INTRODUCTION

How to Use This Manual

This manual contains service information for the CIVIC. Separate volumes are published regarding vehicle construction, engine, and transmission; the applicable reference manuals are listed below.
This manual is divided into sections. This first page of each section is marked with a black tab that lines up with one of the thumb index tabs on next page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Each section includes:

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

Reference Manuals

Description	Code No.	Remarks	Date Published
CIVIC Construction and Function	62SH310		Nov. 1987
D12B/D13B/D14A/D15B/D16A Engine Maintenance and Repair	62PM100	1.2 ℓ SOHC 1-Carbureted Engine 1.3 ℓ SOHC 1-Carbureted Engine 1.4 ℓ SOHC 2-Carbureted Engine 1.5 ℓ SOHC 1-Carbureted Engine 1.5 ℓ SOHC 2-Carbureted Engine 1.5 ℓ SOHC PGM-FI Engine 1.6 ℓ SOHC PGM-FI Engine 1.6 ℓ DOHC PGM-FI Engine	Nov. 1987
L3 Manual Transmission Maintenance and Repair	62PL300	5 Speed	Nov. 1987
L4 Automatic Transmission Maintenance and Repair	62PL400	4 Speed with lock-up	Nov. 1987

Special Information

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

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

NOTE: Gives helpful information.

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

First Edition 11/87 998 pages

HONDA MOTOR CO., LTD.
Service Publication Office

General Information

Chassis and Engine Numbers

Vehicle Identification Number

JHM ED1 5200S000001

Manufacturer, Make and Type of vehicle
- JHM: HONDA MOTOR CO., LTD., JAPAN HONDA, Passenger car

Line/Body and Engine type
- ED1: CIVIC 1200 Sedan
- ED2: CIVIC 1400 Sedan
- ED3: CIVIC 1500 Sedan
- ED4: CIVIC 1600 Sedan
- ED5: CIVIC 1300 Sedan
- ED6: CIVIC 1500 Hatchback
- ED7: CIVIC 1600 Hatchback
- EC7: CIVIC 1200 Hatchback
- EC8: CIVIC 1300 Hatchback
- EC9: CIVIC 1400 Hatchback

Transmission and Body type
- 3: 5-speed manual/2-Door Hatchback
- 4: 4-speed automatic/2-Door Hatchback
- 5: 5-speed manual/4-Door Sedan
- 6: 4-speed automatic/4-Door Sedan

Vehicle Grade
- 2: DX (EC7, EC8, ED1, ED3: KQ, ED5, ED6: KQ)
  GL (EC9, ED2, ED3, ED6: KY)
- 3: GL (ED3: KQ, ED6: KQ) EX (ED3: KY)
- 4: DX (ED3: KW*, ED6: KX/KW*)
- 5: GL (ED3: KX/KS/KW*, ED6: KX/KS/KW*)
- 6: 1.6i (ED4, ED7)
- 7: 1.6i-16 (ED7)

Fixed code

Model Year
- 0: 1988

Factory
- S: SUZUKA Factory

Serial Number

KW*: for Austria.

Engine Serial Number

D12B1-1000001

Engine Type
- D12B1: 1.2 ℓ SOHC 1-Carbureted Engine
- D13B1: 1.3 ℓ SOHC 1-Carbureted Engine
- D14A1: 1.4 ℓ SOHC 2-Carbureted Engine
- D15B1: 1.5 ℓ SOHC PGM-FI Engine with Catalytic Converter for Austria
- D15B2: 1.5 ℓ SOHC PGM-FI Engine with Catalytic Converter
- D15B3: 1.5 ℓ SOHC 1-Carbureted Engine without Catalytic Converter
- D15B4: 1.5 ℓ SOHC 2-Carbureted Engine with Catalytic Converter
- D16A6: 1.6 ℓ SOHC PGM-FI Engine with Catalytic Converter
- D16A7: 1.6 ℓ SOHC PGM-FI Engine without Catalytic Converter
- D16A9: 1.6 ℓ DOHC PGM-FI Engine

Model Year
- 1: 1988

Emission Group
- 0: Ex. PGM-FI Engine with Catalytic Converter
- 7: PGM-FI Engine with Catalytic Converter

Serial Number

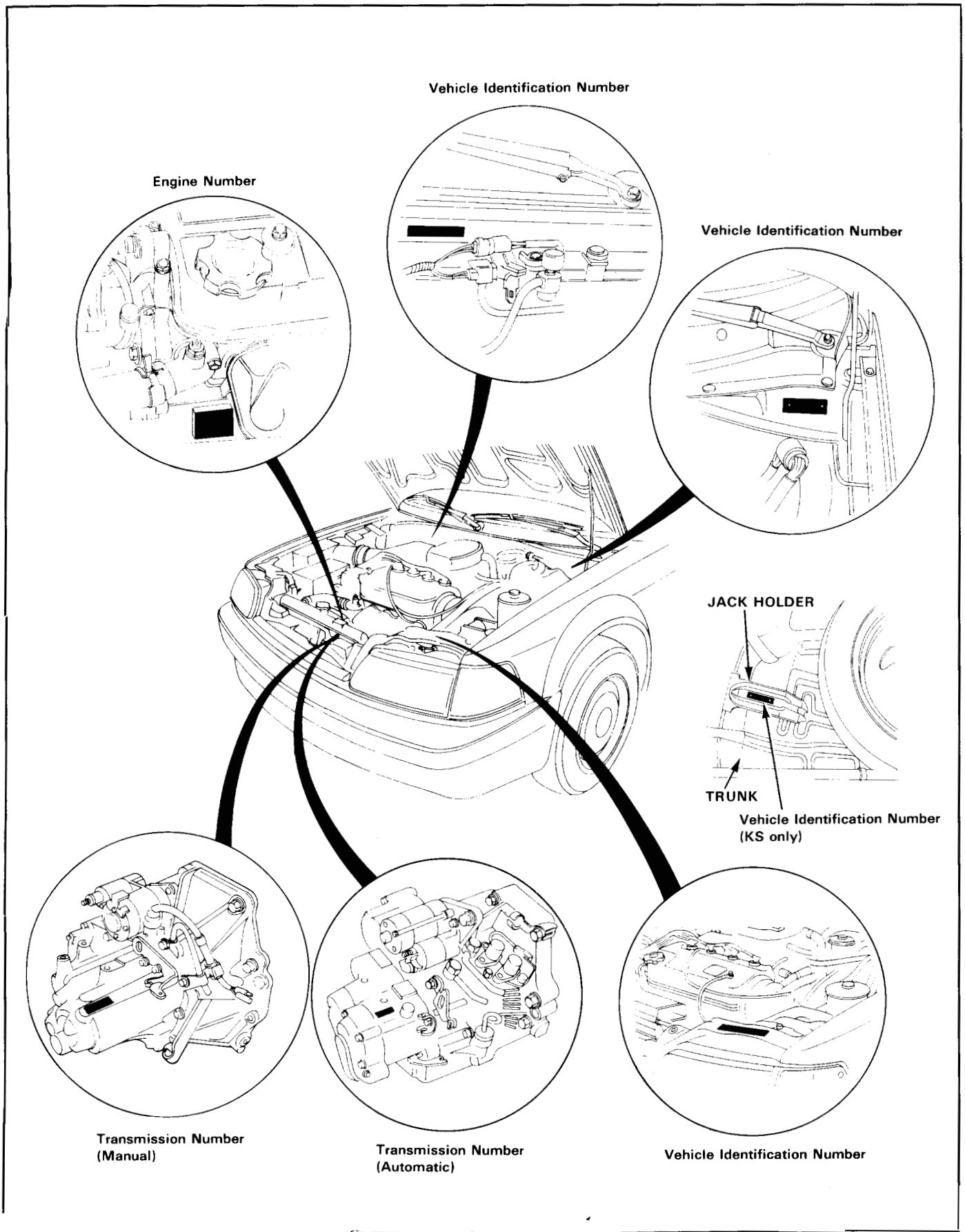
Transmission Number

L3-1000001

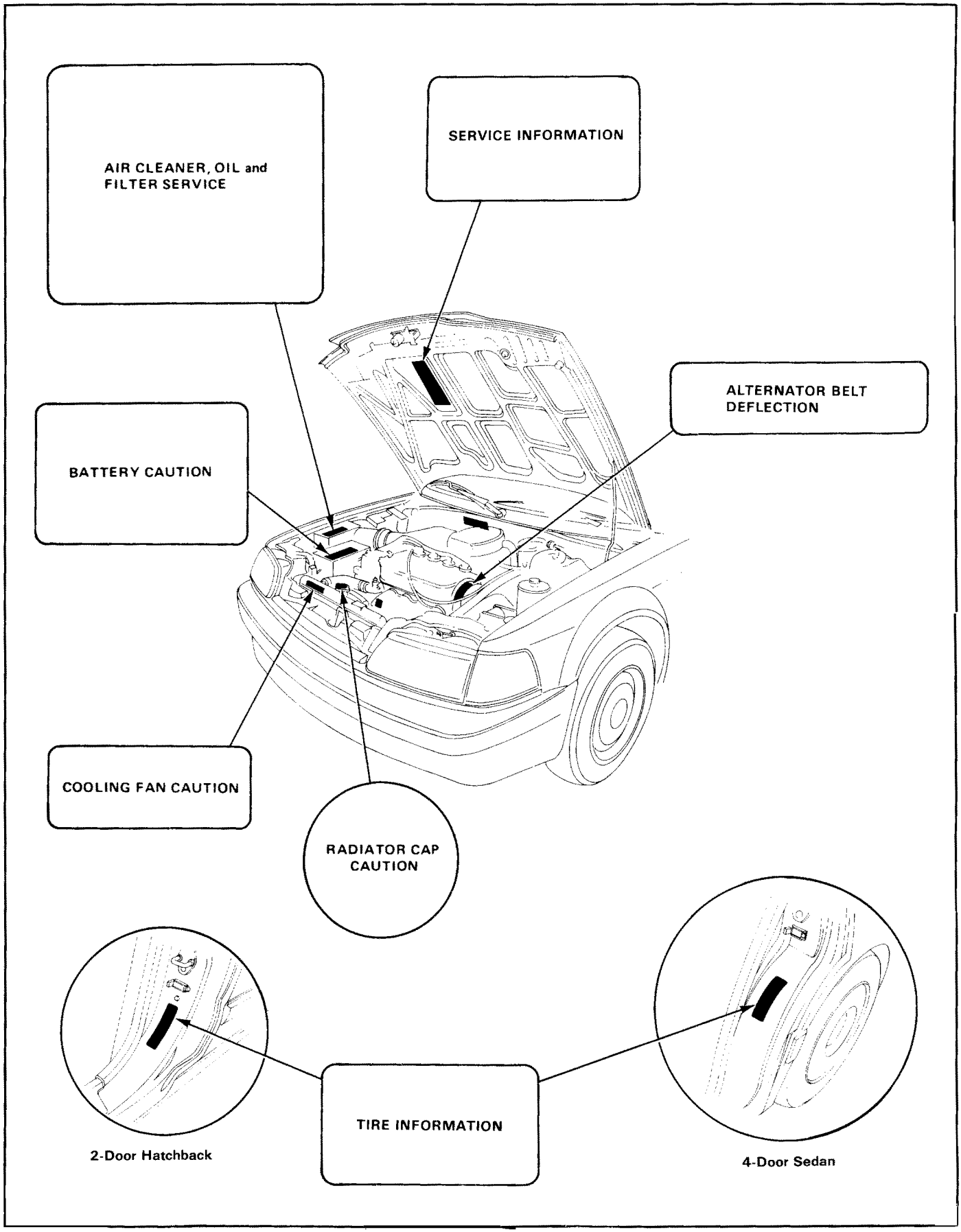
Transmission Type
- L3: Manual
- L4: Automatic

Serial Number

Identification Number Locations



Label Locations



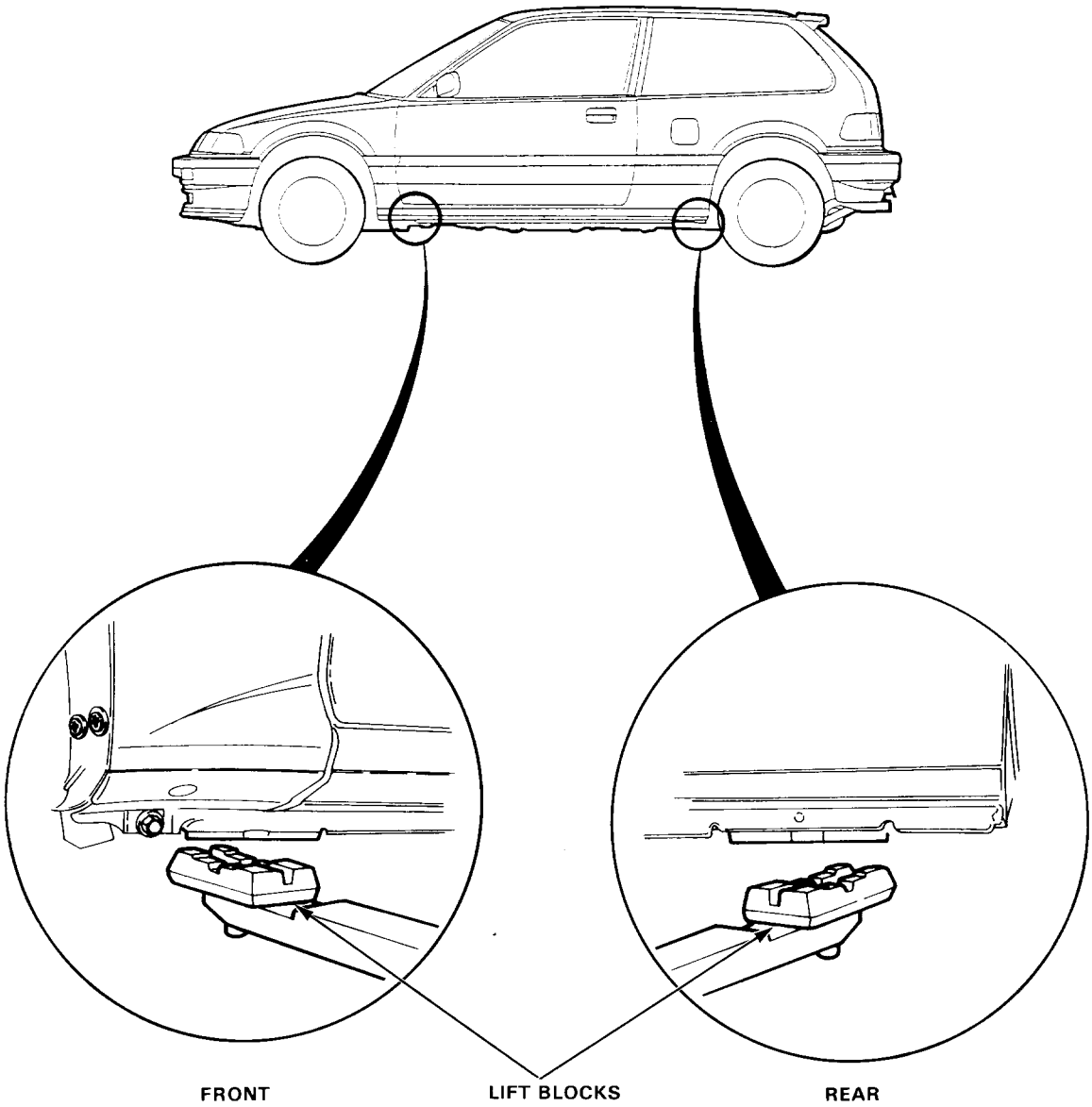
Lift and Support Points

Hoist

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

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

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



(cont'd)

Lift and Support Points (cont'd)

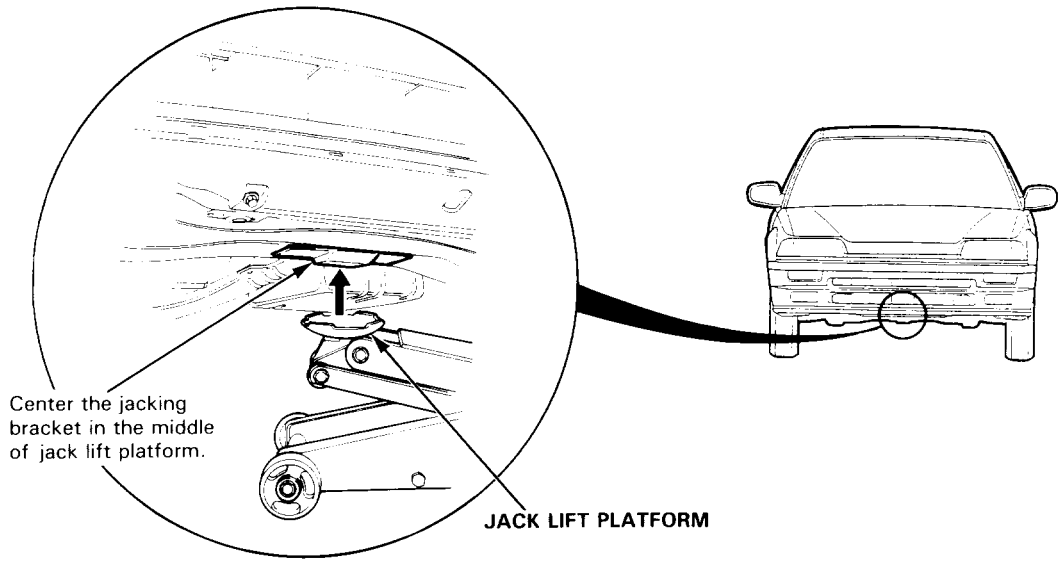
Floor Jack

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.

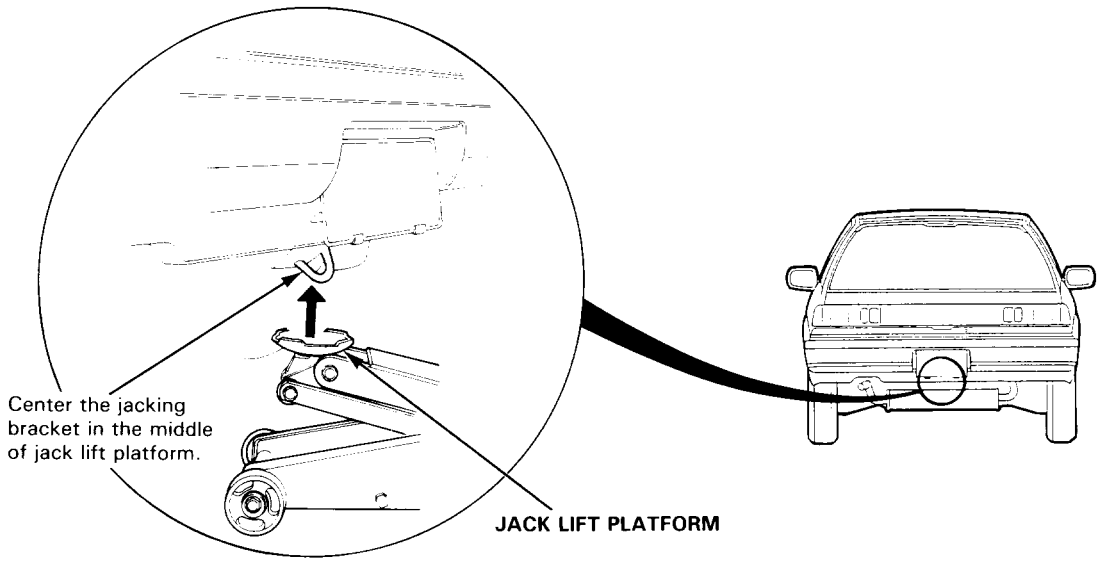
WARNING

- **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.**

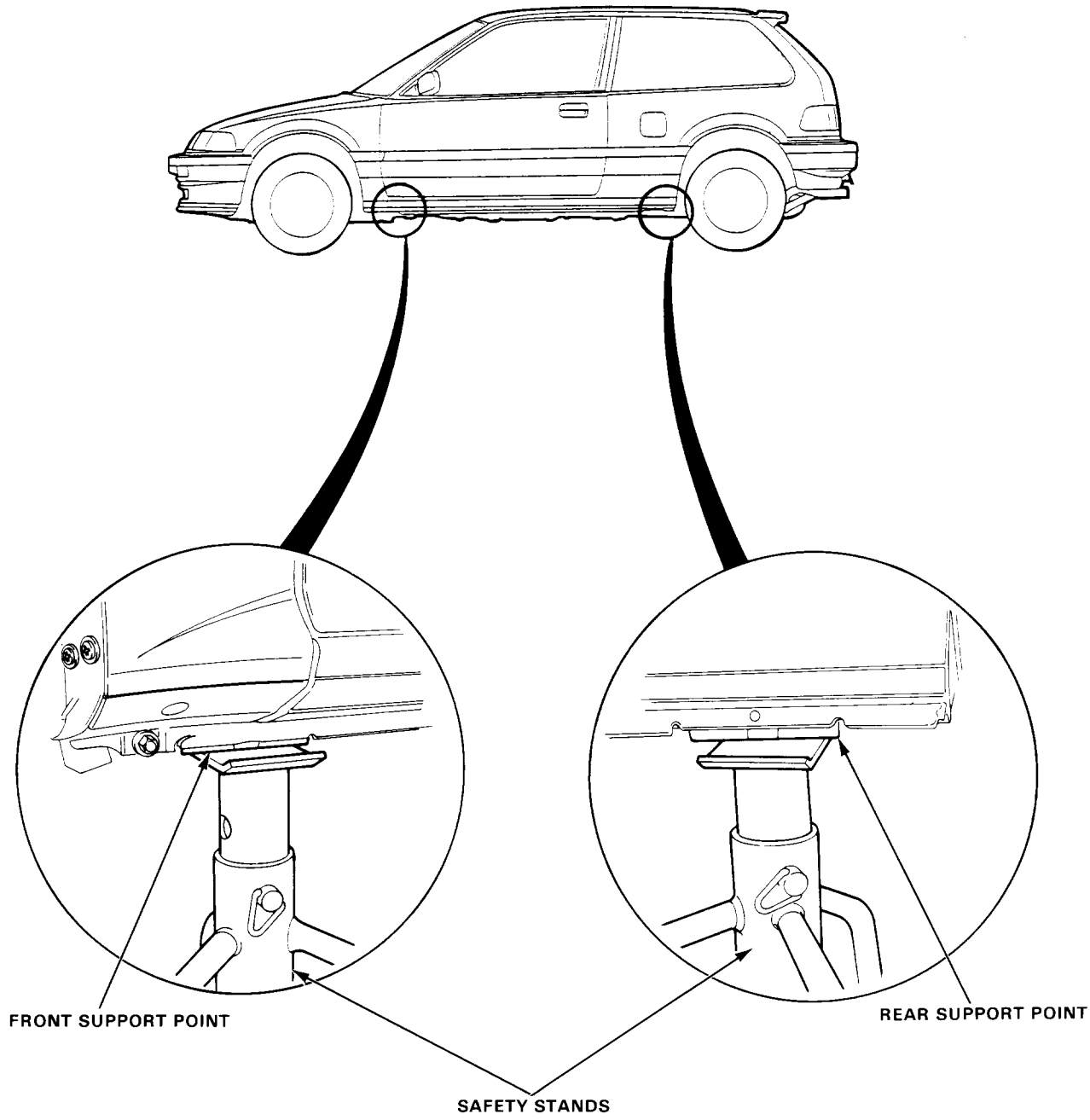
Front



Rear



Safety Stands

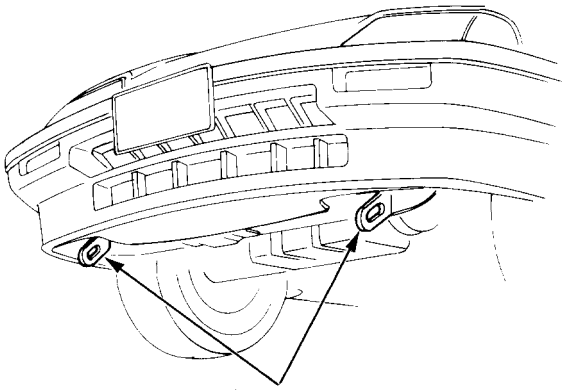


Towing

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

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

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



TOWING HOOKS

Emergency towing with all four wheels on the ground: Under certain emergency conditions, the car may need to be towed with all four wheels on the ground. If your Honda is towed with all four wheels on the ground, check local regulations and observe the following precautions:

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

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

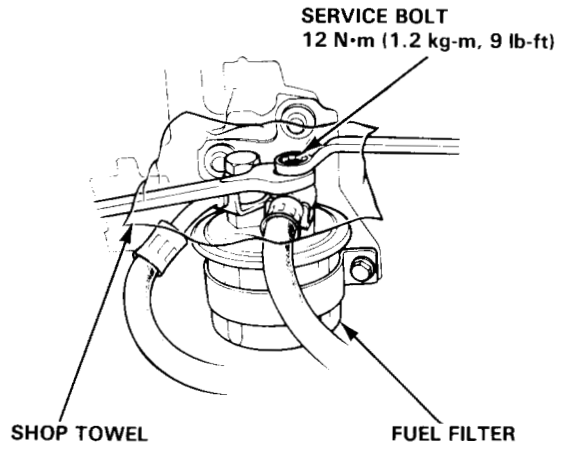
- Do not attach it to the bumper.
- Follow the tow bar manufacturer's instructions.

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

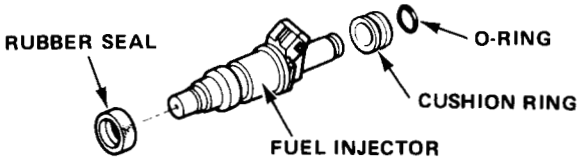
Preparation of Work

Special Caution Items For This Car

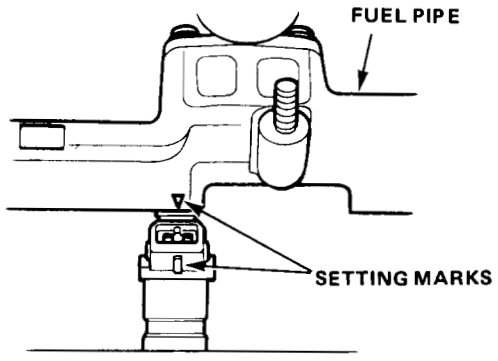
1. Fuel Line Servicing
   - Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



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



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



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

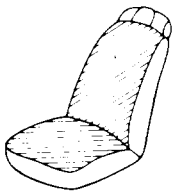
3. Installation of an amateur radio for cars equipped with PGM-FI.
   Care has been taken for the Fuel-Injection, Carburetor, control units (computer) and its wiring to prevent erroneous operation from external interference, but erroneous operation of the computer may be caused by extremely strong radio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

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

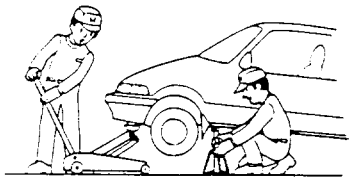
4. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use HONDA PART NO 08740—99986 as a liquid gasket.
   - Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
   - Apply liquid gasket evenly,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

CAUTION: Observe all safety precautions and notes while working.

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

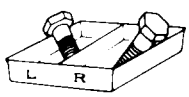


2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate signals as frequently as possible when a work involves two or more workers. Do not run the engine unless the shop or working area is well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

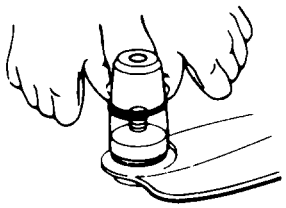


3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.

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

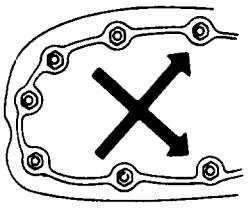


4. Use special tool when use of such a tool is specified.

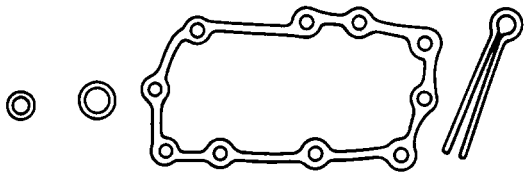


5. Parts must be assembled with the proper torgue according to the maintenance standards established.

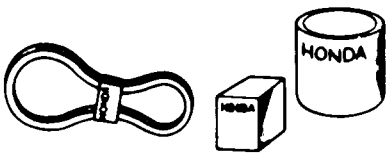
6. When tightening a series bolts or nuts, begin with the center or larger diameter bolts and tighten them in crisscross pattern in two or more steps.



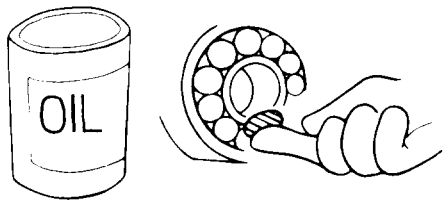
7. Use new packings, gaskets, O-rings and cotter pins whenever reassembling.



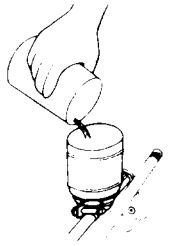
8. Use genuine HONDA parts and lubricants or those equivalent. When parts are to be reused, they must be inspected carefully to make sure they are not damaged or deteriorated and are in good usable condition.



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

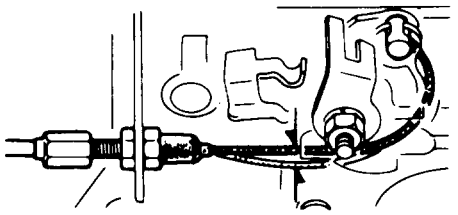


10. Brake fluid and hydraulic components
    - When replenishing the system, use extreme care prevent dust and dirt from entering the system.
    - Do not mix different brands of fluid as they may not be compatible.
    - Do not reuse drained brake fluid.
    - Brake fluid can cause damage to painted surfaces. Wipe up spilled fluid at once.
    - After disconnecting brake hoses or pipes, be sure plug the openings to prevent loss of brake fluid.
    - Clean all disassembled parts only in clean BRAKE FLUID. Blow open all holes and passages with compressed air.



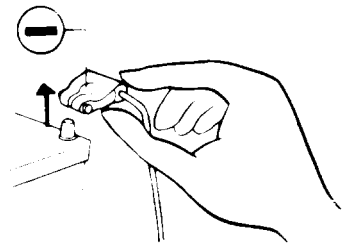
    - Keep disassembled parts from air-borne dust and abrasives.
    - Check that parts are clean before assembly.

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

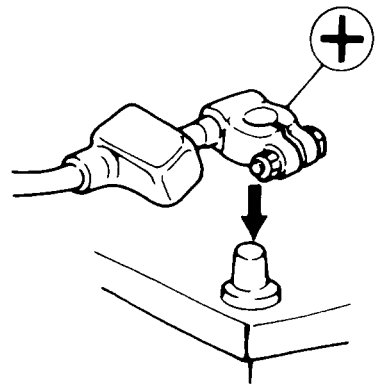


Electrical

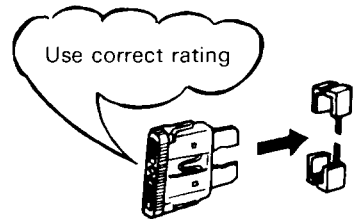
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (−) terminal.



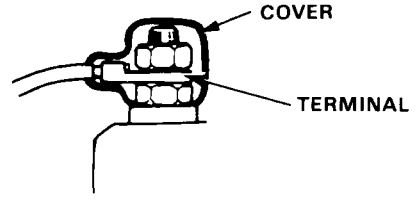
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (−) cable.



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



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

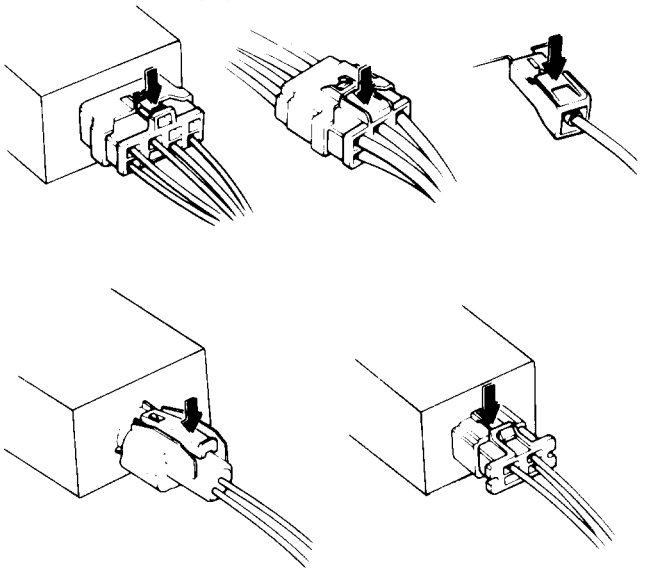


(cont'd)

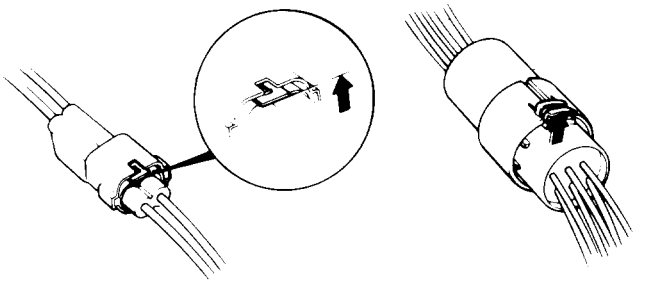
Electrical (cont'd)

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

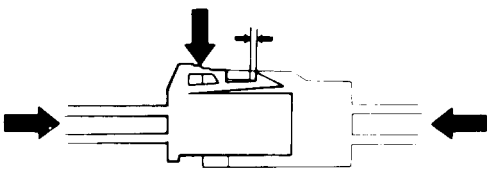
Press to disengage:



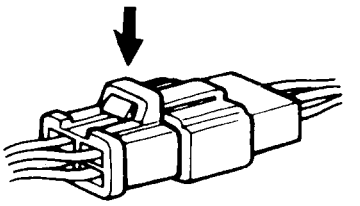
Pull up to disengage:



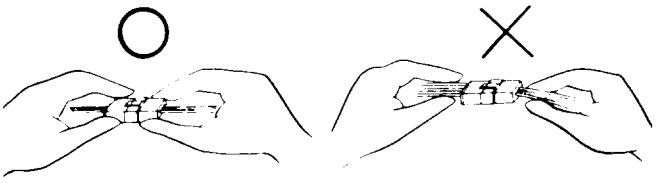
- When disconnecting locks, first press in the coupler tightly (to provide clearance to the locking device), then operate the tab fully and remove the coupler in the designated manner.



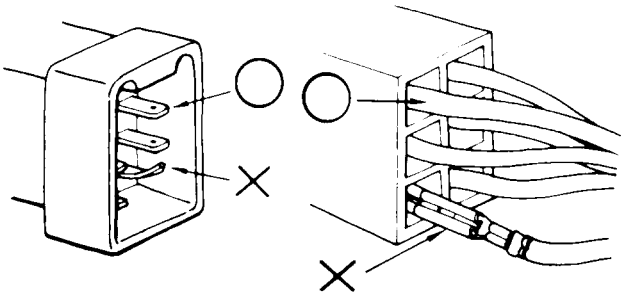
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.



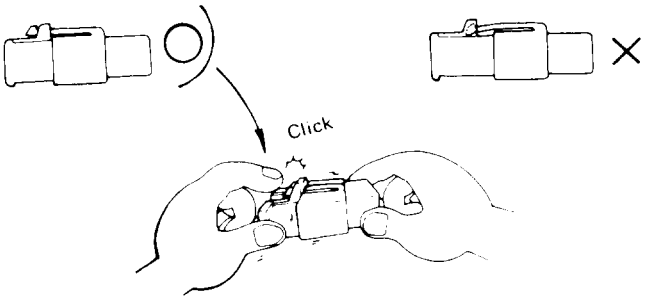
- When disconnecting a coupler, pull it off from the mating coupler by holding on both couplers.
- Never try to disconnect couplers by pulling on their wires.



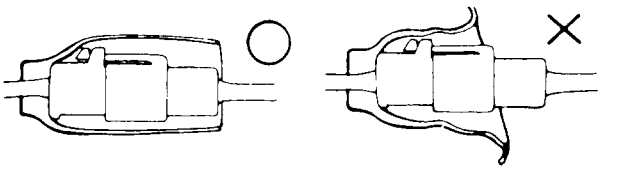
- Before connecting couplers, check to see that the terminals are in place and are not bent or distorted.



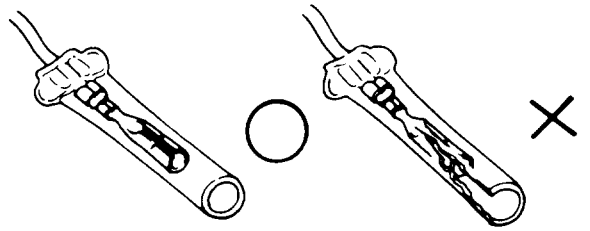
- Insert couplers fully until they will no longer go.
- Some couplers have locking tabs that must be aligned and engaged securely.
- Don't use wire harnesses with a loose wire or coupler.



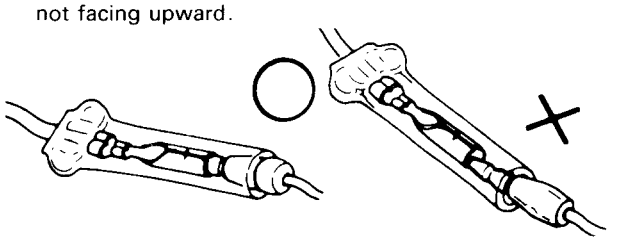
- Place the plastic cover over the mating coupler after reconnecting. Also check that the cover is not distorted.



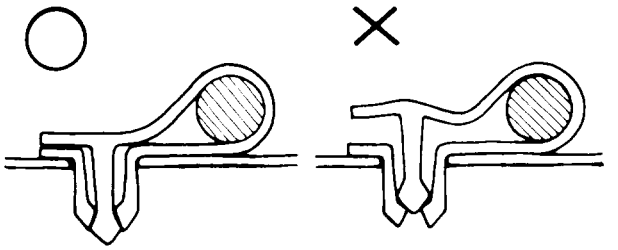
- Before connecting, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



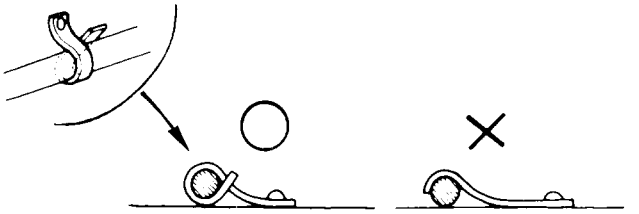
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover is not facing upward.



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

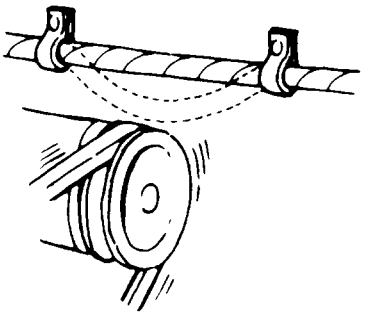


- A loose wire harness or cable can be a hazard to safety. After clamping, check each wire for security in its clamp.

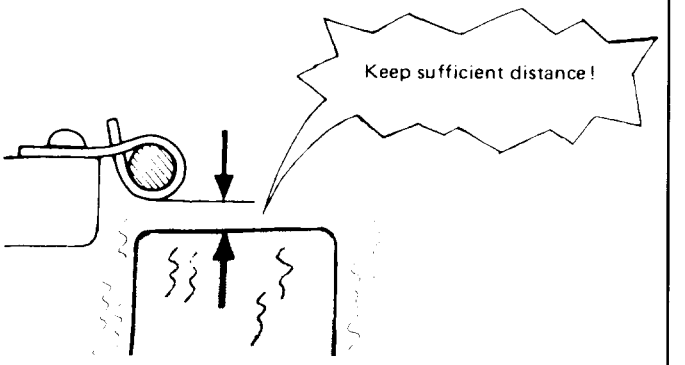


- Do not squeeze wires against the weld when a weld-on clamp is used.

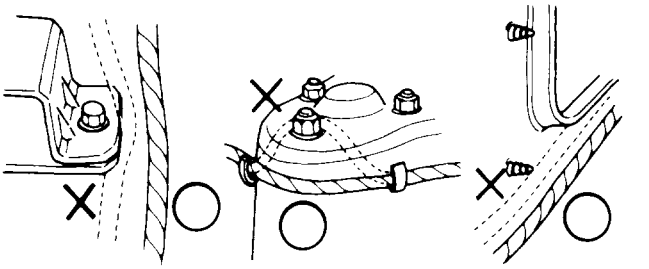
- After calmping, check each harness to be certain that it is not interferring with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



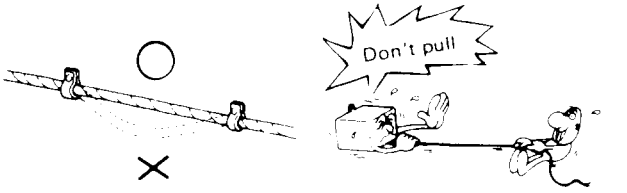
- Always keep a safe distance between wire harnesses and any heated parts.



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



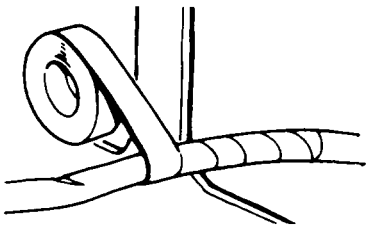
- Route harnesses so they are not pulled taut or slackened excessively.



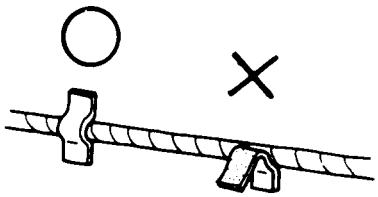
(cont'd)

Electrical (cont'd)

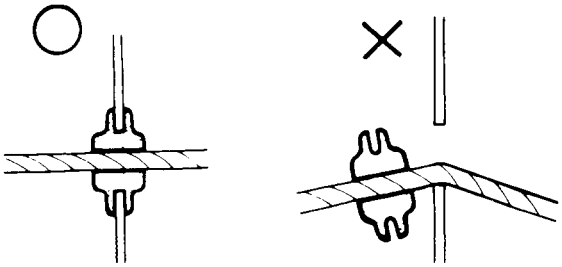
- Protect wires and harnesses with a tape or tube if they are in contact with a sharp edge or corner.



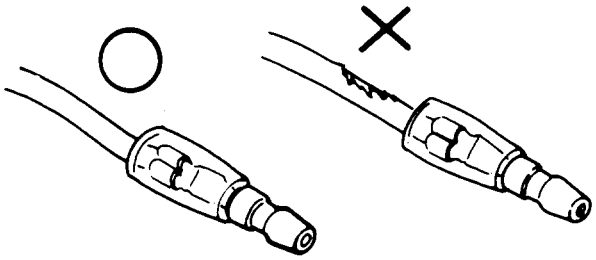
- Clean the attaching surface thoroughly if an addhesive is used. First, wipe with solvent or alcohol in necessary.



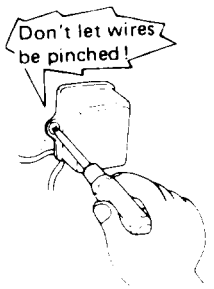
- Seat grommets in their grooves properly.



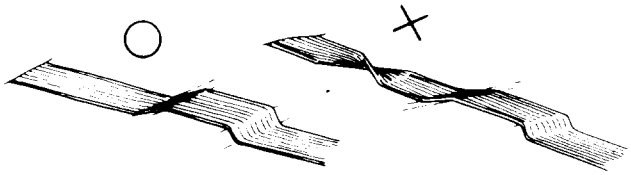
- Do not damage the insulation when connecting a wire.
- Do not use wires or harnesses with a broken insulation. Repair by wrapping with a protective tape or replace with new ones if necessary.



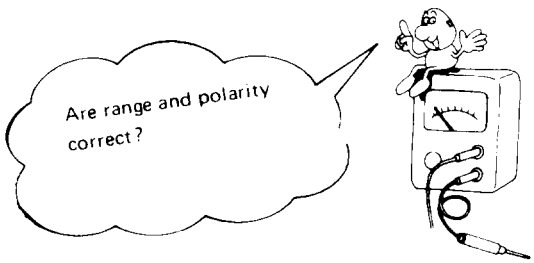
- After installing parts, make sure that wire harnesses are not pinched.



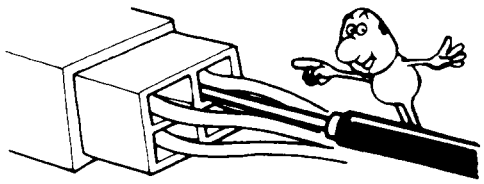
- After routing, check that the wire harnesses are not twisted or kinked.



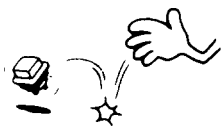
- Wire harnesses should be routed so that they are not pulled taut, slackened excessively, pinched, or interfering with adjacent or surrounding parts in all steering positions.



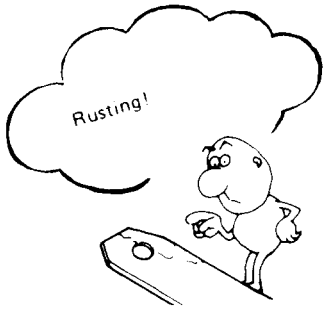
- When using the Service Tester, follow the manufacturer's instructions and those described in the Shop Manual.



- Do not drop parts.



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



Symbol Marks

The following symbols stand for:

:Apply engine oil.

:Apply brake fluid.

:Apply grease.

:Apply DEXRON® II Automatic Transmission Fluid.

: Apply Power Steering Fluid.

:Apply or check vacuum.

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

Abbreviation

2D H/B	2-door Hatchback
4D	4-door Sedan
A/C	Air Conditioner
A/T	Automatic Transmission
ATF	DEXRON® II Automatic Transmission Fluid
BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	PGM-FI Electronic Control Unit
EGR	Exhaust Gas Recirculation
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L.	Left Side
LHD	Left Hand Drive
M/T	Manual Transmission
PCV	Positive Crankcase Ventilation
PGM-CARB	Programmed Carburetor
PGM-FI	Programmed Fuel-Injection
P/S	Power Steering
R.	Right Side
RHD	Right Hand Drive
SW	Switch
SOL. V	Solenoid Valve
TDC	Top Dead Center
P	Parking
R	Reverse
N	Neutral
D_4	Drive Range (1st~4th)
D_3	Drive Range (1st~3rd)
2	Fixed at 2nd range

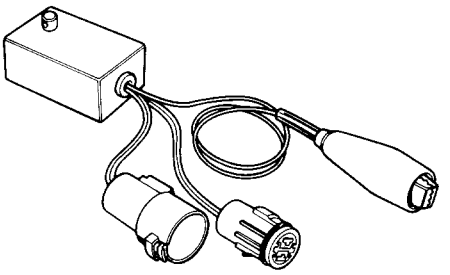
Special Tools

Special Tools

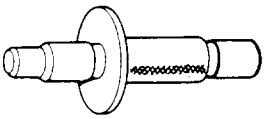
New Tools

Only new tools are listed below. As to other tools, refer to each section.

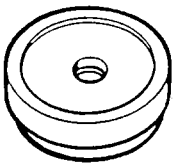
No.	Tool Number	Description	Q'ty	Remarks	Sec
①	07JAZ—SH20100	Engine RPM adaptor	1		6
②	07JAF—PM70100	Clutch Disc Alignment Tool	1		7
③	07JAD—SH30100	Oil Seal Driver Attachment	1		10
④	07JAF—SH20120	Hub Dis/Assembly Shaft, 22.4 x 25.4 mm	1		12
⑤	07JAF—SH20110	Hub Dis/Assembly Pilot, 38 mm	1		12
⑥	07JAF—SH20200	Ball Joint Remover Base	1		12



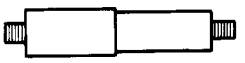
①



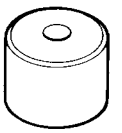
②



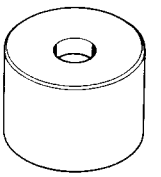
③



④



⑤



⑥

Existing Tools (Common with Other Models)

5. Engine

No.	Tool Number	Description	Q'ty	Remarks
①	07966—6340011	Engine Block Hanger	1	
②	07944—6110100	Pin Driver 5 mm	2	Used to set the piston at TDC (DOHC engine).
③	07757—0010000	Valve Spring Compressor	1	07957—3290001 may also be used.
④	07HAD—PJ70200	Valve Guide Seal Installer	1	
⑤	07742—0010100	Valve Guide Driver 5.5 mm	1	
⑥	07743—0020000	Adjustable Valve Guide Driver	1	
⑦	07HAH—PJ70100	Valve Guide Reamer, 5.5 mm	1	
⑧	07GMD—PH70100	Valve Guide Seal Installer	1	
⑨	07742—0010200	Valve Guide Driver, 6.6 mm	1	
⑩	07984—6570101	Valve Guide Reamer, 6.6 mm	1	
⑪	07947—SB00100	Oil Seal Driver	1	For camshaft seal
⑫	07973—6570002	Piston Pin Dis/Assembly Tool Set	1	
⑬	07973—6570500	Piston Base	1	
⑭	07973—SB00100	Piston Base Head	1	
⑮	07973—PE00200	Pilot Collar	1	
⑯	07973—PE00400	Piston Pin Base Insert	1	
⑰	07973—PE00301	Adjustable Piston Pin Driver	1	
⑱	07948—SB00101	Driver Attachment	1	Crankshaft (Clutch side) for SOHC
⑲	07948—0080000	Driver Attachment	1	Crankshaft (Clutch side) for DOHC
⑳	07HAD—PJ70100	Driver	1	Crankshaft (Pulley side)
㉑	07749—0010000	Driver	1	Crankshaft (Clutch side)
㉒	07912—6110001	Oil Filter Socket Wrench	1	
㉓	07406—0030000	Oil Pressure Gauge Adapter	1	For pressure measurement

6. Fuel and Emissions

No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	RPM Connecting Adaptor	1	
②	07999—PD6000A	PGM-FI Test Harness	1	
③	07614—0050100	Fuel Line Clip	1	
④	07406—0040001	Fuel Pressure Gauge Set	1	
④-1	07406—0040100	Pressure Gauge	1	┐ Component Tools
④-2	07406—0040201	Hose Assy	1	┘
⑤	07HAZ—PJ70000	ECU Test Harness A	1	
⑥	07HAZ—PJ70100	ECU Test Harness B	1	
⑦	07GMJ—ML80100	Test Harness	1	
⑧	07401—0010000	Float Level Gauge	1	

7. Clutch

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

(cont'd)

Existing Tools (Common with Other Models)

8. Manual Transmission

No.	Tool Number	Description	Q'ty	Remarks
①	07744—0010400	Pin Driver, 5 mm	1	07944—6110100 may also be used.
②	07936—6340000	Bearing Remover Set	1	
③	07746—0010300	Attachment, 42 x 47 mm	1	07974—6110100 may also be used.
④	07749—0010000	Driver	1	07949—6110000 may also be used.
⑤	07746—0010400	Attachment, 52 x 55 mm	1	07947—6340200 may also be used.
⑥	07979—PJ40000	Magnet Stand Base	1	
⑦	07GAJ—PG20101	Mainshaft Clearance Inspection Tool	1	
⑧	07746—0030100	Driver	1	
⑨	07746—0030400	Attachment, 35 mm	1	
⑩	07944—SA00000	Pin Driver 4.0 mm	1	
⑪	07947—6110500	Oil Seal Driver	1	
⑫	07948—SC20200	Oil Seal Driver	1	
⑬	07947—6340500	Oil Seal Driver Attachment E	1	

9. Automatic Transmission

No.	Tool Number	Description	Q'ty	Remarks
①	07923—6890202	Mainshaft Holder	1	
②	07HAC—PK40100	Transmission Housing Puller	1	
③	07GAE—PG40001	Clutch Spring Compressor Set	1	
③-1	07HAE—PL50100	Compressor Attachment	1	Component Tools
③-2	07GAE—PG40200	Compressor Bolt Assembly	1	
③-3	07960—6120100	Compressor Attachment	1	
④	07936—6340000	Bearing Remover Set	1	
⑤	07GAC—PF40210	Bearing Remover Attachment	1	07936—6340000 may also be used.
⑥	07749—0010000	Driver	1	07949—6110000 may also be used.
⑦	07746—0010500	Attachment, 62 x 68 mm	1	07947—6340400 may also be used.
⑧	07947—6340500	Driver Attachment E	1	
⑨	07947—6340201	Oil Seal Driver	1	
⑩	07746—0030100	Driver C	1	
⑪	07944—SA00000	4.0 mm, Pin Punch	1	
⑫	07947—6110500	Driver Attachment E	1	
⑬	07948—SC20200	Oil Seal Driver	1	
⑭	07406—0020003	Oil Pressure Gauge Set	1	
⑭-1	07406—0020201	Oil Pressure Gauge Hose Attachment	1	Component Tool
⑮	07406—0070000	Low Pressure Gauge	1	

10. Driveshaft

No.	Tool Number	Description	Q'ty	Remarks
①	07749—0010000	Driver	1	
②	07746—0040800	38 mm Pilot	1	
③	07746—0040900	40 mm Pilot	1	
④	07965—SD90100	Support Base	1	
⑤	07746—0010300	Attachment, 42 x 47 mm	1	
⑥	07746—0010400	Attachment, 52 x 55 mm	1	
⑦	07746—0010500	Attachment, 62 x 68 mm	1	
⑧	07947—SD90100	Oil Seal Driver Attachment	1	
⑨	07GAD—SE00100	Oil Seal Driver Attachment	1	
⑩	07JAD—SH30100	Oil Seal Driver Attachment	1	
⑪	07965—SD90200	Support Collar	1	
⑫	07947—SD90200	Oil Seal Driver Attachment	1	
⑬	07746—0030100	Inner Handle (C)	1	

11. Manual Steering

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

11. Power Steering

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

④— 1 * and ④— 2 * : Component Tools

12. Suspension

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

Special Tools

Existing Tools (Common with Other Models)

13. Brakes

No.	Tool Number	Description	Q'ty	Remarks
①	07921—0010001	Floir Nut Wrench	1	
②	07510—6340300	Vacuum Joint Tube A	1	
③	07404—5790300	Vacuum Gauge	1	
④	07410—5790500	Tube Joint Adaptor	1	
⑤	07406—5790200	Oil Pressure Gauge	2	
⑥	07410—5790100	Pressure Gauge Attachment C	2	
⑦	07510—6340100	Pressure Gauge Joint Pipe	2	
⑧	07749—0010000	Driver	1	07949—6110000 may also be used.
⑨	07747—6890300	Driver Attachment C	1	
⑩	07GAG—SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE—SG00100	Brake Spring Compressor	1	
⑫	07914—SA50000	Snap Ring Pliers	1	

14. Body

No.	Tool Number	Description	Q'ty	Remarks
①	07GAZ—SE30100	Torsion Rod Assembly Tool	1	

15. Heater and Air Conditioner

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

16. Electrical

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

Specifications

specs

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 Minimum Maximum variation	1,275 kPa (13.0 kg/cm^2, 185 psi) 932 kPa (9.5 kg/cm^2, 135 psi) 196 kPa (2 kg/cm^2, 28 psi)
Cylinder head	Warpage Height	— 94.95—95.05	0.05 (0.002) —
Camshaft	End play Oil clearance Runout Cam lobe height IN 1.2ℓ, 1.3ℓ (Ex. KG A/T) 1.3ℓ (KG AT) 1.4ℓ, 1.5ℓ (2-Carbureted Engine) 1.5ℓ (PGM-FI Ex. KW*) 1.6ℓ (Ex. KB, KW) 1.5ℓ (1-Carbureted Engine 1.5ℓ (PGM-FI KR) 1.6ℓ (KB, KW) EX 1.2ℓ, 1.3ℓ 1.4ℓ (M/T) 1.5ℓ (2-Carburetor A/T Ex. KR) 1.5ℓ (PGM-FI A/T Ex. KW*) 1.4ℓ (A/T) 1.5ℓ (2-Carburetor M/T Ex. KR) 1.5ℓ (PGM-FI M/T Ex. KW*) 1.6ℓ (Ex. KB, KW) 1.5ℓ (1-Carbureted Engine) 1.6ℓ (KB, KW) 1.5ℓ (PGM-FI KW*)	0.05—0.15 (0.002—0.006) 0.050—0.089 (0.002—0.004) 0—0.03 (0—0.001) max. 35.672 (1.4044) 35.472 (1.3965) 36.603 (1.4411) 36.057 (1.4196) 34.868 (1.3728) 36.957 (1.4515) 35.693 (1.4052) 36.750 (1.4468) 36.747 (1.4467) 36.198 (1.4251) 36.996 (1.4565) 36.435 (1.4344)	0.5 (0.02) 0.15 (0.006) 0.03 (0.001) — — — — — — — — — — — —
Valve	Valve clearance IN EX Valve stem O.D. IN EX Stem-to-guide clearance IN EX Stem installed height IN EX	0.17—0.22 (0.007—0.009) 0.22—0.27 (0.009—0.011) 5.48—5.49 (0.2157—0.2161) 5.45—5.46 (0.2147—0.2150) 0.02—0.05 (0.001—0.002) 0.05—0.08 (0.002—0.003) 46.985—47.455 (1.8498—1.8683) 48.965—49.435 (1.9278—1.9263)	— — 5.45 (0.2147) 5.42 (0.2134) 0.08 (0.003) 0.12 (0.005) 47.705 (1.8781) 49.685 (1.9561)
Valve seat	Width IN EX	0.85—1.15 (0.033—0.045) 1.25—1.55 (0.049—0.061)	1.6 (0.06) 2.0 (0.08)
Valve spring	Free length IN 1.2ℓ, 1.3ℓ 1.4ℓ, 1.5ℓ, 1.6ℓ (SOHC) 1.6ℓ (DOHC) EX 1.2ℓ, 1.3ℓ, 1.5ℓ 1.6ℓ (SOHC) 1.4ℓ 1.6ℓ (DOHC) SgucrenessIN 1.2ℓ, 1.3ℓ, 1.6ℓ (DOHC) 1.4ℓ, 1.5ℓ, 1.6ℓ (DOHC) EX 1.2ℓ, 1.3ℓ, 1.5ℓ, 1.6ℓ (SOHC) 1.4ℓ 1.6ℓ (DOHC)	47.66 (1.8764) 48.58 (1.9126) 47.49 (1.8697) 49.19 (1.9366) 48.49 (1.9091) 46.89 (1.8461) — — — — —	46.78 (1.8417) 47.64 (1.8756) 46.46 (1.8291) 48.32 (1.9024) 47.68 (1.8772) 45.93 (1.8083) 1.66 (0.0654) 1.70 (0.0669) 1.72 (0.0677) 1.69 (0.0665) 1.64 (0.0646)
Valve guide	I.D. IN and EX	5.51—5.53 (0.2169—0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-shaft clearance IN EX	0.017—0.05 (0.0007—0.0020) 0.018—0.054 (0.0007—0.0021)	0.08 (0.003) 0.08 (0.003)

KW*: for Austria

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

Unit: mm (in.)

5. Engine/Engine Block

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface Bore diameter Bore taper Reboring limit		0.07 (0.0028) max. 75.00—75.02 (2.9526—2.9535) — —	0.10 (0.004) 75.07 (2.9555) 0.05 (0.002) 0.5 (0.02)
Piston	Skirt O.D. At 16 mm (0.63 in) from bottom of skirt Clearance in cylinder Piston-to-ring clearance	 Top 2nd	74.98—74.99 (2.9520—2.9524) 0.01—0.04 (0.0004—0.0016) 0.03—0.06 (0.0012—0.0024) 0.030—0.055 (0.0012—0.0022)	74.97 (2.9517) 0.05 (0.002) 0.13 (0.005) 0.13 (0.005)
Piston ring	Ring end gap	Top 2nd Oil	0.15—0.35 (0.006—0.014) 0.15—0.35 (0.006—0.014) 0.20—0.60 (0.008—0.024)	0.6 (0.02) 0.6 (0.02) 0.7 (0.03)
Connecting rod	Pin-to-rod interference Large end bore diameter End play installed on crankshaft		0.014—0.040 (0.0006—0.0016) Nominal 45.0 (1.77) 0.15—0.30 (0.006—0.012)	— — 0.40 (0.016)
Crankshaft	Main journal diameter Taper/out-of-round, main journal Rod journal diameter Taper/out-of-round, rod journal End play Runout	 1.2ℓ, 1.3ℓ, 1.4ℓ 1.5 ℓ 1.6ℓ	— 0.005 (0.0002) max. 39.976—40.000 (1.5739—1.5748) 41.976—42.000 (1.6526—1.6535) 44.976—45.000 (1.7707—1.7765) 0.0025 (0.0001) max. 0.10—0.35 (0.004—0.014) 0.015 (0.0006) max.	— 0.010 (0.004) — — — 0.010 (0.004) 0.45 (0.018) 0.03 (0.002)
Bearings	Main bearing-to-journal oil clearance Ex. 1.6ℓ 1.6 ℓ No. 1,2,4 and 5 jornals 1.6 ℓ No.3 journal Rod bearing-to-journal oil clearance		 0.024—0.042 (0.0010—0.0017) 0.024—0.042 (0.0010—0.0017) 0.030—0.048 (0.0012—0.0019) 0.020—0.038 (0.0008—0.0015)	 0.5 (0.002) 0.5 (0.002) 0.5 (0.002) 0.05 (0.002)

5. Engine/Engine Lubrication

Unit: mm (in.)

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

5. Engine/cooling

	MEASUREMENT	STANDARD (NEW)
Radiator	Capacity (incl.heater) ℓ (U.S.qt.,Imp.qt.) (Includes resvoir tank 0.4 (0.42, 0.35))	1.6ℓ DOHC M/T 5.5 (5.8, 4.8) A/T 5.4 (5.7 4.8) SOHC M/T 5.4 (5.7, 4.8) A/T 5.3 (5.6, 4.7) 1.2ℓ, 1.3ℓ, 1.4ℓ M/T 5.4 (5.7, 4.8) A/T 5.3 (5.6, 4.7) 1.5ℓ PGM-FI (KX KW-DX) M/T 5.4 (5.7, 4.8) A/T 5.3 (5.6, 4.7) PGM-FI (Others) M/T 5.5 (5.8, 4.8) A/T 5.4 (5.7, 4.8) 1-Carbureted Engine M/T 5.4 (5.7, 4.8) A/T 5.4 (5.7, 4.8) 2-Carbureted Engine M/T 5.5 (5.8, 4.8) A/T 5.4 (5.7, 4.8)
Radiator cap	Pressure cap opening pressure	74—103 kPa (0.75—1.05 kg/cm²,11—15 psi)
Thermostat	Starts to open Full open Valve lift at full open	78°C± 2 (172±3) 90°C (194°F) 8 (0.31) min.
Water pump	Pulley ratio (crankshaft) Capacity: ℓ per min/at min⁻¹ (rpm)	1 : 1 108 (27 U.S. gal., 23 Imp. gal.)/5,000 rpm
Cooling fan	Fan-to-core clearance Thermoswitch "ON" temperature Thermoswitch "OFF" temperature	28.0 (1.10) 88.5°—91.5°C (191°—197°F) 83.5°—86.5°C (182°—188°F)

6. Fuel and Emission (PGM-FI)

	MEASUREMENT		STANDARD (NEW)
Fuel pump	Delivery pressure Displacement Relief valve opening pressure		250 kPa (2.55 kg/cm², 36psi) 236 cc /minutes in 10 seconds min. 441—588 kPa (4.5—6.0 kg/cm², 64—85 psi)
Pressure regulator	Pressure		230—270 kPa (2.35—2.75 kg/cm², 33—39 psi)
Fuel Tank	Capacity		45 ℓ (11.9 U.S. gal., 9.9 Imp. U.S.gal.)
Fast idle			MT 1,000—2,000 min⁻¹ (rpm) AT 1,000—2,000 min⁻¹ (rpm)
Idle spped	with headlights and cooling fan off	1.5ℓ	780 ± 50 min⁻¹ (rpm)
		1.6ℓ, with CATA	750 ± 50 min⁻¹ (rpm)
		1.6 SOHC without CATA	780 ± 50 min⁻¹ (rpm)
		1.6ℓ DOHC	800 ± 50 min⁻¹ (rpm)
Idle CO	With CATA Without CATA		0.1% Max. 1.0 ±1.0%

Unit: mm (in.)

6. Fuel and Emissions (Carbureted Engine)

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure Displacement	6.8—22.6 kPa (0.07—0.23 kg/cm², 1.0—3.2 psi) 833.3 cc/minutes in 10 seconds min.
Fuel Tank	Capacity	45 ℓ (11.9 U.S. gal., 9.9 Imp. U.S. gal.)
Fast idle		MT 1,700—2,700 min⁻¹ (rpm) AT 1,400—3,400 min⁻¹ (rpm)
Idle spped	with headlights and cooling fan off	MT 750 ± 50 min⁻¹ (rpm) AT (except "N" or "P") 700 ± 50 min⁻¹ (rpm)
Idle CO		KQ 0.5% max. EX. KQ 1.0% max.

7. Clutch

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

8. Manual Transmission

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

(cont'd)

Standards and Service Limits (cont'd)

8. Manual Transmission (cont'd)

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

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (U.S. 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	412 kPa (4.2 kg/cm^2, 60 psi) Throttle control lever full closed 785—834 kPa (8.0—8.5kg/cm^2, 114—121 psi) Throttle control lever opened 2/8 or more	363 kPa (3.7 kg/cm^2, 53 psi) 736 kPa (7.5 kg/cm^2 107 psi)
	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 (37.5 mph) 60 km/h	206—216 kPa (2.10—2.20 kg/cm^2, 30—31 psi)	201kPa (2.05 kg/cm^2 29 psi)
	Throttle pressure B Full closed Full opened	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 opened	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)	— 500 kPa (5.1 kg/cm^2, 73 psi)

Unit: mm (in)

9. Automatic Transmission (cont'd)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Stall speed			2,300—2,900 min⁻¹ (rpm)	—
Clutch	Clutch inital clearance	1st	0.65—0.85 (0.026—0.033)	—
		2nd	0.65—0.85 (0.026—0.033)	—
		3rd, 4th	0.40—0.60 (0.016—0.024)	—
	Clutch return spring free length	1st	31.0 (1.22)	29.0 (1.14)
		Except 1st	30.5 (1.20)	28.5 (1.12)
	Clutch disc thickness		1.88—2.0 (0.074—0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55—1.65 (0.061—0.065)	Discoloration
	Clutch plate thickness	Except 1st	1.95—2.05 (0.077—0.079)	↑
	Clutch end plate thickness (1.5 ℓ PGM-FI, and 1.5 ℓ 2-Carbureted Engine)	Mark 1	2.3—2.4 (0.091—0.094)	↑
		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)	↑
	Clutch end plate thickness (1.2 ℓ, 1.3 ℓ, 1.4 ℓ, 1.6 ℓ and 1.5 ℓ 1-Carbureted engine)	Mark 1	2.2—2.3 (0.087—0.091)	↑
		Mark 2	2.5—2.6 (0.098—0.102)	↑
		Mark 3	2.8—2.9 (0.110—0.114)	↑
		Mark 4	3.1—3.2 (0.122—0.126)	↑
		Mark 5	3.4—3.5 (0.134—0.138)	↑
		Mark 11	2.05—2.15 (0.081—0.085)	↑
		Mark 12	2.35—2.45 (0.093—0.096)	↑
		Mark 13	2.65—2.75 (0.104—0.108)	↑
		Mark 14	2.95—3.05 (0.116—0.120)	↑
		Mark 15	3.25—3.35 (0.128—0.132)	↑
		Mark 16	3.55—3.65 (0.140—0.144)	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 (1.2588—1.2594)	↑
	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 idle gear I.D.		18.007—18.020 (0.7089—0.7094)	↑
	Reverse idler shaft holder I.D.		14.416—14.434 (0.5676—0.5683)	Wear or damage
	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 play		0.10—0.45 (0.0039—0.0177)	—
	Selector hub O.D.		51.87—51.90 (2.0421—2.0433)	Wear or damage

(cont'd)

Standard and Service Limits (cont'd)

9. Automatic Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission	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)	
	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 1 st 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 (0.2351—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)	—
	Stator camshaft needle bearing bore I.D. (R side)	26.000—26.013 (1.0236—1.0241)	Wear or damage
	Stator camshaft needle bearing contact and I.D. (Stator side)	24.000—24.021 (0.9449—0.9457)	Wear or damage
	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

unit: mm (in.)

9. Automatic Transmission (cont'd)

	MEASUREMENT	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	26.005—26.025 (1.0238—1.0246)	—
	Carrier-to-driveshaft clearance	0.045—0.086 (0.0017—0.0034)	0.14 (0.006)
	Carrier-to-intermediate shaft clearance	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)	Selection with 7 type of washers
	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)

10. Driveshaft

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

* boot as installed

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft)	0.49—1.67 (0.05—0.17, 0.36—1.27)	
	with P/S	0.098 (0.01, 0.072)	
Power steering	The angle of rack-guide-nut loosened locked position	40 ± 60	
	with P/S	20 —25°	
	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)	7,845—8,826 (80—90, 1,138—1,280)	
Power steering fluide	Fluid capacity Reservoir	0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.)	
	At change	approx 1.2 ℓ (1.3 U.S. qt., 1.1 Imp.qt.)	
Power steering belt	Deflection midway between pulleys/load	9—12 (0.35—0.47)/98N (10 kg, 22 lb) for used belt 7—10 (0.28—0.39)/98N (10 kg, 22 lb) after replacement of belt	
Rack end	Floating torque N·m (kg-m, lb-ft)	0.49—2.94 (0.05—0.3, 0.36—1.27)	

Standard and Service Limits (cont'd)

12. Suspension

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	Toe-in		Front: 0 ±3 (0±0.12) / Rear: 2 ± 2 (0.08 ±0.08)	
	Camber		0°00′ ± 1°	
	Caster		−0°30′ ±1°	
	Side slip		3°00′ ± 1°	
	Turning angle (MAX.)	Inward wheel	0 ±3 (0 ± 0.12)	
		Outward wheel	41°30′ ± 2°	
			33°30′ ± 2°	
Wheel	Rim runout	Steel	0—1.0 (0—0.039)	2.0 (0.08)
		Aluminum	0—0.7 (0—0.028)	1.5 (0.06)
	Pitch-circle diameter		100 (3.94)	
	Offset		45 (1.77)	
Wheel bearing	End play	Front	0	0.05
		Rear	0	0.05

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

13. Brake

	MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke 200N (20 kg, 44 lbs)			To be locked when pulled 6—10 notches	
Foot brake pedal	Pedal height		RHD	161 (6.3) from floor	—
			LHD	153 (6.0) from floor	—
	Free play			1—5 (0.04—0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance			0—0.4 (0—0.016)	—
Disc brake	Disc thickness	Front	1-Carbureted Engine (Ex. 1.5 ℓ)	12.0 (0.47)	10.0 (0.39)
			(1.5 ℓ)	17.0 (0.67)	15.0 (0.59)
			2-Carbureted Engine (Ex. 1.5 ℓ)	17.0 (0.67)	15.0 (0.59)
			PGM-FI	19.0 (0.75)	17.0 (0.67)
		Rear		10.0 (0.39)	8.0 (0.32)
	Disc runout			—	0.1 (0.004)
	Disc paralleism			—	0.015 (0.006)
	Pad thickness	Front	PGM-FI KX	10.0 (0.39)	1.6 (0.06)
			PGM-FI Ex.KX	9.0 (0.35)	3.0 (0.12)
			Carbureted Engine KY, KQ	10.0 (0.39)	3.0 (0.12)
			Carbureted Engine EC	9.5 (0.37)	3.0 (0.12)
			Carbureted Engine Others	9.5 (0.37)	1.6 (0.06)
		Rear		8.0 (0.32)	1.6 (0.06)
Brake Drum	I.D.			180 (7.09)	181 (7.13)
	Lining thickness			4.5 (0.18)	2.0 (0.08)

Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kPa (kg/cm², psi)
	7″	0	20 (44)	1.577 (16.1, 229)
		300	20 (44)	4.292 (43.8, 623)
		500	20 (44)	6.096 (62.2, 885)
	8″ KX (PGM-FI) others (carbureted engine)	0	20 (44)	1.577 (16.1, 229)
		300	20 (44)	5.194 (53.0, 754)
		500	20 (44)	7.595 (77.5, 1102)
	Ex. KX (PGM-FI)	0	20 (44)	1.362 (13.9, 198)
		300	20 (44)	4.508 (46.0, 654)
		500	20 (44)	6.605 (67.4, 960)

Unit: mm (in.)

16. Electrical

	MEASUREMENT	STANDARD (NEW)
Ignition coil	Rated voltage	12 Volts
	Primary winding resistance	0.378—0.462 ohms
	Secondary winding resistance	9,440—14,160 ohms
Ignition wire	Resistance	25,000 ohms max.
Spark plug	Type	See Section 16
	Gap	1.0—1.1 (0.039—0.043)
Ignition timing	At idling PGM-FI SOHC	18° ± 2° (Red) BTDC
	DOHC	16° ± 2° (Red) BTDC
	1-Carbureted Engine	
	KT (1.2 ℓ)	16° ± 2° (Red) BTDC
	KG (1.3 ℓ M/T), KY (1.5 ℓ A/T)	12° ± 2° (Red) BTDC
	KG (1.3 ℓ A/T)	2° ± 2° (Red) BTDC
	Others (1.2 ℓ)	20° ± 2° (Red) BTDC
	Others (1.3 ℓ, 1.5 ℓ)	18° ± 2° (Red) BTDC
	2-Carbureted Engine	
	KQ	20° ± 2° (Red) BTDC
	KG (A/T)	2° ± 2° (Red) BTDC
	KG (M/T)	12° ± 2° (Red) BTDC
	Others	18° ± 2° (Red) BTDC
Battery	Lighting capacity (20-hour ratio)	40, 45, 47 Ampere Hours
	Starting capacity (5-second ratio)	8.6 V min. at 300 Ampere draw

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	15.5 (0.61)	5.3 (0.21)	22 (0.87)	8 (0.31)
	Brush Spring tension	300—500g (10.6—17.6 oz)	—	300—450g (10.6—15.9 oz)	—

Starting motor		HITACHI 0.8 kw		ND 0.8 kw		ND 1.0 kw, 1.2 kw		MITSUBA 1.0 kw, 1.4 kw	
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth	0.5—0.8 ($^{0.020}_{-0.031}$)	0.2 (0.008)	0.5—0.8 ($^{0.020}_{-0.031}$)	0.2 (0.008)	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—0.1 (0.004)	0.4 (0.016)	0.05 (0.002)	0.4 (0.016)	0—0.02 (0.008)	0.05 (0.002)	0—0.02 (0.0008)	0.05 (0.002)
	Commutator O.D.	40.0 (1.57)	39.0 (1.54)	28.0 (1.10)	27.0 (1.06)	29.9—30.0 (1.18)	29.0 (1.14)	28.0—28.1 (1.10—1.11)	27.5 (1.08)
	Brush length	14.5—15.5 (0.57—0.61)	11.0 (0.43)	15.5—16.5 (0.61—0.65)	10.0 (0.39)	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)	15.7 N (1.6 kg, 3.5 lb)	—	15.7 N (1.6 kg, 3.5 lb)	—	18.1—2.89 N (1.85—2.4 kg, 4.1—5.4 lb)	—	20.1—26.5 N (2.05—2.7 kg, 4.5—6.0 lb)	—

Design Specifications

2D H/B

	ITEMS	METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	3,965 mm	156.1 in.	
		3,990 mm	157.1 in.	With bumper guard
	Overall Width	1,680 mm	66.1 in.	
		1,670 mm	65.7 in.	1.2ℓ, 1.3ℓ
	Overall Height	1,330 mm	52.4 in.	
		1,360 mm	53.5 in.	KY
	Wheelbase	2,500 mm	98.4 in.	
	Track, Front/Rear	1,450/1,455 mm	57.1/57.3 in.	
		1,445/1,440 mm	56.9/56.7 in.	KY
	Ground Clearance	160 mm	6.3 in.	
		150 mm	5.9 in.	Cars with cata.
	Seating Capacity	5		
	Overhang, Front/Rear	770/695 mm	30.3/27.4 in.	
		795/695 mm	31.3/27.4 in.	With bumper guard
WEIGHTS	Engine Weight (Wet)			
	1.2ℓ	93 kg	205 lb.	
	1.3ℓ	95 kg	209 lb.	
	1.4ℓ	98 kg	216 lb.	
	1.5ℓ 1-Carbureted	94 kg	207 lb.	
	1.5ℓ 2-Carbureted	101 kg	222 lb.	
	1.5ℓ PGM-FI	100 kg	220 lb.	
	1.6ℓ SOHC	107 kg	236 lb.	
	1.6ℓ DOHC	113 kg	249 lb.	
	Curb Weight 1.2ℓ M/T	835 kg	1,841 lb.	KP, KT, KU
	1.2ℓ A/T	855 kg	1,885 lb.	KP, KT, KU
	1.3ℓ M/T	840 kg	1,852 lb.	KP, KT, KU
		835 kg	1,841 lb.	KB, KF, KE, KW
		840 kg	1,852 lb.	KW (SF, N)
	1.3ℓ A/T	860 kg	1,896 lb.	KP, KT, KU
		855 kg	1,885 lb.	KB, KE, KF, KW
	1.4ℓ M/T	850 kg	1,874 lb.	KB, KF, KG, KW
		855 kg	1,885 lb.	KW (SF, N)
		865 kg	1,907 lb.	KE
	1.4ℓ A/T	870 kg	1,918 lb.	KB, KF, KG, KW
		875 kg	1,929 lb.	KW (SF, N)
		885 kg	1,951 lb.	KE
	1.5ℓ M/T (DX)	859 kg	1,894 lb.	KQ
		865 kg	1,907 lb.	KW, KX
	1.5ℓ M/T (GL)	897 kg	1,978 lb.	KQ
		890 kg	1,962 lb.	KY
		870 kg	1,918 lb.	KS
		880 kg	1,940 lb.	KX
	1.5ℓ A/T (DX)	885 kg	1,951 lb.	KX, KW
	1.5ℓ A/T (GL)	918 kg	2,024 lb.	KQ
		910 kg	2,006 lb.	KY
		890 kg	1,962 lb.	KS
		900 kg	1,984 lb.	KX
	1.6ℓ SOHC	900 kg	1,984 lb.	KG, KX
		905 kg	1,995 lb.	KW, KS
	1.6ℓ DOHC	915 kg	2,017 lb.	KB, KF, KW
		920 kg	2,028 lb.	KW (SF, N)
	Weight Distribution (Front/Rear)			
	1.2ℓ M/T	510/325 kg	1,124/716 lb.	KP, KT, KU
	1.2ℓ A/T	530/325 kg	1,168/716 lb.	KP, KT, KU
	1.3ℓ M/T	515/325 kg	1,135/716 lb.	KP, KT, KU
		510/325 kg	1,124/716 lb.	KB, KF, KE, KW
		515/325 kg	1,135/716 lb.	KW (SF, N)

	ITEMS	METRIC	ENGLISH	NOTES
WEIGHTS	1.3 ℓ A/T	535/325 kg	1,179/716 lb.	KP, KT, KU
		530/325 kg	1,168/716 lb.	KB, KE, KF, KW
	1.4 ℓ M/T	525/325 kg	1,157/716 lb.	KB, KF, KG, KW
		530/325 kg	1,168/716 lb.	KW (SF, N)
		540/325 kg	1,190/716 lb.	KE
	1.4 ℓ A/T	545/325 kg	1,202/716 lb.	KB, KF, KG, KW
		550/325 kg	1,213/716 lb.	KW (SF, N)
		560/325 kg	1,235/716 lb.	KE
	1.5 ℓ M/T (DX)	586/353 kg	1,292/778 lb.	KQ
		535/330 kg	1,179/728 lb.	KW, KX
	1.5 ℓ M/T (GL)	554/343 kg	1,221/756 lb.	KQ
		545/345 kg	1,202/761 lb.	KY
		540/330 kg	1,190/728 lb.	KS
		550/330 kg	1,213/728 lb.	KX
	1.5 ℓ A/T (DX)	555/330 kg	1,224/728 lb.	KX, KW
	1.5 ℓ A/T (GL)	505/343 kg	1,113/756 lb.	KQ
		565/345 kg	1,246/761 lb.	KY
		560/330 kg	1,235/728 lb.	KS
		570/330 kg	1,257/728 lb.	KX
	1.6 ℓ SOHC	550/350 kg	1,213/772 lb.	KG, KX
		555/350 kg	1,224/772 lb.	KW, KS
	1.6 ℓ DOHC	565/350 kg	1,246/772 lb.	KB, KF, KW
		570/350 kg	1,257/772 lb.	KW (SF, N)
	Max. Permissible Weight (EC)			
	1.3 ℓ	1,310 kg	2,888 lb.	
	1.4 ℓ	1,340 kg	2,954 lb.	
	1.5 ℓ	1,280 kg	2,822 lb.	KS
		1,370 kg	3,020 lb.	KX, KW
	1.6 ℓ	1,290 kg	2,844 lb.	KS
		1,370 kg	3,020 lb.	KB, KF, KG, KX, KW
		1,370 kg	3,020 lb.	KY
	Maximum Loaded Vehicle Weight Carrying (Loading) Weight Capacity	45 kg	160 lb.	
ENGINE	Type	Water cooled 4-cycle S.O.H.C.		
	1.6 ℓ Without cata.	Water cooled 4-cycle D.O.H.C.		
	Cylinder arrangement	4-cylinder in-line, transverse		
	Bore and Stroke 1.2 ℓ	75×67.5 mm	2.95×2.66 in.	
	1.3 ℓ	75×76 mm	2.95×2.99 in.	
	1.4 ℓ	75×79 mm	2.95×3.11 in.	
	1.5 ℓ	75×84.5 mm	2.95×3.33 in.	
	1.6 ℓ	75×90 mm	2.95×3.54 in.	
	Displacement 1.2 ℓ	1,193 cm^3 (cc)	74 cu. in.	
	1.3 ℓ	1,343 cm^3 (cc)	83 cu. in.	
	1.4 ℓ	1,396 cm^3 (cc)	86 cu. in.	
	1.5 ℓ	1,493 cm^3 (cc)	91 cu. in.	
	1.6 ℓ	1,590 cm^3 (cc)	98 cu. in.	
	Compression Ratio			
	1.2 ℓ	8.6		
	1.3 ℓ	9.0		
	1.4 ℓ	9.3		
	1.5 ℓ	9.2		
	1.6 ℓ With cata.	9.1		
	1.6 ℓ Without cata.	9.5		
	Valve Train 1.6 ℓ Without cata.	4-valves per cylinder, dual overhead camshafts		
	Others	4-valves per cylinder, single overhead camshaft		
	Lubrication System	Pressure fed		
	Fuel Required			
	Engine with cata.	Unleaded gasoline with 91 research octane number or higher		*Both leaded and unleaded gasoline can be used.
	Carbureted engines without cata.	*Gasoline with 91 research octane number or higer		
	PGM-FI DOHC without cata.	Leaded gasoline with 97 research octane number or higher		

Design Specifications

2D H/B

	ITEMS	METRIC	ENGLISH	NOTES
STARTER	Type 0.8 kW	Direct		
	1.0 kW, 1.2 kW, 1.4kW	Gear reduction		
	Normal Output	0.8 kW, 1.0 kW, 1.2 kW, 1.4 kW		
	Normal Voltage	12V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weight 0.8 kW HITACHI/ND	4.4 kg	9.7 lb.	
	1.0 kW MITSUBA	3.4 kg	7.5 lb.	
	ND	3.85 kg	8.5 lb.	
	1.2 kW ND	3.85 kg	8.5 lb.	
	1.4 kW MITSUBA	3.7 kg	8.2 lb.	
TRANSMISSION	Clutch M/T	Single plate dry, diaphragm spring		
	A/T	Torque converter		
	Transmission Type M/T	5 speeds forward, synchromesh, 1 speed reverse, constant mesh		
	A/T	4 speeds forward, with lock-up clutch, 1 speed reverse		
	Primary Reduction	1.000		
	Gear Ratio	M/T / 1.6 DOHC M/T / A/T		
	1st	3.250 / 3.250 / 2.705		
	2nd	1.894 / 1.944 / 1.560		
	3rd	1.259 / 1.346 / 1.027		
	4th	0.937 / 1.033 / 0.780		
	5th	0.771 / 0.878 / —		
	Reverse	3.153 / 1.954		
	Final Reduction M/T 1.2 ℓ	Single helical gear, 4.058		KB
	1.3 ℓ	Single helical gear, 4.250		KP, KT, KU
	1.4 ℓ	Single helical gear, 4.058		
	1.5 ℓ	Single helical gear, 4.250		
	1.6 ℓ SOHC	Single helical gear, 4.058		KX, KW, KS
	1.6 ℓ DOHC	Single helical gear, 4.250		KQ
		Single hlhical gear, 4.250		
		Single helical gear, 3.888		
	Clutch Facing Area	148 cm²	22.7 sq. in.	
	1.6 ℓ	160 cm²	24.8 sq. in.	
AIR CONDI-TIONER	Compressor	MASTUSHITA		
	Cooling Capacity	3,850 Kcal/h		
	—Conditions:			
	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 m³/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		

	ITEMS		METRIC	ENGLISH	NOTES
AIR CONDITIONER	Blower	Type	Sirocco fan		
		Motor Input	170 W (12 V)		
		Speed Control	4 speeds		
		Max. Capacity	390 m³/h	13,773 cu. ft/h	
	Temp. Control		Air-mix type		
	Comp. Clutch	Type	Dry, single plate, V-belt		
		Power Consumption	32 W max. 12 V		
	Refrigerant	Type	R-12		
		Quantity	0.9±0.05 kg	1.98±0.11 lb	
STEERING SYSTEM	Type		Rack and pinion		
	Overall Ratio	Manual	18.6: 1		
			19.8 (18—20.4): 1		1.6 ℓ only
		Power	17.7: 1		
	Turns, Lock-to-lock	Manual	3.8		
			4.1		1.6 ℓ only
		Power	3.6		
	Steering Wheel Diameter	Dx	337 mm	14.8 in.	
		Others	370 mm	14.6 in.	
SUSPENSION SYSTEM	Type	Front/Rear	Independent by double wishbones, coil springs		
	Shock Absorber	Front	Telescopic, nitrogen gas-filled		
		Rear	Telescopic, nitrogen gas-filled		
WHEEL ALIGNMENT	Wheel Alignment				
	Camber	Front	0°00′±1°		
		Rear	−0°30′±1°		
	Caster	Front	2°59′±1°		
	Toe-in	Front	0±3 mm	0±0.12 in.	
		Rear	2±2 mm	0.08±0.08 in.	
	Kingpin Inclination		7°34′		
BRAKE SYSTEM	Type Front 1.2 ℓ, 1.3 ℓ		Power assisted self-adjusting disc		
	1.4 ℓ, 1.5 ℓ, 1.6 ℓ		Power assisted self-adjusting ventilated disc		
	Rear 1.6 ℓ		Power assisted self-adjusting disc		
	Others		drum		
	Lining Surface Area				
	Front 1.2 ℓ, 1.3 ℓ, 1.4 ℓ, 1.5 ℓ		36.8 mm²	5.70 sq. in.	Carbureted engine
	1.5 ℓ, 1.6 ℓ		44.1 mm²	6.84 sq. in.	PGM-FI
	Rear		50.2 mm²	7.78 sq. in.	Drum
			21.0 mm²	3.25 sq. in.	Disc (1.6 ℓ)
	Effective Disc Diameter				
	Front 1.2 ℓ, 1.3 ℓ, 1.4 ℓ, 1.5 ℓ		190 mm	7.48 in.	Carbureted engine
	1.5 ℓ, 1.6 ℓ		194 mm	7.64 in.	PGM-FI
	Rear		208 mm	8.19 in.	
	Brake Drum I.D. Rear		180 mm	7.09 in.	
	Parking Brake Kind and Type		Mechanically actuating, rear two wheel brakes		
TIRES	Front/Rear	1.2 ℓ, 1.3 ℓ	155SR13		KB, KG KF, KE, KW
			155SR13, 6.15-13-4PR or 165SR13		KP, KT, KU
		1.4 ℓ, 1.5 ℓ	165SR13		KY
			165/70SR13		KQ
			165/70SR13 or 175/70HR13		KB, KG, KX, KW, KS
					KF, KE, KW (1.4 ℓ)
		1.6 ℓ	185/60R14 82H		
	Spare (EC)		T105/80D 13		

Design Specifications

2D H/B

	ITEMS	METRIC	ENGLISH	NOTES
ELECTRICAL	Battery	12V-47AH		
	Starter	12V-0.8 kW, 1.0 kW, 1.2 kW, 1.4 kW		
	Alternator	12V-60 amps		
	Fuses In the dash fuse box	10A, 15A, 20A, 30A		
	In the main fuse box	40A, 50A, 60A		
	Headlights High/Low	12V-60/55W		
	Front Turn Signal Lights	12V-21W		
	Rear Turn Signal Lights	12V-21W		
	Side Turn Signal Lights	12V-5W		
	Stop/Taillights	12V-21/5W		
	Side Marker Lights	12V-5W		
	Back-up Lights	12V-21W		
	License Plate Lights	12V-5W		
	Gauge Lights	12V-3.4W, 3.0W, 1.4W		
	Indicator Lights	12V-1.4W		
	Warning Lights	12V-5W		
	Dome Light	12V-3.4W		
	Trunk Light	12V-1.4W		
	Illumination and Pilot Lights	12V-1.4W 0.91W, 0.84W, LED		
	Heater Illumination Lights	12V-1.4W		

Design Specifications

4D

	ITEMS	METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	4,230 mm	166.5 in.	
		4,235 mm	166.7 in.	KQ
	With bumper guard	4,255 mm	167.5 in.	KW (SF, N)
	Overall Width	1,690 mm	66.5 in.	
	Overall Height	1,360 mm	53.5 in.	
		1,385 mm	54.5 in.	KY
	Wheelbase	2,500 mm	98.4 in.	
	Track, Front/Rear	1,450/1,455 mm	57.1/57.3 in.	
		1,445/1,440 mm	56.9/56.7 in.	KY
	Ground Clearance	160 mm	6.3 in.	
		150 mm	5.9 in.	Cars with cata.
	Seating Capacity	5		
	Overhang, Front/Rear	770/960 mm	30.3/37.8 in.	Includes bumper
	With bumper guard	795/960 mm	31.3/37.8 in.	Includes bumper
WEIGHTS	Engine Weight (Wet)			
	1.2 ℓ	93 kg	205 lb.	
	1.3 ℓ	95 kg	209 lb.	
	1.4 ℓ	98 kg	216 lb.	
	1.5 ℓ 1-Carbureted	94 kg	207 lb.	
	1.5 ℓ 2-Carbureted	101 kg	222 lb.	
	1.5 ℓ PGM-FI	100 kg	220 lb.	
	1.6 ℓ SOHC	107 kg	236 lb.	
	Curb Weight 1.2 ℓ M/T	870 kg	1,918 lb.	KB, KW
		865 kg	1,907 lb.	KP, KT, KU
	1.2 ℓ A/T	885 kg	1,951 lb.	KP, KT, KU
	1.3 ℓ M/T	870 kg	1,918 lb.	KP, KT, KU
		875 kg	1,929 lb.	Singapore
	1.3 ℓ A/T	890 kg	1,962 lb.	KP, KT, KU
		895 kg	1,973 lb.	Singpore
	1.4 ℓ M/T	885 kg	1,951 lb.	KB, KF, KE, KW
		890 kg	1,962 lb.	KW (SF, N)
	1.4 ℓ A/T	905 kg	1,995 lb.	KB, KF, KE, KW
		910 kg	2,006 lb.	KW (SF, N)
	1.5 ℓ M/T (DX)	890 kg	1,962 lb.	KW
		907 kg	2,000 lb.	KQ
	1.5 ℓ M/T (GL)	930 kg	2,050 lb.	KY
		935 kg	2,061 lb.	KQ
		900 kg	1,984 lb.	KW, KS, KX
		875 kg	1,929 lb.	KP, KT, KU
		925 kg	2,039 lb.	Singapore
	1.5 ℓ M/T (EX)	950 kg	2,094 lb.	KY
	1.5 ℓ A/T (GL)	950 kg	2,094 lb.	KY
		958 kg	2,112 lb,	KQ
		920 kg	2,028 lb,	KW, KS, KX
		895 kg	1,973 lb,	KP, KT, KU
		945 kg	2,083 lb,	Singapore
	1.5 ℓ A/T (EX)	970 kg	2,138 lb.	KY
	1.6 ℓ	940 kg	2,072 lb.	KB, KG, KW, KS, KX
		945 kg	2,083 lb.	KW (SF, N)
	Weight Distribution (Front/Rear)			
	1.2 ℓ M/T	510/360 kg	1,124/794 lb.	KB, KW
		505/360 kg	1,114/794 lb.	KP, KT, KU
	1.2 ℓ A/T	525/360 kg	1,157/794 lb.	KP, KT, KU
	1.3 ℓ M/T	510/360 kg	1,124/794 lb.	KP, KT, KU
		515/360 kg	1,135/794 lb.	Singapore
	1.3 ℓ A/T	530/360 kg	1,168/794 lb.	KP, KT, KU
		535/360 kg	1,179/794 lb.	Singapore
	1.4 ℓ M/T	525/360 kg	1,157/794 lb.	KB, KF, KE, KW
		530/360 kg	1,168/794 lb.	KW (SF, N)
	1.4 ℓ A/T	545/360 kg	1,202/794 lb.	KB, KF, KE, KW
		550/360 kg	1,213/794 lb.	KW (SF, N)
	1.5 ℓ M/T (DX)	530/360 kg	1,168/794 lb.	KW
		547/360 kg	1,206/794 lb.	KQ
		540/360 kg	1,190/794 lb.	KW, KS, KX
		515/360 kg	1,135/794 lb.	KP, KT, KU
		565/360 kg	1,246/794 lb.	Singapore
	1.5 ℓ M/T (EX)	580/370 kg	1,279/816 lb.	KY
	1.5 ℓ A/T (GL)	580/370 kg	1,279/816 lb.	KY
		588/370 kg	1,296/816 lb.	KQ
		560/360 kg	1,235/794 lb.	KW, KS, KX
		535/360 kg	1,179/794 lb.	KP, KT, KU,
		585/360 kg	1,290/794 lb.	Singapore
	1.5 ℓ A/T (EX)	600/370 kg	1,322/816 lb.	KY
	1.6 ℓ	565/375 kg	1,246/827 lb.	KB, KG, KW, KS, KX
		570/375 kg	1,257/827 lb.	KW (SF, N)

Design Specifications

4D

	ITEMS	METRIC	ENGLISH	NOTES
WEIGHTS	Max. Permissible Weight (EC)			
	1.2 ℓ	1,340 kg	2,954 lb.	KB, KW
	1.4 ℓ	1,370 kg	3,020 lb.	KB, KF, KG, KE, KW
	1.5 ℓ, 1.6 ℓ	1,400 kg	3,086 lb.	
	Maximum Loaded Vehicle Weight	1,400 kg	3,086 lb.	KY
	Carrying (Loading) Weight Capacity	45 kg	100 lb.	
ENGINE	Type	Water cooled 4-cycle S.O.H.C.		
	Cylinder arrangement	4-cylinder in-line, transverse		
	Bore and stroke 1.2 ℓ	75×67.5 mm	2.95×2.66 in.	
	1.3 ℓ	75×76 mm	2.95×2.99 in.	
	1.4 ℓ	75×79 mm	2.95×3.11 in.	
	1.5 ℓ	75×84.5 mm	2.95×3.33 in.	
	1.6 ℓ	75×90 mm	2.95×3.54 in.	
	Displacement 1.2 ℓ	1,193 cm³ (cc)	74 cu. in.	
	1.3 ℓ	1,343 cm³ (cc)	83 cu. in.	
	1.4 ℓ	1,396 cm³ (cc)	86 cu. in.	
	1.5 ℓ	1,493 cm³ (cc)	91 cu. in.	
	1.6 ℓ	1,590 cm³ (cc)	98 cu. in.	
	Compression Ratio			
	1.2 ℓ	8.6		
	1.3 ℓ	9.0		
	1.4 ℓ	9.3		
	1.5 ℓ	9.2		
	1.6 ℓ	9.1		
	Valve Train	4-valves per cylinder, single overhead camshaft		
	Lubrication System	Pressure fed		
	Fuel Required			
	Engines with cata.	Unleaded gasoline with 91 research octane number or higher		* Both leaded and unleaded gasoline can be used.
	Carbureted engines without cata.	*Gasoline with 91 research octane number or higer		
	PGM-FI without cata.	Unleaded gasoline with 91 research octane number or higher		
STARTER	Type 0.8 kW	Direct		
	1.0 kW, 1.2 kW, 1.4kW	Gear reduction		
	Normal Output	0.8 kW, 1.0 kW, 1.2 kW, 1.4 kW		
	Normal Voltage	12V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weight 0.8 kW HITACHI/ND	4.4 kg	9.7 lb.	
	1.0 kW MITSUBA ND	3.4 kg	7.5 lb.	
	1.2 kW ND	3.85 kg	8.5 lb.	
	1.4 kW MITSUBA	3.85 kg	8.5 lb.	
		3.7 kg	8.2 lb.	
TRANSMISSION	Clutch M/T	Single plate dry, diaphragm spring		
	A/T	Torque converter		
	Transmission Type M/T	5 speeds forward, synchromesh, 1 speed reverse, constant mesh		
	A/T	4 speeds forward, with lock-up clutch, 1 speed reverse		
	Primary Reduction	1.000		
	Gear Ratio	M/T	A/T	
	1st	3.250	2.705	
	2nd	1.894	1.560	
	3rd	1.259	1.027	
	4th	0.937	0.780	
	5th	0.771	—	
	Reverse	3.153	1.954	

	ITEMS	METRIC	ENGLISH	NOTES
TRANSMISSION	Final Reduction M/T 1.2 ℓ	Single helical gear, 4.058		KB, KW
	1.3 ℓ	Single helical gear, 4.250		KP, KT, KU
	1.4 ℓ	Single helical gear, 4.058		KP, KT, KU
	1.5 ℓ	Single helical gear, 4.250		KB, KF, KG, KE, KW
		Single hehical gear, 4.058		KX, KW, KS, KP, KT, KU, KY
	1.6 ℓ	Single helical gear, 4.250		KQ
		Single helical gear, 4.250		KB, KG, KW, KS, KX
	Clutch Facing Area Ex. 1.6 ℓ	148 cm^2	22.7 sq. in.	
	1.6 ℓ	160 cm^2	24.8 sq. in.	
AIR CONDITIONER	Compressor	MATSUSHITA		
	Cooling Capacity	3,850 Kcal/h		
	—Conditions:			
	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	170 W (12 V)		
	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	32 W max. 12 V		
	Refrigerant Type	R-12		
	Quantity	0.9±0.05 kg	1.98±0.11 lb	
STEERING SYSTEM	Type	Rack and pinion		
	Overall Ratio Manual	18.6: 1		
	Power	17.7: 1		
	Turns, Lock-to-lock Manual	3.8		
	Power	3.6		
	Steering Wheel Diameter Ex. 1.6 ℓ	337 mm	14.8 in.	
	1.6 ℓ	370 mm	14.6 in.	
SUSPENSION SYSTEM	Type Front/Rear	Independent by double wishbones, coil springs		
	Shock Absorber Front	Telescopic, hydraulic		
	Rear	Telescopic, nitrogen gas-filled		

Design Specifications

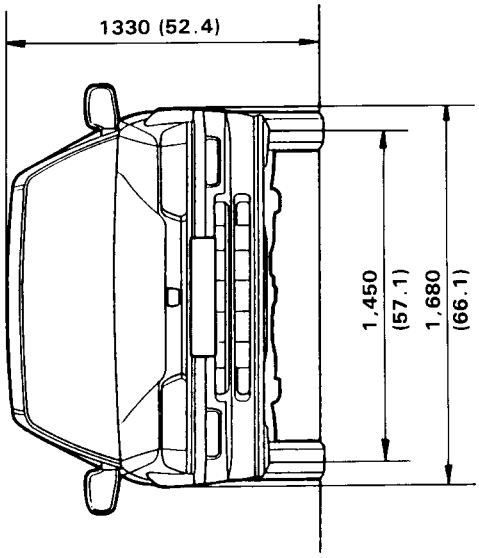
4D

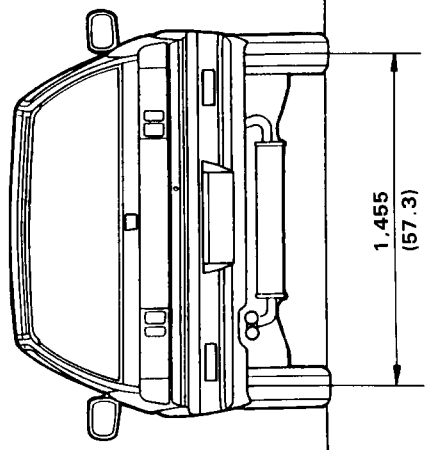
	ITEMS	METRIC	ENGLISH	NOTES
WHEEL ALIGNMENT	Wheel Alignment			
	Camber Front	0°00′ ± 1°		
	Rear	−0°30′ ± 1°		
	Caster Front	2°59′ ± 1°		
	Toe-in Front	0 ± 3 mm	0 ± 0.12 in.	
	Rear	2 ± 2 mm	0.08 ± 0.08 in.	
	Kingpin Inclination	7°34′		
BRAKE SYSTEM	Type Front 1.2 ℓ, 1.3 ℓ	Power assisted self-adjusting disc		
	1.4 ℓ, 1.5 ℓ, 1.6 ℓ	Power assisted self-adjusting ventilated disc		
	Rear 1.6 ℓ	Power assisted self-adjusting disc		
	Others	drum		
	Lining Surface Area			
	Front 1.2 ℓ, 1.3 ℓ, 1.4 ℓ	36.8 mm²	5.70 sq. in.	
	1.5 ℓ, 1.6 ℓ	44.1 mm²	6.84 sq. in.	
	Rear	50.2 mm²	7.78 sq. in.	Drum
		21.0 mm²	3.25 sq. in.	Disc (1.6 ℓ)
	Effective Disc Diameter			
	Front 1.2 ℓ, 1.3 ℓ, 1.4 ℓ, 1.5 ℓ	190 mm	7.48 in.	Carbureted engine
	1.5 ℓ, 1.6 ℓ	194 mm	7.64 in.	PGM-FI
	Rear	208 mm	8.19 in.	
	Brake Drum I.D. Rear	180 mm	7.09 in.	
	Parking Brake Kind and Type	Mechanically actuating, rear two wheel brakes		
TIRES	Front/Rear 1.2 ℓ, 1.3 ℓ	155SR13		KB, KW
		155SR13, 6.15-13-4PR or 165SR13		KP, KT, KU
	1.4 ℓ, 1.5 ℓ	165SR13		KY
		165/70SR13		KQ
		165/70SR13 or 165SR13		
		165/70SR13 or 175/70HR13		KB, KG, KX, KW, KS
				KF, KE, KW (1.4 ℓ)
	1.6 ℓ	175/70R13 82H or 175/65R14 82H		
	Spare (EC)	T105/80D 13		
ELECTRICAL	Battery	12V-47AH		
	Starter	12V-0.8 kW, 1.0 kW, 1.2 kW, 1.4 kW		
	Alternator	12V-60 amps		
	Fuses In the dash fuse box	10A, 15A, 20A, 30A		
	In the main fuse box	40A, 50A, 60A		
	Headlights High/Low	12V-60/55W		
	Front Turn Signal Lights	12V-21W		
	Rear Turn Signal Lights	12V-21W		
	Side Turn Signal Lights	12V-5W		
	Stop/Taillights	12V-21/5W		
	Side Marker Lights	12V-5W		
	Back-up Lights	12V-21W		
	License Plate Lights	12V-5W		
	Gauge Lights	12V-3.4W, 3.0W, 1.4W		
	Indicator Lights	12V-1.4W		
	Warning Lights	12V-5W		
	Dome Light	12V-3.4W		
	Trunk Light	12V-1.4W		
	Illumination and Pilot Lights	12V-1.4W		
		0.91W, 0.84W, LED		
	Heater Illumination Lights	12V-1.4W		

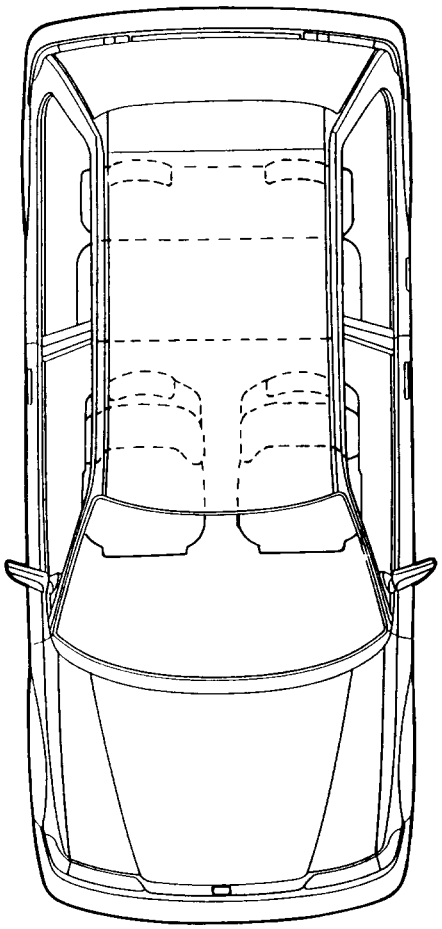
Body Specifications

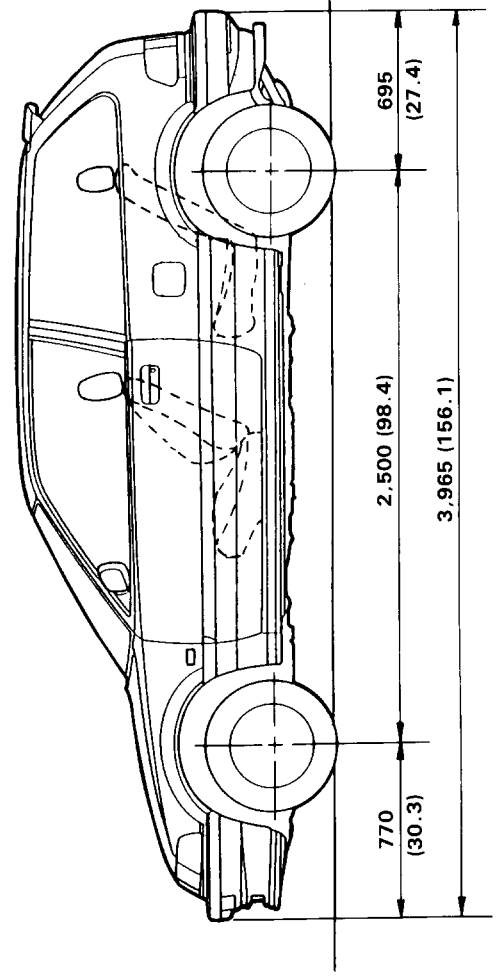
2D H/B

unit: mm (in)





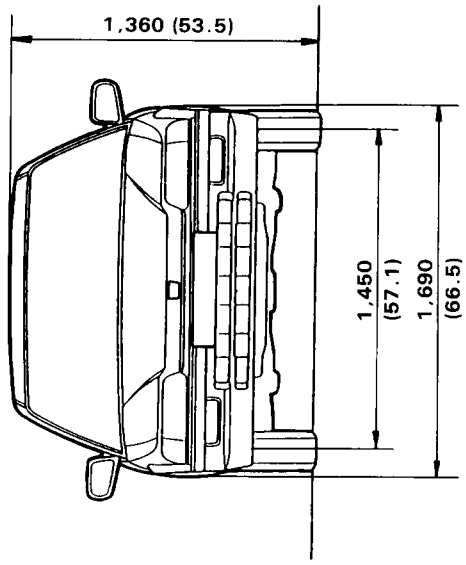


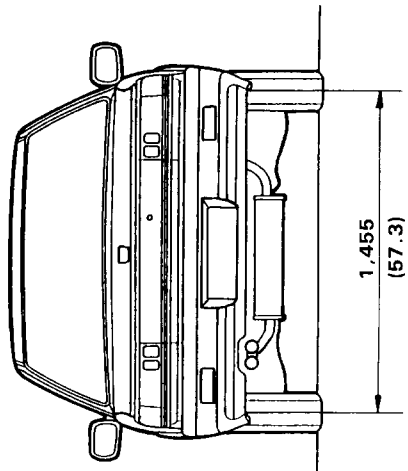


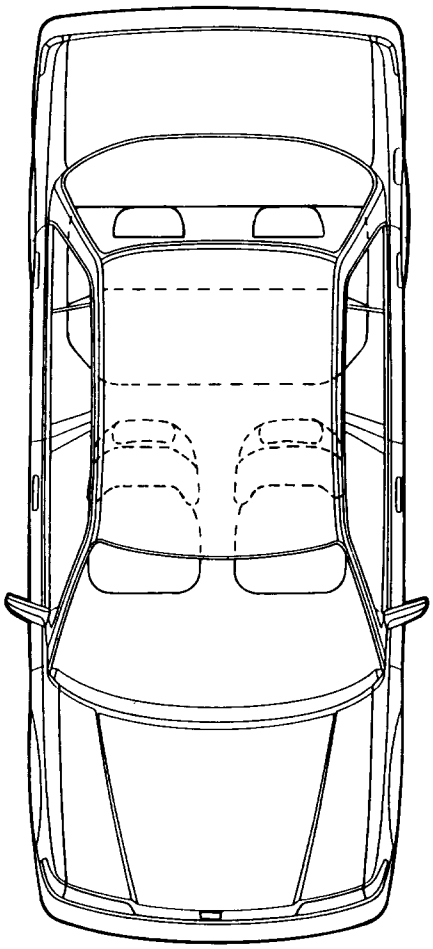
Body Specifications

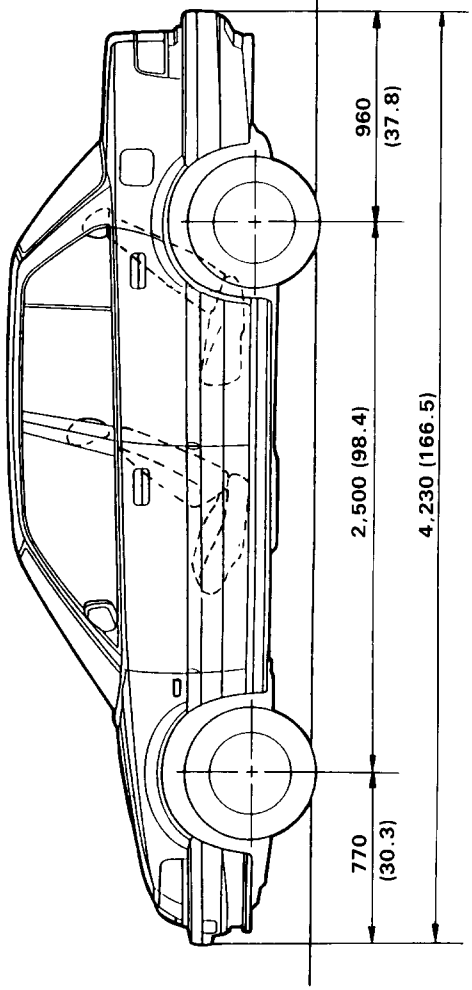
4D

unit: mm (in)







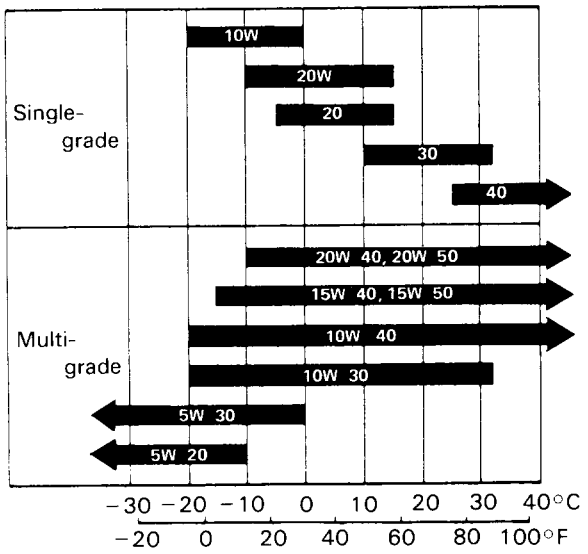


Maintenance

Lubrication Points

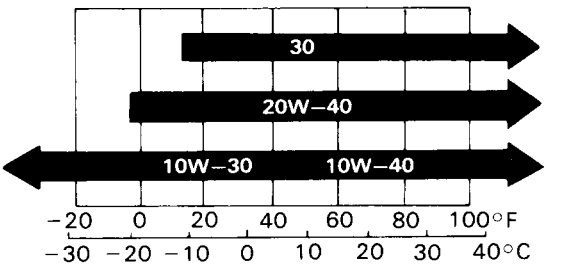
No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SE or SF SAE Viscosity: See chart below
2	Transmission	Manual Automatic	API Service Grade: SE or SF SAE30, 10W—30, 10W—40 or 20W—40 grade oil DEXRON® or DEXRON® II Automatic transmission fluid
3	Brake reservoir		Brake fluid DOT 3
4	Power steering reservoir		Honda power steering fluid P/N 08208—99961
5	Steering gearbox (Power)		Honda steering grease P/N 08740—99969
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Steering gearbox(Manual) Tilt steering Steering ball joints Suspension ball joints Steering boots Shift lever pivot (Manual) Steering column bushings Select lever (Automatic) Pedal linkage Brake master cylinder push rod Trunk hinges Door hinges upper and lower Door opening detents Fuel filler lid Engine hood hinges Engine hood latch Rear brake shoe linkage		Multi- purpose Grease
23	Caliper	Piston seal Dust seal Caliper pin Piston	Silicone Grease

Recommended Engine Oil
(SE or SF Grade oil)

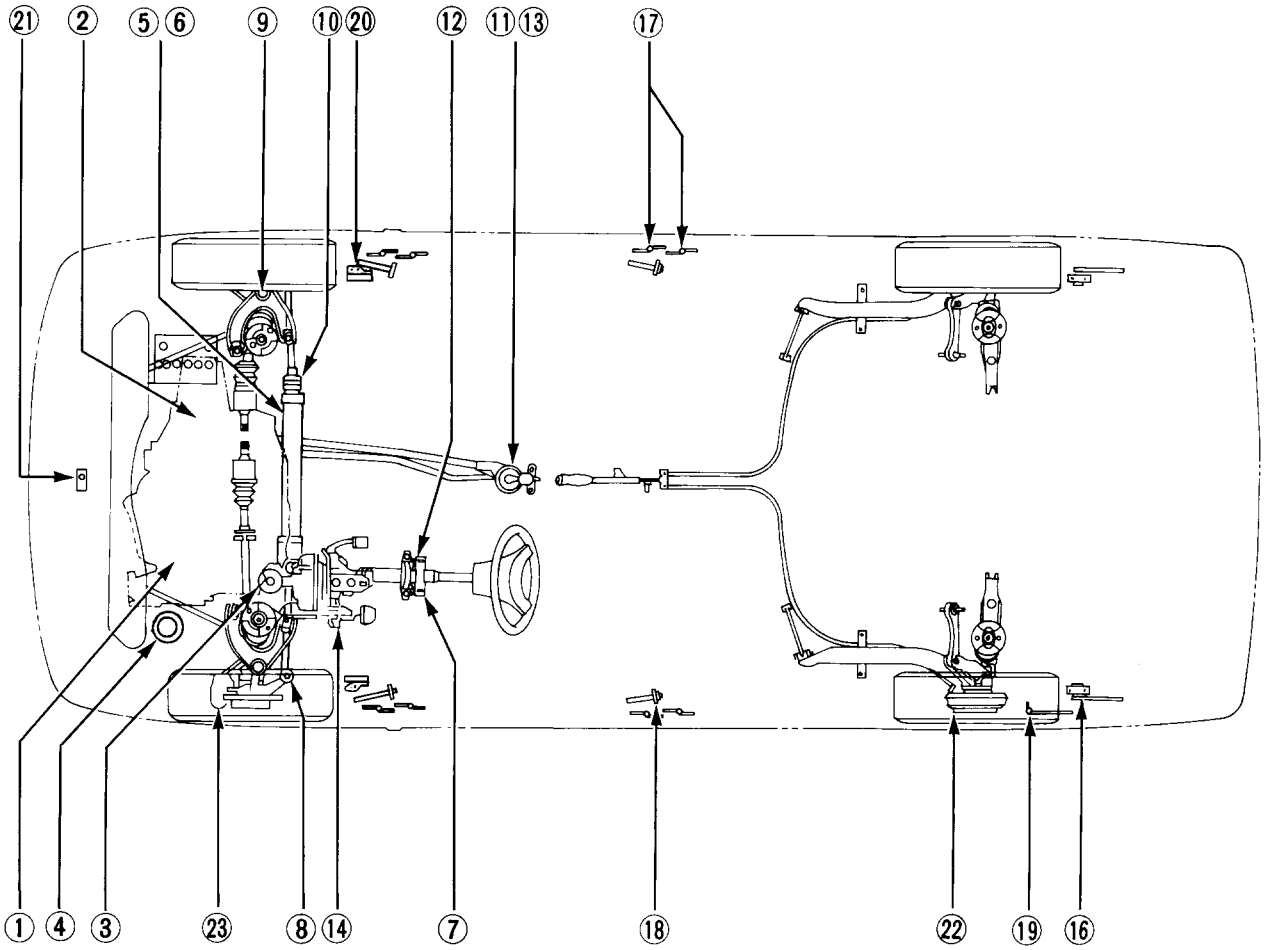


Engine oil viscosity for
ambient temperature ranges.

Recommended Manual Transmission Oil



Transmission oil viscosity for
ambient temperature ranges.


21
2
5
6
9
10
20
12
11
13
17
1
4
3
23
8
14
7
18
22
19
16

Maintenance Schedule

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

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

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

*1 Thereafter, replace every 2 years or 40,000 km (24,000 miles), whichever comes first.

*2 For European and KQ types.

*3 Except for European and KQ types.

*4 Only for KQ type.

*5 For cars using unleaded gasoline and KY type.

*6 Inspection function of dash-pot. Inspection function of idl-up (KG CATE C M/T type only).

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

"Severe driving conditions" include:

A : Repeated short distance driving
B : Driving in dusty conditions
C : Driving in severe, cold weather
D : Driving in areas using road salt or other corrosive materials
E : Driving on rough and/or muddy roads
F : Towing a trailer

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

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

Engine

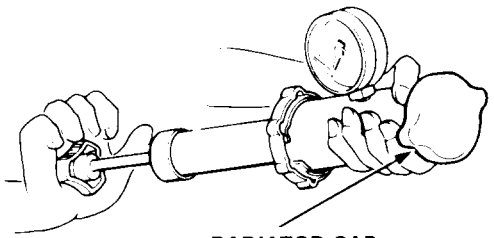
Engine Tune-up

Engine Tune-up

Radiator Cap Testing

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

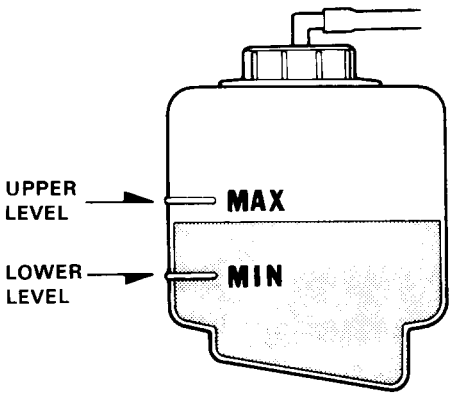
1. Remove the radiator cap, wet its seal with coolant, them install it on the pressure tester.
2. Apply pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).
3. Check for a drop in pressure.
4. If there is a drop in pressure, replace the cap.



RADIATOR CAP

Coolant Level Inspection

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



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

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

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

Radiator Coolant Refill Capacity:

	M/T	A/T
	ℓ (U.S. qt., Imp. qt.)	
1.2 ℓ, 1.3 ℓ, 1.4 ℓ	4.4 (4.6, 3.9)	4.3 (4.5, 3.8)
1.5 ℓ (1-Cabureted)	4.4 (4.6, 3.9)	4.3 (4.6, 3.9)
1.5 ℓ (2-Cabureted)	4.5 (4.7, 4.0)	4.4 (4.6, 3.9)
1.5 ℓ (PGM-FI) 70 ps	4.4 (4.6, 3.9)	4.3 (4.5, 3.8)
1.5 ℓ (PGM-FI)	4.5 (4.7, 4.0)	4.4 (4.6, 3.9)
1.6 ℓ DOHC	4.5 (4.7, 4.0)	
1.6 ℓ SOHC	4.4 (4.6, 3.9)	

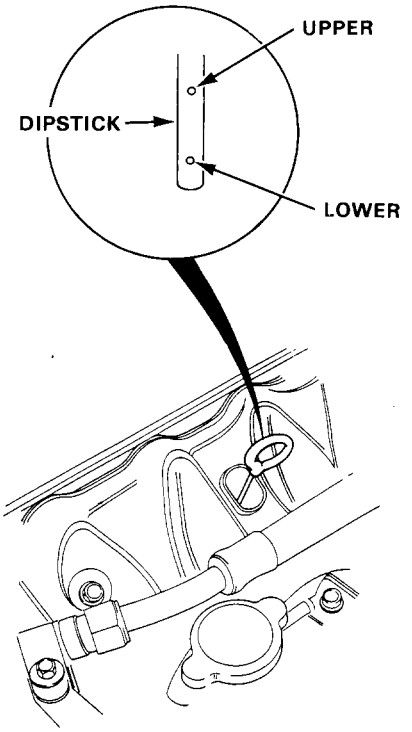
(including the reservoir tank capacity: 0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.))

3. See page 5—78 for refilling.

Oil Level Inspection

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

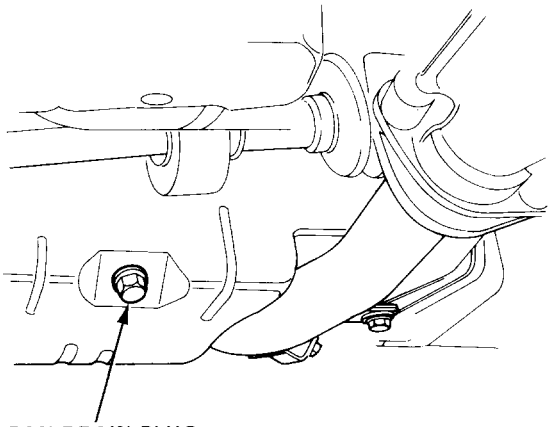
CAUTION: Insert the dipstick carefully to avoid bending it.



Engine Oil Replacement

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

   NOTE: Remove the filler cap to speed draining.

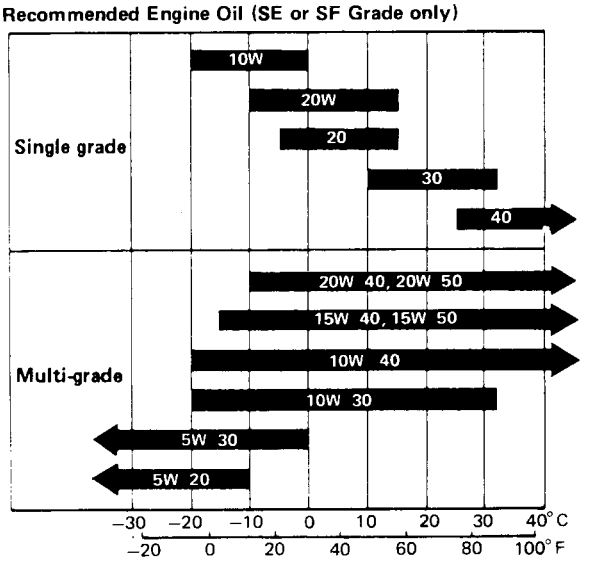


OIL PAN DRAIN PLUG
45 N·m (4.5 kg-m, 33 lb-ft)

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

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

Recommended Engine Oil (SE or SF Grade only)



Expected Ambient Temperature before next oil change

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

Engine Tune-up

Air Cleaner Element Inspection/ Replacement

Inspection

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

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

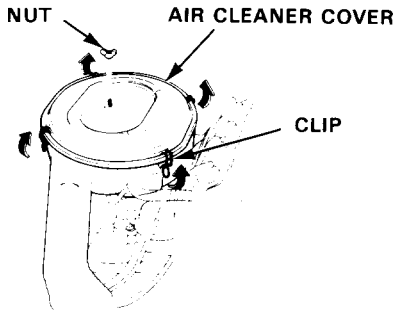
   Replace: every two years

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

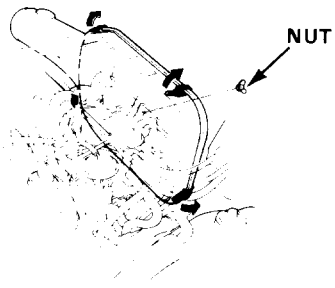
Replacement

1. Remove the air cleaner cover.

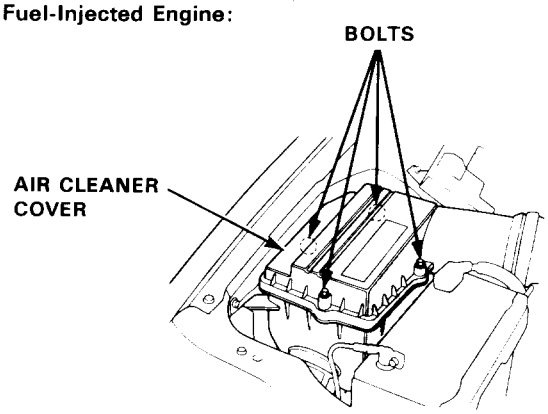
1-Carbureted Engine:



2-Carbureted Engine:



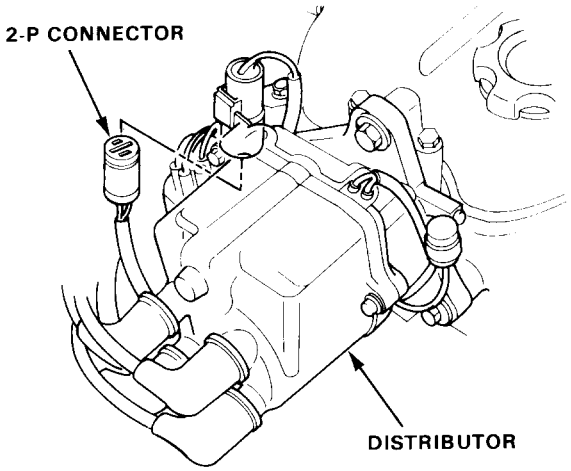
Fuel-Injected Engine:



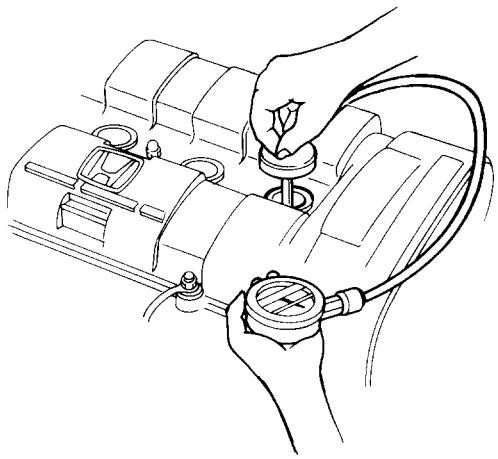
2. Replace the element, install the air cleaner cover and tighten the clip, nut or bolts securely.

Compression Pressure Inspection

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



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



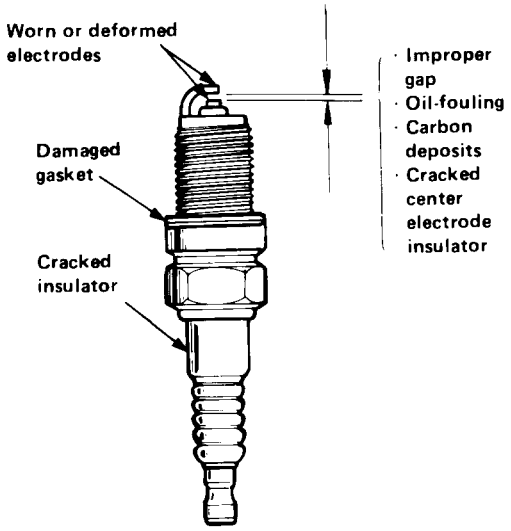
Compression pressure:
SOHC Engine: 1,275 kPa (13.0 kg/cm², 185 psi) at 250 min⁻¹ (rpm)
DOHC Engine: 1,324 kPa (13.5 kg/cm², 192 psi) at 250 min⁻¹ (rpm)
Limit: 932 kPa (9.5 kg/cm², 135 psi) at 250 min⁻¹ (rpm)
Difference between cylinders: 169 kPa (2.0 kg/cm², 28 psi)

NOTE: Use a full charged battery.

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

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



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

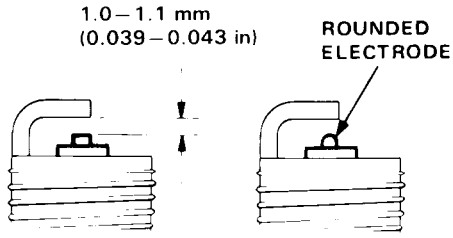
Fouled plug may be caused by:
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

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

Spark Plug:

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

(*): 1.6 ℓ DOHC only



3. Adjust the gap with a suitable gapping tool.

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

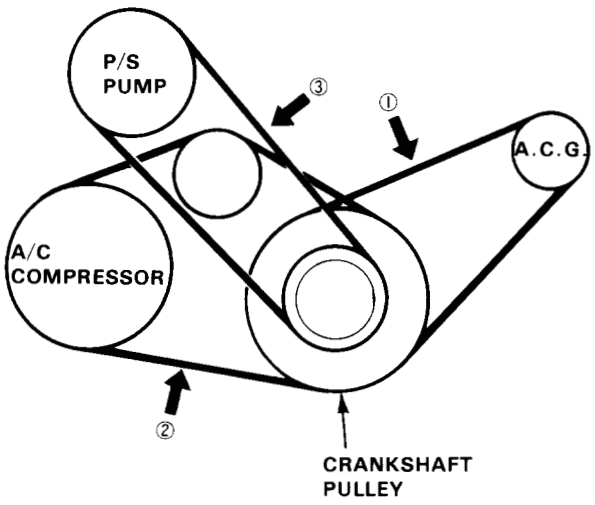
4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

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

Drive Belts Inspection

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

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

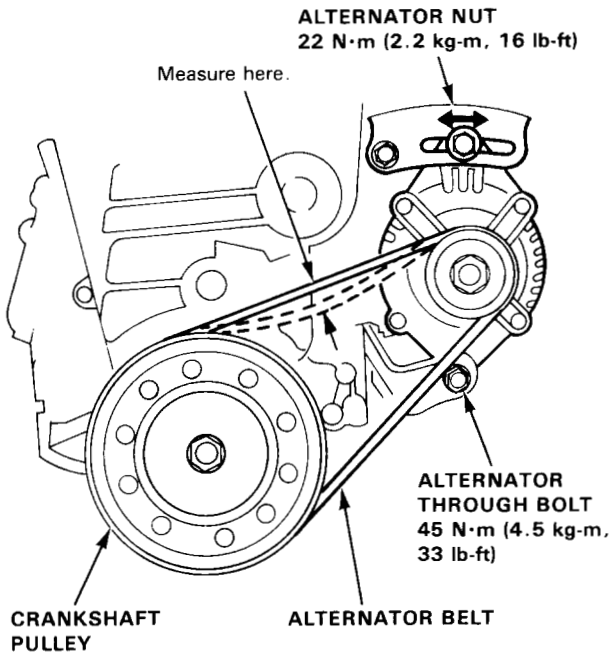


Alternator Belt Adjustment

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

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

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



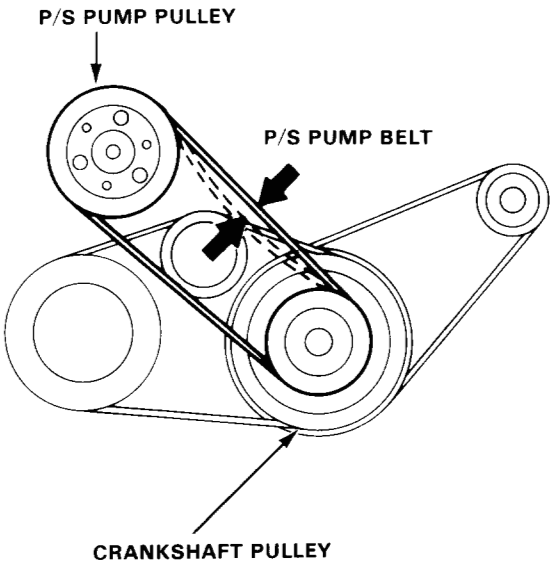
2. Loosen the alternator nut and through bolt.
3. Move the alternator by turning the adjust nut to obtain the proper belt tension, then retighten the bolt and nut.
4. Recheck the deflection of the belt.

P/S Pump Belt Adjustment

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

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

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



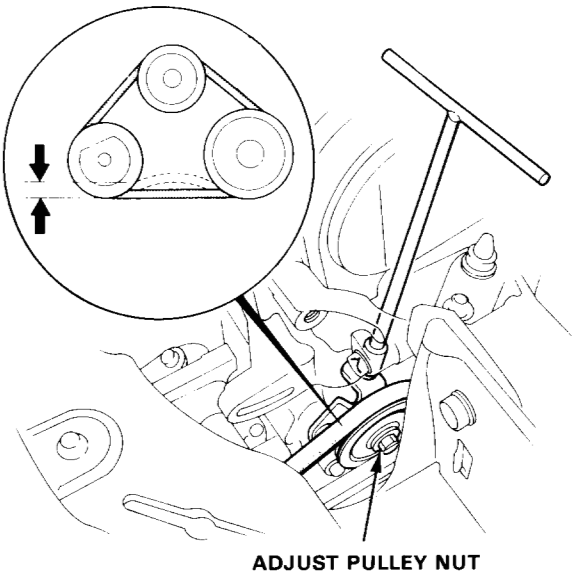
2. Loosen the P/S adjust pulley bolt.
3. Turn the adjust nut to get the proper belt tension, then retighten the bolt and nut.
4. Recheck the deflection of the belt.

A/C Compressor Belt Adjustment

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

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

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



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

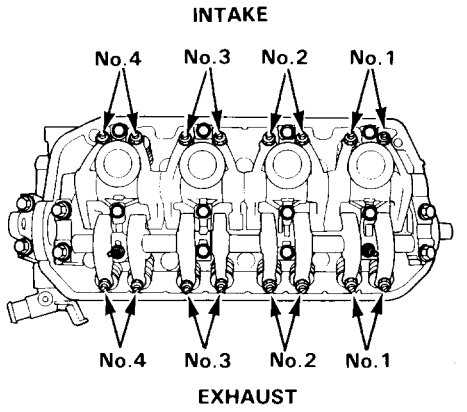
Engine Tune-up

Valve Clearance Adjustment

SOHC Engine:

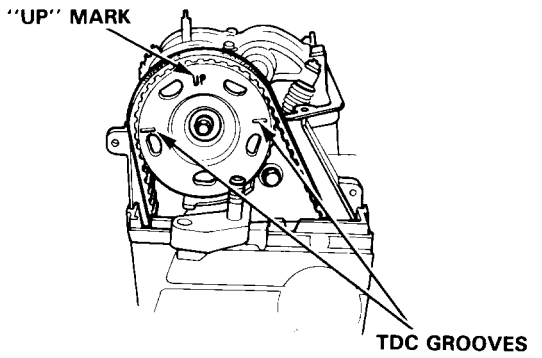
NOTE: Valves should be adjusted cold when the cylinder head temperature is less than 38°C (100°F). Adjustment is the same for intake and exhaust valves.

1. Remove valve cover.

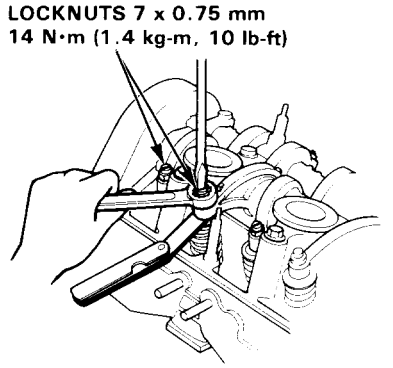


2. Set No. 1 piston at TDC. "UP" mark on the pulley should be at top, and TDC grooves on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

Number 1 piston at TDC

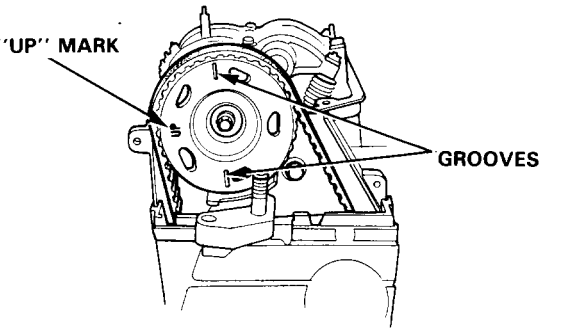


3. Adjust valves on No.1 cylinder.
   Intake: 0.17—0.22 mm (0.007—0.009 in.)
   Exhaust: 0.22—0.27 mm (0.009—0.011 in.)
4. Loosen locknut and turn adjustment screw until feeler gauge slides back and forth with slight amount of drag.



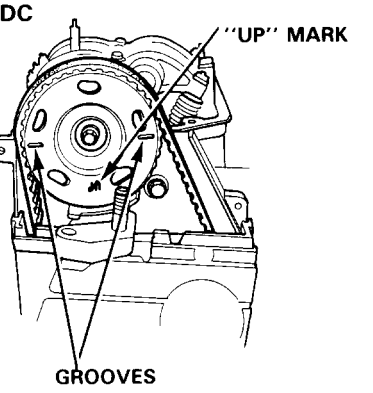
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



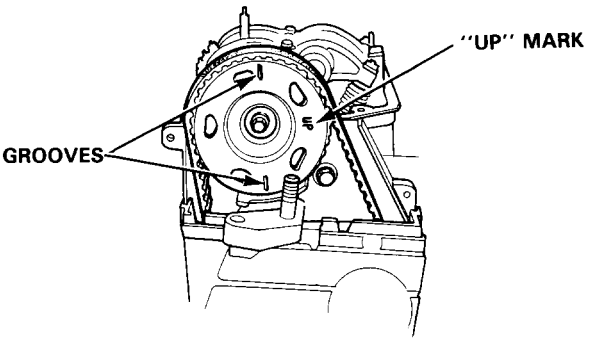
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

Number 4 piston at TDC



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

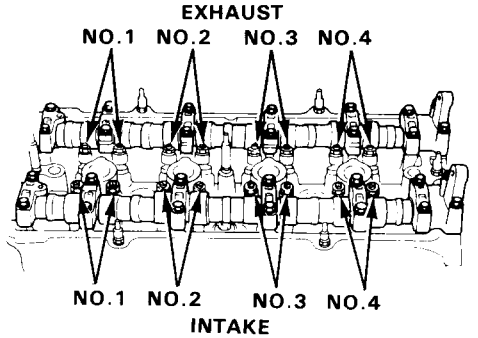
Number 2 piston at TDC



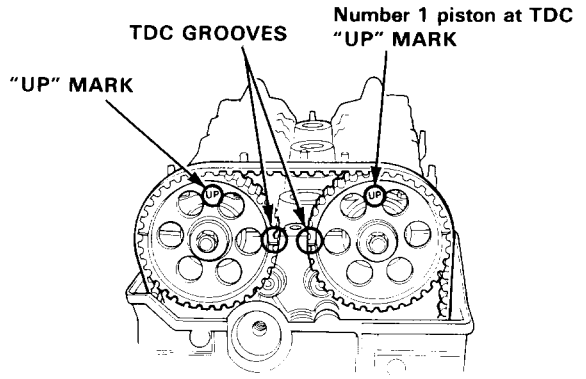
DOHC Engine:

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

1. Remove the valve cover.

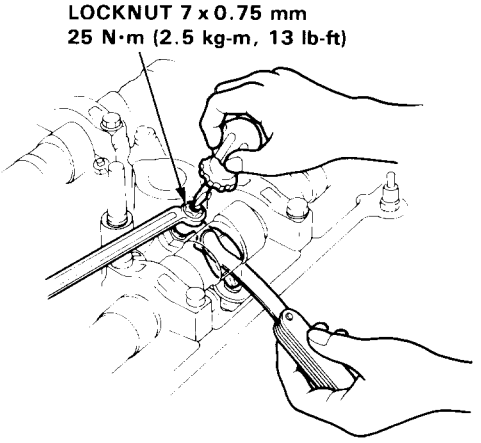


2. Set the No. 1 piston at TDC. "UP" marks in the pulleys should be at top, and the TDC grooves on back side of pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.



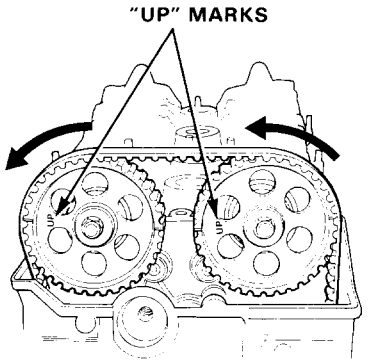
3. Adjust valves on No.1 cylinder.
   Intake: 0.13—0.17 mm (0.005—0.007 in.)
   Exhaust:0.15—0.19 mm (0.006—0.007 in.)

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



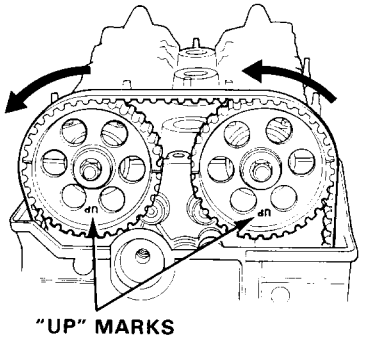
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" marks should be at exhaust side. Distributor rotor should point to No.3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



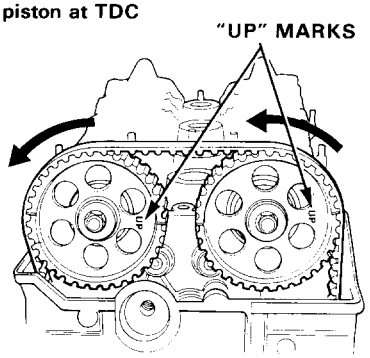
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both "UP" marks should be at bottom and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

Number 4 piston at TDC



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

Number 2 piston at TDC



Idle Speed Inspection/Adjustment

Carbureted Engine:

[KQ]

CO Meter Method

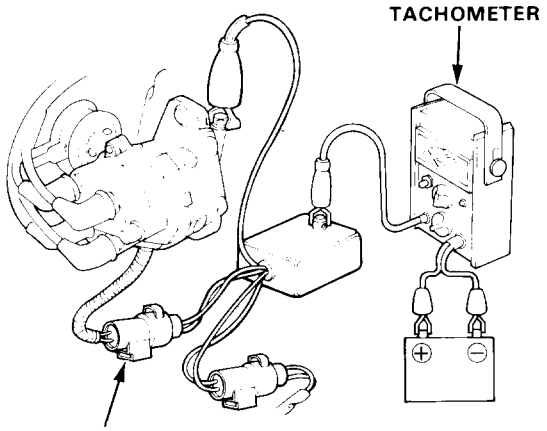
WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

NOTE:

- Check that the carburetors are synchronized properly, self diagnosis indicator, clutch pedal (section 7) before making idle speed and mixture inspections.
- Snap the accelerator pedal several times and check the idle speed with the accelerator pedal fully returned.

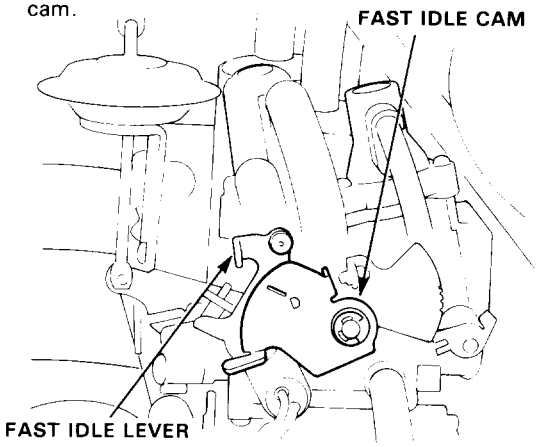
CO Meter Method

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. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
4. Check the fast idle lever.

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



- If not, replace the left carburetor (page 6-67).

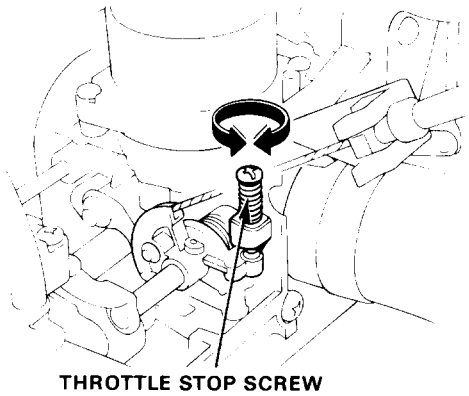
5. Check idle speed with the headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

Idle speed should be:

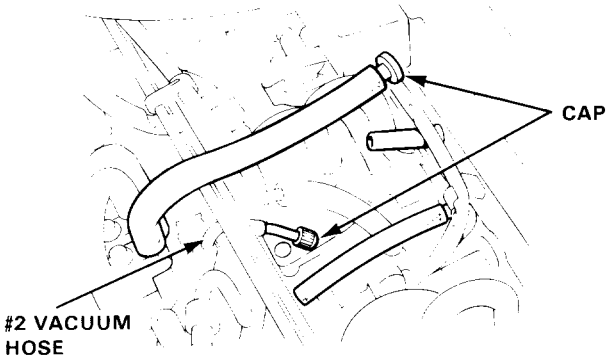
Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

Adjust the idle speed, if necessary, by turning the throttle stop screw.

NOTE: If the idle speed is excessively high, check the throttle control (page 6-88).



6. Disconnect the 2P connector from the EACV and disconnect the hose from vacuum hose manifold, then cap the hose end.
   Disconnect #2 vacuum hose from vacuum hose manifold, then cap the hose end.

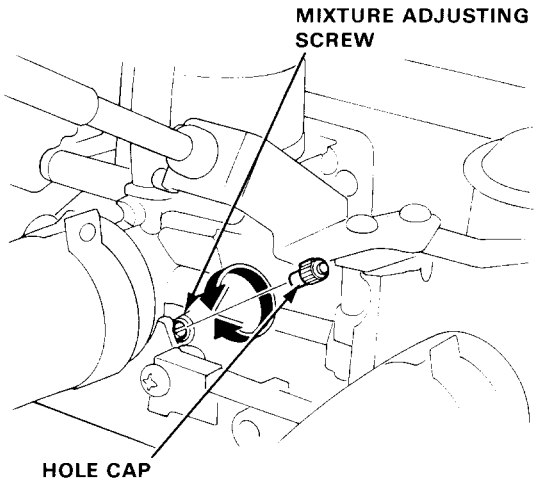


7. Warm up the engine further for more than 2 minutes with the engine speed 3,000 min^{-1} (rpm).

8. Check specification for idle CO with no load.

   Specified CO %: 2.0—3.0 %

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



Turning mixture adjusting screw
clockwise: CO reading decreases
counterclockwise: CO reading increases

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

10. Turn the ignition switch OFF. Reconnect the connector and hose.

11. Remove HAZARD fuse for 10 seconds to reset control unit and recheck idle speed.
    Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

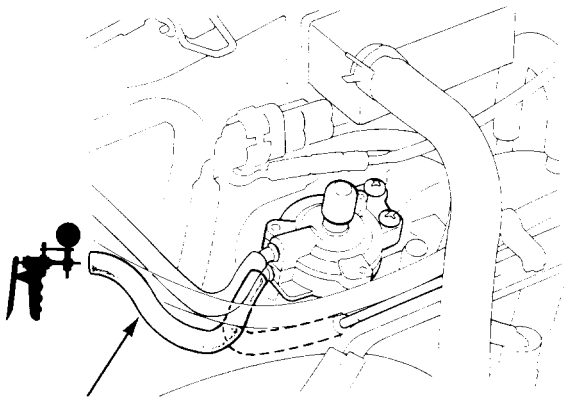
Specified CO %: 0.5 %

- If idle speed is not as specified, adjust by turning throttle stop screw, then repeat step 6.

(cont'd)

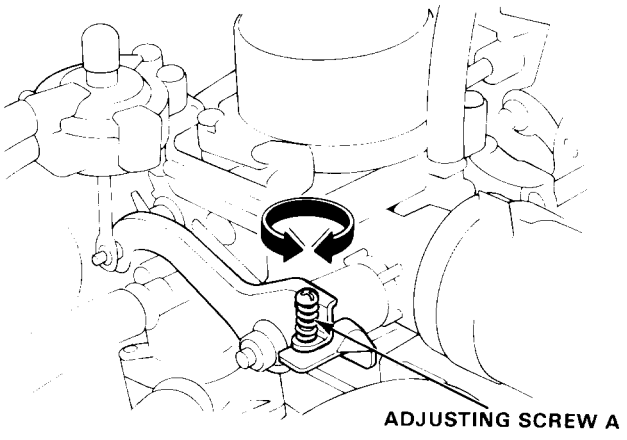
Idle Speed Inspection/Adjustment (cont'd)

12. Reconnect air cleaner intake tube on the air intake duct.
13. Reinstall the mixture adjusting screw hole cap.
14. Discnnect the #20 vacuum hose from the idle boost throttle controller and connect a vacuum pump.



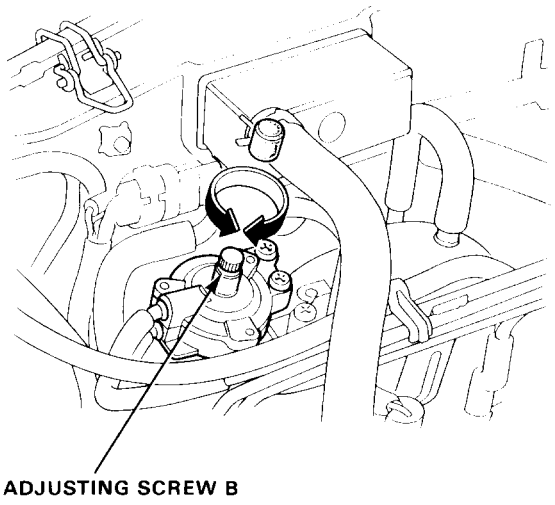
15. Apply vacuum, then check the idle speed with the headlight, heater blower, rear window deffogger and cooling fan on.

Idle speed should be: 700 ±50 min^{-1} (rpm)



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

16. If equipped with air conditioner, check the idle speed with the A/C on.
Idle speed should be: 750±50 min^{-1} (rpm)



Adjusting the idle speed, if necessary, by turning the adjusting screw B.

17. If the idle speed does not reach the specified idle speeds in steps 14 though 16, go to idle control system testing (page 6-30).

[Ex. KQ]

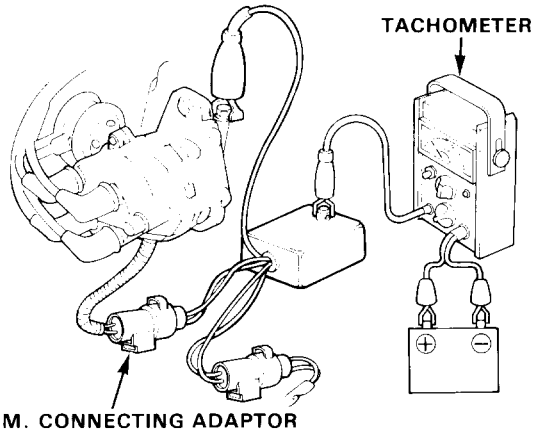
NOTE:

- 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. Check the idle speed with no load.

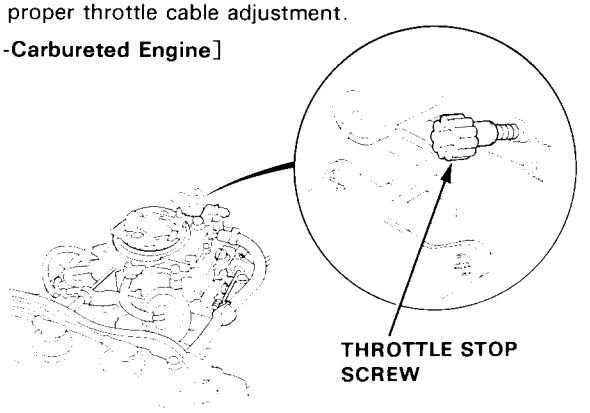
Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm)

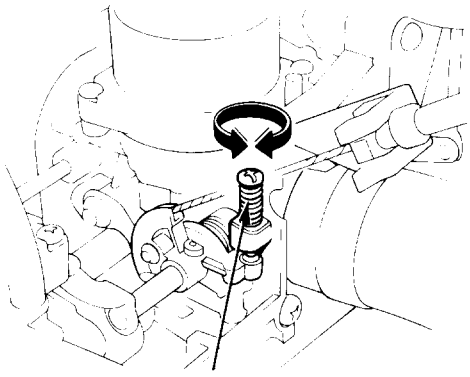
4. If not within specification, adjust by turning throttle stop screw to obtain proper idle speed.

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

[1-Carbureted Engine]



[2-Carbureted Engine]

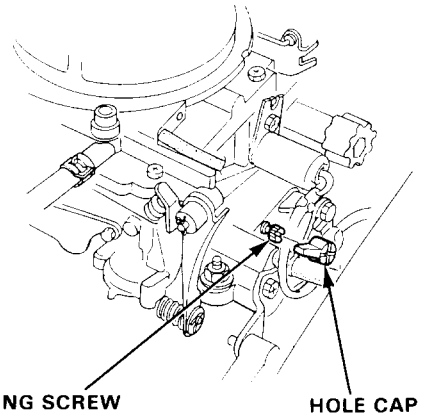


5. Check specification for idle CO with no load.

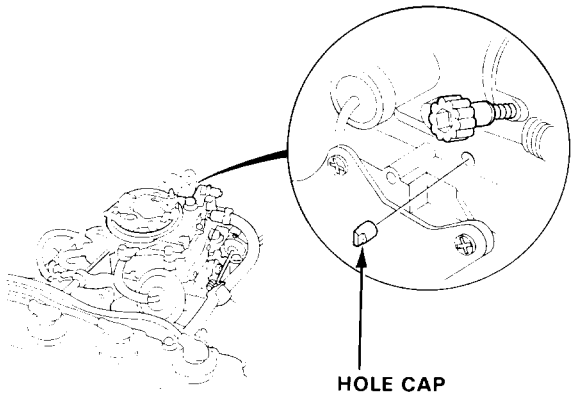
   Spcified CO %: below 0.1 %

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

[1-Carbureted Engine]



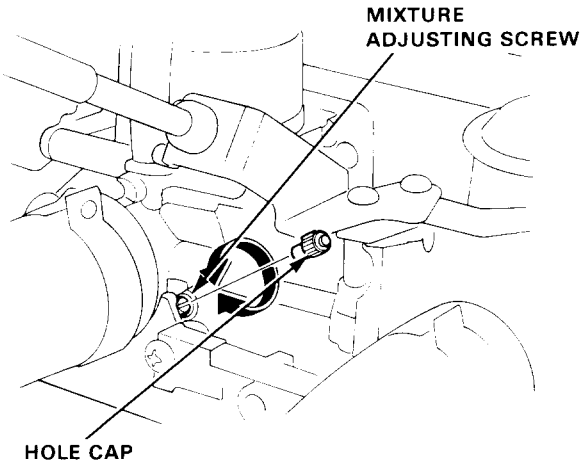
[1-Carbureted Engine, Ex. KP, KT, KU]



(cont'd)

Idle Speed Inspection/Adjustment (cont'd)

[2-Carbureted Engine]



Turning mixture adjusting screw
clockwise: CO reading decreases
counterclockwise: CO reading increases

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

7. Install the hole plug.

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

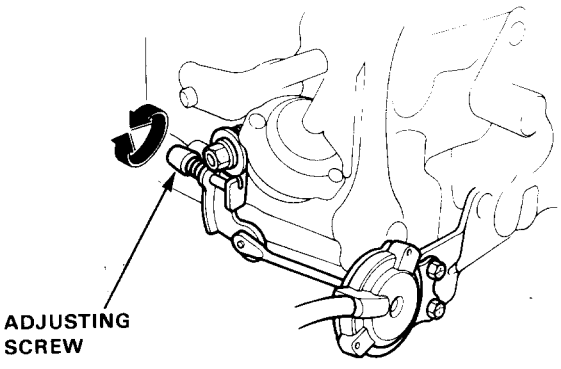
8. If equipped with air conditioner, check the idle speed with the A/C on.

   Idle speed should be:

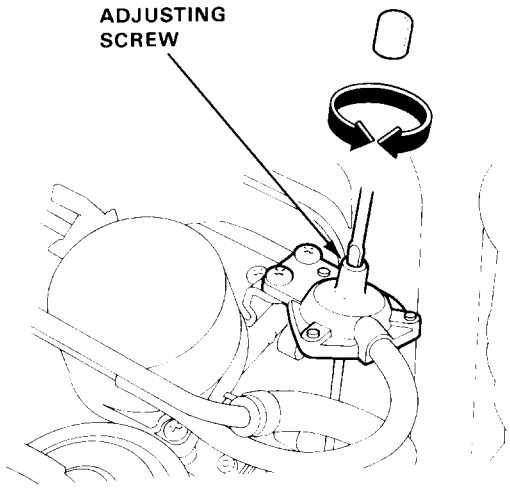
Ex. KG M/T	750±50 min^{-1} (rpm)
KG M/T	950±50 min^{-1} (rpm)

If not:
KG M/T; go to idle control system (page 6-32).
Ex. KG M/T; adjust the idle speed by turning the adjusting screw.

[1-Carbureted Engine]



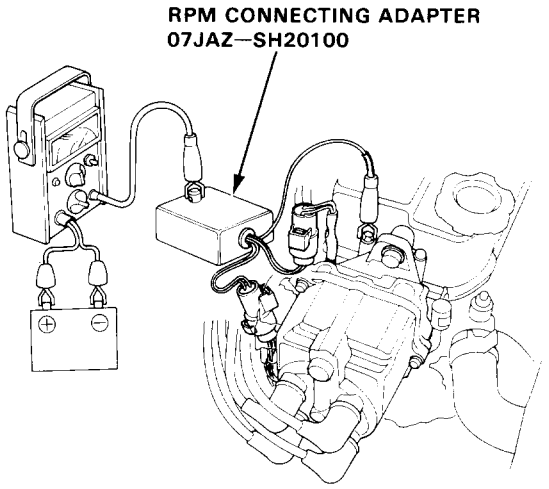
[2-Carbureted Engine]



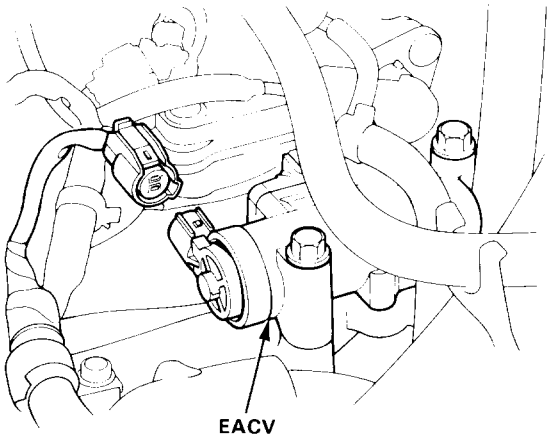
PGM-FI (1.5 ℓ):

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.



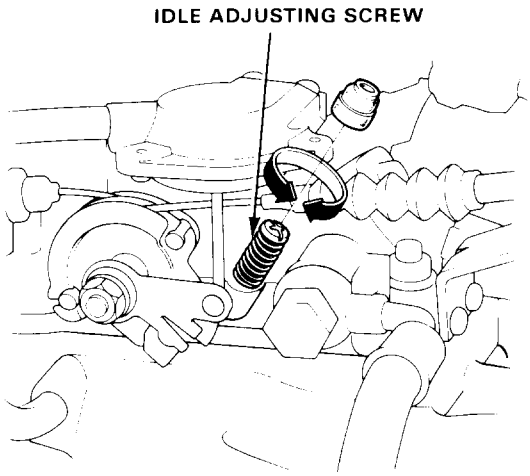
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be:

Manual	625±50 min^{-1} (rpm)
Automatic	625±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 6-236).



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

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

Idle speed should be:

Manual	780±50 min^{-1} (rpm)
Automatic	780±50 min^{-1} (rpm) (in N or P)

7. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
If applicable, with Automatic transmission models, idle the engine for one minute in gear (except N or P) and check the idle speed.
Idle Speed should be: 780±50 min^{-1} (rpm)

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

Idle Speed should be: 780±50 min^{-1} (rpm)

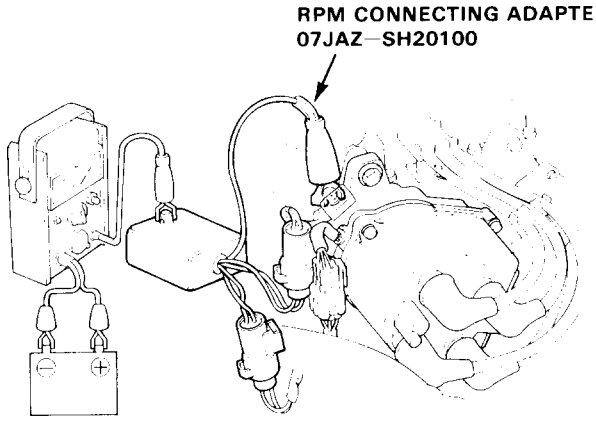
NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-192.

(cont'd)

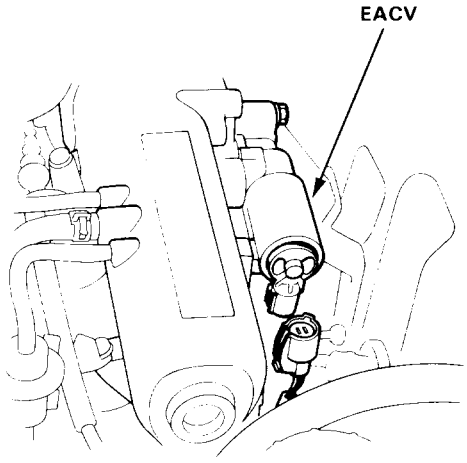
Idle Speed Inspection/Adjustment (cont'd)

PGM-FI (1.6 ℓ):

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



3. Disconnect the 2P connector from the EACV.

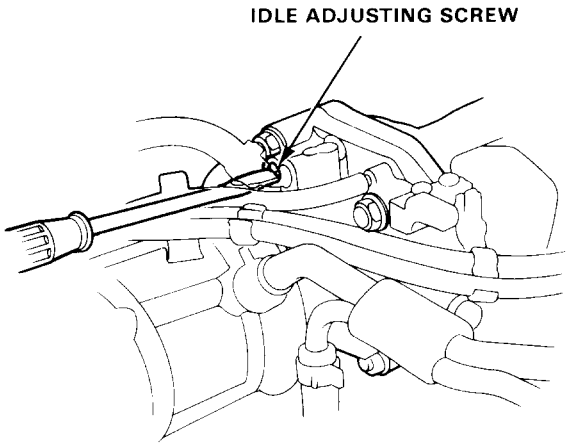


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

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

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

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-237).



5. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.
6. Idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not oparating for one minute, then check the idle speed.

SOHC With CATA	750±50 min⁻¹ (rpm)
SOHC Without CATA	780±50 min⁻¹ (rpm)
DOHC	800±50 min⁻¹ (rpm)

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

SOHC With CATA	750±50 min⁻¹ (rpm)
SOHC Without CATA	780±50 min⁻¹ (rpm)
DOHC	800±50 min⁻¹ (rpm)

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

   Idle Speed should be:

SOHC	780±50 min⁻¹ (rpm)
DOHC	800±50 min⁻¹ (rpm)

NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-192.

Tailpipe Emissions Inspection

Carbureted Engine:

NOTE: It is not possible to use a CO meter to adjust the idle mixture; the effect of the catalytic converter prevents accurate tracking of such small changes in air-fuel ratio.

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

1. Follow steps the propane enrichment method.
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%;
   KQ: 0.5%
   Ex. KQ Others: 1.0%

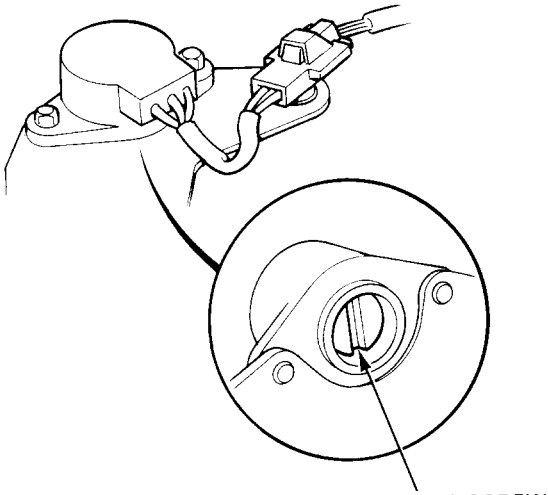
PGM-FI:

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 6-204 or 205).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

   Specified CO%:
   With CATA: 0.1% maximum
   Without CATA: 1.0 ± 1.0%

   - If unable to obtain this reading;
     On With CATA, see ECU troubleshooting (page 6-144 or 146).
     On other models, adjust by turning the adjusting screw of the IMA sensor.

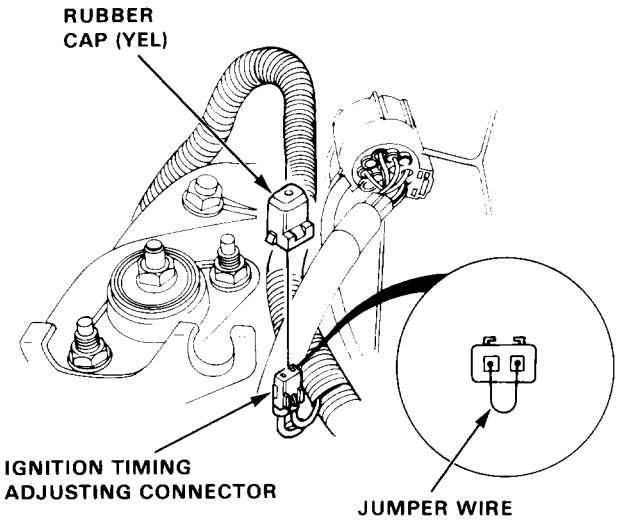


   – If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

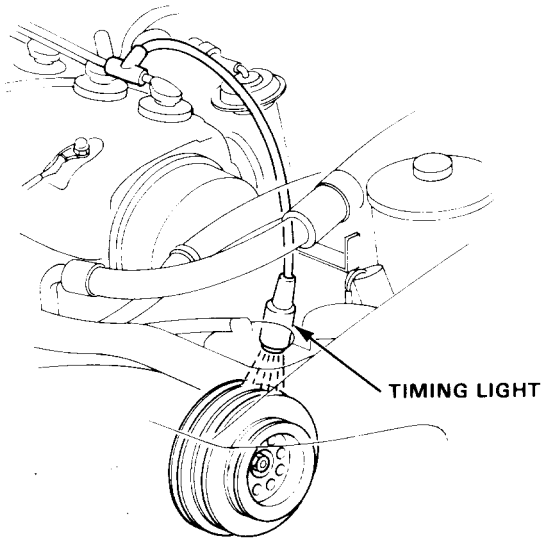
Ignition Timing Inspection and Setting

PGM-FI:

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



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



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

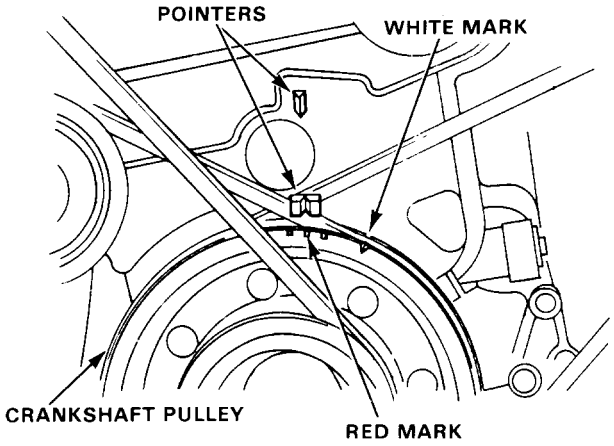
Ignition Timing

1.5 ℓ SOHC:
18°±2°BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral

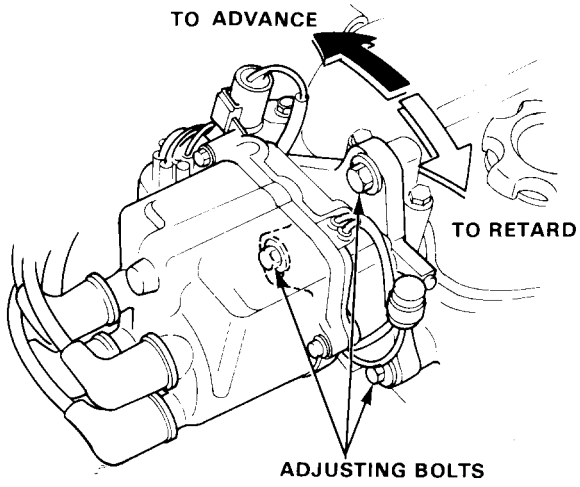
1.6 ℓ SOHC (With CATA):
18°±2°BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral

1.6 ℓ SOHC (Without CATA):
18°±2°BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral

1.6 ℓ DOHC:
16°±2°BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral



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

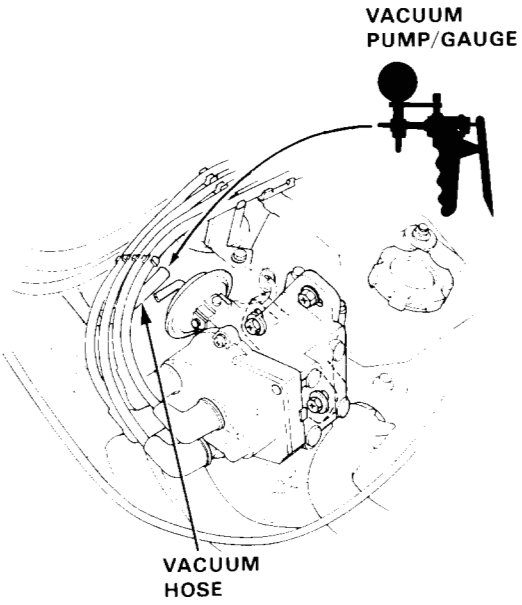


6. Tighten the adjusting bolts and recheck the timing.
7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

1-Carbureted Engine:

〈**Ex. KG (A/T) model**〉

1. Disconnect the vacuum hose from the vacuum advance diaphragm, then connect the vacuum pump/gauge to the vacuum hose.



2. Start the engine and let it idle.

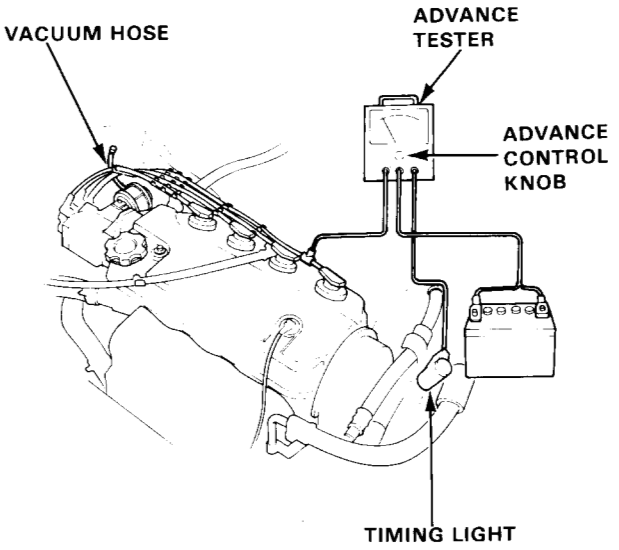
3. Check the vacuum hose for vacuum.
The vacuum hose should have vacuum.

   - If the vacuum hose has no vacuum, check the vacuum hose of proper connection, cracks, blockage or disconnected hose.

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

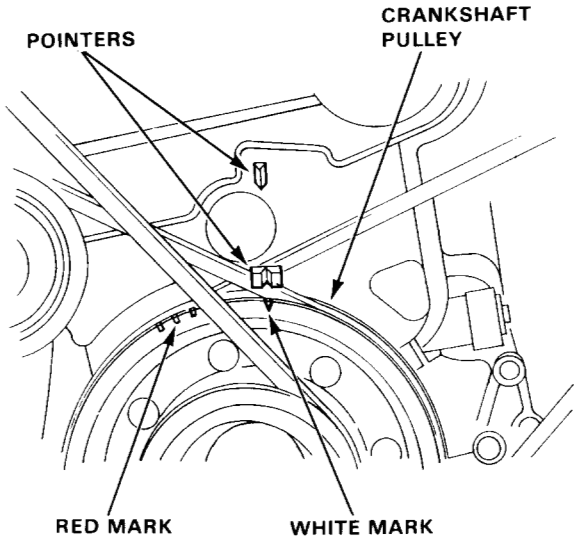
5. Disconnect the vacuum hose from the vacuum advance diaphragm and plug them.

6. Connect a timing light and an advance tester.



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

8. Align the timing mark (White) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



(cont'd)

Ignition Timing Inspection and Setting (cont'd)

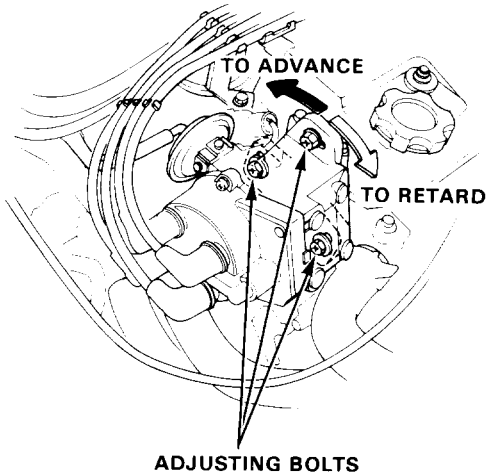
9. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing

1.2ℓ	KT	0°TDC
	Others	4° BTDC
1.3ℓ	All models	2° BTDC
1.5ℓ	All models	2° BTDC

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

10. 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.



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

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

Ignition Timing

1.2ℓ	KT	16° ± 2° BTDC (Red)
	Others	20° ± 2° BTDC (Red)
1.3ℓ	KG (M/T only)	12° ± 2° BTDC (Red)
	Others	18° ± 2° BTDC (Red)
1.5ℓ	KY (A/T only)	12° ± 2° BTDC (Red)
	Others	18° ± 2° BTDC (Red)

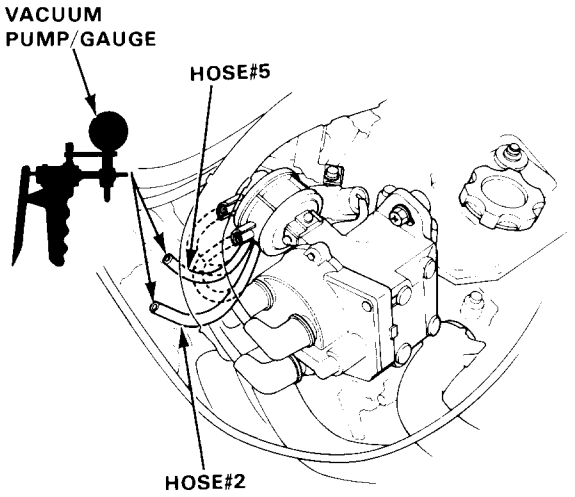
- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} (rpm) in gear]**

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

2-Carbureted Engine:

〈Ex. KG model〉

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 [KQ: 70°C (158°F), others: 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.

   KQ model (1.5 ℓ , PGM-CARB):
   - If the #5 hose has no vacuum, check the #5 and #12 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5 and #12 hoses, and the check valve have no problem, check the vacuum control solenoid valve and recheck the #5 hose for vacuum.

   Others model (1.4 ℓ):
   - If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5 and #10 hoses, 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.

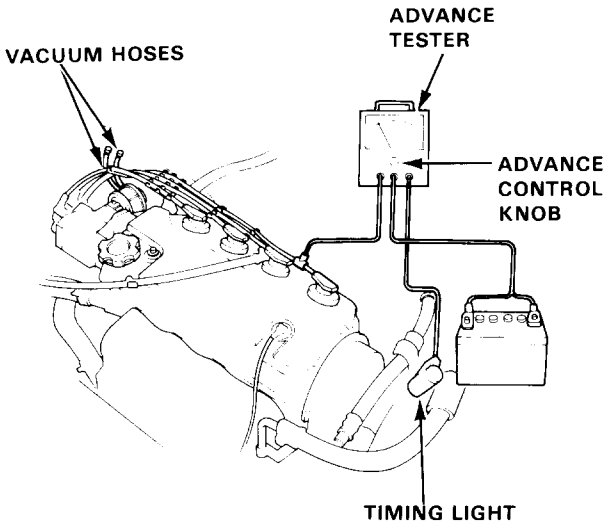
6. Check the #5 hose for vacuum.
   The #5 hose should have no vacuum.

   KQ model (1.5 ℓ , PGM-CARB)
   - If the #5 hose has vacuum, check the vacuum control solenoid valve and the recheck the #5 hose for vacuum.

   Others model (1.4 ℓ):
   - 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 and an advance tester.

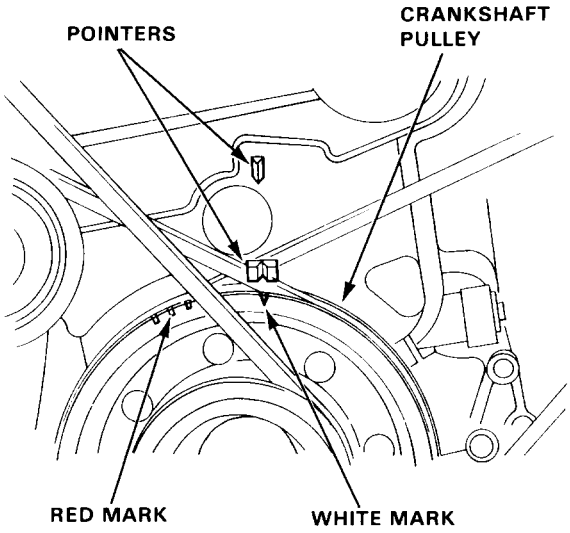


9. While the engine idles, point the light toward the pointer on the timing belt cover.

(cont'd)

Ignition Timing Inspection and Setting (cont'd)

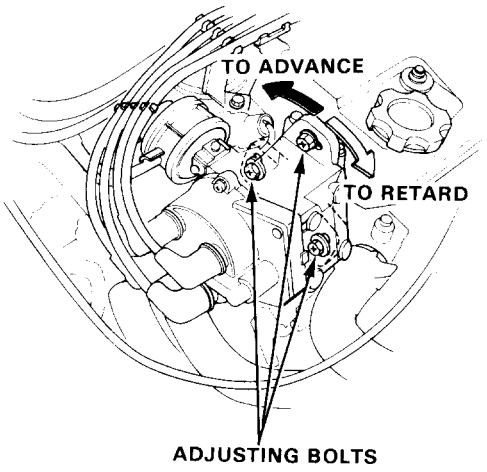
10. Align the timing mark (white) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



11. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing
All models: 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
KQ models (1.5 ℓ, PGM-CARB):
20° ± 2° BTDC (Red)
Others models (1.4 ℓ):
18° ± 2° BTDC (Red)
- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

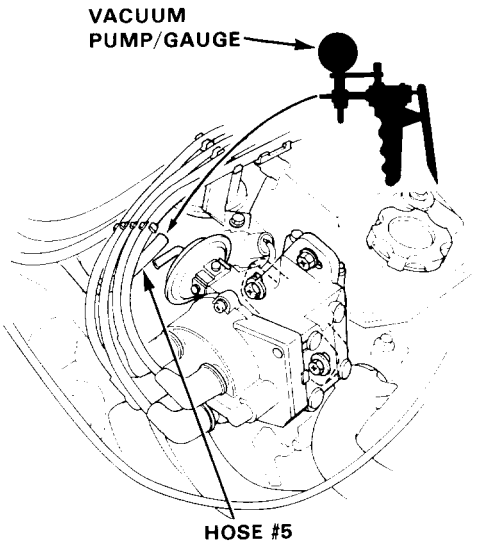
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

Carbureted Engine-KG model:

〈Ex. 1-Carbureted Engine (M/T)〉

NOTE: Skip the step 7 through step 13 for automatic transmission.

1. Disconnect the vacuum hose from the vacuum advance diaphragm, then connect the vacuum pump/gauge to the vacuum hose.



2. Start the engine and let it idle.

3. When the engine is cool [coolant temperature is below 45°C (113°F)], check the #5 hose for vacuum.
   The #5 hose should have vacuum.

   Automatic Transmission:
   - If the #5 hose has no vacuum, check the #5, #10 and #17 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5, #10 and #17 hoses, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

   Manual Transmission (2-Carbureted Engine):
   - If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5 and #10 hoses, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

4. Connect the vacuum hose 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.

   Automatic Transmission:
   The #5 hose should have no vacuum.

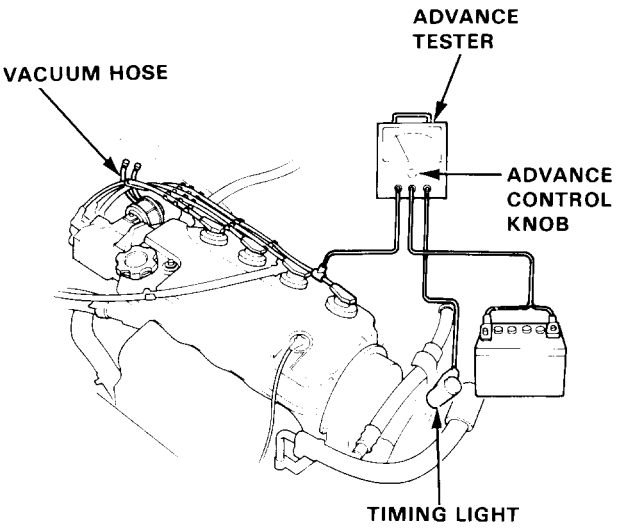
   - If the #5 hose has vacuum, check the vacuum control solenoid valve (See section 6).
     Replace the thermovalve and recheck the #5 hose for vacuum if the vacuum control solenoid valve is OK.

   Manual Transmission (2-Carbureted Engine):
   The #5 hose should have vacuum.

   - If the #5 hose has no vacuum, replace the thermovalve and recheck the #5 hose for vacuum.

7. Disconnect the #5 hose from the vacuum advance diaphgram and plug them.

8. Connect a timing light and an advance tester.

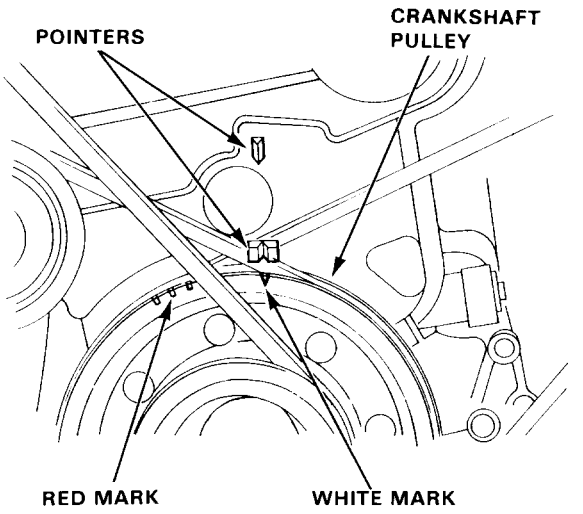


(cont'd)

Ignition Timing Inspection and Setting (cont'd)

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

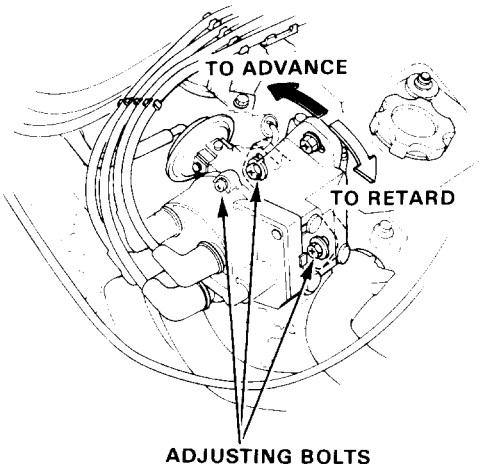
10. Align the timing mark (white) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



11. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing
Manual Transmission (2-Carbureted Engine):
2° BTDC at 750 ± 50 min^{-1} (rpm) in neutral

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
Automatic Transmission:
2° ± 2°BTDC (Red) at 700 ± 50 min^{-1} (rpm) in gear

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

Manual Transmission (2-Carbureted Engine):
12° ± 2° BTDC (Red) at 750 ± 50 min^{-1} (rpm) in neutral

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

Timing Belt

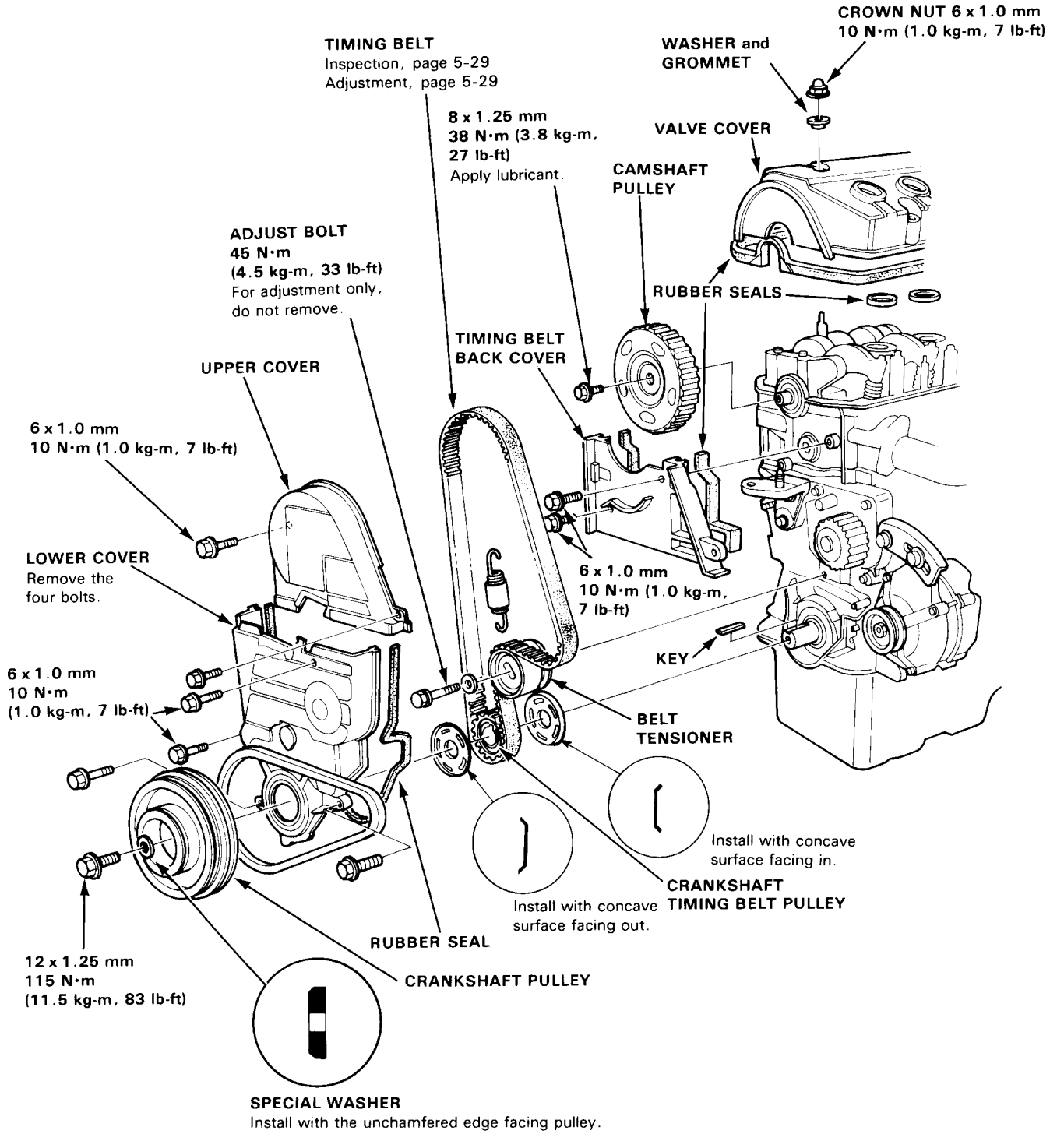
Timing Belt

Timing Belt

Illustrated Index

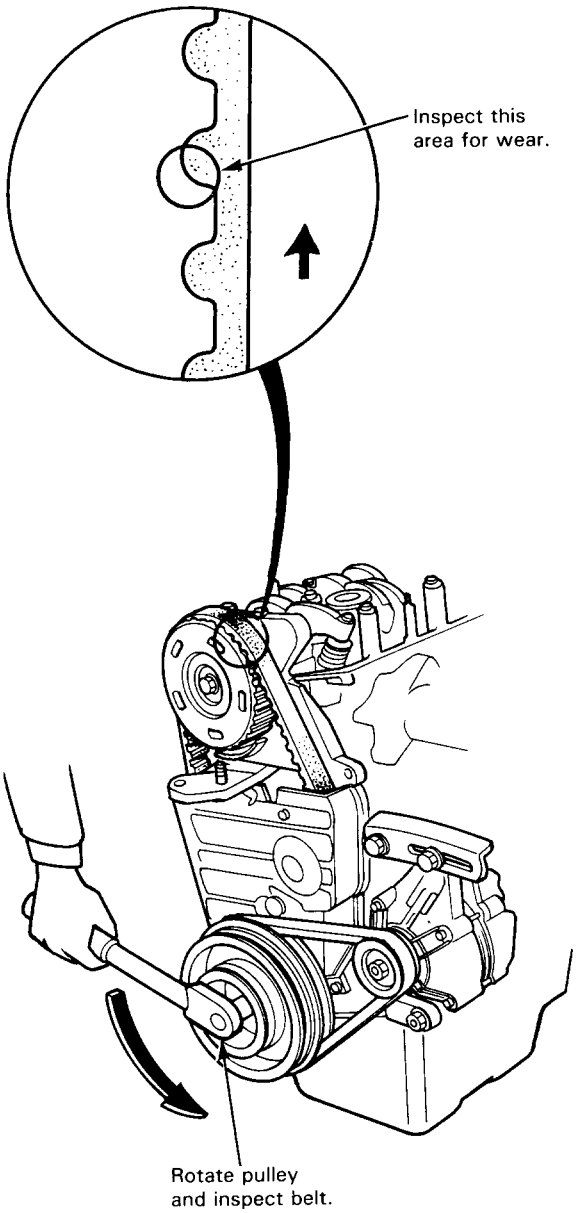
NOTE:

- Refer to page 5-32 for positioning crank and pulley before installing belt.
- Refer to page 5-6, for alternator belt adjustment.
- Refer to page 5-7, for P/S pump belt adjustment.
- Refer to page 5-7, for A/C compressor belt adjustment.
- Mark direction of rotation before removing.



Inspection

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



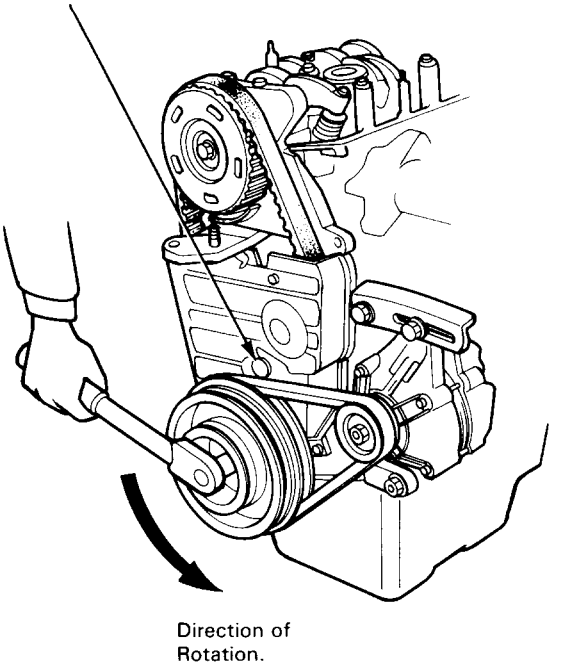
Tension Adjustment

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

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

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

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



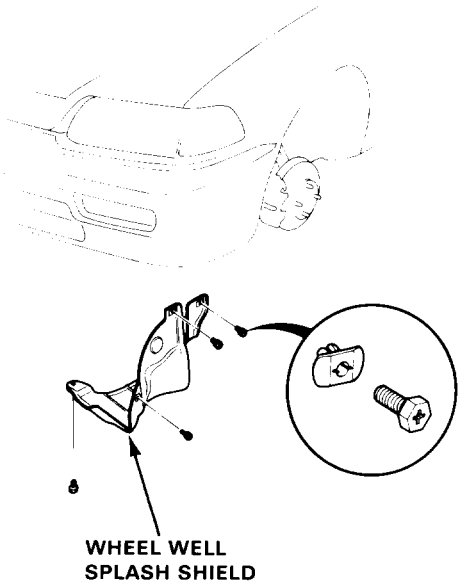
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

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

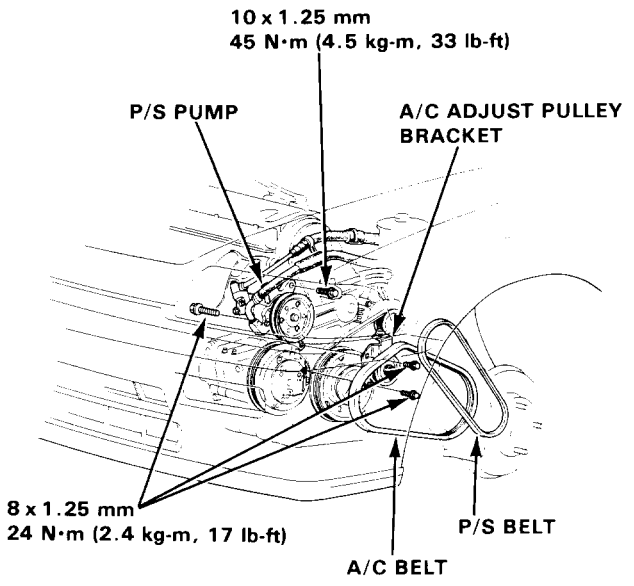
Timing Belt

Replacement

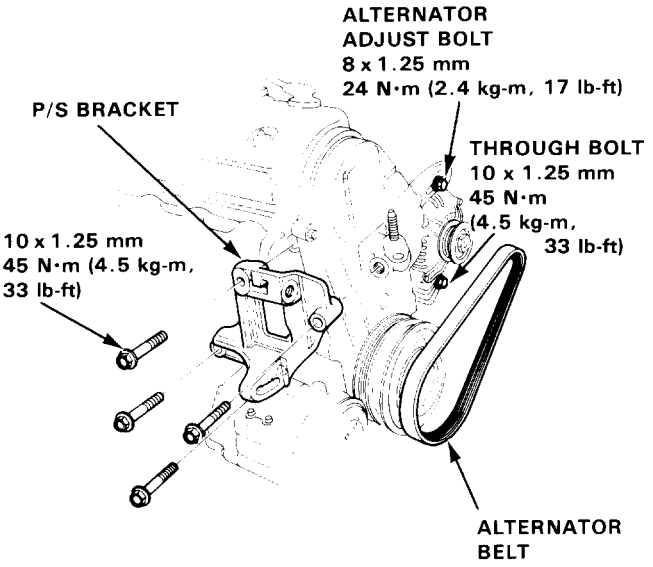
1. Remove the wheel well splash shield.



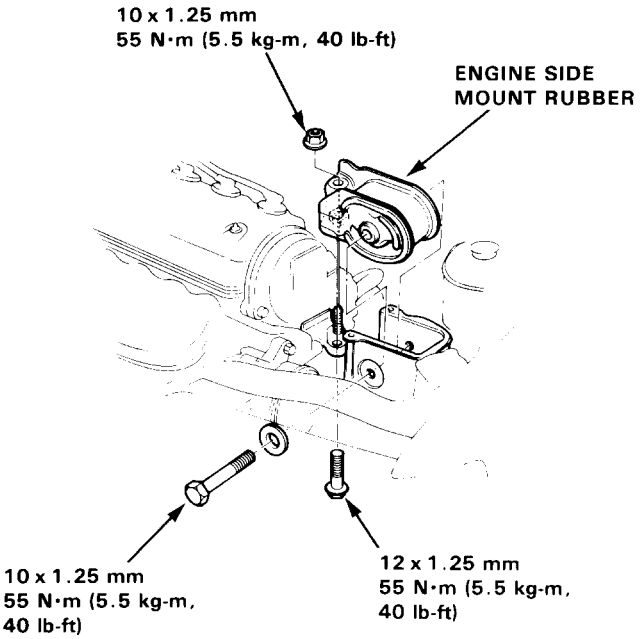
2. Remve the power steering (P/S) (with P/S).
3. Remove the A/C compressor adjust pulley with bracket and the belt (with A/C).



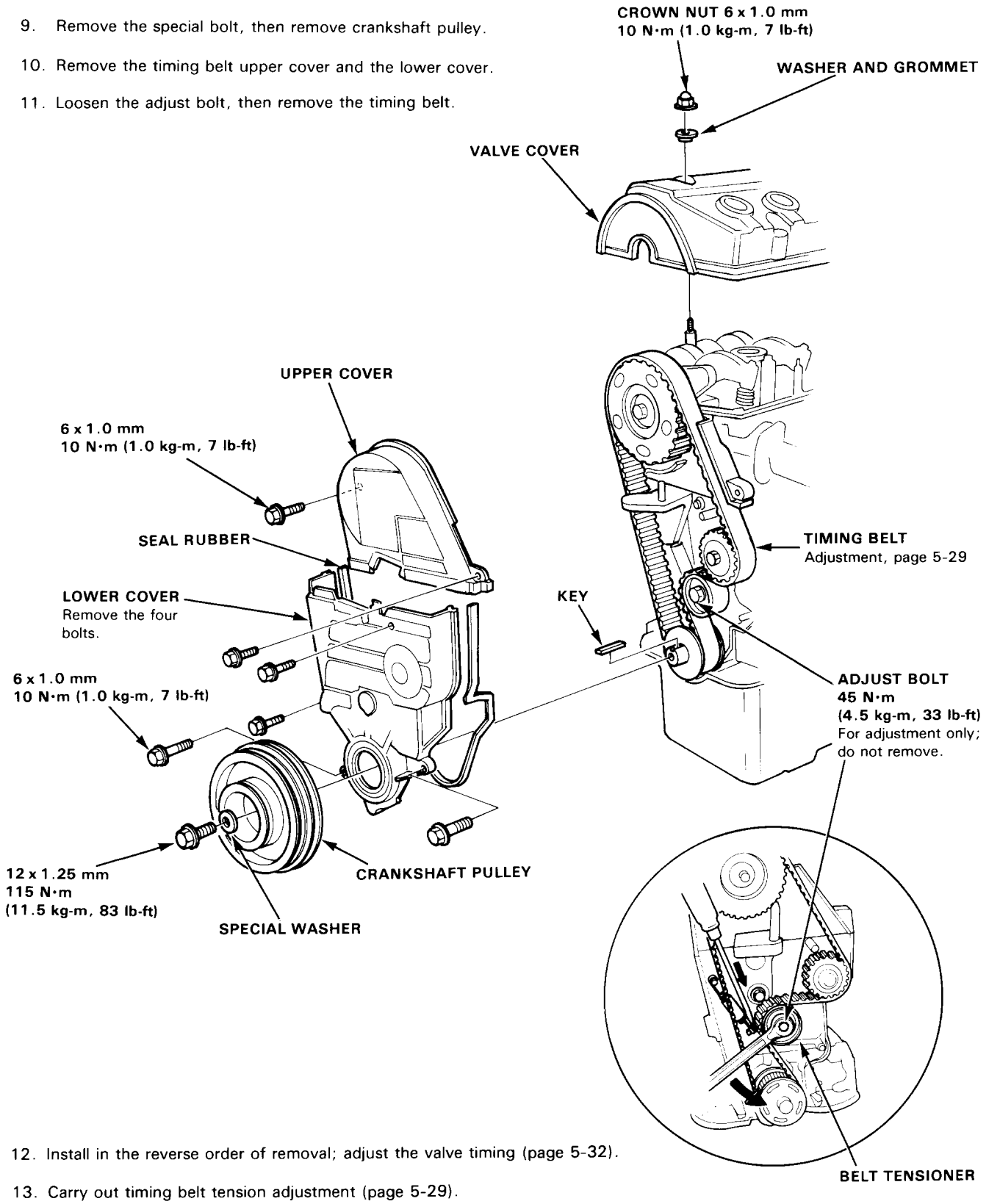
4. Remove the P/S bracket.
5. Loosen the alternator adjust bolt and through bolt, then remove the belt.



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



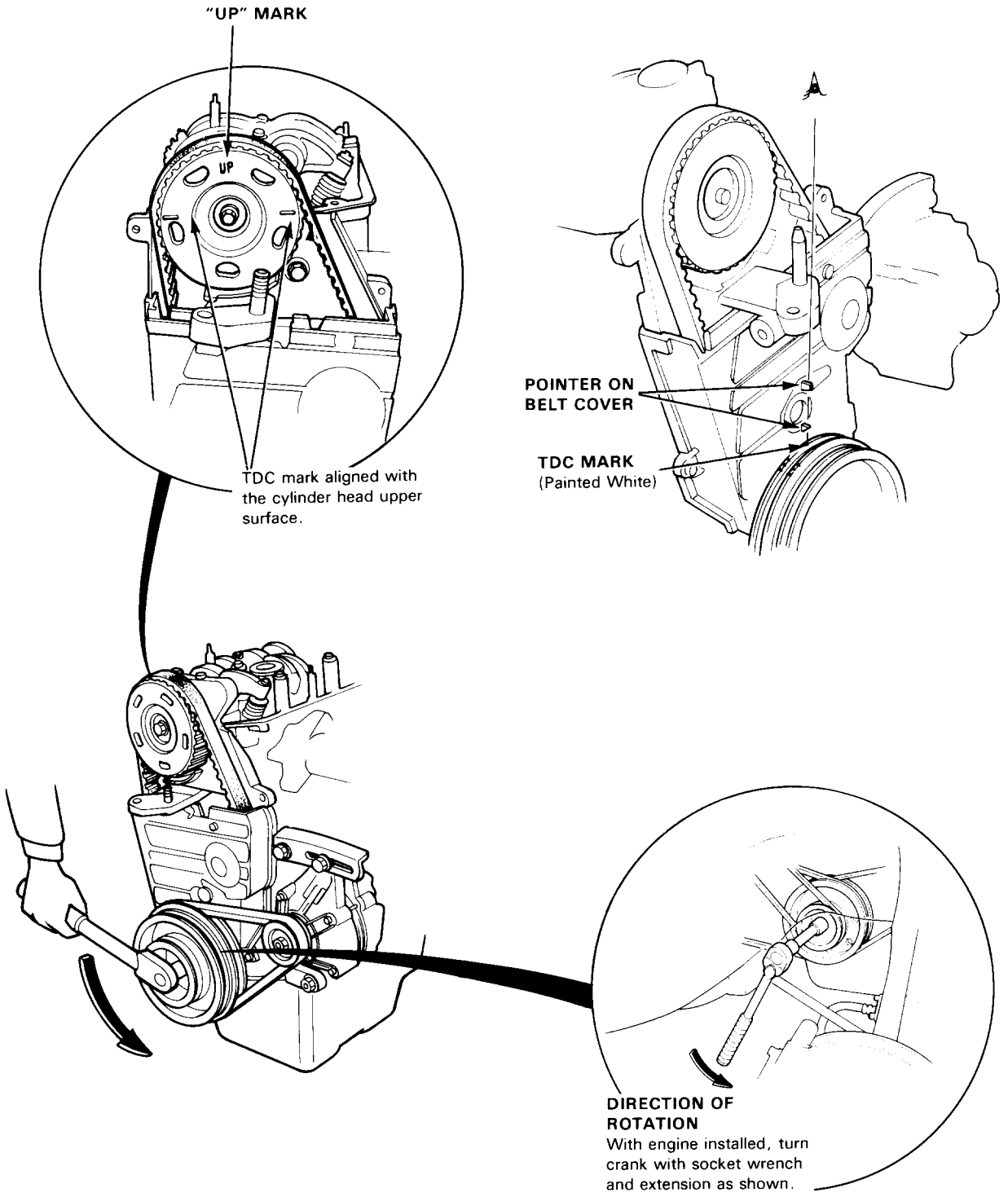
8. Remove the valve cover.
9. Remove the special bolt, then remove crankshaft pulley.
10. Remove the timing belt upper cover and the lower cover.
11. Loosen the adjust bolt, then remove the timing belt.



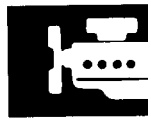
12. Install in the reverse order of removal; adjust the valve timing (page 5-32).
13. Carry out timing belt tension adjustment (page 5-29).

Positioning Crankshaft Before Installing Timing Belt

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



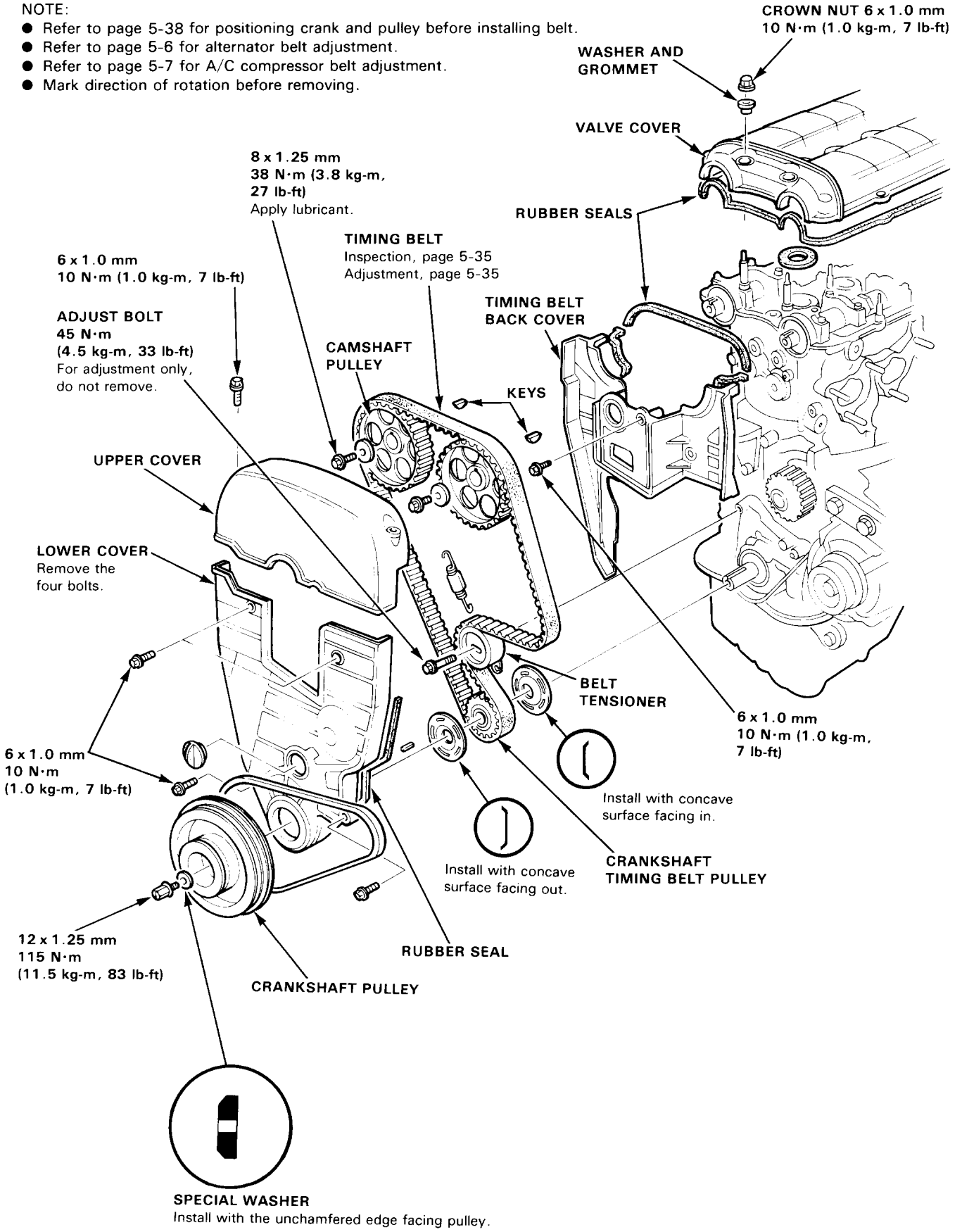
Timing Belt



Timing Belt

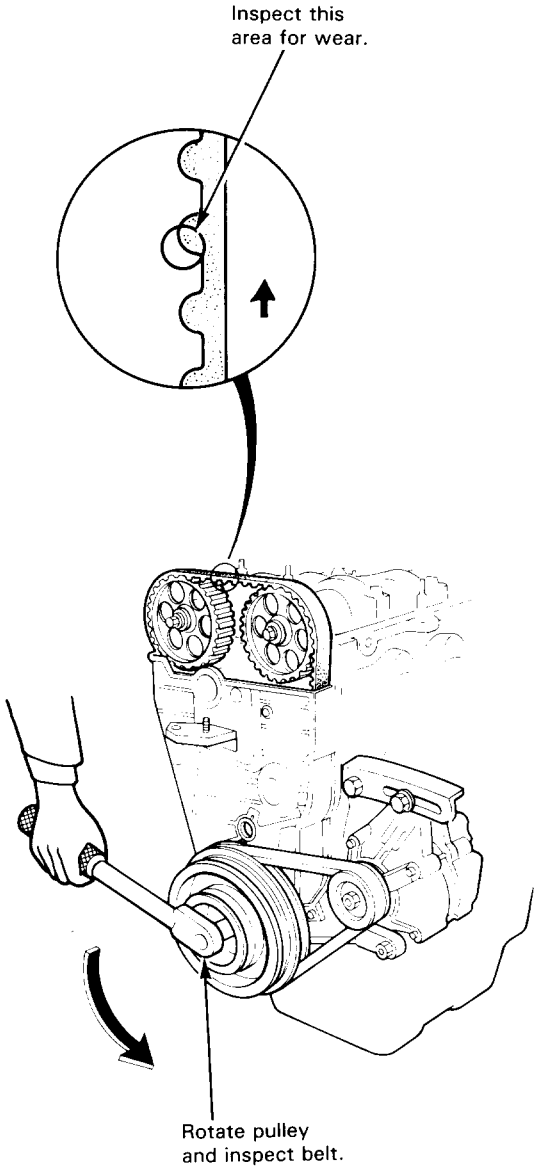
Illustrated Index

NOTE:
- Refer to page 5-38 for positioning crank and pulley before installing belt.
- Refer to page 5-6 for alternator belt adjustment.
- Refer to page 5-7 for A/C compressor belt adjustment.
- Mark direction of rotation before removing.



Inspection

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

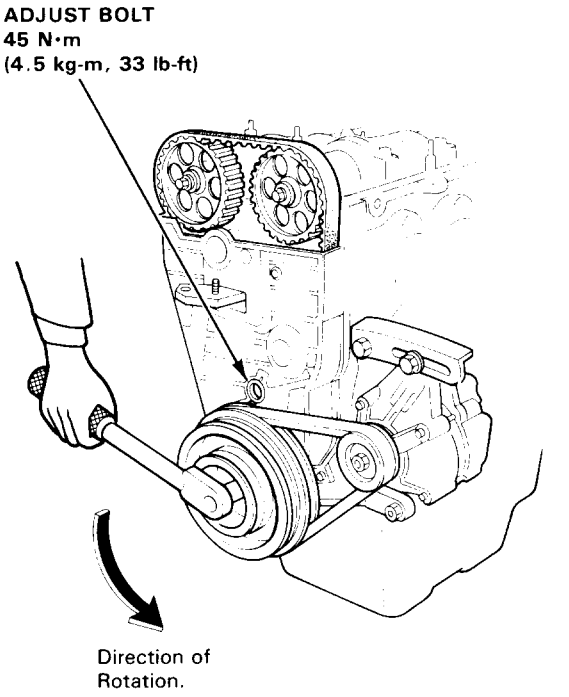


Tension Adjustment

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

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

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



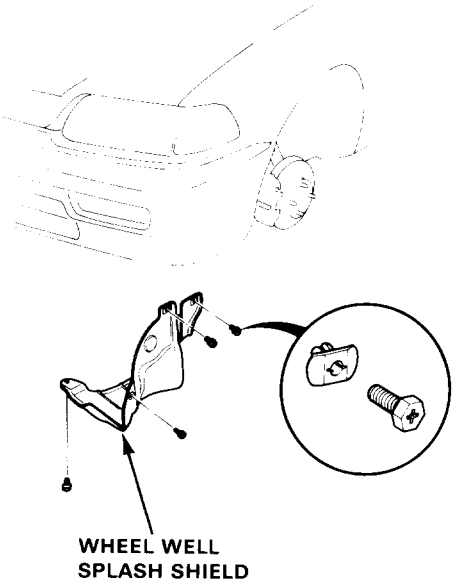
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

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

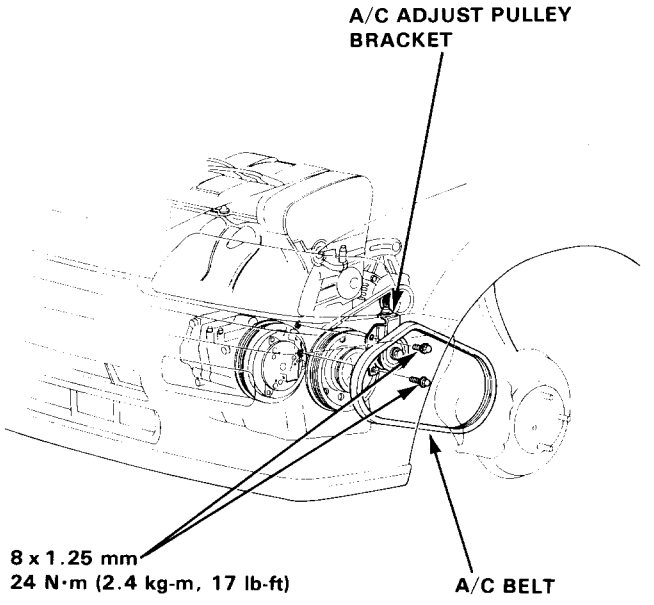
Timing Belt

Replacement

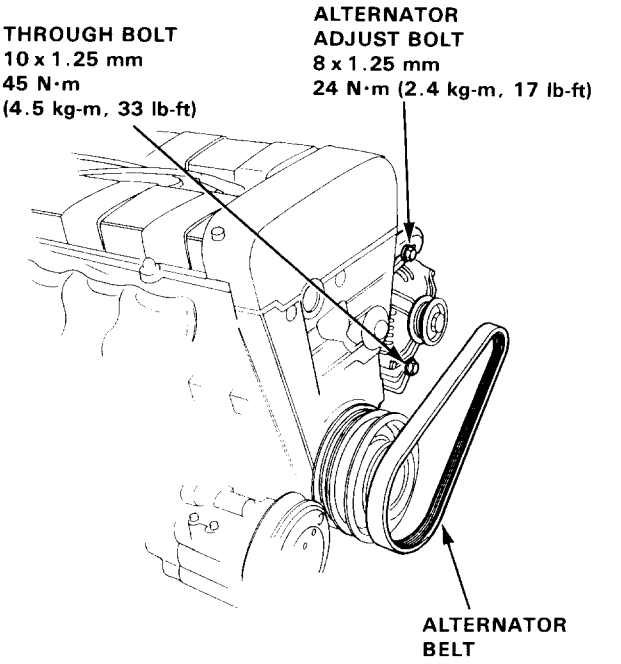
1. Remove the wheel well splash shield.



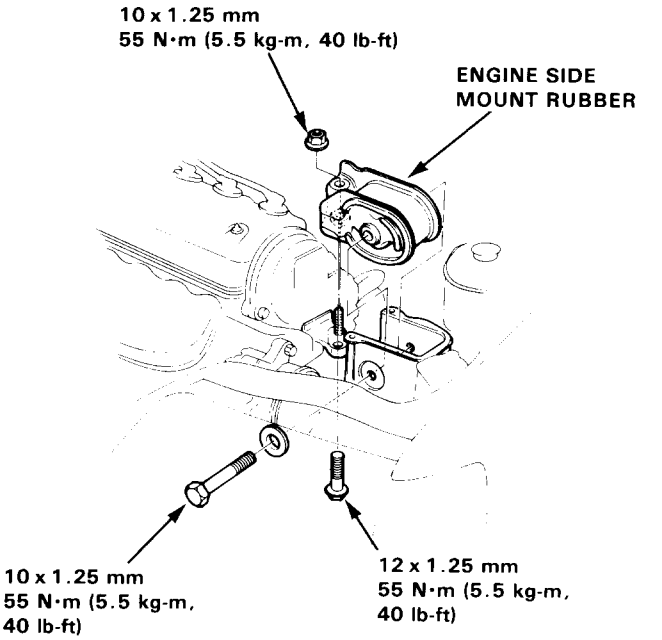
2. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.



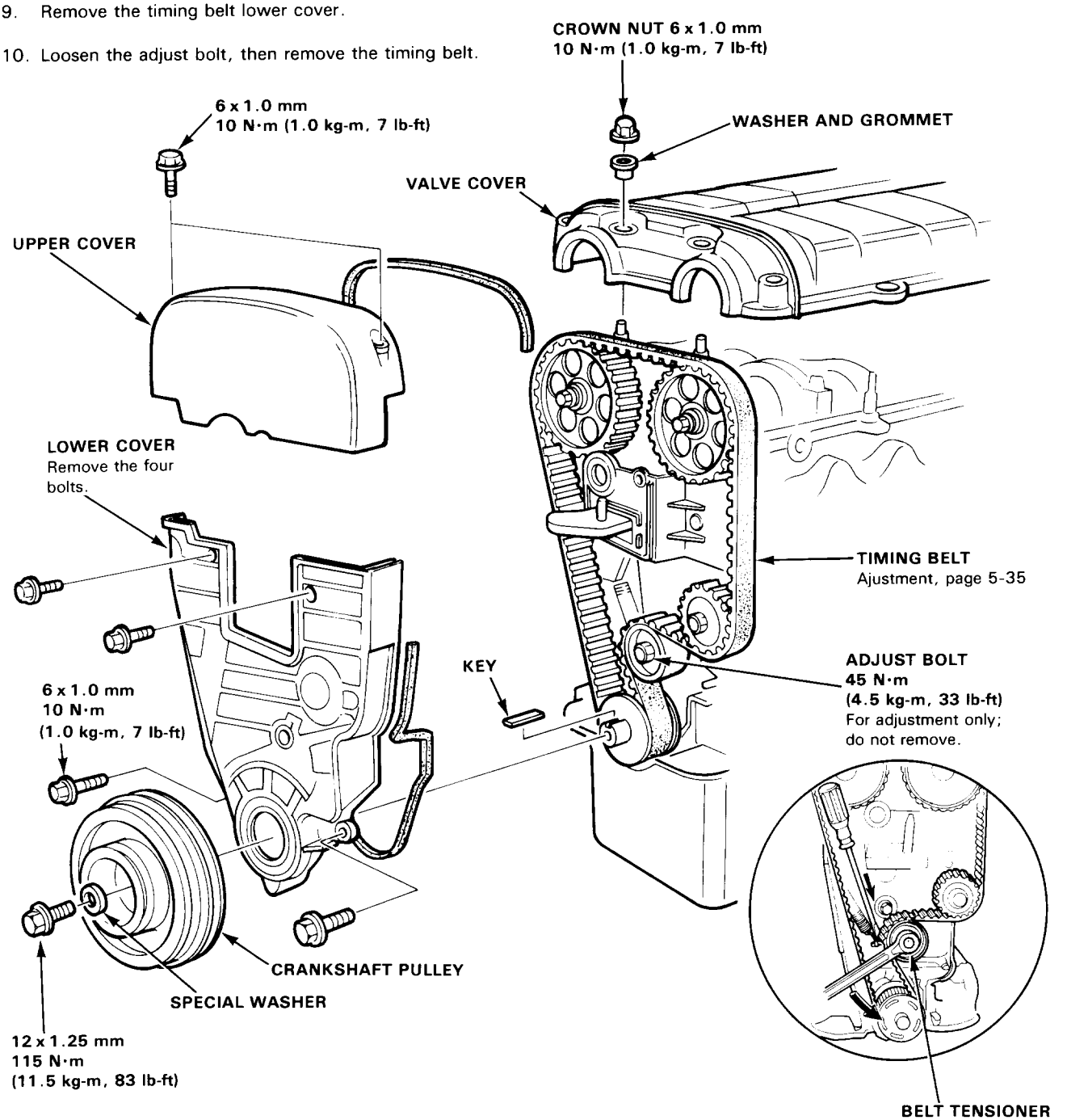
3. Loosen the alternator adjust bolt and through bolt, then remove the belt.



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



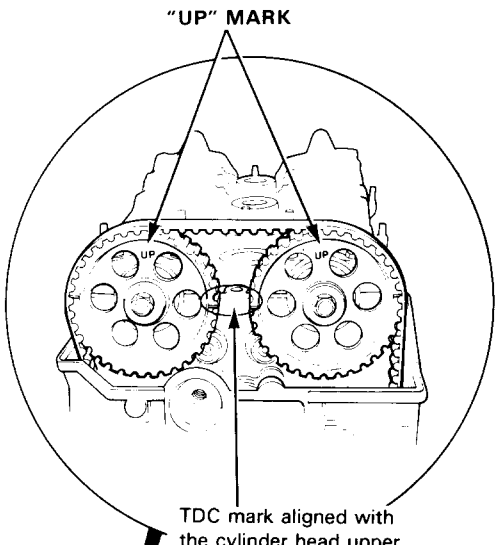
6. Remove the timing belt upper cover.
7. Remove the valve cover.
8. Remove the special bolt, then remove crankshaft pulley.
9. Remove the timing belt lower cover.
10. Loosen the adjust bolt, then remove the timing belt.

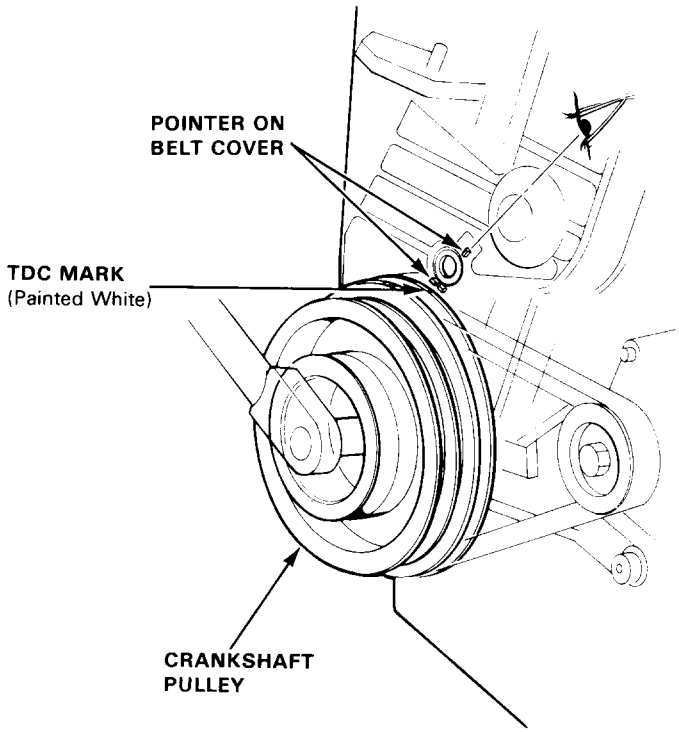


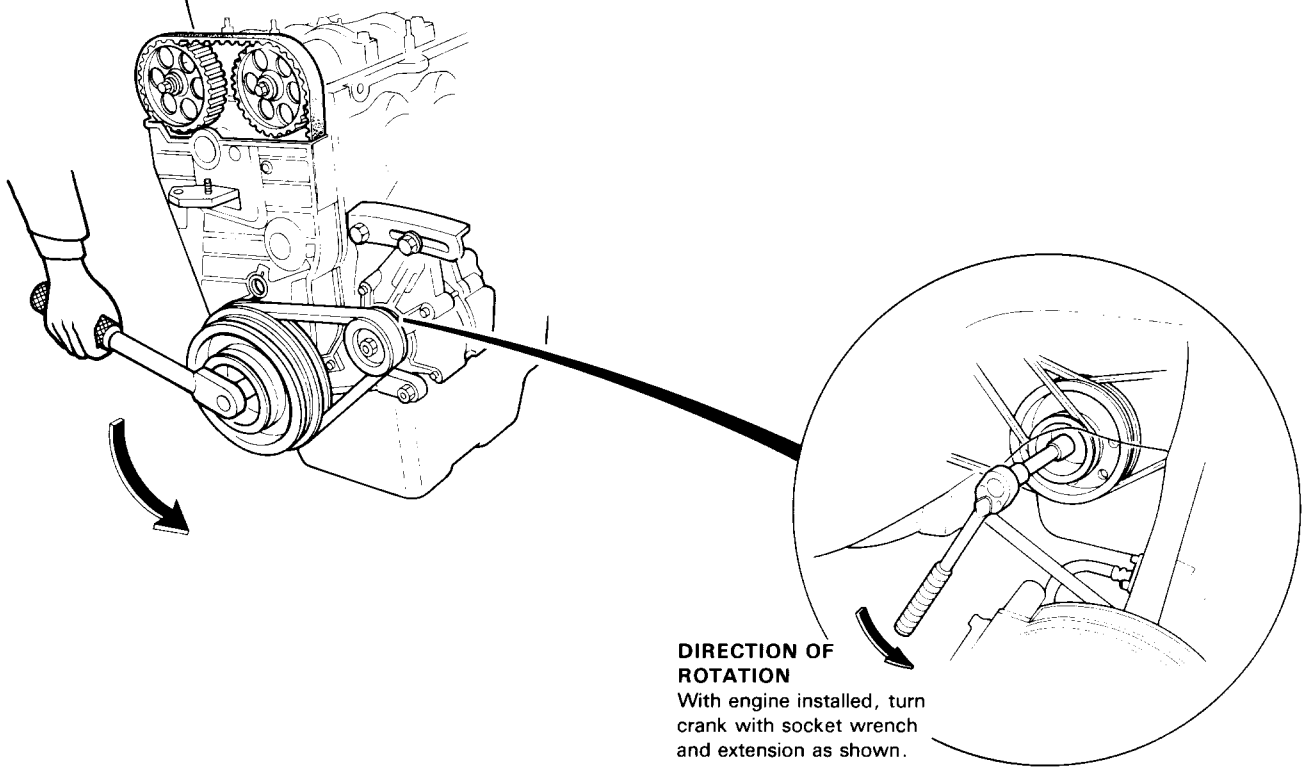
11. Install in the reverse order of removal; adjust the valve timing (page 5-38).
12. Carry out timing belt tension adjustment (page 5-35).

Positioning Crankshaft Before Installing Timing Belt

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







Cylinder Head Removal/Installation

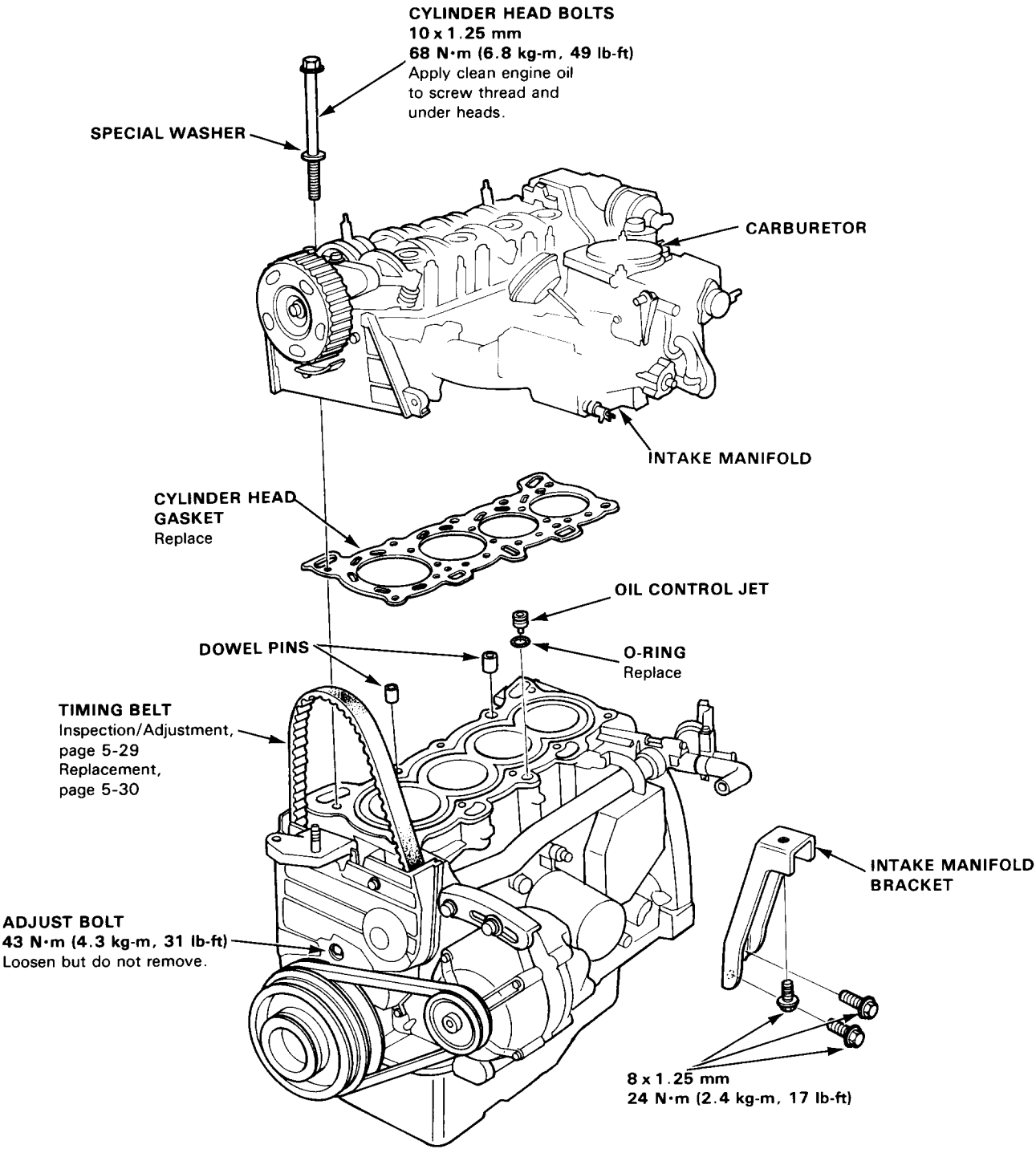
Cylinder Head Removal/Installation

Cylinder Head

Removal (engine removal not required)

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

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



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

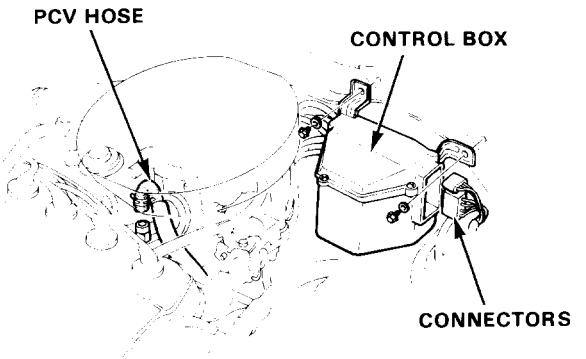
NOTE:
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

1. Disconnect the negative terminal from the battery.
2. Drain the cooling system (See page 5-78).
3. Remove the brake booster vacuum hose from the brake muster power booster.
4. Remove the engine secondary ground cable from the valve cover.
5. Remove the air cleaner cover and air cleaner (carbureted engine).
6. Remove the air intake hose and the air chamber (1.5 ℓ PGM-FI engine).
7. Remove the air intake hose from the throttle body (1.6 ℓ PGM-FI engine).
8. Relieve fuel pressure (See Section 6).

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

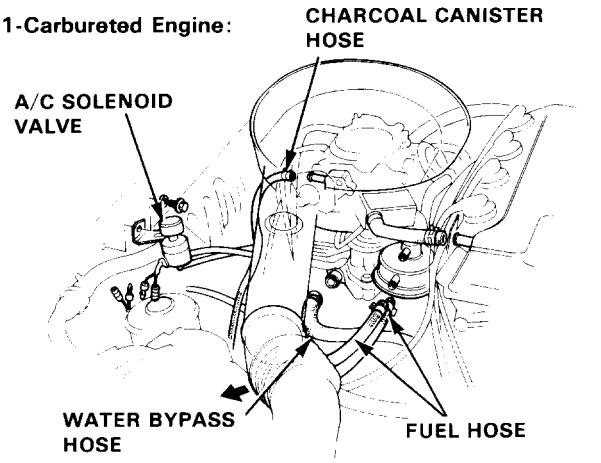
9. Disconnect the fuel hose and fuel return hose.
10. Remove the air intake hose and resonator hose.
11. Disconnect the throttle cable at the throttle body (See Section 5).
12. Disconnect the throttle control cable at the throttle body (A/T only).
13. Disconnect the charcoal canister hose at the throttle valve.
14. Disconnect the vacuum hoses and the water bypass hoses from intake manifold and the throttle body.

1-Carbureted Engine:

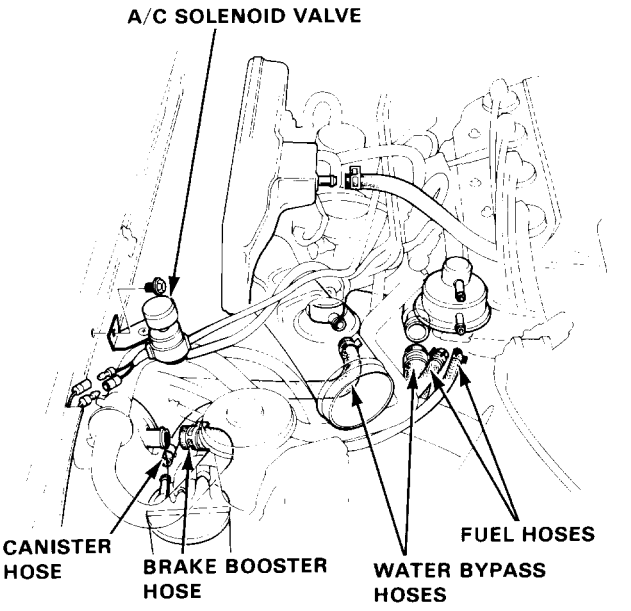


15. Remove the PCV hose, charcoal canister hose and vacuum hose from intake manifold, and remove the vacuum hose from the brake muster power booster.

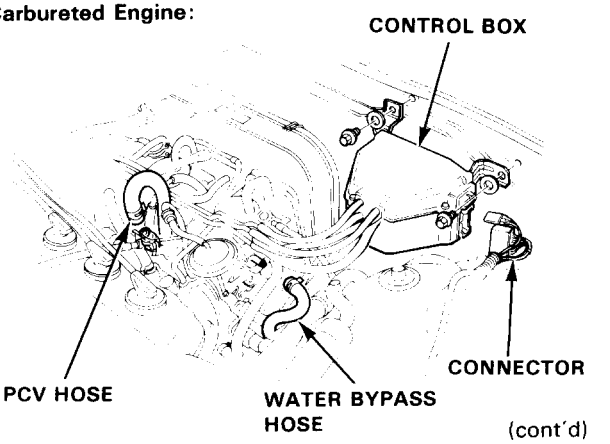
1-Carbureted Engine:



2-Carbureted Engine:



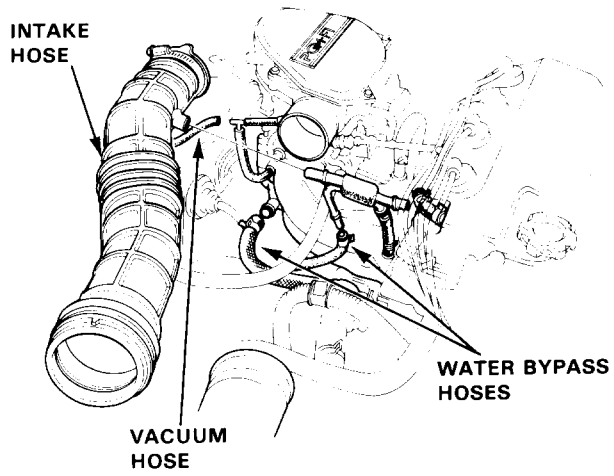
2-Carbureted Engine:



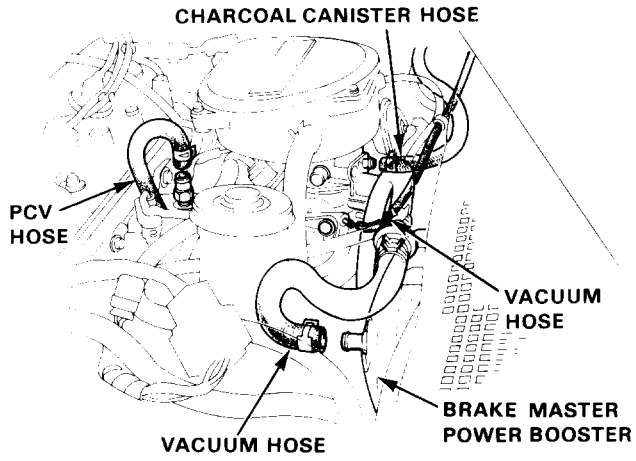
(cont'd)

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

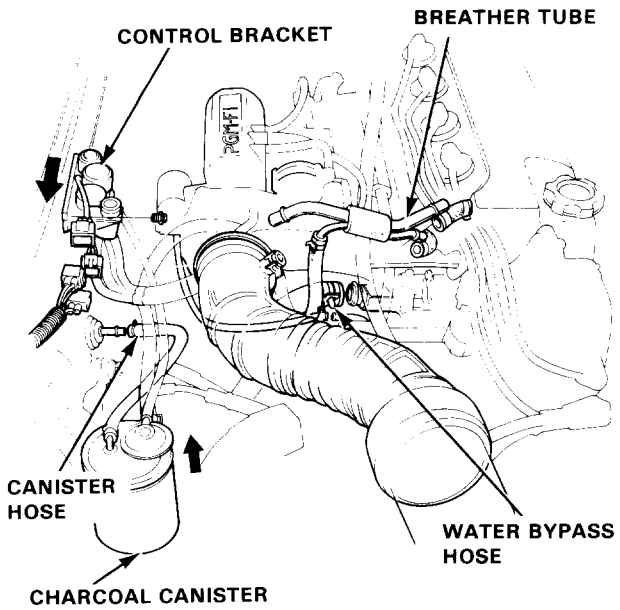
1.5 ℓ PGM-FI Engine:



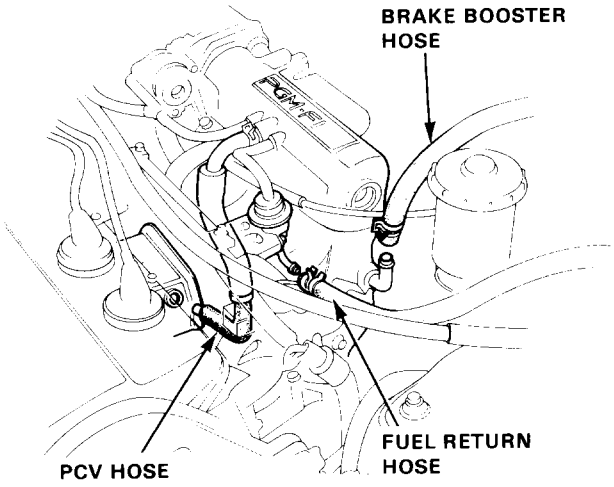
1.5 ℓ PGM-FI Engine:



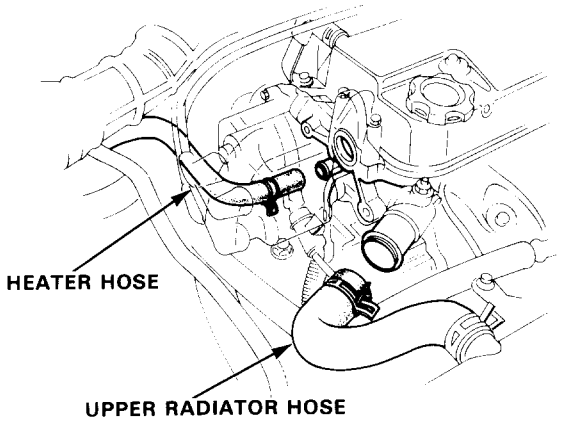
1.6 ℓ PGM-FI Engine:



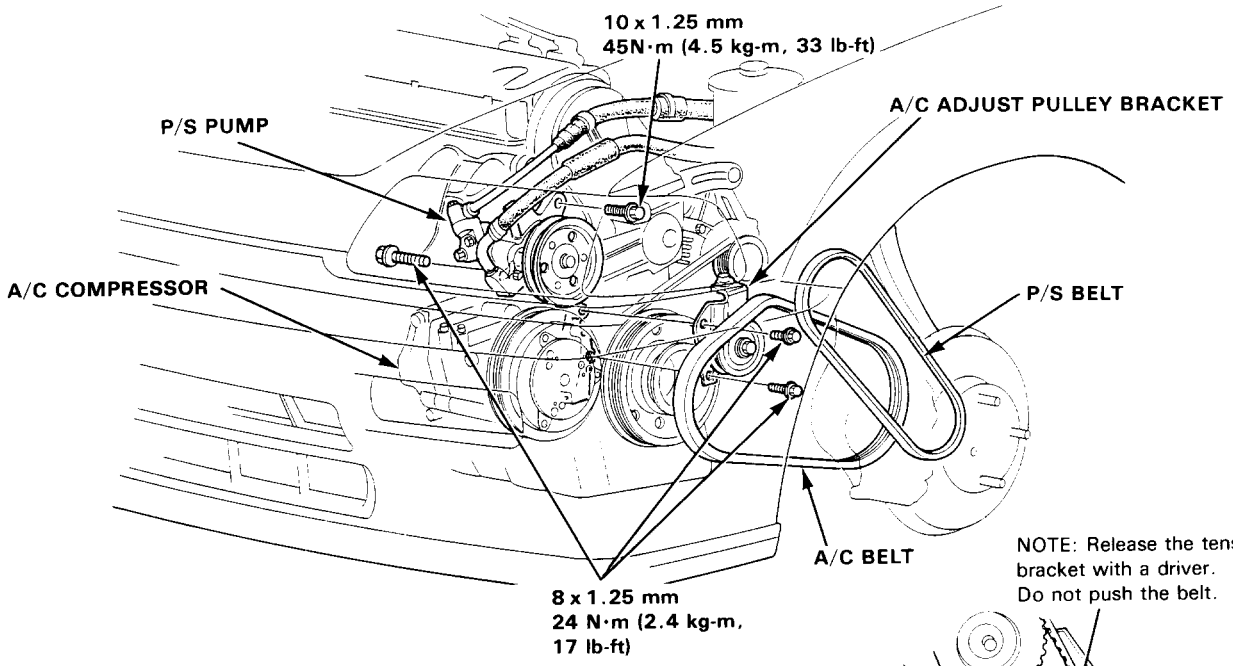
1.6 ℓ PGM-FI Engine:



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

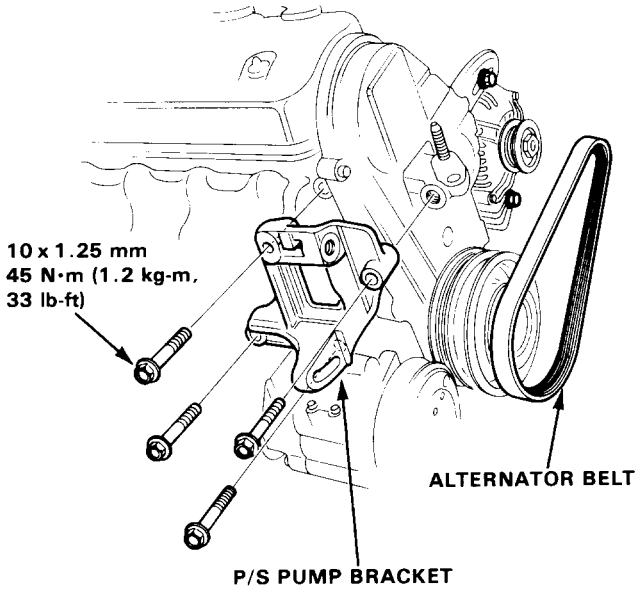


17. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
    - Ignition coil connector (from distributor)
    - EACV connector
    - Engine ground wire
    - Thermounit connector
    - Coolant temperature sensor connector
    - Carburetor solenoid valve, automatic choke connector (1-Carbureted)
    - Carburetor solenoid valve, inner bent solenoid valve connector (2-Carbureted)
    - Air leak solenoid valve connector (2-Carbureted)
    - L.carburetor solenoid valve connector (2-Carbureted)

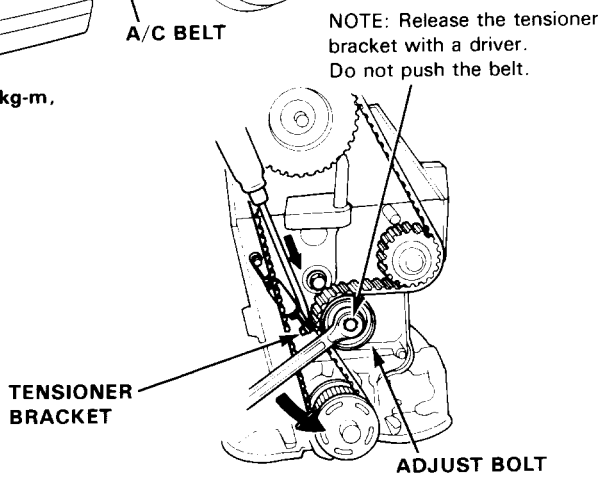


- Intake air temperature sensor connector (PGM-FI)
- Throttle angle sensor connector (PGM-FI)
- Injection connectors (PGM-FI)
- TDC/CRANK sensor connector (from distributor)

18. Remove the P/S belt.
19. Remove the P/S hoses and P/S pump.
20. Remove the P/S bracket.
21. Remove the alternator belt.

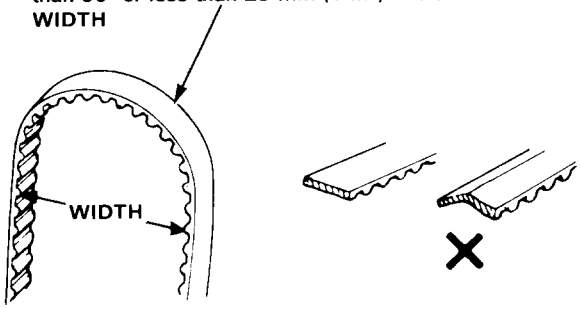


22. Remove the intake manifold bracket.
23. Remove the exhaust manifold bracket, then remove the header pipe.



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.

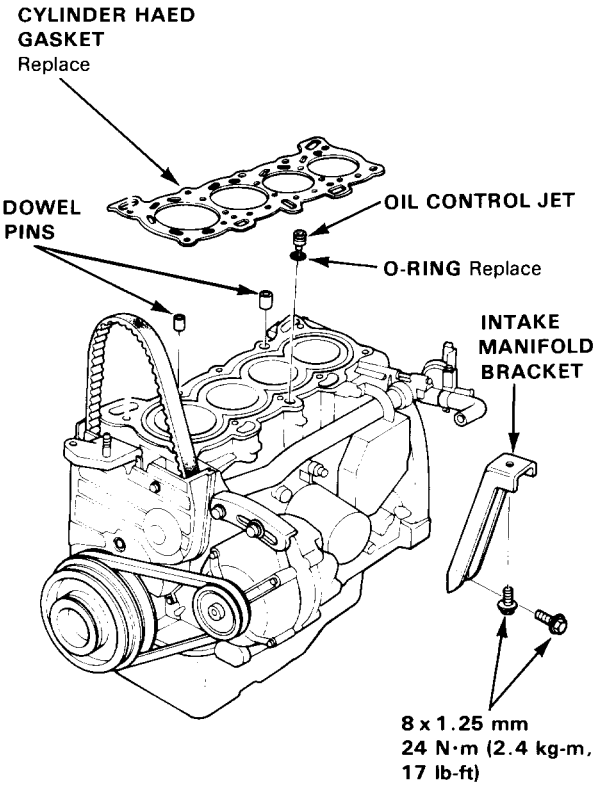


28. Remove the cylinder head.
29. Remove the intake manifold from the cylinder head.

Cylinder Head

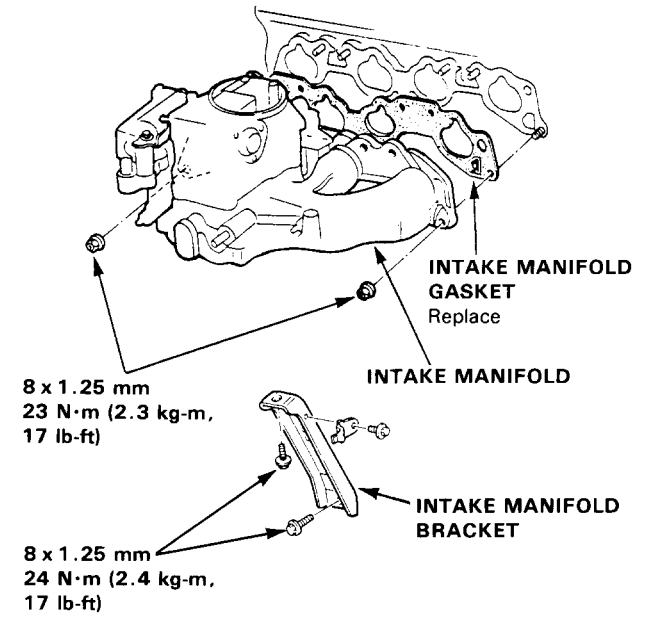
Installation

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

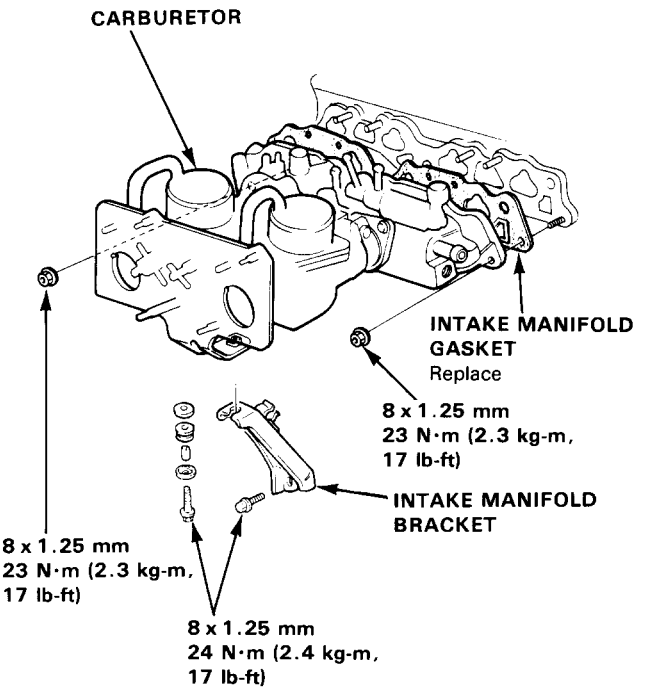


3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.

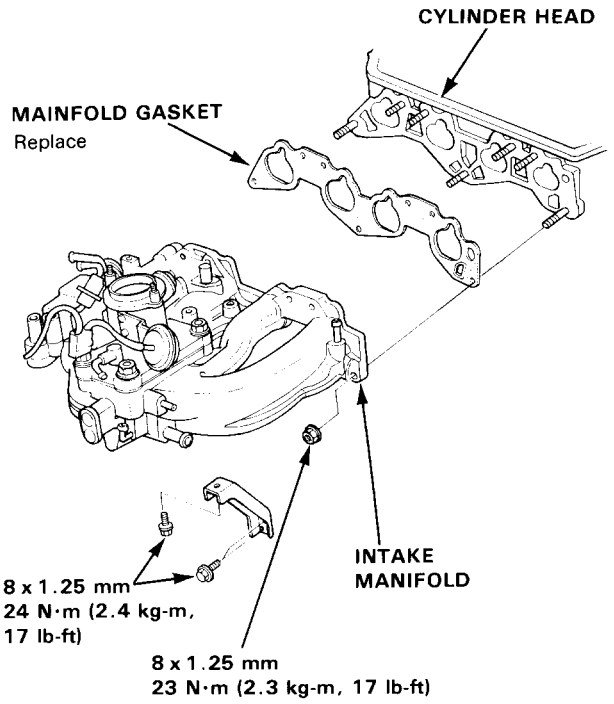
1-Carbureted Engine:



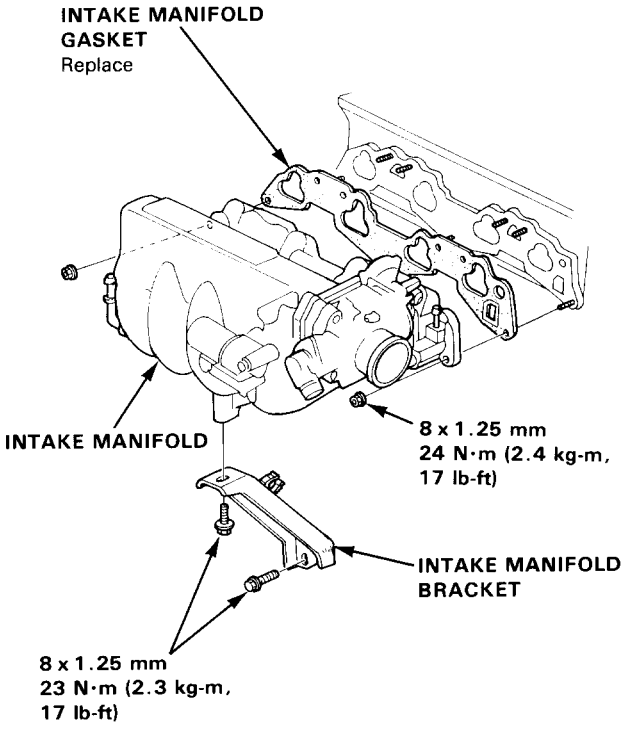
2-Carbureted Engine:



1.5 ℓ PGM-FI Engine:



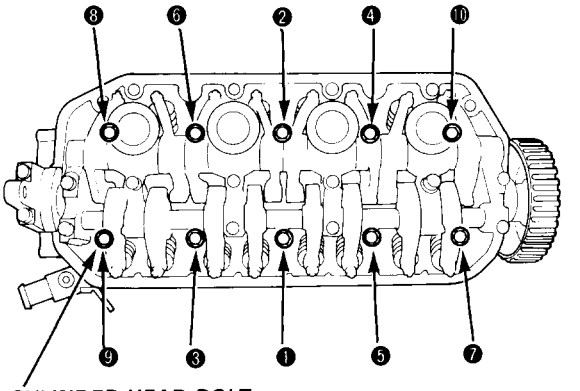
1.6 ℓ PGM-FI Engine:



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

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

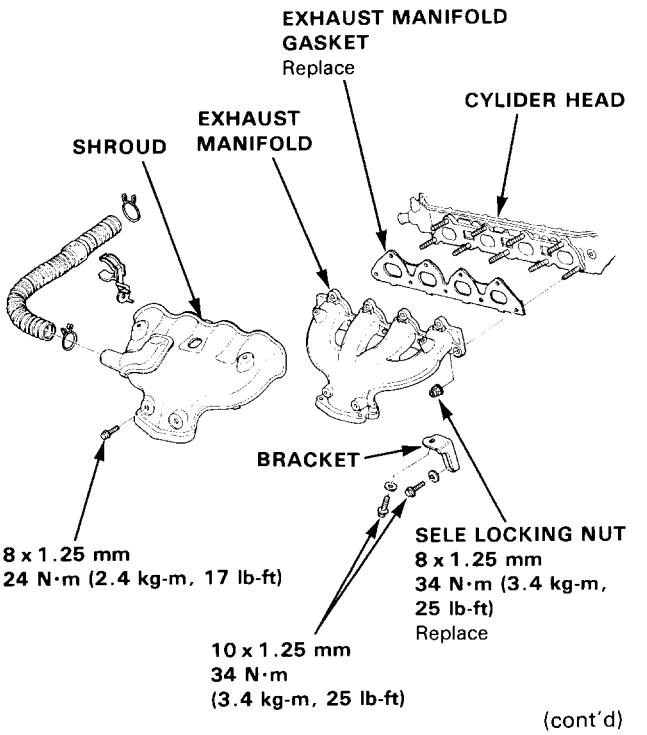
CYLINDER HEAD TORQUE SEQUENCE



5. Adjust the valve timing.

6. Install the exhaust manifold and bracket.

1-Carbureted and 1.4 ℓ Engine:

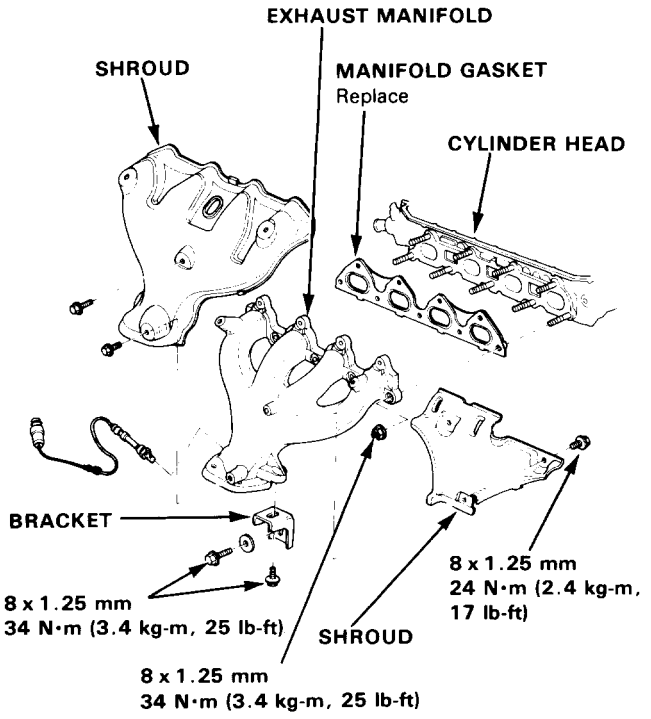


(cont'd)

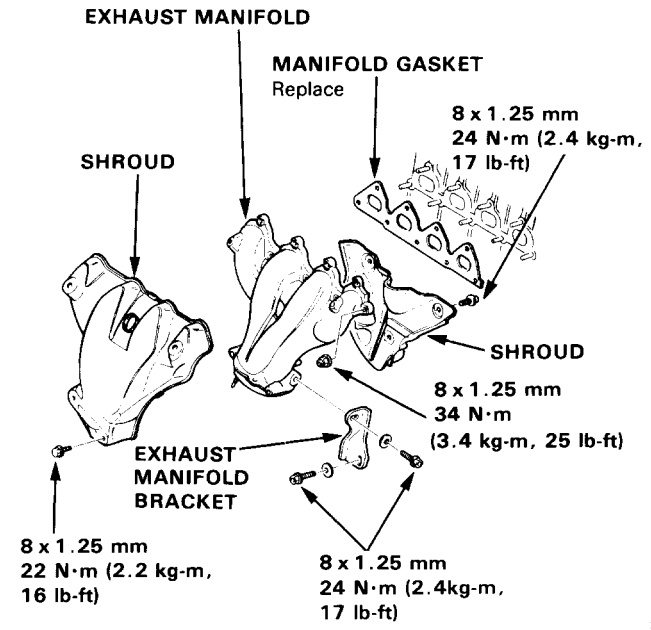
Cylinder Head

Installation (cont'd)

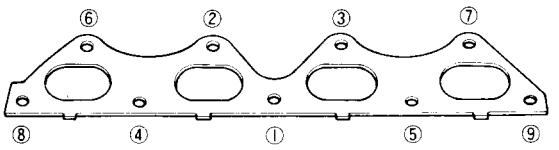
1.5 ℓ (Ex. 1-carbureted), 1.6 ℓ with CATA:



1.6 ℓ with out CATA:



EXHAUST MANIFOLD TORQUE SEQUENCE



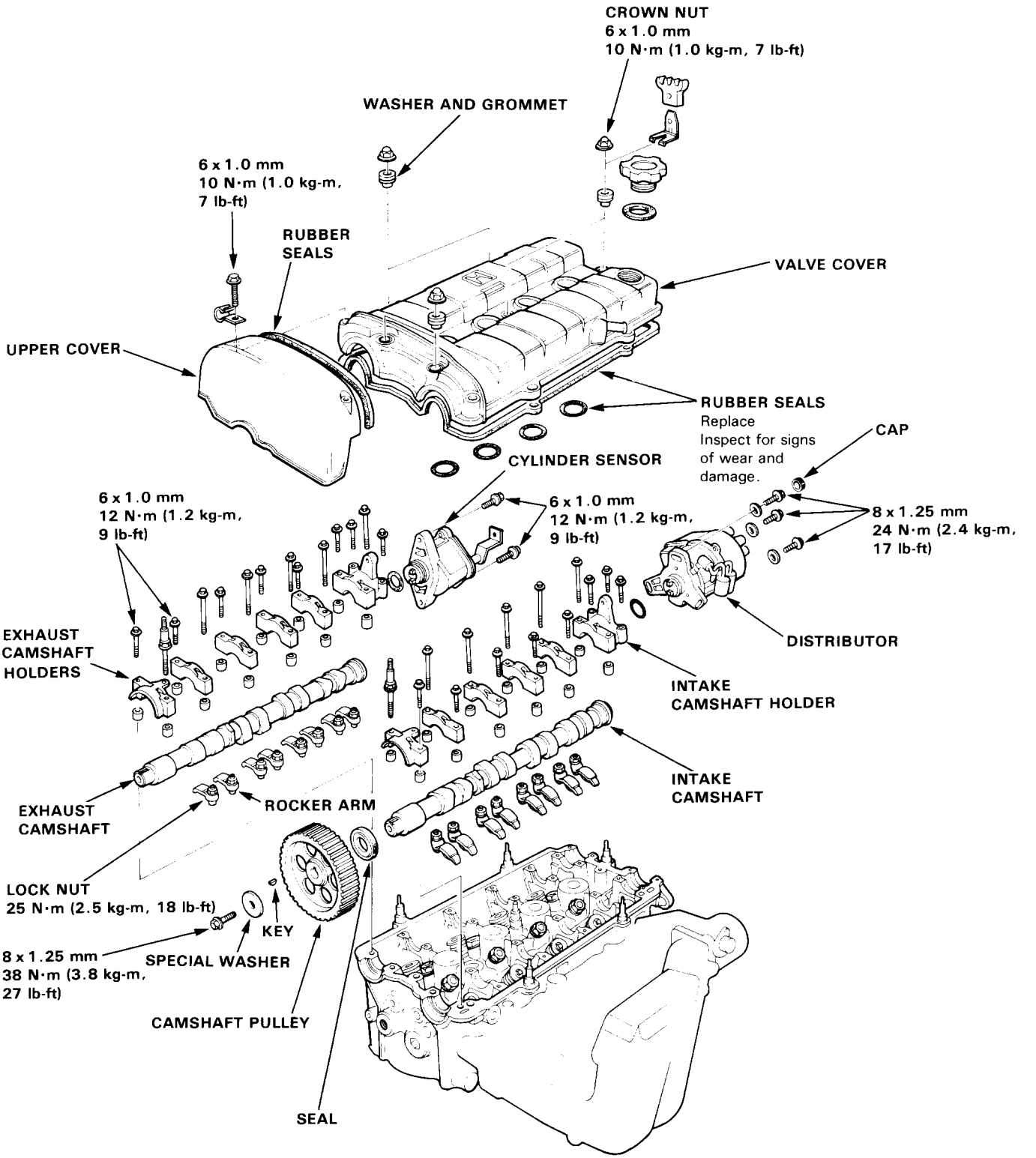
Cylinder Head Removal/Installation

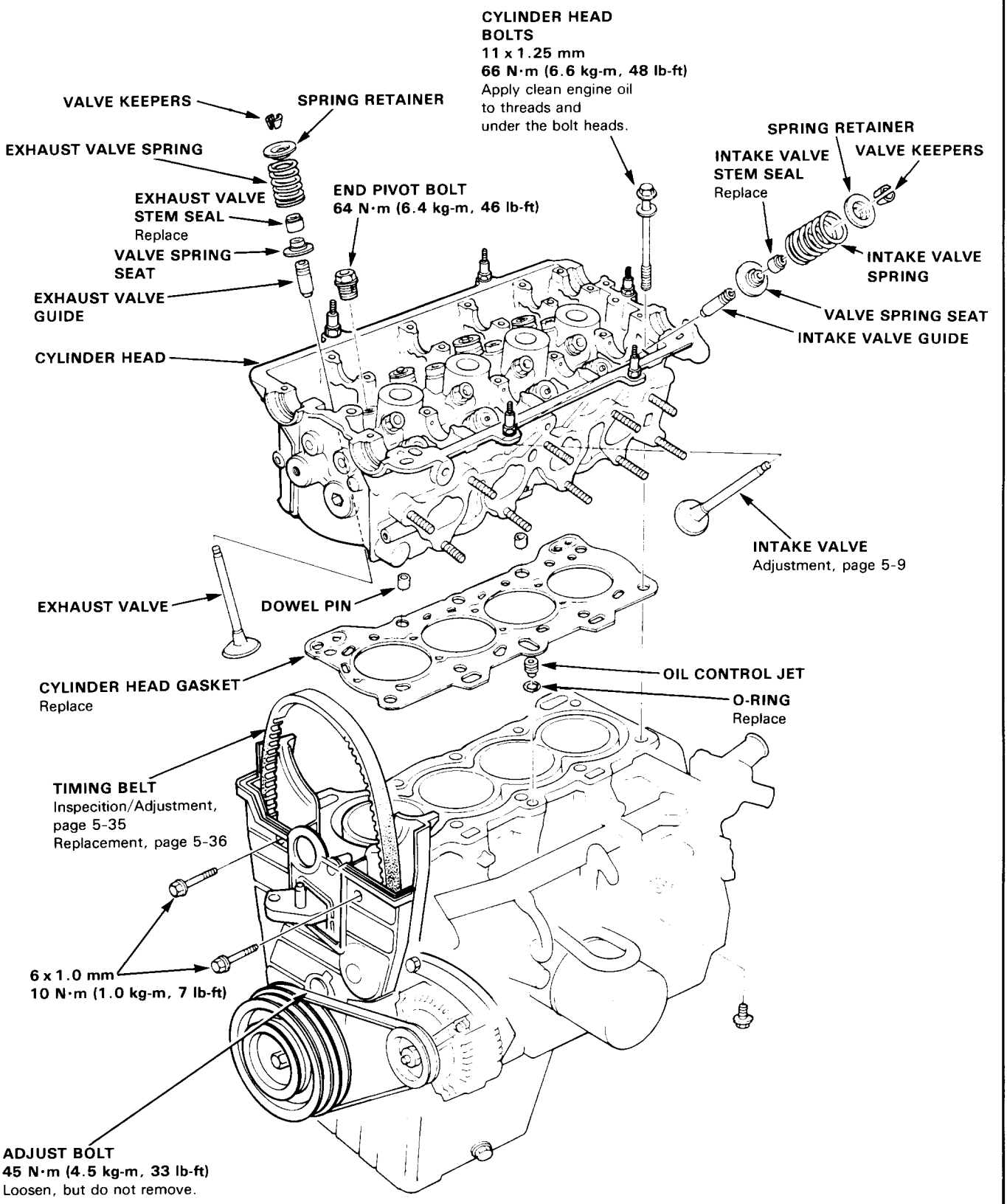
Cylinder Head

Removal (engine removal not required)

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

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




CYLINDER HEAD BOLTS
11 x 1.25 mm
66 N·m (6.6 kg-m, 48 lb-ft)
Apply clean engine oil to threads and under the bolt heads.
VALVE KEEPERS
SPRING RETAINER
EXHAUST VALVE SPRING
EXHAUST VALVE STEM SEAL
Replace
VALVE SPRING SEAT
EXHAUST VALVE GUIDE
END PIVOT BOLT
64 N·m (6.4 kg-m, 46 lb-ft)
CYLINDER HEAD
SPRING RETAINER
INTAKE VALVE STEM SEAL
Replace
VALVE KEEPERS
INTAKE VALVE SPRING
VALVE SPRING SEAT
INTAKE VALVE GUIDE
INTAKE VALVE
Adjustment, page 5-9
EXHAUST VALVE
DOWEL PIN
OIL CONTROL JET
O-RING
Replace
CYLINDER HEAD GASKET
Replace
TIMING BELT
Inspecition/Adjustment, page 5-35
Replacement, page 5-36
6 x 1.0 mm
10 N·m (1.0 kg-m, 7 lb-ft)
ADJUST BOLT
45 N·m (4.5 kg-m, 33 lb-ft)
Loosen, but do not remove.

(cont'd)

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

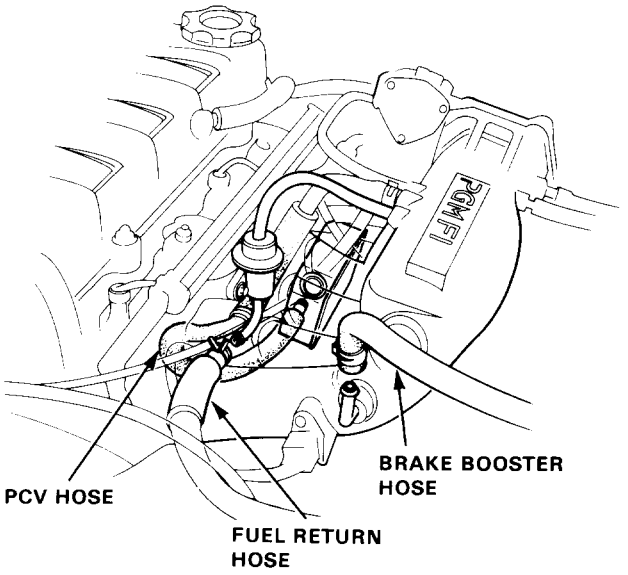
CAUTION: To avoid damaging the cylinder head, wait until the coolant temperature drops below 38°C (100°F) before loosening the retaining bolts.

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

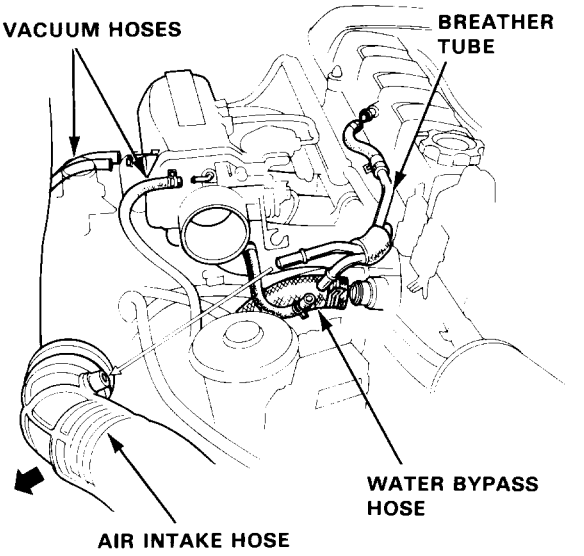
1. Disconnect the negative terminal from the battery.
2. Drain the coolant system.
3. Relieve fuel pressure (See Section 6).
4. Disconnect the fuel feeder hose and fuel return hose.

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

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

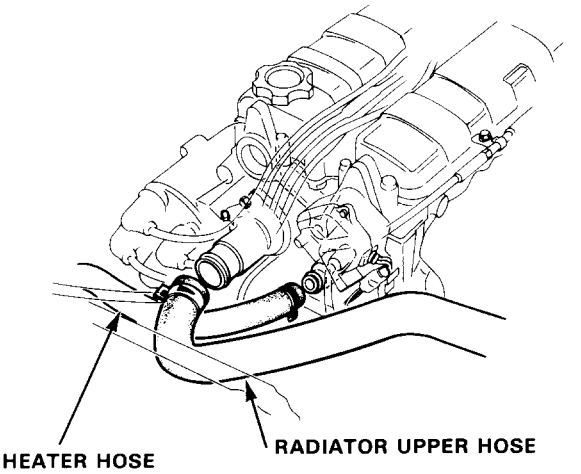


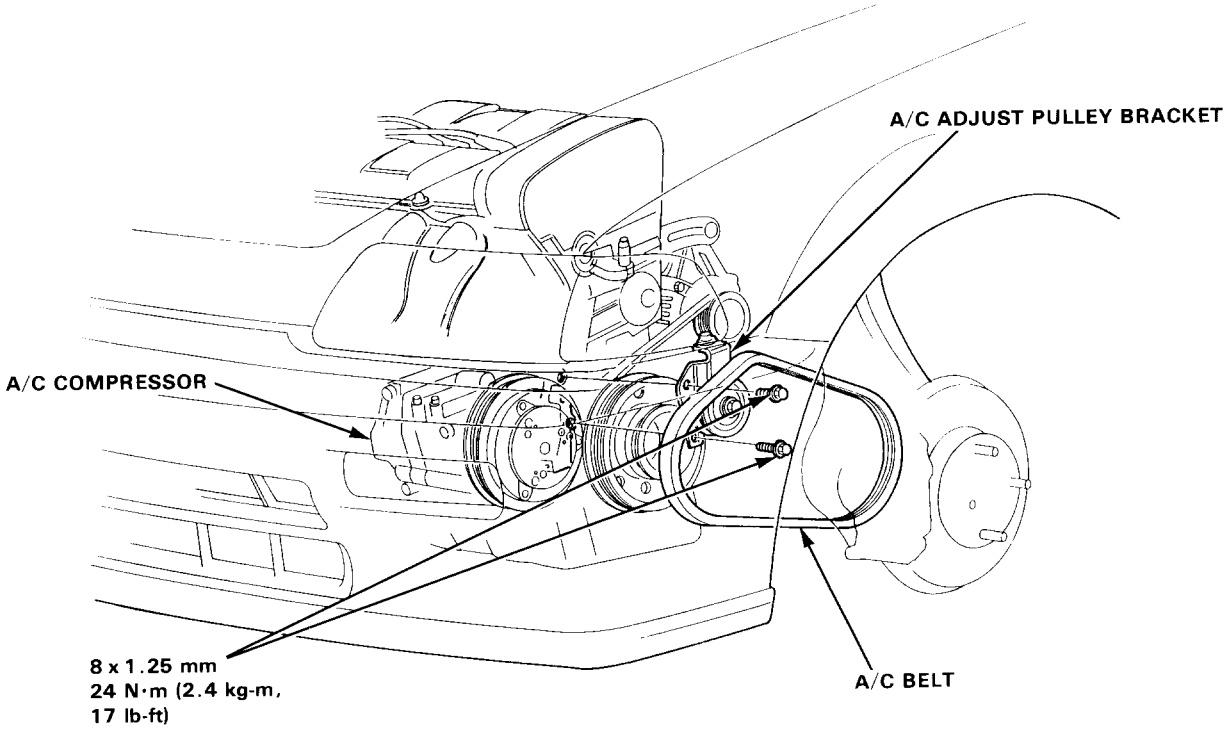
7. Disconnect the breather tube and air intake hose.
8. Disconnect the vacuum hose from the intake manifold.
9. Disconnect the charcoal canister hose.
10. Disconnect the water bypass hose.
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.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



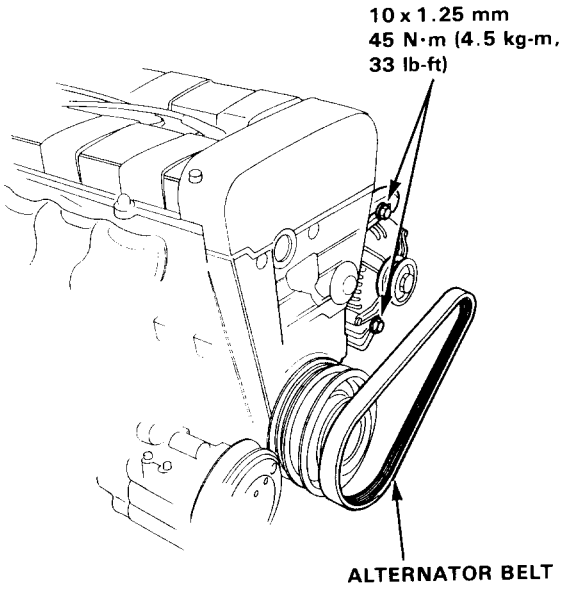
    - Intake air pressure sensor connector
    - Throttle angle sensor connector
    - Injection connector
    - TDC/CRANK sensor connector

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



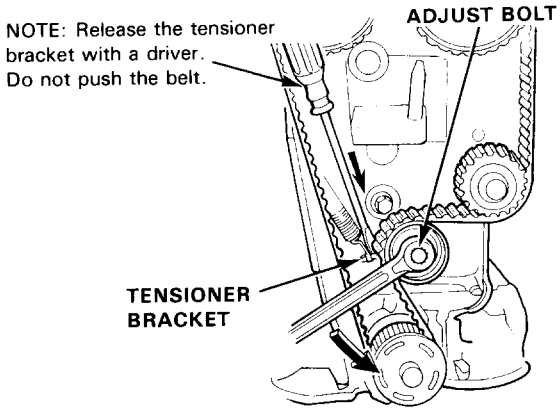


14. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.
15. Remove the alternator belt.

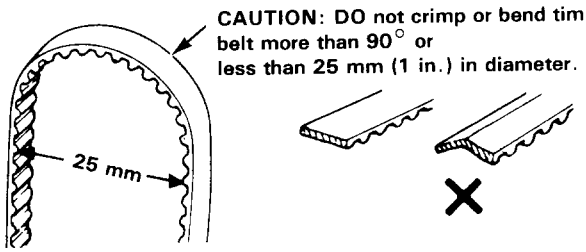


16. Remove the bolts from the intake manifold bracket.
17. Remove the exhaust mandfold shroud.
18. Remove the bolts from the exhaust manifold bracket.
19. Remove the self lock nut from the exhaust header pipe.
20. Remove the exhaust manifold assy.
21. Remove the timing belt upper cover.
22. Remove the valve cover.

23. Loosen the timing belt adjust 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.

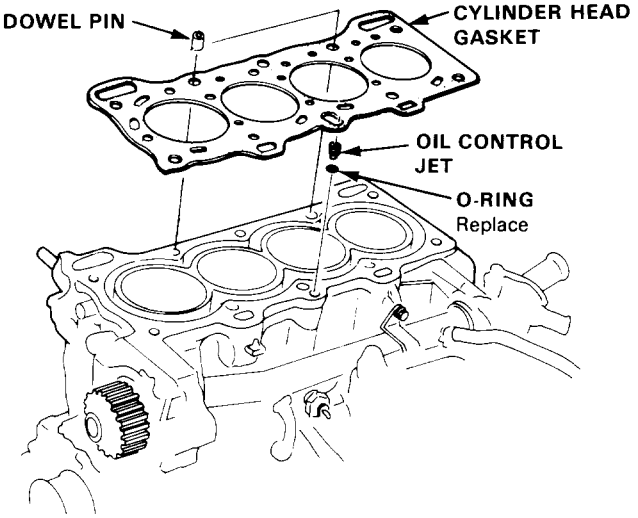
Cylidner Head

Installation

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

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

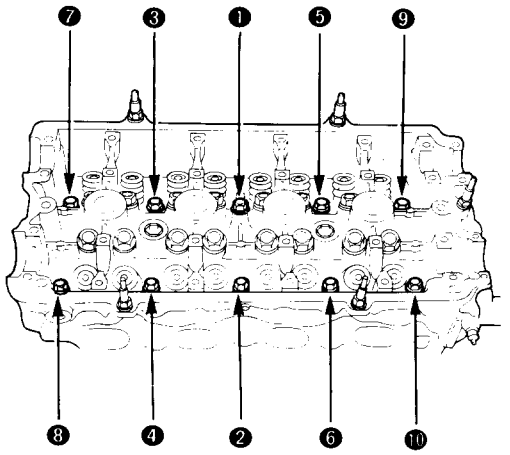
   NOTE: Cylinder head dowel pins and oil control jet must be aligned.



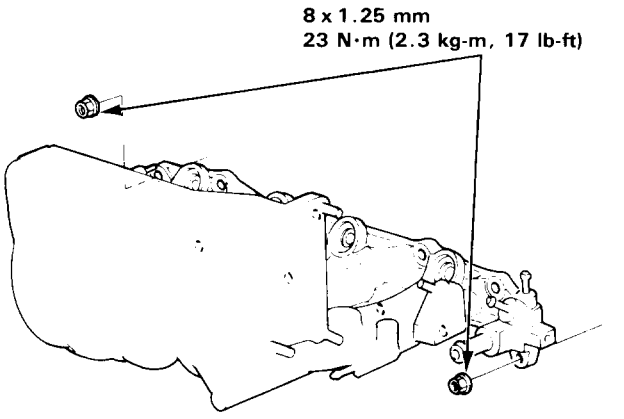
2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft)

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

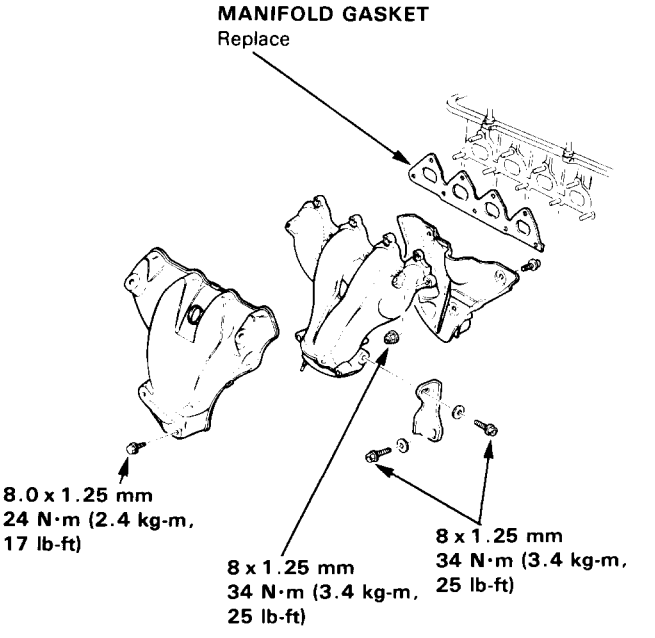
CYLINDER HEAD BOLTS TORQUE SEQUENCE



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



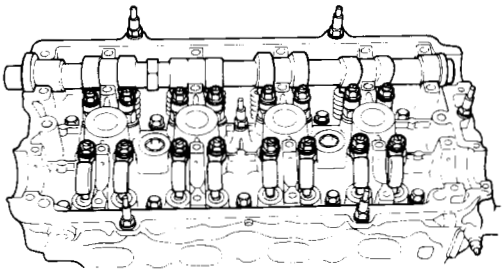
4. Install the exhaust manifold and bracket.



CAUTION:

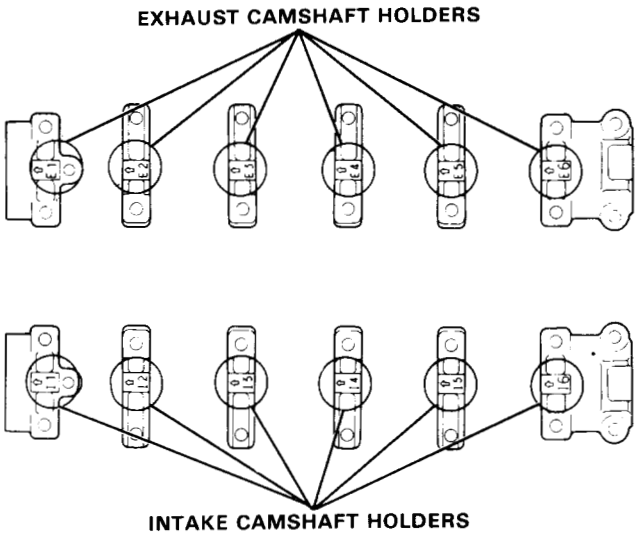
- **Make sure that the keyways on the camshafts are facing up. (NO. 1 cylinder TDC).**
- **Valve locknuts should be loosened and adjust screws backed off before installation.**
- **Replace the rocker arms in these original positions.**

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



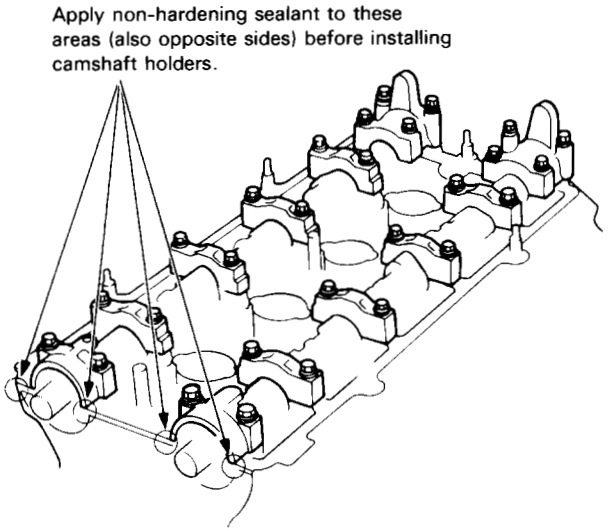
6. Install the camshafts and the camshaft seals with the open side (spring) facing in.

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

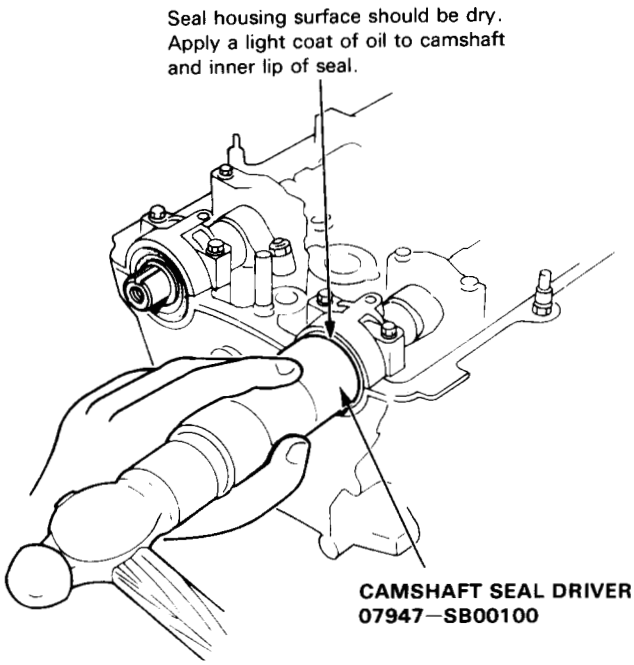


7. Apply liquid gasket to the head mating surfaces of the No. 1 and No. 6 camshaft holders, then install them, along with the No. 2. 3. 4 and 5.

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



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

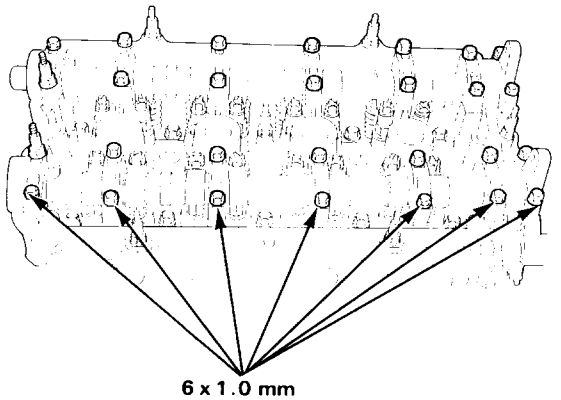


(cont'd)

Cylinder Head

Installation (cont'd)

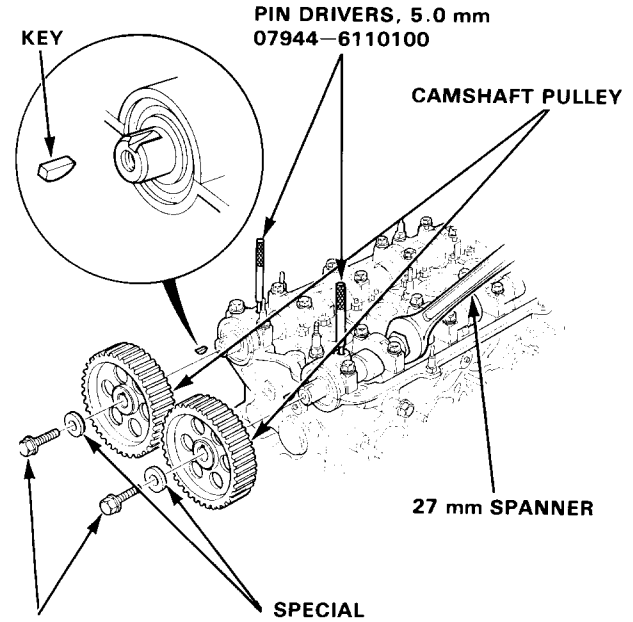
10. Tighten each bolt two turns at a time in the sequence shown below to insure that the rockers do not bind on the valves.



6 x 1.0 mm
12 N·m (1.2 kg-m, 9 lb-ft)

11. Install keys into grooves in camshafts.

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



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

Engine Removal/Installation

WARNING

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

CAUTION: Use fender covers to avoid damaging painted surfaces.

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

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

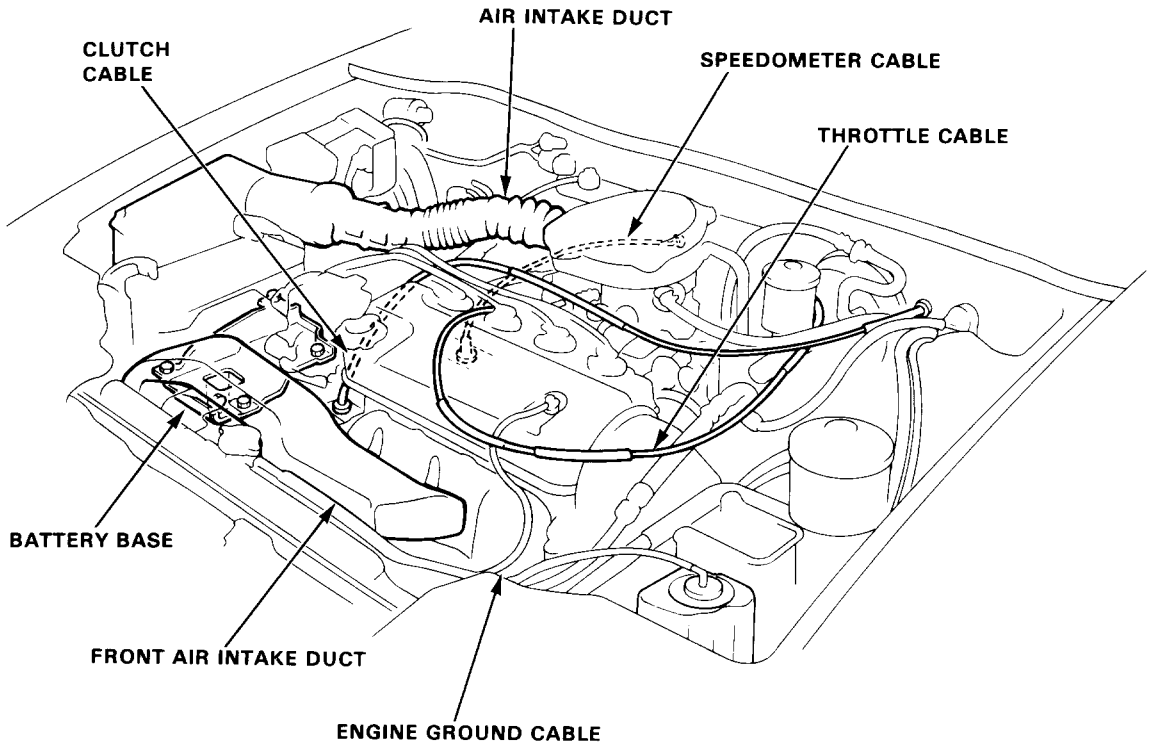
Carbureted Engine: 8~13
PGM-FI Engine : 14~19

LHD:

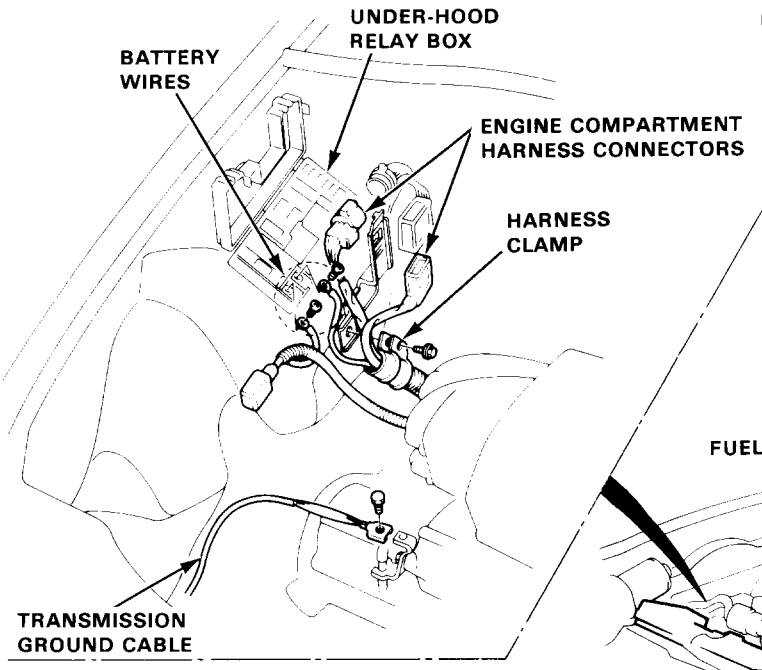
3. Drain the engine oil. Remove the oil filler cap to speed draining. Reistall the drain plug with a new washer.
4. Drain the coolant from the radiator into a clean pan so it may be re-used. Remove the radiator cap to speed draining.

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

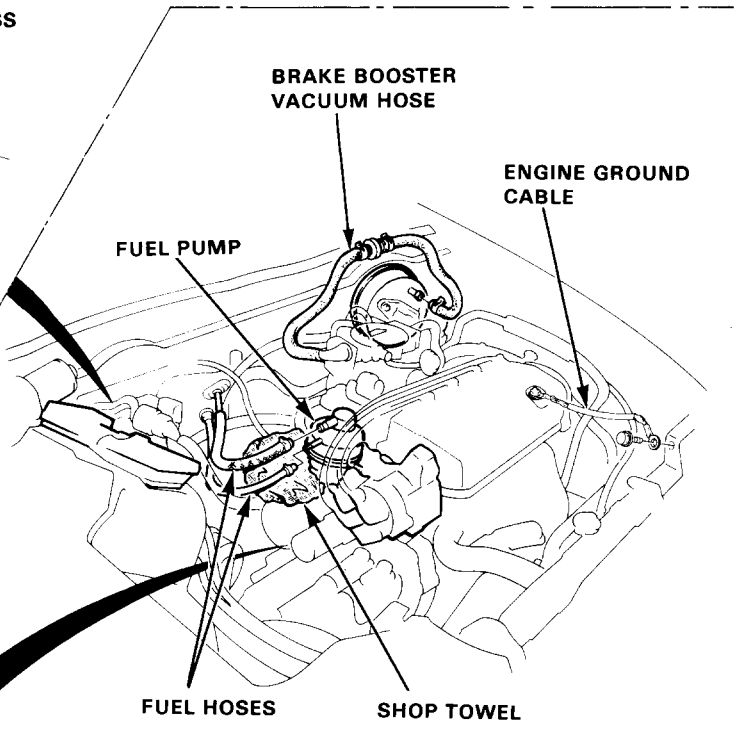
5. Drain transmission oil/fluid.Use a 3/8" drive ratchet wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.
6. Remove the air intake duct and front air intake duct.
7. Remove the battery base.



Carbureted Engine:



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



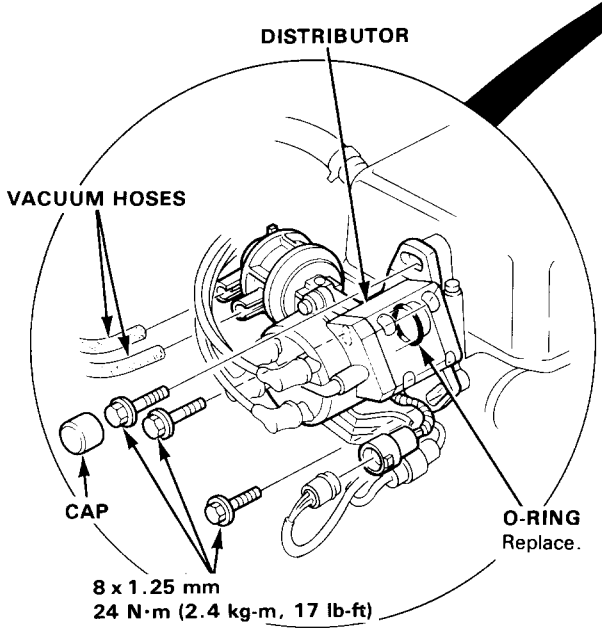
9. Disconnect the fuel hoses at the fuel pump.

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 filler to prevent fuel from spraying over the engine.**



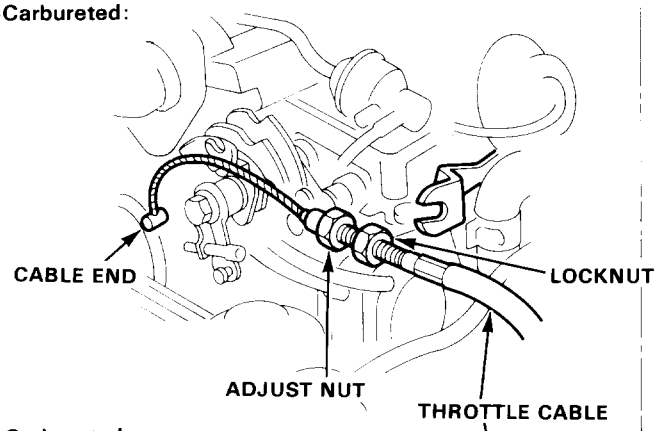
10. Disconnect the engine wire connectors and spark plug wires.

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

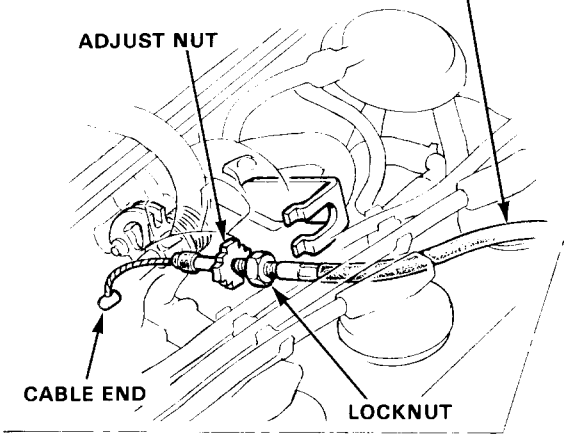
(cont'd)

Carbureted Engine:

1-Carbureted:

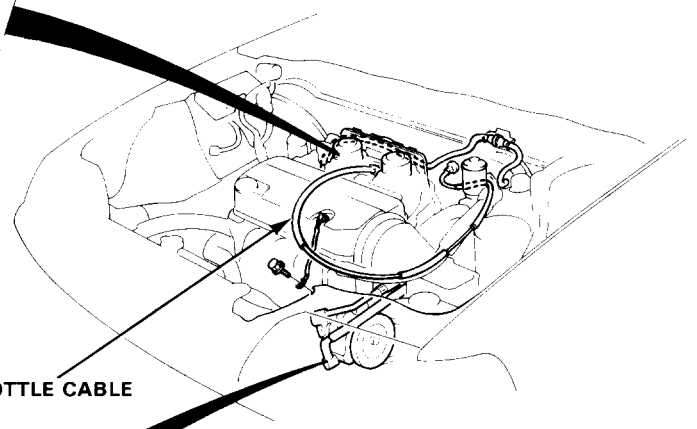


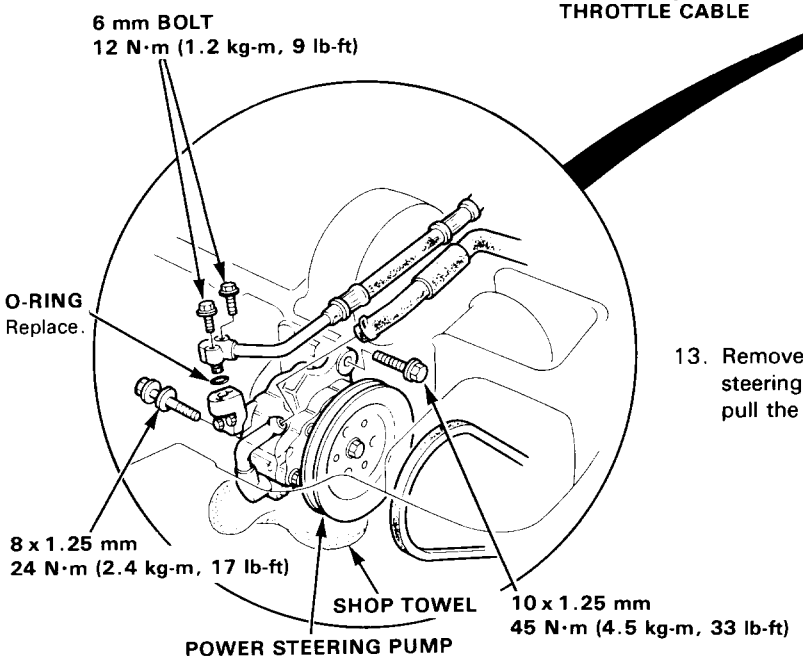
2-Carbureted:



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

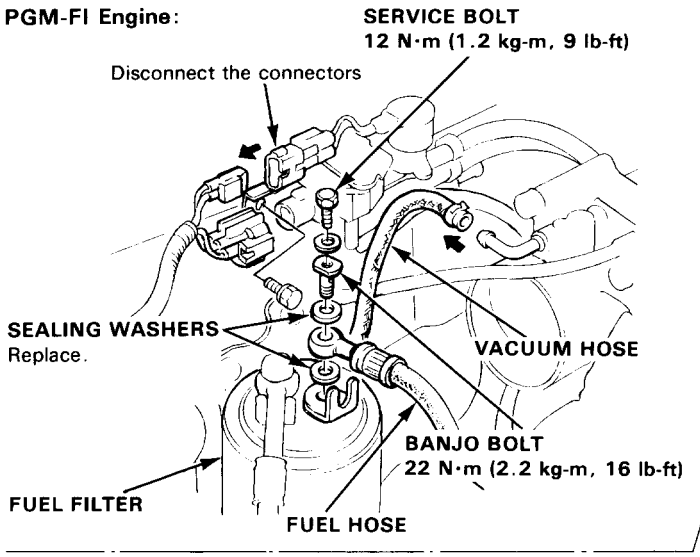
NOTE: Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.





13. 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.

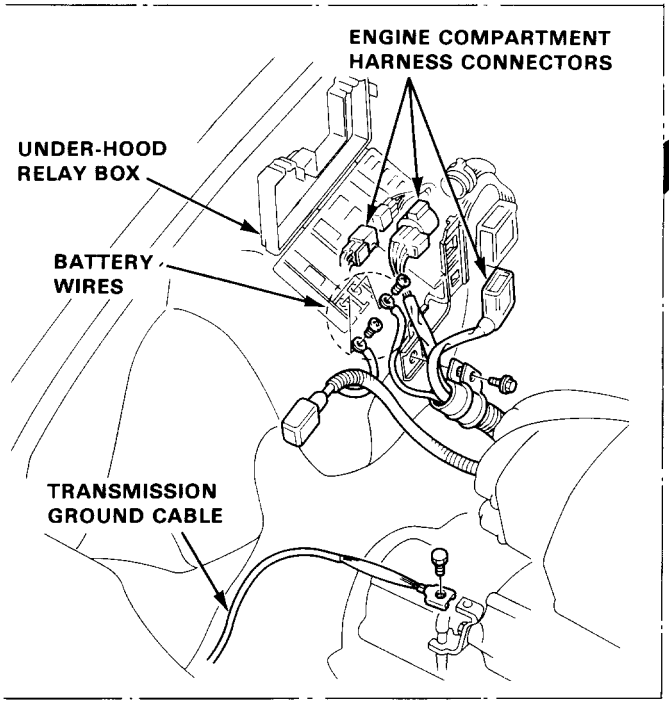
PGM-FI Engine:

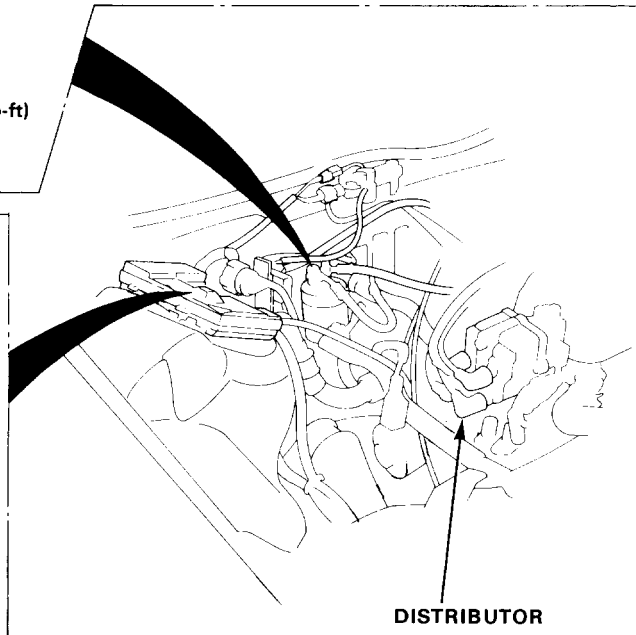


14. Relieve fuel pressure by slowly loosening the service bolt on the fuel filler about one turn. (Section 6).

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

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



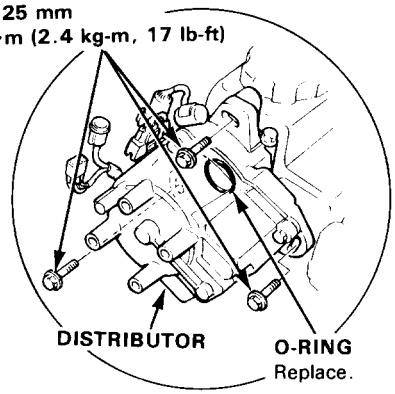


15. Disconnect the engine compartment harness connectors, battery wires and transmission ground cable.

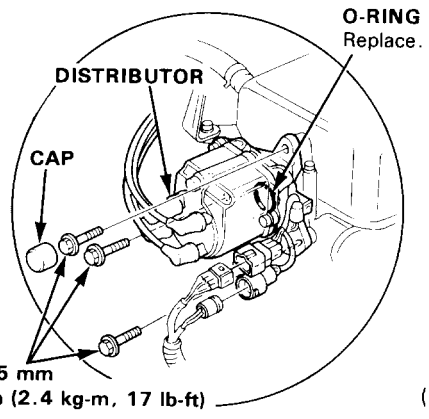
16. Disconnect the engine wire connectors and spark plug wires.

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

DOHC:

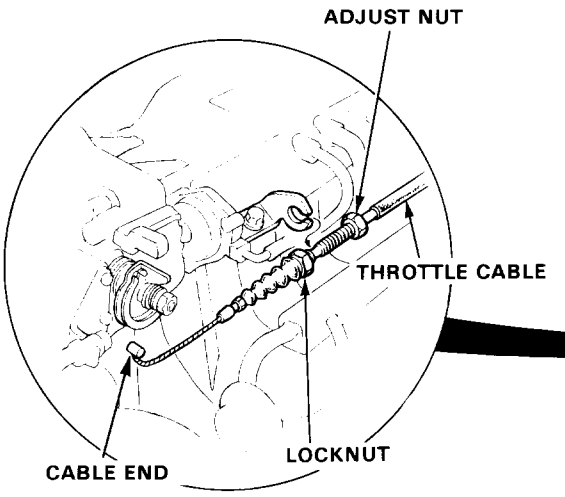


SOHC:



(cont'd)

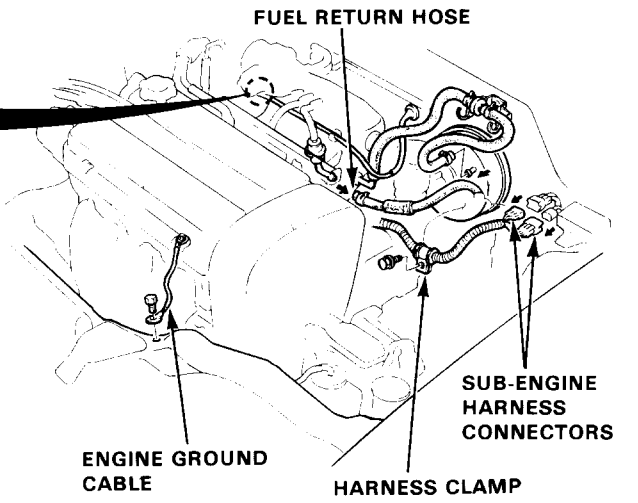
PGM-FI Engine:

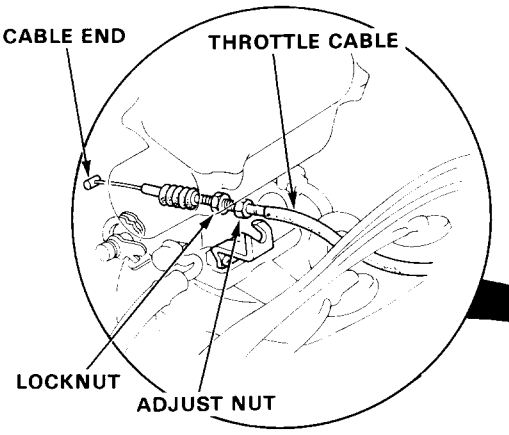


18. Remove the throttle cable by loosening lock the nut and the throttle cable adjust nut, then silp the cable end out of the throttle bracket and accelerator linkage.

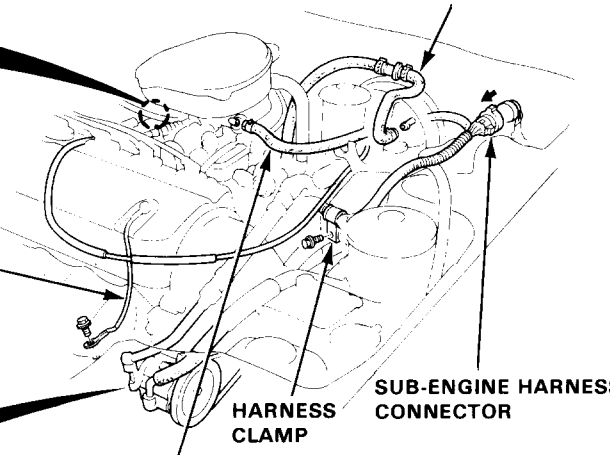
NOTE: Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.

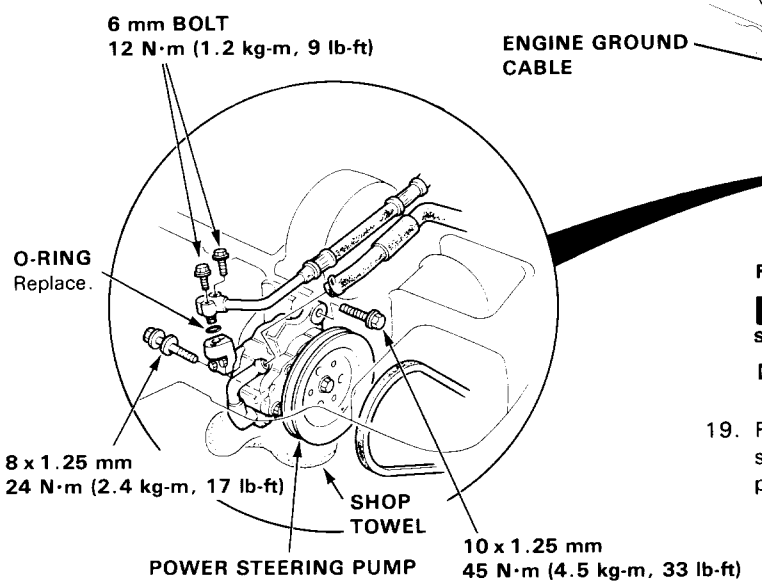
1.6 ℓ :





1.5 ℓ :





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

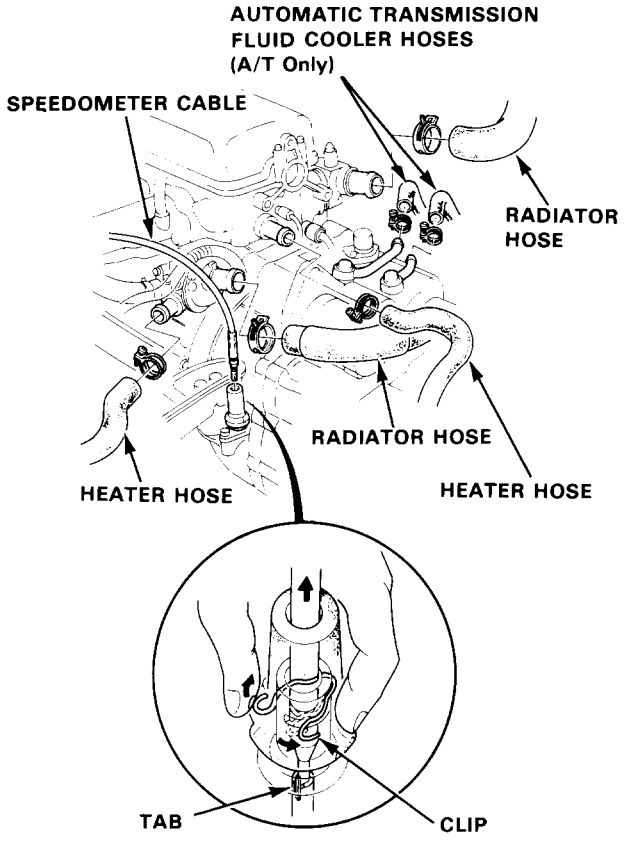
Drain fuel only into an approved container.

19. 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.

20. Disconnect the radiator hoses and heater hoses.

21. Disconnect the transmission fluid cooler hoses.

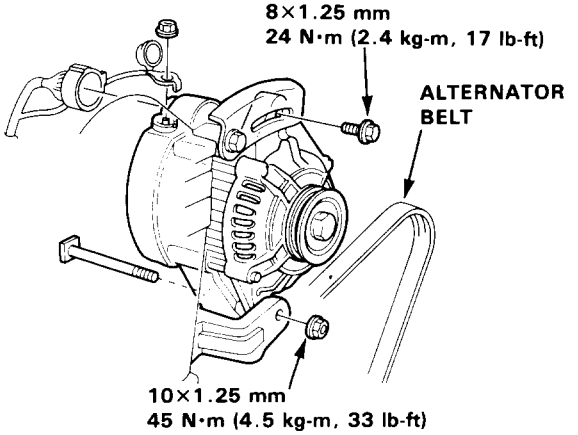
22. Remove the speedometer cable.



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

23. Remove the alternator: (LHD only)

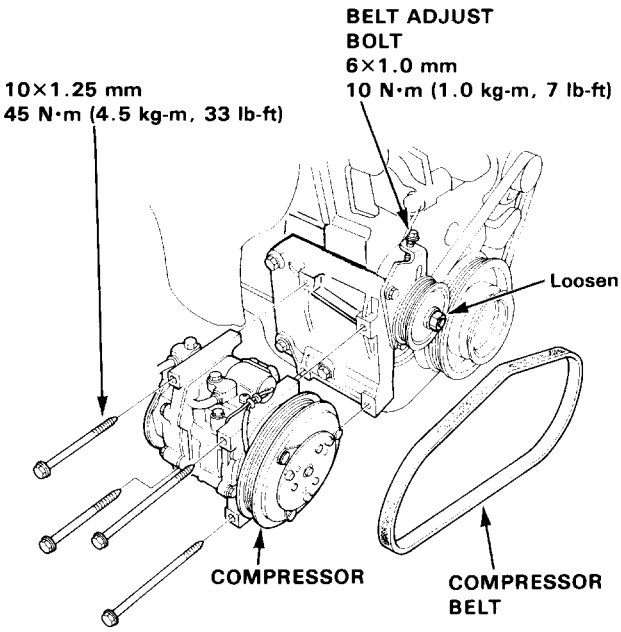
- Disconnect the alternator wire harness connectors.
- Remove the adjust bolt and remove the belt.
- Remove the belt alternator mount bolt and remove the alternator.



24. On cars with A/C:

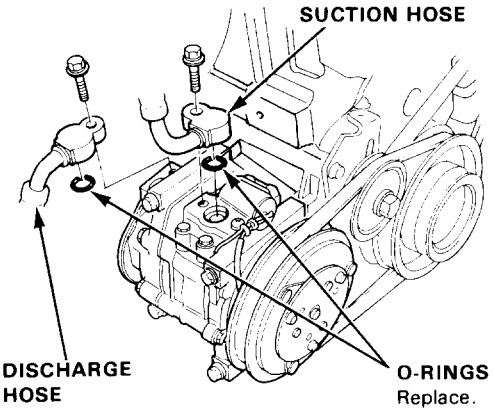
- Loosen the belt adjust bolt and idle pulley nut.
- Remove the compressor mount bolts, then lift the compressor out of the bracket with hoses attached, and wire it up to the front beam.

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



If necessary:

- Disconnect the suction and discharge hoses from the compressor.



(cont'd)

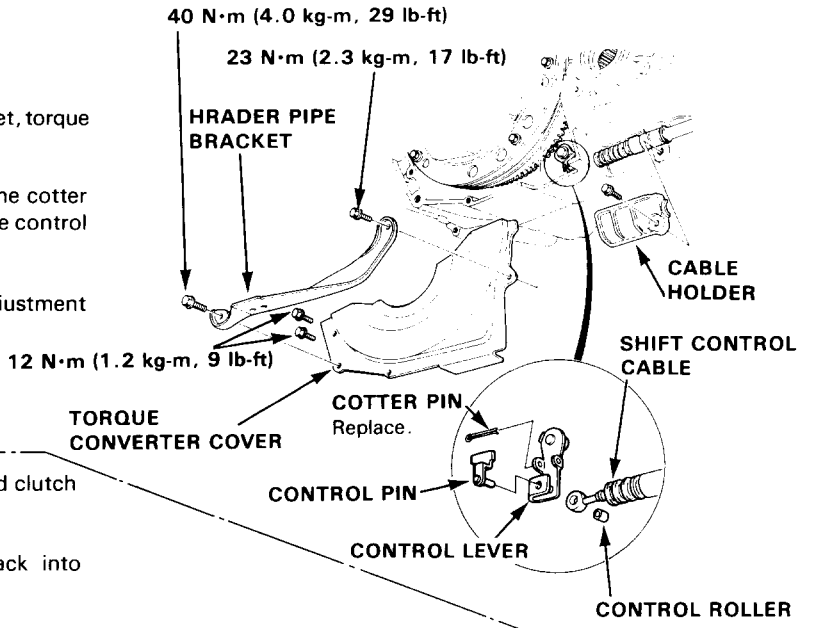
Engine Removal/Installtion (cont'd)

(On Automatic Cars:)

25. Remove the header pipe, header pipe bracket, torque converter cover and cable holder.

26. Remove the shift control cable by removing the cotter pin, control pin and control lever roller from the control lever.

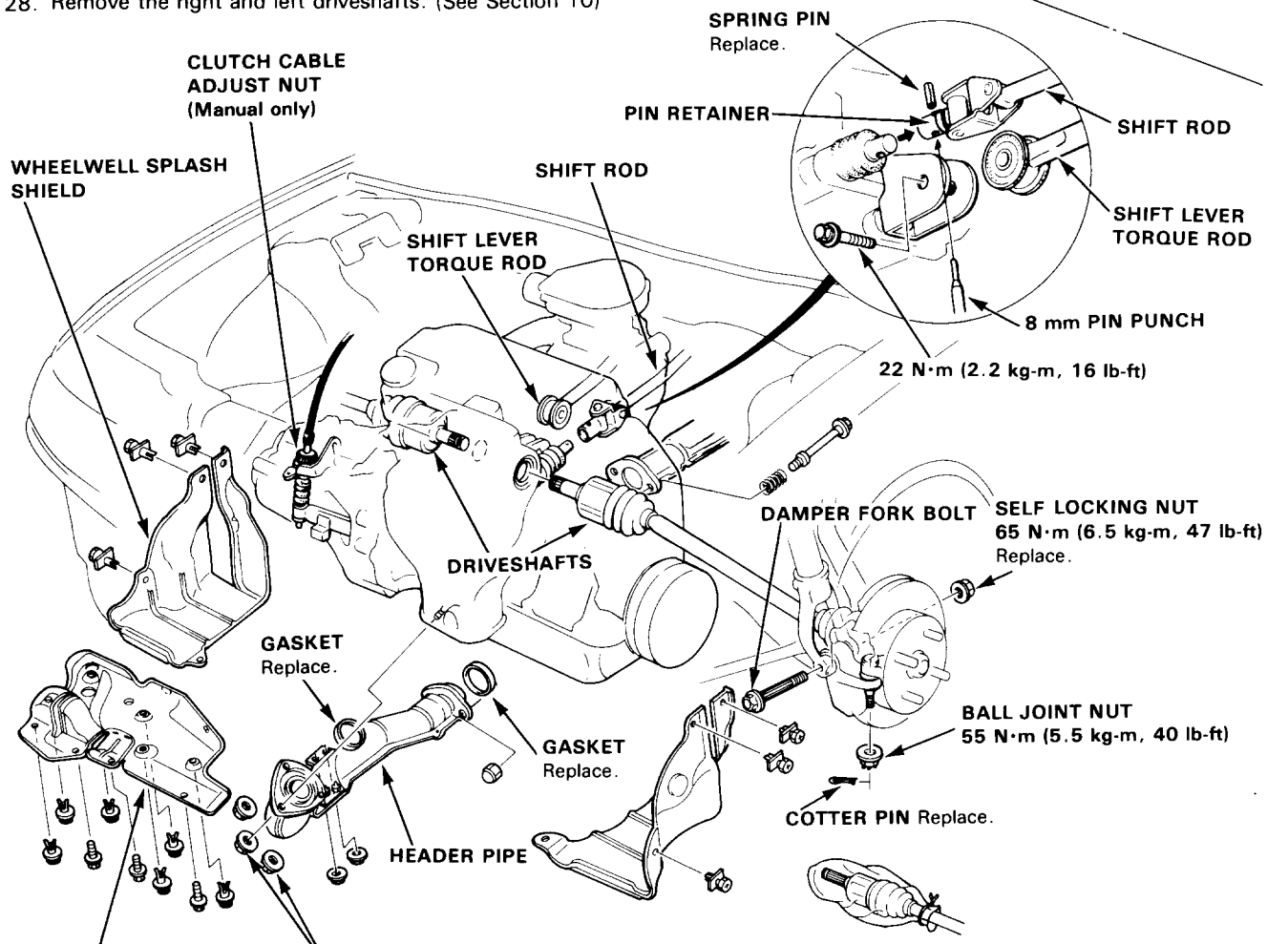
    NOTE: On reassembly, check the cable adiustment (Section 9).



27. 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.

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



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

29. 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.

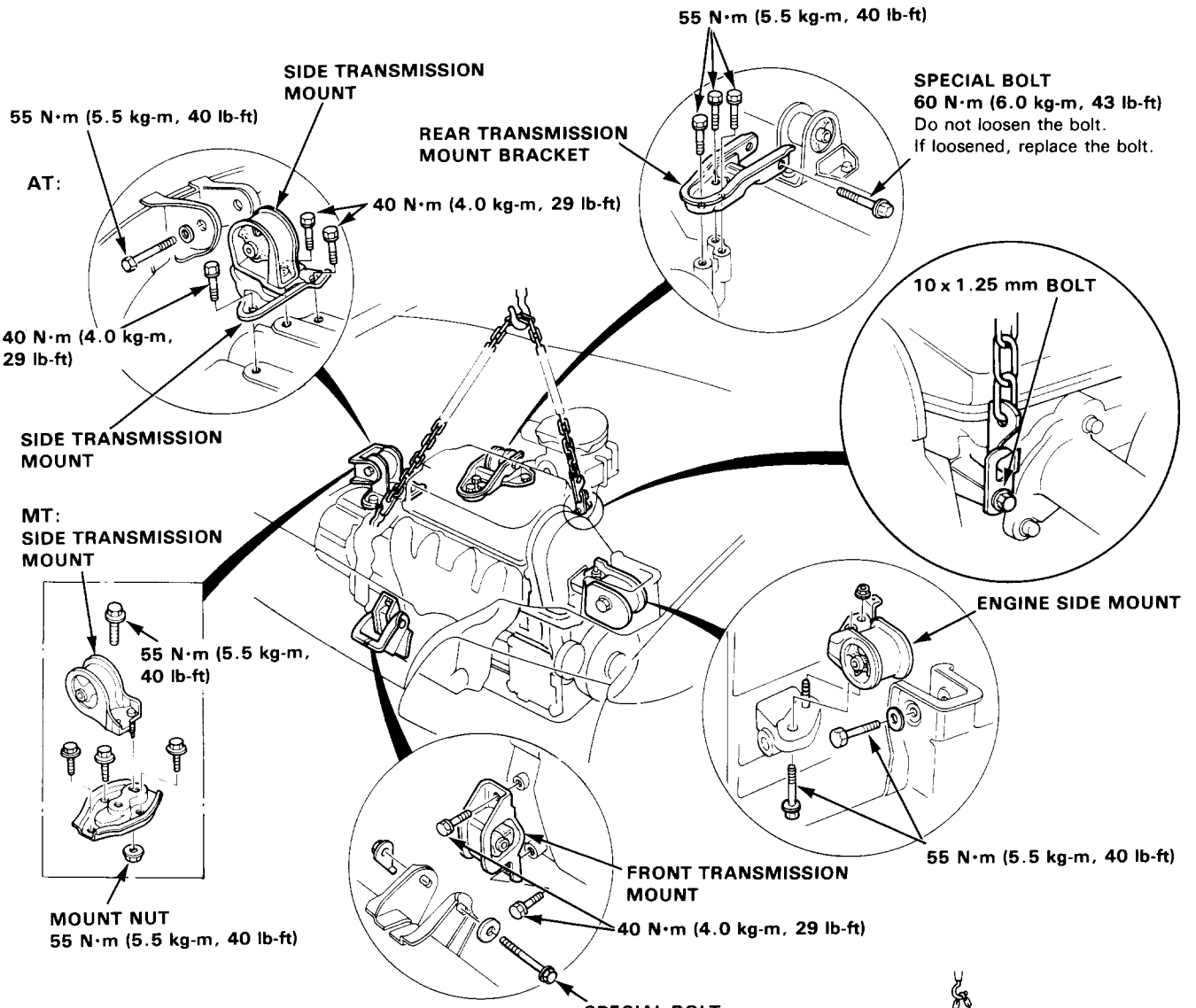
30. Remove the rear transmission mount bracket.

31. Remove the bolts from the front transmission mount.

32. Remove the bolts from the engine side mount.

33. Remove the bolts from the side transmission mount (AT).

34. First remove the mount nut from under the transmission housing and remove the bolt from the side transmission mount (MT).



35. Check that the engine/transaxle is completely free of vacuum, fuel, and coolant hoses, and electrial wires.

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

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

(cont'd)

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

- Torque engine mount bolts in sequence shown.

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

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

CAUTION: Use new spring clips on installation.

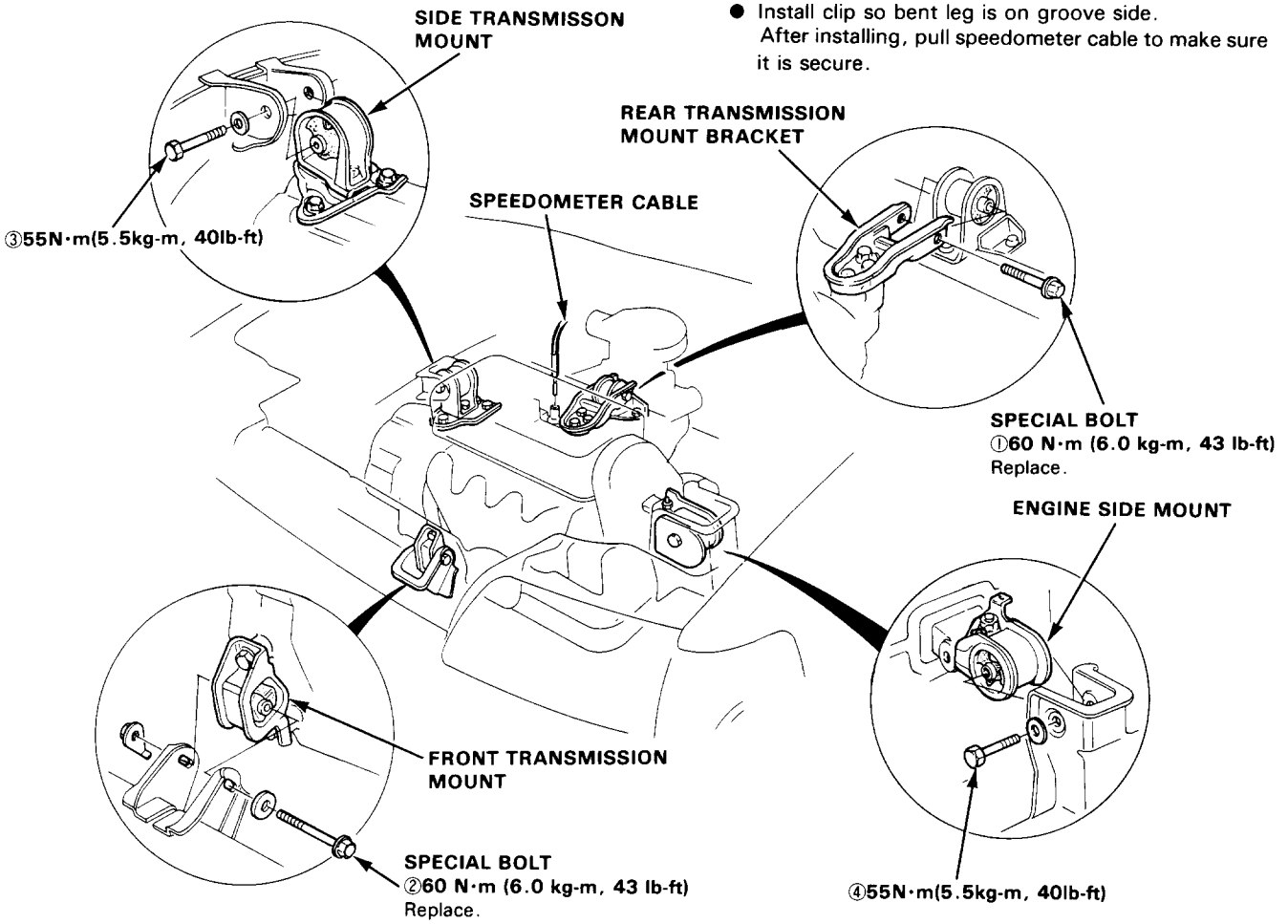
- Inspection for fuel leakage.
  After assembing fuel line parts, turn on the ignition switch (do not operate the starter) so that the fuel pump is operated for approximately two seconds and the fuel is pressurized. Repeat this operation two or three times and check whether any fuel leakage has occurred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

ENGINE MOUNT TORQUE SEQUENCE

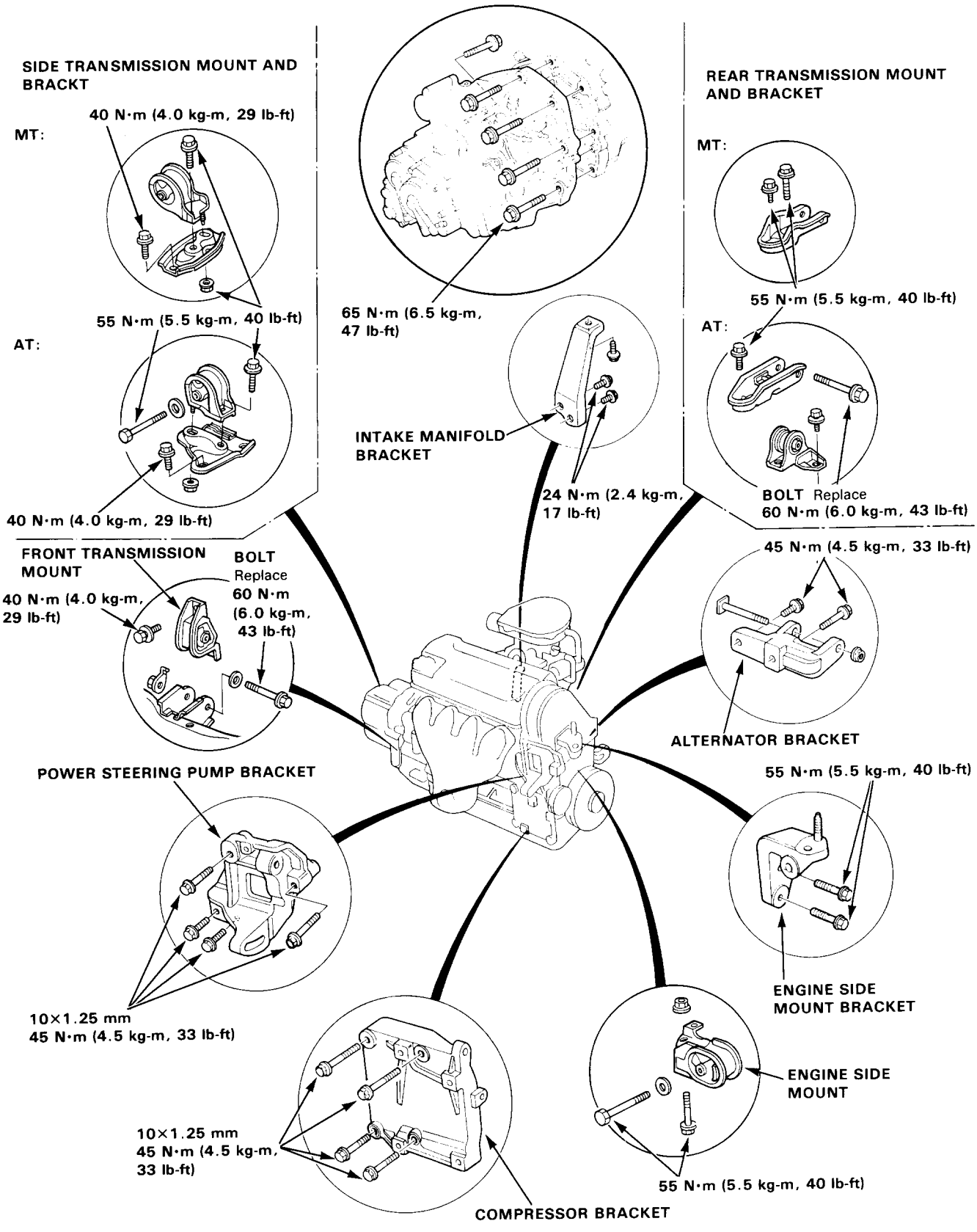
NOTE: Check the mount and bracket for damage.

Speedometer cable Installation:

- Align tab on cable end with slot in holder (page 5-63).
- Install clip so bent leg is on groove side. After installing, pull speedometer cable to make sure it is secure.



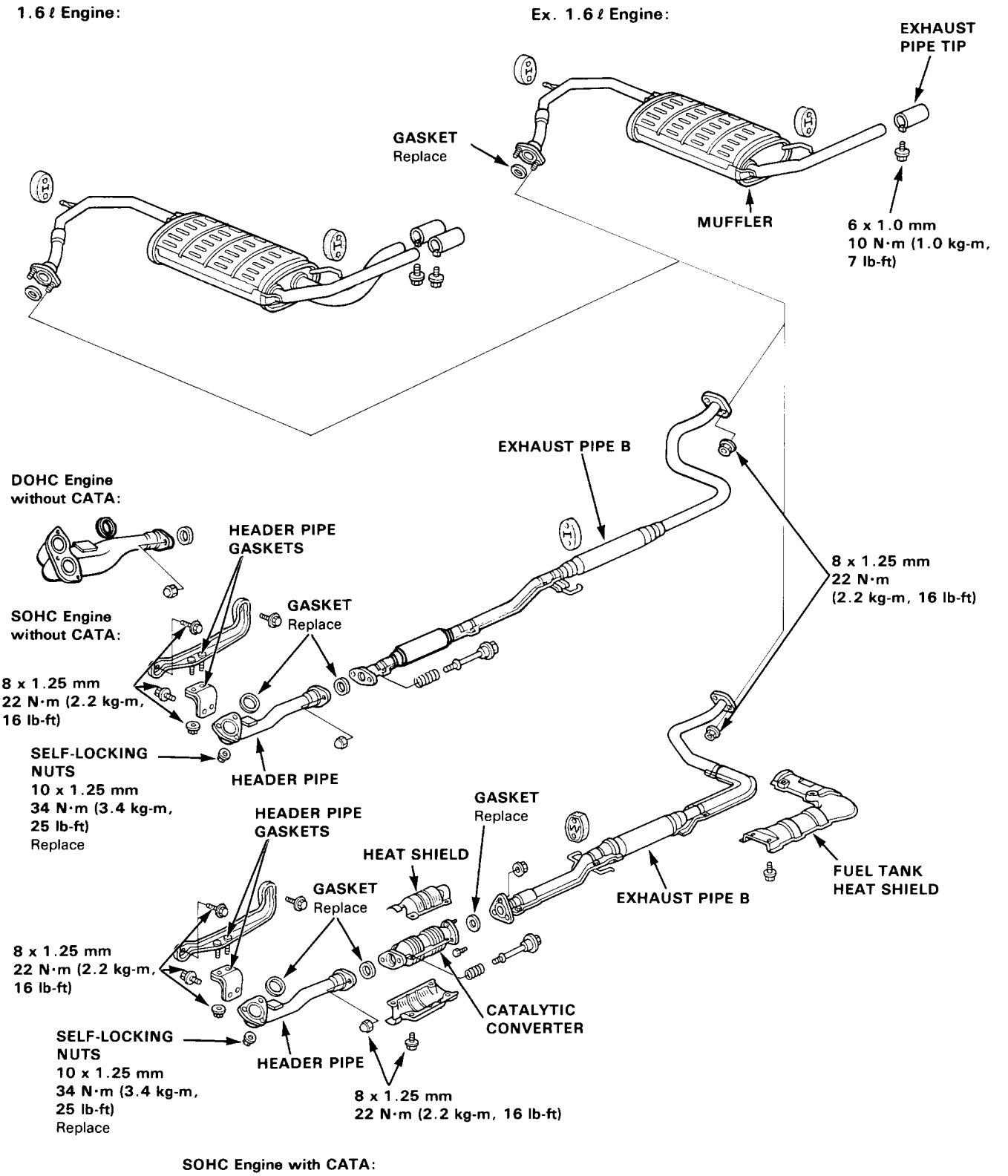
Additional Torque Specifications:



Exhaust Pipe and Muffler

Exhaust Pipe and Muffler

Replacement



Radiator

Radiator

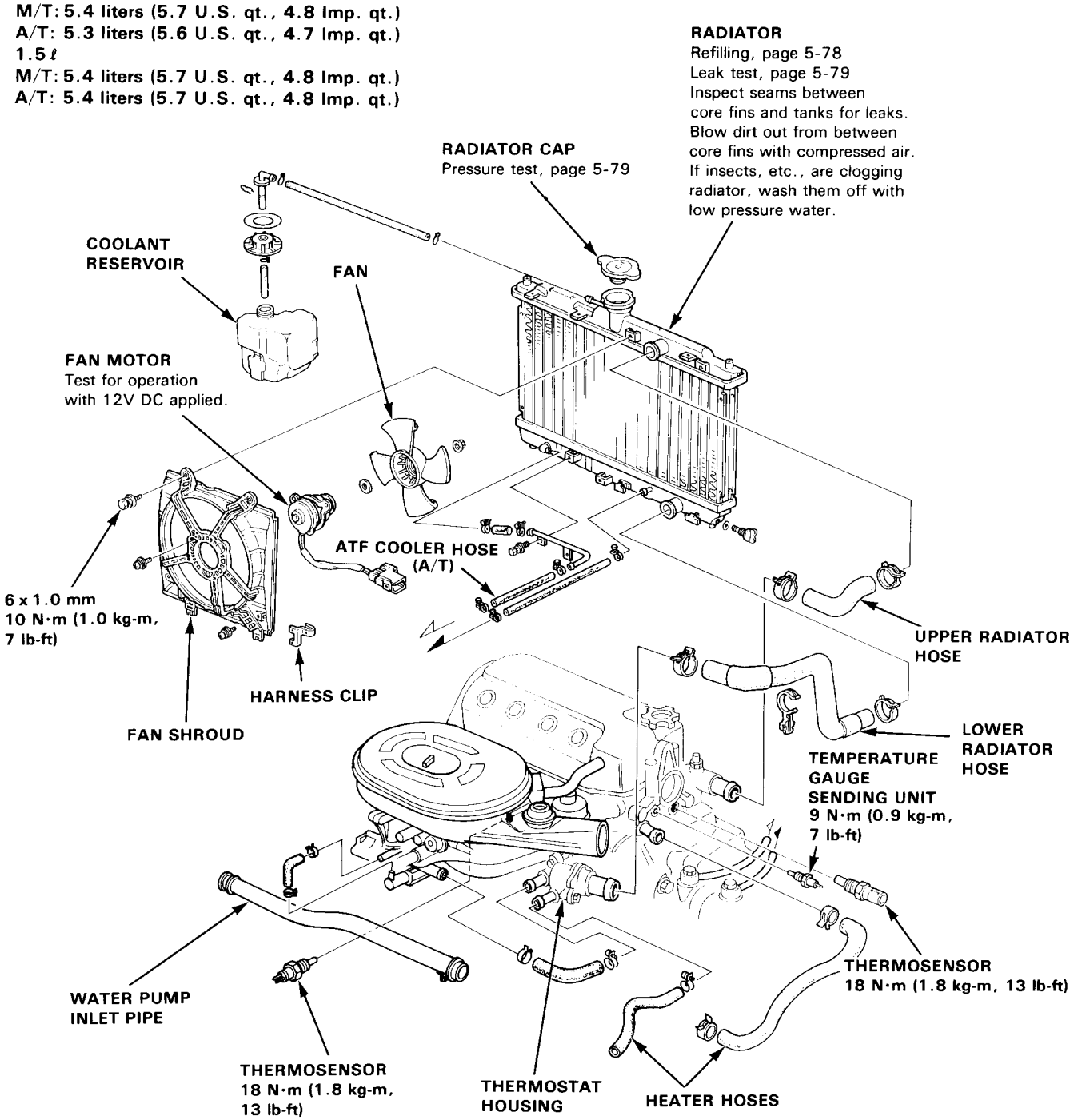
Illustrated Index

SOHC 1-Carbureted Engine:

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

Total Cooling System Capacity (Incl. heater, and reservoir tank 0.4 liters):
1.2ℓ, 1.3ℓ
M/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)
A/T: 5.3 liters (5.6 U.S. qt., 4.7 Imp. qt.)
1.5ℓ
M/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)
A/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)

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

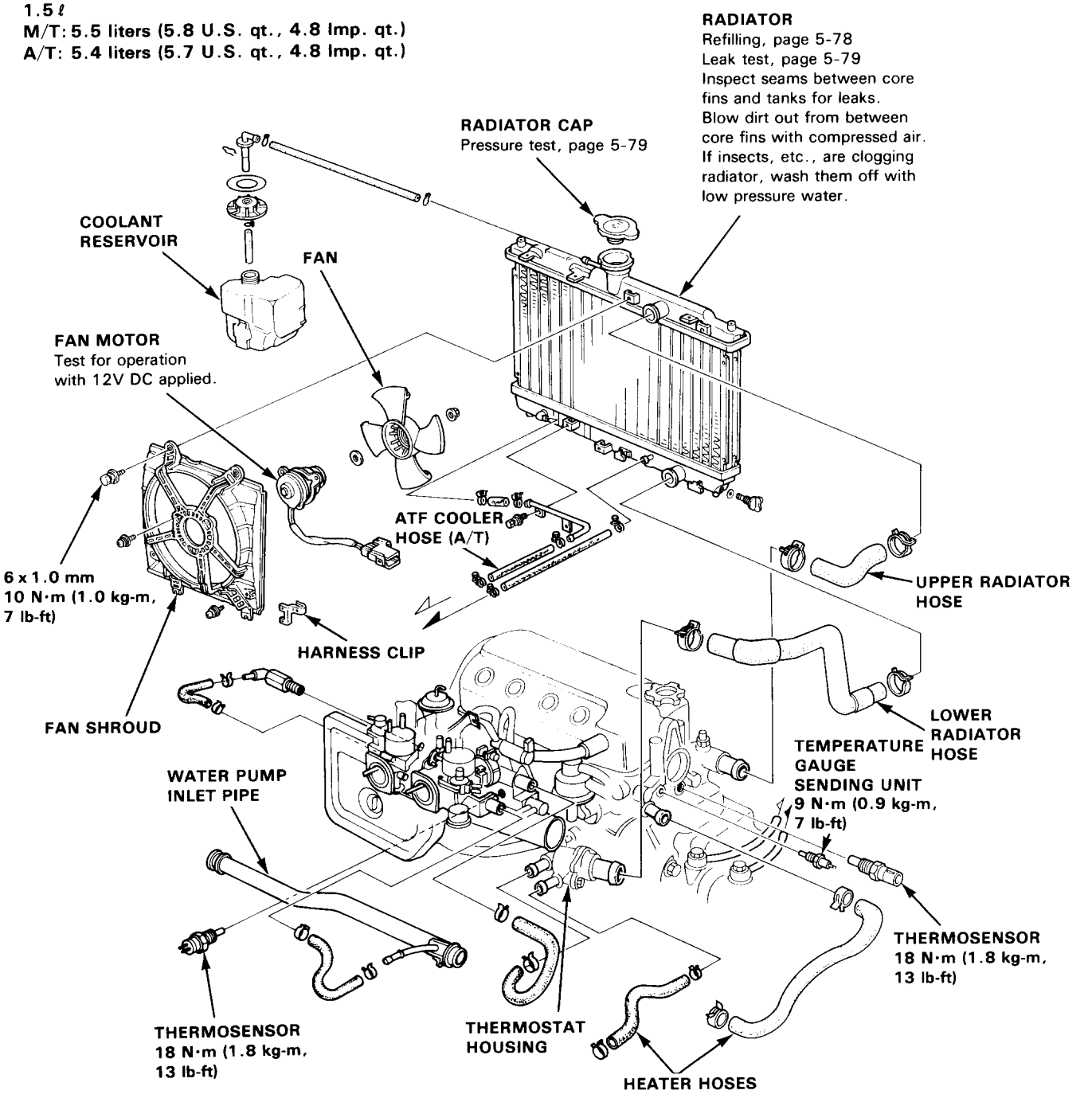


SOHC 2-Carbureted Engine:

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

Total Cooling System Capacity (Incl. heater, and reservoir tank 0.4 liters):
1.4 ℓ
M/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)
A/T: 5.3 liters (5.6 U.S. qt., 4.7 Imp. qt.)
1.5 ℓ
M/T: 5.5 liters (5.8 U.S. qt., 4.8 Imp. qt.)
A/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)

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



Radiator

Illustrated Index

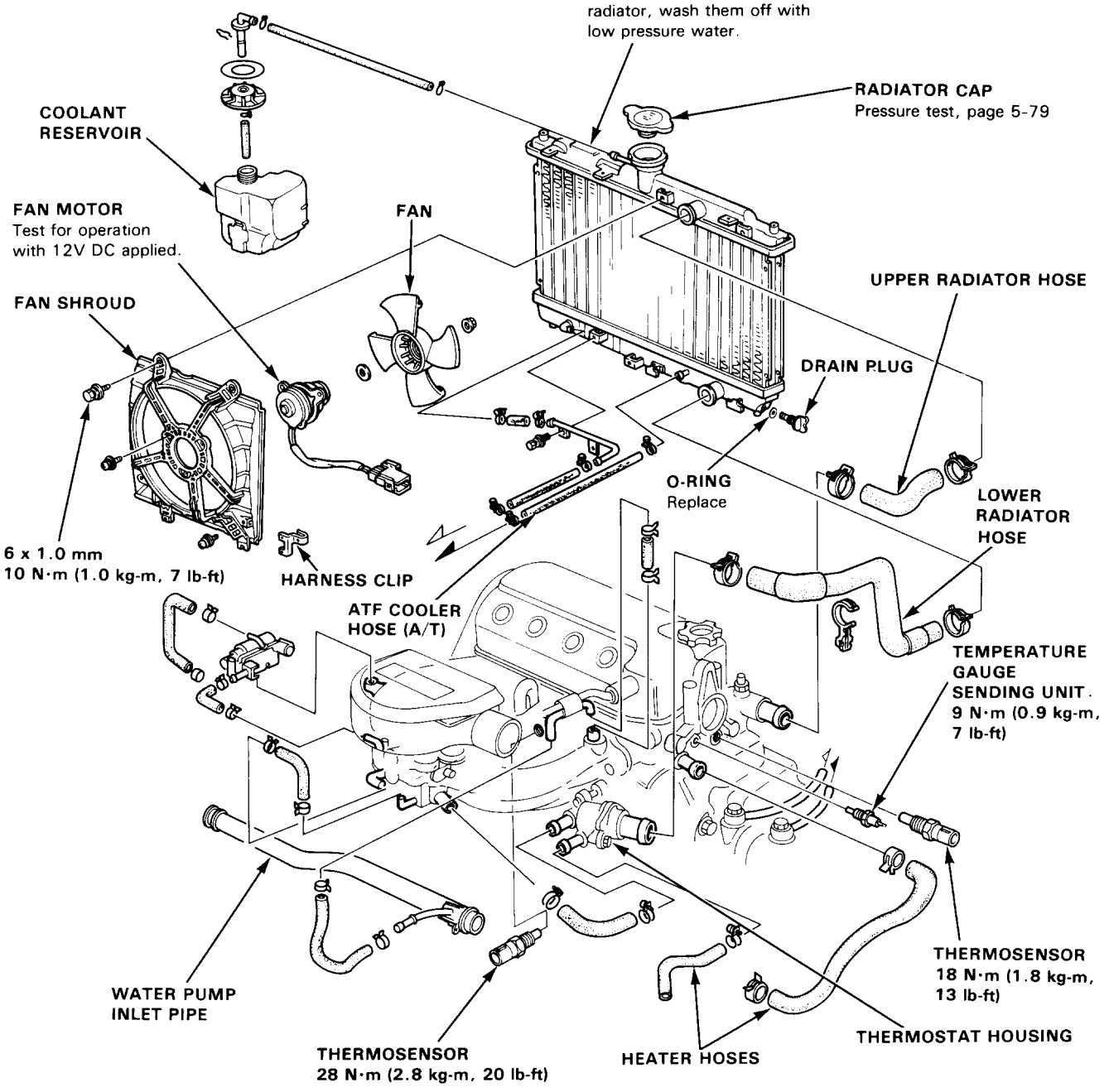
SOHC Fuel-Injected Engine:

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

1.5 ℓ 93 ps
M/T: 5.5 liters (5.8 U.S. qt., 4.8 Imp. qt.)
A/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)
1.5 ℓ 70ps
M/T: 5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)
A/T: 5.3 liters (5.6 U.S. 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 whenever reassembling.

RADIATOR
Refilling, page 5-78
Leak test, page 5-79
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.

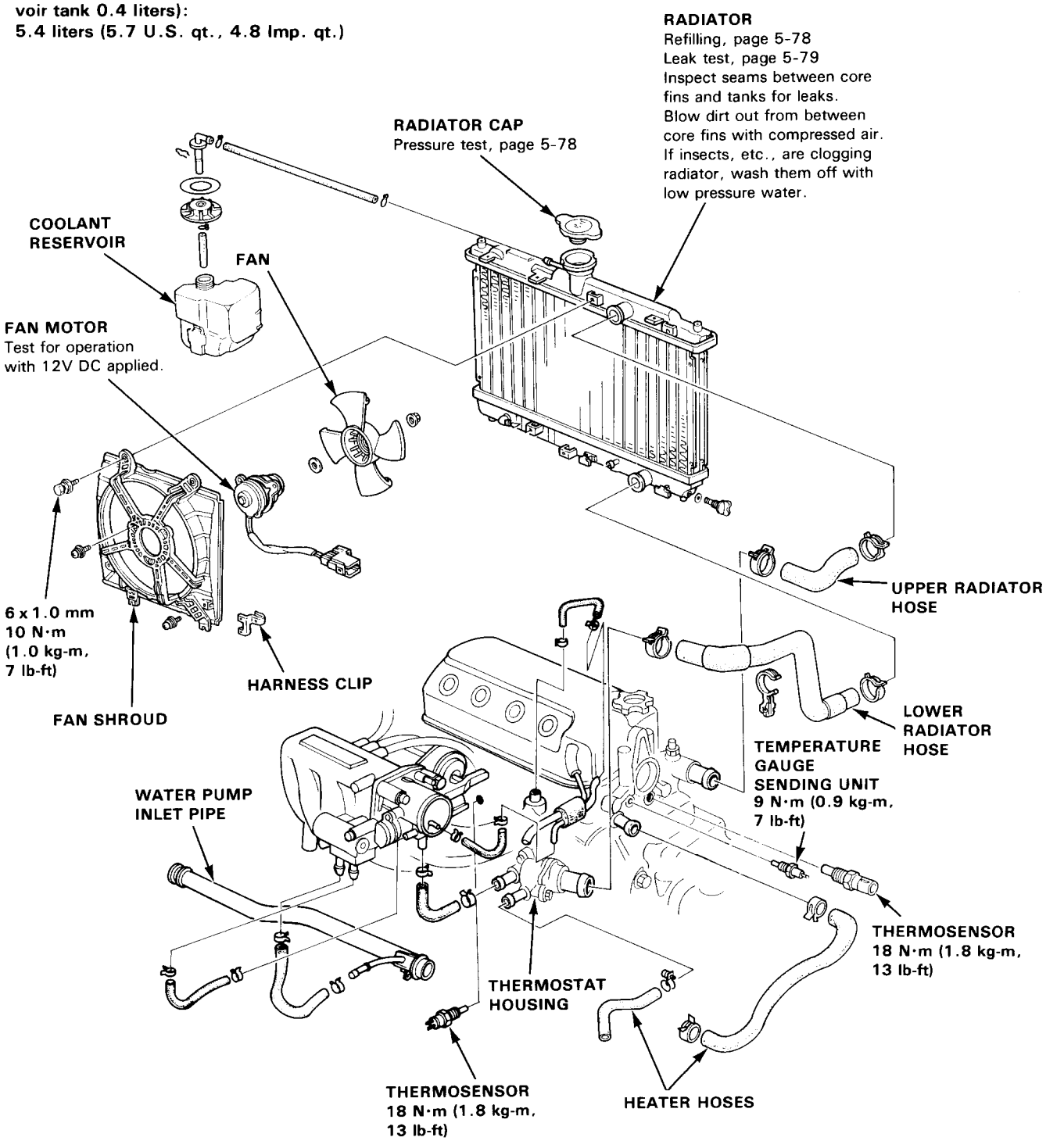


1.6 ℓ SOHC Fuel-Injected Engine:

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

Total Cooling System Capacity (Incl. heater, and reservoir tank 0.4 liters):
5.4 liters (5.7 U.S. qt., 4.8 Imp. qt.)

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

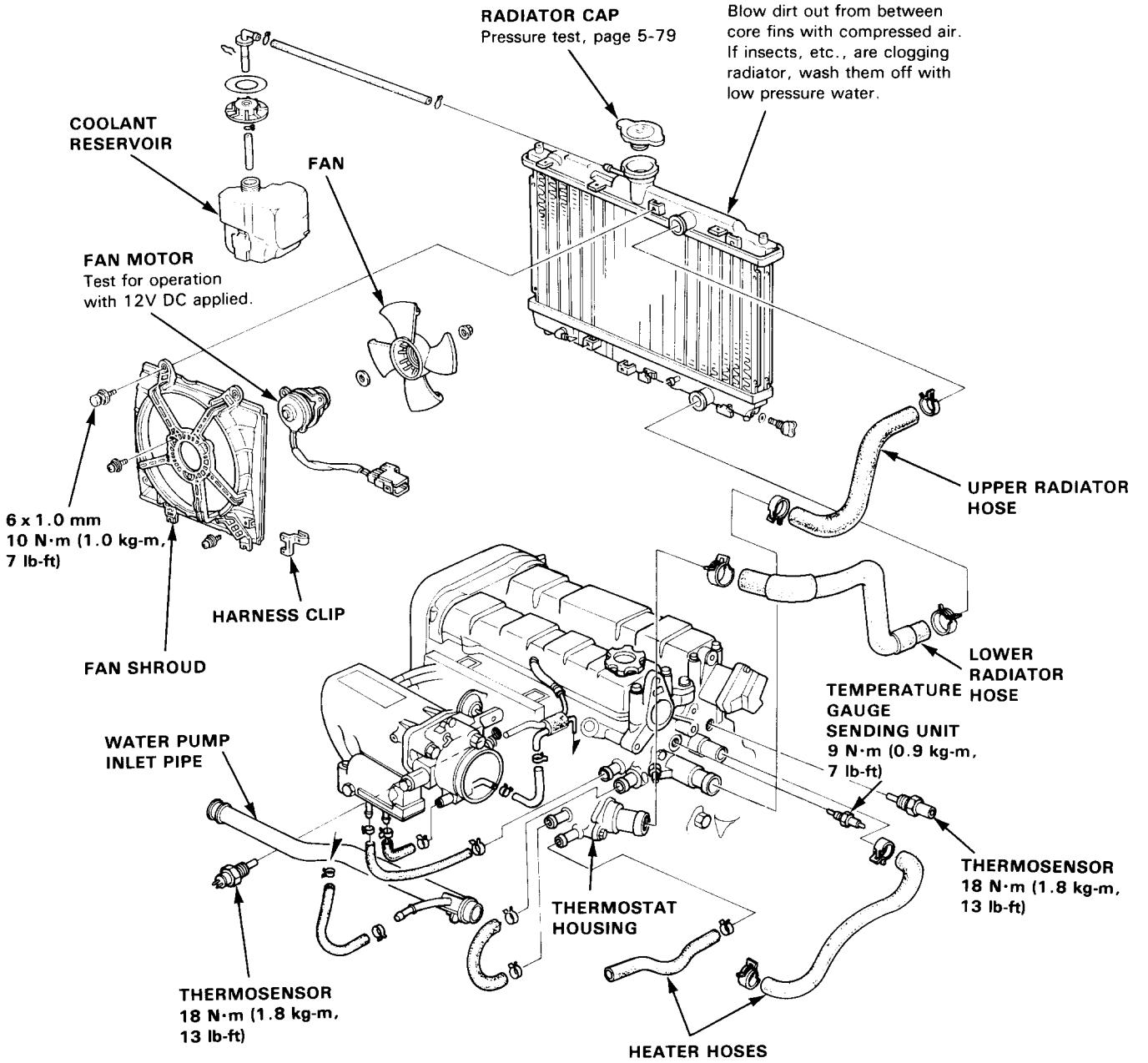


DOHC Fuel-Injected Engine:

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

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

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



Radiator

Replacement

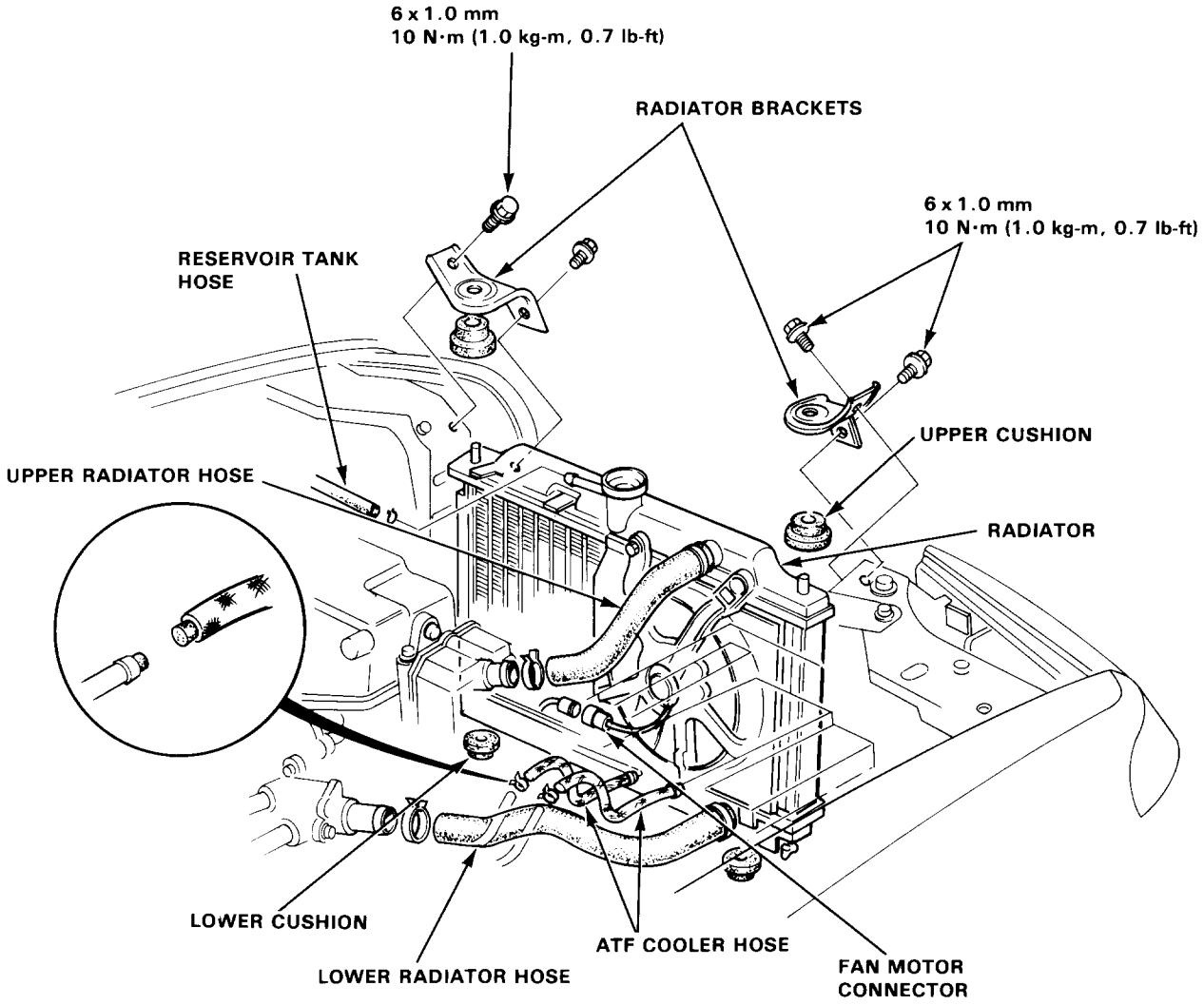
1. Drain the coolant from the radiator.
   - Remove the radiator cap to speed draining.

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

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 ATF cooler hose (A/T).

   NOTE: Plug the hoses and pipes.

5. 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.

Radiator

Refilling and Bleeding

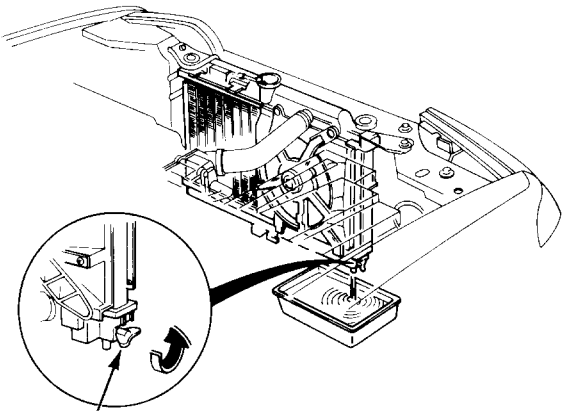
1. Set the heater temperature lever to maximum heat.
2. When the radiator is cool, remove the radiator cap and drain plug, and drain the radiator.
3. Reinstall the radiator drain plug and tighten it securely.
4. Remove, drain and reinstall the reserve tank. Fill the tank halfway to the MAX mark with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

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

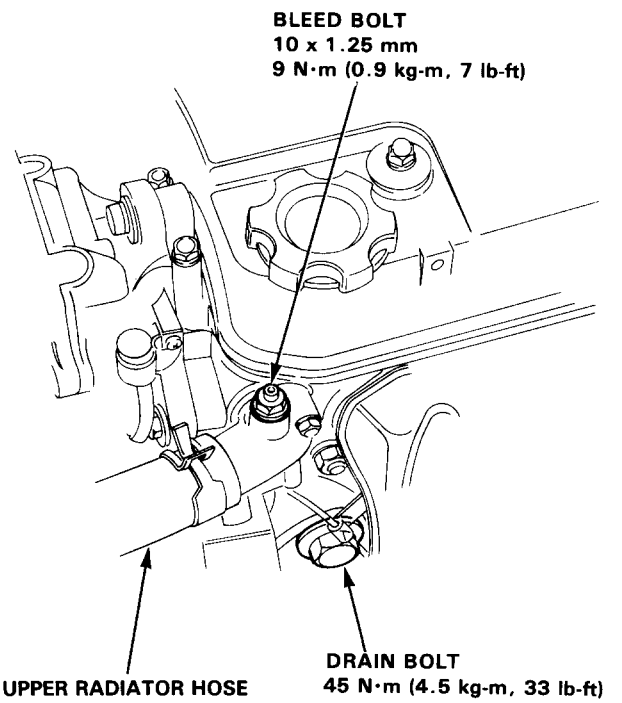
CAUTION:
- **Do not mix different brand anti-freeze/coolants.**
- **Do not use additional rust inhibitors or anti-rust products; they may not be compatible with the recommended coolant.**

Radiator Coolant Refill Capacity:
(Including reservoir tank 0.4 liters)

	M/T	A/T
	ℓ (U.S. qt., Imp. qt.)	
1.2 ℓ, 1.3 ℓ, 1.4 ℓ	4.4, (4.6, 3.9)	4.3, (4.5, 3.8)
1.5 ℓ (1-Cabureted)	4.4, (4.6, 3.9)	4.4, (4.6, 3.9)
1.5 ℓ (2-Cabureted)	4.5, (4.7, 4.0)	4.4, (4.6, 3.9)
1.5 ℓ (PGM-FI) 70 ps	4.4, (4.6, 3.9)	4.3, (4.5, 3.8)
1.5 ℓ (PGM-FI) 93 ps	4.5, (4.7, 4.0)	4.4, (4.6, 3.9)
1.6 ℓ DOHC	4.5, (4.7, 4.0)	
1.6 ℓ SOHC	4.4, (4.6, 3.9)	



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

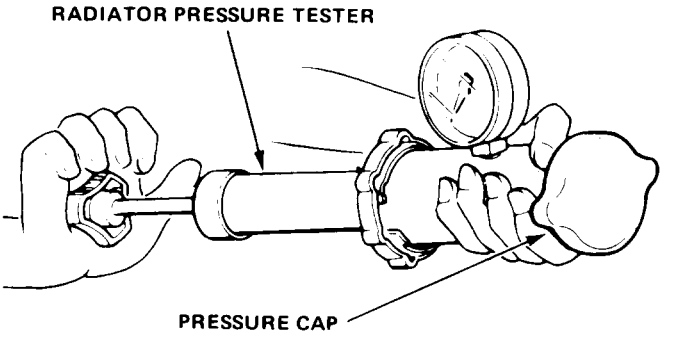


7. With the radiator cap off, start the engine and let it run until warmed up (fan goes on at least twice). If necessary add more coolant mix to bring the level back up to the bottom of the filler neck.
8. Put the radiator cap on, then run the engine again and check for leaks.

Radiator

Cap Testing

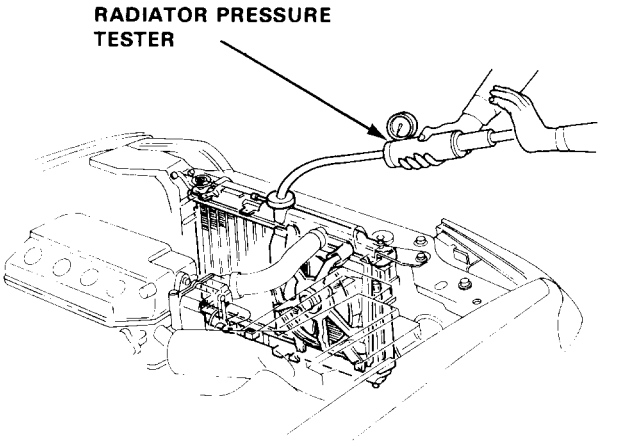
1. Remove the radiator cap, wet its seal with coolant, then install it on the pressure tester.
2. Apply a pressure of 74—103 kPa (0.75—1.05 kg/cm², 11—15 psi).
3. Check for a drop in pressure.



Radiator Testing

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

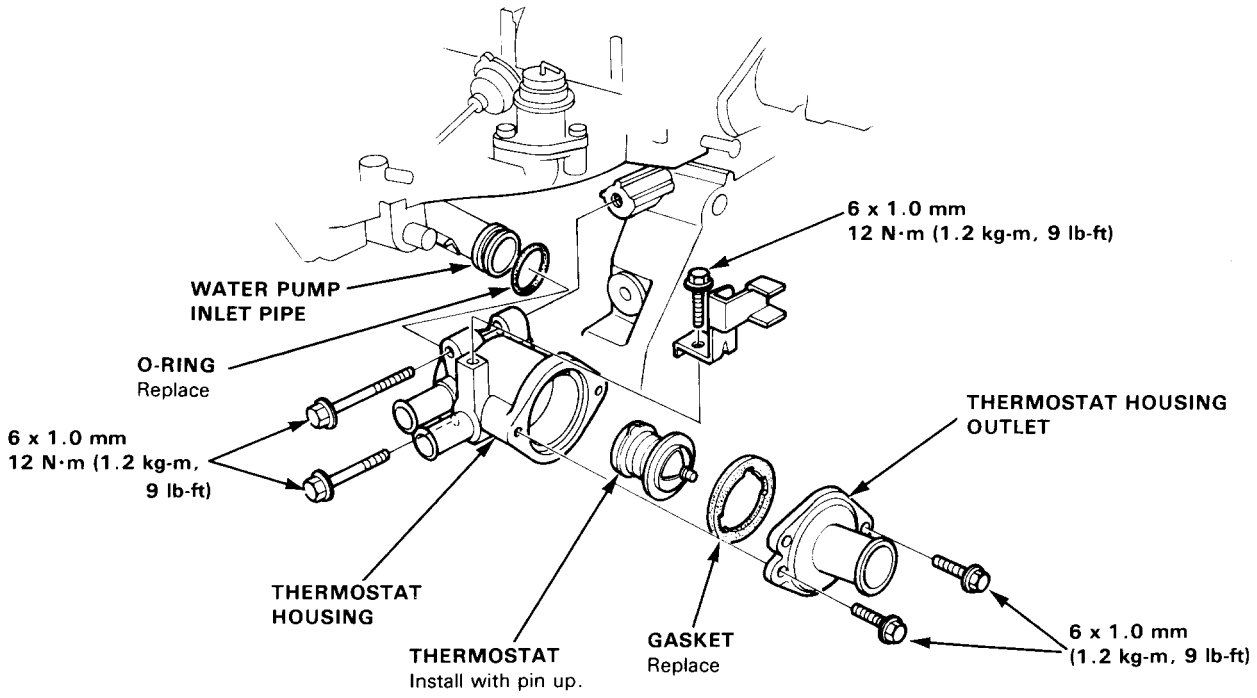
   NOTE: Check for engine oil in coolant and/or coolant in engine oil.



Thermostat

Replacement

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



Testing

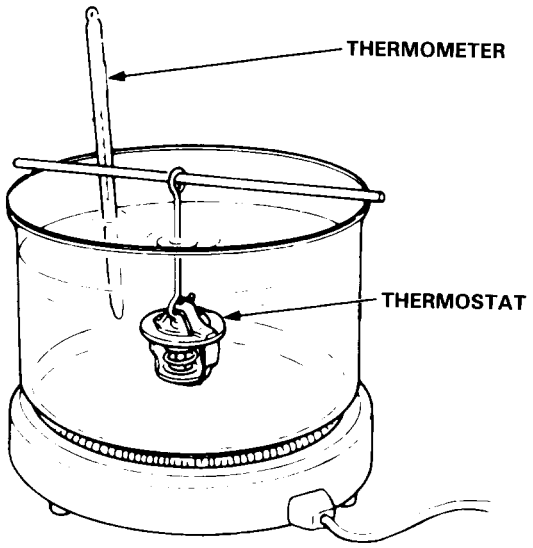
Replace thermostat if it is open at room temperature.

To test a closed thermostat:

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

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

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

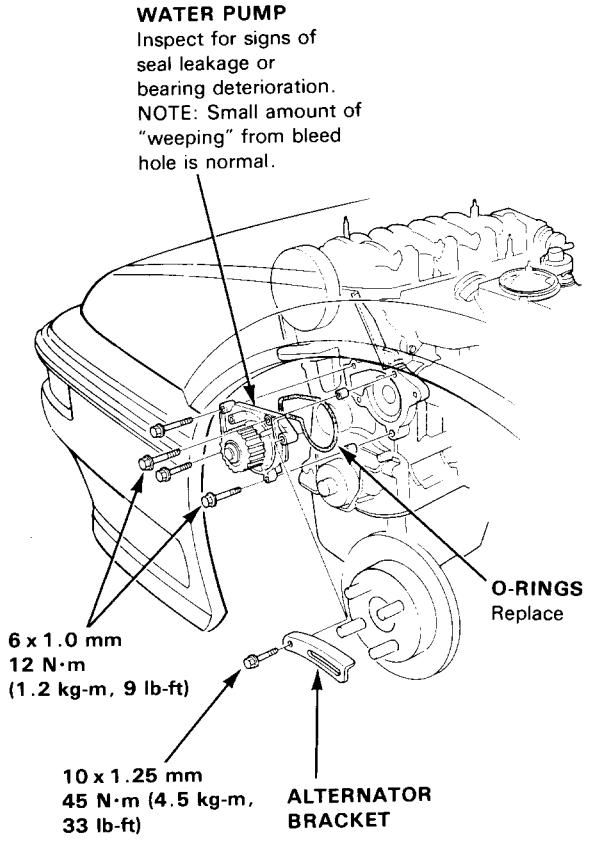


Water Pump

Replacement

1. Remove the timing belt (SOHC: page 5-30, DOHC: page 5-36).

2. Remove the water pump by removing five bolts.



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

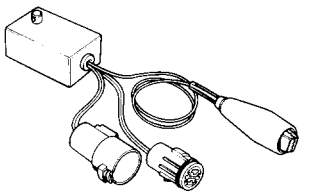
Fuel and Emission

Fuel and Emissions (Carbureted Engine)

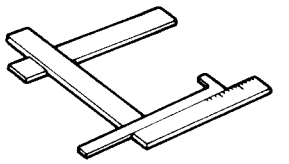
Special Tools

Special Tools

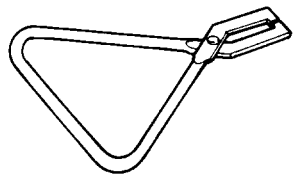
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07401—0010000	Float Level Gauge	1	
③	07614—0050100	Fuel Line Clamp	1	
④	07HAZ—PJ70000	ECU Test Harness A	1	
⑤	07HAZ—PJ70100	ECU Test Harness B	1	
⑥	07411—0020000	Digital Circuit Tester	1	
⑦	07GMJ—ML80100	Test Harness	1	



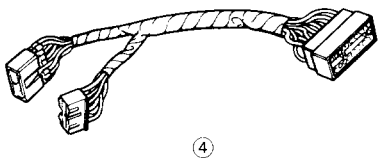
①



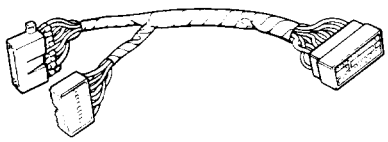
②



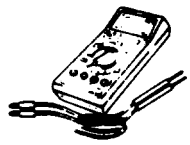
③



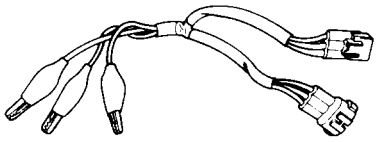
④



⑤



⑥

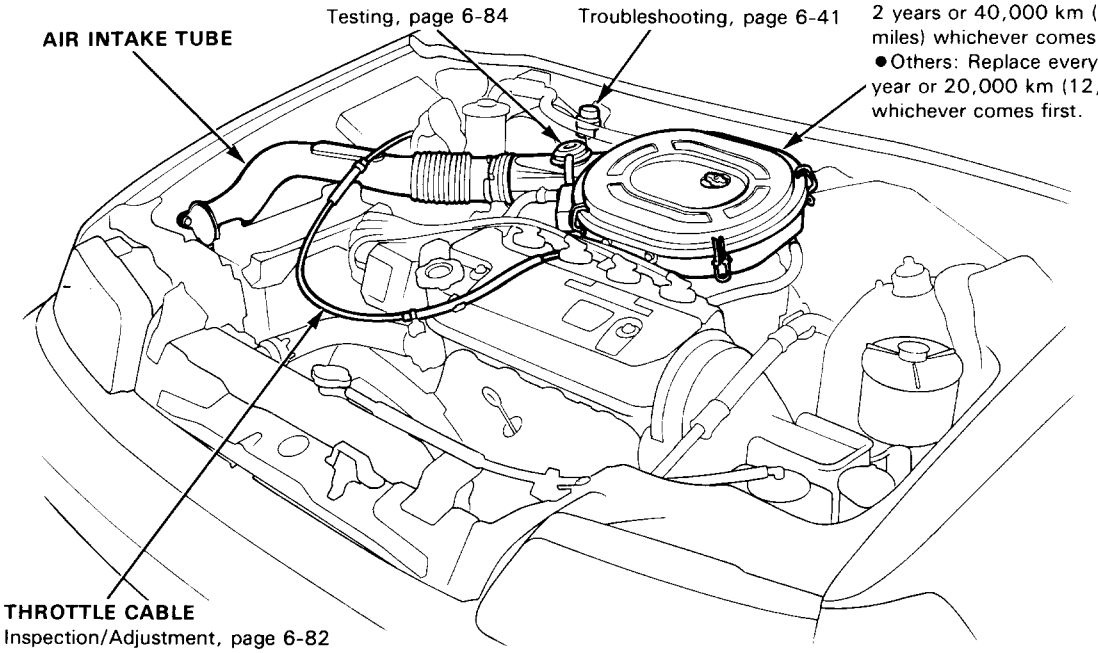


⑦

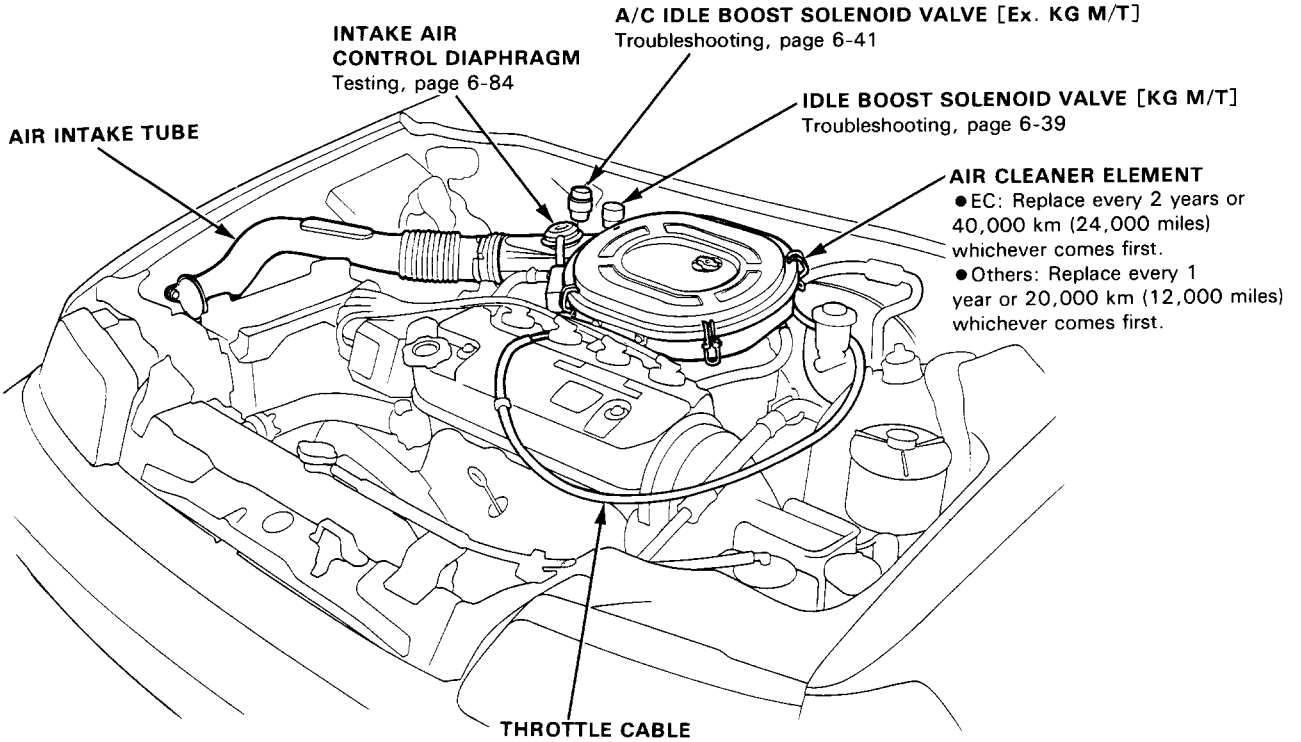
Component Locations

Index

[1-Carbureted Engine, RHD]



[1-Carbureted Engine, LHD]

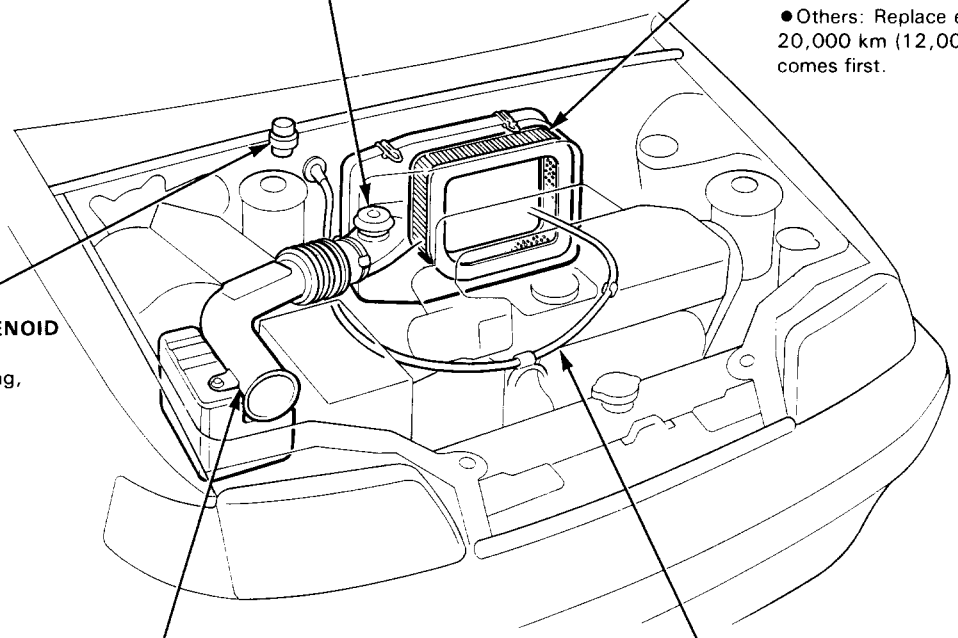


(cont'd)

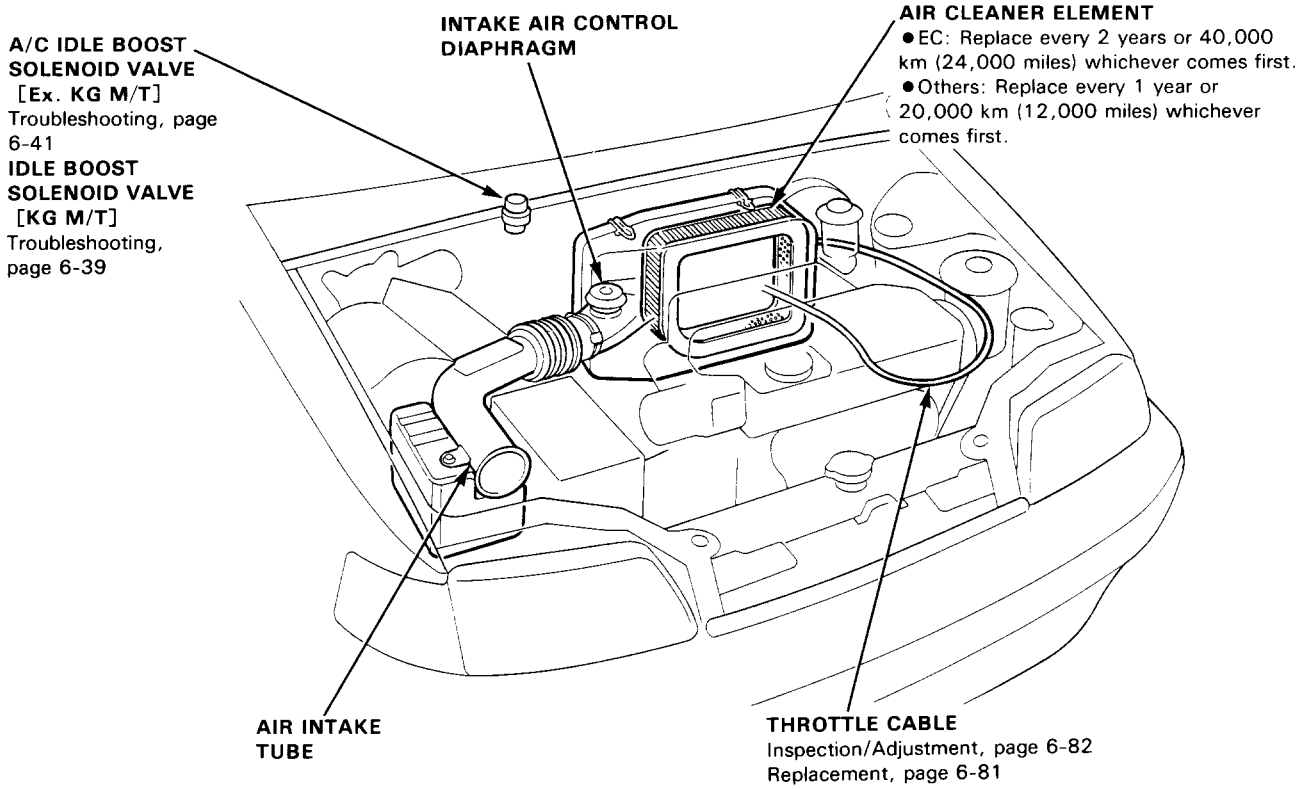
Component Locations

Index (cont'd)

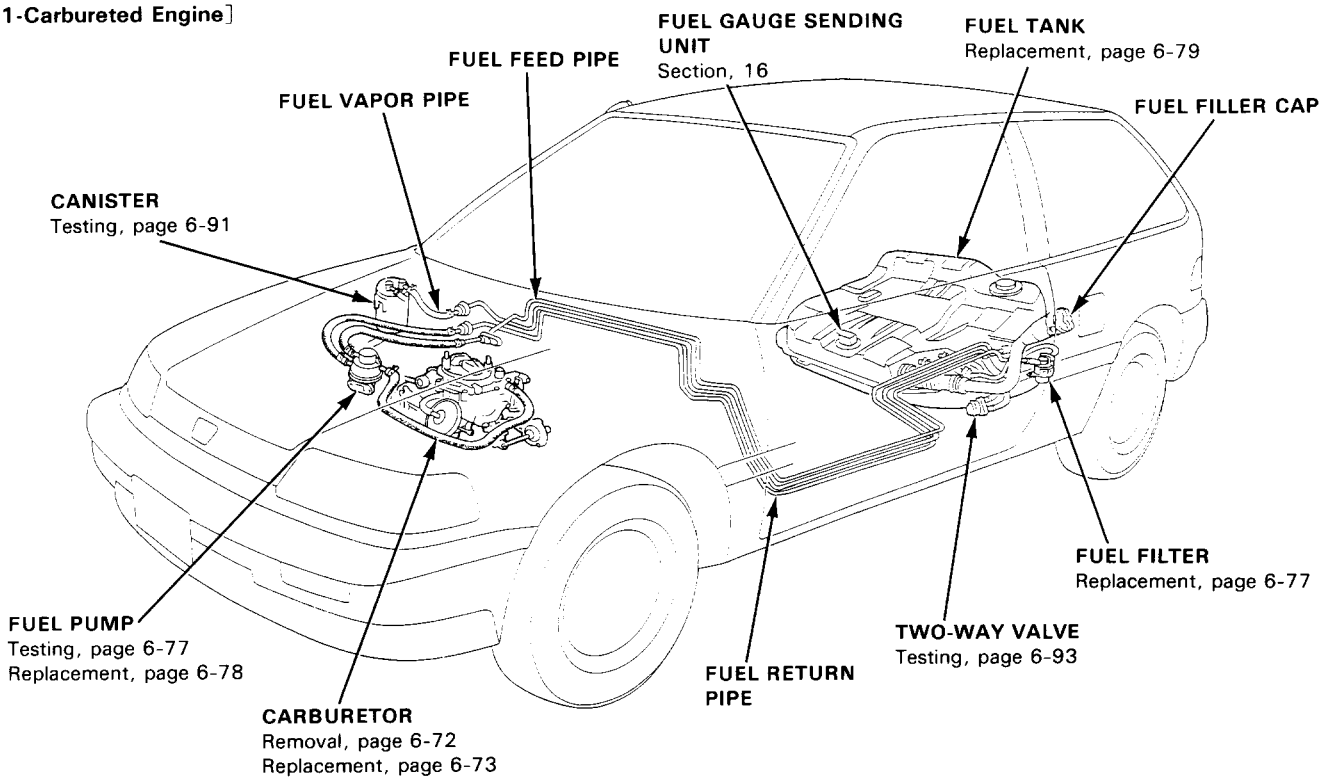
[2-Carbureted Engine, RHD]



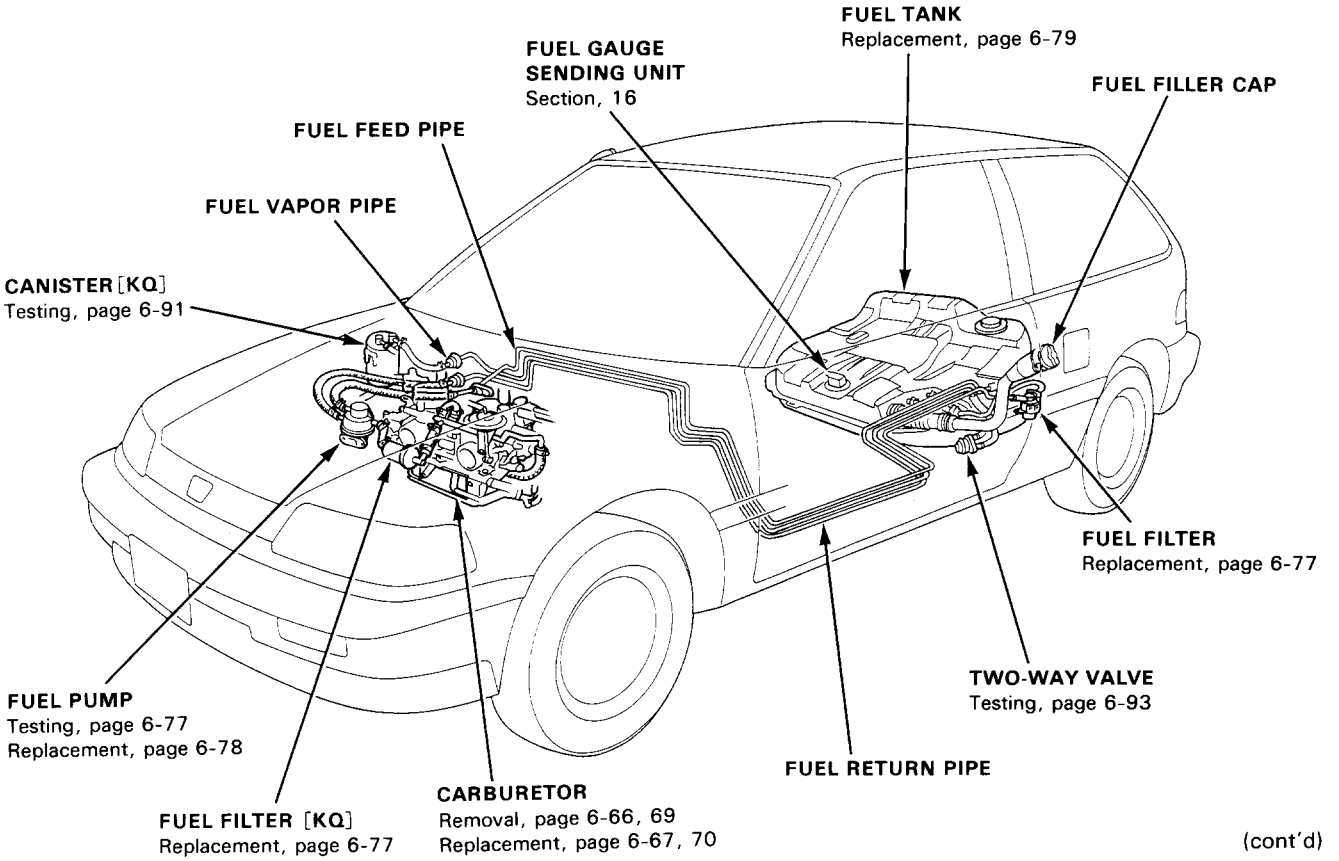
[2-Carbureted Engine, LHD]



[1-Carbureted Engine]



[2-Carbureted Engine]

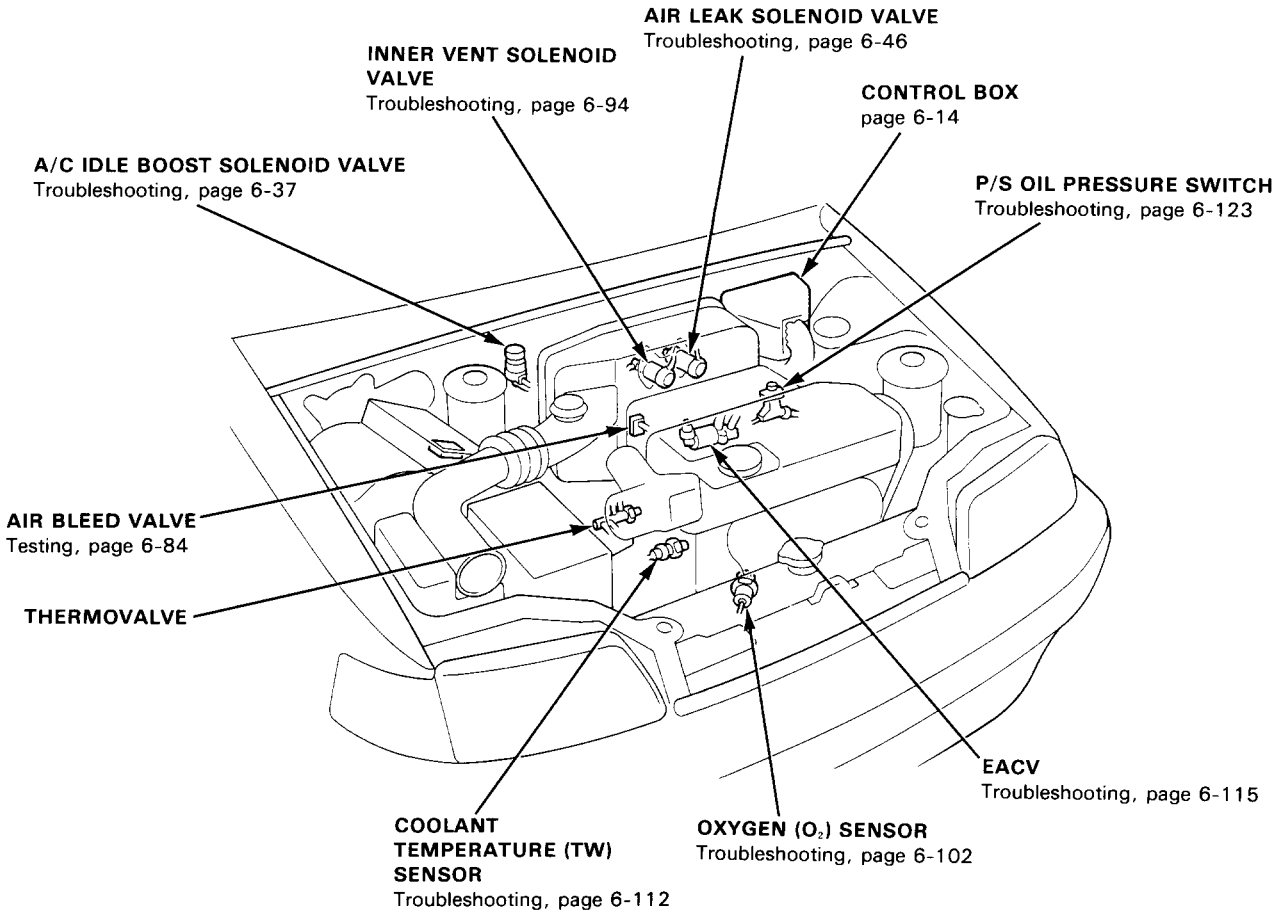


(cont'd)

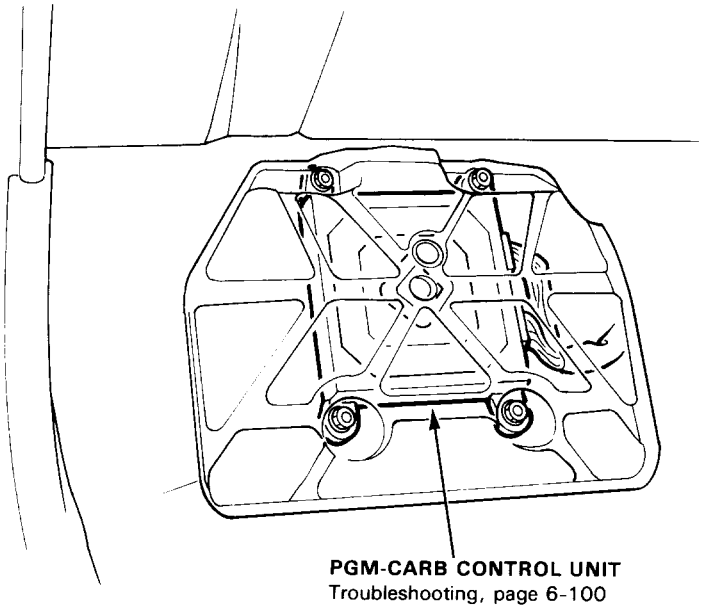
Component Locations

Index (cont'd)

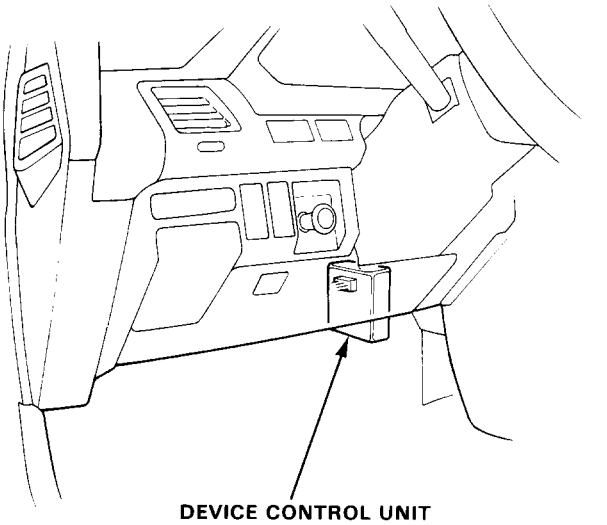
[KQ]



[KQ]



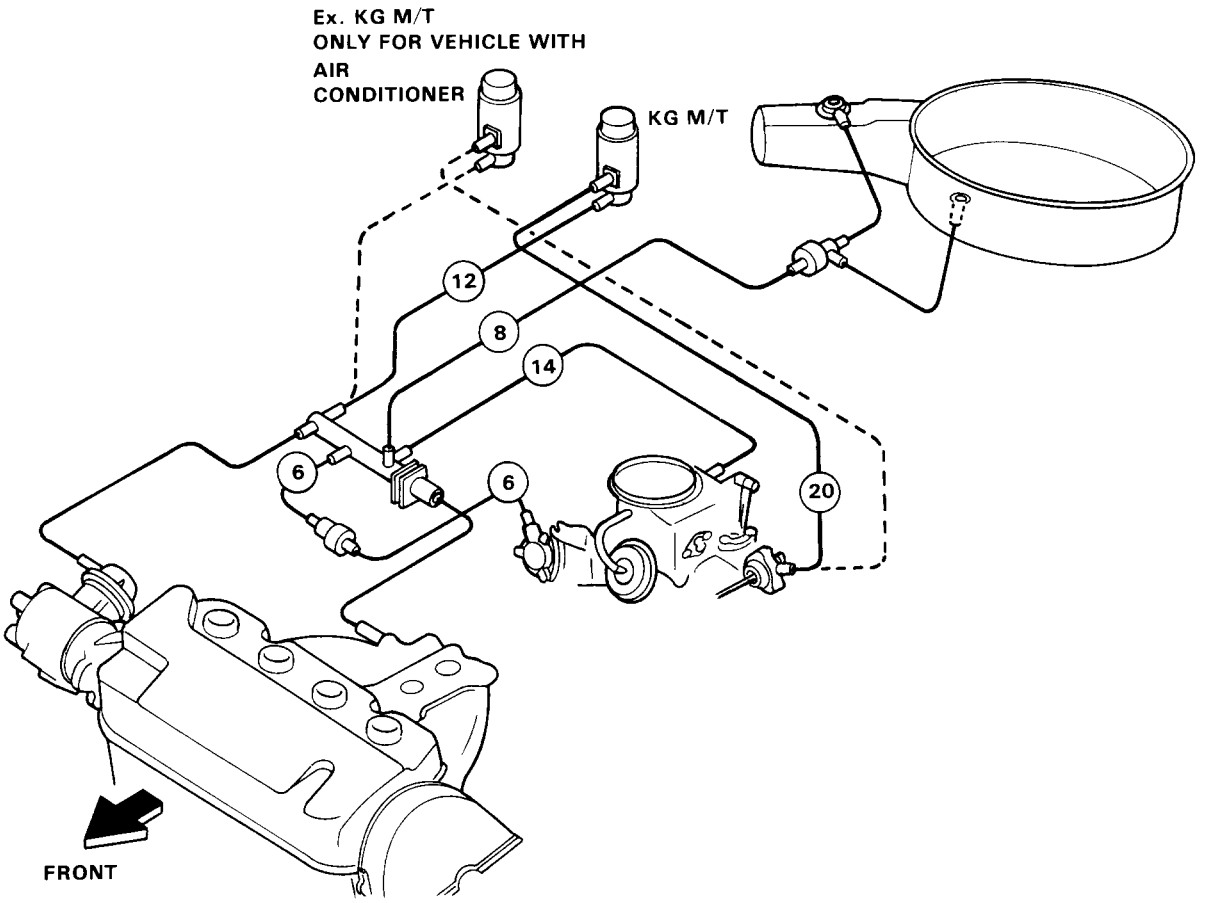
[KG M/T]



System Description

Vacuum Connections

[1-Carbureted Engine, Ex. KG A/T, KY]

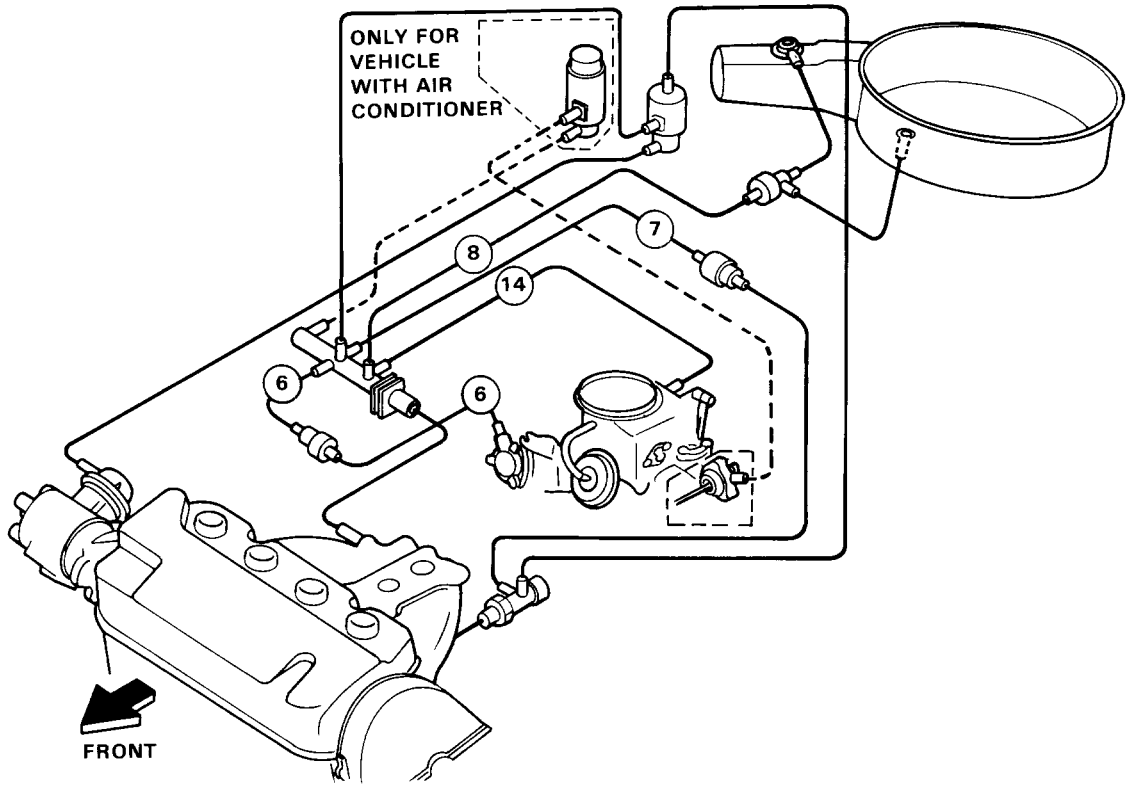


(cont'd)

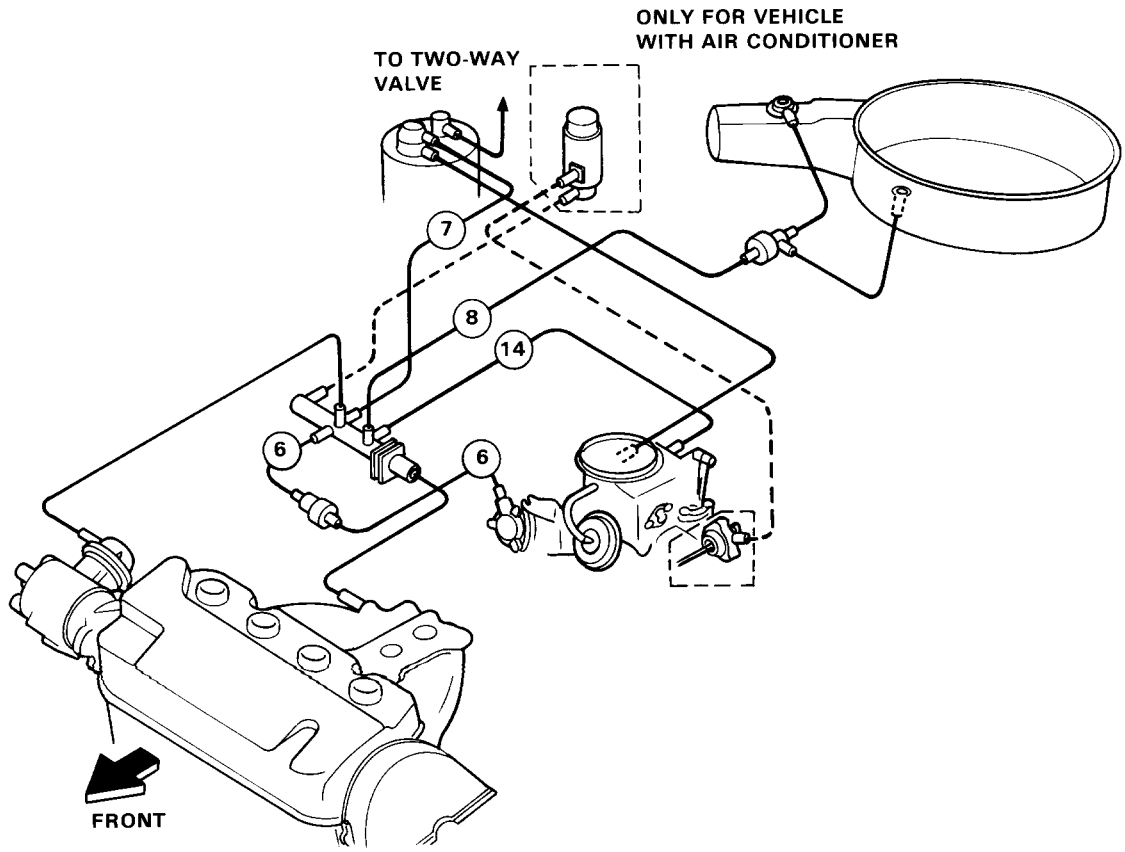
System Description

Vacuum Connections (cont'd)

[1-Carbureted Engine, KG A/T]



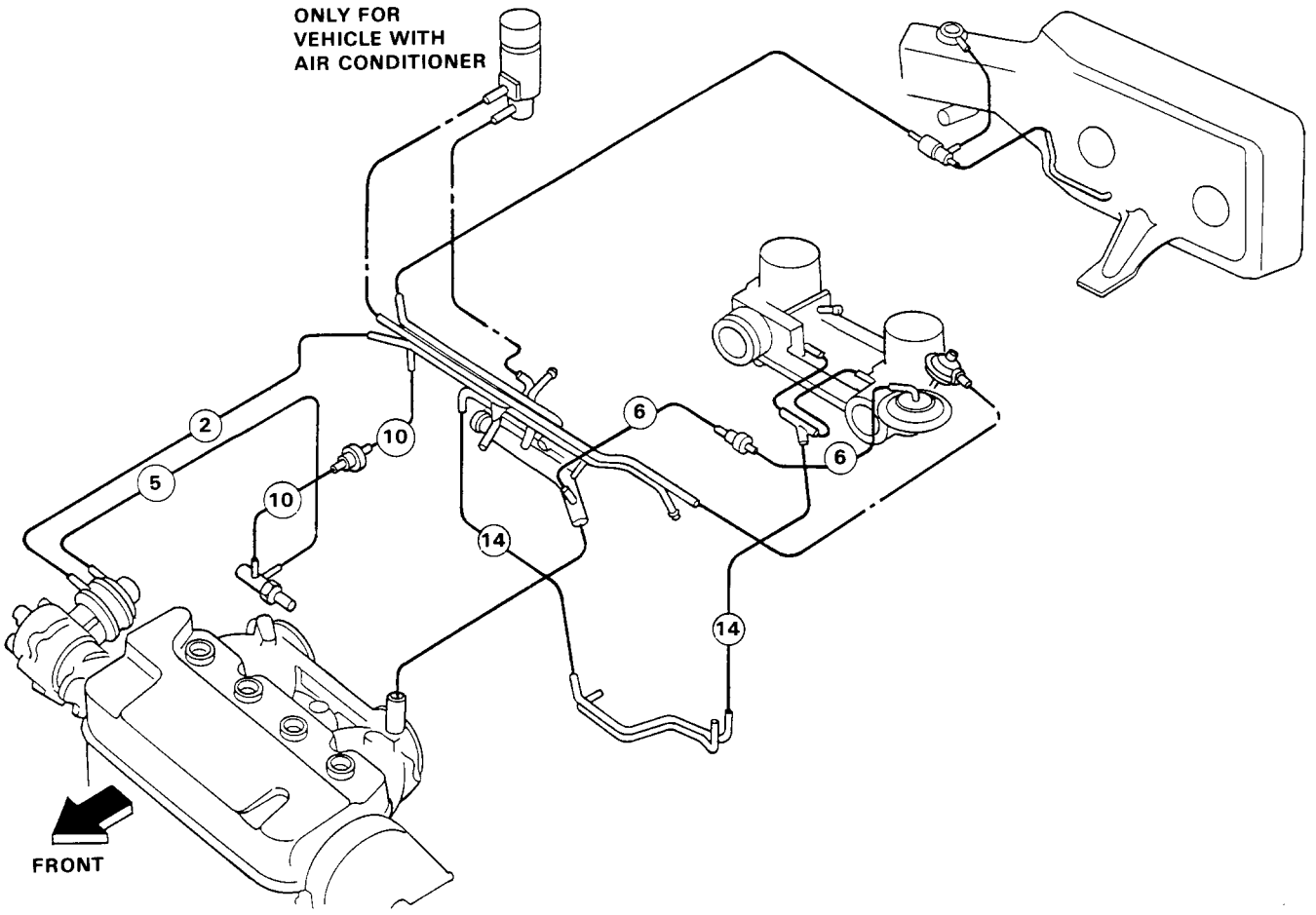
[1-Carbureted Engine, KY]



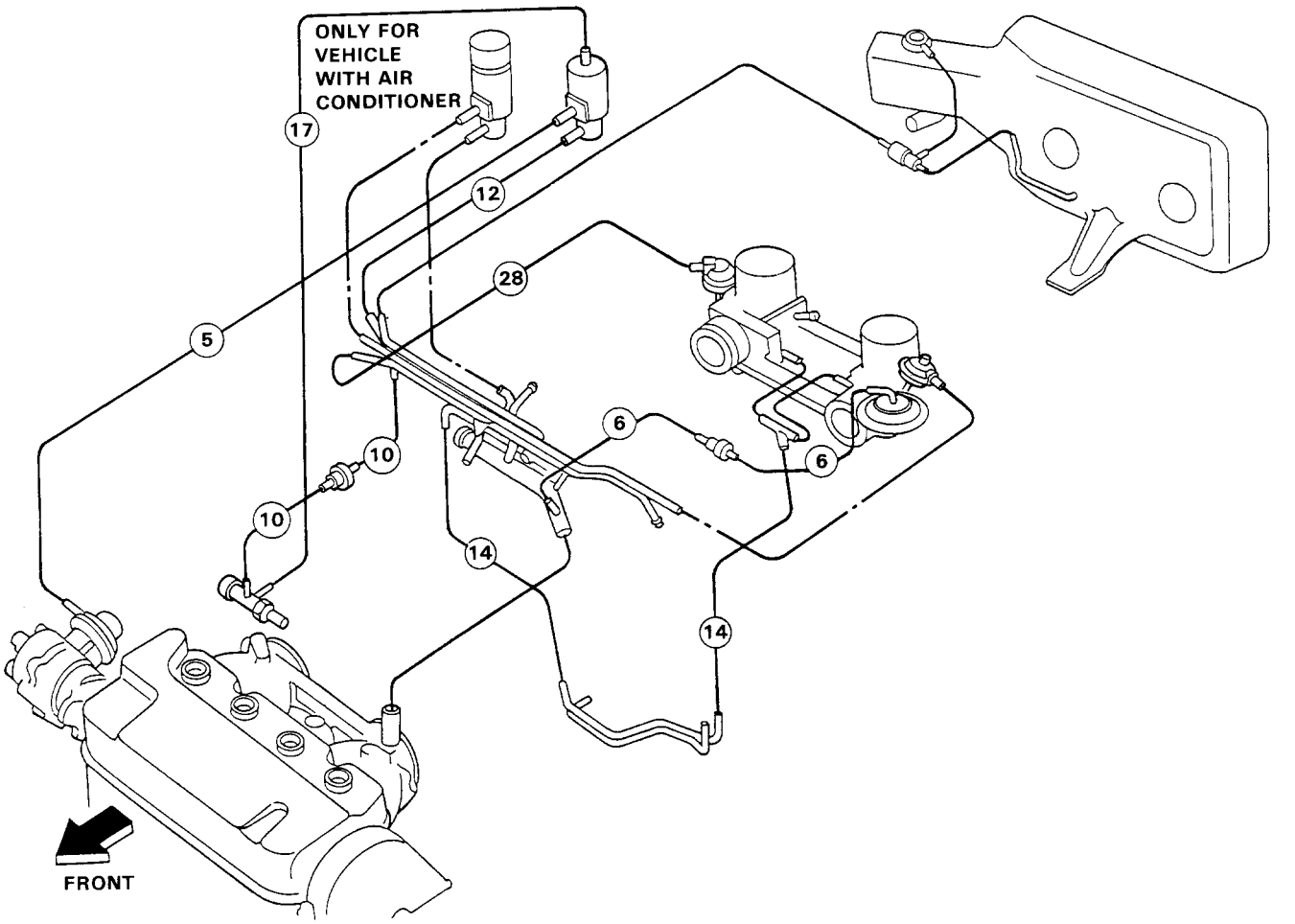
(cont'd)

Vacuum Connections (cont'd)

[2-Carbureted Engine, KB, KF, KW, KE]



[2-Carbureted Engine, KG A/T]

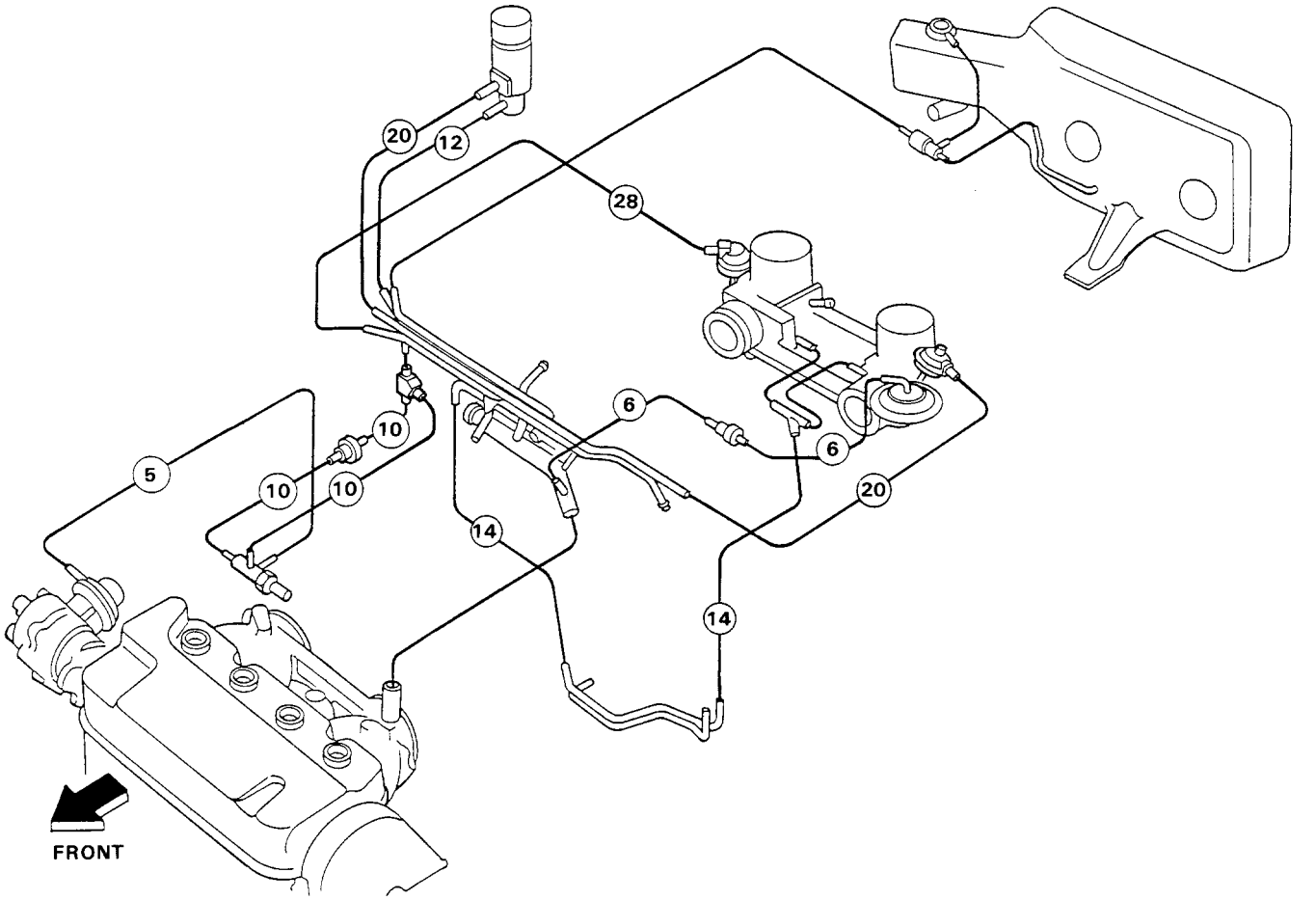


(cont'd)

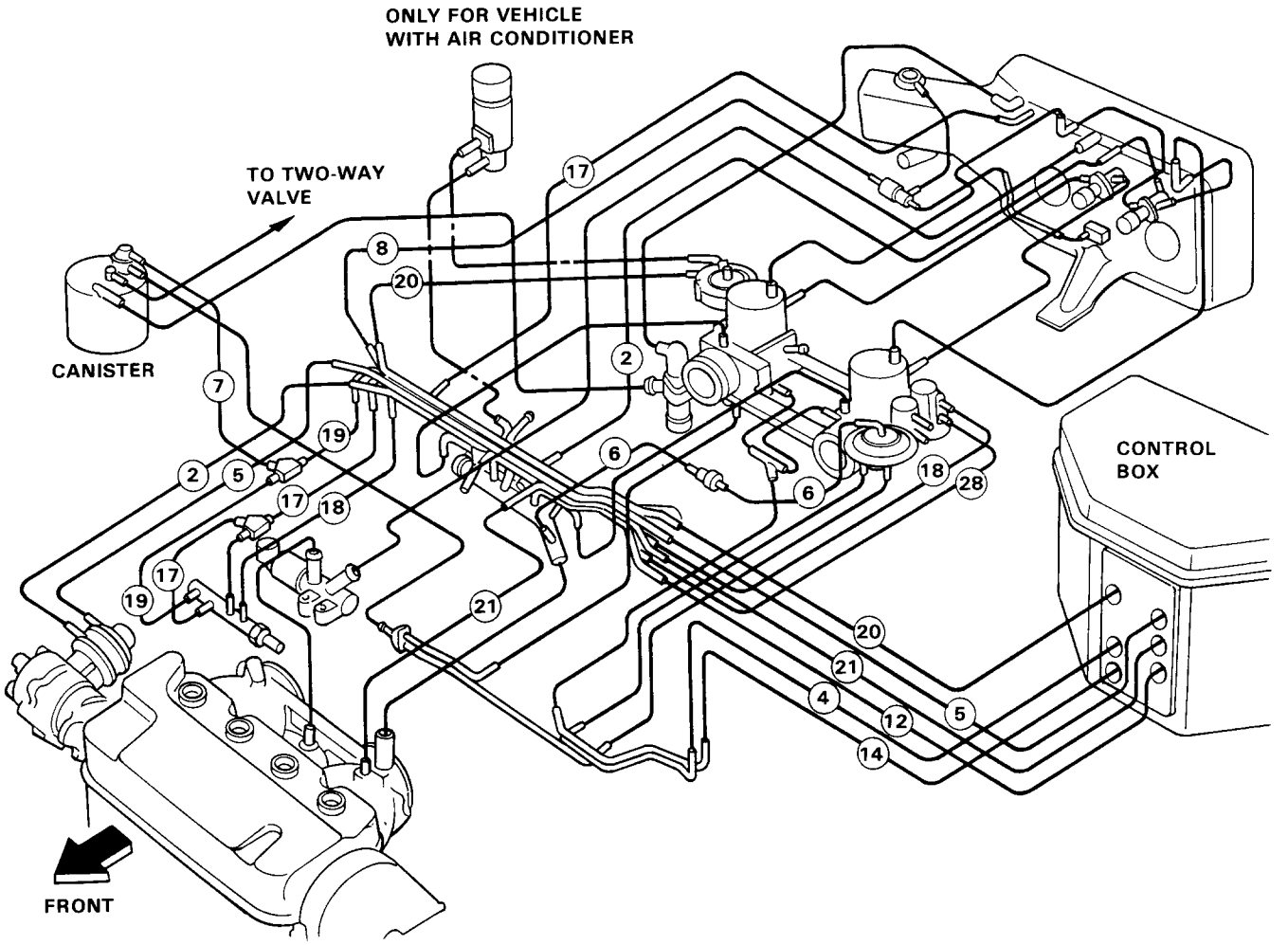
System Description

Vacuum Connections (cont'd)

[2-Carbureted Engine, KG M/T]



[2-Carbureted Engine, KQ]



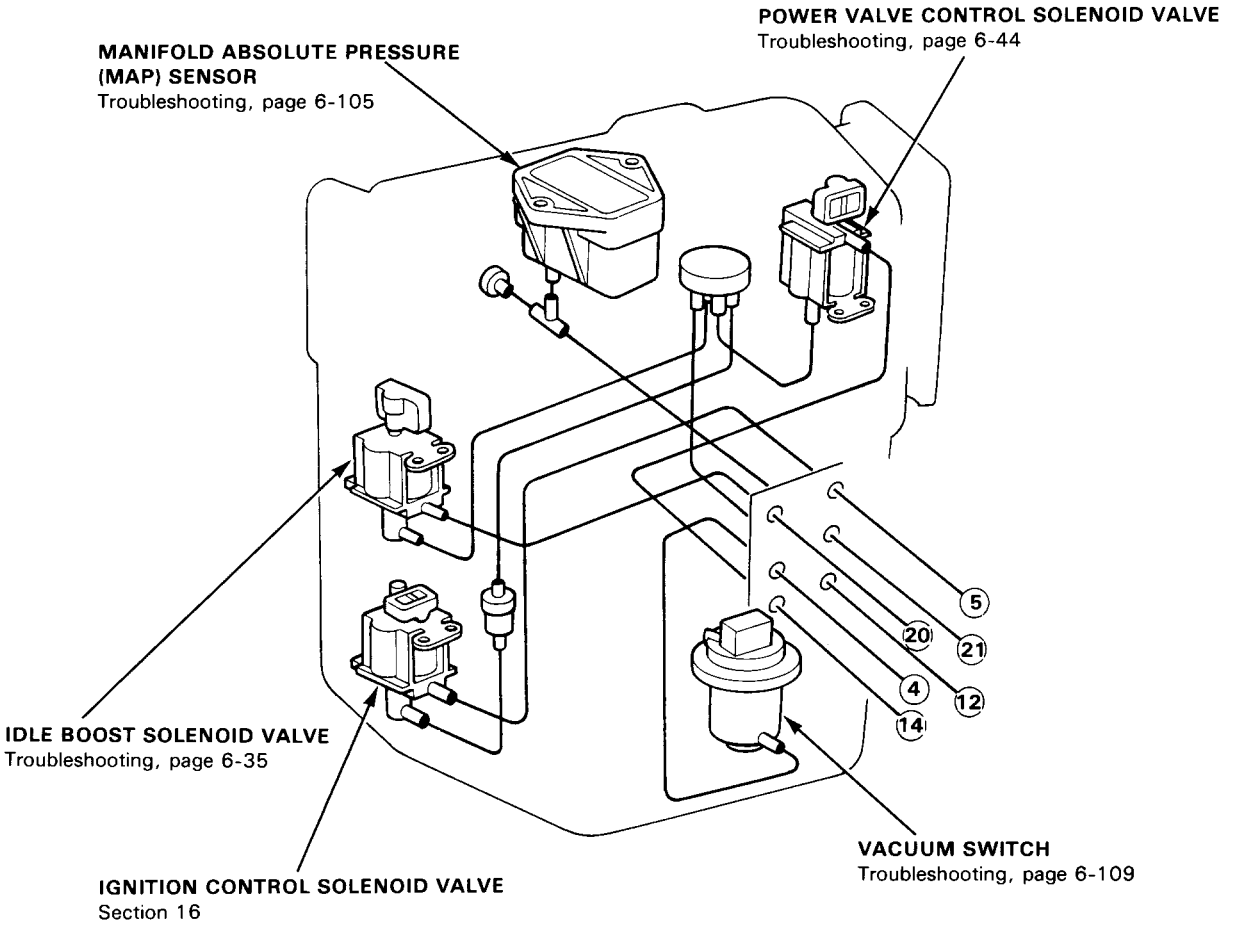
(cont'd)

System Description

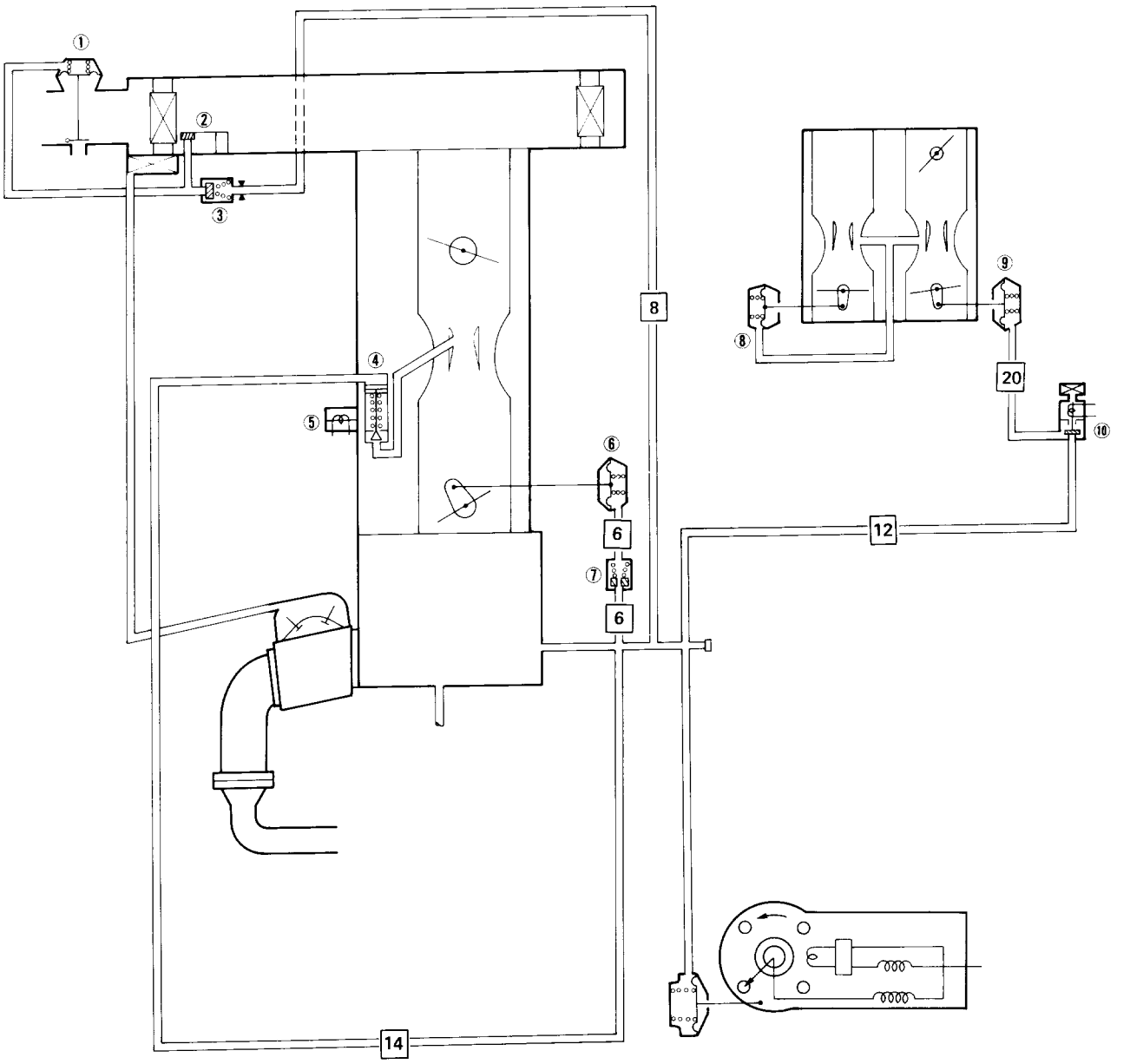
Vacuum Connections (cont'd)

[2-Carbureted Engine, KQ]

Control Box



[1-Carbureted Engine, Ex. KG A/T, KY]



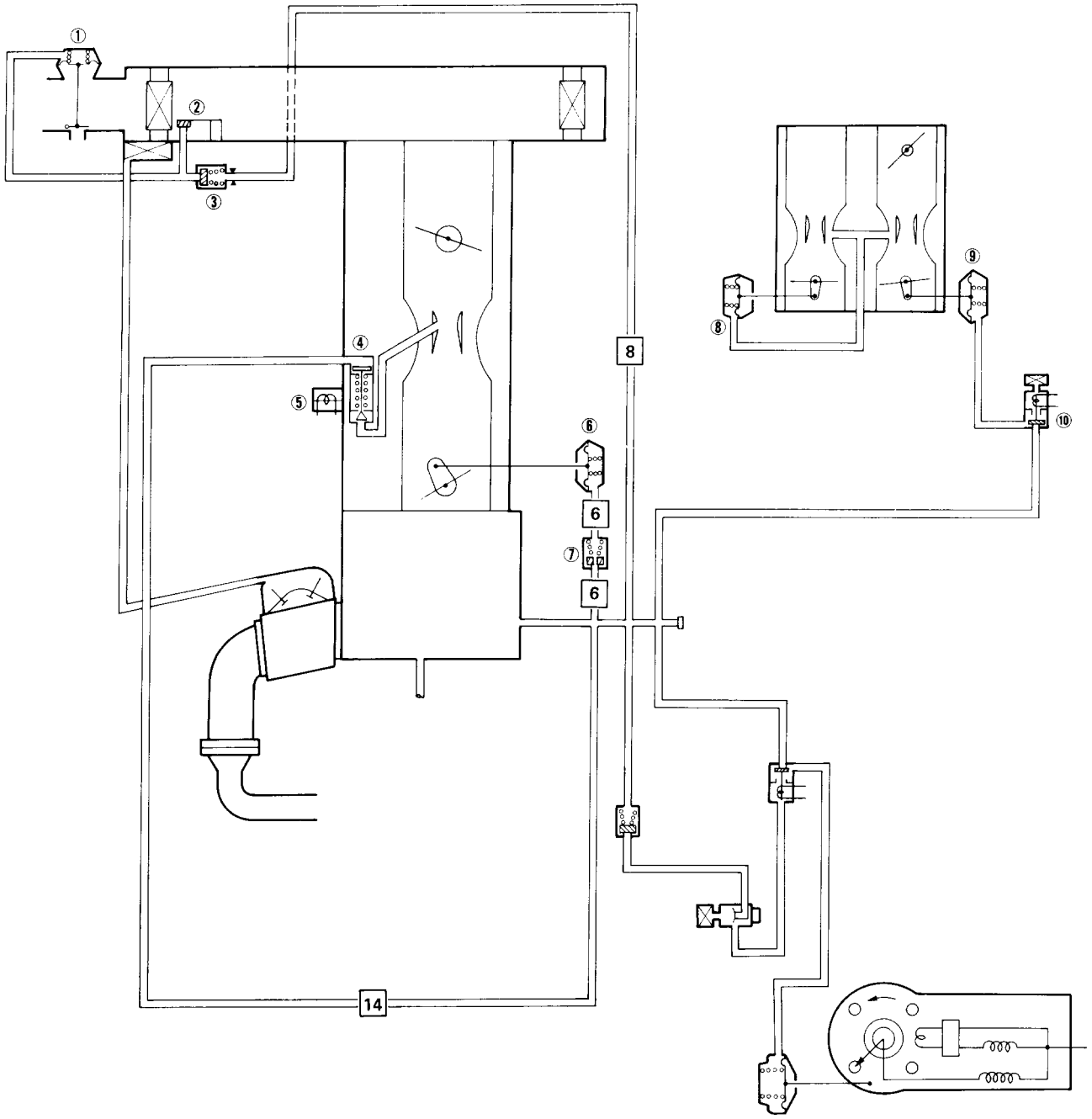
① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE
④ POWER VALVE
⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE
⑥ THROTTLE CONTROLLER
⑦ CHECK VALVE
⑧ SECONDARY DIAPHRAGM
⑨ IDLE BOOST THROTTLE CONTROLLER
⑩ A/C IDLE BOOST SOLENOID VALVE [Ex. KG M/T]
IDLE BOOST SOLENOID VALVE [KG M/T]

(cont'd)

System Description

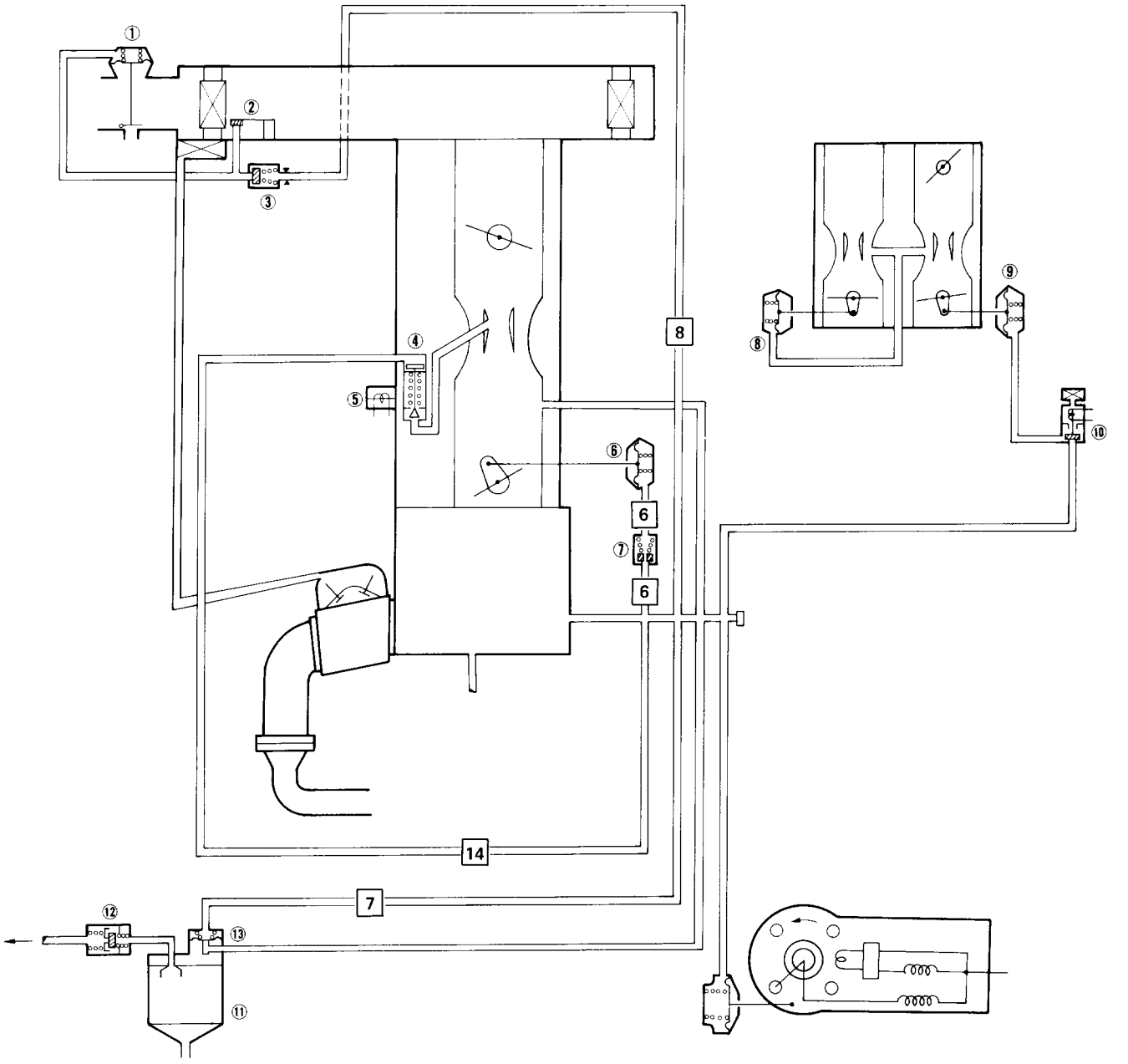
Vacuum Connections (cont'd)

[1-Carbureted Engine, KG A/T]



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 SECONDARY DIAPHRAGM
⑨ IDLE BOOST THROTTLE CONTROLLER
⑩ A/C IDLE BOOST SOLENOID VALVE

[1-Carbureted Engine, KY]



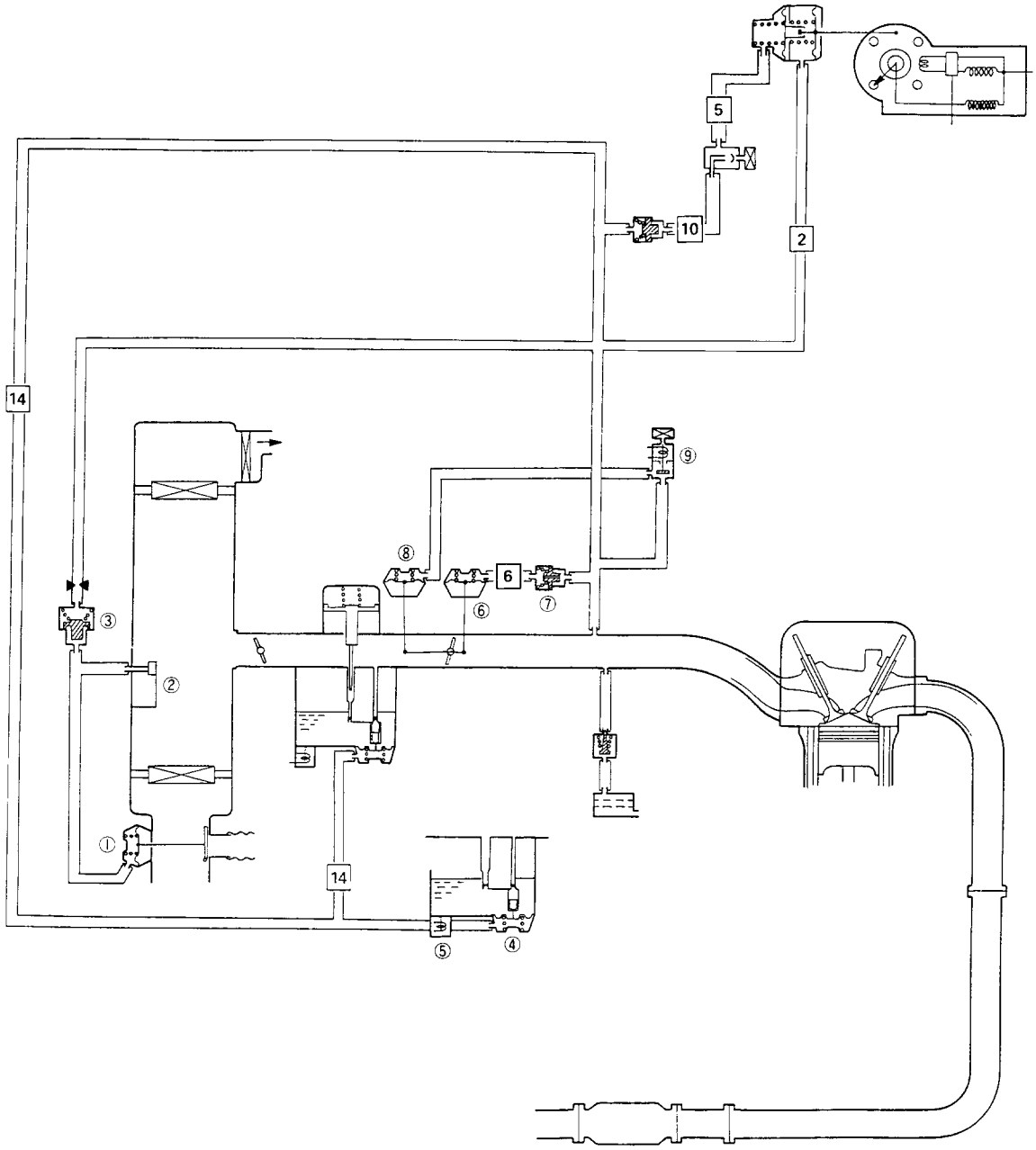
① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE
④ POWER VALVE
⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE
⑥ THROTTLE CONTROLLER
⑦ CHECK VALVE
⑧ SECONDARY DIAPHRAGM
⑨ IDLE BOOST THROTTLE CONTROLLER
⑩ A/C IDLE BOOST SOLENOID VALVE
⑪ CHARCOAL CANISTER
⑫ TWO-WAY VALVE
⑬ PURGE CONTROL VALVE

(cont'd)

System Description

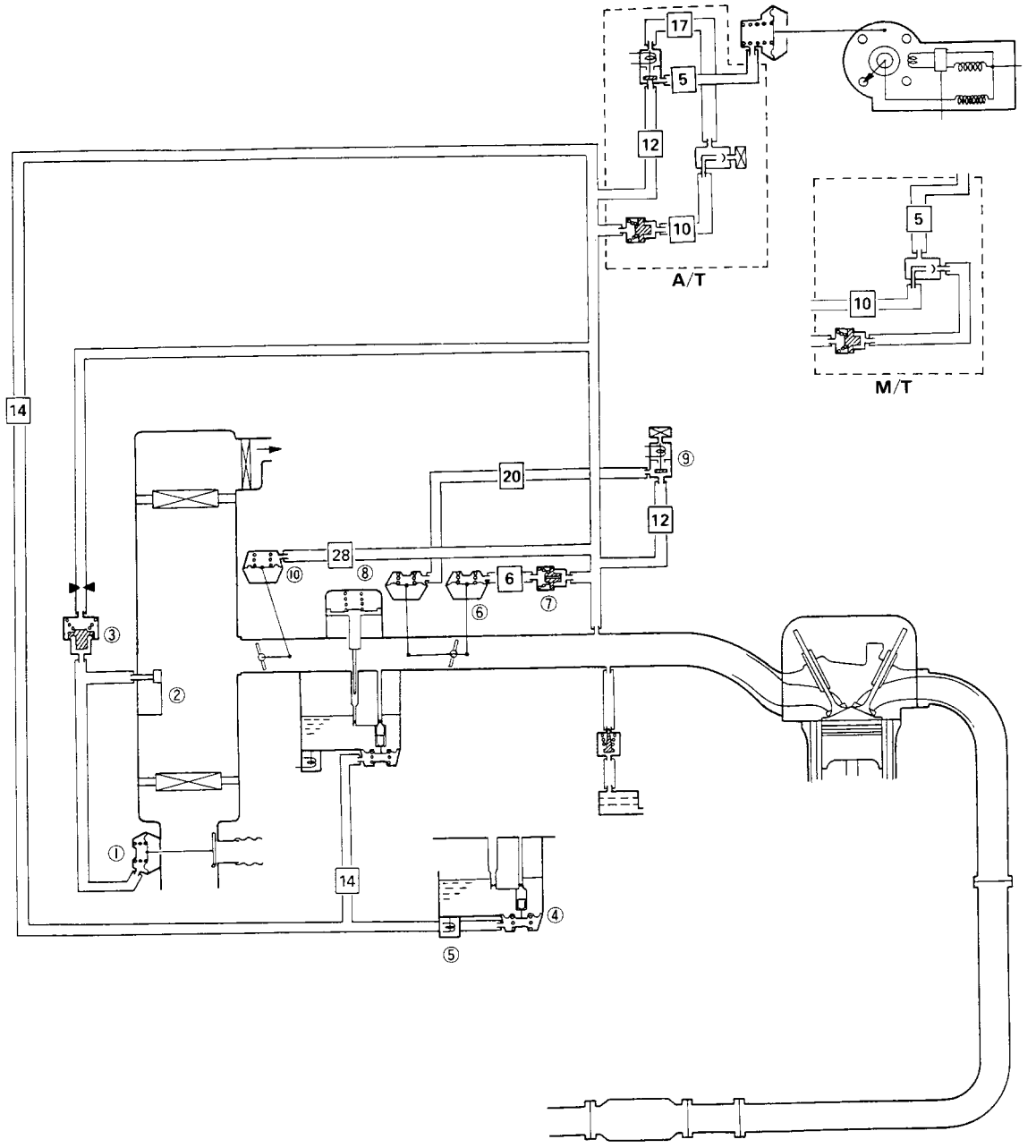
Vacuum Connections (cont'd)

[2-Carbureted Engine, Ex. KG, KQ]



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

[2-Carbureted Engine, KG]



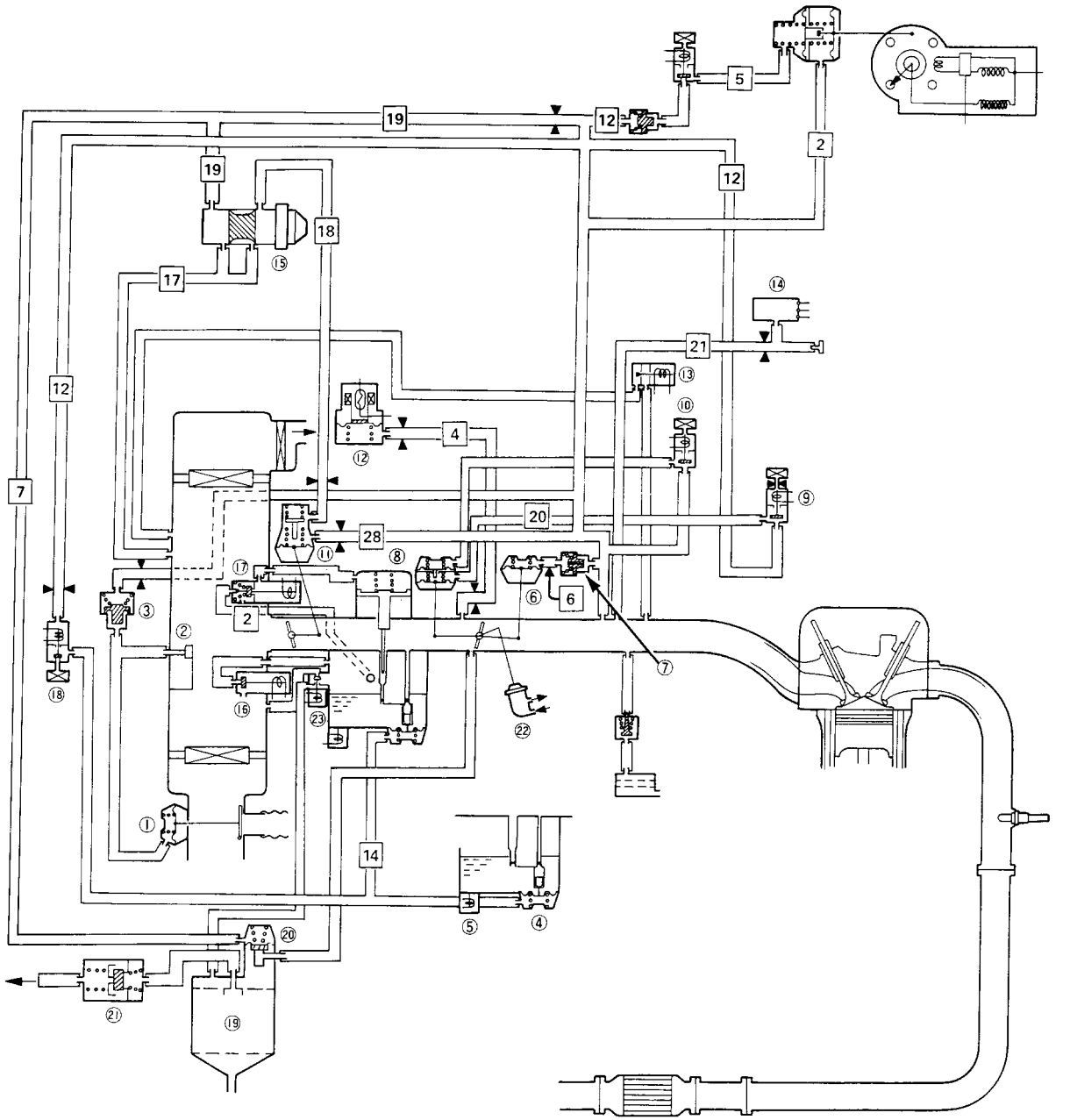
① AIR CONTROL DIAPHRAGM
② AIR BLEED VALVE
③ CHECK VALVE
④ POWER VALVE
⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE
⑥ THROTTLE CONTROLLER
⑦ CHECK VALVE
⑧ IDLE BOOST THROTTLE CONTROLLER
⑨ IDLE BOOST SOLENOID VALVE (M/T)
A/C IDLE BOOST SOLENOID VALVE
⑩ CHOKE OPENER

(cont'd)

System Description

Vacuum Connections (cont'd)

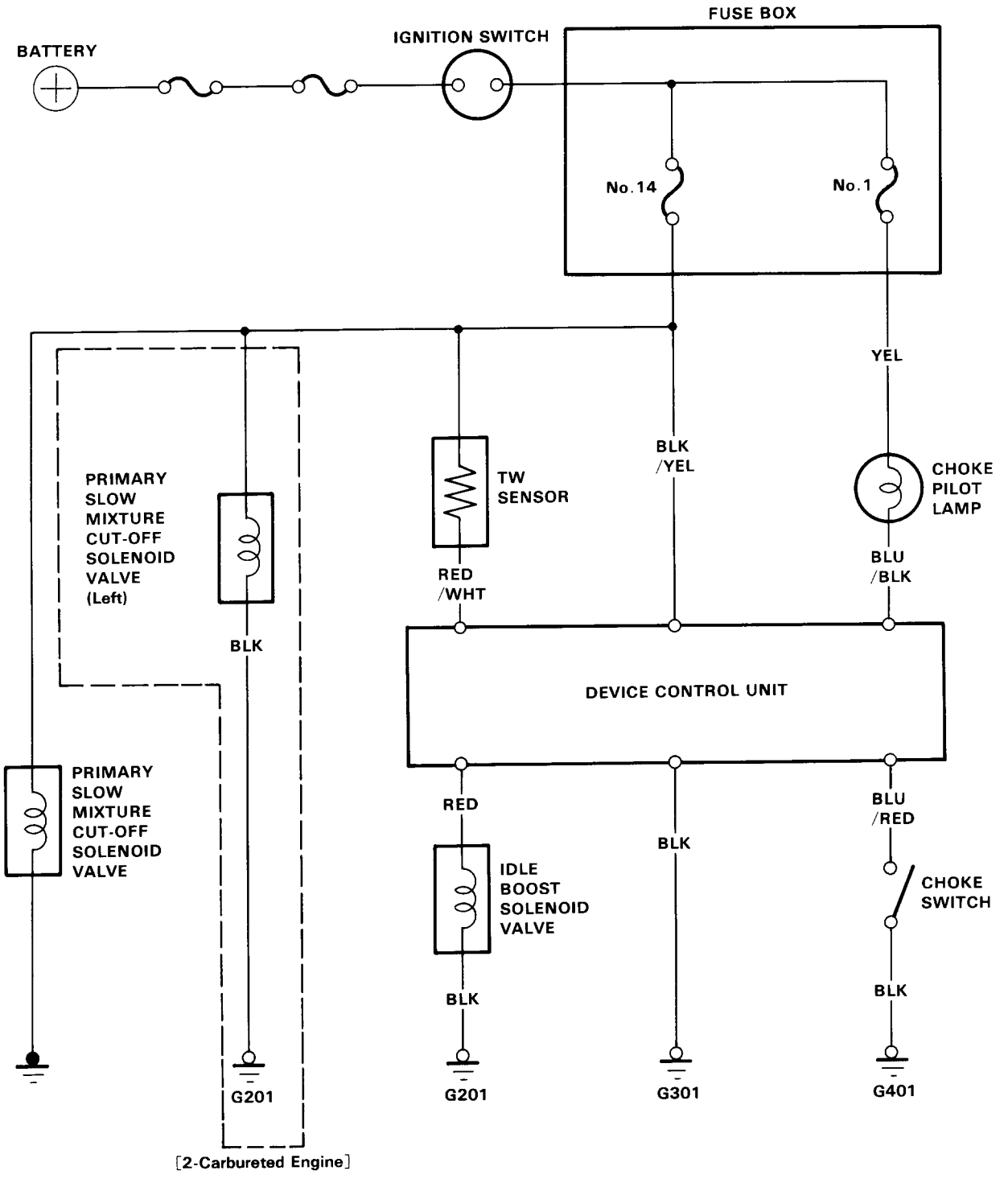
[2-Carbureted Engine, KQ]



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
⑩ A/C IDLE BOOST SOLENOID VALVE
⑪ CHOKE OPENER
⑫ VACUUM SWITCH
⑬ ELECTRONIC AIR CONTROL VALVE (EACV)
⑭ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
⑮ THERMOVALVE
⑯ INNER VENT SOLENOID VALVE
⑰ AIR LEAK SOLEONID VALVE
⑱ POWER VALVE CONTROL SOLENOID VALVE
⑲ CHARCOAL CANISTER
⑳ PURGE CONTROL VALVE
㉑ TWO-WAY VALVE
㉒ THERMOWAX VALVE
㉓ AIR VENT CUT-OFF SOLENOID VALVE

Electrical Connections

[KG M/T]

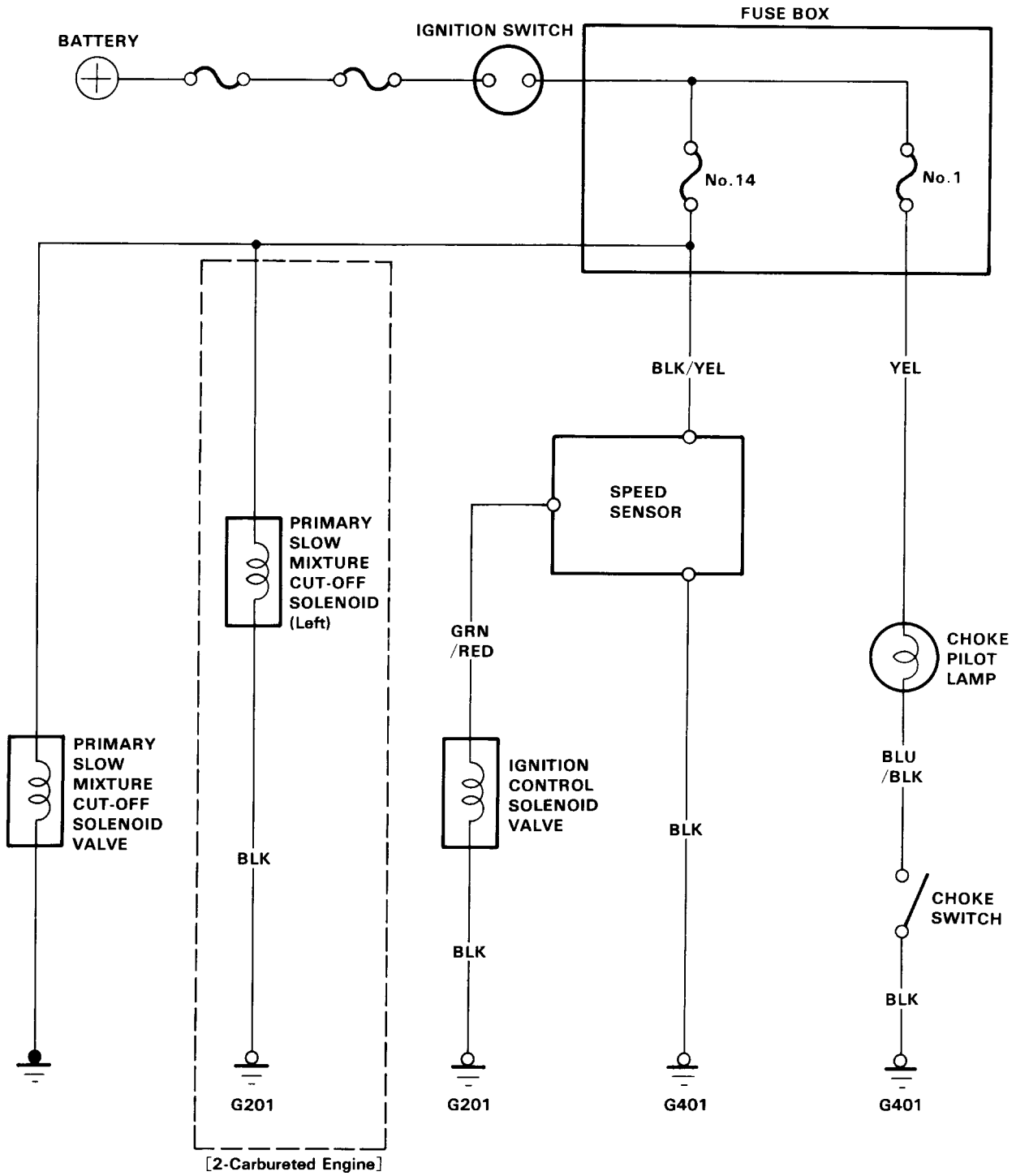


(cont'd)

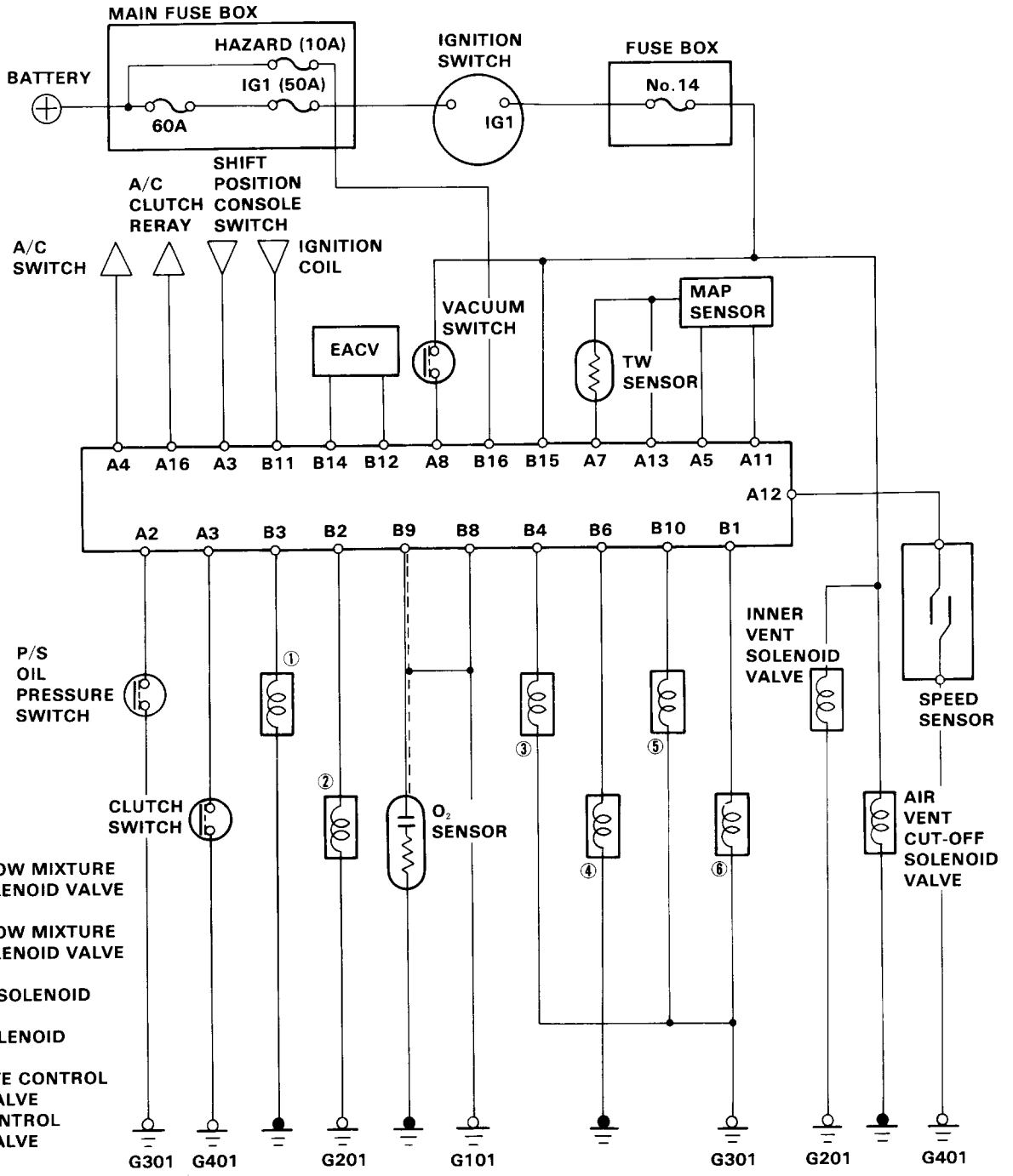
System Description

Electrical Connections (cont'd)

[KG A/T]

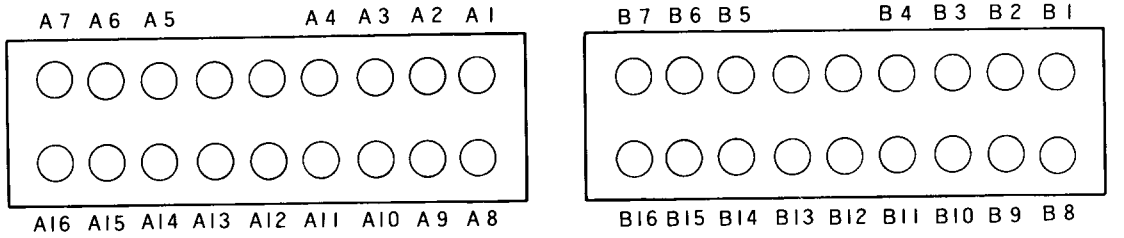


[KQ]



① PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE (Right)
② PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE (Left)
③ IDLE BOOST SOLENOID VALVE
④ AIR LEAK SOLENOID VALVE
⑤ POWER VALVE CONTROL SOLENOID VALVE
⑥ IGNITION CONTROL SOLENOID VALVE

TERMINAL LOCATION



Carburetor

Symptom-to-System Chart

[1-Carbureted Engine]

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 pages 6-24 and 6-25.

PAGE / SUB SYSTEM / SYMPTOM		IDLE SPEED/ MIXTURE	IDLE CONTROL	MANUAL CHOKE/ FAST IDLE SYSTEM	POWER VALVE
		56	31	63	43
ENGINE WON'T START					
DIFFICULT TO START ENGINE WHEN COLD	WHEN COLD			①	
	WHEN WARM		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	②		
	ROUGH IDLE/ FLUCTUATION	①	②		
FREQUENT STALLING	WHILE WARMING UP			②	
	AFTER WARMING UP	①			
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING			①	
	LOSS OF POWER				③
	AFTERBURN		①		
	HESITATION/ SURGE	①			

CARBURETOR				FUEL SUPPLY
PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE	ACCELE-RATOR PUMP	FLOAT LEVEL	VACUUM CONTROLLED SECONDARY	
52	59	58	59	76
				①
②	③	④		
①				
②				
①				③
①				③
		②		②
	④	②	①	②
	②			

Carburetor

Symptom-to-System Chart

[2-Carbureted Engine, KQ]

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 pages 6-26 and 6-27.

PAGE / SYSTEM / SYMPTOM		CARBURETOR			
		IDLE SPEED/ MIXTURE	IDLE CONTROL	AUTOMATIC CHOKE/ FAST IDLE SYSTEM	AIR VENT CUT-OFF (INNER VENT) SOLENOID VALVE
		53	30	60	94, 96
ENGINE WON'T START					①
DIFFICULT TO START ENGINE WHEN COLD	WHEN COLD			①	②
	WHEN WARM				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	③		②
FREQUENT STALLING	WHILE WARMING UP		②	①	
	AFTER WARMING UP	①	②		②
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING			②	①
	LOSS OF POWER				②
	AFTERBURN	②			
	HESITATION/ SURGE				

CARBURETOR					FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
POWER VALVE	PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE	SLOW AIR JET CONTROL	VACUUM PISTON CONTROL	ACCELE-RATOR PUMP			
43	50	46	48	—	76	80	85
	②	②			①		③
	①			②			③
	①	②					③
	②						③
							③
		②					②
		③					②
	①						③
	①	①					③
			②		③		③
③			①	③	②	①	①
						②	①
				②		②	①

Carburetor

Symptom-to-System Chart

[2-Carbureted Engine, Ex. KQ]

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		CARBURETOR						
		IDLE SPEED/ MIXTURE	IDLE CONTROL	MANUAL CHOKE/ FAST IDLE SYSTEM	POWER VALVE	PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE	ACCELE-RATOR PUMP	FUEL SUPPLY
		56	31	63	43	52	—	76
ENGINE WON'T START						②		①
DIFFICULT TO START ENGINE WHEN COLD	WHEN COLD			①		①	②	
	WHEN WARM		②			①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPECIFICATION			①		②		
	WHEN WARM ENGINE SPEED TOO HIGH	①	②	③				
	WHEN WARM ENGINE SPEED TOO LOW	①	①					
	ROUGH IDLE/ FLUCTUATION	①	②					
FREQUENT STALLING	WHILE WARMING UP		③	②		①		③
	AFTER WARMING UP	①	②			①		③
POOR PERFORM-ANCE	MISFIRE OR ROUGH RUNNING			①				②
	LOSS OF POWER				①		③	②
	AFTERBURN		①					
	HESITATION/ SURGE	①					②	

Idle Control System

Testing
[KΩ]

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.

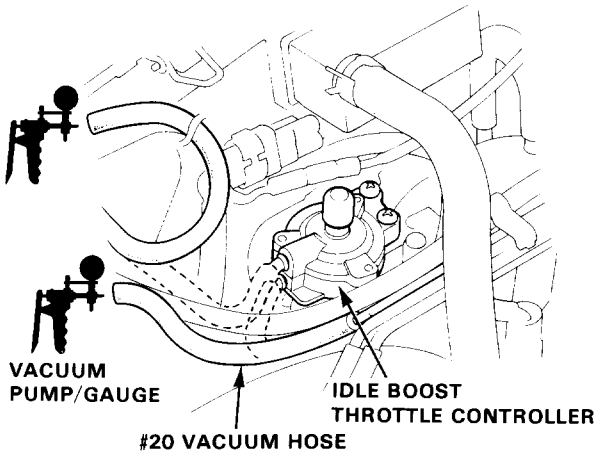
   Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

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

3. Disconnect the two vacuum hoses at idle boost throttle controller and check each for vacuum.

   There should be no vacuum in both hoses.

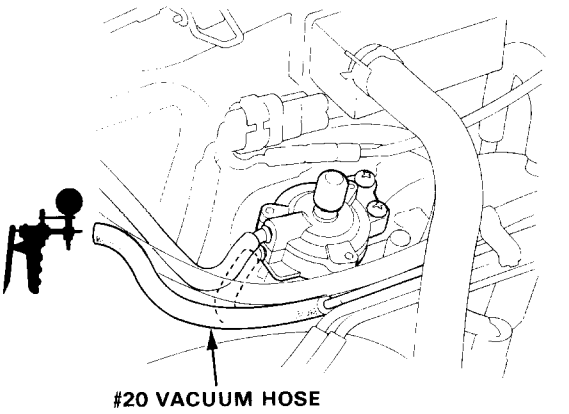


   - If there is no vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.
   - If there is vacuum at the #20 vacuum hose, go to idle boost solenoid valve troubleshooting (page 6-35).
   - If there is vacuum at the outside vacuum hose, go to A/C idle boost solenoid valve troubleshooting (page 6-37).

4. Disconnect the #20 vacuum hose at idle boost throttle controller and check vacuum.

   NOTE: The engine coolant temperature must be below 80°C (176°F).

   There should be vacuum.

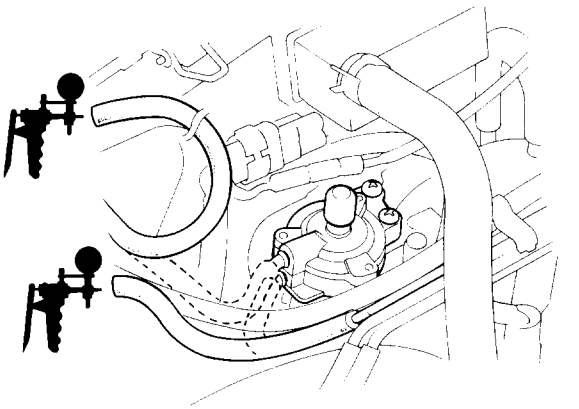


   - If there is vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.
   - If there is no vacuum, go to the idle boost solenoid valve troubleshooting (page 6-35).

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

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

   - If not, disconnect the two vacuum hose at idle boost throttle controller and check each for vacuum. There should be vacuum in both hoses.



   — If there is vacuum in both hoses, replace the idle boost throttle controller.
   — If there is no vacuum at the #20 vacuum hose, go to idle boost solenoid valve troubleshooting (page 6-35).
   — If there is no vacuum at the outside vacuum hose, go to A/C idle boost solenoid valve troubleshooting (page 6-37).

[Ex. KQ, KG M/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:

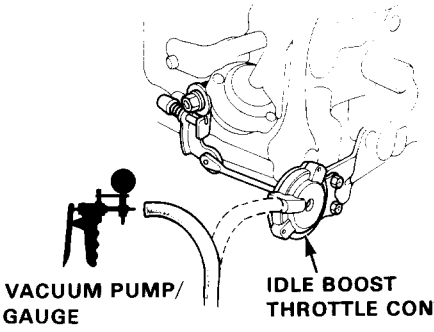
Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

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

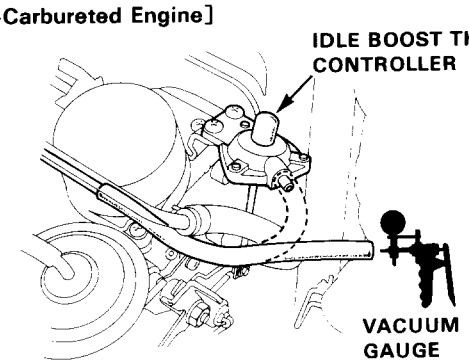
3. Disconnect the vacuum hose from the idle boost throttle controller and check the vacuum.

   There should be no vacuum.

[1-Carbureted Engine]



[2-Carbureted 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 6-41).

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.

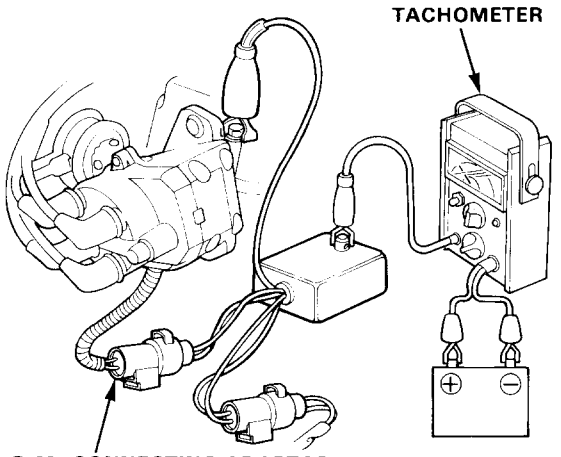
     — If there is no vacuum, go to troubleshooting (page 6-41).

(cont'd)

Idle Control System (cont'd)

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

1. Connect a tachometer.

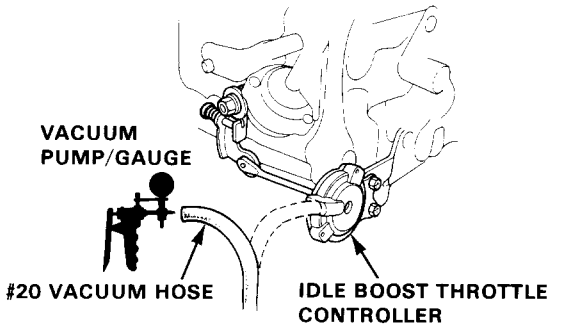


2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
   And warm up the engine further for more than 4 minutes with the engine speed 2,000 min^{-1} (rpm).

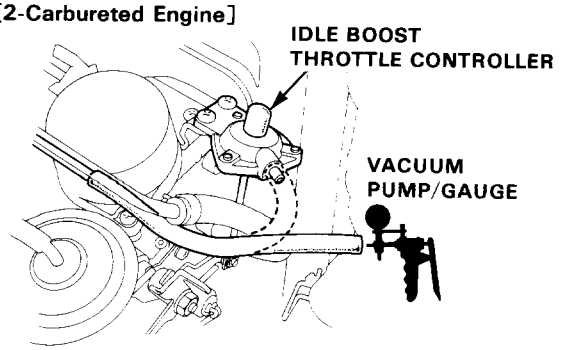
3. Disconnect the #20 vacuum hose from the idle boost throttle controller and check the vacuum.

   There should be no vacuum.

[1-Carbureted Engine]



[2-Carbureted Engine]



- If there is vacuum, go to troubleshooting (page 6-39).

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

   There should be no vacuum.

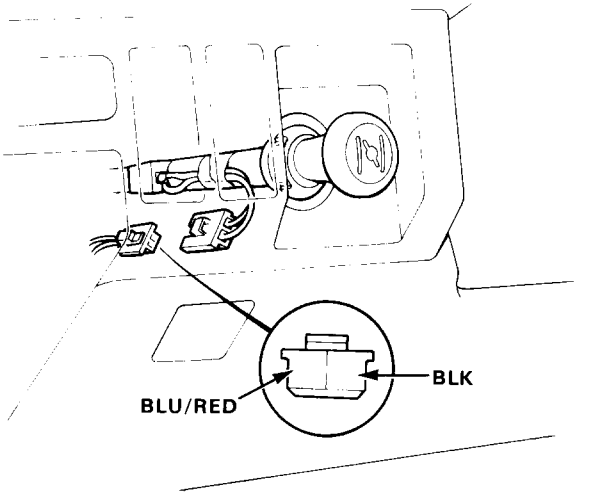
   - If there is vacuum, go to troubleshooting (page 6-39).

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.



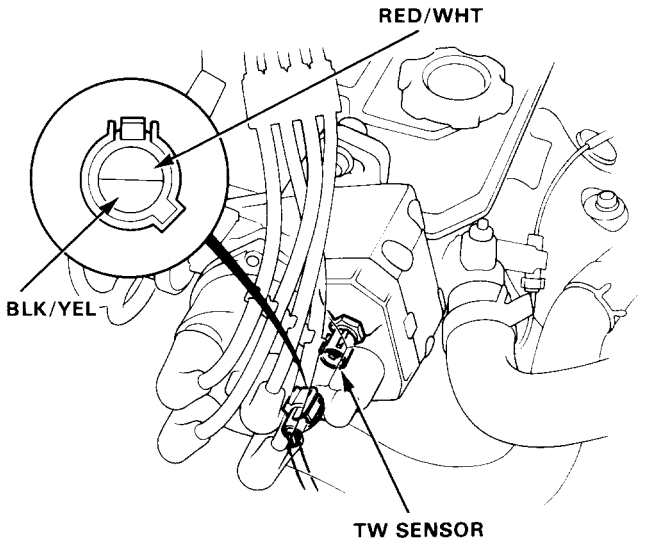
   There should be voltage.

   - 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.

8. Disconnect the 2P connector on the TW sensor, 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 sensor and the control unit. If OK, replace the TW sensor and retest.
- If there is no voltage, inspect open in BLK/YEL wire between the TW sensor and the ignition switch as well as No.14 fuse.

9. Disconnect the 2P connector on the TW sensor 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 6-39).

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

12. Connect the TW sensor 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.

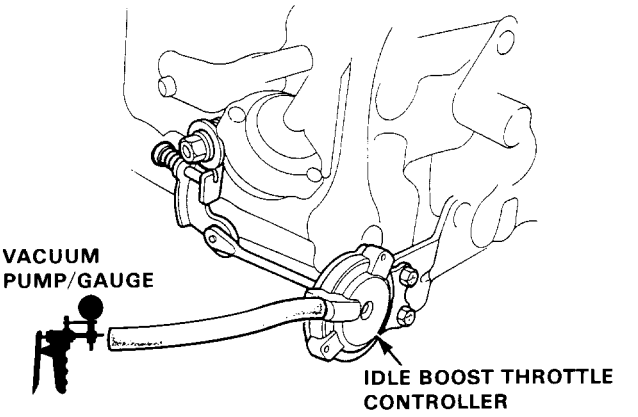
13. Recheck the choke lamp and the vacuum.

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

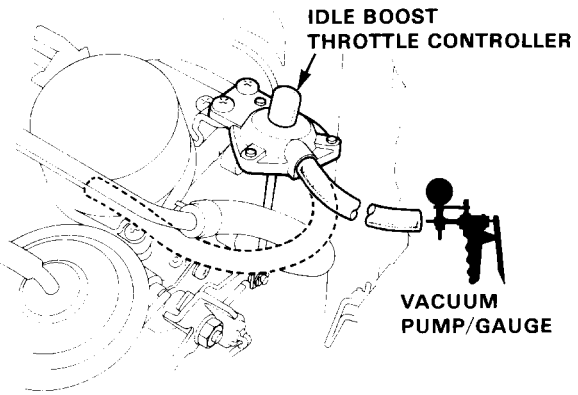
    - If not, replace the device control unit and retest.

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

[1-Carbureted Engine]



[2-Carbureted Engine]



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)

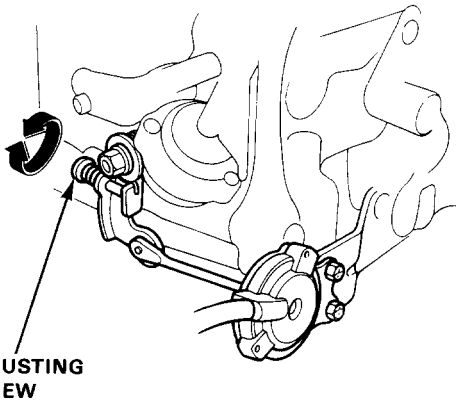
(cont'd)

Carburetor

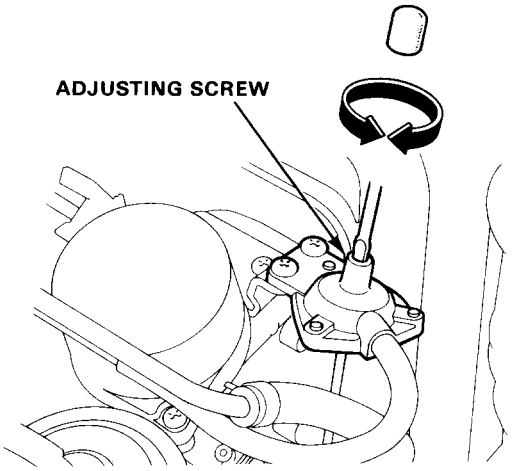
Idle Control System (cont'd)

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

[1-Carbureted Engine]



[2-Carbureted Engine]



[KQ]

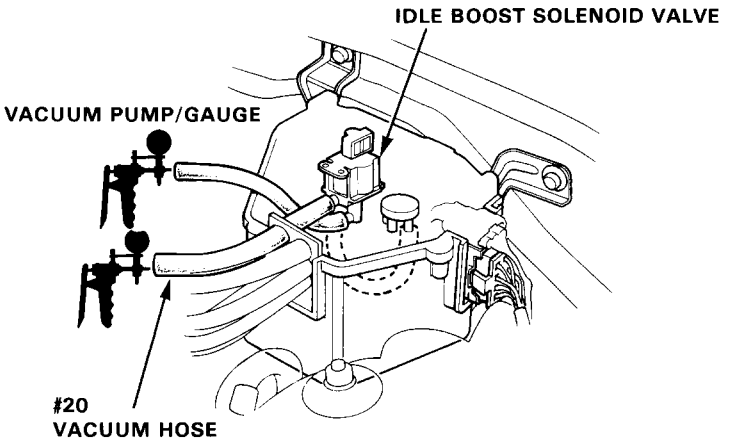
Troubleshooting Flow Chart Idle Boost Solenoid Valve

Inspection of Idle Boost Solenoid Valve.

Open the control box.

Disconnect the lower vacuum hose of the solenoid valve from the 4 way joint and connect a vacuum pump.

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



Start the engine.

NOTE: Engine coolant temperature must be below 80°C (176°F).

Apply vacuum.

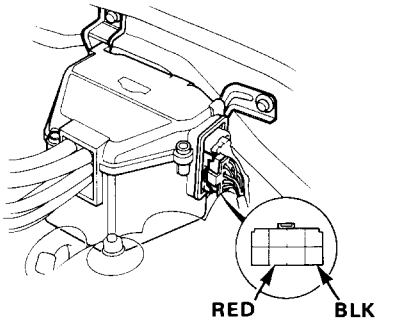
Is vacuum indicated on the gauge?

NO → Measure voltage between RED (+) terminal and BLK (−) terminal on the control box.

YES

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

Apply vacuum.



Is there battery voltage?

YES → **Replace the solenoid valve.**

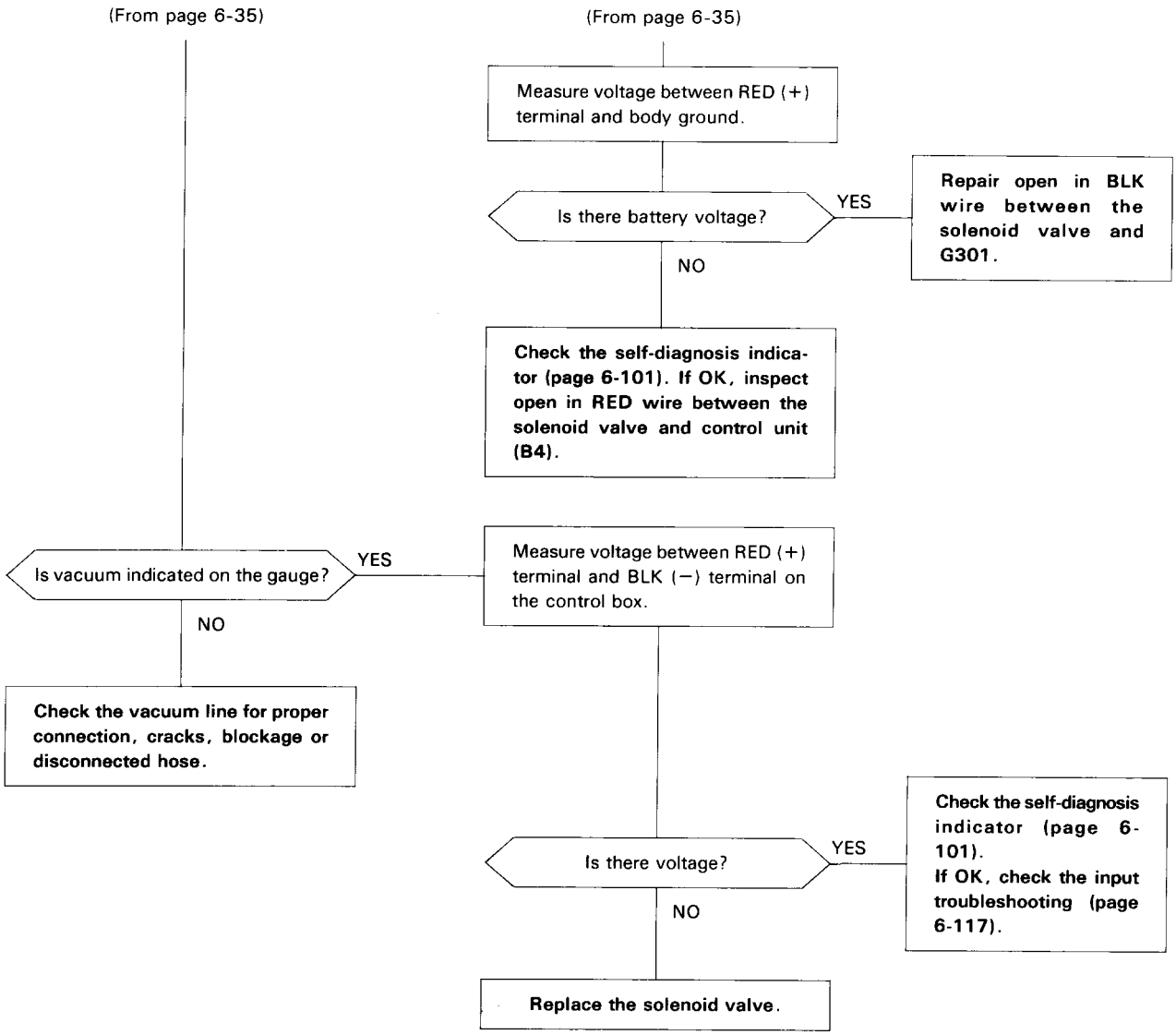
NO

(To page 6-36)

(To page 6-36)

(cont'd)

Idle Control System (cont'd)



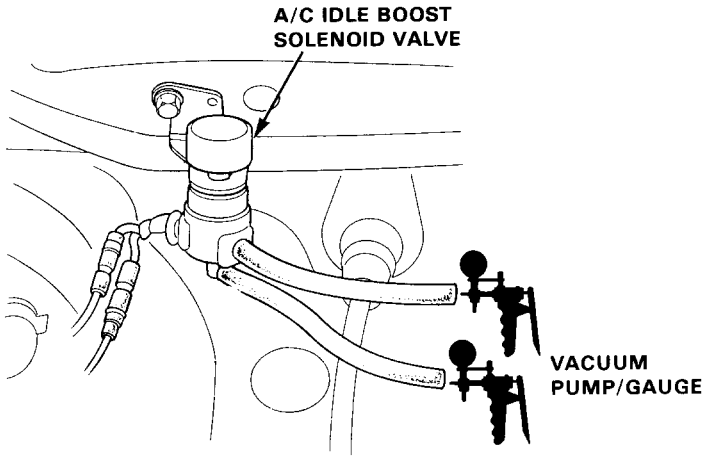
[KQ]

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.

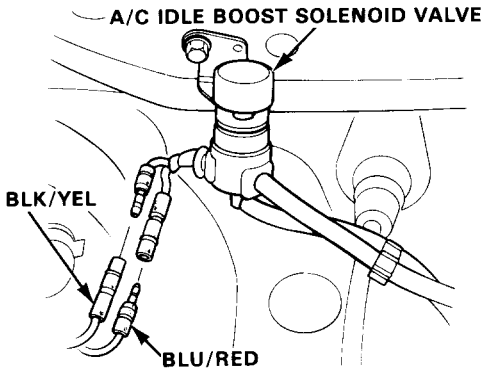
Does solenoid valve hold vacuum?

NO

Disconnect the connectors near the solenoid valve.

Measure voltage between BLK/YEL (+) connector and BLU/RED (−) connector on the wire harness.

YES



Turn the A/C switch ON.

Apply vacuum.

(To page 6-38)

Is there voltage?

YES

Inspect short in BLU/RED wire between the solenoid valve and A/C switch.

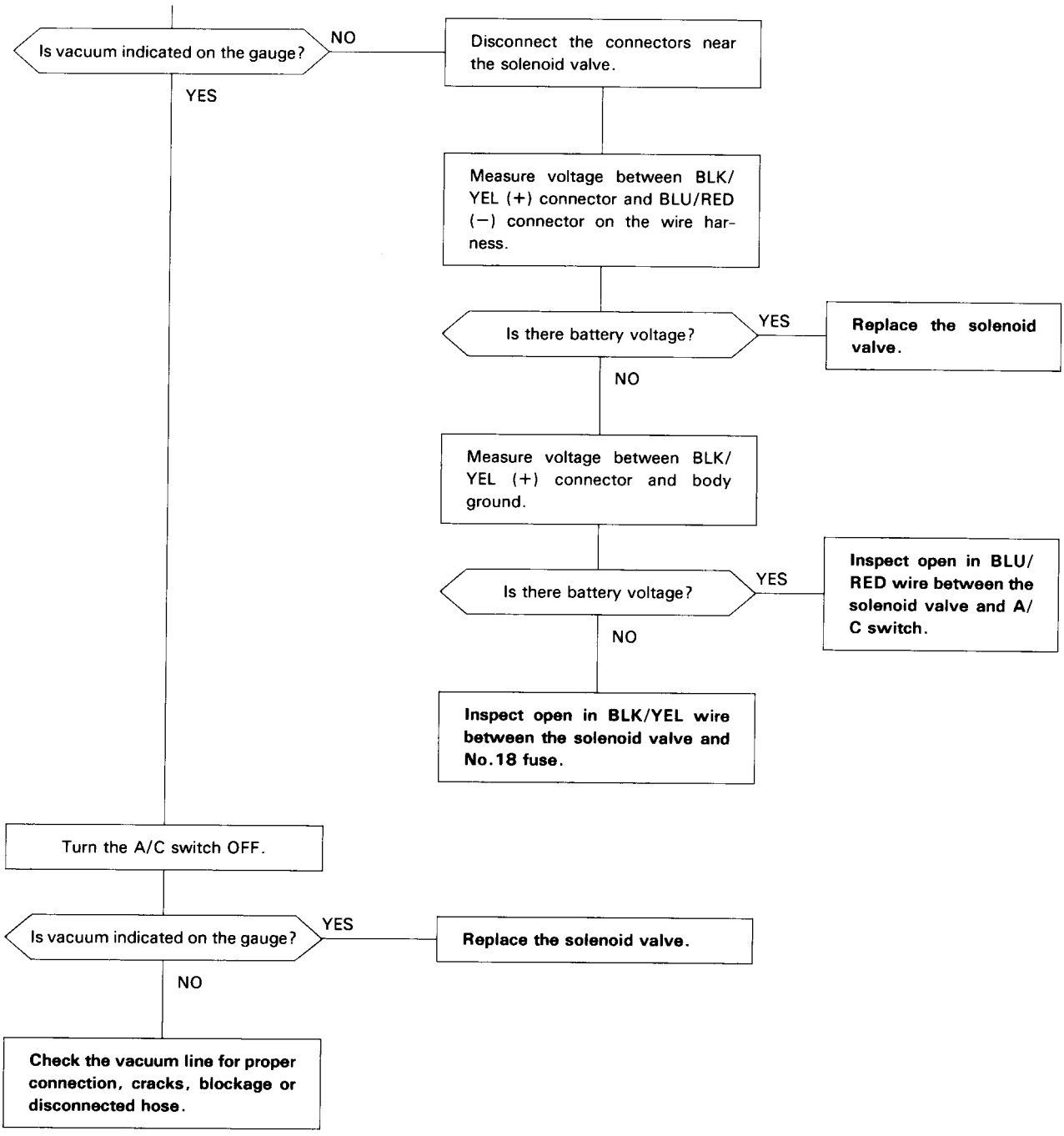
NO

Replace the solenoid valve.

(cont'd)

Idle Control System (cont'd)

(From page 6-37)



[KG M/T]

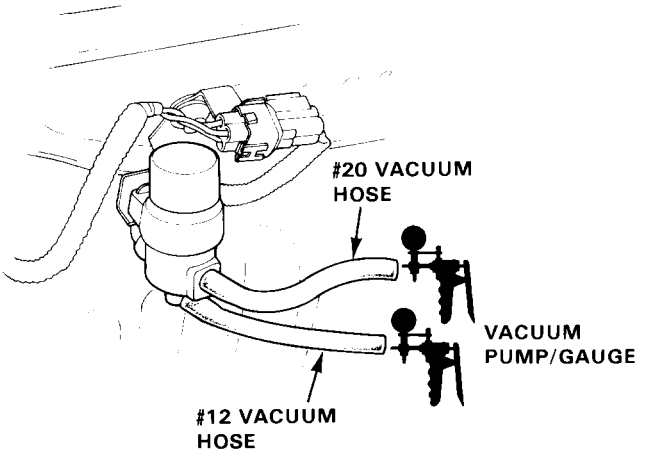
Troubleshooting Flow Chart Idle Boost Solenoid Valve

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).



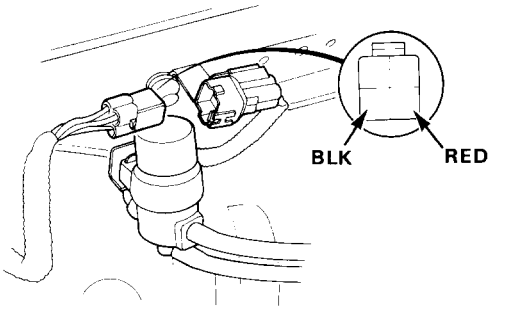
Apply vacuum.

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

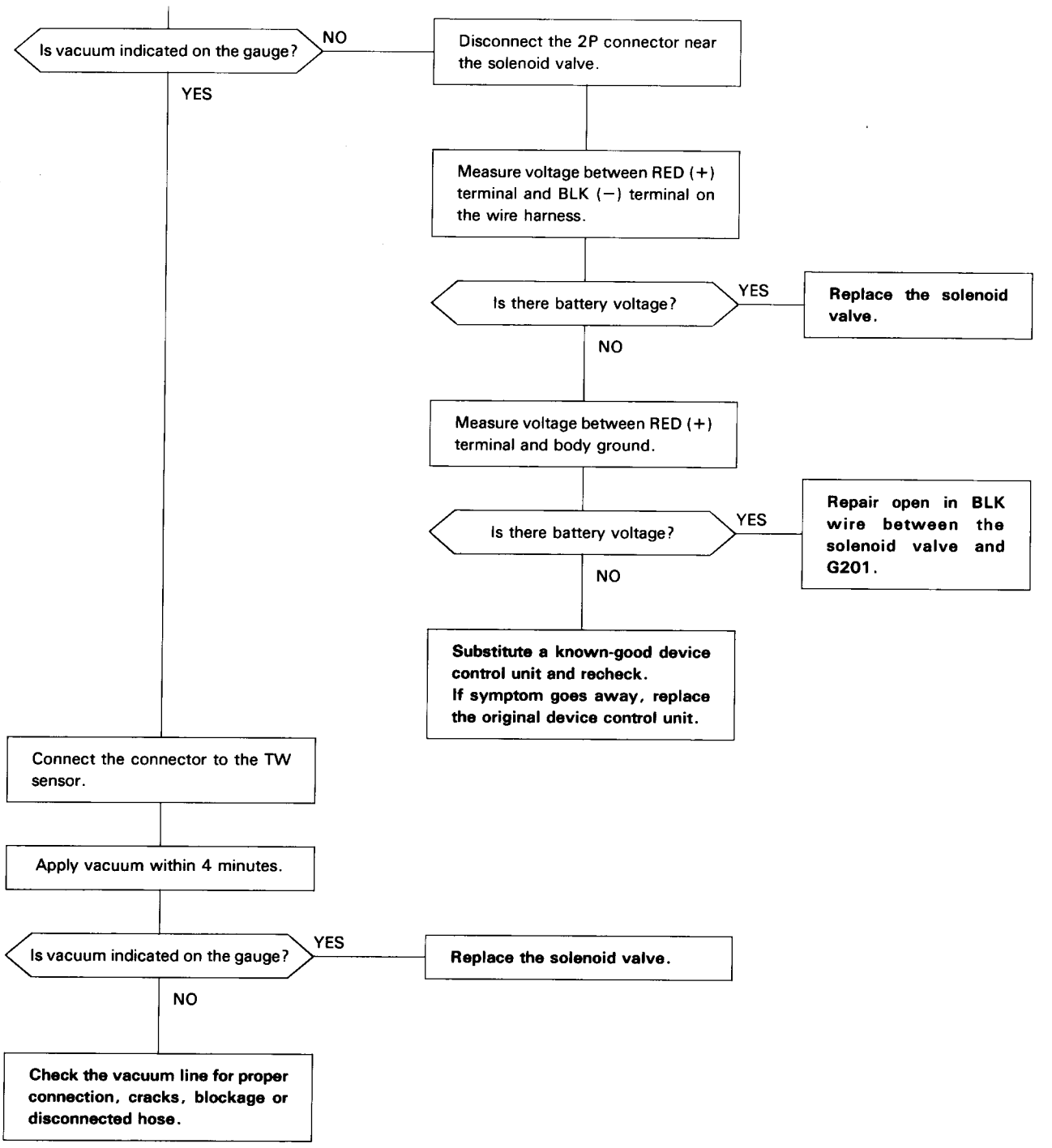
Disconnect the connector from the TW sensor and place choke control knob in 1/8 position, then apply vacuum.

(To page 6-40)

(cont'd)

Idle Control System (cont'd)

(From page 6-39)



[EX. KQ, KG M/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.

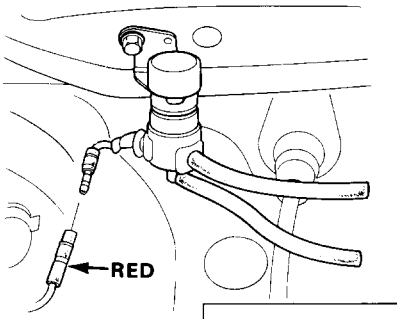
Apply vacuum.

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 (section 15).

NO

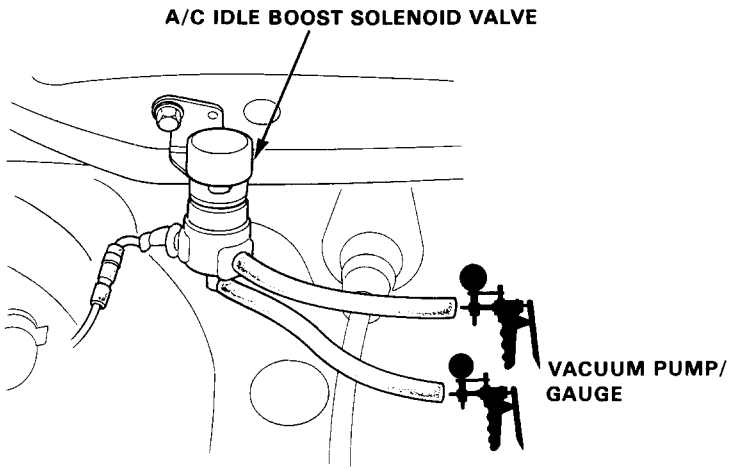
Replace the solenoid valve.

YES

Turn the A/C switch ON.

Apply vacuum.

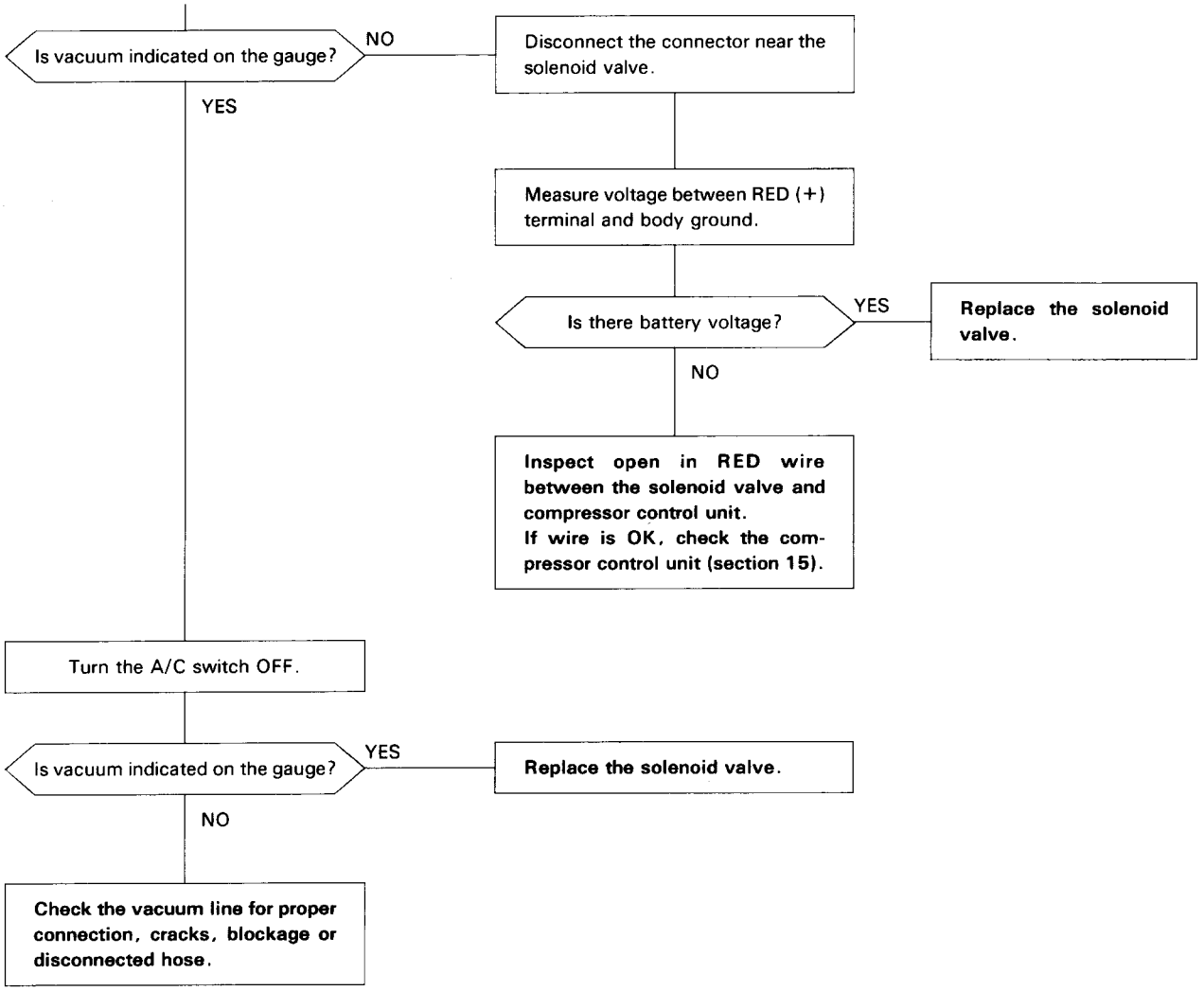
(To page 6-42)



(cont'd)

Idle Control System (cont'd)

(From page 6-41)

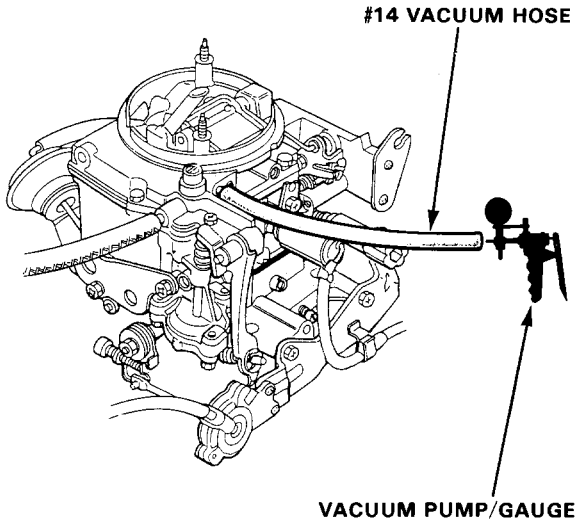


Power Valve

Testing

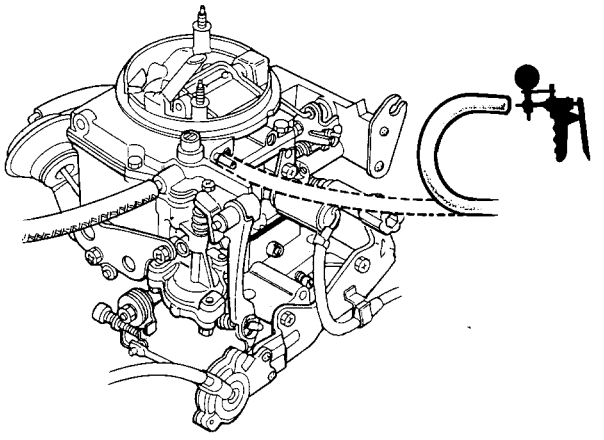
[1-Carbureted Engine]

1. Disconnect the #14 vacuum hose from the vacuum hose manifold and connect a vacuum pump. Apply vacuum and listen for a clicking noise from the power valve.



- If a clicking sound is heard, go on to step 2.
- If no sound is heard, replace the carburetor and retest.

2. Start the engine and wait for it to warm up.
3. Disconnect the #14 vacuum hose from the carburetor and connect a vacuum gauge to the hose.
   Check that there is vacuum at idling.

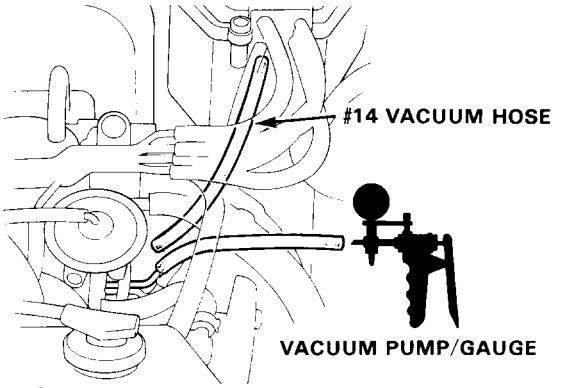


- If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose.

[2-Carbureted Engine]

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

   It should hold vacuum.

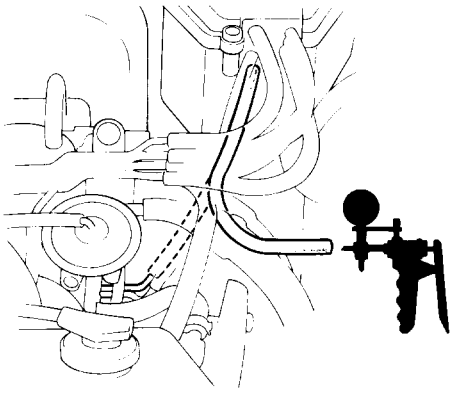


- If it does not hold vacuum, replace the diaphragm and retest (page 6-68, 71).

2. Start the engine and disconnect the #14 vacuum hose from the vacuum hose manifold, and connect a vacuum pump.
   KQ model:
   There should be no vacuum for about 10 seconds after the engine is started.

   And there should be vacuum within 15 seconds after the engine is started.

   NOTE: The engine coolant temperature must be below 30°C (86°F).
   Ex. KQ:
   There should be vacuum.



- If not:
  KQ: go to troubleshooting (page 6-44).
  Ex. KQ: check the vacuum hose for proper connection, cracks, blockage or disconnected hose.

3. [KQ]
   Warm up the engine (the cooling fan comes on), and check the vacuum.
   There should be vacuum.
   - If not, go to troubleshooting (page 6-44).

(cont'd)

Power Valve (cont'd)

[KQ]

Troubleshooting Flow Chart Power Valve Control Solenoid Valve

Inspection of Power Valve Control Solenoid Valve.

Open the control box.

Disconnect the lower vacuum hose of the solenoid valve from the 4 way joint and connect a vacuum pump.

Disconnect #14 vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum gauge.

Start engine.

Apply vacuum for about 10 seconds after the engine is started.

Is vacuum indicated on the gauge?

YES

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

NO

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

(To page 6-45)

Is there battery voltage?

YES

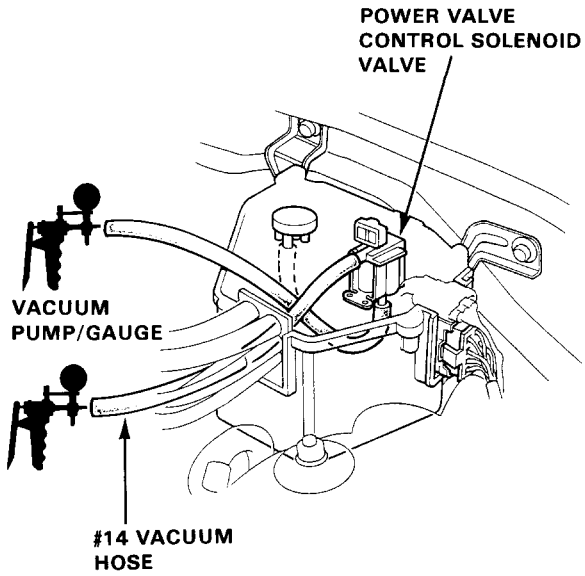
Replace the solenoid valve.

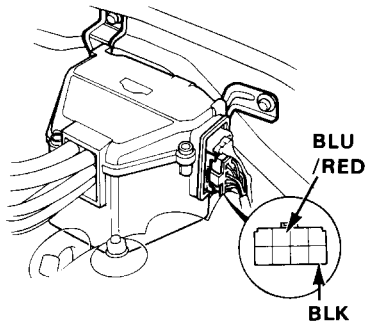
NO

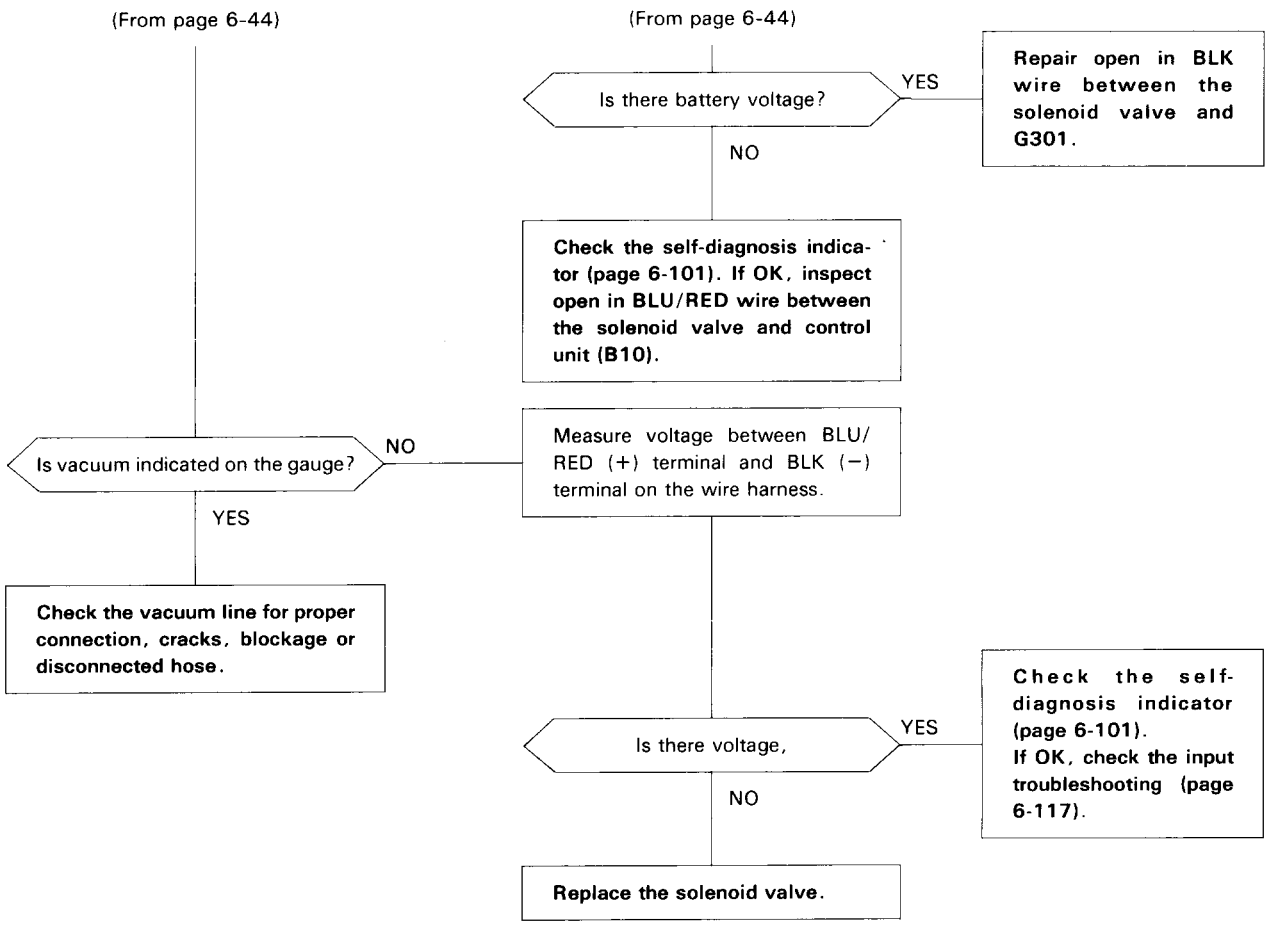
Measure voltage between YEL/RED (+) terminal and body ground.

(To page 6-45)

NOTE: The engine coolant temperature must be below 30°C (86°F)






(From page 6-44)
(From page 6-44)
Is there battery voltage?
YES
Repair open in BLK wire between the solenoid valve and G301.
NO
Check the self-diagnosis indicator (page 6-101). If OK, inspect open in BLU/RED wire between the solenoid valve and control unit (B10).
Is vacuum indicated on the gauge?
NO
Measure voltage between BLU/RED (+) terminal and BLK (−) terminal on the wire harness.
YES
Check the vacuum line for proper connection, cracks, blockage or disconnected hose.
Is there voltage,
YES
Check the self-diagnosis indicator (page 6-101). If OK, check the input troubleshooting (page 6-117).
NO
Replace the solenoid valve.

Slow Air Jet Control System [KQ]

Troubleshooting Flow Chart **Air Leak Solenoid Valve**

Inspection of Air Leak Solenoid Valve.

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

Start the engine.

Apply 100 mmHg (4 in.Hg) vacuum to the hose.

Does solenoid valve hold vacuum?

NO

Turn the ignition switch OFF.

Disconnect the BLU/YEL connector near the air cleaner.

Start the engine.

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

Is there battery voltage?

NO

Check the self-diagnosis indicator (page 6-101). If OK, repair open in BLU/YEL wire between the solenoid valve and control unit (B6).

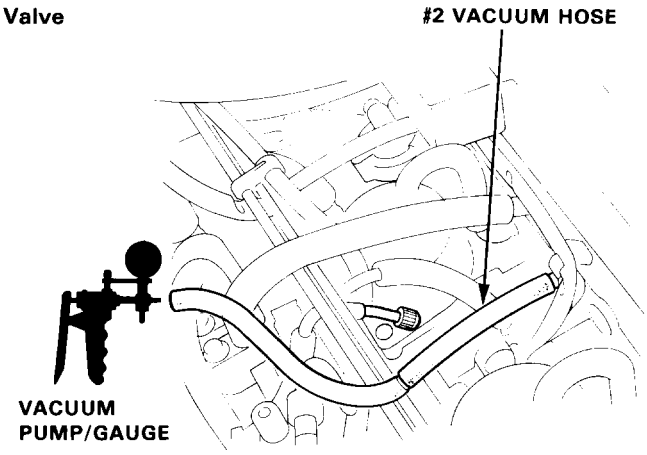
YES

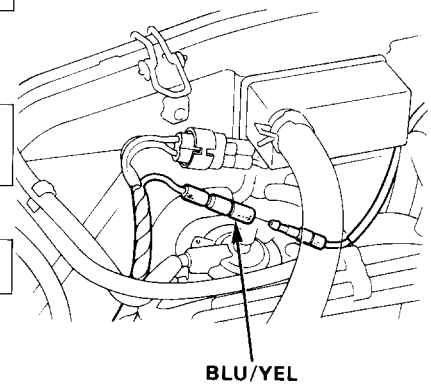
Replace the solenoid valve.

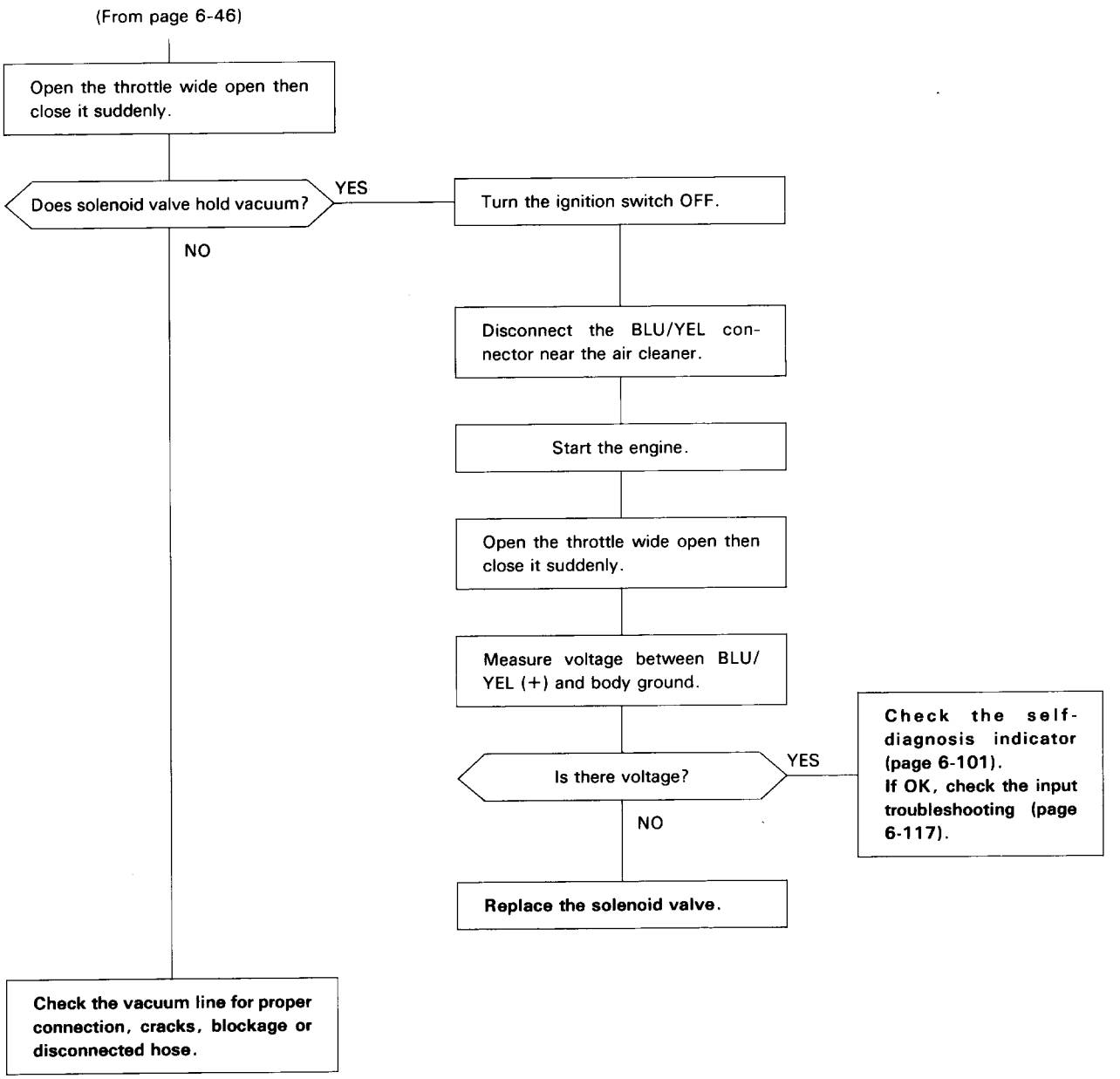
YES

Warm up the engine.

(To page 6-47)






(From page 6-46)
Open the throttle wide open then close it suddenly.
Does solenoid valve hold vacuum?
YES
NO
Turn the ignition switch OFF.
Disconnect the BLU/YEL connector near the air cleaner.
Start the engine.
Open the throttle wide open then close it suddenly.
Measure voltage between BLU/YEL (+) and body ground.
Is there voltage?
YES
NO
Check the self-diagnosis indicator (page 6-101).
If OK, check the input troubleshooting (page 6-117).
Replace the solenoid valve.
Check the vacuum line for proper connection, cracks, blockage or disconnected hose.

Vacuum Piston Control System [KQ]

Troubleshooting Flow Chart Air Leak Solenoid Valve

Inspection of Air Leak Solenoid Valve.

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

Start the engine.

Apply 100 mmHg (4 in.Hg) vacuum to the hose.

Does solenoid valve hold vacuum?

YES

Turn the ignition switch OFF.

Disconnect the BLU/YEL connector near the air cleaner.

Start the engine.

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

Is there battery voltage?

NO

Check the self-diagnosis indicator (page 6-101). If OK, repair open in BLU/YEL wire between the solenoid valve and control unit (B6).

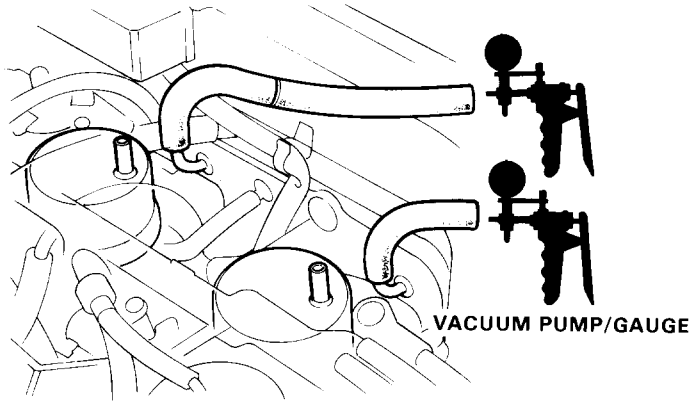
YES

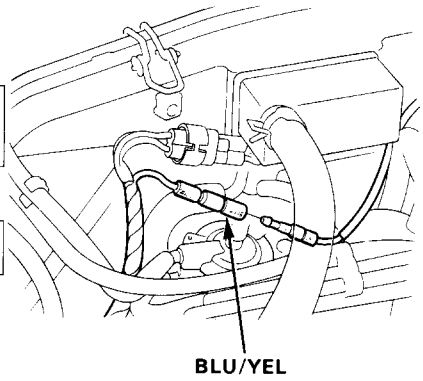
Replace the solenoid valve.

NO

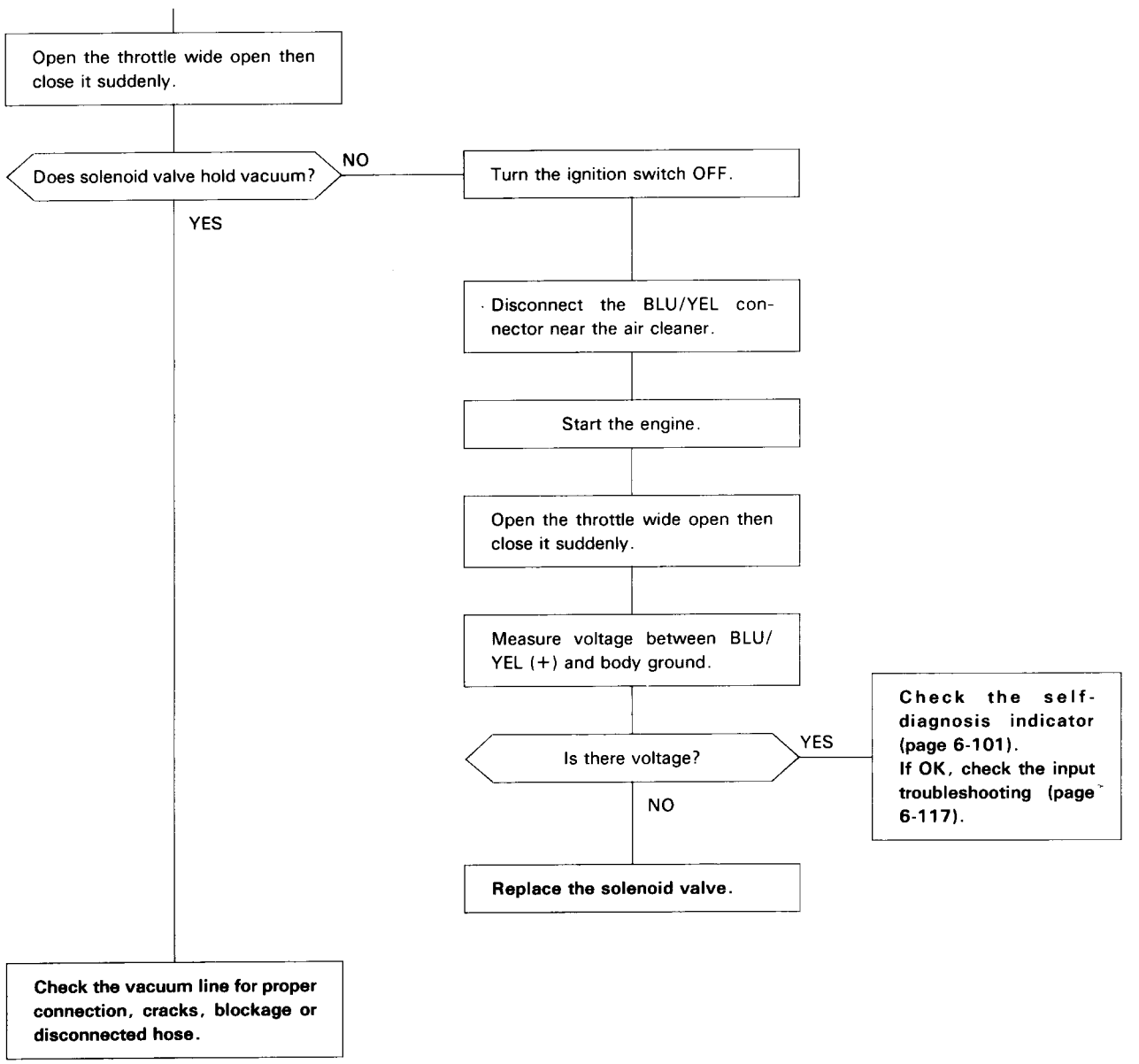
Warm up the engine.

(To page 6-49)





(From page 6-48)



Primary Slow Mixture Cut-off Solenoid Valve

[KQ]

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.

Does the solenoid valve click?

NO

Turn the ignition switch OFF.

Connect the ECU test harness B between the control unit and connector (page 6-99).

Turn the ignition switch ON.

Right solenoid valve: Measure voltage between B3 (+) terminal and B8 (−) terminal.
Left solenoid valve: Measure voltage between B2 (+) terminal and B8 (+) terminal.

Is there battery voltage?

YES

Right solenoid valve: Repair open or short in YEL wire between the solenoid valve and control unit (B3). If OK, replace the solenoid valve.
Left solenoid valve: Repair open or short in GRN/RED wire between the solenoid valve and control unit (B2), If OK, inspect open in BLK wire between the solenoid valve and G201, and replace the solenoid valve.

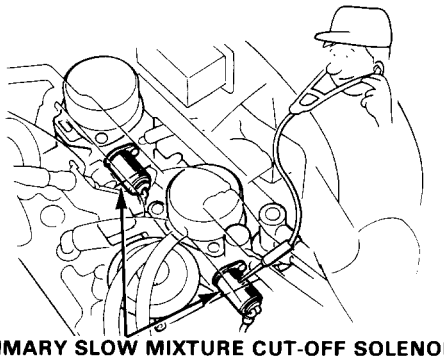
NO

Check the self-diagnosis indicator (page 6-101). If OK, check the input troubleshooting (page 6-117).

YES

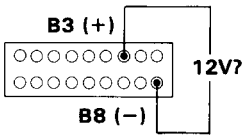
Start the engine and warm up to normal operating temperature (the cooling fan comes on).

(To page 6-51)

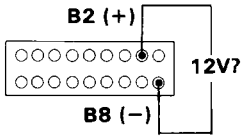


PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE

Right solenoid valve:



Left solenoid valve:



(From page 6-50)

Raise engine speed to 5,000 min^{-1} (rpm) and close the throttle suddenly.

Does the solenoid valve click?

NO

Turn the ignition switch OFF.

YES

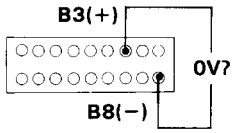
Connect the ECU test harness B between the control unit and connector (page 6-99).

Start the engine.

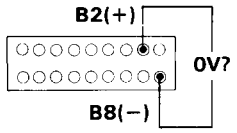
Raise engine speed to 5,000 min^{-1} (rpm) and close the throttle suddenly.

Right solenoid valve: Measure voltage between B3 (+) terminal and B8 (−) terminal.
Left solenoid valve: Measure voltage between B2 (+) terminal and B8 (+) terminal.

Right solenoid valve:



Left solenoid valve:



Is there no voltage for a moment?

NO

Check the self-diagnosis indicator (page 6-101).
If OK, check the input troubleshooting (page 6-117).

YES

Replace the solenoid valve.

Solenoid valve is OK.

(cont'd)

Primary Slow Mixture Cut-off Solenoid Valve (cont'd)

[EX. KQ]

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.

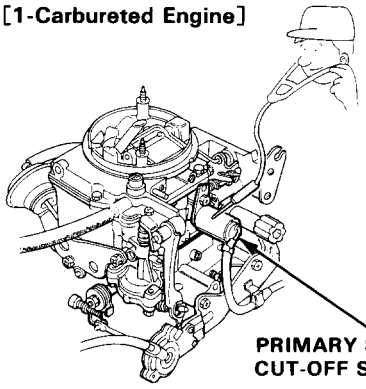
Does the solenoid valve click?

NO → Turn the ignition switch OFF.

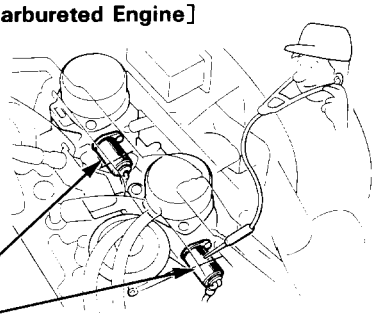
YES

Solenoid valve is OK.

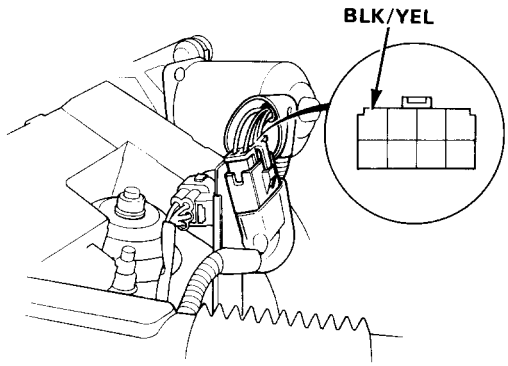
[1-Carbureted Engine]



[2-Carbureted Engine]



PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE



Disconnect the 8P connector.

Turn the ignition switch ON.

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

Is there battery voltage?

YES → **Repair open or short in BLK/YEL wire between the solenoid valve and the 8P connector.**
[1-Carbureted Engine]
If OK; replace the solenoid valve.
[2-Carbureted Engine]
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 BLK/YEL wire between the 8P connector and the ignition switch as well as No.14 fuse.**

Inspection/Adjustment

[KΩ]

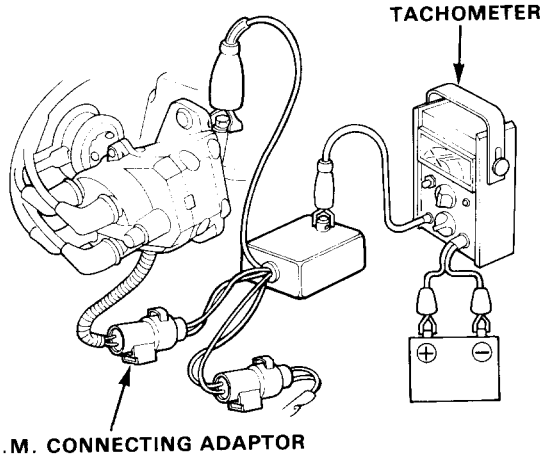
CO Meter Method

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

NOTE:
- Check that the carburetors are synchronized properly, self diagnosis indicator, clutch pedal (section 7) before making idle speed and mixture inspections.
- Snap the accelerator pedal several times and check the idle speed with the accelerator pedal fully returned.

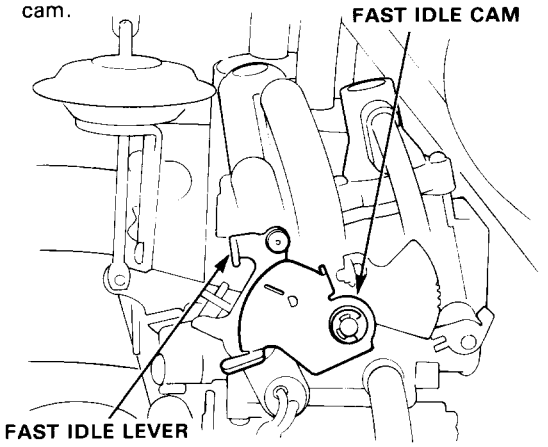
CO Meter Method

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. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
4. Check the fast idle lever.

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



- If not, replace the left carburetor (page 6-67).

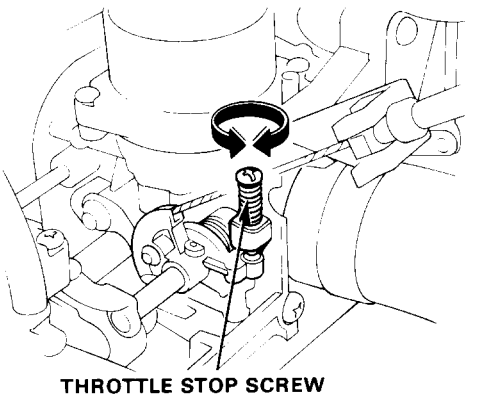
5. Check idle speed with the headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

Adjust the idle speed, if necessary, by turning the throttle stop screw.

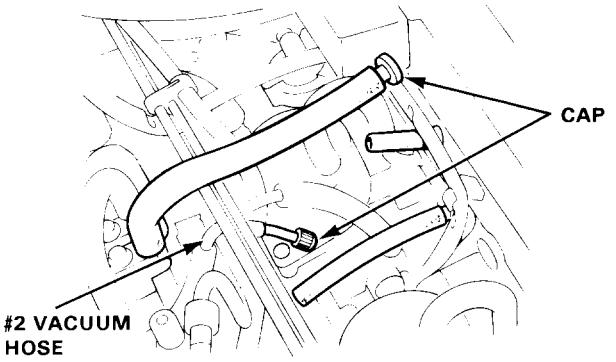
NOTE: If the idle speed is excessively high, check the throttle control (page 6-88).



(cont'd)

Idle Speed/Mixture (cont'd)

6. Disconnect the 2P connector from the EACV and disconnect the hose from vacuum hose manifold, then cap the hose end.
   Disconnect #2 vacuum hose from vacuum hose manifold, then cap the hose end.

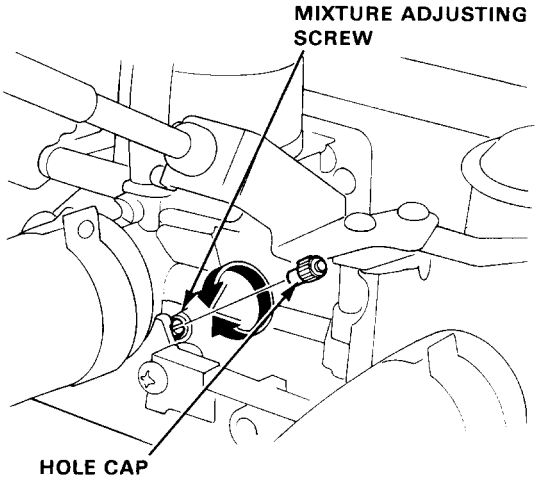


7. Warm up the engine further for more than 2 minutes with the engine speed 3,000 min^{-1} (rpm).

8. Check specification for idle CO with no load.

   Specified CO %: 2.0—3.0 %

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



Turning mixture adjusting screw
clockwise: CO reading decreases
counterclockwise: CO reading increases

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

10. Turn the ignition switch OFF. Reconnect the connector and hose.

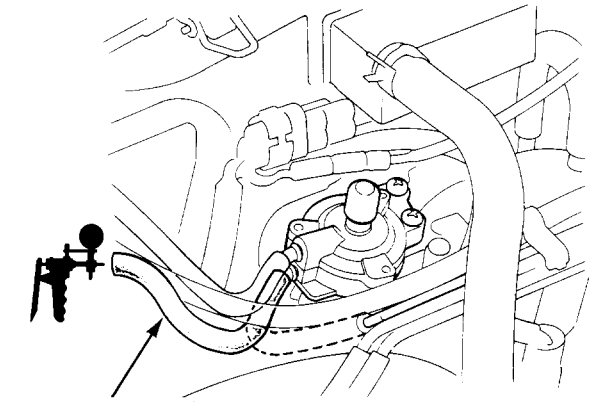
11. Remove HAZARD fuse for 10 seconds to reset control unit and recheck idle speed.
    Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm) (except "N" or "P")

Specified CO %: 0.5 %

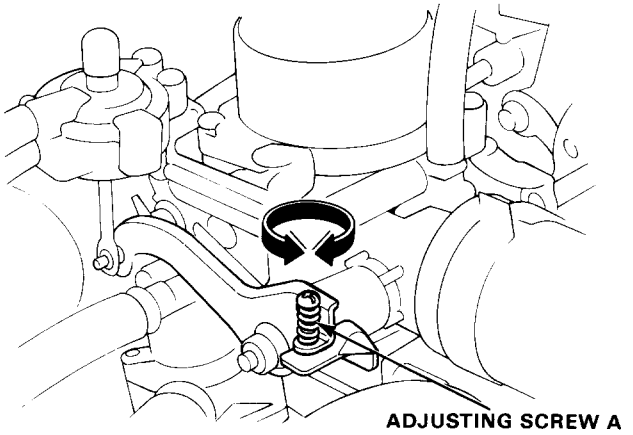
- If idle speed is not as specified, adjust by turning throttle stop screw, then repeat step 6.

12. Reconnect air cleaner intake tube on the air intake duct.
13. Reinstall the mixture adjusting screw hole cap.
14. Disconnect the #20 vacuum hose from the idle boost throttle controller and connect a vacuum pump.



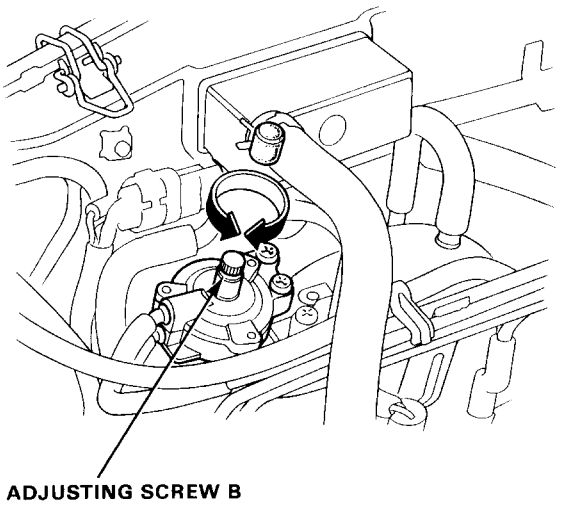
15. Apply vacuum, then check the idle speed with the headlight, heater blower, rear window deffogger and cooling fan on.

Idle speed should be: 700 ±50 min^{-1} (rpm)



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

16. If equipped with air conditioner, check the idle speed with the A/C on.
Idle speed should be: 750±50 min^{-1} (rpm)



Adjusting the idle speed, if necessary, by turning the adjusting screw B.

17. If the idle speed does not reach the specified idle speeds in steps 14 though 16, go to idle control system testing (page 6-30).

(cont'd)

Idle Speed/Mixture (cont'd)

[Ex. KQ]

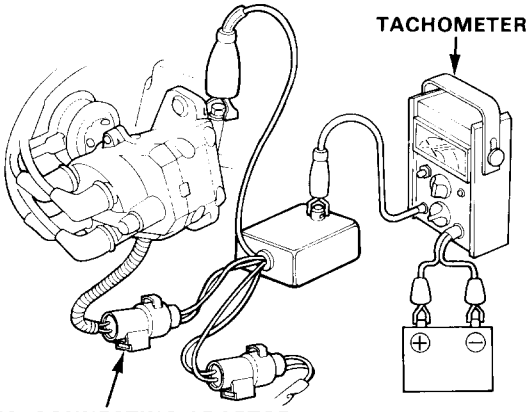
NOTE:

- 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. Check the idle speed with no load.

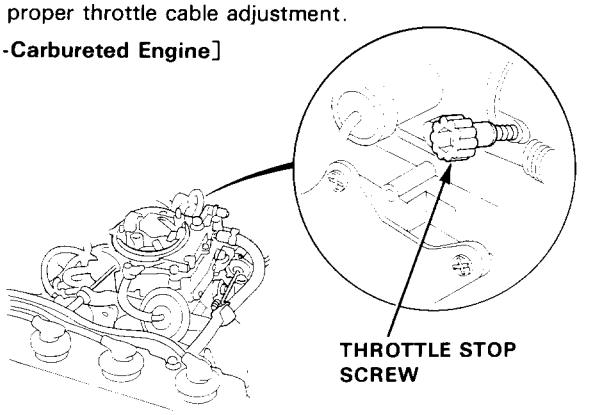
Idle speed should be:

Manual	750±50 min^{-1} (rpm)
Automatic	700±50 min^{-1} (rpm)

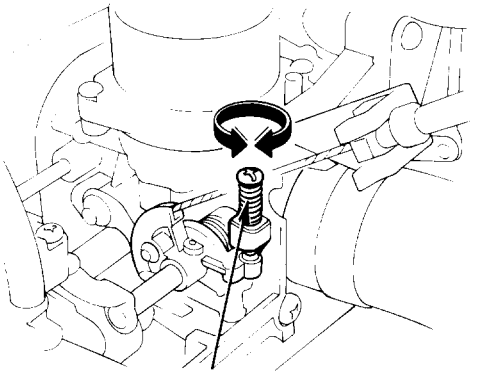
4. If not within specification, adjust by turning throttle stop screw to obtain proper idle speed.

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

[1-Carbureted Engine]



[2-Carbureted Engine]

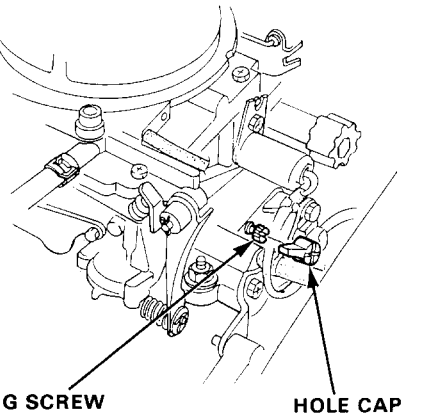


5. Check specification for idle CO with no load.

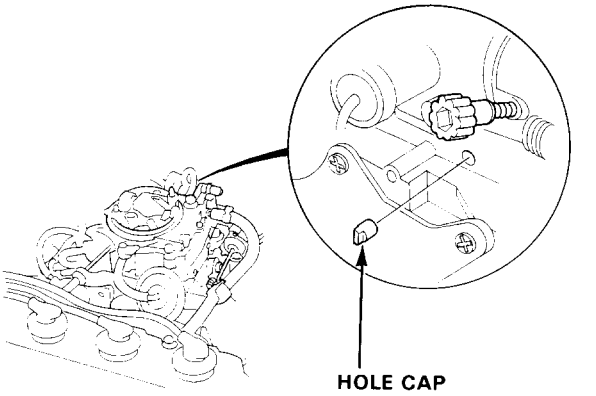
Spcified CO %: below 0.1 %

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

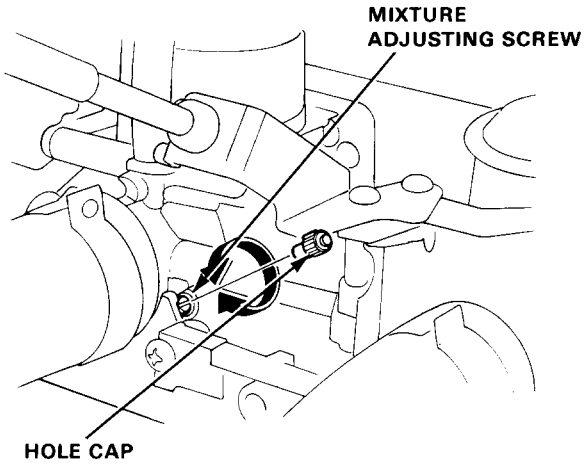
[1-Carbureted Engine]



[1-Carbureted Engine, Ex. KP, KT, KU]



[2-Carbureted Engine]



Turning mixture adjusting screw
clockwise: CO reading decreases
counterclockwise: CO reading increases

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

7. Install the hole plug.

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

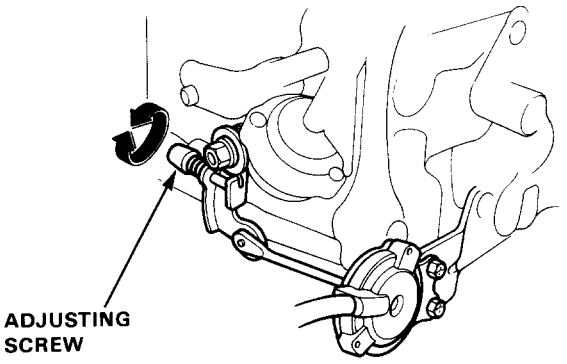
8. If equipped with air conditioner, check the idle speed with the A/C on.

   Idle speed should be:

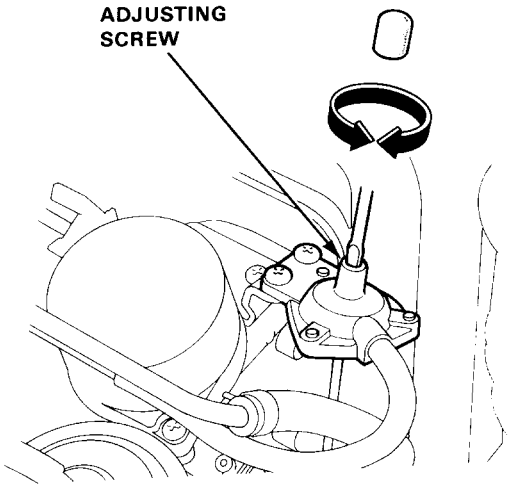
Ex. KG M/T	750±50 min^{-1} (rpm)
KG M/T	950±50 min^{-1} (rpm)

If not:
KG M/T; go to idle control system (page 6-32).
Ex. KG M/T; adjust the idle speed by turning the adjusting screw.

[1-Carbureted Engine]



[2-Carbureted Engine]



Float Level

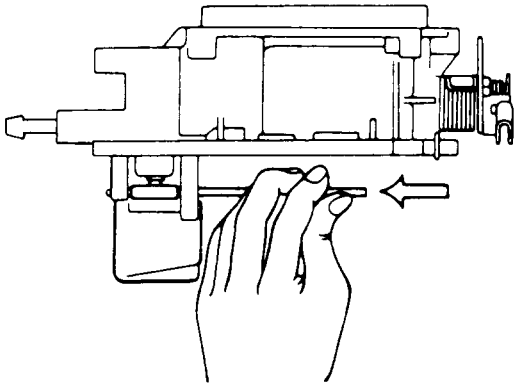
Inspection

[1-Carbureted Engine]

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

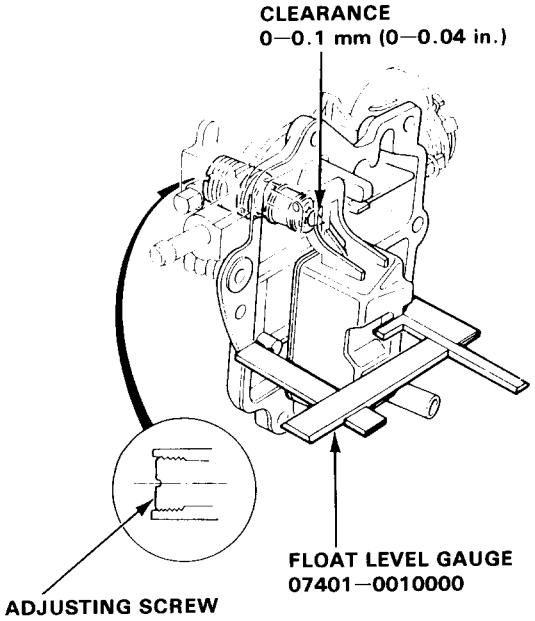
1. Remove float arm pin by lightly tapping it with a slender pin from long leg side as shown, then remove float.

   NOTE: Never tap the float leg.



2. Reassemble float in reverse order.
3. Measure float level by attaching a float level gauge to the center of float.

   Float Level (from Gasket): 34.5—36.5 mm (1.36—1.44 in.)

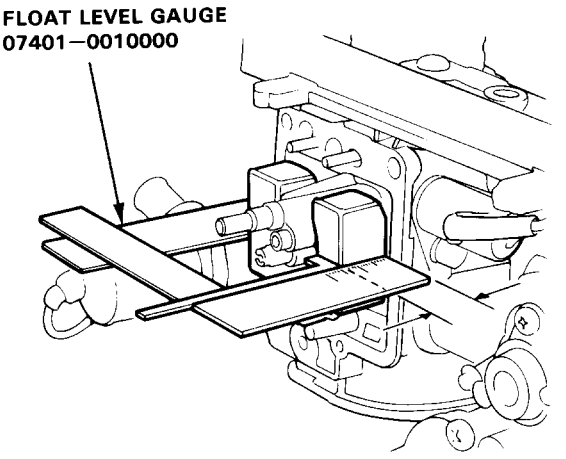


4. Adjust level by turning adjusting screw in or out if necessary.
5. Paint adjusting screw after adjustment.

[2-Carbureted Engine]

1. Remove the carburetors (page 6-66).
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.

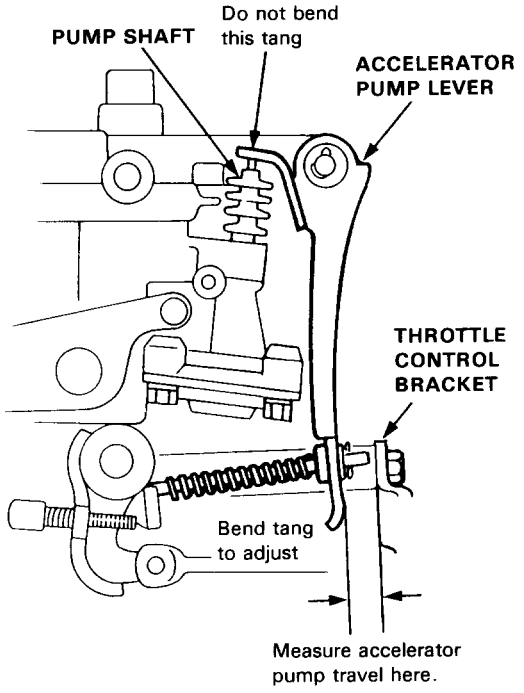
   Float Level: 16±1 mm (0.6 ±0.04 in.)



Accelerator Pump [1-Carbureted Engine]

Inspection

1. Before measuring the accelerator pump linkage travel, make sure the pump shaft travels freely throughout the pump stroke. Make sure the pump lever is in contact with the pump shaft.

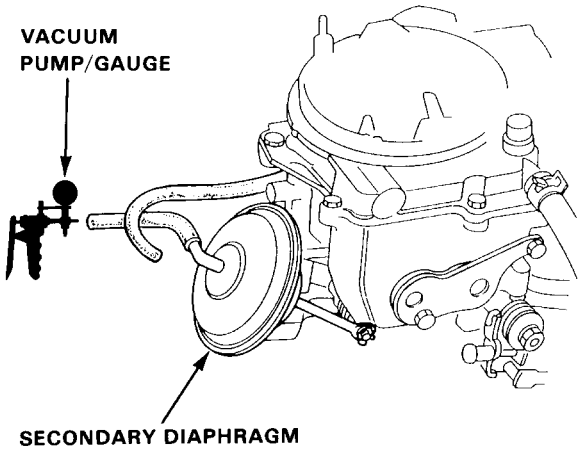


2. To check linkage travel, measure gap between bottom end of pump lever (tang) and stop as shown.

   Limits: 16.5 to 16.9 mm (0.65—0.67 in.)

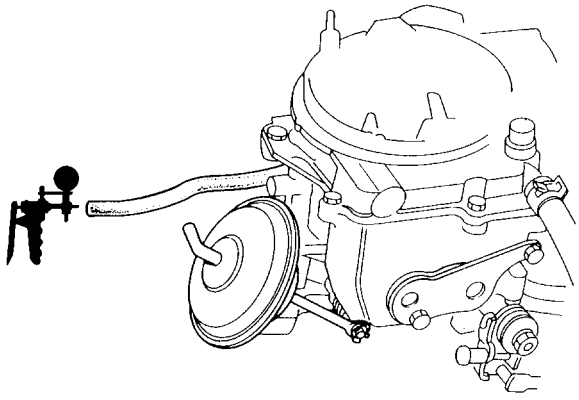
Vacuum Controlled Secondary [1-Carbureted Engine]

1. Disconnect the secondary diaphragm vacuum hose and attach a spare piece of hose between the diaphragm and a vacuum pump.
2. Open the throttle valve fully and apply a vacuum. Check that the diaphragm rod moves as vacuum is applied and that the vacuum then remains steady.



   - If the vacuum does not hold or the rod does not move, first check the hose for proper connection and condition, then check the rod for free movement.

     Repair or replace parts as necessary, and recheck.
3. Connect a vacuum pump to the hose disconnected from the secondary diaphragm.



Vacuum should not hold.

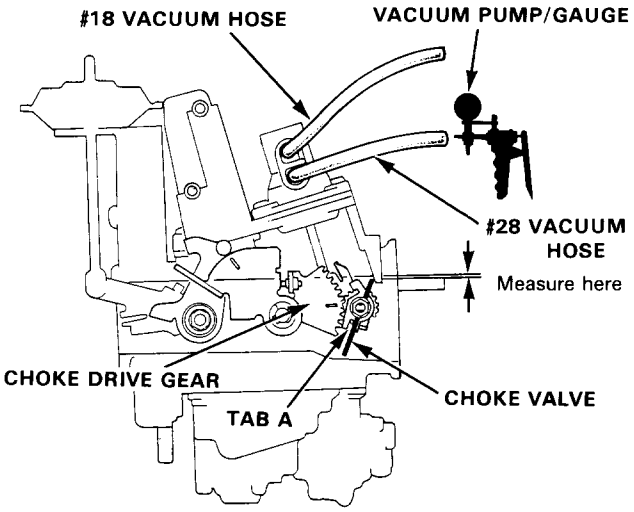
- If vacuum holds, make sure hose is not clogged and clean the carburetor port.

Choke Linkage [KQ]

Adjustment

1. Remove the carburetor (page 6-66).
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)

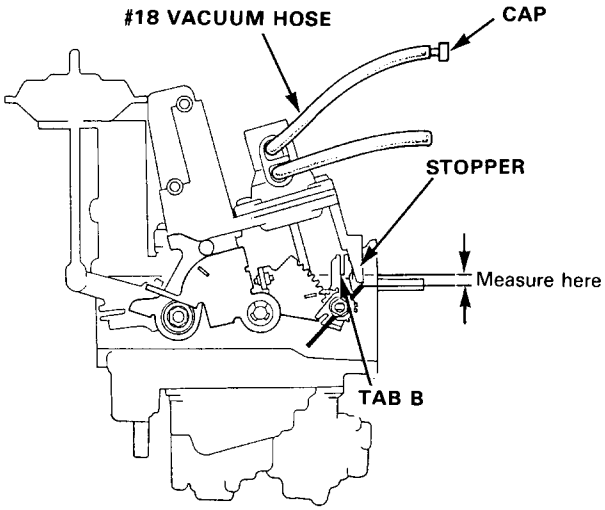
   NOTE: If vacuum drops below 200 mm Hg (8 in. Hg), slowly reapply vacuum until you can maintain the highest level without losing vacuum.
3. Turn the choke drive gear clockwise and measure the clearance between the choke valve and the casting.



1st Stage Clearance:
M/T: 1.65±0.15 mm (0.065±0.006 in.)
A/T: 1.75±0.15 mm (0.69±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: 3.85±0.2 mm (0.152±0.008 in.)
A/T: 4.05±0.2 mm (0.159±0.008 in.)

Adjust clearance by bending Tab B.

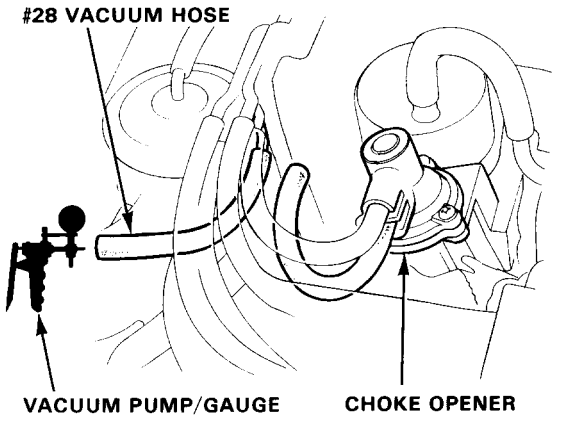
If the clearance can not adjust, replace the left carburetor (page 6-67).

Choke Opener [KQ]

Testing (COLD ENGINE)

NOTE: Engine coolant temperature must be below 15°C (59°F)

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

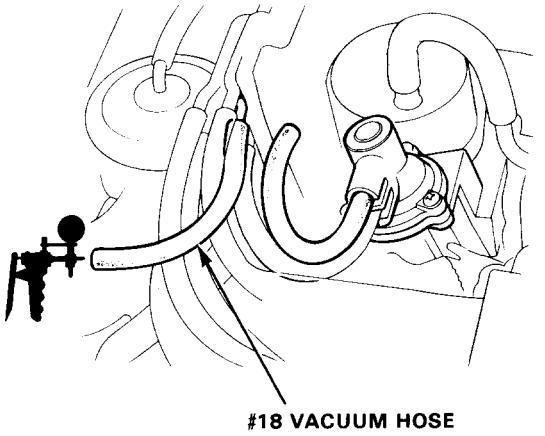


2. Start the engine and check the vacuum.

   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.

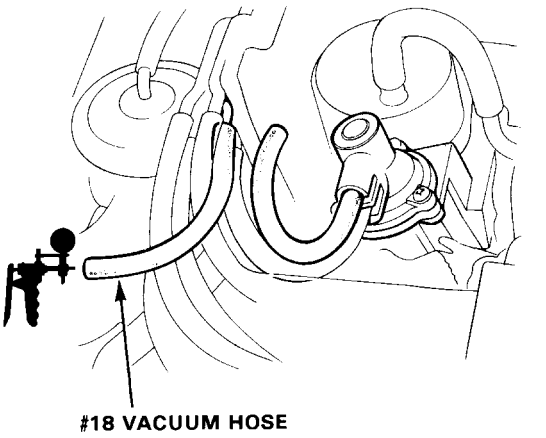
   - If it holds vacuum, check the #18 vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the thermovalve and retest.

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.



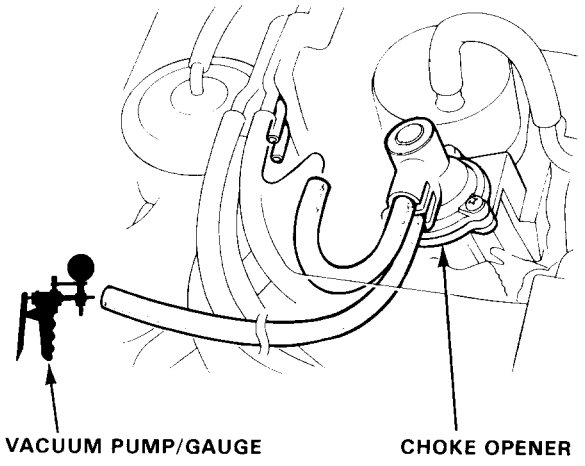
   - If it does not hold vacuum, check the #18 vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the thermovalve and retest.

(cont'd)

Choke Opener [KQ] (cont'd)

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.



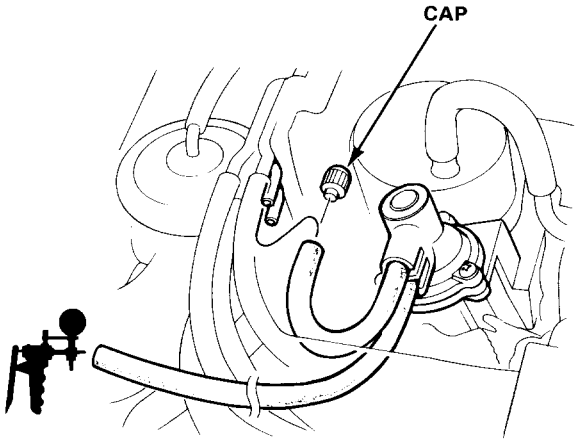
3. Apply vacuum.

   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 6-67).

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

   It should pull the opener rod.

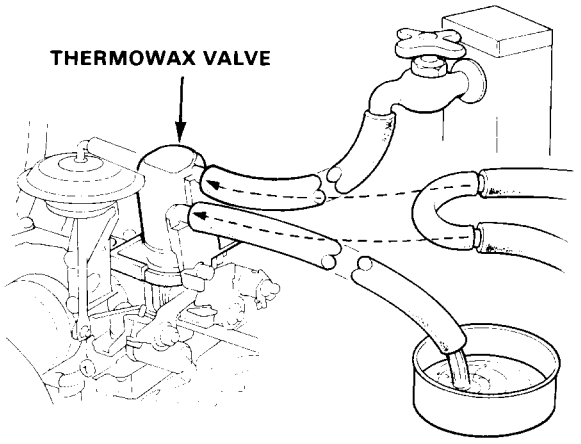


   - If not, replace the left carburetor (page 6-67).

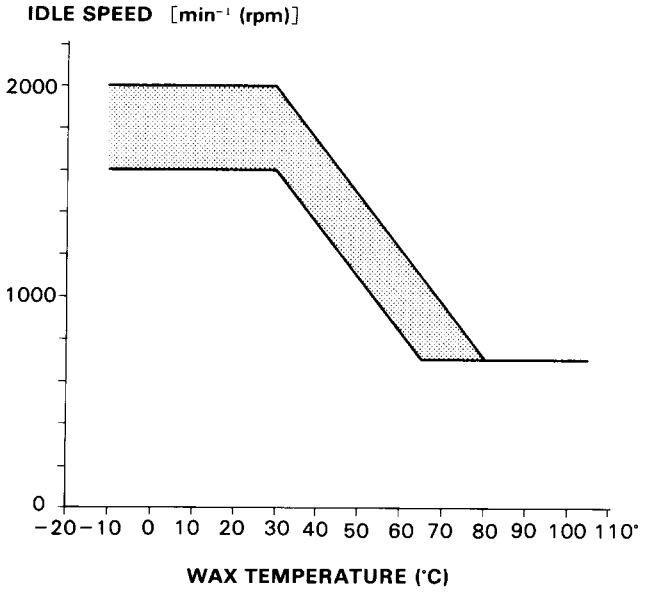
Fast Idle [KQ]

Inspection/Adjustment

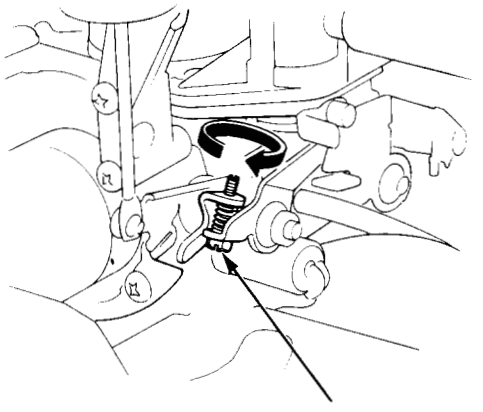
1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Stop the engine.
3. Disconnect both coolant hoses from the thermowax valve and cap the end of hoses.
4. Apply cold water and cool down the wax.



5. Connect a tachometer and check the idle speed.



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



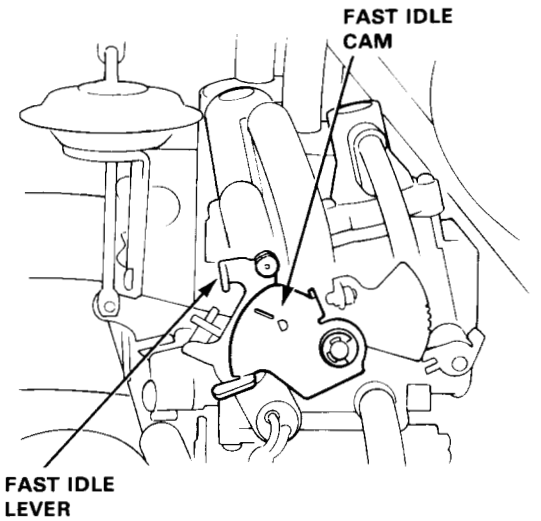
● If not, replace the left carburetor (page 6-66).

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.

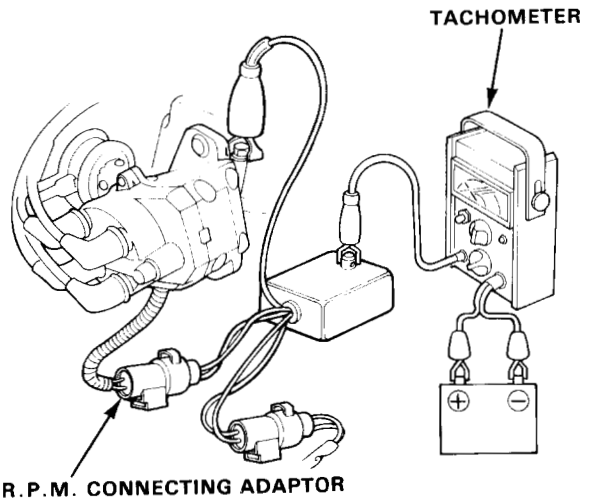
   Fast idle lever should not be seated against fast idle cam.



● If not, replace the left carburetor (page 6-67).

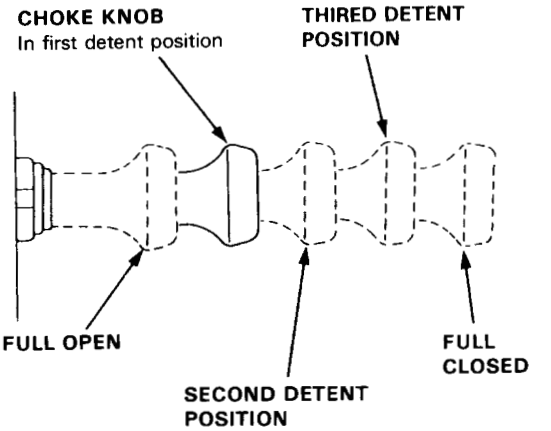
Manual Choke /Fast Idle [Ex. KQ]

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.



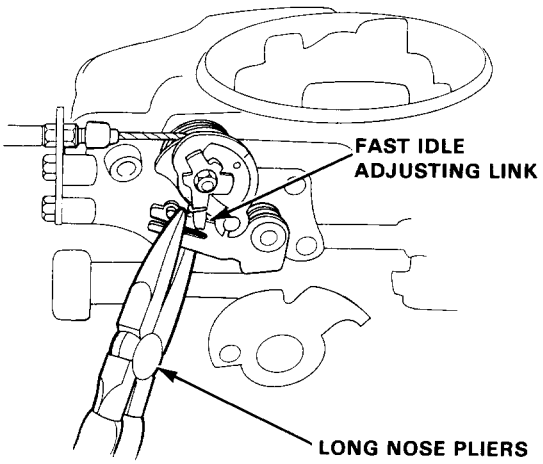
Fast idle should be: 1,500—2,500 min^{-1} (rpm)

(cont'd)

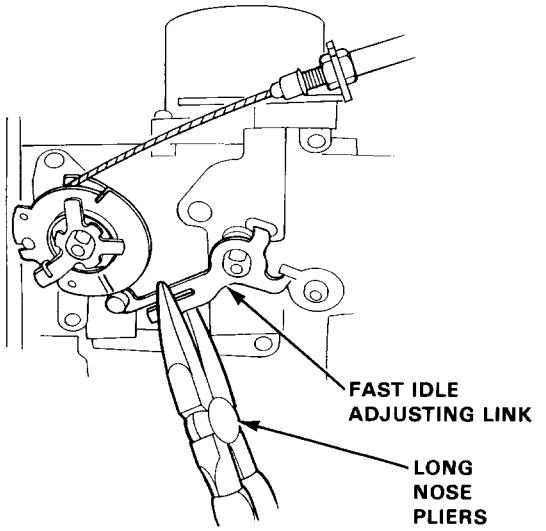
Manual Choke/Fast Idle [Ex. KQ] (cont'd)

- 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.

[1-Carbureted Engine]

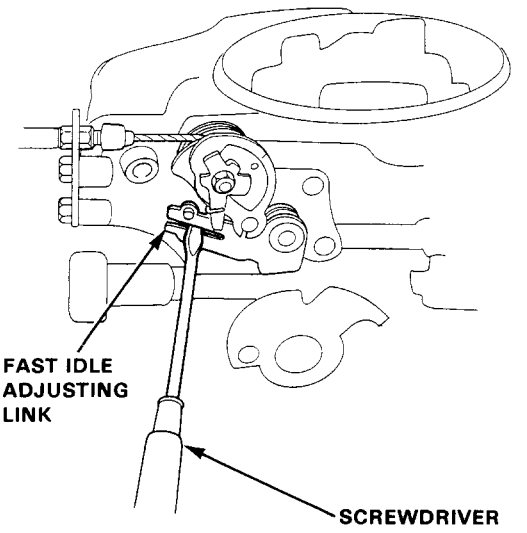


[2-Carbureted Engine]

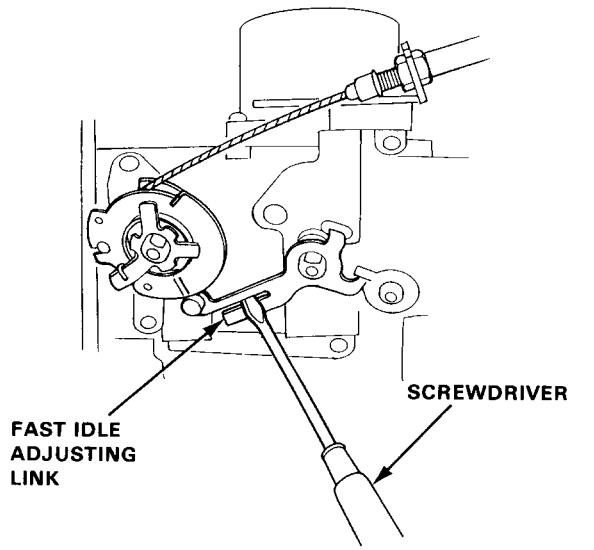


- If the engine speed is too low, insert a screwdriver in the fast idle adjusting link slot and widen the slot. Make adjustments in small increments.

[1-Carbureted Engine]



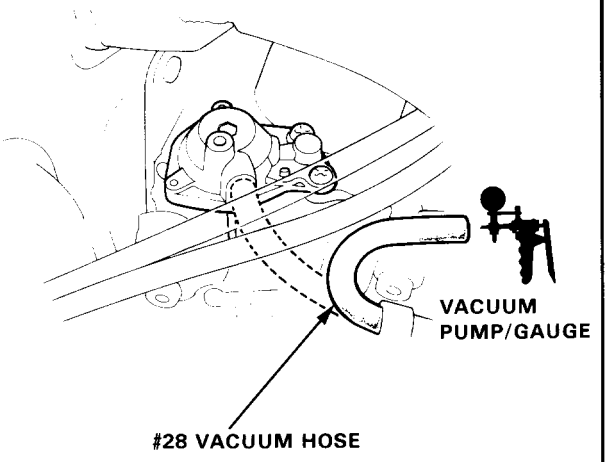
[2-Carbureted Engine]



Choke Opener [KG 2-Carbureted Engine]

Testing

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



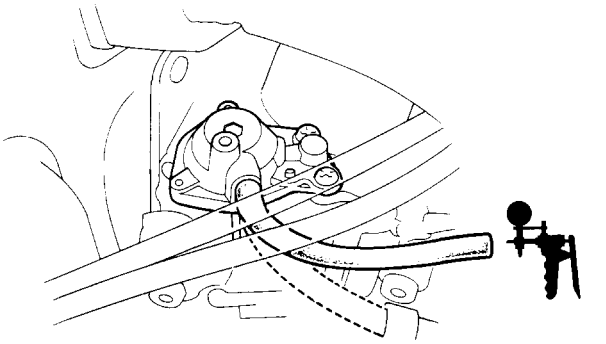
2. Start the engine and check the vacuum.

   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.

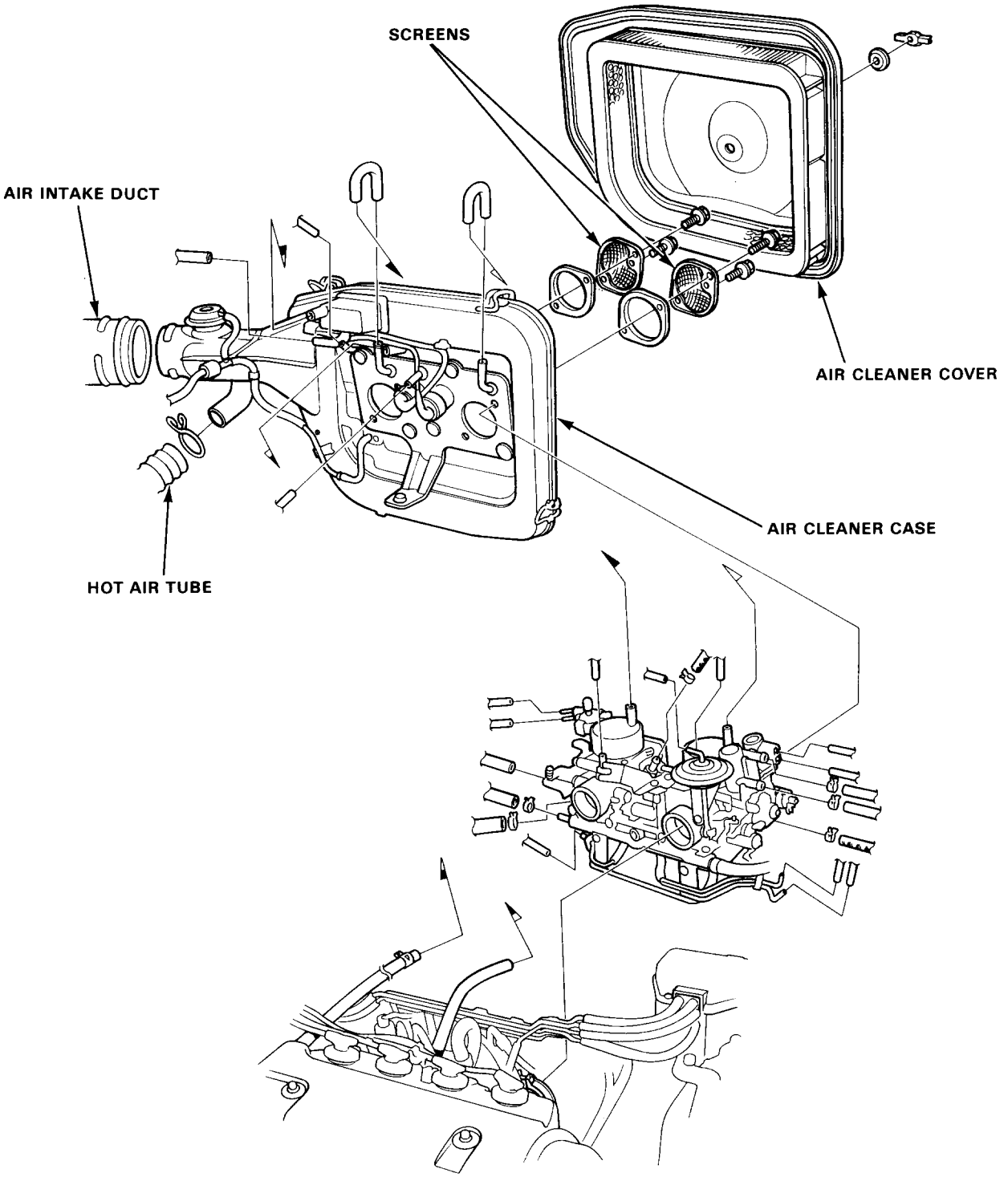


2. Apply vacuum.

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

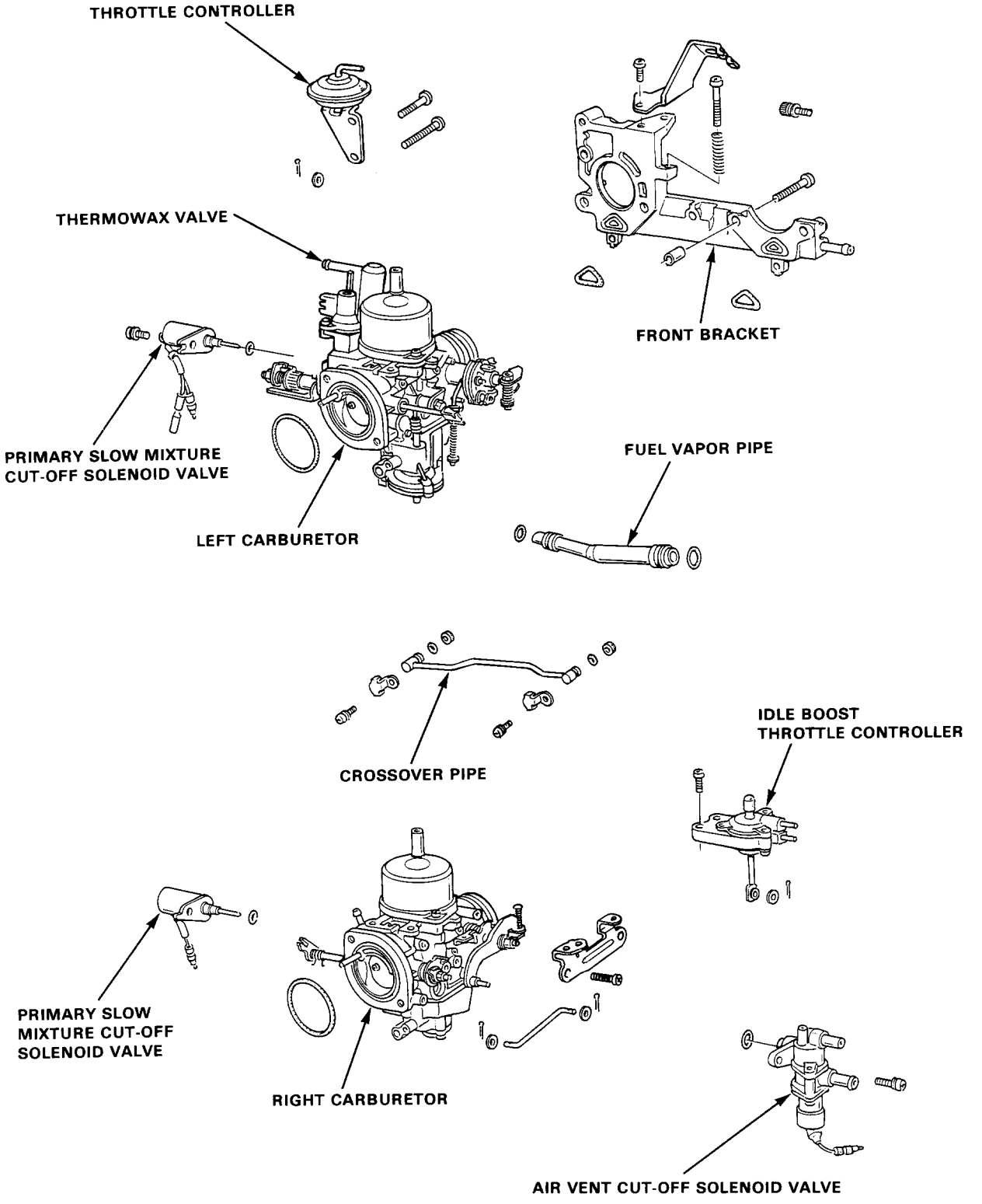
   - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-69).

Removel [KQ]


SCREENS
AIR INTAKE DUCT
AIR CLEANER COVER
AIR CLEANER CASE
HOT AIR TUBE

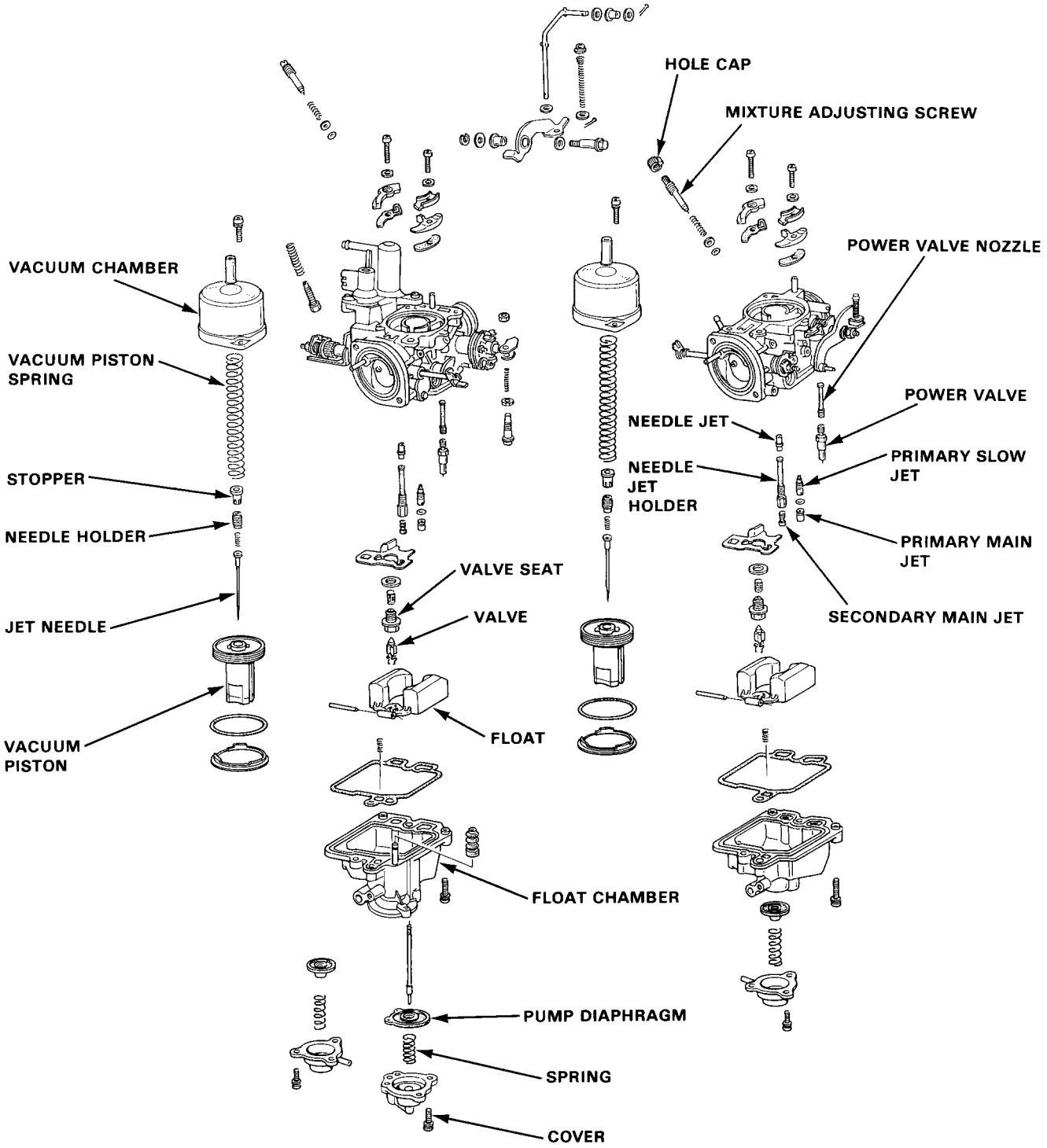
Replacement [KQ]

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.

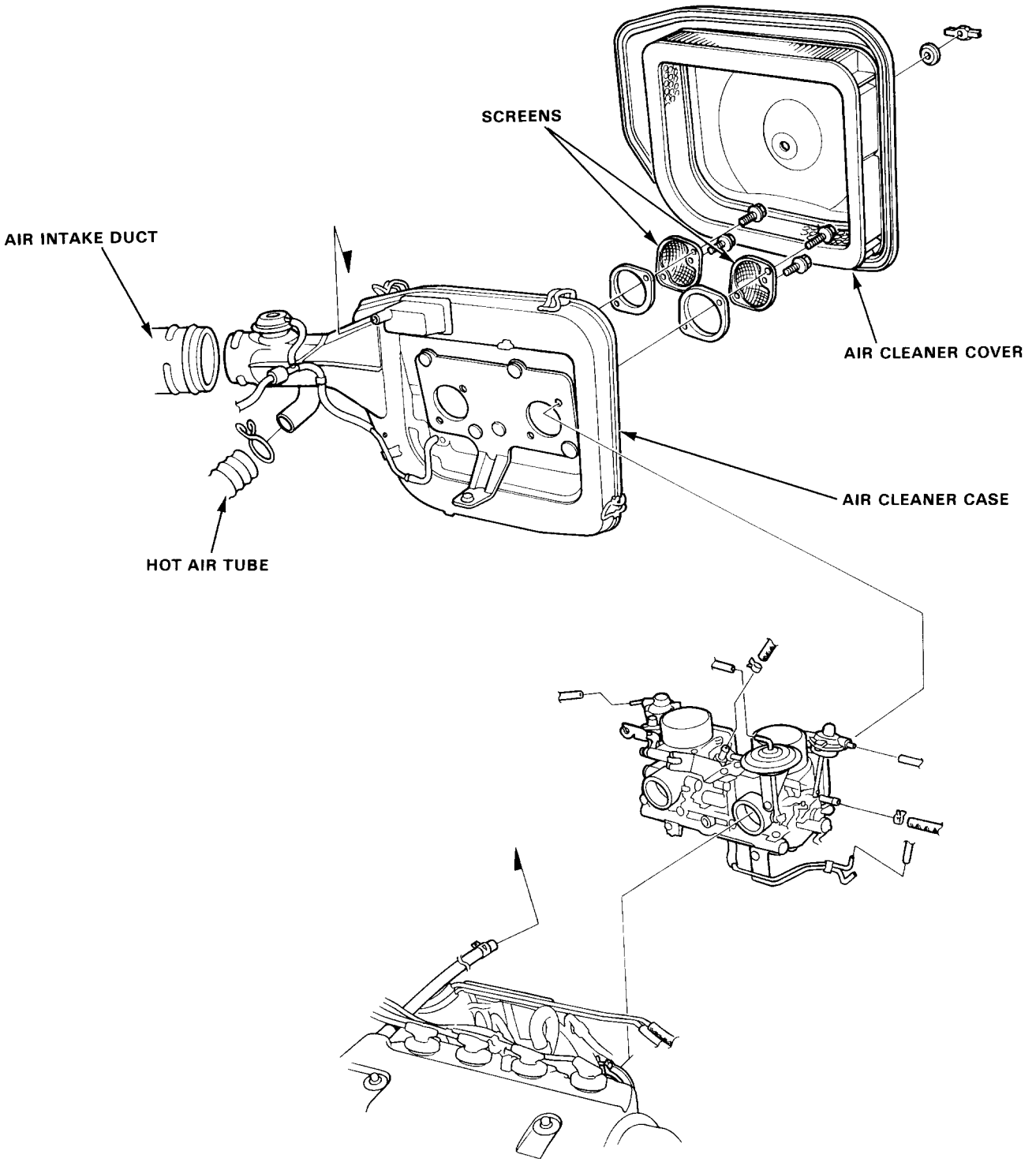


(cont'd)

Replacement [KQ] (cont'd)

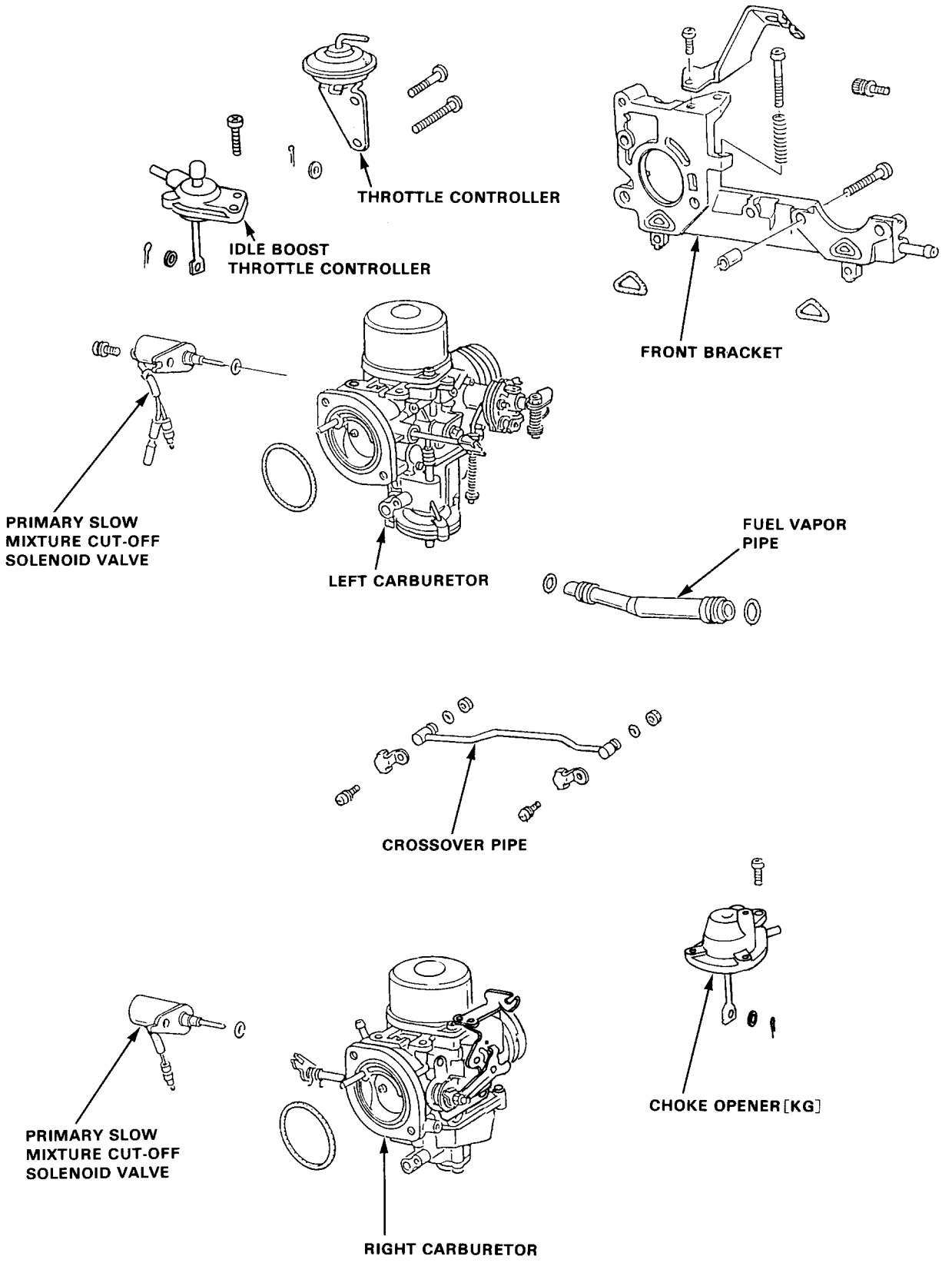


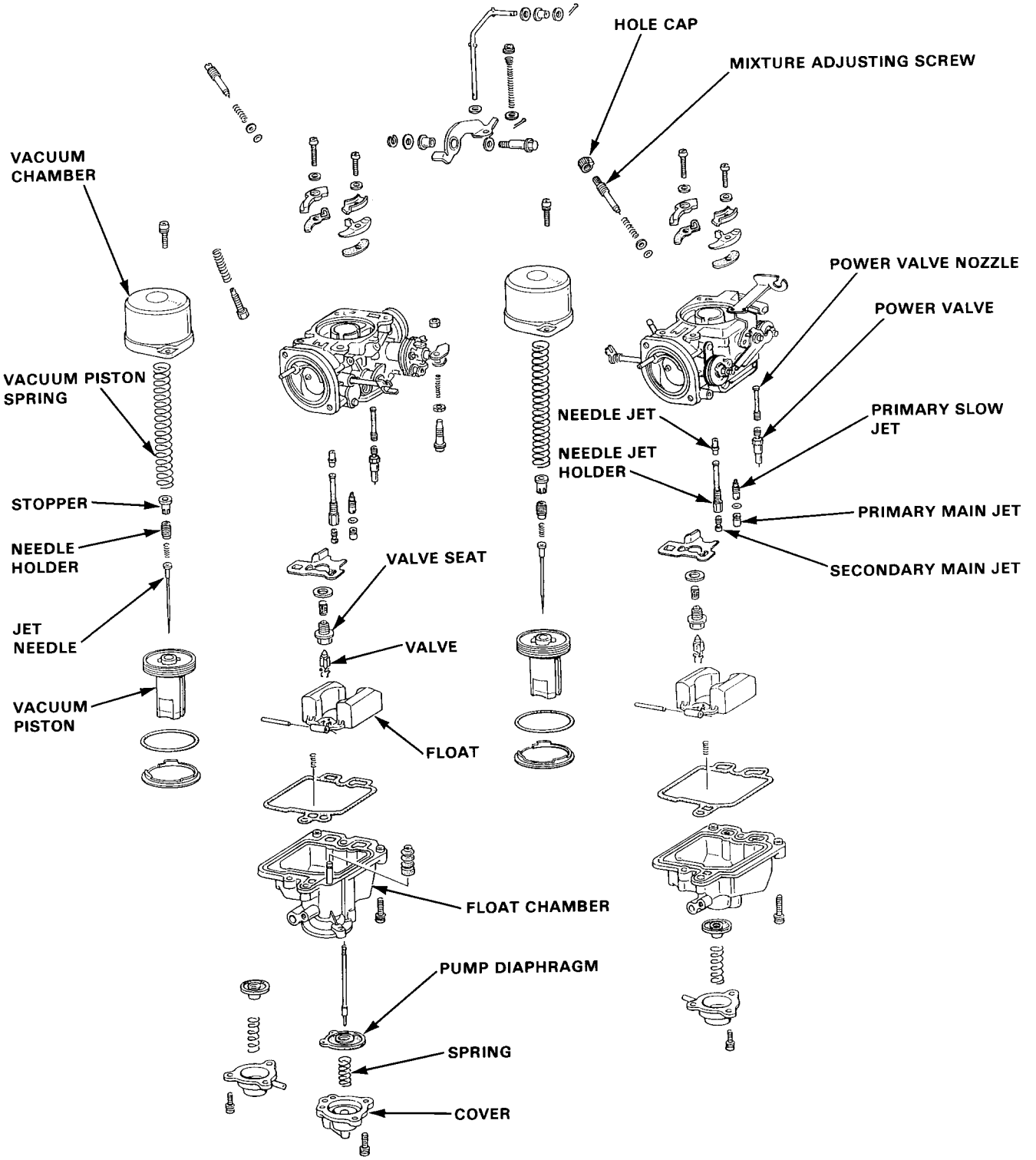
Removal [Ex. KQ 2-Carbureted Engine]



Carburetor

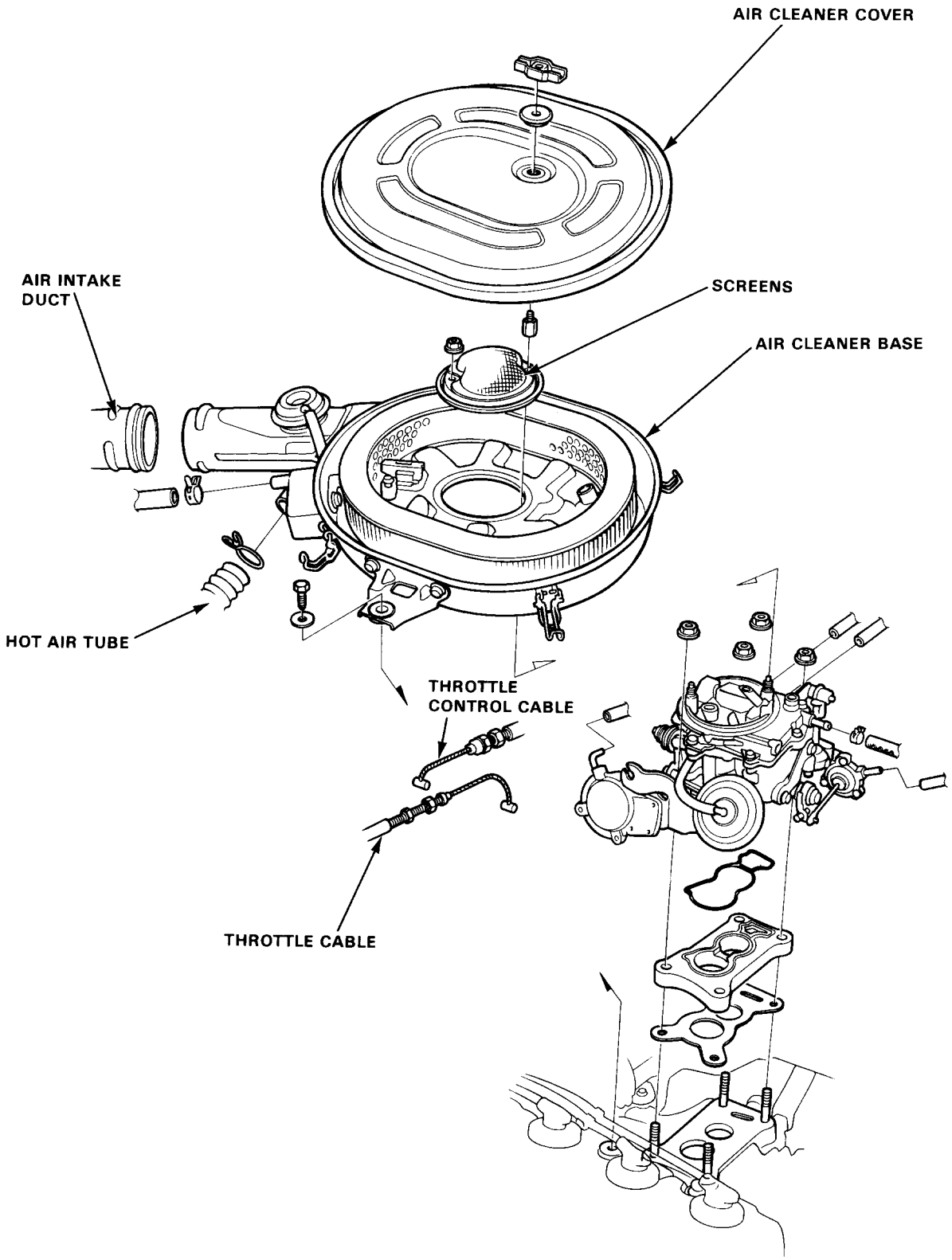
Replacement [Ex. KQ 2-Carbureted Engine]



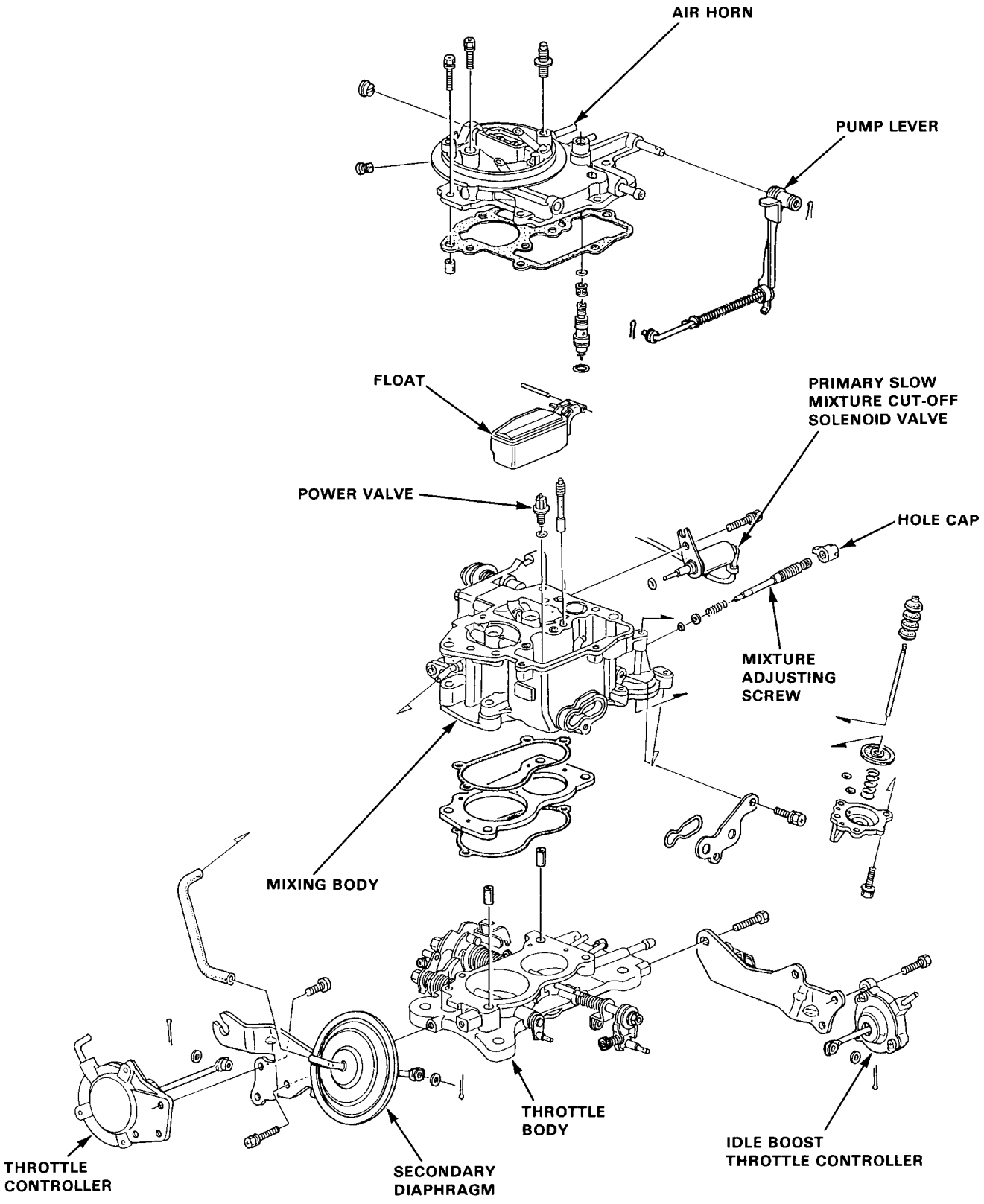

HOLE CAP
MIXTURE ADJUSTING SCREW
VACUUM CHAMBER
POWER VALVE NOZZLE
POWER VALVE
VACUUM PISTON SPRING
NEEDLE JET
PRIMARY SLOW JET
NEEDLE JET HOLDER
STOPPER
PRIMARY MAIN JET
NEEDLE HOLDER
SECONDARY MAIN JET
VALVE SEAT
JET NEEDLE
VALVE
VACUUM PISTON
FLOAT
FLOAT CHAMBER
PUMP DIAPHRAGM
SPRING
COVER

Carburetor

Removal [1-Carbureted Engine]

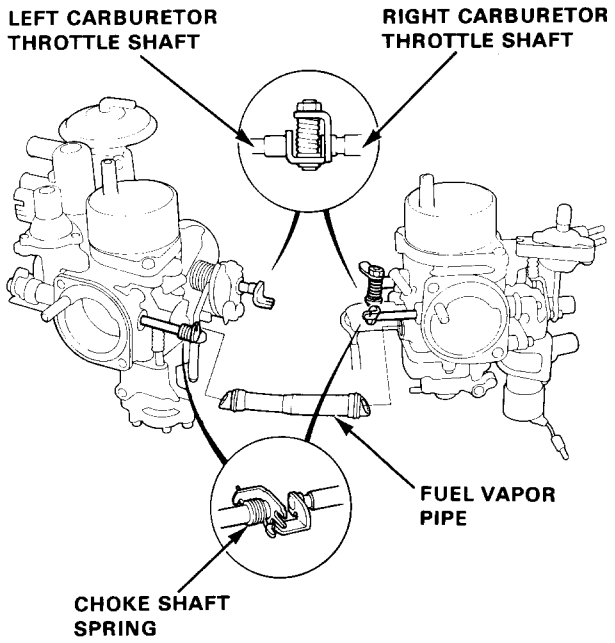


Replacement [1-Carbureted Engine]



Reassembly [2-Carbureted Engine]

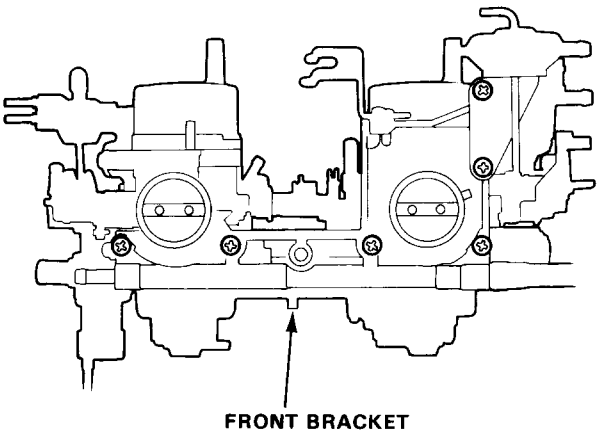
1. Insert the left carburetor's throttle shaft end (forked), between the washers on the right carburetor's throttle shaft end.
2. Install new O-rings on the fuel vapor pipe, then install it.
3. Set the left and right carburetors up.



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

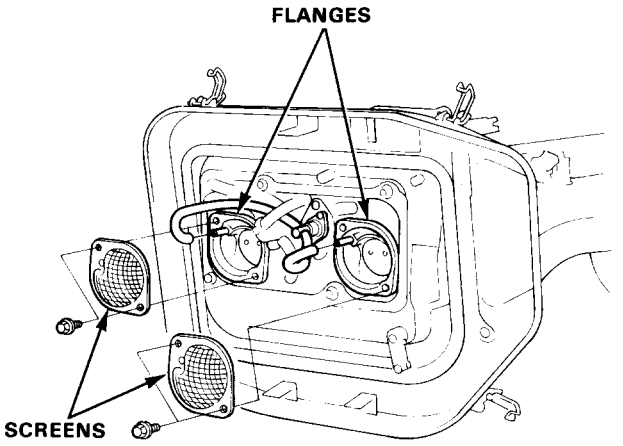
   CAUTION: Make sure the screw length is correct or you may damage the carburetors.

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

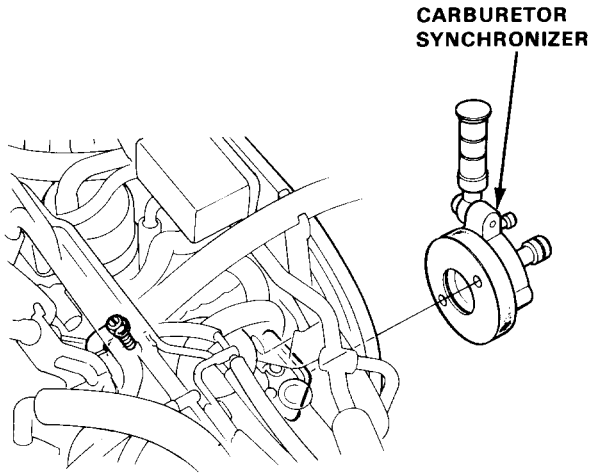


Synchronization [2-Carbureted Engine]

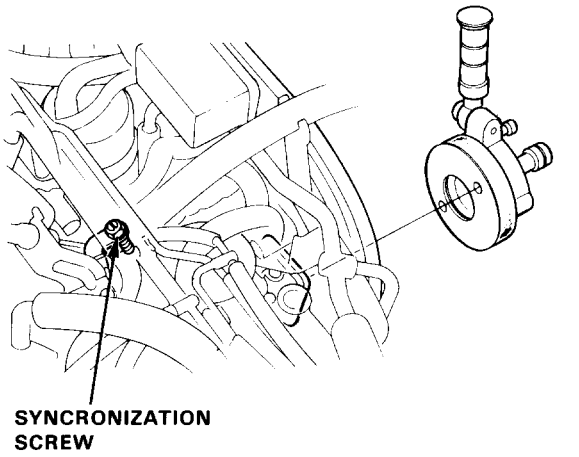
1. Remove the air cleaner cover and element.
2. Remove the air intake screens and air intake flanges.



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.

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 self-diagnosis indicator (KQ model), 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 FILTERS	FUEL PUMP	FUEL TANK	CONTAMI-NATED FUEL
		77	77	79	*
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.

Fuel Filters

Replacement

Replace both front and rear filters at every 2 years or 40,000 km (24,000 miles) whichever comes first.

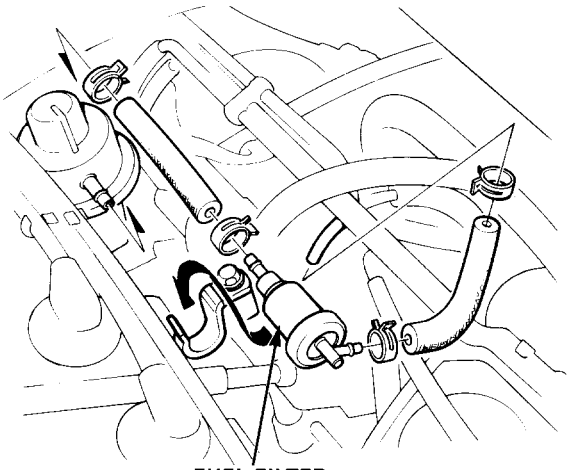
WARNING Do not smoke while working on the fuel system. Keep open flame away from work area.

Front [KQ]

1. Use fuel line clamps to pinch off the fuel lines.
2. Disconnect the fuel lines and remove the fuel filter.

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

3. Install the new fuel filter.
4. Remove the fuel line clamps.

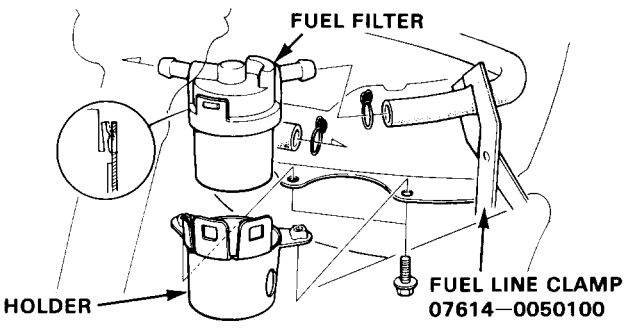


Rear

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.



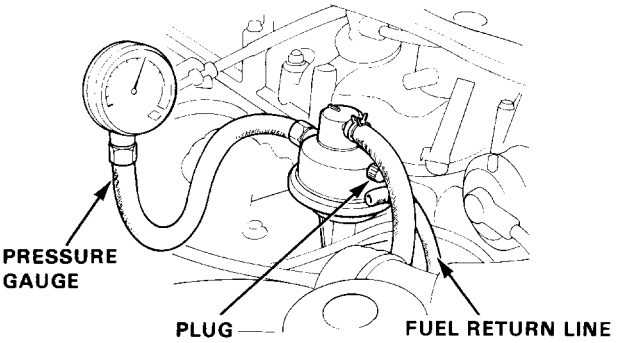
Fuel Pump

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 at the fuel filter in the engine compartment, and connect a pressure gauge to it as shown.
2. Disconnect the fuel return line at the fuel pump and plug the return fitting with a cap.



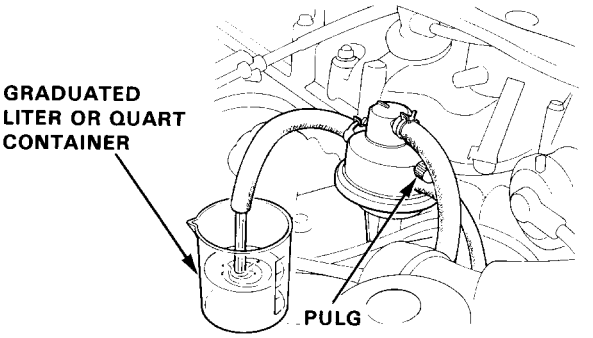
3. Start the engine, and allow it to idle until pressure stabilizes, then stop engine.

Pressure should be:
6.8—22.6 kPa (0.07—0.23 kg/cm², 1.0—3.2 psi)

- If gauge shows at least 6.8 kPa (0.07 kg/cm², 1.0 psi), go on to step 4.
- If gauge shows less than 6.8 kPa (0.07 kg/cm², 1.0 psi), replace pump and re-test.

4. Remove pressure gauge and hold a graduated container under the hose.
5. Start the engine, and allow it to idle for 60 seconds, then stop the engine.
Fuel volume should be 833.3 cm³ (27.9 oz).
   - If fuel volume is less than specified, replace the fuel pump and re-test.

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



6. Remve the plug from fuel pump return fitting and reconnect return line.

(cont'd)

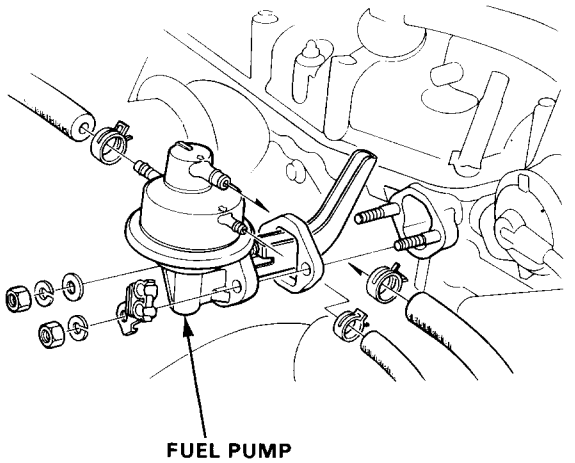
Fuel Pump (cont'd)

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.

Fuel Tank

Replacement

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

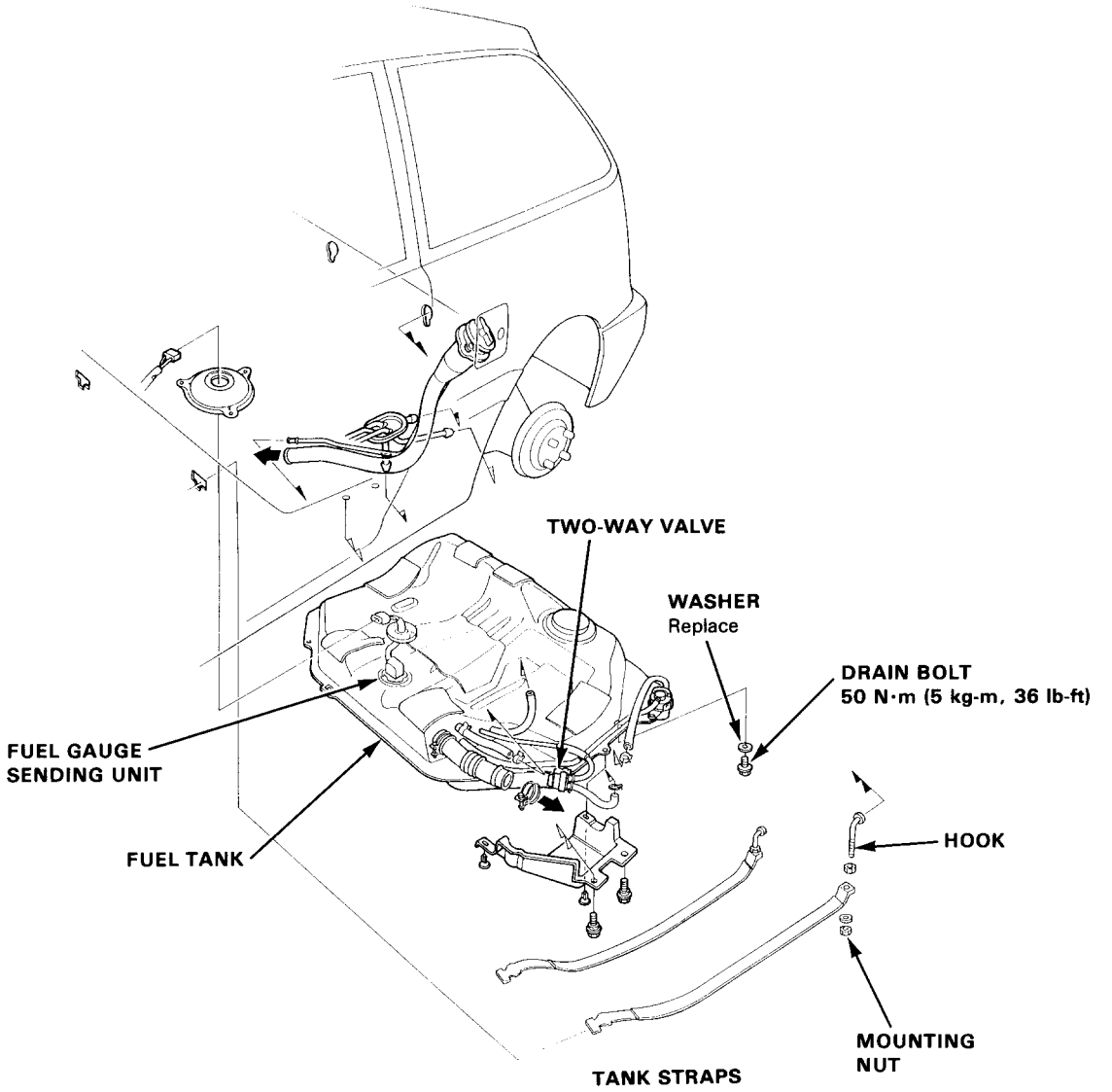
1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Disconnect the fuel gauge sending unit connector.
4. Disconnect the hoses.

CAUTION: When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging 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 a new washer on the drain bolt, then install parts in the reverse order of removal.



Air Intake System

Symptom-to-sub System Chart

NOTE:

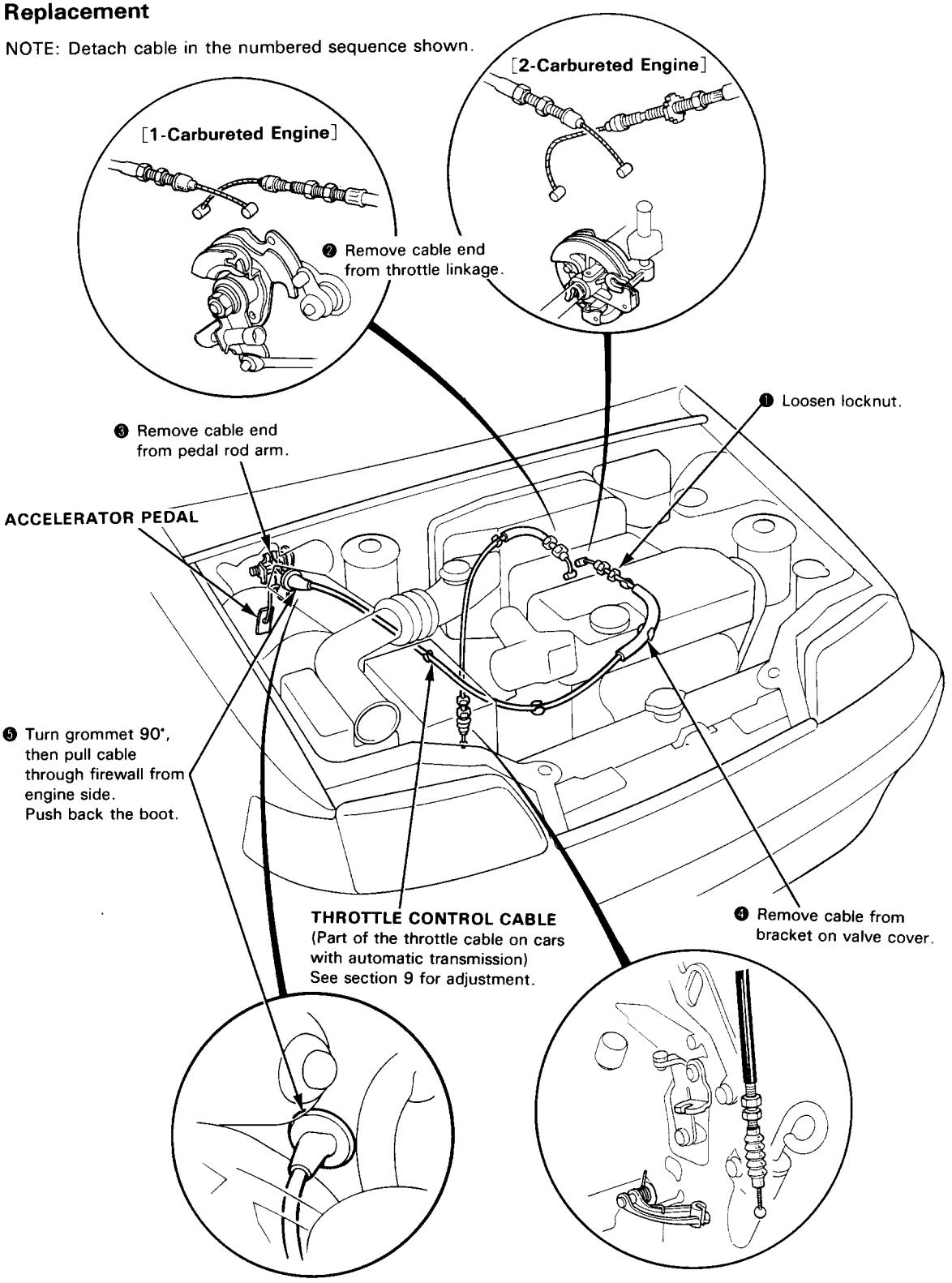
- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows 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 self-diagnosis indicator (KQ model), 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
	81	84
LOSS OF POWER		①
AFTERBURN		①
HESITATION/SURGE		①

Throttle Cable

Replacement

NOTE: Detach cable in the numbered sequence shown.



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

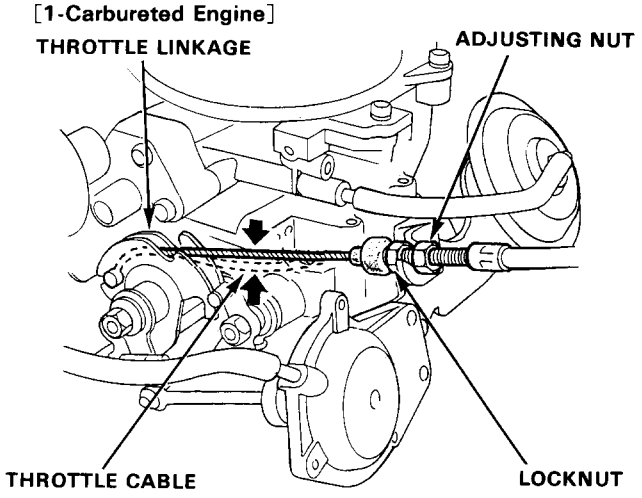
(cont'd)

Throttle Cable (cont'd)

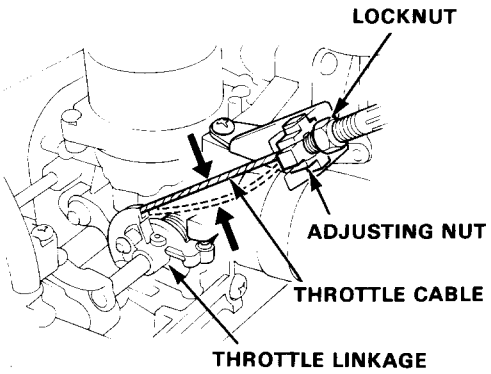
Inspection/Adjustment

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.)

[1-Carbureted Engine]



[2-Carbureted Engine]



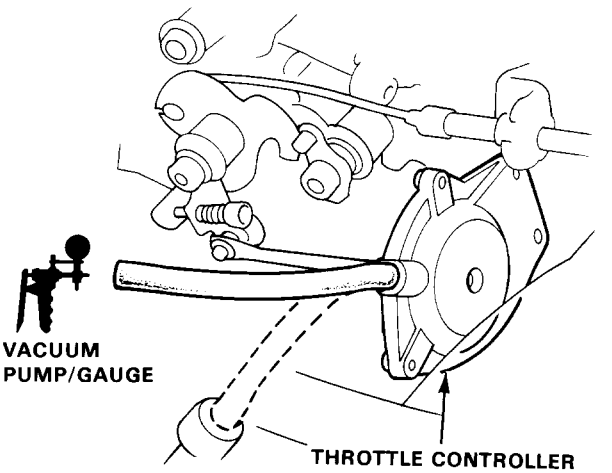
4. If deflection is not within specs, loosen locknut and turn adjusting nut until you can deflect cable as specified. Then tighten locknut.
5. With cable properly adjusted, check throttle valve to be sure it opens fully when you push accelerator pedal to the floor.

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

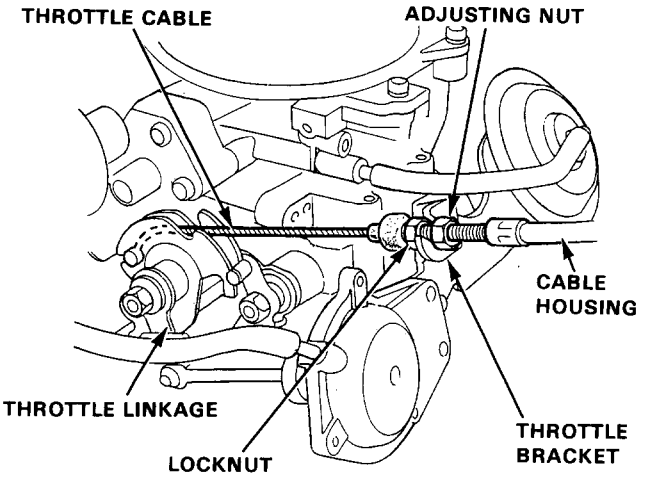
Installation

[1-Carbureted Engine]

1. Disconnect the hose from the throttle controller and connect a vacuum pump to the controller, then apply vacuum.



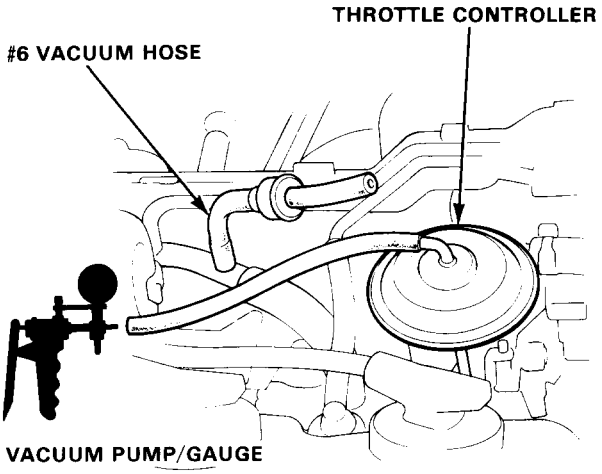
2. Fully open the throttle and choke valves, then close the throttle valve. Now, release the choke valve; the throttle linkage will be off the fast idle cam.
3. Install the throttle cable in the throttle linkage.



4. Turn the adjusting nut until it is 3 mm (1/8 in.) away from the cable bracket.
   Tighten the locknut.
5. Disconnect the vacuum pump and reconnect the throttle controller hose.
6. On models with automatic transmission, adjust the throttle control cable. See section 9.

[2-Carbureted Engine]

1. Disconnect the #6 vacuum hose from the throttle controller and connect a vacuum pump to the controller, the apply vacuum.

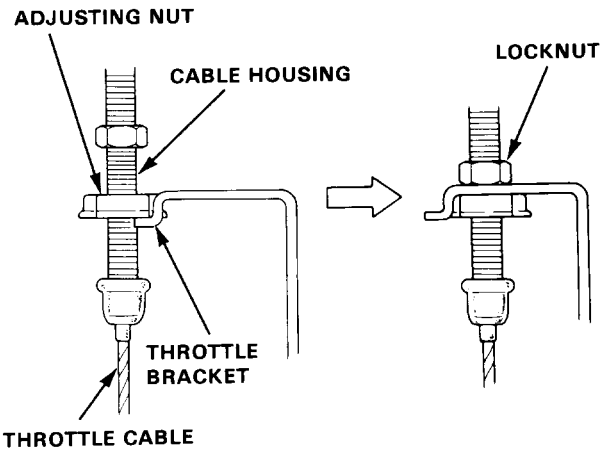


2. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the throttle bracket.

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.



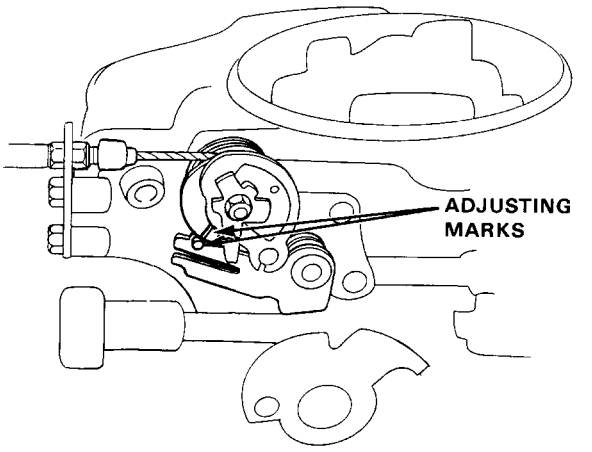
6. Disconnect the vacuum pump and connect the #6 vacuum hose.

Choke Cable

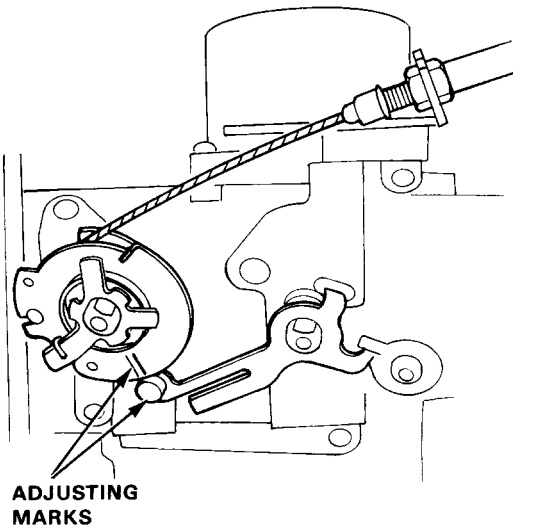
1. Check that choke control operates smoothly with no evidence of binding or sticking.

2. Set choke knob in the second detent position and check that the marks are aligned.

[1-Carbureted Engine]



[2-Carbureted Engine]



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

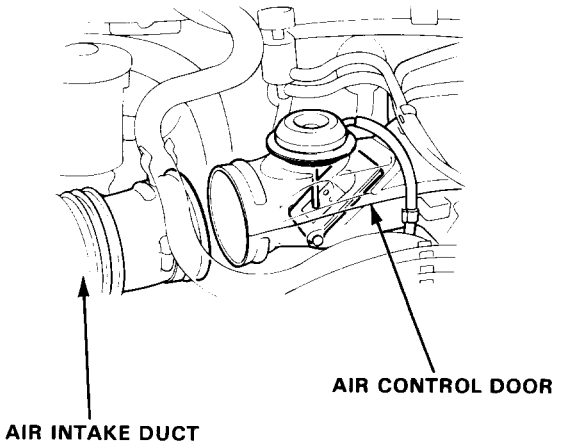
Intake Air Control System

Testing (COLD ENGINE)

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

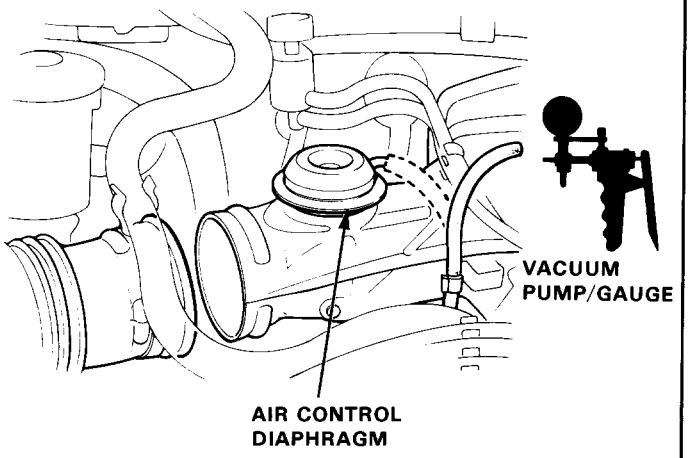
1. Disconnect the air intake duct and start the engine.

   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.

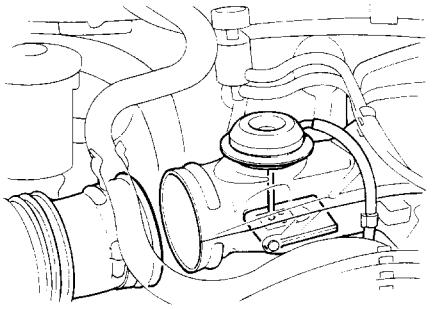


  — If there is vacuum, replace the air control diaphragm and retest.
  — If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve.

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 and retest.

Emission Control System

Sympton-to-sub System Chart

[KΩ]

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 this page.

PAGE / SYSTEM / SYMPTOM		FEEDBACK CONTROL	THROTTLE CONTROL	EVAPORATIVE CONTROL
		87	88	91
ENGINE WON'T START		①		
DIFFICULT TO START ENGINE	WHEN COLD	①		
	WHEN WARM	①	②	
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPECIFICATION	①	②	
	WHEN WARM ENGINE SPEED TOO HIGH		①	
	WHEN WARM ENGINE SPEED TOO LOW	①		
	ROUGH IDLE/ FLUCTUATION	①		
FREQUENT STALLING	WHILE WARMING UP	①		
	AFTER WARMING UP	①		
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING			
	LOSS OFF POWER	①		
	AFTERBURN	①	②	
	HESITATION/SURGE	①		

Tailpipe Emissions

Inspection

NOTE: It is not possible to use a CO meter to adjust the idle mixture; the effect of the catalytic converter prevents accurate tracking of such small changes in air-fuel ratio.

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

1. Follow steps the propane enrichment method.
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.

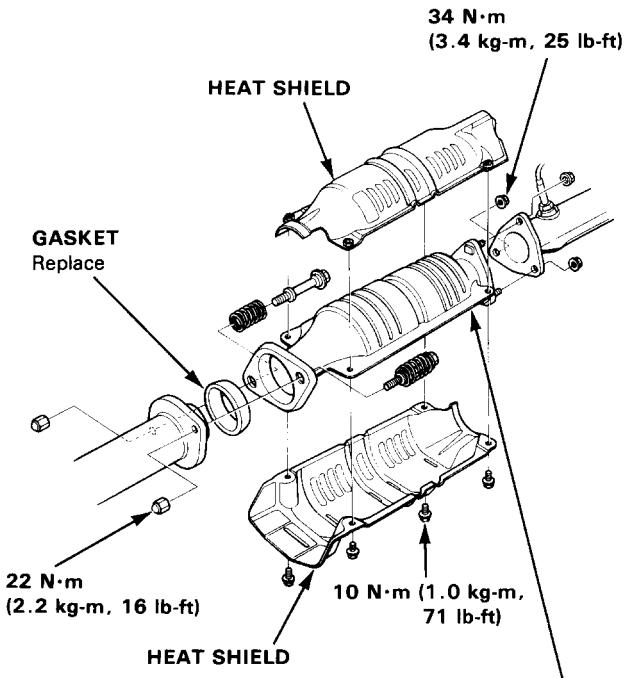
Specified CO%;
KQ: 0.5%
Ex. KQ Others: 1.0%

Catalytic Converter

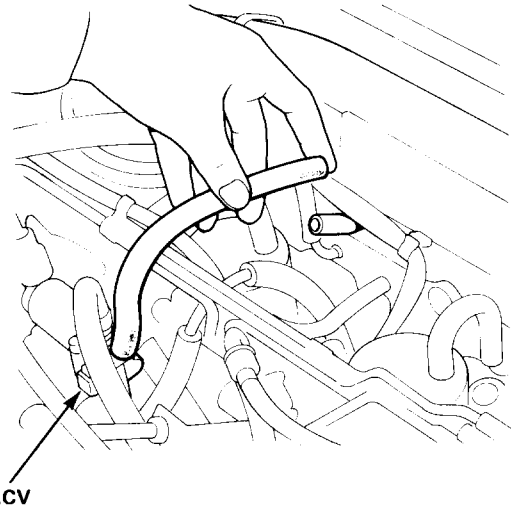
Carbureted Engine : KQ
PGM-FI Engine

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.



Troubleshooting Flow Chart EACV



Inspection of EACV.

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

Disconnect the EACV hose from the air cleaner.

Raise the engine speed to 5,000 min^{-1} (rpm).

Is there vacuum ?

YES → **Check the self-diagnosis indicator (page 6-101). If OK, replace the EACV and retest.**

NO

Raise the engine speed to 5,000 min^{-1} (rpm) and close the throttle suddenly.

Is there vacuum ?

NO → Check the self-diagnosis indicator (page 6-101).

YES

Does LED indicate code 14 ?

YES → **Go to EACV troubleshooting flow chart (page 6-115)**

NO

Check the hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the EACV and retest.

EACV is OK.

Throttle Control System

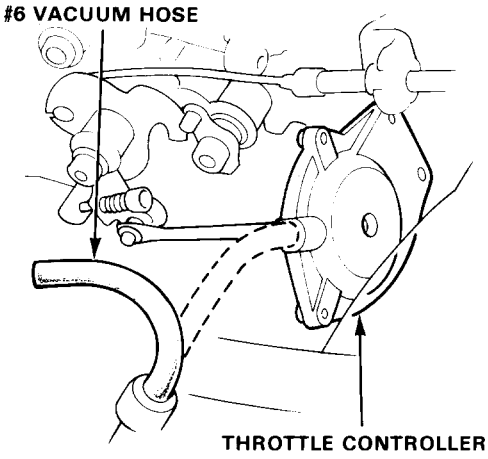
Testing (HOT ENGINE)

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.

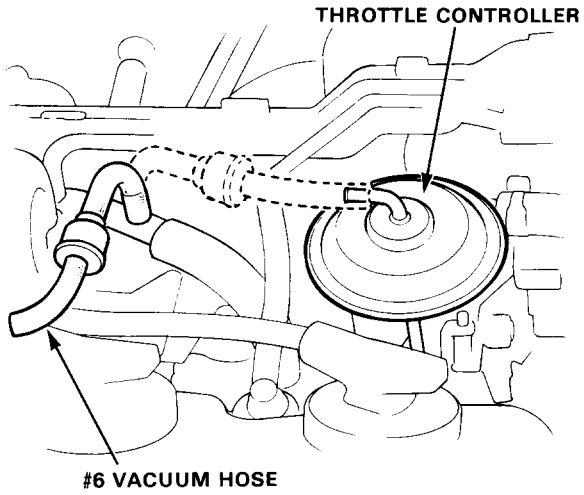
Engine speed should be:

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

[1-Cabureted Engine]

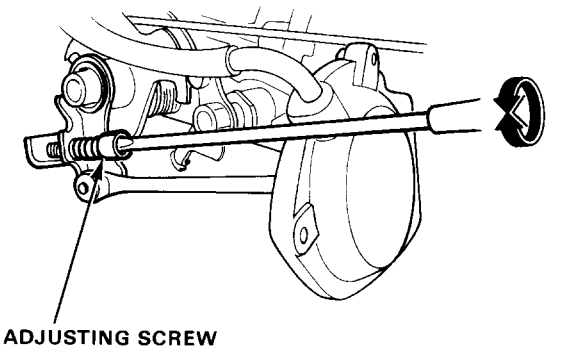


[2-Cabureted Engine]

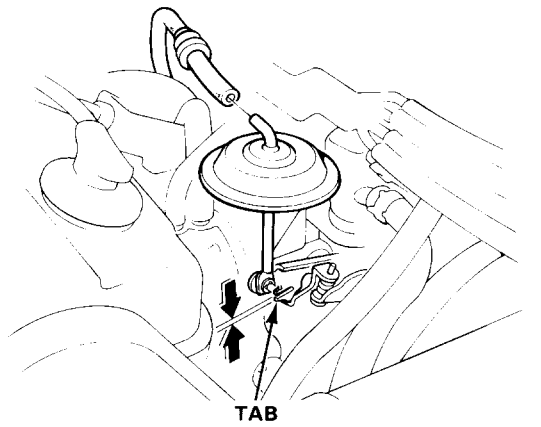


- If the engine speed is excessively high:
  1-Carbureted Engine; adjust by turning the adjusting screw.
  2-Carbureted Engine; adjust by bending TAB.

[1-Cabureted Engine]



[2-Cabureted Engine]



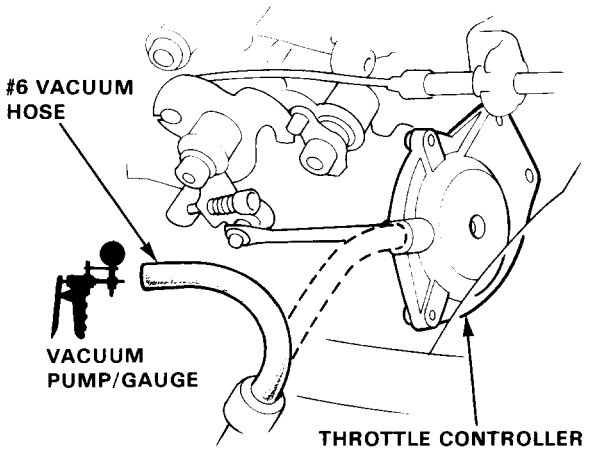
- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose and check vacuum.

  There should be vacuum.

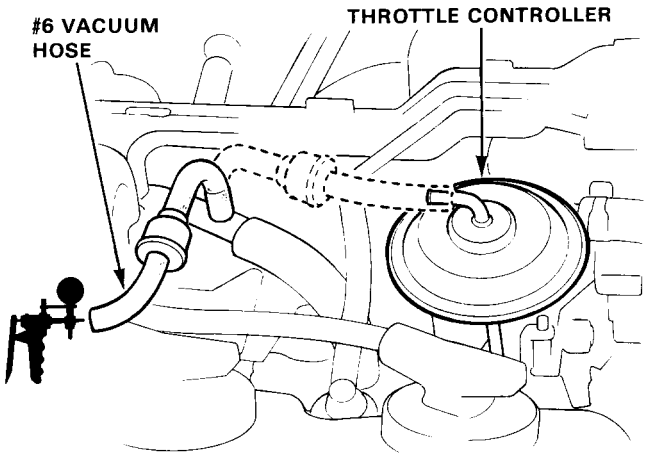
#6 HOSE
THROTTLE CONTROLLER
 # VACUUM HOSE

#6 HOSE
ADJUSTING SCREW

[1-Carbureted Engine]



[2-Carbureted Engine]



— 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.

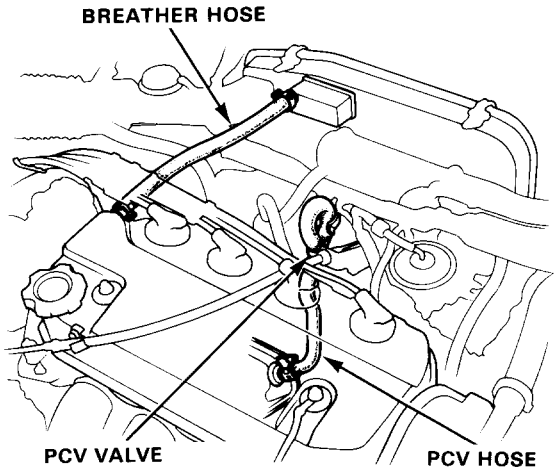
3. Reconnect the #6 vacuum hose and check the idle speed.

   Idle speed should be within specification (page 6-53).

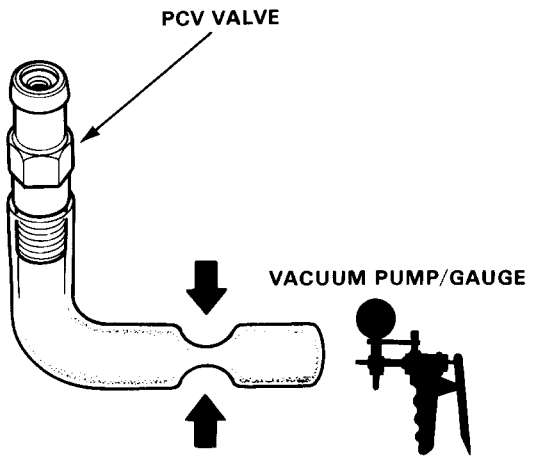
Positive Crankcase Ventilation

PCV Valve Test

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. Remove the PCV valve from the intake mainfold and connect a vacuum pump.



3. Pinch the hose as illustrated above, apply 400—500 mmHg (16—20 in. Hg) of vacuum, unpinch the hose and promptly check for a clicking sound at the PCV valve.

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

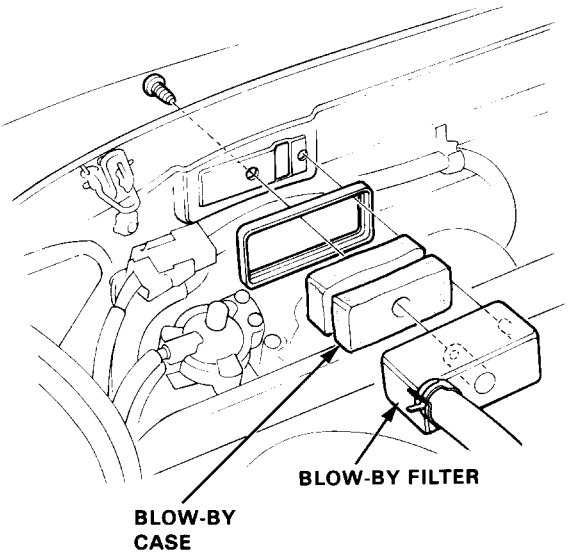
Blow-by Filter Test

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.

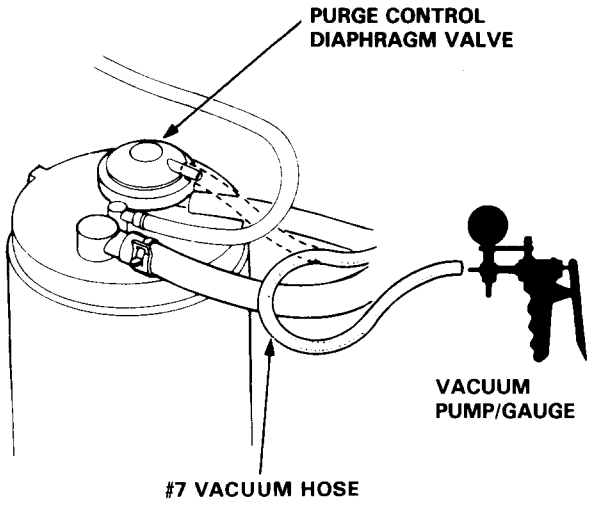


Testing (COLD ENGINE)

[KQ]

NOTE: Engine coolant temperature most be below 55°C (131°F)

1. Disconnect the #7 vacuum hose at purge control diaphragm valve and connect vacuum pump/gauge to the hose.



2. Start the engine and allow to idle.

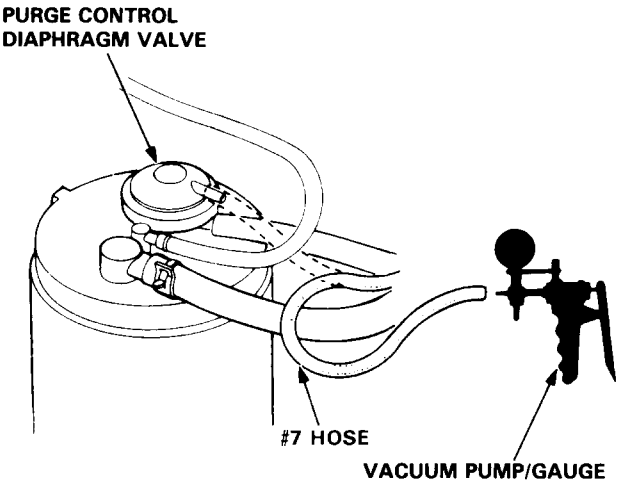
   There should be no vacuum.

   - If there is no vacuum, go to hot engine test (next column).
   - If there is vacuum, replace the thermovalve and retest.

Testing (HOT ENGINE)

[KQ, KY]

1. Disconnect the #7 vacuum hose at the purge control diaphragm valve and connect a vacuum pump/gauge to the hose.



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

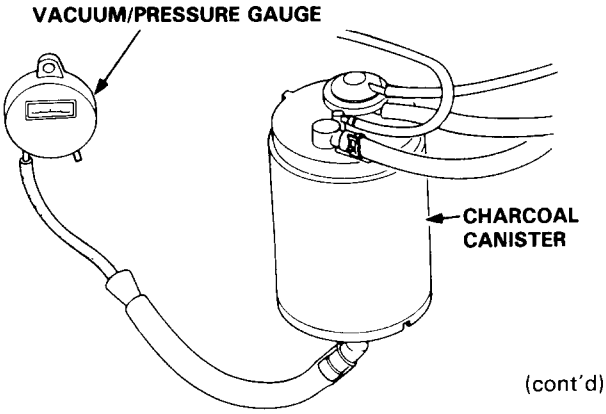
   There should be vacuum.

   - If there is vacuum, go to step 3.
   - If there is no vacuum;
     KQ:
     replace the thermovalve and retest.
     KY:
     check the #7 vacuum hose for proper connection, cracks, brockage or disconnected hose.

3. Disconnect a vacuum pump/gauge and reconnect hose.

4. Remove fuel filler cap.

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



(cont'd)

Evaporative Emission Control (cont'd)

6. Raise engine speed to 3,500 min^{-1} (rpm).

   Vacuum should appear on the gauge within 1 minute.

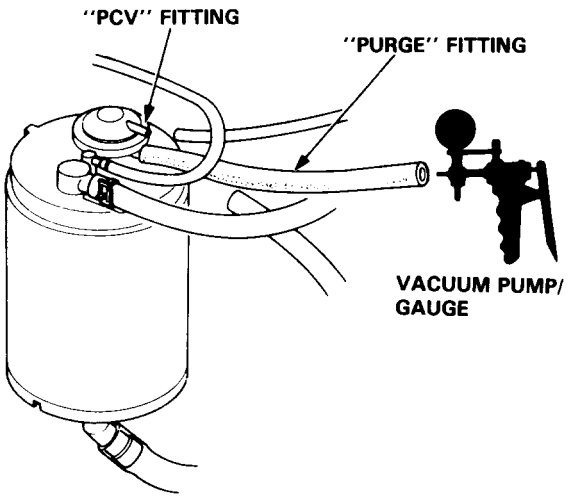
   - If vacuum appears on the gauge in 1 minute, remove the gauge and go on to step 8.
   - If no vacuum, disconnect the vacuum gauge and reinstall the fuel filler cap.

7. Remove the charcoal canister and check for signs of damage.

   - If damaged, replace the canister.
   - If OK, go on to step 8.

8. Stop the engine. Disconnect the hose from the canister PCV fitting.
   Connect a vacuum pump to the canister PURGE fitting as shown, and apply vacuum.

   Vacuum should remain steady.



   - If vacuum remains steady, go on to step 7.
   - If vacuum drops, replace the canister and retest.

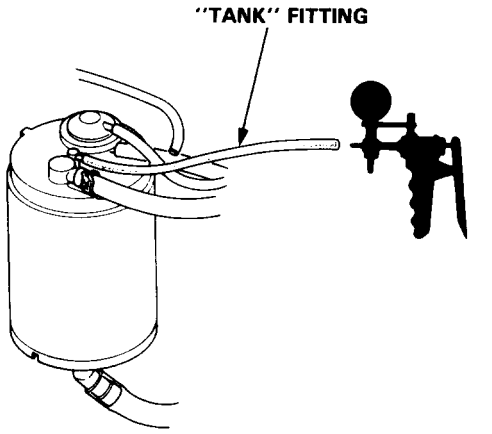
9. Restart the engine. Reconnect the hose to the canister PCV fitting.

   PURGE side vacuum should drop to zero.

   - If PURGE side vacuum does not drop to zero, replace the canister and retest.

10. Connect a vacuum pump to TANK fitting as shown, and apply vacuum.

    If should not hold vacuum.

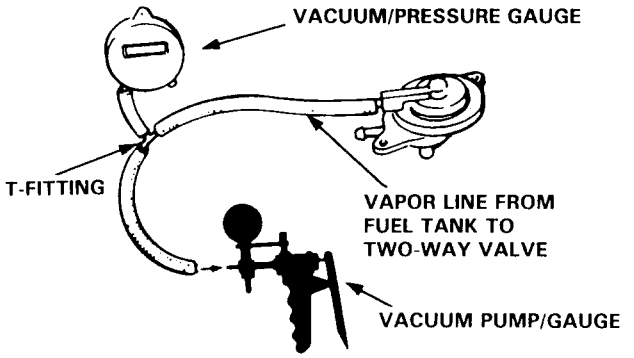


    - If it does not hold vacuum, reinstall fuel filler cap and canister; test is complete.
    - If it holds vacuum, replace canister and retest.

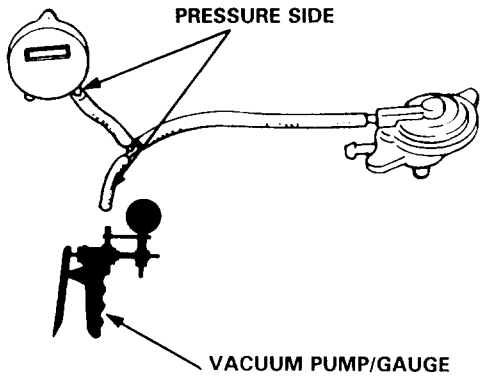
Two-Way Valve

[KY, KQ]

1. Remove the filler cap.
2. Remove vapor line from the fuel tank and connect to T-fitting from vacuum gauge and vacuum pump as shown.



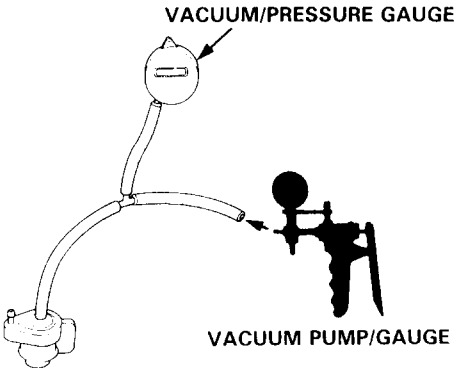
3. Slowly draw a vacuum while watching the gauge.
   Vacuum should stabilize at 5 to 15 mmHg (0.2 to 0.6 in. Hg).
   - If vacuum stabilizes momentarily (two-way valve opens) between 5 and 15 mmHg (0.2 and 0.6 in. Hg), go on to Step 4.
   - If vacuum stabilizes (valve opens) below 5 mmHg (0.2 in. Hg) or above 15 mmHg (0.6 in.Hg), install new valve and re-test.
4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



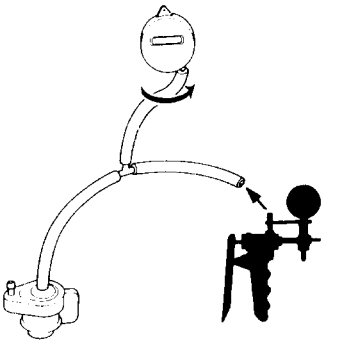
5. Slowly pressurize the vapor line while watching the gauge.
   Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in.Hg).
   - If pressure momentarily stabilizes (valve opens) at 10 to 35 mmHg (0.4 to 1.4 in.Hg), the valve is OK.
   - If pressure stabilizes below 10 mmHg (0.4 in.Hg) or above 35 mmHg (1.4 in. Hg), install a new valve and retest.

[Ex. KY, KQ]

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.



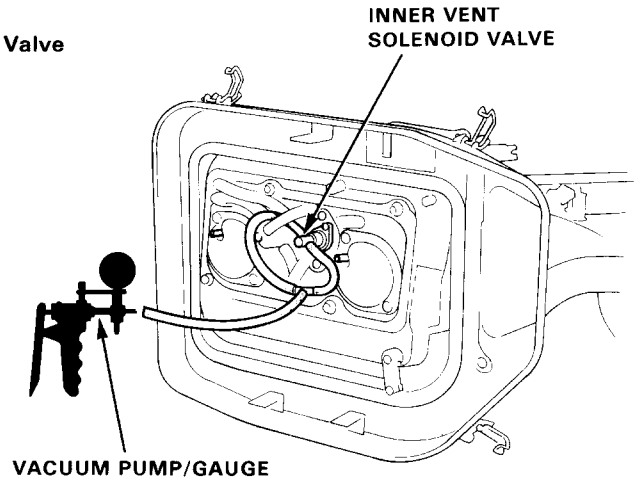
5. Slowly pressurize the vapor line while watching the gauge.
   Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in.Hg).
   - If pressure momentarily stabilizes (Valve opens) at 10 to 25 mmHg (0.4 to 1.0 in.Hg), the valve is OK.
   - If pressure stabilizes below 10 mmHg (0.4 in.Hg) or above 25 mmHg (1.0 in. Hg), install a new valve and re-test.

(cont'd)

Evaporative Emission Controls (cont'd)

[KQ]

Troubleshooting Flow Chart — Inner Vent Solenoid Valve



Inspection of Inner 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

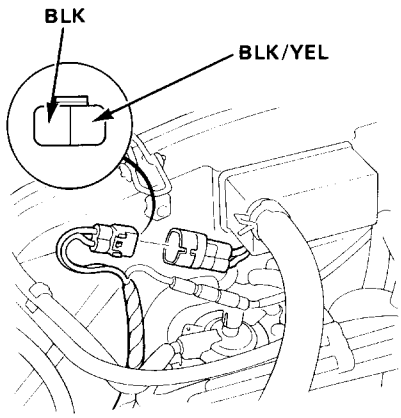
Start the engine.

Apply vacuum.

Does solenoid valve hold vacuum?

YES → Turn the ignition switch OFF.

NO



Disconnect the 2P connector near the air cleaner.

Solenoid valve is OK.

Start the engine.

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

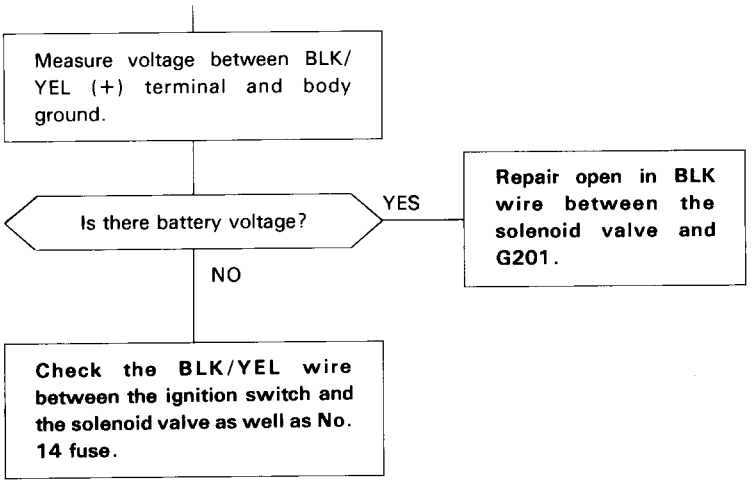
Is there voltage?

YES → **Replace the solenoid valve.**

NO

(page 6-95)

(page 6-94)



(cont'd)

Evaporative Emission Controls (cont'd)

Troubleshooting Flow Chart Air Vent Cut-off Solenoid Valve

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.

Disconnect the lower hose of the solenoid valve.

Apply vacuum.

Does solenoid valve hole vacuum?

NO → **Replace the solenoid valve.**

YES

Start the engine.

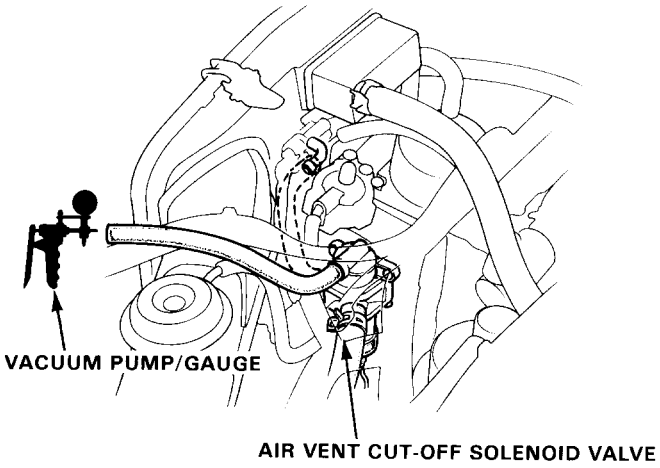
Apply vacuum.

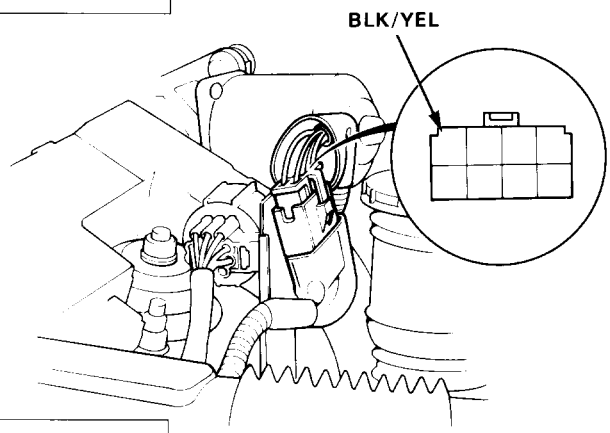
Does solenoid valve hold vacuum?

YES → Turn the ignition switch OFF.

NO

Solenoid valve is OK.



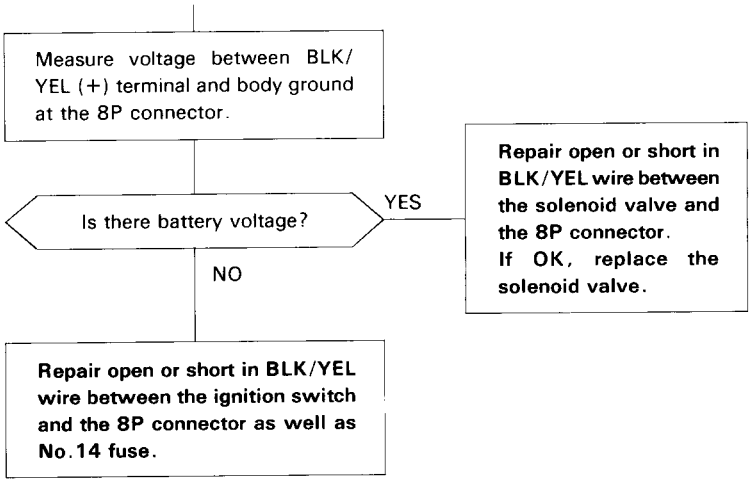


Disconnect the 8P connector on the air vent cut-off solenoid valve.

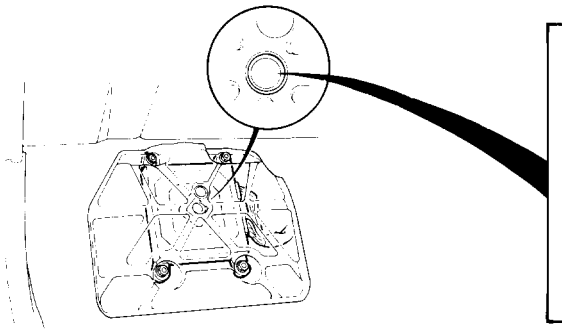
Start the engine.

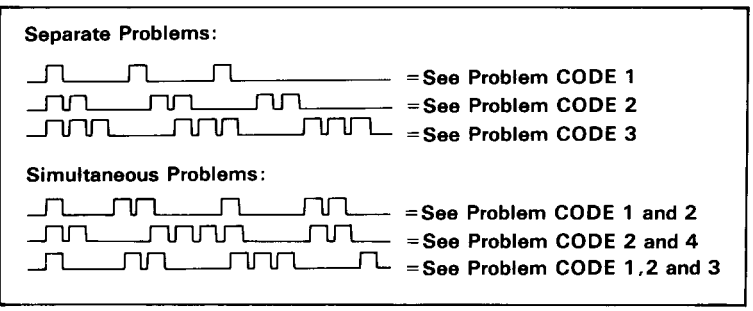
(To page 6-97)

(page 6-96).


Measure voltage between BLK/YEL (+) terminal and body ground at the 8P connector.
Is there battery voltage?
YES
Repair open or short in BLK/YEL wire between the solenoid valve and the 8P connector.
If OK, replace the solenoid valve.
NO
Repair open or short in BLK/YEL wire between the ignition switch and the 8P connector as well as No.14 fuse.

Turn the ignition on, pull the passenger's side carpet back to expose the control unit and observe the LED DISPLAY on the control unit. The LED indicates a system failure code by its blinking frequency.
The control unit LED can indicate any number of simultaneous component problems by blinking separate codes, one after another.

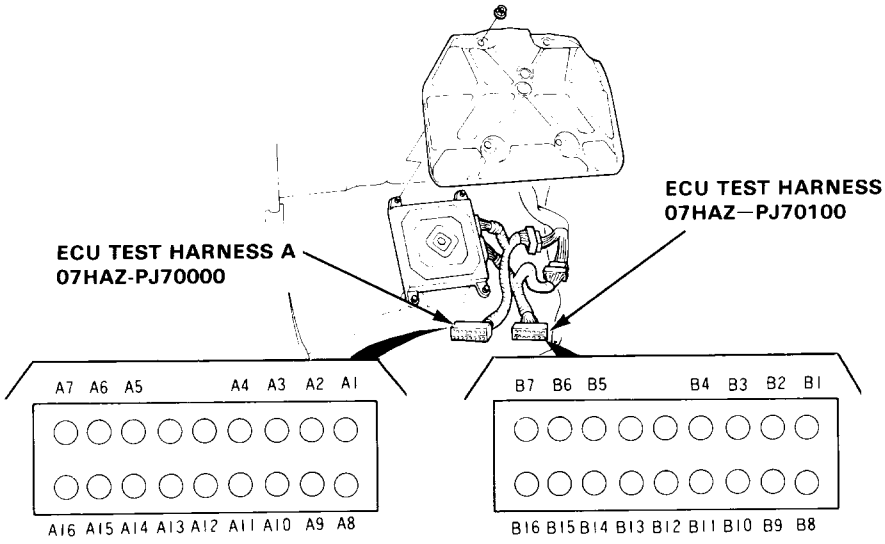




SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
1	OXYGEN CONTENT	6-102
2	VEHICLE SPEED PULSER	6-104
3	MANIFOLD ABSOLUTE PRESSURE	6-105
4	VACUUM SWITCH SIGNAL	6-109
5	MANIFOLD ABSOLUTE PRESSURE	6-107
6	COOLANT TEMPERATURE	6-112
8	IGNITION COIL SIGNAL	6-114
14	ELECTRONIC AIR CONTROL	6-115

If CODE 7, 9, 10, 11, 12, 13 (or more than 14), count the number of blinks again; if the indicator is in fact blinking these codes, substitute a known-good control unit and recheck. If the indication goes away, replace the original control unit. The control unit LED may come on, indicating a system problem, when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.

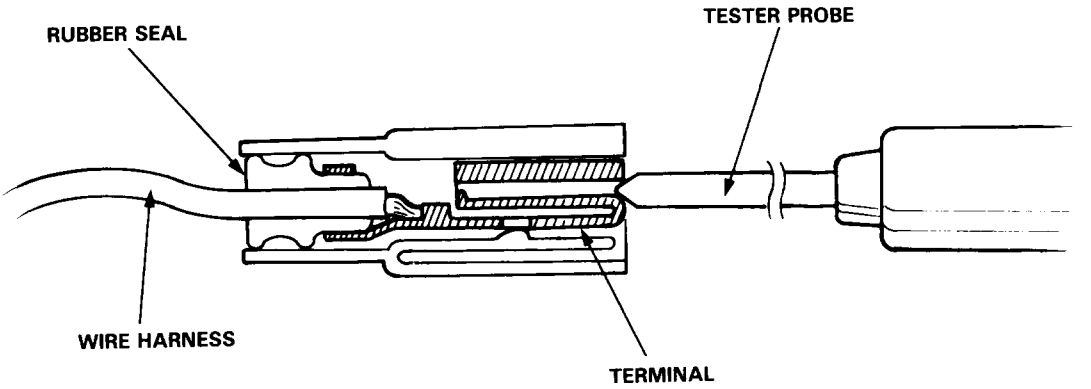
If the inspection for a particular failure code requires the ECU test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the control unit. Unbolt the control unit bracket. Connect the ECU test harness. Then check the system according 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 ECU test harness, bring the tester probe into contact with the terminal from the connector side of wire harness connectors in the engine compartment. For female connectors, just touch lightly with the tester probe and do not insert the probe.**



How to Read Flow Charts

A flow chart 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 flow chart.

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

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

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

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.
- "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 electronic control units), 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 ECU test harness, check the ECU test harness connections before proceeding.

SELF-DIAGNOSIS INDICATOR BLINKS	POSSIBLE CAUSE	PAGE
①	• Spark plug mis-fire • Short or open circuit in O_2 sensor circuit • Faulty O_2 sentor • Carburetor	6—102
②	• Faulty speed sensor • Short circuit in combination meter or speed sensor wire • Disconnect speedometer circuit	6—104
③	• Short or open circuit in MAP sensor wire • Faulty MAP sensor	6—105
④	• Faulty vacuum switch • Short or open circuit in vacuum switch wire • Disconnected vacuum switch piping	6—109
⑤	• Disconnected MAP sensor piping	6—107
⑥	• Open or short circuit in TW sensor wire • Faulty TW sensor	6—112
⑧	• Open or short circuit in ignition coil wire	6—114
⑭	• Open or short circuit in EACV wire	6—115

* CODE 7, 9, 10, 11, 12, 13 or exceeds 14: count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good control unit and recheck. If the indication goes away, replace the original control unit.

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

LED indicates CODE 1

Turn the ignition switch OFF.

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

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

Does LED indicate CODE 1? NO → **Intermittent failure (test drive may be necessary.)**

YES

Inspect fuel pressure at the fuel filter (page 6-77).

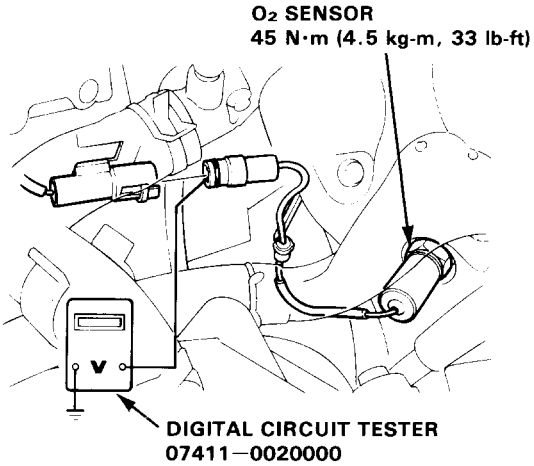
Is pressure as specified ? NO → **Repair fuel supply system (page 6-76 thru. 6-79).**

YES

Disconnect wire harness from the O_2 sensor.

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

Measure voltage between the connector terminal and body ground.



Is voltage above 0.6 V at wide open throttle and below 0.4 V when the throttle is quickly released ? NO → **Replace O_2 sensor.**

YES

(To page 6-103)

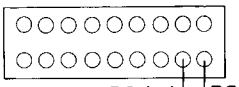
(From page 6-102)

Stop engine.

Connect the ECU test harness B between the control unit and connector (page 6-99).

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

Measure voltage between B9 (+) terminal and B8 (−) terminal.



B9 (+) **B8 (−)**

0.4—0.6V?

Is voltage above 0.6 V at wide open throttle and below 0.4 V when the throttle is quickly released ?

NO → **Repair open or short in WHT wire between control unit (B9) and the O_2 sensor.**

YES

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

Troubleshooting Flow Chart —— Vehicle Speed Sensor

(2) Self-diagnosis LED indicator blinks two times: A problem in the Vehicle Speed Sensor circuit.

LED indicates CODE 2.

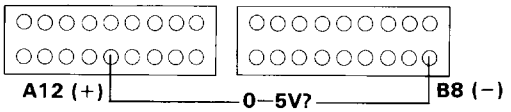
Connect the ECU test harness A and B between the control unit and connector (page 6-99).

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.

Turn the ignition switch ON.

Slowly rotate left front wheel and measure voltage between A12 (+) terminal and B8 (−)terminal.



Does voltage pulse 0V and 5V ?

NO

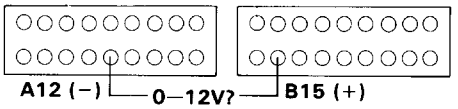
Turn the ignition switch OFF.

Disconnect A and B connector from the control unit only, not the wire harness.

Turn the ignition switch ON.

YES

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



Slowly rotate left front wheel and measure voltage between B15 (+) terminal and A12 (−) terminal.

Does voltage pulse 0V and 12V ?

NO

- **Repair open or short in YEL wire between control unit (A12) and the speed sensor.**
- **Faulty speed sensor.**

YES

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

Troubleshooting Flow Chart —— MAP Sensor

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

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

(3)

—Engine is warm and running.
—LED indicates CODE 3.

Turn the ignition switch OFF.

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

Start the engine and allow to idle.

Does LED indicate CODE 3 ?

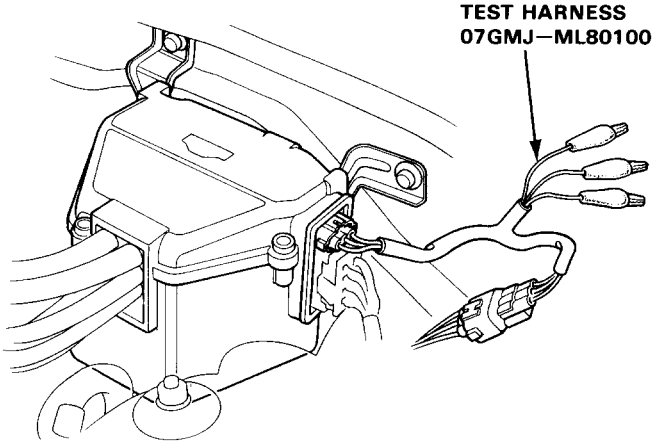
NO → **Intermittent failure (test drive may be necessary.)**

YES

Turn the ignition switch OFF.

Connect the test harness between the MAP sensor and wire harness.

TEST HARNESS 07GMJ—ML80100



Turn the ignition switch ON.

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

Is there approx. 5V ?

NO → Measure voltage between RED (+) terminal and body ground.

Is there approx. 5V ?

YES → **Repair open in GRN wire between control unit (A13) and MAP sensor.**

NO → Turn the ignition switch OFF.

(To page 6-106)

YES

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

(To page 6-106)

(cont'd)

Troubleshooting Flow Chart — MAP Sensor (cont'd)

(From page 6-105)

Is there approx. 3 V ?

NO

- **Replace MAP sensor.**
- **Repair short in WHT wire between control unit (A5) and MAP sensor.**

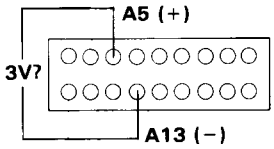
YES

Turn the ignition switch OFF.

Connect the ECU test harness A between the control unit and connector (page 6-99).

Turn the ignition switch ON.

Measure voltage between A5 (+) terminal and A13 (−) terminal.



Is there approx. 3V ?

NO

Repair open in WHT wire between control unit (A5) and MAP sensor.

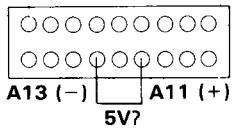
YES

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

(From page 6-105)

Connect the ECU test harness A between the control unit and connector (page 6-99).

Measure voltage between A11 (+) terminal and A13 (−) terminal with the ignition switch on.



Is there approx. 5V ?

YES

Repair open in RED wire between control unit (A11) and MAP sensor.

NO

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

5

LED indicates CODE 5.

Turn the ignition switch OFF.

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

Start engine and keep engine speed at idle.

Does LED indicate CODE 5 ?

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

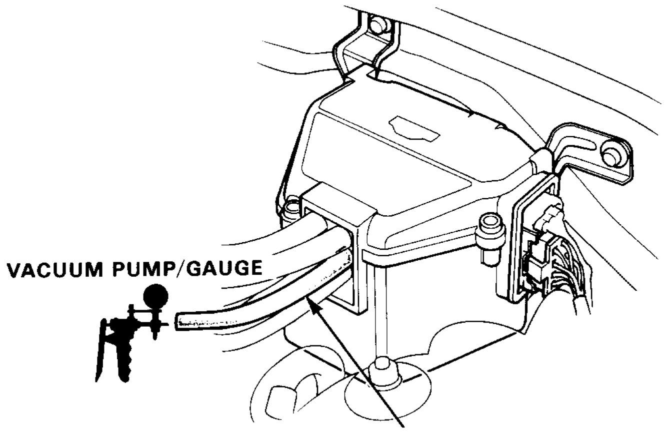
Stop engine.

Remove #21 hose from the vacuum hose manifold and connect a T. fitting from a vacuum gauge between the vacuum hose manifold and the MAP sensor.

Start engine.

Is there vacuum ?

- NO → **Repair as necessary.**
- YES ↓



Connect a vacuum pump to #21 hose and apply vacuum.

Does it hold vacuum?

- NO → **Replace #21 hose.**
- YES ↓

(To page 6-108)

(cont'd)

Troubleshooting Flow Chart — MAP Sensor (cont'd)

(From page 6-107)

Stop engine.

Connect the test harness between the MAP sensor and wire harness.

Turn the ignition switch ON.

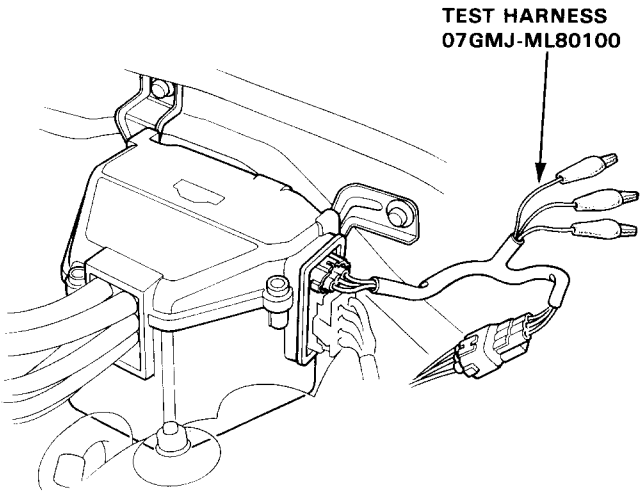
Measure voltage between WHT (+) terminal and GRN (–) terminal.

Is there approx. 3V ?

NO → **Replace MAP sensor.**

YES

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



Troubleshooting Flow Chart —— Vacuum Switch

④ Self-diagnosis LED indicator blinks four times: A problem in the vacuum switch.

—Engine is warm and running.
– LED indicates CODE 4.

Turn the ignition switch OFF.

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

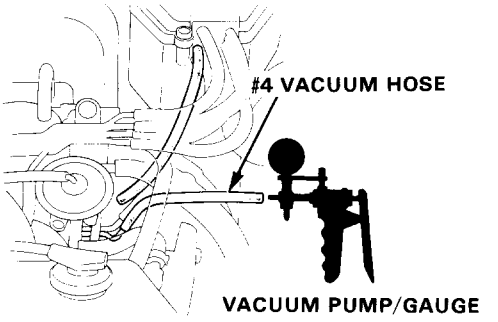
Start the engine and allow to idle.

Does LED indicates CODE 4 ? NO → **Intermittent failure (test drive may be necessary.)**

YES

Turn the ignition switch OFF.

Remove #4 hose from the vacuum hose manifold and connect a vacuum gauge.



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

Is there vacuum ? NO → **Repair as necessary.**

YES

Start engine.

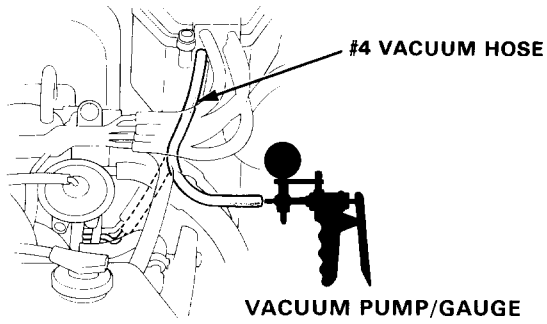
(To page 6-110)

(cont'd)

Troubleshooting Flow Chat —— Vacuum Switch (cont'd)

(From page 6-109)

Connect a vacuum pump to #4 hose and apply vacuum.

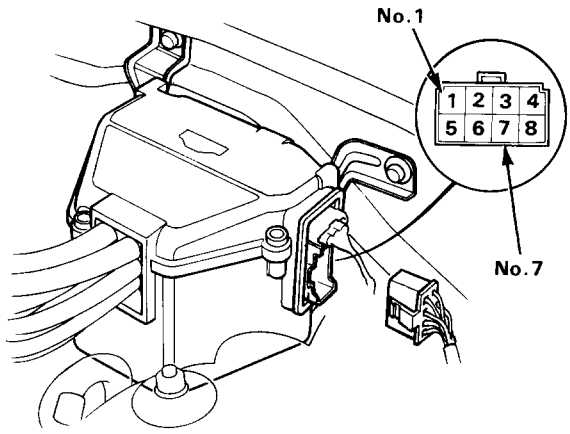


Does it hold vacuum ? NO → **Replace #4 hose.**

YES

Disconnect the 8p connector on the control box.

Measure resistance between No.1 terminal and No.7 terminal on the control box.



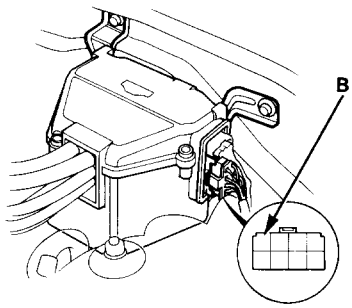
Does continuity exist ? NO → **Replace vacuum switch.**

YES

Reconnect the vacuum hose.

Turn the ignition switch ON.

Measure voltage between BLK/YEL terminal and body ground on the wire harness.



Is there battery voltage ? NO → Inspect No.14 fuse.

YES

Turn the ignition switch OFF.

Is No.14 fuse OK ? NO → **Replace fuse.**

YES

Reconnect the 8p connector to the control box.

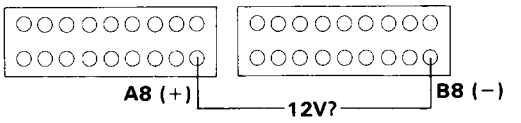
Repair open BLK/YEL wire between No.14 fuse and control box.

(To page 6-111)

(From page 6-110)

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

Turn the ignition switch ON.



Measure voltage between A8 (+) terminal and B8 (−) terminal.

Is there battery voltage ?

NO

Repair open in BRN wire between control unit (A8) and vacuum switch.

YES

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

Troubleshooting Flow Chart —— TW Sensor

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

LED indicates CODE 6.

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

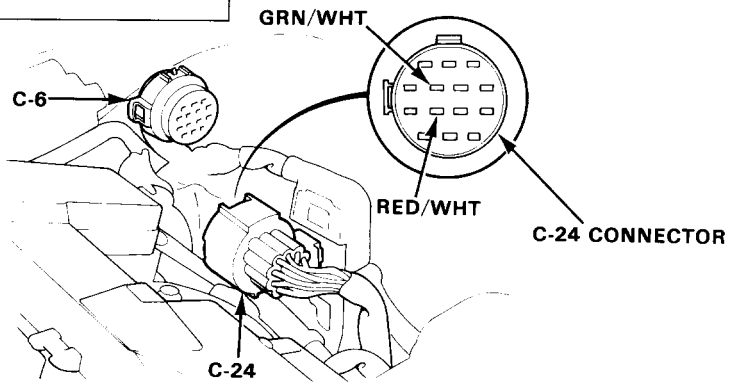
Does LED indicates CODE 6 ?

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

YES

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

Disconnect the C-6 and C-24 connectors.



Measure resistance between GRN/WHT terminal and RED/WHT terminal at C-24 connector.

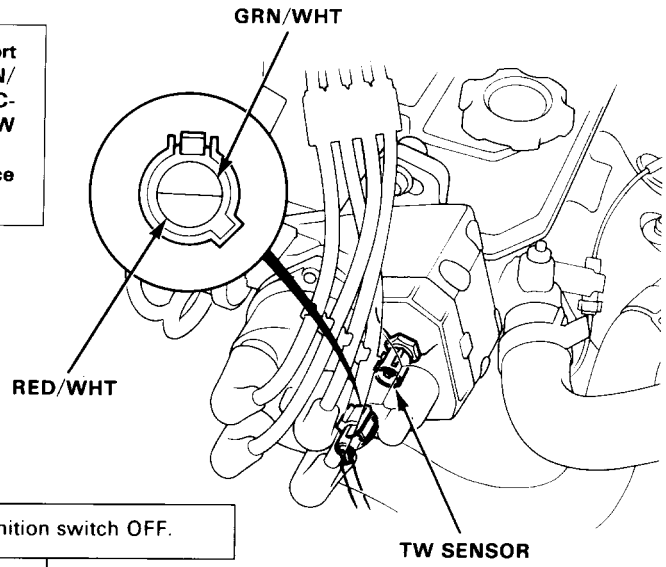
Is there 200—400Ω ?

NO → **Inspect for open or short in RED/WHT or GRN/WHT wire between C-24 connector and TW sensor. If wires are OK, replace the TW sensor.**

YES

Reconnect C-6 and C-24 connectors, then disconnect the 2P connector from TW sensor.

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



Is there approx. 5V ?

NO → Turn the ignition switch OFF.

YES

(To page 6-113)

Connect the ECU test harness A between the control unit and connector (page 6-99).

(To page 6-113)

(From page 6-112)

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

Is there approx. 5V ?

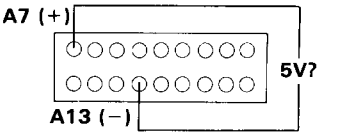
NO → **Repair open in GRN wire between control unit (A13) and C-6 connector.**

YES

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

(From page 6-112)

Turn the ignition switch ON.



Measure voltage between A7 (+) terminal and A13 (−) terminal.

Is there approx. 5 V ?

YES → **Repair open in RED/WHT wire between control unit (A7) and TW sensor.**

NO

Disconnect A connector from the wire harness only, not the control unit.

Measure voltage between A7 (+) terminal and A13 (−) terminal.

Is there approx. 5V ?

YES → **Repair short in RED/WHT wire between control unit (A7) and TW sensor.**

NO

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

Troubleshooting Flow Chart —— Ignition Coil Signal

Self-diagnosis LED indicator blinks eight times: A problem in the ignition coil signal circuit.

LED indicates CODE 8.

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

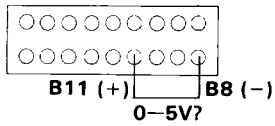
Does LED indicates CODE 8 ?

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

YES

Start the engine.

Connect the ECU test harness B between the control unit and connector (page 6-99).



Measure voltage between B11 (+) terminal and B8 (−) terminal.

Does voltage pulse 0V and 5V?

NO → **Repair short or open BLU wire between control unit (B11) and ignition coil.**

YES

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

Troubleshooting Flow Chart —— EACV

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

- **Engine is running.**
- **LED indicates CODE 14.**

Turn the ignition switch OFF.

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

Start engine.

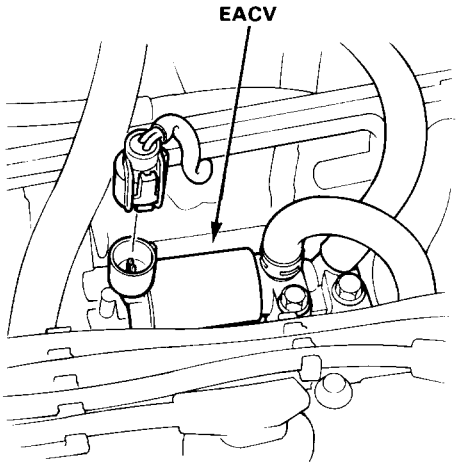
Does LED indicates CODE 14 ?

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

YES

Stop engine.

Disconnect the 2P connector on 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

(To page 6-116)

(cont'd)

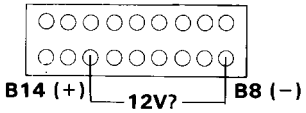
Troubleshooting Flow Chart —— EACV (cont'd)

(From page 6-115)

Reconnect the 2P connector to EACV.

Connect the ECU test harness B between the control unit and connector (page 6-99).

Start the engine.



Measure voltage between B14 (+) terminal and B8 (−) terminal.

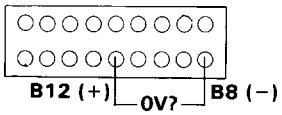
Is there battery voltage?

NO

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

YES

Measure voltage between B12 (+) terminal and B8 (−) terminal.



Is there voltage?

NO

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

YES

Repair open in BLU/YEL wire between control unit (B12) and EACV or BLU wire between control unit (B14) and EACV.

Input Troubleshooting

If there is no voltage from the control unit when there should be voltage or if there is voltage from the unit when there shouldn't be voltage, inspect as follows and if no defects can be found, replace the control unit and re-test.

PROBLEMATIC CIRCUIT	REFER TO CHECK:		CHECK
Idle Boost Solenoid Valve	M/T	1, 2, 4, 5	1. Inspect the power source (IG1, Bat) and ground (page 6-118). 2. Inspect the clutch switch signal (page 6-119). 3. Inspect the A/T shift position signal (page 6-121). 4. Inspect the air conditioning signal (page 6-125). 5. Inspect the P/S oil pressure switch signal (page 6-123).
	A/T	1, 3, 4, 5	
Primary Slow Mixture Cut-off Solenoid Valve	M/T	1, 2, 4	
	A/T	1, 3, 4	
Power Valve Control Solenoid Valve	M/T	1, 2	
	A/T	1, 3	
Slow Air Leak Solenoid Valve	1, 4		
A/C Clutch Relay	1, 4		

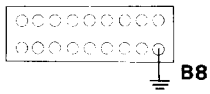
PGM-CARB Control System [KQ]

Input Troubleshooting Flow Chart — Power Source (IG1, Bat) and Ground

Inspection of Power Source (IG1, Bat) and Ground.

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

Check for continuity between the body ground and B8 terminal.

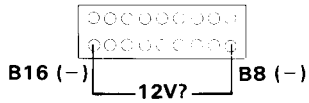


Does continuity exist?

NO — **Repair open in BLK wire between control unit (B8) and G101.**

YES

Measure voltage between B16 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO — Inspect HAZARD fuse.

Is HAZARD fuse OK?

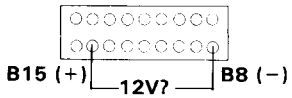
NO — **Replace fuse.**

Repair open in WHT/GRN wire between HAZARD fuse and control unit (B16).

YES

Turn the ignition switch ON.

Measure voltage between B15 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO — Turn the ignition switch OFF.

Inspect No.14 fuse.

Is No.14 fuse OK?

NO — **Replace fuse.**

YES

Repair open in BLK/YEL wire between No. 14 fuse and control unit (B15).

YES

Power source (IG1, Bat) and ground are OK.

Input Troubleshooting Flow Chart —— Clutch Switch Signal (M/T only)

Inspection of clutch switch signal

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

Turn the ignition switch ON.

Measure voltage between A3 (+) terminal and B8 (−) terminal.

Is there battery voltage ?

NO

Turn the ignition switch OFF.

Disconnect the 2P connector on the clutch switch.

Check for continuity between the 2 terminals on the clutch switch.

Does continuity exist ?

YES

—Adjust the clutch pedal (section 7).
—Replace the clutch switch.

NO

Turn the ignition switch ON.

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

Is there battery voltage ?

NO

Repair open in GRN wire between control unit (A3) and the clutch switch.

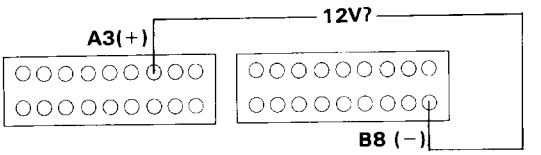
YES

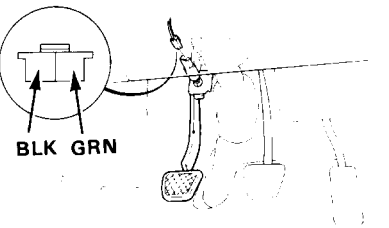
Repair open in BLK wire between the clutch switch and G401.

YES

Depress the clutch pedal.

(To page 6-120)



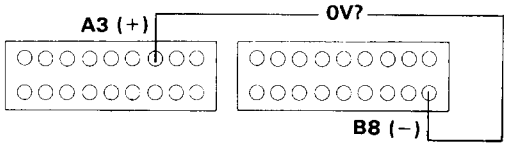


(cont'd)

Input Troubleshooting Flow Chart — Clutch Switch Signal (M/T only) (cont'd)

(From page 6-120)

Measure voltage between A3 (+) terminal and B8 (−) terminal.



Is there voltage ?

YES

Turn the ignition switch OFF.

Disconnect the 2P connector on the clutch switch.

Check for continuity between the 2 terminals on the clutch switch.

Does continuity exist ?

NO

—Adjust the clutch pedal (section 7).
—Replace the clutch switch.

YES

Repair open in GRN wire between control unit (A3) and clutch switch.

NO

Clutch switch signal is OK.

Input Troubleshooting Flow Chart — A/T Shift Position Signal (A/T only)

Inspection of A/T Shift Position Signal.

Turn the ignition switch ON.

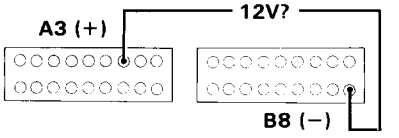
Connect the ECU test harness A between the control unit and connector (page 6-99).

Measure voltage between A3 (+) terminal and B8 (−) terminal in gear (except Neutral or Park).

Is there battery voltage?

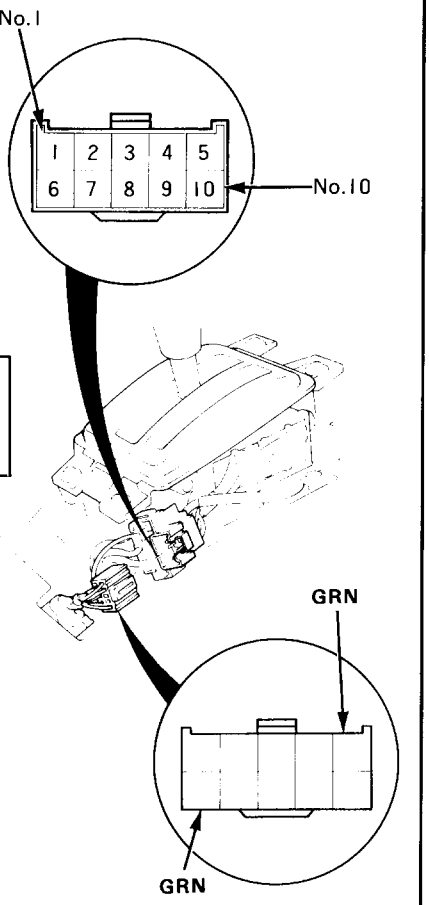
NO → Turn the ignition switch OFF.

YES



Disconnect the 10P connector on the A/T shift position switch.

Measure resistance between No.1 terminal and No.10 terminal on the A/T shift position switch.



Does continuity exist?

YES → **Replace the A/T shift position switch.**

NO → **Repair short in GRN wire between the A/T shift position switch and the control unit (A3).**

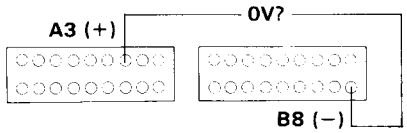
(page 6-122)

(cont'd)

Input Troubleshooting Flow Chart — A/T Shift Position Signal (A/T only) (cont'd)

(page 6-121)

Measure voltage between A3 (+) terminal and B8 (−) terminal in Neutral or Park position.



Is there voltage?

YES

Turn the ignition switch OFF.

NO

Disconnect the 10P connector on the A/T shift position switch.

Measure resistance between No.1 terminal and No.10 terminal on the A/T shift position switch.

Does continuity exist?

NO

Replace the A/T shift position switch.

YES

Turn the ignition switch ON.

Measure voltage between GRN terminal and body ground on the wire harness.

Is there battery voltage?

NO

Repair open in GRN wire between the A/T shift position switch and control unit (A3).

A/T shift position signal is OK.

Repair open in BLK wire between the A/T shift position switch and G511 (3D) or G561 (4D).

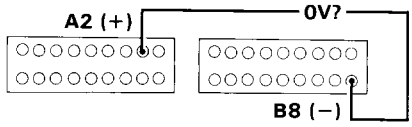
Input Troubleshooting Flow Chart ——P/S Oil Pressure Switch Signal

Inspection of clutch switch signal

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

Turn the ignition switch ON.

Measure voltage between A2 (+) terminal and B8 (−) terminal.

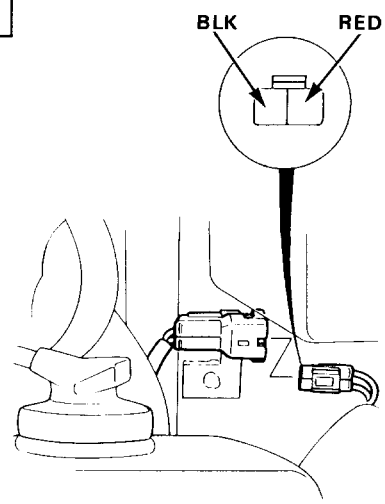


Is there voltage?

YES

Turn the ignition switch OFF.

Disconnect the 2P connector on the P/S oil pressure switch.



Check for continuity between the 2 terminals on the P/S oil pressure switch.

Does continity exist?

NO

Replace the P/S oil pressure switch.

YES

Turn the ignition switch ON.

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

Is there battery voltage?

NO

Repair open in RED wire between control unit (A2) and the P/S oil pressure switch.

YES

Repair open in BLK wire between the P/S oil pressure switch and G301.

NO

Turn steering wheel slowly.

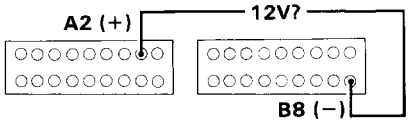
(To page 6-124)

(cont'd)

Input Troubleshooting Flow Chart — P/S Oil Pressure Switch Signal (cont'd)

(From page 6-123)

Measure voltage between A2 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO

Turn the ignition switch OFF.

YES

Disconnect the 2P connector on the P/S oil pressure switch.

Check for continuity between the 2 terminals on the P/S oil pressure switch.

Does continuity exist?

YES

Replace the P/S oil pressure switch.

NO

Repair short in RED wire between control unit (A2) and P/S oil pressure switch.

P/S oil pressure switch signal is OK.

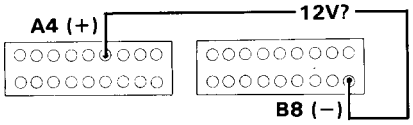
Input Troubleshooting Flow Chart —— Air Conditioning Signal

Inspection of Air Conditioning Signal

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

Start the engine.

Measure voltage between A4 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO → **Repair short in BLU/RED wire between control unit (A4) and A/C switch.**

YES

Blower switch ON.

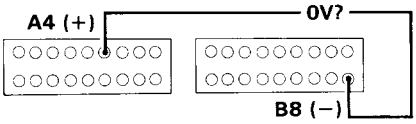
Turn the A/C switch ON.

Does A/C operate?

NO → **See Air Conditioner Inspection (section 15).**

YES

Measure voltage between A4 (+) terminal and B8 (−) terminal.



Is there voltage?

NO → **Repair open in BLU/RED wire between control unit (A4) and A/C switch.**

YES

Air Conditioning Signal is OK.

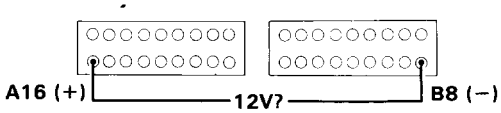
Troubleshooting Flow Chart —— A/C Clutch Relay

Inspection of A/C Clutch Relay.

Connect the ECU test harness A and B between the control unit and connector (page 6-99).

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

Measure voltage between A16 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO

- **Repair open or short in YEL wire between control unit (A16) and A/C clutch relay.**
- **Check the self-diagnosis indicator (page 6-101). If OK, check the input troubleshooting (page 6-117).**

YES

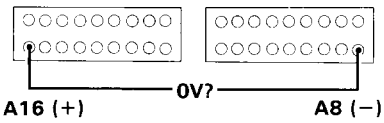
Blower switch ON.

Turn the A/C switch ON.

Does A/C operate?

NO

Measure voltage between A16 (+) terminal and B8 (−) terminal.



Is there voltage?

NO

Inspect A/C clutch relay.

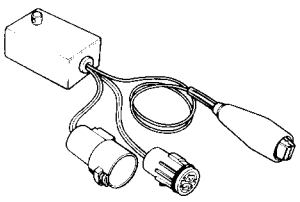
YES

Check the self-diagnosis indicator (page 6-101)
If OK, check the input troubleshooting (page 6-117).

Fuel and Emissions (Fuel-Injected Engine)

Special Tools

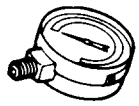
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07406—0040001	Fuel Pressure Gauge Set	1	
②-1	07406—0040100	Pressure Gauge	(1)	Component Tools
②-2	07406—0040201	Hose Assy	(1)	Component Tools
③	07999—PD6000A	PGM-FI Test Harness	1	
④	07411—0020000	Digital Circuit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



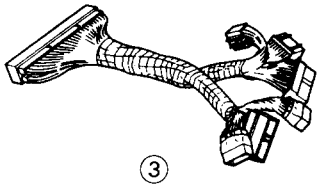
①

②

②-1



②-2

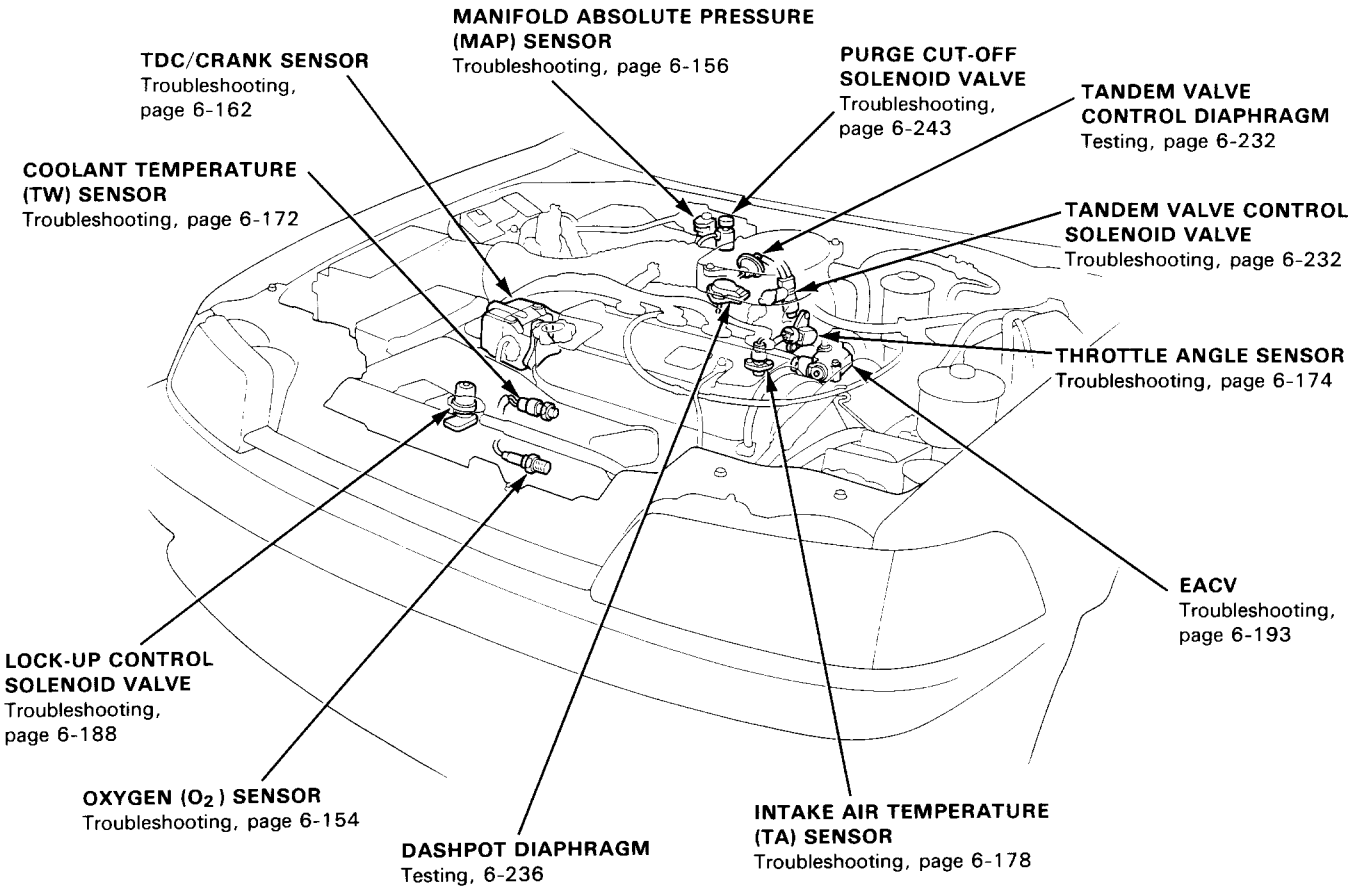


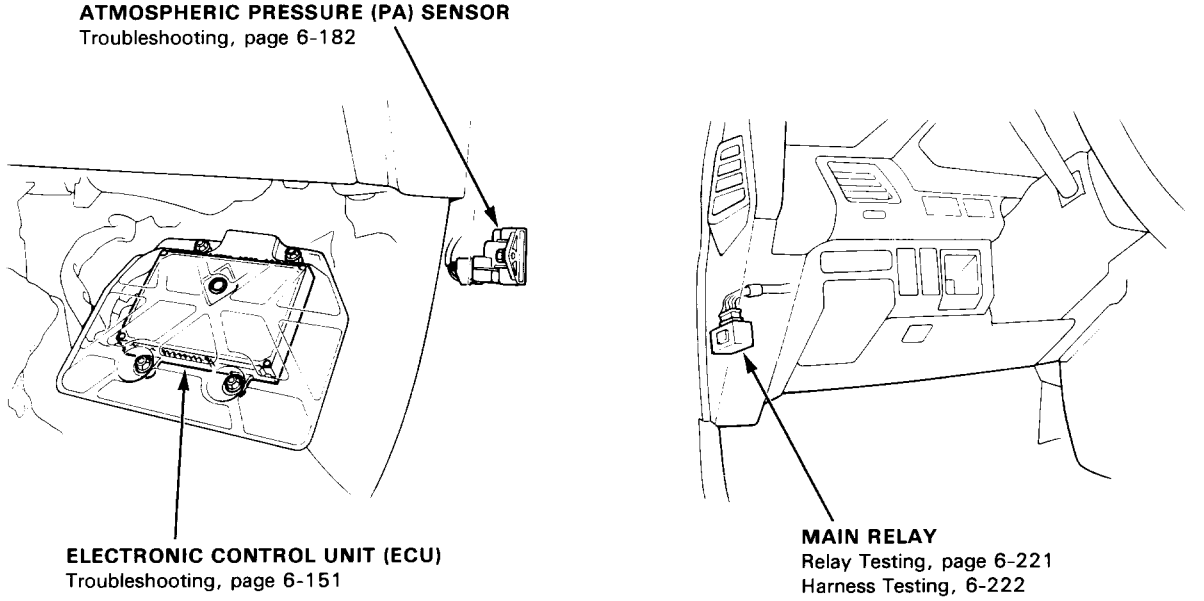
③

④

Component Locations

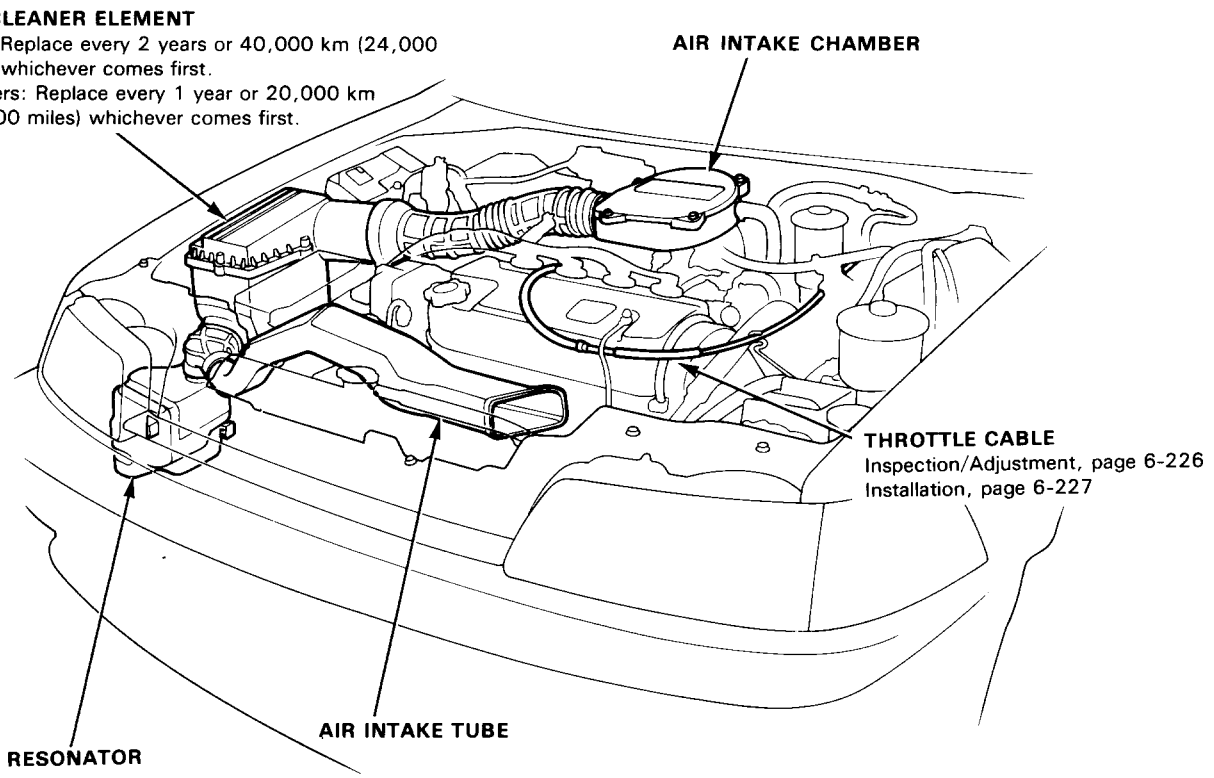
Index [1.5 ℓ]

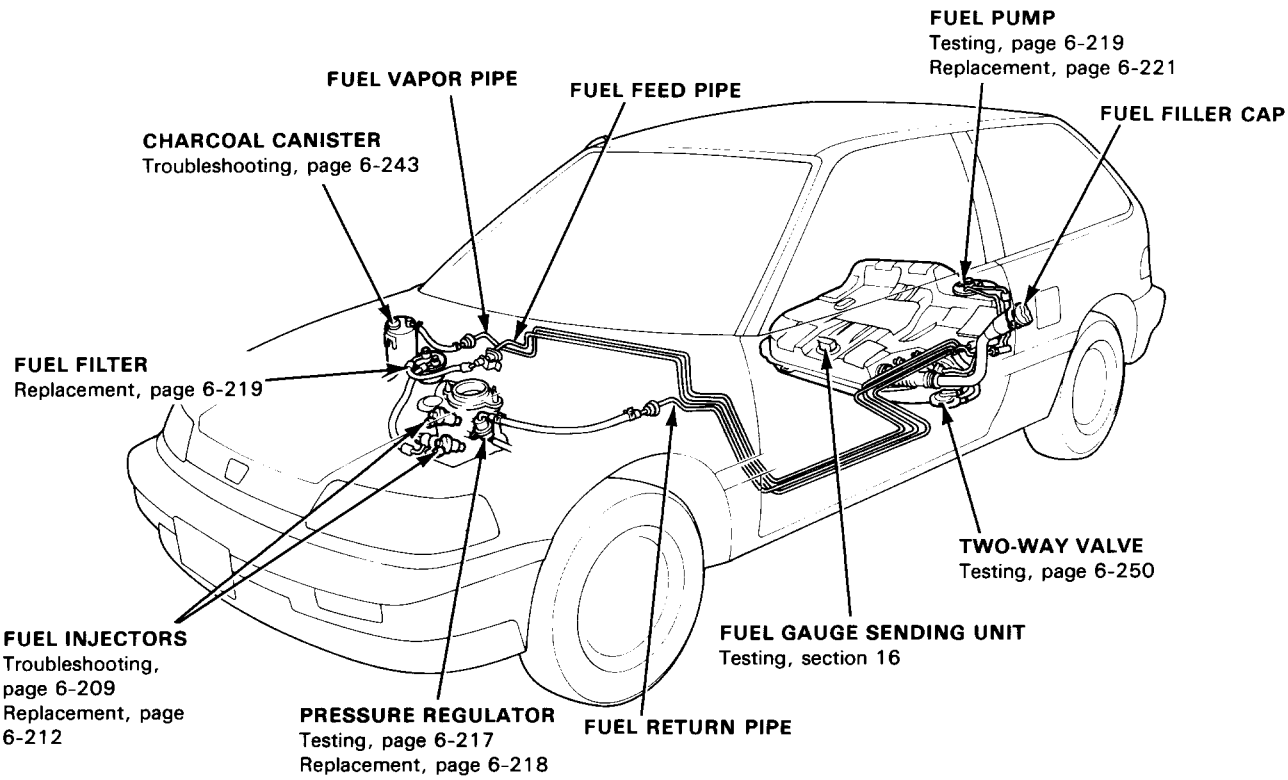




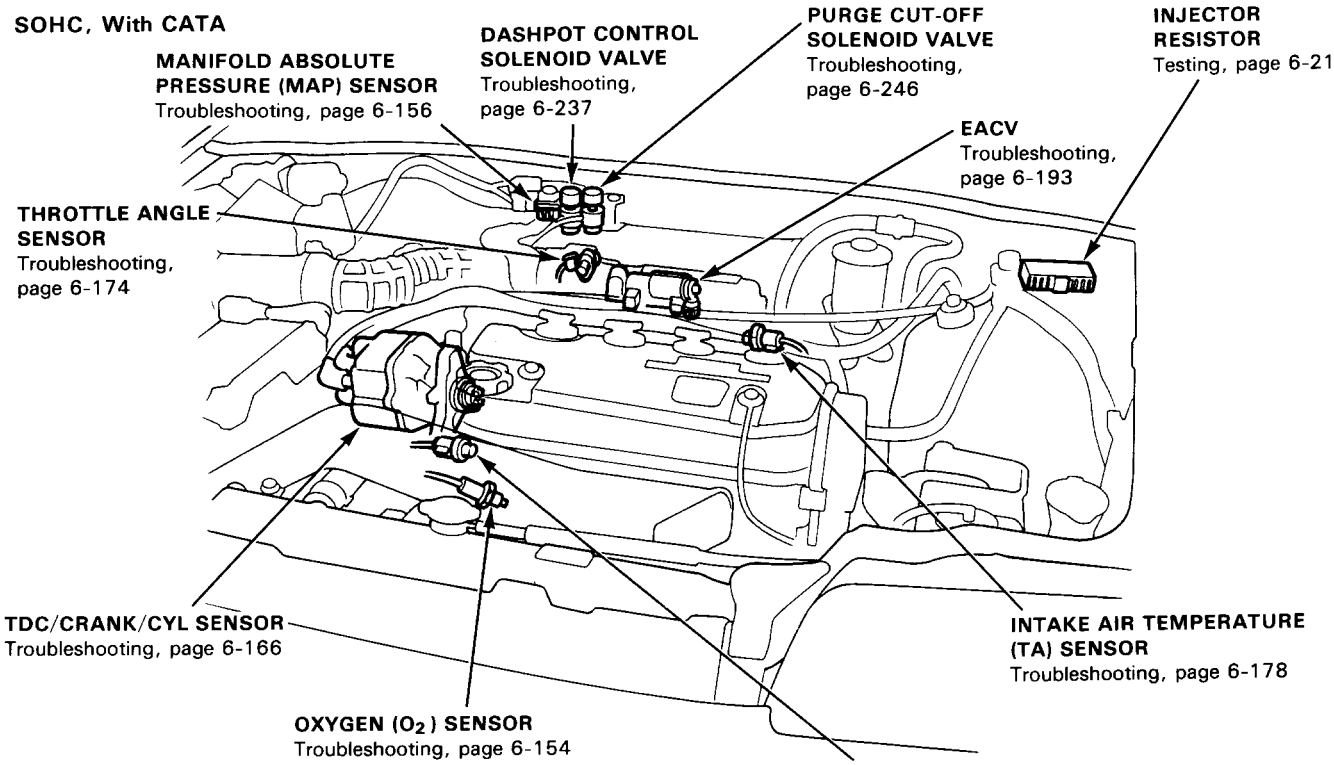
Component Locations

Index [1.5 ℓ]

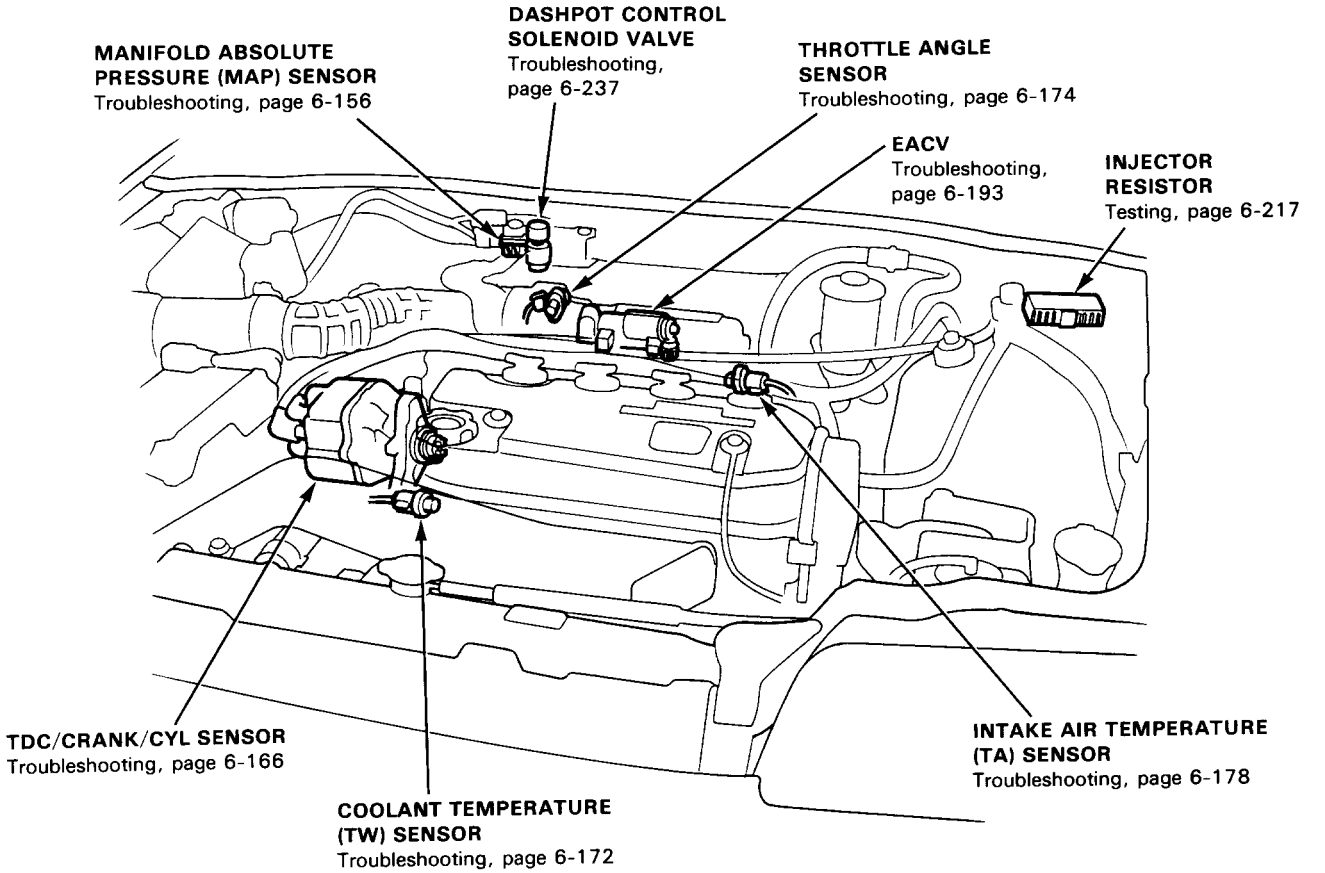




SOHC, With CATA



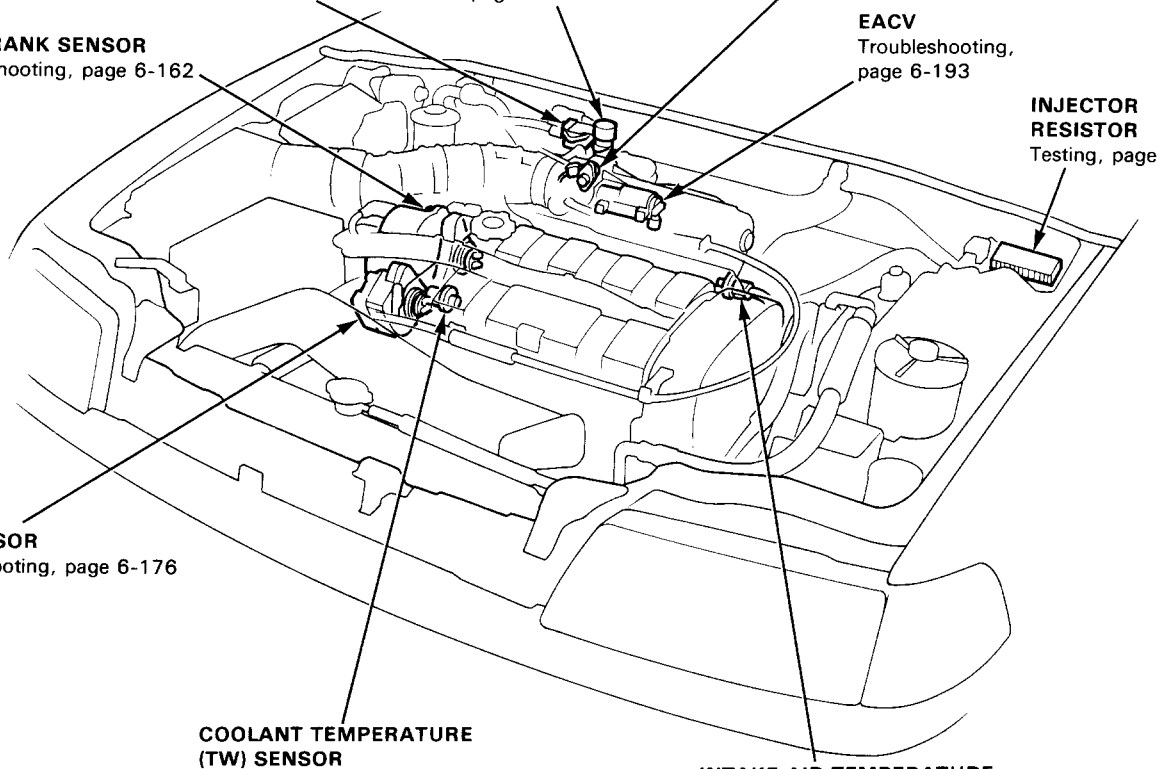
SOHC, Without CATA

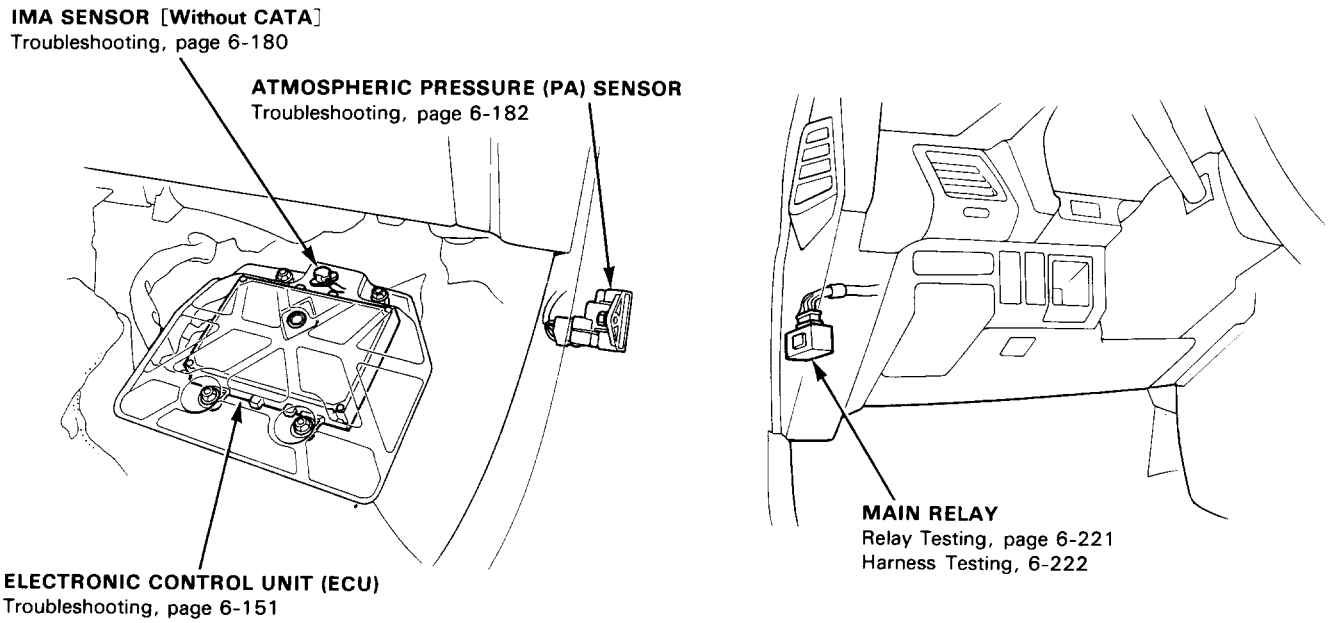


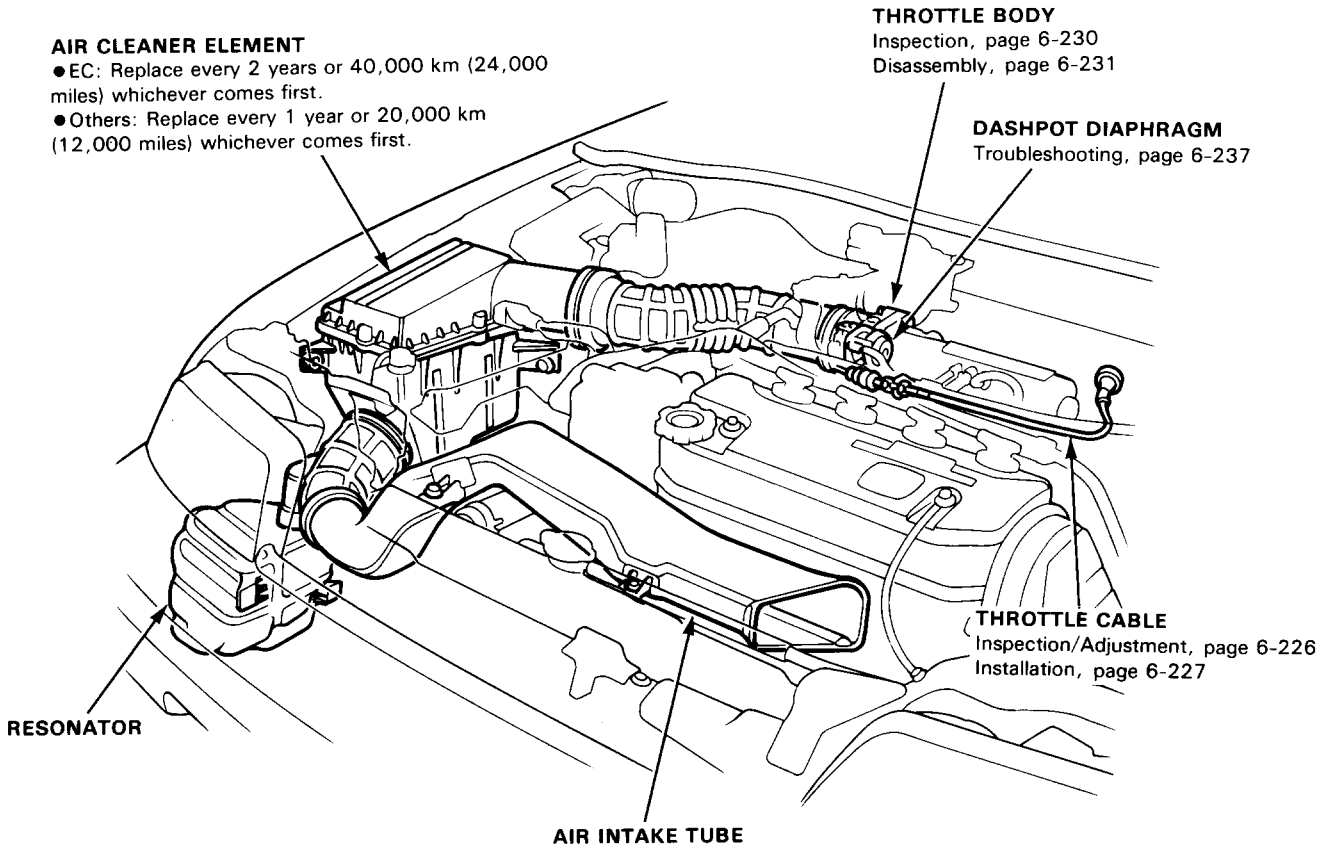
Component Locations

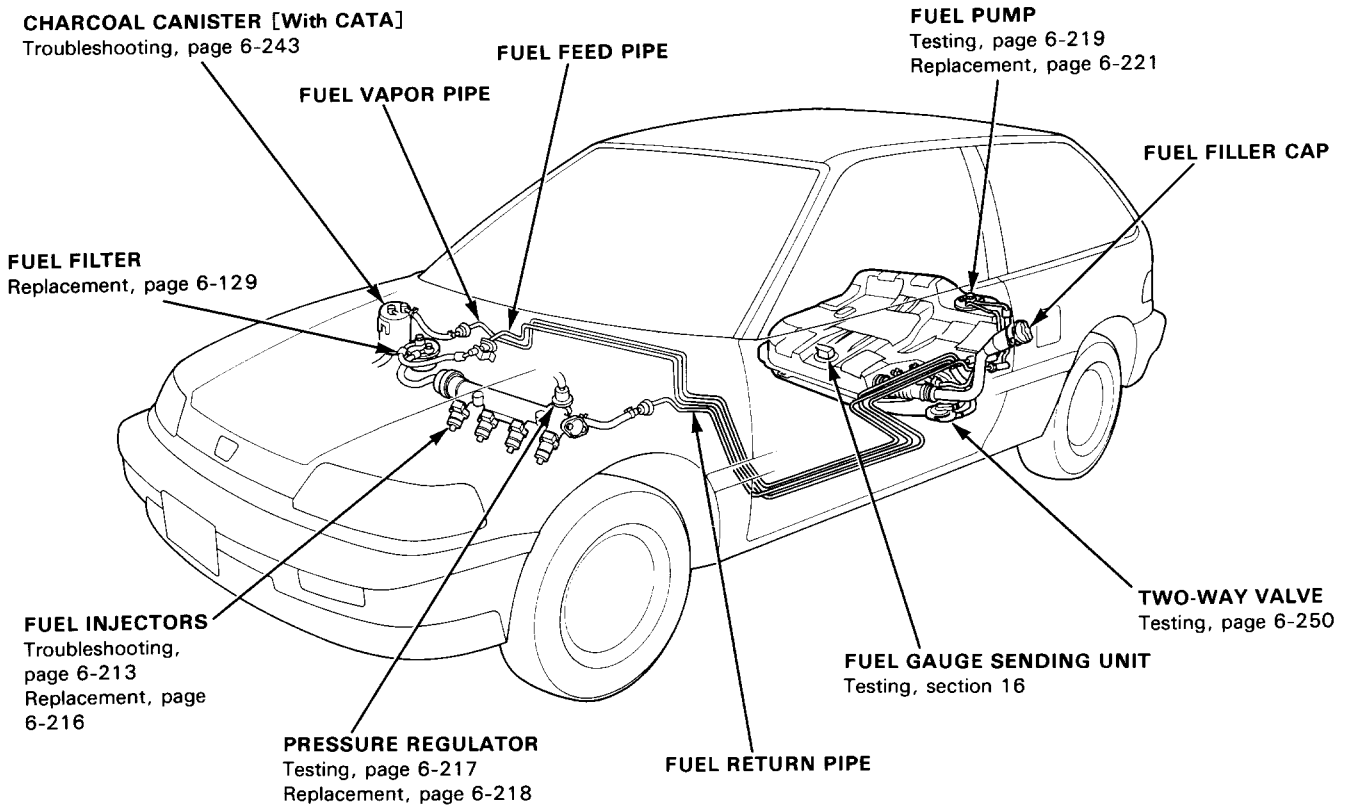
Index [1.6 ℓ]

DOHC

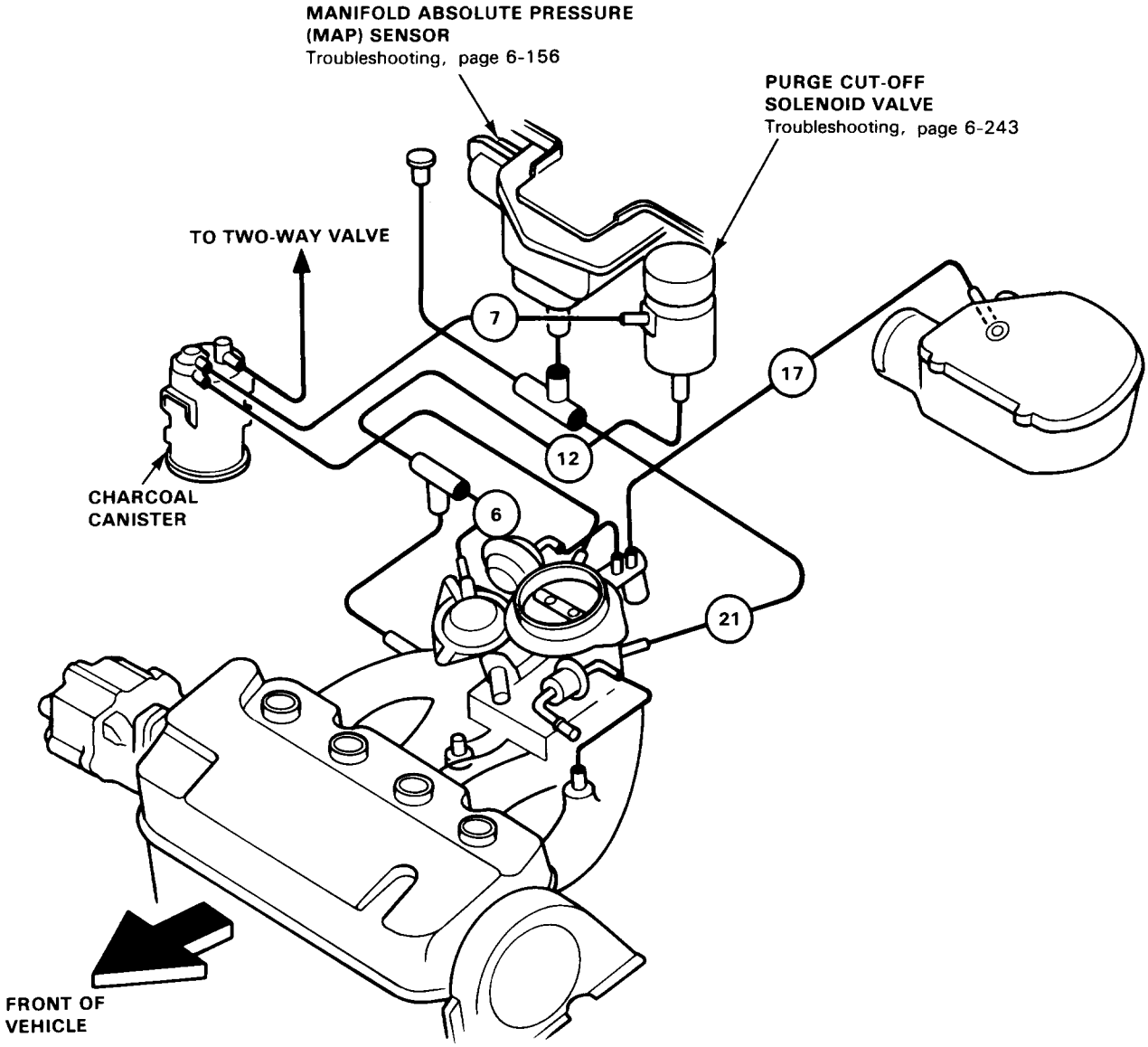


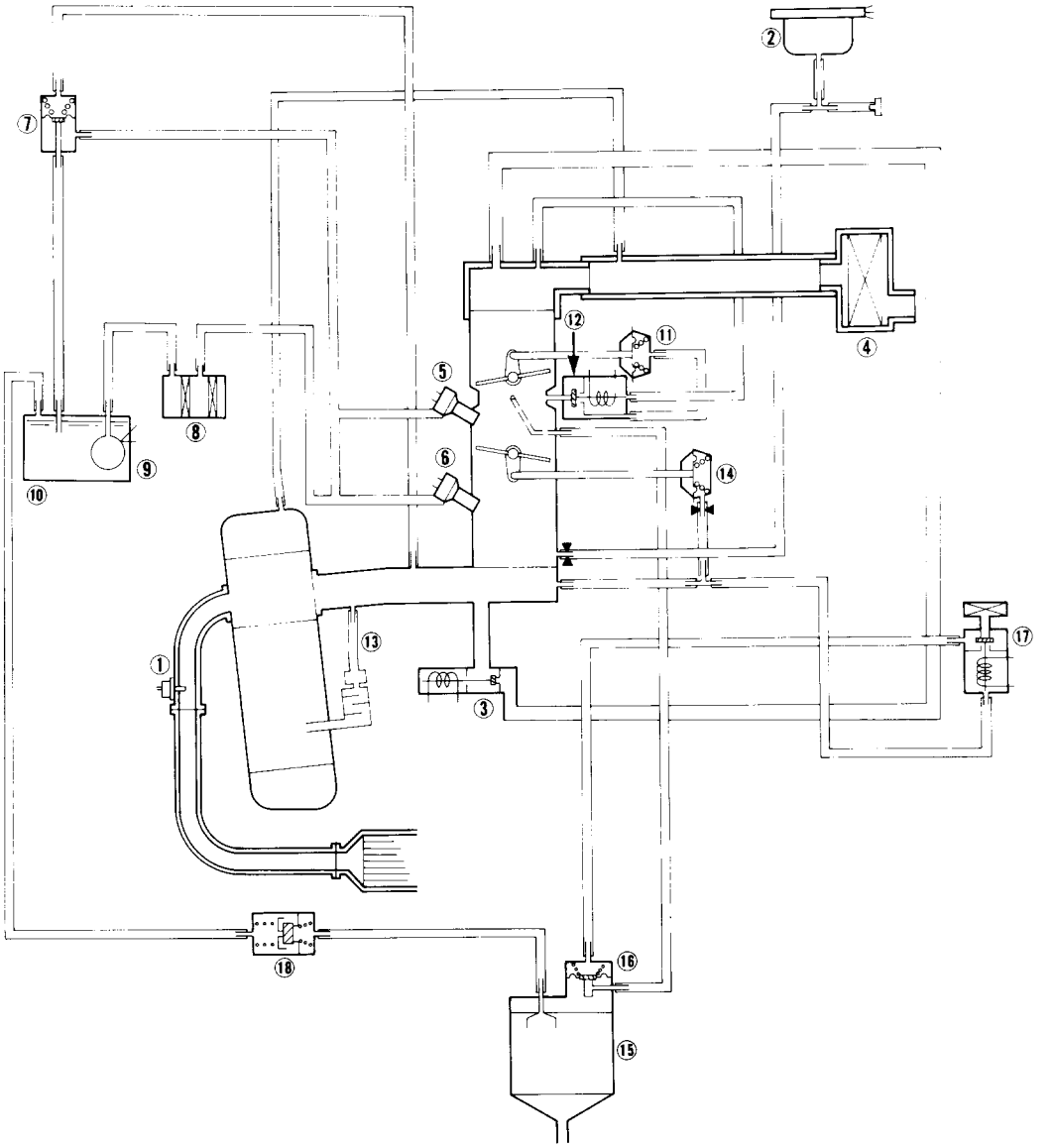



AIR CLEANER ELEMENT
● EC: Replace every 2 years or 40,000 km (24,000 miles) whichever comes first.
● Others: Replace every 1 year or 20,000 km (12,000 miles) whichever comes first.
THROTTLE BODY
Inspection, page 6-230
Disassembly, page 6-231
DASHPOT DIAPHRAGM
Troubleshooting, page 6-237
THROTTLE CABLE
Inspection/Adjustment, page 6-226
Installation, page 6-227
RESONATOR
AIR INTAKE TUBE


CHARCOAL CANISTER [With CATA]
Troubleshooting, page 6-243
FUEL FEED PIPE
FUEL VAPOR PIPE
FUEL PUMP
Testing, page 6-219
Replacement, page 6-221
FUEL FILLER CAP
FUEL FILTER
Replacement, page 6-129
FUEL INJECTORS
Troubleshooting, page 6-213
Replacement, page 6-216
PRESSURE REGULATOR
Testing, page 6-217
Replacement, page 6-218
FUEL RETURN PIPE
FUEL GAUGE SENDING UNIT
Testing, section 16
TWO-WAY VALVE
Testing, page 6-250

Vacuum Connections [1.5 ℓ]



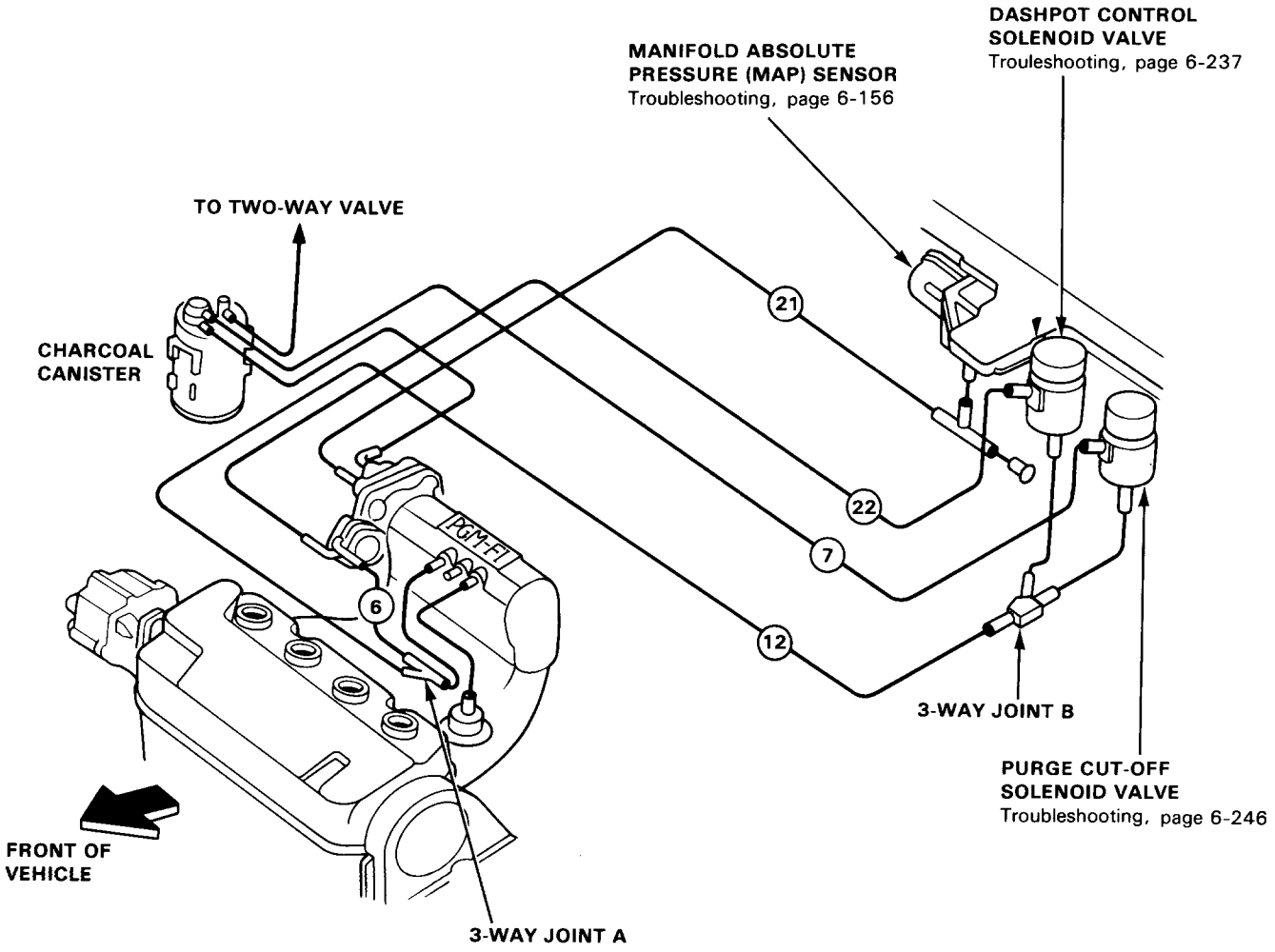


① OXYGEN (O_2) SENSOR
② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
③ ELECTRONIC AIR CONTROL VALVE (EACV)
④ AIR CLEANER
⑤ MAIN INJECTOR
⑥ AUX. INJECTOR
⑦ PRESSURE REGULATOR
⑧ FUEL FILTER
⑨ FUEL PUMP
⑩ FUEL TANK
⑪ TANDEM VALVE CONTROL DIAPHRAGM
⑫ TANDEM VALVE CONTROL SOLENOID VALVE
⑬ PCV VALVE
⑭ DASHPOT DIAPHRAGM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

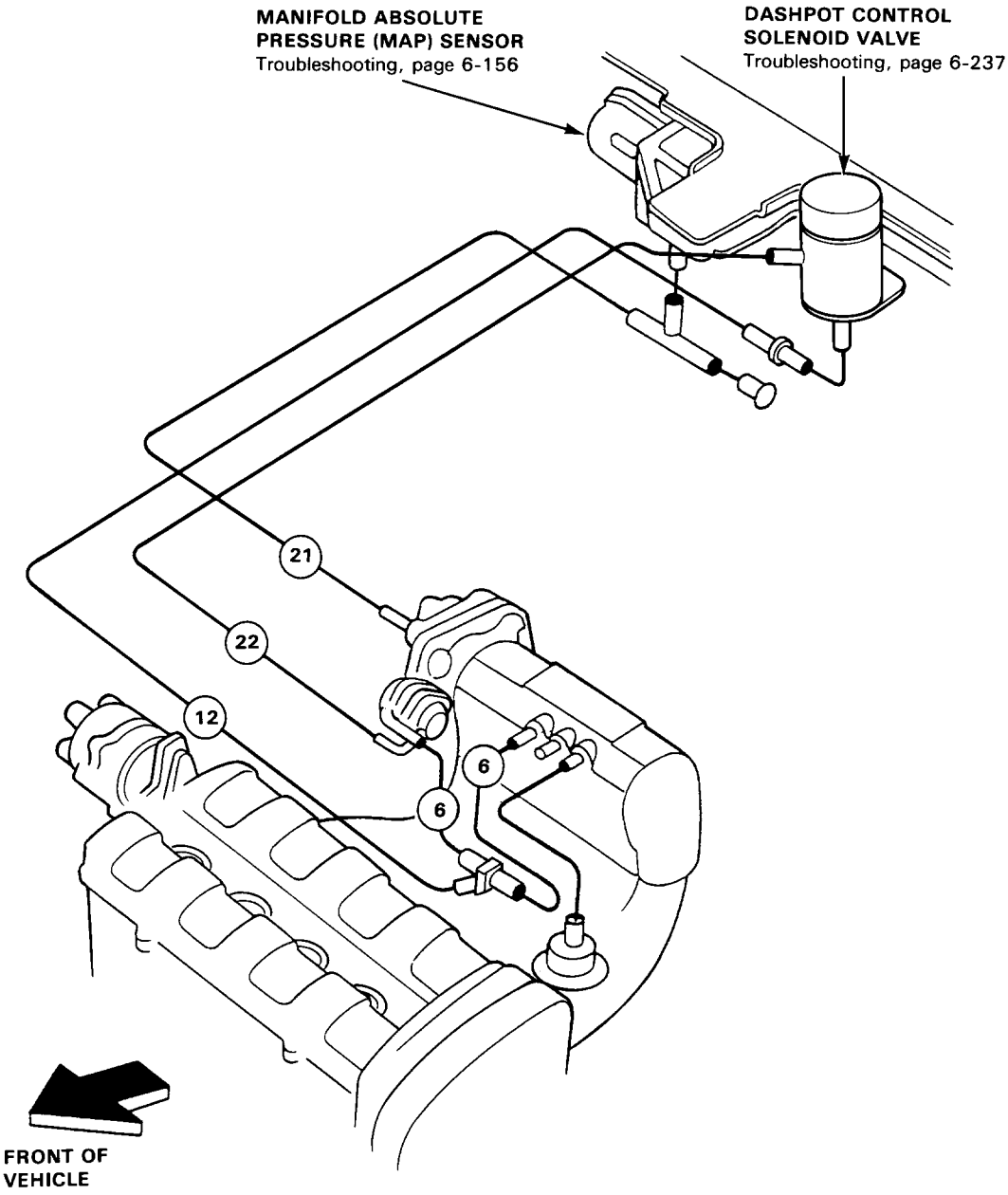
Systems Description

Vacuum Connections [1.6 ℓ]

SOHC, With CATA

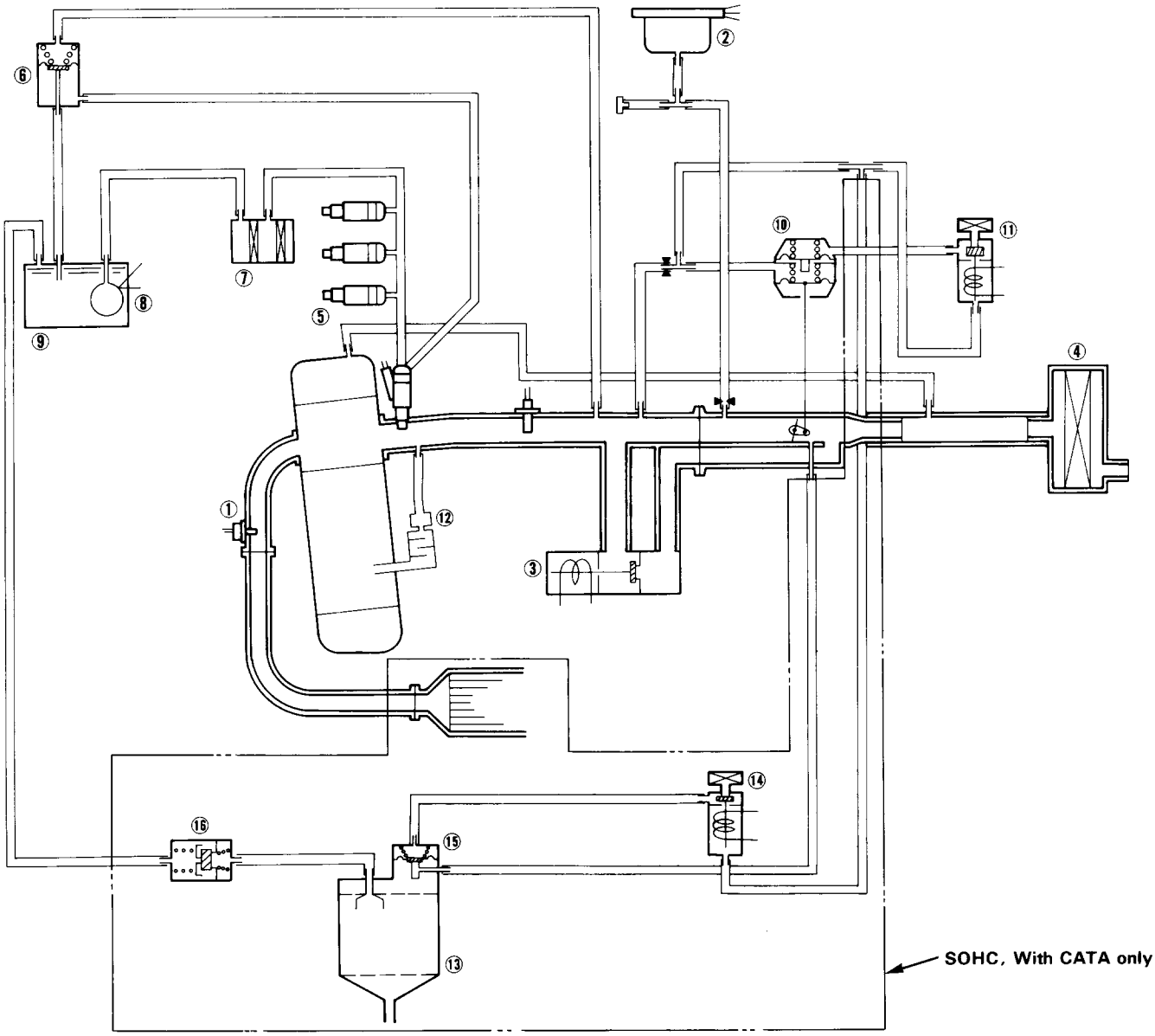


SOHC, Without CATA
DOHC
NOTE: The illustration is DOHC type. SOHC type is the same as of DOHC type, except for the cylinder head.



Systems Description

Vacuum Connections [1.6 ℓ]

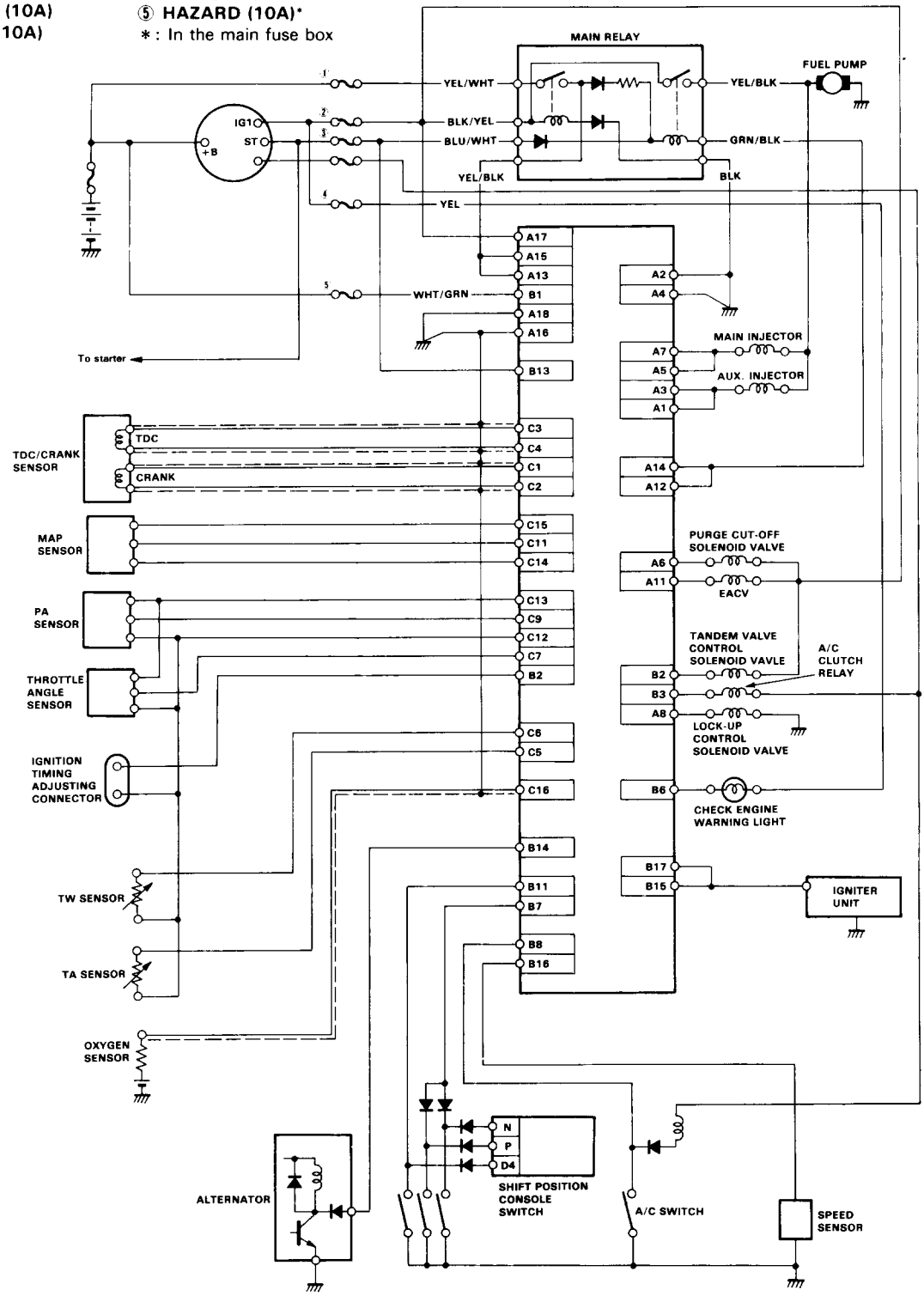


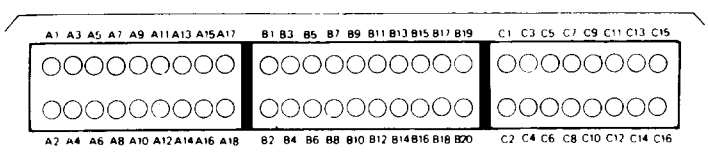
① OXYGEN (O_2) SENSOR (With CATA)
② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
③ ELECTRONIC AIR CONTROL VALVE (EACV)
④ AIR CLEANER
⑤ FUEL INJECTOR
⑥ PRESSURE REGULATOR
⑦ FUEL FILTER
⑧ FUEL PUMP
⑨ FUEL TANK
⑩ DASHPOT DIAPHRAGM
⑪ DASHPOT CONTROL SOLENOID VALVE
⑫ PCV VALVE
⑬ CHARCOAL CANISTER
⑭ PURGE CUT-OFF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

Electrical Connections [1.5 ℓ]

FUSES

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





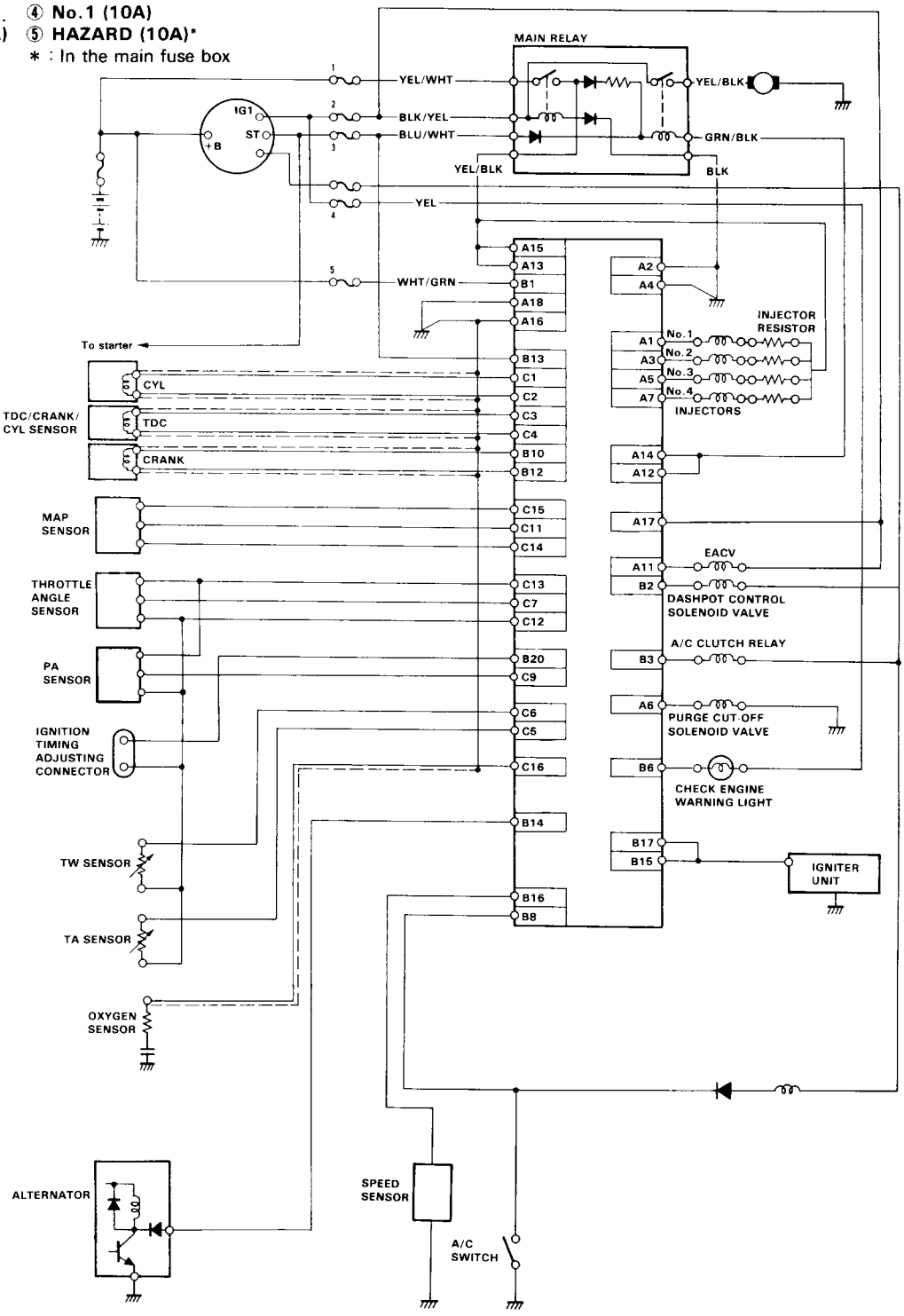
TERMINAL LOCATION

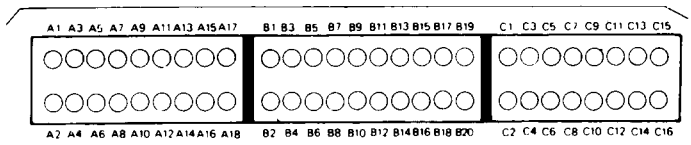
Systems Description

Electrical Connections [1.6 ℓ]

With CATA

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



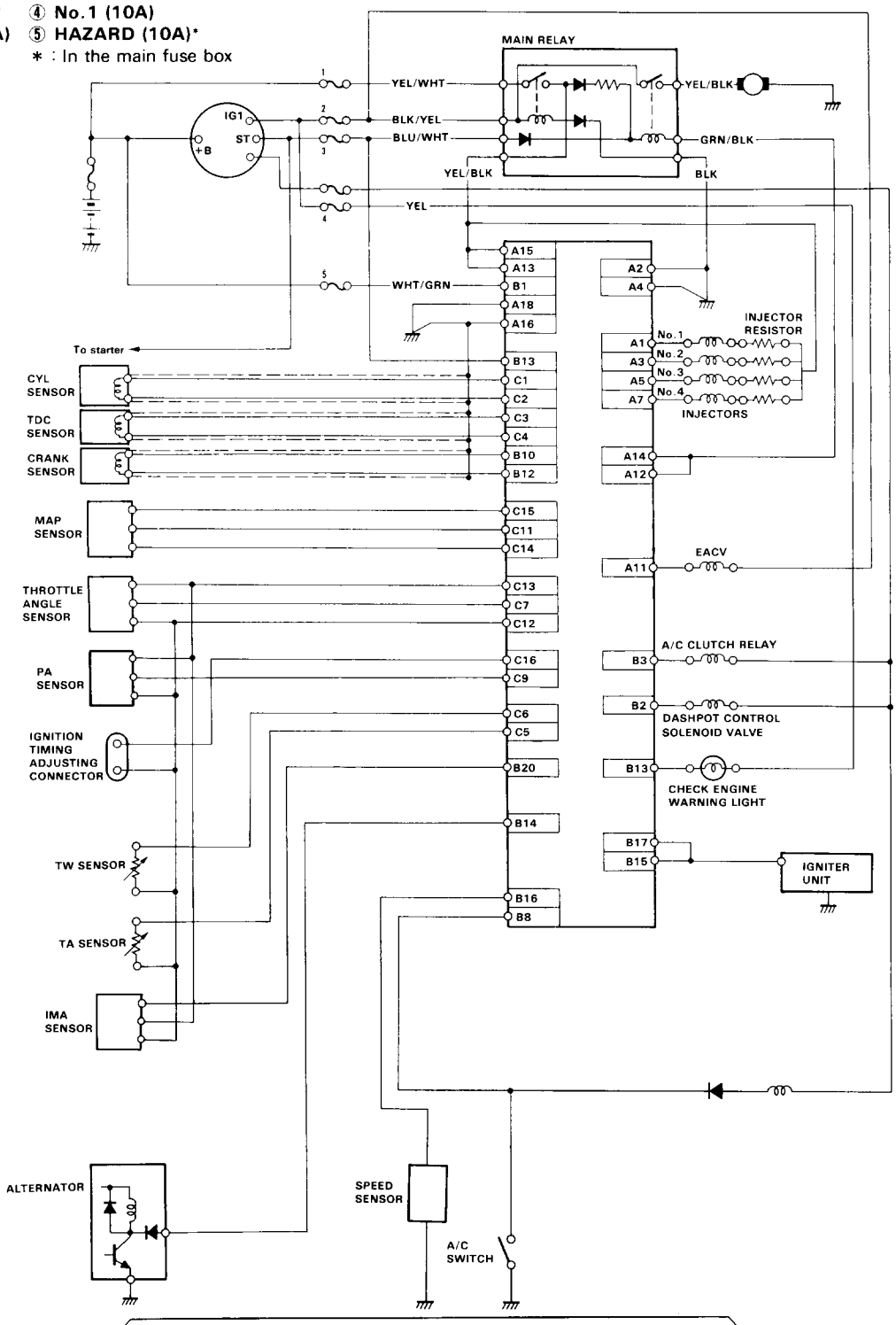


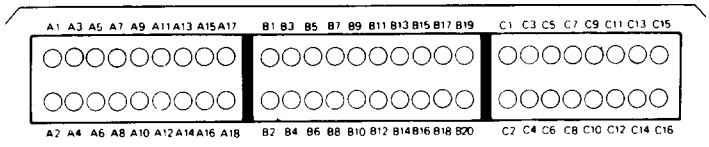
TERMINAL LOCATION

Without CATA

FUSES

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





TERMINAL LOCATION

Troubleshooting

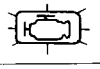
Troubleshooting Guide [1.5 ℓ]

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
		151	154	156	162	172	174	178	182
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		Ⓑⓤ		③		①			
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	Ⓑⓤ				②			
	ROUGH IDLE	Ⓑⓤ		③					
	WHEN WARM ENGINE SPEED TOO HIGH	Ⓑⓤ							
	WHEN WARM ENGINE SPEED TOO LOW	Ⓑⓤ							
FREQUENT STALLING	WHILE WARMING UP	Ⓑⓤ		③					
	AFTER WARMING UP	Ⓑⓤ		③					
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	Ⓑⓤ		③					
	FAILS EMISSION TEST	Ⓑⓤ		②					
	LOSS OF POWER	Ⓑⓤ		③			②		

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

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

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
184	186	188	193	192	209	206	225	240
								
⑮	⑰	⑲	⑭		⑯			
③					②	①		
				②				
			①	②				
			③	①				
			②	①				
			①	②				
			①	②				
			①	②		③		
					①	②		
						①		
					③	①		

Troubleshooting

Troubleshooting Guide [1.6 ℓ SOHC, 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/CYL SENSOR	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR	ATMOSPHERIC PRESSURE SENSOR
		151	154	156	166	172	174	178	182
CHECK ENGINE WARNING LIGHT TURNS ON		□ or ☼							
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	①	③ or ⑤	④ or ⑧ or ⑨	⑥	⑦	⑩	⑬
ENGINE WON'T START		③							
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 ENGINE SPEED TOO HIGH	(BU)							
	WHEN WARM ENGINE SPEED TOO LOW	(BU)							
FREQUENT STALLING	WHILE WARMING UP	(BU)		③					
	AFTER WARMING UP	(BU)		③					
POOR PERFORMANCE	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.

PGM-FI		IDLE CONTROL		FUEL SUPPLY			
IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL INJECTOR	OTHER FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
184	186	193	192	213	206	225	240
							
⑮	⑰	⑭		⑯			
③				②	①		
			②				
		①	②				
		③	①				
		②	①				
		①	②				
		①	②		③		
		①	②		③		
				②	①		
					①		
				③	①		

Troubleshooting

Troubleshooting Guide [1.6 ℓ SOHC, Without CATA and DOHC]

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 **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERA-TURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERA-TURE SENSOR
		151	156	162	176	166	172	174	178
CHECK ENGINE WARNING LIGHT TURNS ON		□ or ☼	K	K	K	K	K	K	K
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		⓪ or ✱	③ or ⑤	④ or ⑧	⑨	④ or ⑧ or ⑨	⑥	⑦	⑩
ENGINE WON'T START		②							
DIFFICULT TO START ENGINE WHEN COLD		(BU)	③				①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	(BU)					②		
	ROUGH IDLE	(BU)	③						
	WHEN WARM IDLE SPEED TOO HIGH	(BU)							
	WHEN WARM IDLE SPEED TOO LOW	(BU)							
FREQUENT STALLING	WHILE WARMING UP	(BU)	③						
	AFTER WARMING UP	(BU)	③						
POOR 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.

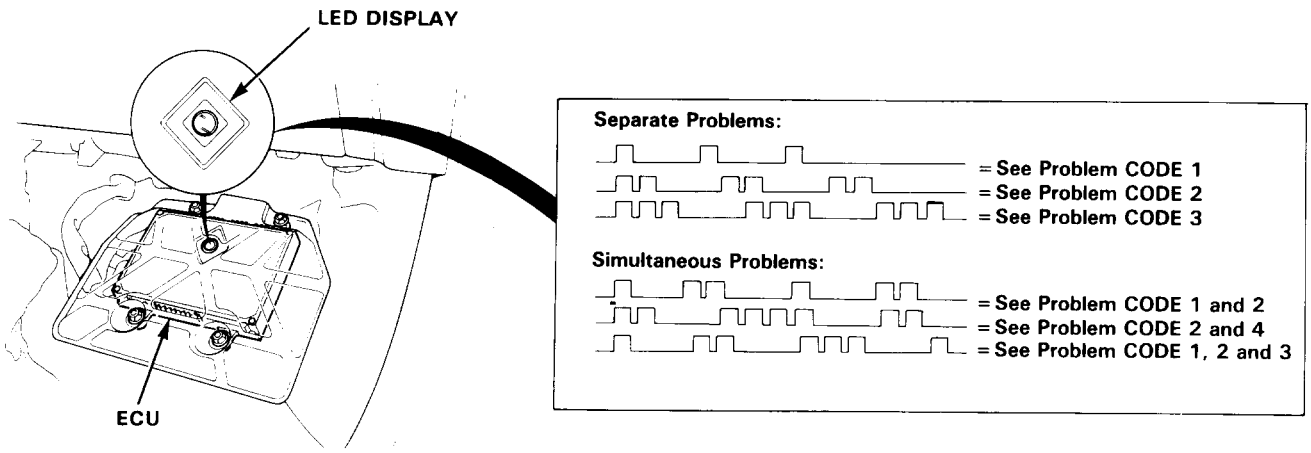
* : SOHC, ** : DOHC

PGM-FI				IDLE CONTROL				
IMA SENSOR	ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
180	182	184	186	193	192	206	225	240
								
(11)	(13)	(15)	(17)	(14)				
		(2)				(1)		
					(2)			
				(1)	(2)			
				(3)	(1)			
				(2)	(1)			
				(1)	(2)			
				(1)	(2)			
				(1)	(2)	(3)		
						(1)		
						(1)		
						(1)		

Troubleshooting

Self-diagnostic Procedure

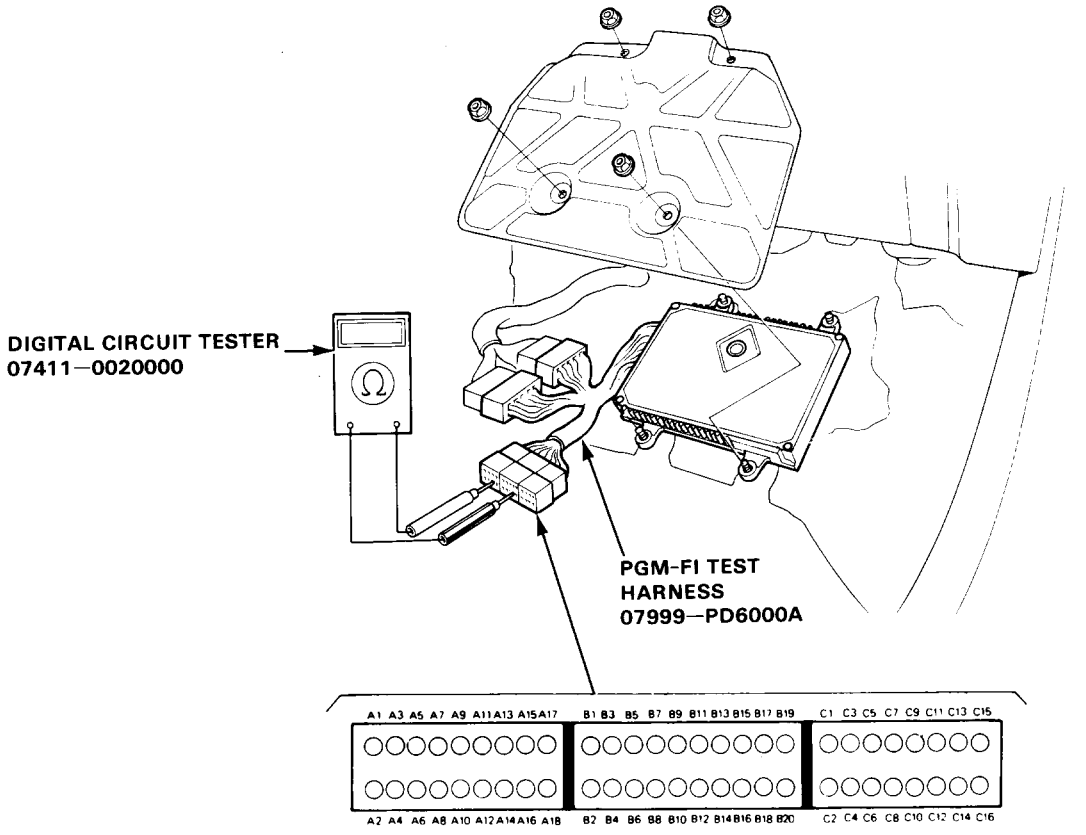
When the Check Engine warning light has been reported on, turn the ignition on, pull down the passenger's side carpet from under the dashboard and observe the LED on the top of the ECU. The LED indicates a system failure code by blinking frequency. The ECU LED can indicate any number of simultaneous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



SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-151
1	OXYGEN CONTENT (With CATA)	6-154
3	MANIFOLD ABSOLUTE PRESSURE	6-156
5		6-160
4	CRANK ANGLE	6-162, 166
6	COOLANT TEMPERATURE	6-172
7	THROTTLE ANGLE	6-174
8	TDC POSITION	6-164, 168
9	No.1 CYLINDER POSITION (1.6 ℓ)	6-170, 176
10	INTAKE AIR TEMPERATURE	6-178
11	IMA (Without CATA)	6-180
13	ATMOSPHERIC PRESSURE	6-182
14	ELECTRONIC AIR CONTROL	6-193
15	IGNITION OUTPUT SIGNAL	6-184
16	FUEL INJECTOR	6-209, 213
17	VEHICLE SPEED SENSOR	6-186
19	LOCK-UP CONTROL SOLENOID VALVE (A/T)	6-188

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.

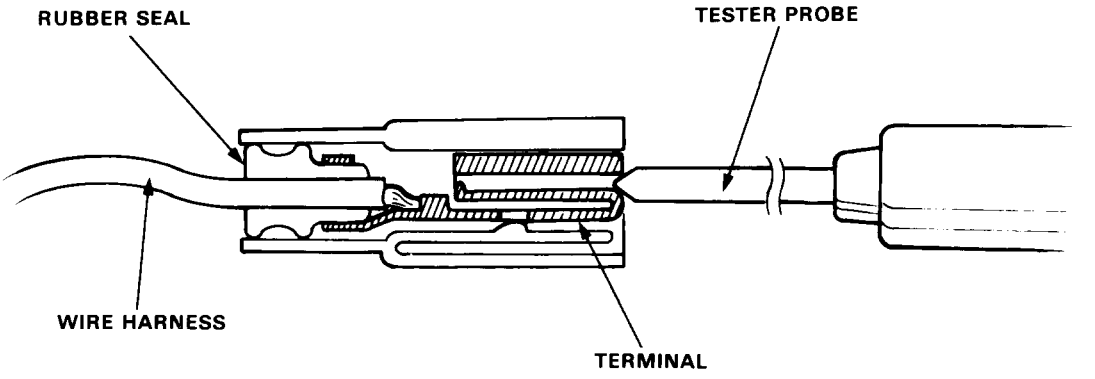
If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure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



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 by giving an "answer" and asking did you get the same answer: Yes or No.
STOP (bold type)	The end of a series of actions and decisions, describes a final repair action and sometimes directs you to an earlier part of the flow to confirm your repair.

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.
- "Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground. In simple electronics, this usually means something won't work at all. In complex electronics (like ECUs), this can sometimes mean something works, but not the way it's supposed to.
- If the electrical readings are not as specified when using the PGM-FI test harness, check the test harness connections before proceeding.

Troubleshooting Flowchart — ECU

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

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

YES

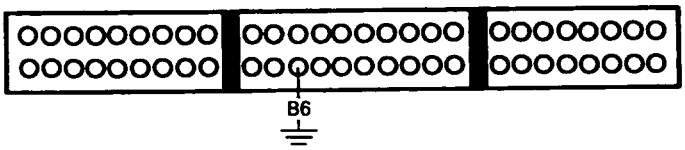
Turn the ignition switch OFF.

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

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

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

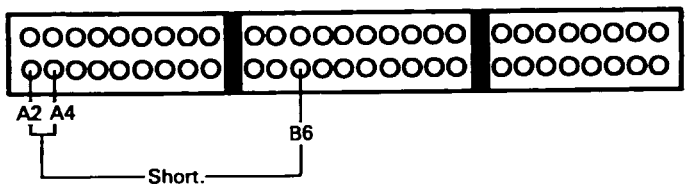
Connect B6 terminal to body ground.



Turn the ignition switch ON.

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

YES



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

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

YES

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

(cont'd)

Troubleshooting Flowchart — ECU (cont'd)

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

Connect the PGM-FI test harness between the ECU and connector (page 6-149). Disconnect "B" connector from ECU only, not the main wire harness.

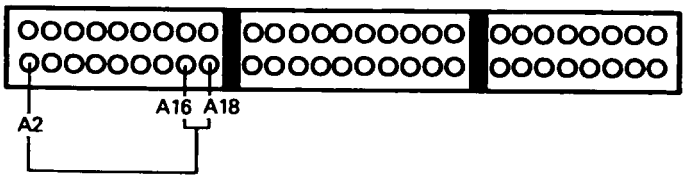
Turn the ignition switch ON.

Does Check Engine warning light remain on ?

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

NO

Reconnect "B" connector to ECU.



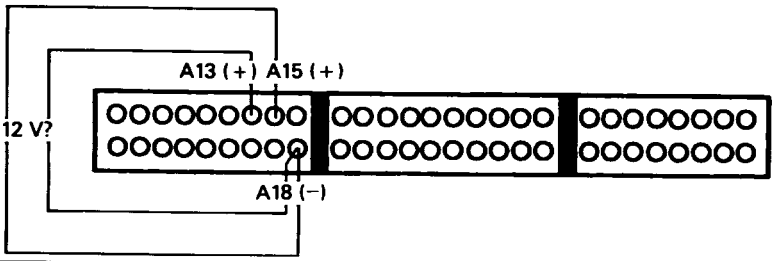
Connect following terminals individually to A2: • A16, • A18.

Is Check Engine warning light on ?

NO — **– Repair open in BLK/RED wire between ECU (A18) and G101.**
– Repair open in BRN/BLK wire between ECU (A16) and G101.

YES

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



Is there battery voltage ?

NO — **– Repair open in YEL/BLK wire between ECU (A13, A15) and main relay.**
– Check main relay and wiring connectors at main relay (page 6-221).

YES

(To page 6-153)

(From page 6-152)

Turn the ignition switch OFF.

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

Start the engine.

Does LED indicate the CODE for the sensor disconnected ?

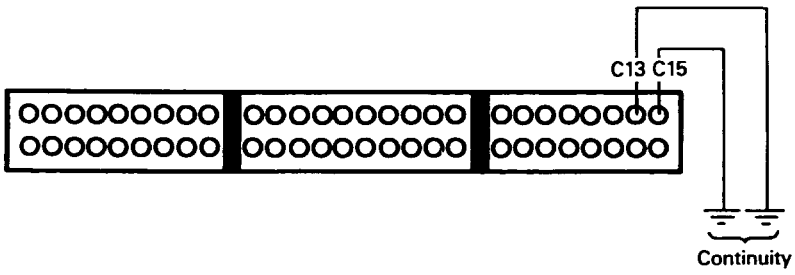
NO → **Replace the sensor that did not cause the CODE to appear upon its disconnection.**

YES

Reconnect all connectors.

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-149). Disconnect "C" connector from ECU only, not the main wire harness.



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

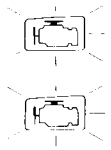
Does continuity exist ?

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

NO

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

Troubleshooting Flowchart —— Oxygen Sensor [With CATA]



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

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

↓

Turn the ignition switch OFF.

↓

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

↓

Inspect pressure regulator (page 6-217).

↓

Is it normal ? — NO → **Replace the pressure regulator (page 6-218).**

↓ YES

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

↓

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

↓

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

↓ YES

(To page 6-155)

(From page 6-154)

Disconnect engine wire harness from O_2 sensor.

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

Measure voltage between the connector terminal and body ground.

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

NO → **Replace O_2 sensor.**

YES

Stop engine.

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

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

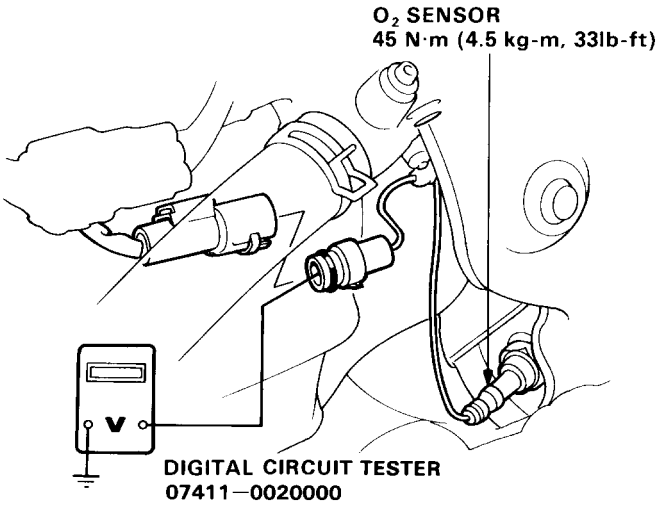
Measure voltage between C16 (+) and A18 (-) terminals.

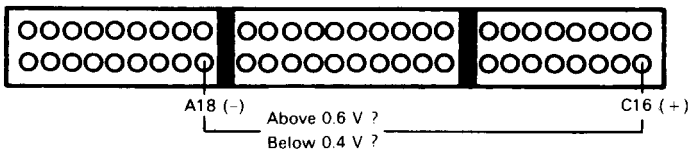
Is voltage above 0.6V during wide open acceleration? Is voltage below 0.4V during closed throttle deceleration from 5,000 min^{-1} (rpm)?

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

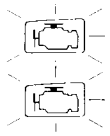
YES

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



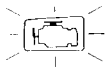


Troubleshooting Flowchart — MAP Sensor



③ Self-diagnosis LED indicator blinks three times: Most likely an electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

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



③

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

Turn the ignition switch OFF.

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

Start the engine and allow to idle.

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

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

YES

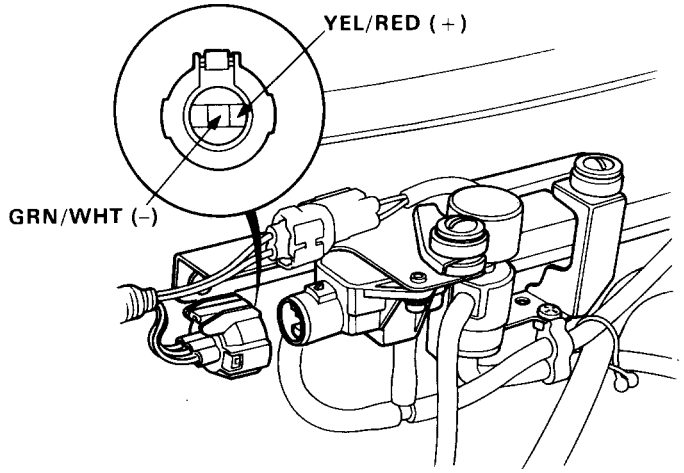
Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

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

(To page 6-157)



(From page 6-156)

Is there approx. 5 V ?

NO

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

Is there approx. 5 V ?

YES

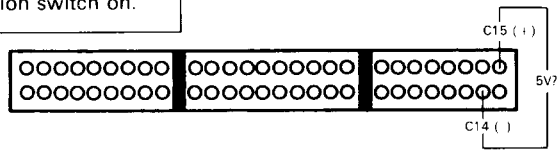
Repair open in GRN/WHT wire between ECU (C14) and MAP sensor.

NO

Turn the ignition switch OFF.

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

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



YES

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

Is there approx. 5 V ?

NO

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

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

Is there approx. 5 V ?

NO

Turn the ignition switch OFF.

YES

Turn the ignition switch OFF.

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

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

Turn the ignition switch ON.

(To page 6-158)

(To page 6-158)

(cont'd)

Troubleshooting Flowchart — MAP Sensor (cont'd)

(From page 6-157)

Reconnect the 3P connector.

Turn the ignition switch ON.

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

Is there approx. 3 V ?

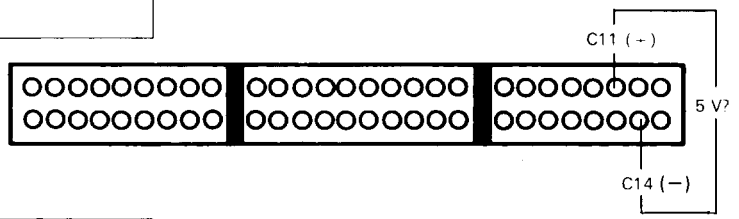
NO → **Replace MAP sensor.**

YES

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

(From page 6-157)

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

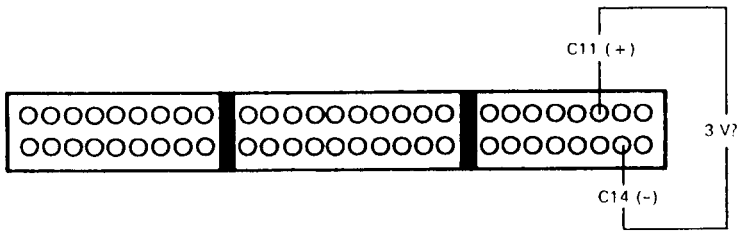


Is there approx. 5 V ?

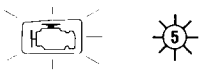
YES → **Repair open in WHT wire between ECU (C11) and MAP sensor.**

NO

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



Troubleshooting Flowchart — MAP Sensor (cont'd)



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

Turn the ignition switch OFF.

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

Start the engine.

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

NO

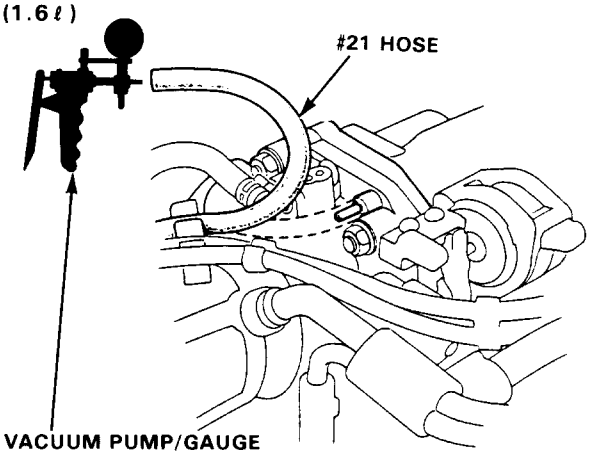
- Make sure all connectors are secure.
- Check vacuum hoses, pipes, and connections.
- Intermittent failure (test drive may be necessary).

YES

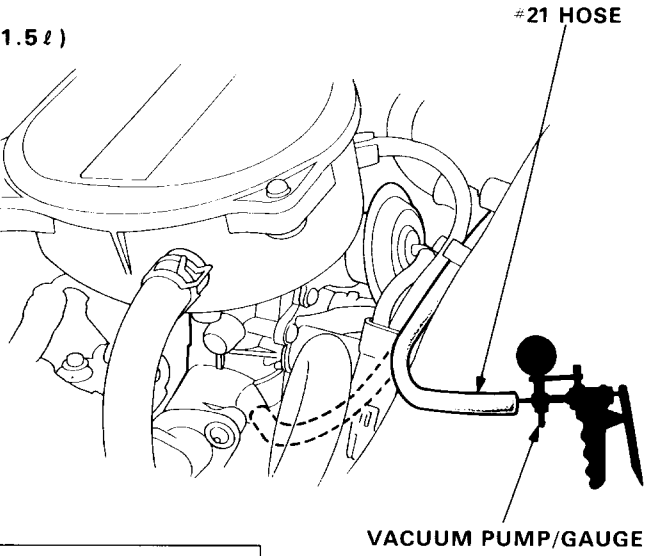
Stop engine.

Connect vacuum pump to #21 hose and apply vacuum.

(1.6 ℓ)



(1.5 ℓ)



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 6-161)

(From page 6-160)

Start engine.

Is there vacuum? NO

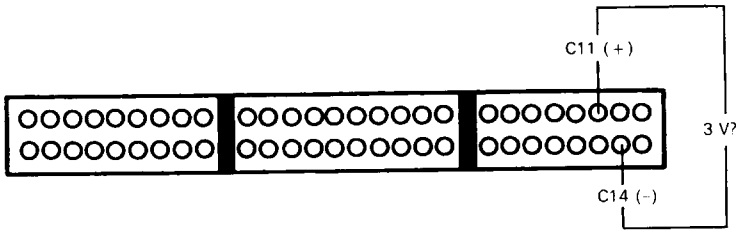
-Remove restriction from throttle body.
-Replace throttle body.

YES

Stop engine.

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

Turn the ignition switch ON.



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

Is there approx. 3 V ? NO

Inspect for an open in WHT wire between the MAP sensor and ECU. If wire is OK, replace the MAP sensor.

YES

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

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

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

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

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

Turn the ignition switch OFF.

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

Start engine.

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

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

YES

Stop engine.

Disconnect 6P connector from the TDC/CRANK sensor.

Measure resistance between D terminal and E terminal.

Is there 350–550 Ω ?

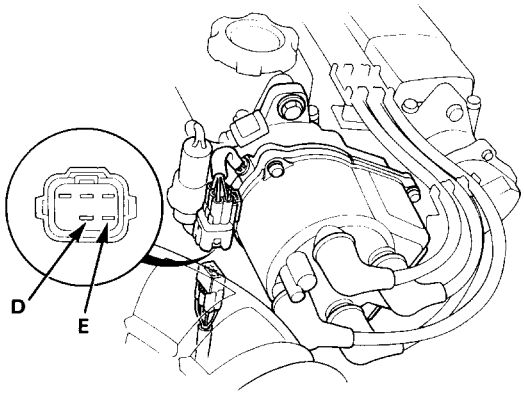
NO → **Replace the distributor assembly (section 16).**

YES

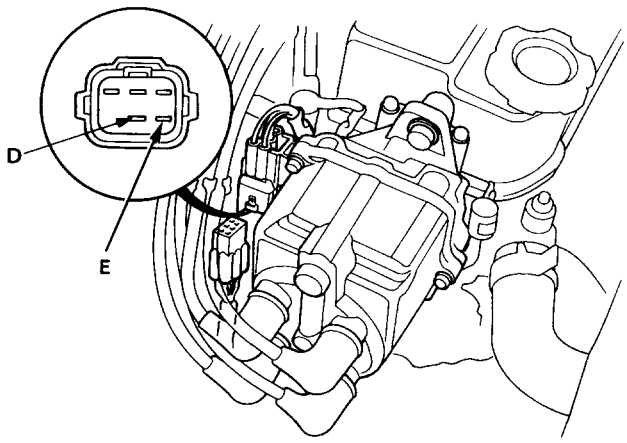
Check for continuity to body ground on D terminal and E terminal individually.

(To page 6-163)

(DOHC)



(1.5 ℓ)



(From page 6-162)

Does continuity exist ?

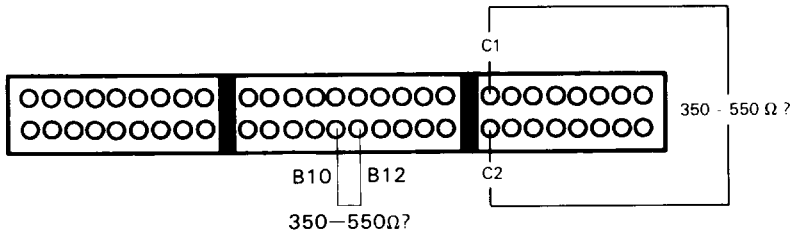
YES → **Replace the distributor assembly (section 16)**

NO

Reconnect the connector.

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-149).

- On the 1.5 ℓ : Measure resistance between C1 terminal and C2 terminal.
- On the DOHC: Measure resistance between B10 terminal and B12 terminal.



Is there 350–550 Ω ?

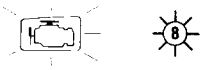
NO → **Repair open in ORN and/or WHT wires.**

YES

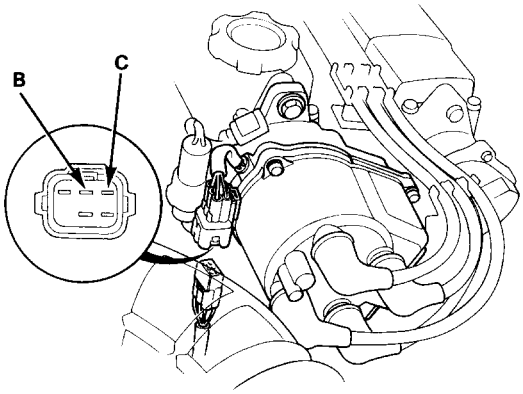
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(cont'd)

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



(DOHC)



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

Turn the ignition switch OFF.

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

Start engine.

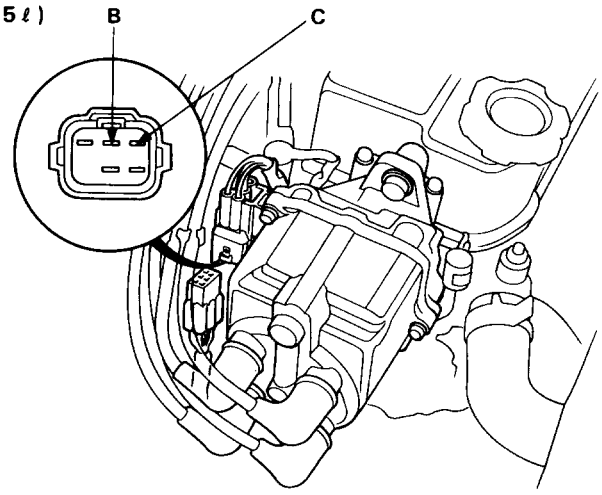
Is Check Engine warning light on ?
Does LED indicate CODE 8 ?

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

YES

Stop engine.

(1.5 ℓ)



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 6-165)

(From page 6-164)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-149).

Measure resistance between C3 terminal and C4 terminal.

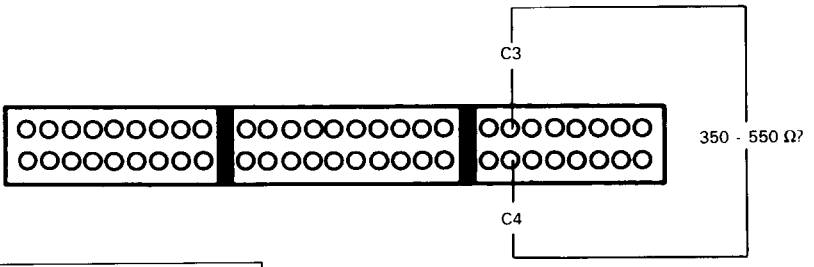
Is there 350 — 550 Ω ?

NO

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

YES

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



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

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

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

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

(4)

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

Turn the ignition switch OFF.

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

Start engine.

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

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

YES

Stop engine.

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

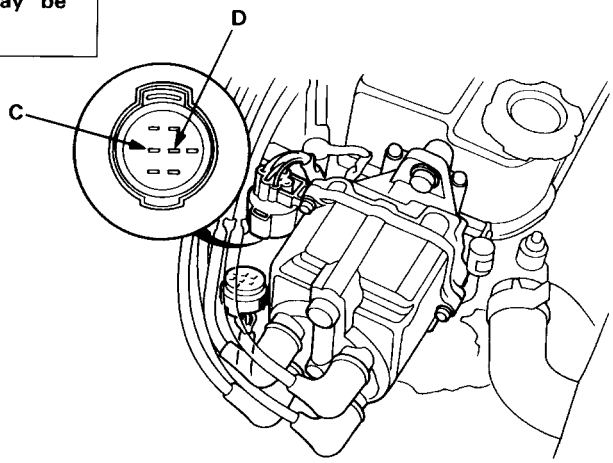
Measure resistance between C terminal and D terminal.

Is there 350–550 Ω ?

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

YES

(To page 6-167)



(From page 6-166)

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

Does continuity exist ?

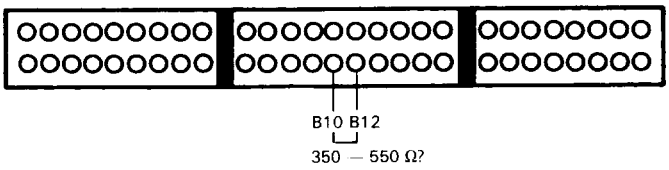
YES → **Replace the distributor assembly (section 16).**

NO

Reconnect the connector.

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-149).

Measure resistance between B10 terminal and B12 terminal.



Is there 350–550 Ω ?

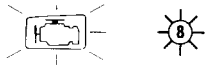
NO → **Repair open in ORN and/or WHT wires.**

YES

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

(cont'd)

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



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

Turn the ignition switch OFF.

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

Start engine.

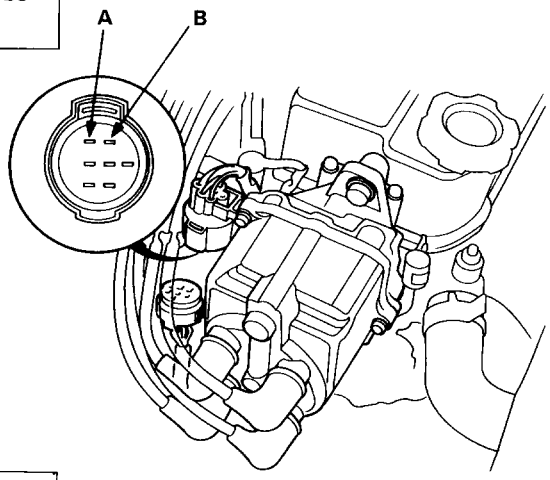
Is Check Engine warning light on?
Does LED indicate CODE 8 ?

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

YES

Stop engine.

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



Measure resistance between A terminal and B terminal.

Is there 350—550 Ω ?

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

YES

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

Does continuity exist ?

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

NO

Reconnect the connector.

(To page 6-169)

(From page 6-168)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-149).

Measure resistance between C3 terminal and C4 terminal.

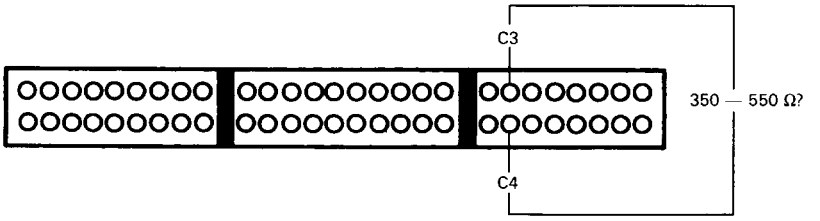
Is there 350 — 550 Ω ?

NO

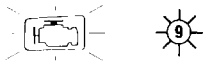
Repair open in ORN/BLU and/or WHT/BLU wires.

YES

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



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



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

Turn the ignition switch OFF.

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

Start engine.

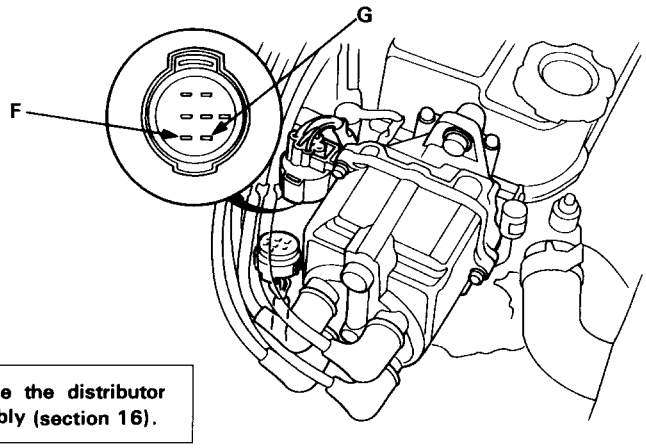
Is Check Engine warning light on?
Does LED indicate CODE 9 ?

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

YES

Stop engine.

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



Measure resistance between F terminal and G terminal.

Is there 350—550 Ω ?

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

YES

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

Does continuity exist ?

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

NO

Reconnect the connector.

(To page 6-171)

(From page 6-170)

Connect the PGM-FI test harness only to the main wire harness, but not to the ECU (page 6-149).

Measure resistance between C1 terminal and C2 terminal.

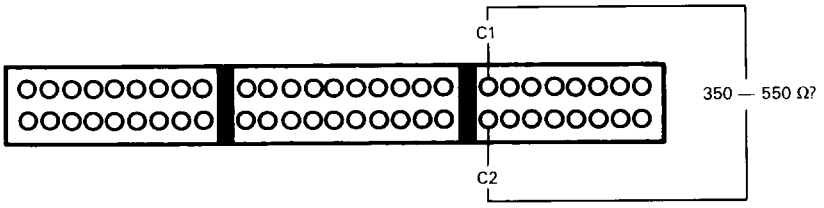
Is there 350 — 550 Ω ?

NO

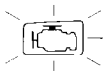
Repair open in BLU/GRN and/or BLU/YEL wires.

YES

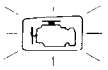
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — TW Sensor




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




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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

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

YES

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

Disconnect C210 and C101 (Std.) or C151 (HF and Si) connectors.

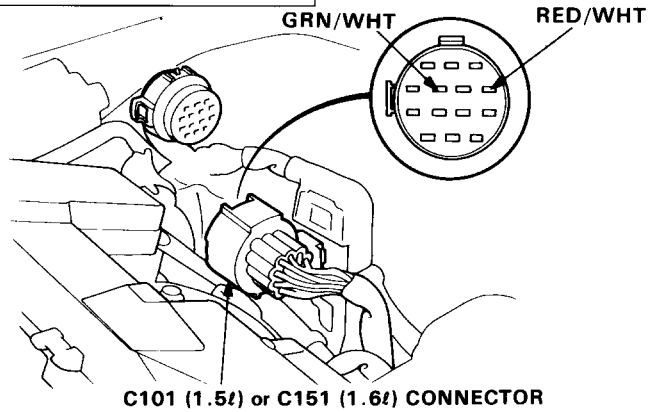
Measure resistance between RED/WHT terminal and GRN/WHT terminal at C101 (1.5ℓ) or C151 (1.6ℓ) connector.

Is there 200—400 Ω ?

NO → **Inspect for open or short in RED/WHT or GRN/WHT wire between C101 (1.5ℓ) or C151 (1.6ℓ) connector and TW sensor. If wires are OK, replace TW sensor.**

YES

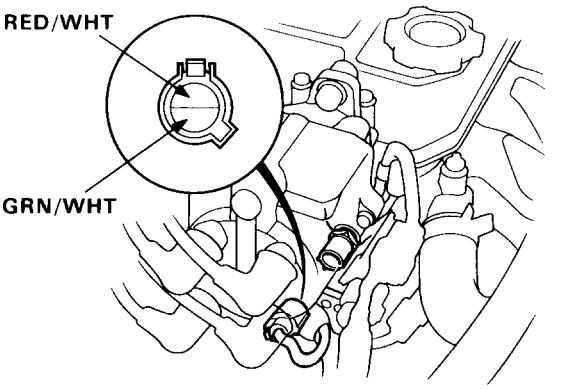
(To page 6-173)



C101 (1.5ℓ) or C151 (1.6ℓ) CONNECTOR

(From page 6-172)

Reconnect C210 and C101 (1.5ℓ) or C151 (1.6ℓ) connectors, then disconnect the 2P connector from TW sensor.



Is there approx. 5V ?

NO

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

YES

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

Is there approx. 5V ?

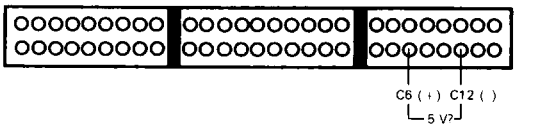
NO

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

YES

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

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



Is there approx. 5V ?

YES

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

NO

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

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

Is there approx. 5V ?

YES

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

NO

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

Troubleshooting Flowchart — Throttle Angle Sensor

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

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

Turn the ignition switch OFF.

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

Start engine.

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

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

YES

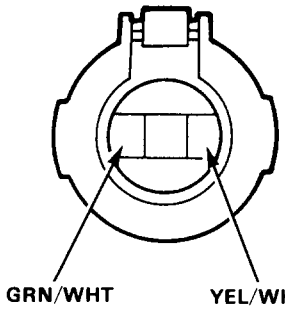
Turn the ignition switch OFF.

Disconnect the 3P connector from the throttle angle sensor.

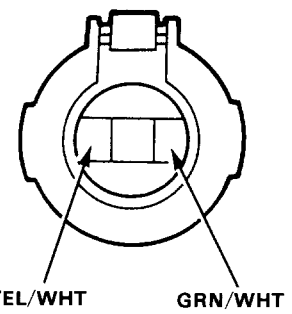
Turn the ignition switch ON.

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

(1.5ℓ)



(1.6ℓ)



Is there approx. 5V ?

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

Is there approx. 5V ?

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

NO → Turn the ignition switch OFF.

YES

Turn the ignition switch OFF.

Reconnect the 3P connector.

(To page 6-175)

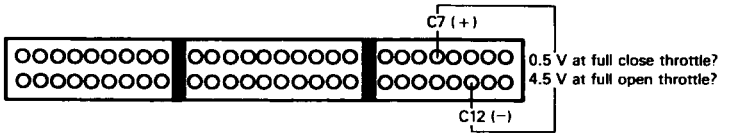
(To page 6-175)

(From page 6-174)

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

Turn the ignition switch ON.

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



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

NO

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

YES

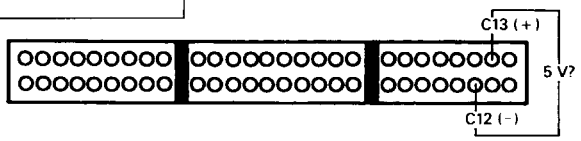
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

(From page 6-174)

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

Turn the ignition switch ON.

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



Is there approx. 5V ?

YES

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

NO

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

Troubleshooting Flow Chart —— CYL Sensor [DOHC]

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

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

Turn the ignition switch OFF.

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

Start engine.

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

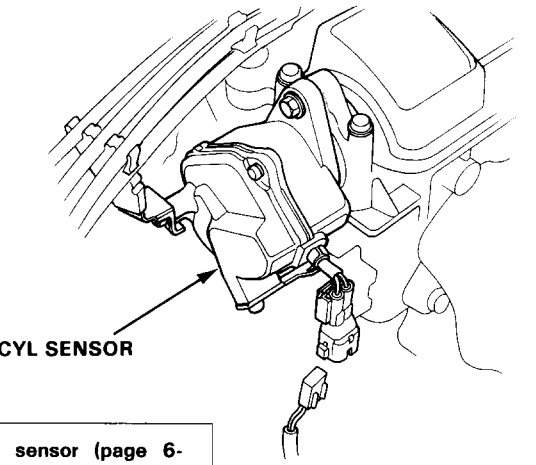
NO → **Intermittent failure (test drive may be necessary).**

YES

Stop engine.

Disconnect the 2P connector from the CYL sensor.

Measure resistance between 2 terminals on the CYL sensor.



Is there 700—1,000 Ω?

NO → **Replace CYL sensor (page 6-190).**

YES

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

Does continuity exist?

YES → **Replace CYL sensor (page 6-190).**

NO

(To page 6-177)

(From page 6-176)

Reconnect the connector.

Connect the system checker harness only to the wire harness, but not to the ECU (page 6-149).

Measure resistance between C1 terminal and C2 terminal.

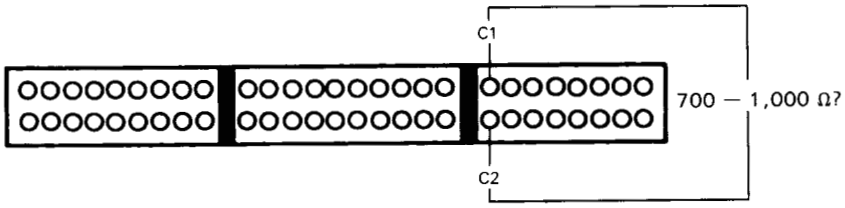
Is there 700—1,000 Ω?

NO

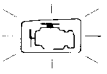
Repair open in BLU/GRN and/or BLU/YEL wires.

YES

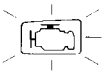
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



Troubleshooting Flowchart — TA Sensor




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




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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

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

YES

Disconnect the 2P connector from the TA sensor.

Measure resistance between the 2 terminals on the TA sensor.

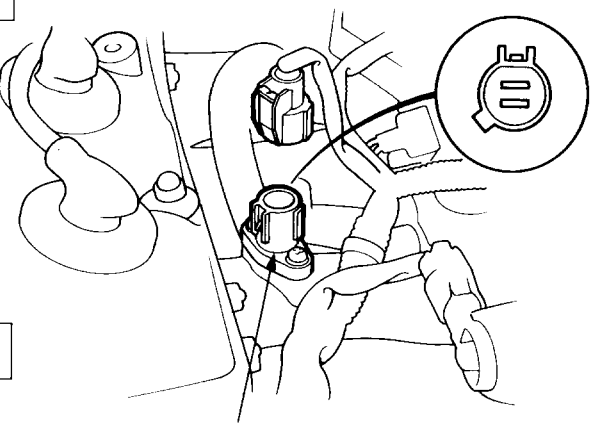
Is there 1–4 kΩ ?

NO → **Replace TA sensor.**

YES

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

(To page 6-179)



TA SENSOR

(From page 6-178)

Is there approx. 5 V ?

NO

Turn the ignition switch OFF.

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

YES

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

Is there approx. 5 V ?

NO

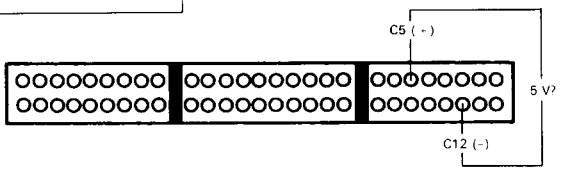
Repair open in GRN/WHT wire between ECU (C12) and TA sensor.

YES

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

Turn the ignition switch ON.

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



Is there approx. 5 V ?

YES

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

NO

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

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

Is there approx. 5 V ?

YES

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

NO

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

Troubleshooting Flow Chart —— IMA Sensor [Without CATA]

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

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

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box for 10 seconds to reset ECU.

Turn the ignition switch ON.

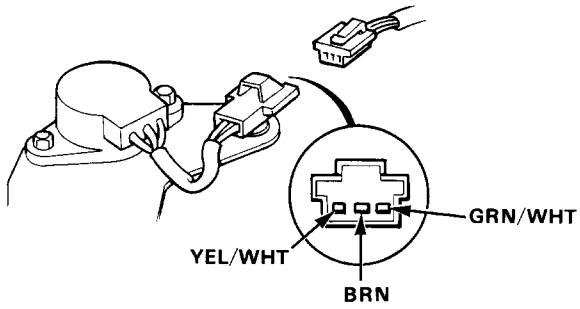
Is Check Engine warning light on? Does LED indicate CODE 11?

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

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the IMA sensor.



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

Is there 4—6 kΩ?

NO → **Replace IMA sensor.**

YES

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

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

NO → **Replace IMA sensor.**

YES

(To page 6-181)

(From page 6-180)

Turn the ignition switch ON.

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

Is there approx. 5V? NO

YES

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

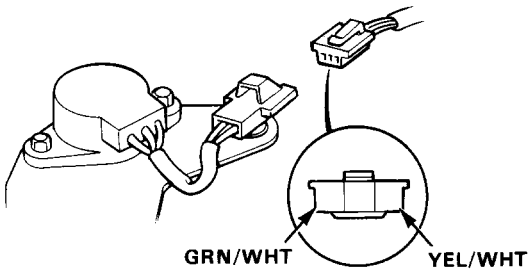
Measure voltage between B20 (+) terminal and C12 (−) terminal.

Is voltage 0.5—4.5V? NO

YES

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

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



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

Is there approx. 5V? YES

NO

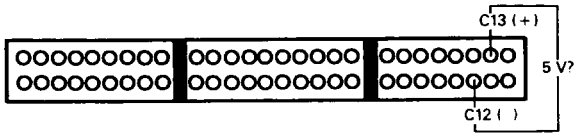
Repair ope in GRN/WHT wire between ECU (C12) and IMA sensor.

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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



Is there approx. 5V? YES

NO

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

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

Troubleshooting Flowchart —— PA Sensor

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

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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

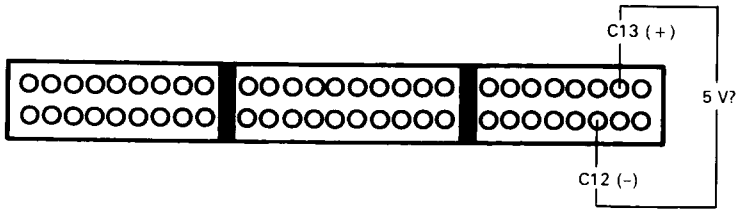
Is Check Engine warning light on ?
Does LED indicate CODE 13 ?

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

YES

Turn the ignition switch OFF.

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



Turn the ignition switch ON.

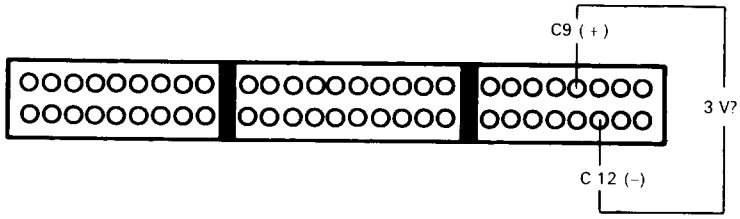
Measure voltage between C13 (+) terminal and C12 (–) terminal.

Is there approx. 5V ?

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

YES

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



(To page 6-183)

(From page 6-182)

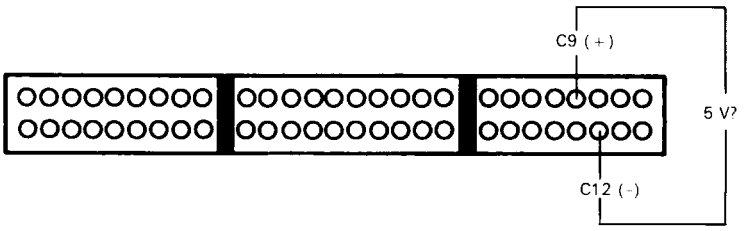
Is there approx. 3V ?

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

NO

Disconnect the main wire harness from PA sensor.

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

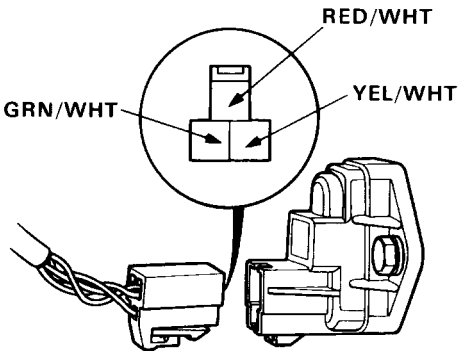


Is there approx. 5V ?

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

YES

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



Is there approx. 5V ?

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

Is there approx. 5V ?

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

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

YES

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

Is there approx. 5V ?

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

YES

Replace PA sensor.

Troubleshooting Flowchart — Ignition Output Signal

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

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

Turn the ignition switch OFF.

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

Start engine.

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

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

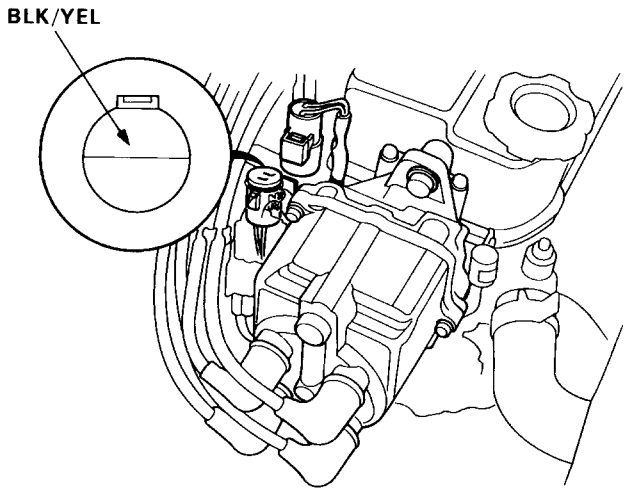
YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the distributor.

Turn the ignition switch ON.

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



Is there battery voltage ?

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

YES

Turn the ignition switch OFF.

Reconnect the 2P connector.

(To page 6-185)

(From page 6-184)

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

Turn the ignition switch ON.

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

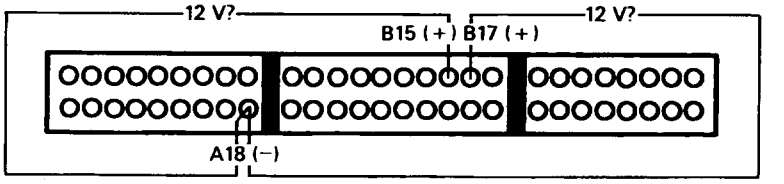
Is there battery voltage ?

NO

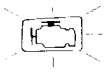
–Replace the igniter unit.
–Repair open in wires between distributor and ECU (B15 or B17).

YES

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



Troubleshooting Flowchart — Vehicle Speed Sensor



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

– Check Engine warning light is on.
– LED indicates CODE 17.

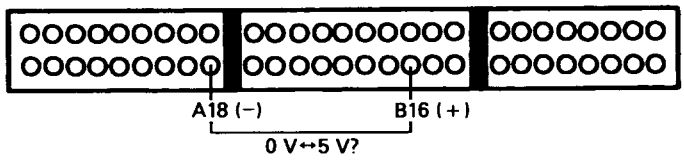
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stands.

WARNING Block rear wheels before jacking up front of car.

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

Turn the ignition switch ON.

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



Does voltage pulse 0V and 5V ?

NO

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

YES

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

Troubleshooting Flowchart —— Lock-up Control Solenoid Valve [A/T Only]

Self-diagnosis LED indicator blinks nineteen times: A problem in the Lock-up Control Solenoid Valve circuit.

– Check Engine warning light is on.
– LED indicates CODE 19.

Turn the ignition switch OFF.

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

Drive vehicle.

Is Check Engine warning light on ?
Does LED indicate CODE 19 ?

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

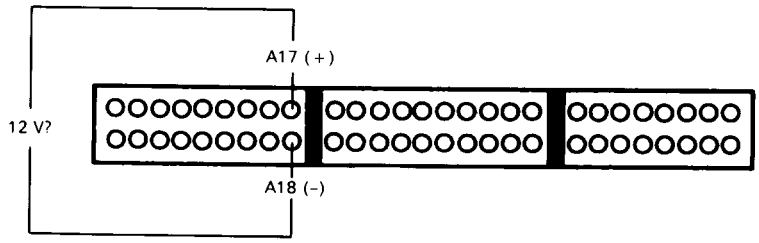
YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-149). Disconnect "A" connector from the ECU only, not the main wire harness.

Turn the ignition switch ON.

Measure voltage between A17 (+) terminal and A18 (–) terminal.



Is there battery voltage ?

NO → Inspect No. 14 fuse.

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the lock-up control solenoid valve.

Is No. 14 fuse OK ?

NO → **Replace fuse.**

YES

Repair open in BLK/YEL wire between ECU (A17) and No. 14 fuse.

(To page 6-189)

(From page 6-188)

Check for continuity between A8 and body ground.

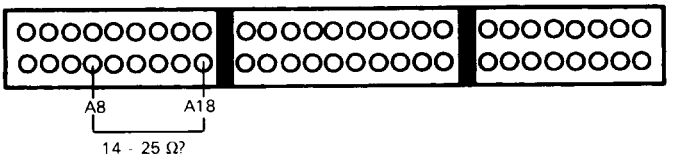
Does continuity exist ?

YES → **Repair short in YEL wire between ECU (A8) and the 2P connector.**

NO

Reconnect the 2P connector.

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.

YES

Does continuity exist ?

YES → **Faulty lock-up control solenoid valve.**

NO

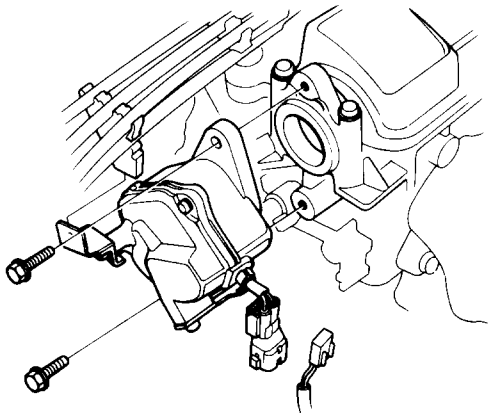
Repair open in YEL wire between ECU (A8) and the 2P connector.

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

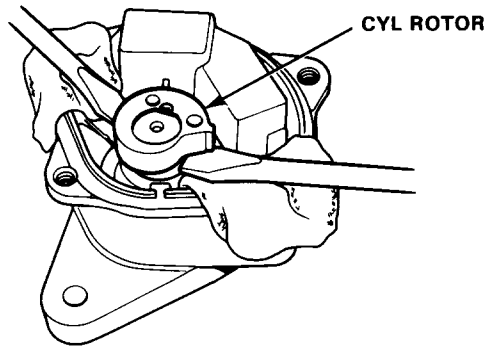
CYL Sensor Overhaul

Disassembly:

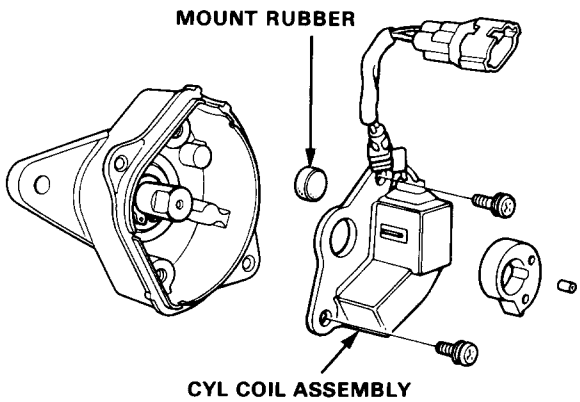
1. Remove the CYL sensor from the engine.



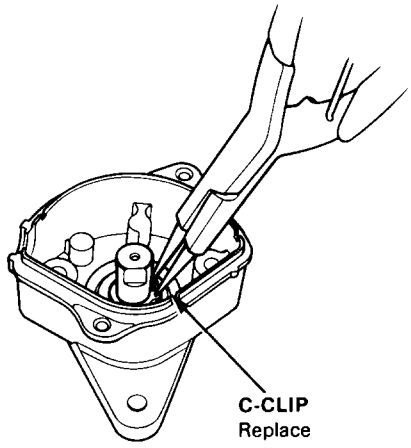
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



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

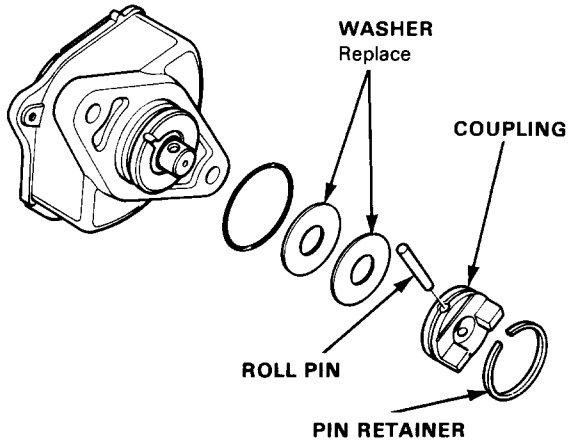


4. Remove the C-clip.

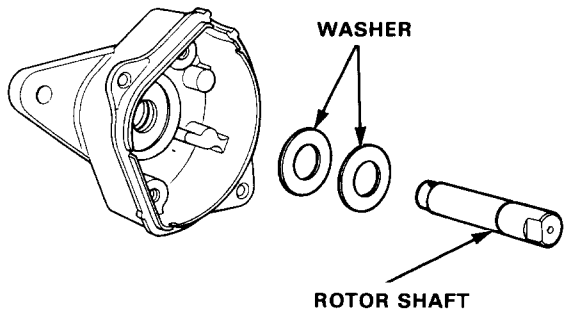


5. Slide off the pin ratainer being careful not to stretch it.

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

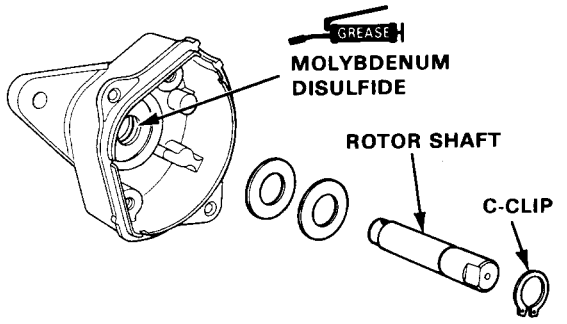


7. Remove the rotor shaft.

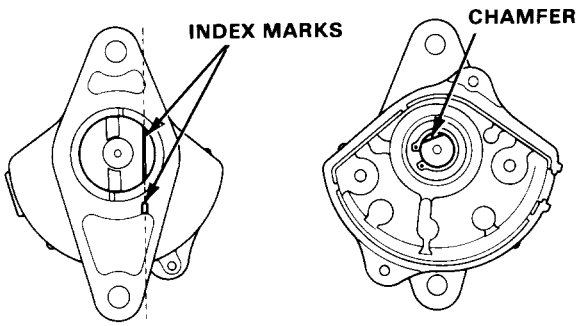


Reassembly:

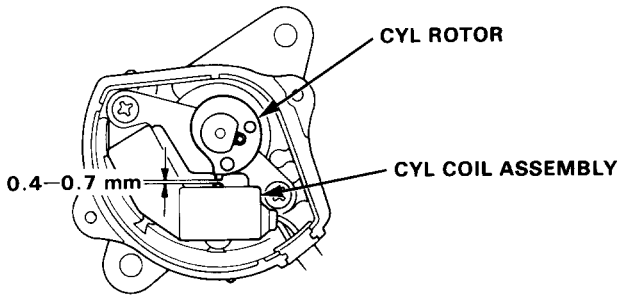
1. Apply molybdenum disulfide grease to the sensor housing, install the washers on the rotor shaft, then install it in the sensor housing. Install a new C-clip.



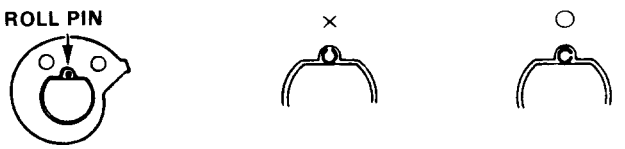
2. Install the coupling with its index mark facing in the direction shown, install the pin, and install the pin retainer.



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



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

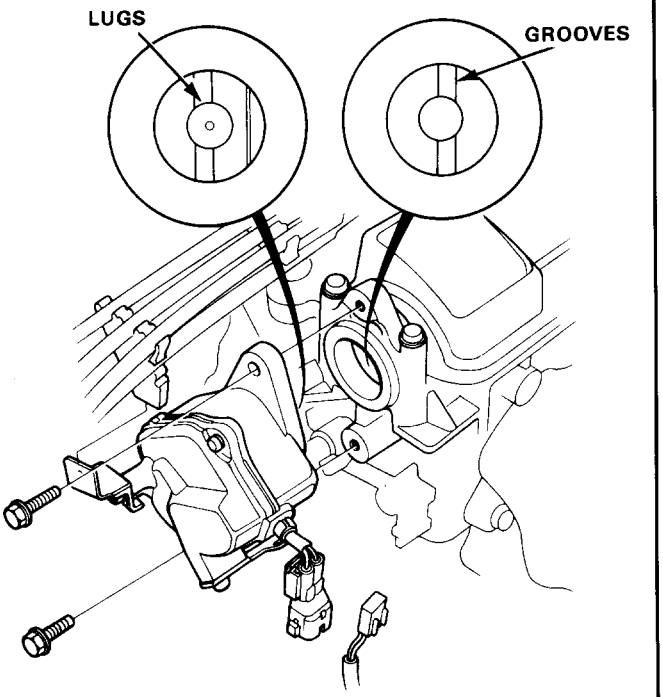


Installation:

1. Install a new O-ring on the sensor housing.

2. Slip the sensor into the position.

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



Idle Control System

System Troubleshooting Guide

NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- If the idle speed is out of specification and LED does not blink CODE 14, go to inspection described on page 6-203.

PAGE / SUB SYSTEM / SYMPTOM		IDLE ADJUSTING SCREW	EACV	AIR CONDITIONING SIGNAL	ALTERNATOR FR SIGNAL	A/T SHIFT POSITION SIGNAL (A/T)	STARTER SWITCH SIGNAL	HOSES AND CONNECTIONS
		204, 205	193	196	198	200	202	*
ENGINE WON'T START			②					①
DIFFICULT TO START ENGINE WHEN COLD		②	①					
WHEN COLD FAST IDLE OUT OF SPEC (1,000—2,000 min^{-1}, rpm)		②	①					
ROUGH IDLE			②					①
WHEN WARM ENGINE SPEED TOO HIGH		③	②	③				①
WHEN WARM ENGINE SPEED TOO LOW	Idle speed is below specified (no load)	②	①		③			③
	Idle speed does not increase after initial start up.		①				②	
	Idle speed drops when blipping throttle with electrical load		②		①			
	On models with automatic transmission, the idle speed drops in gear		②			①		③
	Idle speeds drops when air conditioner in ON		②	①				③
FREQUENT STALLING	WHILE WARMING UP		①					③
	AFTER WARMING UP	③	②					①
FAILS EMISSION TEST			②					①

Troubleshooting Flowchart — EACV

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

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

Turn the ignition switch OFF.

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

Start engine.

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

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

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

Is there 8—15Ω ?

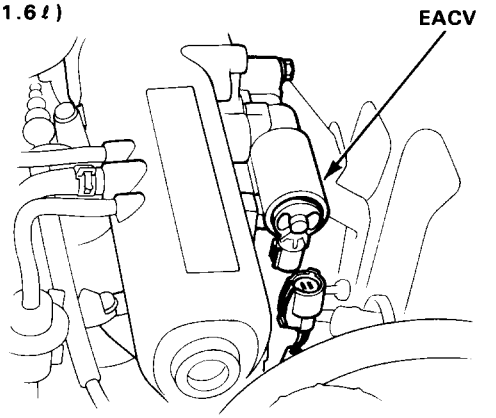
NO → **Replace EACV.**

YES

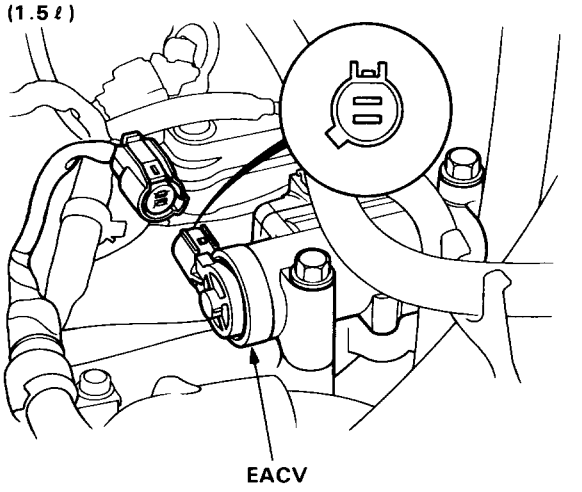
Check for continuity to body ground on each terminal on the EACV.

(To page 6-194)

(1.6ℓ)



(1.5ℓ)



(cont'd)

Troubleshooting Flowchart —— EACV (cont'd)

(From page 6-193)

Does continuity exist ?
- YES → **Replace EACV.**
- NO →

Turn the ignition switch ON.

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

Is there battery voltage ?
- YES → Disconnect the 17P connector from the ECU.
  - Is there battery voltage ?
    - YES → **Repair short in BLU/YEL wire between ECU (A11) and EACV.**
    - NO → **Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.**
- NO →

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

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

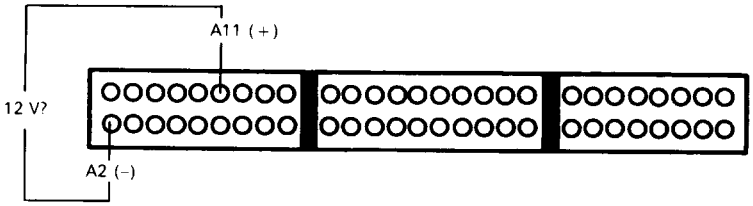
Turn the ignition switch OFF.

Reconnect the 2P connector to EACV.

Connect the PGM-FI test harness "A" connector to the main wire harness only, not the ECU (page 6-149).

Turn the ignition switch ON.

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



(To page 6-195)

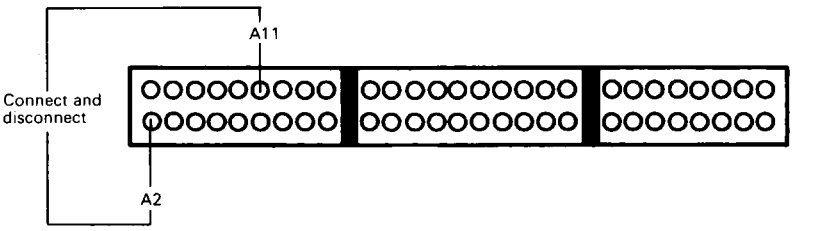
(From page 6-194)

Is there battery voltage ?

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

YES

Connect and disconnect A11 terminal to A2 terminal.



Does EACV click when the connector is connected and disconnected ?

NO → **Replace EACV.**

YES

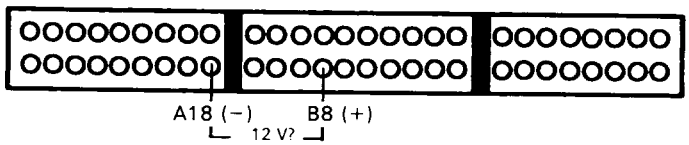
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — Air Conditioning Signal

Inspection of Air Conditioning Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-149). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.



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

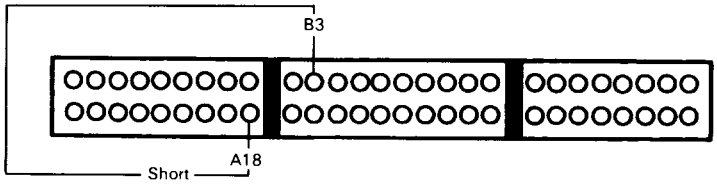
Is there battery voltage ?

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

YES

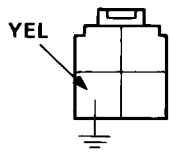
Reconnect "B" connector to the main wire harness.

Connect B3 terminal to A18 terminal.



Does A/C operate ?

NO → Connect the YEL terminal of the 4P connector on the A/C clutch relay to body ground.



YES

Start engine.

Blower switch ON.

(To page 6-197)

Does A/C operate ?

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

YES

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

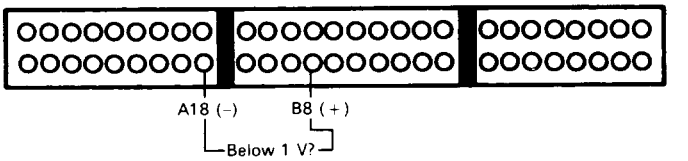
(From page 6-196)

A/C switch ON.

Does A/C operate ? NO → **See Air conditioner inspection (section 15).**

YES

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



Is voltage below 1 V ? NO → **Repair open in BLU/RED wire between ECU (B8) and A/C switch.**

YES

Air conditioning signal is OK.

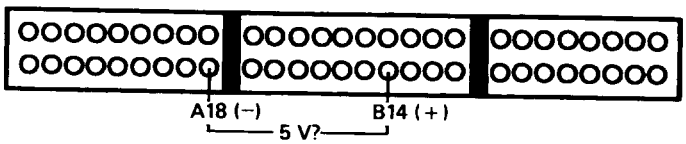
Troubleshooting Flowchart — Alternator FR Signal

Inspection of Alternator FR signal.

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

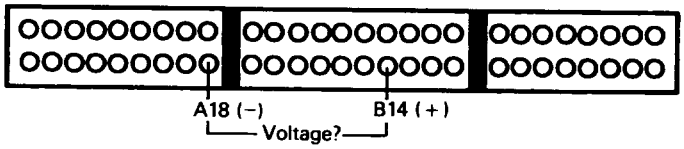
YES

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.

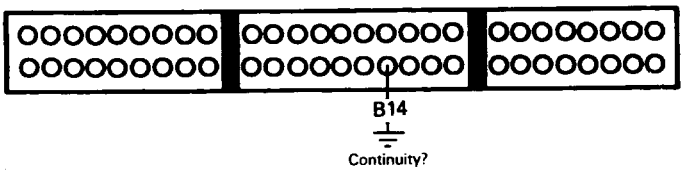
(To page 6-199)

(From page 6-198)

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

Disconnect the negative battery cable from the battery.

Check for continuity between B14 terminal and body ground.



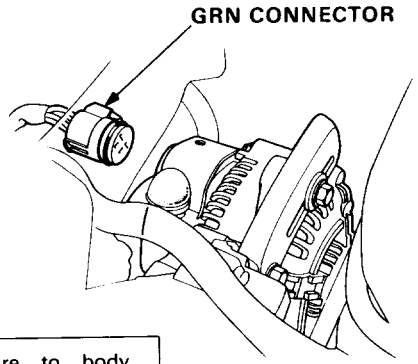
Does continuity exist ?

YES

Disconnect GRN connector from the alternator.

NO

Disconnect GRN connector from the alternator.



Connect BLU wire to body ground.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

NO

See Alternator Inspection (section 16).

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

NO

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

See Alternator Inspection (section 16).

- **Repair open in BLU wire between ECU (B14) and C210 connector, or YEL wire between C101 connector and alternator (1.5 ℓ).**
- **Repair open in BLU wire between ECU (B14) and alternator (1.6 ℓ).**

Troubleshooting Flowchart —— A/T Shift Position Signal [A/T]

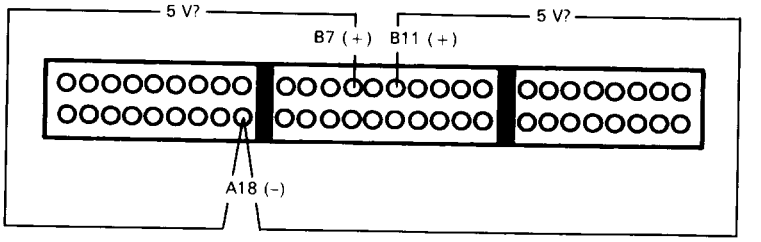
This signals the PGM-FI ECU when the transmission is in Neutral , Park or D4.

Inspection of A/T Shift Position Signal

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



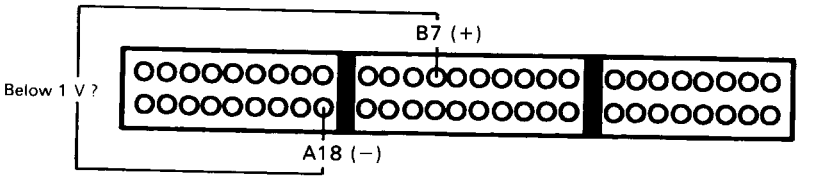
Is there approx. 5 V ?

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

YES

Reconnect "B" connector to the main wire harness.

Measure voltage between B7 (+) terminal and A18 (–) terminal in Neutral position.

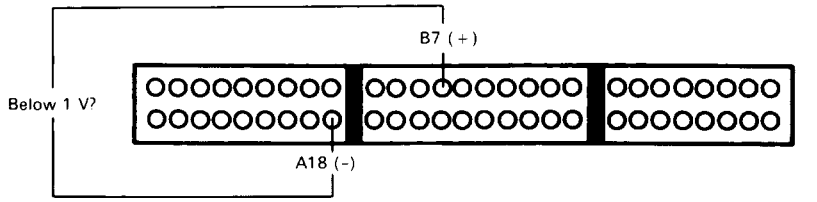


Is voltage below 1V ?

NO →
- **Repair open in GRN wire between ECU (B7) and shift position console switch.**
- **See shift position console switch inspection (section 16).**

YES

Measure voltage between B7 (+) terminal and A18 (–) terminal in Park position.



(To page 6-201)

(From page 6-200)

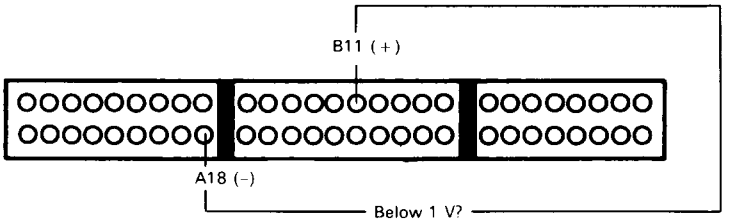
Is voltage below 1V ?

NO

See shift position console switch inspection (section 16).

YES

Measure voltage between B11 (+) terminal and A18 (–) terminal in D4 position.



Is voltage below 1V ?

NO

- **Repair open in GRN/BLK wire between ECU (B11) and shift position console switch.**
- **See shift position console switch inspection (section 16).**

YES

A/T shift position signal is OK.

Troubleshooting Flowchart — Starter Switch Signal

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

Inspection of Starter Switch Signal.

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

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

Is there battery voltage ?

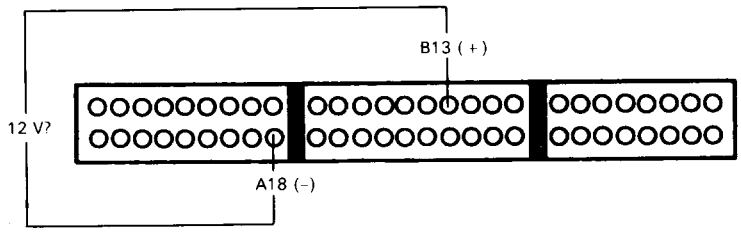
NO → Inspect No. 2 fuse.

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.**



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 6-204, 205)
   - Air conditioning signal (page 6-196)
   - Alternator FR signal (page 6-198)
   - A/T shift position signal (page 6-200)
   - Starter switch signal (page 6-202)
   - Hoses and connections
   - EACV and O-rings for mounting conditions.

2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 6-204, 205).

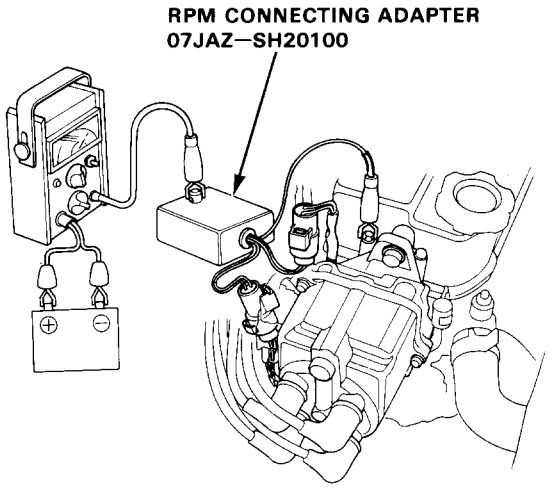
   ● If the idle speed still cannot be adjusted to specification (and LED does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Idle Control System

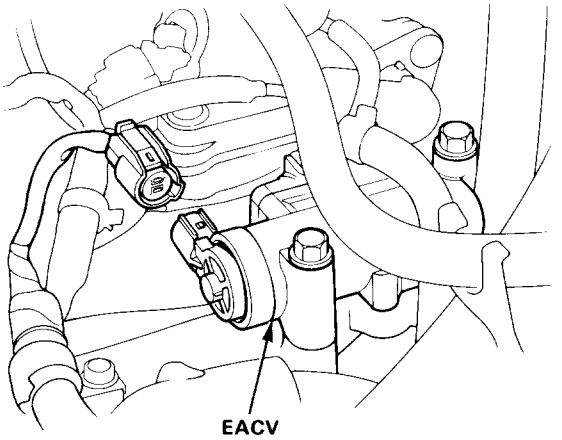
Idle Speed Setting [1.5 ℓ]

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.



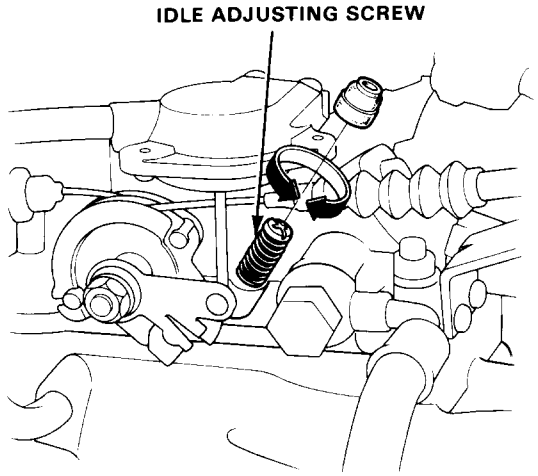
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be:

Manual	625±50 min^{-1} (rpm)
Automatic	625±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 6-236).



5. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.
6. Idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not oparating for one minute, then check the idle speed.

Idle speed should be:

Manual	780±50 min^{-1} (rpm)
Automatic	780±50 min^{-1} (rpm) (in N or P)

7. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
   If applicable, with Automatic transmission models, idle the engine for one minute in gear (except N or P) and check the idle speed.
   Idle Speed should be: 780±50 min^{-1} (rpm)
8. Idle the engine for one minute with heater fan switch at HI (right end) and air conditioner on, then check the idle speed.

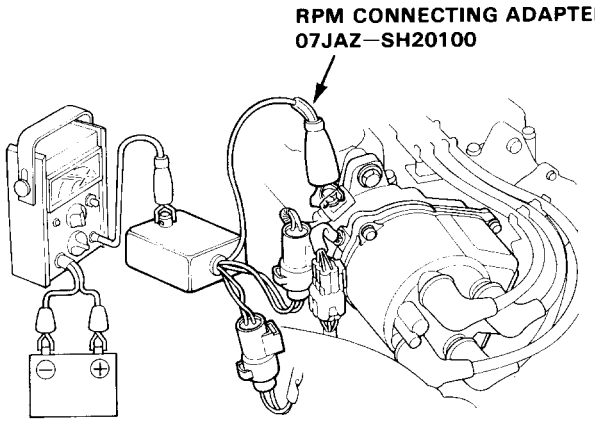
   Idle Speed should be: 780±50 min^{-1} (rpm)

   NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-192.

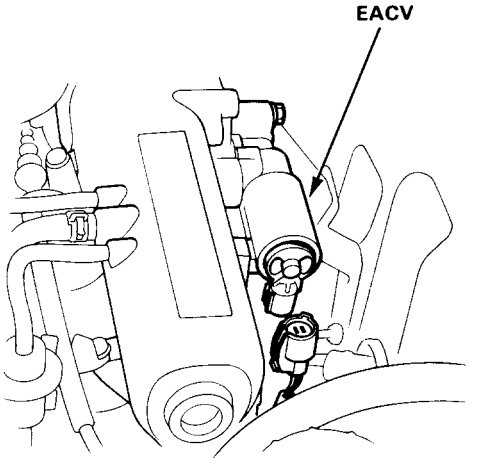
Idle Speed Setting [1.6 ℓ]

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.

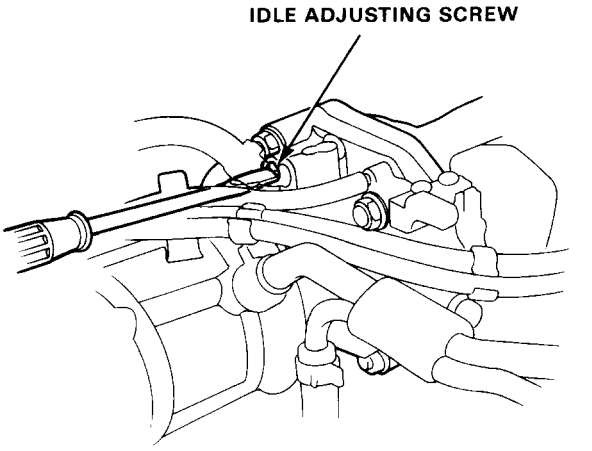


4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   Idle speed should be: 650±50 min^{-1} (rpm)

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

   NOTE: If the idle speed is excessively high, check the throttle control system (page 6-237).



5. Reconnect the 2P connector on the EACV, then remove HAZARD fuse in the main fuse box for 10 seconds to reset ECU.
6. Idle the engine with no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not oparating for one minute, then check the idle speed.

SOHC With CATA	750±50 min^{-1} (rpm)
SOHC Without CATA	780±50 min^{-1} (rpm)
DOHC	800±50 min^{-1} (rpm)

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

SOHC With CATA	750±50 min^{-1} (rpm)
SOHC Without CATA	780±50 min^{-1} (rpm)
DOHC	800±50 min^{-1} (rpm)

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

   Idle Speed should be:

SOHC	780±50 min^{-1} (rpm)
DOHC	800±50 min^{-1} (rpm)

NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-192.

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.

1.5 ℓ

PAGE / SUB SYSTEM / SYMPTOM		FUEL INJECTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	FUEL TANK	CONTAMI-NATED FUEL
		209	217	219	219	221	223	*
ENGINE WON'T START		③		③	①	②		
DIFFICULT TO START ENGINE WHEN COLD		③	③	②	①			
ROUGH IDLE		①	②					③
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					③
	FAILS EMISSION TEST	①	②					
	LOSS OF POWER	③	③	①	③			②

1.6 ℓ

PAGE / SUB SYSTEM / SYMPTOM		FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	FUEL TANK	CONTAMI-NATED FUEL
		213	217	217	219	219	221	223	*
ENGINE WON'T START			③		③	①	②		
DIFFICULT TO START ENGINE WHEN COLD		③			②	①			
ROUGH IDLE		①		②					③
FREQUENT STALLING	WHILE WARM-ING UP	①			②	③			
	AFTER WARM-ING UP	①		③	③	②			
POOR PERFORMANCE	MISFIRE OR ROUGH RUN-NING	①		②					③
	FAILS EMISSION TEST	①		②					
	LOSS OF POWER			③	①	③			②

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

Fuel Pressure

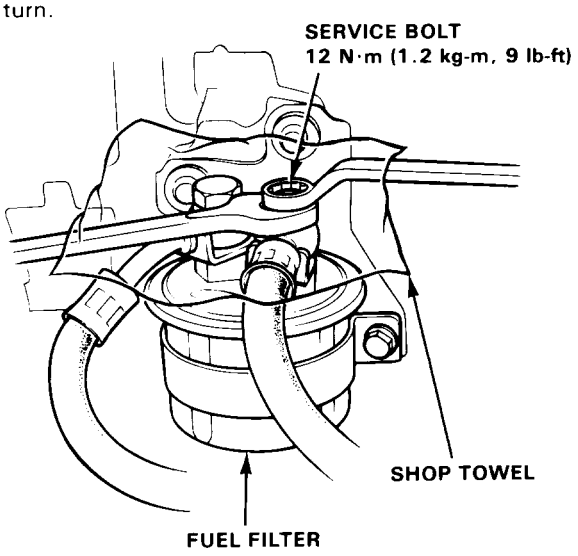
Relieving

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:

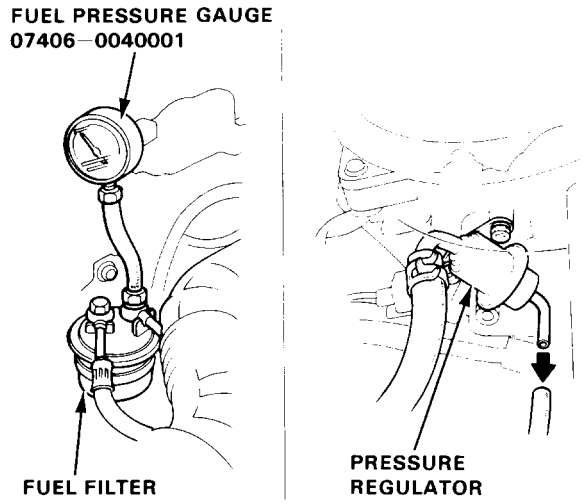
- A fuel pressure gauge can be attached at the 6 mm service bolt hole.
- Always replace the washer between the service bolt and the special banjo bolt, whenever the service bolt is loosened to relieve fuel pressure.
- Replace all washers whenever the bolts are removed to disassemble parts.

Inspection

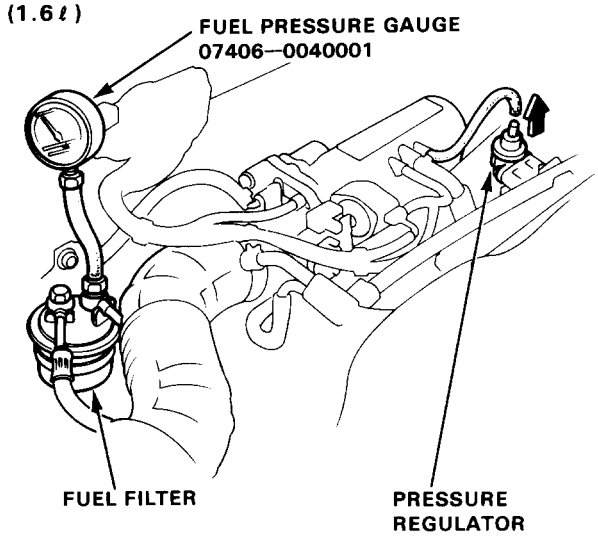
1. Relieve fuel pressure.
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected.

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

(1.5 ℓ)



(1.6 ℓ)



(cont'd)

Fuel Pressure (cont'd)

- If the fuel pressure is not as specified, first check the fuel pump (page 6-219), 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 6-217).

— If the pressure is lower than specified, inspect for:
  - Clogged fuel filter.
  - Pressure regulator failure (page 6-217).
  - Leakage in the fuel line.

Fuel Injectors [1.5 ℓ]

Troubleshooting Flowchart

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

- **Check Engine warning light is 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 → (To page 6-210)

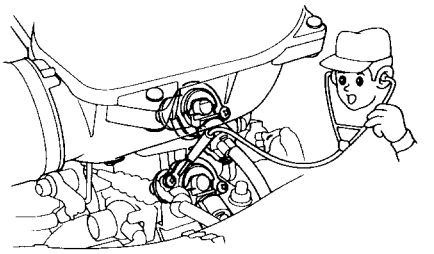
YES

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

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

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 6-210)

(cont'd)

Fuel Injectors [1.5 ℓ]

Troubleshooting Frowchart (cont'd)

(From page 6-209)

Turn the ignition switch OFF.

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

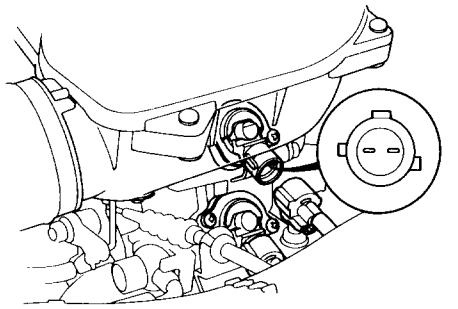
Measure resistance between the 2 terminals of the injector.

(From page 6-209)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



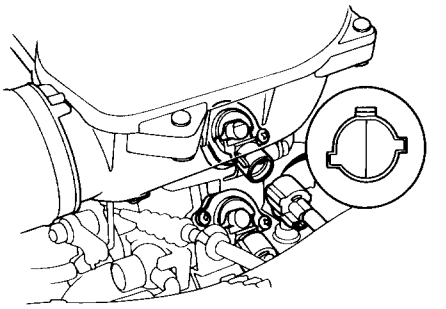
Is resistance 0.6—1.6 Ω (main injector), 7—10 Ω (Aux. injector)?

NO → **Replace the injector.**

YES

Turn the ignition switch ON.

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



Is there battery voltage for two seconds?

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

YES

(From page 6-209)

(From page 6-210)

Measure voltage between the following terminals,
- Main injector: RED (+) terminal and body ground.
- Aux. injector: YEL (+) terminal and body ground.

Is there battery voltage? YES → Disconnect C451 (17P) connector from the ECU.

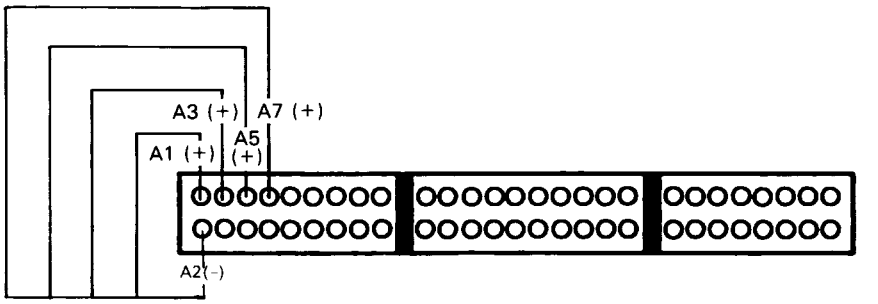
NO

Turn the ignition switch OFF.

Reconnect the 2P connector to the injector.

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

- Main injector: Attach the positive probe of the voltmeter to A5, A7 terminals and the negative probe to A2 terminal.
- Aux. injector: Attach the positive probe of the voltmeter to A1, A3 terminals and the negative probe to A2 terminal.



Turn the ignition switch ON.

Is there battery voltage for two seconds? NO → **Repair open in the wire between the ECU (A1, A3, A5 or A7) and the injector.**

YES

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

Disconnect C451 (17P) connector from the ECU.

Is there battery voltage ? YES → **Repair short in the wire between the ECU (A1, A3, A5 or A7) and the injector.**

NO

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

(cont'd)

Fuel Injectors [1.5 ℓ]

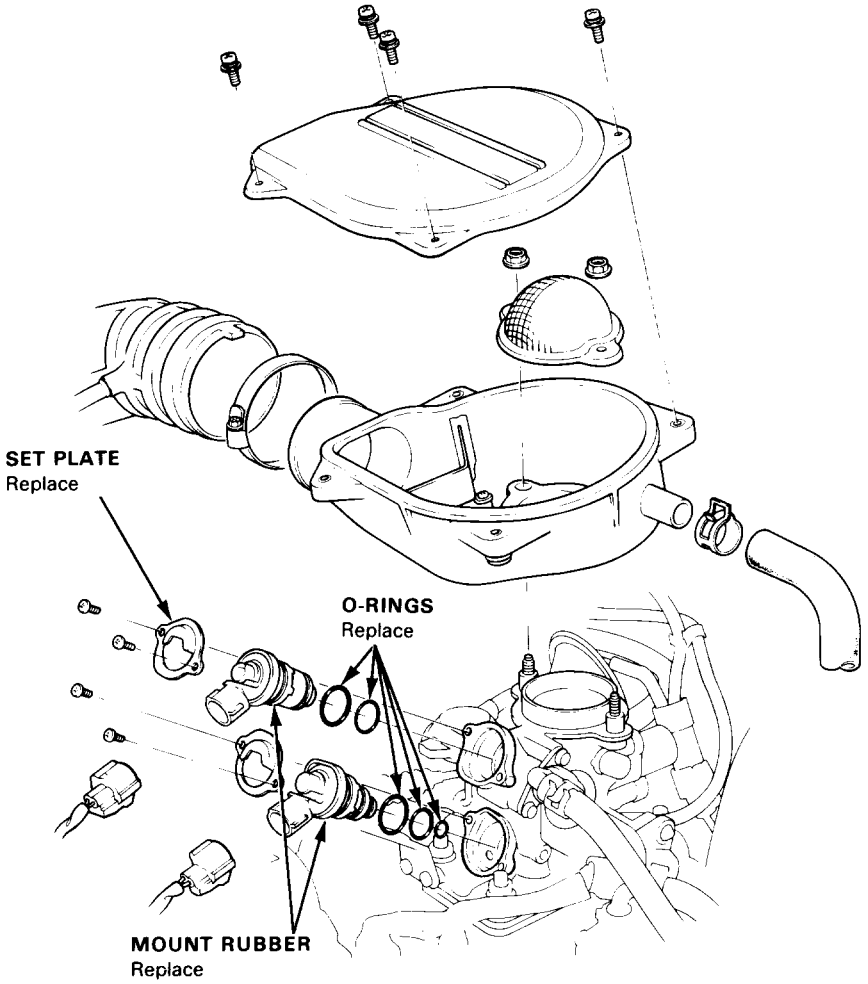
Replacement

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

1. Disconnect the battery negative cable from the battery.
2. Relieve fuel pressure (page 6-207).
3. Remove the air intake chamber.
4. Disconnect the 2P connector from the injector.
5. Loosen the screws, then remove the injector from the throttle body.

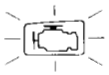
   NOTE: Place a rag or shop towel over the throttle body.
6. Coat new O-rings with clean engine oil and put them on the injector.
7. Insert the injector into the throttle body.

   NOTE: After the injector is inserted, be sure that it turns smoothly about 30°.
8. 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.

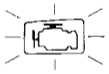


Fuel Injectors [1.6 ℓ]

Troubleshooting Flowchart



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



With CATA

- **Check Engine warning light is on.**
- **LED indicates CODE 16.**

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

Turn the ignition switch OFF.

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

Turn the ignition switch to START position.

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

Does the engine start ?

NO

YES

With CATA only

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

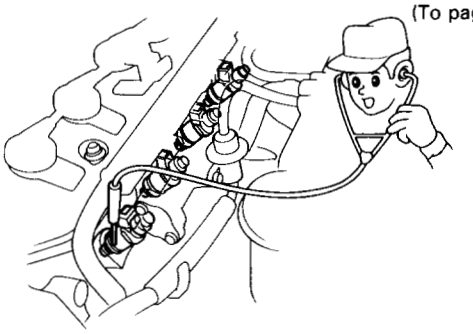
NO

Intermittent failure (Test drive may be necessary.)

YES

(To page 6-214)

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 6-214)

(cont'd)

Fuel Injectors [1.6 ℓ]

Troubleshooting Flowchart (cont'd)

(From page 6-213)

Turn the ignition switch OFF.

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

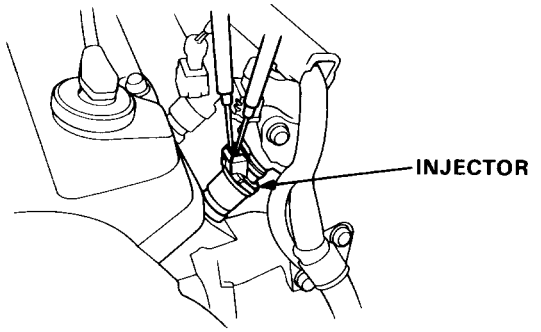
Measure resistance between the 2 terminals of the injector.

(From page 6-213)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



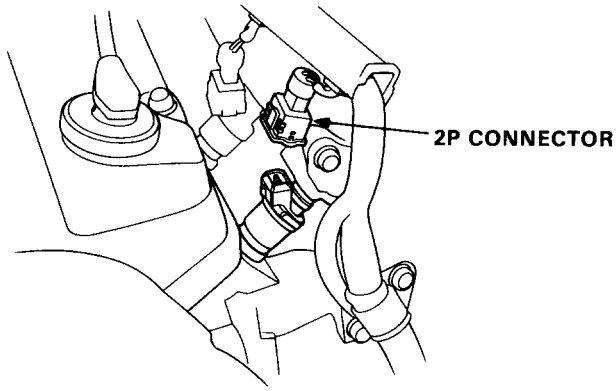
Is there 1.5—2.5Ω ?

NO → **Replace the injector.**

YES

Turn the ignition switch ON.

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



(To page 6-215)

(From page 6-214)

Is there battery voltage ?

NO

Turn the ignition switch OFF.

Disconnect 6P connector on the injector resistor.

Turn the ignition switch ON.

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

Is there battery voltage ?

NO

Repair open in the YEL/BLK wire between the injector resistor and the main relay.

YES

Replace the injector resistor.

YES

Measure voltage between the following terminals,
- No. 1 injector: RED/BLK (+) terminal and BRN (–) terminal.
- No. 2 injector: RED/BLK (+) terminal and RED (–) terminal.
- No. 3 injector: RED/BLK (+) terminal and LT BLU (–) terminal
- No. 4 injector: RED/BLK (+) terminal and YEL (–) terminal

Is there battery voltage ?

YES

Disconnect C451 (17P) connector from the ECU.

NO

Is there battery voltage ?

YES

Repair short in the wire between the ECU (A1, A3, A5 or A7) and the injector.

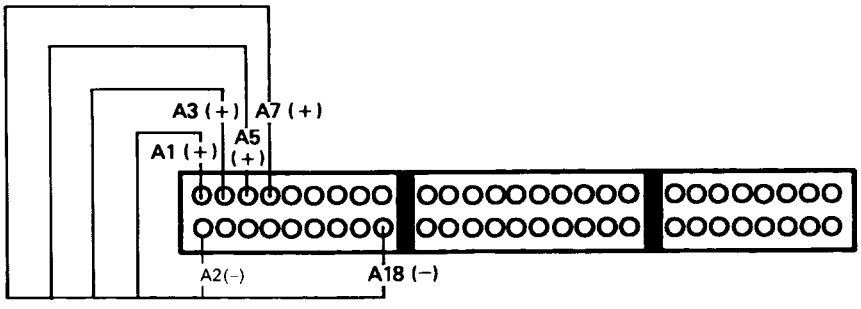
NO

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

Reconnect the 2P connector to the injector.

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

Measure voltage between A2 (–) terminal and following terminals,
- No.1 injector: A1 (+) terminal.
- No.2 injector: A3 (+) terminal.
- No.3 injector: A5 (+) terminal.
- No.4 injector: A7 (+) terminal.



Is there battery voltage ?

NO

Repair open in the wire between the ECU (A1, A3, A5 or A7) and the injector.

YES

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

Fuel Injectors [1.6 ℓ]

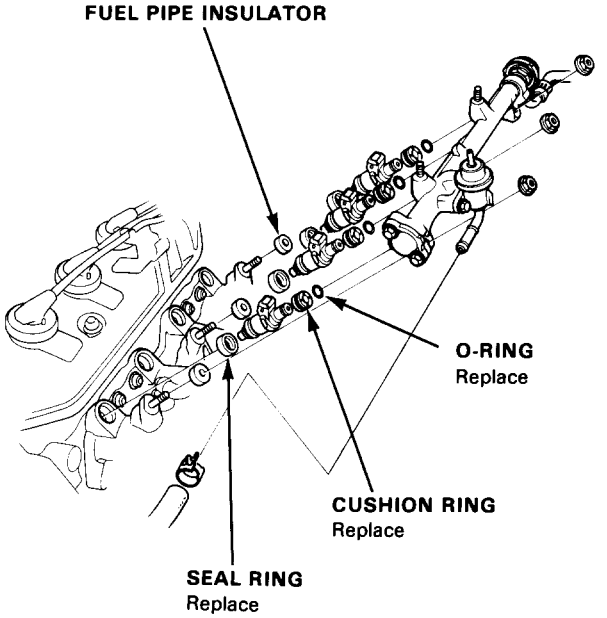
Replacement

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

1. Disconnect the battery negative cable from the battery negative terminal.
2. Relieve fuel pressure (page 6-207).
3. Disconnect the connectors from the injectors.
4. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

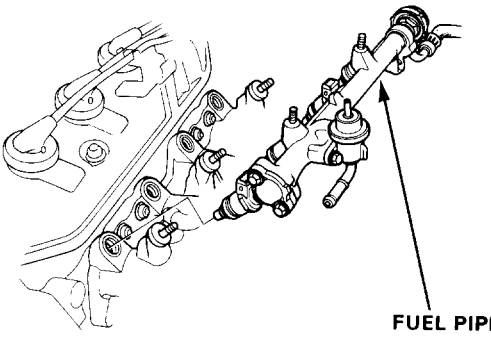
   NOTE: Place a rag or shop towel over the hoses before disconnecting them.

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

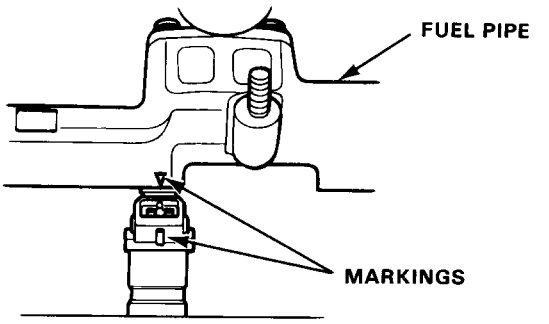


8. Slide new cushion rings onto the injectors.
9. Coat new O-rings with clean engine oil and put them on the injectors.
10. Insert the injectors into the fuel pipe first.
11. Coat new seal rings with clean engine oil and press them into the intake manifold.
12. Install the injectors and fuel pipe assembly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

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



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



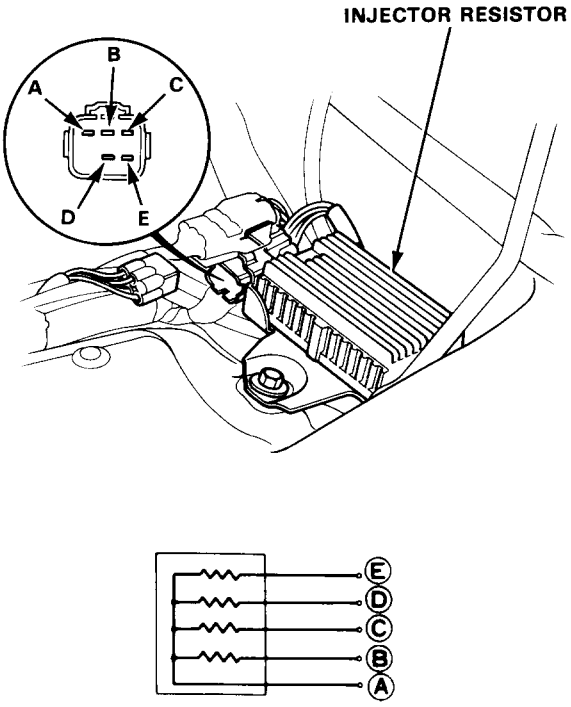
14. Install and tighten the retainer nuts.
15. Connect the vacuum hose and fuel return hose to the pressure regulator.
16. Install the connectors on the injectors.
17. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approximately two seconds, the fuel pressure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

Injector Resistor [1.6 ℓ]

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

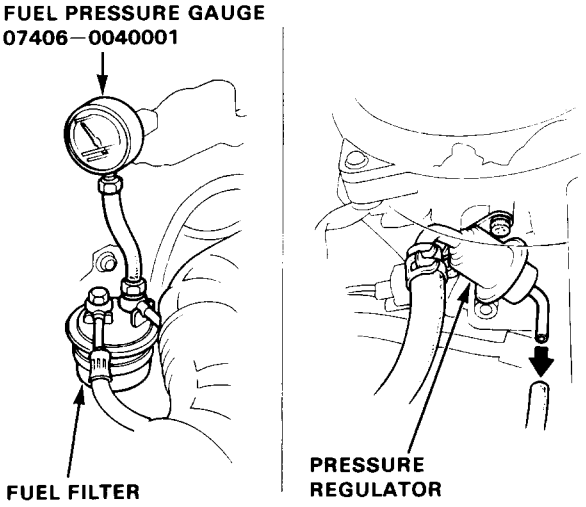
Testing

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

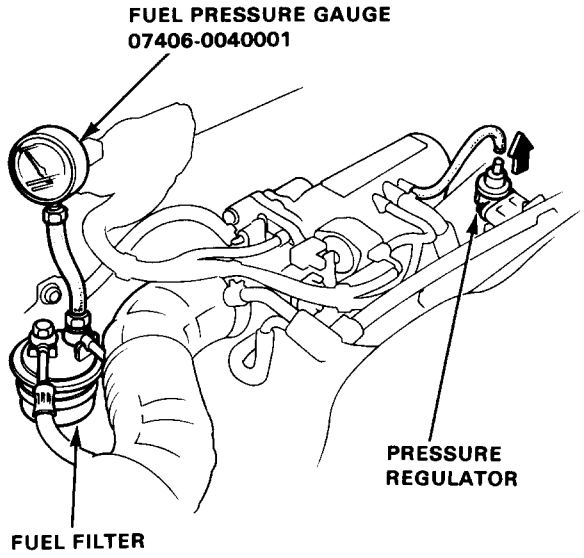
1. Attach a pressure gauge to the service port of the fuel filter (page 6-207).

   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)

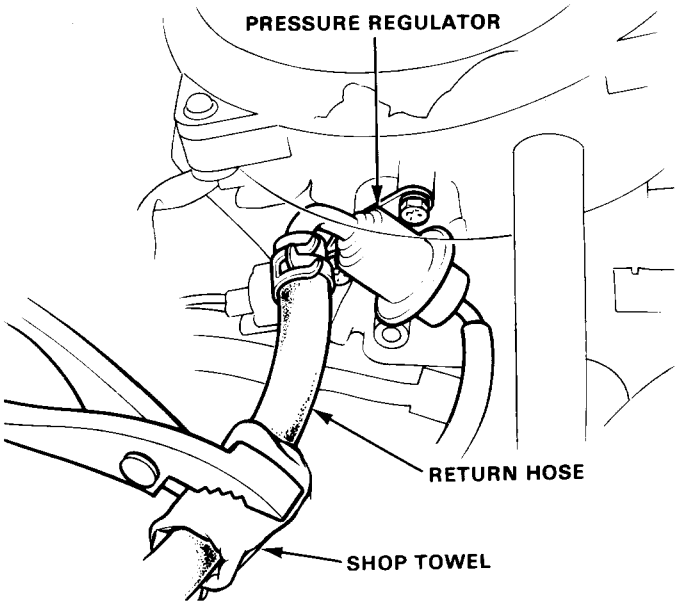
Pressure Regulator

Testing (cont'd)

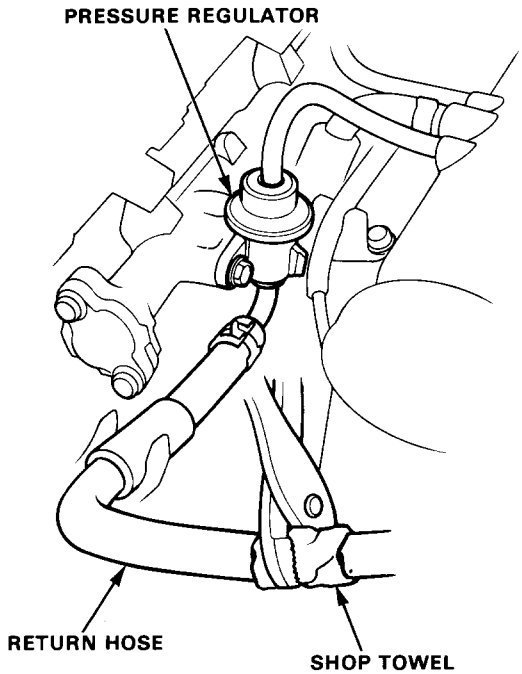
2. Check that the fuel pressure rises when the vacuum hose from the regulator is disconnected.

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

(1.5 ℓ)



(1.6 ℓ)



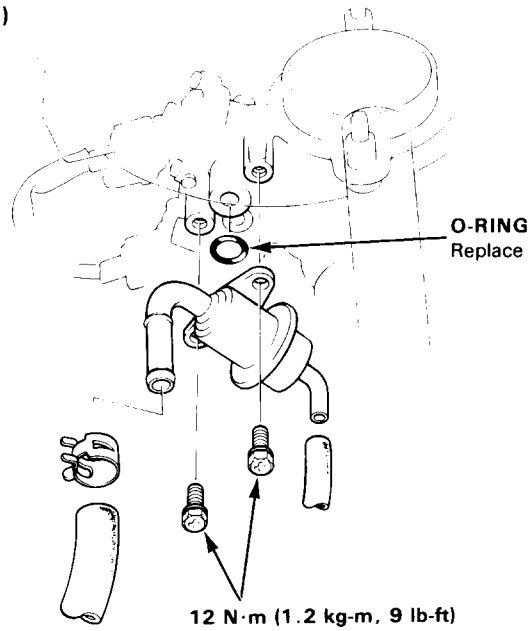
– If the pressure does not rise, replace the regulator and retest.

Replacement

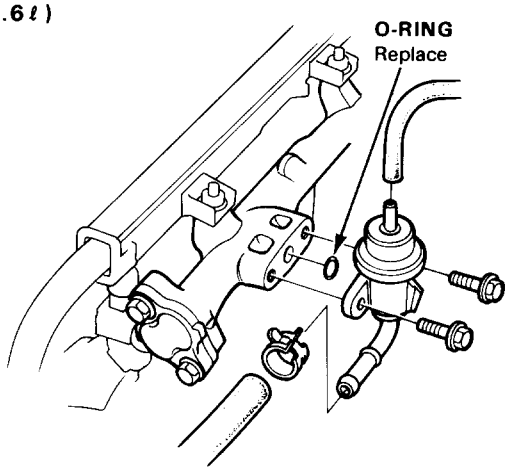
WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Disconnect the negative terminal of the battery.
2. Place a shop towel under pressure regulator, then relieve fuel pressure (page 6-207).
3. Disconnect the vacuum hose and fuel return hose.
4. 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.

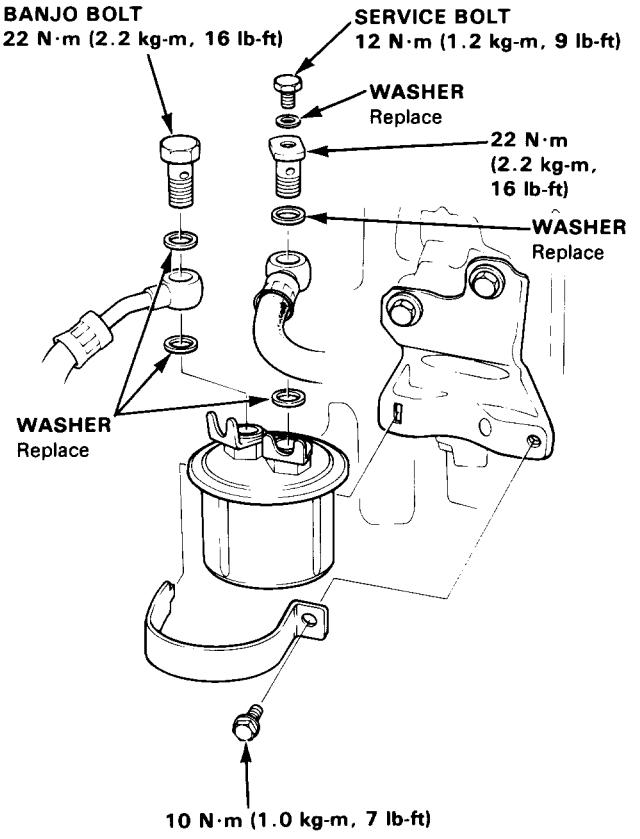
Fuel Filter

Replacement

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

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

1. Disconnect the battery cable from the negative terminal.
2. Place a shop towel under and around the fuel filter.
3. Relieve fuel pressure (page 6-207).
4. Remove the 12 mm banjo bolt and the fuel feed pipe from the filter.
5. Remove the fuel filter clamp and fuel filter.
6. When assembling, use new washers, as shown.

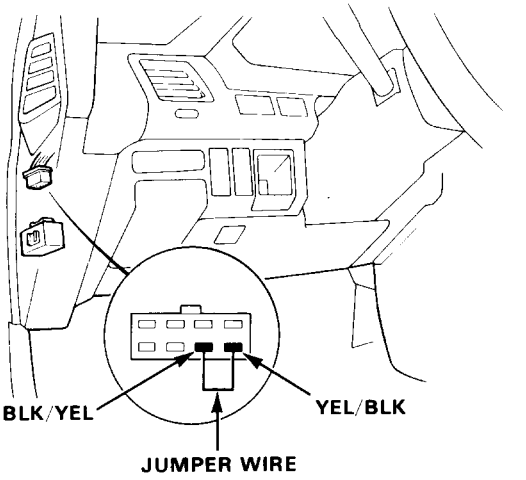


Fuel Pump

Testing

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

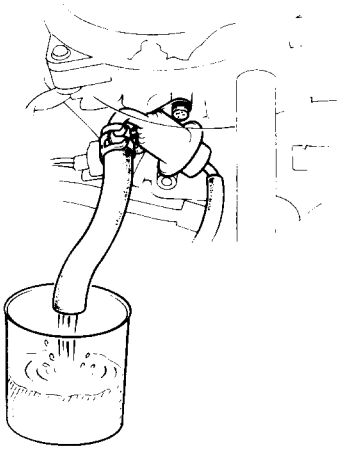
1. With the ignition switch OFF, disconnect the connector from the main relay at left side of the cowl.
2. Connect the BLK/YEL wire and YEL/BLK wire with a jumper wire.



3. Relieve fuel pressure as described on page 6-207 then tighten the service bolt.
4. Disconnect the fuel return hose from the regulator.
5. Turn the ignition switch ON for 10 seconds and measure the amount of fuel flow.

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

(1.5 ℓ)

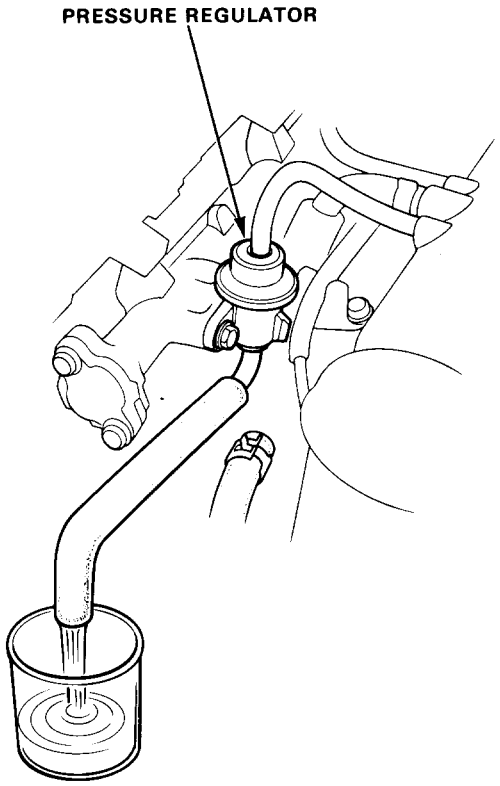


(cont'd)

Fuel Pump

Testing (cont'd)

(1.6ℓ)



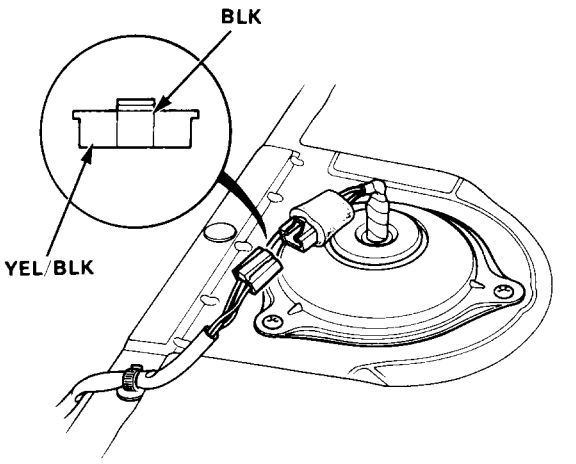
- If fuel flow is less than 230 cm^3 (7.8 oz), or there is no fuel flow, check for:
  - Clogged fuel filter.
  - Clogged fuel line.
  - Pressure regulator failure (page 6-217).

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you hold your ear to the fuel filler port with the fuel filler cap removed. If the pump does not make noise, check as follows:

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

   CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

3. Check that battery voltage is avaiable at the fuel pump connector when the ignition switch is turned ON (positive probe to the YEL/BLK wire, negative probe to the BLK wire).

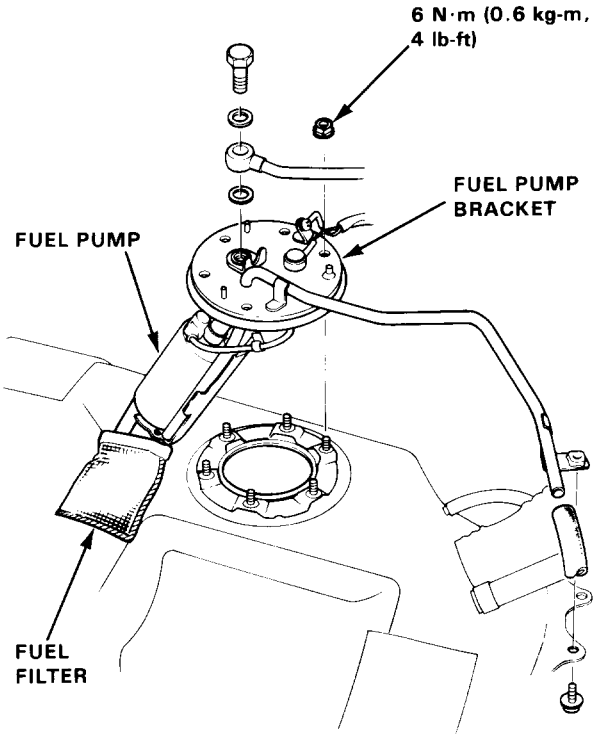


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness (page 6-221).

Replacement

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

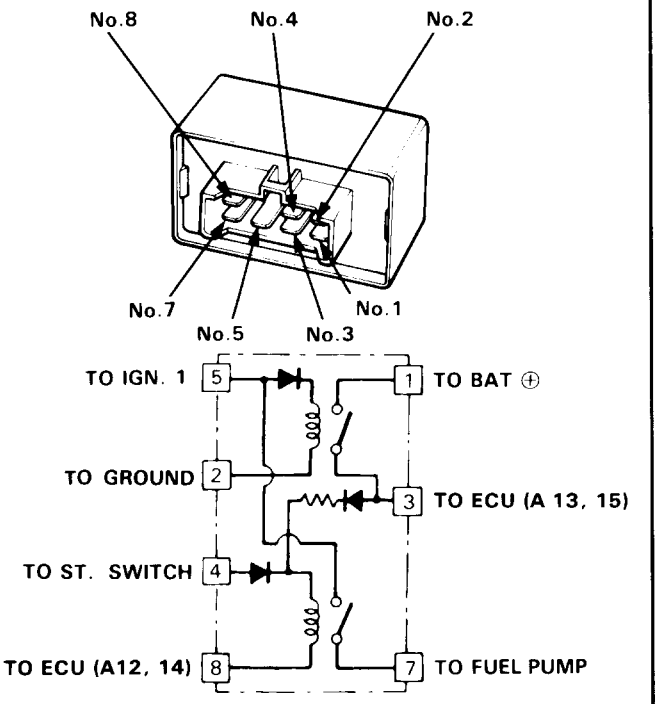
1. Remove the fuel tank (page 6-223 or 224).
2. Remove the fuel pump mounting nuts.
3. Remove the fuel pump from the fuel tank.



Main Relay

Relay Testing

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

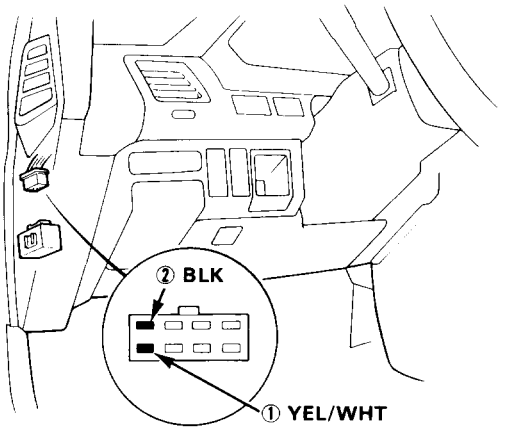


3. Attach the battery positive terminal to the No. 5 terminal and the battery negative terminal to the No. 2 terminal of the main relay. Then check that there is continuity between the No. 1 terminal and No. 3 terminal of the main relay.
   - If there is continuity, go on to step 4.
   - If there is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

Main Relay

Harness Testing

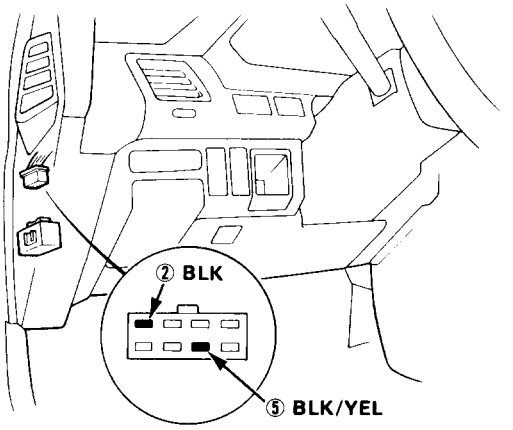
1. Keep the ignition switch in the OFF position.
2. Disconnect the main relay connector.
3. Check for continuity between the BLK wire ② in the connector and body ground.
4. Attach the positive probe of voltmeter to the YEL/WHT wire ① and the negative probe to the BLK wire ②.



Battery voltage should be available.

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

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

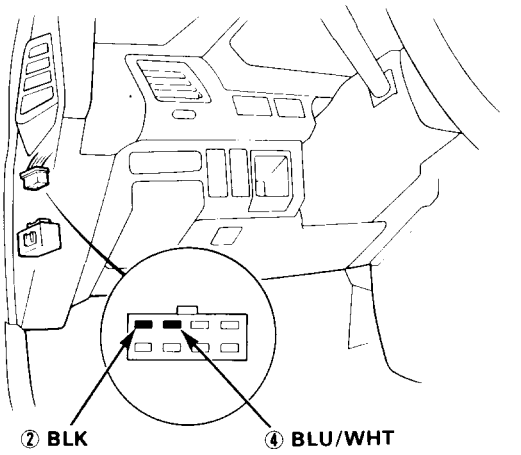


6. Turn the ignition switch ON.

Battery voltage should be available.

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

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

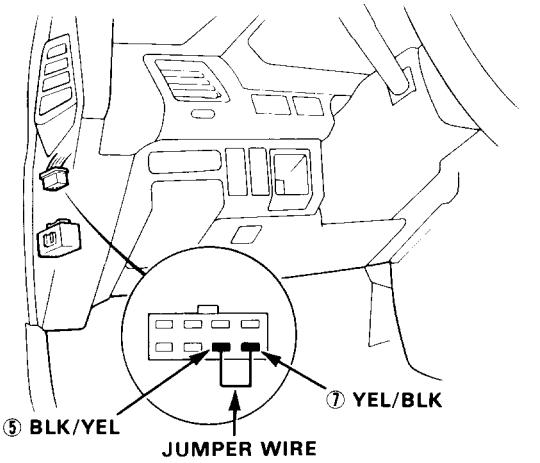


8. Turn the ignition switch to START position.

Battery voltage should be available.

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

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



10. Turn the ignition switch ON.

The fuel pump should work.

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

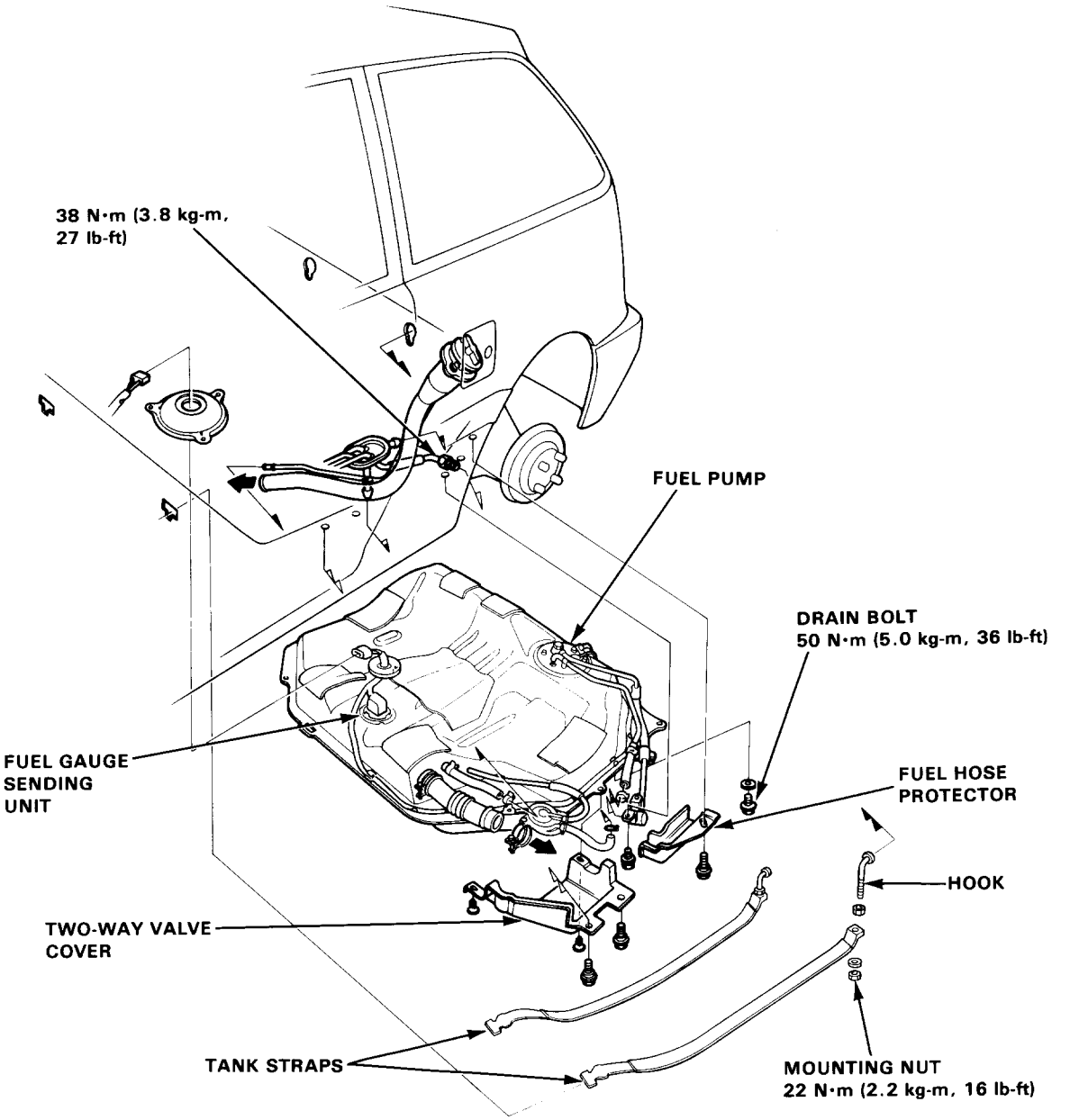
Fuel Tank

Replacement

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

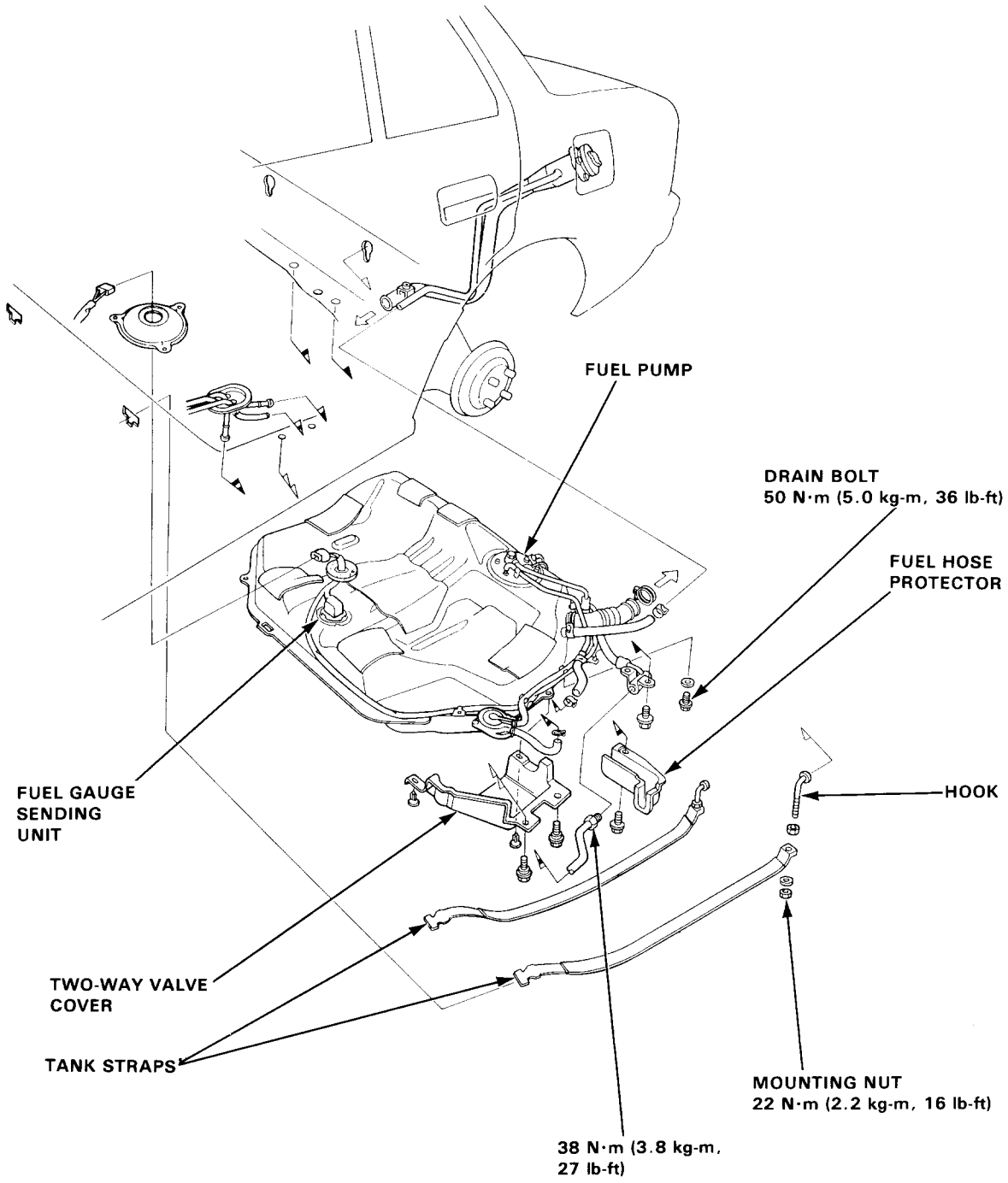
1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Remove the rear seat and disconnect the 3P connector.
4. Remove the two-way valve cover and fuel hose protector.
5. Disconnect the hoses.
   CAUTION: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

2D H/B:



Fuel Tank

4D:


FUEL PUMP
DRAIN BOLT
50 N·m (5.0 kg-m, 36 lb-ft)
FUEL HOSE
PROTECTOR
FUEL GAUGE
SENDING
UNIT
HOOK
TWO-WAY VALVE
COVER
TANK STRAPS
MOUNTING NUT
22 N·m (2.2 kg-m, 16 lb-ft)
38 N·m (3.8 kg-m,
27 lb-ft)

Air Intake System

System Troubleshooting Guide

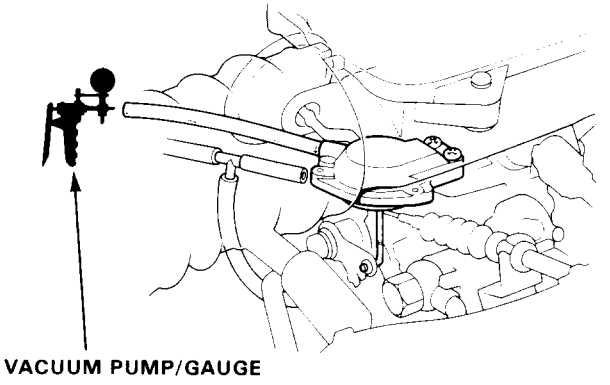
NOTE: Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows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

PAGE / SUB SYSTEM / SYMPTOM	THROTTLE CABLE	THROTTLE BODY	TANDEM CONTROL SYSTEM (1.5ℓ)	THROTTLE CONTROL SYSTEM
	226	228,230	232	236,237
ENGINE WON'T START				①
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	①	②		②
LOSS OF POWER	②	②	①	

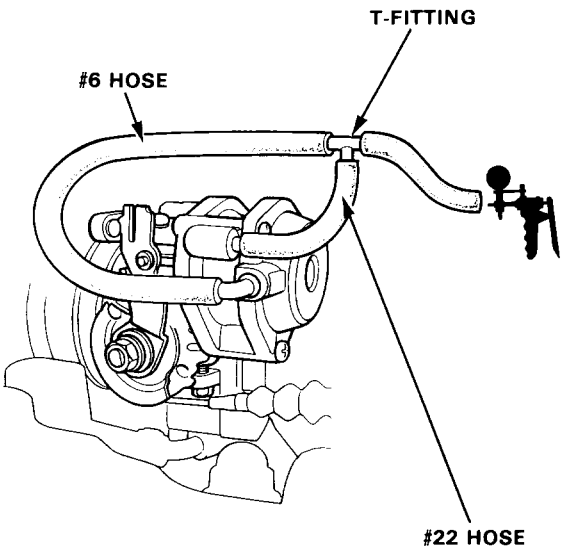
Throttle Cable

Inspection/Adjustment

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Check that the throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. ● On the 1.5 ℓ, disconnect #6 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.

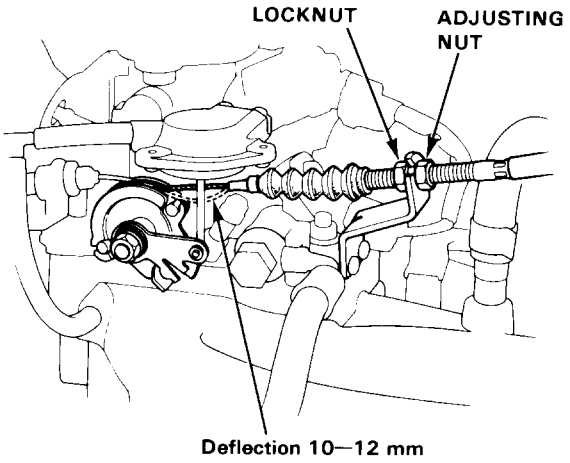


● On the 1.6 ℓ, disconnect #6 and #22 hoses from the dashpot diaphragm and connect a vacuum pump to the diaphragm using a T-fitting as illustrated bellow. Apply vacuum.

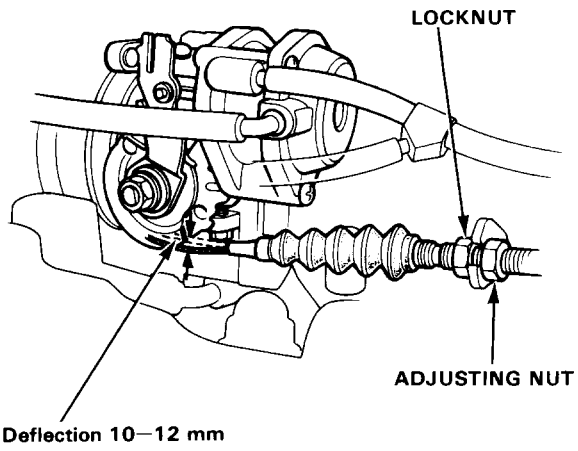


4. Check cable free play at the throttle linkage. Cable deflection should be 10—12 mm (0.39—0.47 in.)

(1.5 ℓ)



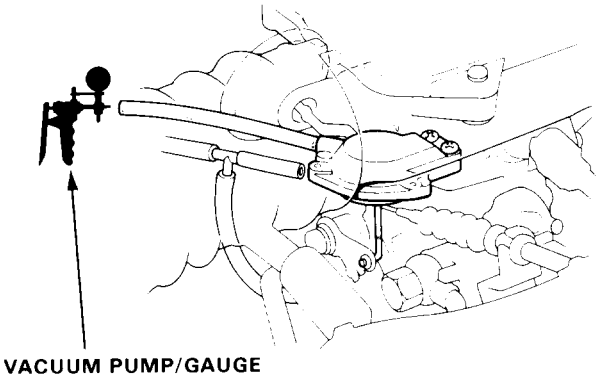
(1.6 ℓ)



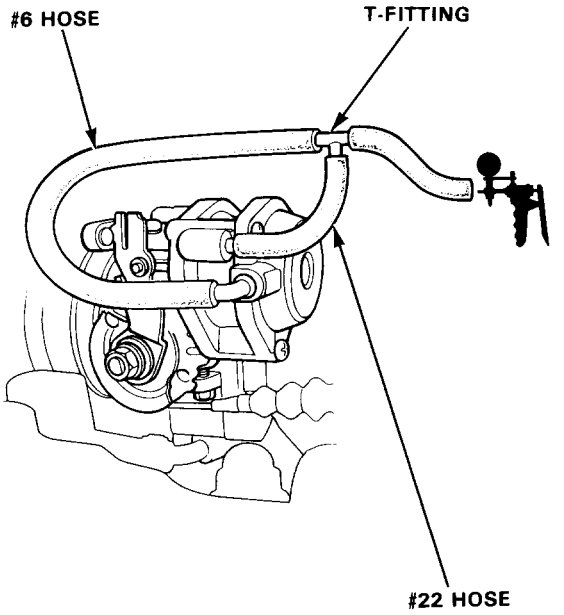
5. If deflection is not within specs, loosen the locknut and turn the adjusting nut until the deflection is as specified.
6. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure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

Installation

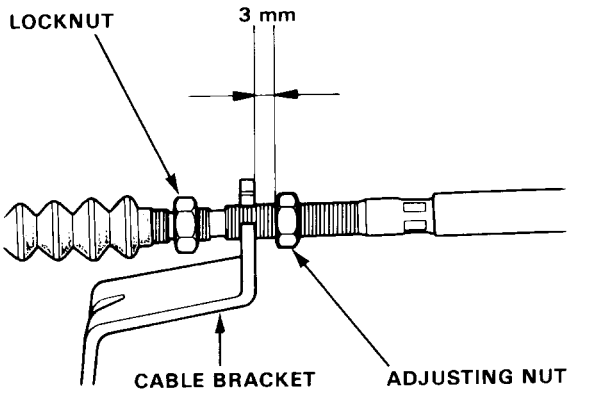
1. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the cable bracket.
2. Warm up the engine to normal operating temperature (the cooling fan comes on).
3. ● On the 1.5 ℓ, disconnect #6 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.



● On the 1.6 ℓ, disconnect #6 and #22 hoses from the dashpot diaphragm and connect a vacuum pump to the diaphragm using a T-fitting as illustrated bellow. Apply vacuum.



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



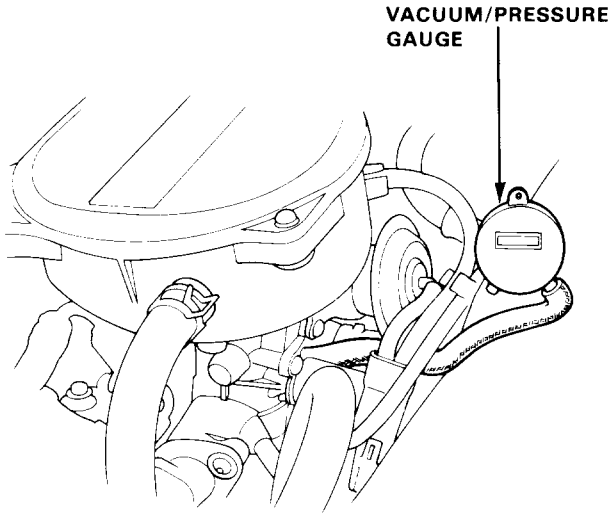
7. Disconnect the vacuum pump and connect the #6 (and #22, 1.6 ℓ) vacuum hose (s).

Throttle Body [1.5 ℓ]

Inspection

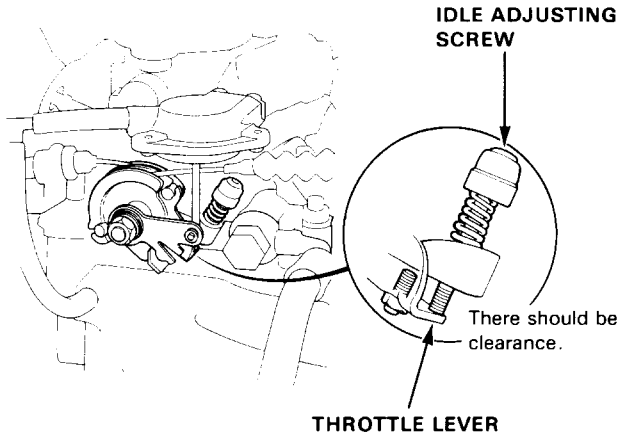
CAUTION: Do not adjust the throttle stop screw since it cannot be reset except at the factory.

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.



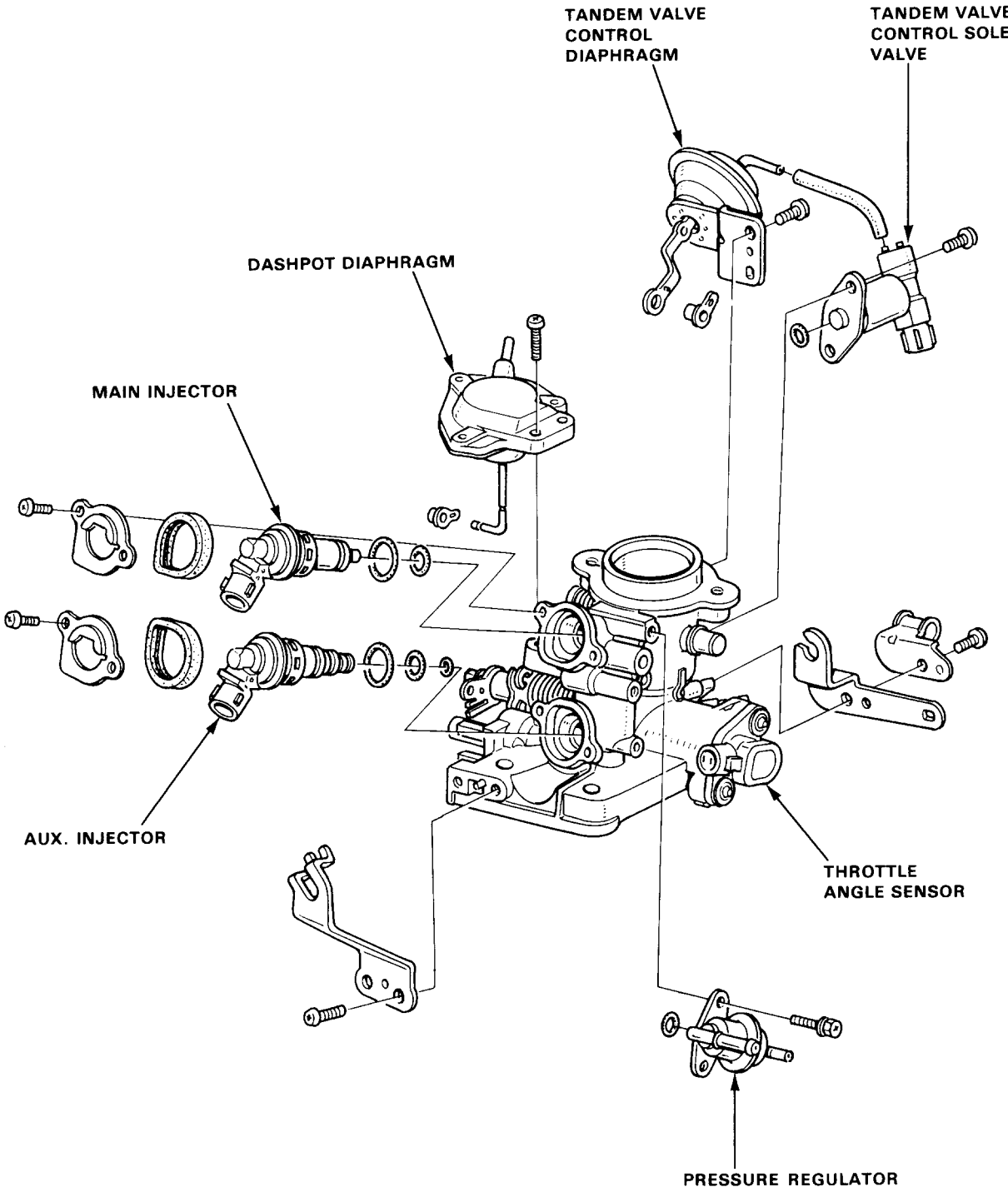
3. Allow the engine to idle and check that the gauge indicates little or no vacuum.
   - If there is measurable vacuum, check the throttle control system (page 6-236).
4. Check that vacuum increases when the throttle is opened slightly from idle.
   - If there is no increase in vacuum, check the canister 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 trottle 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.

Disassembly

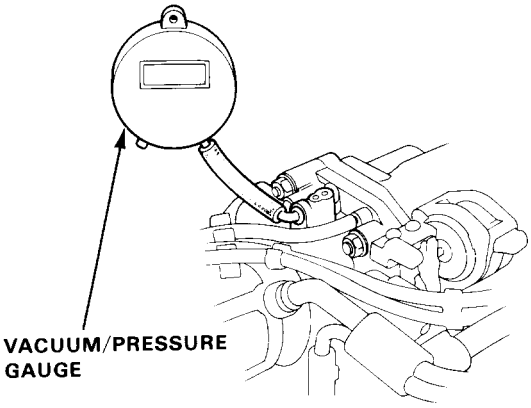


Throttle Body [1.6 ℓ]

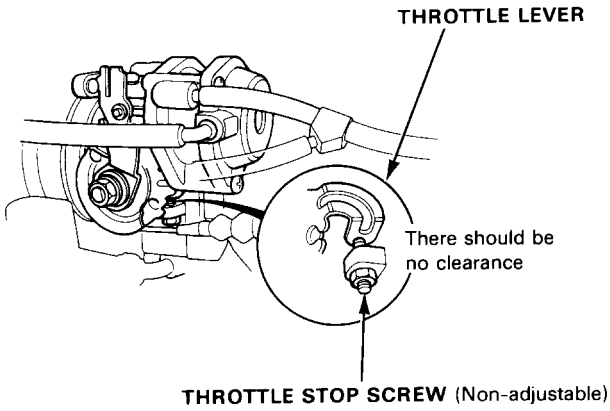
Inspection

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.

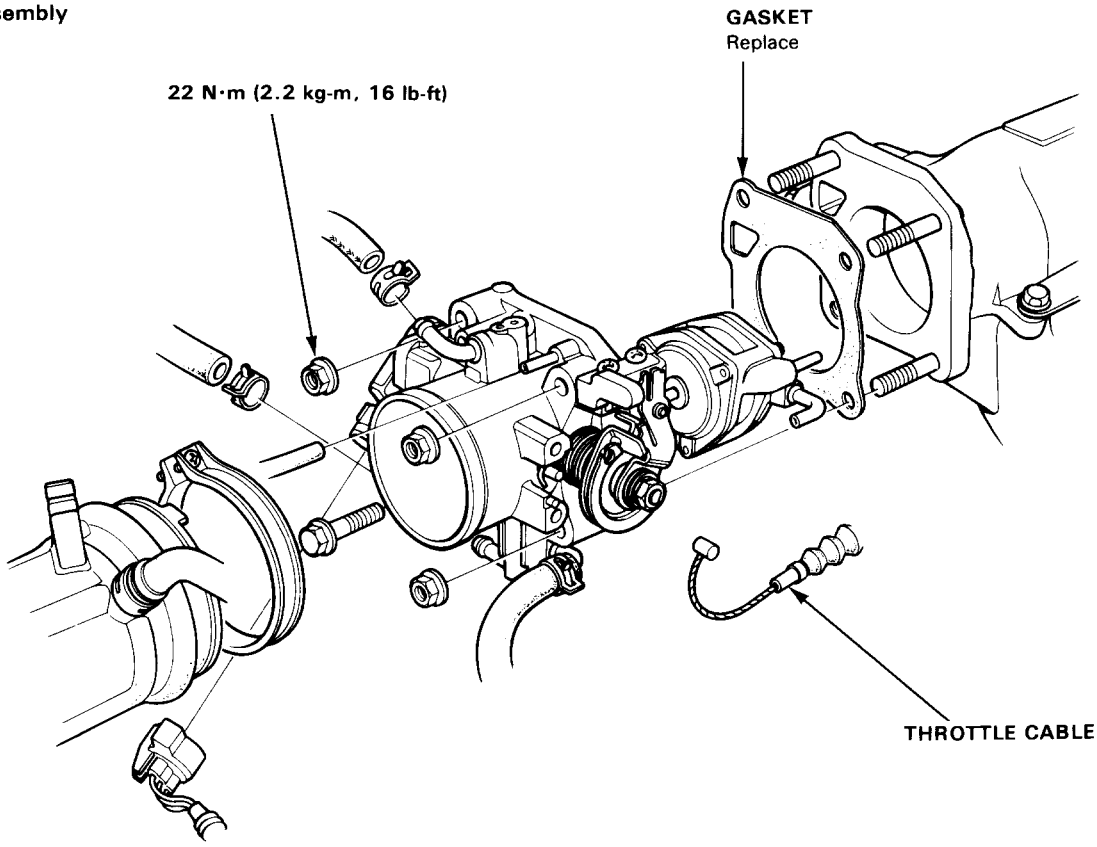


3. Allow the engine to idle and check that the gauge indicates no vacuum.
   - If there in vacuum, check the throttle control system (page 6-237).
4. Check that vacuum is indicated on the gauge when the throttle is opened slightly from idle.
   - If the gauge indicates no vacuum, check the canister port. If the canister port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly witout binding or sticking.
   - If there are any abnormalities in the above steps, check for:
     - Excessive wear or play in the throttle valve shaft.
     - Sticky or binding throttle lever at full close position.
     - Clearance between throttle stop screw and throttle lever at full close position.

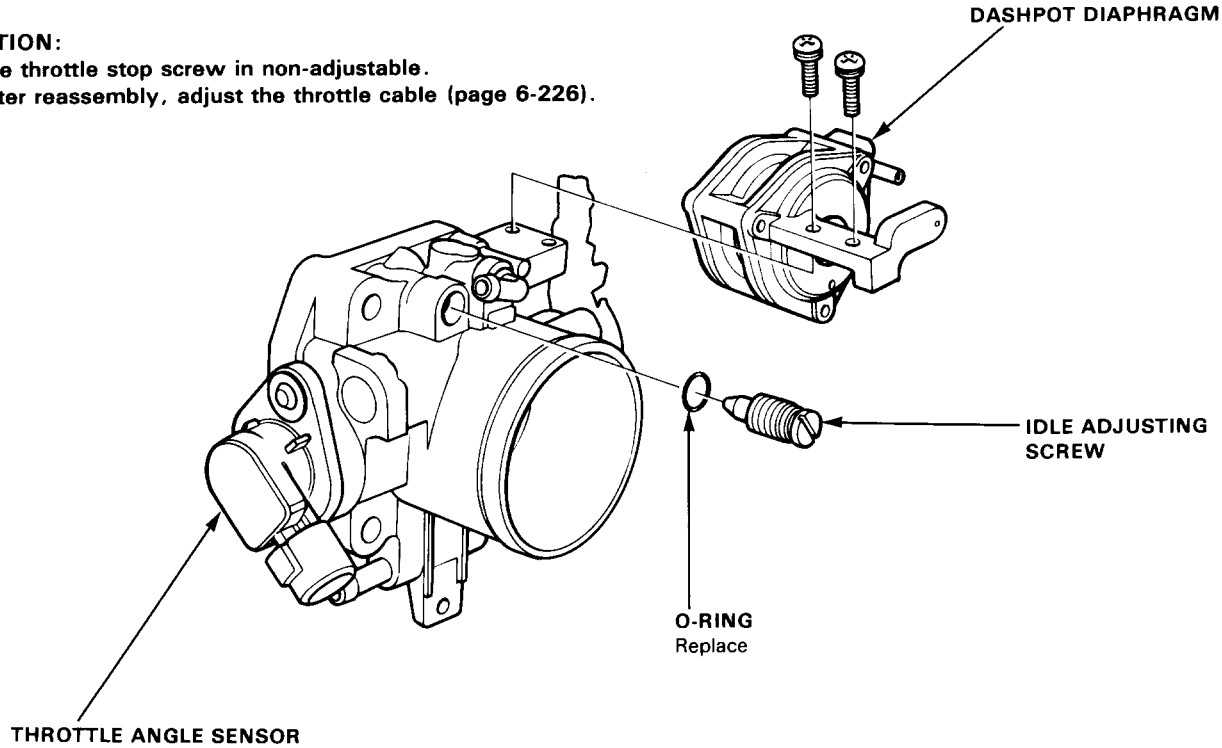


Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.

Disassembly

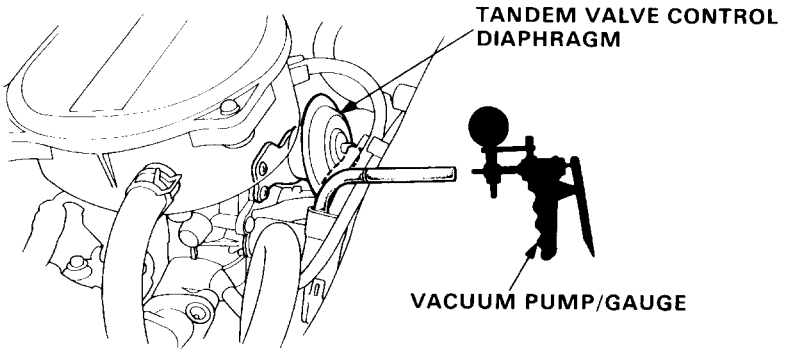


CAUTION:
- The throttle stop screw in non-adjustable.
- After reassembly, adjust the throttle cable (page 6-226).



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).

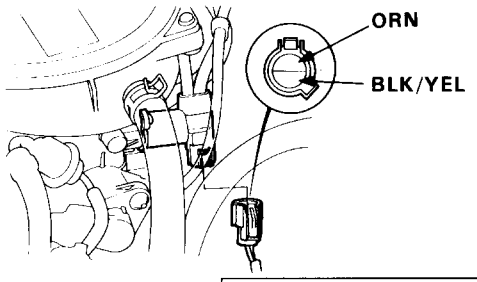
Is there vacuum ?
- YES → Disconnect the 2P connector from the tandem valve control solenoid valve.
  - Is there vacuum ?
    - YES → **Replace the solenoid valve.**
    - NO → Turn the ignition switch OFF.
      - Disconnect "B" connector from ECU.
      - Check for continuity to ground on the ORN wire.
        - 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.
    - (To page 6-233)
  - YES → (To page 6-233)

(From page 6-232)

(From page 6-232)

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 ?

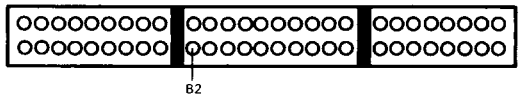
NO

Repair open in BLK/YEL wire between the 2P connector and No. 14 fuse.

YES

Turn the ignition switch OFF.

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



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.

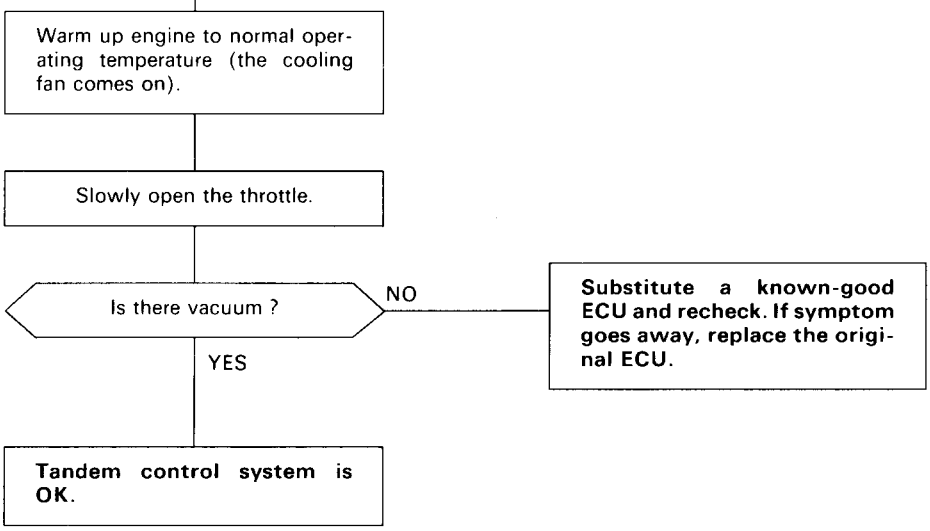
(To page 6-234).

(cont'd)

Tandem Control System [1.5 ℓ]

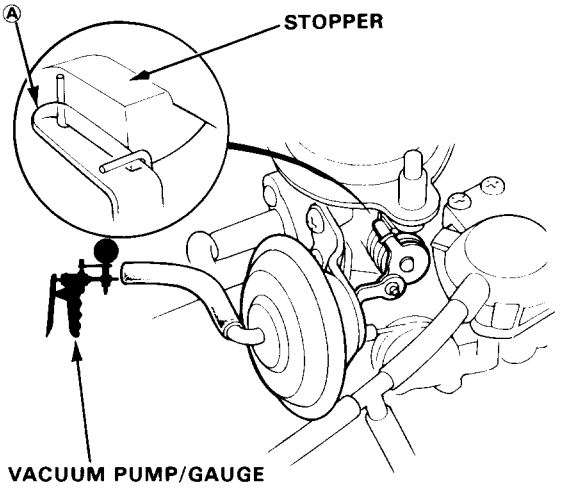
Trobleshooting Flowchart (cont'd)

(From page 6-233)



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.

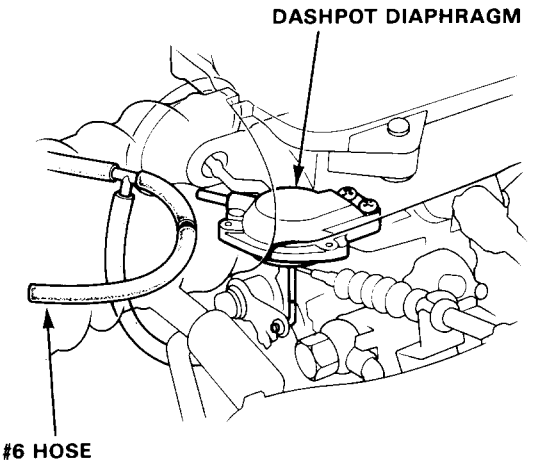
Throttle Control System [1.5 ℓ]

Testing

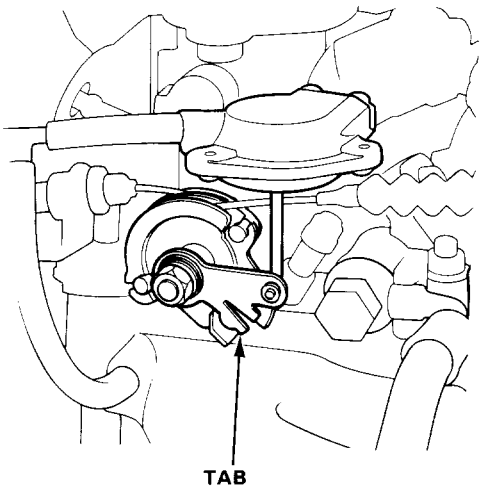
1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #6 vacuum hose from the dashpot diaphragm and check the engine speed.

Engine speed should be:

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

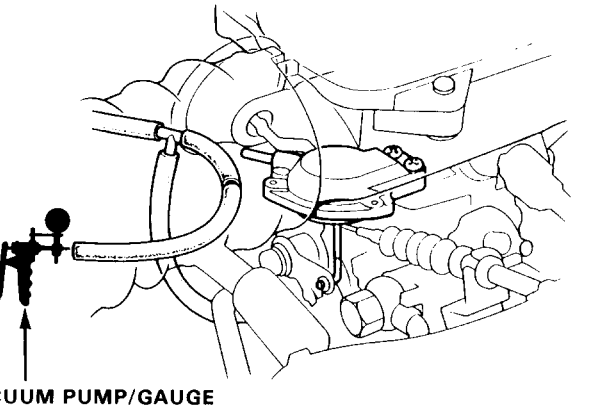


- If the engine speed is excessively high, adjust the engine speed by bending TAB.



- 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, blockage or disconnected hose and replace the 3-way joint.
  — If there is vacuum, replace the dashpot diaphragm and retest.

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

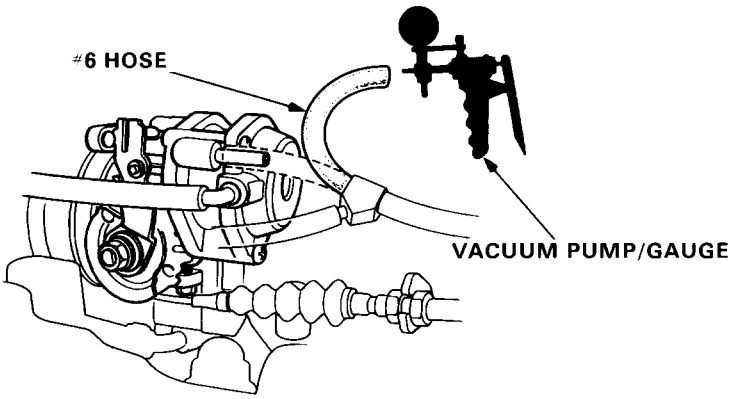
   Idle speed should be within specification (page 6-204).

Troubleshooting Flowchart

Inspection of Throttle Control System

Start the engine and allow to idle

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

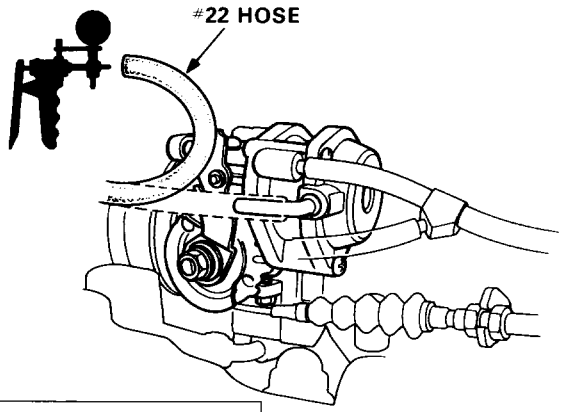


Is there vacuum?

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

YES

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



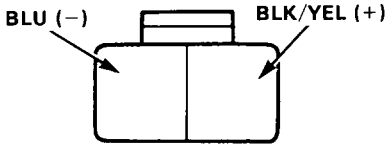
Is there vacuum?

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

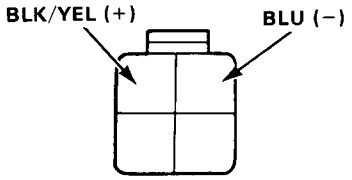
NO

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

(Without CATA)



(With CATA)



Is there battery voltage?

YES → **Replace the dashpot control solenoid valve.**

NO

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

Is there battery voltage?

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

YES

(To page 6-238)

(To page 6-238)

(cont'd)

Throttle Control System [1.6 ℓ]

Trobleshooting Flowchart (cont'd)

(From page 6-237)

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

Check for vacuum at #22 vacuum hose.

Is there vacuum?

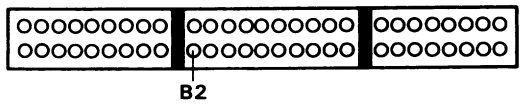
NO → Disconnect the 2P (Without CATA) or 4P (With CATA) connector.

YES → **Throttle control system is OK.**

(From page 6-237)

Turn the ignition switch OFF.

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



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

Does continuity exist?

NO → **Repair open in BLU wire between ECU (B2) and the connector.**

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

Is there vacuum?

NO → **Replace the dashpot control solenoid valve.**

YES → Turn the ignition switch OFF.

Disconnect "B" connector from ECU.

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

Is there continuity to ground?

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

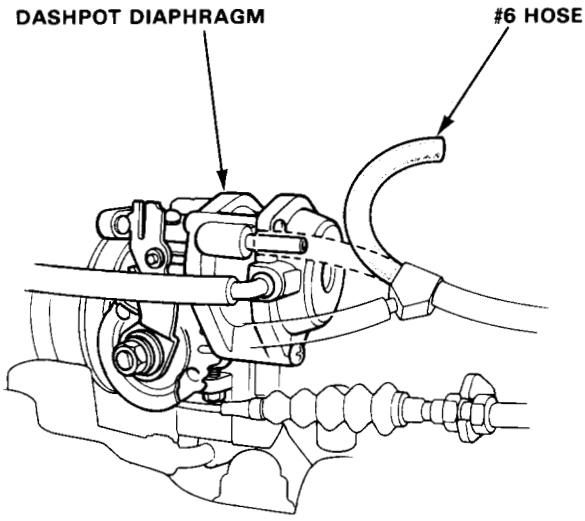
NO → **Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.**

Dashpot Diaphragm Testing

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

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

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



- If the engine speed is out of specified engine speed, inspect the throttle body (page 6-230).

Emission Control 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.

PAGE / SUB SYSTEM / SYMPTOM		CATALYTIC CONVERTER	POSITIVE CRANKCASE VENTILATION SYSTEM	EVAPORATIVE EMISSION CONTROLS
		86	241	243
ROUGH IDLE			①	
POOR PERFORMANCE	FAILS EMISSION TEST	①		②
	LOSS OF POWER	①		

Tailpipe Emission

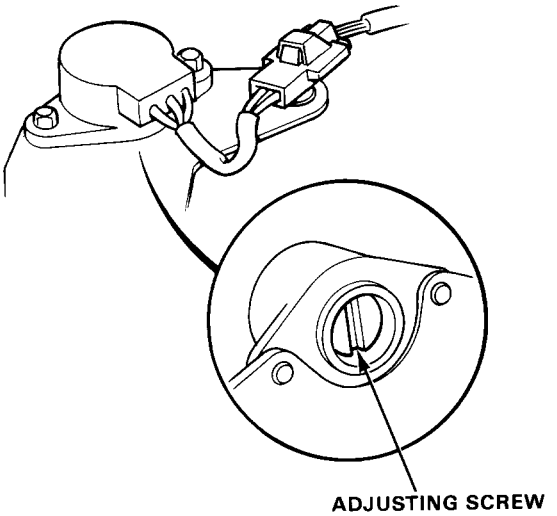
Inspection

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

1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-204 or 205).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:
With CATA: 0.1% maximum
Without CATA: 1.0 ± 1.0%

- If unable to obtain this reading;
  On With CATA, see ECU troubleshooting (page 6-144 or 146).
  On other models, adjust by turning the adjusting screw of the IMA sensor.

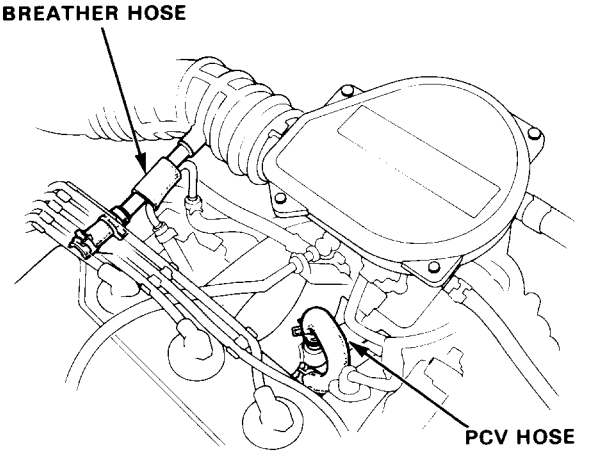


– If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

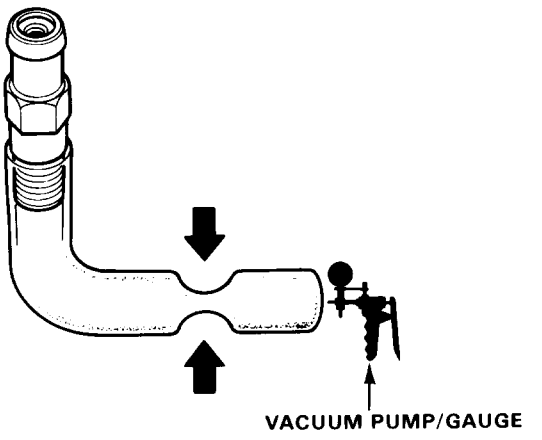
Positive Crankcase Ventilation System

Inspection (1.5 ℓ)

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. Remove the PCV valve from the intake mainfold and connect a vacuum pump.



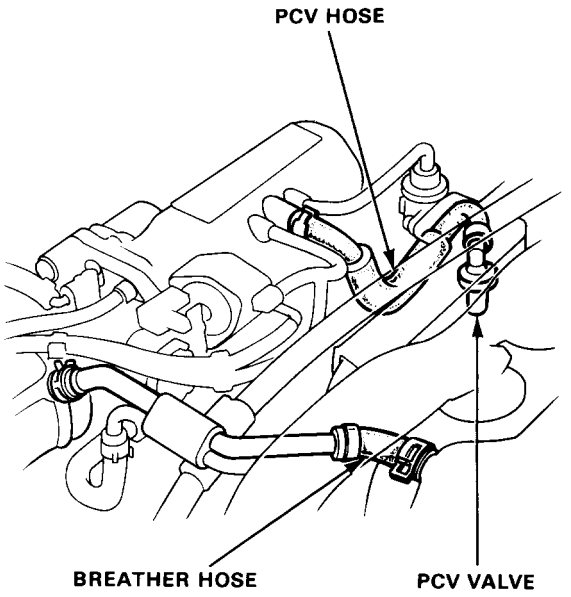
3. Pinch the hose as illustrated above, apply 400—500 mmHg (16—20 in. Hg) of vacuum, unpinch the hose and promptly check for a clicking sound at the PCV valve.

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

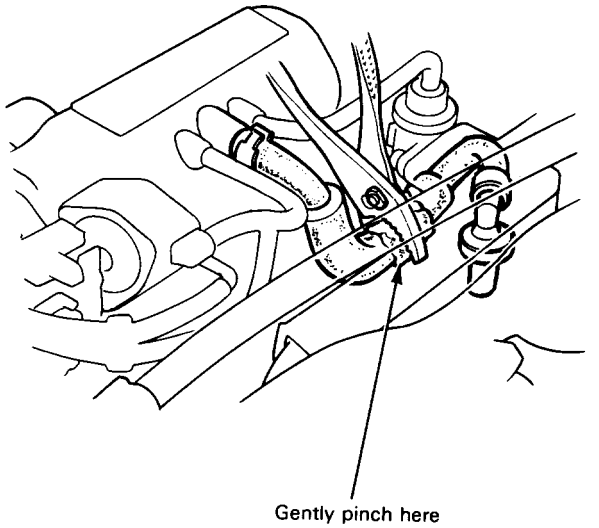
Positive Crankcase Ventilation System

Inspection (1.6ℓ)

1. Check the crankcase ventilation hoses and connections for leaks and clogging.



2. At idling, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold in lightly pinched with your fingers or pliers.



- If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

Evaporative Emission Controls [1.5 ℓ]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

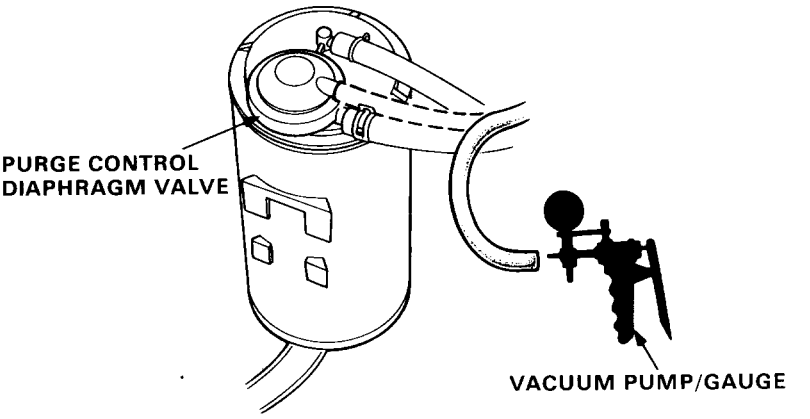
Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

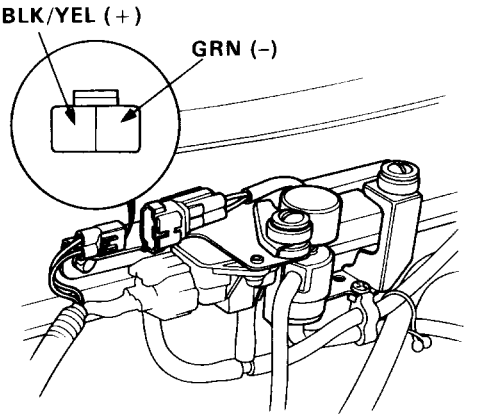
Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 80°C (176°F).

Is there vacuum ?

YES → Disconnect the 2P connector.

NO → (To page 6-244)





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

Is there battery voltage ?

YES → **Replace purge cut-off solenoid valve.**

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

(To page 6-244)

(cont'd)

Evaporative Emission Controls [1.5 ℓ]

Troubleshooting Flowchart (cont'd)

(From page 6-243)

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

Check for vacuum at #7 hose 5 seconds after starting the engine with the throttle valve is slightly opened.

Is there vacuum ?

NO

YES

Reconnect the hose.

Remove fuel filler cap.

(To page 6-245).

(From page 6-243)

Is there battery voltage ?

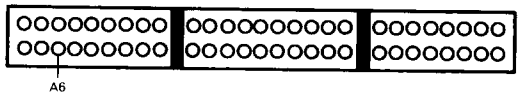
NO

Repair open in BLK/YEL wire between No. 14 fuse and the 2P connector.

YES

Turn the ignition switch OFF.

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



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 2P connector.

YES

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

Disconnect the 2P connector.

Is there vacuum ?

YES

Replace purge cut-off solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "A" connector from ECU.

Check for continuity to ground on GRN wire.

(To page 6-245)

(From page 6-244)

Connect a vacuum gauge to canister purge air hose.

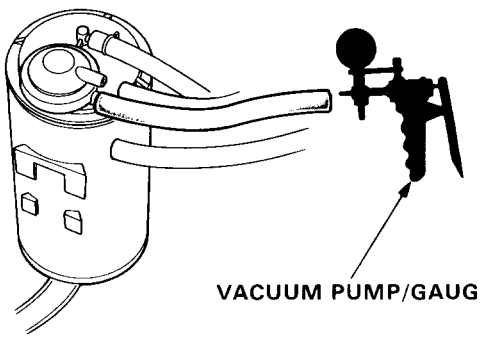
Start the engine and rise speed to 3,500 min^{-1} (rpm).

Does vacuum appear on gauge within 1 minute ?

NO → Check the charcoal canister for signs of damage or defects.

YES

Evaporative emission controls are OK.

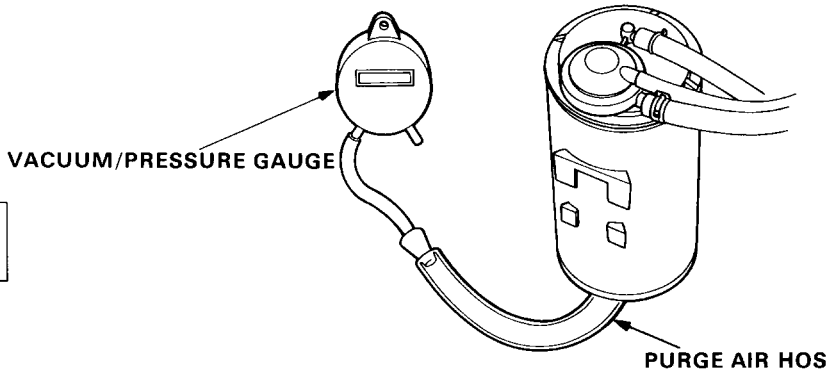


(From page 6-244)

Is there continuity to ground ?

YES → **Repair short to ground in BLU wire between ECU (A6) and the 2P connector.**

NO → **Substitute a known good ECU and recheck. If symptom goes away, replace the original ECU.**



Is the canister OK ?

NO → **Replace the canister.**

YES

Disconnect #7 hose from the purge control diaphragm valve.

Connect a vacuum pump to the canister "purge" fitting and apply vacuum.

Does it hold vacuum ?

NO → **Replace the canister.**

YES

Reconnect #7 hose.

Does "purge" side vacuum drop to zero ?

NO → **Replace the canister.**

YES

See two-way valve test (page 6-250).

Evaporative Emission Control [1.6 ℓ With CATA]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

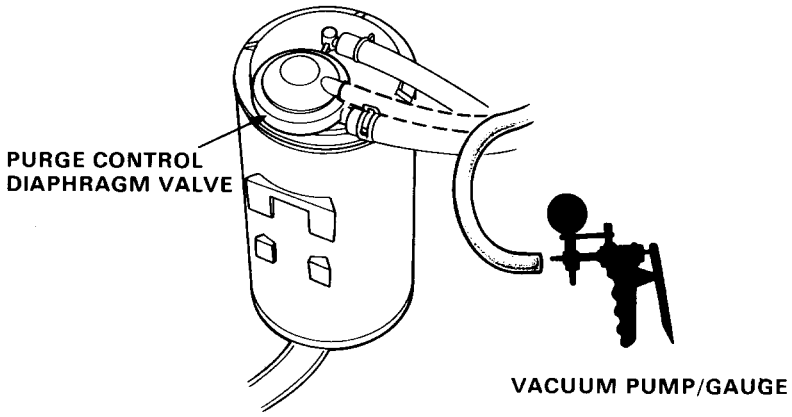
Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

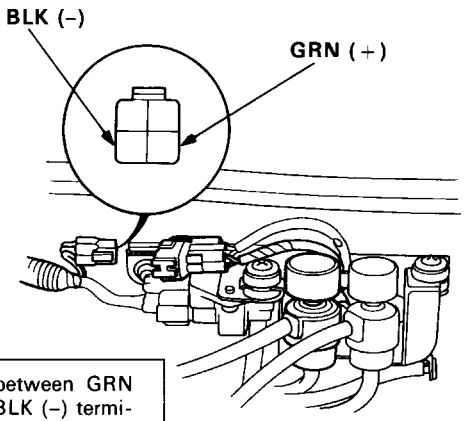
Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 57 °C (135 °F).

Is there vacuum ?

YES → Disconnect the 4P connector.

NO





Measure voltage between GRN (+) terminal and BLK (–) terminal.

Is there battery voltage ?

YES → **Replace purge cut-off solenoid valve.**

NO

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

(To page 6-247)

(To page 6-247)

(From page 6-246)

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

Check for vacuum at #7 hose 5 seconds after starting the engine.

(From page 6-246)

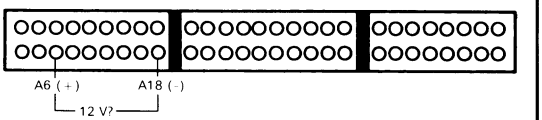
Is there battery voltage ?

YES → **Repair open in BLK wire between the 4P connector and G201.**

NO

Turn the ignition switch OFF.

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



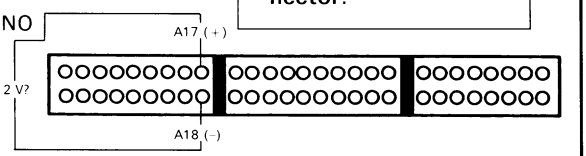
Turn the ignition switch ON.

Measure voltage between A6 (+) terminal and A18 (-) terminal.

Is there battery voltage?

YES → **Repair open in GRN wire between ECU (A6) and the 4P connector.**

NO



Measure voltage between A17 (+) terminal and A18 (-) terminal.

Is there battery voltage ?

NO → Inspect No. 14 fuse.

YES

Is No. 14 fuse OK ?

NO → **Replace fuse.**

YES

Repair open in BLK/YEL wire between ECU (A17) and No. 14 fuse.

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

(To page 6-248)

(cont'd)

Evaporative Emission Controls [1.6 ℓ With CATA]

Trobleshooting Flowchart (cont'd)

(From page 6-249)

Is there vacuum ?

NO

Disconnect the 4P connector.

Is there vacuum ?

YES

Repair purge cut-off solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "A" connector from ECU.

Check for continuity to ground on GRN wire.

Is there continuity to ground ?

YES

Repair short to ground in BLU wire between ECU (A6) and the 2P connector.

NO

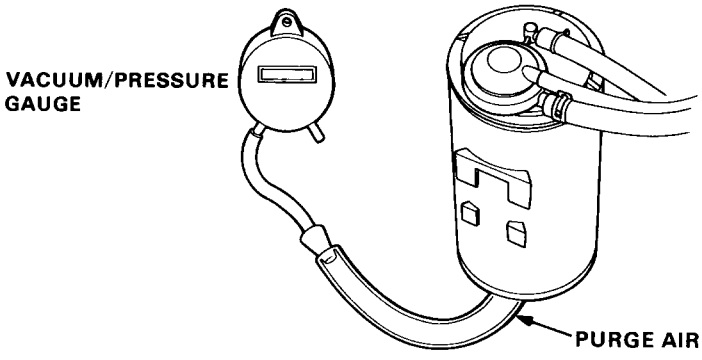
Substitute a known good ECU and recheck. If symptom goes away, replace the original ECU.

YES

Connect a vacuum gauge to canister purge air hose.

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

(To page 6-249)



(From page 6-248)

Does vacuum appear on gauge within 1 minute ?

NO → Check the charcoal canister for signs of damage or defects.

YES → **Evaporative emission controls are OK.**

Is the canister OK ?

NO → **Replace the canister.**

YES

Disconnect #7 hose from the purge control diaphragm valve.

Connect a vacuum pump to the canister "purge" fitting and apply vacuum.

Does it hold vacuum ?

NO → **Replace the canister.**

YES

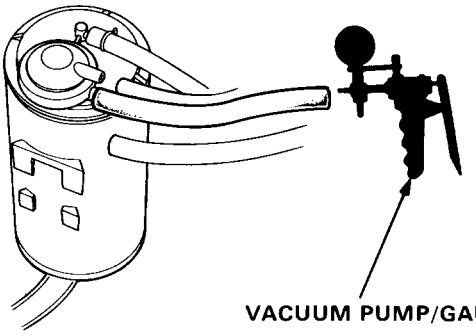
Reconnect #7 hose.

Does "purge" side vacuum drop to zero ?

NO → **Replace the canister.**

YES

See two-way valve test (page 6-250).

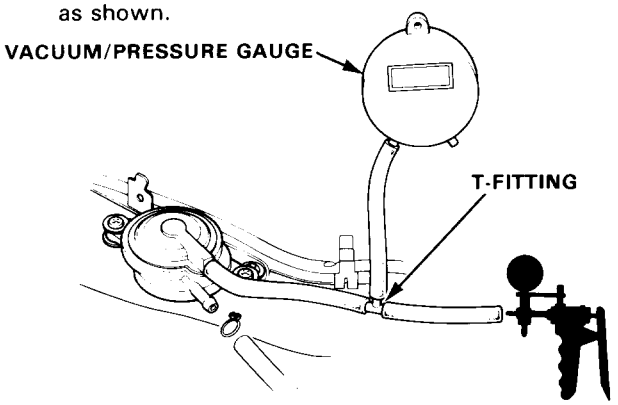


VACUUM PUMP/GAUGE

Evaporative Emission Controls

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.

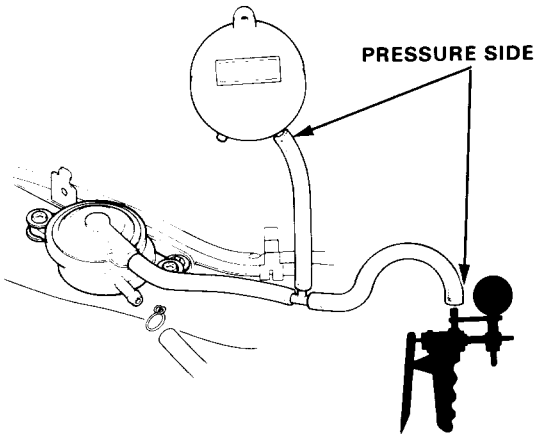


3. Slowly apply vacuum while watching the gauge.

   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.

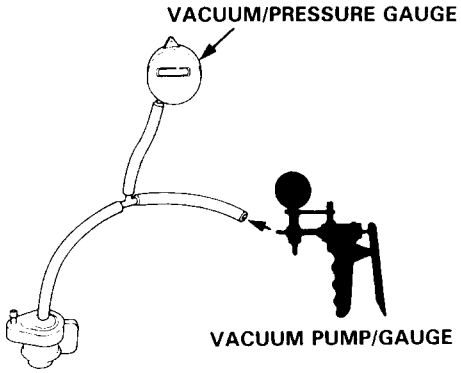
   Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in. Hg).

   - 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

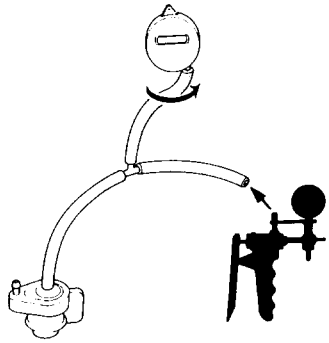
1. Remove the fuel filler cap.
2. Remove the vapor line from the canister or frame, and connect to a T-fitting from the vacuum gauge and the vacuum pump as shown.



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.

Transaxle

Clutch

Manual Transmission

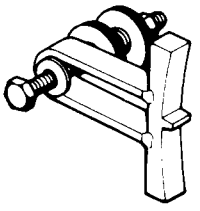
Automatic Transmission

Driveshafts

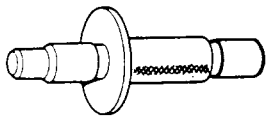
Clutch

Special Tools

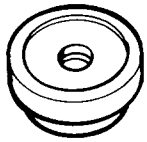
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07924—PD20003	Ring Gear Holder	1	or 07924—PD20002
②	07JAF-PM70100	Clutch Disc Alignment Tool	1	
③	07746—0010100	Attachment 32 x 35 mm	1	
④	07749—0010000	Driver	1	



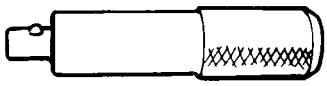
①



②



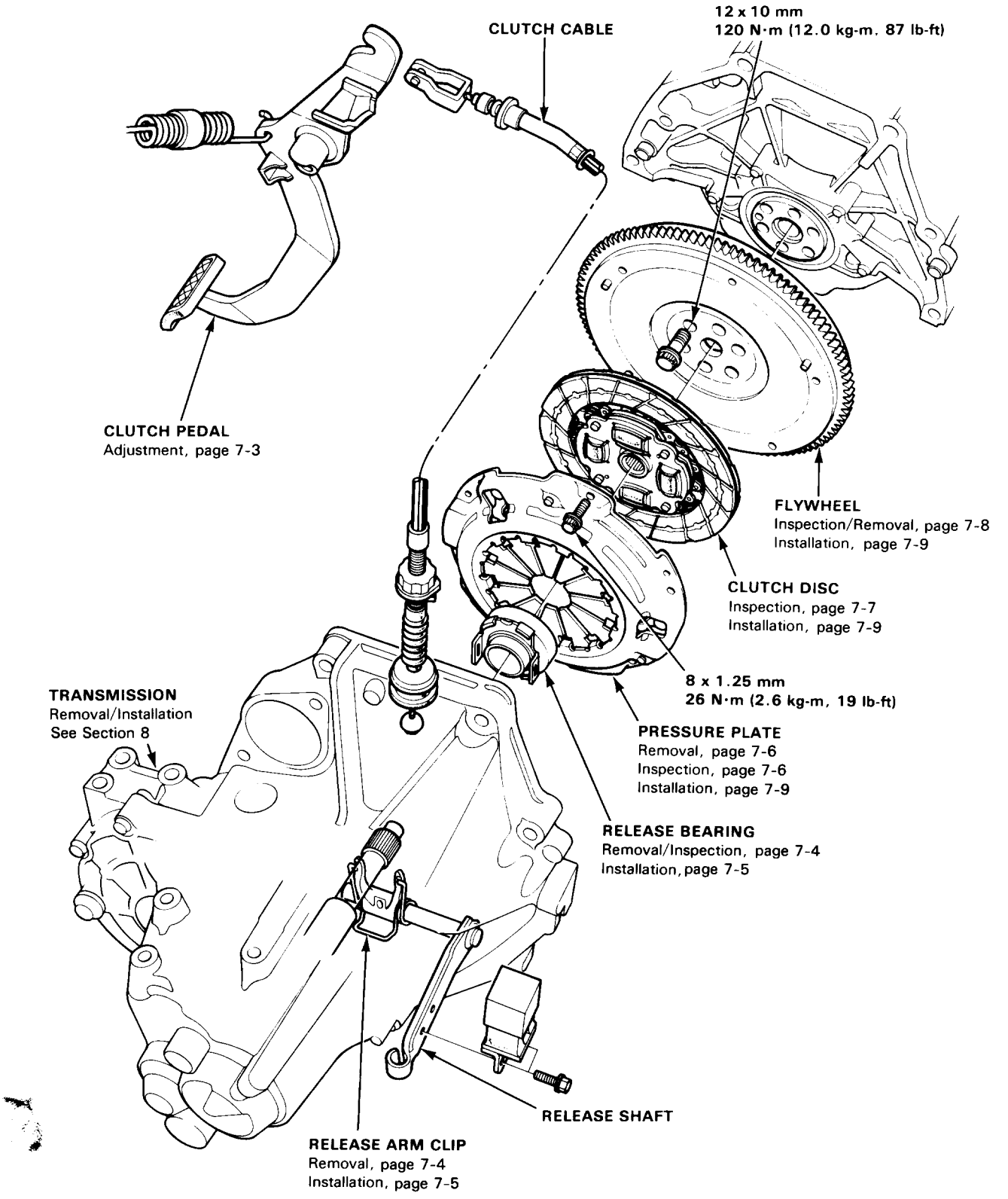
③



④

Illustrated Index

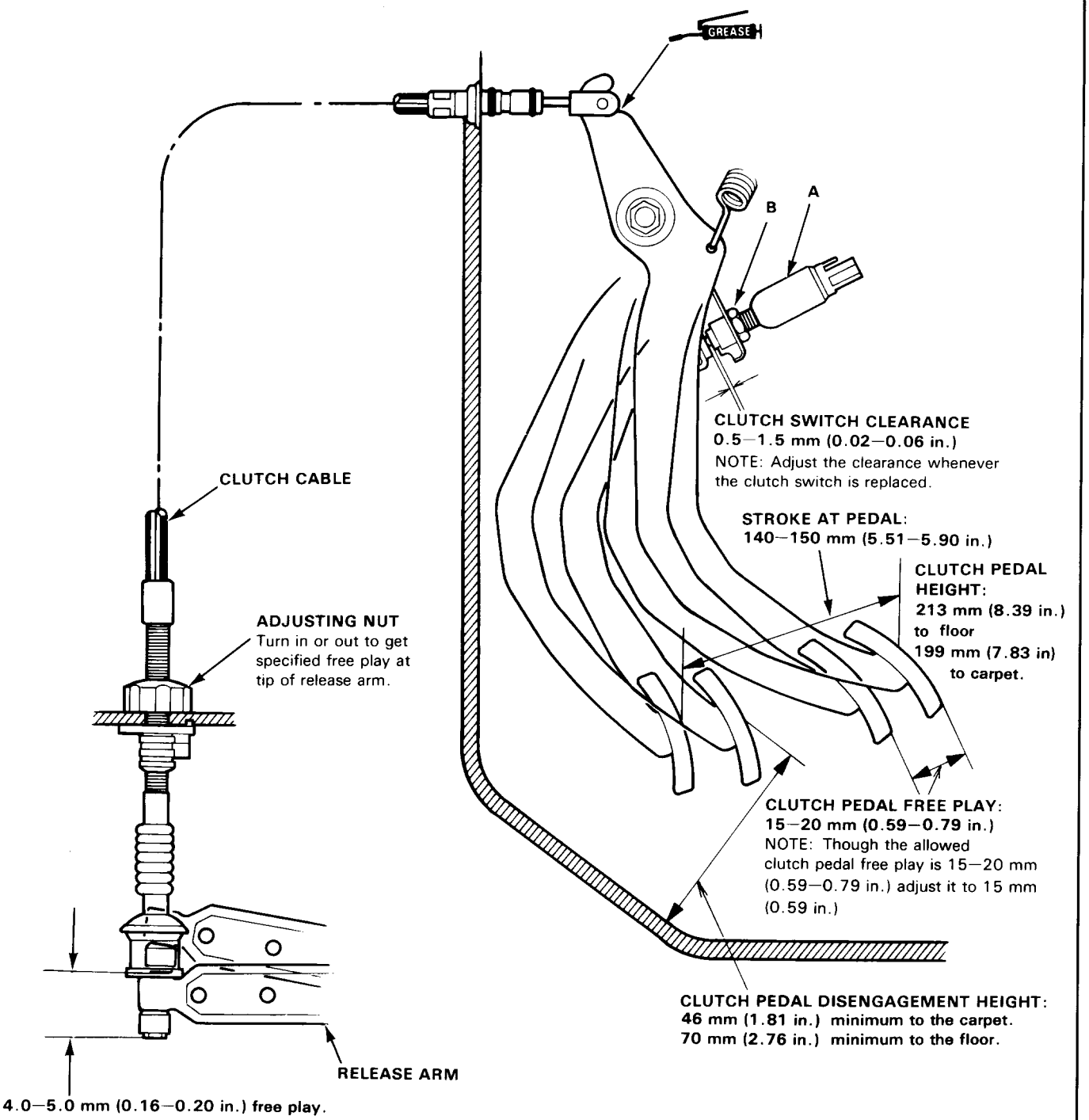
NOTE: Whenever the transmission is removed, the release bearing sliding surface should be cleaned and greased (Molybdenum Disulfide).



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 4.0—5.0 mm (0.16—0.20 in.) free play at the tip of release arm after the adjustment.
5. Turn A to right or left to bring the clutch pedal stroke to the specification and tighten nut B.
6. When clutch switch is replaced, install the switch and turn nut B to adjust clearance.

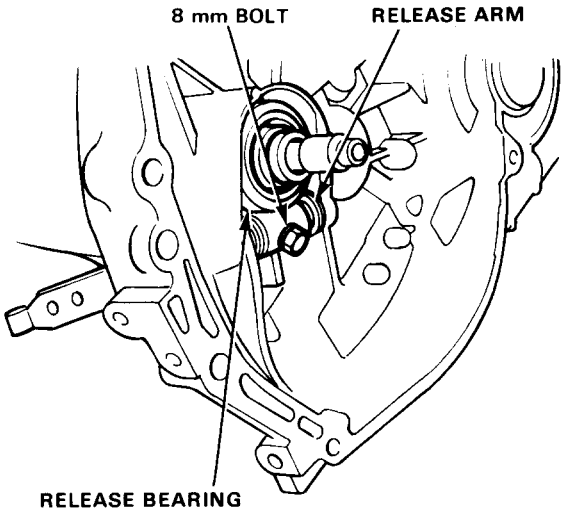


Release Bearing

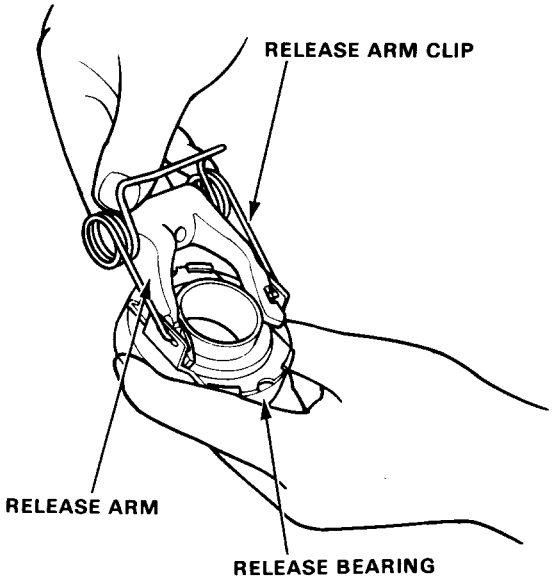
Removal

1. Remove the 8 mm special bolt.

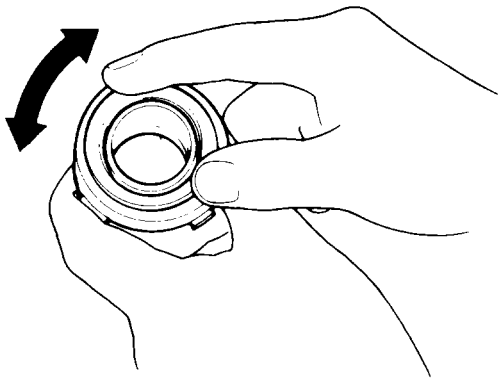
2. Remove the release shaft and release bearing assembly.



3. Separate the release arm from the bearing by removing the clip from the holes in the release bearing.



4. Check the release bearing for excessive play by spinning it by hand.

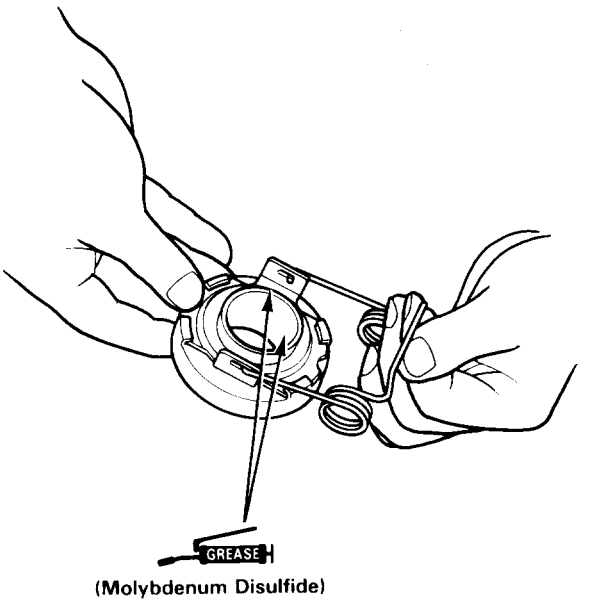


5. Replace the bearing with a new one if there is excessive play.

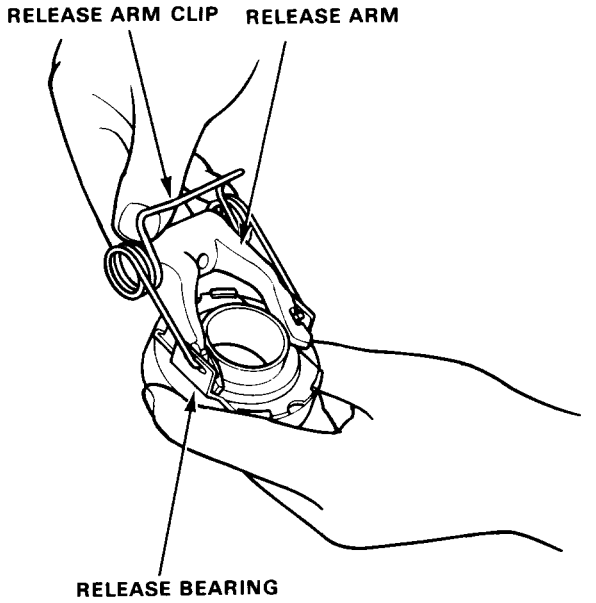
CAUTION: The bearing is packed with grease. Do not wash it in solvent.

Installation

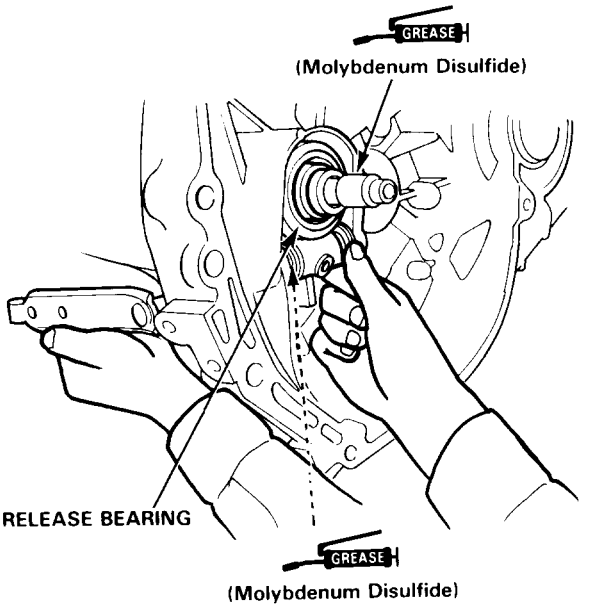
1. Align the release arm with the locating holes of the release bearing.



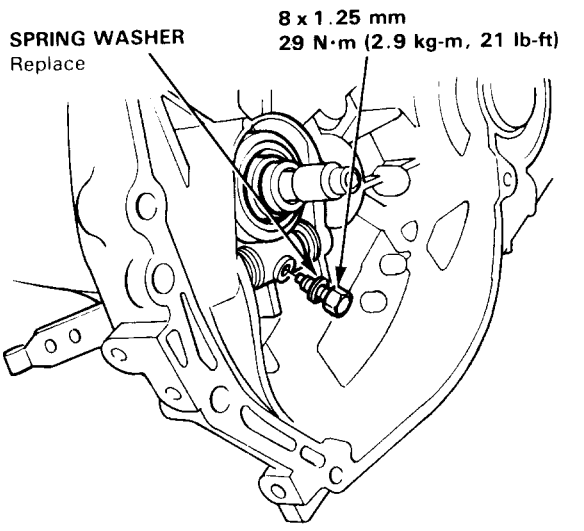
2. Install the release arm clip in the locating holes as shown.



3. Install the release shaft and the release bearing.
NOTE: Grease the release shaft with molybdenum disulfide also.



4. Align the release shaft and release arm, then install a new spring washer and bolt.



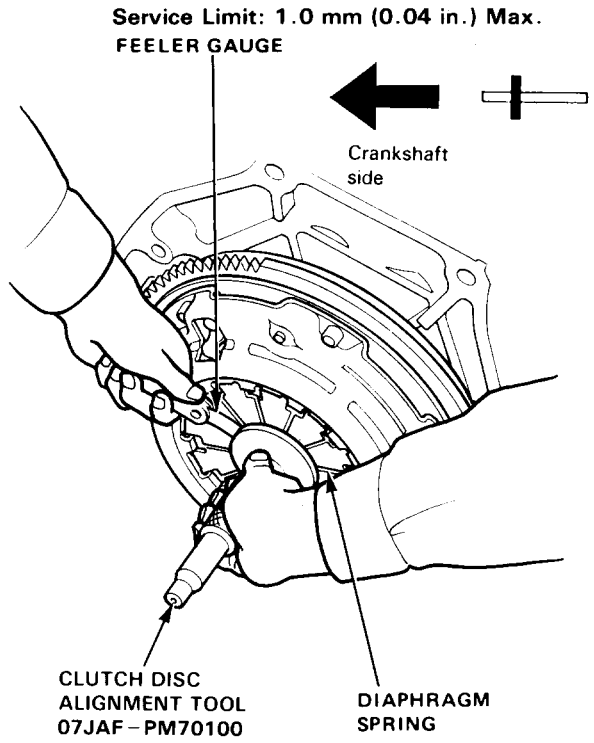
5. Move the release arm up and down to make sure the fork fits properly against the bearing, and that the bearing slides freely.

Pressure Plate

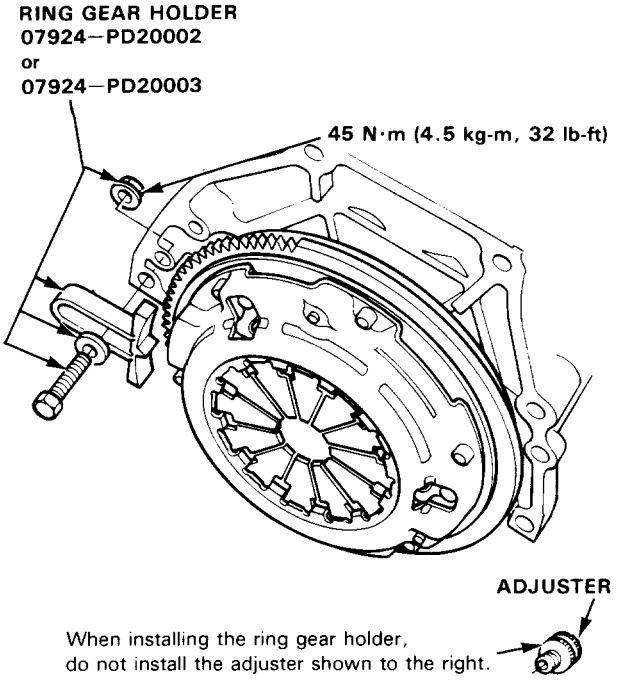
Removal/Inspection

1. Inspect the fingers of the diaphragm spring for wear at the release bearing contact area.

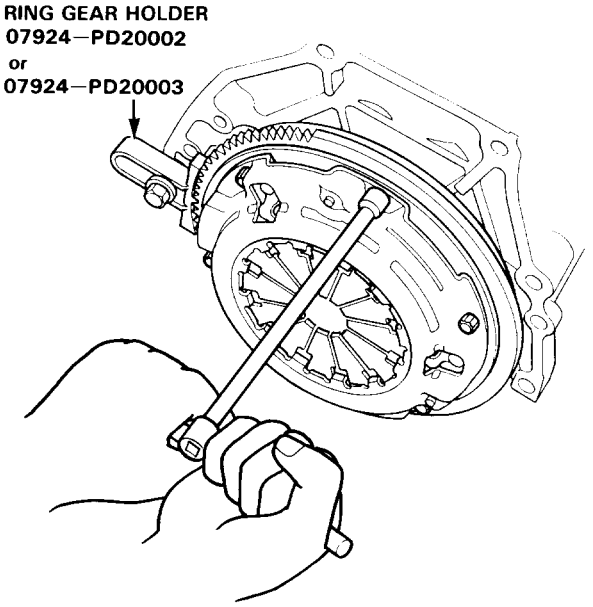
2. Check the diaphragm spring fingers for height using the Clutch Disc Alignment Tool and feeler gauge.



3. Install the Ring Gear Holder.



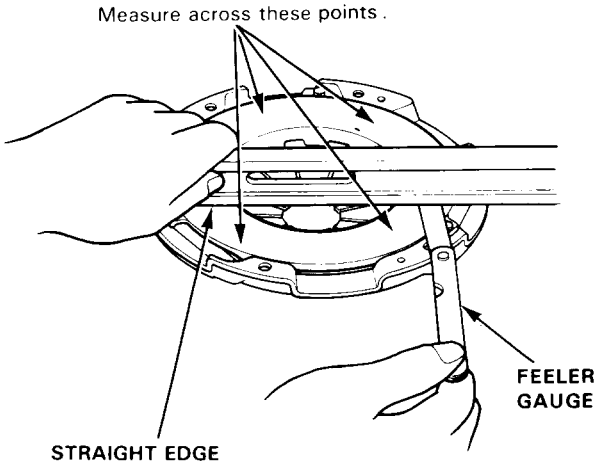
4. To prevent warping, unscrew the pressure plate mounting bolts two turns at a time in a crisscross pattern using a 10 mm T-wrench, then remove the pressure plate and clutch disc.



5. Inspect the pressure plate surface for wear, cracks, or burning.

6. Inspect for warpage using a straight edge and feeler gauge.

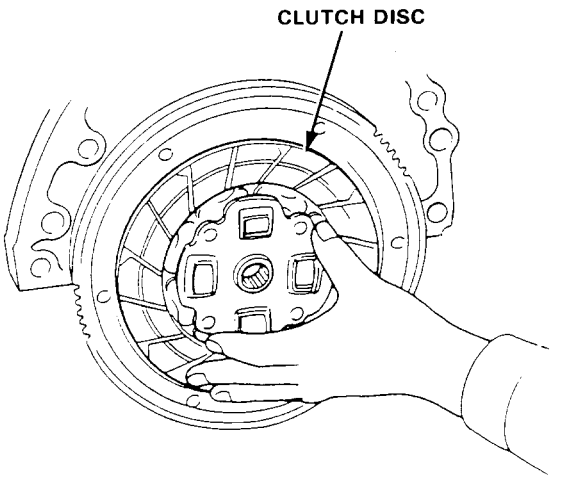
Service Limit: 0.15 mm (0.006 in.) Max.



Clutch Disc

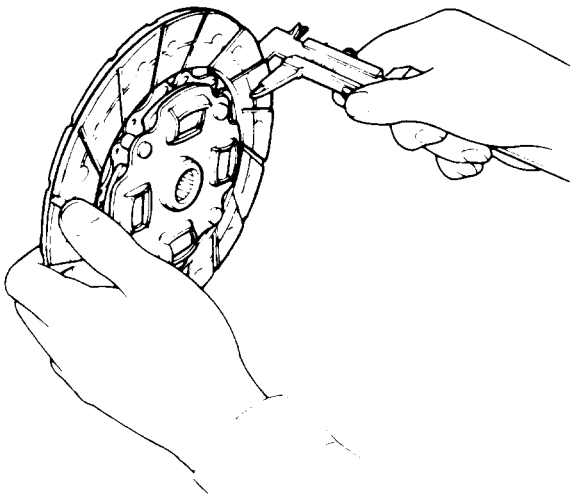
Inspection

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.

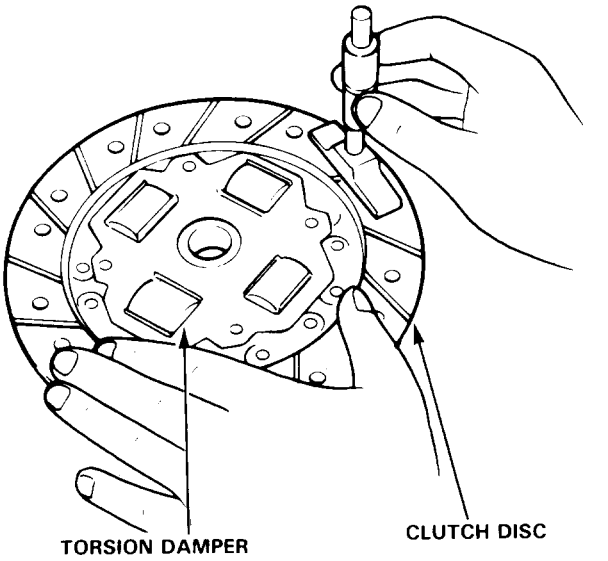
CLUTCH DISC
Clutch Disc Thickness:
Standard (New): 8.1—8.8 mm (0.319—0.346 in.)
Service Limit: 5.7 mm (0.224 in.)



3. Check for loose rubber torsion dampers. Replace the clutch disc if any are loose.

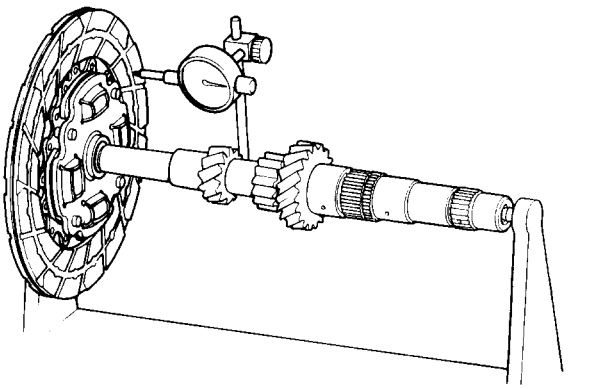
4. Measure the depth from the lining surface to the rivets, on both sides.

Rivet Depth:
Standard (New): 1.3 mm (0.051 in.) min.
Service Limit: 0.2 mm (0.008 in.)



5. Measure the clutch plate runout with the mainshaft and a dial indicator.

Clutch plate runout:
Standard: 0.8 mm (0.031 in.) max.
Service Limit: 1.0 mm (0.039 in.)



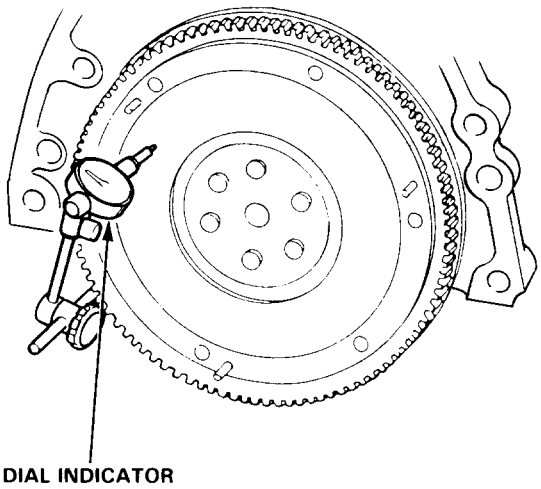
Flywheel

Inspection/Removal

1. Inspect the ring gear teeth for wear or damage.
2. Inspect the clutch disc mating surface on the flywheel for wear, cracks or burning.
3. Measure the flywheel runout using a dial indicator through at least two full turns. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance.

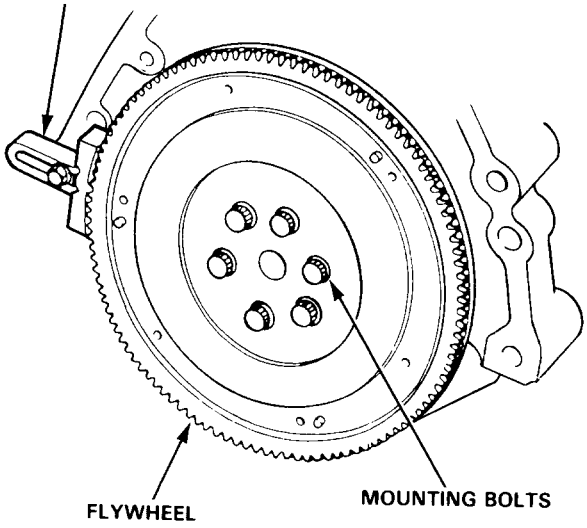
   NOTE: The runout can be measured with engine installed.

   Standard (New): 0.05 mm (0.002 in.) max.
   Service Limit: 0.15 mm (0.006 in.)



4. Remove the six flywheel mounting bolts and flywheel.

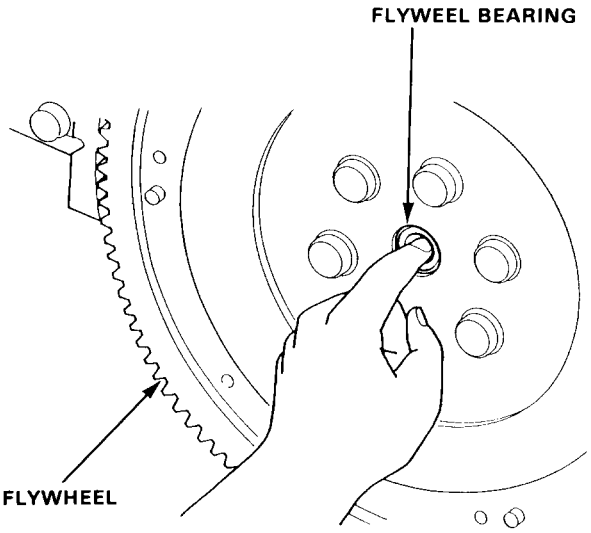
RING GEAR HOLDER
07924—PD20002
or
07924—PD20003



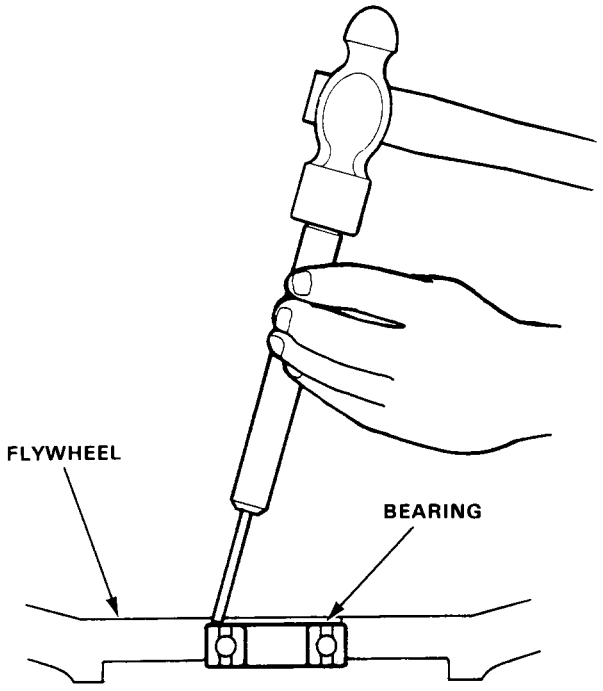
Flywheel Bearing

Inspection/Replacement

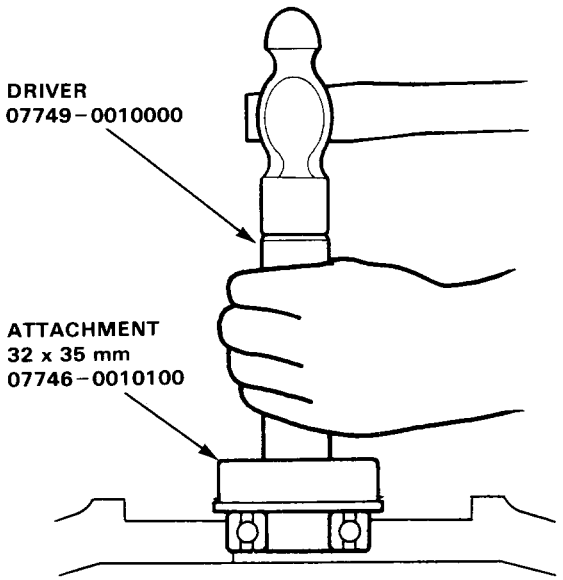
1. Turn the inner race of the bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the flywheel. Replace the bearing if the race does not turn smoothly, quietly, or fit tightly in the flywheel.



2. Remove the bearing from the flywheel.



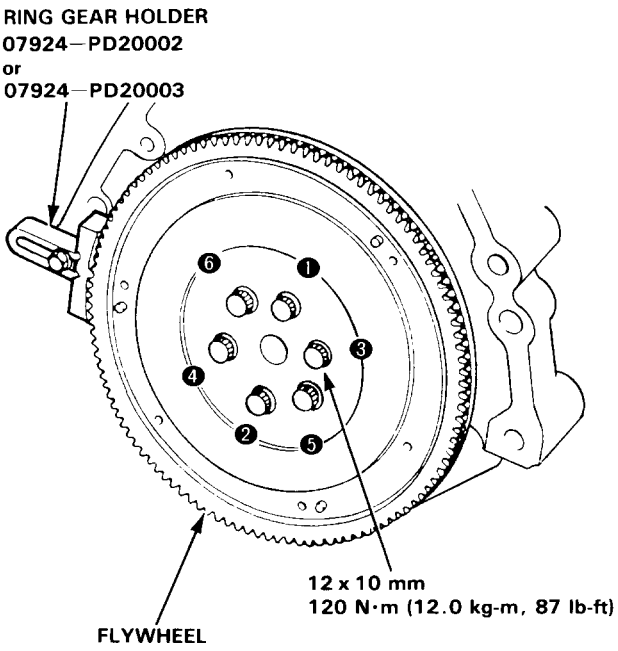
3. Drive in the new bearing in the flywheel.



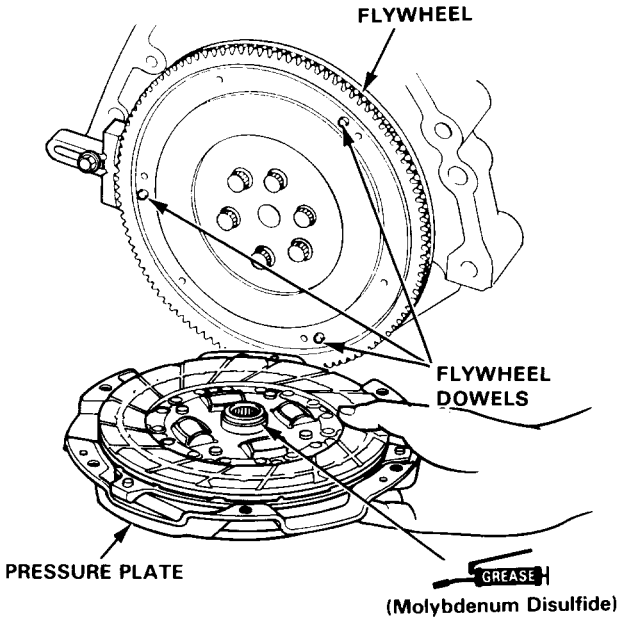
Installation

1. Align the hole in flywheel with the crankshaft dowel pin and assemble. Install the bolts only finger tight.

2. Install the Ring Gear Holder, then torque the flywheel bolts in a crisscross pattern, as shown.



3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.

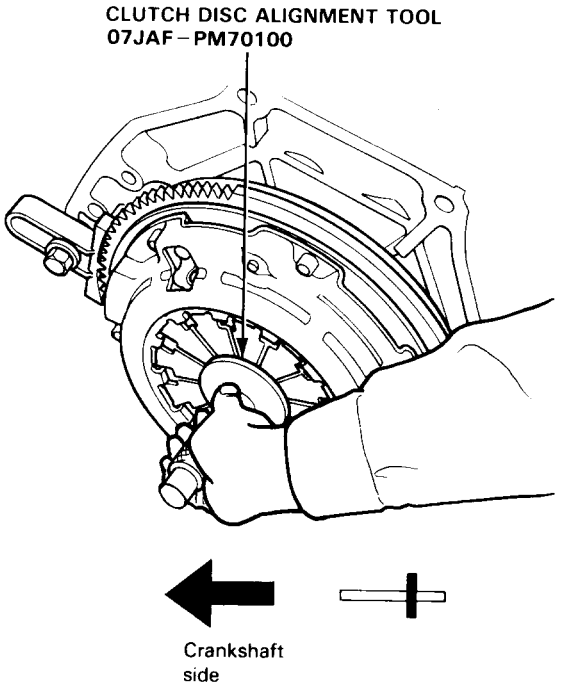


4. Install the attaching bolts finger tight.

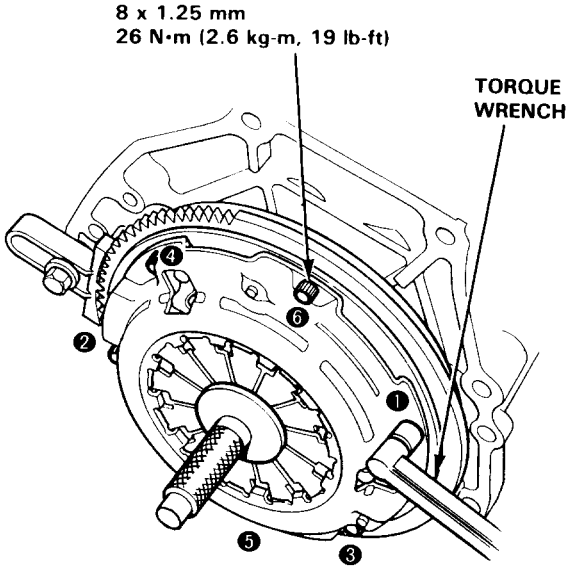
(cont'd)

Installation (cont'd)

5. Insert the Clutch Disc Alignment Tool in the splined hole in the clutch disc.



6. Torque the bolts in a crisscross pattern as shown. Tighten them two turns at a time to prevent warping the diaphragm spring.



7. Remove the Alignment Tool and Ring Gear Holder.

Manual Transmission

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

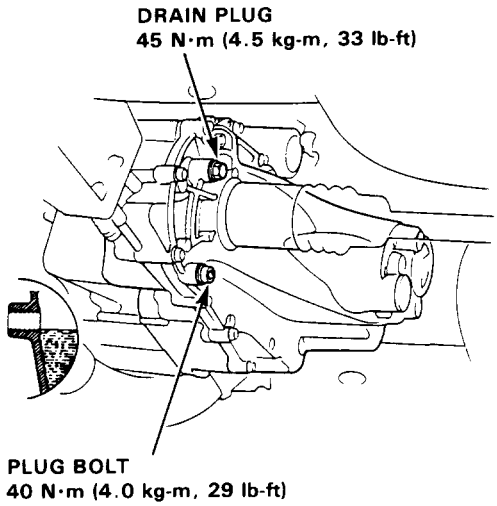
Use only SAE 10W-30 or 10W-40 oil rated SE or SF grade.

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.

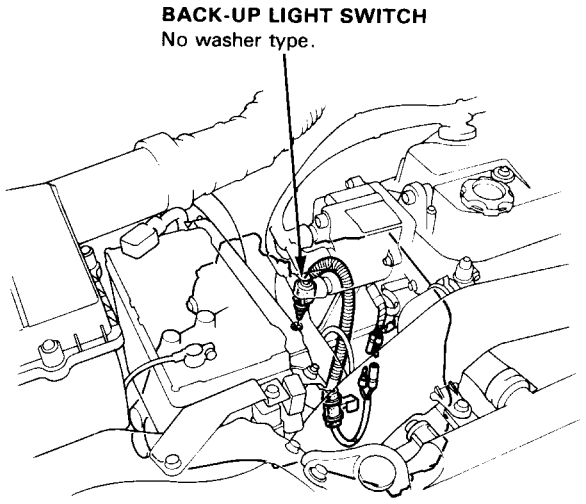


Back-up Light Switch

Replacement

NOTE: Check the switch see Section 16.

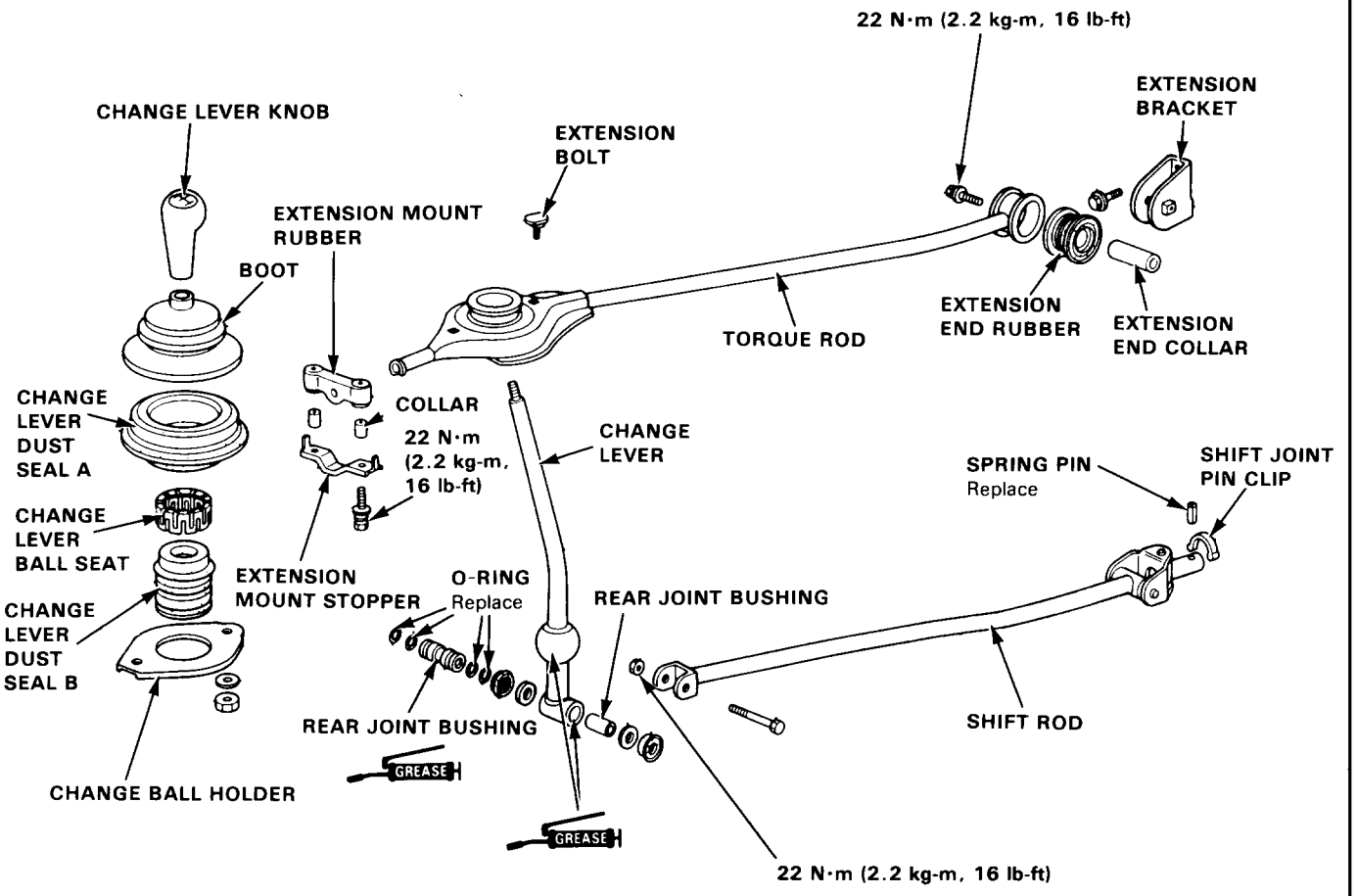
1. Disconnect the back-up light switch wire connectors.
2. Remove the back-up light switch.



3. Install the back-up light switch.

Gearshift Mechanism

Overhaul



Transmission

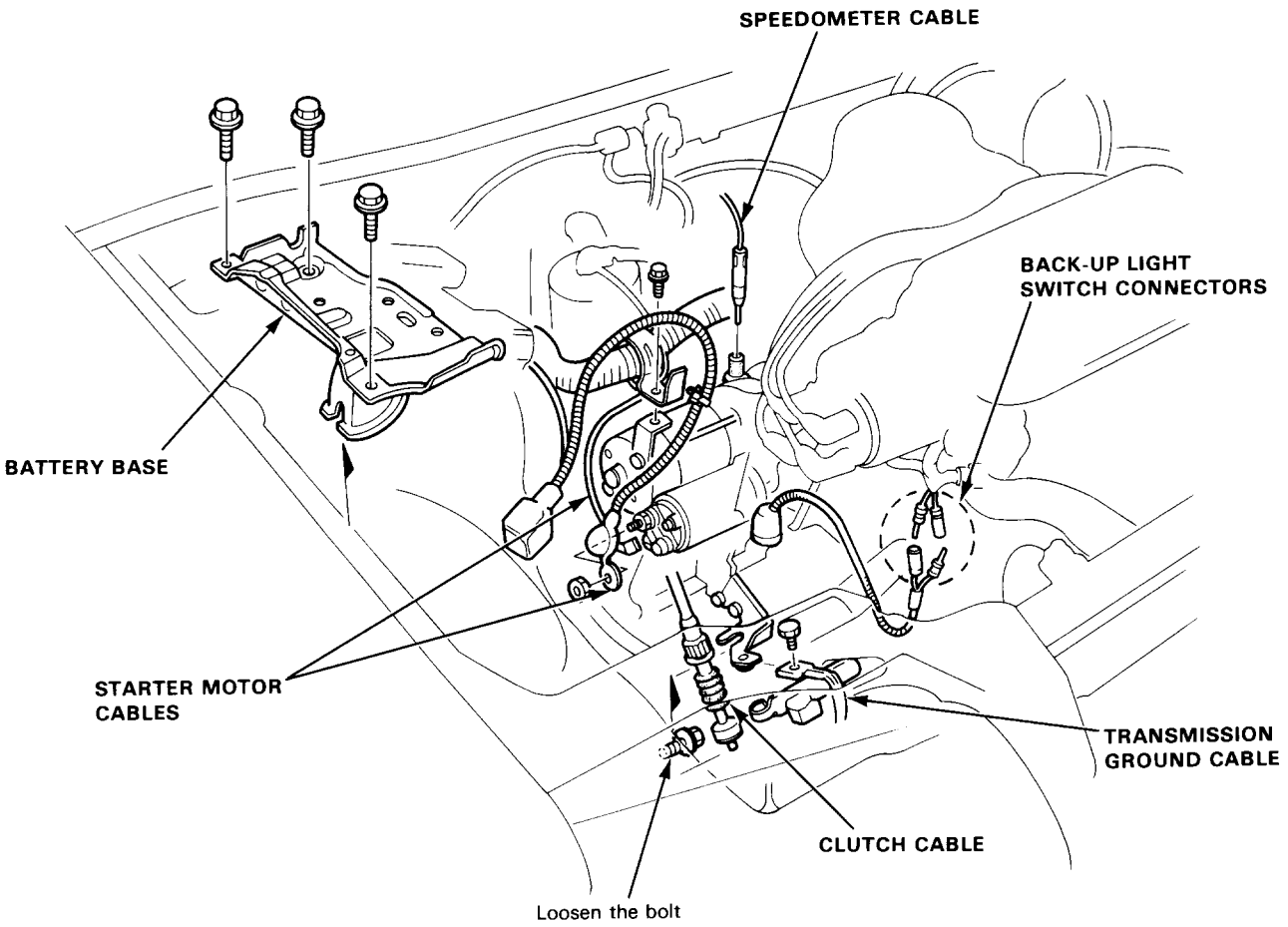
Removal

WARNING

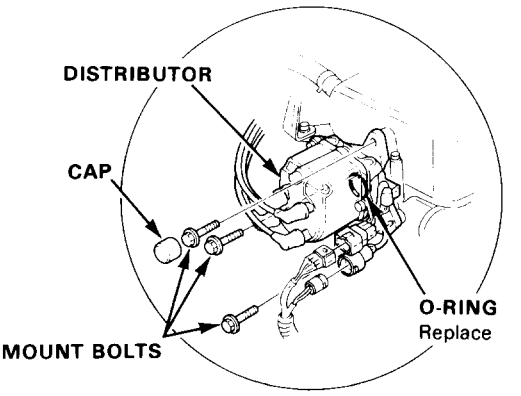
- **Make sure jacks and safety stands are placed properly (See Section 1), and hoist brackets are attached to correct positions on the engine (See Section 5).**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

1. Disconnect the battery negative (−) and positive (+) cables from the battery.
2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base. Remove the intake hose band of the throttle body.
3. Remove the air cleaner case complete with the intake hose (See Section 6).
4. Disconnect the starter motor and transmission ground cables.
5. Disconnect the speedometer cable.
   NOTE: Do not disassemble speedometer gear holder.
6. Disconnect the back-up light switch connector from the engine.
7. Disconnect the clutch cable at release arm.
8. Drain transmission fluid. Use a socket wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.



9. Disconnect the connectors and remove the mount bolts, then remove the distributor from the cylinder head.



10. Remove the bolts attaching the starter motor, and remove the starter motor.

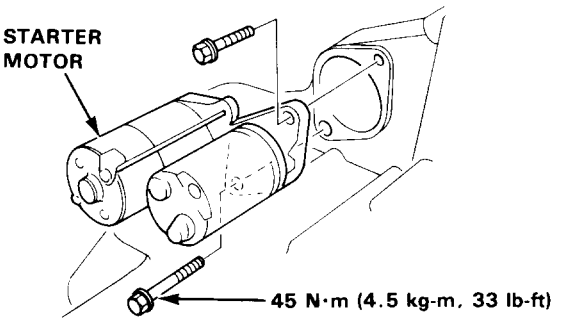
11. Remove the engine splash shield and the right wheelwell splash shield.

12. Remove the header pipe.

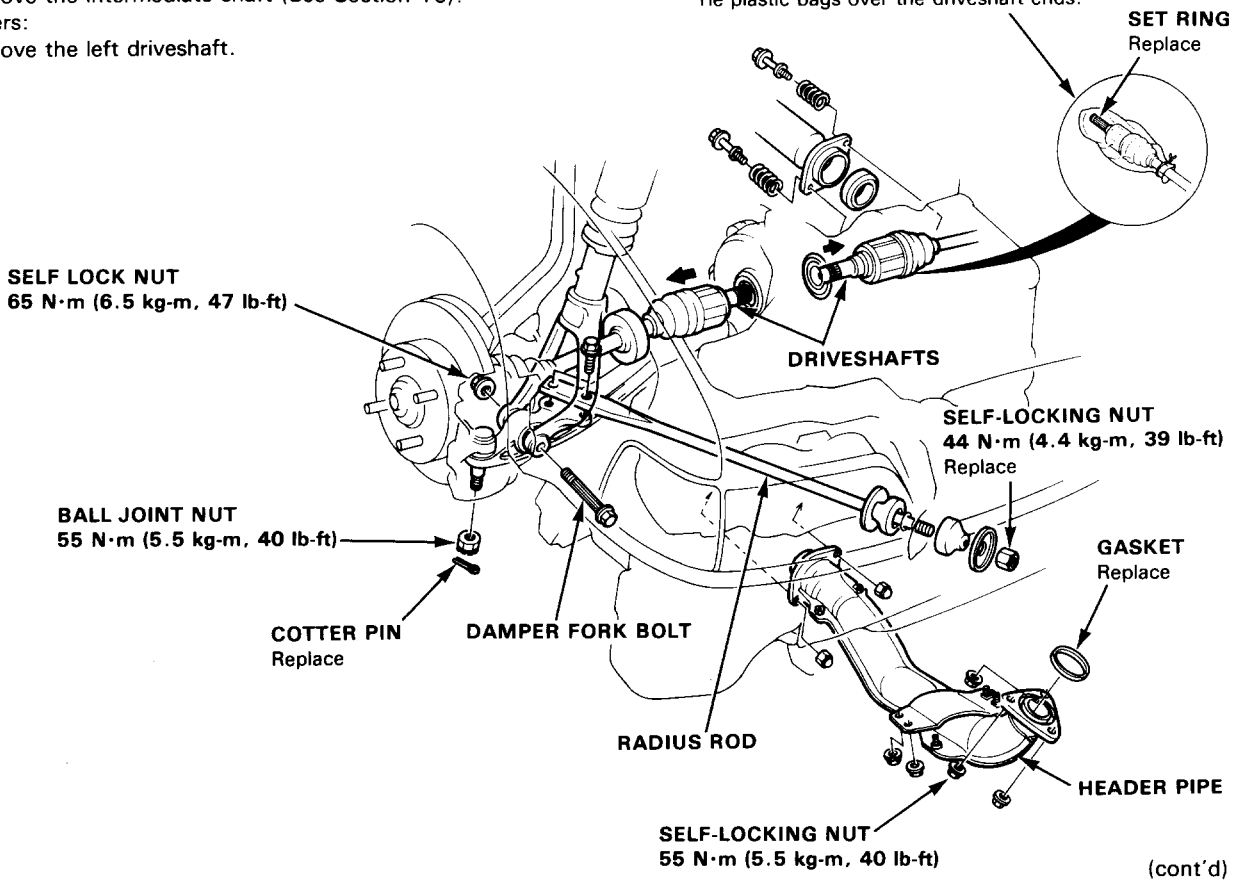
13. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm.

14. Remove the bolts and nut, then remove the right radius rod.

15. Remove the right driveshaft.
D16A DOHC, D16A SOHC KB, KW without CAT:
Remove the intermediate shaft (See Section 10).
Others:
Remove the left driveshaft.



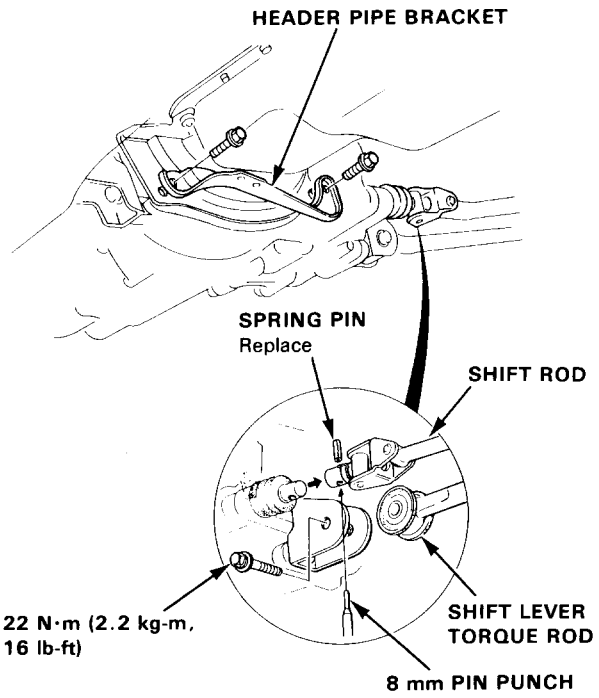
NOTE: Coat all precision finished surfaces with clean engine oil or grease.
Tie plastic bags over the driveshaft ends.

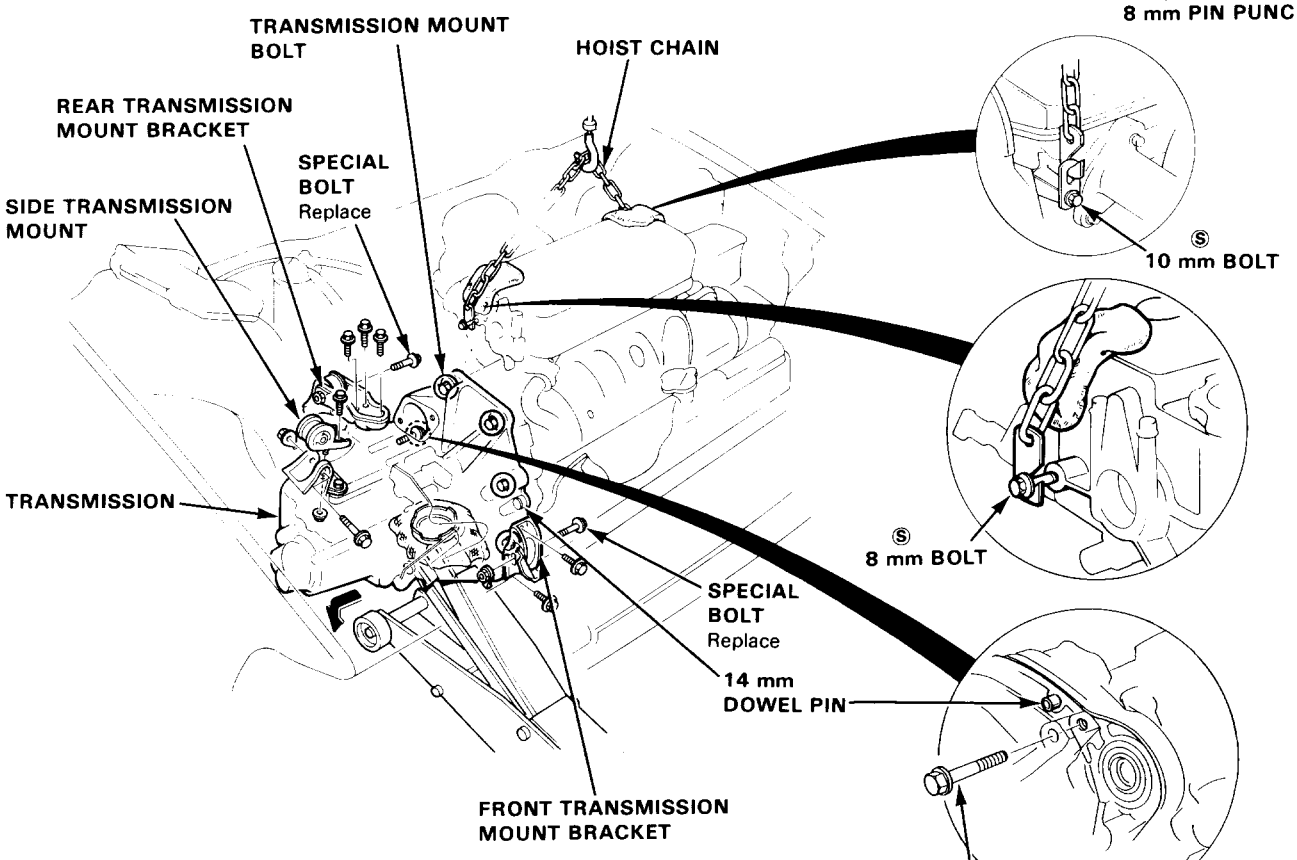


(cont'd)

Removal (cont'd)

16. Remove the header pipe bracket.
17. Remove the shift lever torque rod and shift rod from clutch housing.
18. Install the bolt Ⓢ at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plate Ⓢ, then lift the engine slightly to unload the mounts.
19. Place a jack under the transmission and raise transmission just enough to take the weight off the mounts.
20. Remove the bolts from the front transmission mount.
21. Remove the rear transmission mount bracket by removing the 4 mounting bolts.
22. Remove the bolts and nut, then remove the side transmission mount.
23. Remove the 5 transmission mount bolts.

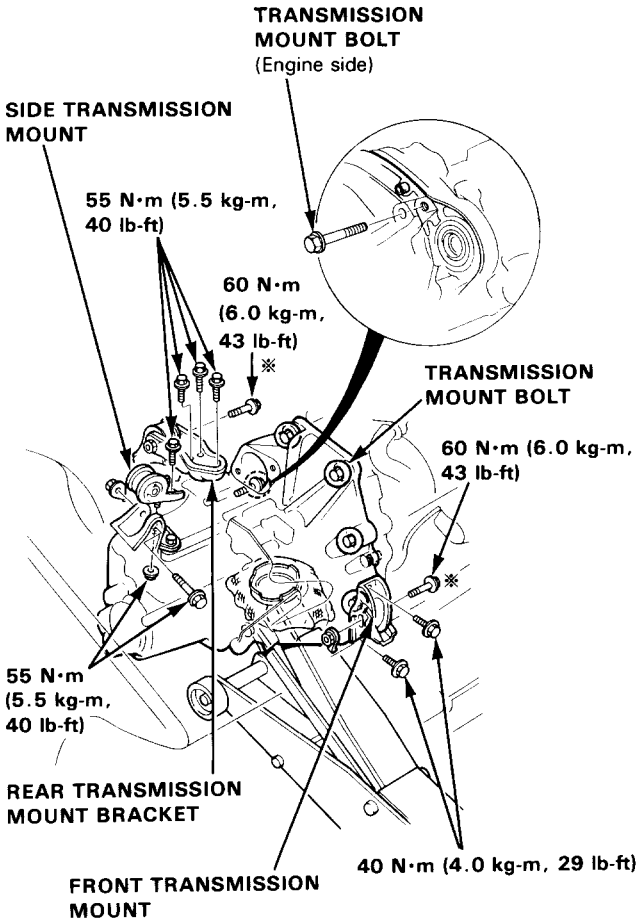




24. Pull the transmission away from the engine until it clears the 14 mm dowel pins.
25. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.

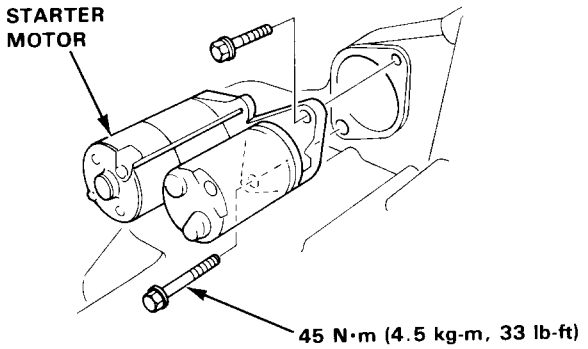
Installation

1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the clutch housing.
3. Loosely install the transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12 x 1.25 x 70 mm) and torque to 68 N·m (6.8 kg-m, 50 lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to front and side transmission mounts.

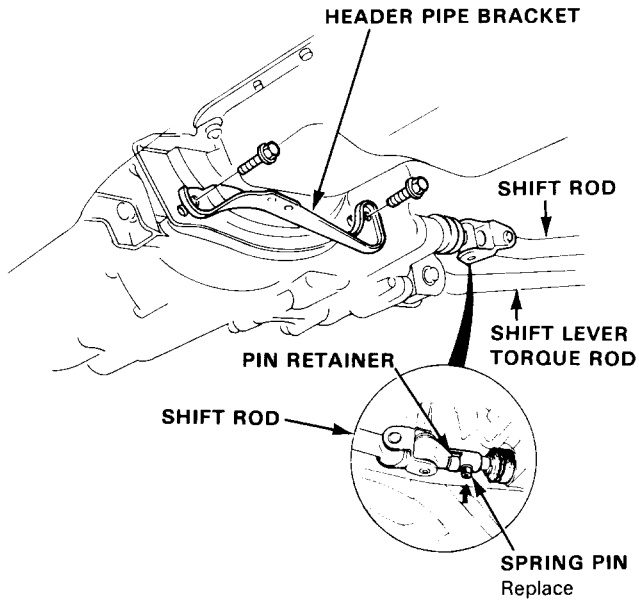


※Special bolt: Replace.

7. Install the starter motor.



8. Remove the transmission jack.
9. Remove the chain hoist by removing the hanger plate and 10 mm bolts.
10. Install the shift lever torque rod and shift rod.



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

11. Install the header pipe bracket.

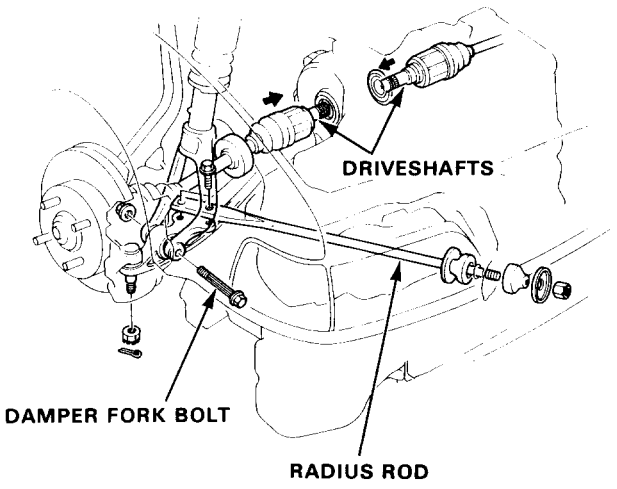
(cont'd)

Installation (cont'd)

12. Install a new set rings on the end of each driveshaft.

13. Install the right driveshaft (See Section 10).
    D16A DOHC, D16A SOHC KB, KW without CAT:
    Install the intermediate shaft (See Section 10).
    Others:
    Install the left driveshaft (See Section 10).

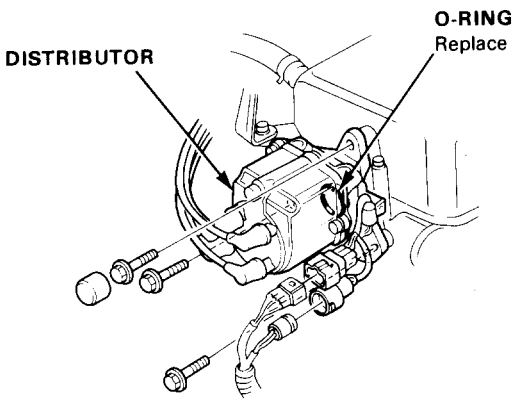
    NOTE: Turn the right steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage side gear.



14. Install the damper fork and radius rod.

15. Install the ball joints to the lower arm.

16. Install the splash shields and exhaust header pipe.
    Install the distributor.

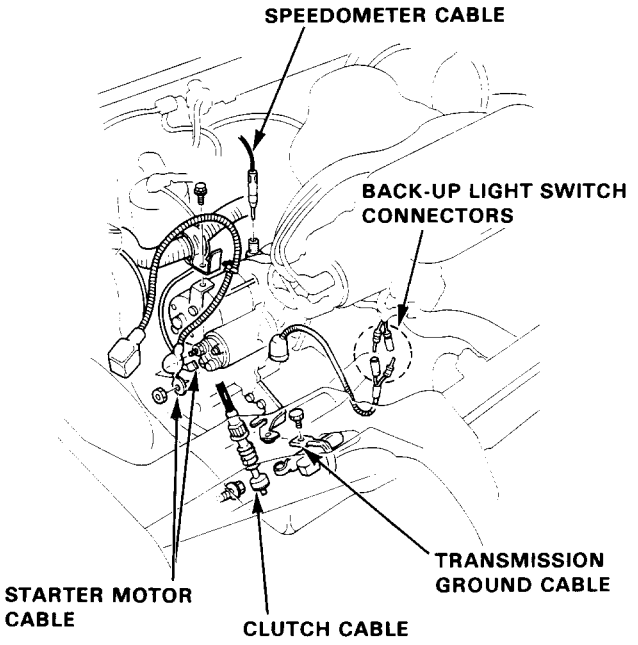


17. Connect the speedometer cable.

18. Connect the clutch cable to release arm.

19. Connect the back-up light switch connector.

20. Install the 3 bolts located at the side of the battery base, and retighten the intake hose band of the throttle body.



21. Refill the transmission with oil.

22. Connect the starter motor and transmission ground cables.

23. Connect the battery positive (+) and negative (−) cables to the battery.

24. Install the air cleaner case and intake hose.

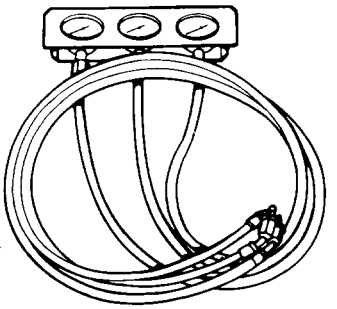
25. Check the ignition timing (See Section 16).

26. Check the transmission for smooth operation.

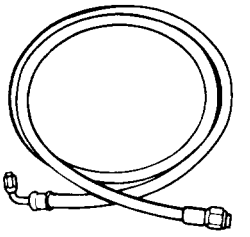
Automatic Transmission

Special Tool

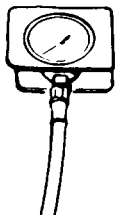
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07406—0020003	Oil Pressure Gauge Set	1	Component Tool
①-1	07406—0020201	Oil Pressure Gauge Hose Attachment	1	
②	07406—0070000	Low Pressure Gauge	1	



①



①-1



②

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 gear.	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

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 orifice 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.	4rh/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

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)

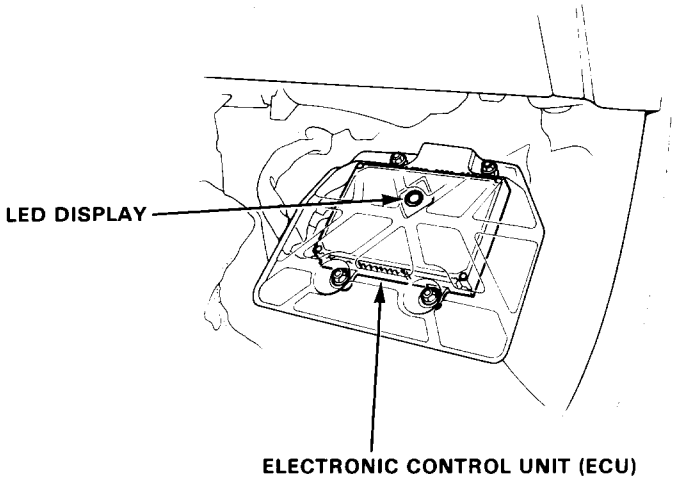
PROBABLE CAUSES DUE TO IMPROPER REPAIR	
R1	Improper clutch clearance
R2	Improper gear clearance
R3	Parking pawl installed upside down
R4	Parking shift arm installed upside down
R5	Sprag clutch installed upside down
R6	Feed pipe missing in governor shaft
R7	Reverse hub installed upside down
R8	Oil pump 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 whirring 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 thoroughly 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 case. 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 cable adjustment may clear this problem. See page 9-17.
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.

1.5ℓ PGM-FI:
If the lock-up control electrical system is suspected to be faulty after to the symptom charts on in pages 9-2 and 9-3, check the following.

1. Check the ECU LED under the instrument panel.
   If it blinks, count the number of blinks and inspect according to the troubleshooting chart (see page 6-142).



2. Check and adjust the throttle control cable (page 9-17).
3. Check for power in put signal of the lock-up control solenoid valve (page 6-200).
4. Check the lock-up control solenoid valve (page 9-10).
5. Check the hydraulic system according to the troubleshooting in pages 9-2 and 9-3.

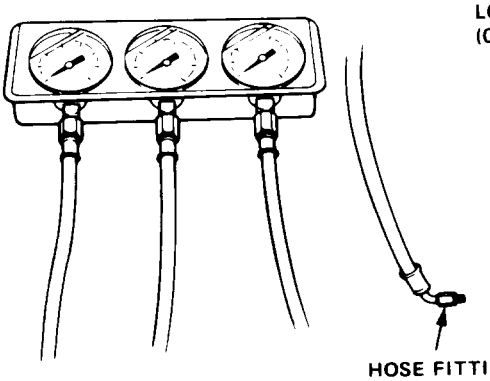
Pressure

Testing

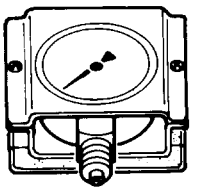
CAUTION: Before testing, be sure transmission is filled to proper level.

NOTE:
- Stop engine when attaching hoses for pressure tests.
  Torque hose fitting to 18 N·m (1.8 kg-m, 12 lb-ft).
- Do not reuse aluminum washers.

GAUGE SET 07406–0020003
(includes pressure hose set 07406–0020201)

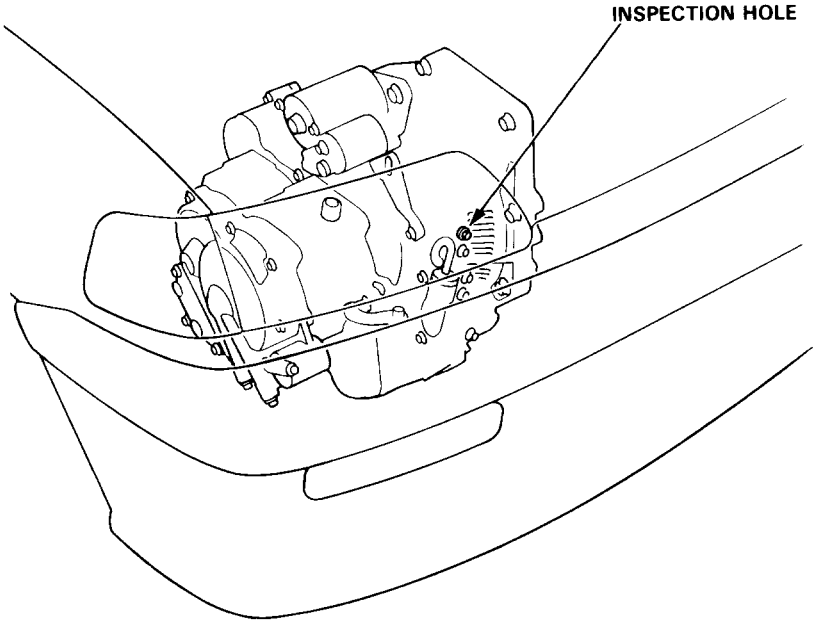


LOW PRESSURE GAUGE (07406–0070000)



HOSE FITTING

Line Pressure Measurement
- Set the parking brake securely.
- Jack up the front of the car and support it with a jack stands.
- Run the engine at 2,000 rpm.



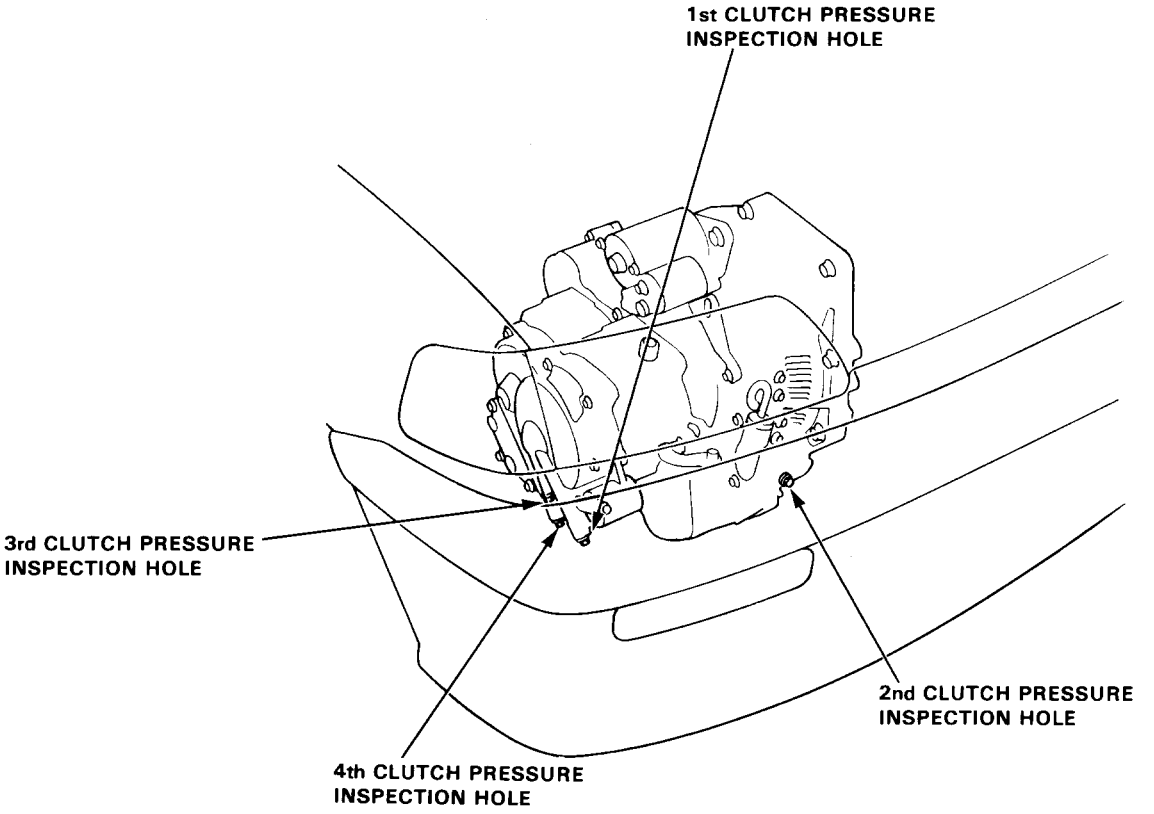
PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Line	N or P	No (or low) Line pressure	Torque converter, oil pump pressure regulator, torque converter check valve, oil pump	785–834 kPa (8.0–8.5 kg/cm^2, 114–121 psi) 1.2 ℓ : 736–785kPa (7.5–8.0kg/cm^2, 107–114 psi)	736 kPa (7.5 kg/cm^2, 107 psi) 1.2 ℓ : 686 kPa (7.0 kg/cm^2, 100 psi)

(cont'd)

Testing (cont'd)

Clutch Pressure Measurment

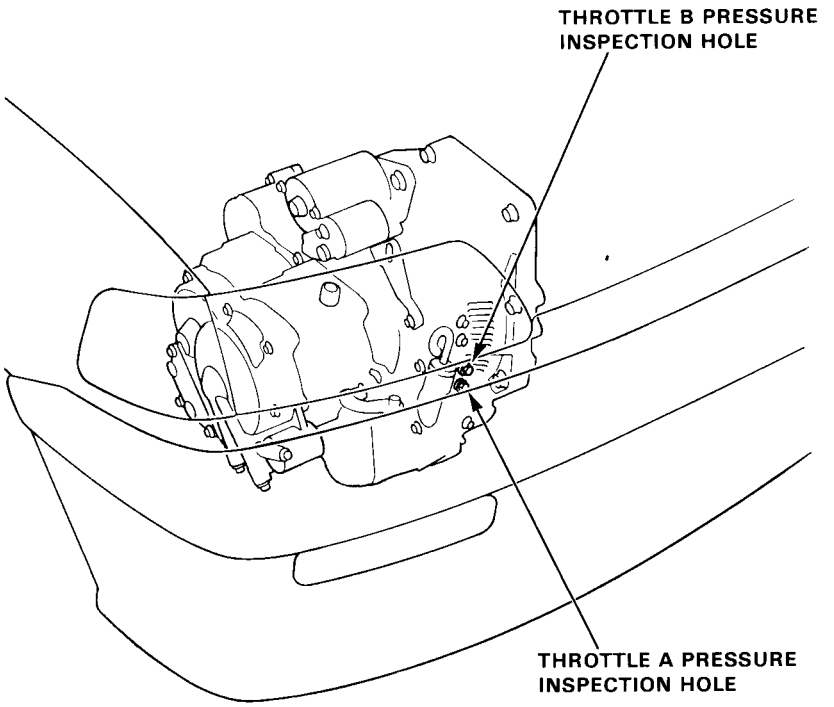
- Set the parking brake securely and block the rear wheels.
- Jack up the front of the car and support it with jack stands.
- Run the engine at 2,000 min^{-1} (rpm)



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/cm^2, 114—121 psi)	736 kPa (7.5 kg/cm^2, 107 psi)
2nd Clutch (2nd hold)	[2]	No or low 2nd pressure	2nd Clutch	785—834 kPa (8.0—8.5 kg/cm^2, 114—121 psi)	736 kPa (7.5 kg/cm^2, 107 psi)
2nd Clutch 3rd Clutch 4th Clutch	[D3] or [D4]	No or low 3rd or 4th pressure	2nd, 3rd and 4th Clutch	412 kPa (4.2 kg/cm^2, 60 psi) (throttle control lever fully closed) 785—834 kPa (8.0—8.5 kg/cm^2, 114—121 psi) (throttle open more than 1/4)	363 kPa (3.7 kg/cm^2, 53 psi) (throttle control lever fully closed) 736 kPa (7.5 kg/cm^2, 107 psi) (throttle open more than 1/4)
	[R]		Servo valve		

ThrottlePressure Measurement

- Set the parking brake securely and block the wheels.
- Run the engine at 1,000 min^{-1} (rpm)
- Disconnect the throttle control cable from the throttle lever.



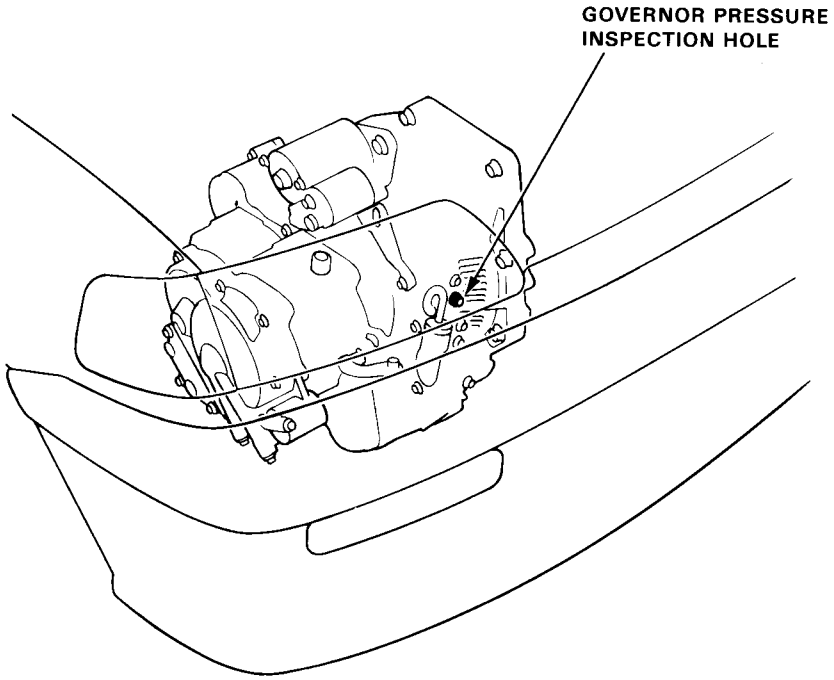
PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Throttle A	D3 or D4	No (or low) throttle pressure	Throttle valve A Throttle modulator valve	0—4.9 kPa (0—0.05 kg/cm^2, 0—70 psi) with lever released. 505—520 kPa (5.15—5.30 kg/cm^2, 73.2—75.4 psi) with lever in full throttle position. 1.4 ℓ KG: 456—471 kPa (4.65—4.80 kg/cm^2 66—68 psi) With lever in full throttle position.	500 kPa (5.1 kg/cm^2, 72.5 psi) with lever in full throttle position. 1.4 ℓ KG: 451 kPa (4.6 kg/cm^2, 65 psi) with lever in full throttle position.
Throttle B	D3 or D4	No (or low) throttle pressure	Throttle valve B	0 kPa (0 kg/cm^2, 0 psi) with lever released. 785—834 kPa (8.0—8.5 kg/cm^2, 114—121 psi) with lever in full throttle position.	736 kPa (7.5 kg/cm^2, 107 psi) with lever in full throttle position.

(cont'd)

Testing (cont'd)

Governor Pressure Meassurement

- Set the parking brake securely and block the rear wheels.
- Jack up the front of the car and support it with jack stands.
- Run vehicle at 38 mph (60 km/h).



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Governor	D3 or D4	No (or low) governor pressure	Governor valve	KS, KX, KZ: 206—216 kPa (2.10—2.20 kg/cm^2, 30—31 psi) Others: 151—161 kPa (1.54—1.64 kg/cm^2, 22—23 psi)	KS, KX, KZ: 201 kPa (2.05 kg/cm^2, 29 psi) Others: 146 kPa (1.49 kg/cm^2, 21 psi)

Stall Speed

Test

CAUTION:

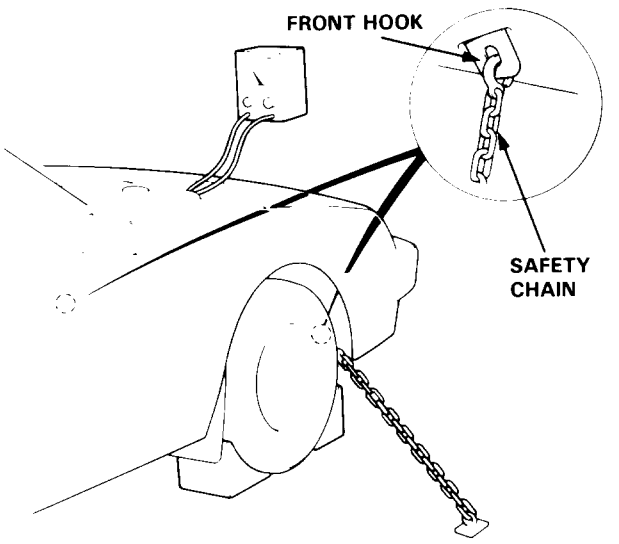
- **To prevent transmission damage, do not test stall speed for more than 10 seconds at a time.**
- **Do not shift the lever while rising the engine speed.**
- **Be sure to remove the pressure gauge before testing stall speed.**

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 [D3].
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], [2], and [R].

NOTE: Stall speed in [D3], [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)

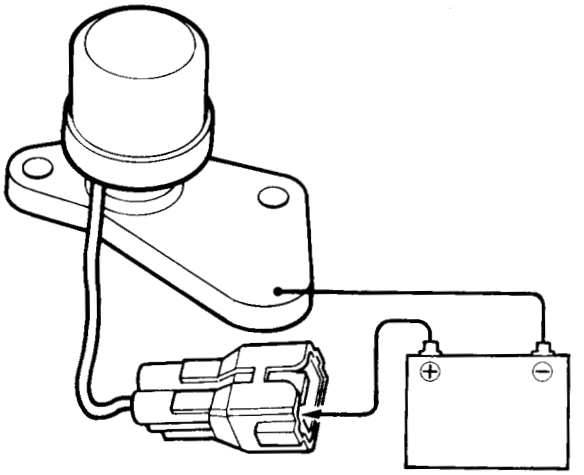
TROUBLE	PROBABLE CAUSE
Stall rpm high in [2], [D3], [D4], and [R]	· Low fluid level or oil pump output. · Clogged oil strainer. · Pressure regulator valve stuck closed. · Slipping clutch.
Stall rpm high in [D3] and [D4] only	· Slippage of 1st clutch.
Stall rpm low in [2], [D3], [D4], and [R]	· Engine output low, throttle cable misadjusted. · Oil pump seized. · Torque converter one-way clutch slipping.



Lock-up Control Solenoid Valve (1.5ℓ PGM-FI)

Inspection

1. Disconnect the lock-up control solenoid valve connector.
2. Connect the YEL/BLK 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.

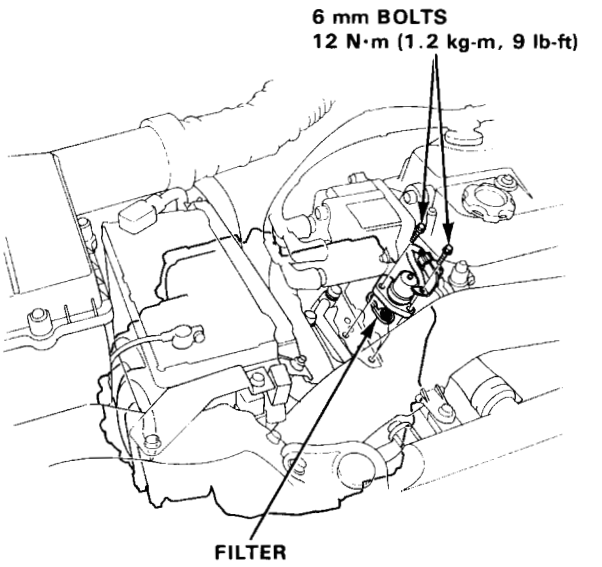


3. If not, check for continuity between the harness and body ground.
4. Replace the lock-up control solenoid valve if there is continuity between the harness and body ground.

Replacement

NOTE: Be sure to replace the lock-up control solenoid valve only when it is suspected to be faulty.

1. Remove the 6 x 1.0 mm bolts and lock-up control solenoid valve.
2. Check the oil passage in the lock-up control solenoid valve body and replace if it is clogged with dirt.



3. Clean the lock-up control solenoid valve mounting surface and oil passage.
4. Install a new filter O-ring and the lock-up control solenoid valve.
5. Be sure that the connector is not rusted or contaminated with dirt or oil and connect it securely.

Fluid Level

Checking/Changing

Checking

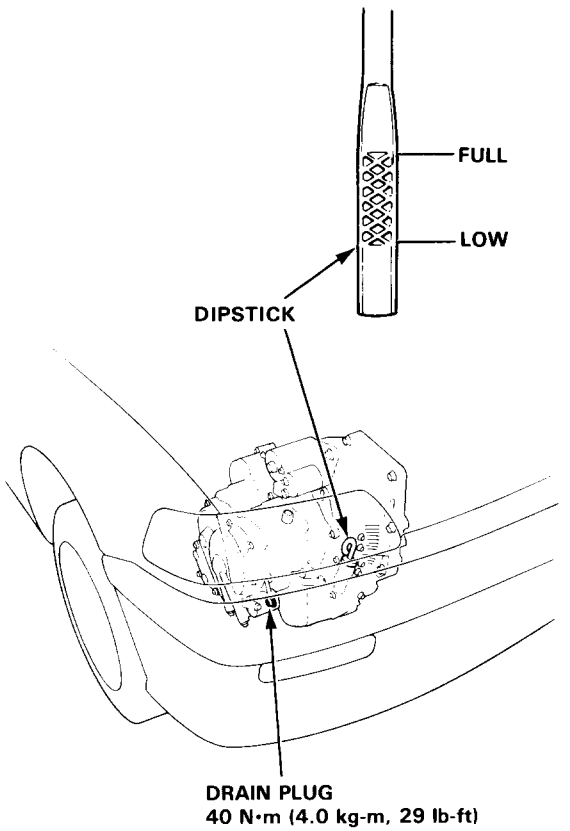
With the car on level ground, pull the transmission dipstick and check the level of fluid immediately after the engine is shut off (within one minute). The fluid level should be between the full and low marks. Push the dipstick all the way in to check the fluid level. If the level is at, or below, the low mark, add DEXRON-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:
2.4 ℓ (2.5 U.S. qts, 2.1 Imp. qt) at change
5.4 ℓ (5.7 U.S. qts, 4.8 Imp. qt) after overhaul



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**

		1st→2nd	2nd→3rd	3rd→4th	Lock-up. ON
Full-throttle Acceleration from a stop (km/h)	1.4 ℓ	54—58	97—105	143—151	140—148
	1.5ℓ With CATA	50—57	94—103	145—154	144—155
	Others	52—57	96—105	148—156	148—155
Half-throttle Acceleration from a stop (km/h)	1.4 ℓ	36—43	66—72	95—108	—
	1.5ℓ with CATA	32—35	62—70	86—95	—
	Others	29—37	60—66	91—105	—
1/8-throttle Coasting down-hill from a stop (km/h)	1.4 ℓ	20—23	42—48	53—58	46—55
	1.5ℓ with CATA	20—22	36—39	49—56	46—61
	Others	16—19	31—38	48—55	46—55

- **Downshift**

		4th→3rd	3rd→2nd	2nd→1st
Full-throttle When car is slowed by increased grade, wind, etc. (km/h)	1.4 ℓ	122—131	79—88	39—45
	1.5ℓ with CATA	118—128	88—94	38—41
	Others	130—138	83—93	42—47

		4th→2nd	2nd→1st
Closed-throttle Coasting or braking to a stop (km/h)	1.4 ℓ	16—19	10—12
	1.5ℓ with CATA	28—31	10—12
	Others	15—17	9—11

3. Accelerate to about 56 km/h 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 100 km/h; 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.

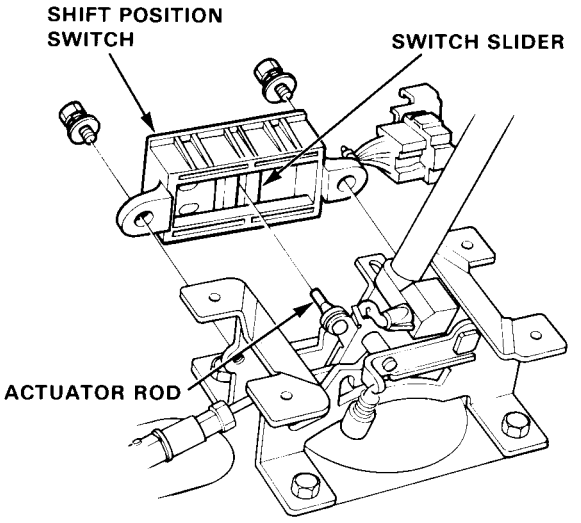
P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake; the car should not move.

Shift Position Switch

Installation

1. Position the switch slider in neutral as shown.
2. Shift selector lever to neutral.
3. Align the switch lug with the actuator rod.

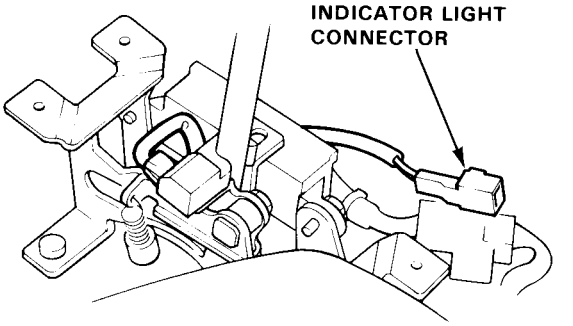


4. Tighten the bolts.

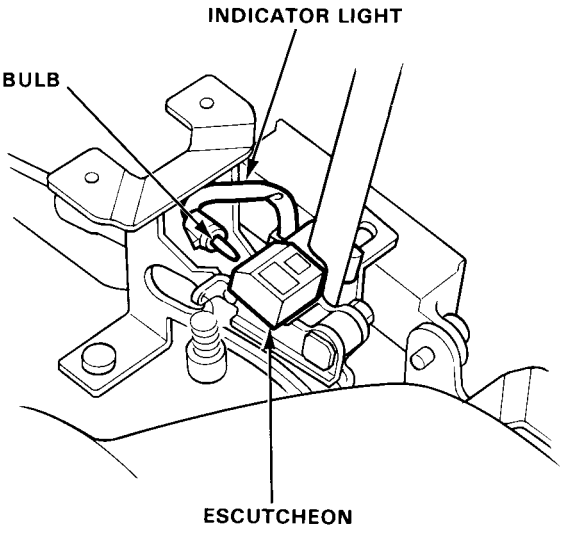
Shift Indicator Light

Check and Installation

1. Check for continuity between indicator light connector terminals as shown. If there is no continuity, check for burned out bulb or open circuit.



2. Install the indicator bulb in the bulb housing. Insert the bulb housing into slot in escutcheon, then turn 90° to bulb housing.



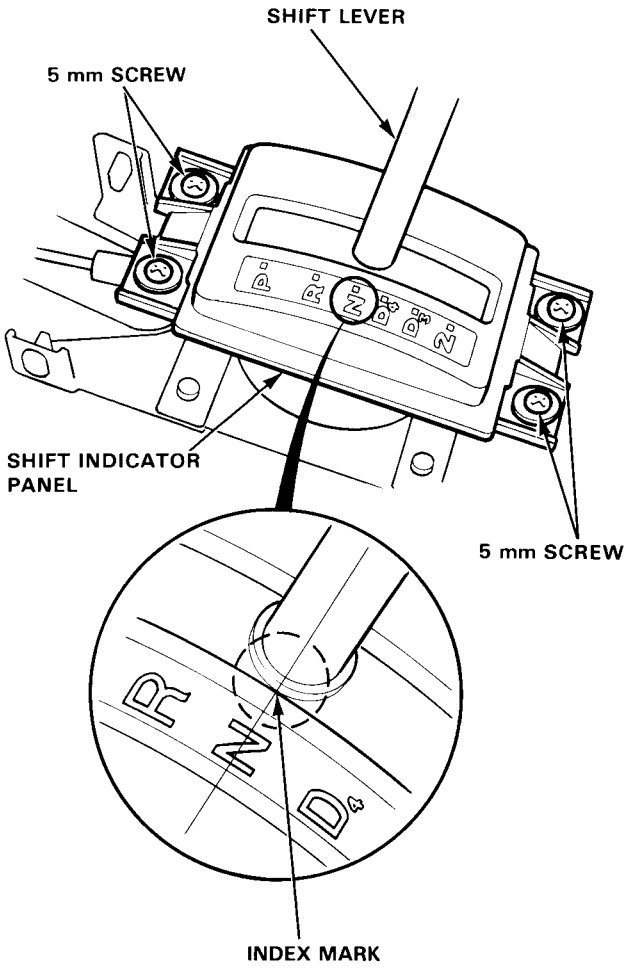
Shift Indicator Panel

Adjustment

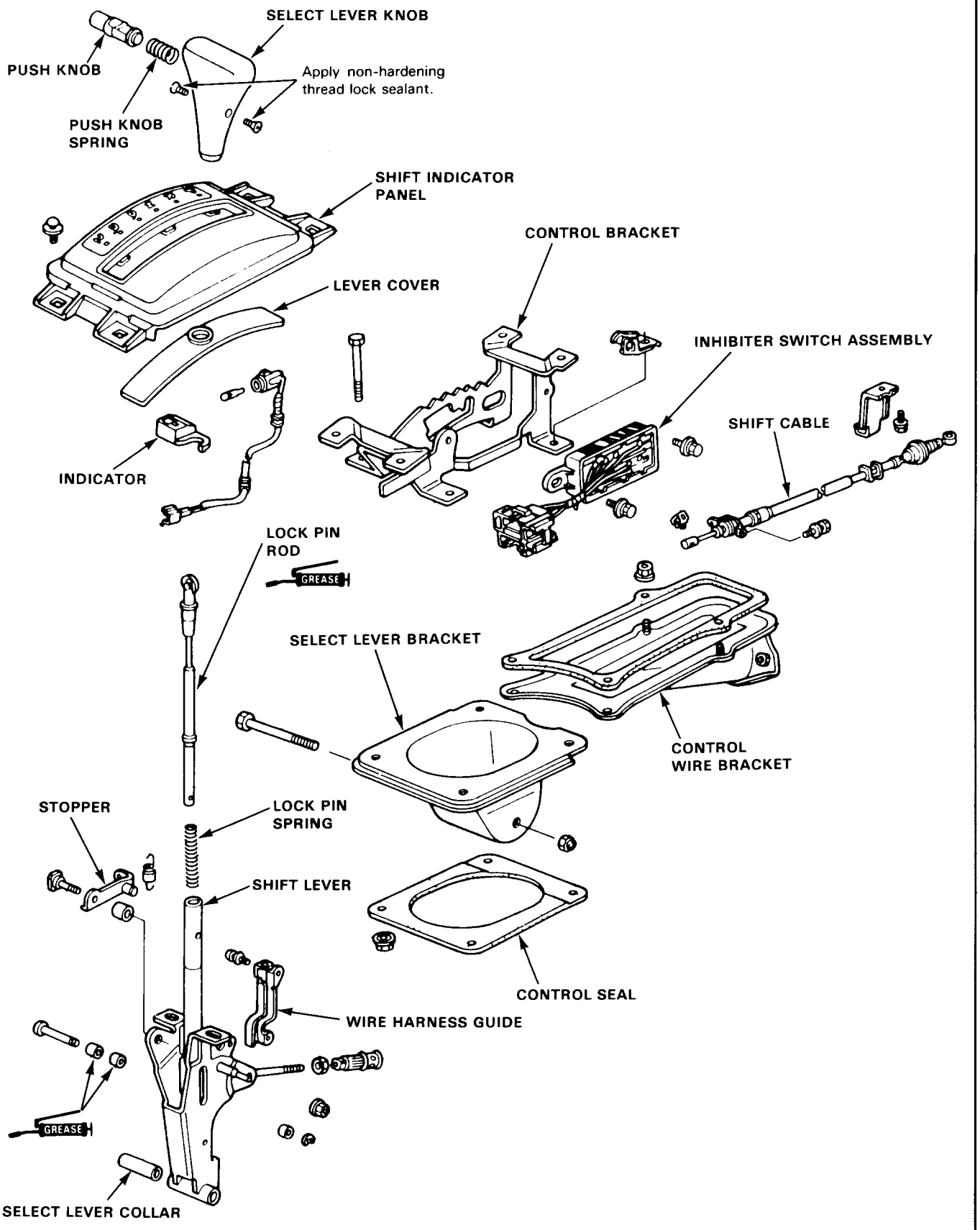
1. Check that the index mark of the indicator aligns with the N mark of the shift indicator panel with the transmission in NEUTRAL.

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.



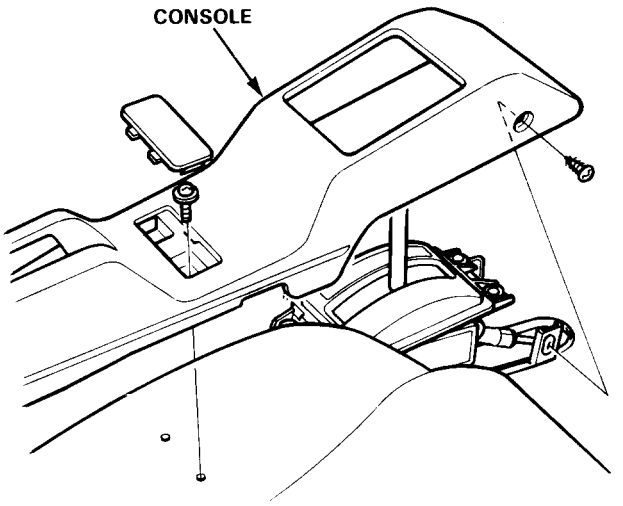
Gear Shift Selector



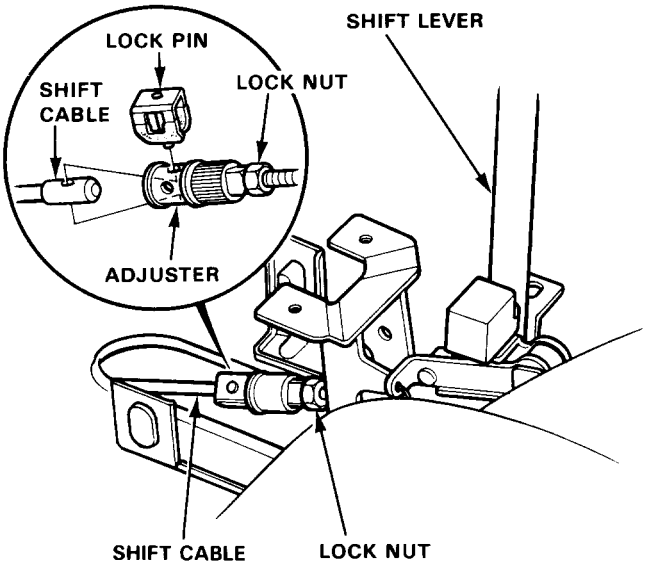
Shift Cable

Adjustment

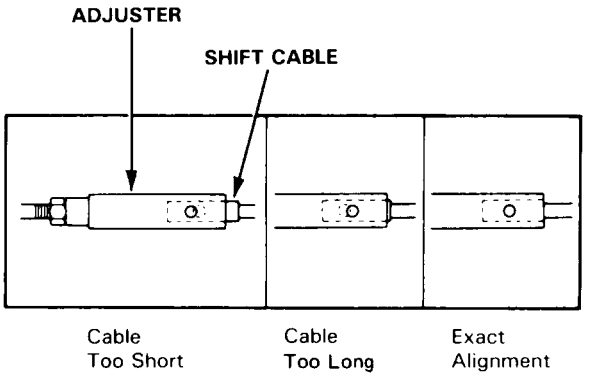
1. Start the engine. Shift to reverse to see if the reverse gear engages.
2. With the engine off, remove the console.



3. Shift to Drive, then 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 locknut on shift cable and adjust as required.
6. Tighten the locknut.
7. Install the lock pin on the adjuster.

NOTE: If you feel the lock pin binding as you reinstall it, the cable is still out of adjustment and must be readjusted again.

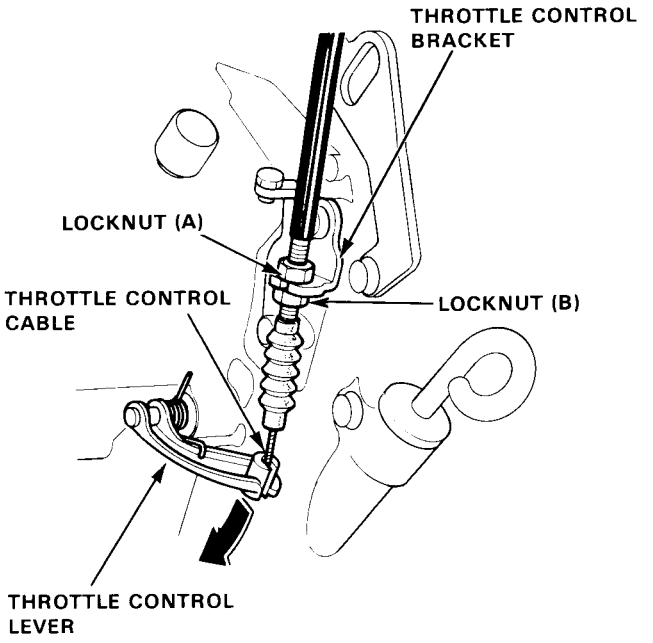
8. Start the engine and check the shift lever in all gears. If any gear does not work properly, refer to Troubleshooting on page 9-2.

Throttle Control Cable

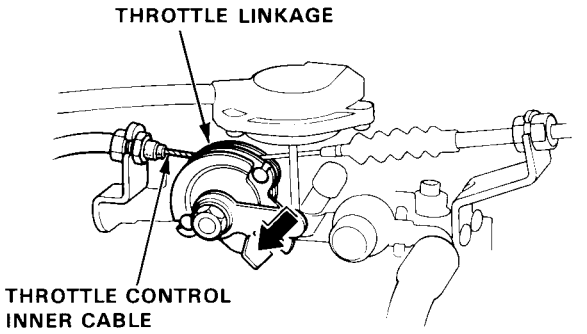
Adjustment/Inspection

1. Loosen locknuts (A) and (B) on the throttle control cable.

2. Press down as shown on the throttle control lever until it stops.



3. While pressing down on the throttle control lever, pull on the throttle linkage to check the amount of throttle control cable free play.



Remove all throttle control cable free play by gradually turning lock nut (A).

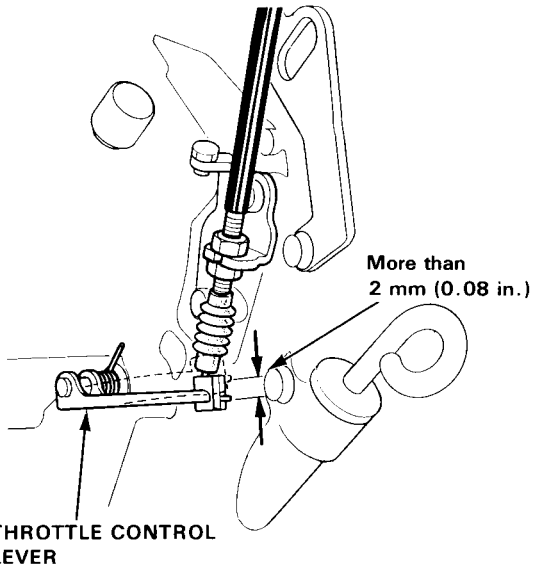
While continuing to press down on the throttle control lever, pull open the throttle linkage.

The control lever should begin to move at precisely the same time as the linkage.

NOTE: Correct "Fine Tune" adjustment of the throttle control cable is critical for proper operation of the transmission and lock-up torque convertor.

4. 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.

Removal

WARNING

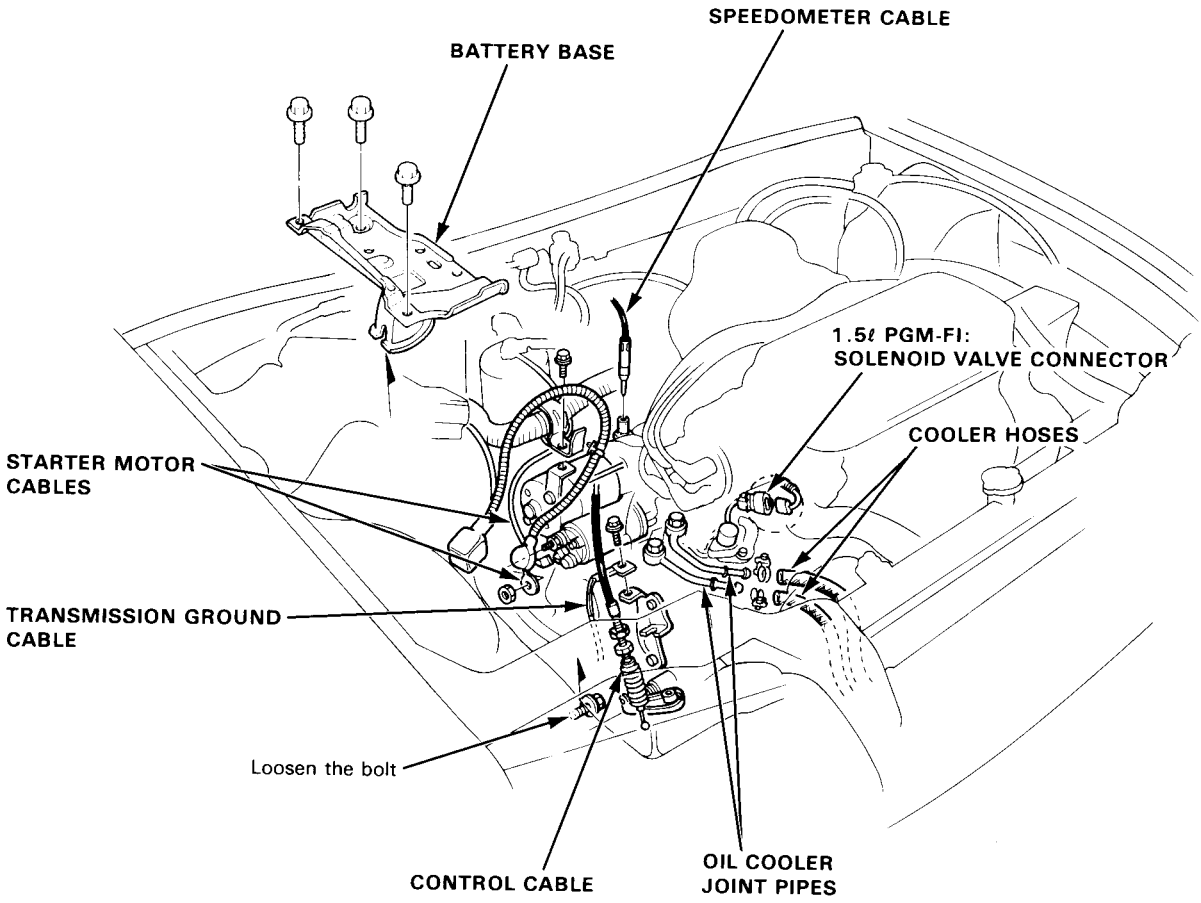
- **Make sure jacks and safety stands are placed properly, and hoist brackets are attached to correct positions on the engine.**
- **Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

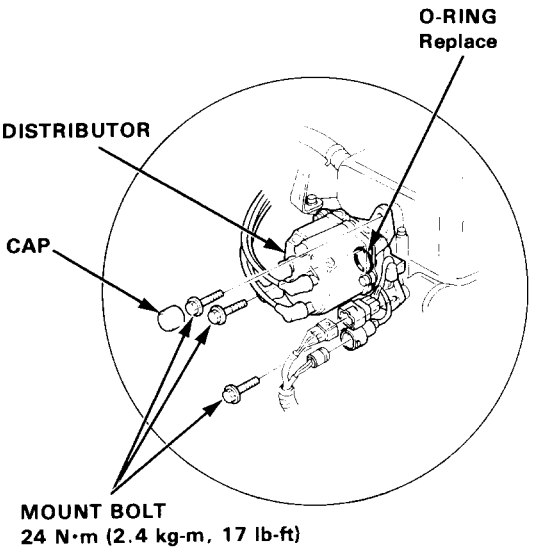
1. Disconnect the battery negative (−) and positive (+) cables from the battery, and remove the battery.
2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base, and intake hose band of the throttle body.
3. Remove the air cleaner case complete with the intake hose (see 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. **1.5ℓ PGM-FI:**
   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.



10. Disconnect the connectors and remove the mount bolts, then remove the distributor from the cylinder head.



11. Remove the engine splash shield and the right wheelwell splash shield.

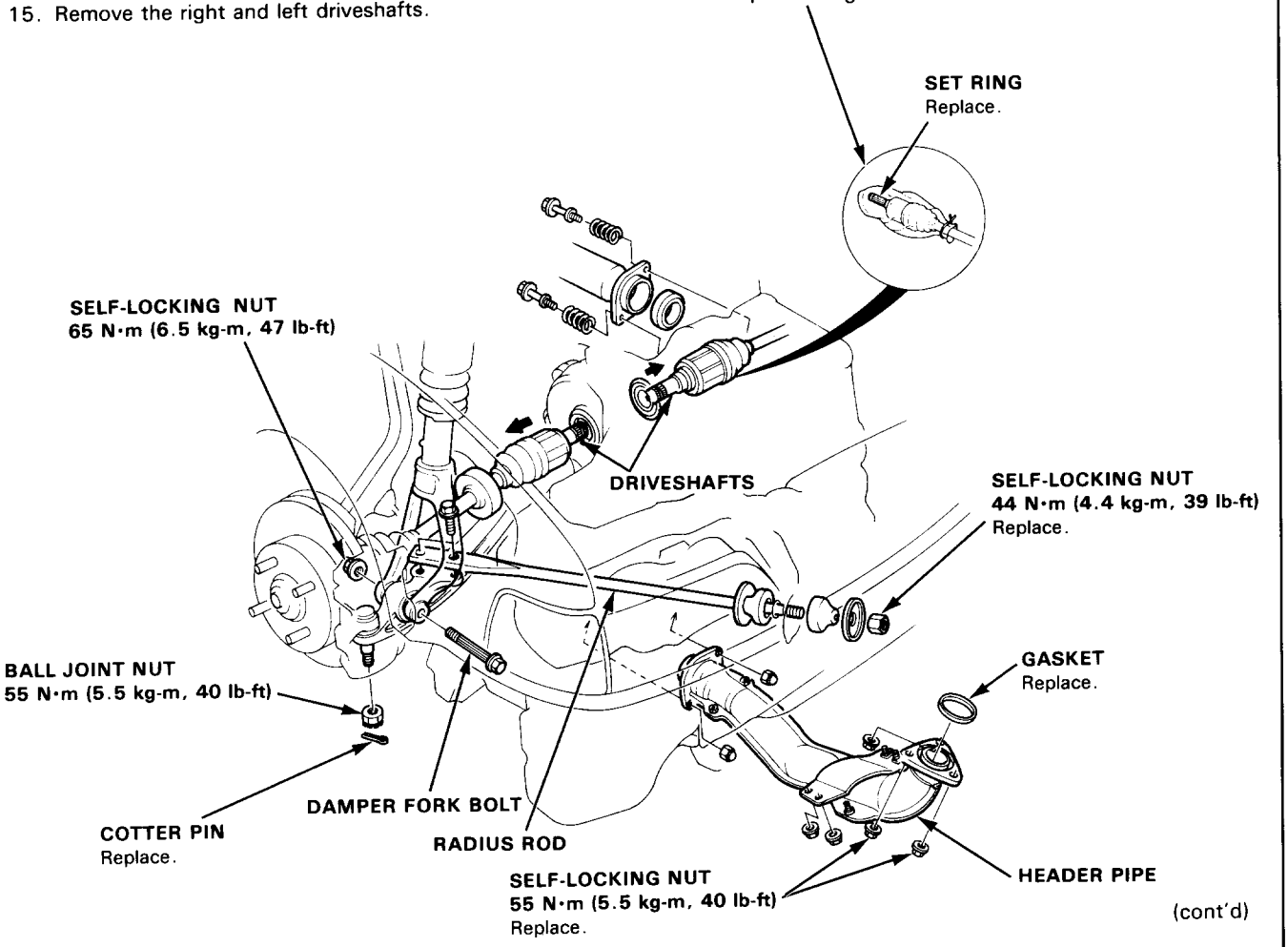
12. Remove the header pipe.

13. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm (See Section 5).

14. Remove the bolts and nut, then remove the right radius rod.

15. Remove the right and left driveshafts.

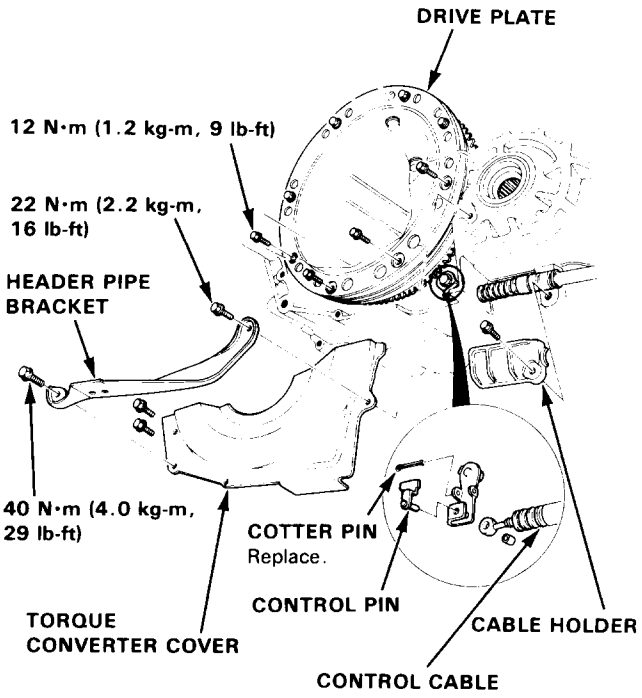
NOTE: Coat all precision finished surfaces with clean engine oil or grease.
Tie plastic bags over the driveshaft ends.

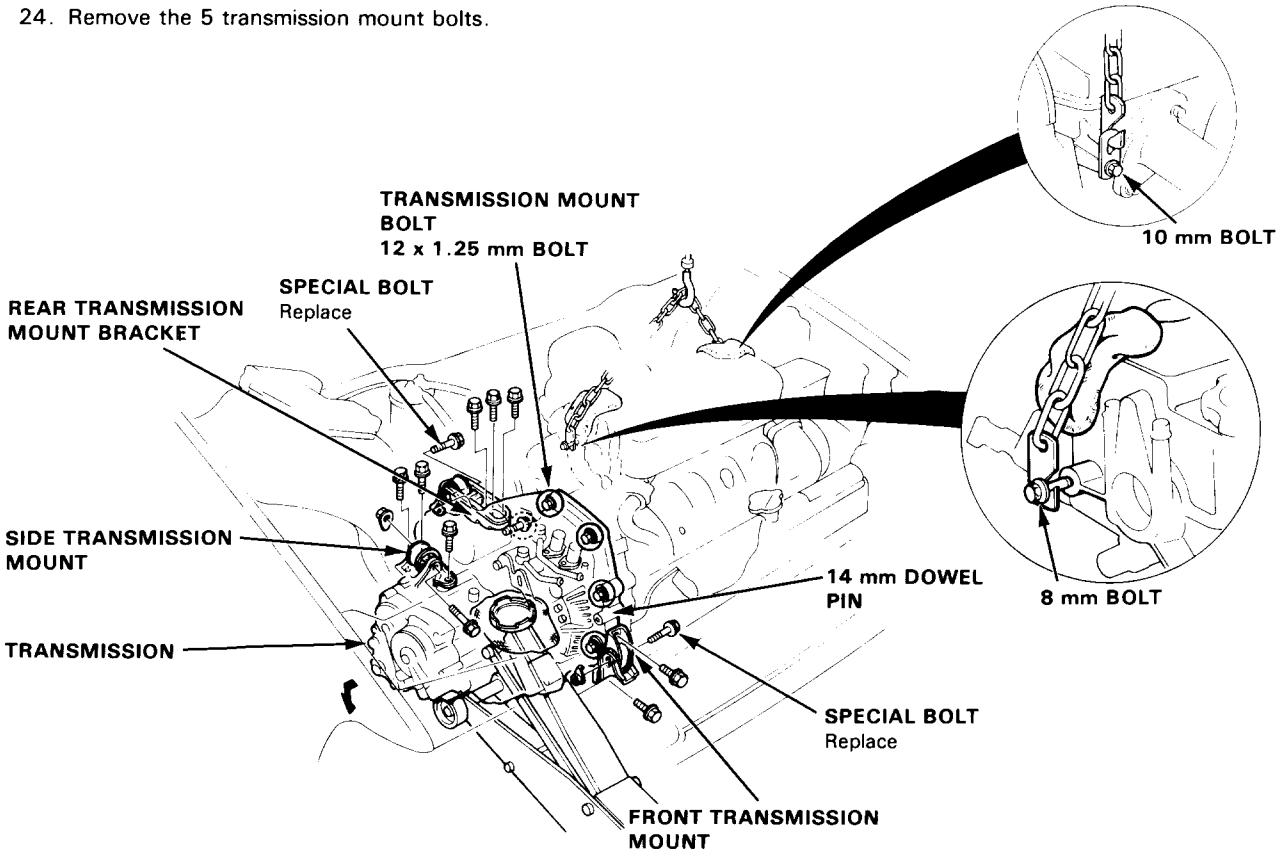


(cont'd)

Removal (cont'd)

16. Remove the header pipe bracket, torque converter cover and cable holder.
17. Remove the shift control cable by removing the cotter pin, control pin and control lever roller from the control lever.
18. Remove the plug, then remove the drive plate bolts one at a time while rotating the crankshaft pulley.
19. Install the bolts at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plates, then lift the engine slightly to unload the mounts.
20. Place a jack under the transmission and raise transmission just enough to take weight off 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 4 mounting bolts, then remove the side transmission mount.
24. Remove the 5 transmission mount bolts.

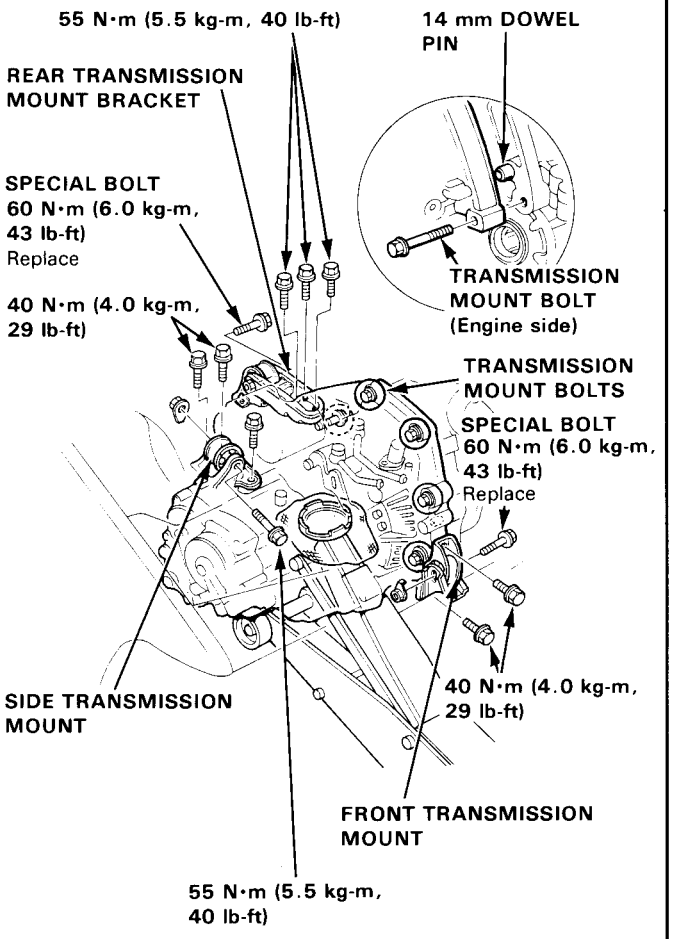




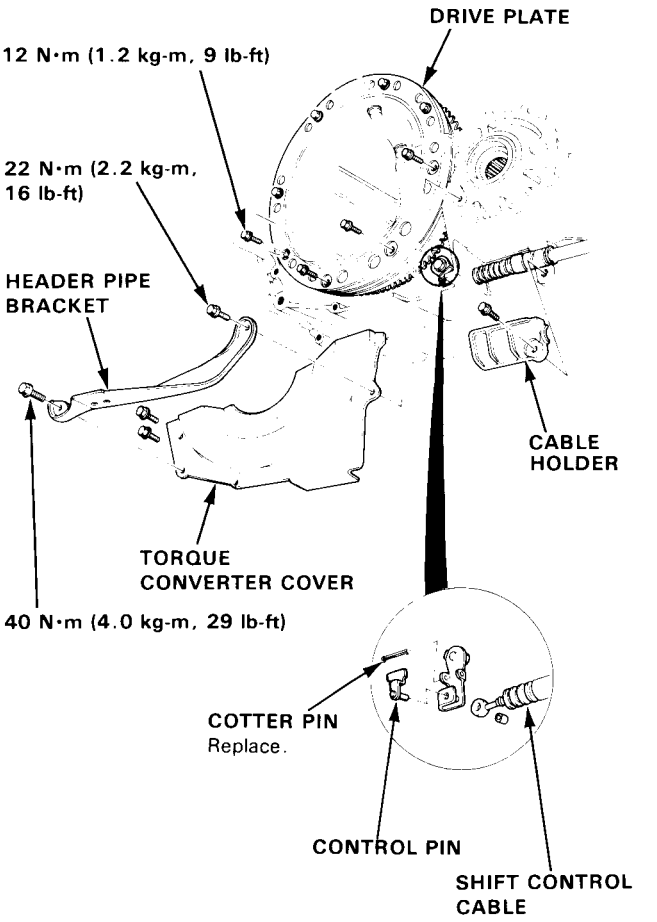
25. Pull the transmission away from the engine until it clears the 14 mm dowel pins, then lower on the transmission jack.

Installation

1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the 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.
10. Intall the shift control cable and cable holder.

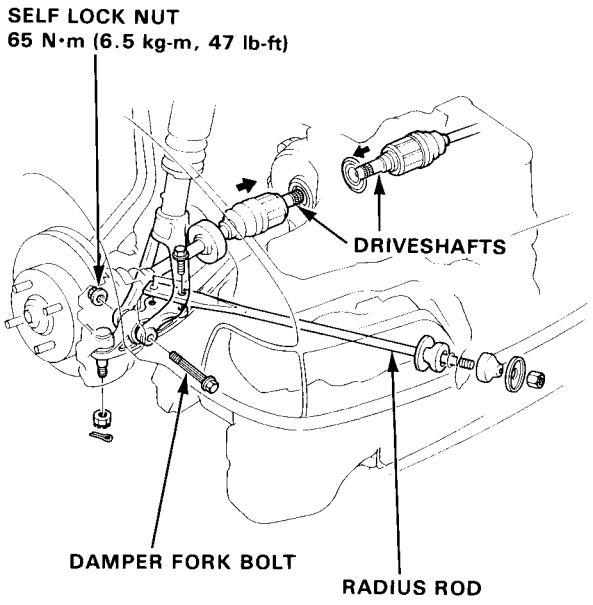


11. Install the torque converter cover and header pipe bracket.

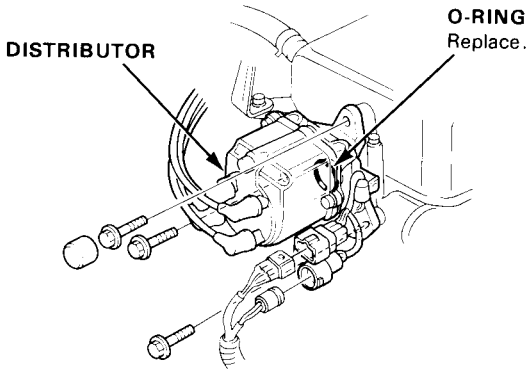
(cont'd)

Installation (cont'd)

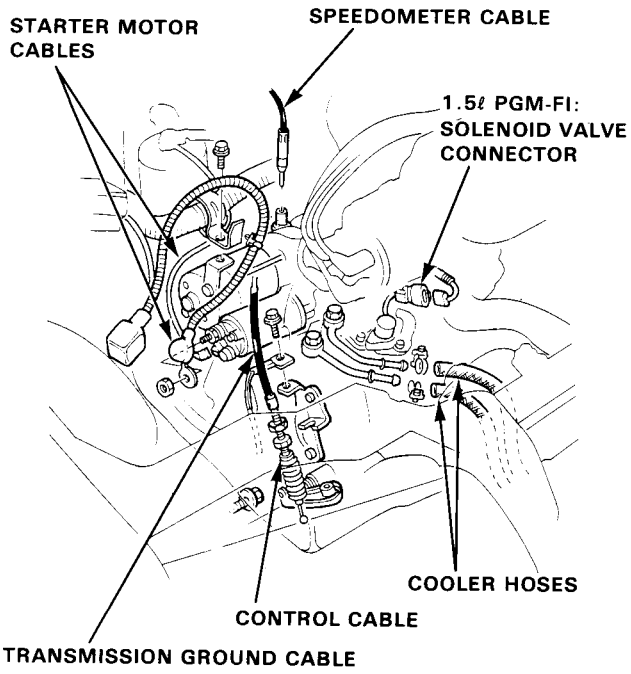
12. Install a new set ring on the end of each driveshaft.
13. Install the right and left driveshafts (See Section 10). NOTE: Turn the right and left steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage the side gear.



14. Install the damper fork bolt and radius rod.
15. Install the ball joints to the lower arm.
16. Install the splash shields and exhaust header pipe.
17. Install the distributor.



18. **1.5ℓ PGM-FI:**
Connect the lockup control solenoid valve wire connector.
19. Connect the cooler hoses to the joint pipes.
20. Connect the 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.

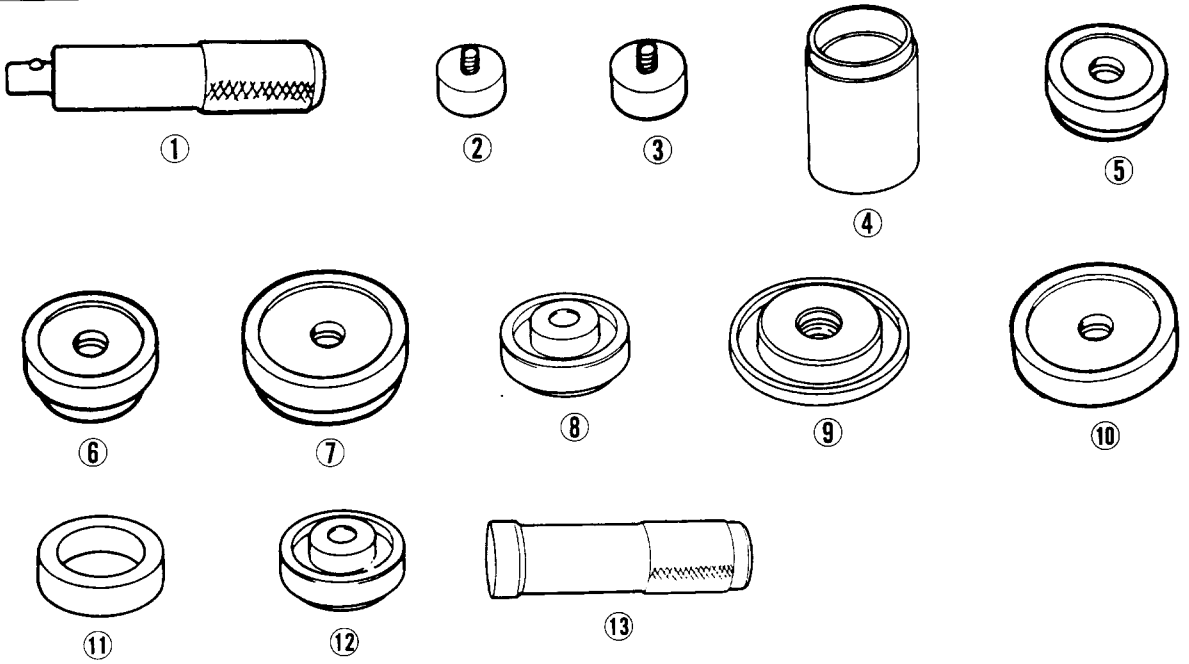


23. Refill the transmission with ATF.
24. Connect the starter motor and transmission ground cables.
25. Connect the battery positive (+) and negative (−) cables to the battery.
26. Install the air cleaner case and intake hose.
27. Start the engine, set the parking brake, and shift the transmission through 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 page 9-12.

Driveshafts

Special Tools

Re1. No.	Tool Number	Description	Q'ty	Remarks
①	07749—0010000	Driver	1	
②	07746—0040800	38 mm Pilot	1	
③	07746—0040900	40 mm Pilot	1	
④	07965—SD90100	Support Base	1	
⑤	07746—0010300	Attachment 42 x 47 mm	1	
⑥	07746—0010400	Attachment 52 x 55 mm	1	
⑦	07746—0010500	Attachment 62 x 68 mm	1	
⑧	07947—SD90100	Oil Seal Driver Attachment	1	
⑨	07GAD—SE00100	Oil Seal Driver Attachment	1	
⑩	07JAD—SH30100	Oil Seal Driver Attachment	1	
⑪	07965—SD90200	Support Collar	1	
⑫	07947—SD90200	Oil Seal Driver Attachment	1	
⑬	07746—0030100	Inner Handle (C)	1	

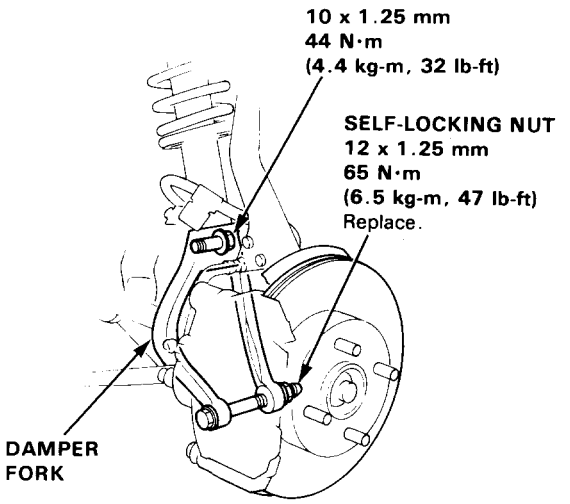


Driveshafts

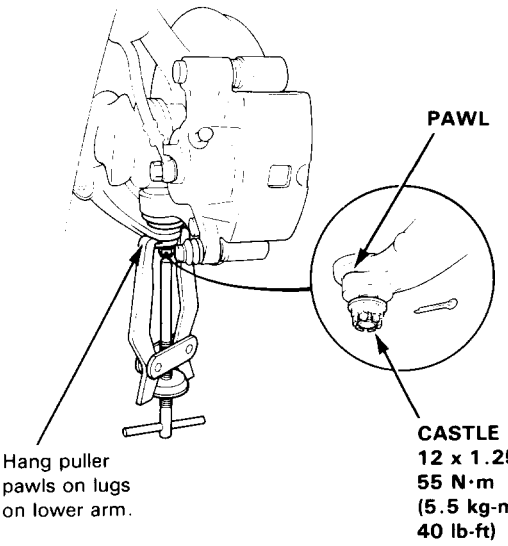
Removal

1. Loosen the front wheel lug nuts.
2. Raise the front end of the car and place safety stands in the proper locations. Remove the front wheels.
3. Drain the transmission oil.

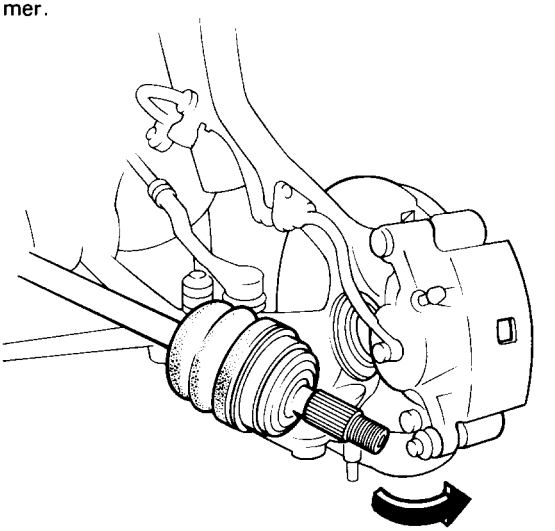
   NOTE: It is not necessary to drain the transmission oil when only the left driveshaft is removed.
4. Raise the locking tab on the spindle nut and remove it with a 36 mm (1-7/16 in.) socket wrench.
5. Remove the damper fork nut and damper pinch bolt. Remove the damper fork.



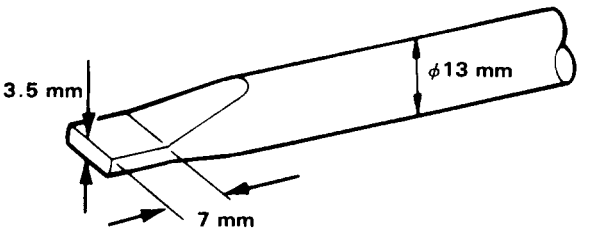
6. Remove the knuckle-to-lower arm castle nut, and separate the lower arm from the knuckle using a puller with the pawls applied to the lower arm.

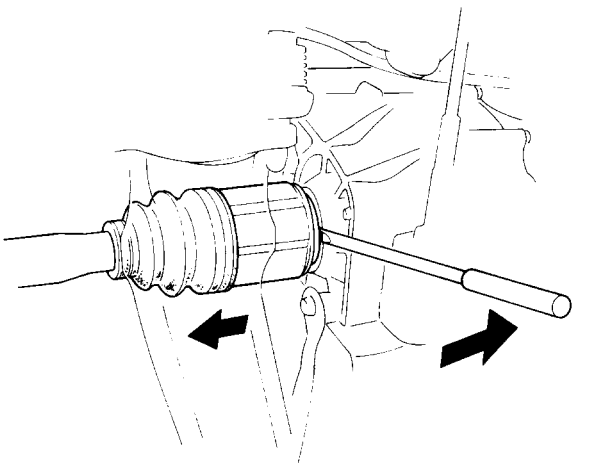


7. Pull the knuckle outward and remove the driveshaft outboard joint from the knuckle using a plastic hammer.



8. Pry the driveshaft assembly with a screwdriver as shown to force the set ring at the driveshaft end past the groove.
9. Pull the inboard joint and remove the driveshaft and CV joint out of the differential case as an assembly.





CAUTION:

- **Do not pull on the driveshaft, as the CV joint may come apart.**
- **Use care when prying out the assembly and pull it straight to avoid damaging the differential oil seal or intermediate shaft dust seal.**

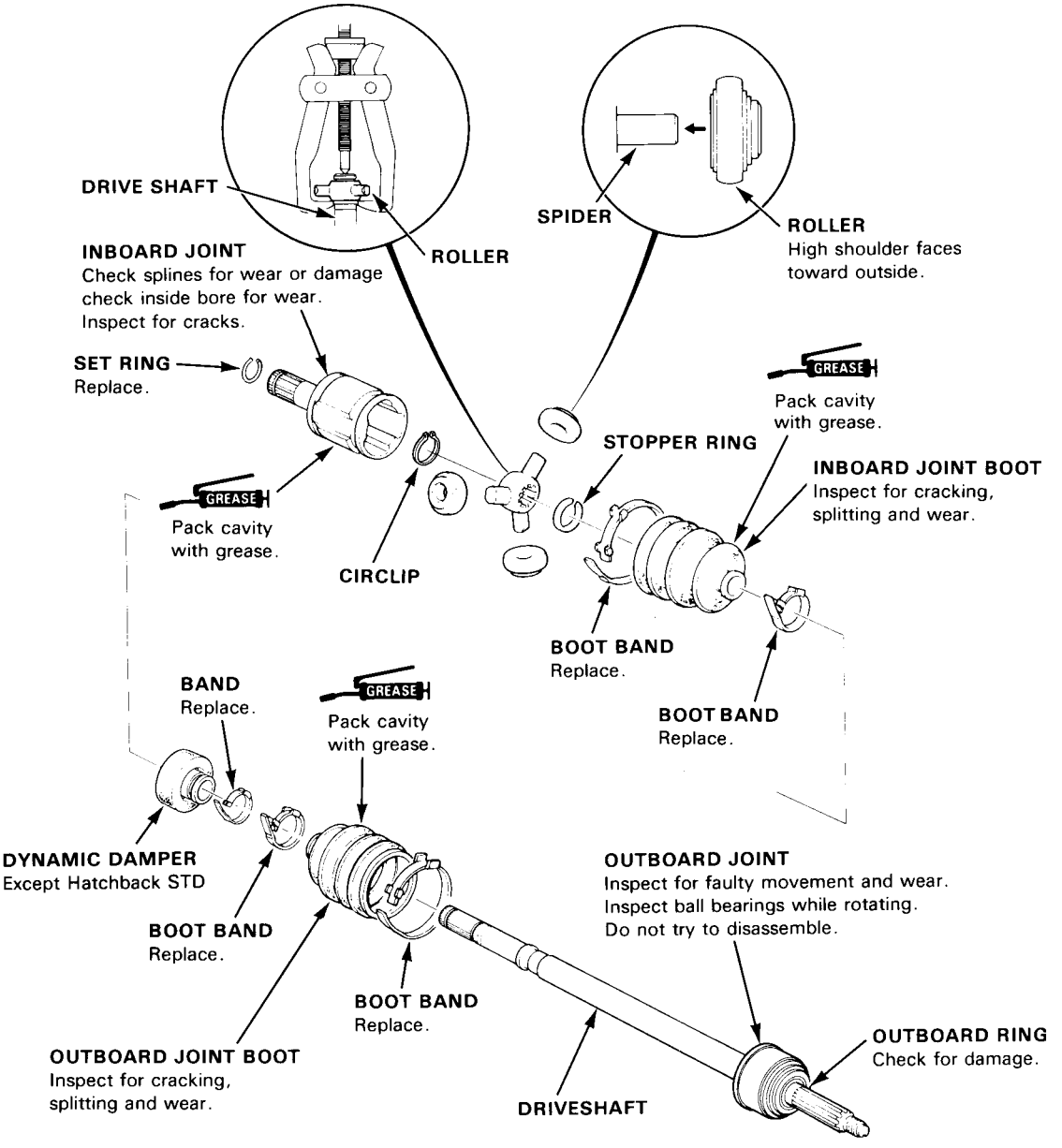
Disassembly/Inspection

NOTE:
- Mark the rollers and roller grooves during disassembly to ensure proper positioning during reassembly.
- Before disassembly, mark the spider and driveshaft so they can be reinstalled in their original positions.
- The inboard joint must be removed to replace the boots.

GREASE Thoroughly pack the inboard joint and both joint boots with high quality molybdenum disulfide grease when reassembling.

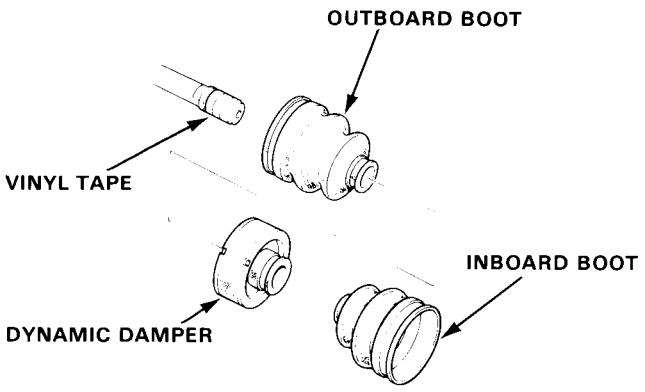
Grease Quantity:

	1-Carbureted Engine (Ex. 1.5 ℓ and EC)	Others
Inboard Joint	100~110 g	120~130 g
Outboard Joint	70~80 g	90~100 g

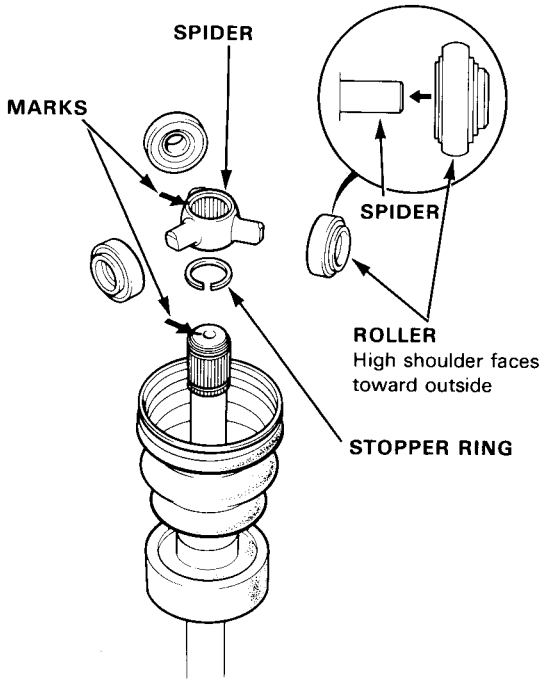


Reassembly

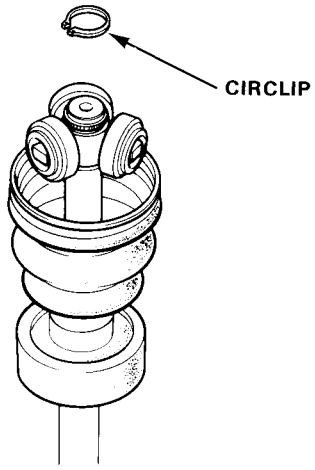
1. Wrap the splines with vinyl tape to prevent damage to the boots and dynamic damper.
2. Install the outboard boot, dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape.



3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the rollers to the spider with their high shoulders facing outward.
   CAUTION:
   - **Reinstall the rollers to their original positions on the spider.**
   - **Hold the driveshaft assembly so the spider and roller points up, to prevent it from falling off.**



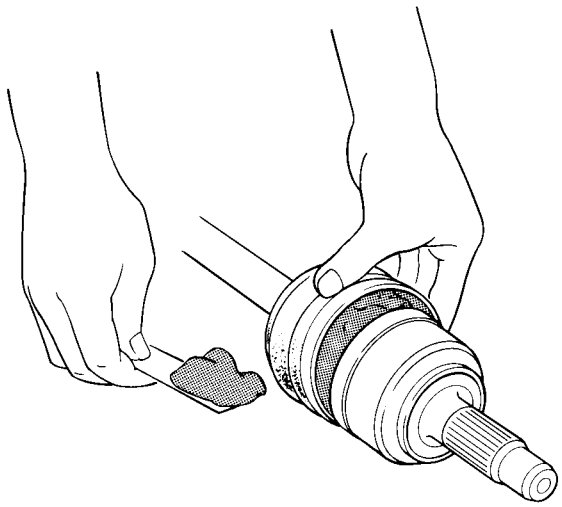
6. Fit the circlip onto the driveshaft groove.



7. Pack the outboard joint boot with molybdenum disulfide grease.

Grease Quantity:

1-Carbureted Engine (Ex. 1.5 ℓ and EC)	70~80 g
Others	90~100 g

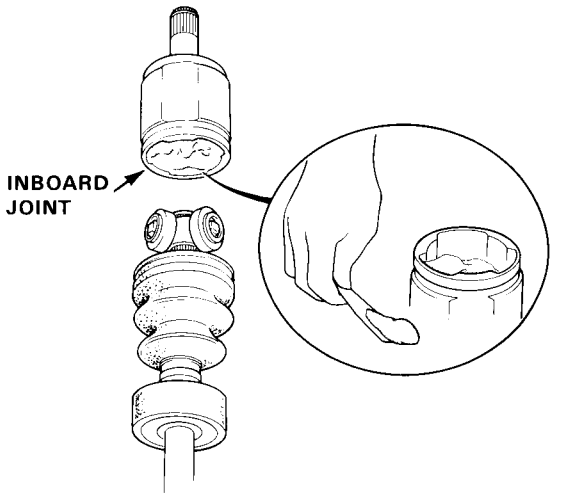


8. Pack the inboard joint with molybdenum disulfide grease.
Grease Quantity:

1-Carbureted Engine (Ex. 1.5 ℓ and EC)	100~110 g
Others	120~130 g

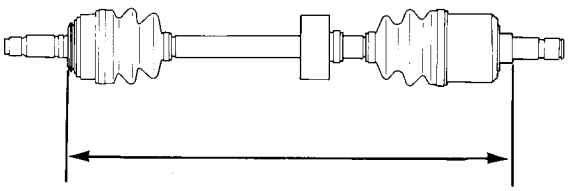
9. Fit the inboard joint onto the driveshaft.

CAUTION: Hold the driveshaft assembly so the inboard joint points up, to prevent it from falling off.



10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full entension.

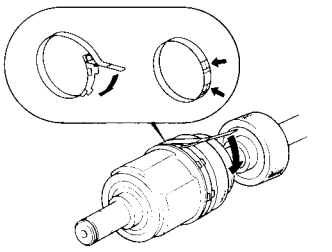
NOTE: The ends of boots seat in the groove of the driveshaft and joint.



	Left	Right
With Intermediate Shaft	485—490 mm (19.09—19.29 in)	485—490 mm (19.09—19.29 in)
Without Intermediate Shaft	774.5—779.5 mm (30.50—30.69 in)	481.5—486.5 mm (18.96—19.15 in)

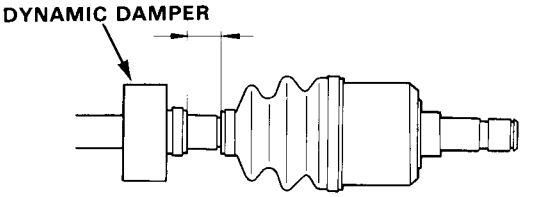
11. Install new boot bands on the boot and bend both sets of locking tabs.

12. Lightly tap on the doubled-over portions to reduce their height.



13. With dynamic damper
- Position the dynamic damper as shown below.
- Lighly tap on the doubled-over portion to reduce its height.
- Install a new dynamic damper band and bend down both sets of locking tabs.

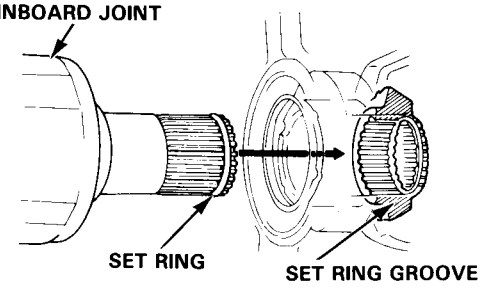
	Left	Right
PGM-FI, With Intermediate Shaft	30±2 mm (1.18±0.08 in)	30±2 mm (1.18—0.08 in)
PGM-FI, Without Intermediate Shaft and 2-Carbureted Engine	53.7±2 mm (2.11±0.08 in)	20±2 mm (0.78—0.08 in)
1-Carbureted Engine	53.7±2 mm (2.11±0.08 in)	—



14. Install a new set ring in the driveshaft groove.

15. Install the inboard end of the driveshaft into the 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.**

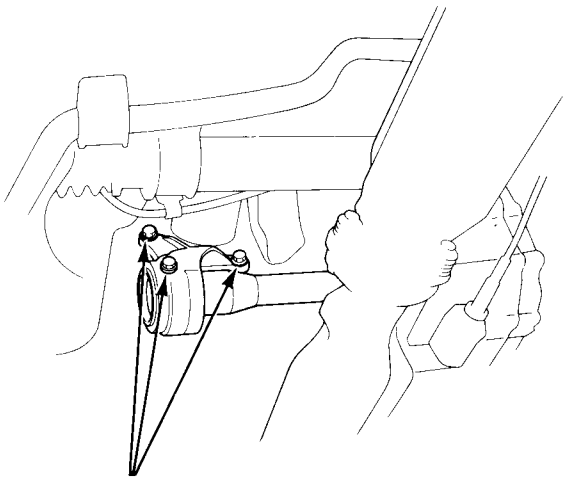


16. Refill the transmission.

Intermediate Shaft

Replacement

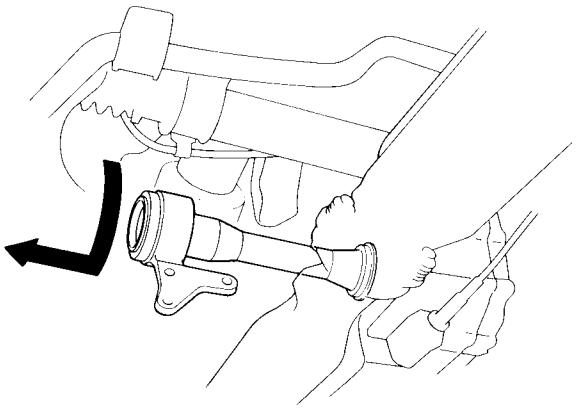
1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



10 x 1.25 mm
40 N·m (4.0 kg-m, 29 lb-ft)

3. Lower the bearing support close to the steering gearbox and remove the intermediate shaft from the differential.

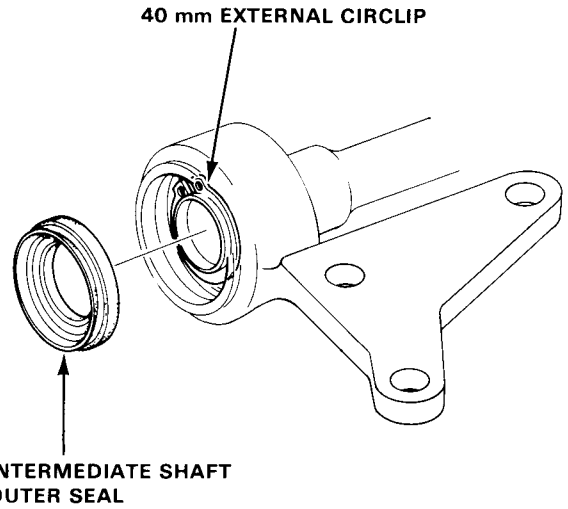
   CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



Installation is the reverse order of removal.

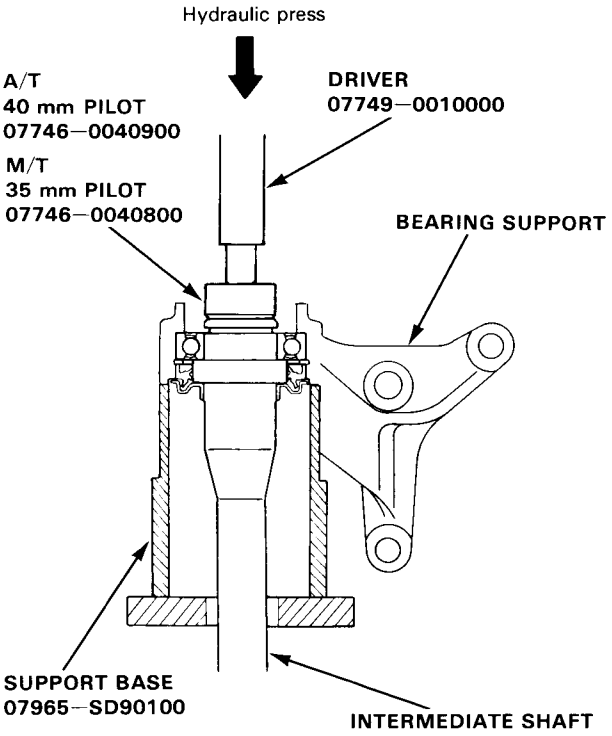
Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the 40 mm external circlip.



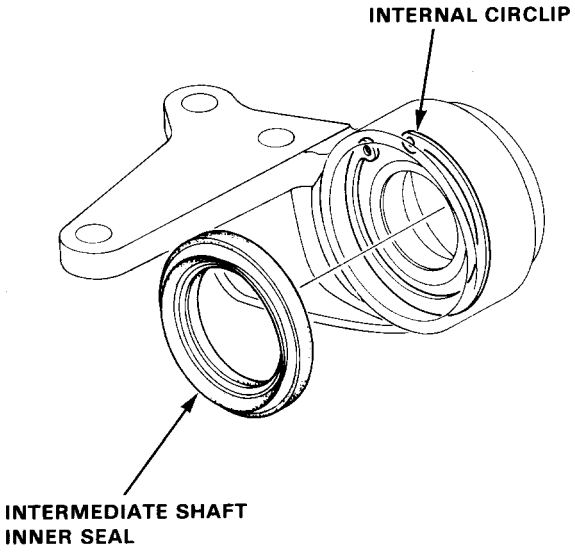
3. Press the intermediate shaft out of the shaft bearing.

   NOTE: A/T model is illustrated. M/T model does not require press or support base. The shaft can be hammered out using the driver and pilot, it the bearing support is clamped in a soft-jawed vise.

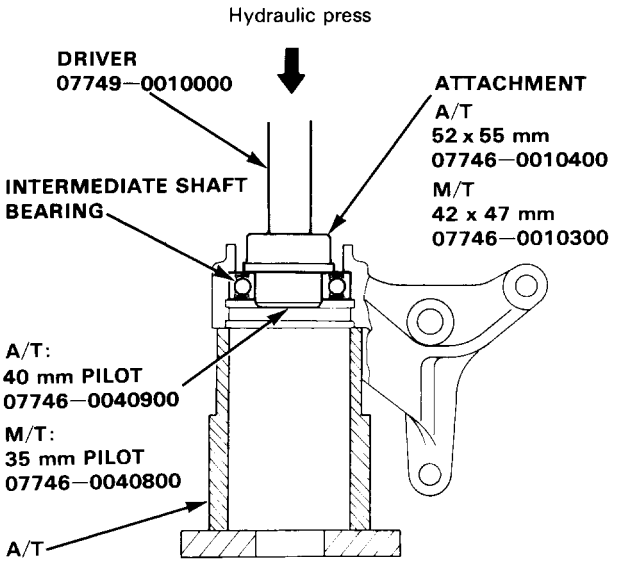


4. Remove the intermediate shaft inner seal.

5. Remove the internal circlip.

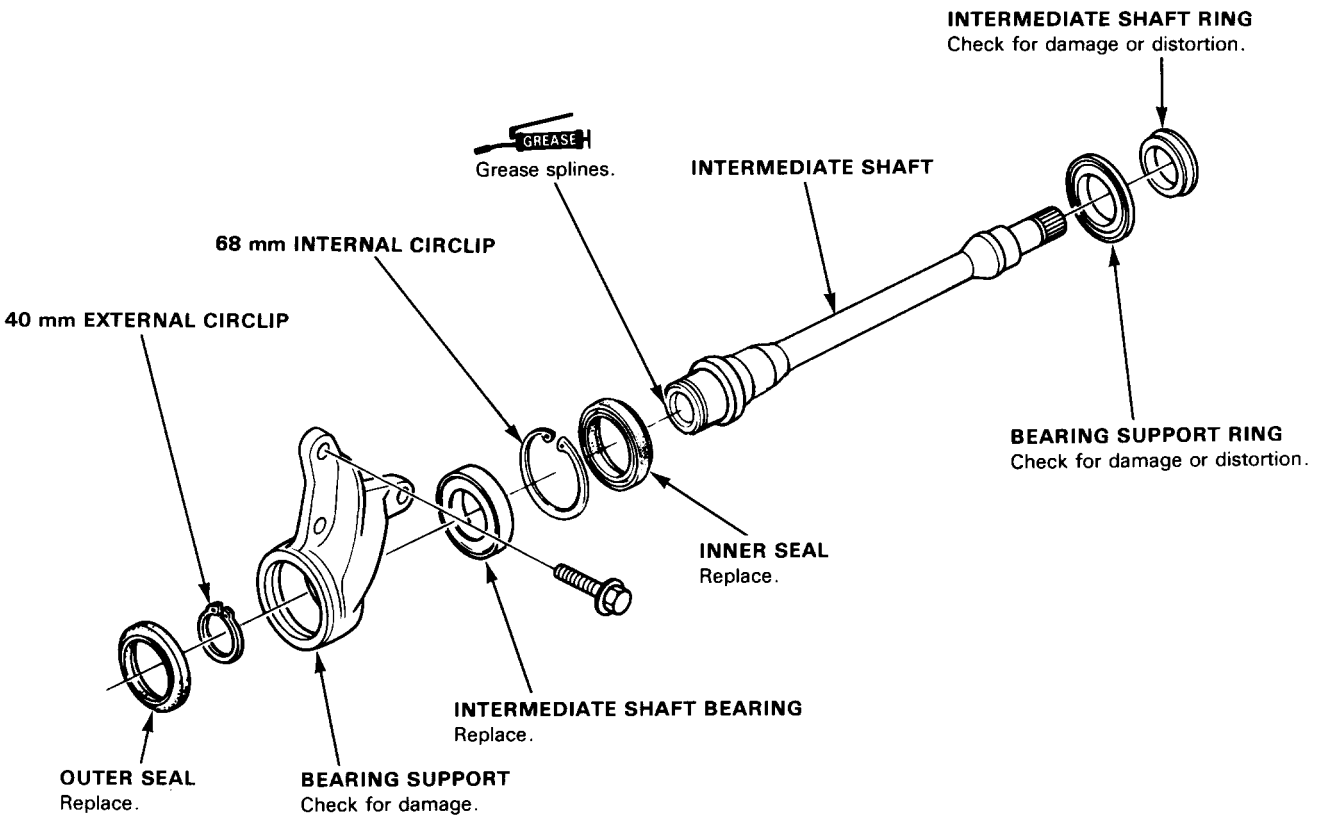


6. Press the intermediate shaft bearing out of the bearing support.



M/T
Use a 100 mm (4.0 in) pice of pipe, with an inner diameter of 60 mm (2.4 in) and an outer diameter of 65~88 mm (2.6~3.4 in).

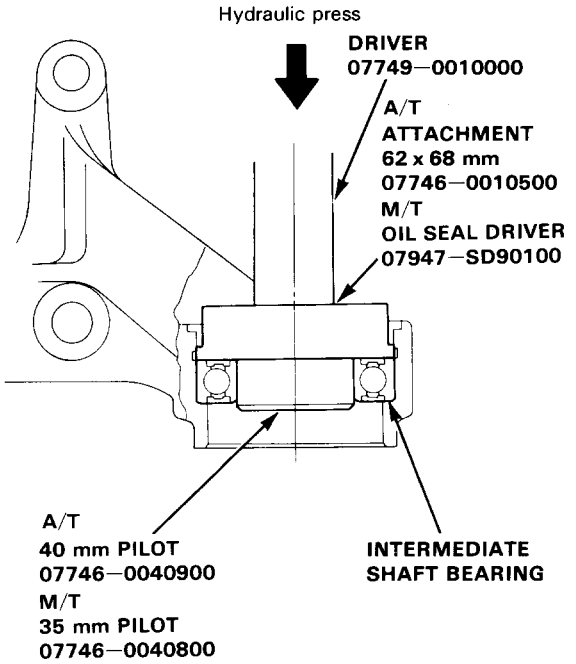
Index/Inspection



Intermediate Shaft

Reassembly

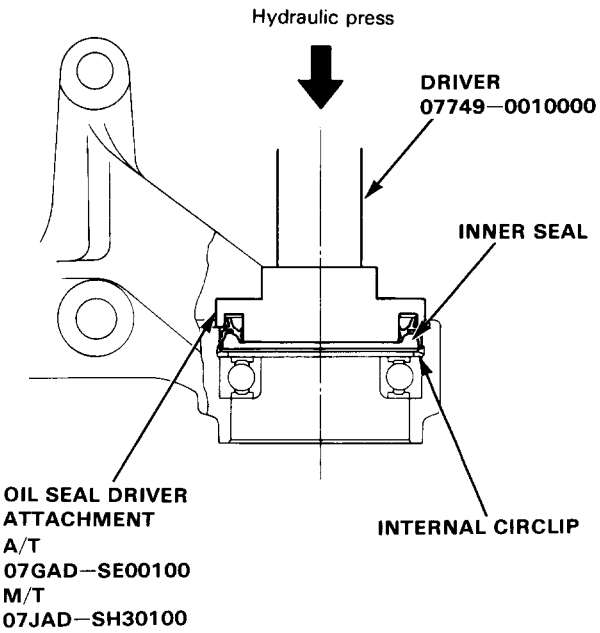
1. Press the intermediate shaft bearing into the bearing support.



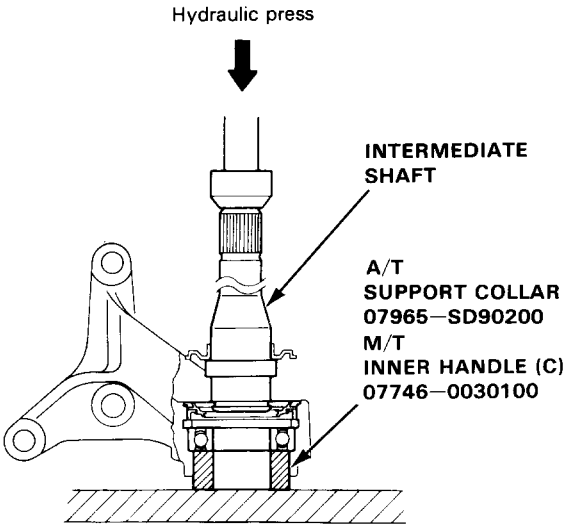
2. Seat the internal circlip in the groove of the bearing support.

   CAUTION: Install the circlip with the tapered end facing out.

3. Press the intermediate shaft inner seal into the bearing support.



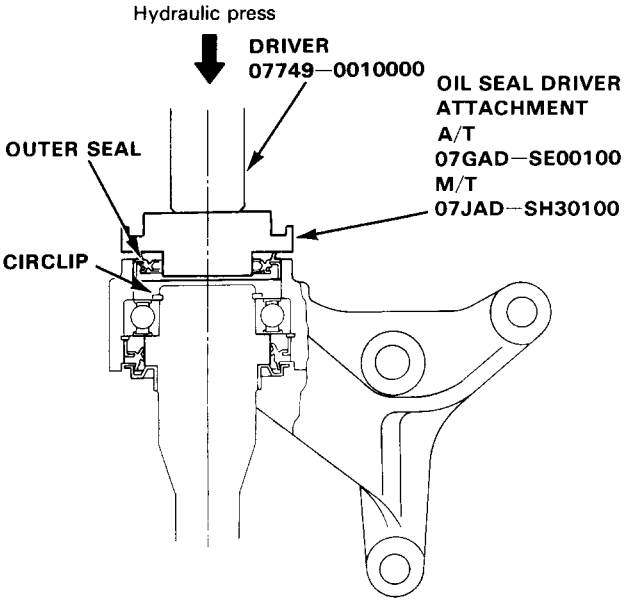
4. Press the intermediate shaft into the shaft bearing.



5. Seat the 40 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.



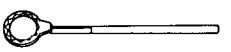
Steering

Manual Steering

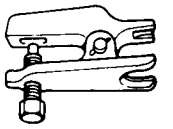
Power Steering

Special Tools

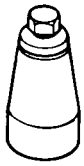
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	
②	07941—6920003	Ball Joint Remover	1	
③	07974—SA50800	Ball Joint Boot Clip Guide B	1	



①



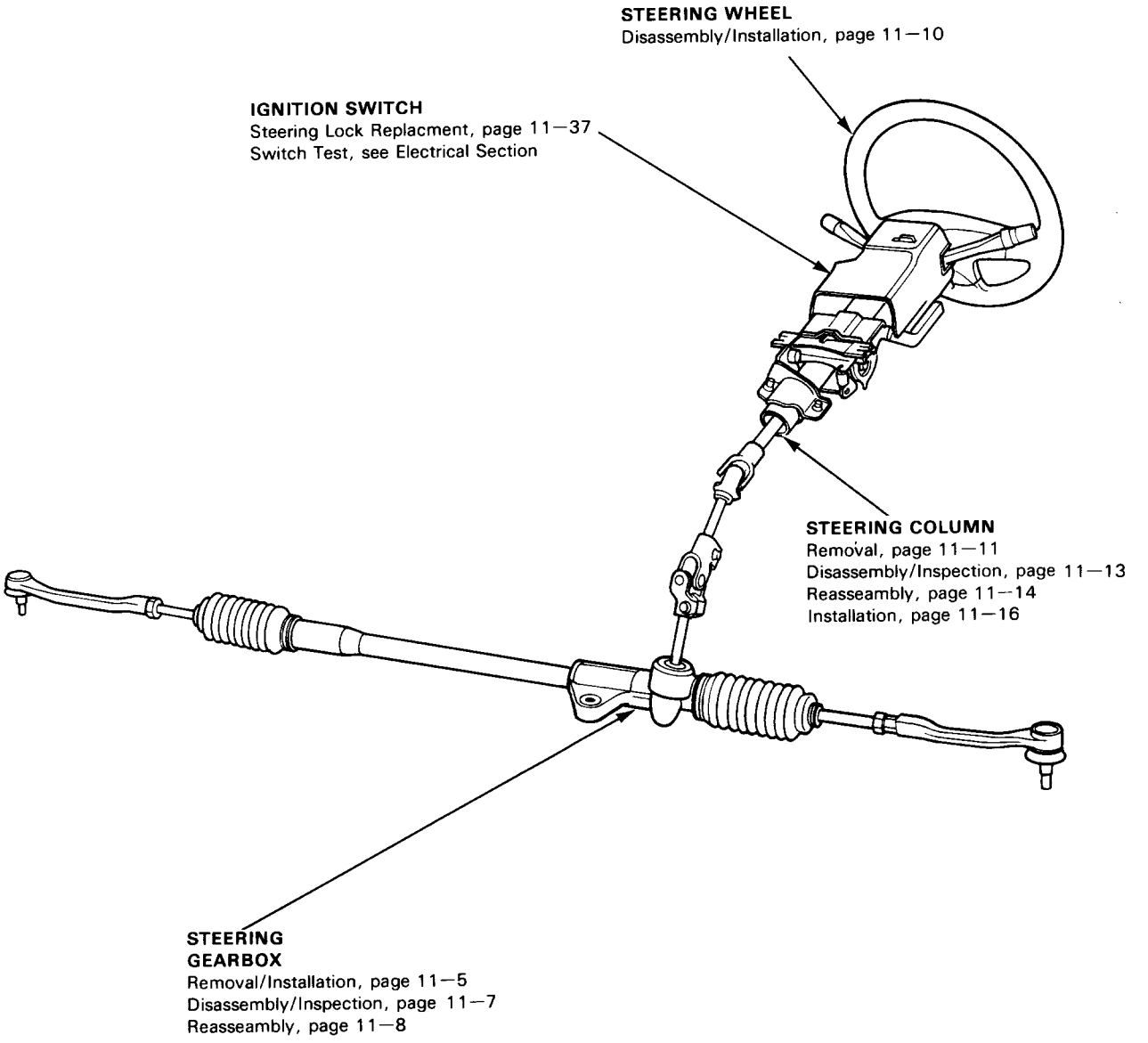
②



③

Index

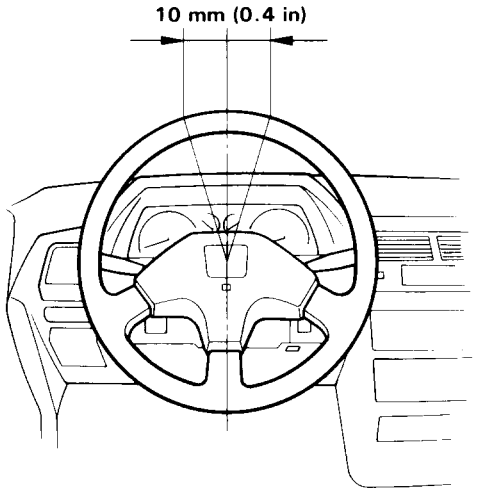
NOTE: The tilt steering column is shown; the conventional steering column is similar except for the tilt mechanism.



Inspection

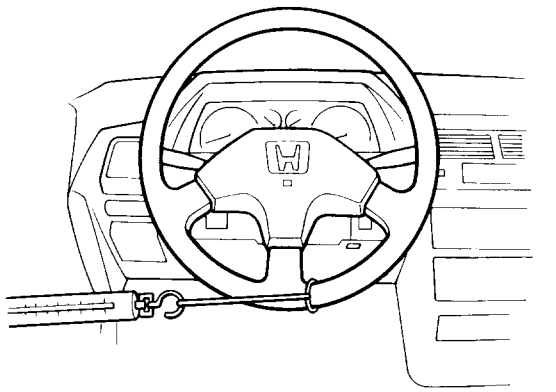
Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.
   Service Limit: 10 mm (0.4 in)



Steering Effort Check

1. Raise the front wheels off the ground.
2. Turn the steering wheel with a spring gauge and check its reading.
3. If the reading exceeds the service limit, adjust the steering gearbox as shown below.
   Service Limit: 15 N(1.5 kg, 3.3 lbs)



Steering Gearbox Adjustment

1. Loosen the rack screw locknut. Then:

1.6 PGM-FI:

— Tighten, loosen and re-tighten the rack guide screw two times, to 5 N•m (0.5 kg-m, 3.6 lb-ft) then, back it off $15^{\circ}{}^{+0}_{-5}$ (front wheels pointed straight ahead).

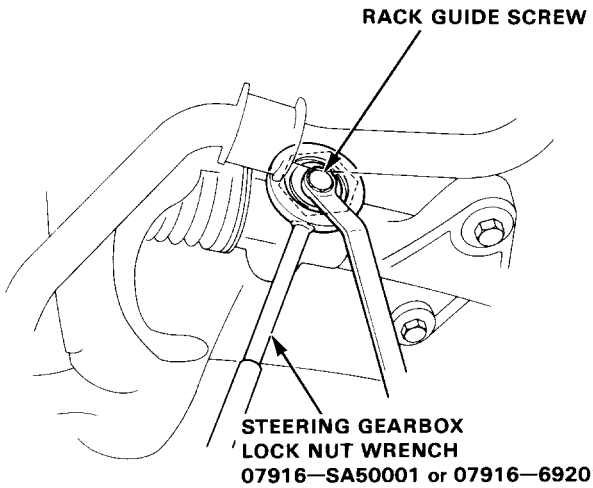
— Tighten the locknut on the rack guide screw to the 68 N•m (6.8 kg-m, 49 lb-ft).

Others models:

— Tighten the rack guide screw nutil it compresses the spring and seats against the rack guide.

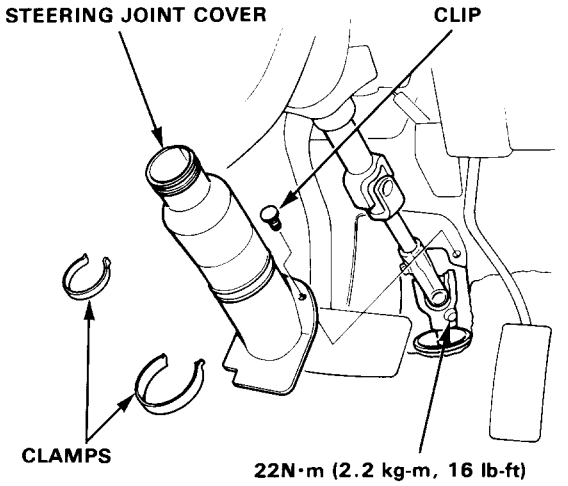
— Back the rack guide screw off $50^{\circ} \pm 10^{\circ}$ and tighten the lock nut on the rack guide screw to 25 N•m (2.5 kg-m, 18 lb-ft).

2. Check for tight or loose steering through the compete turning travel.
3. Recheck steering effort as shown adove.

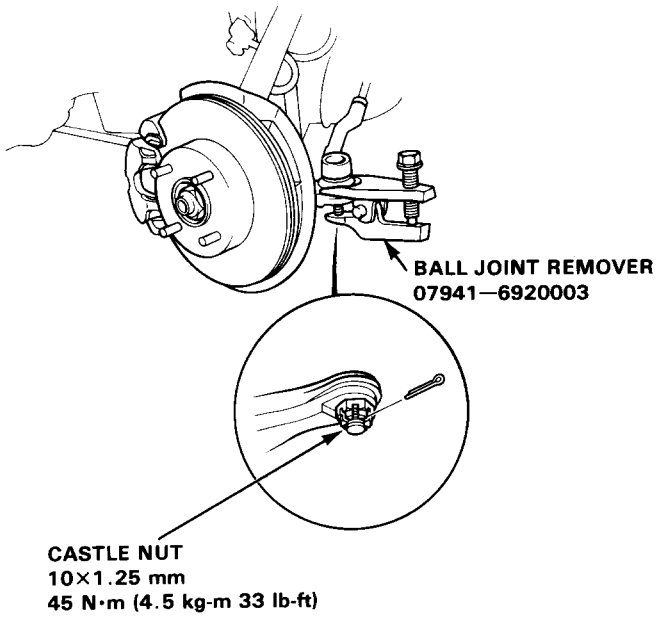


Removal/Installation

1. Remove the cover panel and steering joint cover, then disconnect the steering shaft from the gearbox.

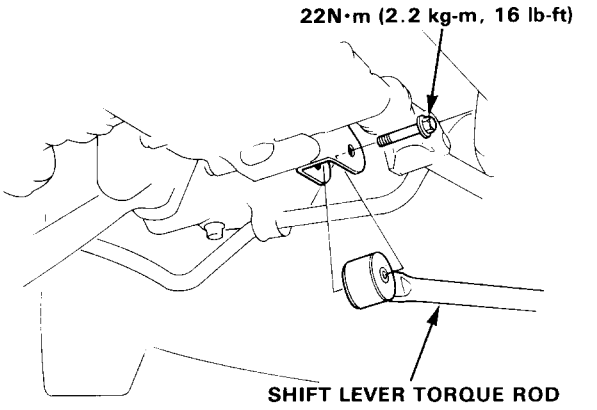


2. Raise the front of car on jack stands and remove the front wheels.
3. Remove the cotter pins, and unscrew the tie-rod end ball joint nuts halfway.
4. Break the ball joints loose using the ball joint remover.
5. Then remove the nuts, and lift the tie-rod ends out of the steering knuckles.

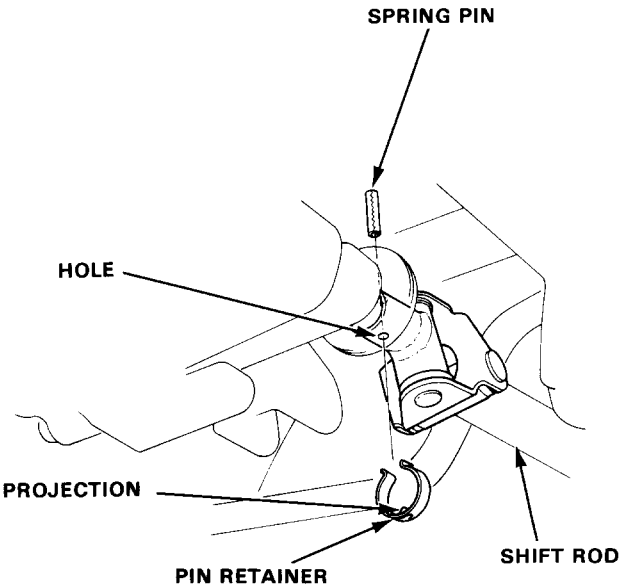


6. Manual Transmission Only:

- Disconnect the shift lever torque rod from the clutch housing.



- Remove the pin retainer, drive out spring pin with punch, then disconnect the shift rod.



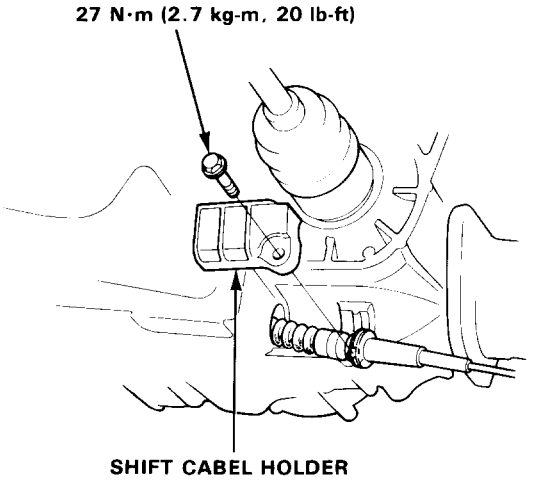
NOTE: On reassembly, reinstall the pin retainer after driving in pin and be sure that the projection on the pin retainer is in the hole.

(cont'd)

Removal/Inspection (cont'd)

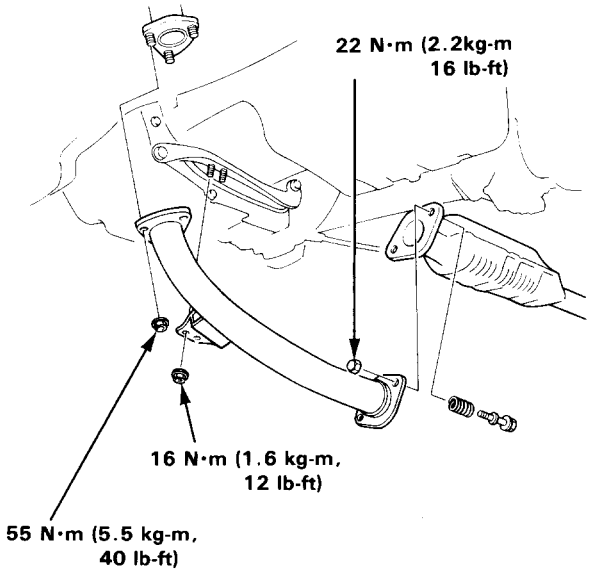
7. Automatic Transmission Only:

   - Remove the shift cable holder and pull the shift cable down by hand.



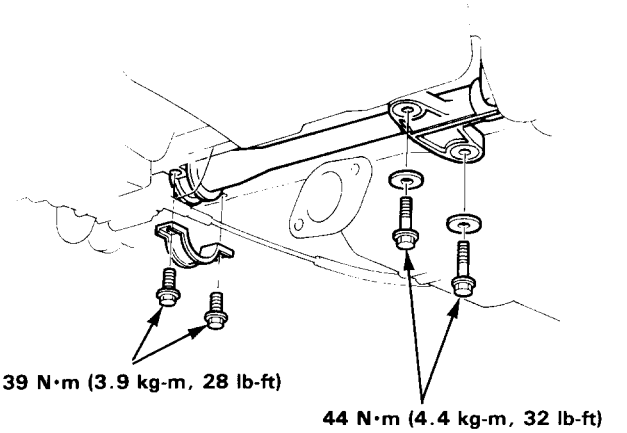
8. Remove the self-locking nuts connecting exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.
   CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

9. Remove the header pipe.

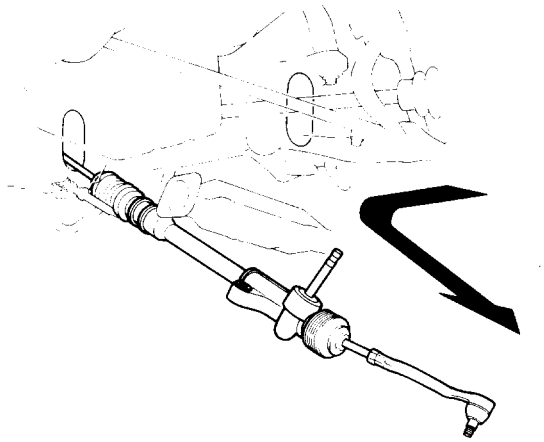


10. Remove the steering gearbox brackets.

11. Remove the steering gearbox mounting bolts.



12. Slide tie rod all the way to the right side.

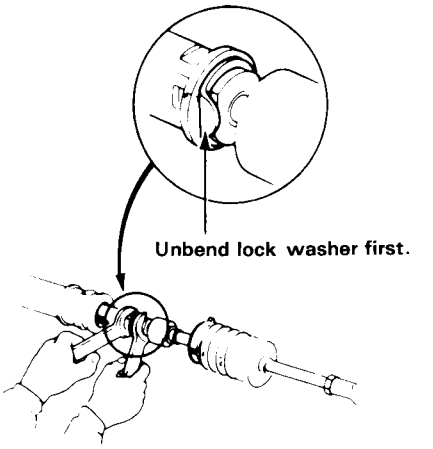


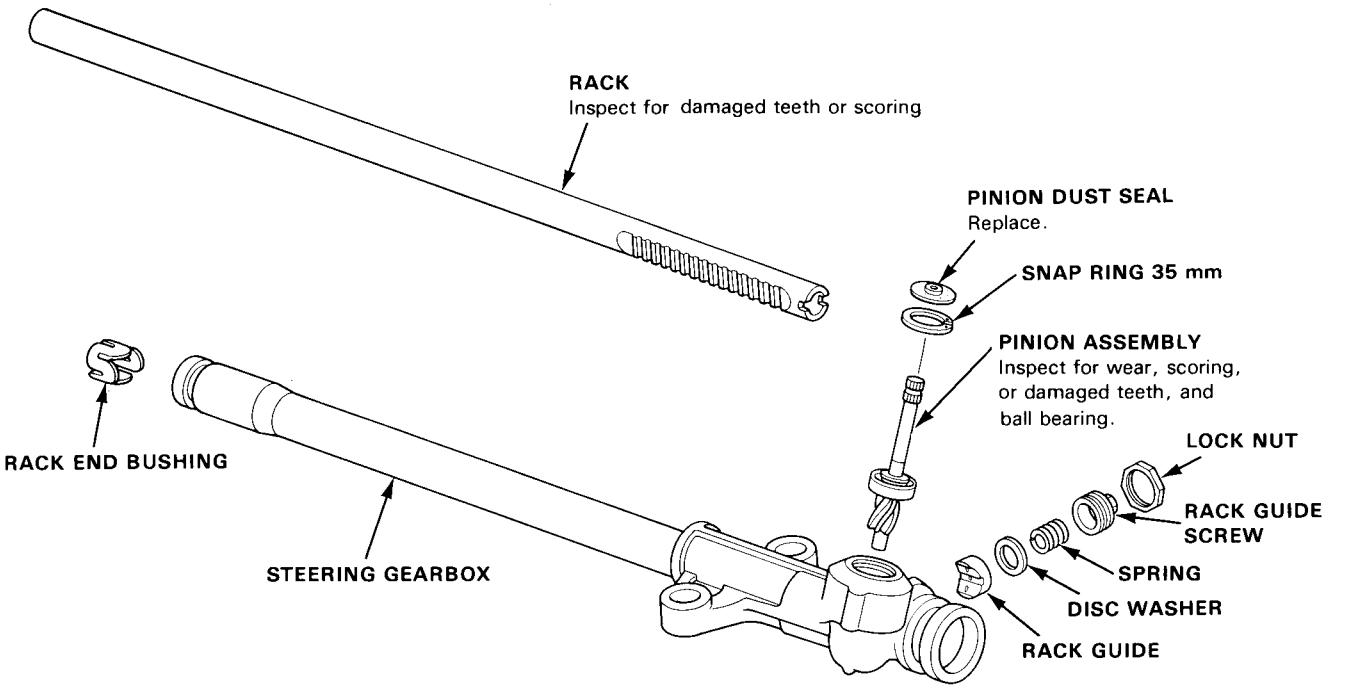
13. Slide the gear box right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.

14. Re-install is in the reverse order of removal.

Disasembly/Inspection

1. Carefully clamp the gearbox in a vise.
2. Loosen the bands, then pull the boots away from the ends of the gearbox and unbend the tie-rod lock washers.
3. Hold the rack with a 22 mm wrench and unscrew the tie-rods with a 17 mm wrench.
4. Remove the rack guide components from the gearbox.
5. Remove the pinion boot, pinion dust seal, and 35 mm snap ring, then pull the pinion out of the gearbox.
6. Slide the rack out of the gearbox.





NOTE: The pinion assembly bearing cannot be removed. If the bearing must be replaced, replace as an assembly.

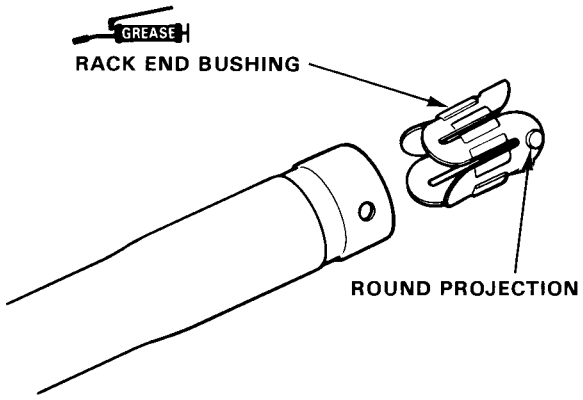
Reassembly

1. Apply a thin coat of grease to the inside surface of the rack end bushing.

Grease quantity: 1—3g

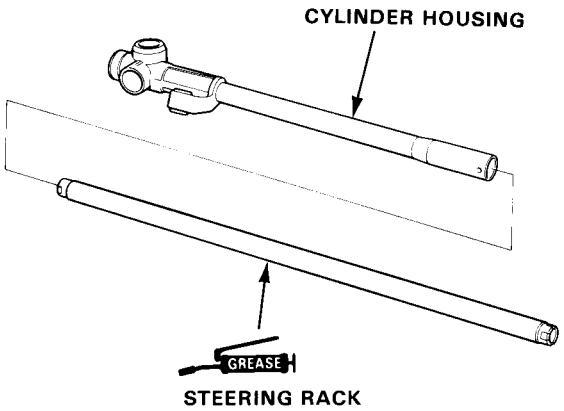
CAUTION: Do not fill the slots with grease; they must remain open to serve as air passages.

2. Install the rack end busing by aligning the round projections on the busing with the holes in the cylinder housing.

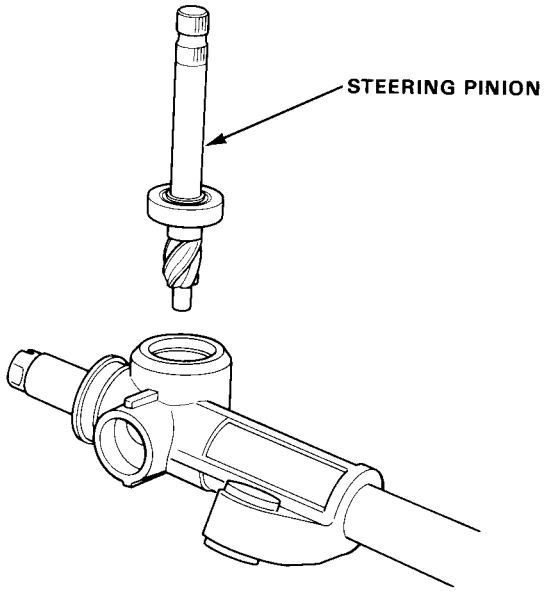


3. Apply grease to the steering rack.

4. Install the steering rack into the cylinder housing carefully to avoid damaging the steering rack sliding surface.

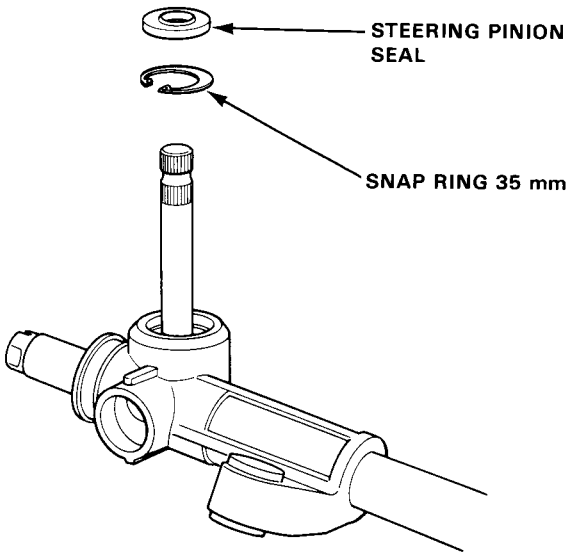


5. Install the steering pinion in the gear housing.



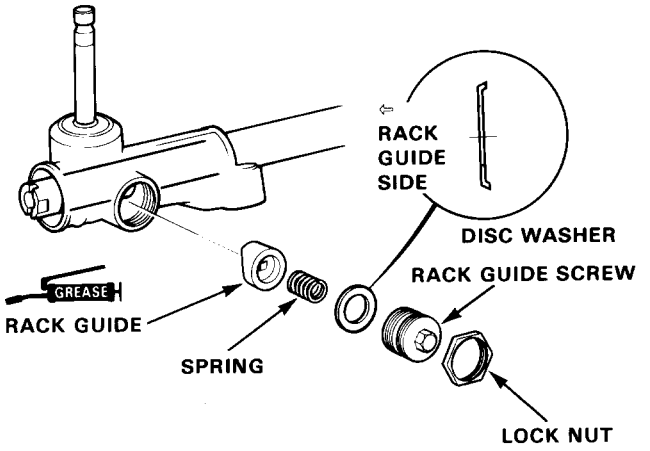
6. Install the 35 mm snap ring securely in the gear housing groove.

7. Grease the Steering pinion seal, and install it on the gear housing.



8. Coat the rack guide with grease.

9. Install the rack guide, spring, disc washer and rack guide screw on the gear housing.



Back the rack guide screw off about:
1.6 PGM-FI:

— Tighten, loosen and re-tighten the rack guide screw two times, to 5 N·m (0.5 kg-m, 3.6 lb-ft) then back it off $15^{\circ}{}^{+0}_{-5}$ (front wheels pointed straight ahead).

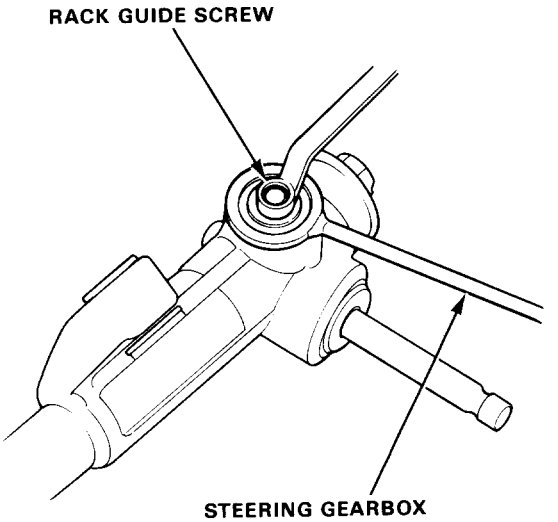
— Tighten the locknut on the rack guide screw to the 68 N·m (6.8 kg-m, 49 lb-ft).

Other Models:

— Tighten the rack guide screw until it compresses the spring and seats against the rack guide.

— Back it off 50°±10° and install the lock nut on the rack guide screw to 25 N·m (2.5 kg-m, 18 lb-ft).

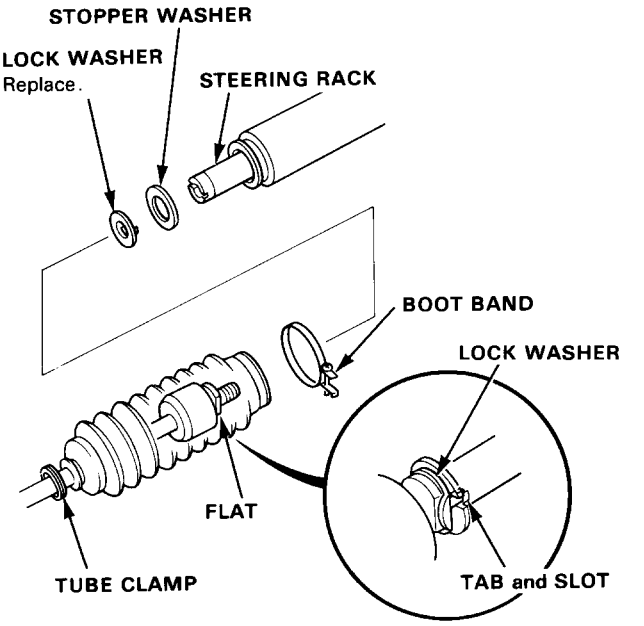
10. Tighten the lock nut while holding the rack guide screw with the special tool.



11. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

NOTE: Install the stopper washer with the chamfered side facing out.

12. Tighten the tie-rod securely, then bend the lock washer back against the flat on the flange as shown.



13. Install the boots and secure with boot band and tube clamp.

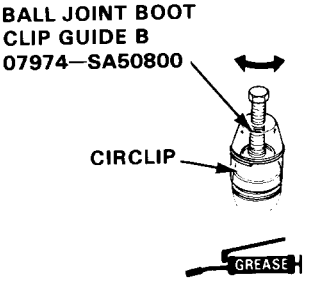
14. Check that the boots are not twisted or collapsed by sliding the rack.

15. Install the tie-rod ends on the tie-rods. Do not tighten the locknuts until after tie-rod adjustment.

16. Fill the tie-rod boots with grease and install; replace boots that are cut or split.

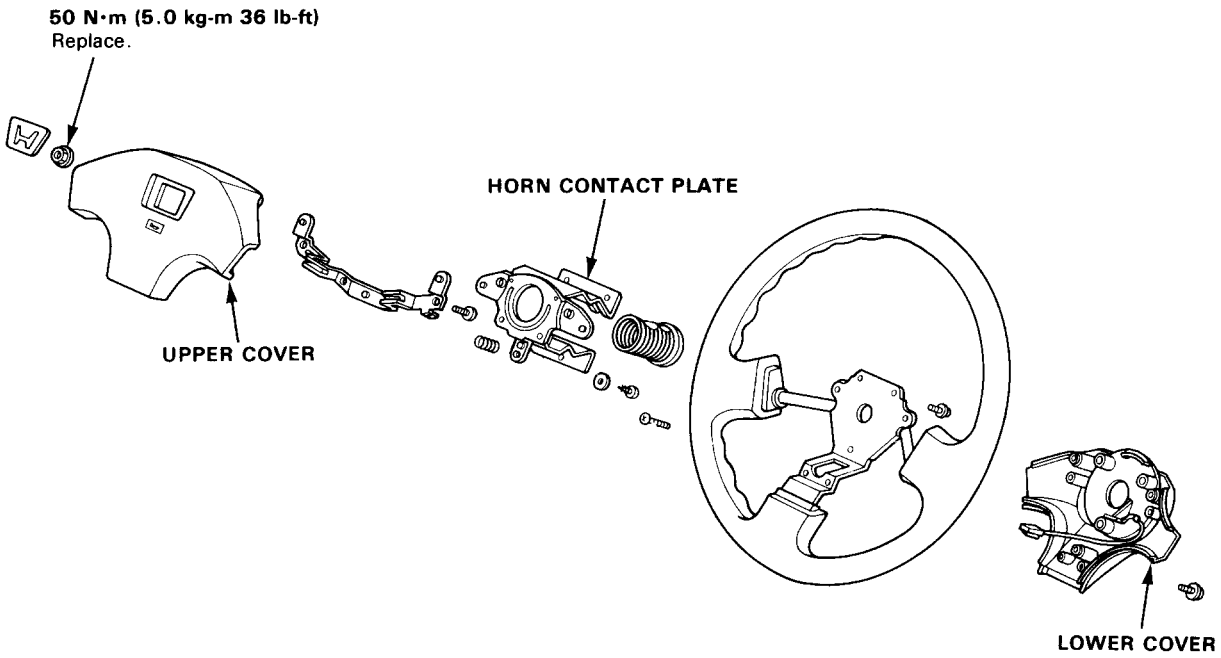
17. Bleed air from the boots by gently squeezing them from the bottom up.

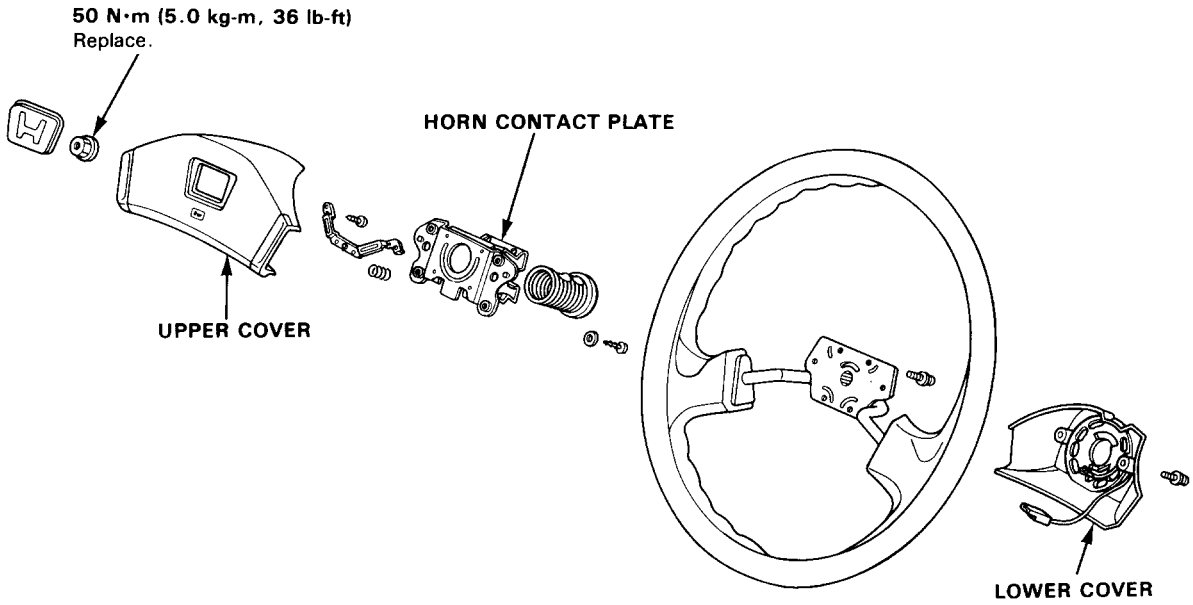
18. Use the special tool's bolt to adjust the depth of the tool's large end. Align the large end of the tool with the groove on the boot. Slide the clip into position over the tool.



Steering Wheel

Disassembly/Reassembly

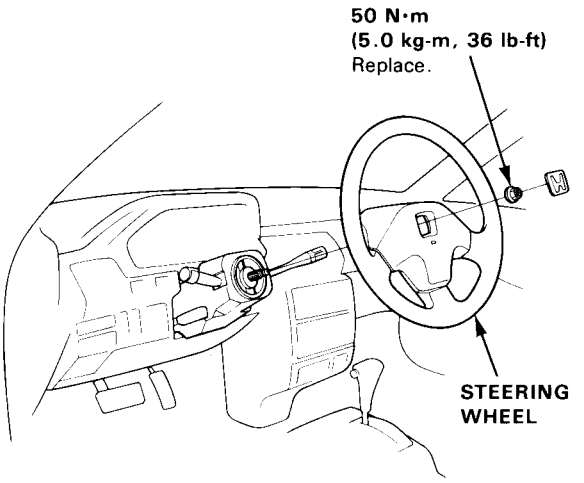




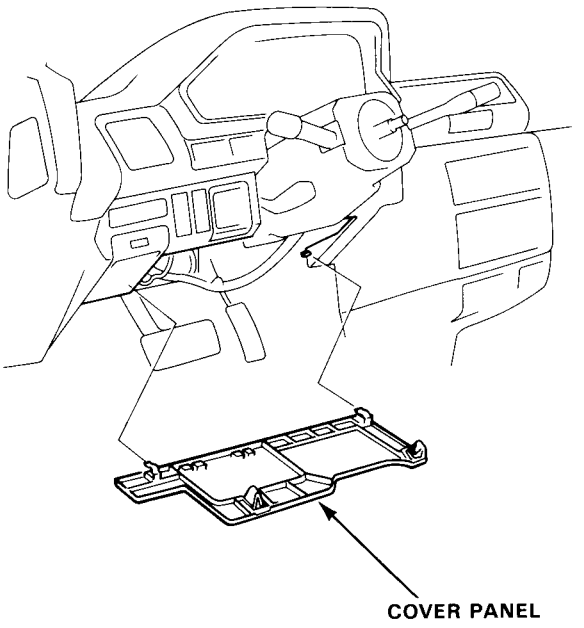
Steering Column

Removal

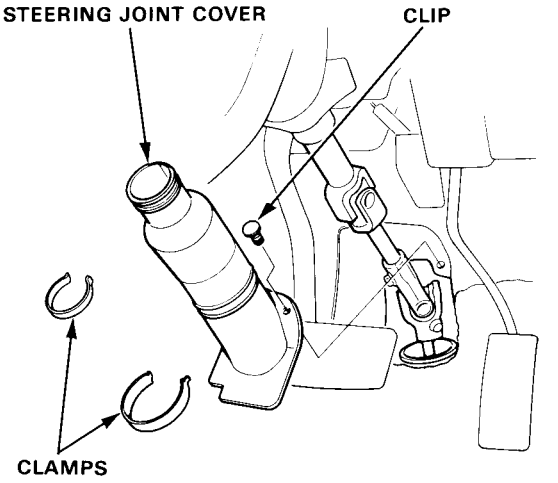
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



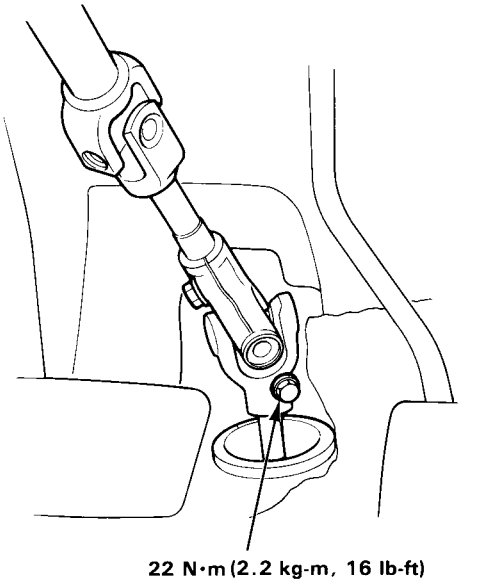
4. Remove the cover panel.



5. Remove the steering joint cover.



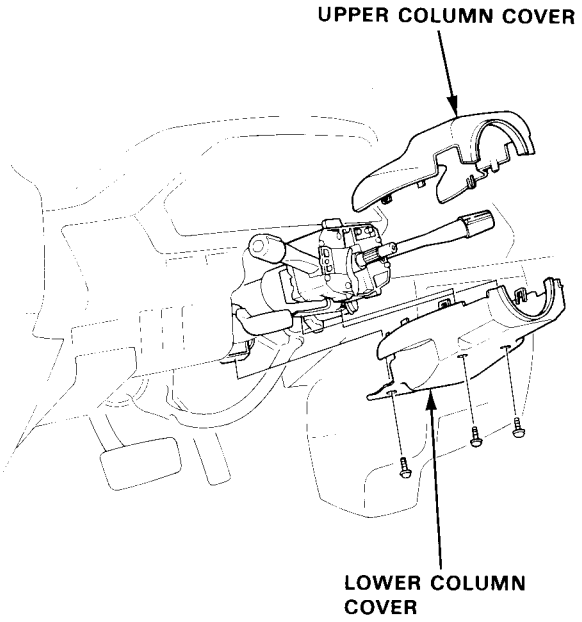
6. Remove the lower steering joint bolt.



(cont'd)

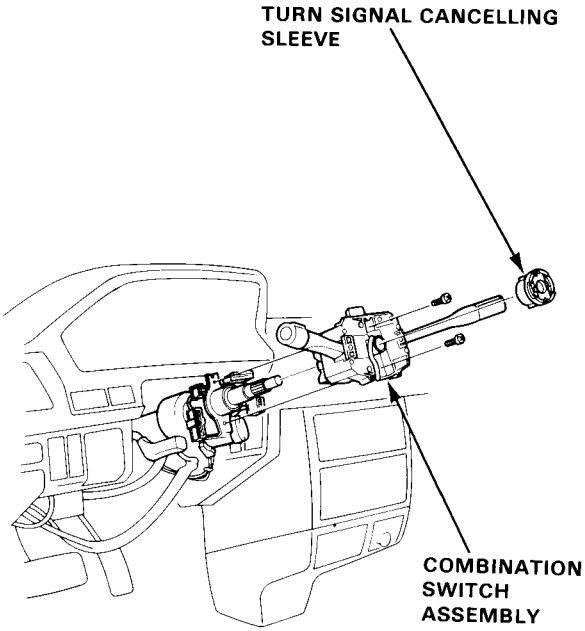
Removal (cont'd)

7. Remove the upper and lower column covers.



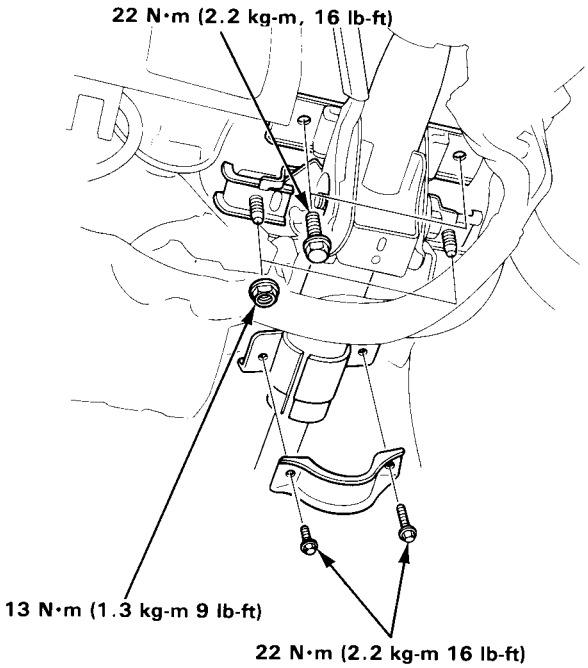
8. Disconnect each wire coupler from the combination switch.

9. Remove the turn signal cancelling sleeve and combination switch assembly.



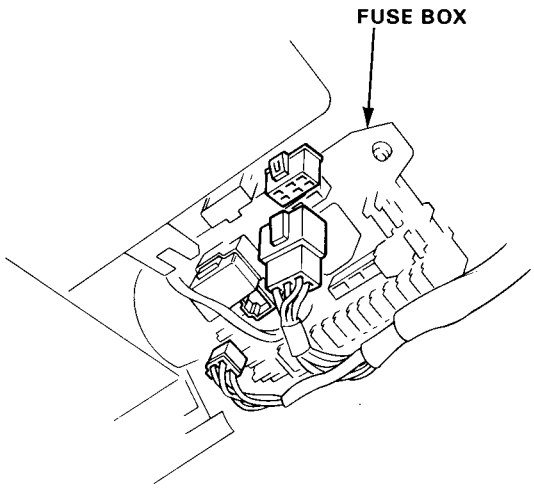
10. Remove the lower column bracket.

11. Remove the nuts attaching the bending plate guide and bending plate.



12. Disconnect each wire coupler from the fuse box at under-dash left side.

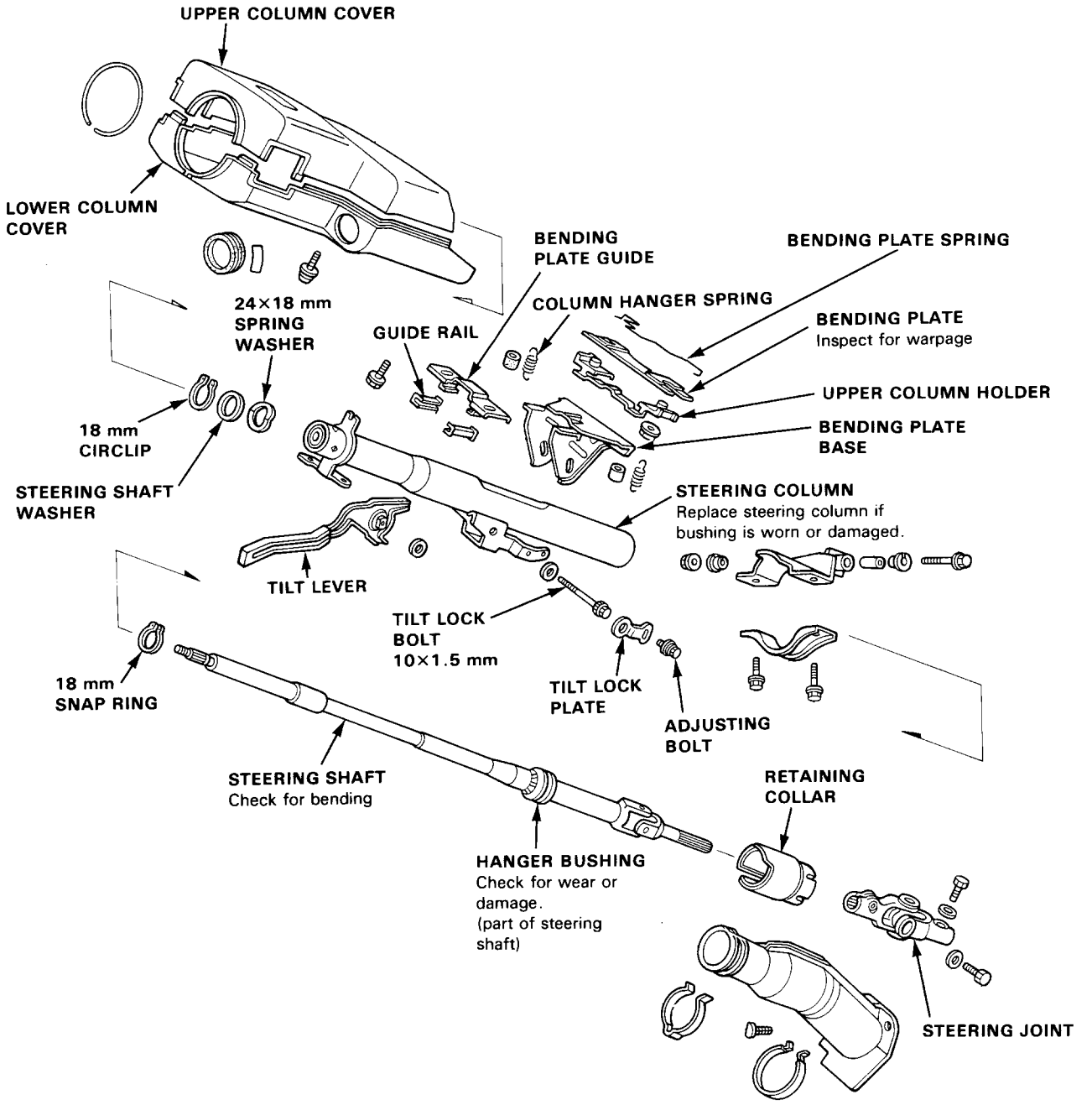
13. Remove the steering column assembly.



Disassembly/Inspection

NOTE: The tilt steering column is shown; the conventional steering column is similar except for the tilt mechanism.

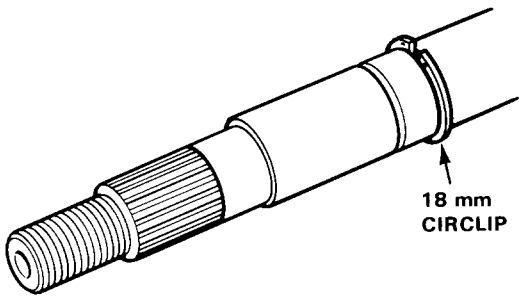
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I".
5. Remove the snap ring, then remove the steering shaft from the bottom of the column.
6. Remove the retaining collar.



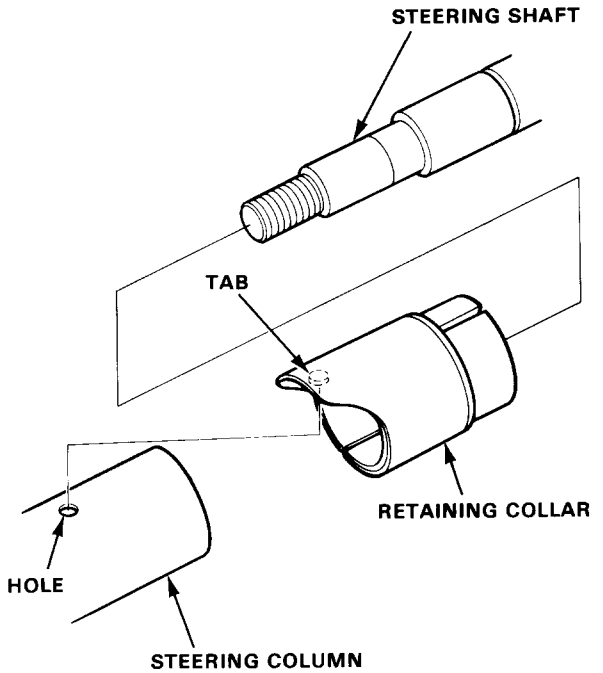
Steering Column

Reassembly

1. Install the circlip on the steering shaft.



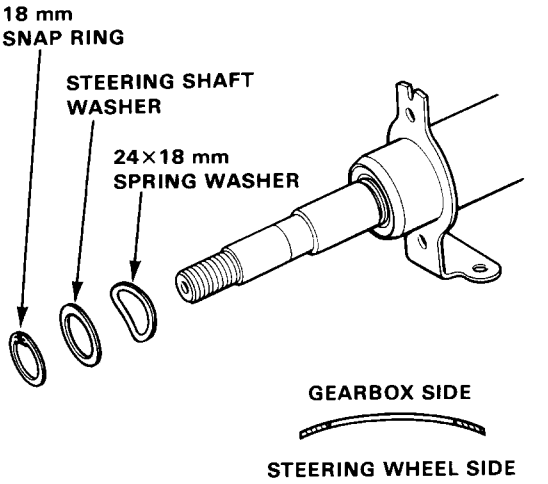
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



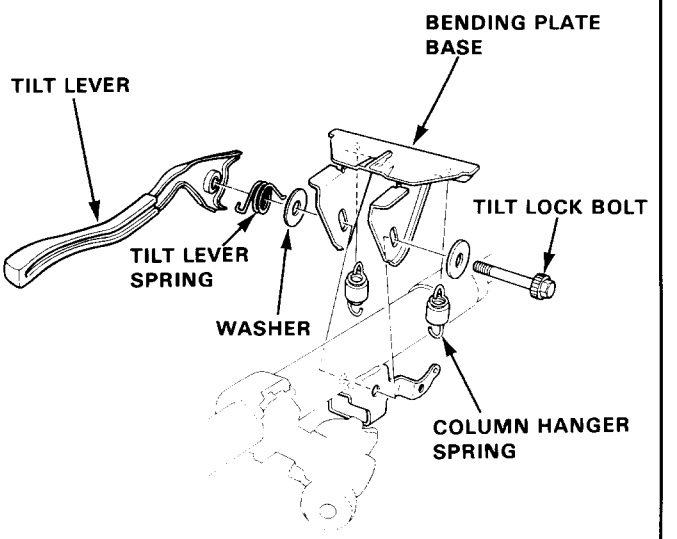
3. Insert the steering shaft into the steering column from the bottom.

4. Install the 24×18 mm spring washer and steering washer on the steering shaft and secure with the 18 mm snap ring.

   NOTE: Install the spring washer as shown.

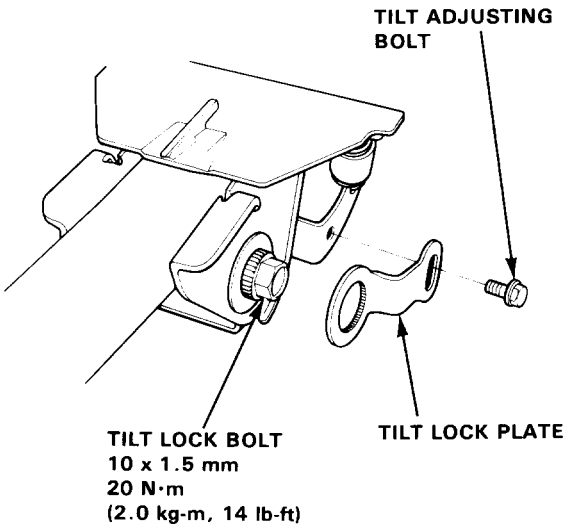


5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, tilt lever spring, washers, and the bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.



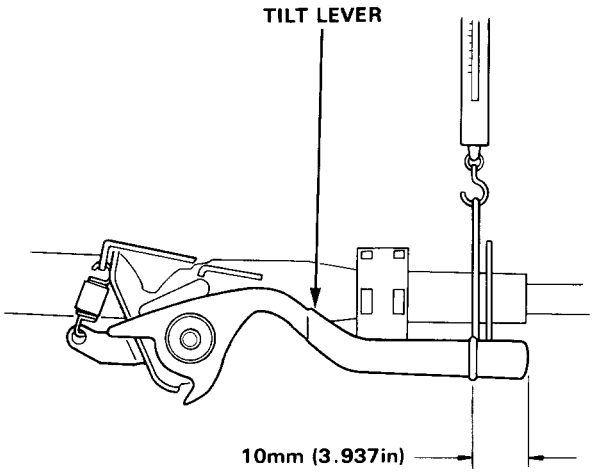
(cont'd)

8. Tighten the tilt lock bolt to 20N·m (2.0 kg-m 14lb-ft), then position the tilt lock plate on the splined portion of the tilt lock bolt and loosely attach with the tilt adjusting bolt.

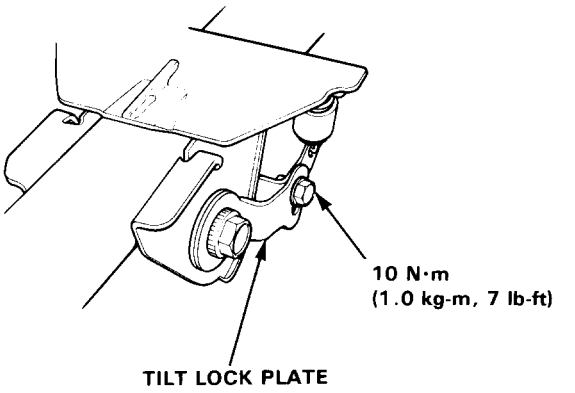


9. Attach a spring scale 10mm(3.937in) from the end of the knob. Measure the force required to move the lever.

Preload: 80N(8.0kg, 18lbs)



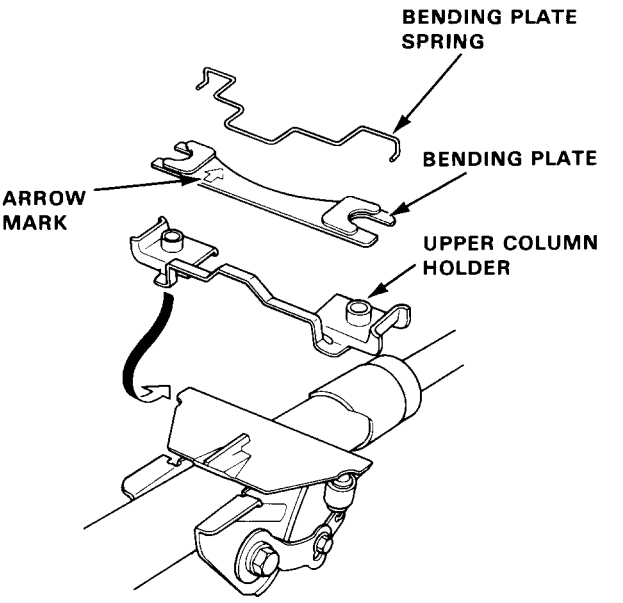
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

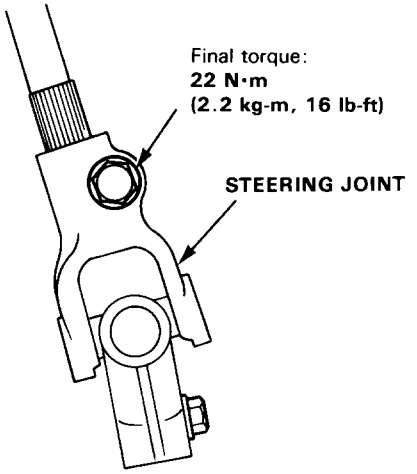
NOTE: Install the bending plate with arrow mark facing the steering gearbox.



(cont'd)

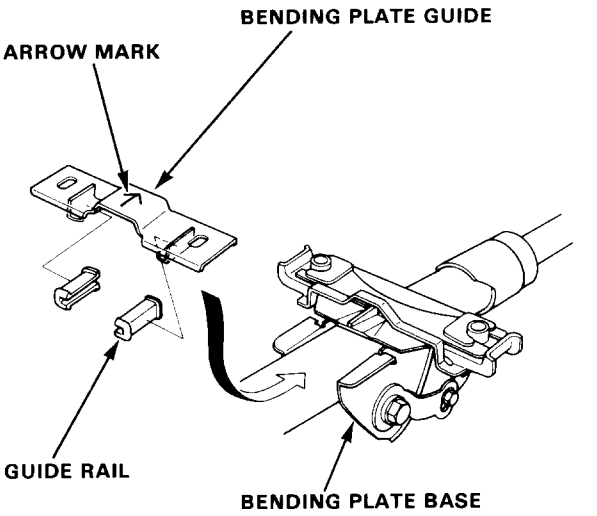
Reassembly (cont'd)

13. Loosely install the steering joint on the steering shaft.

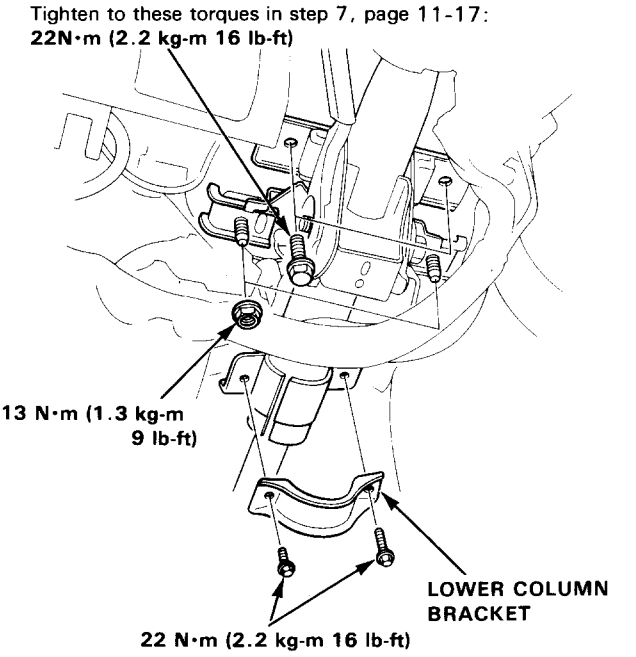


Installation

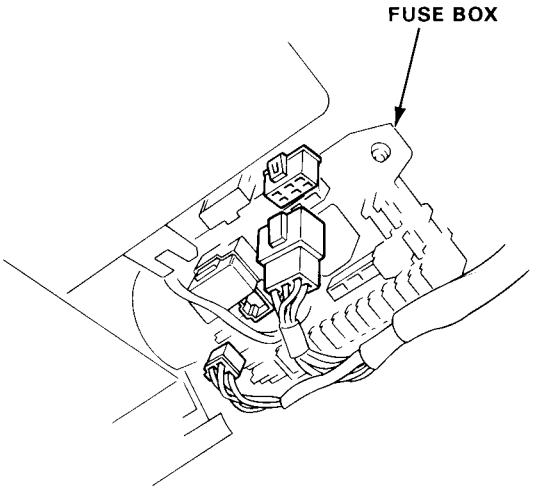
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.
NOTE:Install the bending plate guide with its arrow mark toward the gearbox.



2. Loosely install the steering column assembly with the nuts, bolts, and lower column bracket.

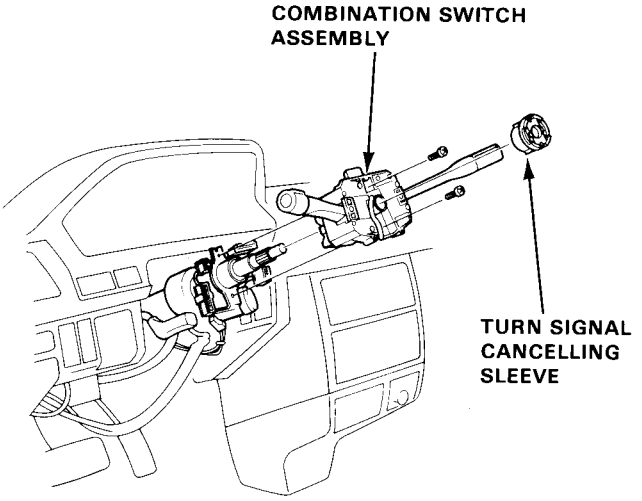


3. Connect each wire coupler to the fuse box at the under dash left side.

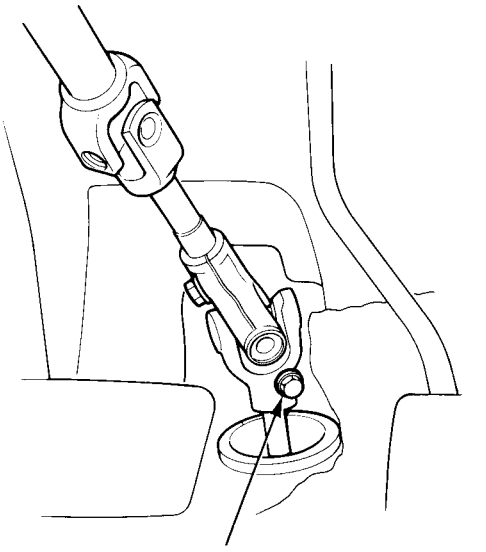


4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.



6. Loosely install the steering joint on the steering gearbox pinion.

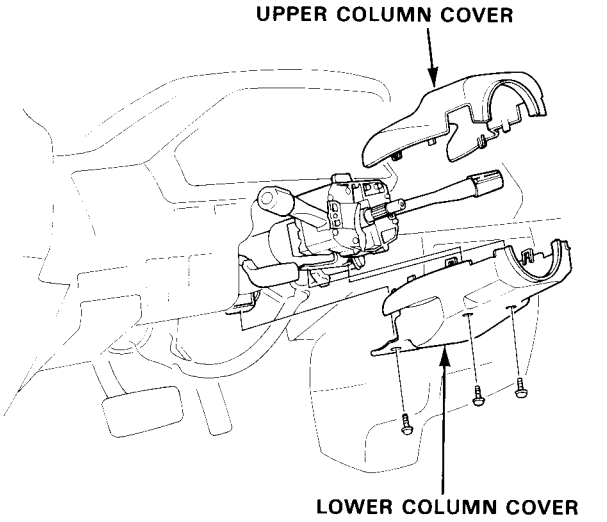


Final torque: **22 N·m (22 kg-m 16 lb—ft)**

7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.

8. Tighten the lower steering joint bolts.

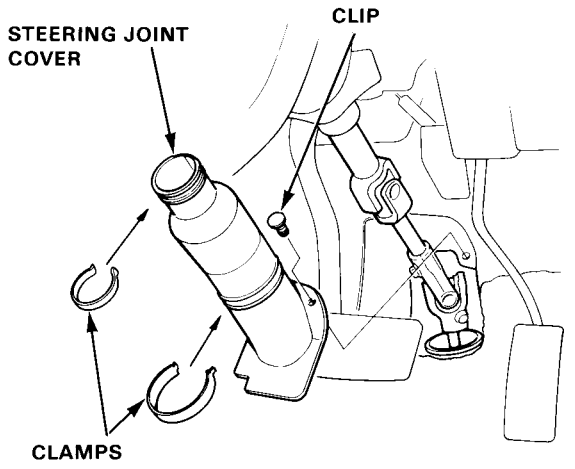
9. Install the upper column cover and lower column cover.



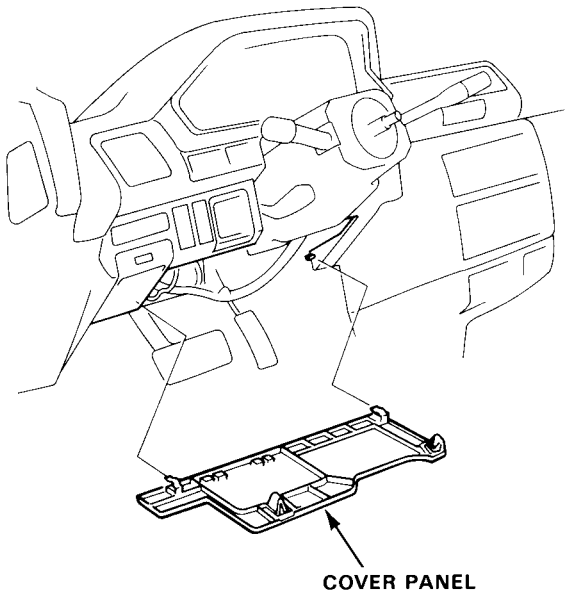
(cont'd)

Installation (cont'd)

10. Install the steering joint cover with the clamps and clip.



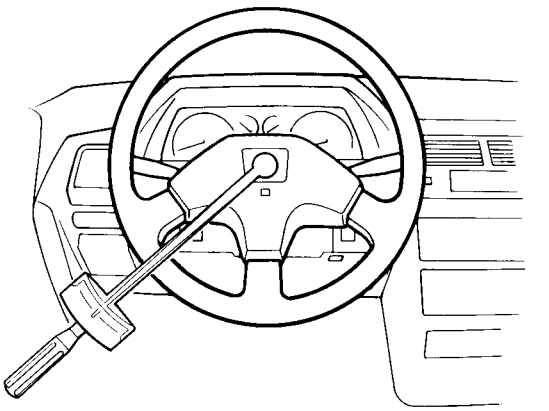
11. Install the cover panel.



12. Install the steering wheel in a straight ahead position.

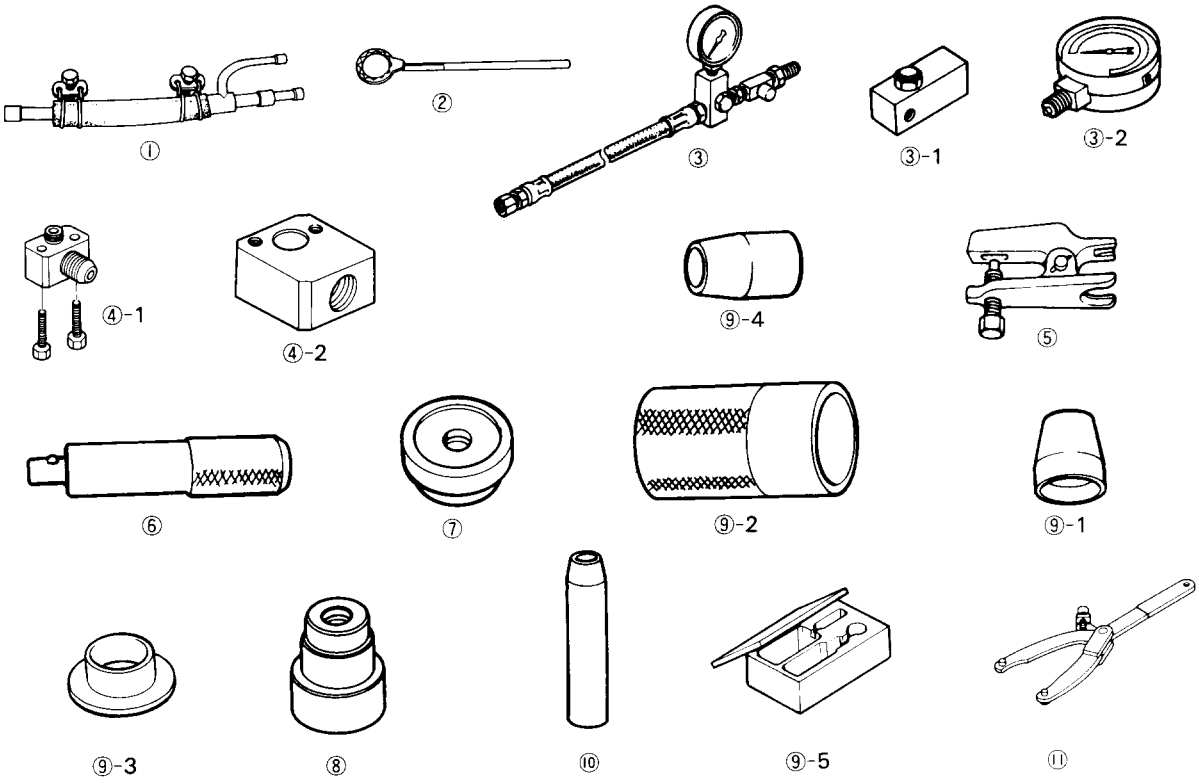
13. Tighten the steering wheel mount nut and torque to 50 N•m (5.0 kg-m, 36 lb-ft).

14. Check that the horn works properly, then install the center pad.



Special Tools

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

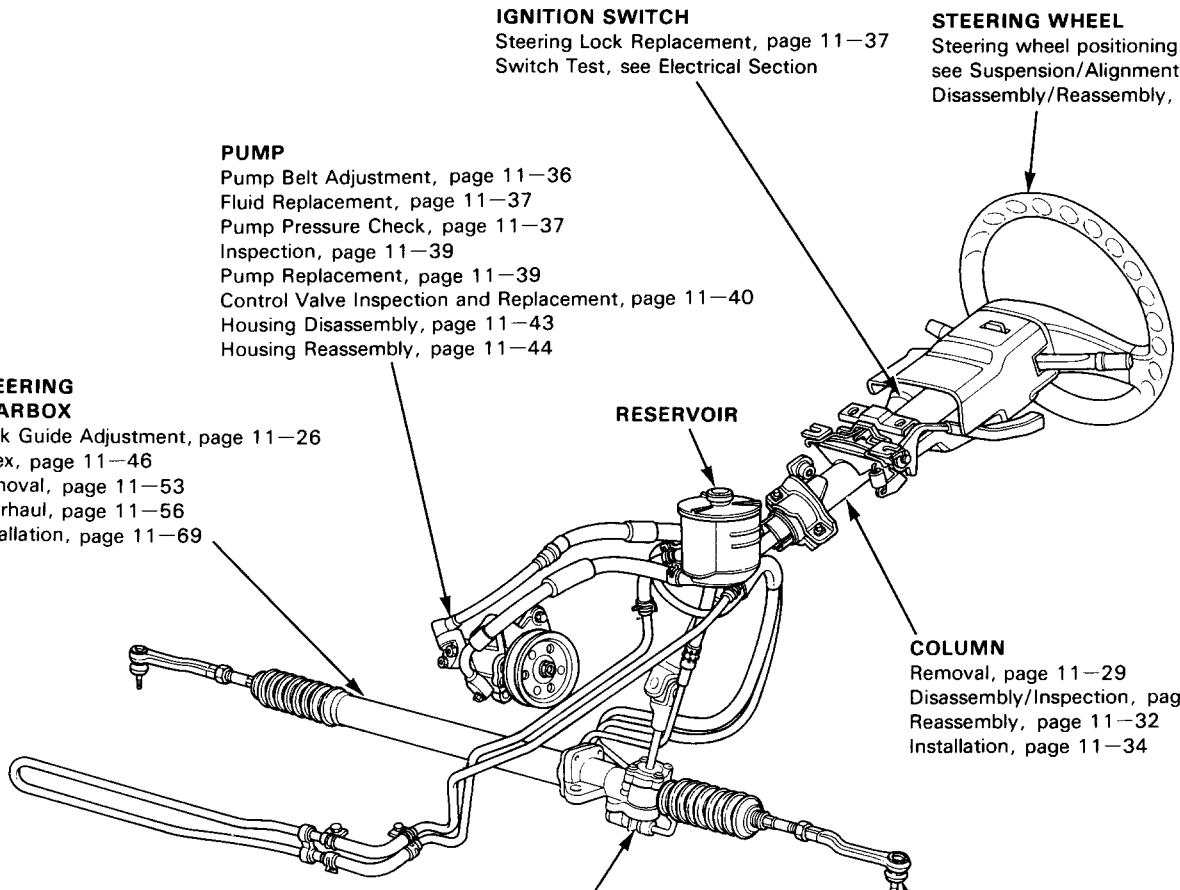


Component Location

Index

NOTE: The tilt steering column is shown; the conventional steering column is similar except for the tilt mechanism.

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.



IGNITION SWITCH
Steering Lock Replacement, page 11—37
Switch Test, see Electrical Section

STEERING WHEEL
Steering wheel positioning,
see Suspension/Alignment
Disassembly/Reassembly, page 11—10

PUMP
Pump Belt Adjustment, page 11—36
Fluid Replacement, page 11—37
Pump Pressure Check, page 11—37
Inspection, page 11—39
Pump Replacement, page 11—39
Control Valve Inspection and Replacement, page 11—40
Housing Disassembly, page 11—43
Housing Reassembly, page 11—44

STEERING GEARBOX
Rack Guide Adjustment, page 11—26
Index, page 11—46
Removal, page 11—53
Overhaul, page 11—56
Installation, page 11—69

RESERVOIR

COLUMN
Removal, page 11—29
Disassembly/Inspection, page 11—31
Reassembly, page 11—32
Installation, page 11—34

TIE ROD END
See Suspension Section

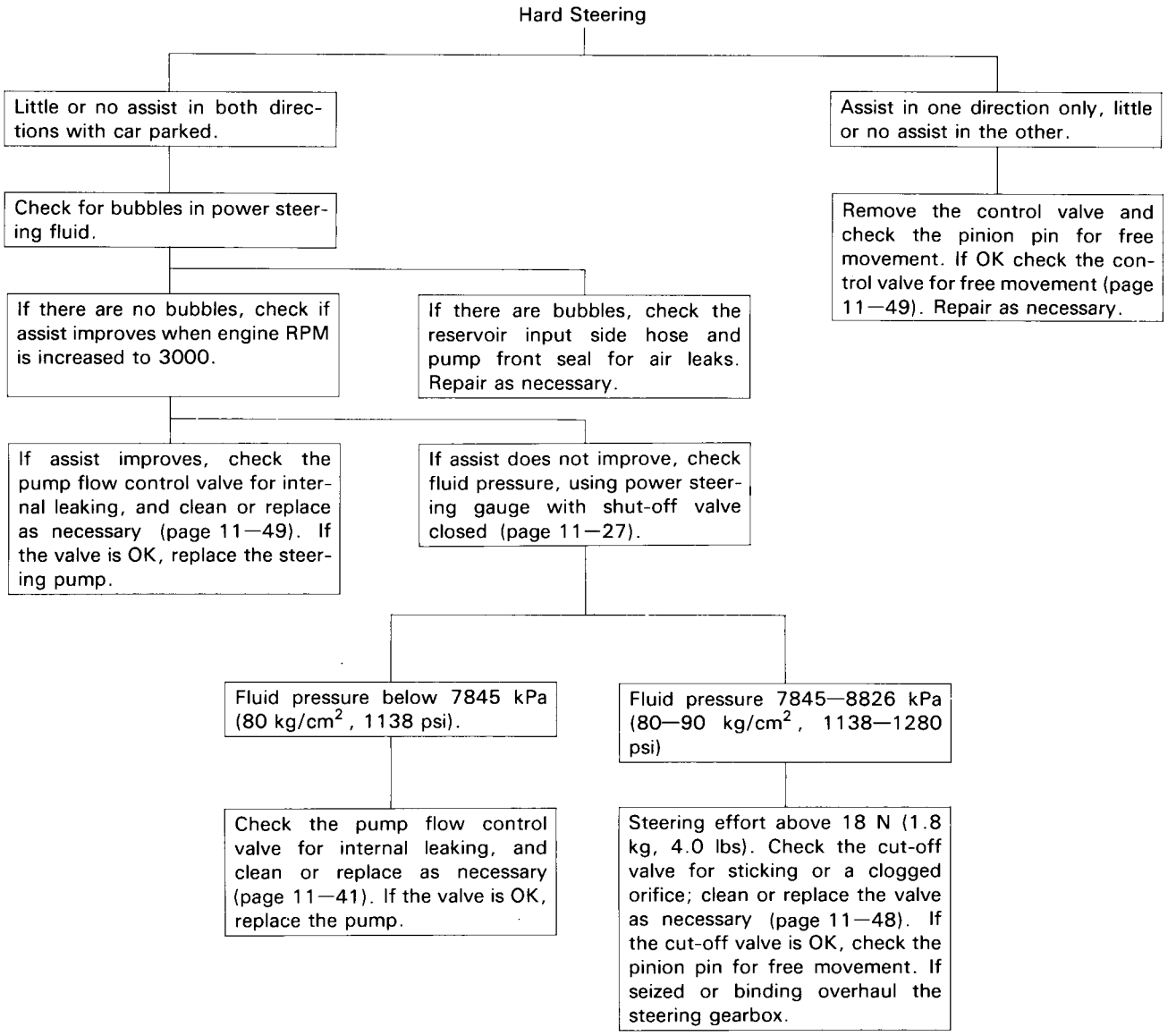
VALVE BODY UNIT
Removal, page 11—47
Overhaul, page 11—47
Installation page 11—52

Troubleshooting

General Troubleshooting

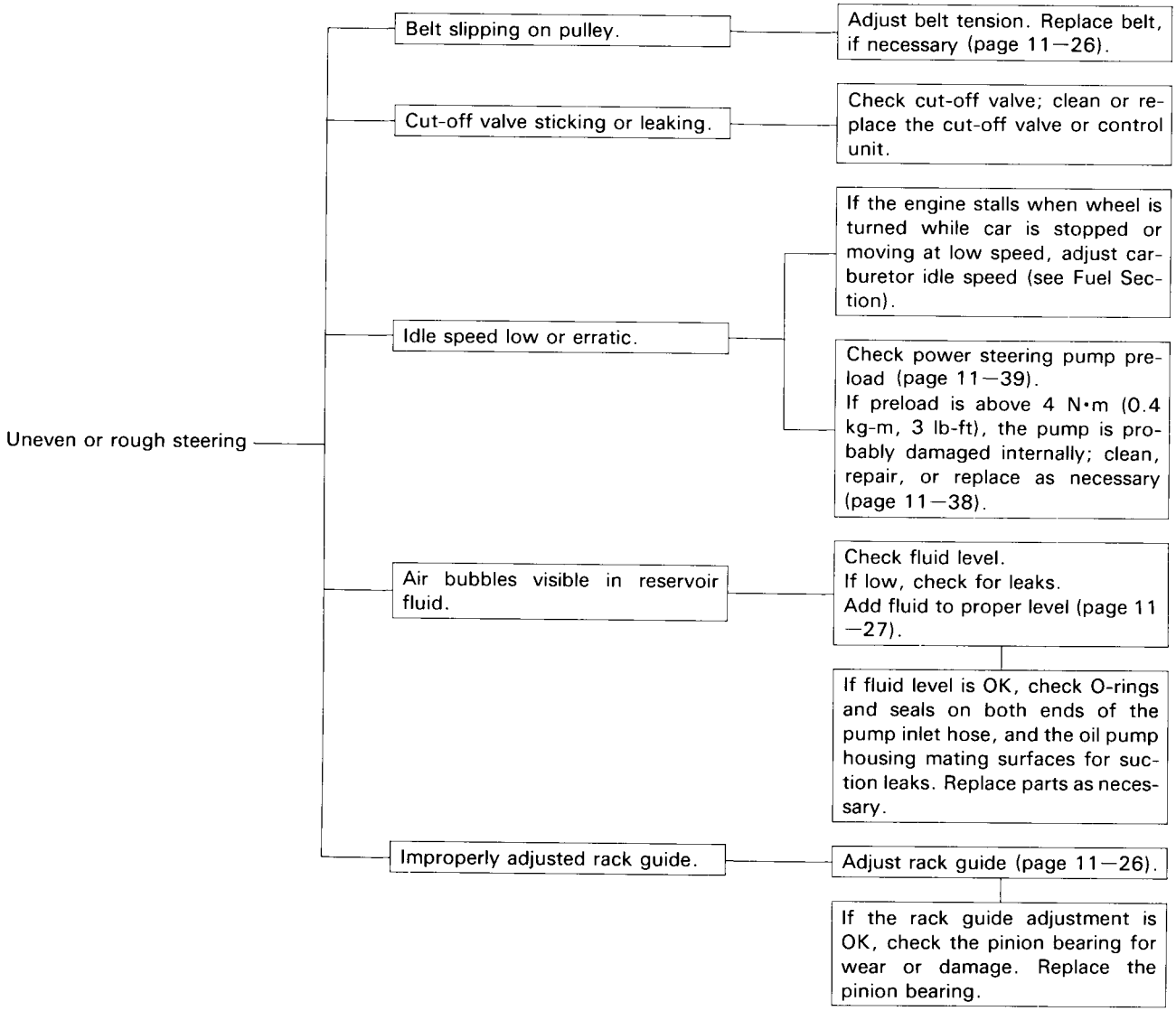
Check the following before you begin:

- 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?



(cont'd)

General Troubleshooting (cont'd)

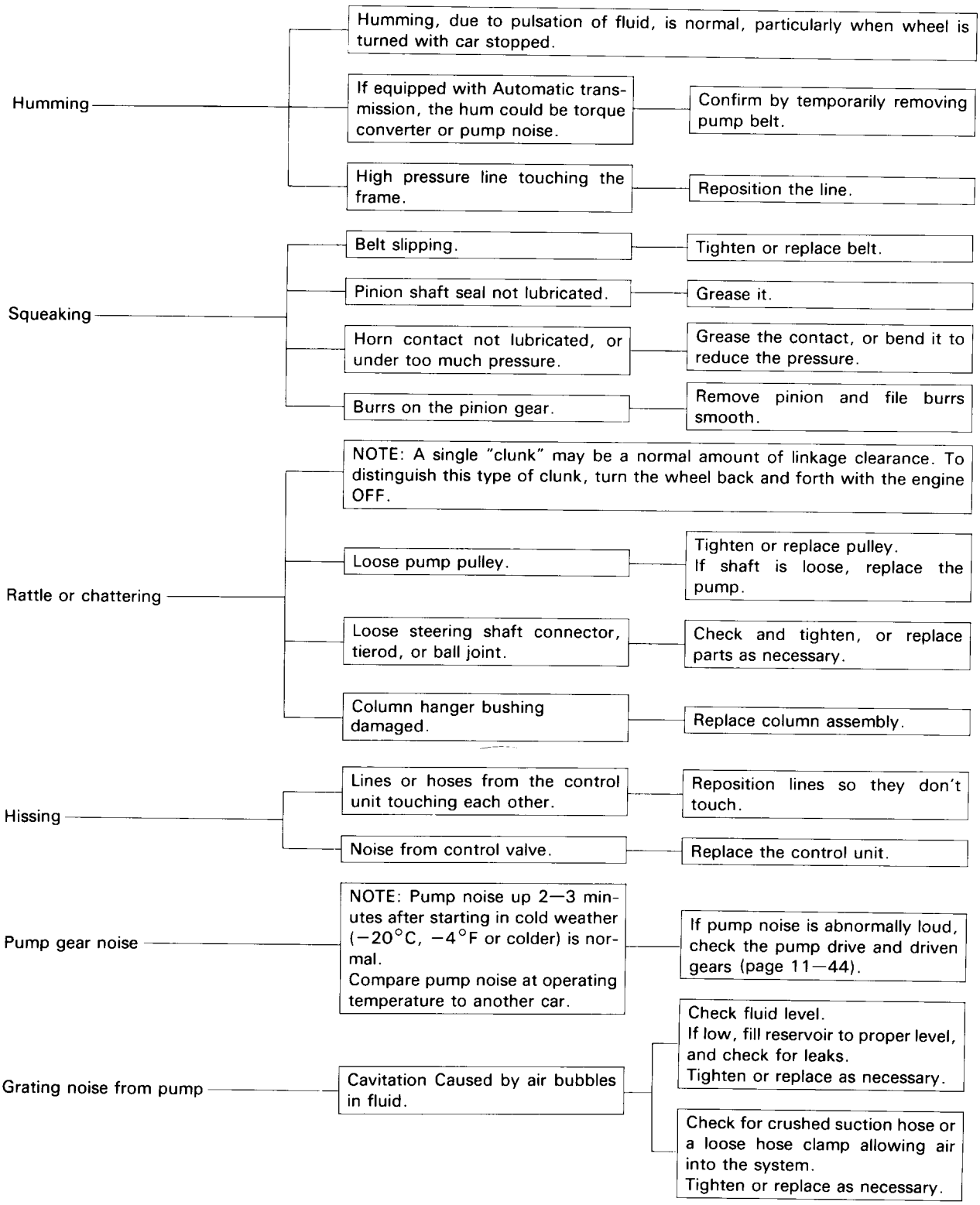


Shock or vibration when wheel is turned to full lock.	Pump belt slipping on pulley (pump stops momentarily).	Adjust belt tension (page 11—26). or replace belt.
	Sticking relief valve; pulsation exceeds 980 kPa (10 kg/cm^2, 142 psi).	Check flow control valve (page 11—41); clean or replace as necessary. If the flow control valve is OK, replace the pump.
Assist (excessively light steering) at high speed.	Measure force required to turn wheel with bypass tube joint installed, and car parked on dry paved surface (page 11—28).	If below 50 N (5.0 kg, 11 lbs), check cut-off valve and control unit and replace parts as necessary.
Steering kicks back during wide turns.	Pump belt slipping.	Adjust belt tension (page 11—26) or replace belt.
	Sticking cut-off valve or control valve.	Replace cut-off valve or control unit.
	Rack guide adjusted too loose.	Adjust rack guide (page 11—26).
Wheel will not return smoothly.	Tire pressure too low.	Inflate to correct pressure.
	Improper front wheel alignment.	Readjust front wheel alignment or replace parts as necessary.
	Improperly adjusted rack guide.	Adjust rack guide (page 11—26).

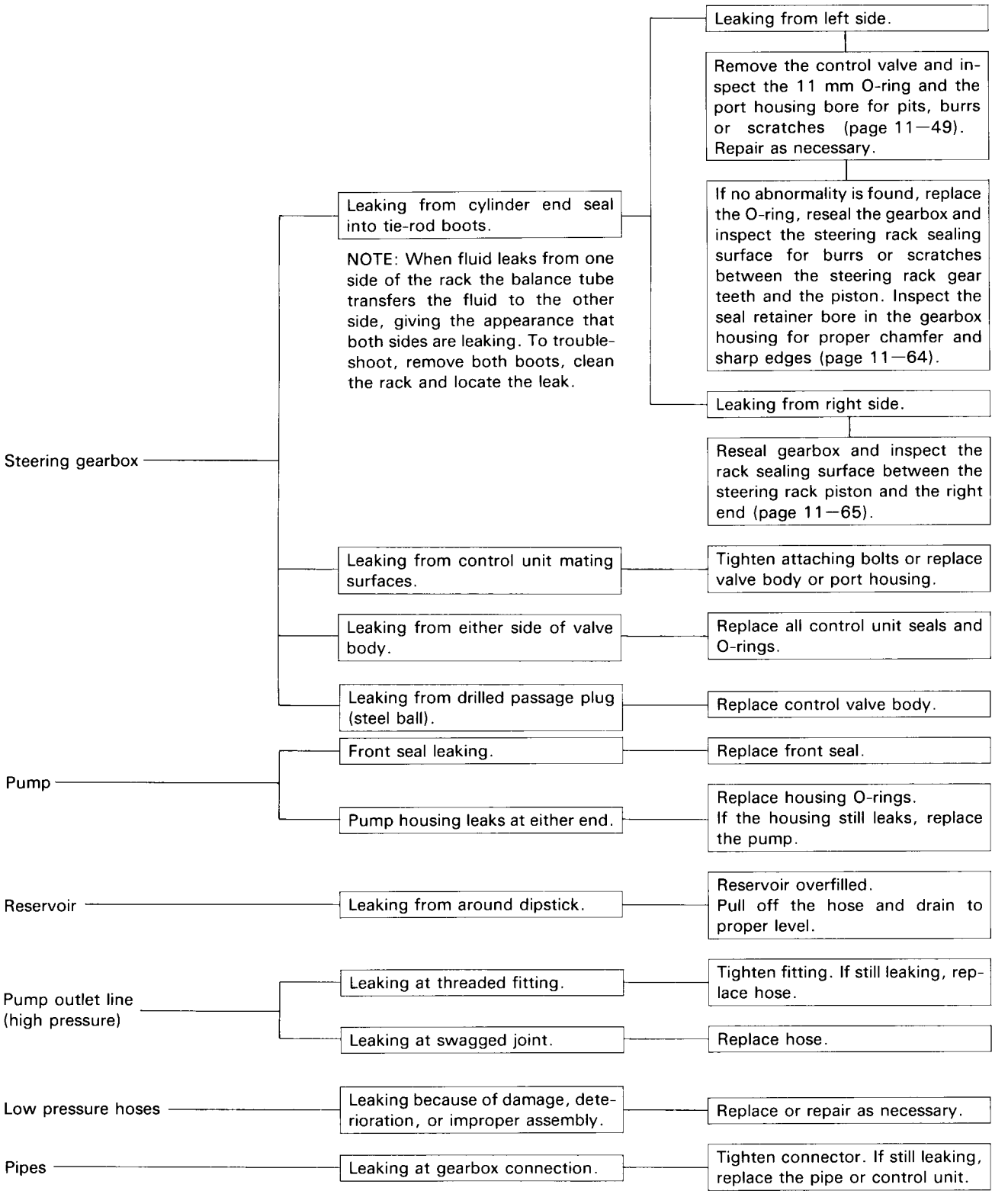
Troubleshooting

Noise and Vibration

NOTE: Pump noise in first 2—3 minutes after starting in cold weather (−20°C, −4°F or colder) is normal.



Fluid Leaks


Steering gearbox
Leaking from cylinder end seal into tie-rod boots.
NOTE: When fluid leaks from one side of the rack the balance tube transfers the fluid to the other side, giving the appearance that both sides are leaking. To trouble-shoot, remove both boots, clean the rack and locate the leak.
Leaking from left side.
Remove the control valve and inspect the 11 mm O-ring and the port housing bore for pits, burrs or scratches (page 11—49). Repair as necessary.
If no abnormality is found, replace the O-ring, reseal the gearbox and inspect the steering rack sealing surface for burrs or scratches between the steering rack gear teeth and the piston. Inspect the seal retainer bore in the gearbox housing for proper chamfer and sharp edges (page 11—64).
Leaking from right side.
Reseal gearbox and inspect the rack sealing surface between the steering rack piston and the right end (page 11—65).
Leaking from control unit mating surfaces.
Tighten attaching bolts or replace valve body or port housing.
Leaking from either side of valve body.
Replace all control unit seals and O-rings.
Leaking from drilled passage plug (steel ball).
Replace control valve body.
Pump
Front seal leaking.
Replace front seal.
Pump housing leaks at either end.
Replace housing O-rings. If the housing still leaks, replace the pump.
Reservoir
Leaking from around dipstick.
Reservoir overfilled. Pull off the hose and drain to proper level.
Pump outlet line (high pressure)
Leaking at threaded fitting.
Tighten fitting. If still leaking, replace hose.
Leaking at swagged joint.
Replace hose.
Low pressure hoses
Leaking because of damage, deterioration, or improper assembly.
Replace or repair as necessary.
Pipes
Leaking at gearbox connection.
Tighten connector. If still leaking, replace the pipe or control unit.

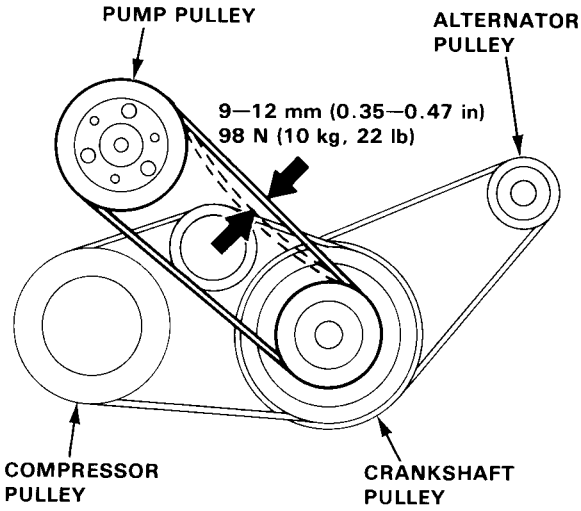
Maintenance

Pump Belt Adjustment

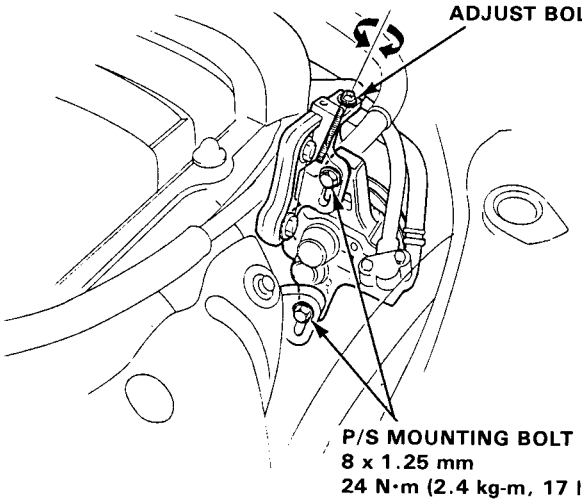
A properly adjustment belt should deflect about 9—12 mm (0.35—0.47 in) when you push on it mid-way between the pulleys with a force of about 98 N (10 kg, 22 lbs).

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

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



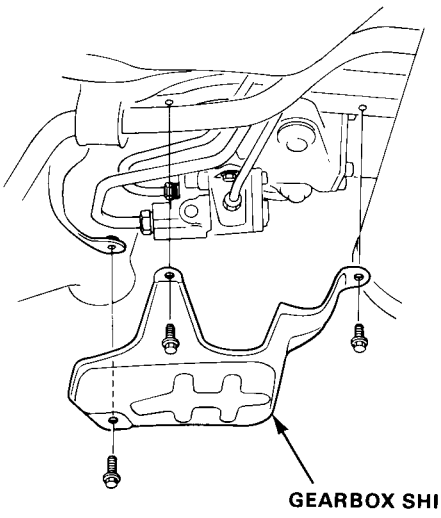
2. Loosen the P/S mounting bolts.
3. Turn the adjust bolt to get the proper tension, then retighten the P/S mounting bolt.
4. Recheck the deflection of the belt.



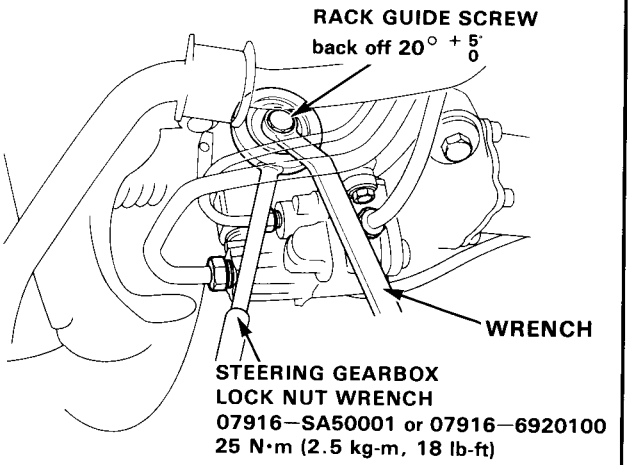
On-Car Checks

Rack Guide Adjustment

1. Remove the gearbox splash splash.



2. Loosen the lock nut on the rack guide screw with the special tool as shown.



3. Tighten the guide screw until it compresses the spring and seats against the guide, then loosen it.

   Re-tighten it to about:
   4 N·m (0.4 kg-m, 3 lb-ft)

   Then back it off about:
   $20° +5 0$

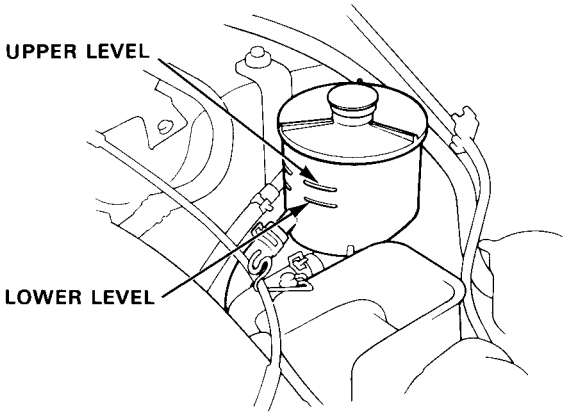
   Tighten the lock nut to about 25 N·m (2.5 kg-m, 18 ft-lb) while preventing the guide screw from turning.

4. Check the steering effort as described on page 11—28.

Fluid Replacement

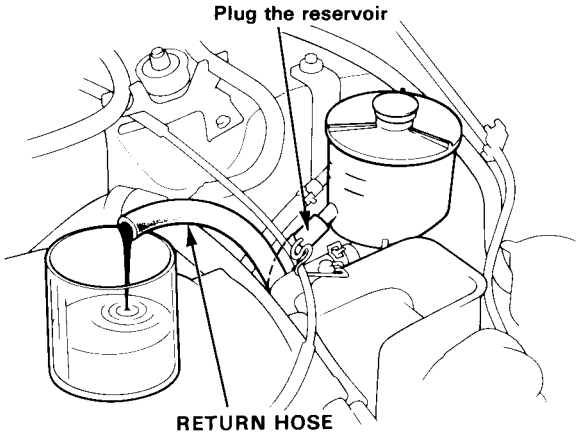
Check the reservoir at regular intervals, and add fluid as necessary.

CAUTION: Use only GENUINE HONDA Power Steering Fluid. Using other fluids such as ATF or other manufacturer's power steering fluid will damage the sytem.



Fluid Replacement
CAPACITY: 1.2 liter (1.3 U.S. pt) at change

1. Disconnect the return hose from the gearbox at the reservoir, and put the end in a suitable container.
2. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.



3. Re-fit the return hose on the reservoir.
4. Fill the reservoir to the upper level mark.
5. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
6. Recheck the fluid level and add some if necessary.

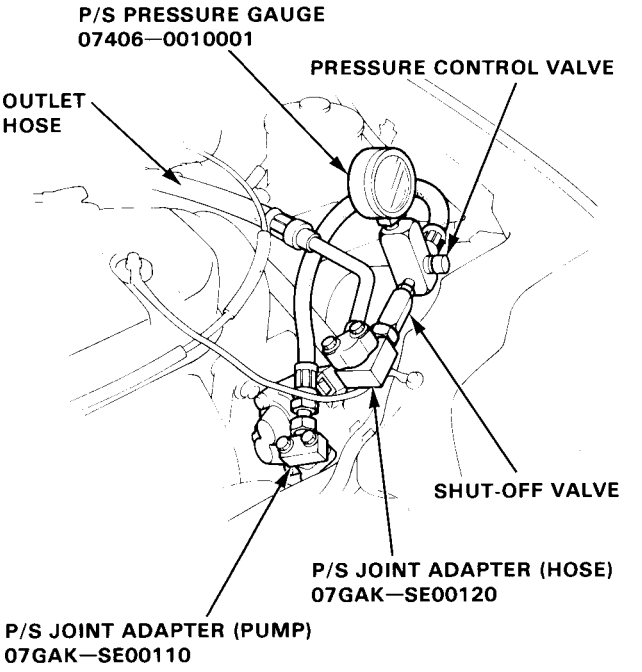
CAUTION: Do not fill the reservoir beyond the upper level mark.

Pump Pressure Check

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

NOTE: First check the power steering fluid level and pump belt tension.

1. Disconnect the outlet hose from the pump outlet fitting, and install the pump joint adaptor on the outlet.
2. Install the hose joint adaptor to the outlet hose.
3. Install the power steering pressure gauge between the pump and hose joint adaptors as shown.



4. Open the shut-off valve fully.
5. Open the pressure control valve fully.

(cont'd)

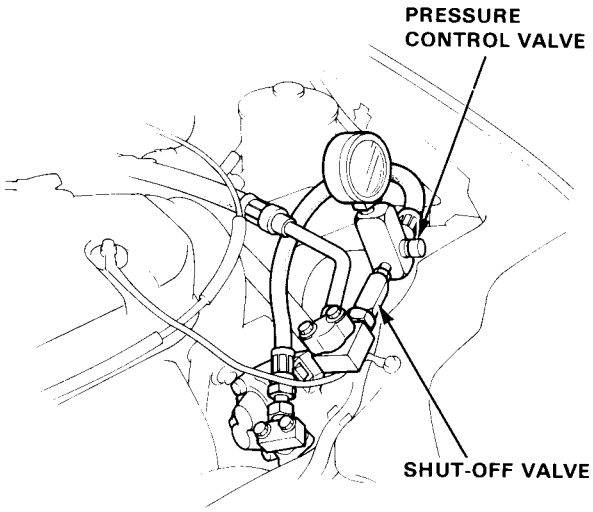
On-Car Checks

Pump Pressure Check (cont'd)

6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Close the shut-off valve, then, close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.
9. Immediately open the shut-off valve fully.

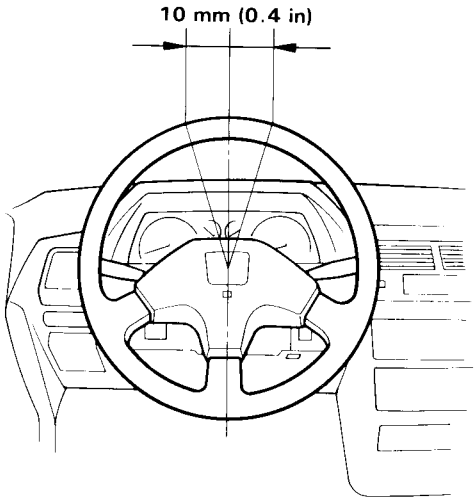
   CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

   If the pump is in good condition, the gauge should read at least 7845—8826 kPa (80—90 kg/cm^2, 1138—1280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



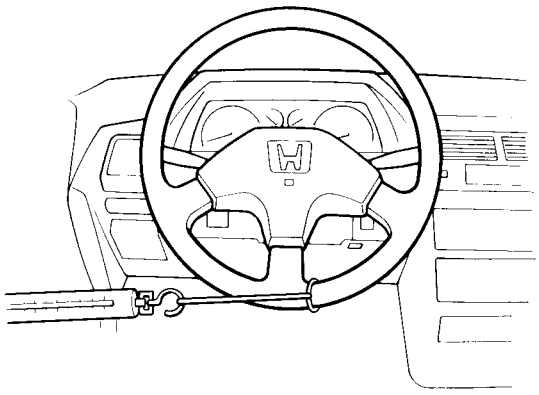
Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.



Power Assist Check with Car Parked

1. Check the power steering fluid level and pump belt tension.
2. Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

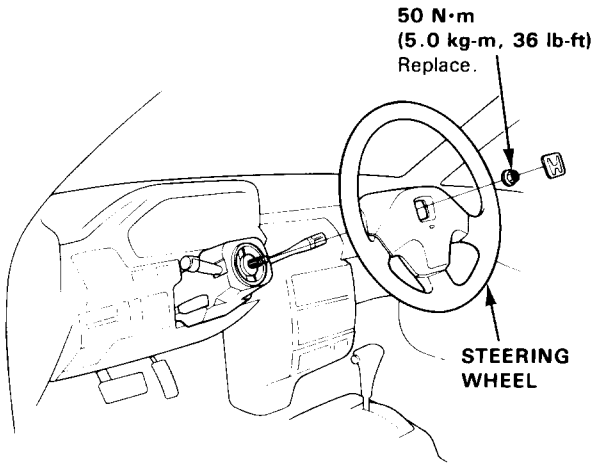


4. The scale should read no more than 18 N (1.8 kg, 4 lb) If it reads more or less, check the gearbox and pump.

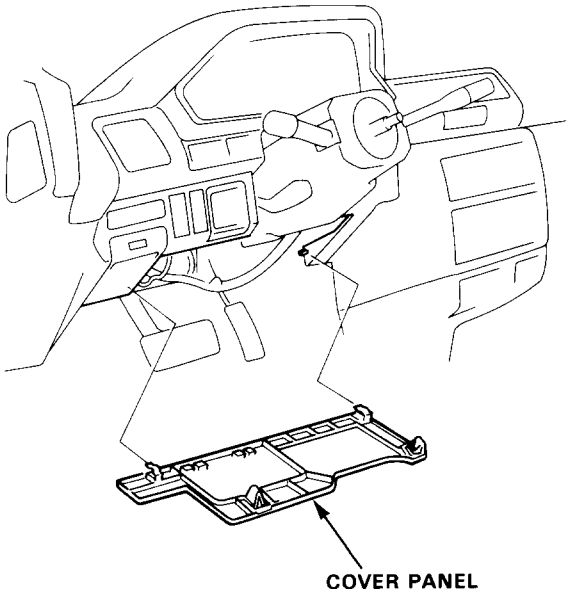
Column

Removal

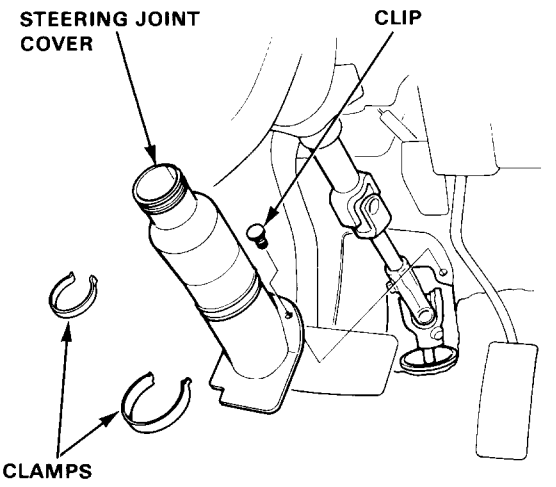
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



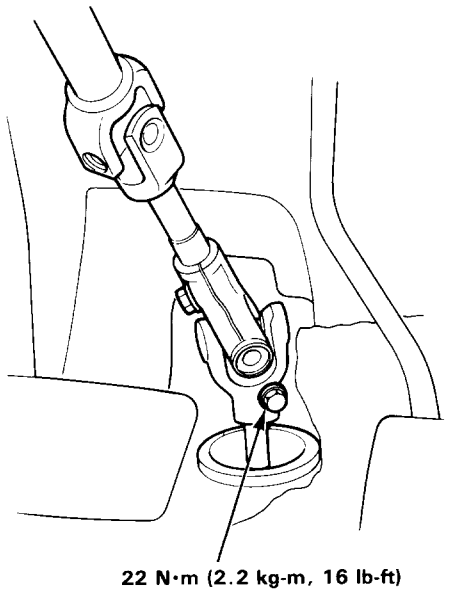
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.



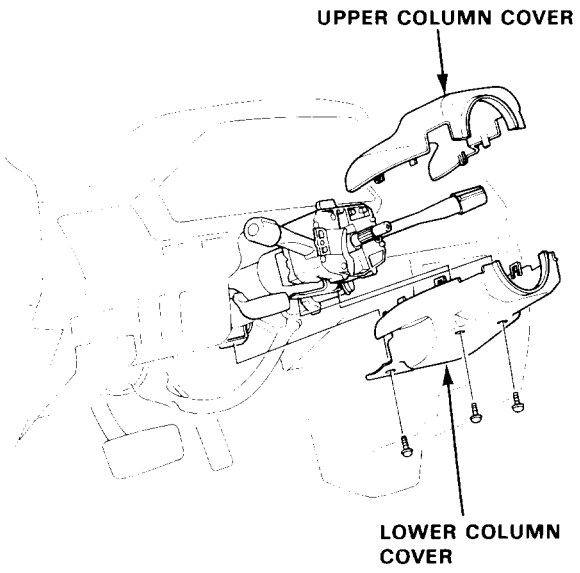
6. Remove the steering joint bolt, and move the joint toward the column.



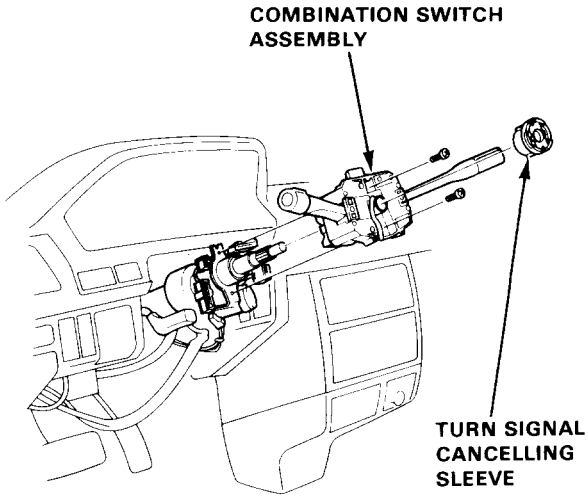
(cont'd)

Removal (cont'd)

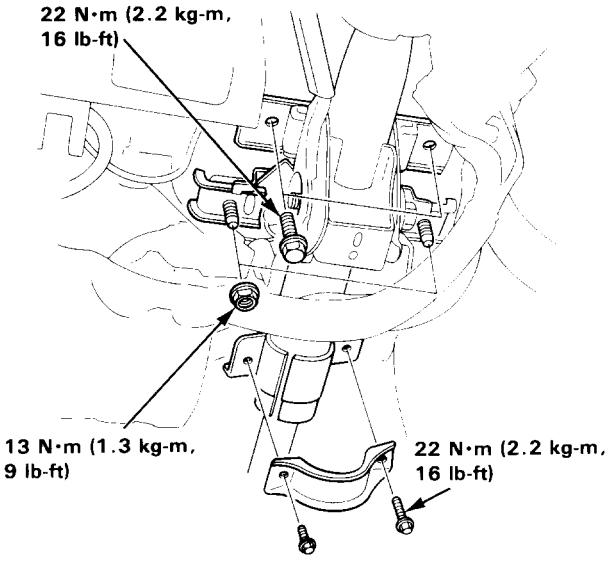
7. Remove the upper and lower column covers.



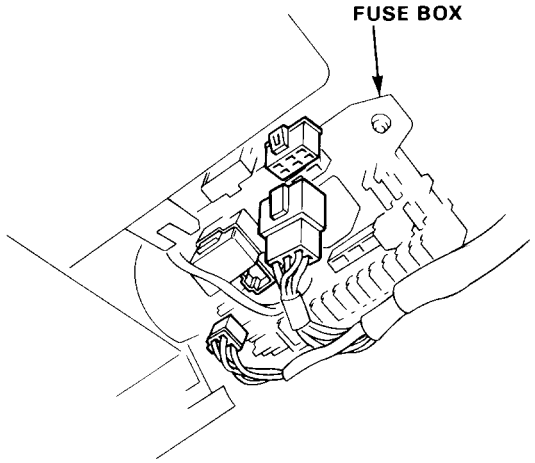
8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal cancelling sleeve and combination switch assembly.



10. Remove the lower column bracket.
11. Remove the nuts attaching the bending plate guide and bending plate.

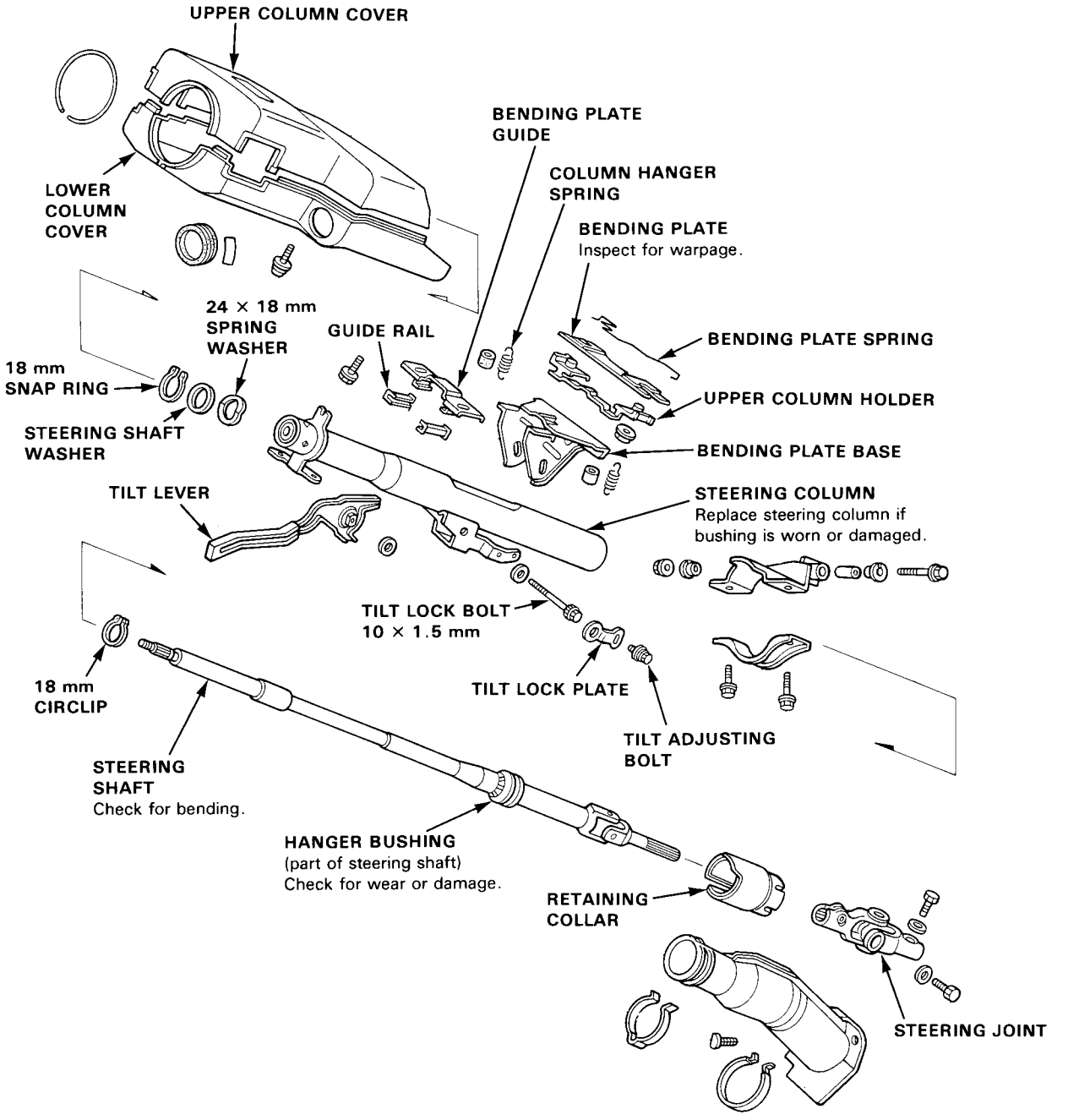


12. Disconnect each wire coupler from the fuse box at under dash left side.
13. Remove the steering column assembly.



Disassembly/Inspection

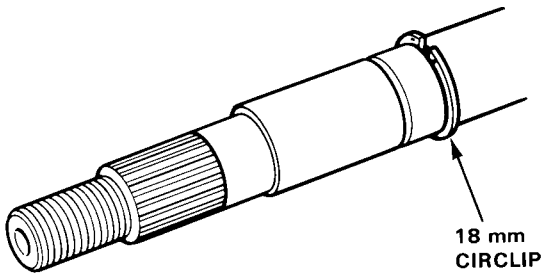
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I."
5. Remove the snapring, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.



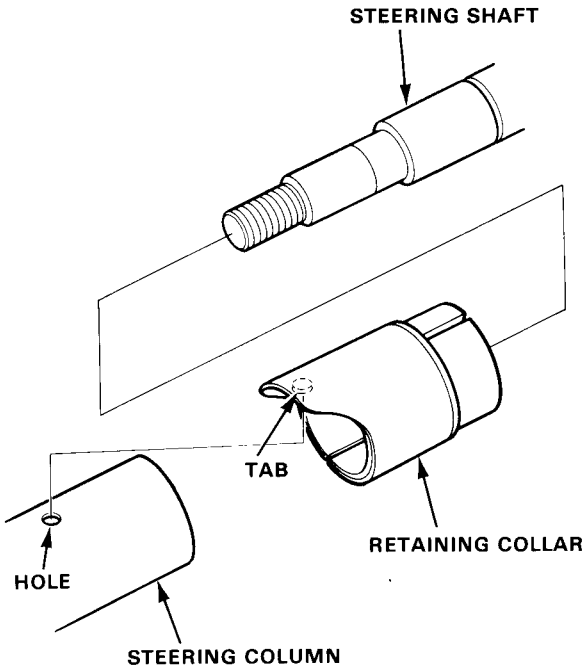
Column

Reassembly

1. Install the circlip on the steering shaft.



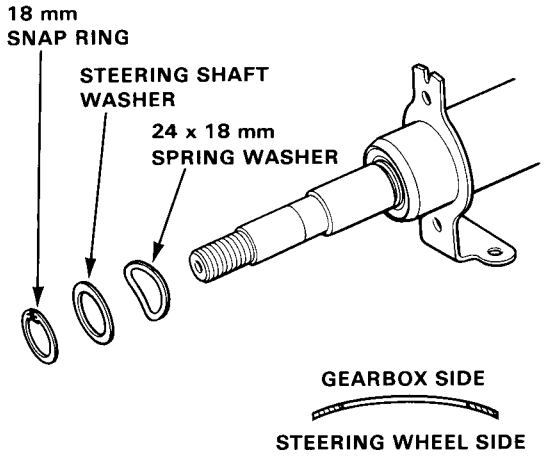
2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.



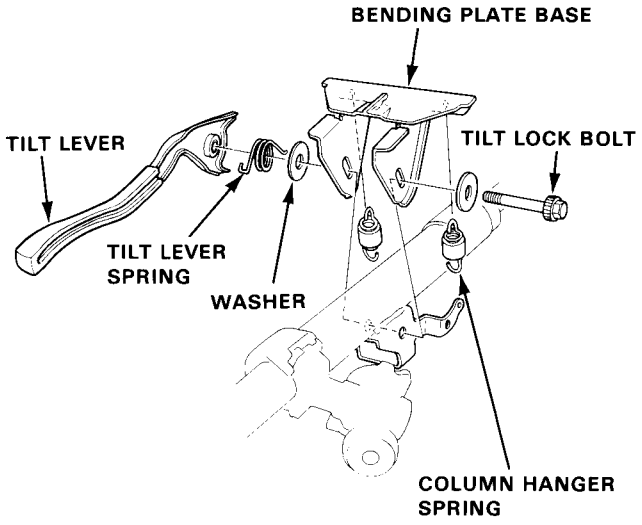
3. Insert the steering shaft into the steering column from the bottom.

4. Install the 24×18 mm spring washer and steering shaft washer on the steering shaft and secure with the 18 mm snap ring.

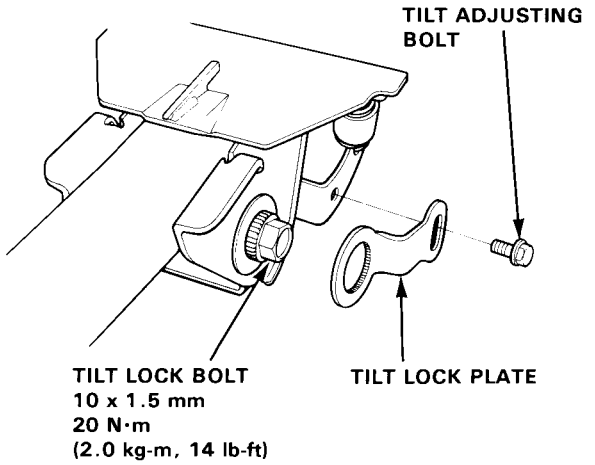
   NOTE: Install the spring washer as shown.



5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, spring, washers, and bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.

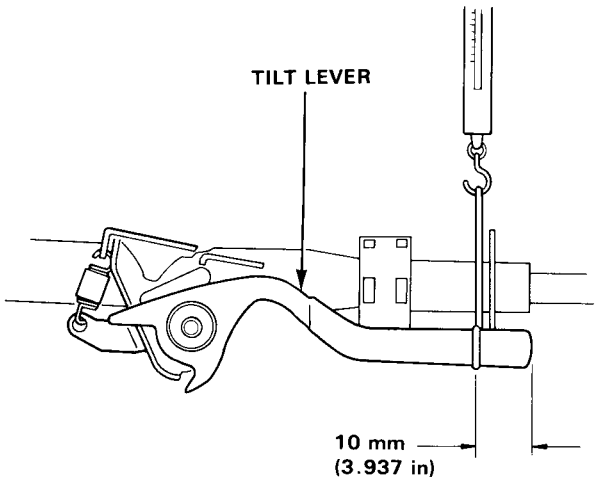


8. Tighten the tilt lock bolt to 20 N·m (2.0 kg-m, 14 lb-ft), then position the tilt lock plate on the splined portion of tilt lock bolt and loosely attach with the tilt adjusting bolt.

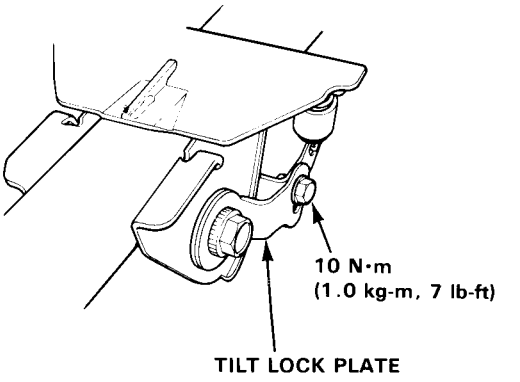


9. Attach a spring scale 10 mm (3.937 in) from the end of the knob. Measure the force required to move the lever.

Preload: **80 N (8.0 kg, 18 lbs)**



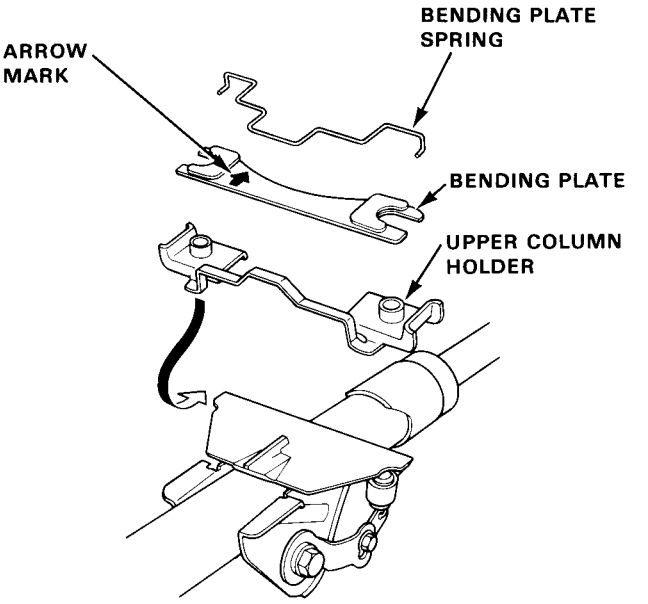
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

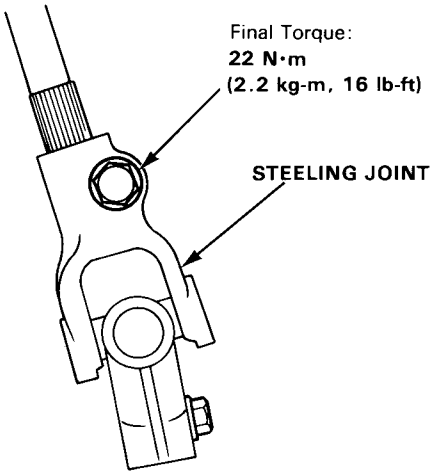
NOTE: Install the bending plate with arrow mark facing the steering gearbox.



(cont'd)

Reassembly (cont'd)

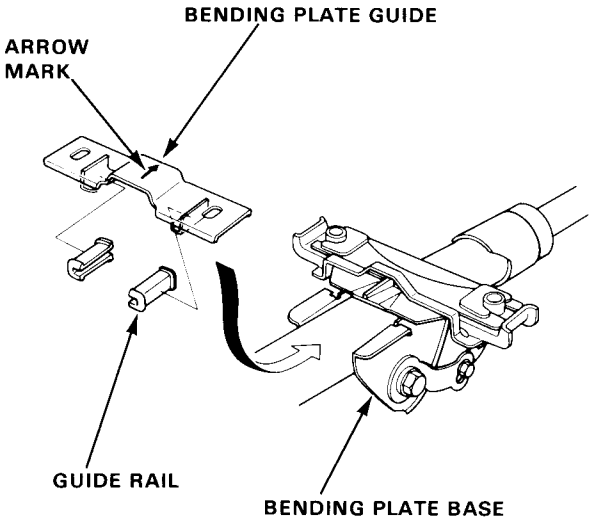
13. Loosely install the steering joint on the steering shaft.



Installation

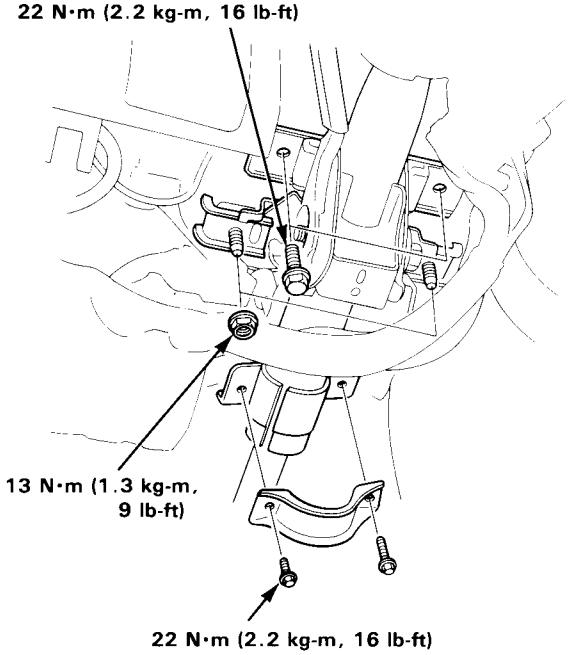
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

NOTE: Install the bending plate guide with its arrow mark toward the gearbox.

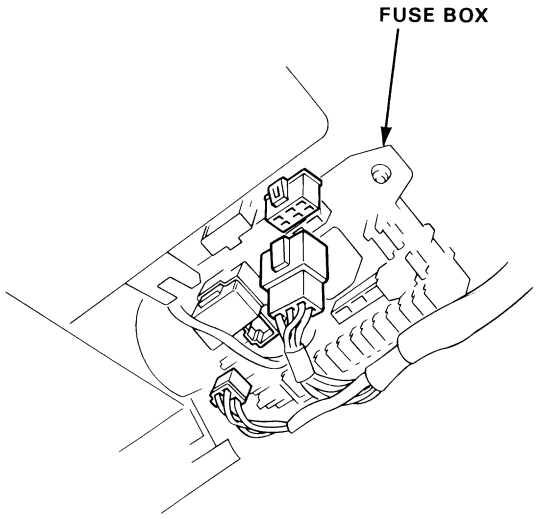


2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket.

Tighten to these torques in step 7, page 11—33:
22 N·m (2.2 kg-m, 16 lb-ft)

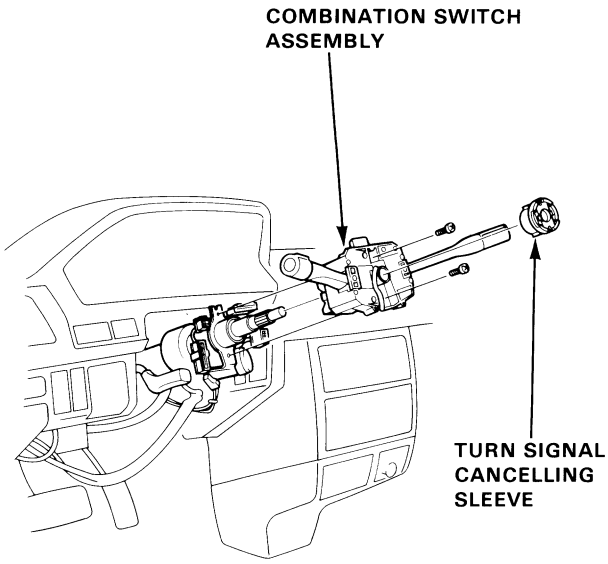


3. Connect each wire coupler to the fuse box at the under dash left side.

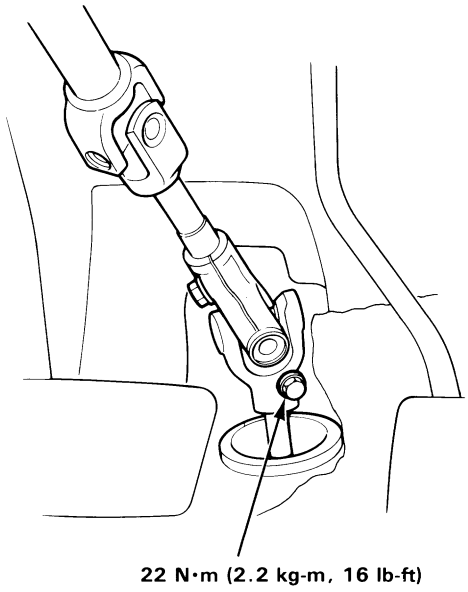


4. Install the combination switch assembly and turn signal cancelling sleeve.

5. Connect each wire coupler to the combination switch.



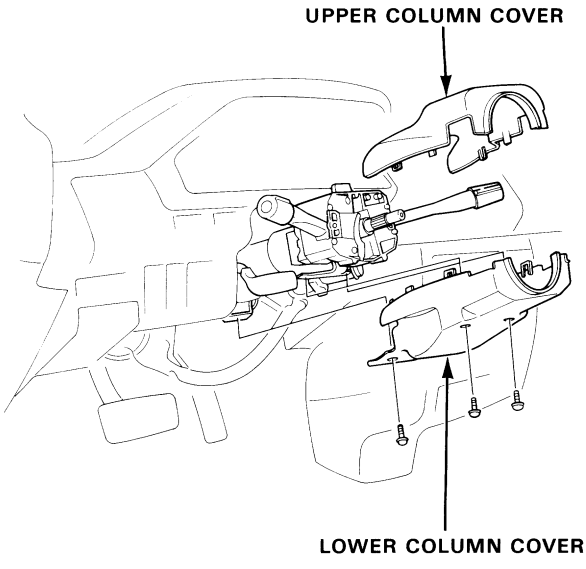
6. Loosely install the steering joint on the steering gearbox pinion.



7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.

8. Tighten the lower and upper steering joint bolts.

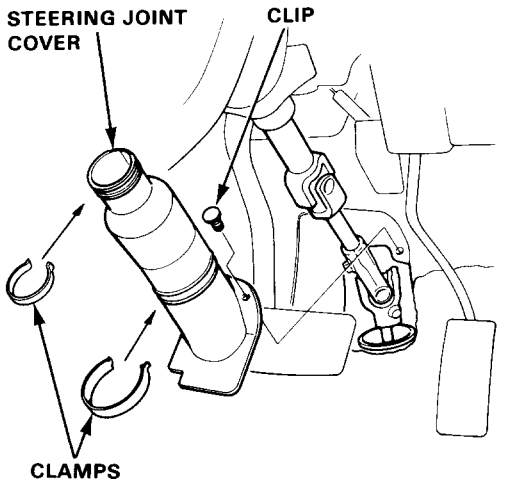
9. Install the upper column cover and lower column cover.



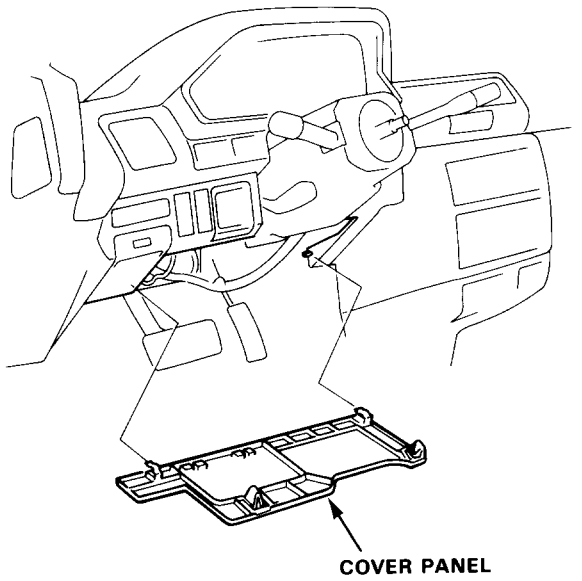
(cont'd)

Installation (cont'd)

10. Install the steering joint cover with the clamps and clip.



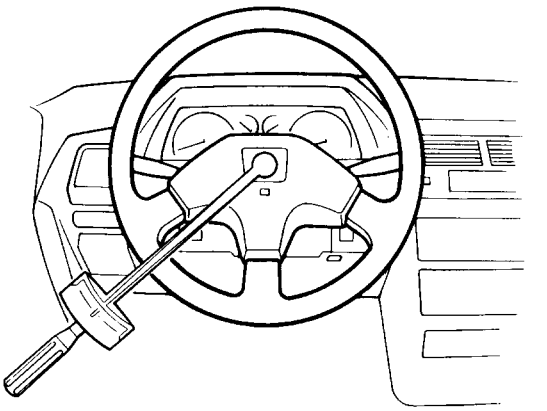
11. Install the cover panel.



12. Install the steering wheel in a straight ahead position.

13. Tighten the steering wheel mount nut and torque to 50 N•m (5.0 kg-m, 36 lb-ft).

14. Check that the horn works properly, then install the center pad.

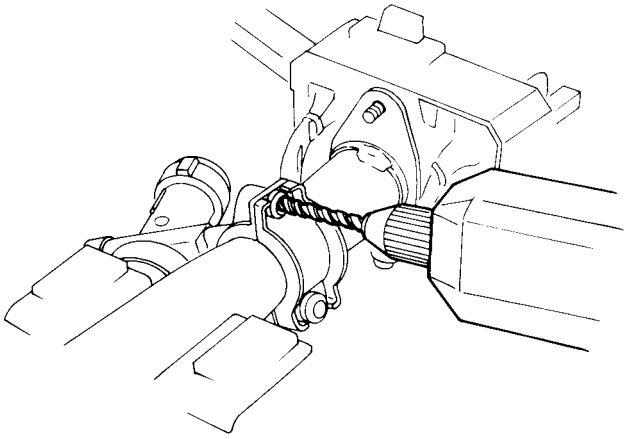


Steering Lock

Lock Replacement

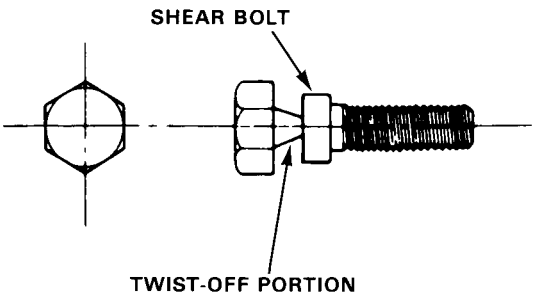
1. Remove the steering column covers.
2. Disconnect the ignition switch connector.
3. Center punch the 2 shear bolts and drill their heads off with a 3/8 in. drill bit.

   CAUTION: Do not damage the switch body when removing the shear bolt heads.
4. Remove the shear bolts from the switch body.



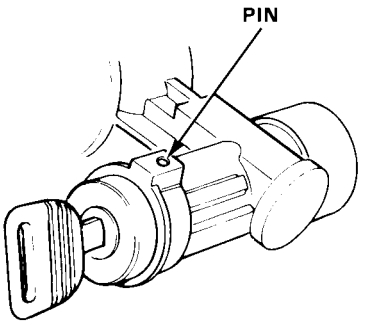
5. Install the new ignition switch without the key inserted.
6. Loosely tighten the new shear bolts.

   NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.
7. Insert the ignition key and check for proper operation of the steering wheel lock and that the ignition key turns freely.
8. Tighten the shear bolts until the hex heads twist off.

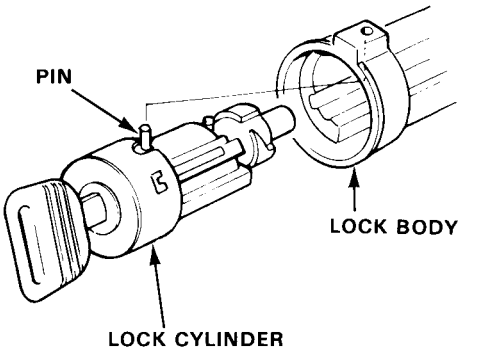


Lock Cylinder Replacement

1. Remove the ignition switch.
2. Turn the ignition key to "I."
3. Push the pin in and remove the lock cylinder from the lock body.



4. Turn the key to LOCK and align the lock cylinder with the lock body.
5. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
6. Turn the key to "I," push the pin and insert the lock cylinder into the lock body until the pin clicks into place.



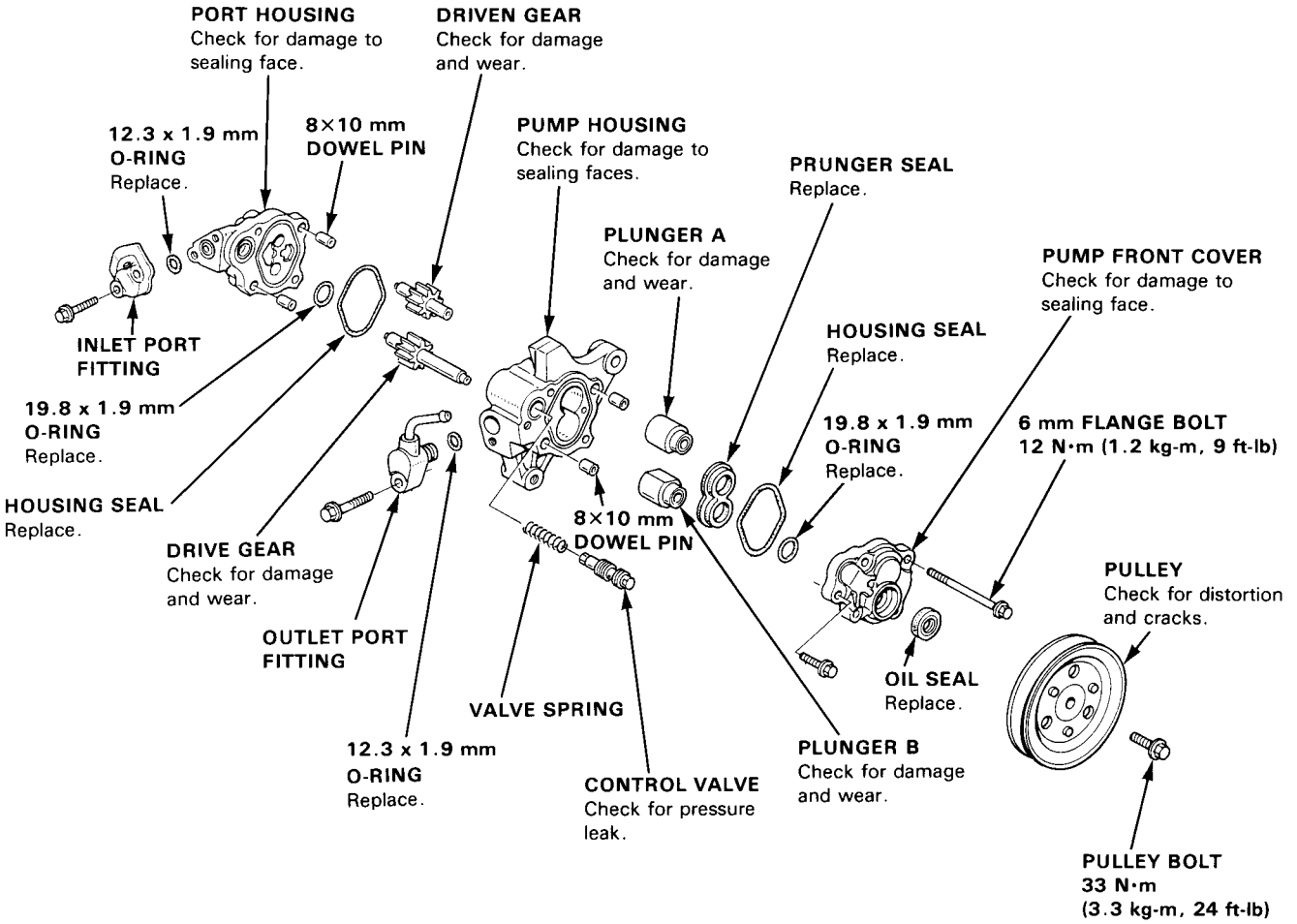
7. Install the ignition switch.

Steering Pump

Illustrated Index

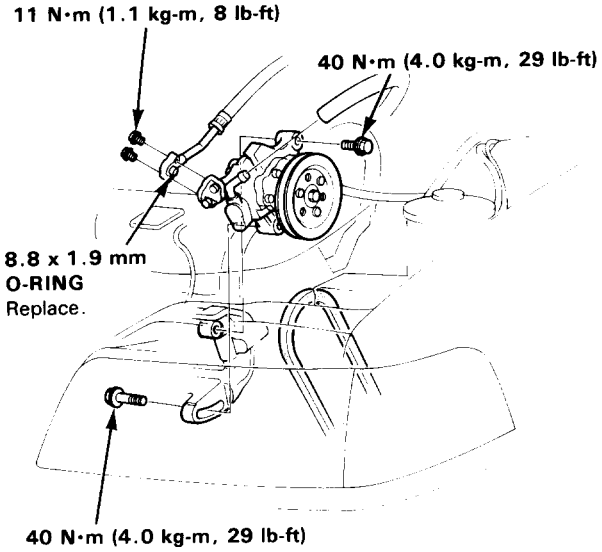
CAUTION: Pump components are made of aluminium. Be careful not to damage them when servicing.

- Clean all of the disassembled parts thoroughly.
- Replace all O-rings and seals. Do not dip new O-rings and seals in solvent; coat O-rings with steering grease before installation, and make sure they stay in place during reassembly.
- The shaded parts are selectively fitted, and should not be disassembled except to replace seals. If any one of them is faulty, replace the whole pump as an assembly.



Replacement

1. Drain the fluid from the system (page 11—27).
2. Disconnect the inlet and outlet hoses from the pump and plug them.
3. Remove the belt by loosening the pump attaching bolts.
4. Remove the bolts, then remove the pump.

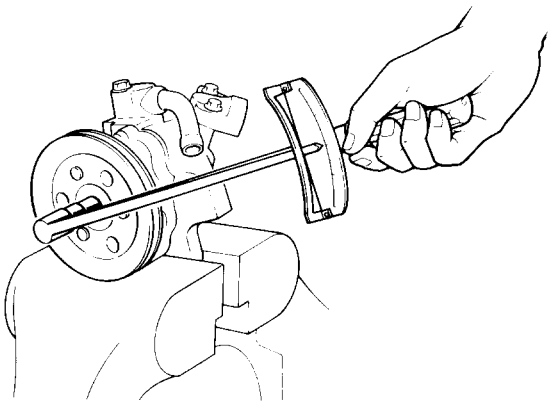


5. Loosely install the new pump on the bracket.
6. Connect the inlet and outlet hoses to the pump.
7. Install and adjust the belt (page 11—26).
8. Fill the reservoir with new fluid to the UPPER LEVEL on the reservoir.
9. Start the engine and let it run at fast idle while turning the steering wheel lock-to-lock several times to bleed air from the system.
10. Check the reservoir and add fluid if necessary.

Preload Inspection

Check the pump preload with a torque wrench after overhauling a pump or installing a replacement pump.

Preload: 4 N·m (0.4 kg-m, 3 lb-ft) max.

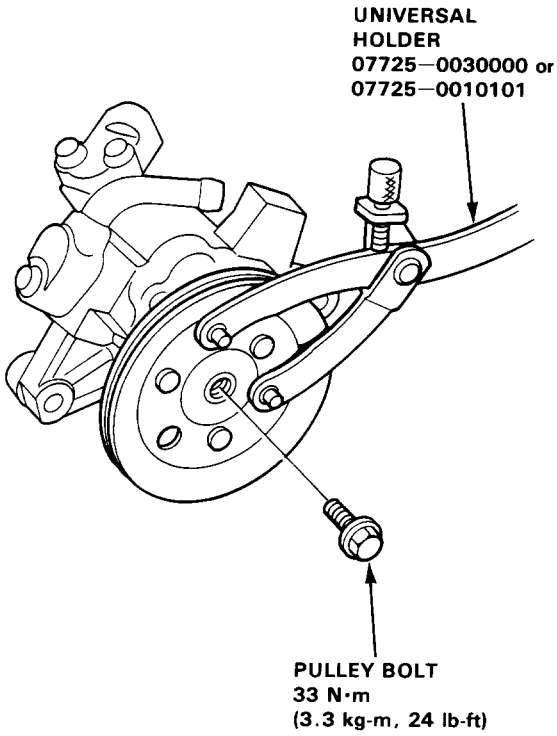


Steering Pump

Pulley Replacement

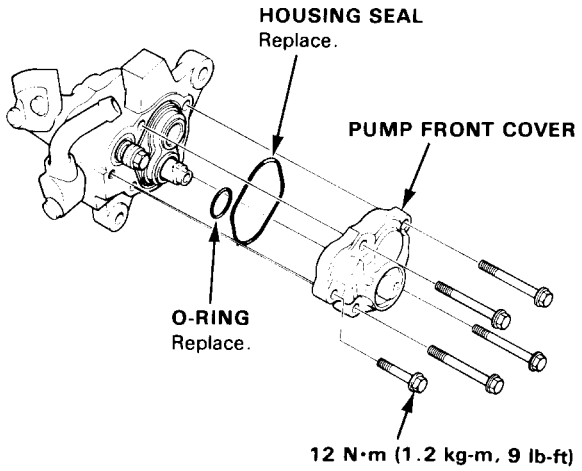
Remove the pulley bolt using the special tool, then remove the pulley.

NOTE: Pulley bolt has left hand threads.

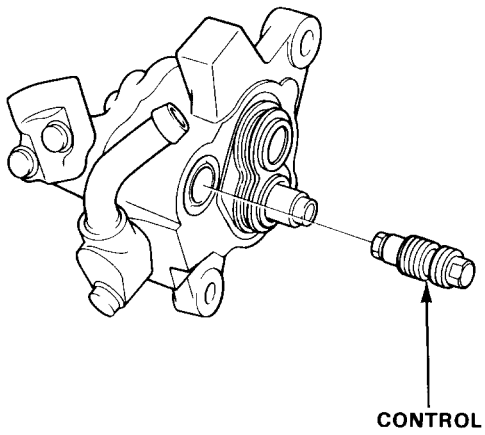


Control Valve Inspection and Replacement

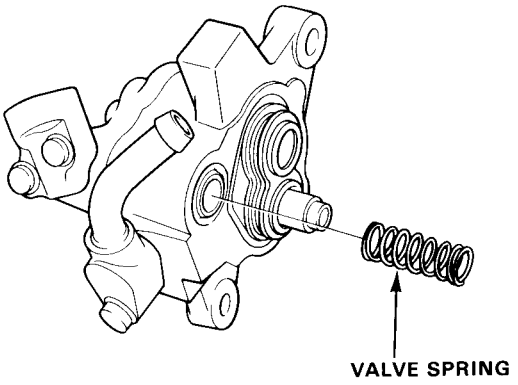
1. Remove the five 6 mm bolts in the order shown, then separate the pump front cover, pump housing and port housing.



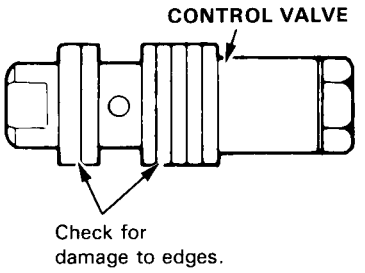
2. Remove the control valve from the pump housing.



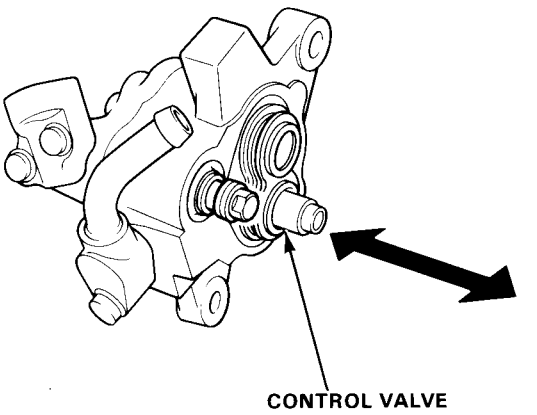
3. Remove the valve spring from the pump housing.



4. Check for wear, burrs, and other damage to the edges of the grooves in the valve.

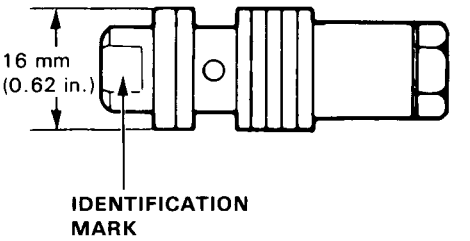


5. Slip the valve back in the pump and check that it moves in and out smoothly.



if OK, go on to step 6, if not, replace the valve:

- The original valve was selected for a precise fit in the pump housing bore, so make sure the new one has the same identification mark.



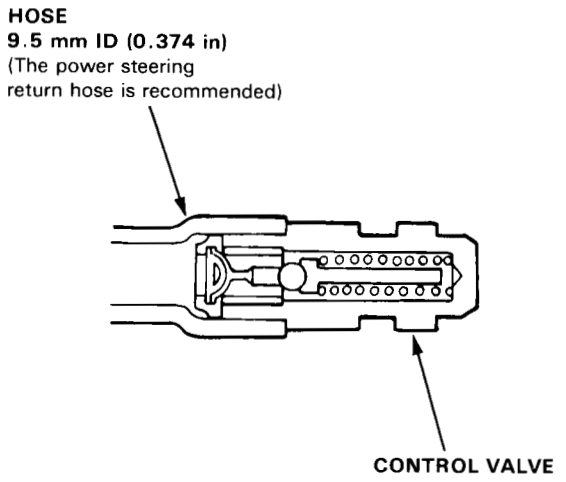
Mark	Part Number	Part Name	Size mm(in)
A	56350—PC1—010	CONTROL VALVE A	15.995—16.000 (0.6297—0.6299)
Without mark	56360—PC1—010	CONTROL VALVE B	16.000—16.006 (0.6299—0.6302)

(cont'd)

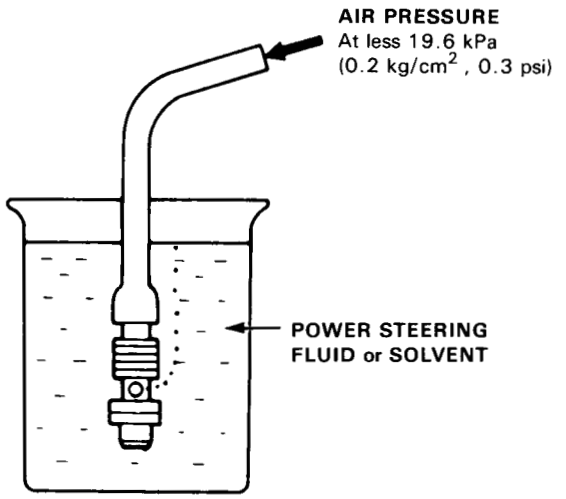
Steering Pump

Control Valve Inspection and Replacement (cont'd)

6. Attach a hose to the end of the valve as shown.

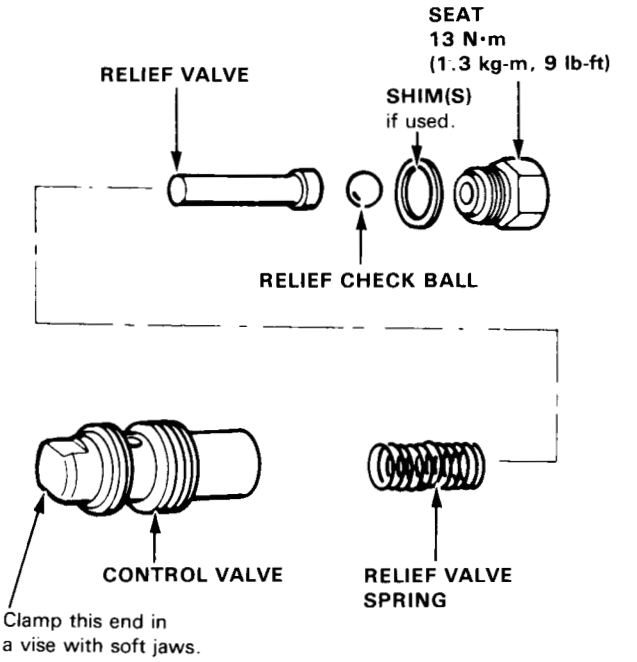


7. Then submerge the valve in a container of power steering fluid or solvent, and blow on the hose. If air bubbles leak through the valve, replace or repair it as follows.



8. Clamp the bottom end of the valve in a vise with soft jaws.

9. Unscrew the seat in the top end of the valve, and remove any shims, the relief check ball, relief valve and relief valve spring.



10. Clean all the parts in solvent, dry them off, then re-assemble and re-test the valve.

    NOTE: If necessary, relief pressure is adjusted at the factory by adding shims under the check ball seat. If you found shims in your valve, be sure you reinstall as many as you took out.

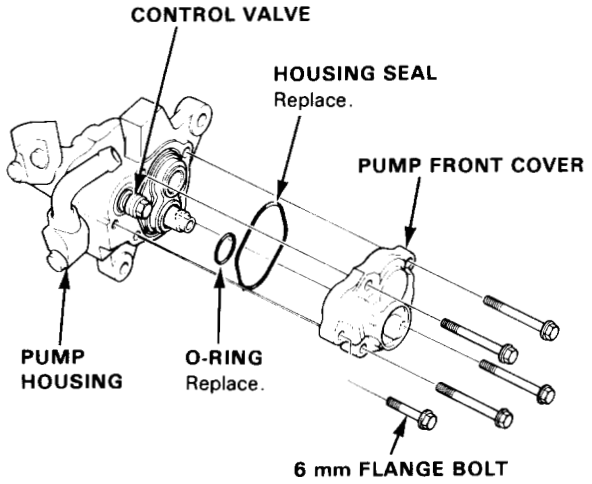
11. Install the control valve in the reverse order of removal.

    - Apply steering grease (Honda P/N 08740—99969) to new O-rings.
    - Coat the control valve with power steering fluid then install it and its spring.

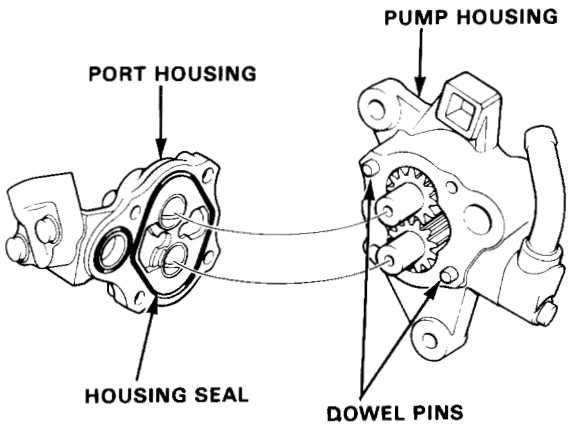
Housing Disassembly

CAUTION: The pump components are made of aluminum. Be careful not to damage them when servicing.

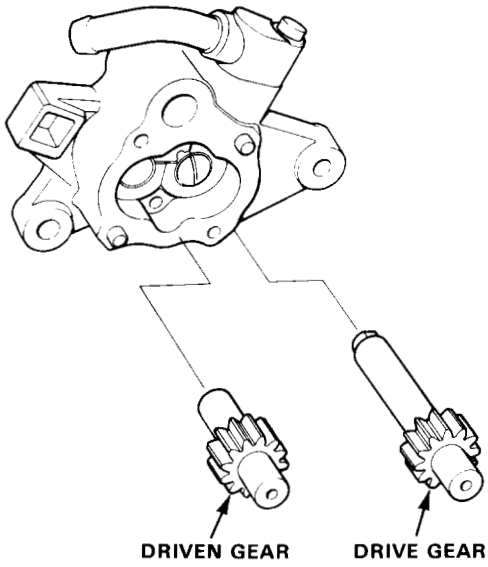
1. Remove the pump from car (page 11—39).
2. Remove the pulley (page 11—40) and pump front cover.



3. Remove the housing seal from the pump housing.
4. Remove the dowel pins, plunger seal, control valve O-ring from the pump housing.
5. Separate the port housing from the pump housing.



6. Remove the dowel pins from the pump housing and remove the housing seal and O-ring from the port housing.
7. Remove the pump drive and driven gears from the pump housing.

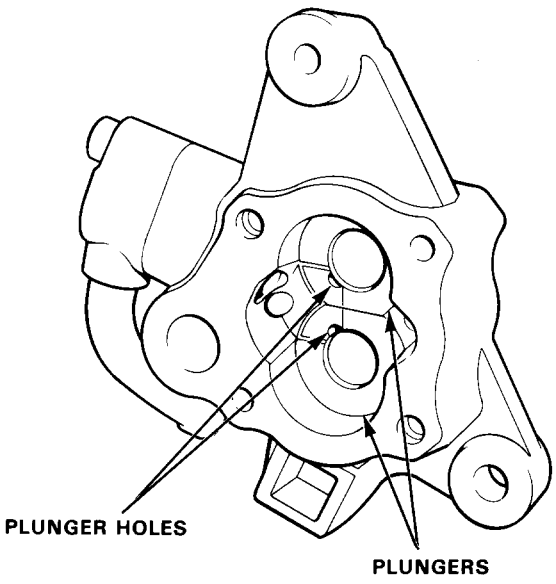


8. Remove the plungers from the pump housing.
9. Pry the oil seal out of the pump front cover.

Steering Pump

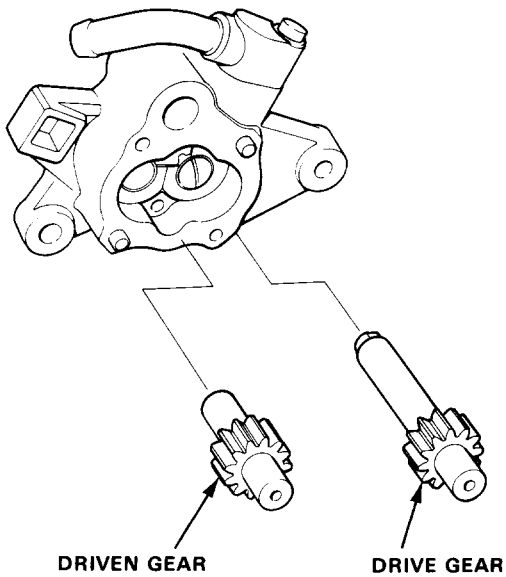
Housing Reassembly

1. Coat the outer surfaces of the plungers with power steering fluid, then install them in the pump housing. Make sure the plunger holes are positioned as shown.



2. Coat the inside of the plungers with power steering fluid.

3. Install the pump drive and driven gears in the pump housing.

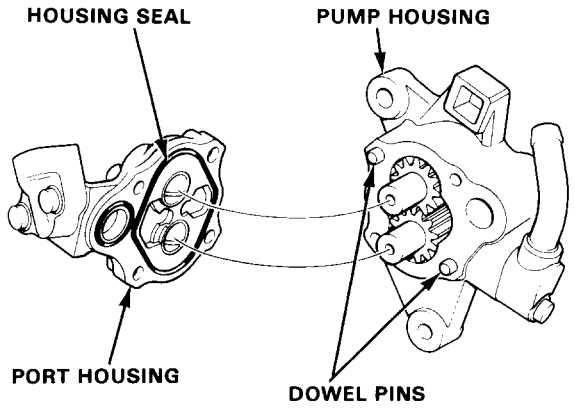


4. Coat the bushings on the port housing with power steering fluid.

5. Install the dowel pins in the pump housing, then install the new housing seal and O-ring in the port housing.

   NOTE: Coat the new housing seal with grease.

6. Install the port housing on the pump housing.



7. Grease the new plunger seal and install it over the plungers.

8. Install the dowel pins.

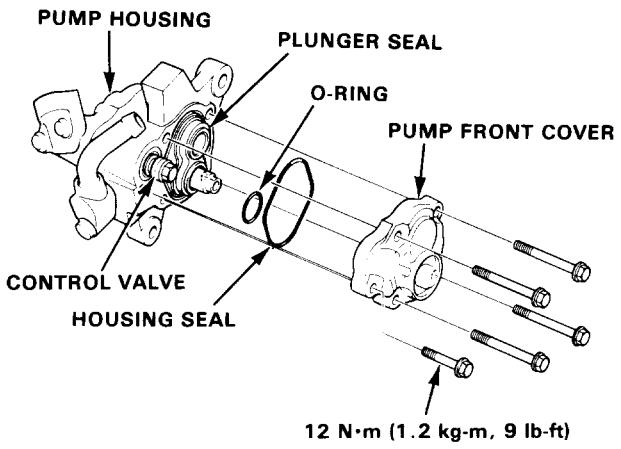
9. Fill the groove of the pump housing with grease and install the new housing seal in the pump housing.

11. Grease the new O-ring and install it in the pump housing.

12. Install the control valve.

13. Install the pump front cover.

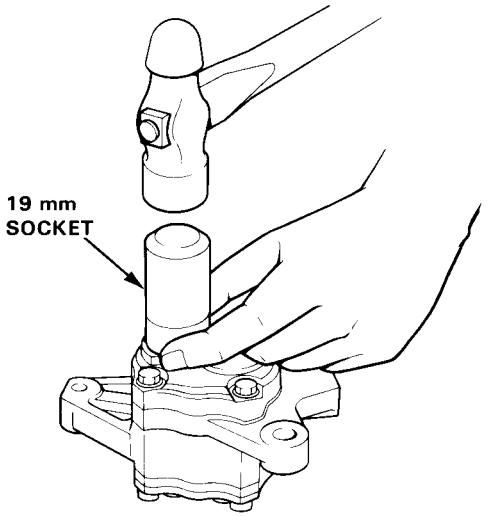
    NOTE: Tighten the front cover bolts in the order shown.



14. Loosely install the new oil seal in the pump front cover.

NOTE: The oil seal spring may come out of position if the oil seal is not installed squarely.

15. Install the new oil seal in the pump front cover; get it started by hand, then use a 19 mm socket to push it in the rest of the way.

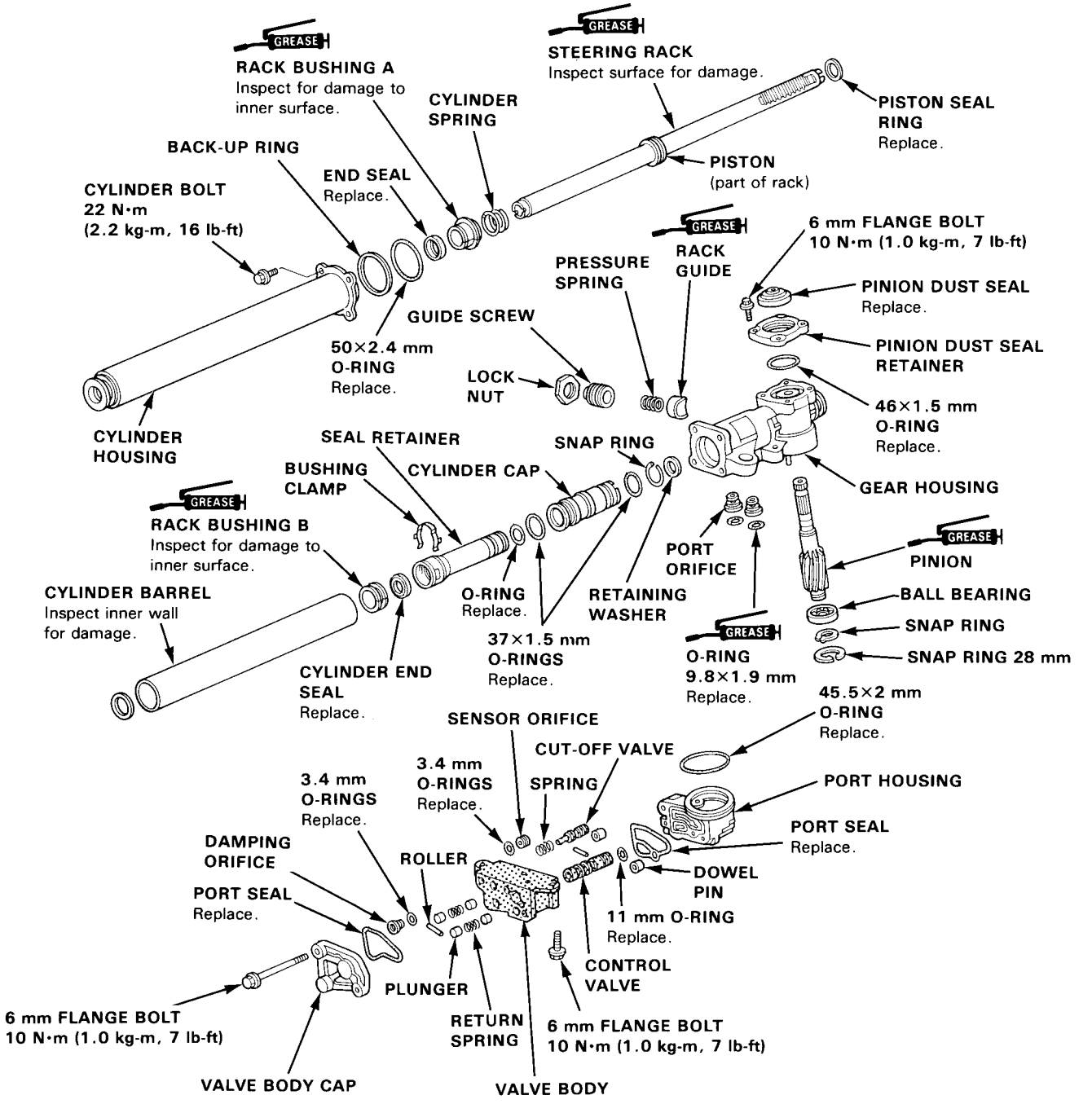


Steering Gearbox

Illustrated Index

CAUTION:
- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Always replace O-rings and seals.
- Replace parts with damaged sliding surfaces.
- Do not dip seals and O-rings in solvent; coat O-rings with grease, make sure they stay in position during reassembly, and use the appropriate special tools to install them where necessary.
- The shaded parts (valve body, control valve, cut-off valve) are a matched set; if the valve body is faulty, replace the complete valve body unit.

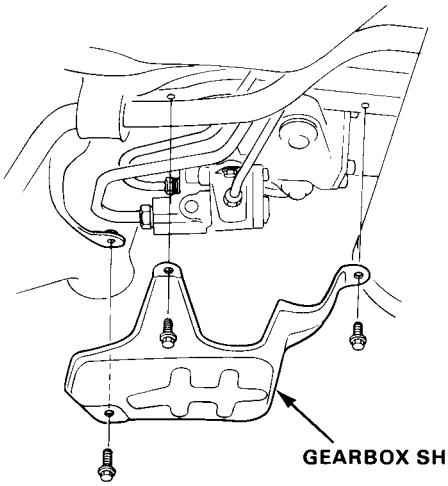
● GREASE STEERING GREASE ..... Part Number 08740—99969



Valve Body Unit Overhaul

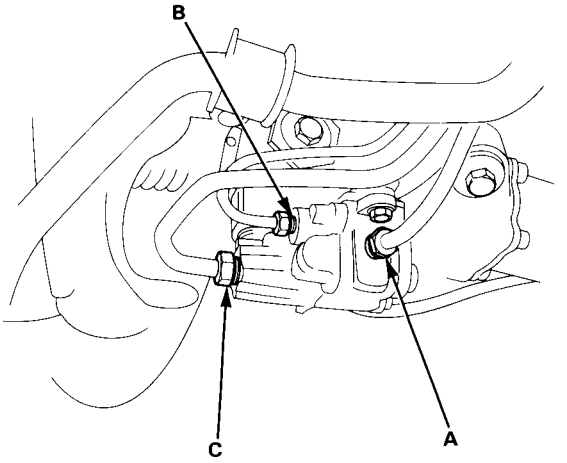
Removal:

1. Drain the power steering fluid (page 11—27).
2. Remove the gearbox shield.
3. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox, Blow dry with compressed air.



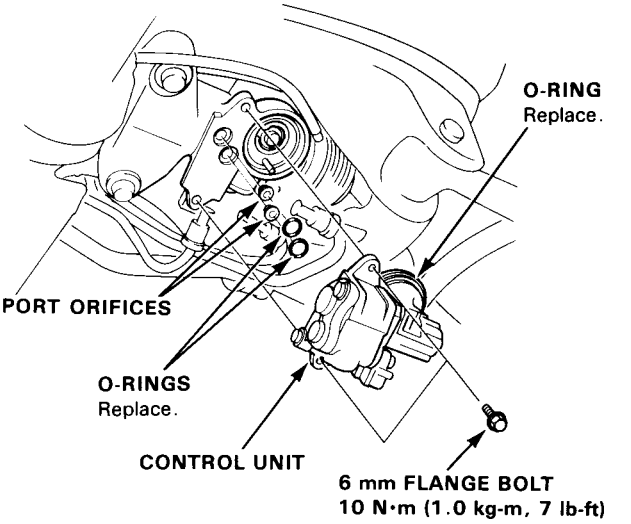
4. Using flare nut wrenches, disconnect the four lines from the control unit.

   A: From pump: 14 mm wrench
   38 N•m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
   13 N•m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
   29 N•m (2.9 kg-m, 20 lb-ft)

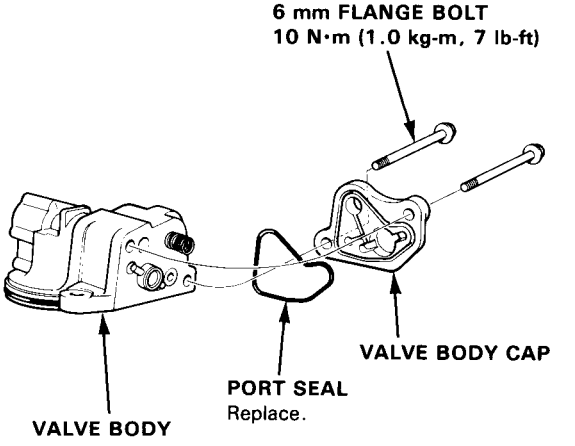


Disassembly:

5. Remove the two 6 mm flange bolts and remove the control unit from the gearbox.
6. Remove the O-rings and port orifices from the gearbox.
7. Remove the O-rings from the control unit.



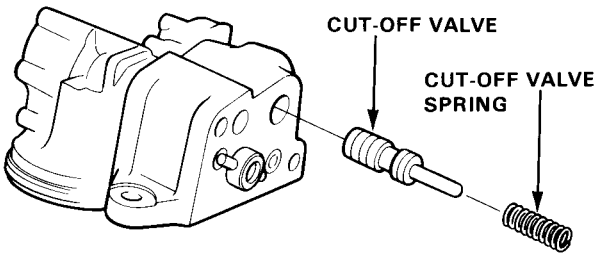
8. Remove the two 6 mm flange bolts, and remove the cap from the valve body.
9. Remove the port seal from the cap.



(cont'd)

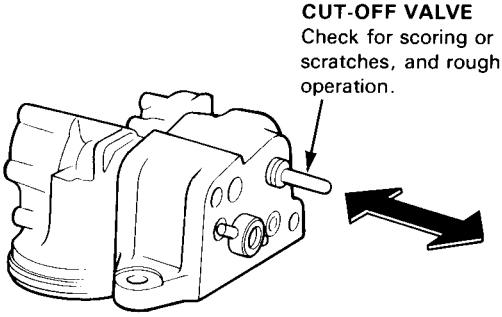
Valve Body Unit Overhaul (cont'd)

10. Remove the cut-off valve and spring from the valve body.

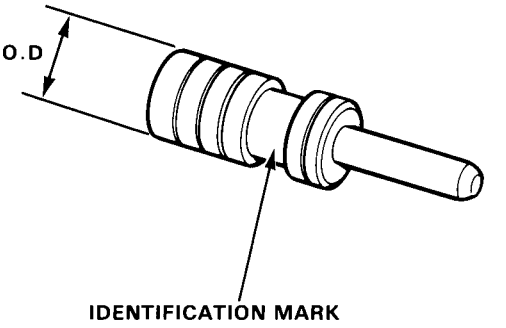


11. Check the cut-off valve:

- Inspect its surface for scoring or scratches.
- Slip it back into the valve body, and make sure it slides sloothly without drag and without side play.



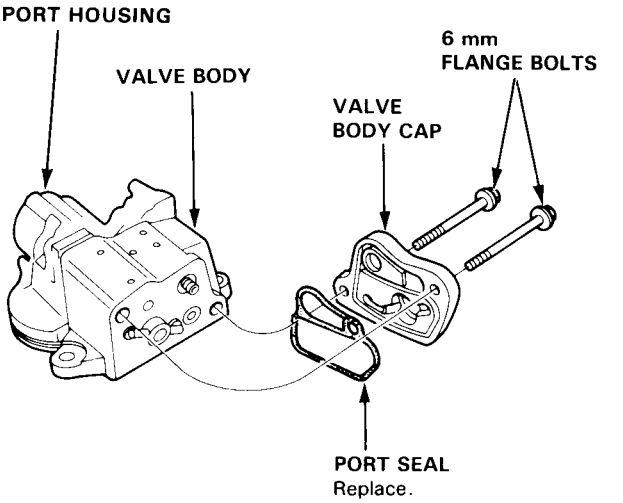
NOTE:
- The cut-off valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification make on it.
- If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.



Identification mark	Outside diameter	Part number
A	10.000—10.005 mm (0.3937—0.3939 in)	53650—SB4—950
B	9.995—10.000 mm (0.3935—0.3937 in)	53651—SB4—950
C	9.990—9.995 mm (0.3933—0.3935 in)	53652—SB4—950

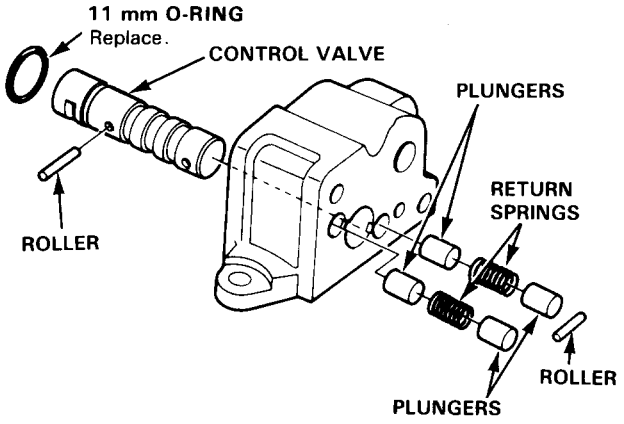
12. Separate the valve body and port housing.

13. Remove the seal and dowel pins from the port housing.



14. Remove the rollers from the control valve by pushing the valve out one side of the valve body, and then the other.

NOTE: When removing the rollers, hold the plungers with your fingers to keep them from popping out.



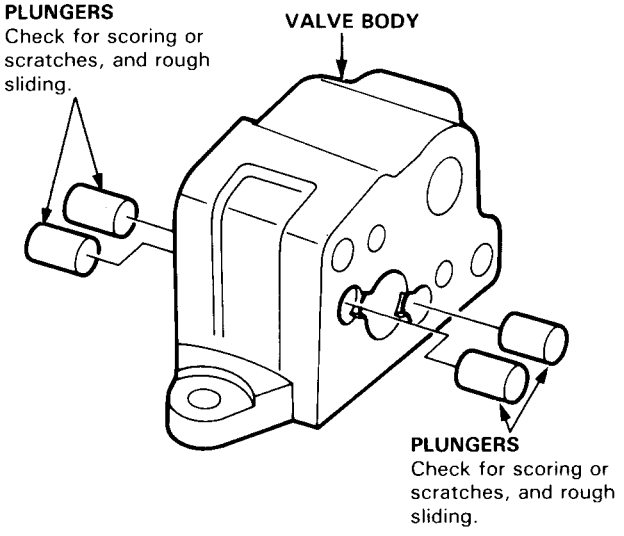
15. Remove the plungers, return springs and control valve from the valve body.

16. Remove the 11 mm O-ring from the control valve.

17. Check the plungers.

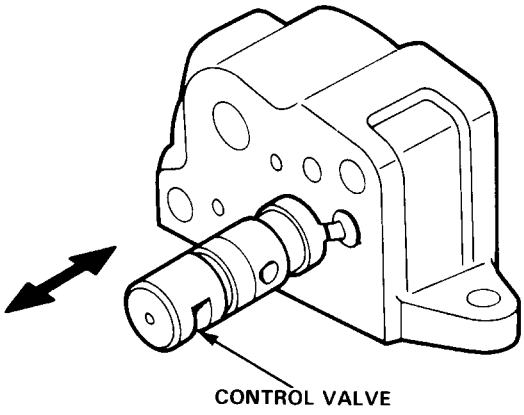
- Inspect their surface for scoring or scratches.
- Slip each plunger into the valve body, and make sure it slides smoothly, without drag or side play. If any plunger is damaged, replace it.

NOTE: If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.

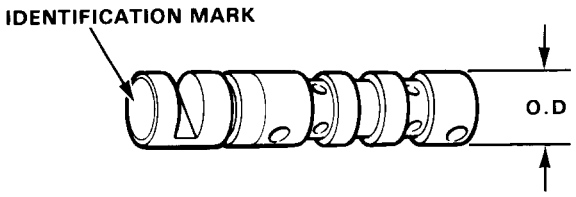


18. Check the control valve.

- Inspect its surface for scoring or scratches.
- Slip it into the valve body, and make sure it slidies smoothly, without drag or side play.



NOTE:
- The control valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification mark on it.
- If the valve body is damaged, replace all three parts (valve body, control valve and cut-off valve) as a set.

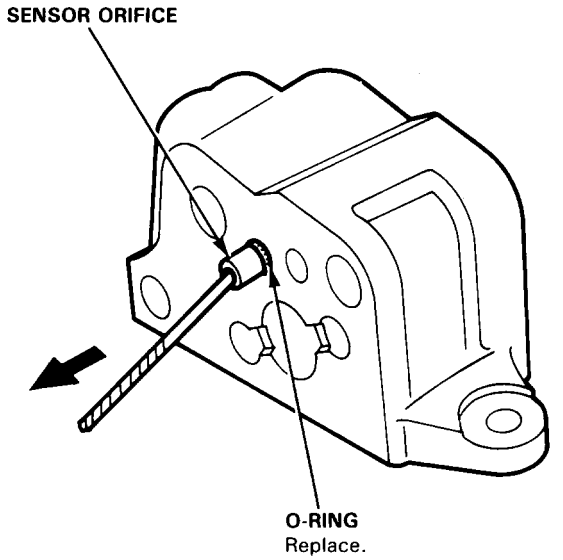


Identification mark	Outside diameter	Part number
X	13.998—14.003 mm (0.5511—0.5513 in)	53646—SH3—950
Y	13.993—13.998 mm (0.5509—0.5511 in)	53647—SH3—950
Z	13.988—13.993 mm (0.5507—0.5509 in)	53648—SH3—950

(cont'd)

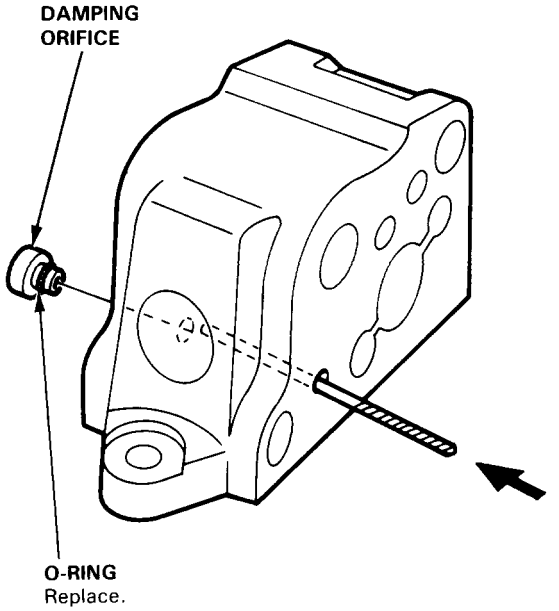
Valve Body Unit Overhaul (cont'd)

19. Using a 1.5 mm (1/16") drill bit, remove the sensor orifice and O-ring.



20. Using 1.5 mm (1/16") drill bit, push the damping orifice and O-ring out of the valve body.

CAUTION: Grind the shank end of the drill bit flat before using.



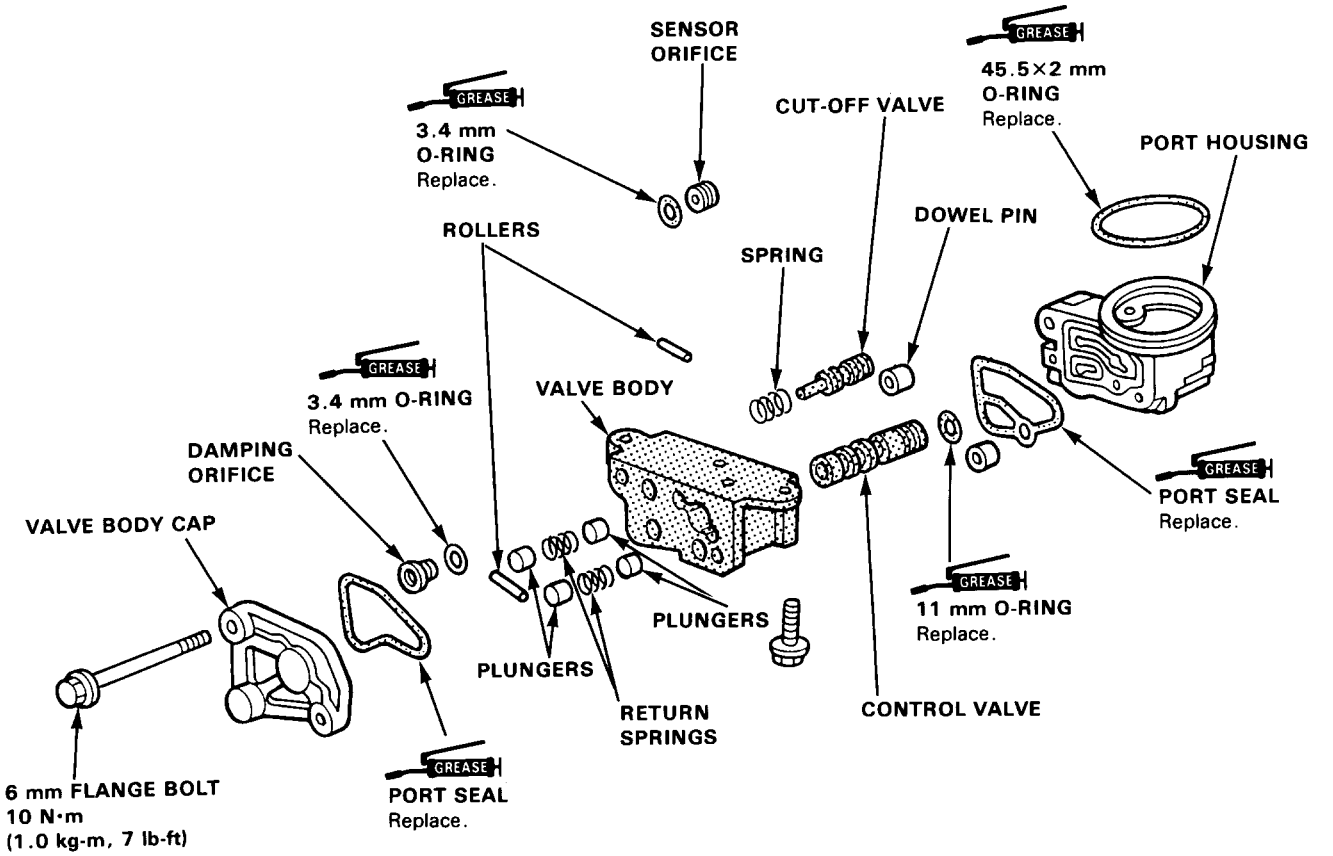
Valve Body Unit Overhaul

Assembly:

1. Thoroughly clean the disassembled parts shown below.
2. Coat the plungers, cut-off valve and reaction control valve surfaces with power steering fluid.
3. Reassemble the parts in the reverse order of disassembly.

CAUTION:

- **Replace the O-rings and seals with new ones.**
- **Do not dip the O-rings and seals in solvent.**
- **Apply grease in the port seal grooves to keep the seals in place.**
- **Apply grease to the 45.5×2 mm and 11 mm O-rings to keep them in place in the valve ports.**
- GREASE **STEERING GREASE ..... Part Number 08740—99969**



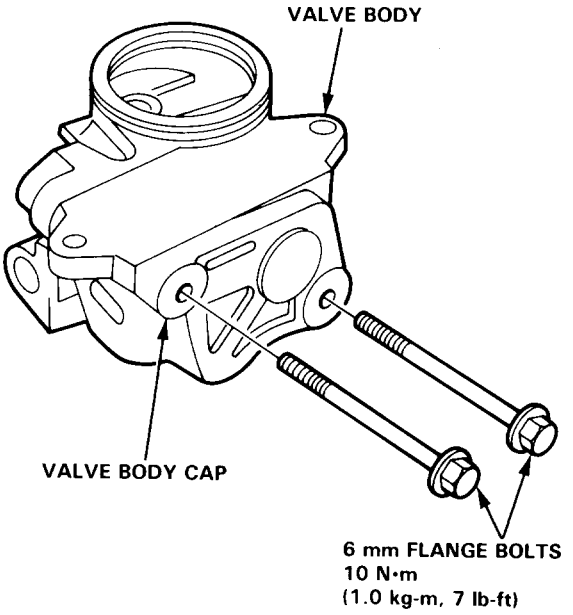
NOTE: If the Valve Body is damaged, it must be replaced as a set, with the Cut-off Valve and Control Valve (shaded parts).

(cont'd)

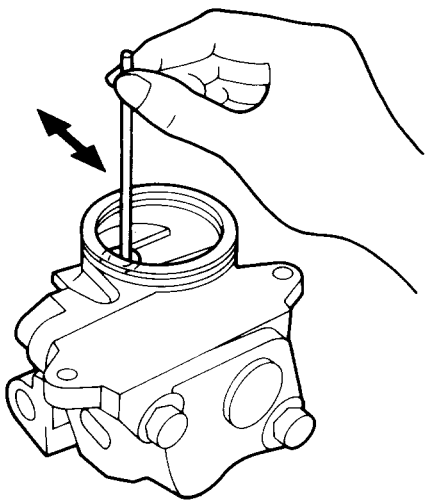
Valve Body Unit Overhaul (cont'd)

4. Install and tighten the 6 mm flange bolts in the control valve body unit.

CAUTION: Make sure the mating surface of the valve body and cap are flush at the upper side.

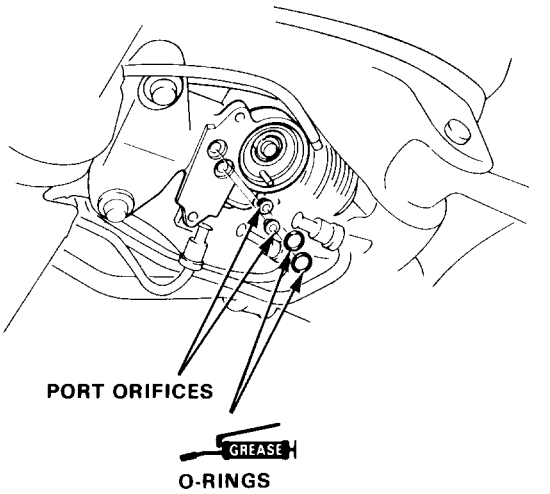


5. Make sure the control valve moves smoothly, and returns to neutral position.



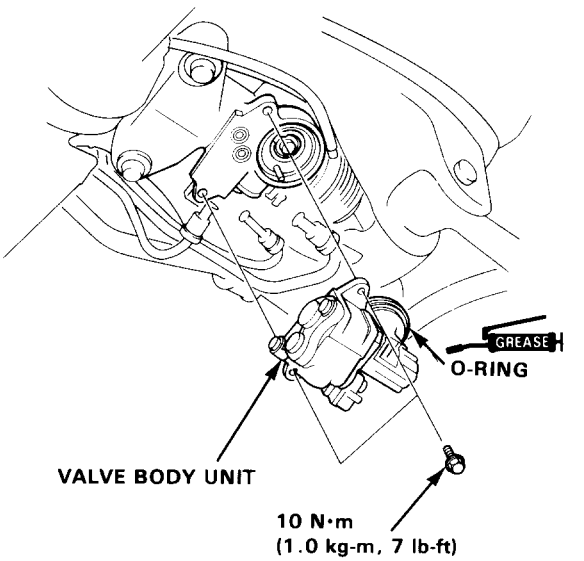
Installation:

6. Coat the 9.8×1.9 mm O-rings with grease, and install them together with the orifices.



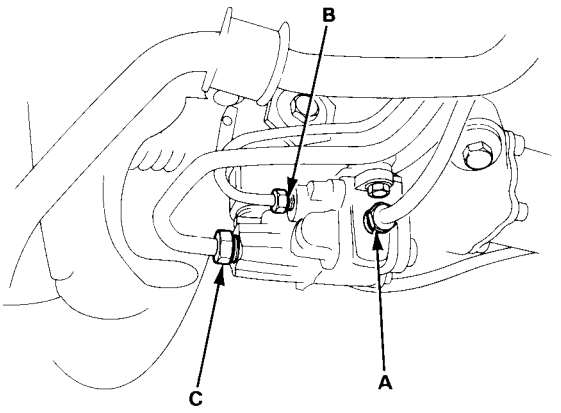
7. Install the O-ring to the valve body unit, then install the valve body unit on the gear housing with the two 6 mm bolt.

CAUTION:
- **When installing, be careful not to hit the pinion holder pin.**
- **Make sure the O-rings are in place and not pinched.**



8. Connect the four lines to the control unit, using flare nut wrenches.

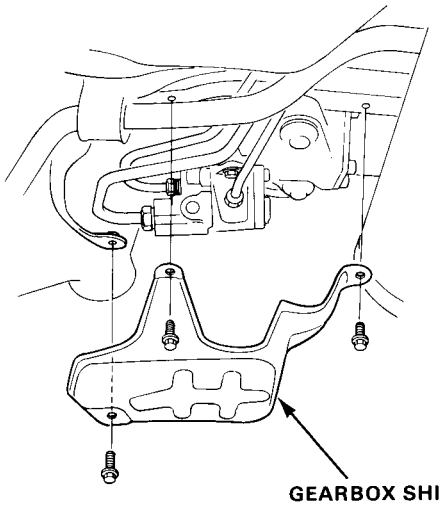
   A: From pump: 14 mm wrench
      38 N·m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
      13 N·m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
      29 N·m (2.9 kg-m, 20 lb-ft)



9. Fill the reservoir with power steering fluid and bleed air from the system by turning the steering wheel from lock to lock several times with the engine warm.

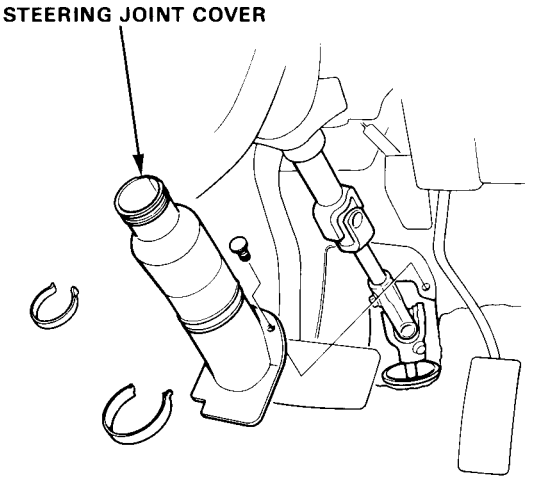
10. Make sure there are no fluid leaks, then install the shield.

11. Recheck the fluid level in the reservoir (page 11—27).



Steering Rack Removal

1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.



2. Drain the power steering fluid as described on page 11—27.

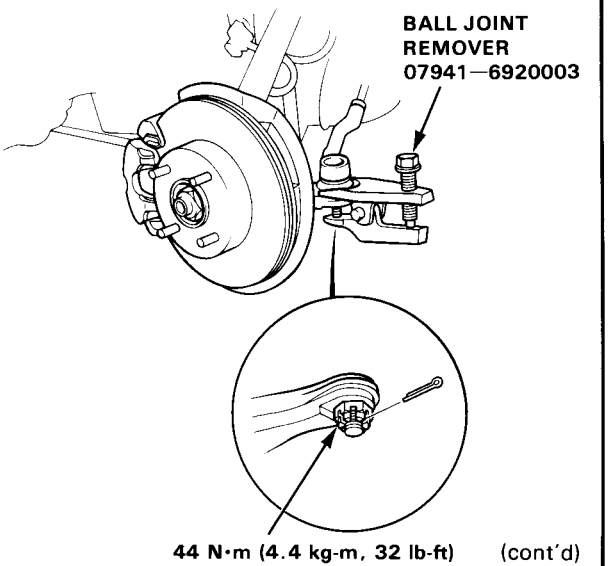
3. Remove the gearbox shield.

4. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.

5. Raise the front of car and support on safety stands in the proper locations.

6. Remove the front wheels.

7. Disconnect the tie rods from the steering knuckles using the special tool shown.

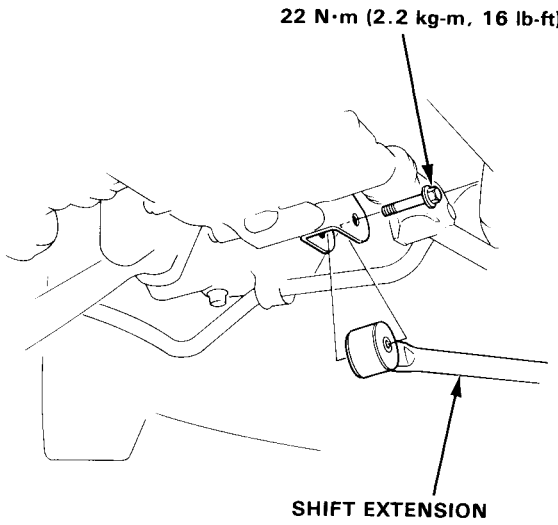


(cont'd)

Steering Rack Removal (contd)

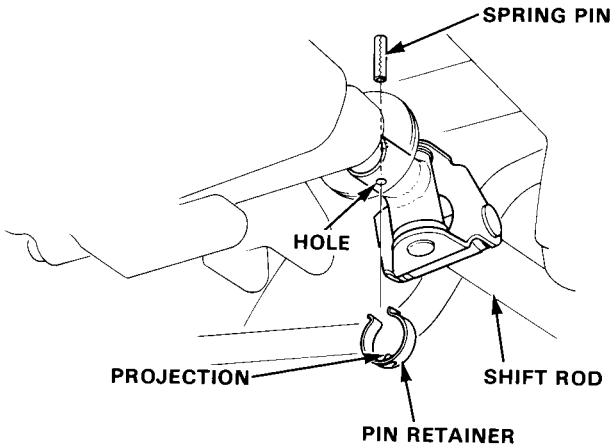
8-1. (Manual transmission model only)

- Remove the shift extension from the transmission case.



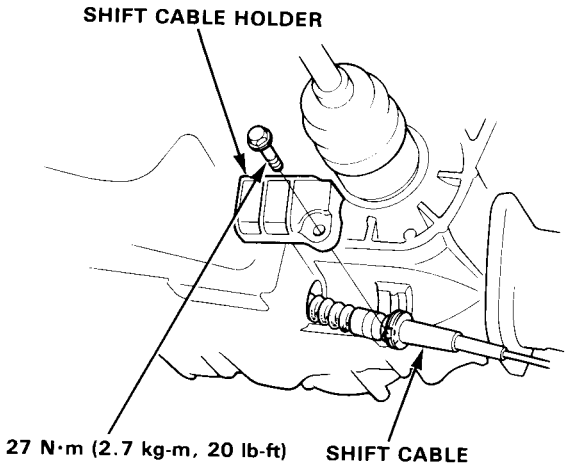
- Slide the boot at the connecting position of the gear shift rod.
- .Drive out the spring pin with a punch, then disconnect the shift rod.

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



8-2. (Automatic transmission only)

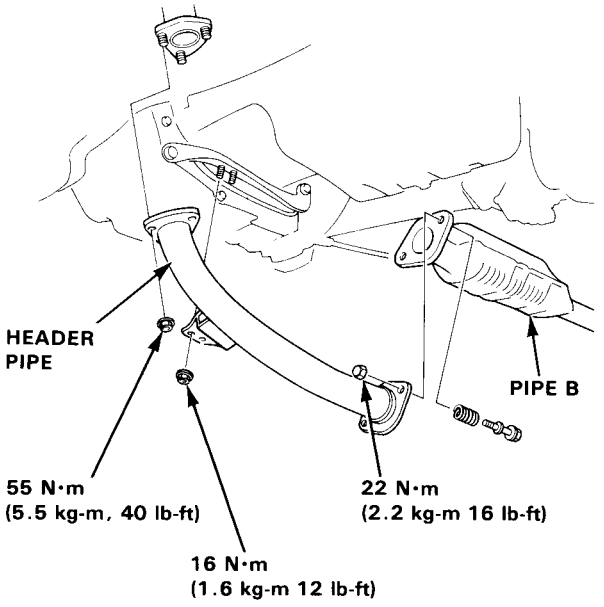
- Remove the shift cable holder and cable from the transmission case.



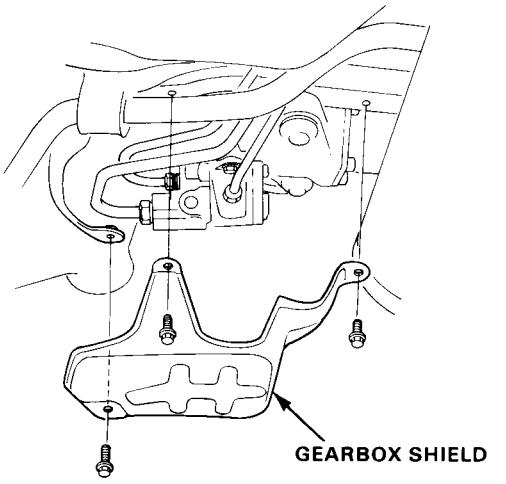
9. Remove the self-locking nuts connecting the exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.

CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

10. Remove the header pipe.



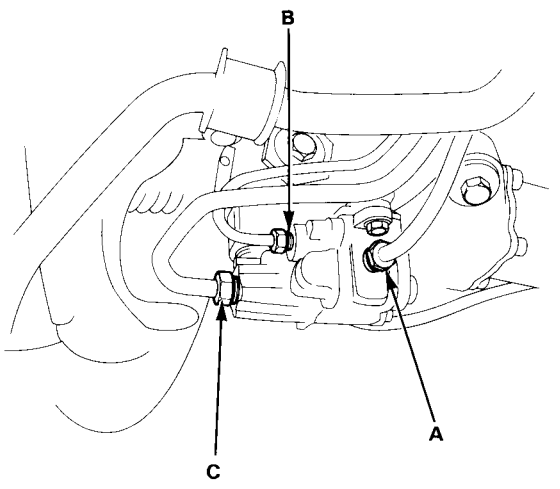
11. Remove the gearbox shield.



12. 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 compessed air.

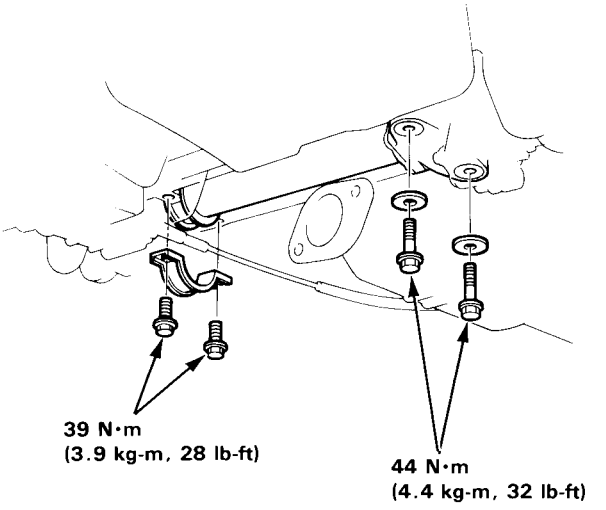
13. Disconnect the three lines from the control unit.

    A: From pump: 14 mm wrench
    38 N·m (3.8 kg-m, 28 lb-ft)
    B: To reservoir: 12 mm wrench
    13 N·m (1.3 kg-m, 9 lb-ft)
    C: To oil Cooler: 17 mm wrench
    29 N·m (2.9 kg-m, 20 lb-ft)

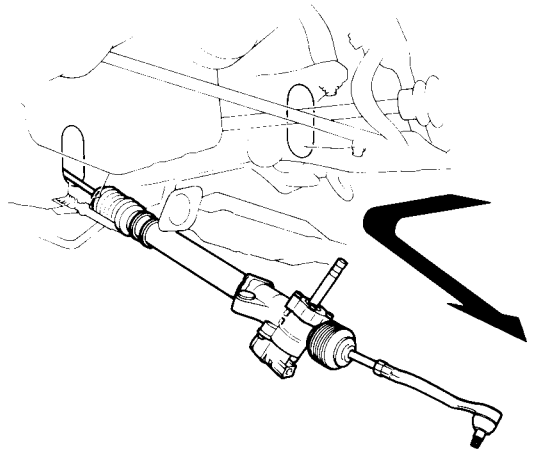


14. Slide the tie rod all the way to the right side.

15. Remove the steering gearbox mounting bolts.

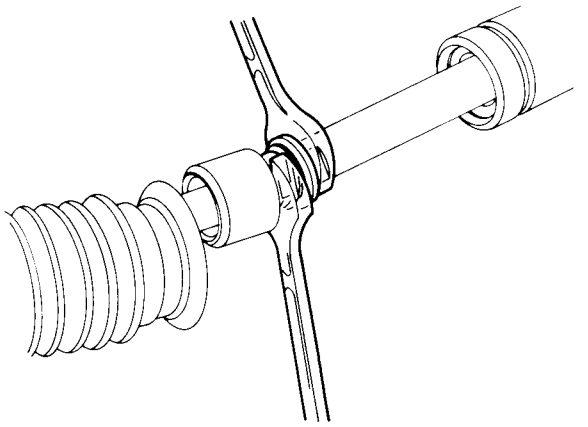


16. Slide the gearbox right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.

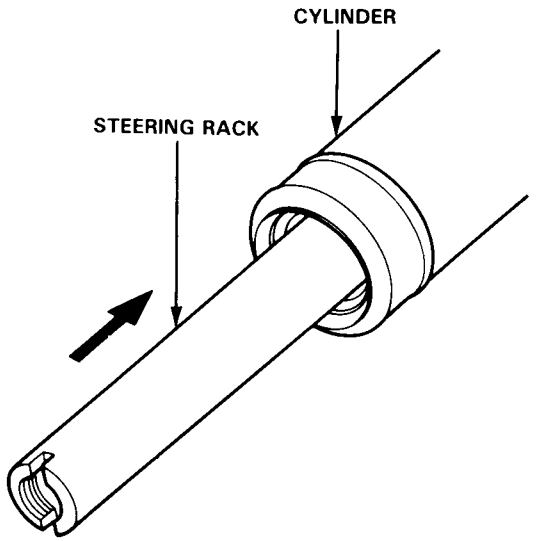


Overhaul

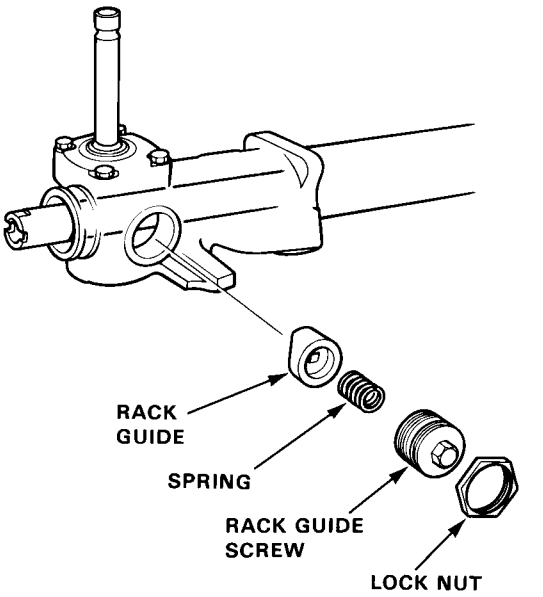
1. Remove the control unit as described on page 11-47.
2. Carefully clamp the gearbox in a vise with soft jaws.
3. Loosen the bands, pull the boots away from the ends of the geaebox, and unbend the tie-rod lock washers. Hold the rack with a 22 mm wrench, and unscrew the tie-rods with a 17 mm wrench.



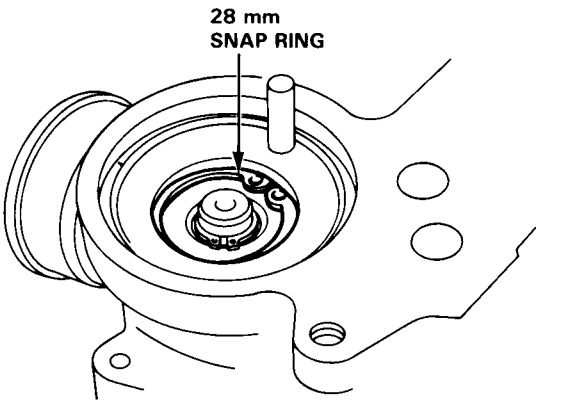
4. Push the right end of the rack back into the cylinder housing so the smooth surface that rides against the seal won't be damaged.



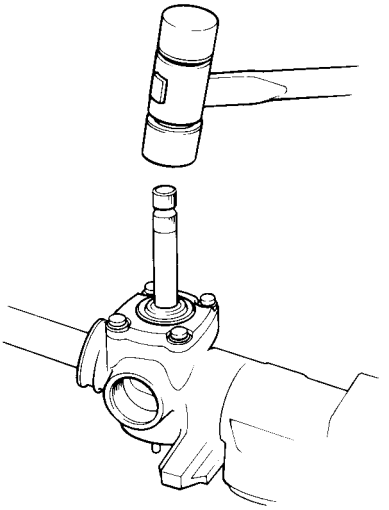
5. Loosen the rack screw lock nut, and remove the rack guide screw.



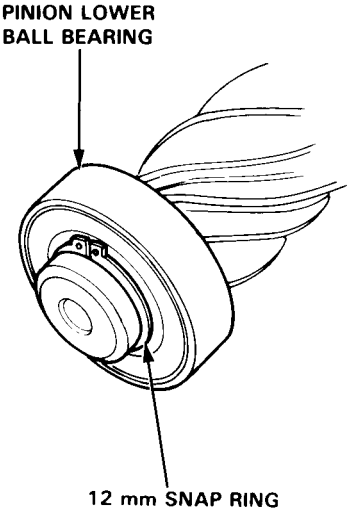
6. Remove the 28 mm snap ring from the bottom of the gear housing.



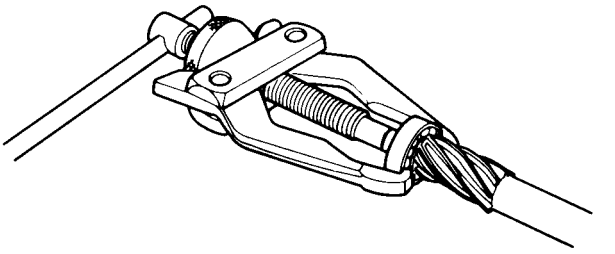
7. Remove the pinion from the gear housing by tapping it lightly.



8. Check the pinion lower ball bearing for play.

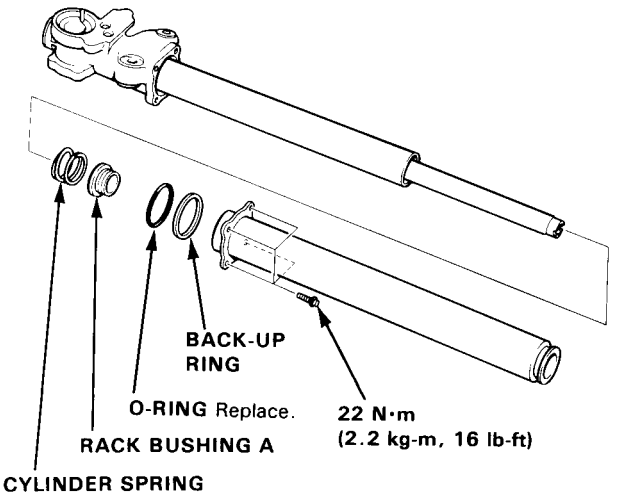


9. If the bearing is noisy or has excessive play, remove the 12 mm snap ring and remove the bearing using a commercially available bearing puller.



10. Remove the four bolts from the end of the cylinder housing, then slide the housing off the rack.

11. Remove the cylinder housing.



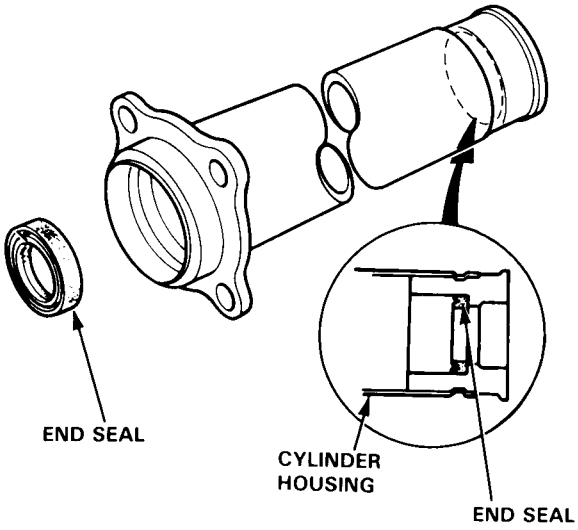
(cont'd)

Overhaul(cont'd)

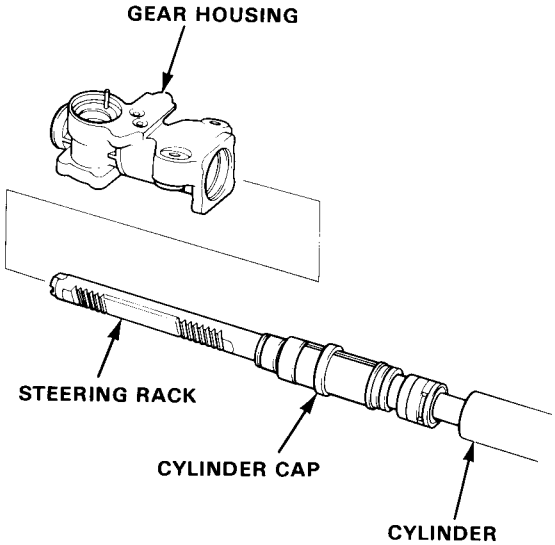
12. Remove the O-ring, back-up ring, steering rack bushing A and cylinder spring.

13. Remove the cylinder end seal from the cylinder housing.

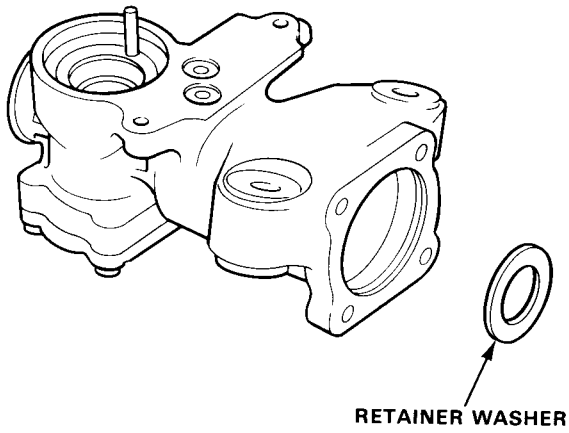
14. Use your fingers or a wooden stick to avoid damaging the housing.



15. Remove the cylinder, cylinder seal retainer, cylinder cap and steering rack from the gear housing.

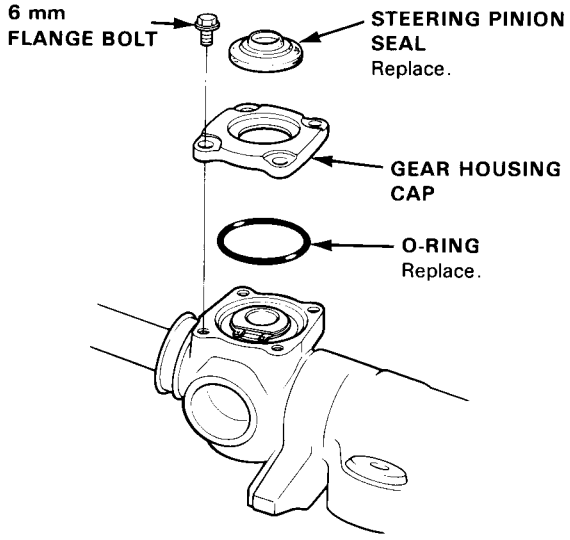


16. Remove the retainer washer from the gear housing.



17. Remove the gear housing cap from the gear housing by removing the four 6 mm flange bolts.

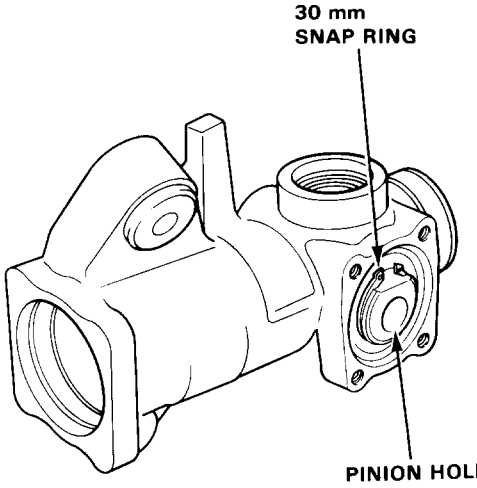
18. Remove the steering pinion seal from the gear housing cap.



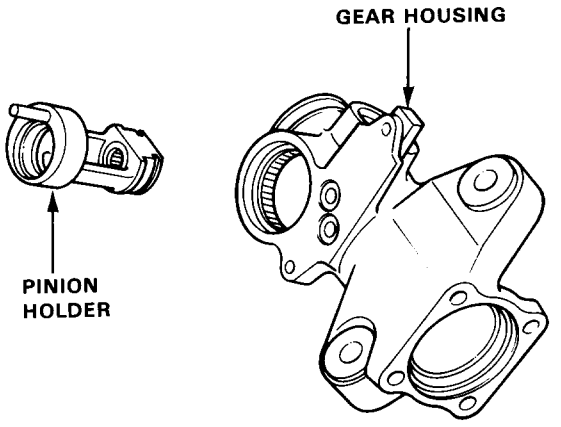
19. Remove the O-ring from the gear housing.

20. Check the upper bearing for free movement and excessive play; if it is good and the grease in it is clean, go on step 20.
If it is damaged, or if dirt has gone past the seal into the grease, replace the bearing.

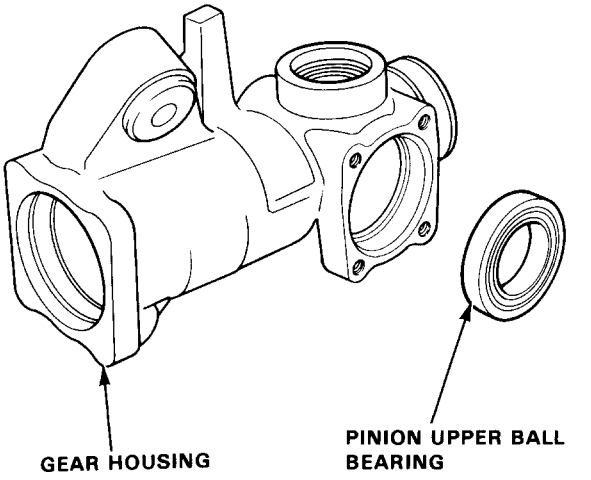
- Remove the 30 mm snap ring from the pinion holder.



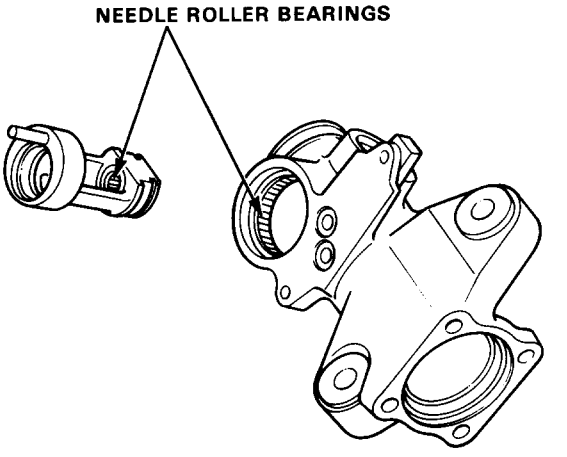
- Remove the pinion holder from the gear housing.



- Remove the pinion upper ball bearing from the gear housing.



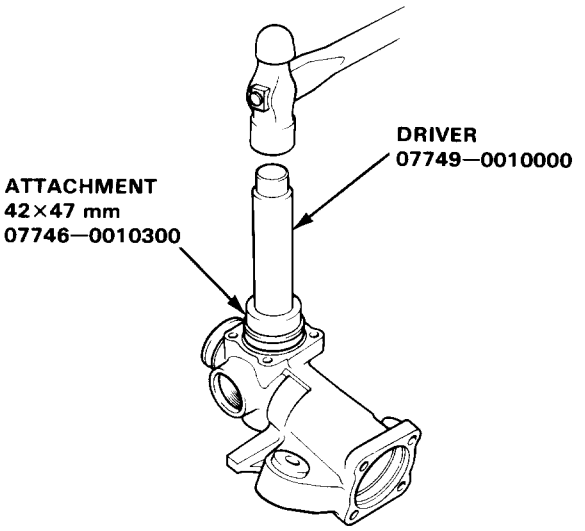
- Check the needle roller bearing in the pinion holder and in the gear housing for damage; if they are OK, pack them with grease. If the bearings are damaged, replace them as a set.



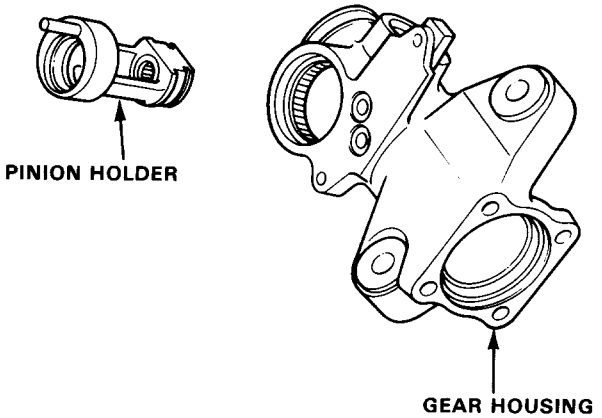
(cont'd)

Overhaul (cont'd)

- Pack a new upper bearing with grease, then drive the bearing into the gear housing with its sealed side facing out.

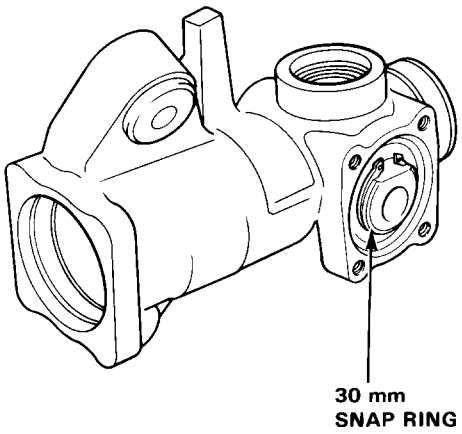


- Install the pinion holder in the gear housing.

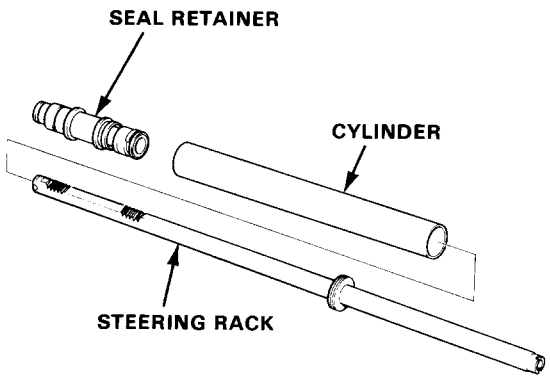


- Reinstall the 30 mm snap ring with its tapered side facing out.

NOTE: Snap ring ends must be aligned with the flat area.

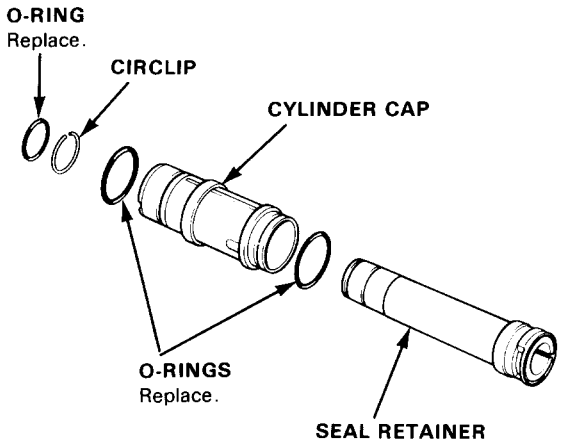


21. Remove the cylinder and seal retainer from the steering rack.



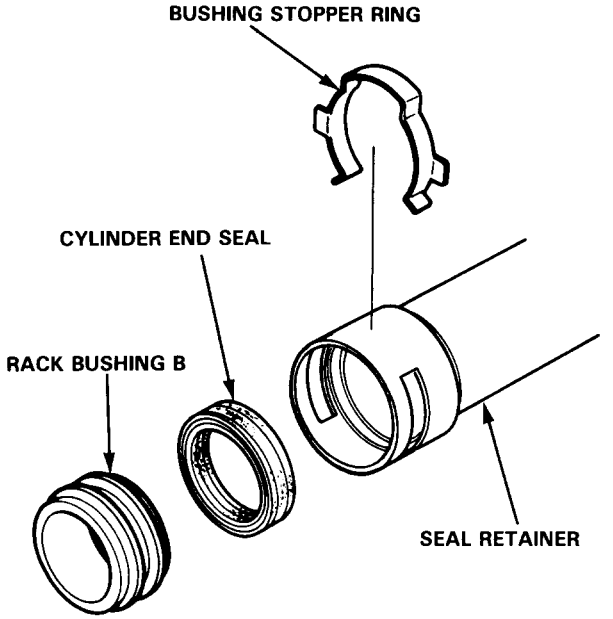
22. Remove the O-rings and circlip from the seal retainer, then remove the cylinder cap from the seal retainer.

23. Remove the O-rings from the cylinder cap.

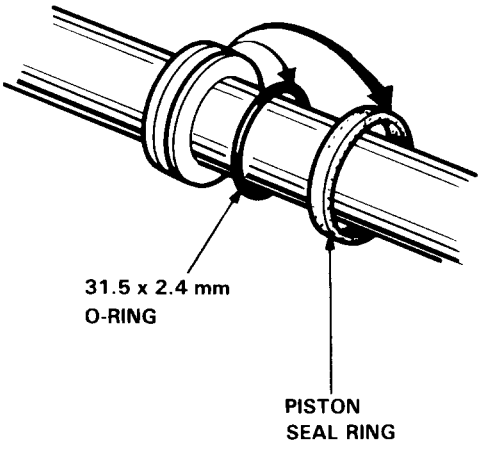


24. Remove the bushing stopper ring from the seal retainer.

25. Remove the cylinder end seal.

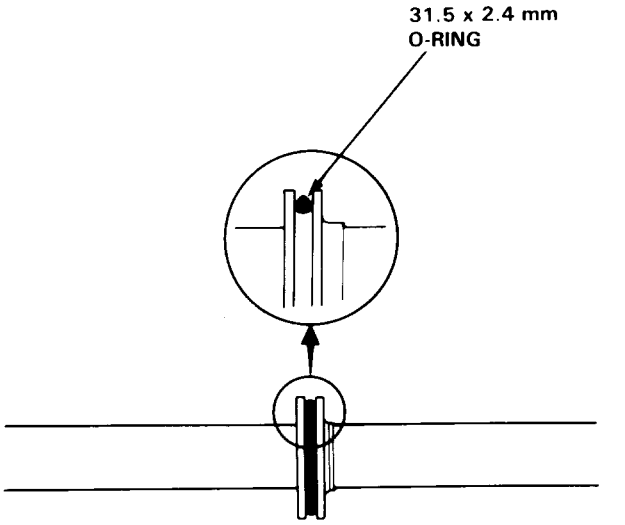


26. Carefully pry the piston seal ring and O-ring off the rack.



NOTE: Before reassembling any parts inspect them as described on page 11—46 and make sure they are clean. Replace worn or damaged parts.

27. Install a new O-ring on the rack with its narrow edge facing out.

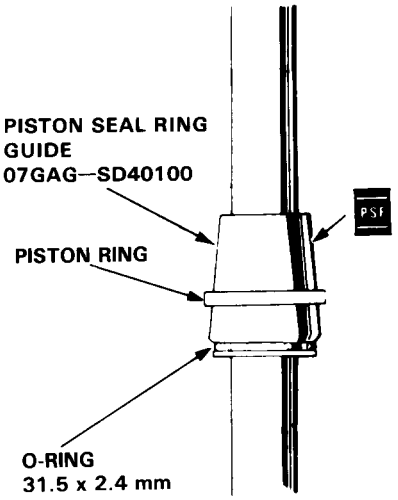


(cont'd)

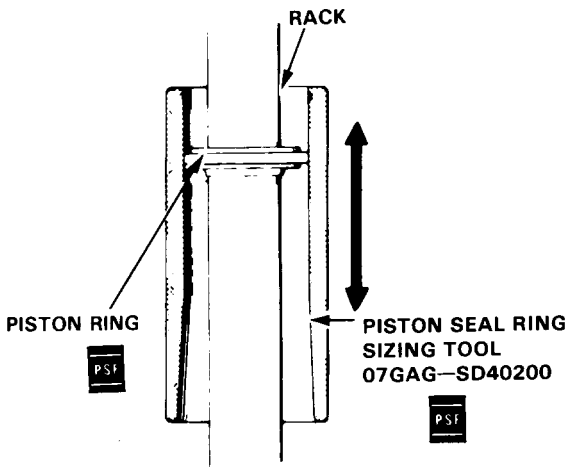
Overhaul (cont'd)

28. Coat the pinion seal ring guide with power steering fluid, and slide it onto the rack, big end first.

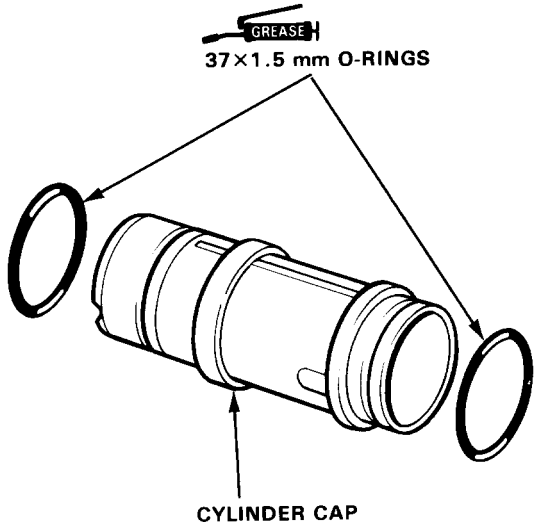
29. Position the new piston seal ring on the special tool, slide it down to to big end of the tool, and then pull it off into the piston groove on top of the O-ring.



30. Coat the piston seal ring and inside of the special tool with power steering fluid.
Carefully slide the tool onto the rack and over the piston ring, then rotate the tool as you move it up and down to seat the piston ring.

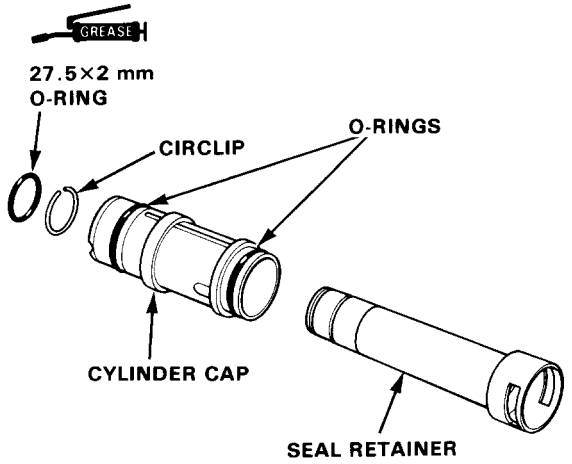


31. Coat new O-rings with grease and install them on the cylinder cap.

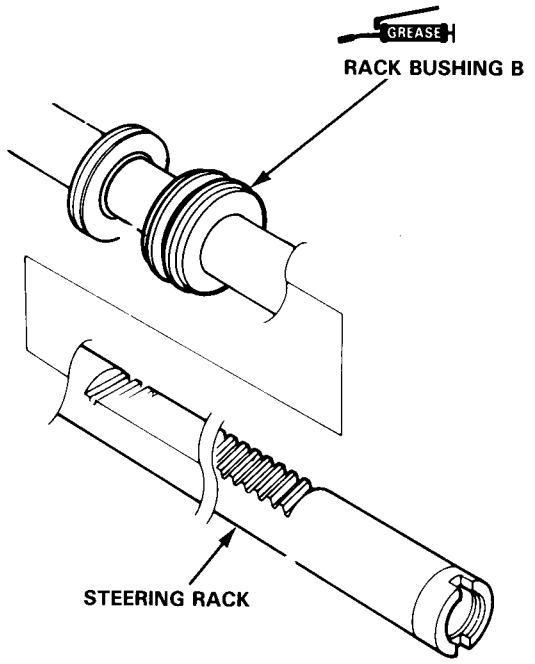


32. Slide the cylinder cap onto the seal retainer.

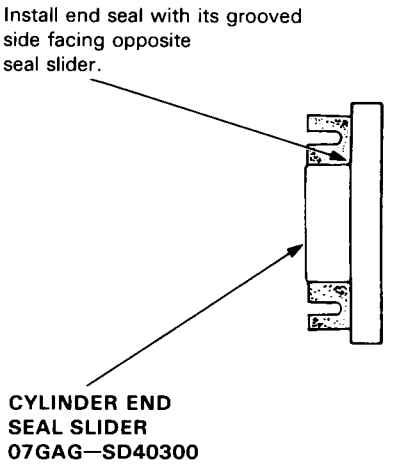
33. Install the circlip and O-ring on the seal retainer.



34. Grease the sliding surface of the steering rack bushing B, and install the bushing on the steering rack with the groove of the bushing facing the steering rack piston.

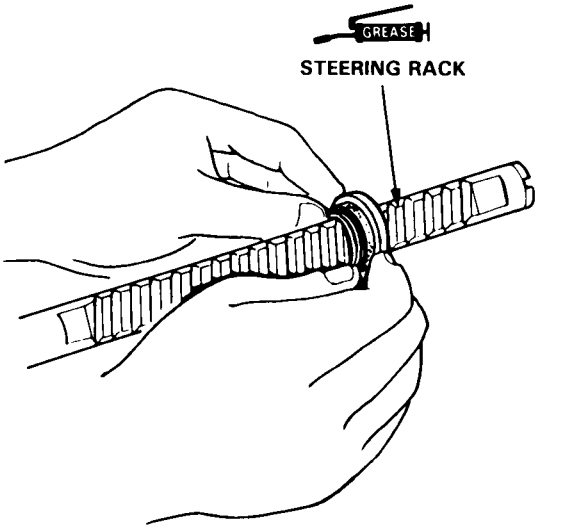


35. Grease the sliding surfaces of the new cylinder end seal and the special tool , then place the seal on the special tool with its grooved side facing opposite the slider.

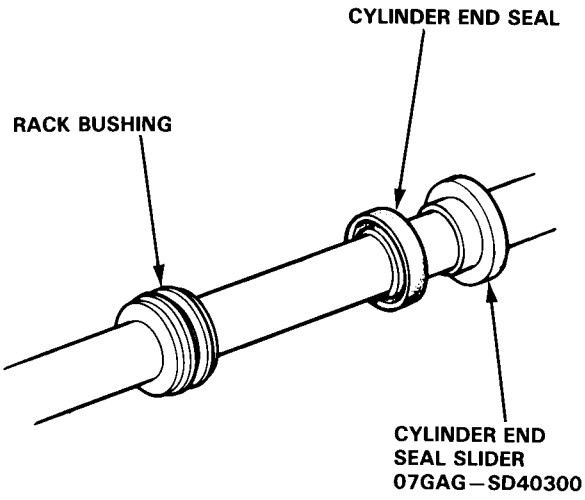


36. Grease the steering rack, and install the special tool.

CAUTION: Make sure the rack teeth do not face the slot in the special tool.



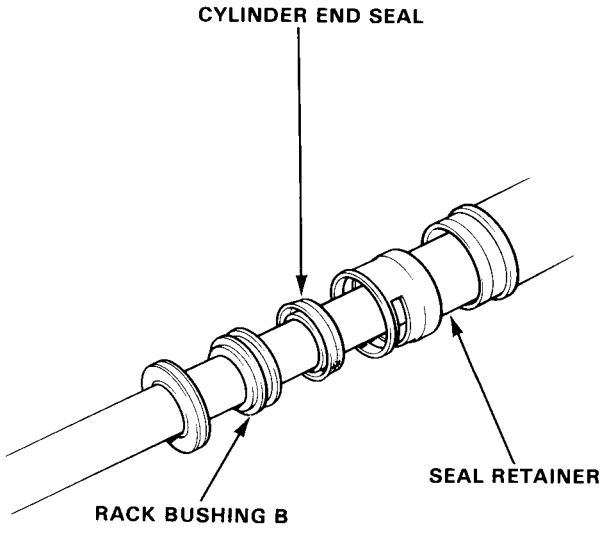
37. Remove the special tool from the cylinder end seal, then separate the ends of the tool and remove it from the rack.



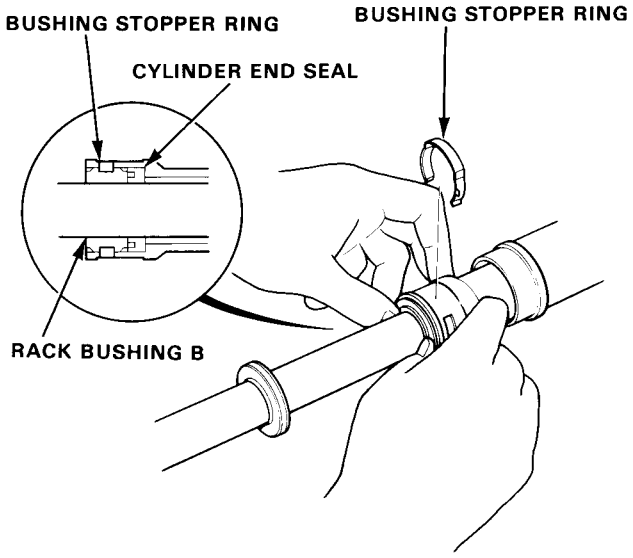
(cont'd)

Overhaul(cont'd)

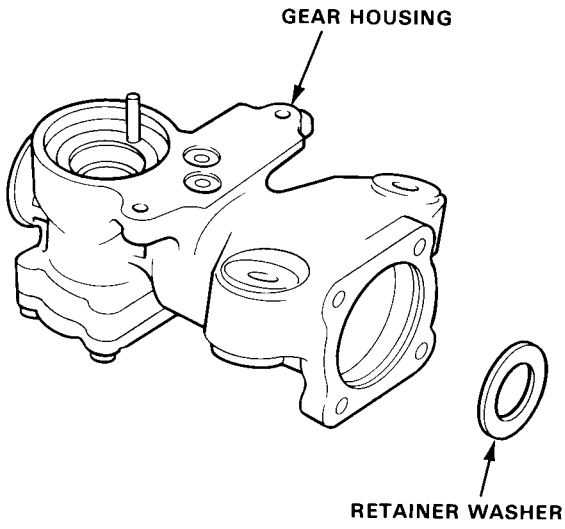
38. Fit the seal retainer on the steering rack.



39. Push the rack bushing B toward the seal retainer by hand until the cylinder end seal is seated in the retainer. Fit the seal stopper ring in the groove of the seal retainer securely.

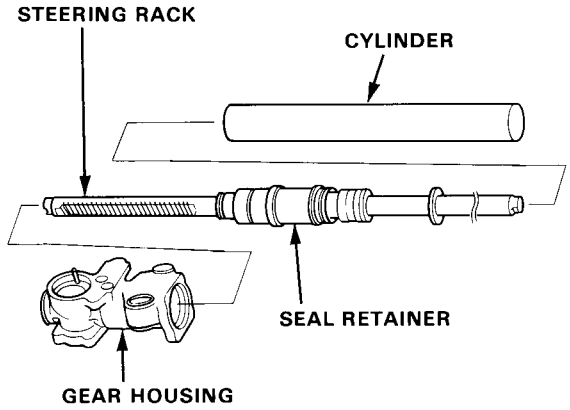


40. Install the retainer washer on the gear housing.



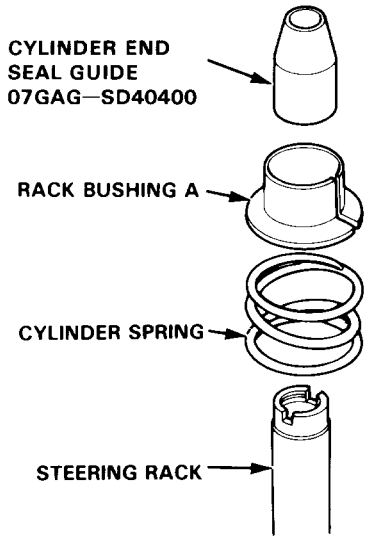
41. Place the gear housing on the work bench and insert the seal retainer and steering rack into the gear housing.

42. Coat the inside surface of the cylinder with power steering fluid, slide it over the rack and into the gear housing; press it into to housing until it seats.

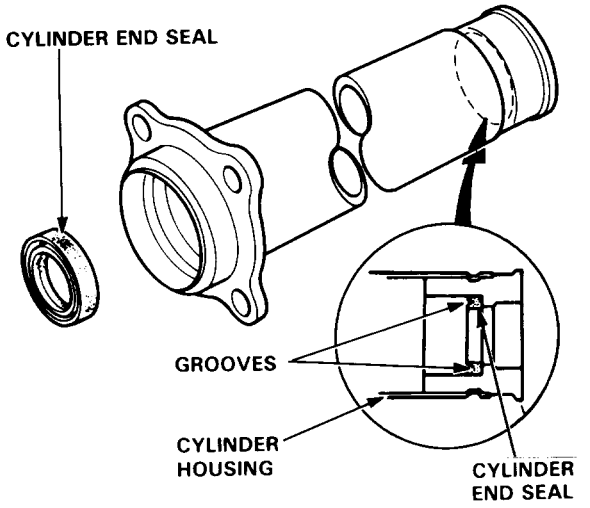


43. Install the cylinder spring over the rack, then coat the rack bushing A with power steering fluid and install it on the spring.

44. Grease the special tool and slip it onto the end of the steering rack.



45. Coat the inside surface of the cylinder with power steering fluid and install the cylinder end seal with its grooved side facing out.

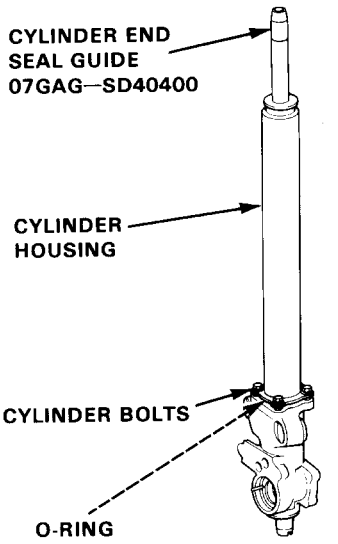


46. Install the O-ring and back-up ring on the gear housing.

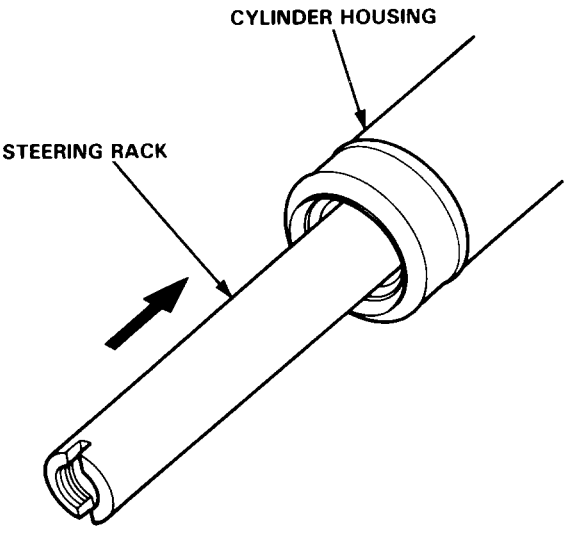
47. Carefully position the cylinder on the gear housing and loosely install with four bolts.

CAUTION: Be careful not to damage the end seal in the cylinder housing.

48. Remove the special tool from the steering rack.



49. Insert the steering rack into the cylinder housing, being careful not to damage the steering rack sliding surface.

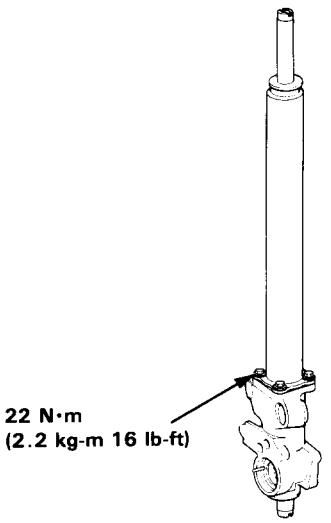


(cont'd)

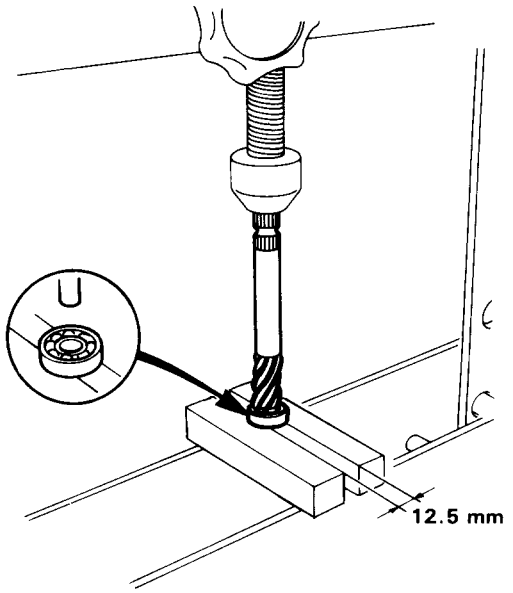
Overhaul (cont'd)

50. Tighten the cylinder housing to the gear housing.

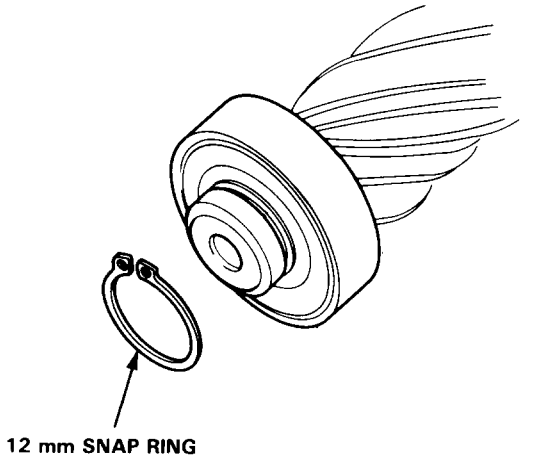
    NOTE: Before tightening the bolts, make sure the mating surfaces of the cylinder and gear housings fit properly by pushing them together; hold them together while tightening the bolts.



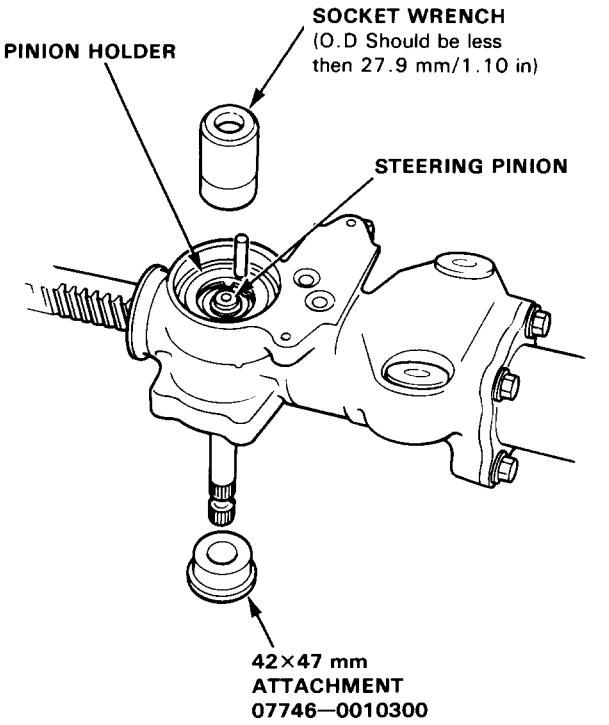
51. Press the lower ball bearing onto the pinion with its shielded side facing down.



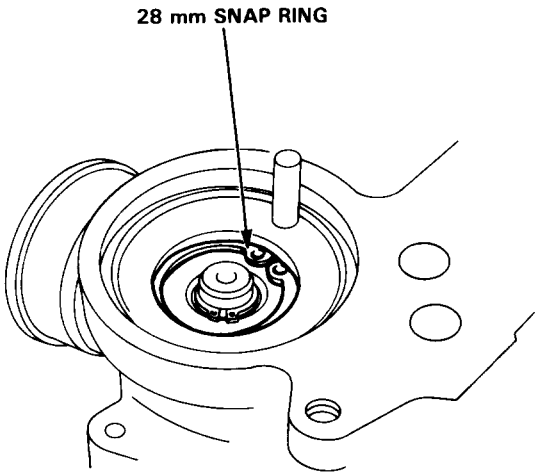
52. Install the 12 mm snap ring on the steering pinion, apply grease to the lower ball bearing and check for smooth operation.



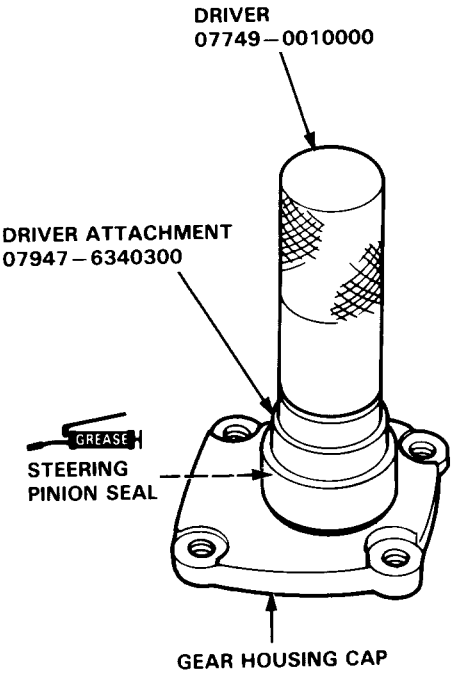
53. Install the steering pinion in the pinion holder.



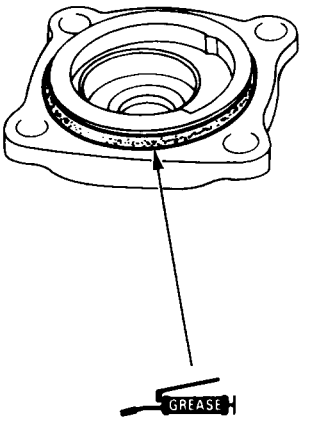
54. Install the 28 mm snap ring securely in the pinion holder groove.



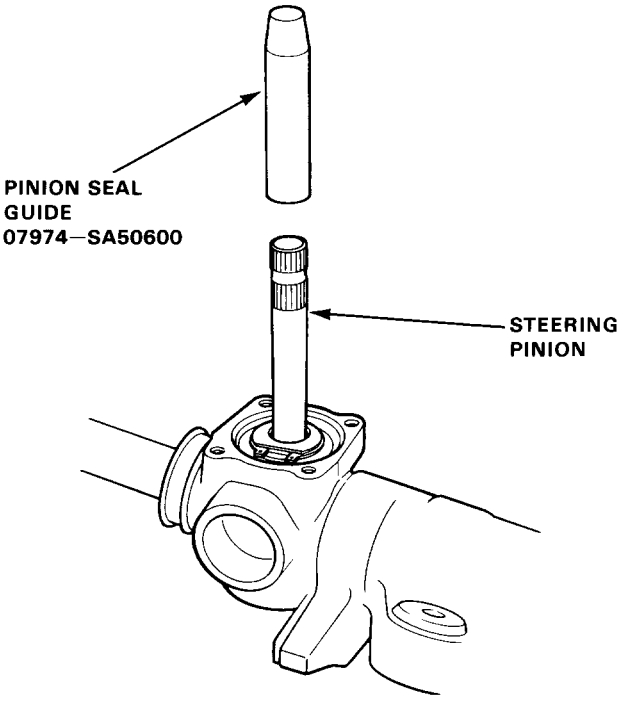
55. Grease the steering pinion seal, and install it on the gear housing using the special tools.



56. Grease the new O-ring and install it in the groove in the gear housing cap.



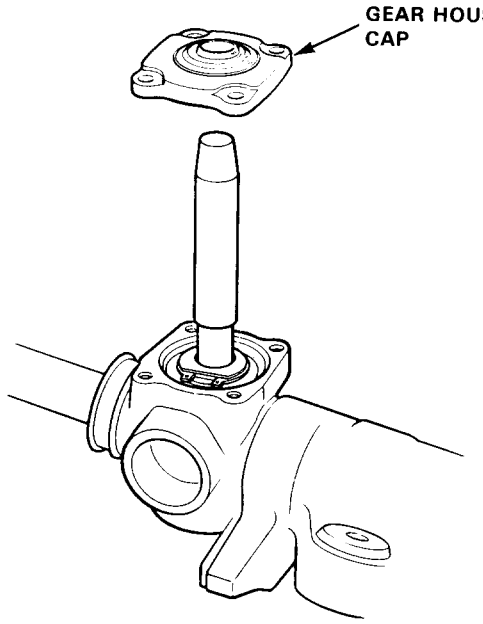
57. Grease the special tool and fit it over the steering pinion.



(cont'd)

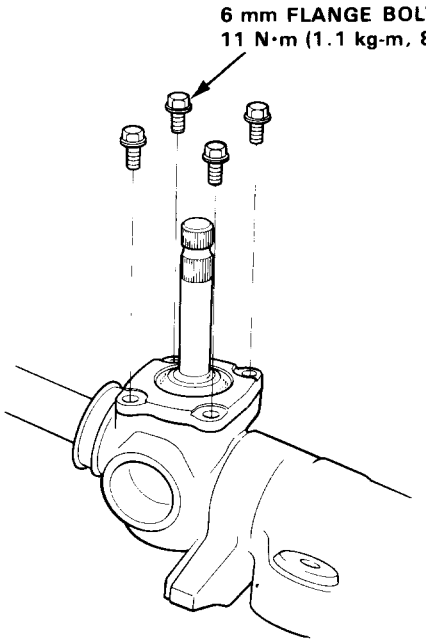
Overhaul (cont'd)

58. Install the gear housing cap carefully to avoid damaging or distorting lip of the seal, or distorting the seal spring.



59. Remove the special tool.

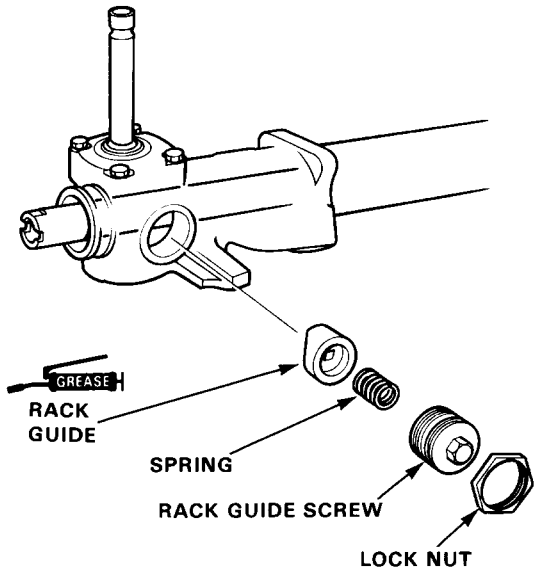
60. Tighten the four flange bolts.



61. Install the control valve unit on the gear housing.

62. Coat the rack guide with grease.

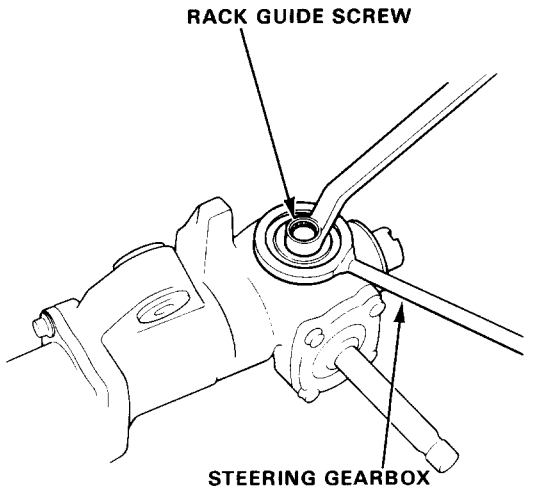
63. Install the rack guide, spring and rack guide screw on the gear housing.



64. Tighten the rack guide screw until it compresses the spring and seats against the rack guide, then loosen it.

65. Re-tighten it to 4 N·m (0.4 kg-m, 2.9 lb-ft), back off about $20^{\circ}\,^{+5}_{0}$ and install the lock nut on the rack guide screw.

66. Tighten the lock nut while holding the rack guide screw with the special tool.

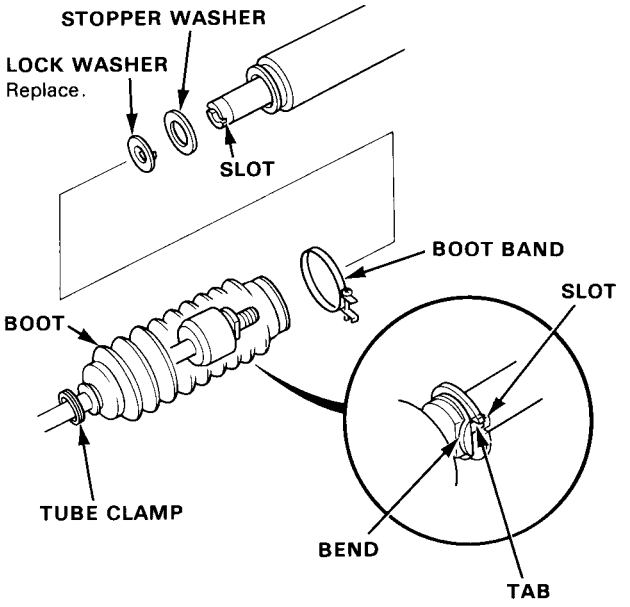


67. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

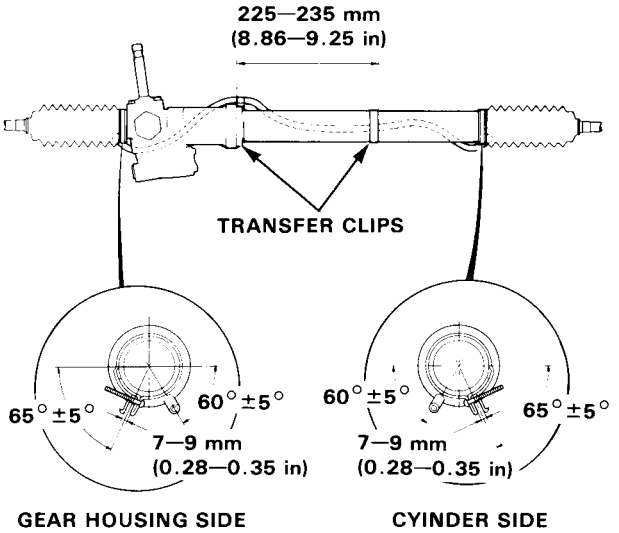
    NOTE: Install the stopper washer with the chamfered side facing out.

68. Tighten the tie-rod securely, then bend the lock washer back against the flat on the flange as shown.

69. Install the boots and secure with boot band and tube clamp.



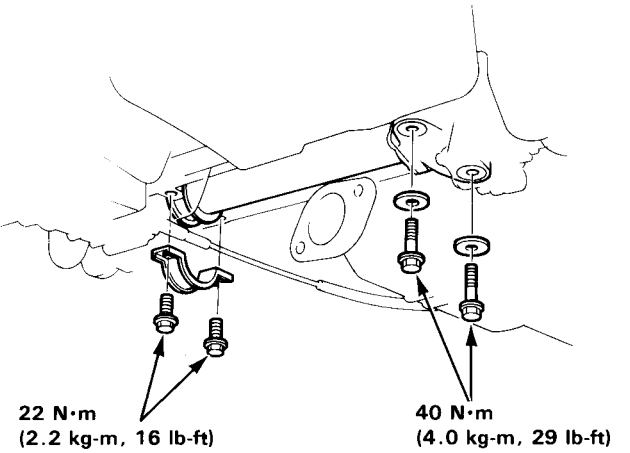
70. Install the air transfer hose and clamp with transfer clips as shown.



Installation

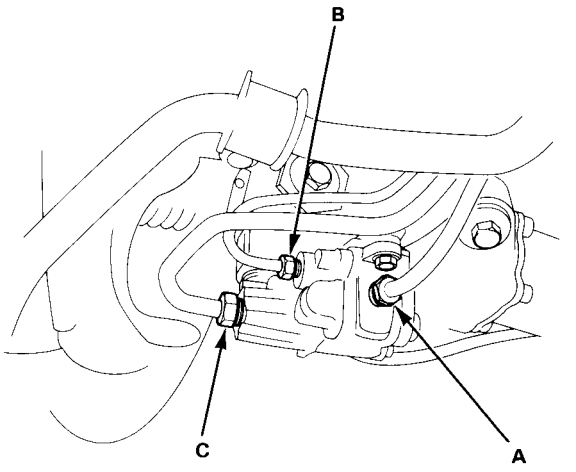
1. Re-install the gearbox in the reverse order of removal.

2. Tighten the gearbox mounting bolts.



3. Connect the fluid lines to the control unit.

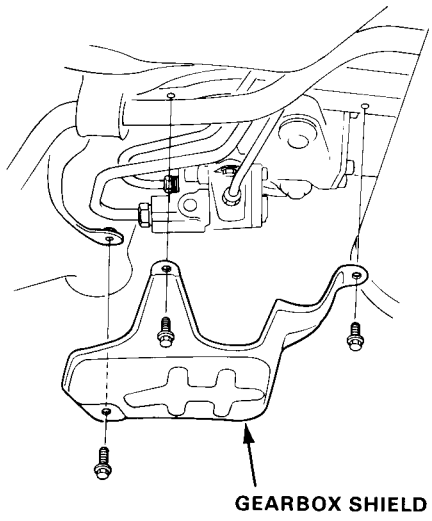
   A: From pump: 14 mm wrench
   38 N·m (3.8 kg-m, 28 lb-ft)
   B: To reservoir: 12 mm wrench
   13 N·m (1.3 kg-m, 9 lb-ft)
   C: To oil cooler: 17 mm wrench
   29 N·m (2.9 kg-m, 20 lb-ft)



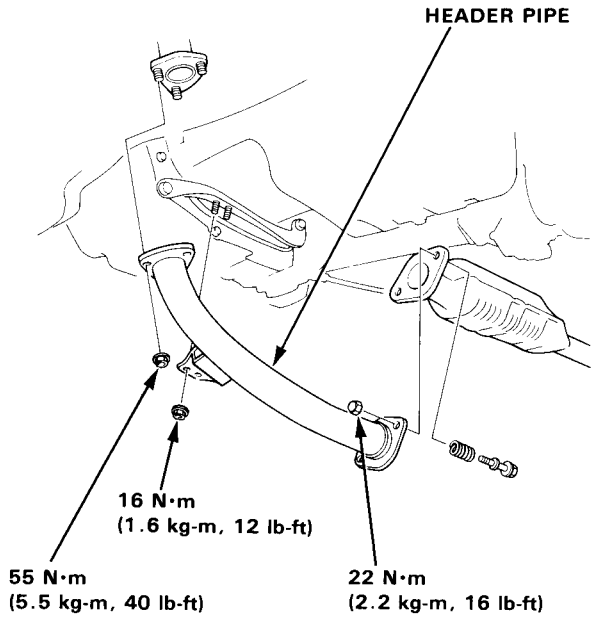
(cont'd)

Installation (cont'd)

4. Install the gearbox shield.

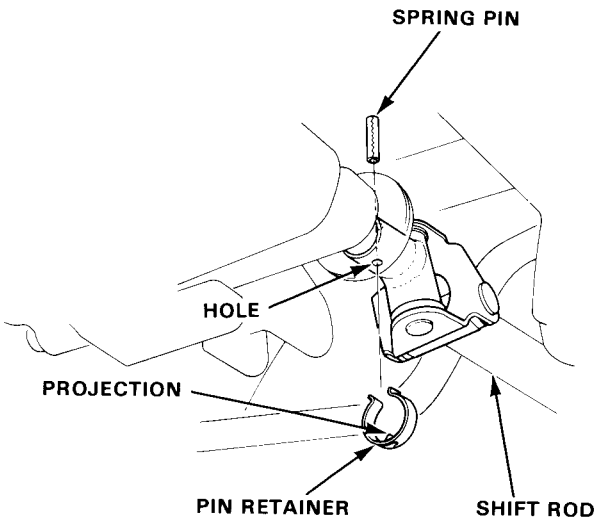


5. Install the header pipe with new gasket, and tighten the bolts and nuts.

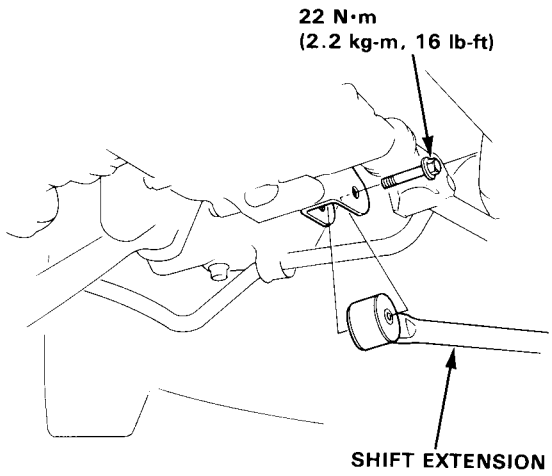


6-1. (Manual transmission model only)

- 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.

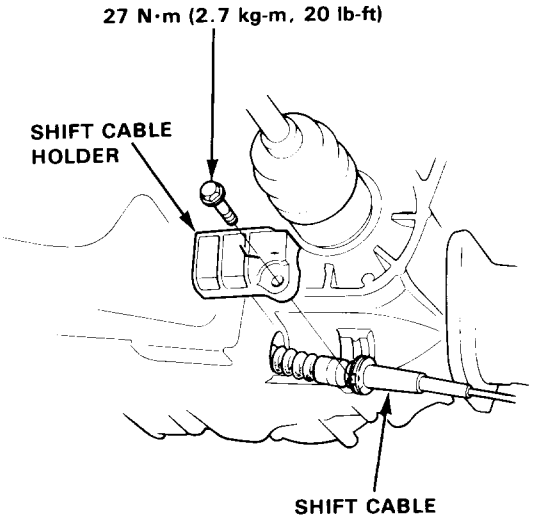


- Install the shift extension to the transmission case.

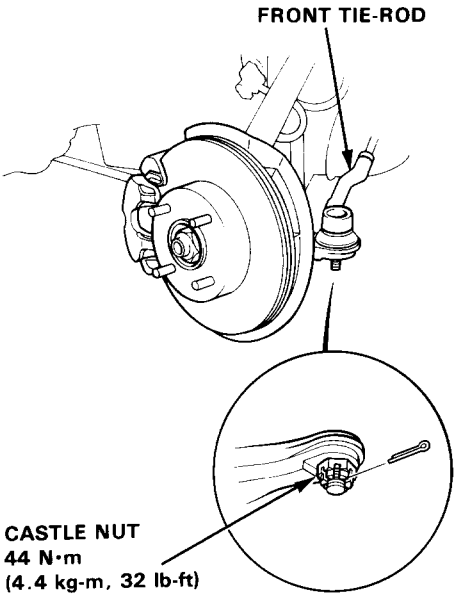


6-2. (Automatic transmission model only)

- Connect the shift cable to the transmission and install the cable holder.



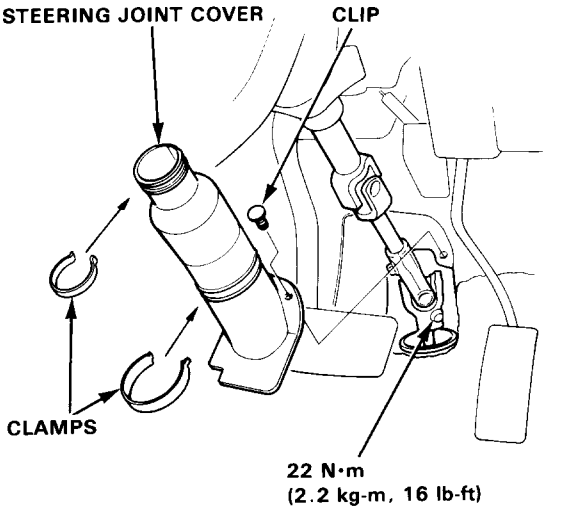
7. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.



8. Re-connect 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.



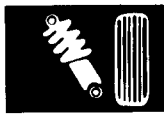
10. Fill the system:

- Fill the reservoir with new Honda Power Steering Fluid.
- Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
- Check the fluid again, and add more if necessary.

11. Check the gearbox for leaks, then reinstall the shield.

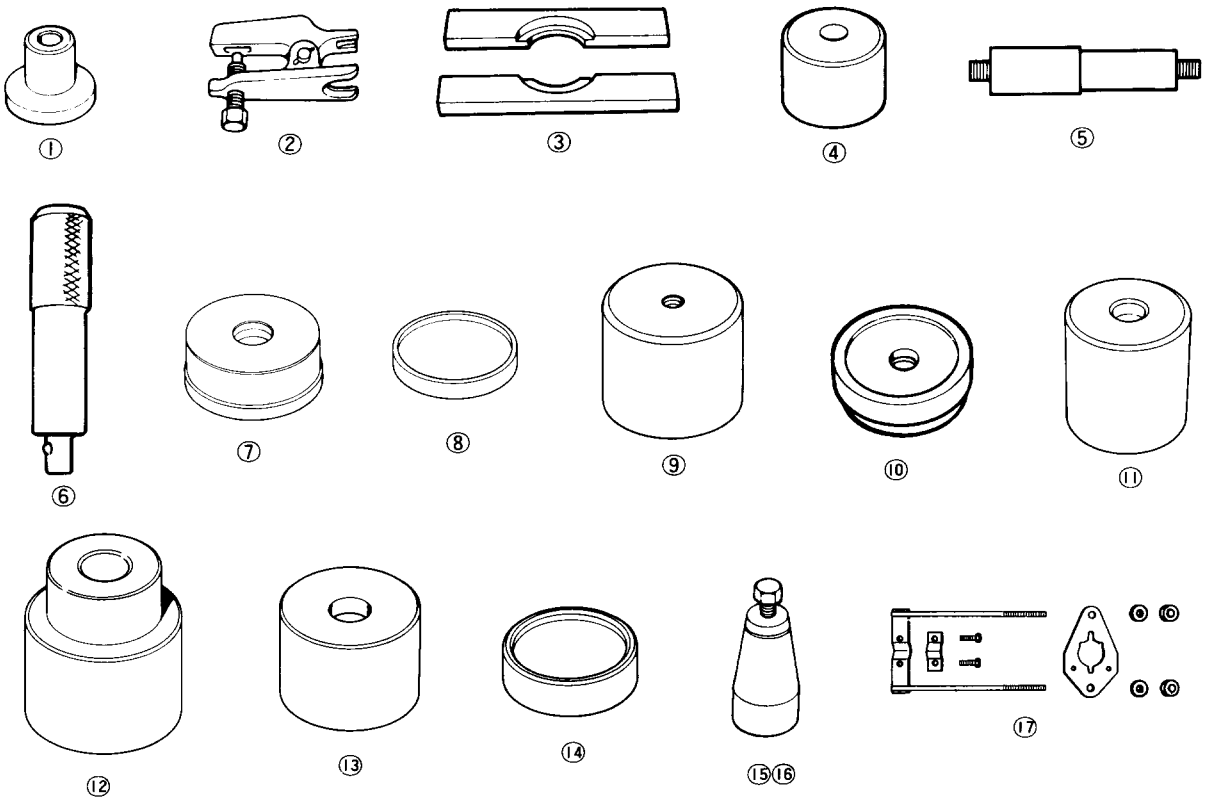
12. Re-install the front wheels.

Suspension



Special Tools

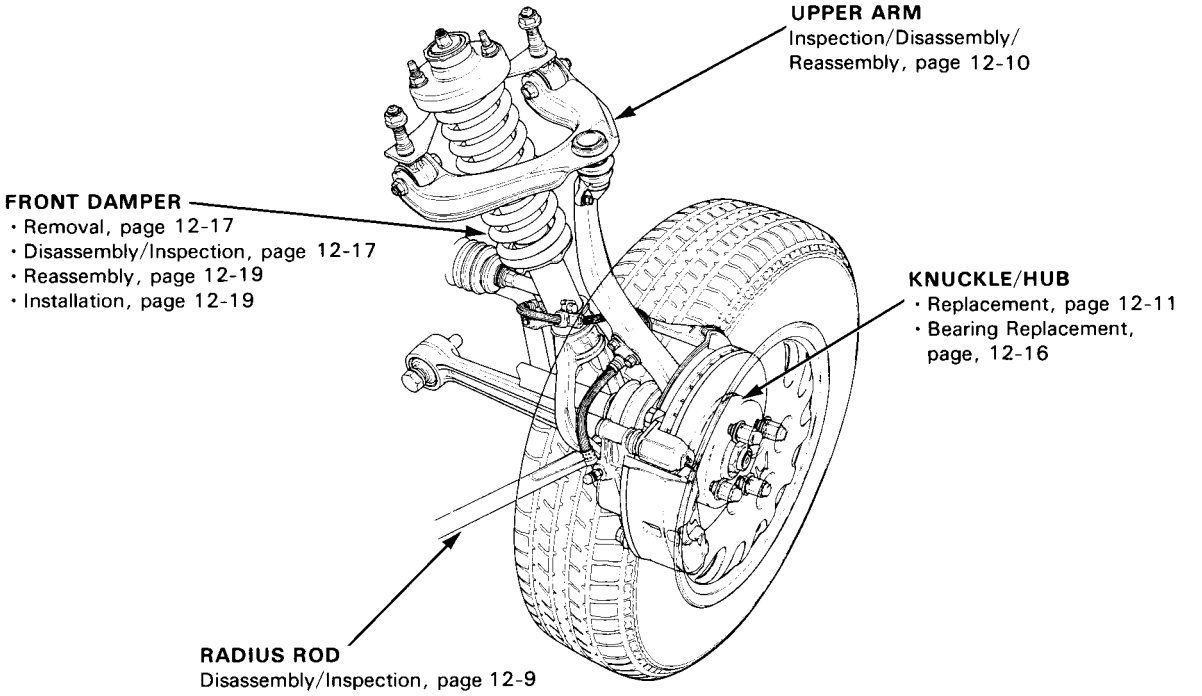
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07HGK—0010100	Wheel Alignment Gauge Attachment	1	
②	07941—6920003	Ball Joint Remover	1	
③	07965—6340301	Hub Dis/Assembly Base	1	
④	07JAF—SH20110	Hub Dis/Assembly Pilot, 38 mm	1	
⑤	07JAF—SH20120	Hub Dis/Assembly Shaft 22.4 x 25.4 mm	1	
⑥	07749—0010000	Driver	1	
⑦	07746—0010400	Attachment 52 x 55 mm	1	
⑧	07GAF—SE00401	Hub Dis/Assembly Base	1	
⑨	07965—6920201	Hub Dis/Assembly Base	1	
⑩	07746—0010600	Attachment 72 x 75 mm	1	
⑪	07GAF—SE00200	Hub Assembly Guide Attachment	1	
⑫	07965—SB00100	Ball Joint Remover/Installer	1	
⑬	07JAF—SH20200	Ball Joint Remover Base	1	
⑭	07965—SB00200	Ball Joint Installer Base	1	
⑮	07974—SA50700	Ball Joint Boot Clip A	1	
⑯	07974—SA50800	Ball Joint Boot Clip B	1	
⑰	07GAE—SE00100	Spring Compressor	1	



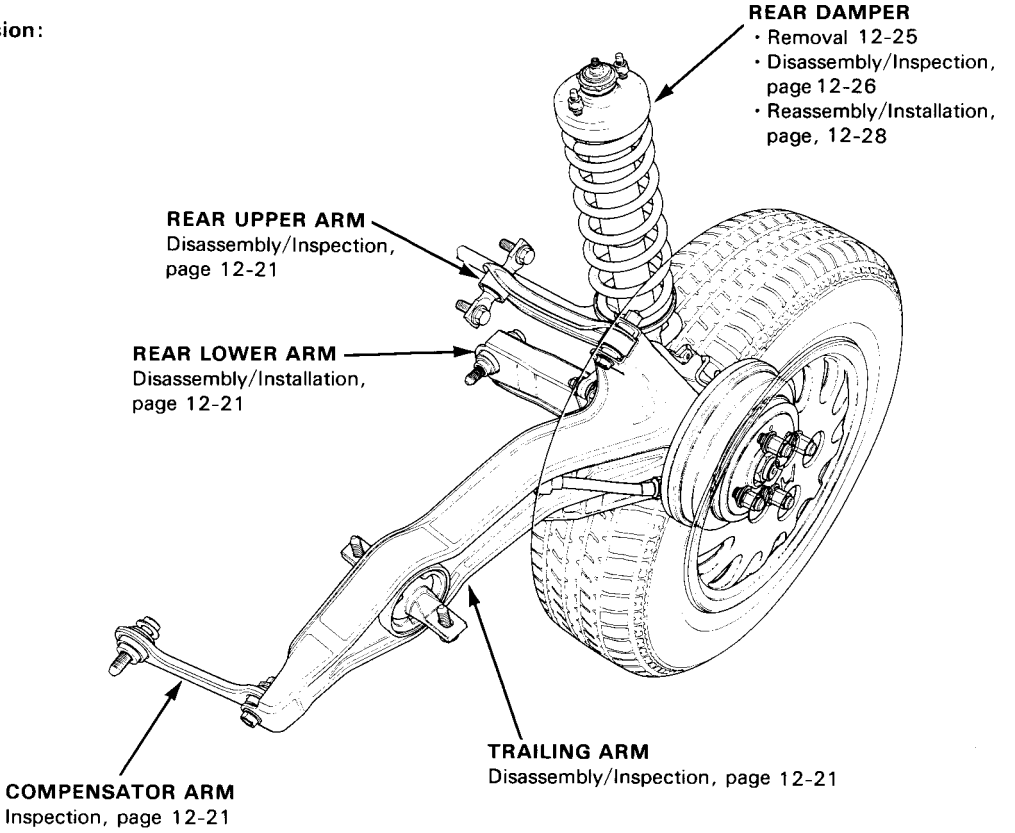
Component Location

Index

Front Suspension:



Rear Suspension:



Wheel Alignment

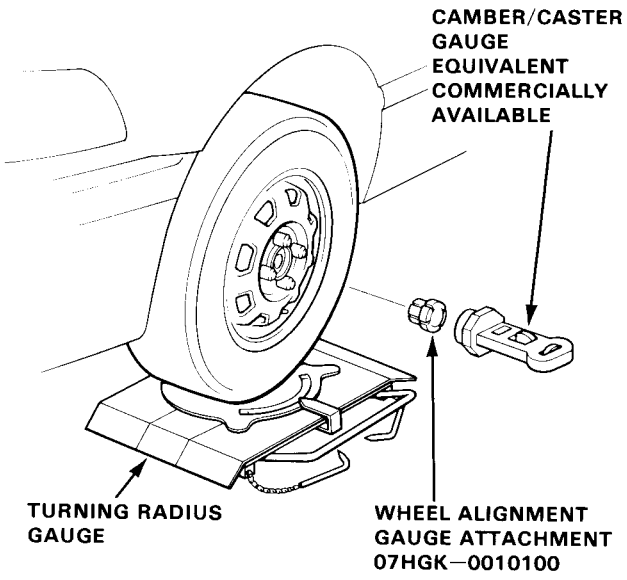
Caster

Inspection

1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel aylignment attachments.
4. Install a camber/caster gauge on the Wheel Alignment Gauge Attachment and apply the front brake. Turn the wheel 20° inward.
5. Turn the adjust screw so that the bubble in the caster gauge is at 0°
6. Turn the wheel outward 20° and read the caster on the gauge with the bubble at the center of the gauge.

   Caster Angle: 3° 00′ ± 1°



7. If out of specification, check for bent or damaged suspension components.

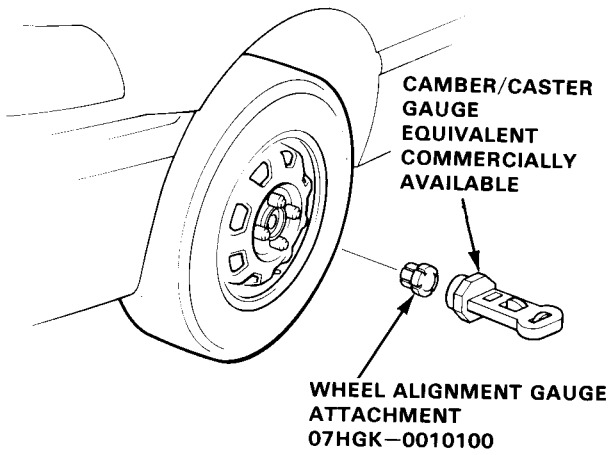
Camber

Inspection

1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

   NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel alignment attachments.
4. Read the camber on the gauge with the bubble at the center of the gauge.

   Camber angle: Front: 0° 00′ ± 1°
   Rear: −0° 25′ ± 1°



5. If out of specification, check for bent or damaged suspension components.

Rear Toe Inspection/ Adjustment

1. Release parking brake.

   NOTE: If the parking brake is engaged, you may get an incorrect reading.

   Rear toe in: 2±2 mm (0.079±0.079 in.)

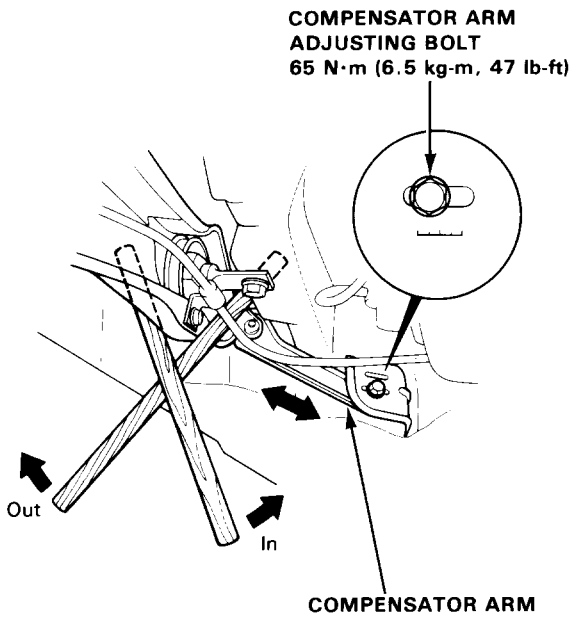
   — If adjustment is required, go to step 2.

   — If no adjustment is required, remove alignment equipment.

2. Before adjustment, note the locations of right and left compensator arm adjusting bolts.

3. Loosen the adjusting bolt and slide the compensator arm in or out as shown, to adjust the toe.

4. Tighten the adjusting bolt.



- Example
  After the rear toe inspection, the wheel is 2 mm (0.079 in.) out of the specification.
  — Move the arm so the adjusting bolt moves 2 mm (0.079 in) inward from the position recorded before the adjustment.
  — The distance the adjusting bolts is moved should be equal to the amount of out-of-specification.

Front Toe Inspection/ Adjustment

NOTE: Check the tire pressure before inspection.

1. Center Steering Wheel spokes.

   NOTE: Measure difference in toe measurements with the wheels pointed straight ahead.

   Front toe-in: 0±3 mm (0±0.118 in)

   — If adjustment is required, go on to step 2.

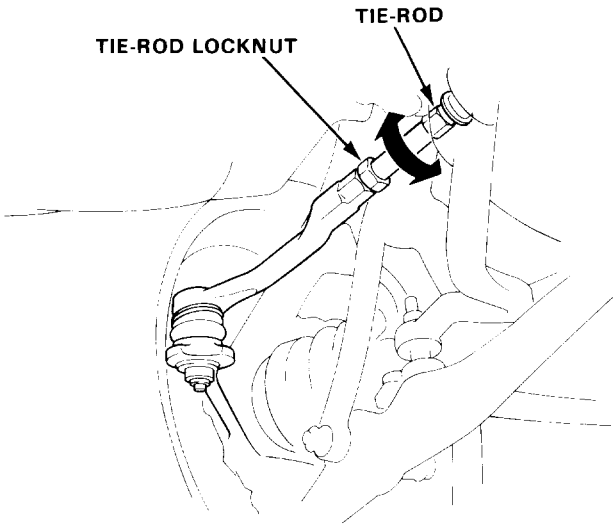
   — If no adjustment is required, remove alignment equipment.

2. Loosen the tie-rod locknuts and turn both tie-rods in the same direction until the front wheels are in straight ahead position.

3. Turn both tie-rods equally until the toe reading on the turning radius gauge is correct.

4. After adjusting, tighten the tie-rod locknuts.

   NOTE: Reposition the tie-rod boot if twisted or displaced after adjustment has been made.



Wheel Alignment

Turning Angle Inspection/ Adjustment

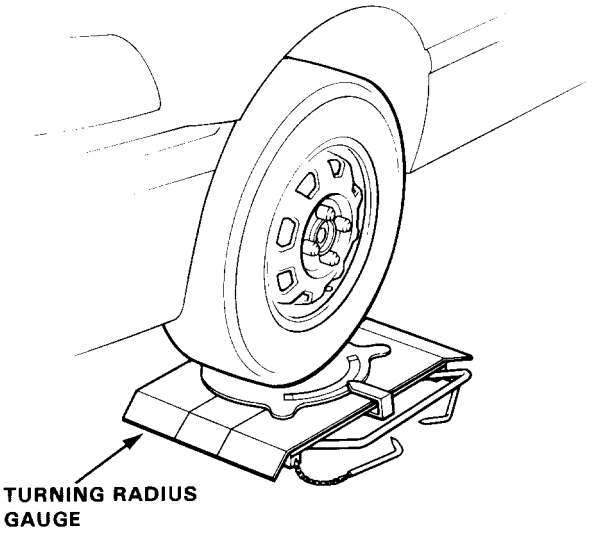
1. Jack up the front of the car, set the turning radius gauges beneath the front wheels, then lower the car.

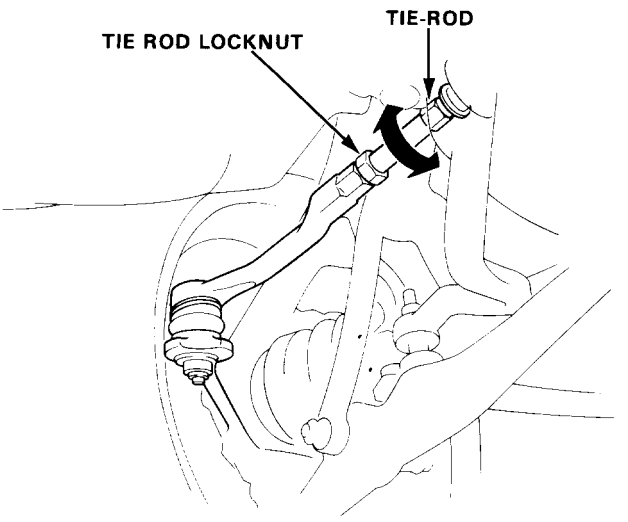
2. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   Turning angle:
   Inward wheel: 41° 30′ ±2°
   Outward wheel: 33° 30′ ±2°

3. If the measurements are not within the specifications, adjust as required by turning the tie-rods.

   NOTE: After adjustments, recheck the front wheel toe and readjust if necessary. Reposition the tie rod boot if twised or displaced after adjustment has been made.



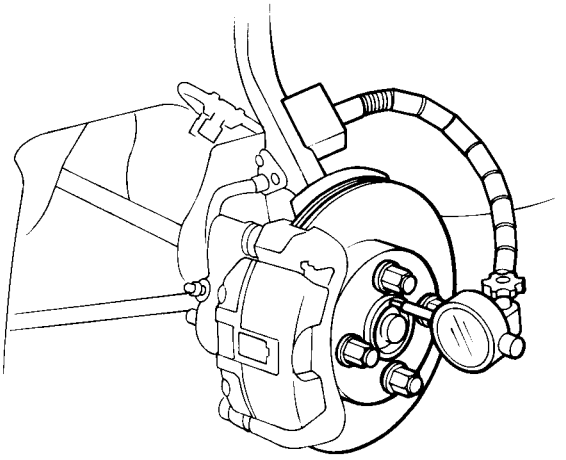


Wheel Measurements

Bearing End Play

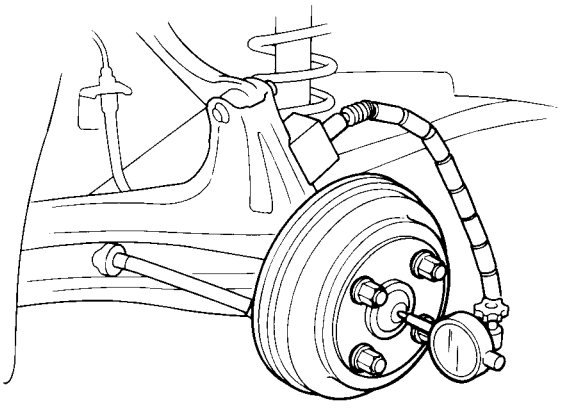
Front Wheel End Play

Standard: 0—0.05 mm (0—0.002 in.)



Rear Wheel End Play

Standard: 0—0.05 mm (0—0.002 in)

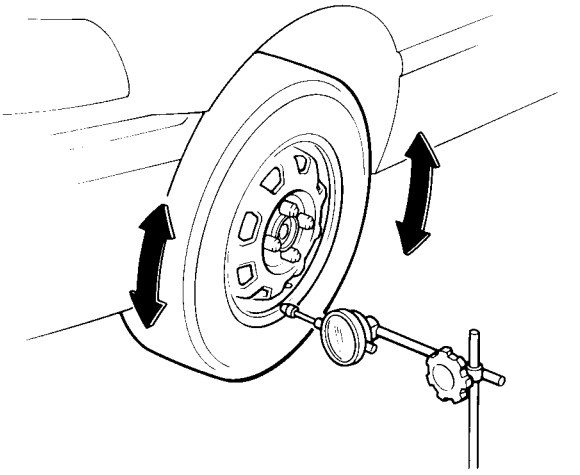


Runout

Front and Rear Wheel Axial Runout

Standard:

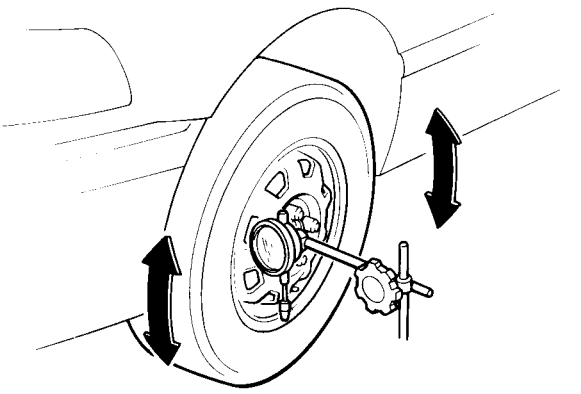
Steel Wheel: 0—1.0 mm (0—0.039 in.)
Aluminum Wheel: 0—0.7 mm (0—0.028 in)



Front and Rear Wheel Radial Runout

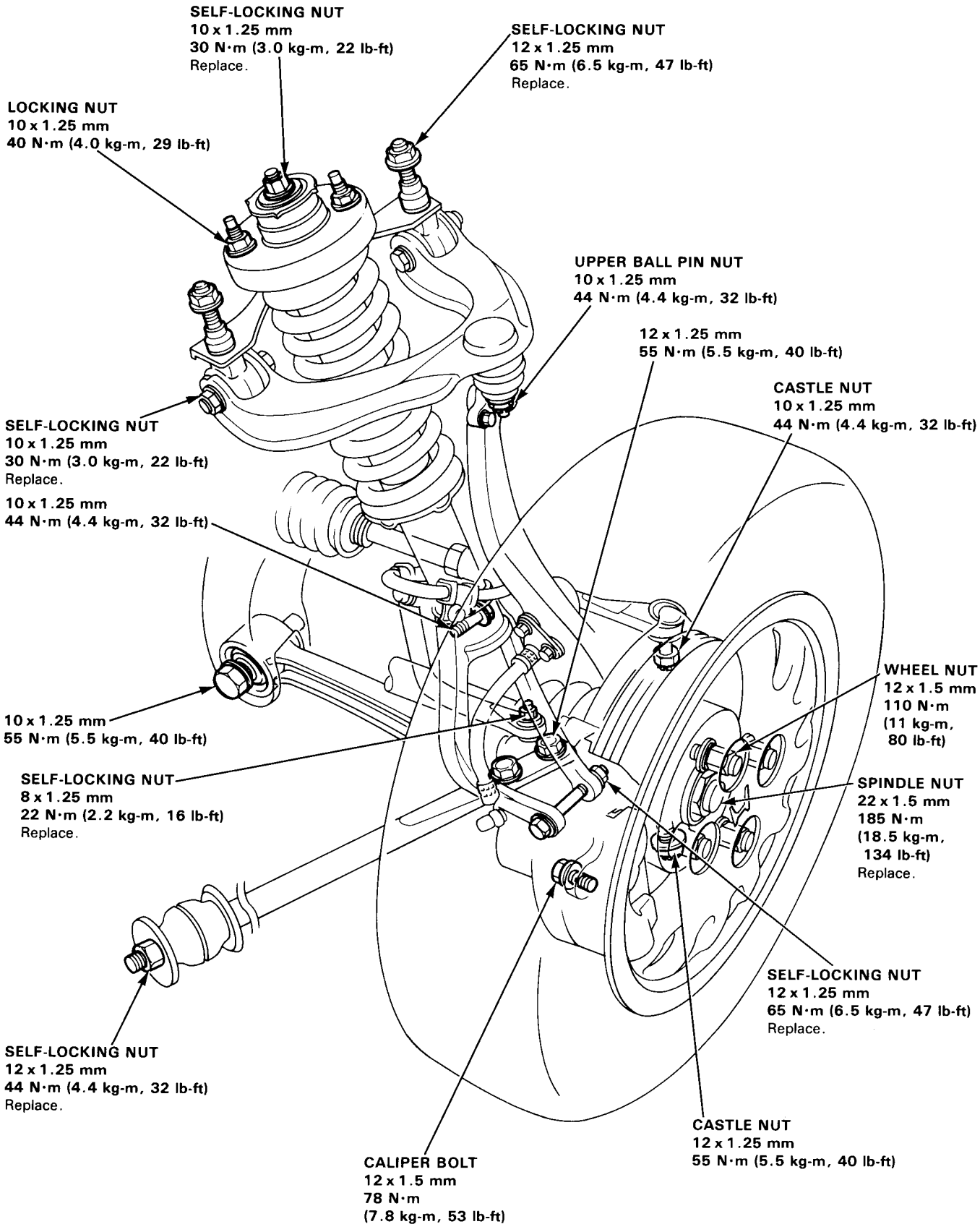
Standard:

Steel Wheel: 0—1.0 mm (0—0.039 in.)
Aluminum Wheel: 0—0.7 mm (0—0.028 in)



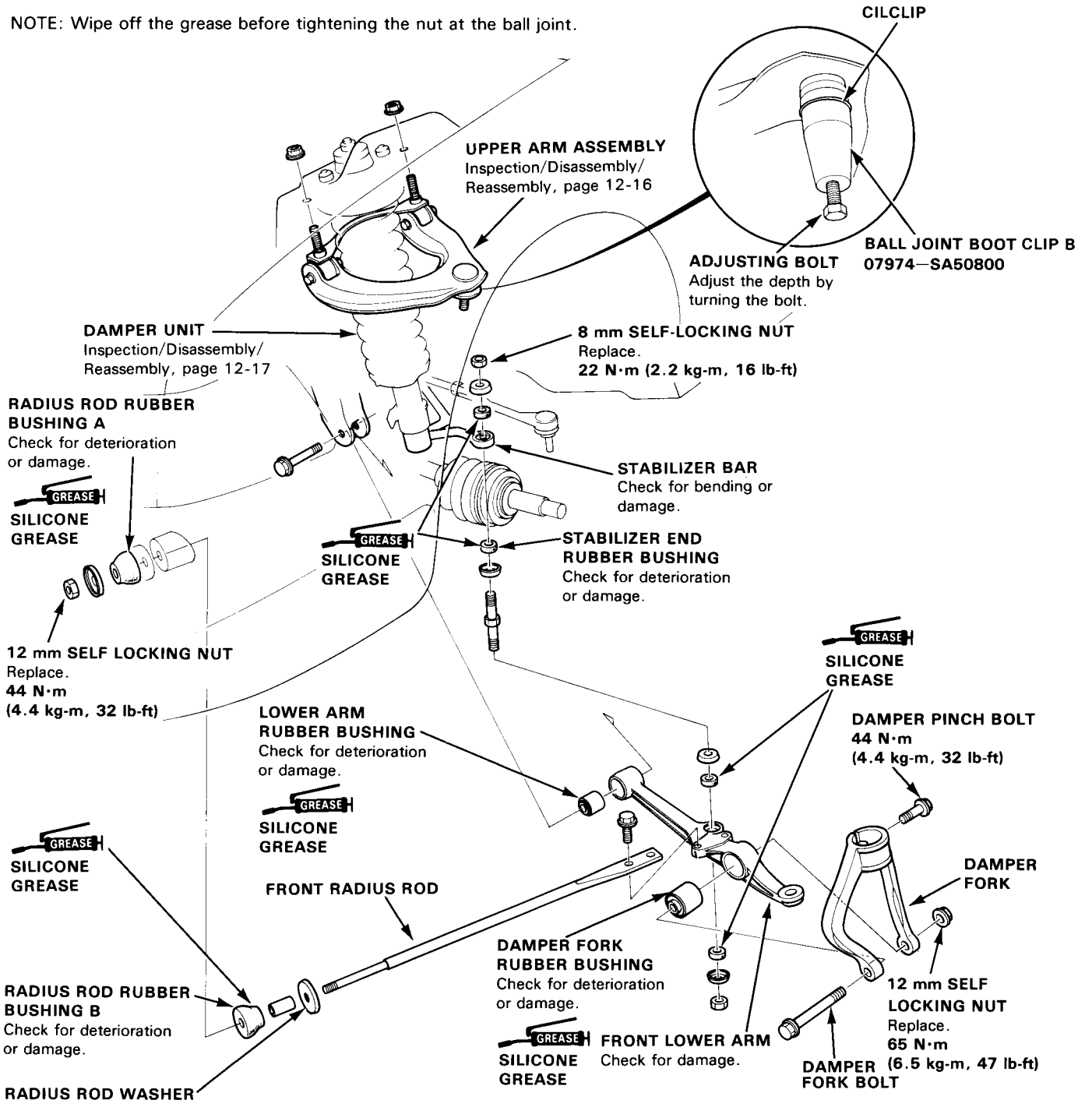
Front Suspension

Torque Specifications



Overall Suspension
CAUTION:
- **Replace the self-locking nuts after removal.**
- **Replace the self-locking bolts if you can easily thread a nut past their nylon locking Inserts.**

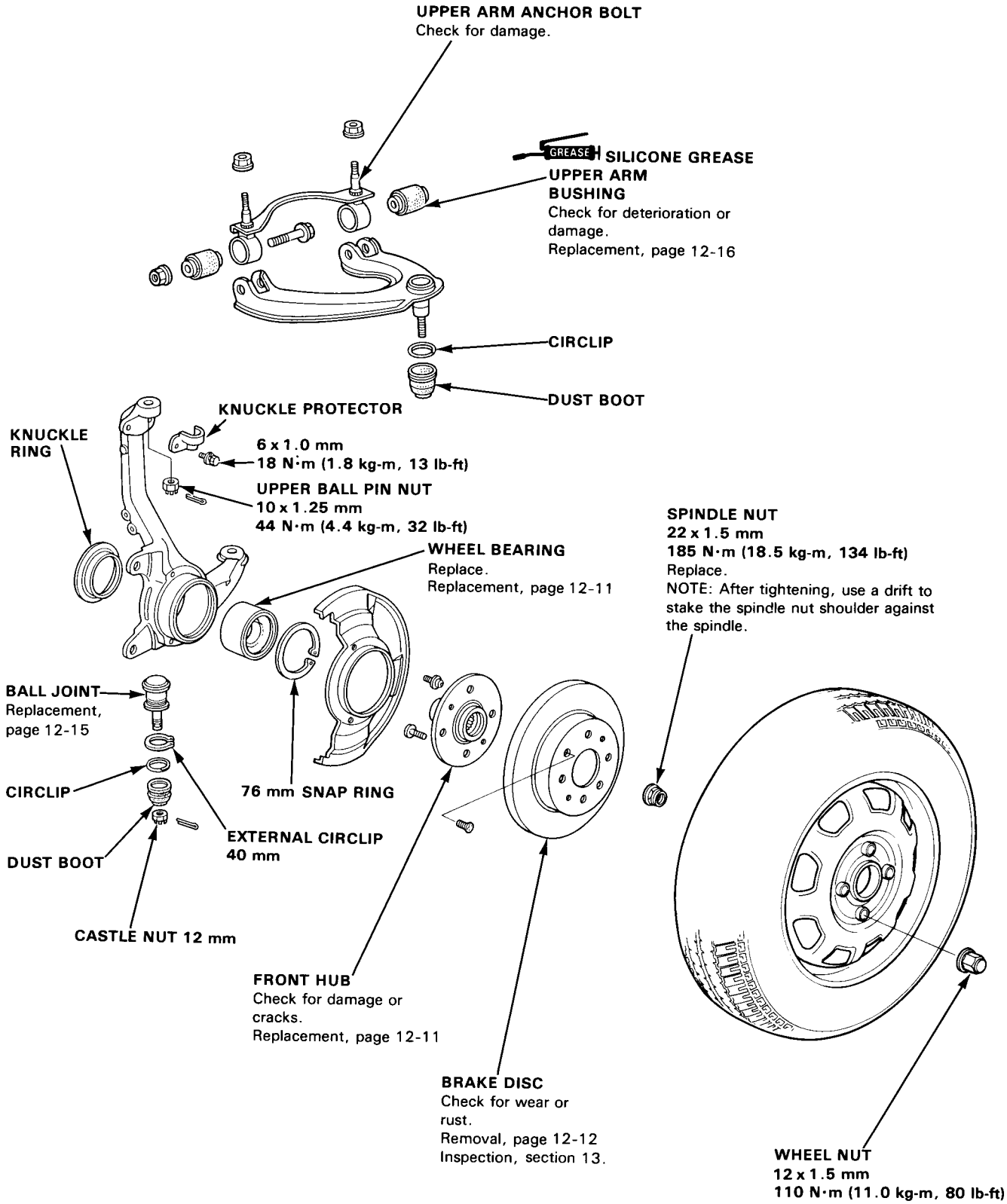
NOTE: Wipe off the grease before tightening the nut at the ball joint.



CAUTION: Do not interchange the radius rod rubber bushings. The thick bushing should be installed in front position.

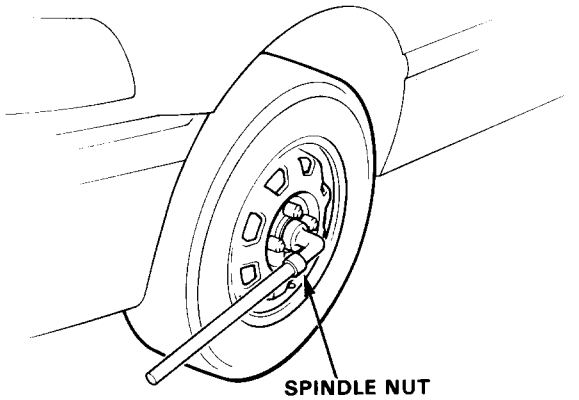
Front Suspension

Knuckle/Hub



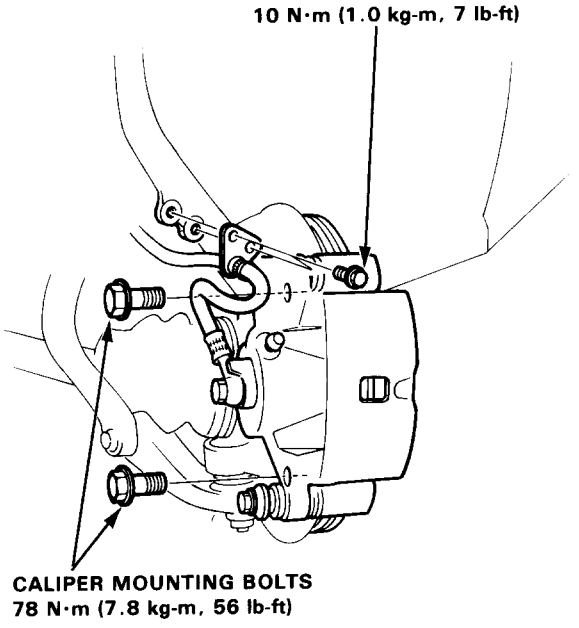
Knuckle/Hub Replacement

1. Pry the spindle nut stake away from the spindle, then loosen the nut using a 32 mm socket.



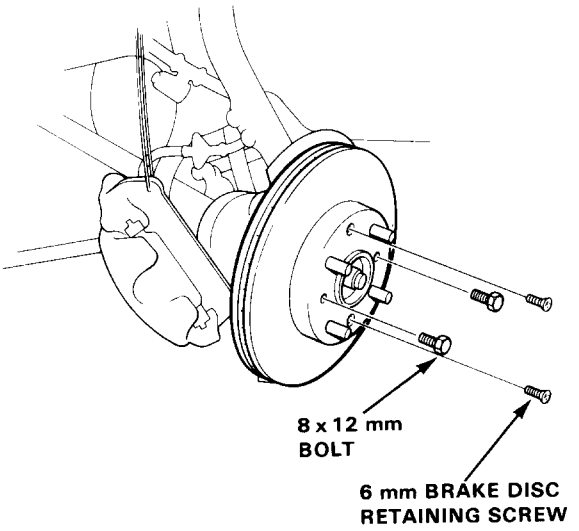
2. Loosen the wheel nuts slightly.
3. Raise the front of car and support on safety stands in proper locations.
4. Remove the wheel nuts, wheels, and spindle nut.
5. Remove the caliper mounting bolts and hang the caliper assembly to one side.

   CAUTION: To prevent accidental damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage.

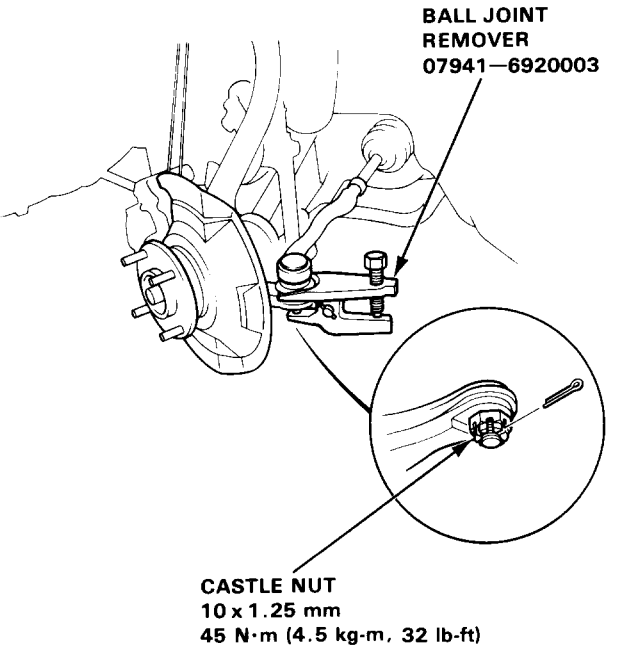


6. Remove the 6 mm brake disc retaining screws.
7. Screw two 8 ×12 mm bolts into the disc to push it away from the hub.

   NOTE: Turn each bolt two turns at a time to prevent cocking disc excessively.



8. Remove the cotter pin from the tie-rod end and remove the castle nut.
9. Break loose the tie-rod ball joint using the special tool, then lift the tie-rod out of the knuckle.



(cont'd)

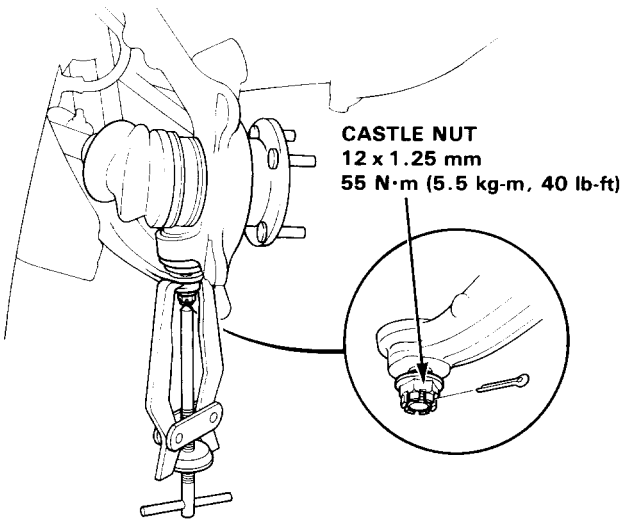
Knuckle/Hub Replacement (cont'd)

10. Remove the cotter pin and loosen the lower arm ball joint nut half the length of the joint threads.

11. Separate the ball joint and lower arm using a puller with the pawls applied to the lower arm.

    CAUTION: Avoid damaging the ball joint boot.

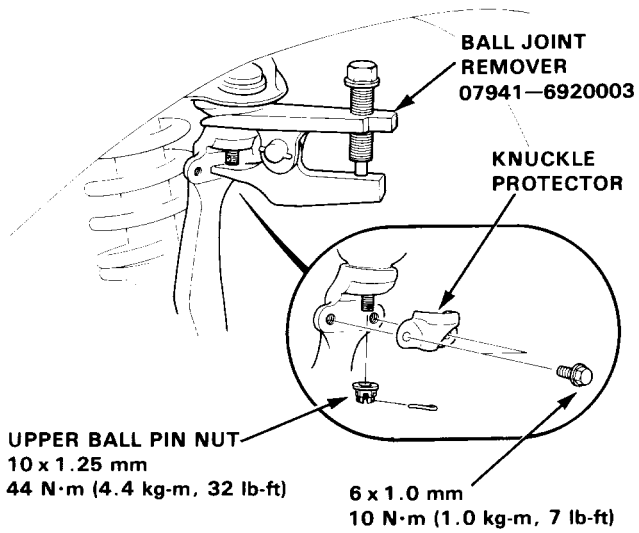
    NOTE: If necessary, apply penetrating type lubricant to loosen the ball joint.



12. Remove the knuckle protector.

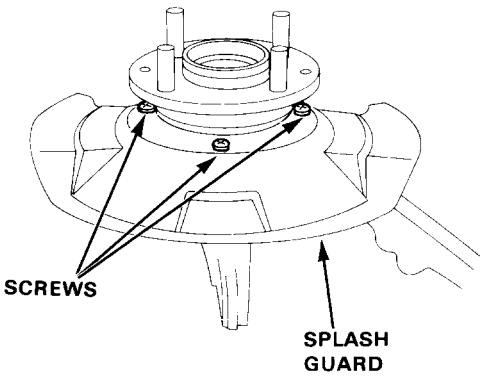
13. Remove the cotter pin and remove the upper ball pin nut.

14. Separate the upper ball joint and knuckle using the special tool.



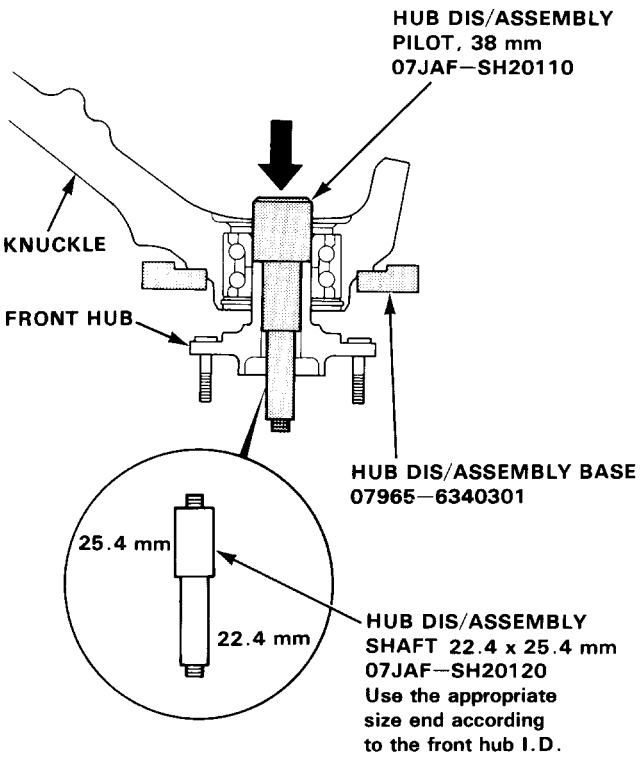
15. Remove the knuckle and hub by sliding them off the driveshaft.

16. Remove the splash guard screws from the knuckle.



17. Separate the hub from the knuckle using the special tools and a hydraulic press.

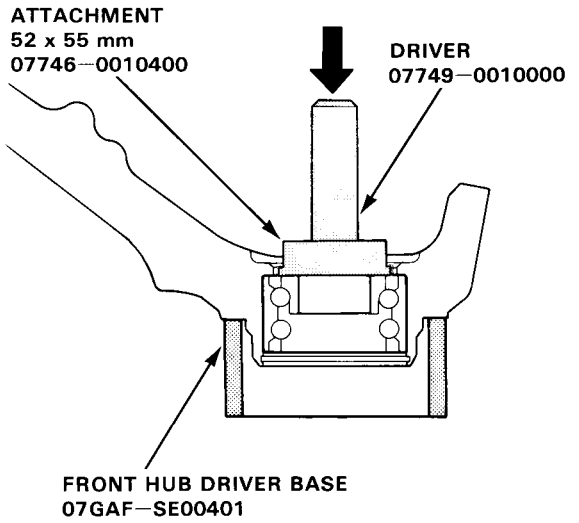
    CAUTION:
    - **Take care not to distort the splash guard.**
    - **Hold onto the hub to keep it from falling when pressed clear.**
    - **To prevent damage to the tool make sure the threads are fully engaged before pressing.**



NOTE: Replace the bearing with a new one after removal.

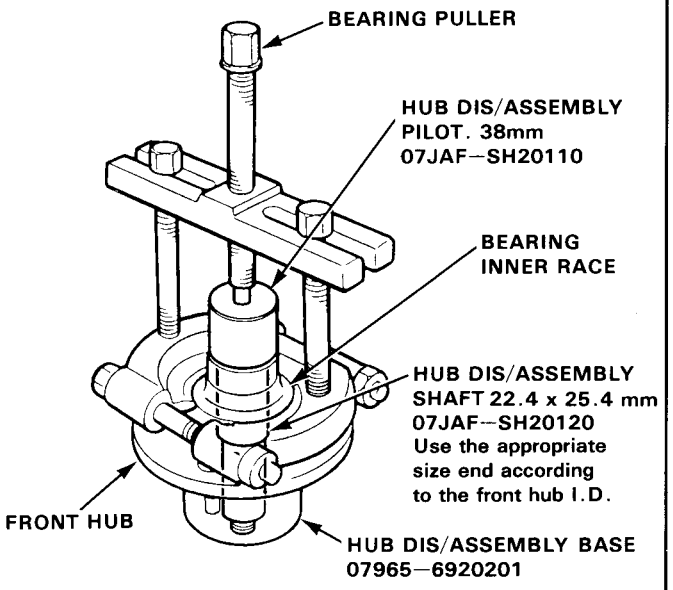
18. Remove the 76 mm snap ring and knuckle ring from the knuckle.

19. Press the wheel bearing out of the knuckle using the special tools shown and a hydraulic press.



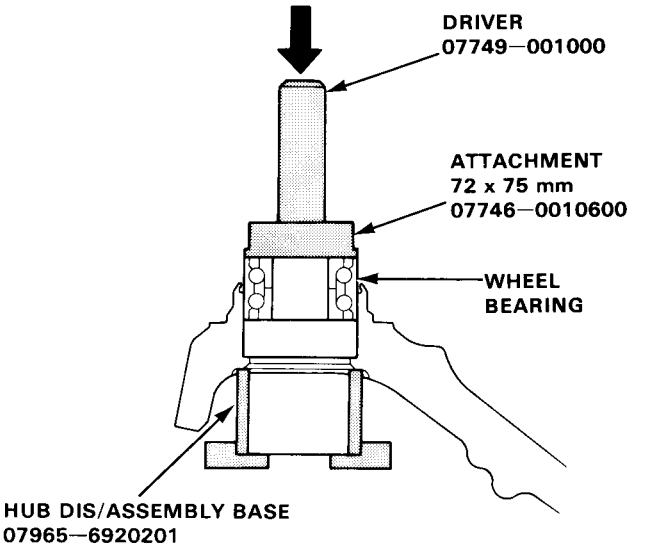
20. Remove the outboard bearing inner race from the hub using the special tools shown and a bearing puller.

CAUTION: To prevent damage to the tool make sure the threads are fully engaged before pressing.

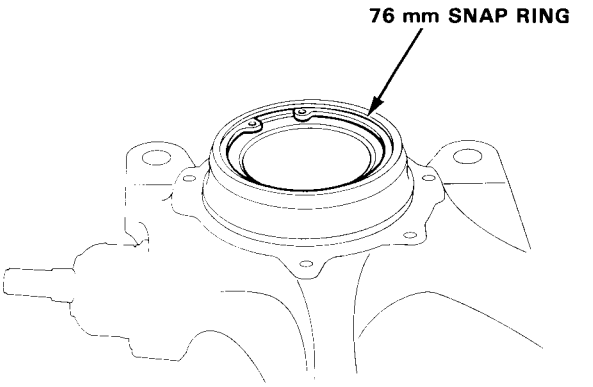


NOTE: Wash the knuckle and hub thoroughly in high flashpoint solvent before reassembly.

21. Press a new wheel bearing into the hub using the special tools shown and a hydraulic press.



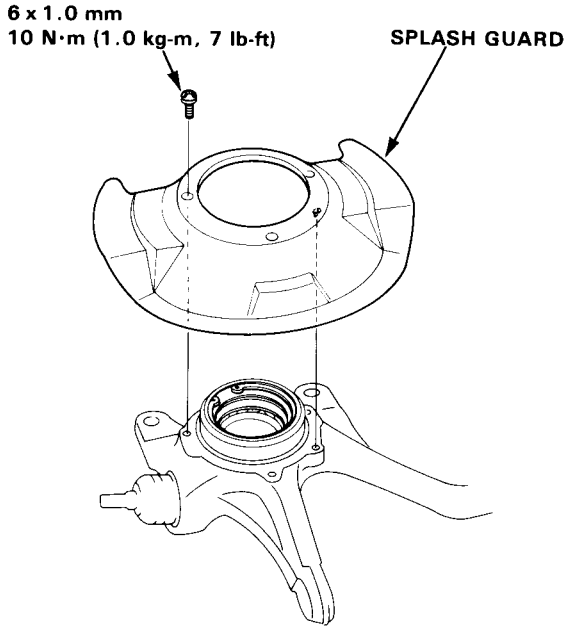
22. Install the 76 mm snap ring securely in the knuckle groove.



(cont'd)

Knuckle/Hub Replacement (cont'd)

23. Install the splash guard and tighten the screws.

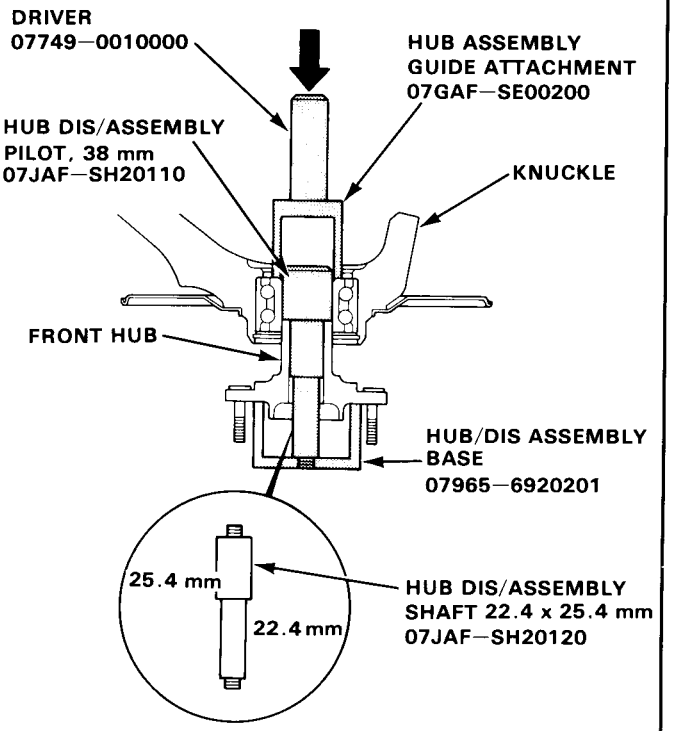


24. Install the shaft into the base with the appropriate size end according to the front hub I.D.

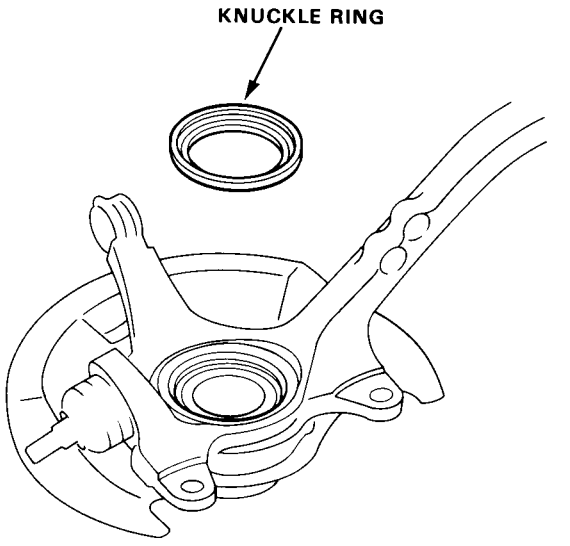
25. Place the front hub onto the special tools and install the pilot.

26. Set the knuckle in position and install using the special tools and a hydraulic press.

CAUTION:
- **Maximum press load: 2 tons.**
- **To prevent damage to the tool make sure the threads are fully engaged before pressing.**

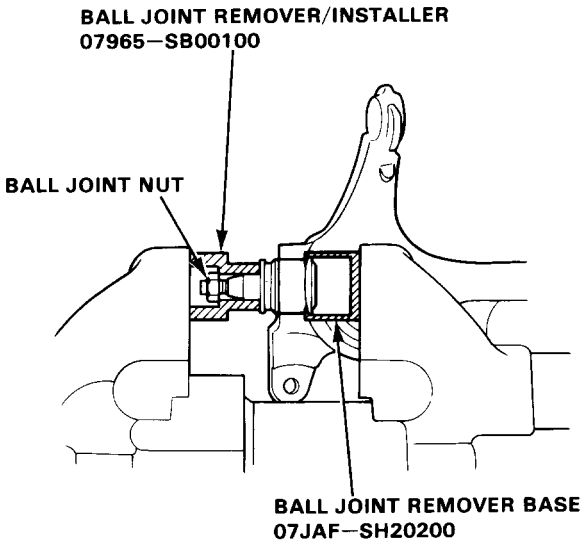


27. Install the front knuckle ring on the knuckle.

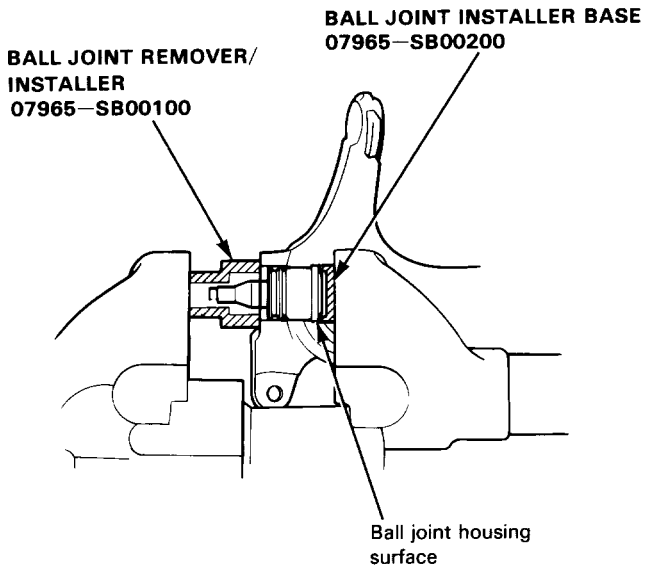


Lower Ball Joint Replacement

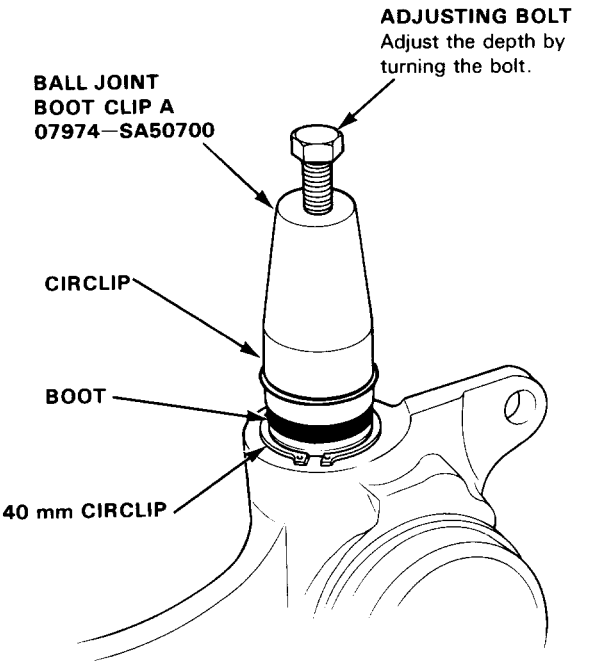
1. Remove the knuckle (page 12-10).
2. Remove the boot by prying the snap ring off.
3. Remove the 40 mm circlip.
4. Install the special tool on the ball joint and tighten the ball joint nut.
5. Position the special tool over the ball joint as shown then set the assembly in a vise. Press the ball joint out of the knuckle.



6. Place the ball joint in position by hand.
7. Install the special tools over the ball joint as shown, then press the ball joint in.

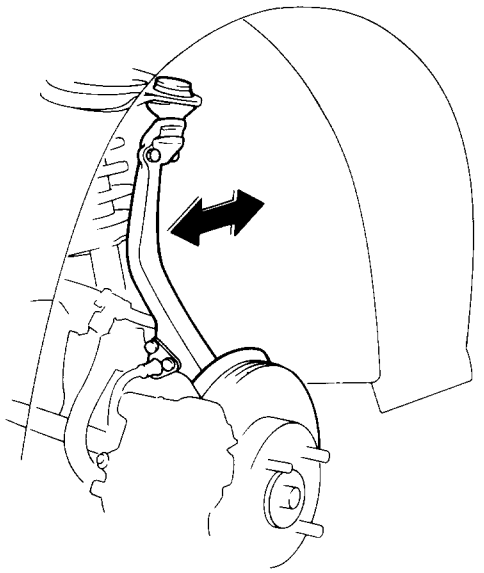


8. Install the 40 mm circlip.
9. Adjust the special tool with the adjusting bolt until the end of the tool aligns with the groove on the boot. Slide the clip over the tool and into position.

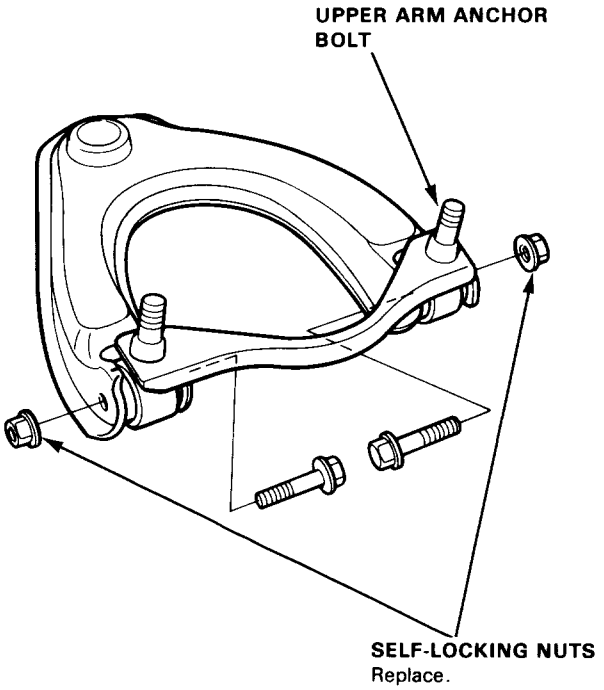


Upper Arm Bushing Replacement

1. Remove the front wheels.
2. Rock the upper ball joint front-to-back.
3. Replace the upper arm bushings as follows if there is any play.

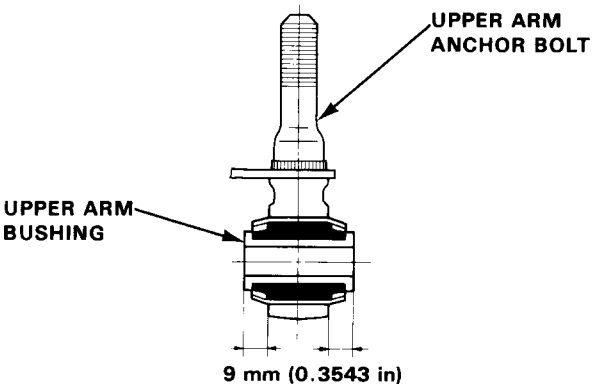


4. Remove the self-locking nuts, upper arm bolts and upper arm anchor bolts.



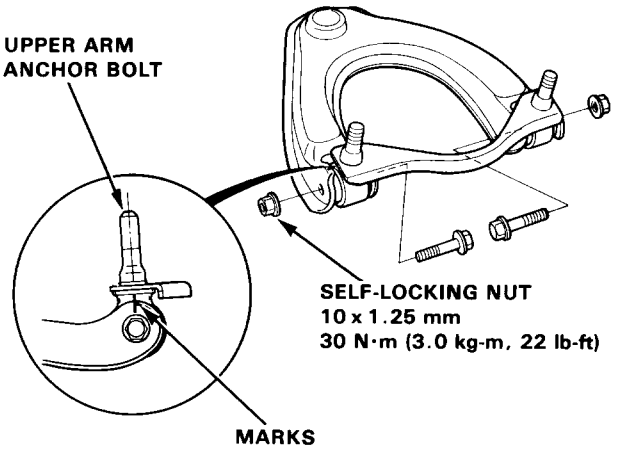
5. Place each upper arm anchor bolt in a vise and drive out the upper arm busings.
6. Drive the new upper arm bushings into the upper arm anchor bolts.

   NOTE: Center the bushing so that 9 mm (0.3543 in) protrudes from each side of the anchor bolt as shown.



7. Install the upper arm bolts and tighten the self-locking nuts.

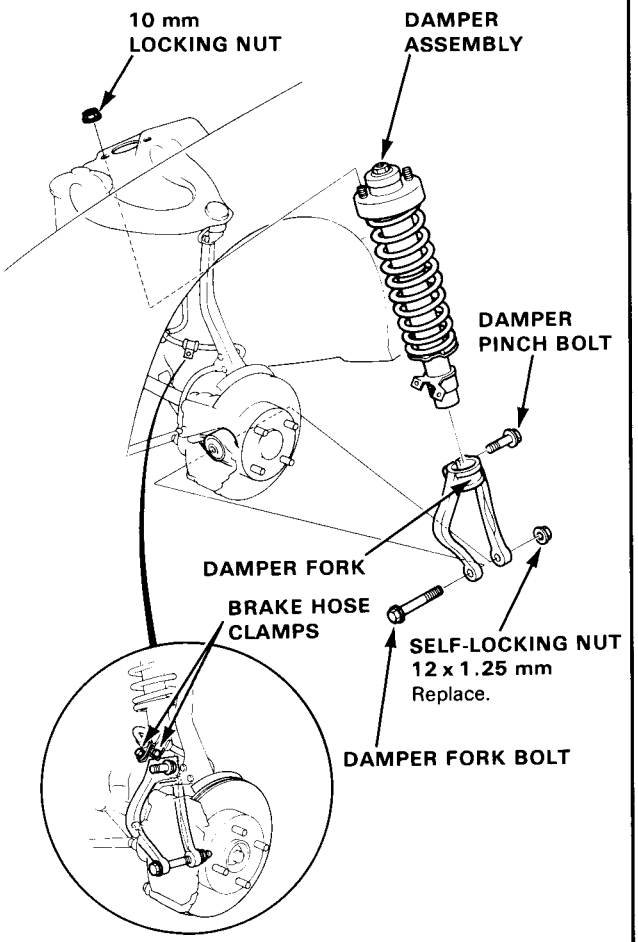
   NOTE: Align the upper arm anchor bolt with the mark on the upper arm.



9. After installation, check the camber (page 12-4).

Damper Removal

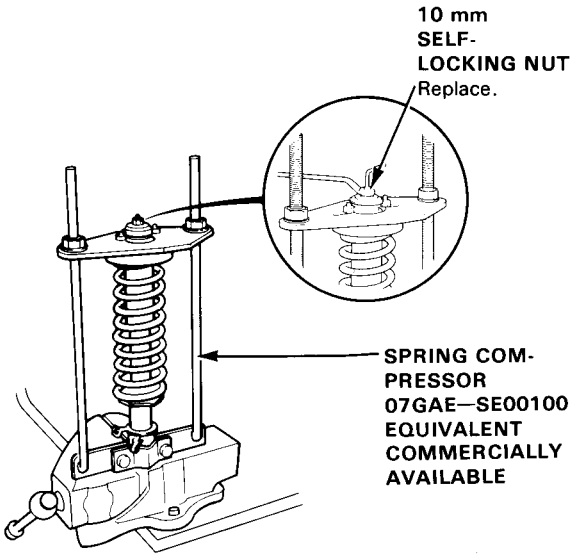
1. Remove the brake hose clamps from the damper.
2. Remove the damper pinch bolt.
3. Remove the damper fork bolt and remove the damper fork.
4. Remove the damper by removing the two 10 mm nuts.



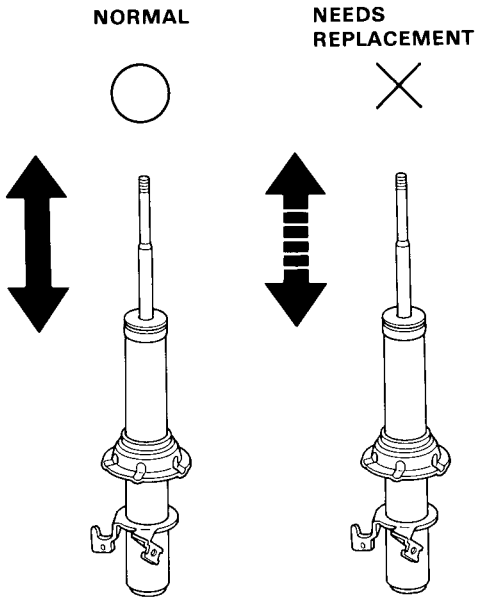
Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions, then remove the self locking nut.

   CAUTION: Do not compress the spring more than necessary to remove the nut.



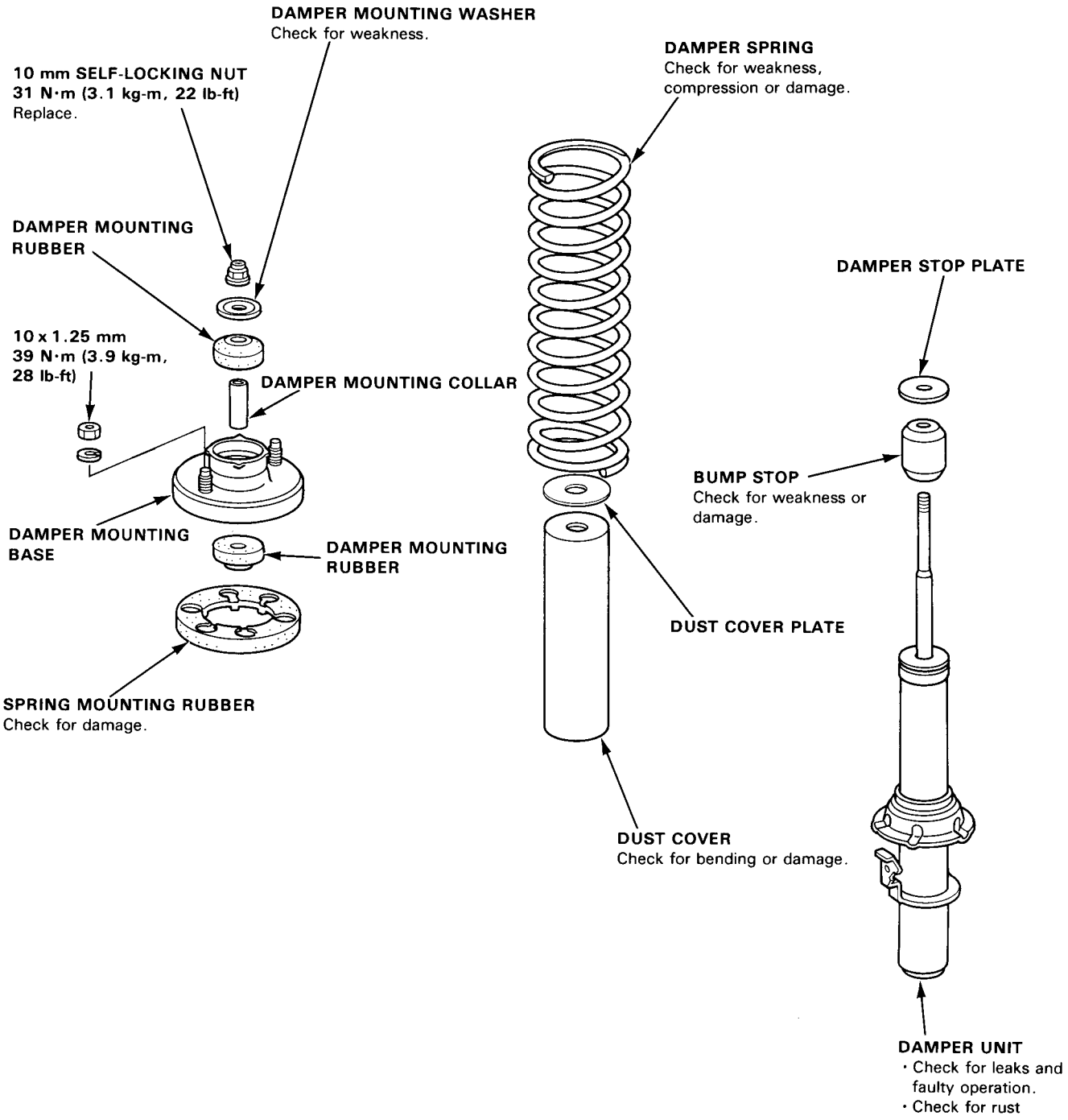
2. Remove the spring compressor then disassemble the damper as shown on the next page.
3. Check for smooth operation through a full stroke, both compression and extension.



4. Also check for smooth operation in short strokes of 5—10 cm (2—4 in). Replace the damper if resistance is uneven or jerky.
5. Check for oil leaks abnormal noises or binding during these tests.

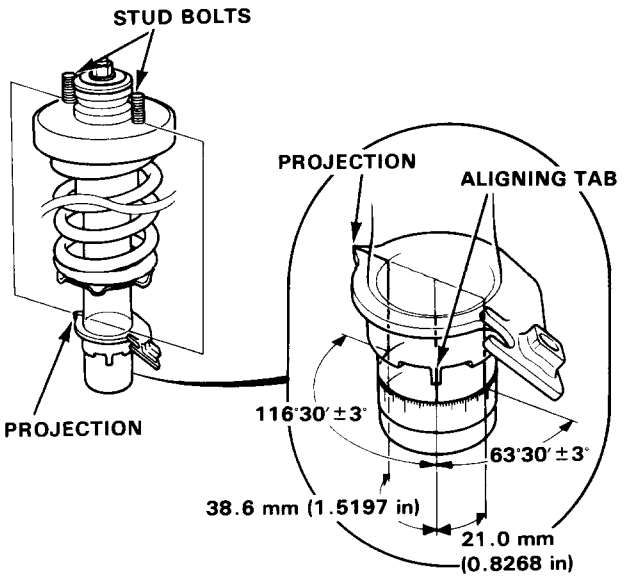
(cont'd)

Damper Disassembly/Inspection (cont'd)



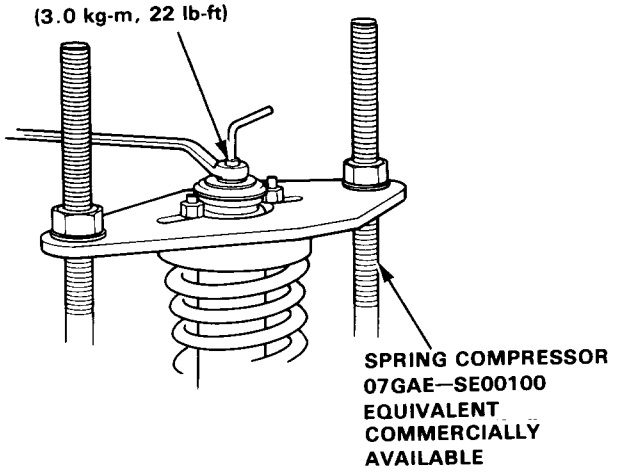
Damper Reassembly

1. Install the damper unit, damper spring, bump stop, boot, upper spring seat, damper bushings, and collar on the spring compressor.
2. Mark the damper at two points by measuring around from the damper fork aligning tab. Align the two points with the stud bolts on the mounting base.
   NOTE: Some damper units will have a projection at one of the alignment points.



   NOTE: Left side shown, right side is opposite.

3. Compress the damper spring.
4. Install the damper mount washer and new 10 mm self-locking nut.
5. Hold the damper shaft and tighten the 10 mm self-locking nut.

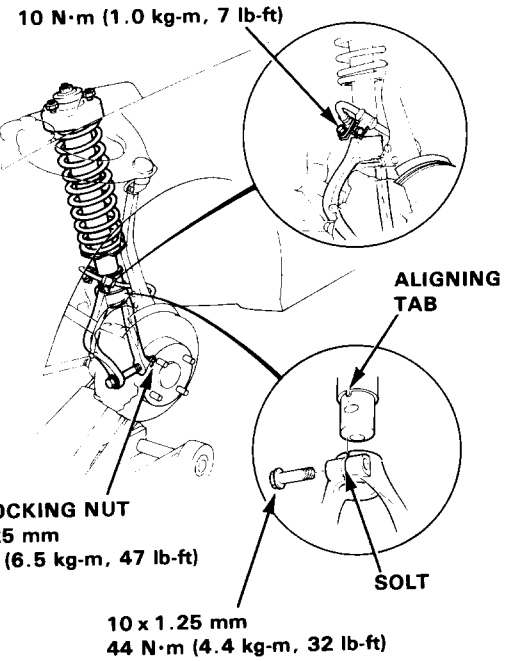


Damper Installation

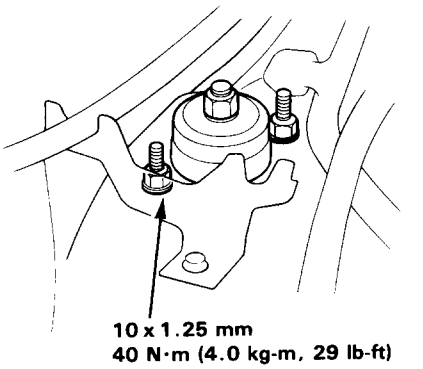
1. Loosely install the damper on the frame with the aligning tab facing inside.
2. Install the damper fork on the driveshaft and lower arm. Install the damper in the damper fork so the aligning tab is aligned with the slot in the damper fork. Hand tighten the bolts and nuts.
3. Raise the knuckle with a floor jack until the car just lifts off the safety stand.

   NOTE: The mount base nuts should be tightened with the damper under vehicle load.

4. Tighten the damper pinch bolt.
5. Secure the damper fork bolt with a new 12 mm self locking nut.
6. Install the brake hose clamps with the two bolts.

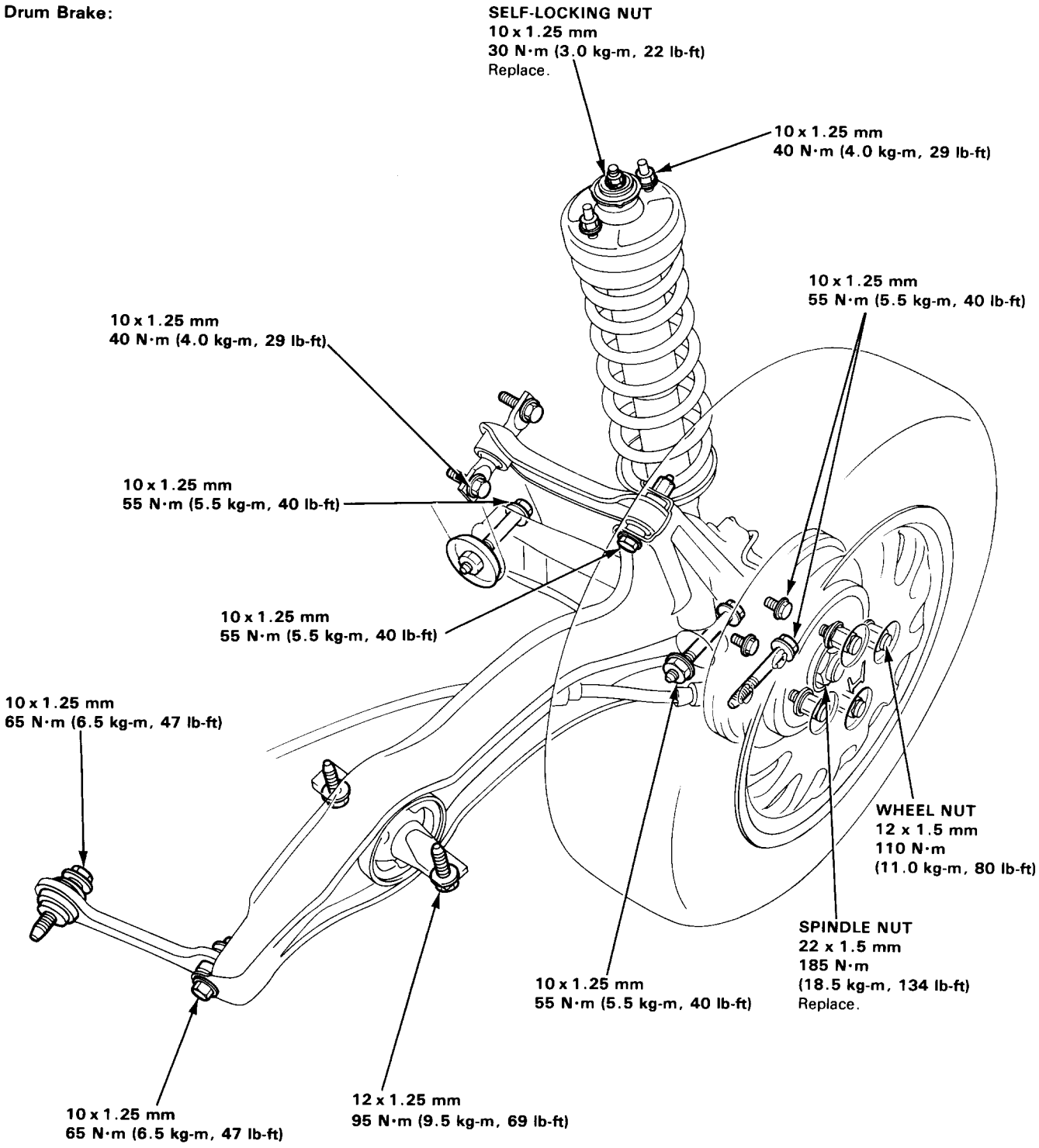


7. Secure the damper assembly to the frame with the 10 mm locking nuts.



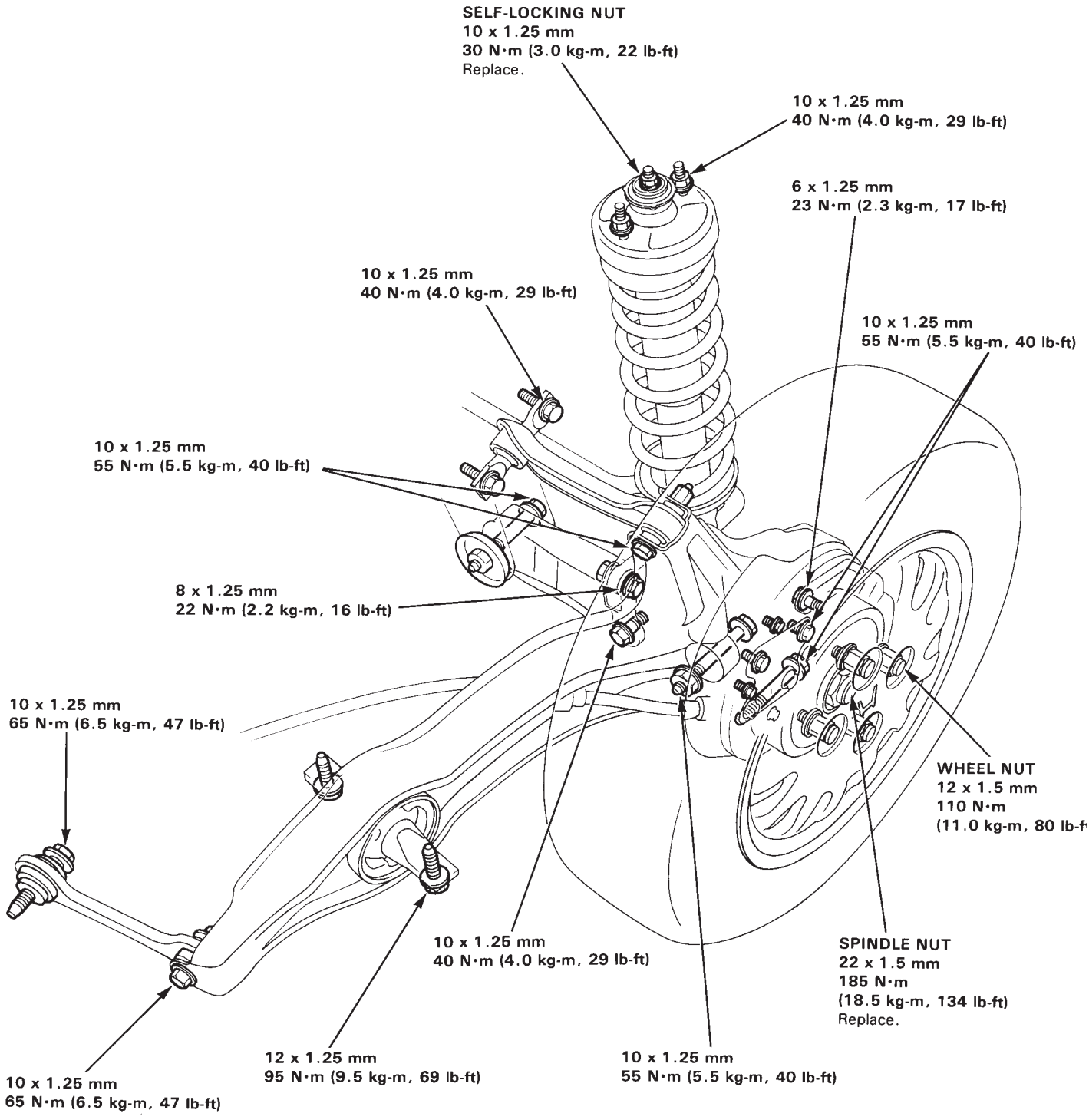
Specifications (cont'd)

Drum Brake:



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

Disc Brake:



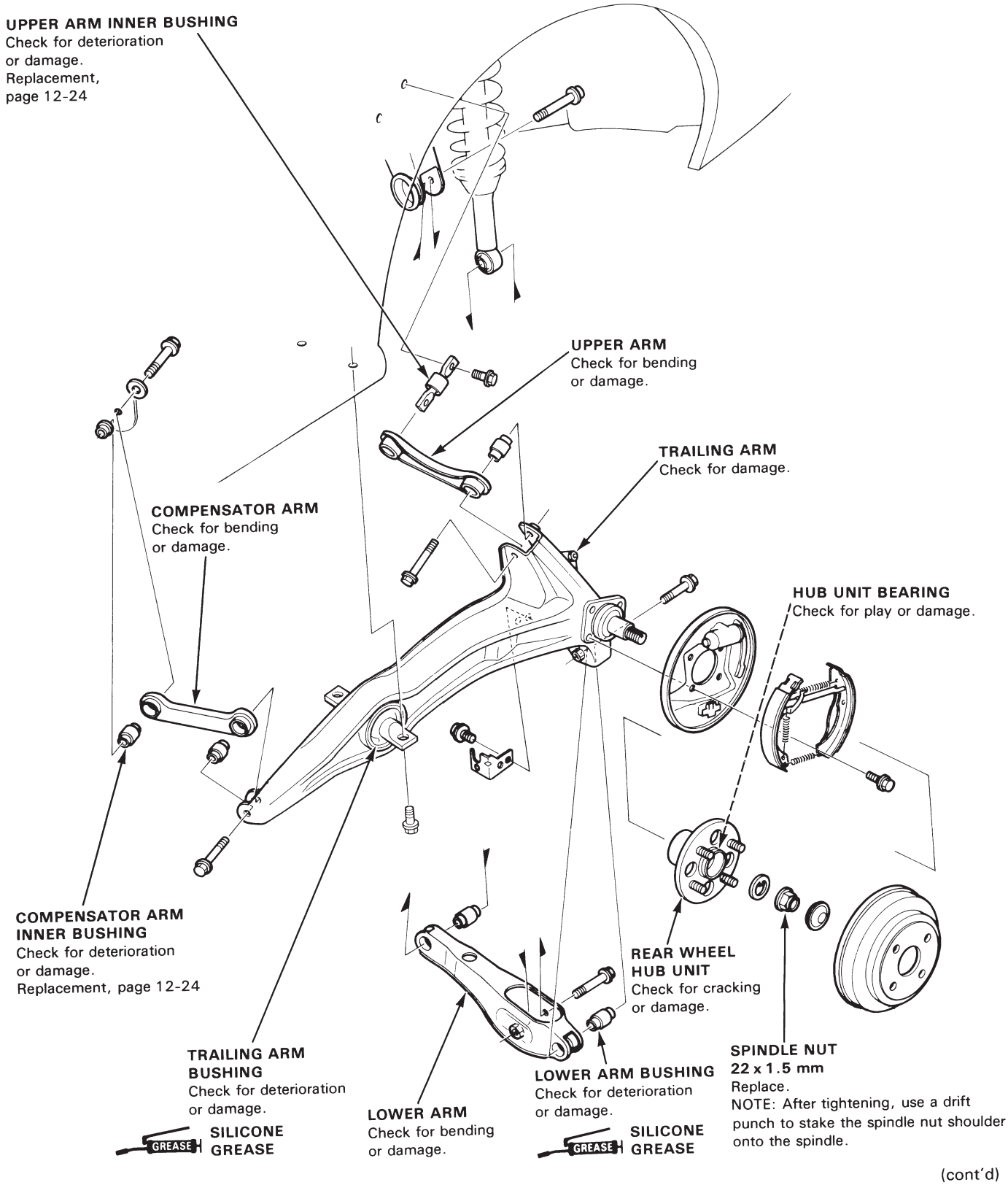
CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

(cont'd)

Rear Suspension

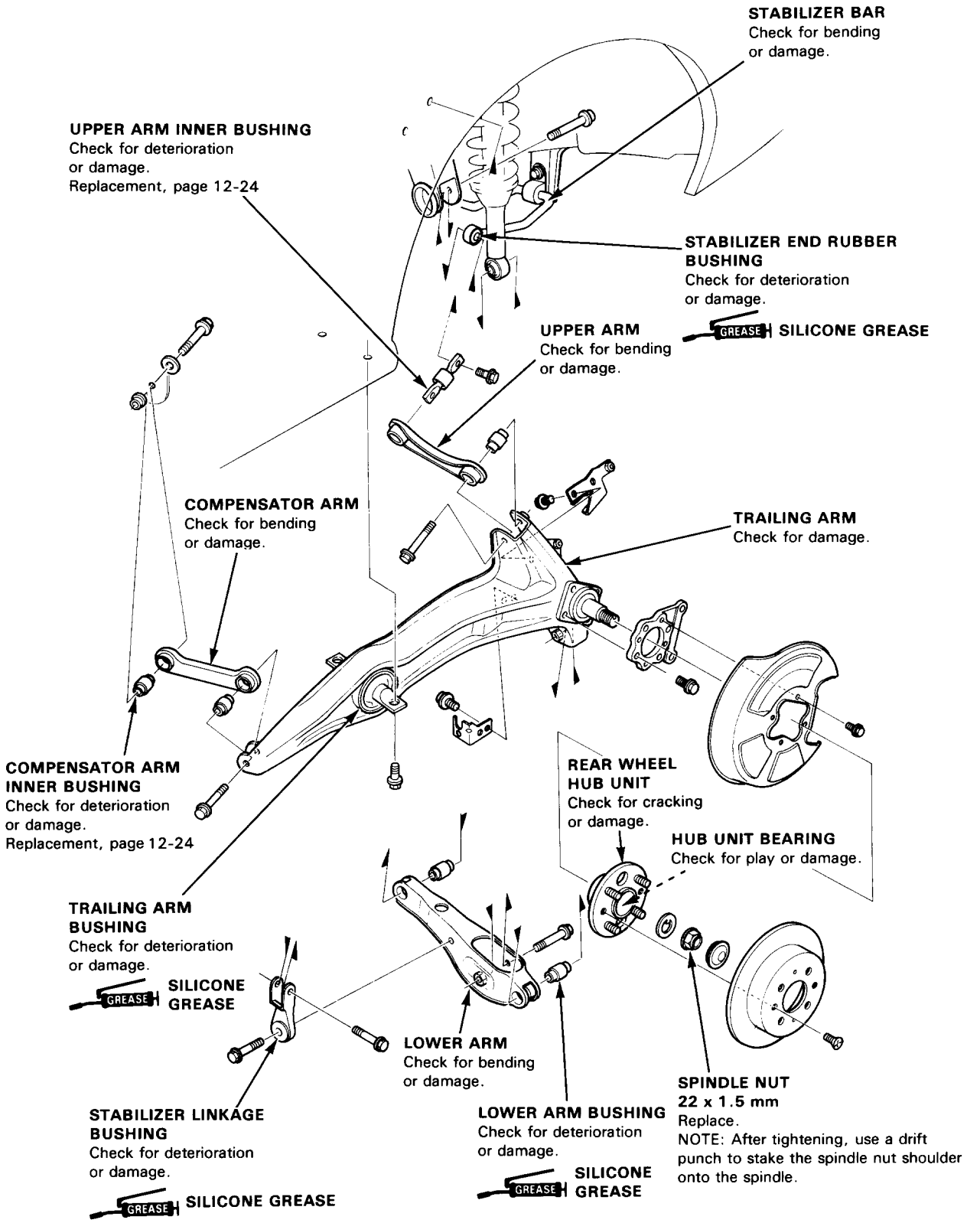
Illustrated Index

Drum Brake:



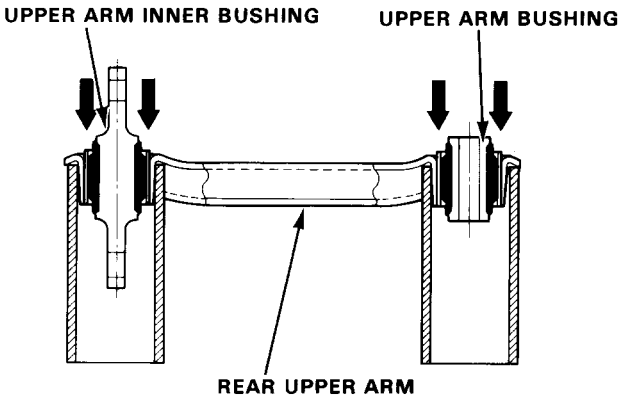
(cont'd)

Disc Brake:


STABILIZER BAR
Check for bending or damage.
UPPER ARM INNER BUSHING
Check for deterioration or damage.
Replacement, page 12-24
STABILIZER END RUBBER BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
UPPER ARM
Check for bending or damage.
COMPENSATOR ARM
Check for bending or damage.
TRAILING ARM
Check for damage.
COMPENSATOR ARM INNER BUSHING
Check for deterioration or damage.
Replacement, page 12-24
REAR WHEEL HUB UNIT
Check for cracking or damage.
HUB UNIT BEARING
Check for play or damage.
TRAILING ARM BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
LOWER ARM
Check for bending or damage.
SPINDLE NUT
22 x 1.5 mm
Replace.
NOTE: After tightening, use a drift punch to stake the spindle nut shoulder onto the spindle.
STABILIZER LINKAGE BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE
LOWER ARM BUSHING
Check for deterioration or damage.
GREASE SILICONE GREASE

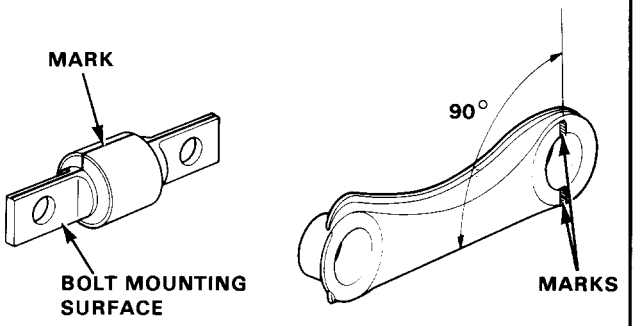
Upper Arm Bushing Replacement

1. Remove the upper arm bushing and inner bushing as shown.



2. Mark a scribe line on the upper arm inner bushing so that it is in line with the bolt mounting surface.

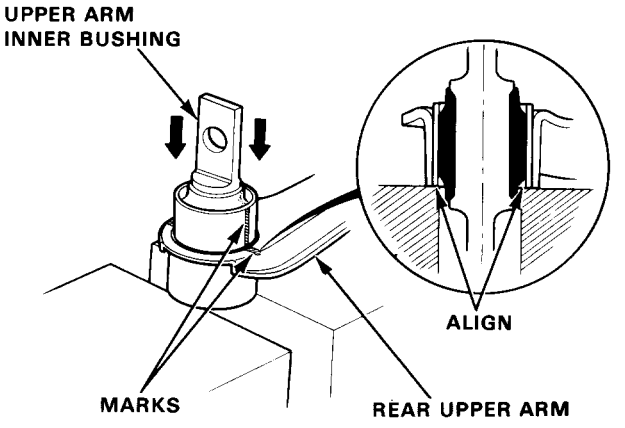
3. Mark on the upper arm at two points so that they are in line and make a right angle with the arm as shown in the drawing.



4. Drive in the upper arm inner bushing with the marks aligned.

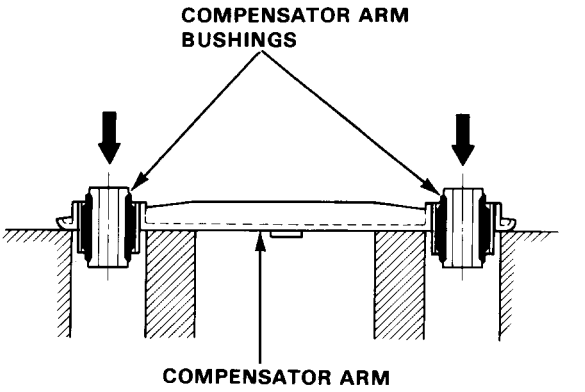
5. Drive the upper arm bushing into the upper arm.

   NOTE: Drive in the upper arm bushing and inner bushing until their leading edges are flush with the upper arm.



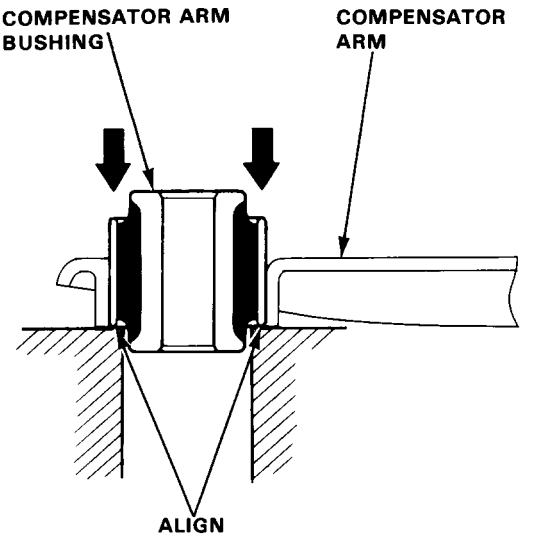
Compensator Arm Bushing Replacement

1. Drive the compensator arm bushing out of the compensator from the direction indicated.



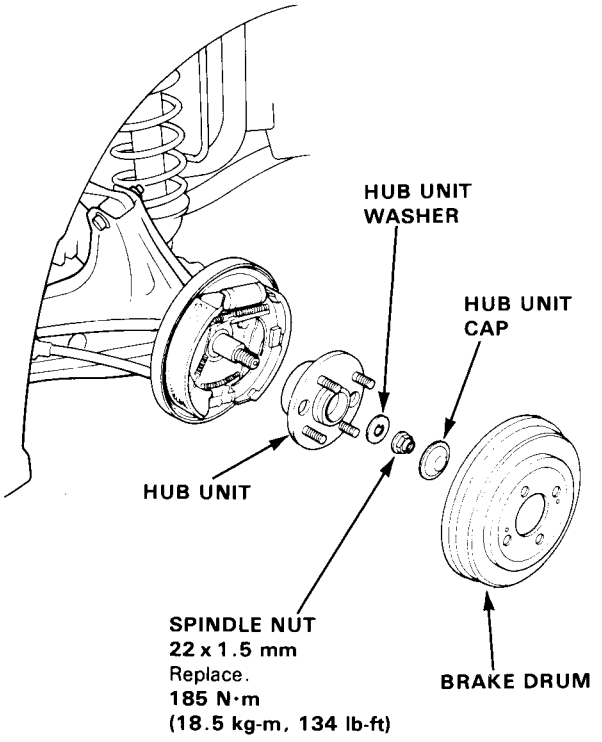
2. Drive in the compensator arm bushings from the direction indicated.

   NOTE: Drive in the compensator arm bushings so that their leading edges are flush with the compensator arm.



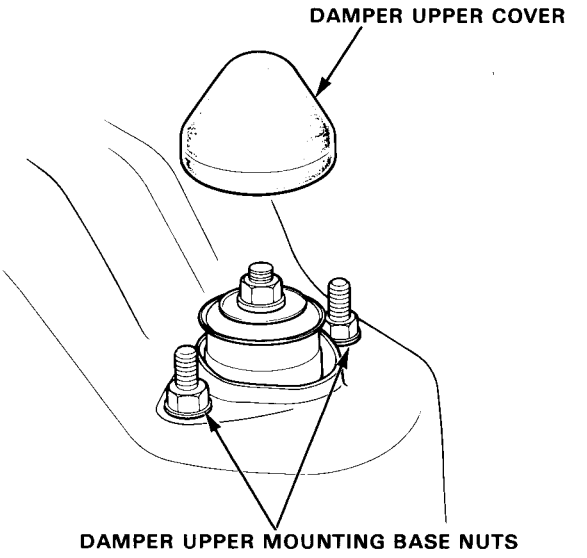
Hub Unit Bearing Replacement

1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel 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.

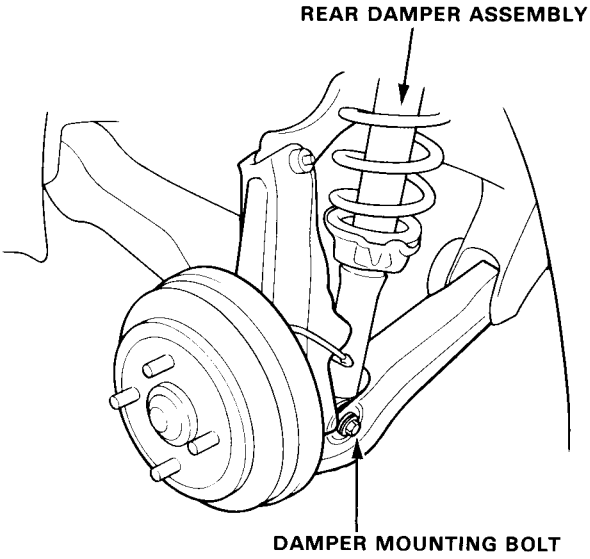


Damper Removal

1. Jack up the rear of car and support on safety stands in proper locations.
2. Remove the damper upper cover at the rear seat lining.
3. Remove the damper upper mounting base nuts.



4. Remove the damper mounting bolt.
5. Lower the lower arms and remove the damper assembly.

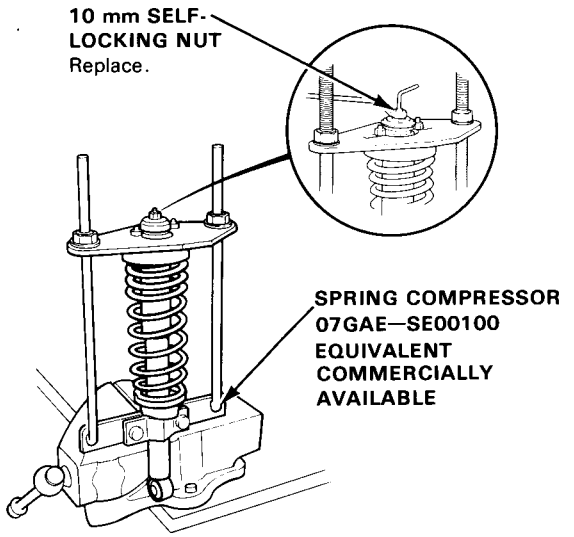


Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions.

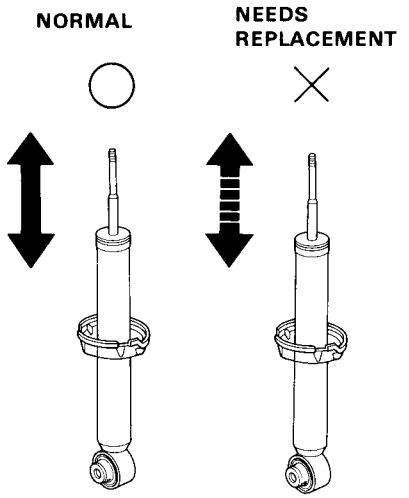
   CAUTION: Do not compress the spring more than necessary to remove the 10 mm self locking nut.

2. Remove the 10 mm self locking nut from the damper assembly.



3. Remove the spring compressor and disassemble the damper as shown on the next page.

4. Check for smooth operation through a full stroke, both compression and extension.



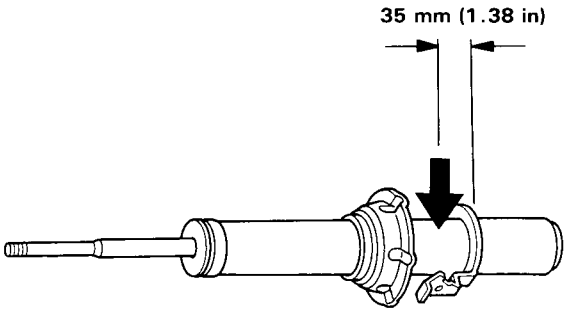
5. Also check for smooth operation in soft strokes of 5—10 cm (2—4 in). Replace the damper if resistance is uneven or jerky.

6. Check for oil leaks, abnormal noises or binding during these tests.

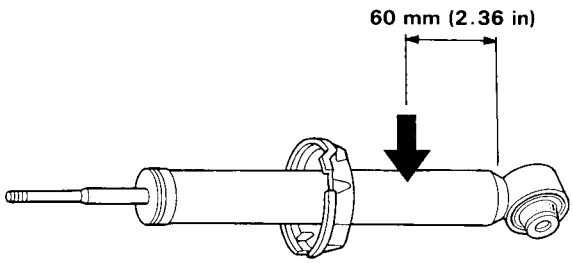
Damper Disposal

WARNING The rear dampers (and front dampers on the 2D H/B DI, IZ) contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal to prevent explosion and possible injury due to explosion.
Place the damper on a level surface with its rod extended and drill a holl of 2~3 mm (0.078—0.118 in) diameter in the body to release the gas.

Front Damper (2D H/B DI, IZ Only)

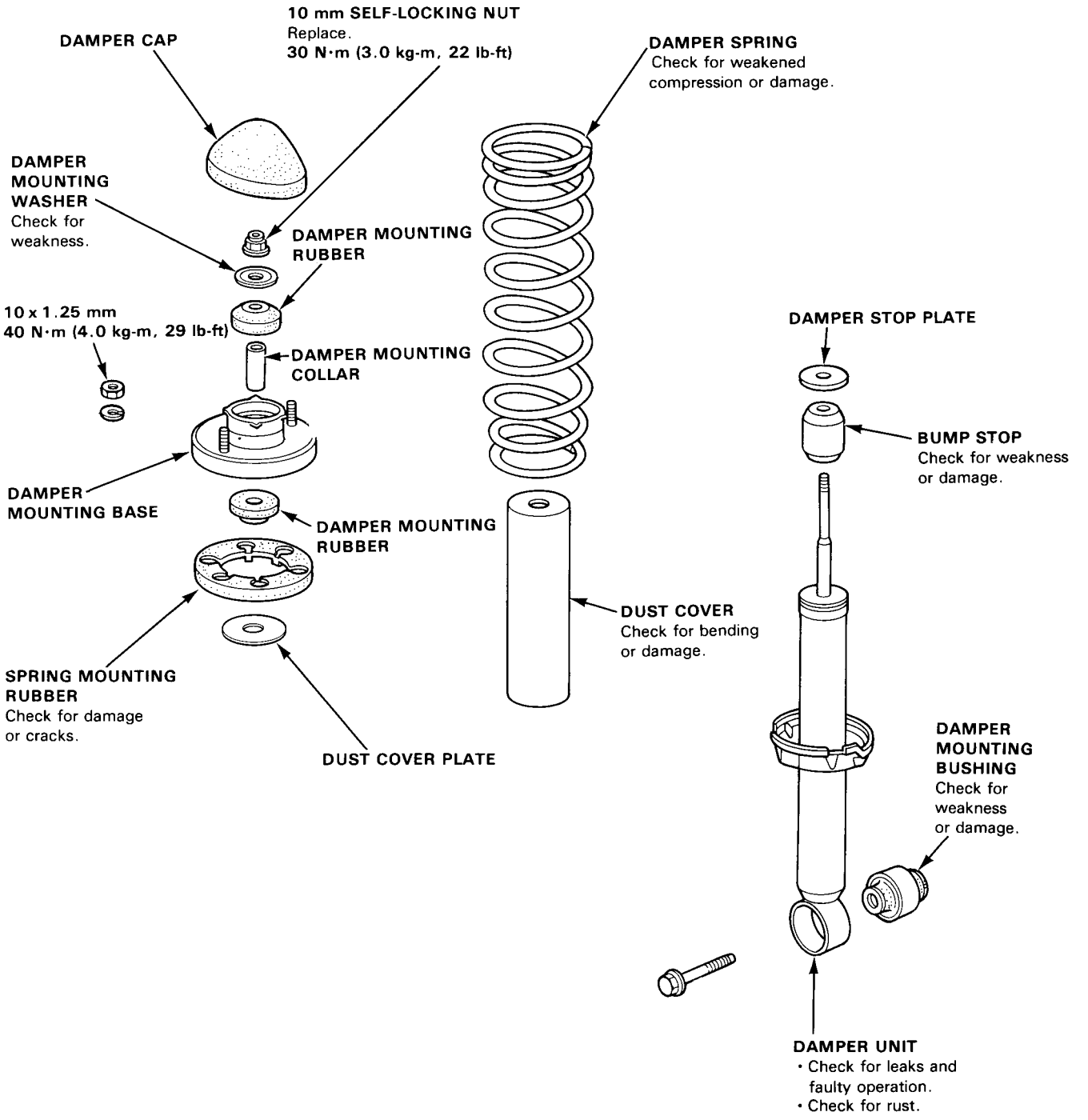


Rear Damper



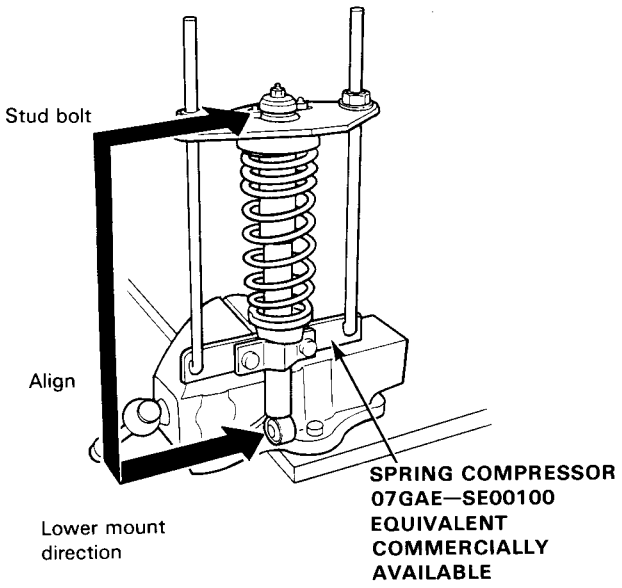
WARNING Always wear eye protection to avoid getting metal shavings in your eyes when the gas damper pressure is relieved.

Damper Disassembly/Inspection

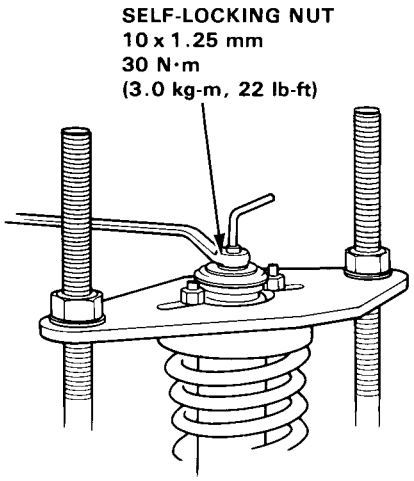


Damper Reassembly

1. Install the spring seat on the damper unit.
2. Install the damper unit, dust cover, damper spring, bump stop, bump stop plate, damper mounting collar, damper mounting rubber and spring mounting rubber in the spring compressor.
3. Install the damper mounting base on the damper unit so that the upper stud bolts are in line with the direction of the lower mount.

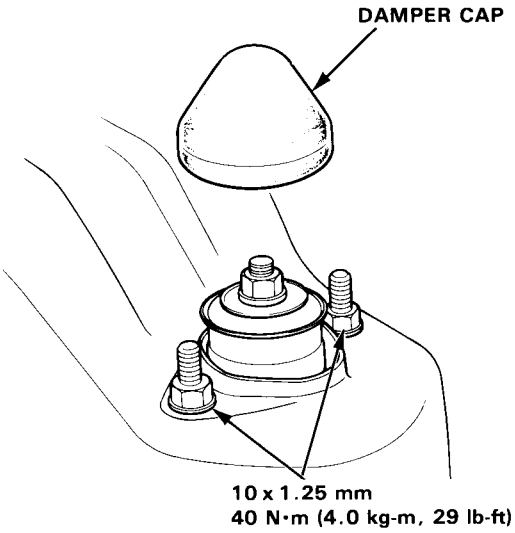


4. Compress the coil spring.
5. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self-locking nut.
6. Hold the damper shaft and tighten the 10 mm self-locking nut.



Damper Installation

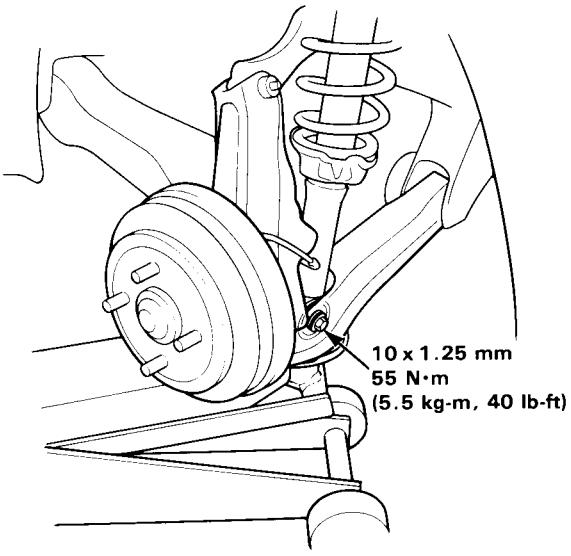
1. Lower the rear suspension and set the damper unit in its original position.
2. Loosely install the damper unit mounting bolt.
3. Install the damper upper base mounting nuts and tighten them.



4. Install the damper cap.
5. Raise the rear suspension with a floor jack until the weight of the car is on the damper.

   NOTE: The damper mounting bolts should be tightened with the damper under vehicle load.

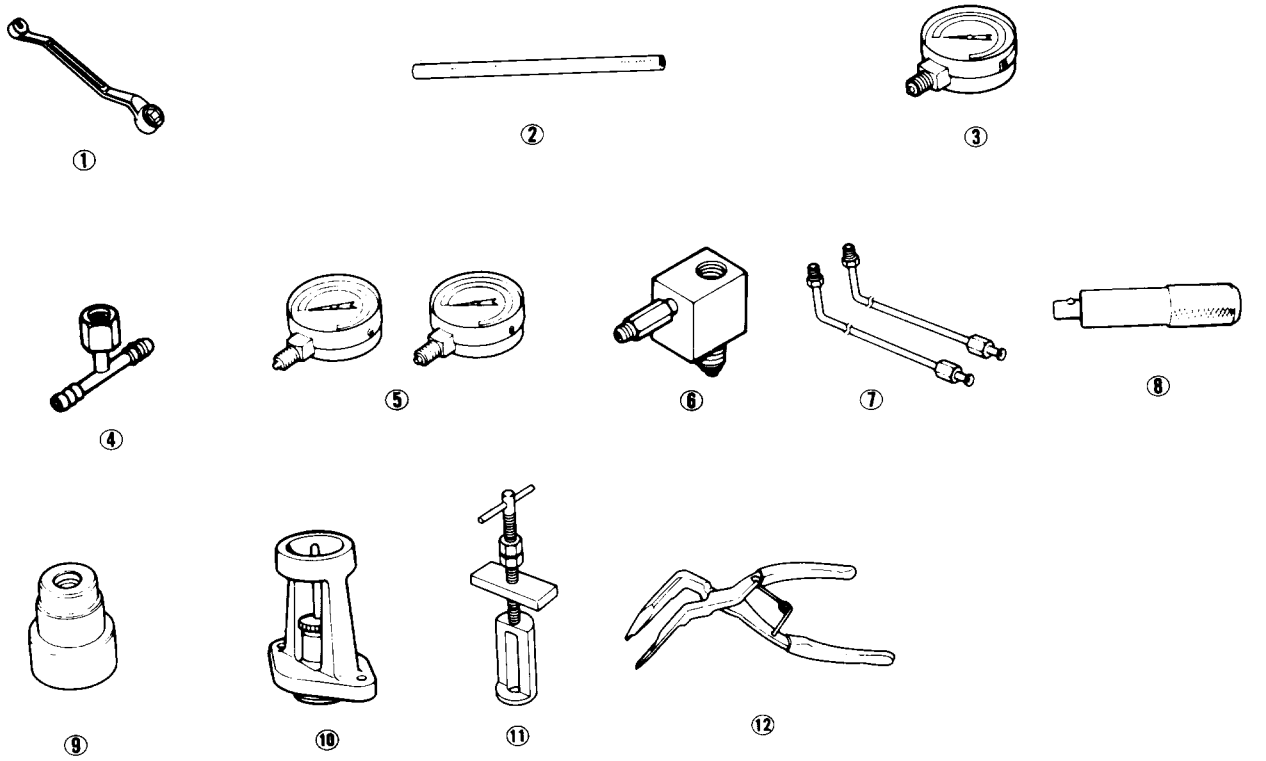
6. Tighten the damper mounting bolt.



Brakes

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07921—0010001	Flare Nut Wrench	1	
②	07510—6340300	Vacuum Joint Tube A	1	
③	07404—5790300	Vacuum Gauge	1	
④	07410—5790500	Tube Joint Adaptor	1	
⑤	07406—5790200	Pressure Gauges	2	
⑥	07410—5790100	Pressure Gauge Attachment C	2	
⑦	07510—6340100	Pressure Gauge Joint Pipe	2	
⑧	07749—0010000	Driver	1	
⑨	07947—6890300	Driver Attachment C	1	
⑩	07GAG—SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE—SG00100	Brake Spring Compressor	1	
⑫	07914—SA50001	Snap Ring Pliers	1	



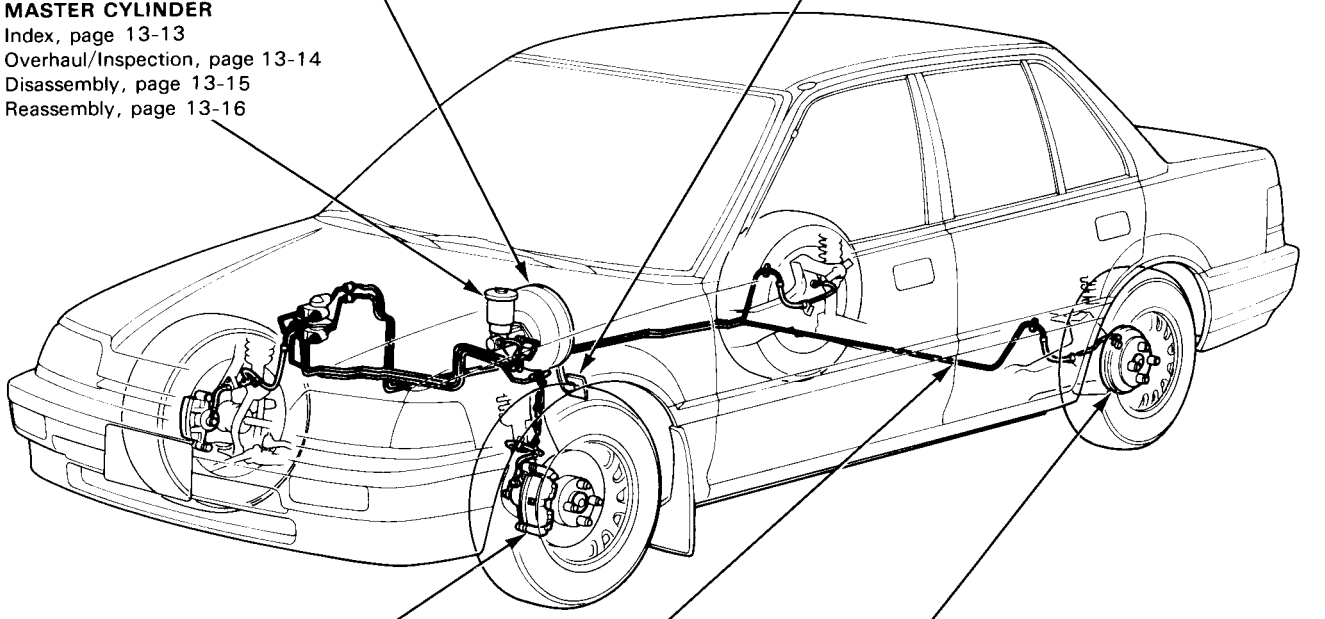
Brake

Illustrated Index

BRAKE BOOSTER
Index and Inspection, page 13-17
Testing, page 13-18
Disassembly, page 13-19
Rebuild Kit, page 13-21
Reassembly, page 13-22
Pushrod Clearance Adjustment, page 13-27
Pushrod Adjustment, page 13-26

BRAKE PEDAL
Pedal Height Adjustment, page 13-4
Brake Light Switch Adjustment, page 13-4

MASTER CYLINDER
Index, page 13-13
Overhaul/Inspection, page 13-14
Disassembly, page 13-15
Reassembly, page 13-16



BRAKE HOSES/PIPES
Inspection, page 13-43
Brake Hoses Replacement page, 13-44

REAR BRAKE
Index/Inspection, page 13-29
Brake Shoes Disassembly, page 13-31
Brake Shoes Reassembly, page 13-32
Wheel Cylinder Disassembly/Inspection, page 13-33

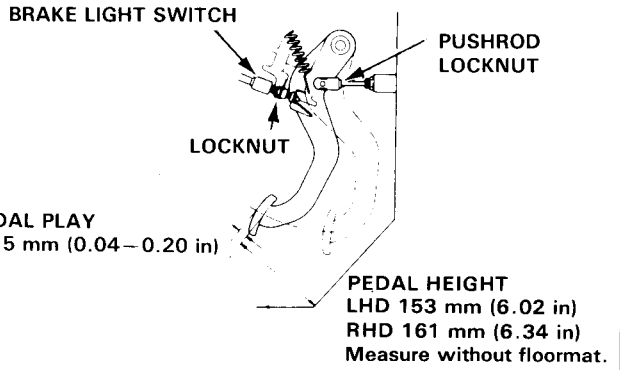
FRONT BRAKE
Inspection, page 13-5
Brake Pad Inspection/Replacement, page 13-8
Brake Caliper Disassembly, page 13-9
Brake Caliper Reassembly, page 13-10
Brake Disc Inspection, page 13-11

PARKING BRAKE
Adjustment, page 13-4
Disassembly and Reassembly, page 13-45

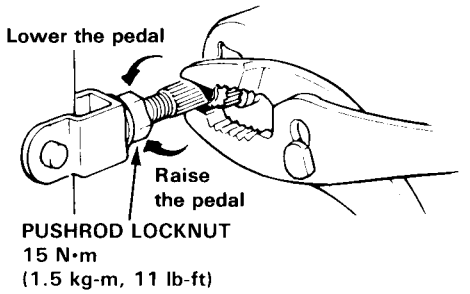
Pedal Height

Adjustment

1. Loosen brake light switch locknut and back off brake light switch until it is no longer touching brake pedal.

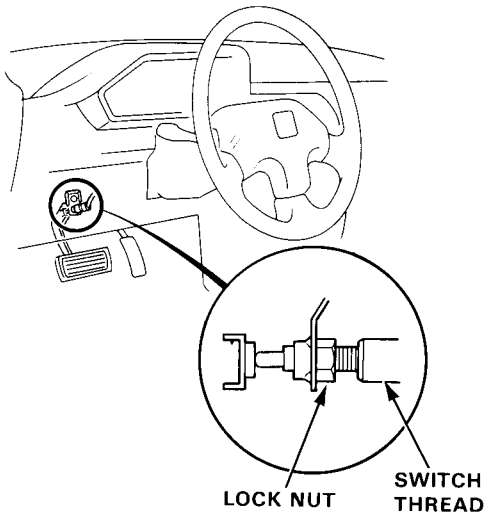


2. Loosen pushrod locknut and screw pushrod in or out with plier until the pedal height from the floor is 153 mm (6.02 in). After adjustment, tighten the locknut firmly.



3. Screw in the brake light switch until its plunger is fully depressed (threaded end touching pad on pedal arm). Then back off switch 1/2 turn and tighten locknut firmly.

CAUTION: Check that brake lights go off when pedal is released.



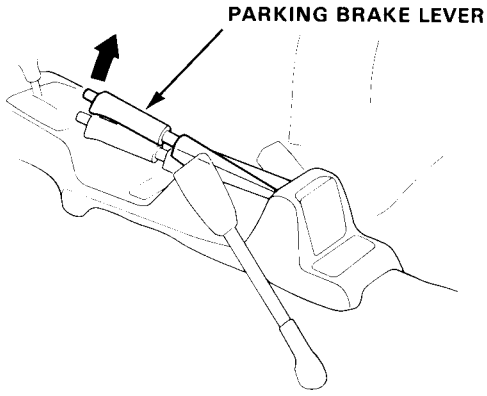
Parking Brake

Adjustment

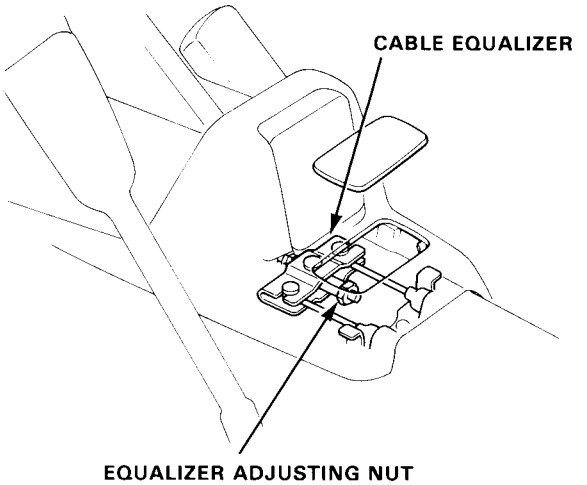
NOTE:
- Be sure the rear brakes are properly adjusted before adjusting the parking brake.
- Incorrectly adjusted rear brakes affect the parking brake adjustment.
- If rear brake adjustment is required repair the rear adjuster first.
- If doing this adjustment after brake drum installation, start the engine and depress the brake pedal several times to set self-adjusting brakes before adjusting parking brake cable.

WARNING Block the front wheels before jacking up the rear of the car.

1. Raise the rear wheels off the ground.
2. Pull the parking brake lever up one notch.



3. Tighten the equalizer adjusting nut until rear wheels drag slightly when turned.
4. Release brake lever and check that rear wheels do not drag when turned. Readjust if necessary.
5. With the equalizer properly adjusted, the rear brakes should be fully applied when the parking brake lever is pulled up 6 to 10 clicks.



Front Brake

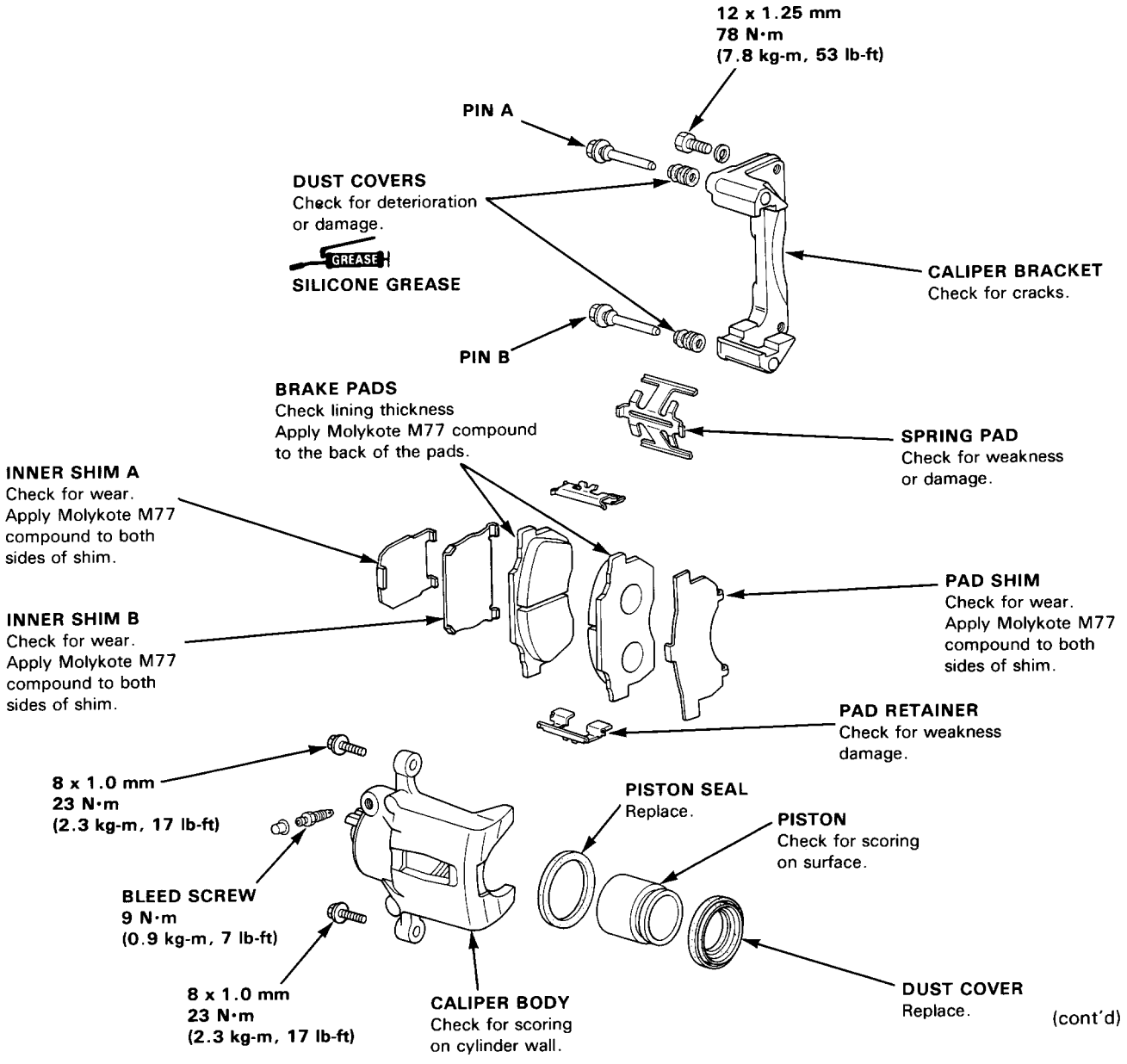
Inspection

WARNING **Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.**

CAUTION:
- **Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **To prevent spills, cover the hose joints with rags or shop towels.**
- **Clean all parts in brake fluid and air dry; blow out all passages with compressed air.**
- **Before reassembling, check that all parts are free of dust and other foreign particles.**
- **Replace parts with new ones whenever specified to do so.**
- **Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid as they may not be compatible.**
- **Do not reuse the drained fluid.**

NOTE:
- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.

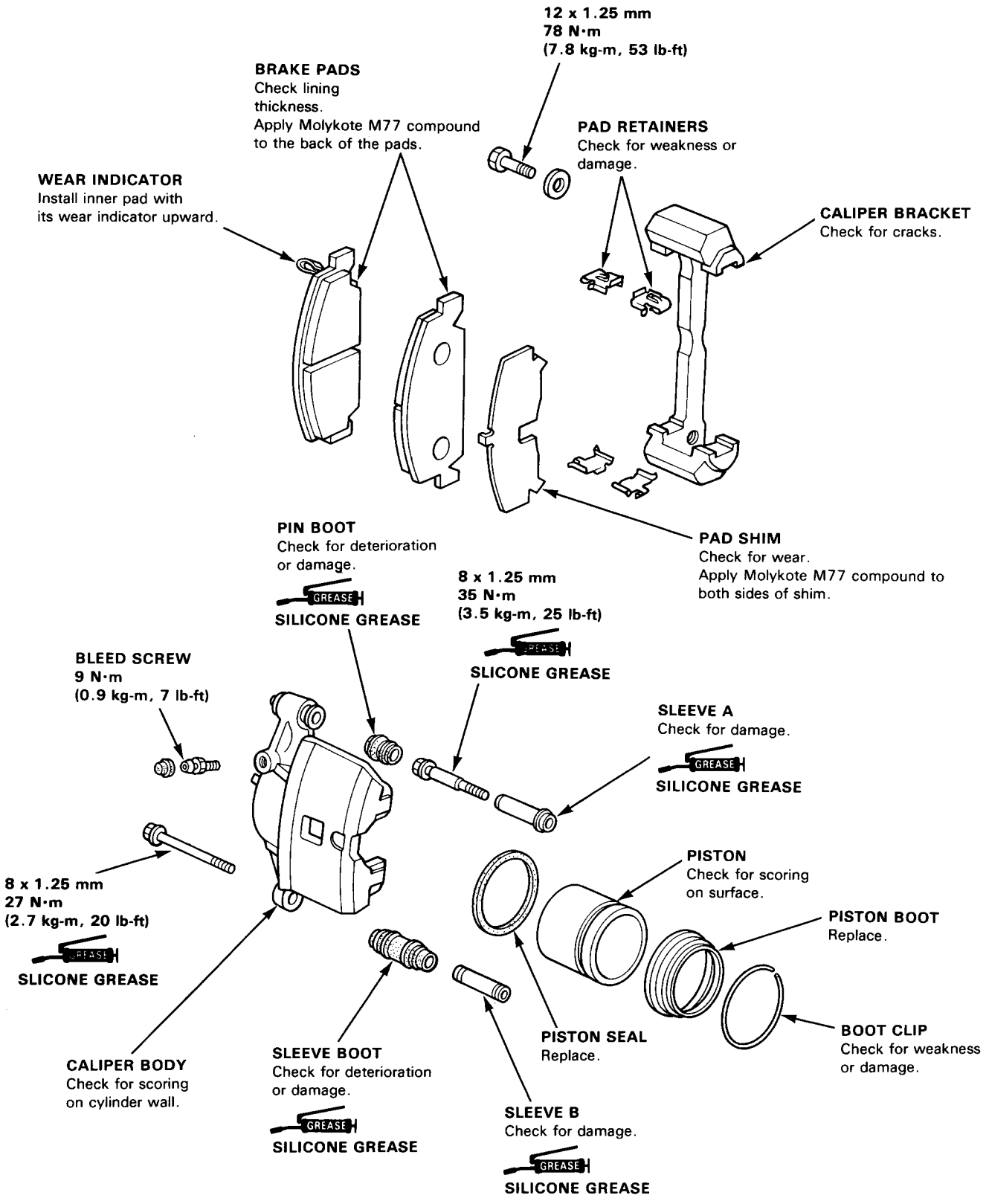
A type



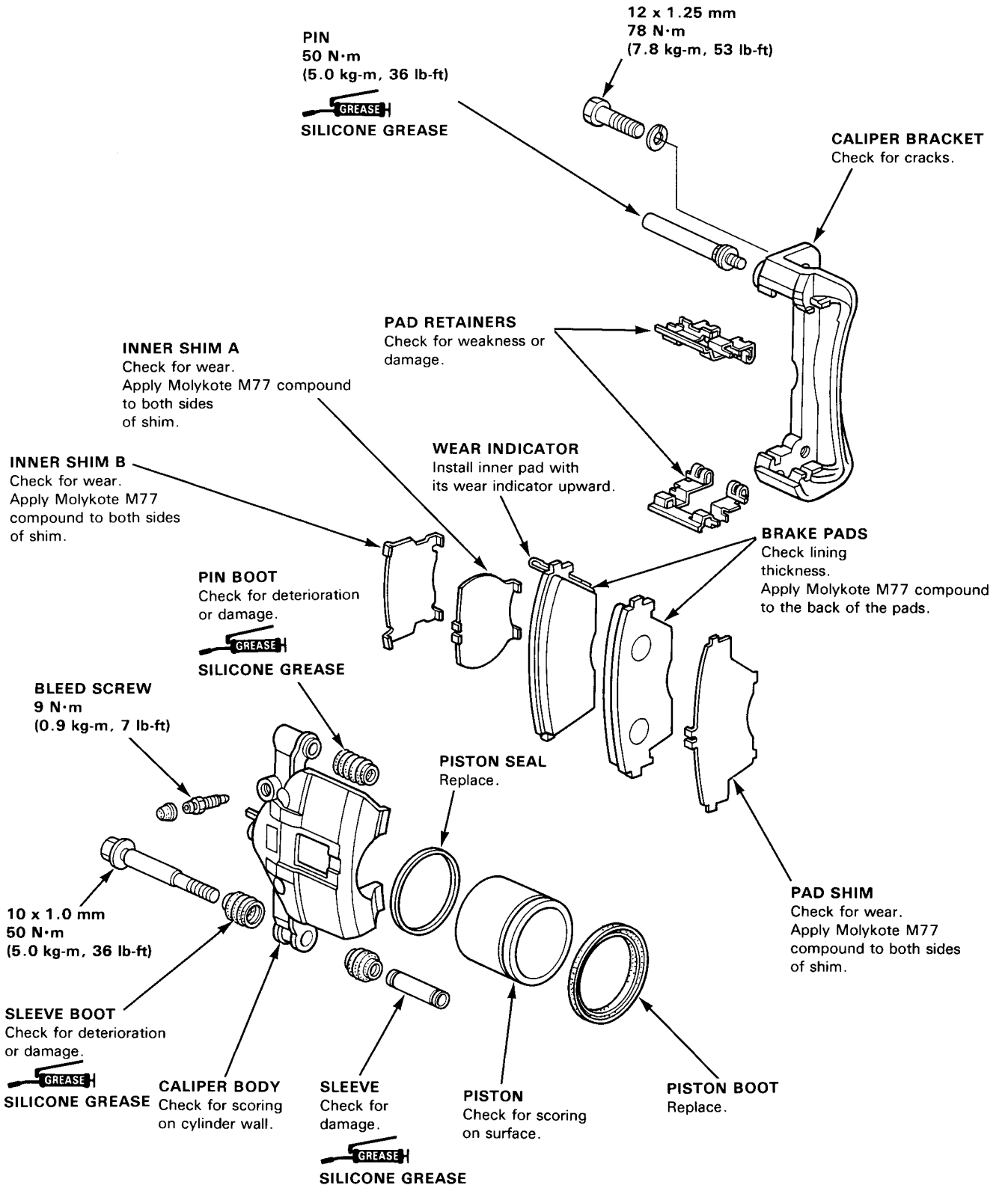
(cont'd)

Inspection (cont'd)

B type



C type


PIN
50 N·m
(5.0 kg-m, 36 lb-ft)
GREASE
SILICONE GREASE
12 x 1.25 mm
78 N·m
(7.8 kg-m, 53 lb-ft)
CALIPER BRACKET
Check for cracks.
PAD RETAINERS
Check for weakness or damage.
INNER SHIM A
Check for wear.
Apply Molykote M77 compound to both sides of shim.
WEAR INDICATOR
Install inner pad with its wear indicator upward.
INNER SHIM B
Check for wear.
Apply Molykote M77 compound to both sides of shim.
BRAKE PADS
Check lining thickness.
Apply Molykote M77 compound to the back of the pads.
PIN BOOT
Check for deterioration or damage.
GREASE
SILICONE GREASE
BLEED SCREW
9 N·m
(0.9 kg-m, 7 lb-ft)
PISTON SEAL
Replace.
PAD SHIM
Check for wear.
Apply Molykote M77 compound to both sides of shim.
10 x 1.0 mm
50 N·m
(5.0 kg-m, 36 lb-ft)
SLEEVE BOOT
Check for deterioration or damage.
GREASE
SILICONE GREASE
CALIPER BODY
Check for scoring on cylinder wall.
SLEEVE
Check for damage.
GREASE
SILICONE GREASE
PISTON
Check for scoring on surface.
PISTON BOOT
Replace.

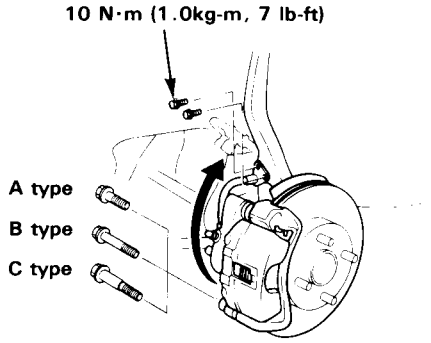
Brake Pad

Inspection/Replacement

WARNING Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.

NOTE: On the A type brake caliper, hold the pin B with a open end wrench when removing the caliper bolts.

1. Remove the front wheels and support the front of car on safety stands.
2. Remove the brake hose clamp bolts from the knuckle.
3. Remove caliper bolt and pivot caliper up out of the way.

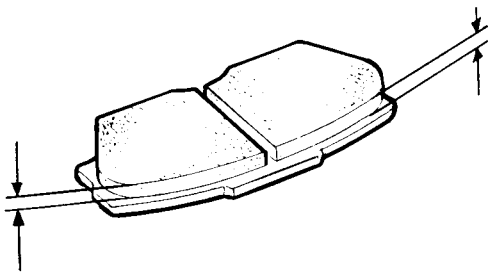


A type	8 x 1.0 mm 23 N·m (2.3 kg-m, 17 lb-ft)
B type	8 x 1.25mm 27 N·m (2.7 kg-m, 20 lb-ft)
C type	10 x 1.0 mm 50 N·m (5.0 kg-m, 36 lb-ft)

4. Remove the pad shims, pad retainers and pads.
5. Using a vernier caliper, measure the thikness of each brake pad lining.

Brake Pad Thickness:

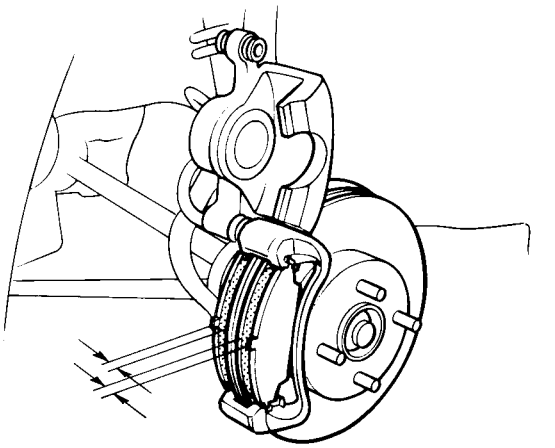
	Standard	Service Limit
A type	9.5 mm (0.37 in)	1.6 mm (0.06 in)
B type (KY, KQ Types)	10.0 mm (0.39 in)	3.0 mm (0.12 in)
B type (KX-GL Type)	10.0 mm (0.39 in)	1.6 mm (0.06 in)
B type (Others Types)	9.5 mm (0.37 in)	3.0 mm (0.12 in)
C type	9.0 mm (0.35 in)	3.0 mm (0.12 in)



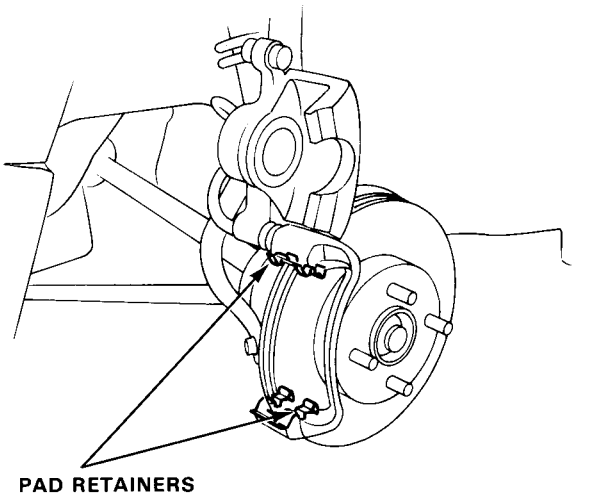
NOTE: Measurement does not include pad backing thickness.

6. If lining thickness is less than service limit, replace both pads as a set.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.



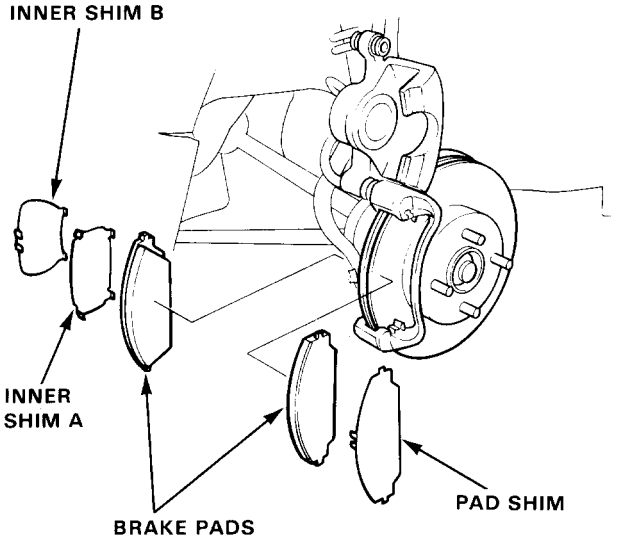
7. Clean the caliper thoroughly; remove any rust, and check for grooves or cracks.
8. Install the pad retainers.



9. Apply Molykote M77 compound to both sides of the pad shims and back of the pads.

10. Install the brake pads and pad shims.

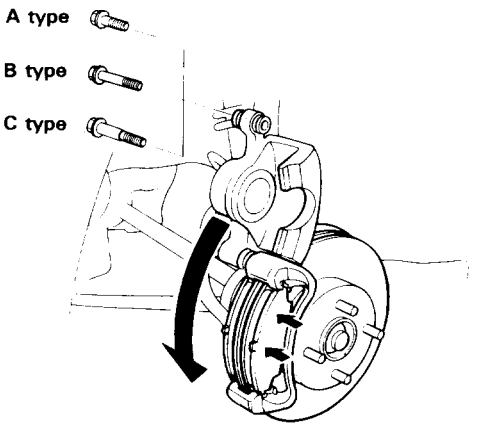
    NOTE: Install the pad with the wear indicator on the inside.



11. Push in the piston so that the caliper will fit over the pads. Keep the boot in position to prevent damaging the boot when pivoting the caliper down.

12. Pivot the caliper down into position, then install the bolt and tighten it.

    NOTE: Caliper bolt tightening torque varies from type to type.



A type	8 x 1.0 mm 23 N·m (2.3 kg-m, 17 lb-ft)
B type	8 x 1.25mm 27 N·m (2.7 kg-m, 20 lb-ft)
C type	10 x 1.0 mm 50 N·m (5.0 kg-m, 36 lb-ft)

13. Install the brake hose clamp bolts to the Knuckle.
14. Depress the brake pedal several times to make sure the brakes work, then road-test.

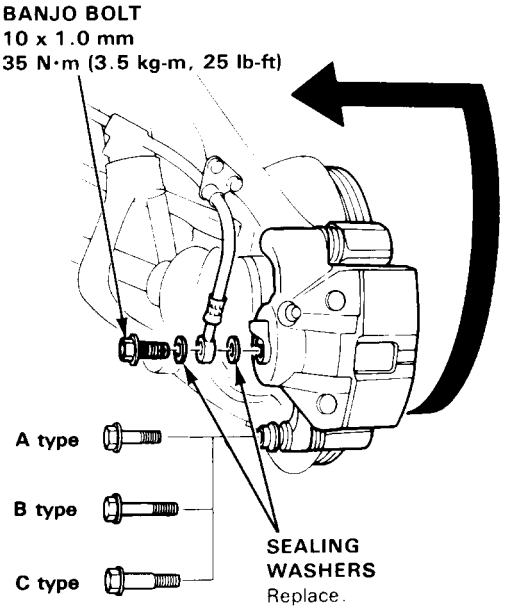
Disassembly

CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish; Wash spilled brake fluid off immediately with clean water.**

1. Remove the banjo bolt and disconnect the brake hose from the caliper.

2. Remove the caliper bolt, then remove the caliper.

    NOTE: Avoid damaging the splash guard.



A type	8 x 1.0 mm 23 N·m (2.3 kg-m, 17 lb-ft)
B type	8 x 1.25mm 27 N·m (2.7 kg-m, 20 lb-ft)
C type	10 x 1.0 mm 50 N·m (5.0 kg-m, 36 lb-ft)

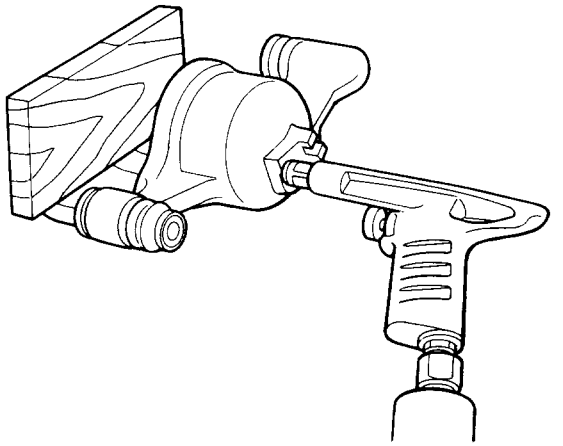
(cont'd)

Brake Caliper

Disassembly (cont'd)

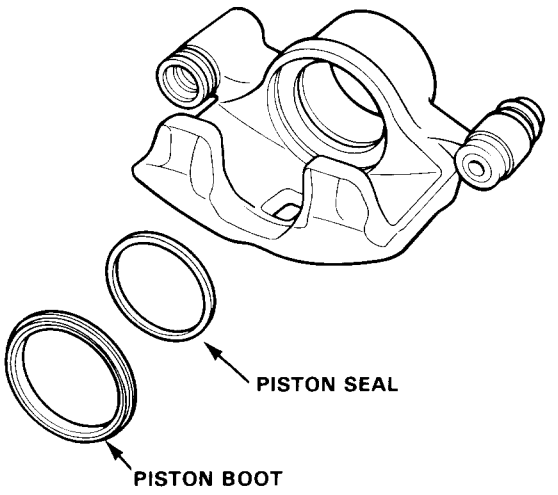
3. Place a wooden block or shop rag in the caliper opposite the piston, then carefully remove the piston from the caliper by applying air pressure through the brake line hole.

WARNING
- **Do not place your fingers in front of the piston.**
- **Do not use high air pressure; use an OSHA approved 30 PSI nozzle.**



4. Remove the piston boot and piston seal.

CAUTION: Take care not to damage the cylinder.



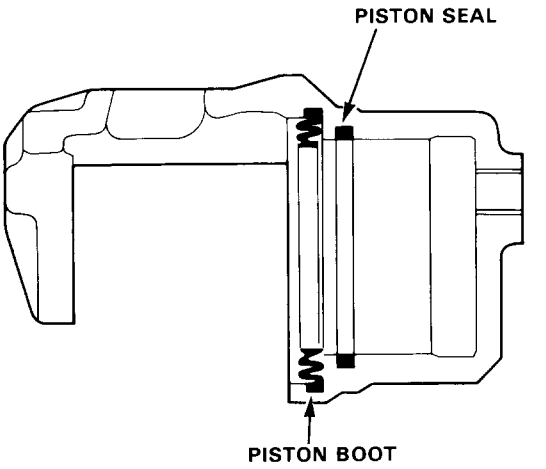
Reassembly

CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish.**
- **Wash spilled brake fluid off immediately with clean water.**

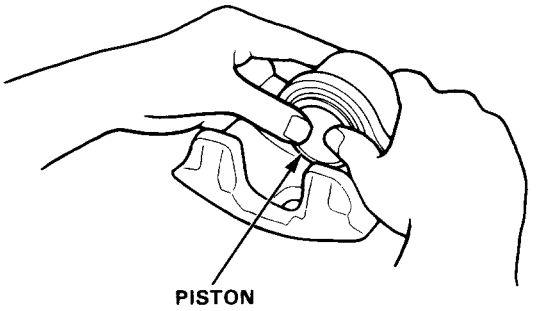
1. Clean the piston and caliper bore with brake fluid and inspect for wear or damage.

2. Apply brake cylinder grease to a new piston seal, then install the piston seal in the cylinder groove.

3. Install the piston boot.



4. Lubricate the caliper cylinder and piston with brake fluid, then install the piston in the cylinder with the dished end facing in.



5. Reinstall the caliper in the reverse order of removal.

6. Fill the brake reservoir up and bleed the brake system (page, 13-12).

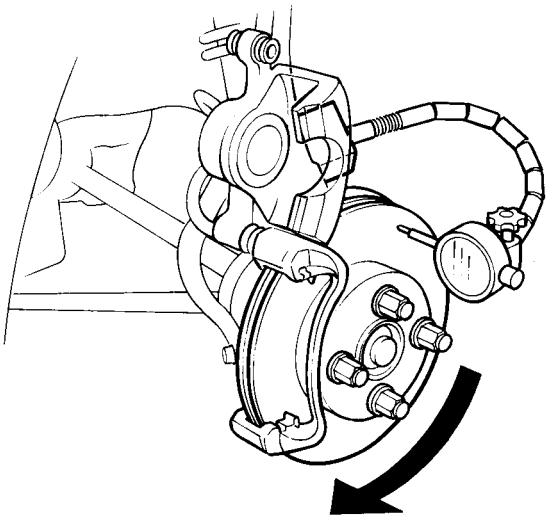
Brake Disc

Run-Out Inspection

1. Remove the front wheels, and support the front of the car on safety stands.
2. Remove caliper pin bolt, then pivot the caliper up out of the way on the caliper pin bolt, and remove the pads and pad retainers.
3. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.
4. Use the lug nuts to hold the disc securely against the hub, then mount a dial indicator as shown.

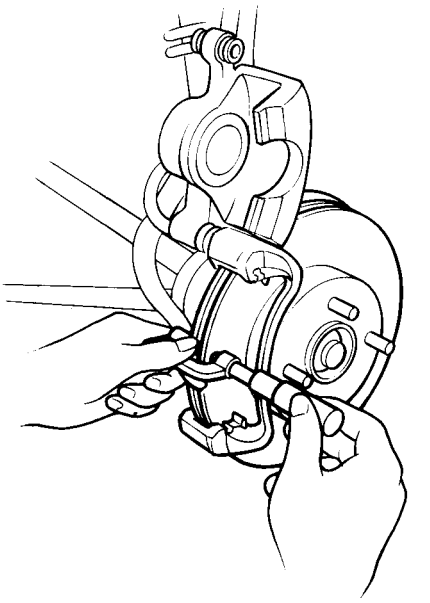
   Brake Disc Runout:
   Service Limit: 0.15 mm (0.006 in)

5. If the disc is beyond the service limit, refinish the rotor with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front brake disc lathe" offered by Snap-on Tools Co. are approved for this operation.



Thickness and Parallelism Inspection

1. Remove the front wheels, and support the front of car on safety stands.
2. Move the caliper and pads out of the way as described in the preceding column.
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in.) in from the outer edge of the disc.



Brake Disc Thickness:

	Standard	Max: Refinishing Limit
1.2 ℓ and 1.3 ℓ - Carbureted Engine	12 mm (0.47 in)	10 mm (0.39 in)
1.4 ℓ and 1.5 ℓ - Carbureted Engine	17 mm (0.67 in)	15 mm (0.59 in)
PGM-FI	19 mm (0.75 in)	17 mm (0.67 in)

Brake Disc Parallelism:
The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in.)

4. If the disc is beyond the limits for thickness or parallelism, refinish the rotor with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front brake disc lathe" offered by Snap-on Tools Co. are approved for this operation.

   NOTE: A new disc should be ground if its run-out is greater than 0.10 mm (0.004 in.).

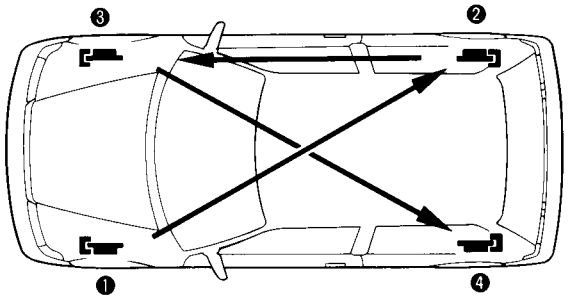
Bleeding

CAUTION

- **Make sure all parts are clean before reassembly.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish; Wash spilled brake fluid off immediately with clean water.**

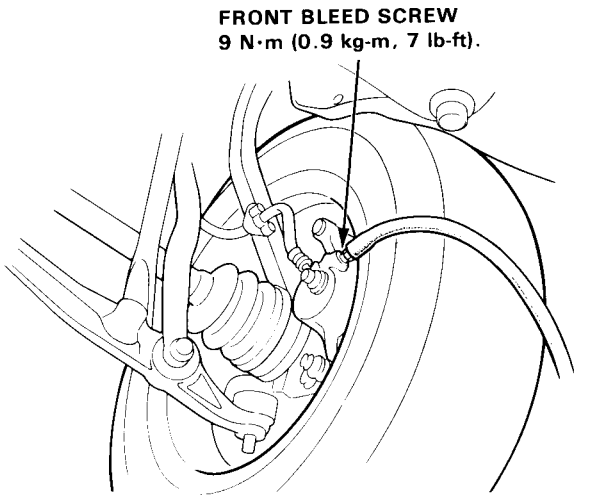
NOTE: The reservoir on the master cylinder must be full at the start of bleeding procedure, and checked after bleeding each wheel cylinder. Add fluid as required. Use only DOT 3 brake fluid.

Bleeding Sequence



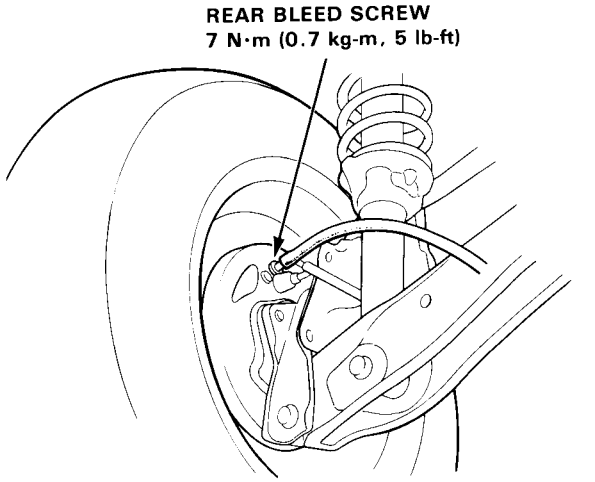
1. Have someone slowly pump the brake pedal several times, then apply steady pressure.
2. Loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
3. Repeat the procedure for each wheel in the sequence shown above, until air bubbles no longer appear in the fluid.
4. Check brake performance by road testing.

FRONT

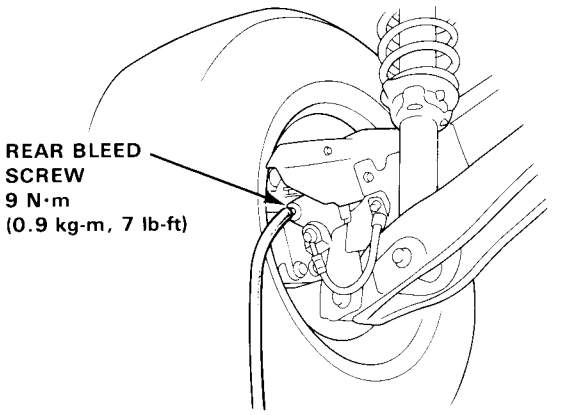


REAR

Drum Brake:

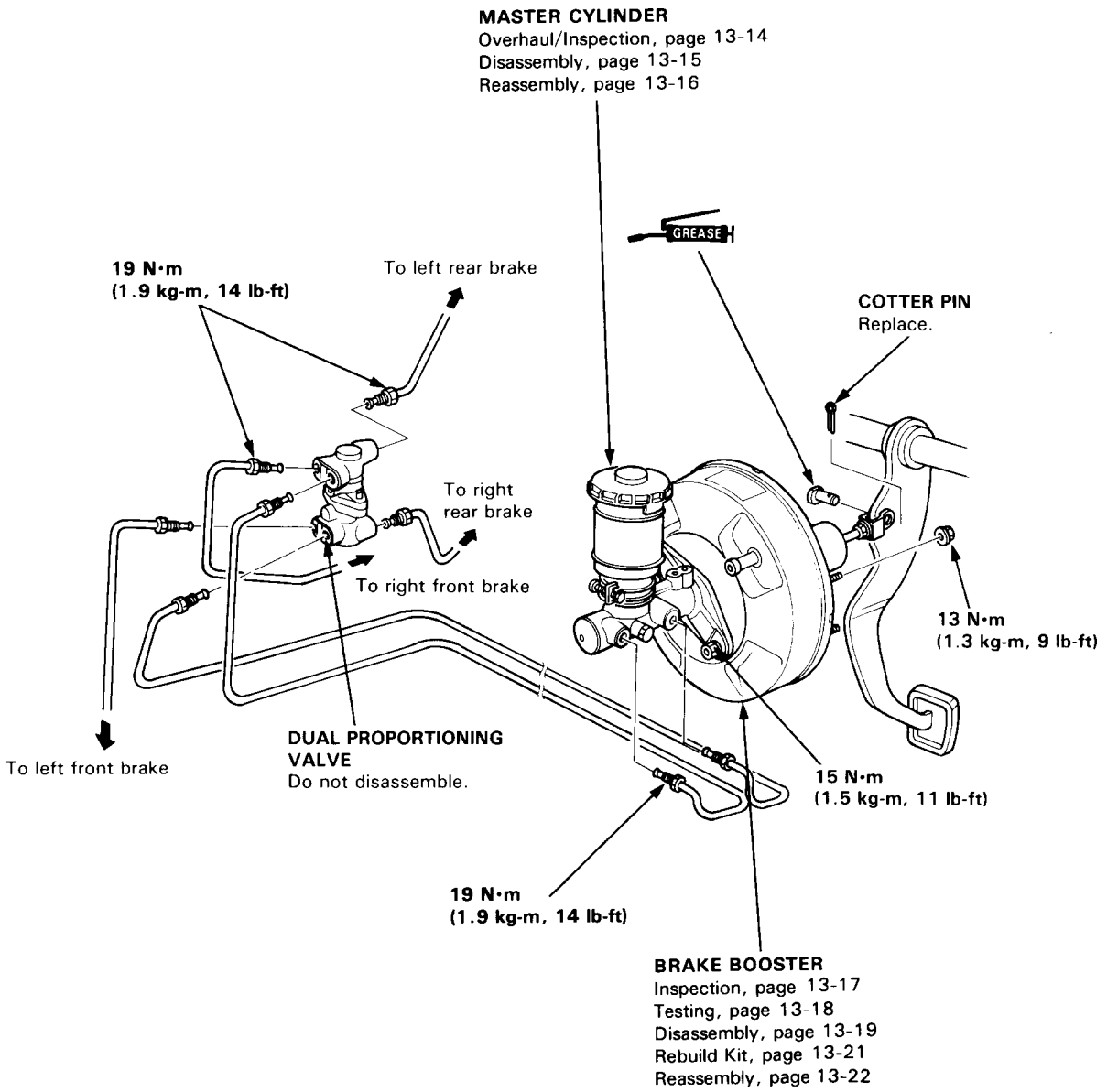


Disc Brake:



Master Cylinder Booster

Index



Master Cylinder

Overhaul/Inspection

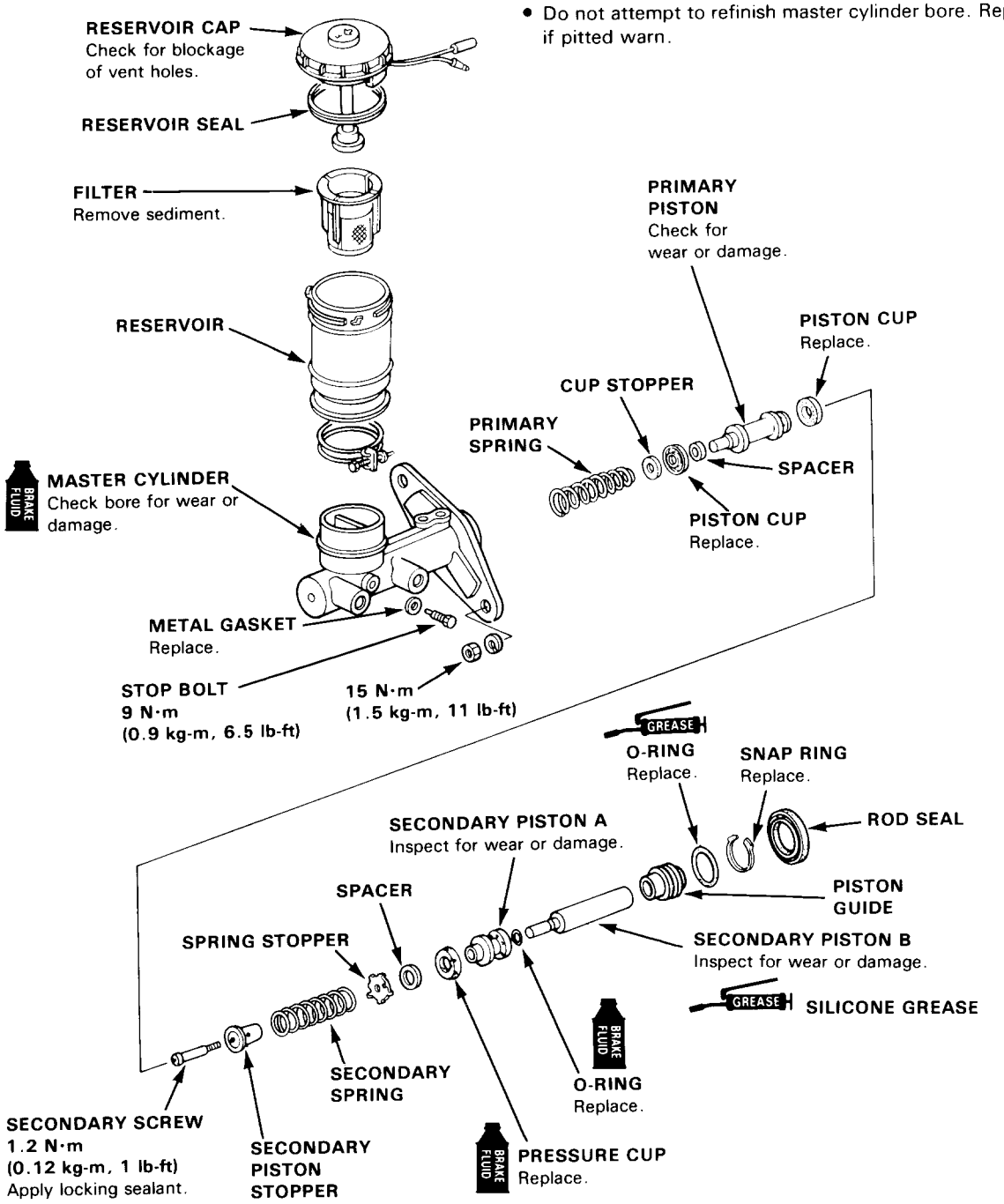
CAUTION:

- **Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at once and rinse well with clean water.**
- BRAKE FLUID **This symbol represents brake fluid. Use only DOT 3 brake fluid.**
- GREASE **Use only HONDA cylinder grease (P/N 08733–B020E) or equivalent.**

- Carefully inspect the bore of the master cylinder for pits, scratches or scoring.
- Replace the master cylinder if the bore is damaged or worn. Do not hone or attempt to refinish the bore.

NOTE:

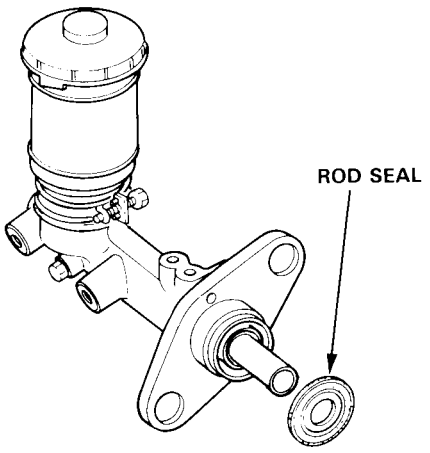
- Wash all removed parts in brake fluid and blow dry with compressed air. Blow open all passages and fluid ports.
- Replace all rubber parts with new ones whenever the cylinder is disassembled.
- To prevent damage, liberally apply clean brake fluid to the piston cups before installation. Use special tool to install the cups.
- Do not attempt to refinish master cylinder bore. Replace if pitted warn.



Disassembly

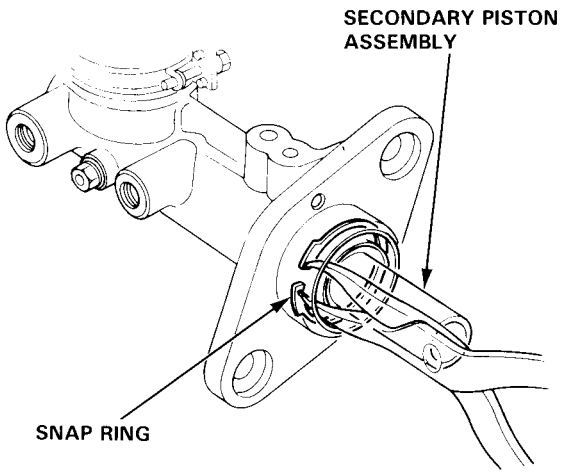
CAUTION:
- **Avoid spilling fluid on painted, plastic or rubber parts as it may damage the finish.**
- **Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.**
- **Use only new clean brake fluid.**
- **Clean all parts thoroughly with brake fluid. Blow out all passages with compressed air.**
- **Do not allow foreign matter to enter the system.**
- **Be careful not to bend or damage the brake pipe when removing the master cylinder.**

1. Remove the rod seal.

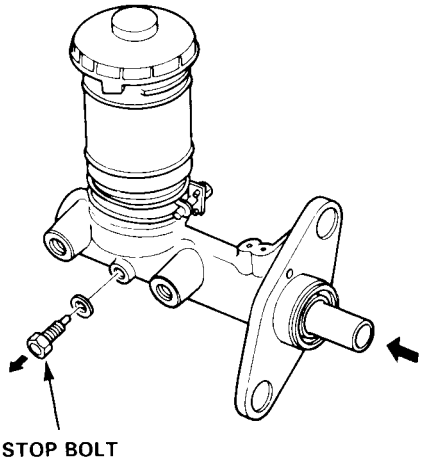


2. Push the secondary piston assembly, then remove the snap ring.

CAUTION: Avoid damaging the master cylinder wall.



3. Remove the stop bolt while pushing in the secondary piston assembly.

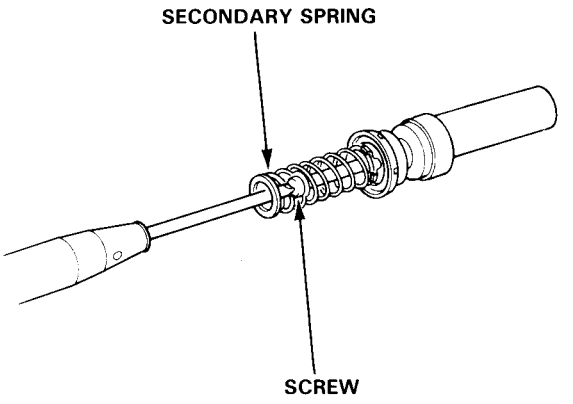


4. Remove the piston guide, secondary piston assembly and primary piston assembly.

NOTE: If the primary piston assembly is difficult to remove,apply compressed air from the primary piston side outlet.

CAUTION:
- **Do not use high pressure air or bring the nozzle too close to the inlet.**
- **Place a shop rag over the master cylinder to prevent the primary piston from becoming a projectile.**

5. Remove the screw from the secondary piston assembly, then remove the secondary spring.



6. Clean all parts with brake fluid.

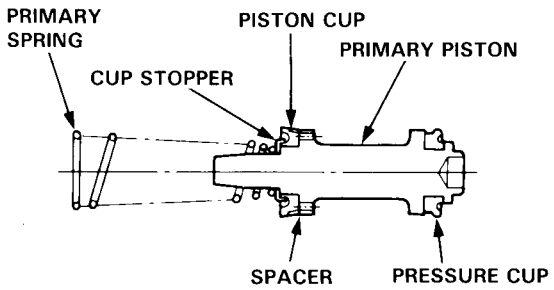
Master Cylinder

Reassembly

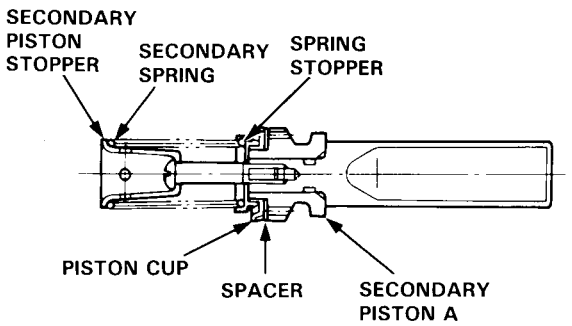
CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish. Wash spilled brake fluid off immediately with clean water.**

1. Lubricate new piston assemblies with brake fluid, then fit them together.

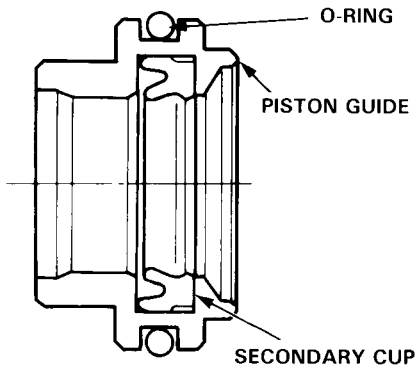
PRIMARY PISTON ASSEMBLY



SECONDARY PISTON ASSEMBLY



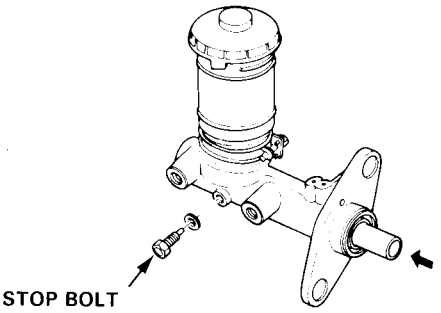
PISTON GUIDE ASSEMBLY



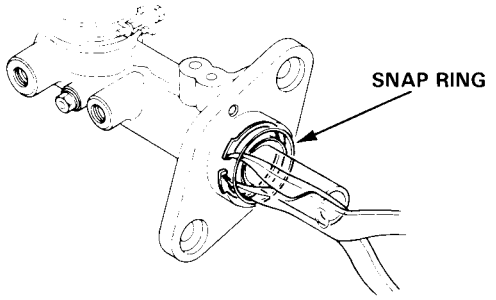
2. Install the piston assemblies in the master cylinder.

   NOTE: To ease assembly, rotate the pistons while inserting.

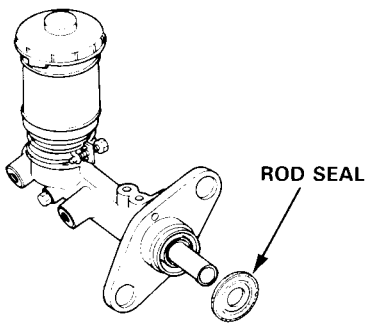
3. Install the stop bolt and new sealing washer while pushing in the secondary piston assembly, then tighten the stop bolt.



4. Install the snap ring while pushing in the secondary piston assembly.



5. Install a new rod seal.



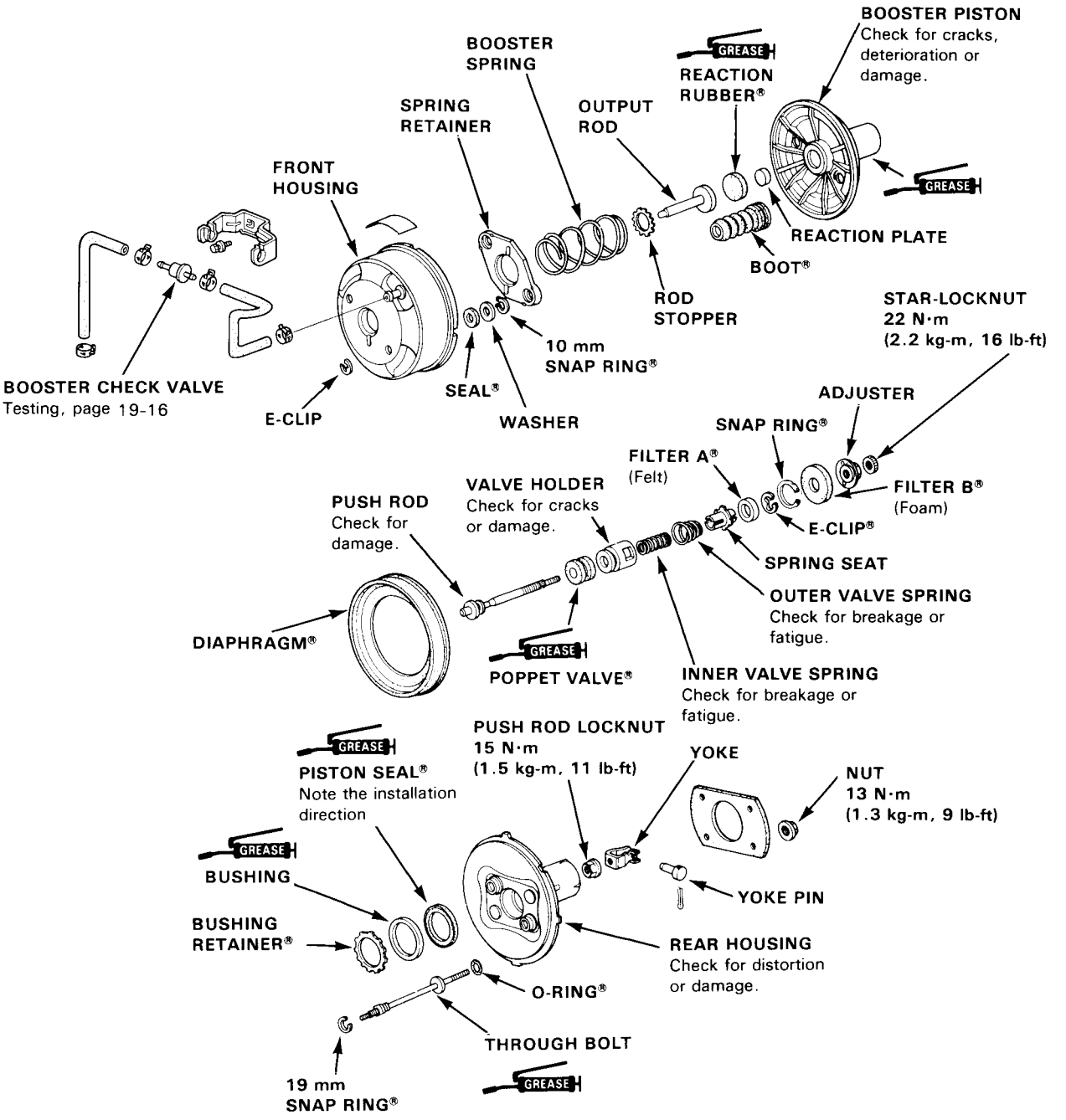
CAUTION: When connecting the brake pipes, make sure that there in no interference between the brake pipes and other parts

Brake Booster

Index and Inspection

Booster testing is on next page.

NOTE:
- Parts marked® are available with rebuild kit and must be replaced whenever disassembled.
- GREASE on this page refers to silicone grease.
- Scribe an aligning mark across the front and rear housings so you can reassemble in their original positions (page 19-16).



Brake Booster

Test

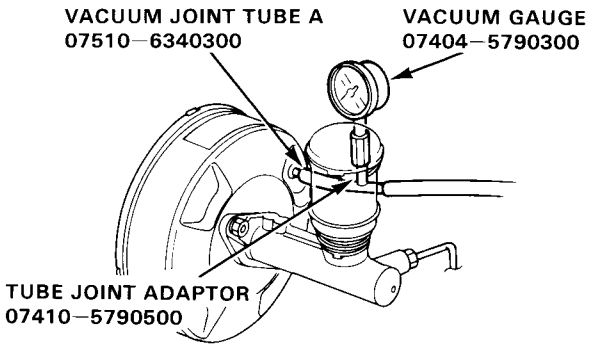
Leak Test

1. Install the Brake Power Kit (07504—6340100) as shown.

2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 300—500 mmHg (11.8—19.7 inHg), then stop the engine.

3. Read the vacuum gauge.

   If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.
   - Check valve
   - Vacuum hose
   - Seals
   - Diaphragm
   - Master cylinder O-ring and cup



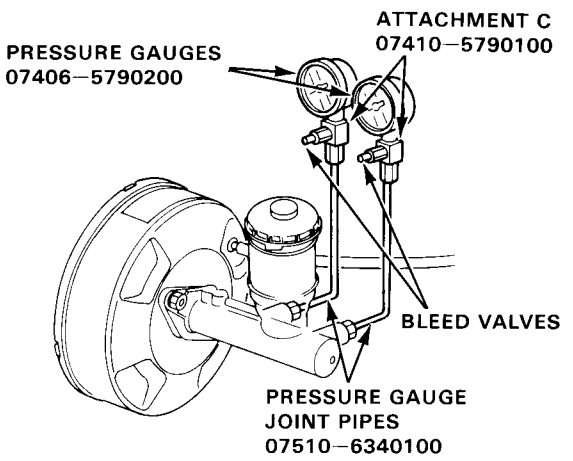
Function Test

1. Install the vacuum gauge as same the leak test.

2. Connect the oil pressure gauges to the master cylinder using the attachments as shown.

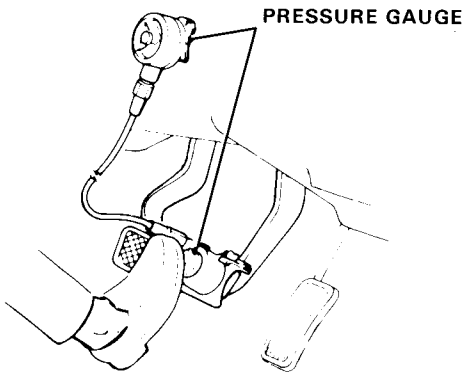
3. Bleed air through the valves.

   CAUTION: Avoid spilling brake fluid on painted, plastic or rubber partsas it may damage the finish.



4. Start the engine.

5. Depress the brake pedal with a 200 N (20 kg, 44 lbs) of pressure. The following pressures should be observed at the pressure gauges in each vacuum.

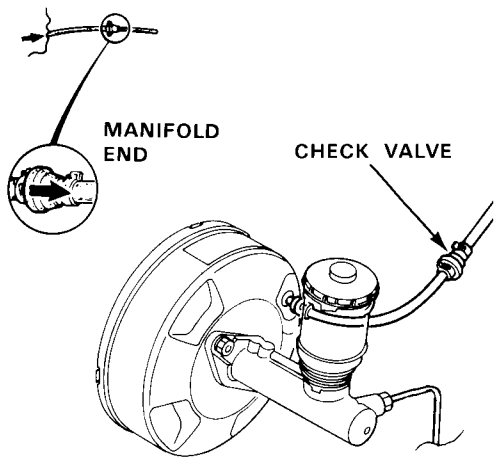


Vacuum mmHg	Line Pressure kpa (kg/cm², psi)		
	1-Carbureted Engine	2-Carbureted Engine and KX, PGM-FI	PGM-FI Ex. KX, PGM-FI
0	1579 (16.1, 229)	1363 (13.9, 198)	1363 (13.9, 198)
300	4295 (43.8, 623)	5198 (53, 754)	4511 (46, 654)
500	6100 (62.2, 884)	7600 (77.5, 1102)	6610 (67.4, 958)

6. Inspect the master cylinder pistons and cups in the readings do not fall within the limits shown above.

Check Valve Test

1. Remove the check valve, blow on one end of the hose and then the other; if you can blow through the booster end, but not through the manifold end, the check valve is OK.

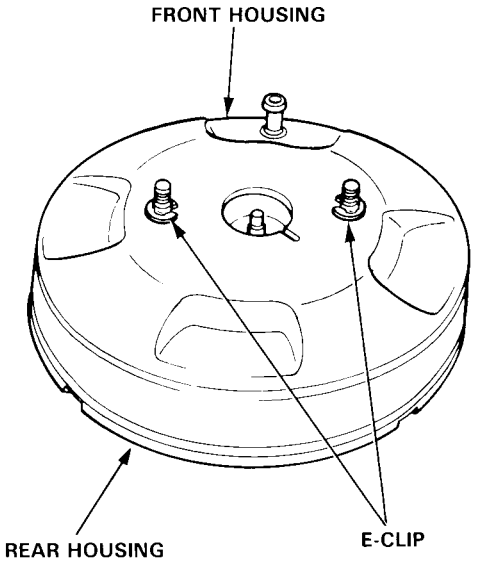


Brake Booster

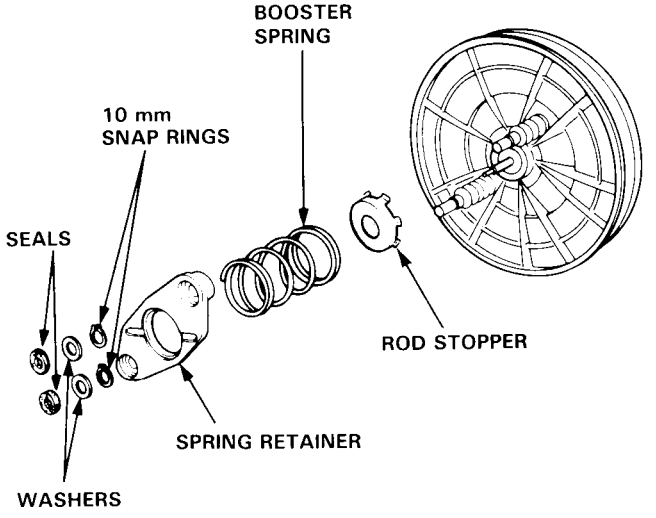
Disassembly

1. Scribe an aligning mark across the front and rear booster housings to ensure proper positioning of parts on reassembly.

2. Remove the E-clips, and separate the front booster housing and the rear booster housing.

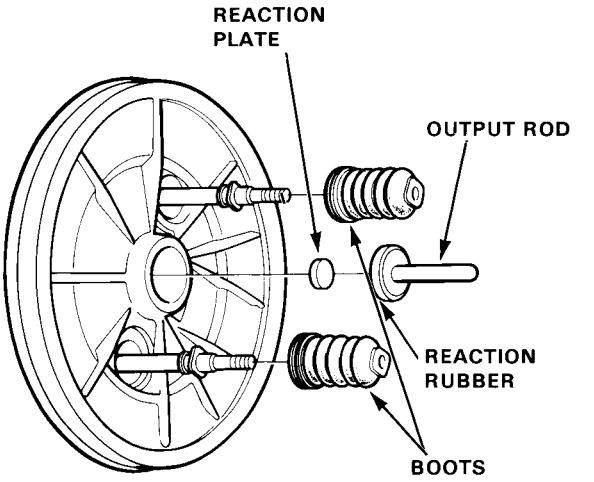


3. Remove the seals and washers from the spring retainer, then remove the spring retainer, booster spring and rod stopper by removing the 10 mm snap rings.



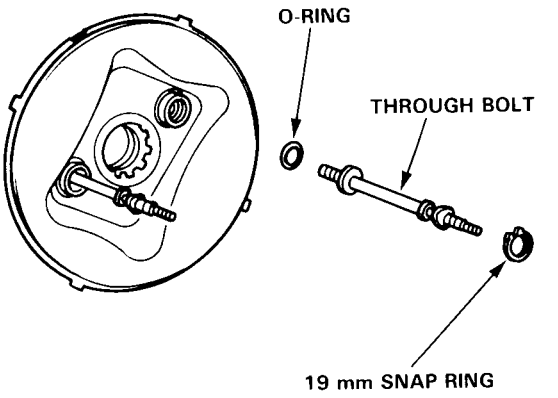
4. Remove the output rod, reaction rubber and reaction plate.

5. Remove the boots.



6. Separate the booster piston from the housing.

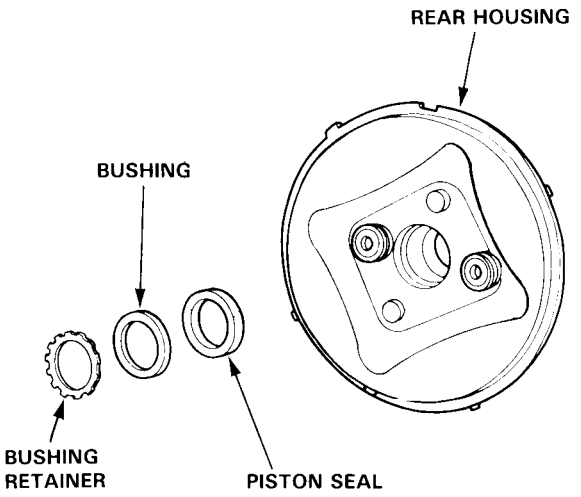
7. Remove the 19 mm snap ring and remove the through bolts with O-rings from the rear housing.



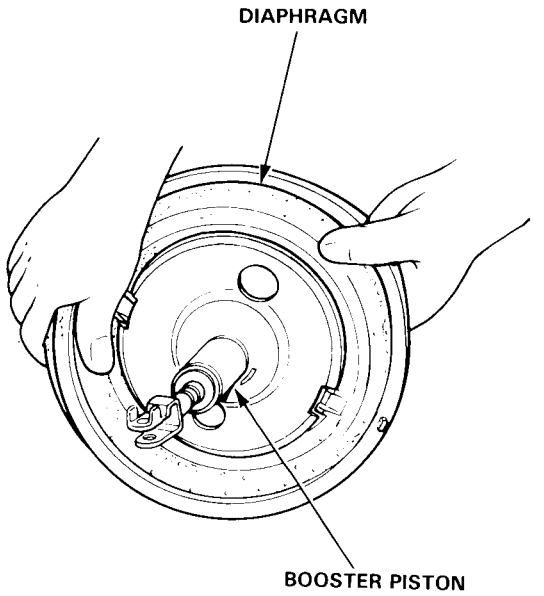
(cont'd)

Disassembly (cont'd)

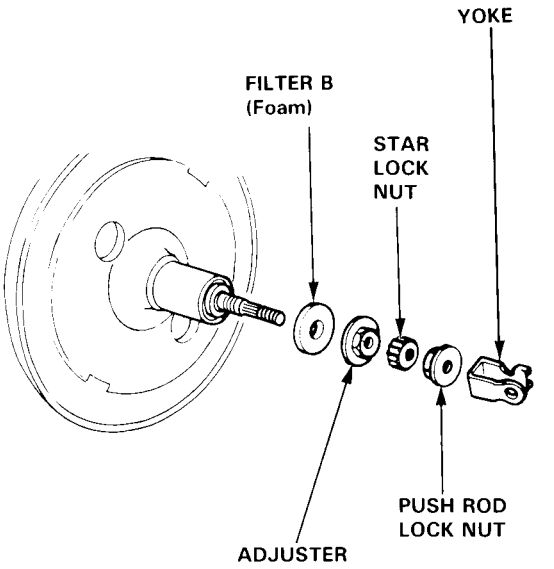
8. Remove the bushing retainer, bushing and piston seal from the rear housing.



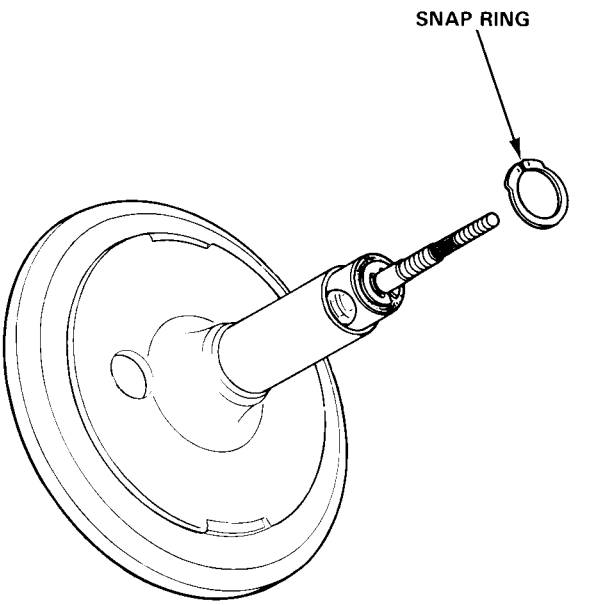
9. Remove the diaphragm from the booster piston.



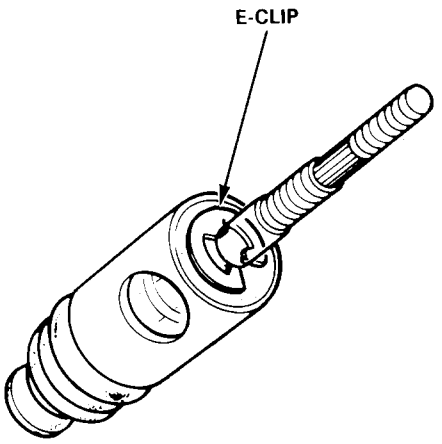
10. Remove the push rod yoke, push rod lock nut, star lock nut, adjuster and filter B (foam) from the booster piston



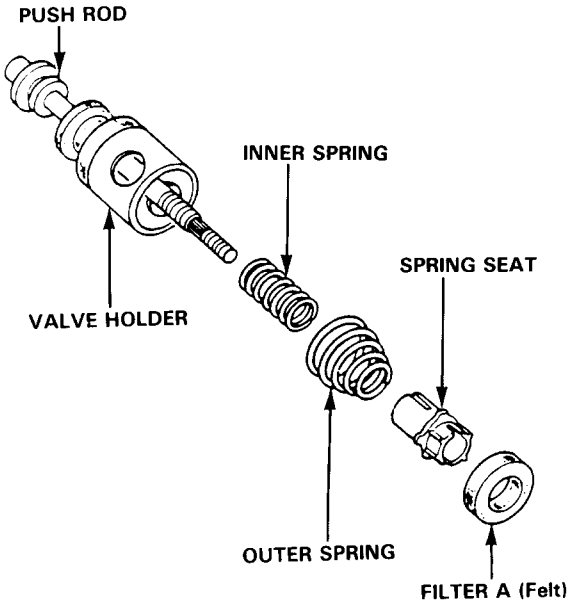
11. Remove the push rod by removing the snap ring.



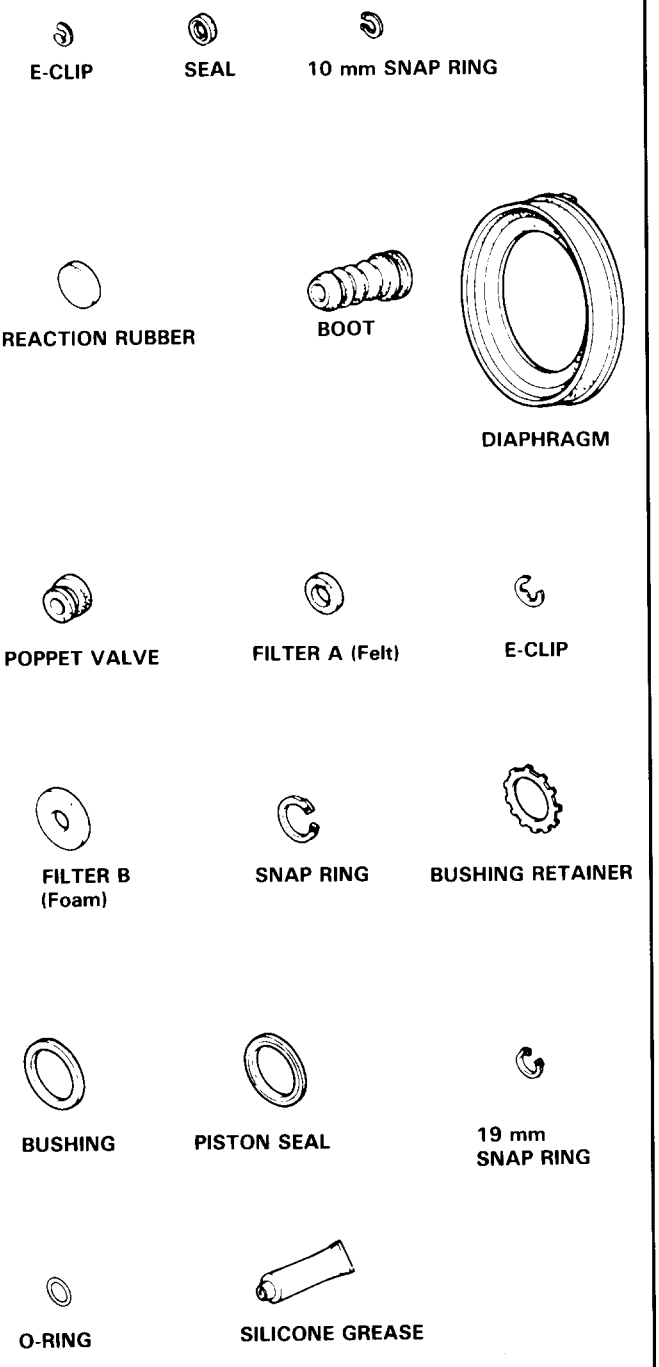
12. Remove the E-clip from the push rod.



12. Remove filter A (Felt), spring seat, outer valve spring, inner valve spring, valve holder, poppet valve and push rod.



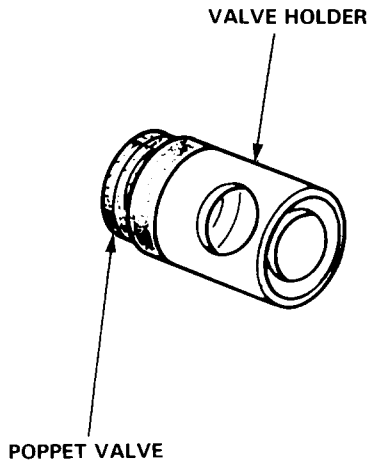
Rebuild Kit



Reassembly

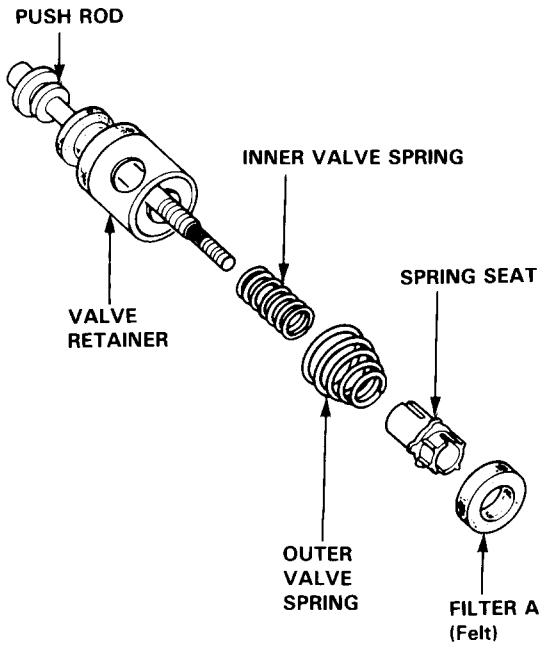
NOTE: Clean all parts before reassembly.

1. Install the poppet valve on the valve holder.

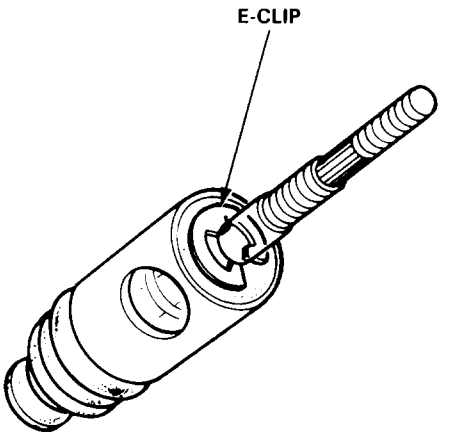


2. Install the valve holder, inner valve spring, outer valve spring and spring seat on the push rod.

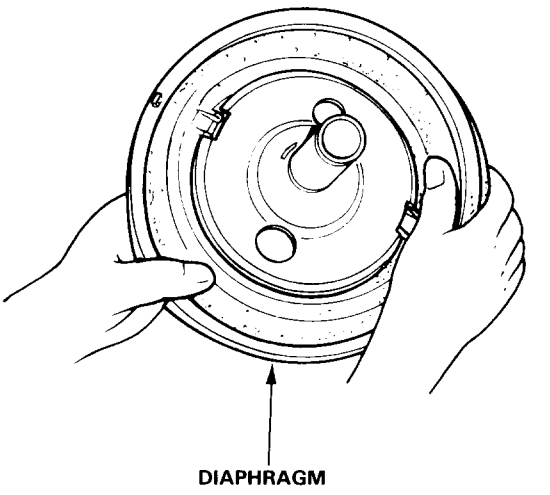
NOTE: Install the spring seat with its short end facing the filter side.



3. Install a new filter A (felt) on the push rod and secure with a new E-clip.

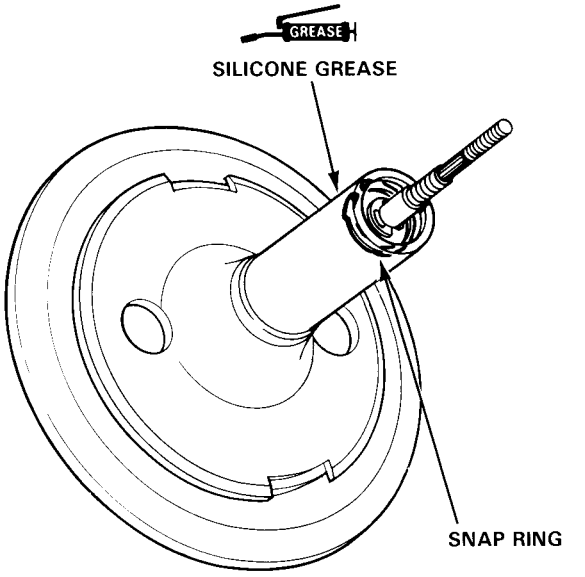


4. Install the diaphragm on the booster piston.

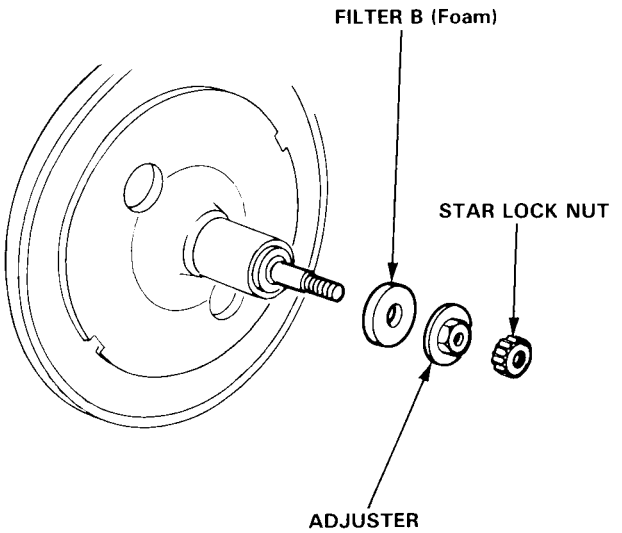


5. Apply silicone grease to the inner and outer surface of the booster piston tube.

6. Install the push rod assembly and secure with the snap ring.

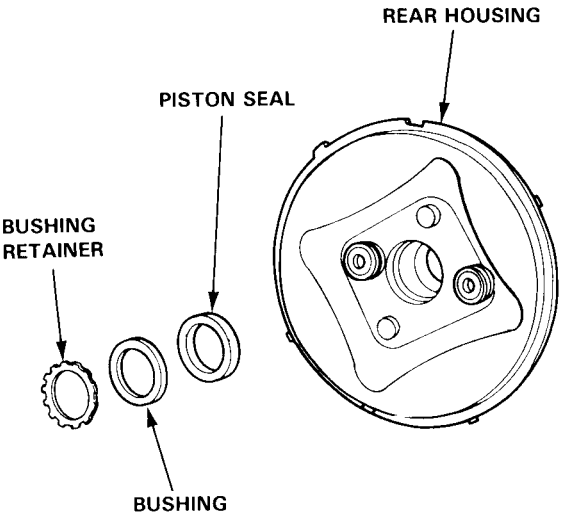


7. Install filter B (foam) on the push rod, then loosely install the adjuster and start lock nut.



8. Apply silicone grease to the piston seal.

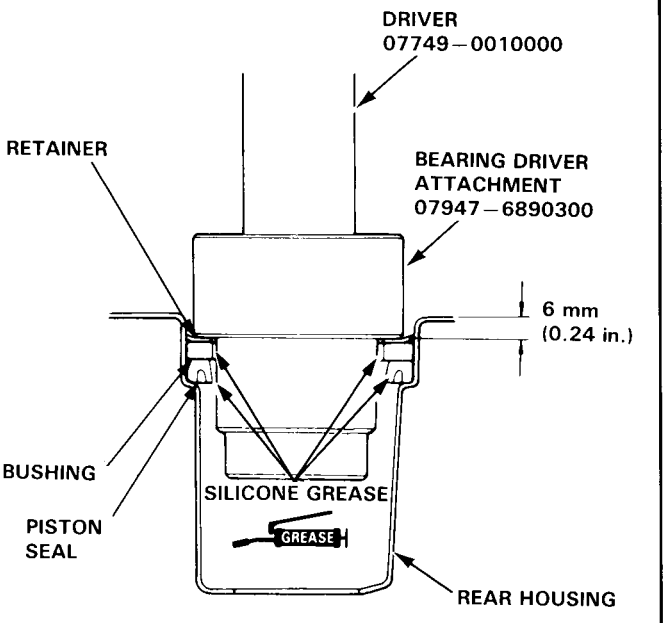
9. Position the piston seal, bushing and bushing retainer on the rear housing.



NOTE: Make sure the lip of the seal is facing in, as shown in drawing below.

10. Drive the bushing retainer in until it is 6 mm below the edge of the rear housing.

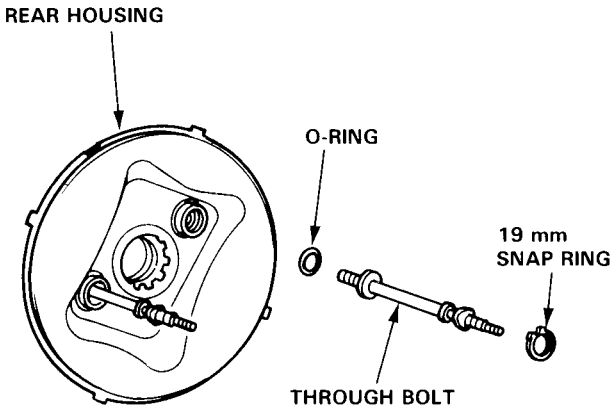
CAUTION: If you drive the retainer more than 6 mm, the piston seal may distort.



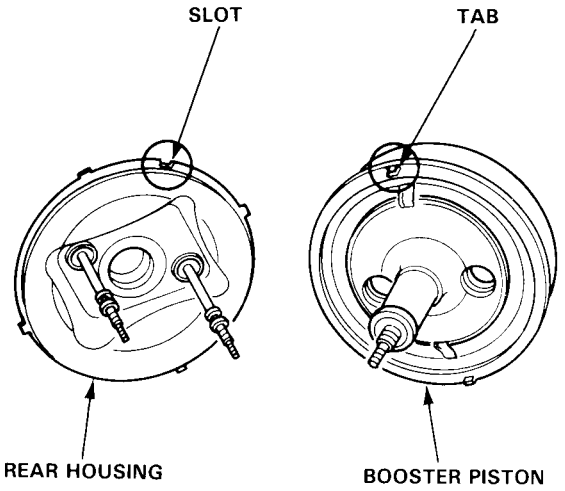
(cont'd)

Reassembly (cont'd)

11. Install the O-rings and through bolts on the rear housing and secure with 19 mm snap ring.

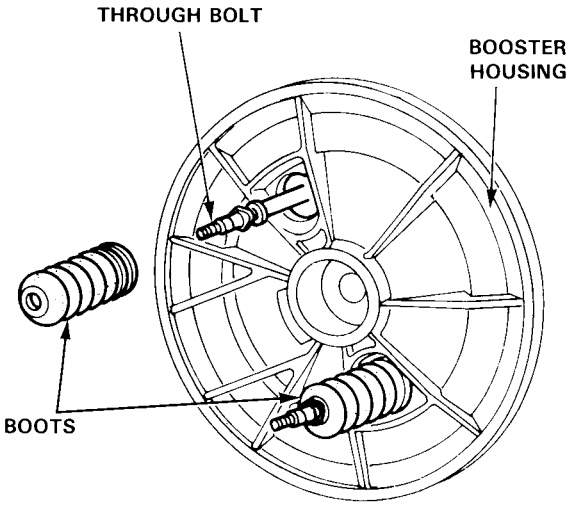


12. Install the booster pistion on the rear housing aligning their tabs and slots.



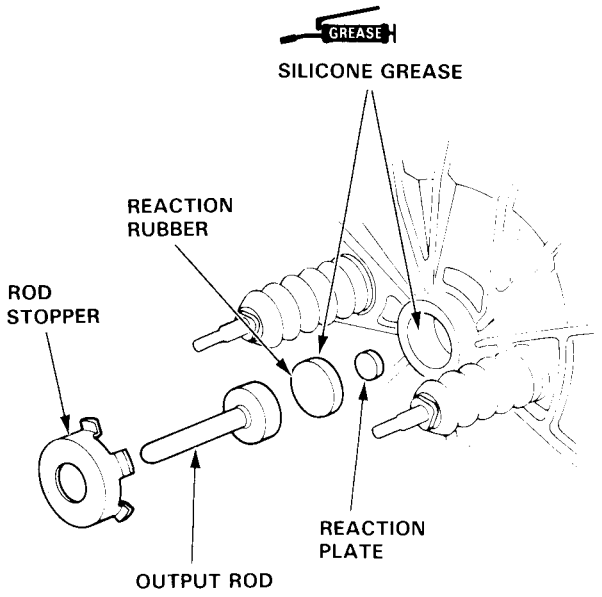
13. Install the boots on the throgh bolts.

NOTE: Make sure not to damage the boots when installing.

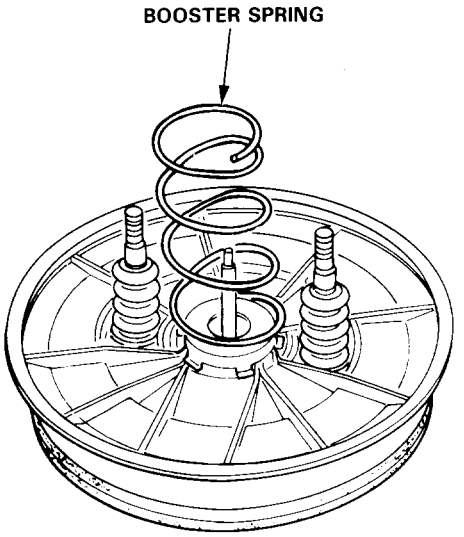


14. Apply silicone grease to the bore of the booster piston and reaction rubber.

15. Install the reaction plate, reaction rubber, output rod and rod stopper on the booster piston.

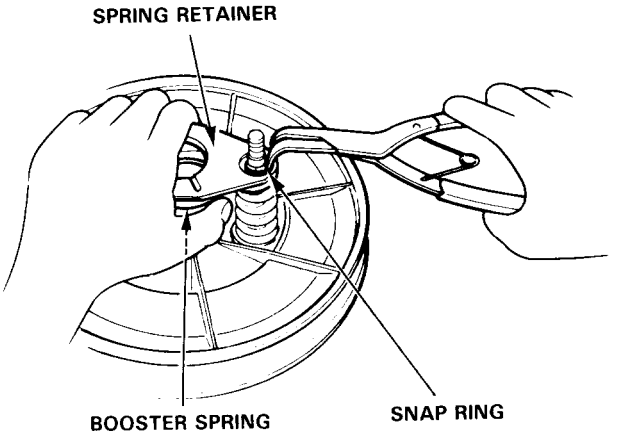


16. Install the booster spring.



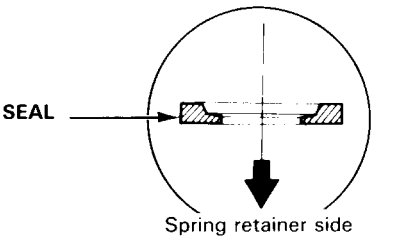
17. Install the spring retainer on the through bolts aligning the square portions of the bolts and retainer.

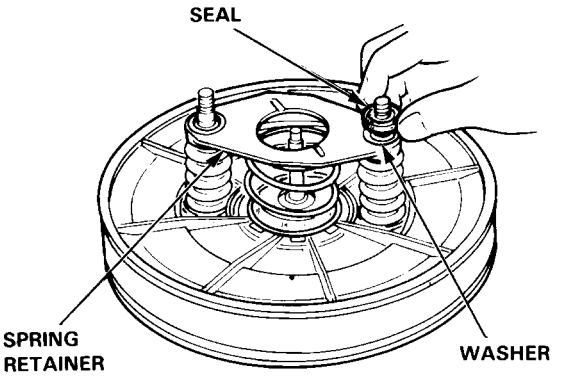
18. Compress the booster spring, then install the 10 mm snap ring on the through bolts.



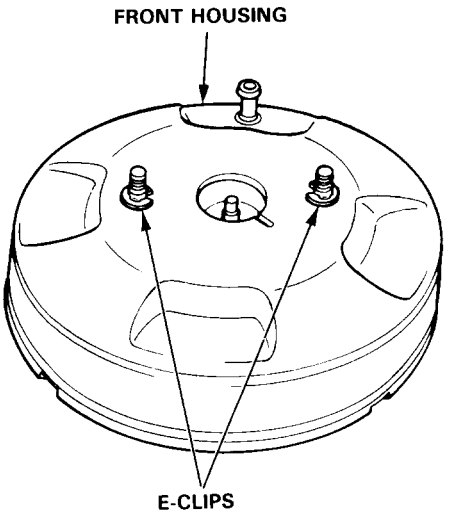
19. Install the washers and seals on the through bolts.

NOTE: Install the seals with the flat sides facing the spring retainer side as shown.





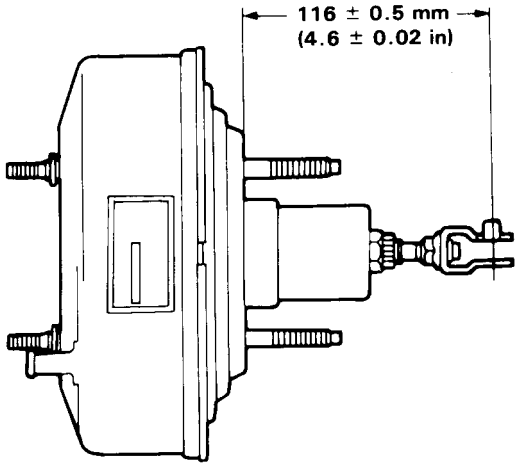
20. Install the front housing and secure with E-clips.



Brake Booster

Pushrod Adjustment

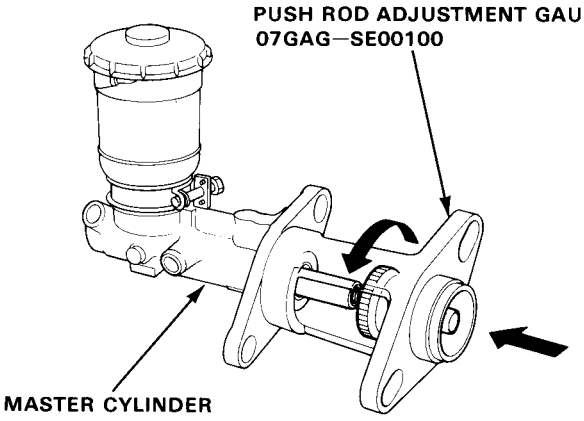
Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.



Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing master cylinder.

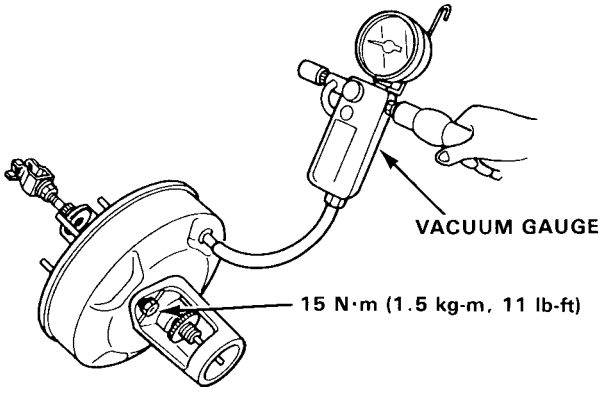
1. Using the Push Rod Adjustment Gauge, adjust bolt so the top of it is flush with end of master cylinder piston.



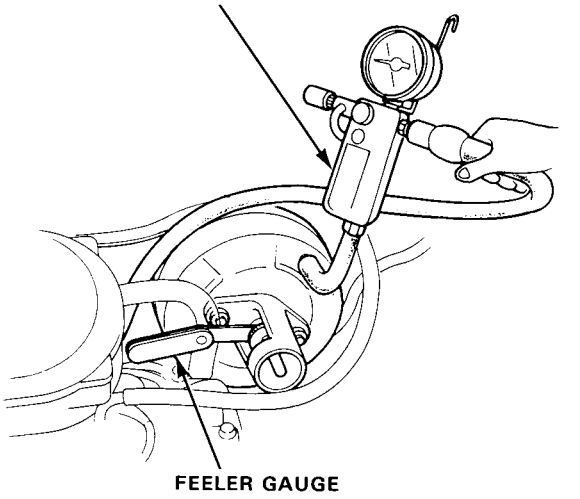
2. Install the master cylinder rod seal between the push rod adjustment gauge and brake booster.
3. Without disturbing the adjusting bolt's position, put the gauge upside down on the booster.
4. Install the master cylinder nuts and tighten to the specified torque.
5. Connect the booster in-line with a vacuum gauge to the booster's apply a 500 mm Hg (20 in Hg) vacuum and hold.
6. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut.

CLEARANCE: 0—0.4 mm (0—0.016 in)

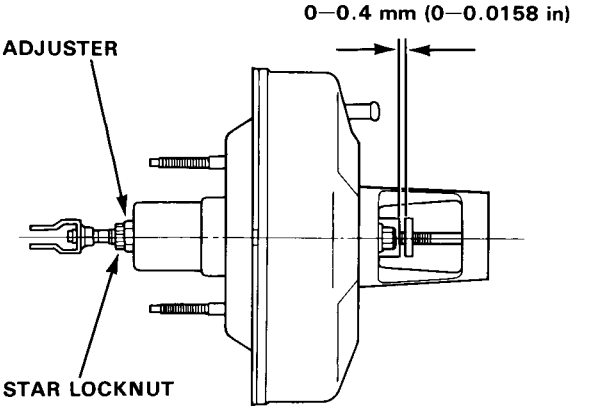
- Booster out of car.



- Inspection with the booster attached to the car.



7. If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust. Hold the clevis while adjusting.
8. Tighten the star locknut securely.



NOTE: If the clearance between the gauge body and adjusting nut is 0 mm, the push rod-to-piston clearance is 0.04 mm. If the clearance between the gauge body and adjusting nut is 0.4 mm, the push rod-to-piston clearance is 0 mm.

(cont'd)

Pushrod Clearance Adjustment (cont'd)

9. After adjustment, loosen the clevis end pushrod locknut and turn the pushrod to obtain the correct pedal height.

   PEDAL HEIGHT FROM FLOOR:
   RHD 161 mm (6.34 in)
   LHD 153 mm (6.02 in)
   (with floor mat removed)
   The pedal should have 1—5 mm free play.

10. Adjust the brake light switch (page 13-4).

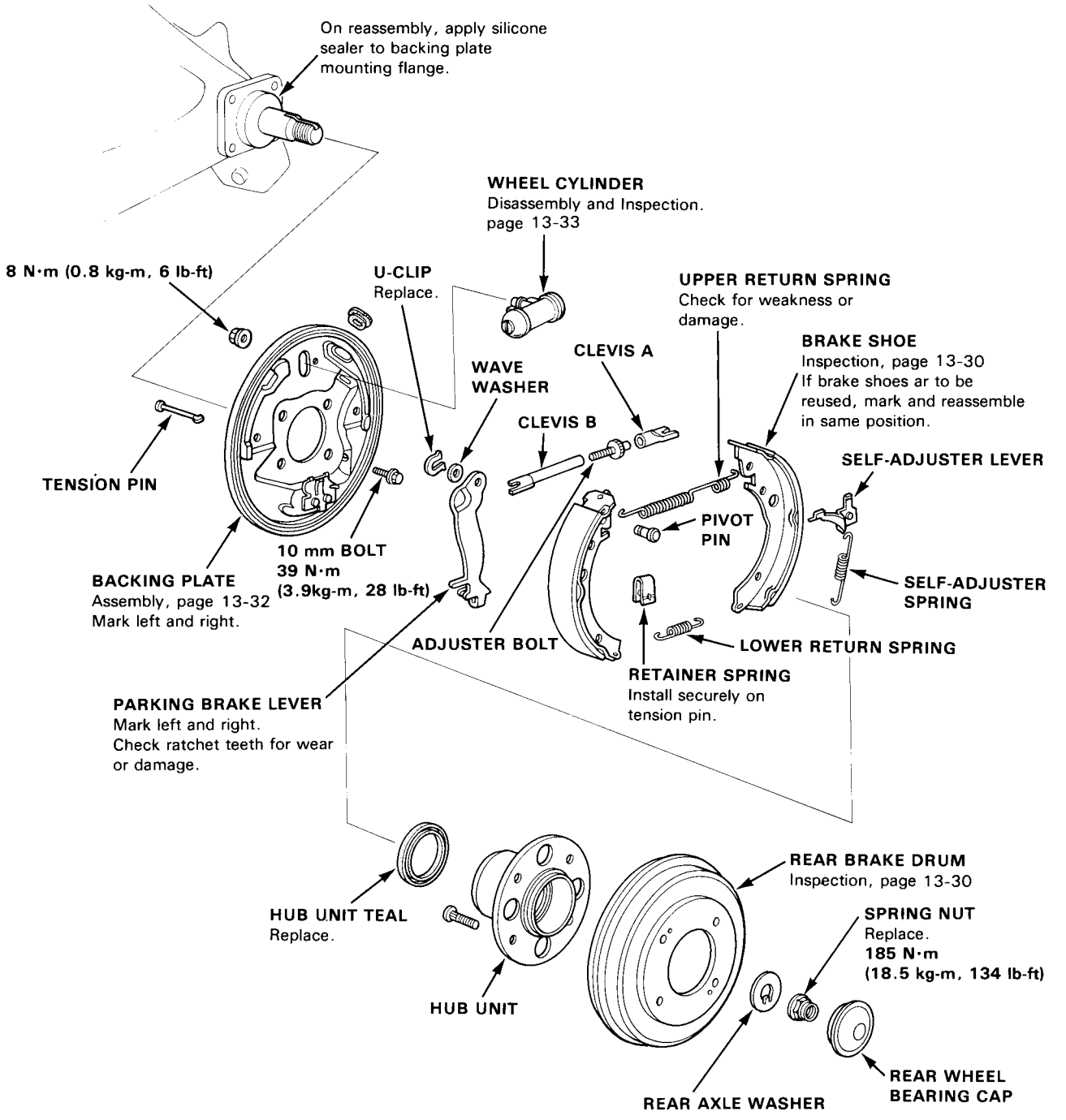
Brake shoes

Index and Inspection

WARNING **Block the front wheels before jacking up the rear of the car.**

1. Raise the rear of car and support with safety stands in proper locations.
2. Loosen the parking brake.
3. Remove the rear wheels and rear brake drum.

WARNING **Do not use an air hose to blow the brake assembly clean. Use an OSHA-approved vacuum cleaner, to avoid breathing brake lining dust.**

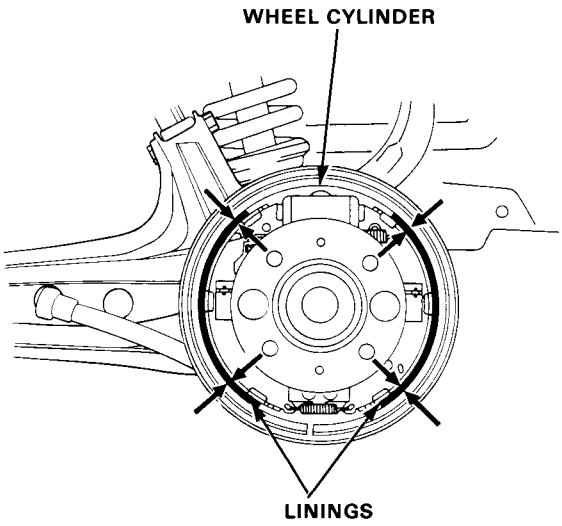


Brake Shoes

Inspection

1. Inspect wheel cylinders for leakage.
2. Inspect brake linings for cracking, glazing, wear or contamination.
3. Measure brake lining thickness.

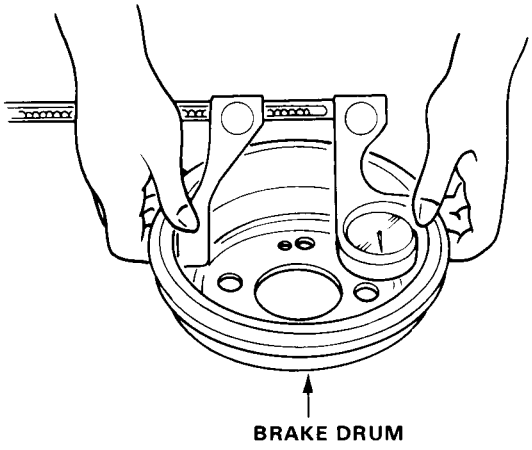
   Lining Thickness
   (Does not include brake shoe thickness)
   Standard: 4.5 mm (0.177 in.)
   Service Limit: 2.0 mm (0.079 in.)



4. Inspect bearings in hub unit for smooth operation. If defective, refer to Section 12.
5. Measure inside diameter of brake drum.

   Drum Indide Diameter:
   Standard: 180 mm (7.087 in)
   Service Limit: 181 mm (7.126 in)

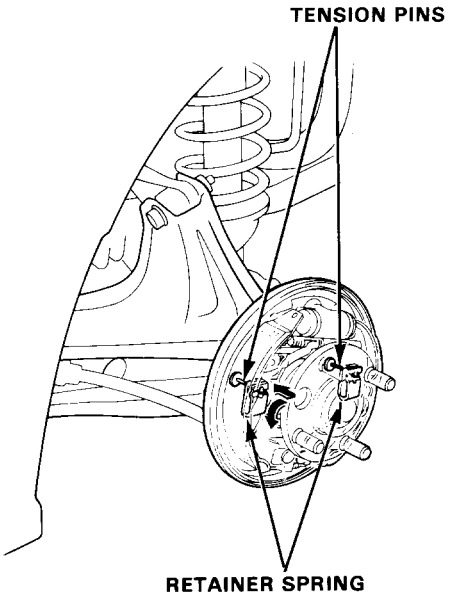
   NOTE:If the refinishing limit stamped on the drum does not match the one listed above, use the one on the drum.



6. Inspect brake drum for scoring, grooving, cracks.

Disassembly

1. Remove the tension pins by pushing the retainer spring and turning them.



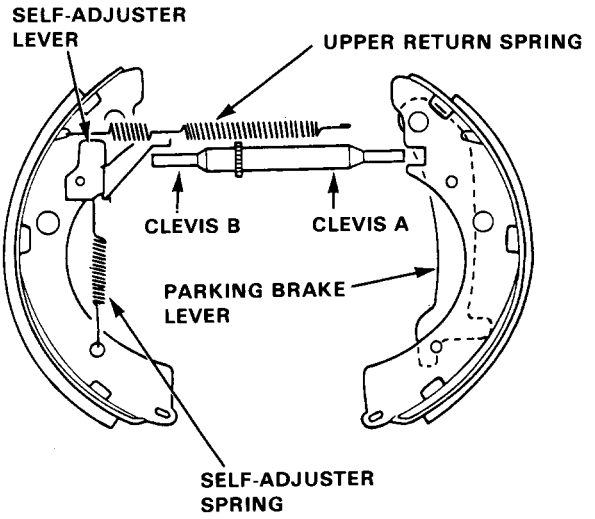
2. Lower the brake shoe assembly and remove the lower return spring.

   NOTE: Make sure not to damage the dust cover on the wheel cylinder.

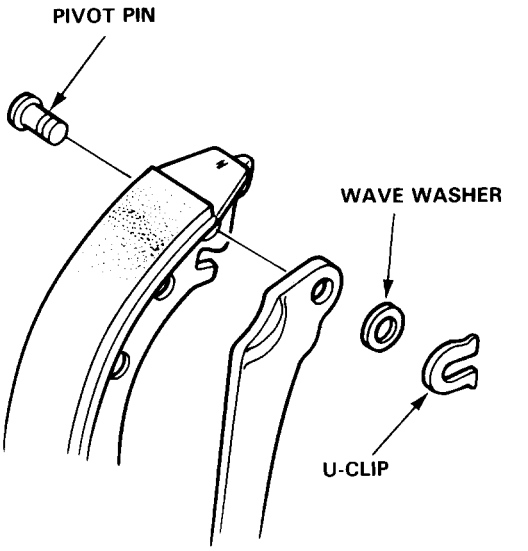
3. Remove the brake shoe assembly.

4. Disconnect the parking brake cable from the parking brake lever.

5. Remove the upper return spring, self-adjuster lever and self-adjuster spring, and separate the brake shoes.



6. Remove the wave wahser, parking brake lever and pivot pin from the brake shoe by removing the U-clip.

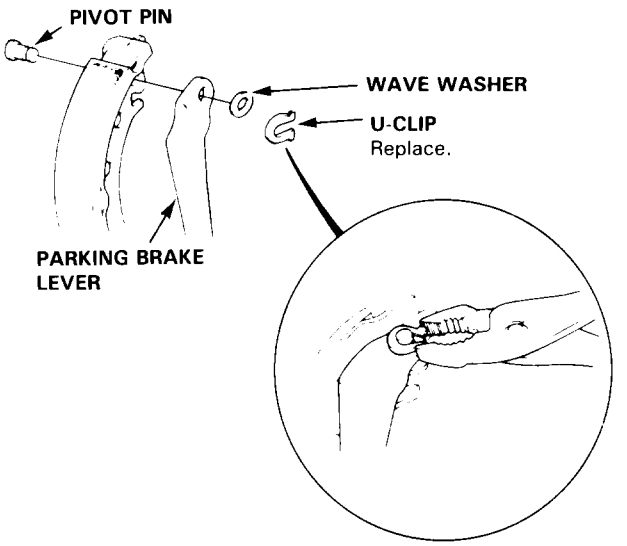


Brake Shoes

Reassembly

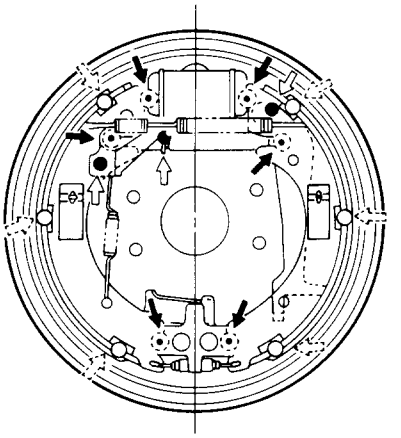
1. Apply brake cylinder grease to the sliding surface of the pivot pin, and insert the pin into the brake shoe.
2. Install the parking brake lever and wave washer on the pivot pin and secure with U-clip.

   NOTE: Pinch the U-clip securely to prevent the pivot pin from coming out of the brake shoe.



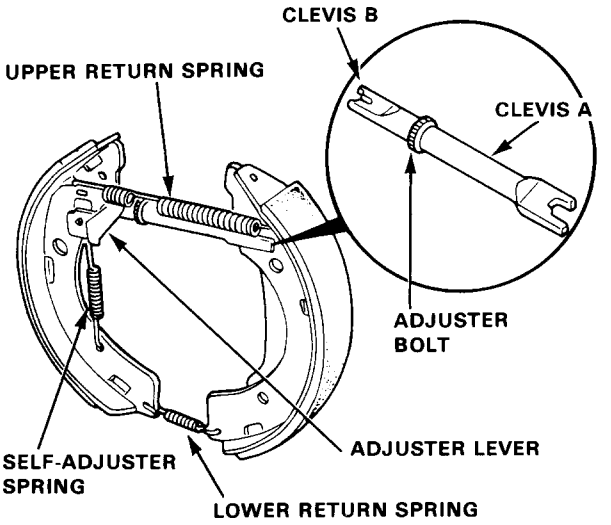
3. Connect the parking brake cable to the parking brake lever.
4. Apply grease on each sliding surface.

   CAUTION: Contaminated brake linings reduce stopping power. Keep grease or oil off the brake linings. Wipe any excess grease off the parts.



5. Clean the threaded portions of clevises A and B. Coat the threads of the clevises with grease. To shorten the clevises, turn the adjuster bolt.
6. Hook the adjuster spring to the adjuster lever first, then to the brake shoe.
7. Install the clevises and upper return spring noting the installation direction.

   NOTE: Make sure not to damage the wheel cylinder dust covers.
8. Install the lower return spring.
9. Install the tension pins and retaining springs.

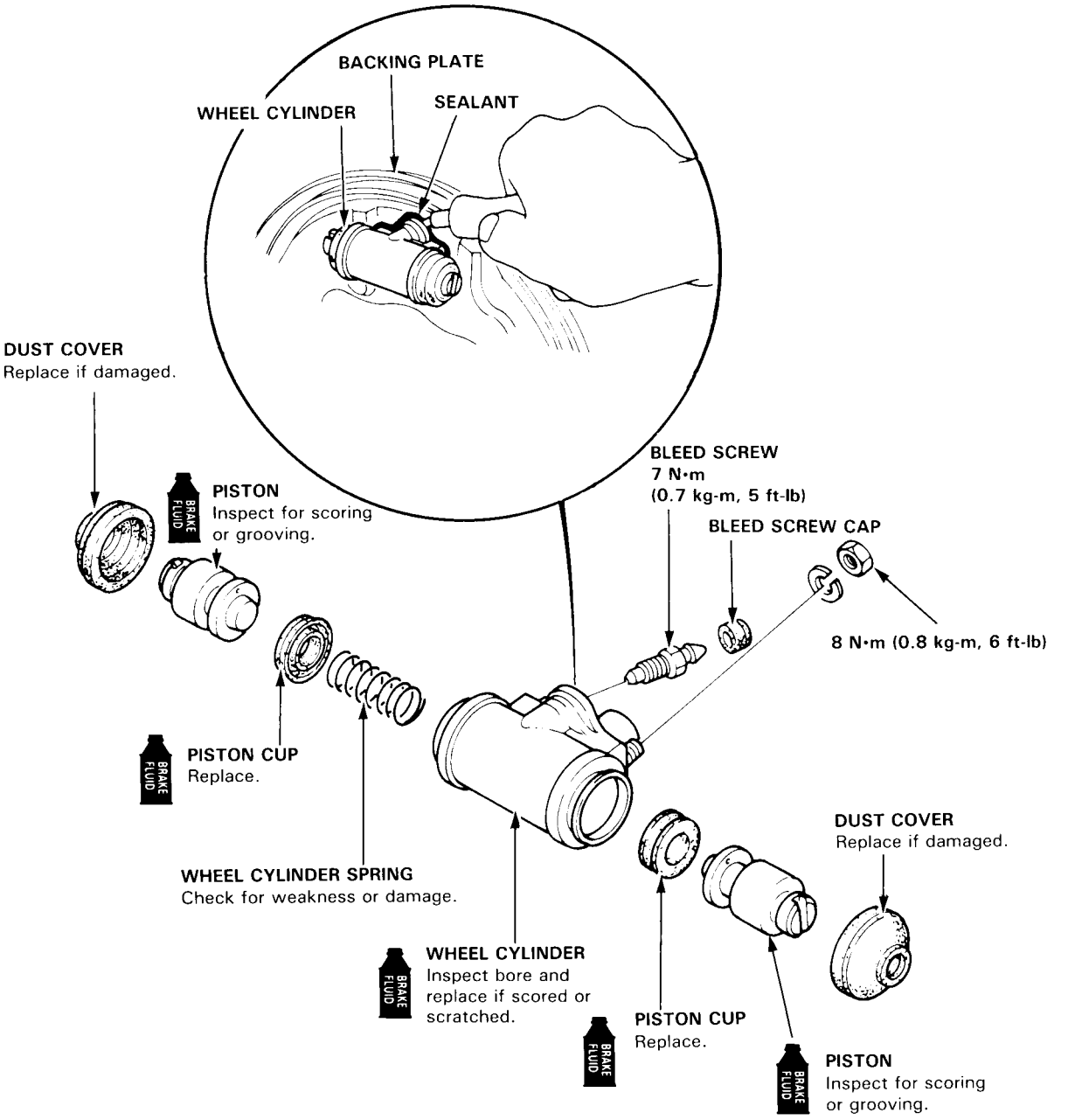


10. Install the brake drum.
11. If the wheel cylinder has been removed, bleed the brake system (page 13-12).
12. Depress the brake pedal several times to set the self adjusting brake.
13. Adjust the parking brake (page 13-4).

Wheel Cylinder

Disassembly and Inspection

CAUTION:
- Use only clean brake fluid.
- Use only new replacement parts.
- Brake fluid will damage the kainted, plastic and rubber parts. Whenever handling brake fluid, protect the painted, plastic or rubber parts by covering with a rag. If fluid does get on these parts, wipe it off with a clean cloth.
- Blow all passages with compressed air before reassembling.
- Clean all parts thoroughly with the clean brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different types of fluid as they may not be compatible.
- Never reuse the brake fluid once it has been drained.
- Lubricate all parts with clean brake fluid during reassembly.
- Apply sealant between the wheel cylinder and backing plate whenever the wheel cylinder has been removed.



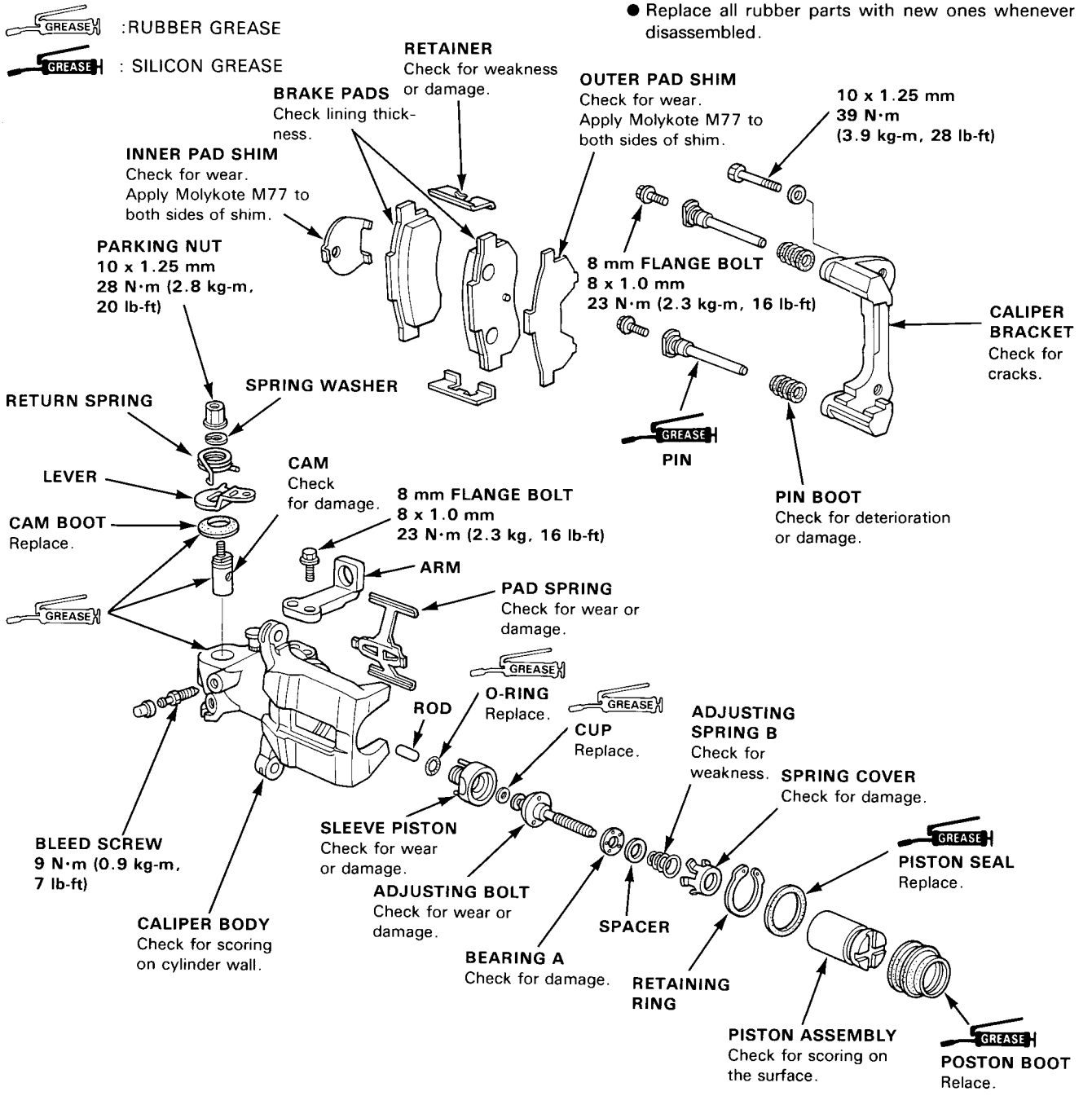
Rear Disc Brake

Inspection

WARNING Do not use an air hose to blow the brake assembly clean. Use an OSHA-approved vacuum cleaner, to avoid breathing brake dust.

CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

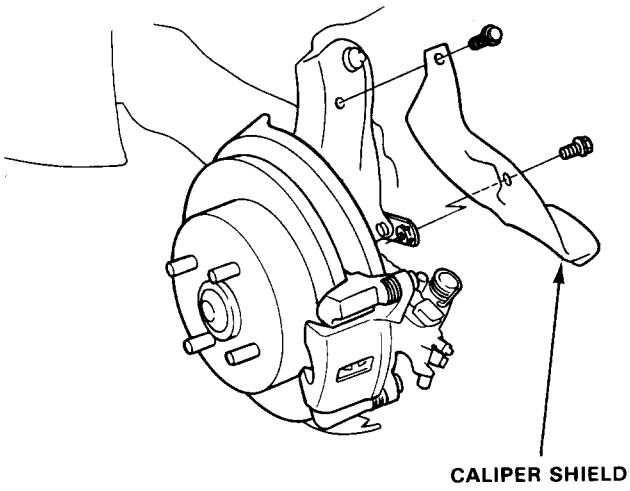
NOTE:
- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.



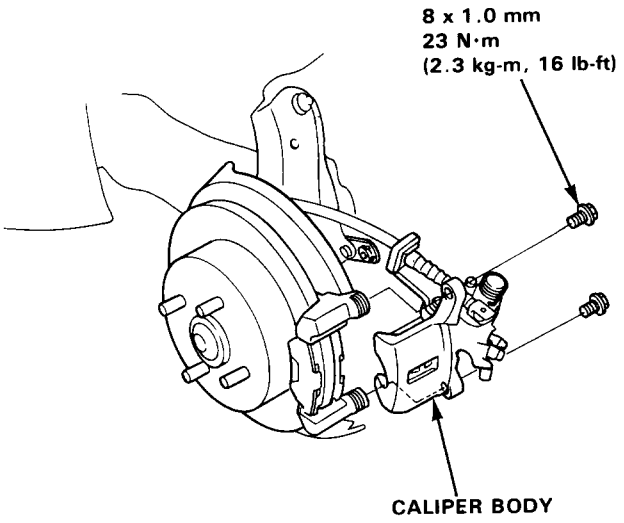
Rear Brake Pad/Disc

Inspection and Replacement

1. Block the front wheels, support the rear of car on safety stands, then remove the rear wheels.
2. Remove the caliper shield.

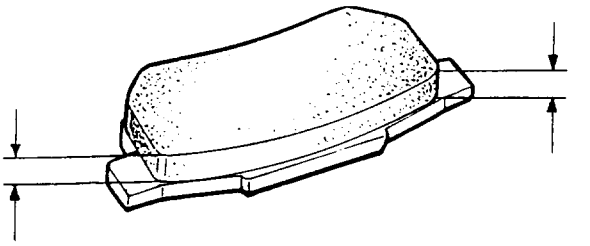


3. Remove the two caliper mounting bolts and the caliper from the bracket.

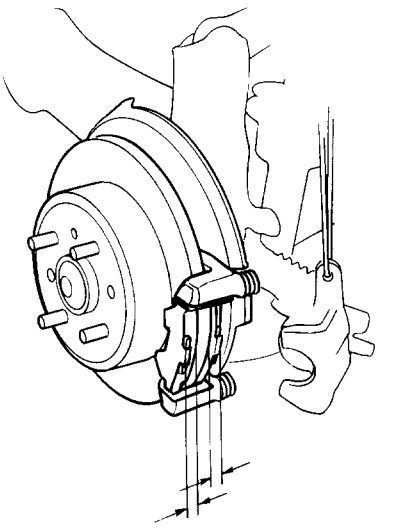


4. Remove the pads and measure the thickness of each brake pad lining using a vernier caliper.

Brake Pad Thickness:
Standard: 8.0 mm (0.31 in)
Service limit 1.6 mm (0.06 in)



5. If the lining thickness is less than service limit, replace the brake pads as a set.



(cont'd)

Rear Brake Pad/Disc

Inspection and Replacement (cont'd)

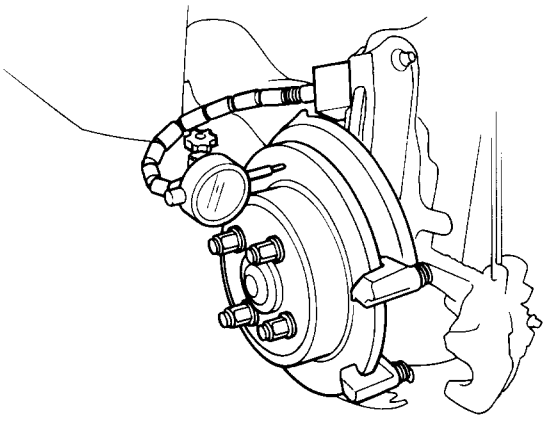
6. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.

7. Mount dial indicator as shown and measure the run-out at 10 mm (0.39 in) from the outer edge of the disc.

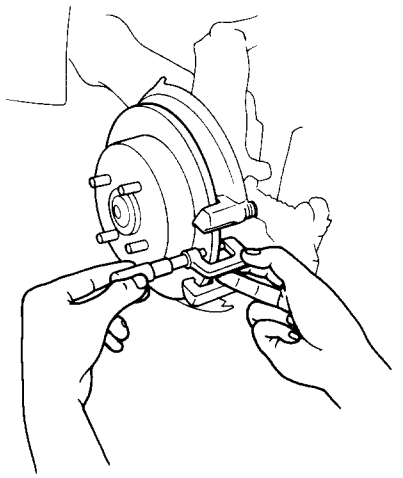
   CAUTION: Use wheel nuts and 3 mm thickness washers to hold the disc securely.

   Brake Disc Run-out:
   Service Limit: 0.15 mm (0.0006 in)

8. Replace the brake disc if beyond the service limit.



9. Using a micrometer, measure the rear brake disc thickness at eight points, approximately 45 apart and 10 mm (0.39 in) from the outer edge of the disc.



10. Replace the disc if it exceeds the following service limits.

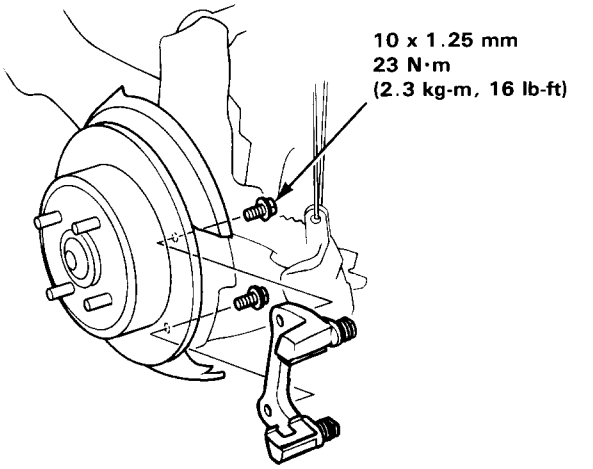
    Brake Disc Thickness:
    Standard: 10.0 mm (0.39 in)
    Service limit: 8.0 mm (0.31 in)

    Brake Disc Parallelism:
    The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in).

11. Replace the brake disc if beyond the limits.

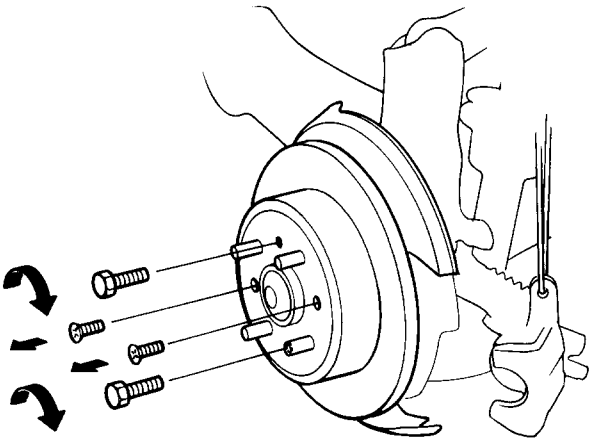
    NOTE: A now disc should be ground if its run-out is greater than 0.10 mm (0.004 in).

12. Remove the two caliper bracket mounting bolts and caliper bracket.



13. Remove the two 6 mm screws and brake disc.

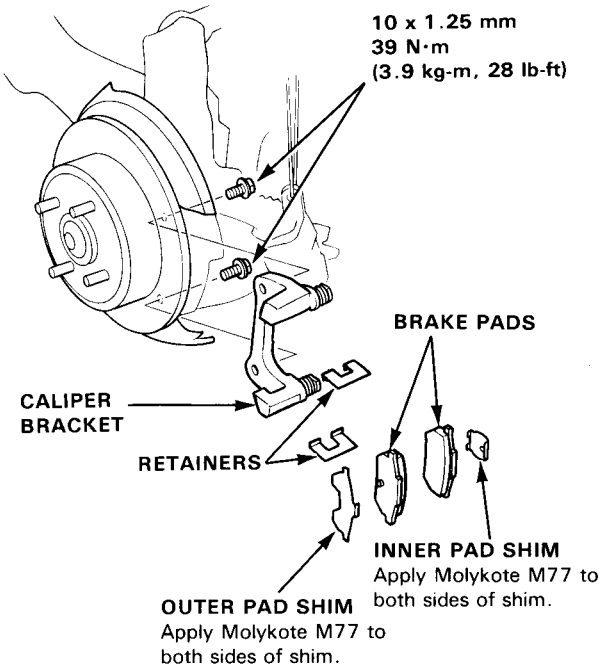
    NOTE: If the brake disc is difficult to remove, install 8 mm bolts into the threaded holes and tighten them.



14. Install the new brake disc.

15. Clean the caliper bracket and retainers, then install the caliper bracket with two bolts and retainers.

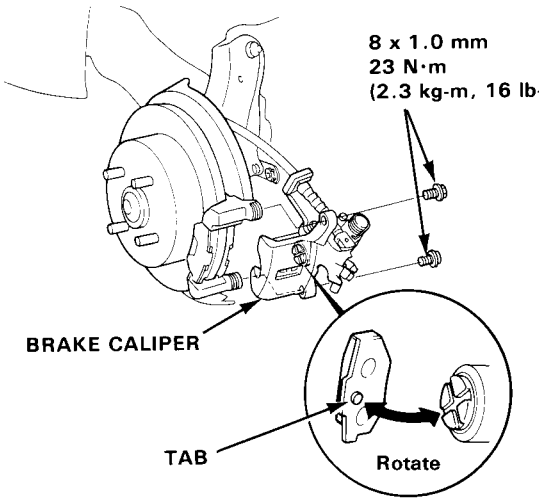
    Install the new brake pads and pad shims onto the caliper bracket.



16. Rotate the caliper piston clockwise into place in the cylinder, then align the cutout in the piston with the tab on the inner pad by turning back the piston back.

    CAUTION: Lubricate the boot with silicone to avoid twisting the piston boot. If the piston boot is twisted, back it out so it sits properly.

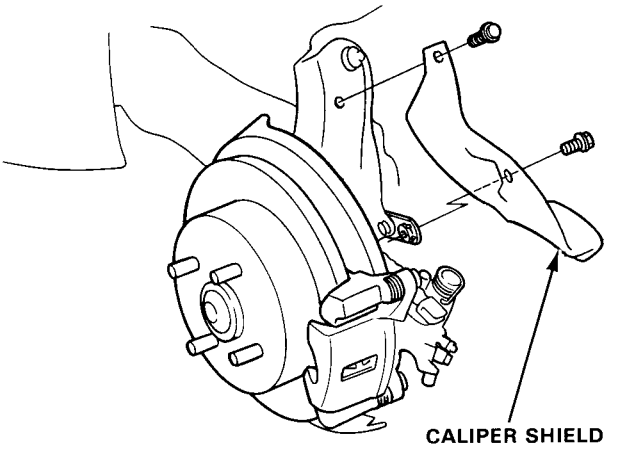
17. Install the brake caliper.



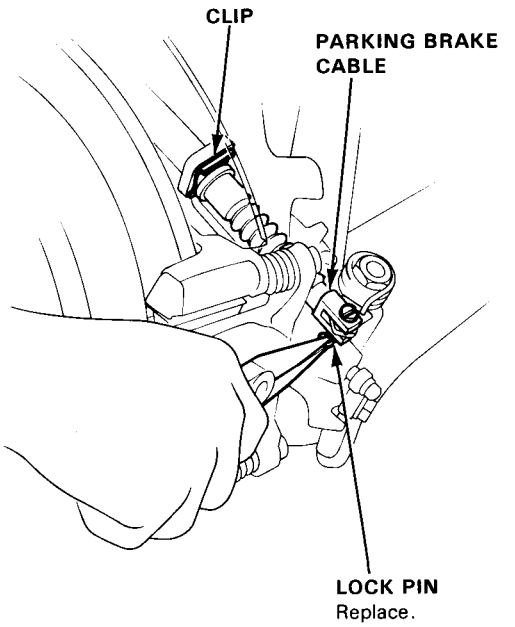
Disassembly

CAUTION:
- **Make sure all parts are clean before ressembly.**
- **Use only new replacement parts.**
- **Use only new clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as its can damage to finish. Wash spilled brake fluid off immediately with clean water.**

1. Remove the caliper shield.



2. Disconnect the parking brake cable from the lever on the caliper by removing the lock pin.



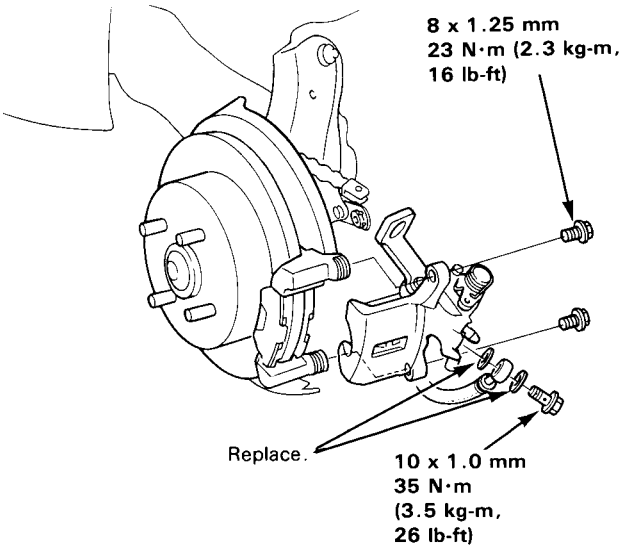
(cont'd)

Dissassembly (cont'd)

3. Remove the banjo bolt and disconnect the brake hose from the caliper.

4. Remove the two caliper mounting bolts and the caliper from the bracket.

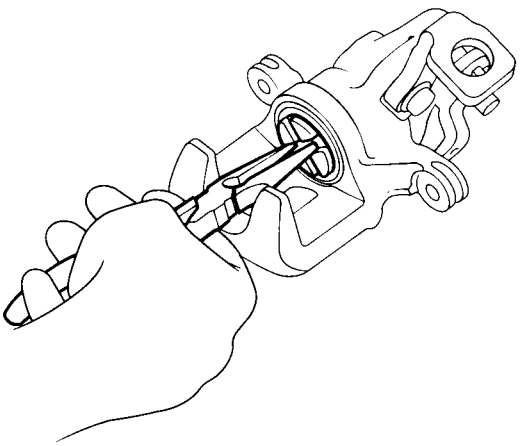
CAUTION:
- **Thoroughly clean the outside of the caliper to prevent dust and dirt from entering inside.**
- **Plug the end of the brake hose to prevent brake fluid from flowing out.**



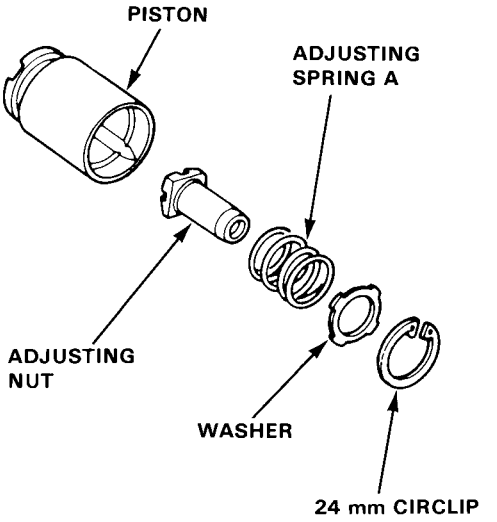
5. Remove the pad spring from the caliper.

6. Remove the piston and piston boot while rotating the piston.

CAUTION: Avoid damaging the piston and piston boot.

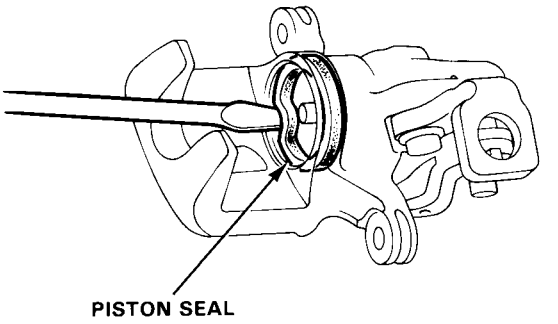


7. Remove the circlip, then washer, adjusting spring A, and the adjusting nut from the piston.



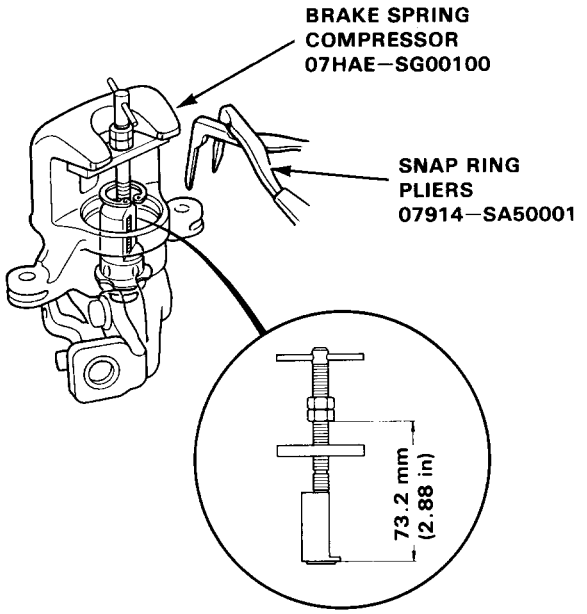
8. Remove the piston seal.

CAUTION: Take care not to damage the cylinder bore.



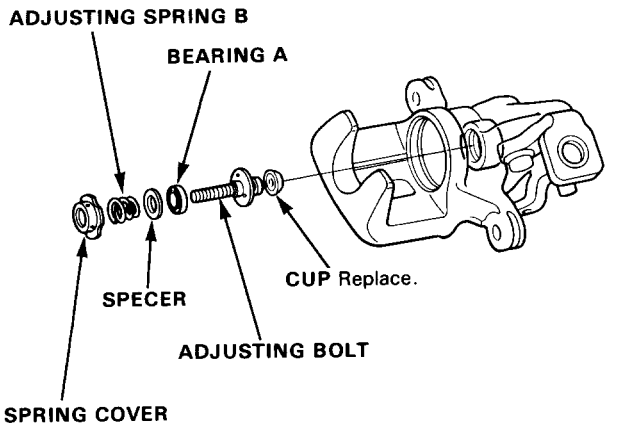
9. Install the special tool between the caliper body and spring guide as shown.

10. Compress the adjusting spring B by turning the shaft of the special tool, then remove the circlip with snap ring pliers.

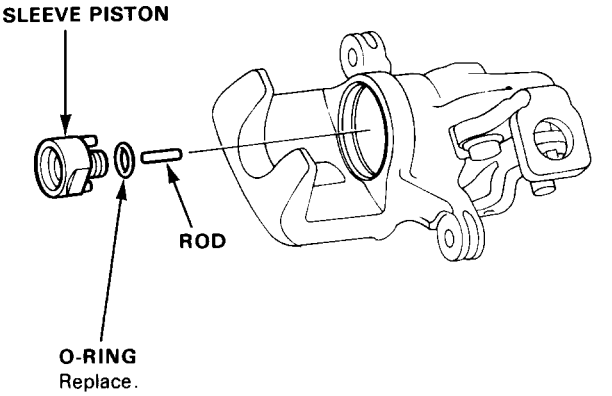


11. Remove the brake spring compressor from caliper body.

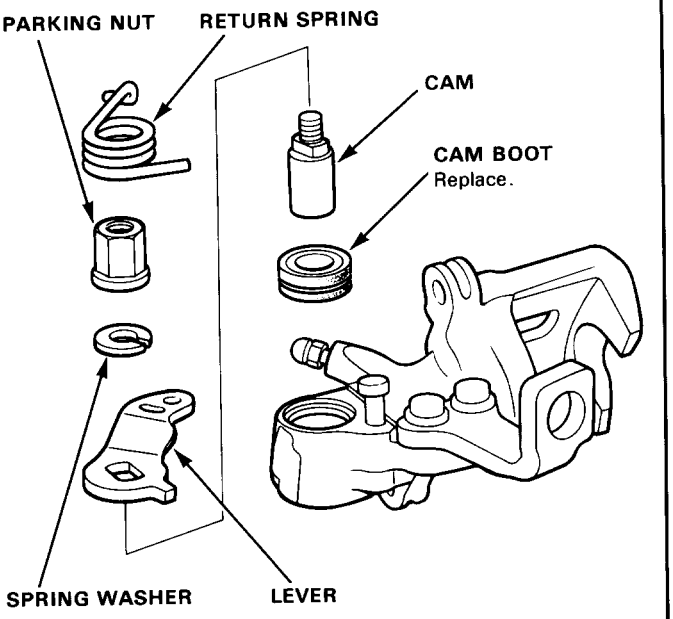
12. Remove the spring cover, adjusting spring B, spacer, bearing A, adjusting bolt and cup.



13. Remove the sleeve piston, then remove the rod from the cam.



14. Remove the return spring, parking nut, spring washer, lever, cam and cam boot.

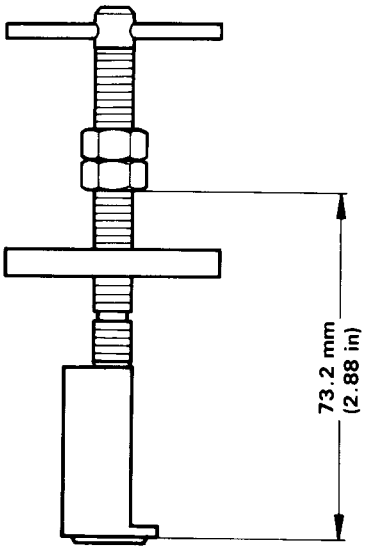


Rear Caliper

Reassembly

CAUTION:
- **Make sure all parts are clean before reassembly.**
- **Use only new replacement parts.**
- **Use only new clean brake fluid.**
- **Do not allow dirt or other foreign matter to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid.**
- **Avoid spilling brake fluid on painted, plastic or rubber surfaces as its can damage the finish. Wash spilled brake fluid off immediately with clean water.**

1. Adjust the brake spring compressor (special tool) as shown.

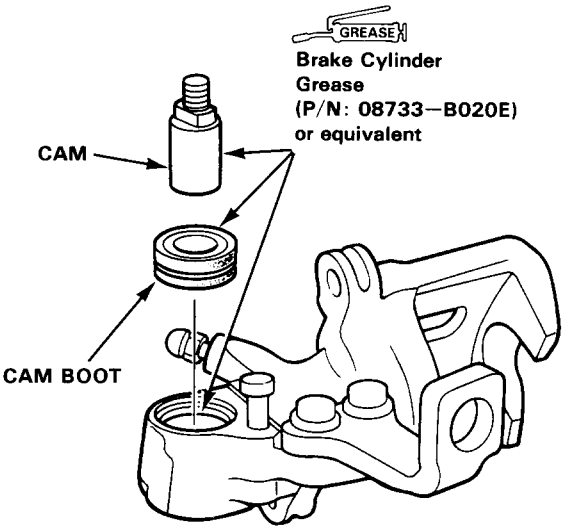


2. Pack all cavities of the needle bearing with Brake Cylinder Grease (P/N: 08733—B020E), or equivalent rubber grease.

3. Coat the new cam boot with Brake Cylinder Grease (P/N: 08733—B020E), or equivalent rubber grease and install in the caliper.

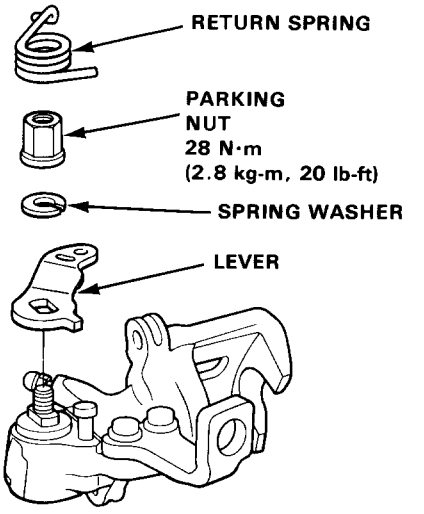
4. Install the cam with threaded end facing up.

CAUTION: Avoid damaging the cam boot since it must be installed before the cam.



5. Install the lever, spring washer and parking nut, then tighten parking nut.

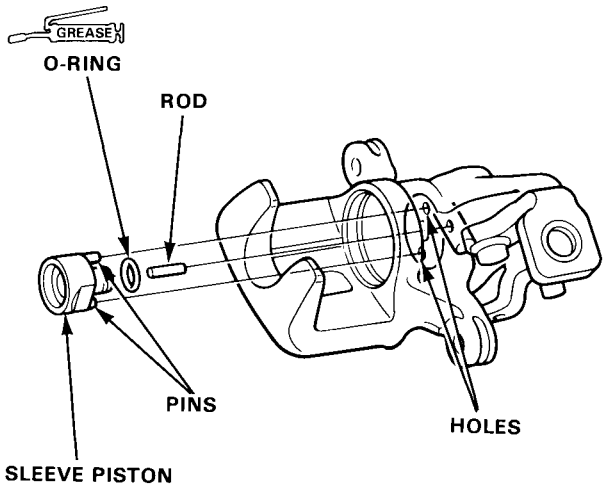
6. Install the return spring.



7. Install the rod in the cam.

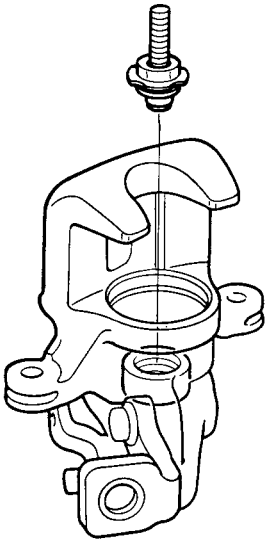
8. Install a new O-ring on the sleeve piston.

9. Install the sleeve piston so the hole in the bottom of the piston is aligned with the rod in the cam, and two pins on the piston are aligned with the holes in the caliper.

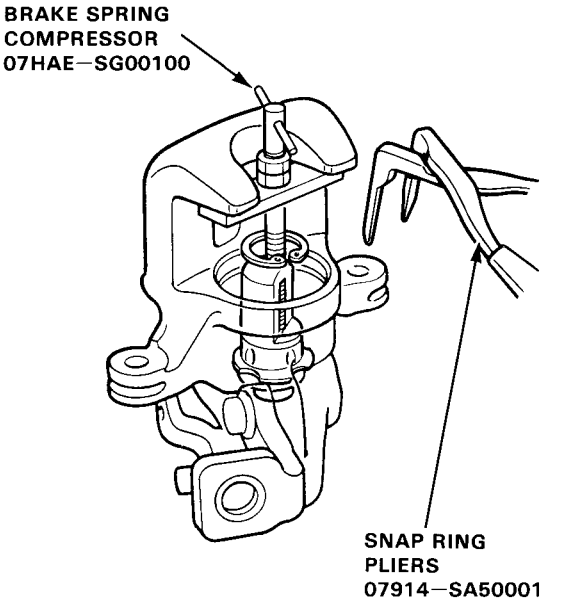


10. Install a new cup with its groove facing the bearing A side on the adjusting bolt.

11. Fit the bearing A, spacer, adjusting spring B and spring cover on the adjusting bolt, and install in the caliper cylinder.



12. Install the brake spring compressor (special tool) as shown.

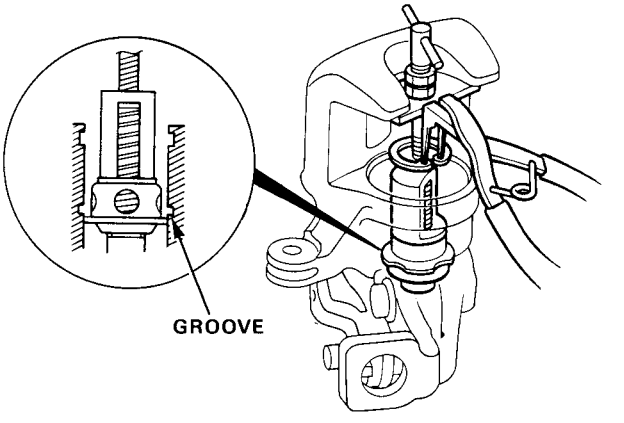


13. Compress the spring until it bottoms out.

14. Check that the flared end of the spring cover is below the circlip groove.

15. Install the circlip then remove the brake spring compressor.

NOTE: Check that the circlip is seated in the groove properly.

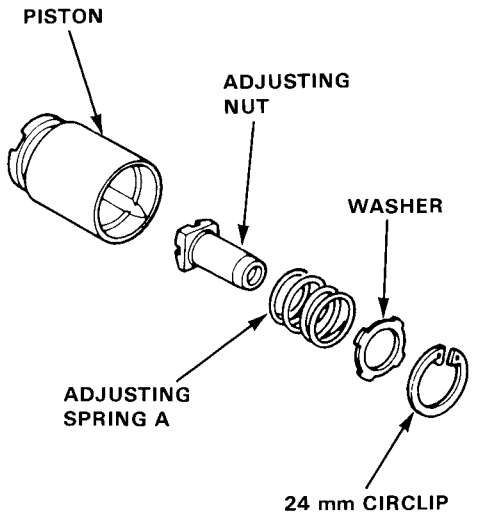


(cont'd)

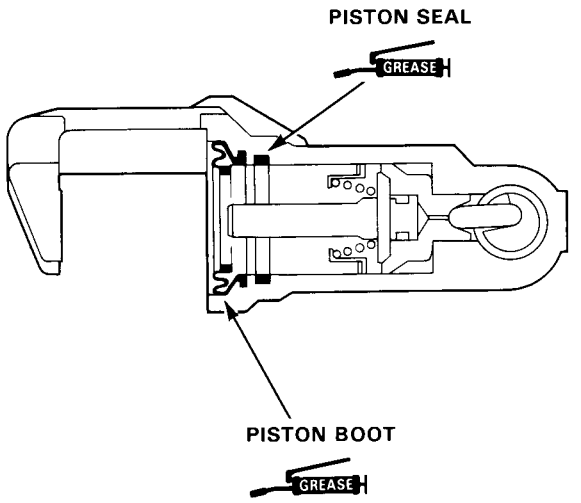
Rear Caliper

Reassembly (cont'd)

16. Install the adjusting nut, adjusting spring A, and washer, and secure with the circlip.

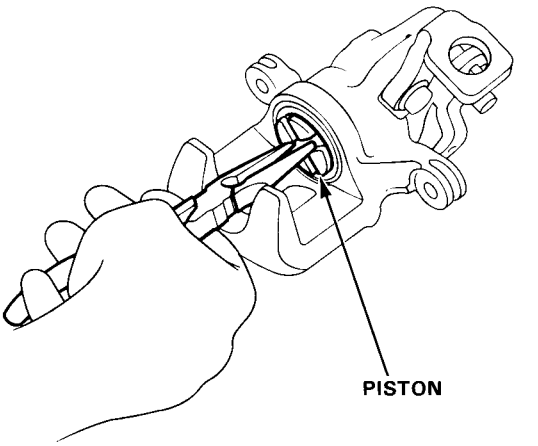


17. Coat the new piston seal and piston boot with silicone grease and install them in the caliper.



18. Coat the outside of the piston with silicone grease, and install it on the adjusting bolt while rotating it clockwise.

CAUTION: Avoid damaging the piston boot.



19. Install the brake pad retainers and brake pads.
20. Install the pad springs on the caliper.
21. Install the caliper on the caliper bracket and tighten the caliper mounting bolts.
22. Connect the brake hose to the caliper with new sealing washers and tighten the banjo bolt.
23. Connect the parking brake cable to the arm on the caliper.
24. Fill the brake reservoir up and bleed the brake system (page 13-13).
25. Operate the brake pedal several times, then adjust the parking brake lever.

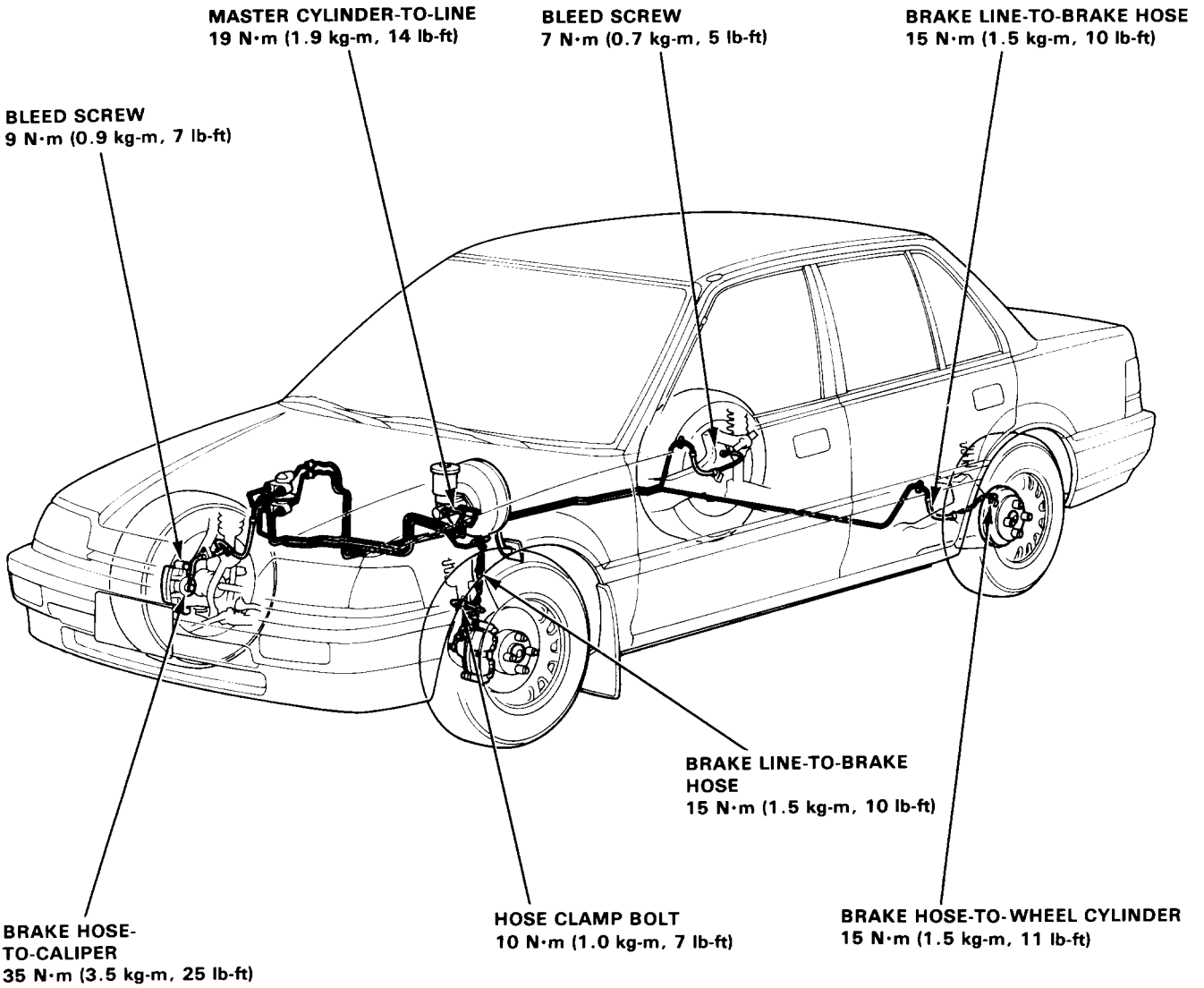
    NOTE: Before adjustments, make sure the parking brake arm on the caliper touches the pin.

26. Install the caliper shield and tighten the bolts.

Brake Hoses/Pipes

Inspection

1. Inspect the brake hoses for damage, leaks, interference or twisting.
2. Check the brake lines for damage, rusting or leakage. Also check for bent brake lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.



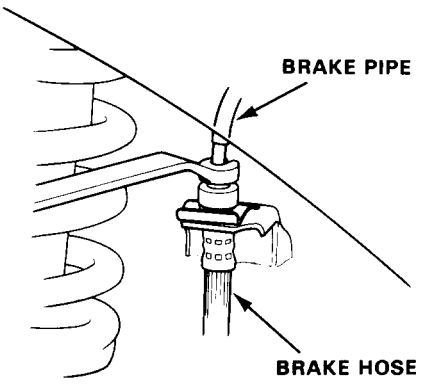
Brake Hose/Pipes

Brake Hoses Replacement

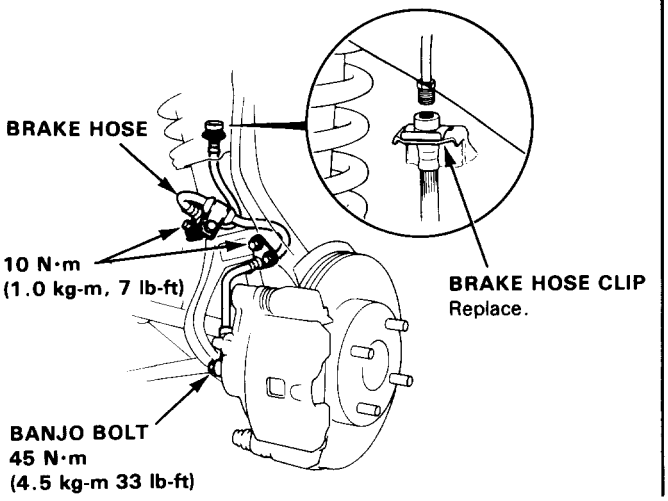
CAUTION

- **Before reassembling, check that all parts are free of dust and other foreign particles.**
- **Replace parts with new ones whenever specified to do so.**
- **Use only clean brake fluid.**
- **Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid as they may not be compatible.**
- **Do not spill brake fluid on the car, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**

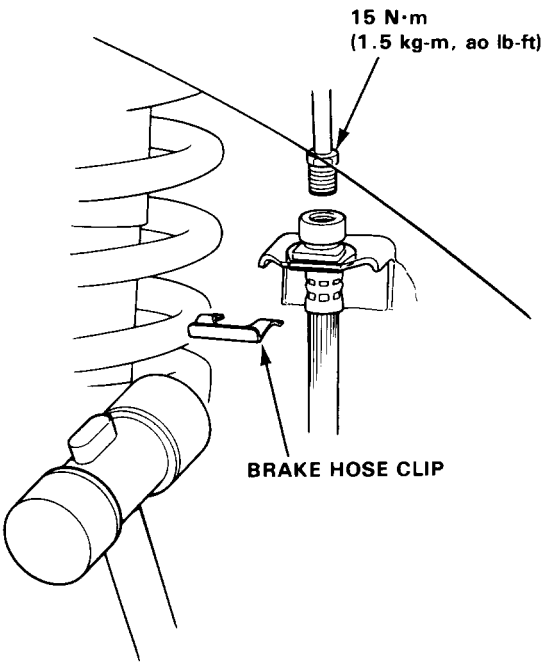
1. Replace the brake hose if the hose is twisted, cracked or if it leaks.
2. Disconnect the brake hose from the brake pipe using a 10 mm flare nut wrench.



3. Remove and discard the brake hose clip from the brake hose.
4. Remove the banjo bolt and disconnect the brake hose from the caliper.



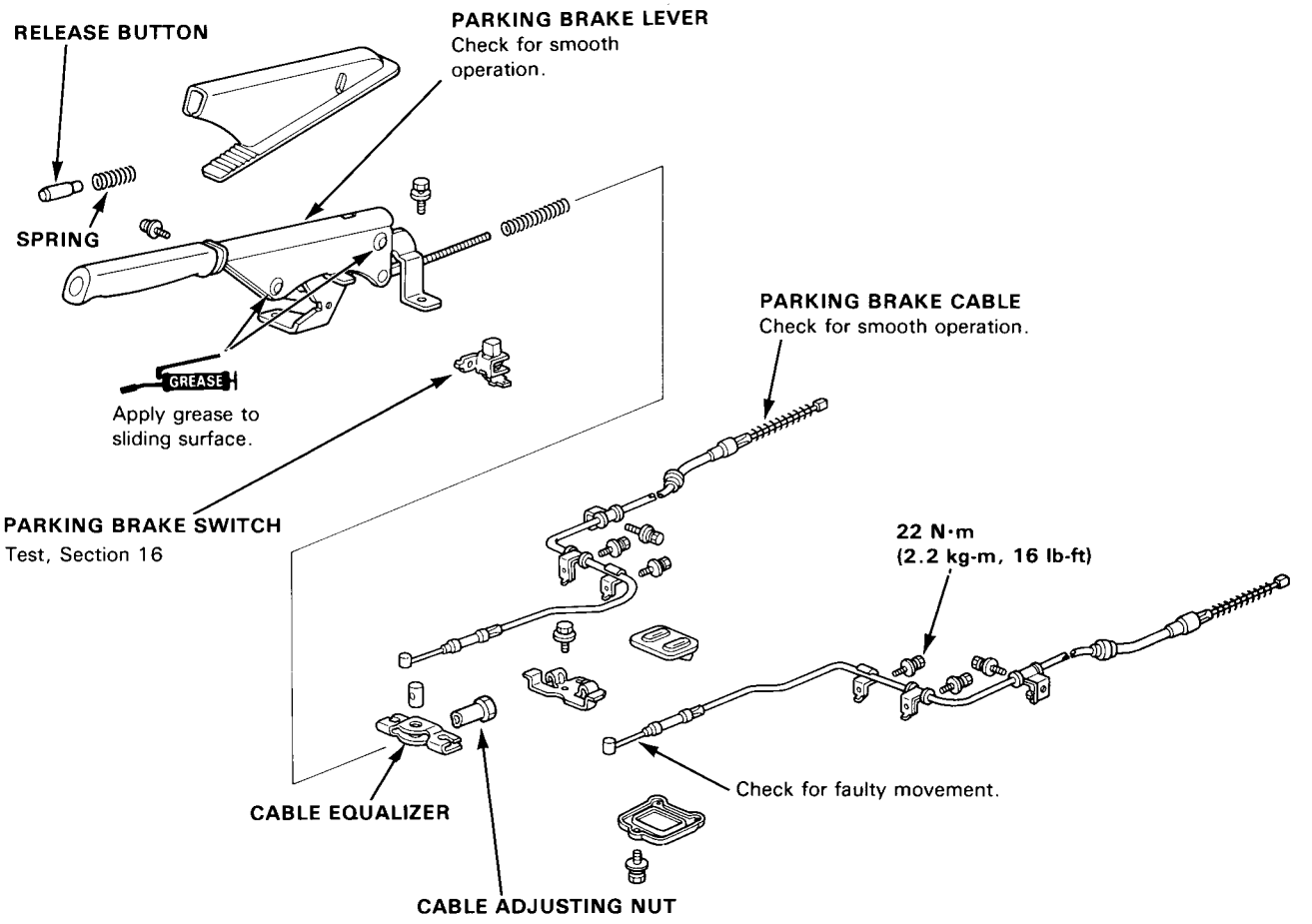
5. Install a new brake hose clip to the brake hose.
6. Connect the brake line to the brake hose.



7. Connect the brake hose to the caliper.
8. Install the brake hose on the knuckle and damper mounting clamp.
9. After installing the brake hose, check the hose and line joints for leaks, and tighten as necessary.

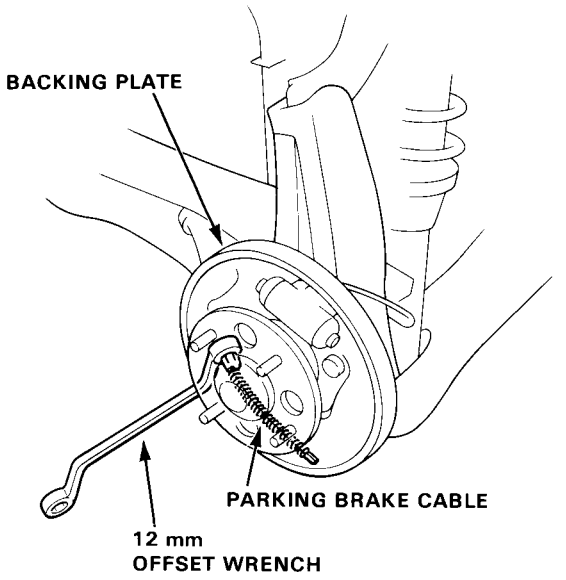
Parking Brake

Disassembly and Reassembly



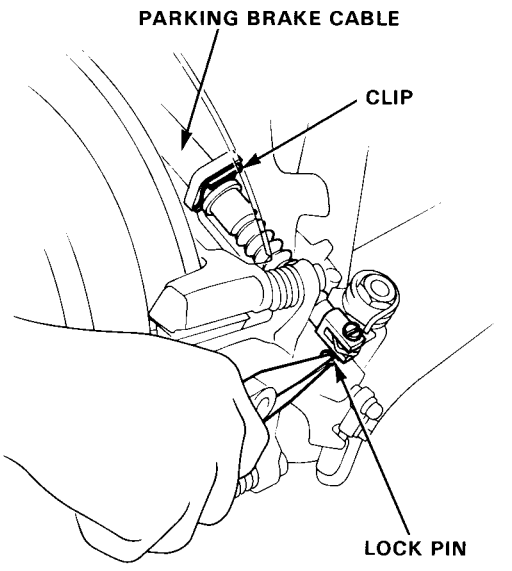
REAR DRUM BRAKE

Remove the parking brake cable from the backing plate using a 12 mm offset wrench as shown.



REAR DISC BRAKE

Disconnect the parking brake cable from the lever on the caliper by removing the lock pin.

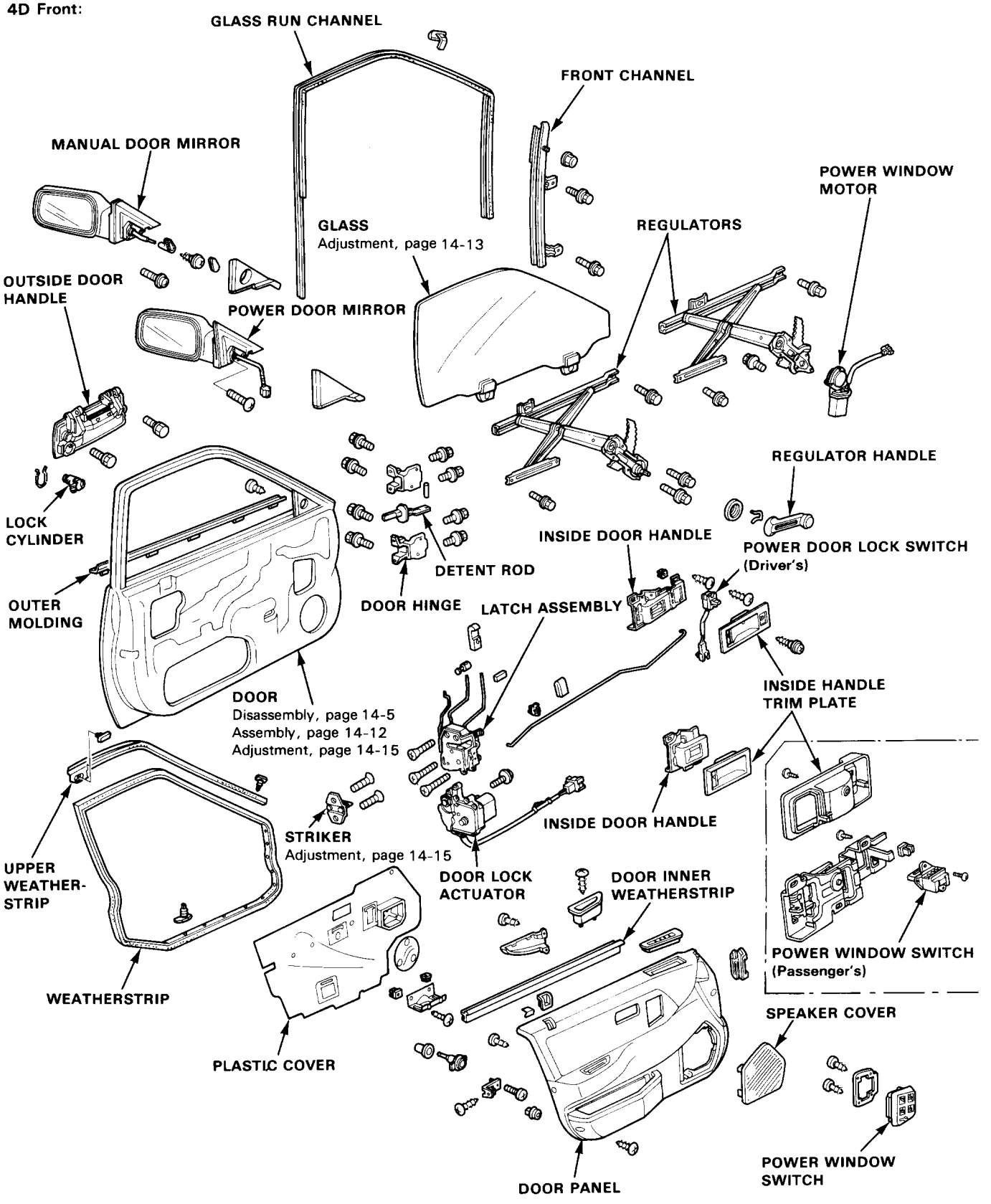


Body

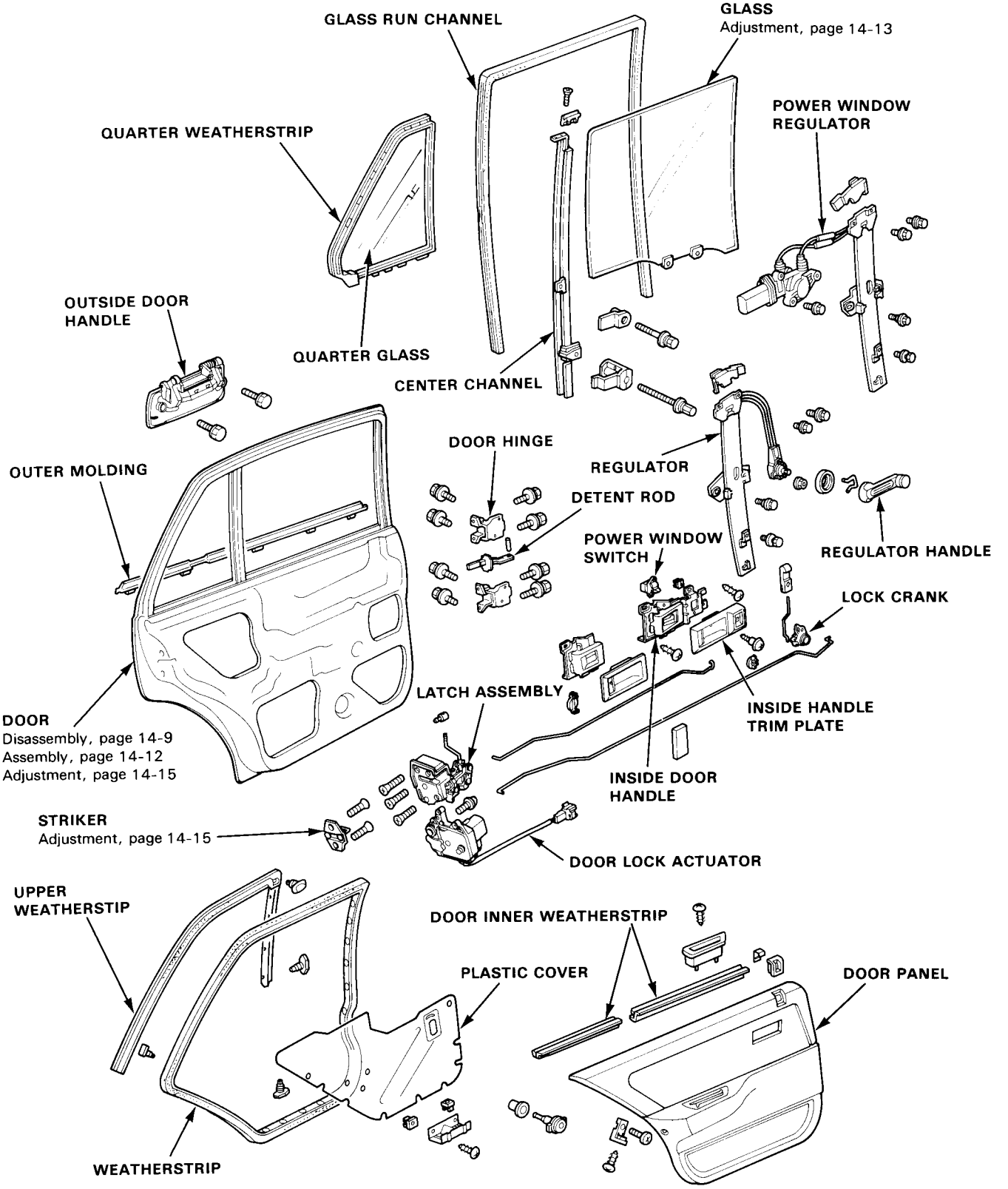
Doors

Index

4D Front:



Rear:

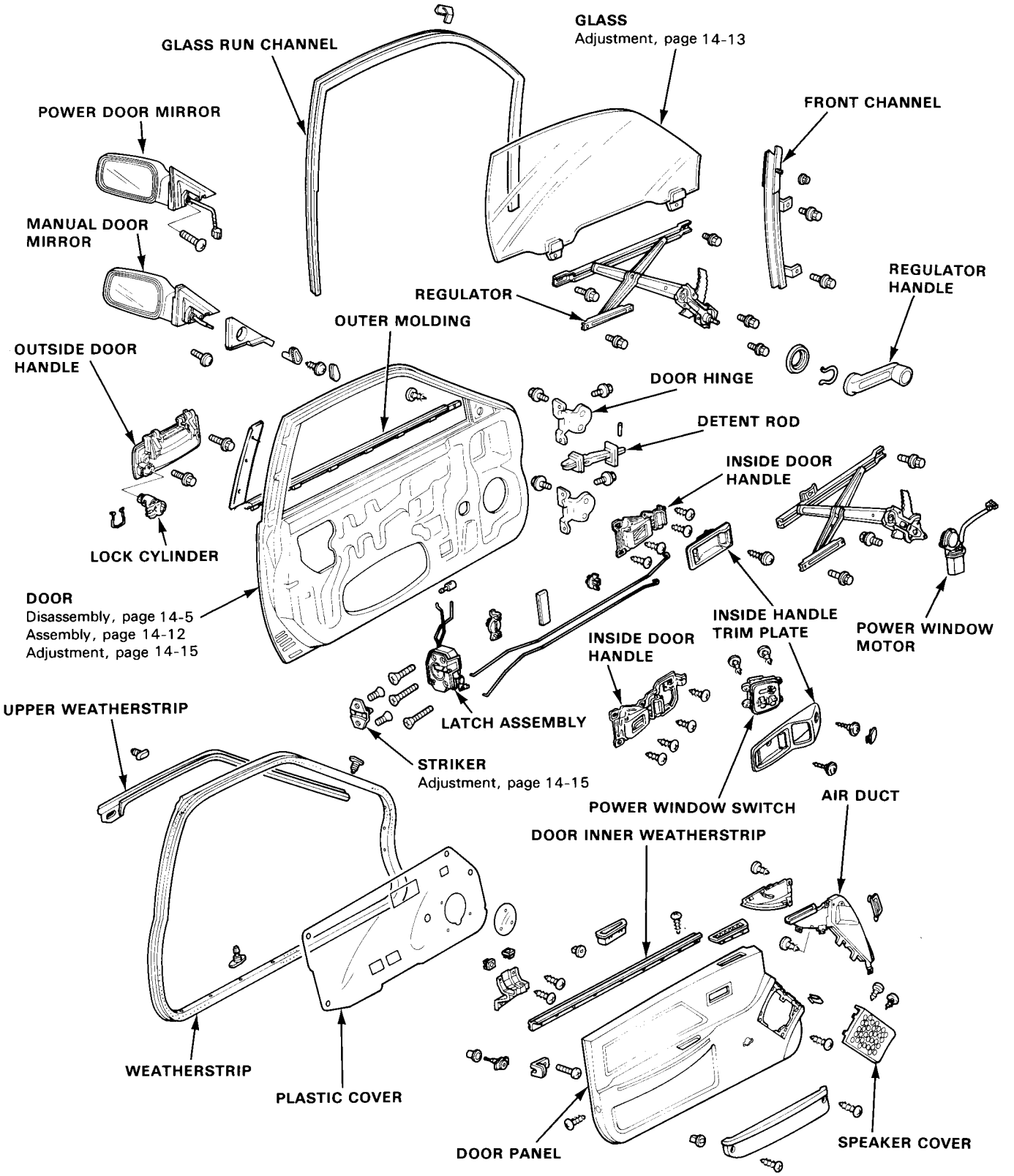

GLASS RUN CHANNEL
GLASS
Adjustment, page 14-13
QUARTER WEATHERSTRIP
POWER WINDOW REGULATOR
OUTSIDE DOOR HANDLE
QUARTER GLASS
CENTER CHANNEL
DOOR HINGE
OUTER MOLDING
REGULATOR
DETENT ROD
POWER WINDOW SWITCH
REGULATOR HANDLE
LOCK CRANK
DOOR
Disassembly, page 14-9
Assembly, page 14-12
Adjustment, page 14-15
LATCH ASSEMBLY
INSIDE HANDLE TRIM PLATE
INSIDE DOOR HANDLE
STRIKER
Adjustment, page 14-15
DOOR LOCK ACTUATOR
UPPER WEATHERSTIP
DOOR INNER WEATHERSTRIP
PLASTIC COVER
DOOR PANEL
WEATHERSTRIP

(cont'd)

Doors

Index (cont'd)

2D H/B:

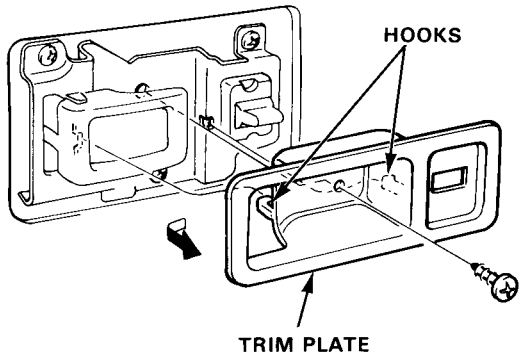


Front Door

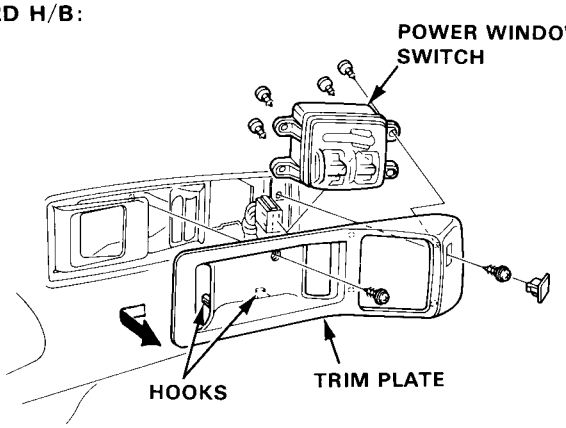
Disassembly

1. Remove the trim plate screw, then carefully remove the trim plate.

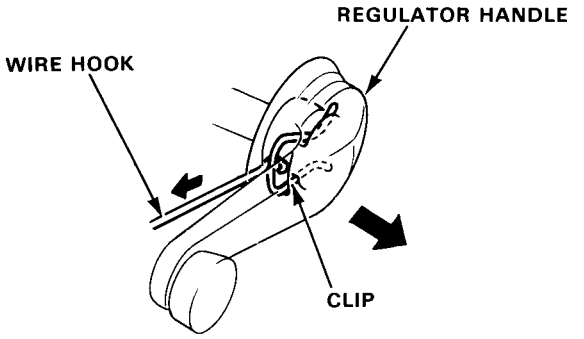
4D:



2D H/B:

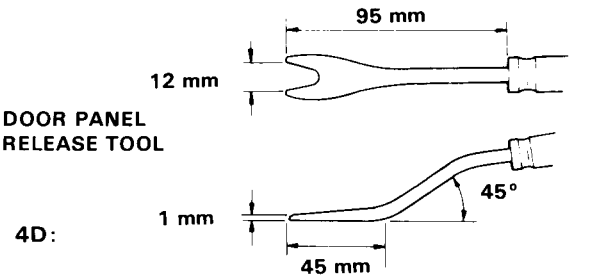


2. If applicable, remove the regulator handle by pulling the clip out with a wire hook.

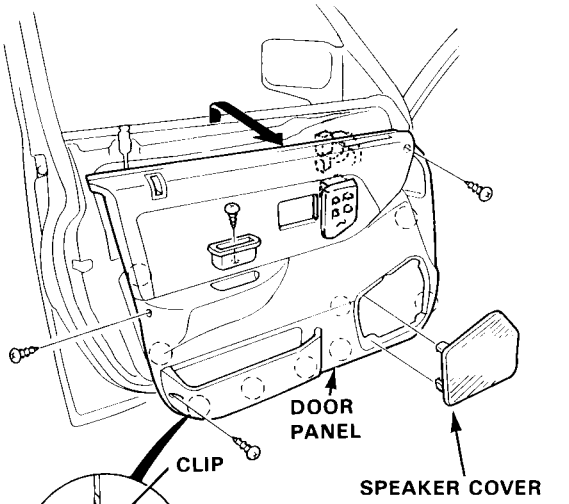


3. Remove the screw and carefully pry up the armrest pocket.
Remove the screws, then remove the speaker cover (2D H/B).
Remove the screws and clips (See door panel release tool) attaching the door panel.
Remove the door panel by pulling it upward and disconnect the power window harnesses (4D, Driver's).

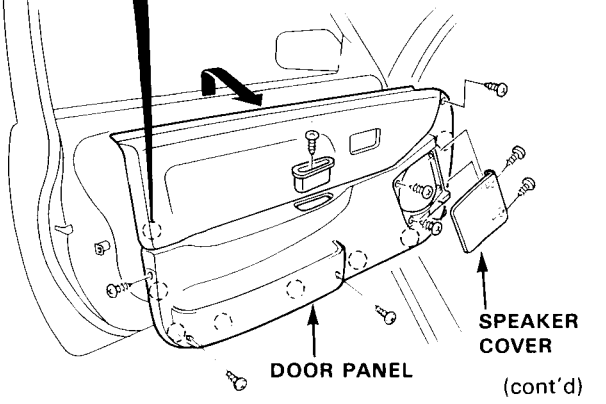
NOTE: Remove the panel with as little bending as possible to avoid creasing or breaking it.



4D:



2D H/B:

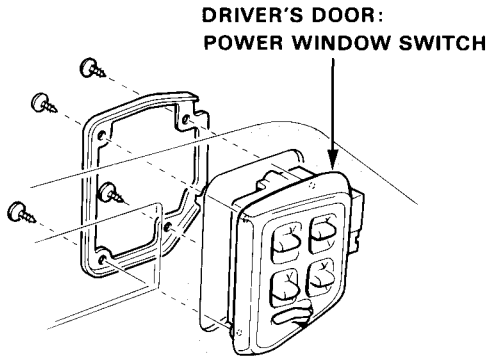


(cont'd)

Front Door

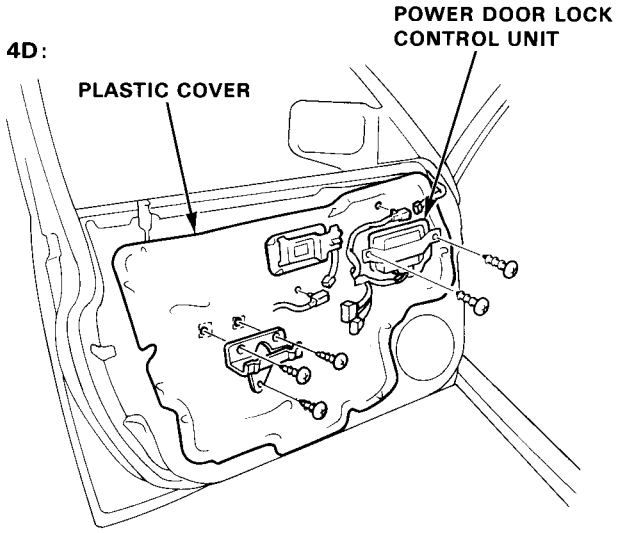
Disassembly (cont'd)

4. Remove the power window switch, if equipped, from the door panel by removing the 4 screws.

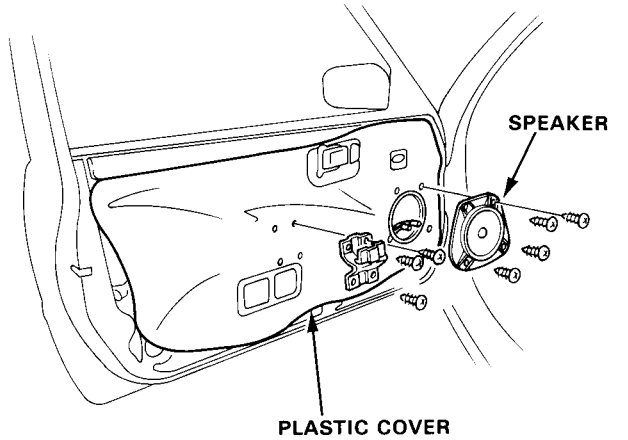


5. Remove the screws, then remove the power door lock control unit, speaker and door panel bracket.

6. Carefully remove the plastic cover.

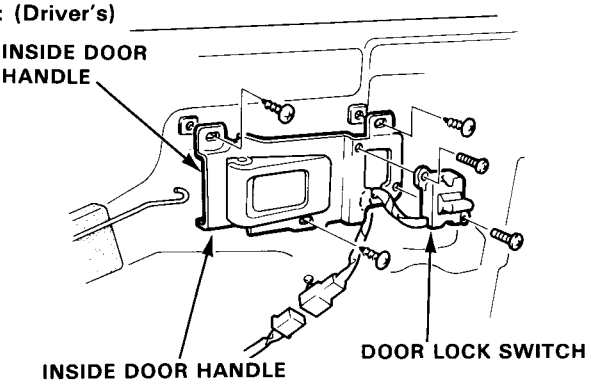


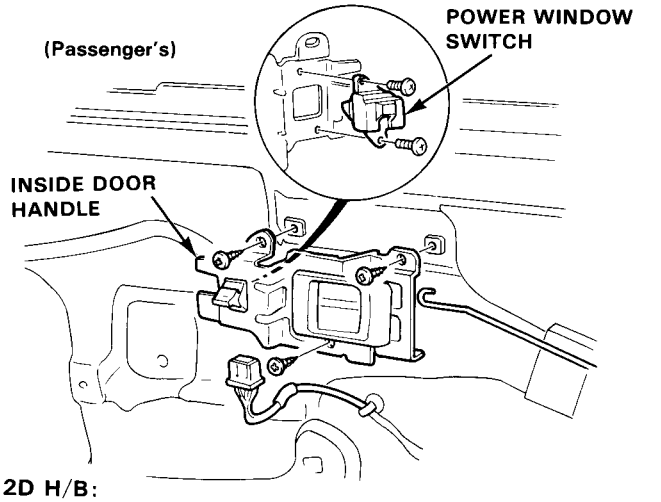
2D H/B:



7. Disconnect the wire harness and remove the 3 screws, then remove the inside door handle. Remove the screws, then remove the switch.

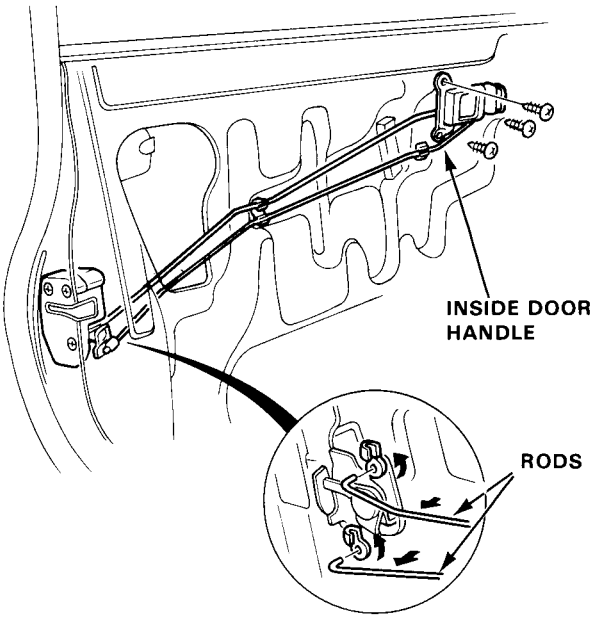
4D: (Driver's)





2D H/B:

Remove the 3 screws, disconnect the latch rods, then remove the inside door handle.



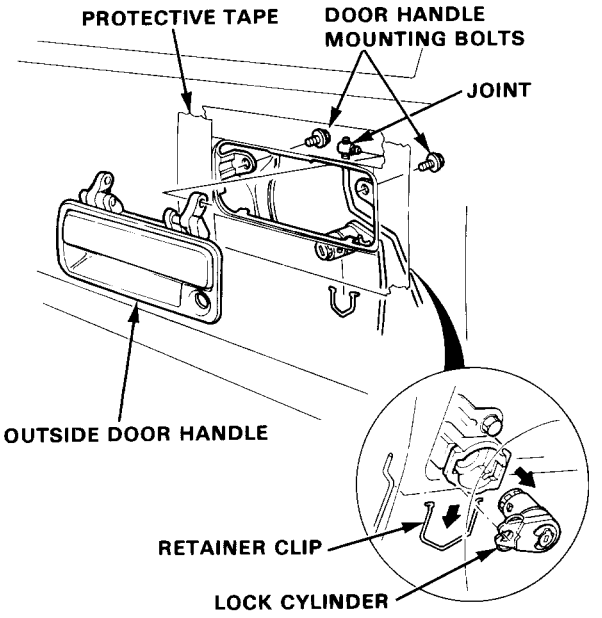
8. Reconnect the window switch or use 12 V battery to operate the window regulator.

9. Raise the window fully.

10. Pull out the retainer clip, and take out the lock cylinder, then disconnect the lock rod.

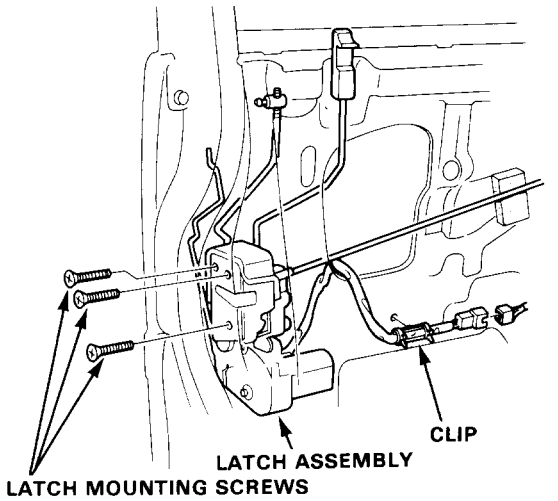
    NOTE: Use protective tape around the edge of the door handle to prevent scratching the paint.

11. Remove the mounting bolts for the outside door handle.



12. Pull the outside door handle out, and pry the joint off the handle with a flat tip screwdriver. Remove the handle from the rod.

13. Remove the screws and take the door latch off the door, then push the door latch and rod insie the door.

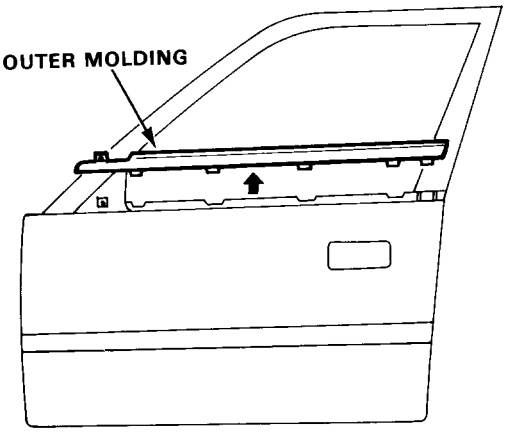


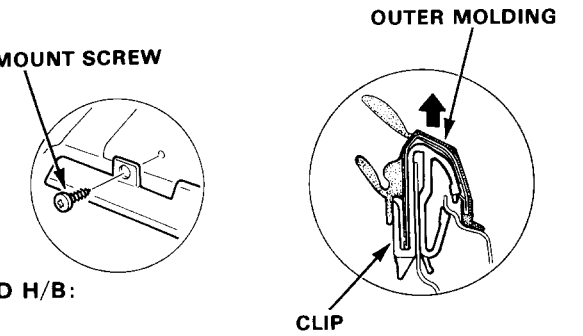
14. Lower the window fully.

15. Remove the door mirror (page 14-16, 17).

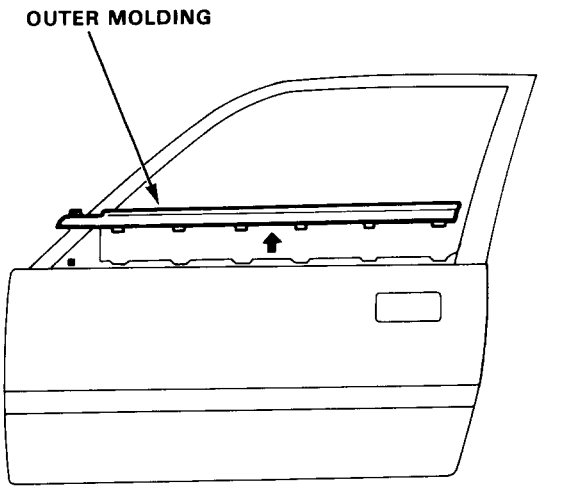
16. Remove the screw and detach the clips, then remove the outer molding.

4D:





2D H/B:

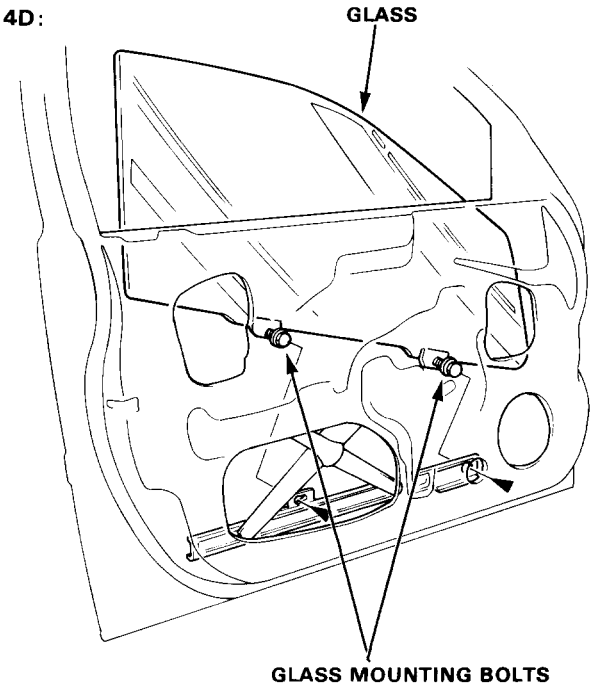


(cont'd)

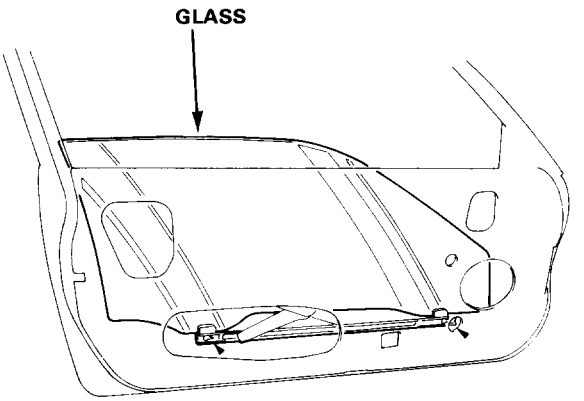
Disassembly (cont'd)

17. Carefully raise the window until you can see its mounting bolts. Loosen the bolts and pull the door glass out through the window slot.

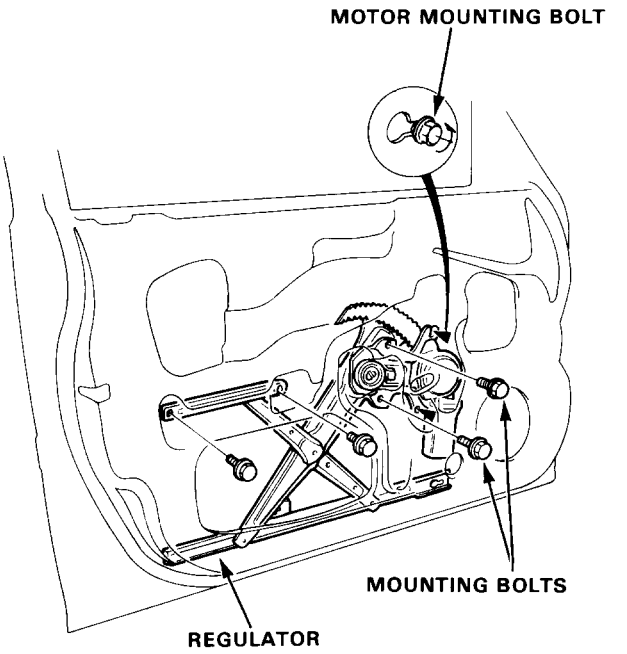
4D:



2D H/B:



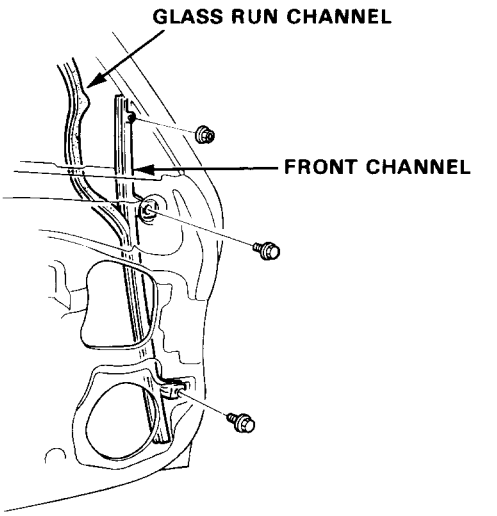
18. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.



19. Remove the glass run channel.

20. Remove the front channel by removing the 2 bolts and the nut.

NOTE: Before installation, insert the glass run channel into the front channel.

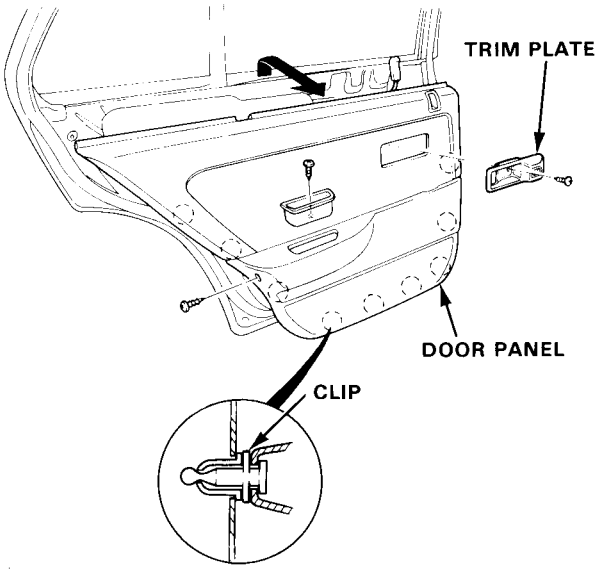


Rear Door

Disassembly

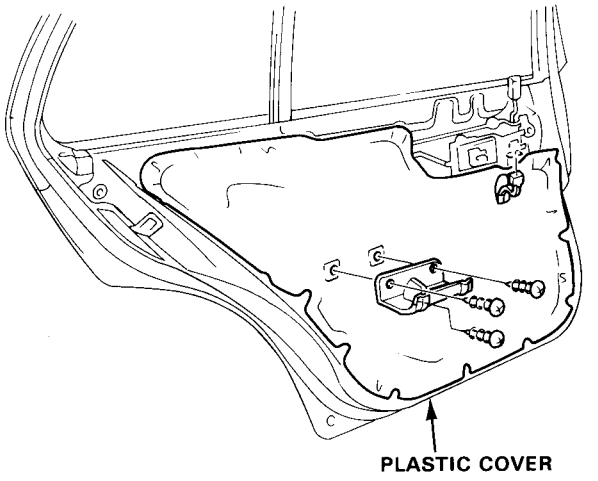
1. Remove the trim plate by removing the screw.

2. Pry apart the 9 clips and lift the door panel straight up off the window sill.



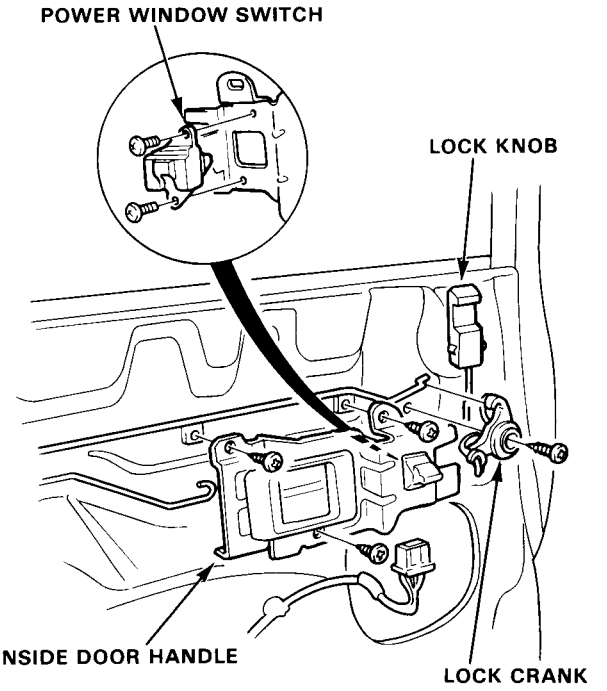
3. Remove the screws, then remove the door panel bracket.

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.

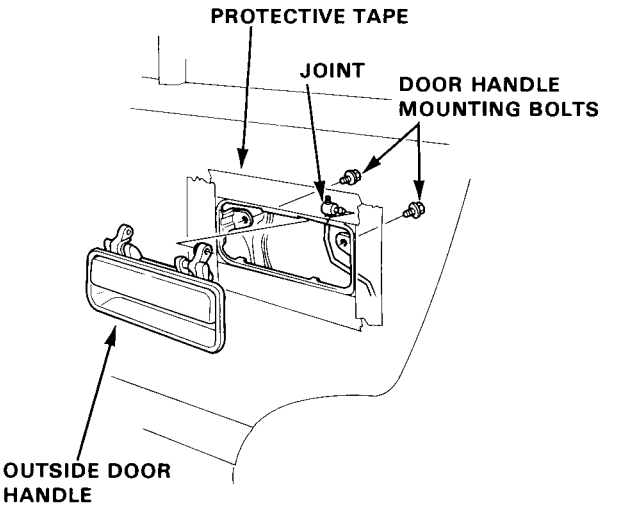
6. Disconnect the wire harness and remove the 2 screws, then remove the power window switch.



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.

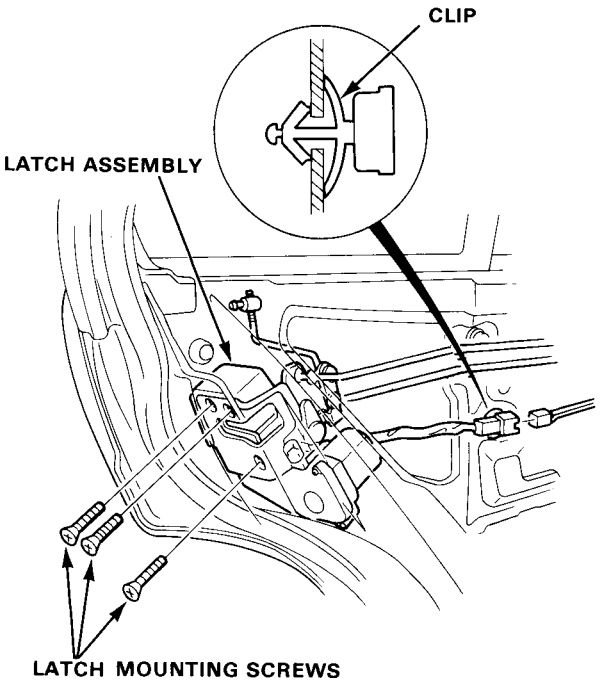
   NOTE: Use protective tape around the edge of the door handle to prevent scratching the paint.



(cont'd)

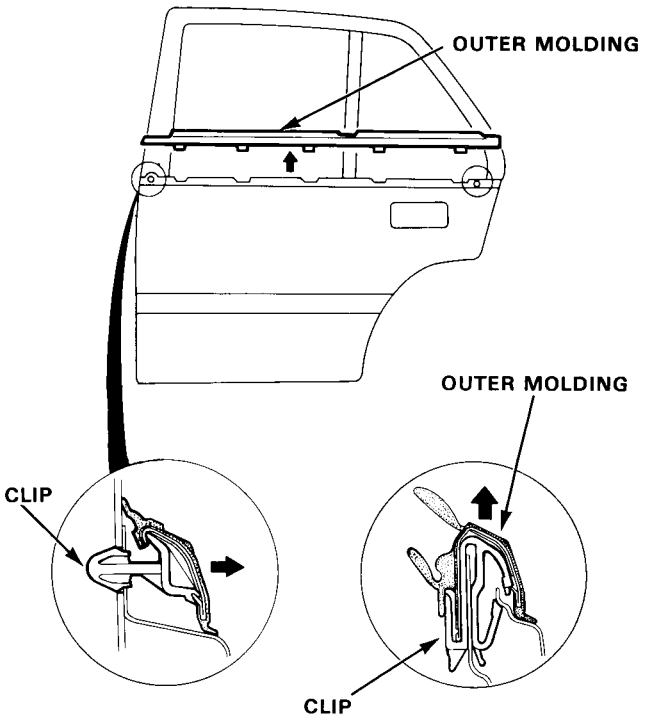
Disassembly (cont'd)

9. Remove the screws and take the latch assembly off the door, then push the latch assembly and rod inside the door.

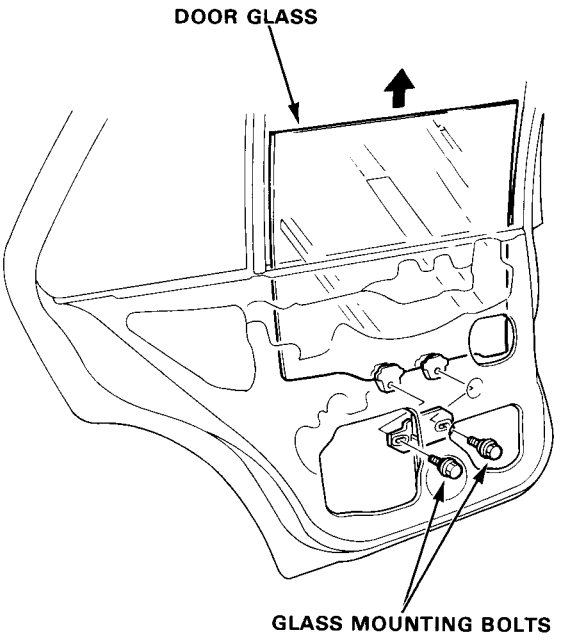


10. Lower the window fully.

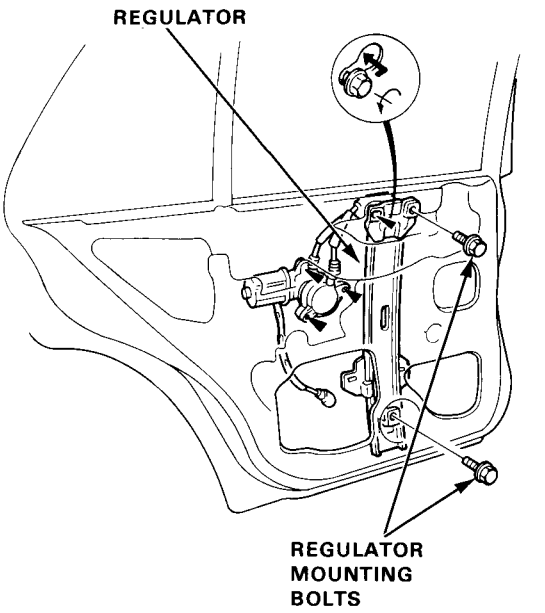
11. Detach the clips, remove the outer molding.



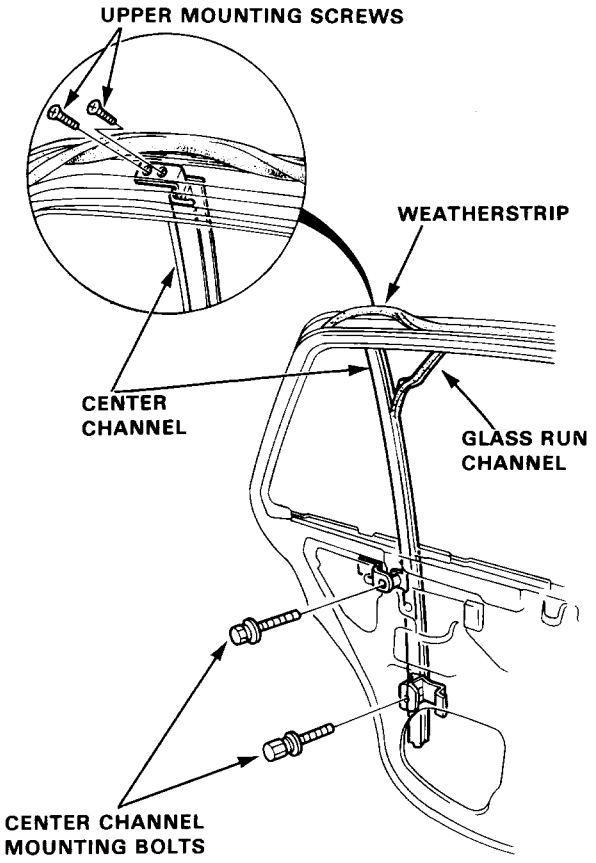
12. Carefully raise the door glass until you can see its mounting bolts, then remove the bolts. Pull the door glass out through the window slot.



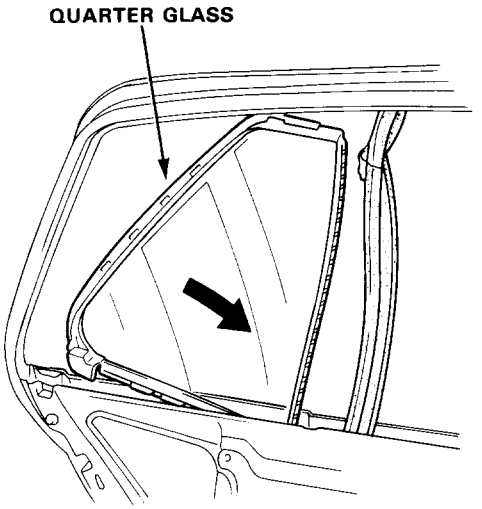
13. Remove the 2 mounting bolts and loosen the 4 bolts, then take out the regulator assembly through the lower hole in the door.



14. Pull away weatherstip and remove the 2 screws as shown. Remove the 2 channel bolts, then remove the center channel.



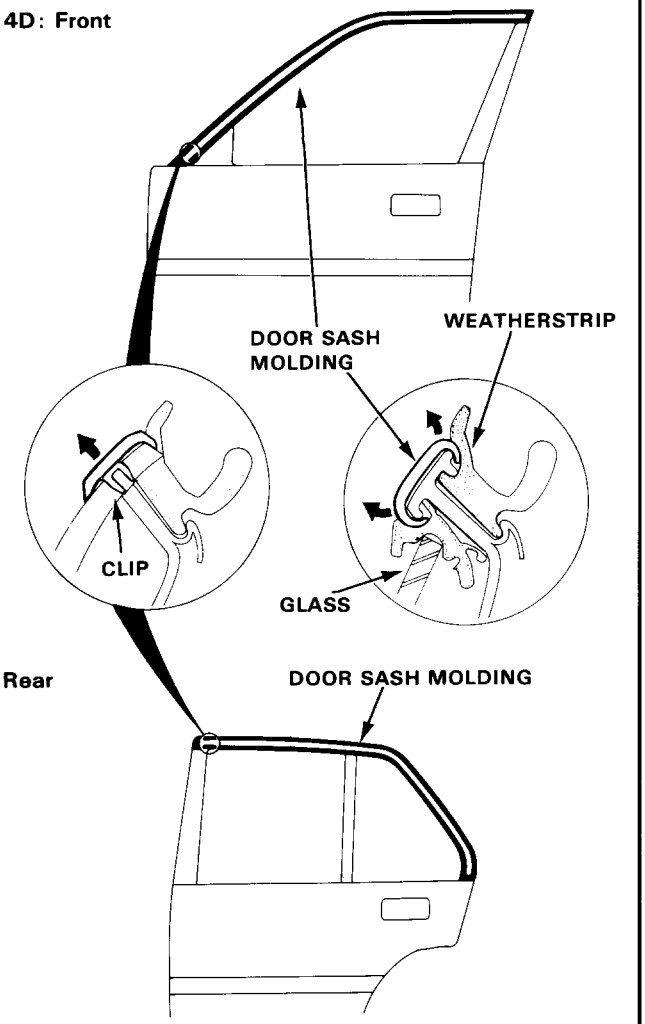
15. Remove the quarter glass.



Removal

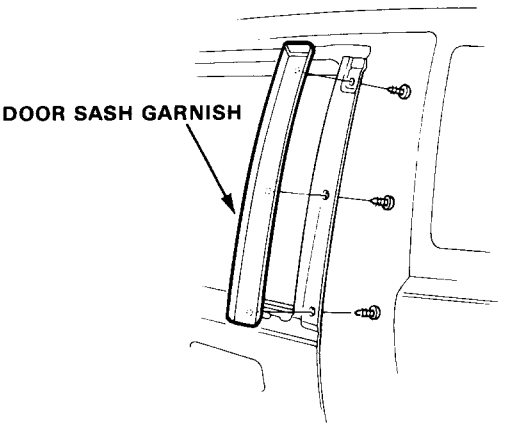
1. Remove the door sash molding by pulling it by hand, starting at the clip.

4D: Front



2D H/B:

2. Remove the 3 screws, then remove the door sash garnish.

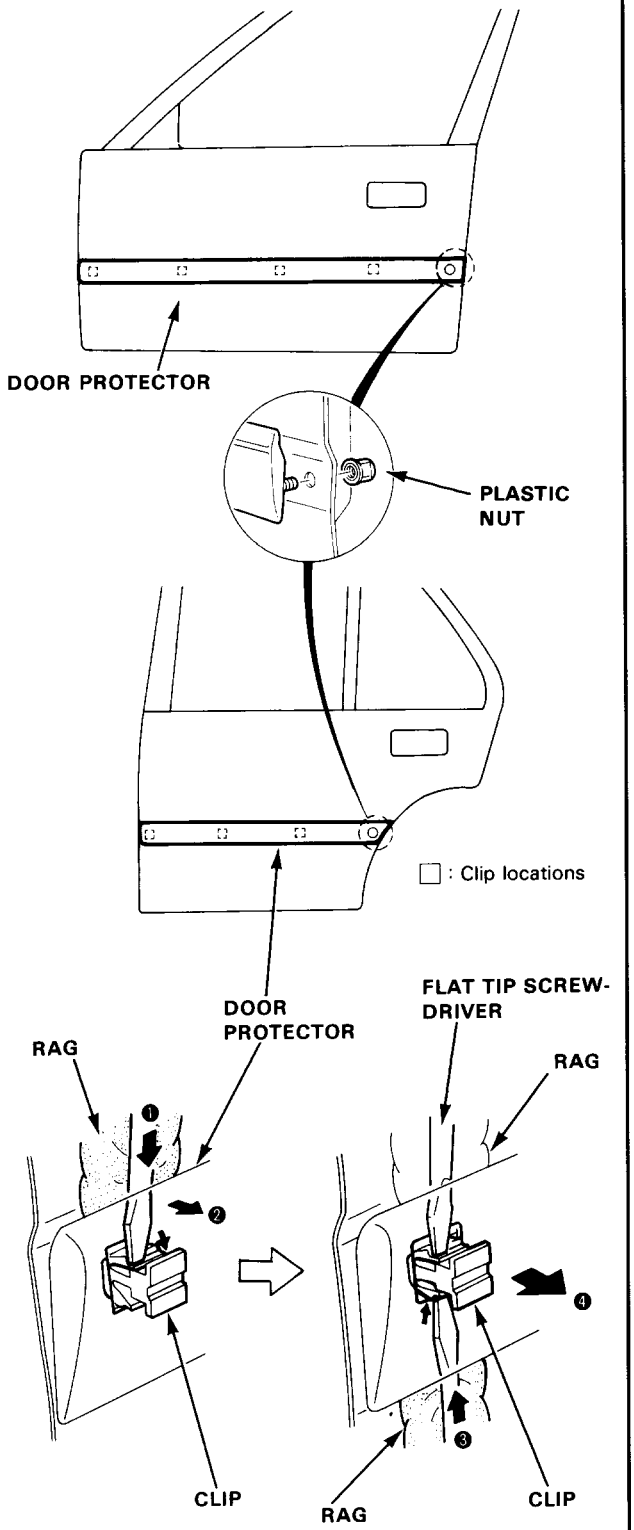


(cont'd)

Door Molding

Removal (cont'd)

3. Remove the door protector by removing the nut and detach the clips from the inside, or outside.



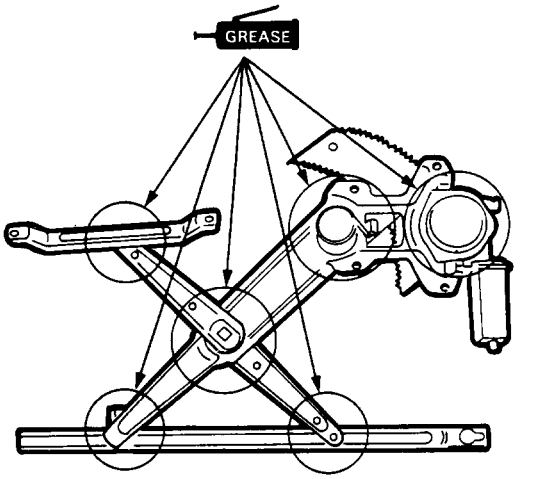
Doors

Assembly

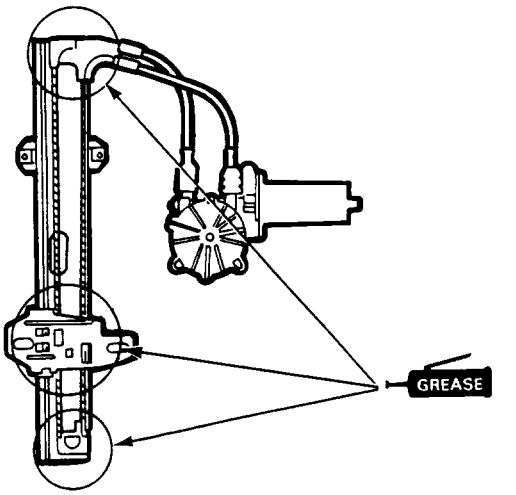
Assemble the door in the reverse order of disassembly, and also:

1. Grease all the sliding surfaces of the window regulator where shown.

Front:

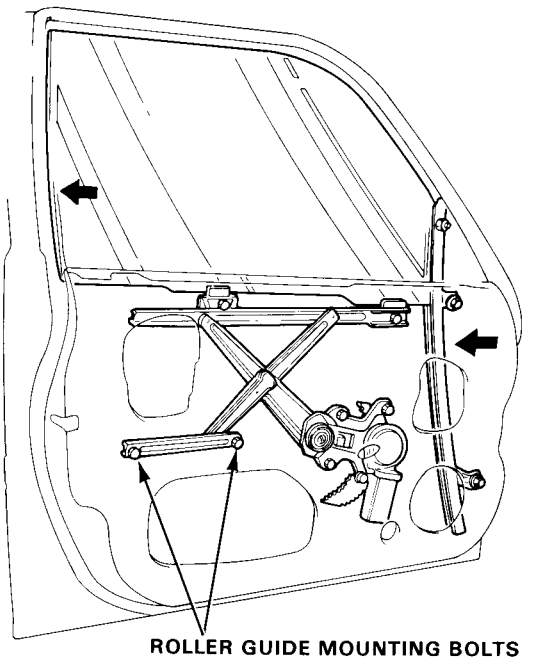


Rear:



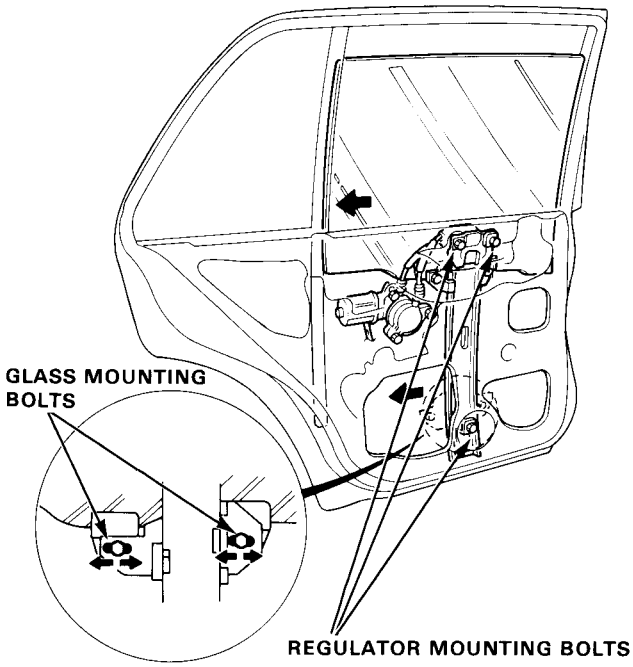
2. To adjust window fit in the door, raise the window as far up as possible and hold it against the door sash. Then, tighten the roller guide bolts or motor mounting bolts.

4D Front and 2D H/B:



Rear:

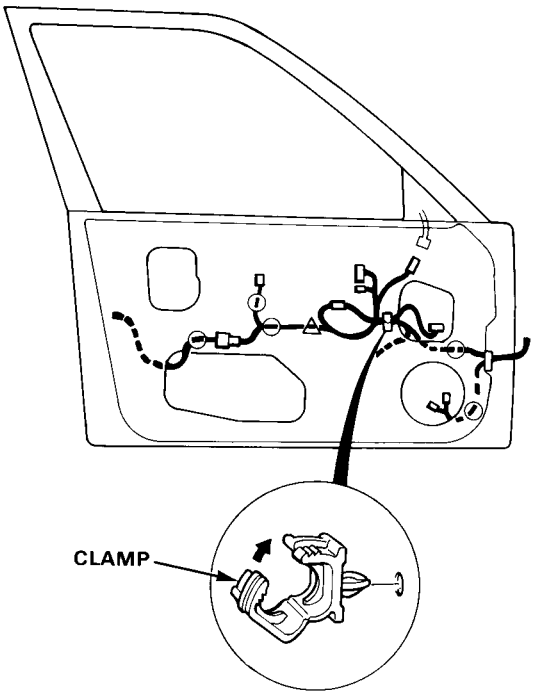
3. Raise the window as far up as possible and hold it against the door sash, then tighten the regulator mounting bolts and glass mounting bolts.



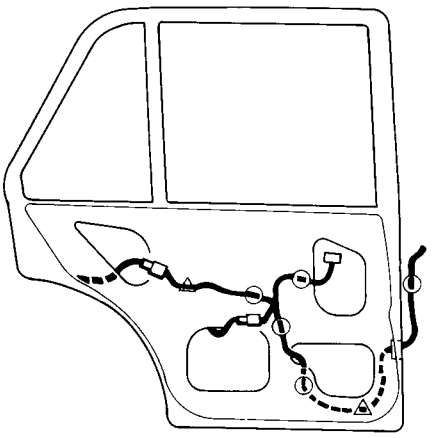
4. Fix the wire harness correctly on the door.

4D Front:

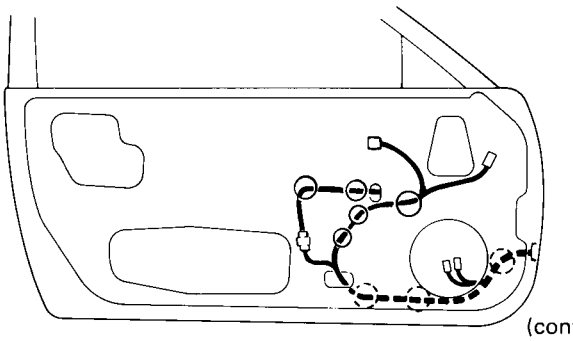
△, ○ : Clip locations



Rear:



2D H/B:



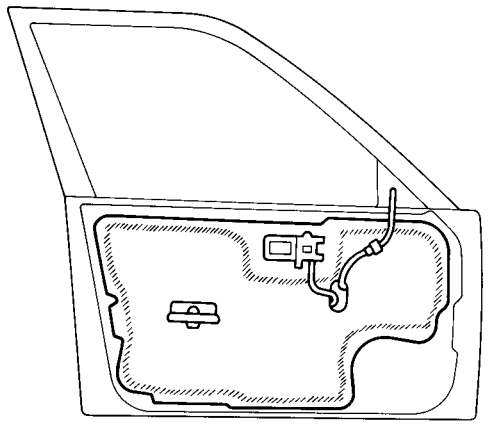
(cont'd)

Assembly (cont'd)

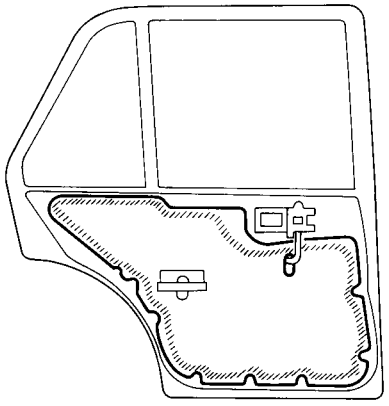
5. When reinstalling the plastic cover, apply adhesive along the edge where necessary to maintain a continuous seal and prevent air/water leaks.

   NOTE: Repair any torn section of the plastic cover.

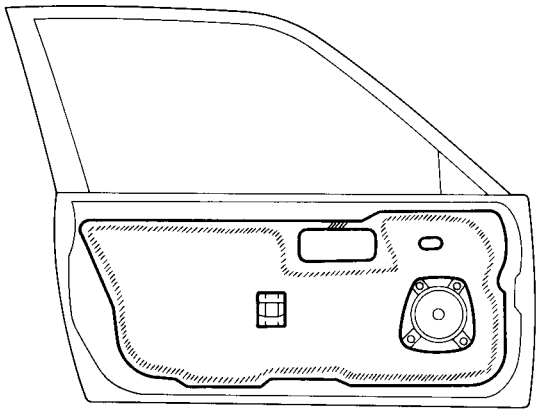
4D Front:



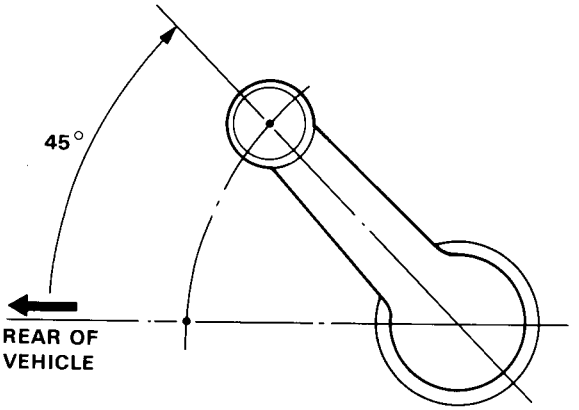
Rear:



2D H/B:



6. Install the regulator handle so it points backward, and up at a 45 degree angle with the window closed.

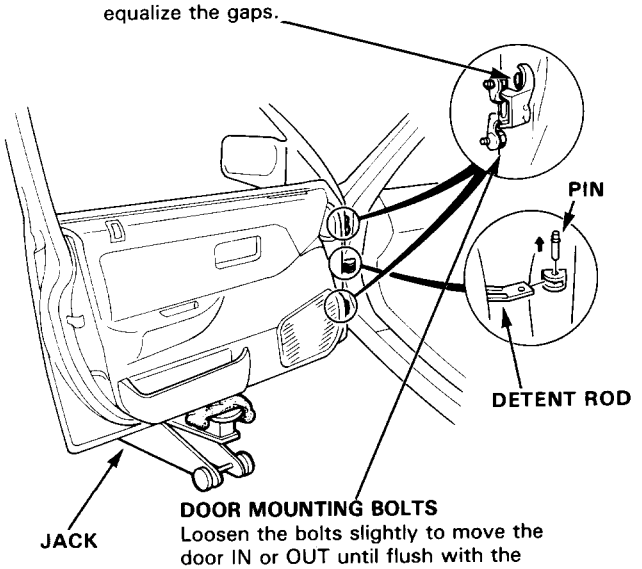


Door Position Adjustment

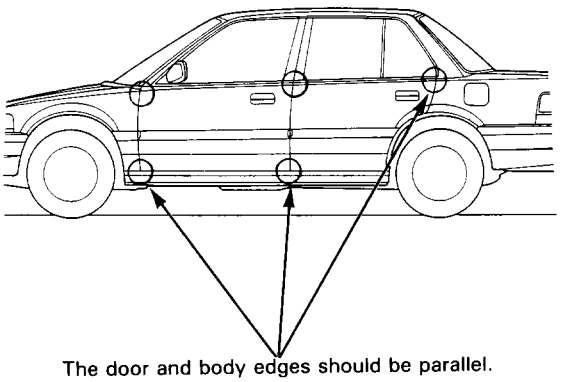
After installing the door, check for a flush fit with the body, then check for equal gap between the front and rear, and top and bottom door edges and the body. The door and body edges should also be parallel. Adjust at the hinges as shown.

CAUTION: Place a rag or shop towel on the jack to prevent damage to the door when the hinge bolts are loosened for adjustment.

HINGE MOUNTING BOLTS
Loosen the bolts, and move the door BACKWARD or FORWARD, UP or DOWN as necessary to equalize the gaps.



DOOR MOUNTING BOLTS
Loosen the bolts slightly to move the door IN or OUT until flush with the body. If necessary, you can install a shim behind one hinge to make the door edges PARALLEL with the body.

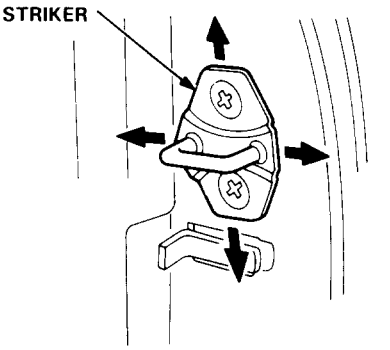


The door and body edges should be parallel.

Door Striker Adjustment

Make sure the door latches securely without slamming. If it needs adjustment:

1. Draw a line 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.



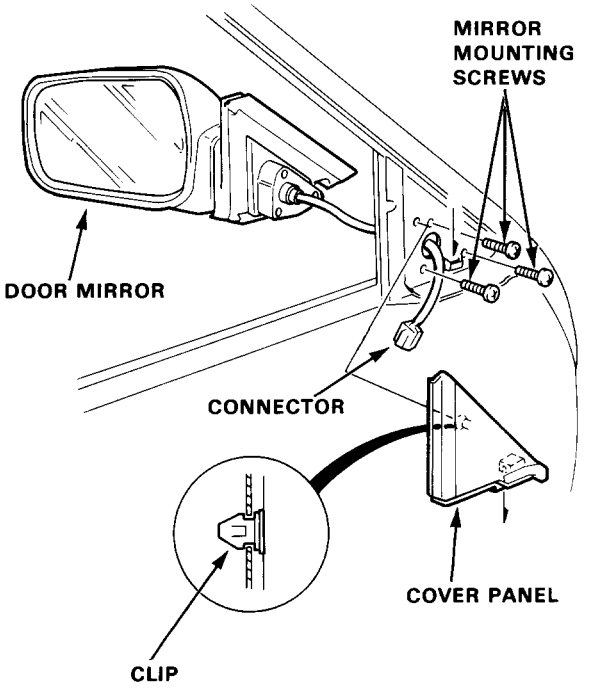
NOTE: Hold the outside handle out and push the door against the body to be sure the striker allows a flush fit.

3. If the door latches properly, tighten the screws and recheck.

Power Door Mirror

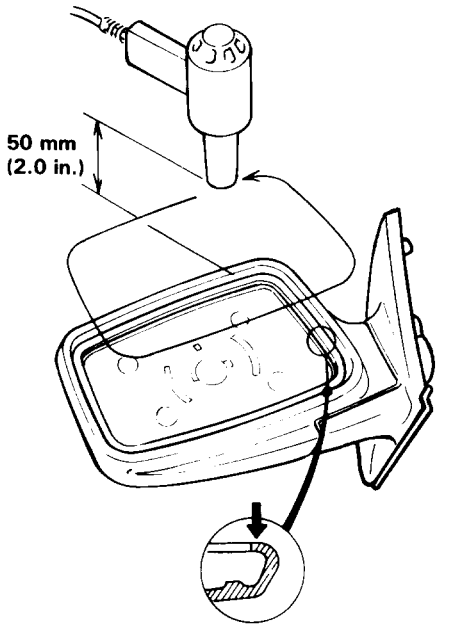
Removal

1. Remove the door panel and disconnect the power mirror connector.
2. Pry out the cover panel with a flat tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.

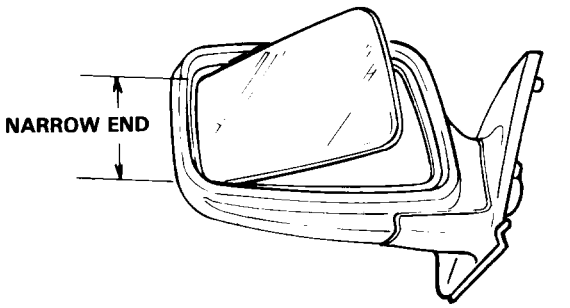


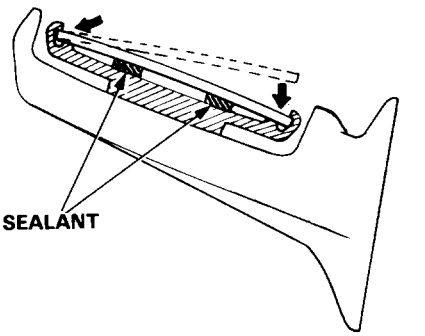
Mirror Glass Replacement

1. Heat the edge of the glass with a low powered heat gun for several minutes, then remove the glass.



2. Install the glass in the mirror case, narrow end first.

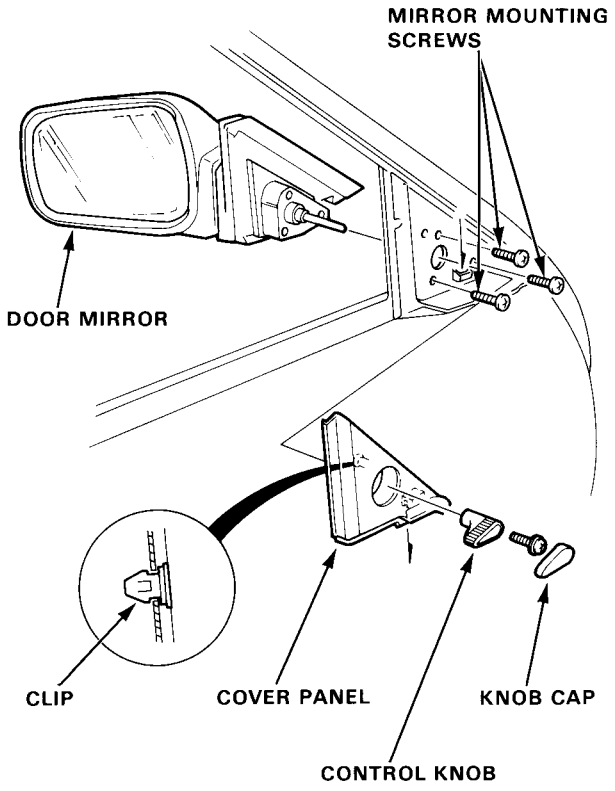




Manual Door Mirror

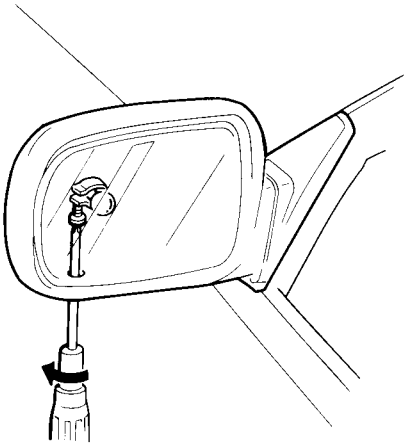
Removal

1. Remove the knob cap and screw, then remove the control knob.
2. Pry out the cover panel with a flat tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.



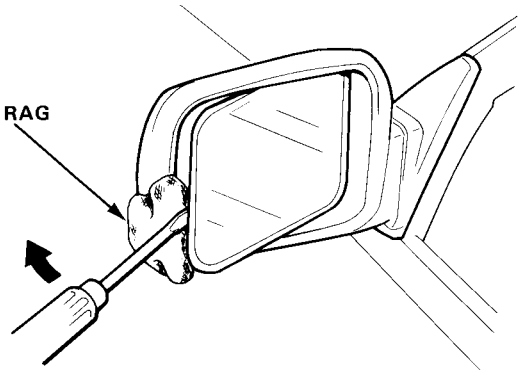
Mirror Glass Replacement

1. Insert a screwdriver in the mirror through the service hole, and loosen the glass retaining screw.

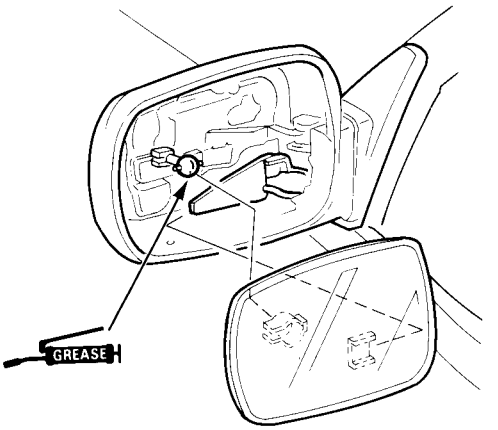


2. Carefully pry out the mirror with a flat tip screwdriver as shown.

CAUTION: To prevent damage to the mirror, wrap the end of the screwdriver with a rag or shop towel.



3. Install the mirror in the reverse order of removal, and also apply grease to the location shown.

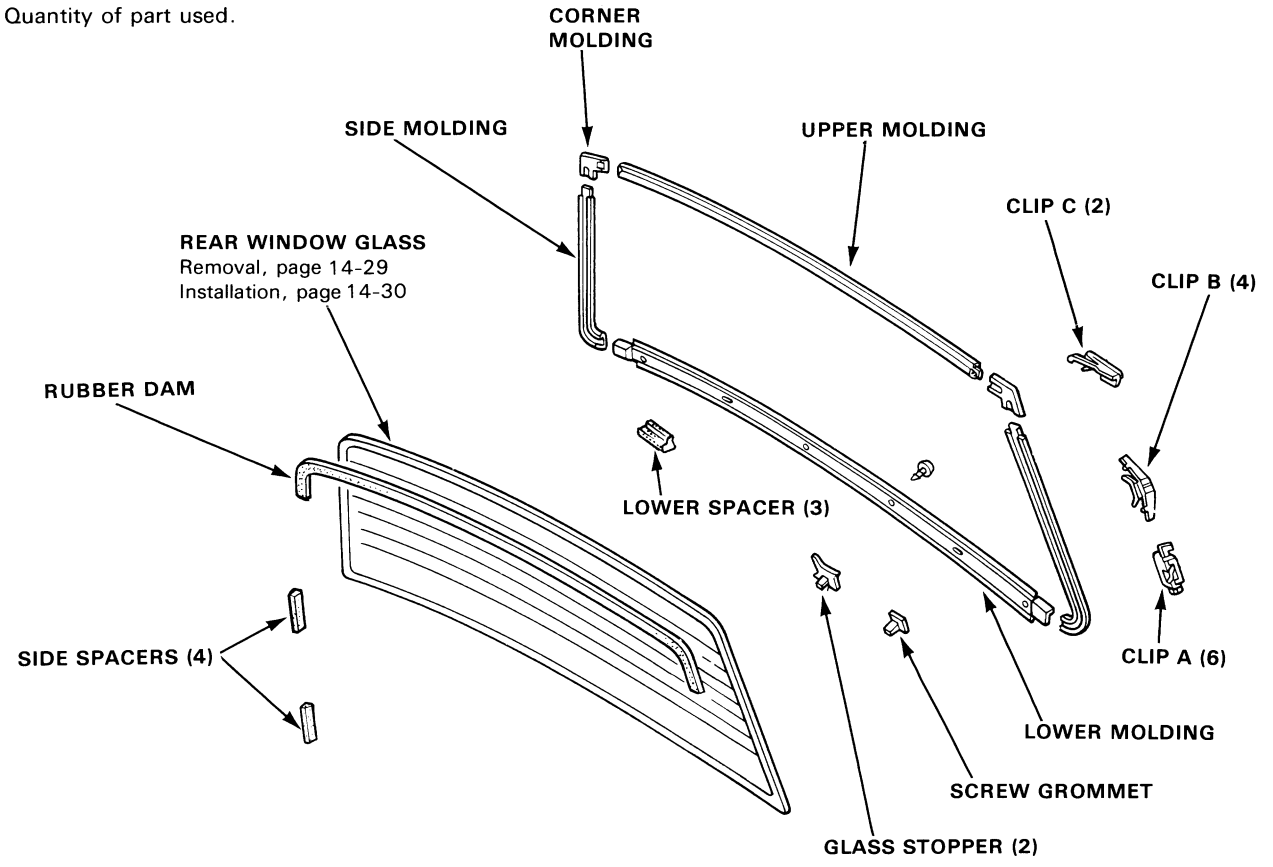


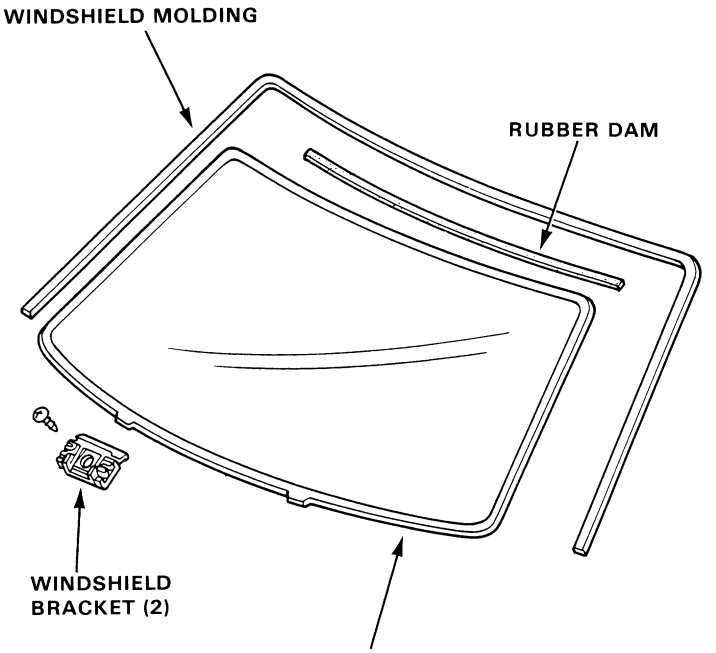
Windshield, Rear Window Glass, Quarter Glass

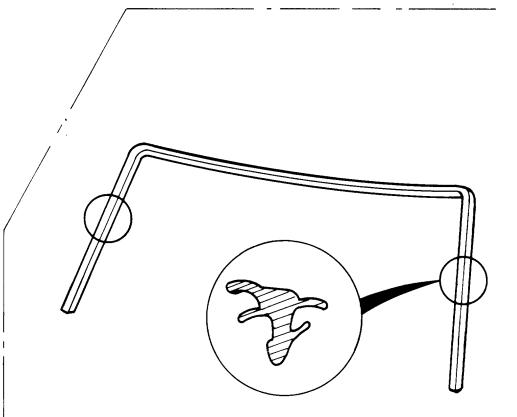
Index

4D:

( ): Quantity of part used.

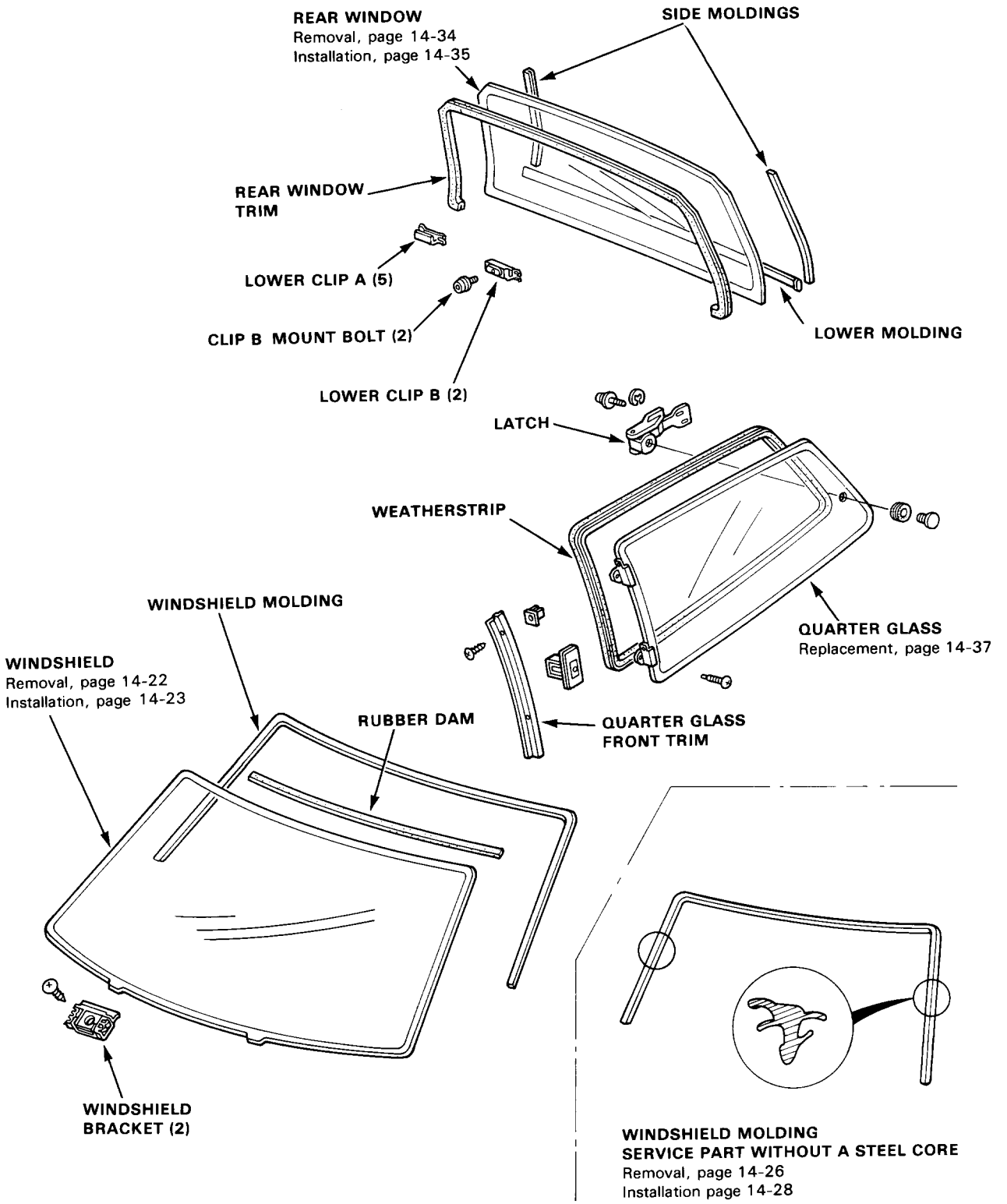






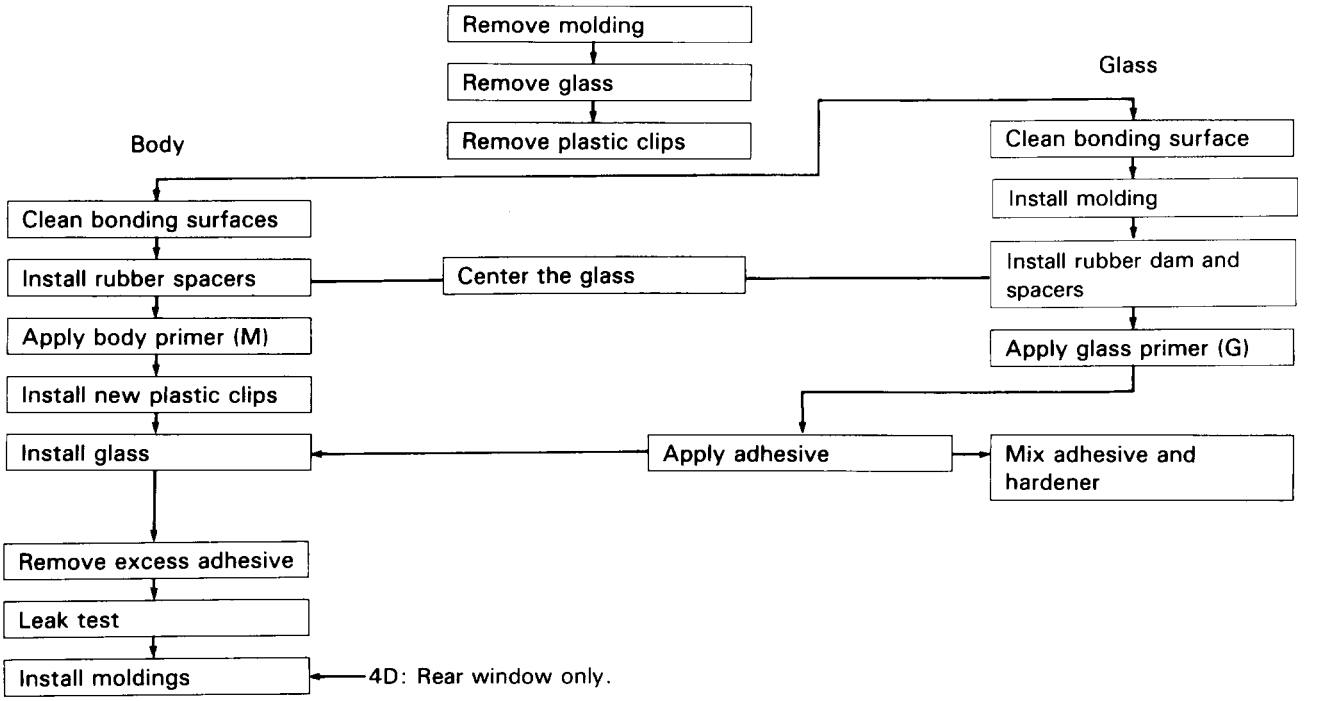
WINDSHIELD MOLDING
SERVICE PART WITHOUT A STEEL CORE
Removal, page 14-26
Installation page 14-28

2D H/B:
( ): Quantity of part used.



Windshield, Rear 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

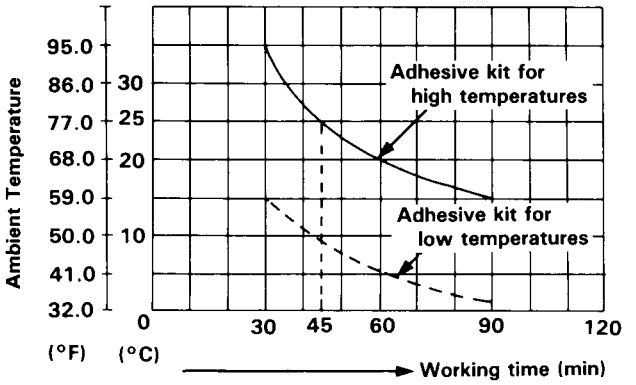
Tools

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

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.



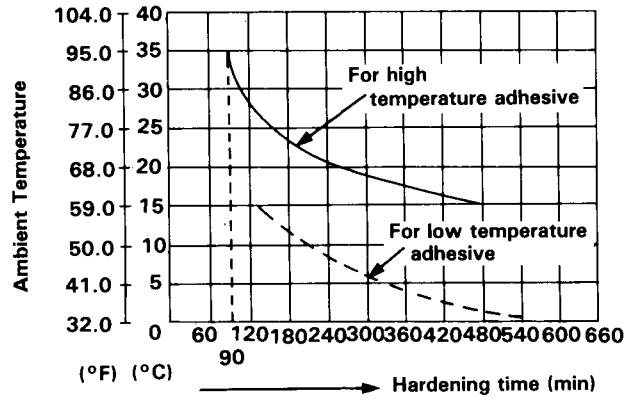
Notes

- 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 lever 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.

Windshield

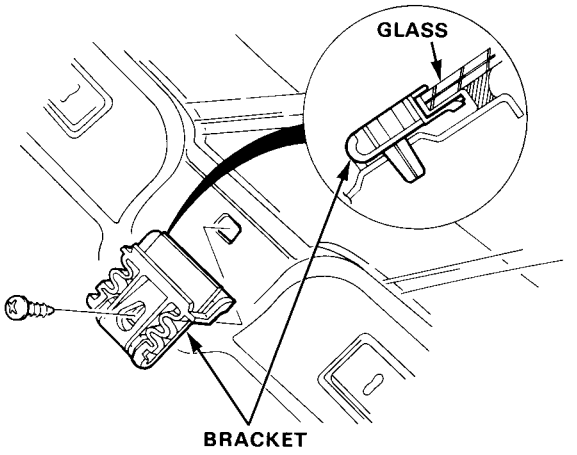
Removal

CAUTION: Use seat covers to avoid damaging surface.

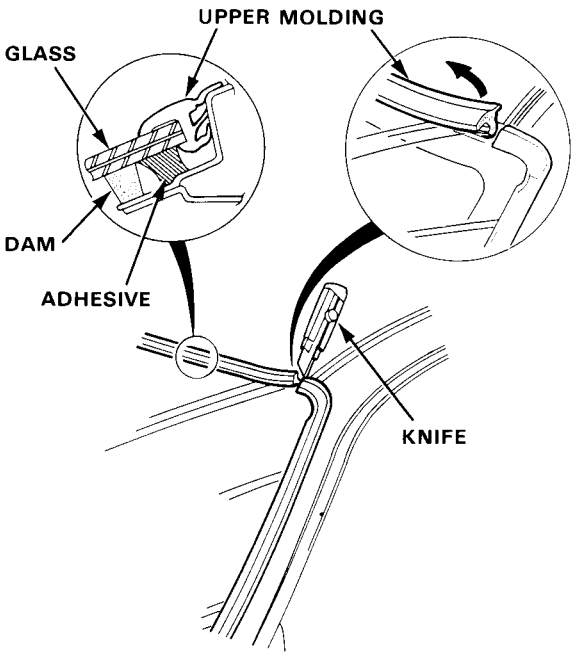
1. To remove the windshield, first remove the:
   - Rearview mirror (page 14-55).
   - Sun visors and holders.
   - Front pillar trim (page 14-46, 47).
   - Front wiper and air scoop.
   - Lower molding.
   - Front of weatherstrip.

NOTE: Do not damage the painted surface.

2. Remove the screws, then remove the right and left glass brackets.

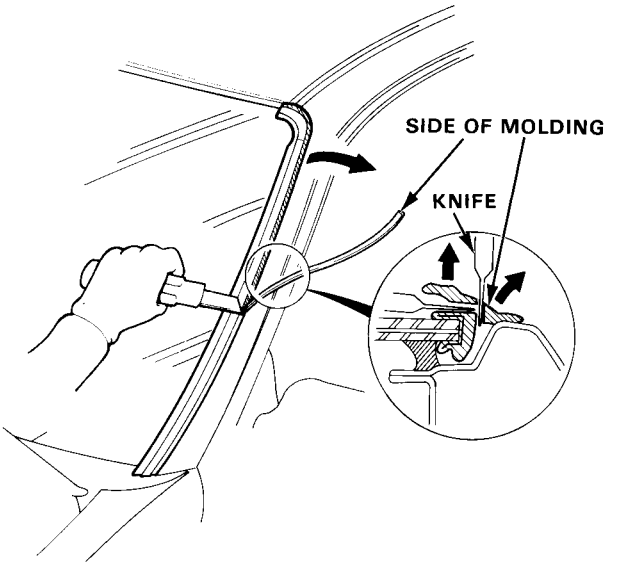


3. Cut the end of the upper molding as shown.



4. Pull away the upper molding.

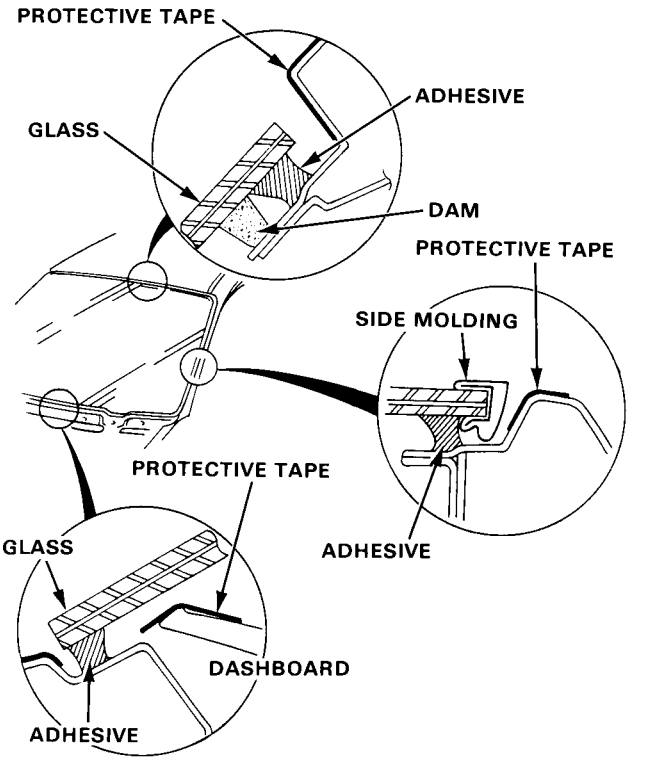
5. Cut the side rubber portion off the molding as shown (Page 14-26).



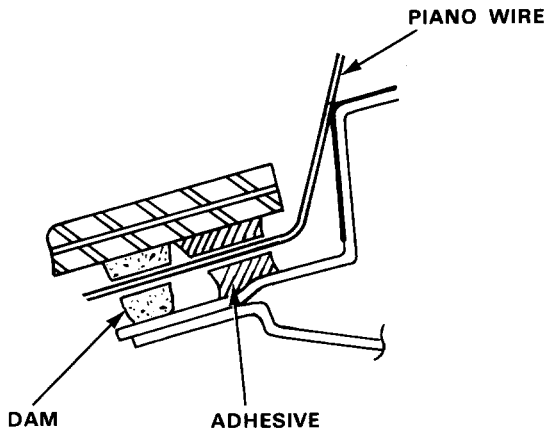
6. Lower the front of the headliner.

   NOTE: Take care not to bend the headliner excessively.

7. Apply protective tape along the edge of the dashboard and body next to the glass as shown.

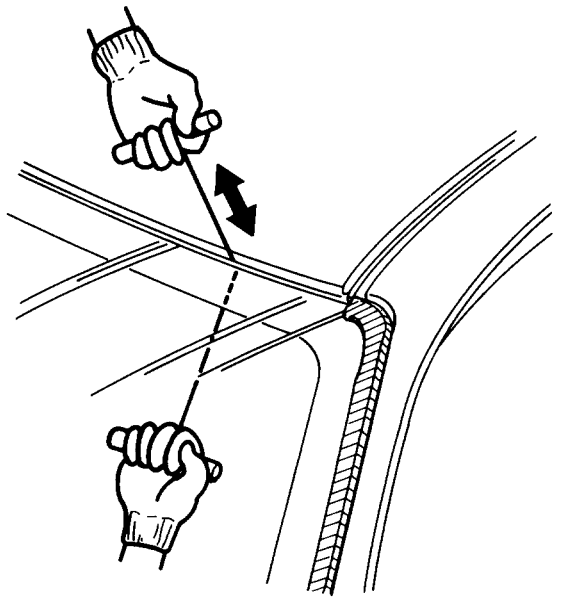


8. Using an awl, make a hole through the adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.



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 side molding from the glass.

Installation

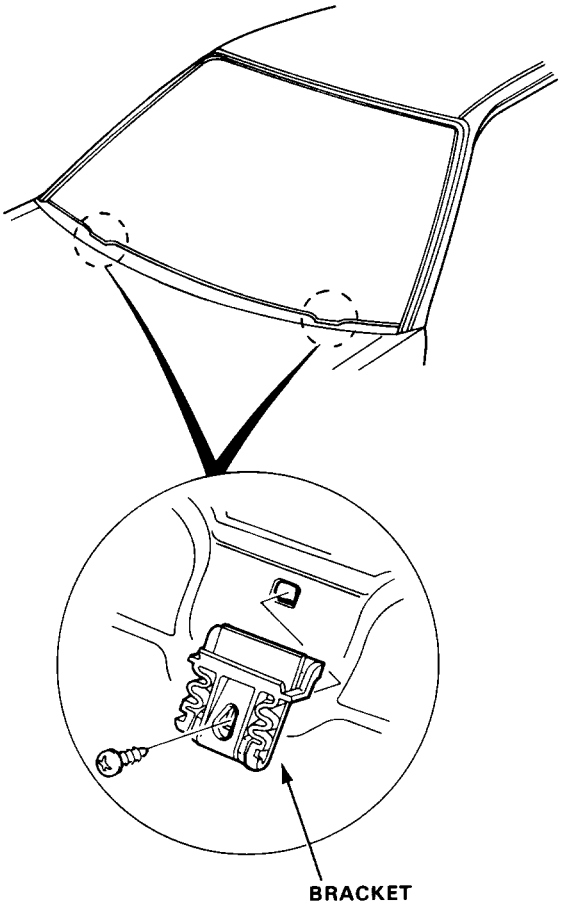
1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. Install the glass brackets as shown.



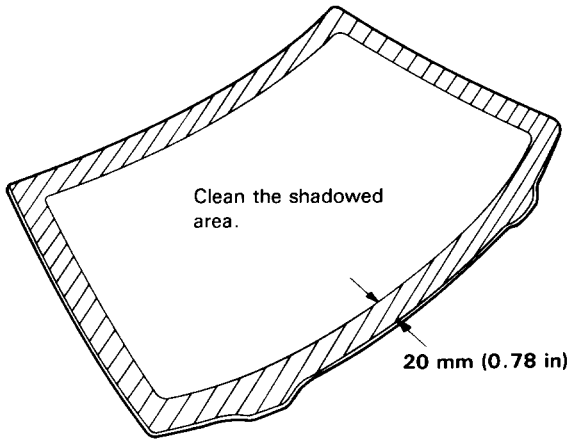
(cont'd)

Installation (cont'd)

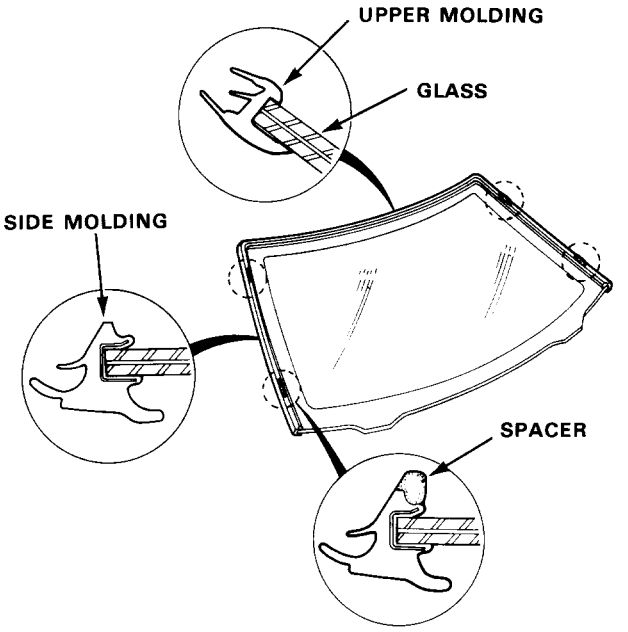
4. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

   NOTE: Make sure the bonding surface is kept free of water, oil and grease.

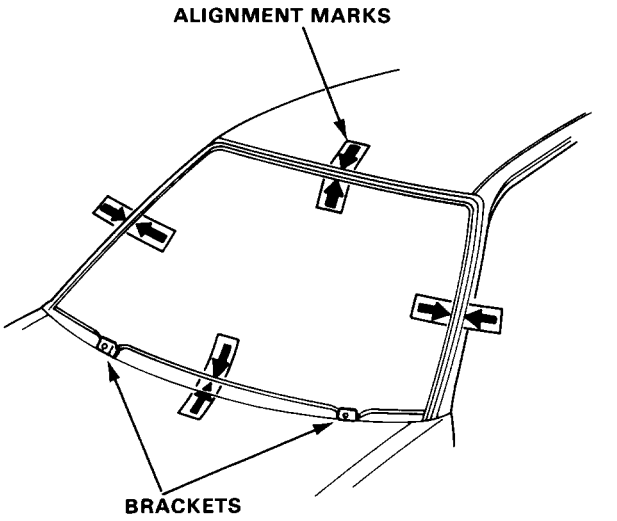
   CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.



5. Apply the windshield moldings to the glass as shown.

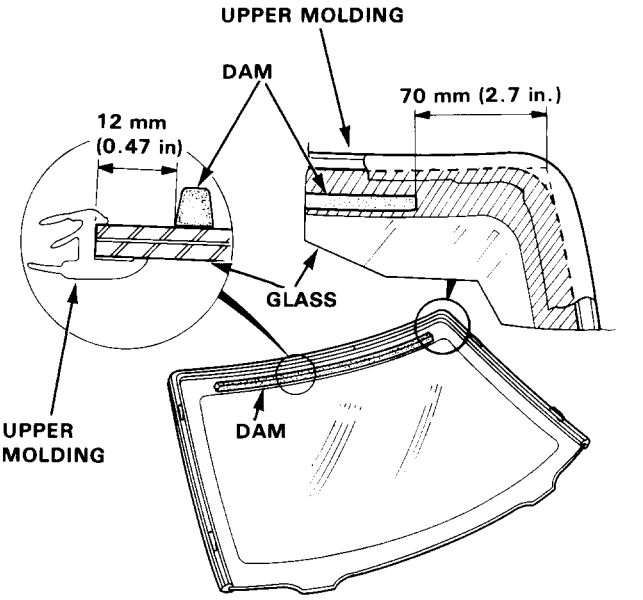


6. Set the glass upright on the spacers, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.



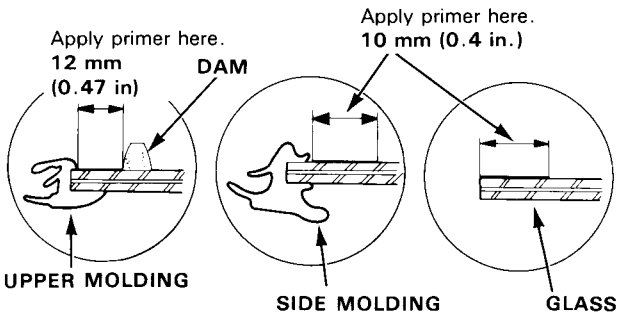
7. Center and glue the rubber dam to the inside face of the glass as shown, to contain the adhesive during installation.

   NOTE:
   - Be careful not to touch the glass where adhesive will be applied.
   - Mask off surrounding surfaces before applying primer.



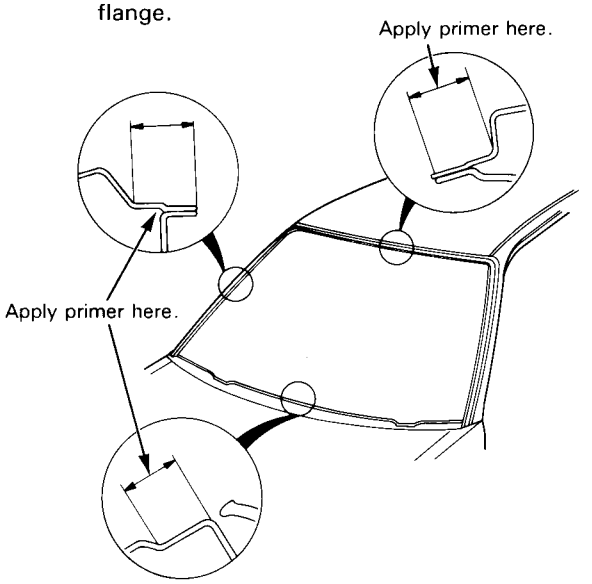
8. With a sponge, apply a light coat of glass primer around the edge of the glass, then lightly wipe it off with gauze or cheesecloth.

NOTE:
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

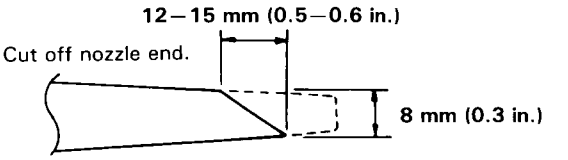
NOTE:
- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.
- Mask off the dashboard before painting the flange.



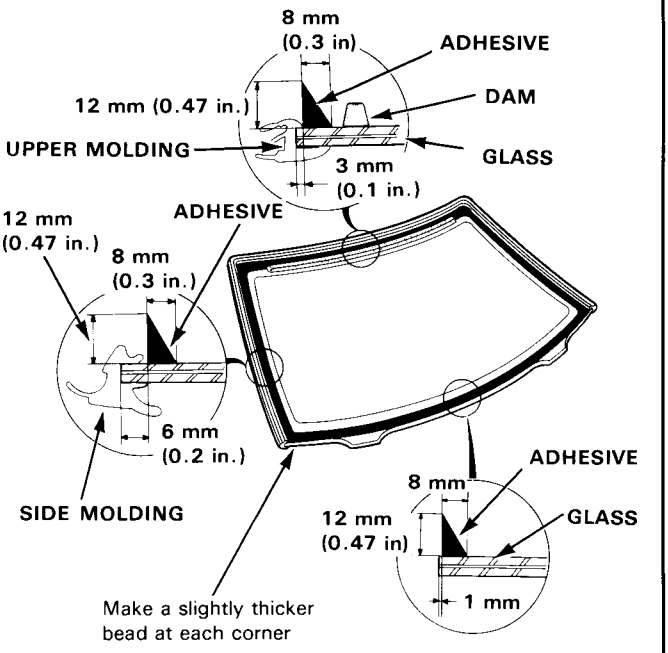
10. Thoroughly mix the adhesive and hardener together on a glass or metal plate.

NOTE:
- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that came with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



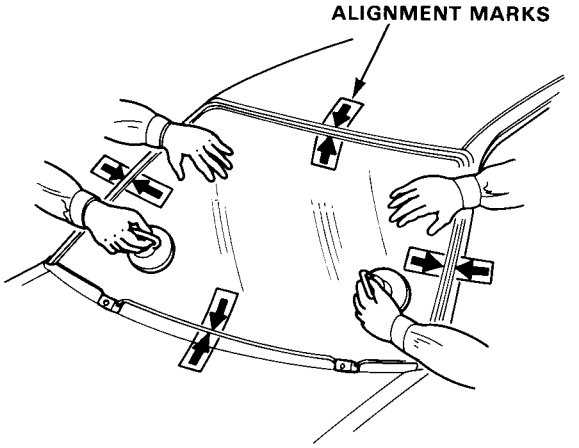
(cont'd)

Windshield

Installation (cont'd)

13. Use suction cups to hold the glass over the opening, align it with the marks made in step 6 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close the doors until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a soft rag or towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

15. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

    NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

16. Reinstall all remaining removed parts.

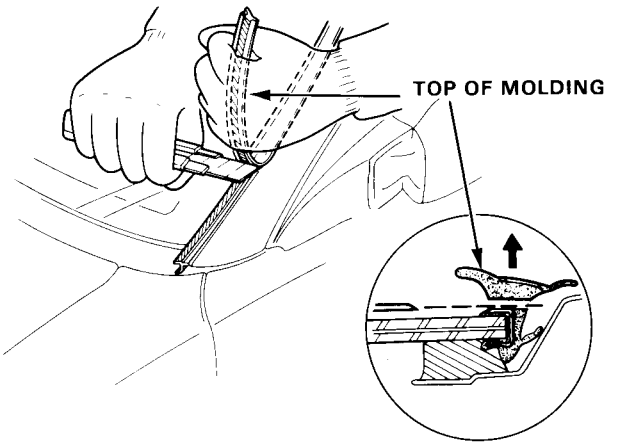
Windshield Molding

Removal

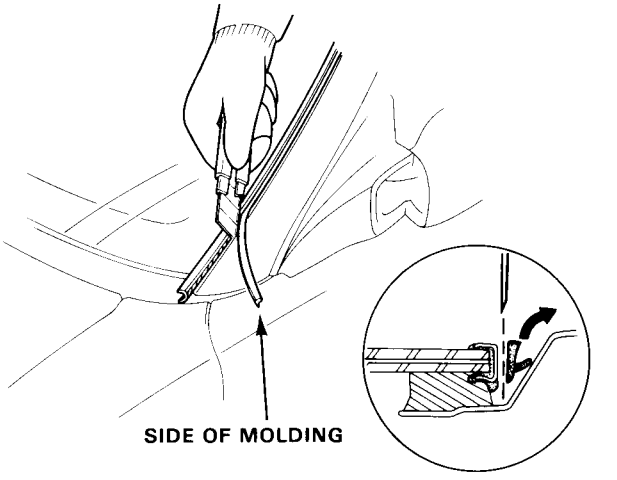
1. To remove the front windshield molding, first remove the:
   - Front wiper and air scoop
   - Lower molding.

   NOTE: Do not damage the painted surface during removal procedure.

2. Cut the top rubber portion off the side of molding as shown.



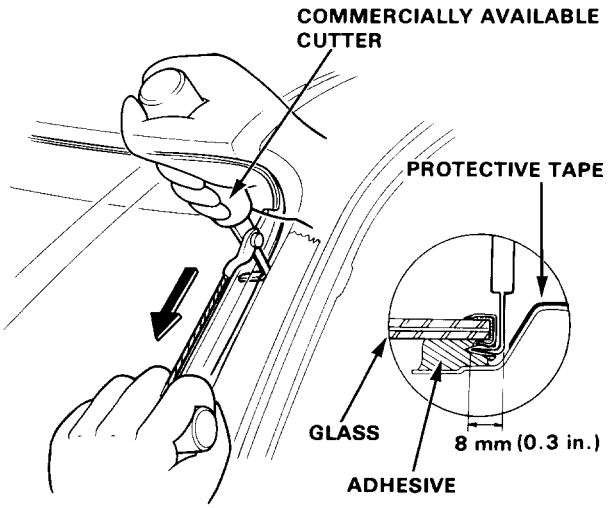
3. Cut the side rubber portion off the molding as shown.



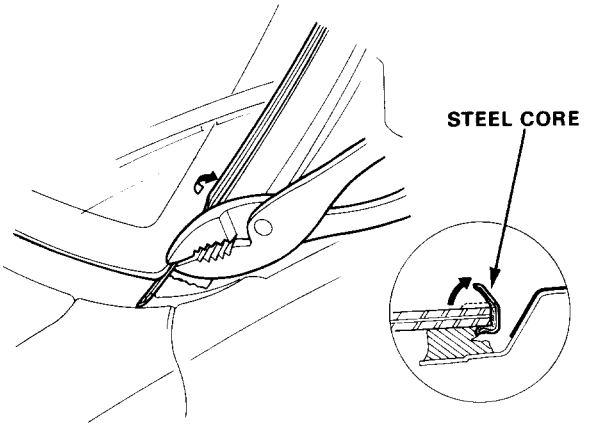
4. Apply protective tape along the edge of the body next to the glass as shown.
Cut the bottom of the side molding as shown. Cut through the adhesive holding the underside of the side moldings.

NOTE:
- You will need a commercially available cutter with an L-angled blade having 8 mm of cutting surface, in order to cut only the molding adhesive without cutting the glass adhesive. The blade supplied with some cutters may need to be ground down to 8 mm.

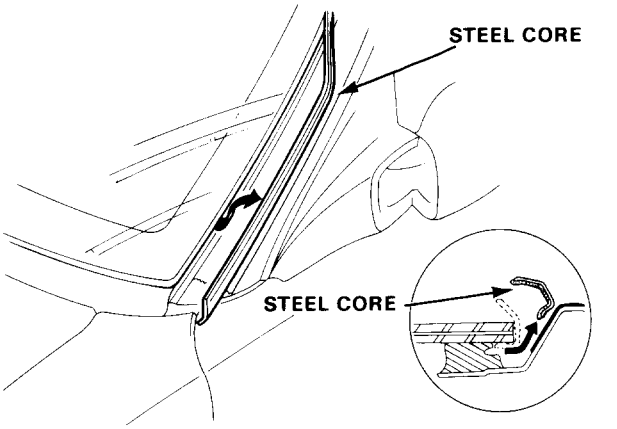
- Windshield moldings can be cut easily with a hottip type L-angle bladed cutter.



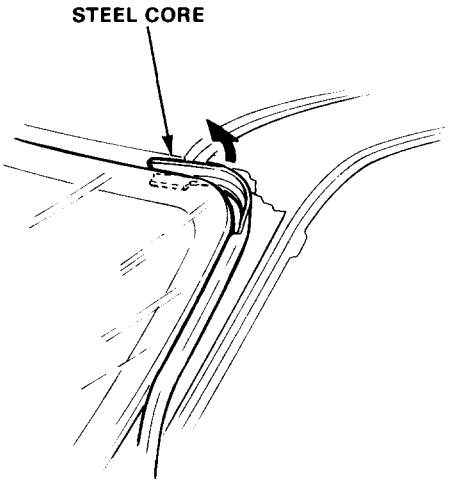
5. Carefully bend up the top side of the steel core as shown.



6. Pull the molding steel core away from the glass.
NOTE: The upper molding can be removed by simply pulling it up.



CAUTION: Remove the steel core without damaging the glass.

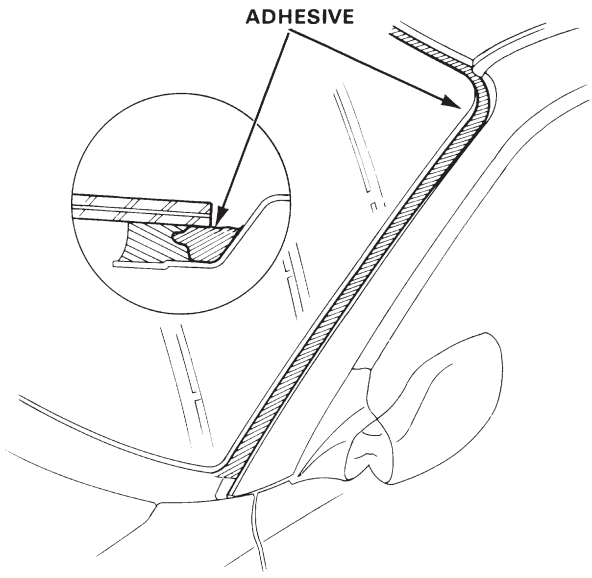


Windshield Molding

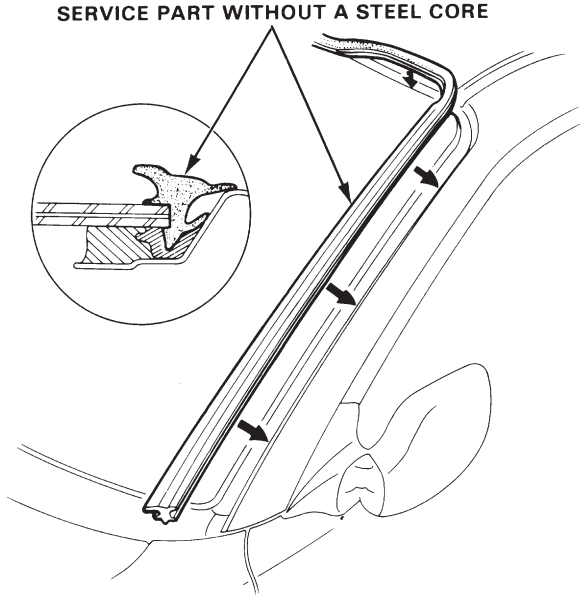
Installation

NOTE: When only replacing the molding (with the windshield remaining in place) use the replacement molding that has no steel core.

1. Apply adhesive around the glass as shown.



2. Install the coreless molding, starting at the upper corners then smoothly pushing the top and side portions into place.



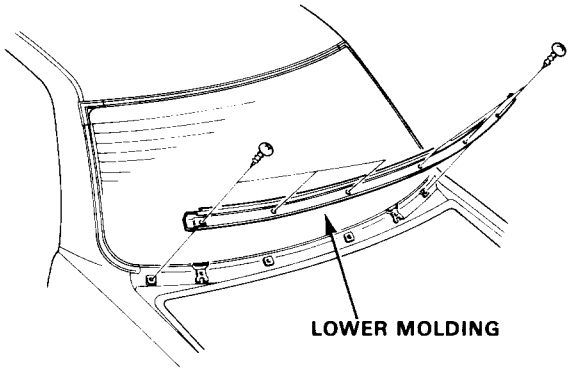
Rear Window

Removal

4D:
CAUTION:
- **Wear glove to remove and install the glass.**
- **Do not damage the defroster grid lines.**

1. To remove the rear glass, first remove:
   - Rear shelf (page 14-46).
   - Rear pillar trim panel (page 14-46).
2. Disconnect the defroster leads, and remove their holders.

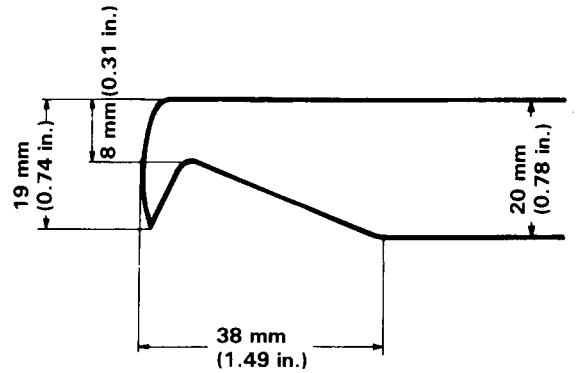
   NOTE: Avoid scratching or scoring the glass with the cutter blade.
3. Remove the screws, then remove the lower molding.



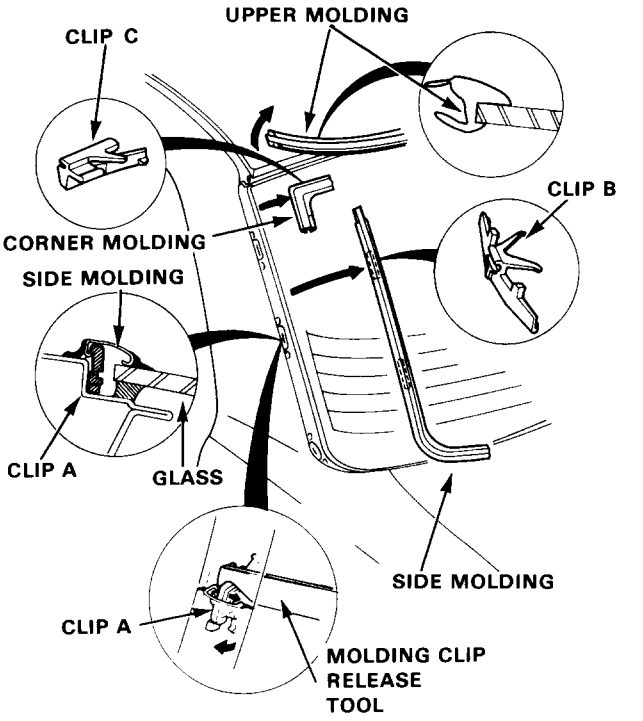
NOTE: You will need a molding clip release tool to remove some moldings. If necessary, make one that has the dimensions shown:

Molding Clip Release Tool

Thickness: 2 mm (0.08 in.), pointed at the end.

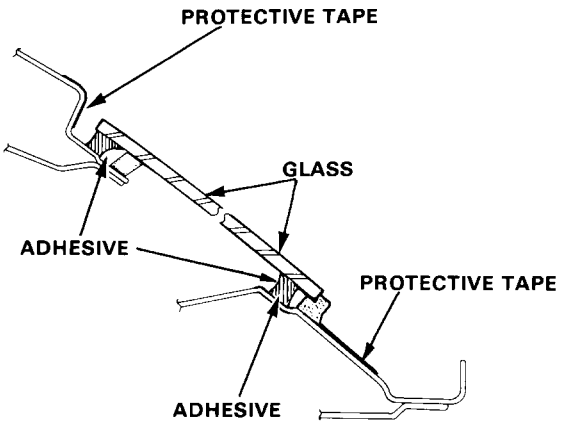


4. Remove the side and corner molding with a molding clip release tool.
5. Detach the clips and remove the corner and side moldings.
6. Pull away the upper molding.



7. Lower the rear of the headliner (page 14-48).

   CAUTION: Take care not to bend the headliner excessively.
8. Apply protective tape along the edge of the body next to the glass as shown.



(cont'd)

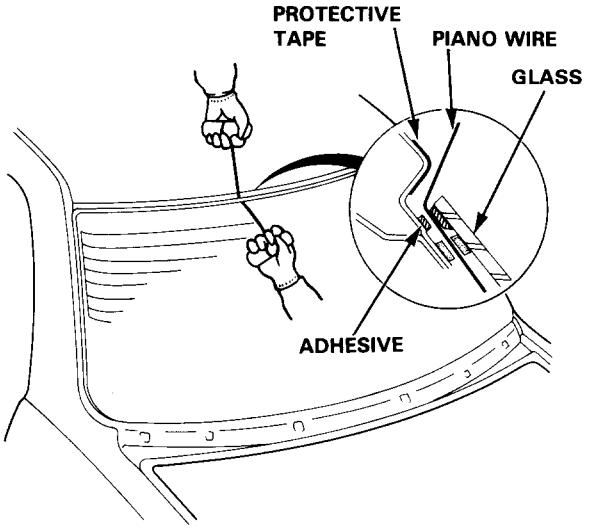
Rear Window

Removal (cont'd)

9. 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.

10. 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.



11. Remove the molding clips and the rubber 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 spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

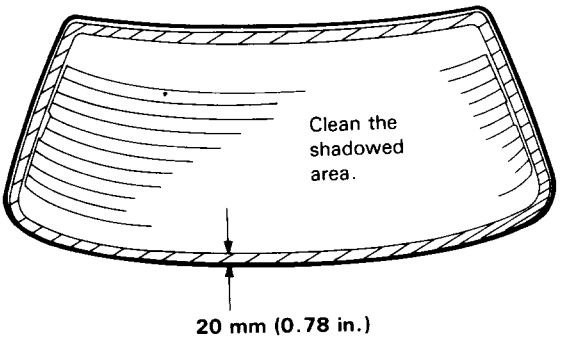
2. Clean the body bonding surface with a sponge dampened in alcohol.

   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

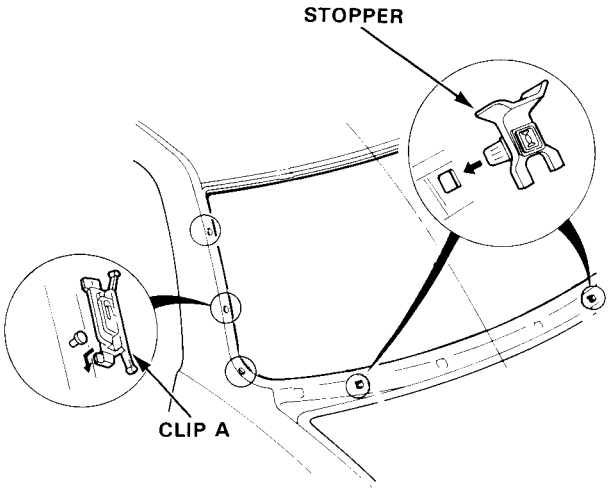
3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

   NOTE: Make sure the bonding surface is kept free of water, oil and grease.

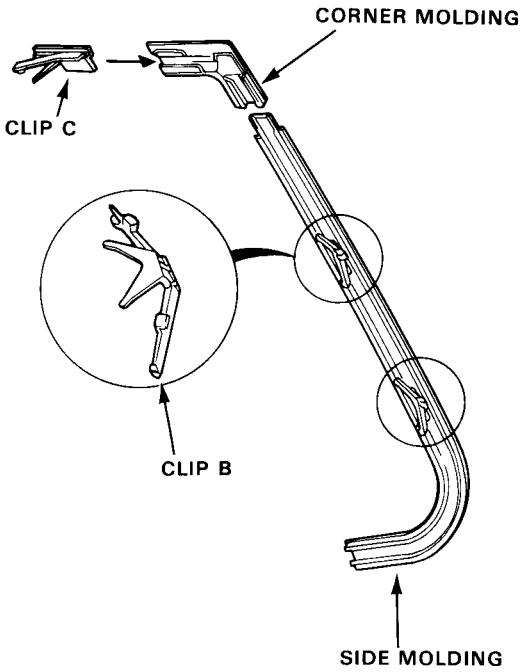
   CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.



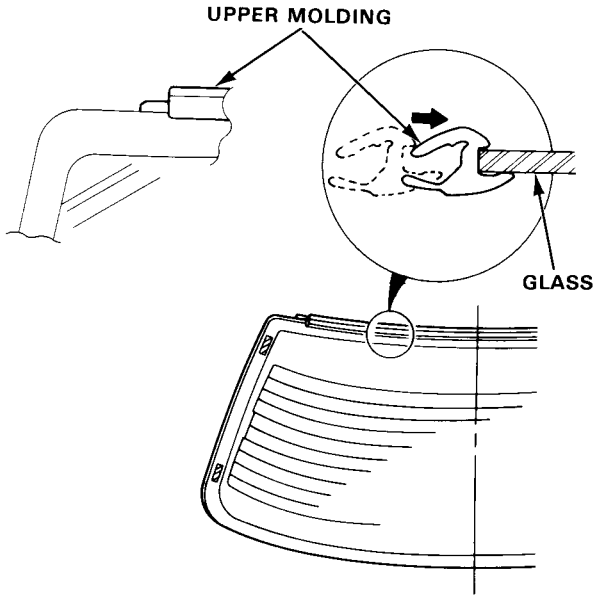
4. Install the molding clips and stoppers as shown.



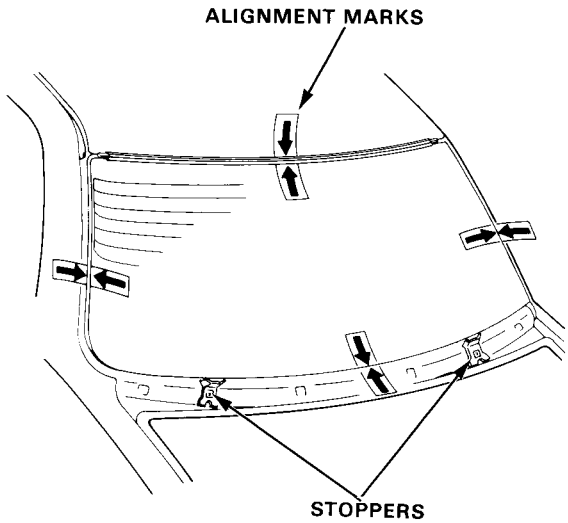
5. Attach the clips to the side and upper moldings as shown.



6. Center and adhere the upper molding to the upper edge of the glass as shown.



7. Set the glass upright on the spacers, 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.

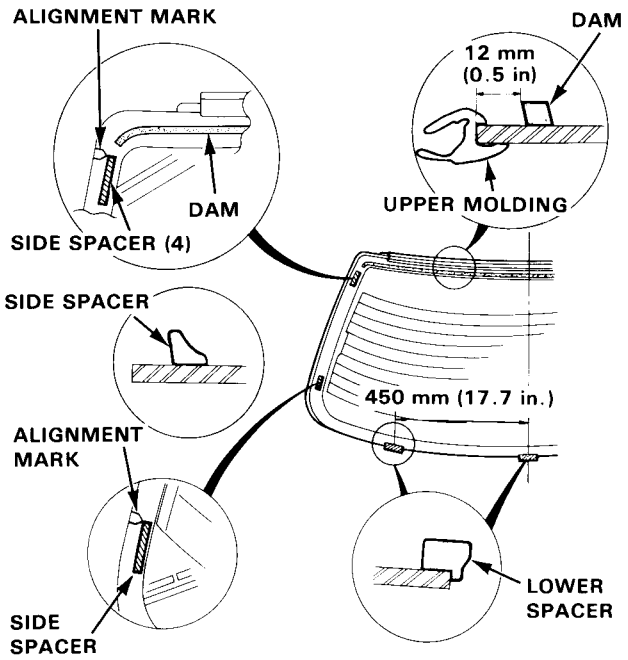


(cont'd)

Installation (cont'd)

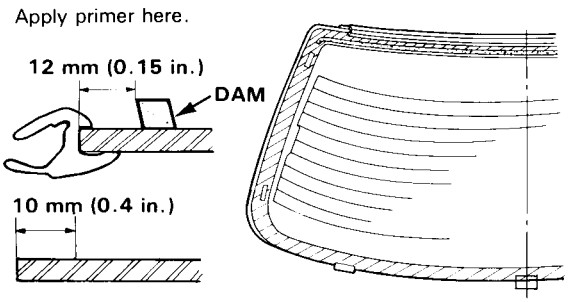
8. Glue the rubber dam and side spacers to the inside face of the glass as shown, to contain the adhesive during installation.

   NOTE: Be careful not to touch the glass where adhesive will be applied.



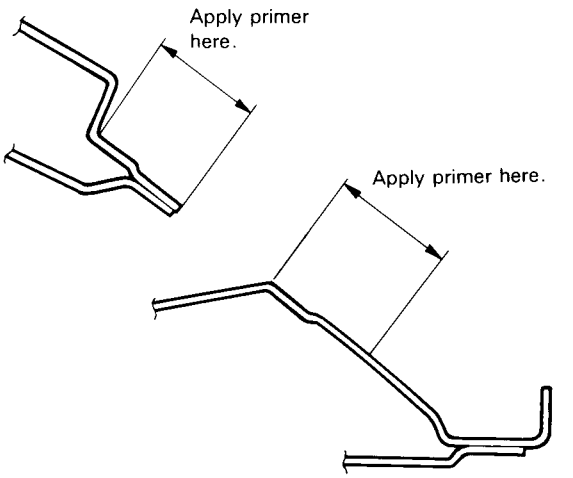
9. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

   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.

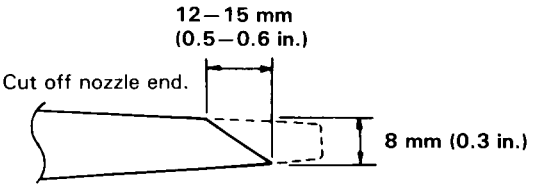


11. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

    NOTE: Clean the plate with a sponge and alcohol before mixing.

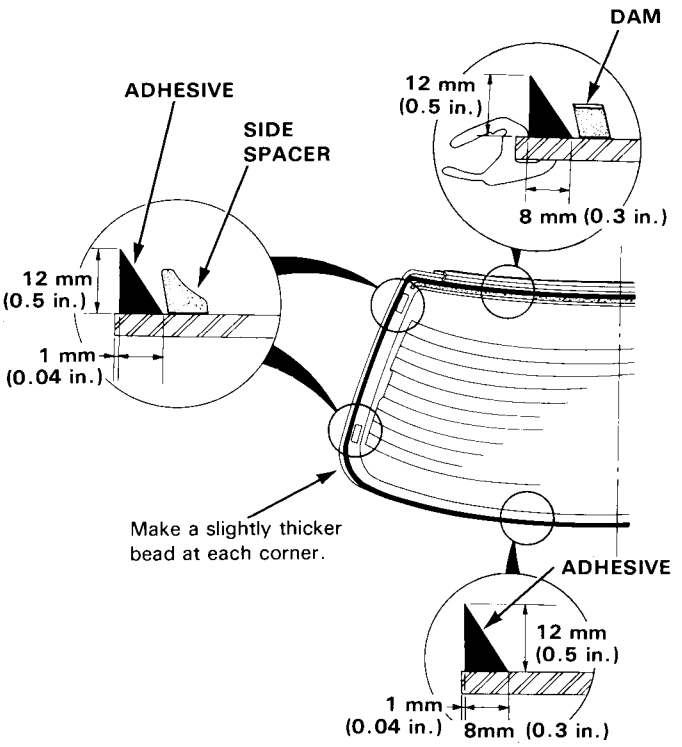
12. Follow the instructions that came with the adhesive.

13. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



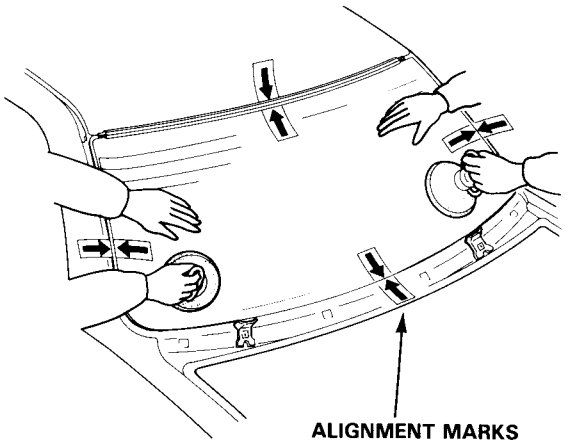
14. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

NOTE: Peel off the backing of dam.

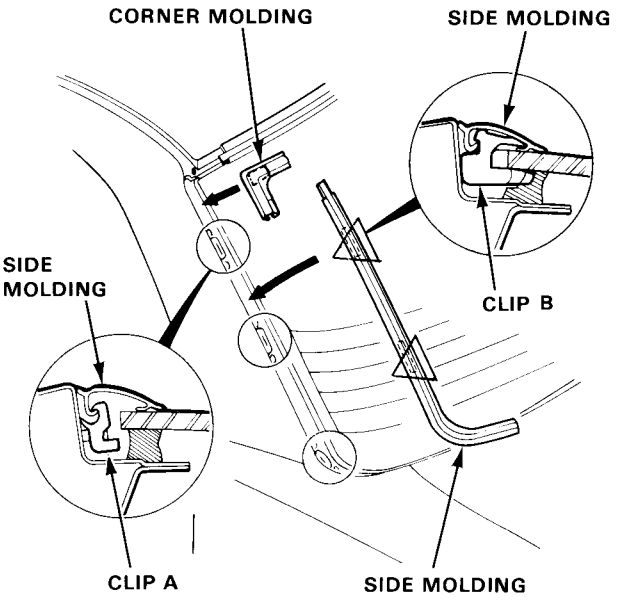


15. Use suction cups to hold the glass over the opening, align it with the marks made in step 7 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

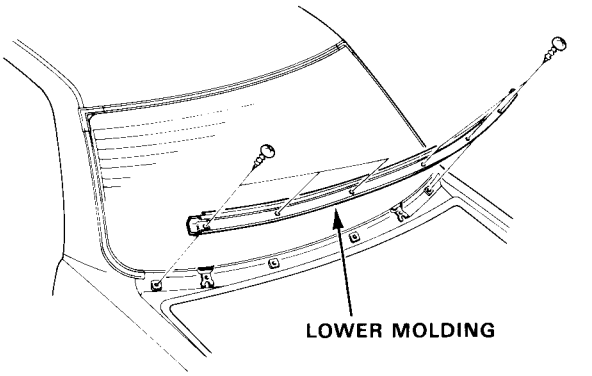
NOTE: Do not close or open the doors until adhesive is dry.



16. Install the right and left corner moldings, and side moldings.



17. Install the lower molding.



18. 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.

19. Fix the headliner back into position then install:

- Rear pillar trim panel.
- Rear shelf.

Rear Window

Removal

2D H/B:

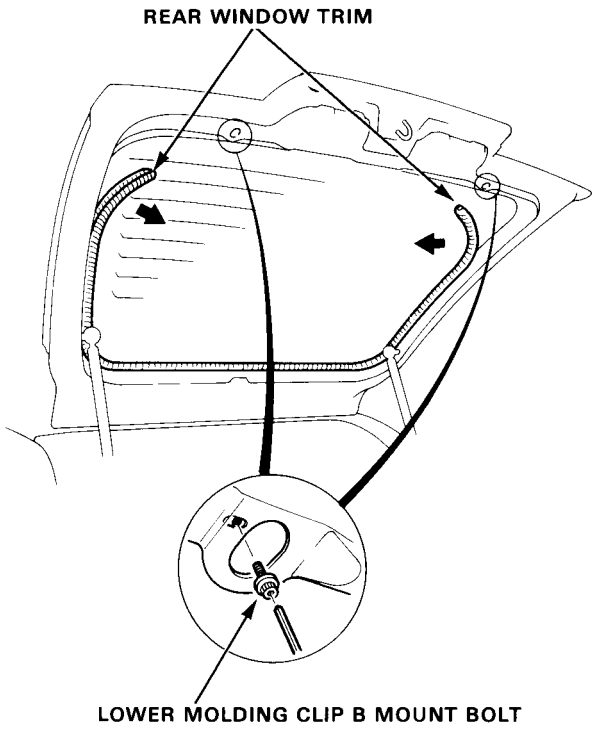
CAUTION:

- **Wear gloves to remove and install the glass.**
- **Do not damage the defroster grid lines.**

1. To remove the rear window glass, first remove the:
   - Tailgate trim panel (pages 14-67).
   - Rear wiper (See section 16).
   - Tailgate spoiler. (page 14-70).

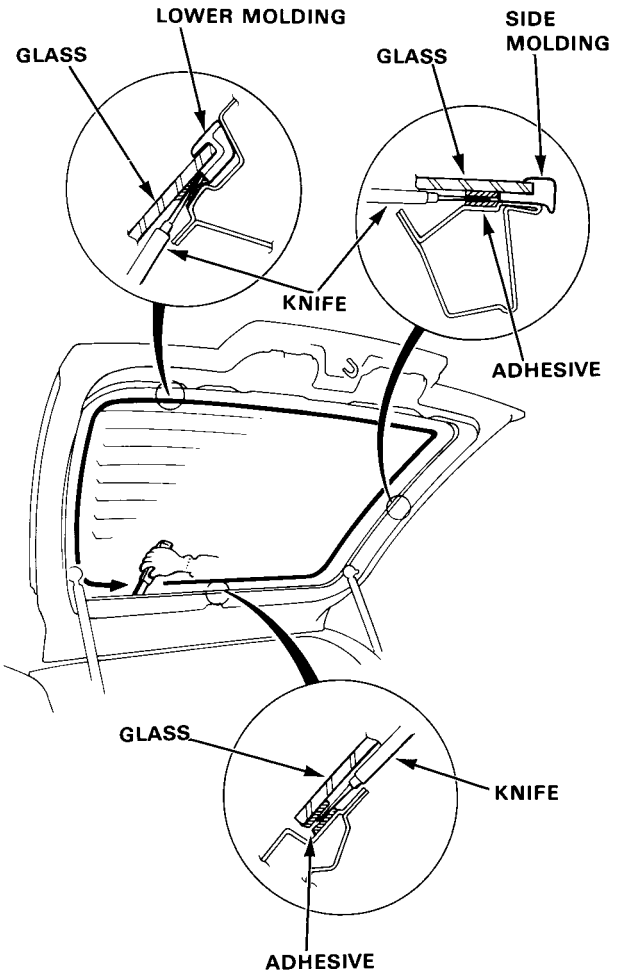
2. Remove the rear window trim, and remove the rear window lower molding clip B mount bolts.

   NOTE: Take care not to scratch or score the glass.



NOTE: Take care not to scratch or score the glass.

3. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area.



4. Remove the rear window molding when the glass is to be reused.

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

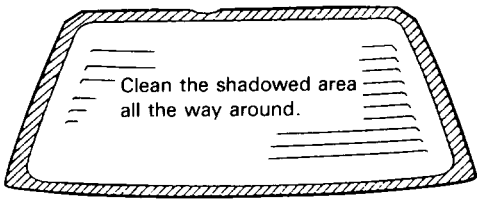
   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove all traces of the rubber spacer material from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

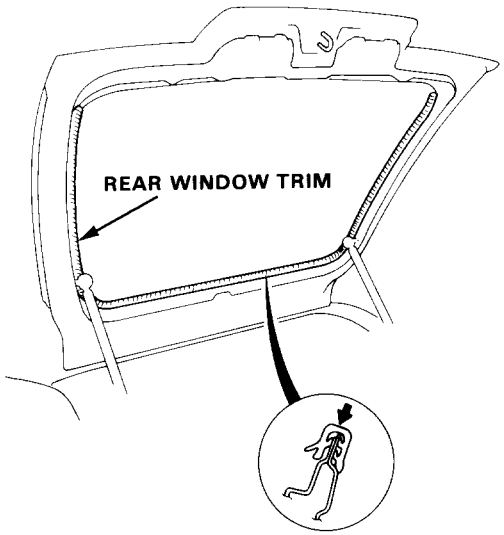
   NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

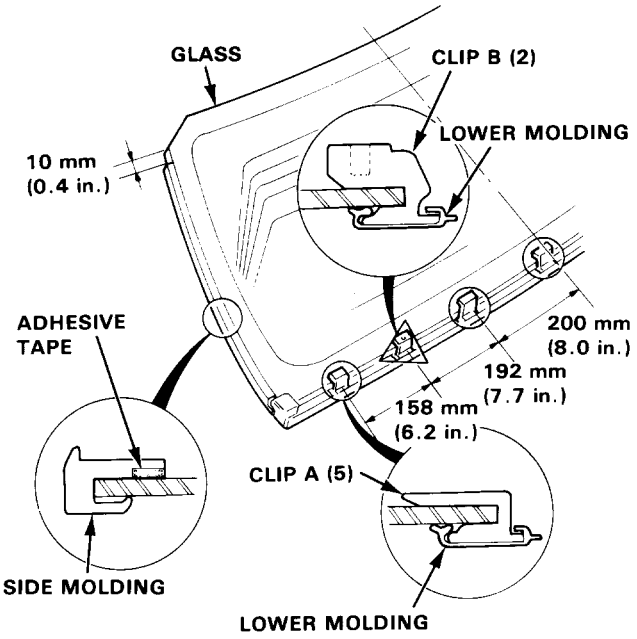
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.



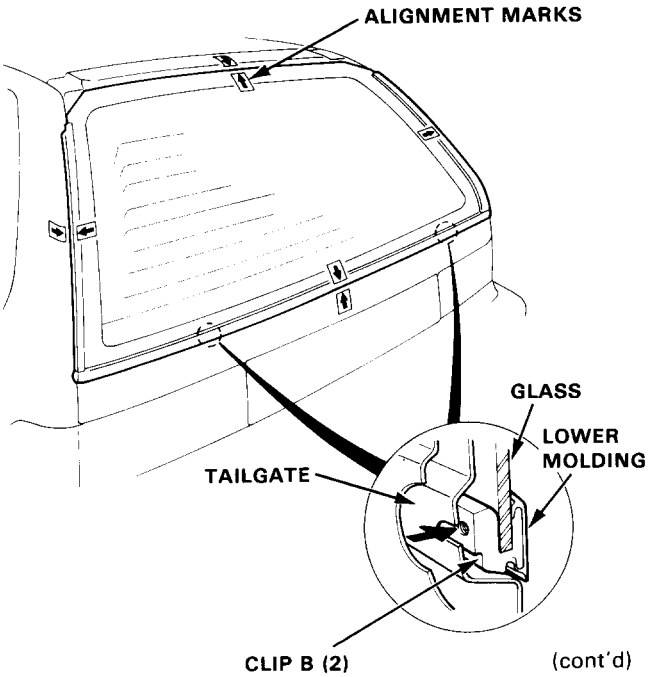
4. Install the rear window trim in the tailgate.



5. Adhere the side moldings, lower molding clips and lower molding to the side and lower edge of the glass as shown.



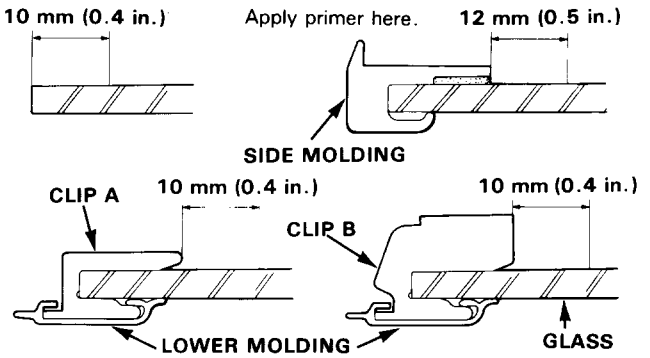
6. Set the glass upright on the tailgate, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.
   NOTE: Check that the lower molding clip B mount holes and tailgate holes aligning with each other as shown.



(cont'd)

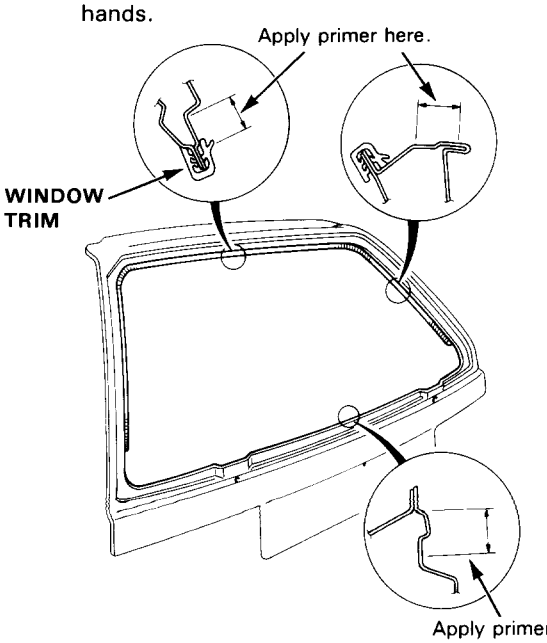
Installation (cont'd)

7. 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.



8. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

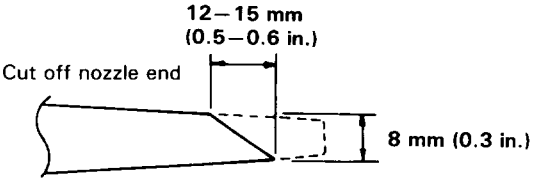
   NOTE:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.



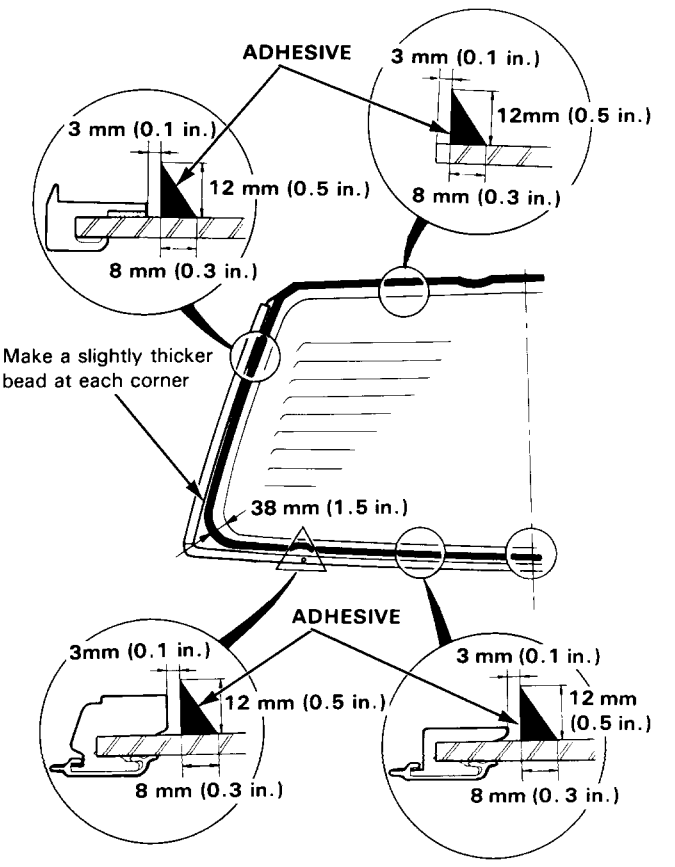
9. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

   NOTE:
   - Clean the plate with a sponge and alcohol before mixing.
   - Follow the instructions that come with the adhesive.

10. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

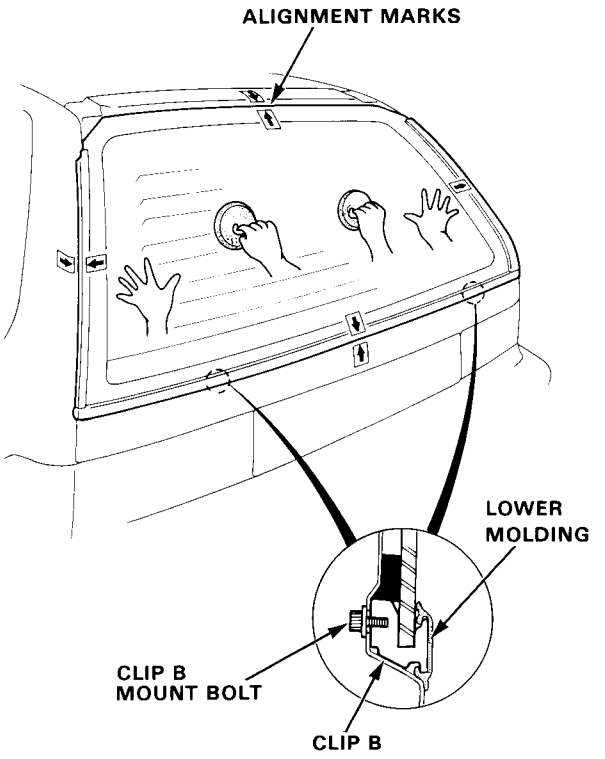


11. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



12. Use suction cups to hold the glass 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.



13. Scrape or wipe the excess adhesive off with a putty knife or gauze.

    NOTE: Use a soft rag or towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

14. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

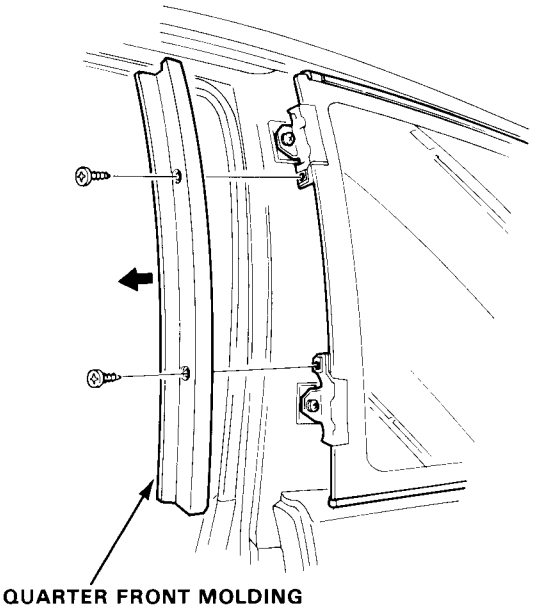
    NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

15. Reinstall all remaining removed parts.

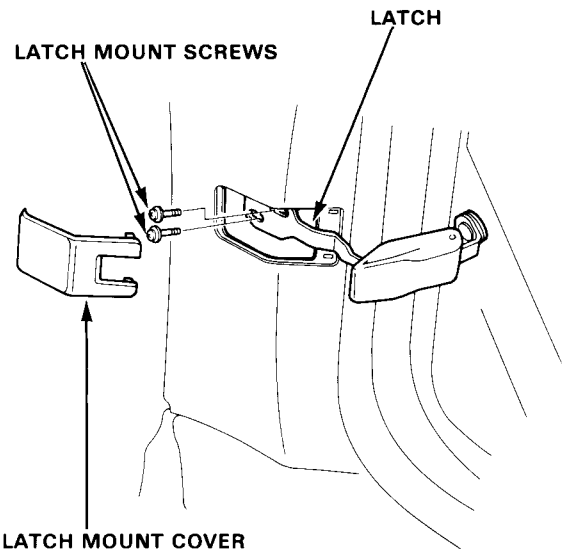
Replacement

2D H/B:

1. Remove the screws and the quarter front molding.



2. Pry the latch mount cover out and then remove the latch mount screws.

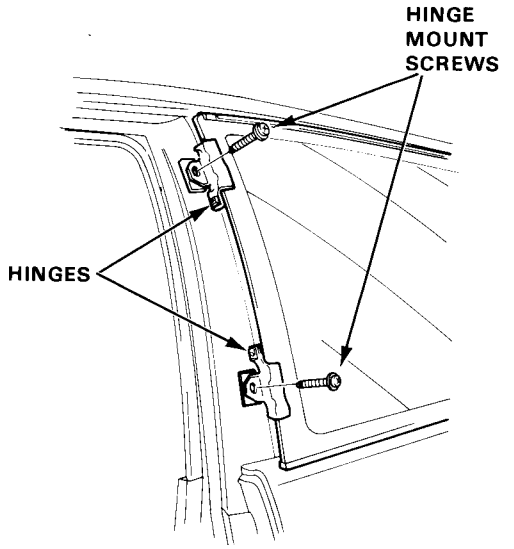


(cont'd)

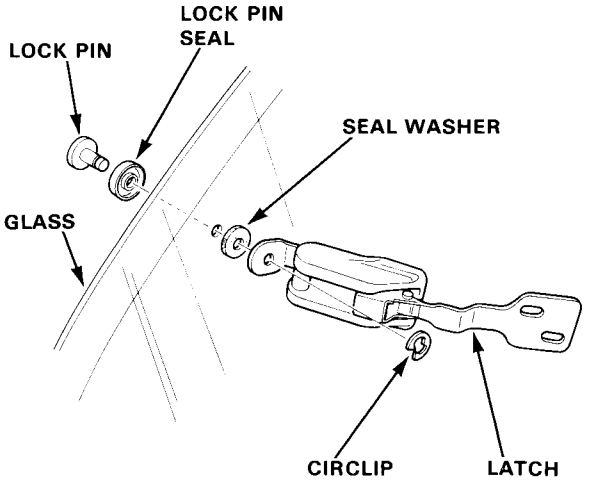
Quarter Glass

Replacement (cont'd)

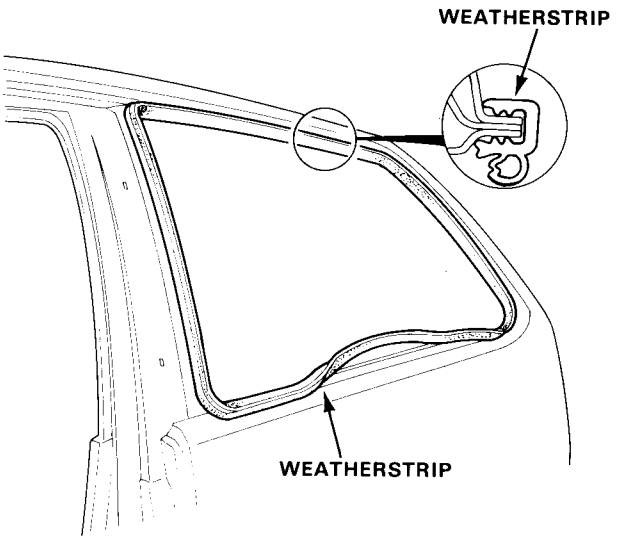
3. Remove the quarter glass hinge mount screws, and then the glass.



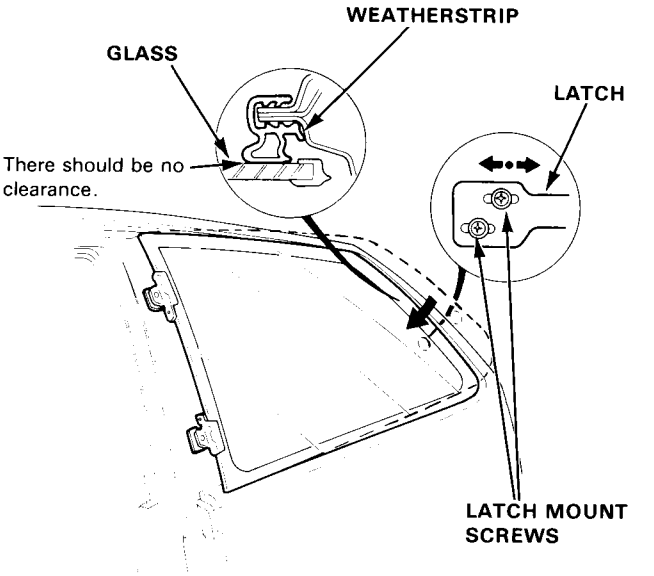
4. Remove the circlip with a flat tip screwdriver, then remove the latch.



5. If necessary, pull off the weatherstrip.

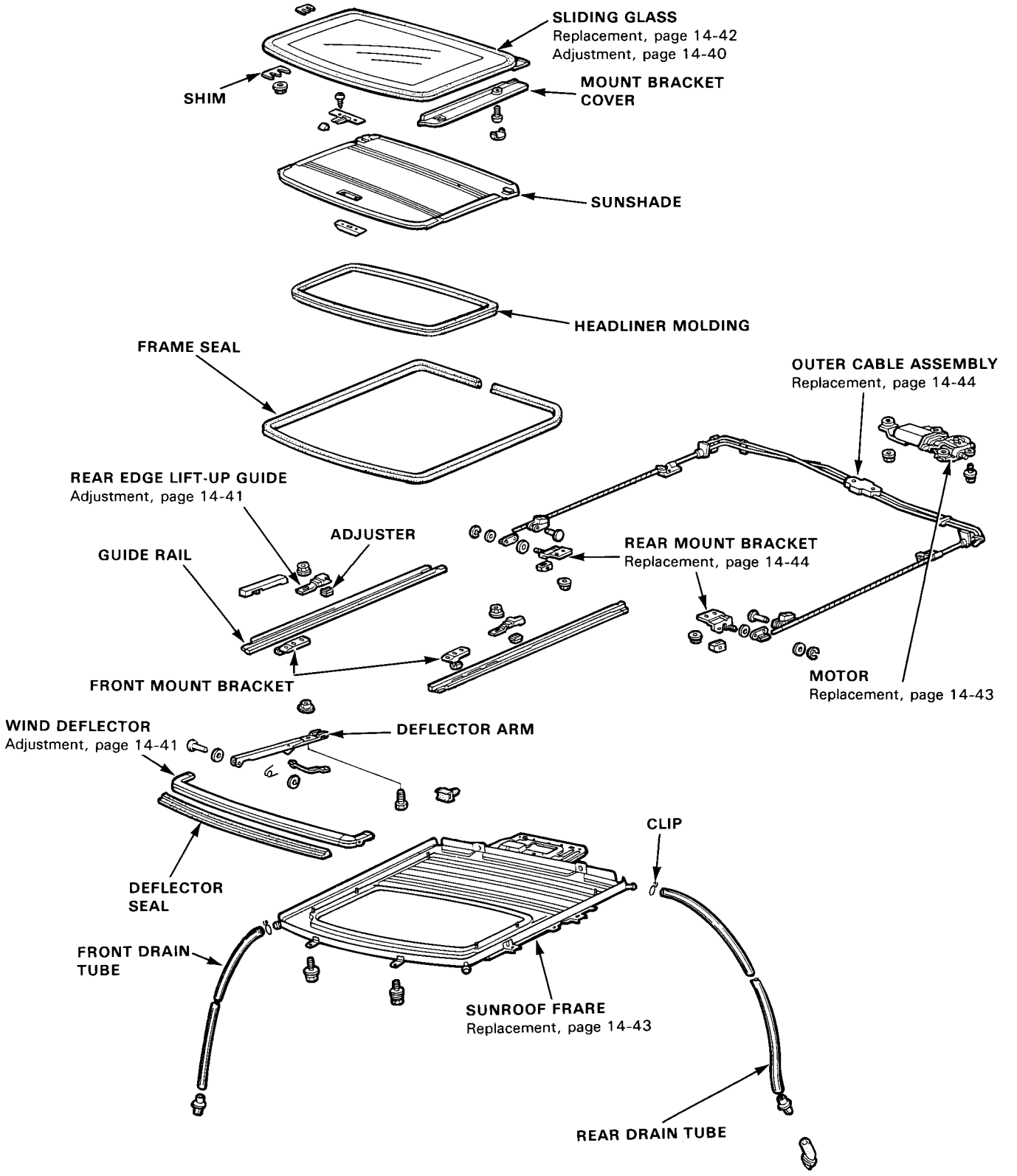


6. Install in the reverse of removal. Check for proper glass fit when closed after intallation.
To adjust, loosen the latch mount screw and move the latch back and forth. Adjust so that the latch works smoothly, and the glass closes securely.
Check for proper contact between the glass and weatherstrip at the rear edge.



Sunroof

Index



Sunroof

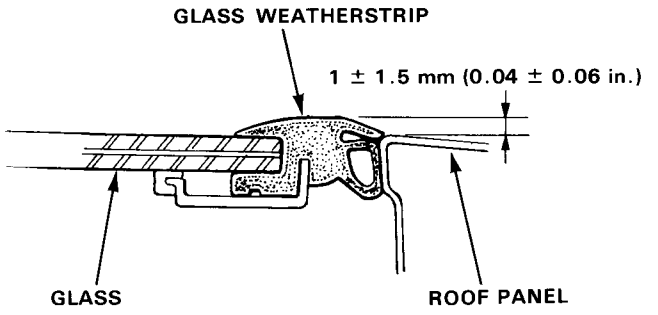
Troubleshooting

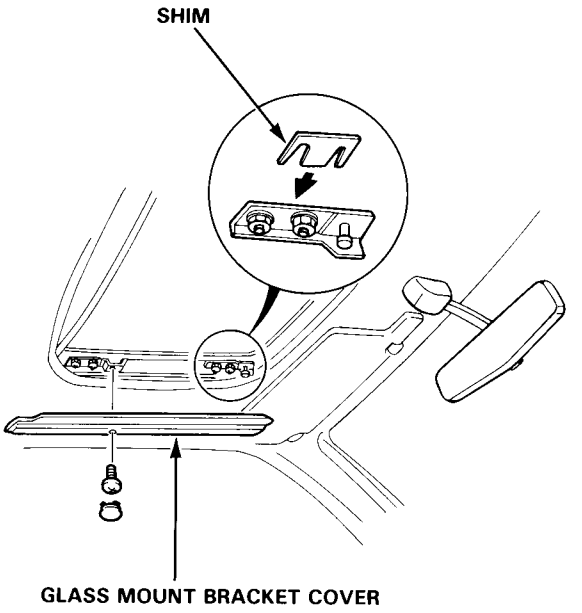
Symptom	Probable Cause
Water leak	1. Clogged drain tube. 2. Gap between glass weatherstrip and roof panel. 3. Defective or improperly installed glass weatherstrip.
Wind noise	1. Excessive clearance between glass weatherstrip and roof panel.
Deflector noise	1. Improper clearance between deflector seal 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, but 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 Height Adjustment

Roof panel should be even with the glass weatherstrip, to within 1 ± 1.5 mm (0.04 ± 0.06 in.) all the way around. If not, slide sunshade back, and:

1. Pry plug out of the glass mount bracket cover, remove screw, then slide cover off to the rear.
2. Loosen mount bracket nuts and install shims between glass frame and bracket as shown.
3. Repeat on opposite side if necessary.

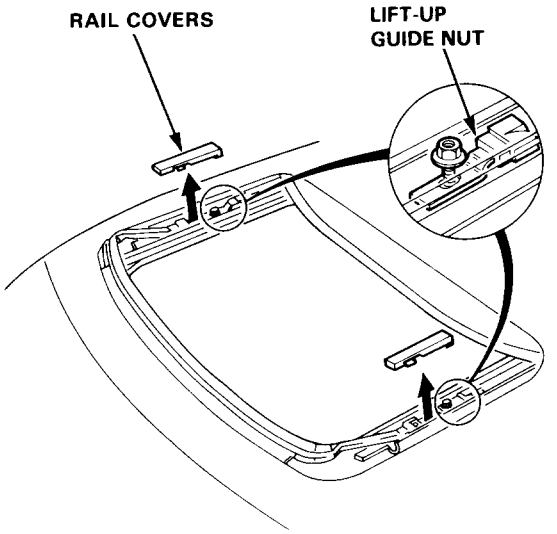




Rear Edge Closing Adjustment

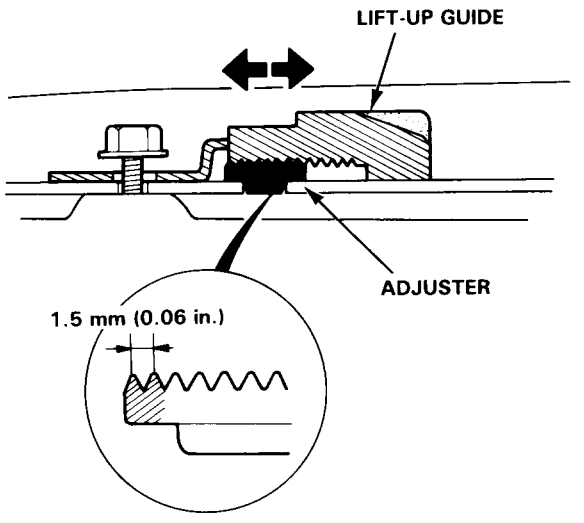
Open the glass about a foot then close it to check where rear edge begins to rise.
If it rises too soon and seats too tight against roof panel, or too late and does not seat tight enough, adjust it.

1. Open the glass fully.
2. Remove the rail covers from both sides, and loosen lift-up guide nuts.



3. Move the guides forward or back, then tighten nuts and re-check roof closing.

   The guides have pitches of 1.5 mm (0.06 in.) each and can be adjusted 2 pitches forward or back.

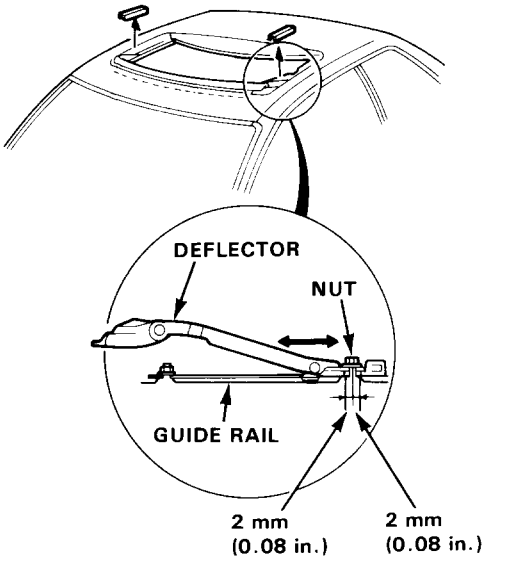


Wind Deflector Adjustment

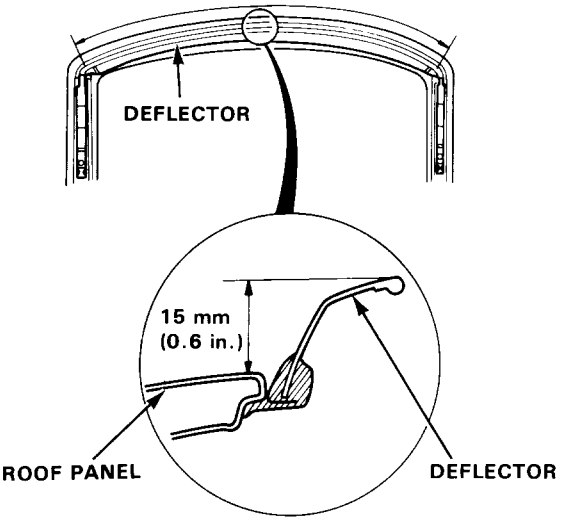
NOTE: A gap between deflector seal and roof panel will cause wind noise when driving at high speed with the sunroof open.

1. Open the sunroof and pry rail covers off both sides.
2. Loosen deflector mounting screws.

   NOTE: Wind deflector can be adjusted 3 mm (0.12 in.) forward or back.



3. Adjust deflector forward or back so the edge of its seal touches the roof evenly.
   Deflector seal should touch the roof across entire front edge.

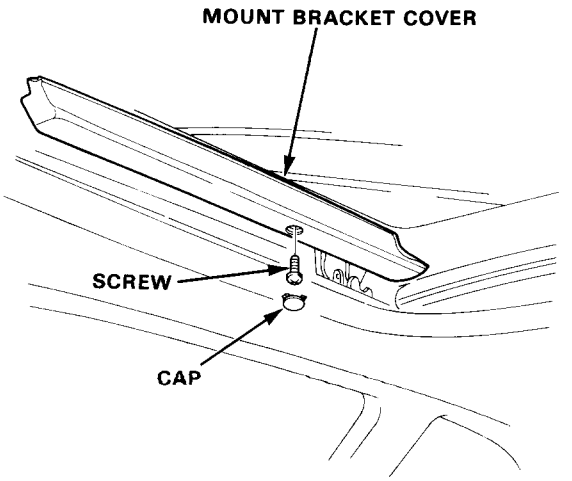


NOTE: The height of the deflector when open can not be adjusted. If damaged or deformed, replace it.

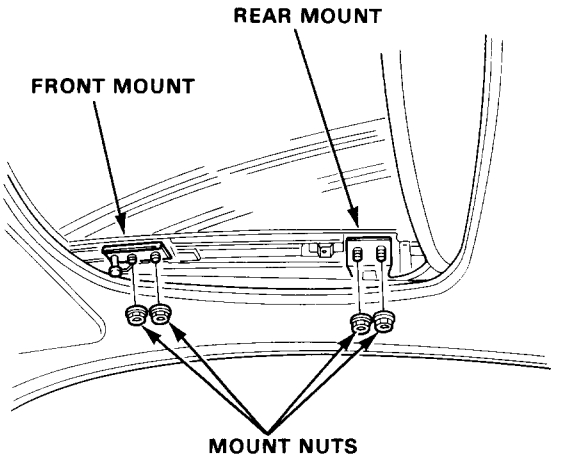
Sunroof

Glass and Sunshade Replacement

1. Slide sunshade all the way back.
2. Pry plug out of each bracket cover, remove screw, and slide cover off to the rear.

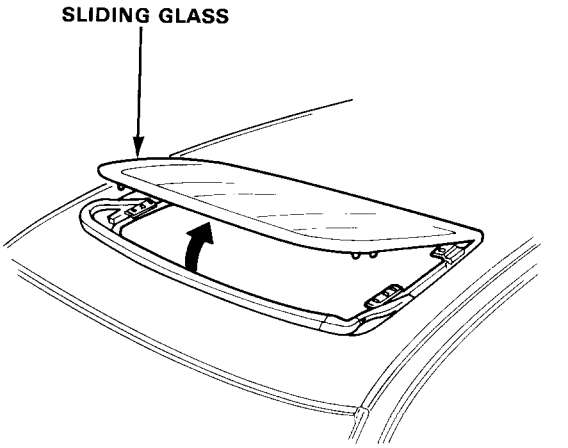


3. Close the glass fully.
4. Remove the nuts from front and rear mounts on both sides.



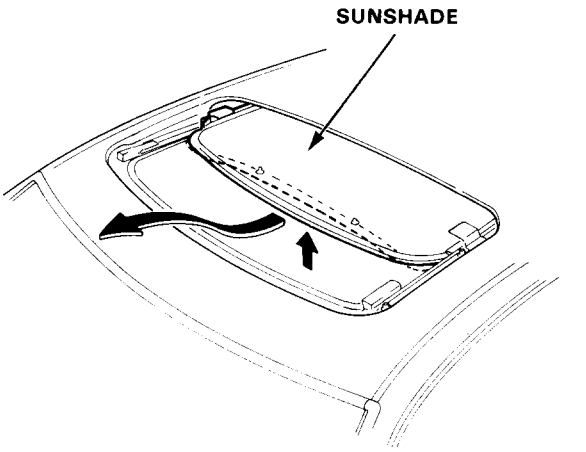
5. Remove the glass by lifting up and pulling forward as shown.

   NOTE: Do not damage the roof panel.



6. Remove the wind deflector.
7. Remove the sunshade as shown.

   NOTE: The sunshade may be bent slighty to ease removal.

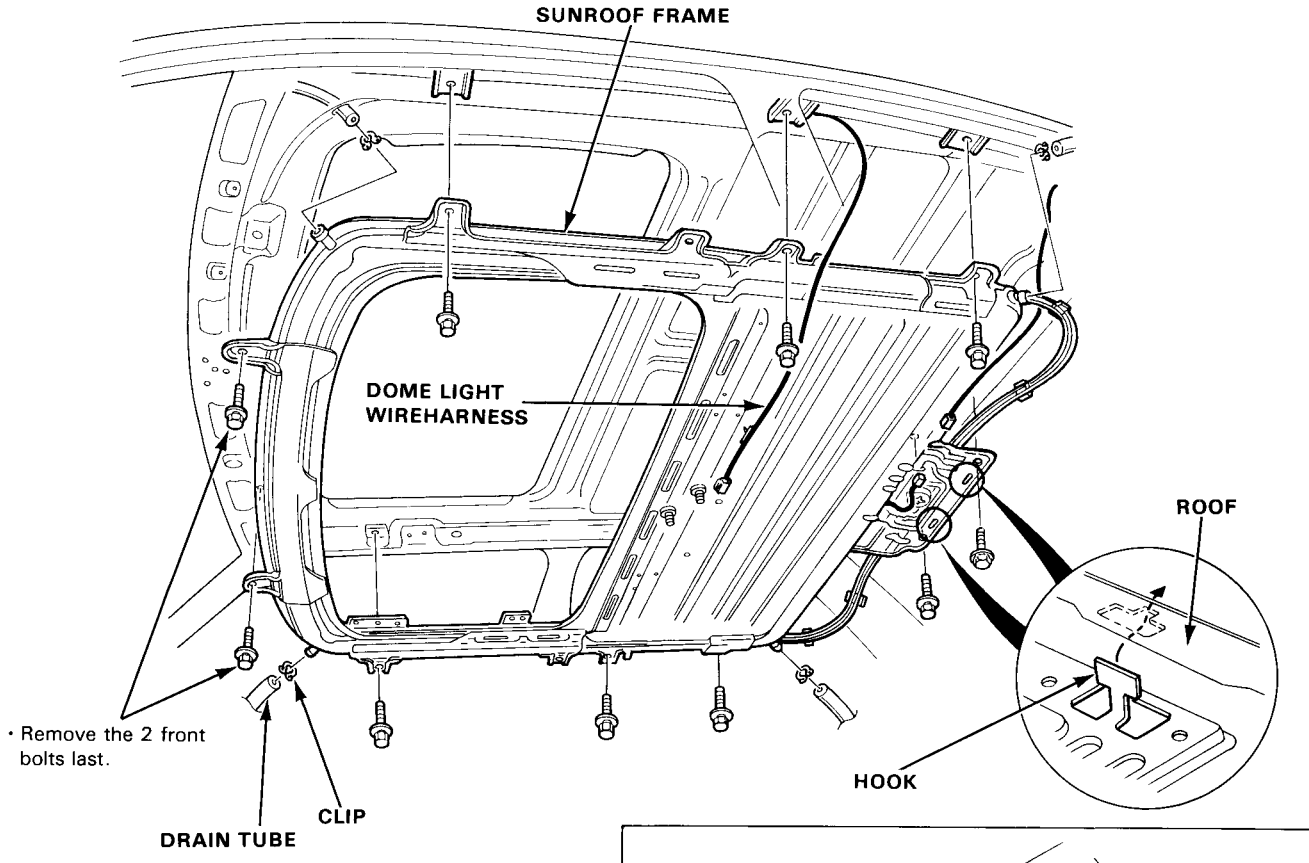


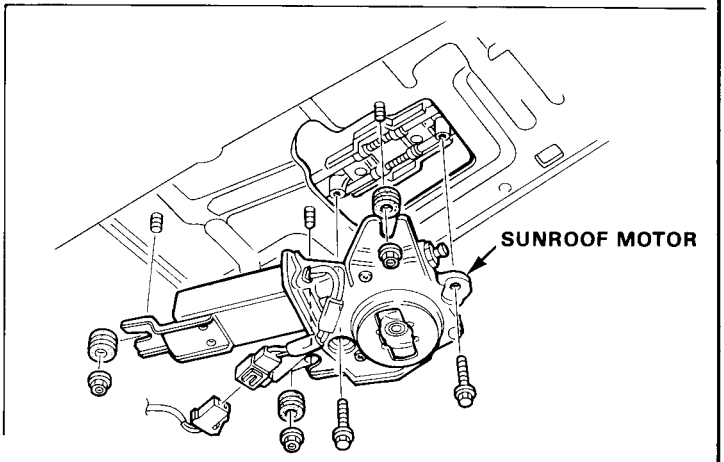
Motor, Drain Tube, and Frame Replacement

CAUTION: Be careful not to damage the seats or other interior trim.

1. Remove the sliding glass (page 14-42) and the headliner (page 14-48).
2. Disconnect the motor and limit switch wire harness; remove the clips securing the dome light wire harness.
3. Remove the sunroof motor by removing the two bolts and three nuts.
4. Disconnect the drain tubes.
5. Remove the ten 6 x 16 mm mounting bolts from the frame, and remove the frame from the car.

NOTE: You may require assistance when removing the frame.





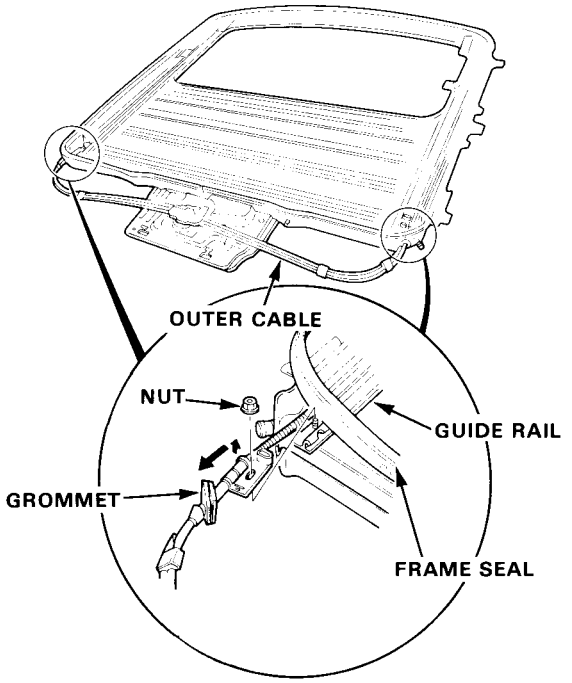
6. To install, insert the frame's rear pins into the body holes, then install parts in the reverse order of removal.
   NOTE: Install the tube clips with the ends facing the side to ease installation of the headliner.

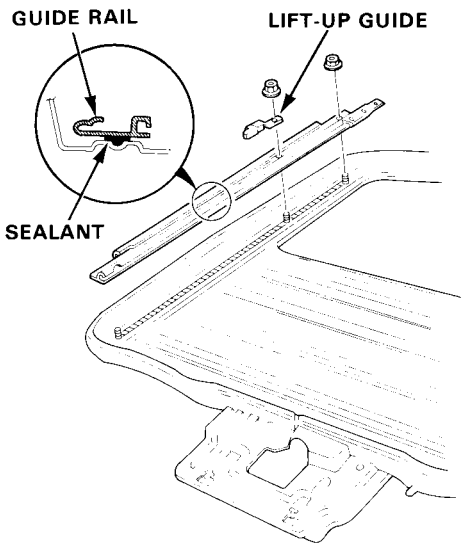
Sunroof

Cable Replacement

With sunroof out of the car, remove the guide rail mounting nuts, lift off the guide rails, and remove the cables with rear mount brackets attached.

NOTE: Fill the groove in each grommet with sealant and apply molybdenum grease to the inner cable.



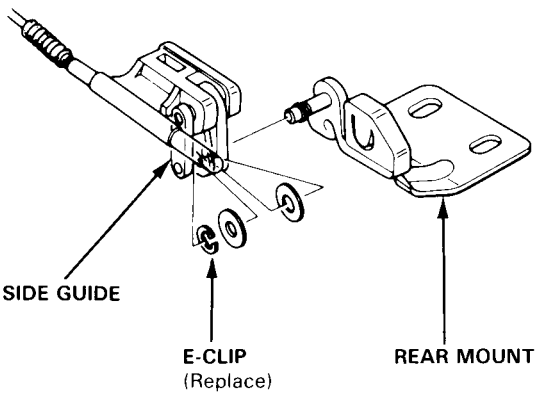


Rear Mount Bracket Disassembly

1. Remove the side guides from the rear mount brackets.

   NOTE: Replace the guides with new ones whenever they are disassembled.

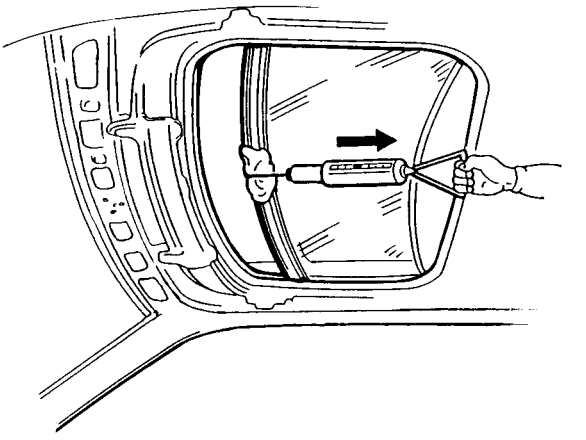
2. Pry the E-clip off the pin, and remove the rear mount bracket from the cable.



Drag Check (Motor Removed)

Before installing the sunroof motor, measure effort required to close sliding panel using a spring scale as shown.

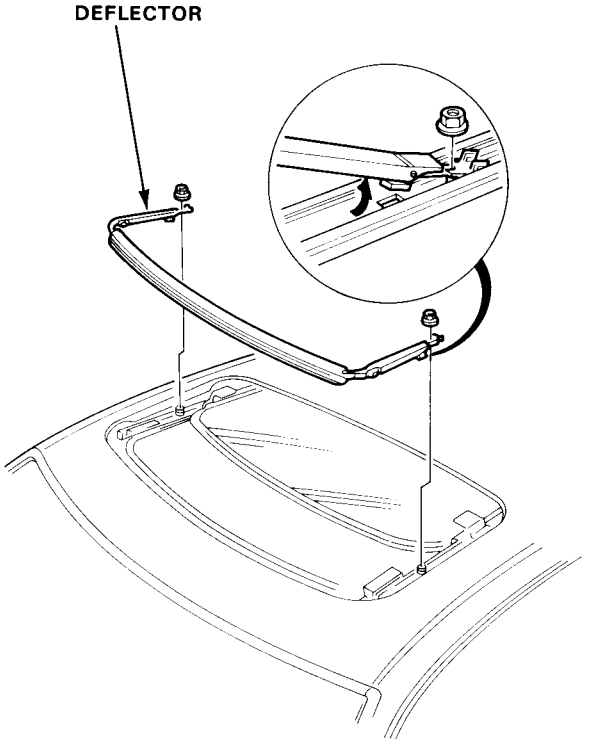
CAUTION: When using the spring scale, protect the leading edge of the sunroof with a shop rag.



If load is over 98 N (10 kg, 22 lb), check side clearance and glass height adjustment (page 14-40).

Wind Deflector Installation

Installation is done in the reverse order of removal. When installing, make sure to insert the deflector ends tightly into the guide rails and arrange the deflector and rails in parallel.

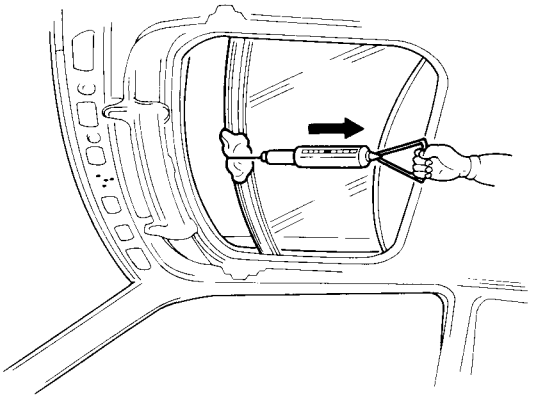


Closing Force Check (Motor Installed)

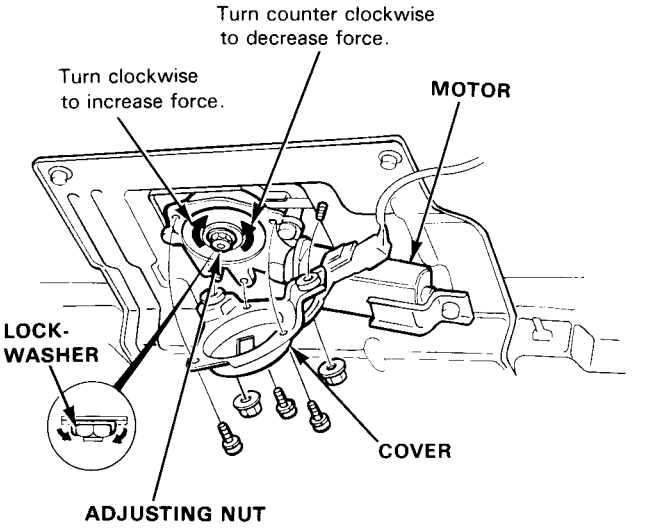
1. After installing all removed parts, have a helper hold the switch to close the sunroof while you measure force required to stop it. Attach spring scale as shown. Read force as soon as glass stops moving, then immediately release the switch and spring scale.

   CAUTION: When using the spring scale, protect the leading edge of the sunroof with a shop rag.

   Closing Force: 196–245 N (20–30 kg, 44–55 lb)



2. If force is not within specification, adjust by turning sunroof motor clutch adjusting nut. After adjusting, install a new lockwasher and bend it flat against the adjusting nut.



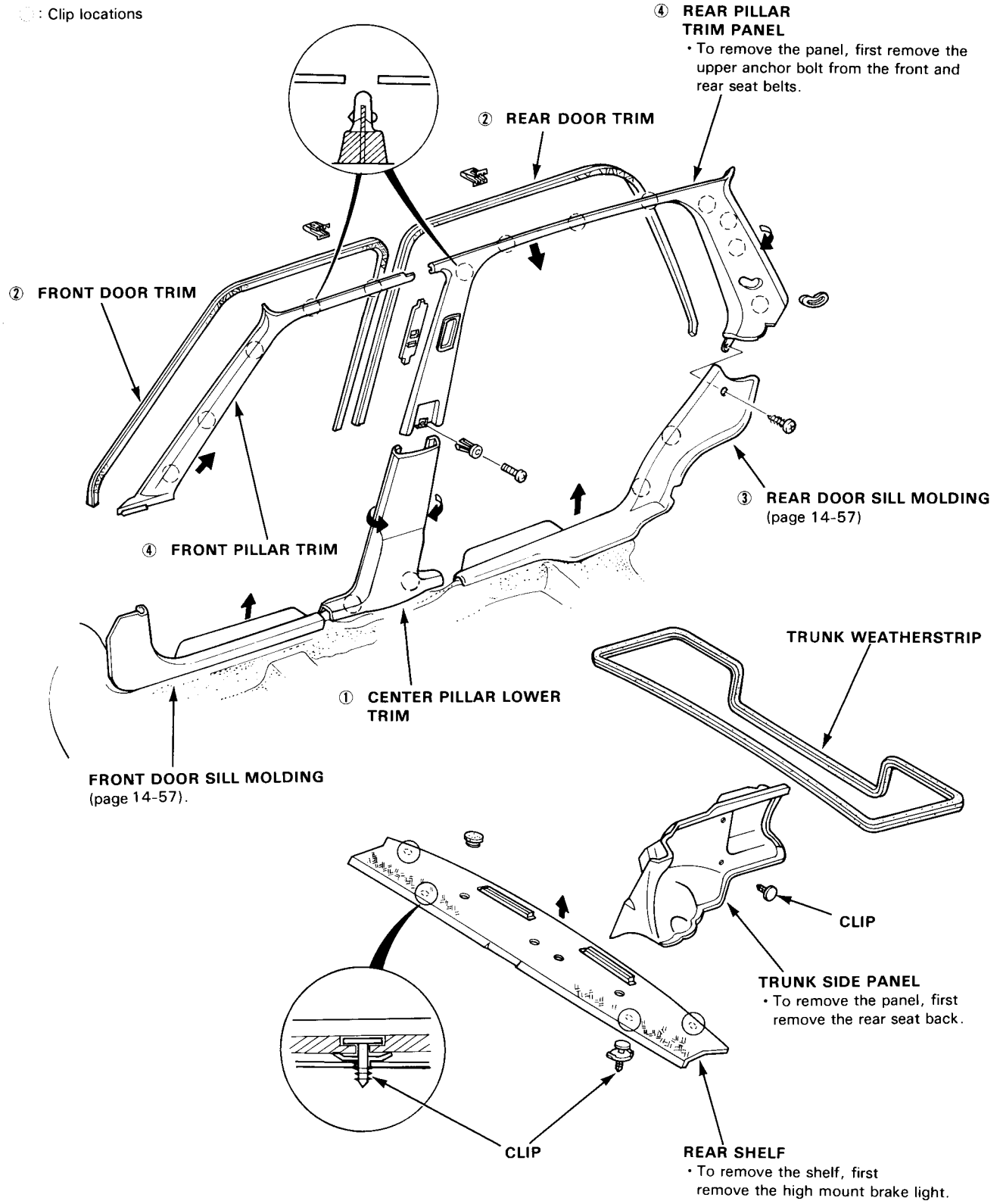
Interior Trim

Replacement

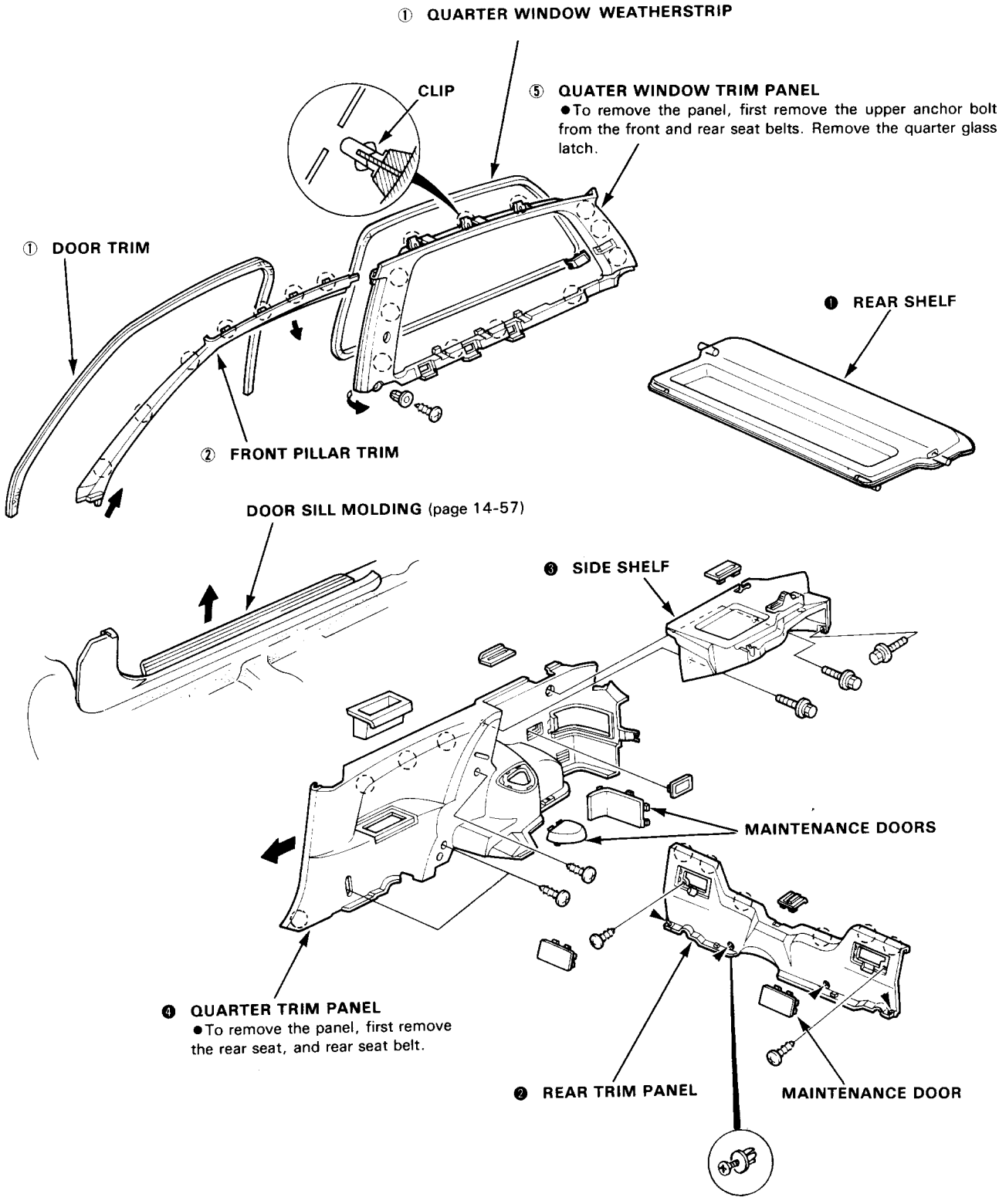
4D:

Disassemble in numbered sequence.

: Clip locations



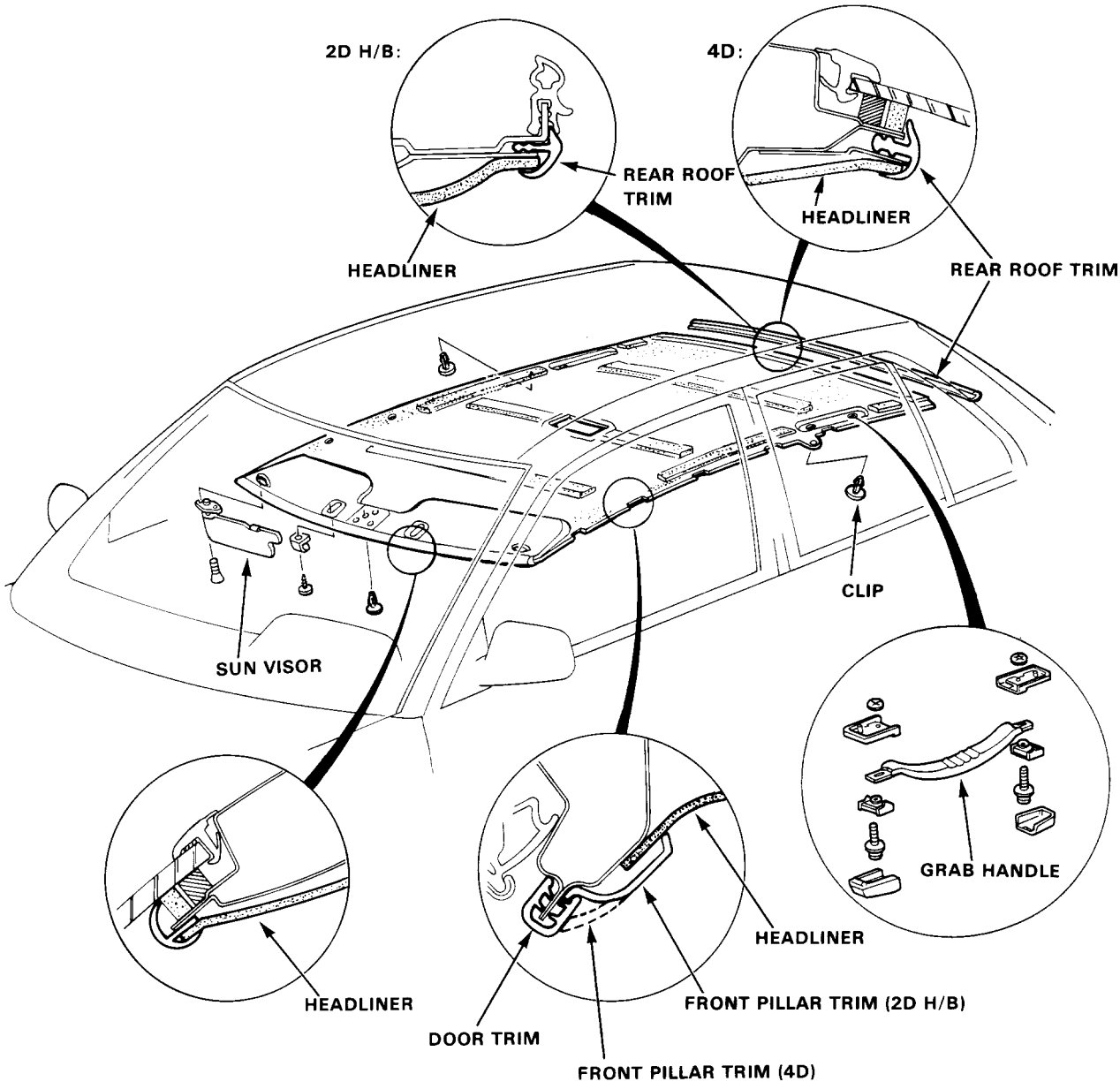
2D H/B:
Disassemble in numbered sequence.
( ) : Clip locations



Headliner

Replacement

1. Remove:
   - Sun visors and holders.
   - Rearview mirror assembly (page 14-55).
   - Front pillar trim (page 14-46).
   - Rear pillar trim panel (4D) (page 14-46).
   - Quarter window trim panel (2D H/B) (page 14-47).
   - Headliner molding (Sunroof model) (page 14-39).
   - Dome light.
   - Grab handles.
2. Remove the clips and rear roof trim, then remove the headliner.

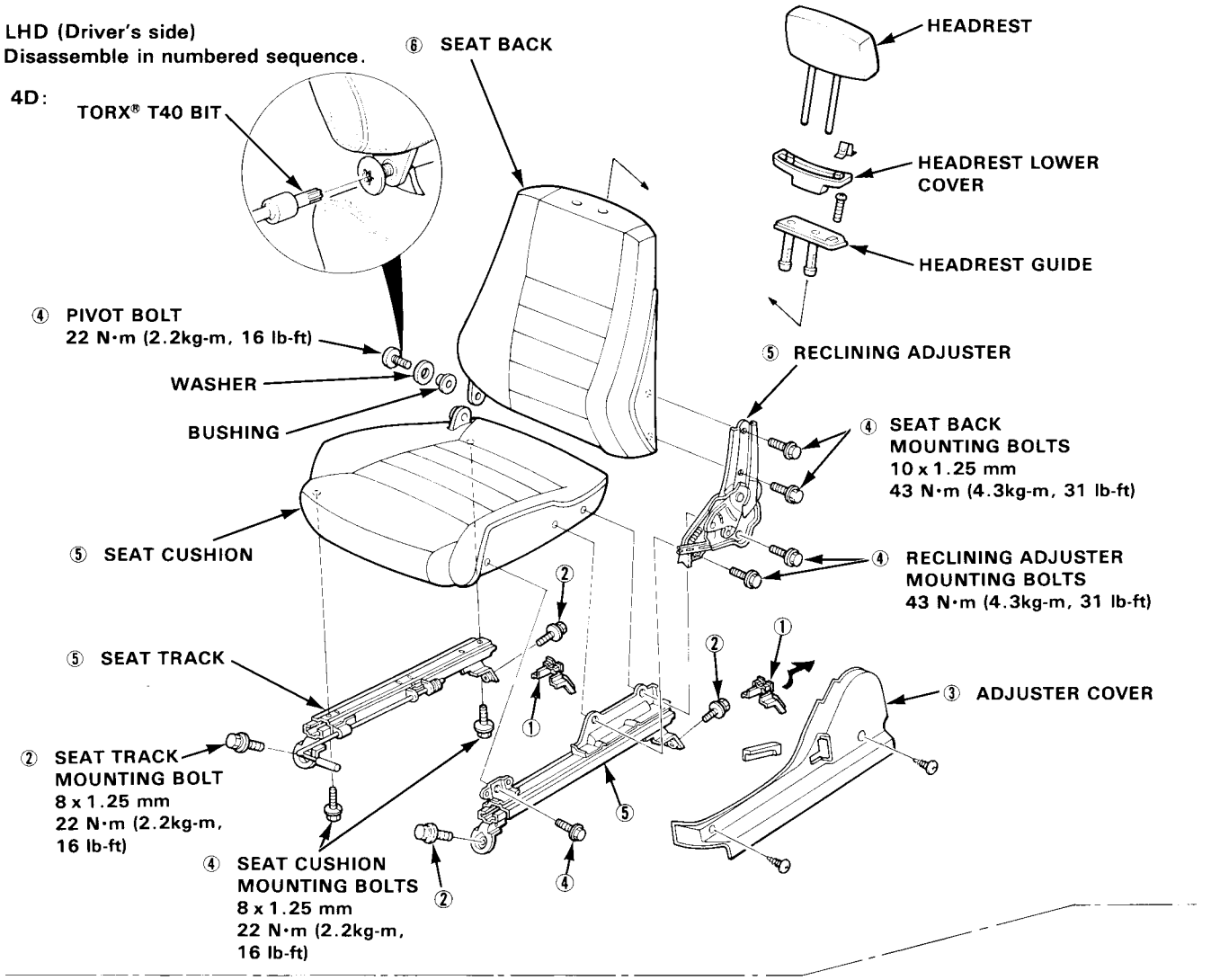


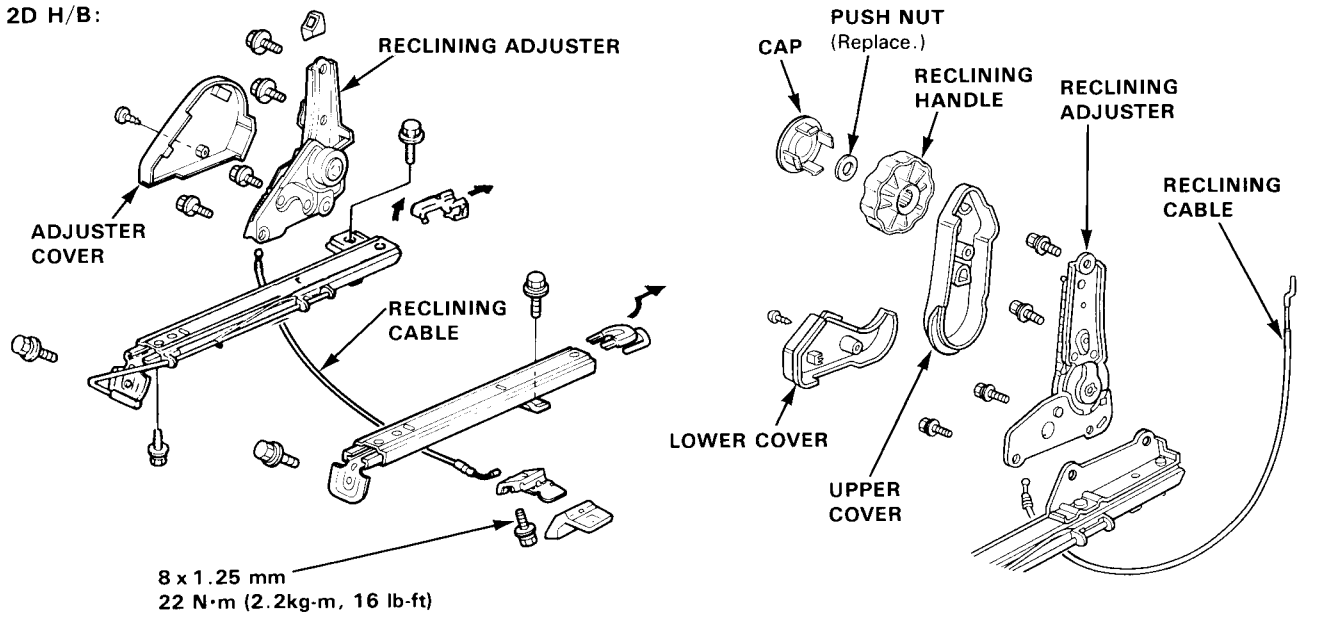
3. Assemble the headliner in the reverse order of disassembly.

NOTE:
- When installing the headliner inside the passenger cabin, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check that the two sides of the headliner are securely attached to the trim.

Front Seats

Disassembly

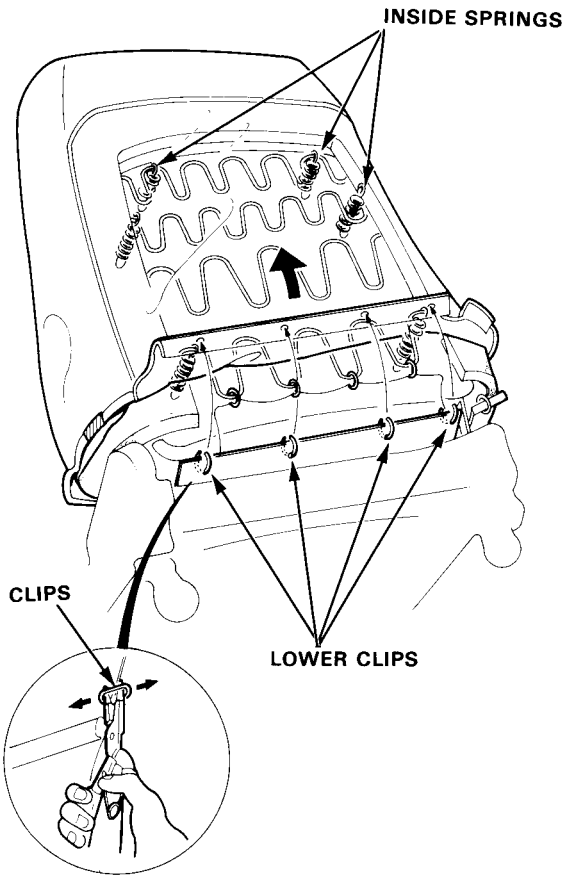




Front Cover Replacement

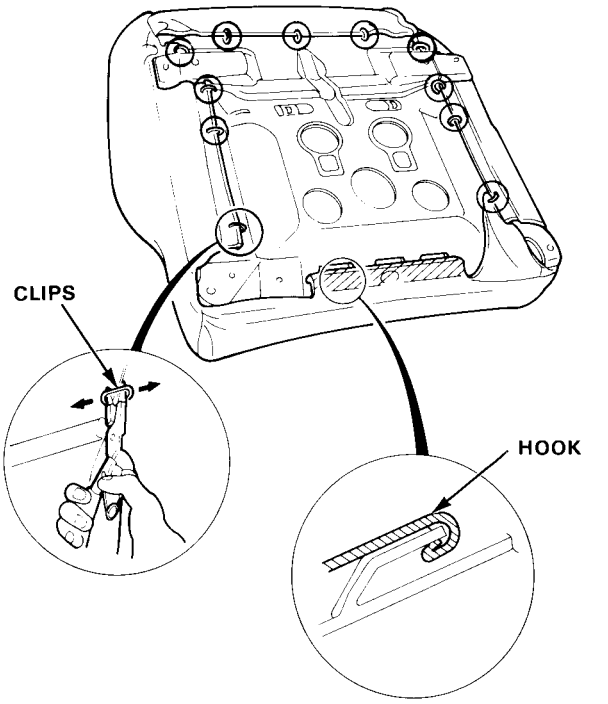
Front Seat Back:

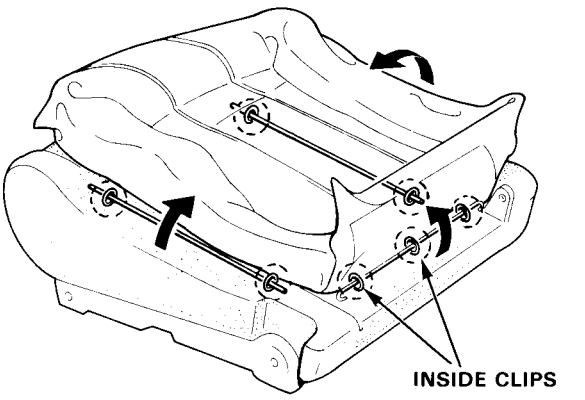
1. Separate the seat cushion and back. (page 14-49).
2. Remove the headrest and headrest guide (page 14-49).
3. Remove the lower clips and turn over the trim cover.
4. Remove the inside clips and inside springs, then remove the trim cover.



Front seat cushion:

5. Remove the 11 clips and the hook, and turn over the trim cover.
6. Remove the inside clips, then remove the trim cover.

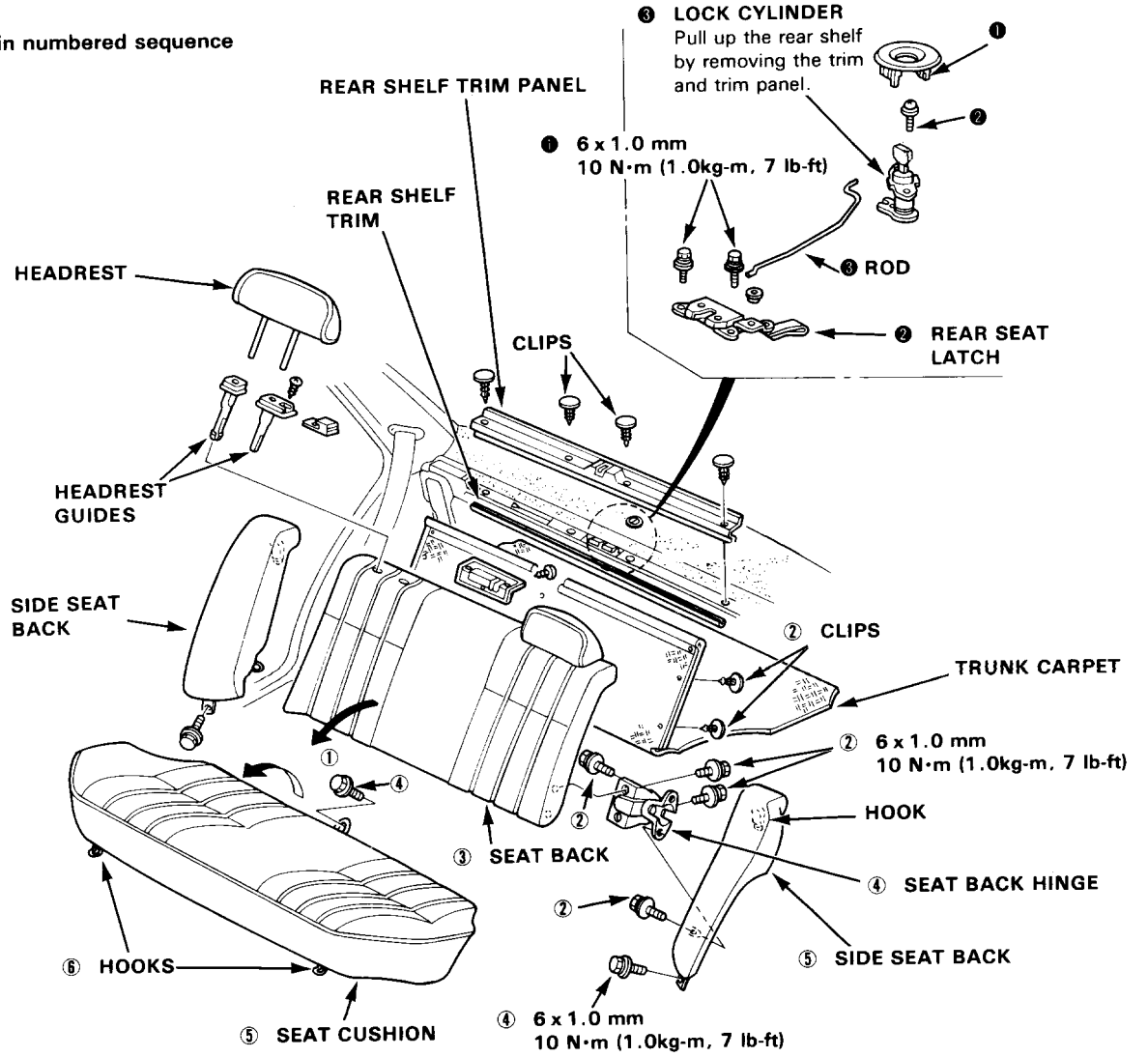


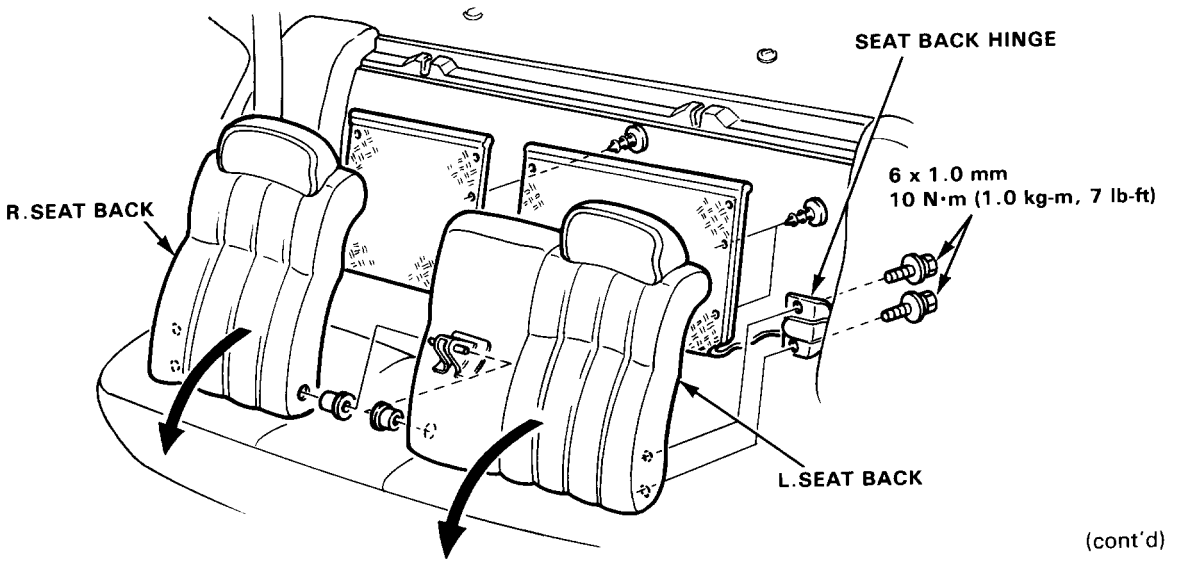


NOTE: To prevent wrinkles when installing a seat cover, make sure the material is stretched evenly over the frame before securing all the clips.

Replacement

4D:
Disassemble in numbered sequence

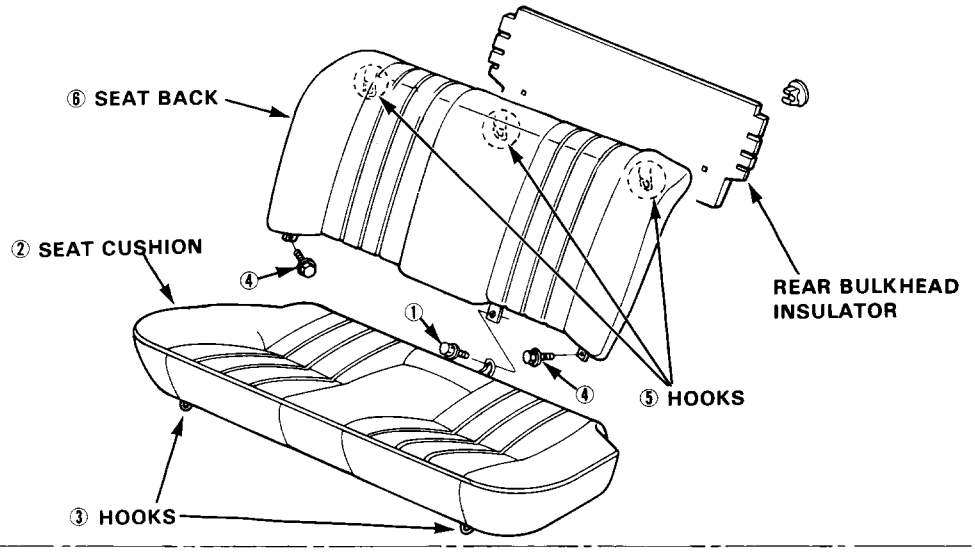




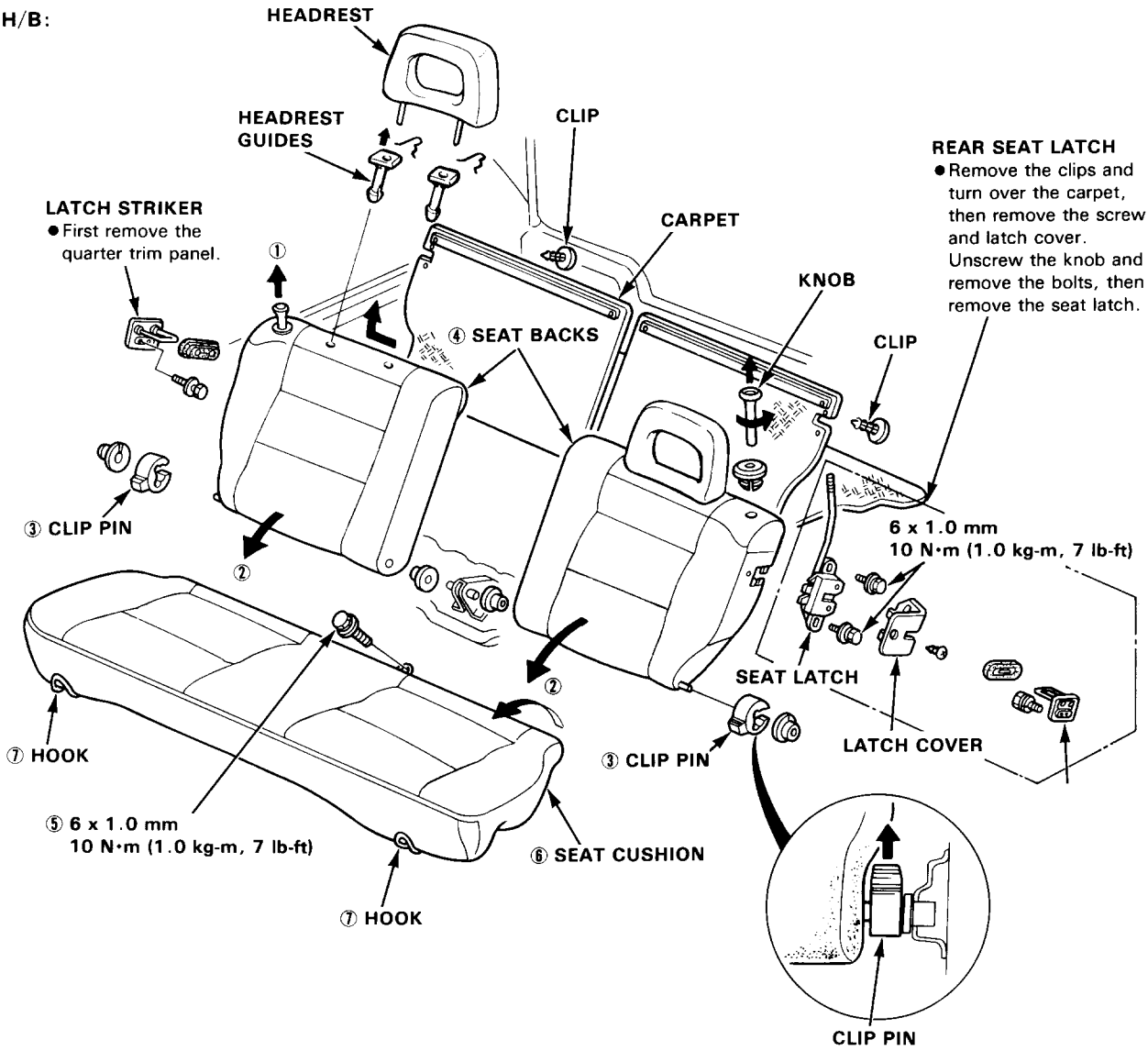
(cont'd)

Replacement (cont'd)

4D:



2D H/B:

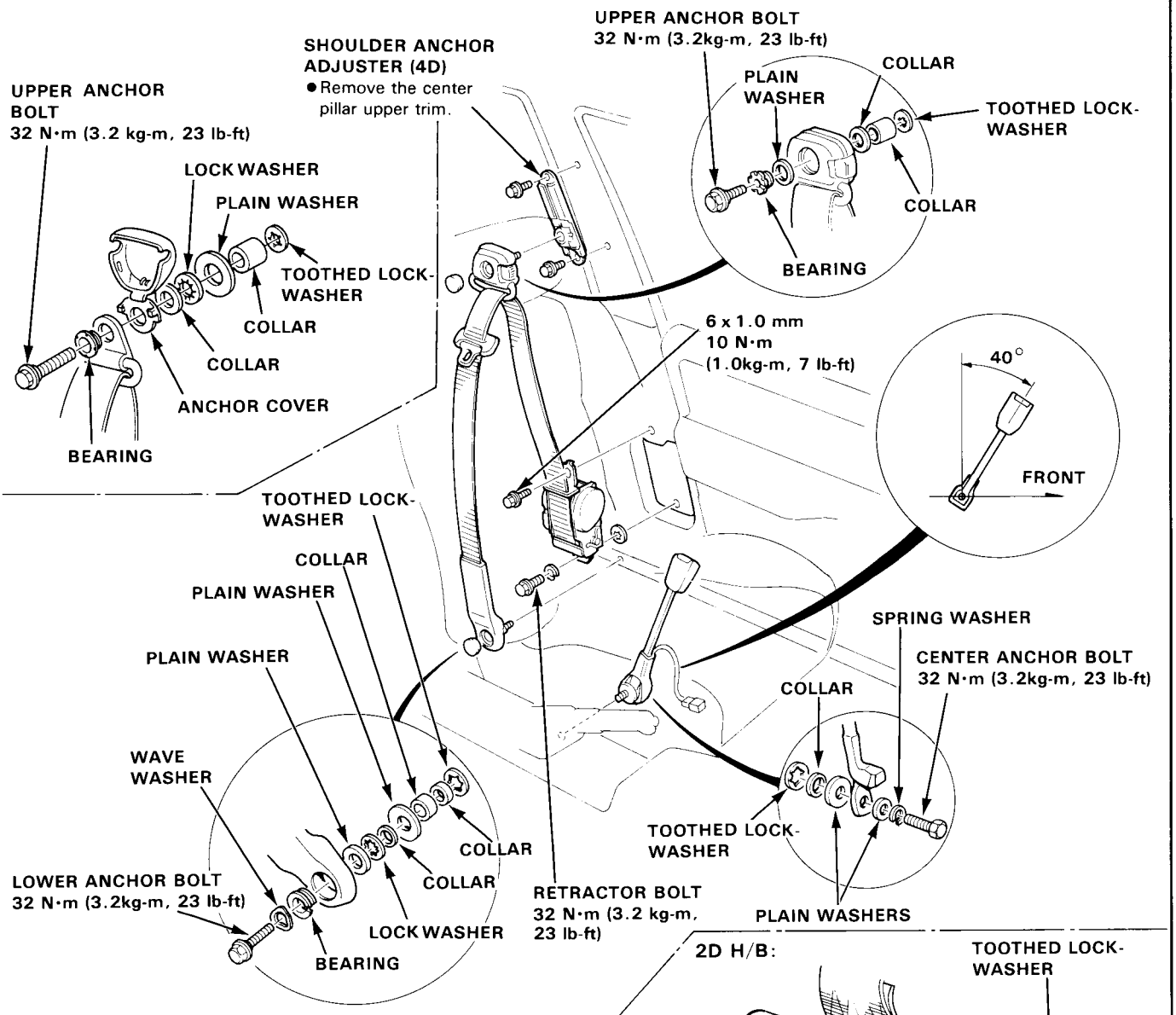


Front Seat Belts

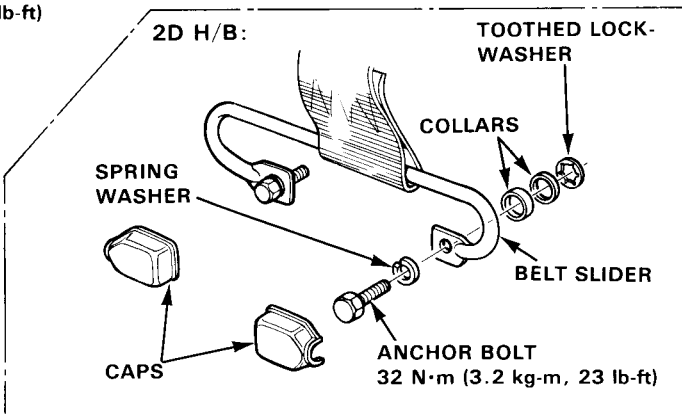
Replacement

CAUTION: Check the seat belts for damage (page 14-55), and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the quarter trim panel (2D H/B), or the center pillar lower trim (4D).
2. Remove the upper anchor bolt, lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.
3. Slide the front seat forward until the seat belt center anchor bolt is accessible, then remove the bolt and the center anchor.



4. Install the 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.
   - Install the center anchor bolt at 40° forward from vertical.
   - Before attaching the quarter trim panel (2D H/B) or center pillar lower trim (4D), make sure there are no twists or kinks in the belts.

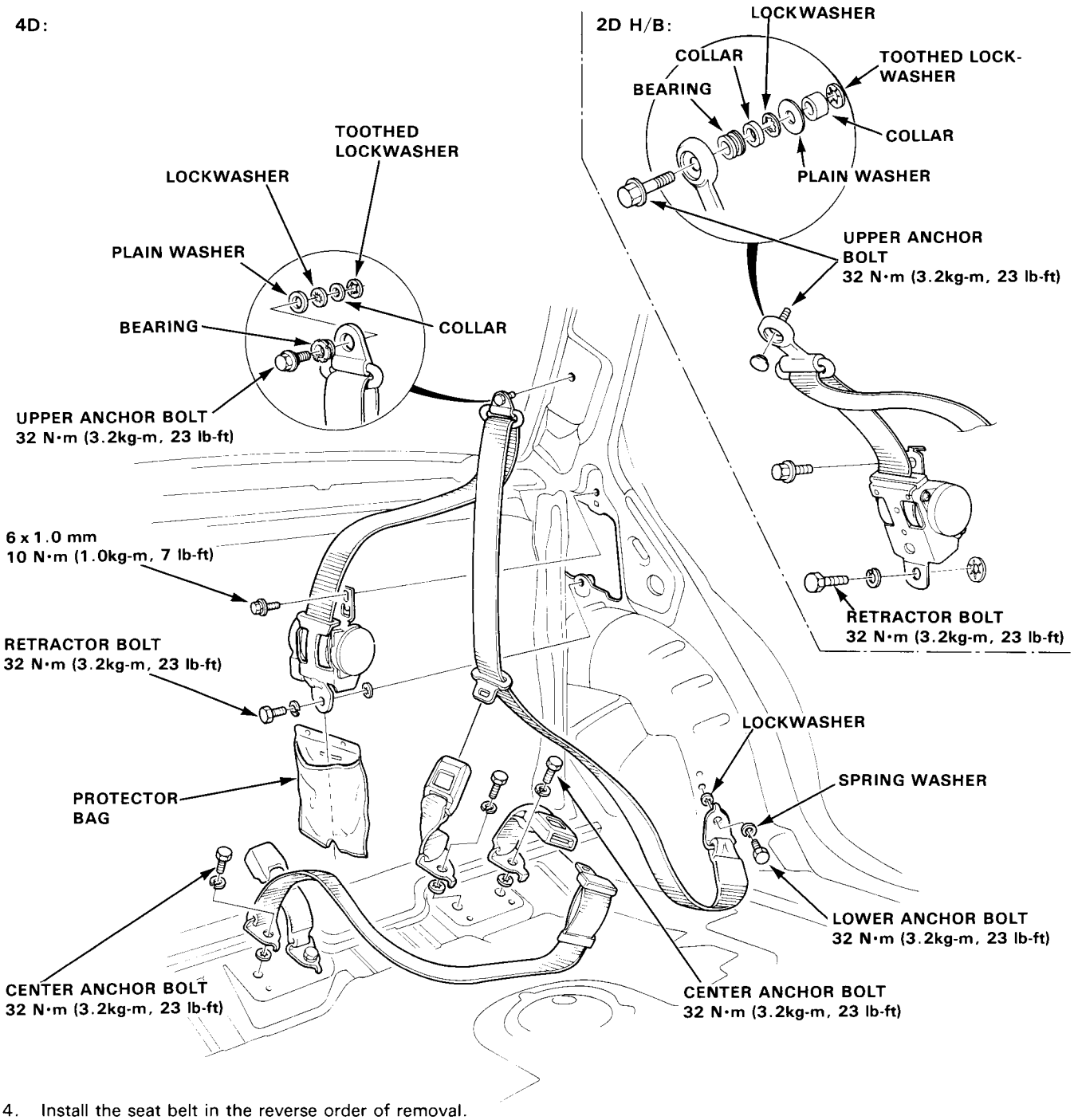


Rear Seat Belts

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 14-51, 52).
2. Remove the quarter trim panel (2D H/B), or the rear pillar trim panel (4D: page 14-46, 47).
3. Remove the upper anchor bolt, the lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.



4. Install the seat belt in the reverse order of removal.

NOTE: Before attaching the quarter trim panel (2D H/B) or rear pillar trim panel (4D) and rear seat, make sure there are no twists in the belt.

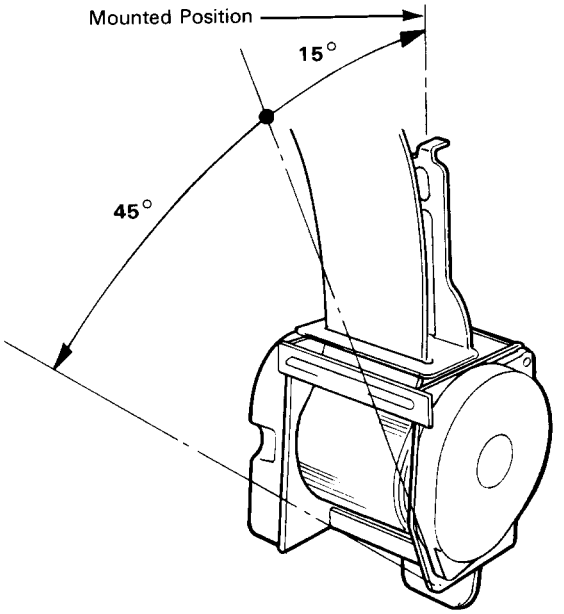
Seat Belts

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 slowly up to 15° from the mounted position. The belt should lock when the retractor is leaned over 45°.

   CAUTION: Do not attempt to disassemble the retractor.



3. Replace the belt with a new one if there is any abnormality.

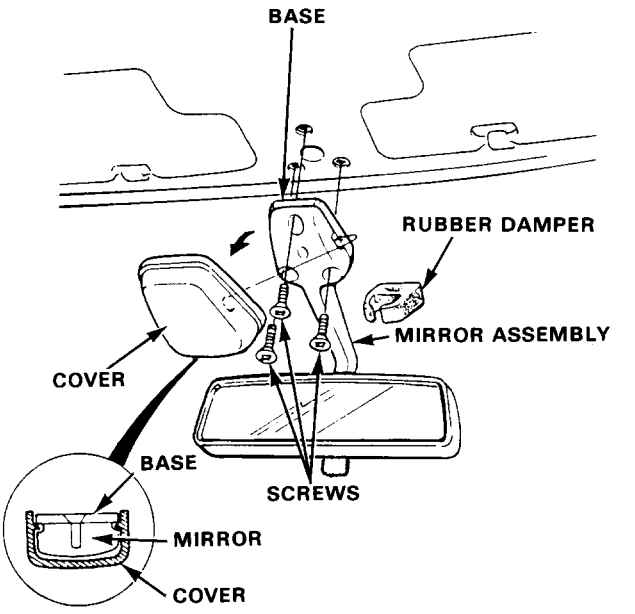
On-the-Car Belt Inspection

1. Check that the belt is not twisted or caught on anything.
2. After installing the an chors, 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.

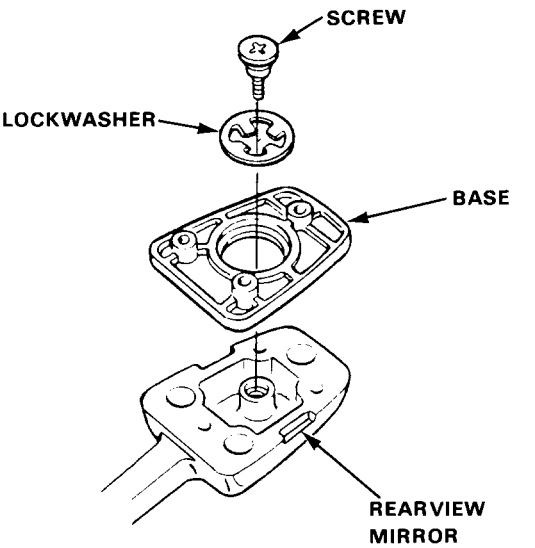
Rearview Mirror

Replacement

1. Remove the rubber damper.
2. Pry the cover off using the end of a flat tip screwdriver.



3. Remove the 3 mounting screws from the mirror base, then remove the mirror assembly.
4. Remove the base from the bracket by removing the screw.

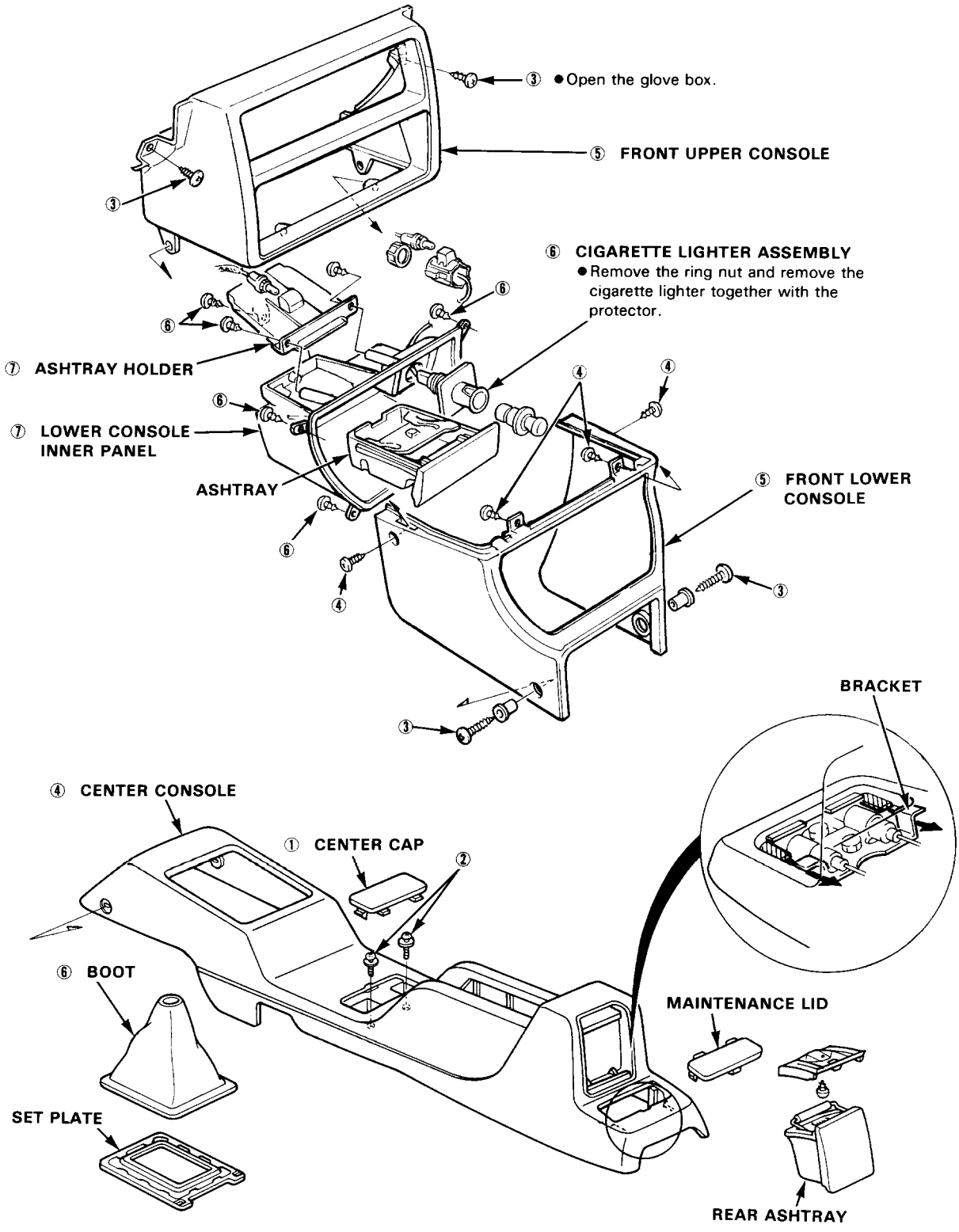


Console

Replacement

Disassemble in numbered sequence:

NOTE:
- Lift up the parking brake lever.
- For manual transmission models, remove the shift lever knob.

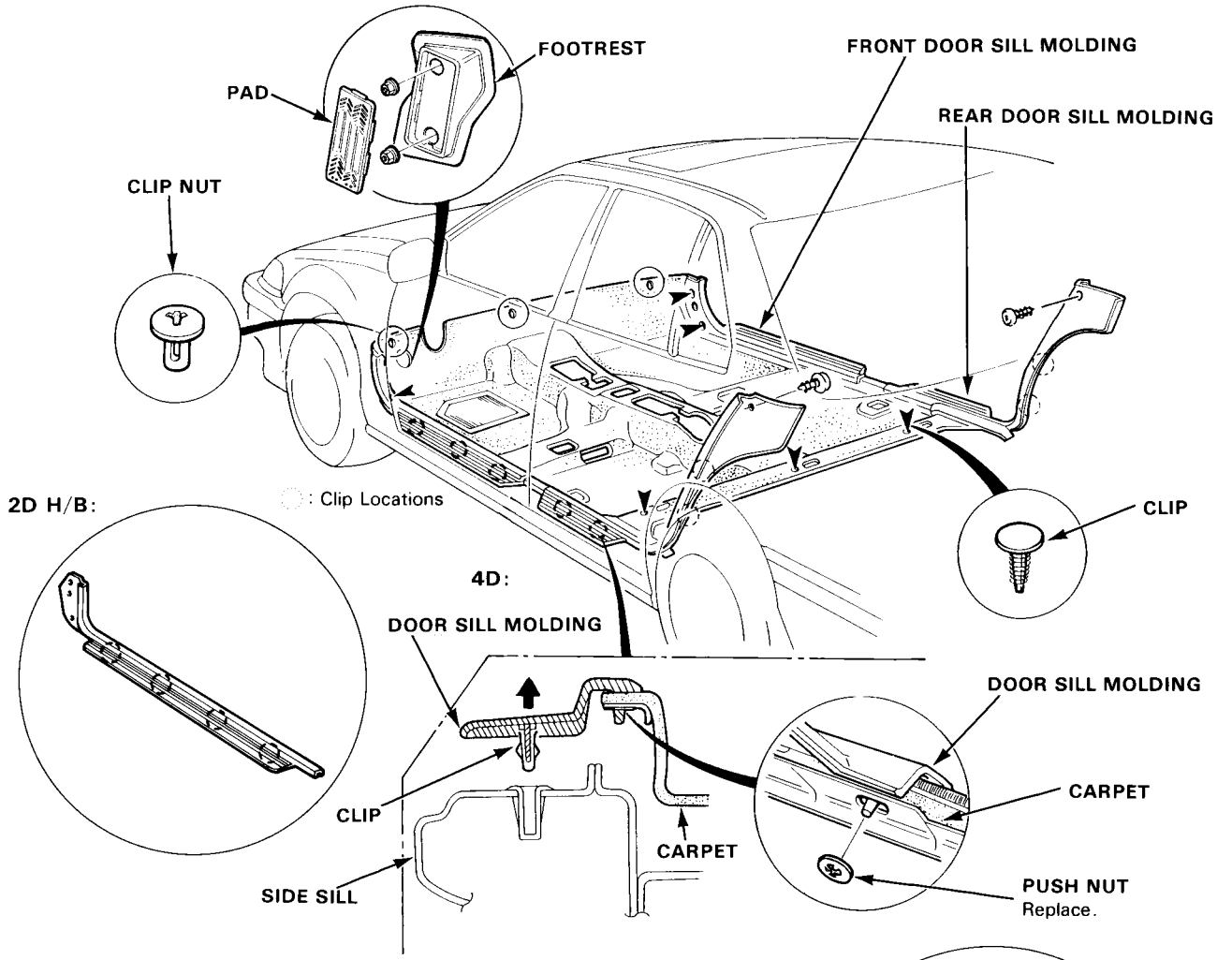


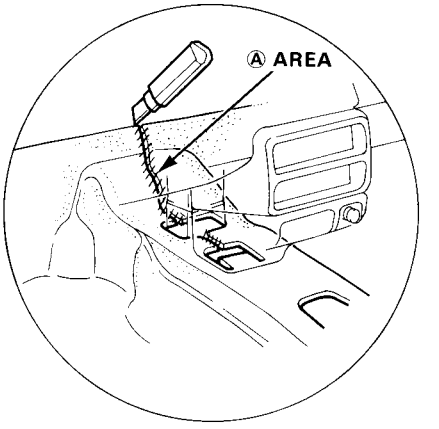
Carpet/Door Sill Moldings

Replacement

1. Remove:
   - Front seats.
   - Rear seat.
   - Console.
   - Hood release handle.
   - Fuel filler door and trunk lid openers.

2. Pry out the clips and pull up the door sill moldings.
3. Remove the push nuts, then separate the door sill moldings and carpet.
4. Pry out the clips at the rear edge and under the dashboard, peel off the tape and remove the clip nuts.





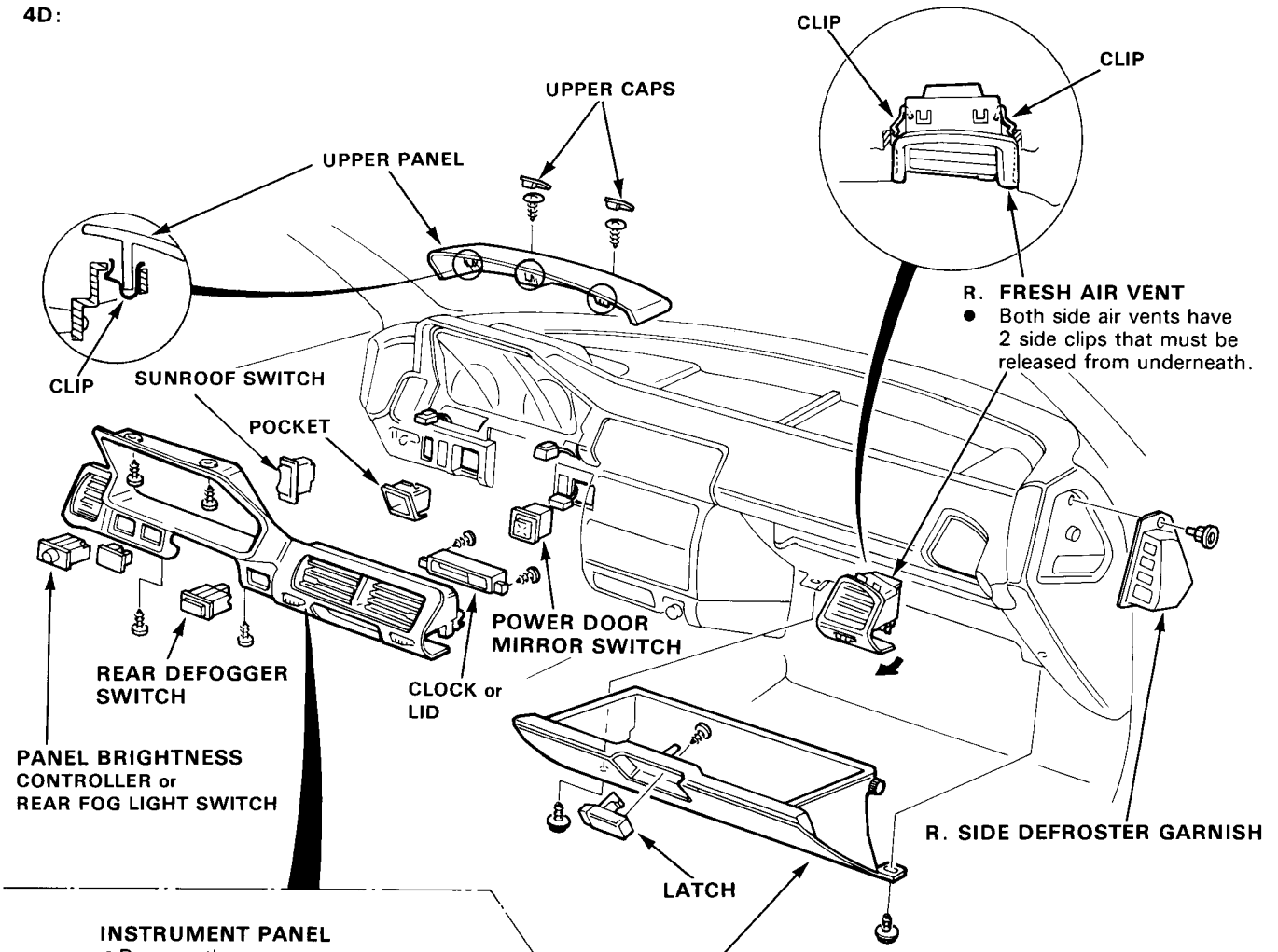
5. Cut the Ⓐ area first, then pull back the carpet as shown.
6. Remove the carpet.
7. Install the carpet in the reverse order of removal.

   NOTE:
   - Reattach the cut areas with tape and tie bands.

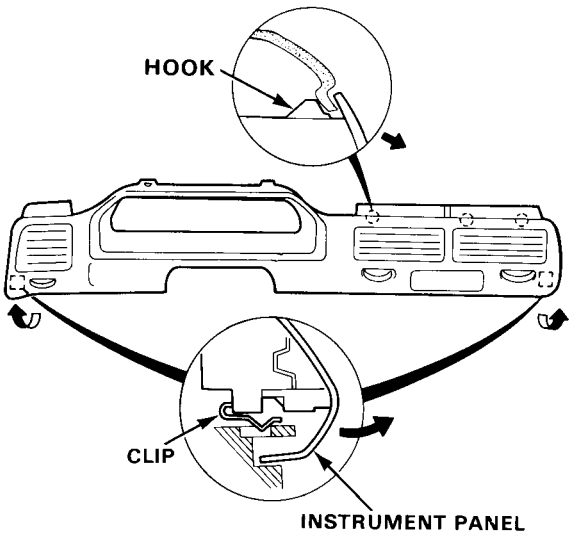
Dashboard

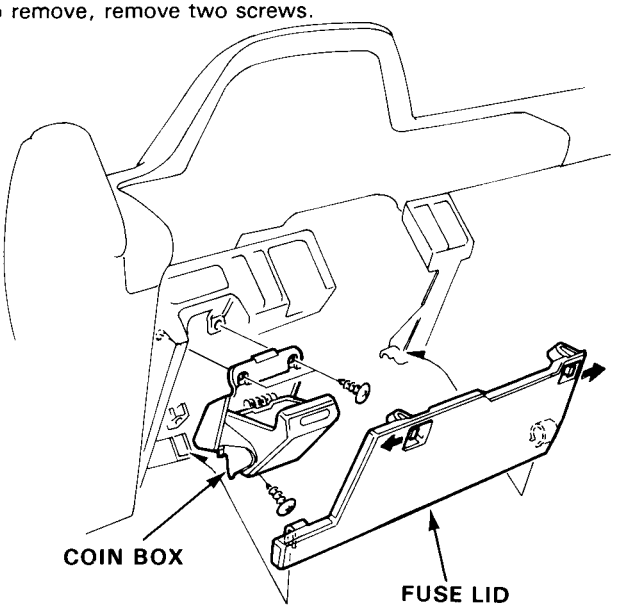
Component Removal/Installation

4D:

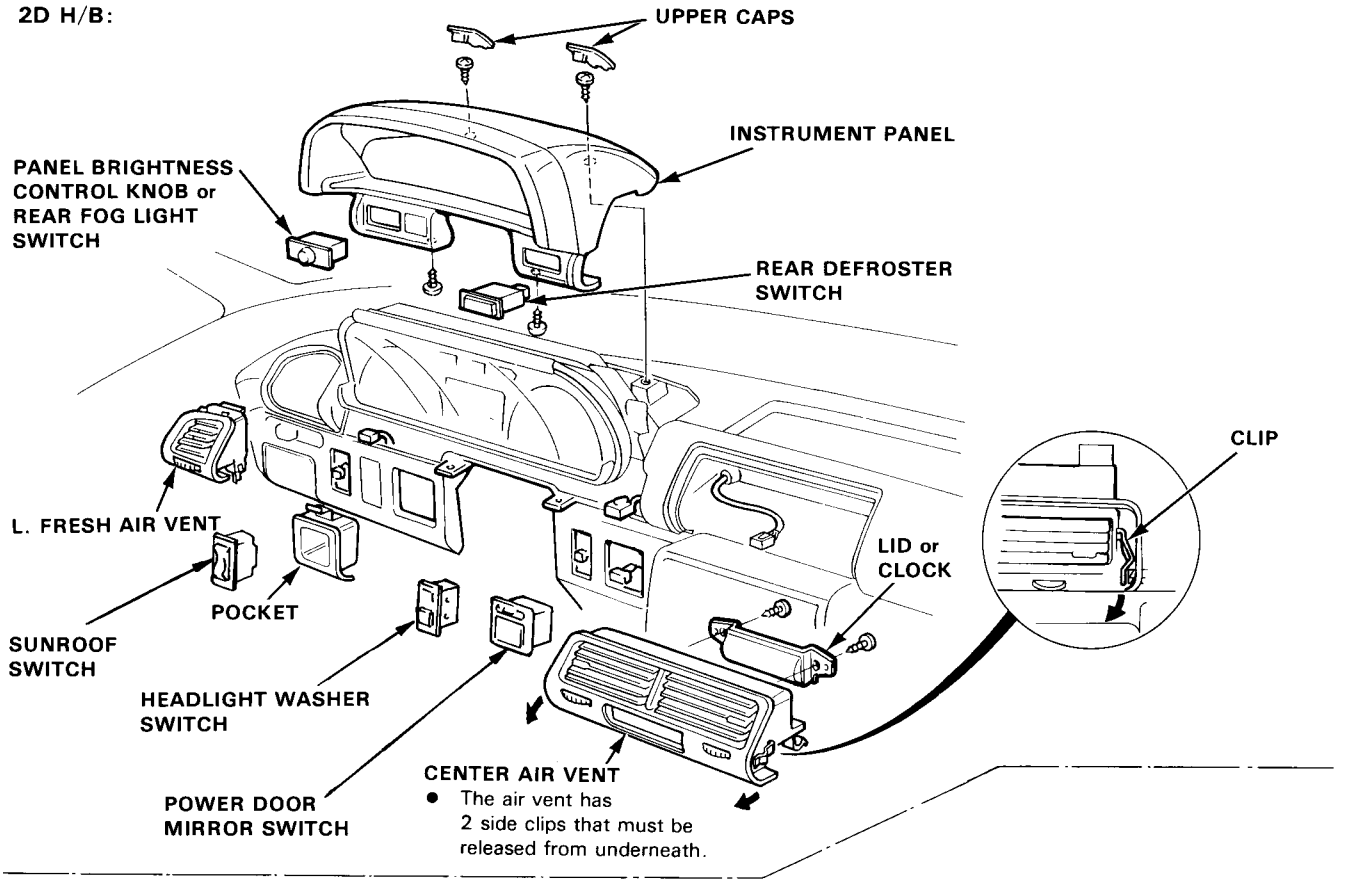


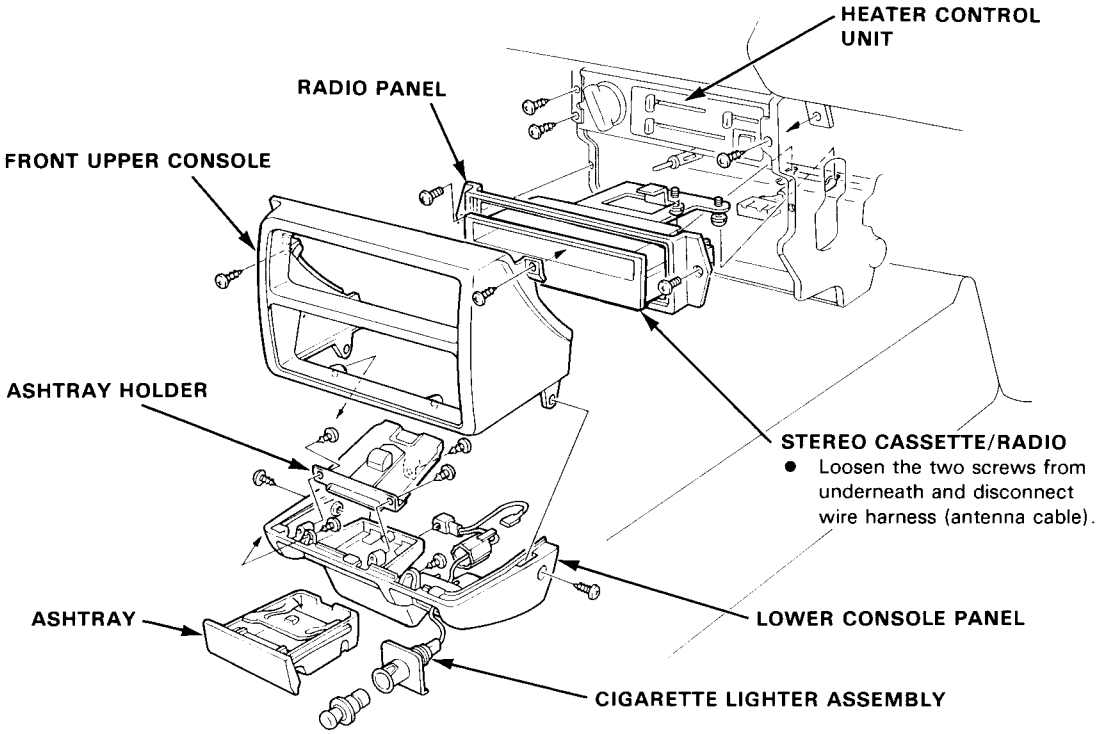
INSTRUMENT PANEL
- Remove the 4 screws.
- The panel has 2 side clips that must be released from underneath and upper hooks.





2D H/B:


UPPER CAPS
INSTRUMENT PANEL
PANEL BRIGHTNESS CONTROL KNOB or REAR FOG LIGHT SWITCH
REAR DEFROSTER SWITCH
CLIP
L. FRESH AIR VENT
LID or CLOCK
POCKET
SUNROOF SWITCH
HEADLIGHT WASHER SWITCH
POWER DOOR MIRROR SWITCH
CENTER AIR VENT
• The air vent has 2 side clips that must be released from underneath.


HEATER CONTROL UNIT
RADIO PANEL
FRONT UPPER CONSOLE
ASHTRAY HOLDER
STEREO CASSETTE/RADIO
• Loosen the two screws from underneath and disconnect wire harness (antenna cable).
ASHTRAY
LOWER CONSOLE PANEL
CIGARETTE LIGHTER ASSEMBLY

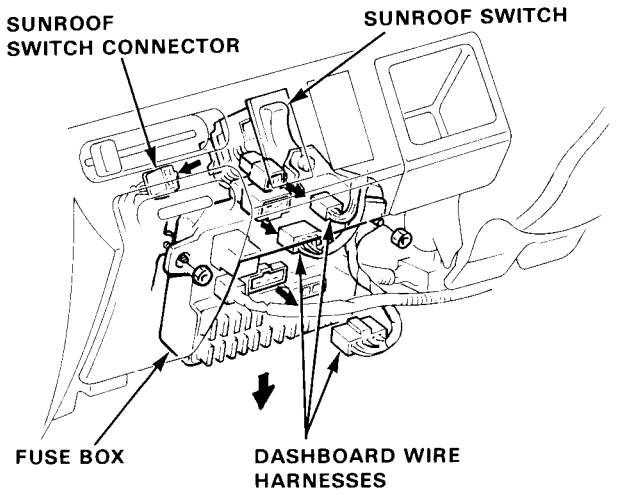
Dashboard

Replacement

1. To remove the dashboard, first slide the seats back fully and remove the:

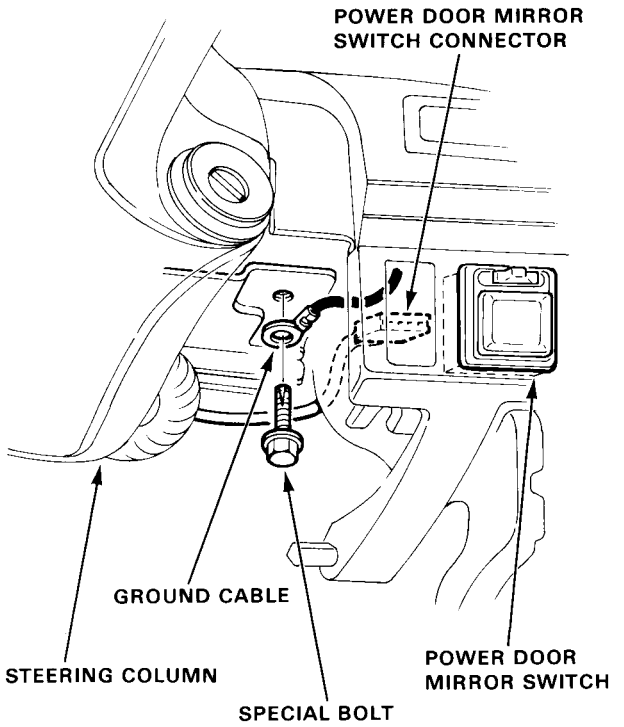
   ● Center console (page 14-56, 59).

2. Remove the fuse lid and disconnect the wire harnesses from the connector holder, and fuse box. Disconnect the sunroof switch connector.



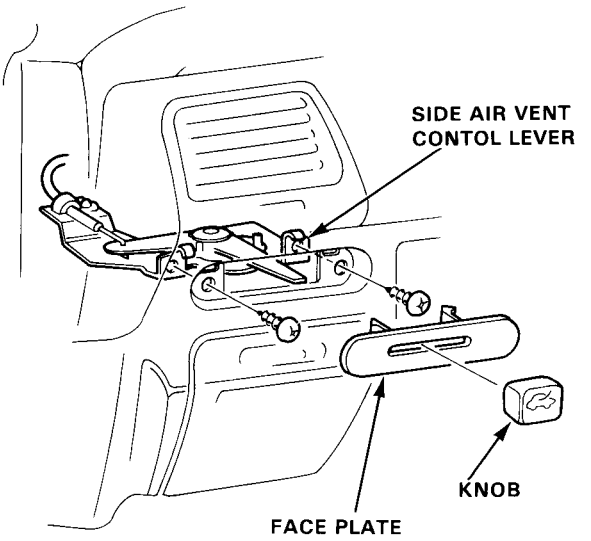
   NOTE: Remove the fuse box mounting nuts, then lower the fuse box, if necessary.

3. Disconnect the ground cable at right of steering column and power door mirror switch connector.

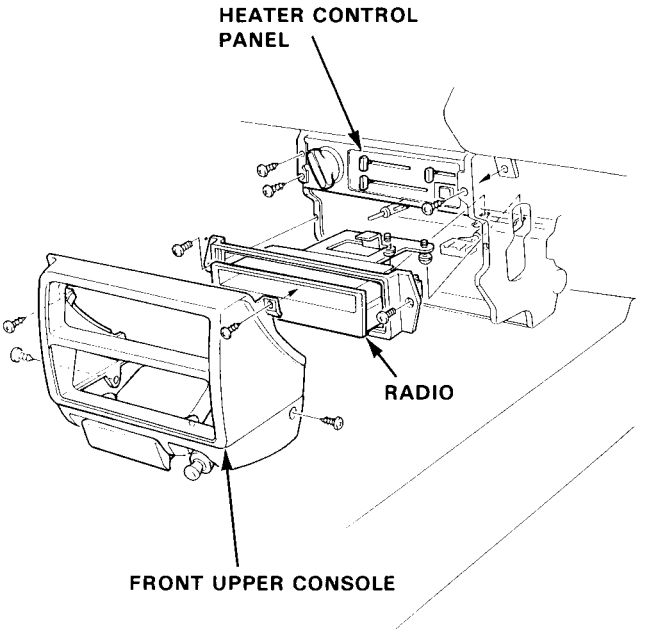


4. Remove the knob, then remove the side air vent face plate.

5. Remove the 2 screws attaching the side air vent control lever.

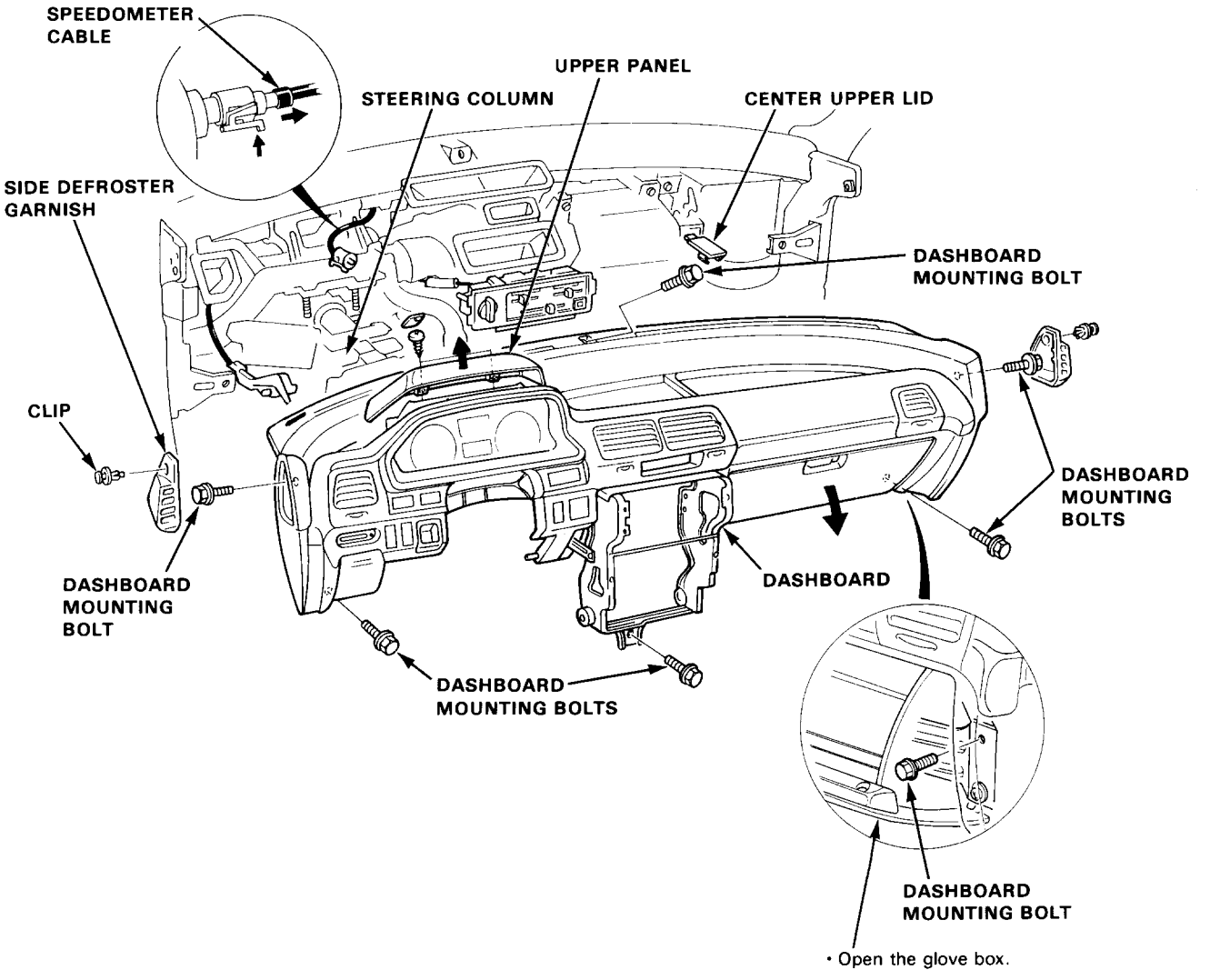


6. Remove the front upper console and radio, remove the 3 screws attaching the heater control panel to the dashboard.



7. Remove the gauge upper panel (4D) or instrument panel (2D H/B) (Page 14-58, 59).
8. Disconnect the speedometer cable.
9. Remove the center upper lid from the top of the dashboard.
10. Remove the side defroster garnishes from both ends of the dashboard.
11. Lower the steering column (See section 11).
12. Remove the dashboard mounting bolts.
13. Lift and remove the dashboard.

Reassembly NOTE:
- Make sure the dashboard fits onto the body correctly.
- Before tightening the dashboard bolts, make sure the dashboard wires are not pinched, and that the dashboard is not interfering with the heater control cable.



Front Bumper

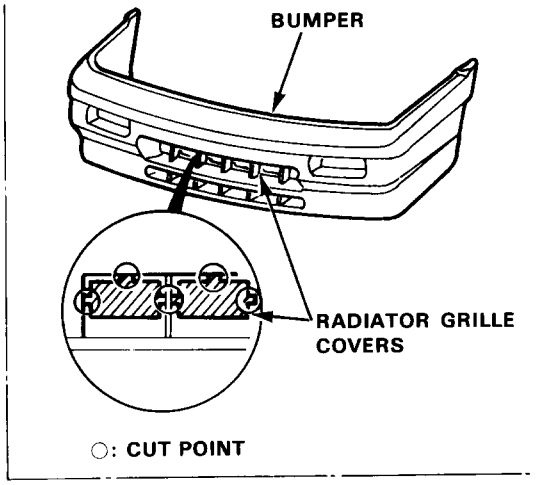
Replacement

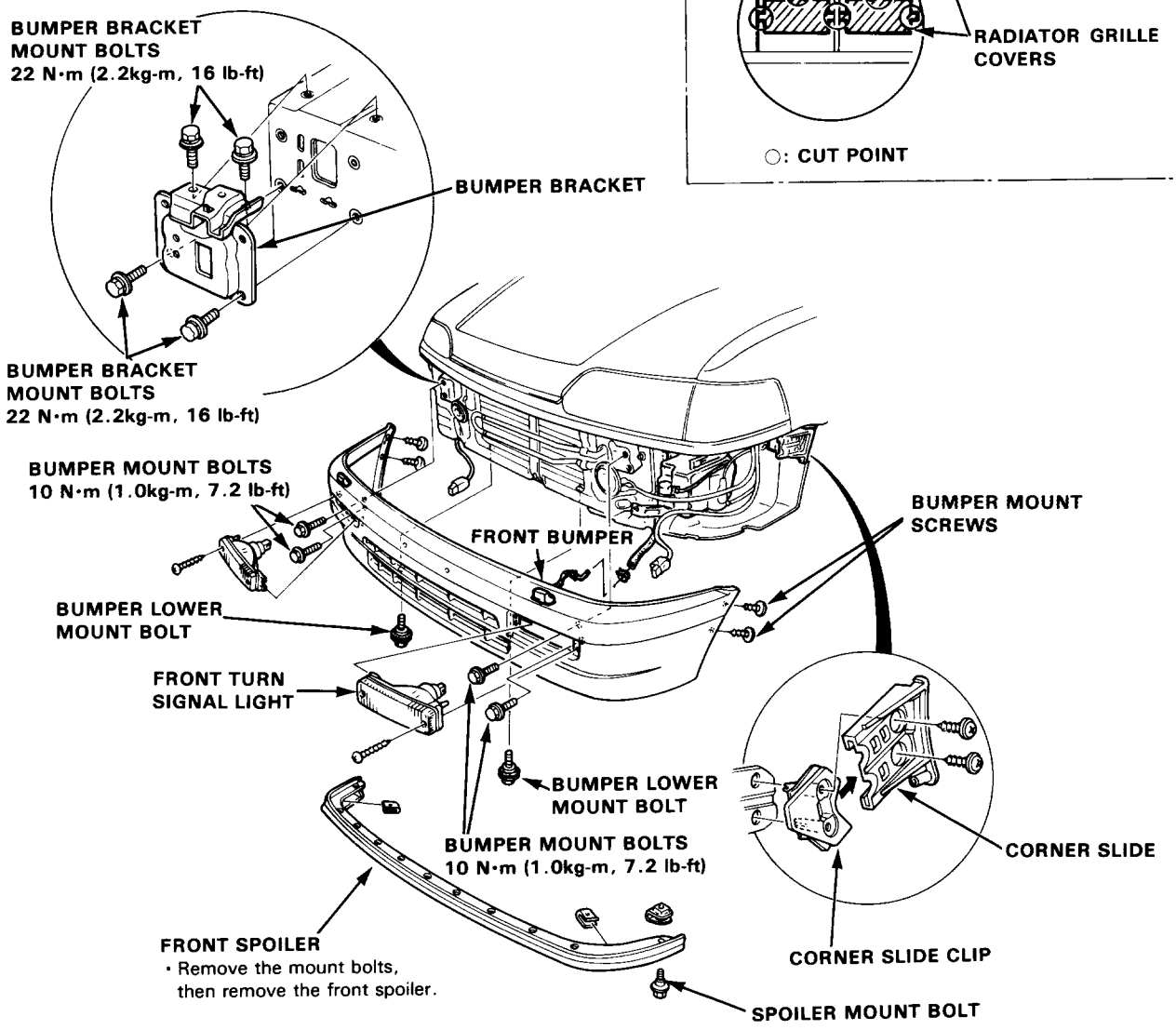
1. Remove the right and left front turn signal lights.
2. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
3. Remove the 2 bumper lower mount bolts and the 4 bumper mount bolts.
4. Disconnect the headlight washer hose.
5. Remove the bumper by sliding it forward.

If necessary:

6. Remove the bumper brackets by removing the bracket mount bolts.
7. Remove the screws, then remove the corner slide and slide clip.
8. Installation sequence is essentially the reverse order of removal.

   NOTE: When installing a new bumper on a car with A/C, cut off and discard the 5 radiator grille covers.





Rear Bumper

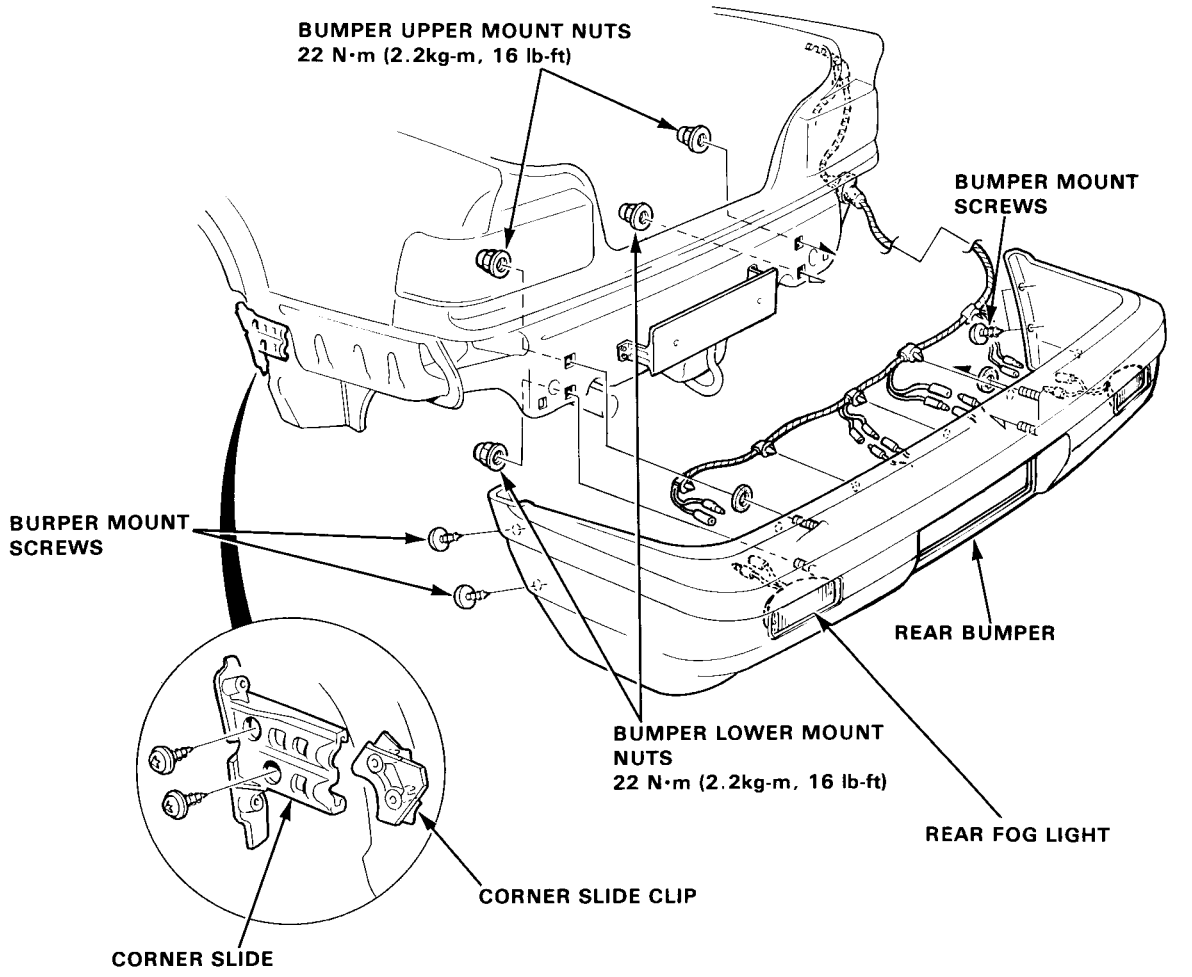
Replacement

1. Disconnect the two license light wire connectors and rear fog light connectors.
2. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
3. Remove the 2 bumper lower mount nuts from under the trunk floor.
4. Remove the 2 bumper upper mount nuts from the trunk area.
5. Remove the bumper by sliding it to the rear.

   NOTE: Do not damage the threads of the bumper bolts.

If necessary:

6. Remove the screws, then remove the corner slide and slide clip.

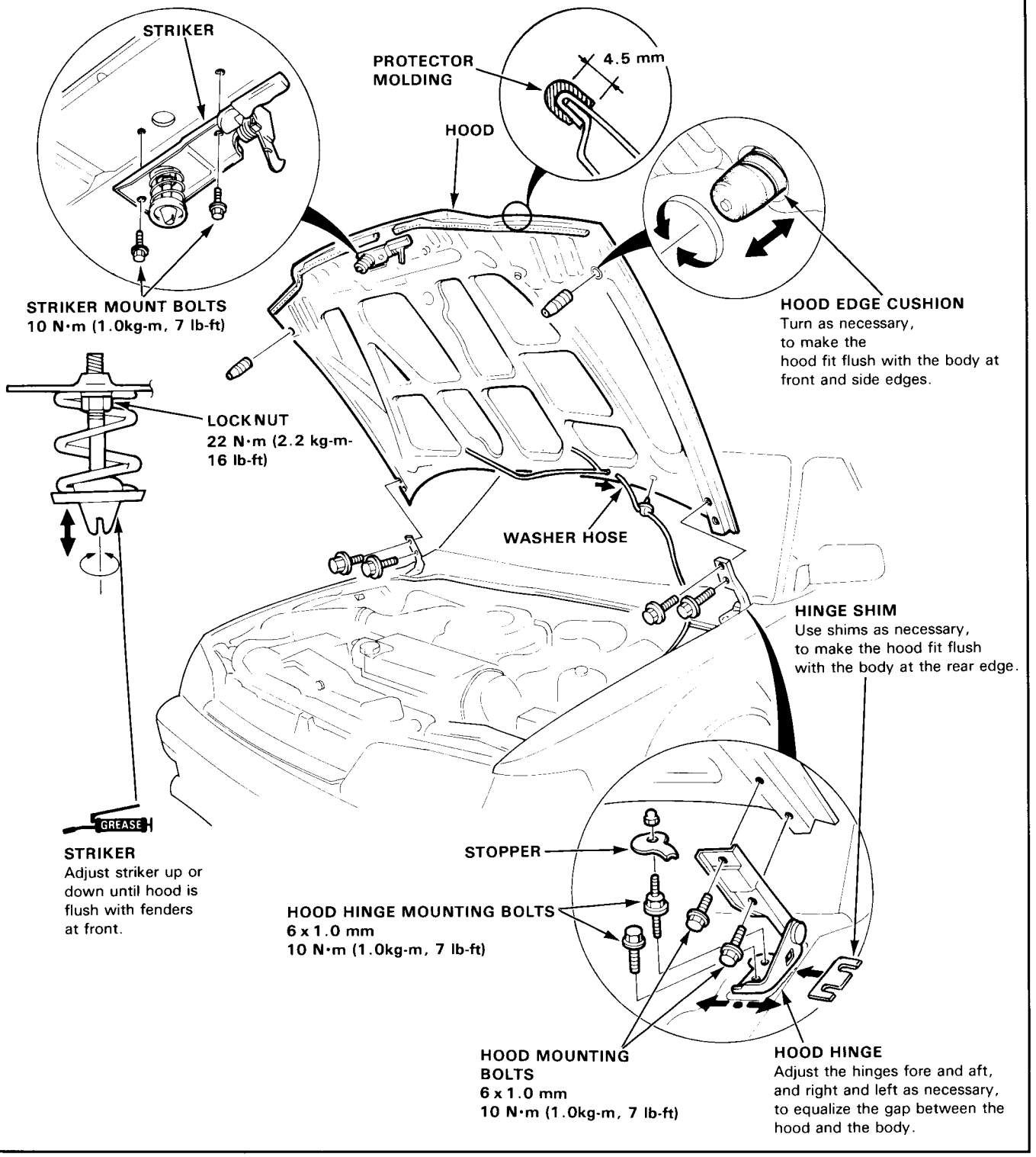


7. Installation sequence is essentially the reverse order of removal.

Hood

Replacement/Adjustment

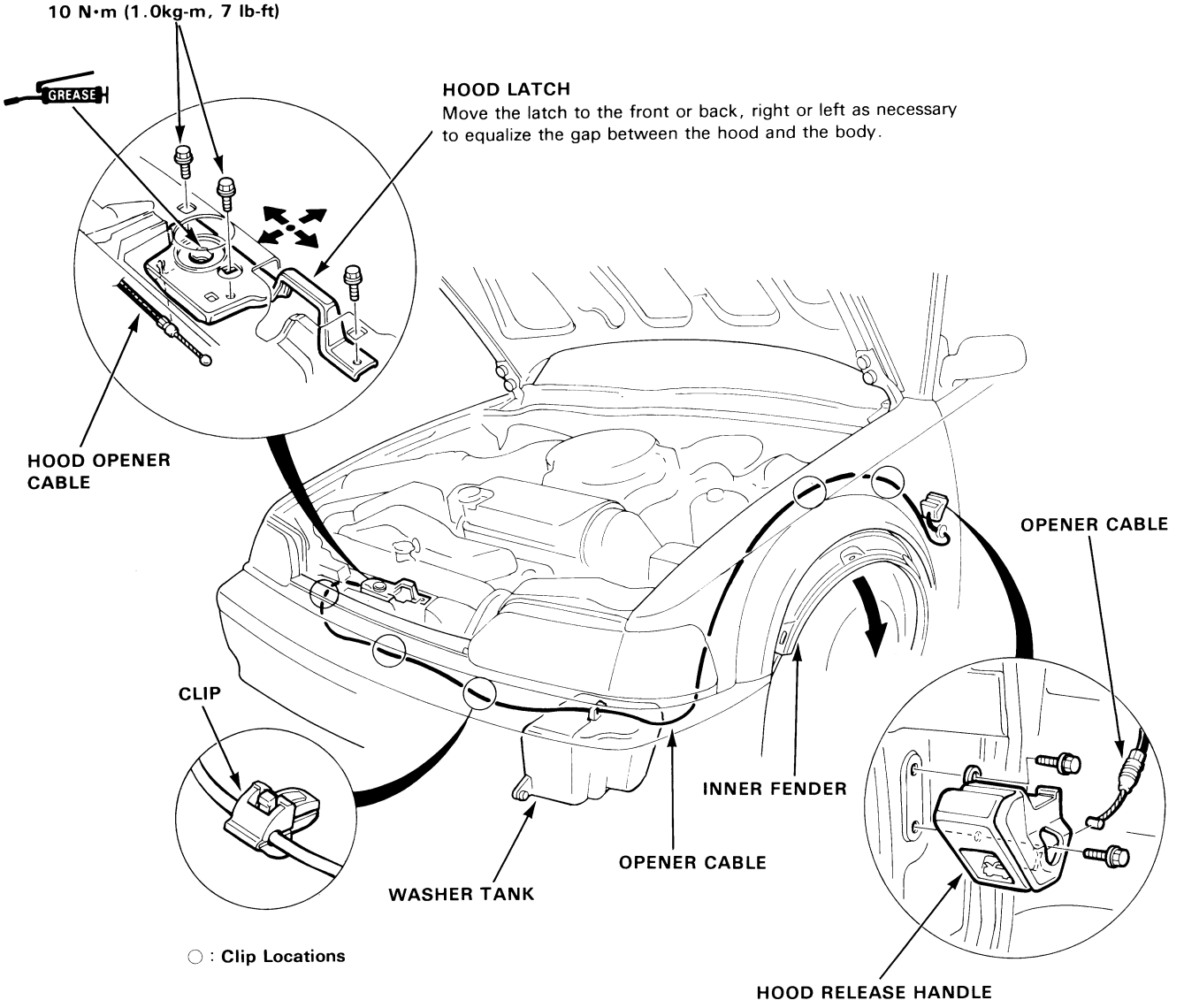
1. Pull the windshied washer hose out of the hood.
2. Hold the hood up and remove the 2 hood mounting bolts on each side, then remove the hood.
3. To remove the hood hinges, remove the front windshield wiper and air scoop.
4. When installing the hood, don't tighten the hinge bolts until you've checked the adjustments shown below.



Opener and Latch Replacement

1. Remove the bolts, then remove the hood release handle and disconnect the opener cable.
2. Remove the front bumper.
3. Remove the 3 mounting bolts, then remove the hood latch and disconnect the opener cable.
4. Remove the left side inner fender, then pull out the opener cable.

   NOTE: Before pulling out the opener cable, tie a string to the cable so you can pull it back in later.
5. After installing, adjust the hood fit to the opening.



6. After installing, adjust the hood fit to the opening.

Trunk Lid

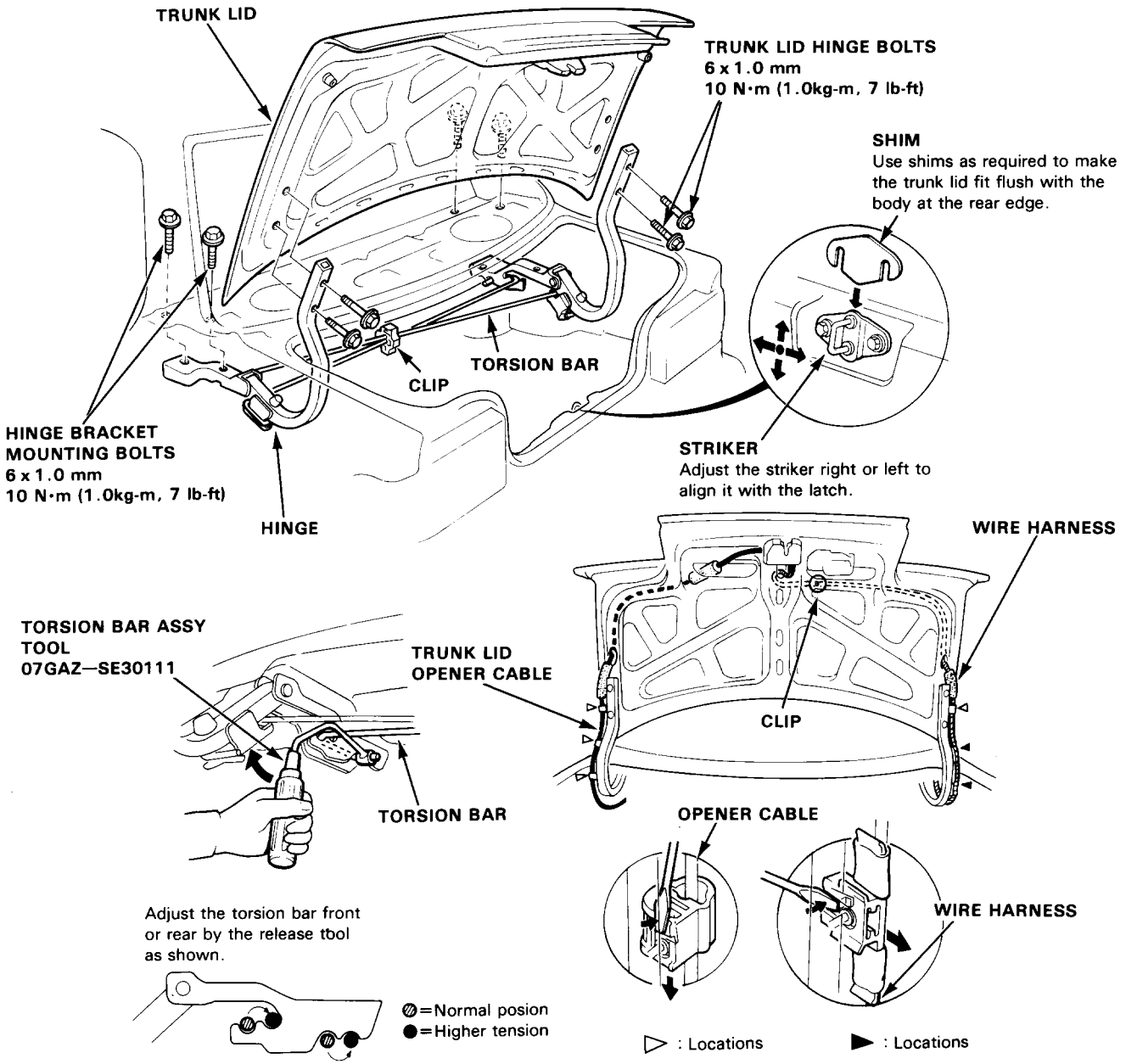
Replacement/Adjustment

1. Pull the harness and trunk lid opener cable (page 14-68) out of the trunk lid.

   NOTE: Before pulling out the wire harness, 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 hinge bolts, then lift off the lid.
3. Remove the torsion bar using a release tool.
4. Remove the rear shelf.
5. Remove the hinge bracket mounting bolts, then remove the hinges from the trunk.
6. Assemble in the reverse order.

   NOTE: Before tightening the hinge bolts, check the adjustments shown below:



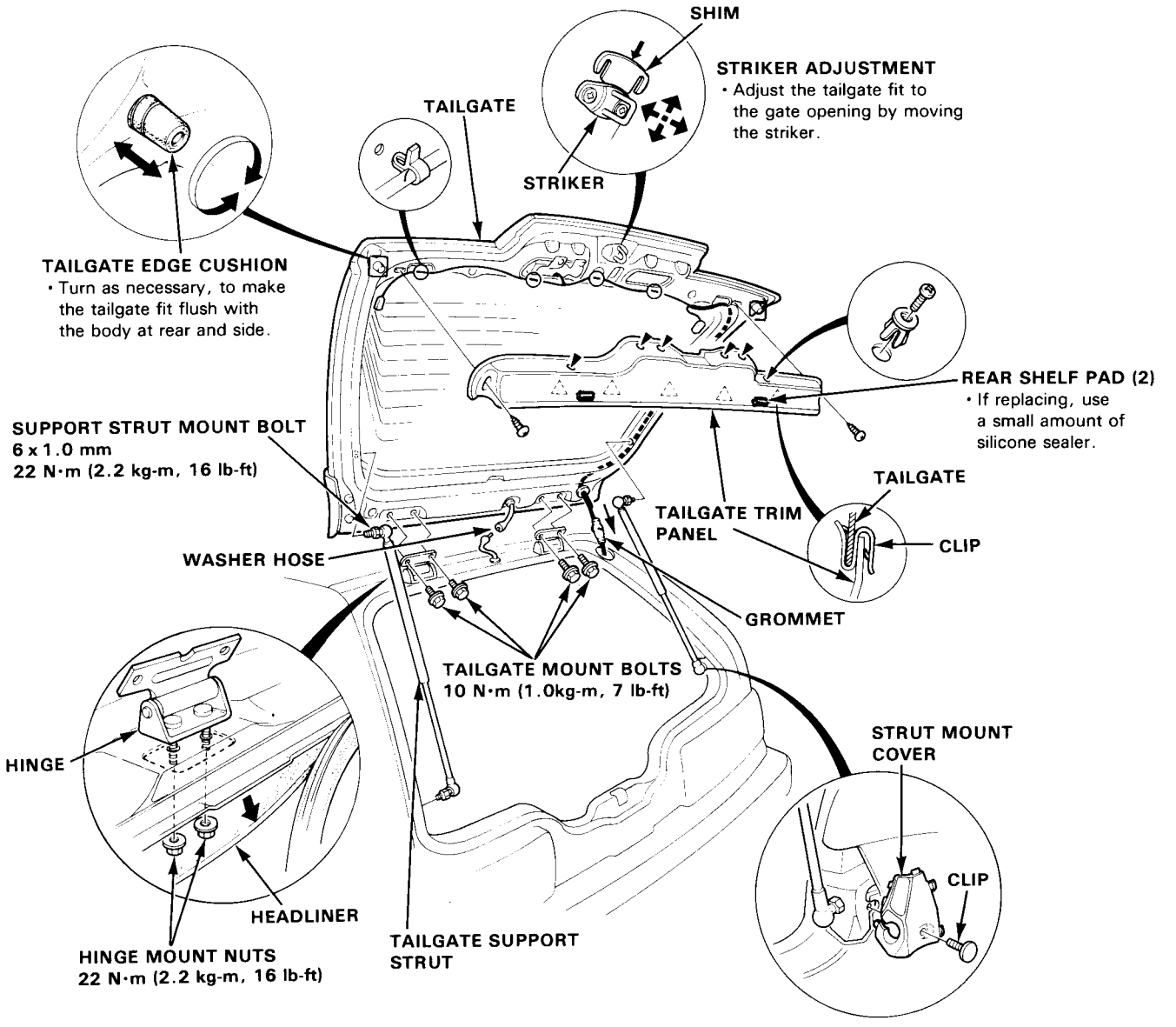
Tailgate

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 harnesses, tie a string to the end of it so you can pull it back in when the tailgate is reinstalled.
3. Remove the tailgate support struts.
   NOTE: Let an assistant hold the tailgate when removing the struts.
4. Remove the tailgate by removing the tailgate mount bolts.
   NOTE: Take care not to damage the roof panel.

If necessary:

- Lower the rear of the headliner just enough to gain access to the hinge mount nuts, then remove the hinge by removing the hinge mount nuts.



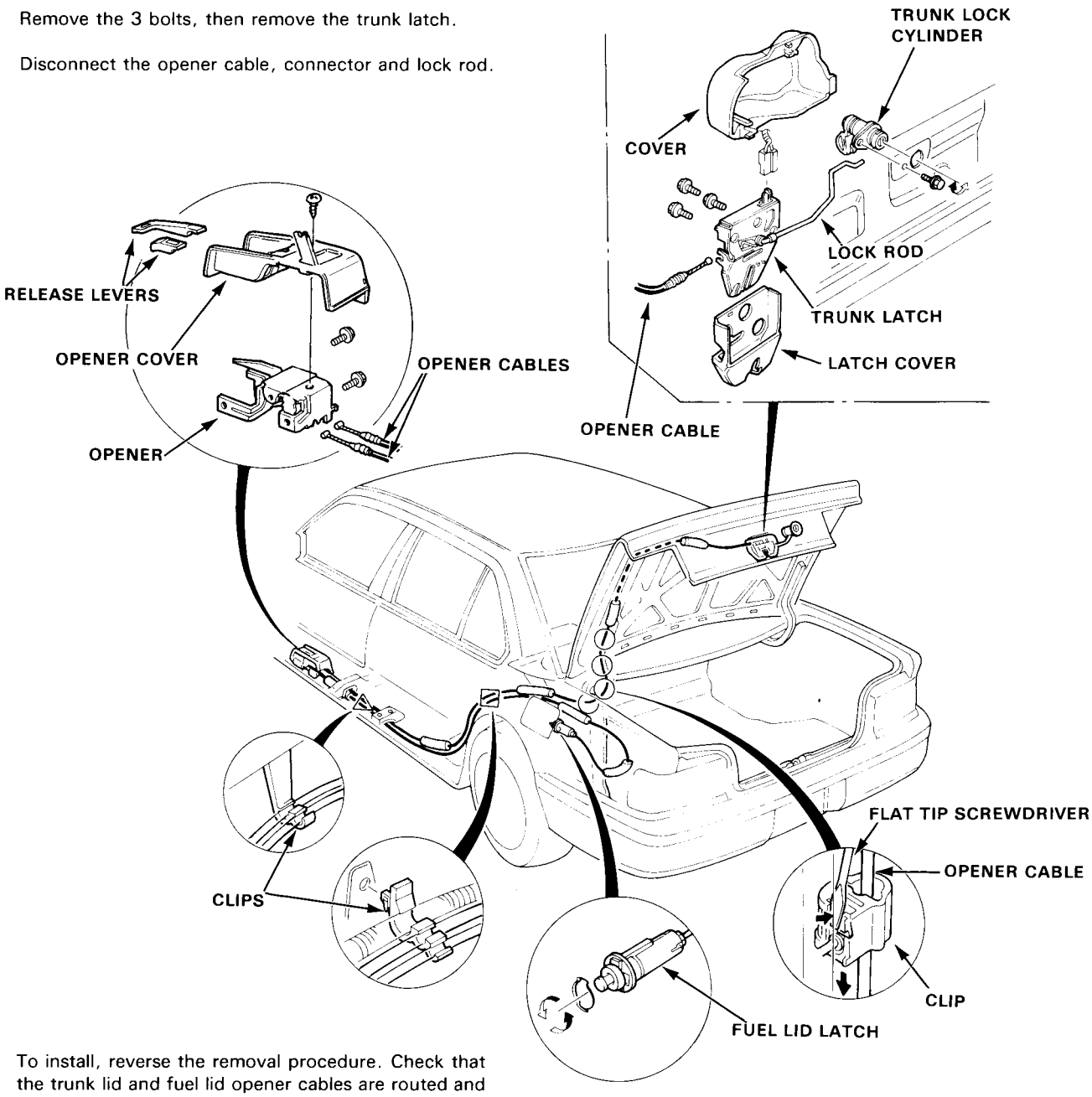
5. Installation sequence is essentially the reverse order of removal. However, observe the following:
   - Before tightening the hinge nuts, adjust the tailgate fit and striker.
   - Use care when pulling the wire harness back in to avoid damaging the body.
   - Coat the inside and outside of the grommet with sealer.

Fuel Filler /Trunk Opener

Replacement

4D:

1. To remove the opener cables, remove the following parts:
   - Left side door sill molding, left 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.
3. Remove the fuel lid latch by turning it 90°.
4. Remove the rear panel (page 14-71).
5. Remove the bolts and cover, then remove the trunk lock cylinder.
6. Remove the 3 bolts, then remove the trunk latch.
7. Disconnect the opener cable, connector and lock rod.



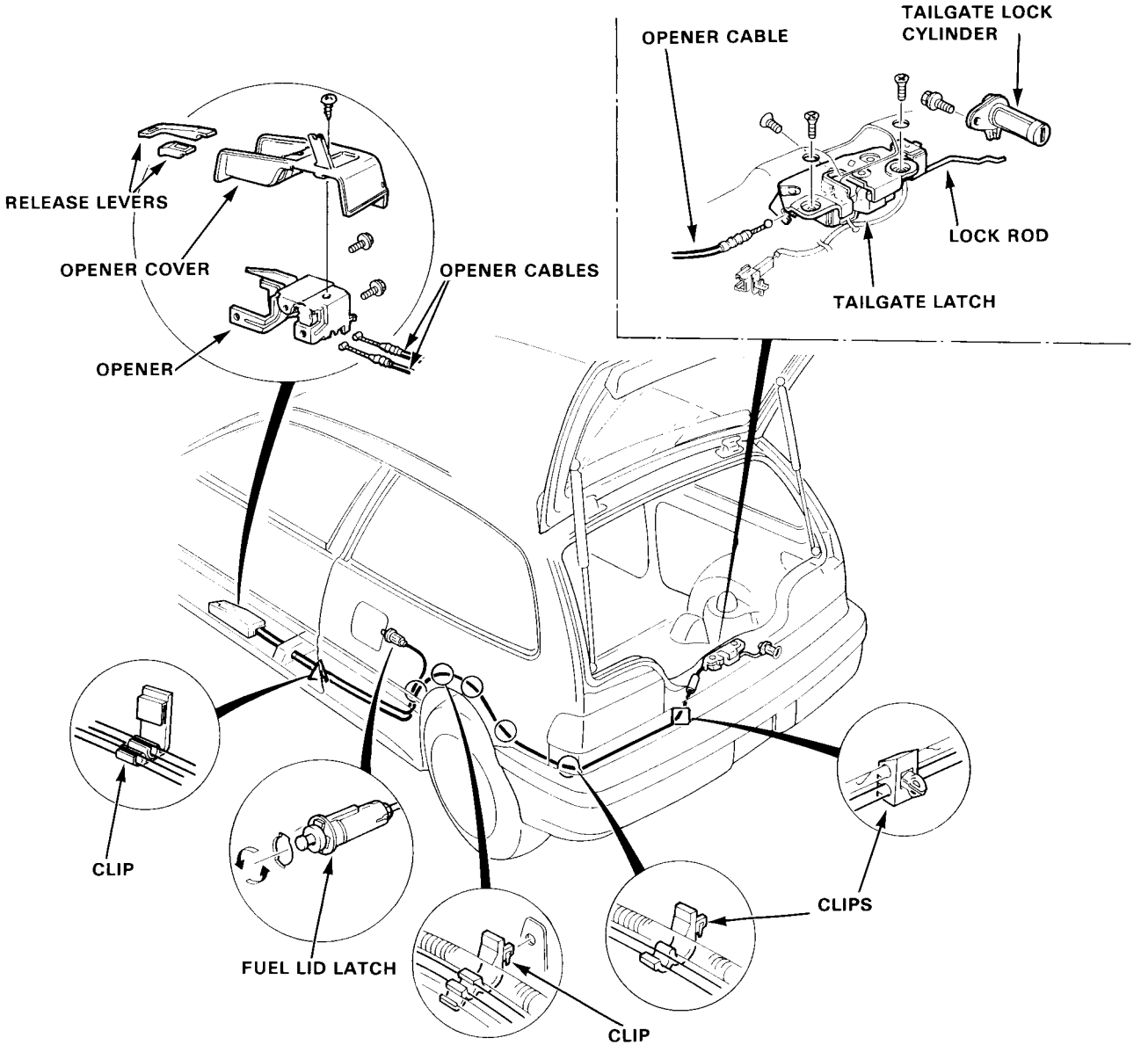
8. To install, reverse the removal procedure. Check that the trunk lid and fuel lid opener cables are routed and connected properly.

Fuel Filler/Tailgate Opener

Replacement

2D H/B:

1. To remove the opener cables, remove the following parts:
   - Left side door sill molding, left half of carpet.
   - Left quarter trim panel, and rear trim panel.
2. Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts.
3. Remove the fuel lid latch by turning it 90°.
4. Remove the bolt, then remove the tailgate lock cylinder.
5. Remove the 3 screws, then remove the tailgate latch.
6. Disconnect the opener cable, connector and lock rod.



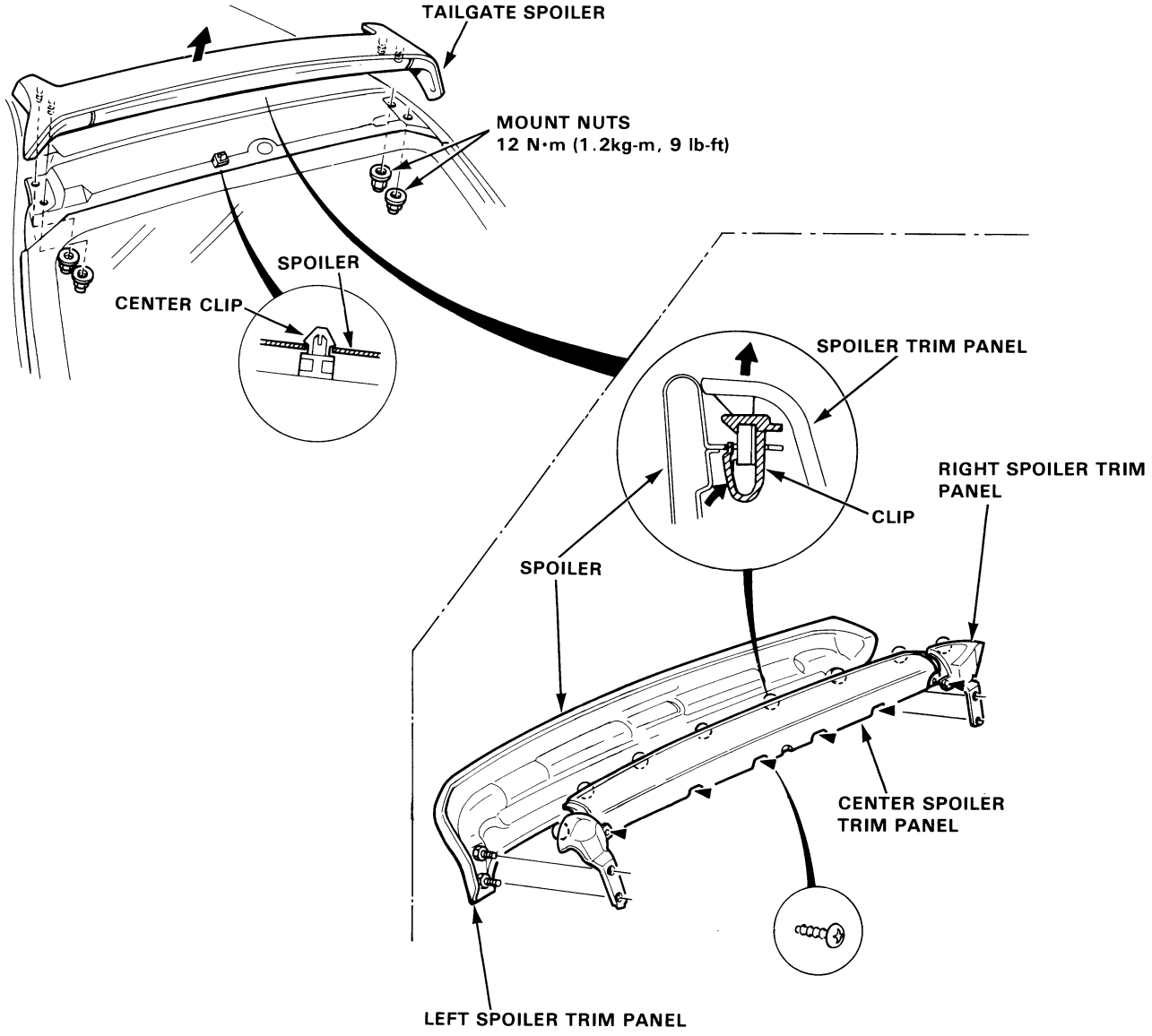
7. To install, reverse the removal procedure.
   Check that the tailgate and fuel lid opener cables are routed and connected properly.

Tailgate Spoiler

Replacement

2D H/B:

1. Remove the 4 mount nut/washers and unclip the center clip.
2. Remove the spoiler.



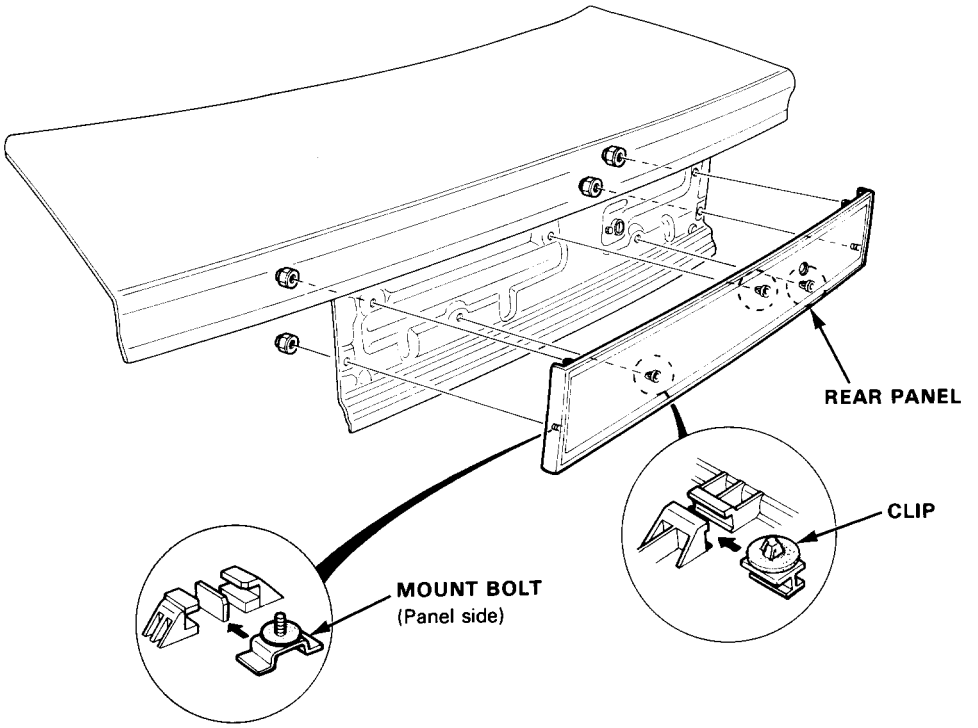
3. Remove the right, left and center spoiler trim panels by removing the 6 secrews and 8 clips.
4. Install the spoiler in the reverse order of removal.

Rear Panel

Replacement

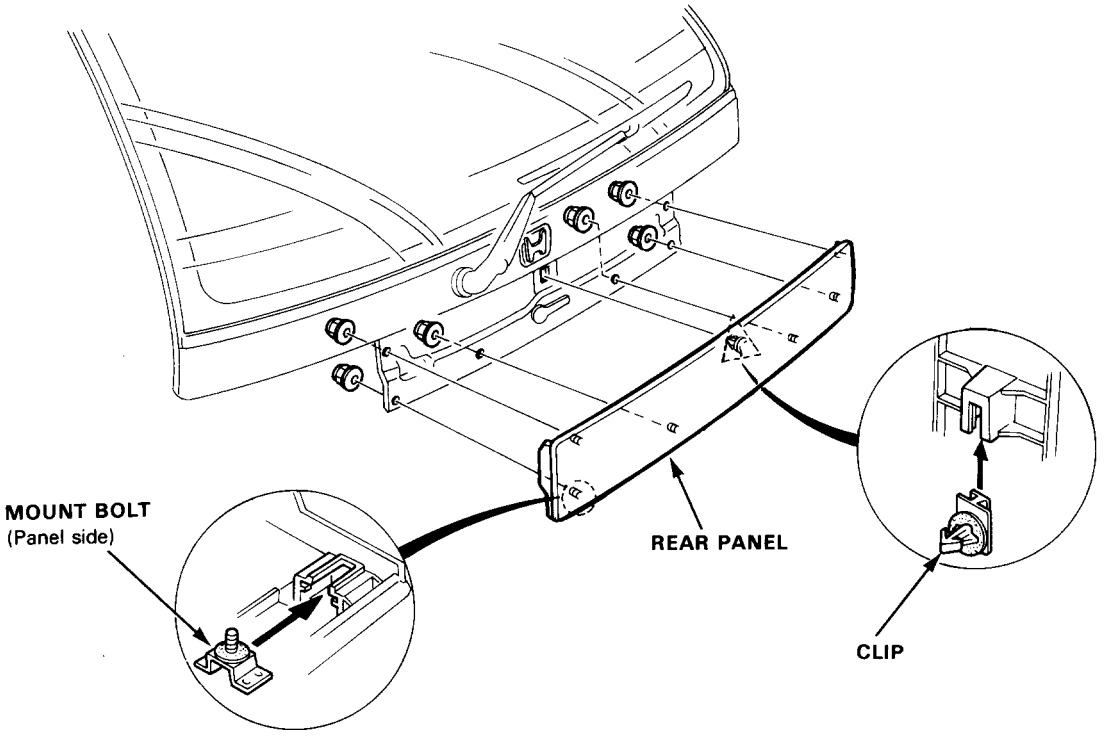
4D:

1. Remove the 4 mount nuts and detach the 3 clips, then remove the rear panel.



2D H/B:

1. Remove the tailgate trim panel (page 14-67).
2. Remove the 6 mount nuts and detach the clip, then remove the rear panel.

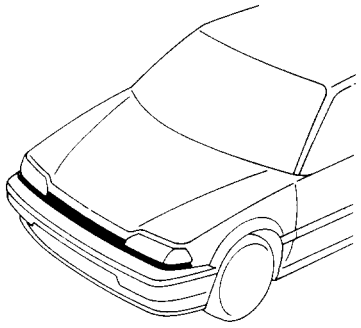


Front Mask Area/Rear Panel Area

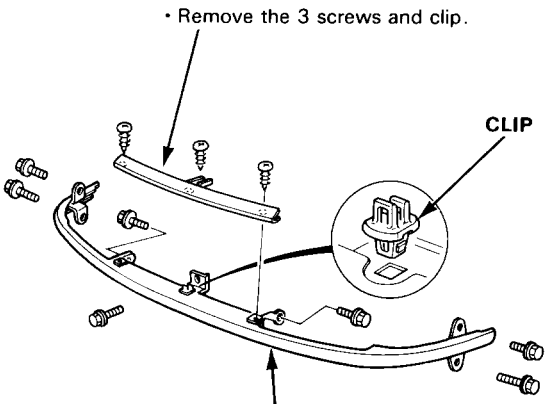
Replacement

FRONT:

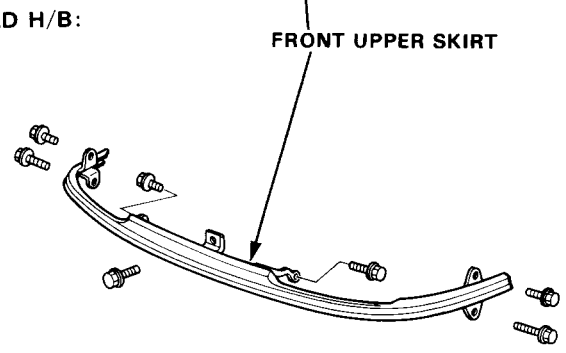
1. Remove the front bumper and side marker lights.
2. Remove the bolts, then remove the front upper skirt.



4D:

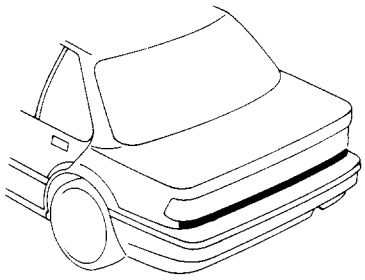


2D H/B:

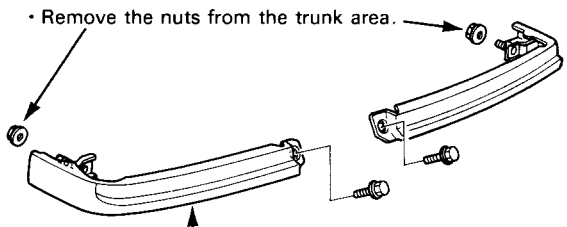


REAR:

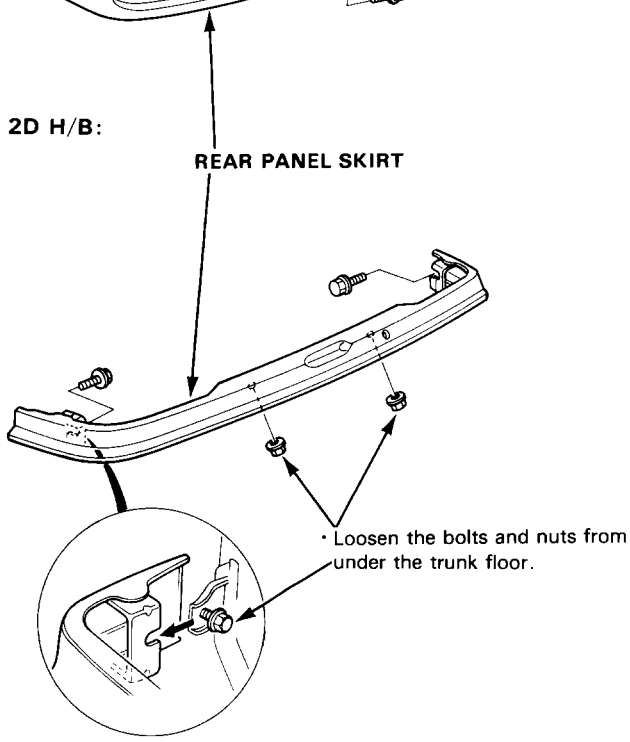
1. Remove the rear bumper (2D H/B).
2. Remove the bolts and nuts, then remove the rear panel skirt.



4D:

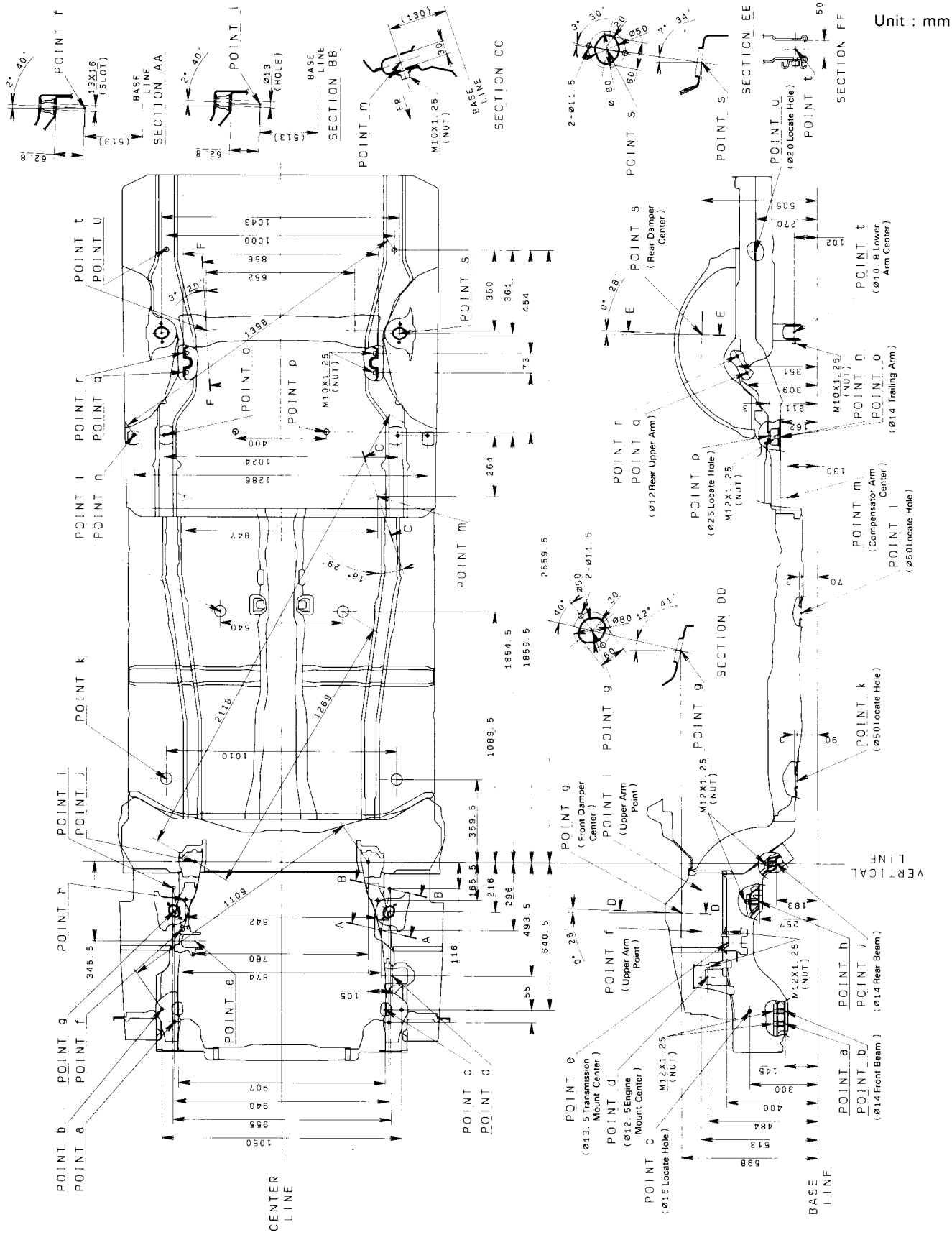


2D H/B:



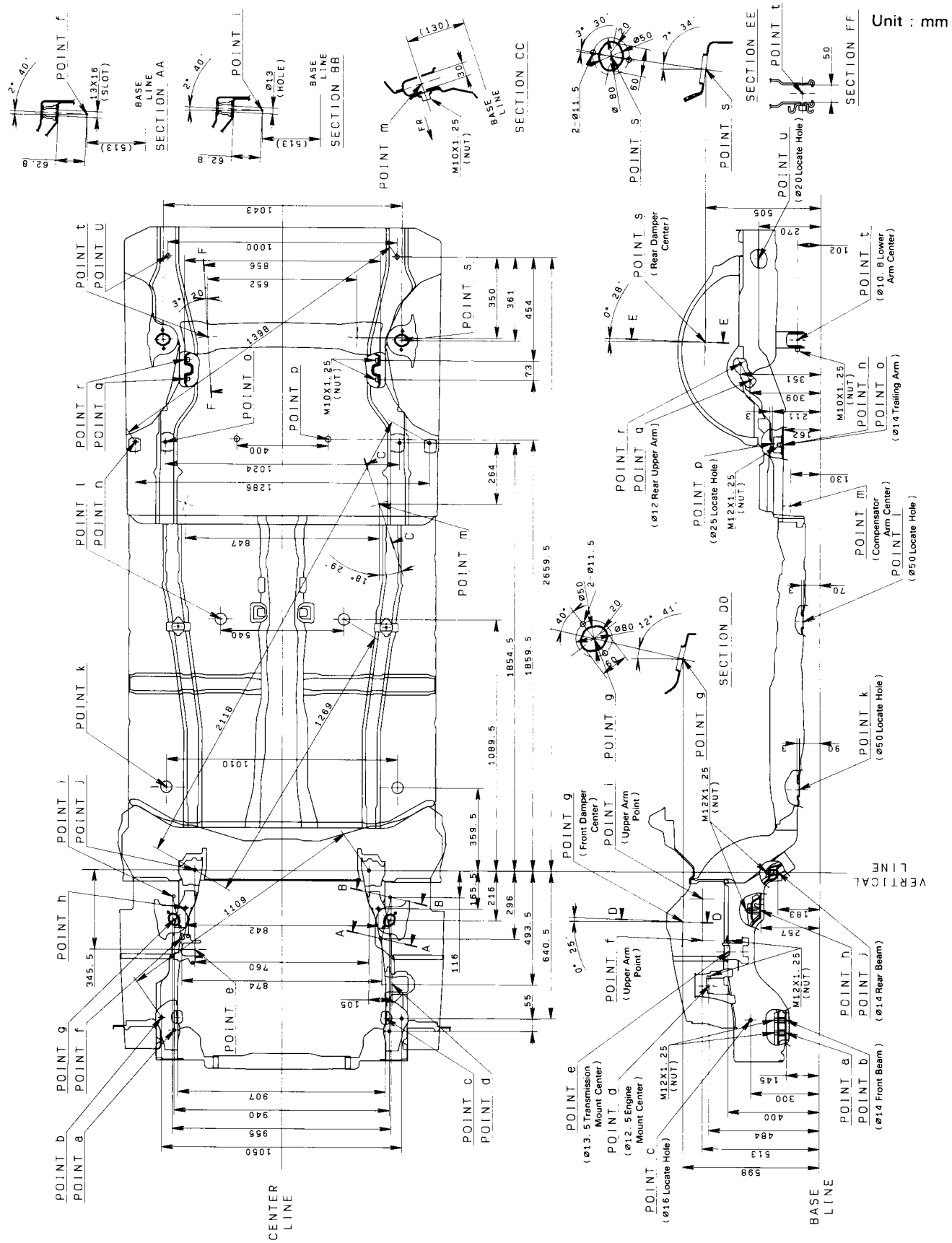
Frame Repair Chart

4D

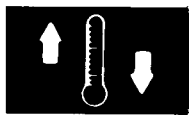


Frame Repair Chart

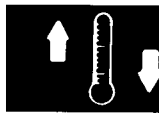
2D H/B



Heater and Air Conditioner

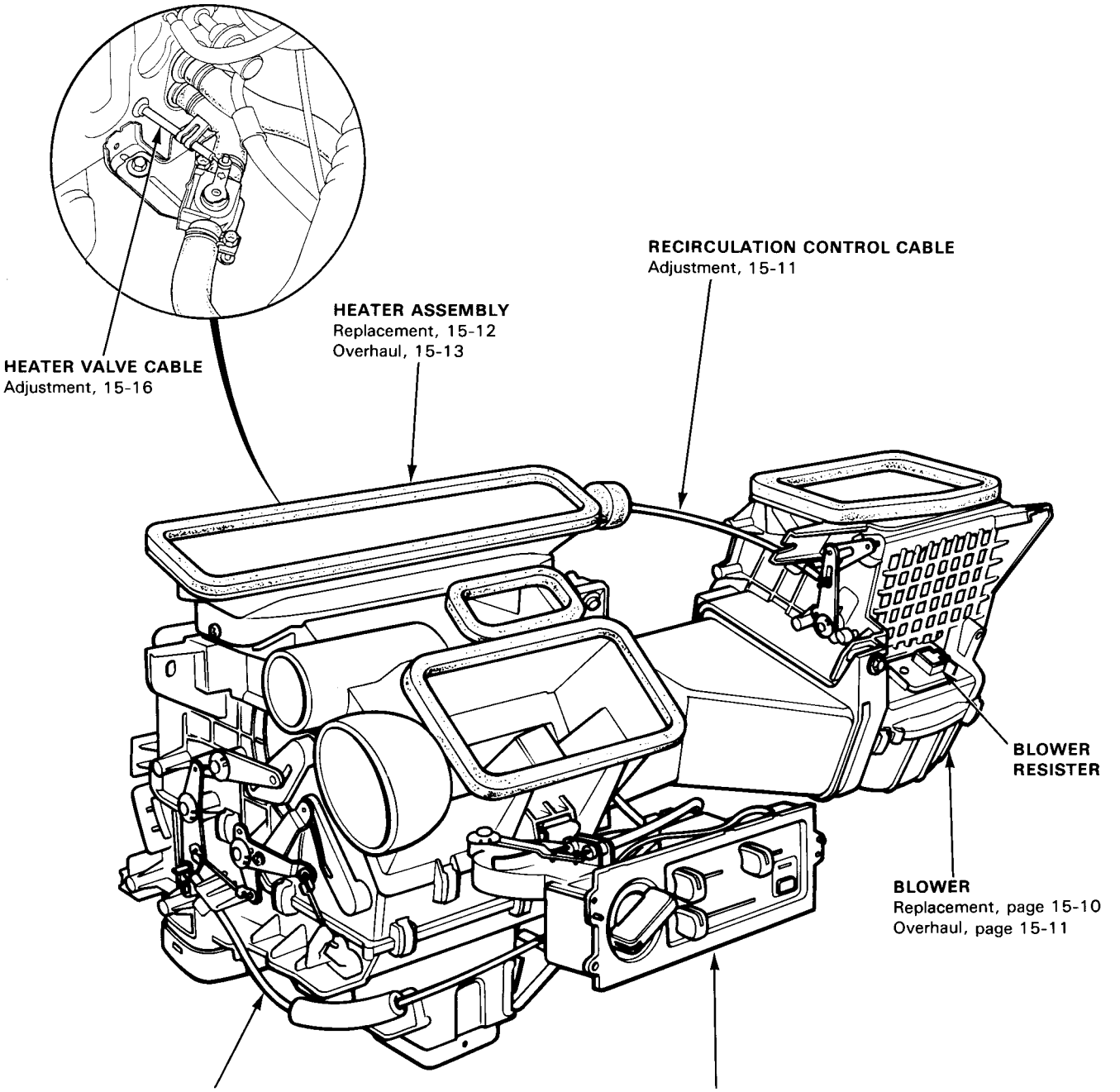


Heater



Heater

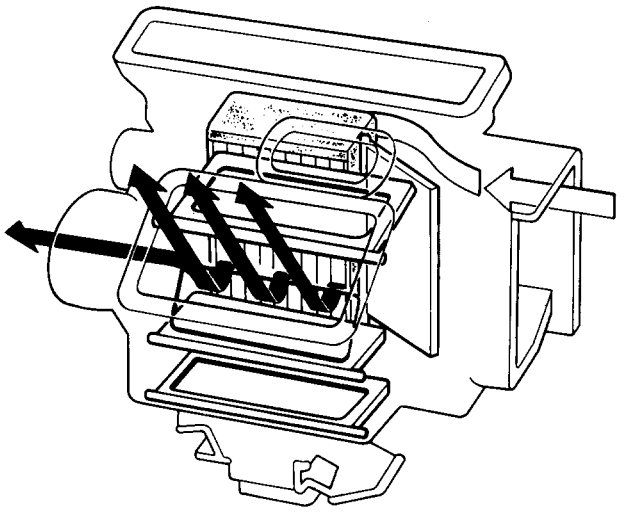
Illustrated Index

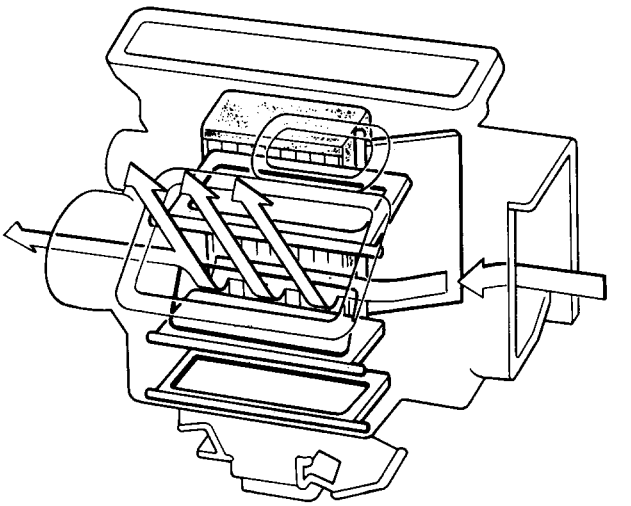


Heater Door Position

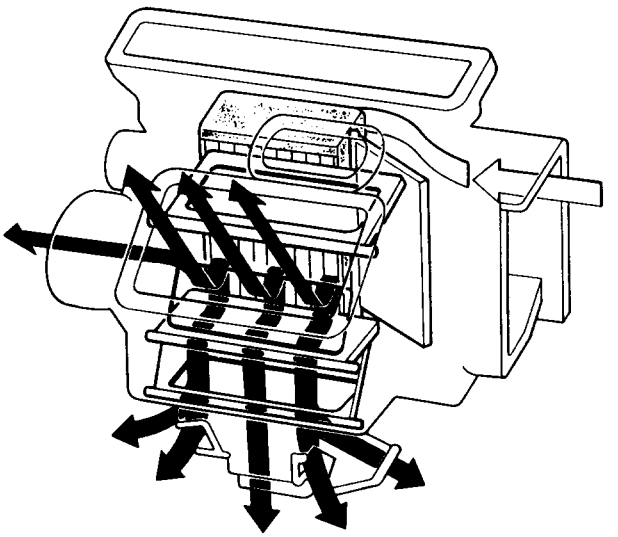
HOT
COLD

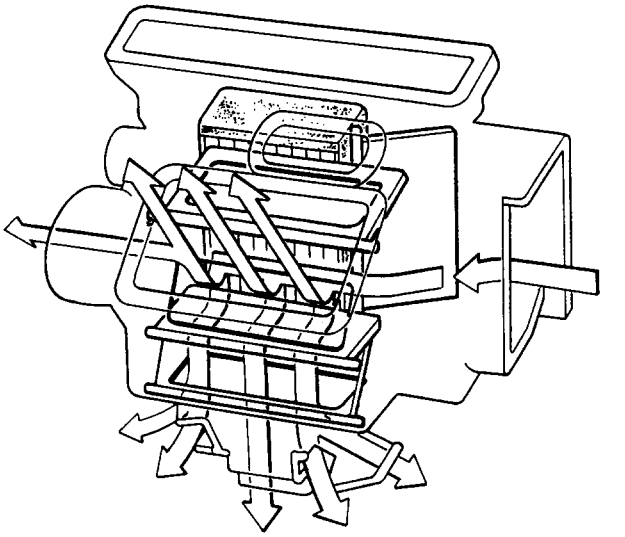
(VENT)





(HEAT/VENT)



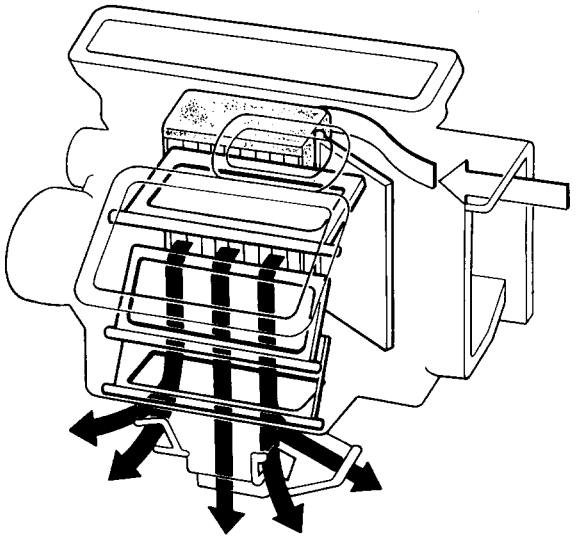


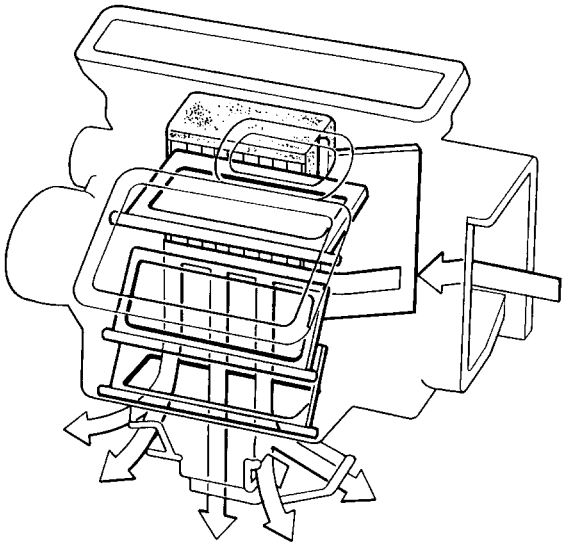
(cont'd)

Heater Door Position (cont'd)

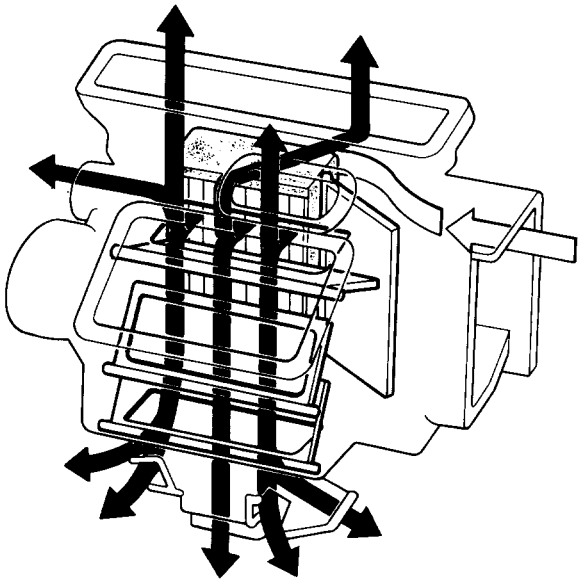
HOT
COLD

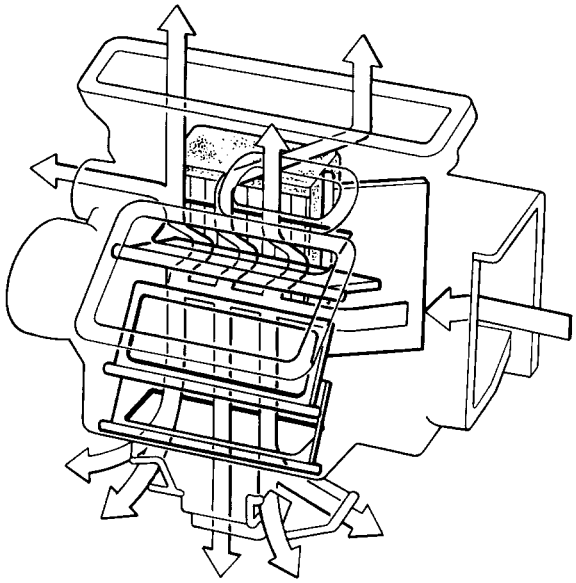
(HEAT)



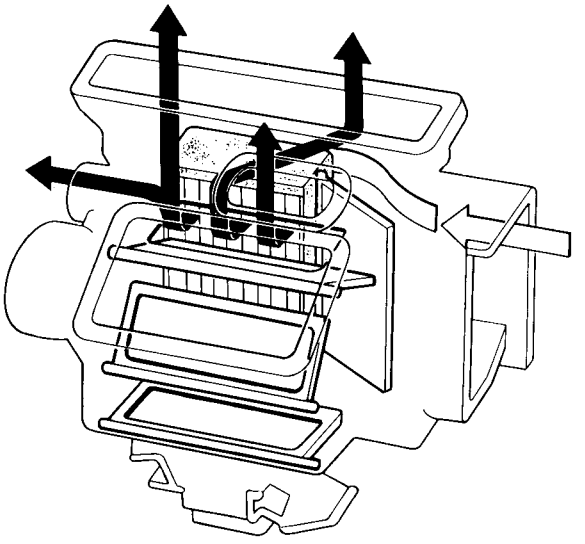


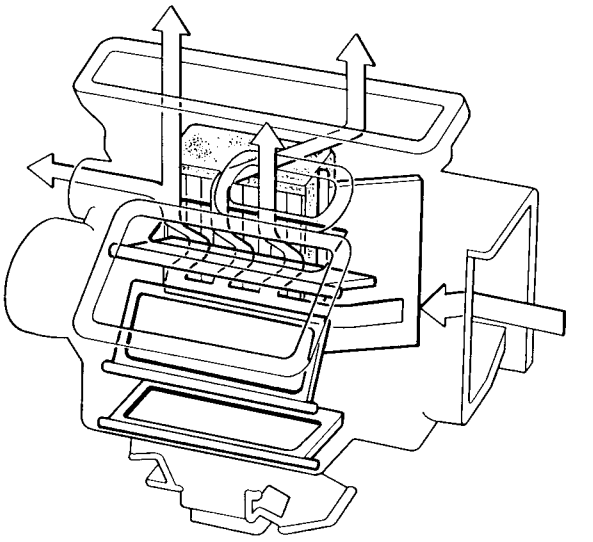
(HEAT/DEF)





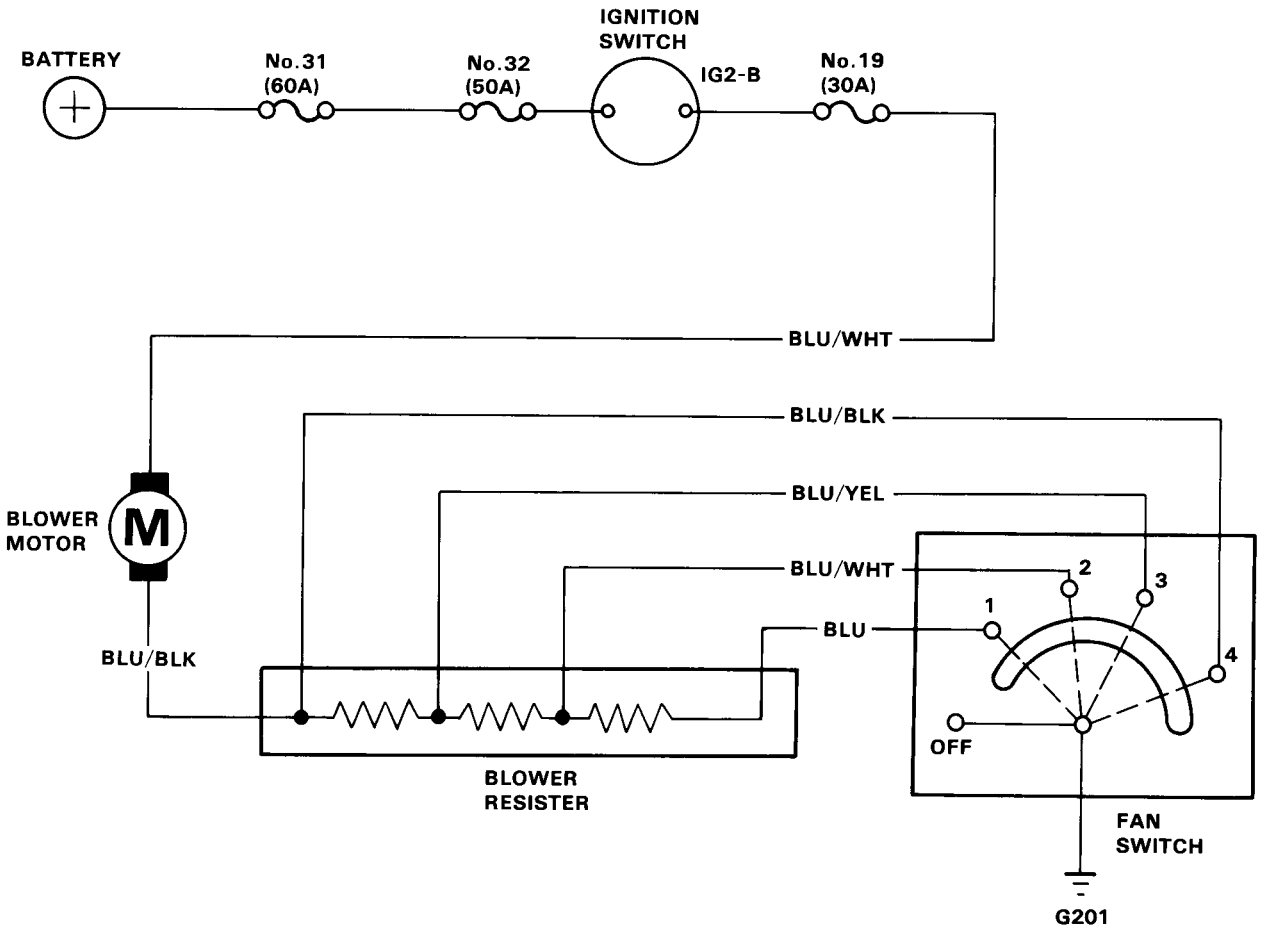
(DEF)





Heater

Circuit Diagram



Troubleshooting

Symptom Chart

SYMPTOM		REMEDY
No hot air flow	Blower motor does not run	Perform the flowchart (page 15-7)
	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 15-9)
	Blower runs properly	Check following: • Clogged heater duct • Clogged blower outlet • Incorrect door position

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 BLU/WHT terminal (+) and body ground (−).

Is there battery voltage? NO → **Repair open in BLU/WHT wire between blower and ignition switch.**

YES

Turn the ignition switch OFF.

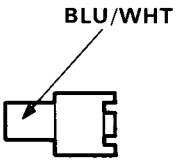
Reconnect the 2P connector to the blower motor.

Connect a jumper wire between the BLU/BLK terminal and body ground. Turn the ignition switch ON.

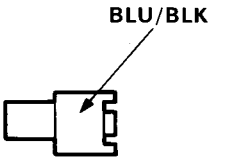
Does blower motor run? NO → **Replace the blower motor.**

YES

(To page 15-8)



View from wire side



View from wire side

(cont'd)

Flow Chart-Blower (cont'd)

(From page 15-7)

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the 6P connector from the fan switch.

Connect the jumper wire between the BLU/BLK terminal and body ground.

Turn the ignition switch ON.

Does the blower motor run?

NO → **Repair open in BLU/BLK wire between blower and fan switch.**

YES

Turn the ignition switch OFF.

Remove the jumper wire.

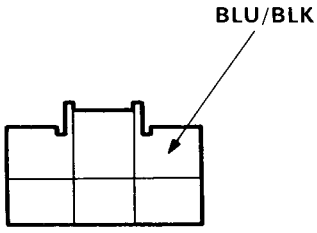
Inspect the fan switch (page 15-17).

Is the fan switch OK?

NO → **Replace the fan switch.**

YES

Repair open in BLK wire between the fan switch and body ground or poor ground (G201).



View from wire side

Blower motor running speed does not change.

Disconnect the 4P connector from the blower resistor.

Check for continuity between the 2 and 4 terminals of the resistor.

Does continuity exist? NO → **Replace the resistor.**

YES

Reconnect the 4P connector to the resistor.

Disconnect the 6P connector from the fan switch.

Turn the ignition switch on.

Measure voltage between:
- BLU/YEL terminal and body ground.
- BLU/WHT terminal and body ground.
- BLU terminal and body ground.

Is there battery voltage? NO → **Repair open in BLU/YEL, BLU/WHT and/or BLU wire(s) between the fan switch and resistor.**

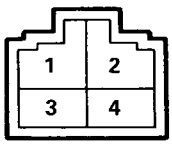
YES

Check for continuity from BLK terminal to body ground.

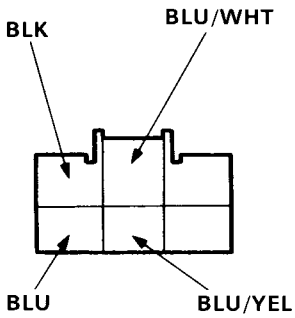
Is there continuity? NO → **Repair open in BLK wire between the fan switch and body ground or poor ground (G201).**

YES

Replace the fan switch.



View from terminal side

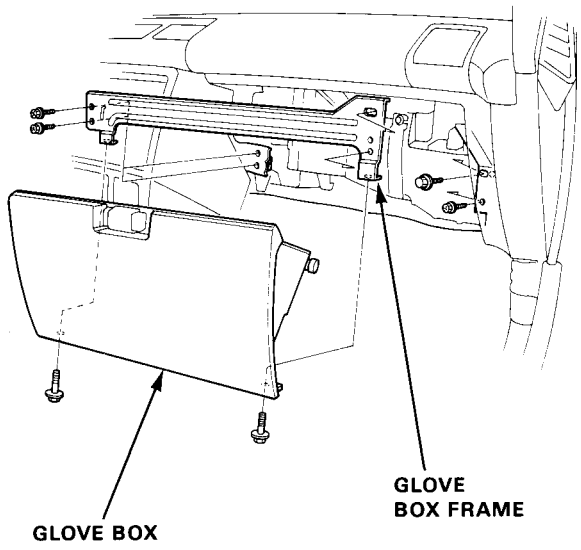


View from wire side

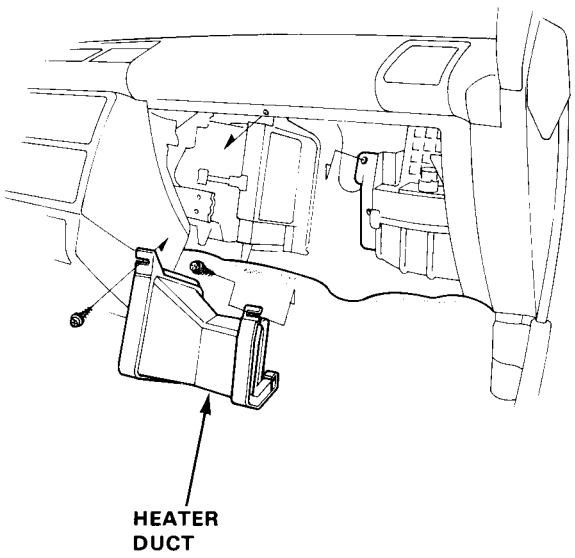
Blower

Replacement

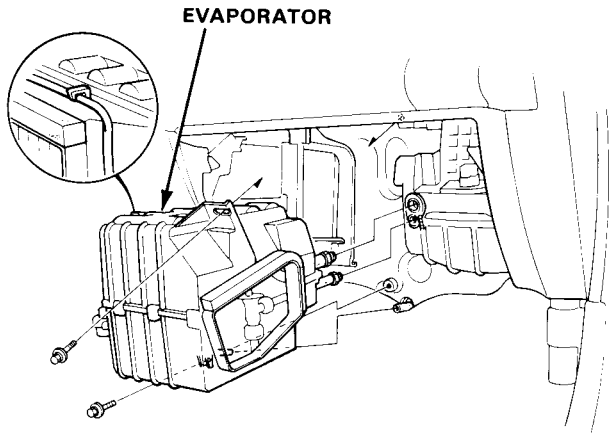
1. Disconnect the battery negative terminal.
2. Remove the glove box and glove box frame.



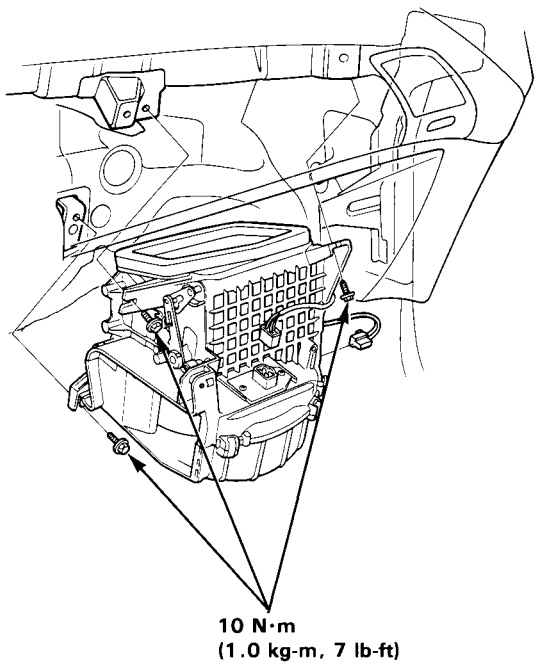
3-a. Remove the tapping screws (2) and remove the heater duct.



3-b. Remove the A/C band and the evaporator. (page 15-20)



4. Remove the mounting bolts (3).
5. Disconnect the connectors from the blower motor, resistor then remove the blower.



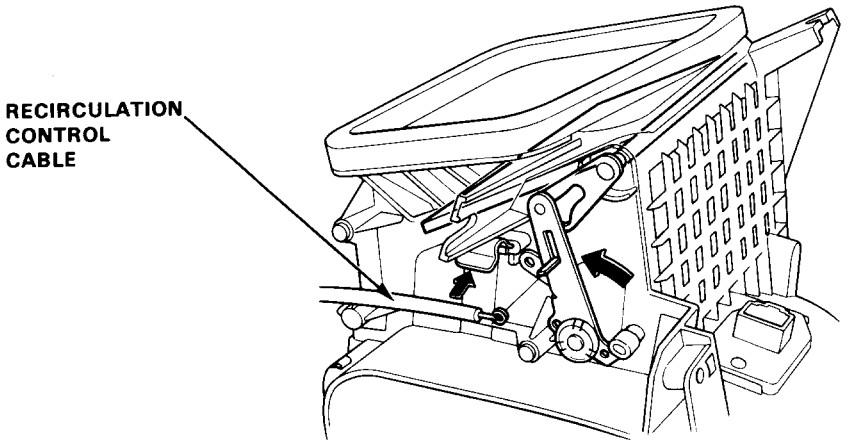
6. Install the blower in the reverse order of removal and make sure there is no air leakage.

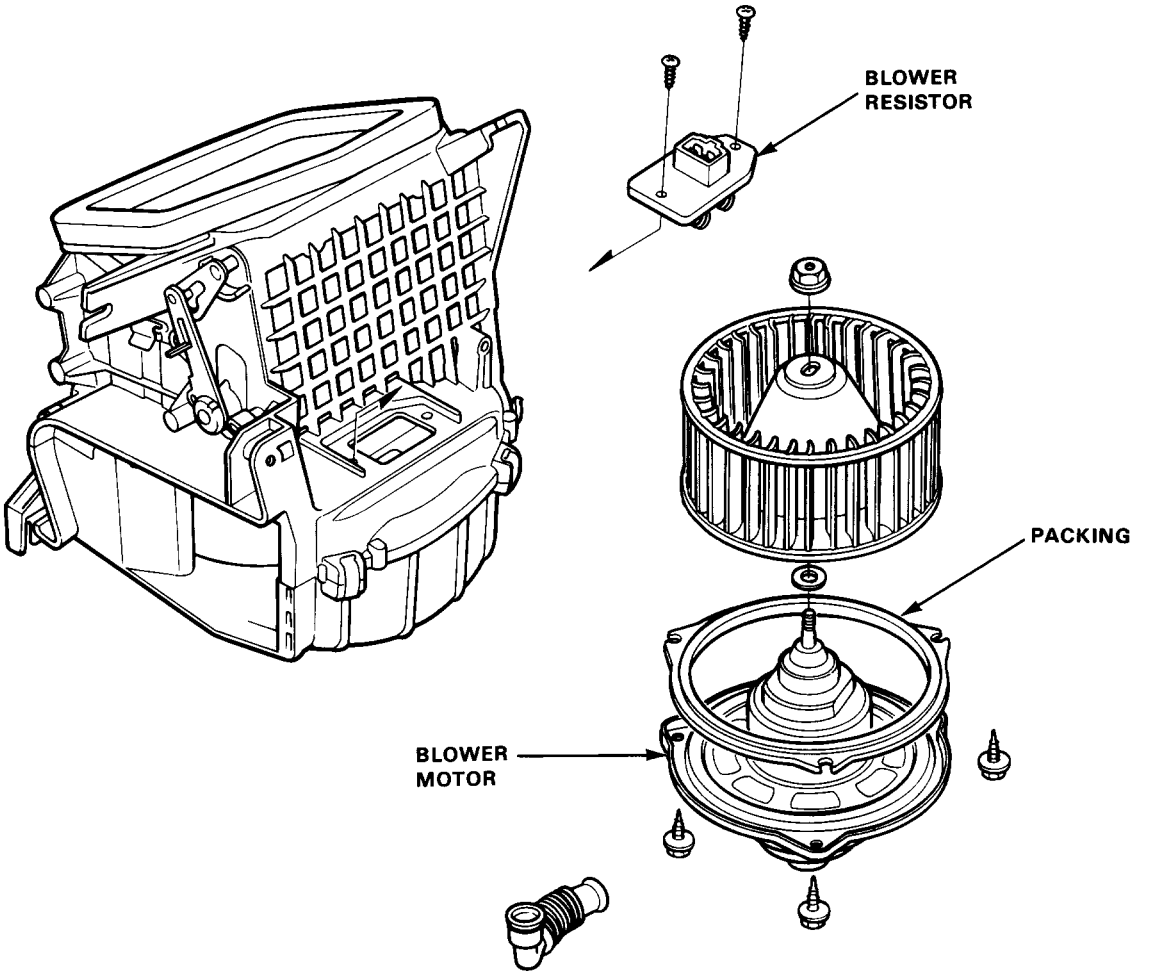
Overhaul

NOTE:

- Before reassembly, make sure that the air door and linkage move smoothly without binding.

- RECIRCULATION CONTROL CABLE ADJUSTMENT
  Slide the recirculation control lever to "RECIRC". Then connect the control cable to the arm while holding the air doors shut.





Heater assembly

Replacement

1. When the engine is cool, drain coolant from the radiator (Section 5).

WARNING

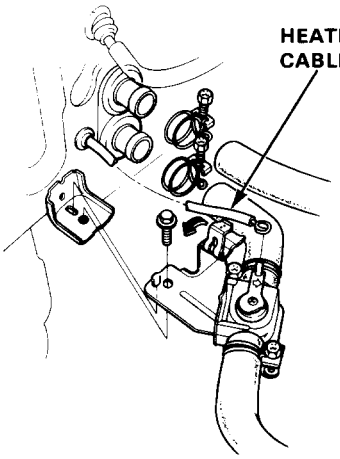
- **Do not remove the radiator cap when the engine is hot; the coolant is under pressure and could severely scald you.**
- **Keep hands away from the radiator fan. The fan may start automatically without warning and run for up to 30 minutes, even after the engine is turned off.**

CAUTION: Radiator coolant will damage paint. Quickly rinse any spilled coolant from painted surfaces.

2. Disconnect the heater hoses at the heater.

   NOTE: Coolant will run out when the hoses are disconnected, drain it into a clean drip pan.

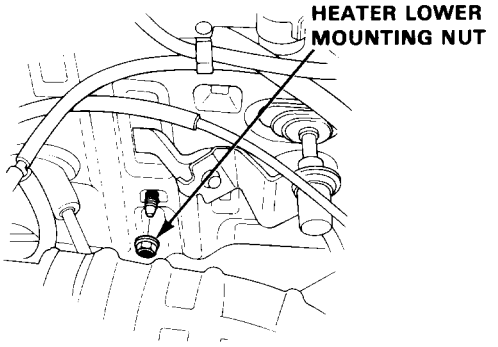
3. Disconnect the heater valve cable from the heater valve.



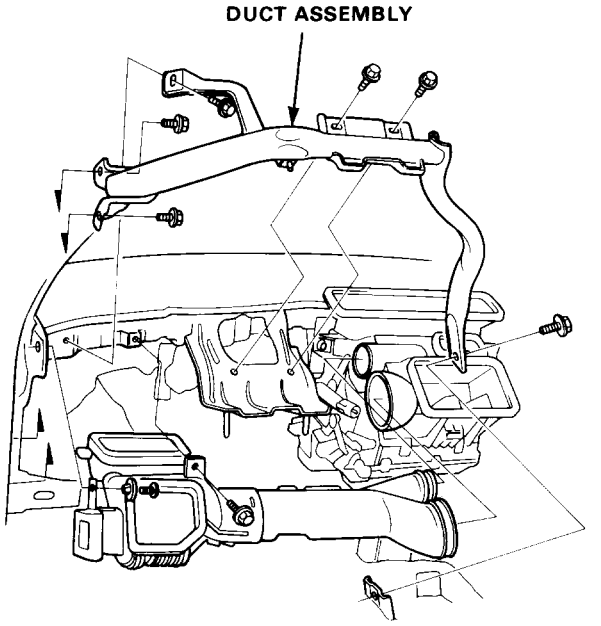
4. Remove the dashboard (Section 14).

5. Remove the heater duct (page 15-10).

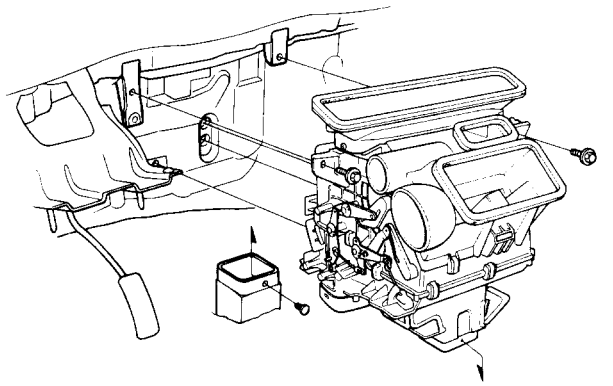
6. Remove the heater lower mounting nut.



7. Remove the steering column bracket and duct assembly.



8. Remove the heater mounting bolts (2) and clip, then remove the heater assembly.

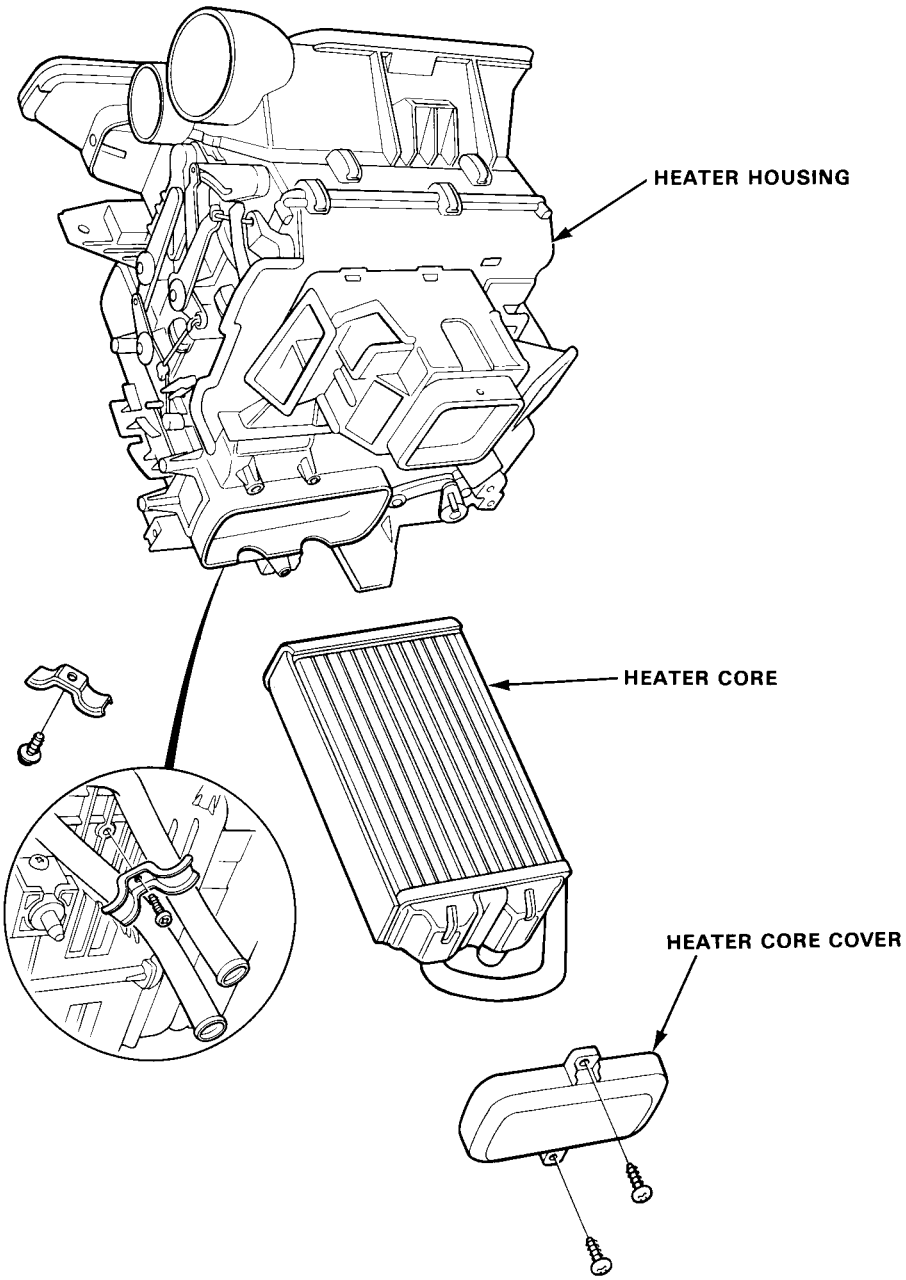


9. Install in the reverse order of removal, and:

   - Apply a sealant to the grommets.
   - Do not interchange the inlet and outlet hoses. Make sure that the hose clamps are secure.
   - Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture.
     Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.
   - Connect all cables and make sure they are properly adjusted (page 15-16).

Overhaul

1. Remove the heater assembly.
2. Remove the tapping screws (2) and heater core cover.
3. Remove the tapping screw and clamp.
4. Pull out the heater core from the heater housing.

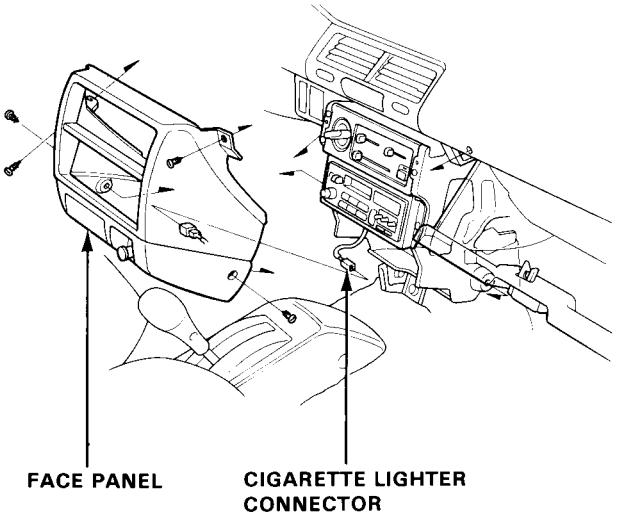


Install in the reverse order of removal and:
Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.

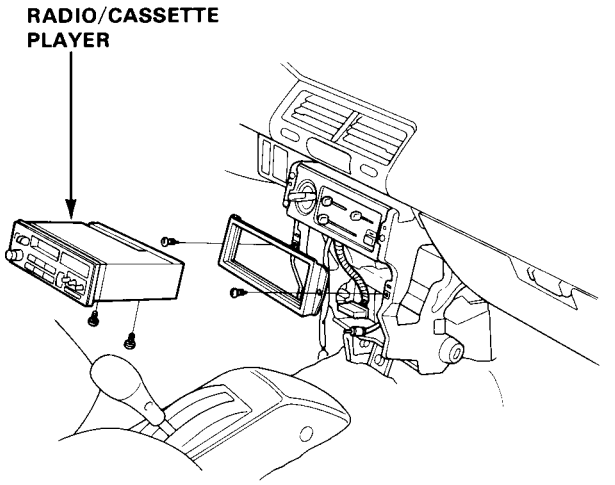
Heater Control Panel

Replacement

1. Remove the tapping screws (4) and remove the face panel and disconnect cigarette lighter connector.

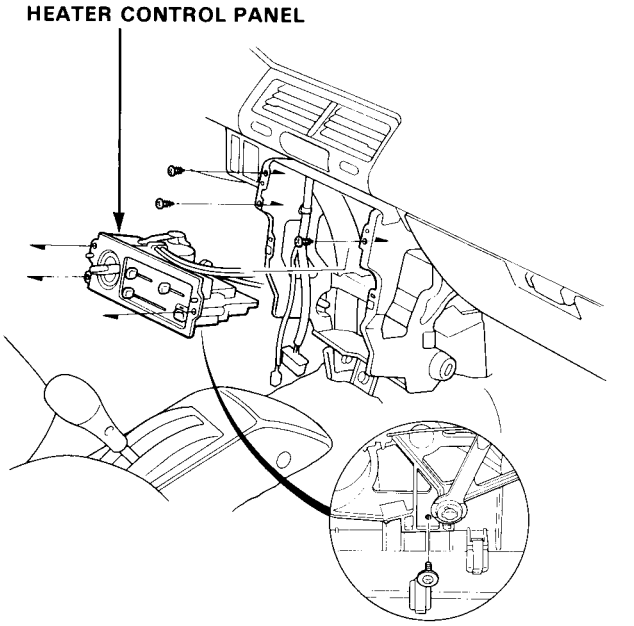


2. Remove the tapping screws (4) and remove the radio/cassette player.



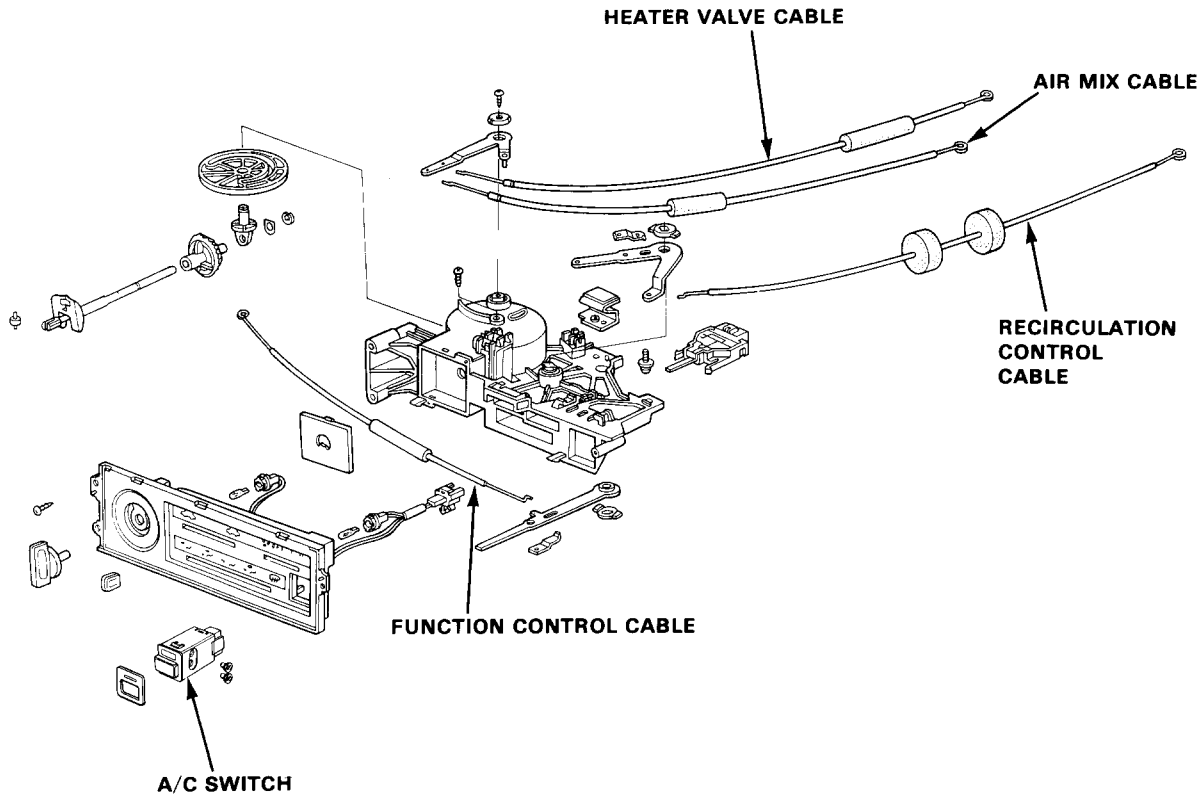
3. Disconnect the cables (4) at the heater assembly (page 15-16).

4. Remove the tapping screws (3) and pull out the heater control panel and disconnect the wire harness connectors, then remove the heater control.



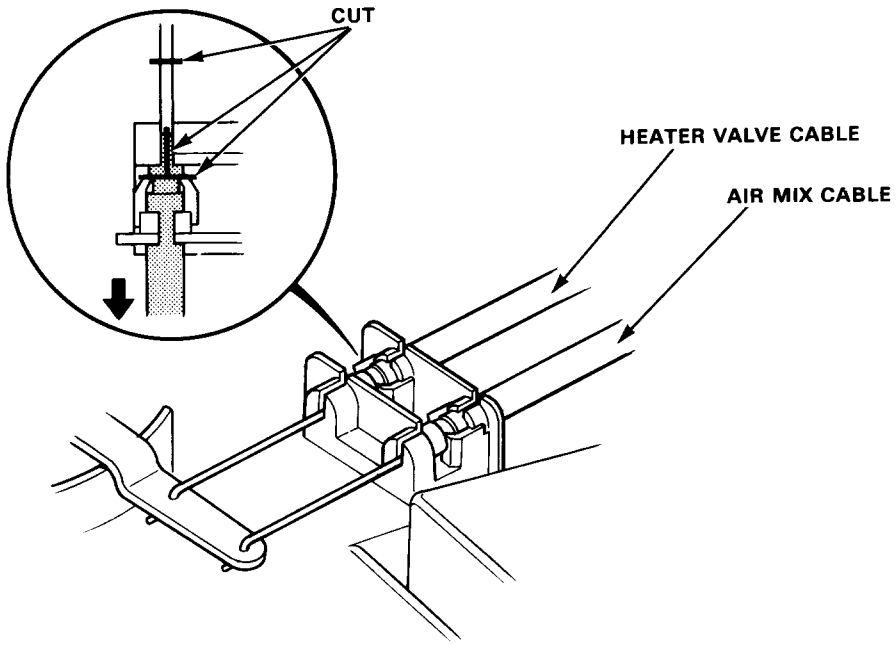
Install in the reverse order of removal and connect and make sure that it is properly adjusted (page 15-16).

Overhaul



Cable Replacement

1. Cut and pull the cable.
2. Set the new one.

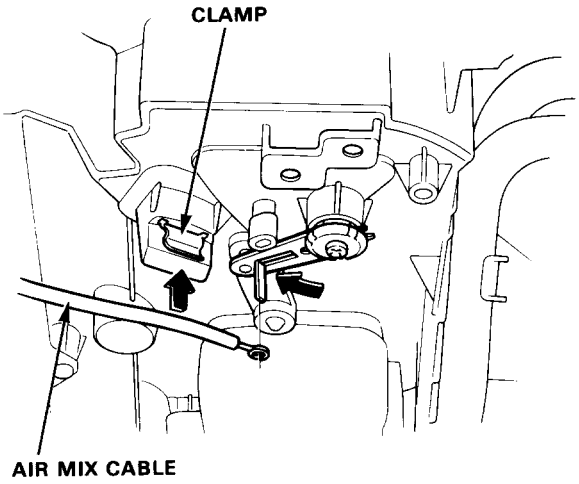


NOTE: After assembly check that the air mix lever slides smoothly, the full stroke right to left.

Heater Control Cables

Air Mix Cable Adjustment

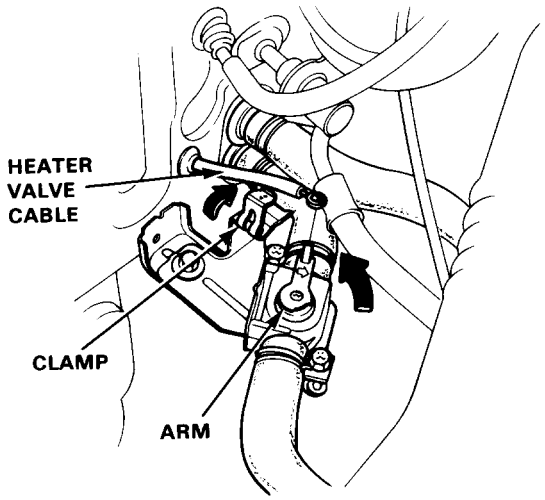
1. Slide the temperature control lever to HOT.
2. Turn the air mix door shaft arm to the left and connect the end of the cable to the arm.
3. Gently slide the cable outer housing back from the end enough to take up any slack in the cable, but not enough to make temperature control lever move, then snap the cable housing into the clamp.



NOTE: Heater valve cable should be adjusted if the air mix cable has been disconnected.

Heater Valve Cable Adjustment

1. Slide the temperature control lever to HOT.
2. Gently slide the cable housing back from 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.

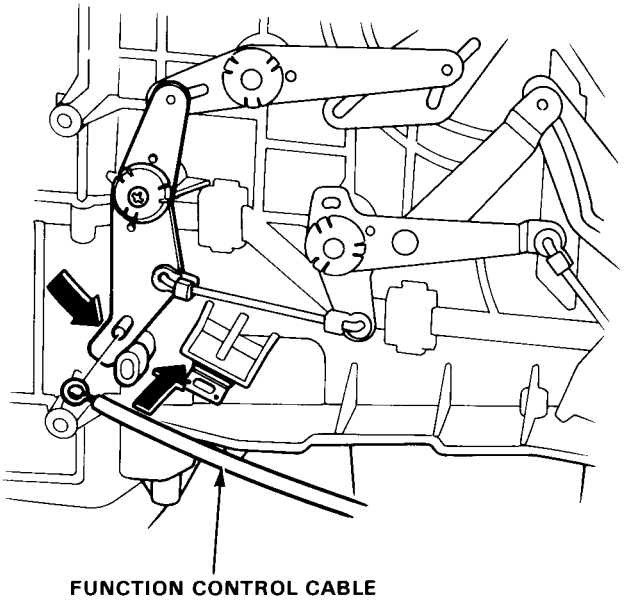


NOTE: Air mix cable should be adjusted if the heater valve cable has been disconnected.

Fan Switch

Function Control Cable Adjustment

1. Slide the function control lever to DEF.
2. Turn the function control shaft to the front and connect the end of the cable to the arm.
3. 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.



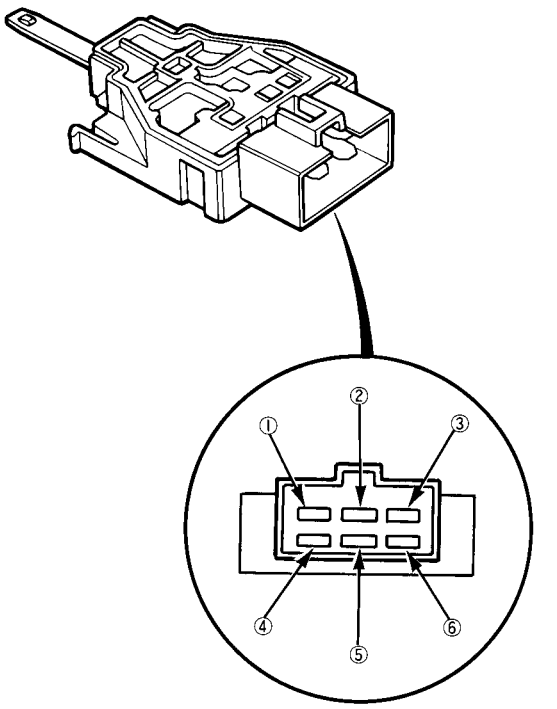
FUNCTION CONTROL CABLE

Test

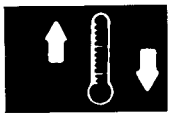
1. Disconnect the 6P connector from the fan switch.
2. Check for continuity between the terminals of the fan switch according to the table below.

SWITCH CONNECTION

Position \ Terminal	1	2	3	4	5	6
OFF						
1	○			○		○
2	○	○				○
3	○				○	○
4	○		○			○

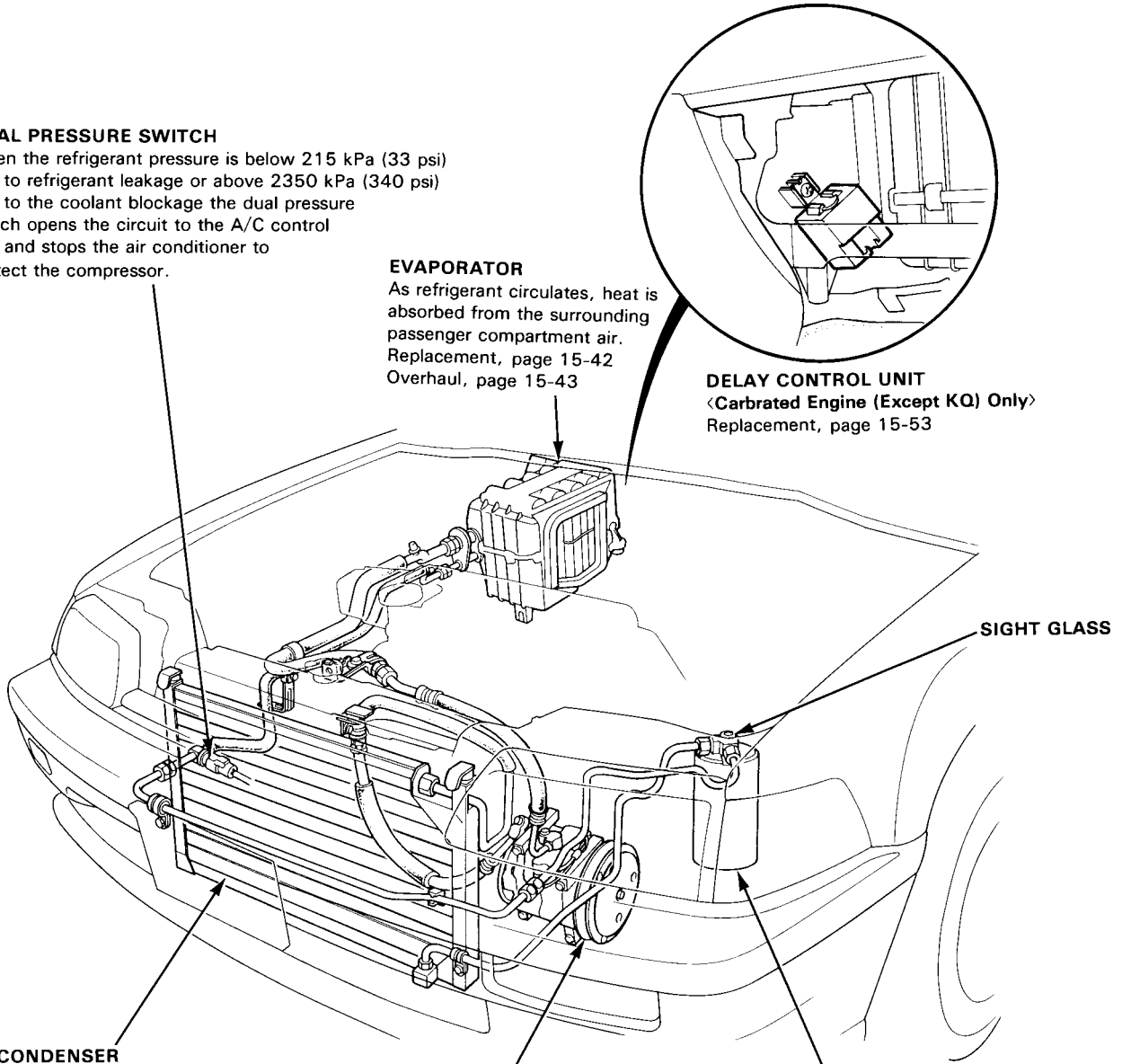


Air Conditioner

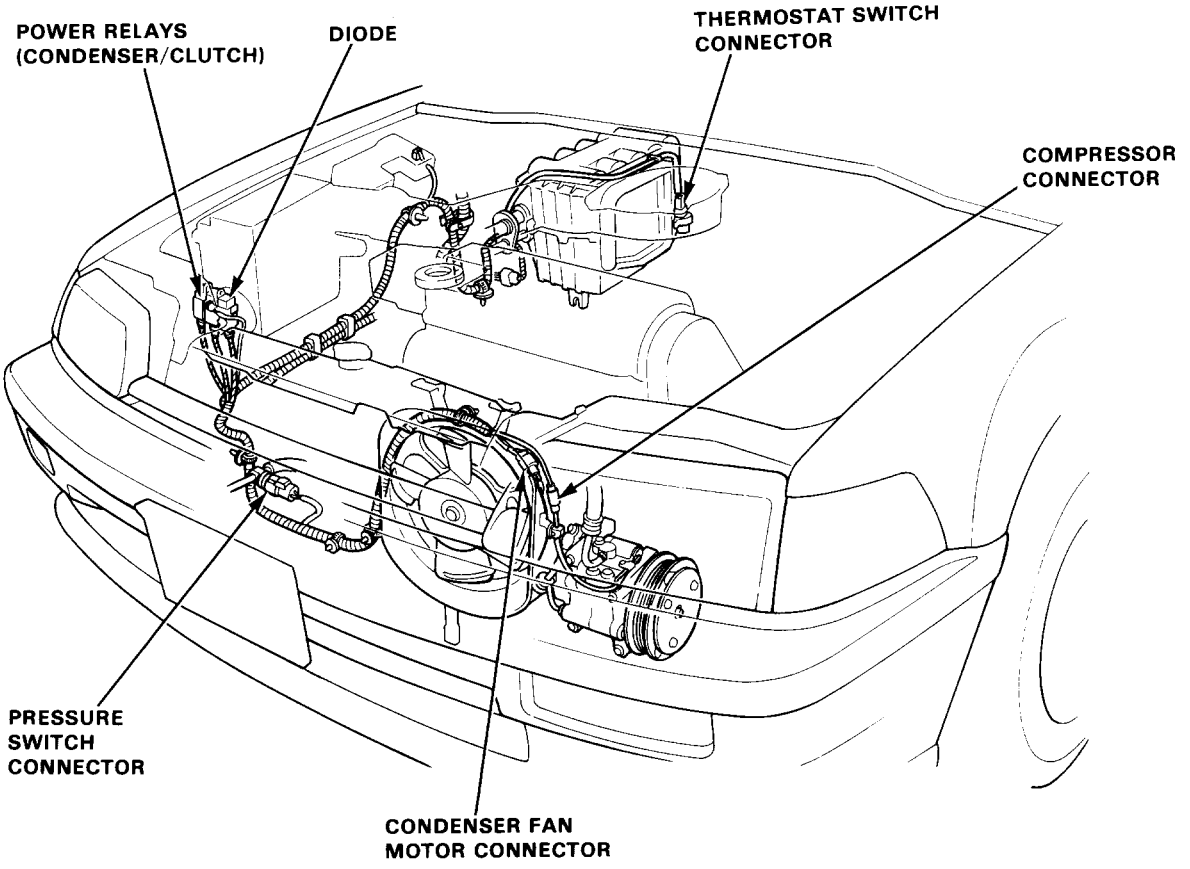


Air Conditioner

Illustrated Index

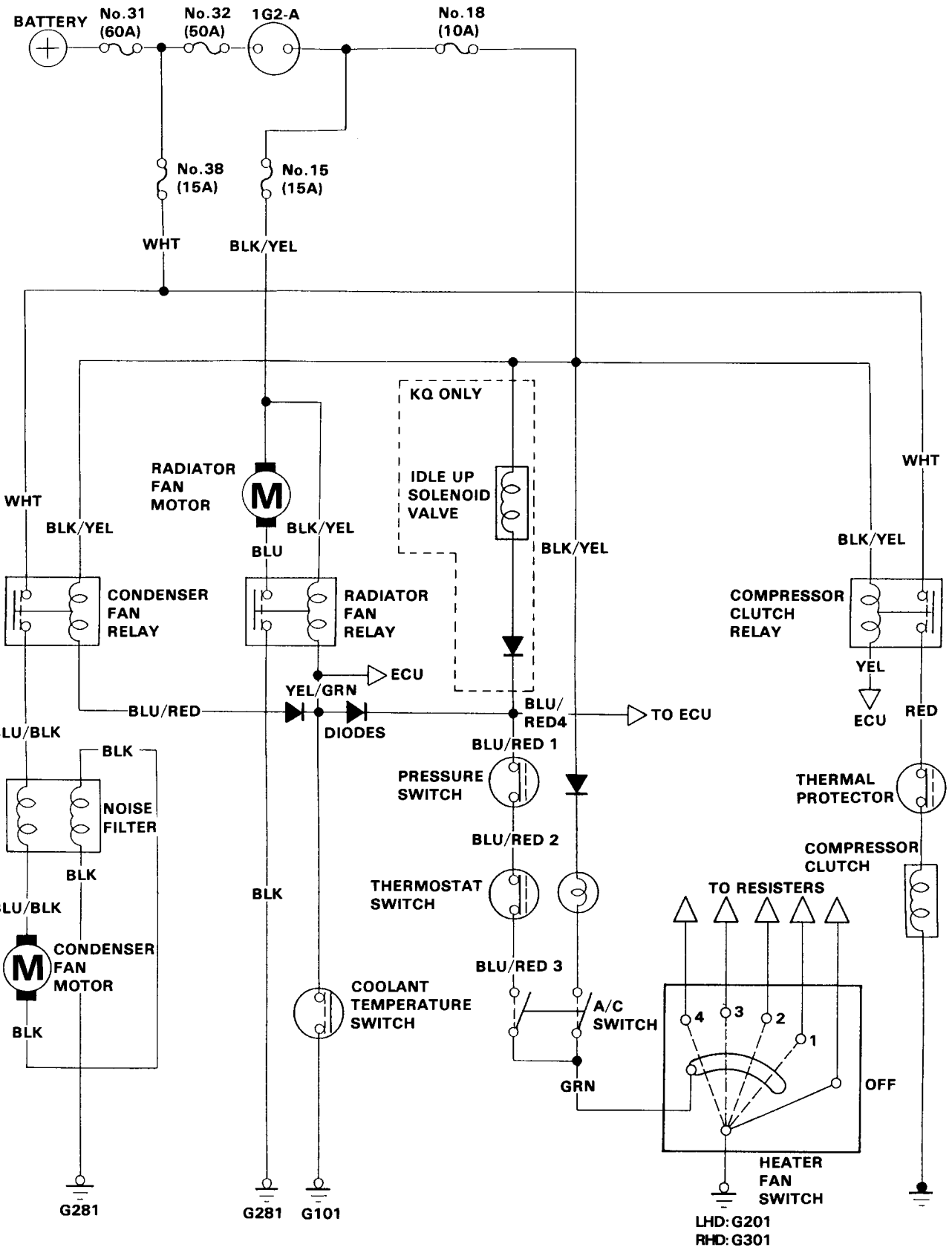


Wire Harness Routing

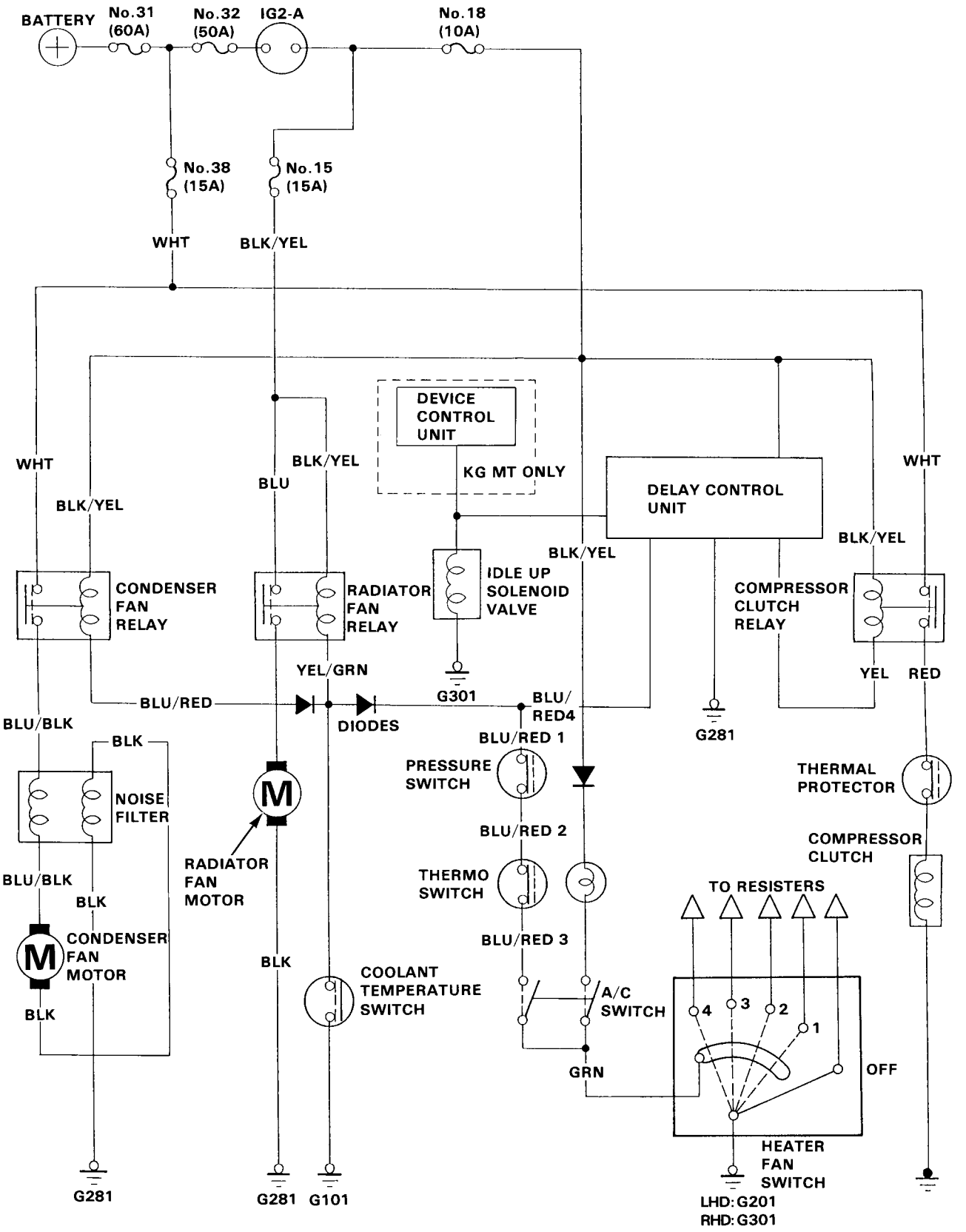


Circuit Diagram

● Fuel Injected Engine/Carbureted Engine (KQ)



● Carbureted Engine (Except KQ)



Troubleshooting

Symptom Chart

- Any abnormality must be corrected before continuting the test.
- Because of the precise measurements needed, use a voltmeter and ammeter when testing.

Before performing any troubleshooting procedures check:
- Fuses No.15, 18, 32, 38

- All electrical connections are clean and tight.

SYMPTOM	REMEDY
Compressor does not come on.	Perform the procedures in the flow chart. (page 15-25)
Only radiator fan (or condensor fan) does not run.	Perform the procedures in the flow chart. (page 15-30)
Radiator fan and condensor fan do not run.	Perform the procedures in the flow chart. (page 15-31)
Compressor and radiator fan (or condensor fan) do not run.	Perform the procedures in the flow chart. (page 15-34)
	Discharge (high) pressure abnormally high or low.
Idle boost does not work.	See the fuel and emission section.

Flow Chart: Compressor

Compressor does not come on.

Inspect No. 18 and No. 38 fuses.

Are the fuses OK? NO → **Replace the fuses.**

YES

Disconnect the 4-P connector from the compressor clutch relay.

Measure voltage between the WHT terminal (+) and body ground.

Turn the ignition switch on.

Is there battery voltage? NO → **Repair open in WHT wire between the fuse box and compressor clutch relay.**

YES

Measure voltage between the BLK/YEL terminal (+) and body ground

Is there battery voltage? NO → **Repair open in BLK/YEL wire between the fuse box and compressor clutch relay**

YES

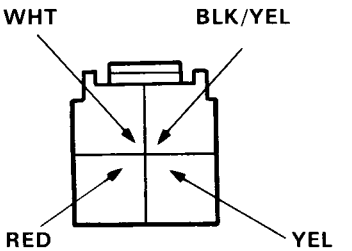
Connect the jumper wire between the WHT terminal and RED terminal

Does the compressor clutch engage? NO → Turn the ignition OFF and Reconnect the 4-P connector to the compressor clutch relay.

YES

Fuel Injected Engine: To page 15-26
Carbureted Engine (KQ): To page 15-27
Carbureted Engine (Except KQ): To page 15-28

(To page 15-29)



CLUTCH RELAY
View from wire side

(cont'd)

Flow Chart: Compressor (cont'd)

<Fuel Injected Engine>

(From Page 15-25)

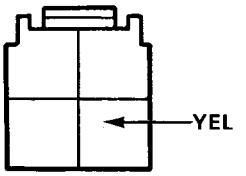
Turn the ignition switch OFF and reconnect 4P connector to the compressor clutch relay.

Turn the ignition switch ON, and connect a jumper wire between YEL terminal and body ground.

Does the compressor clutch engage?

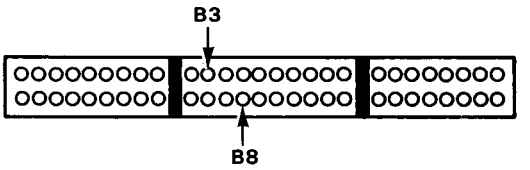
NO → **Replace the compressor clutch relay.**

YES



CLUTCH RELAY
View from wire side

Turn the ignition switch OFF and disconnect PGM-FI ECU connector and connect the PGM-FI ECU test harness.



PGM-FI-ECU test harness
07999—PD6000A

Turn the ignition switch ON and connect a jumper wire between B3 terminal and body ground.

Does the compressor clutch engage?

NO → **Repair open in YEL wire between the compressor clutch relay and ECU.**

YES

Disconnect a jumper wire and connect a jumper wire between B8 terminal and body ground.

Does the compressor clutch engage?

NO → **Repair open in BLU/RED4 wire between compressor and ECU.**

YES

Substitute a Known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(From Page 15-25)

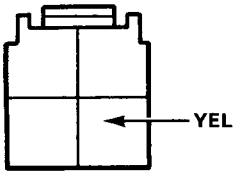
Turn the ignition switch OFF and reconnect 4P connector to the compressor clutch relay.

Turn the ignition switch ON, and connect a jumper wire between YEL terminal and body ground.

Does the compressor clutch engage?

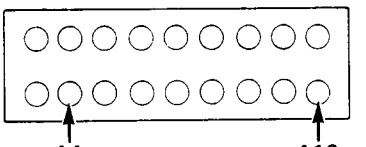
NO → **Replace the compressor clutch relay.**

YES



CLUTCH RELAY
View from wire side

Turn the ignition switch OFF and disconnect PGM-CARB ECU connector and connect the PGM-CARB ECU test harness.



PGM-CARB-ECU test harness
07HAZ-PJ70000

Turn the ignition switch ON and connect a jumper wire between A16 terminal and body ground.

Does the compressor clutch engage?

NO → **Repair open in YEL wire between the compressor clutch relay and ECU.**

YES

Disconnect a jumper wire and connect a jumper wire between A4 terminal and body ground.

Does the compressor clutch engage?

NO → **Repair open in BLU/RED4 wire between compressor and ECU.**

YES

Substitute a Known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(cont'd)

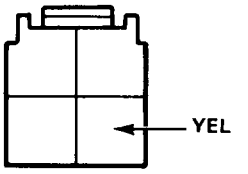
Flow Chart: Compressor (cont'd)

<Carbleted Engine (Except KQ)>

(From Page 15-25)

Turn the ignition switch OFF and reconnect 4P connector to the compressor clutch relay.

Turn the ignition switch ON, and connect a jumper wire between YEL terminal and body ground.



CLUTCH RELAY
View from wire side

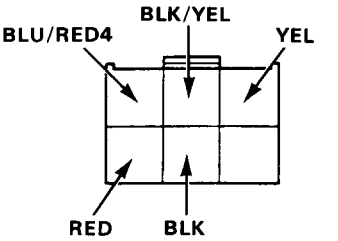
Does the compressor clutch engage?

NO → **Replace the compressor clutch relay.**

YES

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.**

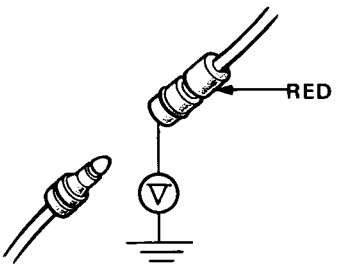
YES

Faulty delay control unit.

(From page 15-25)

Disconnect the RED terminal from compressor and turn the ignition switch on.

Measure voltage between the RED terminal (+) and body ground.



Is there battery voltage?

NO → **Repair open in RED wire between the compressor clutch relay and compressor clutch connector.**

YES

Turn the ignition switch OFF and check the thermal protector (page 15-51).

Is the thermal protector OK?

NO → **Replace the thermal protector.**

YES

Replace the compressor clutch.

Flow Chart: Either Fan

Radiator fan (or condenser fan) does not run.

Turn the ignition, heater fan, A/C switches on.

Inspect the radiator (or condenser) fan motor.

Does the fan motor run?

NO (Both not running) → (To page 15-31)

YES

Turn the ignition switch OFF. Inspect No. 32 or No. 15 fuses.

Are the fuses OK?

NO → **Replace the fuses.**

YES

Inspect the relay of the fan motor that does not run. (page 15-54)

Is the relay OK?

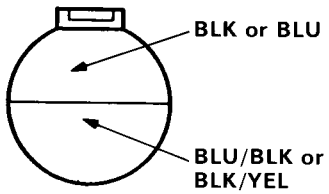
NO → **Replace the relay.**

YES

Disconnect the 2-P connector of the motor.

Turn the ignition switch ON and measure voltage between the BLU/BLK or BLK/YEL terminal (+) and BLK or BLU terminal (−).

View from terminal side



Is there battery voltage?

NO → Check for continuity between BLK or BLU terminal and body ground.

YES

Replace the fan motor.

Is there continuity?

NO → **Repair open in BLK or BLU wire or poor ground.**

YES

Repair open in BLK/YEL or BLU/BLK wire.

Flow Chart : Both Fans

Radiator fan and condenser fan do not run.

Inspect fuse No. 15 (15A).

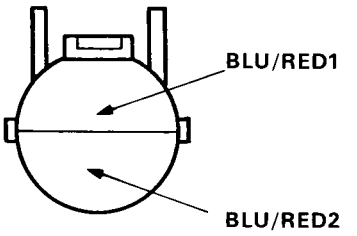
Is the fuse OK? NO → **Replace fuse.**

YES

Turn the ignition switch OFF.

Disconnect the dual pressure switch.

Connect the BLU/RED1 terminal to body ground.



View from terminal side

Do both fans run? NO → **Repair open in BLU / RED1 wire between diode and pressure switch or faulty diode.**

YES

Connect a jumper wire between the BLU/RED1 and BLU/RED2 terminals.

NOTE: Check A/C pressure first; may be low on refrigerant.

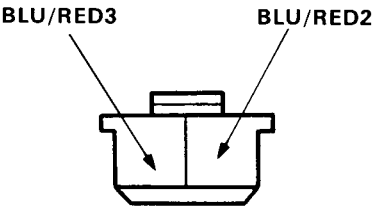
Do both fan motors run? YES → **Replace the dual pressure switch.**

NO

Remove the jumper wire and reconnect the 2P connector to the pressure switch.

Disconnect the 2P connector from the thermostat switch.

Connect a jumper wire between the BLU/RED2 terminal and body ground.



View from wire side

(To page 15-32)

(cont'd)

Flow Chart: Both Fans (cont'd)

(From page 15-31)

Turn the ignition switch ON.

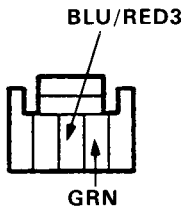
Do both fan motors run?
- NO → **Repair open in BLU/RED2 wire between the pressure switch and thermostat switch.**
- YES ↓

Connect a jumper wire between the BLU/RED2 and BLU/RED3 terminals of the thermostat switch connector.

Do both fan motors run?
- YES → **Replace the thermostat switch.**
- NO ↓

Reconnect the 2P connector to the thermostat switch. Disconnect the 5P connector from the A/C switch.

Connect the BLU/RED3 terminal to the body ground.



View from wire side

Do both fan motors run?
- NO → **Repair open in BLU/RED3 wire between the thermostat switch and A/C switch.**
- YES ↓

Connect the BLU/RED3 and GRN terminals with a jumper wire.

Do both fan motors run?
- YES → **Replace the A/C switch.**
- NO ↓

Check the heater fan switch (page 15-17).

Is the heater fan switch OK?
- NO → **Replace the heater fan switch.**
- YES ↓

(To page 15-33)

(From page 15-32)

Reconnect the 5P connector to the A/C switch and disconnect the 6P connector from the heater fan switch.

Connect a jumper wire between the GRN terminal and body ground.

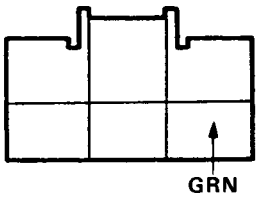
Do both fans run?

NO

Repair open in GRN wire between the heater fan switch and A/C switch.

YES

Repair open in BLK wire between the heater fan switch and ground or poor ground.



View from wire side

Flow Chart: Compressor And Either Fan

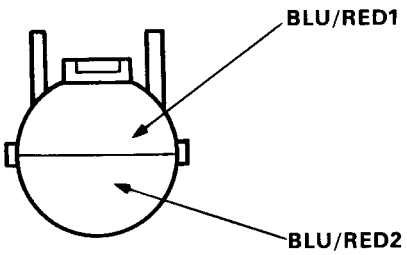
Compressor and radiator fan (or Condenser fan) do not run.

Inspect No.38 (15A), 15 (15A), 32 (50A) and No.18 (10A) fuses.

Are the fuses OK? — NO → **Replace the fuse(s).**

YES

Disconnect the 2P connector from the pressure switch.



Turn the heater fan, A/C switch ON and start the engine.

Connect a jumper wire between the BLU/RED1 terminal and body ground.

Do the compressor and both fans run? — NO → **Repair open in BLU/RED1 wire between presssure switch and diodes**

YES

Connect a jumper wire between the BLU/RED 1 and 2 terminals.

NOTE: Check A/C pressure first, may be low on refrigerant.

Do the compressor and both fans run? — YES → **Replace the pressure switch**

NO

(To page 15-35)

(From page 15-34)

Reconnect the 2P connector to the pressure switch.

Disconnect the 2P connector from the thermostat switch.

Connect a jumper wire between the BLU/RED2 terminal and body ground.

Do the compressor and both fans run?

NO → **Repair open in BLU/RED2 wire between pressure and thermostat switches.**

YES

Connect a jumper wire between the BLU/RED2 and 3 terminals.

Do the compressor and both fans run?

YES → **Replace the thermostat switch.**

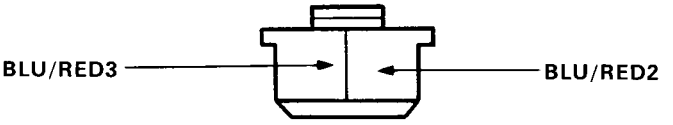
NO

Turn the ignition switch OFF

Reconnect the 2P connector to the thermostat switch.

Disconnect the 5P connector from the A/C switch.

(To page 15-36)



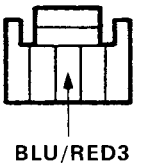
View from wire side

(cont'd)

Flow Chart: Compressor And Either Fan (cont'd)

(From page 15-35)

Connect a jumper wire between the BLU/RED3 terminal and body ground.



Start the engine.

Do the compressor and both fans run?

NO → **Repair open in BLU/RED3 wire between the thermostat and A/C switch.**

YES

Connect a jumper wire between the BLU/RED and GRN terminals.

Do the compressor and both fans run?

YES → Inspect the A/C switch. page 15-55.

Is the A/C switch OK?

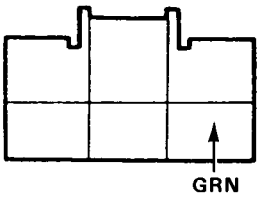
NO → **Replace the A/C switch.**

YES

NO

Reconnect the 5P connector to the A/C switch and turn A/C switch ON.

Disconnect the 6P connector from the fan switch.

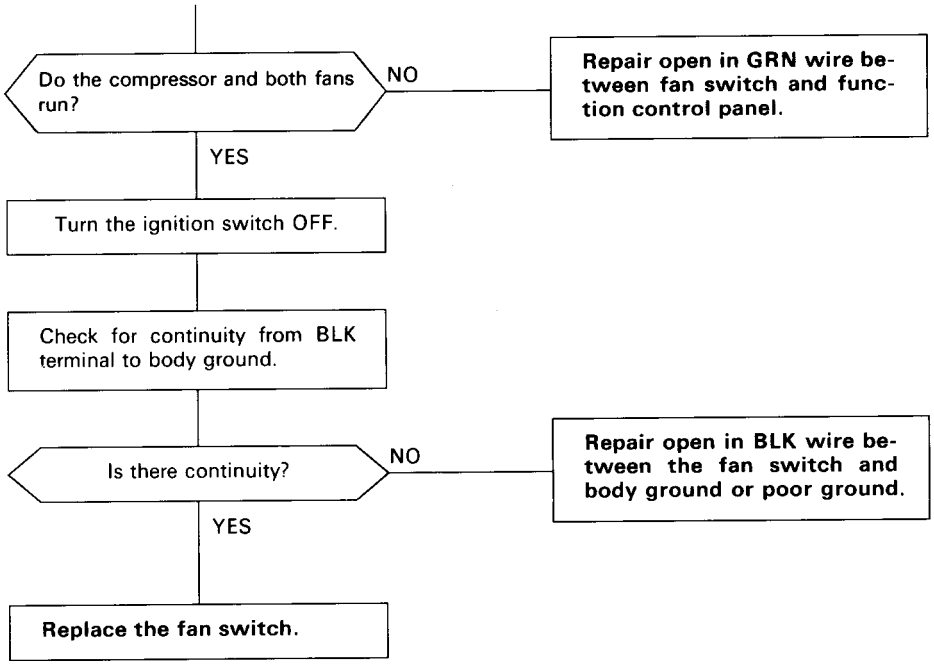


View from wire side

Connect a jumper wire between the GRN terminal and body ground.

(To page 15-37)

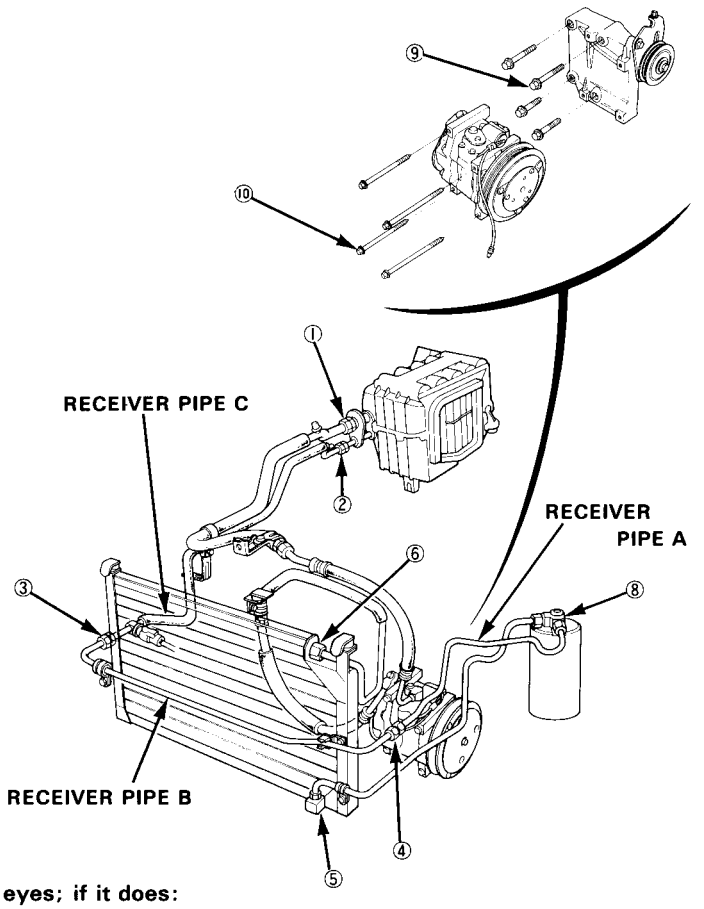
(From page 15-36)



NOTE: Performance Test on page 15-58.

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 15-55 Recharging: 15-57
	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

CAUTION:
1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil after replacing the following parts:
   - Condenser ·····10 cc (1/3 fl oz)
   - Evaporator ·····30 cc (1 fl oz)
   - Line or hose ·····10 cc (1/3 fl oz)
   - Receiver ·····10 cc (1/3 fl oz)
   - Compressor·····On compressor replacement, subtract the volume of oil drained from the removed compressor from 150 cc (5 fl oz) or 120 cc (4 fl oz), and drain the calculated volume of oil from the new compressor:
     150 cc (5 fl oz) — Volume of removed compressor = Draining volume
7. Torque specifications
   - ① Suction hose evaporator side ·····32 N·m (3.2 kg-m, 23 lb-ft)
   - ② Receiver pipe C evaporator side ·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ③ Receiver pipe C to Receiver pipe B·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ④ Receiver pipe B to Receiver pipe A·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑤ Condenser pipe to Condenser ·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑥ Discharge hose to Condenser ·····22 N·m (2.3 kg-m, 16 lb-ft)
   - ⑦ Compressor hose mounting bolts ·····30 N·m (3.0 kg-m, 22 lb-ft)
   - ⑧ Receiver tank·····17 N·m (1.7 kg-m, 12 lb-ft)
   - ⑨ Compressor bracket mounting bolts ·····48 N·m (4.8 kg-m, 35 lb-ft)
   - ⑩ Compressor mounting bolts ·····25 N·m (2.5 kg-m, 18 lb-ft)



WARNING When handling refrigerant (R-12):
- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes; if it does:
  - Do not rub your eyes or skin.
  - Splash large quantities of cool water in your eyes or on your skin.
  - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce a poisonous gas.

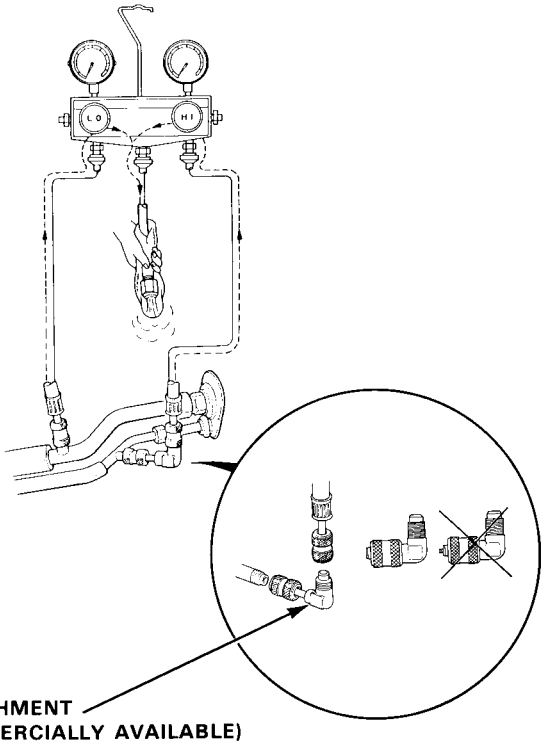
Discharge Procedure

WARNING

- **Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.**
- **Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.**

1. Connect the gauges as shown.
2. Disconnect the center hose of the gauge set and place the free end in a shop towel.
3. Slowly open the high side manifold valve slightly to let refrigerant flow from the center hose only. Do not open the valve too wide. Check the shop towel to make sure no oil is being discharged with the reriger-ant.

   CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.
4. After the high pressure gauge reading has dropped below 1000 kPa (142 psi), open the low side valve to discharge both high and low sides of the system.
5. Note the gauge readings and, as system pressure drops, gradually open both high and low side valves fully until both gauges indicate O kPa (O psi).

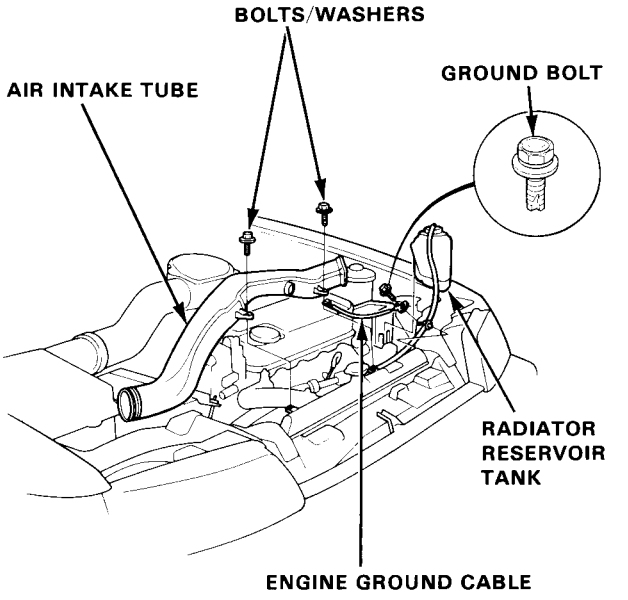


ATTACHMENT (COMMERCIALLY AVAILABLE)
NOTE:Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

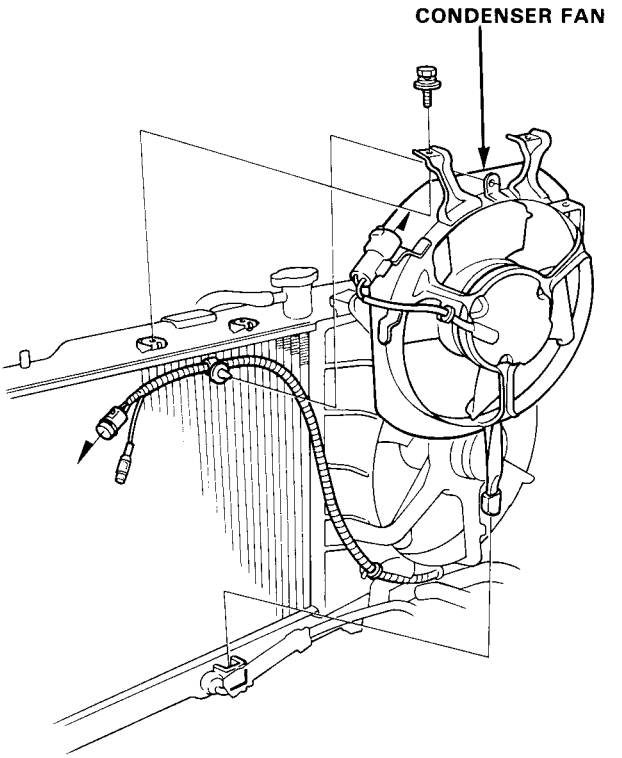
Condenser

Replacement

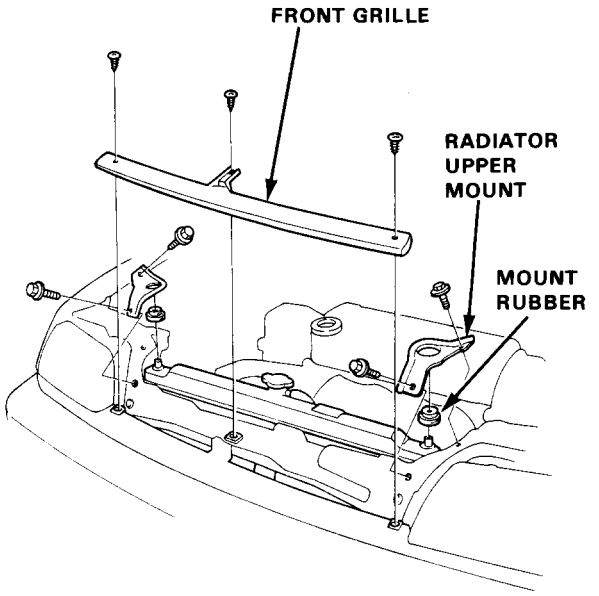
1. Discharge the refrigerant.
2. Disconnect the engine ground cable.
3. Remove the radiator reservoir tank and the air intake tube.



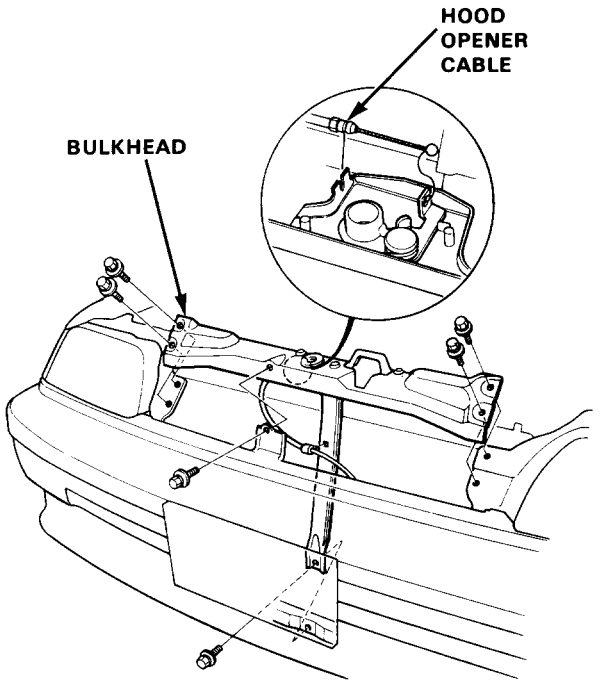
4. Remove the condenser fan with the two bolts.



5. Remove the front grille with three screws and radiator upper mounts with two bolts each.

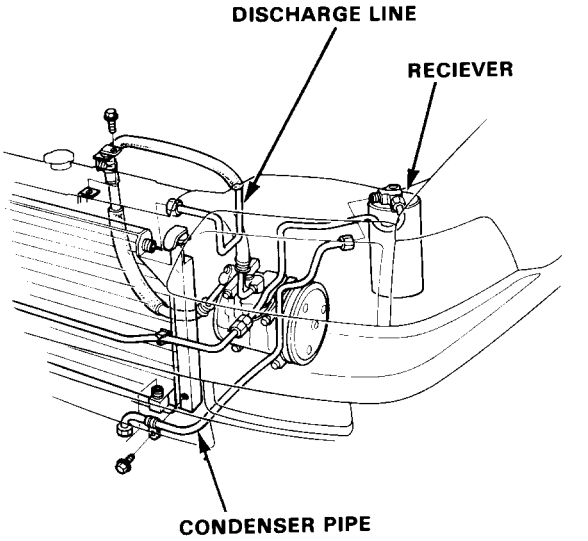


6. Remove the front bulkhead with six bolts, then remove the hood opener cable.

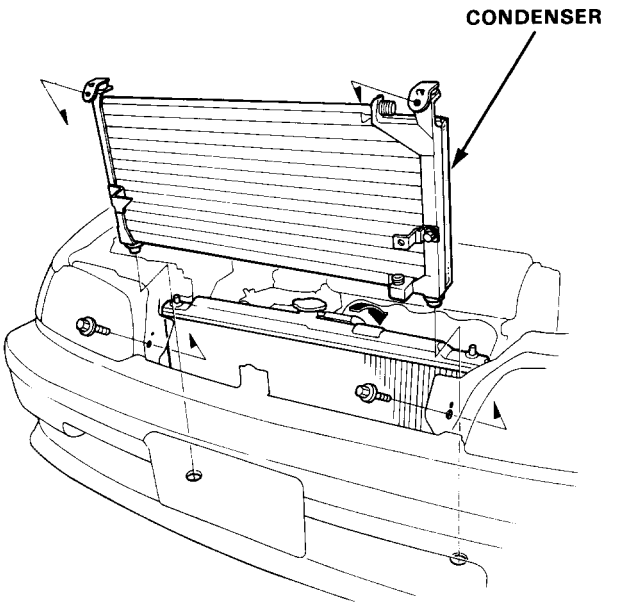


7. Disconnect the condenser pipe and discharge pipe from the condenser.

CAUTION: Cap the open fittings immediately to keep moisture and dirt out of system.



8. Remove the mounting bolts (2) and condenser.



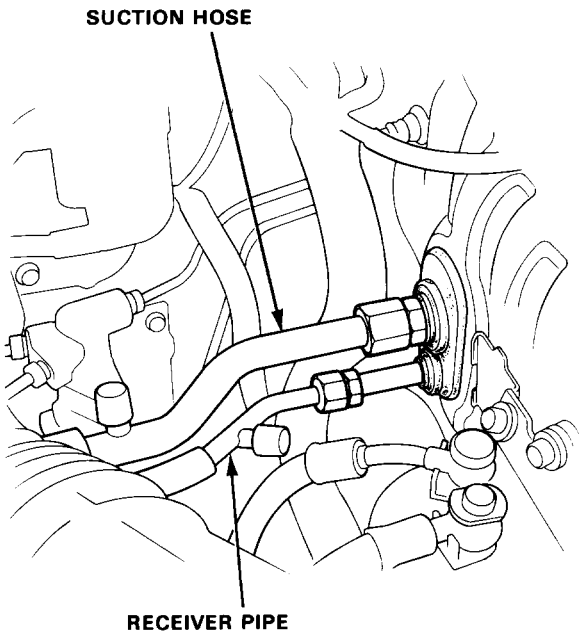
9. Install in the reverse order of removal, charge the system (page 15-55) and test performance (page 15-58).

Evaporator

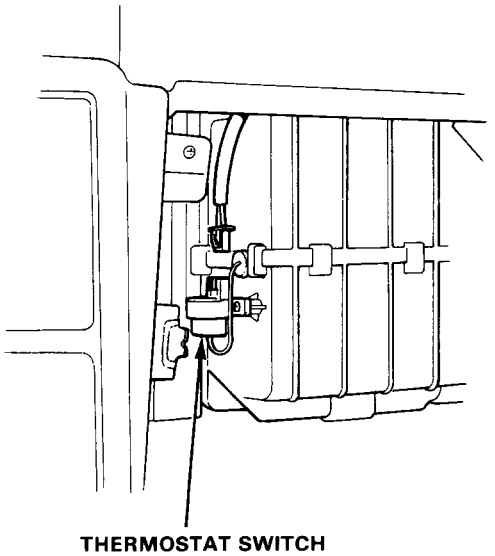
Replacement

1. Disconnect the battery negative terminal.
2. Discharge the refrigerant (page 15-40).
3. Disconnect the receiver line and suction hose from the evaporator.

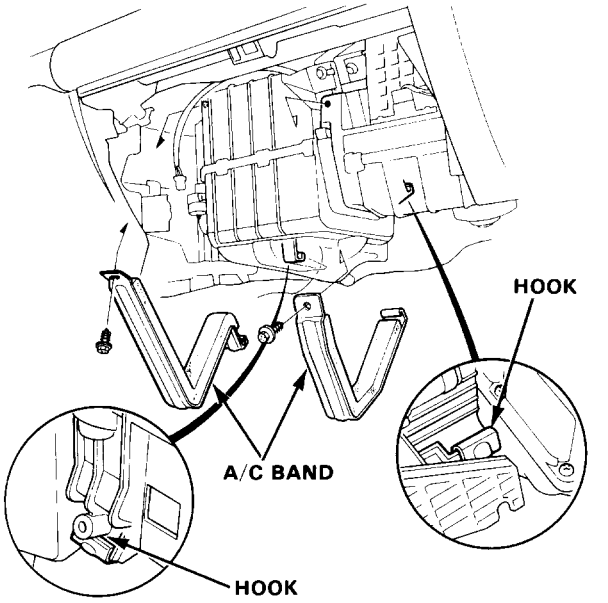
CAUTION: Cap the open fittings immediately to keep moisture out of the system.



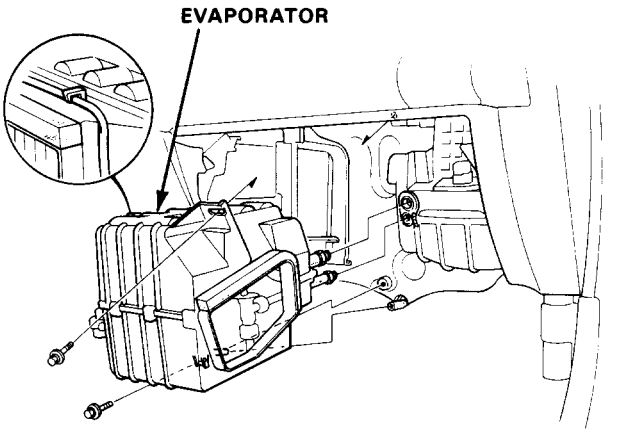
4. Remove the glove box (section 14).
5. Disconnect the connector from the thermo switch and pull off the wire harness from the clamps.



6. Remove the tapping screws (2) and A/C bands.



7. Remove the mounting bolts (2) and evaporator.



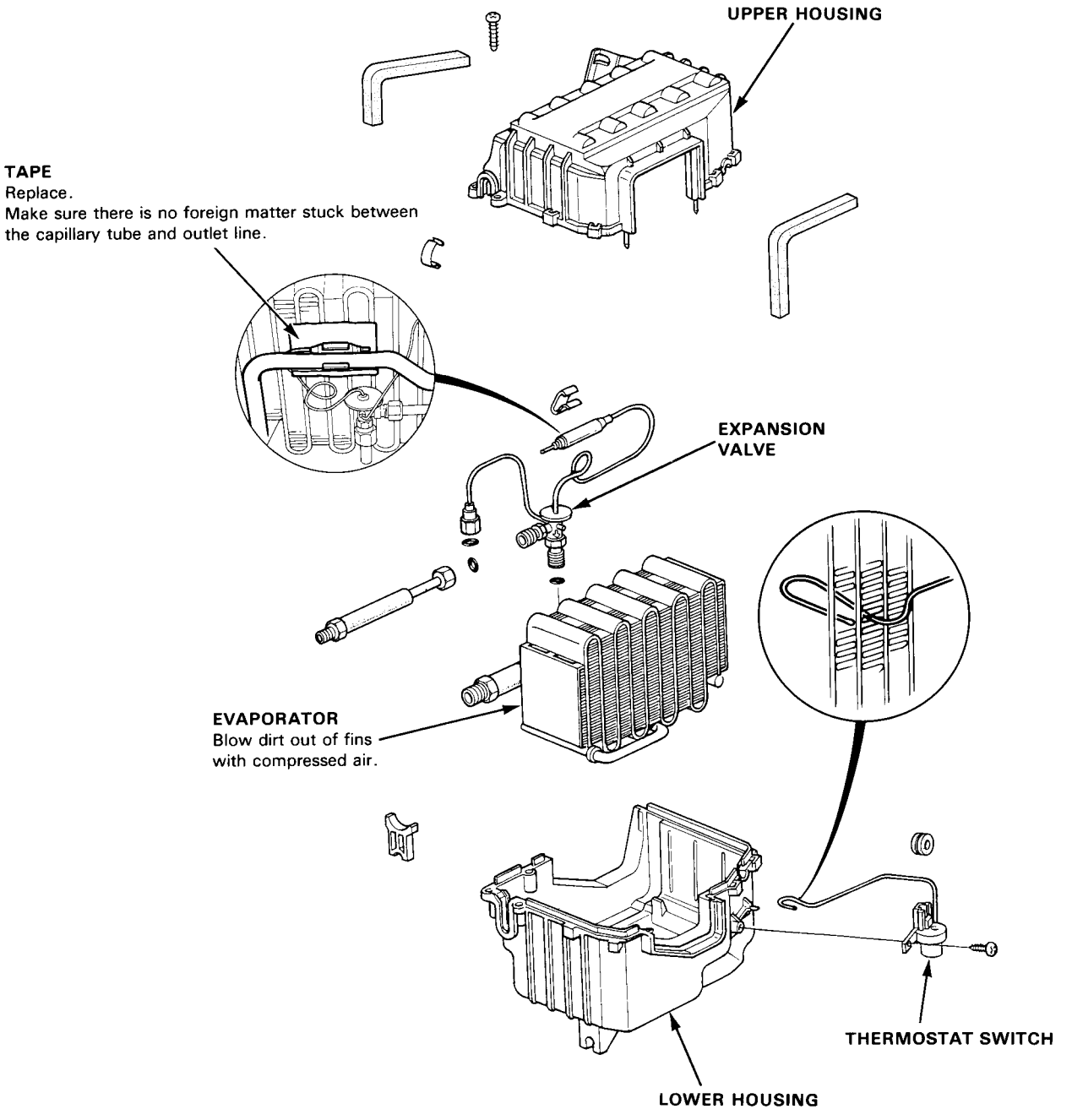
8. Install in the reverse order of removal, and:
   - Apply a sealant to the gromments.
   - Make sure that there is no air leakage.
   - Charge the system (page 15-55) and test performance (page 15-58).

Overhaul

1. Pull out the evaporator sensor from the evaporator fins.
2. Remove the tapping screws and clips from the housing.
3. Carefully separate the hosings and remove the evaporator covers.
4. Remove the expansion valve if necessary.

Assemble the evaporator in the reverse order of disassembly, and:

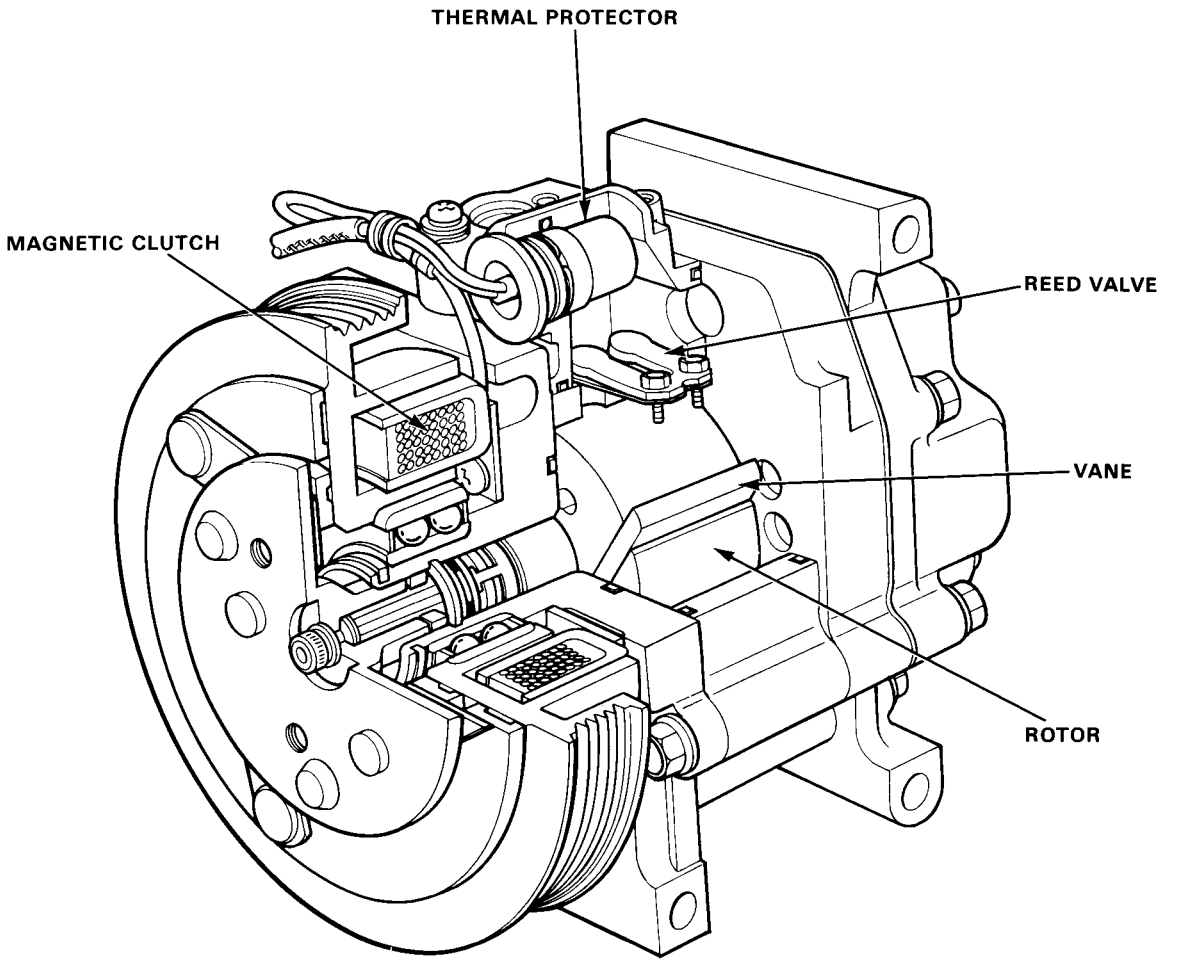
- Install the expansion valve capillary tube against the suction line, and wrap it with tape.
- Reinstall the evaporator sensor in its original location.



Compressor

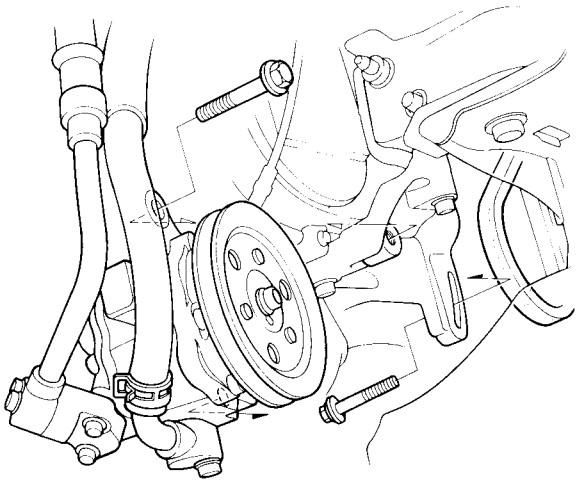
Description

This compressor is a three-vane, rotary type and consists of three vanes that come out of the rotor to the cylinder wall, reed valve that prevents backflow, and magnetic clutch.
A thermal protector is installed on this compressor.



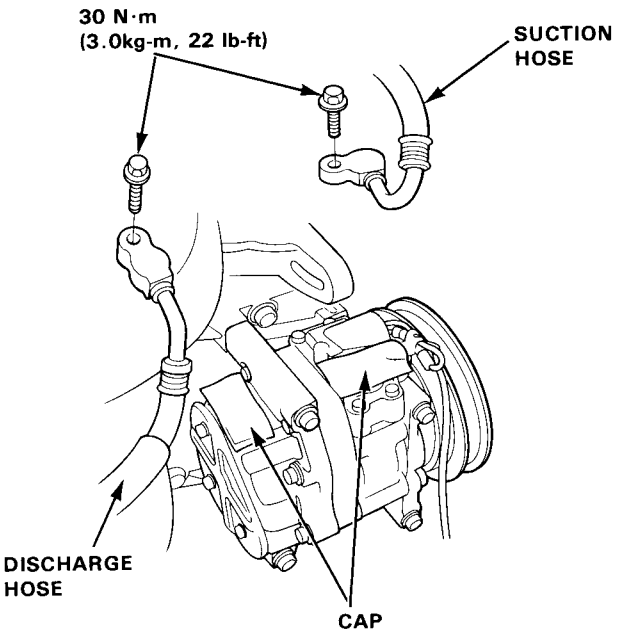
Replacement

1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system page (15-40).
3. Remove the mounting bolts (2) the power steering pump belt, and the power steering pump.

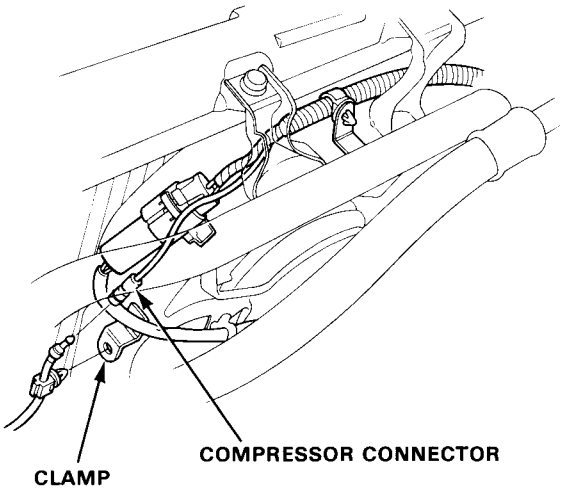


4. Disconnect the suction and discharge hoses from the compressor.

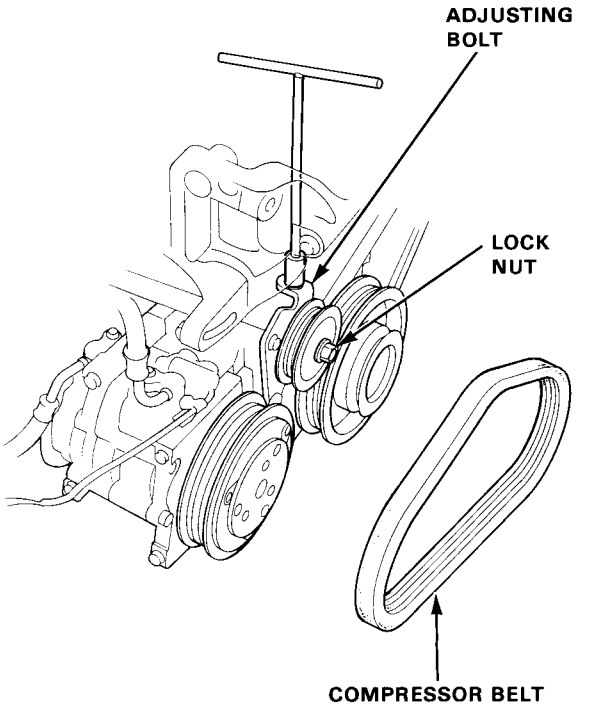
CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.



5. Disconnect the compressor connector and the clamp.



6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.

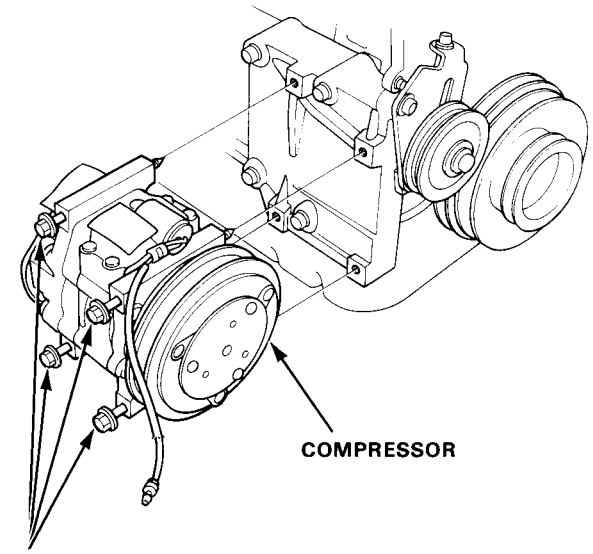


(cont'd)

Compressor

Replacement (cont'd)

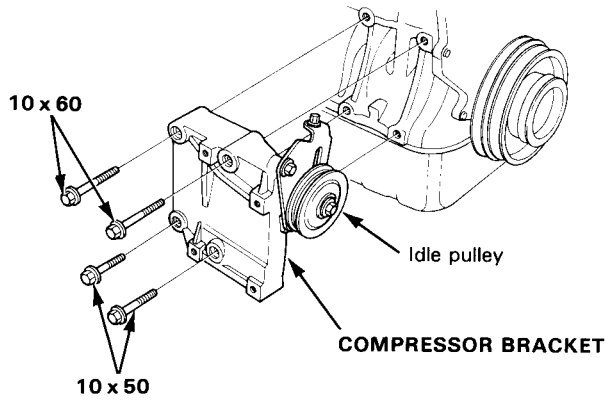
7. Remove the compressor mounting bolts (4) and compressor. Rest the compressor on the front beam.



8. Remove the mounting bolts (4) and compressor bracket with idle pulley.

ALL TORQUE:

48 N·m (4.8kg-m, 35 lb-ft)



9. Remove the compressor.

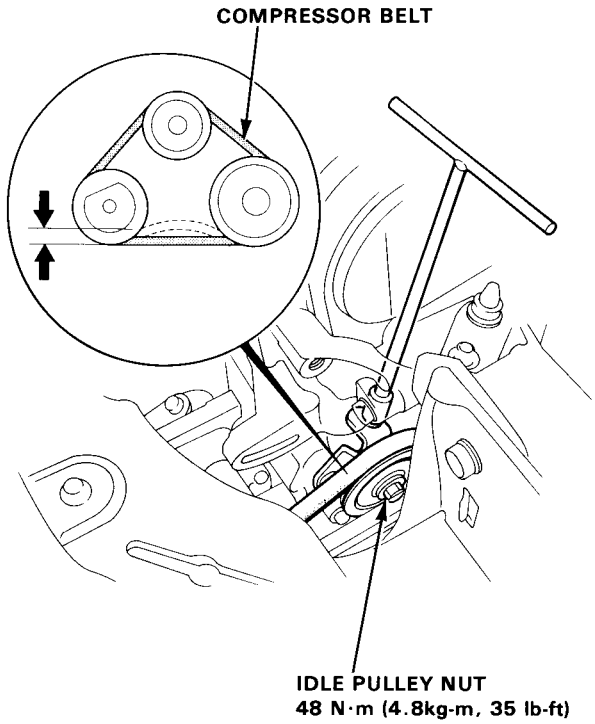
10. Install in the reverse order of removal and:

- If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
  150 cc (5fl oz,) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the compressor belt and the power steering belt.

NOTE: Measure the deflection when 98 N (10 kg, 22 lb) force is applied between the pulleys.

Compressor belt Adjustemnt.
9—11 mm (0.35—0.43 in)

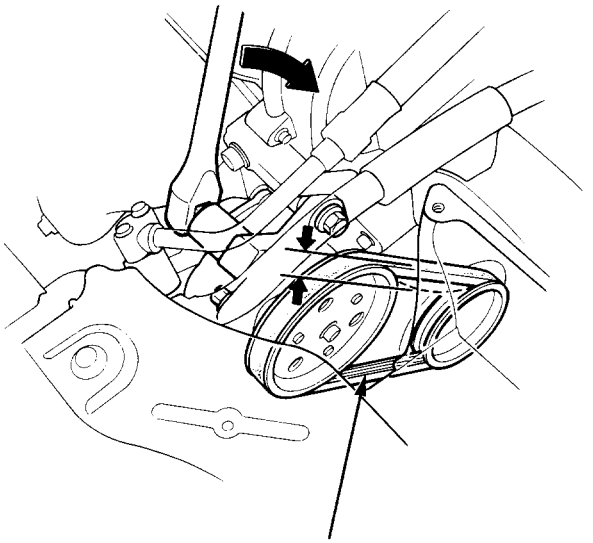
{7—9 mm (0.28—0.35 in) when new belt is intalled}



- Charge the system (page 15-55).
- Test the performance (page 15-58).

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〕

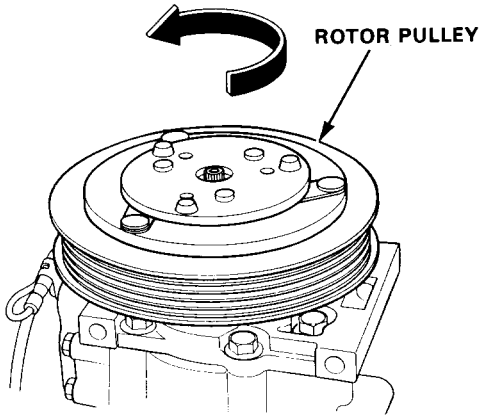


POWER STEERING BELT

Compressor

Clutch Inspection

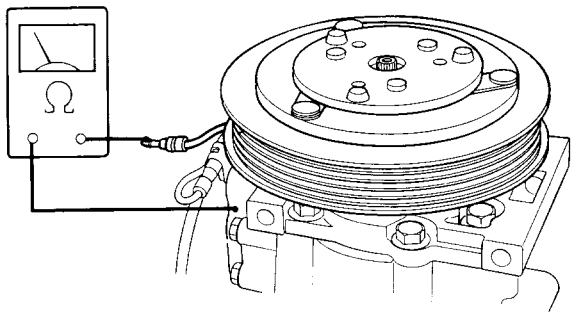
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.



- Check resistance of the field coil:

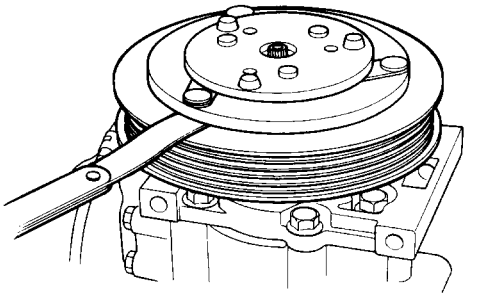
Field Coil Resistance: 3.33±0.17 ohm at 20°C) (68°F)

If resistance is not within specifications, replace the coil.

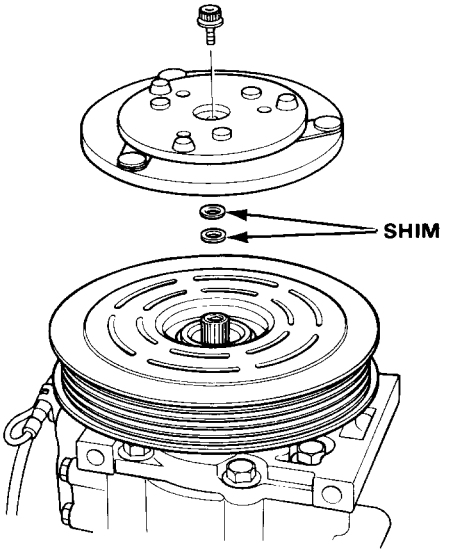


- Measure the clearance between the pulley and pressure plate all the way around. If the clearane is not within specified limits, the pressure plate must be removed and shims added or removed as required.

CREARANCE: 0.4—0.6 mm (0.016—0.024 in)

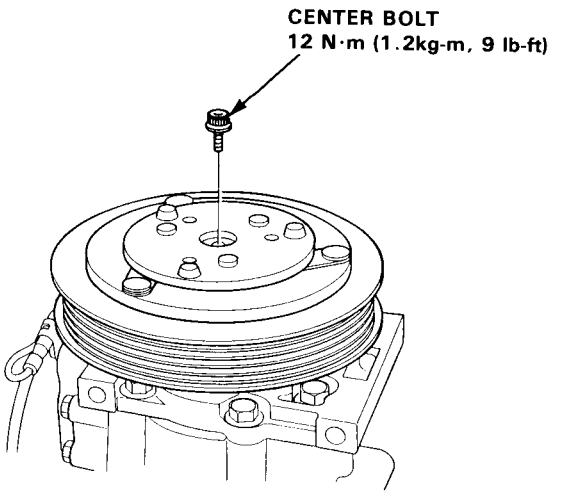


NOTE: The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

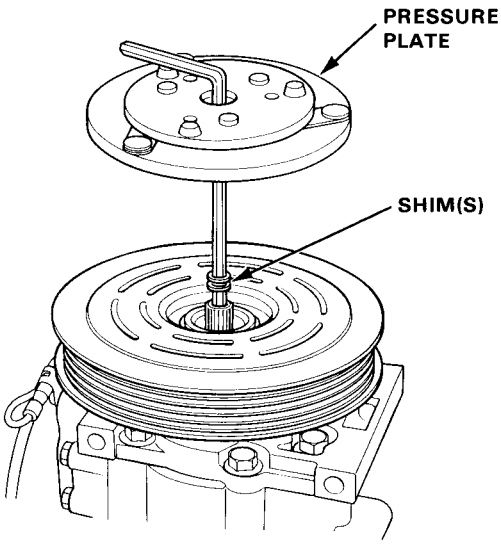


Clutch Overhaul

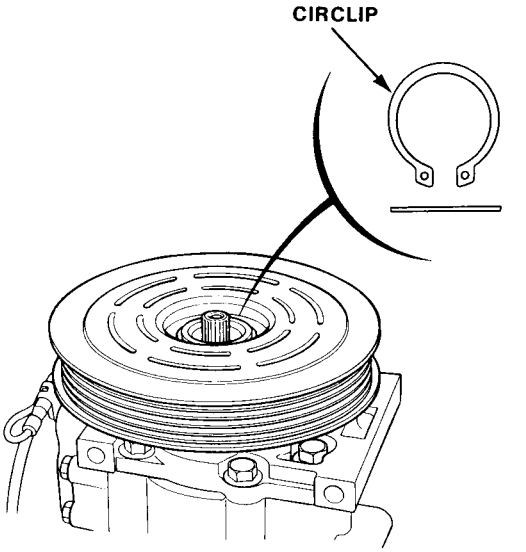
1. Remove the center bolt and washers.



2. Remove the pressure plate and shim(s) taking care not to lose the shims.

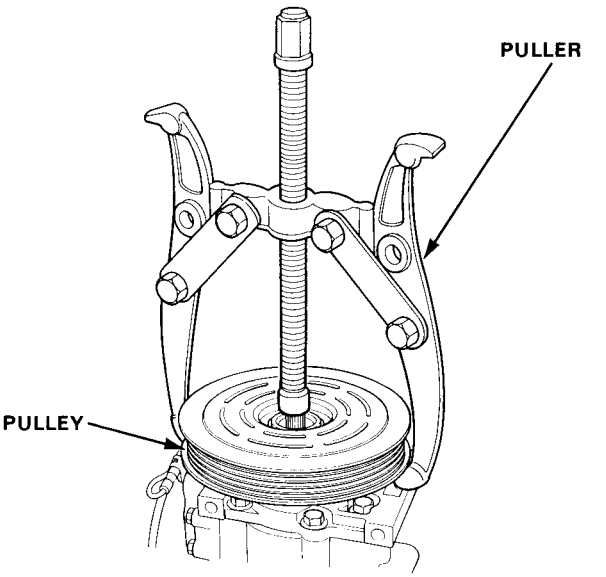


3. Use circlip pliers to remove the circlip.



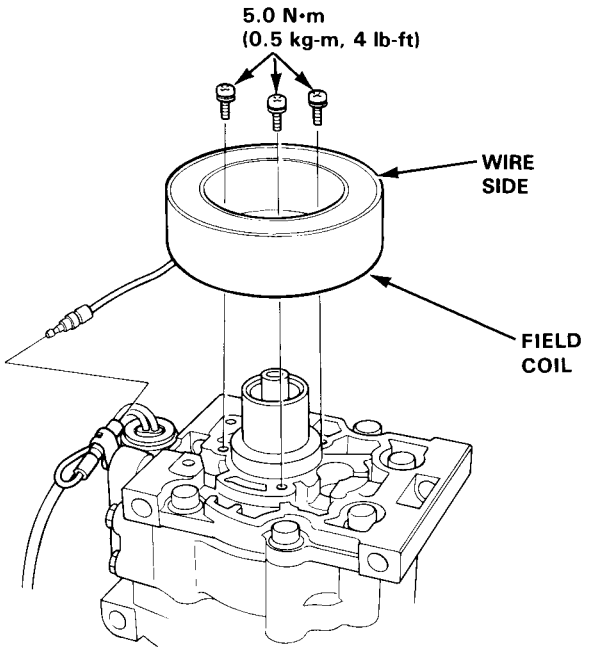
4. Remove the pulley from the shaft using a 2 or 3 jaw puller.

5. Check the pulley, replace the assembly if the pulley is damaged or deformed.



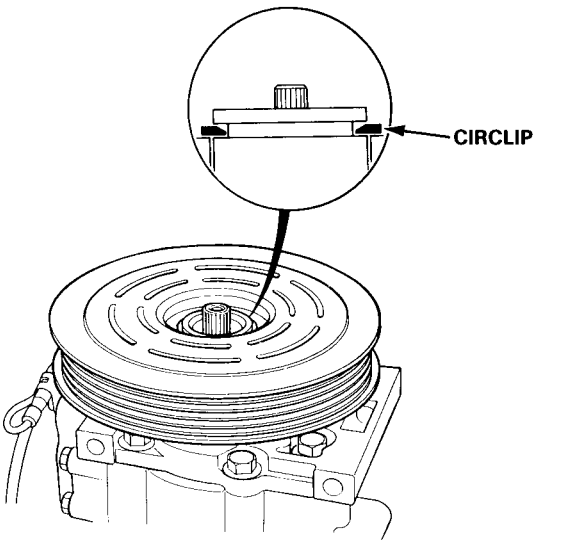
Clutch Overhaul (cont'd)

6. Disconnect the field coil connector and remove the screws (3) and field coil.

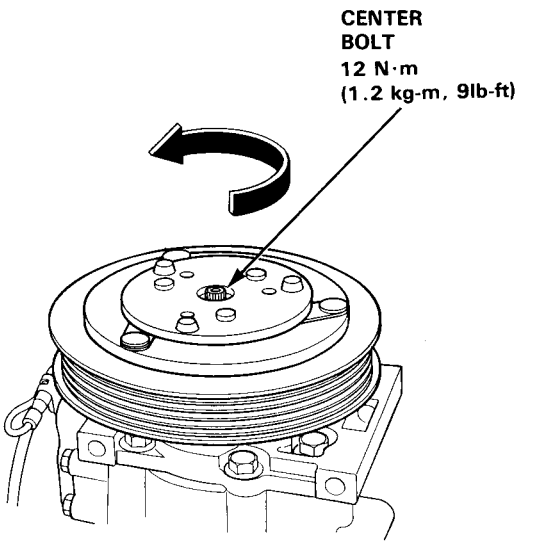


7. Install in the reverse order of removal and:

- 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.

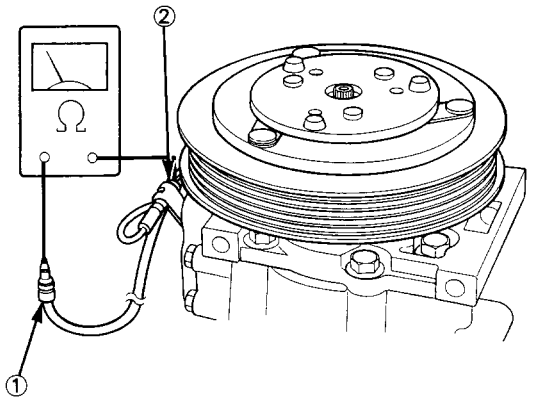


Thermal Protector Inspection

Check for continuity between the 1 and 2 terminals of the compressor connector.

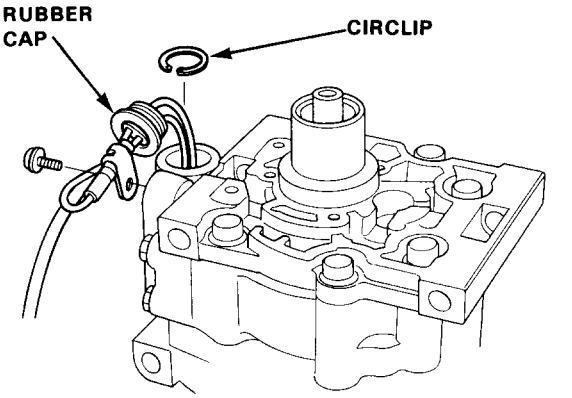
There should be continuity.

- If no continuity, replace the thermal protector



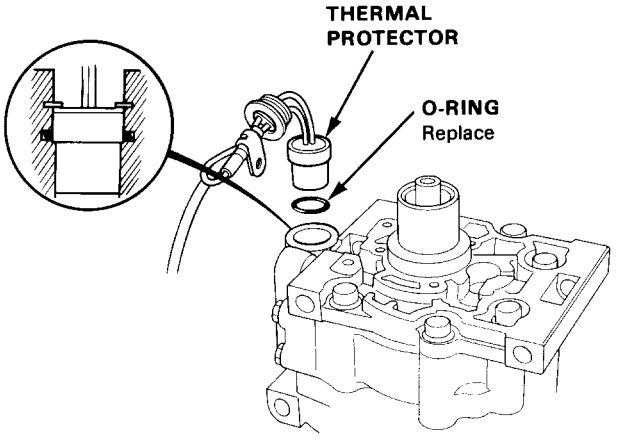
Thermal Protector Replacement

1. Remove the pressure plate and field coil (page 15-49).
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.



Compressor

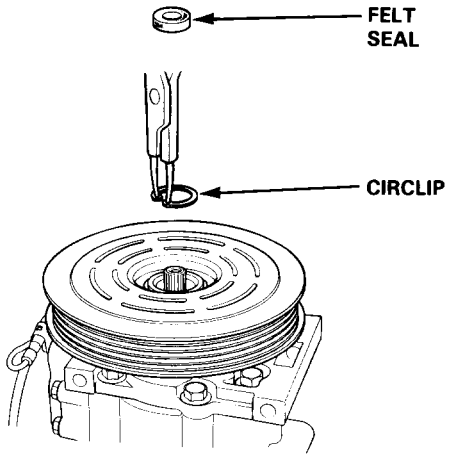
Shaft Seal Replacement

NOTE: Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate (page 24-31).

   NOTE: Removal of the clutch pulley and coil is not necessary.

2. Remove the felt seal and circlip.



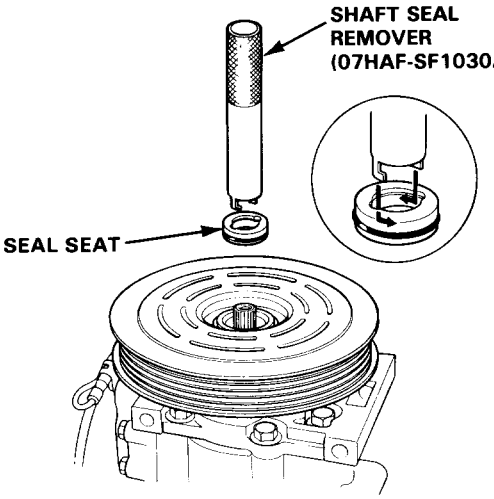
3. Remove the shim(s).

   NOTE: After removing, place shim(s) safely in a parts rack.

4. Insert the Shaft Seal Remover into the compressor aligning the cutout of the remover with the groove of the seal seat.

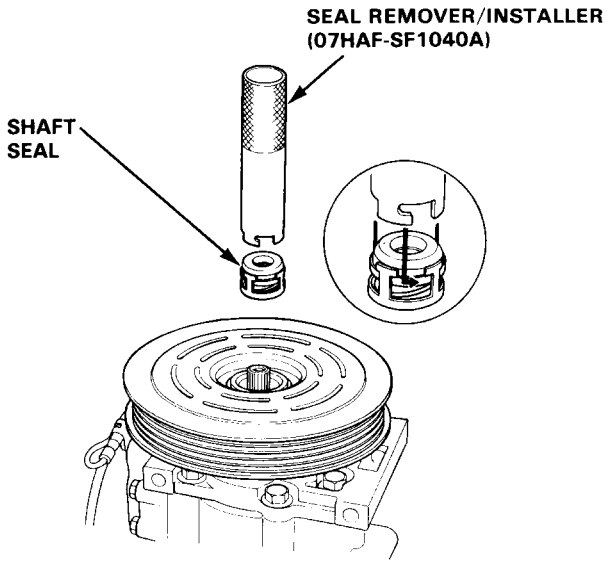
5. Rotate the Shaft Seal Remover counterclockwise to make sure that the cutout is engaged with the seal seat.

6. Pull out the seal seat.



7. Insert the Shaft Seal Remover into the compressor aligning the cutout of the remover with the metal pawl of the seal case.

8. Rotate the Shaft Seal Remover counter clock wise to make sure that the cutout is engaged with the metal pawl.



9. Withdraw the remover.

10. Lay down the compressor and clean the shaft seal contacting face of the compressor with cleaning solvent.

    CAUTION:
    - **Keep the cleaning solvent and dirt out of the compressor.**
    - **Do not use any cloth for cleaning, clean only by rinsing with solvent.**
    - **Do not spill the refrigerant oil from the compressor. Refill the same amount of the oil if the oil is spilled out.**

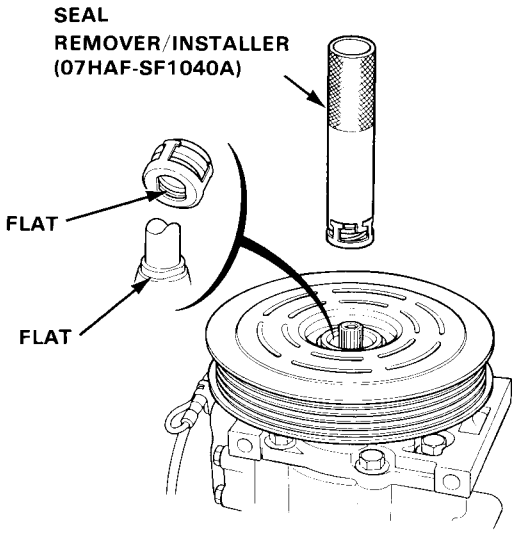
11. Clean the new shaft seal thoroughly with cleaning solvent.

12. Lubricate the shaft seal with refrigerant oil (SUNISO 5GS or equivalent) and install it on the shaft seal remover.

    NOTE:
    - Use only clean refrigerant oil.
    - Do not touch the sealing surfaces of the shaft seal after lubricating.

13. Liberally lubricate the compressor shaft with refrigerant oil.

14. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.



15. Clean the seal seat with cleaning solvent, then lubricate the seal seat with refrigerant oil (SUNISO 5GS or equivalent).

    NOTE:
    - Use only clean refrigerant oil.
    - Do not touch the sealing surface of the seal plate after lubricated.

16. First slide the seal seat into the compressor by hand as far as possible.

17 Press the seal seat with the grip side of the remover.

18. Install the circlip with its chamfered edge inside.

19. Press the circlip with the grip side of the remover, then install the felt seal.

20. Install the shim(s).

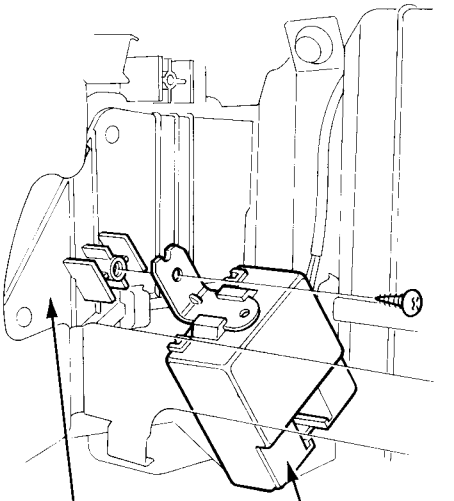
21. Install the pressure plate. Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within the specified limits, (0.3—0.45 mm (0.012—0.018 in)) shims must be added or removed as required.

Delay Control Unit

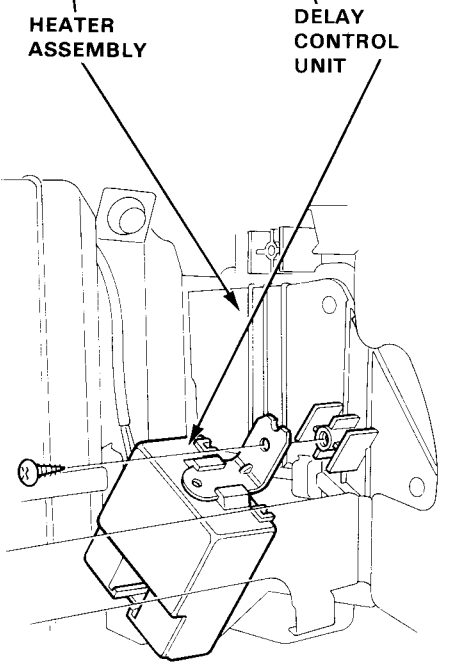
Replacement

1. Remove the glove box.
2. Remove the delay control from the heater assembly side.
3. Install in the reverse order of removal.

〈LHD〉



〈RHD〉



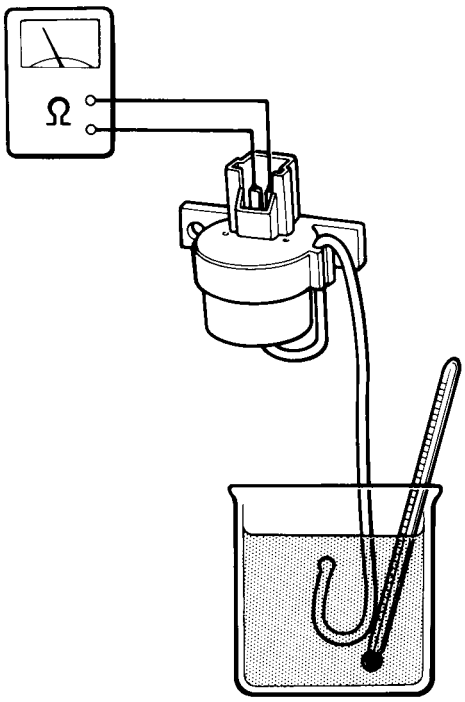
Test

Thermostat Switch

Dip the evaporator sensor into a pan filled with ice water, and check for continuity between the terminals.

Cut off 1.5—−0.5°C (35—33°F)
Cut in 2.5—5°C (36—41°F)

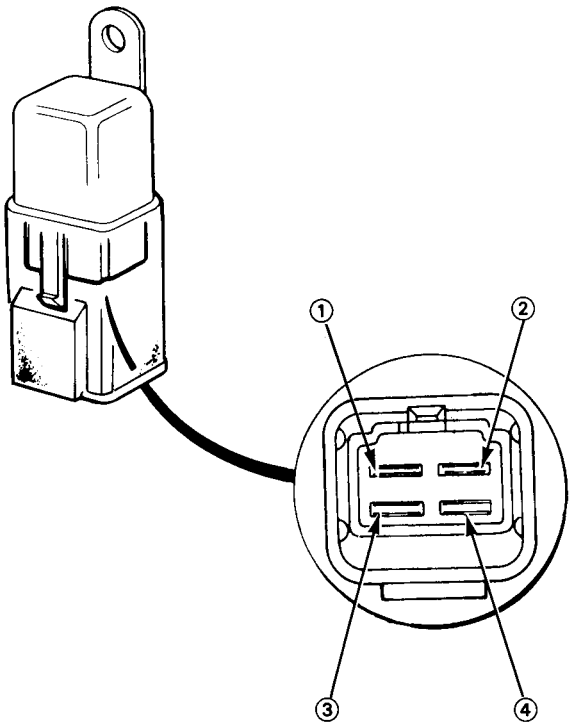
If cut off or cut in temperature is too low or too high, replace the thermostat switch.

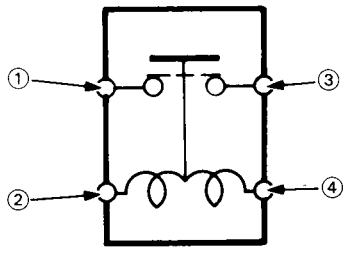


Relay

NOTE: All A/C system relays are similar.

1. Check for continuity between terminals ① and ③.
2. Connect a 12 V battery across terminals ② and ④. There should be continuity between terminals ① and ③.

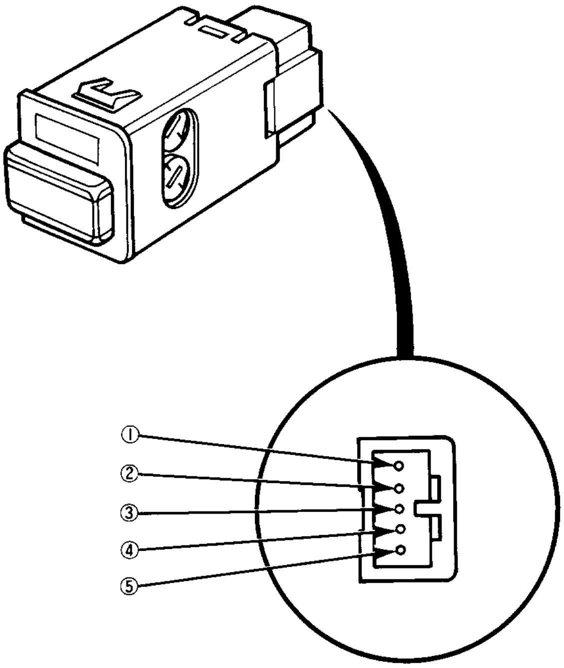




A/C Switch

Check for continuity between the terminals according to the table.

Terminal No. / Position	①	②	③	④	⑤
OFF	○—⊗—	—○	○—⊗—	—◀|—	—○
ON	○—⊗—	—○		○—⊗—	—◀|—○
			○—	—○	



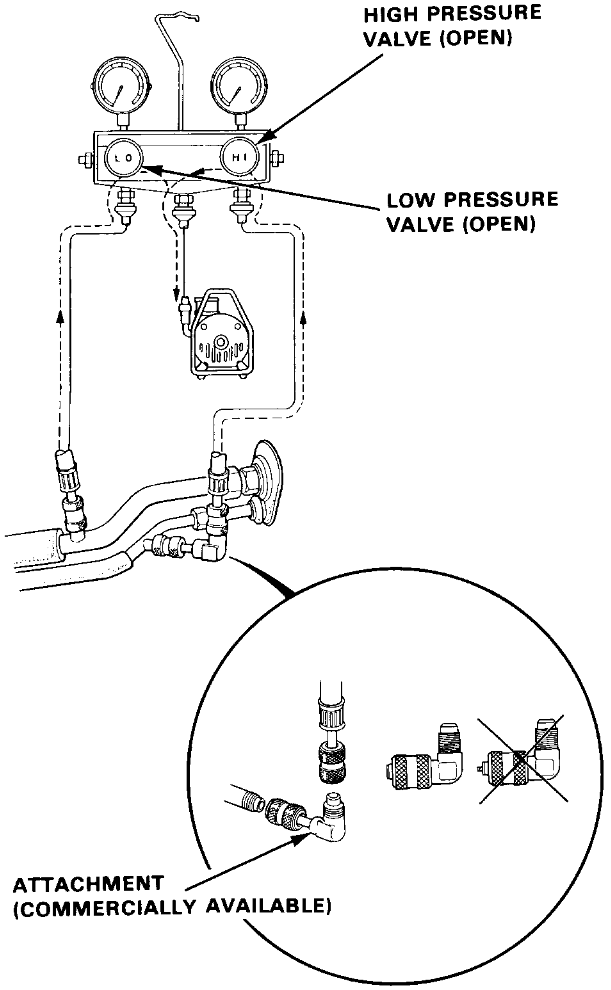
System Evacuation

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).

2. Attach a gauge set and pump as shown, connecting the center charging hose to the pump inlet.

3. Start the pump, then open both gauge valves. Run the pump for about 15 minutes. Close the valves and stop the pump. The low gauge should indicate above 700 mm Hg (27 in-Hg) and remain steady with the valves closed.
NOTE: If low pressure does not reach more than 700 mm Hg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test below).

4. If there are no leaks open the valves and continue pumping for at least another 15 minutes, then close both valves, stop the pump and disconnect it from the center charging hose.



NOTE: Set the attachment to the gauge hose at high pressure side, then install the gauge set as shown.

System Charging

Leak Test

WARNING When handling refrigerant (R-12):

- **Always wear eye protection.**
- **Do not let refrigerant get on your skin or in your eyes. If it does:**
  - **— Do not rub your eyes or skin.**
  - **— Splash large quantities of cool water in your eyes or on your skin.**
  - **— Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.**
- **Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).**
- **Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.**
- **Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.**

1. Attach a refrigerant supply and gauge set as shown, with all valves closed. Then open the refrigerant supply valve on the can.

2. Loosen the center charging hose fitting at the gauge to purge any air from the hose, until it hisses for a few seconds, then tighten it again.

3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.

4. Check the system for leaks using a leak detector.

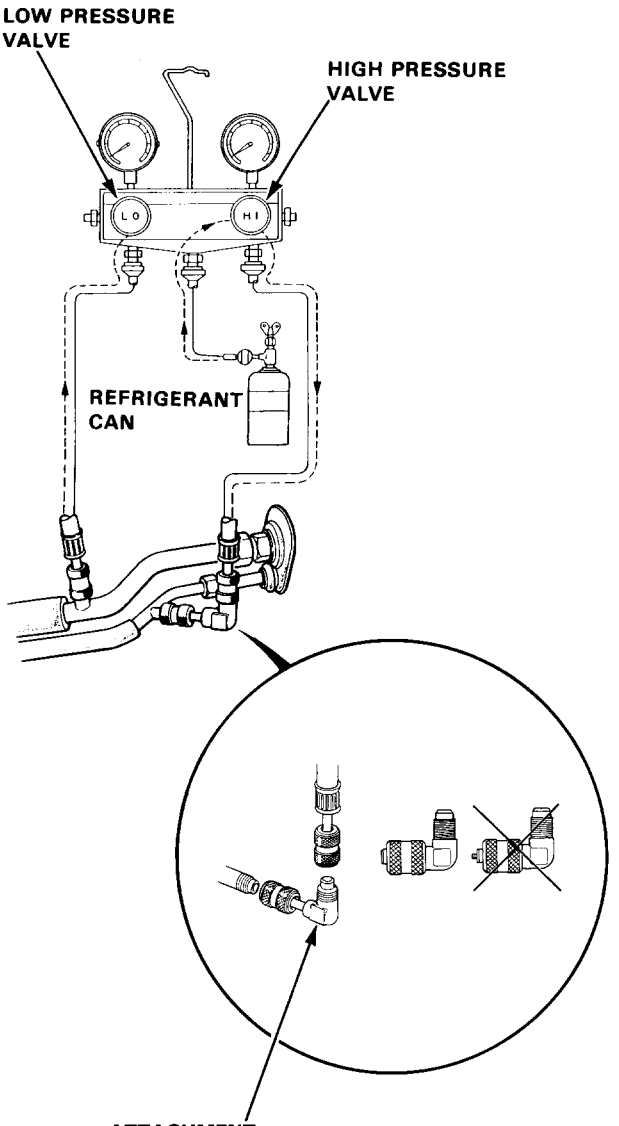
5. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system according to the Discharge Procedure on page 15-40.

6. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 15-55).

'88 A/C high side adapter:

The A/C high side charging fitting size is being changed on all '88 models. The fitting's O.D. will be reduced from 7/16″ to 3/8″ to prevent you from accidentally connecting the low side hose to the high side fitting. Consequently, you'll need an adapter for the existing hose on your charging station.

We recommend using the adapter with the short depressor; there is the possibility that the long depressor may allow the adapter to leak.



ATTACHMENT (COMMERCIALLY AVAILABLE)

NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown.

Charging Procedures

WARNING Always wear eye protection when charging the system.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect a gauge set and refrigerant can (right side up) as shown, with the gauge valves closed. Purge air from the charging hose by opening the refrigerant valve, then loosening the center connector at the gauge, letting it hiss for a few seconds, and retighten it.

2. Open the high gauge valve and charge with approximately 300 g (10.5 oz) of refrigerant.

   WARNING Do not start the engine with high gauge valve open.

   NOTE:
   - Be sure to charge with 300 g (10.5 oz) refrigerant. If low, the vane in the compressor (if new compressor is installed) will not operate.
   - Do not open the low gauge valve.

3. After charging with 300 g (10.5 oz) refrigerant, close the high gauge valve.

4. Start the engine and turn on the A/C switch and heater fan switch and turn the air mix lever to "COLD."

5. Run the engine at 1500—2000 rpm, and check that the low gauge pressure suddenly drops.

6. If the low pressure does not drop:
   (a) Raise the engine speed to 2500 rpm and turn the A/C switch ON and OFF.
   If the low pressure does not drop, turn the ignition switch OFF and wait for 1—2 minutes, then restart the engine and raise to 2500 rpm and turn the A/C switch ON and OFF.

   (b) If the low pressure still does not drop, stop the engine and close the low gauge valve and recharge with additional 100 g (3.5 oz) of refrigerant. Repeat step (a).

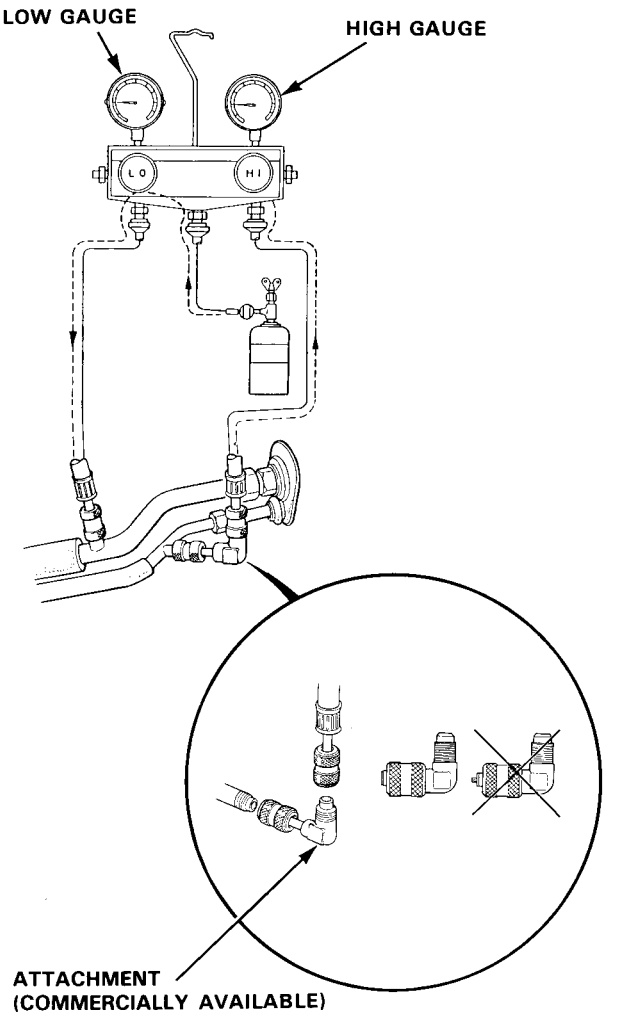
   (c) If the low pressure does not drop after repeating the procedure in step (a) several times. Stop the engine and re-evacuate and repeat steps 1 thru 6.

7. Open the low gauge valve and charge refrigerant with the engine running at 2500 rpm.

   WARNING Do not open the high gauge valve and keep the refrigerant can right side-up.

8. Charge the system with 850—950 g (29-34 oz) of refrigerant until sight glass is free of any bubbles, indicating a full charge.

9. When fully charged, close the gauge valves, then the valve on the can. Slowly disconnect the refrigerant hose from the center gauge connection to allow excess refrigerant to escape. Quickly remove the gauges from the system to minimize refrigerant loss.



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

Performance Test

The performance test will help determine if the air conditioning system is operating within specifications.

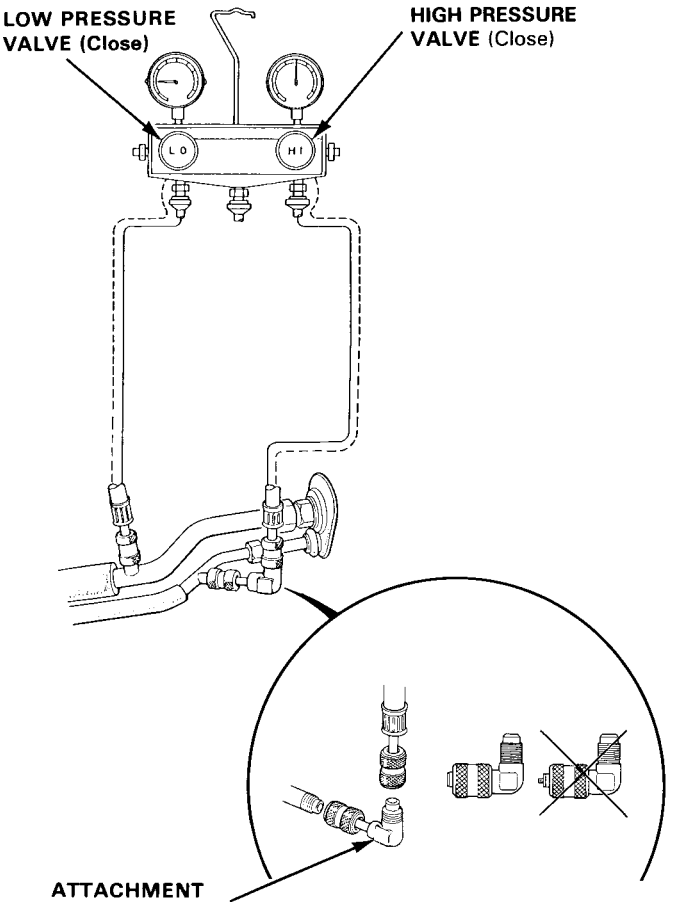
1. Connect the gauges as shown.

2. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.

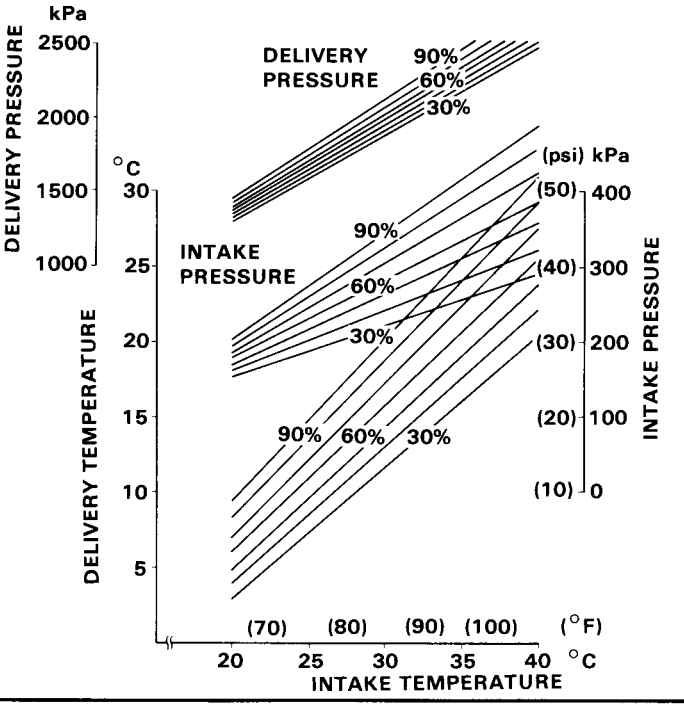
3. Test conditions:
   - Avoid direct sunlight.
   - Open engine hood.
   - Open front doors.
   - Set the temperature control dial to max and push the vent and fresh air buttons.
   - Turn the fan switch to MAX.
   - Run the engine at 1,500 RPM.
   - No driver or passengers in vehicle.

4. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the dash vent and the high and low system pressure from the A/C gauges.

5. To complete the charts:
   - Mark the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) along the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - Mark a point one line above and one line below the humidity level.(10% above and 10% below the humidity level)
   - From each point,draw a horizontal line across to the delivery temperature.
   - The delivery temperature should fall between the two lines.
   - Complete the low side pressure test and high side pressure test in the same way.
   - Any measurements outside the line may indicate the need for further inspection.



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.



Idle Speed Setting

1. Before setting (with A/C ON), check that the idle speed is adjusted properly (Section 11).

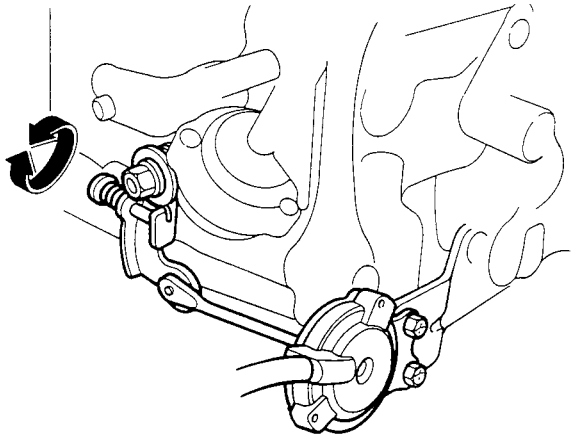
2. After charging, adjust the idle speed by turning the idle adjusting screw in or out as required with the air conditioner ON.
   - Apply the parking brake and block the wheels.
   - Headlights ..... OFF
   - A/C temperature dial ..... MAX COLD
   - Function lever ..... VENT
   - Fan switch ..... MAX
   - Recirculation lever ..... RECIRC

● Carbureted Engine

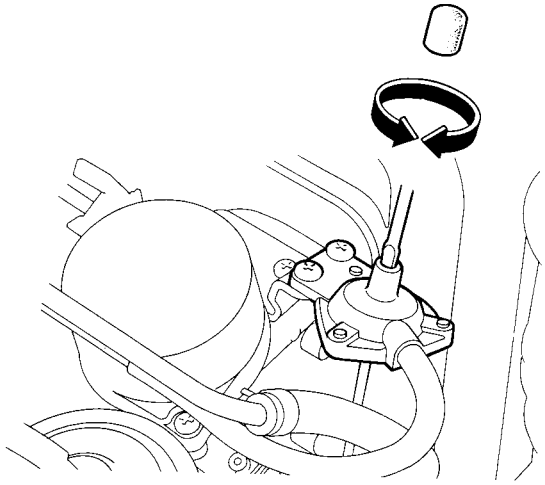
Idle speed should be:

Manual	780 ± 50 rpm
Automatic	780 ± 50 rpm (in N or P)

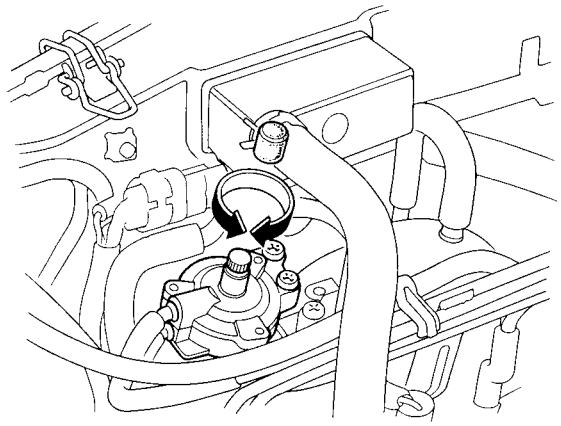
Adjust the idle speed, if necessary, by turning the idle adjusting screw.



1-Carbreted Engine



2-Carbreted Engine (Except KQ)



2-Carbreted Engine (KQ)

● Fuel-Injected Engine

Idle speed should be: 780 ± 50 rpm

Electrical

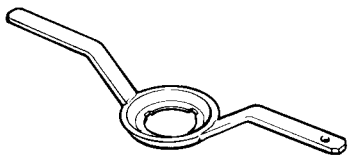
How to Use This Section

Index to Circuits and Systems

Special Tool/Troubleshooting

Special Tool

Ref. No	Tool Number	Description	Q'ty	Remarks
①	07920—SB20000	Fuel Sender Wrench	1	



Troubleshooting Precautions

Before Troubleshooting

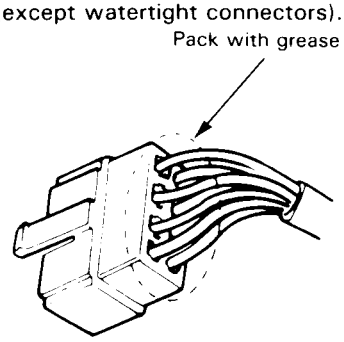
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

CAUTION:

- **Do not quick-charge a battery unless the battery ground cable has been disconnected, or you will damage the alternator diodes.**
- **Do not attempt to crank the engine with the battery ground cable connected incompletely or you will severely damage the wiring.**

While You're Working

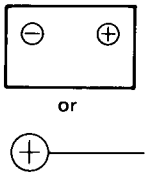
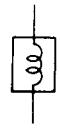
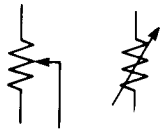
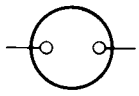
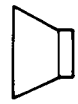
- Make sure connectors are clean, and have no loose pins or receptacles.
- Make sure multiple pin connectors are packed with grease (except watertight connectors).

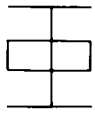
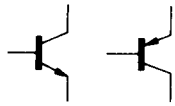
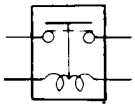
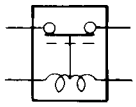
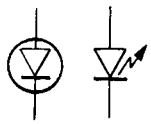
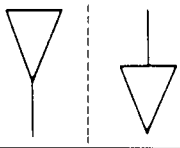
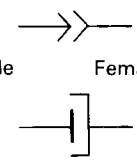


CAUTION:

- **Do not pull the wires when disconnecting a connector, pull only the connector housings.**
- **When connecting a connector, push it until it clicks into place.**

Schematic Symbols

BATTERY	GROUND		FUSE	COIL, SOLENOID	CIGARETTE LIGHTER
	Ground terminal 	Component ground 			
RESISTOR	VARIABLE RESISTOR	THERMISTOR	IGNITION SWITCH	BULB	HEATER
					
MOTOR	PUMP	CIRCUIT BREAKER	HORN	DIODE	SPEAKER, BUZZER
					

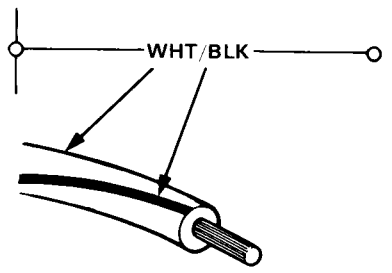
ANTENNA		TRANSISTOR (Tr)
Mast 	Window 	
RELAY (In normal condition)		CONDENSER
Normal open relay 	Normal closed relay 	
SWITCH (In normal condition)		LUMINOUS DIODE (LED)
Normal open switch 	Normal closed switch 	
CONNECTION	CONNECTOR	REED SWITCH
Input Output 	Male Female 	

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics.

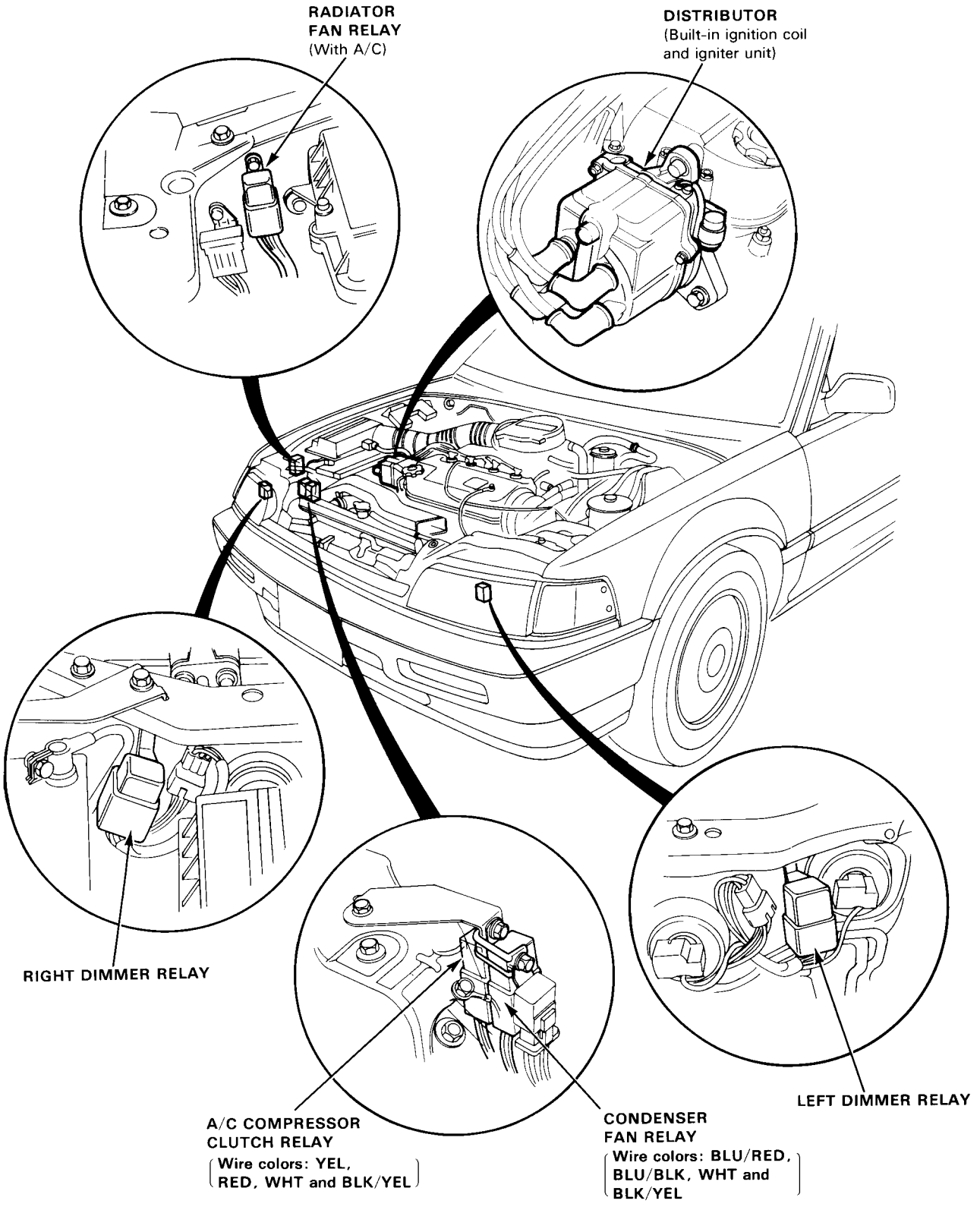
WHT.....White
YEL .....Yellow
BLK .....Black
BLU .....Blue
GRN .....Green
RED .....Red
ORN .....Orange
PNK .....Pink
BRN .....Brown
GRY .....Gray
LT BLU ...Light Blue
LT GRN ...Light Green

Wire insulator has one color or one color with another color stripe. The second color is the stripe.



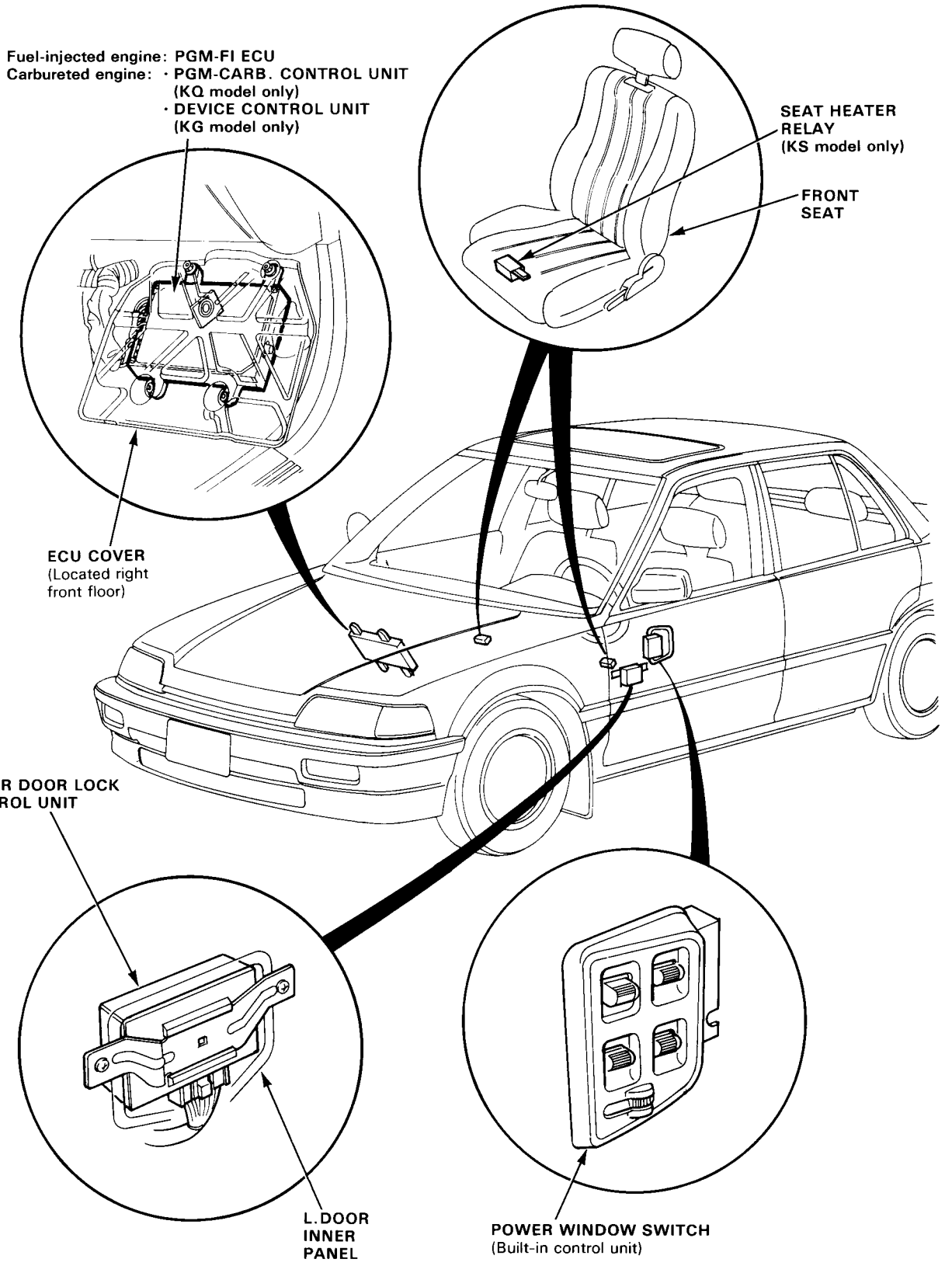
Relays and Control Unit Locations

Engine Compartment



Door and Floor

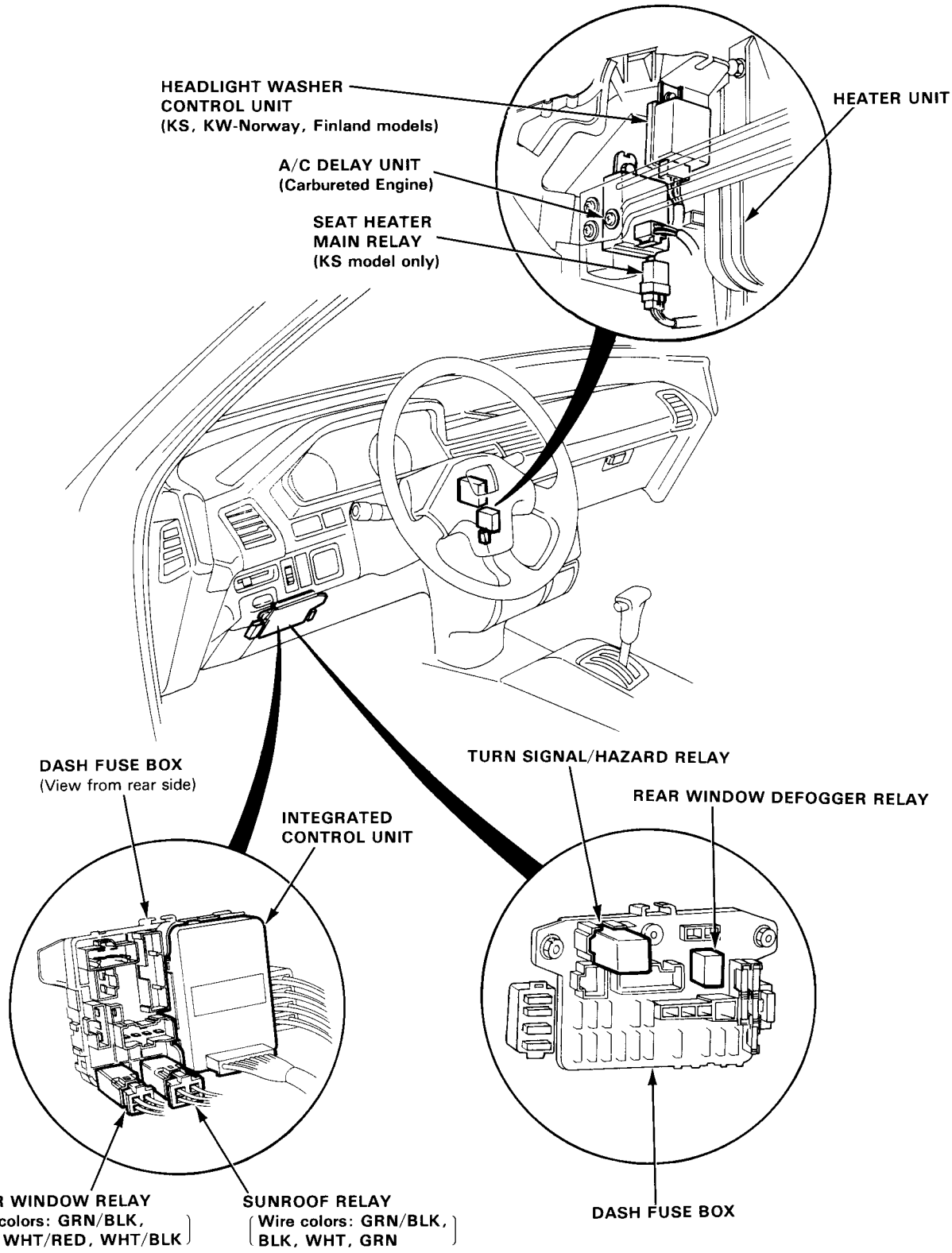
NOTE: RHD type is symmetrical to LHD type.



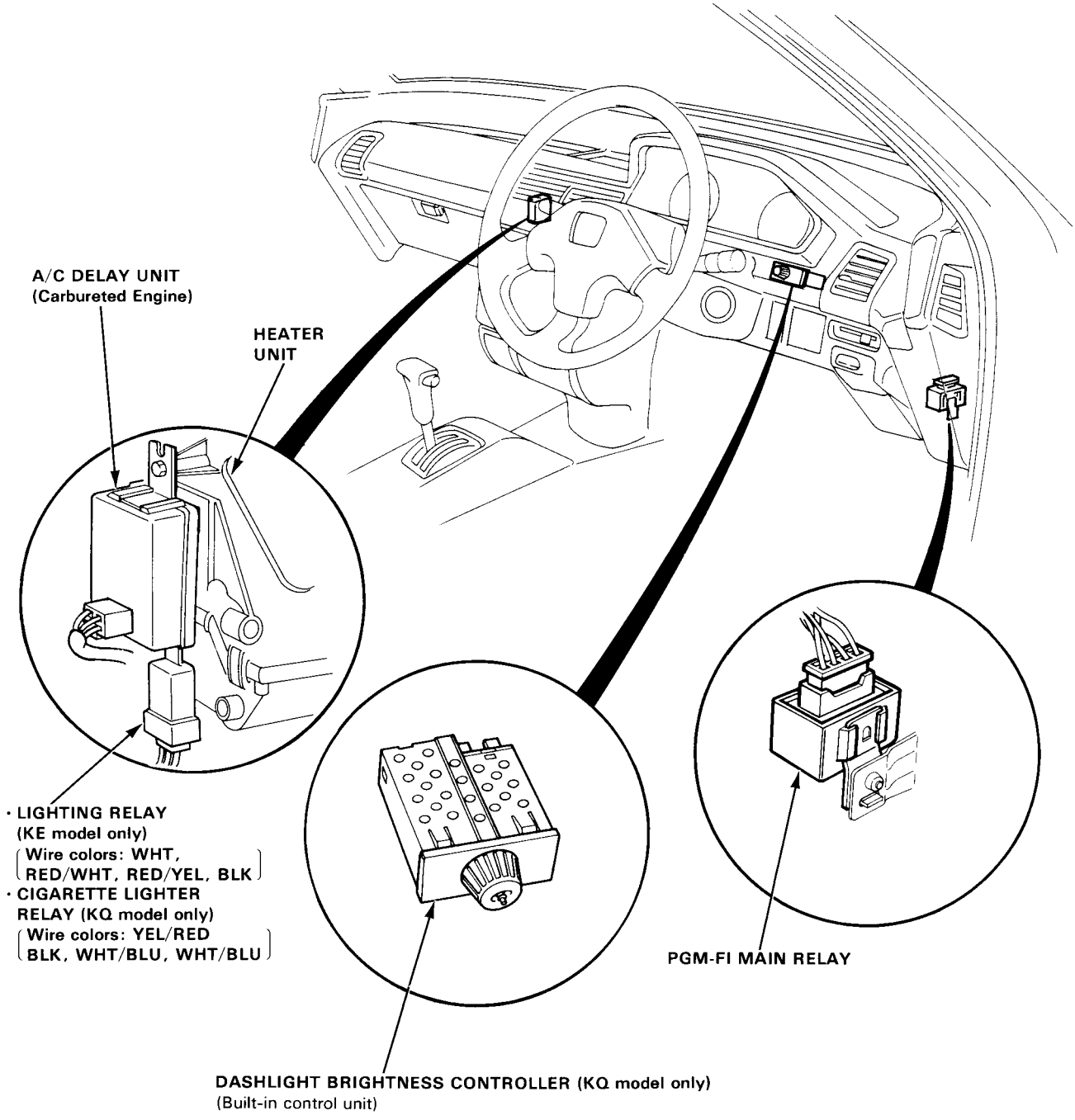
Relays and Control Unit Locations

Dashboard

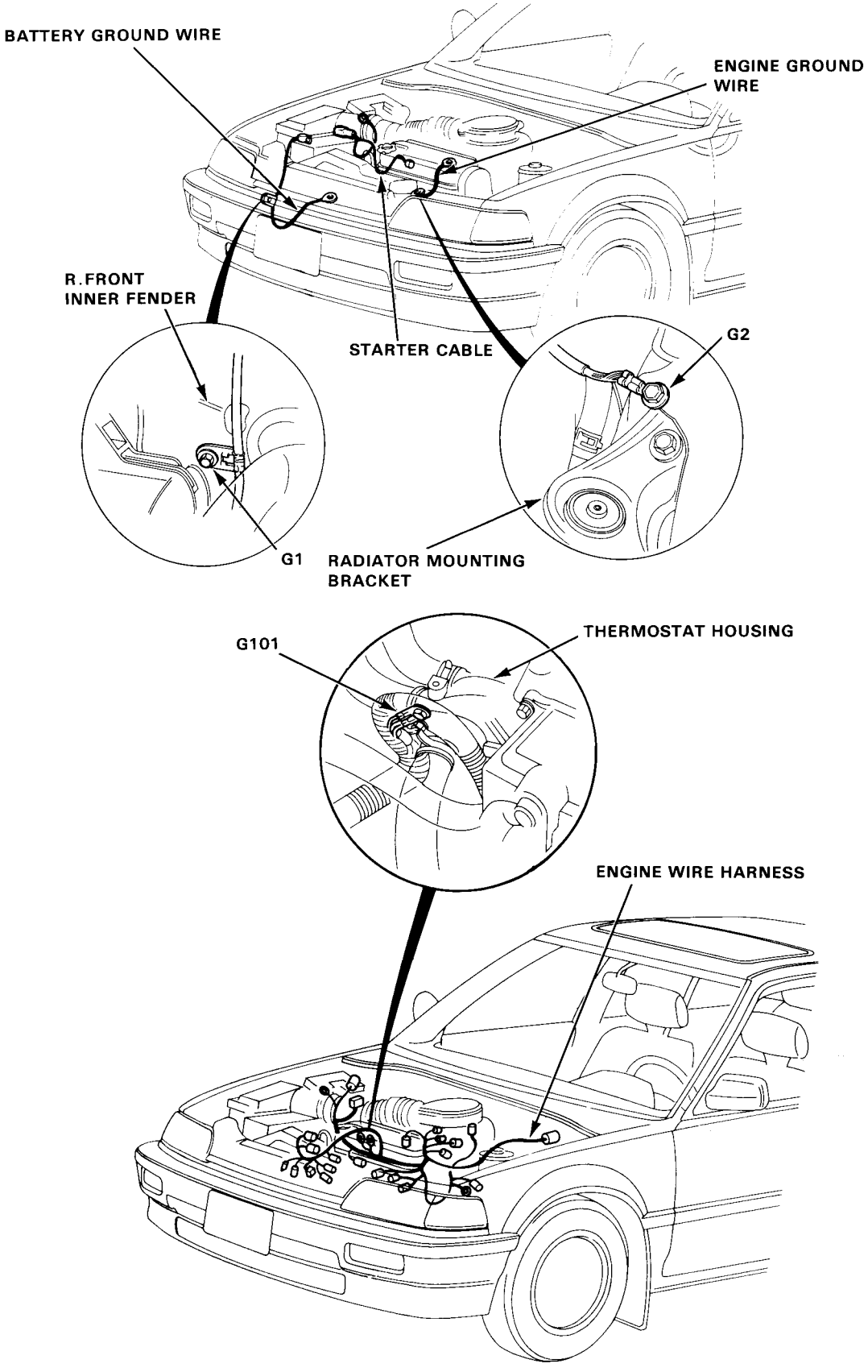
NOTE: RHD type is symmetrical to LHD type.

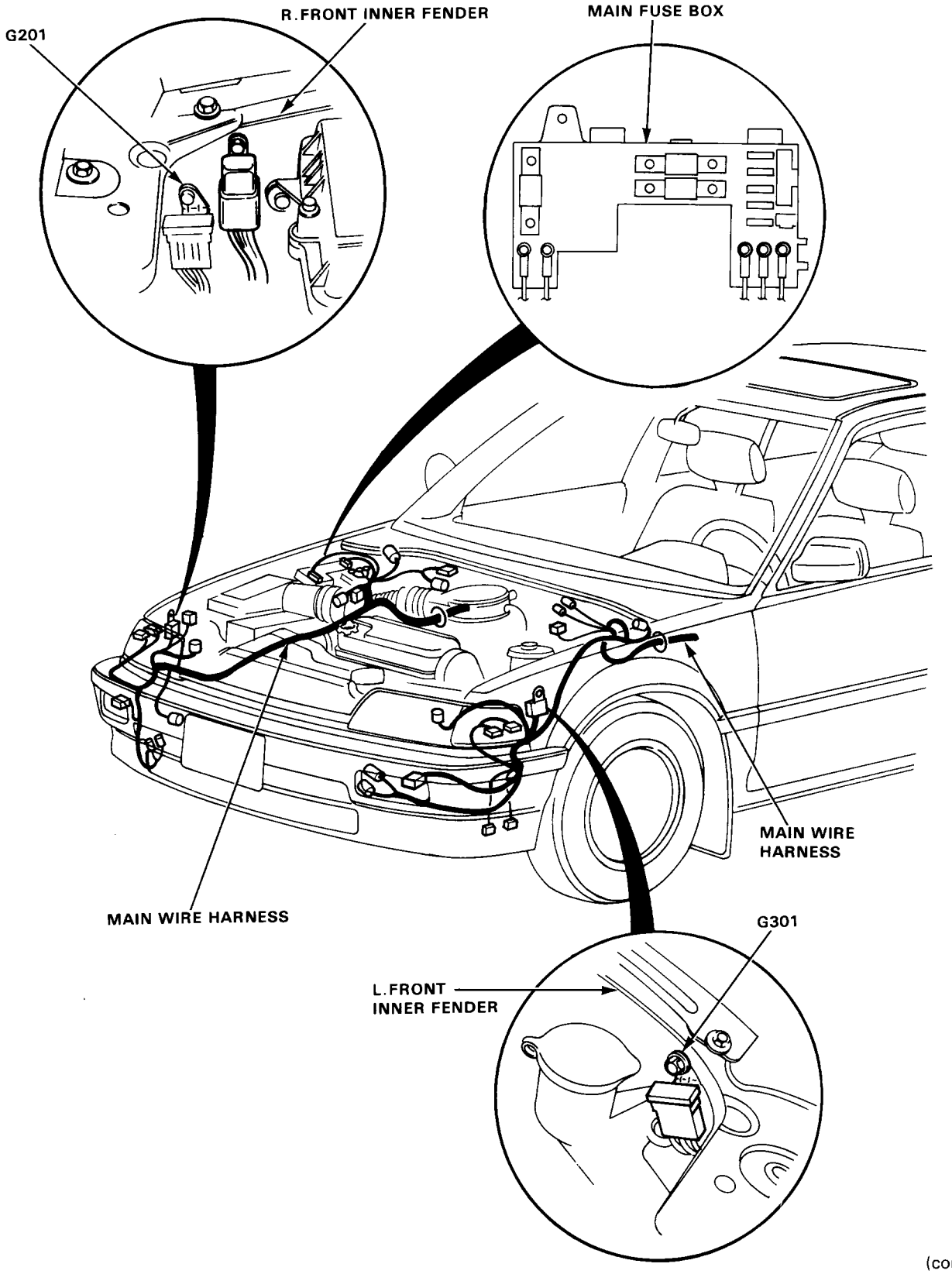


NOTE: LHD type is symmetrical to RHD type.



Ground and Wire Harness Routing

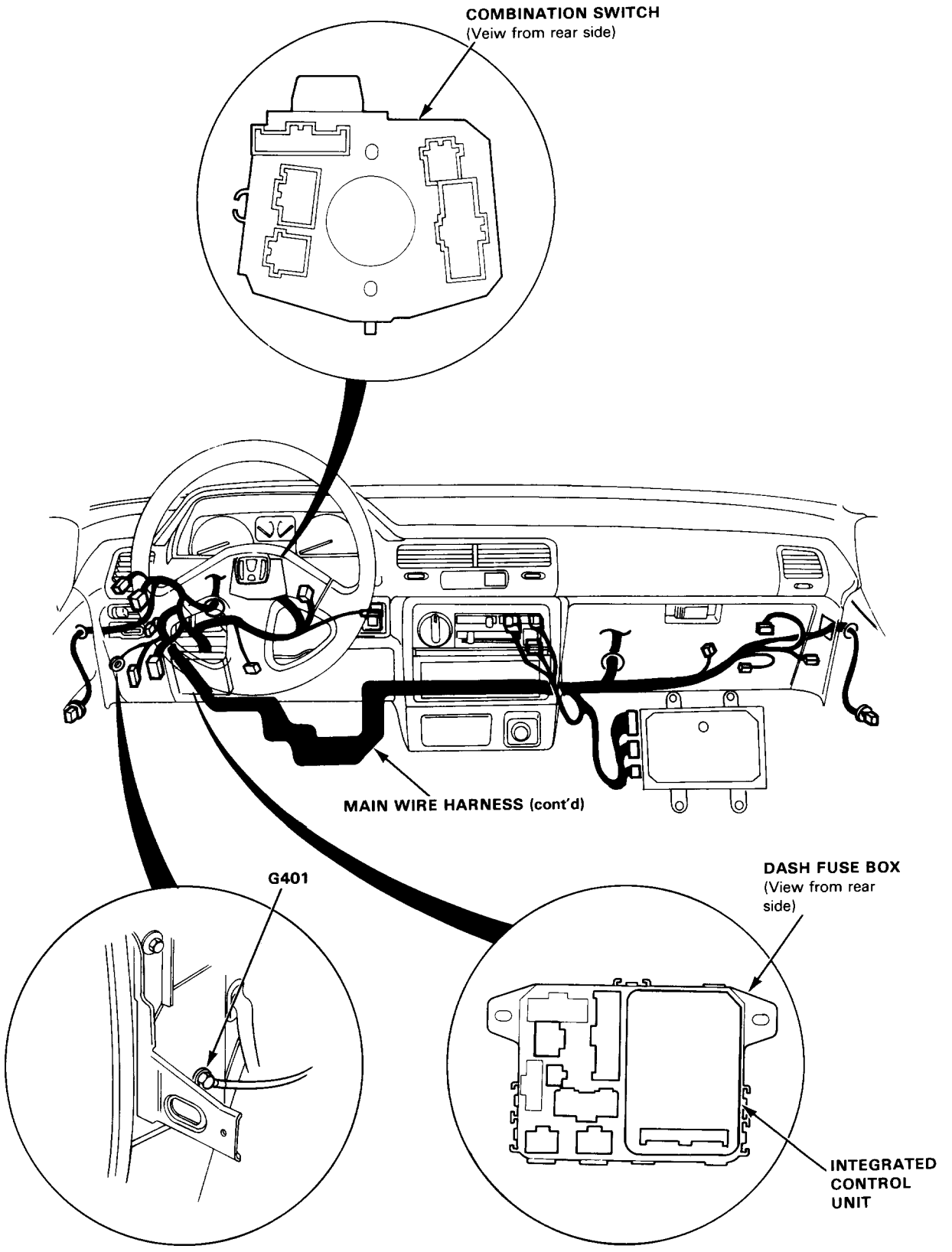



G201
R.FRONT INNER FENDER
MAIN FUSE BOX
MAIN WIRE HARNESS
MAIN WIRE HARNESS
G301
L.FRONT INNER FENDER

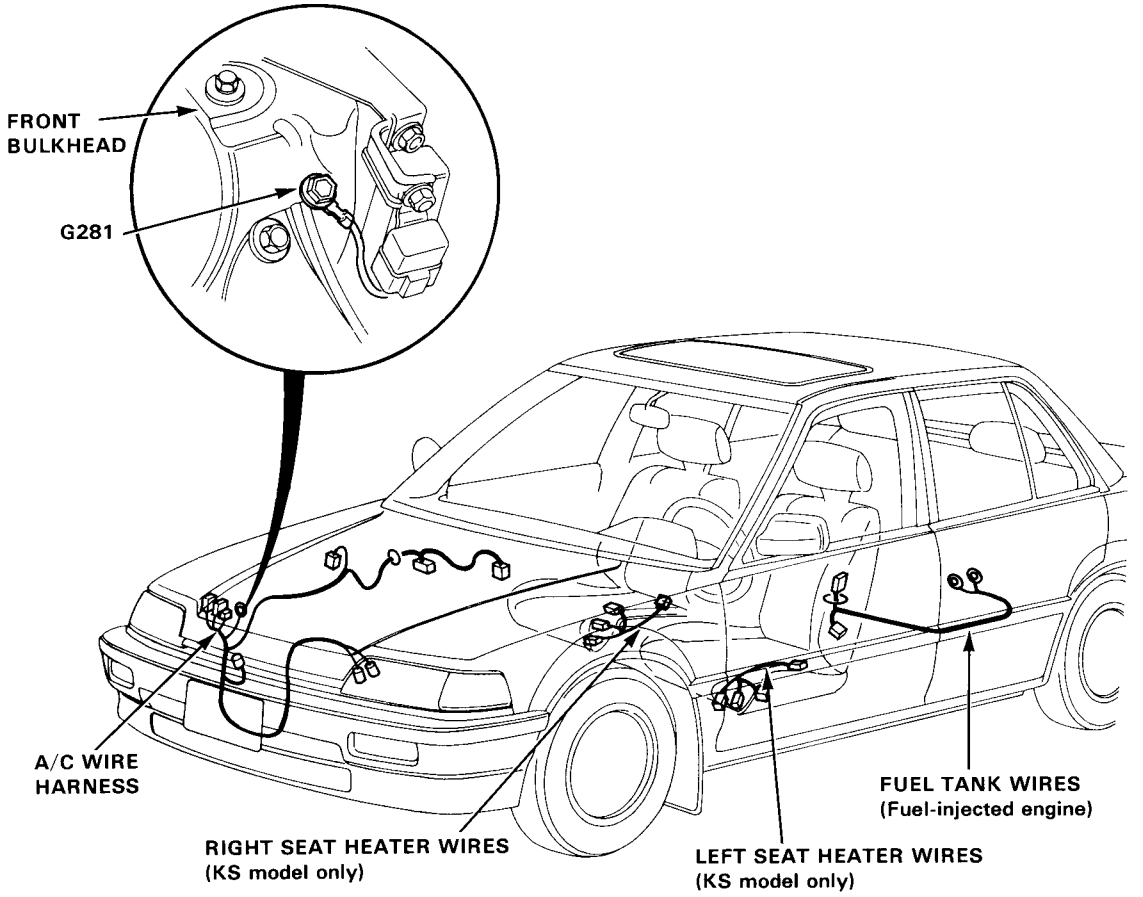
(cont'd)

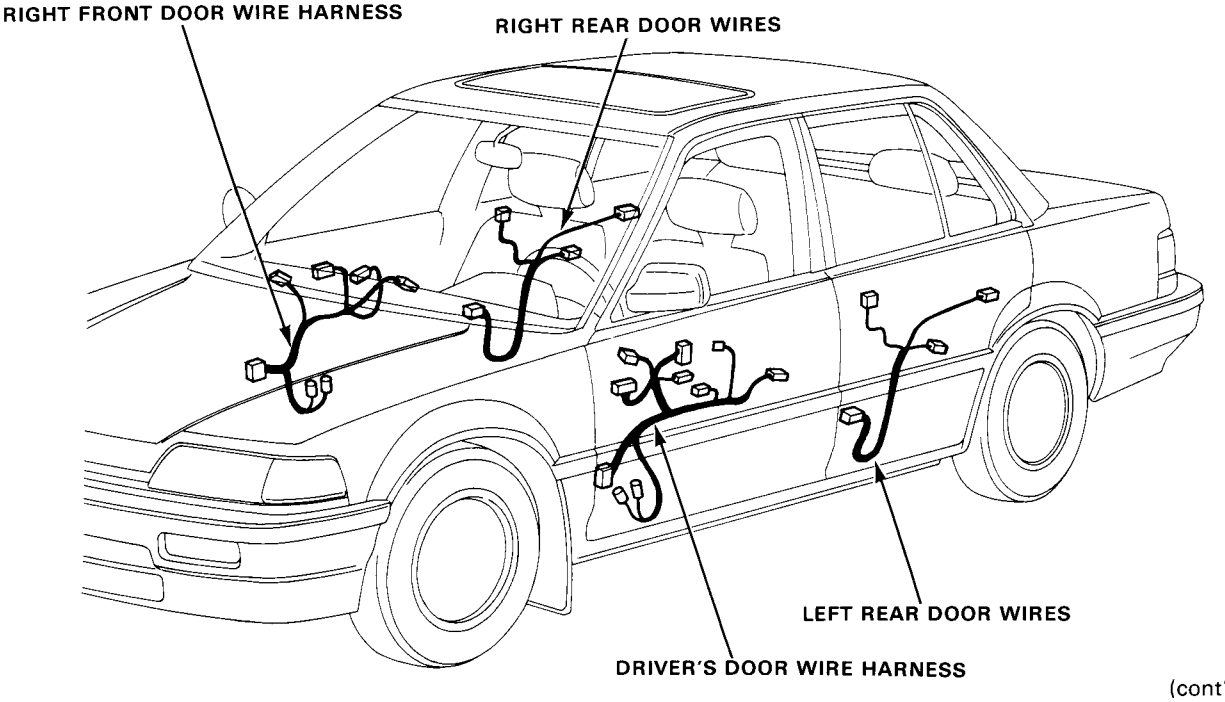
Ground and Wire Harness Routing

NOTE: RHD type is symmetrical to LHD type.



NOTE: RHD type is symmetrical to LHD type.

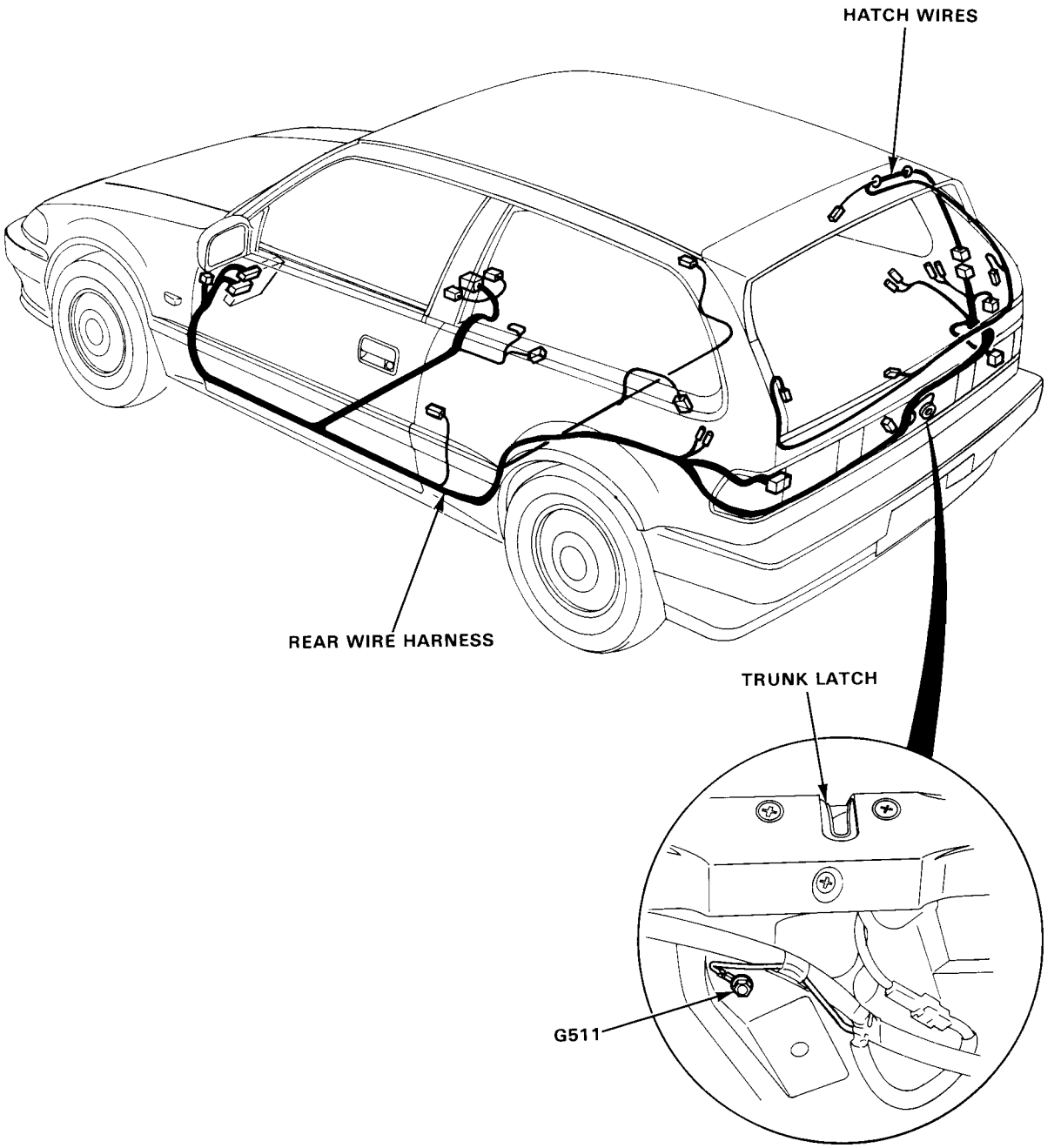




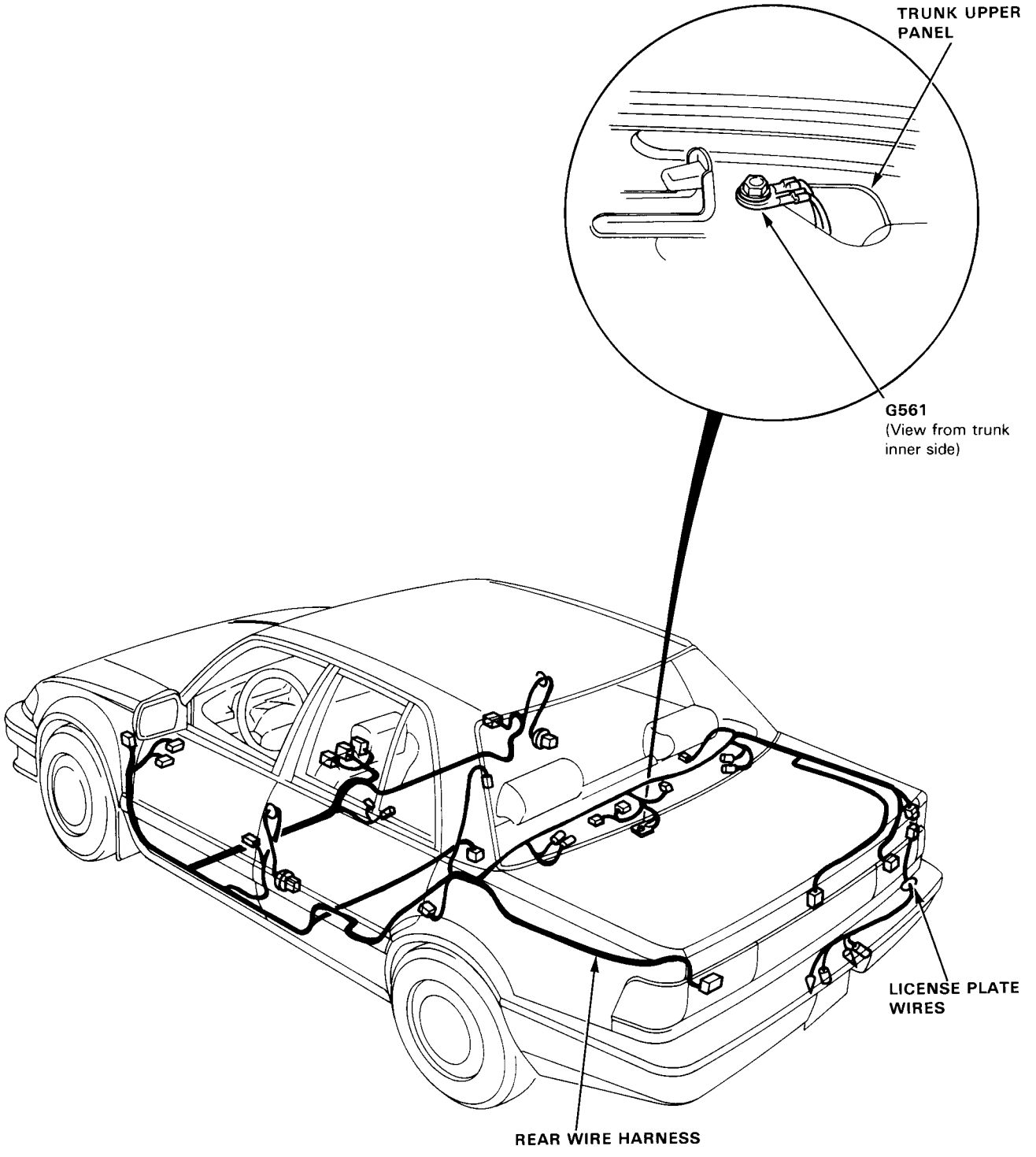
(cont'd)

Ground and Wire Harness Routing

NOTE: RHD type is symmetrical to LHD type.



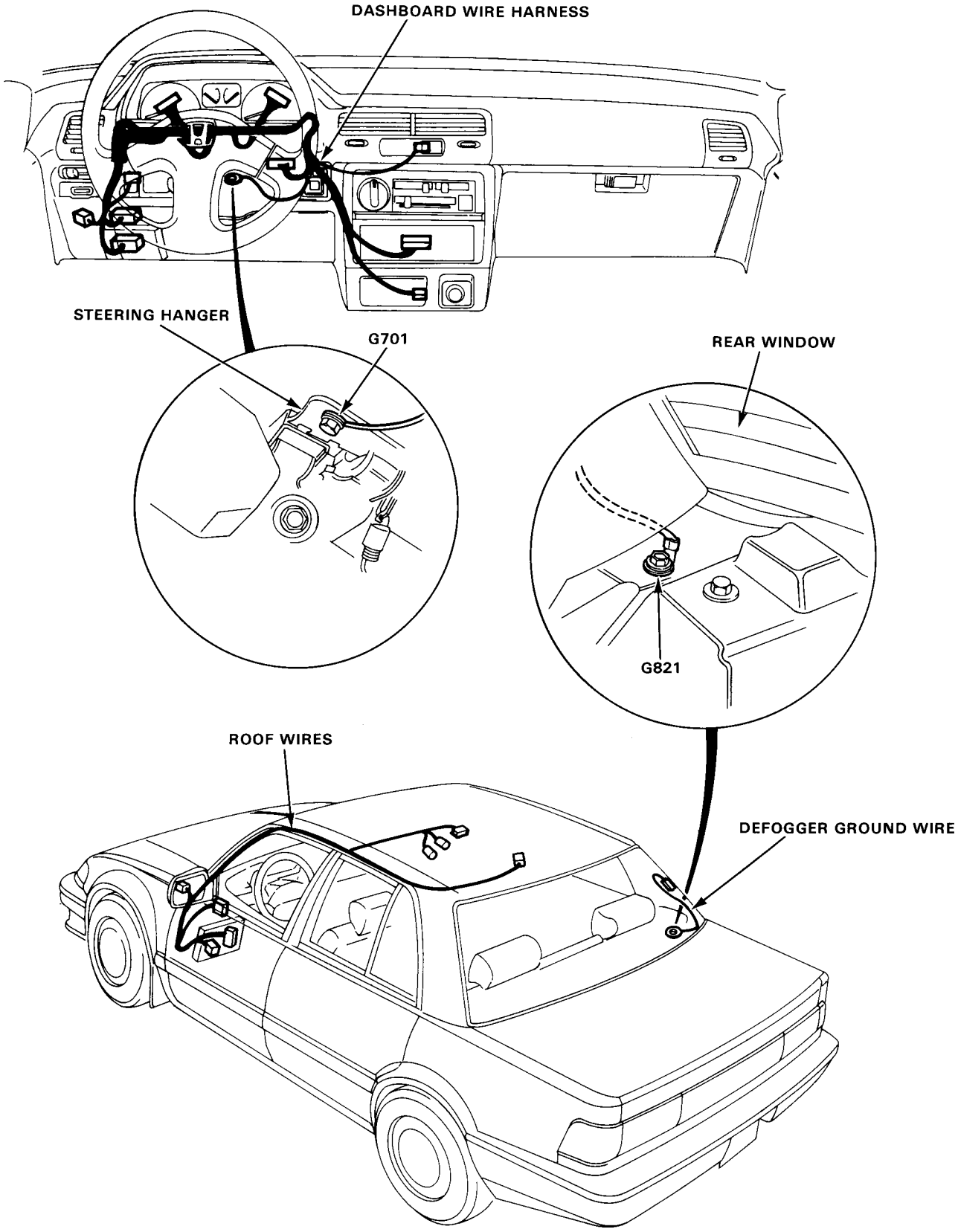
NOTE: RHD type is symmetrical to LHD type.



(cont'd)

Ground and Wire Harness Routing

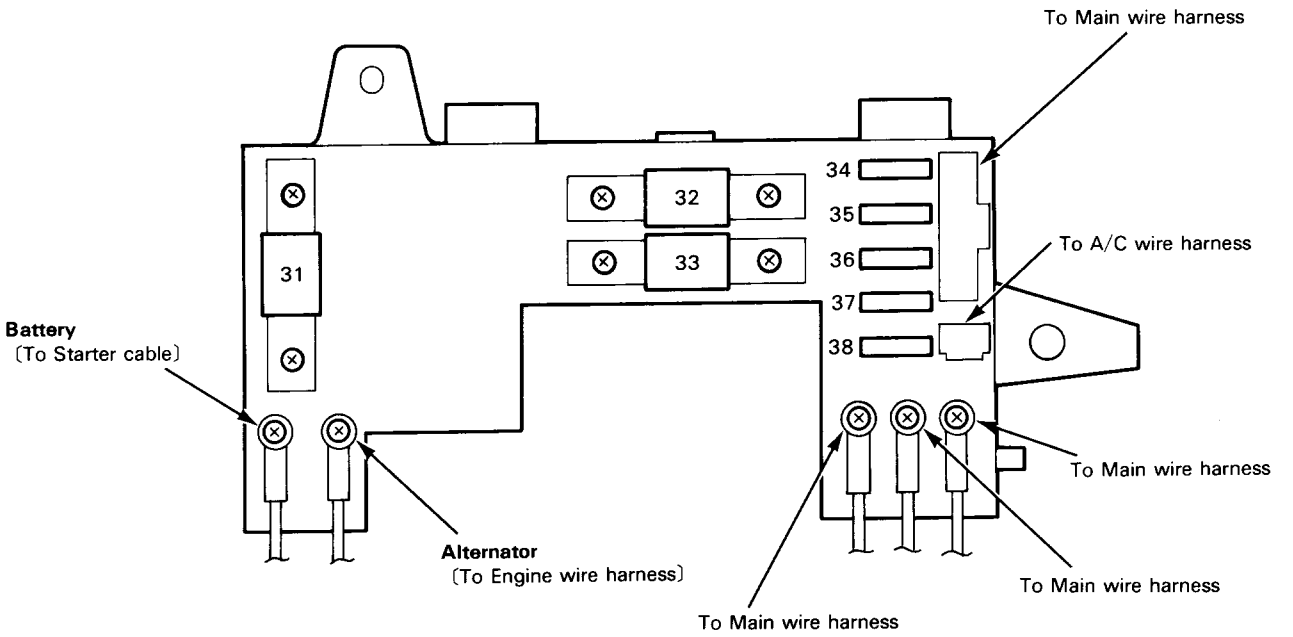
NOTE: RHD type is symmetrical to LHD type.



Fuses

Main Fuse Box

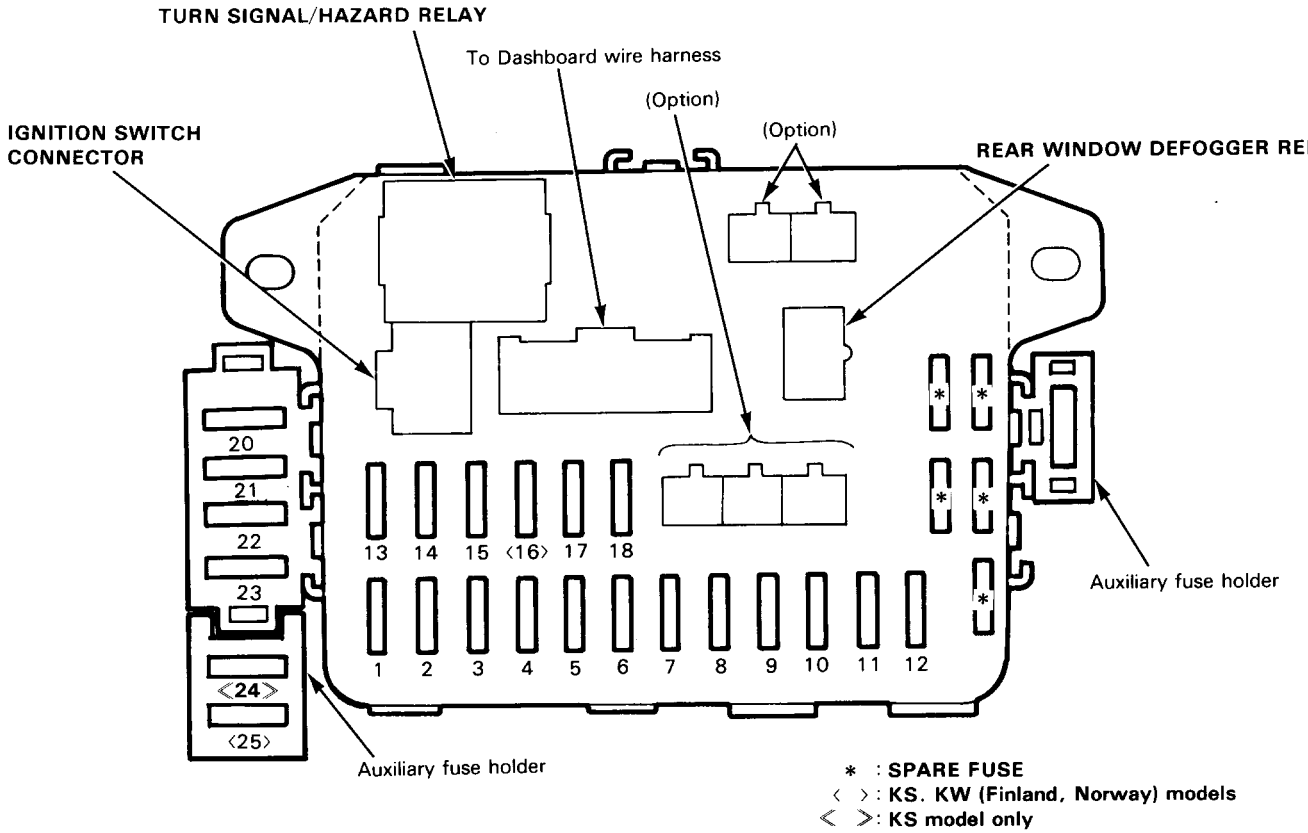
NOTE: Main fuse box is located right side, engine compartment.



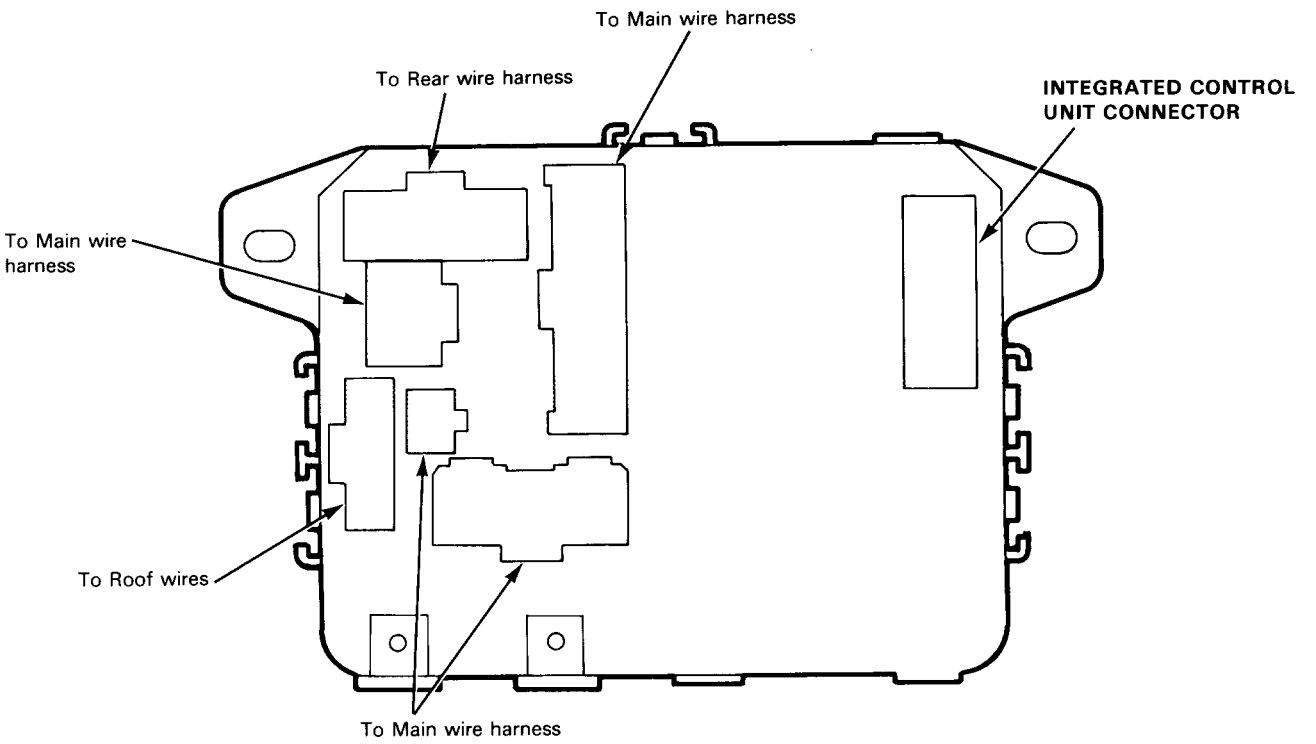
Fuses

Dash Fuse Box (LHD)

NOTE: Dash fuse box is located left side, under dash.

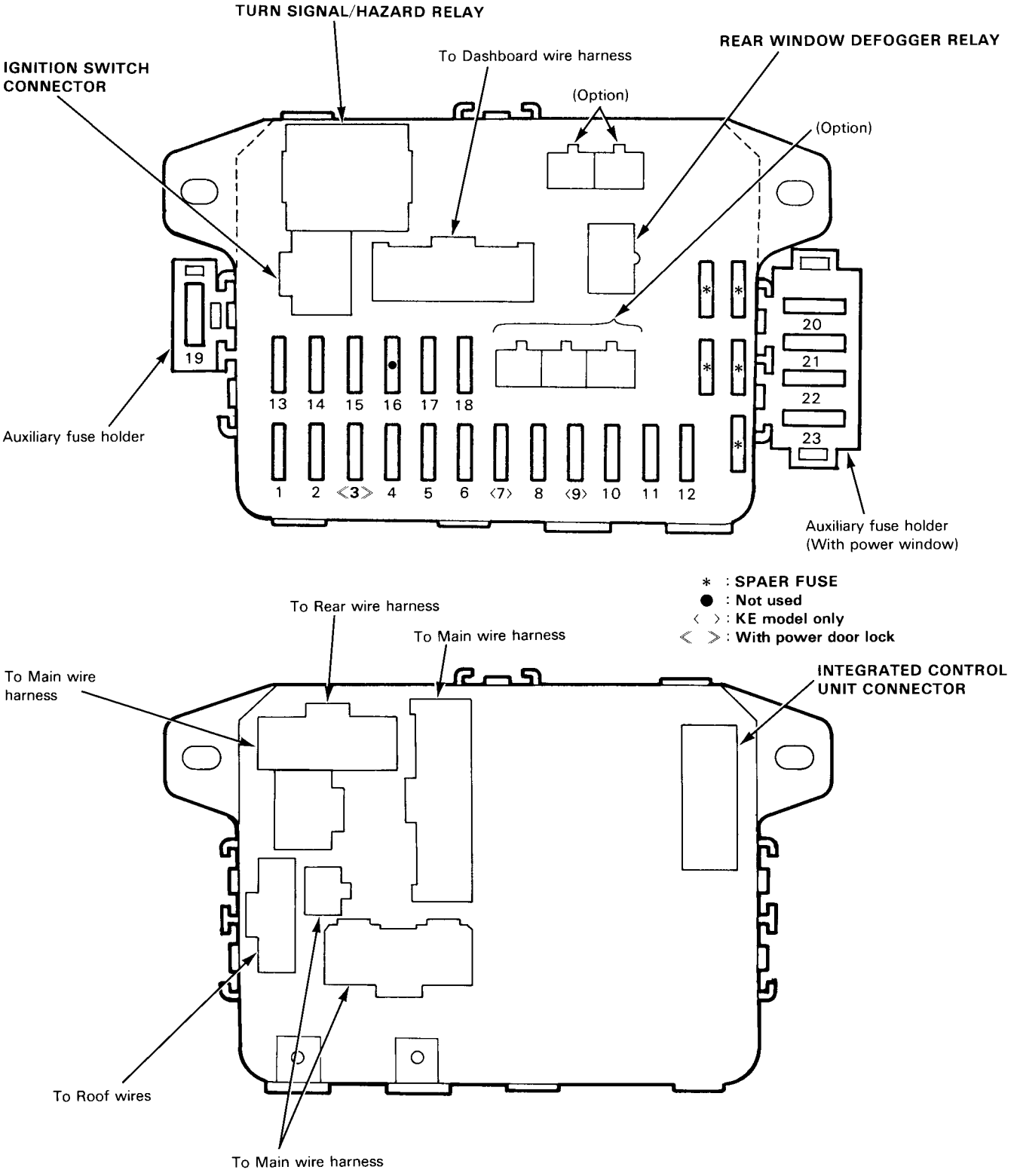


* : SPARE FUSE
〈 〉: KS, KW (Finland, Norway) models
〈 〉: KS model only



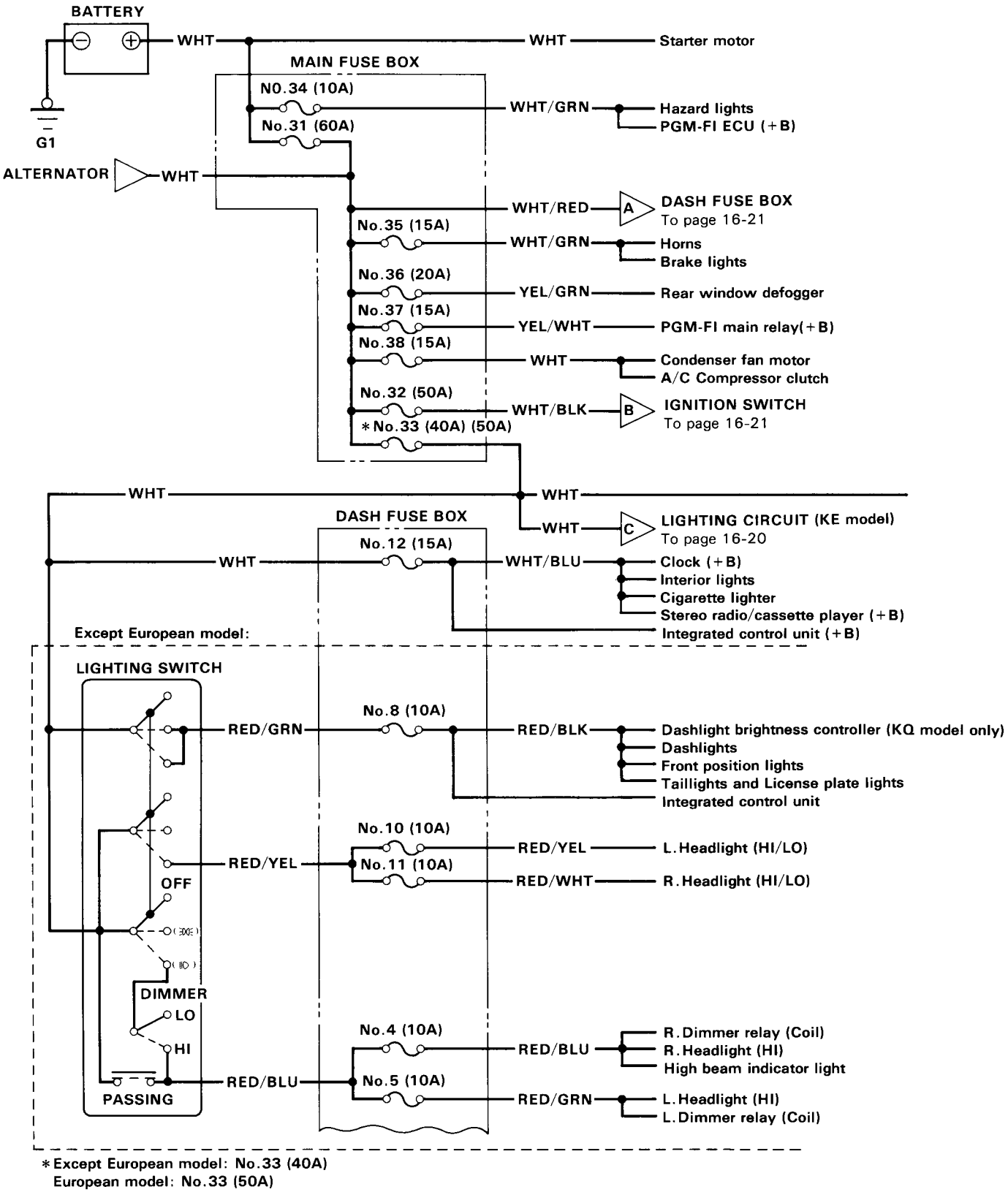
(RHD)

NOTE: Dash fuse box is located right side, under dash.



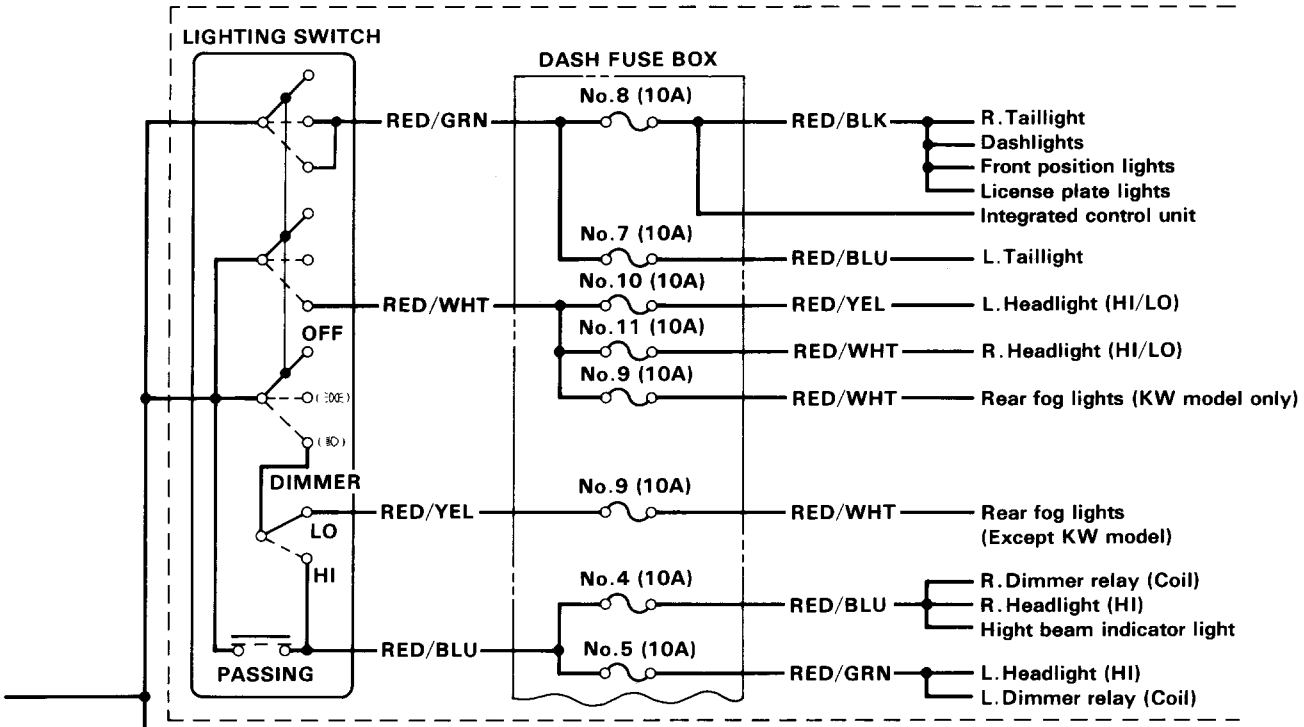
Power Distribution

Circuit Identification

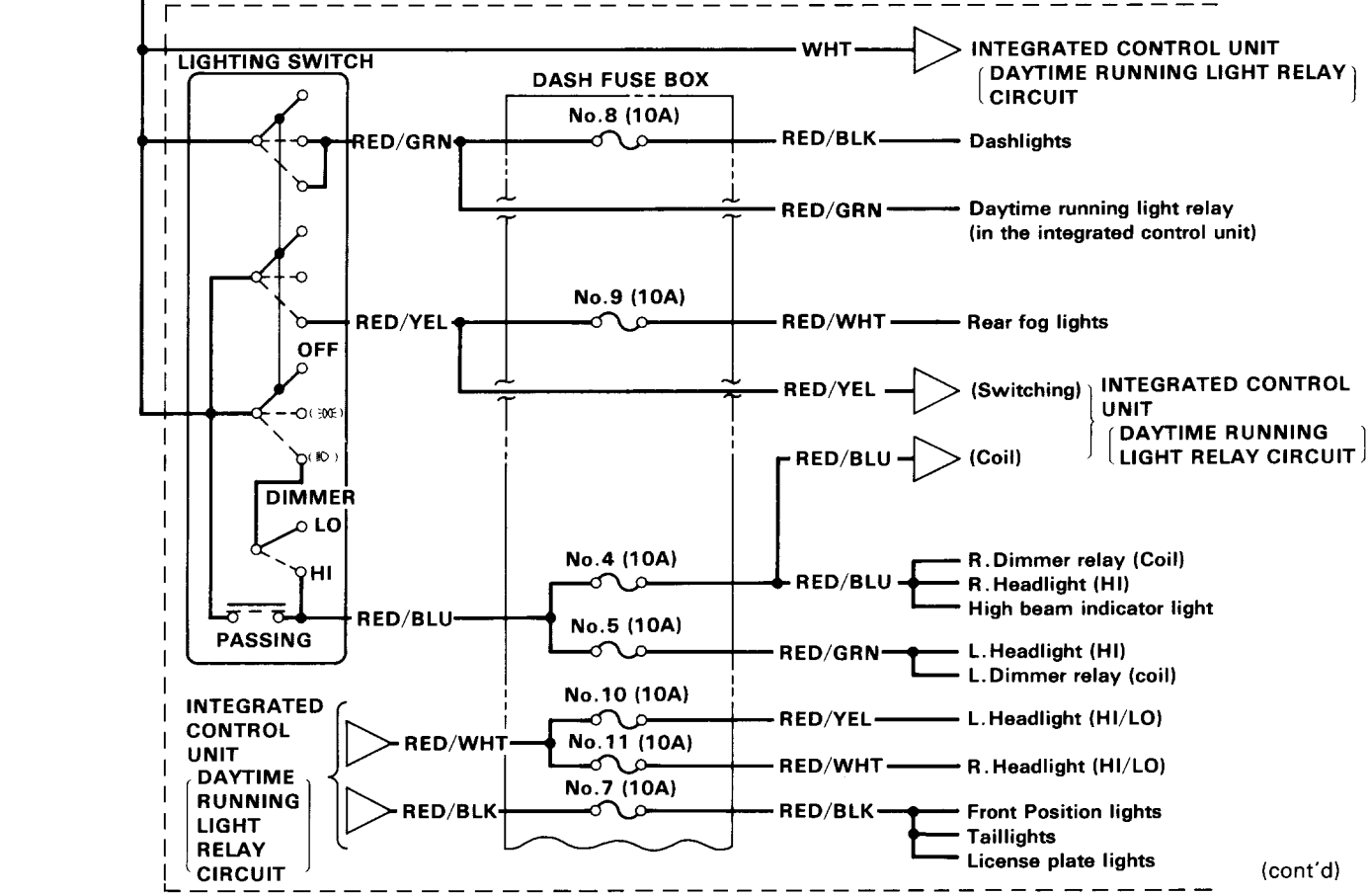


*Except European model: No.33 (40A)
European model: No.33 (50A)

KG, KX, KB and KW (Except Finland, Norway) models:



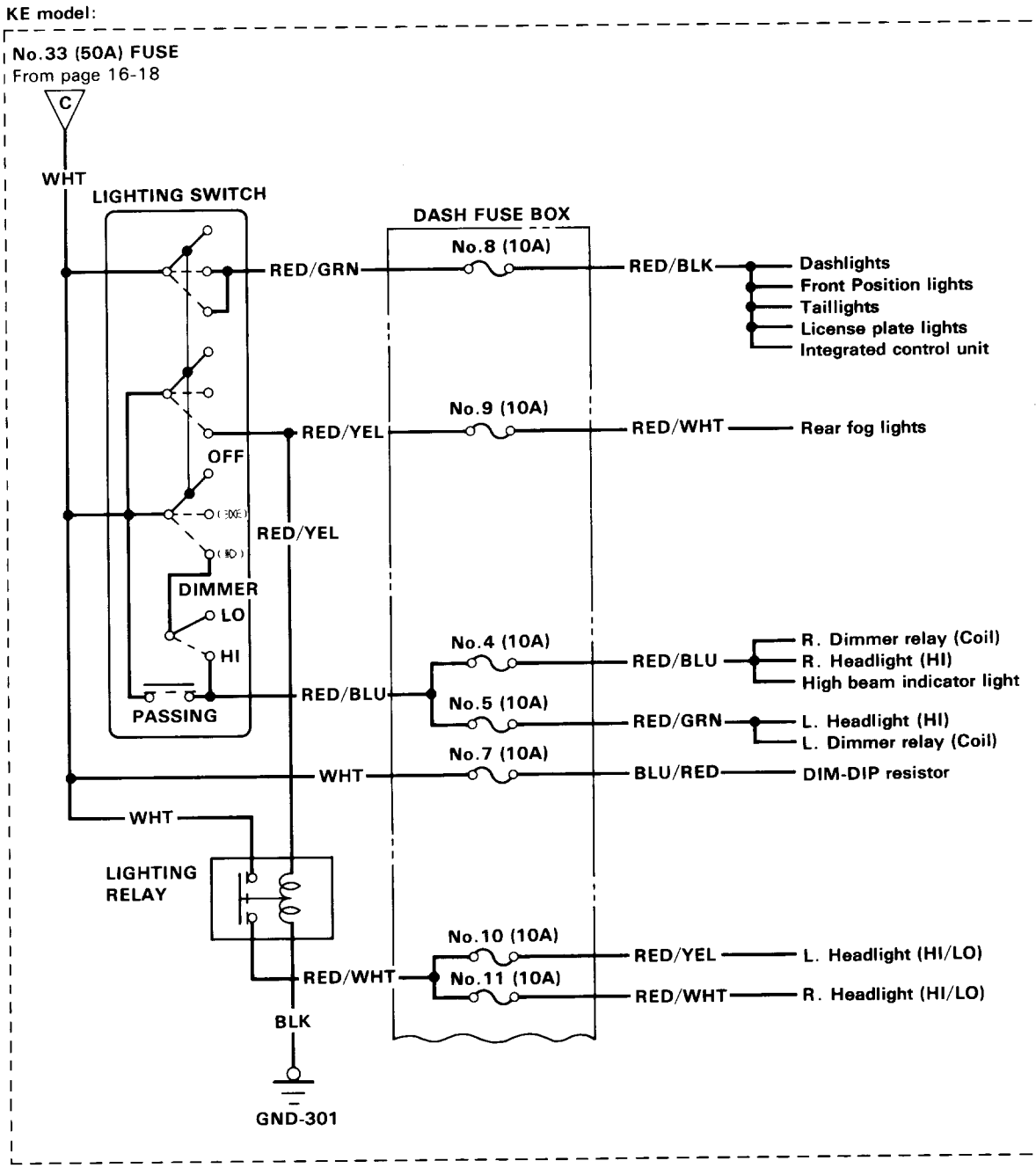
KS, KW (Finland, Norway) models:

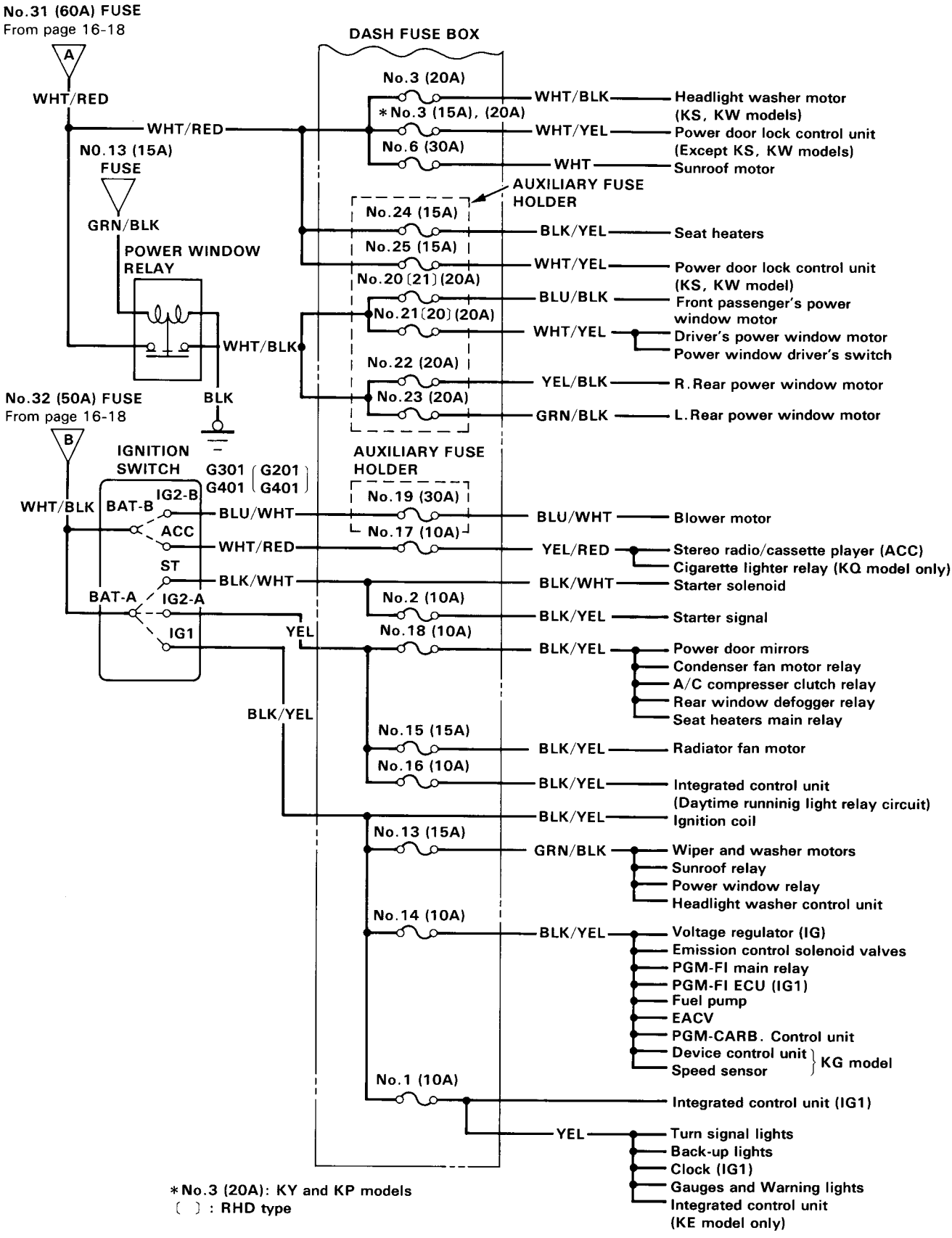


(cont'd)

Power Distribution

Circuit Indentification (cont'd)

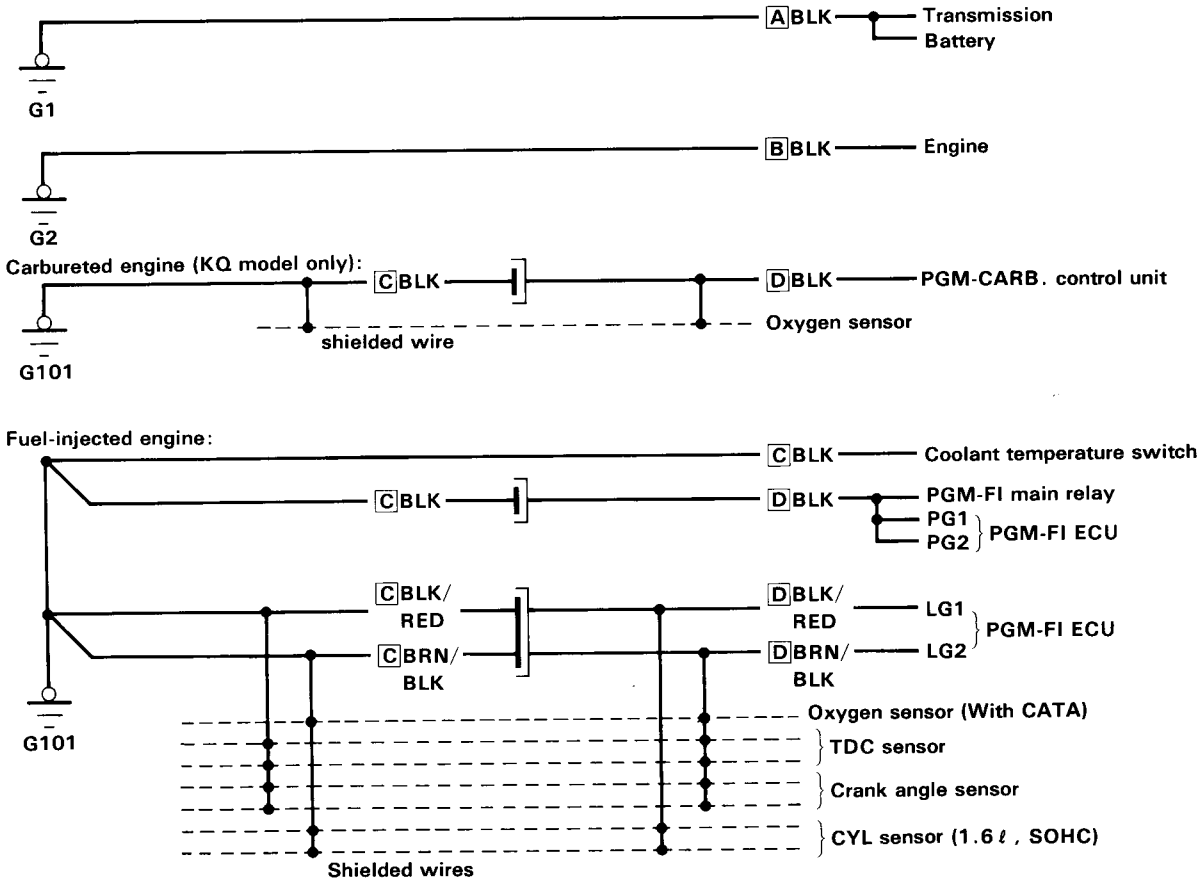



No.31 (60A) FUSE
From page 16-18
A
WHT/RED
WHT/RED
NO.13 (15A) FUSE
GRN/BLK
POWER WINDOW RELAY
WHT/BLK
BLK
No.32 (50A) FUSE
From page 16-18
B
IGNITION SWITCH
G301 (G201)
G401 (G401)
WHT/BLK
BAT-B
IG2-B
ACC
ST
BAT-A
IG2-A
IG1
BLU/WHT
WHT/RED
BLK/WHT
YEL
BLK/YEL
DASH FUSE BOX
No.3 (20A)
*No.3 (15A), (20A)
No.6 (30A)
AUXILIARY FUSE HOLDER
No.24 (15A)
No.25 (15A)
No.20 (21) (20A)
No.21 (20) (20A)
No.22 (20A)
No.23 (20A)
AUXILIARY FUSE HOLDER
No.19 (30A)
No.17 (10A)
No.2 (10A)
No.18 (10A)
No.15 (15A)
No.16 (10A)
No.13 (15A)
No.14 (10A)
No.1 (10A)
WHT/BLK
Headlight washer motor (KS, KW models)
WHT/YEL
Power door lock control unit (Except KS, KW models)
WHT
Sunroof motor
BLK/YEL
Seat heaters
WHT/YEL
Power door lock control unit (KS, KW model)
BLU/BLK
Front passenger's power window motor
WHT/YEL
Driver's power window motor
Power window driver's switch
YEL/BLK
R.Rear power window motor
GRN/BLK
L.Rear power window motor
BLU/WHT
Blower motor
YEL/RED
Stereo radio/cassette player (ACC)
Cigarette lighter relay (KQ model only)
BLK/WHT
Starter solenoid
BLK/YEL
Starter signal
BLK/YEL
Power door mirrors
Condenser fan motor relay
A/C compresser clutch relay
Rear window defogger relay
Seat heaters main relay
BLK/YEL
Radiator fan motor
BLK/YEL
Integrated control unit (Daytime runninig light relay circuit)
BLK/YEL
Ignition coil
GRN/BLK
Wiper and washer motors
Sunroof relay
Power window relay
Headlight washer control unit
BLK/YEL
Voltage regulator (IG)
Emission control solenoid valves
PGM-FI main relay
PGM-FI ECU (IG1)
Fuel pump
EACV
PGM-CARB. Control unit
Device control unit
Speed sensor
KG model
Integrated control unit (IG1)
YEL
Turn signal lights
Back-up lights
Clock (IG1)
Gauges and Warning lights
Integrated control unit (KE model only)
*No.3 (20A): KY and KP models
( ) : RHD type

Ground Distribution

Circuit Indentification

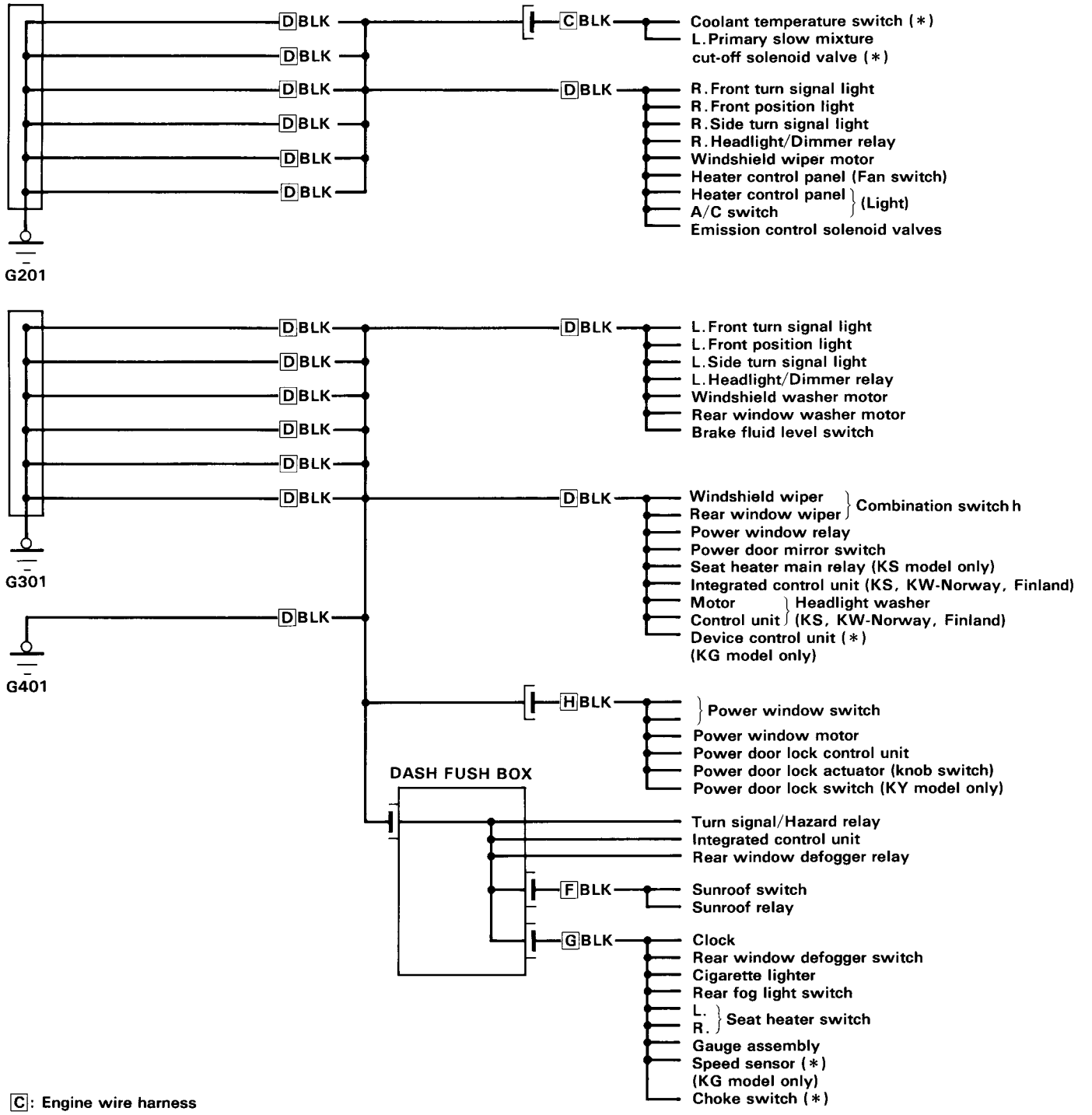
NOTE: See page 16-8 for illustrated ground locations.



A: Battery ground wire
B: Engine ground wire
C: Engine wire harness
D: Main wire harness

LHD:

NOTE: See pages 16-9 and 10 for illustrated ground locations.



C: Engine wire harness
D: Main wire harness
F: Roof wires
G: Dashboard wire harness
H: Driver's door wire harness
* : Carbureted engine

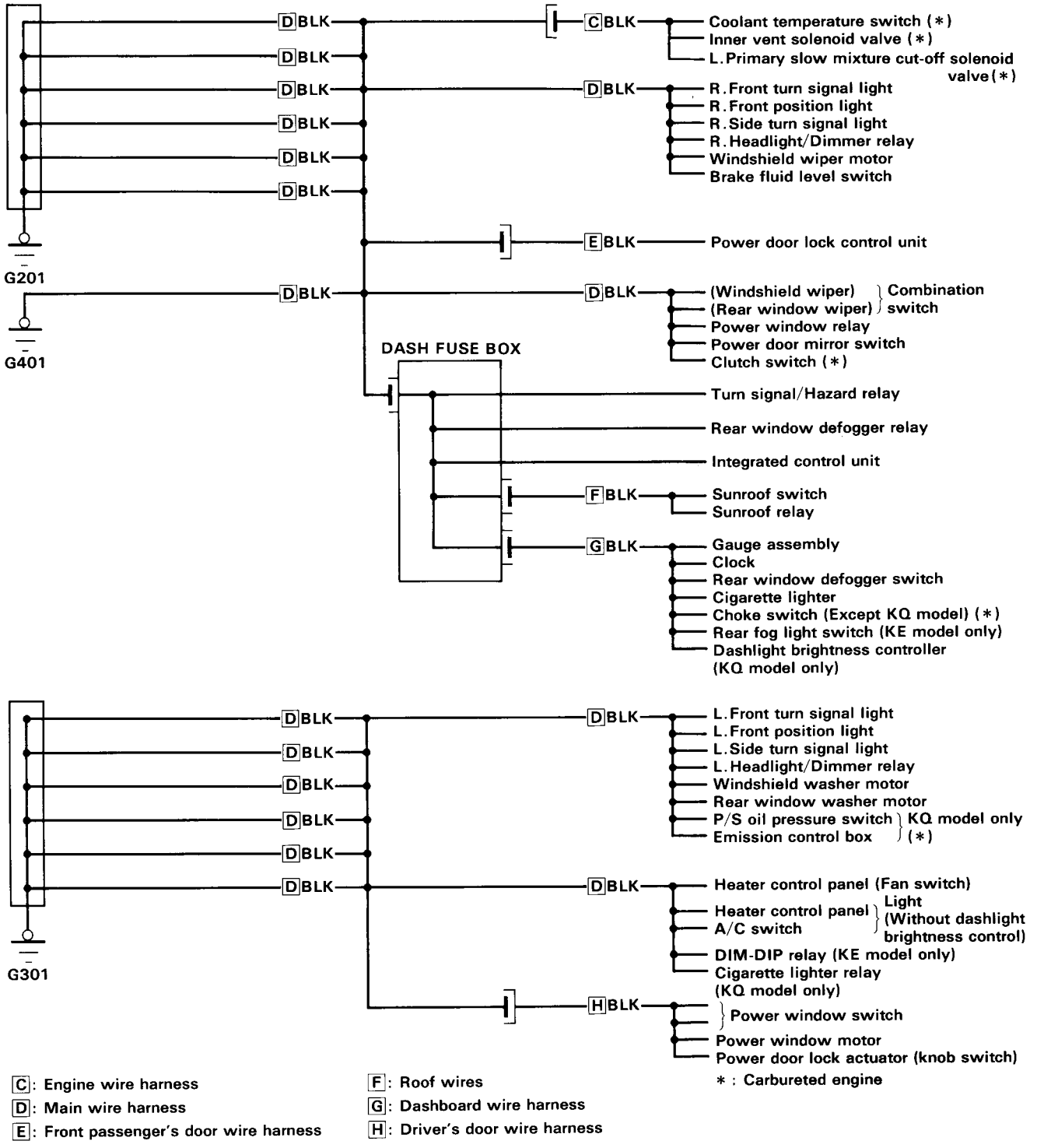
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

RHD:

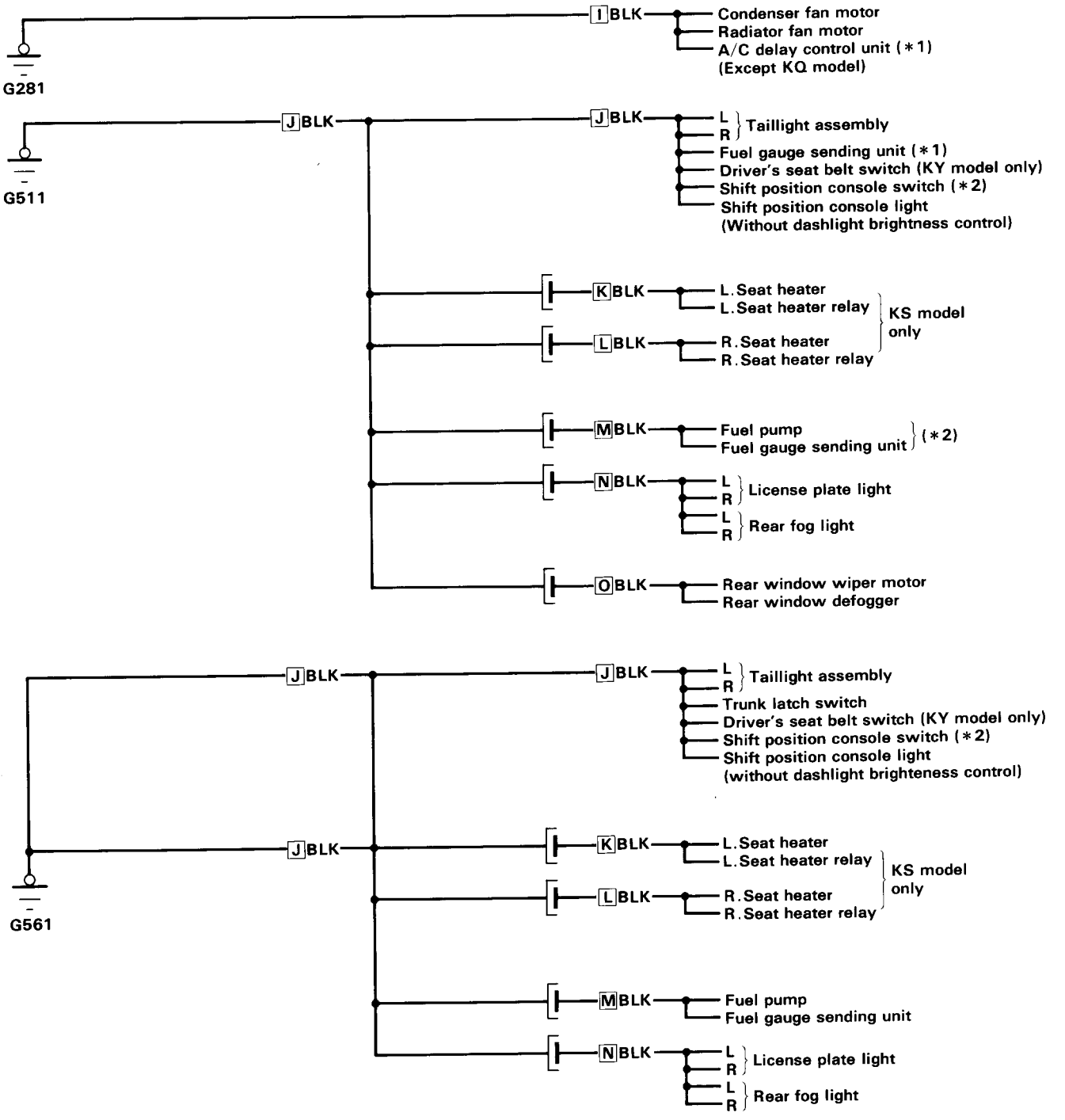
NOTE: See pages 16-9 and 10 for illustrated ground locations.



C: Engine wire harness
D: Main wire harness
E: Front passenger's door wire harness
F: Roof wires
G: Dashboard wire harness
H: Driver's door wire harness

* : Carbureted engine

NOTE: See pages 16-11 thru 13 for illustrated ground locations.



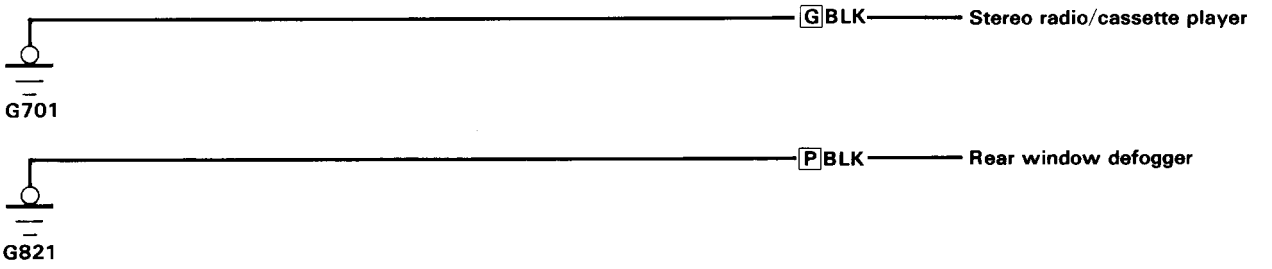
I: A/C wire harness
J: Rear wire harness
K: Left seat heater wires
L: Right seat heater wires
M: Fuel tank wires
N: License plate light wires
O: Hatch wires
*1: Carbureted engine
*2: Fuel-injected engine

(cont'd)

Ground Distribution

Circuit Identification (cont'd)

NOTE: See pages 16-14 for illustrated ground locations.



G: Dashboard wire harness
P: Defogger ground wire

Battery

Test

NOTE: To get accurate results, the temperature of the electrolyte must be between 15 and 38°C (59 and 100°F) before testing.

Test Equipment Required:

- Battery tester with:
  Voltmeter with 0–18 V scale, Ammeter with 0–100 A and 0–500 A scales, and a carbon pile with 0–300 W.
- 12 V Battery Charger:
  Fast charge capability of 50 A and slow charge capability of 5 A.

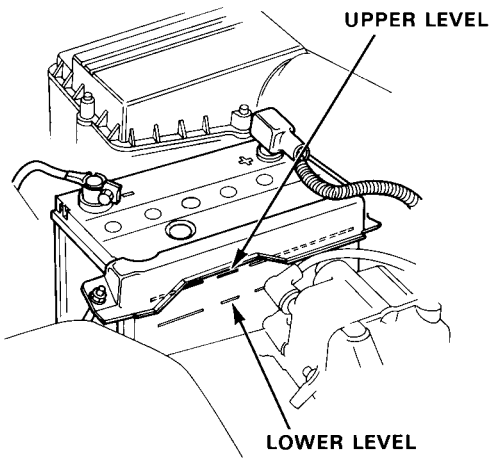
Test Procedure:

WARNING Keep sparks, flames and cigarettes away while charging battery.

CAUTION: Battery electrolyte is a sulfuric acid solution.

- If it spills on painted surfaces, clothing, or skin, rinse it off with water immediately to minimize the damage.
- Always wear safety goggles or a face shield when servicing a battery.

1. Check for damage: If the case is cracked or the posts are loose, replace the battery.
2. Check the battery electrolyte level:
   Check the electrolyte level in each cell.
   If it's low, add distilled water until the electrolyte rises to the UPPER mark.



3. Test battery load capacity by connecting a battery tester, and applying a load of 3 times the battery ampere hour rating.
   When the load has been applied for exactly 15 seconds, the battery voltage reading should stay above 9.6 V.
   - If the reading stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
   - If the reading is between 6.5 and 9.6 V, fast charge the battery by connecting a battery charger, for 3 minutes at an initial rate of 40 amps.

   CAUTION: Amperage will drop as voltage increases; do not increase the amperage to compensate or you may damage the battery.

   Watch the battery voltage during the entire 3 minutes; the highest reading should stay below 15.5 V.
   - If the reading stays below 15.5 V, the battery is OK; clean its terminals and case, and reinstall it.
   - If the reading exceeds 15.5 V any time during the 3 minutes of fast charge, the battery is no good; replace it.

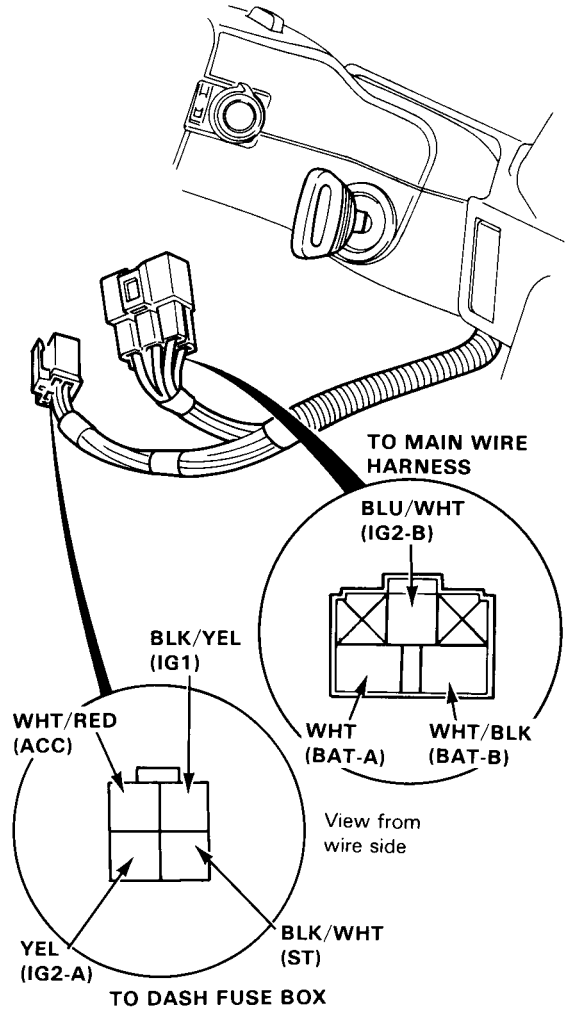
   - If the reading drops below 6.5 V, slow charge the battery by connecting a battery and charge, at 5 amps for no more than 24 hours, (or until the indicator shows full charge, or the specific gravity of the electrolyte is at least 1.250).
     Then test load capacity again.
     - If the voltage stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
     - If the voltage still drops below 6.5 V, the battery is no good; replace it.

Ignition Switch

Test

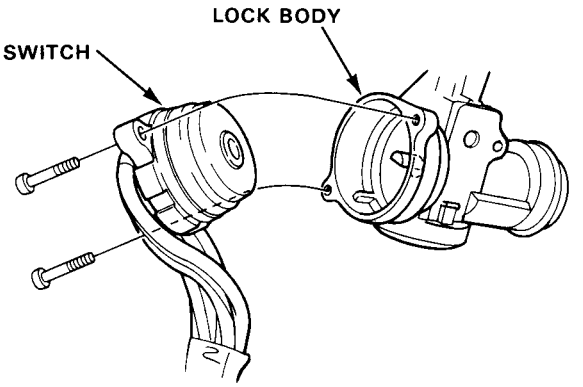
1. Remove the dashboard lower panel.
2. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	WHT/RED (ACC)	WHT/BLK (BAT -B)	BLU/WHT (IG2 -B)	WHT (BAT -A)	BLK/YEL (IG1)	YEL (IG2 -A)	BLK/WHT (ST)
0							
I	○	○					
II	○	○	○	○	○	○	
III				○	○		○



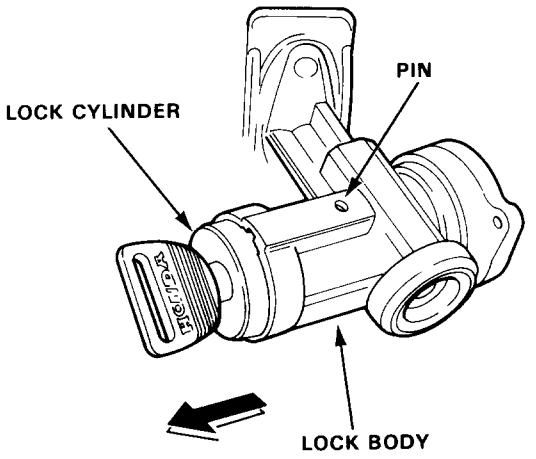
Electrical Switch Replacement

1. Remove the dashboard lower panel.
2. Remove the steering column lower cover.
3. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
4. Insert the key and turn it to "0."
5. Remove the 2 screws and replace the base of the switch

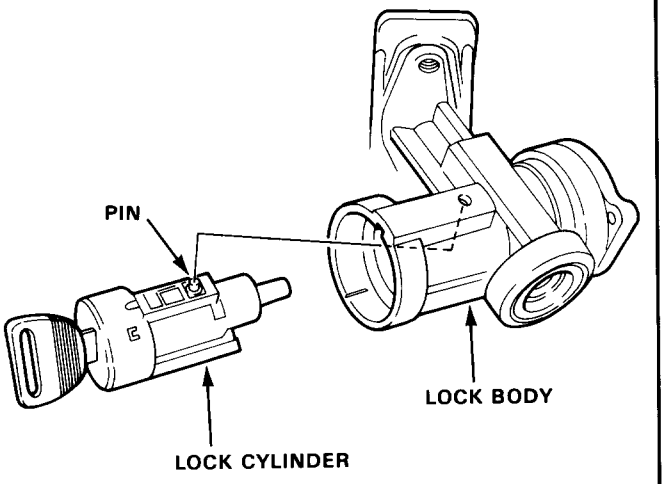


Lock Cylinder Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Turn the ignition key to "I."
4. Push the pin in and remove the lock cylinder from the lock body.



5. Turn the key to "O" and align the lock cylinder with the lock body.
6. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
7. Turn the key to the "I", push the pin and insert the lock body cylinder, into the lock until the pin clicks into place.

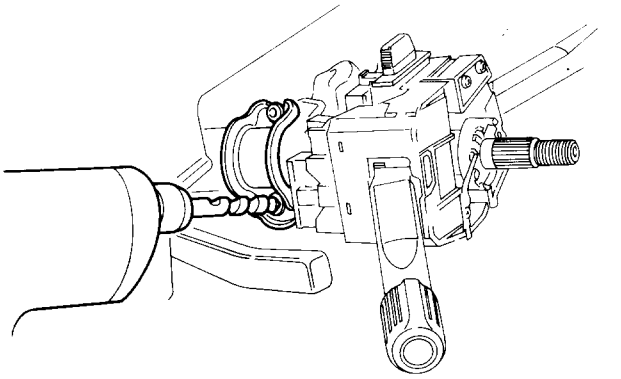


Steering Lock Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Center punch each of the 2 shear bolts and drill their heads off with a 3/16 in. drill bit.

   CAUTION Do not damage the switch body when removing the shear heads.

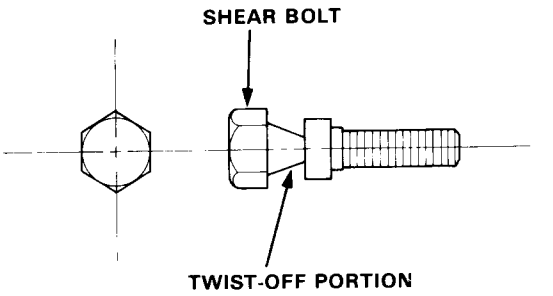
4. Remove the shear bolts from the switch body.



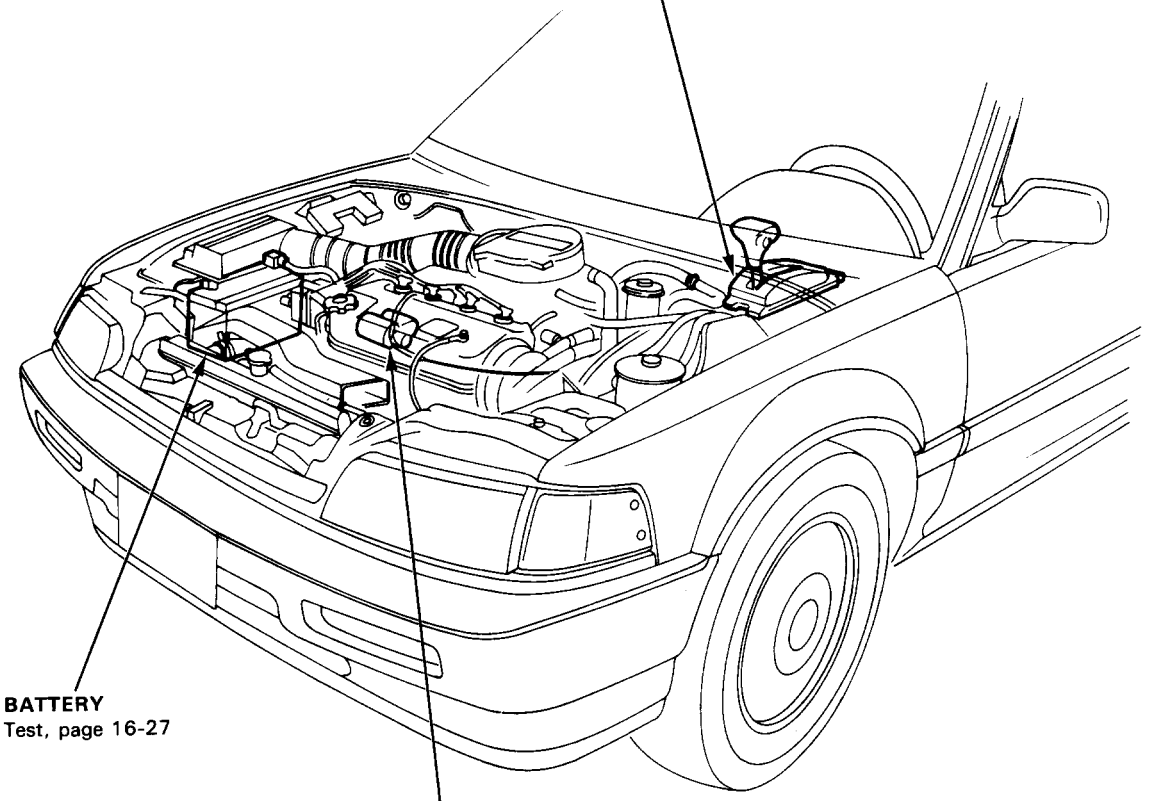
5. Install the new ignition switch without the key inserted.
6. Loosely tighten the new shear bolts.

   NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.

7. Insert the ignition key and check for proper operation of the steering wheel lock and that ignition key turns freely.
8. Tighten the shear bolts until the hex heads twist off.



Component Location Index

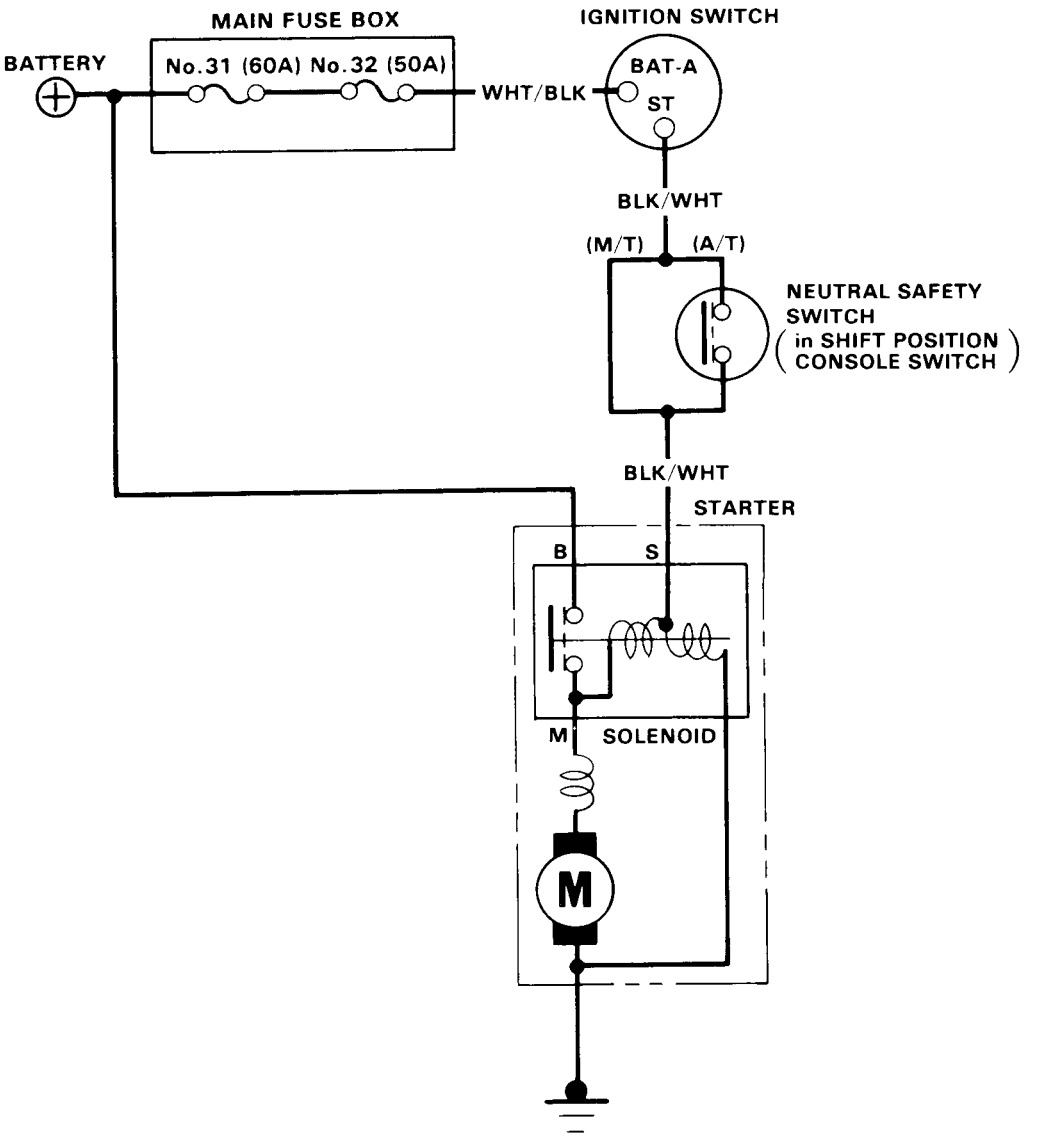


SHIFT POSITION CONSOLE SWITCH (NEUTRAL SAFETY SWITCH) (A/T only)
Test, page 16-97
Replacement, page 16-97

BATTERY
Test, page 16-27

STARTER
Test, page 16-32
Solenoid Test, page 16-34
Replacement, page 16-35
Overhaul, page 16-36
Reassembly, page 16-44

Circuit Diagram



Starter Test

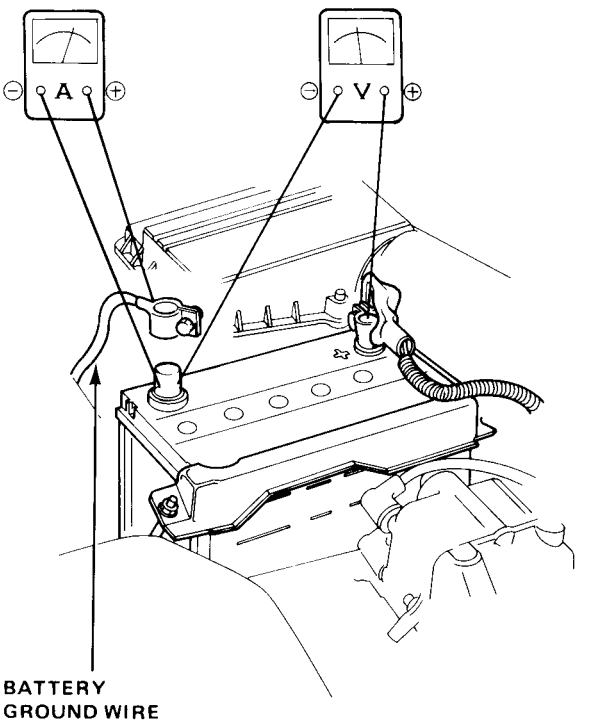
NOTE: The air temperature must be between 15 and 38°C (59 and 100°F) before testing.

Recommended Procedure:

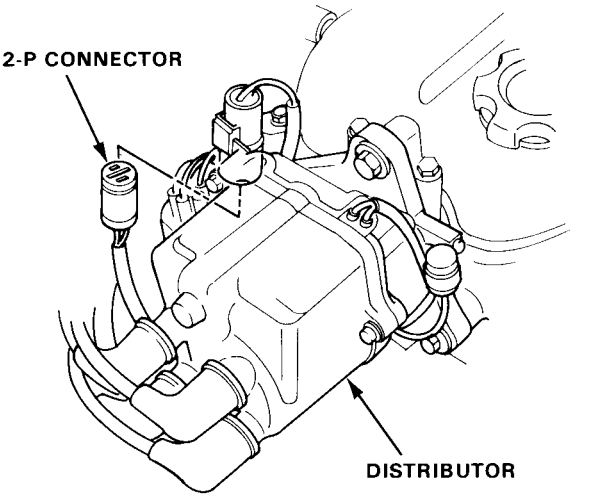
Use a starter system tester.
Connect and operate the equipment in accordance with manufacturer's instructions.
Test and troubleshoot as described.

Alternate Procedure:

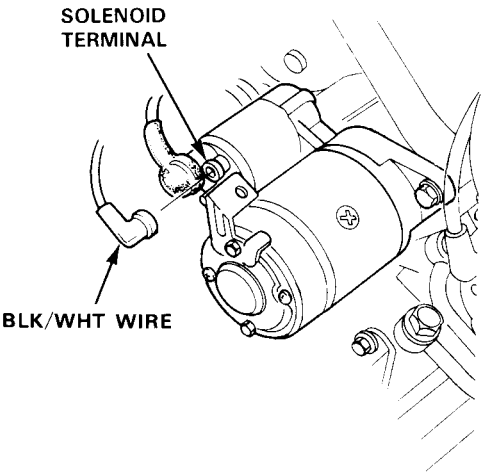
- Use the following equipment:
  - Ammeter, 0–400 A
  - Voltmeter, 0–20 V (accurate within 0.1 volt)
  - Tachometer, 0–1200 rpm
- Hook up voltmeter and ammeter as shown.



1. Disconnect the 2-P connector (Ignition coil primary lead) from the distributor.



2. Check the starter engagement:
   Turn the ignition switch to "Start". The starter should crank the engine.
   - If the starter does not crank the engine, check the battery, battery positive wire and ground, and the wire connections for looseness or corrosion.
   - Test again.
     If the starter still does not crank the engine, bypass the ignition switch circuit as follows:
     Unplug the connector (BLK/WHT wire) from the starter. Connect a jumper wire from the battery positive (+) terminal to the solenoid terminal. The starter should crank the engine.



– If the starter still does not crank the engine, remove the starter and diagnose its internal problems.

– If the starter cranks the engine, check for an open in the BLK/WHT wire circuit between the starter and ignition switch, and connectors. Check the ignition switch. 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:
0.8kw, 1.2kw and 1.4kw: 8 volts
1.0kw : 8.5 volts
Current should be no greater than specified below:
0.8 kw: 200 amperes
1.0 kw: 230 amperes
1.2 kw: 280 amperes
1.4 kw: 350 amperes

If voltage is too low, or current draw too high, check for:

- Battery fully charged.
- Open circuit in starter armature commutator segments.
- Starter armature dragging.
- Shorted armature winding.
- Excessive drag in engine.

5. Check cranking min^{-1} (rpm):
Engine speed during cranking should be above 100 min^{-1} (rpm).

- Loose battery or starter terminals.
- Excessively worn starter brushes.
- Open circuit in commutator segments.
- Dirty or damaged helical spline or drive gear.
- Defective drive gear overrunning clutch.

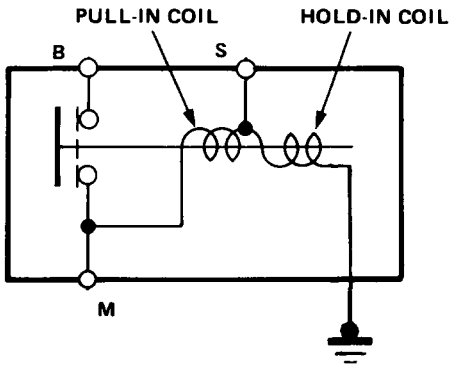
6. Check the starter disengagement:
Turn the ignition switch to "Start" and release to "Run." The starter drive gear should disengage from the flywheel ring gear.

If the drive gear hangs up on the flywheel ring gear, check:

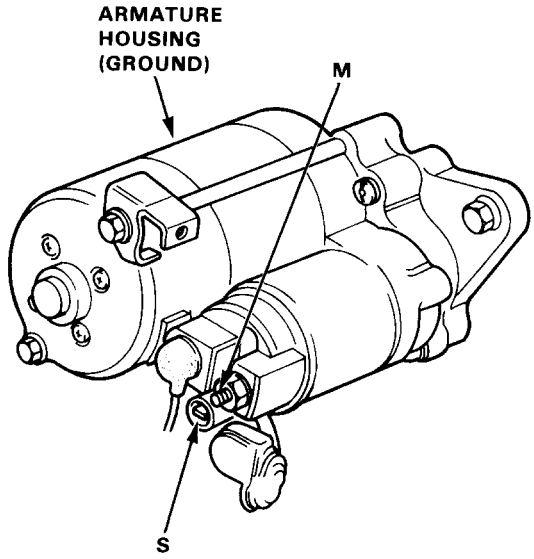
- Solenoid plunger and switch for malfunction.
- Drive gear assembly for dirty or damaged overrunning clutch.

Starter Solenoid Test

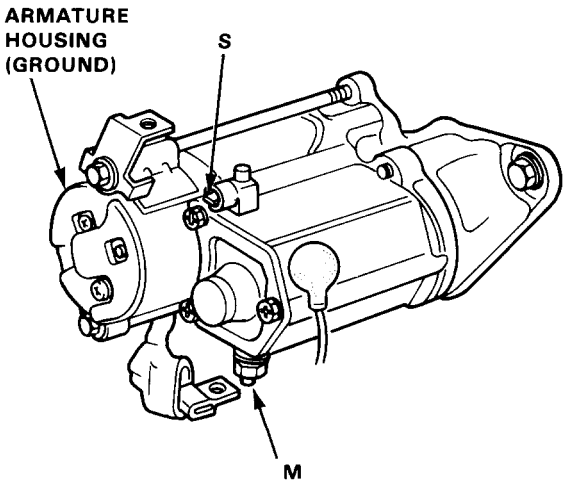
1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground).
   Coil is OK if there is continuity.
2. Check the pull-in coil for continuity between the S and M terminals.
   Coil is OK if there is continuity.



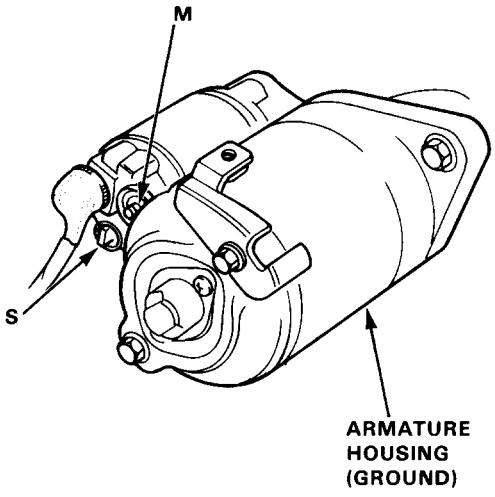
Mitsuba (1.0 kw and 1.4 kw) type:



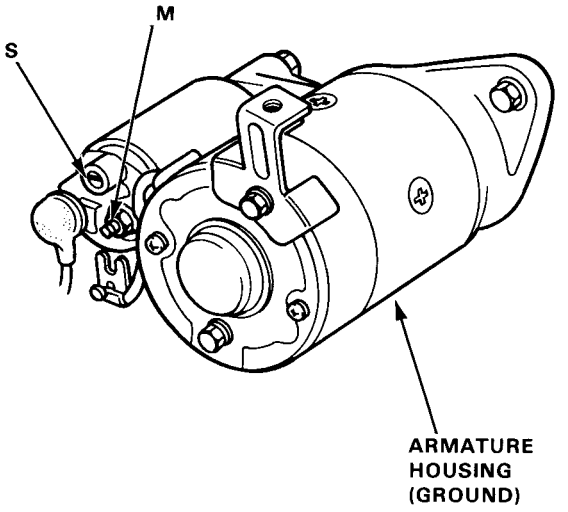
Nippon Denso (1.0 kw and 1.2 kw) type:



Nippon Denso (0.8 kw) type:

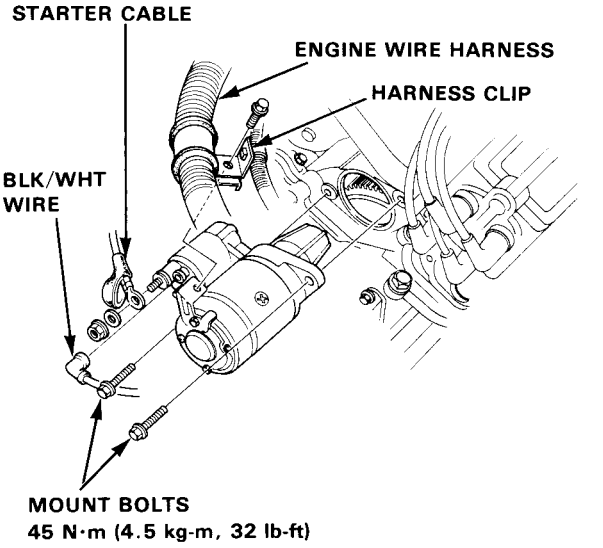


Hitachi (0.8 kw) type:



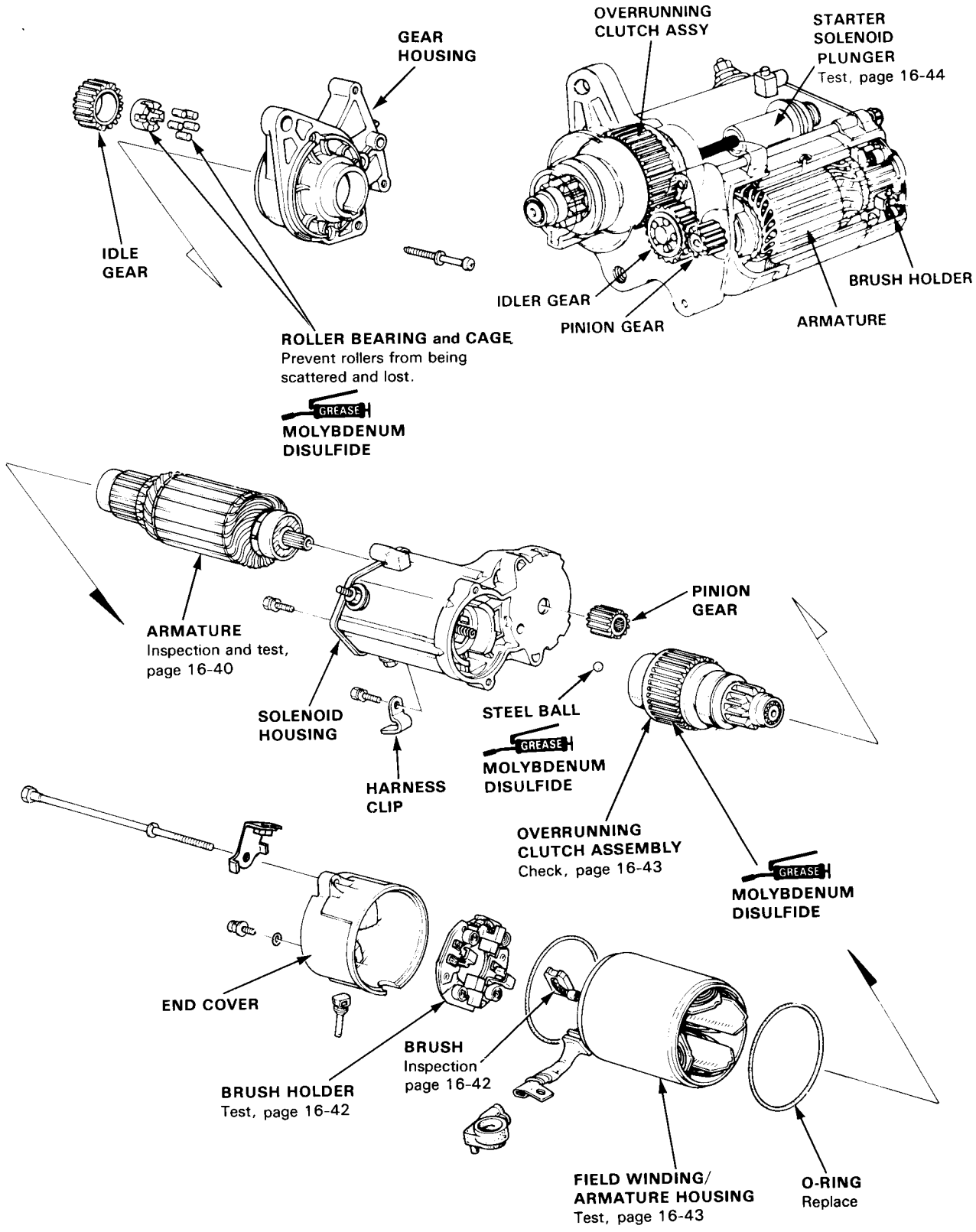
Starter Replacement

1. Disconnect the ground wire from the battery negative (−) post.
2. Remove the engine wire harness from the harness clip on the starter motor.
3. Disconnect the starter cable from the B terminal on the solenoid, and the BLK/WHT wire from the S terminal.
4. Remove the 2 bolts holding the starter, and remove the starter.



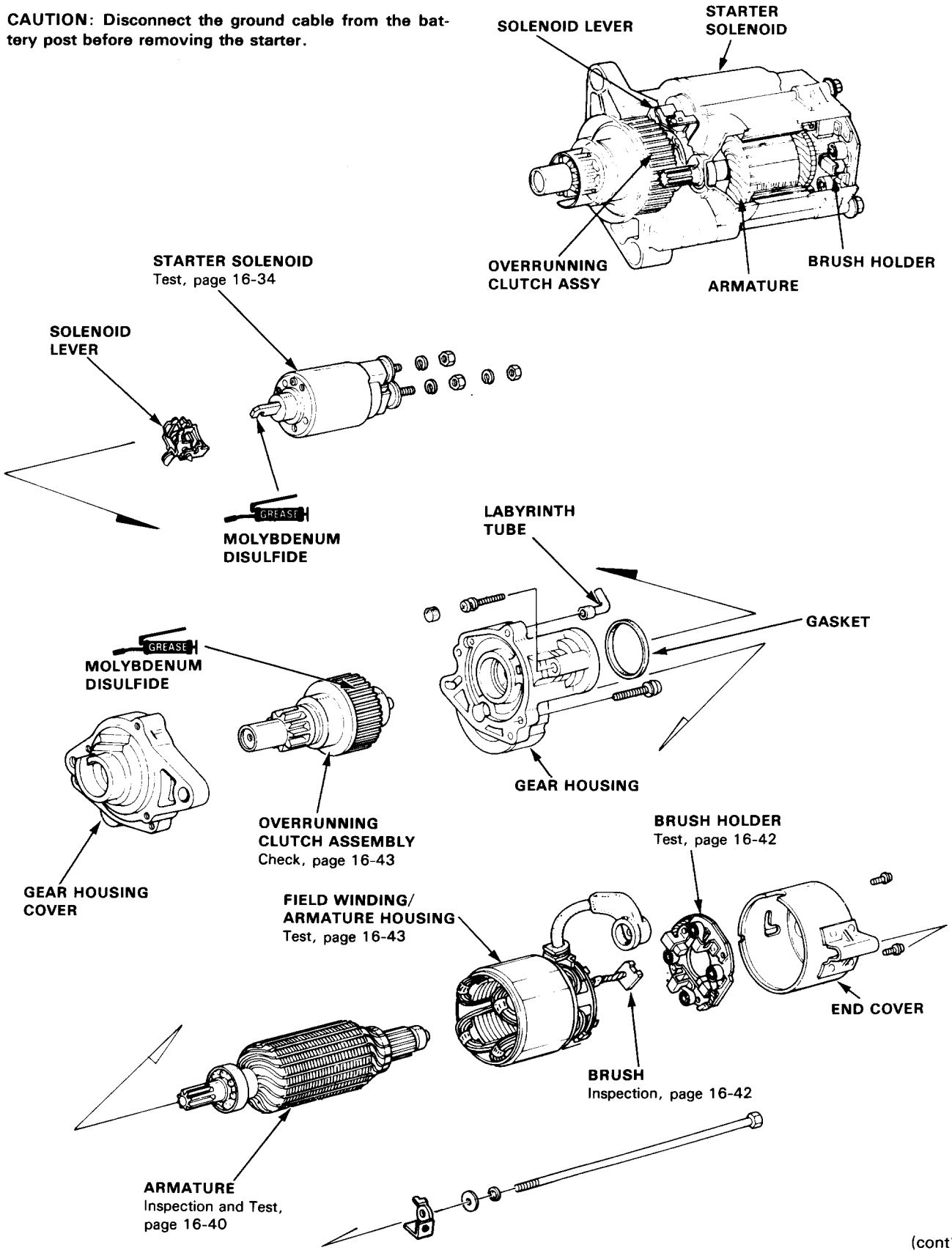
Starter Overhaul (Gear Reduction 1.0 kw and 1.2 kw, ND type)

CAUTION: Disconnect ground wire from the battery post before removing the starter.



(Gear Reduction 1.0 kw and 1.4 kw, Mitsuba type)

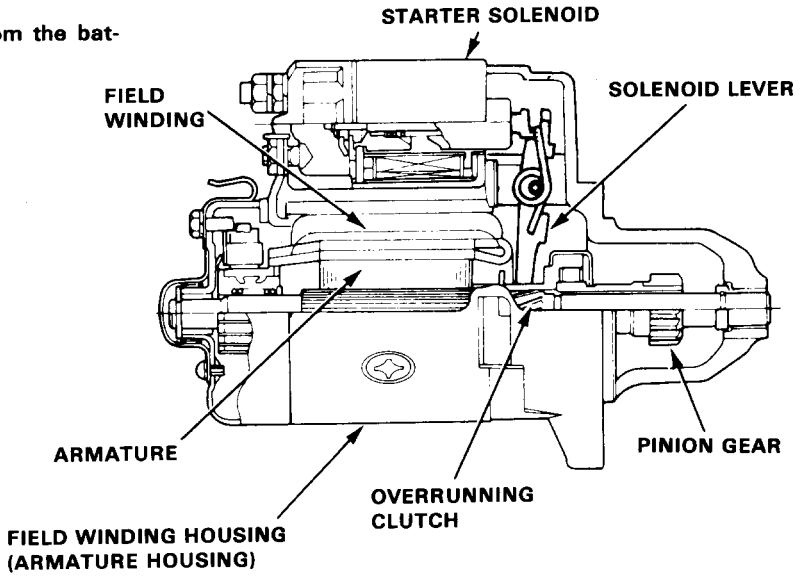
CAUTION: Disconnect the ground cable from the battery post before removing the starter.

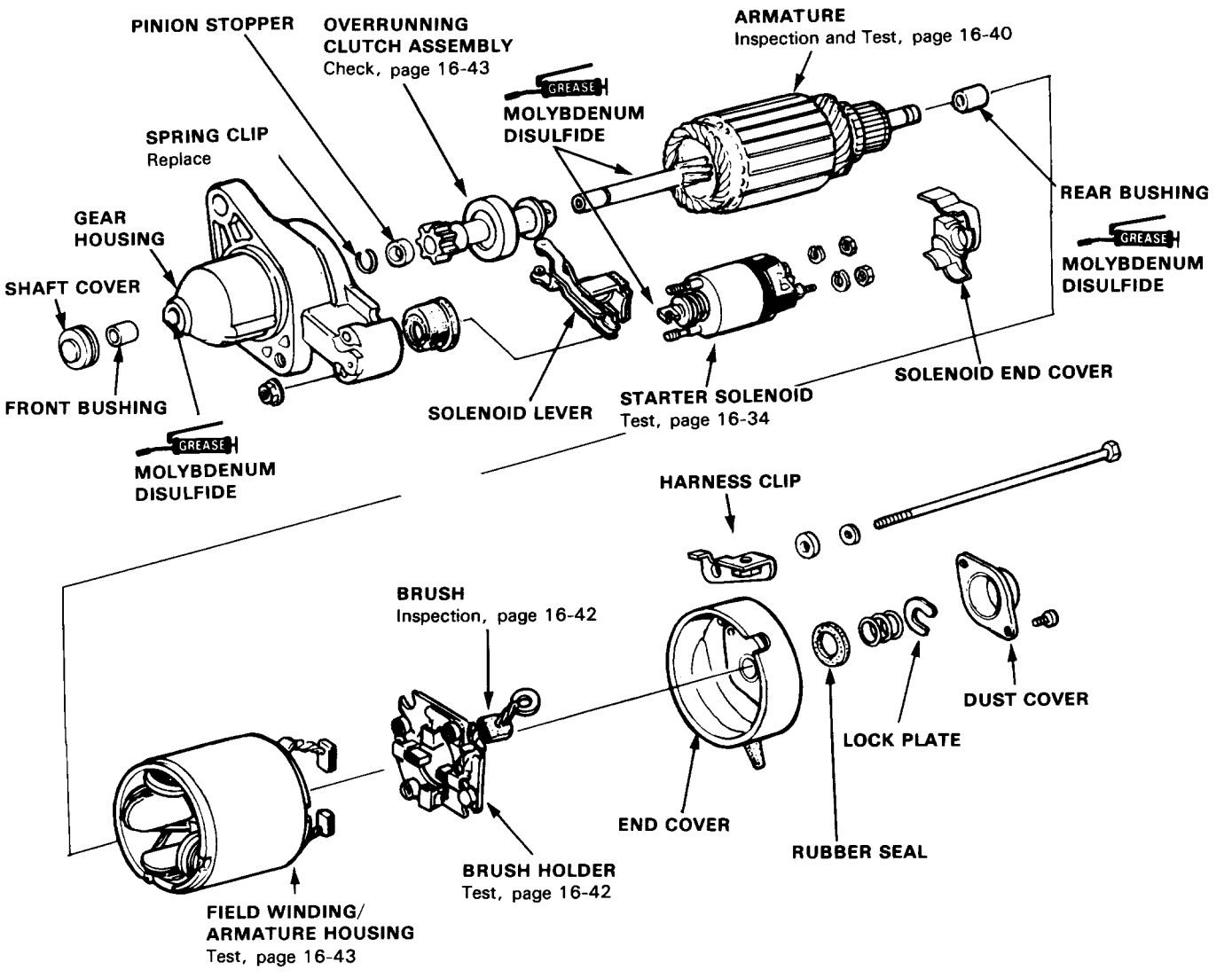


(cont'd)

Starter Overhaul (cont'd) (Direct Drive 0.8 kw, ND type)

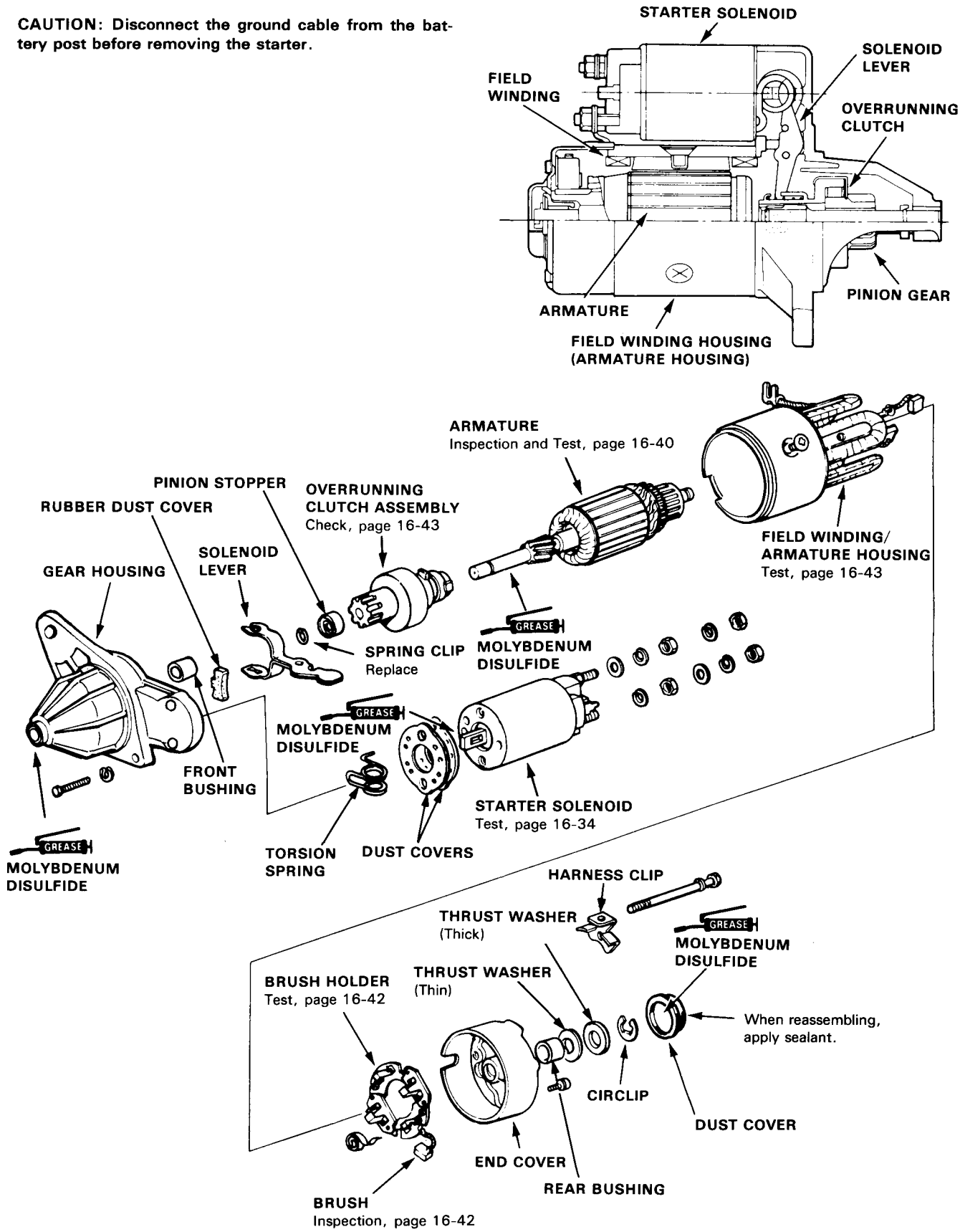
CAUTION: Disconnect the ground cable from the battery post before removing the starter.





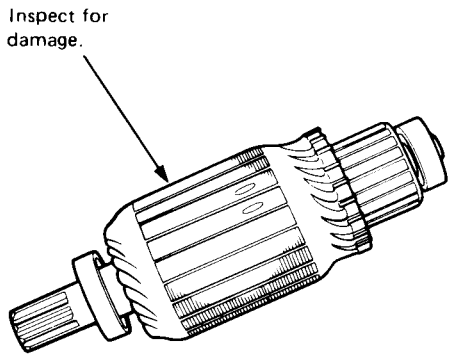
(Direct Drive 0.8 kw, Hitachi type)

CAUTION: Disconnect the ground cable from the battery post before removing the starter.



Armature Inspection and Test

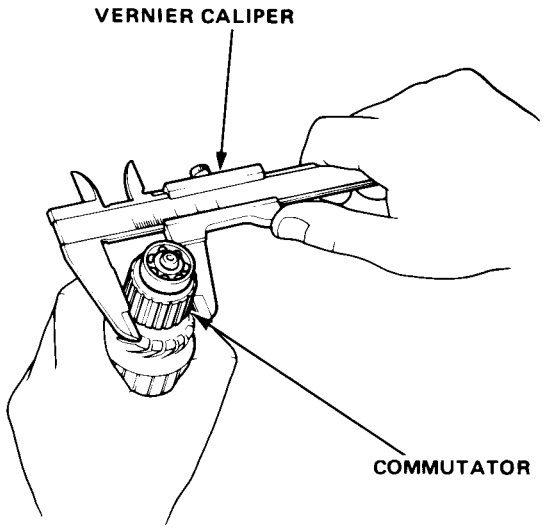
1. Inspect the armature for wear or damage due to contact with the field coil magnets.



2. A dirty or burnt commutator surface may be resurfaced with emery cloth or a lathe within the following specifications.

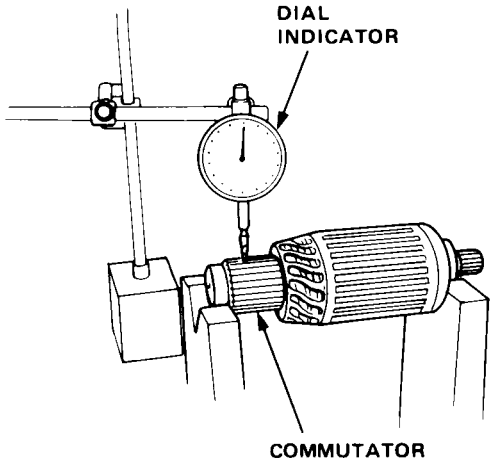
Commutator Diameter

	Standard (New)	Service Limit
ND (1.0kw and 1.2kw)	28.0—30.0 mm (1.177—1.181 in)	29.0 mm (1.14 in)
Mitsuba (1.0kw and 1.4kw)	26.0—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)



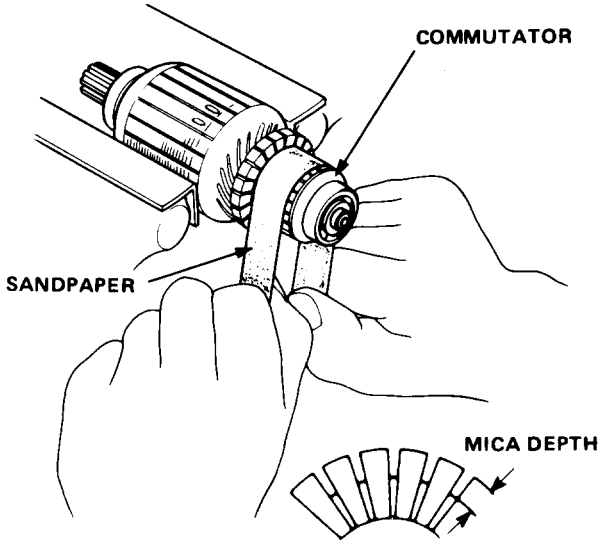
Commutator Runout

	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.

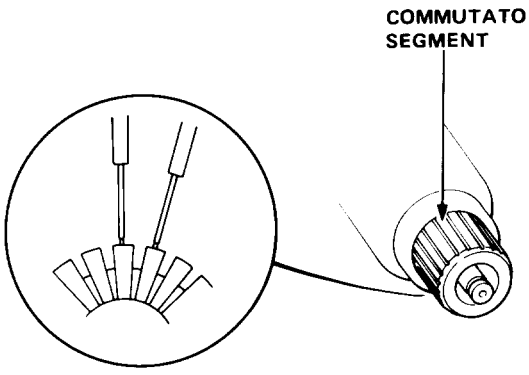
4. If surface is dirty, recondition it with a #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth.



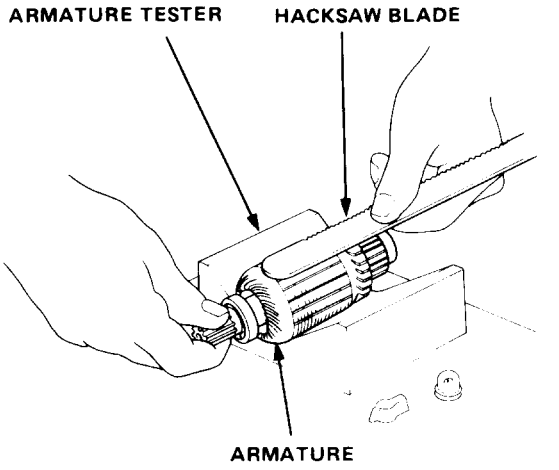
Commutator Mica Depth

	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.

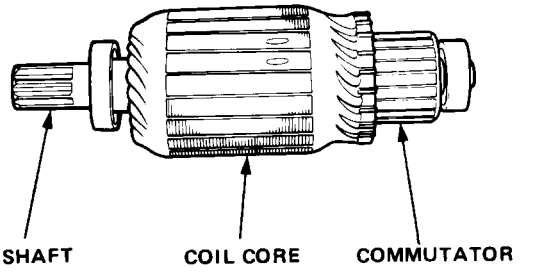


6. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.



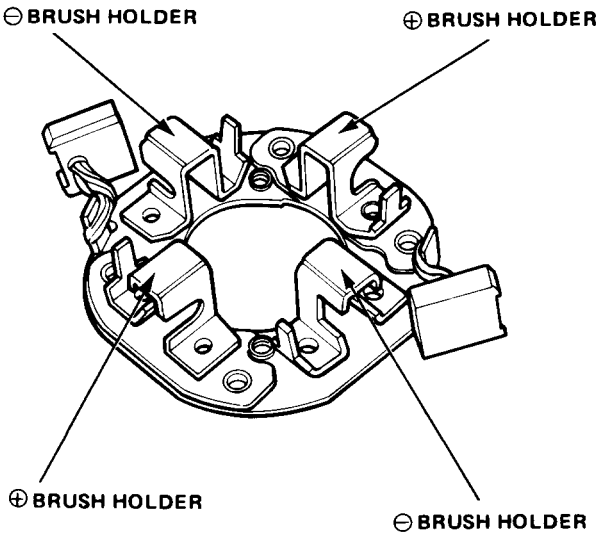
If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

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.



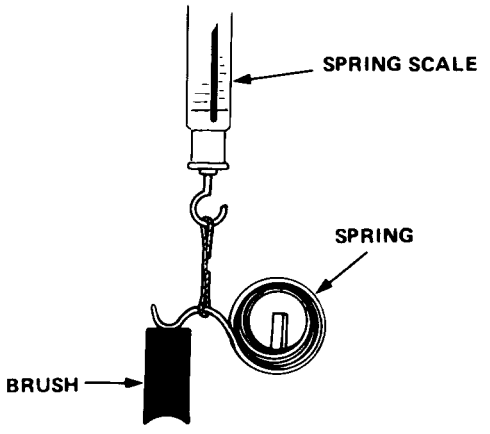
Starter Brush Holder Test

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)

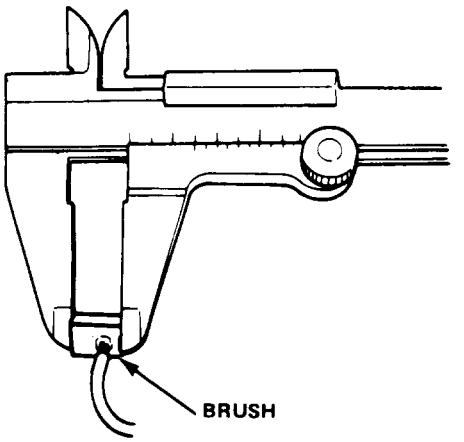


Starter Brush Inspection

Measure brush length. If not within service limit, replace the armature housing and brush holder assembly.

Brush Length

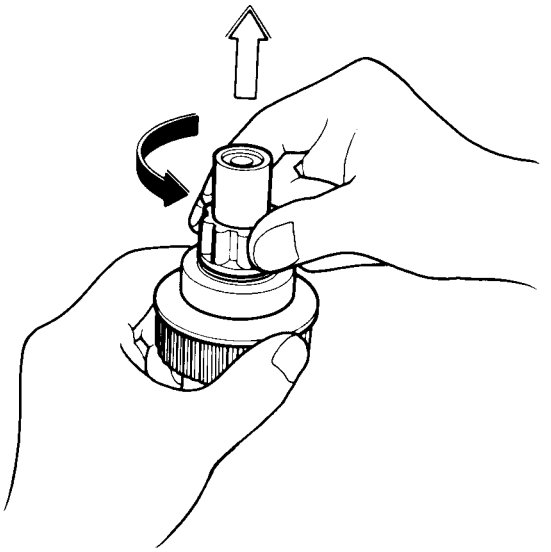
	Standard (New)	Service Limit
ND (1.0 kw and 1.2 kw)	12.5—13.5 mm (0.49—0.53 in)	8.5 mm (0.33 in)
Mitsuba (1.0 kw and 1.4 kw)	14.3—14.7 mm (0.56—0.58 in)	9.3mm (0.37in)
ND (0.8 kw)	15.5—16.5mm (0.61—0.65 in)	10.0 mm (0.39 in)
Hitachi (0.8 kw)	14.5—15.5 mm (0.57—0.61 in)	11.0 mm (0.43 in)



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.

Overrunning Clutch Check

1. Check if the overrunning clutch moves along the shaft freely. If not, replace the overrunning clutch assembly.
2. Check if the overrunning clutch locks in one direction and rotates smoothly in reverse. If it does not lock in either direction or it locks in both directions, replace the overrunning clutch assembly.

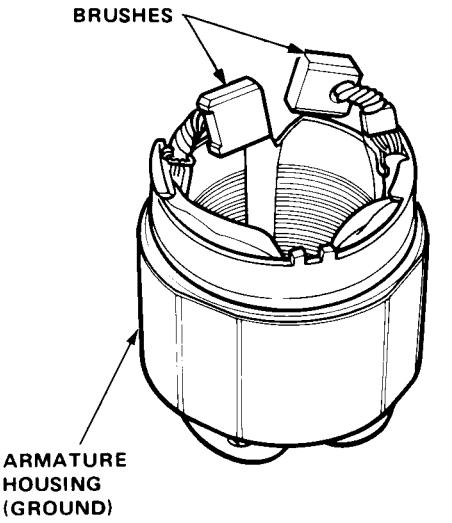


3. Check if the starter drive gear is worn or damaged. If the gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

   NOTE: Check condition of the flywheel or torque converter ring gear if the starter drive gear teeth are damaged.

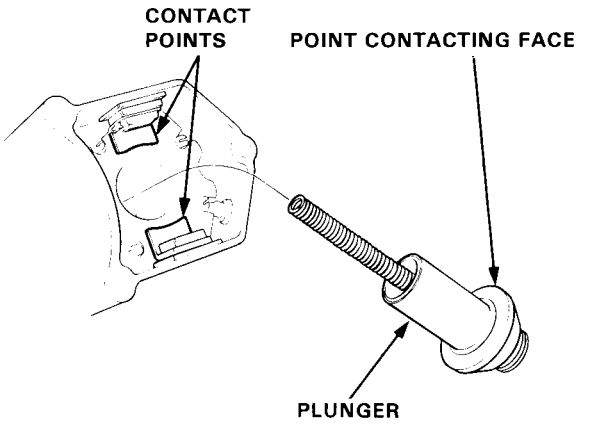
Starter Field Winding Test

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.



Solenoid Plunger Inspection (1.0 kw 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.

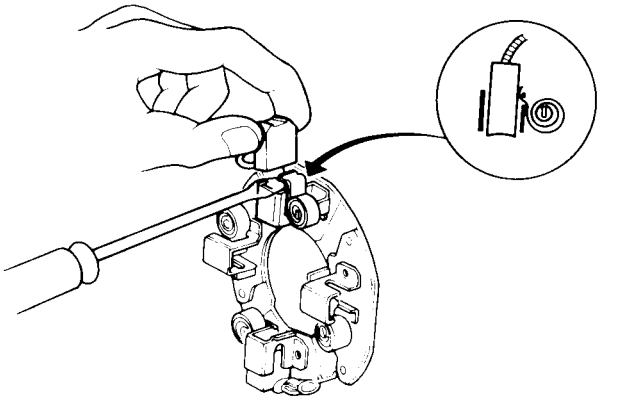


Starter Reassembly

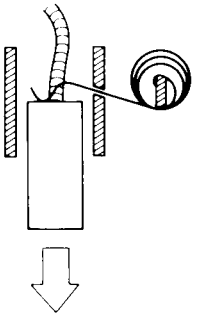
Reassemble the starter in the reverse order of disassembly.

Nippon Denso (1.0 kw and 1.2 kw) and Mitsuba (1.0 kw and 1.4 kw)type.

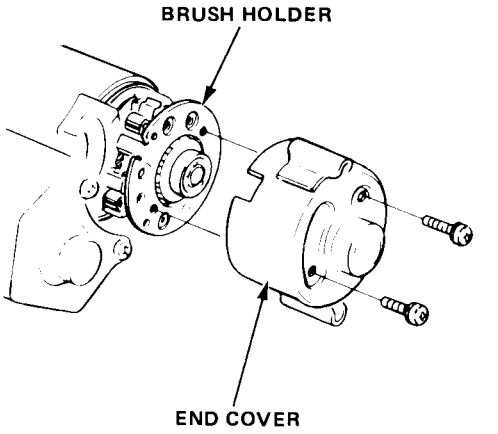
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



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.

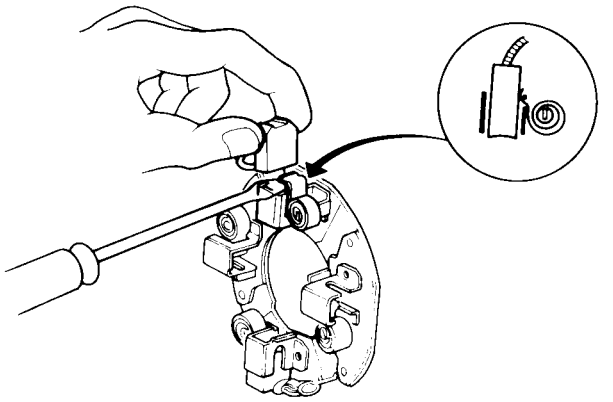


3. Install the end cover on the brush holder.

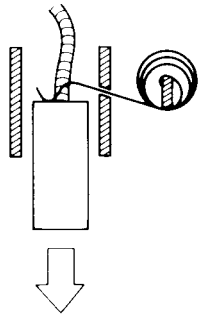


Nippon Denso (0.8 kw) and Hitachi (0.8 kw) type:

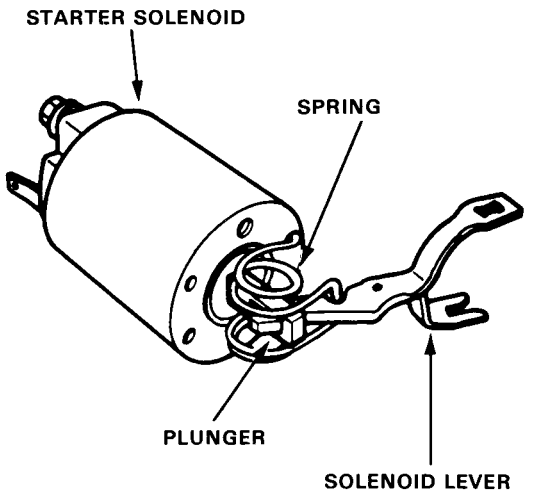
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



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.

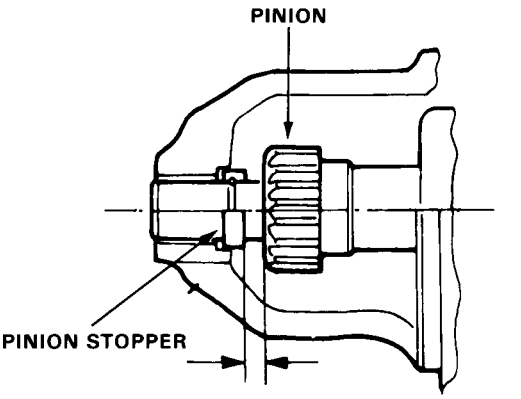


3. For Hitachi (0.8 kw), install the spring as shown.



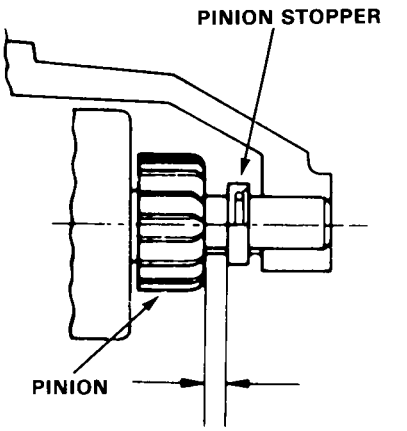
4. After assembling measure the clearance between the pinion stopper and the pinion with the clutch pushed out by the starter solenoid.

Nippon Denso (0.8 kw):



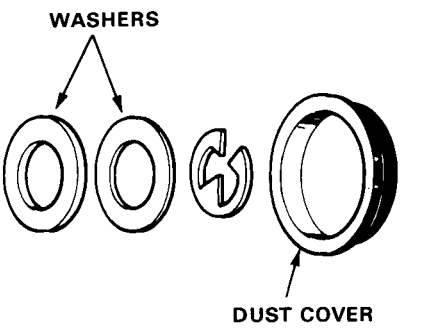
Specified Clearance: 0.1—4.0 mm (0.004—0.157 in.)

Hitachi (0.8 kw):



Specified Clearance: 0.3—2.5 rm (0.012—0.098 in.)

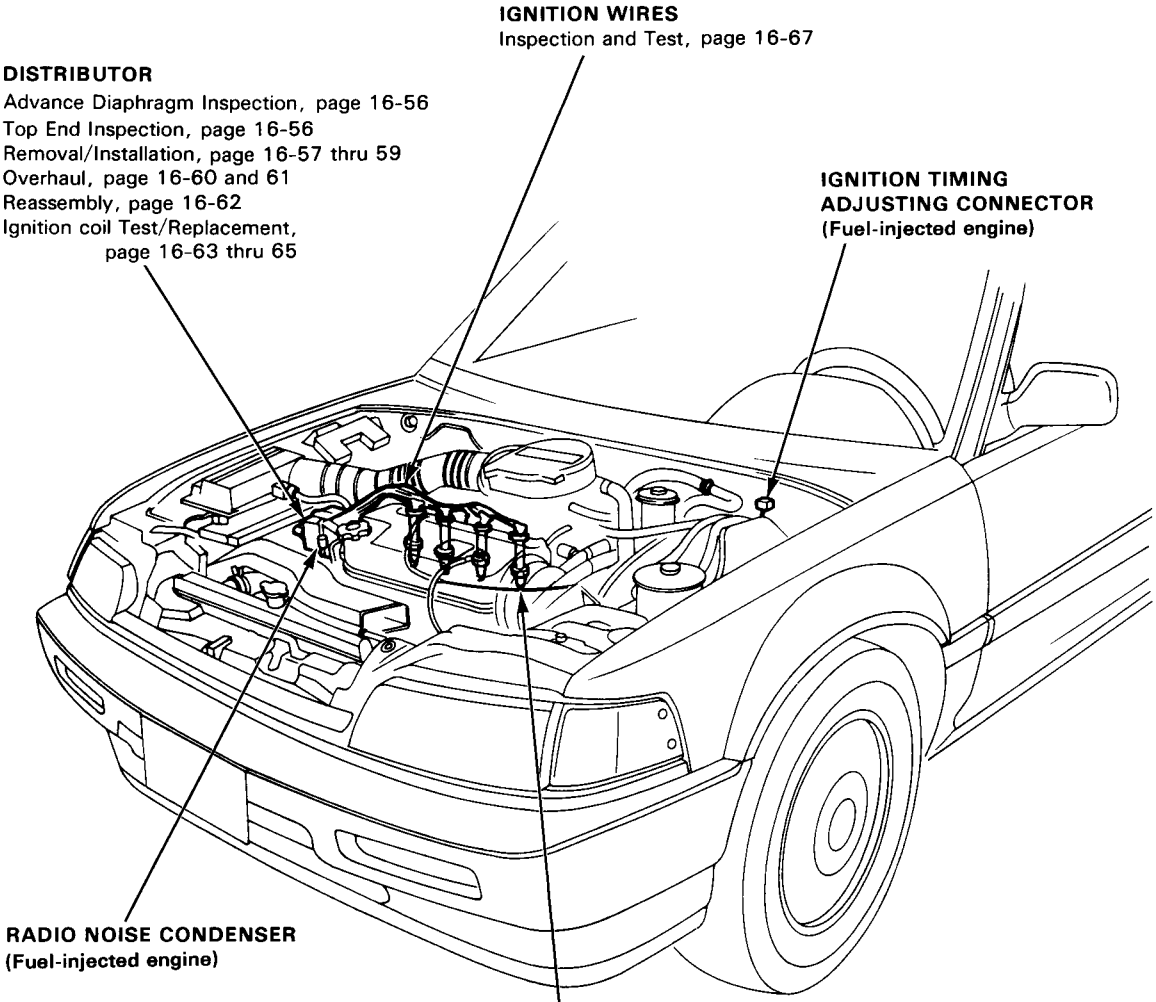
If out of the specifications, adjust by changing the number of washers used.



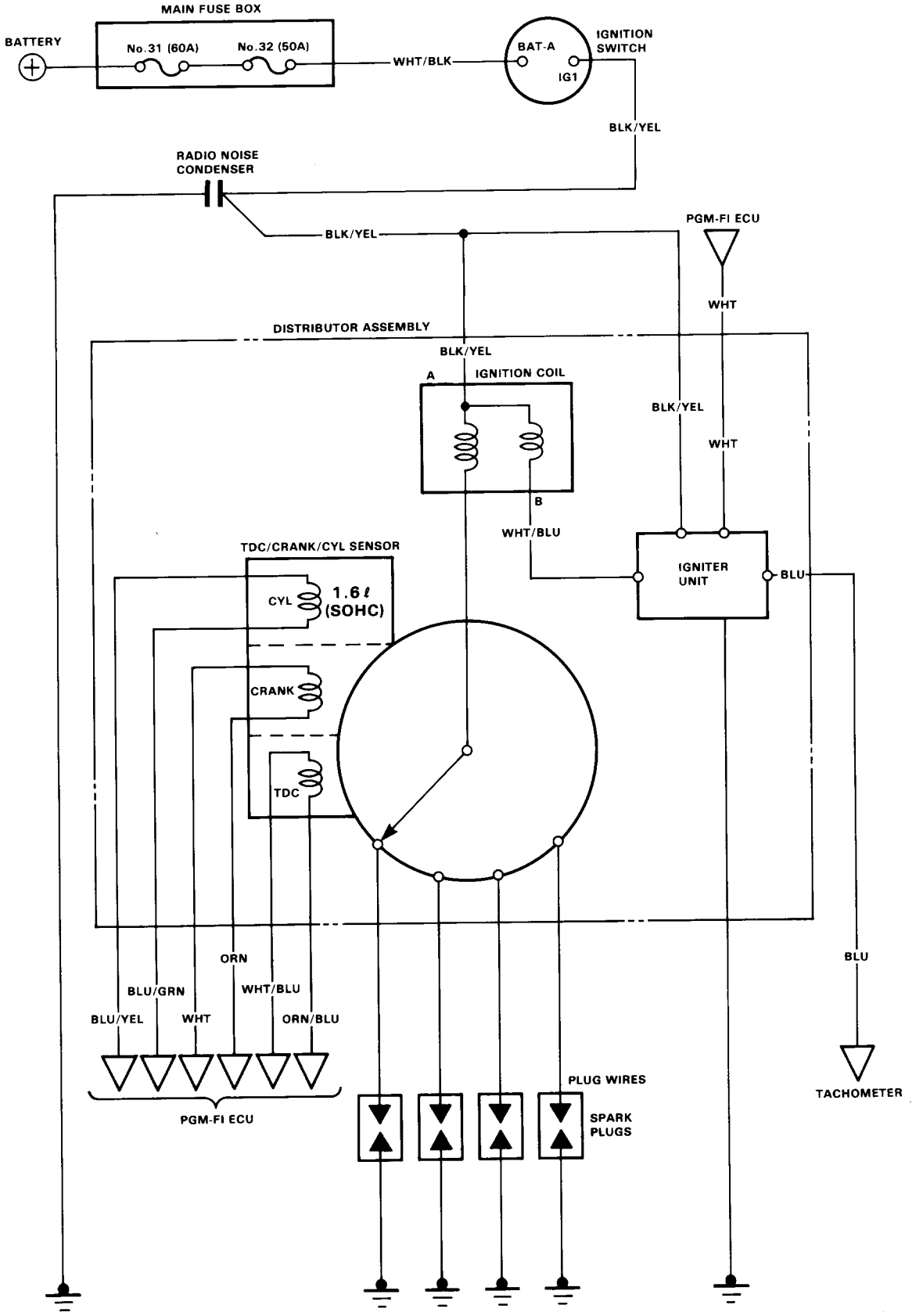
Ignition System

Component Location Index

IGNITION TIMING CONTROL SYSTEM
Troubleshooting, section 5
Inspection and Setting, page 16-49

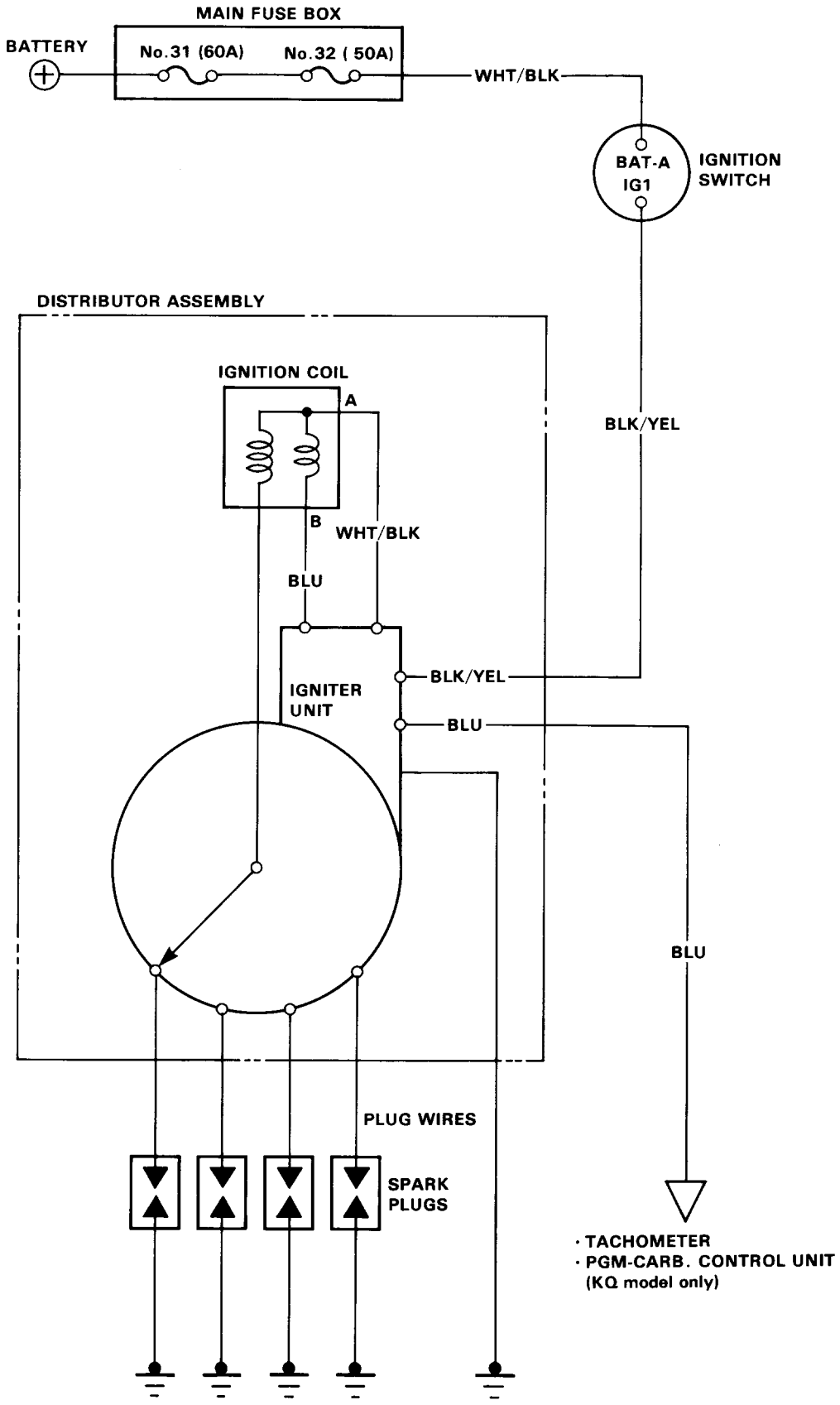


Circuit Diagram (Fuel-Injected Engine)



Ignition System

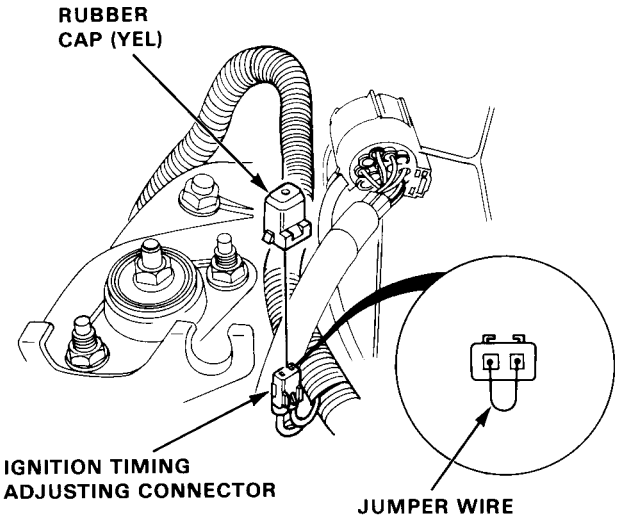
Circuit Diagram (Carbureted Engine)



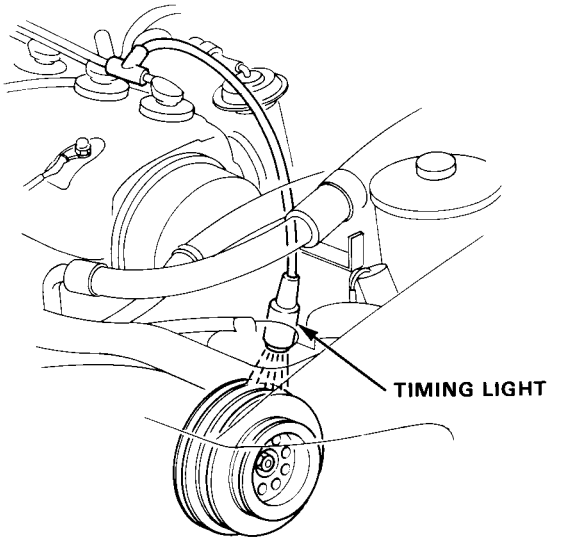
Ignition Timing Inspection and Setting (Fuel-Injected Engine)

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 rear engine compartment and connect the BRN and GRN/WHT terminals with a jumper wire.



3. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



4. Adjust ignition timing, if necessary, to the following specifications:

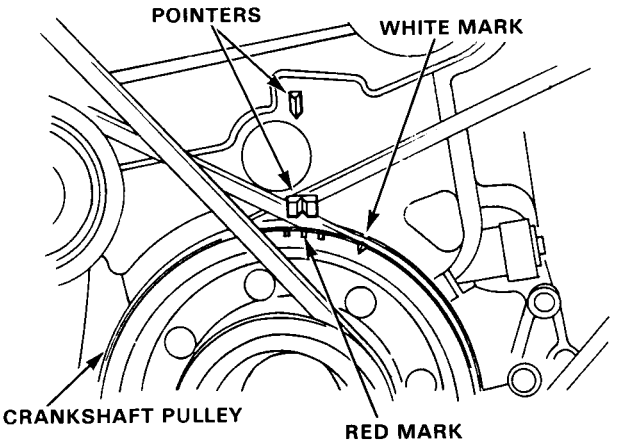
Ignition Timing

1.5 ℓ SOHC:
18°±2°BTDC (RED) at 780±50 min^{-1} (rpm) in neutral

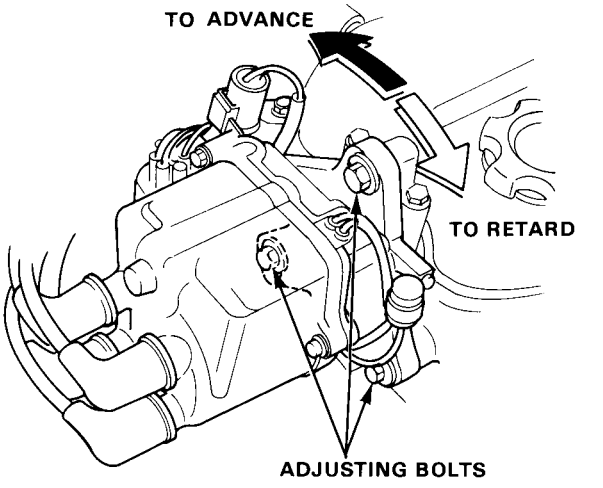
1.6 ℓ SOHC (With CATA):
18°±2°BTDC (RED) at 750±50 min^{-1} (rpm) in neutral

1.6 ℓ SOHC (Without CATA):
18°±2°BTDC (RED) at 780±50 min^{-1} (rpm) in neutral

1.6 ℓ DOHC:
16°±2°BTDC (RED) at 800±50 min^{-1} (rpm) in neutral



5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counterclockwise to advance the timing, or clockwise to retard the timing.



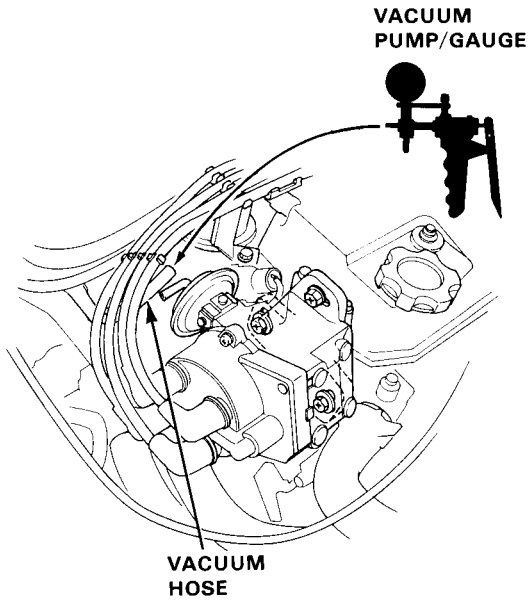
6. Tighten the adjusting bolts and recheck the timing.

7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

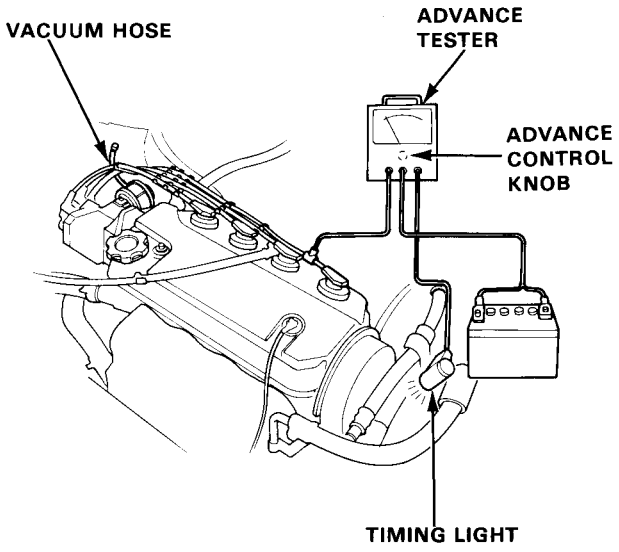
Ignition Timing Inspection and Setting (1-Carbureted Engine)

〈Ex. KG (A/T) model〉

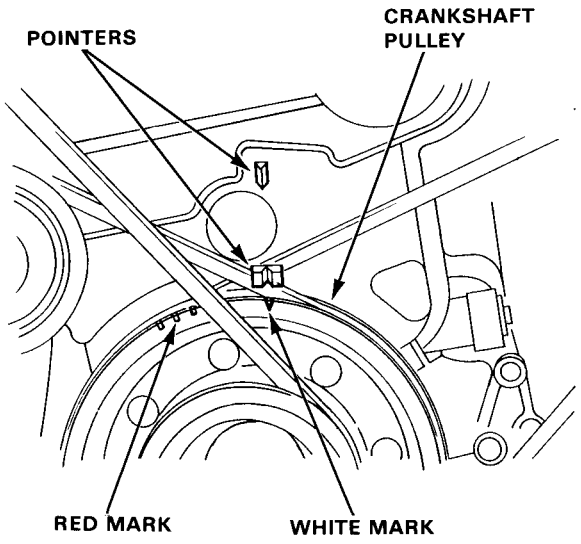
1. Disconnect the vacuum hose from the vacuum advance diaphragm, then connect the vacuum pump/gauge to the vacuum hose.



2. Start the engine and let it idle.
3. Check the vacuum hose for vacuum.
   The vacuum hose should have vacuum.
   - If the vacuum hose has no vacuum, check the vacuum hose of proper connection, cracks, blockage or disconnected hose.
4. Connect the vacuum hose to the vacuum advance diaphragm and allow the engine to warm up (cooling fan comes on).
5. Disconnect the vacuum hose from the vacuum advance diaphragm and plug them.
6. Connect a timing light and an advance tester.



7. While the engine idles, point the light toward the pointer on the timing belt cover.
8. Align the timing mark (White) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



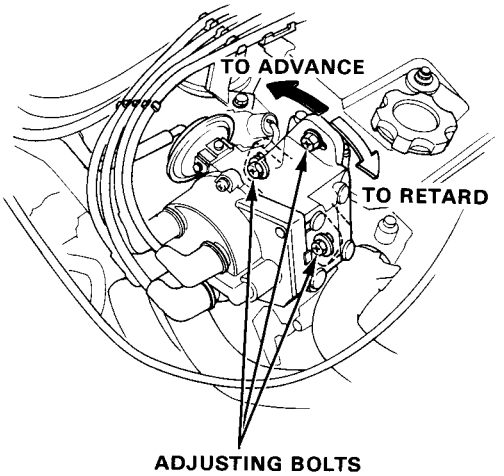
9. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing

1.2ℓ	KT	0°TDC
	Others	4° BTDC
1.3ℓ	All models	2° BTDC
1.5ℓ	All models	2° BTDC

- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} (rpm) in gear]**

10. 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.



11. Tighten the distributor adjusting bolts, then recheck the timing.

12. Connect the vacuum hose to the vacuum advance diaphragm and inspect ignition timing at idle.

Ignition Timing

1.2ℓ	KT	16°±2°BTDC (Red)
	Others	20° ± 2° BTDC (Red)
1.3ℓ	KG (M/T only)	12° ± 2° BTDC (Red)
	Others	18° ± 2° BTDC (Red)
1.5ℓ	KY (A/T only)	12° ± 2° BTDC (Red)
	Others	18° ± 2° BTDC (Red)

- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} (rpm) in gear]**

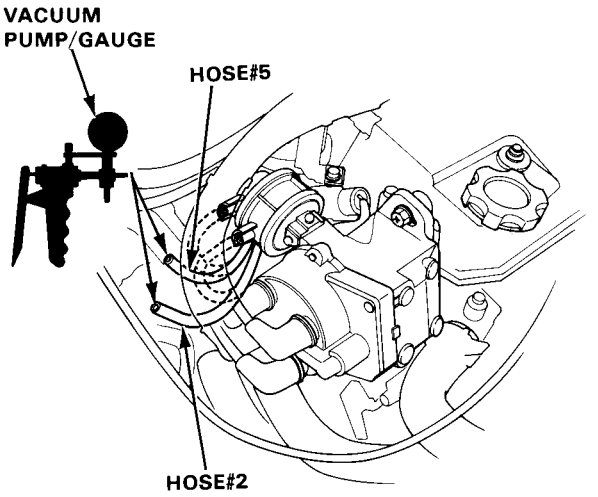
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

(cont'd)

Ignition Timing Inspection and Setting (cont'd) (2-Carbureted Engine)

〈Ex. KG model〉

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 [KQ: 70°C (158°F), others: 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.

   KQ model (1.5 ℓ , PGM-CARB):
   - If the #5 hose has no vacuum, check the #5 and #12 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5 and #12 hoses, and the check valve have no problem, check the vacuum control solenoid valve and recheck the #5 hose for vacuum.

   Others model (1.4 ℓ):
   - If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
     If the #5 and #10 hoses, 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.

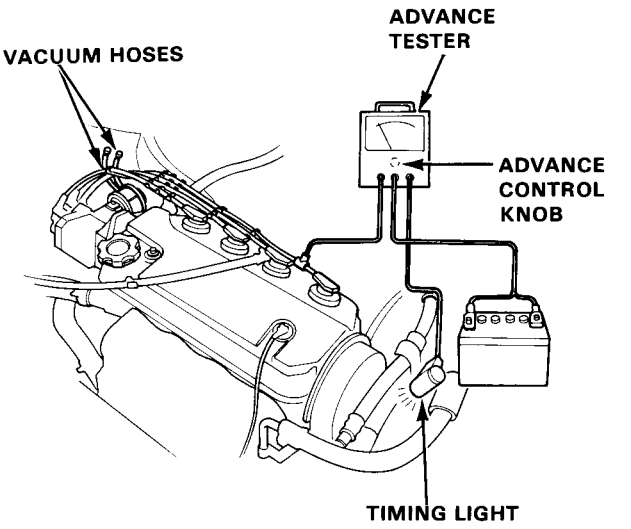
6. Check the #5 hose for vacuum.
   The #5 hose should have no vacuum.

   KQ model (1.5 ℓ , PGM-CARB)
   - If the #5 hose has vacuum, check the vacuum control solenoid valve and the recheck the #5 hose for vacuum.

   Others model (1.4 ℓ):
   - If the #5 hose has vacuum, replace the thermovalve and recheck the #5 hose for vacuum.

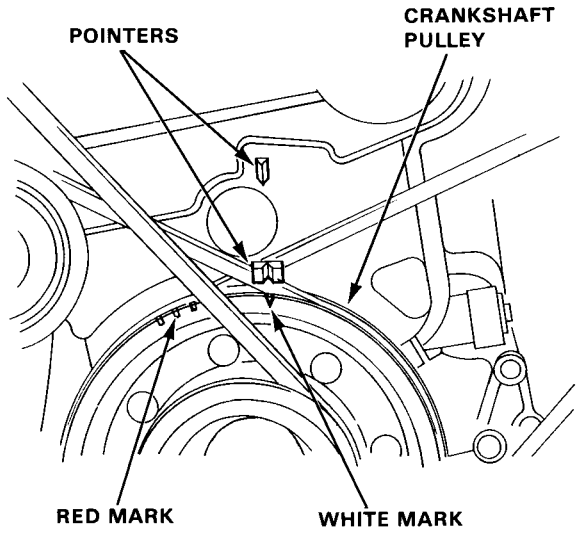
7. Disconnect the vacuum hoses from the vacuum advance diaphragm and plug them.

8. Connect a timing light and an advance tester.



9. While the engine idles, point the light toward the pointer on the timing belt cover.

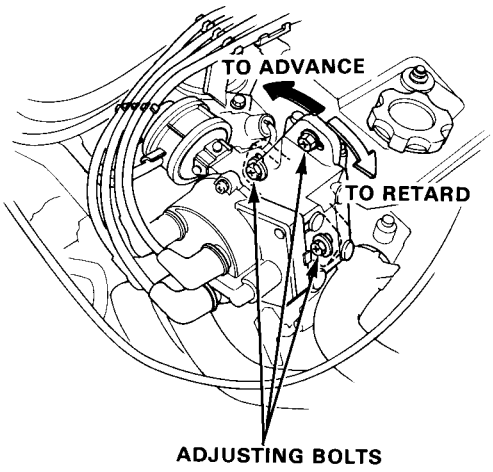
10. Align the timing mark (white) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



11. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing
All models: 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
KQ models (1.5 ℓ, PGM-CARB):
20° ± 2° BTDC (Red)
Others models (1.4 ℓ):
18° ± 2° BTDC (Red)
- **Manual Transmission [at 750 ± 50 min^{-1} (rpm) in neutral]**
- **Automatic Transmission [at 700 ± 50 min^{-1} in gear]**

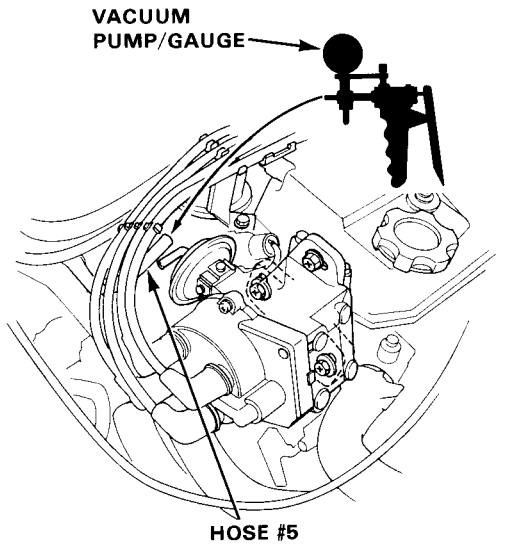
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

(cont'd)

Ignition Timing Inspection and Setting (cont'd) (Carbureted Engine-KG model)

〈Ex. 1-Carbureted Engine (M/T)〉
NOTE: Skip the step 7 through step 13 for automatic transmission.

1. Disconnect the vacuum hose from the vacuum advance diaphragm, then connect the vacuum pump/gauge to the vacuum hose.



2. Start the engine and let it idle.

3. When the engine is cool [coolant temperature is below 45°C (113°F)], check the #5 hose for vacuum.
The #5 hose should have vacuum.

Automatic Transmission:
- If the #5 hose has no vacuum, check the #5, #10 and #17 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
If the #5, #10 and #17 hoses, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

Manual Transmission (2-Carbureted Engine):
- If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.
If the #5 and #10 hoses, and the check valve have no problem, replace the thermovalve and recheck the #5 hose for vacuum.

4. Connect the vacuum hose 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.

Automatic Transmission:
The #5 hose should have no vacuum.

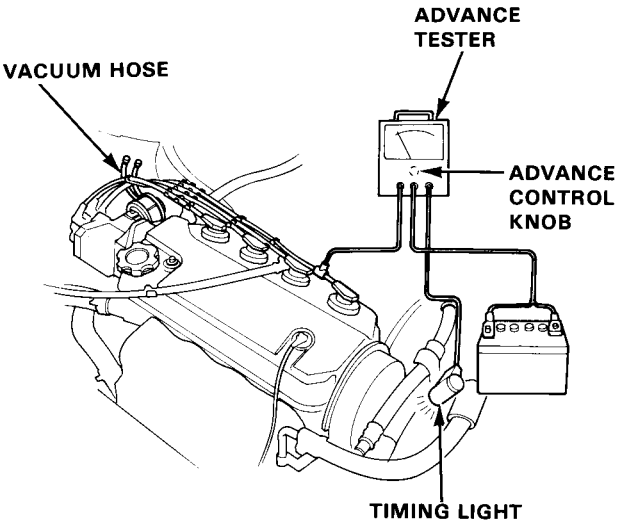
- If the #5 hose has vacuum, check the vacuum control solenoid valve (See section 6).
Replace the thermovalve and recheck the #5 hose for vacuum if the vacuum control solenoid valve is OK.

Manual Transmission (2-Carbureted Engine):
The #5 hose should have vacuum.

- If the #5 hose has no vacuum, replace the thermovalve and recheck the #5 hose for vacuum.

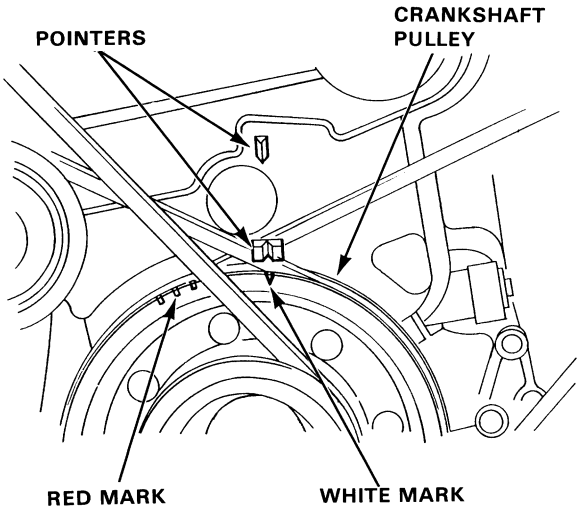
7. Disconnect the #5 hose from the vacuum advance diaphgram and plug them.

8. Connect a timing light and an advance tester.



9. While the engine idles, point the light toward the pointer on the timing belt cover.

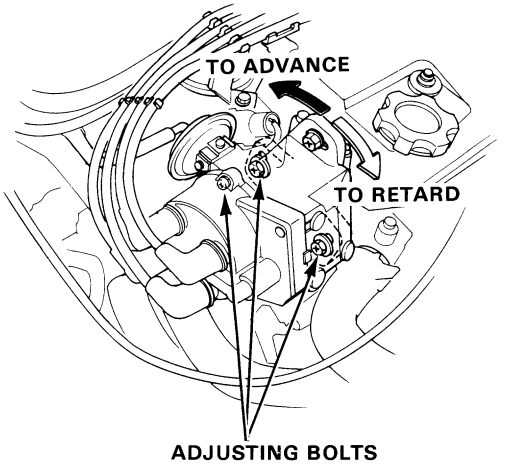
10. Align the timing mark (white) on the crankshaft pulley to the pointer by turning the advance control knob of the advance tester.



11. Read initial timing when timing mark (white) is aligned to the pointer.

Initial Timing
Manual Transmission (2-Carbureted Engine):
2° BTDC at 750 ± 50 min^{-1} (rpm) in neutral

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
Automatic Transmission:
2° ± 2°BTDC (Red) at 700 ± 50 min^{-1} (rpm) in gear

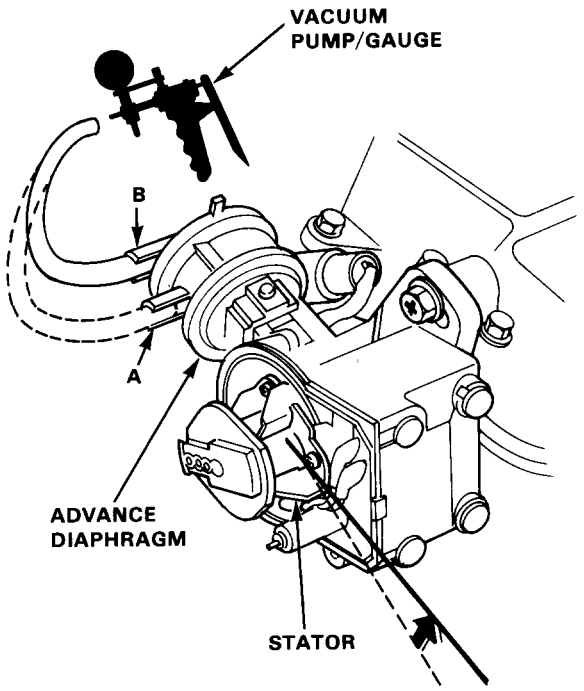
- Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing clockwise to retard the timing, or counterclockwise to advance the timing.
- Tighten the distributor adjusting bolts, then recheck the timing.

Manual Transmission (2-Carbureted Engine):
12° ± 2° BTDC (Red) at 750 ± 50 min^{-1} (rpm) in neutral

- If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

Advance Diaphragm Inspection

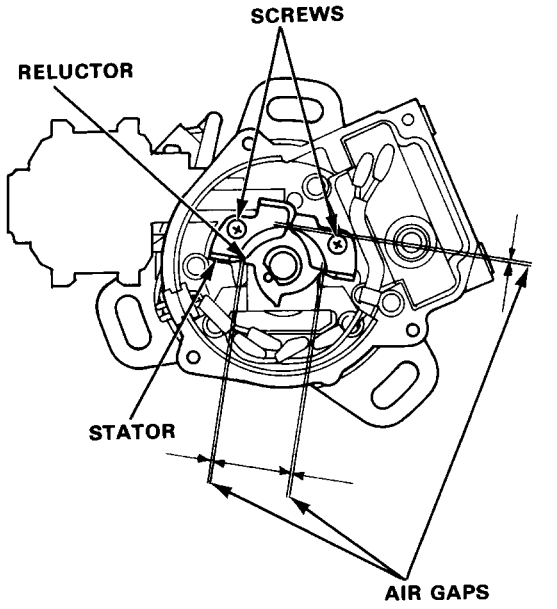
1. Remove the distributor cap and vacuum hoses from the advance diaphragm.
2. Connect a vacuum pump/gauge to the advance diaphragm A (inside port).



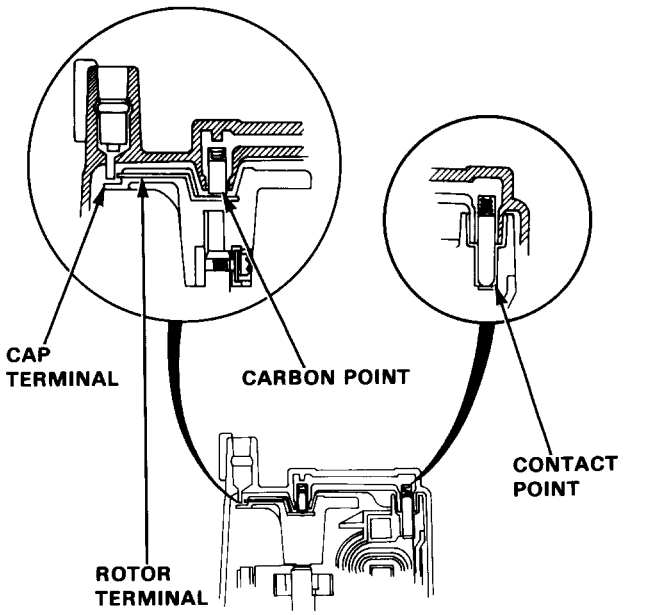
3. When vacuum (more than 500 mm Hg, 20 in. Hg) is applied to the diaphragm, the stator should turn counterclockwise and stay. If the stator does not turn or stay, replace the diaphragm.

   When vacuum is released, the stator should return. If the stator does not return, repair or replace as necessary.
4. Repeat the step 2—3 for the advance diaphragm B (outside port).

1. Check to be sure that the air gaps are equal (Carbureted engine only).
2. If necessary, back off the screws and move the stator as required to adjust.

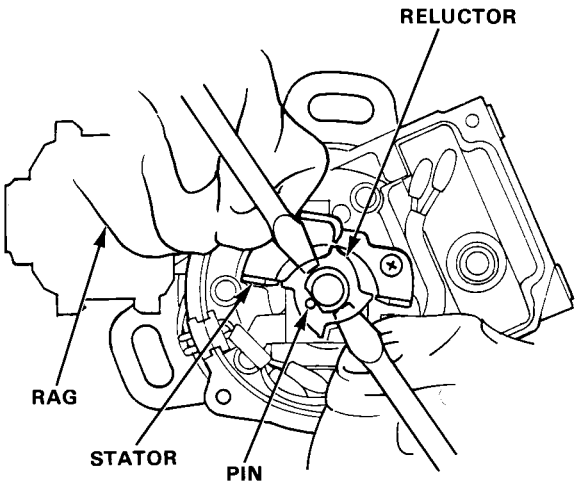


3. Check for rough or pitted rotor and cap terminals.
4. Scrape or file off the carbon deposits.
   Smooth the rotor terminal with an oil stone or #600 sandpaper if rough.
5. Check the distributor cap for cracks, wear and damages. If necessary, clean or replace it.



Reluctor Replacement (Carbureted Engine)

1. Carefully pry up the reluctor by using two screwdrivers as shown. Do not damage the reluctor and stator.



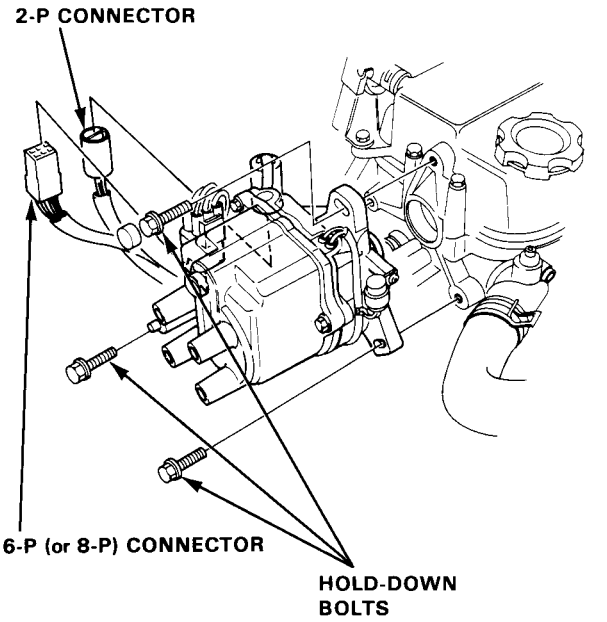
2. When installing the reluctor, be sure to drive in the pin with its gap away from the shaft.

   NOTE: The number or letter manufacturing code on the reluctor must always face up.

Distributor Removal (Fuel-Injected Engine)

1. Disconnect the 2-P and 6-P (or 8-P) connectors from the distributor.

2. Disconnect the spark pulg wires from the distributor cap.

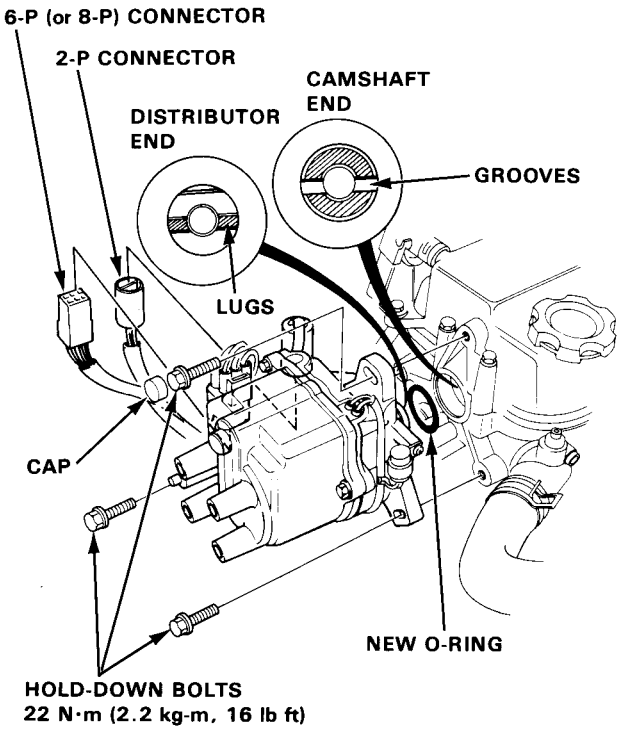


3. Remove the distributor hold-down bolts, then remove the distributor from the cylinder head.

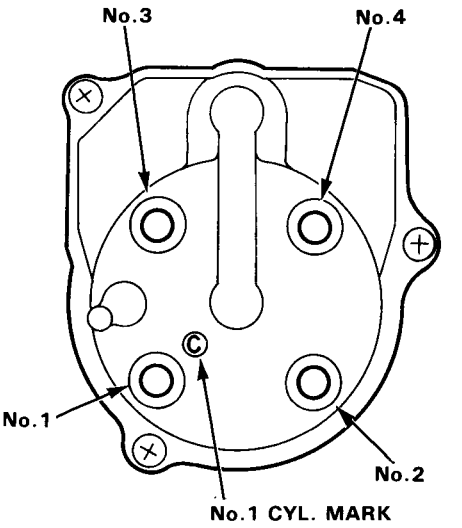
Distributor Installation (Fuel-Injected Engine)

1. Coat a new O-ring with engine oil then install it.
2. Slip the distributor into position.

   NOTE: The lugs on the end of the distributor and its mating grooves in the camshaft end are both offset to eliminate the possibility of installing the distributor 180° out of time.



3. Install the hold-down bolts and tighten temporarily.
4. Connect the 2-P and 6-P (or 8-P) connectors to the distributor.
5. Connect the spark plug wires as shown.

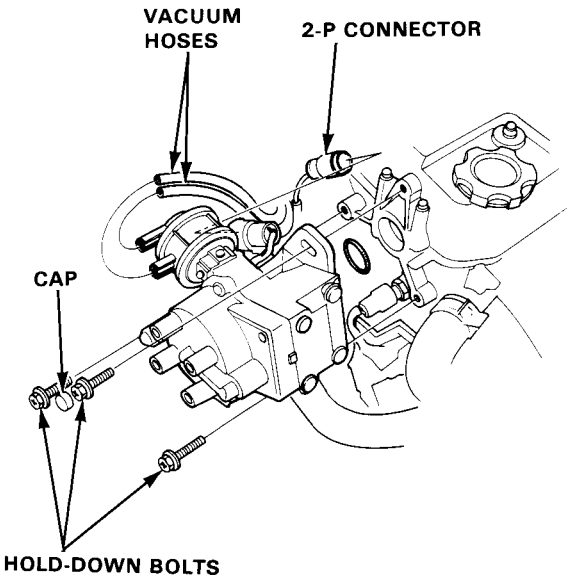


6. Set the timing with a timing light as shown on page 16-49.
7. After adjusting, tighten the hold- down bolts, then install the cap on the bolt.

Distributor Removal/Installation (Carbureted Engine)

Removal:

1. Disconnect the 2-P connector from the distributor.
2. Disconnect the spark pulg wires from the distributor cap.
3. Disconnect the vacuum hoses from the advance diaphragm.

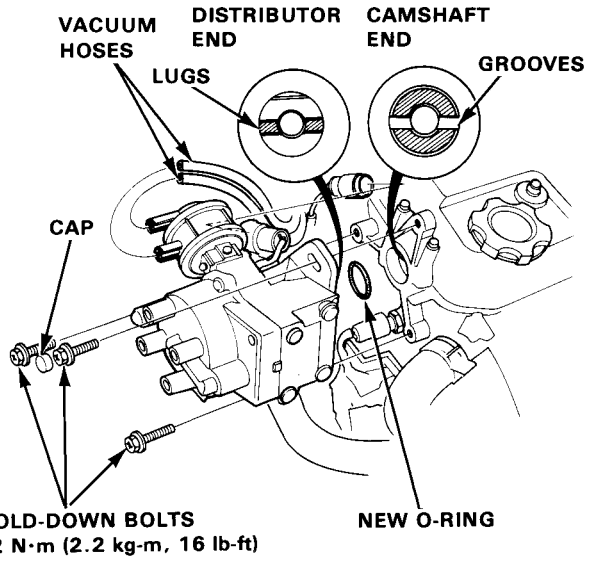


4. Remove the distributor hold-down bolts, then remove the distributor from the cylinder head.

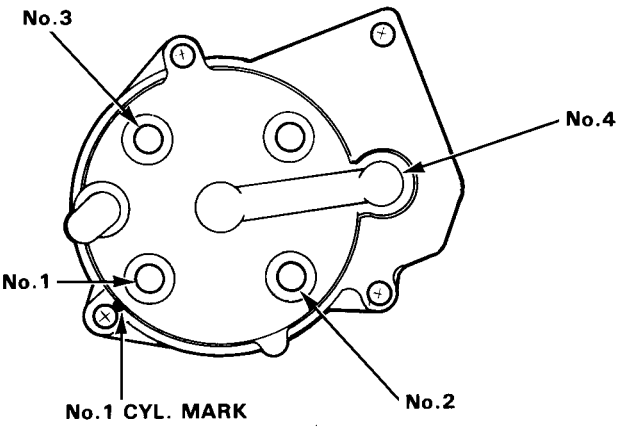
Installation:

1. Coat a new O-ring with engine oil then install it.
2. Slip the distributor into position.

   NOTE: The lugs on the end of the distributor and its mating grooves in the camshaft end are both offset to eliminate the possibility of installing the distributor 180° out of time.

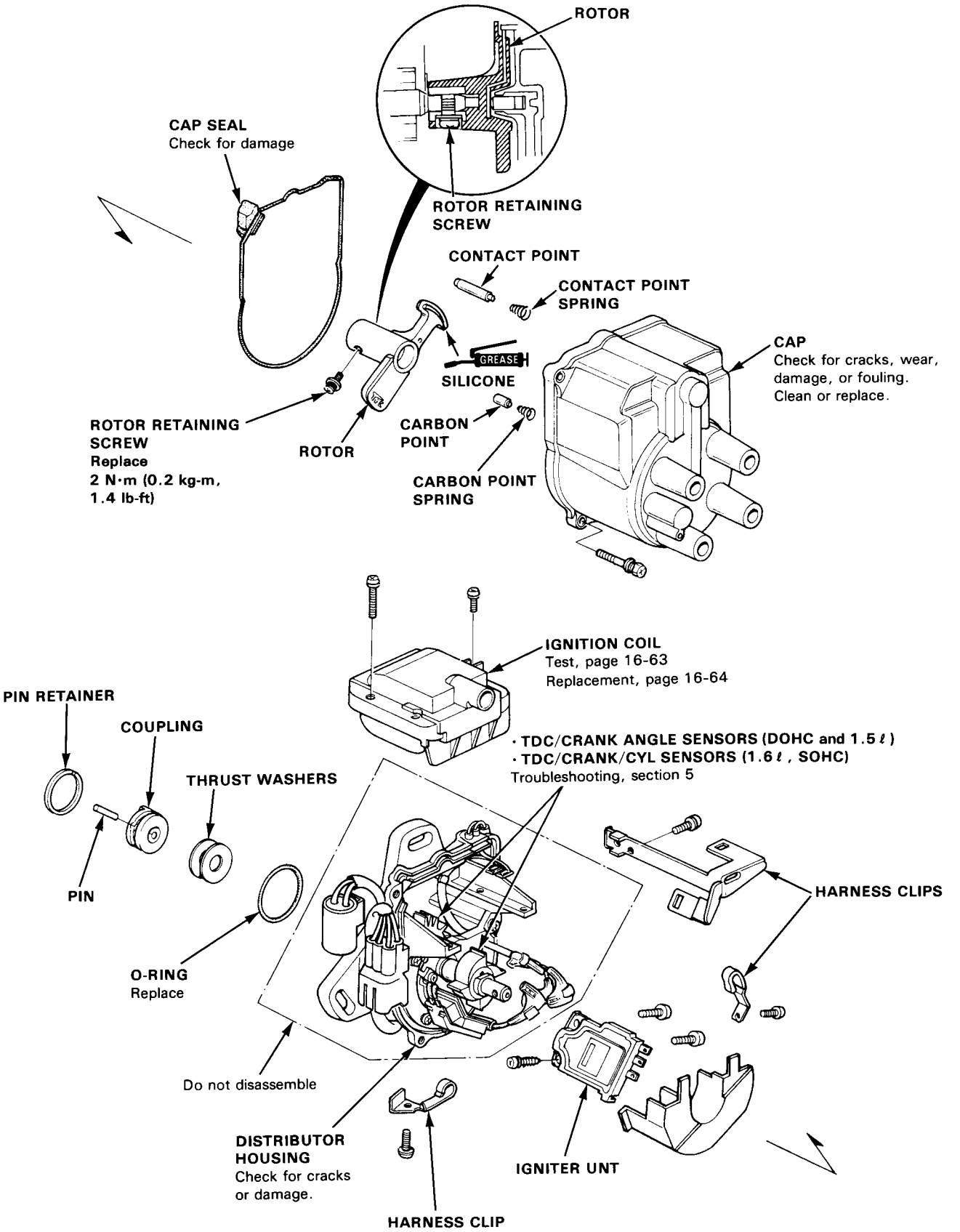


3. Install the hold-down bolts and tighten temporarily.
4. Connect the 2-P connector to the distributor and the vacuum hoses to the advance diaphragm.
5. Connect the spark pulg wires as shown.

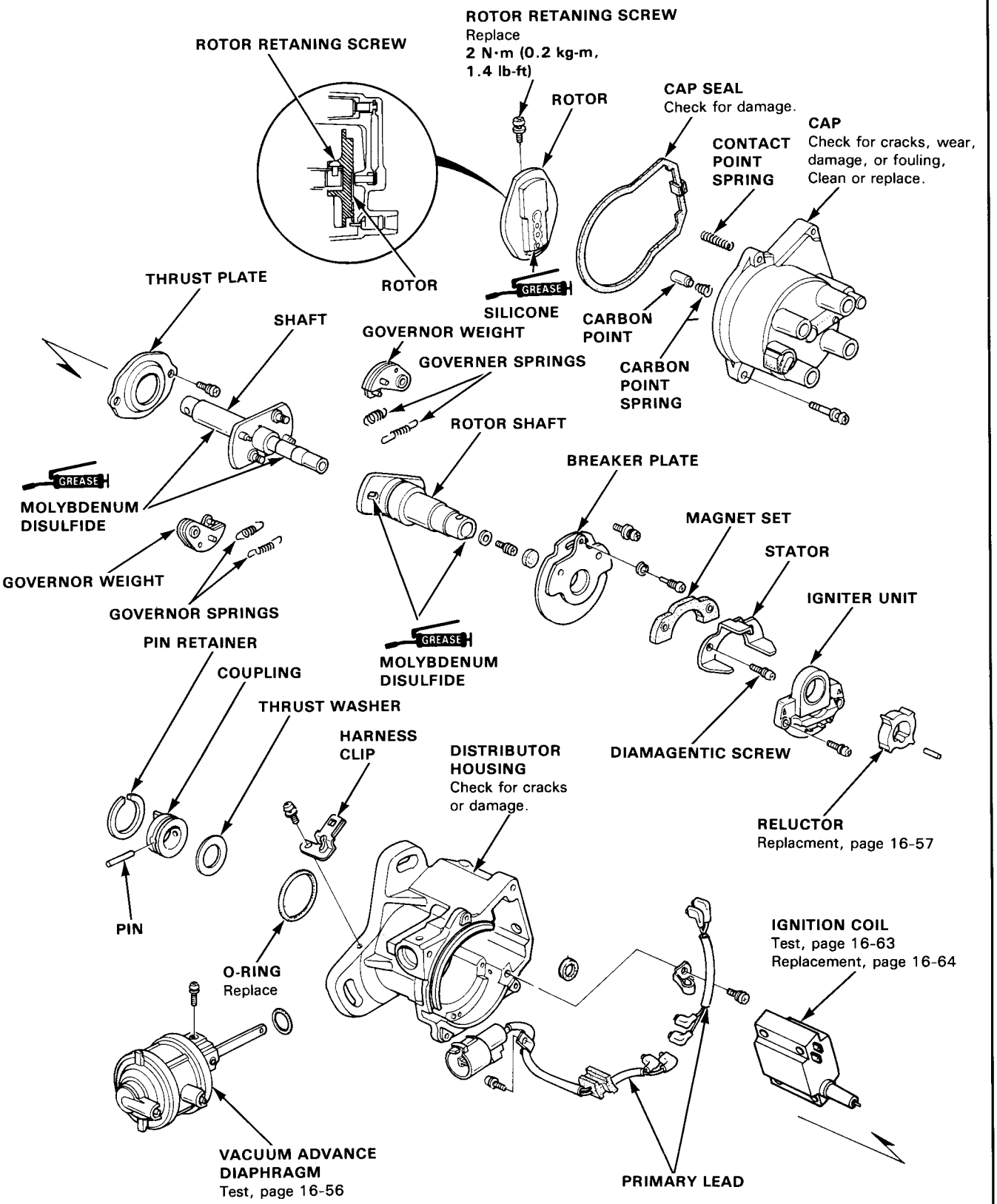


6. Set the timing with a timing light as shown on page 16-50.
7. After adjusting, tighten the hold-down bolts, then install the cap on the bolt.

Distributor Overhaul (Fuel-Injected Engine)



NOTE: After installing the reluctor, adjust the air gaps between the stator and reluctor (see page 16-52).

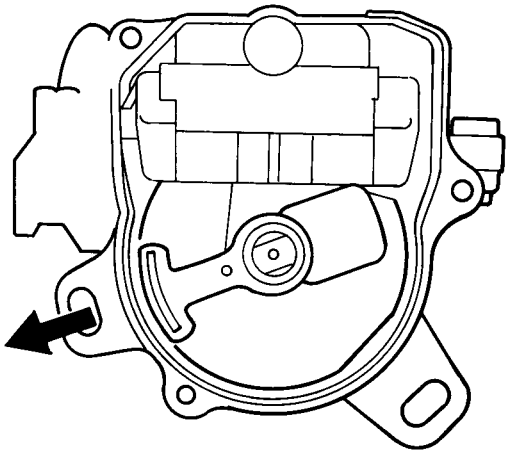


Distributor Reassembly

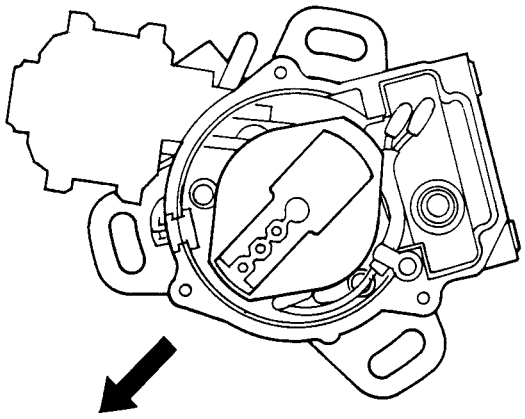
Reassemble the distributor in the reverse order of disassembly.

1. Install the rotor, then turn it so that it faces in the direction shown (toward the No.1 cylinder).

Fuel-injected engine:

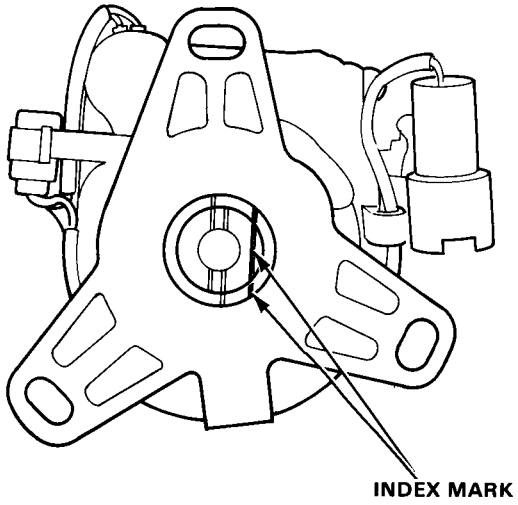


Carbureted engine:

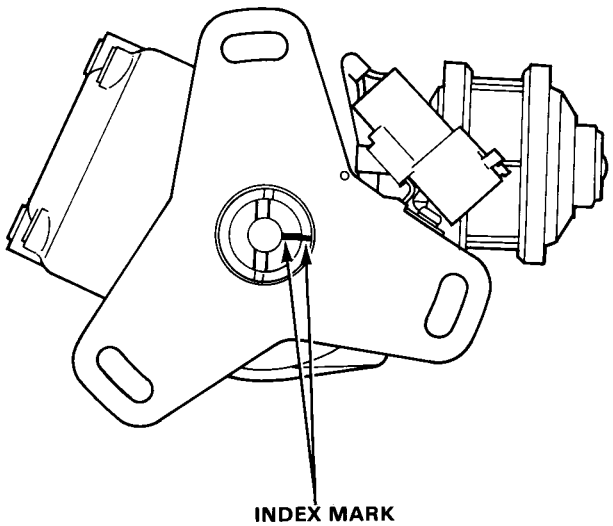


2. Set the thrust washer and coupling on the shaft.
3. Check that the rotor is still pointing toward the No.1 cylinder, then align the index mark on the housing with the index mark on the coupling.

Fuel-injected engine:



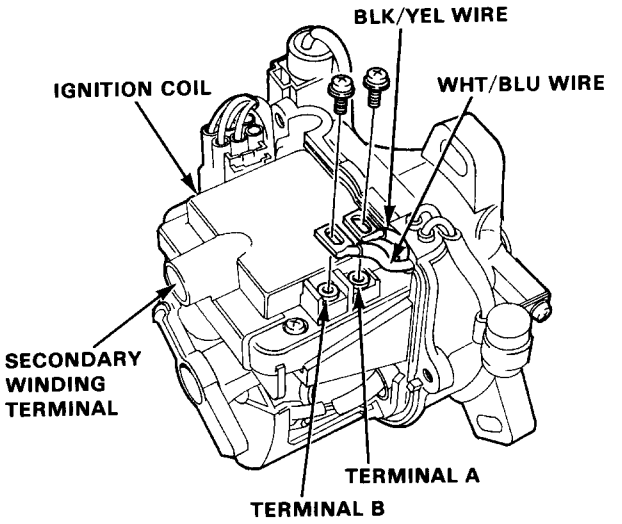
Carbureted engine:



Ignition Coil Test

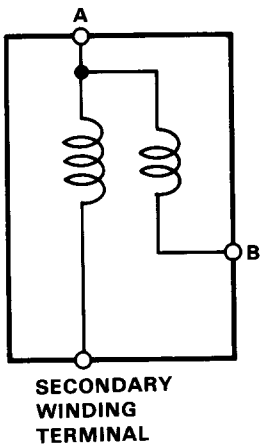
Fuel-injected engine:

1. With the ignition switch OFF, remove the distributor cap.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.



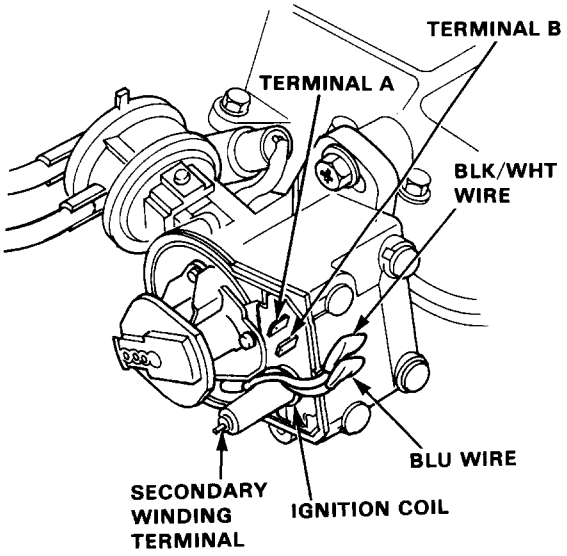
3. Using an ohmmeter, measure resistance between the terminals. Replace the coil if the resistance is not within specifications.
   NOTE: Resistance will vary with the coil temperature; specifications are at 20°C (70°F)

   Primary Winding Resistance (between the A and B terminals): 0.4—0.5 ohms
   Secondary Winding Resistance (between the A and secondary winding terminals): 9,440—14,160 ohms



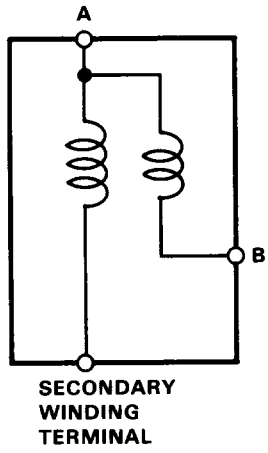
Carbureted engine

1. With the ignition switch OFF, remove the distributor cap.
2. Disconnect the BLK/WHT and BLU wires from the terminals A and B respectively.



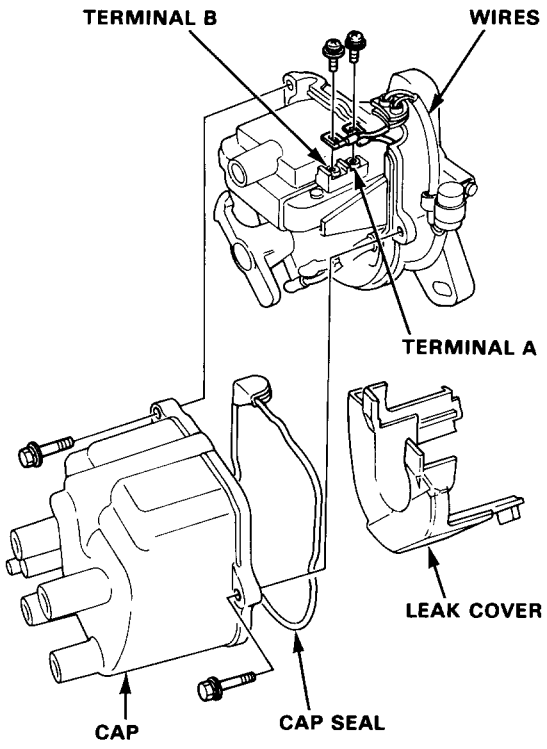
3. Using an ohmmeter, measure resistance between the terminals. Replace the coil if the resistance is not within specifications.
   NOTE: Resistance will vary with the coil temperature; specifications are at 20°C (70°F)

   Primary Winding Resistance (between the A and B terminals): 0.5—0.7 ohms
   Secondary Winding Resistance (between the A and secondary winding terminals): 10,400—15,600 ohms

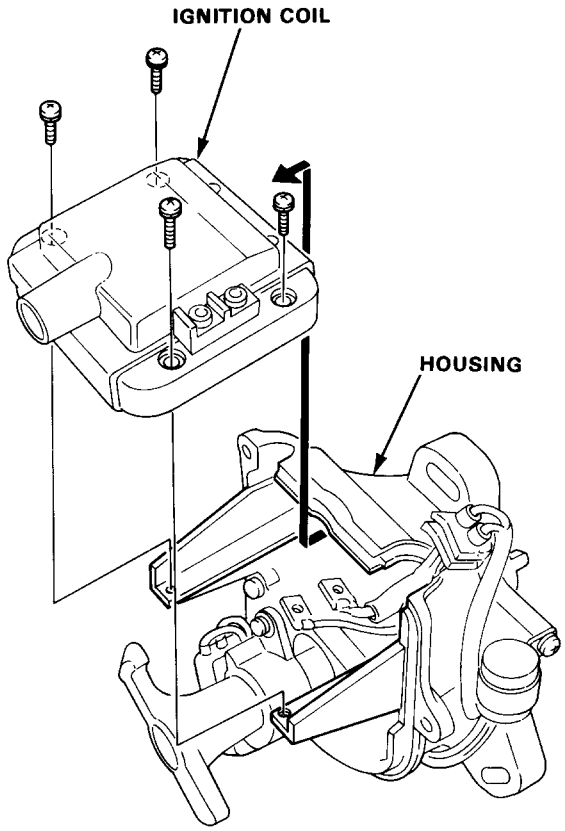


Ignition Coil Replacement (Fuel-Injected Engine)

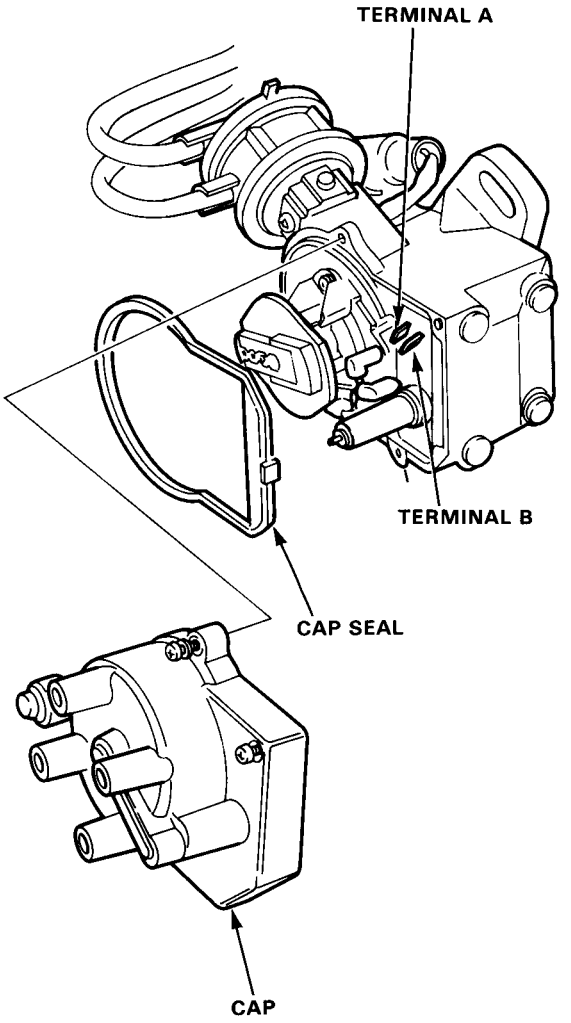
1. With ignition switch OFF, remove the distributor cap and cap seal, then remove the leak cover.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.



3. Remove the 4 screws and slide the ignition coil out of the distributor housing.

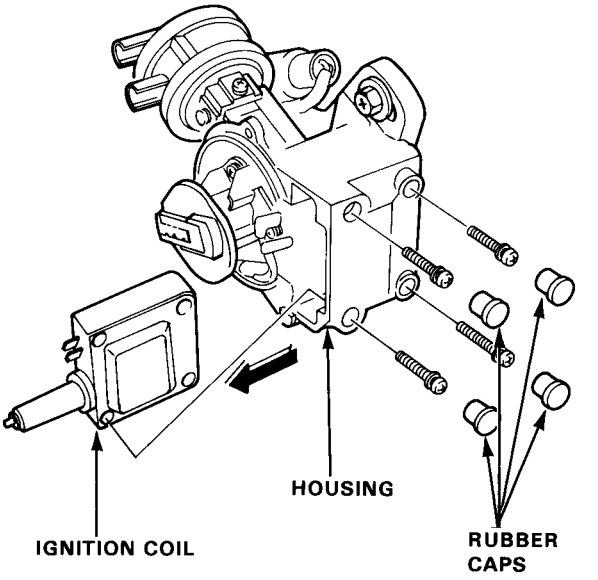


1. With ignition switch OFF, remove the distributor cap and cap seal.
2. Disconnect the BLK/WHT and BLU wires from the terminals A and B respectively.



3. Remove the rubber caps from the distributor housing.
4. Remove the 4 screws and slide the ignition coil out of the distributor housing.

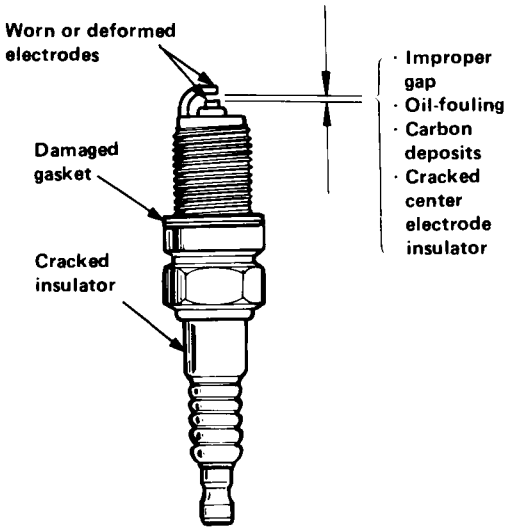
NOTE:
- Replace the rubber caps if they are worn out.
- Installing the rubber caps, apply silicon grease to them.
- Make sure that the wires are clamped and apart from a stator, etc.



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

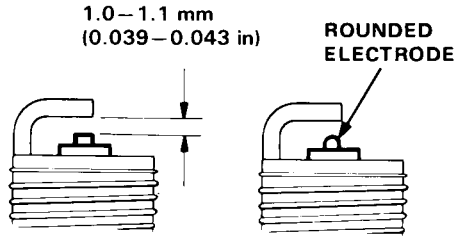
Fouled plug may be caused by:
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below:

Spark Plug:

		Standard	Optional
Unleaded gasoline	NGK	BCPR6E-11	BCPR6EY-N11 BCPR7E-11 BCPR7EY-N11
	ND	Q20PR-U11	Q22PR-U11
leaded gasoline	NGK	BCPR6E-11	BCPR5E-11 (*) BCPR7E-11
	ND	20PR-U11 20PR-UL11 (*)	16PR-U11 (*) 16PR-UL11 (*) 20PR-U11 (*) 22PR-U11 22PR-UL11 (*)

(*): 1.6 ℓ DOHC only



3. Adjust the gap with a suitable gapping tool.

   Electrode Gap: 1.0–1.1 mm (0.039–0.043 in)

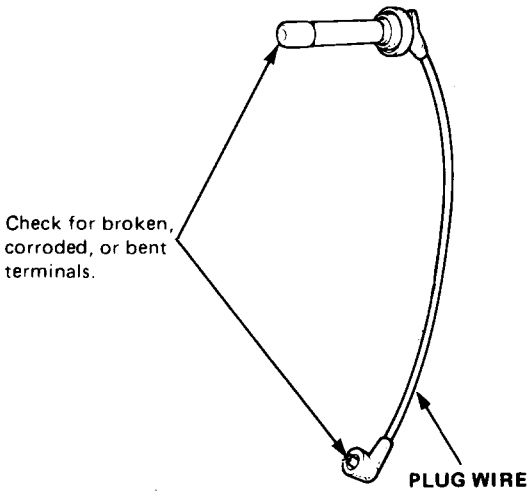
4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

   NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Ignition Wire Inspection and Test

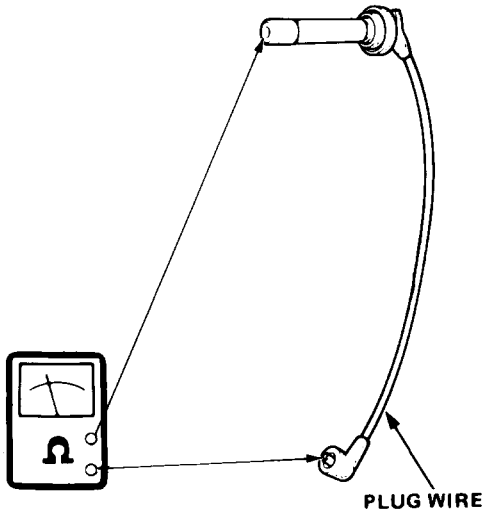
CAUTION: Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wire or the conductor may be broken.

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.

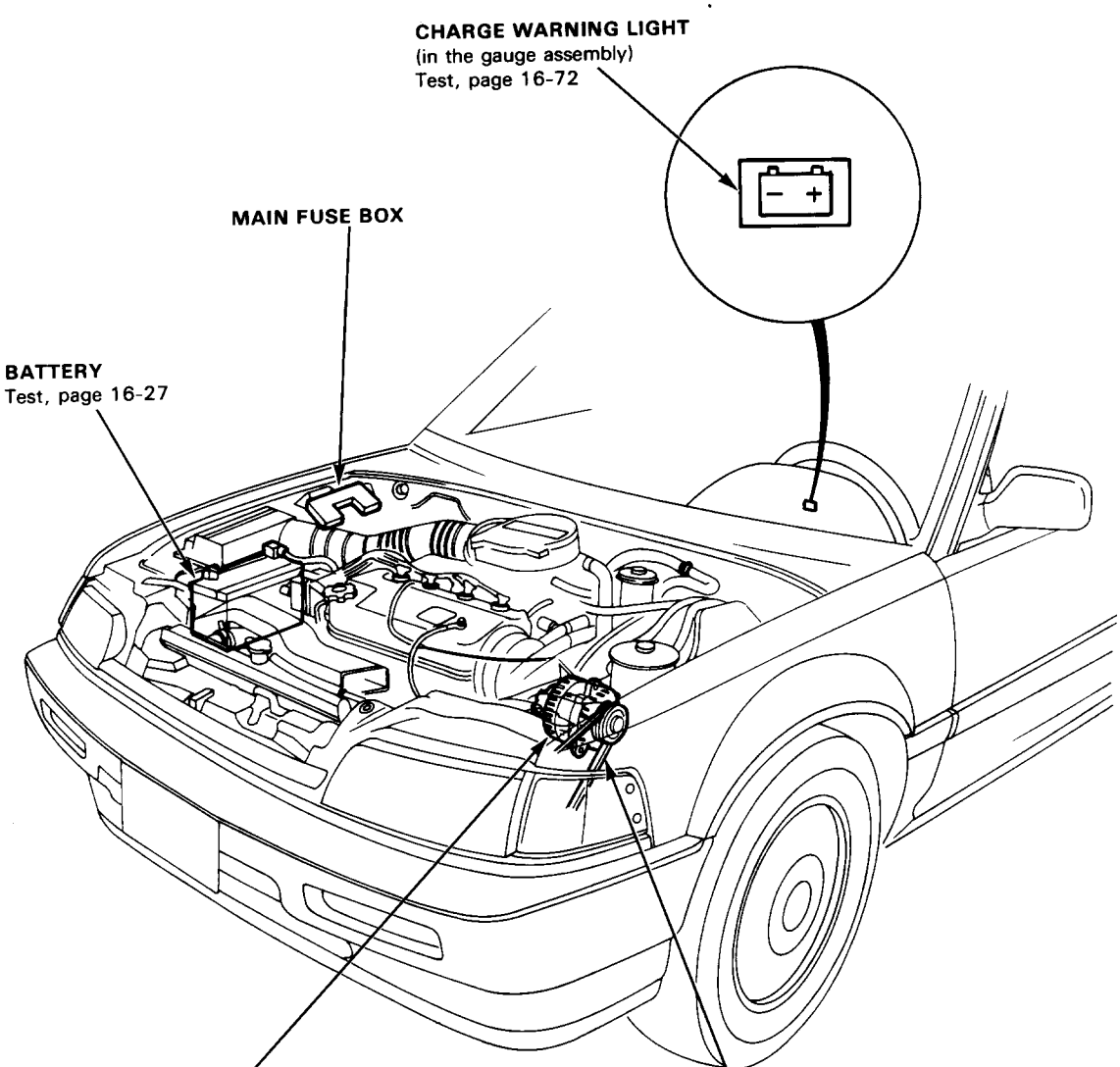
   Ignition Wire Resistance:
   25,000 ohms max. at 20°C (70°F)



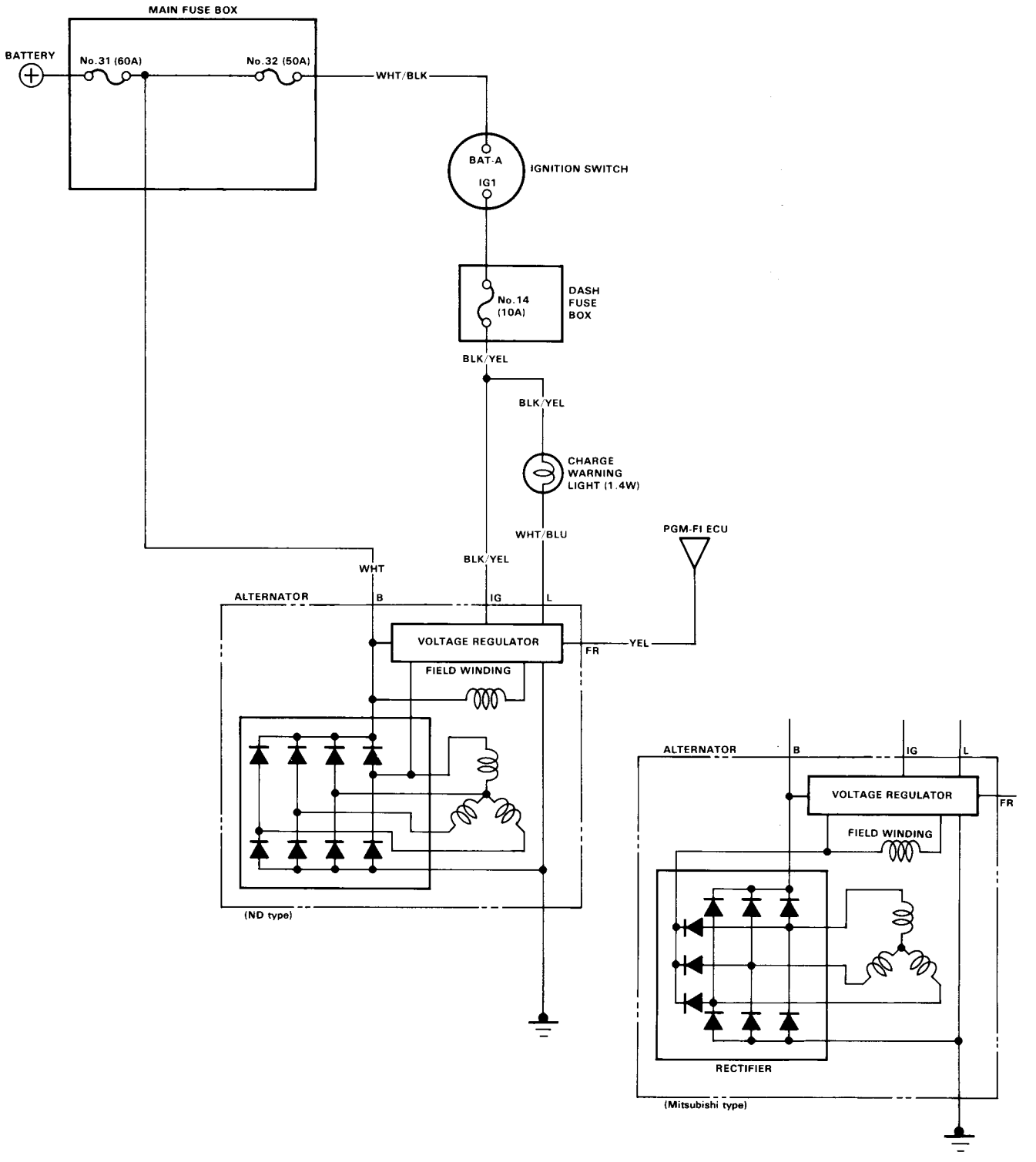
3. If resistance exceeds 25,000 ohms, replace the ignition wire.

Charging System

Component Location Index



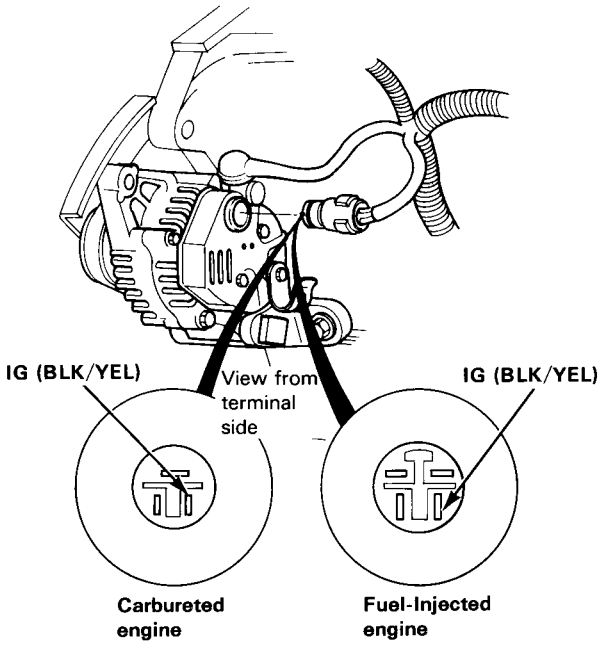
Circuit Diagram



Alternator and Regulator Test

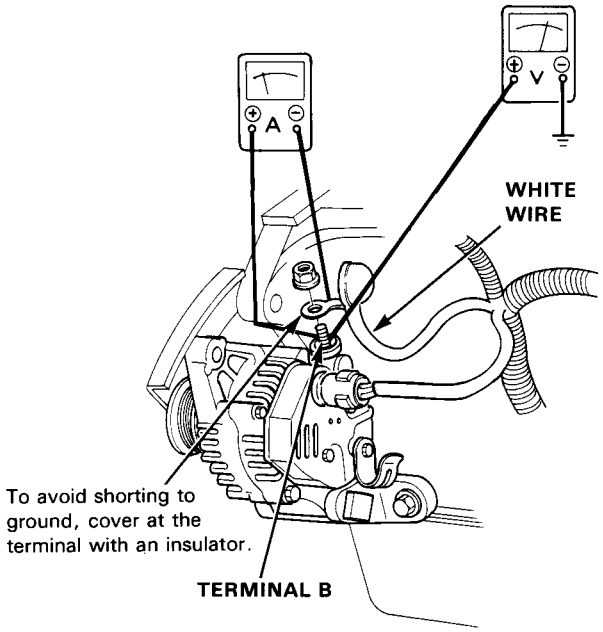
1. First make sure you have a good battery, and that the alternator belt, and connections at the alternator and main fuses are good. Next, check the No.14 (10A) fuse in the dash fuse box. (If blown, the charge warning light will come on even if the system is working properly)

2. Disconnect the alternator connector from the alternator.
   With the ignition switch on, there should be battery voltage between the IG (BLK/YEL) terminal and body ground.



- If there is no voltage, check for an open in the BLK/YEL wire between the dash fuse box and voltage regulator.
- If there is battery voltage, go to step 3.

3. If these check OK, connect a voltmeter between the alternator terminal B and body ground, and an ammeter (100 amp capacity or higher) between the alternator terminal B and the white wire as shown. (An inductive pick up can be used instead of disconnecting the white wire.)

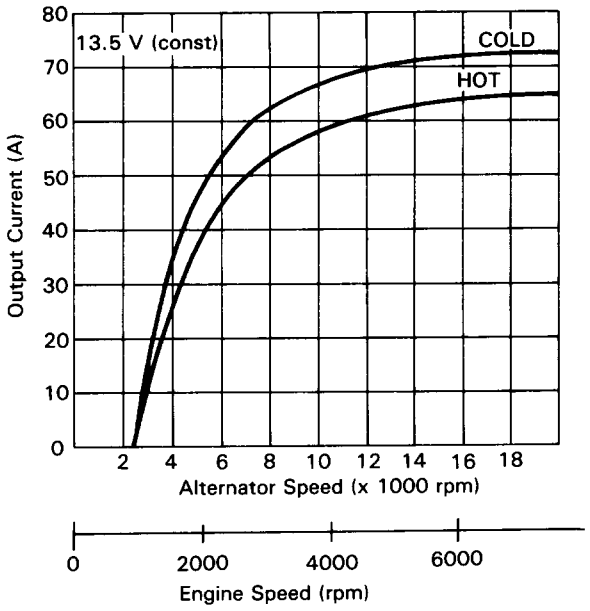


4. Start the engine, and turn on the headlights, blower motor, rear window defogger, etc.

   NOTE: If voltage stays above 13.5 V, apply electrical load more to lower the voltage to less than 13.5 V. If the voltage exceeds 16 V, stop the engine and replace the voltage regulator.

5. Compare the readings to the chart below. If no output or below specification, go to step 7. If output is within specification, go to step 6.

NOTE: Subtract 5 to 10 amperes from the maximum reading due to engine operation.



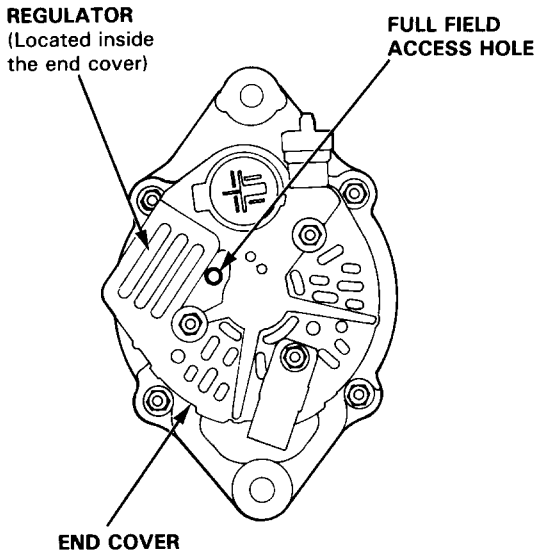
6. Turn off all loads in step 4, then measure the alternator output voltage at 1,500 rpm.

- If the voltage is between 13.9 V and 15.1 V, the alternator and regulator are OK.
  If the charge warning light is still on, see Charge Warning Light Test.

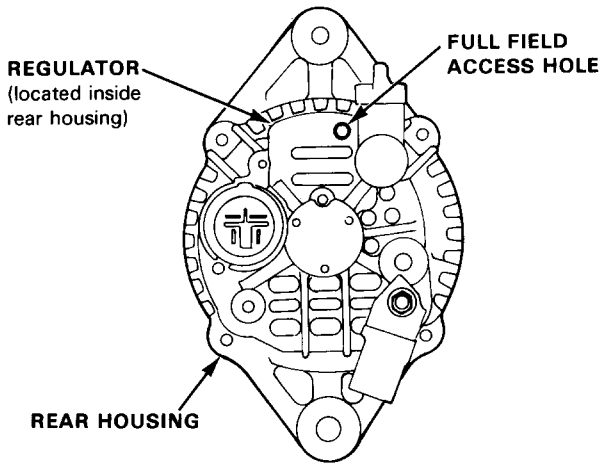
7. Perform a full-field test: Insert a short screwdriver into the full field access hole at the back of the alternator. While grounding the screwdrive and check amperage reading.

CAUTION: The voltage will rise quickly when the alternator is full fielded. Do not allow the voltage to exceed 18 volts or damage to the electrical system may result.

Nippon Denso type:



Mitsubishi type:

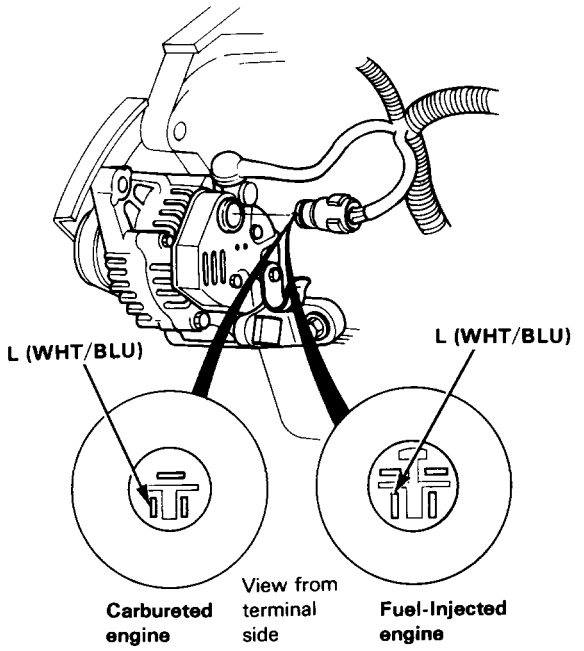


- If the amperage is not within specification, replace the alternator.
- If the amperage is within specification, replace the voltage regulator.

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.



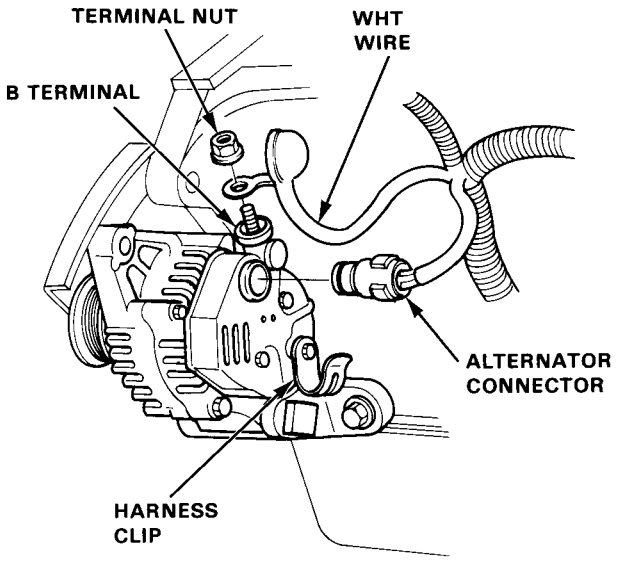
- If the warning light still does not come on, check for:
  - Blown No. 14 (10 A) fuse in the dash fuse box.
  - Bad bulb.
  - An open in the WHT/BLU wire between the warning light and voltage regulator.
  - An open in the BLK/YEL wire between the warning light and the dash fuse box, or the dash fuse box and the ignition switch.

- If the light comes on, check the alternator and regulator (see page 16-70).

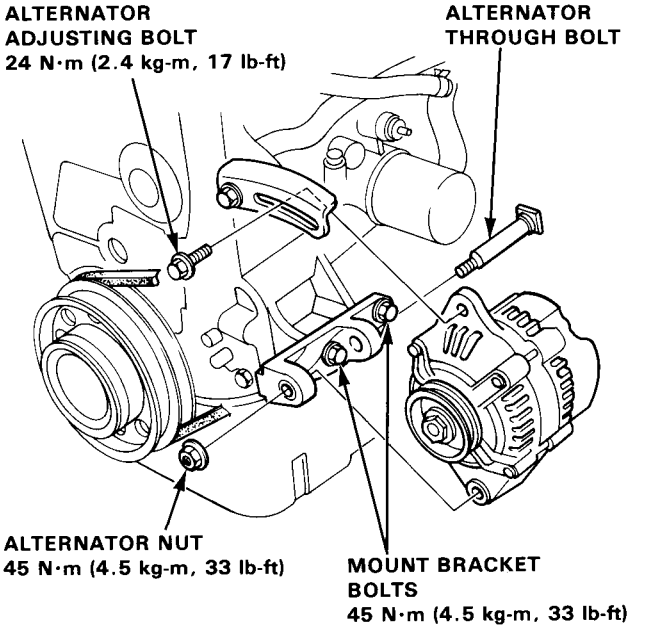
2. Start the engine and let it idle. The charge warning light should go off.
   If it stays on this time, check the alternator and regulator (see page 16-70).

Alternator Replacement

1. Disconnect the ground wire from the battery negative (−) post.
2. Disconnect the alternator connector from the alternator.
3. Remove the terminal nut and the WHT wire from the B terminal.



4. Remove the adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.
5. Remove the alternator throught bolt, then remove the alternator.



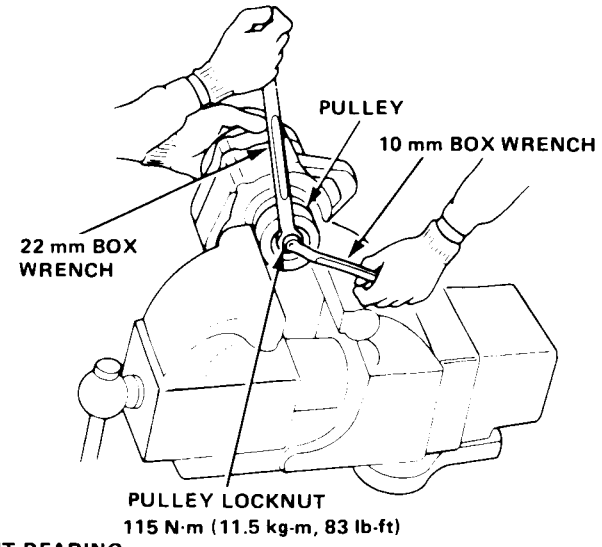
6. If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.
7. adjust the alternator belt tension after installation (see page 16-70).

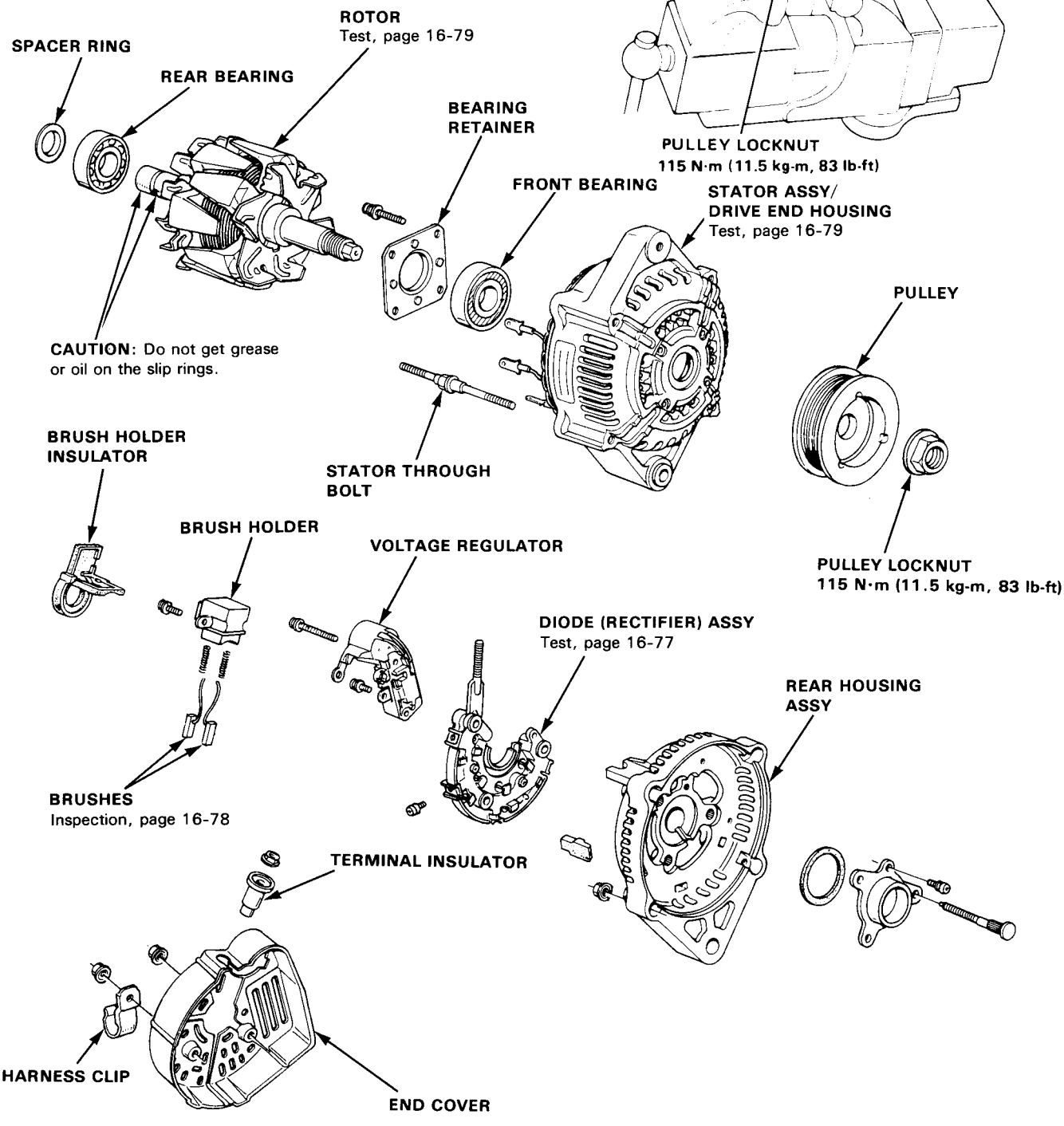
Charging System

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.

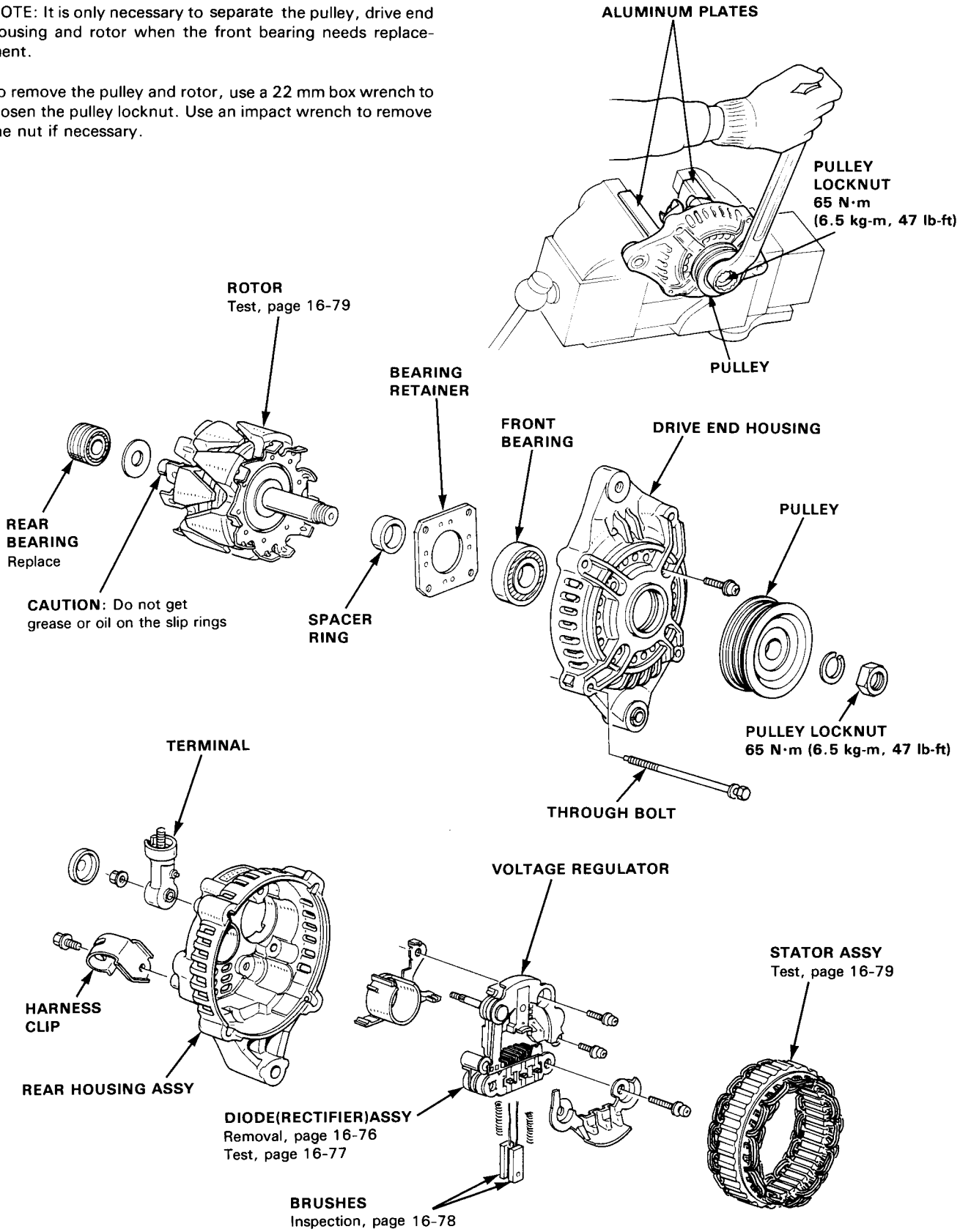




(Mitsubishi type)

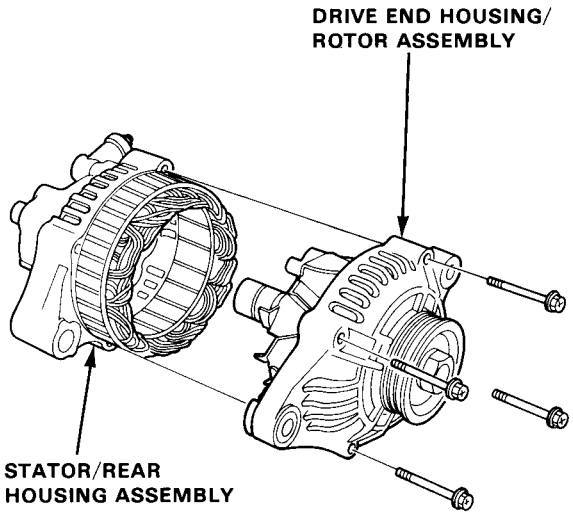
NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

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.

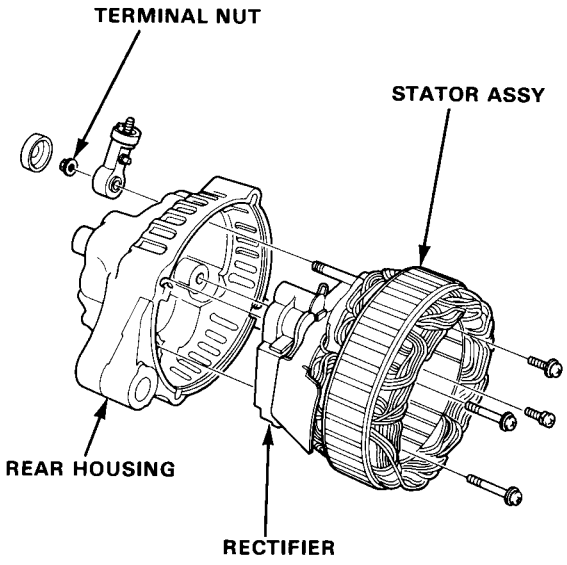


Rectifier Removal (Mitsubishi type)

1. Separate the drive end housing/rotor assembly from the stator/rear housing assembly by removing 4 bolts.

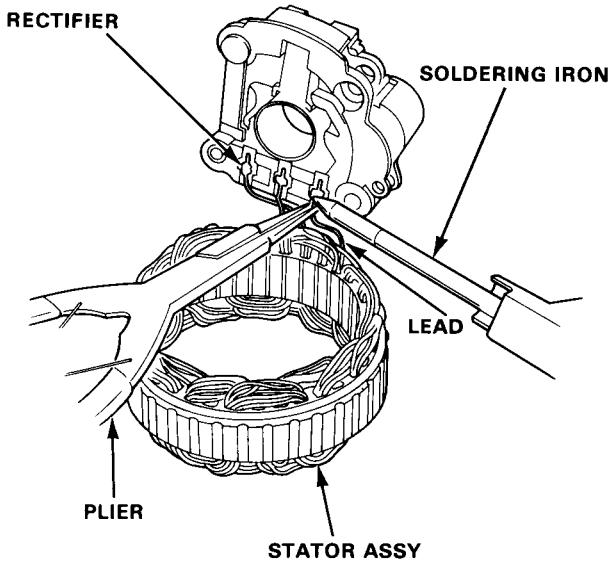


2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut from the rear housing.



3. Unsolder the rectifier from the stator leads.

   NOTE: Pinch the stator lead with pliers to take away heat.



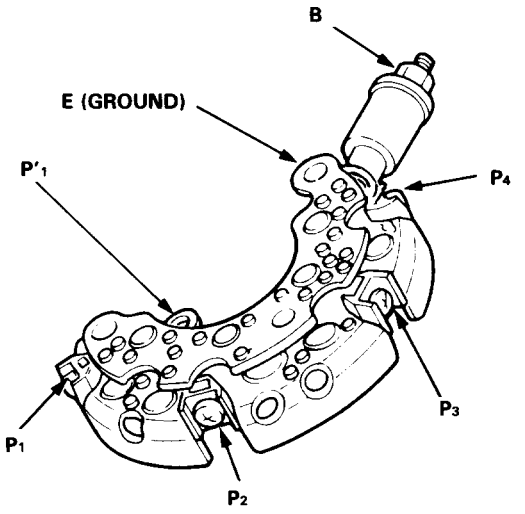
CAUTION: When installing the rectifier, use only a rosin core type solder or solder joints will corrode.

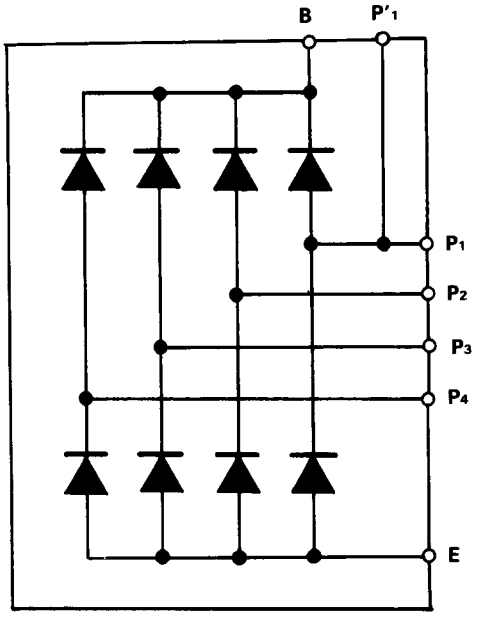
Rectifier Test

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.



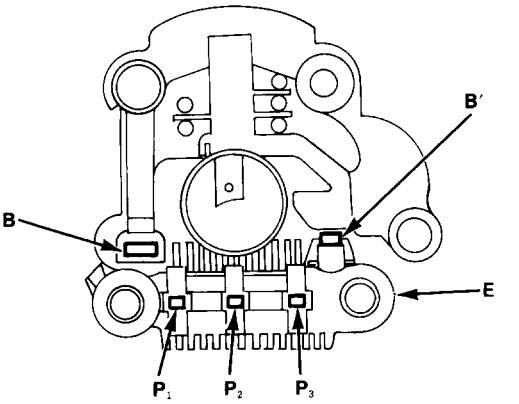


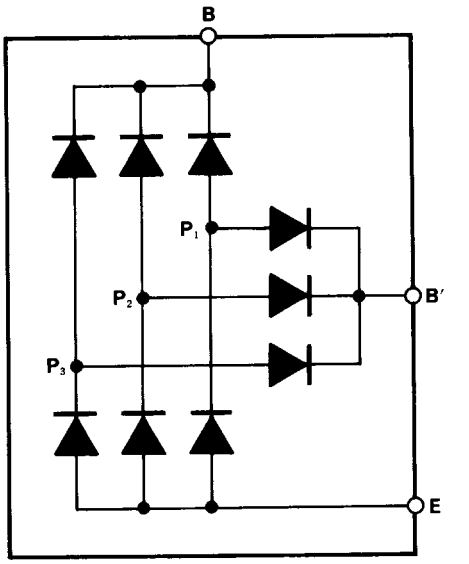
2. If any of the 8 diodes fails, replace the rectifier assembly (diodes are not available separately).

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).

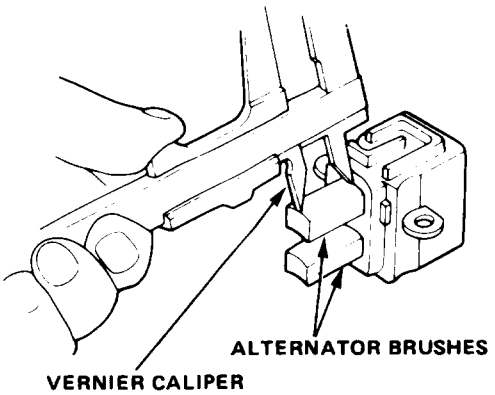
Alternator Brush Inspection

CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

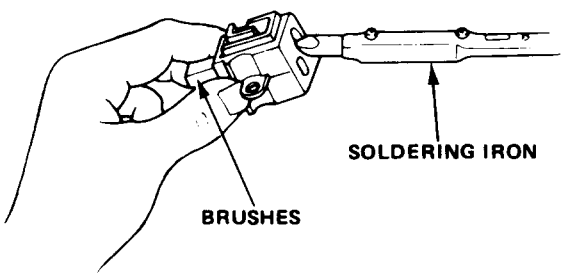
Nippon Denso type:

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)



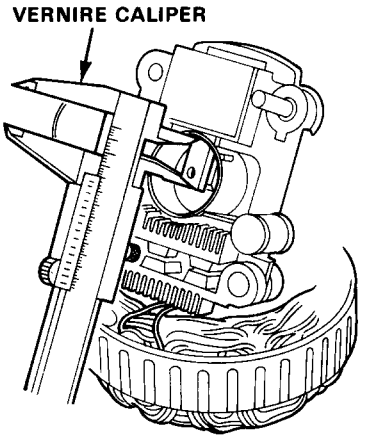
If the brushes are not within the service limit, replace them.



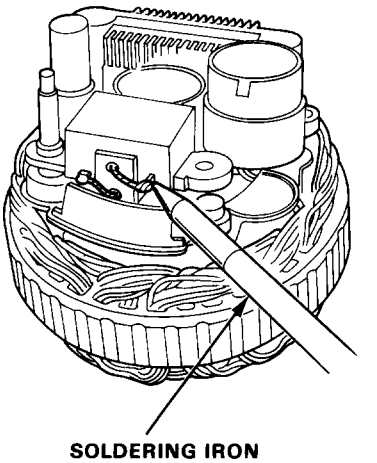
Mitsubishi type:

1. Separate the drive end housing /rotor assembly from the stator/rear housing assembly by removing 4 screws (see page 16-76).
2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut fom the rear housing (see page 16-76).
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)

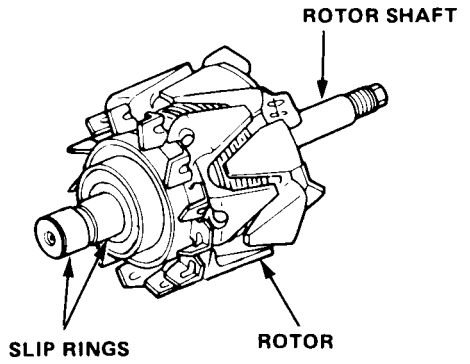


If the brushes are not within the service limit, replace them.



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.

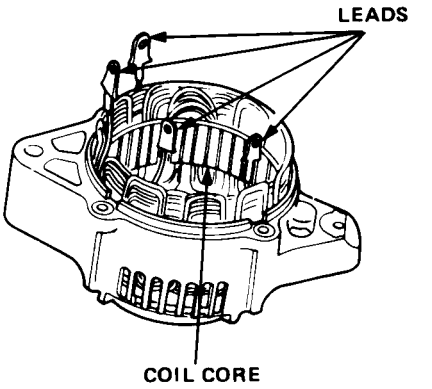


3. If the rotor fails either continuity check, replace it.

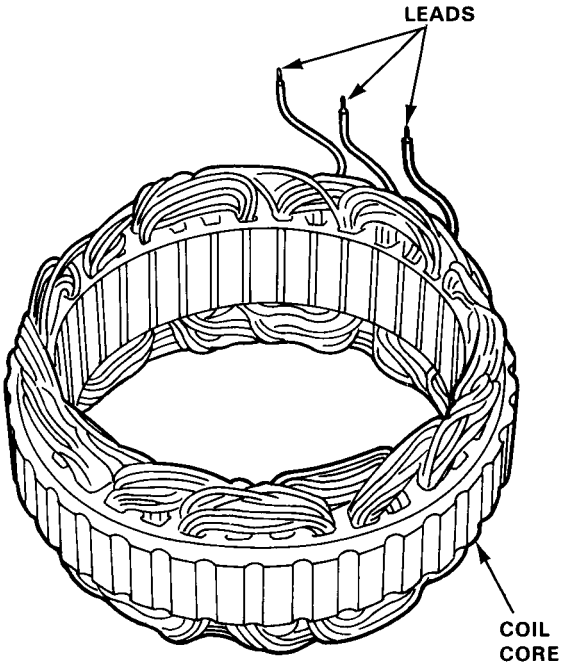
Stator Test

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:

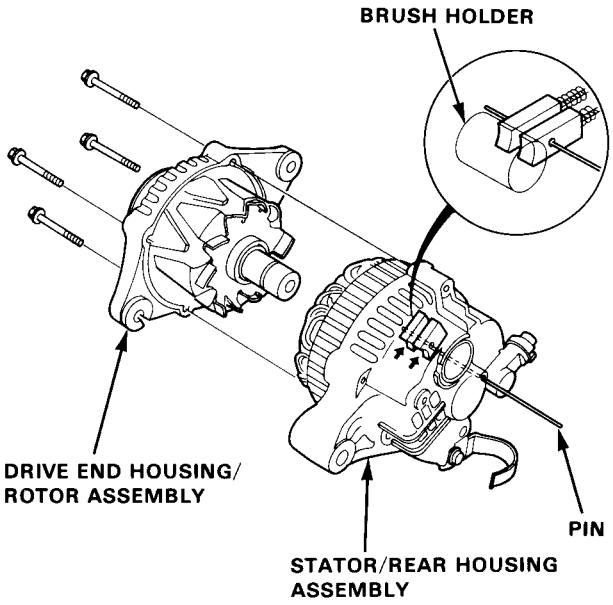


3. If the coil fails either continuity check, replace the stator.

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.



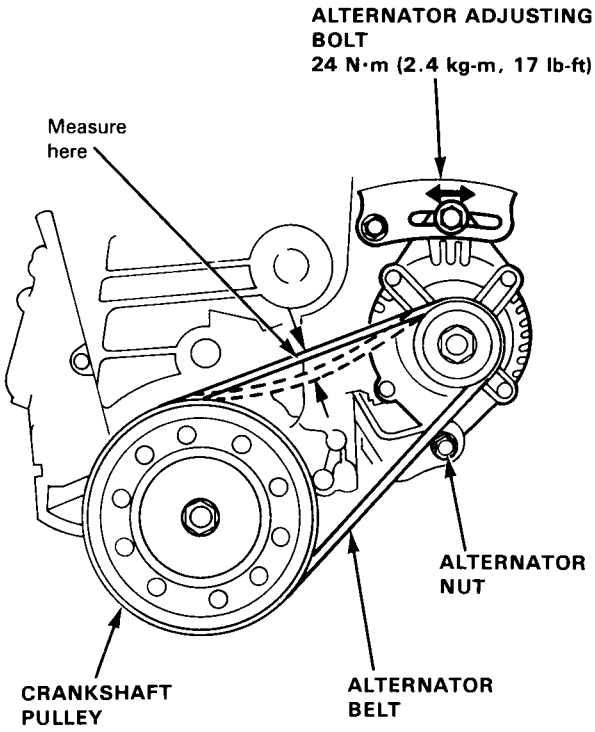
2. Set the drive end housing /rotor assembly into the stator/rear housing assembly, tighten the through bolts, then pull out the pin.

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)

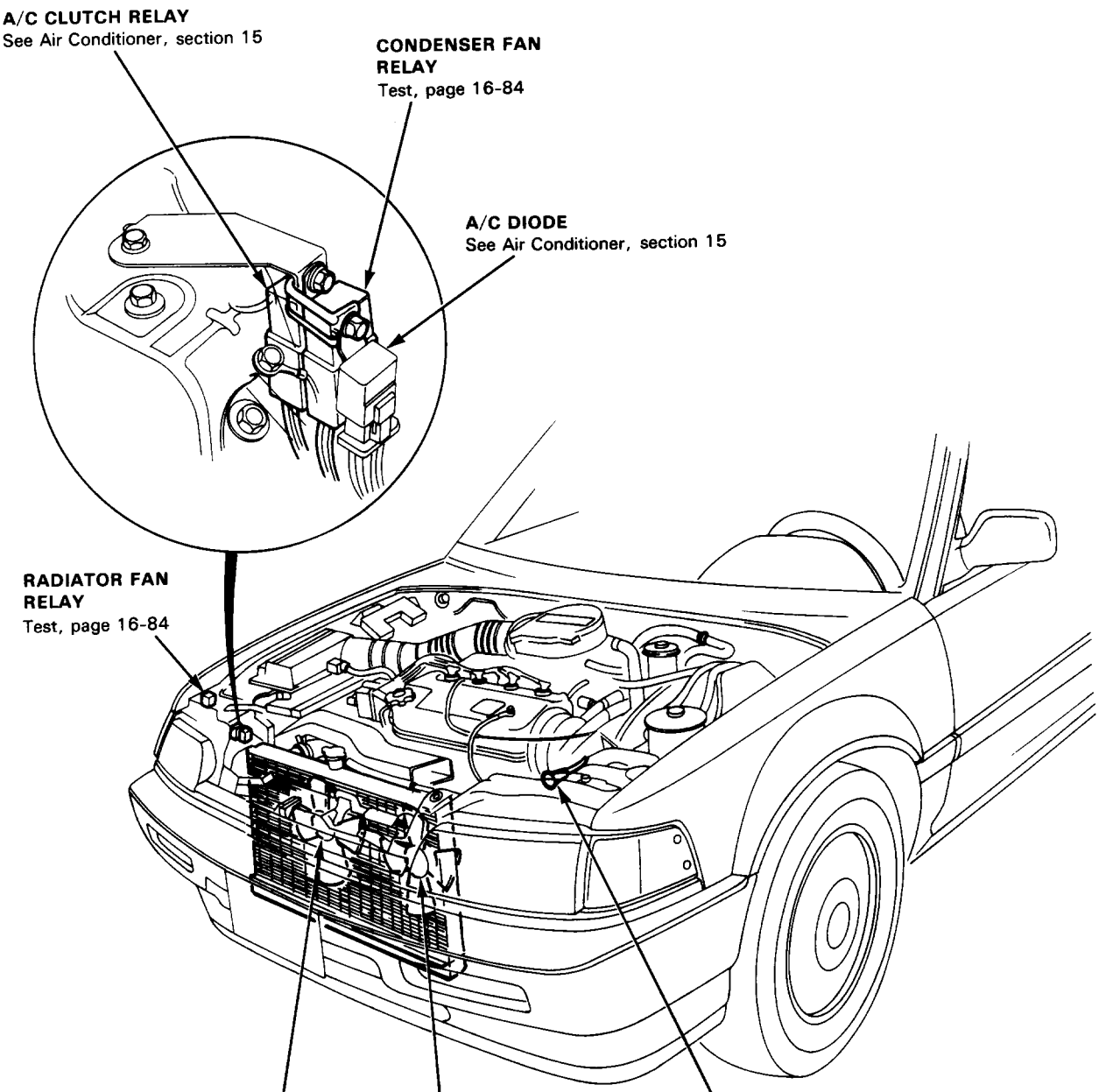
   NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.25—0.35 in) when first measured.



2. Loosen the alternator adjusting bolt and nut.
3. Move the alternator to obtain the proper belt tension, then retighten the adjusting bolt and nut.
4. Recheck the deflection of the belt.

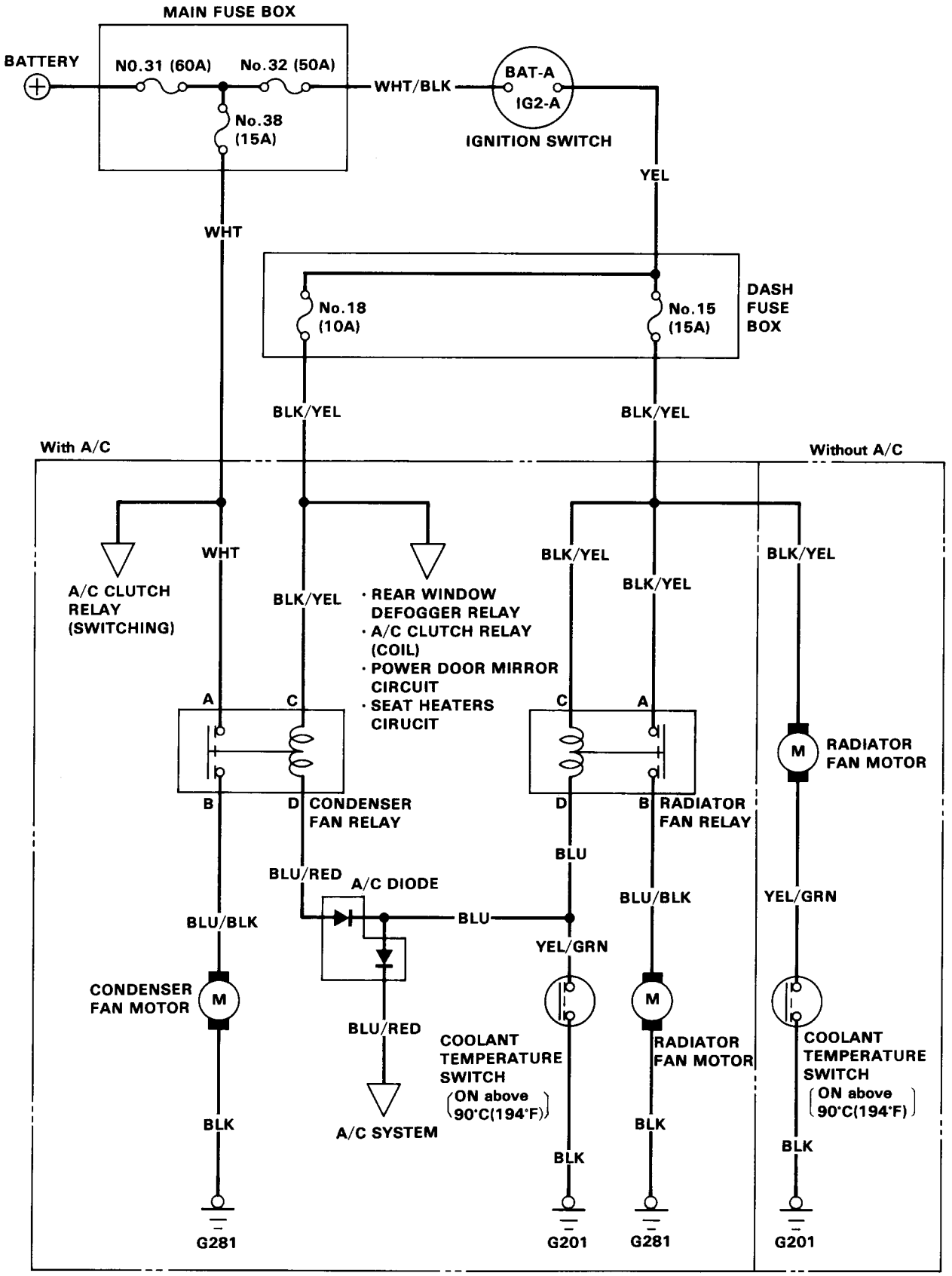
Cooling Fan System

Component Location Index



Cooling Fan System

Circuit Diagram

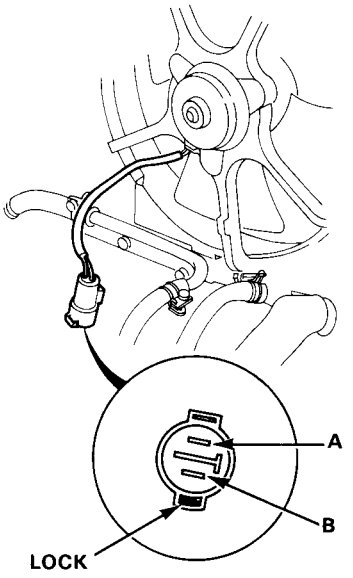


Fan Motor Test

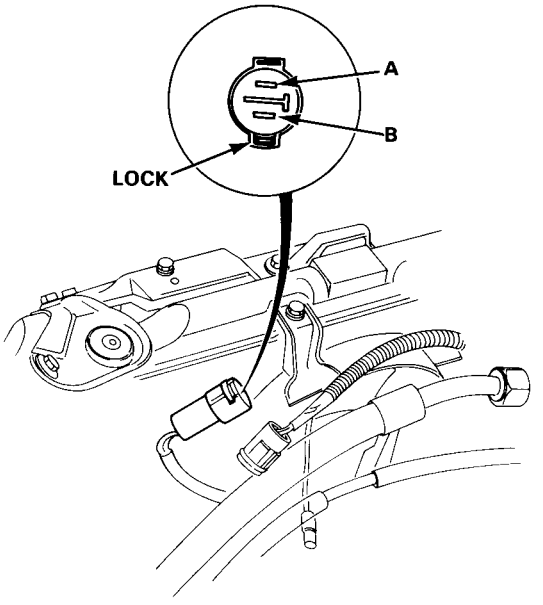
1. Disconnect the 2-P connector from the fan motor.
2. Test motor operation by connecting battery positive to the A terminal, and negative to the B terminal.
3. If the motor fails to run smoothly, replace it.

<A-Type>

Radiator Fan Motor:

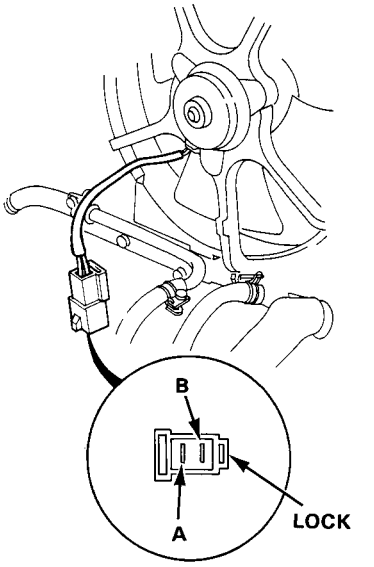


Condenser Fan Motor:

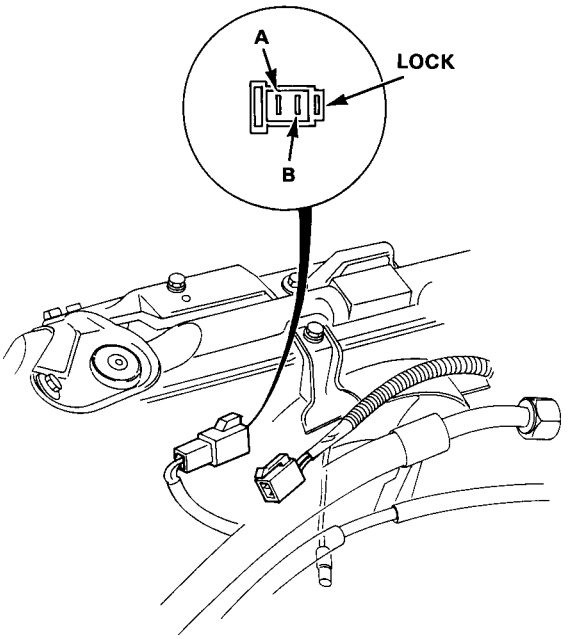


<B-Type>

Radiator Fan Motor:



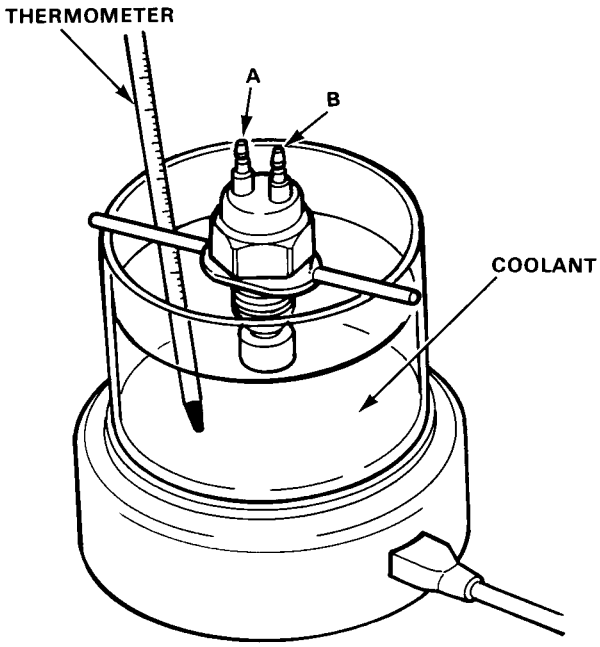
Condensor Fan Motor:



Cooling Fan System

Coolant Temperature Switch Test

1. Remove the coolant temperature switch from the rear of the engine cylinder block.
2. Suspend the coolant temperature switch in a container of coolant as shown.

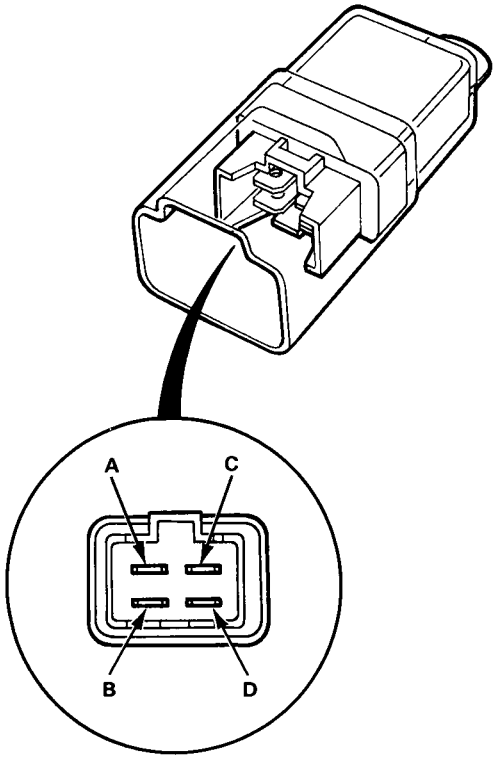


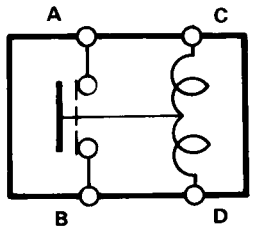
3. Heat the coolant and check coolant temperature with a thermometer (see table below).
4. Check for continuity between the A and B terminals according to the table.

Temperature \ Terminal	A	B
Above 88.5—91.5°C (191—197°F)	○	○
Below 83.5—86.5°C (182—188°F)		

Relay Test

1. Remove the radiator fan relay on the right front inner fender or condenser fan relay on the right front bulkhead.
2. There should be continuity between the A and B terminals when the battery in connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.

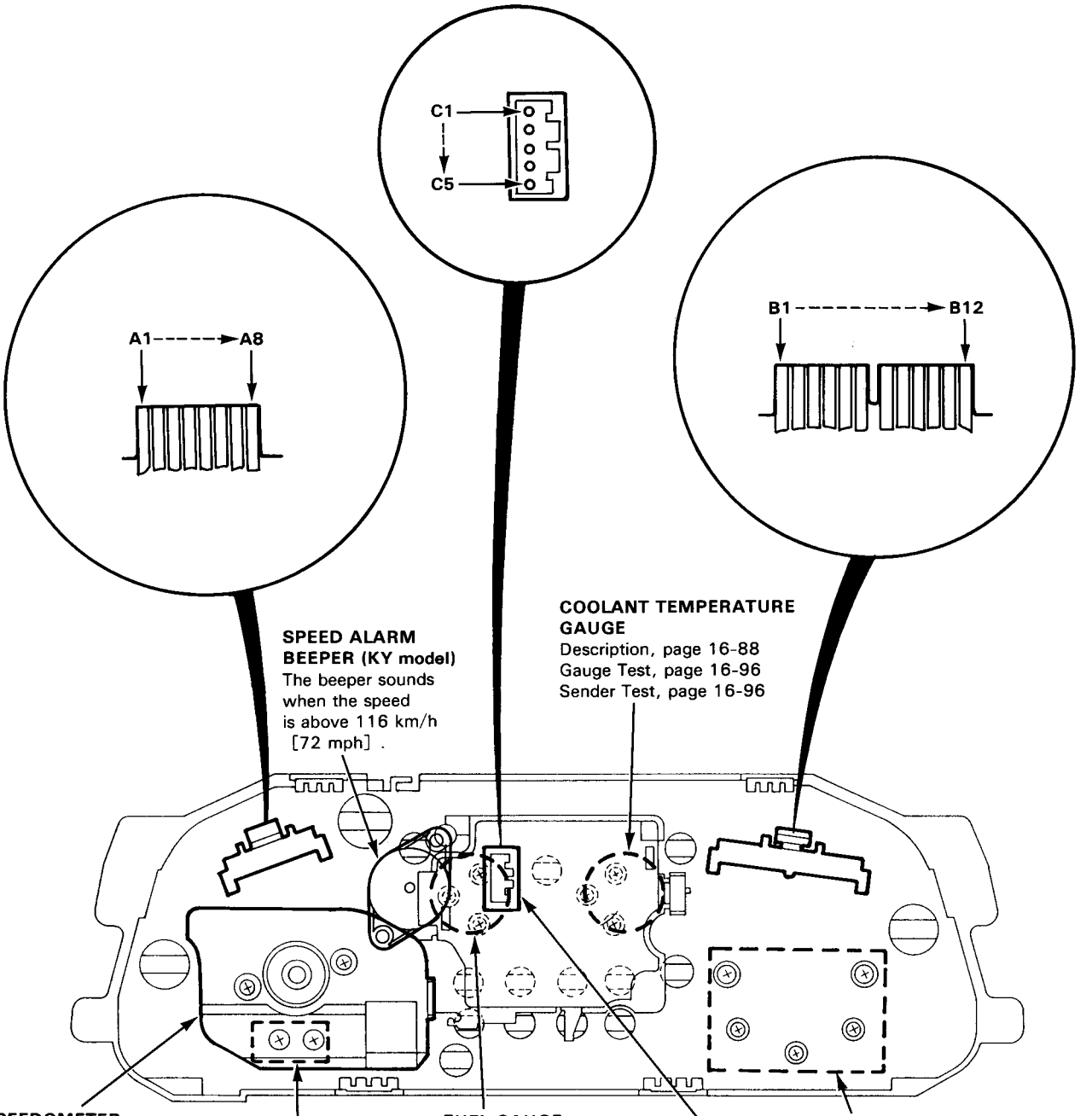




Gauge Assembly

Gauge/Indicator Location Index

· **GAUGE ASSEMBLY**
Removal, page 16-89
Disassembly, page 16-93



SPEED ALARM BEEPER (KY model)
The beeper sounds when the speed is above 116 km/h [72 mph] .

COOLANT TEMPERATURE GAUGE
Description, page 16-88
Gauge Test, page 16-96
Sender Test, page 16-96

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 16-92

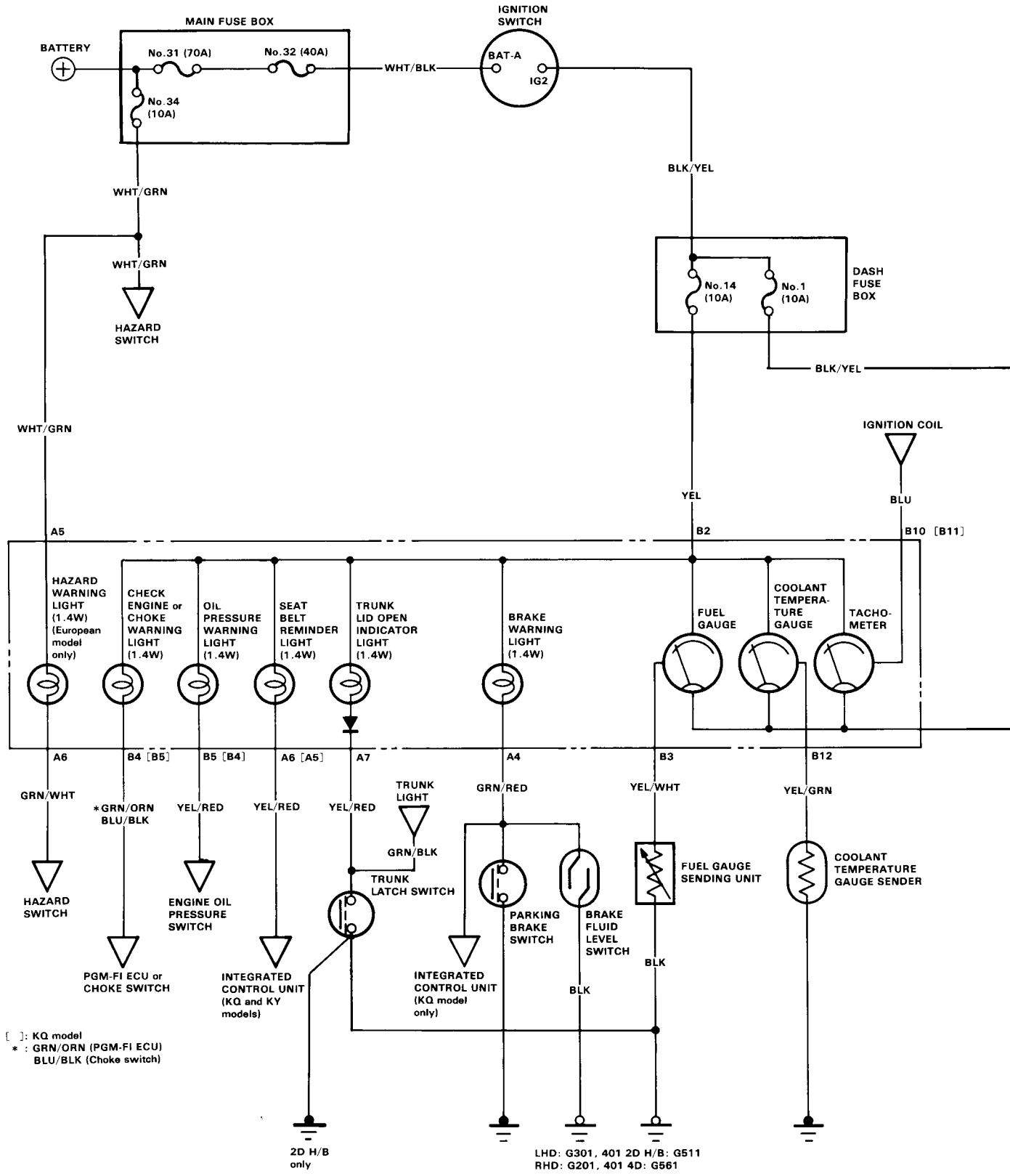
FUEL GAUGE
Description, page 16-88
Gauge Test, page 16-94
Sending Unit Test/Replacement, page 16-94 and 95

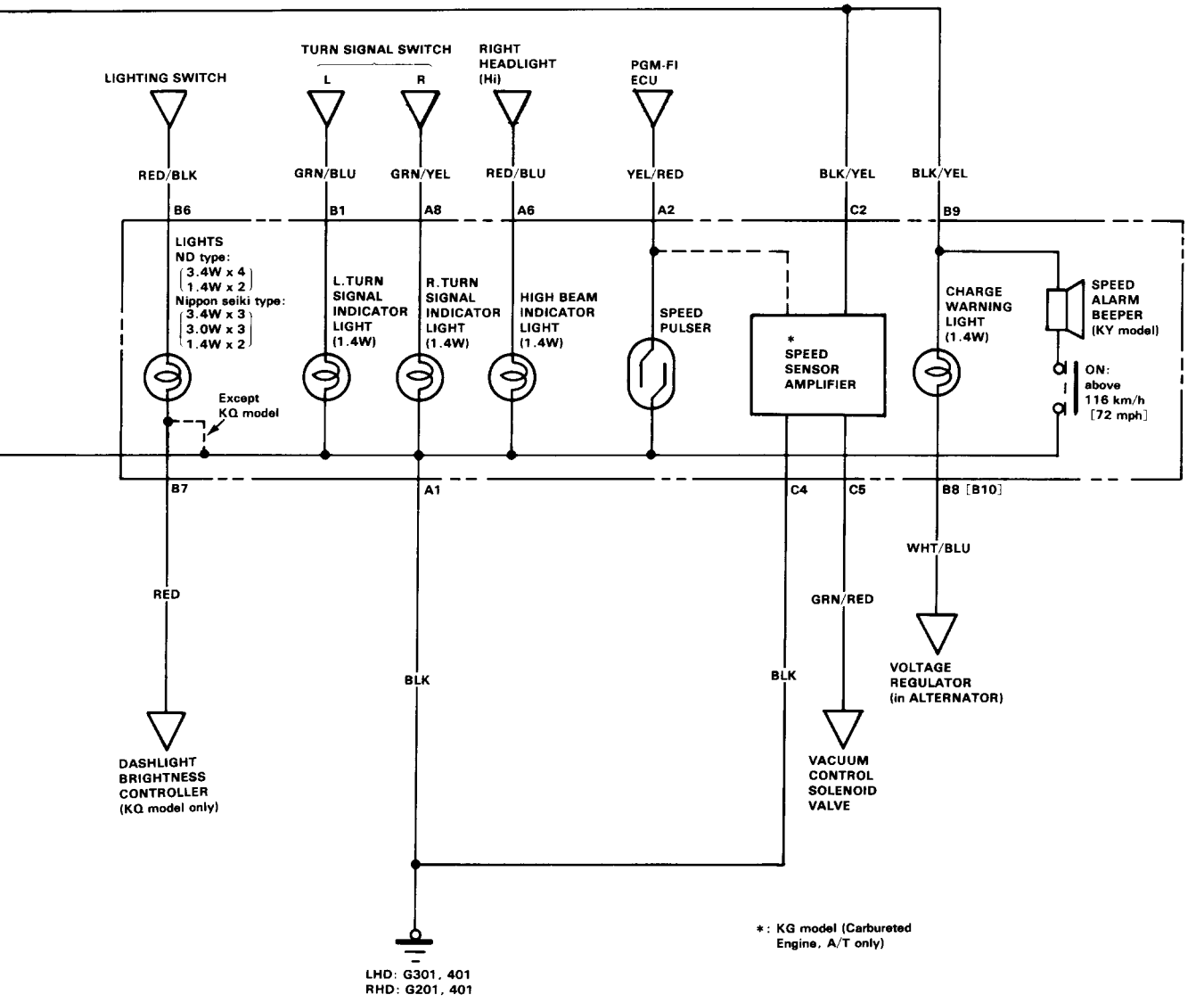
SPEED SENSOR AMPLIFIER (KG model)
Outputs about 5V when the speed is above 60 km [37 mph] .

TACHOMETER
Indicates 100 min^{-1} (rpm) 200 pulses per minute of the igniter unit.

Gauge Assembly

Circuit Diagram



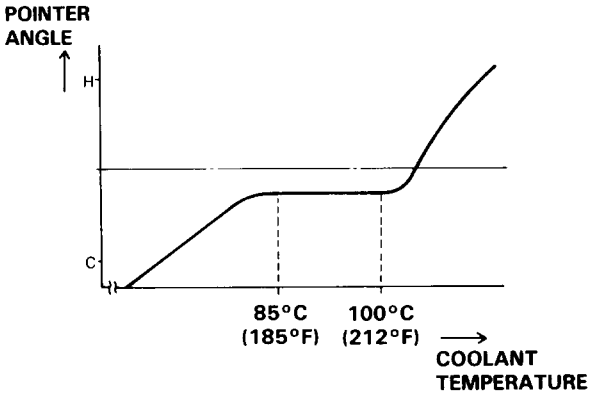

LIGHTING SWITCH
TURN SIGNAL SWITCH
L
R
RIGHT HEADLIGHT (Hi)
PGM-FI ECU
RED/BLK
GRN/BLU
GRN/YEL
RED/BLU
YEL/RED
BLK/YEL
BLK/YEL
B6
B1
A8
A6
A2
C2
B9
LIGHTS
ND type:
3.4W x 4
1.4W x 2
Nippon seiki type:
3.4W x 3
3.0W x 3
1.4W x 2
L.TURN SIGNAL INDICATOR LIGHT (1.4W)
R.TURN SIGNAL INDICATOR LIGHT (1.4W)
HIGH BEAM INDICATOR LIGHT (1.4W)
SPEED PULSER
* SPEED SENSOR AMPLIFIER
CHARGE WARNING LIGHT (1.4W)
SPEED ALARM BEEPER (KY model)
ON: above 116 km/h [72 mph]
Except KΩ model
B7
A1
C4
C5
B8 [B10]
WHT/BLU
RED
GRN/RED
BLK
BLK
VOLTAGE REGULATOR (in ALTERNATOR)
DASHLIGHT BRIGHTNESS CONTROLLER (KΩ model only)
VACUUM CONTROL SOLENOID VALVE
LHD: G301, 401
RHD: G201, 401
*: KG model (Carbureted Engine, A/T only)

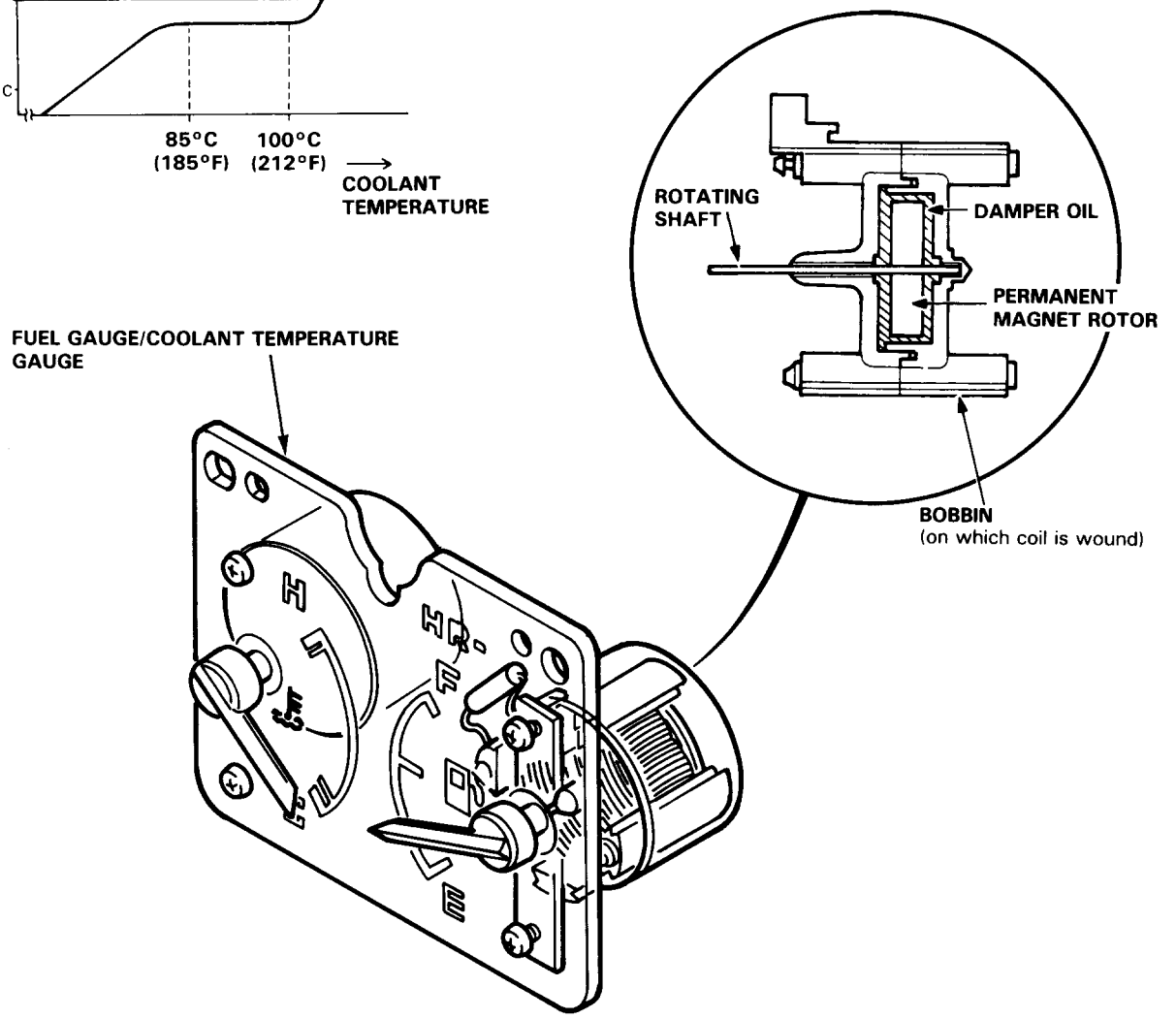
Gauge Assembly

Description

Bobbin Type (Cross Coil Type) Gauge:

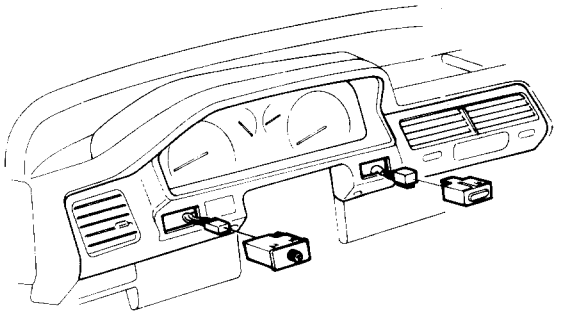
- A bobbin type gauge is an electromagnetic instrument in which two intersecting coils are wound around the permanent magnet rotor. By varying the resistance of the unit to vary the current which flows through the coil, the magnetic force which energizes the coil will vary, causing the rotor (pointer) to operate. A sliding resistance is employed in the fuel gauge just as in a bimetal type gauge, and a thermistor is used in the temperature gauge.
- The rotor of the fuel gauge is immersed in damper oil and its center of gravity lies roughly along the rotating shaft, hence the fuel level is indicated continuously even when the ignition switch is OFF.
- The coolant temperature gauge is a center point stable small indicating angle type which indicates the temperature of the coolant between about 85°C (185°F) and 100°C (212°F).



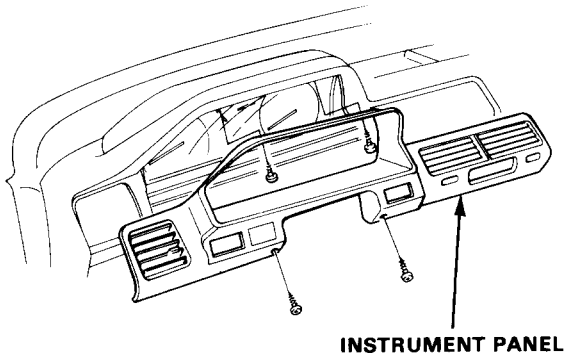


Removal

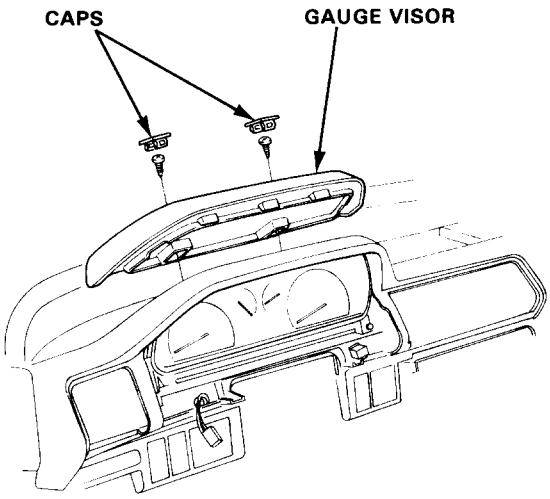
1. Remove the dashboard lower panel.
2. Remove the switches by pushing it out, then disconnect the connectors.



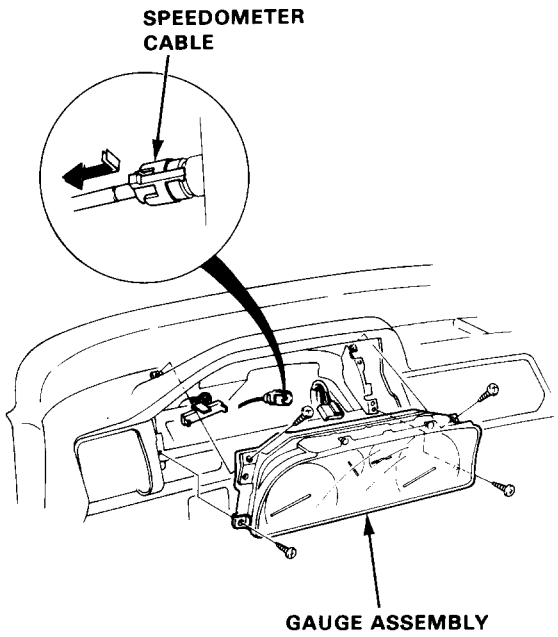
3. Remove the 4 screws, then remove the instrument panel from the dashboard.



4. Remove the caps and 2 screws, then remove the gauge visor from the dashboard.

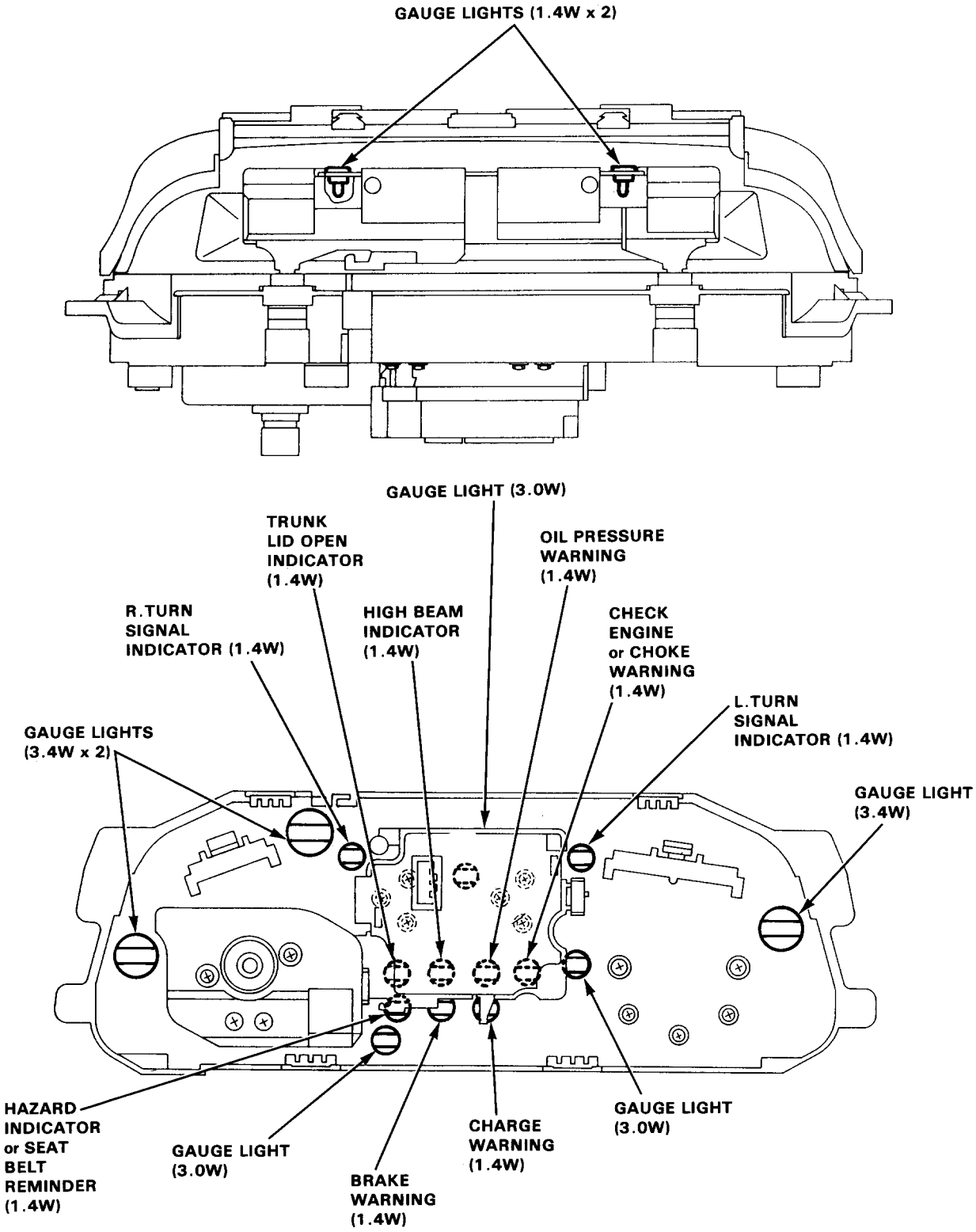


5. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.

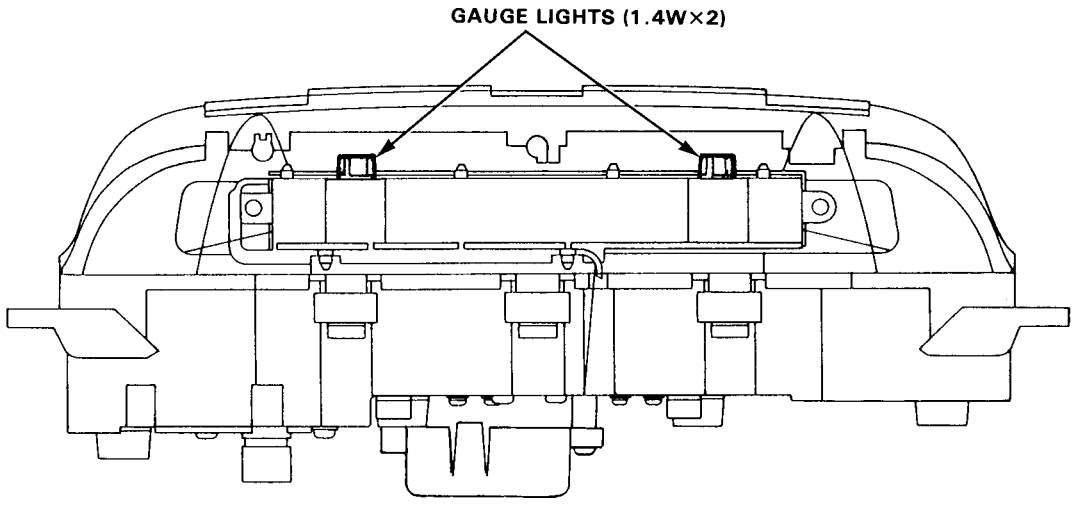


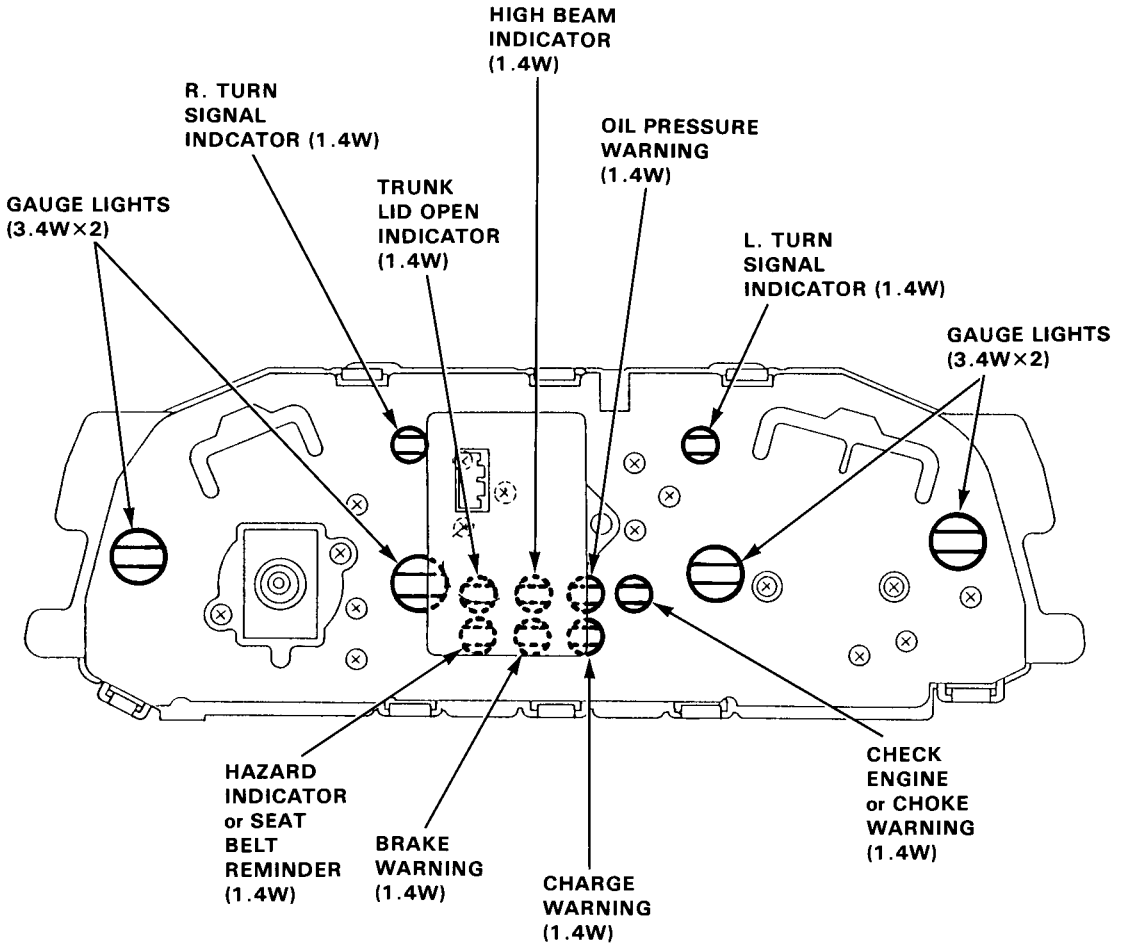
Gauge Assembly

Bulb Locations (Nippon Seiki type)



(Nippon Denso type)



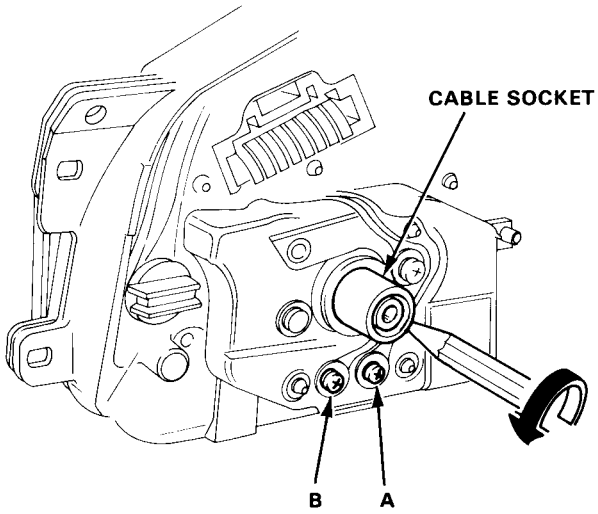


Gauge Assembly

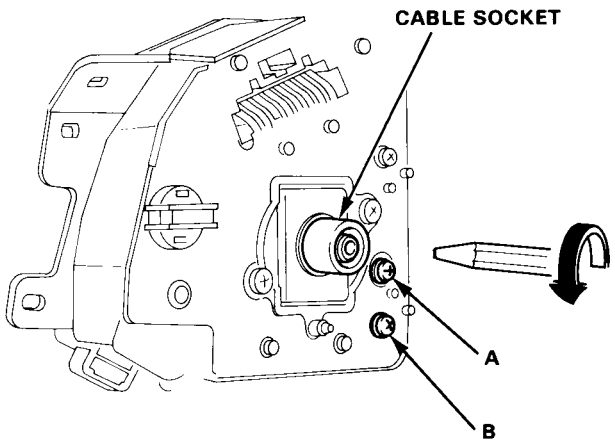
Speed Pulser Test

1. Remove the gauge assembly from the dashboard, then turn it over.
2. Break the lead off a pencil tip then insert the pencil into the speedometer cable connector socket and turn it. Connect an ohmmeter between the A and B terminals. There should be continuity 4 times between the A and B terminals per revolution.

Nippon Seiki type:

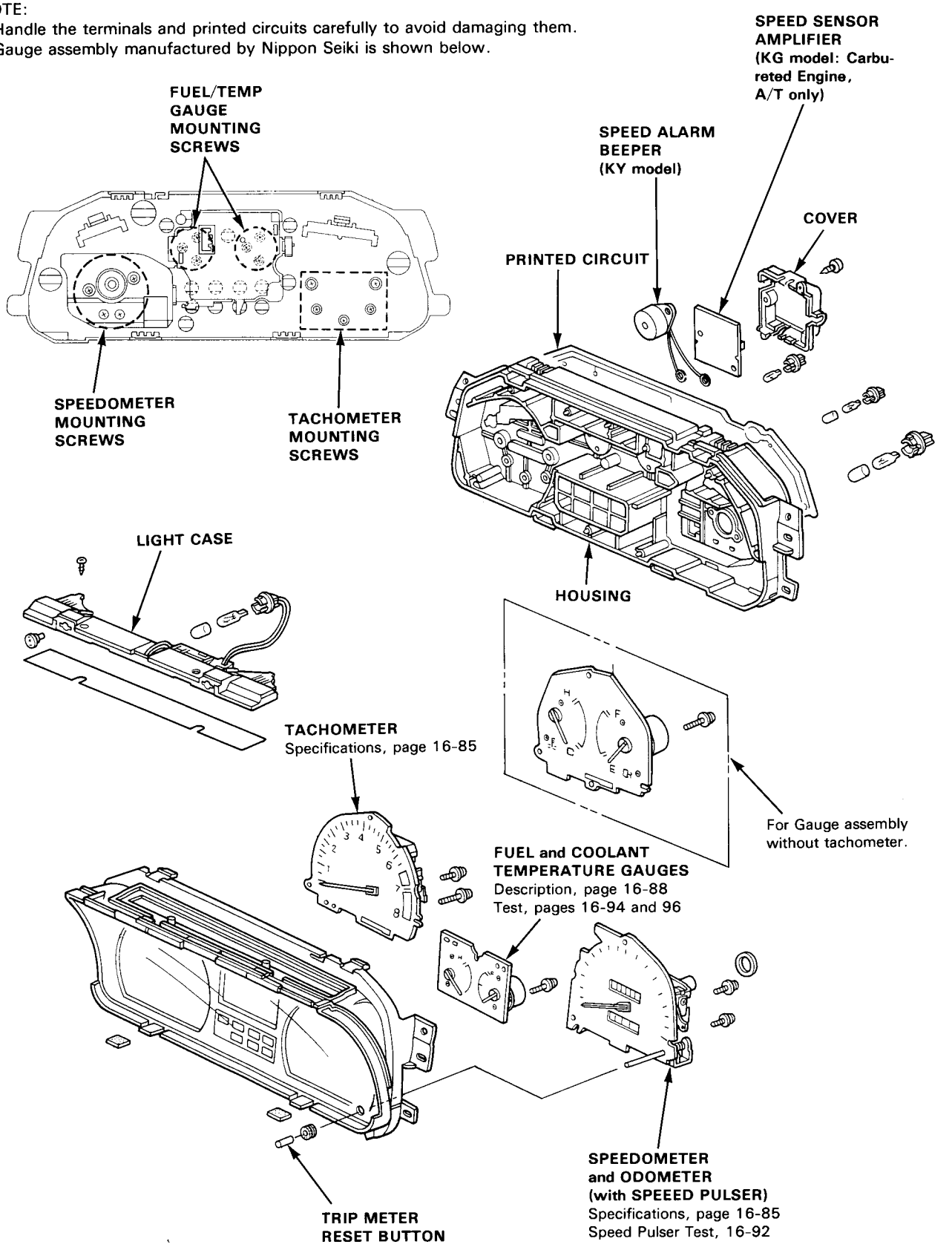


Nippon Denso type:



Disassembly

NOTE:
- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is shown below.



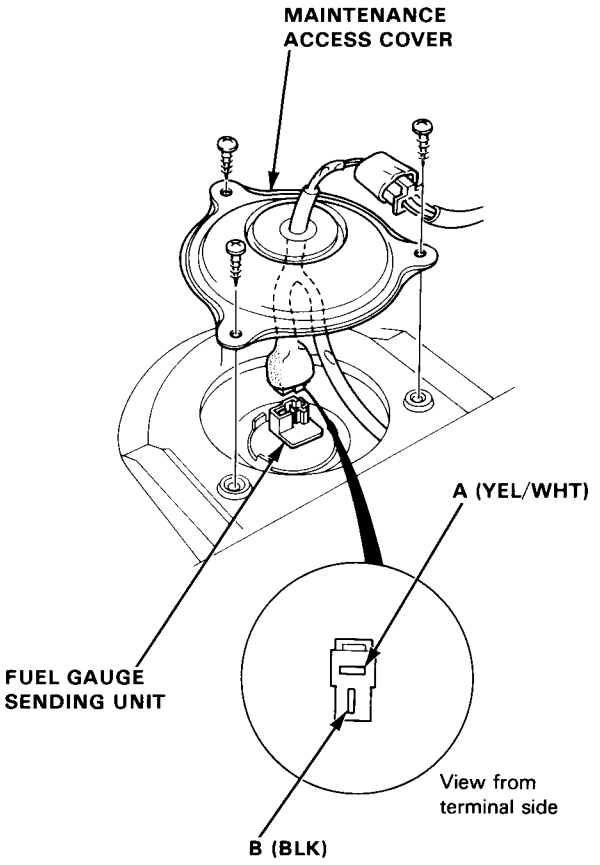
Fuel Gauge

Gauge Test

NOTE: Refer to page 16-86 for wiring description of the fuel gauge circuit.

1. Remove the rear seat (see section 14), then remove the maintenance access cover.

2. Disconnect the 2-P connector from the fuel gauge sending unit.



3. Connect the voltmeter positive probe to the A (YEL/WHT) terminal and the negative probe to the B (BLK) terminal, then turn the ignition switch ON.
There should be battery voltage.

   - If there is battery voltage, go to step 4.

   - If the voltage is not specified, check for:
     - Blown No. 1 (10A) fuse in the dash fuse box.
     - An open in the YEL, YEL/WHT or BLK wire.
     - Poor ground (G511 or G561).

4. Turn the ignition switch OFF. Attach a jumper wire between the A (YEL/WHT) and B (BLK) terminals.

   Turn the ignition switch ON.
   Check that the pointer of the fuel gauge starts moving toward"F"mark.

   CAUTION: Turn the ignition switch OFF before the pointer reaches "F"mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F"mark may cause damage to the fuel gauge.

   NOTE: The fuel gauge is a bobbin (cross coil) type, hence the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

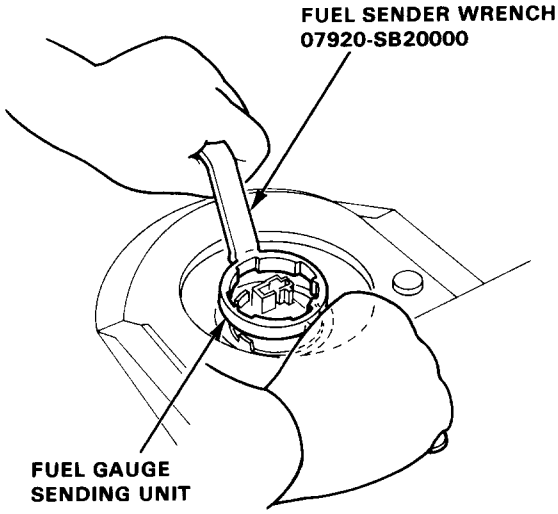
   - If the pointer of the fuel gauge does not swing at all, replace the gauge.

   - Inspect the fuel gauge sending unit if the gauge is OK.

Sending Unit Test/Replacement

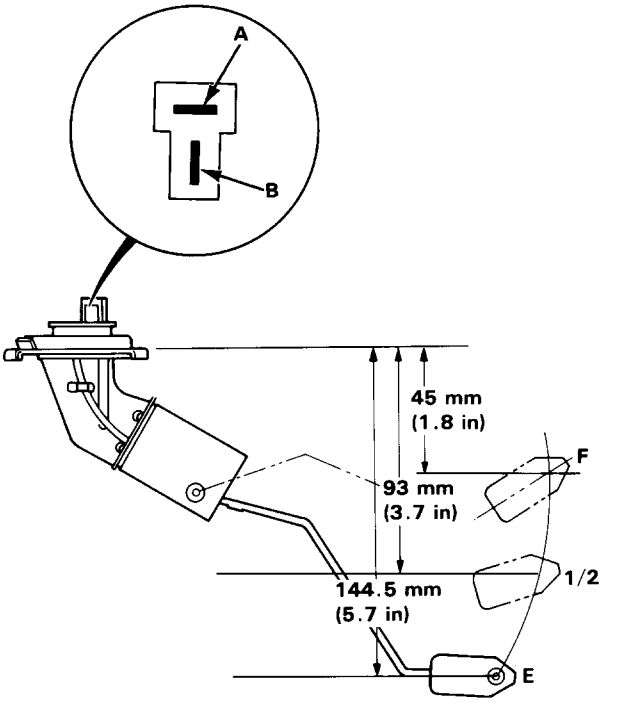
WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Remove the rear seat (see section 14), them remove the maintenance access cover.
2. Check that the ignition switch OFF, then disconnect the 2-P connector from the fuel gauge sending unit.
3. Remove the fuel gauge sending unit.



4. Measure the resistance between the A and B terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance (Ω)	105–110	25.5–39.5	2–5



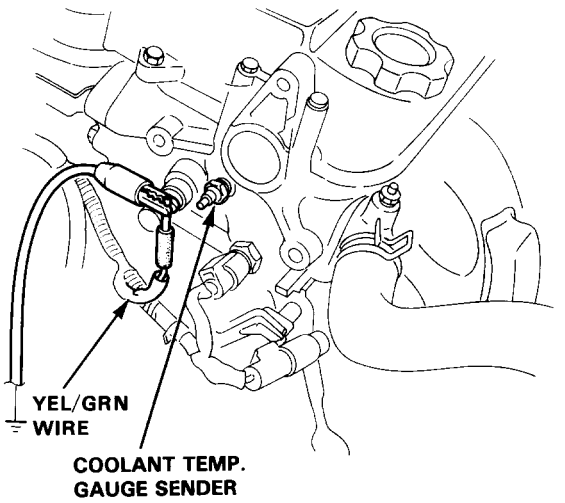
5. If unable to obtain the above readings, replace the fuel gauge sending unit.

Coolant Temperature Gauge

Gauge Test

NOTE: Refer to page 16-86 for wiring description of the coolant temperature gauge circuit.

1. Make sure the ignition switch is OFF, then disconnect the YEL/GRN wire from the coolant temperature gauge sender and ground it with a jumper wire.



2. Turn the ignition switch ON.
   Check that the pointer of the coolant temperature gauge starts moving toward "H" mark.

   CAUTION: Turn the ignition switch OFF before the pointer reaches "H" mark on the gauge dial. Failure to turn the ignition OFF quickly enough may cause damage to the gauge.

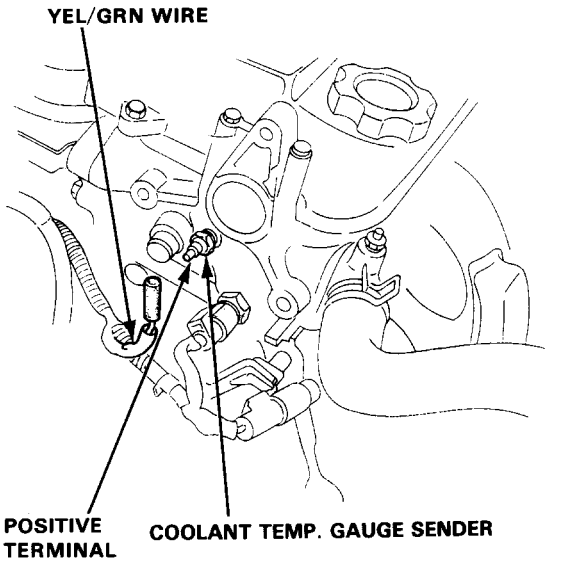
   - If the pointer of the gauge does not swing at all, check for:
     - Blown No. 1 (10 A) fuse in the dash fuse box.
     - An open in the YEL or YEL/GRN wire.

     Replace the coolant temperature gauge if the fuse and wiring are normal.

   - Inspect the gauge sender if the gauge is OK.

Sender Test

1. Disconnect the YEL/GRN wire from the sender.
2. With the engine cold, use an ohmmeter to measure resistance between the positive terminal and the engine (ground).



3. Check the temperature of the coolant.
4. Run the engine and measure the change in resistance with the engine at operting temperature (cooling fan comes on).

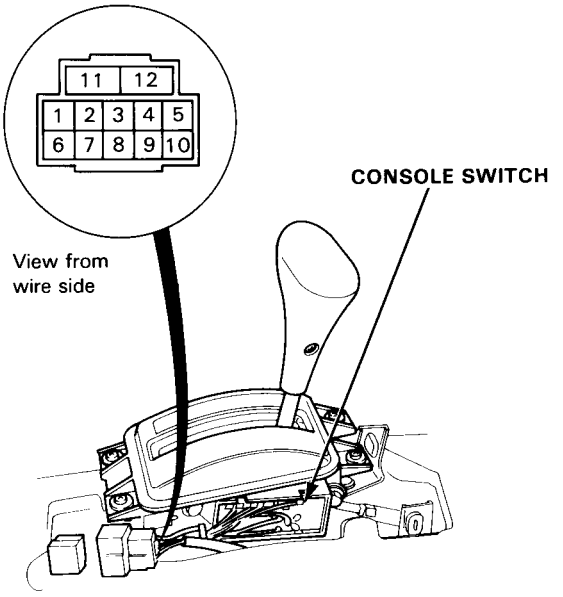
Temperature	56°C (133°F) ["C" mark]	85°C (185°F) – 100°C (212°F)
Resistance (Ω)	142	49 – 32

5. If obtained readings are substantially different from specifications above, replace the gauge sender.

Shift Position Console Switch

Test

1. Remove the center console, then disconncet 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	9	10	5	6
L					
D_3	○	○			
D_4	○		○		
N	○			○	
R					
P	○				○

Neutral Safety Switch

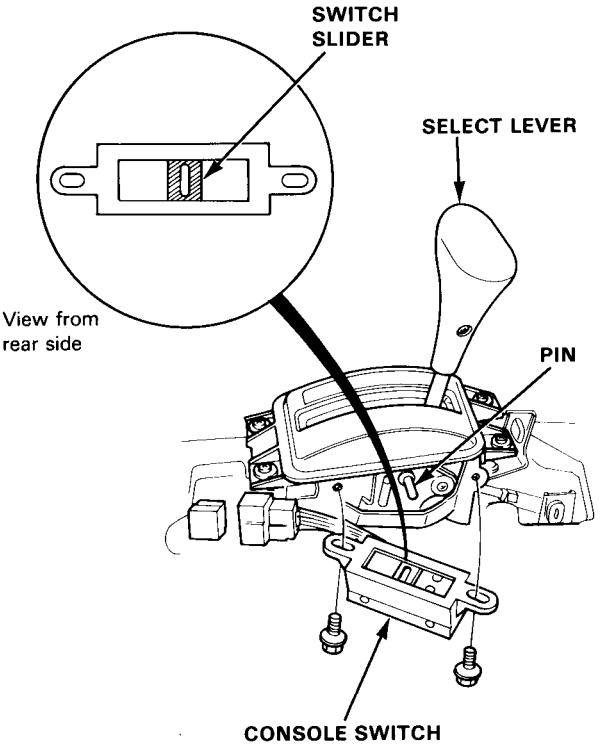
Terminal / Position	11	12
L		
D_3		
D_4		
N	○	○
R		
P	○	○

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.

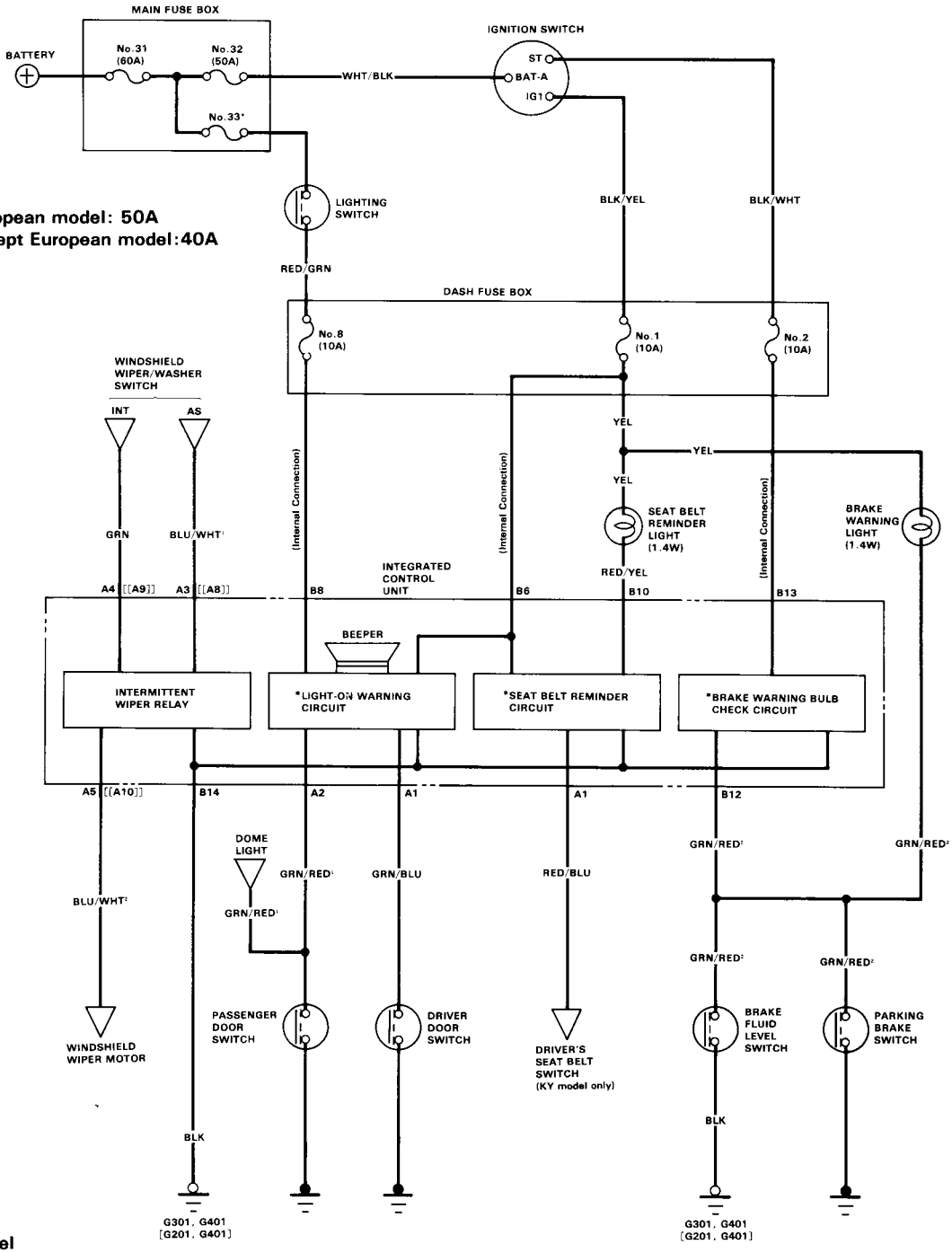


4. Position the switch slider to "Neutral"as shown above.
5. Shift the select lever to "Neutral", then slip the console switch into position.
6. Tighten the switch with the 2 bolts.

Integrated Control Unit (Without Daytime and Dim-Dip Light)

Circuit Piagram

Description:
A multi function control unit located under the driver side of the dashboard, integrates the function of brake warning bulb check circuit (KQ model only). seat belt reminder (KY model only), light-on warning circuit (Except KY, KP, KT and KU models) and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.
NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/RED[1] and GRN/RED[2] are not the same).



No.33*·····European model: 50A
Except European model:40A

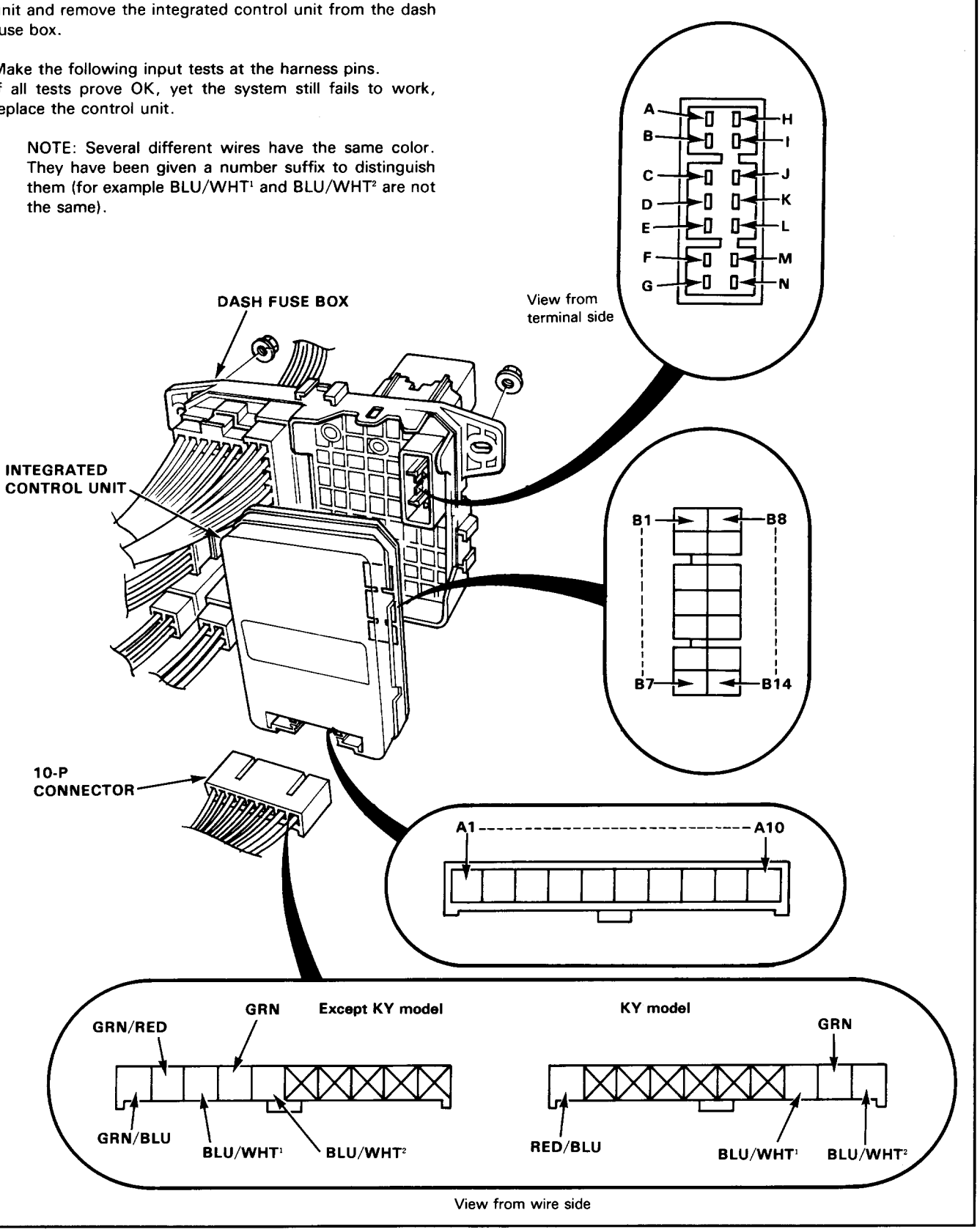
[[ ]] : KY model
[ ] : RHD
*** · Light-on Warning Circuit: (Except KY,KP,KT and KU models)**
· Seat Belt Reminder Circuit: (KY model only)
· Brake Warning Bulb Circuit: (KQ model only)

Input Test

Remove the dashboard lower panel and dash fuse box, then disconnect the 10-P connector from the integrated control unit and remove the integrated control unit from the dash fuse box.

Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

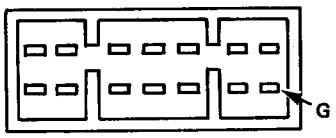
NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT[1] and BLU/WHT[2] are not the same).



Integrated Control Unit (Without Daytime and Dim-Dip Light)

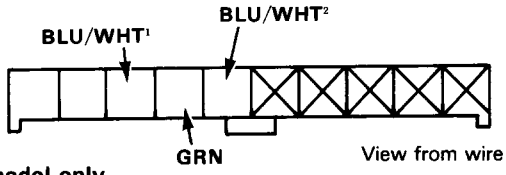
Input Test (cont'd)

Wiper System:



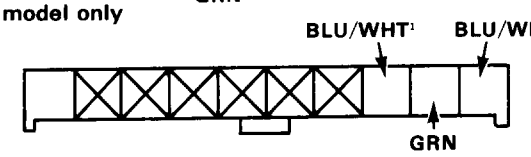
View from terminal side

Except KY model



View from wire side

KY model only

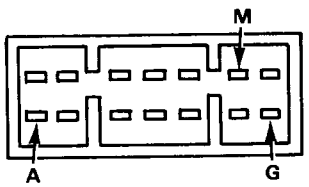


View from wire side

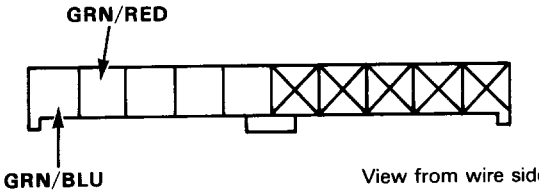
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 〔G201, G401〕)
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT.	Check for voltage to ground: should be battery voltage.	• Blown No. 13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

〔 〕: RHD

Light-on Warning System:



View from terminal side

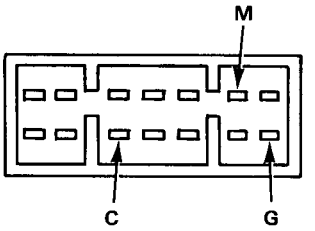


View from wire side

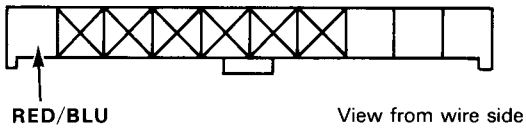
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 〔G201, G401〕). • An open in the wire.
2	A	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1(10A) fuse. • An open in the wire.
4	GRN/RED	Passenger door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No.12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	GRN/BLU	Driver door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

〔 〕: RHD

Seat Belt Reminder System:



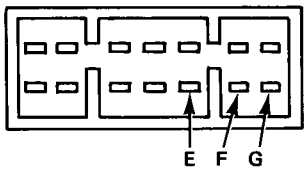
View from terminal side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	C and M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 1 (10A) fuse. • An open in the wire.
3	RED/BLU	Driver's seat belt is not buckled.	Check for continuity to ground: should be continuity.	• Faulty seat belt switch. • Poor ground (2D H/B: G511, 4D: G561). • An open in the wiire.

Brake Warning System:



View from terminal side

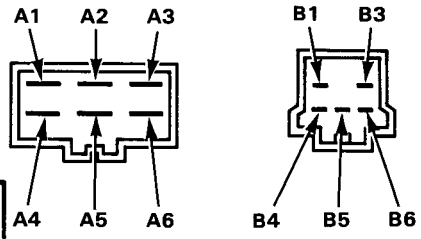
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	F	Ignition switch to "III" position.	Check for voltage to ground: should be battery voltage.	• Blown No.2 (10A) fuse. • An open is the wire.
3	E	Ignition switch ON, full brake fluid and parking brake DOWN.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • Blown brake warning light bulb. • An open is the wire.

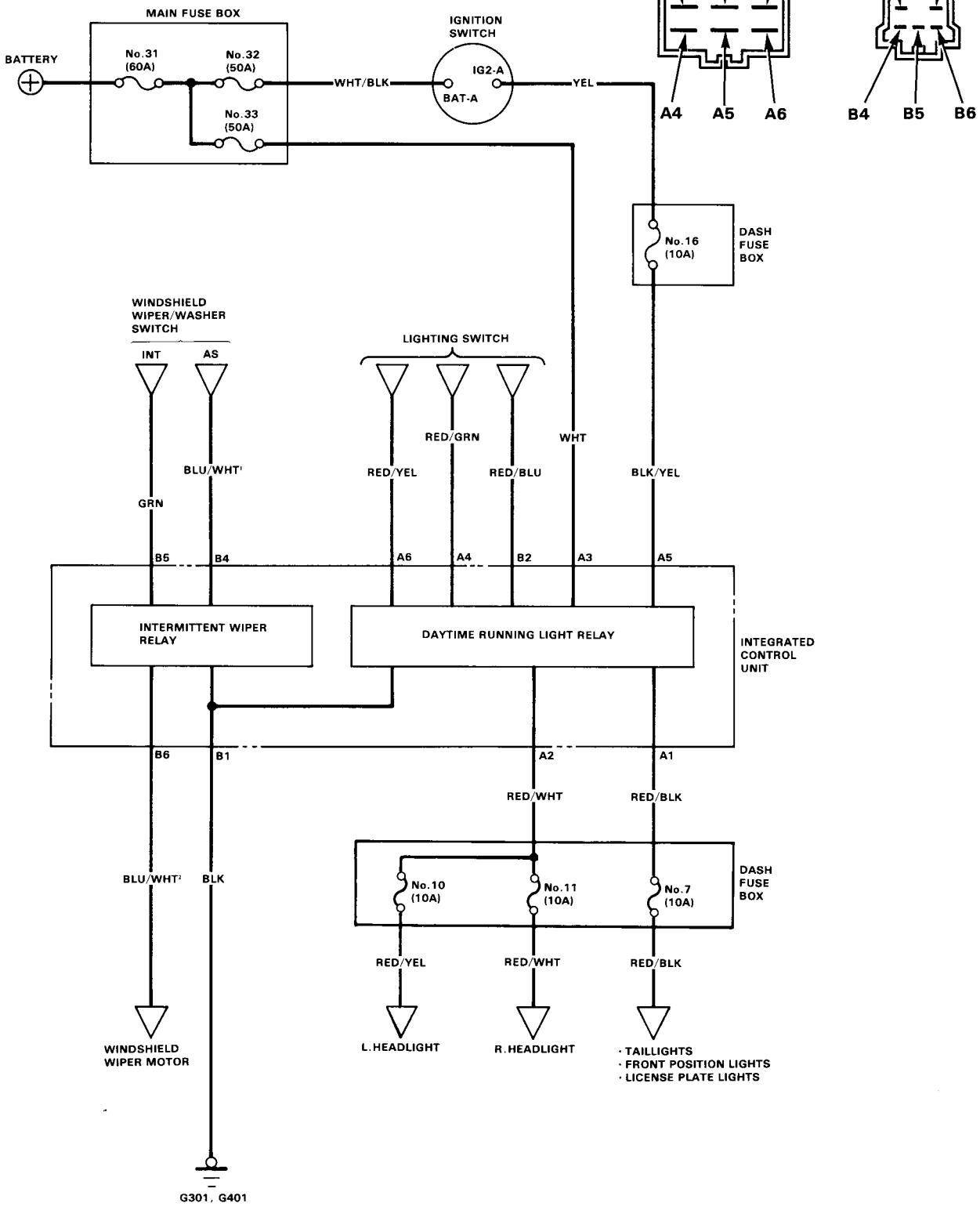
Integrated Control Unit (With Daytime and Dim-Dip Light)

Circuit Diagram (With Daytime Light)

Description:
A multi function control unit located under the left side of the dashboard, integrates the functions of daytime running light relay and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit Terminals:

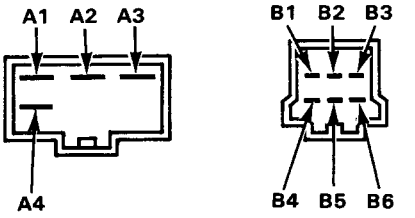


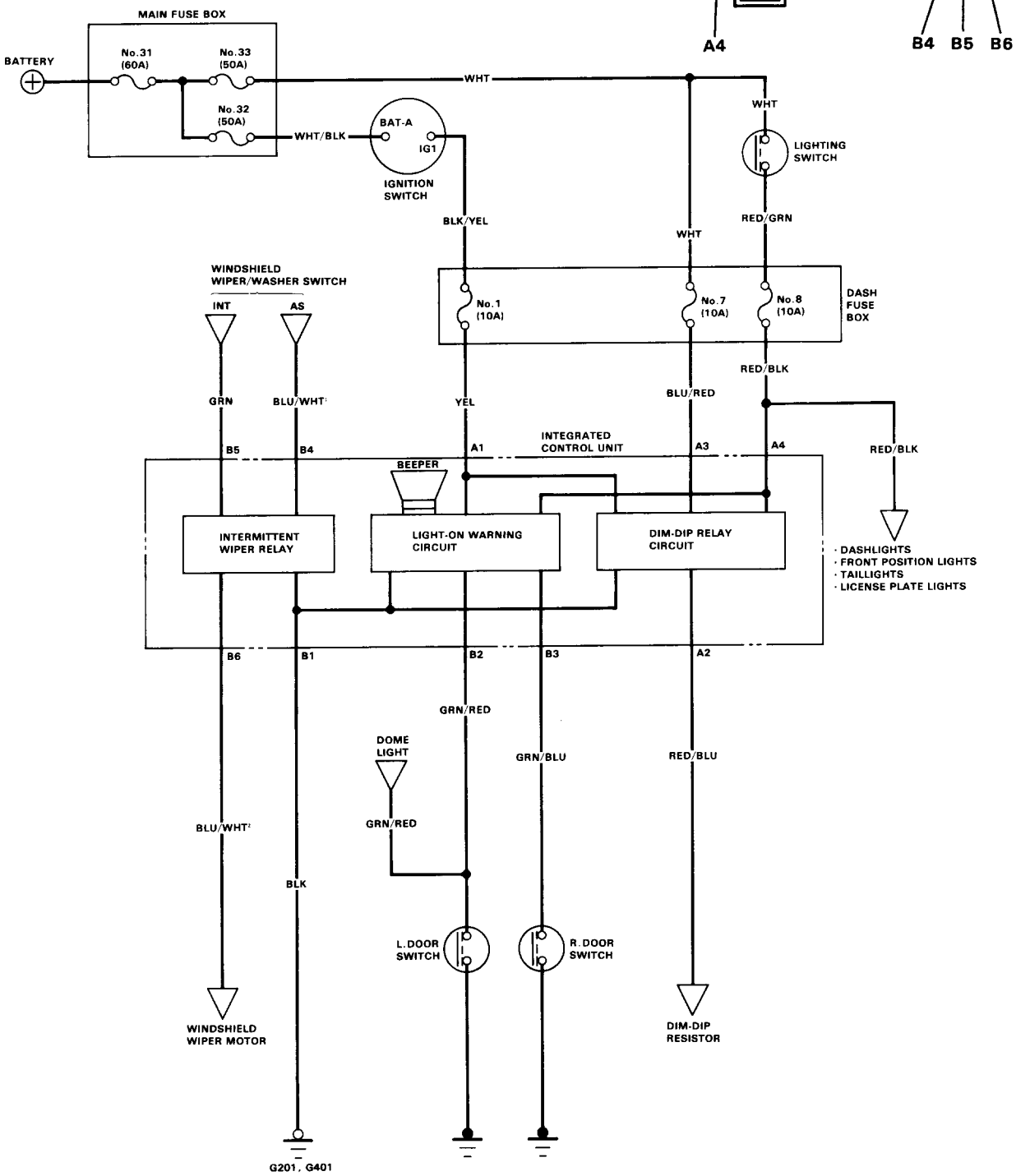


(With Dim-Dip Light)

Description:
A multi function control unit located under the right side of the dashboard, integrates the functions of dim-dip relay circuit, light-on warning and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit Terminals:



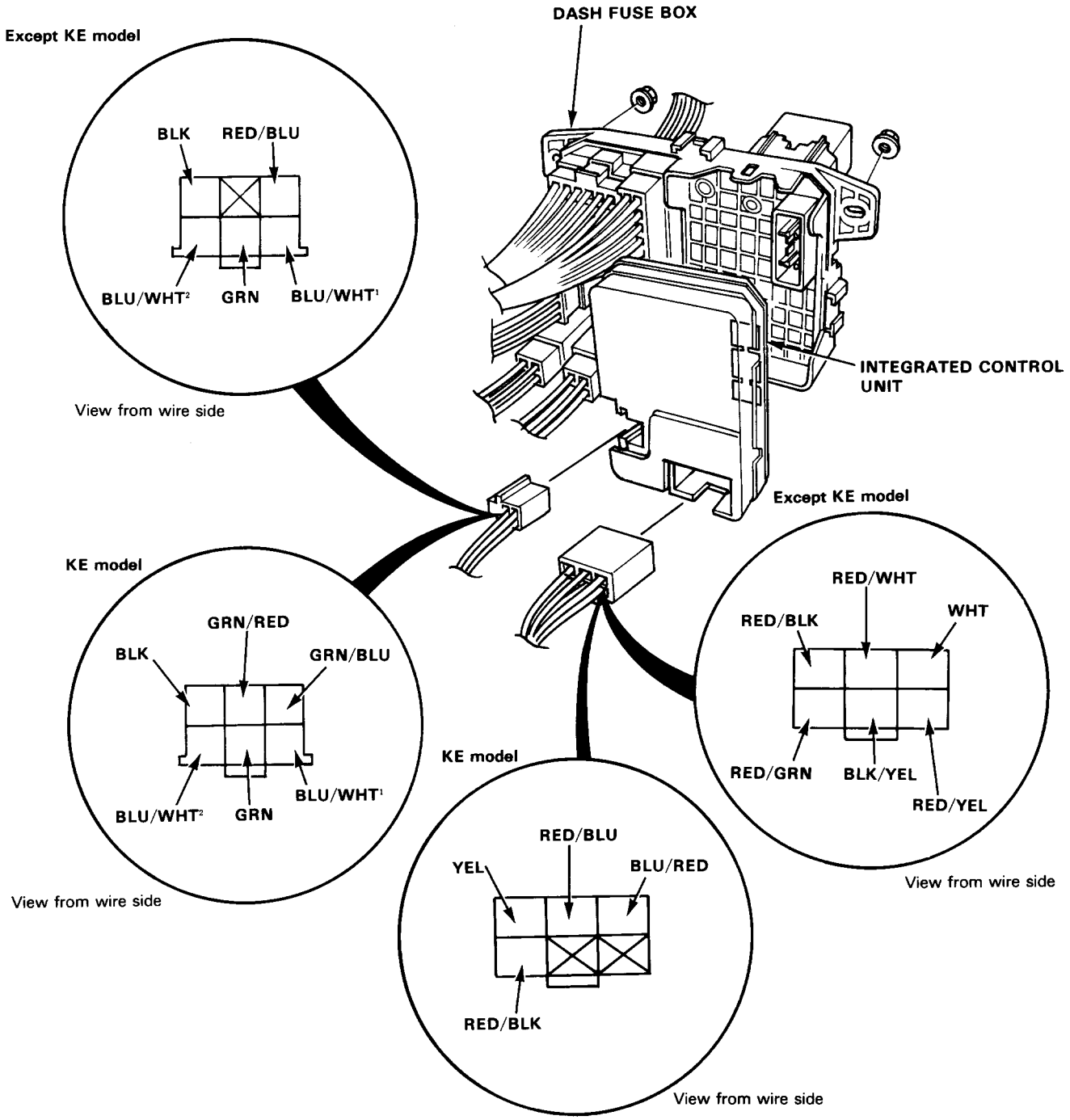


Integrated Control Unit (With Daytime and Dim-Dip Light)

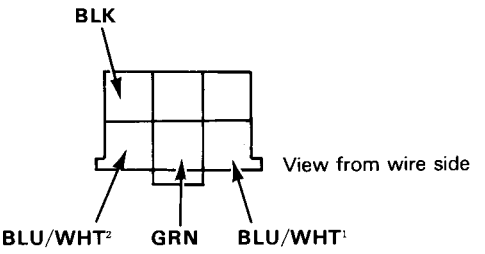
Input Test

Remove the dashboard lower panel and dash fuse box, then disconnect the 6-P connectors from the integrated control unit.
Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT[1] and BLU/WHT[2] are not the same).



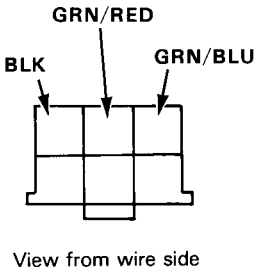
Wiper System:



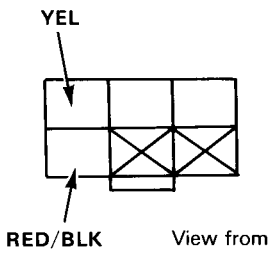
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 〔G201, G401〕).
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

〔 〕: RHD

Light-on Warning System:



View from wire side



View from wire side

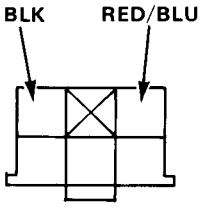
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground. should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltge.	• Blown No.1 (10A) fuse. • An open in the wire.
4	GRN/RED	Passenger door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No.12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	GRN/BLU	Driver door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

(cont'd)

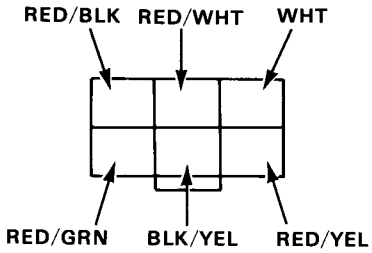
Integrated Control Unit (With Daytime and Dim-Dip Light)

Input Test (cont'd)

Daytime Running Light System:



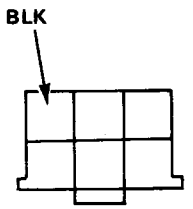
View from wire side



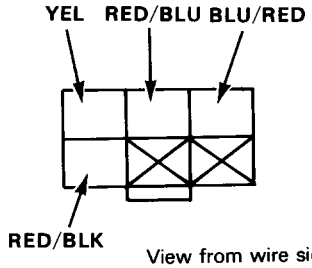
View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT	Under all conditions.	Check for voltage to ground: should be battery voltage.	• An open in the wire.
3	RED/GRN	Lighting switch ≡OO≡	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
4	RED/YEL	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
5	RED/BLU	Lighting switch ≡D Dimmer switch Hi.	Check for voltage to ground: should be battery voltage.	• Blown No.5 (10A) fuse. • An open in the wire.
6	BLK/YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.16 (10A) fuse. • An open in the wire.
7	RED/BLK	Connect the WHT terminal to the RED/BLK terminal.	Front position lights, taillights and license plate lights should come on.	• Blown bulbs. • An open in the wire.
8	RED/WHT	Connect the WHT terminal to the RED/WHT terminal.	Headlights (Lo) should come on.	• Blown bulbs. • Blown No.10 (10A) or No.11 (10A) fuse. • Poor ground (G201, G301, G401).

Dim-Dip Headlight System:



View from wire side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	BLU/RED	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.7 (10A) fuse. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the wire.
4	RED/BLK	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • An open in the wire.
5	RED/BLU	Lighting switch ≡D	Check for voltage to ground: should be battery voltage.	• Faulty Dim-Dip resistor. • Blown No.10 (10A) and No.11 (10A) fuse. • Faulty lighting relay. • An open in the wire.

Seat Belt Reminder System

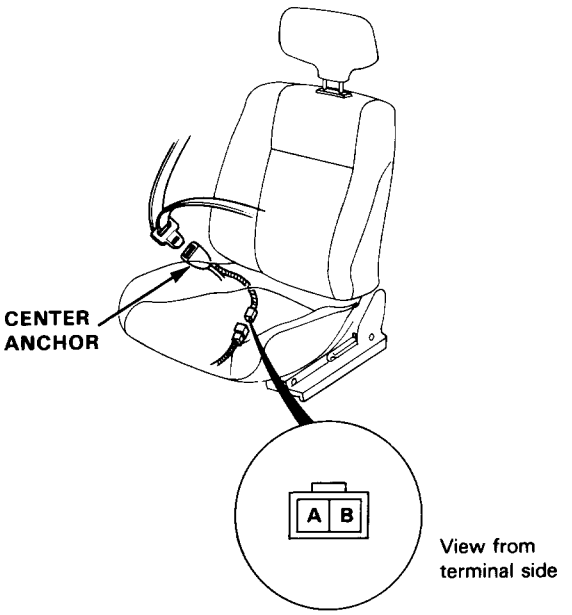
Description

NOTE: Refer to page 16-98 for wiring description of the seat belt beeper/timer circuit.

With the ignition switch in "Run" or "Start", Voltage is applied to the beeper/timer of the integrated control unit. When you unbuckle the driver's seat belt, the beeper/timer circuit senses ground at the "A1" terminal. With voltage at the "B6" terminal and ground at the "B14" terminal, the seat belt beeper sunds and the timer contacts close and open. This causes the seat belt reminder light to flash on and off. After 5 seconds the alarm stops and the contacts remain open.

Seat Belt Switch Test

1. Remove the center console and disconnect the 2-P connector from the seat belt switch.
2. There should be continuity between the A and B terminals when the seat belt is not buckled.



Oil Pressure Warning System

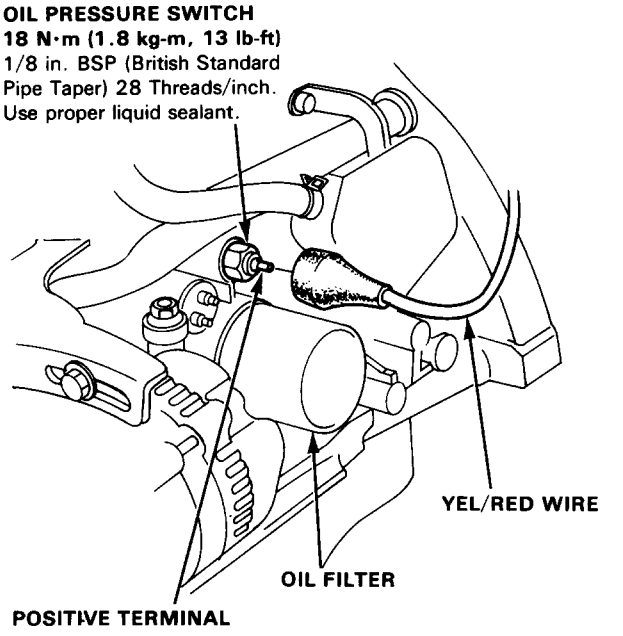
Description

NOTE: Refer to page 16-86 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).

Brake Warning System

Description

NOTE: Refer to page 16-98 for wiring description of the circuit check system.

Description:
The brake warning light goes on if the parking brake is applied, if the brake fluid level is low, and as a circuit test while cranking the engine.

Parking Brake:
With the ignition switch in "Run"or "Start", and the parking brake switch closed, the brake warning light operates to remind the driver that the parking brake is applied.

Brake Fluid Level:
With the ignition switch in "Run"or"Start", and the brake fluid level switch closed, the brake warning light operates to warn the driver of low brake fluid level in the brake master cylinder.

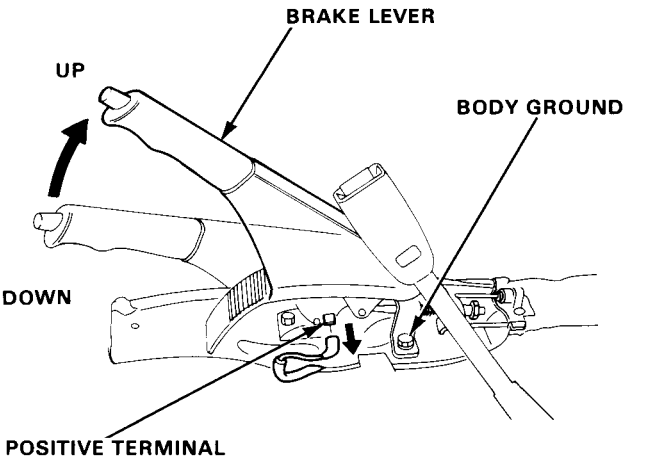
NOTE: Low fluid level indicates brake wear or system leaks; check brake pad wear before adding fluid.

Circuit Check: KQ model only
With the ignition switch in "Start"voltage is applied through the No.2 (10A) fuse in the dash fuse box to the circuit check built into the integrated control unit. The circuit check transistor is on, and current flows through the No.1 (10A) fuse in the dash fuse box, the brake warning light and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and bulb.

Parking Brake Switch Test

1. Remove the center console and disconnect the connector from the switch.

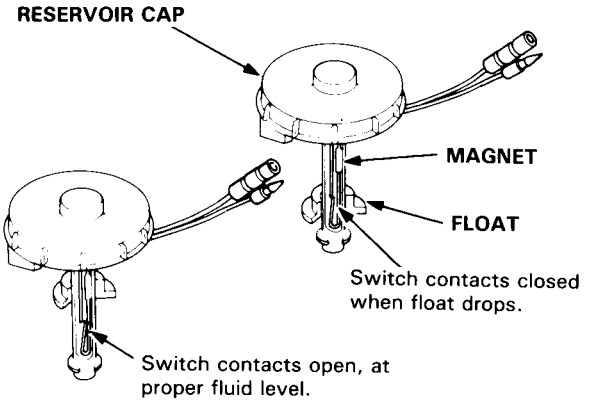
2. There should be continuity between the positive terminal and body ground with the brake lever up.
   There should be no continuity with the brake lever down.



Brake Fluid Level Switch Test

1. Remove the reservoir cap. Check that the float moves up and down freely.
   Replace the reservoir cap assembly if the float does not move freely.

2. Check for continuity between the terminals with the float up and down.
   There should be continuity with the float down and no continuity with the float up.
   Replace the reservoir cap assembly if necessary.



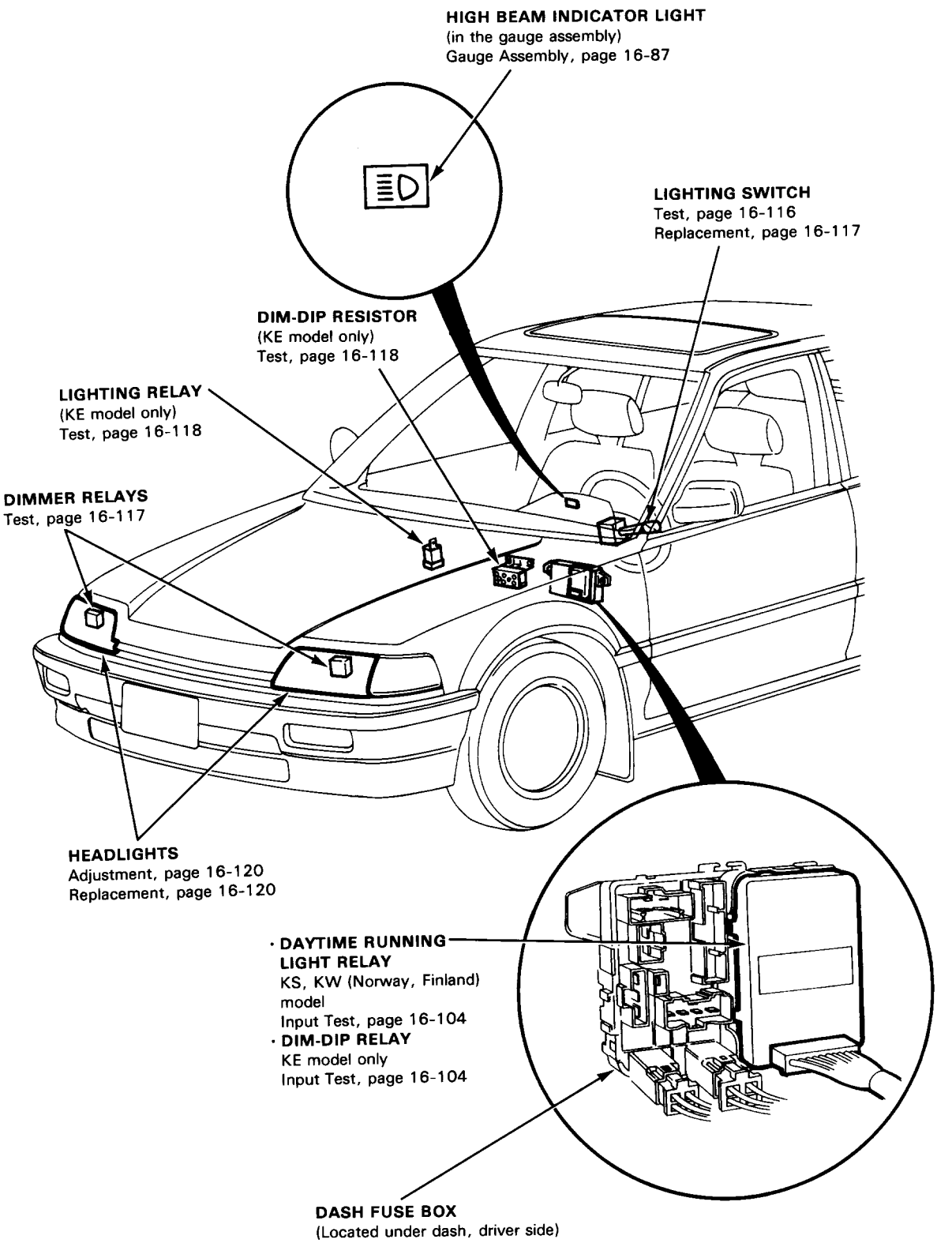
Light-on Warning System

Description

NOTE: Refer to 16-98 [103] for wiring description of the light-on warning circuit, and page 16-99, [104] for the input test of the warning circuit.

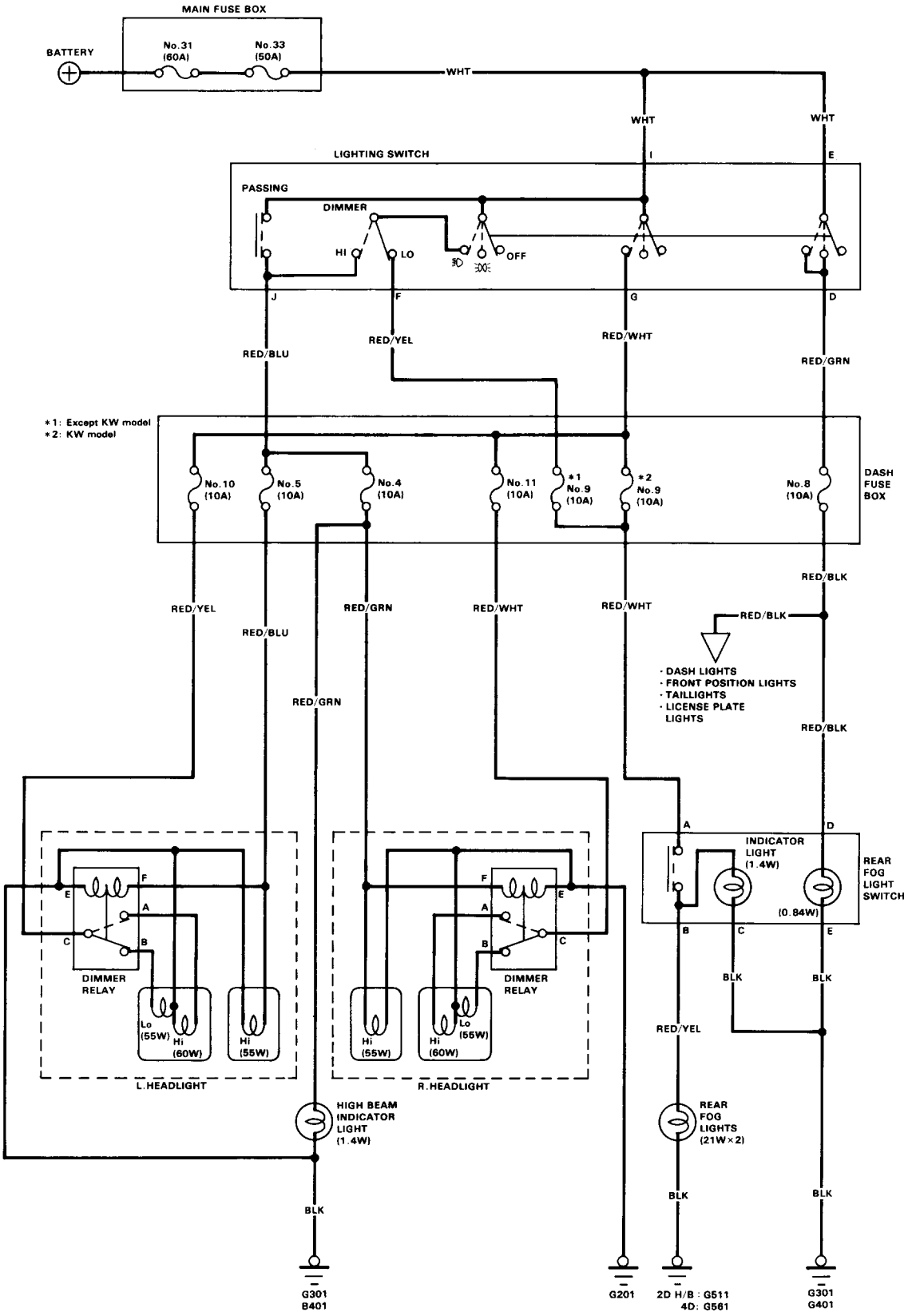
When the light on, voltage is applied to the warning circuit on the integrated control unit. When you open the driver's door, the warning circuit senses ground through closed door switch.
With voltage at the "B8, [A4]" terminal, ground at the "A1, [B3]" terminal, the beeper is activated to remind the driver to turn of the lights.
[ ] : KE model

Component Location Index

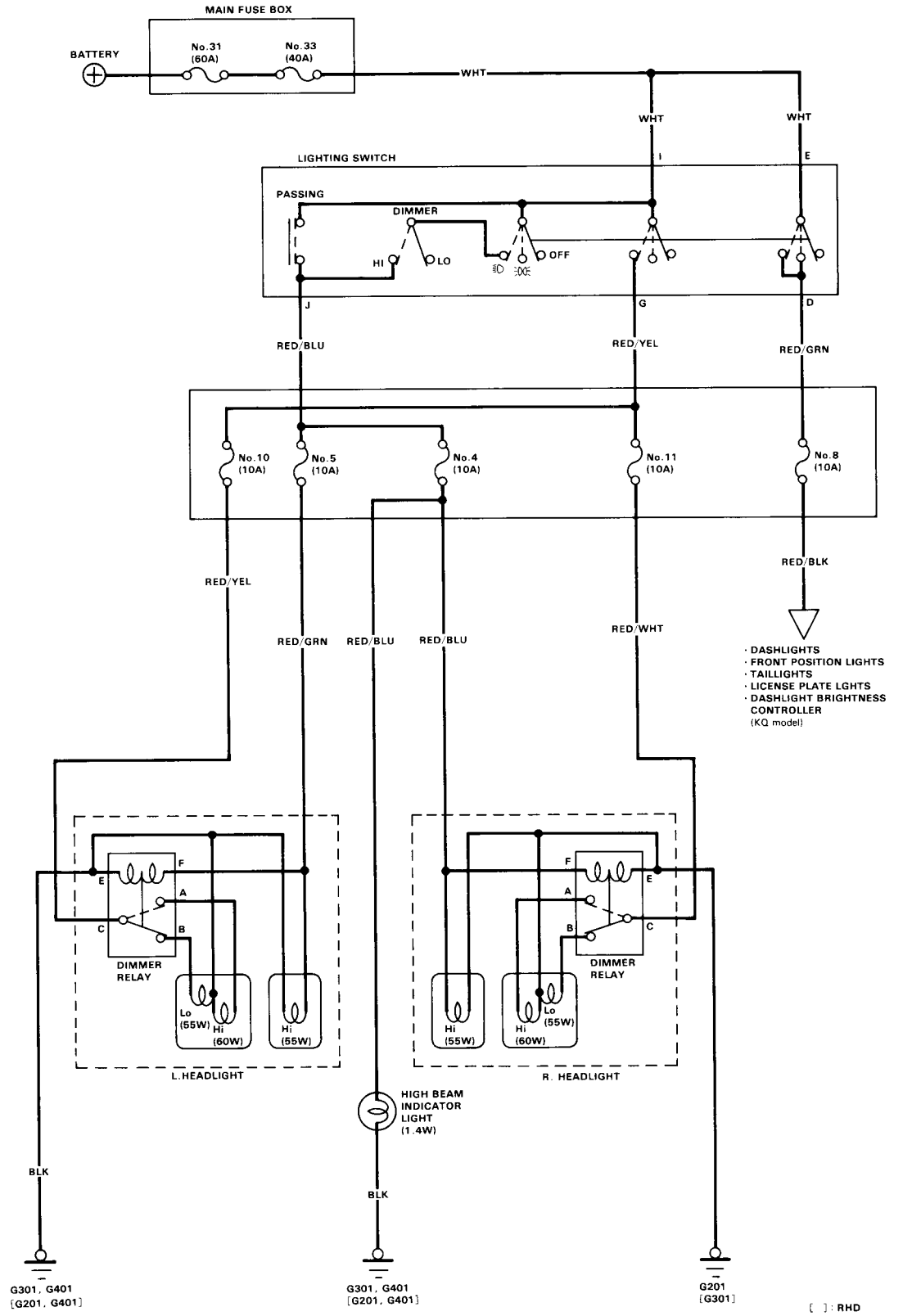


Lighting System

Circuit Diagram (KG, KF, KB, KW and KX models)

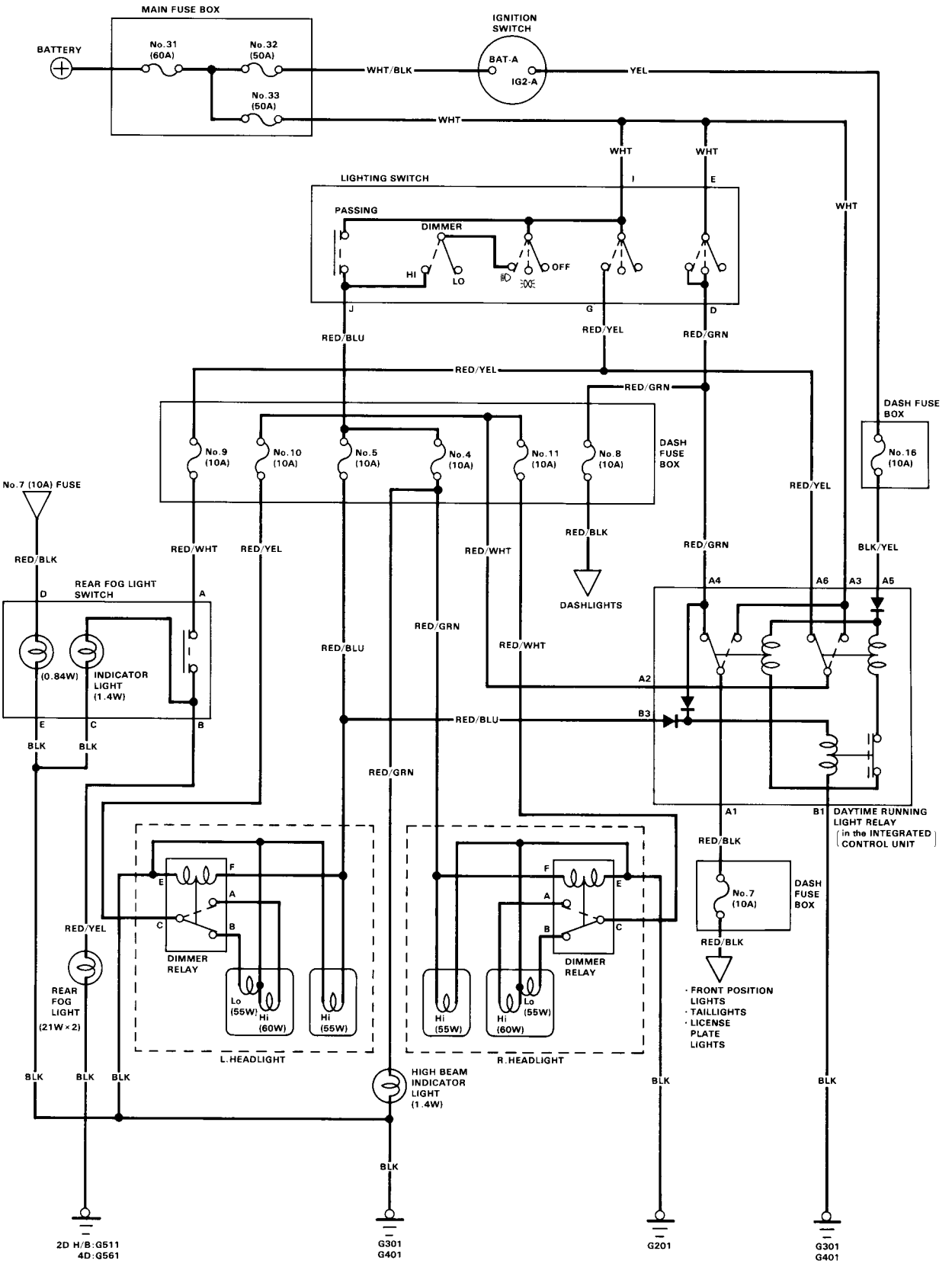


Circuit Diagram (KQ, KT, KY and KP models)

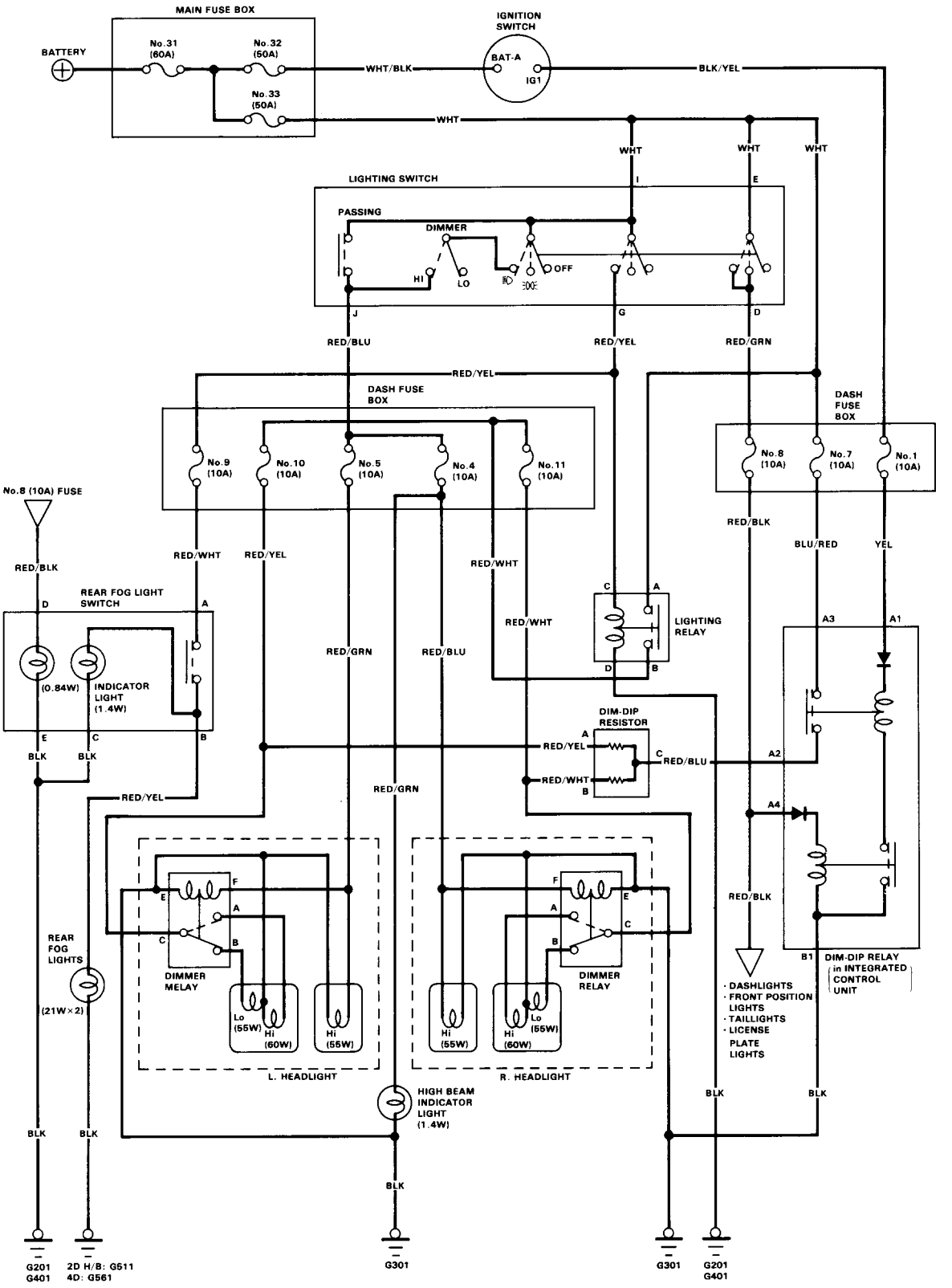


Lighting System

Circuit Diagram(With Daytime Light)



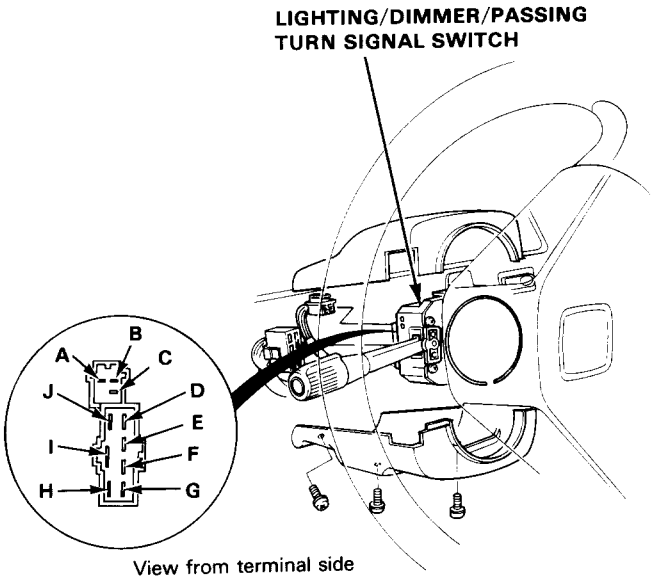
Circuit Diagram (with Dim-Dip Headlight)



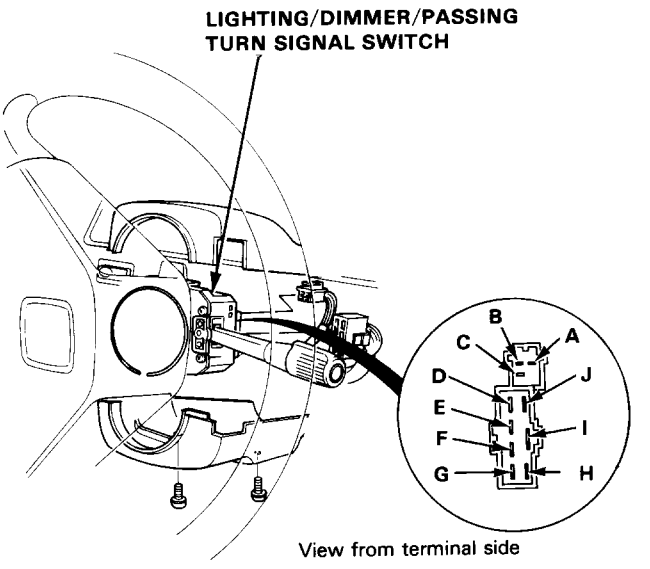
Lighting/Turn Signal Switch Test

1. Remove the column covers.
2. Disconnect the 7-P and 4-P connectors from the switch.
3. Check for continuity between the terminals in each switch position according to the tables.

LHD:



RHD:



Lighting/Dimmer/Passing Switch

Position \ Terminal		D	E	F*	G	I	J
Lighting switch	OFF						
	≡DC	○	○				
	≡D				○	○	
Dimmer switch	LOW			○	○	○	
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

Turn Signal Switch

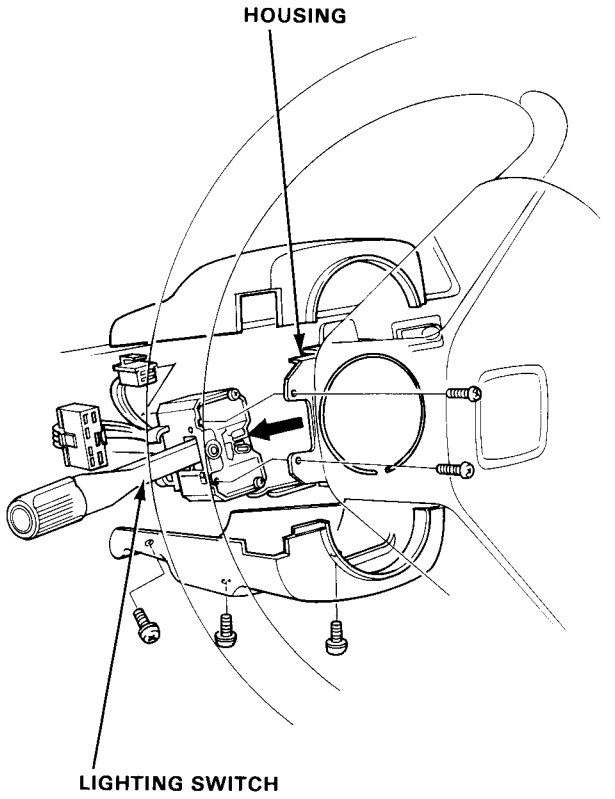
Position \ Terminal		A	B	C
LHD:	R	○		○
	NEUTRAL			
	L	○	○	
RHD:	R	○	○	
	NEUTRAL			
	L	○		○

*·····KW (Except Norway, Finland) model only

Lighting Switch Replacement

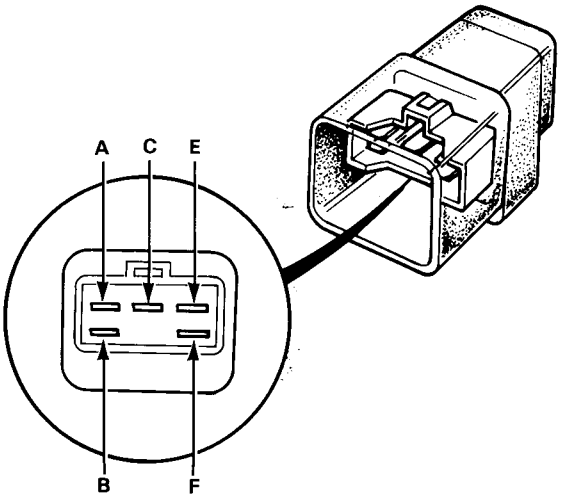
1. Remove the lower and upper covers from the steering column.
2. Disconnect the 7-P and 4-P connectors.
3. Remove the 2 screws and slide the lighting switch out of the housing as shown.

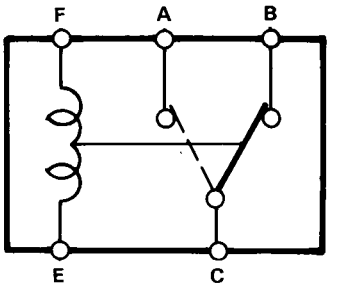
NOTE: Be carefull not to damage the steering wheel cover.



Dimmer Relay Test

1. Remove the dimmer relays from the headlight units.
2. There should be continuity between the A and C terminals when the battery is connected to the E and F terminals.
   There should be continuity between the B and C terminals when the battery is disconnected.

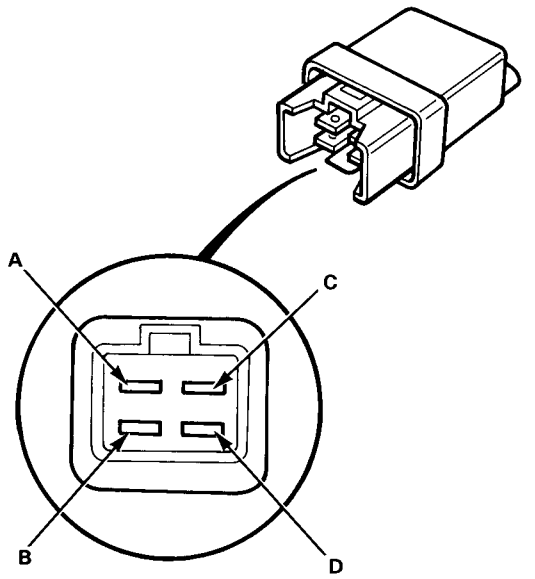


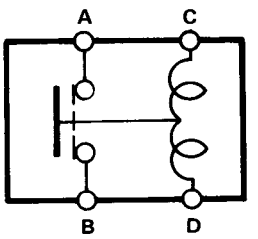


Lighting System

Lighting Relay Test

1. Remove the lighting relay.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.



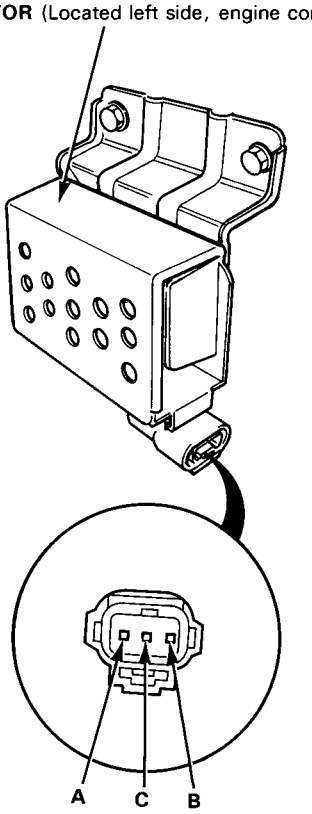


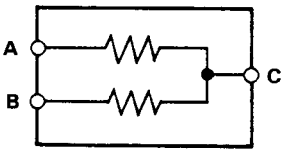
DIM-DIP Resistor Test

CAUTION: Dim-Dip resistor becomes very hot in use of Dim-Dip headlights; do not touch it or the attaching hardware immediately after they have been turned off.

1. Disconnect the 3-P connector from the resistor.
2. There should be continuity between A and C; between B and C terminals.

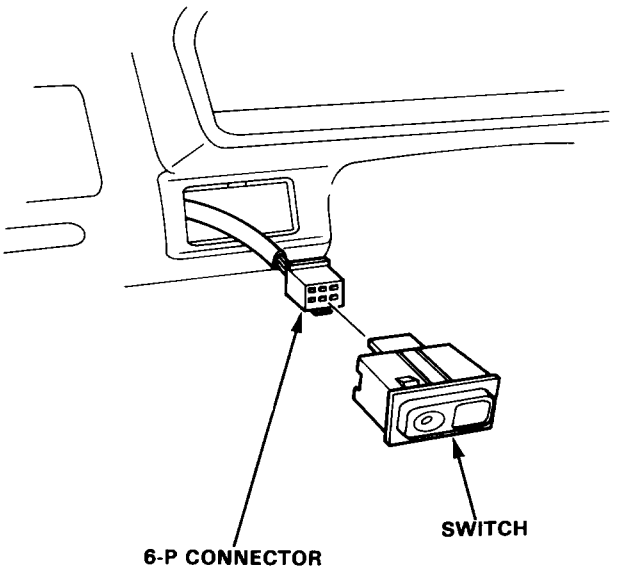
RESISTOR (Located left side, engine compartment)



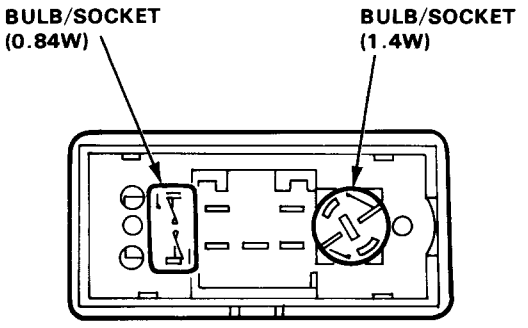


Rear Fog Light Switch Removal

1. Remove the dashboard lower panel. Push out the switch from behind the instrument panel, then disconnect the 6-P connector from the switch.



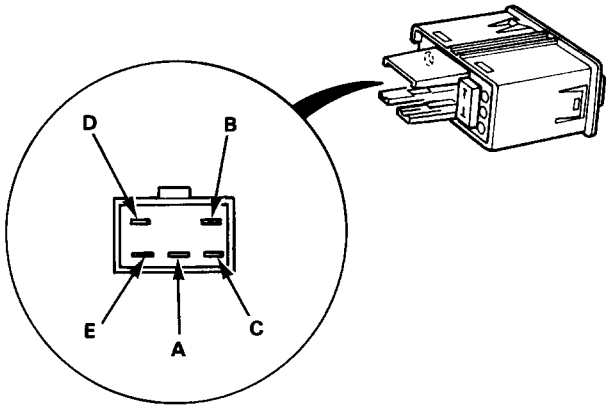
2. Turn the socket 45° counterclockwise (1.4W) and pull out the socket (0.84W) to remove it.

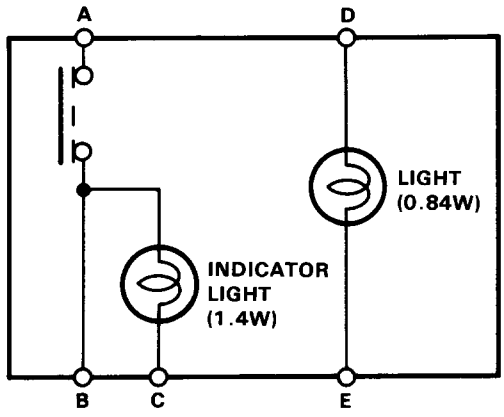


Rear Fog Light Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal / Position	A		B		C	D		E
ON	○	—	○	⌀	○	○	⌀	○
OFF								

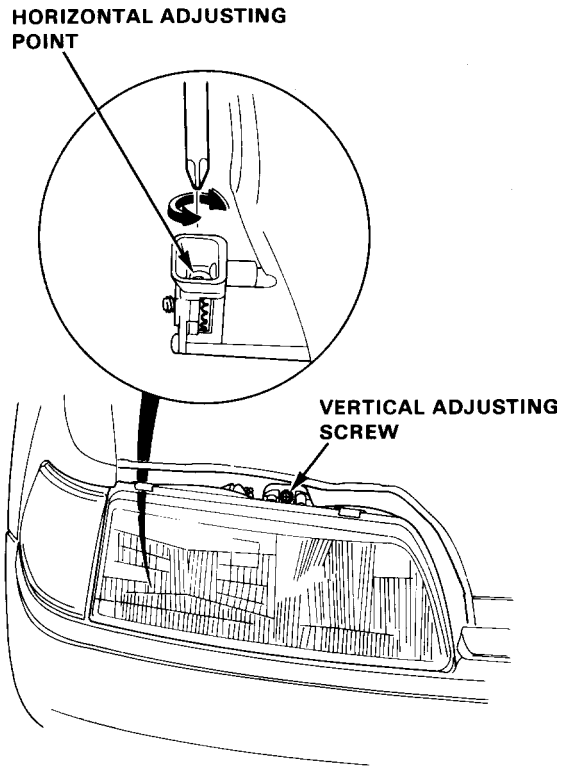




Headlights

Adjustment

NOTE: Adjust the headlights to local requirements.

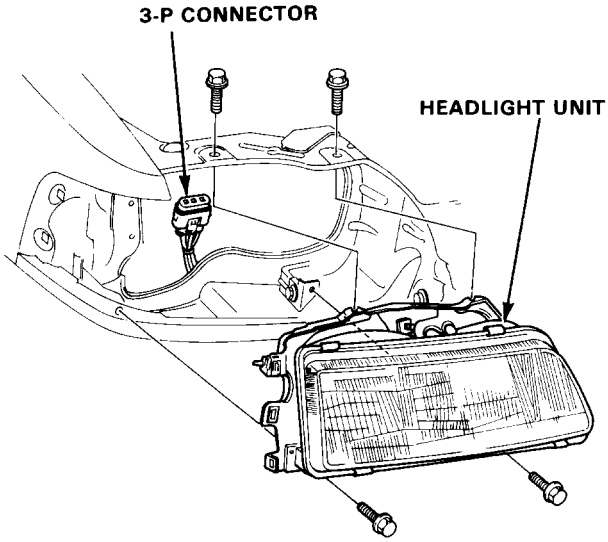


Replacement

CAUTION:

- **Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.**
- **Do not try to replace or clean the headlights with the lights on.**

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and 4 mount bolts, then remove the unit.



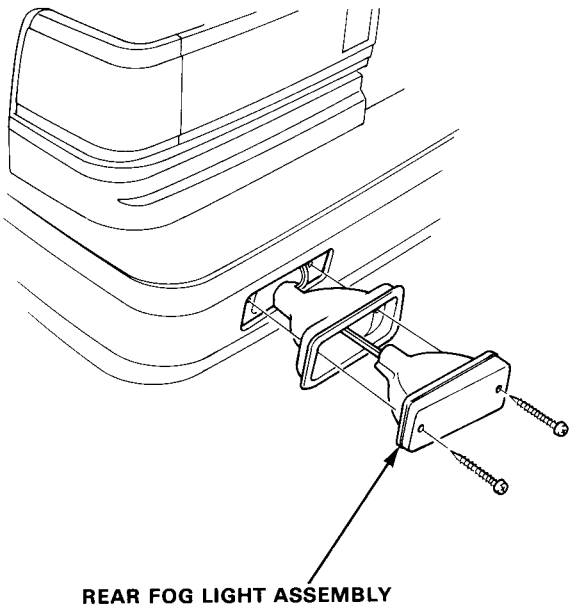
3. After installing the unit, adjust the headlights to local requirements.

Rear Fog Light/Taillight Assembly

Replacement

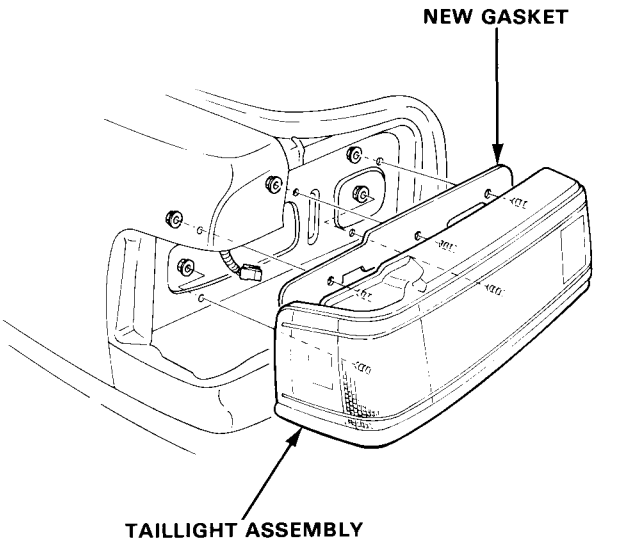
Rear Fog Light:

1. Remove the 2 screws and rear fog light assembly.



Taillight Assembly;

1. Open the trunk lid and the maintenance cover of the taillight.
2. Disconnect the 6-P connector from behind the taillight.
3. Remove the 5 mount nuts and the taillight assembly.

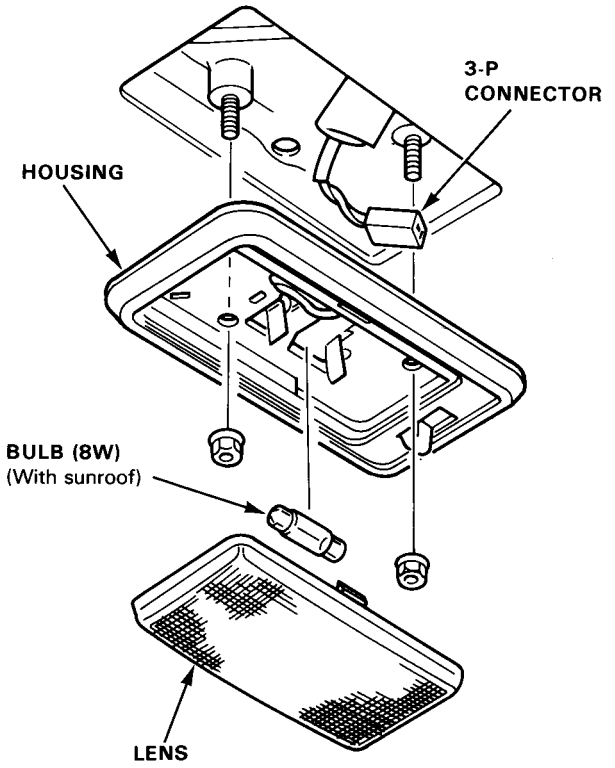


4. Inspect the gasket; replace if it is distorted or overly compressed.

Dome Light

Test

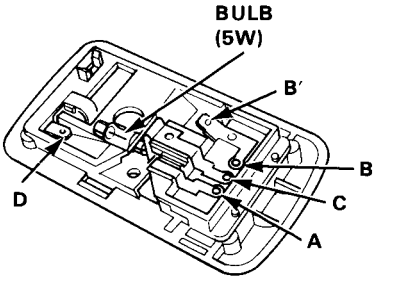
1. Turn the light switch OFF.
2. Pry off the lens.
3. Remove the 2 nuts (or screw) and the housing.
4. Disconnect the 3-P connector (or two connectos) from the housing.



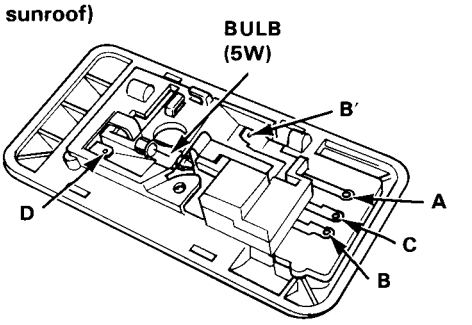
5. Remove the dome light.
6. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	A	B or B'	C		D
OFF			○	○	○
DOOR		○	○	○	○
ON	○		○	○	○

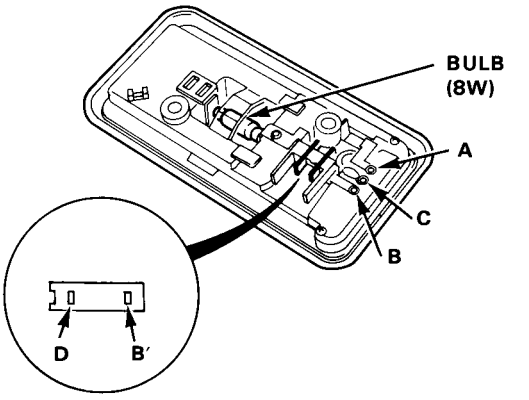
2D H/B:

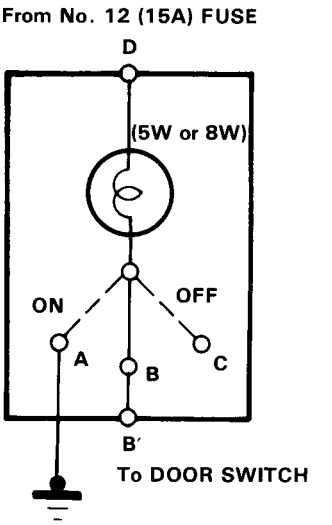


4D:
(Without sunroof)



4D:
(With sunroof)

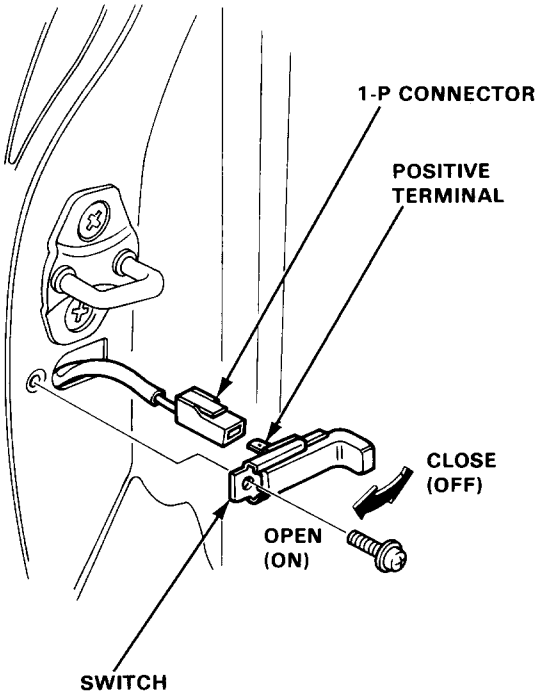




Door Switches

Test

1. Open the door.
2. Remove the screw and pull out the door switch.
3. Disconnect the 1-P connector from the switch.

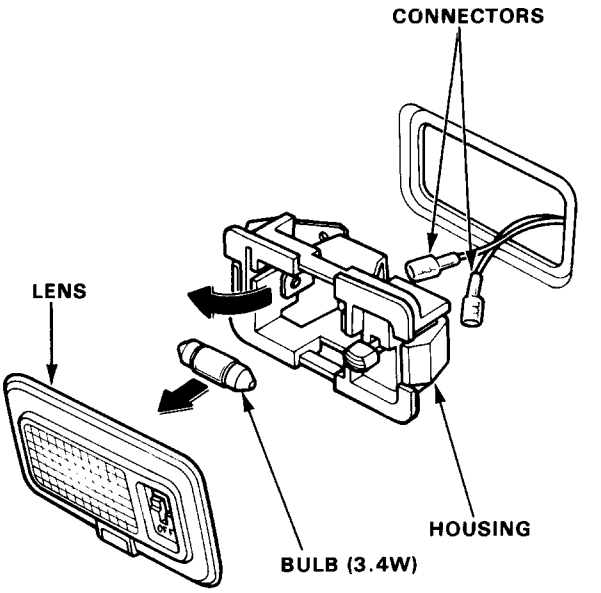


4. There should be continuity between the positive terminal and base plate (ground)with the switch released (door opened).
   There should be no continuity with the switch pushed (door closed).

Trunk Light

Replacement

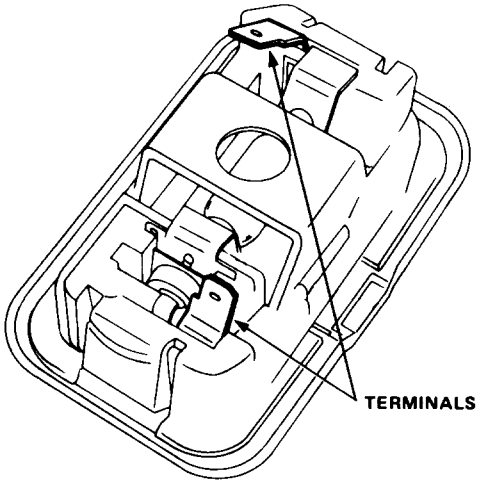
1. Pry off the trunk light lens from the housing.
2. Pry off the light assembly.
3. Disconnect the connectors from the housing.

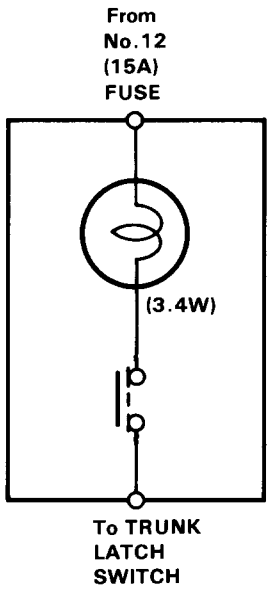


Trunk Light

Test

1. Make sure that the bulb, is in good condition. Set the trunk light switch in the ON position and check for continuity between terminals.

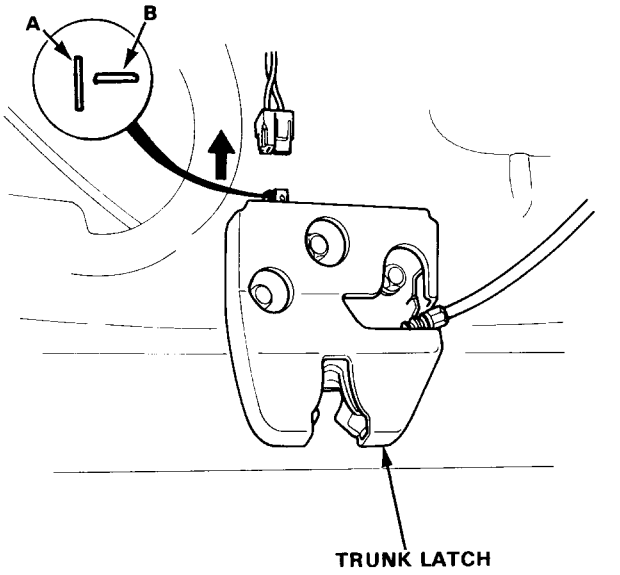




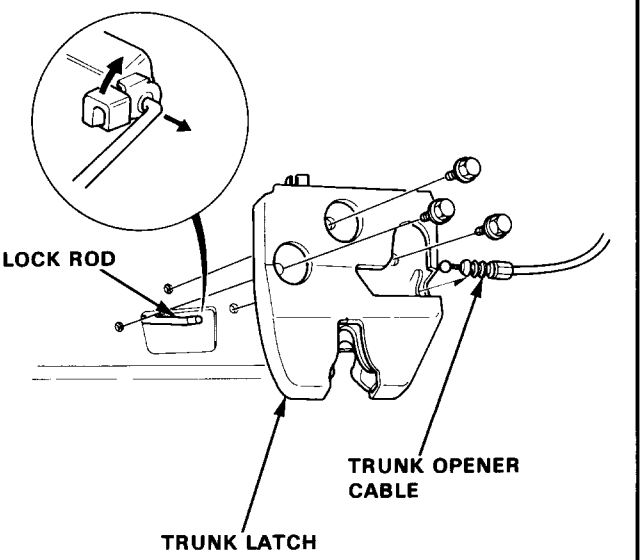
Latch Switch

Test/Replacement

1. Open the trunk lid.
2. Disconnect the connector from the trunk latch.
3. There should be continuity between A and B terminals.

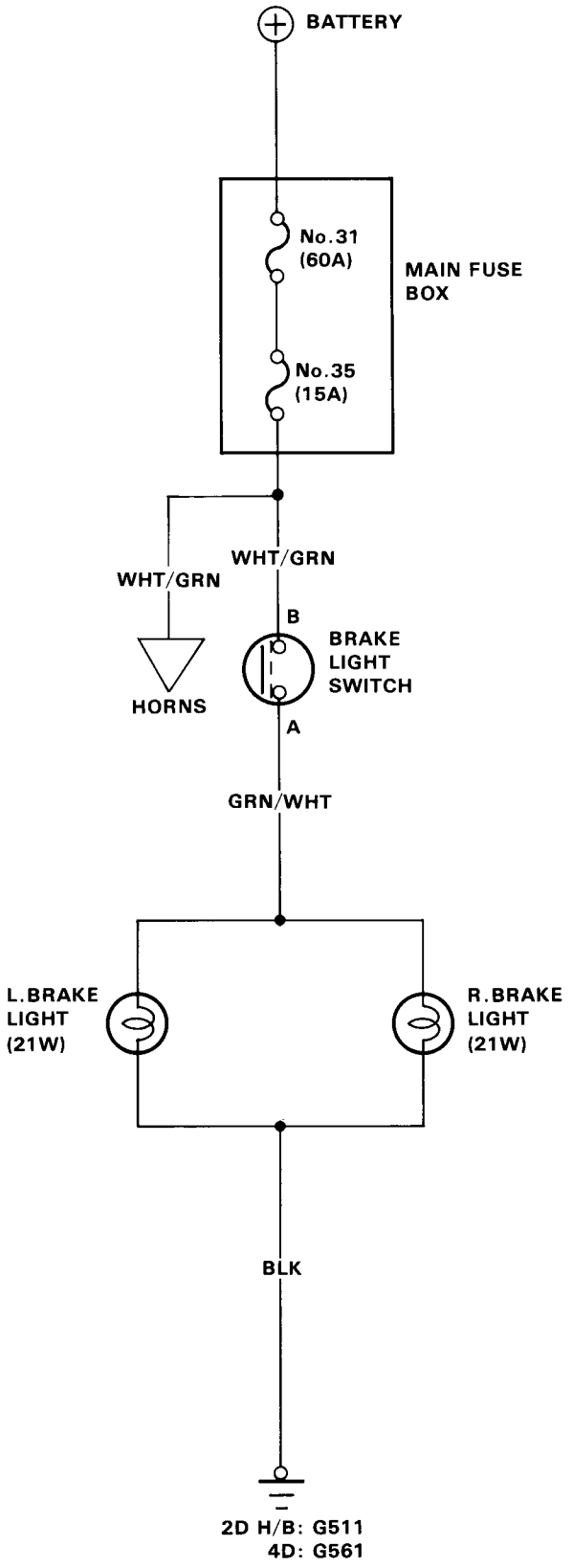


4. If necessary, remove the 3 bolts to pull out the latch from the trunk lid, then disconnect the lock rod from the latch.
5. Disconnect the trunk opener cable from the latch.



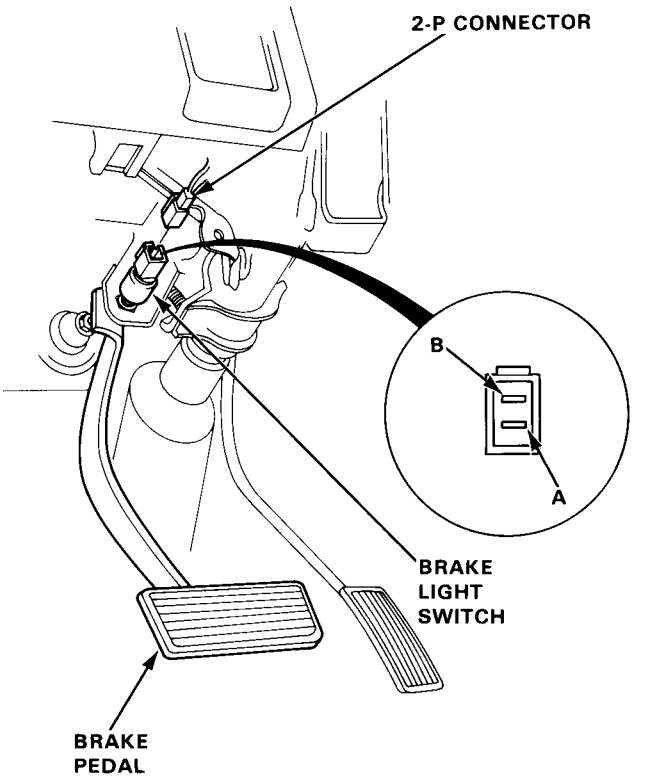
Brake Lights

Circuit Diagram



Test

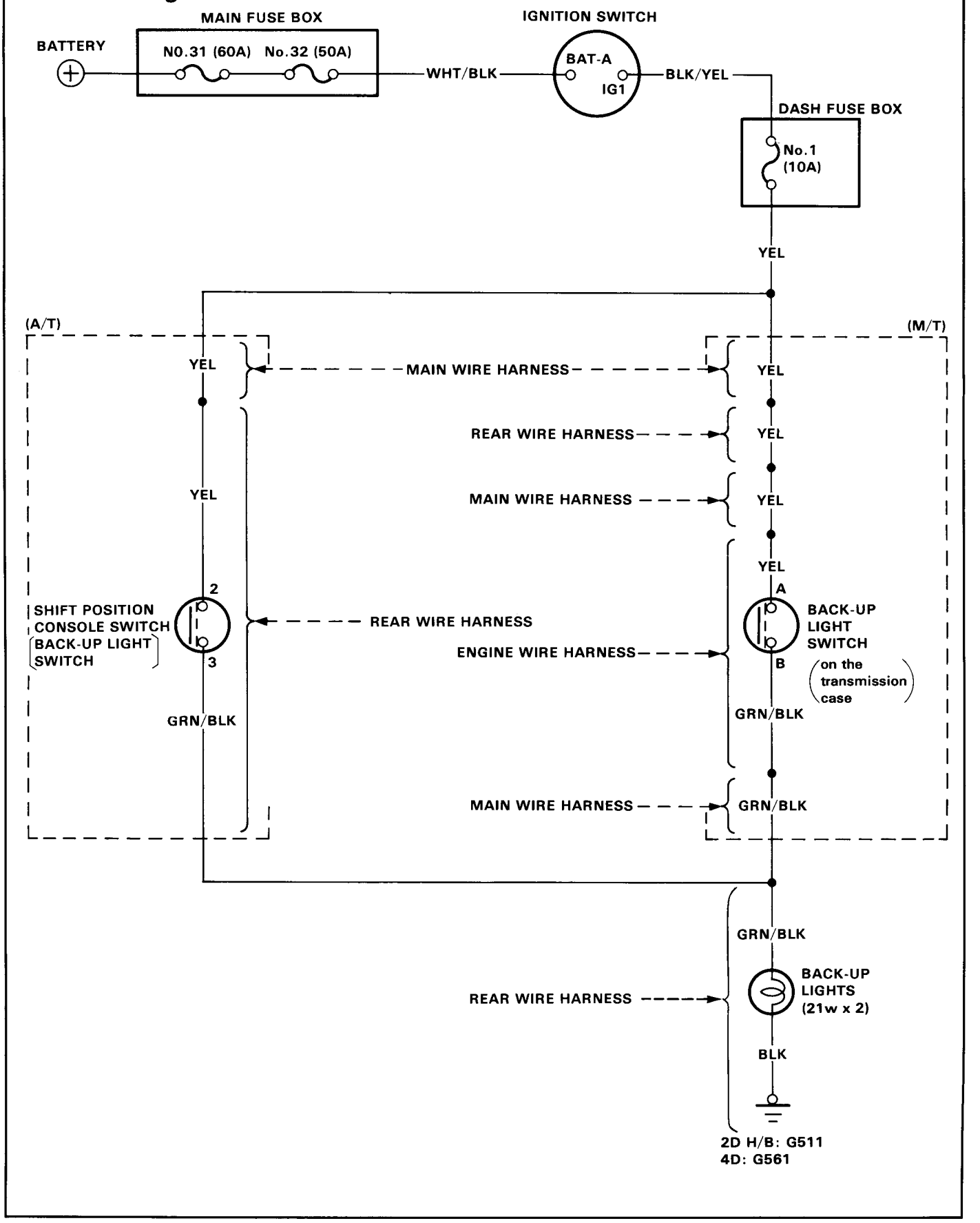
1. If the brake lights do not go on, check the No.35 (15A) fuse in the main fuse box, and the brake light bulbs in the taillight assembly.
2. If the fuse and bulbs are OK, disconnect the 2-P connector from the brake light switch.



3. Check for continuity between the A and B terminals. There should be continuity with the brake pedal pushed.
   - if no continuity, replace the switch or adjust pedal height (see section 13).
   - If there is continuity, but the brake lights do not go on:
     - Poor ground (2D H/B: G511, 4D: G561).
     - An open in the WHT/GRN or GRN/WHT wire.

Back-up Lights

Circuit Diagram



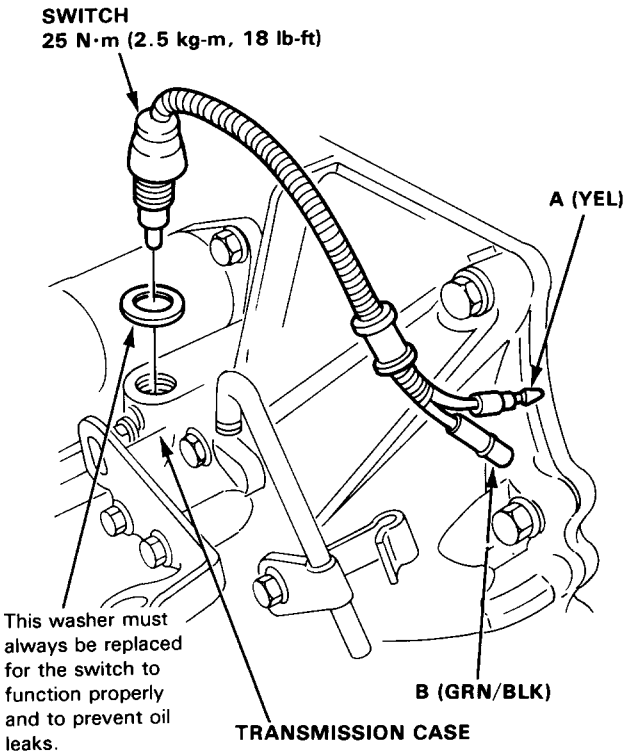
Test

Manual Transmission:

1. Test back-up light switch by placing the select lever in reverse and turning the ignition switch to ON.

2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the taillight assembly.

3. If the fuse and bulbs are OK, disconnect the connectors from the back-up light switch.



4. Check for continuity between the A and B wires with the switch installed to the transmission case. There should be continuity as the select lever engages "R"

   - If no continuity, replace the switch.

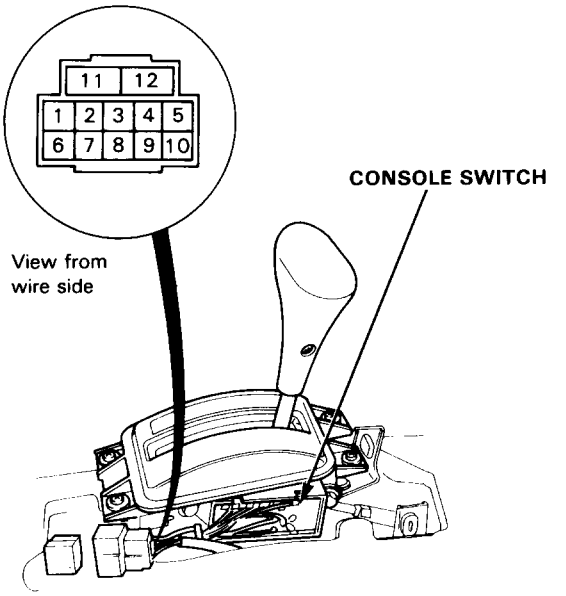
   - If there is continuity, but the back-up lights do not go on:
     - Poor ground (2D H/B: G511, 4D: G561).
     - An open in the YEL or GRN/BLK wire.

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 taillight 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"

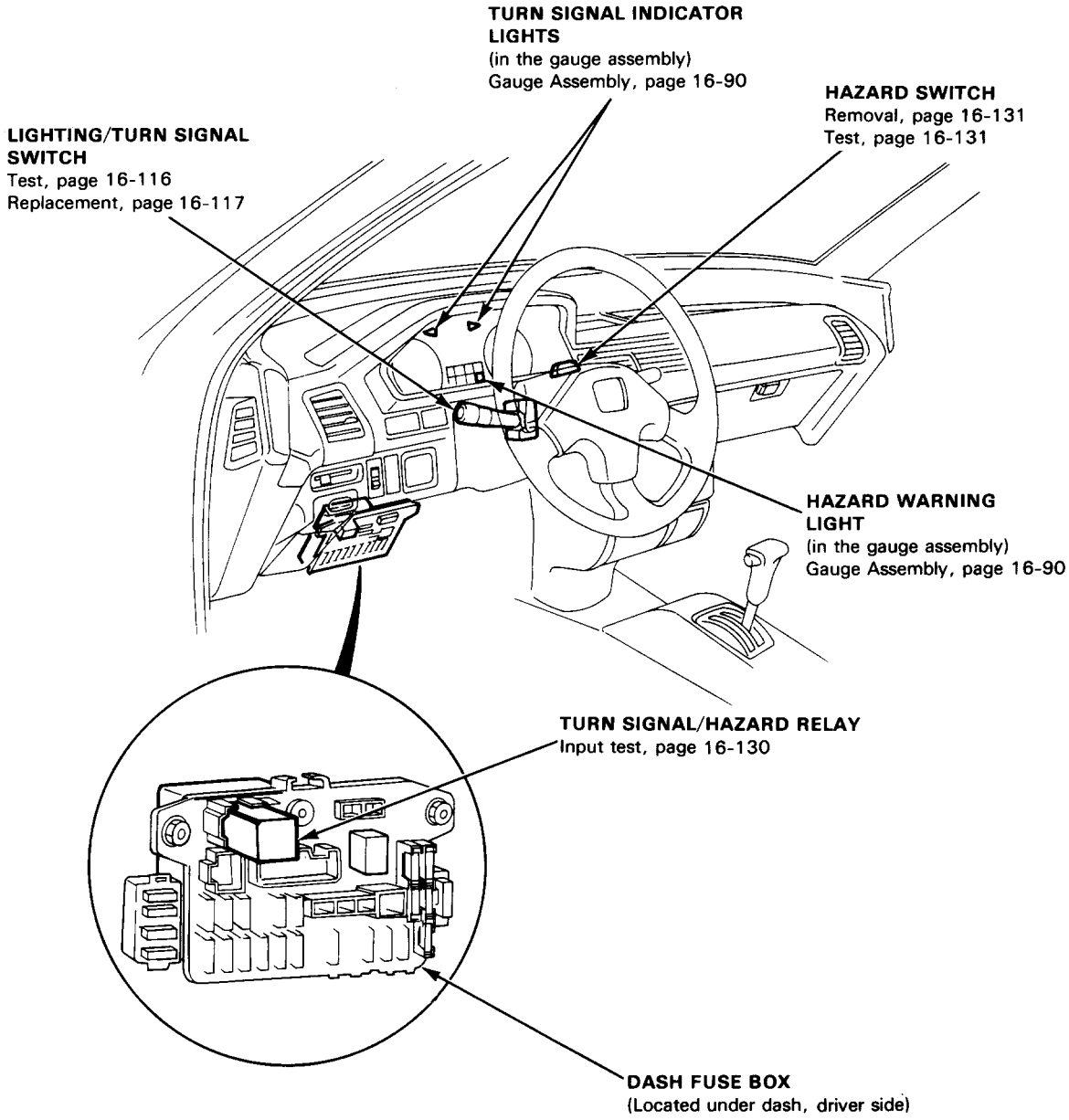
   - If no continuity, replace the switch assembly (see page 16-97).

   - If there is continuity, but the back-up lights do not go on:
     - Poor ground (2D H/B: G511, 4D: G561).

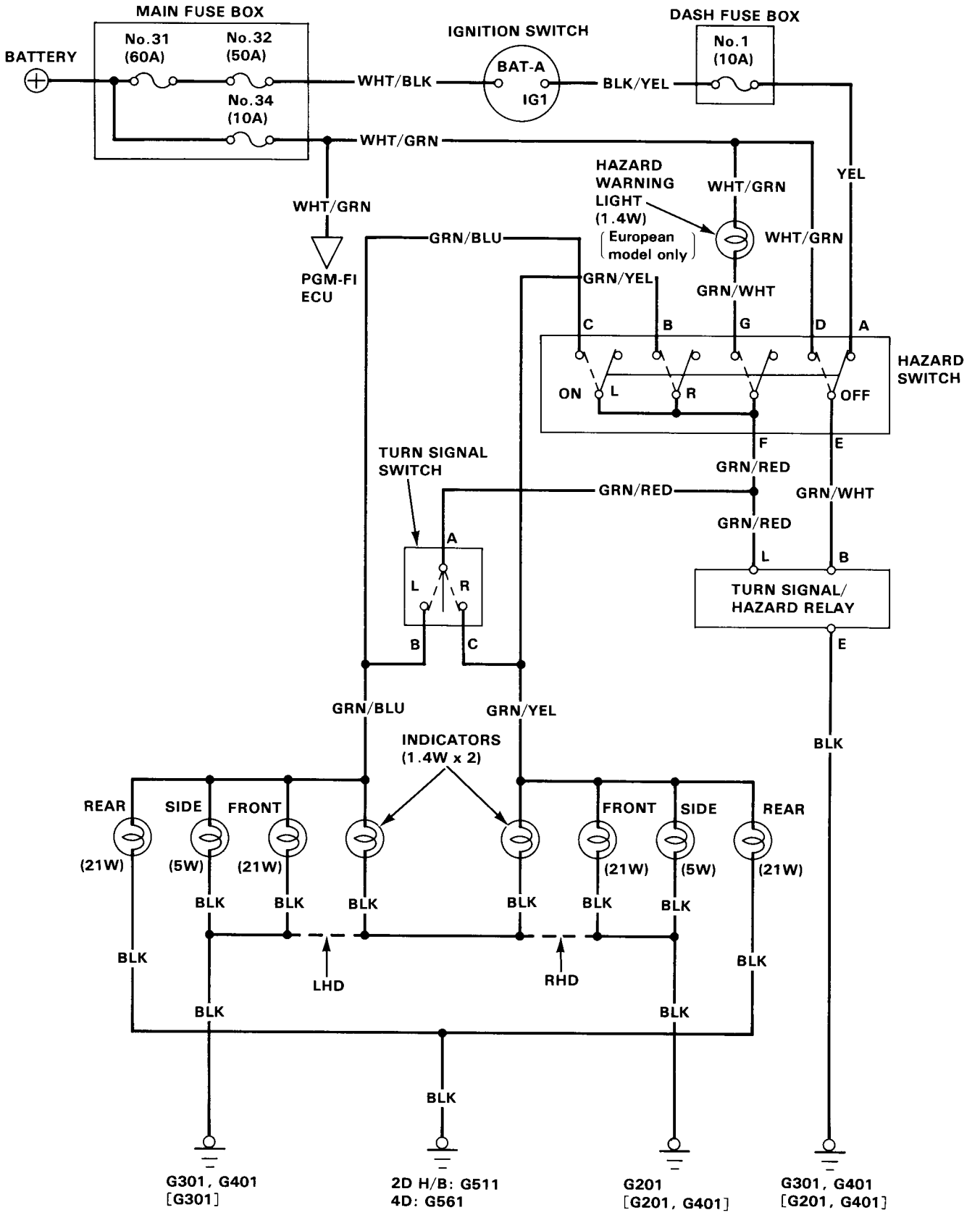
     - An open in the YEL or GRN/BLK wire.

Turn Signal/Hazard Flasher System

Component Location Index



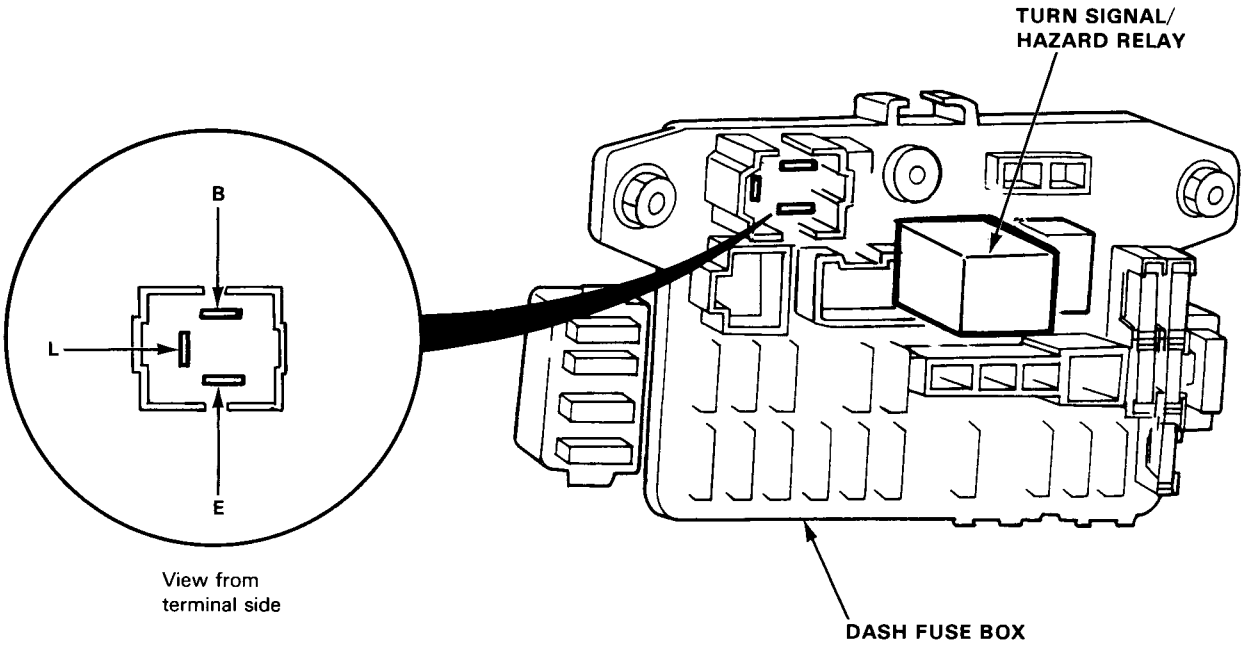
Circuit Diagram



Turn Signal/Hazard Flasher System

Turn Signal/Hazard Relay Input Test

Remove the dashboard lower panel, then remove the turn signal /hazard relay from the dash fuse box.
Make the following input tests at the relay holder pins.
If all tests prove OK, but the relay fails to work, replace the turn signal/hazard relay.

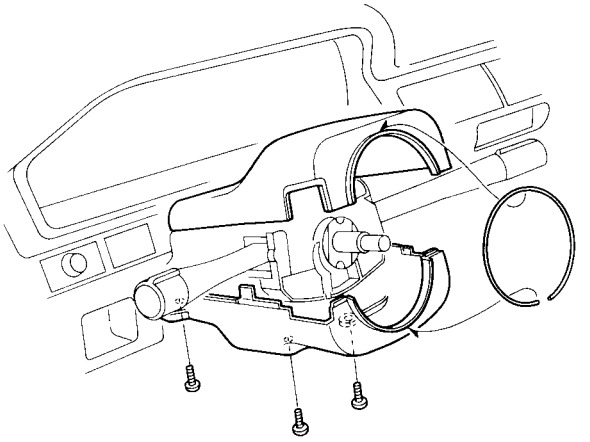


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	E	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor grond (G301, G401 〔G201, G401〕) • An open in he BLK wire.
2	B	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in he YEL or GRN/WHT wire. • Faulty hazard switch.
3	B and L	Hazard switch ON and connect the B terminal to the L terminal.	Hazard lights should come on.	• Blown No.34 (10A) fuse. • Blown bulb. • Poor ground. • Faulty hazard switch. • An open in the WHT/GRN, GRN/RED, GRN/YEL or GRN/BLU wire.
		Ignition switch ON and turn signal switch in R or L and connect the B terminal to the L terminal.	R or L side turn lights should come on.	• Faulty turn signal switch.

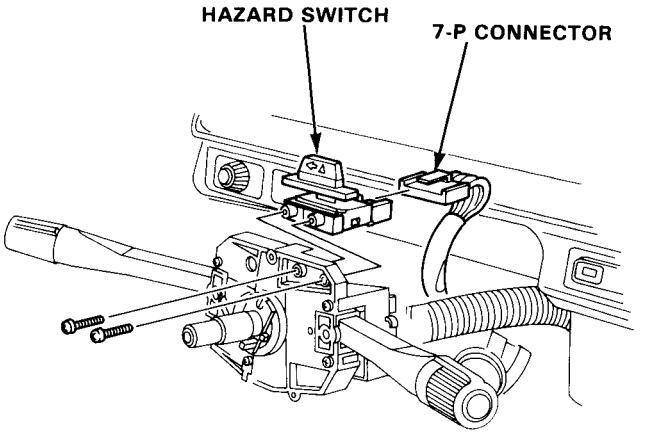
〔 〕: RHD

Hazard Switch Removal

1. Remove the steering wheel then remove the column covers.



2. Disconnect the 7-P connector, then remove the switch from the combination switch by releasing the 2 mounting screws.

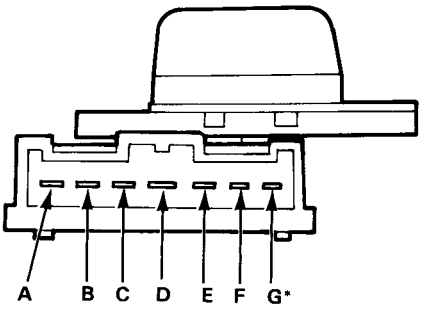


Hazard Switch Test

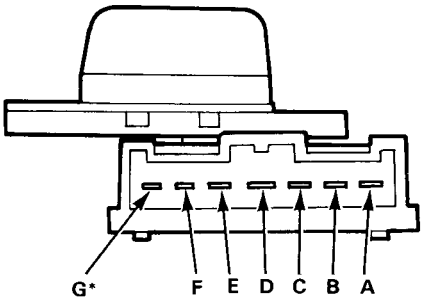
1. Remove the hazard switch
2. Check for continuity between the terminals in each switch position according to the table.

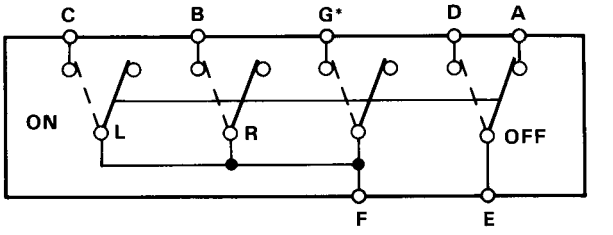
Terminal / Position	A	B	C	D	E	F	G
OFF	○				○		
ON		○	○	○	○	○	○

LHD:



RHD:

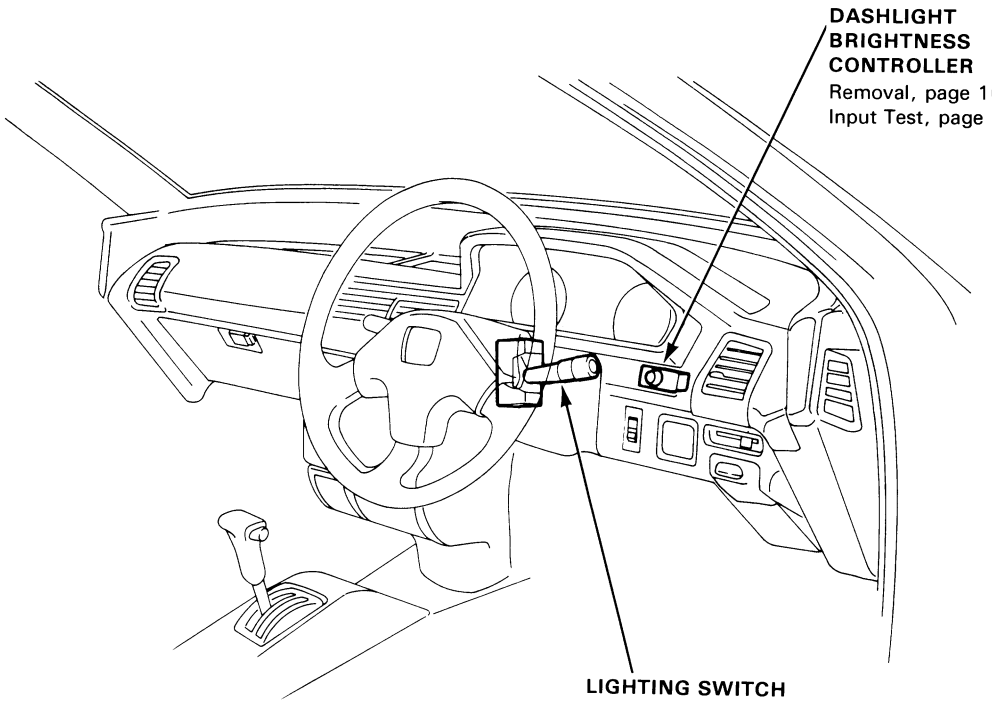




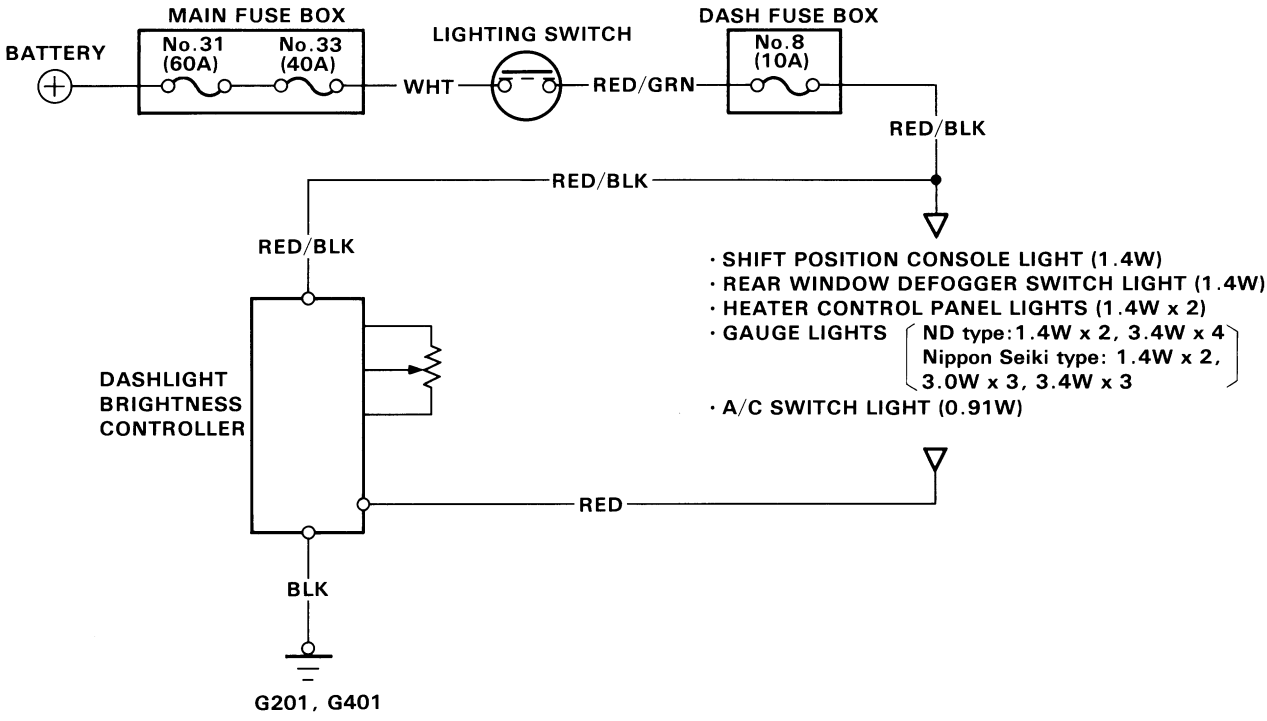
G*·····European model only

Dashlight Brightness Control (KQ model only)

Component Location Index



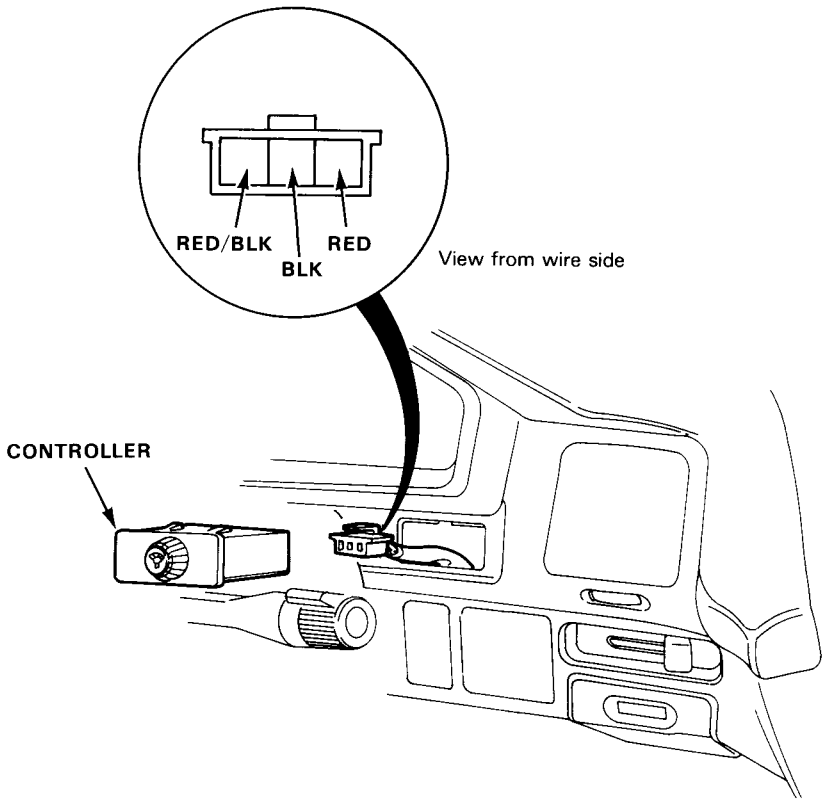
Circuit Diagram



Controller Input Test

NOTE: The control unit is built in the dashlight brightness controller.

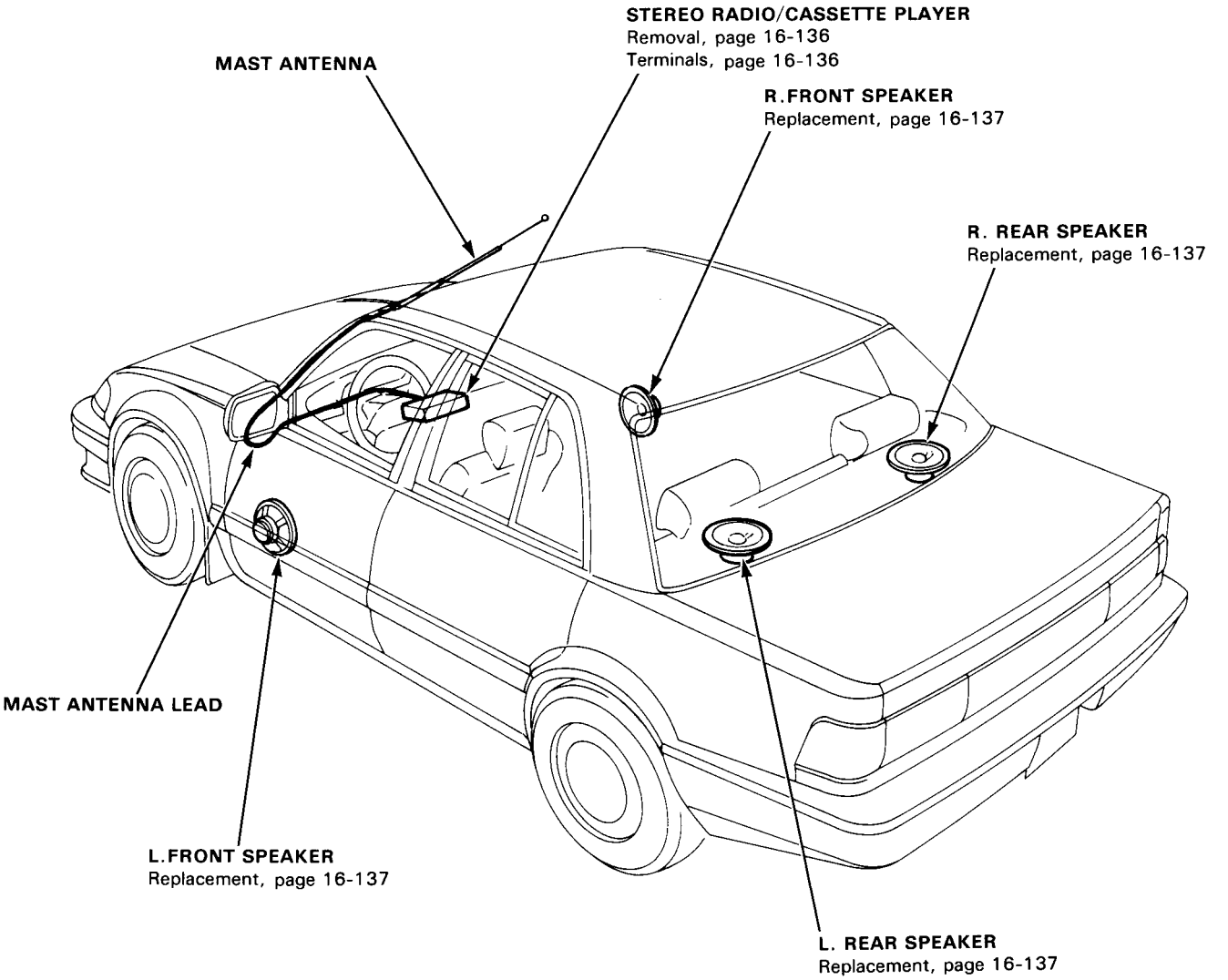
Remove the dashboard lower panel. Push out the controller from behind the instrument panel, then disconnect the 3-P connector from the controller.
Make the following input tests at the harness pins. If all tests prove OK, yet the dashlights still can not be controlled, check the connector for good connection. If OK, then replace the controller.



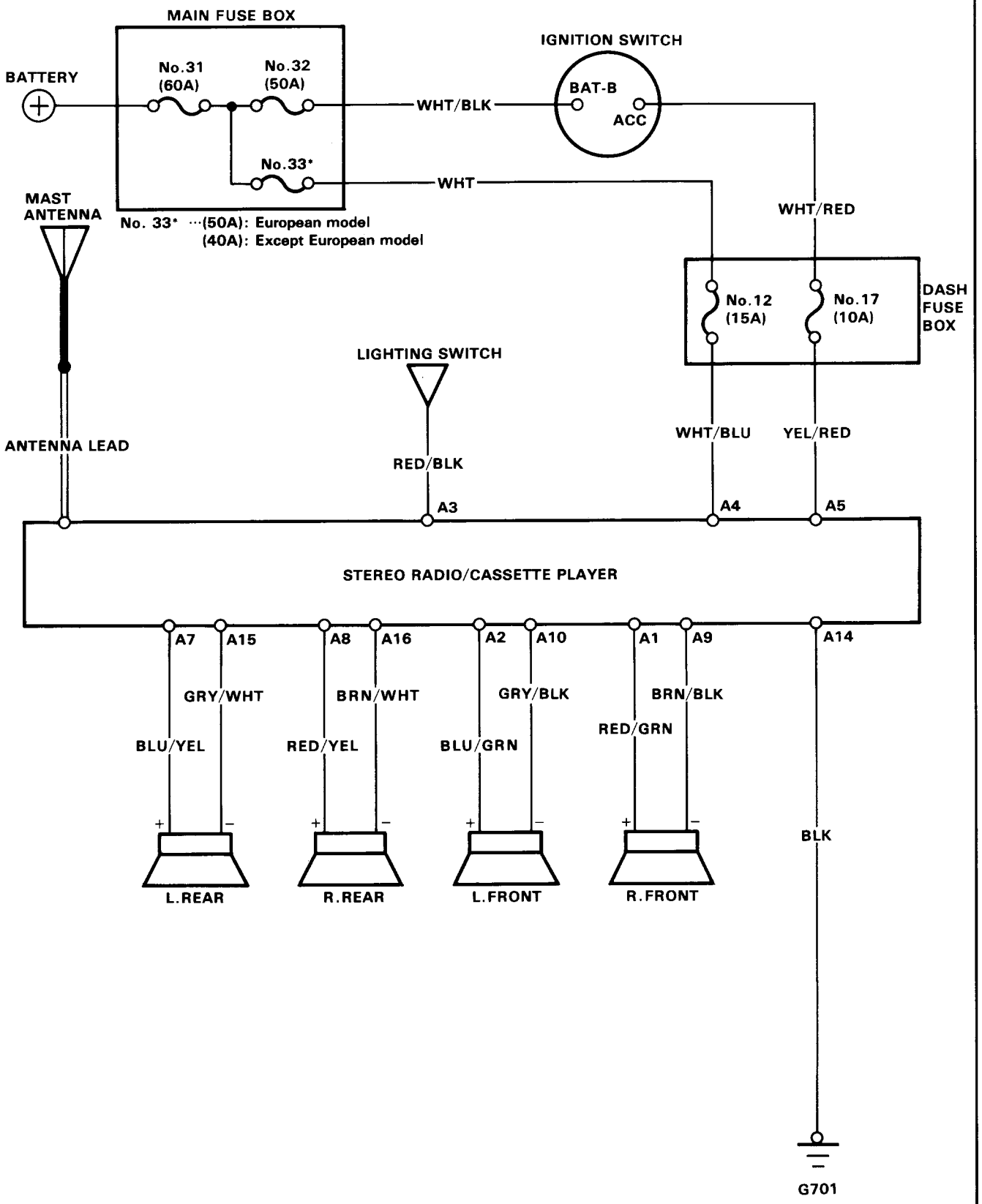
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity,	• Poor ground (G201, G401) • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery 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 and the RED/BLK wires are connected.	• An open in the RED/BLK or RED wire.

Stereo Sound System

Component Location Index



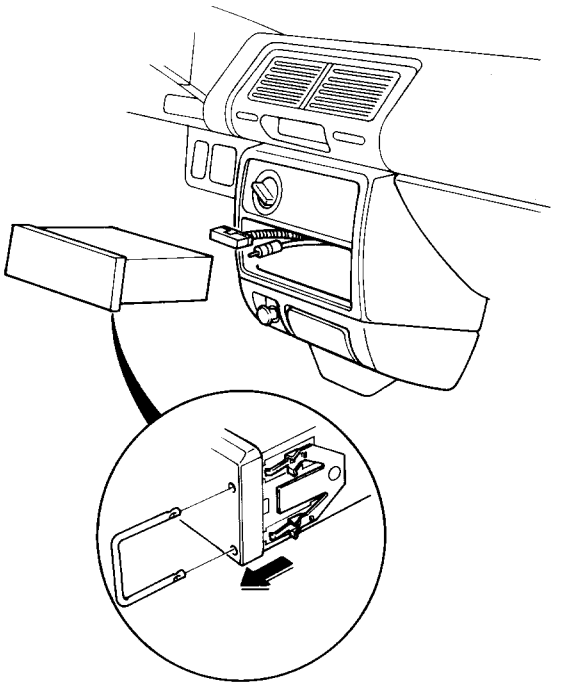
Circuit Diagram



Stereo Sound System

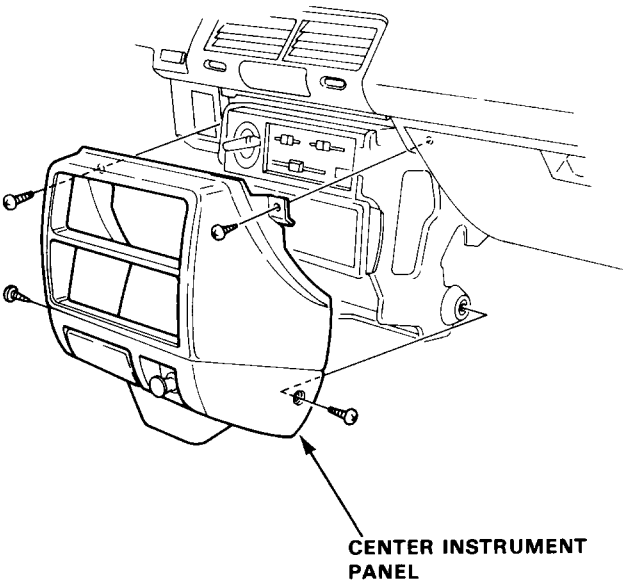
Unit Removal

A-Type:

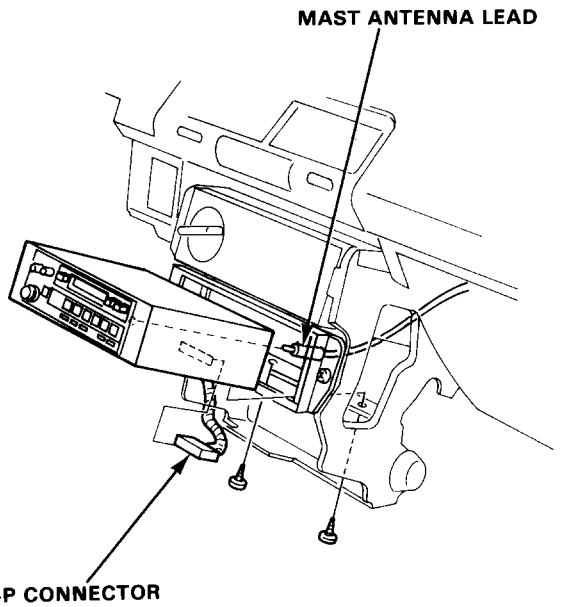


B-Type:

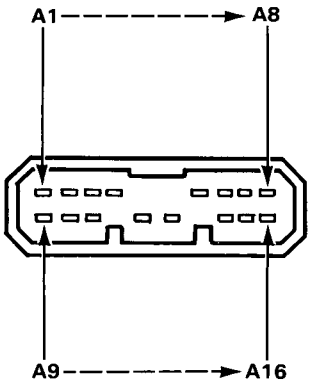
1. Remove the center instrument panel, then disconnect the 2-P connector from the cigarette lighter.



2. Remove the 2 screws, then disconnect the 16-P connector and the mast antenna lead, and pull the stereo radio cassette player.



Unit Terminals



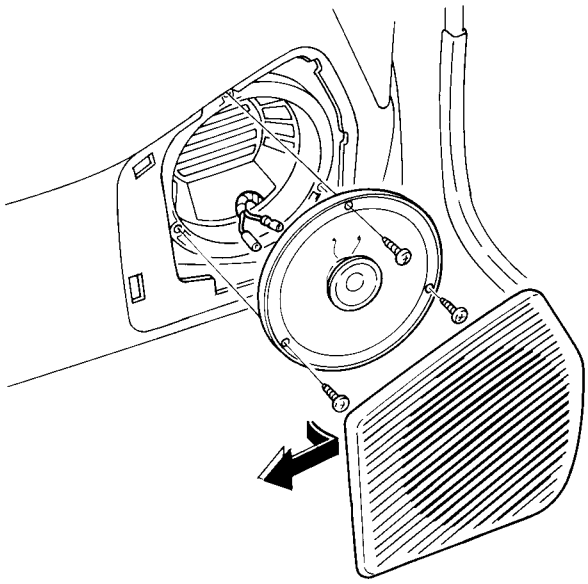
Terminal	Wire	Destination
A1	RED/GRN	Right front speaker ⊕
A2	BLU/GRN	Left front speaker ⊕
A3	RED/BLK	Light-on signal
A4	WHT/BLU	Constant power (Tuning memory)
A5	YEL/RED	ACC (Main stereo power supply)
A6		(Not used)
A7	BLU/YEL	Left rear speaker ⊕
A8	RED/YEL	Right rear speaker ⊕
A9	BRN/BLK	Right front speaker ⊖
A10	GRY/BLK	Left front speaker ⊖
A11		(Not used)
A12		(Not used)
A13		(Not used)
A14	BLK	Ground
A15	GRY/WHT	Left rear speaker ⊖
A16	BRN/WHT	Right rear speaker ⊖

Speaker Replacement

Front Speakers:

2D H/B: carefully pry out the grille at the two rear clips.

4D: remove the 2 screws on the front edge of the grille.



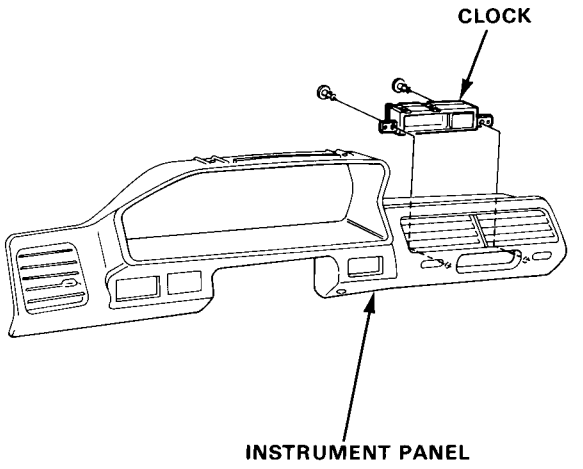
Rear Speakers:

(Rear speakers are dealer-mounted)

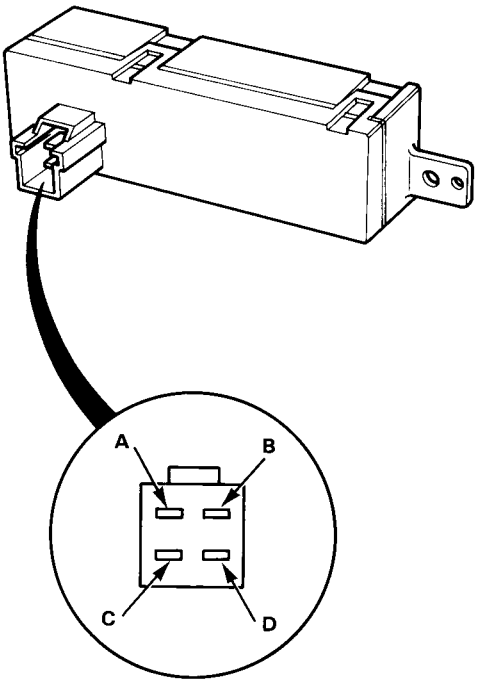
Clock

Removal

1. Remove the instrument panel from the dashboard, then disconnect the 4-P connector from the clock.
2. Remove the 2 screws and clock from the instrument panel.



Terminals

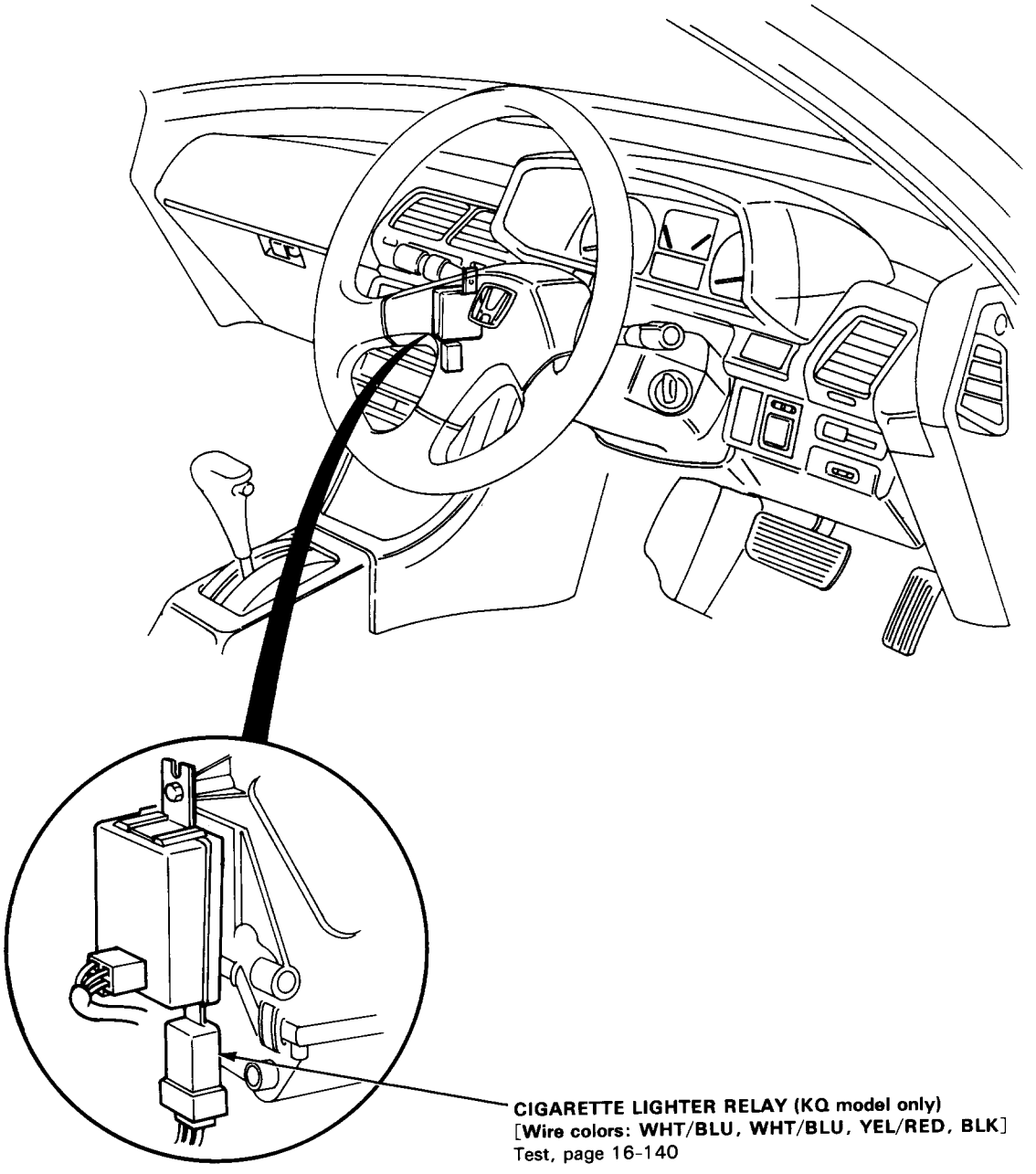


Terminal	Wire	Destination
A	WHT/BLU	Constant power (Time memory)
B	YEL	IG1 (Main clock power supply)
C	RED/BLK	Light-on signal
D	BLK	Ground

Cigarette Lighter

Component Location Index

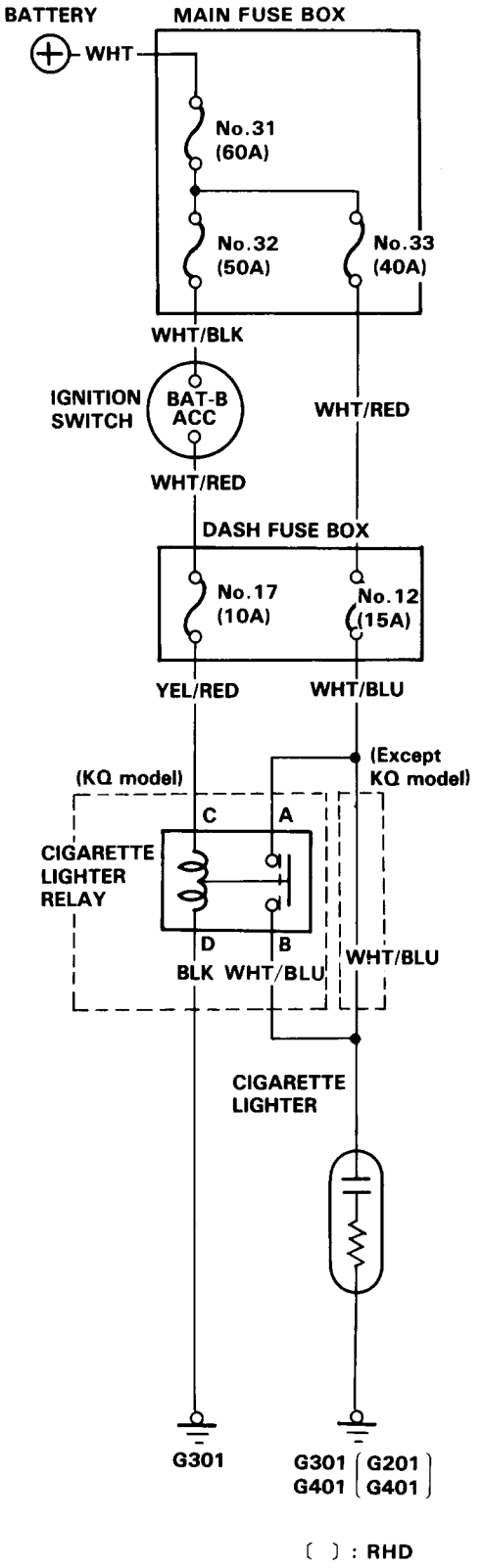
· **CIGARETTE LIGHTER**
Replacement, page 16-141



CIGARETTE LIGHTER RELAY (KQ model only)
[Wire colors: WHT/BLU, WHT/BLU, YEL/RED, BLK]
Test, page 16-140

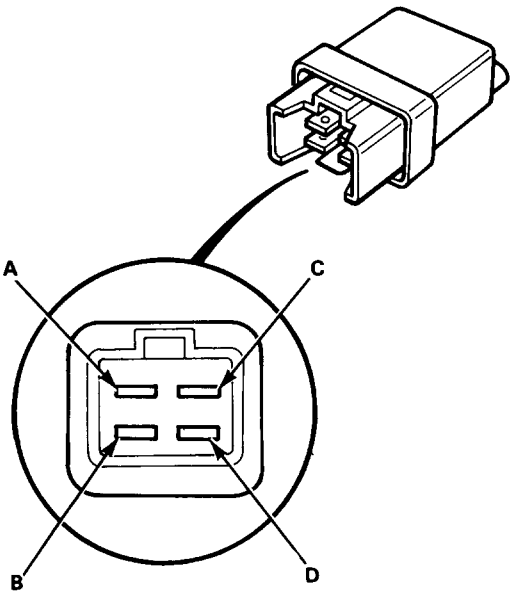
Cigarette Lighter

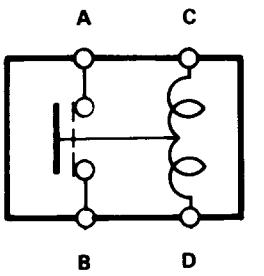
Circuit Diagram



Cigarette Lighter Relay Test

There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.

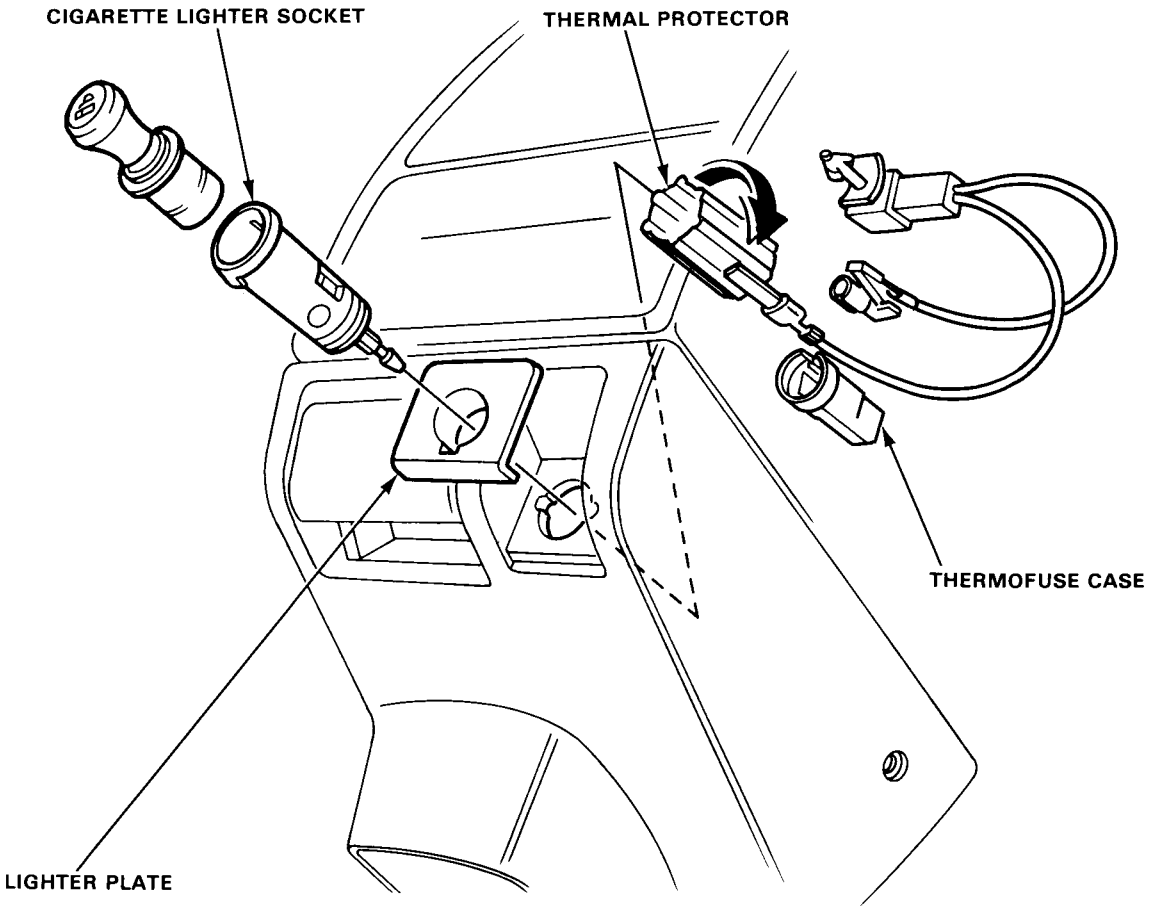




Cigarette Lighter

Replacement

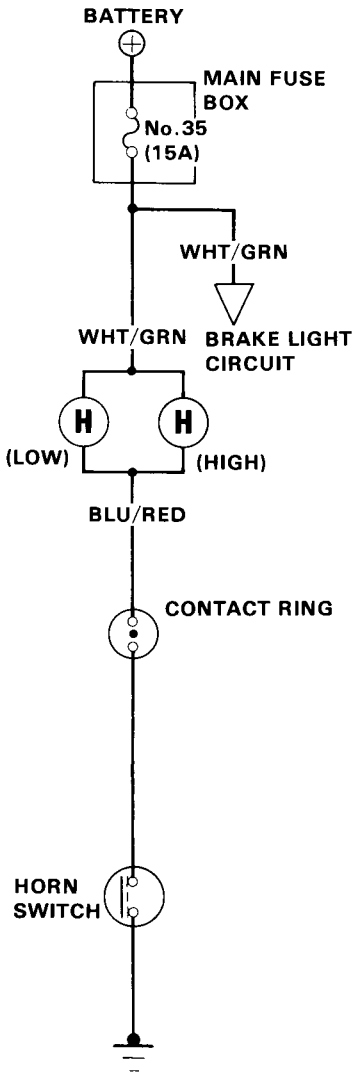
1. Remove the 4 screws and center instrument panel, then disconnect the 2-P connector from the cigarette lighter.
2. Disconnect the thermofuse case from the socket end.
3. Remove the thermal protector and separate the cigarette lighter socket.



4. When installing the cigarette lighter, align the lug on the cigarette lighter socket with the slot in the panel.
5. Make sure that the ground wire and thermofuse case are seated to the cigarette lighter assembly.

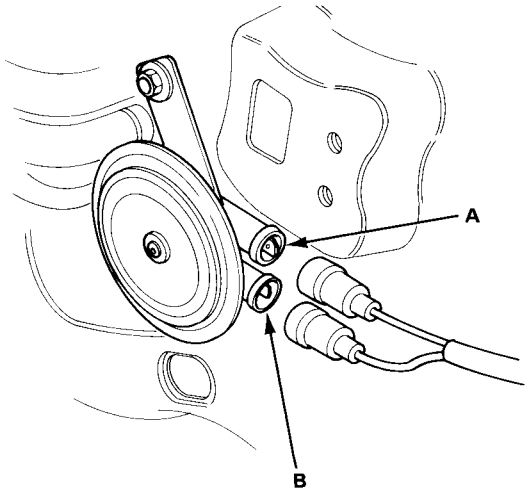
Horns

Circuit Diagram



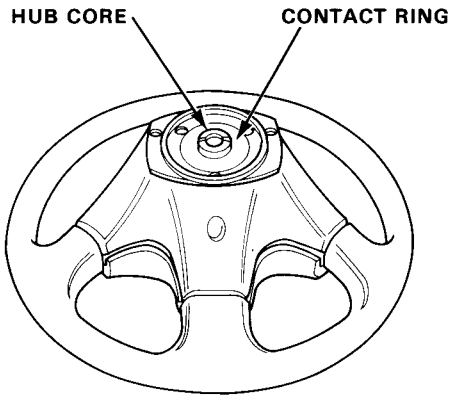
Horn Test

1. Remove the front bumper.
2. Disconnect the wires from the horn.
3. Test the horn by connecting battery voltage to the A and B terminals. The horn should sound.
4. If the horn fails to sound, replace it.



Switch Test

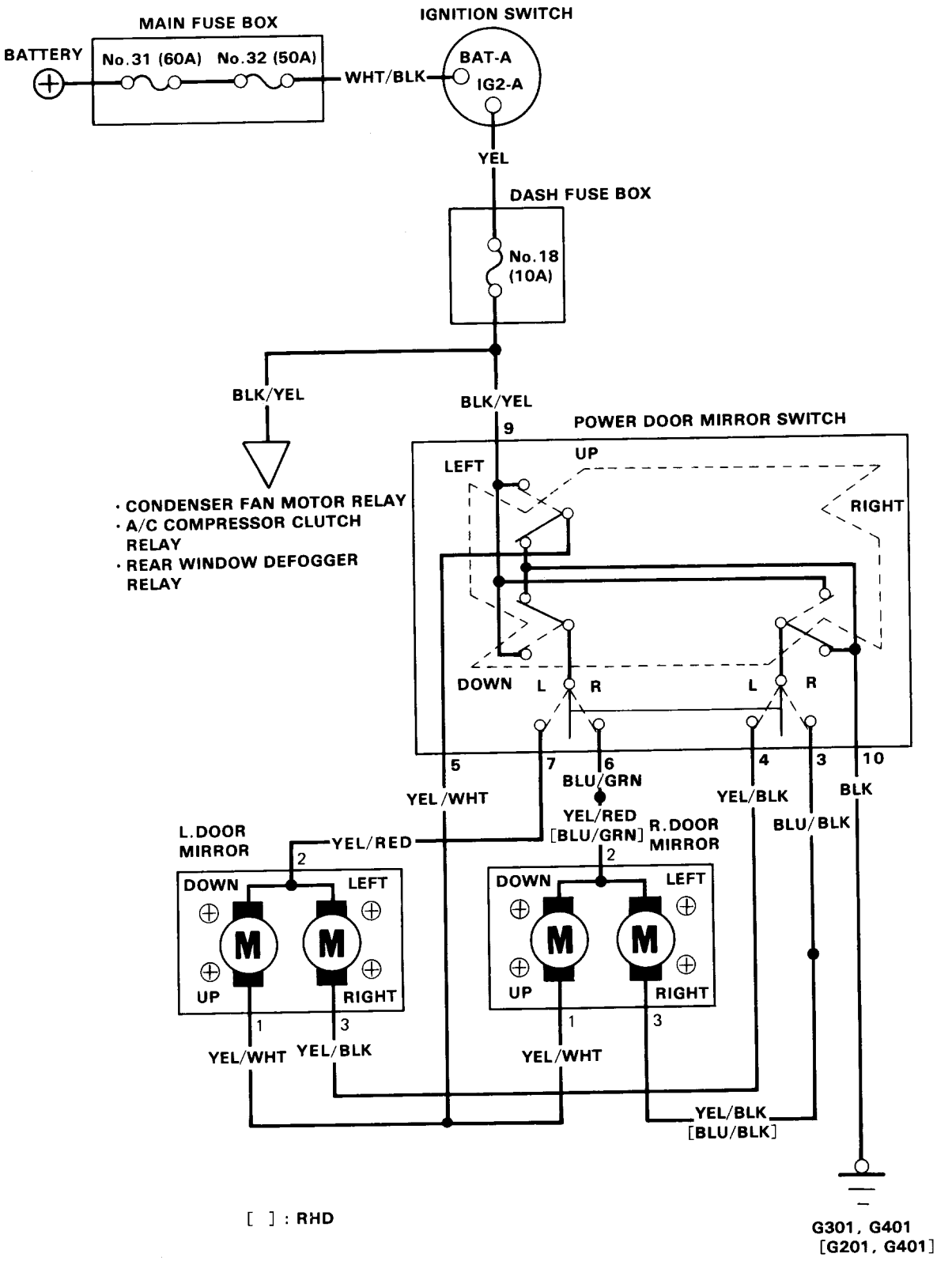
1. Remove the steering wheel, then turn it over.
2. Check for continuity between the contact ring and hub core on the steering wheel with the horn switch pressed.
   There should be continuity.



3. If there is no continuity, repair the horn switch.

Power Door Mirrors

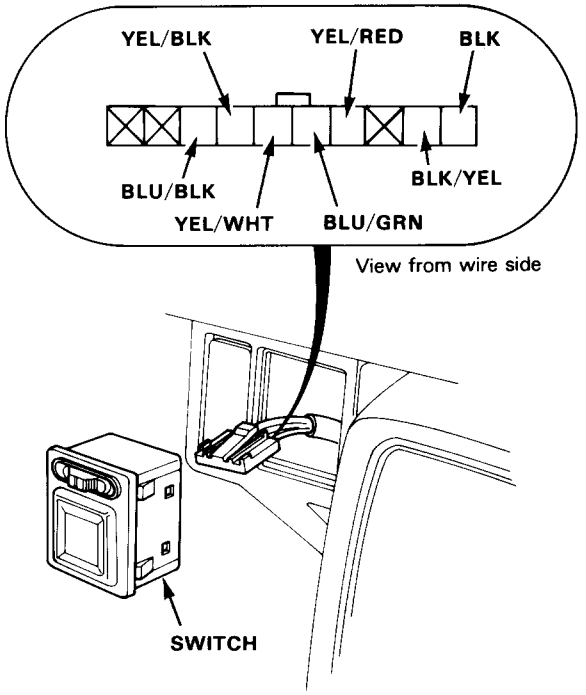
Circuit Diagram



Power Door Mirrors

Function Test

NOTE: Before testing, remove the dashboard lower panel and push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.



Mirror Test

One or both inoperative:

1. Check for voltage between the BLK/YEL terminal and body ground with the ignition switch ON.
   There should be battery voltage.
   - If there is no voltage, check for
     - Blown No.18 (10A) fuse in the dash fuse box.
     - An open in the BLK/YEL wire.
   - If there is battery voltage, go to step 2.
2. Check for continuity between the BLK terminal and body ground.
   There should be continuity.
   - If there is no continuity, check for
     - An open in the BLK wire.
     - Poor ground (G301, G401 [G201, G401]).

Left inoperative:

Connect the BLK/YEL terminal to the YEL/RED terminal and the YEL/WHT (or YEL/BLK) terminal to the body ground with jumper wires.
The left mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the left door trim panel and check for open in the YEL/WHT (or YEL/BLK) wire between the left door mirror and switch.
  If the wire is OK. check the left door mirror.
- If the mirror neither tilts down nor swings left, repair the YEL/RED wire.
- If the mirror operates properly, check the mirror switch.

Right inoperative:

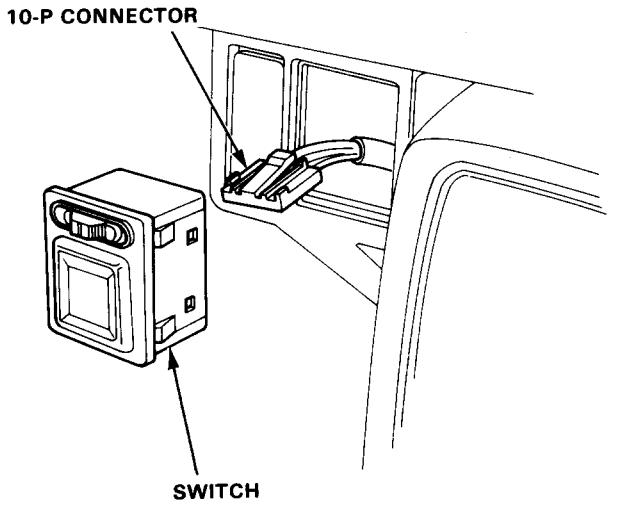
Connect the BLK/YEL terminal to the BLU/GRN terminal and the YEL/WHT (or BLU/BLK) terminal to the body ground with jumper wires.
The right mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the right door trim panel and check for open in the YEL/WHT (or YEL/BLK [BLU/BLK] and BLU/BLK) wire between the right door mirror and the switch.
  If the wire is OK, check the right door mirror.
- If the mirror neither tilts down nor swing left, repair the YEL/RED [BLU/GRN] and BLU/GRN wire.
- If the mirror operates properly, check the mirror switch.

[ ] : RHD

Switch Removal

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.

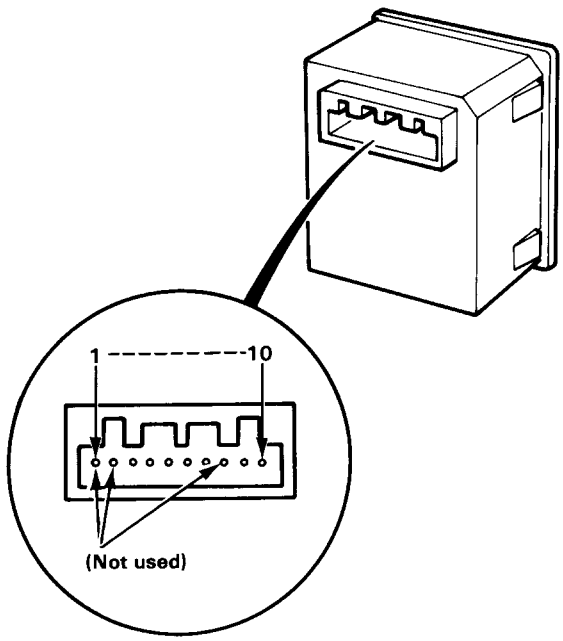


Switch Test

1. Remove the power door mirror switch from the instrument panel.
2. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch

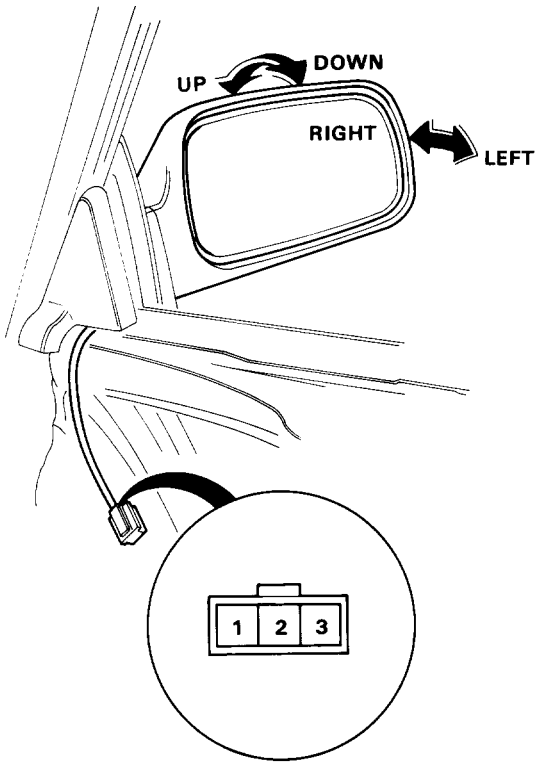
Position		Terminal 3	4	5	6	7	9	10
R	OFF	○		○	○			○
	UP			○			○	
	DOWN	○			○		○	
	LEFT			○	○		○	
	RIGHT	○					○	
L	OFF		○	○		○		○
	UP			○			○	
	DOWN		○			○	○	
	LEFT			○		○	○	
	RIGHT		○				○	



Power Door Mirrors

Door Mirror Test

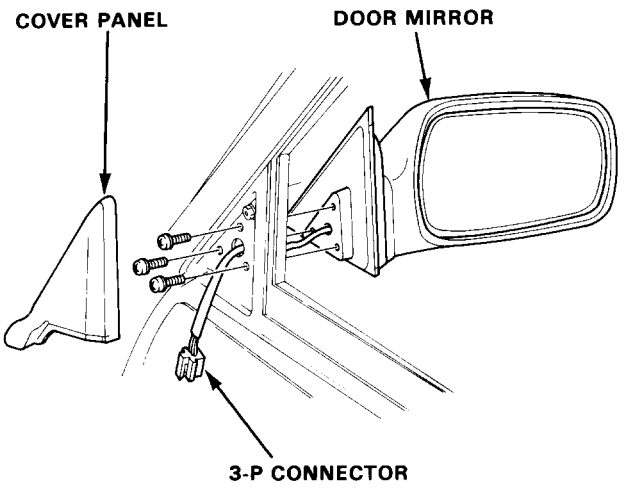
1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Test actuator operation:
   - TILP UP: Connect battery positive to the No.1 terminal and negative to the No.2 terminal.
   - TILT DOWN: Conncet battery positive to the No.2 terminal and negative to the No.1 terminal.
   - SWING LEFT: Connect battery positive to the No.2 terminal and negative to the No.3 terminal.
   - SWING RIGHT: Connect battery positive to the No.3 terminal and negative to the No.2 terminal.
3. If the mirror fails to operate properly, replace it.



View from wire side

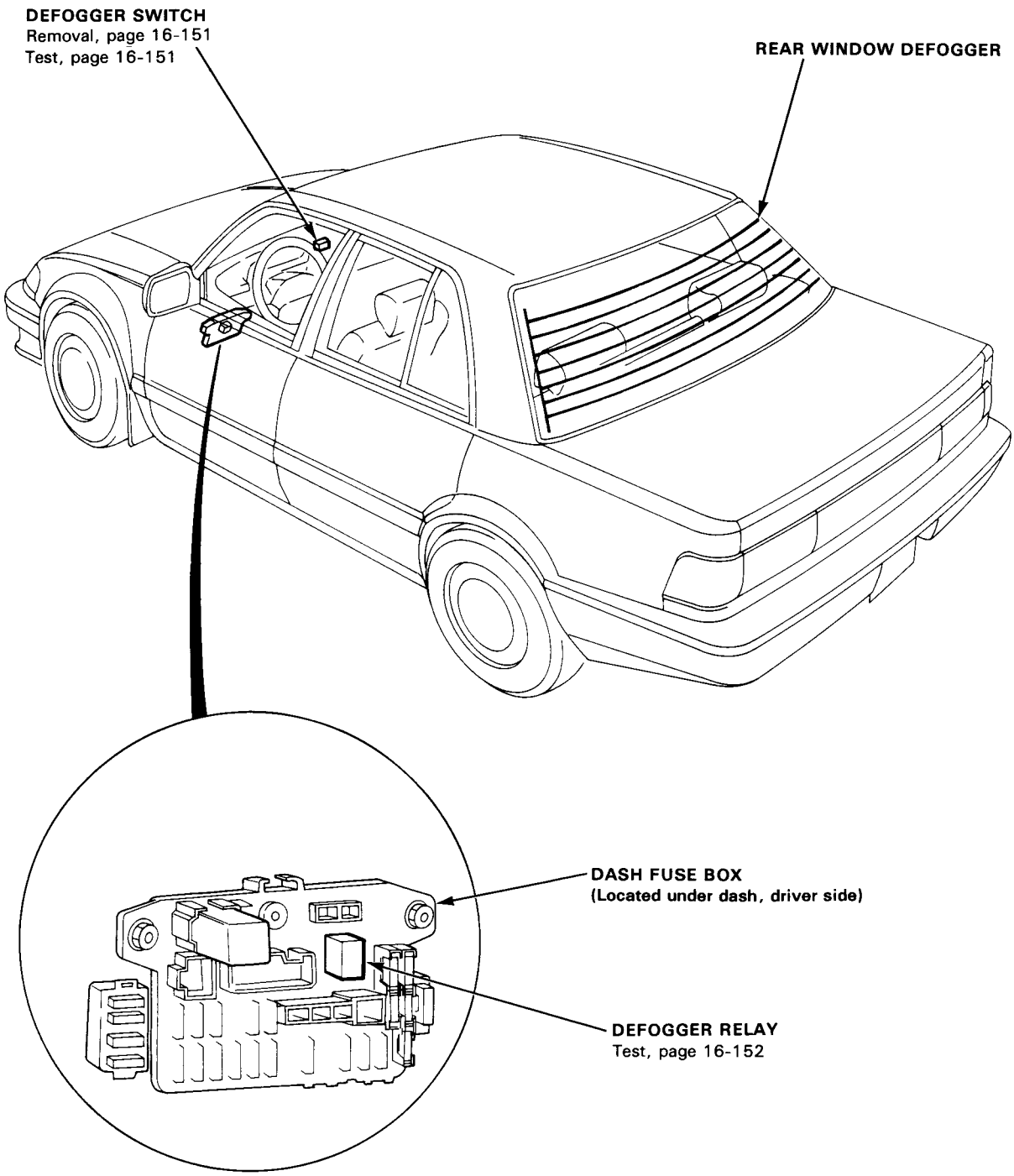
Door Mirror Replacment

1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Carefully pry out the cover panel with a flat tip screwdriver.
3. While holding the mirror with one hand, remove its mount screws with the other.



Rear Window Defogger

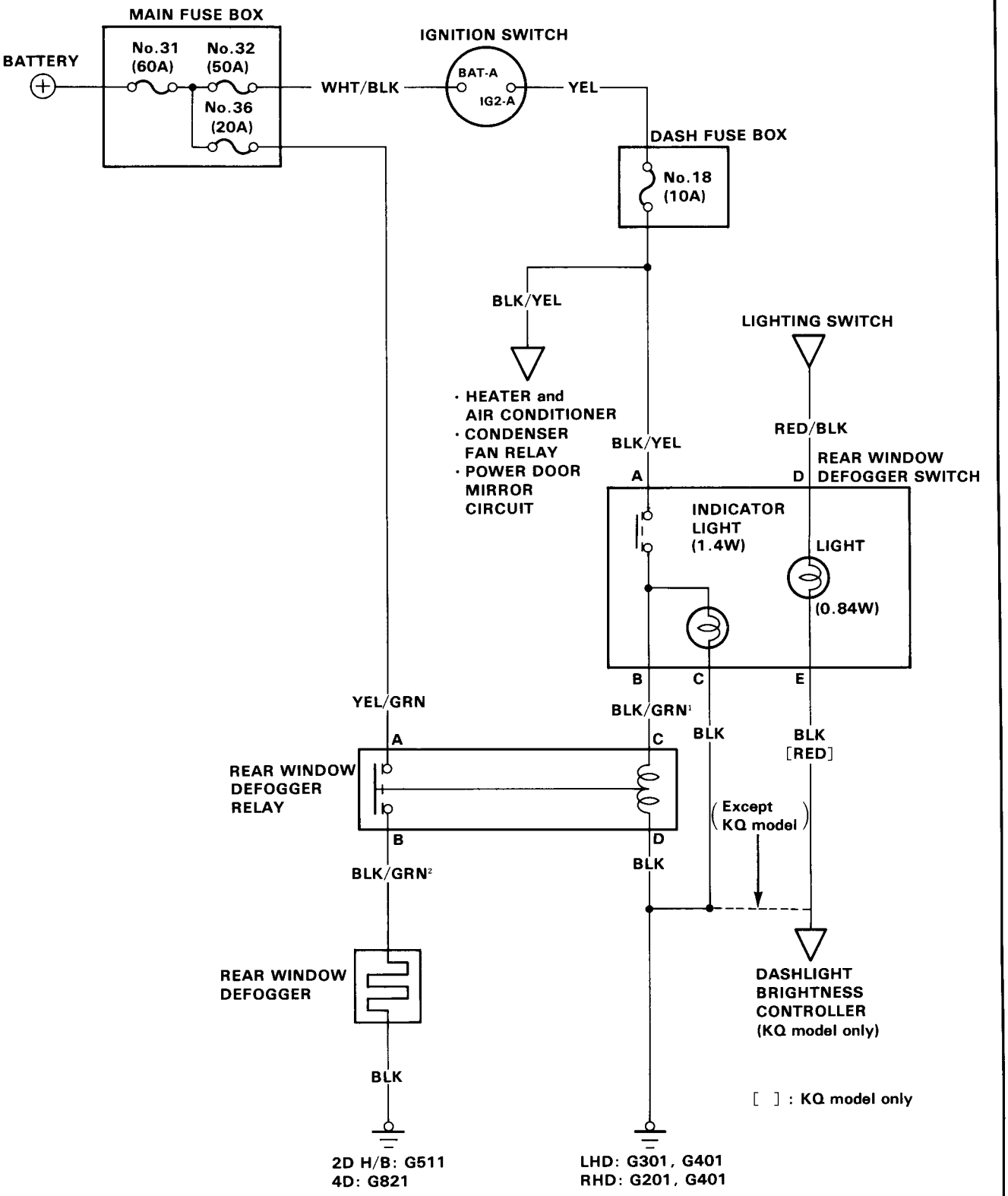
Component Location Index



Rear Window Defogger

Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/GRN[1] and BLK/GRN[2] are not the same).



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.36 (20A) fuse (in the main fuse box)	Defogger switch	Function test	Defogger relay	Repair defogger wire	Poor ground	Open circuit in wires or loose or disconnected terminals
Defogger operates, but indicator light does not go on.	1								
Defogger does not operate and indicator light does not go on.		1		2				G301, G401 [G201, G401]	BLK/YEL or BLK/GRN[1]
Defogger does not operate, but indicator light goes on.			1		2	3		2D H/B: G511 4D: G821	YEL/GRN or BLK/GRN[2]
Broken defogger wire							1		

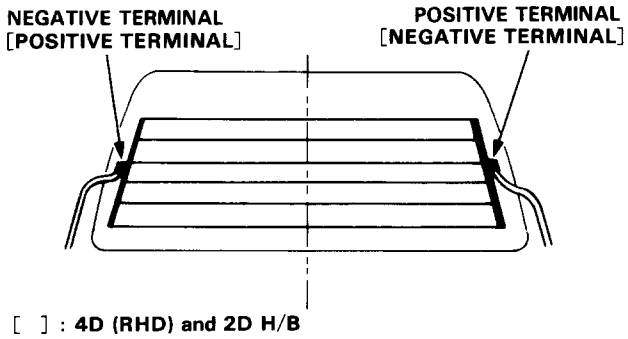
[ ] : RHD

Rear Window Defogger

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.



[ ] : **4D (RHD) and 2D H/B**

2. Check for continuity between the negative terminal and body ground.
   If no continuity, check for open in the defogger ground wire.

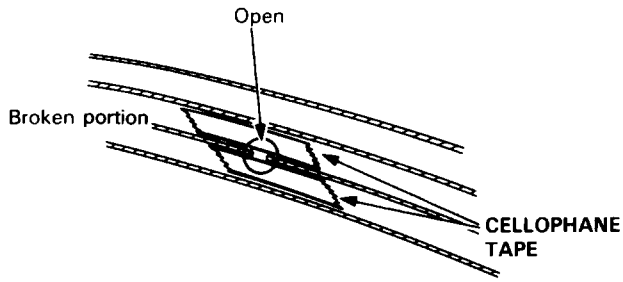
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.
   There should be approximately 6 V with the ignition switch and the defogger switch ON.
   - If the voltage is as specified, the defogger wire is OK.
   - If there is 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.

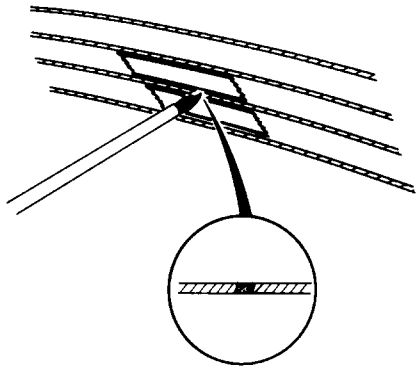
1. Lightly rub area around the break with the fine steel wool, then clean with alcohol.

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.

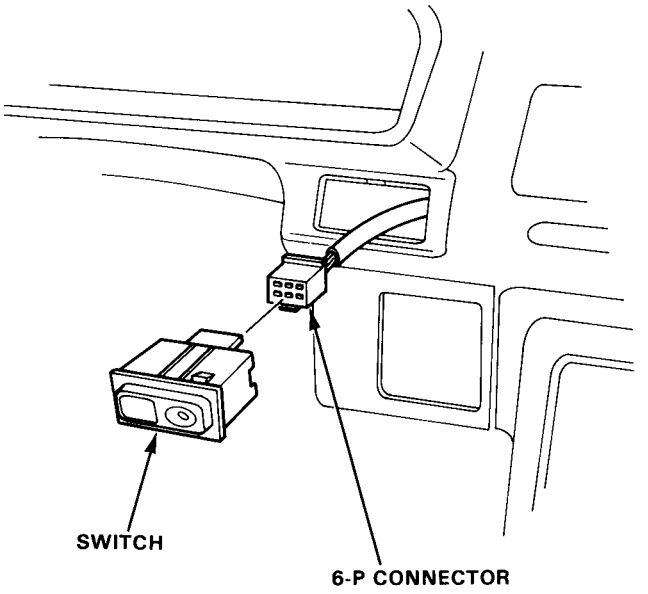


4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).

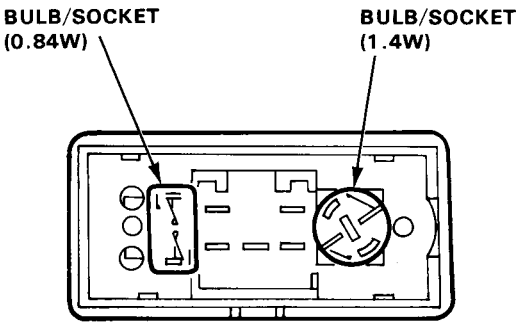
5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.

Switch Removal

1. Remove the dashboard lower panel. Push the switch behind the instrument panel, then disconnect the 6-P connector from the switch.



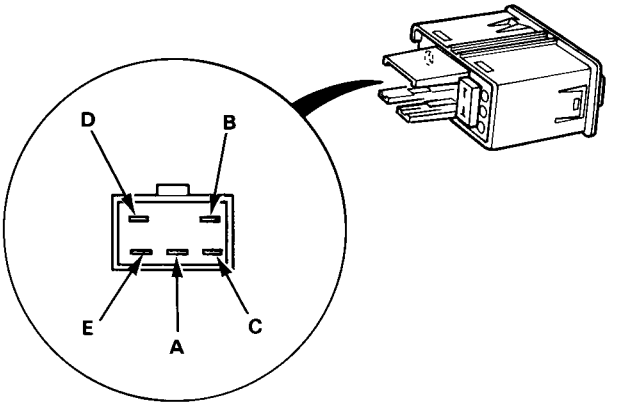
2. Turn the socket 45° counterclockwise (1.4W) and pull out the socket (0.84W) to remove it.

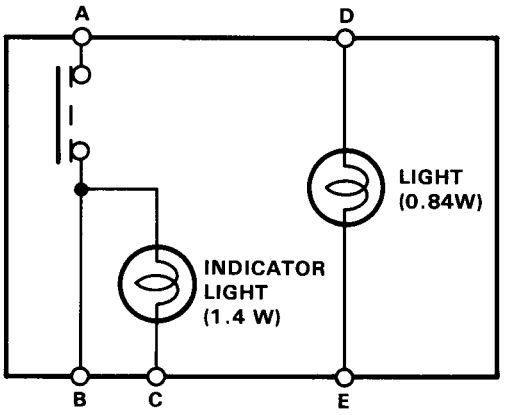


Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

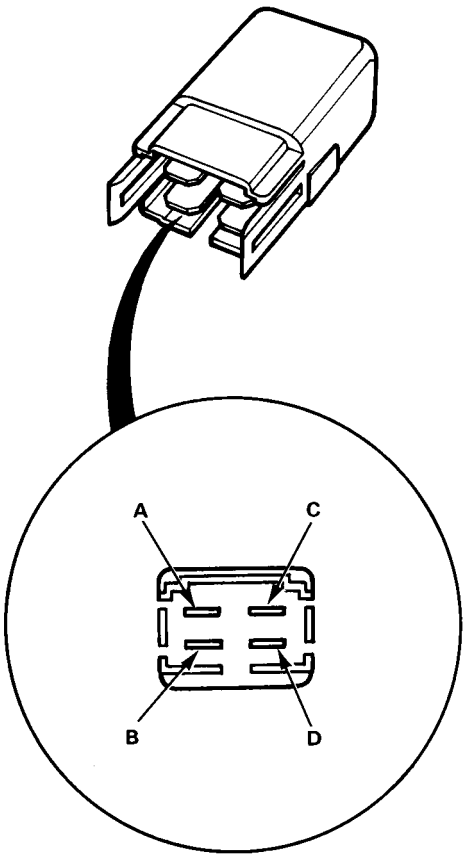
Terminal / Position	A		B		C	D		E
ON	○		○	○	○	○	○	○
OFF								

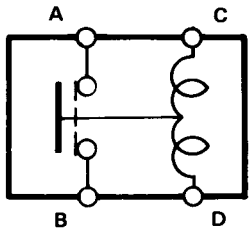




Relay Test

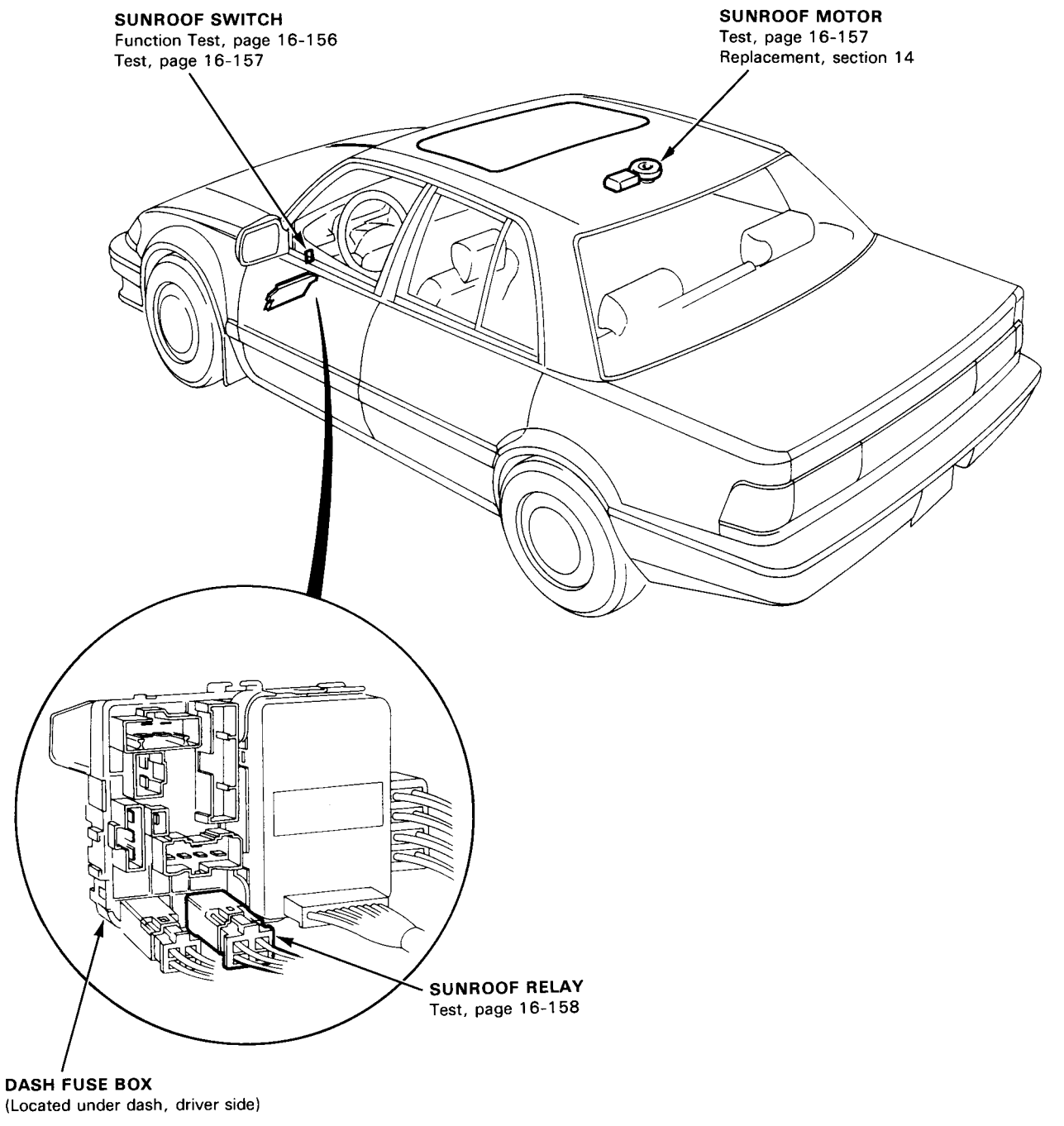
1. Remove the defogger relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.





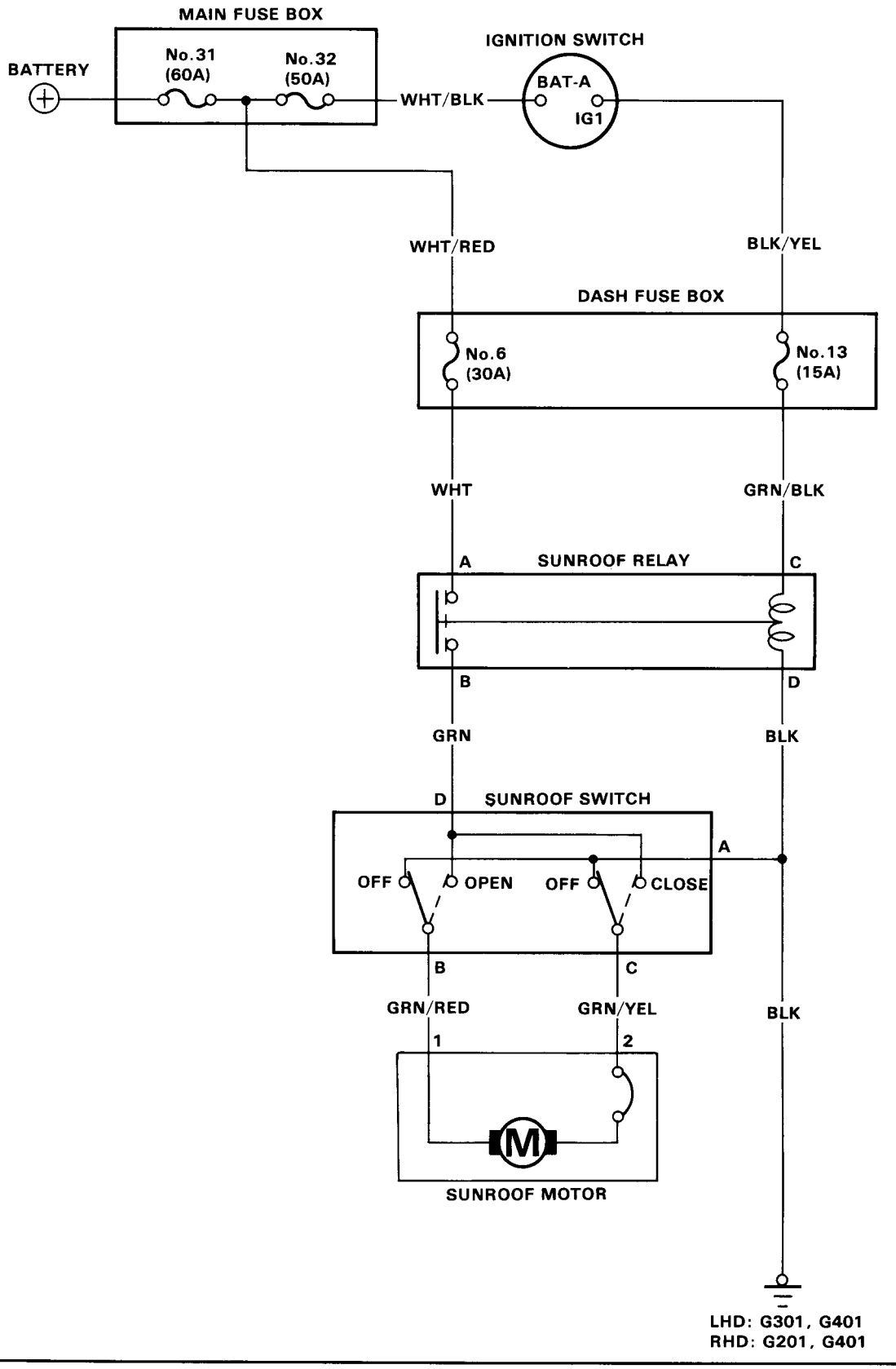
Sunroof

Component Location Index



Sunroof

Circuit Diagram



Electrical Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

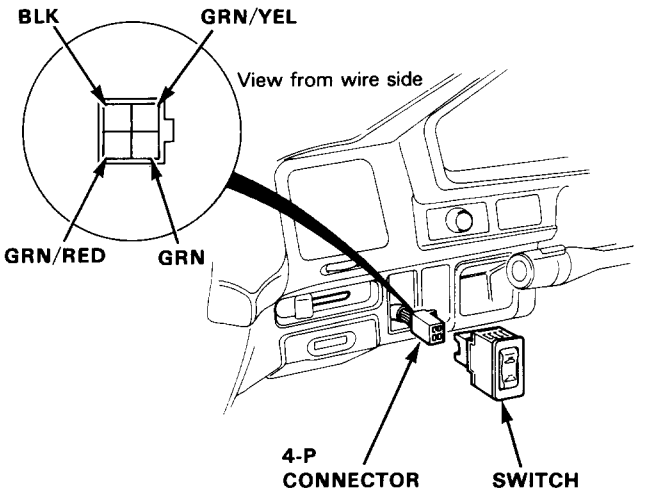
Symptom / Item to be inspected		Clutch out of adjustment, foregin matter stuck between guide rail and sunroof, or outer cable not attached properly	Blown No.6 (30A) fuse (in the dash fuse box)	Blown No.13 (15A) fuse (in the dash fuse box)	Function test	Sunroof relay	Sunroof motor	Sunroof switch	Poor 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		G301,G401 [G201,G401]	WHT,GRN/BLK,GRN or BLK
	With OPEN switch.							1		GRN/RED
	With CLOSE switch							1		GRN/YEL

[ ] : RHD

Sunroof

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.



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 (G301, G401 [G201, G301]).

   - If there is continuity, go to step 4.

[ ] : RHD

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/BLK, GRN or WHT 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.

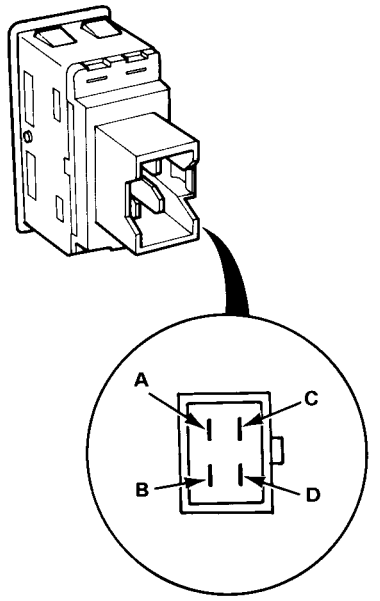
   - If the sunroof opens, check the switch.
   - If sunroof does not open, remove the headliner and check the motor.

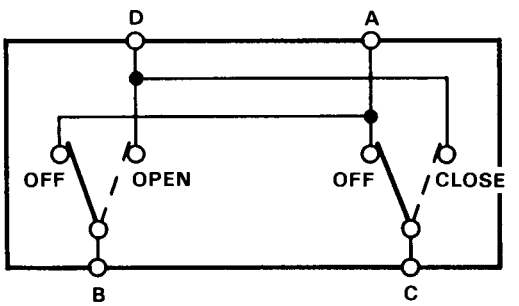
Sunroof

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			○	○

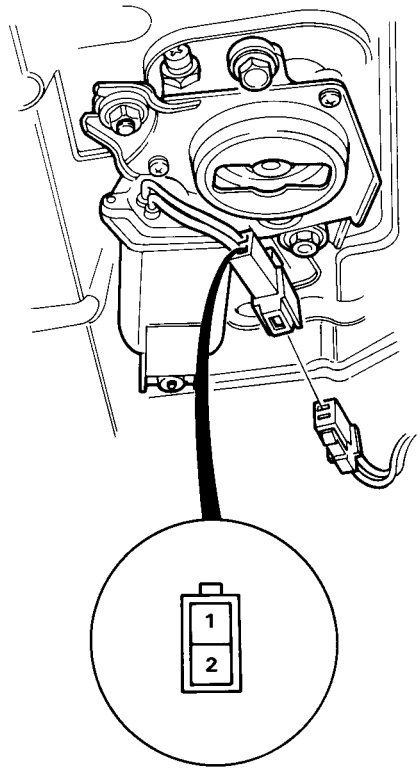




Motor Test

1. Remove the headliner.
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.

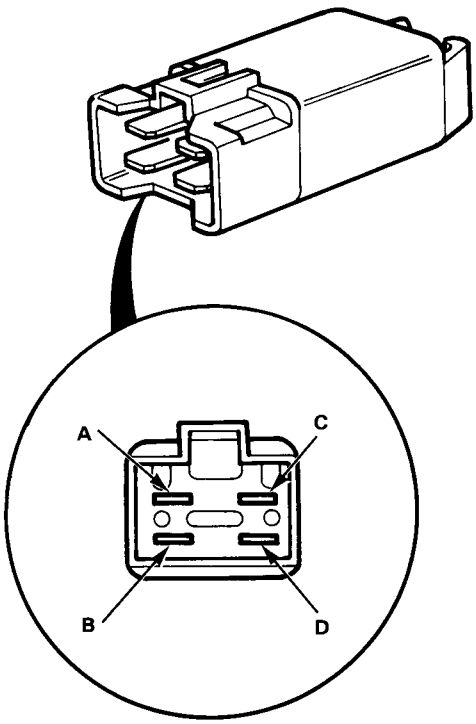


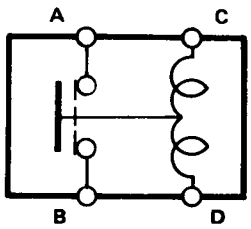
View from wire side.

Power Windows

Relay Test

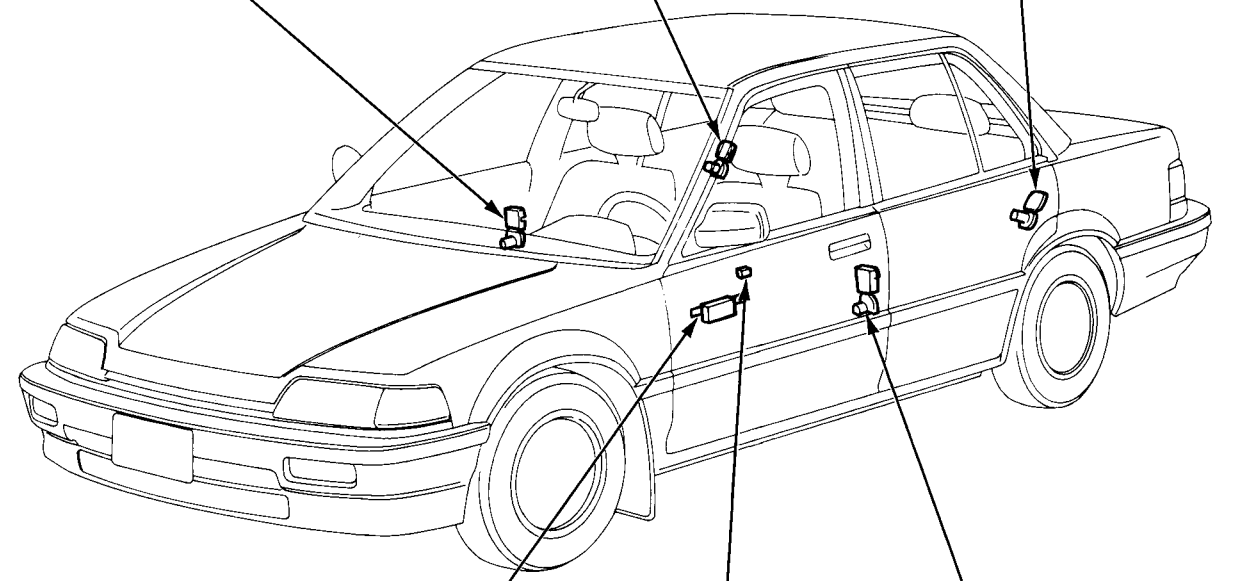
1. Remove the relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.





Power Door Locks

Component Location Index



R.REAR DOOR LOCK ACTUATOR
Test, page 16-167
Replacement, section 14

L.REAR DOOR LOCK ACTUATOR
Test, page 16-167
Replacement, section 14

R.FRONT DOOR LOCK ACTUATOR
Test, page 16-167
Replacement, section 14

DRIVER'S DOOR LOCK ACTUATOR (KY model only)
Test, page 16-166

DRIVER'S DOOR LOCK KNOB SWITCH
Test, page 16-167
Replacement, section 14

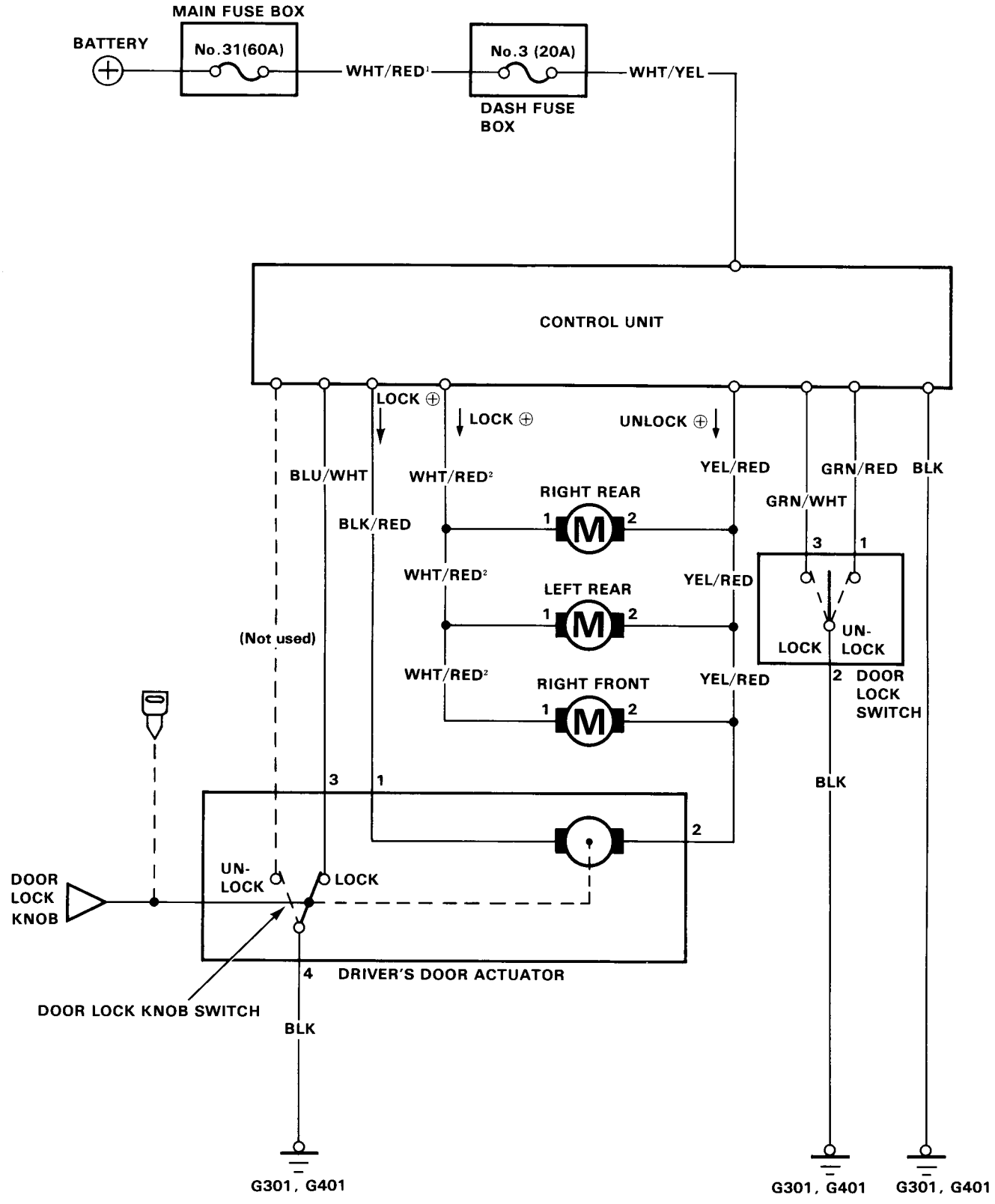
CONTROL UNIT
(Located in the driver's door panel)
Input Test, page 16-163,164

DRIVER'S DOOR LOCK SWITCH (KY model only)
Test, page 16-166

Power Door Locks

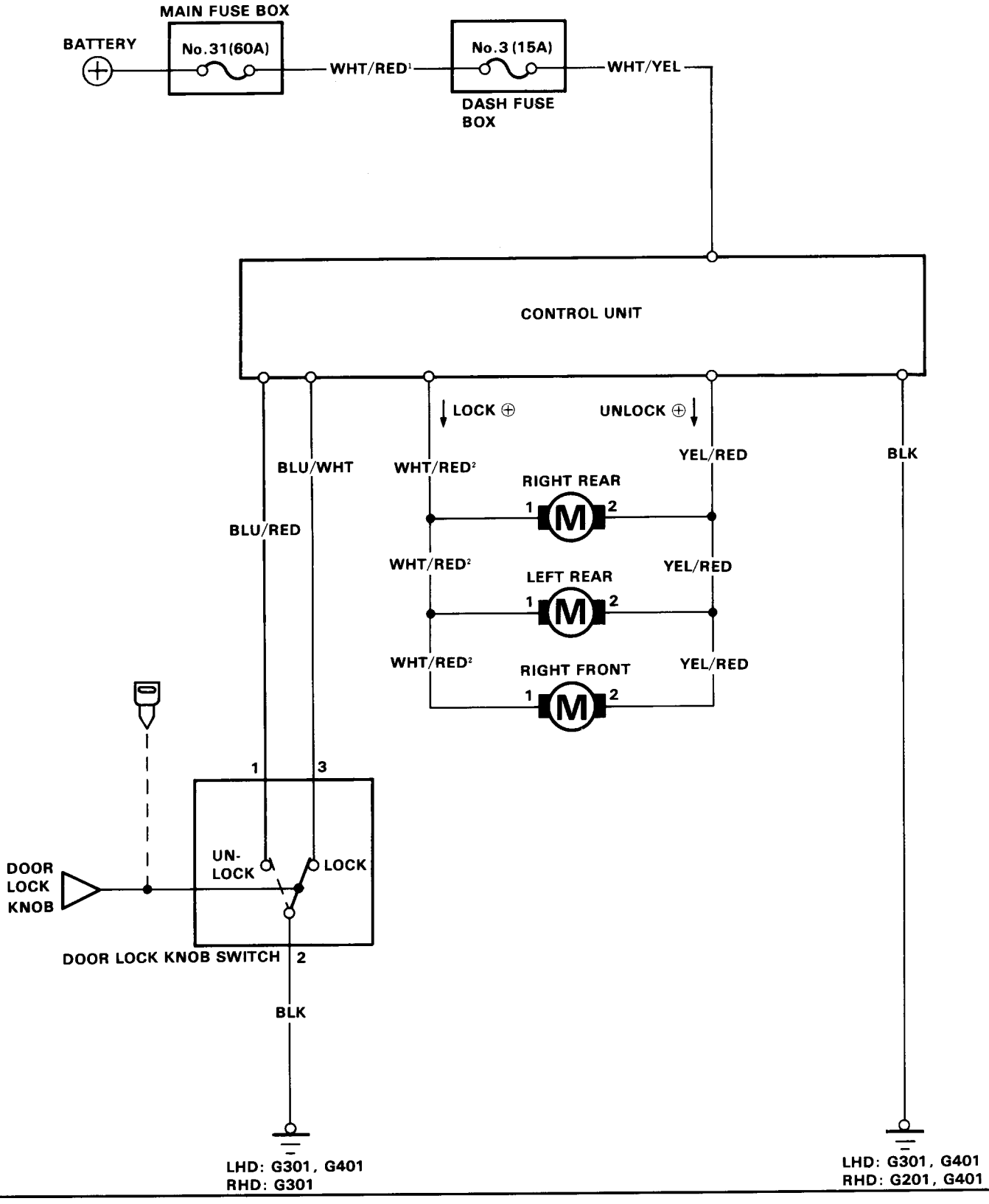
Circuit Diagram (KY model)

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example WHT/RED[1] and WHT/RED[2] are not the same).



(Except KY models)

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example WHT/RED[1] and WHT/RED[2] are not the same).



Power Door Locks

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected	Blown No.3 (20A)* fuse or No.3 (15A) fuse (in the dash fuse box)	Door lock knob switch (in the driver's door actuator)	Control unit input	Passenger door actuator	Disconnected or obstructed door lock rod/linkage	*Door lock switch	Poor ground	Open circuit in wires or loose or disconnected terminals
Power door lock system do not operate at all.		1		2				G301 G401 (G201 G401)	WHT/RED[1] or WHT/YEL
Doors do not lock or unlock with driver's door lock knob switch.	All passenger doors.	1	2	3		4		G301 G401 [G301]	BLU/WHT, YEL/RED, WHT/RED[2] or BLU/RED
	One or more passenger door.				1				YEL/RED or WHT/RED[2]
*Doors do not lock or unlock with door lock switch.	All doors.	1		3		4	2	G301 G401	GRN/RED, GRN/WHT, YEL/RED, WHT/RED[2] or BLK/RED
	One or more door.				1				YEL/RED,WHT/RED[2] or BLK/RED

CAUTION: To prevent damage to the motor, apply battery voltage momentarily.

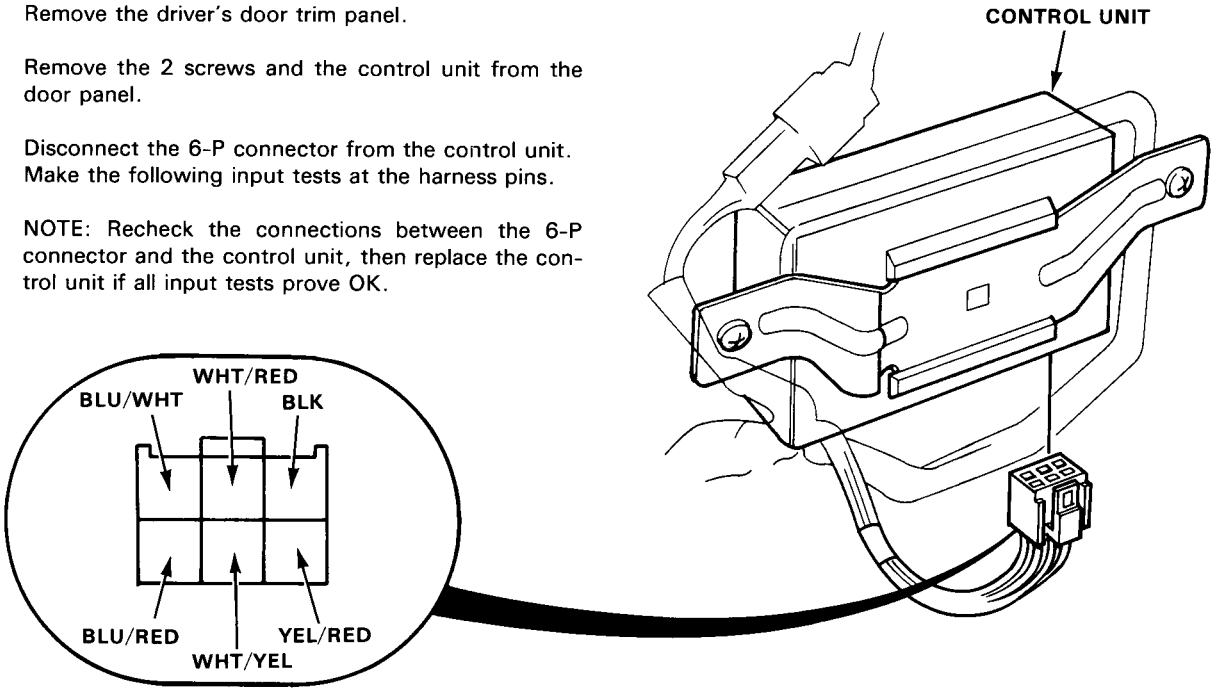
*For KY model only.

[ ]: RHD

Control Unit Input Test (Except KY models)

1. Remove the driver's 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.



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground G301, G401 [G201, G401] • An open in the wire.
2	WHT/YEL	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.3 (15A) fuse. • An open in the wire.
3	BLU/WHT	Driver's door lock knob in LOCK.	Check for continuity to ground: should be continuity.	• Faulty door lock knob switch. • Poor ground (G301, G401 [G301]). • An open in the wire.
4	BLU/RED	Driver's door lock knob in UNLOCK.	Check for continuity to ground: should be continuity.	• Faulty door lock knob switch. • Poor ground (G301, G401 [G301]). • An open in the wire.
5	YEL/RED and WHT/RED	Connect the WHT/YEL terminal to the WHT/RED terminal, and the YEL/RED 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 WHT/YEL terminal to the YEL/RED terminal, and the WHT/RED terminal to the BLK terminal momentarily.	Check door lock operation: Passenger doors should unlock as the battery is connected momentarily.	

[ ] : RHD

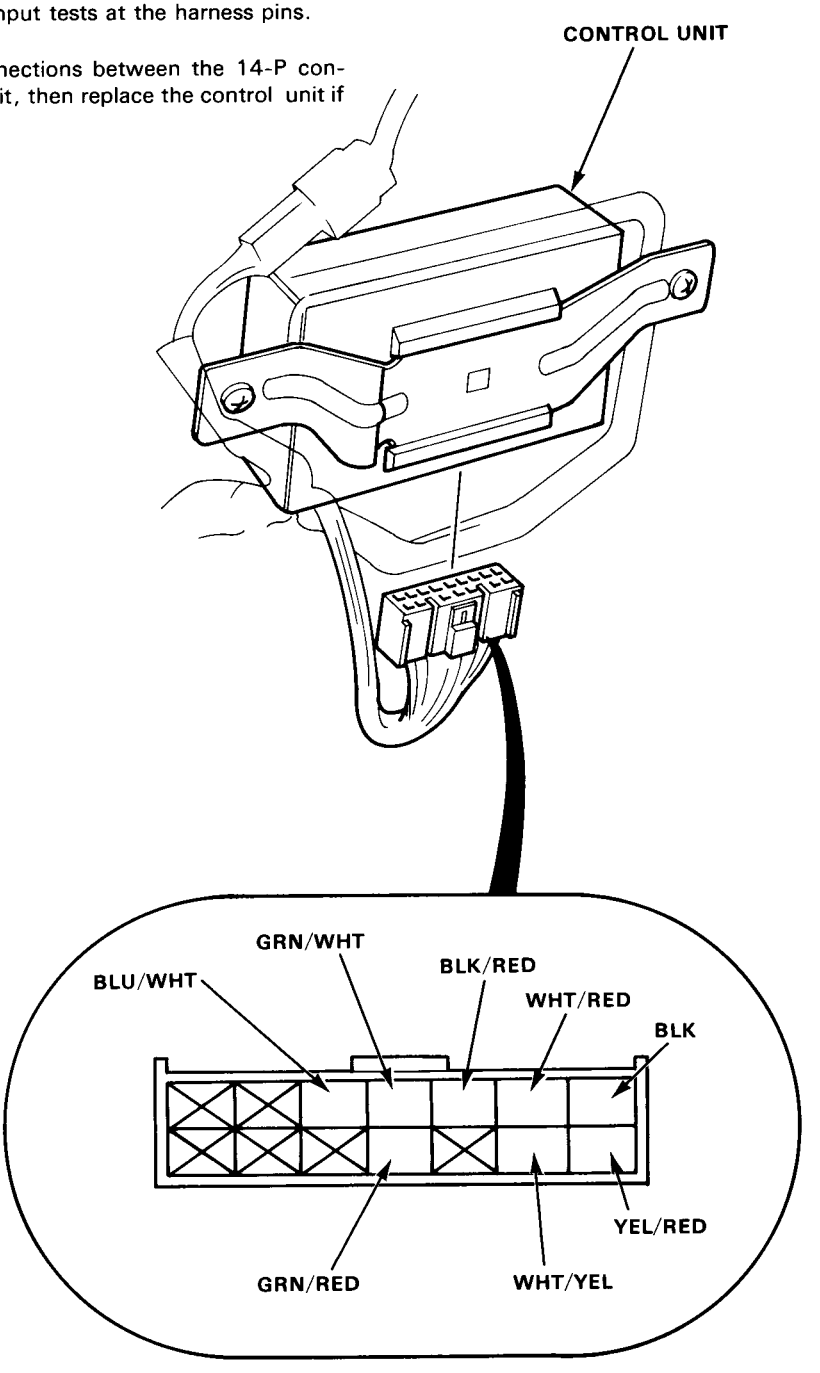
CAUTION: To prevent damage to the motor, apply battery voltage momentarily.

(cont'd)

Control Unit Input Test (cont'd) (KY model only)

1. Remove the driver's door trim panel.
2. Remove the 2 screws and the control unit from the door panel.
3. Disconnect the 14-P connector from the control unit. Make the following input tests at the harness pins.

NOTE: Recheck the connections between the 14-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 (G301, G401). • An open in the wire.
2	WHT/YEL	Under all conditions.	Check for voltage to ground: should be battery voltage .	• Blown No.3 (20A) fuse. • An open in the wire.
3	GRN/WHT	Door lock switch in LOCK.	Check for continuity to ground: should be continuity as the switch is turned.	• Faulty door lock switch. • Poor ground (G301, G401). • An open in the wire.
4	GRN/RED	Door lock switch in UNLOCK		
5	BLU/WHT	Driver's door lock knob in LOCK.	Check for continuity to ground: should be continuity.	• Faulty driver's door actuator. • Poor ground (G301, G401). • An open in the wire.
6	YEL/RED, WHT/RED and BLK/RED	Connect the WHT/YEL terminal to the BLK/RED terminal, and the YEL/RED terminal to the BLK terminal momentarily.	Check door lock operation: Driver's door should lock as the battery in connected momentarily.	• Faulty actuator. • An open in the wire.
		Connect the WHT/YEL terminal to the WHT/RED terminal, and the YEL/RED terminal to the BLK terminal momentarily.	Check door lock operation: Passenger doors should lock as the battery in connected momentarily.	
		Connect the WHT/YEL terminal to the YEL/RED terminal, and the BLK/RED to the BLK terminal momentarily.	Check door lock operation: Driver's door should unlock as the battery is connected momentarily.	
		Connect the WHT/YEL terminal to the YEL/RED terminal, and the WHT/RED terminal to the BLK terminal momentarily.	Check door lock operation: Passenger doors should unlock as the battery is connected momentarily.	

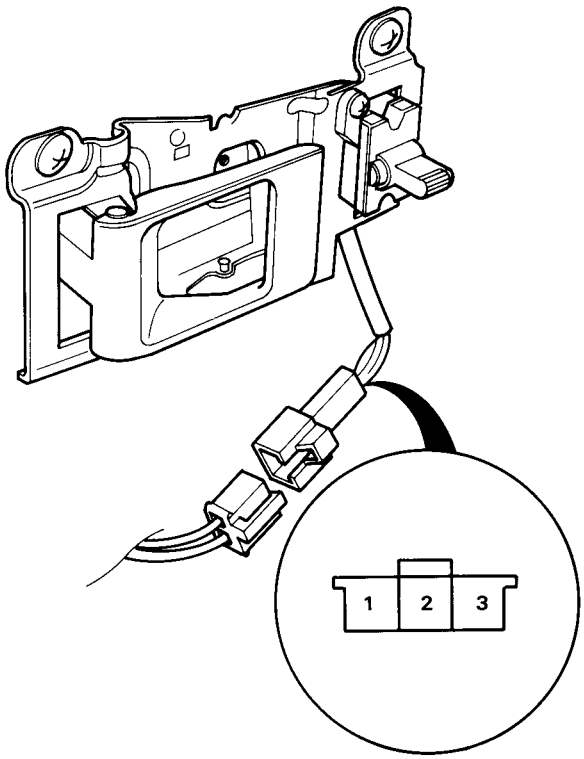
CAUTION: To prevent damage to the motor, apply battery voltage momentarily.

Power Door Locks

Door Lock Switch Test

1. Remove the driver's door trim panel.
2. Disconnect the 3-P connector from the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	3
LOCK		○——	——○
OFF			
UNLOCK	○——		——○



View from wire side

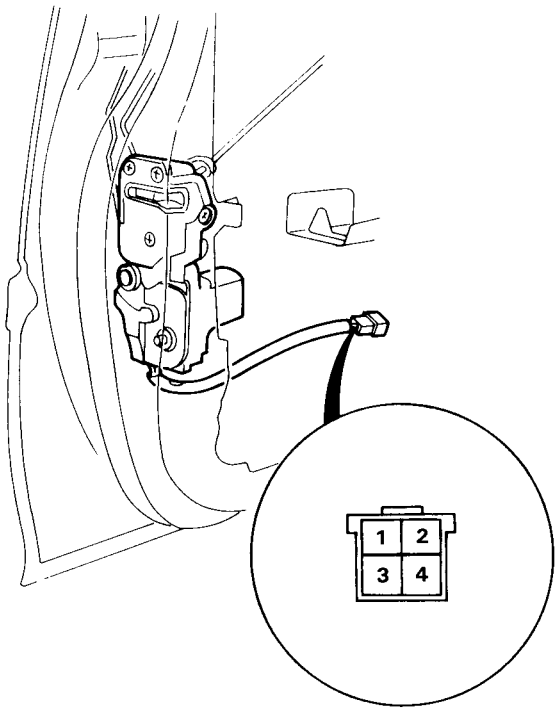
Driver's Door Actuator Test

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the actuator.
3. Test actuator operation:

   LOCK: With battery positive connected to the No.1 terminal, connect negative to the No.2 terminal momentarily.

   UNLOCK: With battery positive connected to the No.2 terminal, connect negative to the No.1 terminal momentarily.

CAUTION: To prevent damage to the motor, apply battery voltage momentarily.



View from wire side

4. If the actuator fails to operate properly, replace it.
5. There should be continuity between the No.3 and No. 4 terminals when the driver's door lock knob is locked.

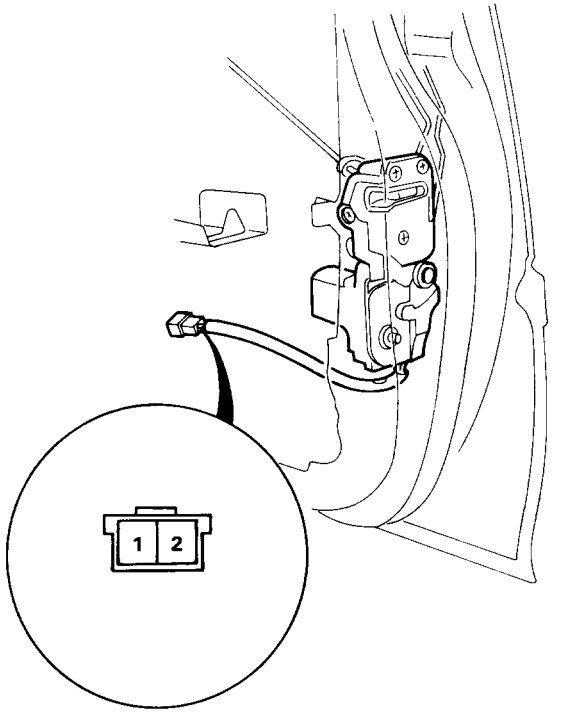
Passenger Door Actuator Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the actuator.
3. Test actuator operation:

   LOCK: With battery positive connected to the No.1 terminal, connect negative to the No.2 terminal momentarily.

   UNLOCK: With battery positive connected to the No.2 terminal, connect negative to the No.1 terminal momentarily.

   CAUTION: To prevent damage to the motor, apply battery voltage momentarily.



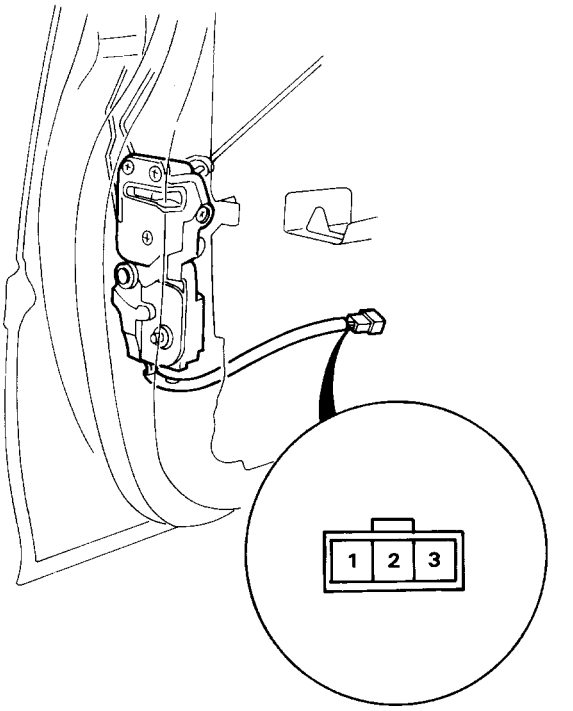
View from wire side

4. If the actuator fails to operate properly, replace it.

Door Lock Knob Switch Test

1. Remove the driver's door trim panel.
2. Disconnect the 3-P connector from the switch.
3. Check for continuity between the terminals in each switch position according to the table.

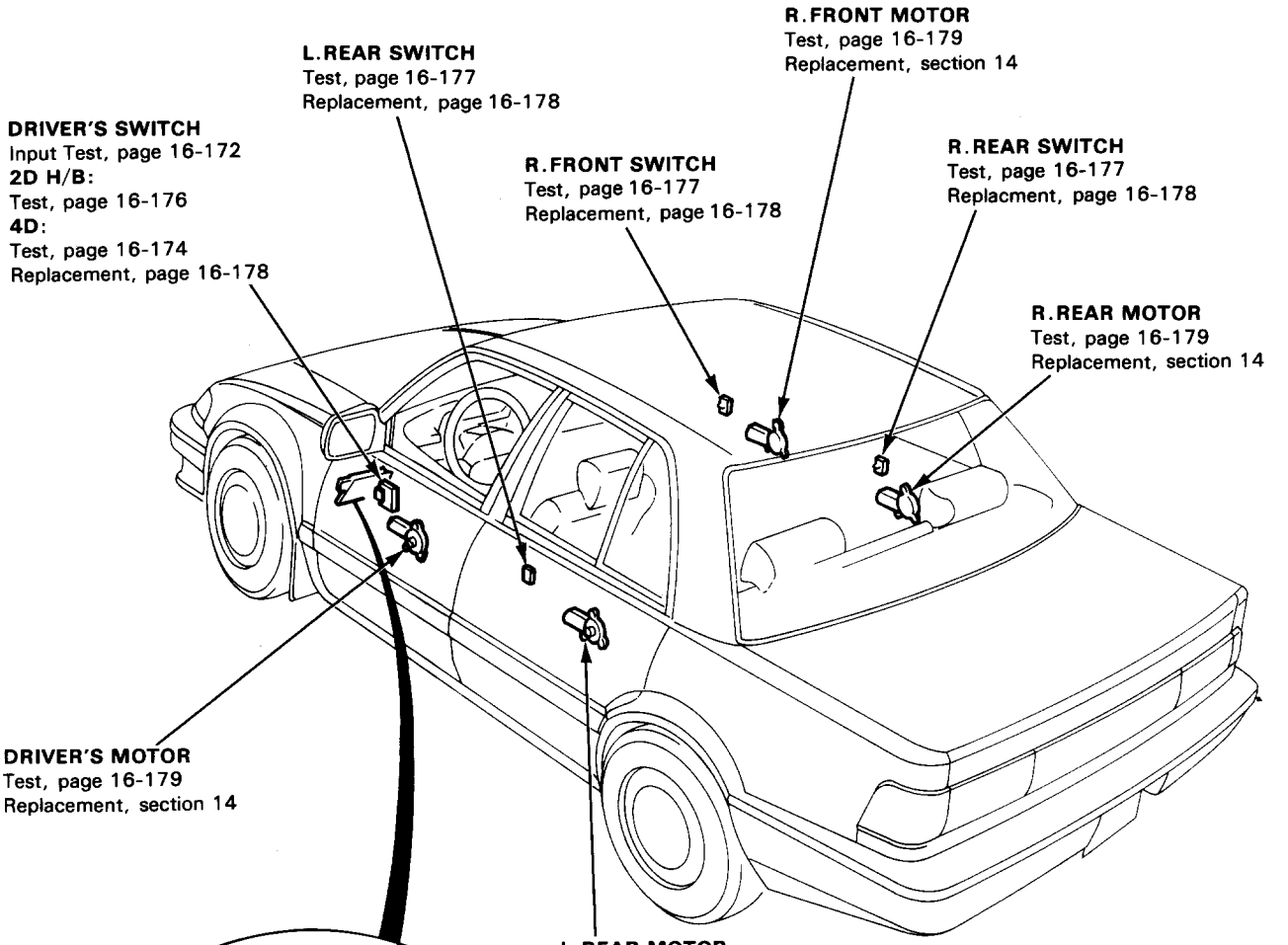
Position \ Terminal	1	2	3
UNLOCK	○	○	
LOCK		○	○

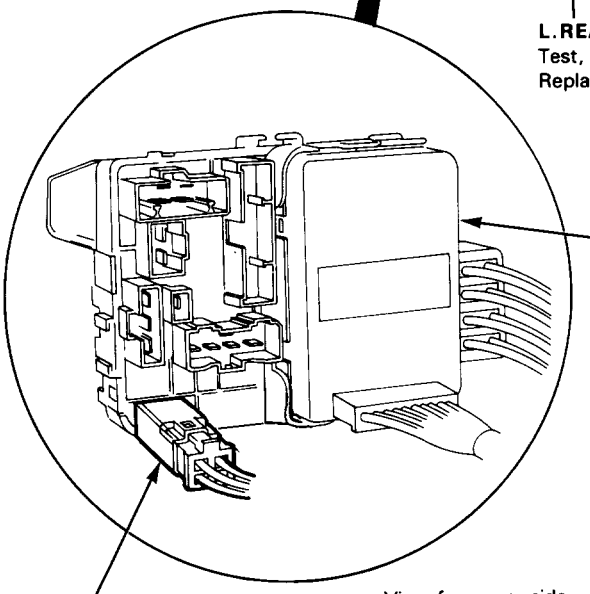


View from wire side

Power Windows

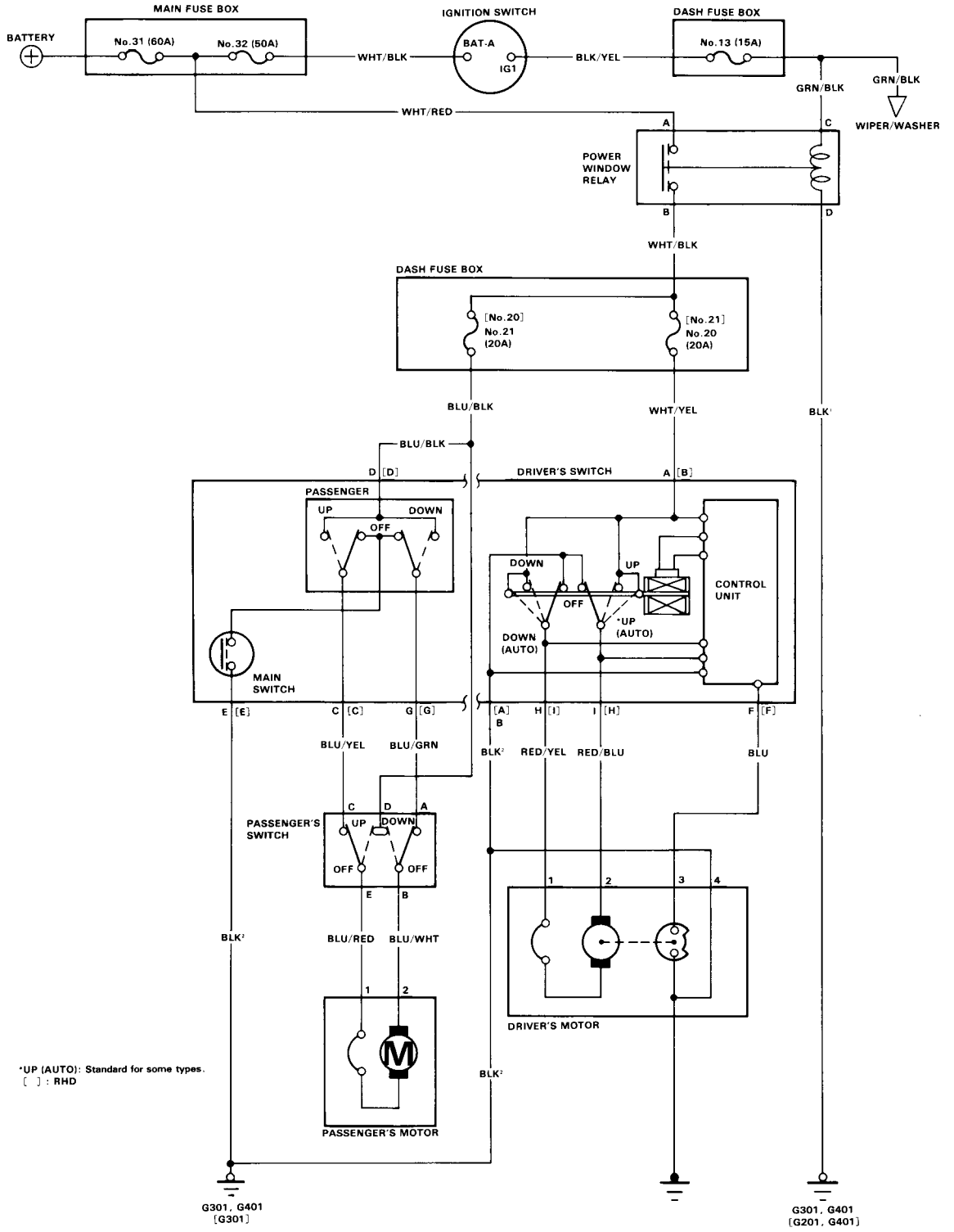
Component Location Index





Circuit Diagram

2D H/B:



*UP (AUTO): Standard for some types.
[ ] : RHD

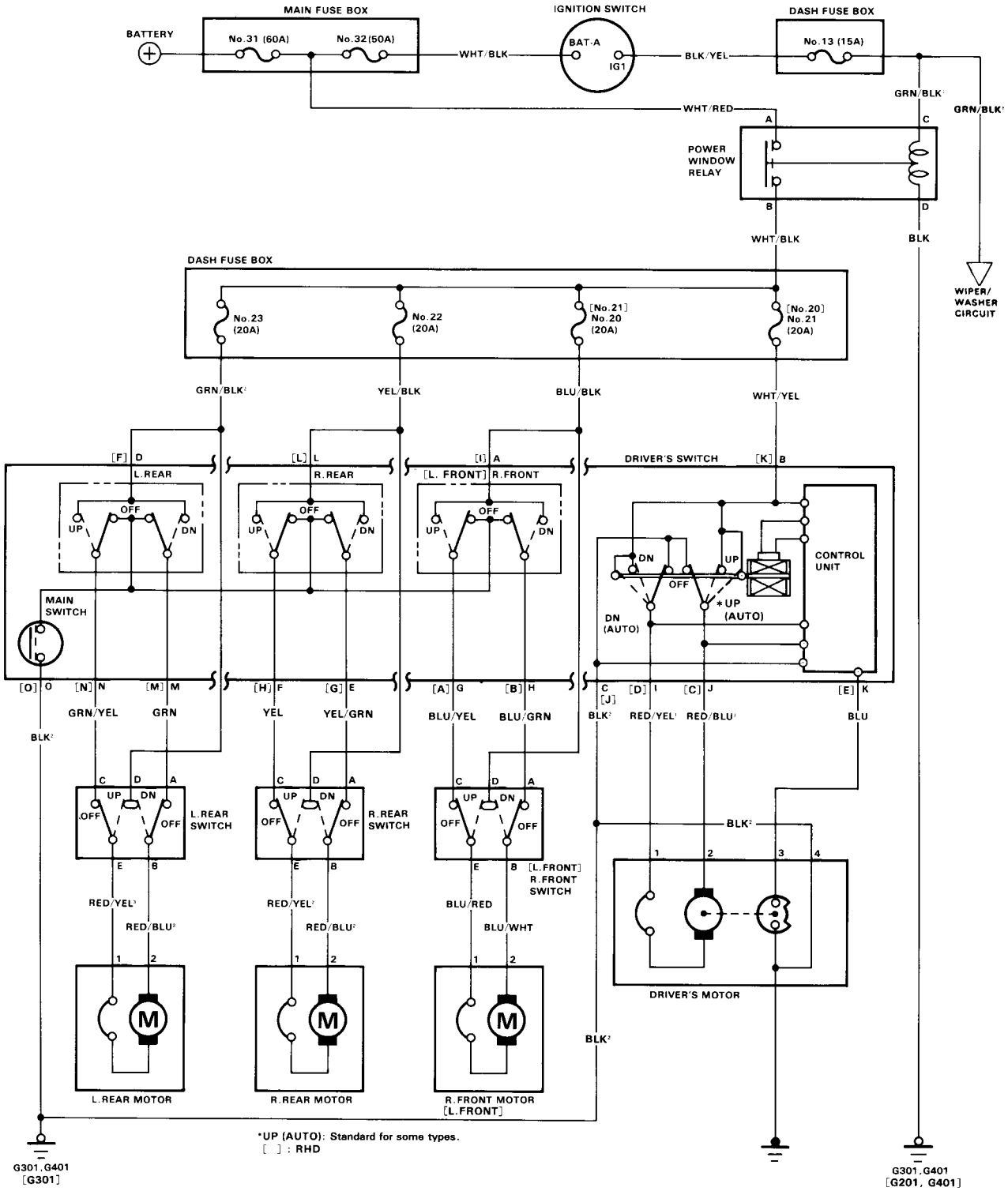
Power Windows

Circuit Diagram (cont'd)

4D:

NOTE:

- Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/BLK[1] and GRN/BLK[2] are not the same).
- "DN" in the switch circuit denotes DOWN.



*UP (AUTO): Standard for some types.
[ ] : RHD

Troubleshooting

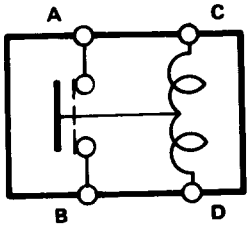
NOTE: The numbers in the table show the troubleshooting sequence.

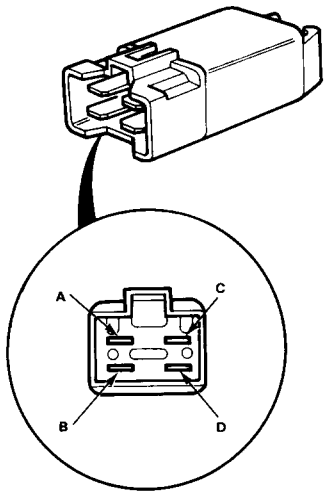
Item to be inspected / Symptom			State of charge and clean and tight connections of battery	Blown No.13 (15A) fuse (in the dash fuse box)	Power window relay	Blown No.21 [No.20] (20A) fuse in the dash fuse box	Blown No.20 [No.21] (20A) fuse in the dash fuse box	Blown No.22 (20A) fuse Sedan only	Blown No.23 (20A) fuse Sedan only	Driver's door switch	Passenger switch	Driver's motor	Pulser (in driver's motor)	Passenger's motor	Window regulator	Driver's door switch input	Poor ground	Open circuit in wires or loose or disconnected terminals
All windows do not operate.			1	2	3												G301,G401 [G201,G401]	BLK/YEL, WHT/RED, GRN/BLK[1] or WHT/BLK
Driver's window does not operate.						1						2			3	4		WHT/YEL
Driver's window does not operate in AUTO.										1			2			3		BLU
Passenger windows do not operate.	Rigt [Left] front						1			2	3			4	5			BLU/BLK
	Sedan only	Left rear							1	2	3			4	5			GRN/BLK[2]
		Right rear						1		2	3			4	5			YEL/BLK

[ ] : RHD

Relay Test

1. Remove the relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.





Power Windows

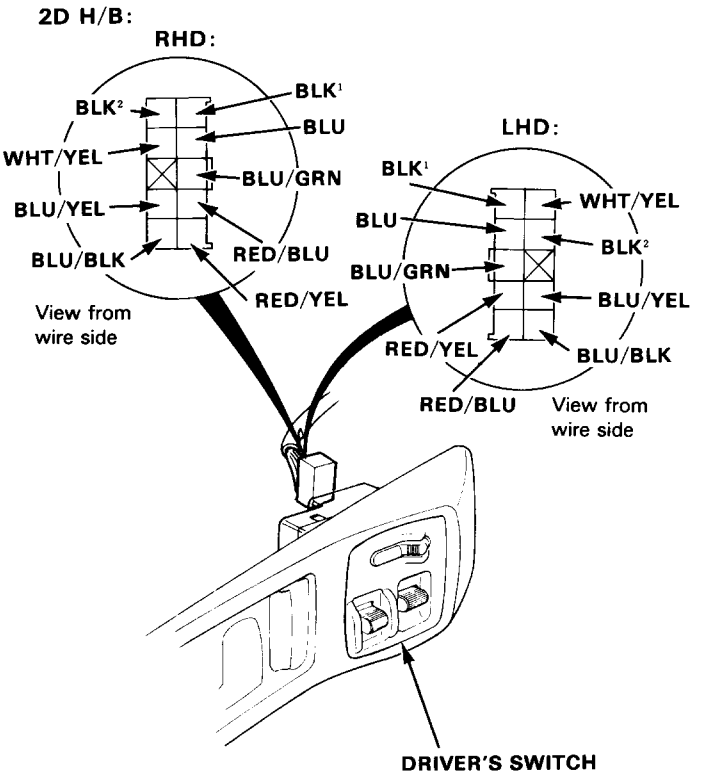
Driver's Switch Input Test

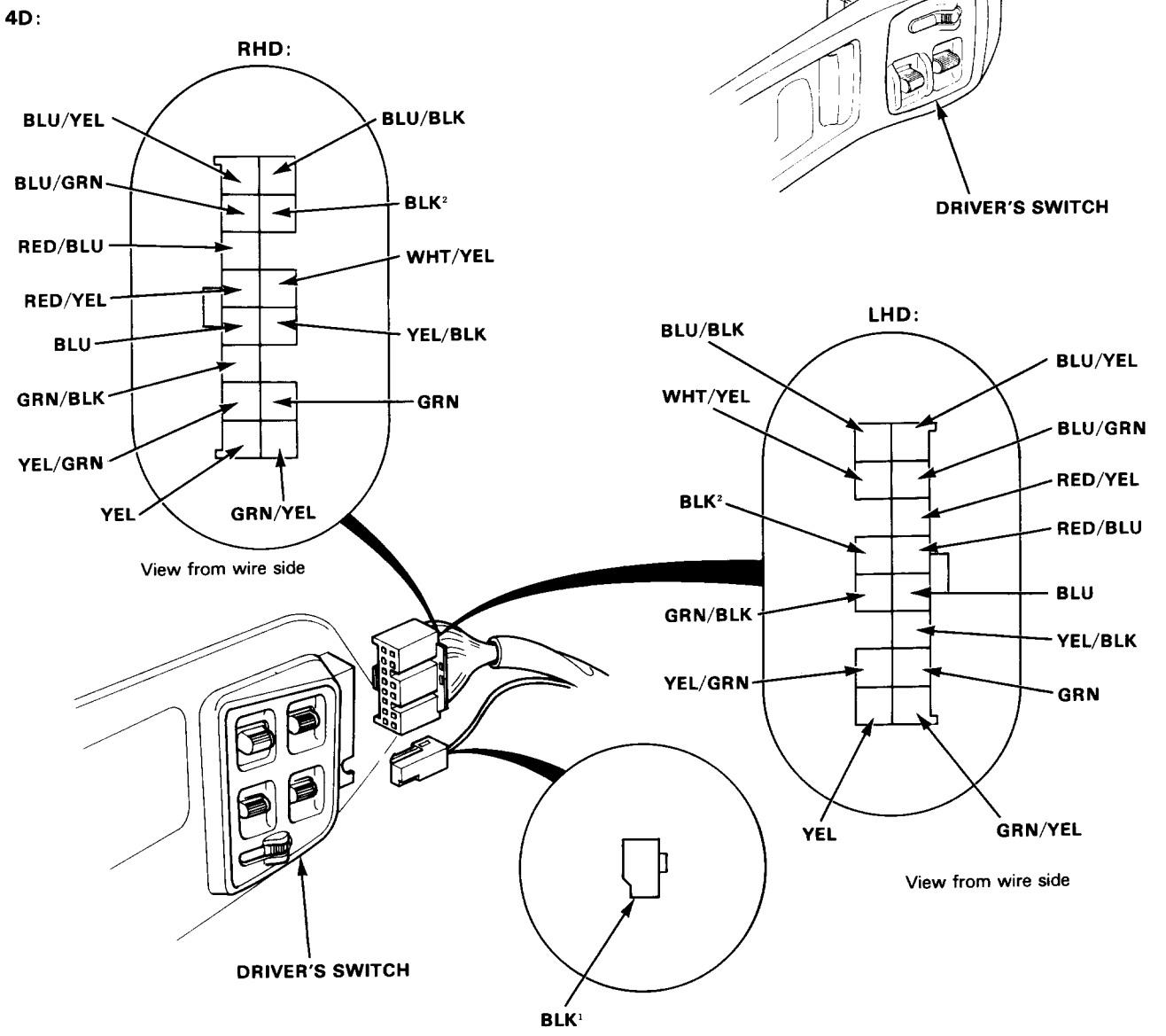
NOTE: The control unit is built into the driver's switch, and only controls driver's door window operation.

2D H/B:
Remove the 2 screws. Disconnect the 10-P connector and remove the driver's switch from the door trim panel.
Make the following input tests at the harness pins.

4D:
Remove the driver's door trim panel and disconnect the14-P and 1-P connectors from the driver's switch.
Make the following input tests at the harness pins.

NOTE: Recheck the connections between the 10-P or 14-P and 1-P connectors, and the driver's switch, then replace the driver's switch if all input tests prove OK.





No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK[1]	Under all conditions.	Check for continuity to ground: should be continuity.	•Poor ground (G301, G401 [G301]) • An open in the wire.
2	WHT/YEL BLU/BLK YEL/BLK* GRN/YEL*	Ignition switch ON.	Check for voltage to ground: should be battery voltage .	• Blown No.20, 21, 22* or 23* (20A) fuse. • Faulty power window relay. • An open in the wire.
3	RED/BLU and RED/YEL	Connect the WHT/YEL terminal to the RED/BLU terminal, and the RED/YEL terminal to the BLK terminal, then ignition switch ON	Check the driver's motor operation: should run.	• Faulty driver's motor. • An open in the wire.
4	BLU/YEL and BLU/GRN	Connect the BLU/BLK terminal to the BLU/YEL terminal, and the BLU/GRN terminal to the BLK terminal, then ignition switch ON	Check the right front motor operation: should run.	• Faulty R.front [L.front] motor. • Faulty R.front [L.front] switch. • An open in the wire.
5	YEL* and YEL/GRN*	Connect the YEL/BLK terminal to the YEL terminal, and the YEL/GRN terminal to the BLK terminal, then ignition switch ON	Check the right rear motor operation: should run.	• Faulty R. rear motor. • Faulty R. rear switch. • An open in the wire.
6	GRN/YEL* and GRN*	Connect the GRN/BLK terminal to the GRN/YEL terminal, and the GRN terminal to the BLK terminal, then ignition switch ON	Check the left rear motor operation: should run.	• Faulty L. rear motor. • Faulty L. rear switch. • An open in the wire.
7	BLU and BLK[2]	Connect the WHT/YEL terminal to the RED/YEL terminal, and the BLK terminal to the RED/BLU terminal, then ignition Switch ON	Check for resistance between the BLU and BLK terminals: should indicate between 20-50 ohms as the driver's motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire

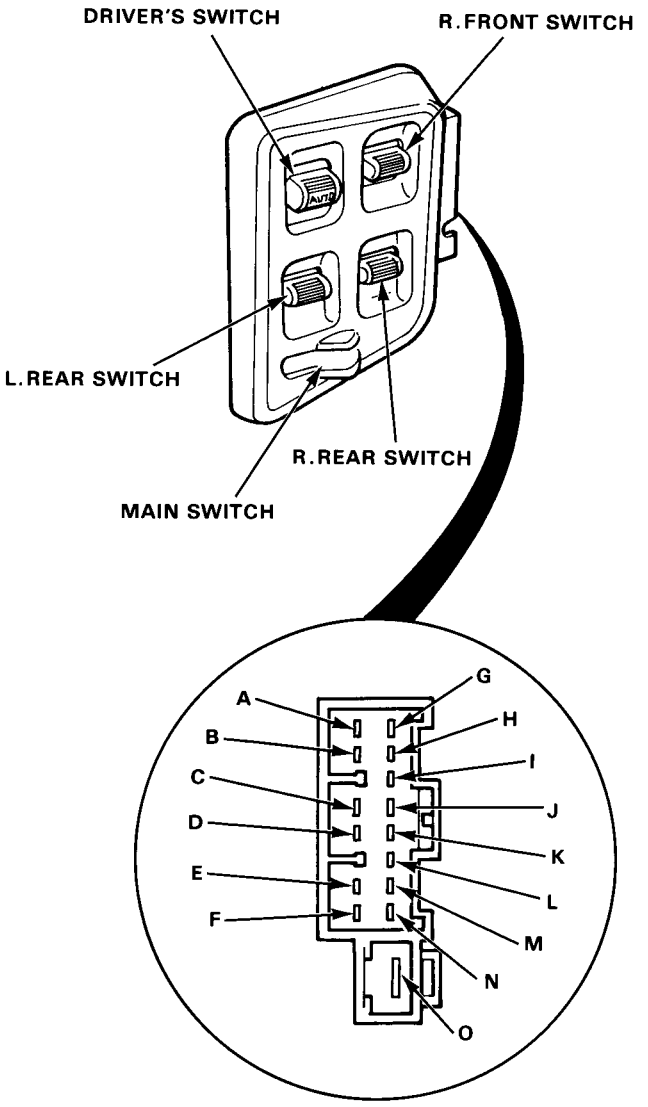
*.....4D only
[ ] : RHD

Power Windows

Driver's Switch Test (4D:)

LHD:

1. Remove the door trim panel.
2. Check for continuity between the terminals in each switch position according to the tables.



DRIVER'S SWITCH

Position \ Terminal	B	C	I	J
OFF		○	○	○
UP	○			○
DOWN	○		○	
DOWN (AUTO)	○		○	

R.FRONT SWITCH

Position	Main switch \ Terminal	A	G	H	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○	○		
	OFF	○	○		
DOWN	ON	○		○	
	OFF	○		○	

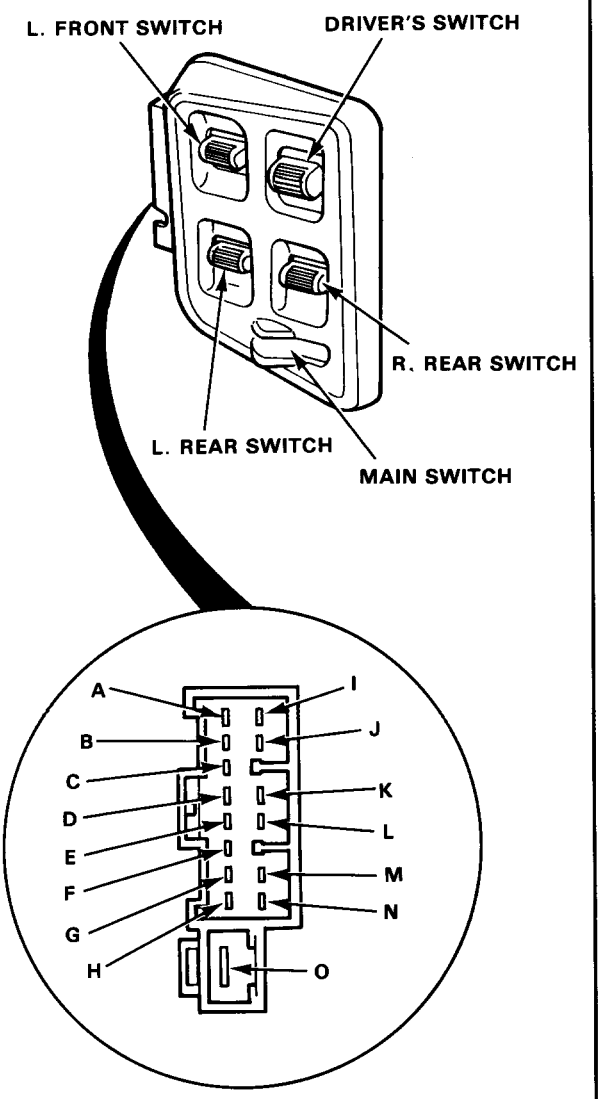
L.REAR SWITCH

Position	Main switch \ Terminal	L	F	E	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○	○		
	OFF	○	○		
DOWN	ON	○		○	
	OFF	○		○	

R.REAR SWITCH

Position	Main switch \ Terminal	D	M	N	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○		○	
	OFF	○		○	
DOWN	ON	○	○		
	OFF	○	○		

RHD:



DRIVER'S SWITCH

Position \ Terminal	C	D	J	K
OFF	○	○	○	
UP (AUTO)	○			○
UP	○			○
DOWN		○		○
DOWN (AUTO)		○		○

L.FRONT SWITCH

Position	Main switch \ Terminal	A	B	I	O
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○		○	
	OFF	○		○	
DOWN	ON		○	○	
	OFF		○	○	

R.REAR SWITCH

Position	Main switch \ Terminal	G	H	L	O
OFF	ON	○	○		○
	OFF	○	○		
UP	ON		○	○	
	OFF		○	○	
DOWN	ON	○		○	
	OFF	○		○	

L.REAR SWITCH

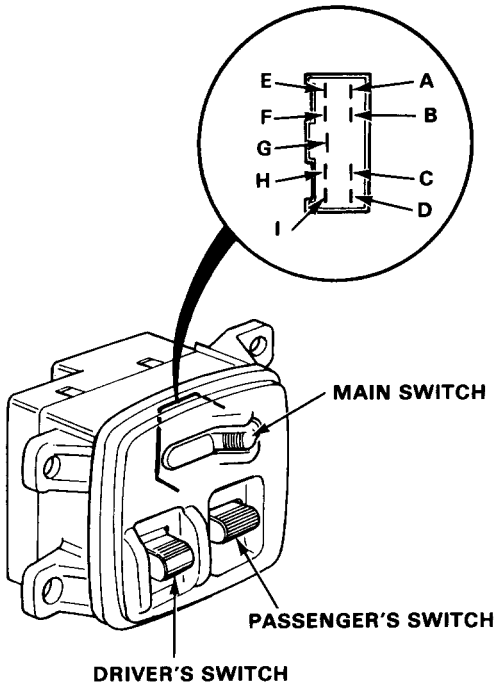
Position	Main switch \ Terminal	F	M	N	O
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○		○	
	OFF	○		○	
DOWN	ON	○	○		
	OFF	○	○		

Power Windows

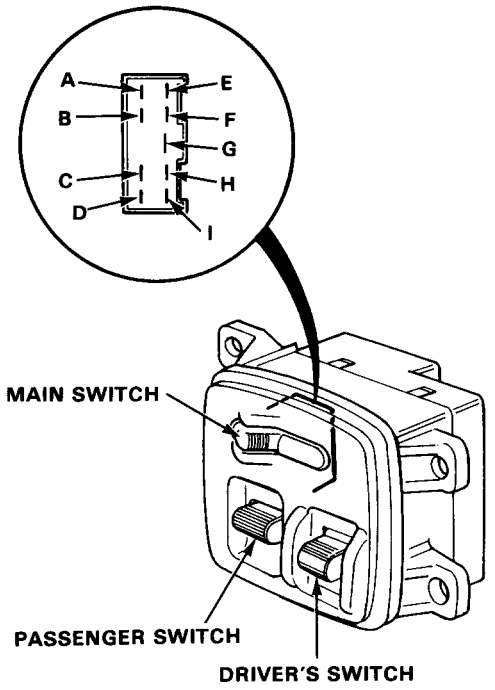
Driver's Switch Test (2D H/B:)

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the tables.

LHD:



RHD:



LHD:

DRIVER'S SWITCH

Position \ Terminal	A	B	H	I
OFF		○	○	○
UP (AUTO)	○			○
UP	○			○
DOWN	○		○	
DOWN (AUTO)	○		○	

PASSENGER'S SWITCH

Position	Main switch \ Terminal	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○

RHD:

DRIVER'S SWITCH

Position \ Terminal	A	B	H	I
OFF	○		○	○
UP (AUTO)		○	○	
UP		○	○	
DOWN		○		○
DOWN (AUTO)		○		○

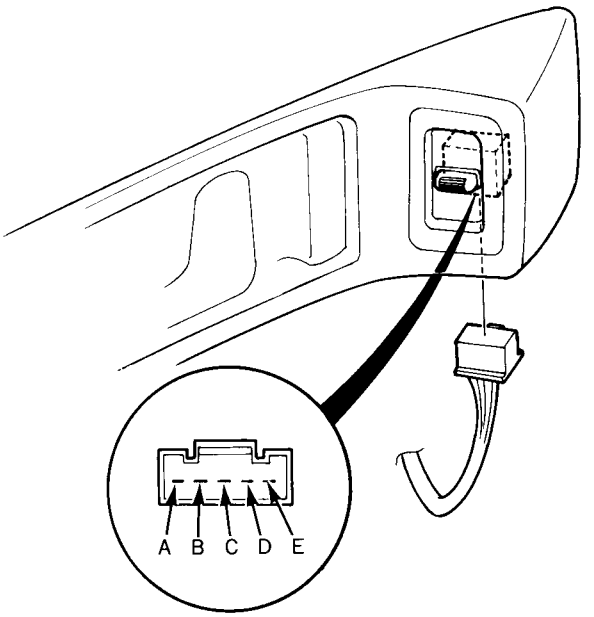
PASSENGER'S SWITCH

Position	Main switch \ Terminal	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○

Passenger Switch Test

2D H/B:

1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.

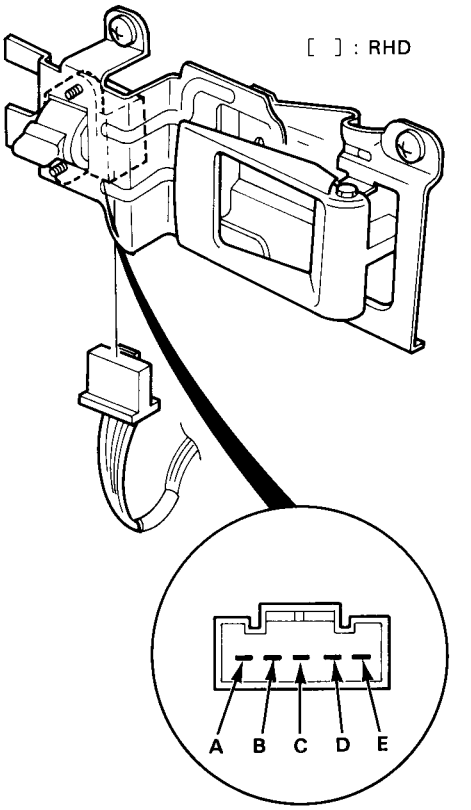


Position \ Terminal	A	B	C	D	E
UP				○—○	
OFF	○—○		○		○
DOWN		○—○		○	

4D:

1. Remove the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.

NOTE: Right [Left] front switch shown, rear switches similar.



Position \ Terminal	A	B	C	D	E
UP				○—○	
OFF	○—○		○		○
DOWN		○		○	

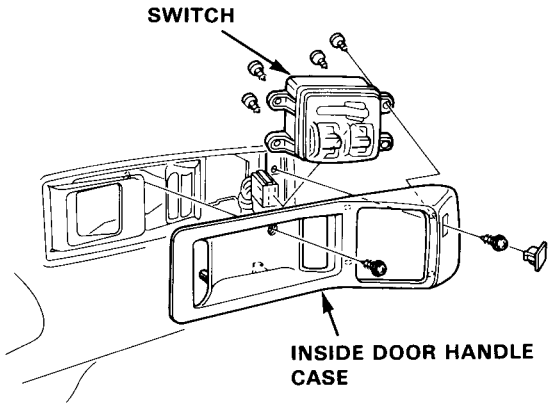
Power Windows

Switch Replacement

2D H/B:

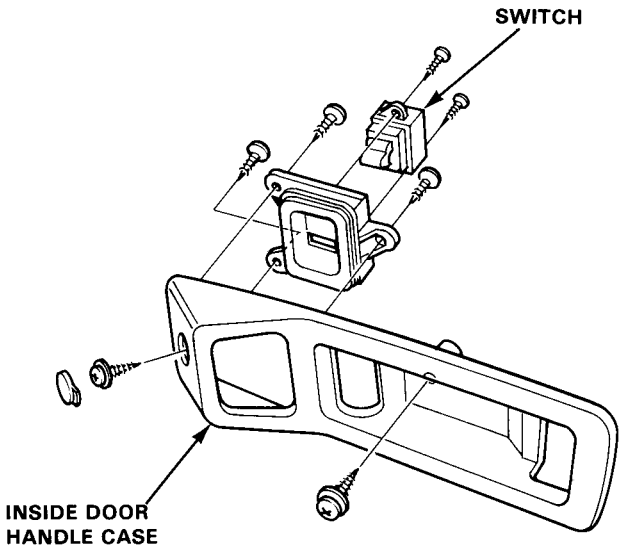
Driver's Switch:

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Remove the 4 screws and switch from the inside door handle case.



Passenger Switch:

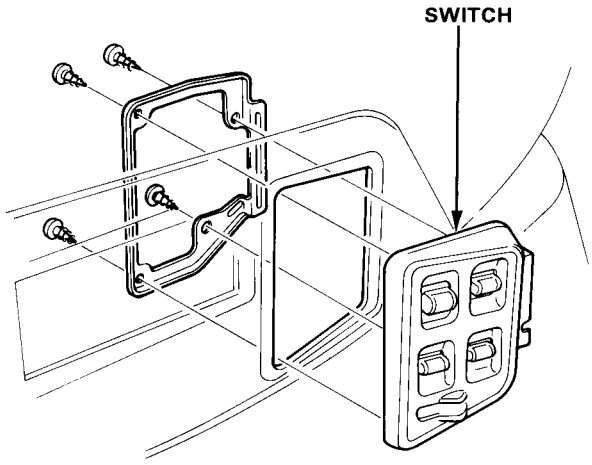
1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Remove the 2 screws and switch from the inside door handle case.



4D:

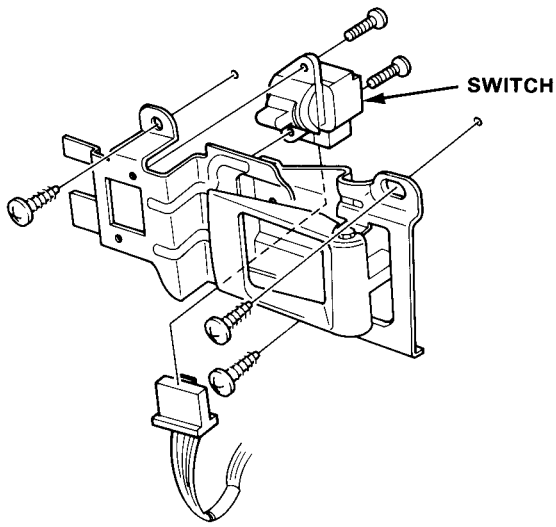
Driver's Switch:

1. Remove the door trim panel.
2. Remove the switch from the door trim panel by releasing the 4 mounting screws.



Passenger Switches:

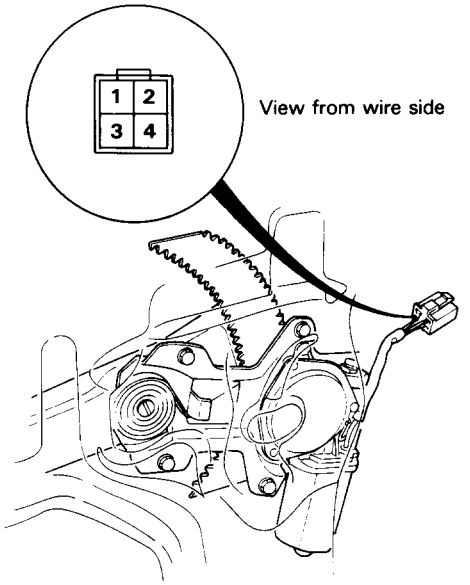
1. Remove the door trim panel.
2. Remove the inside handle from the door panel by removing the 3 mounting screws.
3. Remove the switch from the inside handle by removing the 2 mounting screws.



Driver's Motor Test

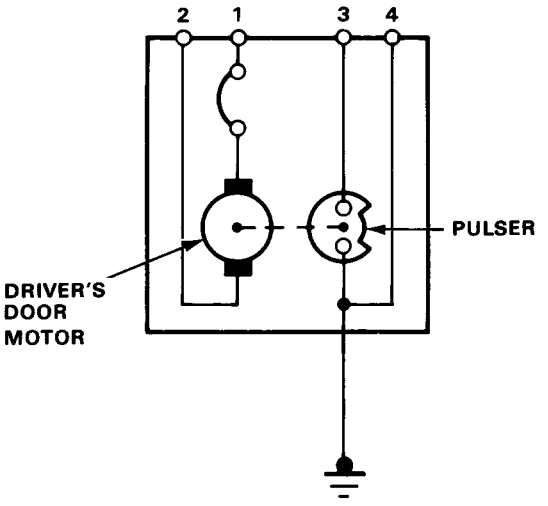
Motor Test:

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Test motor operation by connecting battery voltage to the No.1 and No.2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.



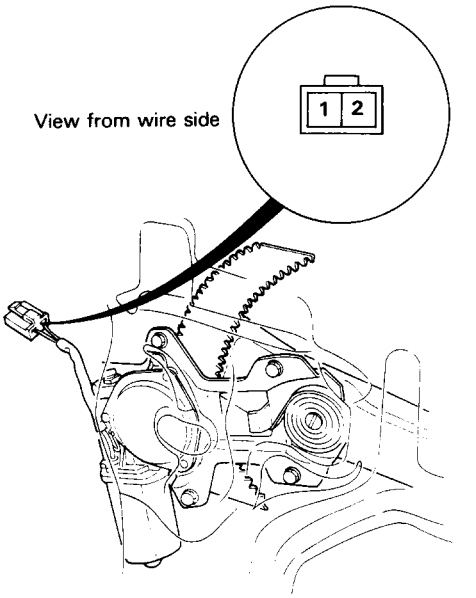
Pulser Test:

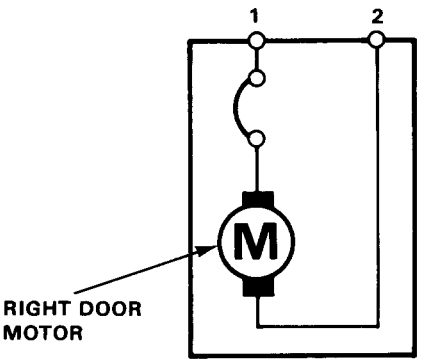
Measure resistance between the No.3 and No.4 terminals when running the motor by connecting battery voltage to the No.1 and No.2 terminals.
Ohmmeter should indicate between 20-50 ohms as the motor runs.



Passenger's Motor Test

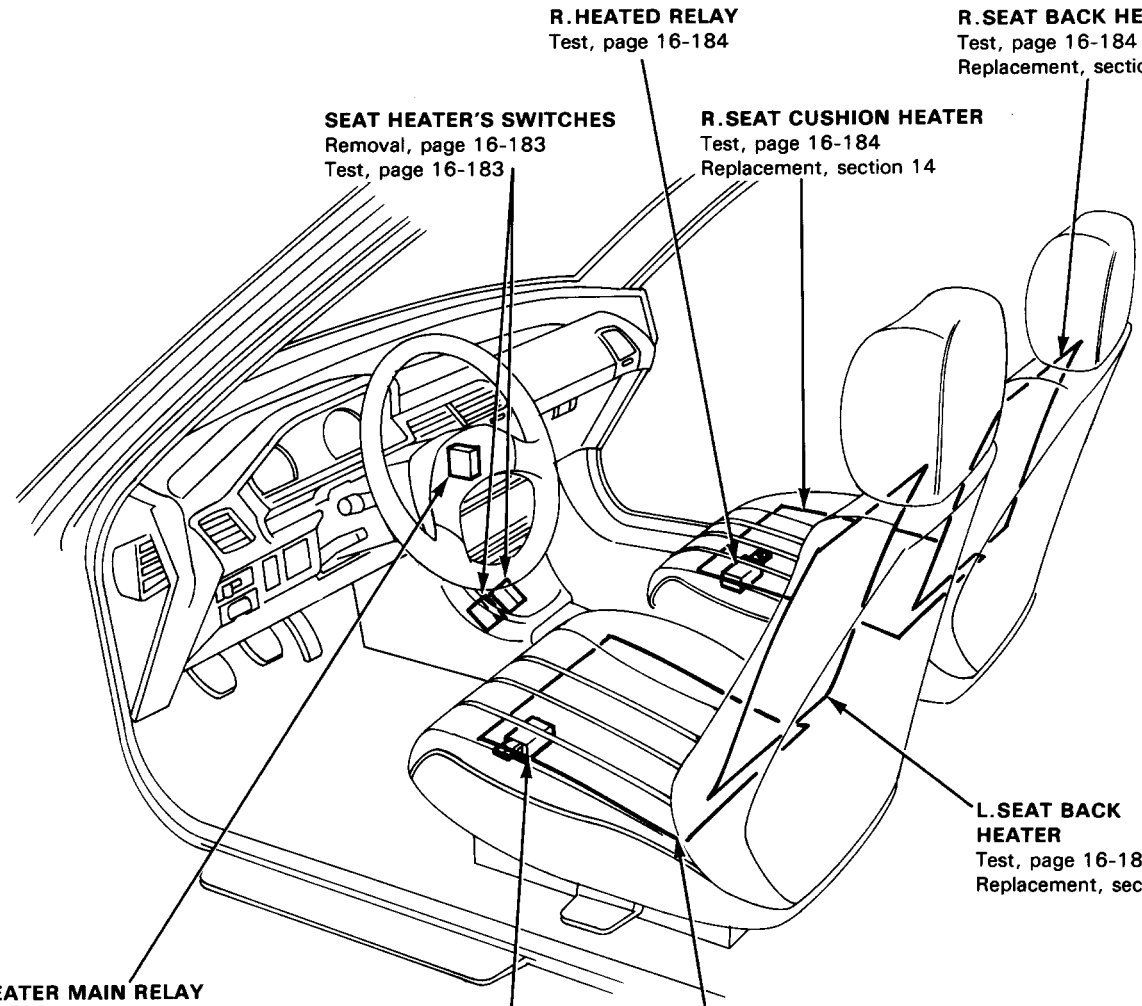
1. Remove the door trim panel.
2. Disconnect the 2-P connector from the motor.
3. Test motor operation by applying battery voltage to the No.1 and No.2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.





Seat Heaters (KS model only)

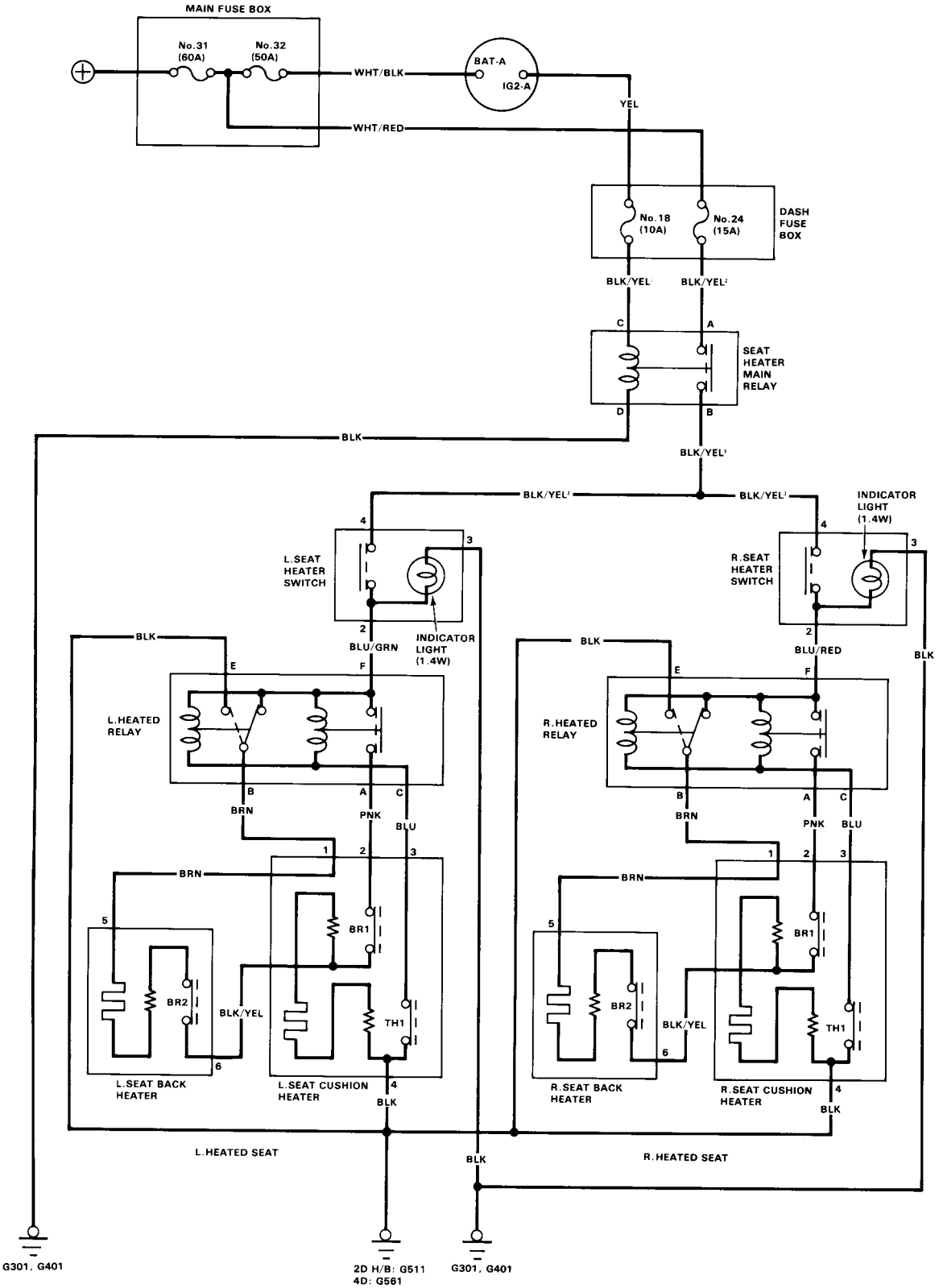
Component Location Index



Description

Two heaters are provided in each front seat; one in the seat cushion and one in the seat back. In normal use, temperature is automatically controlled by the thermostat [OFF above 40°C (104°F)] built in each seat cushion heater. In emergency case, the breaker 1 [OFF above 50°C (122°F)] and the breaker 2 [OFF above 70°C (158°F)] cut off the circuit to prevent abnormal temperature rise.

Circuit Diagram



BR1: BREAKER [OFF above 50°C (122°F)]
TH1: THERMOSTAT [OFF above 40°C (104°F)]
BR2: BREAKER [OFF above 70°C (158°F)]

Seat Heaters (KS model only)

Troubleshooting

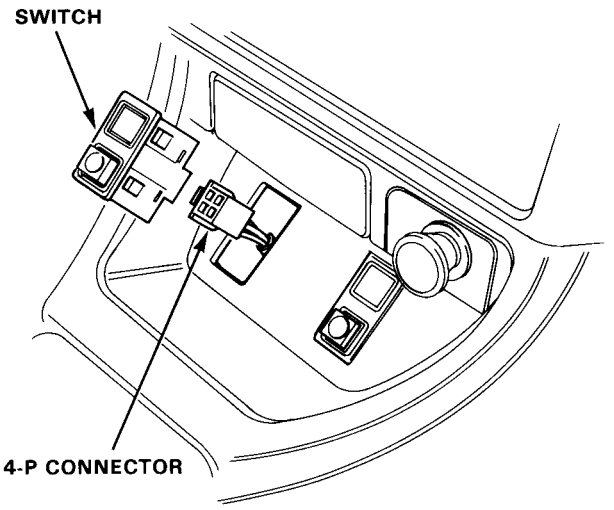
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected		Blown No.24 (15A) or No.18 (10A) fuses (in the dash fuse box)	Blown indicator light bulb	Seat heater switch	Seat heater	Heated relay input	Poor ground	Open circuit in wires or loose or disconnected terminals
Seat heaters operate, but indicator light does not go on.			1				G301 G401	
Seat heaters do not operate and indicator light does not go on.		1		2			G301 G401 G511 G561	BLK/YEL[1] , BLK/YEL[2]
Seat heaters do not operate, but indicator light goes on.	Left and Right seat					1	G511 G561	BLU/GRN, BLU/RED, BRN, BLK/YEL, PNK, BLU
Seat cushion heater or seat back heater does not operate, but indicator light goes on.					1			

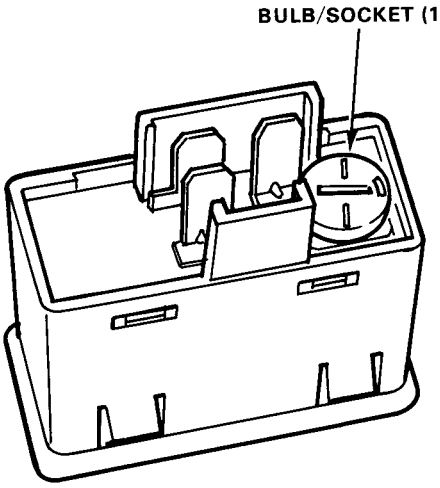
G511: 2D H/B
G561: 4D

Switch Removal

1. Remove the front console.
2. Disconnect the 4-P connector to remove the switch, then push the switch behind the console.

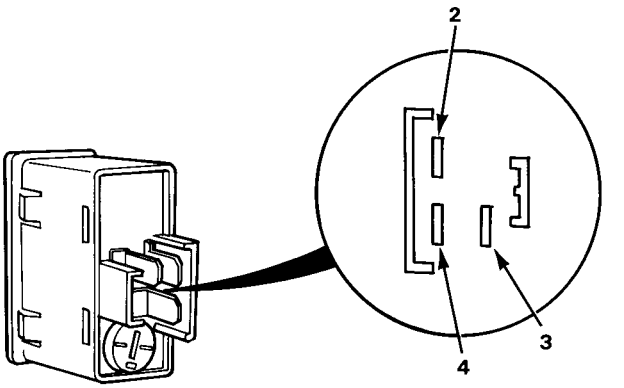


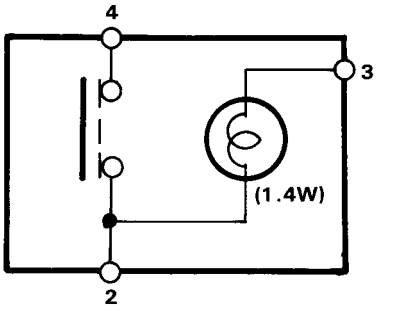
3. Turn the socket 45° counter-clockwise to remove it.



Switch Test

1. Remove the seat heater switch from the front console.
2. There should be continuity between the No.4 and No. 2 terminals when the switch is clicked into ON. There should be no continuity when the switch is clicked into OFF.



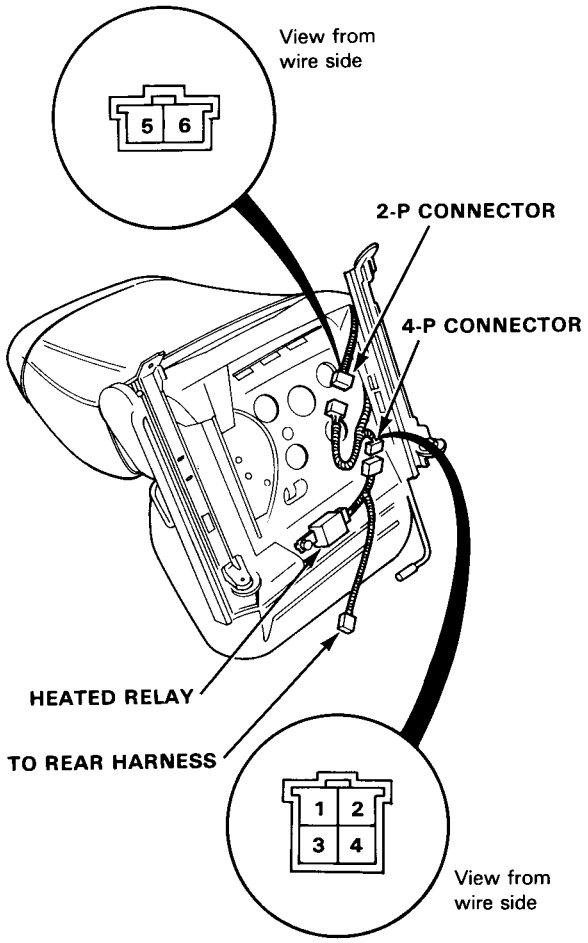


Seat Heaters (KS model only)

Heater Test

1. Disconnect the 4-P connector and 2-P connector as shown below.

   NOTE: Left front seat is shown. Right front seat is similar.



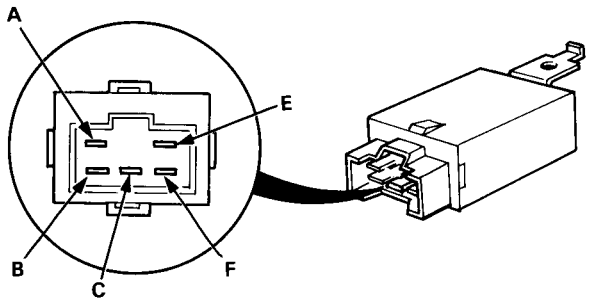
2. Check for continuity between the No.2 and No.3 terminals; between the No.5 and No.6 terminals (R x 10^3 scale)
   There should be continuity.

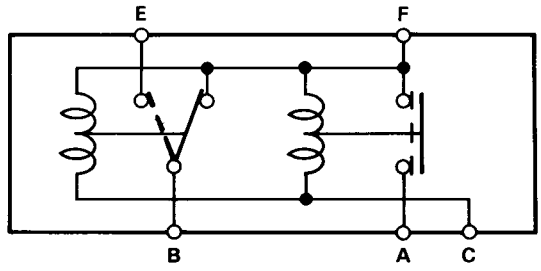
Relay Test

Heated relay:

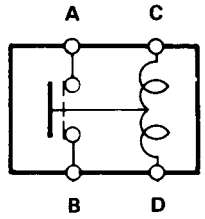
1. Remove the driver's seat, then remove the relay from the bottom of the seat.

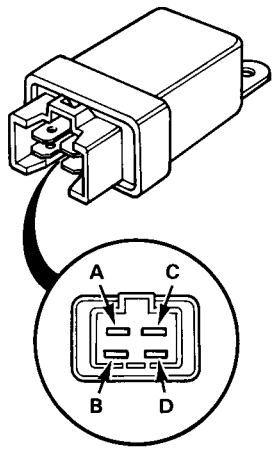
2. There should be continuity between the F and A; between E and B terminals when the battery is connected across the F and C terminals.
   There should be continuity between the F and B terminals when the battery is disconnected.



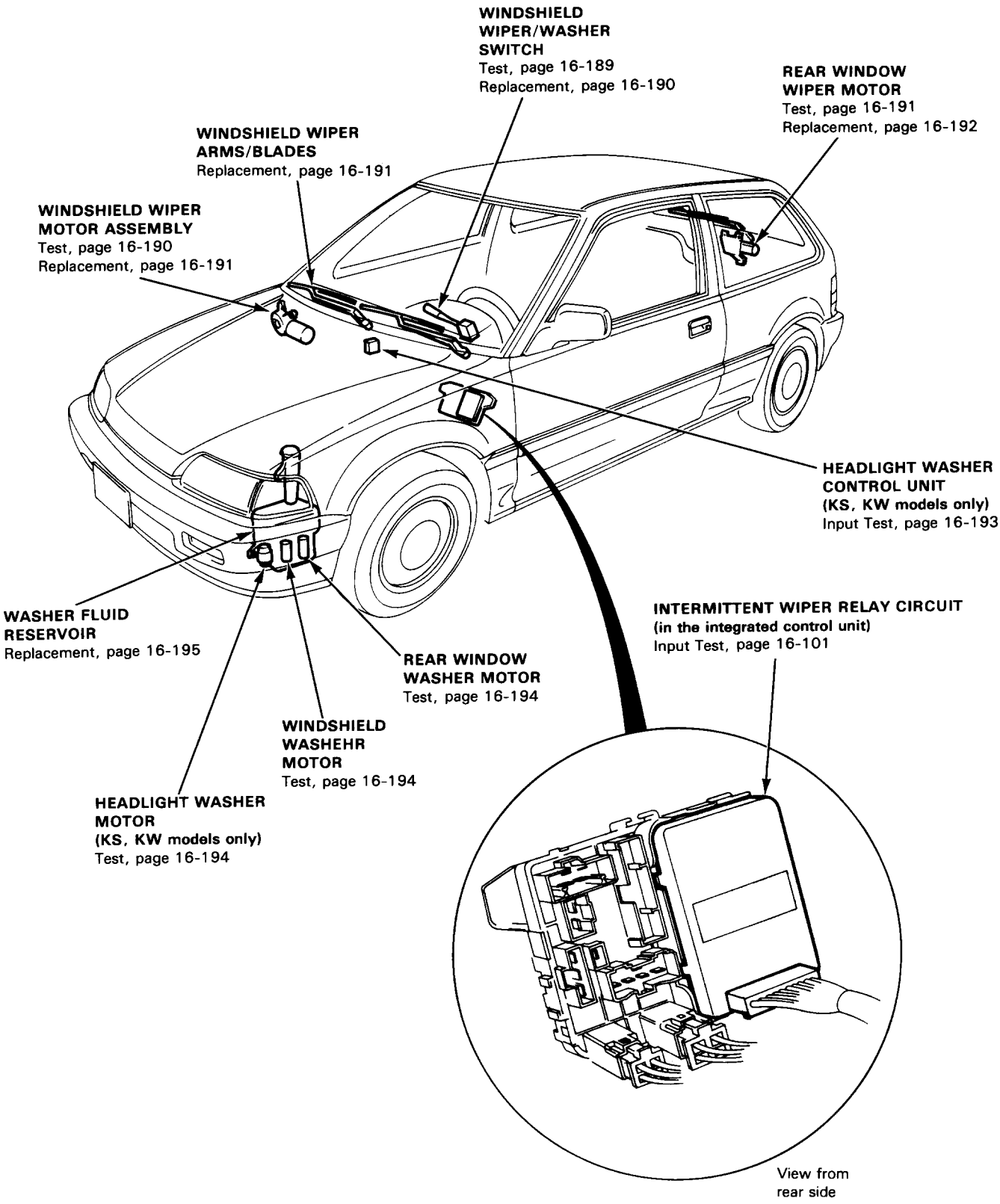


Main relay:
There should be continuity between the A and B terminals when the battery is connected across the C and D terminals.
There should be no continuity when the battery is disconnected.





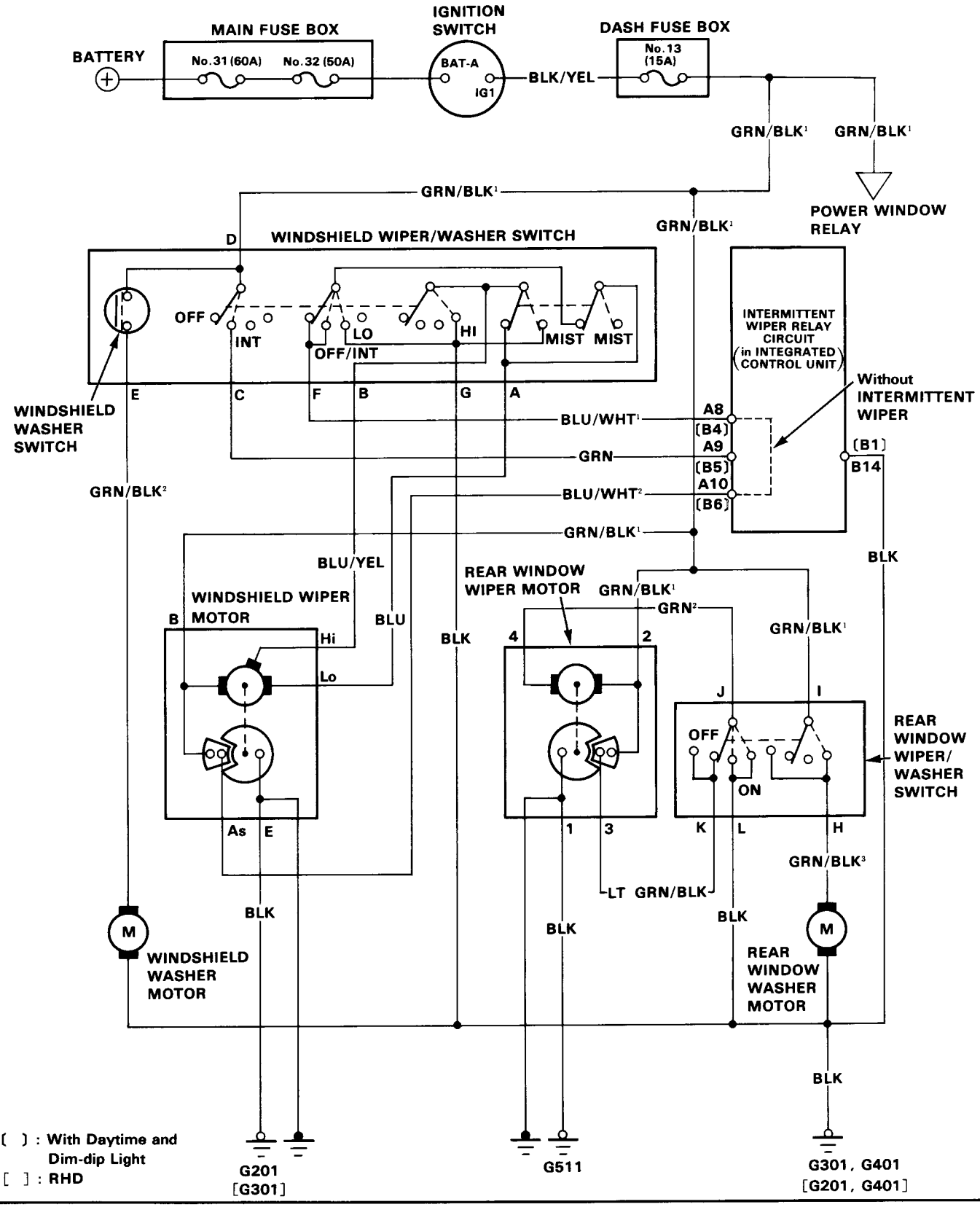
Component Location Index



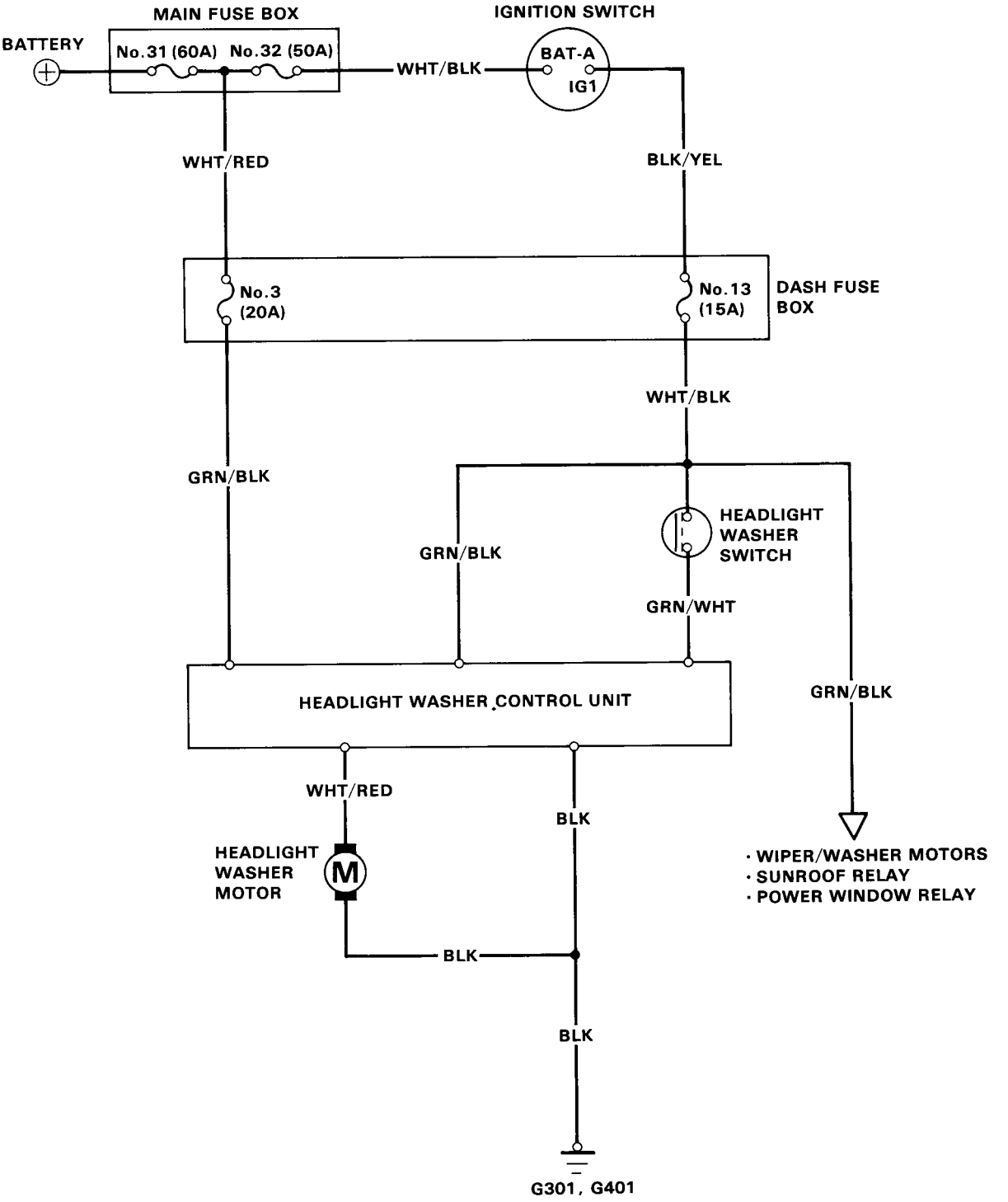
Wipers/Washers

Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/BLK[1] and GRN/BLK[2] are not the same).



Circuit Diagram (Headlight Washer)
(KS, KW models only)



Troubleshooting

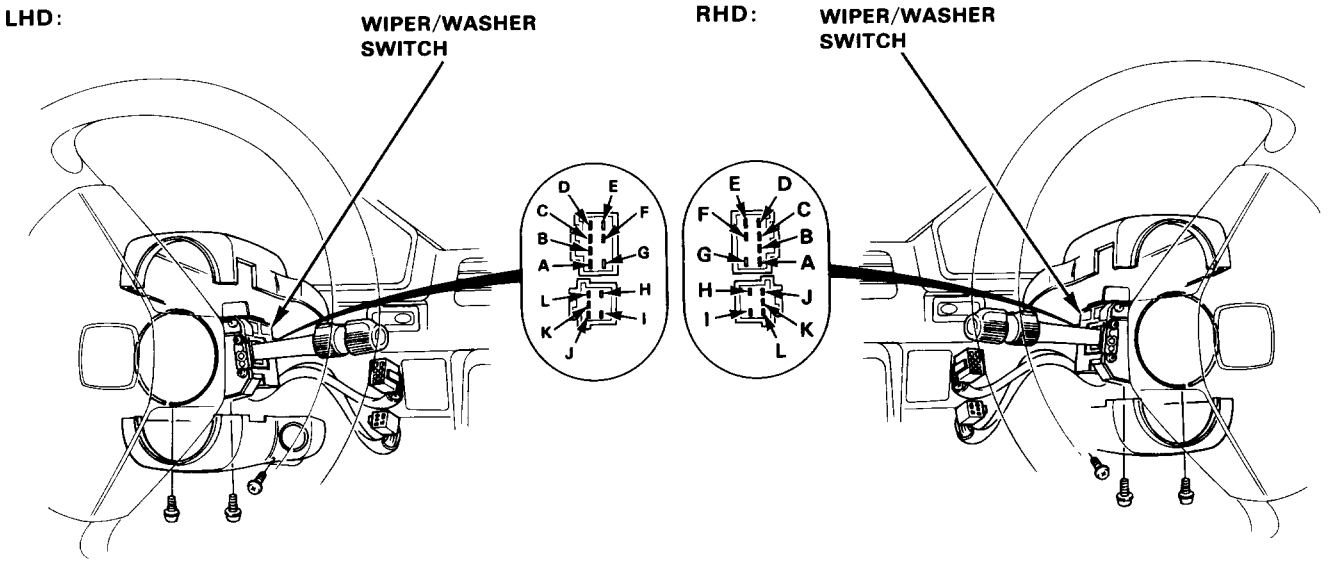
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected	Blown No.13 (15A) fuse (in the dash fuse box)	Wiper switch	Wiper motor assembly	Washer switch	Washer motor	Intermittent wiper relay circuit (in the integrated control unit)	Insufficient washer fluid in reservoir	Disconnected, blocked washer hose or clogged outlet	Disconnected wiper linkages	Poor ground	Open circuit in wires or loose or disconnected terminals
Wipers do not operate.	In all positions	1	4	2						3	G201 [G301]	GRN/BLK[1]
	In INT		1				2					GRN, BLU/WHT[1]
	In LO or HI		1									
	In Mist		1									
Rear window wiper does not operate.		1	3	2							G511	GRN/BLK[1] or GRN[2]
Blades do not return to park position when wipers are turned OFF.			2	1								BLU/WHT[2]
Erratic intermittent cycle or wipers do not operate intermittently.			1				2					GRN/BLK[2] or GRN/BLK[3]
Little or no washer fluid is pumped.					4	3		1	2		G301, G401 [G201, G401]	BLK/YEL

[ ] : RHD

Wiper/Washer Switch Test

1. Remove the steering column covers.
2. Disconnect 8-P and 6-P connectors from the switch.
3. Check for continuity between the terminal in each switch position according to the table.



Windshield

Position \ Terminal	A	B	C	D	E	F	G
OFF	○					○	
INT	○		○	○		○	
LO	○						○
HI		○					○
Mist Switch "ON"		○					○
Washer Switch"ON"				○	○		

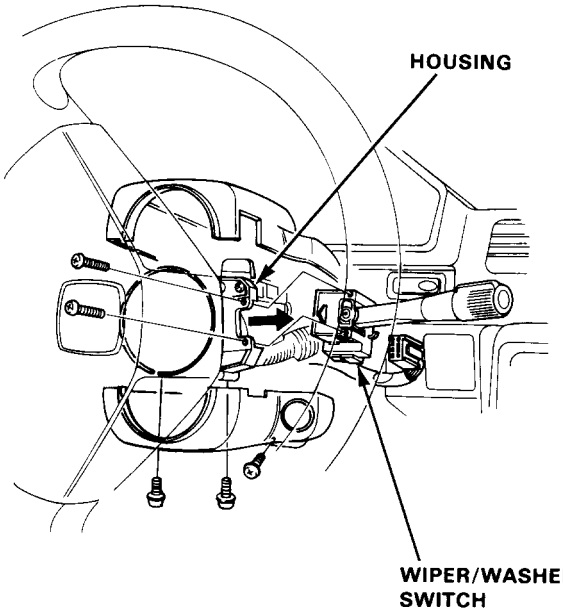
Rear Window

Position \ Terminal	H	I	J	K	L
Washer Switch "ON"	○	○			
OFF			○	○	
ON			○		○
Washer Switch "ON"	○	○			

Wiper/Washer Switch Replacement

1. Remove the lower and upper covers from the steering column.
2. Disconnect the 8-P and 6-P connectors from the wiper/washer switch.
3. Remove the 2 screws and slide the wiper/washer switch out of the housing as shown.

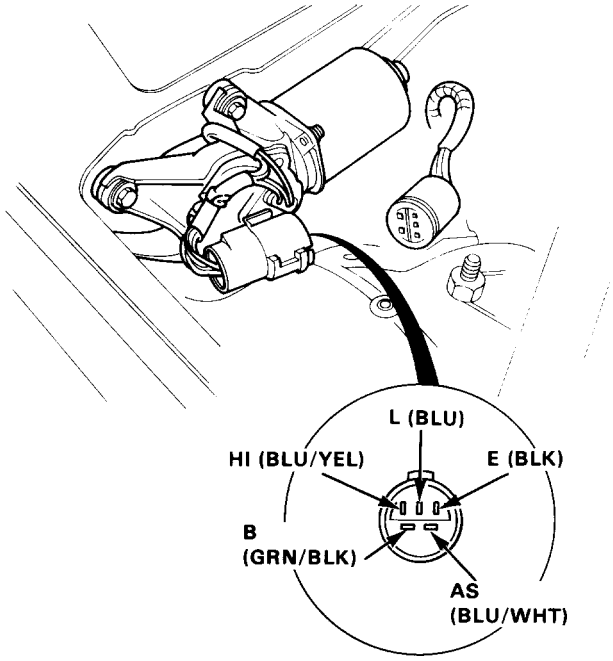
NOTE: Be carefull not to damage the steering wheel cover.



Windshield Wiper Motor Test

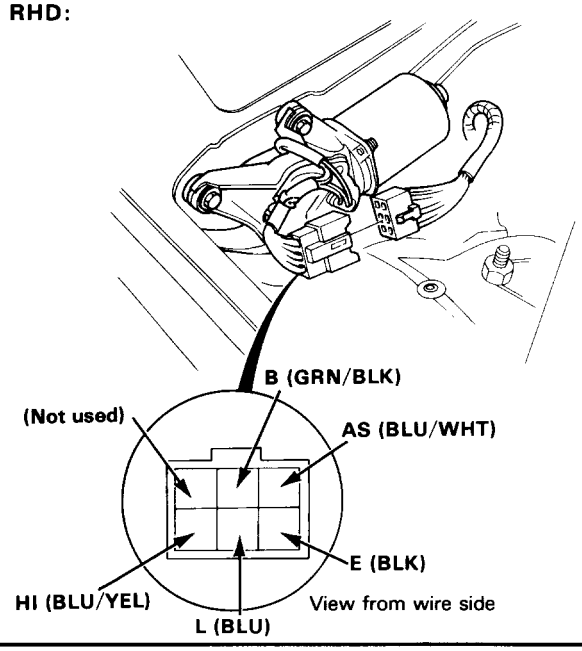
1. Disconnect the 5-P connector of the wiper motor assembly.
2. Test motor operation:
   LOW SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Lo (BLU) terminal.
   HIGH SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Hi (BLU/YEL) terminal.
3. If the motor fails to run smoothly, replace it.

LHD:



View from terminal side

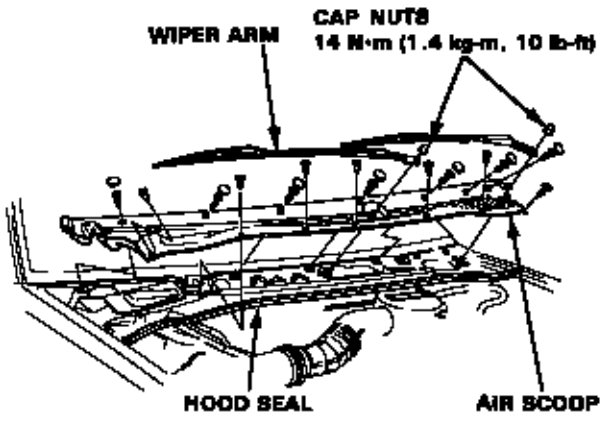
RHD:



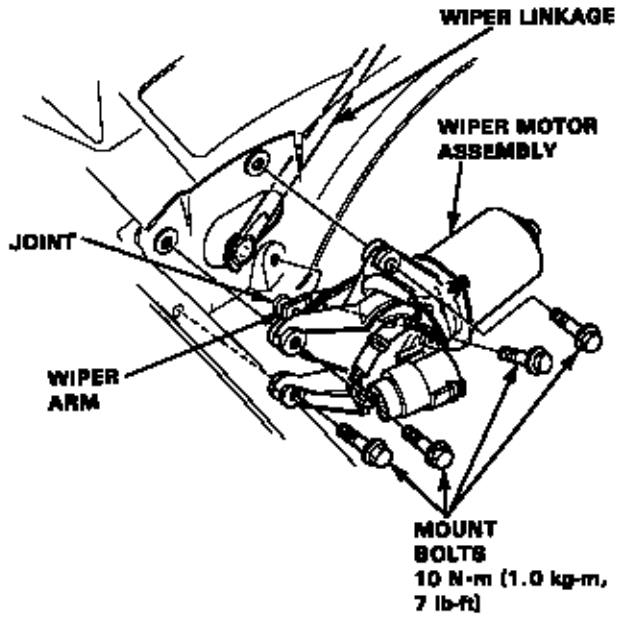
View from wire side

Windshield Wiper Motor Replacement

1. Remove the cap nuts and the wiper arms.
2. Remove the hood seal and air scoop by prying off the trim clips and removing the screws.



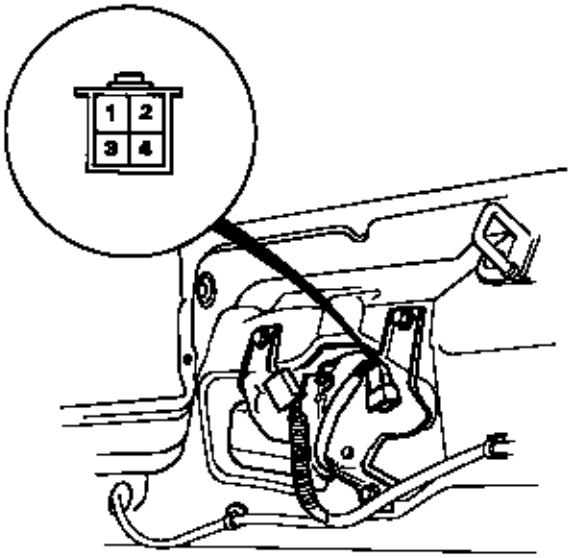
3. Pry the wiper linkage off the motor arm with a screw driver.
4. Disconnect the 6-P connector from the wiper motor assembly, then remove the 4 mount bolts and the wiper motor assembly.



5. Install the wiper motor assembly in the reverse order of removal.

Rear Window Wiper Motor Test

1. Remove the hatch trim panel.
2. Disconnect the 4-P connector.
3. Test wiper motor operation by connecting battery positive wire to the No.2 terminal and negative to the No.4 terminal.
4. If the motor fails to run smoothly, replace it.

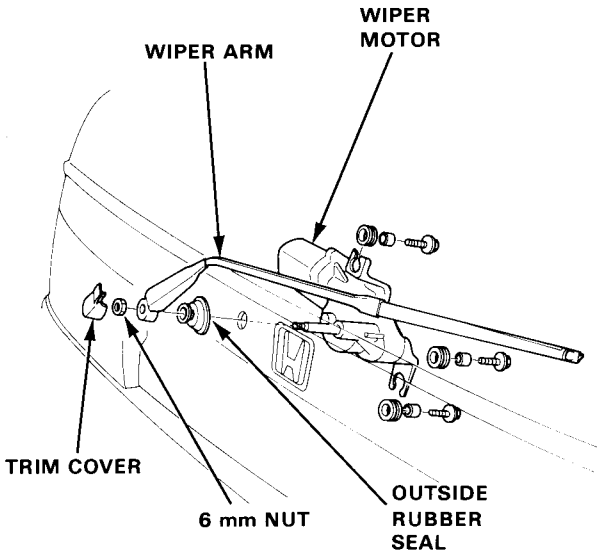


5. Check for continuity between the terminals according to the table.

Wiper Blade \ Terminal	1	2	3
At park position		○	○
At center position	○		○

Rear Window Wiper Motor Replacement

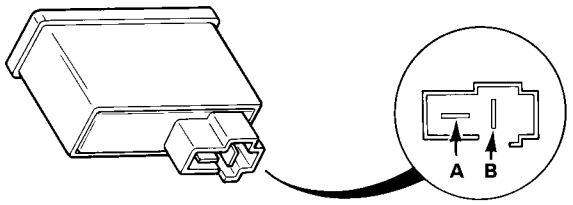
1. Remove the hatch trim panel.
2. Remove the trim cover, 6 mm nut, wiper arm, and the outside seal rubber.
3. Disconnect the 4-P connector from the wiper motor.
4. Remove the 3 mount bolts and the wiper motor.



Headlight Washer Switch Test

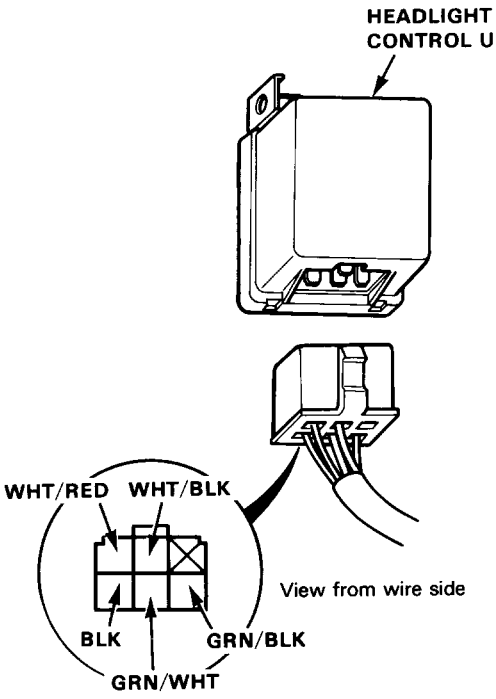
1. Remove the dashboard lower panel. Push out the switch from behind the instrument panel, then disconnect the 2-P connector from the switch.
2. Check for continuity between the terminals according to the table.

Position \ Terminal	A	B
OFF		
ON	○	○



Headlight Washer Control Unit Input Test

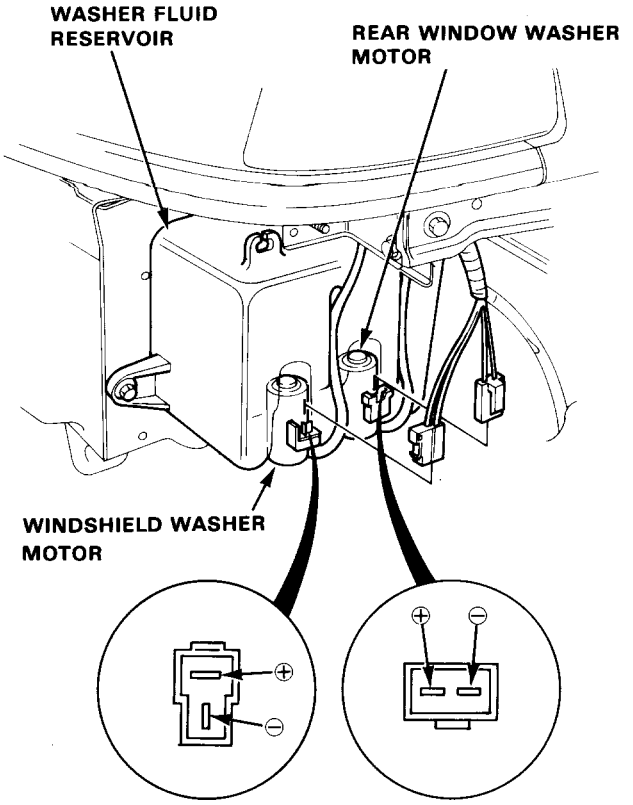
Remove the dashboard lower panel and disconnect the 6-P connector from the control unit.
Make the following input tests at the harness pins.
If all tests prove OK, yet the system still fails to work, replace the control unit.

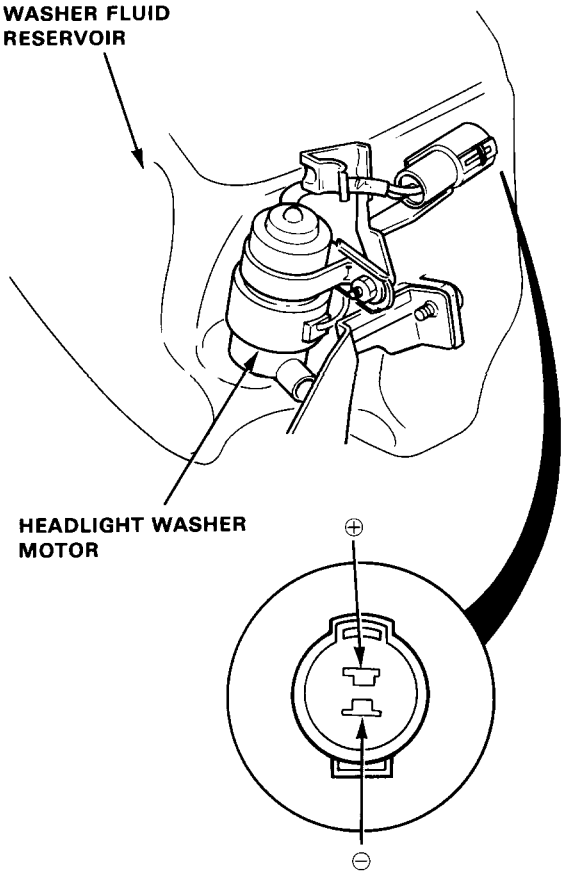


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT/BLK	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.3 (20A) fuse. • An open in the wire.
3	GRN/WHT	Ignition switch ON and headlight washer switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • Faulty headlight washer switch • An open in the wire.
4	WHT/RED	Connect the WHT/BLK terminal to the WHT/RED terminal.	Check the headlight washer motor operation: should run.	• Faulty headlight washer motor. • Poor ground (G301, G401). • An open in the wire.
5	GRN/BLK	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • An open in the wire.

Washer Motor Test

1. Remove the front bumper and disconnect the 2-P connector from the washer motor.
2. Test either washer motor operation by connecting battery positive to the ⊕ terminal and negative to the ⊖ terminal.





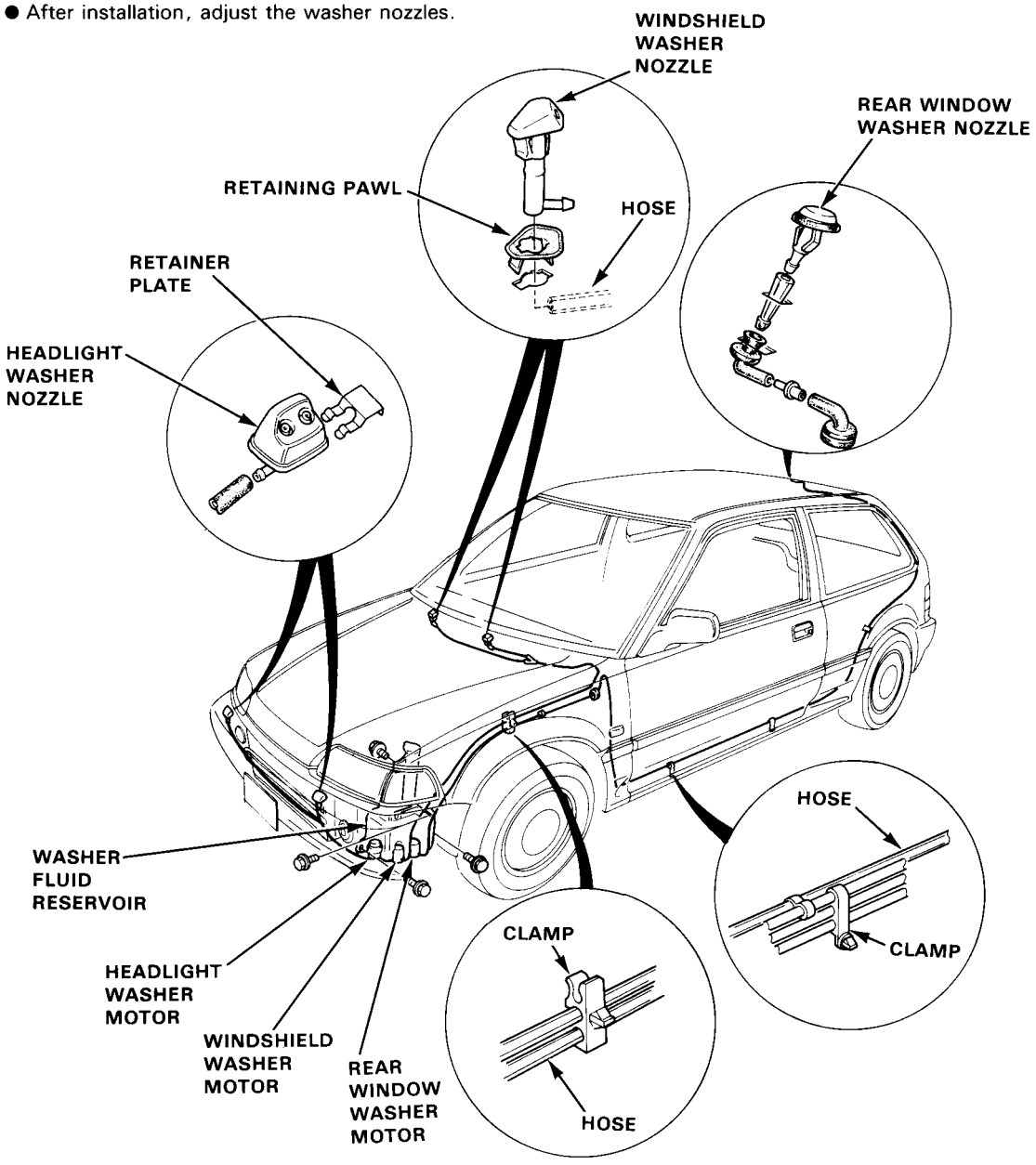
- If the motor fails to run smoothly, replace it.
- If the motor runs smoothly but little or no washer fluid is pumped, check for disconnected or blocked washer-hose, or clogged pump outlet in the motor.

Washer Replacement

1. Remove the bumper, then remove the washer reservoir by removing the 4 mount bolts.
2. Disconnect the hoses and the 2-P connectors from the windshield, rear window and headlight washer motors.
3. Remove the washer nozzles;

Windshield Washer Nozzles:	Releasing the retaining pawls and pushing them out from the under side.
Rear Window Washer Nozzle:	Remove the rear spoiler and pull out the nozzle.
Headlight Washer Nozzles:	Releasing the retainer plate and pushing them out from the inside of bumper.

NOTE:
- Clamp the hoses with the wire harness in the left front fender.
- Take care not to pinch hoses during reinstallation.
- Install the grommets firmly.
- After installation, adjust the washer nozzles.



Wiring Diagrams

Index