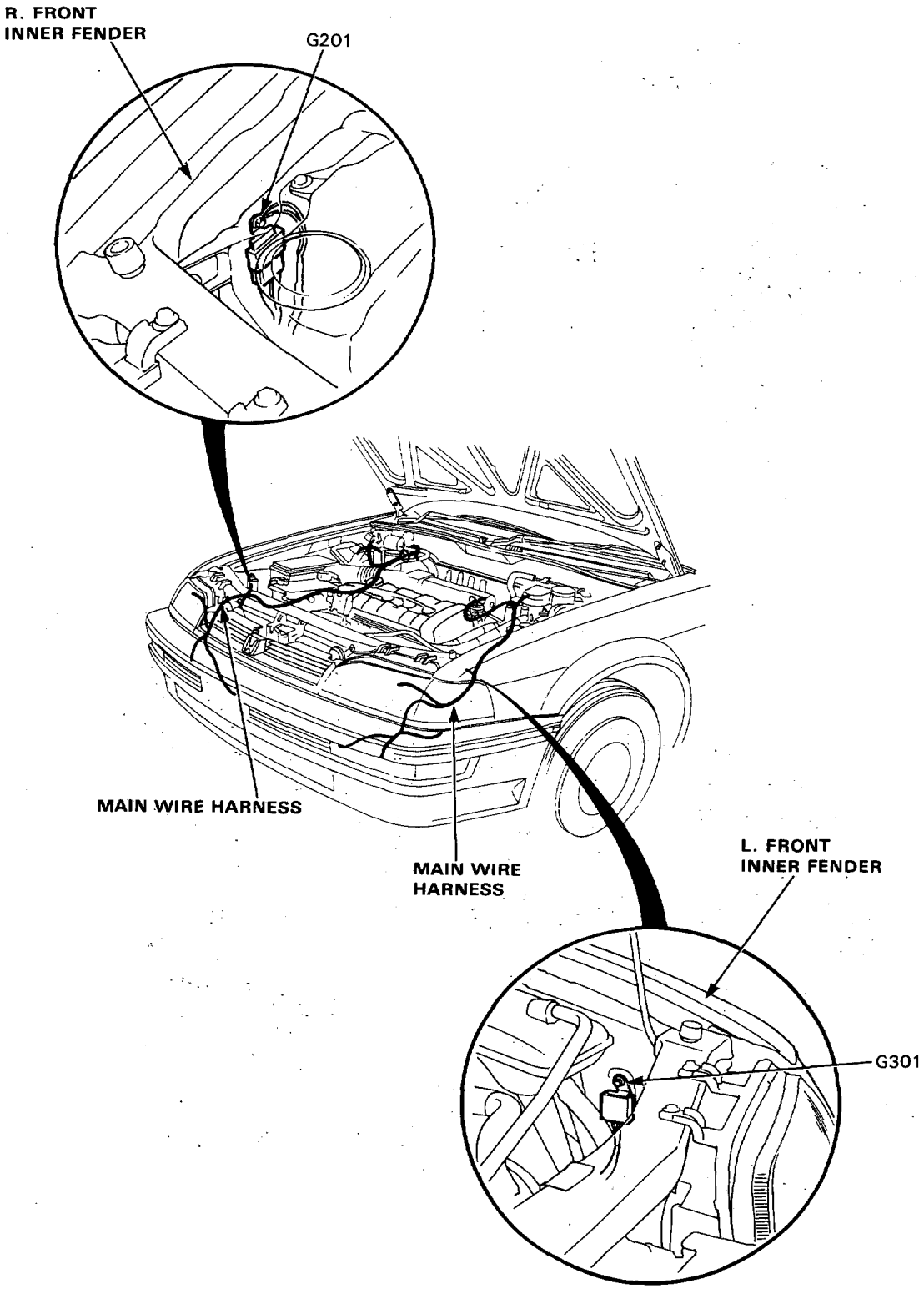


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

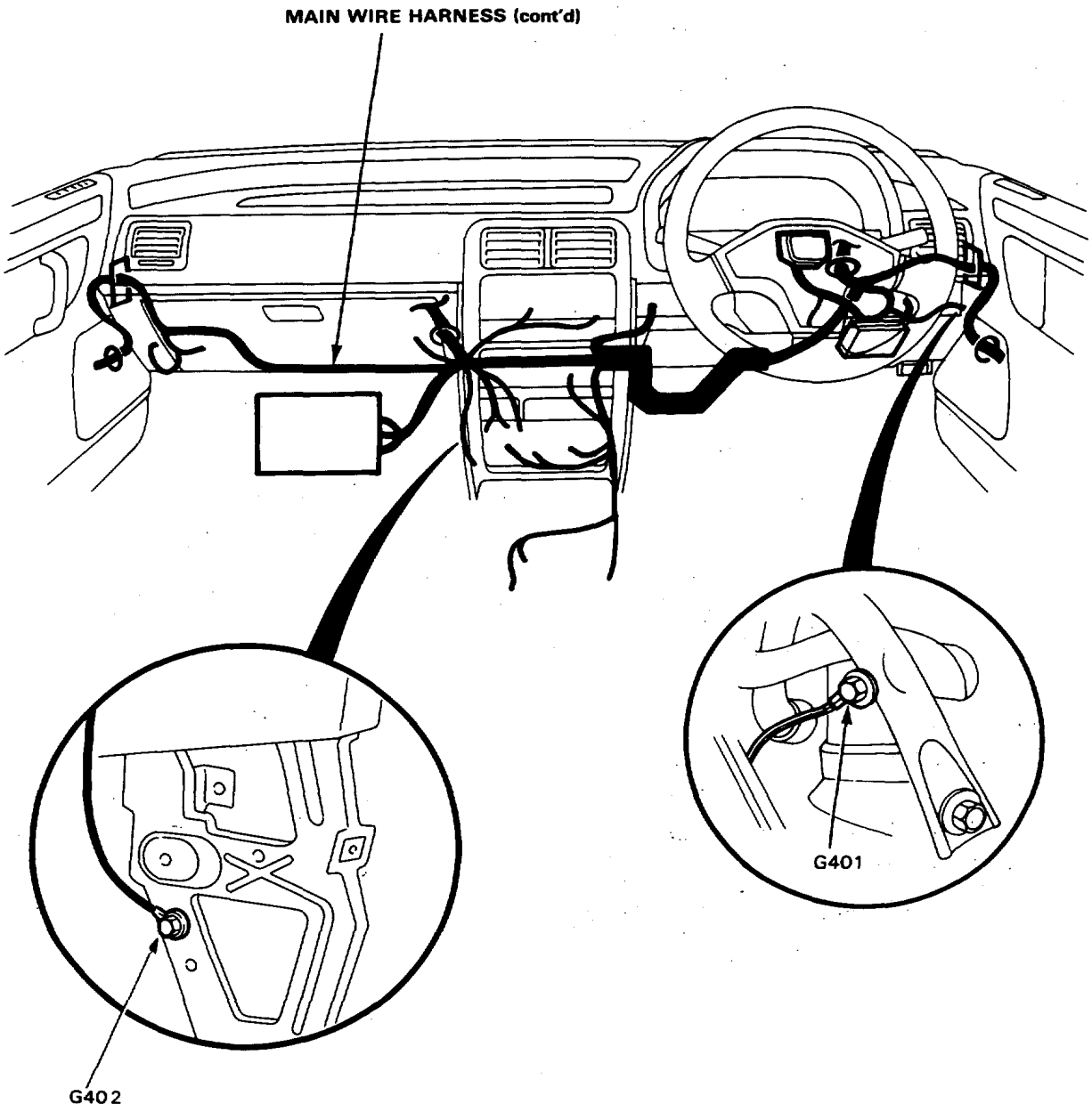
Ground and Wire Harness Routing

NOTE: RH Drive type shown. LH Drive type is similar.



Downloaded from www.Manualslib.com manuals search engine

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.

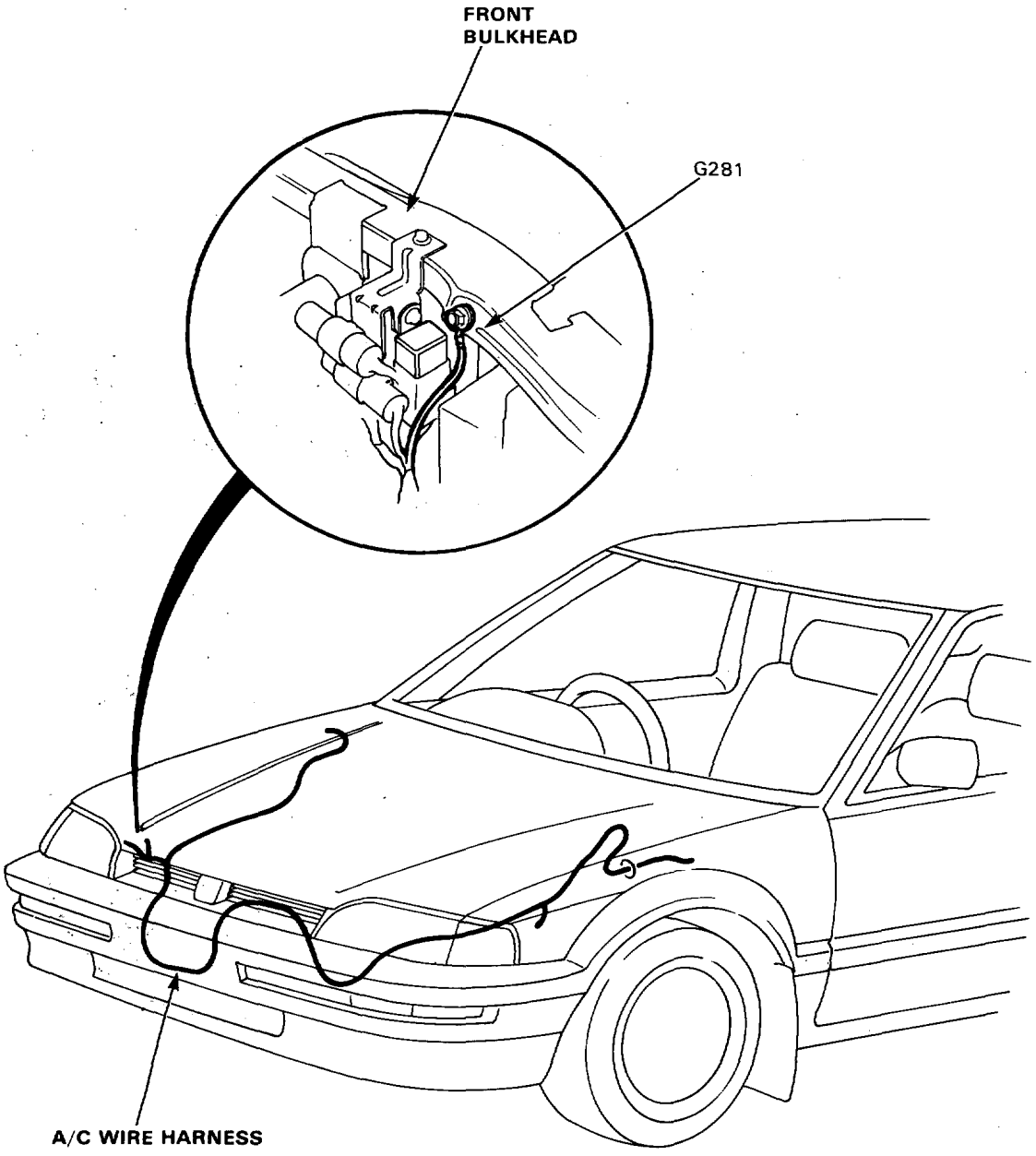


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

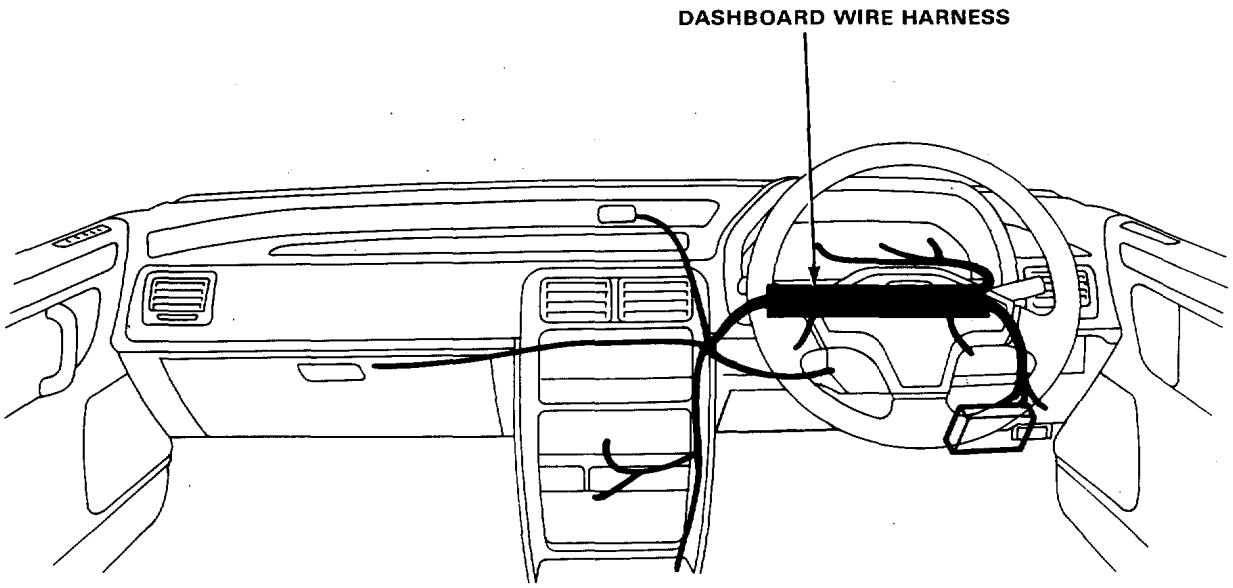
Ground and Wire Harness Routing

NOTE: RH Drive type shown. LH Drive type is similar.



Downloaded from www.Manualslib.com manuals search engine

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.

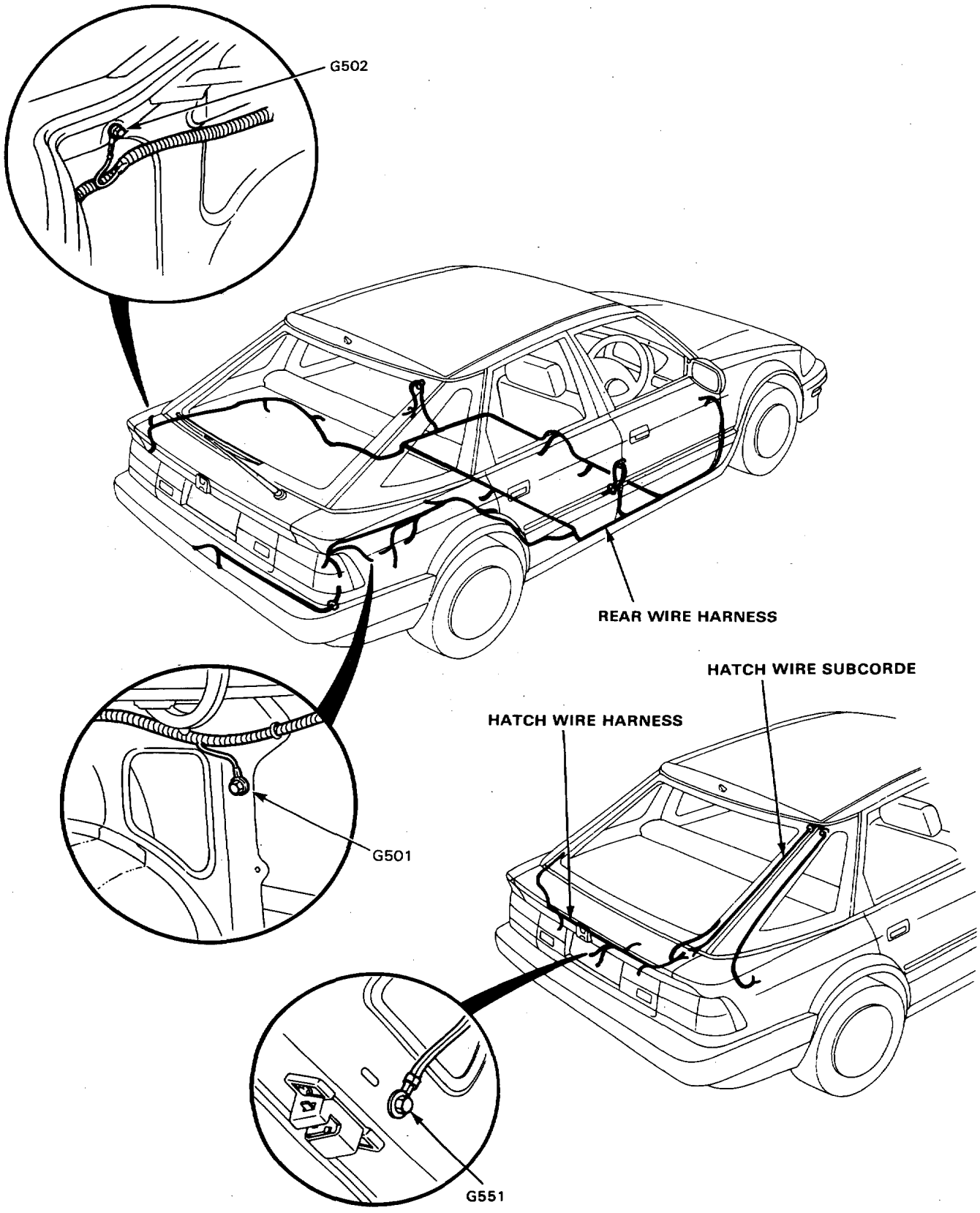


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

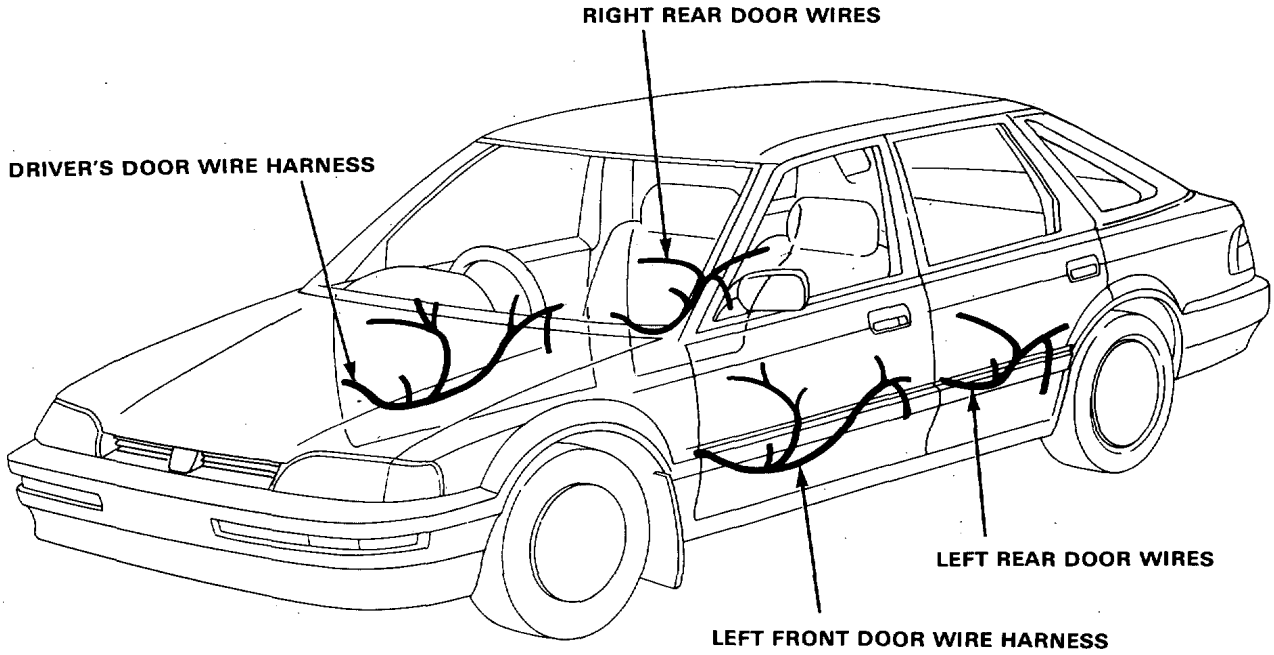
Ground and Wire Harness Routing

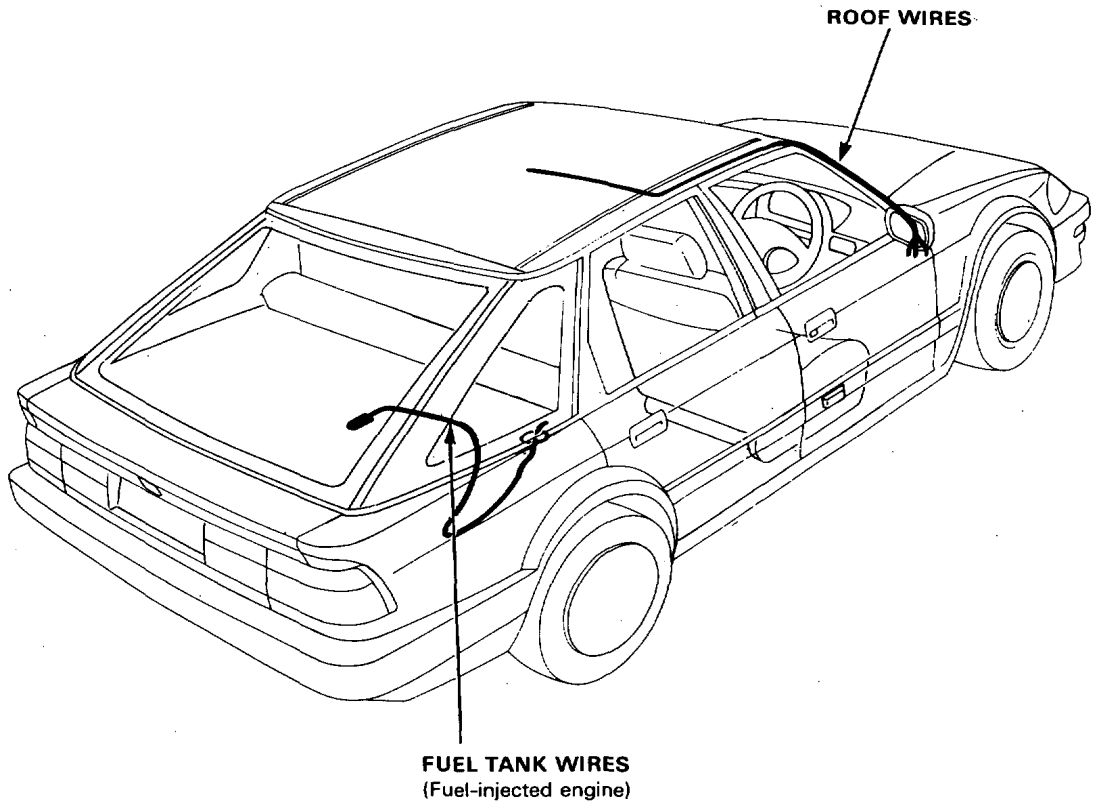
NOTE: RH Drive type shown. LH Drive type is similar.



Downloaded from www.Manualslib.com manuals search engine

NOTE: RH Drive type shown. LH Drive type is similar.



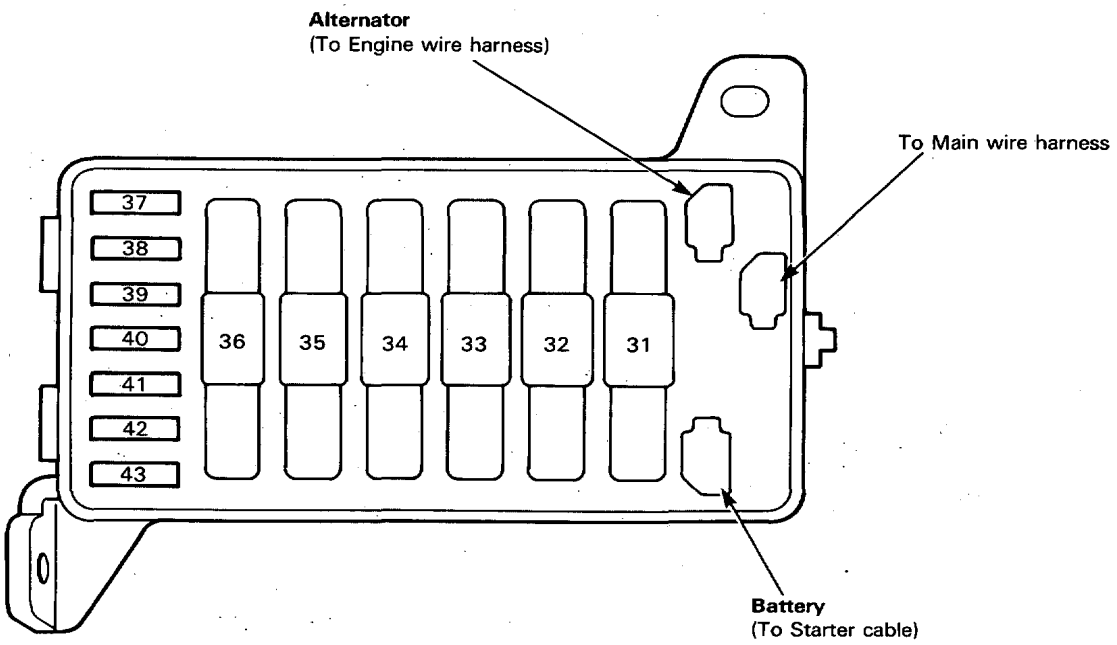


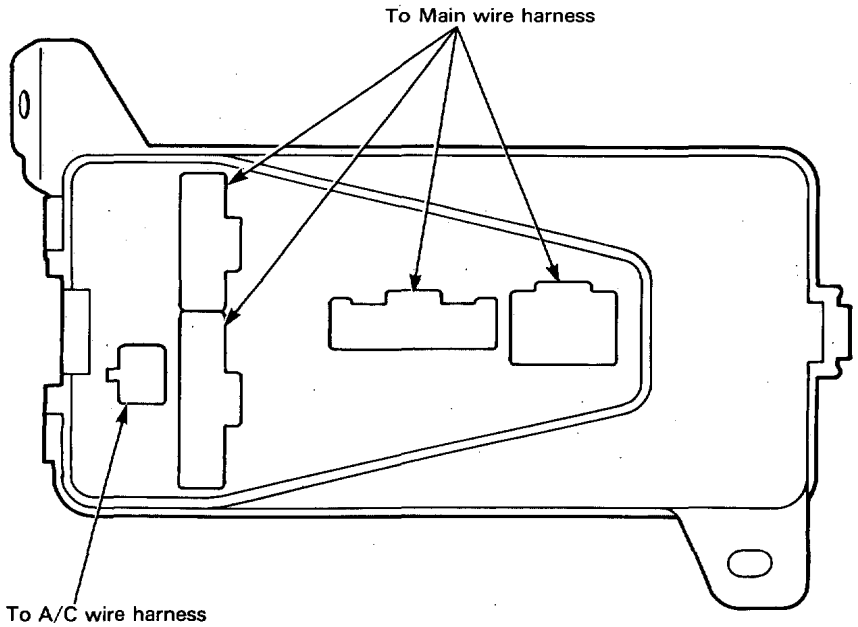
Downloaded from www.Manualslib.com manuals search engine

Fuses

Main Fuse Box

NOTE: Main fuse box is located right side, engine compartment.

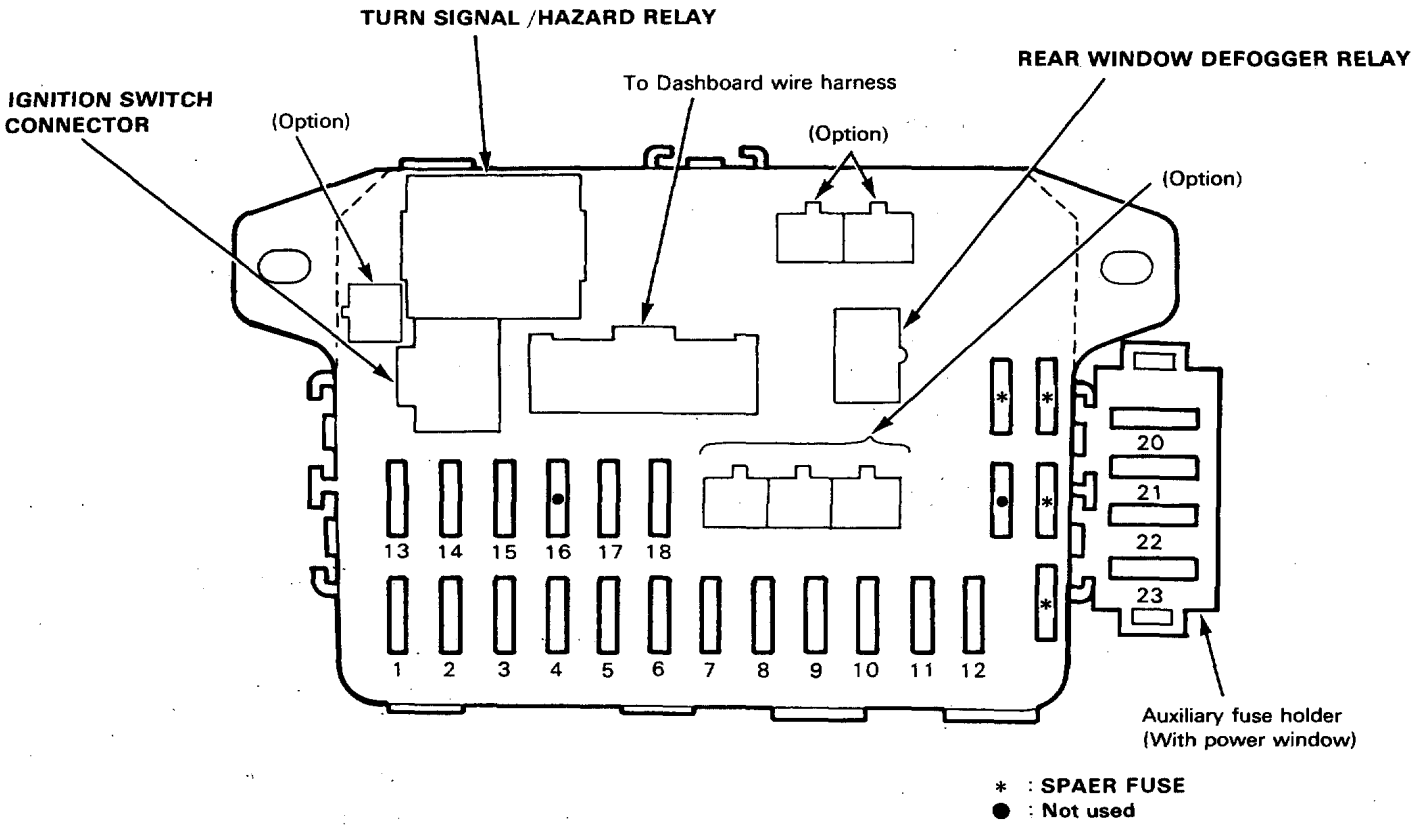


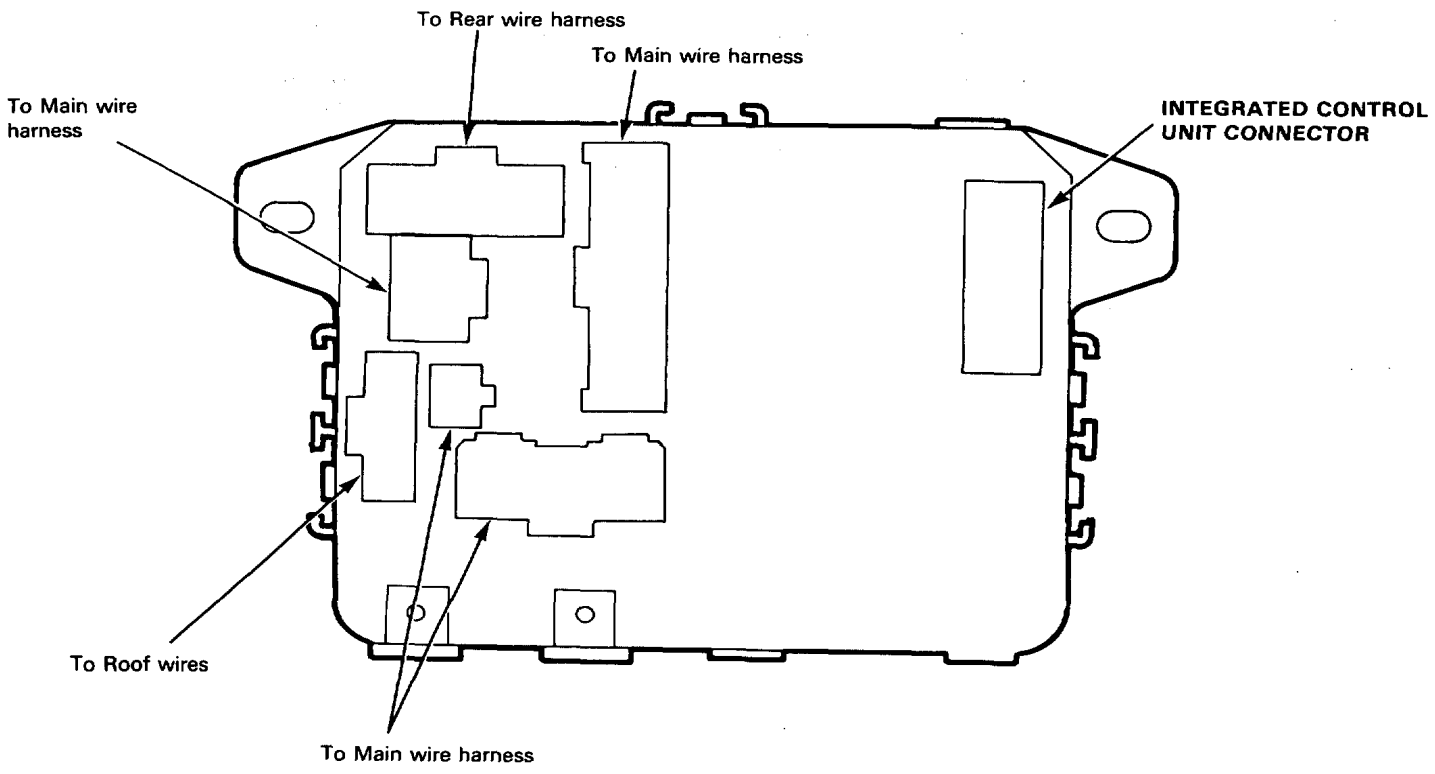


Downloaded from www.Manualslib.com manuals search engine

Dash Fuse Box

NOTE: Dash fuse box is located right side, under dash.

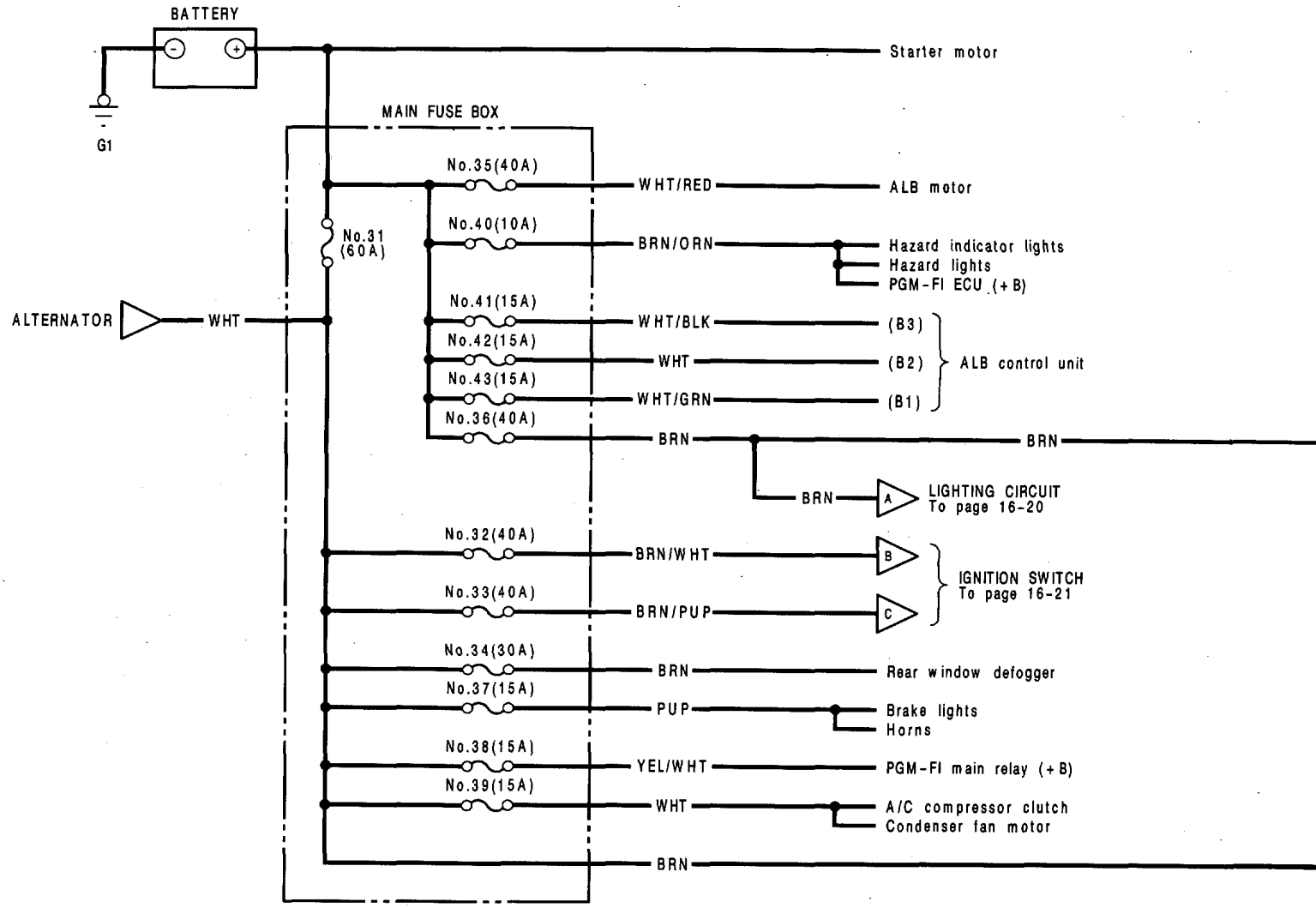




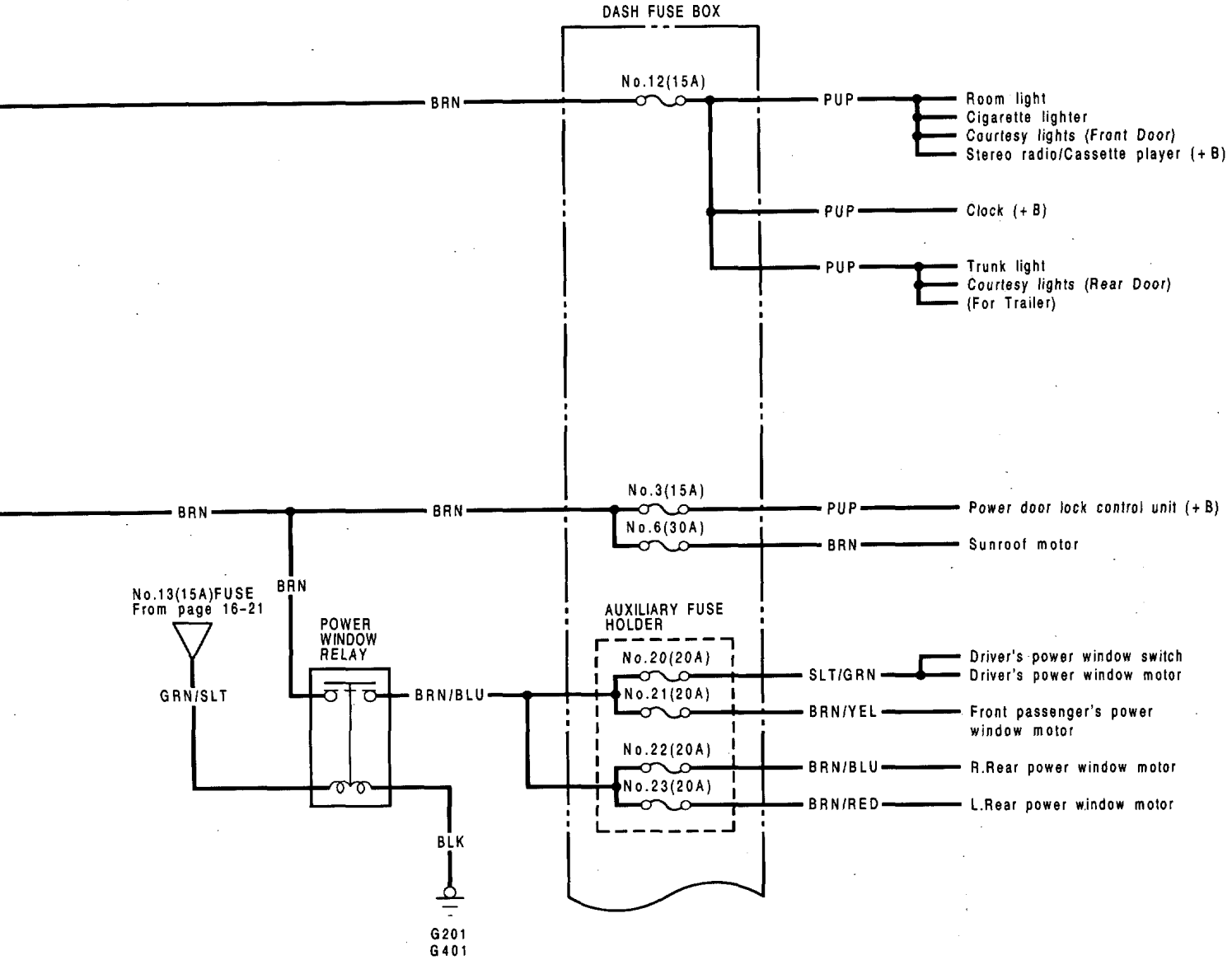
Downloaded from www.Manualslib.com manuals search engine

Power Distribution

Circuit Identification



Downloaded from www.Manualslib.com manuals search engine

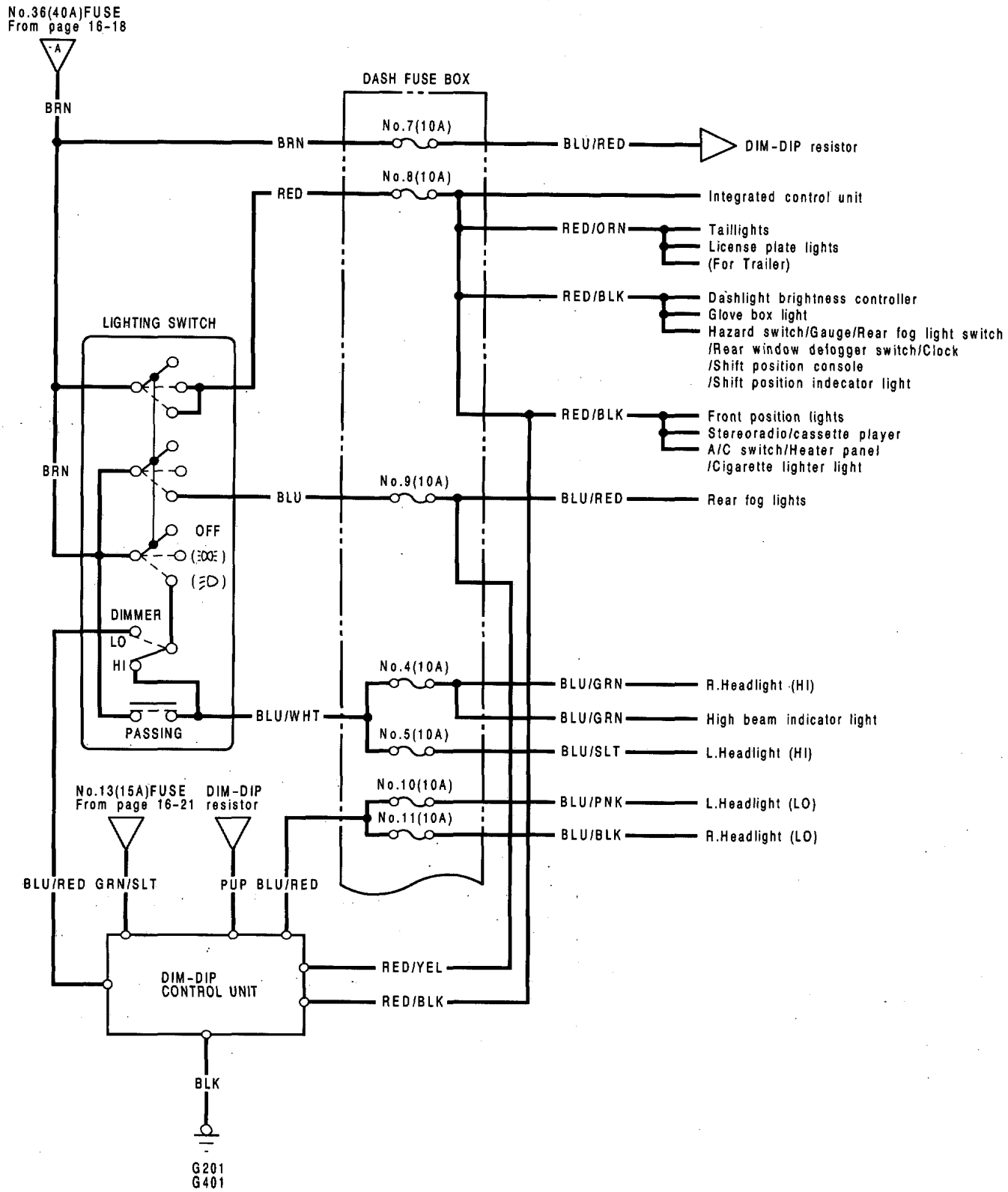


(cont'd)

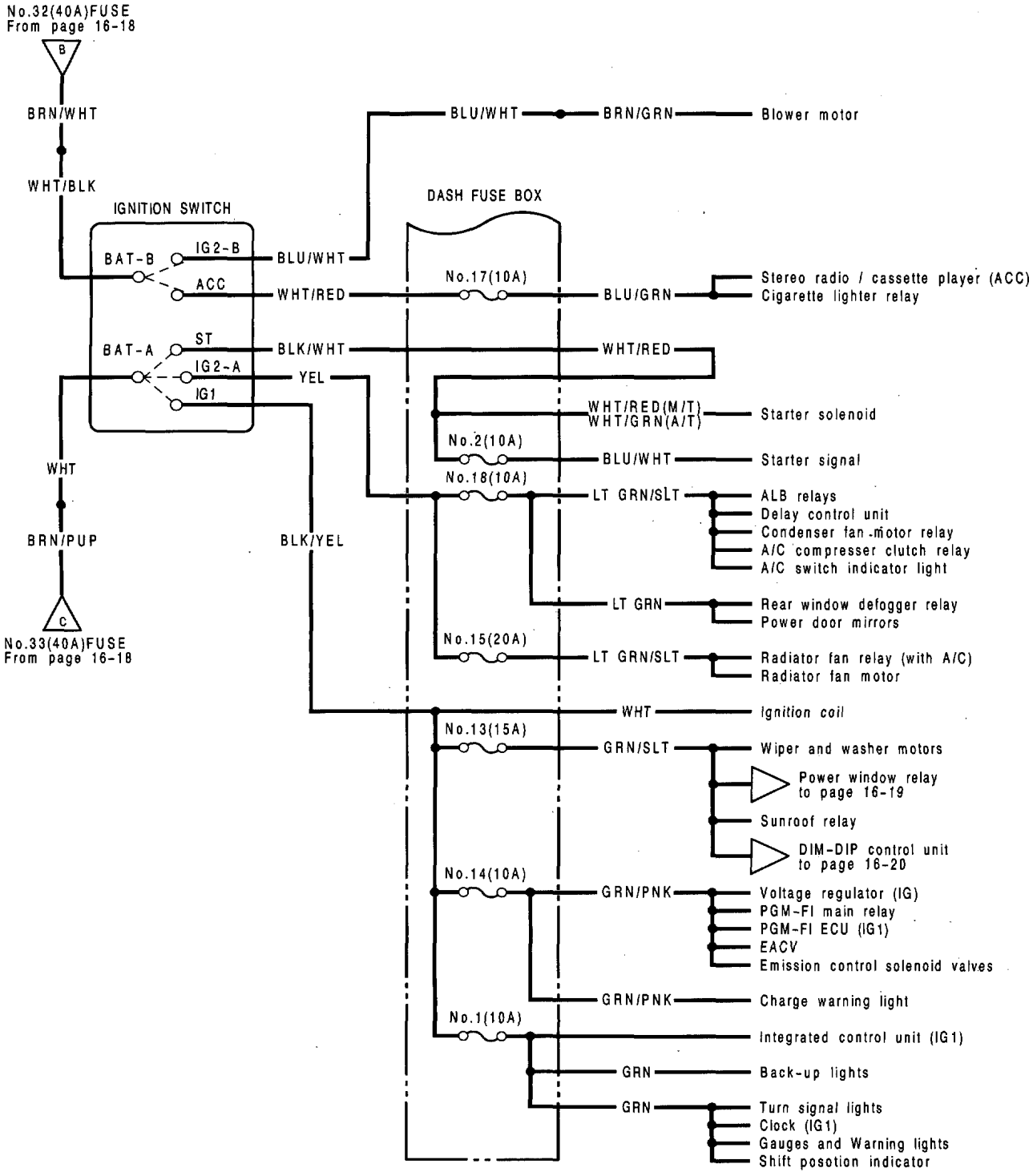
Downloaded from www.Manualslib.com manuals search engine

Power Distribution

Circuit Identification (cont'd)



Downloaded from www.Manualslib.com manuals search engine

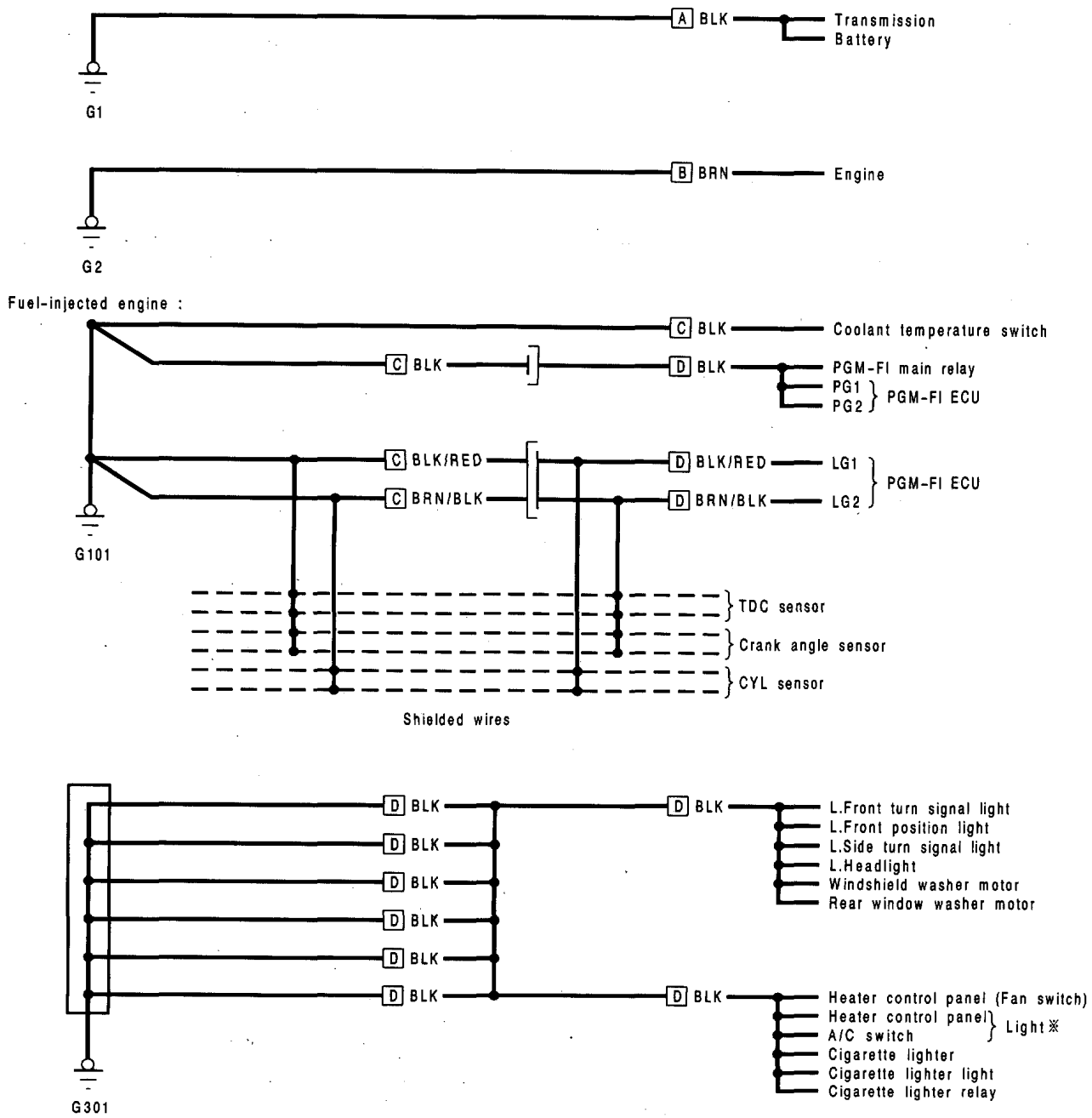


Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification

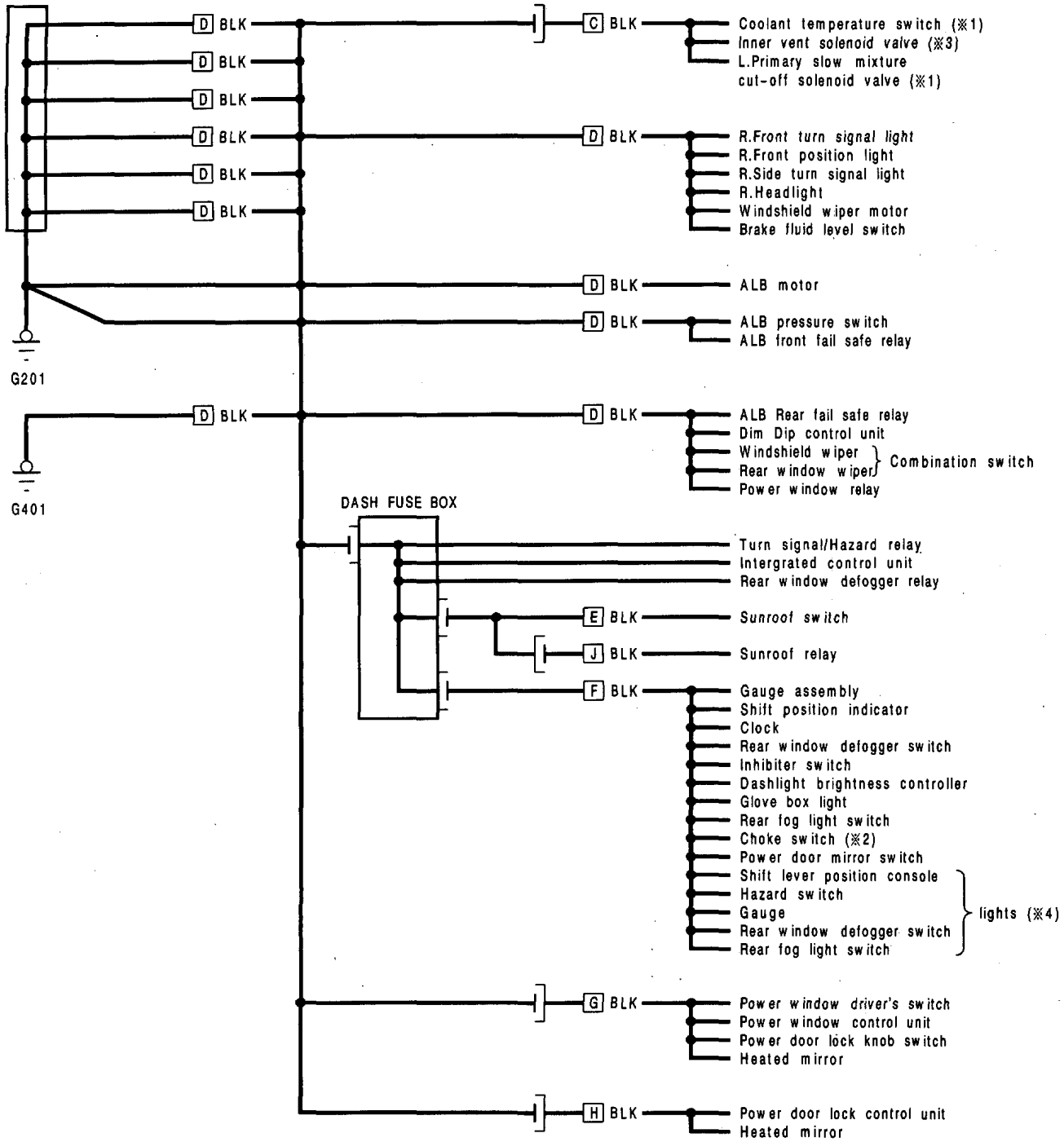
NOTE : See page 16-8 to 10 for illustrated ground locations.



A : Battery ground wire
B : Engine ground wire
C : Engine wire harness
D : Main wire harness
※ : Wituout dashlight brightness control

Downloaded from www.Manualslib.com manuals search engine

NOTE : See pages 16-10 and 11 for illustrated ground locations.



C : Engine wire harness
D : Main wire harness
E : Roof wire
F : Dashboard wire harness
G : Driver door wire harness
H : Front passenger's door wire harness
J : Sunroof switch subcord

(※1) : Carbureted engine
(※2) : 1.4ℓ Carbureted engine
(※3) : 1.6ℓ Carbureted engine
(※4) : Without dashlight brightness control

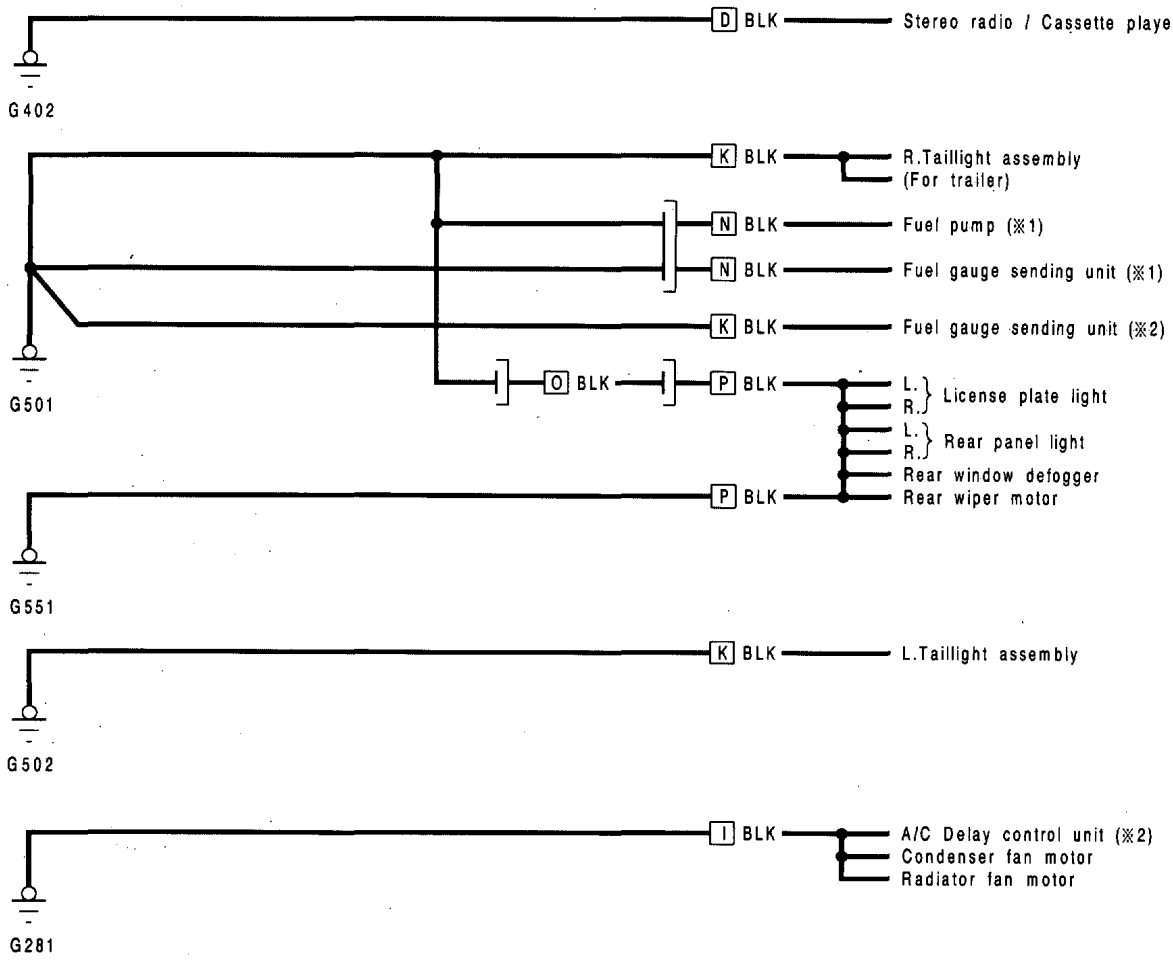
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification (cont'd)

NOTE : See pages 16-12 and 14 for illustrated ground locations.



D : Main wire harness
I : A/C wire harness
K : Rear wire harness
N : Fuel tank wires
O : Hatch subcord
P : Hatch wire harness

(※1) : Fuel-injected engine
(※2) : Cabureted engine

Downloaded from www.Manualslib.com manuals search engine

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.

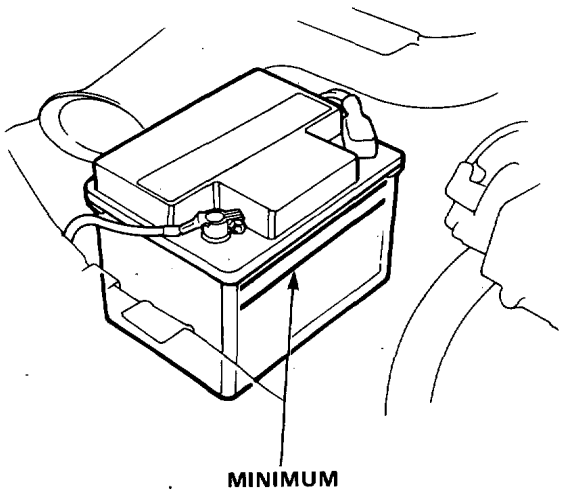
Test Procedure :

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.



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 9.6V, 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 : Aamperage 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 15.5V.

— 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.

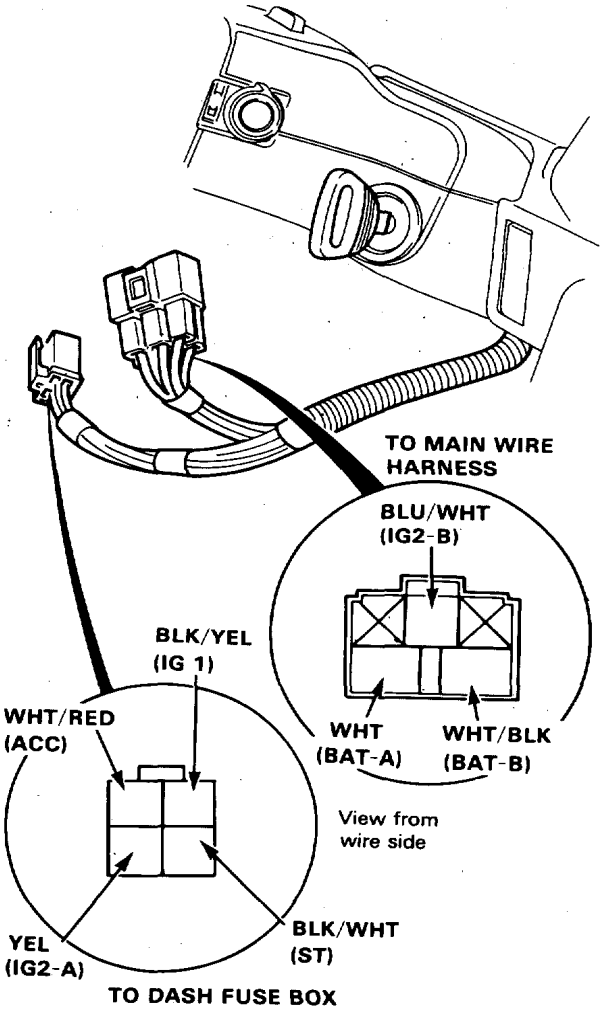
Downloaded from www.Manualslib.com manuals search engine

Ignition Switch

Test

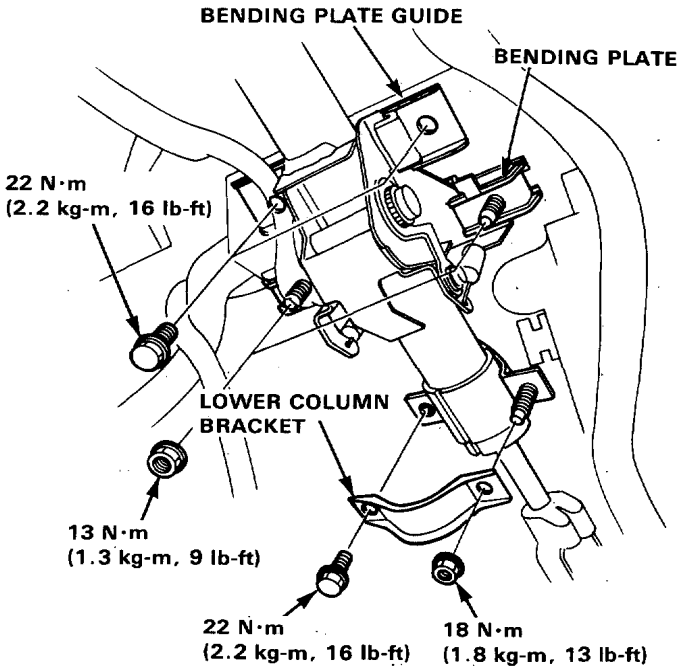
1. Remove the dashboard lower panel.
2. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	WHT/RED (ACC)	WHT/BLK (BAT-B)	BLU/WHT (IG2-B)	WHT (BAT-A)	BLK/YEL (IG 1)	YEL (IG2-A)	BLK/WHT (ST)
0							
I	○—○						
II	○—○	○—○		○—○	○—○	○—○	
III				○—○	○—○		○—○

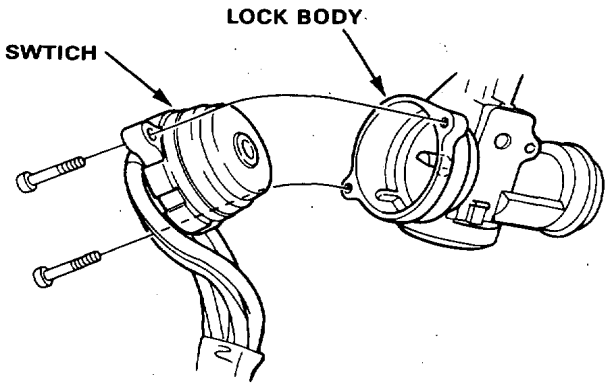


Electrical Switch Replacement

1. Remove the steering wheel, thern remove the steering column covers.
2. Remove the dashboard lower panel.
3. Remove the lower column bracket.
4. Remove the nuts attaching the bending plate guide and bending plate.



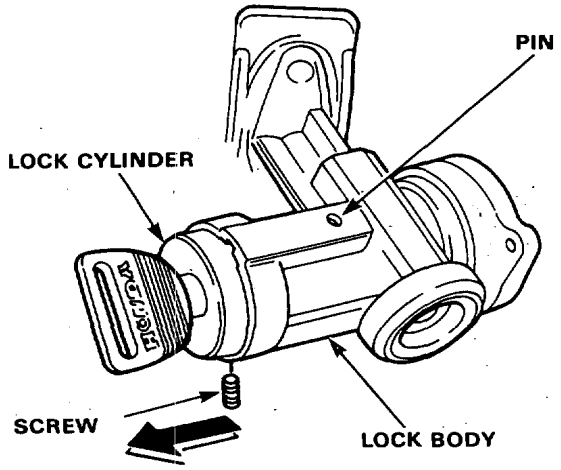
5. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
6. Insert the key and turn it to "0."
7. Remove the 2 screws and replace the base of the switch.



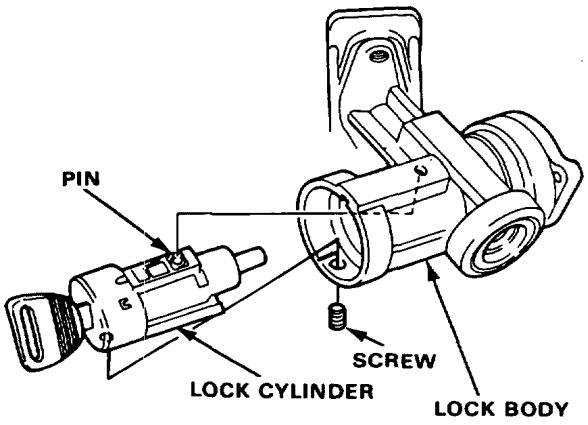
Downloaded from www.Manualslib.com manuals search engine

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. Remove the screw from the lock body.
5. Push the pin in and remove the lock cylinder from the lock body.



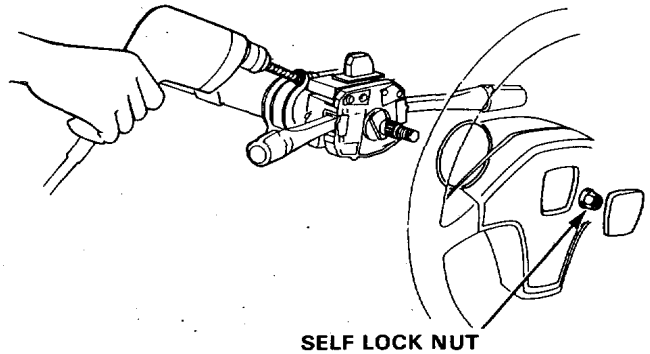
6. Turn the key to "0" and align the lock cylinder with the lock body.
7. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
8. Turn the key to the "I", push the pin and insert the lock body cylinder into the lock until the pin clicks into place.
9. Install the screw to the lock body.



Steering Lock Replacement

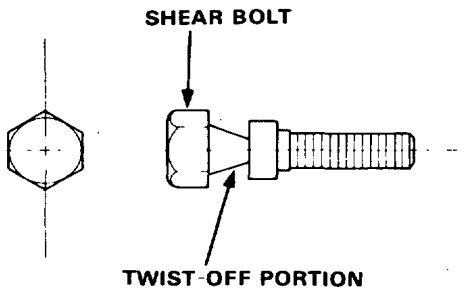
1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Remove the lower column bracket.
4. Remove the nuts attaching the bending plate guide and bending plate. (see page: 16-26)
5. Center punch each of the 2 shear bolts and drill their heads off with a 3/16 in. drill bit.

   CAUTION: Do not damage the switch body when removing the shear heads.
6. Remove the shear bolts from the swtich body.



7. Install the new ignition switch without the key inserted.
8. Loosely tighten the new shear bolts.

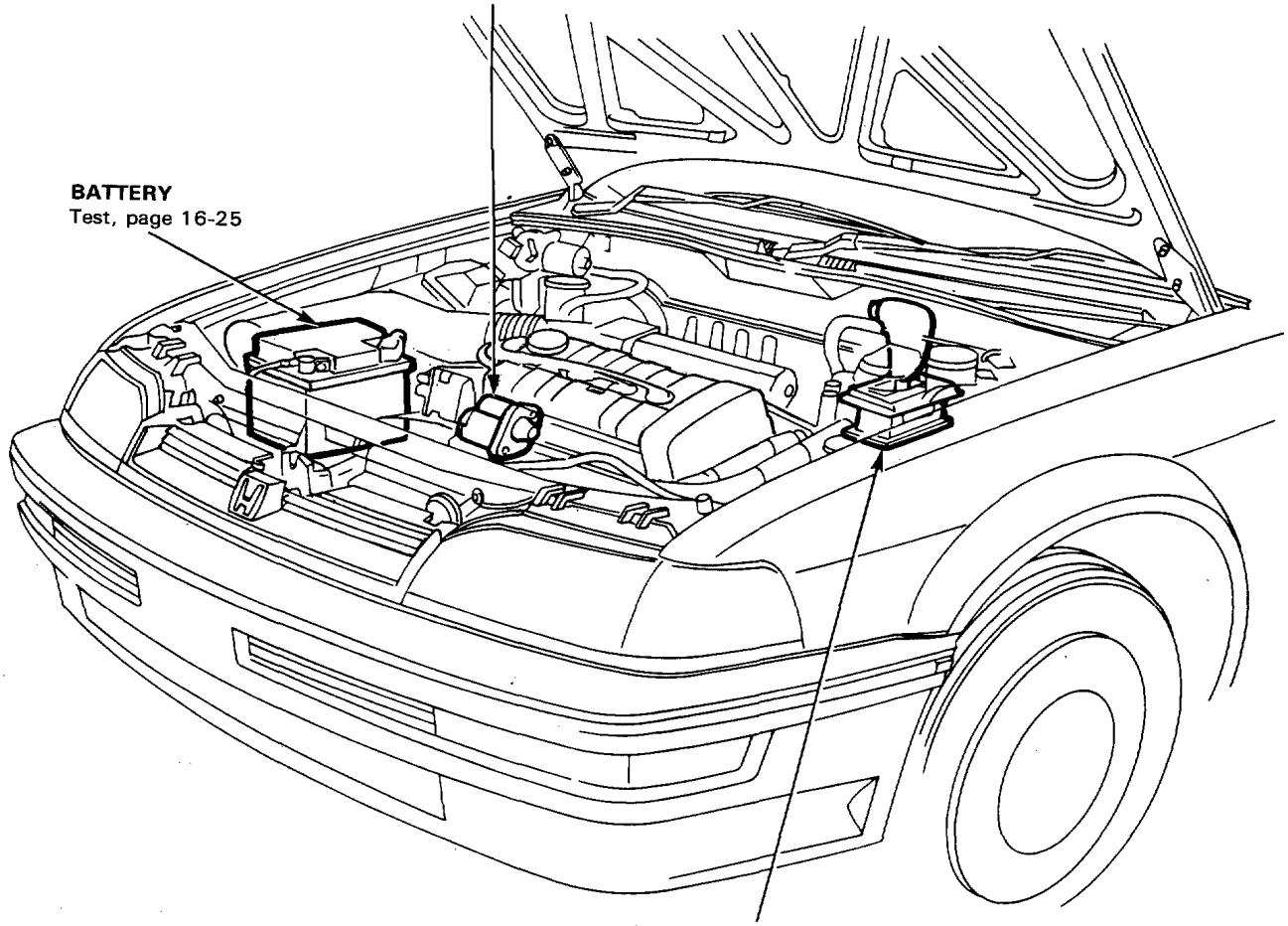
   NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.
9. Insert the ignition key and check for proper operation of the steering wheel lock and that ignition key turns freely.
10. Tighten the shear bolts until the hex heads twist off.



Downloaded from www.Manualslib.com manuals search engine

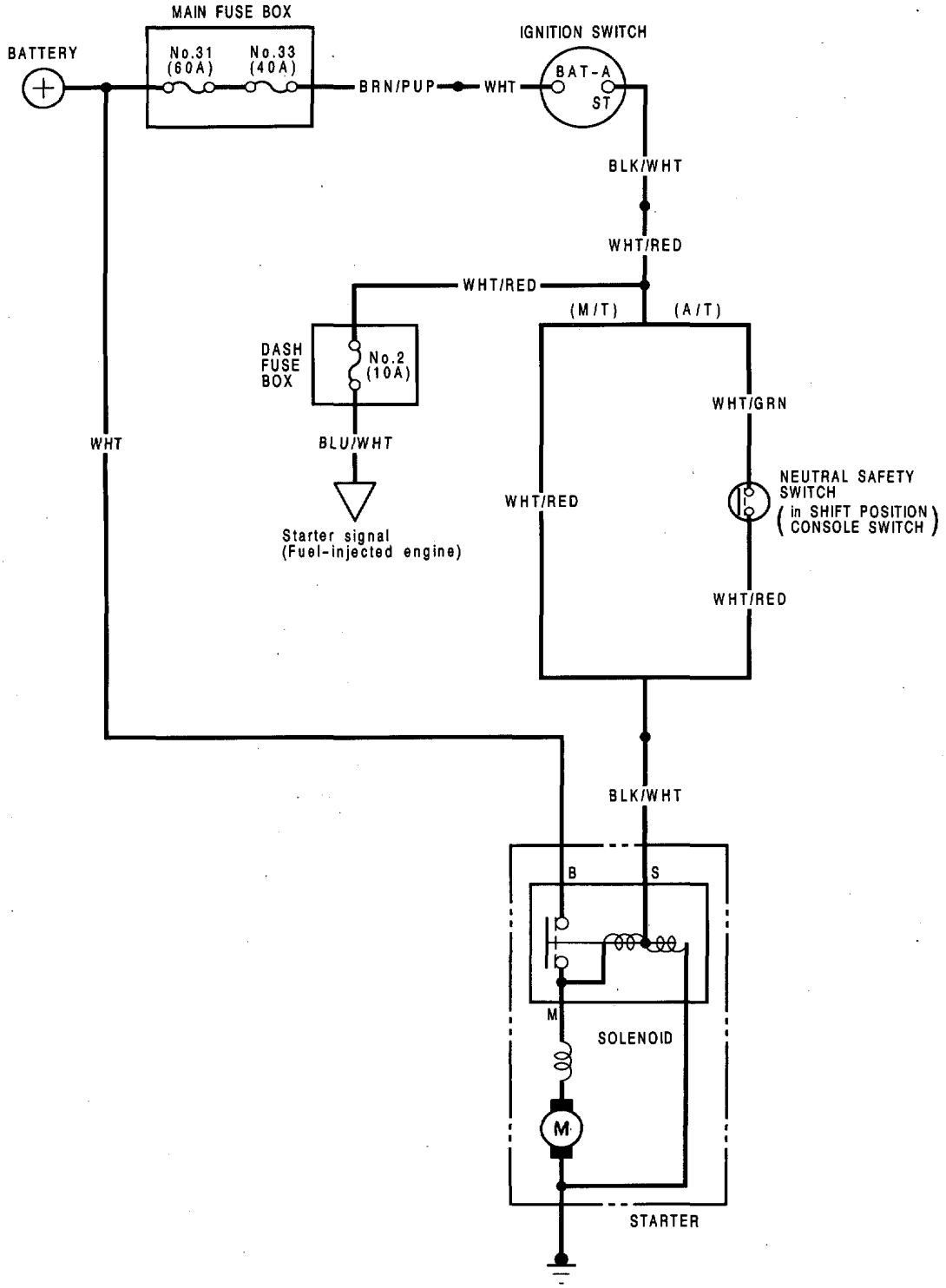
Starting System

Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

Starting System

Starter Test

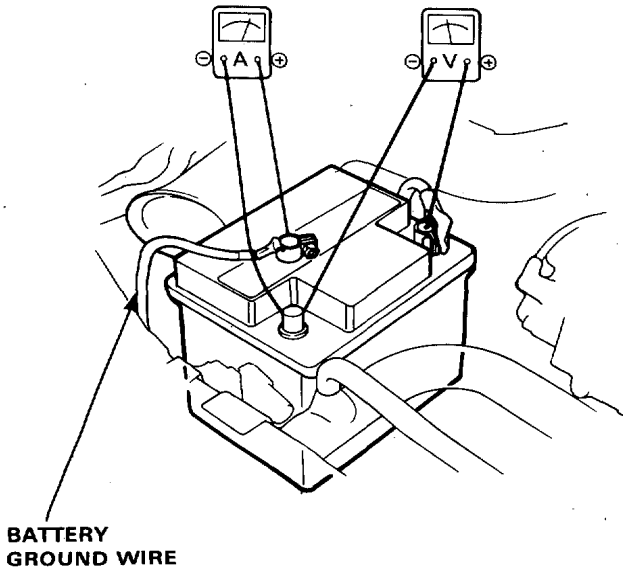
NOTE: The air temperature must be between 15 and 38°C (59 and 100°F) before testing.

Recommended Procedure :

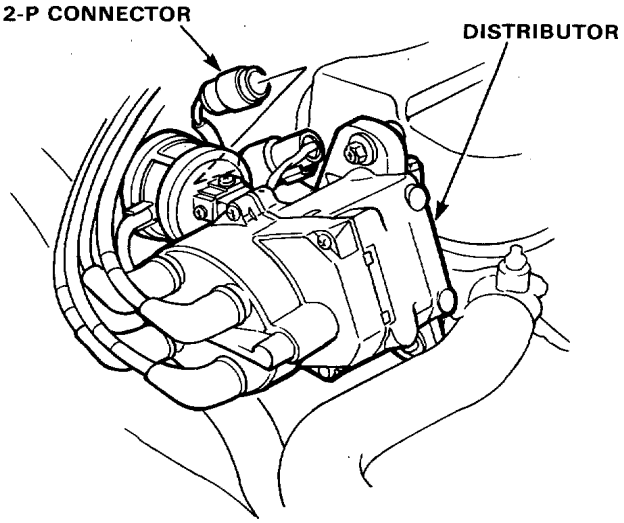
Use a starter system tester.
Connect and operate the equipment in accordance with manufacturer's instructions.
Test and troubleshoot as described.

Alternate Procedure :

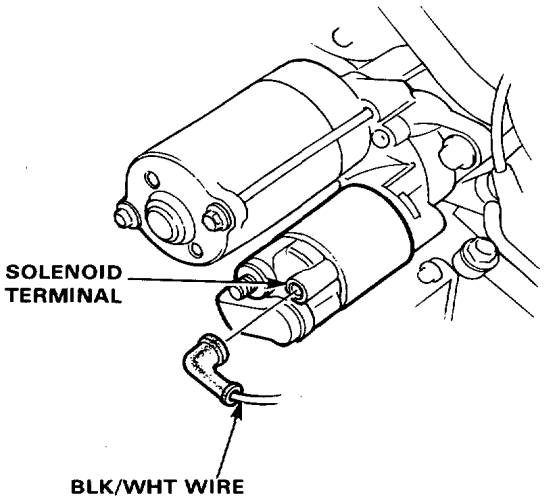
- Use the following equipment :
  - Ammeter, 0-400 A
  - Voltmeter, 0-20 V (accurate within 0.1 volt)
  - Tachometer, 0-1200 rpm
- Hook up voltmeter and ammeter as shown.



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.



Downloaded from www.Manualslib.com manuals search 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. On cars with automatic transmission, check the shift position console switch (neutral safety switch) and connector.

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 :
1.2kw and 1.4kw : 8 volts
1.0kw : 8.5 volts
Current should be no greater than specified below :
1.0kw : 230 amperes
1.2kw : } 350 amperes
1.4kw : }

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.
- Should 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.

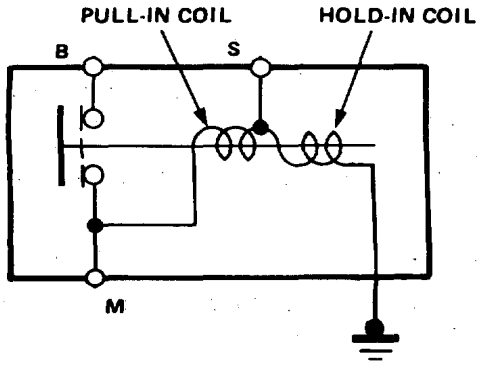
If the drive gear hangs up on the flywheel ring gear, check :

- Solenoid plunger and switch for malfunction.
- Drive gear assembly for dirty or damaged overrunning clutch.

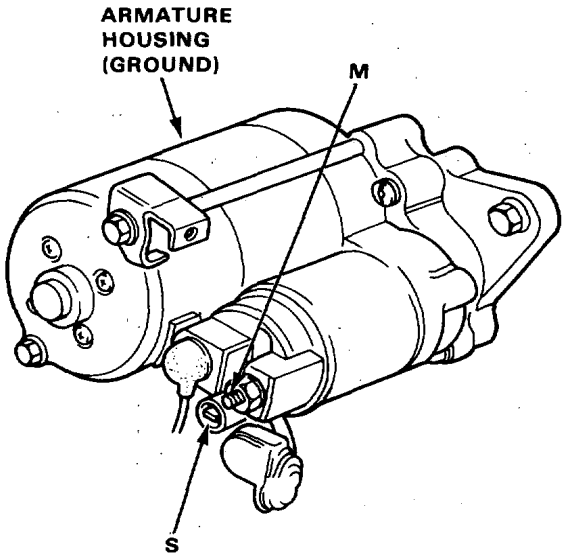
Downloaded from www.Manualslib.com manuals search engine

Starter Solenoid Test

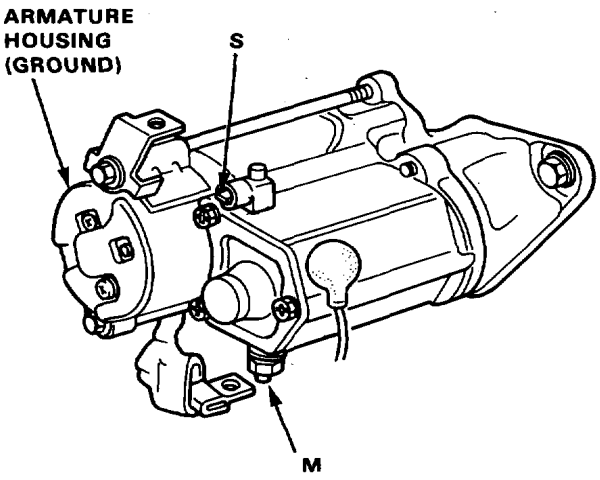
1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground).
   Coil is OK if there is continuity.
2. Check the pull-in coil for continuity between the S and M terminals.
   Coil is OK if there is continuity.



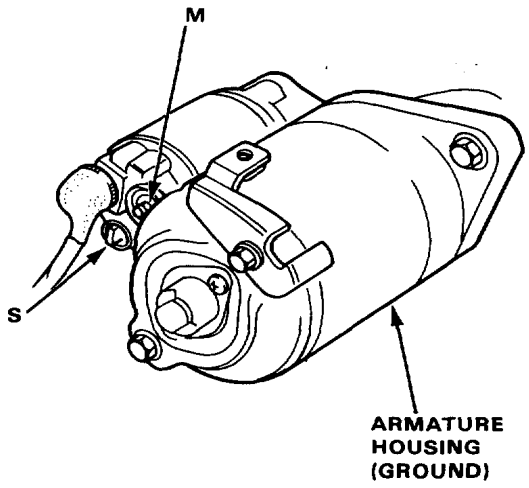
Mitsuba (1.0 kw and 1.4 kw) type:



Nippon Denso (1.0 kw and 1.2 kw) type:

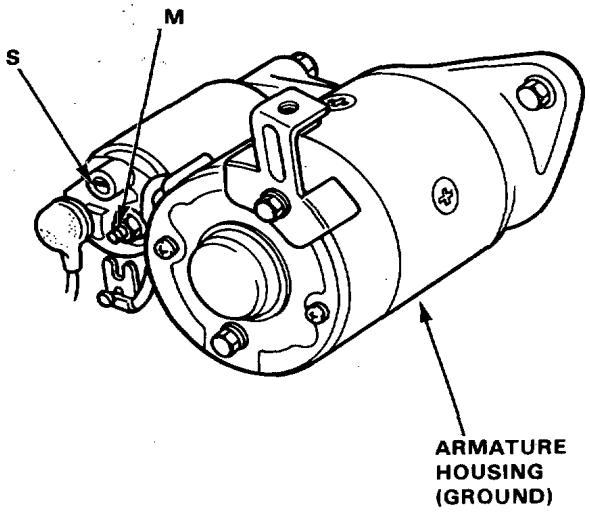


Nippon Denso (0.8 kw) type:



Downloaded from www.Manualslib.com manuals search engine

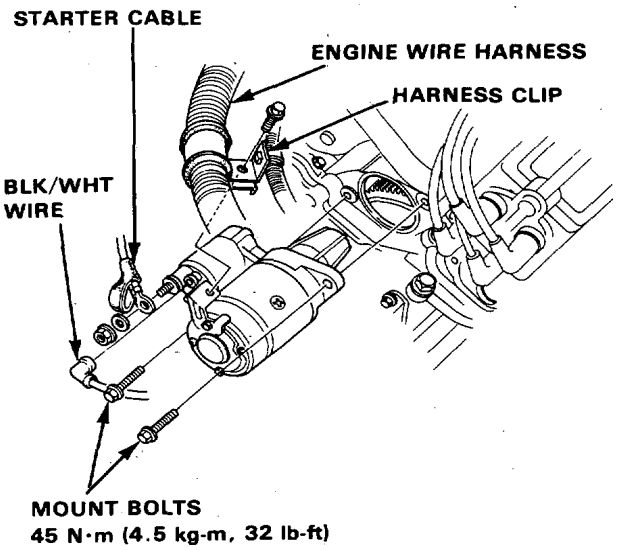
Hitachi (0.8 kw) type:



Starter Replacement

NOTE: After installation, make sure that the wires are clamped.

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.

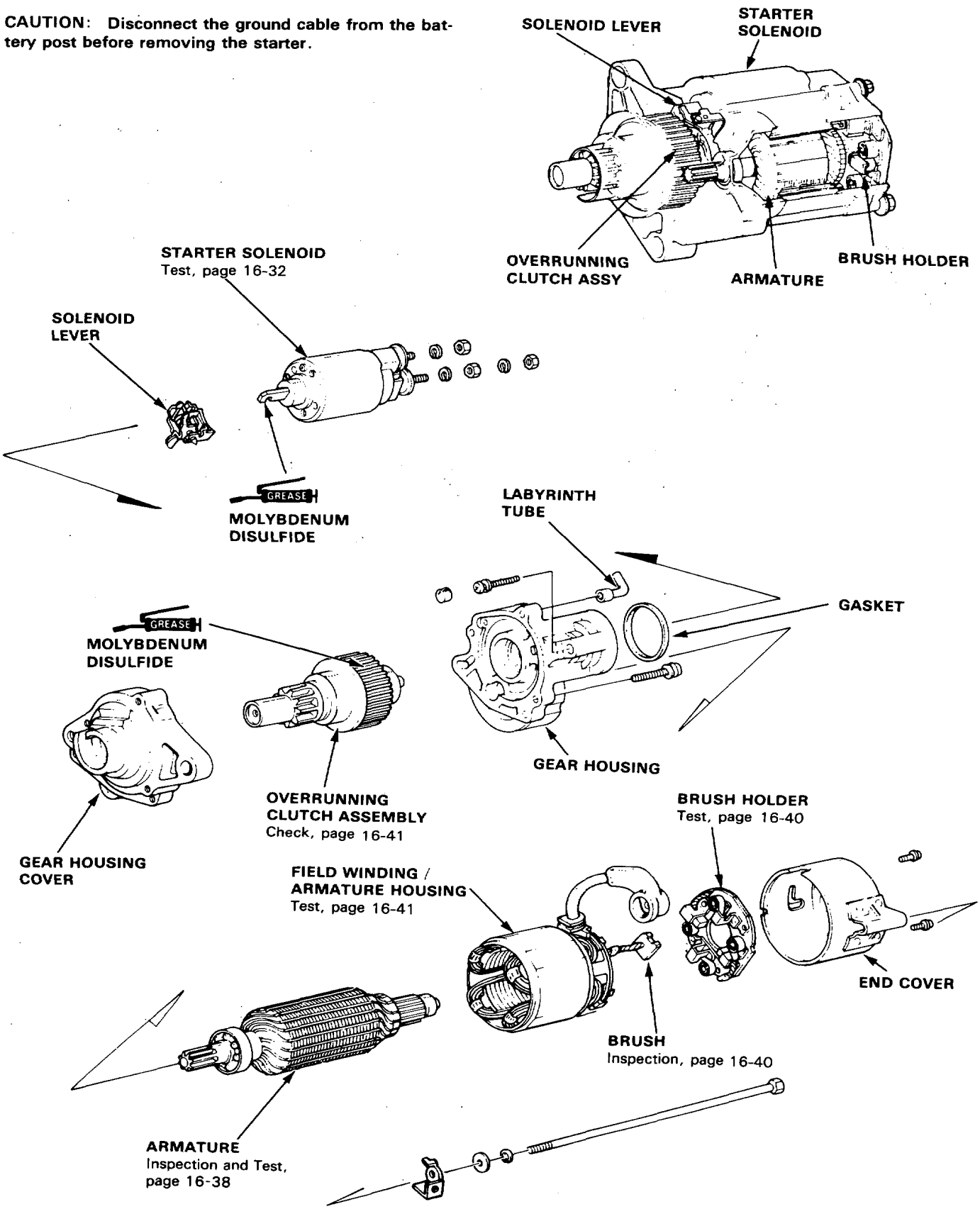


Downloaded from www.Manualslib.com manuals search engine

Starting System

Starter Overhaul (Gear Reduction 1.0kw and 1.4kw, Mitsuba type)

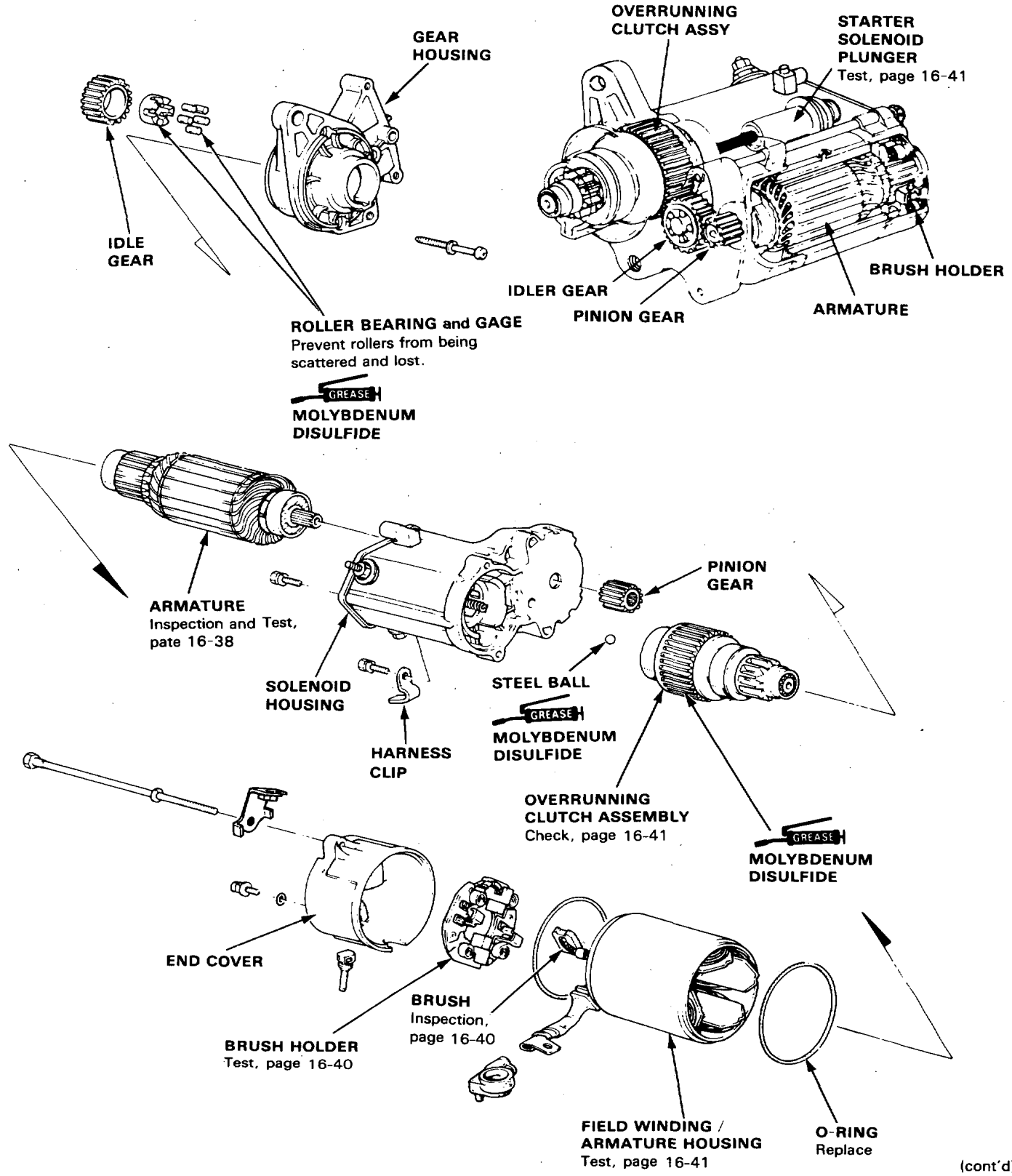
CAUTION: Disconnect the ground cable from the battery post before removing the starter.



Downloaded from www.Manualslib.com manuals search engine

Starter Overhaul (Gear Reduction 1.0kw and 1.2kw, ND type)

CAUTION: Disconnect ground wire from the battery post before removing the starter.

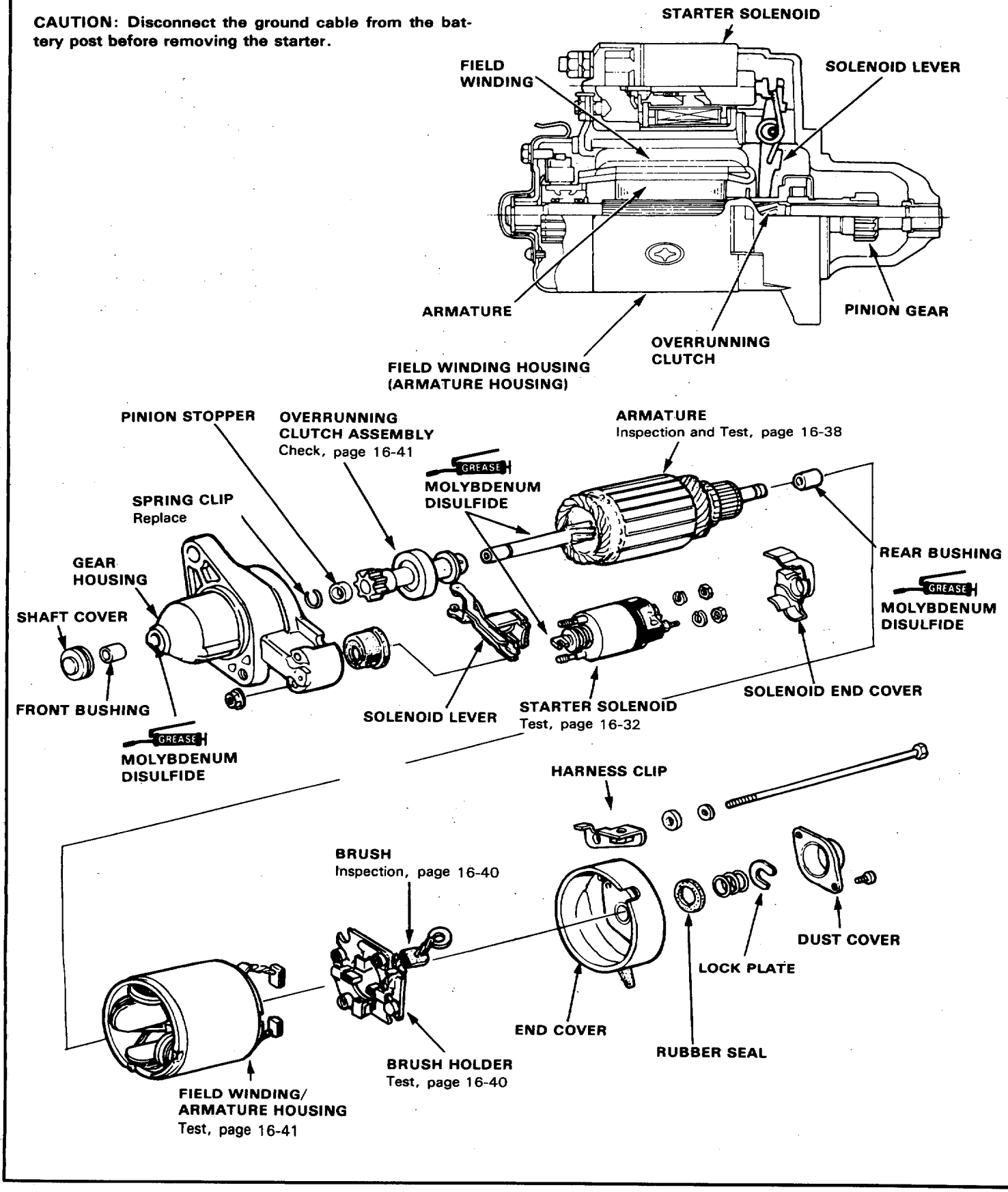


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Starter Overhaul (cont'd) (Direct Drive 0.8 kw, ND type)

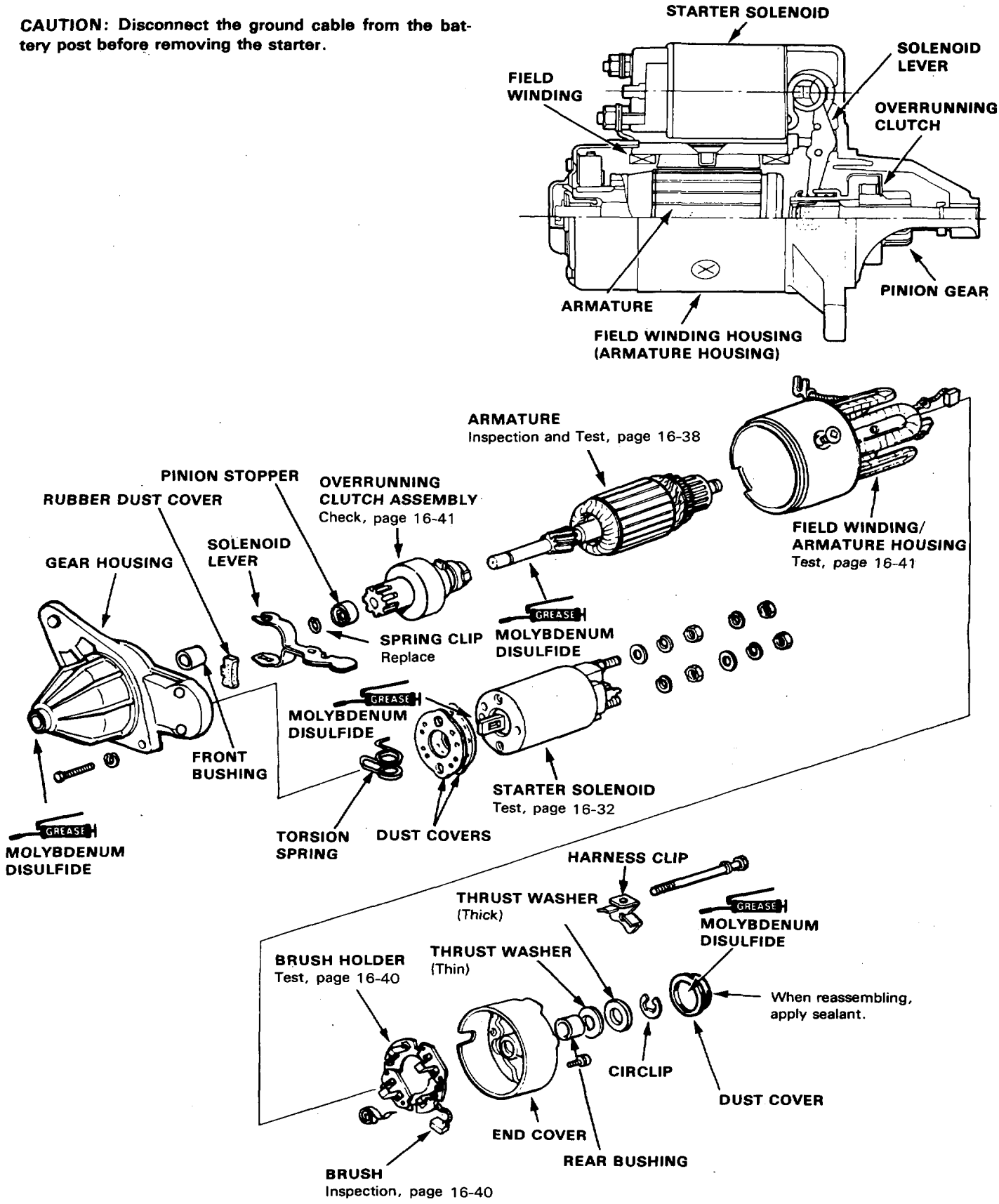
CAUTION: Disconnect the ground cable from the battery post before removing the starter.



Downloaded from www.Manualslib.com manuals search engine

Starter Overhaul (Direct Drive 0.8 kw, Hitachi type)

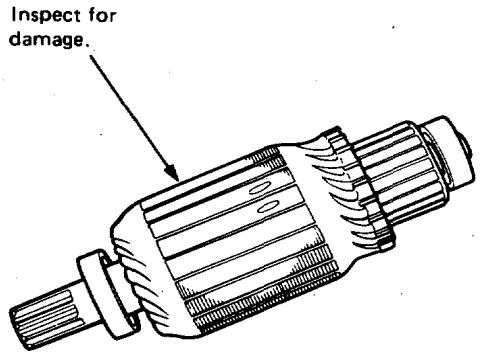
CAUTION: Disconnect the ground cable from the battery post before removing the starter.



Downloaded from www.Manualslib.com manuals search engine

Armature Inspection and Test

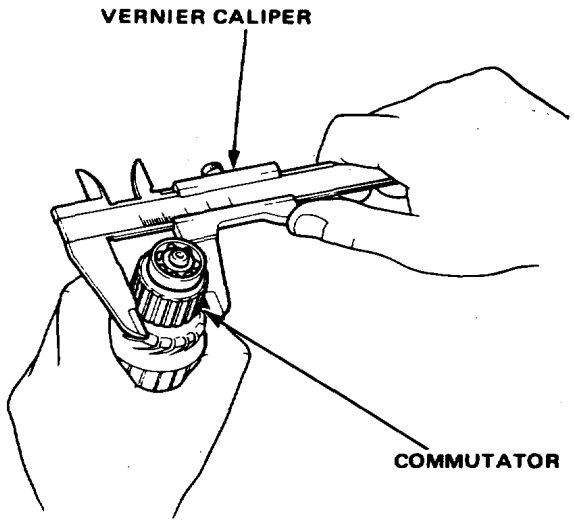
1. Inspect the armature for wear or damage due to contact with the field coil magnets.



2. A dirty or burnt commutator surface may be resurfaced with emery cloth or a lathe within the following specifications.

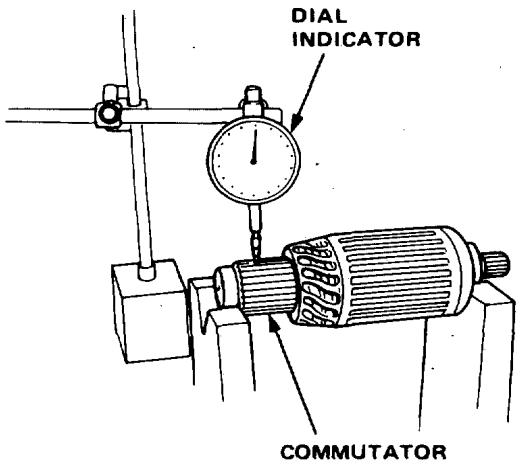
Commutator Diameter

	Standard (New)	Service Limit
ND (1.0kw and 1.2kw)	29.9—30.0 mm (1.177—1.181 in)	29.0 mm (1.14 in)
Mitsuba (1.0kw and 1.4kw)	28.0—28.1 mm (1.102—1.106 in)	27.5 mm (1.08 in)
ND (0.8 kw)	28.0 mm (1.102 in)	27.0 mm (1.06 in)
Hitachi (0.8 kw)	40 mm (1.57 in)	39.0 mm (1.54 in)



Commutator Runout

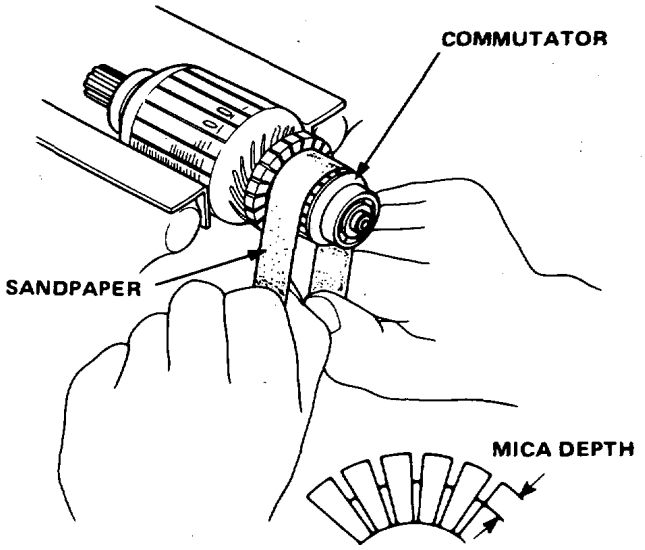
	Standard (New)	Service Limit
ND (1.0 kw and 1.2 kw) and Mitsuba (1.0 kw and 1.4 kw)	0—0.02 mm (0—0.001 in)	0.05 mm (0.002 in)
ND (0.8 kw)	0—0.05 mm (0—0.002 in)	0.4 mm (0.016 in)
Hitachi (0.8 kw)	0—0.1 mm (0—0.004 in)	0.4 mm (0.016 in)



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.

Downloaded from www.Manualslib.com manuals search engine

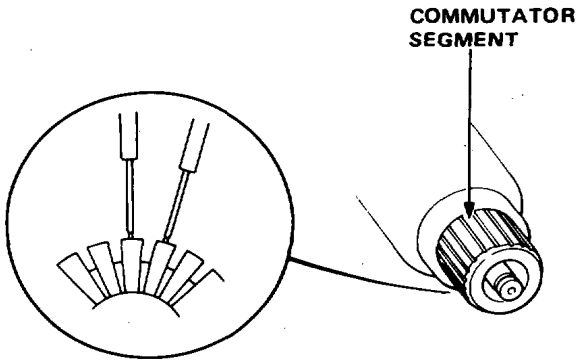
4. If surface is dirty, recondition it with a #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth.



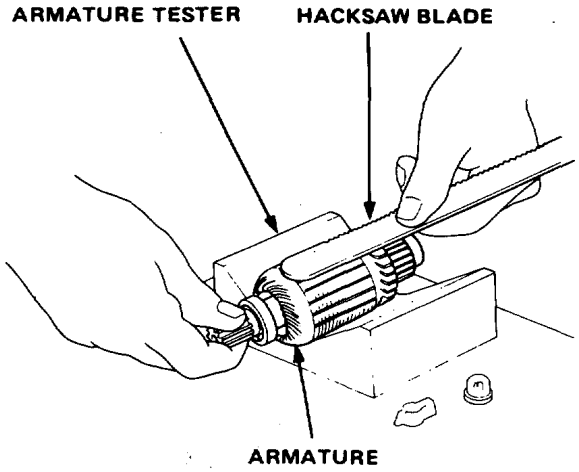
Commutator Mica Depth

	Standard (New)	Service Limit
ND (0.8 kw, 1.0 kw and 1.2 kw) and Hitachi (0.8 kw)	0.5—0.8 mm (0.020—0.031 in)	0.2mm (0.008 in)
Mitsuba (1.0 kw and 1.4 kw)	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.

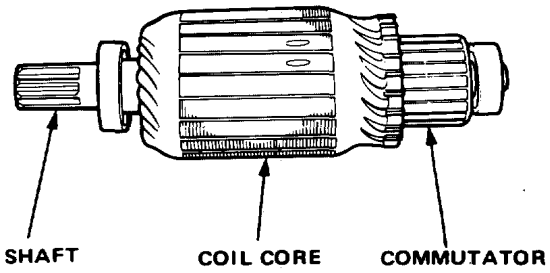


6. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.



If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

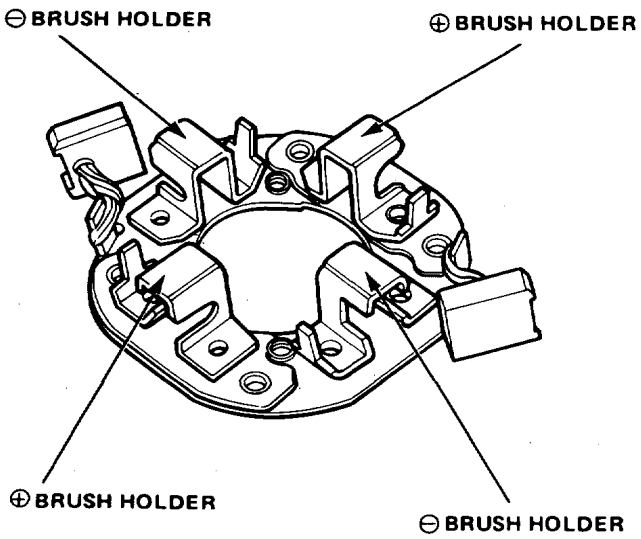
7. With an ohmmeter, check that no continuity exists between the commutator and armature coil core, and between the commutator and armature shaft. If continuity exists, replace the armature.



Downloaded from www.Manualslib.com manuals search engine

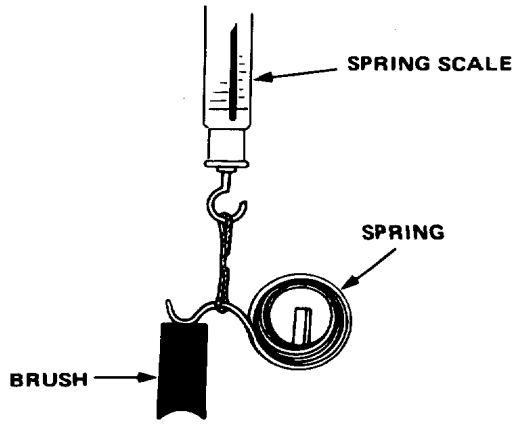
Starter Brush Holder Test

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 (1.0 kw and 1.2 kw): 18.5—24.4 N (1.85—2.44 kg, 4.1—5.41 lb)
Mitsuba (1.0 kw and 1.4 kw): 20.5—27.0 N (2.05—2.70 kg, 4.5—6.016 lb)
ND (0.8 kw) and Hitachi (0.8 kw): 16 N (1.6 kg, 3.52 lb)

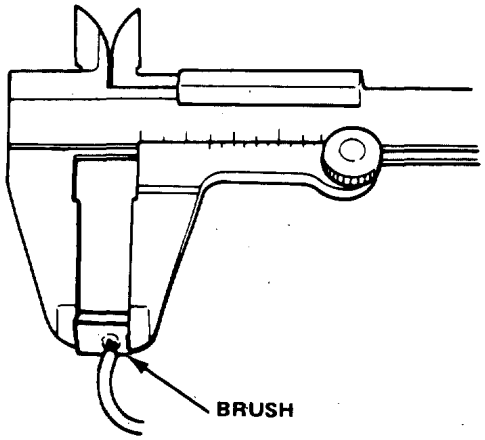


Starter Brush Inspection

Measure brush length. If not within service limit, replace the armature housing and brush holder assembly.

Brush Length

	Standard (New)	Service Limit
ND (1.0 kw and 1.2 kw)	12.5—13.5 mm (0.49—0.53 in)	8.5 mm (0.33 in)
Mitsuba (1.0 kw and 1.4 kw)	14.3—14.7 mm (0.56—0.58 in)	9.3mm (0.37in)
ND (0.8 kw)	15.5—16.5mm (0.61—0.65 in)	10.0 mm (0.39 in)
Hitachi (0.8 kw)	14.5—15.5 mm (0.57—0.61 in)	11.0 mm (0.43 in)

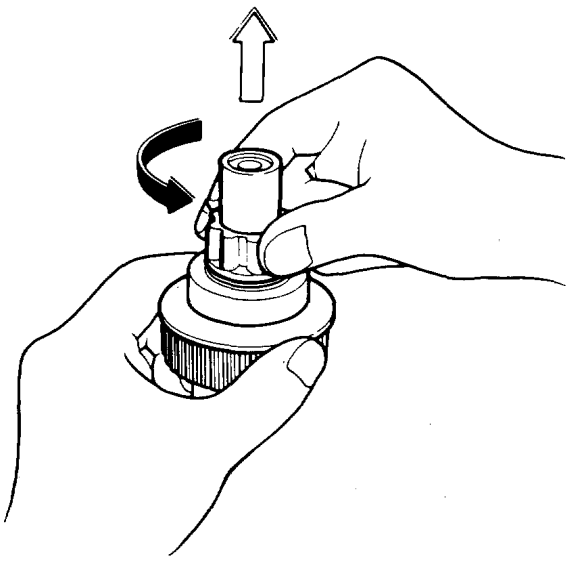


NOTE: To seat new brushes after installing them in their holders, slip a strip of #500 or #600 sandpaper, with the grit side up, over the commutator, and smoothly rotate the armature. The contact surface of the brushes will be sanded to same contour as the commutator.

Downloaded from www.Manualslib.com manuals search engine

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 its locks in both directions, replace the overrunning clutch assembly.

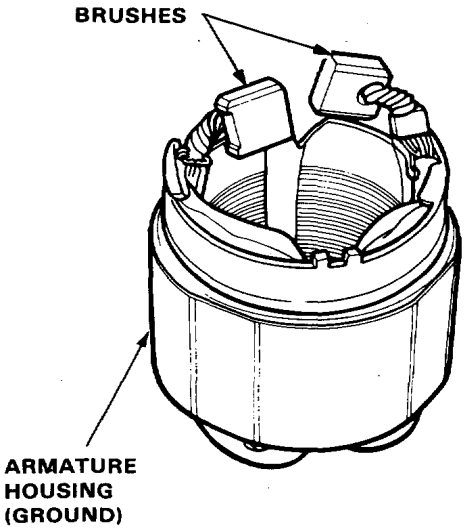


3. Check if the starter drive gear is worn or damaged. If the gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

   NOTE: Check condition of the flywheel or torque converter ring gear if the starter drive gear teeth are damaged.

Starter Field Winding Test

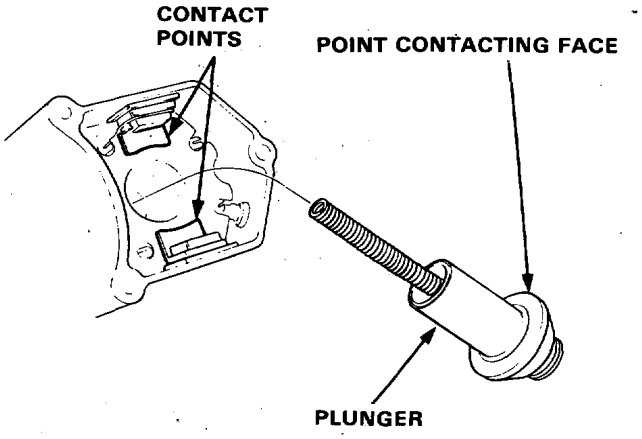
1. Check for continuity between the brushes. If no continuity, replace the armature housing.
2. Check for continuity between each brush and the armature housing (ground) .
   If continuity exists, replace the armature housing.



Downloaded from www.Manualslib.com manuals search engine

Solenoid Plunger Inspection (1.0kw and 1.2kw, 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.

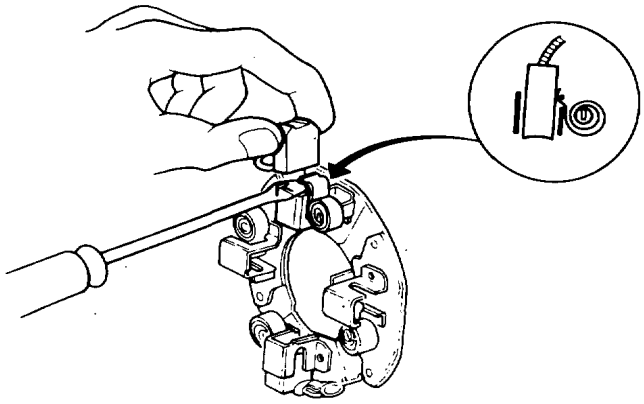


Starter Reassembly

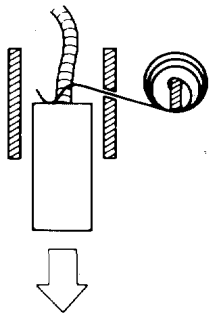
Reassembly the starter in the reverse order of disassembly.

Nippon Denso (1.0kw and 1.2kw) and Mitsuba (1.0kw and 1.4kw) type.

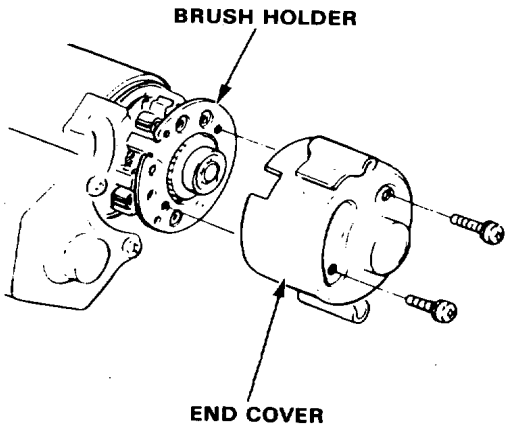
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



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.



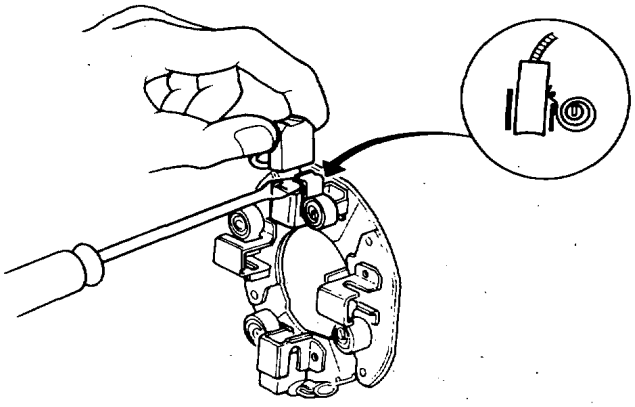
3. Install the end cover on the brush holder.



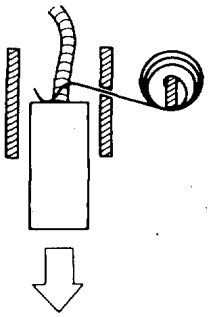
Downloaded from www.Manualslib.com manuals search engine

Nippon Denso (0.8 kw) and Hitachi (0.8 kw) type:

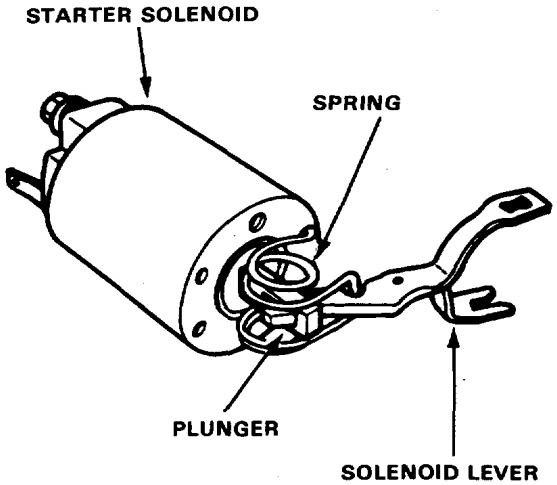
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



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.

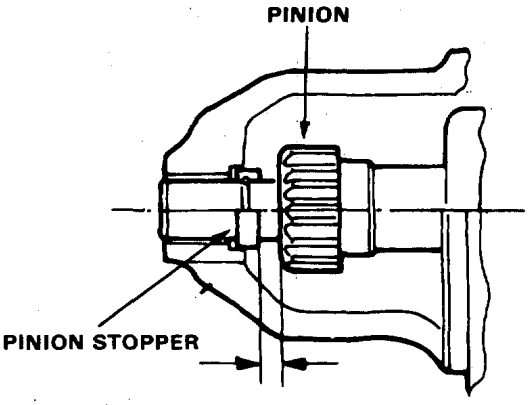


3. For Hitachi (0.8 kw), install the spring as shown.



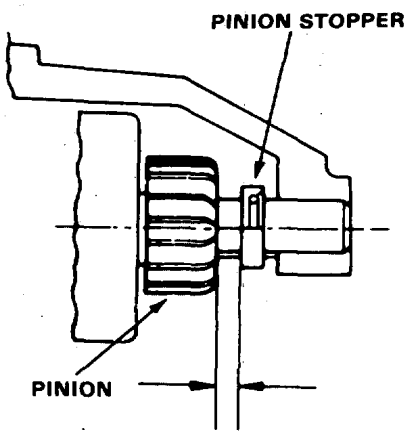
4. After assembling measure the clearance between the pinion stopper and the pinion with the clutch pushed out by the starter solenoid.

Nippon Denso (0.8 kw):



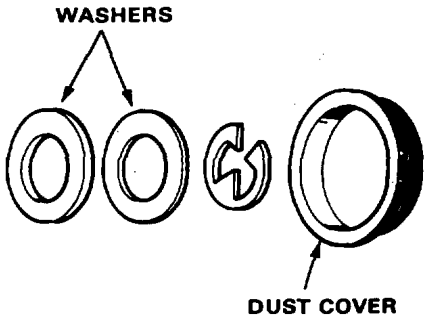
Specified Clearance: 0.1—4.0 mm (0.004—0.157 in.)

Hitachi (0.8 kw):



Specified Clearance: 0.3—2.5 *rm* (0.012—0.098 in.)

If out of the specifications, adjust by changing the number of washers used.



Downloaded from www.Manualslib.com manuals search engine

Ignition System

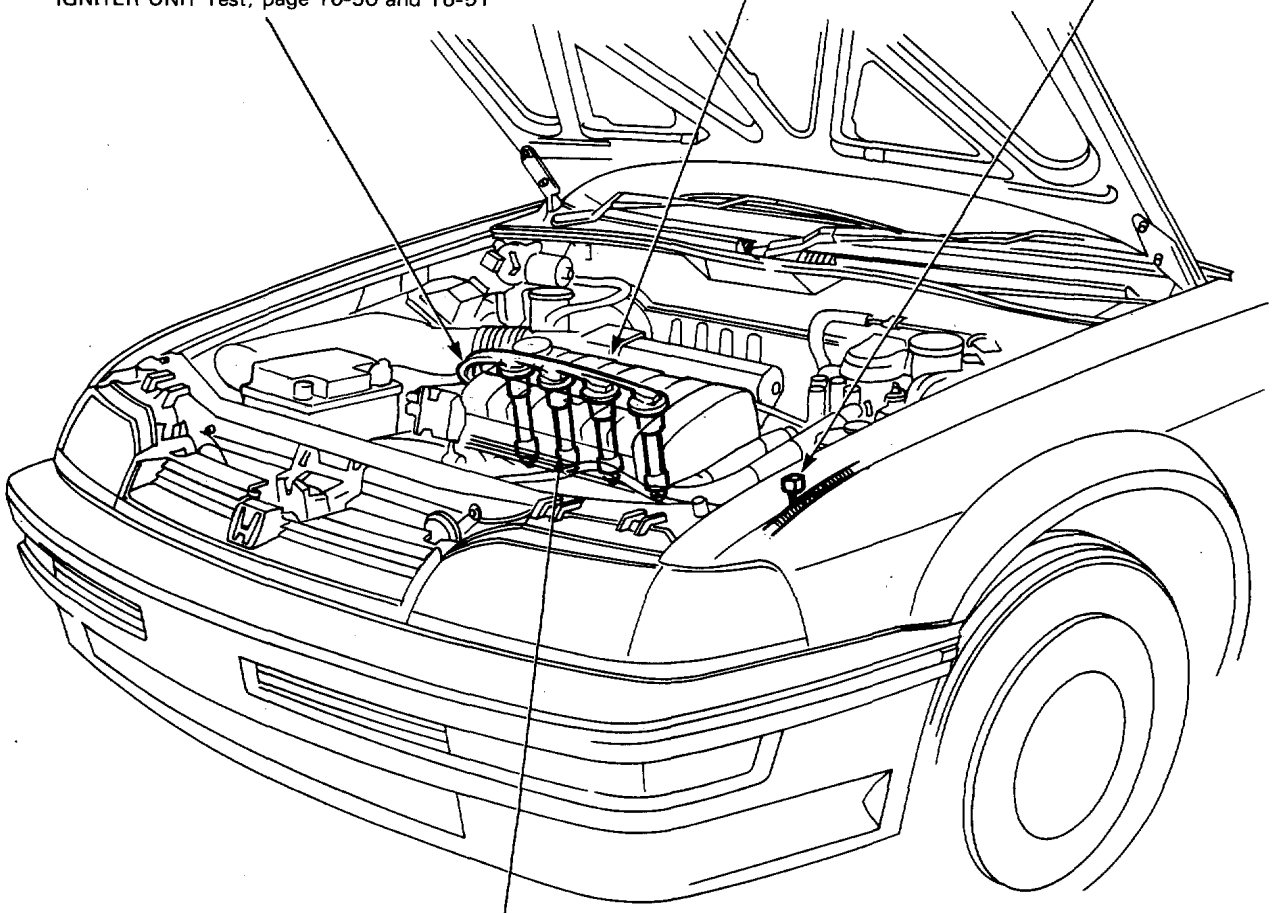
Component Location Index

IGNITION TIMING CONTROL SYSTEM
Troubleshooting, section 6
Inspection and Setting, page 16-47 thru 49

DISTRIBUTOR
Advance Diaphragm Inspection, page 16-52
Top End Inspection, page 16-52
Reluctor and Stator Air Gap Inspection, page 16-53
Reluctor Replacement, page 16-53
Removal/Installation, page 16-54 and 55
Overhaul, page 16-56 and 57
Reassembly, page 16-58
Ignition Coil Test/Replacement, page 16-59 thru 61
IGNITER UNIT Test, page 16-50 and 16-51

IGNITION WIRES
Inspection and Test, page 16-63

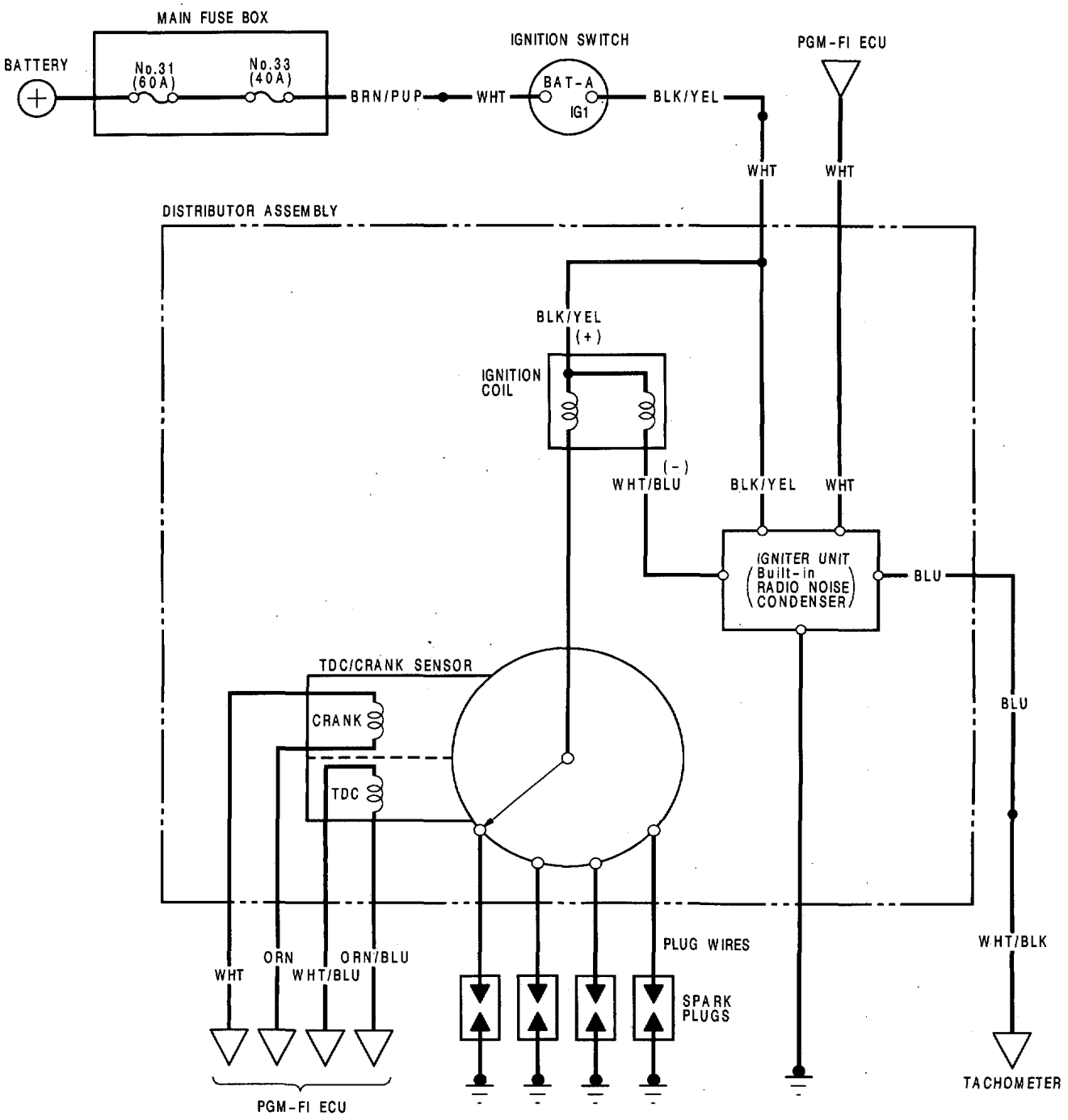
IGNITION TIMING ADJUSTING CONNECTOR
(Fuel-injected engine)



SPARK PLUG
Inspection, page 16-62

Downloaded from www.Manualslib.com manuals search engine

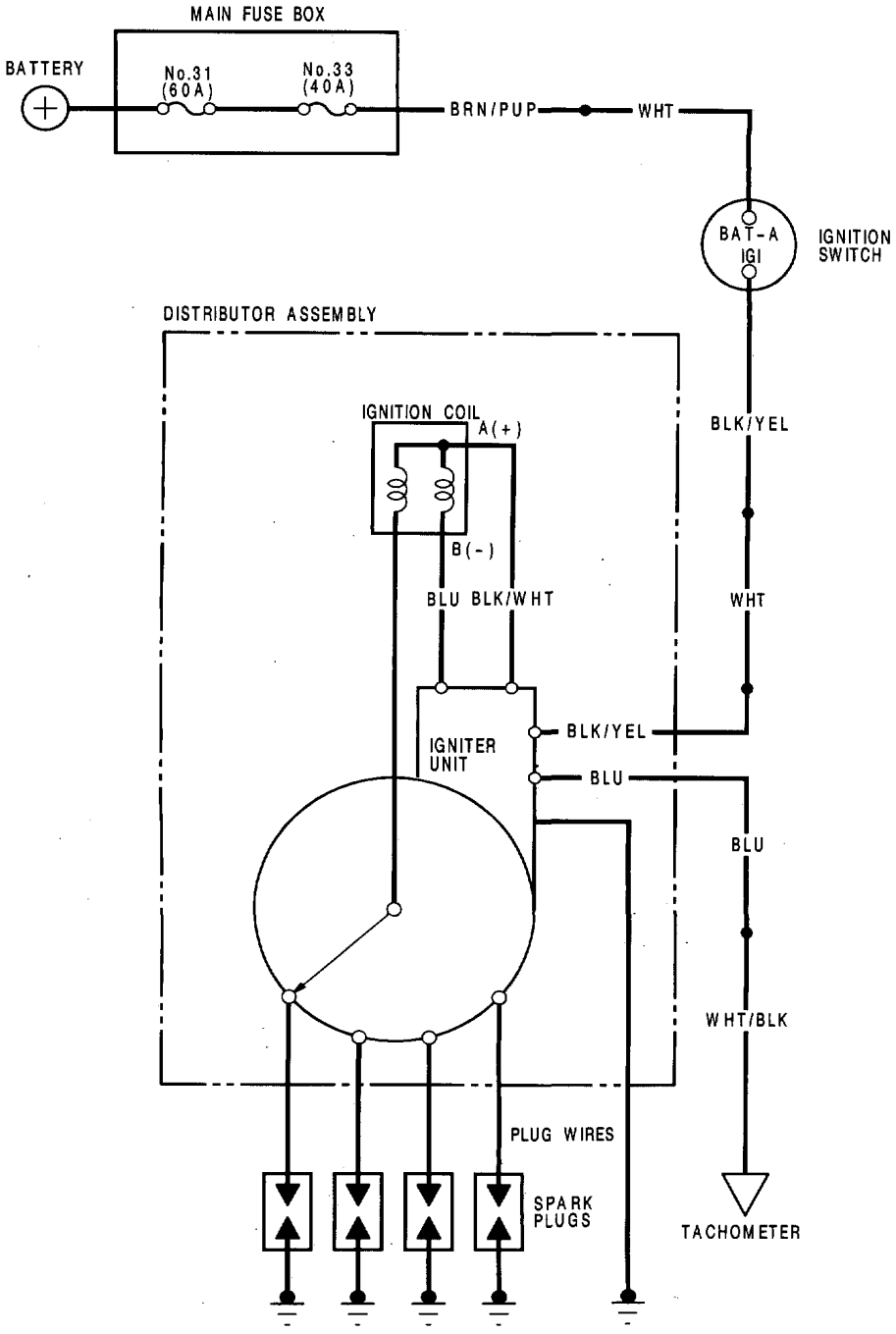
Circuit Diagram (Fuel-Injected Engine)



Downloaded from www.Manualslib.com manuals search engine

Ignition System

Circuit Diagram (Carbureted Engine)

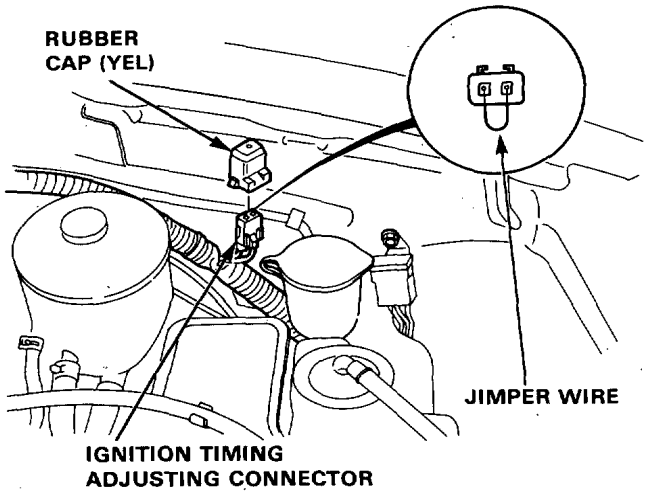


Downloaded from www.Manualslib.com manuals search engine

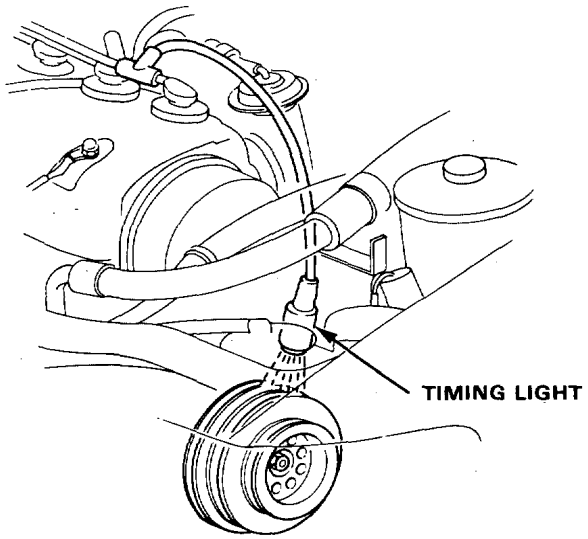
Ignition Timing Inspection and Setting (Fuel-Injected Engine)

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 front engine compartment and connect the BRN and GRN/WHT terminals with a jumper wire.



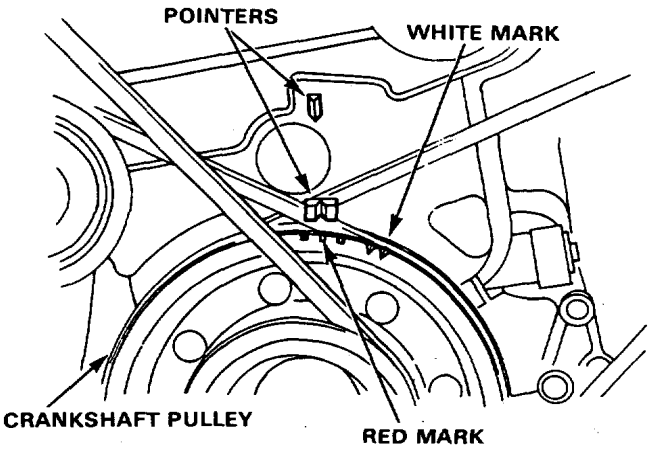
3. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



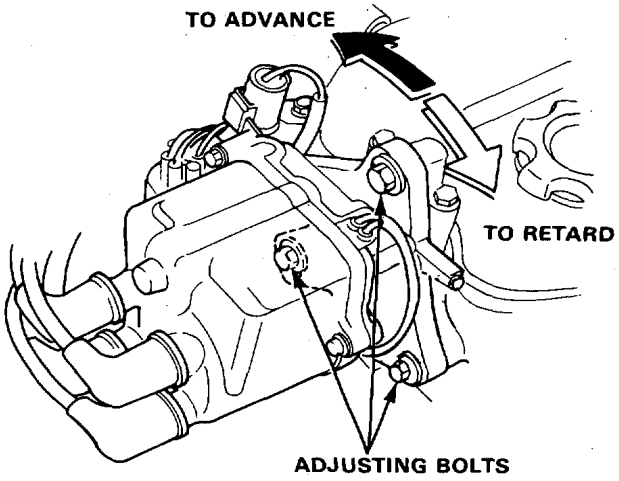
4. Adjust ignition timing, if necessary, to the following specifications.

Ignition Timing

1.5 ℓ SOHC (MT, AT)
18°±2°BTDC (RED) at 800±50 min^{-1} (rpm) in neutral
1.6 ℓ SOHC (MT, AT)
18°±2°BTDC (RED) at 780±50 min^{-1} (rpm) in neutral
1.6 ℓ DOHC (MT):
16°±2°BTDC (RED) at 800±50 min^{-1} (rpm) in neutral
1.6 ℓ DOHC (AT):
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.

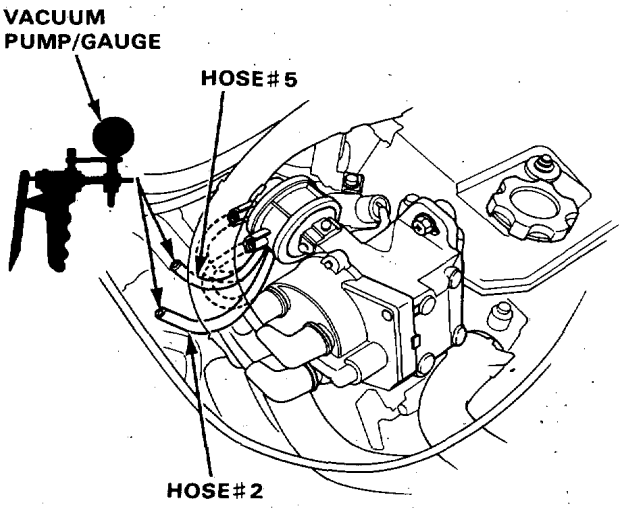
7. Remove the jumper wire and install the rubber cap to the ighition timing adjusting connector.

Downloaded from www.Manualslib.com manuals search engine

Ignition System

Ignition Timing Inspection and Setting (2-Carbureted Engine)

1. Disconnect the vacuum hoses from the vacuum advance diaphragm, then connect the vacuum pump/gauges to the vacuum hoses.



2. Start the engine and let it idle.

3. When the engine is cool.
Coolant temperature is below [45°C (113°F)]
Check each hose for vacuum. The #2 and #5 hoses should have vacuum.

   - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
   - If the #5 hose has no vacuum, check the #5 hose for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged. If the #5 hose, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

4. Connect the vacuum hoses to the vacuum advance diaphragm and allow the engine to warm up. (cooling fan comes on).

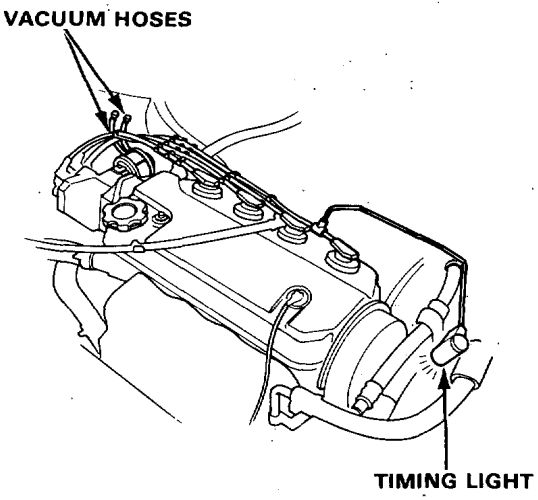
5. Disconnect the #5 hose from the vacuum advance diaphragm and connect the vacuum pump/gauge to the #5 hose.

6. Check the #5 hose for vacuum.
The #5 hose should have no vacuum.

   - If the #5 hose has vacuum, replace the thermovalve and recheck the #5 hose for vacuum.

7. Disconnect the vacuum hoses from the vacuum advance diaphragm and plug them.

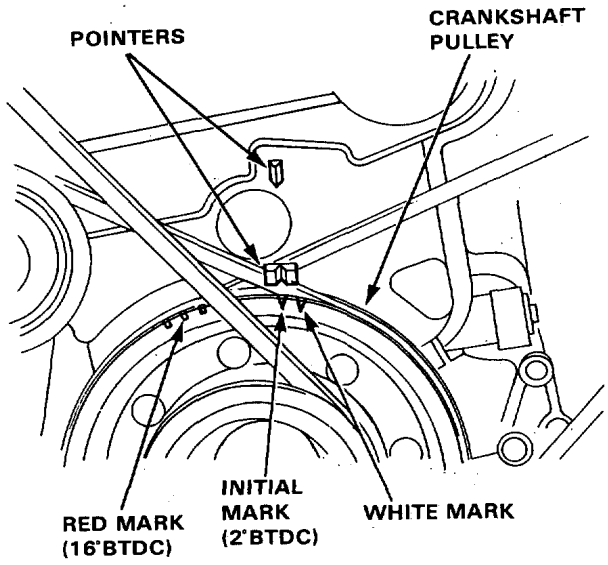
8. Connect a timing light.



9. While the engine idles, point the light toward the pointer on the timing belt cover.

Downloaded from www.Manualslib.com manuals search engine

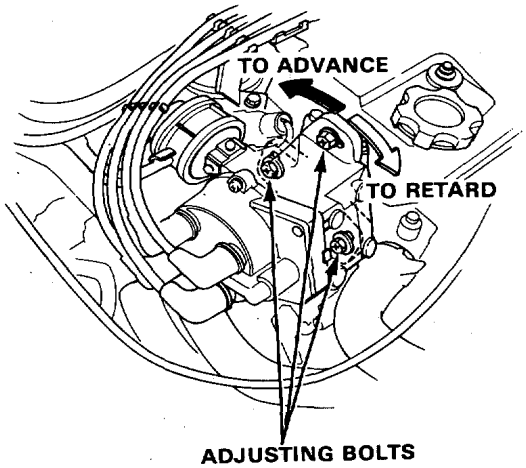
10. Align the timing initial mark on the crankshaft pulley to the pointer.



11. Timing when initial timing mark is aligned to the pointer.

Initial Timing
2° BTDC
- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

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



13. Tighten the distributor adjusting bolts, then recheck the timing.

14. Connect the vacuum hose to the vacuum advance diaphragm and inspect ignition timing at idle.

Ignition Timing
1.6ℓ : 16° ± 2° BTDC (Red)
1.4ℓ : 18° ± 2° BTDC (Red)

- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

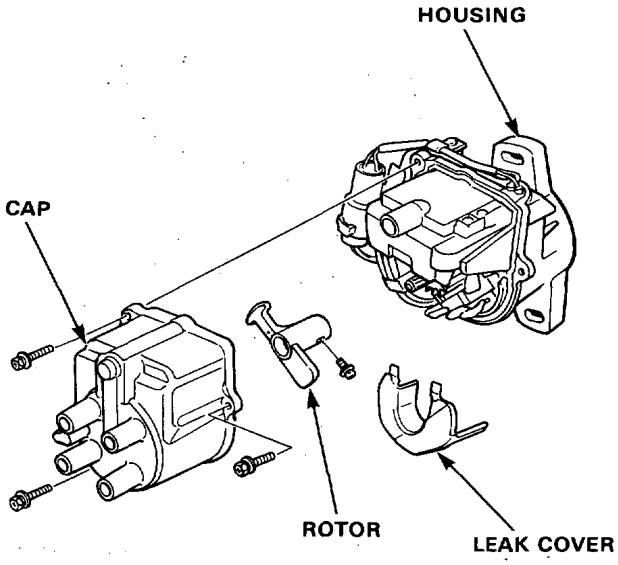
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

Downloaded from www.Manualslib.com manuals search engine

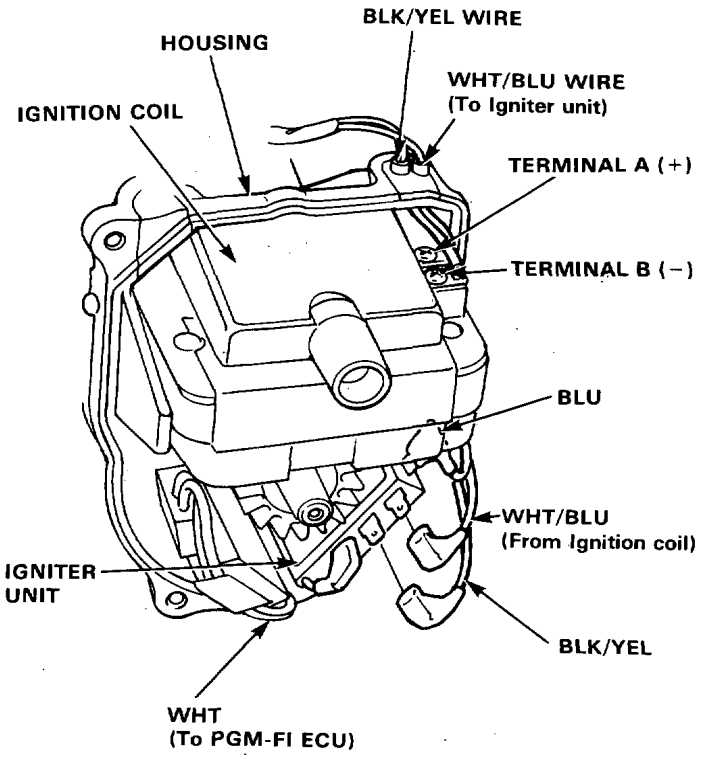
Igniter Unit Input Test (Fuel-injected engine)

NOTE: If the check engine warning light comes on, see section 6.

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.



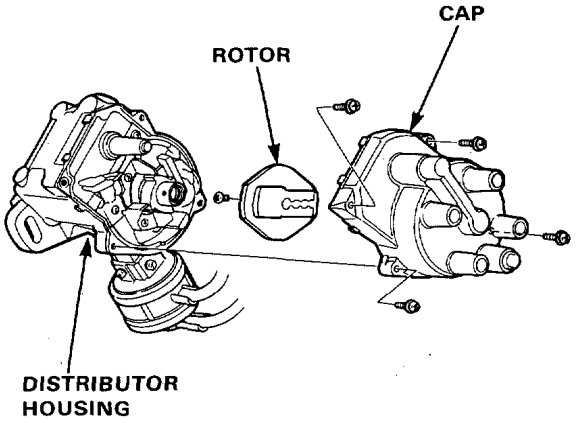
5. Disconnect the WHT/BLU wire from the Igniter unit. There should be battery voltage between the WHT/BLU (+) wire and body ground.
   - If there is battery voltage, go to step 6.
   - If there is no voltage, check for;
     — Ignition coil test.
     — An open in the WHT/BLU wire between the ignition 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.

Downloaded from www.Manualslib.com manuals search engine

Igniter Unit Input Test (Carbureted Engine)

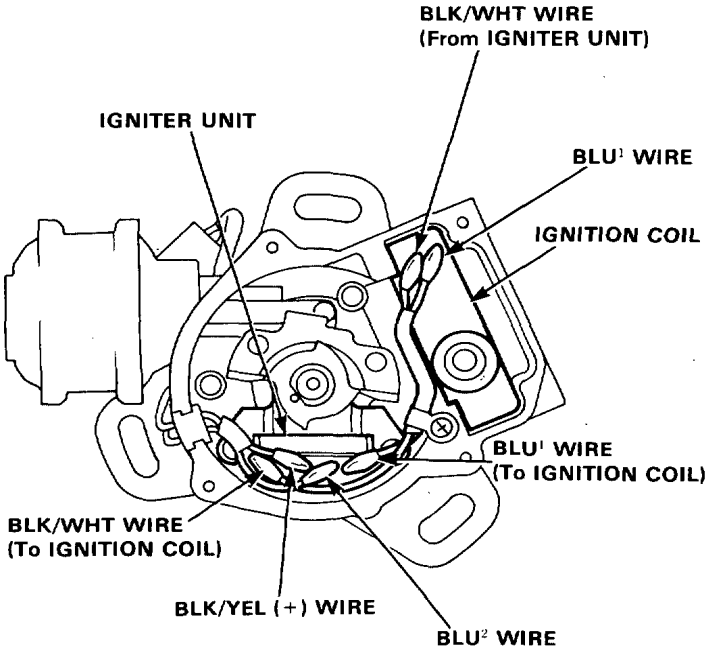
NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU[1] and BLU[2] are not the same).

1. Remove the cap and rotor from the distributor. (Ensuehe caps contact point ~ see next page * isclear of distributor body befor lipting out cap).



2. With the ignition switch ON. Check the battery voltage between the BLK/YEL (+) wire and body ground.

   - If there is battery voltage, go to step 3.
   - If there is no voltage, check for an open in WHT or BLK/YEL wire.



3. With the ignition switch OFF. Check for continuity between the BLK/WHT wire and BLU[1] wire on the igniter unit.

   - If there is continuity, go to step 4.
   - If there is no continuity, check for:
     - An open in the BLK/WHT wire or BLU[1] wire between the igniter unit and ignition coil.
     - Ignition coil test (see page 16-55)

4. Check for continuity between the igniter unit and distributor housing.

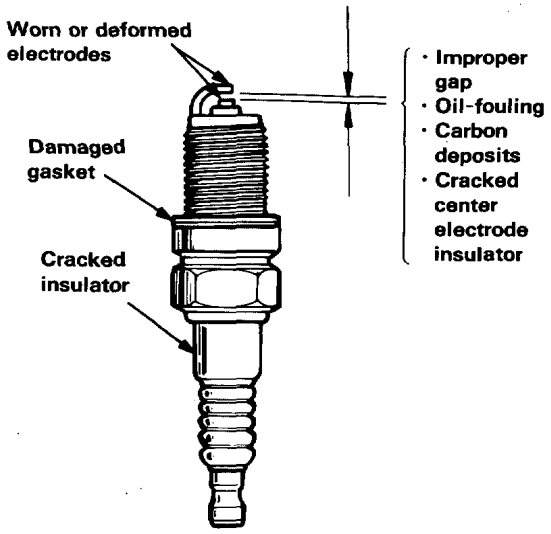
5. If all tests OK, yet the system still fails to work, replace the igniter unit assembly.

Downloaded from www.Manualslib.com manuals search engine

Ignition System

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

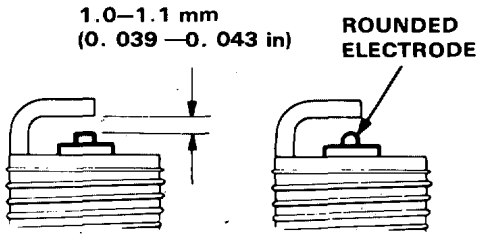
Fouled plug may be caused by :
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

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

Spark Plug :

Standard
BCPR6E-11 (NGK)
Q20PR-V11 (ND)

Optional
BCPR7E-11 (NGK)
Q22PR-U11 (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) .

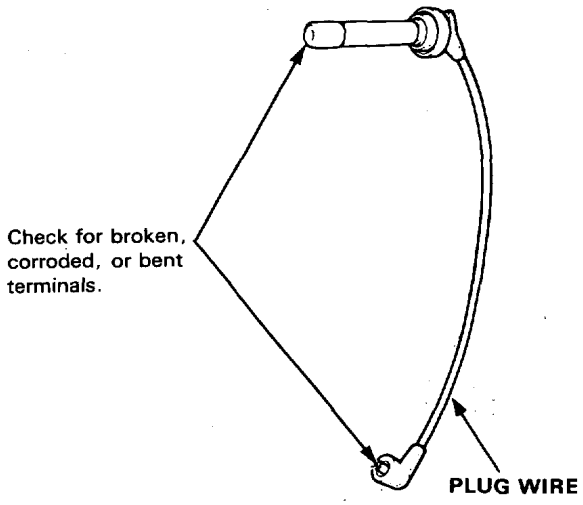
NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Downloaded from www.Manualslib.com manuals search engine

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.

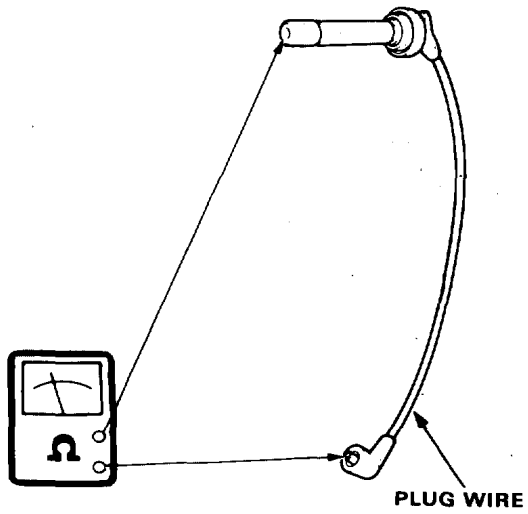
1. Check the condition of the wire terminals. If any terminal is corroded, clean it, and if it is broken or distorted, replace the wire.



2. Connect ohmmeter probes and measure resistance.

   Ignition Wire Resistance :
   25, 000 ohms max. at 20°C (70°F)

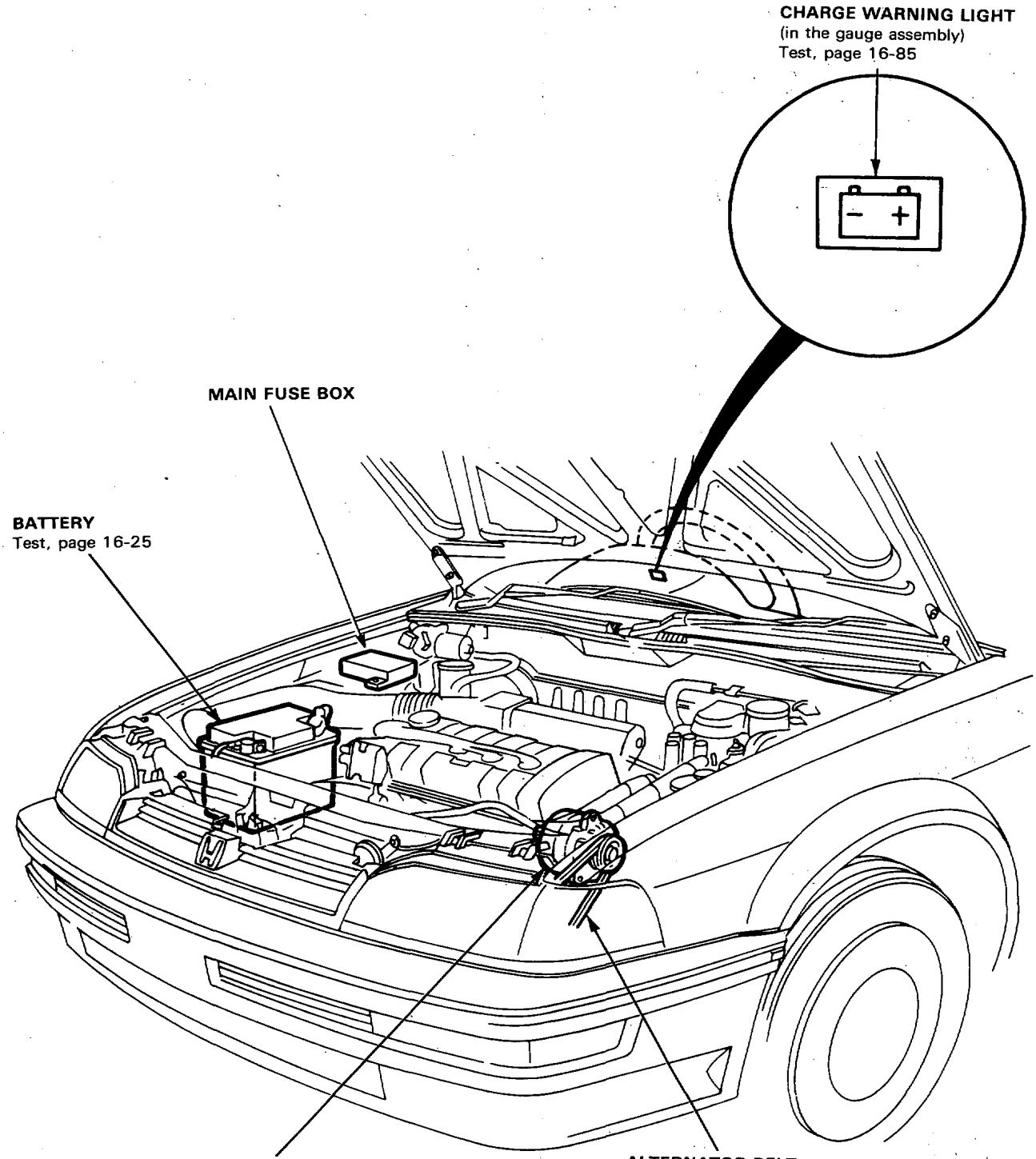
3. If resistance exceeds 25,000 ohms, replace the ignition wire.



Downloaded from www.Manualslib.com manuals search engine

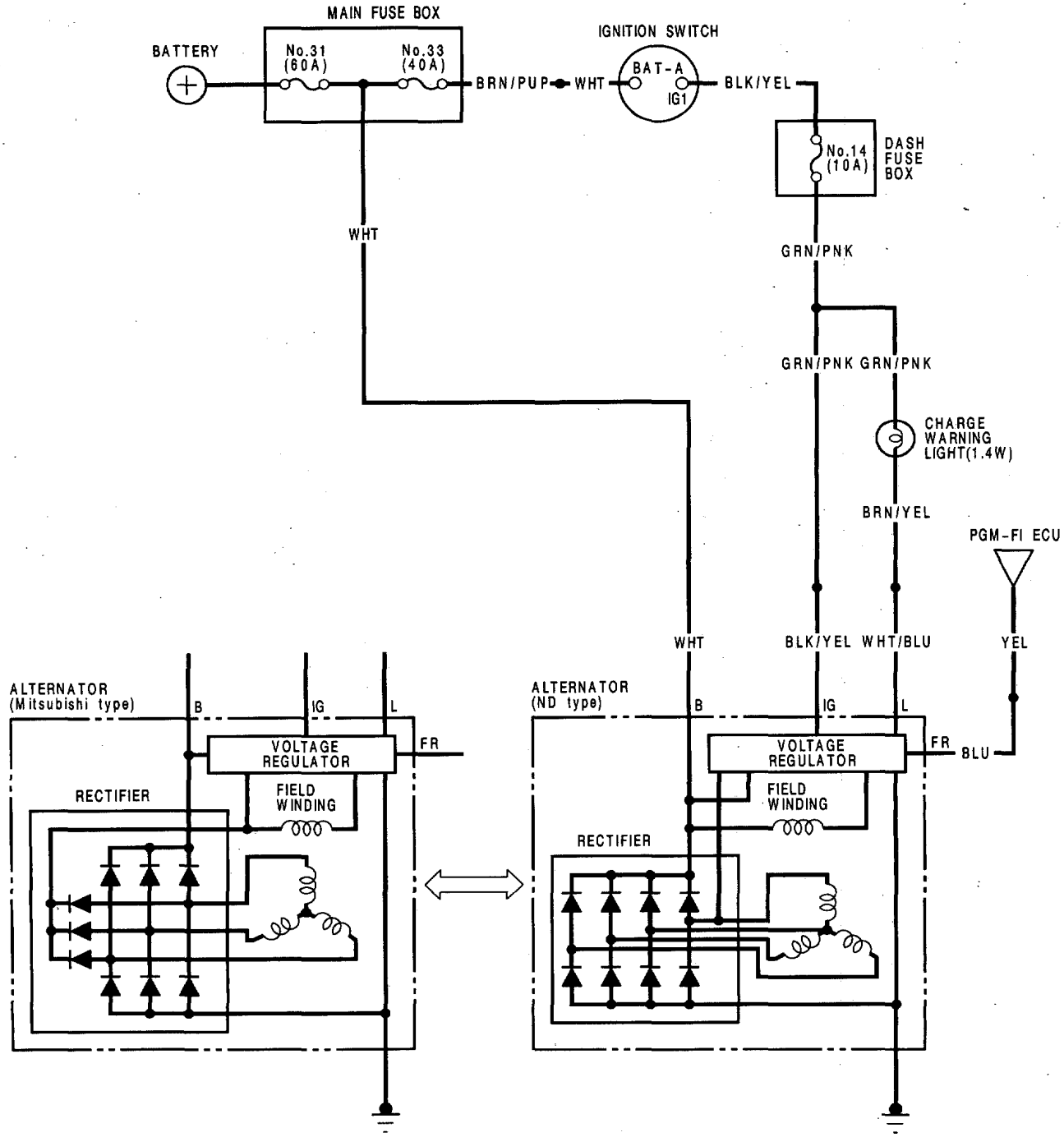
Charging System

Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



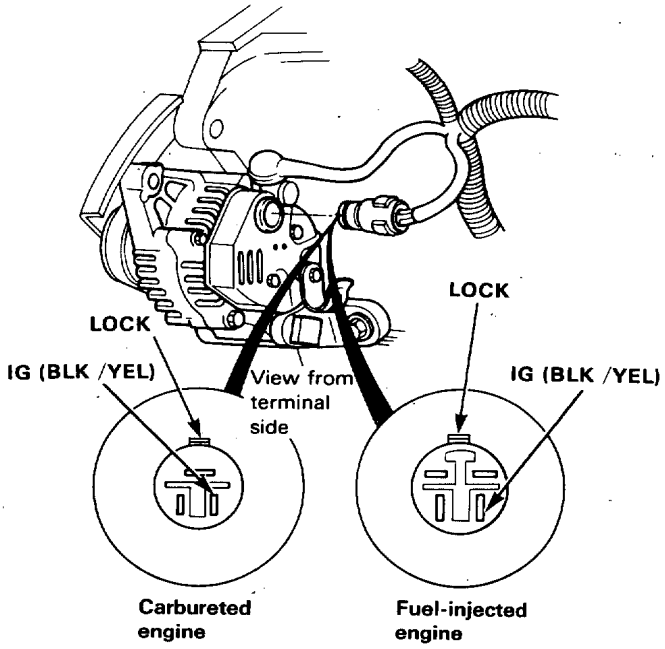
Downloaded from www.Manualslib.com manuals search engine

Charging System

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.)

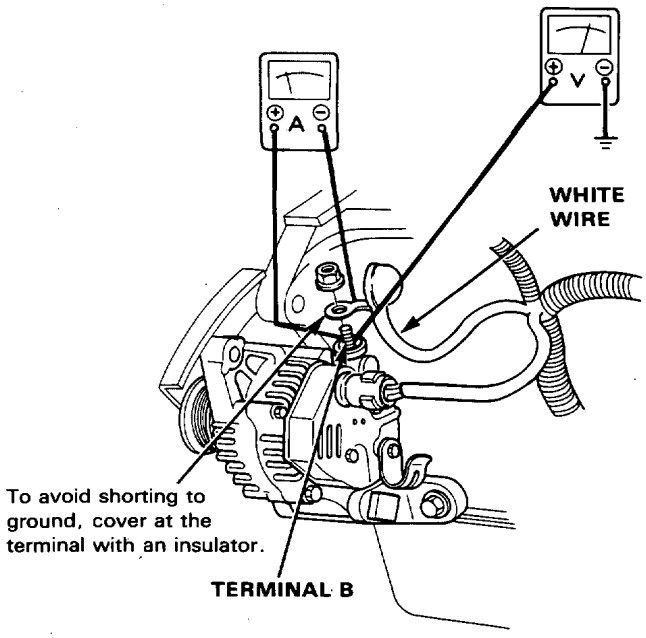
2. Disconnect the alternator connector from the alternator.
   With the ignition switch on, there should be battery voltage between the IG (BLK /YEL) terminal and body ground.



- 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.)

   NOTE: Disconnect the negative terminal of battery and disconnect the WHT wire of B terminal, and connect the ammeter as shown.



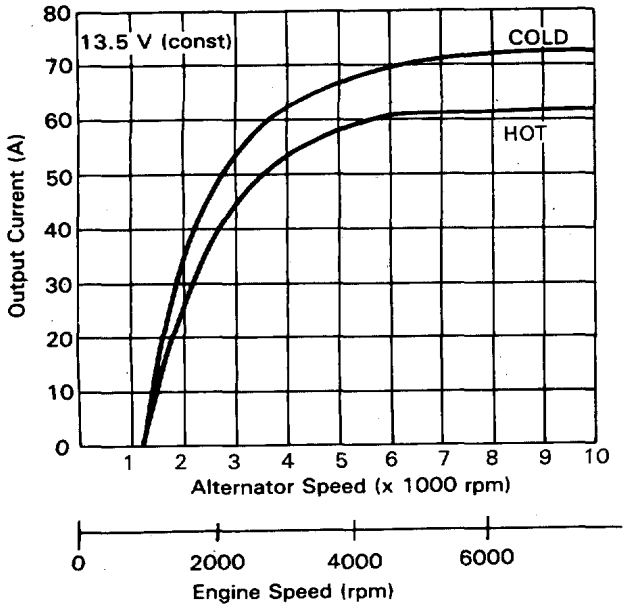
4. Start the engine, and turn on the headlights, blower motor, rear window defogger, etc.

   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.

Downloaded from www.Manualslib.com manuals search engine

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.



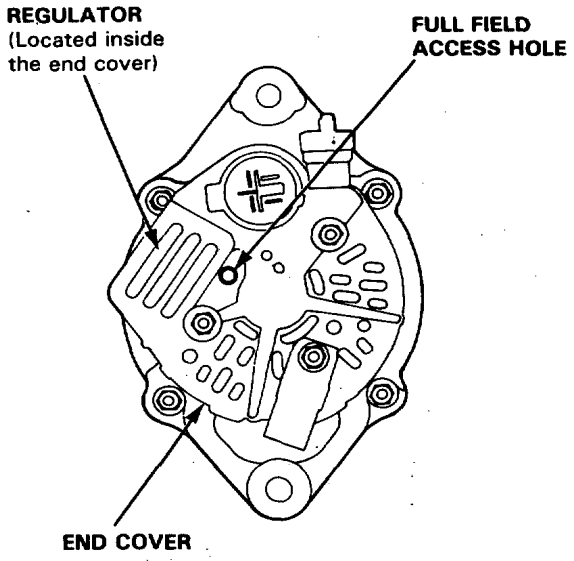
6. Turn off all loads in step 4, then measure the alternator output voltage at 1;500 rpm.

- 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. (see page 16-68)

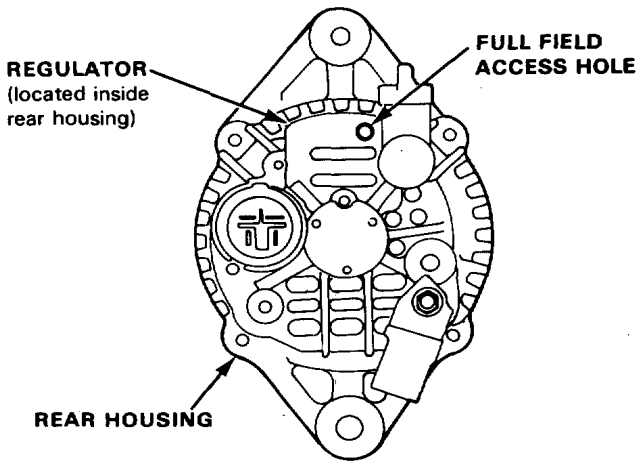
7. Perform a full-field test: Insert a short screwdriver into the full field access hole at the back of the alternator. While grounding the screwdrive and check amperage reading.

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.

Nippon Denso type:



Mitsubishi type:



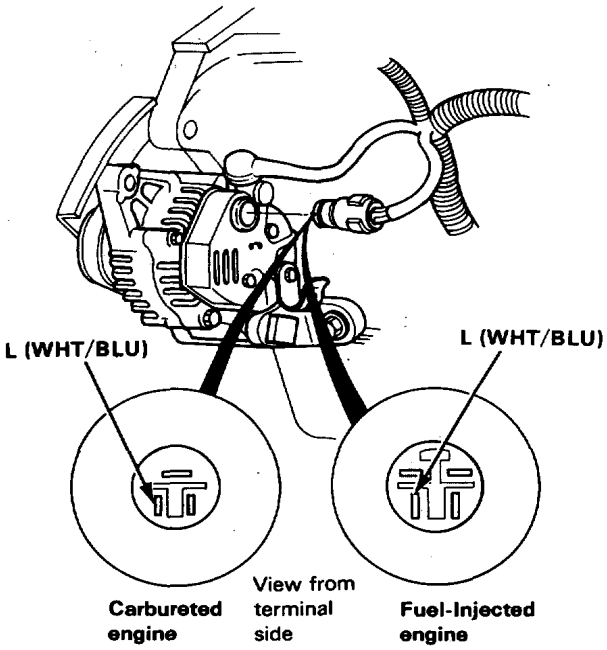
- If the amperage is not within specification, replace the alternator.
- If the amperage is within specification, replace the voltage regulator.

Downloaded from www.Manualslib.com manuals search engine

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 16-66).

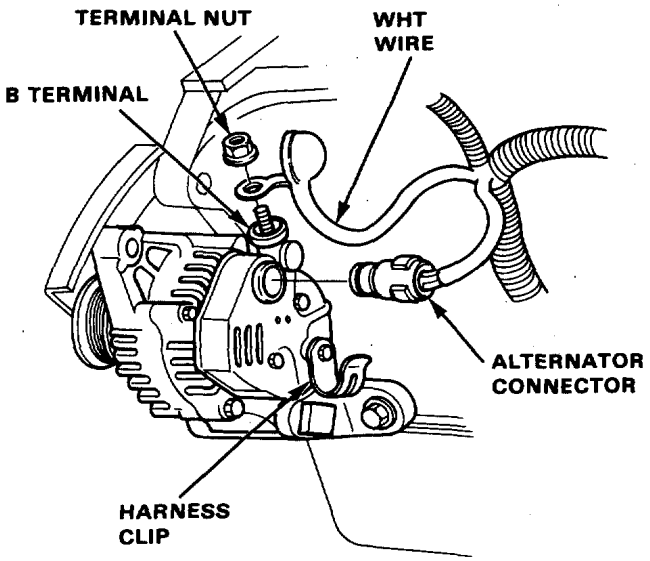
2. Start the engine and let it idle. The charge warning light should go off.
   If it stays on this time, check the alternator and regulator (see page 16-66).

Downloaded from www.Manualslib.com manuals search engine

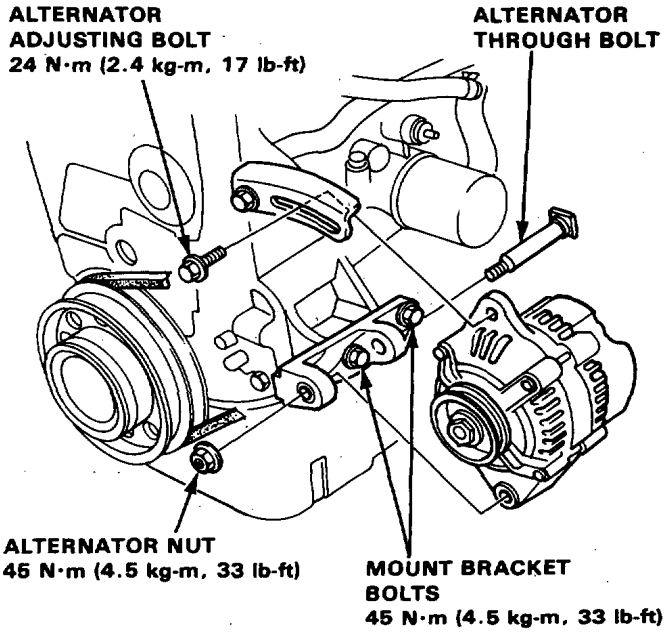
Alternator Replacement

NOTE: After installation, make sure that the wires are clamped.

1. Disconnect the ground wire from the battery negative (−) post.
2. Remove the washer fluid Reservoir.
3. Disconnect the alternator connector from the alternator.
4. Remove the terminal nut and the WHT wire from the B terminal.



5. Remove the adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.
6. Remove the alternator throught bolt, then remove the alternator.



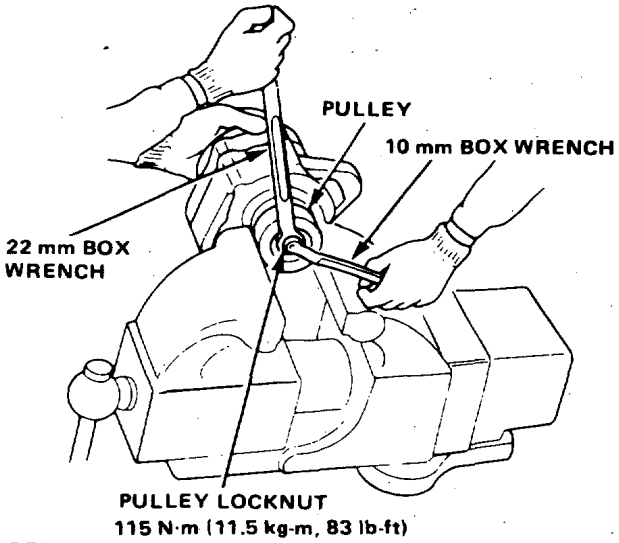
7. If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.
8. adjust the alternator belt tension after installation (see page 16-76).

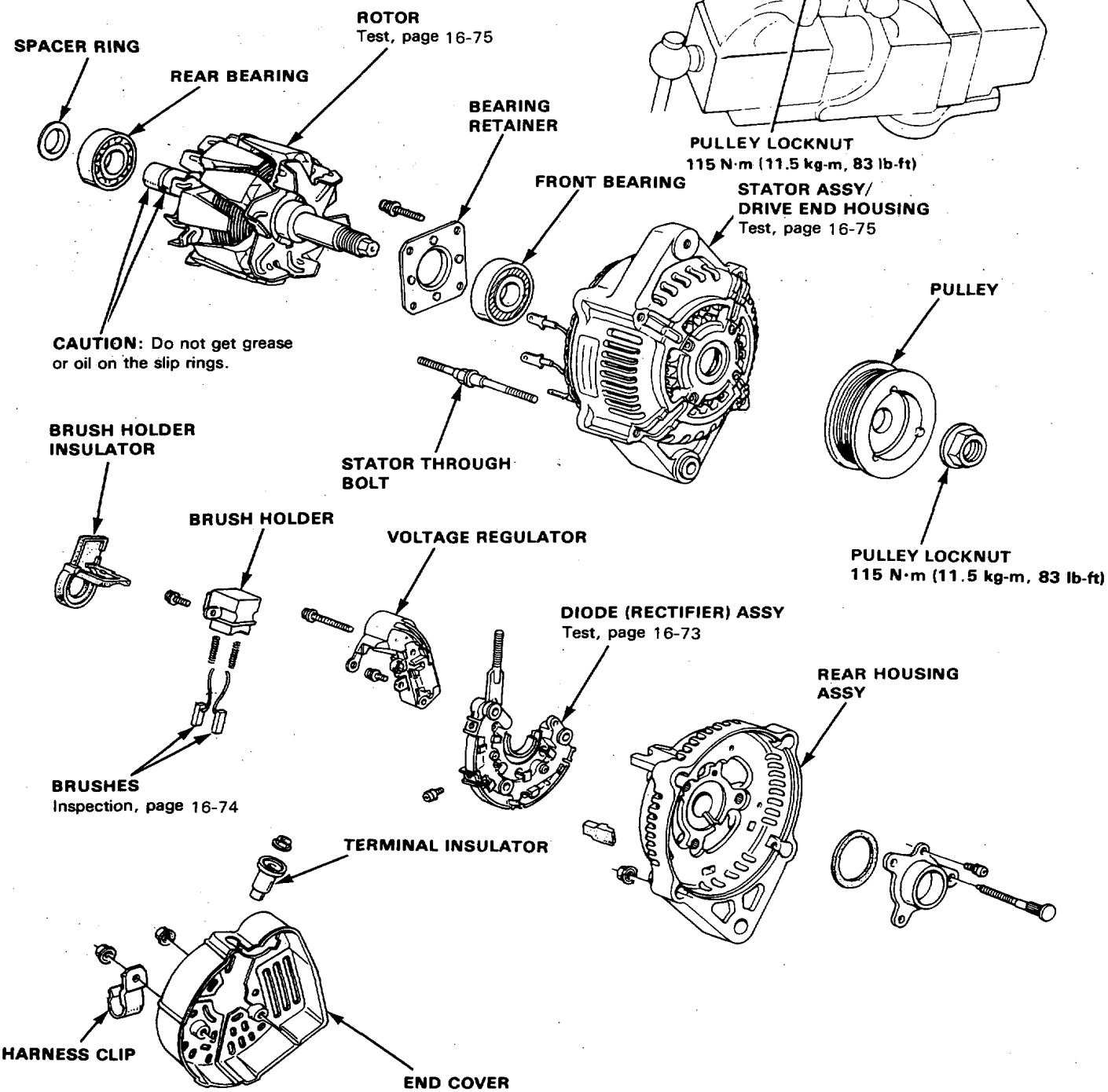
Downloaded from www.Manualslib.com manuals search engine

Alternator Overhaul (ND type)

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.



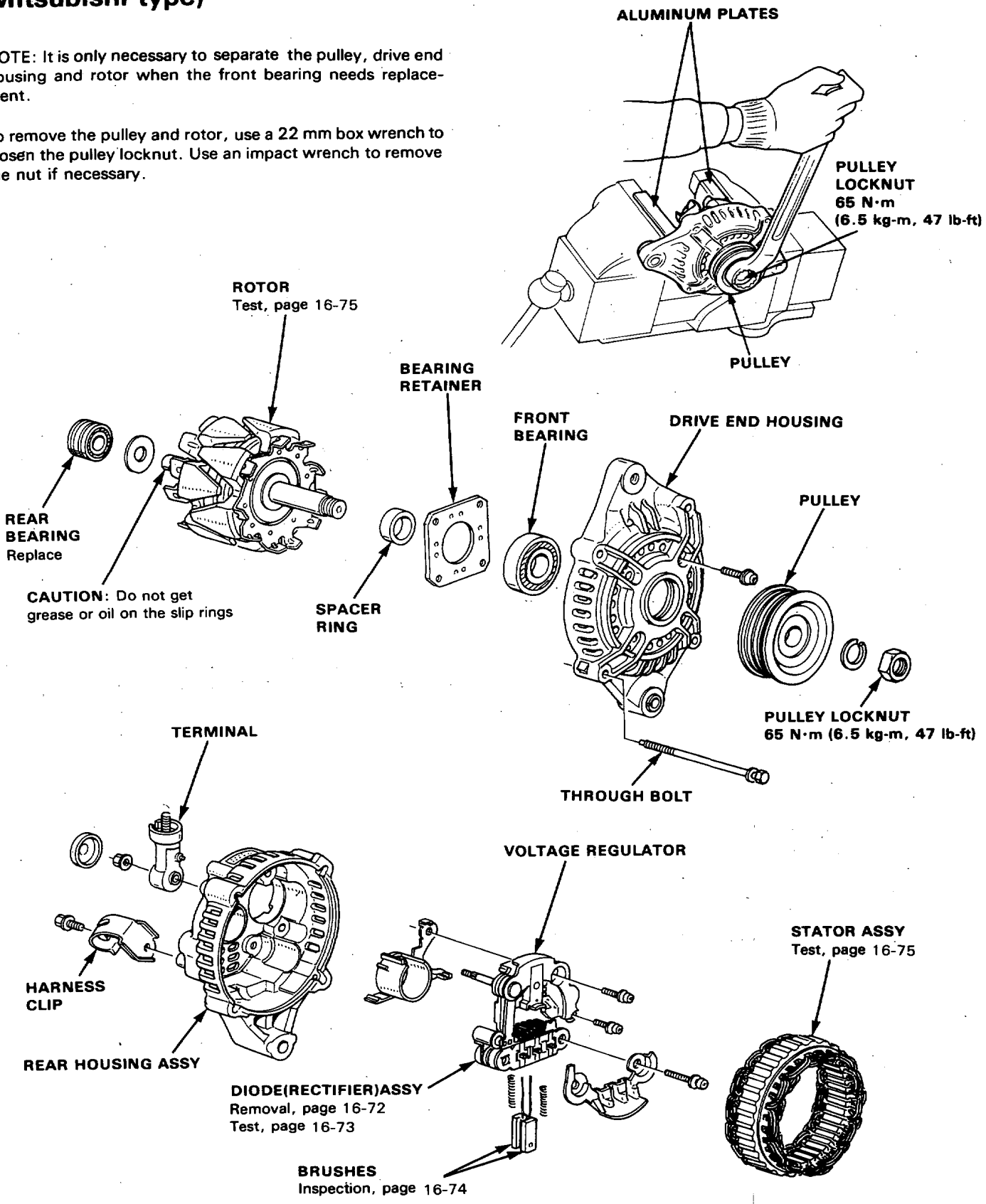


Downloaded from www.Manualslib.com manuals search engine

(Mitsubishi type)

NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

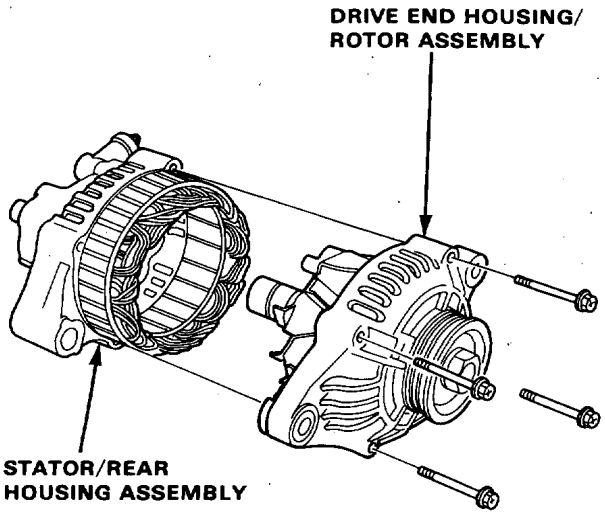
To remove the pulley and rotor, use a 22 mm box wrench to loosen the pulley locknut. Use an impact wrench to remove the nut if necessary.



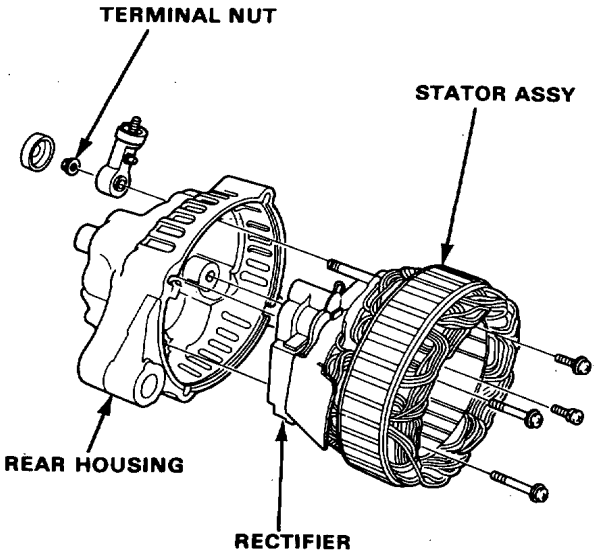
Downloaded from www.Manualslib.com manuals search engine

Rectifier Removal (Mitsubishi type)

1. Separate the drive end housing/rotor assembly from the stator/rear housing assembly by removing 4 bolts.

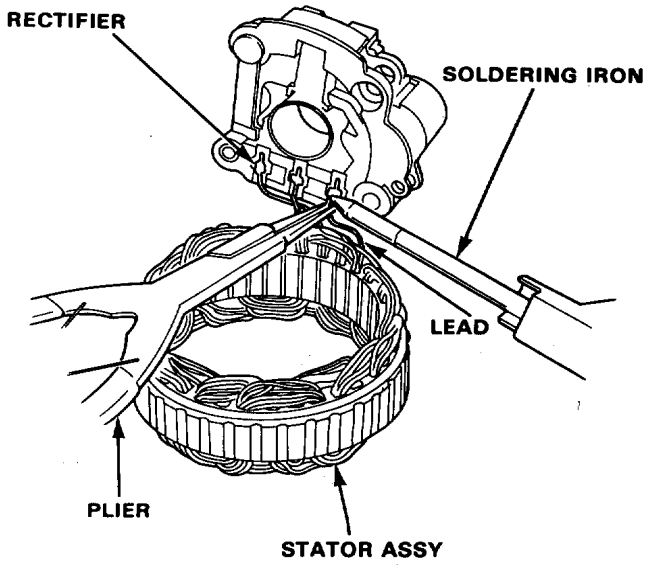


2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut from the rear housing.



3. Unsolder the rectifier from the stator leads.

NOTE: Pinch the stator lead with pliers to take away heat.



CAUTION: When installing the rectifier, use only a rosin core type solder or solder joints will corrode.

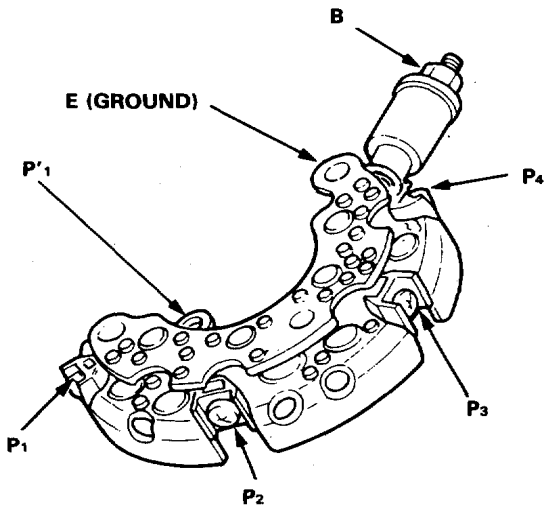
Downloaded from www.Manualslib.com manuals search engine

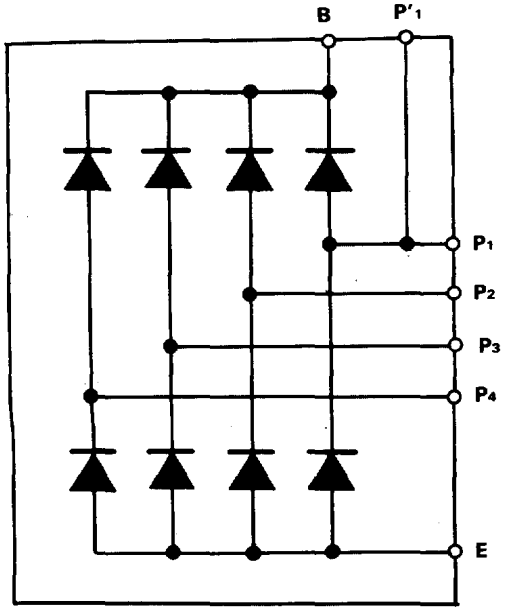
Rectifier Test

Nippon Denso type:

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.



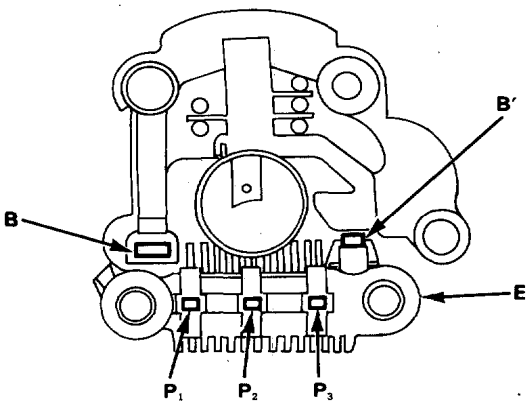


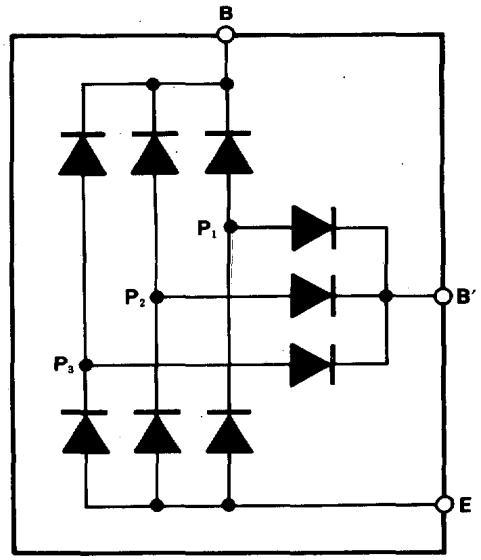
2. If any of the 8 diodes fails, replace the rectifier assembly (diodes are not available separately).

Mitsubishi type:

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 nine diodes, each diode must be tested for continuity in both directions: a total of 18 checks.

1. Check for continuity in each direction, between the B and P (of each diode pair)terminals, and E (ground) and P(of each diode pair) terminals, and B' and P (of each diode pair) terminals, All diodes should have continuity in only one direction.





2. If any of the 9 diodes fails, replace the rectifier assembly (diodes are not available separately).

Downloaded from www.Manualslib.com manuals search engine

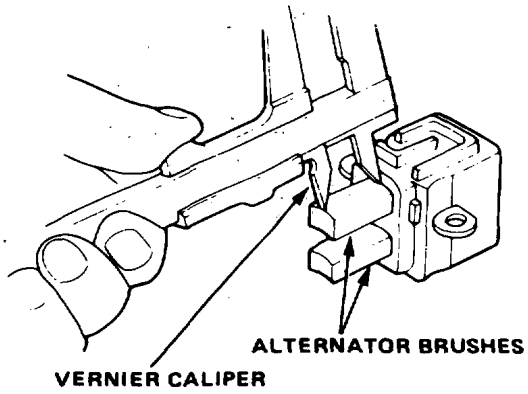
Alternator Brush Inspection

CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

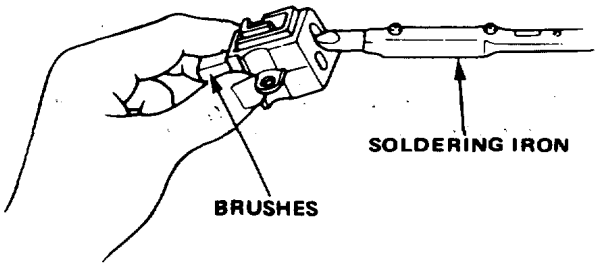
Nippon Denso type:

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)



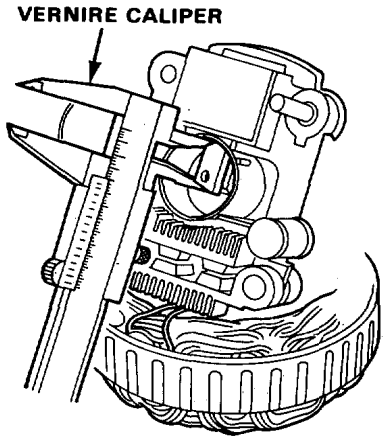
If the brushes are not within the service limit, replace them.



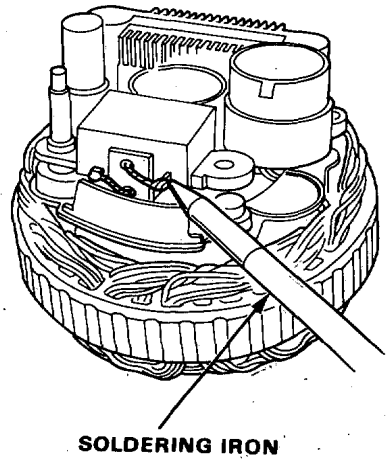
Mitsubishi type:

1. Separate the drive end housing /rotor assembly from the stator/rear housing assembly by removing 4 screws (see page 16-72).
2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut fom the rear housing (see page 16-72).
3. Measure length of the brushes with a vernier caliper.

Alternator Brush Length:
Standard : 22.0 mm (0.90 in)
Service Limit : 8.0 mm (0.31 in)



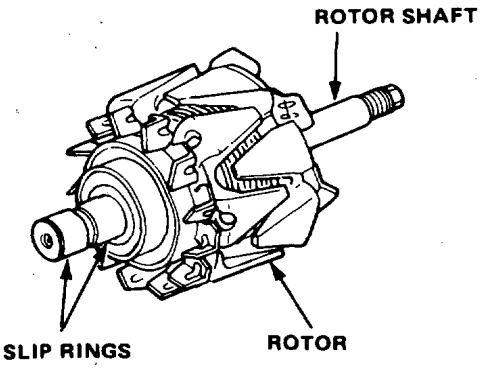
If the brushes are not within the service limit, replace them.



Downloaded from www.Manualslib.com manuals search engine

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.

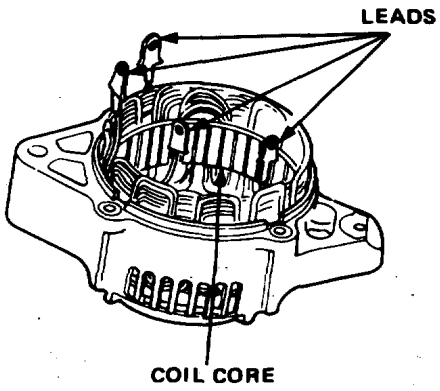


3. If the rotor fails either continuity check, replace it.

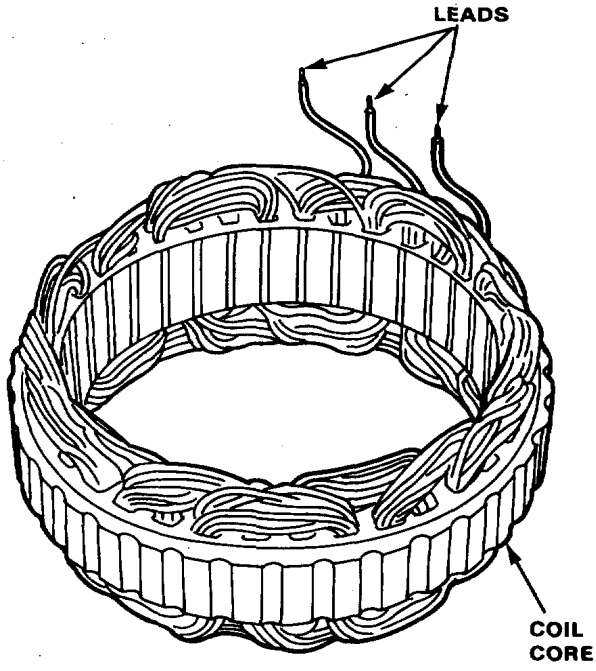
Stator Test

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.

Nippon Denso type:



Mitsubishi type:



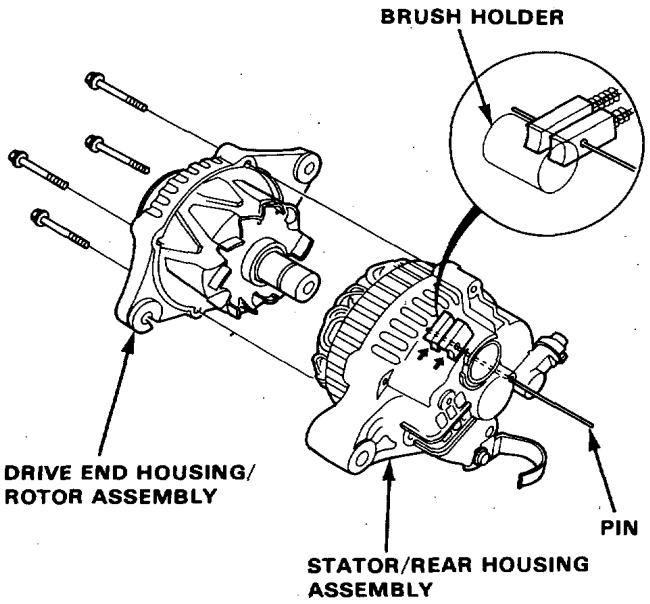
3. If the coil fails either continuity check, replace the stator.

Downloaded from www.Manualslib.com manuals search engine

Alternator Reassembly (Mitsubishi type)

Reassembly the alternator in the reverse order of disassembly.

1. Insert a pin into a hole on the brush holder to prevent the brushes from protruding.



2. Set the drive end housing /rotor assembly into the stator/rear housing assembly, tighten the through bolts, then pull out the pin.

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.

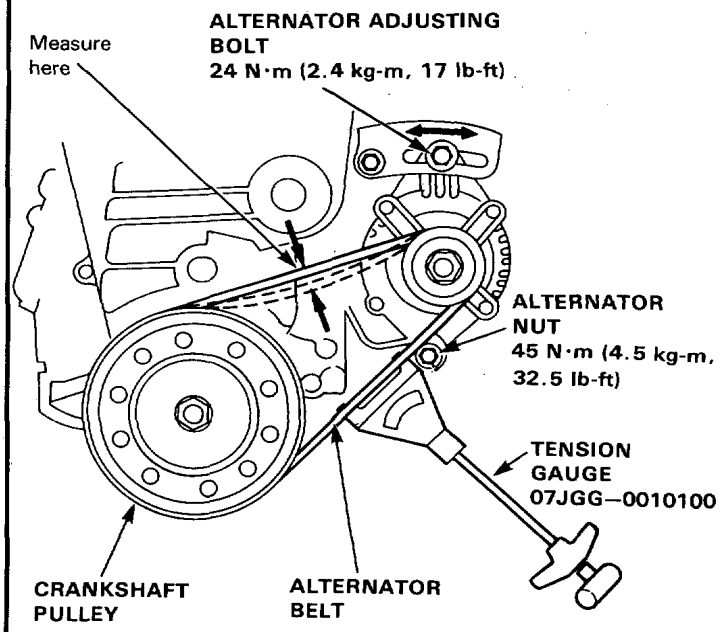
   Deflection: 9—11 mm (0.35—0.43 in)

   NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.25—0.35 in) when first measured.

With Tension Gauge Test
Attach the tension gauge to the alternator belt as shown. Measure the belt tension.

Tension: 35 kg (77 lb)

NOTE: On a brand-new belt, the tension should be 50 kg (110 lb) when first measured.



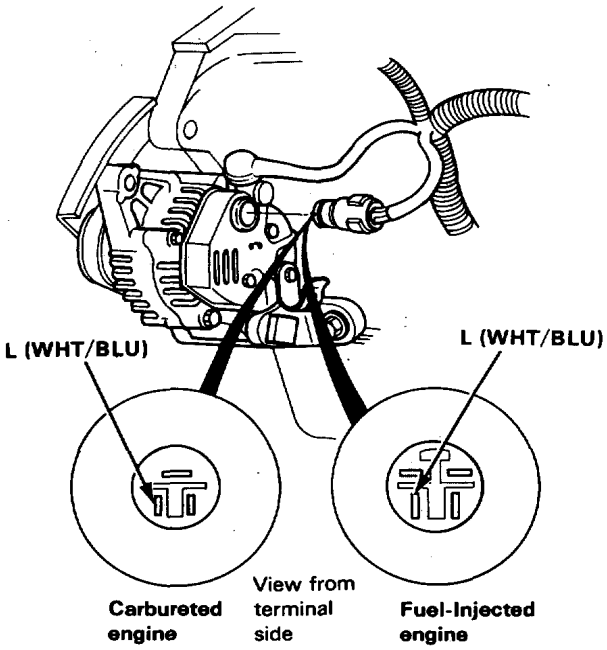
2. Loosen the alternator adjusting bolt and nut.
3. Move the alternator to obtain the proper belt tension, then retighten the adjusting bolt and nut.
4. Recheck the deflection of the belt.

Downloaded from www.Manualslib.com manuals search engine

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.

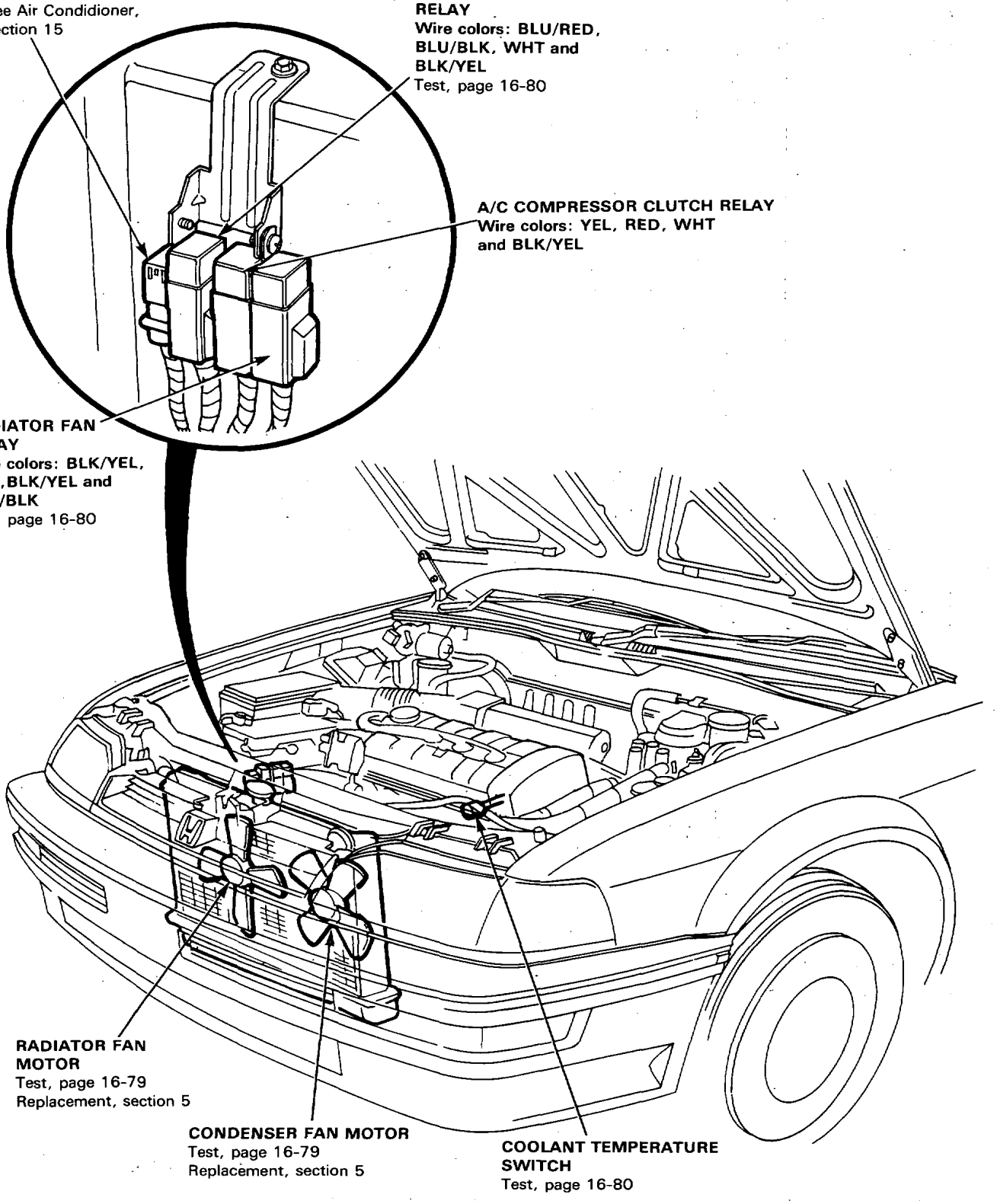
- If the light comes on, check the alternator and regulator (see page 16-66).

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 16-66).

Downloaded from www.Manualslib.com manuals search engine

Cooling Fan System

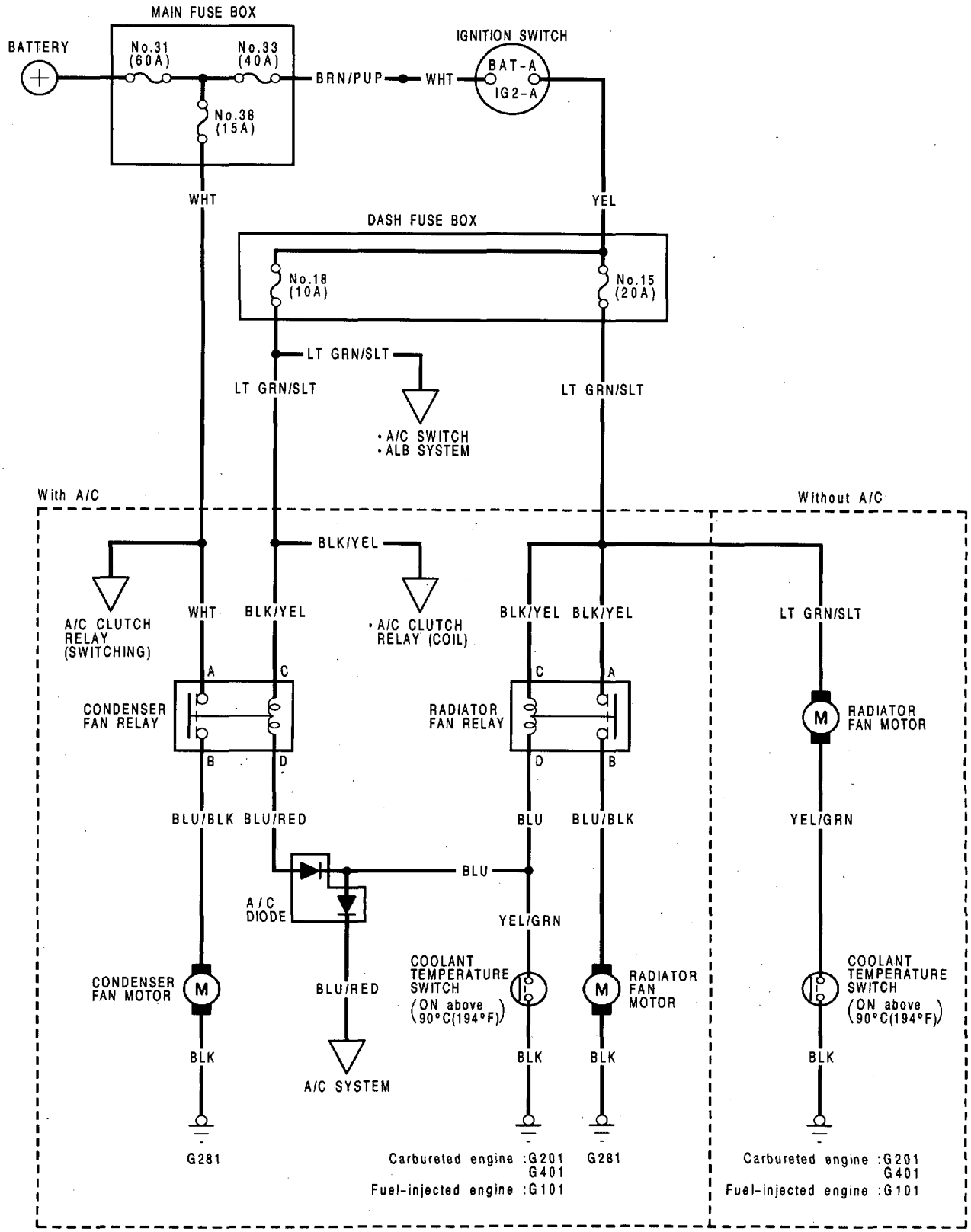
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Cooling Fan System

Circuit Diagram

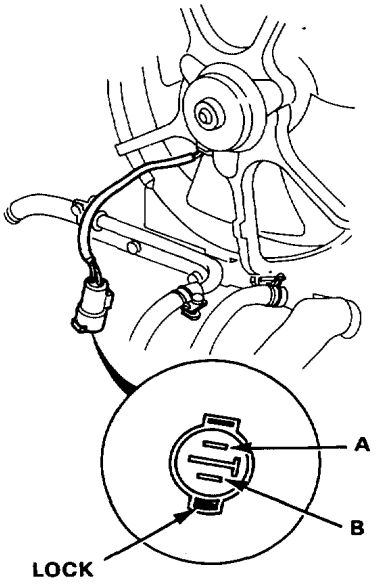


Downloaded from www.Manualslib.com manuals search engine

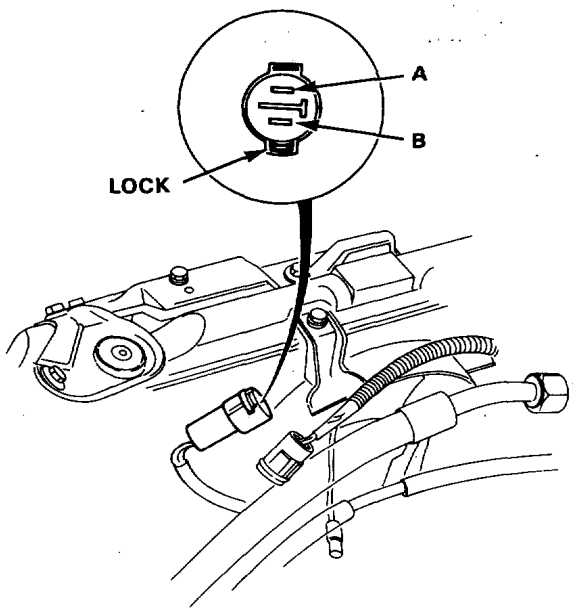
Fan Motor Test

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.

Radiator Fan Motor :



Condenser Fan Motor :

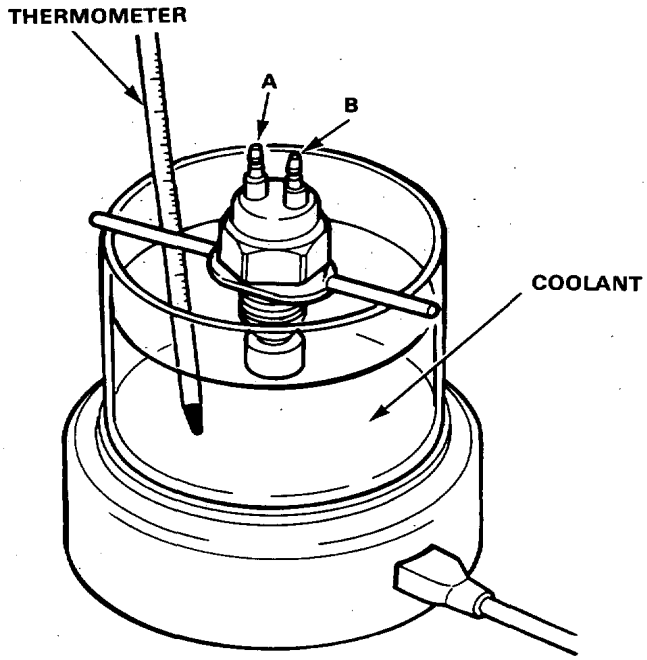


Downloaded from www.Manualslib.com manuals search engine

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.

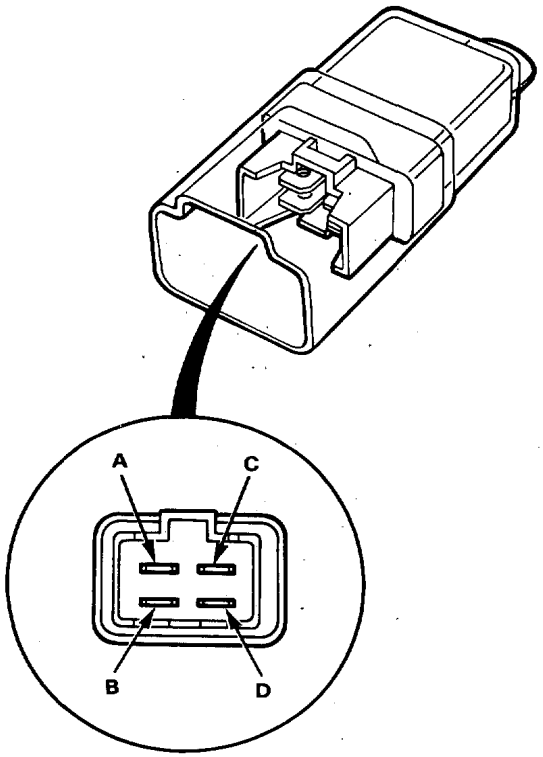


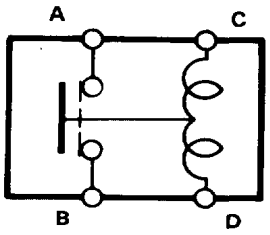
3. Heat the coolant and check coolant temperature with a thermometer (see table below).
4. Check for continuity between the A and B terminals according to the table.

Temperature \ Terminal	A	B
Above 88.5-91.5 °C (191 —197 °F)	○	○
Below 83.5-89.5 °C (182 —193 °F)		

Relay Test

1. Remove the radiator fan relay or condenser fan relay.
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.



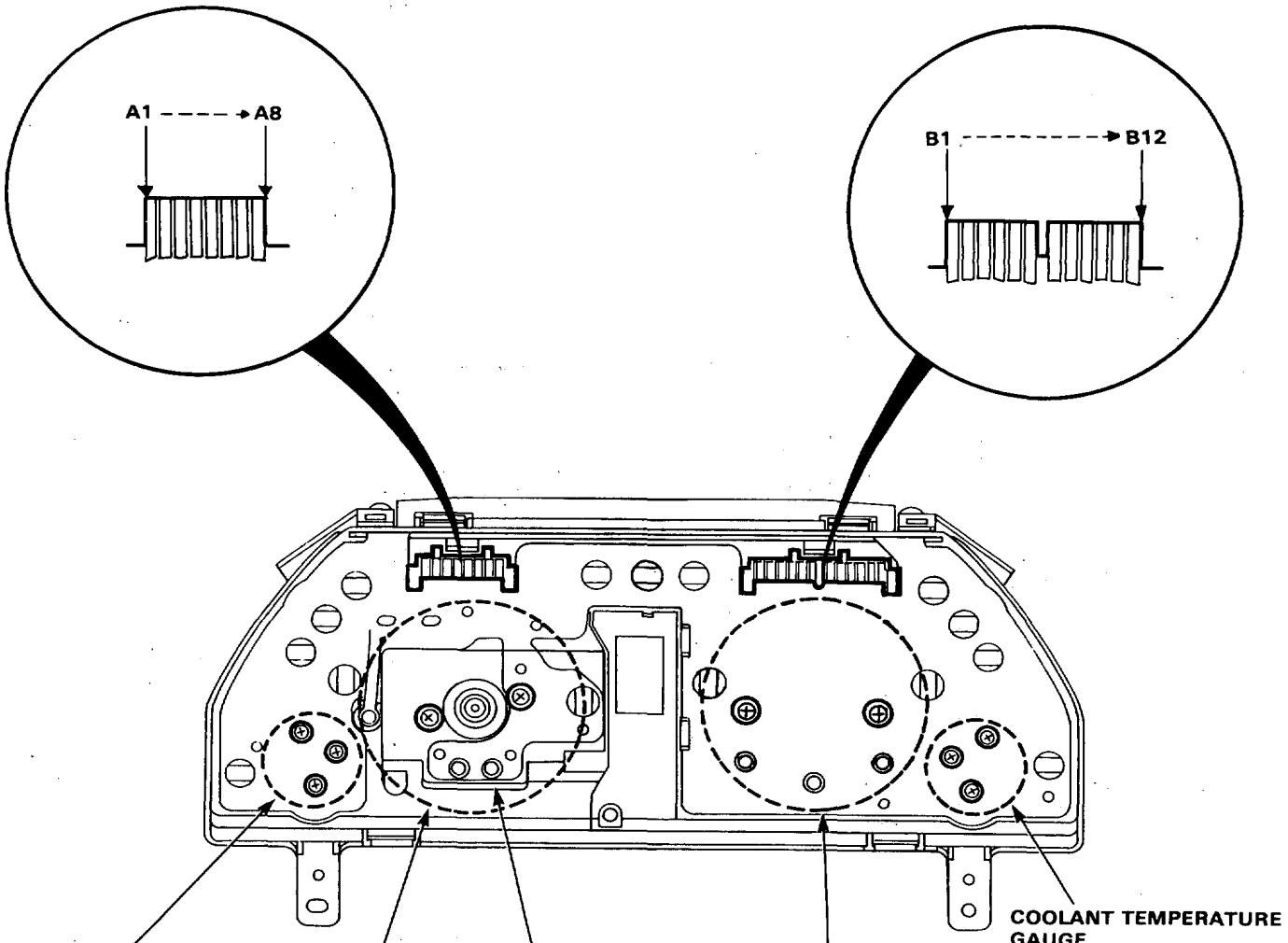


Downloaded from www.Manualslib.com manuals search engine

Gauge Assembly

Gauge/Indicator Location Index

· **GAUGE ASSEMBLY**
Removal, page 16-84
Disassembly, page 16-86



FUEL GAUGE
Gauge Test, page 16-88
Sending Unit Test/Replacement, page 16-89

SPEEDOMETER
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
Test, page 16-87

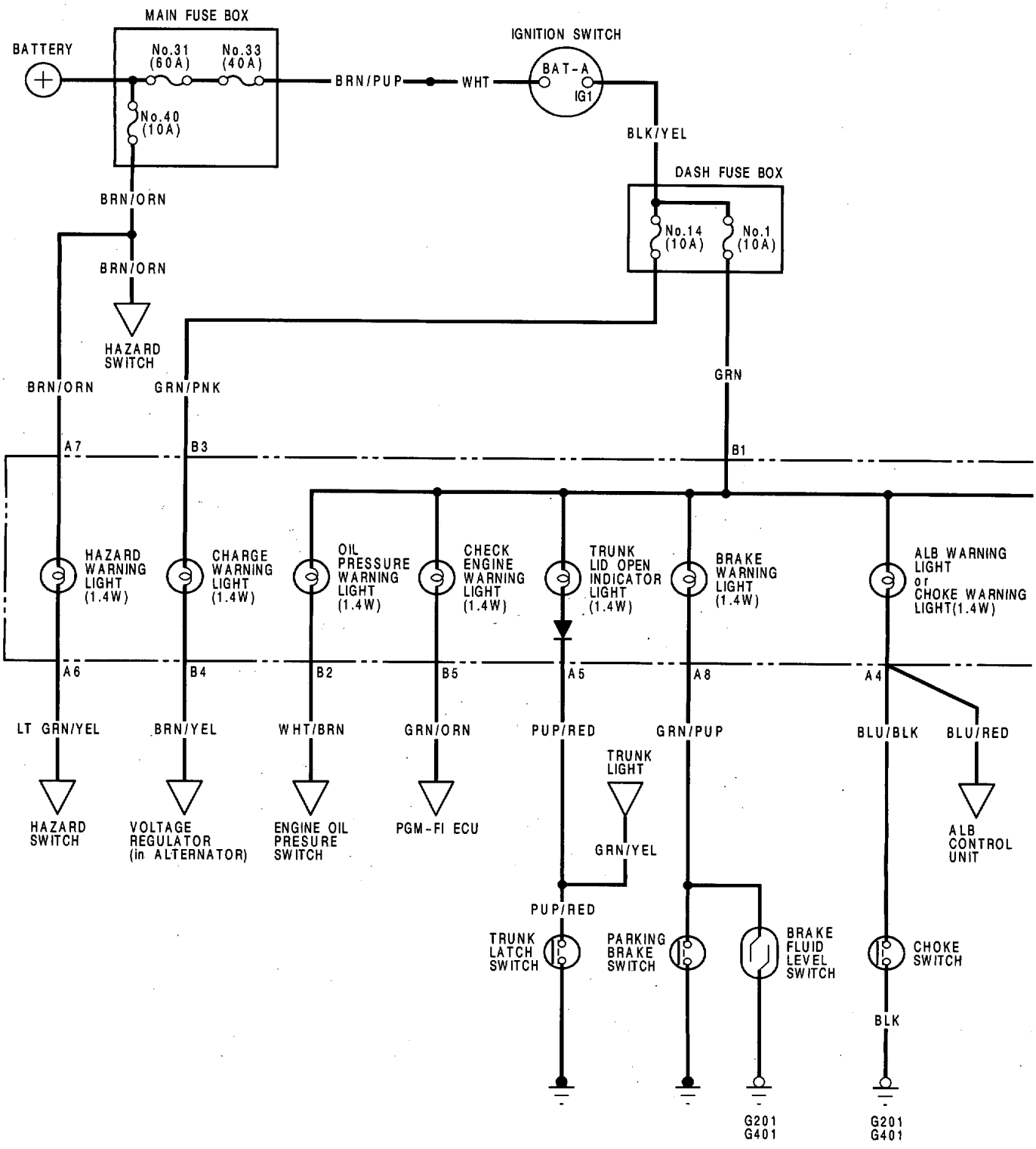
TACHOMETER
Indicates 100 min⁻¹ (rpm) 200 pulses per minute of the igniter unit.

COOLANT TEMPERATURE GAUGE
Gauge Test, page 16-90
Sender Test, page 16-90

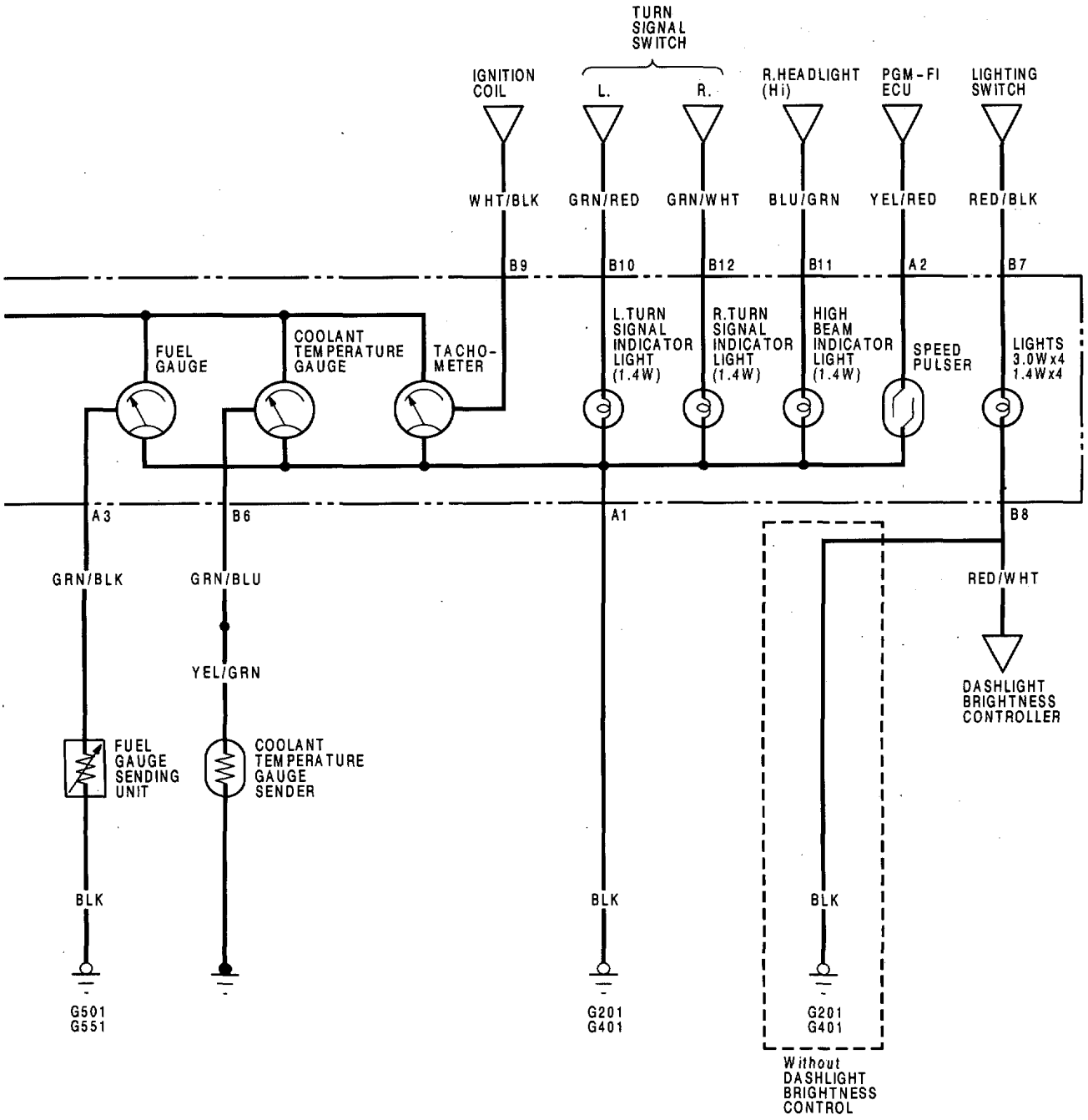
Downloaded from www.Manualslib.com manuals search engine

Gauge Assembly

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

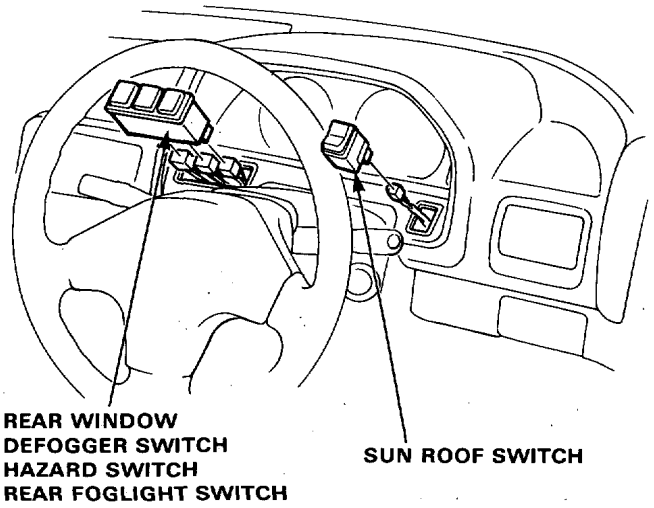


Downloaded from www.Manualslib.com manuals search engine

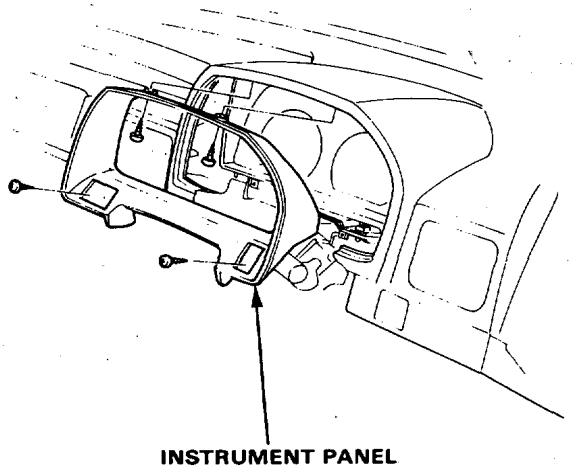
Gauge Assembly

Removal

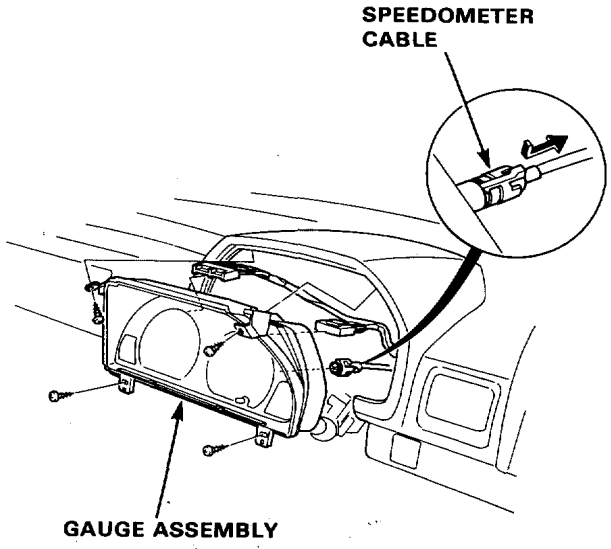
1. Remove the rear window defogger switch and lid.



2. Remove the 4 screws, then remove the instrument panel.

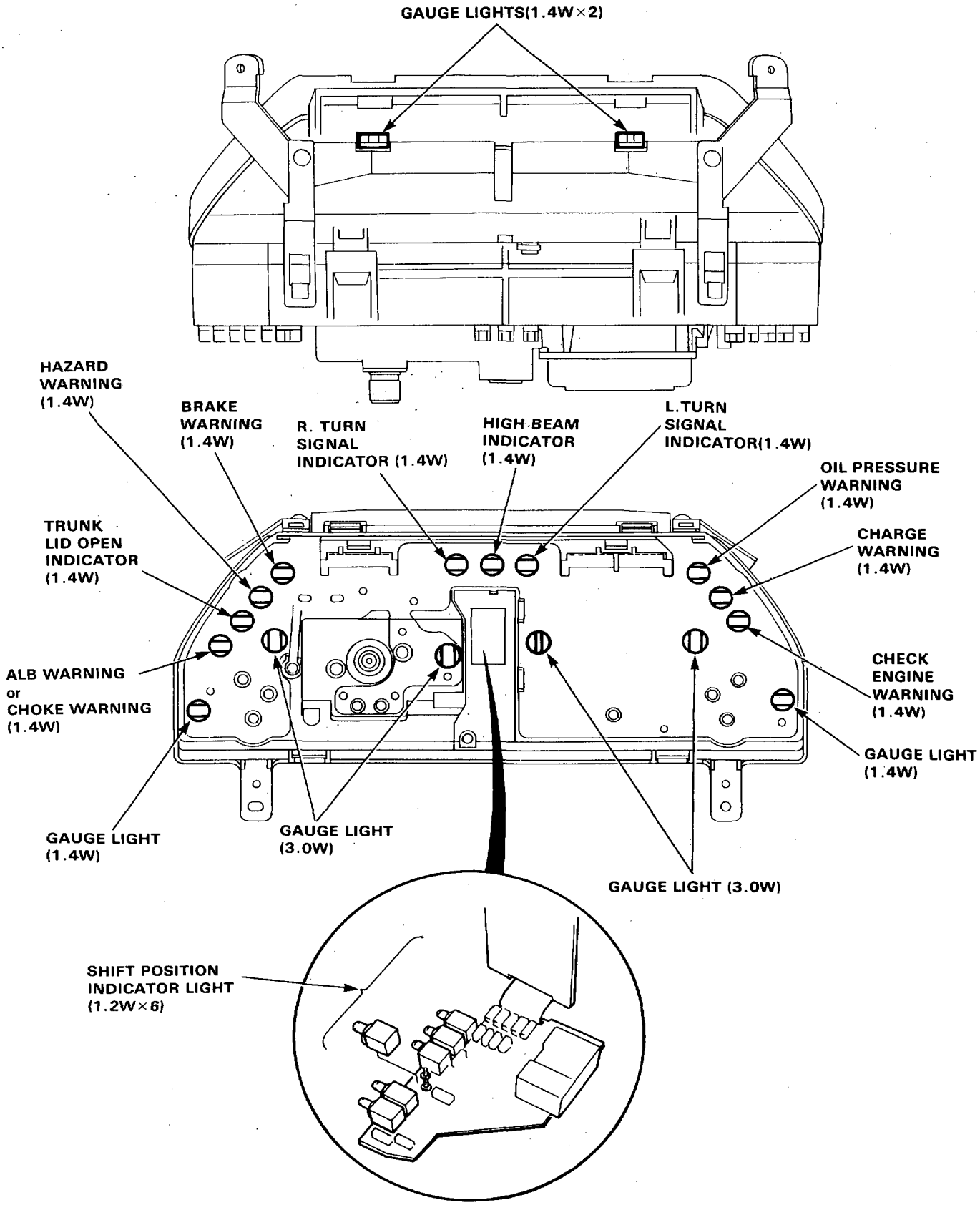


3. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.



Downloaded from www.Manualslib.com manuals search engine

Bulb Locations

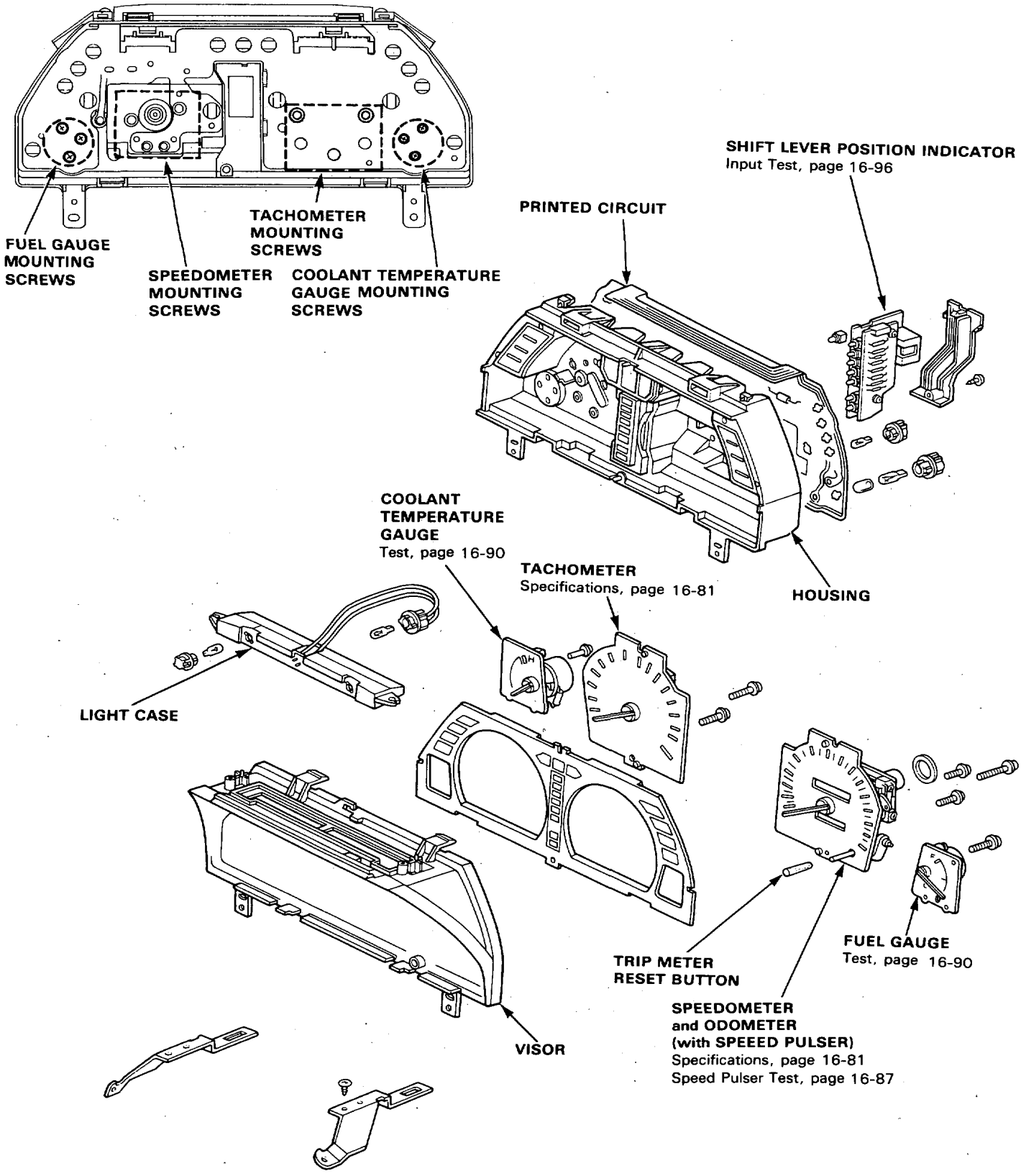


Downloaded from www.Manualslib.com manuals search engine

Gauge Assembly

Disassembly

NOTE: Handle the terminals and printed circuits carefully to avoid damaging them.

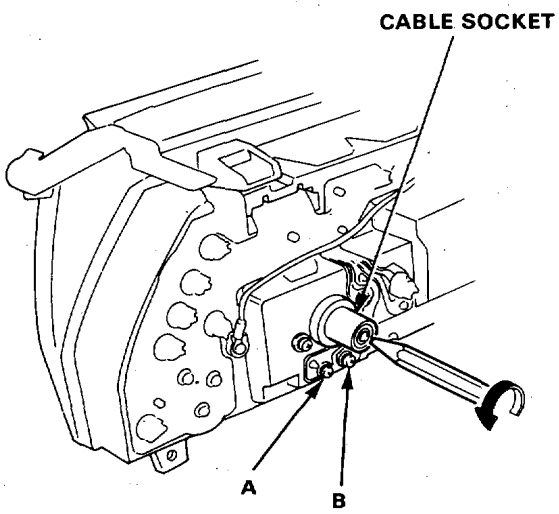


Downloaded from www.Manualslib.com manuals search engine

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.



Downloaded from www.Manualslib.com manuals search engine

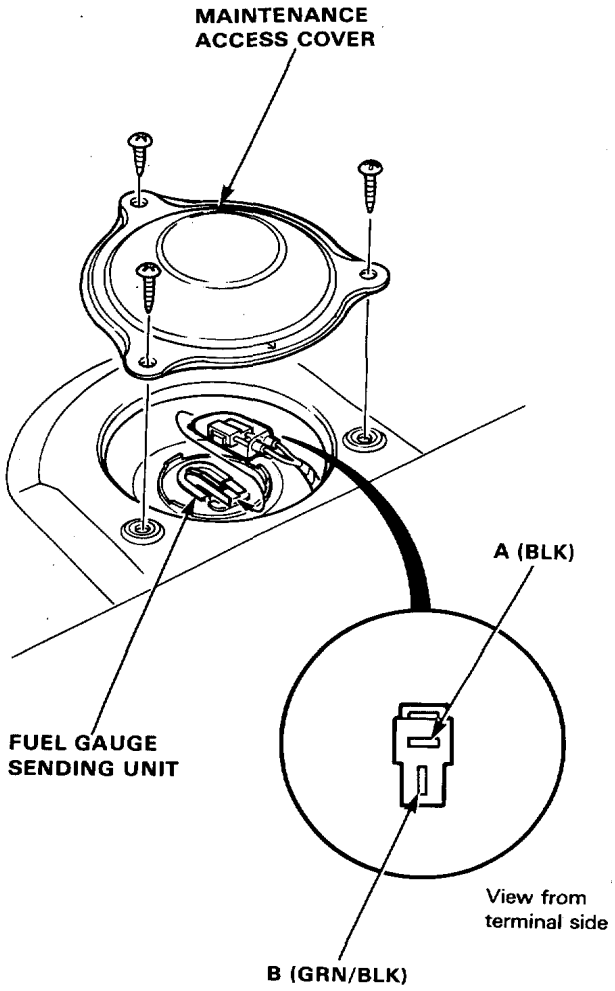
Fuel Gauge

Gauge Test

NOTE: Refer to page 16-82 for wiring description of the fuel gauge circuit.

1. Fold down rear seat back, remove trunk carpet and board, then remove the maintenance accoss cover. (Care should be taken not to damage paint work if leaning in from rear hatch).

2. Disconnect the 2-P connector from the fuel gauge sending unit.



3. Connect the voltmeter positive probe to the B (GRN /BLK) terminal and the negative probe to the A (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 GRN, GRN/BLK or BLK wire.
     — Poor ground (G501).

4. Turn the ignition switch OFF. Attach a jumper wire between the A (BLK) and B (GRN/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.

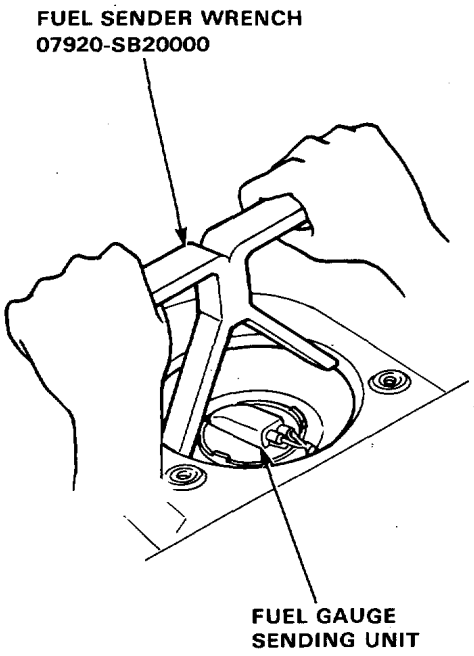
   - If the pointer of the fuel gauge does not swing at all, replace the gauge.
   - Inspect the fuel gauge sending unit if the gauge is OK.

Downloaded from www.Manualslib.com manuals search engine

Sending Unit Test /Replacement

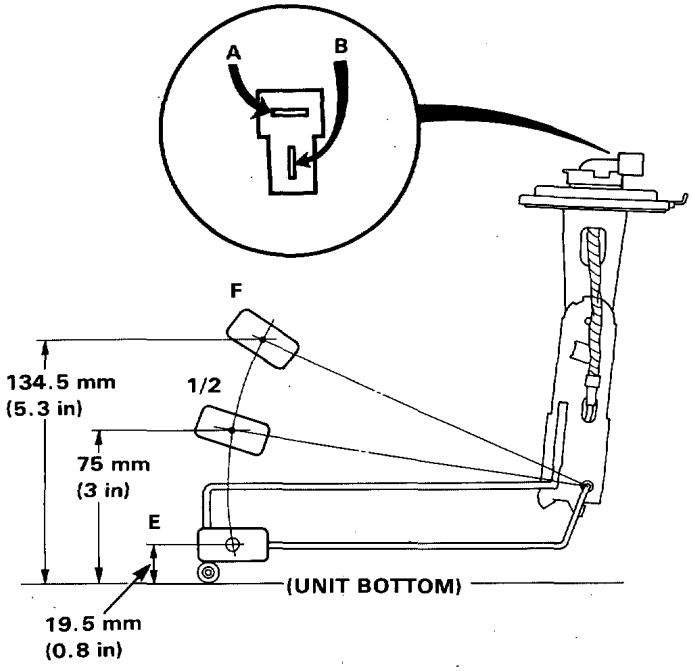
WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Pull down 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)	100-105	25.5-39.5	2-5



5. If unable to obtain the above readings, replace the fuel gauge sending unit.

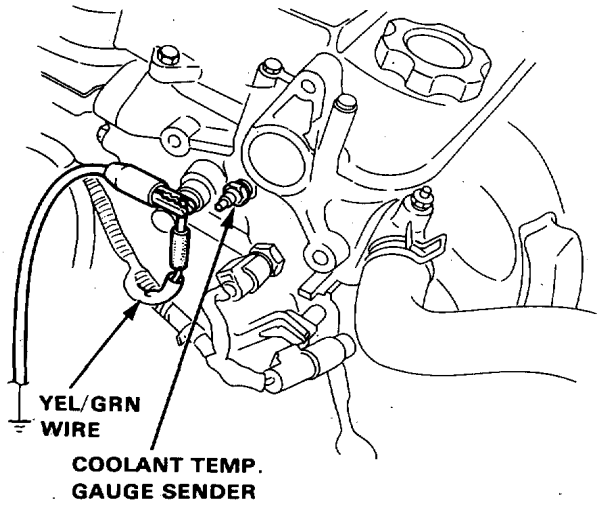
Downloaded from www.Manualslib.com manuals search engine

Coolant Temperature Gauge

Gauge Test

NOTE: Refer to page 16-83 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.

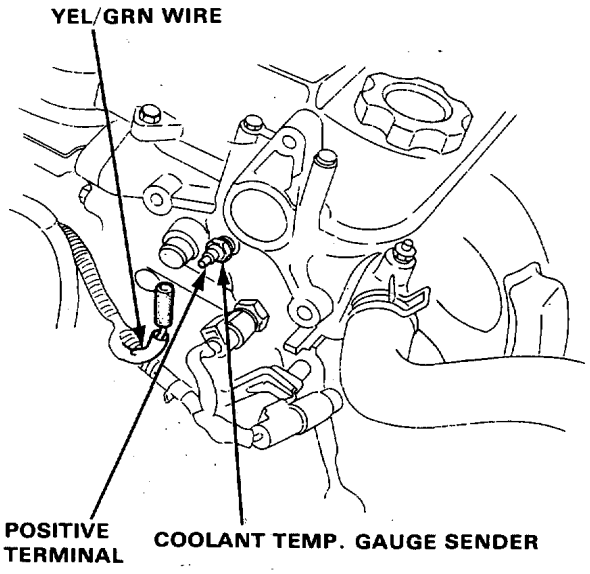
- If the pointer of the gauge does not swing at all, check for :
  - Blown No. 1 (10 A)fuse in the dash fuse box.
  - An open in the GRN, GRN/BLU or YEL/GRN wire.

  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 operating 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.

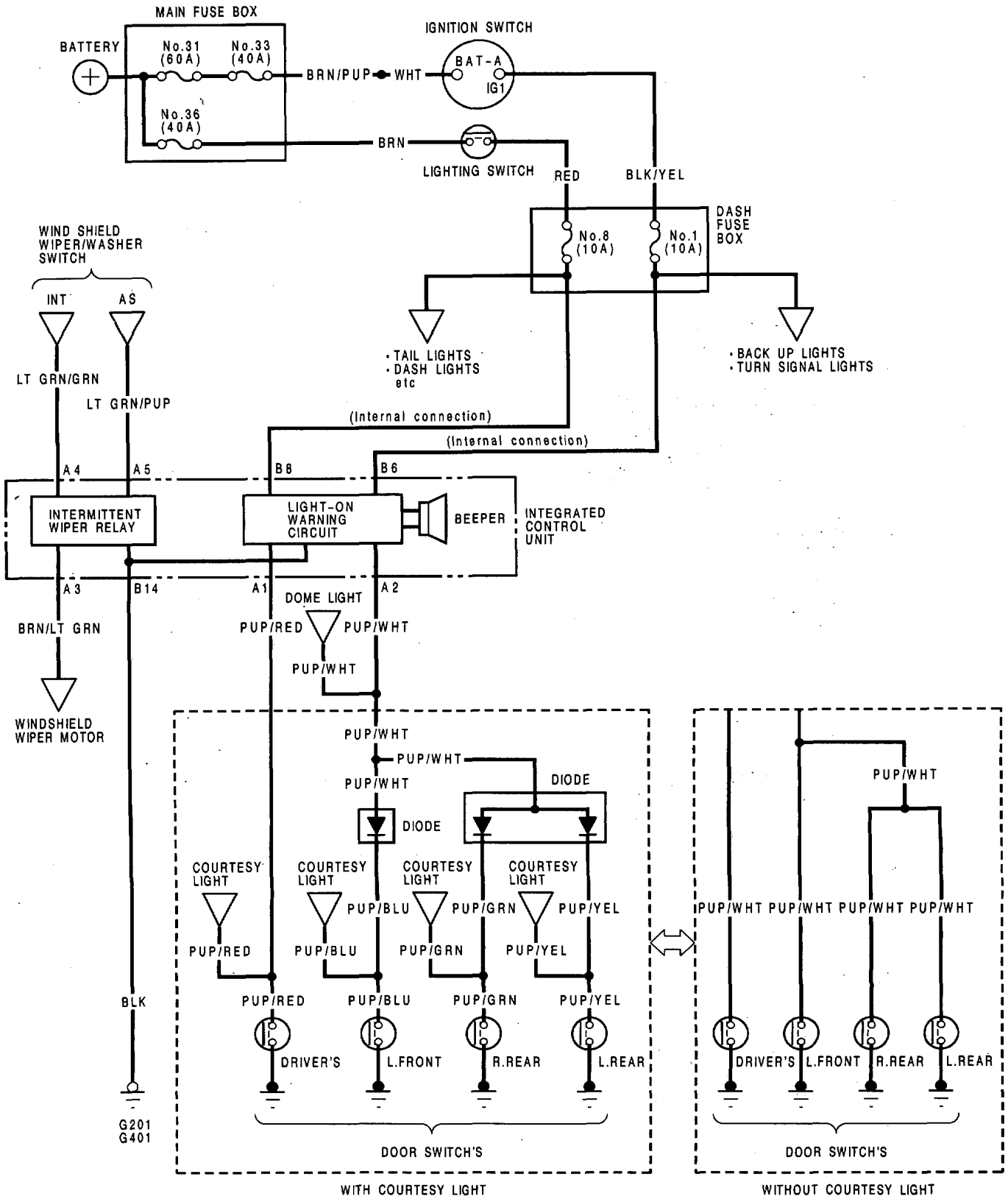
Downloaded from www.Manualslib.com manuals search engine

Integrated Control Unit

Circuit Diagram

Description:

A multi function control unit located under the driver side of the dashboard, light-on warning circuit and intermittent wiper relay cricuit onto one circuit board, sharing common circuit functions.



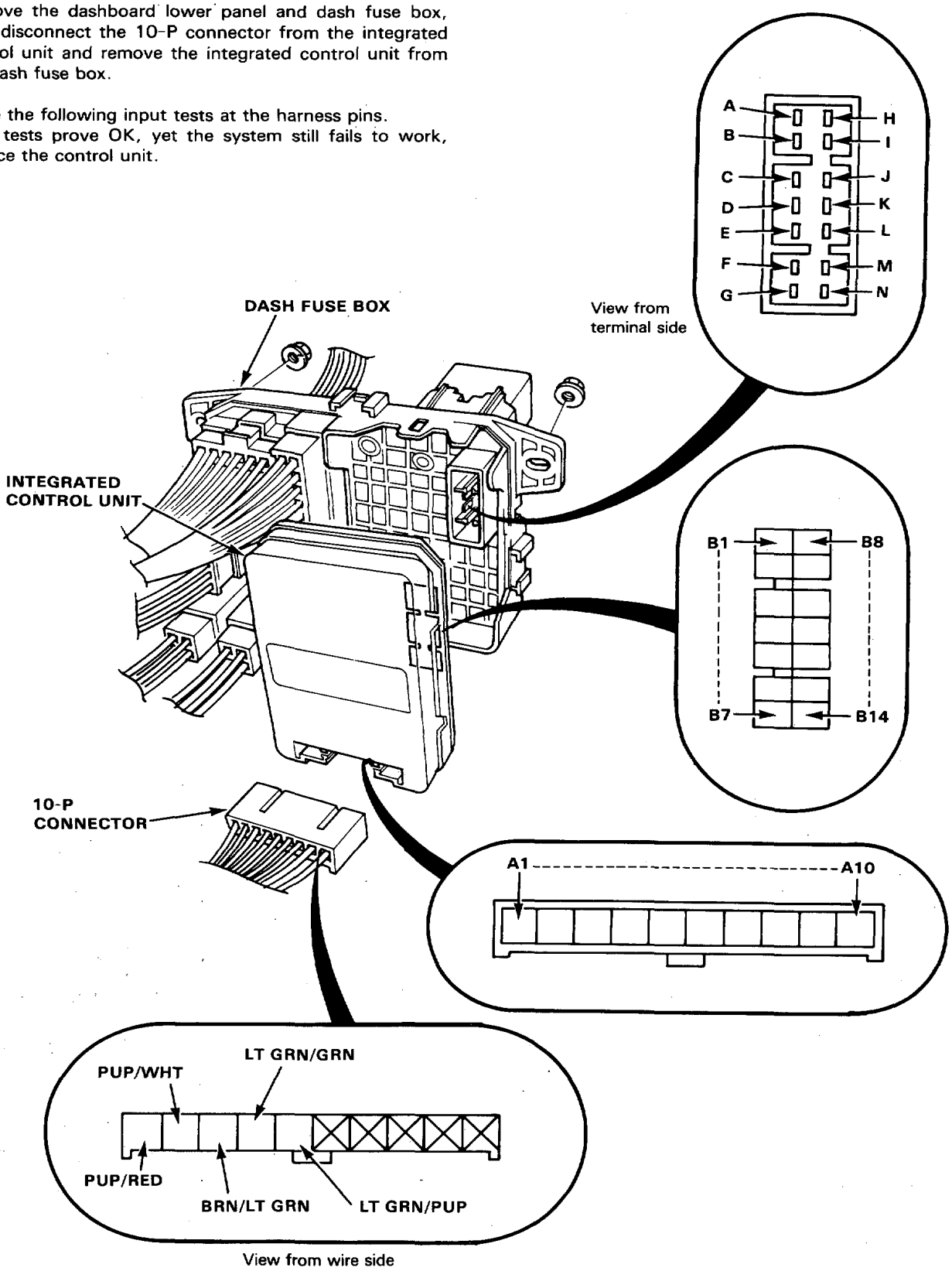
Downloaded from www.Manualslib.com manuals search engine

Integrated Control Unit

Input Test

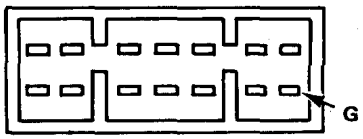
Remove the dashboard lower panel and dash fuse box, then disconnect the 10-P connector from the integrated control unit and remove the integrated control unit from the dash fuse box.

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.

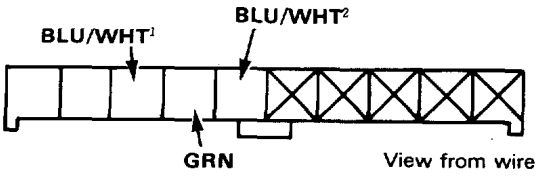


Downloaded from www.Manualslib.com manuals search engine

Wiper System:



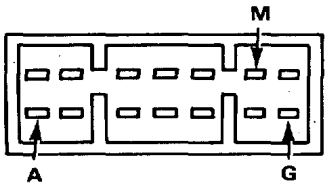
View from terminal side



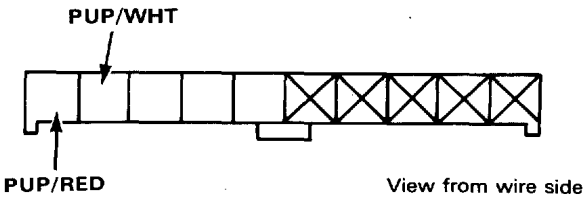
View from wire side

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 (G201, G401)
2	BRN/LT GRN and LT GRN/PUP	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BRN/LT GRN and LT GRN/PUP terminals: should be continuity.	· Faulty wiper switch. · Faulty wiper motor. · An open in the wire.
3	LT GRN/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.

Light-on Warning 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 (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	PUP/WHT	L. Front door open. R. Rear door open. L. Rear 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	PUP/RED	Driver door open.	Check for continuity to ground: should be continuity.	· Faulty driver door switch. · An open in the wire.

(cont'd)

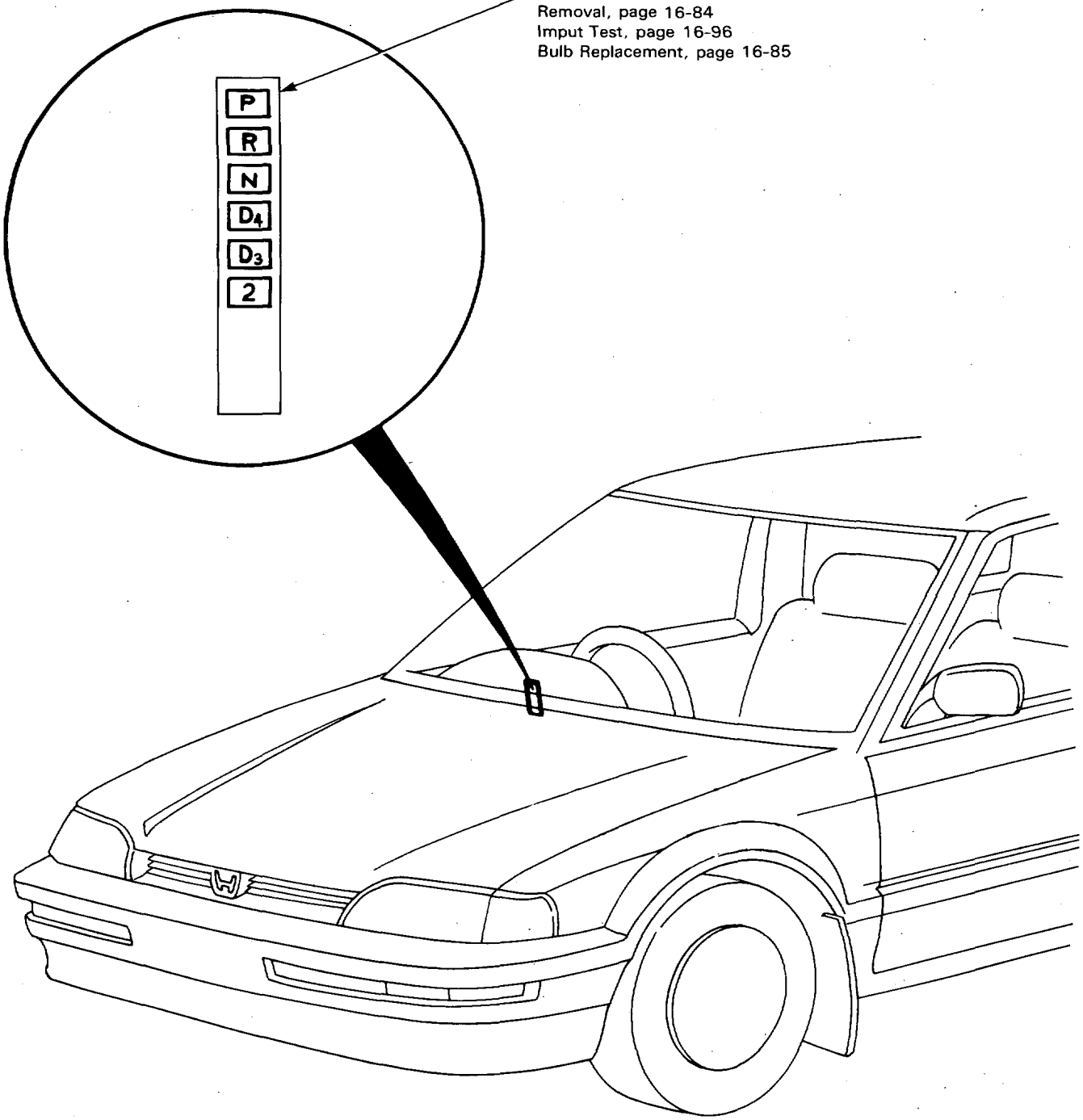
Downloaded from www.Manualslib.com manuals search engine

Shift Lever Position Indicator

Component Location Index

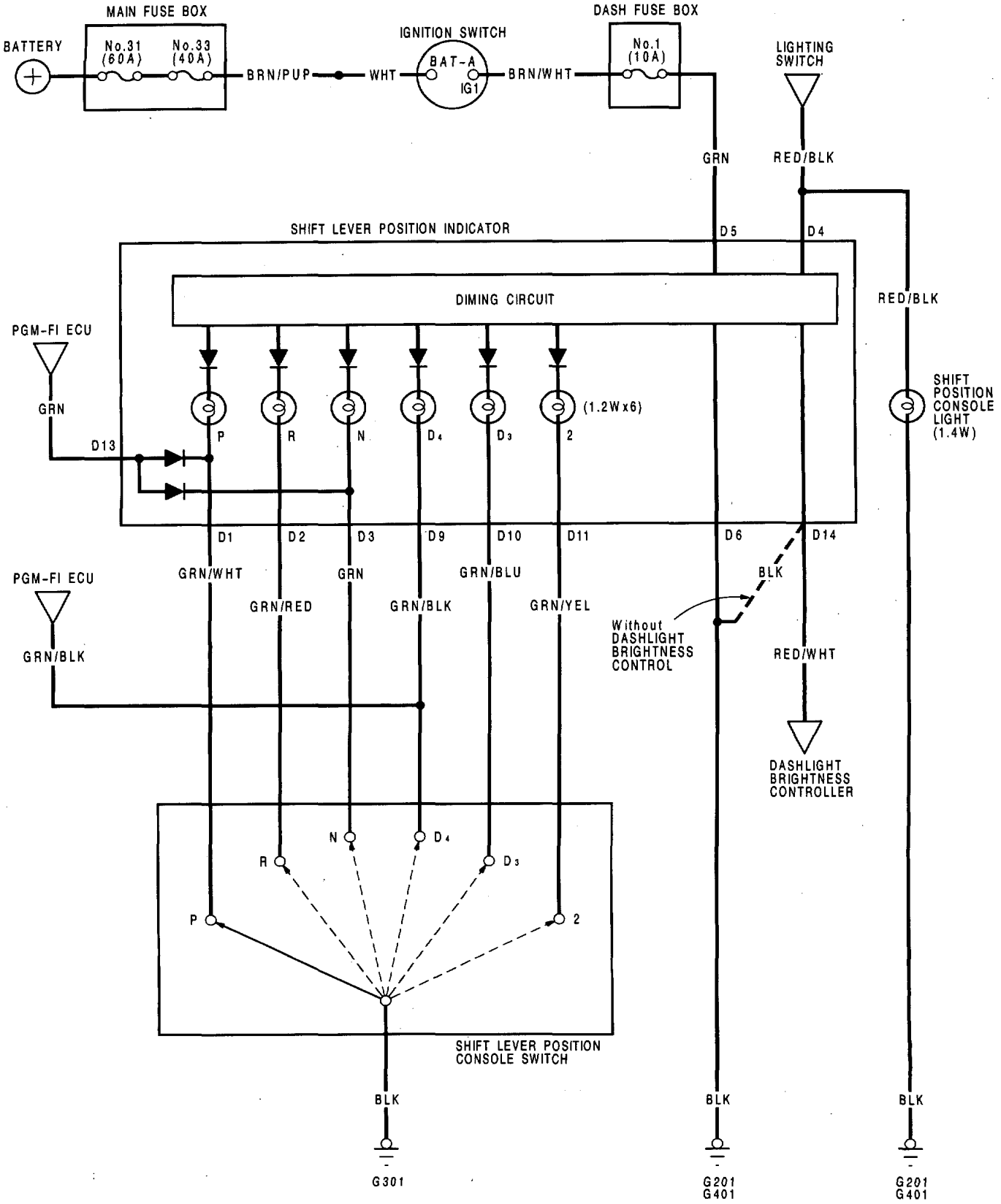
• **SHIFT POSITION CONSOLE SWITCH**
test, page 16-98
Replacement, page 16-98

SHIFT LEVER POSITION INDICATOR
Removal, page 16-84
Imput Test, page 16-96
Bulb Replacement, page 16-85



Downloaded from www.Manualslib.com manuals search engine

Circuit Daiagram

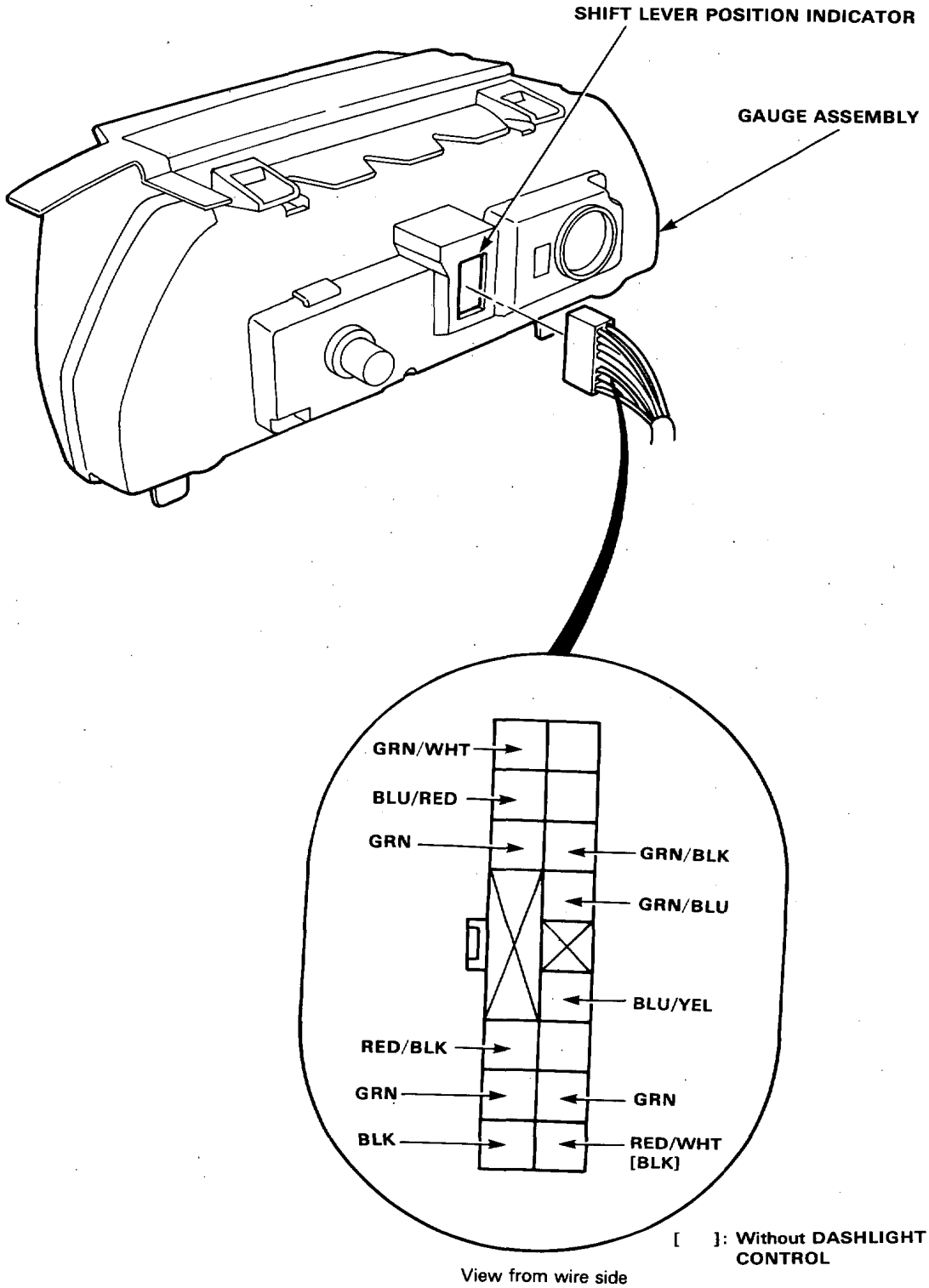


Downloaded from www.Manualslib.com manuals search engine

Shift Lever Position Indicator

Indicator Input Test

Remove the gauge assembly from the dashboard and disconnect the 14-P connector from the indicator.
Make the following input tests at the harness pins. If all tests prove OK, yet the indicator still fails to work, replace the indicator assembly.



[ ]: Without DASHLIGHT BRIGHTNESS CONTROL

View from wire side

Downloaded from www.Manualslib.com manuals search engine

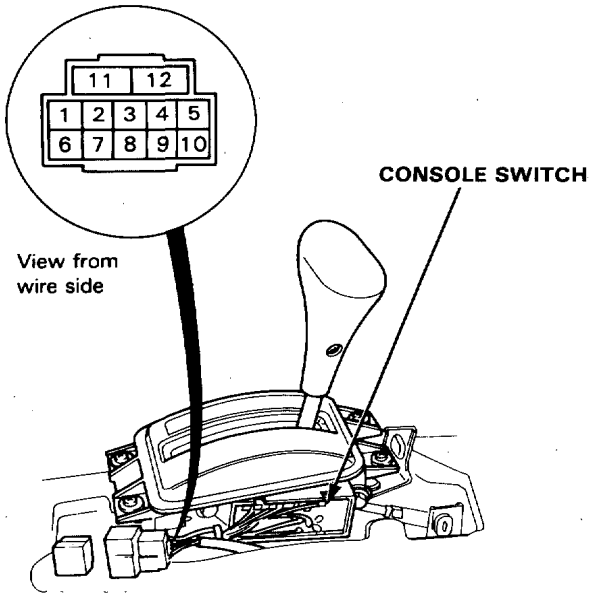
No.	Wire	Test condition	Test : desired result	Possible cause(if result is not obtained)
1	BLK[1] and [BLK[2]]	Under all conditions.	Check for continuity to ground: should be continuity.	· Poor ground (G201). · An open in the wire.
2	GRN[1]	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	· Blown No. 1 (10 A)fuse. · An open in the wire.
3	GRN/WHT	Shift lever position in P.	Check for continuity to ground: should be continuity.	· Faulty shift position console switch. · Poor ground (G201). · An open in the wire.
	BLU/RED	Shift lever position in R.		
	GRN	Shift lever position in N.		
	GRN/BLK	Shift lever position in D_4.		
	GRN/BLU	Shift lever position in D_3.		
	BLU/YEL	Shift lever position in 2.		
4	RED/BLK and RED/WHT	Lighting switch ON and dashlight brightness control dial on full bright.	Check for voltage between RED/BLK and RED/WHT terminals: should be battery voltage. NOTE: If the fuse blows, the RED/WHT and the RED/BLK wires are connected.	· Faulty dashlight brightness control system. · An open in the wire.
5	GRN[2]	Ignition switch ON.	Check for voltage to ground: should be about 5 V.	· Faulty PGM-FI system. · An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Shift Position console switch

Test

1. Remove the center console, then disconnect the 10-P and 2-P connectors from the console switch.
2. Check for continuity between the terminals in each switch position according to the tables.



Shift Position Switch

Terminal / Position	7	8	9	10	5	4	6
2	○	○					
D_3	○	—	○				
D_4	○	—	—	○			
N	○	—	—	—	○		
R	○	—	—	—	—	○	
P	○	—	—	—	—	—	○

Neutral Safety Switch

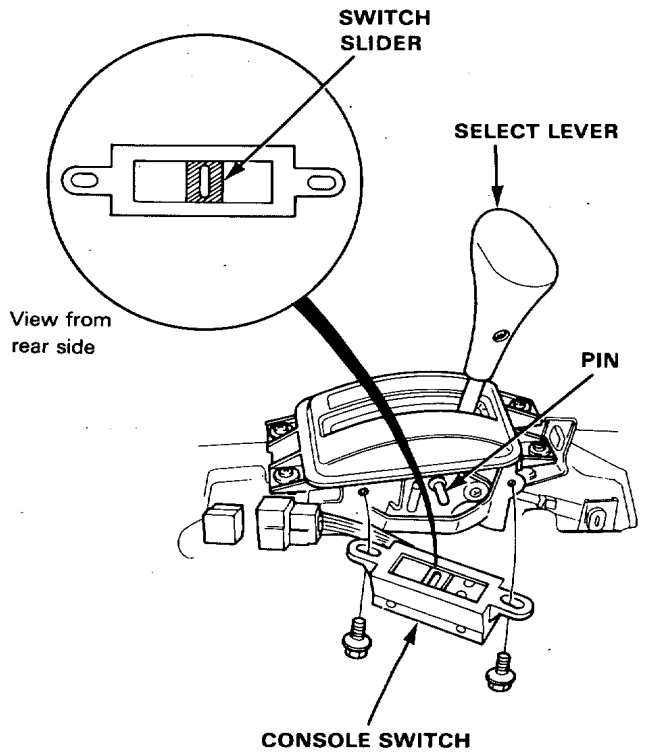
Terminal / Position	11	12
2		
D_3		
D_4		
N	○	○
R		
P	○	○

Back-up Light Switch

2	3
○	○

Replacement

1. Remove the center console, then disconnect the 10-P and 2-P connectors from the console switch.
2. Remove the 2 bolts to replace the console switch.



3. Position the switch slider to "Neutral" as shown above.
4. Shift the select lever to "Neutral", then slip the console switch into position.
5. Tighten the switch with the 2 bolts.

Downloaded from www.Manualslib.com manuals search engine

Brake Warning System

Description

NOTE: Refer to page 16-114 for wiring description of the brake warning circuit.

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.

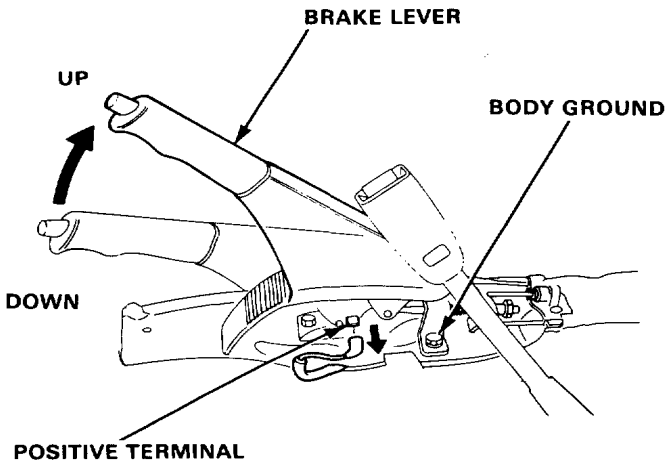
Parking Brake:
With the ignition switch in "Run" or "Start", and the parking brake switch closed, the brake warning light operates to remind the driver that the parking brake is applied.

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.

Parking Brake Switch Test

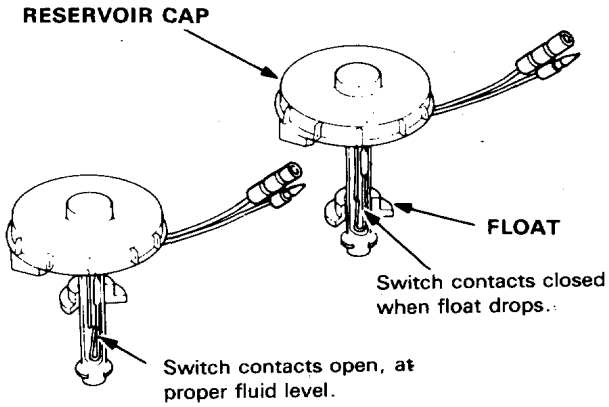
1. Remove the center console and disconnect the connector from the switch.
2. There should be continuity between the positive terminal and body ground with the brake lever up.
   There should be no continuity with the brake lever down.



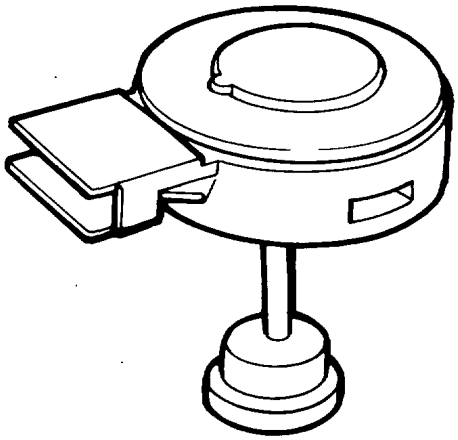
Brake Fluid Level Switch Test

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.

with A.L.B



with out A.L.B



Downloaded from www.Manualslib.com manuals search engine

Oil Pressure Warning System

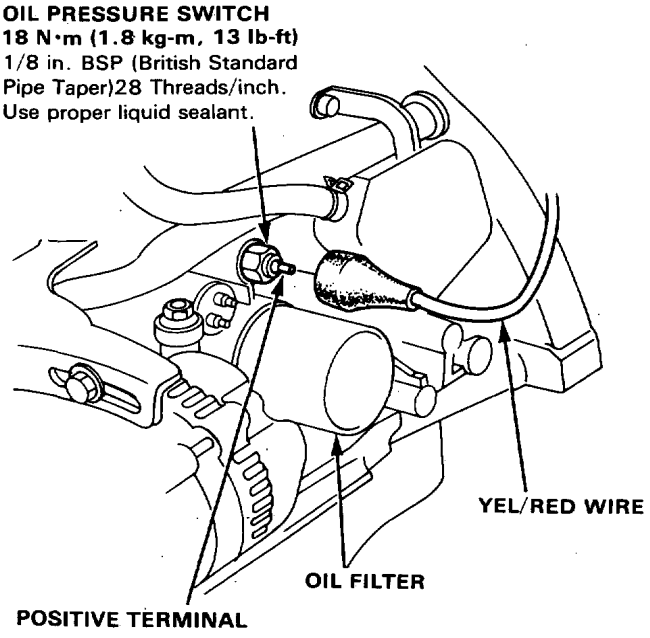
Description

NOTE: Refer to page 16-82 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 5).

Light-on Warning System

Description

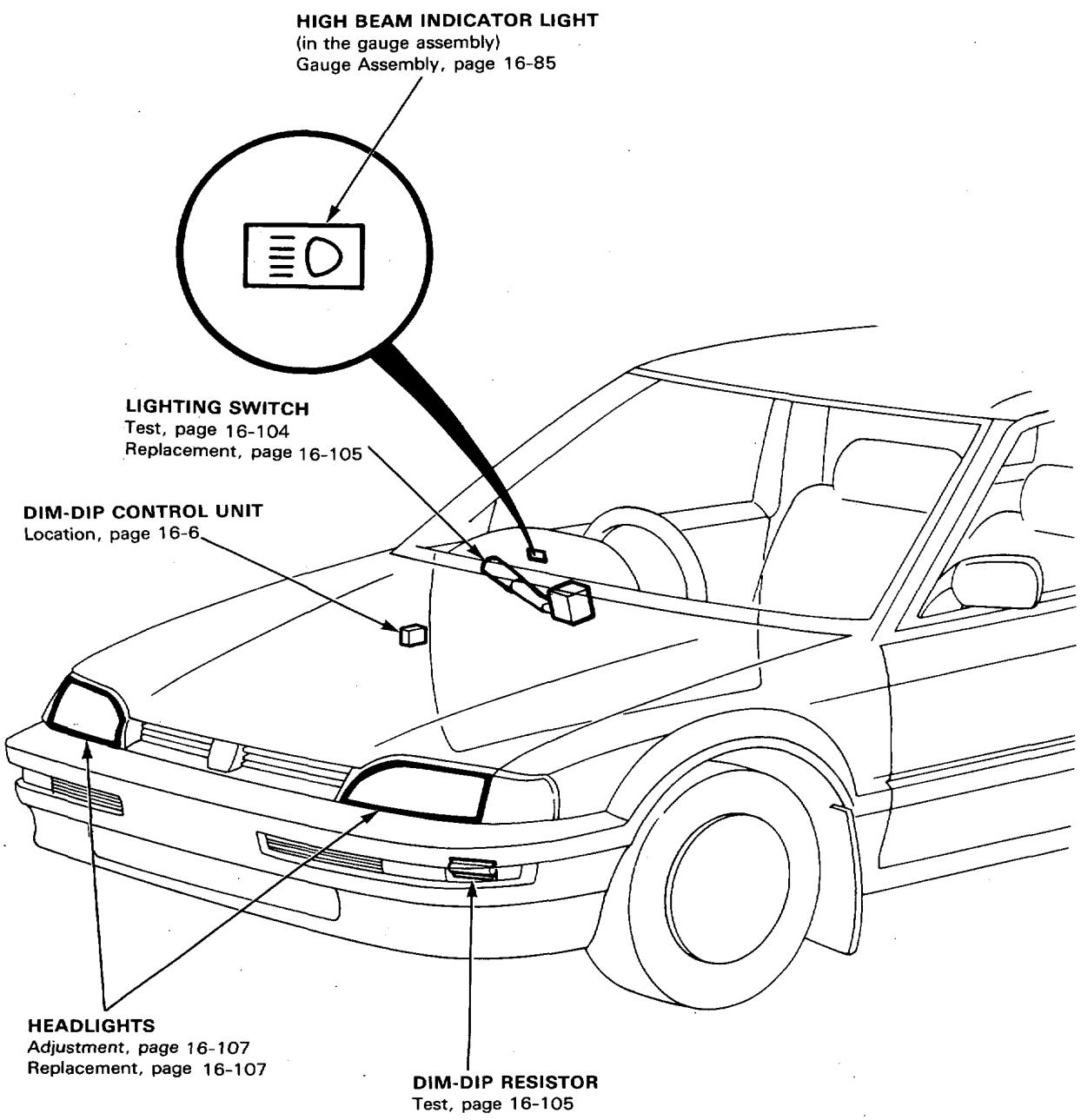
NOTE: Refer to 16-91 for wiring description of the light -on warning circuit, and page 16-91 for the input test of the warning circuit.

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" terminal, ground at the "B14" terminal, the beeper is activated to remind the driver to turn of the lights.

Downloaded from www.Manualslib.com manuals search engine

Lighting System

Component Location Index

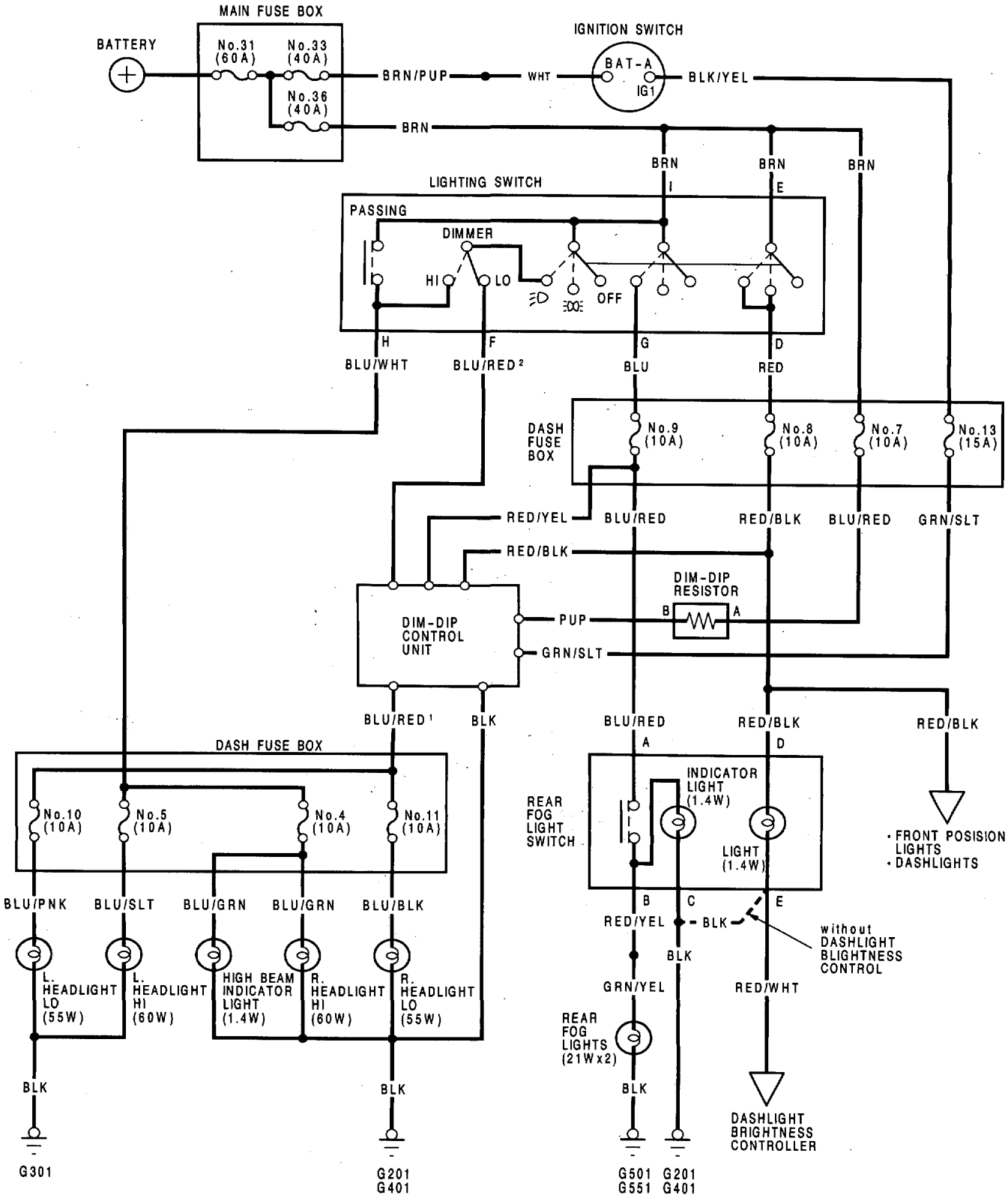


Downloaded from www.Manualslib.com manuals search engine

Lighting System

Circuit Diagram

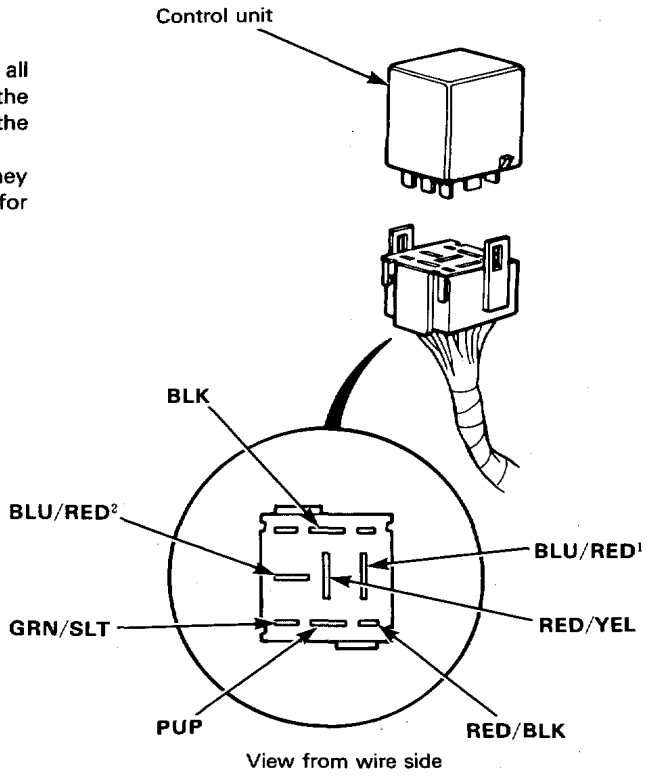
NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/RED[1] and BLU/RED[2] are not the same).



Downloaded from www.Manualslib.com manuals search engine

DIM-DIP Control Unit Input Test

Remove the dashboard lower panel, then slide the dash fuse box.
Disconnect the 7-P connecter ftom the control unit.
Make the following input tests at the harness pins. If all tests prove OK, yet system still fails to work, check the connector for good connection. If OK, then 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/RED' and BLU/RED² are not the same).



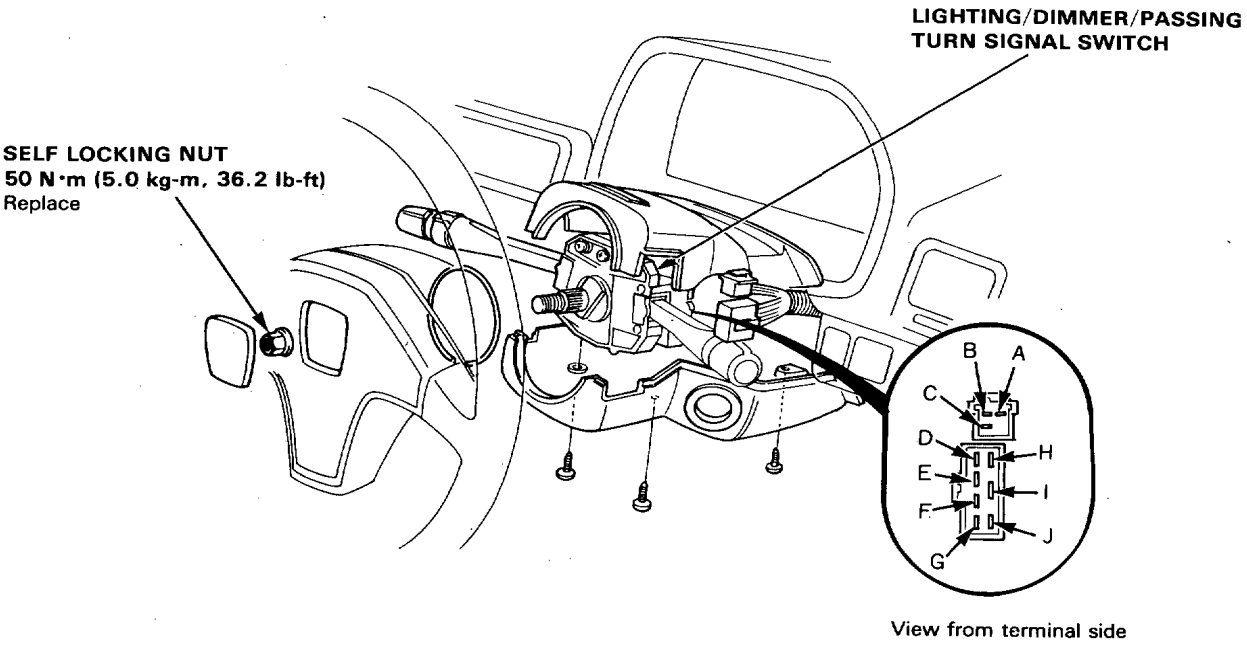
View from wire side

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). • Ah open in the wire.
2	PUP	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.7 (10A) fuse. • Faulty DIM-DIP resistor. • Ah open in the wire.
3	RED/BLK	Lighting switch ON(≡OOE).	Check for voltage to ground: should be battery voltage.	• Blown No.8 (15A) fuse. • An open in the wire.
4	BLU/RED²	Lighting switch ON(≡D) and dimmer switch LO.	Check for voltage to ground: should be battery voltage.	• Faulty lightig switch.
5	BLU/RED¹	Lighting switch ON(≡D) and dimmer switch LO.	Connect the BLU/RED¹ terminal to the BLU/RED² terminal: Headlights (LO) should come on.	• Blown No.10 (10A) and No.11 (10A) fuses. • Poor ground (G201, G401). • An open in the wire.
6	RED/YEL	Lighting switch ON(≡D).	Check for voltage to ground: should be battery voltage.	• Blown No.9 (10A) fuse. • An open in the wire.
7	GRN/SLT	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Lighting/Turn Signal Switch Test

1. Remove the dashboard lower panel.
2. Remove the steering wheel.
3. Remove the steering column covers then disconnect the 7-P and 4-P connectors.
4. Check for continuity between the terminals in each position according to the tables.



View from terminal side

Lighting/Dimmer/Passing Switch

Position \ Terminal		D	E	F	G	H	I
Lighting switch	OFF						
	≡OE	○	○				
	≡D				○		○
Dimmer switch	LOW			○	○		○
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

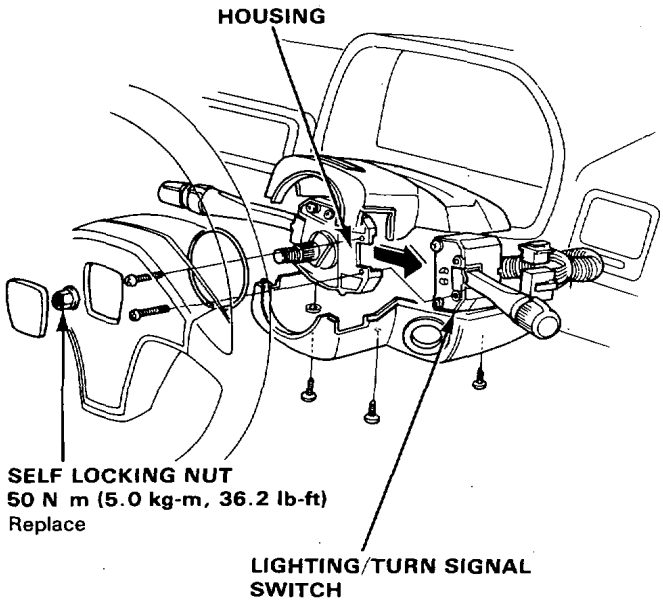
Turn Signal Switch

Position \ Terminal	A	B	C
R	○	○	
NEUTRAL			
L	○		○

Downloaded from www.Manualslib.com manuals search engine

Lighting/Turn Signal Switch Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel.
3. Remove the steering column covers then disconnect the 7-P and 4-P connectors from behind the switch.
4. Remove the 2 screws and slide the lighting switch out of housing as shown.

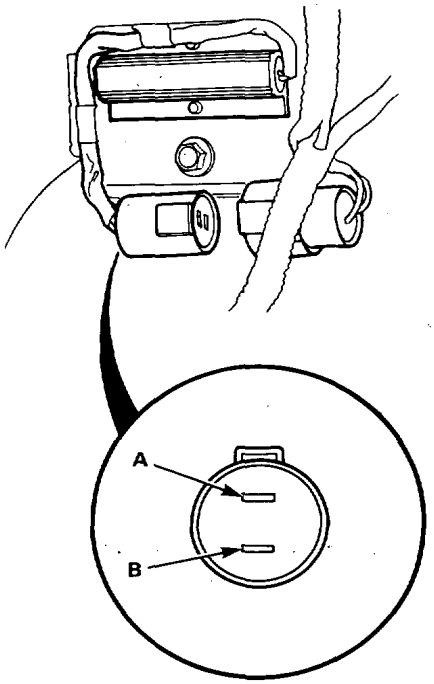


DIM-DIP Resistor Test

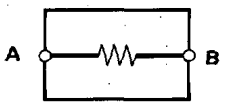
CAUTION: Dim-Dip resistor becomes very hot in use of Dim-Dip headlights; do not touch it or the attaching hardware immediately after they have been turned off.

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)



View from wire side

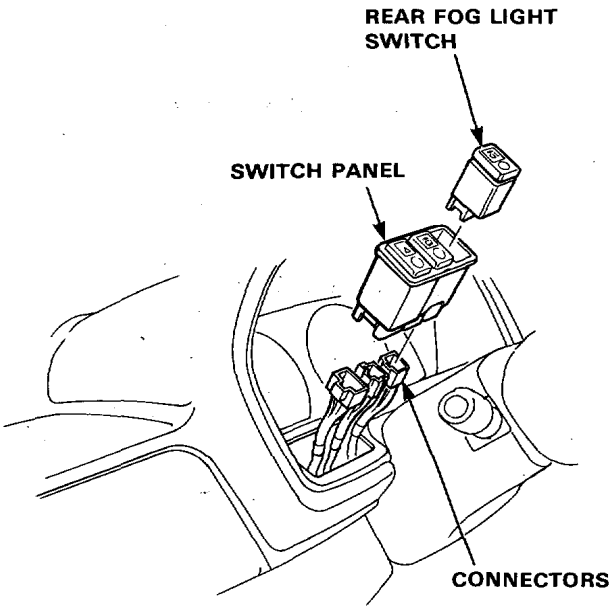


Downloaded from www.Manualslib.com manuals search engine

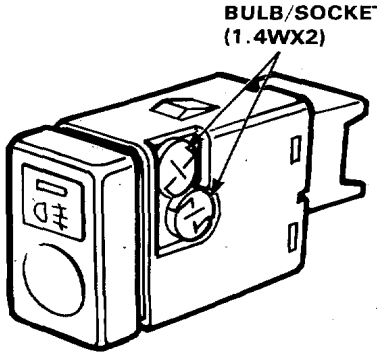
Lighting System

Rear Fog Light Switch Removal

1. Remove the dashboard lower panel. Push out the switchs from behind the instrument panel, then disconnect the connectors from the switchs.
2. Remove the rear fog light switch from the switch panel.



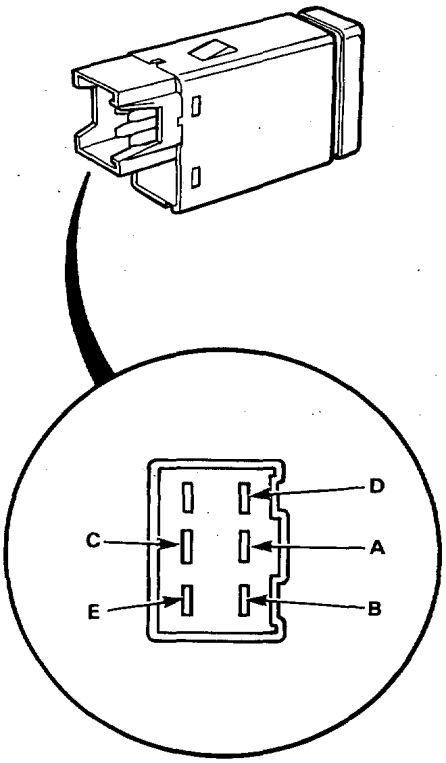
3. Turn the socket 45° counterclockwise (1.4W).

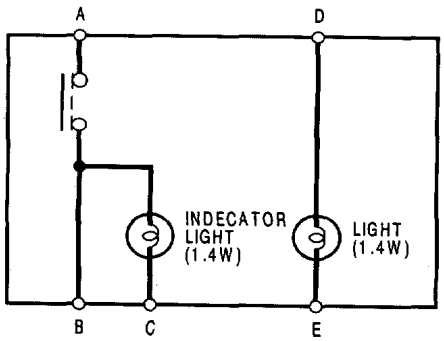


Rear Fog Light Switch Test

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			○	○	○	○	○	○



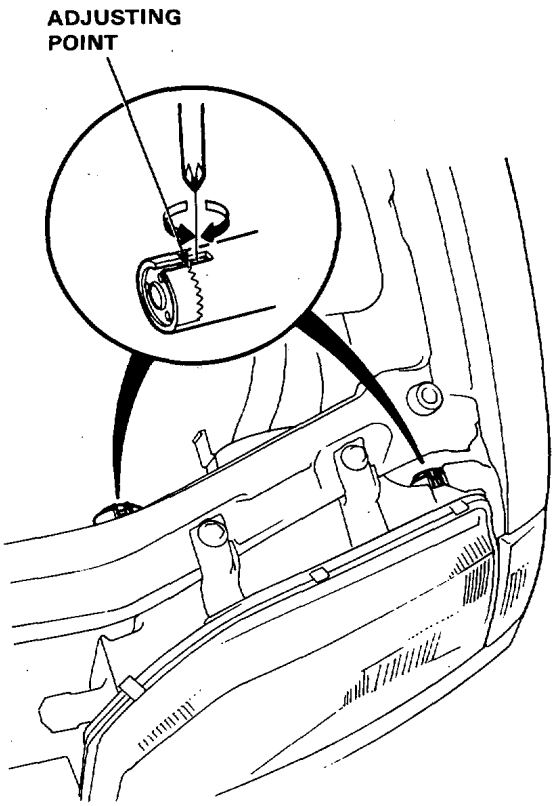


Downloaded from www.Manualslib.com manuals search engine

Headlights

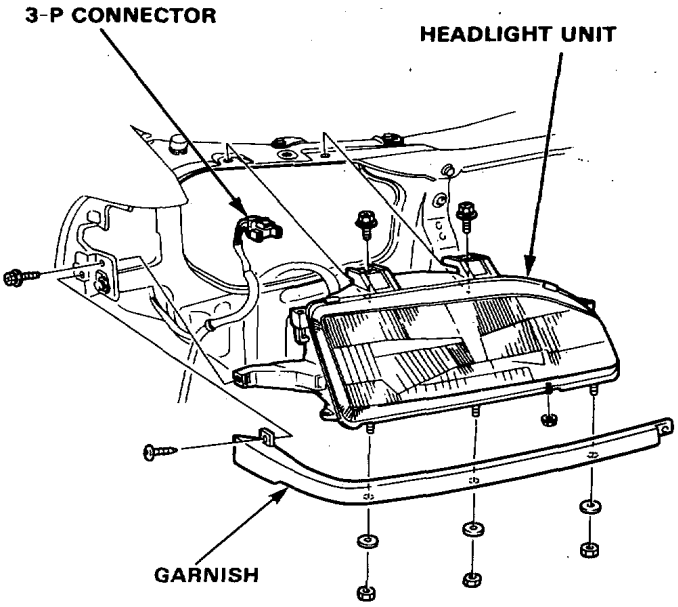
Adjustment

NOTE: Adjust the headlights to local requirements.



Replacement

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and front position /side turn light.
3. Remove the screw and bolts and nut, then remove the unit.
4. Remove the nuts, then remove the garnish from the unit.
5. After installing the unit, adjust the headlights to local reguirements.



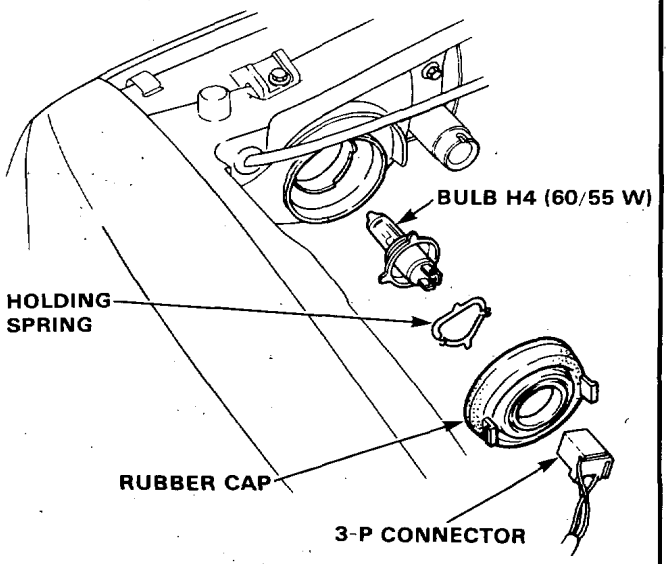
Downloaded from www.Manualslib.com manuals search engine

Headlights

Bulb Replacement

CAUTION:

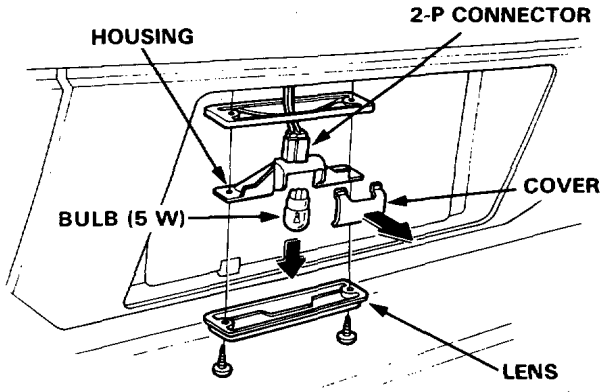
- **Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.**
- **Do not try to replace or clean the headlights with the lights on.**



License Plate Light

Bulb Replacement

1. Remove the 2 screws and pull out the light assembly from the lid.
2. Disconnect the 2-P connector from the housing.

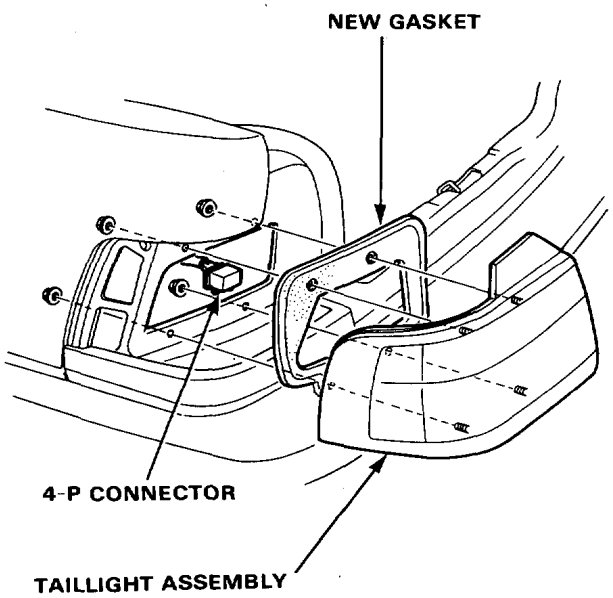


Downloaded from www.Manualslib.com manuals search engine

Taillights Assembly

Replacement

1. Open the trunk lid and remove the trunk side panel.
2. Disconnect the 4-P connector from behind the taillight.
3. Remove the 4 mounting nuts and the taillight assembly.

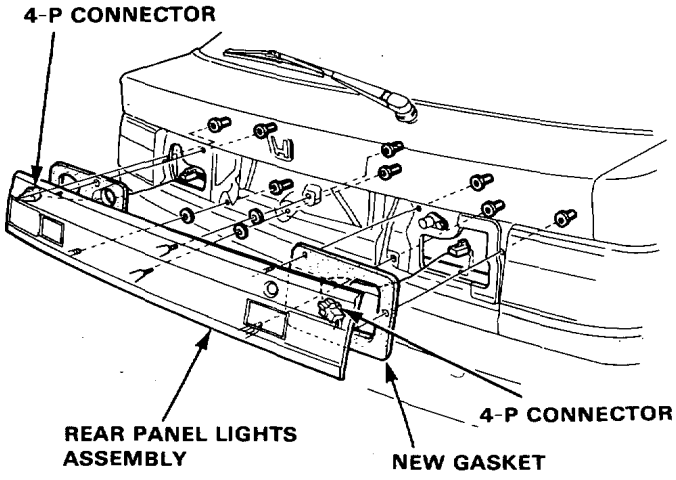


4. Inspect the gasket; replace if it is distorted or overly compressed.

Rear Panel Lights Assembly

Replacement

1. Open the trunk lid and remove the rear trim cover.
2. Disconnect the 4-P connectors from behind the rear panel lights.
3. Remove the 8 mounting nuts and the rear panel lights assembly.



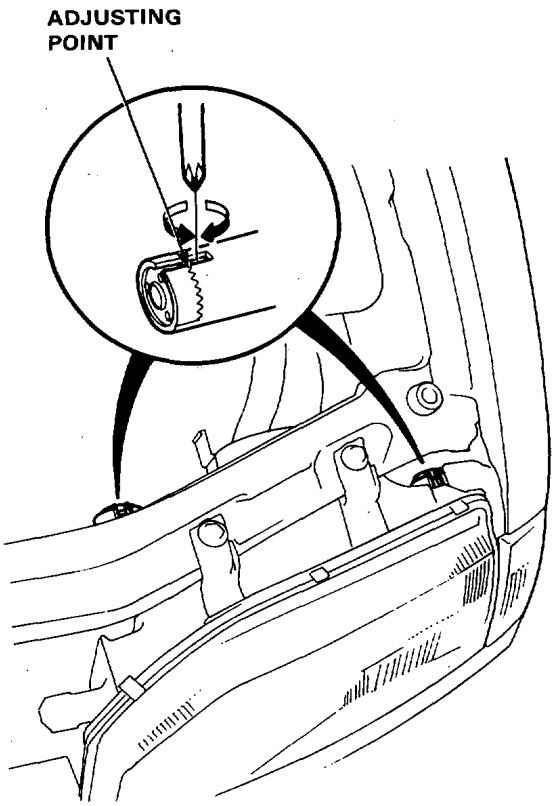
4. Inspect the gasket; replace if it is distorted or overly compressed.

Downloaded from www.Manualslib.com manuals search engine

Headlights

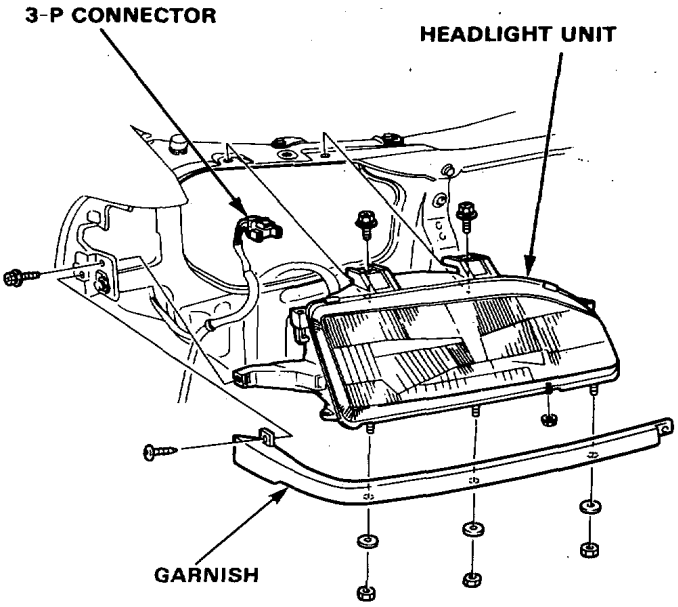
Adjustment

NOTE: Adjust the headlights to local requirements.



Replacement

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and front position /side turn light.
3. Remove the screw and bolts and nut, then remove the unit.
4. Remove the nuts, then remove the garnish from the unit.
5. After installing the unit, adjust the headlights to local reguirements.



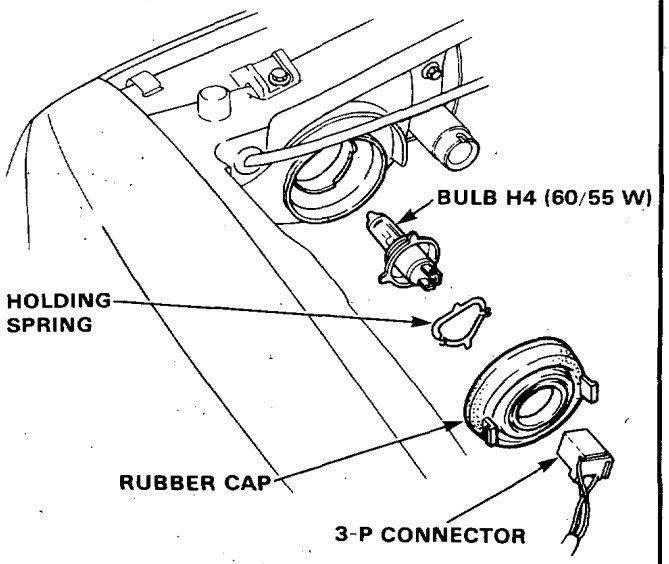
Downloaded from www.Manualslib.com manuals search engine

Headlights

Bulb Replacement

CAUTION:

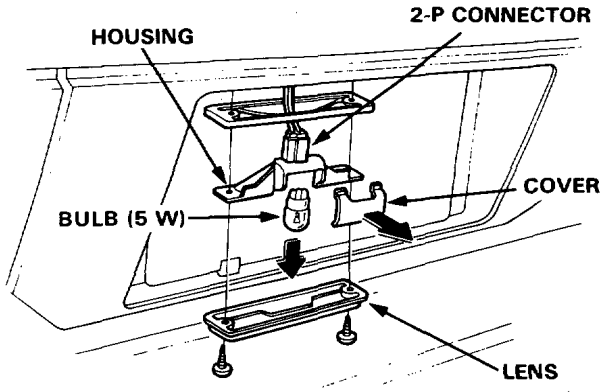
- **Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.**
- **Do not try to replace or clean the headlights with the lights on.**



License Plate Light

Bulb Replacement

1. Remove the 2 screws and pull out the light assembly from the lid.
2. Disconnect the 2-P connector from the housing.

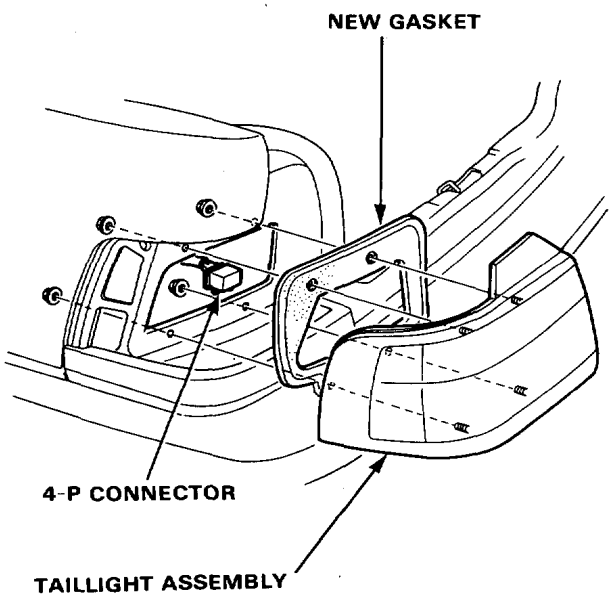


Downloaded from www.Manualslib.com manuals search engine

Taillights Assembly

Replacement

1. Open the trunk lid and remove the trunk side panel.
2. Disconnect the 4-P connector from behind the taillight.
3. Remove the 4 mounting nuts and the taillight assembly.

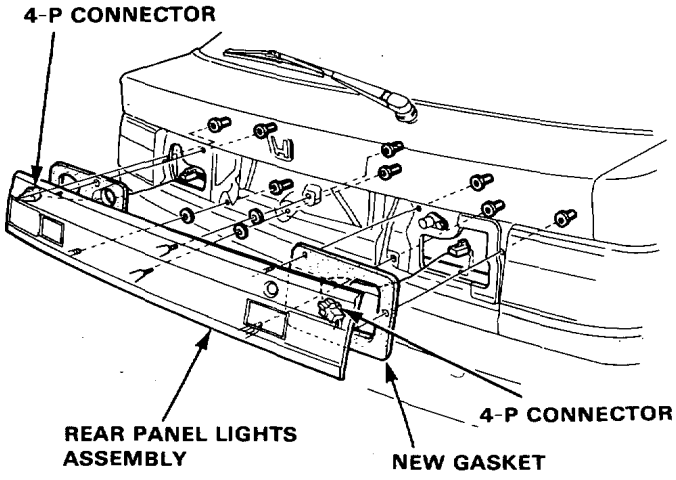


4. Inspect the gasket; replace if it is distorted or overly compressed.

Rear Panel Lights Assembly

Replacement

1. Open the trunk lid and remove the rear trim cover.
2. Disconnect the 4-P connectors from behind the rear panel lights.
3. Remove the 8 mounting nuts and the rear panel lights assembly.



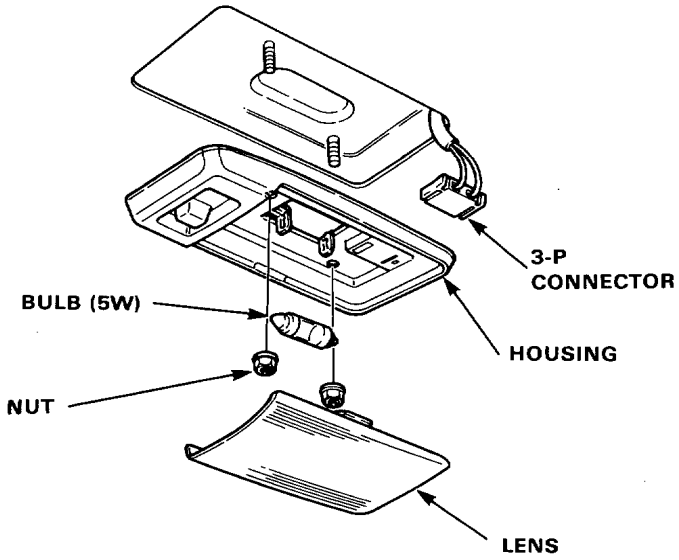
4. Inspect the gasket; replace if it is distorted or overly compressed.

Downloaded from www.Manualslib.com manuals search engine

Room Light

Test

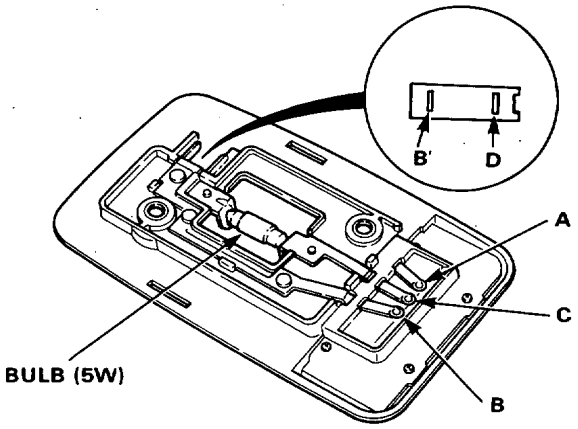
1. Turn the light switch OFF.
2. Pry off the lens.
3. Remove the 2 nuts (with sunroof) or screw (without sunroof) and housing.
4. Disconnect the 3-p connector from the housing.
5. Remove the room light.



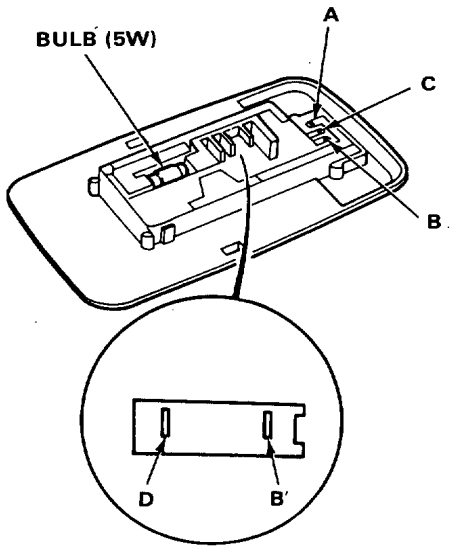
6. Check for continuity between the terminals in each switch position according to the table.

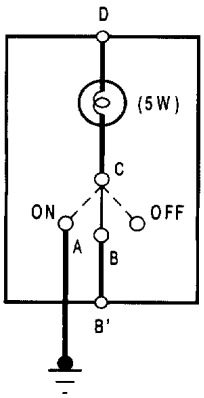
Position \ Terminal	A	B or B'	C		D
OFF			○	○	○
DOOR		○	○	○	○
ON	○		○	○	○

WITH SUNROOF:



WITHOUT SUNROOF:





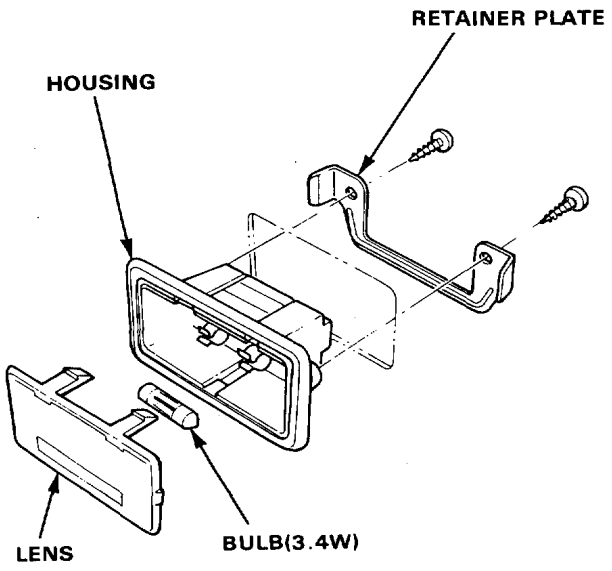
Downloaded from www.Manualslib.com manuals search engine

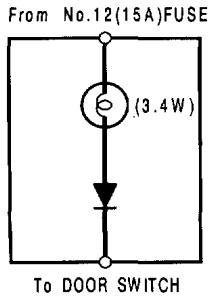
Courtesy Lights

Replacement

NOTE: The bulb or lens alone can be replaced without having to remove the door trim panel.

1. Remove the door trim panel.
2. Remove the 2 screws and the retainer plate to remove the light from the door trim panel.

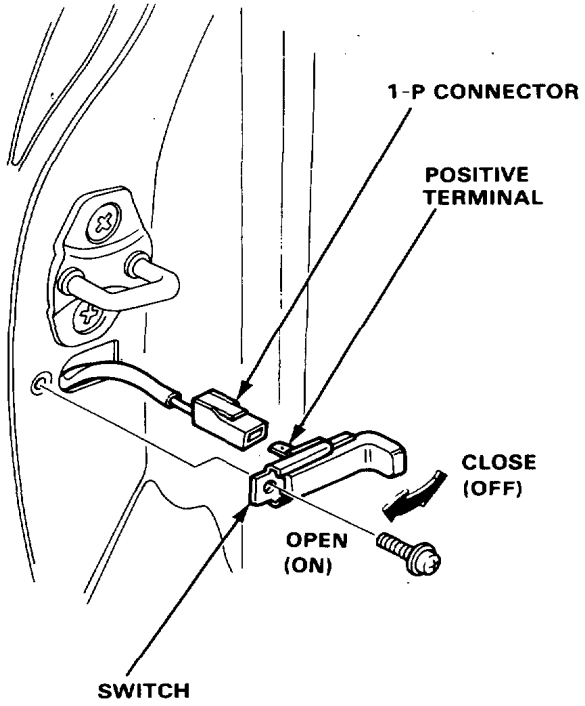




Door Switches

Test

1. Open the door.
2. Remove the screw and pull out the door switch.
3. Disconnect the 1-P connector from the switch.



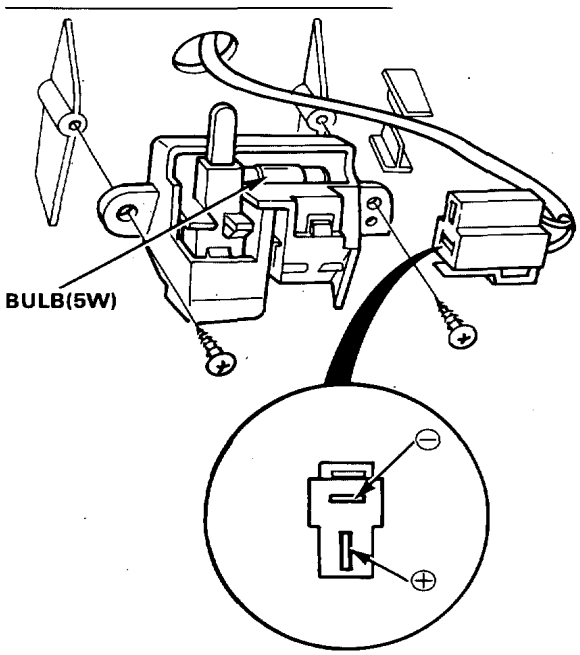
4. There should be continuity between the positive terminal and base plate (ground) with the switch released (door opened).
   There should be no continuity with the switch pushed (door closed).

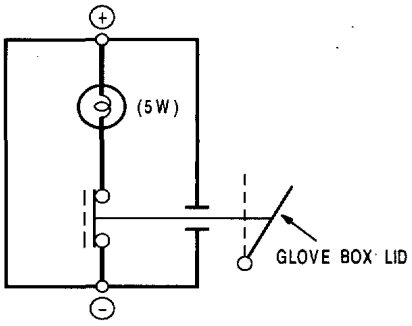
Downloaded from www.Manualslib.com manuals search engine

Glove Box Light

Test

1. Open the glove box.
2. Disconnect the 2P connector from the light.
3. There should be continuity between the ⊕ and ⊖ terminals with a bulb installed.

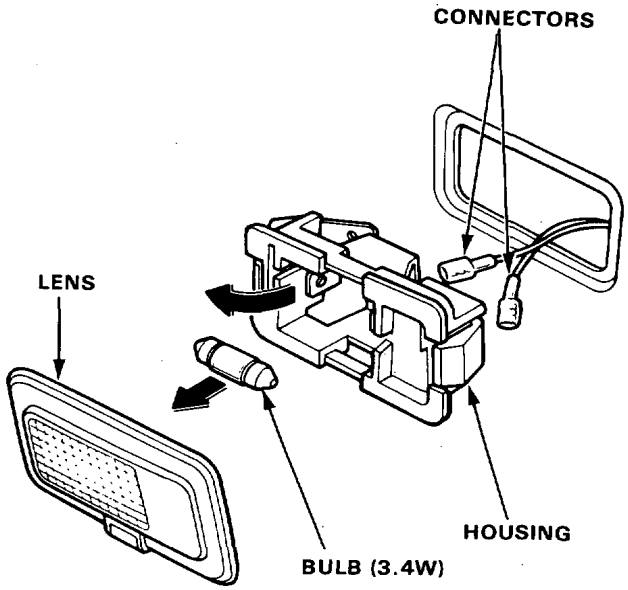




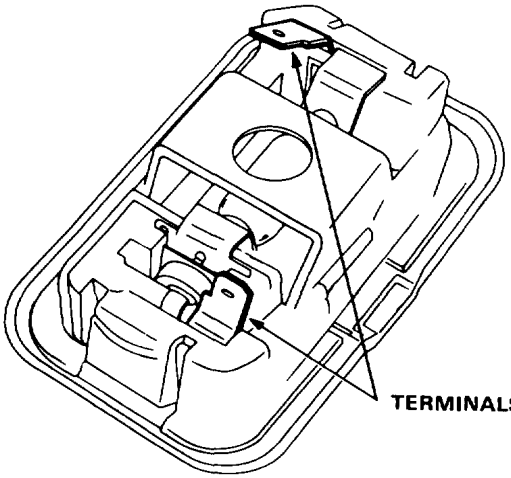
Trunk Light

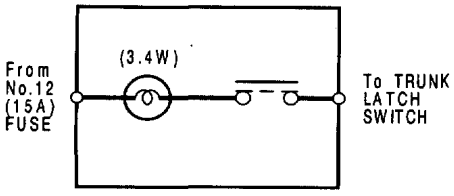
Test

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.



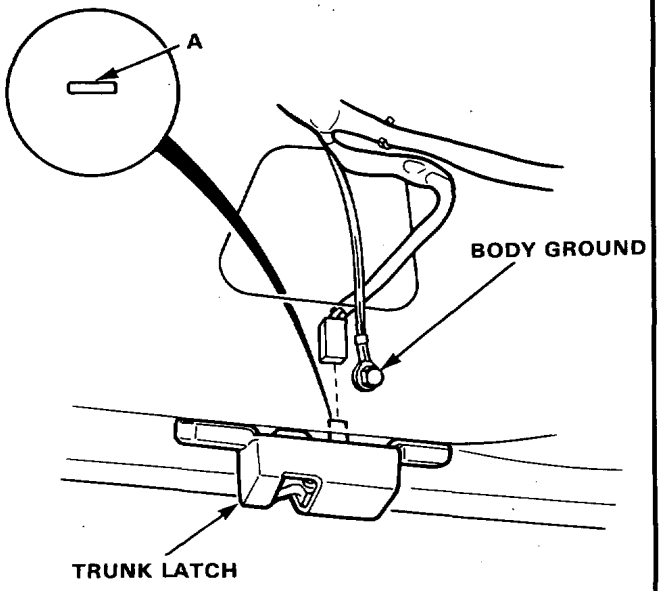


Downloaded from www.Manualslib.com manuals search engine

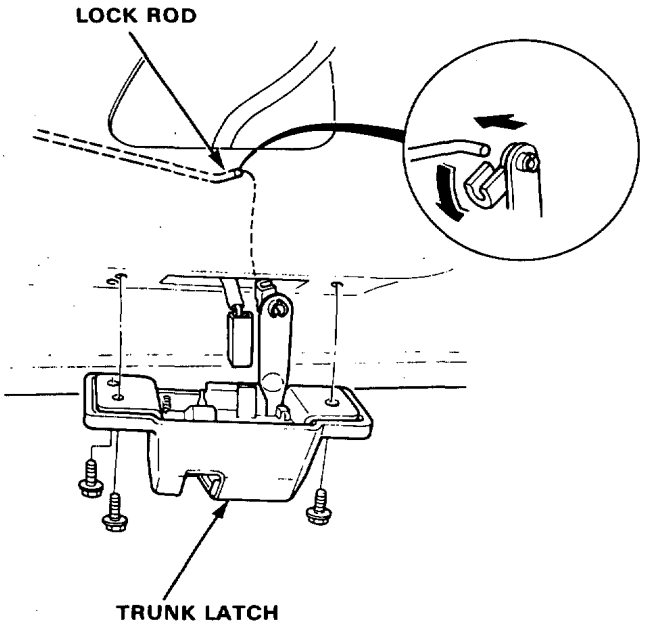
Latch Switch

Test/Replacement

1. *Open* the trunk lid.
2. Disconnect the connector from the trunk latch.
3. There should be continuity between the A terminal and body ground.



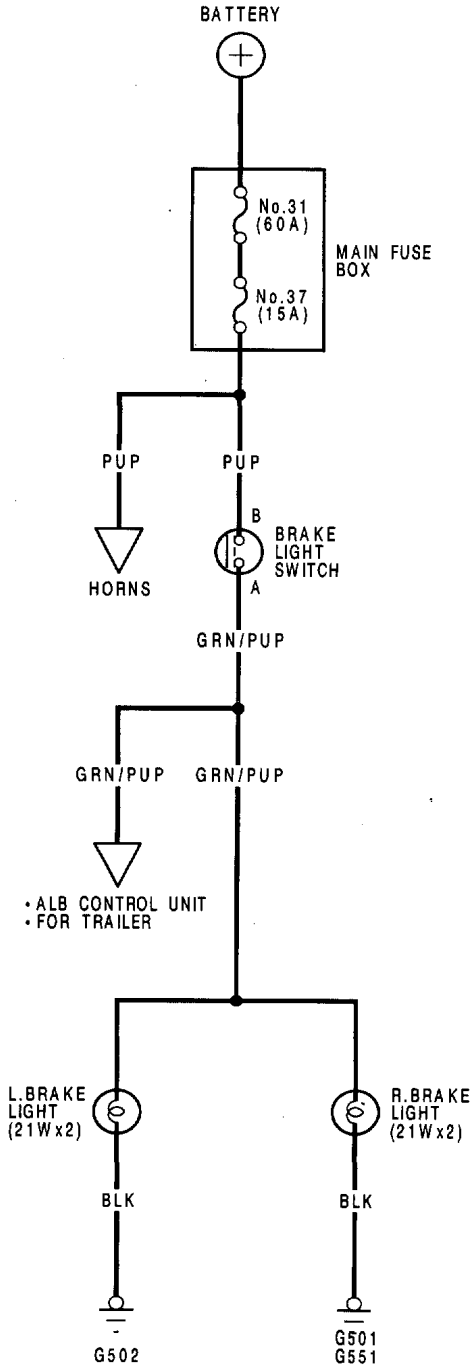
4. If necessary, remove the 3 bolts to pull out the latch from the trunk lid, then disconnect the lock rod from the latch.



Downloaded from www.Manualslib.com manuals search engine

Brake Lights

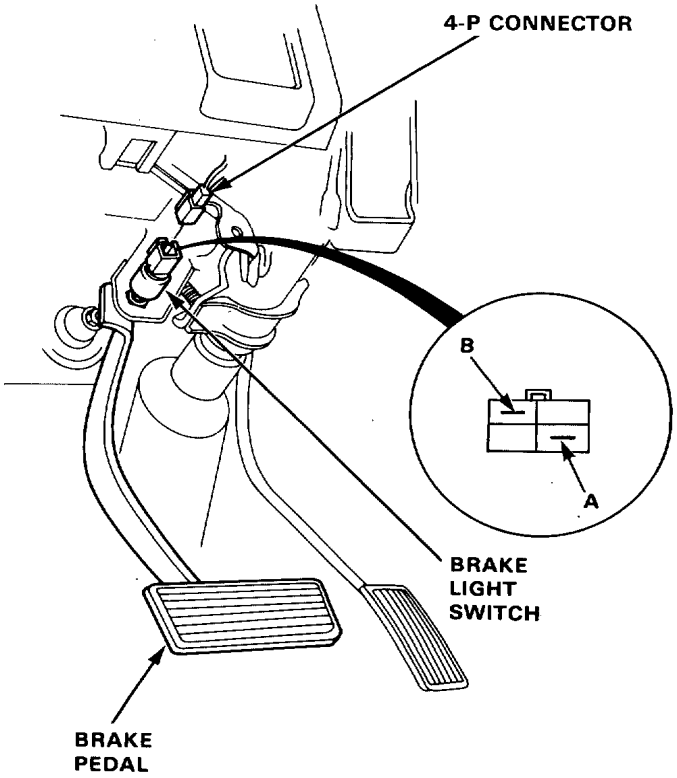
Circuit Diagram



Test

1. If the brake lights and high mount brake light do not go on, check the No.37 (15A) fuse in the main fuse box, and the brake light bulbs in the taillight, rear panel light and high mount brake light.

2. If the fuse and bulbs are OK, disconnect the 4-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, adjust pedal height or replace the switch (see section 13).
   - If there is continuity, but the brake lights do not go on :

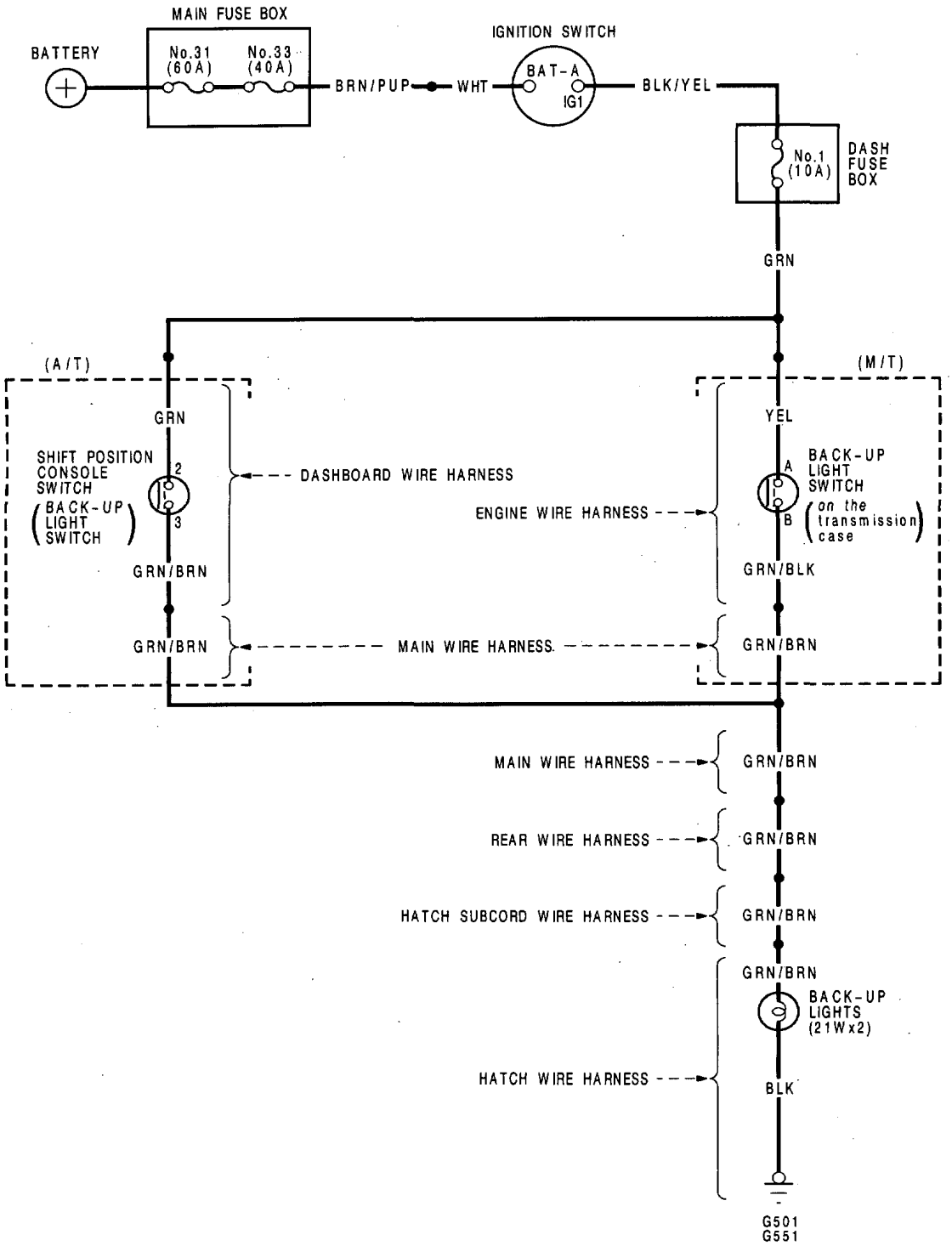
     Poor ground (G501, G551, G502).

     An open in the PUP or GRN/PUP wire.

Downloaded from www.Manualslib.com manuals search engine

Back up Lights

Circuit Diagram



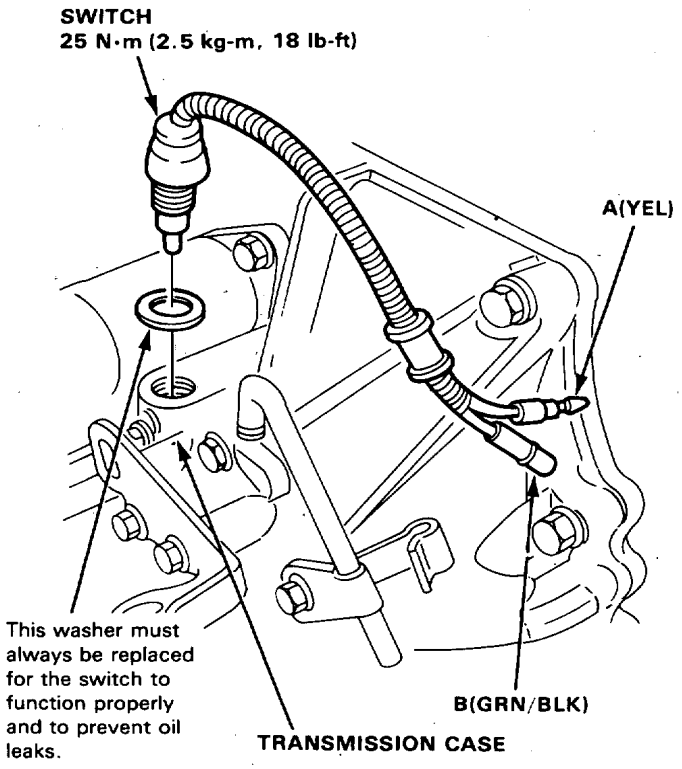
Downloaded from www.Manualslib.com manuals search engine

Back-up Lights

Test

Manual Transmission :

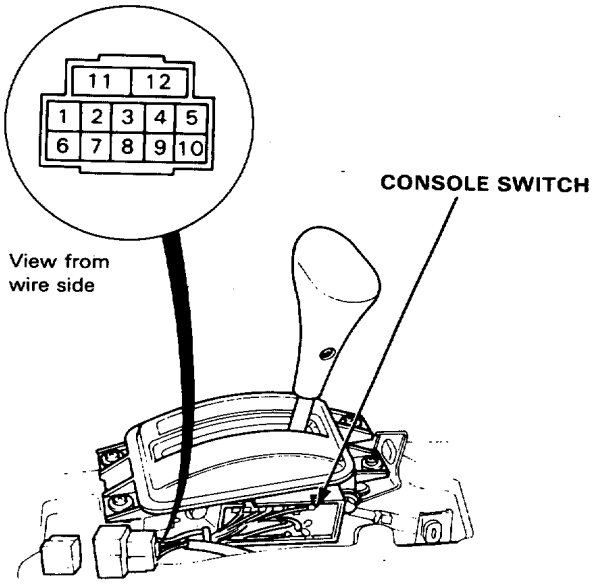
1. Test back-up light switch by placing the select lever in reverse and turning the ignition switch ON.
2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the rear panel light assembly.
3. If the fuse and bulbs are OK, disconnect the connectors 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 (G501, G551).
     - An open in the GRN or YEL or GRN/BLK or GRN/BRN wire.

Automatic Transmission :

1. Test back-up light switch by shifting the select lever to "R" and turning the ignition switch 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 rear panel light assembly.
3. If the fuse and bulbs are OK, remove the center console, then disconnect the 10-P connector from the shift position console switch (back-up light switch).

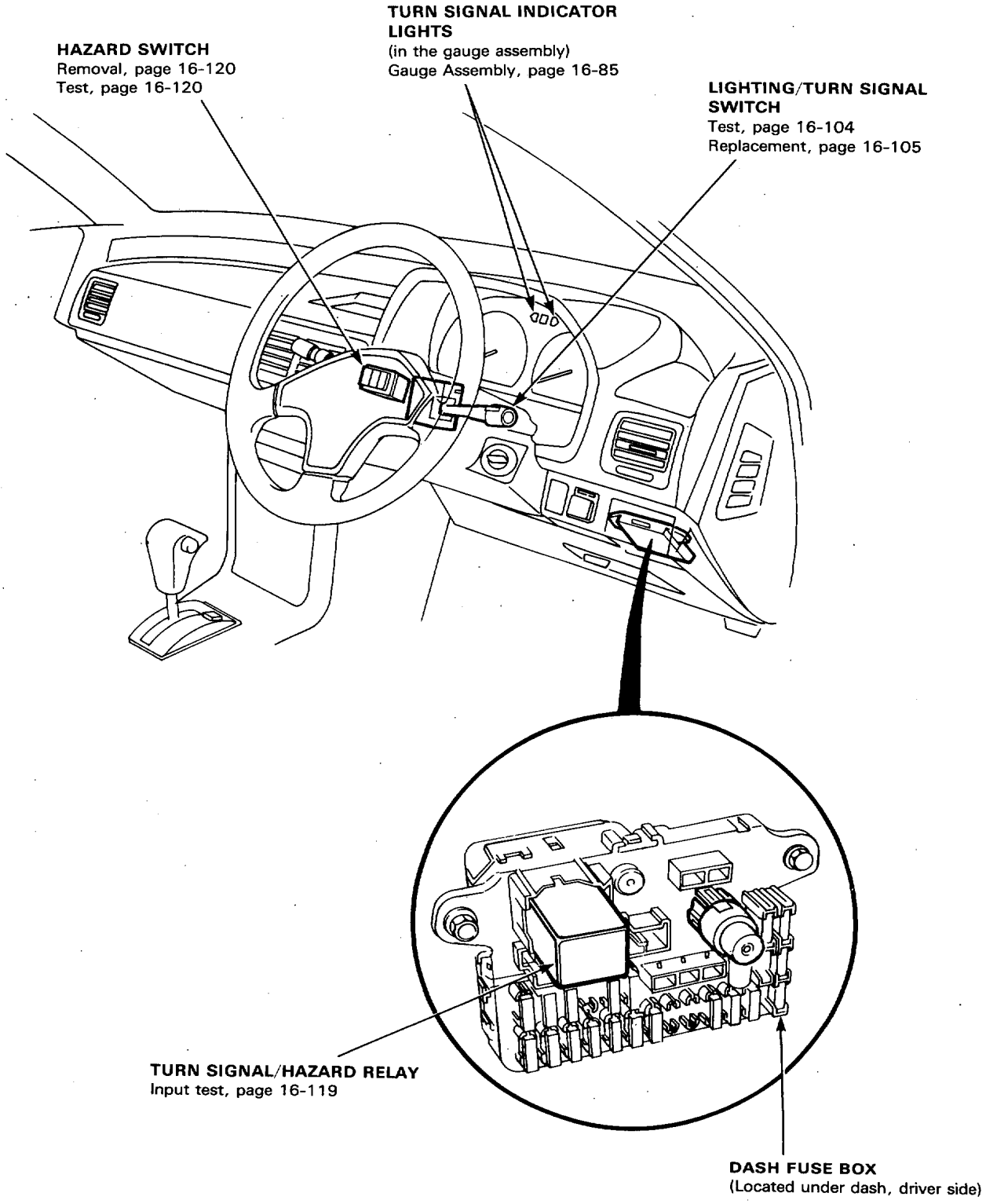


4. Check for continuity between No.2 and No.3 terminals. There should be continuity as the select lever engages "R".
   - If no continuity, replace the switch assembly (see page 16-88).
   - If there is continuity, but the back-up lights do not go on :
     - Poor ground (G501, G551).
     - An open in the GRN or GRN/BRN wire.

Downloaded from www.Manualslib.com manuals search engine

Turn Signal/Hazard Flasher System

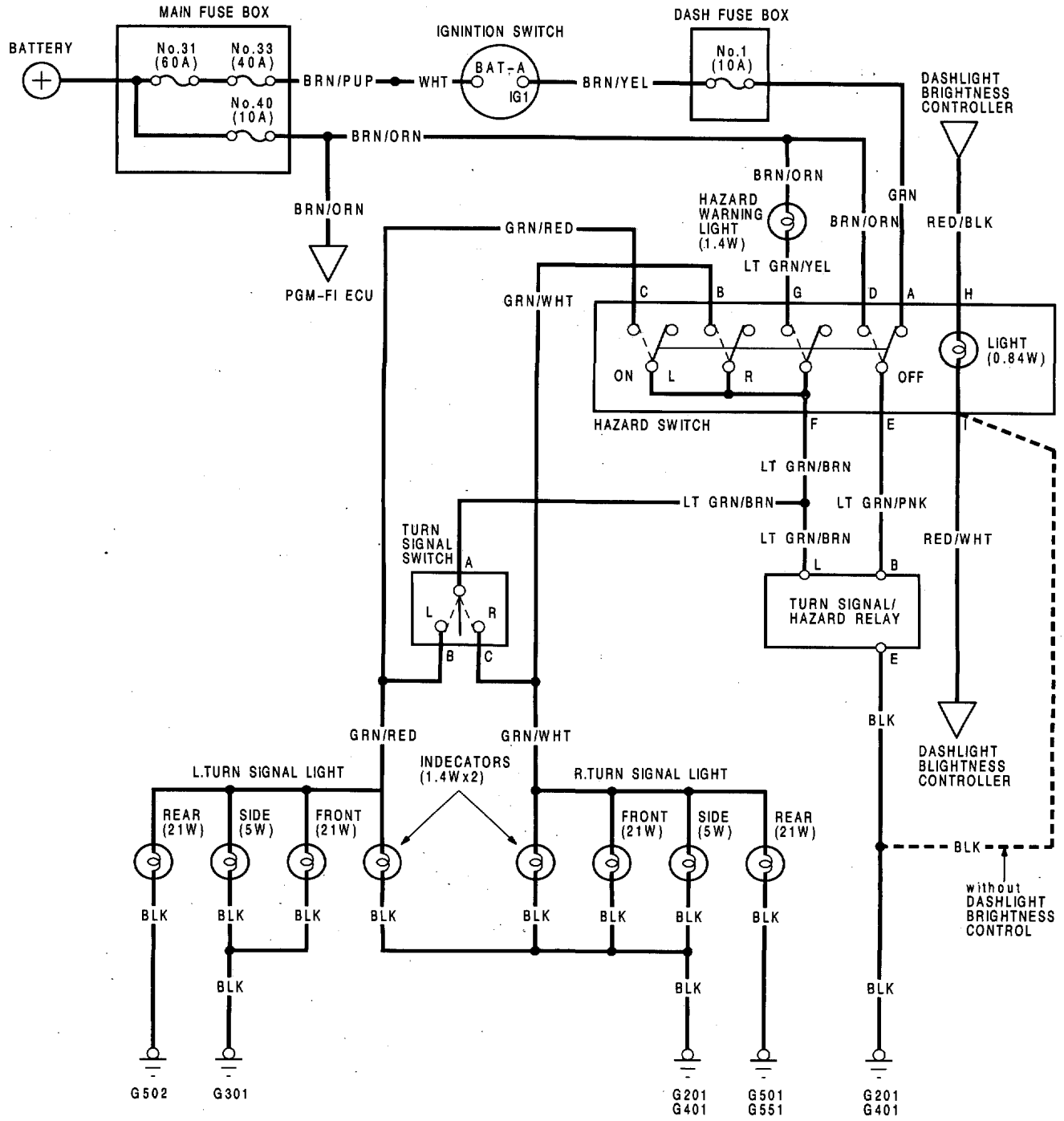
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Turn Signal/Hazard Flasher System

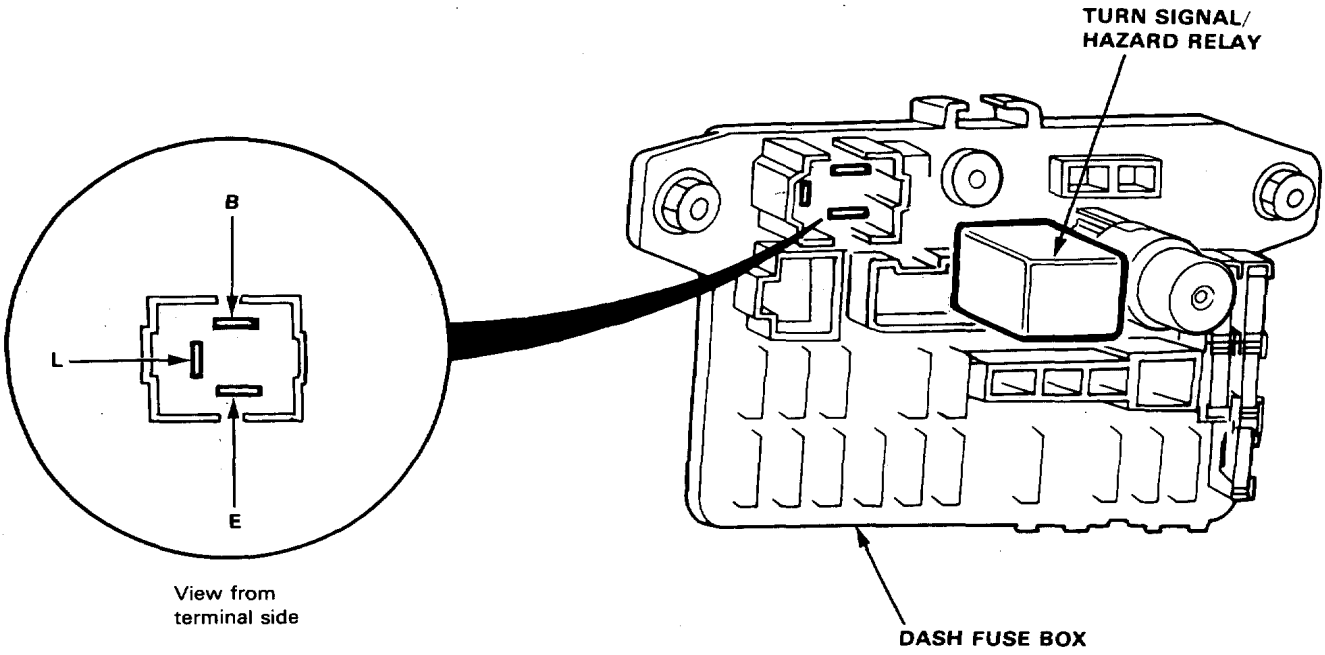
Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

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.



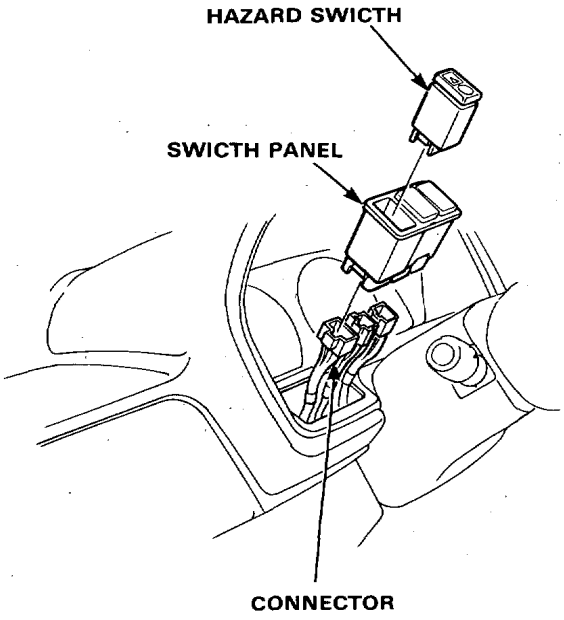
No.	Terminal	Test condition	Test : desired result	Possible cause (if result is not obtained)
1	E	Under all conditions.	Check for continuity to ground : should be continuity	• Poor ground (G201, G401) • An open in he BLK wire.
2	B	Ignition switch ON.	Check for voltage to ground : should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the BRN or LT GRN/PNK 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.40 (10A) fuse. • Blown bulb. • Poor ground (G201, G301, G401, G501, G502). • Faulty hazard switch. • An open in the BRN/ORN, LT GRN/BRN GRN/RED or GRN/WHT 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.

Downloaded from www.Manualslib.com manuals search engine

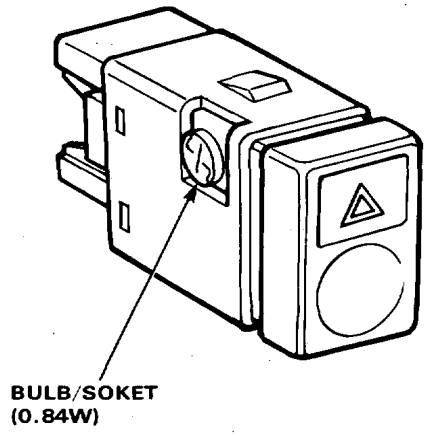
Turn Signal/Hazard Flasher System

Hazard Switch Removal

1. Remove the dashboard lower panel. Push out the switchs from behind the instrument panel, then disconnect the connectors from the switchs.
2. Remove the hazard switch from the switch. panel.



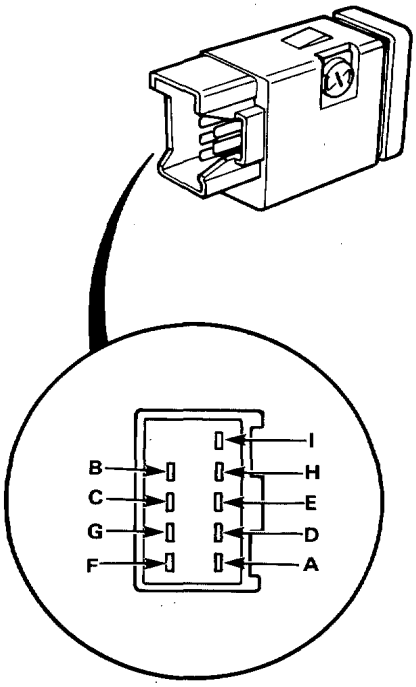
3. Turn the socket 45° counterclockwise (0.84W)

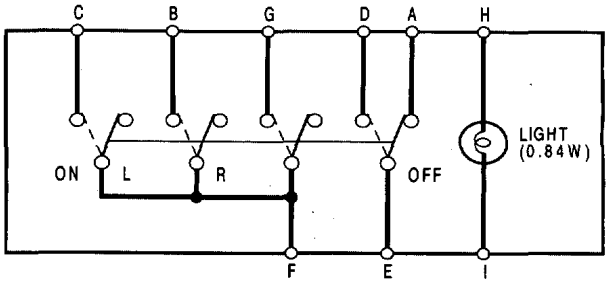


Hazard Switch Test

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		○	○	○	○	○	○

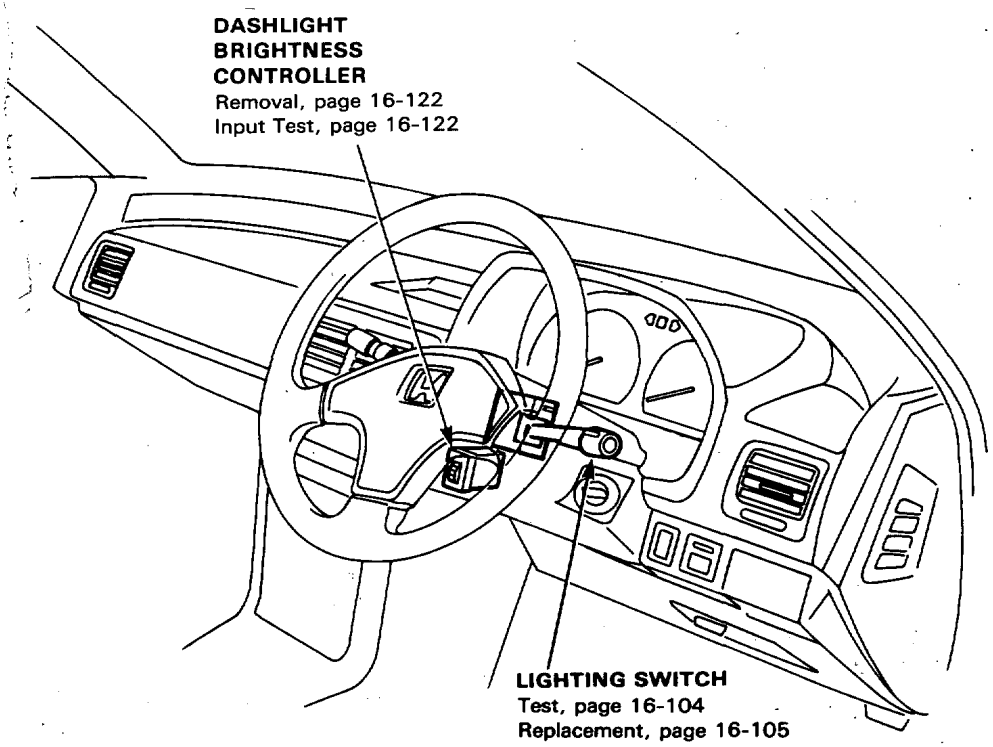




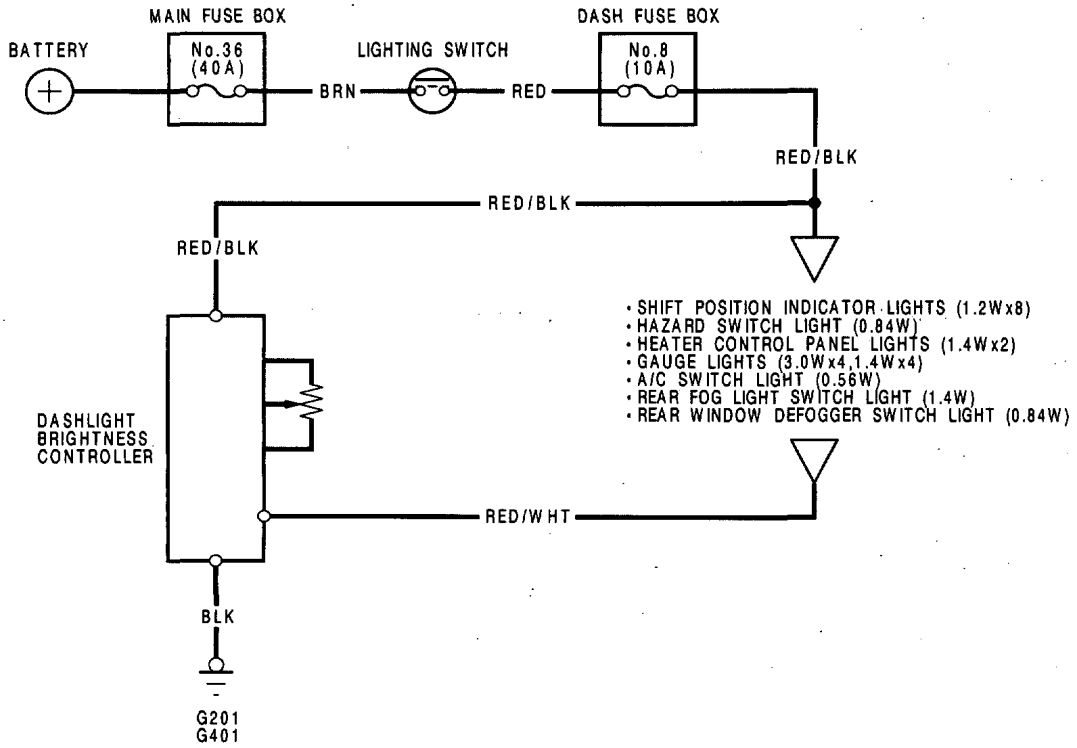
Downloaded from www.Manualslib.com manuals search engine

Dashlight Brightness Control

Component Location Index



Circuit Diagram



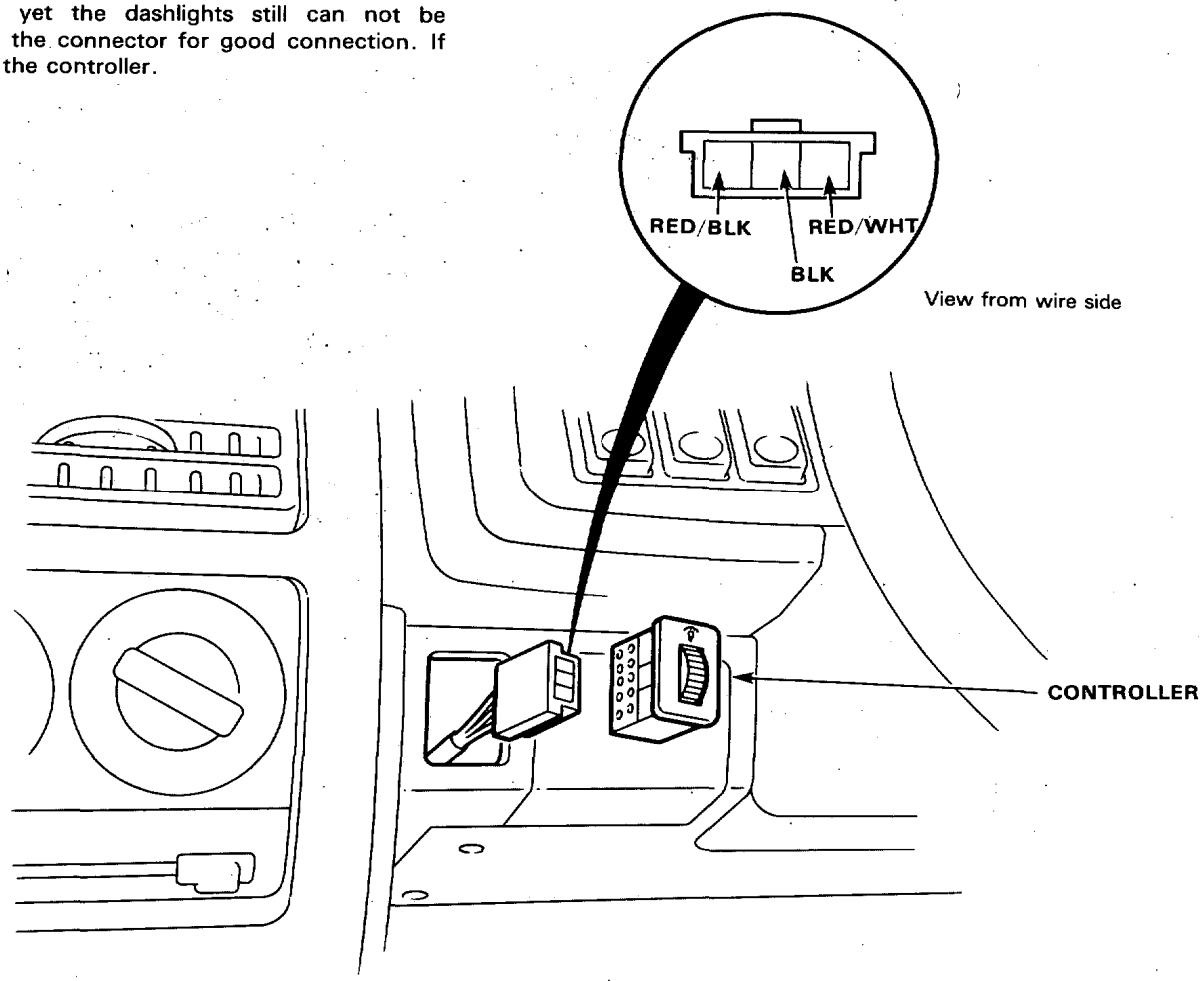
Downloaded from www.Manualslib.com manuals search engine

Dashlight Brightness Control

Controller Input Test

NOTE: The control unit is built in the dashlight brightness controller.

Remove the dashboard lower panel. Push out the controller from behind the instrument panel, then disconnect the 3-P 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.

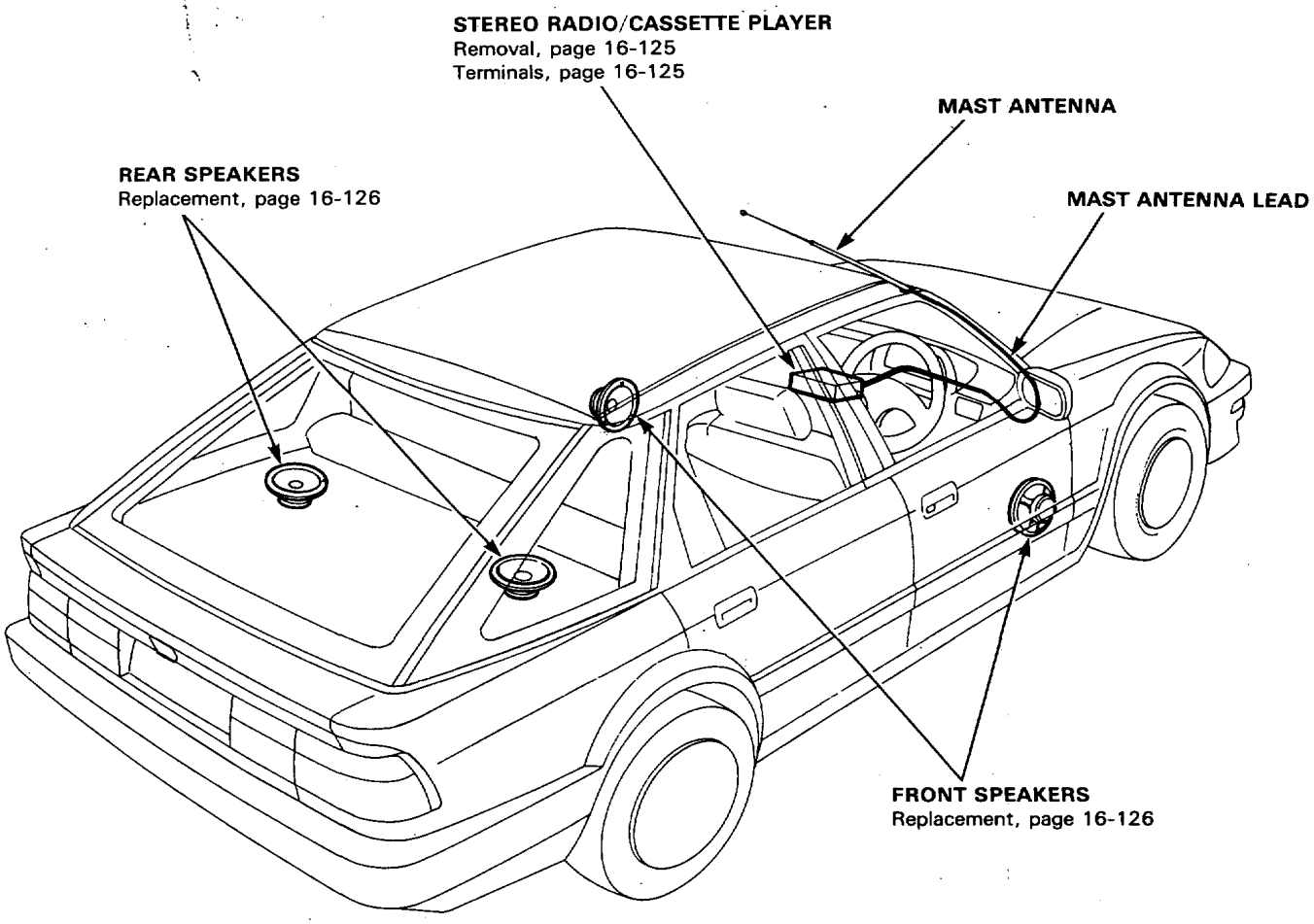


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground : should be continuity,	• Poor ground (G201, G401) • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground : should be battery 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/WHT and the RED/BLK wires are connected.	• An open in the RED/BLK or RED/WHT wire.

Downloaded from www.Manualslib.com manuals search engine

Stereo Sound System

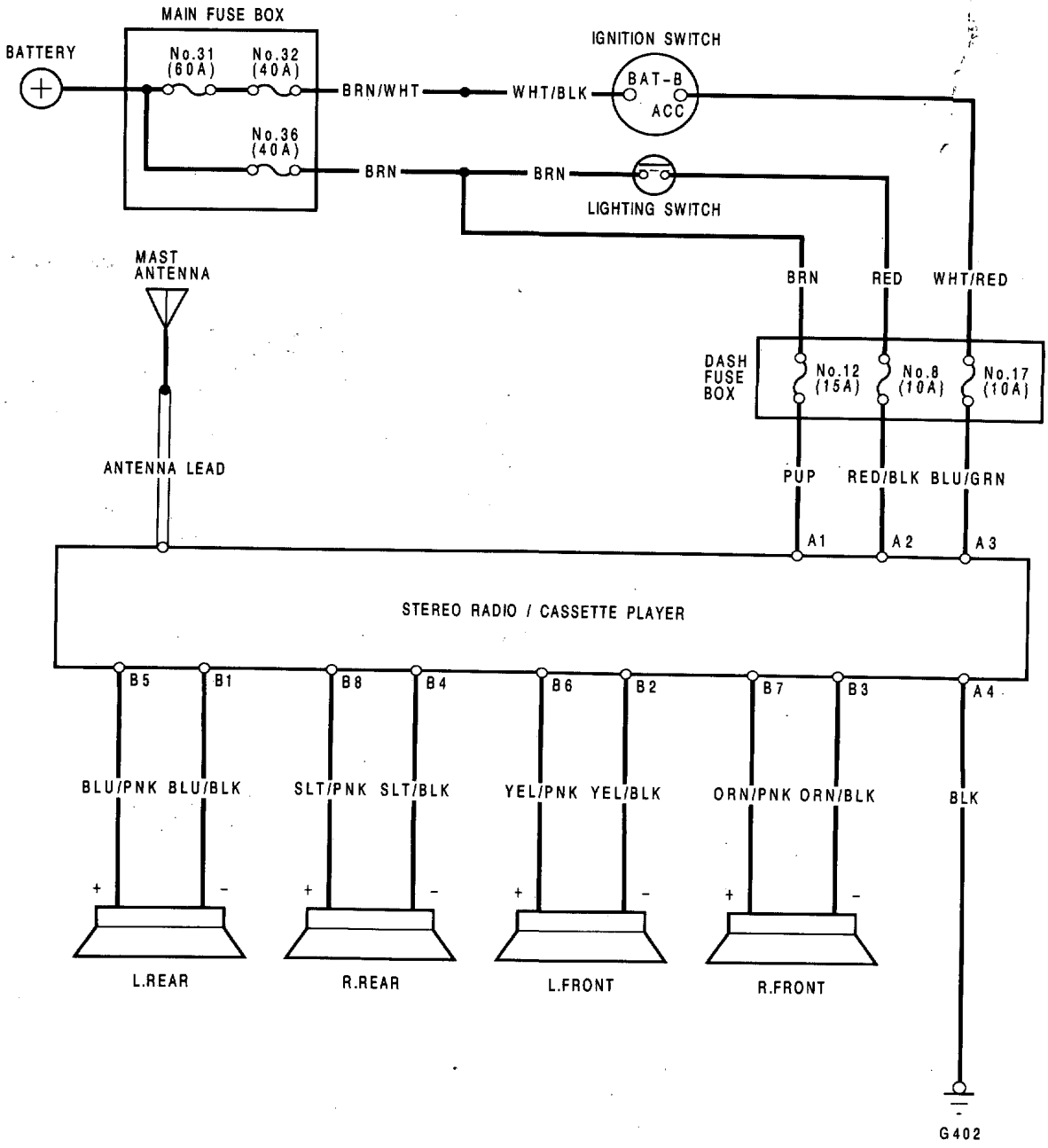
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

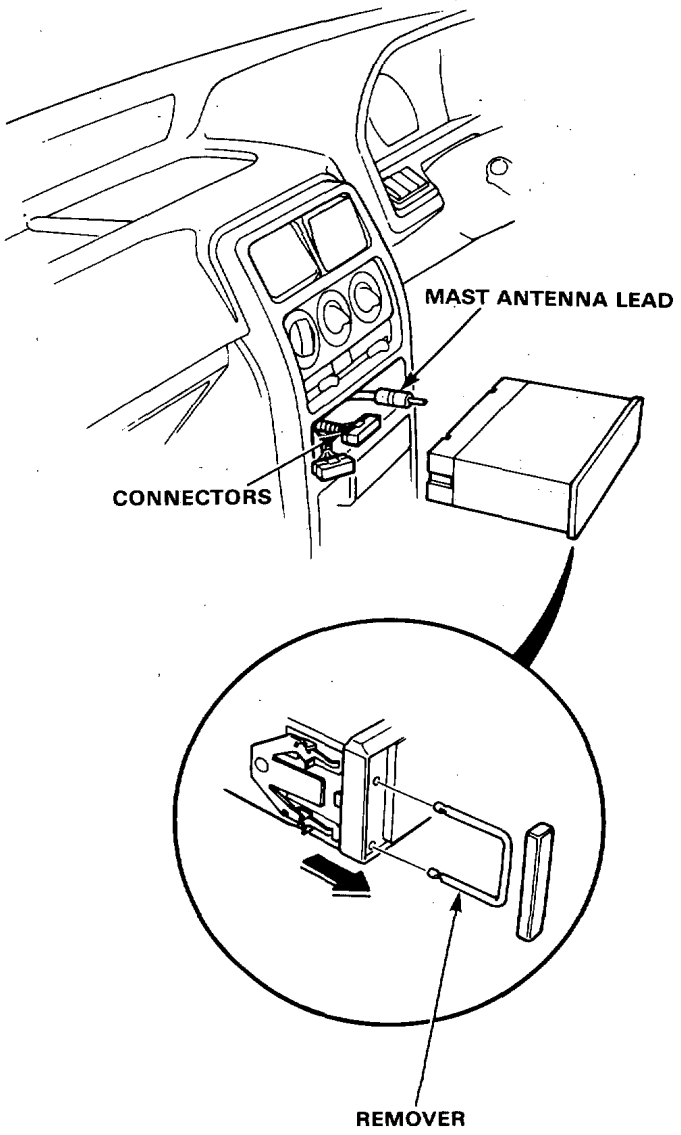
Stereo Sound System

Circuit Diagram

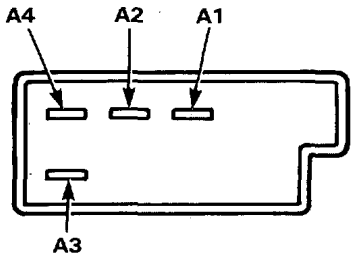


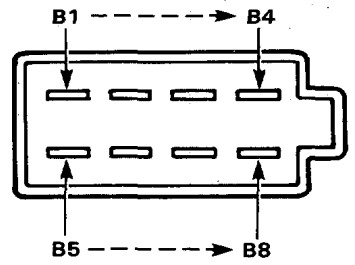
Downloaded from www.Manualslib.com manuals search engine

Unit Removal



Unit Terminals





Terminal	Wire	Destination
A1	PUP	Constant power (Tuning memory)
A2	RED/BLK	Light-ON signal
A3	BLU/GRN	ACC (Main stereo power supply)
A4	BLK	Ground

Terminal	Wire	Destination
B1	BLU/BLK	Left rear speaker ⊖
B2	YEL/BLK	Left front speaker ⊖
B3	ORN/BLK	Right front speaker ⊖
B4	SLT/BLK	Right rear speaker ⊖
B5	BLU/PNK	Left rear speaker ⊕
B6	YEL/PNK	Left front speaker ⊕
B7	ORN/PNK	Right front speaker ⊕
B8	SLT/PNK	Right rear speaker ⊕

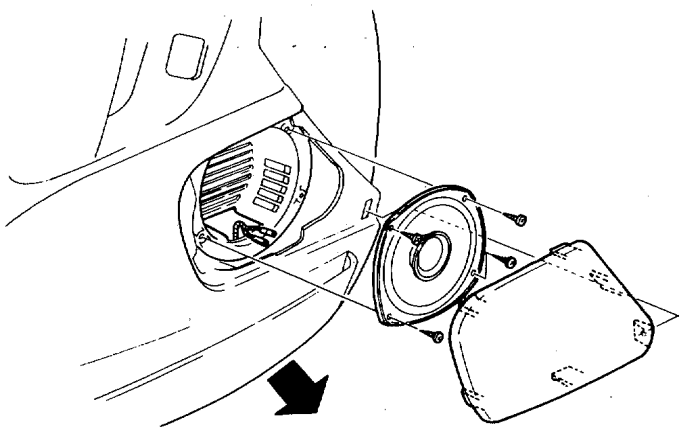
Downloaded from www.Manualslib.com manuals search engine

Stereo Sound System

Speaker Replacement

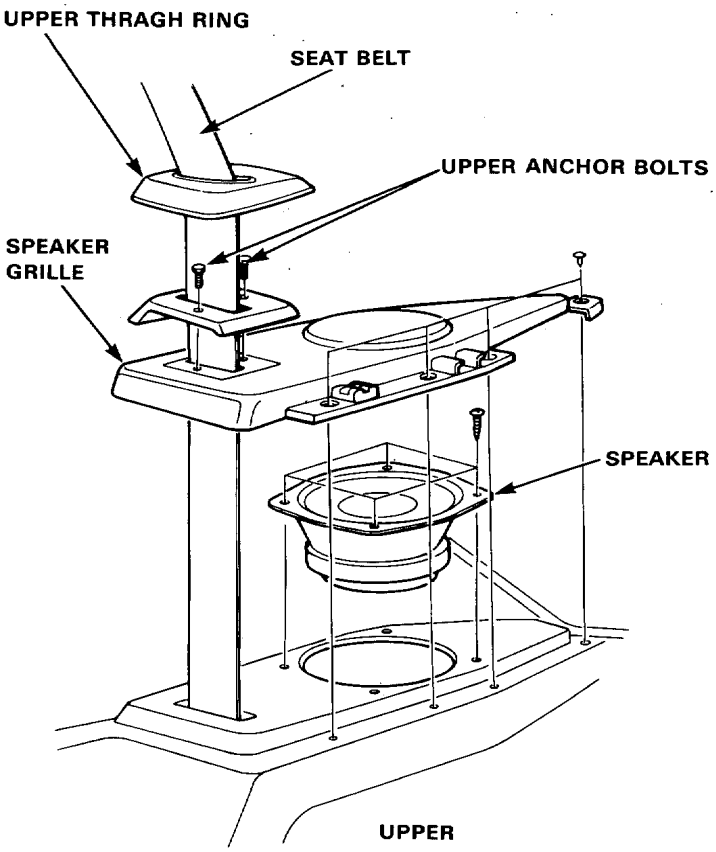
Front Speakers :

1. Remove the door trim panel.
2. Remove the 4 screws and disconnect the wires then remove the speaker.



Rear Speakers:

1. Remove the upper anchdor bolt. (see 14 section).
2. Remove the speaker grille.
3. Remove the 4 screws and disconnect the wires then remove the speaker.

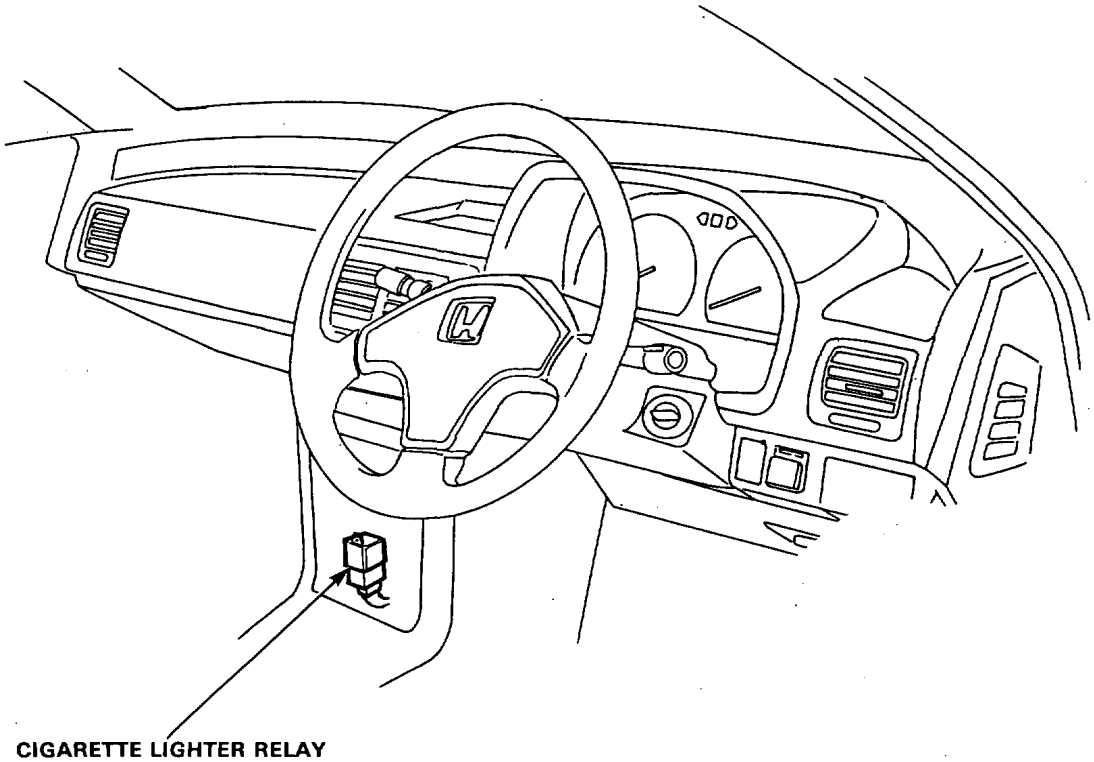


Downloaded from www.Manualslib.com manuals search engine

Cigarette Lighter

Component Location Index

• **CIGARETTE LIGHTER**
Test, page 16-128
Replacement, page 16-129

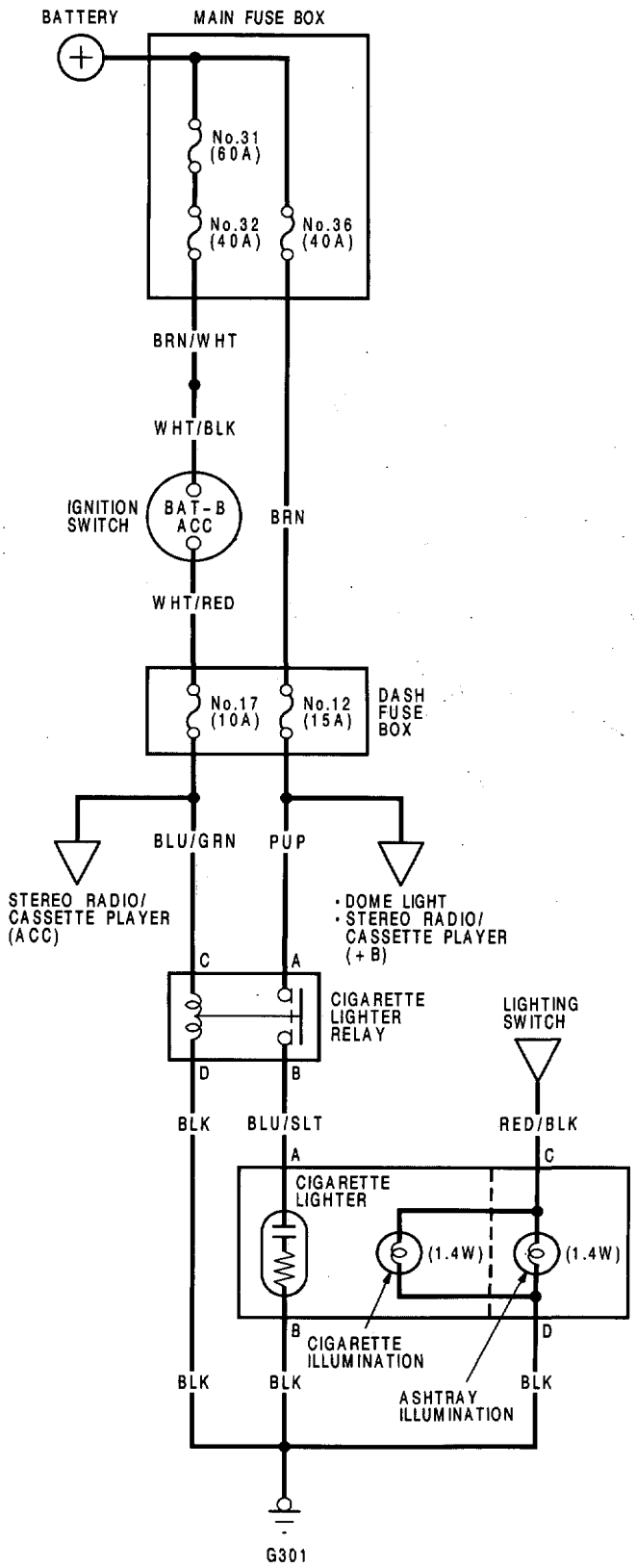


CIGARETTE LIGHTER RELAY
[Wire colors: BLU/SLT, BLK, BLU/GRN and pup]
Test, page 16-129

Downloaded from www.Manualslib.com manuals search engine

Cigarette Lighter

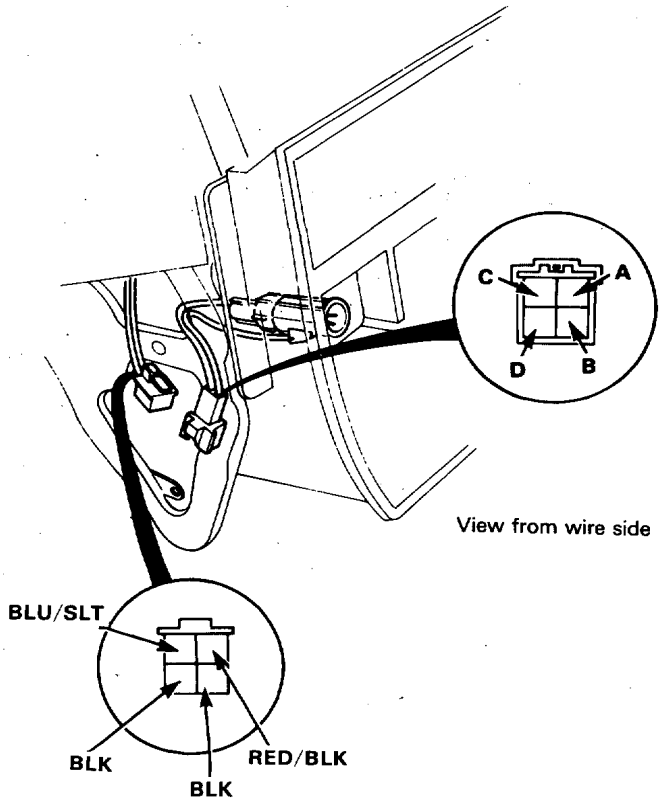
Circuit Diagrm

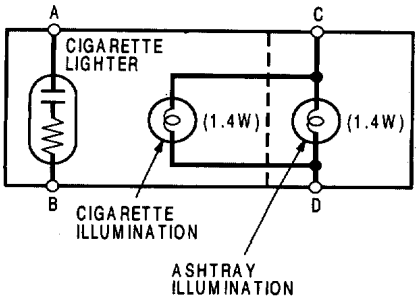


Test

1. Remove the center instrument panel, then disconnect the 4-P connector from the cigarette lighter.

2. Check for voltage between the BLU/SLT and the BLK terminal.
   There should be battery voltage.
   - If there is no voltage, *check for*
     - Blown No.12 (15A) or No.17 (10A) fuse in the dash fuse box.
     - An open in the Pup or BLU/SLT wire.
     - Failty cigarette lighter relay. (Test, page 16-)
   - If there is battery voltage, replace the cigarette lighter assy.



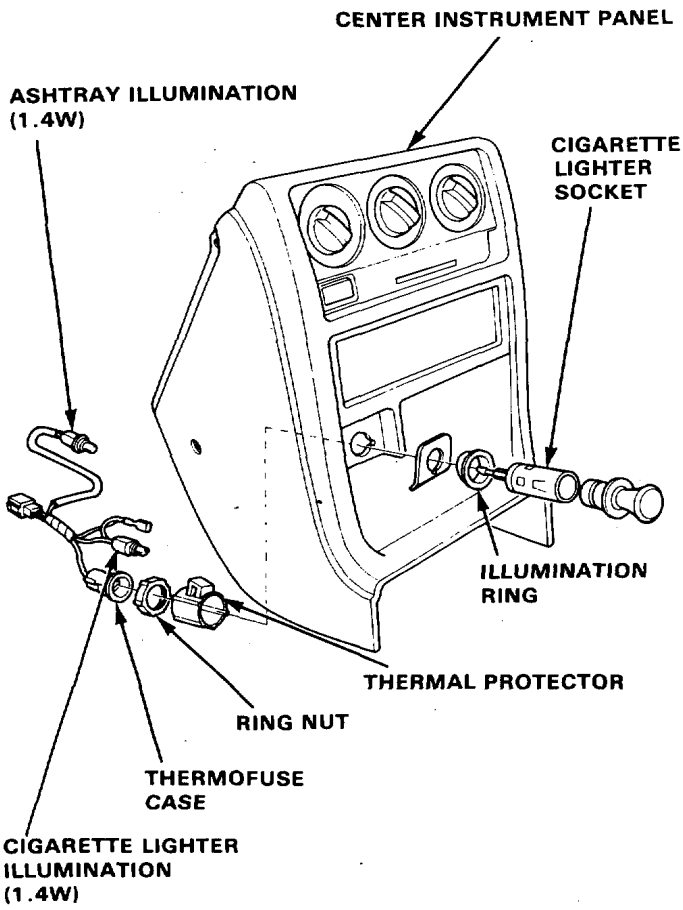


Downloaded from www.Manualslib.com manuals search engine

Replacement

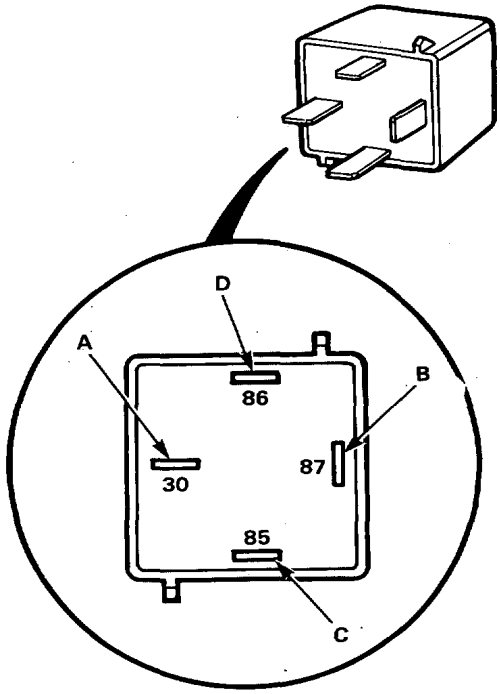
1. Remove the center instrument panel, then disconnect the 4-P connector from the cigarette lighter.
2. Disconnect the thermofuse case from the socket end.
3. Remove the ring nut and separate the cigarette lighter socket.

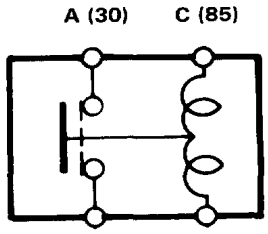
   NOTE: When installing the cigarette lighter, align the lug on the cigarette lighter socket with the slot in the panel.



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.



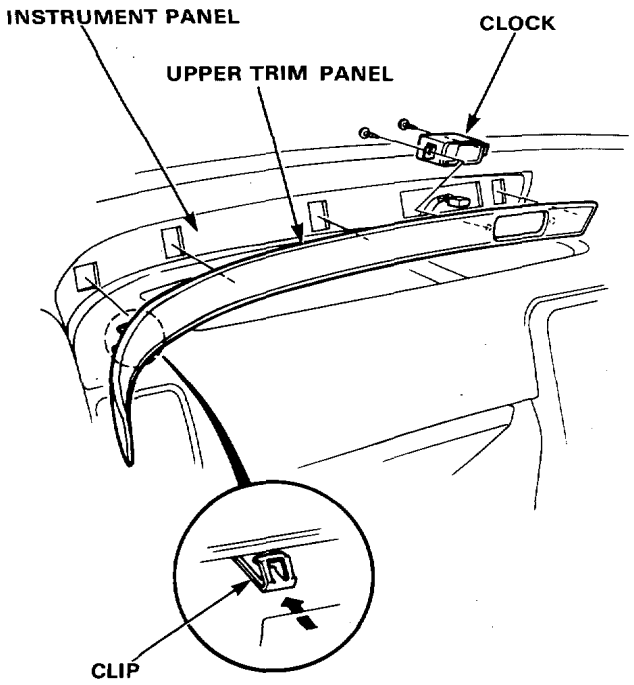


Downloaded from www.Manualslib.com manuals search engine

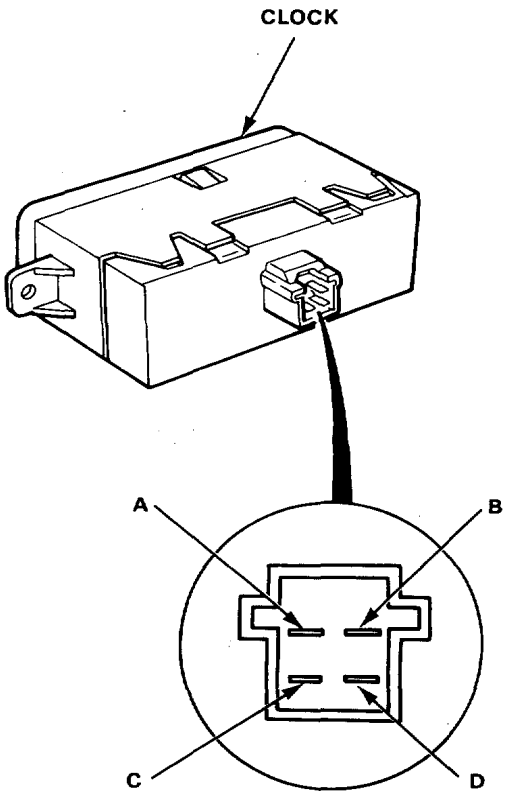
Clock

Removal

1. Remove the upper trim panel from the instrument panel, then carefully pull out the 10 clips.
2. Disconnect the 4-P connector from the clock.
3. Remove the 2 screws and clock from the panel.



Terminals

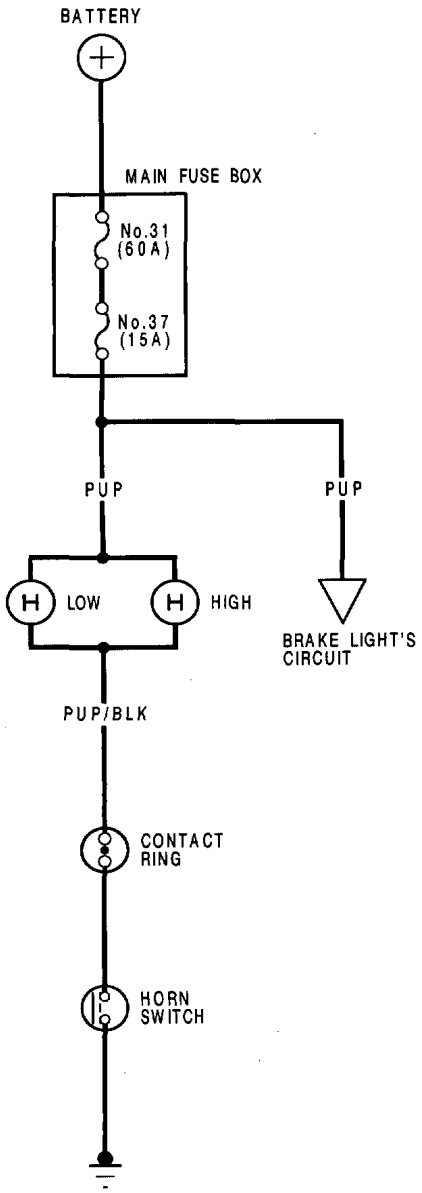


Terminal	Wire	Destination
A	WHT/BLU	Constant power (Time memory)
B	YEL	IG1 (Main clock power supply)
C	RED/BLK	Light-on signal
D	BLK	Ground

Downloaded from www.Manualslib.com manuals search engine

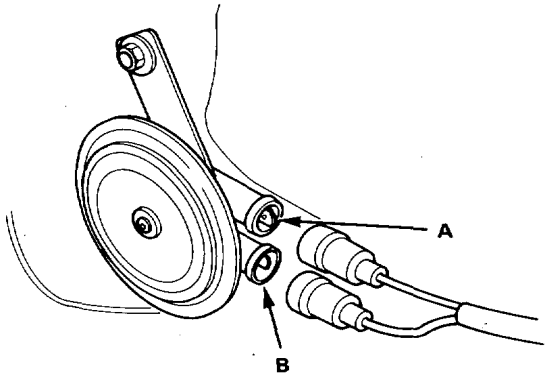
Horn

Circuit Diagram



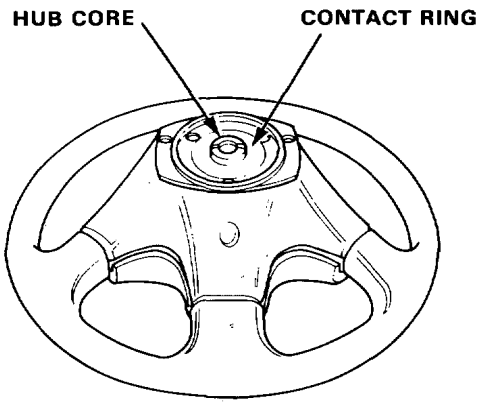
Horn Test

1. Remove the front bumper.
   - Remove the right and left front turn signal lights.
   - Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
   - Remove the 2 lower bumper mounting bolts and the 4 bumper mounting bolts.
   - Lift and remove the bumper by sliding it forward.
   - Installation sequence is essentially the reverse order of removal.
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. (see, page 16-104)
2. Check for continuity between the contact ring and hub core on the steering wheel with the horn switch pressed.
   There should be continuity.

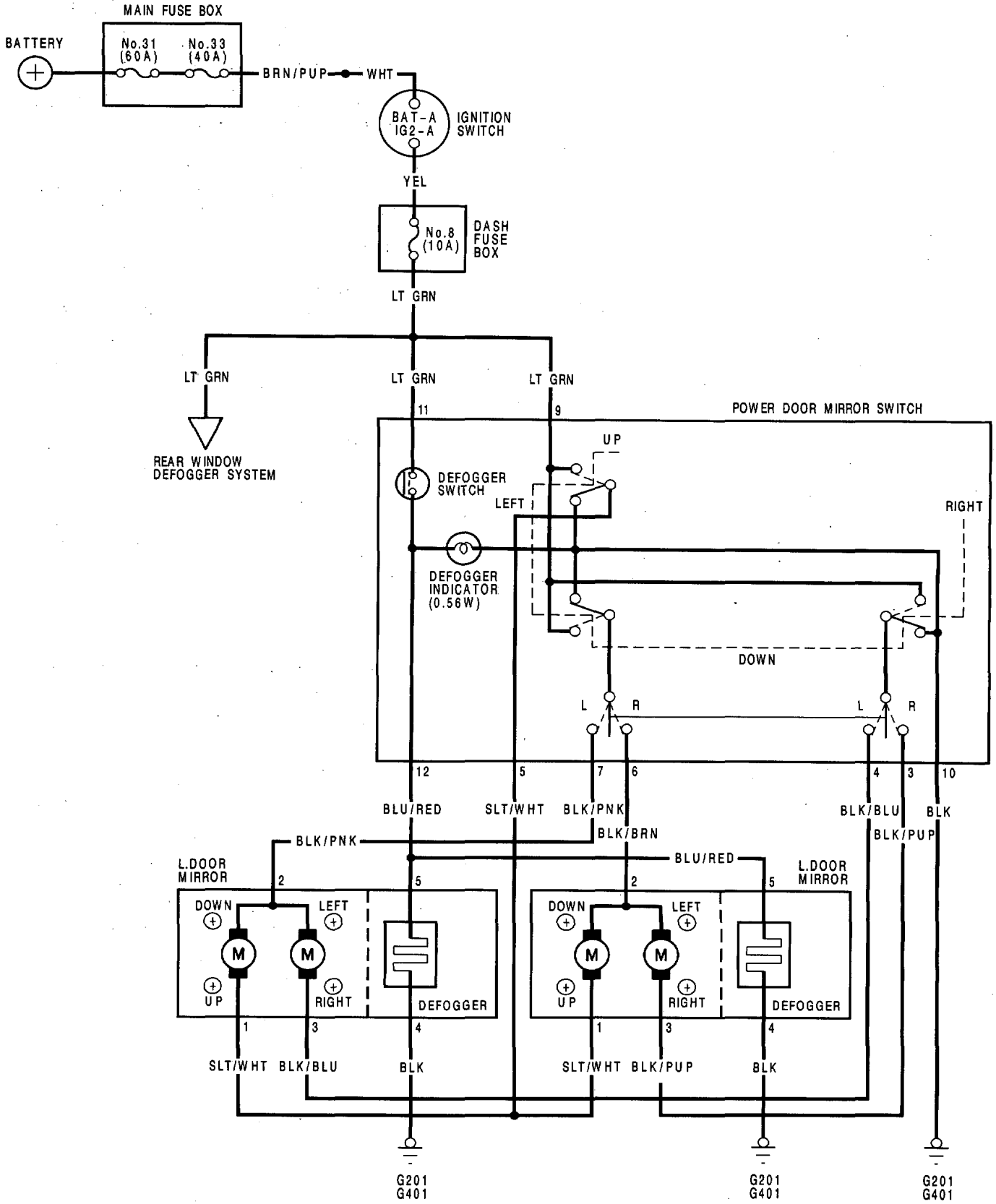


3. If there is no continuity, repair the horn switch.

Downloaded from www.Manualslib.com manuals search engine

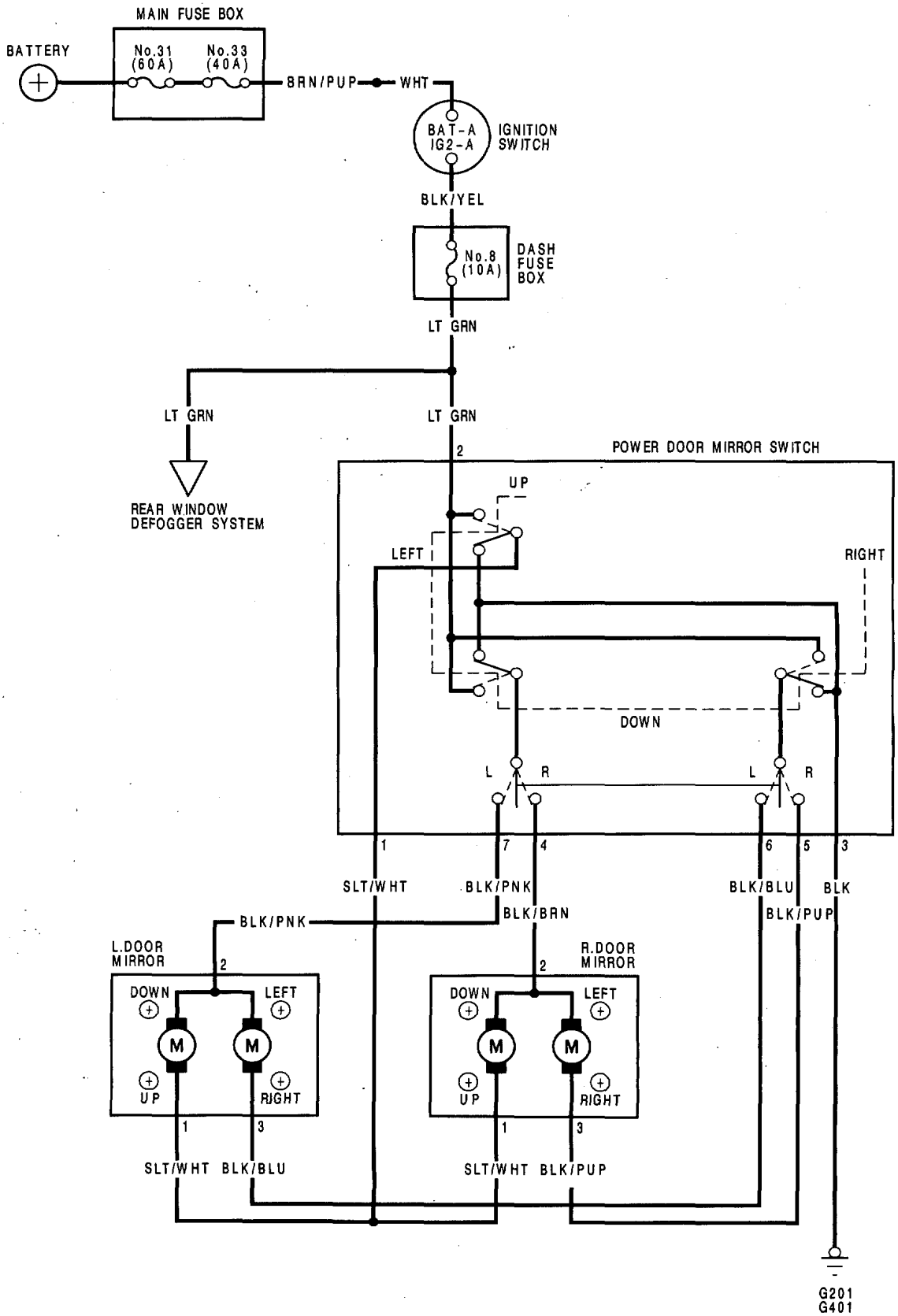
Power Door Mirrors

Circit Diagram (with Defogger)



Downloaded from www.Manualslib.com manuals search engine

(Without Defogger)



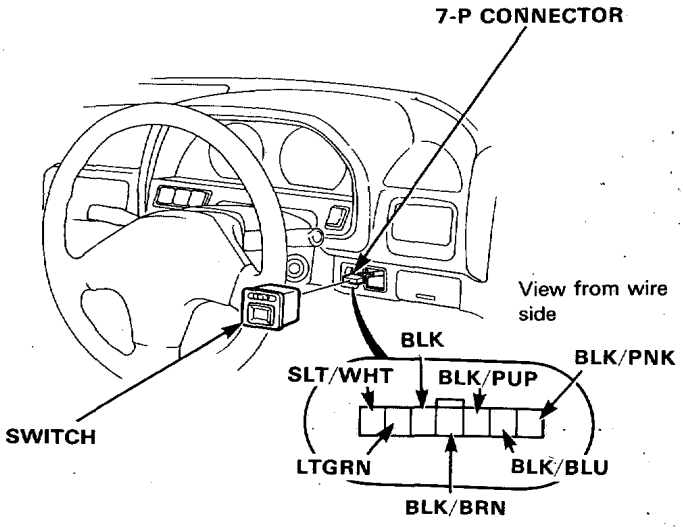
Downloaded from www.Manualslib.com manuals search engine

Power Door Mirrors

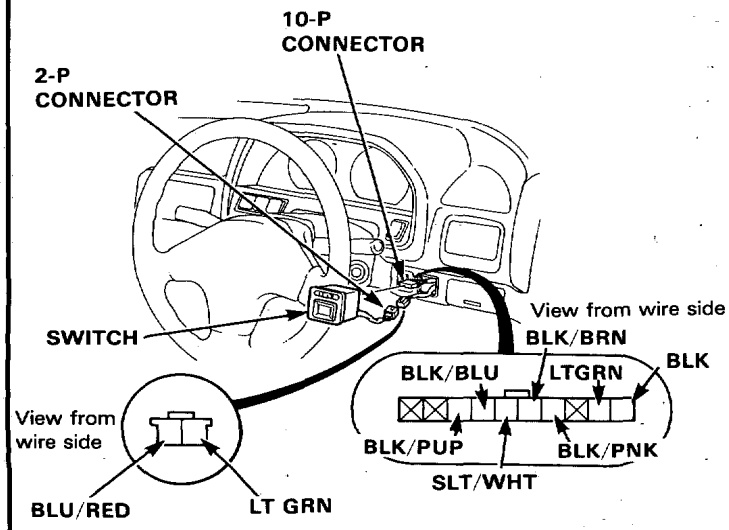
Function Test

NOTE: Before testing, remove the dashboard lower panel and push out the switch from behind the instrument panel, then disconnect the 7-P connector (and 10-P connector and 2-P connector) to remove the switch.

Without defogger:



With defogger:



Mirror Test

One or both inoperative:

1. Check for voltage between the LT GRN terminal and body ground with the ignition switch ON.
   There should be battery voltage.
   - If there is no voltage, check for
     - Blown No.8 (10A) fuse in the dash fuse box.
     - An open in the LT GRN 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 (G201, G401).

Right inoperative:

Connect the BLK/BRN terminal to the BLU/GRN terminal and the SLT/WHT (or BLK/PUP) 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 SLT/WHT (or BLK/PUP) 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 swings left, repair the BLK/BRN wire.
- If the mirror operates properly, check the mirror switch.

Left inoperative:

Connect the LT GRN terminal to the BLK/PNK terminal and the SLT/WHT (or BLK/BLU) 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 SLT/WHT (or BLK/BLU) 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 BLK/PNK wire.
- If the mirror operates properly, check the mirror switch.

Downloaded from www.Manualslib.com manuals search engine

Defogger Test

1. Check for voltage between the LT GRN terminal of the 2-P connector and body ground with the ignition switch ON.
   There should be battery voltage.

   - If there is no voltage, check for:
     - Blown No.8 (10A) fuse in the dash fuse box.
     - An open in the LT GRN wire between the dash fuse box and the defogger switch.

   - If there is battery voltage, go to step 2.

2. Connect the LT GRN terminal of the 2-P connector to the BLU/RED terminal with a jumper wire.
   Both the right and left mirrors should gradually warm up when the ignition switch is turned ON.

   - If neither warm up, repair the BLU/RED wire.

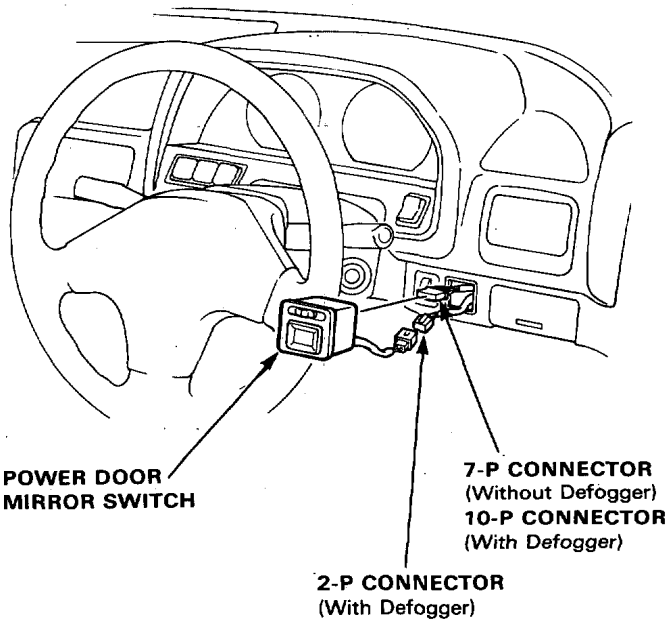
   - If only one fails to warm up, check its mirror defogger element.

   - If both warm up, check the switch.

Switch Removal

1. Remove the dashboard lower panel.

2. Push out the switch from behind the instrument panel, them disconnect the 7-P connector (without Defogger) or 10-P and 2-P connector's (with Defogger) to remove the switch.



Downloaded from www.Manualslib.com manuals search engine

Power Door Mirrors

Switch Test

1. Remove the power door mirror switch from the instrument panel.
2. Check for continuity between the terminal's in each switch position according to the table.

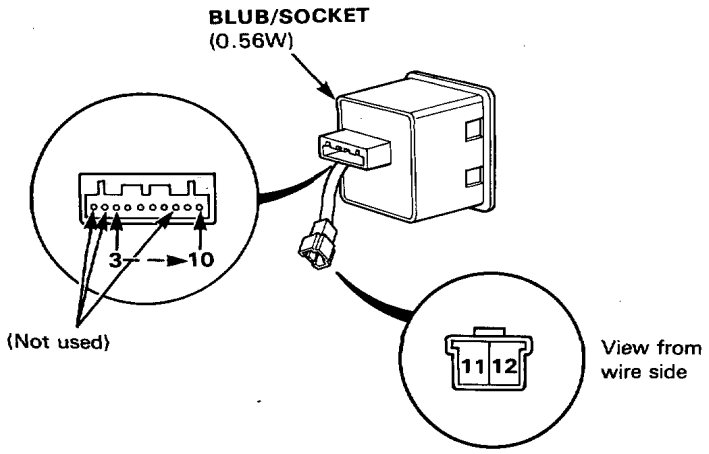
With Defogger:
Mirror switch

Position		Terminal 3	4	5	6	7	9	10
R	OFF	○		○	○			○
	UP			○			○	
	DOWN				○		○	
	LEFT				○		○	
	RIGHT	○					○	
L	OFF		○	○		○		○
	UP			○			○	
	DOWN					○	○	
	LEFT					○	○	
	RIGHT		○				○	

Defogger Switch

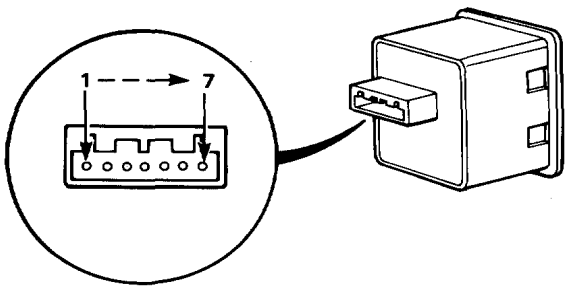
Position	Terminal 11	12		10
OFF		○	⊖	○
ON	○	○	⊖	○

(Internal connection)



Without Defogger:
Mirror switch

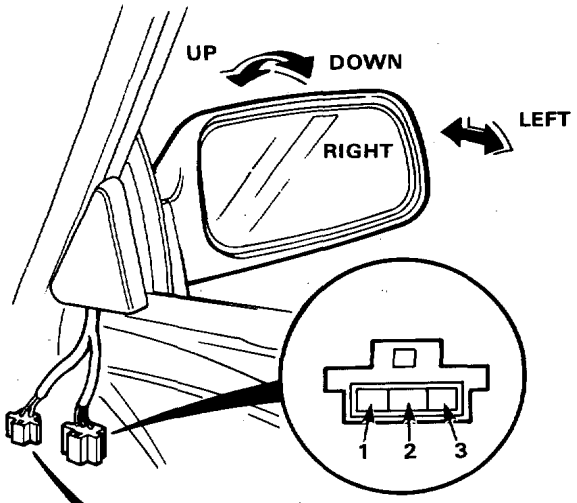
Position		Terminal 1	2	3	4	5	6	7
R	OFF	○		○	○	○		
	UP	○	○					
	DOWN		○		○			
	LEFT		○		○			
	RIGHT		○			○		
L	OFF	○		○			○	○
	UP	○	○					
	DOWN		○					○
	LEFT		○					○
	RIGHT		○				○	



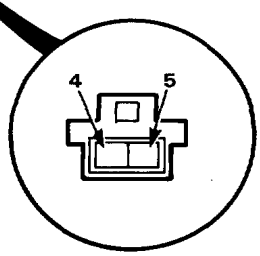
Downloaded from www.Manualslib.com manuals search engine

Door Mirror Test

1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Test actuator operation:
   - TILT UP: Connect battery positive to the No.1 terminal and negative to the No.2 terminal.
   - TILT DOWN: Connect 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 bettery positive to the No.3 terminal and negative to the No.2 terminal.
3. If the mirror fails to operate properly, replace it.
4. For with defogger, check for continuity between the No.4 and No.5 terminals (R x 10^3 scale). There should be continuity.



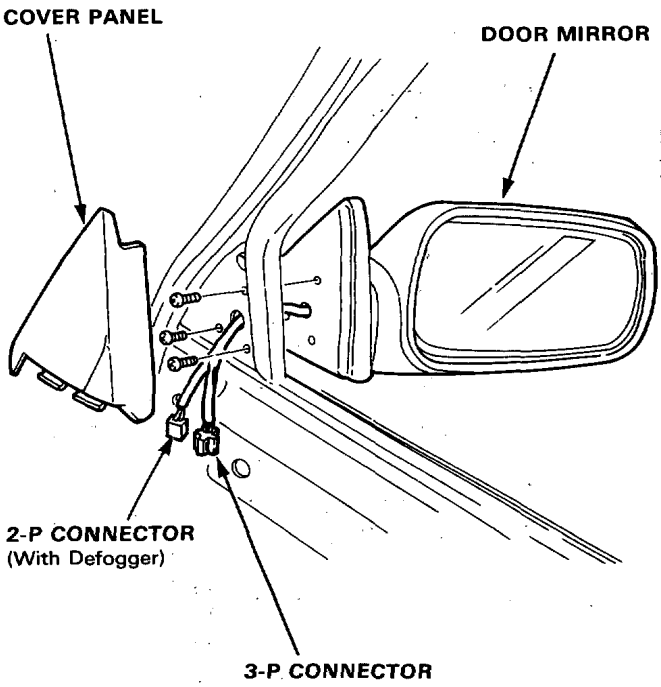
View from wire side



(With Defogger)

Door Mirror Replacement

1. Remove the door trim panel, then disconnect the 3-P connector (and 2-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.

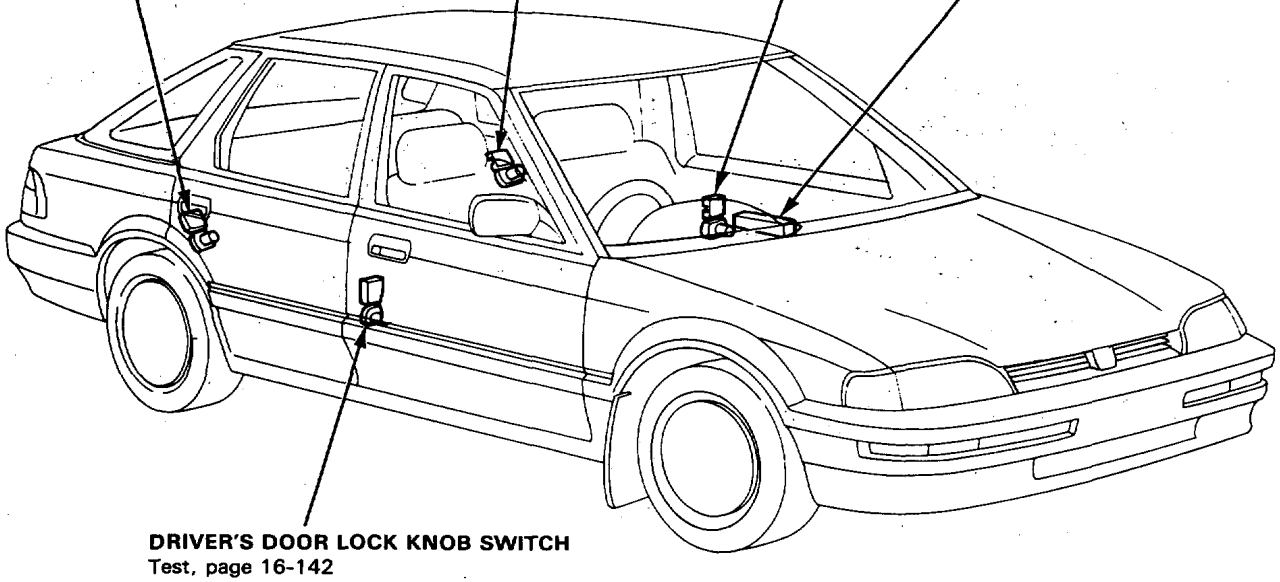


Downloaded from www.Manualslib.com manuals search engine

Power Door Locks

Component Location Index

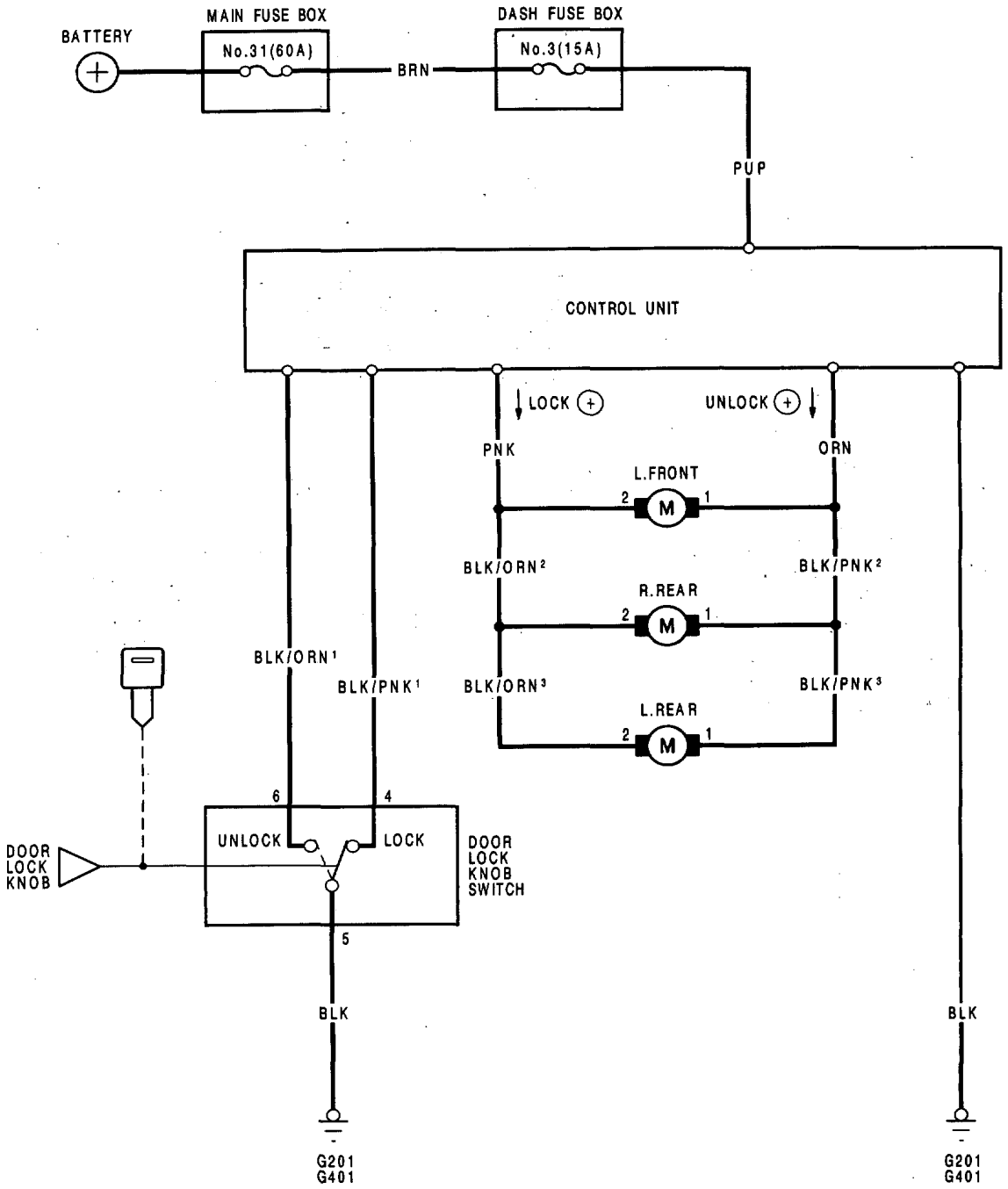
• Troubleshooting, page 16-129



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/ORN[1] and BLK/ORN[2] are not same).



Downloaded from www.Manualslib.com manuals search engine

Power Door Locks

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected		Blown No.3 (15A) fuse (in the dash fuse box)	Door lock knob switch	Control unit input	Passenger door actuator	Disconnected or obstructed door lock rod/linkage	Poor ground	Open circuit in wires or loose or disconnected terminals
Power door lock system do not operate at all.		1		2			G201 G401	BRN or PUP
Doors do not lock or unlock with driver's door lock knob switch.	All passenger doors.	1	2	3		4	G201 G401	BLK/ORN[1], BLK/PNK[1] PNK or ORN
	One or more passenger door.				1			PNK, ORN BLK/ORN[2] or BLK/PNK[2]

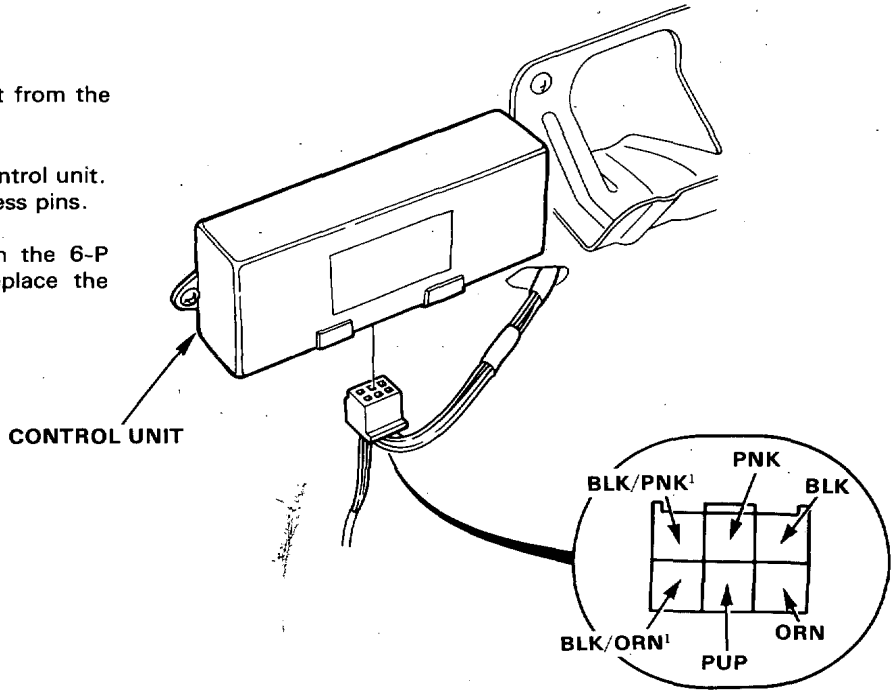
CAUTION: To prevent damage to the motor, apply battery voltage momentarily.

Downloaded from www.Manualslib.com manuals search engine

Control Unit Input Test

1. Remove the L.front door trim panel.
2. Remove the 2 screws and the control unit from the door panel.
3. Disconnect the 6-P connector from the control unit. Make the following input tests at the harness pins.

   NOTE : Recheck the connections between the 6-P connector and the control unit, then replace the control unit if all input tests prove OK.



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	PUP	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.3 (15A) fuse. • An open in the wire.
3	BLK/PNK¹	Driver's door lock knob in LOCK.	Check for continuity to ground : should be continuity.	• Faulty door lock knob switch. • Poor ground (G201, G401). • An open in the wire.
4	BLK/ORN¹	Driver's door lock knob in UNLOCK.	Check for continuity to ground : should be continuity.	• Faulty door lock knob switch. • Poor ground (G201, G401). • An open in the wire.
5	ORN and PUP	Connect the PUP terminal to the PNK terminal, and the ORN terminal to the BLK terminal momentarily.	Check door lock operation : Passenger doors should lock as the battery in connected momentarily.	• Faulty actuators. • An open in the wire.
		Connect the PUP terminal to the ORN terminal, and the PNK terminal to the BLK terminal momentarily.	Check door lock operation : Passenger doors should unlock as the battery is connected momentarily.	

CAUTION : To prevent damage to the motor, apply battery voltage momentarily.

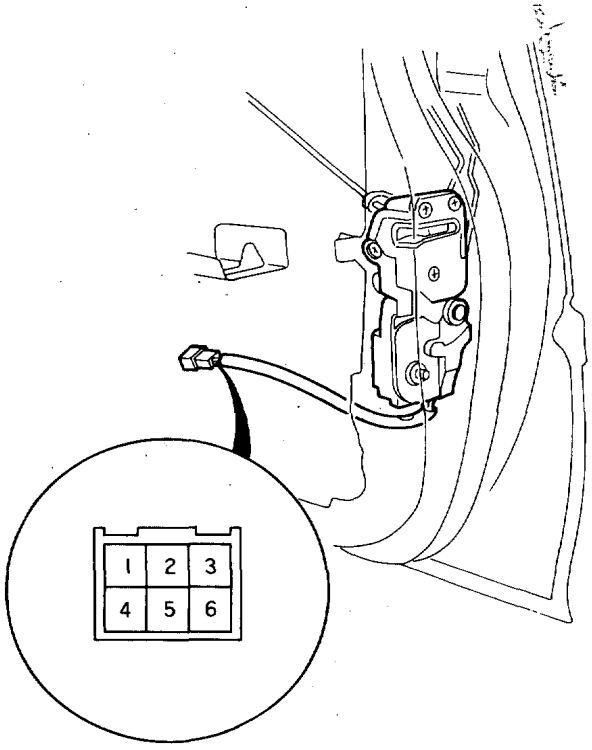
Downloaded from www.Manualslib.com manuals search engine

Power Door Locks

Door Lock Knob Switch Test

1. Remove the driver's door trim panel.
2. Disconnect the 6-P connector from the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	4	5	6
UNLOCK		○——	——○
LOCK	○——	——○	

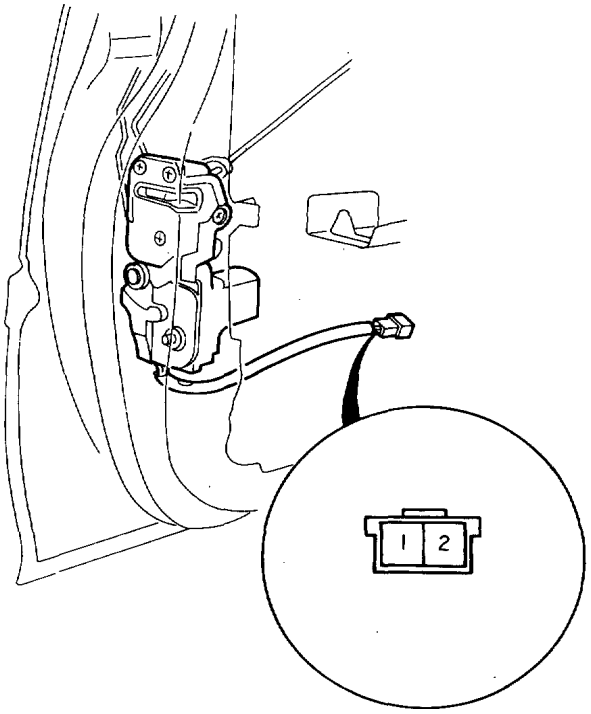


View from wire side

Passenger Door Actuator Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the actuator.
3. Test actuator operation by applying battery voltage to the No.1 and No.2 terminals.
   Test the actuator in each direction, by switching the leads from the battery.

   CAUTION: To prevent damage to the motor, apply battery voltage momentarily.

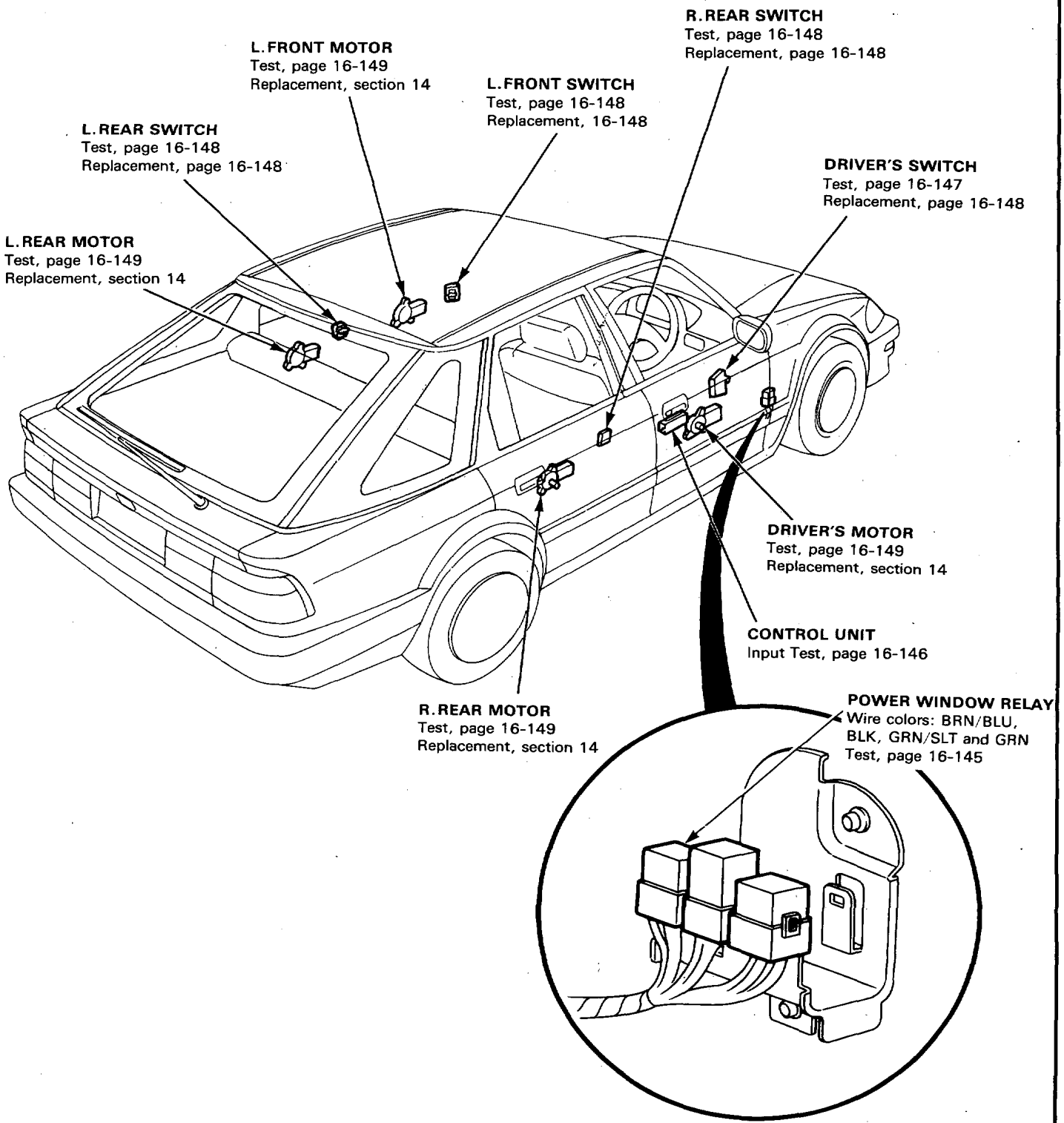


View from wire side

Downloaded from www.Manualslib.com manuals search engine

Power Windows

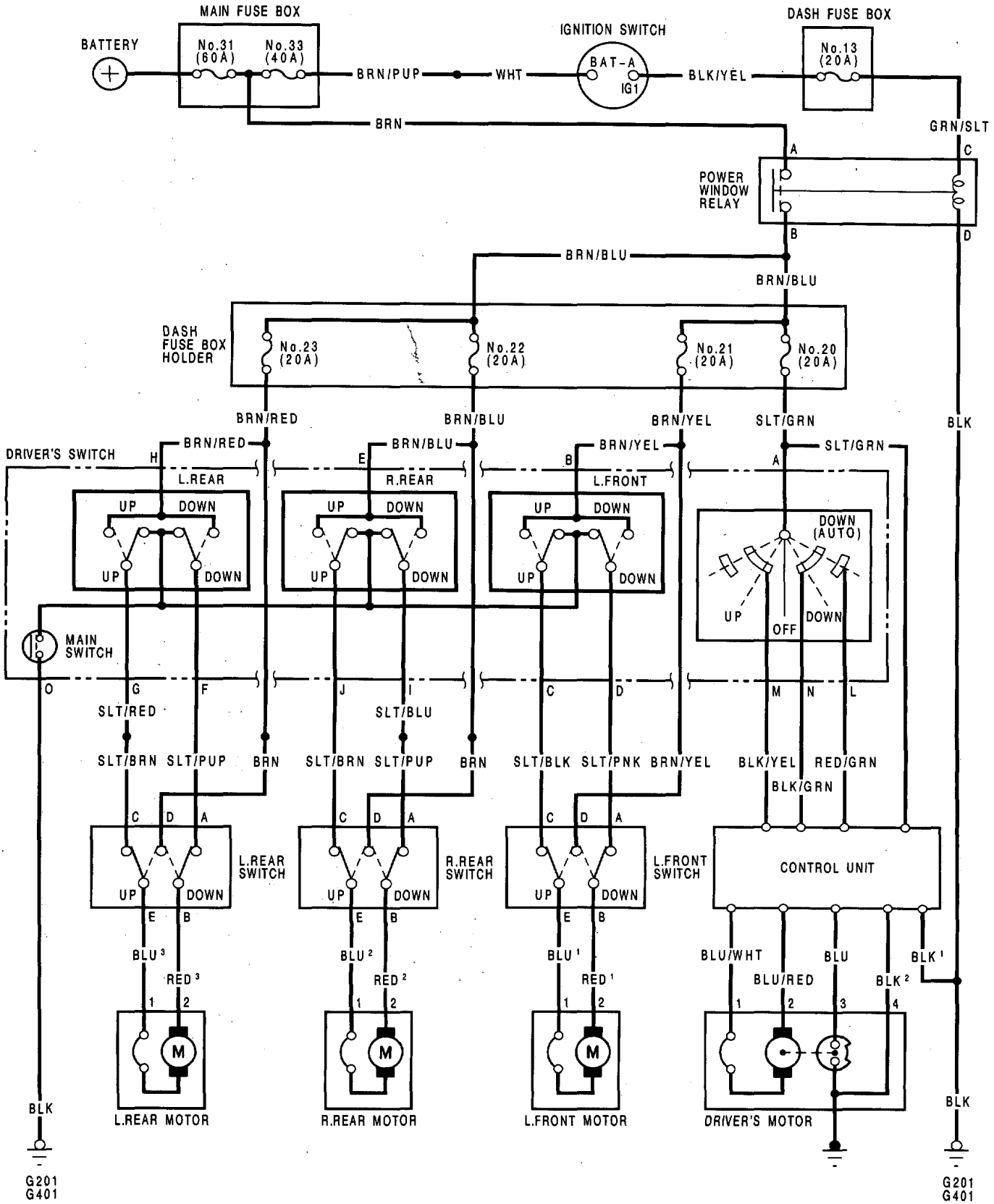
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Power Windows

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

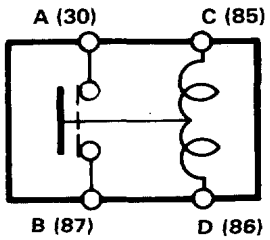
Troubleshooting

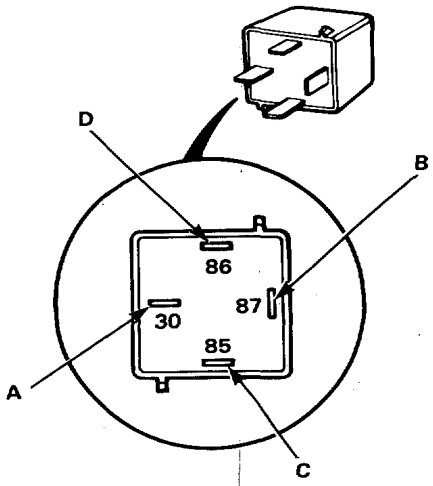
NOTE: The numbers in the table show the troubleshooting sequence.

Item to be inspected / Symptom		State of charge and clean and tight connections of battery	Blown No.13 (20A) fuse (in the dash fuse box)	Power window relay	Blown No.20 (20A)fuse (in the dash fuse box holder)	Blown No.21 (20A)fuse (in the dash fuse box holder)	Blown No.22 (20A)fuse (in the dash fuse box holder)	Blown No.23 (20A)fuse (in the dash fuse box holder)	Driver's door switch	Passenger switch	Driver's motor	Control unit input test	Passenger's motor	Window regulator	Poor ground	Open circuit in wires or loose or disconnected terminals
All windows do not operate.		1	2	3											G201 G401	BLK/YEL, BRN GRN/SLT or BRN/BLU
Driver's window does not operate.					1				3		4	2		5		SLT/GRN
Driver's window does not operate in AUTO.											2	1				BLU
Passenger windows do not operate.	Left front					1			2	3			4	5		BRN/YEL
	Left rear							1	2	3			4	5		BRN/RED
	Right rear						1		2	3			4	5		BRN/BLU

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.





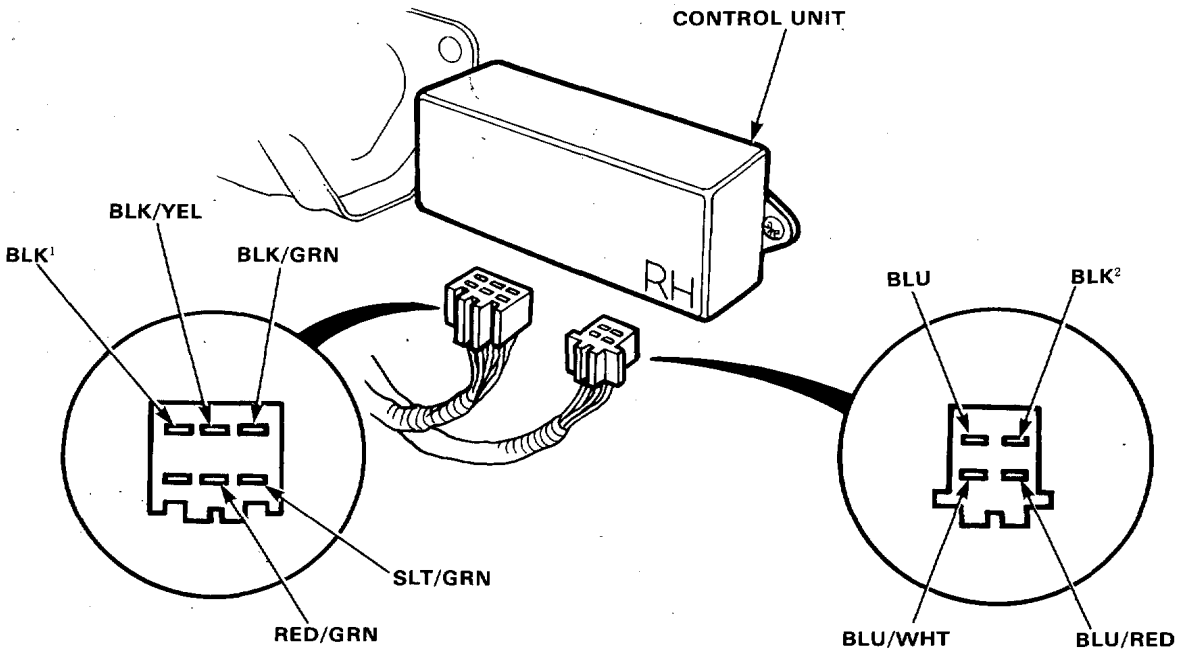
Downloaded from www.Manualslib.com manuals search engine

Power Windows

Control Unit Input Test

1. Remove the driver's door trim panel.
2. Remove the 2 screws and the control unit from the door panel.
3. Disconnect the 5-P and the 4-P connectors from the control unit. Make the following input tests at the harness pins.

   NOTE: Recheck the connections between the connectors and the control unit , then replace the control unit if all input tests prove OK.

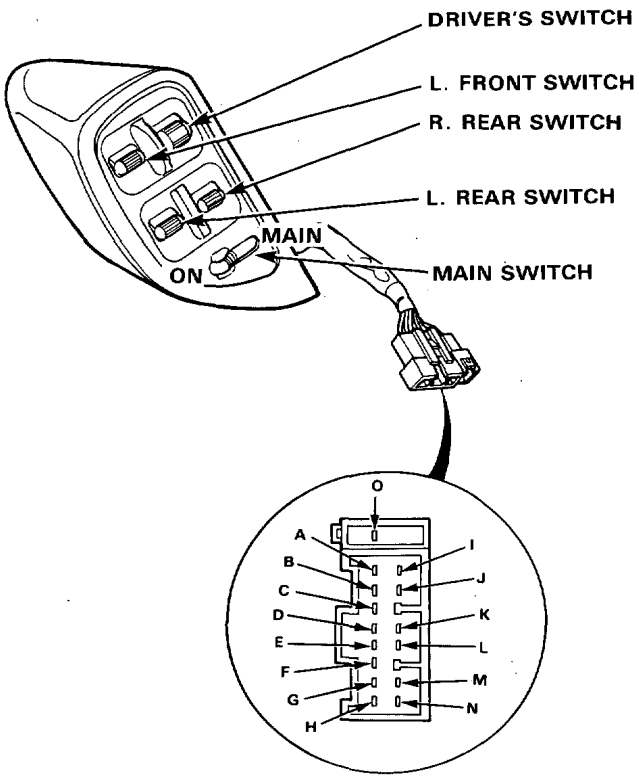


No.		Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK¹	Under all conditions.	Check for continuity to ground: There should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	SLT/GRN	Ignition switch "ON".	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) or No. 13 (20A) fuse. • Faulty power window relay. • An open in the wire.
3	BLK/YEL	Ignition switch "ON". Driver's switch "UP".	Check for voltage to ground: There should be battery voltage.	• Faulty driver's switch. • An open in the wire.
4	BLK/GRN	Ignition switch "ON". Driver's switch "DOWN".		
5	RED/GRN	Ignition switch "ON". Driver's switch "DOWN(AUTO)".		
6	BLU or BLK²	Connect the WHT/YEL terminal to the BLU/WHT terminal, and the BLK¹ terminal to the BLU/RED terminal.	Check for resistance between the BLU and BLK² terminals: Should indicate between 20-50 ohms as the motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire.

Downloaded from www.Manualslib.com manuals search engine

Driver's Switch Test

1. Remove the door trim panel.
2. Dis connect the 15-P connectors from the driver's door harness.
3. Check for continuity between the terminals in each switch position according to the tables.



DRIVER'S SWITCH

Position \ Terminal	A	L	M	N
OFF				
UP	○		○	
DOWN	○			○
DOWN(AUTO)	○	○		

L.FRONT SWITCH

Position	Main switch \ Terminal	B	C	D	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON			○	○
	OFF	○	○		
DOWN	ON		○		○
	OFF	○		○	

R.REAR SWITCH

Position	Main switch \ Terminal	E	I	J	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON		○		○
	OFF	○		○	
DOWN	ON			○	○
	OFF	○	○		

L.REAR SWITCH

Position	Main switch \ Terminal	F	G	H	O
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○			○
	OFF		○	○	
DOWN	ON		○		○
	OFF	○		○	

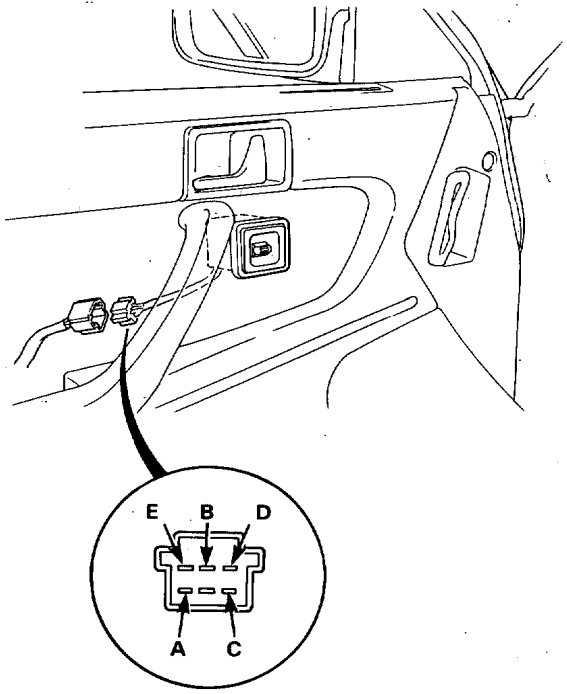
Downloaded from www.Manualslib.com manuals search engine

Power Windows

Passenger Switch Test

1. Remove the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.

   NOTE: Left front switch shown, rear switches similar.



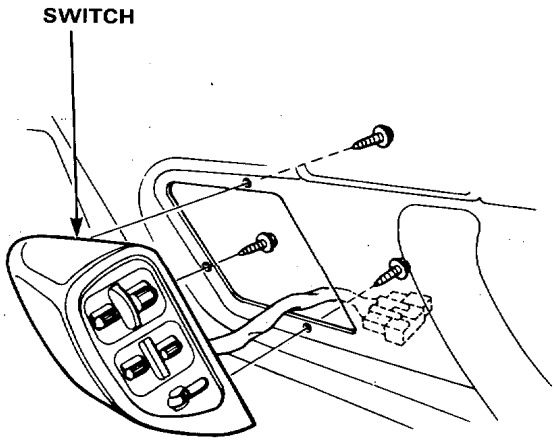
View from wire side

Position \ Terminal	A	B	C	D	E
UP				○	○
OFF	○	○	○		○
DOWN		○		○	

Switch Replacement

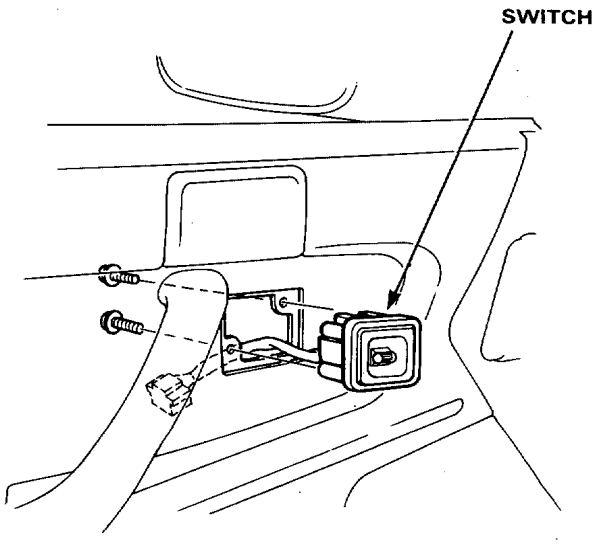
Driver's Switch :

1. Remove the door trim panel.
2. Disconnect the 15-P connector's from the driver's door harness.
3. Remove the switch from the door trim panel by releasing the 3 mounting screws.



Passenger Switches :

1. Remove the door trim panel.
2. Disconnect the 5-P connector's from the passenger door harness.
3. Remove the switch from the door trim panel by removing the 2 mounting screws.

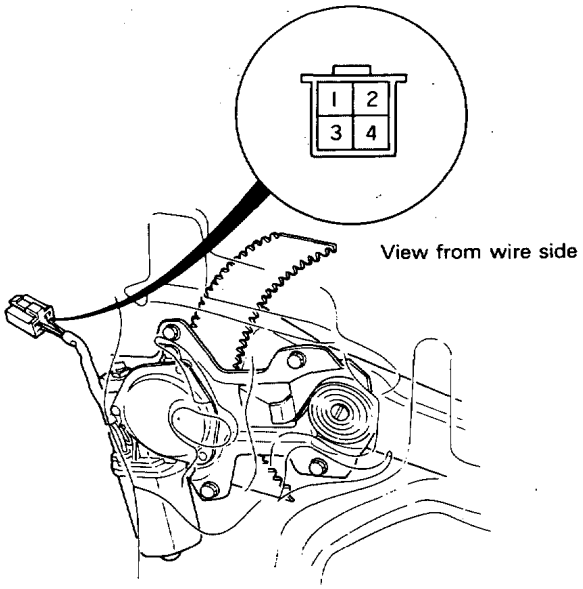


Downloaded from www.Manualslib.com manuals search engine

Driver's Motor Test

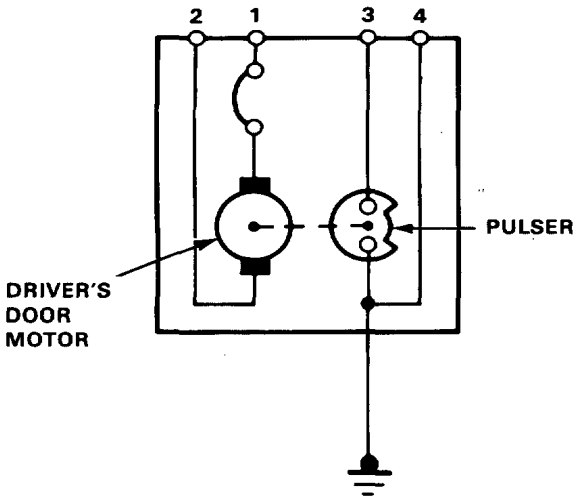
Motor Test :

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 battery.
4. If the motor does not run, replace it.



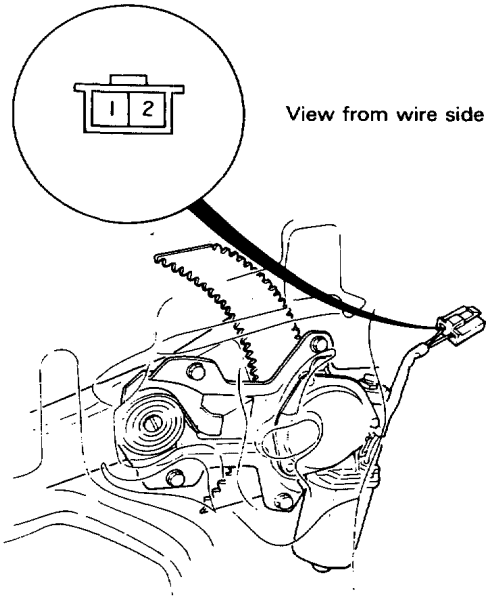
Pulser Test :

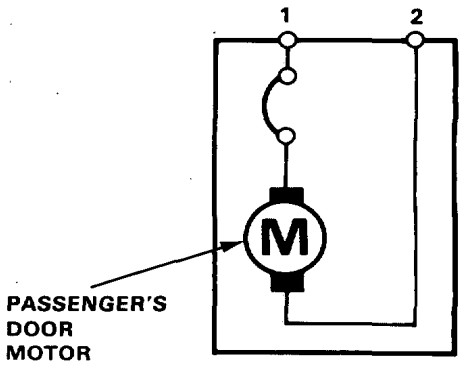
Measure resistance between the No.3 and No.4 terminals when running the motor by connecting battery voltage to the No.1 and No.2 terminals.
Ohmmeter should indicate between 20-50 ohms as the motor runs.



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.

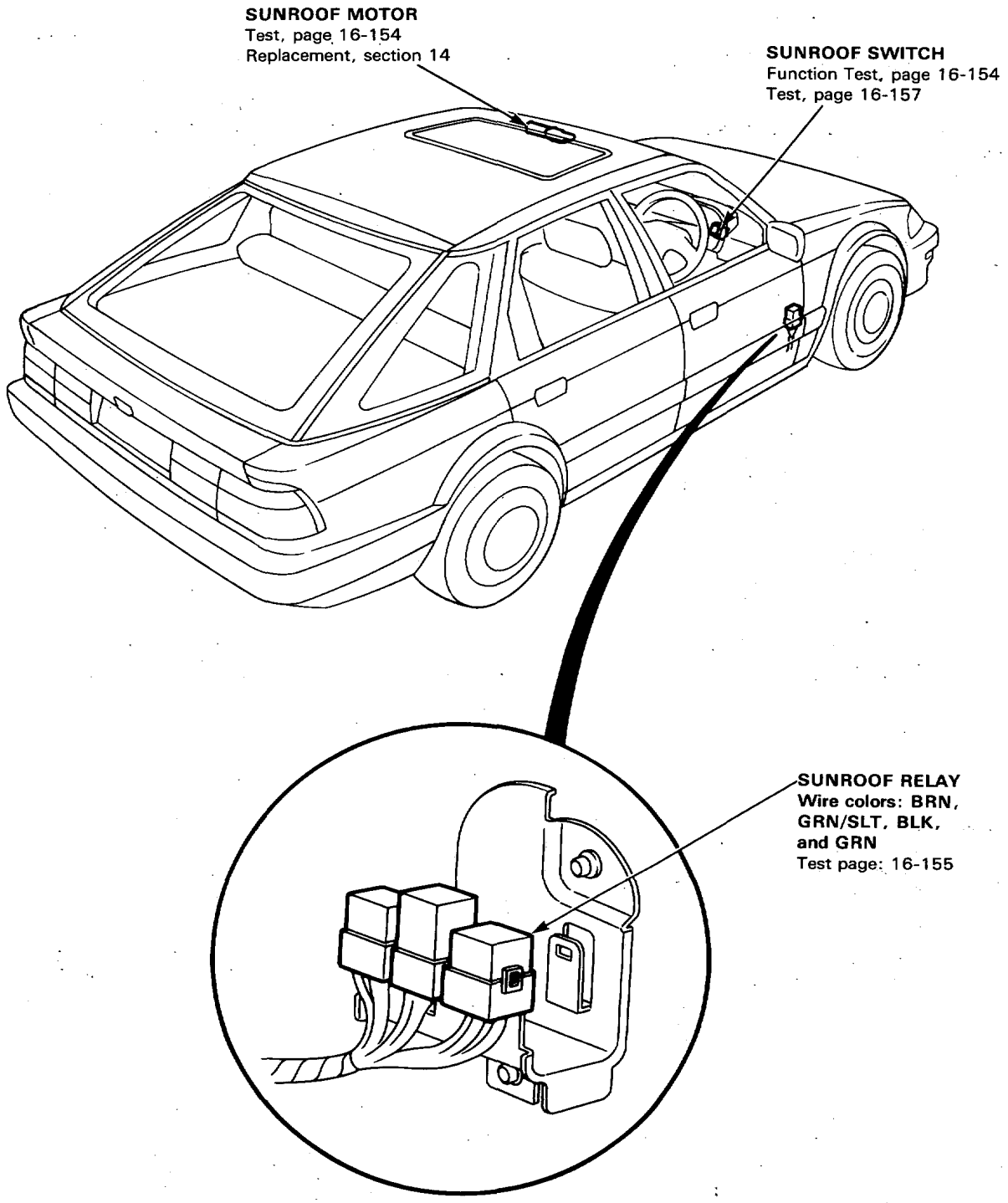




Downloaded from www.Manualslib.com manuals search engine

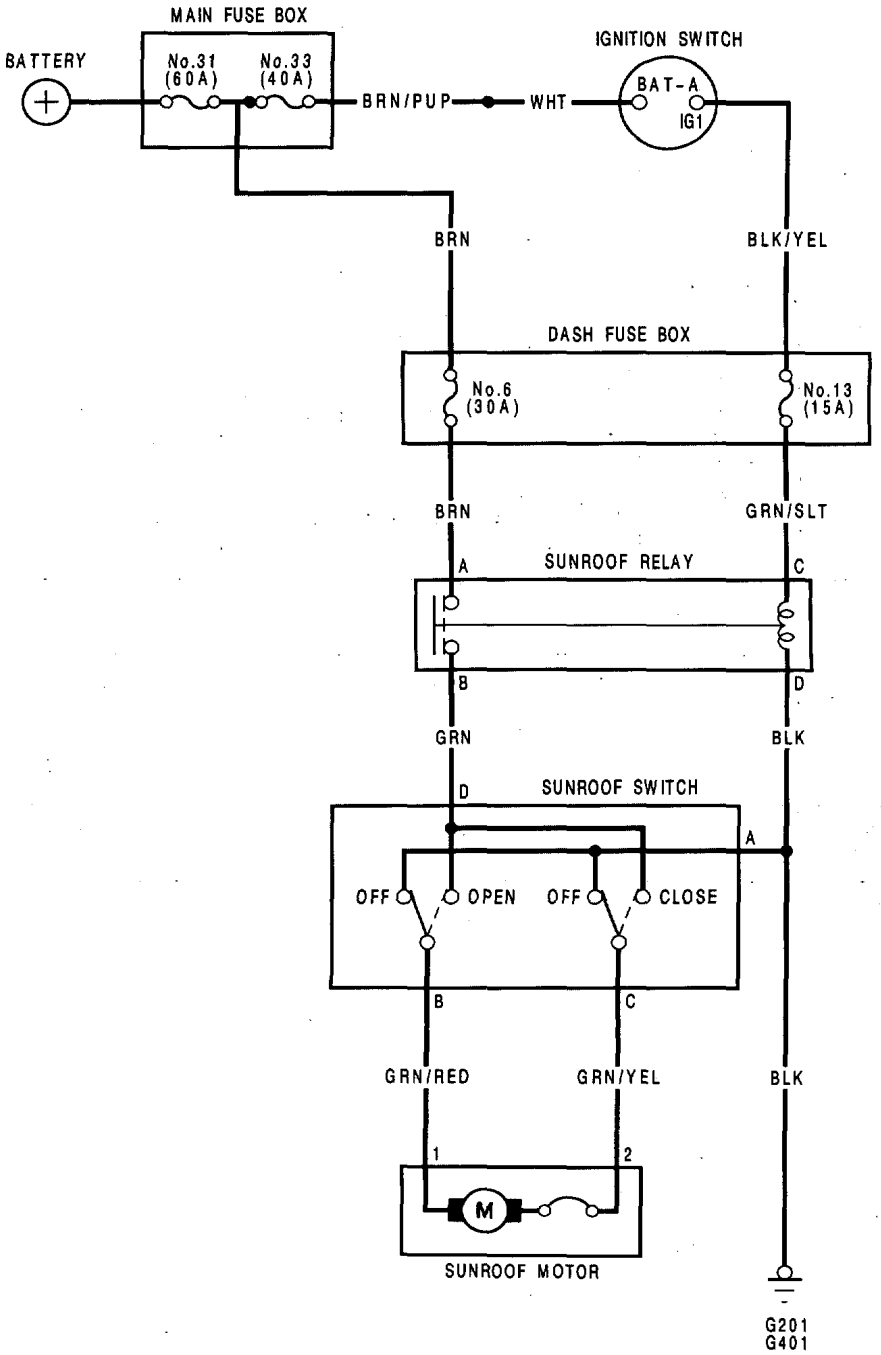
Sunroof

Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

Sunroof

Electrical Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

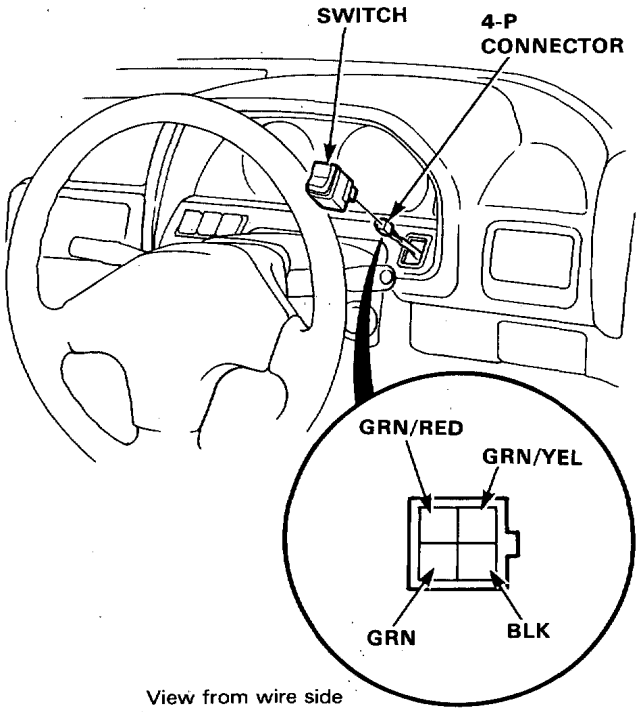
Symptom / Item to be inspected		Clutch out of adjustment, foregin matter stuck between guide rail and sunroof, or outer cable not attached properly	Blown No.6 (30A) fuse (in the dash fuse box)	Blown No.13 (15A) fuse (in the dash fuse box)	Function test	Sunroof relay	Sunroof motor	Sunroof switch	Poor 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).	Switch in any position.		1	2	3	4	5		G201,G401	BRN, GRN/SLT, GRN
	With OPEN switch.							1		GRN/RED
	With CLOSE switch							1		GRN/YEL

Downloaded from www.Manualslib.com manuals search engine

Function Test

1. Remove the dashboard lower panel.

2. Push out the switch from behind the instrument panel, then disconnect the 4-P connector to remove the switch.



View from wire side

3. 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 (G201, G401)

- If there is continuity, go to step 4.

4. Check for voltage between the GRN terminal and the BLK terminal with ignition switch ON.
There should be battery voltage.

- If there is no voltage, check for
  — Blown No.13 (15A) or No.6 (30A) fuse in the dash fuse box.
  — An open in the GRN/SLT, GRN or BRN wire.
  — Faulty sunroof relay.
- If there is battery voltage go to step 5.

5 Connect 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 switch.
- If sunroof does not open, remove the headliner and check the motor.

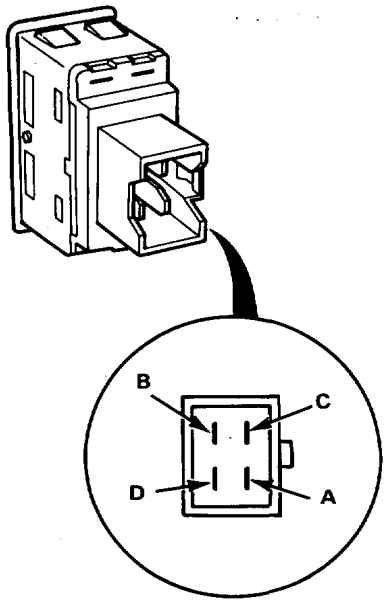
Downloaded from www.Manualslib.com manuals search engine

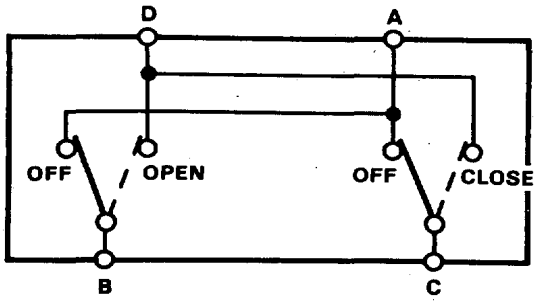
Sunroof

Switch Test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 4-P connector to remove the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	A	B	C	D
OFF	○	○	○	
OPEN		○		○
CLOSE			○	○

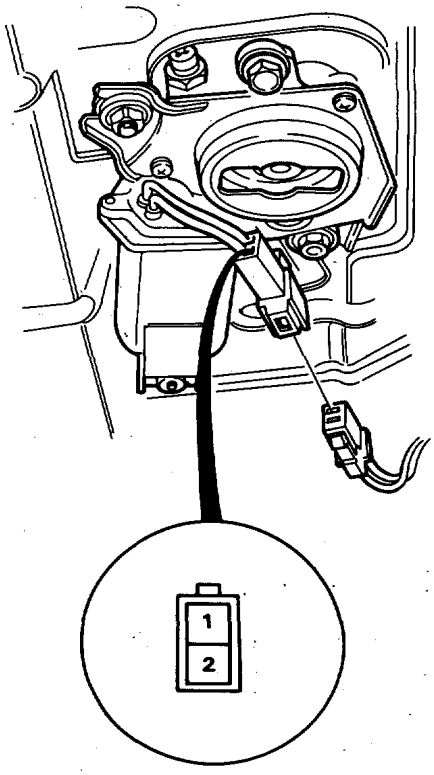




Motor Test

1. Remove the headliner. (see, 14 Section)
2. Disconnect the 2-P connector from the sunroof motor.
3. Test motor operation by connecting a battery 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.

NOTE: See Closing Force Check in section 14 for motor clutch test.

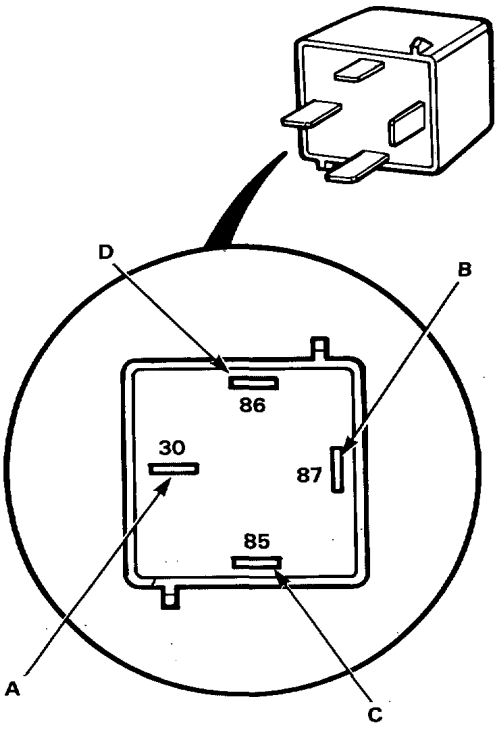


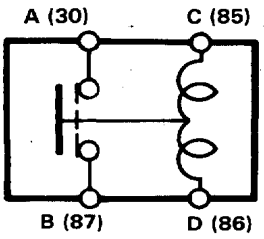
View from wire side.

Downloaded from www.Manualslib.com manuals search engine

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.

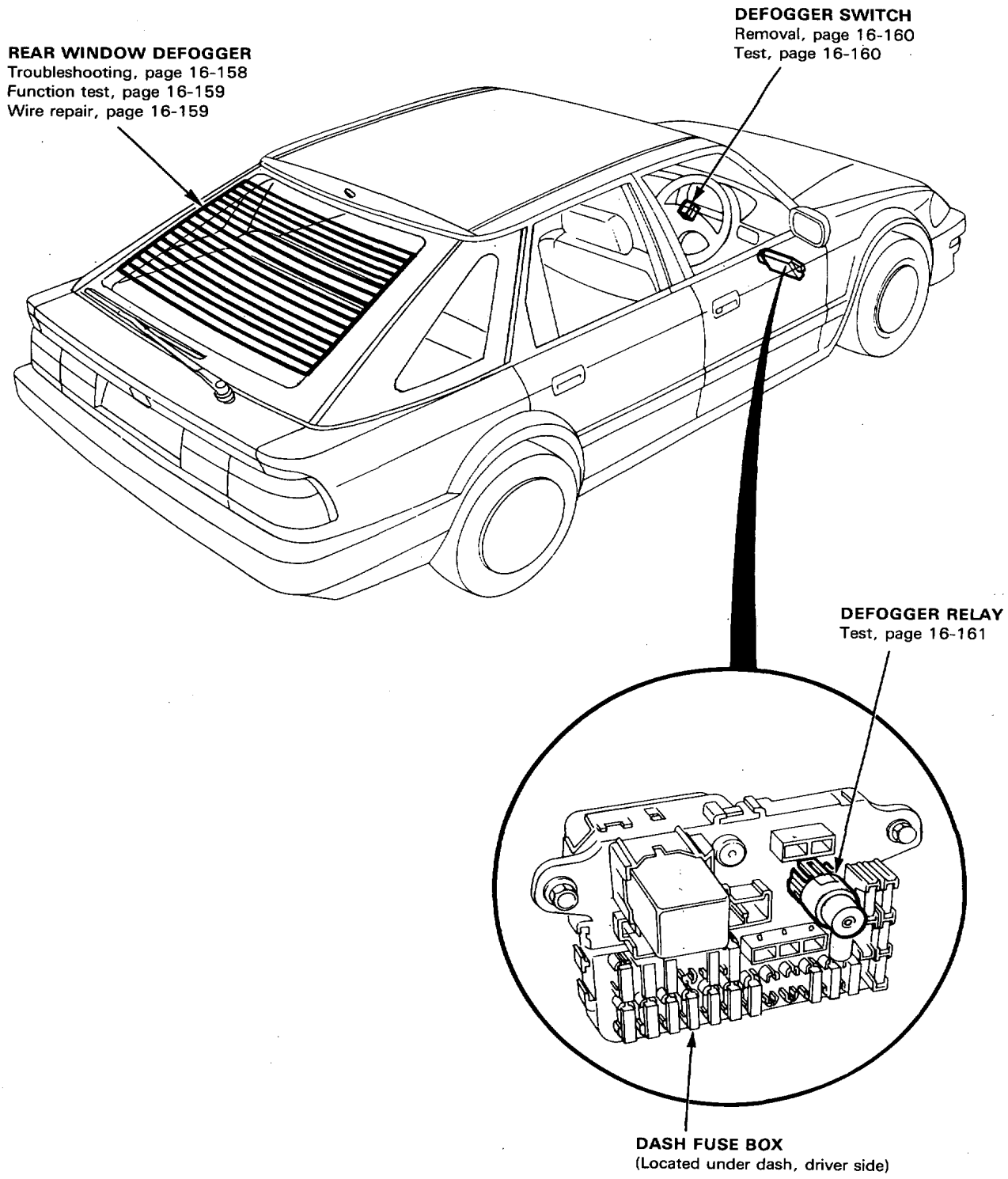




Downloaded from www.Manualslib.com manuals search engine

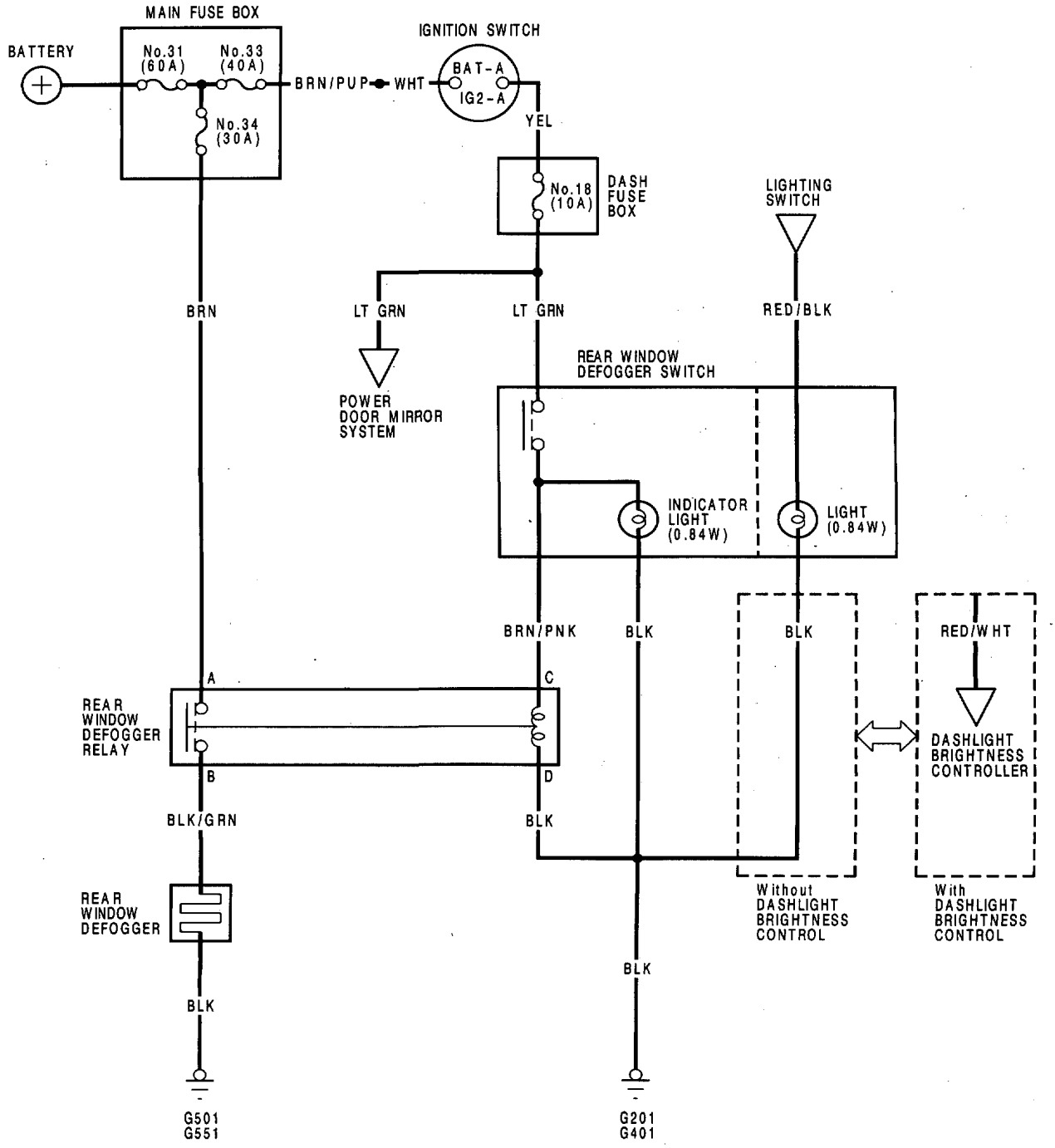
Rear Window Defogger

Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram



Downloaded from www.Manualslib.com manuals search engine

Rear Window Defoger

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

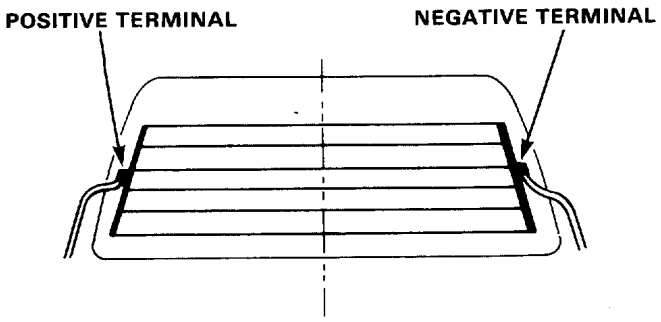
Item to be inspected / Symptom	Blown indicator light bulb	Blown No.18 (10A) fuse (in the dash fuse box)	Blown No. 34 (30A) fuse (in the main fuse box)	Defogger switch	Function test	Defogger relay	Repair defogger wire	Poor ground	Open circuit in wires or loose or disconnected terminals
Defogger operates, but indicator light does not go on.	1								
Defogger does not operate and indicator light does not go on.		1		2				G201, G401	LT GRN or BRN/PNK
Defogger does not operate, but indicator light goes on.			1		2	3		G501 G551	BRN or BLK/GRN
Broken defogger wire							1		

Downloaded from www.Manualslib.com manuals search engine

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.

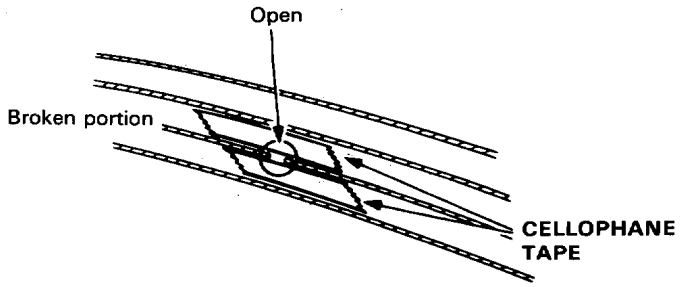


2. Check for continuity between the negative terminal and body ground.
   If no continuity check for open in the defogger ground wire.
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.
   There should be approximately 6 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

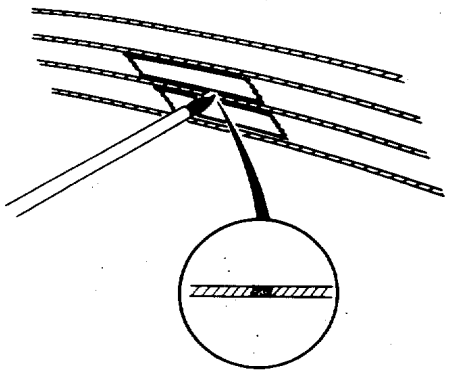
NOTE: Repair section must be no longer than one inch.

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.



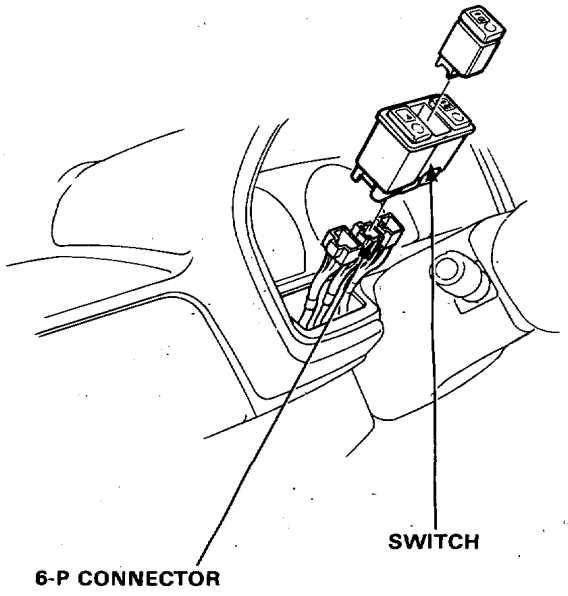
4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).
5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.

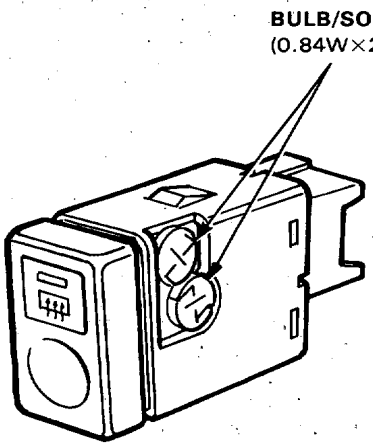
Downloaded from www.Manualslib.com manuals search engine

Rear Window Defogger

Switch Removal

1. Carefully pull out the switch from the instrument panel, then disconnect the 6-P connector from the switch.

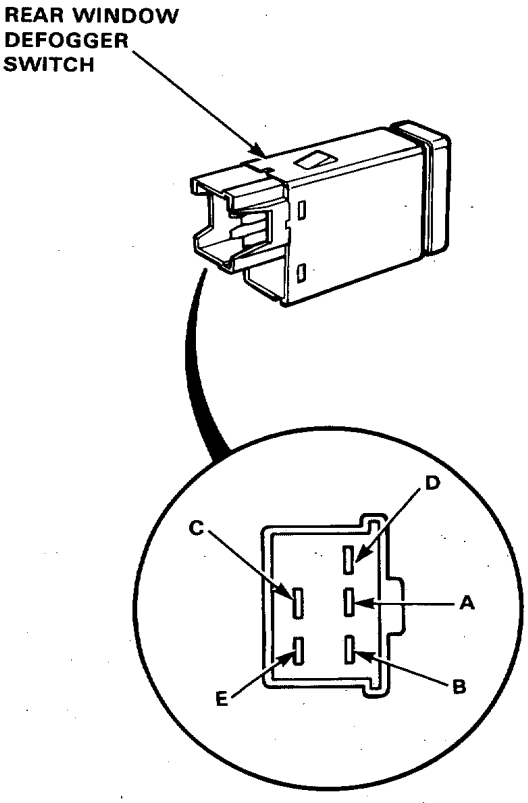


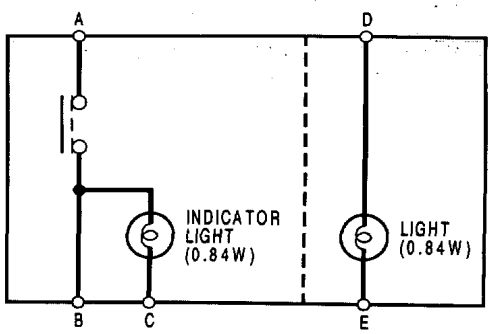


Switch Test

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		○	⊖	○	○	⊖	○

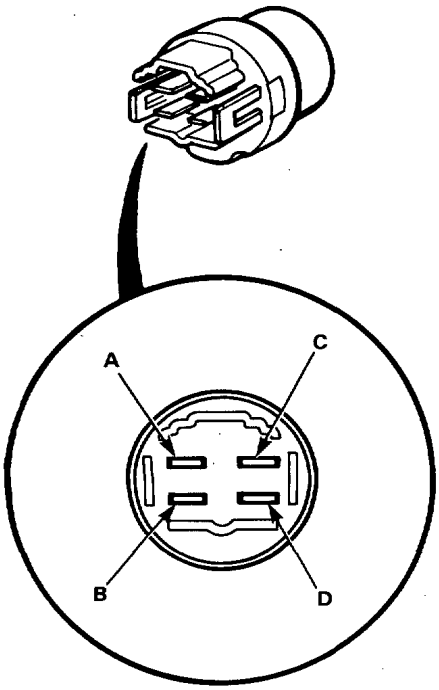


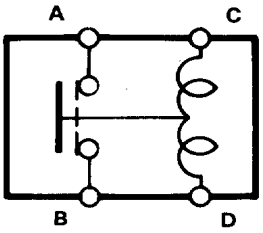


Downloaded from www.Manualslib.com manuals search engine

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.

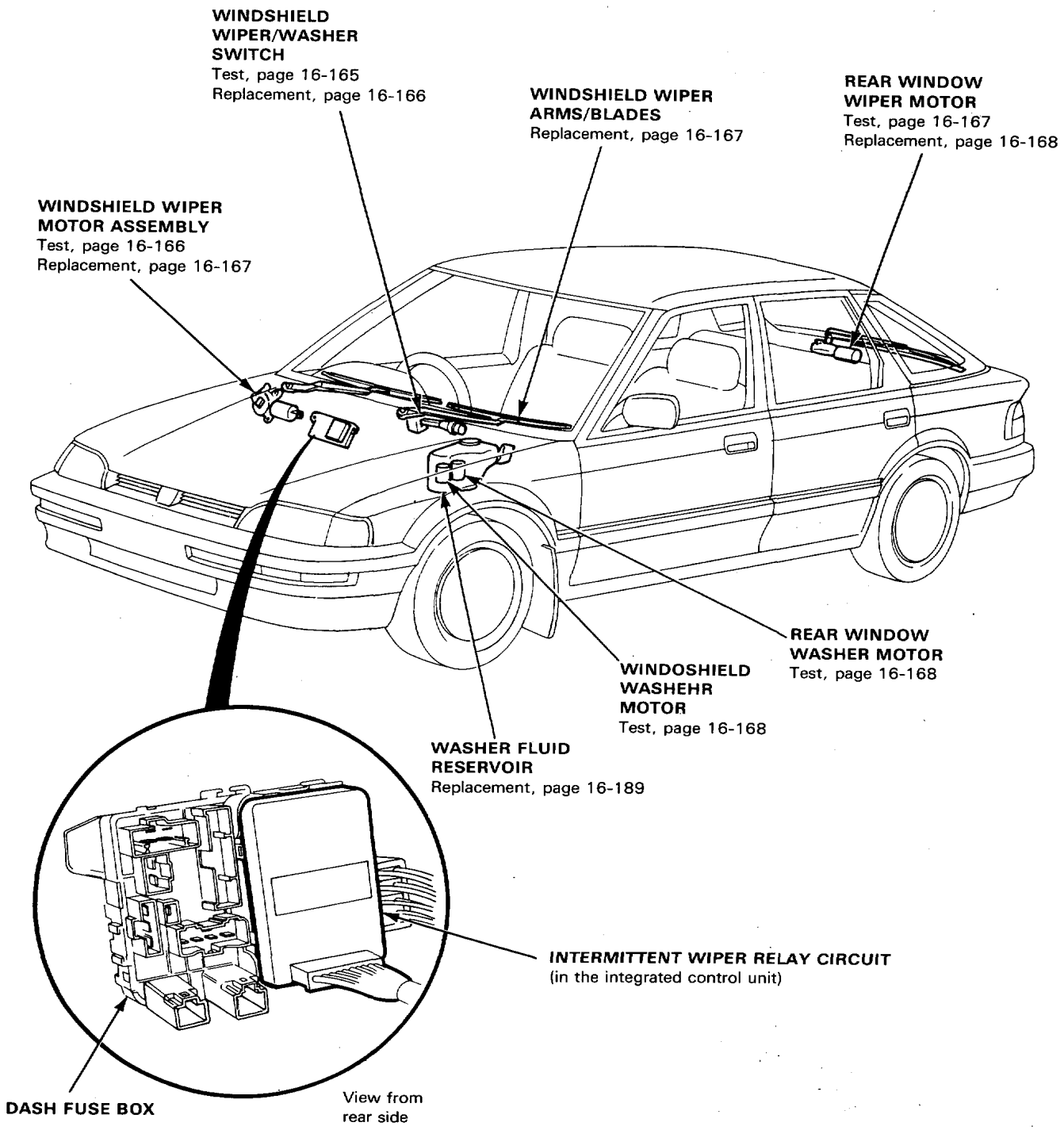




Downloaded from www.Manualslib.com manuals search engine

Wipers/Washers

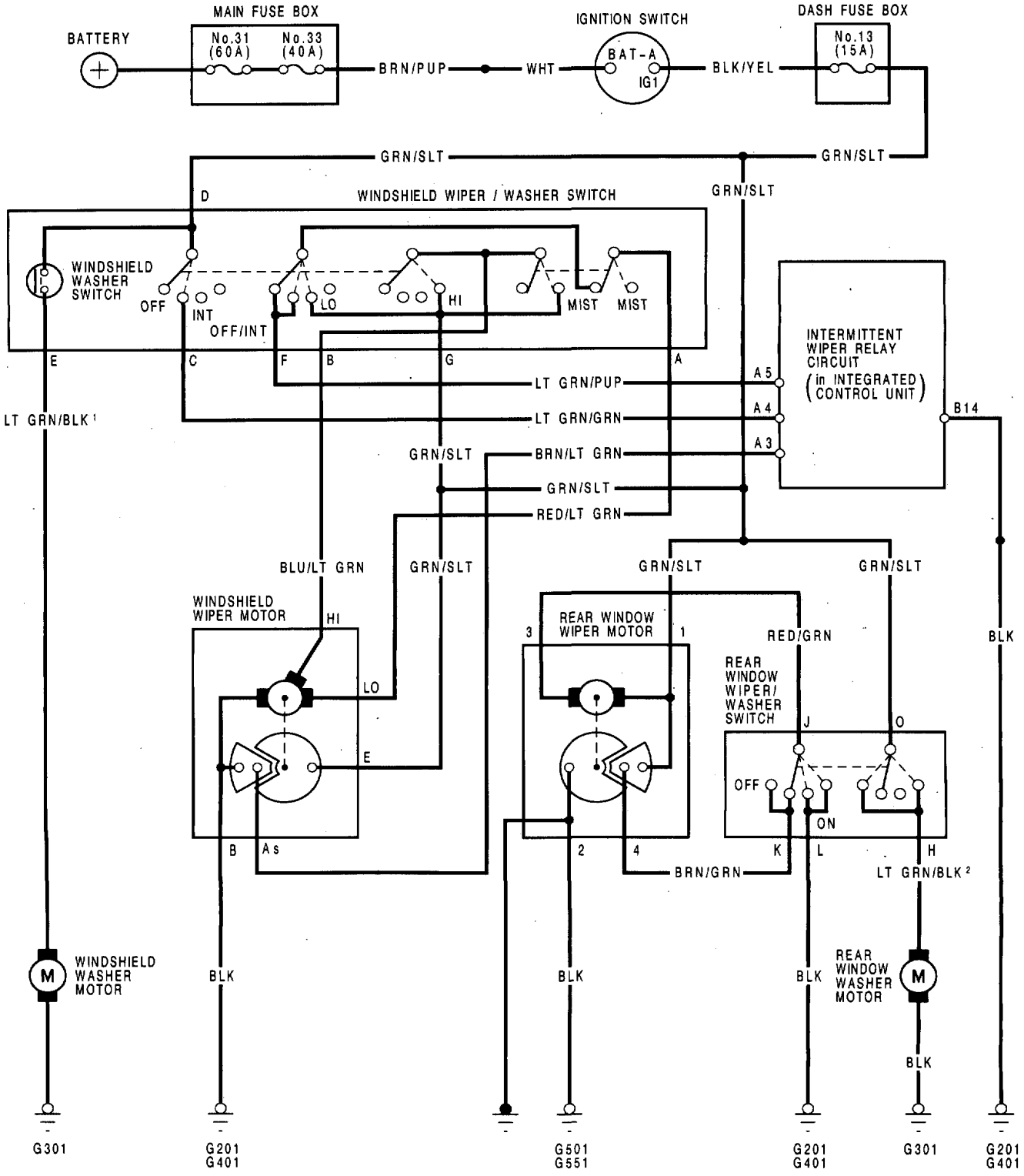
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example LT GRN/BLK[1] and LT GRN/BLK[2] are not the same).



Downloaded from www.Manualslib.com manuals search engine

Wipers/Washers

Troubleshooting

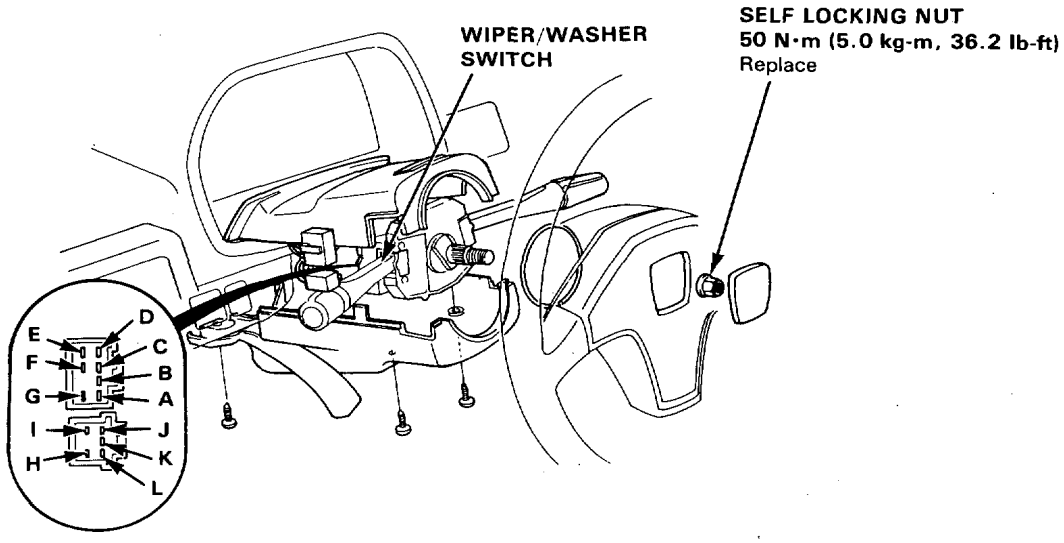
NOTE: The numbers in the table show the troubleshooting sequence.

Syptom \ Items to be inspected		Blown No.13 (15A) fuse (in the dash fuse box)	Wiper switch	Wisper motor Assembly: Front	Wisper motor Assembly: Rear	Washer switch	Washer motor	Intermittent wiper relay circuit (in the integrated contorl unit)	Insufficient washer fluid in reservoir	Disconnected, blocked washer hose or clogged outlet	Disconnected wiper linkages	Poor ground	Open circuit in wires, loose or disconnected terminals
Front wiper does not operate.	In all positions	1	4	2							3	G201[1] G401	GRN/SLT
	In INT		1					2					GRN[1], BLU/WHT[1]
	In LO or HI		1										
	In MIST		1										
Rear window wiper does not operate.			1		2							G551	GRN/BLK[1], LT GRN/BLK
Blades do not return to park position when wipers are turned OFF.	Front wiper		2	1									BRN/LT GRN
	Rear wiper				1								BRN/GRN
Erratic intermittent cycle or wipers do not operate intermittently.			1					2					
Little or no washer fluid is pumped.						4	3		1	2		G301	LT GRN/BLK[1], LT GRN/BLK[2]

Downloaded from www.Manualslib.com manuals search engine

Wiper/Washer Switch Test

1. Remove the steering wheel and the 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.



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"	○	○			

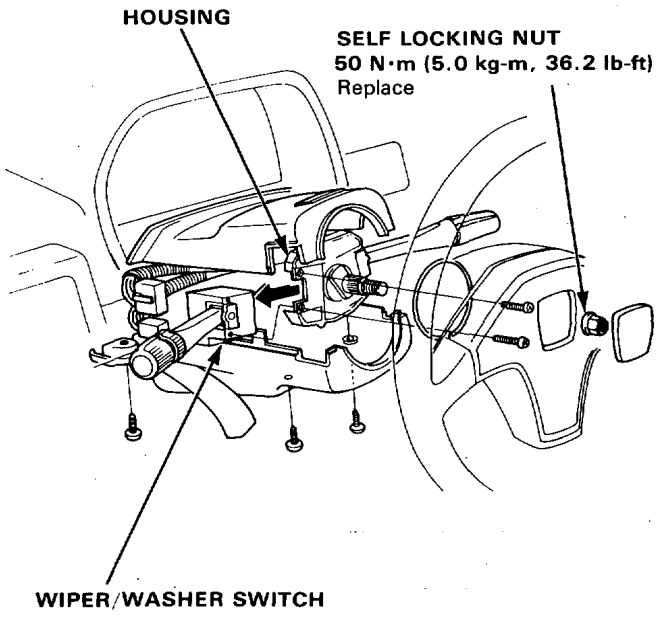
Downloaded from www.Manualslib.com manuals search engine

Wipers/Washers

Wiper/Washer Switch Replacement

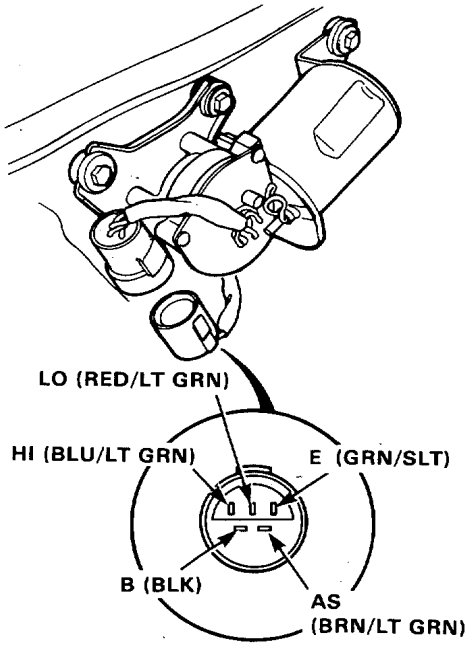
1. Remove the steering wheel and the lower and upper covers from the steering column.
2. Disconnect the 8-P and 6-P connectors from the wiper/washer switch.
3. Remove the 2 screws and slide the wiper/washer switch out of the housing as shown.

   NOTE: Be carefull not to damage the steering wheel cover.



Windshield Wiper Motor Test

1. Disconnect the 5-P (or the 6-P) connector of the wiper motor assembly.
2. Test motor operation :
   LOW SPEED: Connect battery positive to the Lo (RED/LT GRN) terminal and negative to the B (BLK) terminal.
   HIGH SPEED: Connect battery positive to the Hi (BLU/LT GRN) terminal and negative to the B (BLK) terminal.
3. If the motor fails to run smoothly, replace it.

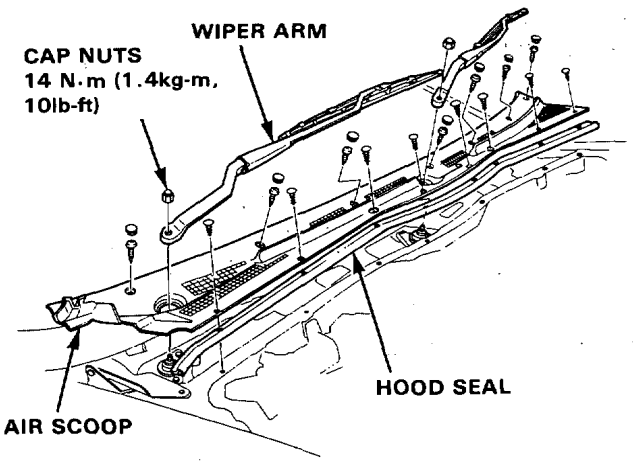


View from terminal side

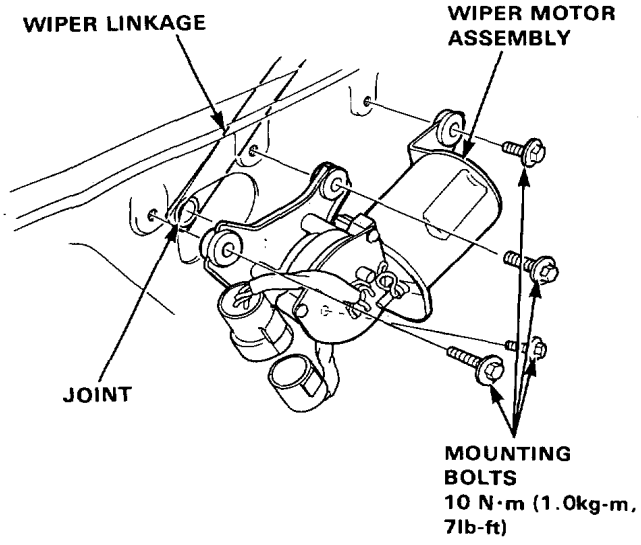
Downloaded from www.Manualslib.com manuals search engine

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.



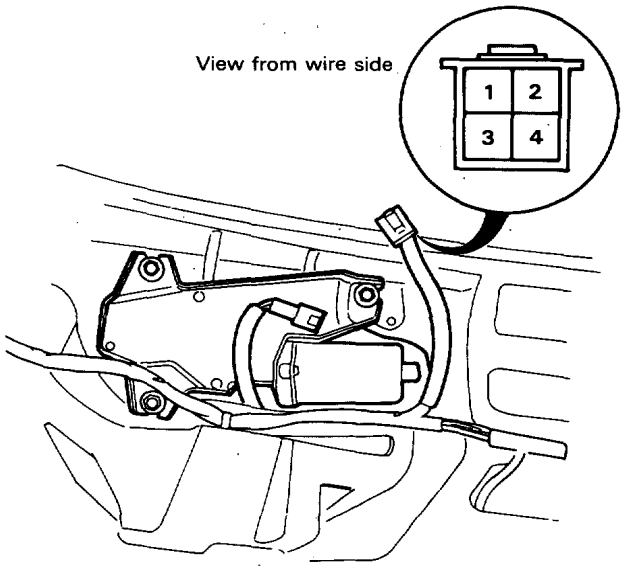
3. Pry the wiper linkage off the motor arm with a screw driver.
4. Disconnect the 5-P connector from the wiper motor assembly, then remove the 4 mounting bolts and the wiper motor assembly.



5. Install the wiper motor assembly in the reverse order of removal.

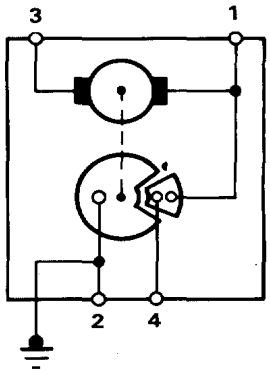
Rear Window Wiper Motor Test

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 nagative 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.

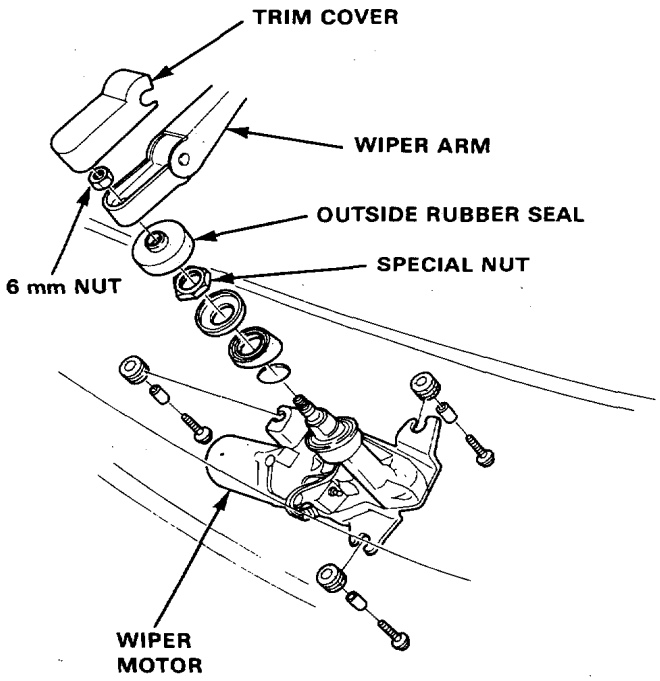
Terminal / Wiper Blade	1	2	3
At park position		○	○
At center position	○		○



Downloaded from www.Manualslib.com manuals search engine

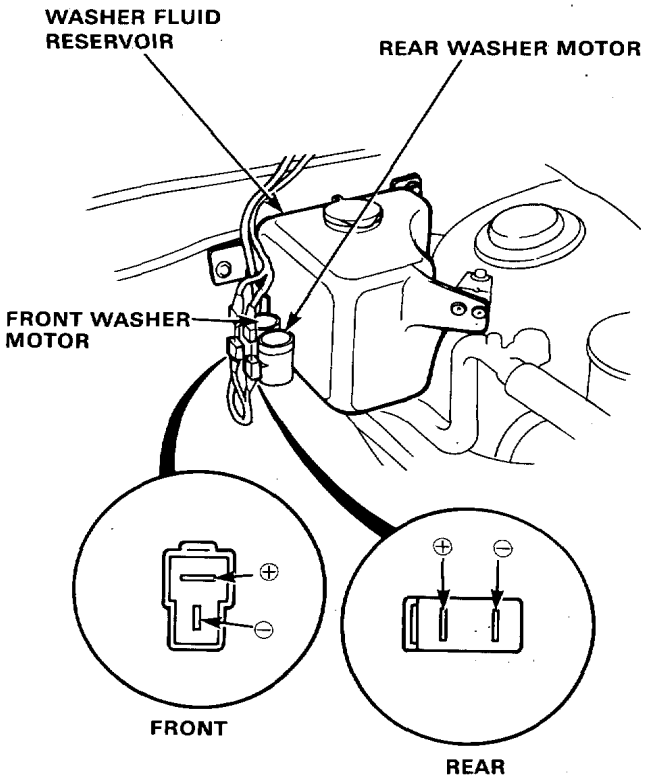
Rear Window Wiper Motor Replacement

1. Remove the hatch trim panel.
2. Remove the trim cover, 6 mm nut, wiper arm, and the outside seal rubber.
3. Disconnect the 4-P connector from the wiper motor.
4. Remove the 3 mount bolts and the wiper motor.



Washer Motor Test

1. 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.



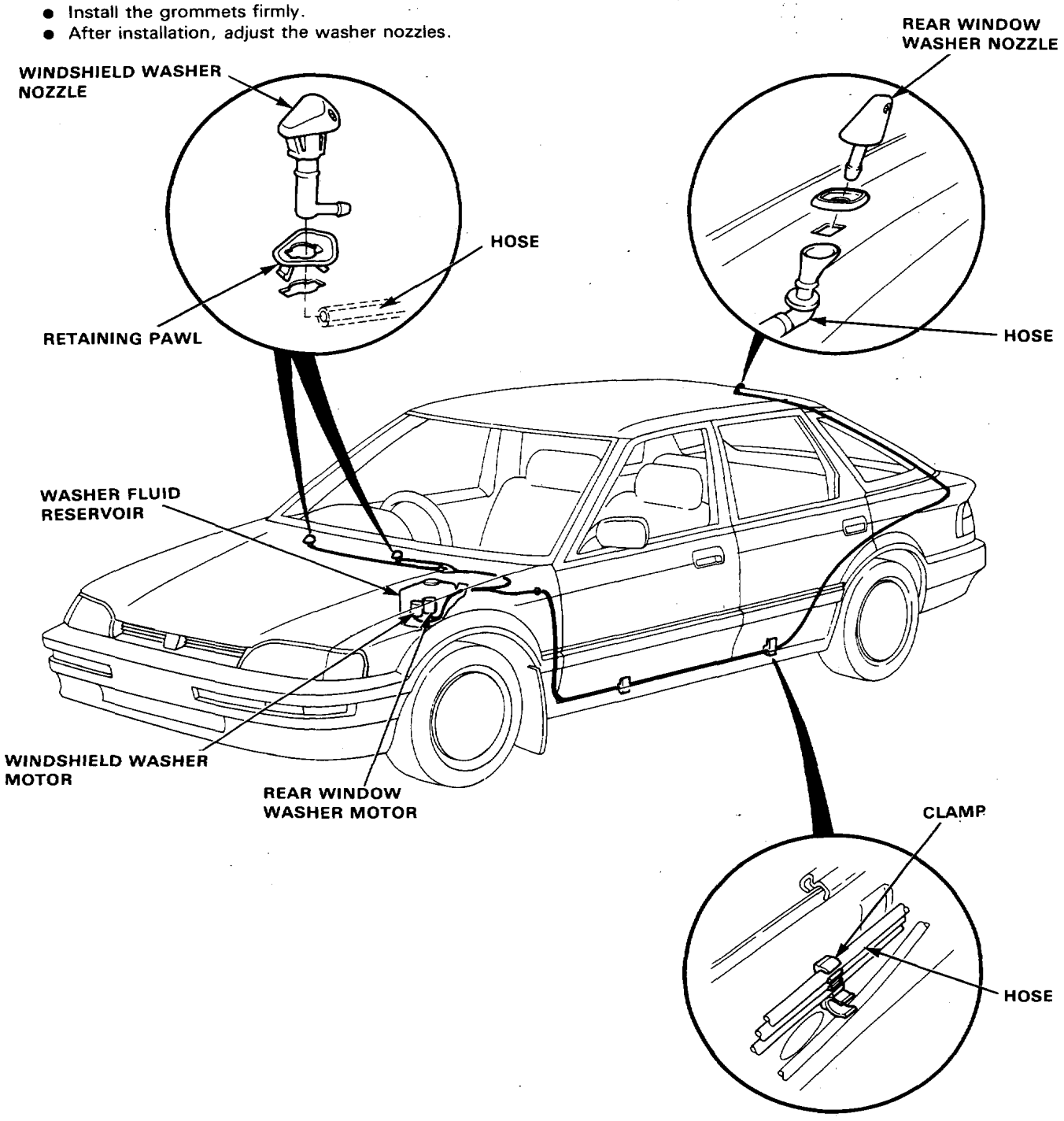
- If the motor fails to run smoothly, replace it.
- If the motor runs smoothly but little or no washer fluid is pumped, check for disconnected or blocked washer-hose, or clogged pump outlet in the motor.

Downloaded from www.Manualslib.com manuals search engine

Washer Replacement

1. Remove the washer reservoir by removing the 3 mount bolts and 1 nut.
2. Disconnect the hoses and the 2-P connectors from the front and the rear washer motors.
3. Remove the washer nozzles by releasing the retaining pawls and pushing them out from the underside. (Rear window washer nozzle : Remove the rear spoiler)

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.

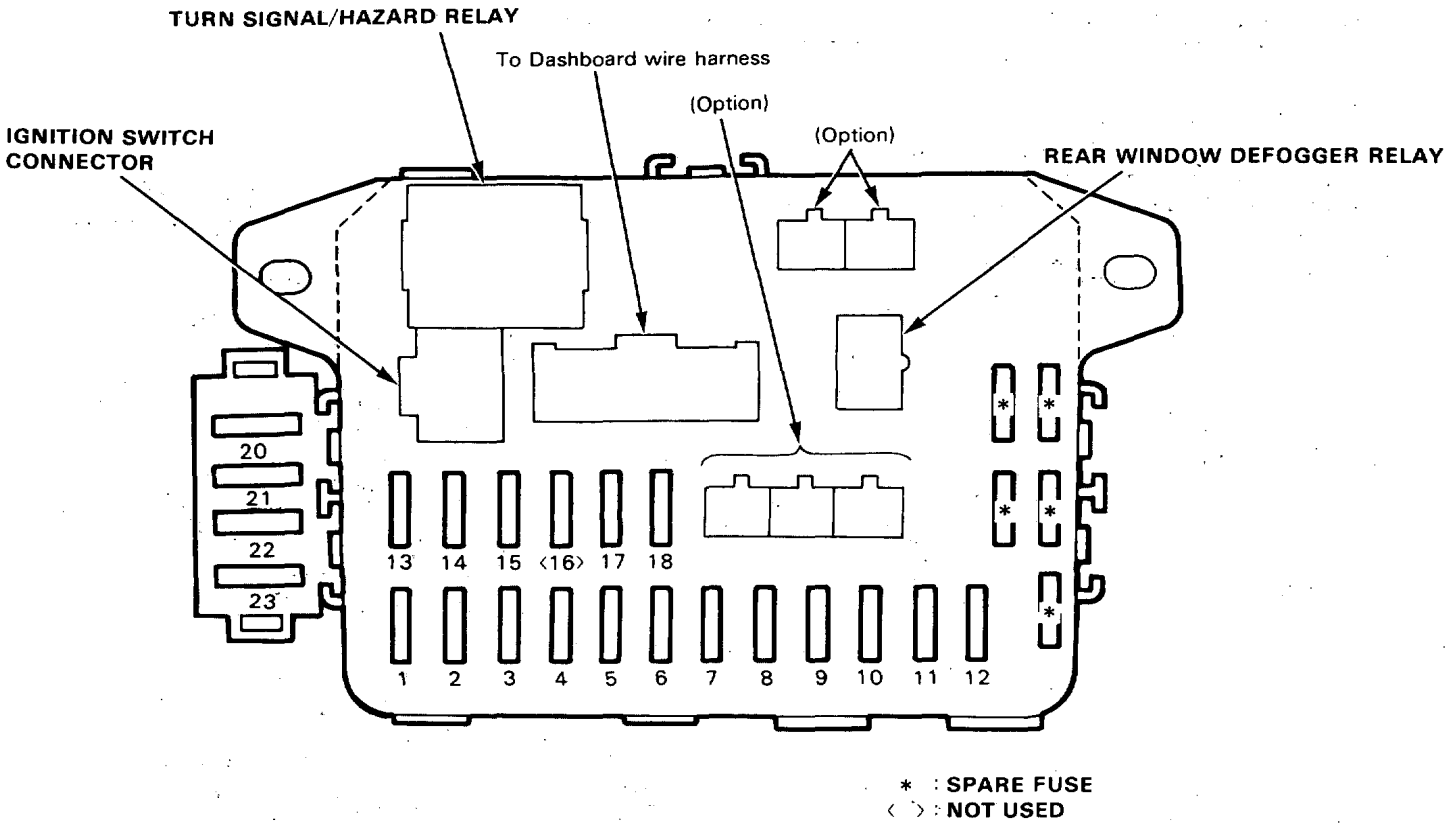


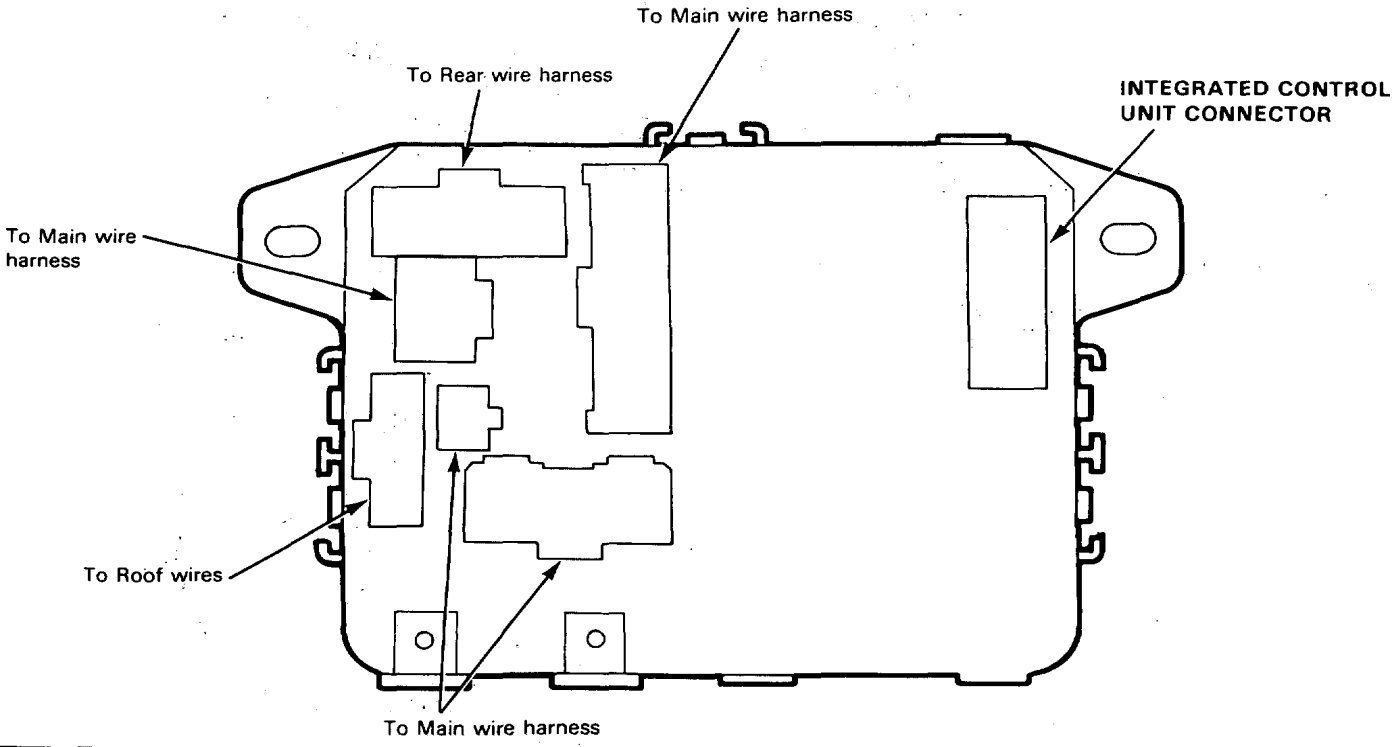
Downloaded from www.Manualslib.com manuals search engine

Fuses

Dash Fuse Box (LHD)

NOTE: Dash fuse box is located left side, under dash.

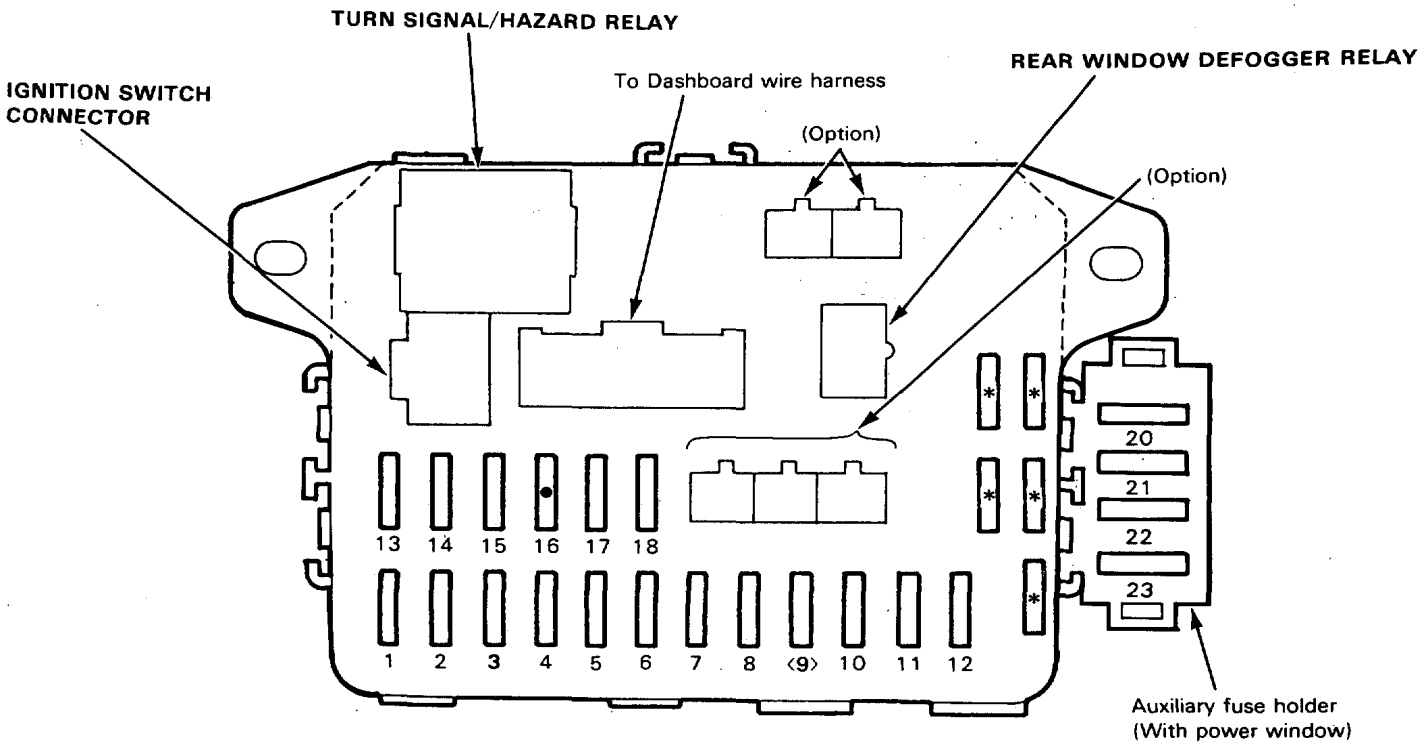


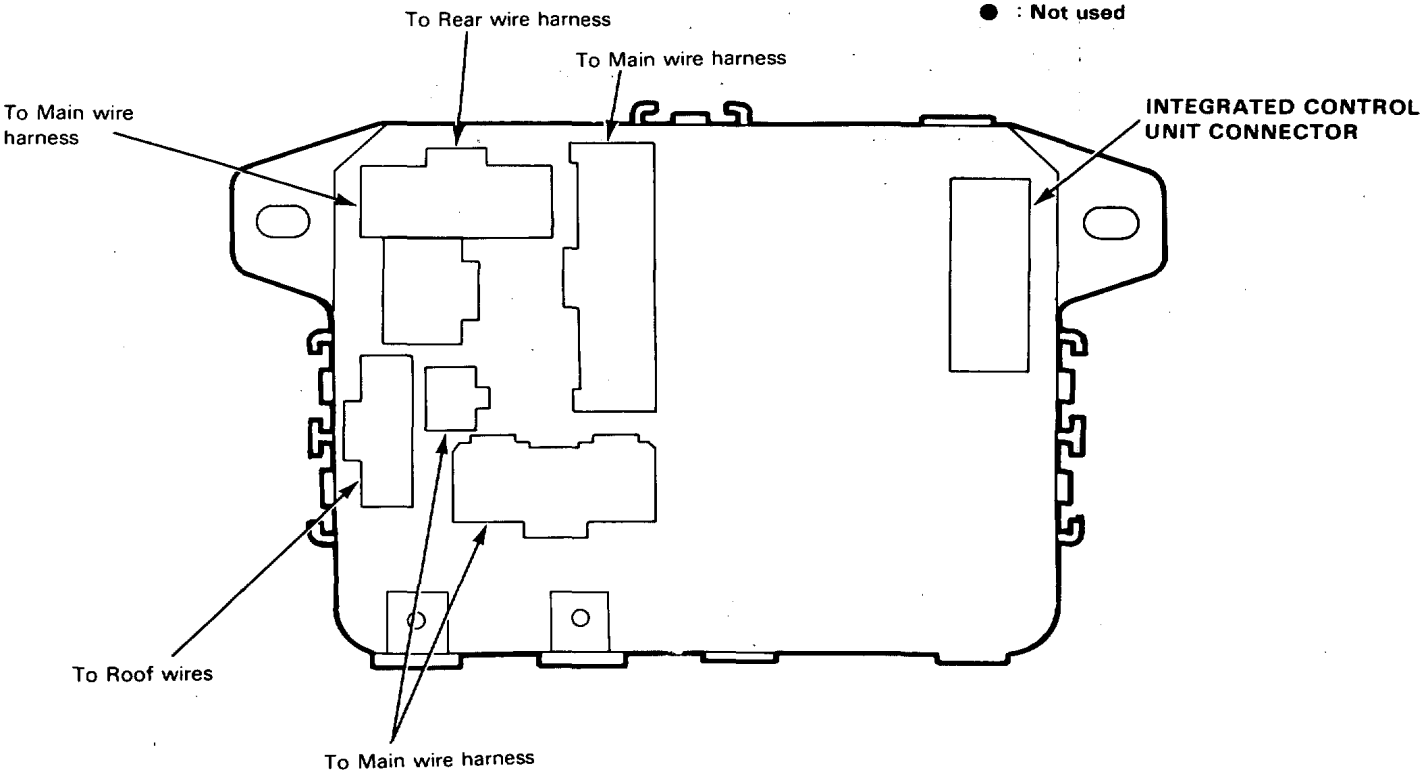


Downloaded from www.Manualslib.com manuals search engine

(RHD)

NOTE: Dash fuse box is located right side, under dash.

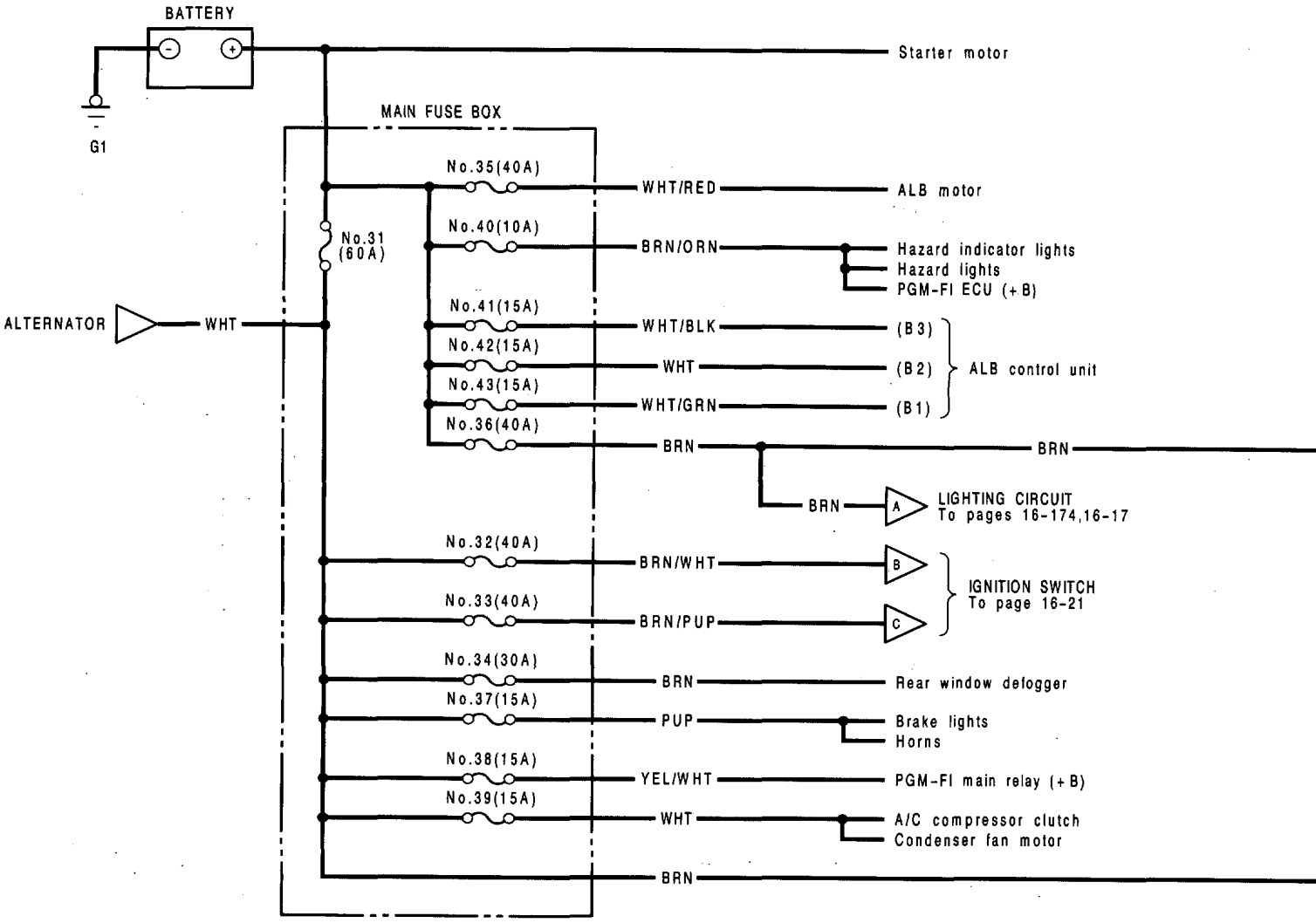




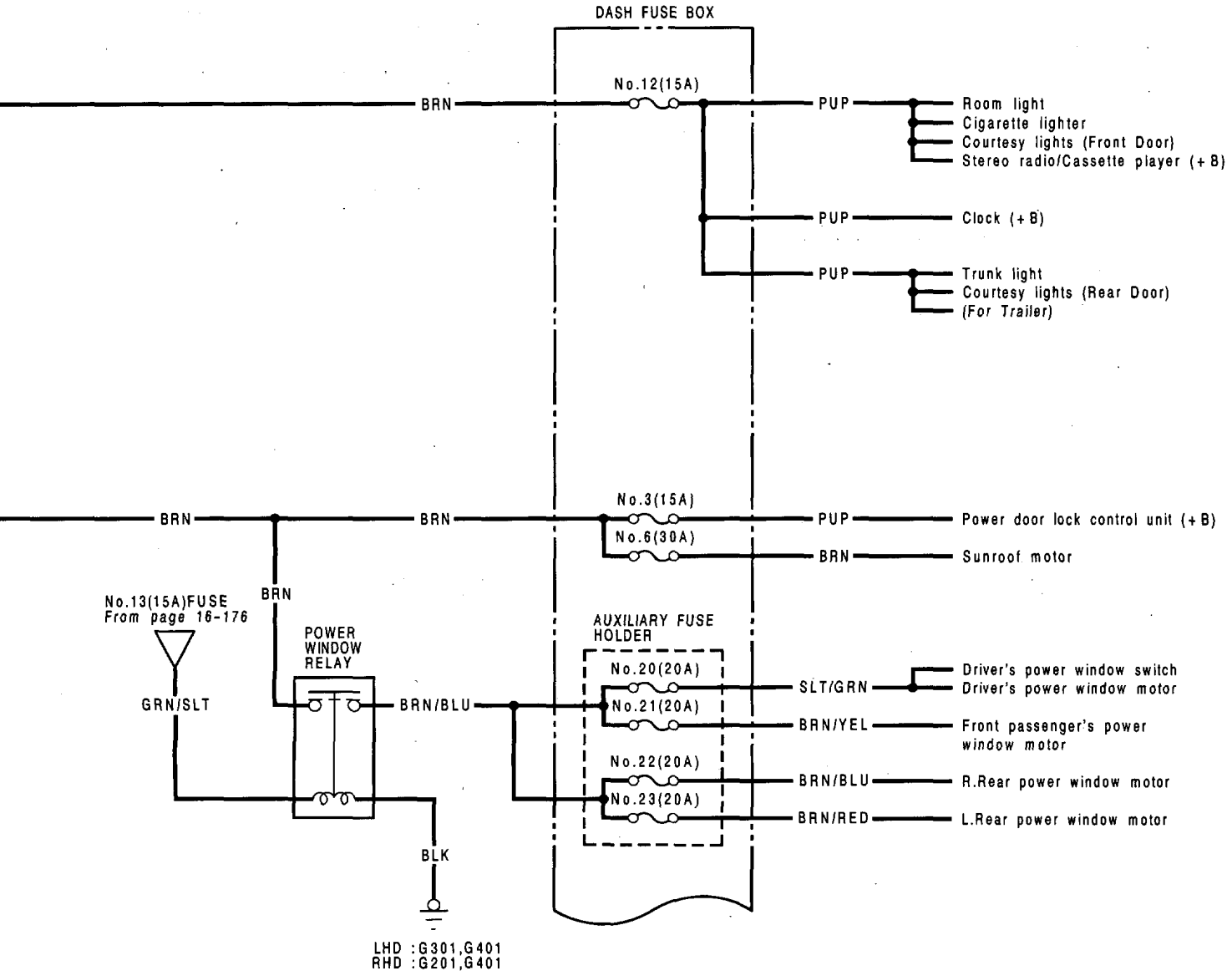
Downloaded from www.Manualslib.com manuals search engine

Power Distribution

Circuit Identification



Downloaded from www.Manualslib.com manuals search engine



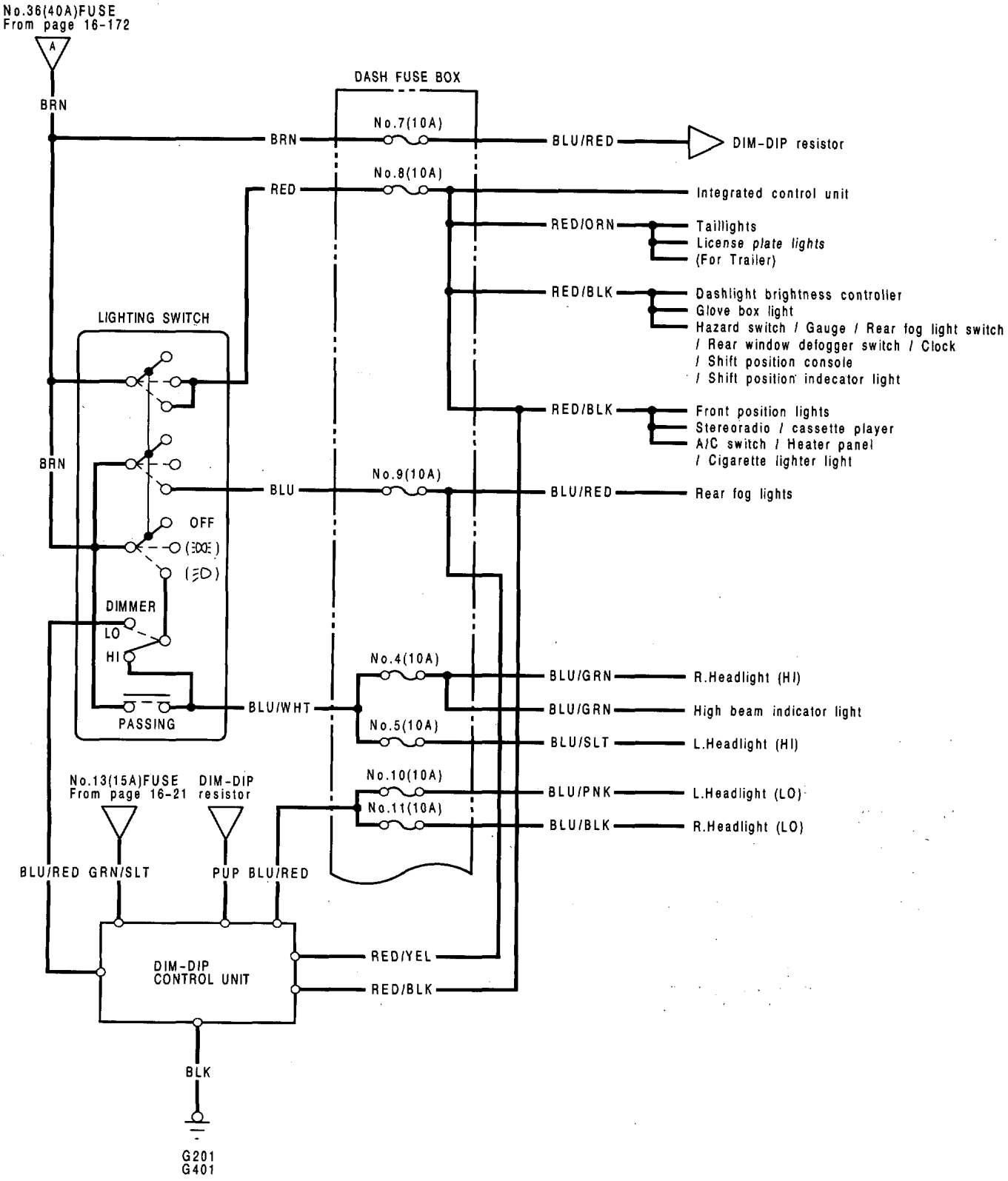
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Power Distribution

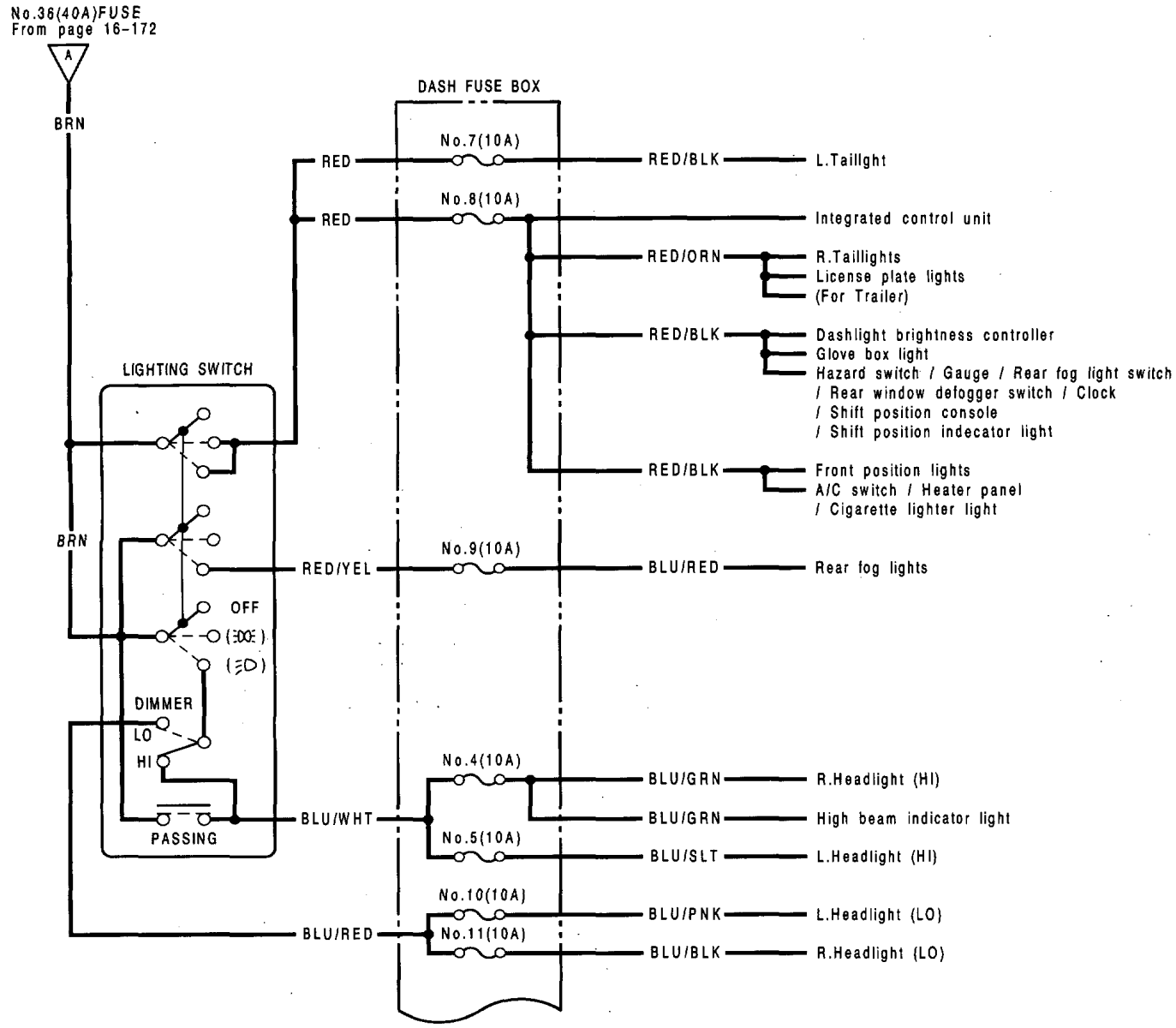
Circuit Identification (cont'd)

KE model:



Downloaded from www.Manualslib.com manuals search engine

Except KE model:

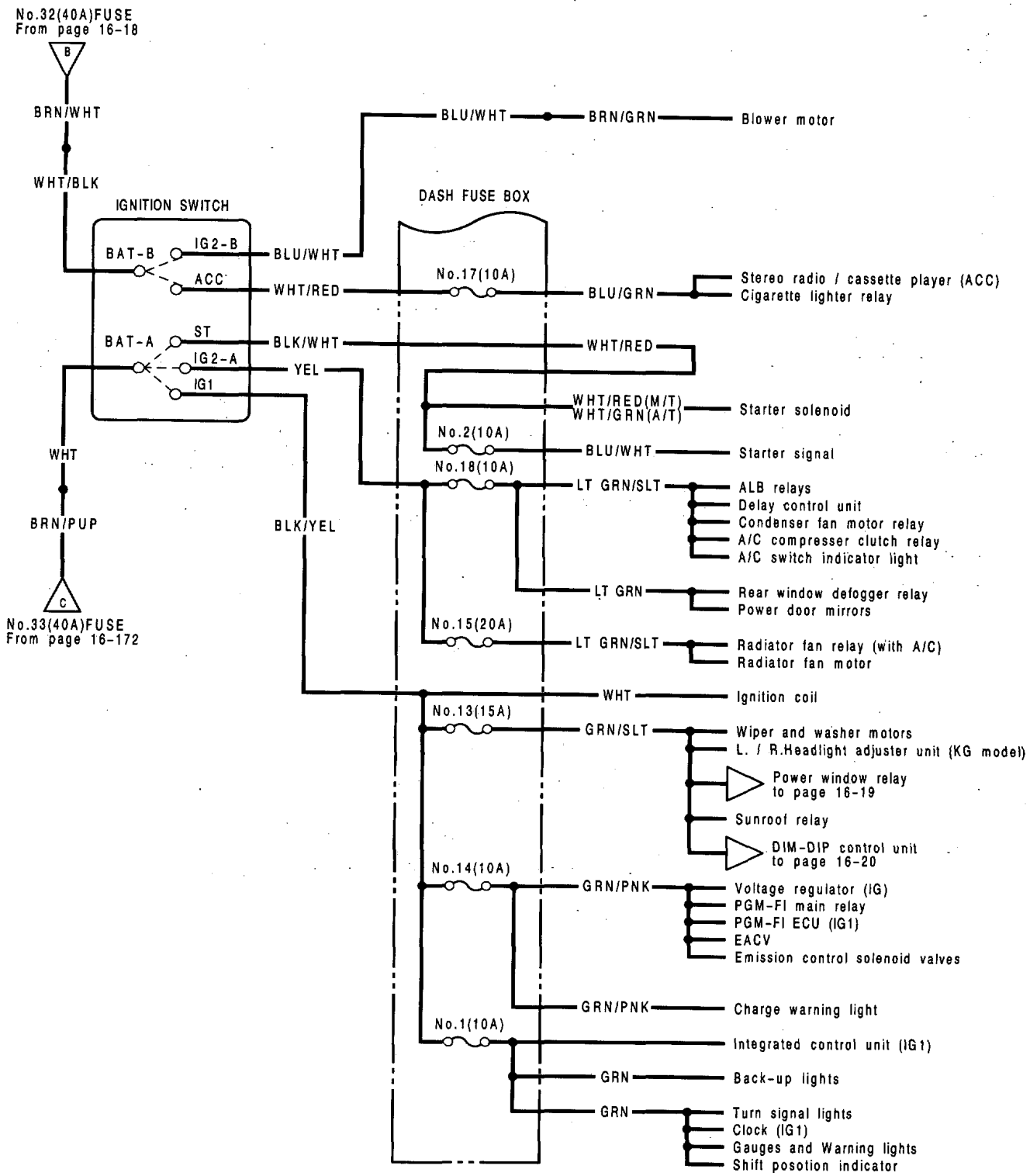


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Power Distribution

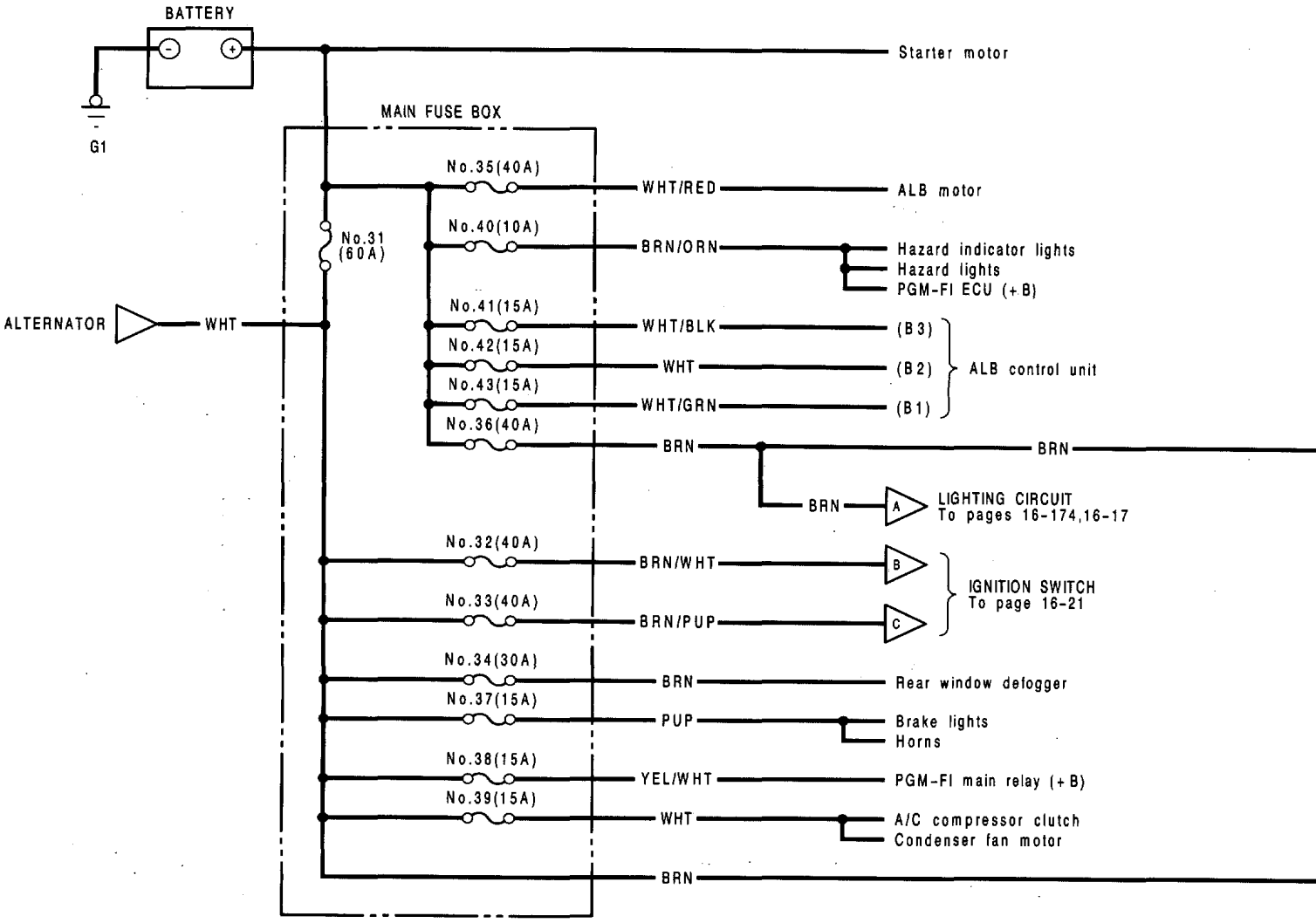
Circuit Identification (cont'd)



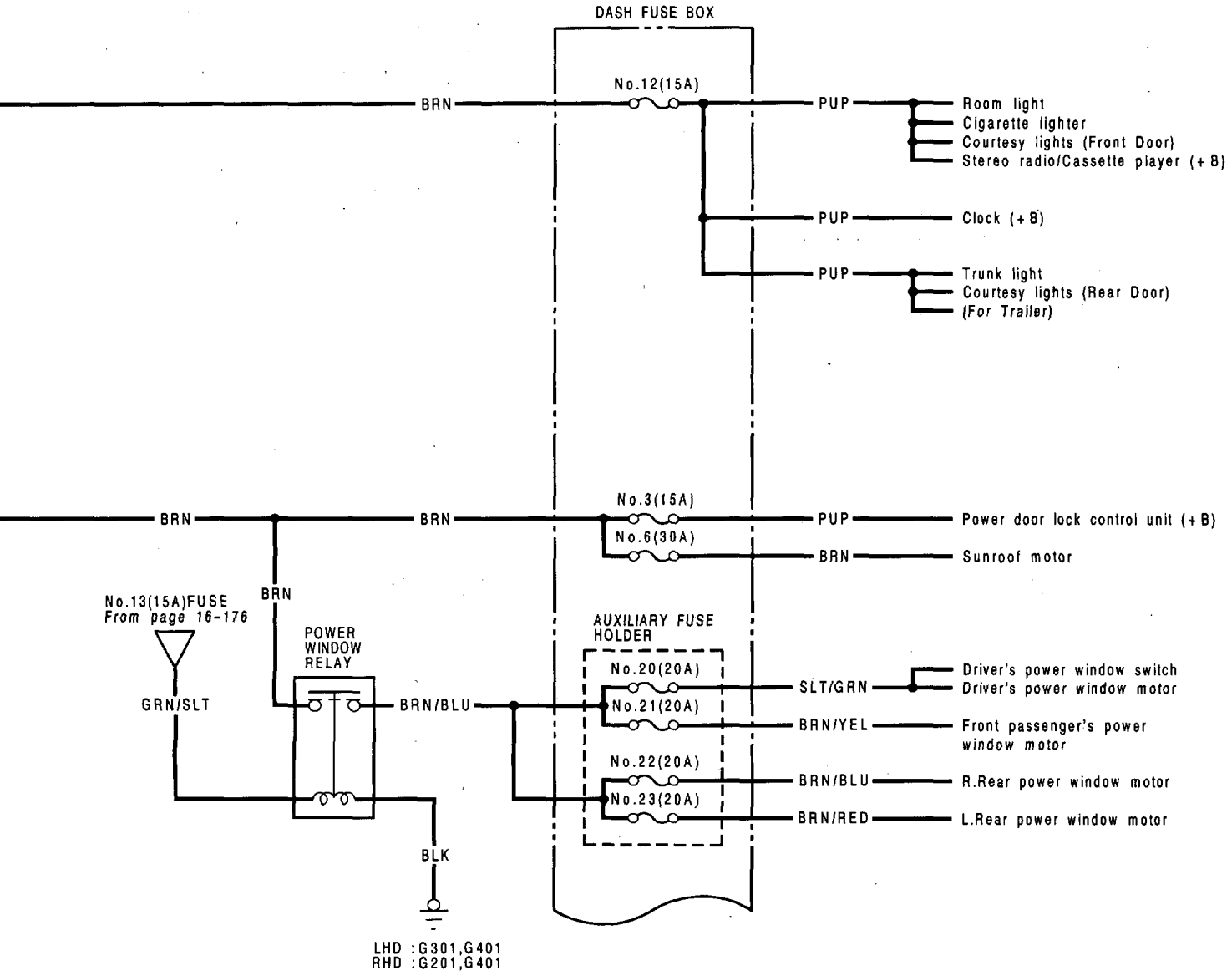
Downloaded from www.Manualslib.com manuals search engine

Power Distribution

Circuit Identification



Downloaded from www.Manualslib.com manuals search engine



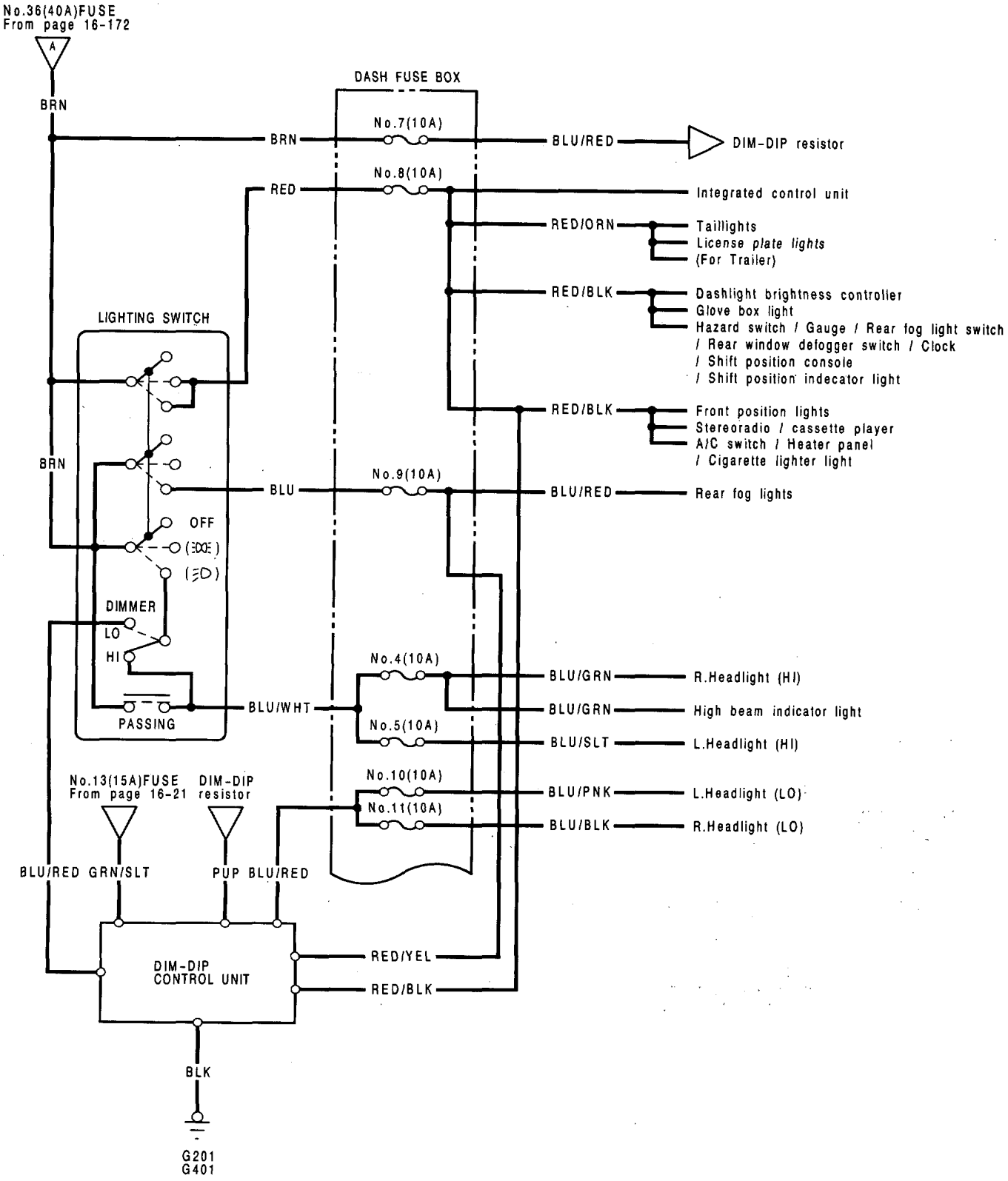
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Power Distribution

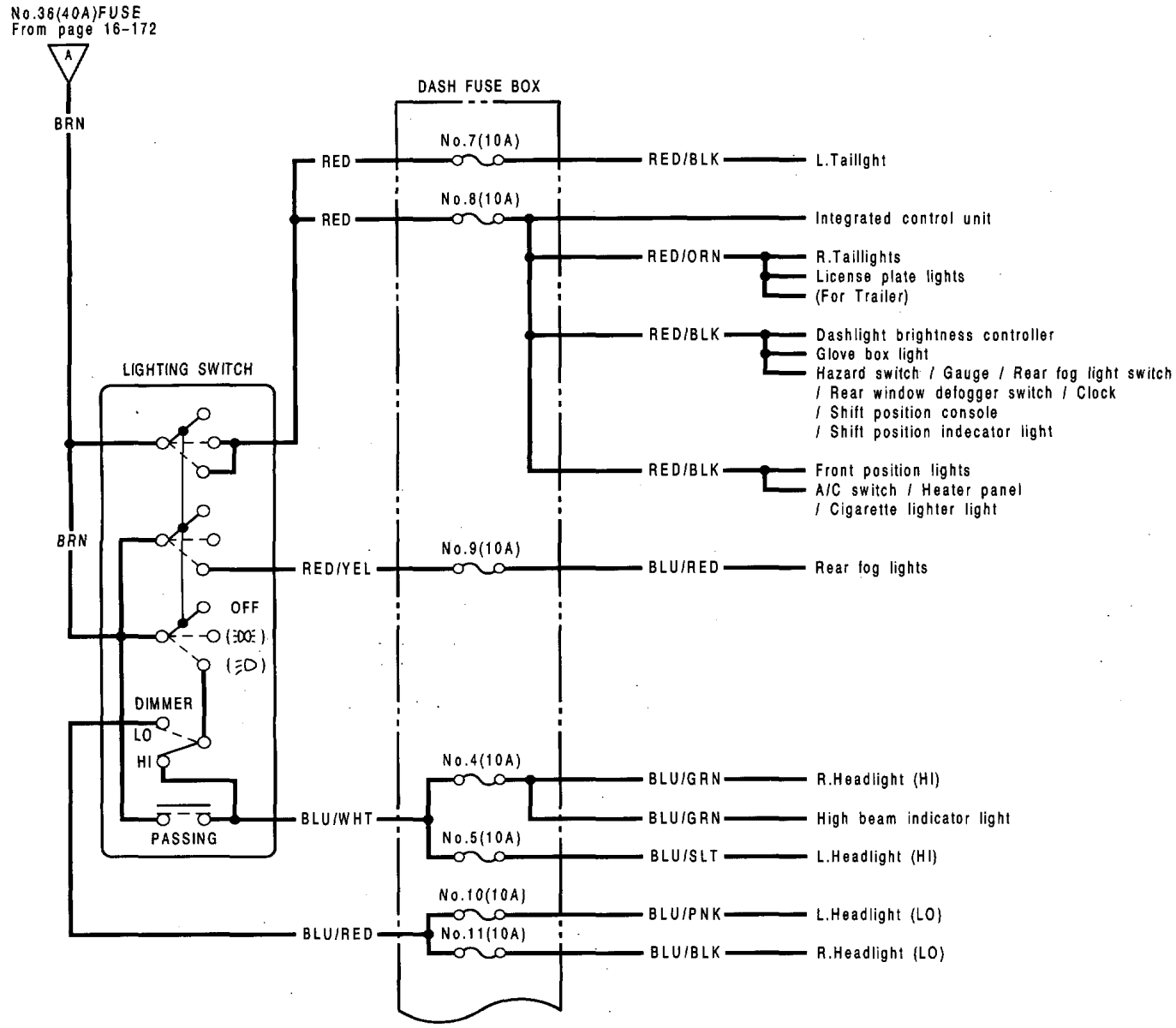
Circuit Identification (cont'd)

KE model:



Downloaded from www.Manualslib.com manuals search engine

Except KE model:

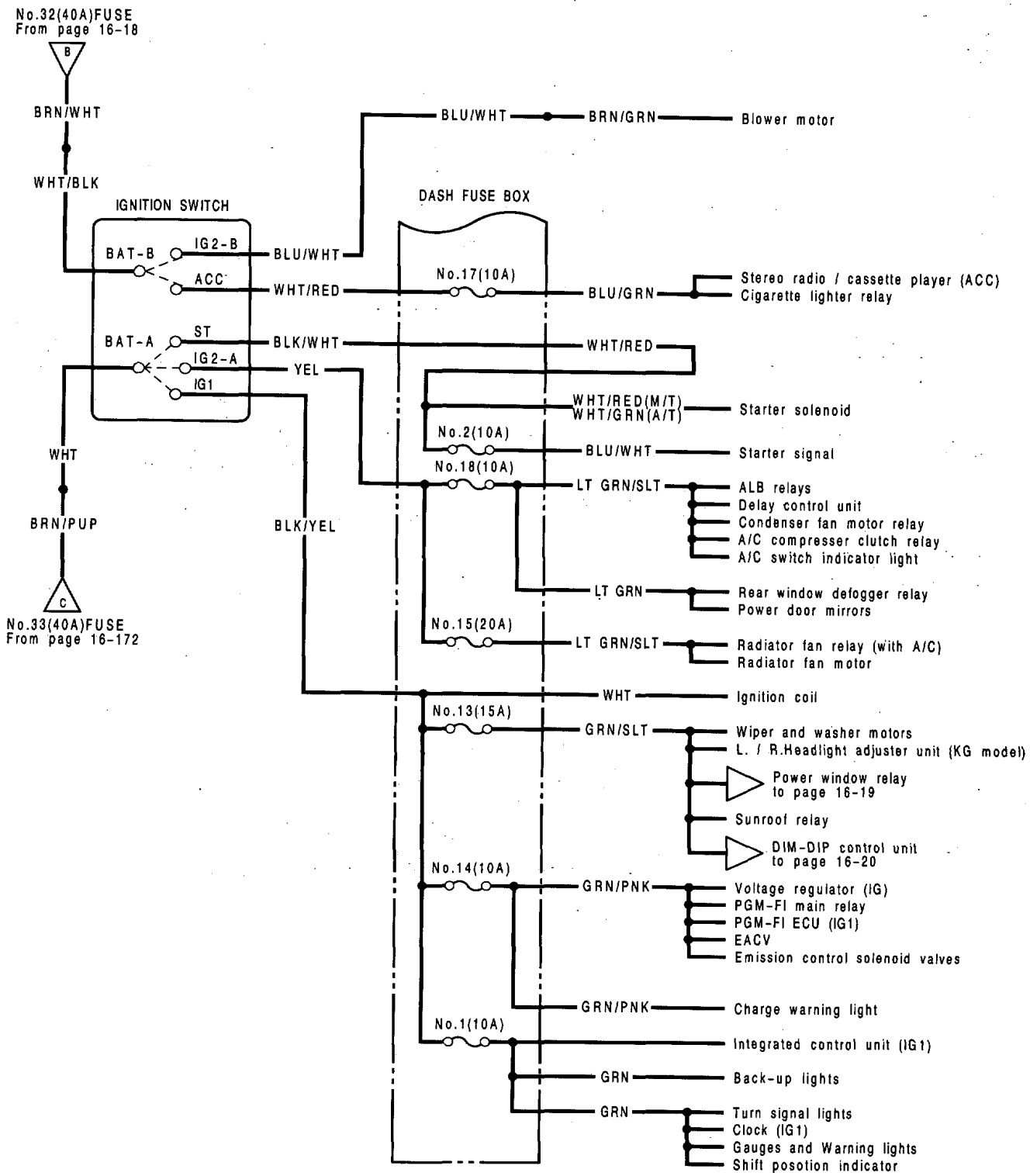


(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Power Distribution

Circuit Identification (cont'd)

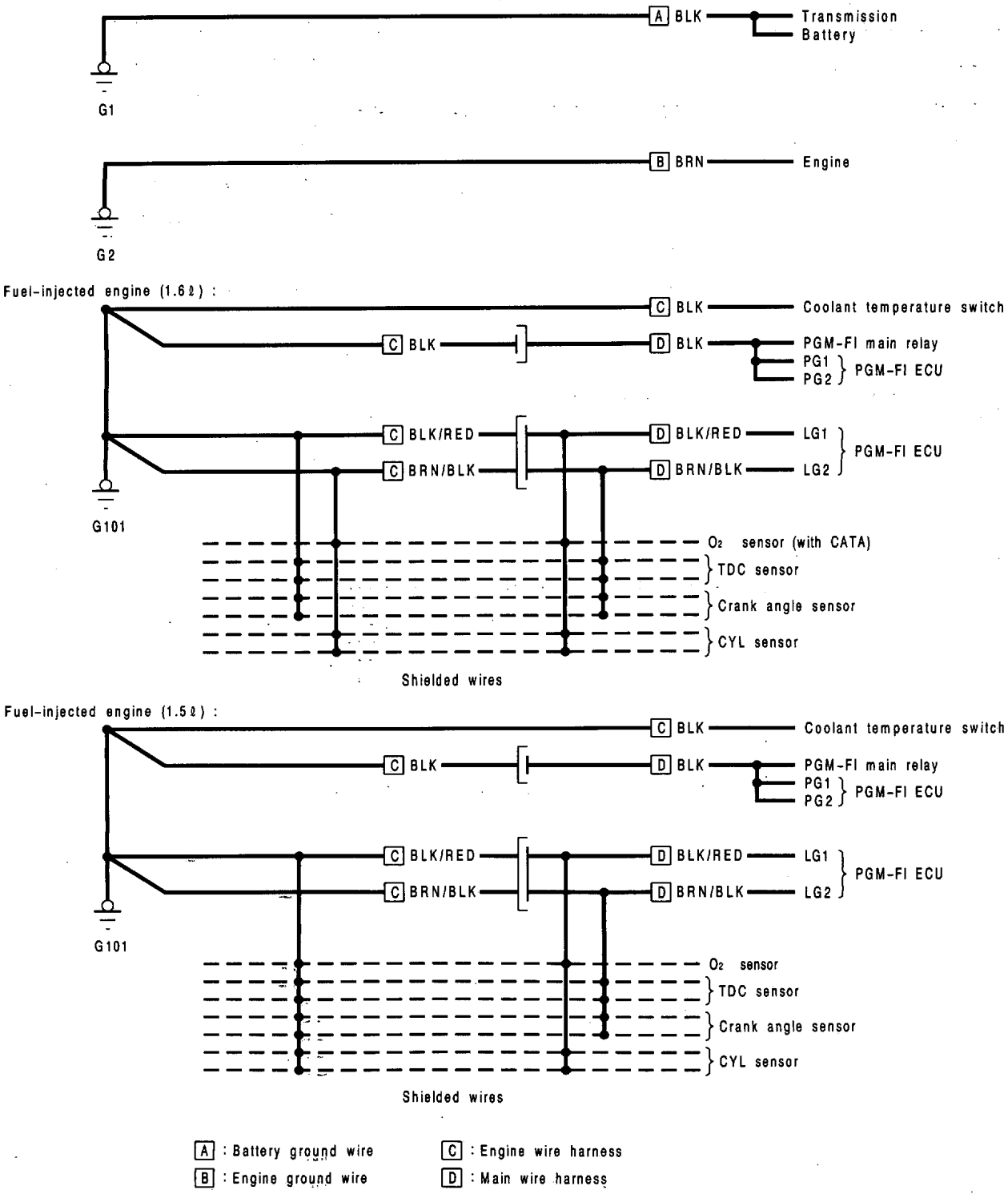


Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification

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

(cont'd)

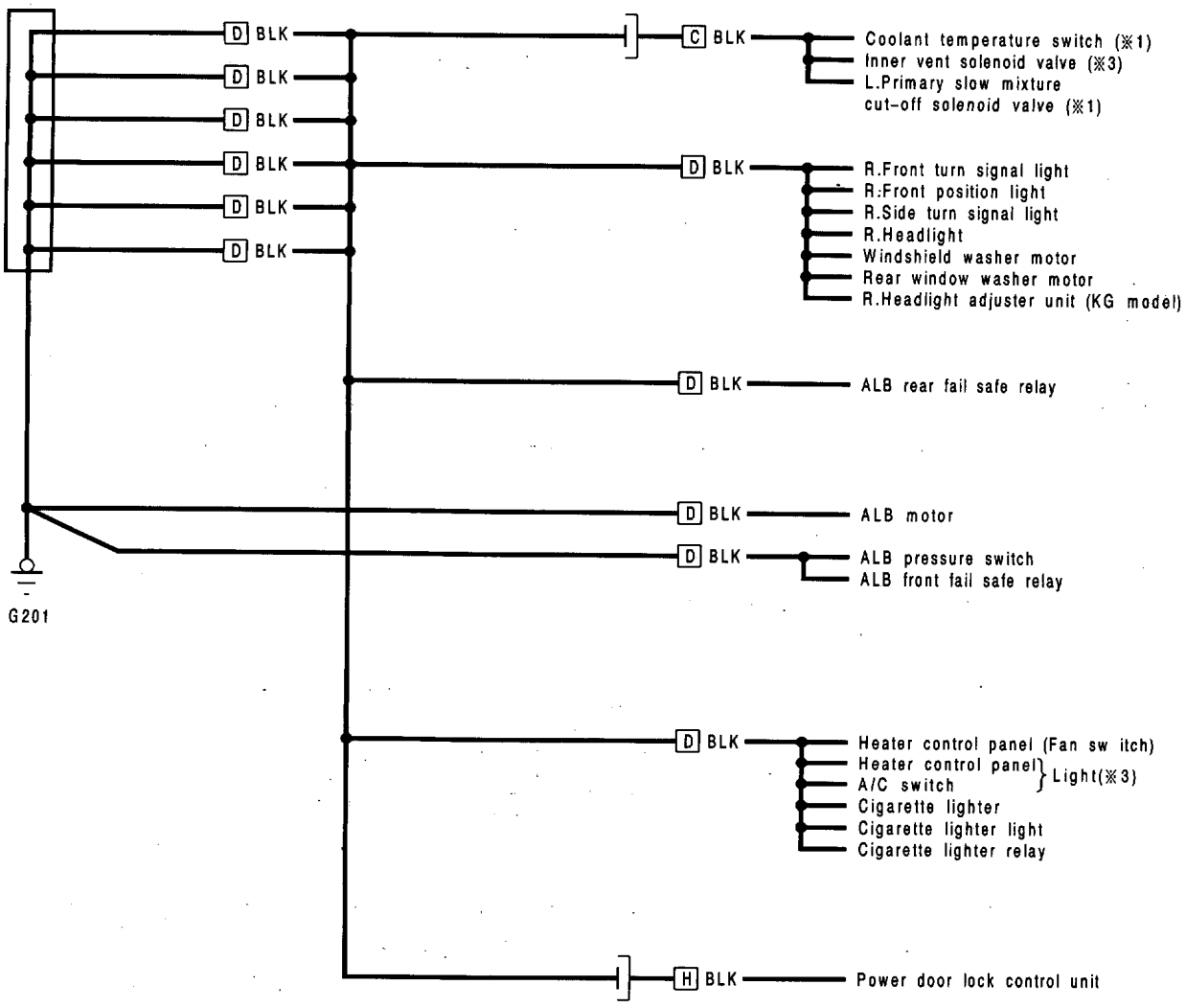
Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification (cont'd)

LHD:

NOTE: See pages 16-10 for illustrated ground locations.

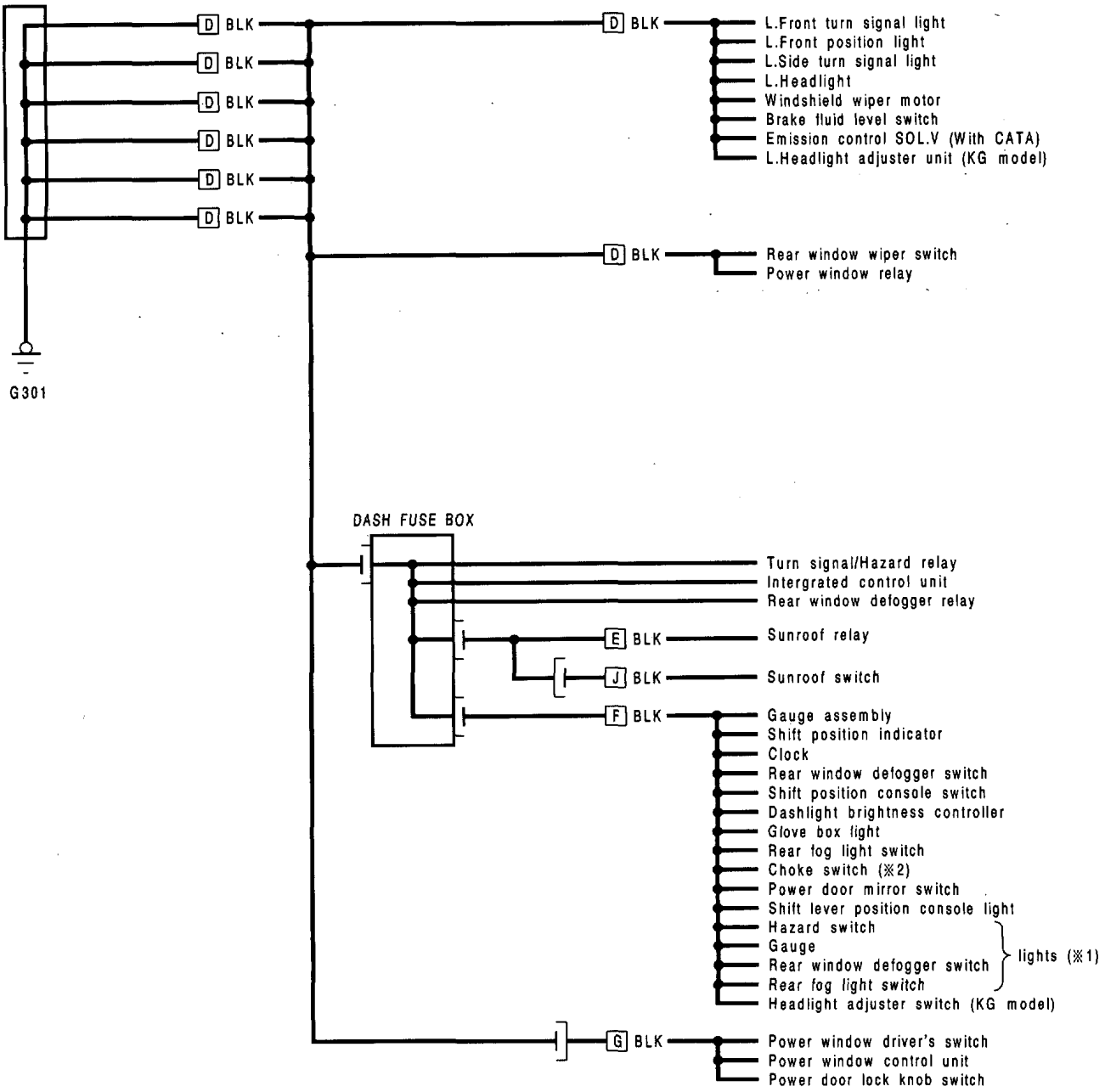


C : Engine wire harness
D : Main wire harness
H : Front passenger's door wire harness

(※1) : Carbureted engine
(※2) : 1.6l Carbureted engine
(※3) : Without dashlight brightness control

Downloaded from www.Manualslib.com manuals search engine

LHD:
NOTE: See page 16—10 and 11 for illustrated ground locations.



D : Main wire harness
E : Roof wire
F : Dashboard wire harness
G : Driver door wire harness
J : Sunroof switch subcord

(※1) : Without dashlight brightness control
(※2) : 1.4ℓ Carbureted engine

(cont'd)

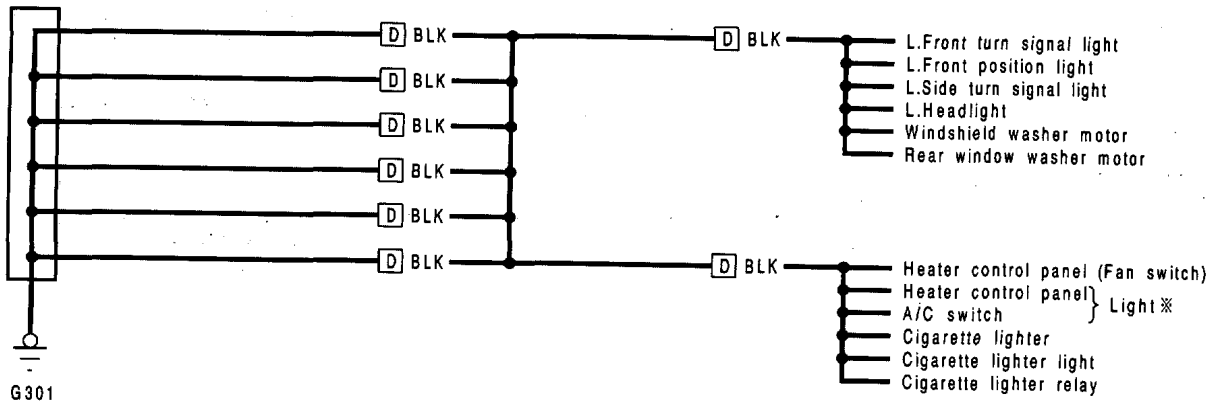
Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification (cont'd)

RHD:

NOTE: See page 16-10 for illustrated ground locations.



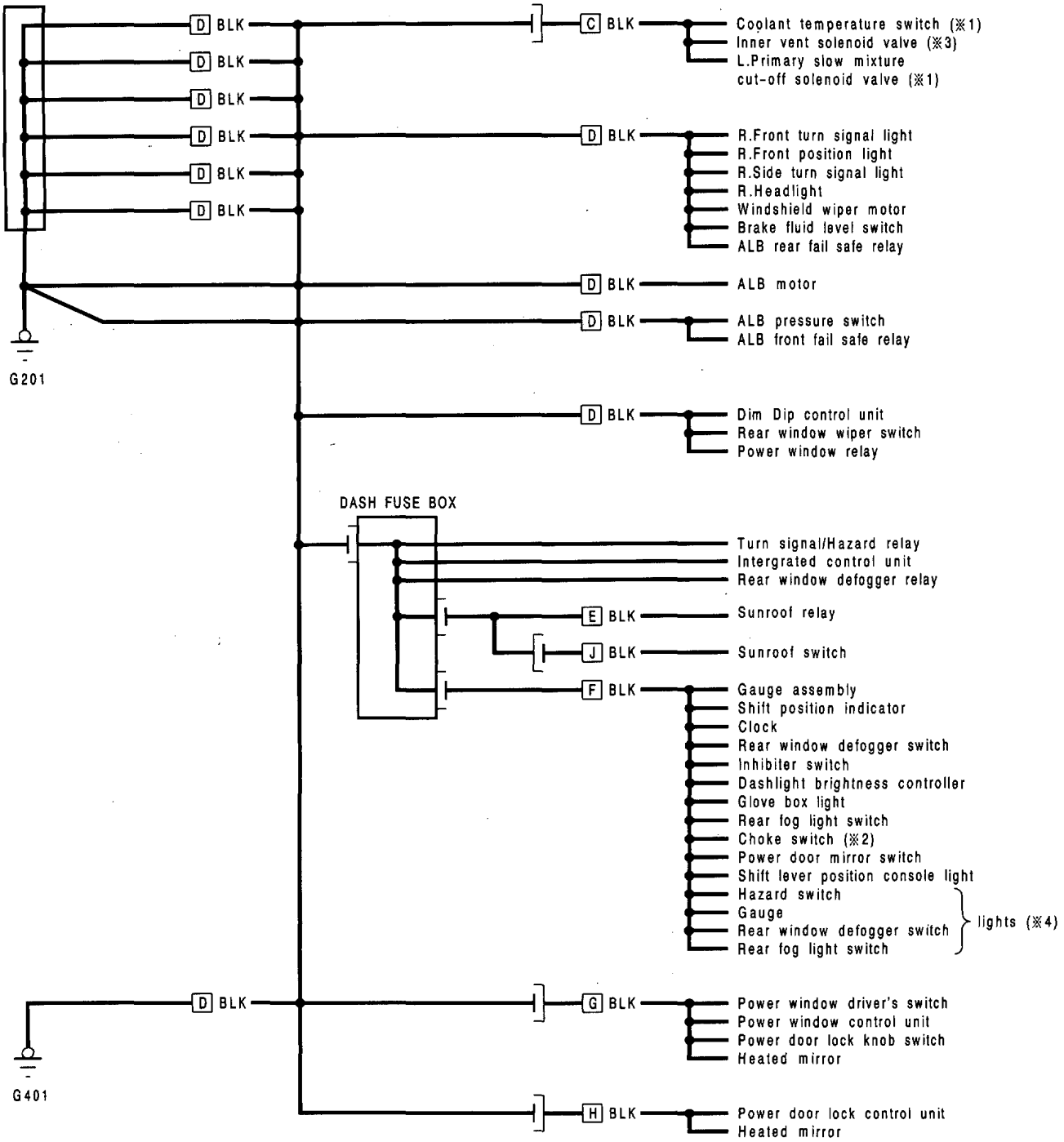
D : Main wire harness

※ : Wituout dashlight brightness control

Downloaded from www.Manualslib.com manuals search engine

RHD:

NOTE: See pages 16-10 and 11 for illustrated ground locations.



C : Engine wire harness
D : Main wire harness
E : Roof wire
F : Dashboard wire harness
G : Driver door wire harness
H : Front passenger's door wire harness
J : Sunroof switch subcord

(※1) : Carbureted engine
(※2) : 1.4ℓ Carbureted engine
(※3) : 1.6ℓ Carbureted engine
(※4) : Without dashlight brightness control

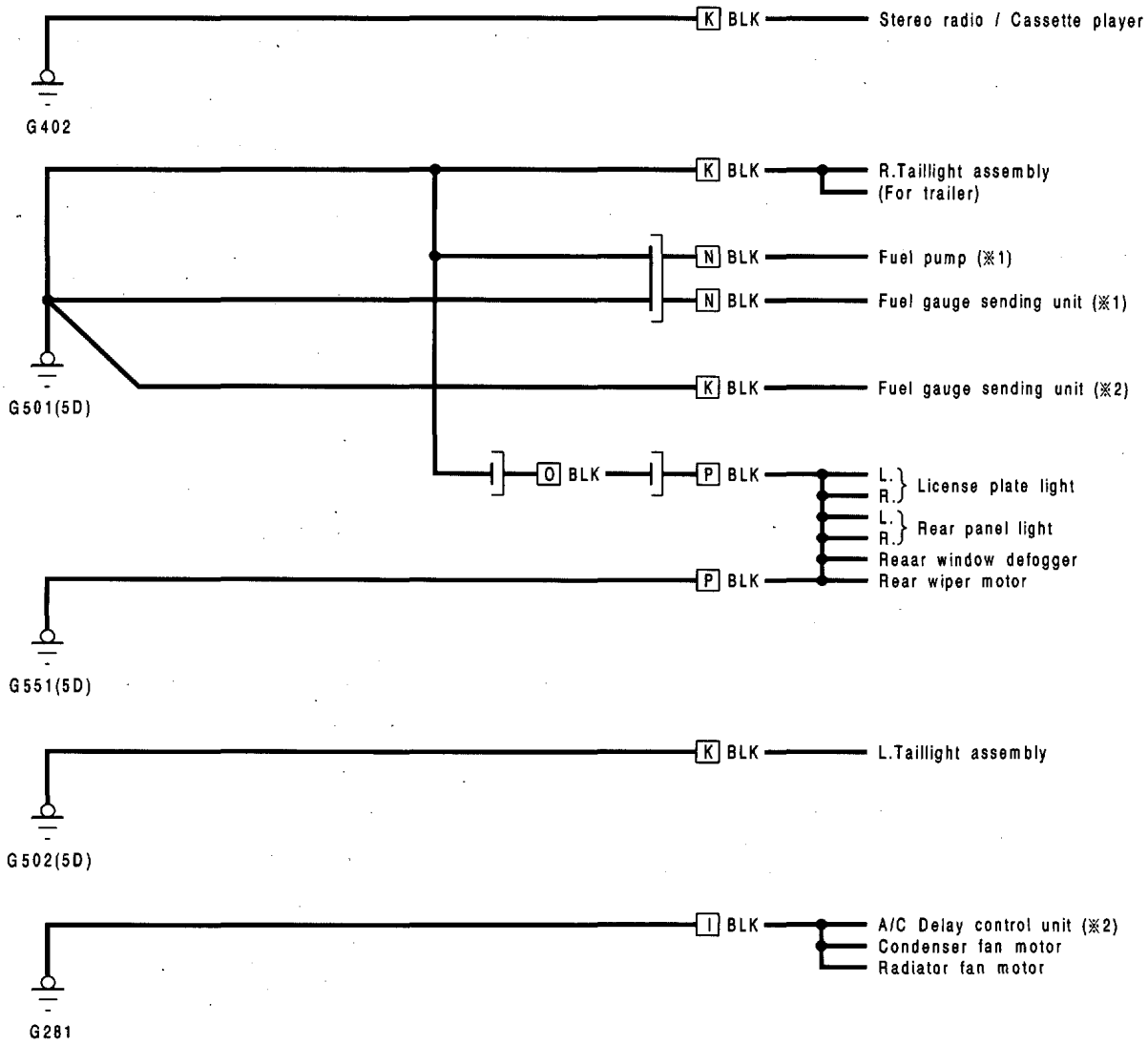
(cont'd)

Downloaded from www.Manualslib.com manuals search engine

Ground Distribution

Circuit Identification (cont'd)

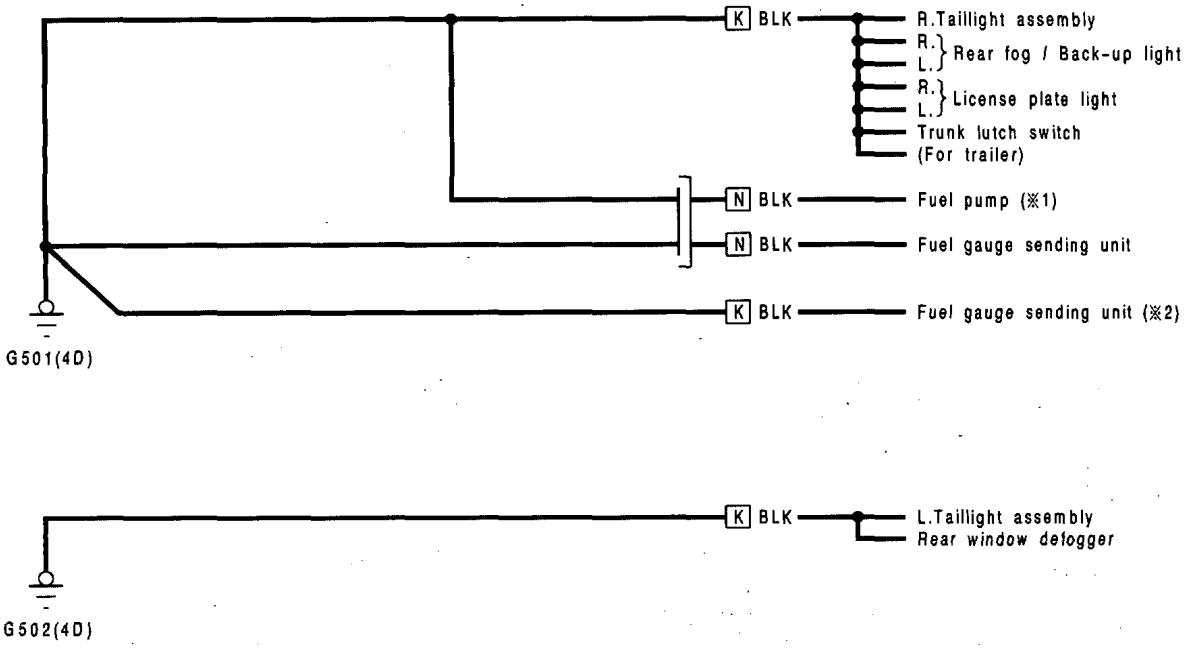
NOTE: See pages 16-12 and 14 for illustrated ground locations.



D : Main wire harness
I : A/C wire harness
K : Rear wire harness
N : Fuel tank wires
O : Hatch subcord
P : Hatch wire harness
(※1) : Fuel-injected engine
(※2) : Cabureted engine

Downloaded from www.Manualslib.com manuals search engine

NOTE : See pages 16-14 for illustrated ground locations.



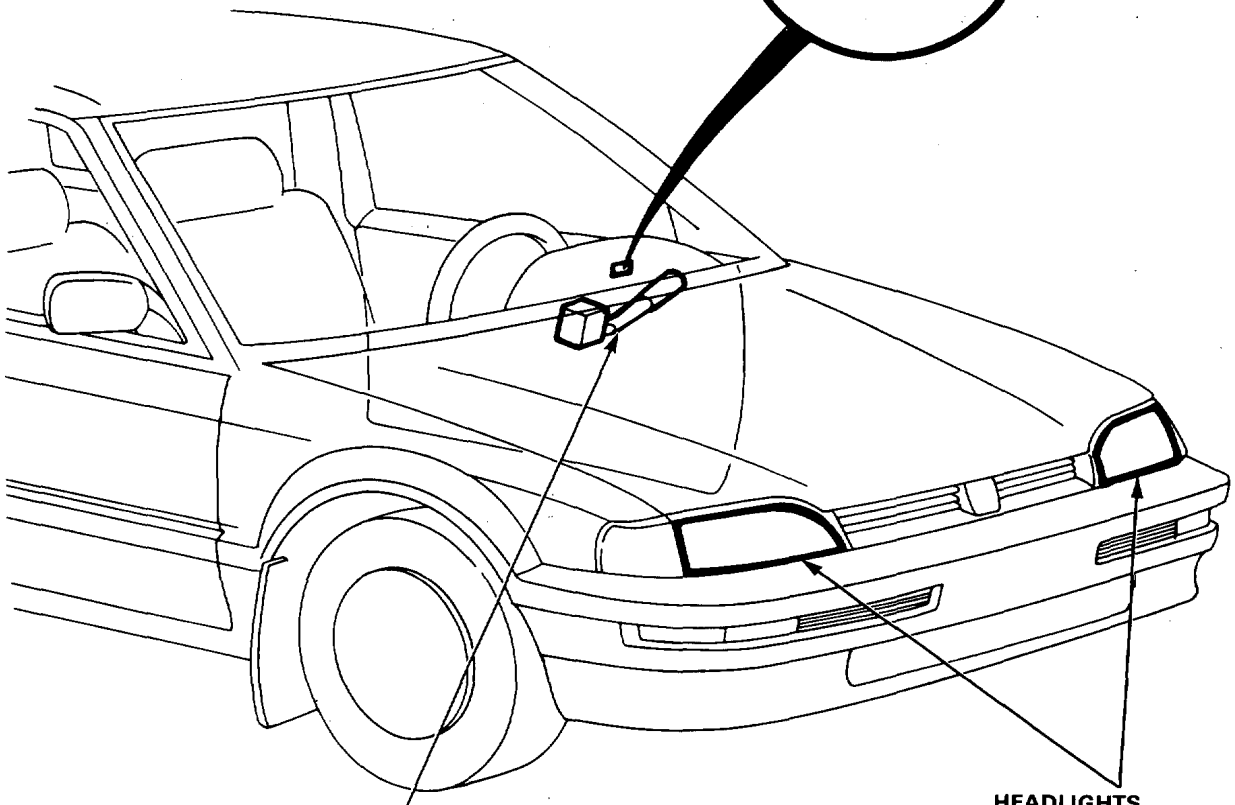
K : Rear wire harness
N : Fuel tank wires

(※1) : Fuel-injected engine
(※2) : Carbureted engine

Downloaded from www.Manualslib.com manuals search engine

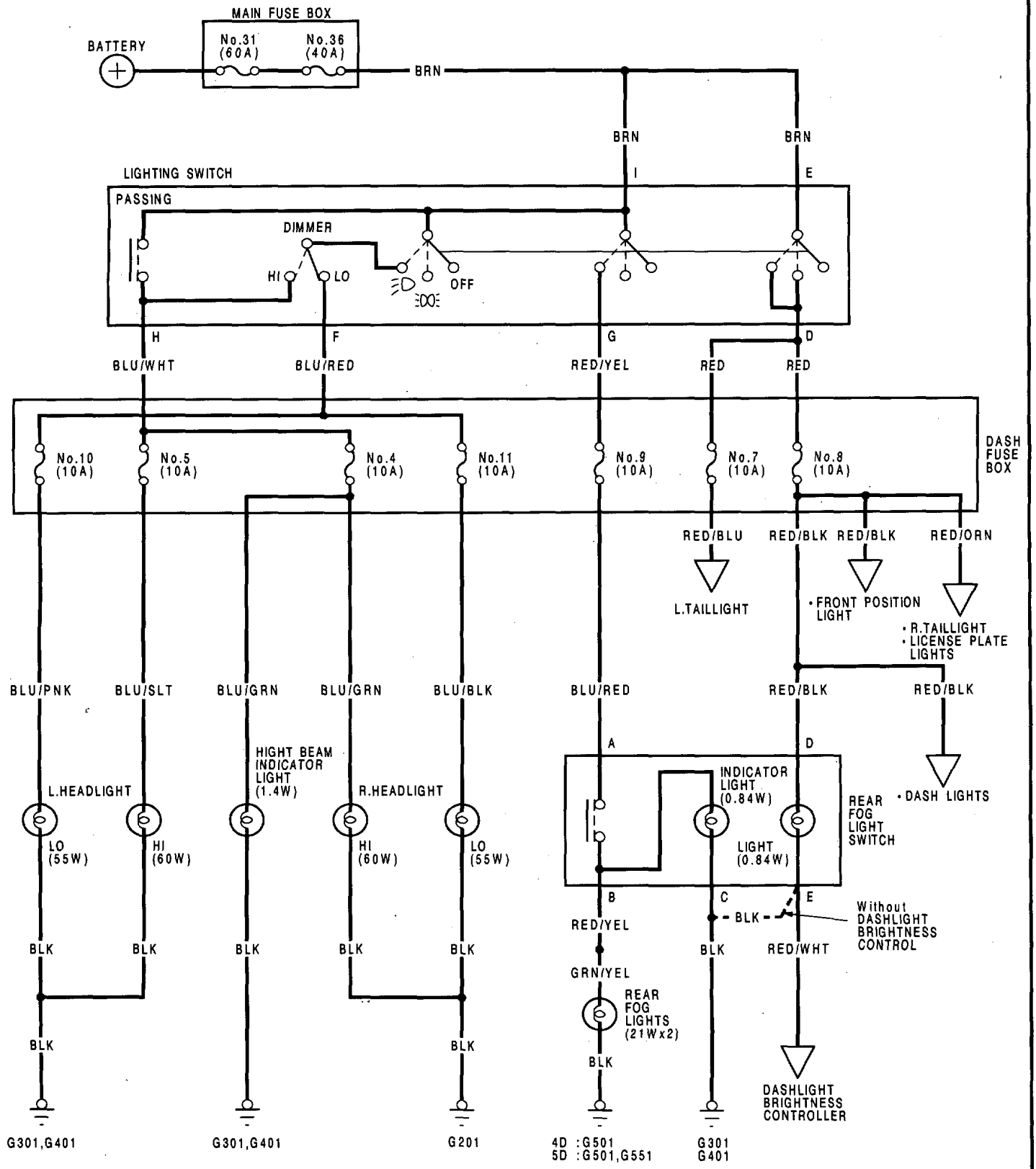
Lighting System (Except KE model)

Componeht Location Index



Downloaded from www.Manualslib.com manuals search engine

Circuit Diagram

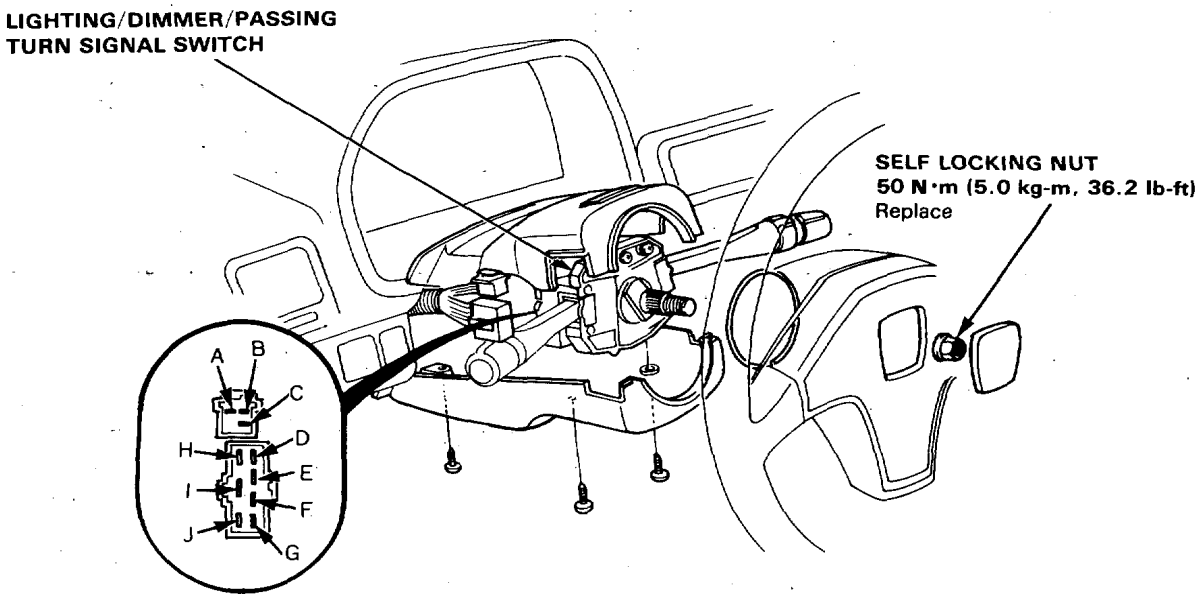


Downloaded from www.Manualslib.com manuals search engine

Lighting System (Except KE model)

Lighting/Turn Signal Switch Test

1. Remove the dashboard lower panel.
2. Remove the steering wheel.
3. Remove the steering column covers then disconnect the 7-P and 4-P connectors.
4. Check for continuity between the terminals in each position according to the tables.



Lighting/Dimmer/Passing Switch

Position \ Terminal		D	E	F	G	H	I
Lighting switch	OFF						
	≡D	○	○				
	≡O				○		○
Dimmer switch *	LOW			○	○		○
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

* : With lighting switch position in (≡O)

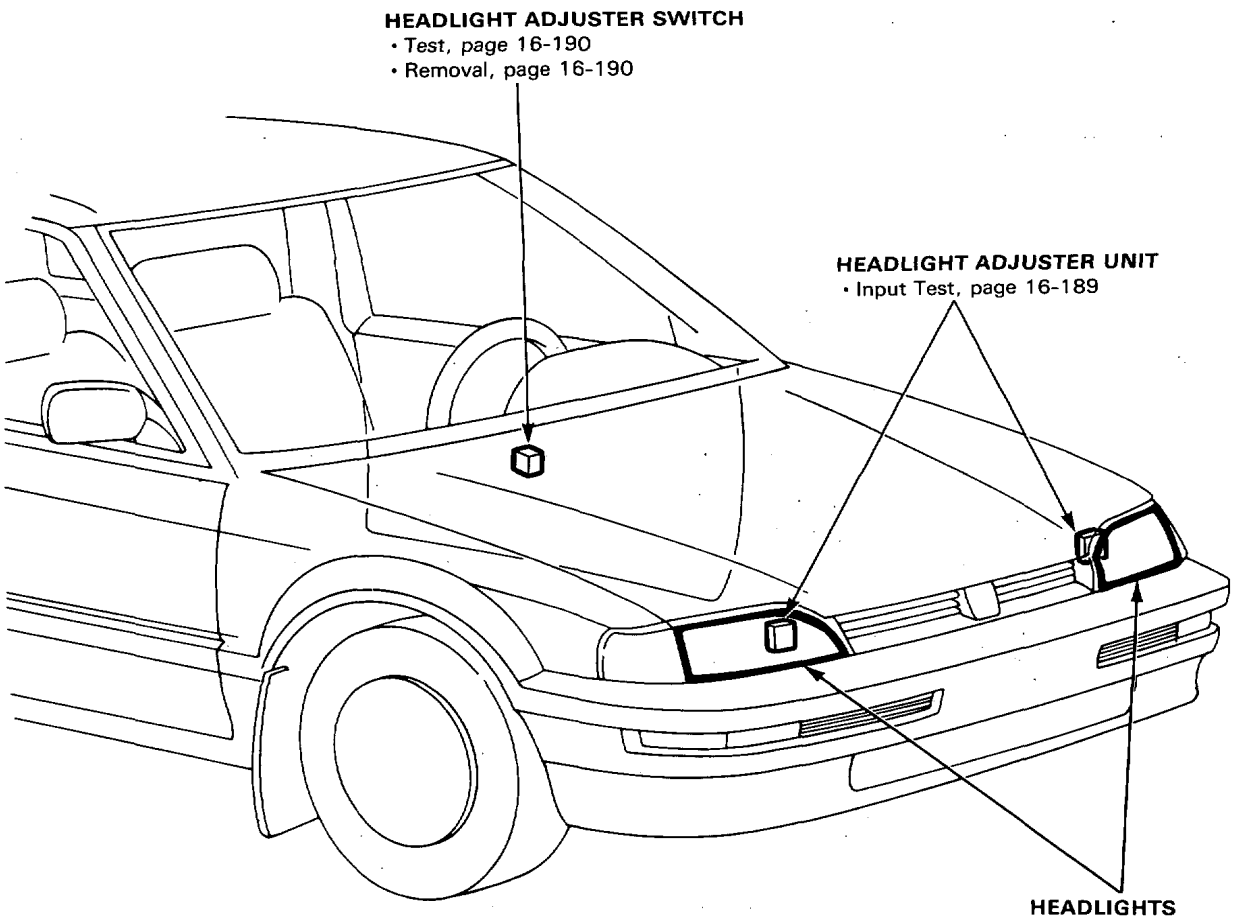
Turn Signal Switch

Position \ Terminal	A	B	C
R	○		○
NEUTRAL			
L	○	○	

Downloaded from www.Manualslib.com manuals search engine

Headlight Adjuster (KG model)

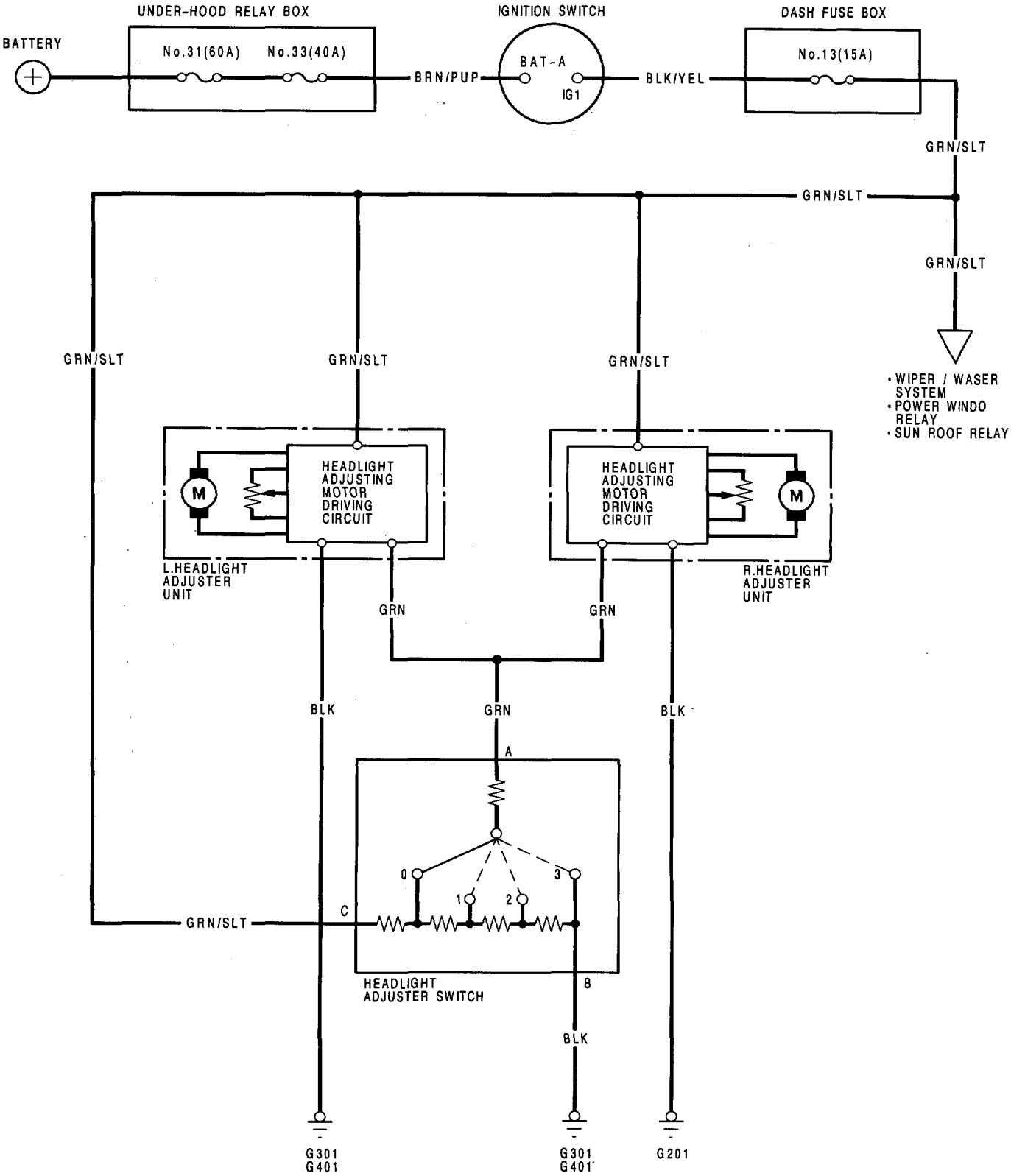
Component Location Index



Downloaded from www.Manualslib.com manuals search engine

Headlight Adjuster (KG model)

Circuit Diagram

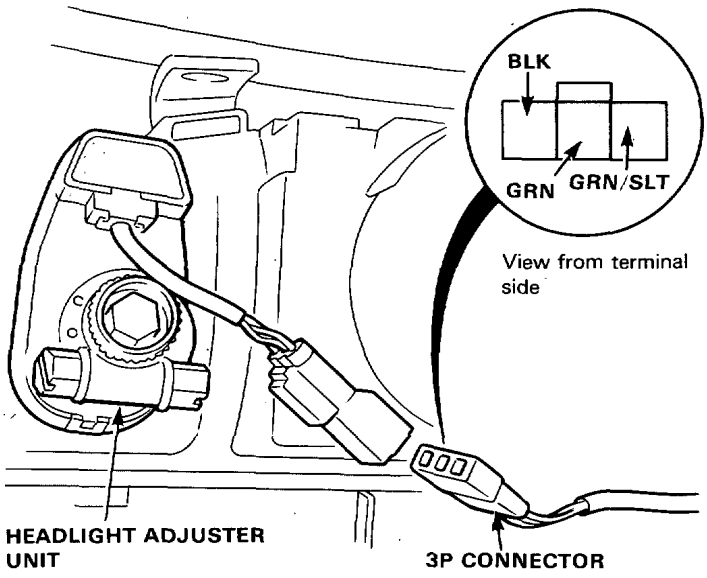


Downloaded from www.Manualslib.com manuals search engine

Unit Input Test

NOTE: Check for blown No.13 (15A) fuse in the dash fuse box before input test.

1. Disconnect the 3-P connectors for the R and L headlight adjuster units.



2. Check for continuity between the BLK termininal and body ground.
   There should be continuity.
   - It there is no continuity, check for.
     - An open in the BLK wire.
     - Poor ground (Right side: G201, Left side: G301)
   - If there is continuity, go to step 3.

3. Check for voltage between the GRN/SLT terminal and body ground with the ignition switch ON, There should be battery voltage.
   - If there is no voltage, check for an open in the GRN/SLT wire.
   - If there is battery voltage, go to step 4.

4. Using an ohmmeter. When the ignition switch OFF, measure resistance between the GRN terminal and body ground and between the GRN/SLT and GRN terminal in each ajuster switch position according to the table.

Terminal / Position	Resistance (Approx. kΩ)	
	GRN-body ground	GRN/SLT-GRN
0	0.7	1.1
1	0.6	———
2	0.5	———
3	0.4	———

   - If resistance is not within specification, check for
     - An open in the GRN wire.
     - Faulty headlight adjuster switch.
   - If resistance is within specification, go to step 5.

5. If all tests are normal, but the headlight adjuster unit does not operate, check for frozen, stuck or inporperly installed the headlight adjuster unit. If mechanical check is OK, replace the headlight adjuster unit.

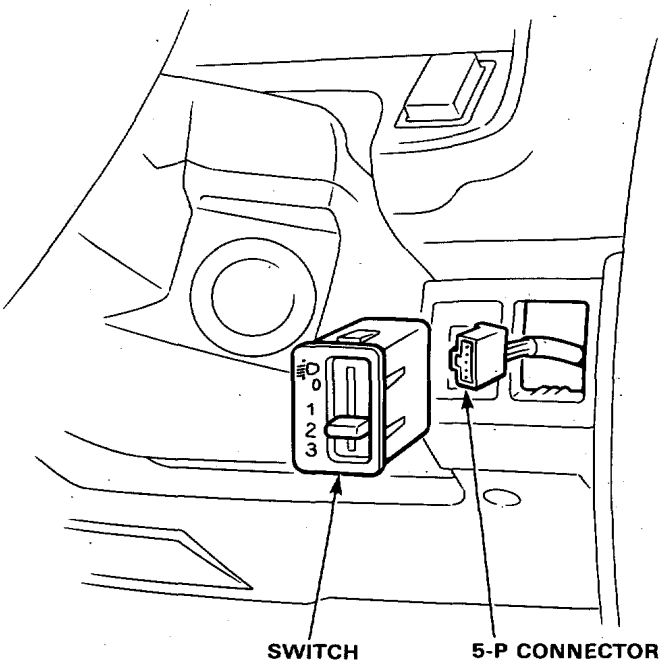
NOTE: Check for connection of 3-P connectors after test, For example, malfunction of headlight adjuster is occurred by improper connection of one side.

Downloaded from www.Manualslib.com manuals search engine

Headlight Adjuster (KG model)

Switch Removal

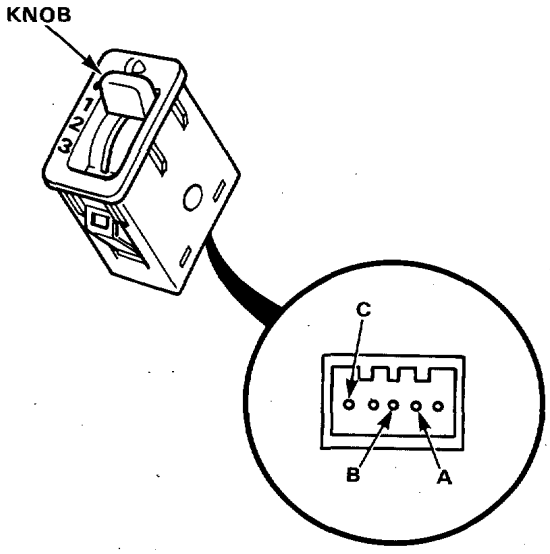
1. Remove the dashboard lower panel and push out the switch from behind the instrument panel.
2. Disconnet 5-P connector from the switch.



Switch Test

1. Remove the switch from the instrument panel.
2. Measure the resistance between the A and B terminals at 0, 1, 2 and 3 positions by moving the knob, and measure resistance between the A and C terminal in 0 position of switch.

   Replace the switch if the resistance is not within specifications.



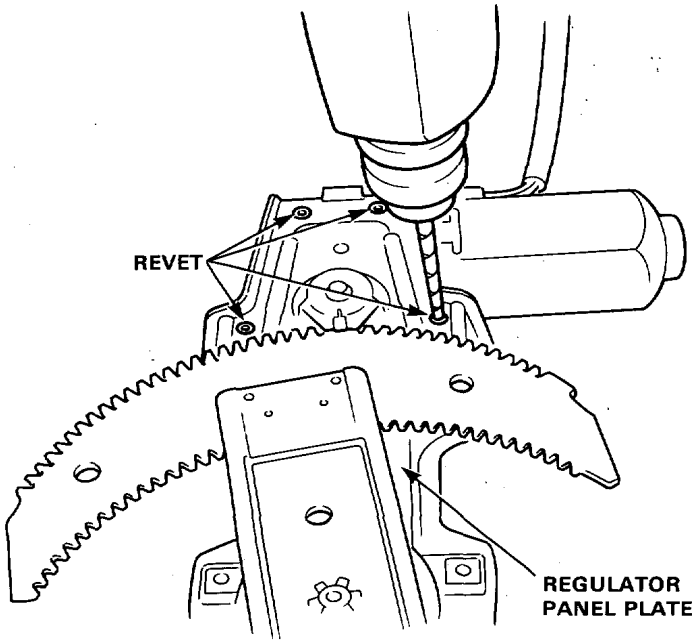
Terminal / Position	Resistance (Approx. kΩ)	
	A—B	A—C
0	0.7	1.1
1	0.6	———
2	0.5	———
3	0.4	———

Downloaded from www.Manualslib.com manuals search engine

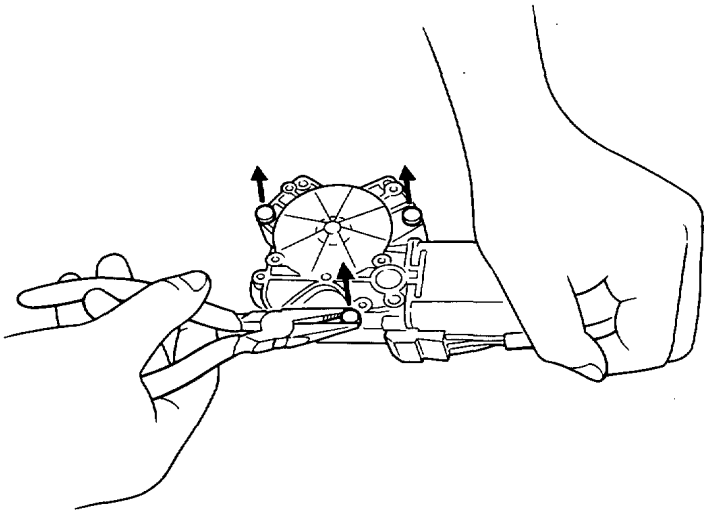
Power Windows

Motor Replacement

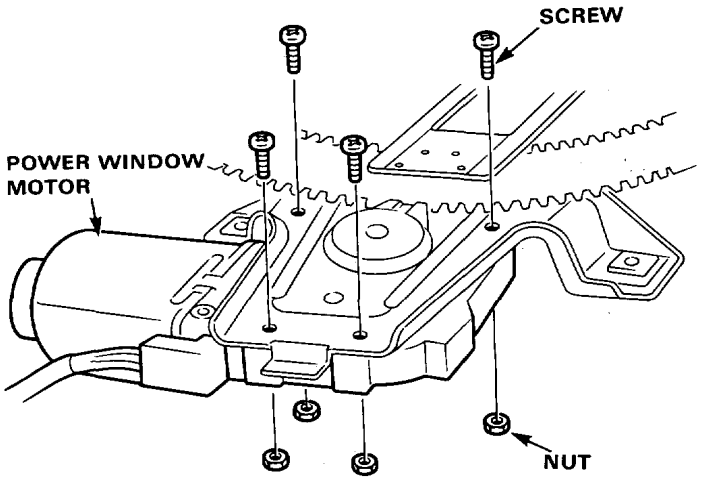
1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Remove the regulator assembly. (See section 14)
4. Remove the 4 rivets from the regulator panel plate, with a drill diameter 4.2 mm.



5. Pull out the rivets from the motor.



6. Fix the motor with 4 screws and 4 nuts on the regulator panel plate.



7. Add a drop of "LOCTITE" glue on the nuts to secure.
8. Assemble the regulator assembly in the reverse order of disassembly. (See section 14)
9. After installation, check the smooth movement of door glass.

Downloaded from www.Manualslib.com manuals search engine