

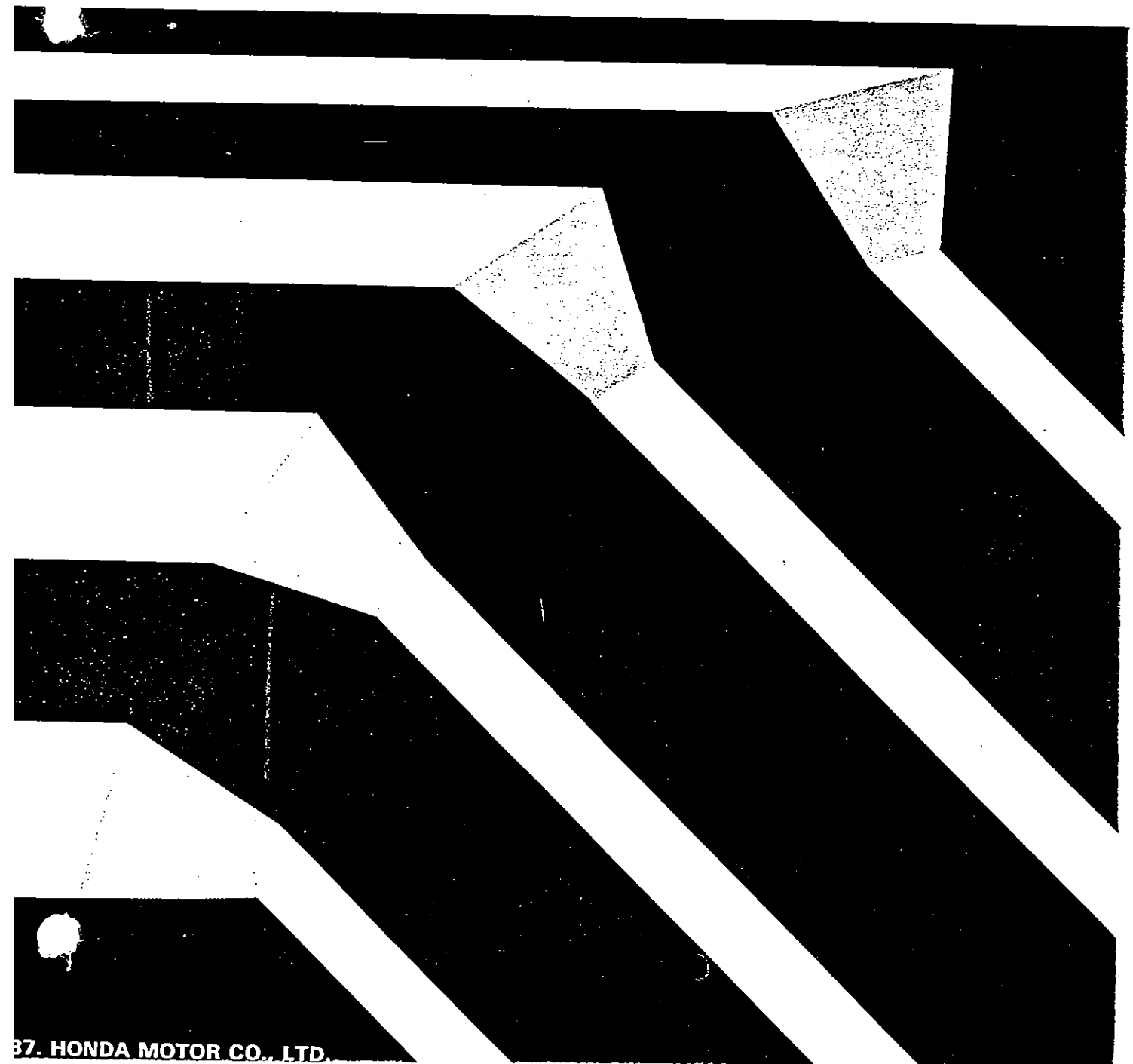
SHOP MANUAL

HONDA

CIVIC
COUPE CRX

CHASSIS MAINTENANCE AND REPAIR

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INTRODUCTION

How to Use This Manual

This manual contains service information for the CIVIC COUPE CRX. Separate volumes are published regarding vehicle construction, engine, and transmission; the applicable reference manuals are listed below.

This manual is divided into sections. This first page of each section is marked with a black tab that lines up with one of the thumb index tabs on the next page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Each section includes:

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

Reference Manuals

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

Special Information

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

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

NOTE: Gives helpful information.

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

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

1	General Info	
2	Special Tools	
3	Specifications	spec
4	Maintenance	
5	Engine	
6	Fuel and Emissions	
7 - 10	Transaxle	
11	Steering	
12	Suspension	
13	Brakes	
	Body	
	Heater and Air Conditioner	
	Electrical	

1

2

3

4

5

6

7-8

9

10

11

General Information

Chassis and Engine Numbers	1 – 2
Identification Number Locations	1 – 3
Label Locations	1 – 4
Lift and Support Points	1 – 5
Towing	1 – 8
Preparation of Work	1 – 9
Symbol Marks	1 – 15
Abbreviation	1 – 15

Chassis and Engine Numbers

- Vehicle Identification Number

JHM ED9 3600S000001

Manufacture, Make and Type of Vehicle
JHM: HONDA MOTOR CO., LTD., JAPAN.
HONDA, Passenger car.

Line/Body and Engine Type
ED9: CIVIC COUPE CRX 1600

Transmission and Body Type
3: 5-speed manual/2-Door Coupe

Vehicle Grade
6: IZ, I (1600, SOHC)
7: DI (1600, DOHC)

Fixed code

Model Year
0: 1988

Plant
S: SUZUKA Factory

Serial Number

Engine Number

D16A7-1000001

Engine Type
D16A6: 1.6 l SOHC PGM-FI
With catalytic converter
D16A7: 1.6 l SOHC PGM-FI
Without catalytic converter
D16A8: 1.6 l DOHC PGM-FI
With catalytic converter
D16A9: 1.6 l DOHC PGM-FI
Without catalytic converter

Model Year
1: 1988

Emission Group
0: Without catalytic converter and KX, KQ
7: KS, KW with catalytic converter

Serial Number

Transmission Number

L3-1000001

Transmission Type
L3: Manual 5-speed

Serial Number

Identification Number Locations



Vehicle Identification Number

Engine Number

Vehicle Identification Number

JACK HOLDER

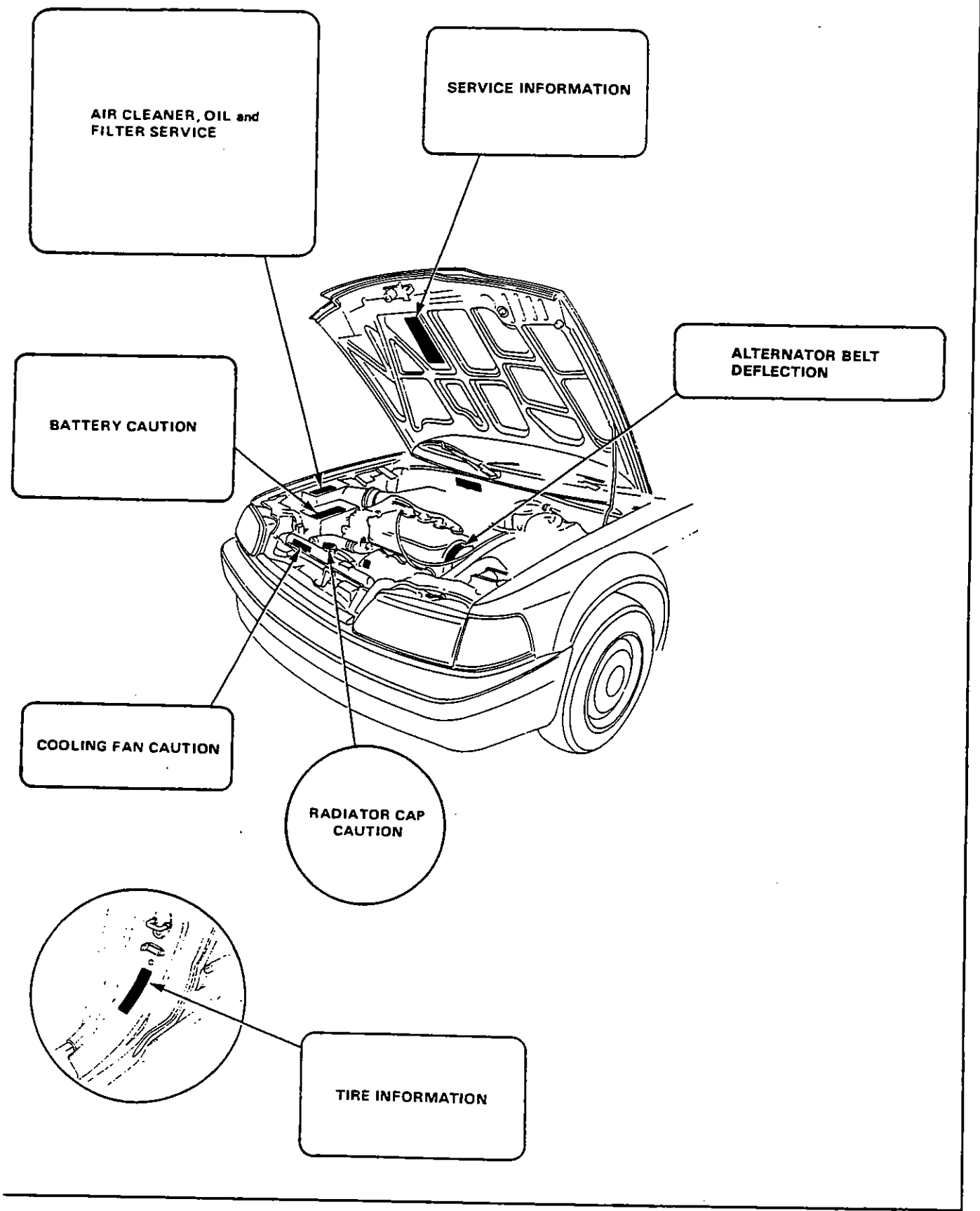
TRUNK

Vehicle Identification Number
(KS only)

Transmission Number
(Manual)

Vehicle Identification Number

Label Locations



Lift and Support Points



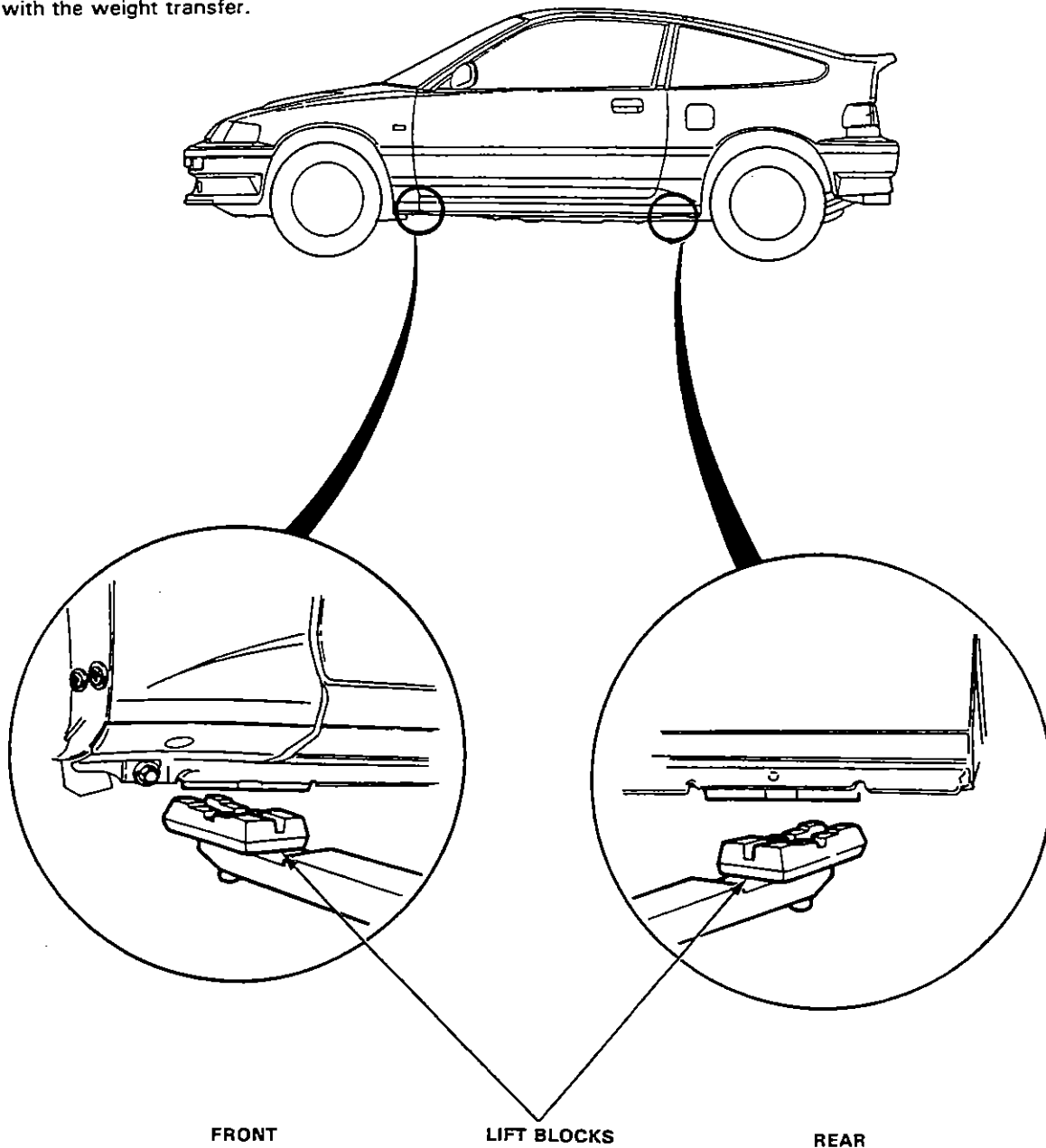
Hoist

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.



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ift and Support Points (cont'd)

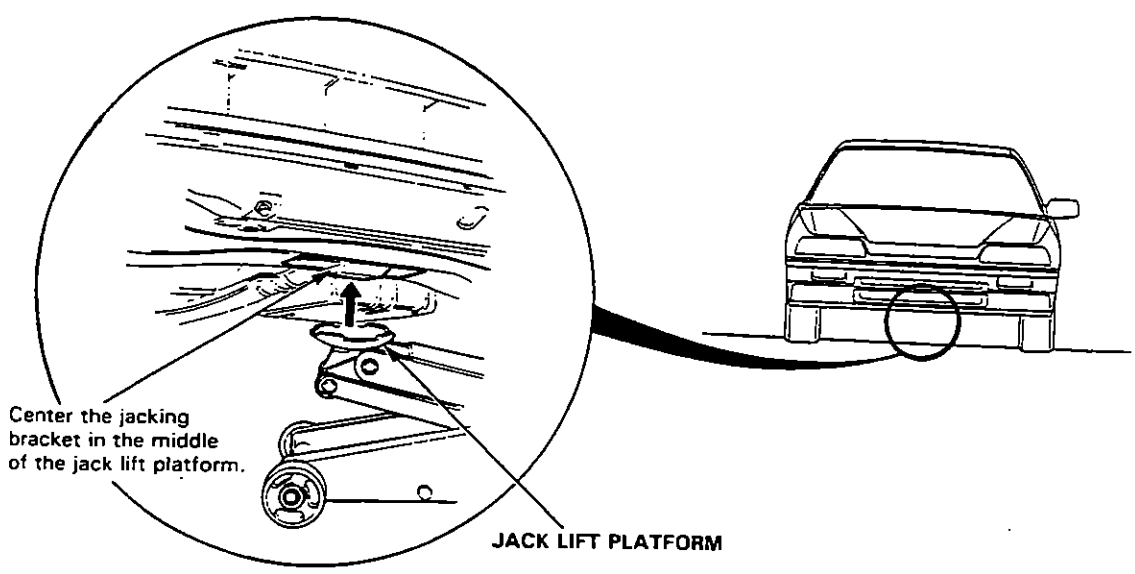
Floor Jack

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

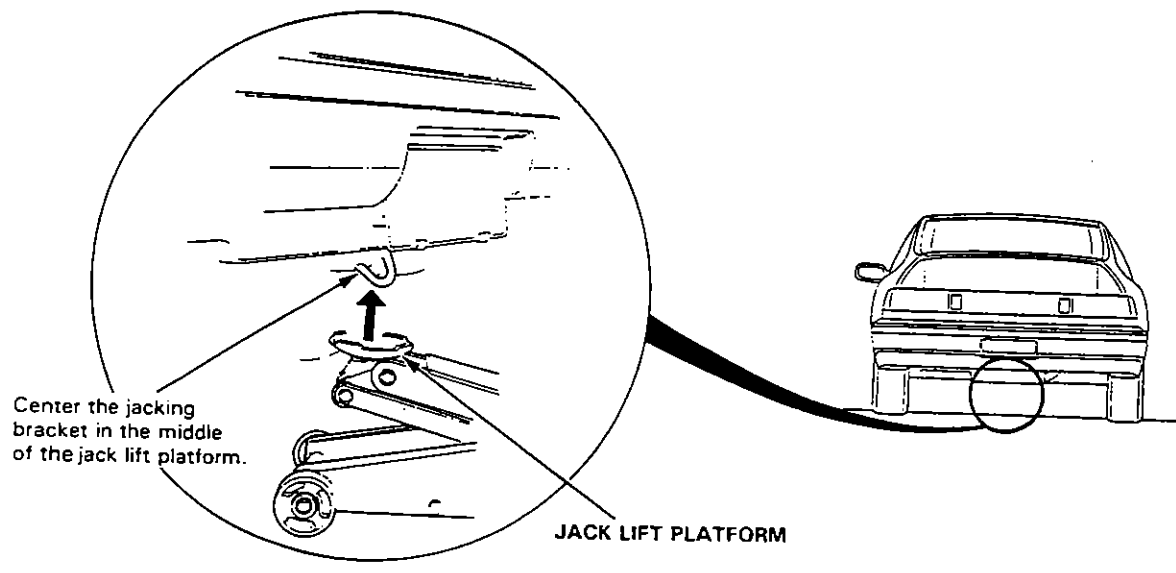
 **WARNING**

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

Front

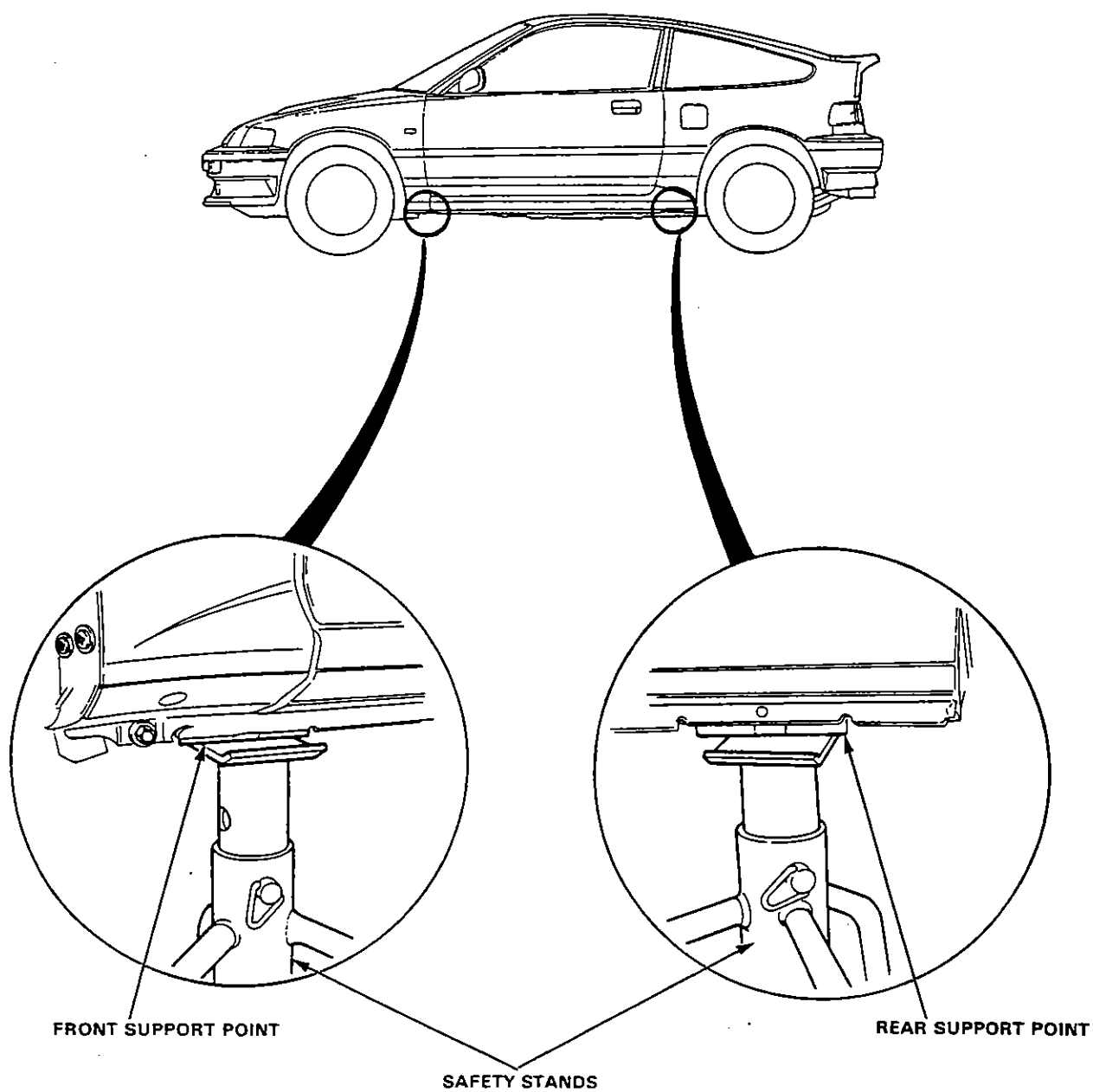


Rear





Safety Stands



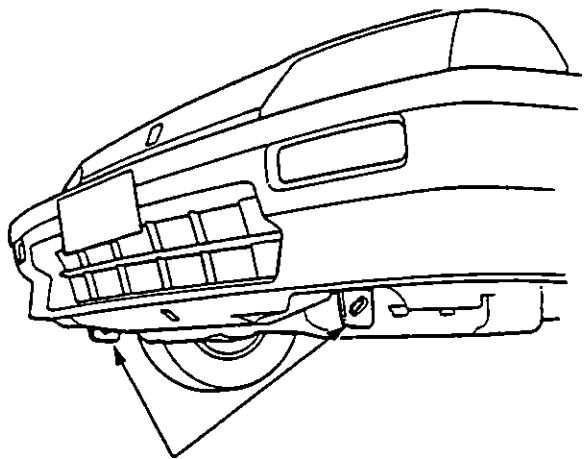
Towing

- Towing

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

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

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



TOWING HOOKS

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 the car 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.

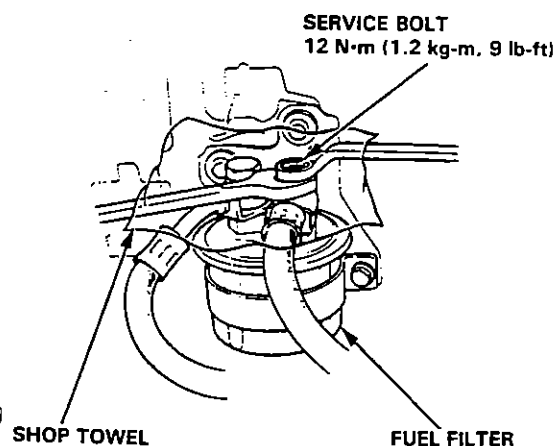
WARNING Never use tow chains or rope to tow a car; your ability to safely control the car may be adversely affected.

Preparation of Work

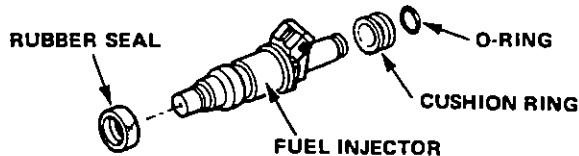
Special Caution Items For This Car

1. Fuel Line Servicing

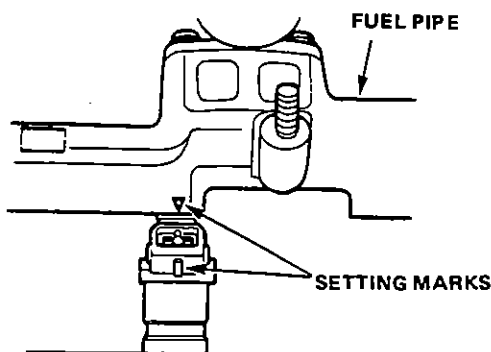
- Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



- 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 PGM-FI ECU (computer) and its wiring to prevent erroneous operation from external interference, but erroneous operation of the computer may be caused by extremely strong radio waves. Attention must be paid to the following items to prevent erroneous operation of the computer.

- The antenna and the body of the radio must be at least 200 mm (7.9 in.) away from the computer.

The computer locations:

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

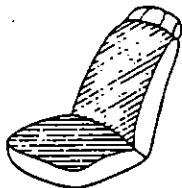
4. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use HONDA PART NO 08740-99986 as a liquid gasket.

- Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
- Apply liquid gasket evenly, being careful to cover all the mating surface.
- To prevent leakage of oil, apply liquid gasket to the inner threads of the bolt holes.
- Do not allow liquid gasket to stand for more than 20 minutes before assembly.
- Wait at least 30 minutes before filling with the appropriate liquid (engine oil, coolant etc).

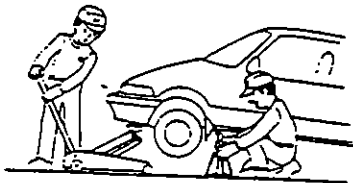
Preparation of Work

CAUTION: Observe all safety precautions and notes while working.

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



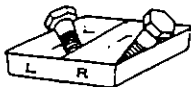
- 2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate signals as frequently as possible when work involves two or more workers. Do not run the engine unless the shop or working area is well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



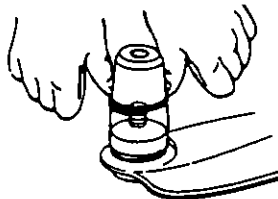
- 3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



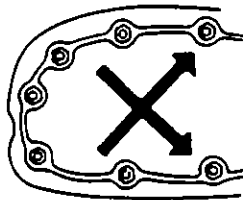
Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.



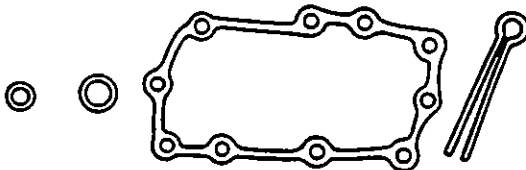
- 4. Use special tools when use of such is specified.



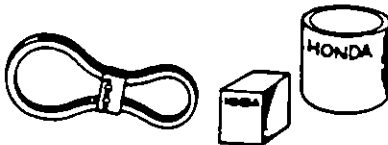
- 5. Parts must be assembled with the proper torque according to the maintenance standards established.
- 6. When tightening a series bolts or nuts, begin with the center or larger diameter bolts and tighten them in crisscross pattern in two or more steps.



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

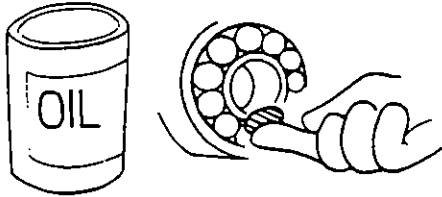


- 8. Use genuine HONDA parts and lubricants or those equivalent. When parts are to be reused, they must be inspected carefully to make sure they are not damaged or deteriorated and are in good usable condition.





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



10. Brake fluid and hydraulic components

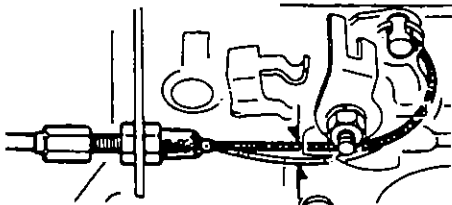
- When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
- Do not mix different brands of fluid as they may not be compatible.
- Do not reuse drained brake fluid.
- Brake fluid can cause damage to painted surfaces. Wipe up spilled fluid at once.
- After disconnecting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



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

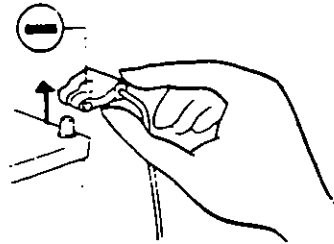
11. Avoid oil or grease getting on rubber parts and tubes, unless, specified.

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

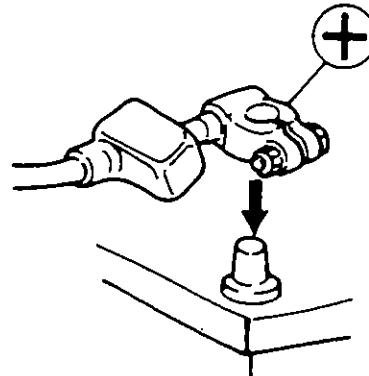


Electrical

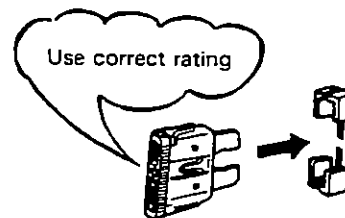
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (-) terminal.



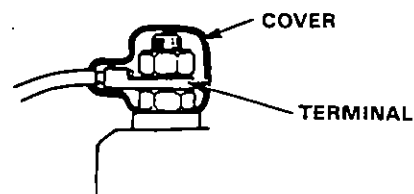
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (-) cable.



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



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

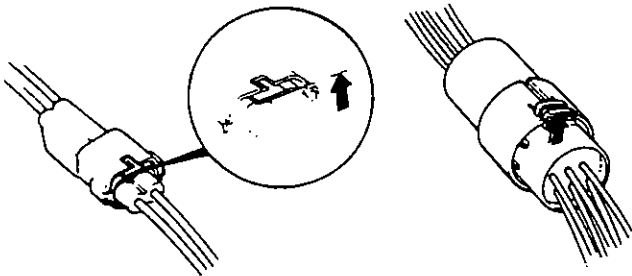
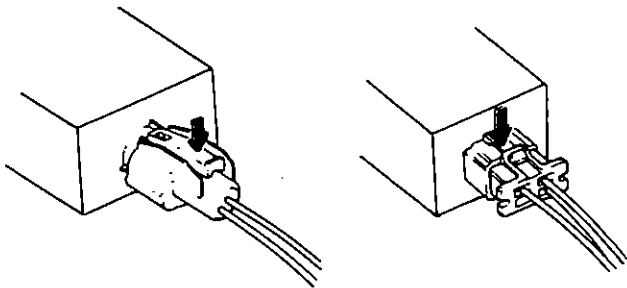
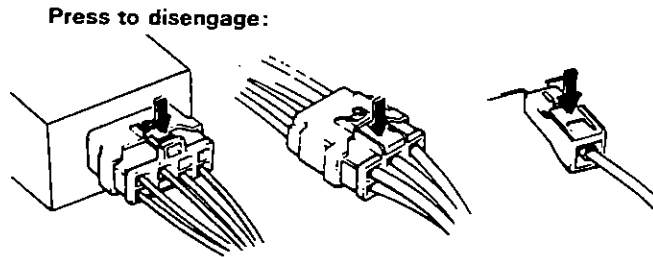


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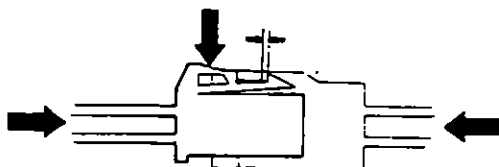
Preparation of Work

Electrical (cont'd)

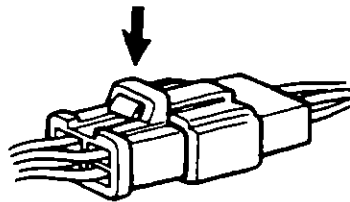
- When removing locking couplers, be sure to disengage the lock before disconnecting.
- Couplers may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following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



- 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.



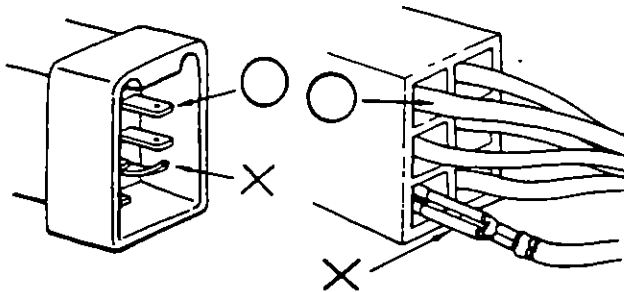
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when re-connecting.



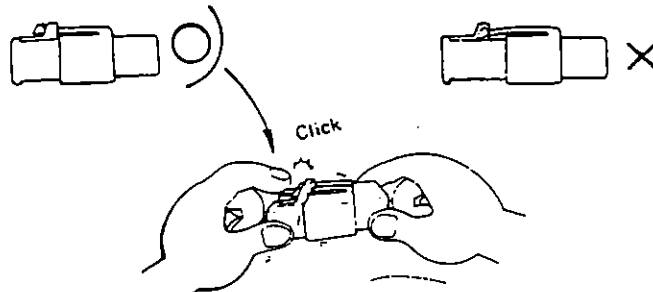
- When disconnecting a coupler, pull it off from the mating coupler by holding on both couplers.
- Never try to disconnect couplers by pulling on their wires.



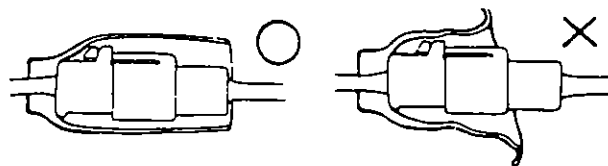
- Before connecting couplers, check to see that the terminals are in place and are not bent or distorted.



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

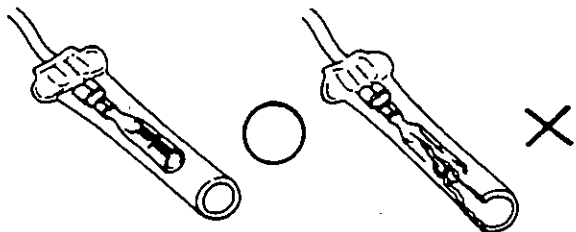


- Place the plastic cover over the mating coupler after reconnecting. Also check that the cover is not distorted.

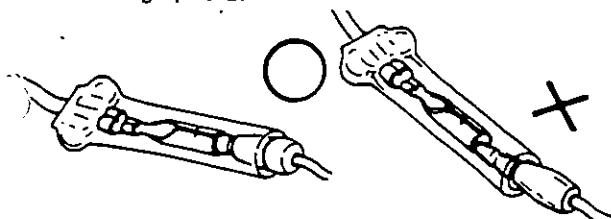




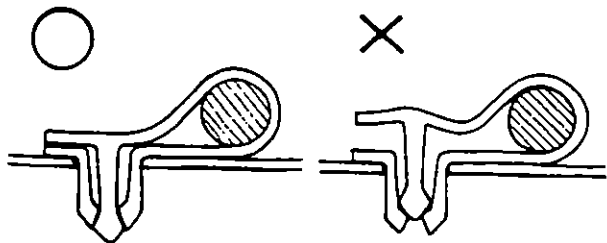
- Before clamping, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



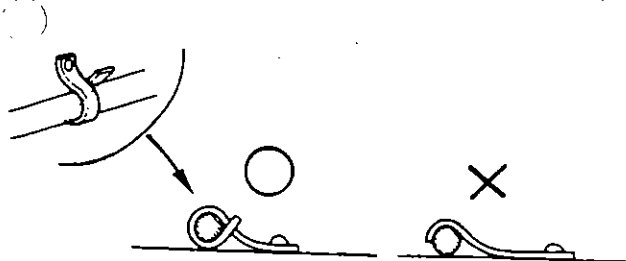
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover is not facing upward.



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



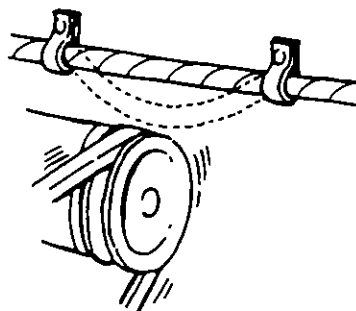
- A loose wire harness or cable can be a hazard to safety. After clamping, check each wire for security in its clamp.



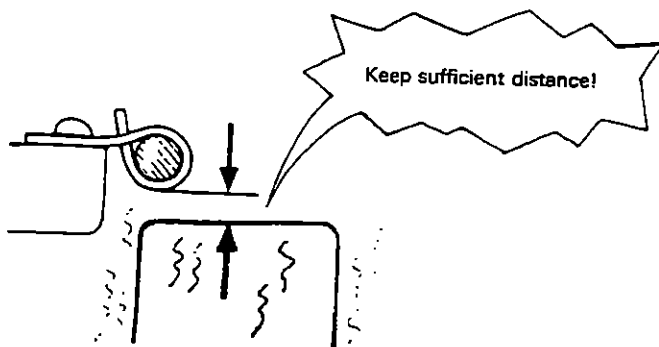
- Do not squeeze wires against the weld when a weld-on clamp is used.



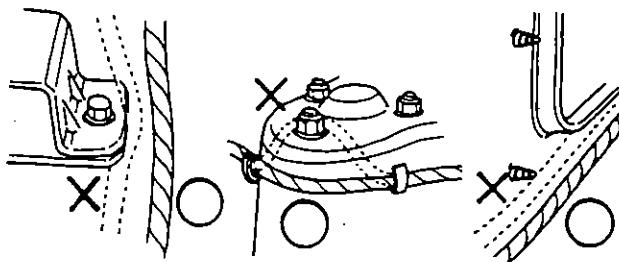
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



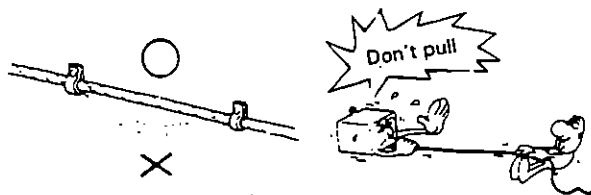
- Always keep a safe distance between wire harnesses and any heated parts.



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



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

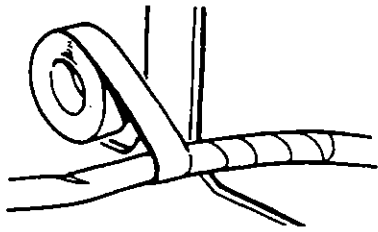


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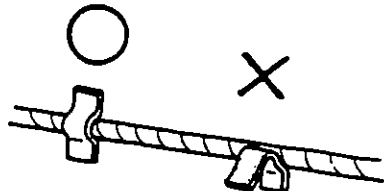
Preparation of Work

Electrical (cont'd)

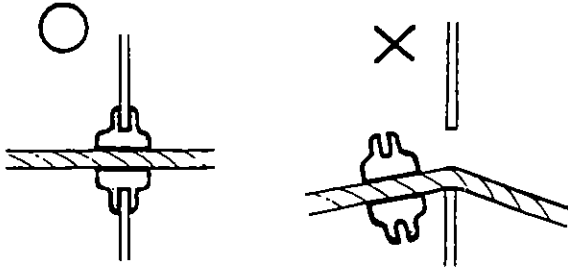
- Protect wires and harnesses with tape or a tube if they are in contact with a sharp edge or corner.



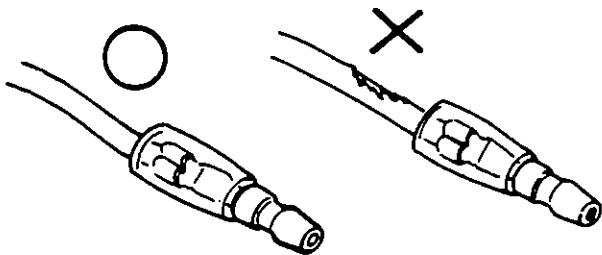
- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol in necessary.



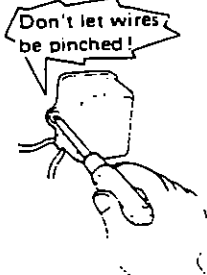
- Seat grommets in their grooves properly.



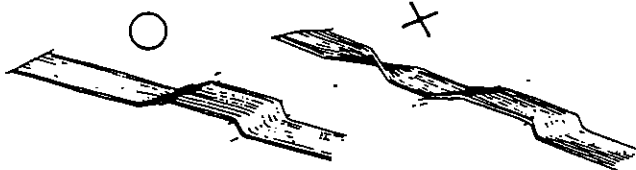
- Do not damage the insulation when connecting a wire.
- Do not use wires or harnesses with a broken insulation. Repair by wrapping with a protective tape or replace with new ones if necessary.



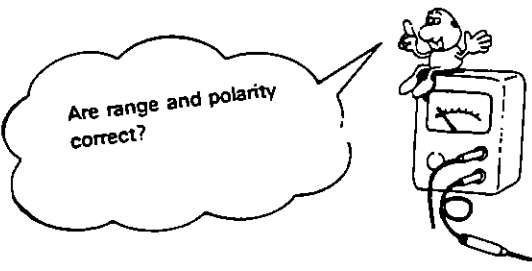
- After installing parts, make sure that wire harnesses are not pinched.



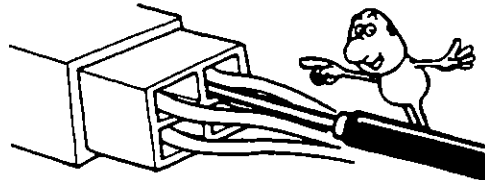
- After routing, check that the wire harnesses are not twisted or kinked.



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



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



- Do not drop parts.



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



Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.



: Apply Power Steering Fluid.



:Apply or check vacuum.

①, ②, ③, :

①, ②, ③, : Sequence for removal.

Abbreviation



A/C
BAT
CATA
EACV
ECU

EX
GND
IG
IN
INT
L
LHD
M/T
PCV
PGM-FI
P/S
R
RHD
SW
SOL. V
TDC

Air Conditioner
Battery
Catalytic Converter
Electronic Air Control Valve
PGM-FI Electronic Control
Unit
Exhaust
Ground
Ignition
Intake
Intermittent
Left Side
Left Hand Drive
Manual Transmission
Positive Crankcase Ventilation
Programmed Fuel-Injection
Power Steering
Right Side
Right Hand Drive
Switch
Solenoid Valve
Top Dead Center

0

1

2

3



Special Tools

Existing Tools

(Common with Other Models)2 – 2

Special Tools

Existing Tools (Common with Other Models)

— 5. Engine —

No.	Tool Number	Description	Q'ty	Remarks
①	07966—6340011	Engine Block Hanger	1	Used to set the piston at TDC (DOHC engine). 07957—3290001 may also be used.
②	07944—6110100	Pin Driver 5 mm	2	
③	07757—0010000	Valve Spring Compressor	1	
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	Crankshaft (Clutch side) Crankshaft (Pulley side) Crankshaft (Clutch side)
⑰	07973—PE00302	Adjustable Piston Pin Driver	1	
⑱	07948—0080000	Driver Attachment	1	
⑲	07HAD—PJ70100	Driver	1	
⑳	07749—0010000	Driver	1	
㉑	07912—6110001	Oil Filter Socket Wrench	1	
㉒	07406—0030000	Oil Pressure Gauge Adapter	1	For pressure measurement

— 6. Fuel and Emissions —

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

— 7. Clutch —

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



8. Manual Transmission

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

10. Driveshafts

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

(cont'd)

Special Tools

Existing Tools (Common with Other Models)

11. Manual Steering

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

11. Power Steering

No.	Tool Number	Description	Q'ty	Remarks
①	07406—0010101	Bypass Tube Joint	1	
②	07916—SA50001	Steering Gearbox Lock Nut Wrench	1	
③	07406—0010200	P/S Pressure Gauge Set	1	
③-1	07406—0010300	Pressure Control Valve	1	— Component Tools
③-2	07406—0010400	Pressure Gauge	1	
④	07GAK—SE00100	P/S Pressure Gauge Adaptor Set	1	
④-1*	07GAK—SE00110	P/S Joint Adaptor (Pump)	1	07406—0011100 may also be used. 07406—0011200 may also be used.
④-2*	07GAK—SE00120	P/S Joint Adaptor (Hose)	1	
⑤	07941—6920003	Ball Joint Remover	1	07949—6110000 may also be used.
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	— Component Tools
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	07725—0010101 may also be used.
⑩	07974—SA50600	Pinion Seal Guide	1	
⑪	07725—0030000	Universal Holder	1	

* ①-1* and ④-2* : Component Tools

12. Suspension

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



13. Brakes

No.	Tool Number	Description	Q'ty	Remarks
①	07921-0010001	Flare Nut Wrench	1	07949-6110000 may also be used.
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	
⑨	07747-6890300	Driver Attachment C	1	
⑩	07GAG-SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE-SG00100	Brake Spring Compressor	1	
⑫	07914-SA50001	Snap Ring Pliers	1	

15. Heater and Air Conditioner

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

16. Electrical

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

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3

3

Specifications

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



Standards and Service Limits

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

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min ⁻¹ (rpm) and wide-open throttle		Normal Minimum Maximum variation	1,275 kPa (13.0 kg/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		0.05–0.15 (0.002–0.006)	0.5 (0.02)
	Oil clearance		0.050–0.089 (0.002–0.004)	0.15 (0.006)
	Runout		0–0.03 (0–0.001) max.	0.03 (0.001)
	Cam lobe height	IN EX KY KY EX KY KY	36.603 (1.4411) 36.957 (1.4515) 36.747 (1.4467) 36.996 (1.4565)	— — — —
Valve	Valve clearance	IN EX	0.17–0.22 (0.007–0.009) 0.22–0.27 (0.009–0.011)	— —
	Valve stem O.D.	IN EX	5.48–5.49 (0.2157–0.2161) 5.45–5.46 (0.2147–0.2150)	5.45 (0.2147) 5.42 (0.2134)
	Stem-to-guide clearance	IN EX	0.02–0.05 (0.001–0.002) 0.05–0.08 (0.002–0.003)	0.08 (0.003) 0.12 (0.005)
	Stem installed height	IN EX	46.985–47.455 (1.8498–1.8683) 48.965–49.435 (1.9278–1.9263)	47.705 (1.8781) 49.685 (1.9561)
	Valve seat	Width	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	48.58 (1.9126) 49.19 (1.9366)	47.64 (1.8756) 48.32 (1.9024)
Valve guide	I.D.	IN EX	5.51–5.53 (0.2169–0.2177)	1.70/1.72 (0.0669/0.0677)
		IN and EX	5.51–5.53 (0.2169–0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-shaft clearance	IN EX	0.017–0.05 (0.0007–0.0020) 0.018–0.054 (0.0007–0.0021)	0.08 (0.003) 0.08 (0.003)

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

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min ⁻¹ (rpm) and wide-open throttle		Nominal Minimum Maximum variation	1,324 kPa (13.5 kg/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		0.05–0.15 (0.002–0.006)	0.5 (0.02)
	Oil clearance		0.050–0.089 (0.002–0.004)	0.15 (0.006)
	Runout		0–0.03 (0–0.001) max.	0.03 (0.001)
	Cam lobe height	IN EX	33.021 (1.3000) 32.382 (1.2749)	— —
Valve	Valve clearance	IN EX	0.13–0.17 (0.005–0.007) 0.15–0.19 (0.006–0.008)	— —
	Valve stem O.D.	IN EX	6.58–6.59 (0.2591–0.2595) 6.55–6.56 (0.2579–0.2583)	6.55 (0.2579) 6.52 (0.2567)
	Stem-to-guide clearance	IN EX	0.02–0.05 (0.001–0.002) 0.05–0.08 (0.002–0.003)	0.08 (0.003) 0.12 (0.005)
	Stem installed height	IN EX	45.545–46.015 (1.7931–1.8116) 44.735–45.205 (1.7612–1.7797)	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	IN EX	47.49 (1.8697) 46.89 (1.8461)	46.46 (1.8291) 45.93 (1.8083)
	Squareness	IN/EX	—	1.66/1.64 (0.065/0.065)
Valve guide	I.D.	IN and EX	6.61–6.63 (0.2602–0.2610)	6.55 (0.2579)

5. Engine/Engine Block

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface 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	44.976—45.000 (1.7707—1.7718) 0.005 (0.0002) max. 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 No. 1, 2, 4 and 5 journals No. 3 journal Rod bearing-to-journal oil clearance	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) 0.05 (0.002)

5. Engine/Engine Lubrication

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (U.S. qt., Imp. qt)	SOHC DOHC	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 4.3 (4.5, 3.8) After engine 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 DOHC	44 ℓ (11.6 U.S. gal., 9.7 Imp. gal.) 6,250 min ⁻¹ (rpm) 67 ℓ (17.7 U.S. gal., 14.7 Imp. gal.) 6,750 min ⁻¹ (rpm)
	Inner-to-outer rotor radial clearance Pump body-to-rotor radial clearance Pump body-to-rotor side clearance		0.14 (0.006) 0.10—0.175 (0.004—0.007) 0.03—0.08 (0.001—0.003)
Relief valve	Pressure setting 80°C (176°F)	Idle SOHC DOHC 3,000 min ⁻¹ (rpm) SOHC DOHC	167 kPa (1.7 kg/cm ² , 24 psi) min. 137 kPa (1.4 kg/cm ² , 20 psi) min. 451 kPa (4.6 kg/cm ² , 65 psi) 470 kPa (4.8 kg/cm ² , 68 psi)

5. Engine/Cooling

	MEASUREMENT	STANDARD (NEW)
Radiator	Capacity (incl. heater) ℓ (U.S. qt., Imp. qt.) (Includes reservoir tank 0.4 (0.42, 0.35))	DOHC 4.5 (4.8, 4.0) SOHC 4.4 (4.7, 3.9)
Radiator cap	Pressure cap opening pressure	74—103 kPa (0.75—1.05 kg/cm ² , 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 min ⁻¹ (rpm)
Cooling fan	Fan-to-core clearance Thermostat "ON" temperature Thermostat "OFF" temperature	28.0 (1.10) 88.5°—91.5°C (191°—197°F) 83.5°—86.5°C (182°—188°F)

(cont'd)

Standards and Service Limits (cont'd)

6. Fuel and Emission

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

7. Clutch

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	213 (8.39) to floor 140-150 (5.5-5.9) 15-20 (0.59-0.79) 70 (2.76) min. to floor	— — — —
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth Surface runout Thickness	1.3 (0.05) min. 0.8 (0.03) max. 8.1-8.8 (0.32-0.35)	0.2 (0.008) 1.0 (0.04) 5.7 (0.224)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance	31.00-31.15 (1.220-1.226) 0.05-0.239 (0.002-0.009)	31.2 (1.228) 0.28 (0.011)
Clutch cover	Unevenness 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 Thickness 3rd 4th 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 gear	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 area Diameter of low gear contact area Runout	0.17-0.38 (0.0067-0.0150) 30.000-30.015 (1.1811-1.817) 24.980-24.993 (0.9835-0.9840) 35.984-36.000 (1.4167-1.4173) 0.02 (0.0008) max.	0.53 (0.021) 29.95 (1.179) 24.93 (0.981) 35.93 (1.415) 0.05 (0.002)
Countershaft low gear	I.D. End play Thickness	41.009-44.025 (1.6145-1.6152) 0.03-0.10 (0.0012-0.0039) 29.41-29.44 (1.1579-1.1591)	41.07 (1.617) 0.22 (0.009) 29.36 (1.156)
Countershaft second gear	I.D. End play Thickness	44.009-44.025 (1.7326-1.7333) 0.03-0.11 (0.0012-0.0043) 29.92-29.97 (1.1780-1.1799)	44.07 (1.735) 0.23 (0.009) 29.85 (1.175)

3. Manual Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Spacer collar (Countershaft second gear)	I.D. O.D. Length	32.975–32.985 (1.2982–1.2986) 38.989–39.000 (1.5350–1.5354) 30.03–30.06 (1.1823–1.1835)	33.03 (1.300) 38.93 (1.533) 30.01 (1.181)
Spacer collar (Mainshaft fourth and fifth gears)	I.D. O.D. Length	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 pawl 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 diameter Carrier-to-pinionshaft clearance Driveshaft bore diameter Carrier-to-driveshaft clearance Carrier-to-intermediate shaft clearance Side clearance	18.000–18.018 (0.7087–0.7094) 0.017–0.047 (0.007–0.0019) 26.025–26.045 (1.0246–0.0413) 0.045–0.086 (0.0017–0.0034) 0.075–0.111 (0.0030–0.0044) 0.15 max.	— 0.095 (0.004) — 0.14 (0.006) 0.16 (0.006)
Differential pinion gear	Backlash pinion gear bore diameter Pinion gear to pinionshaft clearance	0.05–0.15 (0.002–0.006) 18.042–18.066 (0.7103–0.7113) 0.059–0.095 (0.0023–0.0037)	Selection with 7 type of washers — 0.15 (0.006)

10. Driveshaft

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

not as installed

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft) with P/S	0.49–1.67 (0.05–0.17, 0.36–1.27) 0.098 (0.01, 0.072)	
Power steering	The angle of rack-guide-nut loosened locked position with P/S Pump pressure with valve closed (Oil temp./ speed: 40°C (104°F) min/idle. Do not run for more than 5 seconds) kPa (kg/cm², psi)	40° ± 60° 20°–25° 7.845–8.826 (80–90, 1.138–1.280)	
Power steering fluid	Fluid capacity Reservoir At change	0.4 l (0.42 U.S. qt., 0.35 Imp. qt.) approx 1.2 l (1.3 U.S. qt., 1.1 Imp. qt.)	
Power steering belt	Deflection midway between pulleys/load	9–12 (0.35–0.47)/98N (10 kg, 22 lb) for used belt 7–10 (0.28–0.39)/98N (10 kg, 22 lb) after replacement of belt	
Rack end	Floating torque N·m (kg-m, lb-ft)	0.49–2.94 (0.05–0.3, 0.36–1.27)	

Standard and Service Limits (cont'd)

12. Suspension

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

Δ: Maximum 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	—
	Free play	LHD	153 (6.0) from floor 1—5 (0.04—0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance		0—0.4 (0—0.016)	—
Disc brake	Disc thickness	Front	19.0 (0.75)	17.0 (0.67)
		Rear	10.0 (0.39)	8.0 (0.32)
	Disc runout		—	0.1 (0.004)
	Disc parallelism		—	0.015 (0.006)
	Pad thickness	Front	10.0 (0.39)	1.6 (0.06)
		Rear	8.0 (0.32)	1.6 (0.06)
Brake Drum	I.D.		180 (7.09)	181 (7.13)
	Lining thickness		4.5 (0.18)	2.0 (0.08)
Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kPa (kg/cm², psi)
		0	20 (44)	1.362 (13.9, 198)
		300	20 (44)	4.508 (46.0, 654)
		500	20 (44)	6.605 (67.4, 960)

16. Electrical

Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)			
Ignition coil	Rated voltage	12 Volts			
	Primary winding resistance	0.378—0.462 ohms			
	Secondary winding resistance	9,440—14,160 ohms			
Ignition wire	Resistance	25,000 ohms max.			
Spark plug	Type	See Section 16			
	Gap	1.0—1.1 (0.039—0.043)			
Ignition timing	At idling SOHC DOHC	18° ± 2° (Red) BTDC 16° ± 2° (Red) BTDC			
Battery	Lighting capacity (20-hour ratio) Starting capacity (5-second ratio)	40, 45, 47 Ampere Hours 8.6 V min. at 300 Ampere draw			
Alternator	Output	13.5V / 60A			
	MEASUREMENT	STANDARD (NEW) SERVICE LIMIT			
	Coil resistance (rotor)	2.8—3.0 ohm ±0.1 ohm			
	Slip ring O.D.	32.5 (1.28) 32.1 (1.26)			
	Brush length	15.5 (0.61) 5.3 (0.21)			
	Brush Spring tension	300—500g (10.6—17.6 oz) —			
Starting motor	ND 1.0 kw, 1.2 kw		MITSUBA 1.0 kw, 1.4 kw		
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth	0.5—0.8 (0.020—0.031)	0.2 (0.008)	0.4—0.5 (0.016—0.020)	0.15 (0.006)
	Commutator	0—0.02 (0.008)	0.05 (0.002)	0—0.02 (0.0008)	0.05 (0.002)
	Commutator O.D.	29.9—30.0 (1.18)	29.0 (1.14)	28.0—28.1 (1.10—1.11)	27.5 (1.08)
	Brush length	12.5—13.5 (0.49—0.53)	8.5 (0.33)	14.3—14.7 (0.56—0.58)	9.3 (0.37)
	Spring Pressure (new)	18.1—2.89 N (1.85—2.4 kg, 4.1—5.4 lb)	—	20.1—26.5 N (2.05—2.7 kg, 4.5—6.0 lb)	—

Design Specifications

	ITEMS	METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	3,755 mm	147.8 in.	
	Overall Width	3,795 mm	149.4 in.	
	Overall Height	1,675 mm	65.9 in.	KQ, KY
	Wheel Base	1,270 mm	50.0 in.	Ex. KQ, KY
	Track, Front/Rear	1,280 mm	50.4 in.	KY
		2,300 mm	90.6 in.	
		1,450/1,456 mm	57.1/57.3 in.	Ex. KQ, KY
		1,445/1,455 mm	56.9/57.3 in.	KY
WEIGHTS	Ground Clearance	1,450/1,455 mm	57.1/57.3 in.	KQ
		160 mm	6.3 in.	Without Catalytic Converter
	Overhang, Front/Rear	150 mm	5.9 in.	With Catalytic Converter
		765/690 mm	30.1/27.2 in.	} Includes bumper
	With bumper guard	805/690 mm	31.7/27.2 in.	
	Engine Weight (Wet)			
	SOHC	107 kg	236 lb.	
	DOHC	113 kg	249 lb.	
ENGINE	Curb Weight	825 kg	2,040 lb.	KX
	DOHC	909 kg	2,004 lb.	KY
		910 kg	2,007 lb.	KB
		905 kg	1,996 lb.	KF, KE
	SOHC	900 kg	1,985 lb.	KW
		895 kg	1,973 lb.	KS
		890 kg	1,962 lb.	KW
		900 kg	1,985 lb.	KG
	Weight Distribution (Front/Rear)	935 kg	2,017 lb.	KQ
	DOHC			
		575/350 kg	1,268/772 lb.	KX
		559/350 kg	1,232/772 lb.	KY
		560/350 kg	1,235/772 lb.	KB
		555/350 kg	1,224/772 lb.	KF, KE
	SOHC	550/350 kg	1,213/772 lb.	KW
		550/345 kg	1,213/761 lb.	KS
		545/345 kg	1,202/761 lb.	KW
		550/350 kg	1,213/772 lb.	KG
		585/350 kg	1,290/772 lb.	KQ
	Max. Permissible Weight (EC)	1,290 kg	2,844 lb.	Ex. KS
		1,140 kg	2,513 lb.	KS
	Maximum Loaded Vehicle Weight	1,370 kg	3,020 lb.	KY
	Carrying (Loading) Weight Capacity	45 kg	160 lb.	
ENGINE	Type	Water cooled 4-cycle S.O.H.C.		
	Cylinder arrangement	Water cooled 4-cycle D.O.H.C.		
	Bore and Stroke	4-cylinder in-line, transverse		
	Displacement	75 x 90 mm	2.95 x 3.54 in.	
	Compression Ratio	1,590 cm ³ (cc)	97 cu. in.	
	Without Catalytic Converter			
	With Catalytic Converter			
	Valve Train	9.1		
	Lubrication System	9.5		
	Fuel Required	4-valves per cylinder, single or dual overhead camshafts		
	DOHC with Catalytic Converter	Pressure fed		
	SOHC with Catalytic Converter			
	Without Catalytic Converter			
		Unleaded gasoline with 95 research octane number or higher		
		Unleaded gasoline with 91 research octane number or higher		
		Leaded gasoline with 97 research octane number or higher		

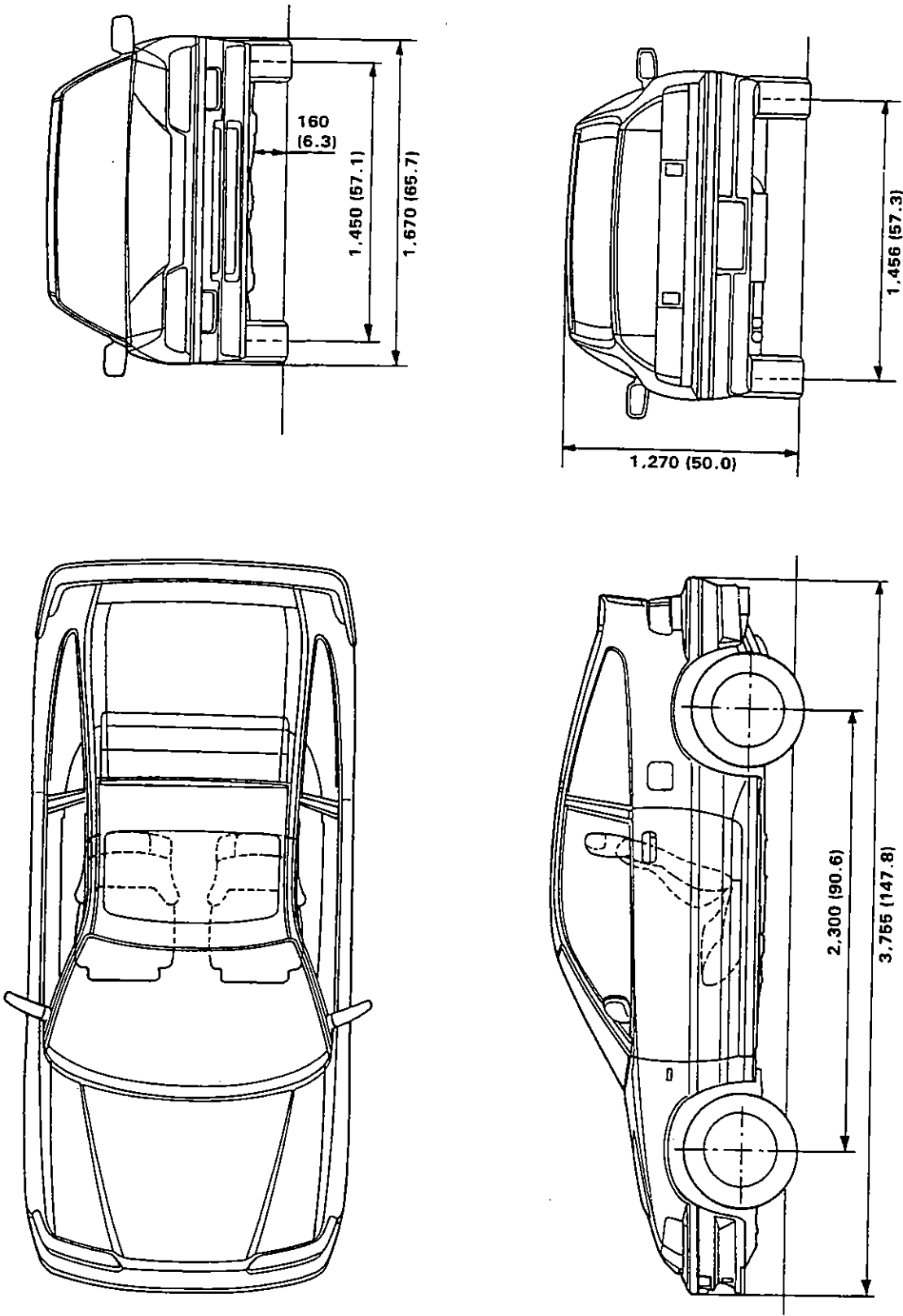
	ITEMS	METRIC	ENGLISH	NOTES
STARTER	Type 1.0 kW, 1.2 kW, 1.4kW	Gear reduction		
	Normal Output	1.0 kW, 1.2 kW, 1.4 kW		
	Normal Voltage	12V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weight	1.0 kW MITSUBA	3.4 kg	
	ND	3.85 kg	8.5 lb.	
	1.2 kW ND	3.85 kg	8.5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

Design Specifications

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

Body Specifications

unit: mm (in)



5

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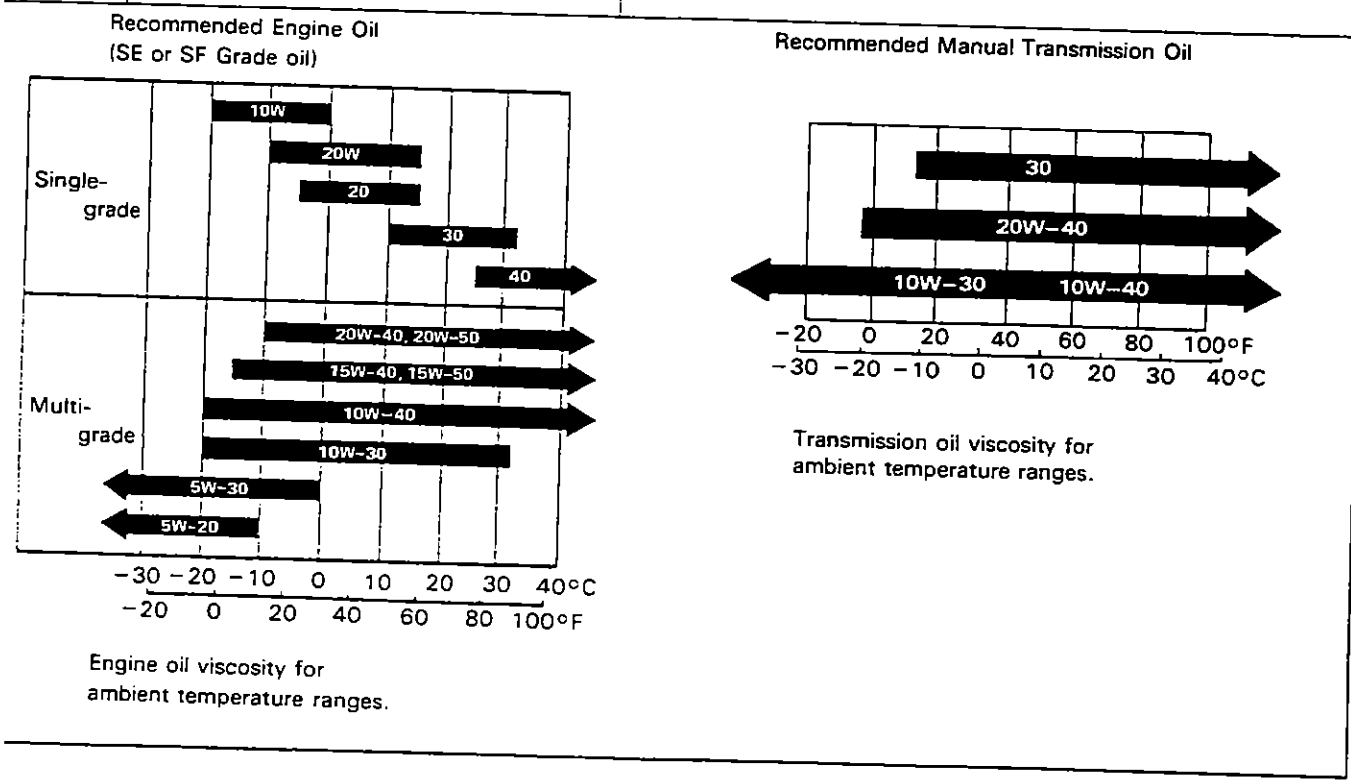
Maintenance

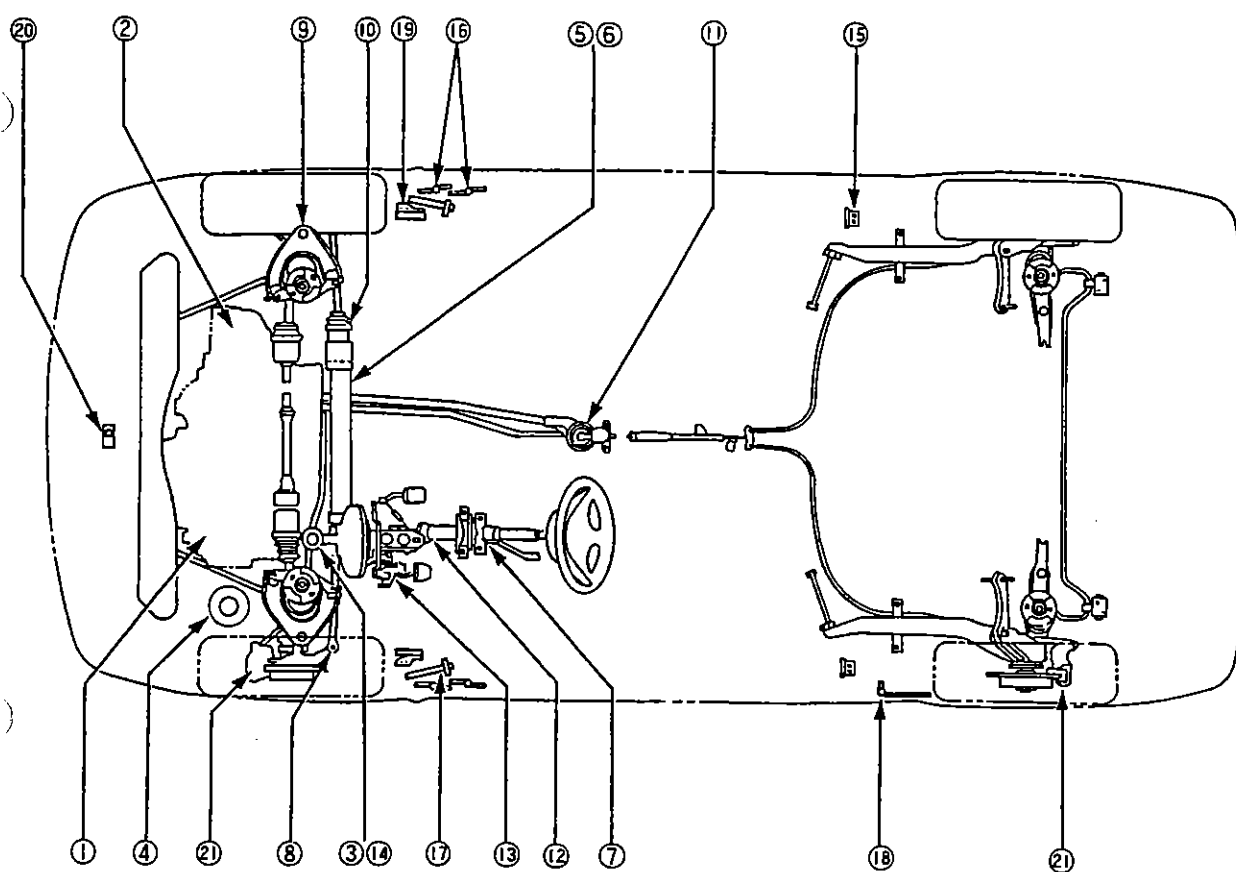
Lubrication Points.....	4-2
Maintenance Schedule	4-4



Lubrication Points

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





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	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**	
COOLING SYSTEM, HOSES AND CONNECTIONS			I		I	
AIR CLEANER ELEMENT (Viscous type)**			R		R	
AIR CLEANER ELEMENT (Dry type)**		R	R	R	R	R
FUEL FILTER			R		R	
TANK, FUEL LINE AND CONNECTIONS			I		I	
EVAPORATIVE EMISSION CONTROL SYSTEM**						I
IGNITION TIMING AND CONTROL SYSTEM			I		I	
SPARK PLUGS (For cars using unleaded gasoline)			R		R	
SPARK PLUGS (For cars using leaded gasoline)		R	R	R	R	R
DISTRIBUTOR CAP AND ROTOR			I		I	
IGNITION WIRING			I		I	
CRANKCASE EMISSION CONTROL SYSTEM			I		I	
BRAKE FLUID			R		R	
BRAKE HOSES AND LINES		I	I	I	I	I
FRONT BRAKE PADS		Inspect every 10,000 km (6,000 miles) or 6 months				
FRONT BRAKE DISCS AND CALIPERS		I	I	I	I	I
REAR BRAKE DISCS, CALIPERS AND PADS			I		I	
PARKING BRAKES			I		I	
CLUTCH RELEASE ARM TRAVEL		I	I		I	
EXHAUST PIPE AND MUFFLER		I	I	I	I	I
SUSPENSION MOUNTING BOLTS		I	I	I	I	I
FRONT WHEEL ALIGNMENT		I	I	I	I	I
STEERING OPERATION, TIE ROD ENDS, STEERING GEAR BOX AND BOOTS		I	I		I	
POWER STEERING SYSTEM**		I	I	I	I	I
POWER STEERING PUMP BELT**			I		I	
CATALYTIC CONVERTER HEAT SHIELD (Car equipped with catalytic converter)			I		I	

—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.

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

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

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

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

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

Engine

Engine Tune-up	5-1
Timing Belt	5-13
Cylinder Head Removal/Installation	5-27
Engine Removal/Installation	5-43
Exhaust Pipe and Muffler	5-53
Radiator	5-55



2

3

4

5

Engine Tune-up

Radiator Cap Testing	5-2
Coolant Level Inspection	5-2
Engine Oil Level Inspection	5-3
Engine Oil Replacement	5-3
Air Cleaner Inspection/ Replacement	5-4
Compression Pressure Inspection ...	5-4
Spark Plug Inspection	5-5
Drive Belt Inspection	5-6
Alternator Belt Adjustment	5-6
P/S Pump Belt Adjustment	5-7
A/C Compressor Belt Adjustment ...	5-7
Valve Clearance Adjustment.....	5-8
Idle Speed Inspection/Adjustment ...	5-10
Tailpipe Emissions Inspection	5-11
Ignition Timing Inspection and Setting	5-11

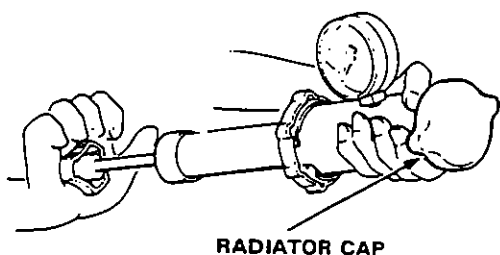


Engine Tune-up

Radiator Cap Testing

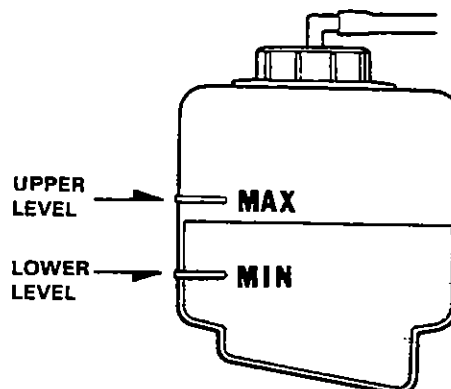
WARNING System is under high pressure when engine is hot. To avoid danger of releasing scalding coolant, remove cap only when engine is cool.

1. Remove the radiator cap, wet its seal with coolant, then 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.



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 additional rust inhibitors or antirust products; they may not be compatible with the recommended coolant.

Radiator Coolant Refill Capacity:

ℓ (U.S.qt., Imp.qt.)

1.6 ℓ DOHC	4.5 (4.7, 4.0)
1.6 ℓ SOHC	4.4 (4.6, 3.9)

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

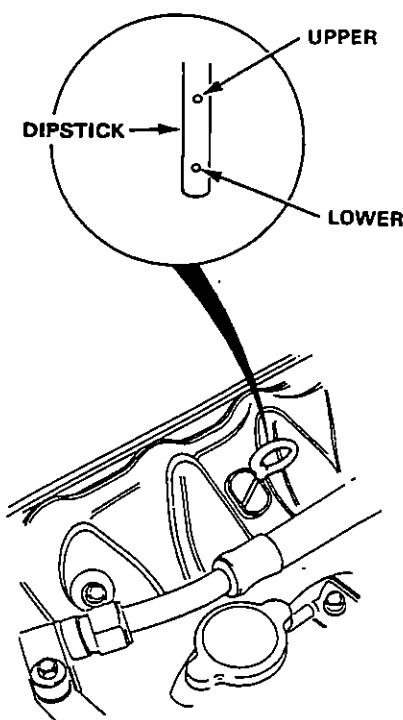
3. See page 5-59 for refilling.



Engine Oil Level Inspection

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

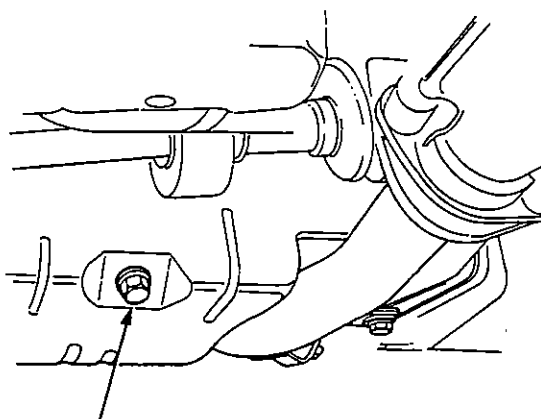
CAUTION: Insert the dipstick carefully to avoid bending it.



Engine Oil Replacement

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

NOTE: Remove the filler cap to speed draining.

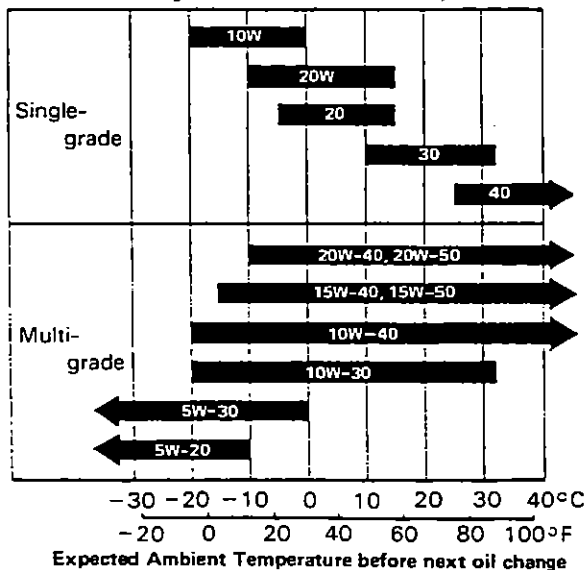


OIL PAN DRAIN PLUG
45 N·m (4.5 kg-m, 33 lb-ft)

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)



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

Engine Tune-up

Air Cleaner Element Inspection/Replacement

Inspection

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

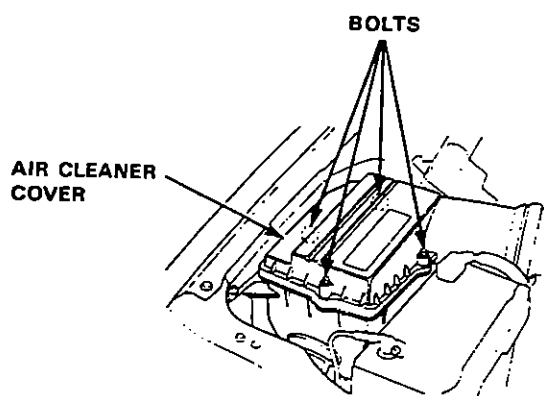
NOTE: No cleaning is necessary for the air cleaner element, because its filter takes in oil (: viscous type).

Replace: every two years

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

Replacement

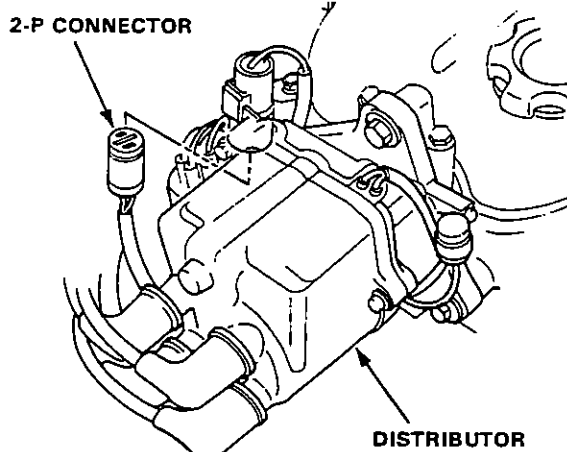
1. Remove the air cleaner cover.



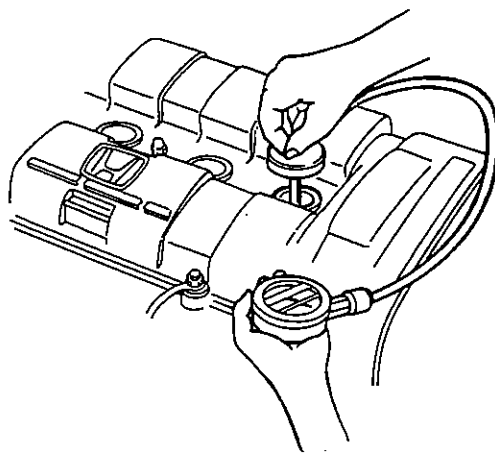
2. Replace the element, install the air cleaner cover and tighten the clip, nut or bolts securely.

Compression Pressure Inspection

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



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



Compression pressure:

SOHC Engine: 1,275 kPa (13.0 kg/cm², 185 psi)
at 250 min⁻¹ (rpm)

DOHC Engine: 1,324 kPa (13.5 kg/cm², 192 psi)
at 250 min⁻¹ (rpm)

Limit: 932 kPa (9.5 kg/cm², 135 psi)
at 250 min⁻¹ (rpm)

Difference between cylinders:
169 kPa (2.0 kg/cm², 28 psi)

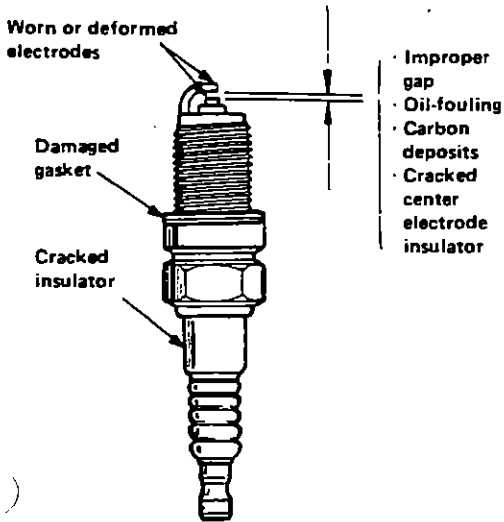
NOTE: Use a full charged battery.

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



Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



Burned or worn electrodes may be caused by:

- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

Fouled plug may be caused by:

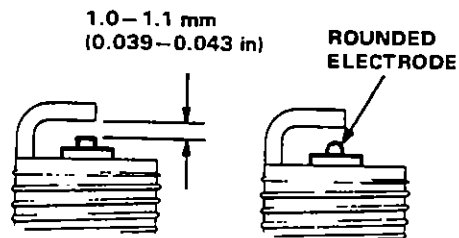
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

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

Spark Plug:

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

(*): 1.6 l DOHC only



3. Adjust the gap with a suitable gapping tool.

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

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

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

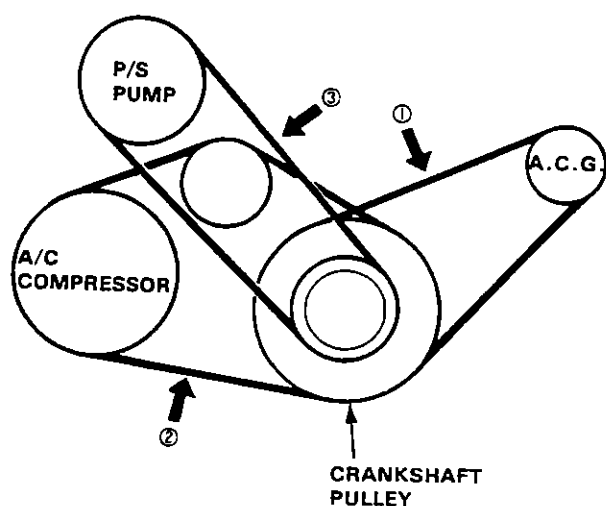
Engine Tune-up

Drive Belts Inspection

Drive Belts Deflection:

(When applying a force of 9.8 N (10 kg, 22 lbs))

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

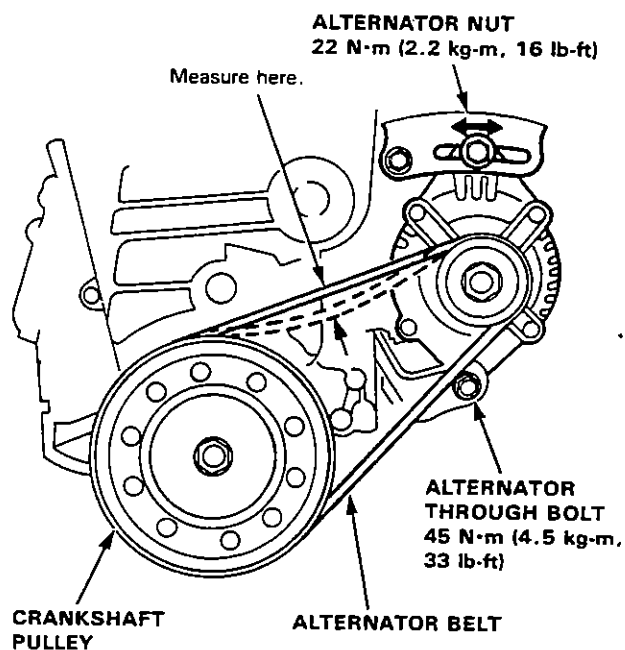


Alternator Belt Adjustment

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.

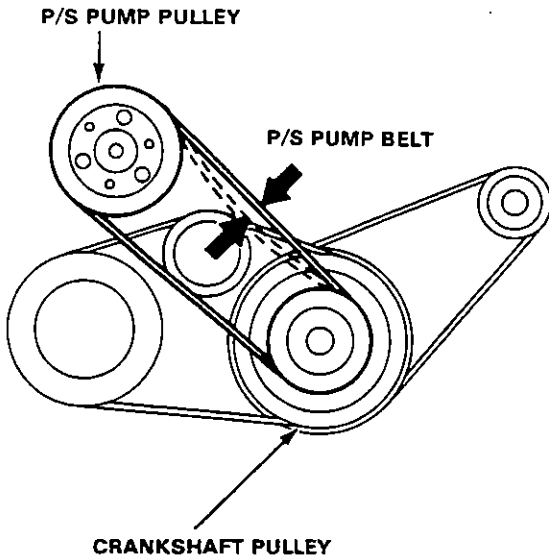


P/S Pump Belt Adjustment

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.

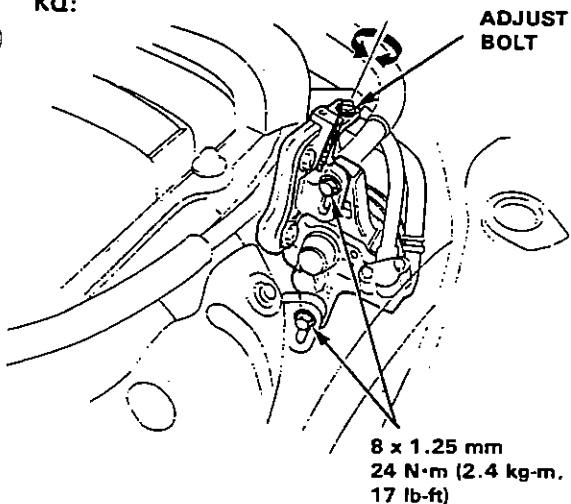
Deflection: 9–12 mm (0.35–0.47 in.)

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.

KQ:

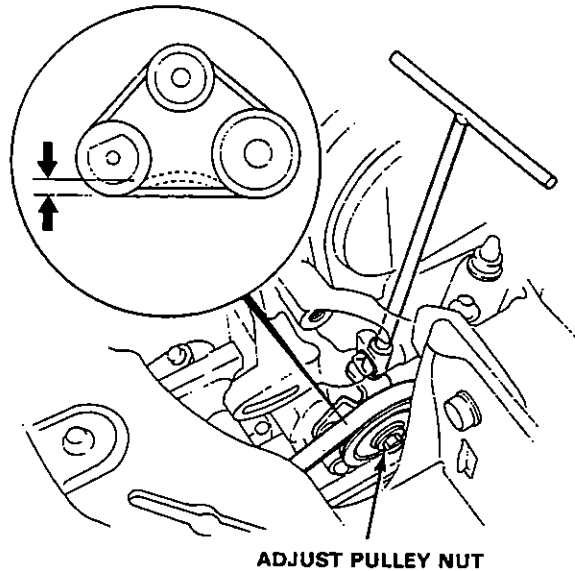


A/C Compressor Belt Adjustment

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.

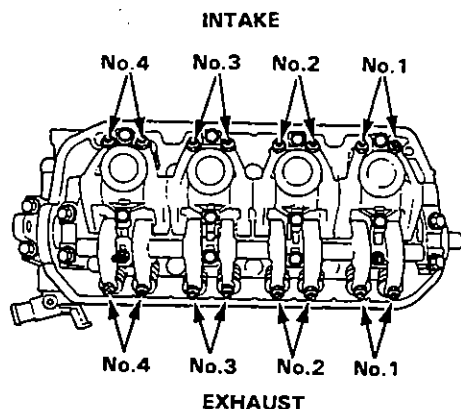
Engine Tune-up

Valve Clearance Adjustment

SOHC Engine:

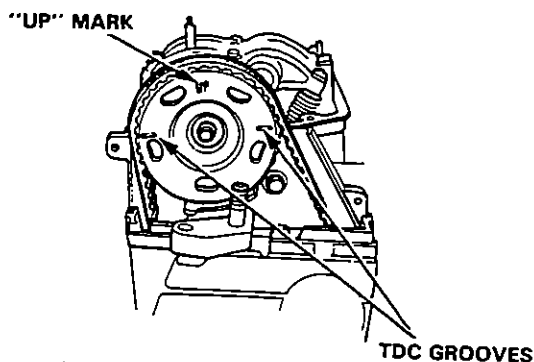
NOTE: Valves should be adjusted cold when the cylinder head temperature is less than 38°C (100°F). Adjustment is the same for intake and exhaust valves.

1. Remove valve cover.



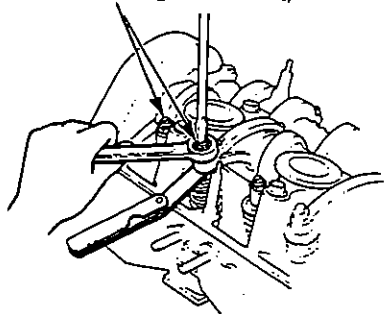
2. Set No. 1 piston at TDC. "UP" mark on the pulley should be at top, and TDC grooves on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

Number 1 piston at TDC



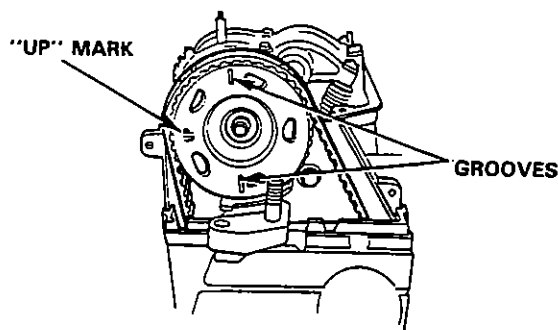
3. Adjust valves on No. 1 cylinder.
Intake: 0.17–0.22 mm (0.007–0.009 in.)
Exhaust: 0.22–0.27 mm (0.009–0.011 in.)
4. Loosen locknut and turn adjustment screw until feeler gauge slides back and forth with slight amount of drag.

LOCKNUTS 7 x 0.75 mm
14 N·m (1.4 kg-m, 10 lb-ft)



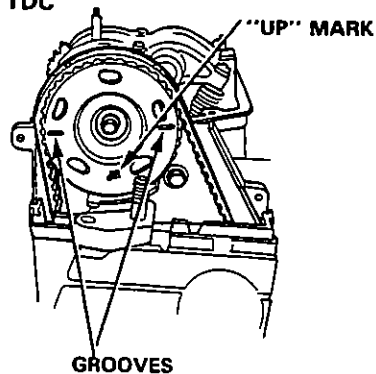
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



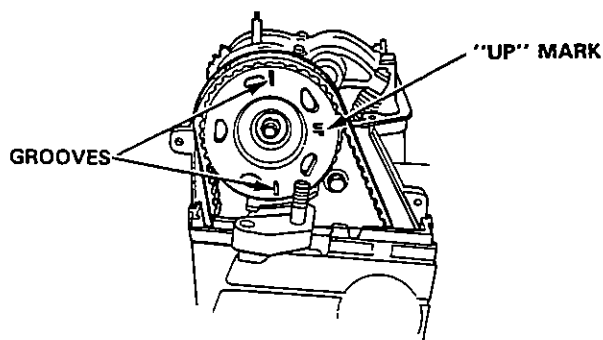
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No. 4 plug wire. Adjust valves on No. 4 cylinder.

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

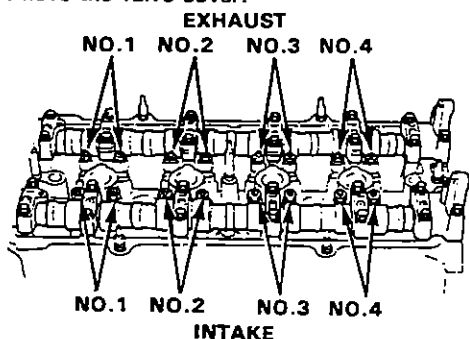




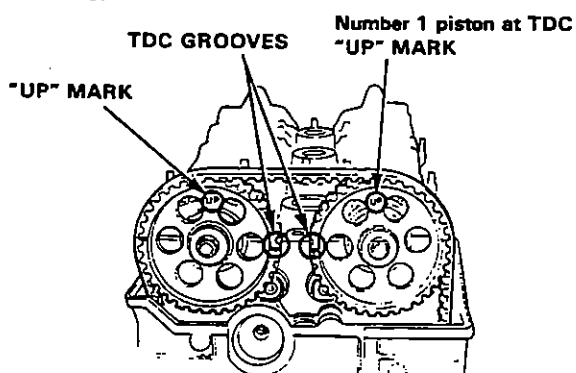
DOHC Engine:

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

1. Remove the valve cover.



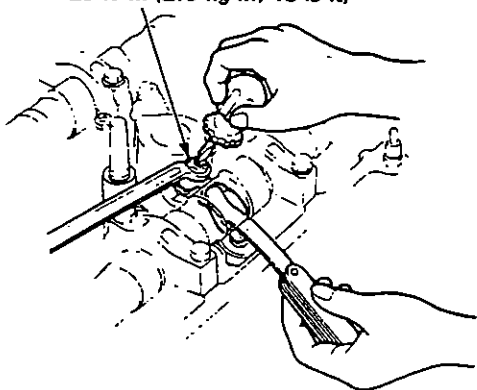
Set the No. 1 piston at TDC. "UP" marks in the pulleys should be at top, and the TDC grooves on back side of pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.



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.)

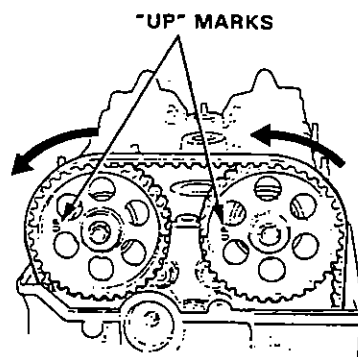
Loosen locknut and turn adjust screw until feeler gauge slides back and forth with slight amount of drag.

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



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

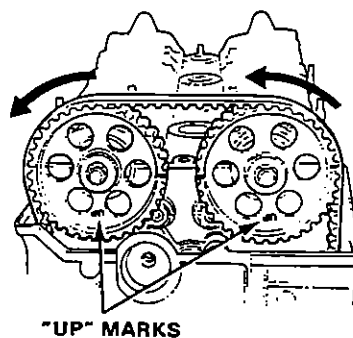
Number 3 piston at TDC



EXHAUST CAM PULLEY INTAKE CAM PULLEY

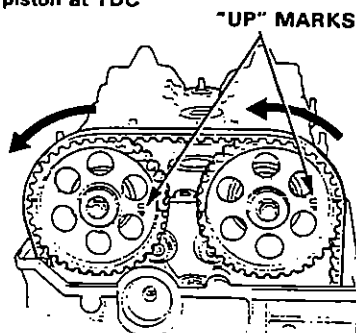
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both "UP" marks should be at bottom and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

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.

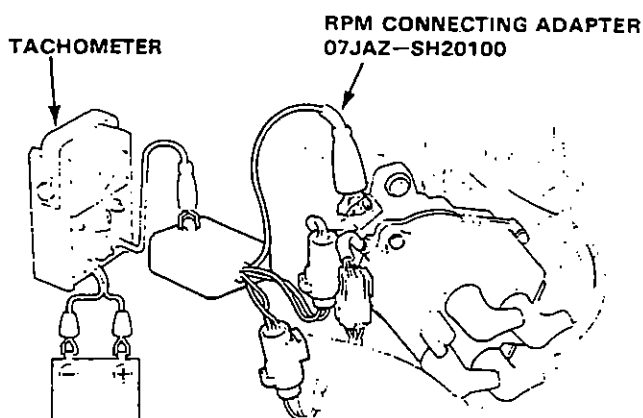
Number 2 piston at TDC



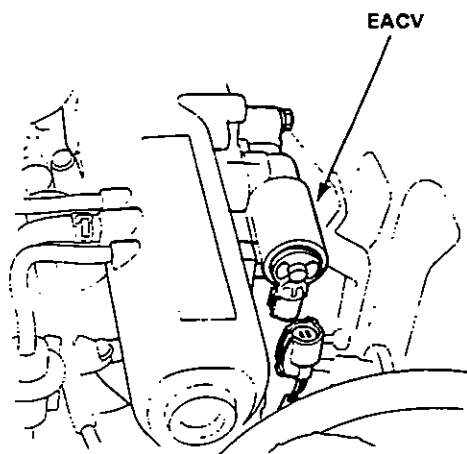
Engine Tune-up

Idle Speed Inspection/Adjustment

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



3. Disconnect the 2P connector from the EACV.



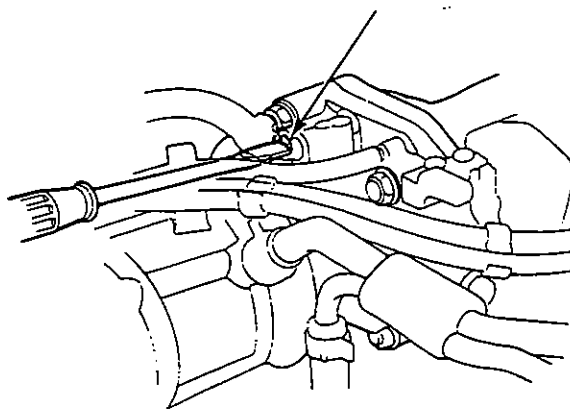
Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be: $650 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

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

IDLE ADJUSTING SCREW



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 operating for one minute, then check the idle speed.

KQ, SOHC with CATA	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
KY	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

KQ, SOHC with CATA	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
KY	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Idle Speed should be:

SOHC and KQ	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Engine Tune-up



Tailpipe Emissions Inspection

Inspection

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

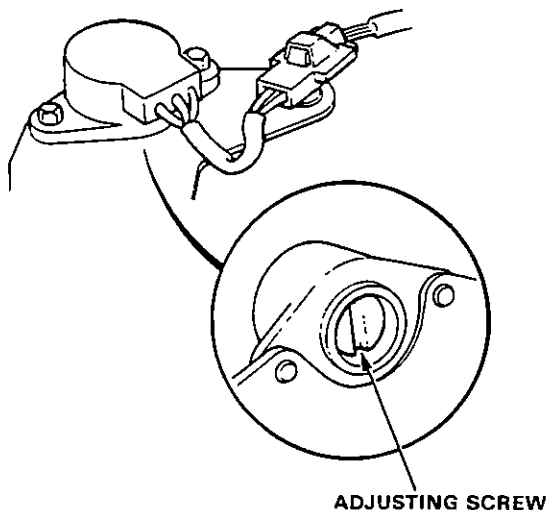
1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-69).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:

With CATA: 0.1% maximum

Without CATA: $1.0 \pm 1.0\%$

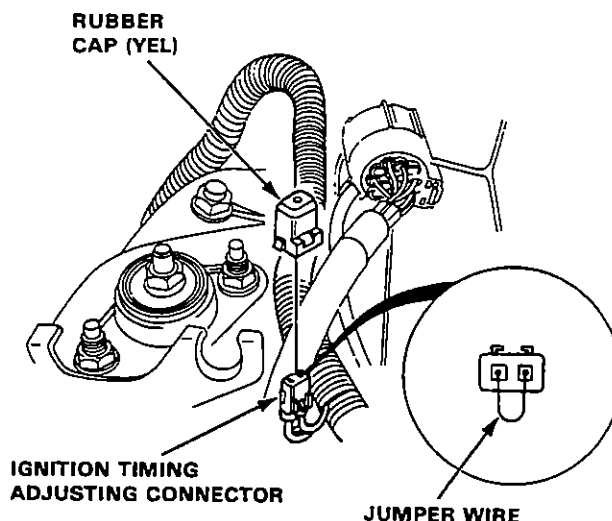
- If unable to obtain this reading:
On With CATA, see ECU troubleshooting (page 6-14 or 16).
On other models, adjust by turning the adjusting screw of the IMA sensor.



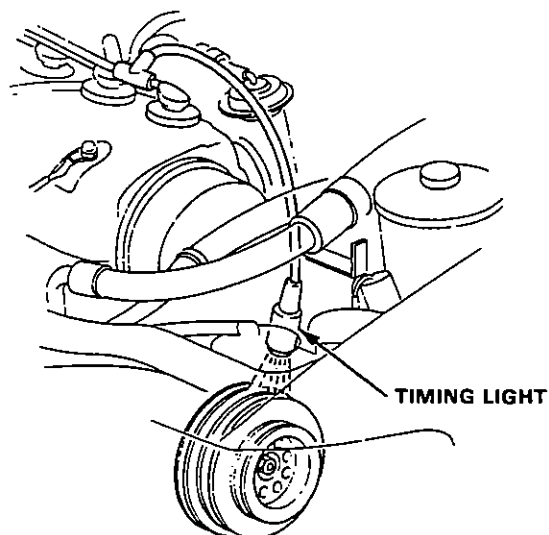
- If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

Ignition Timing Inspection and Setting

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



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



(cont'd)

Engine Tune-up

Ignition Timing Inspection and Setting (cont'd)

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

Ignition Timing

1.6 l SOHC (With CATA):

$18^{\circ} \pm 2^{\circ}$ BTDC (RED) at 750 ± 50 min⁻¹ (rpm) in neutral

1.6 l SOHC (Without CATA):

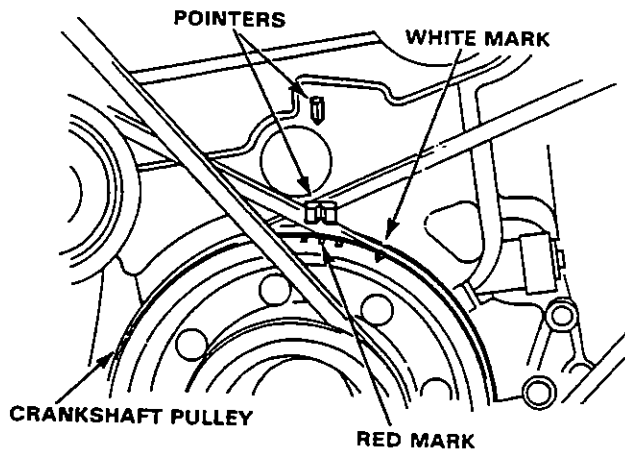
$18^{\circ} \pm 2^{\circ}$ BTDC (RED) at 780 ± 50 min⁻¹ (rpm) in neutral

1.6 l DOHC (EX. KQ model):

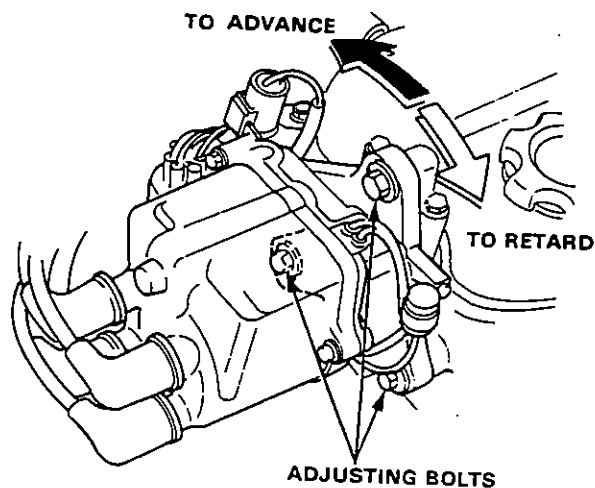
$16^{\circ} \pm 2^{\circ}$ BTDC (RED) at 800 ± 50 min⁻¹ (rpm) in neutral

1.6 l DOHC (KQ model):

$16^{\circ} \pm 2^{\circ}$ BTDC (RED) at 750 ± 50 min⁻¹ (rpm) in neutral



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



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

Timing Belt

SOHC	5-15
DOHC	5-21



Timing Belt

〈SOHC〉

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



Timing Belt

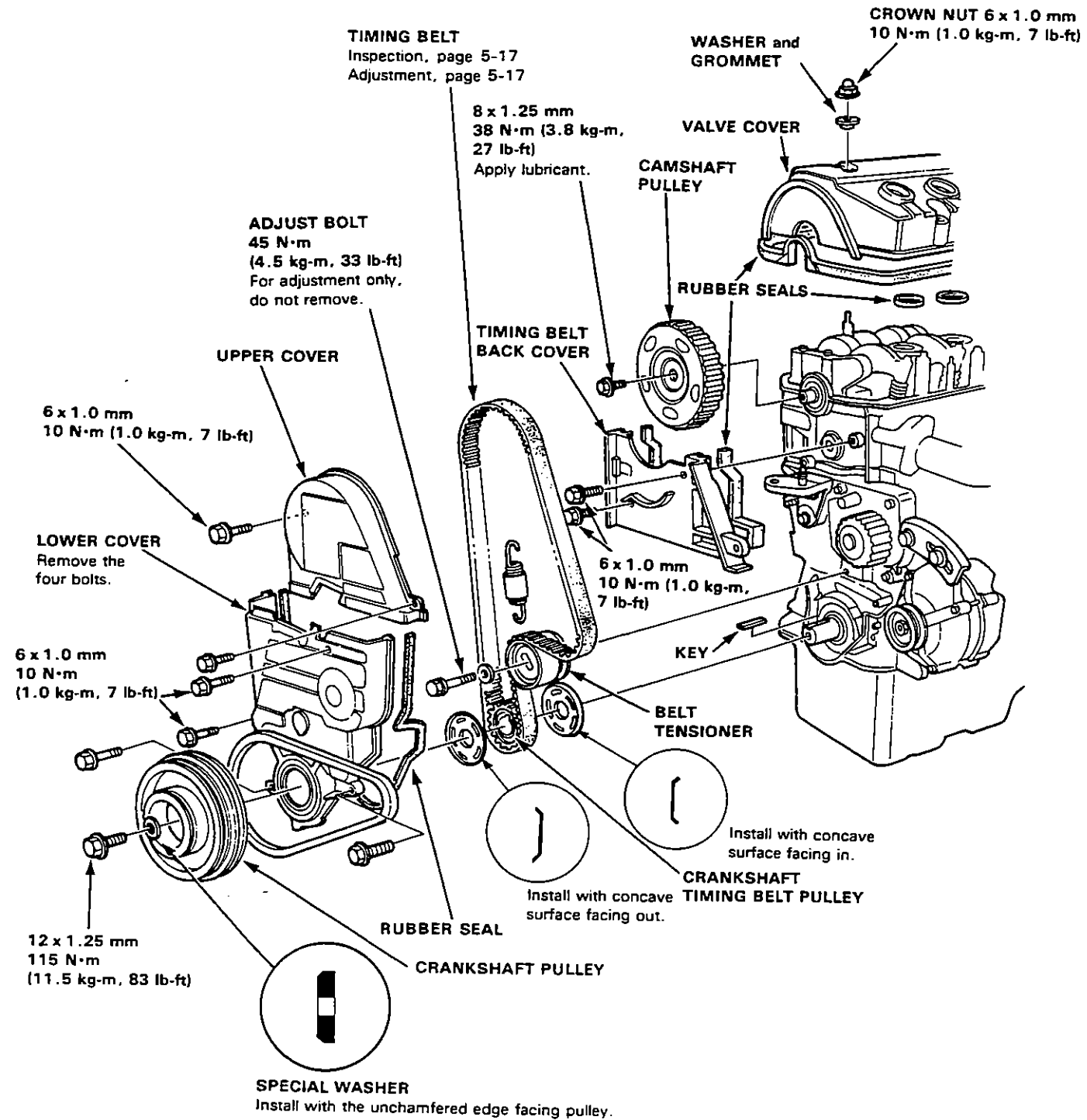
Illustrated Index

Timing Belt

Illustrated Index

NOTE:

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

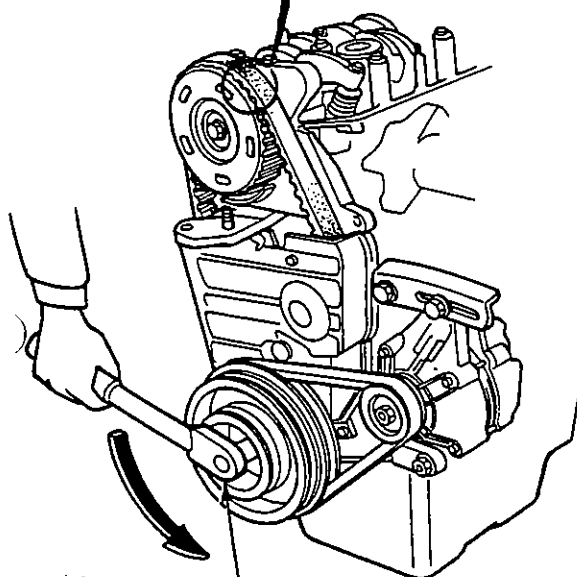
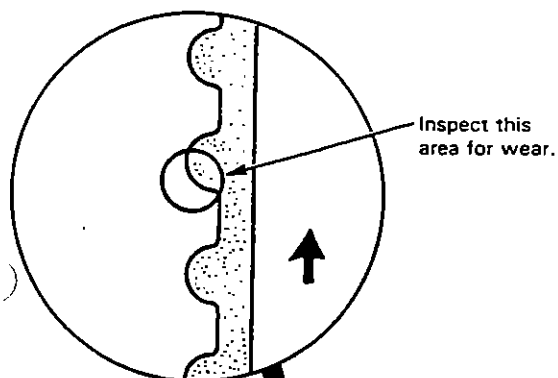




Inspection

NOTE:

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



Rotate pulley and inspect belt.

Tension Adjustment

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

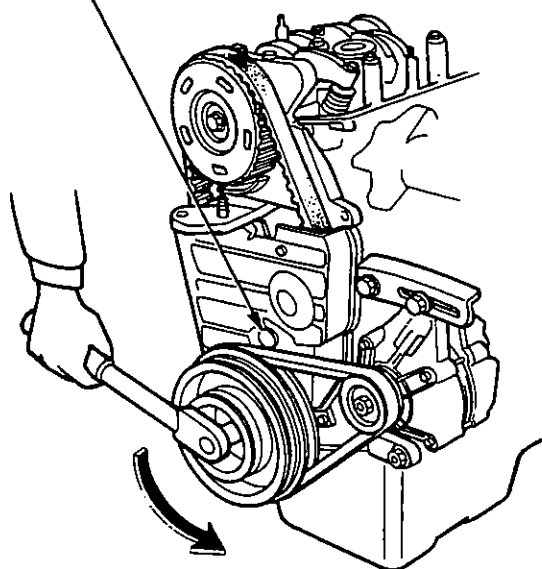
NOTE: Tensioner is spring-loaded to apply proper tension to the belt automatically after making the following adjustment:

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

ADJUST BOLT

45 N·m

(4.5 kg-m, 33 lb-ft)



Direction of Rotation.

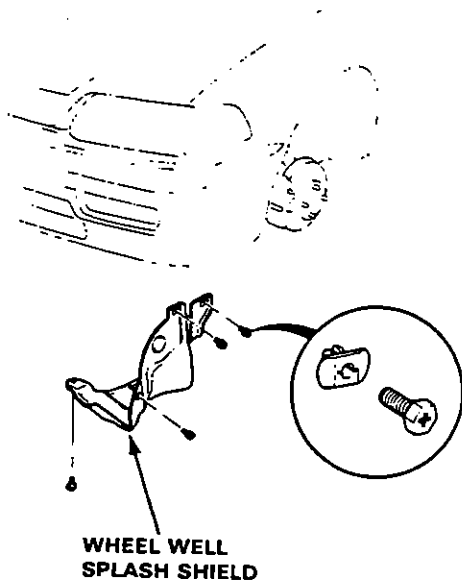
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

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

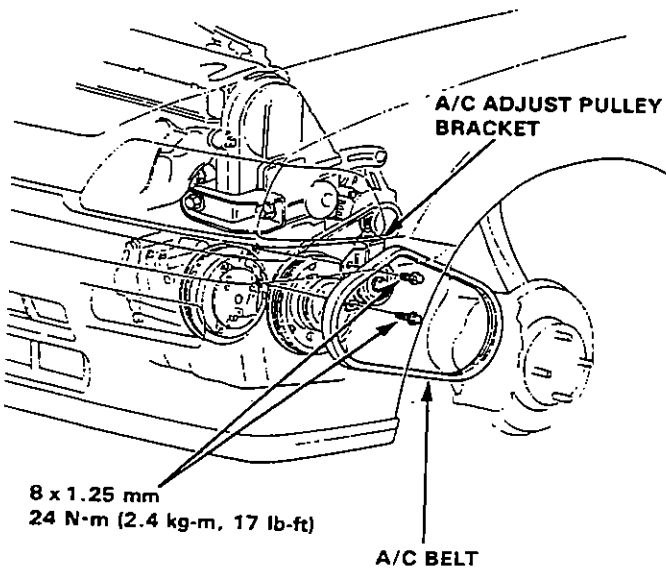
Timing Belt

Replacement

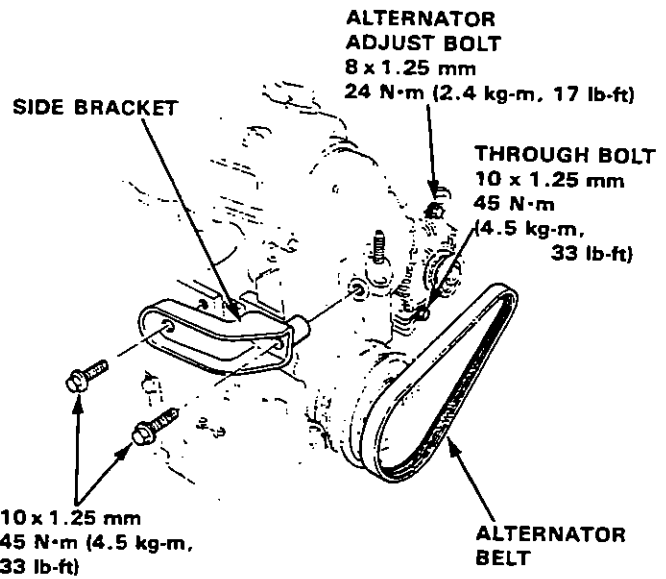
1. Remove the wheel well splash shield.



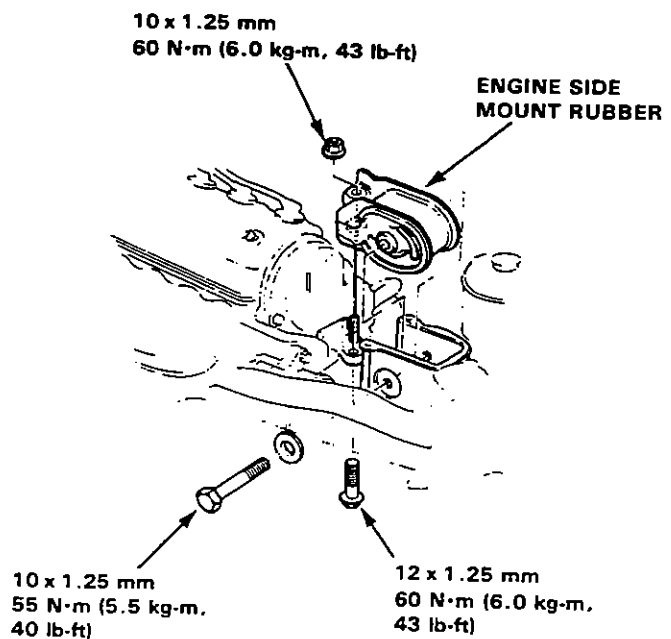
2. Remove the A/C compressor adjust pulley with bracket and the belt (with A/C).



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

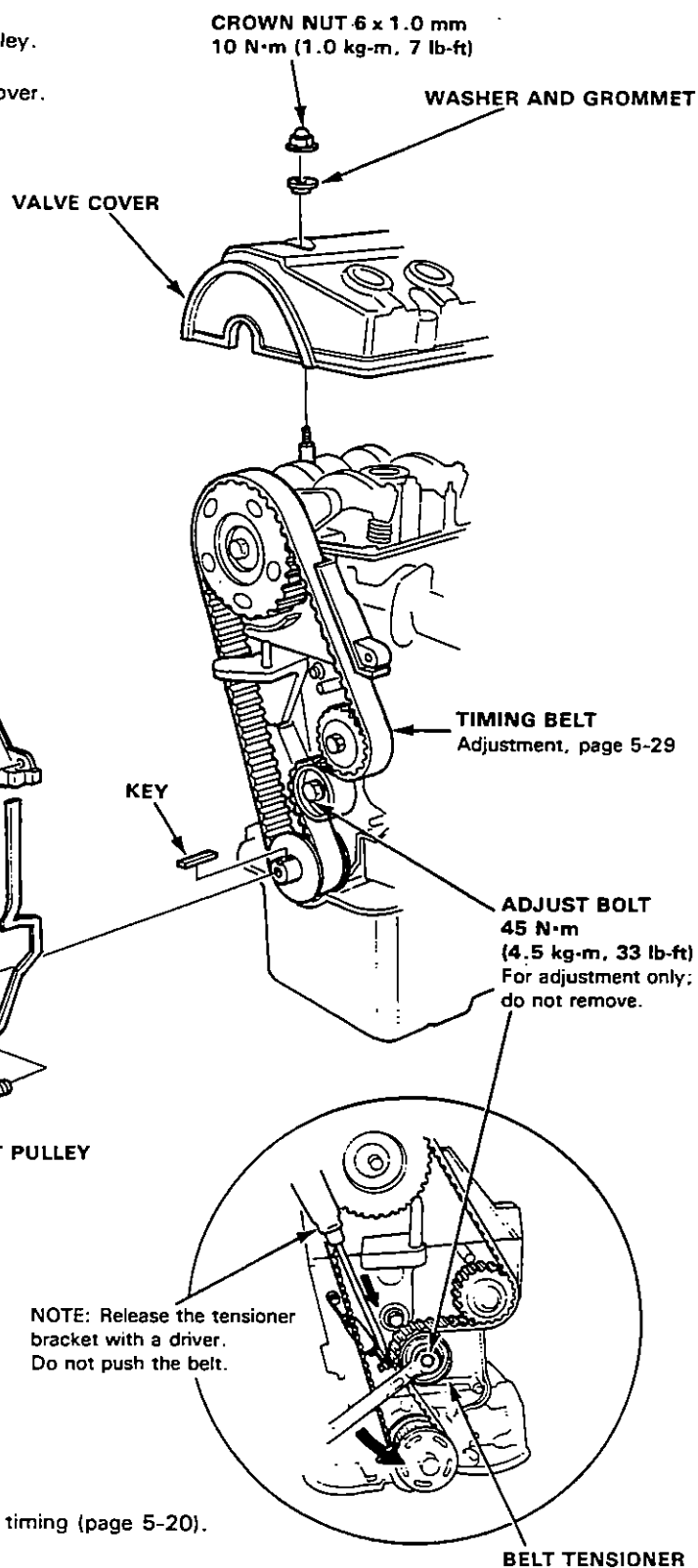


5. After installation, adjust the tension of each belt. See page 5-6 for alternator belt tension adjustment. See page 5-7 for A/C compressor belt tension adjustment.
6. Remove the engine support bolts and nut, then remove the side mount rubber.





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

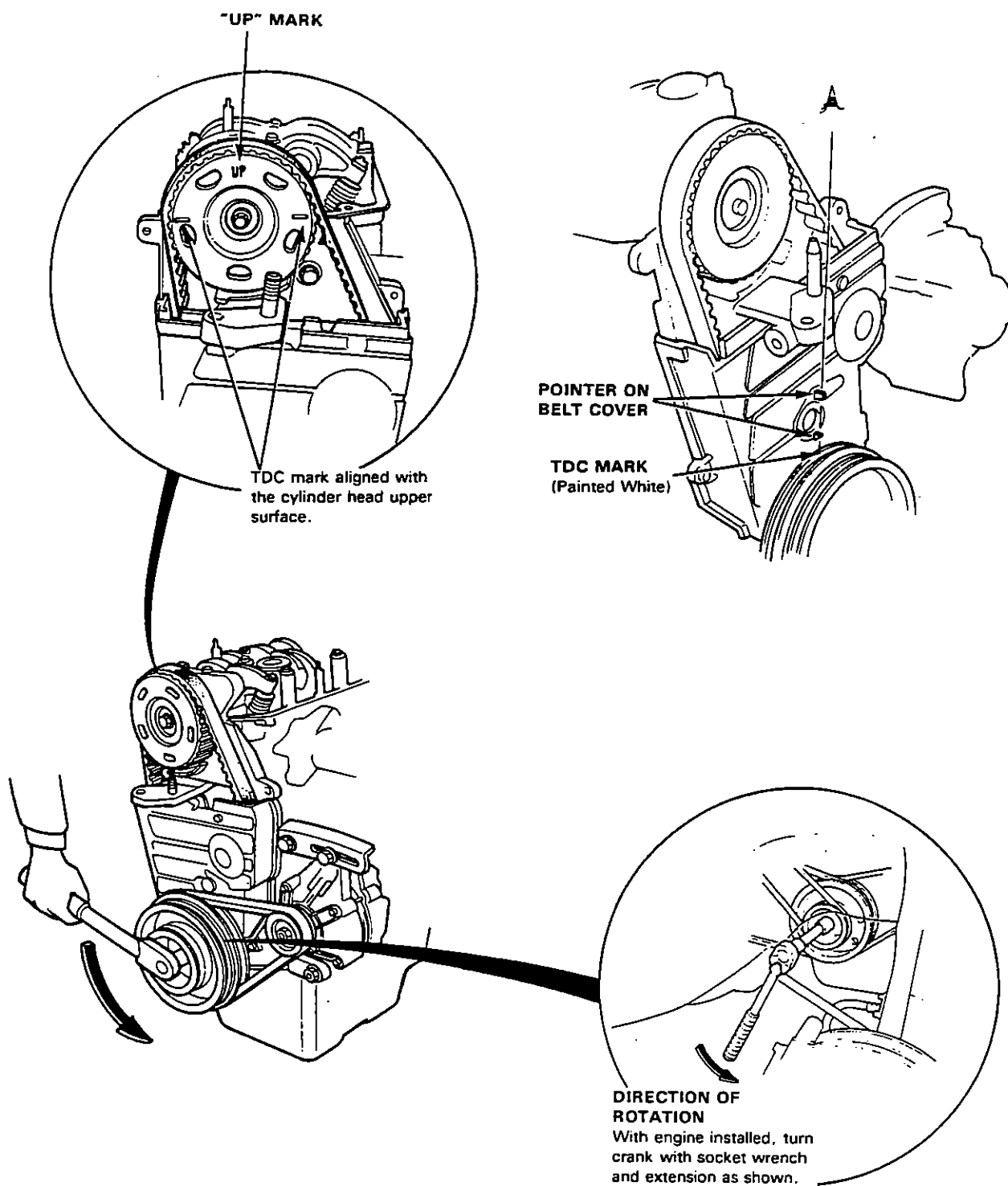


12. Install in the reverse order of removal; adjust the valve timing (page 5-20).
13. Carry out timing belt tension adjustment (page 5-17).

Timing Belt

- Positioning Crankshaft Before Installing Timing Belt

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



Timing Belt

〈DOHC〉

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

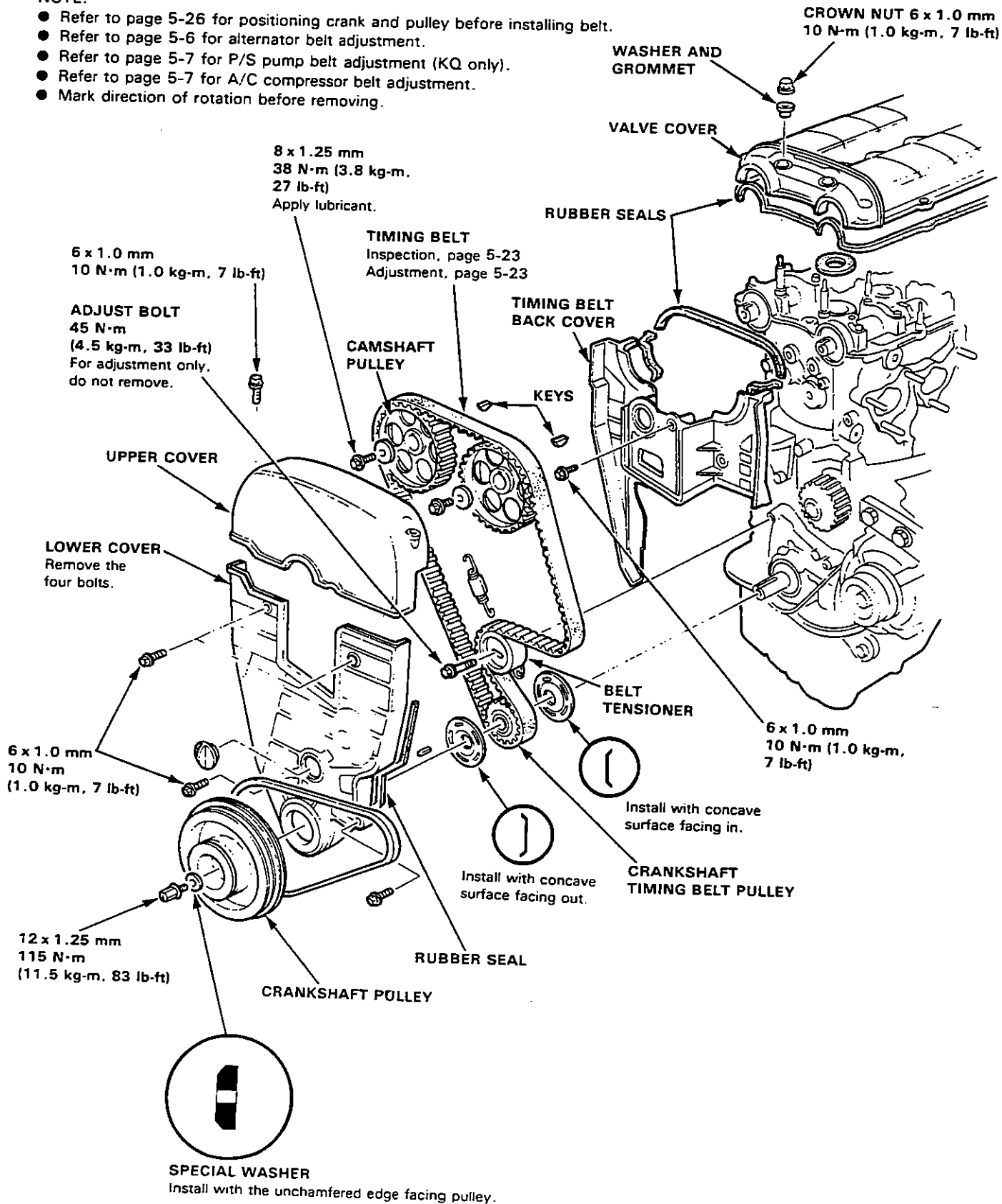


Timing Belt

Illustrated Index

NOTE:

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

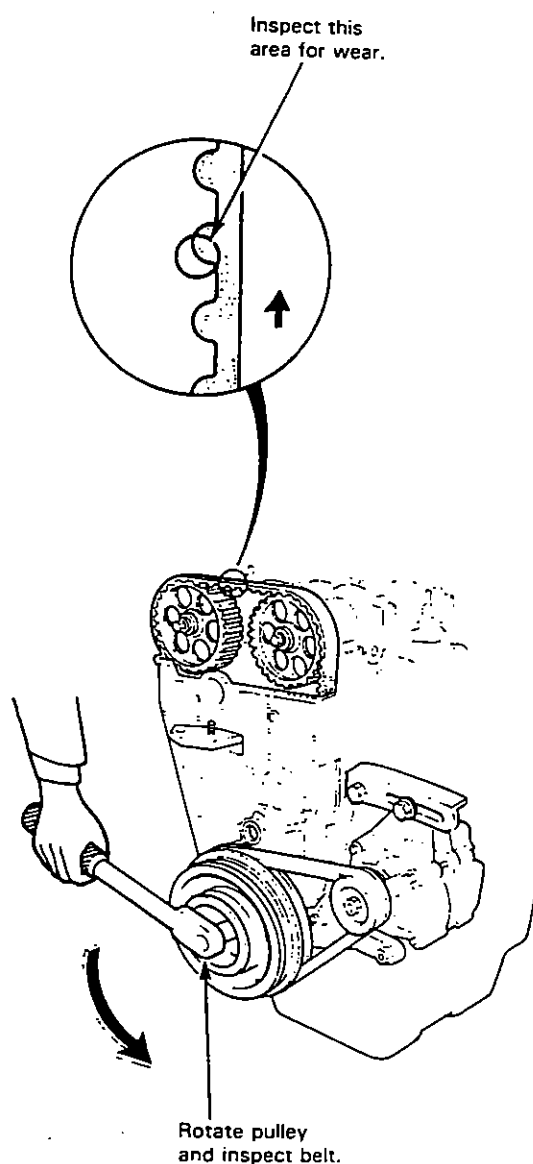




Inspection

NOTE:

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



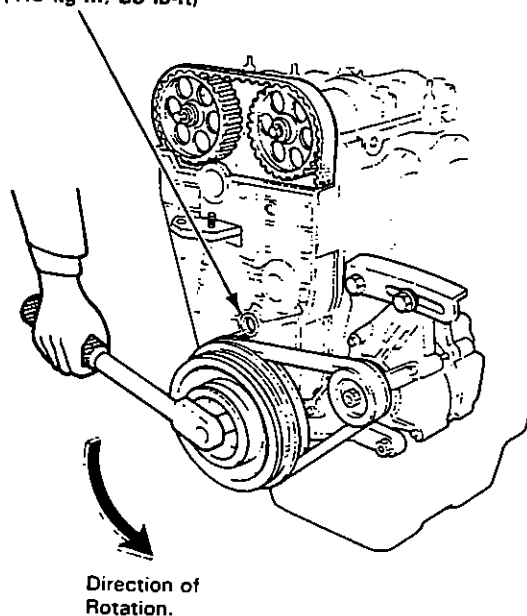
Tension Adjustment

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

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

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

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



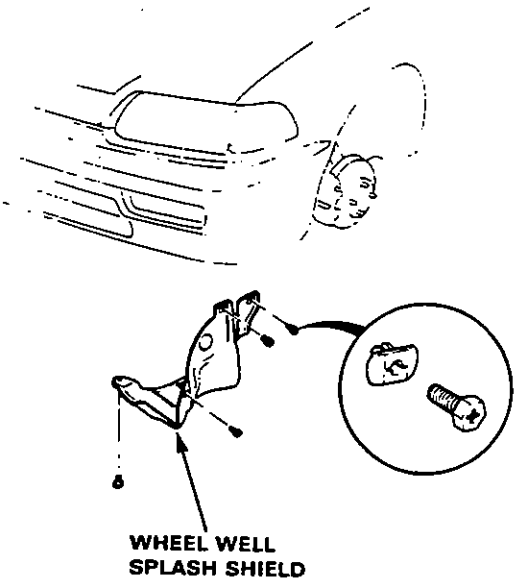
3. Rotate crankshaft counterclockwise 3-teeth on camshaft pulley to create tension on timing belt.
4. Tighten adjust bolt.
5. If pulley bolt broke loose while turning crank, retorque it to 115 N·m (11.5 kg-m, 83 lb-ft).

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

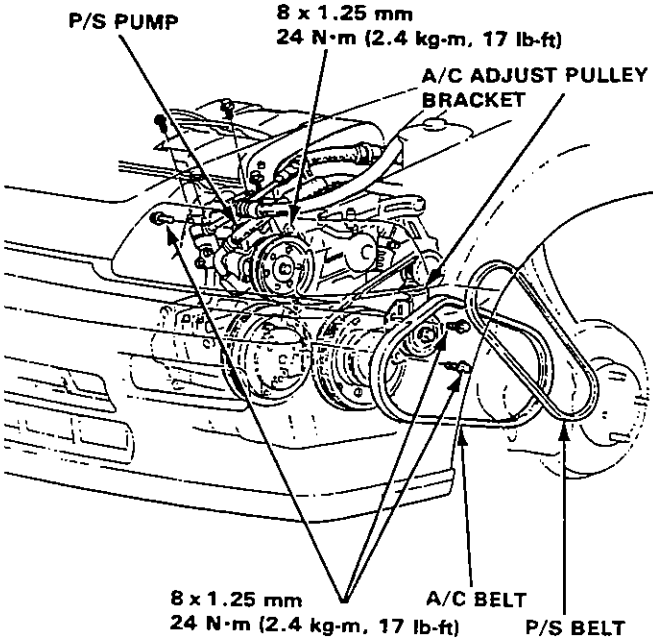
Timing Belt

-Replacement

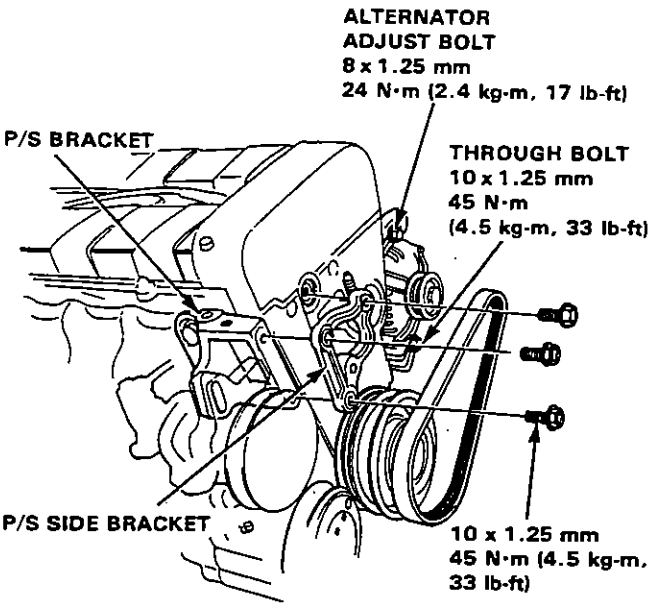
1. Remove the wheel well splash shield.



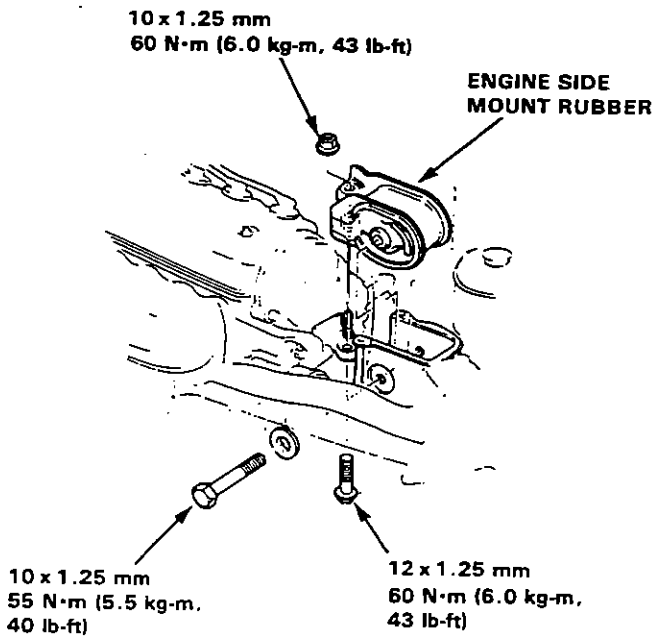
2. Remove the power steering (P/S) pump (KQ).
3. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.



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

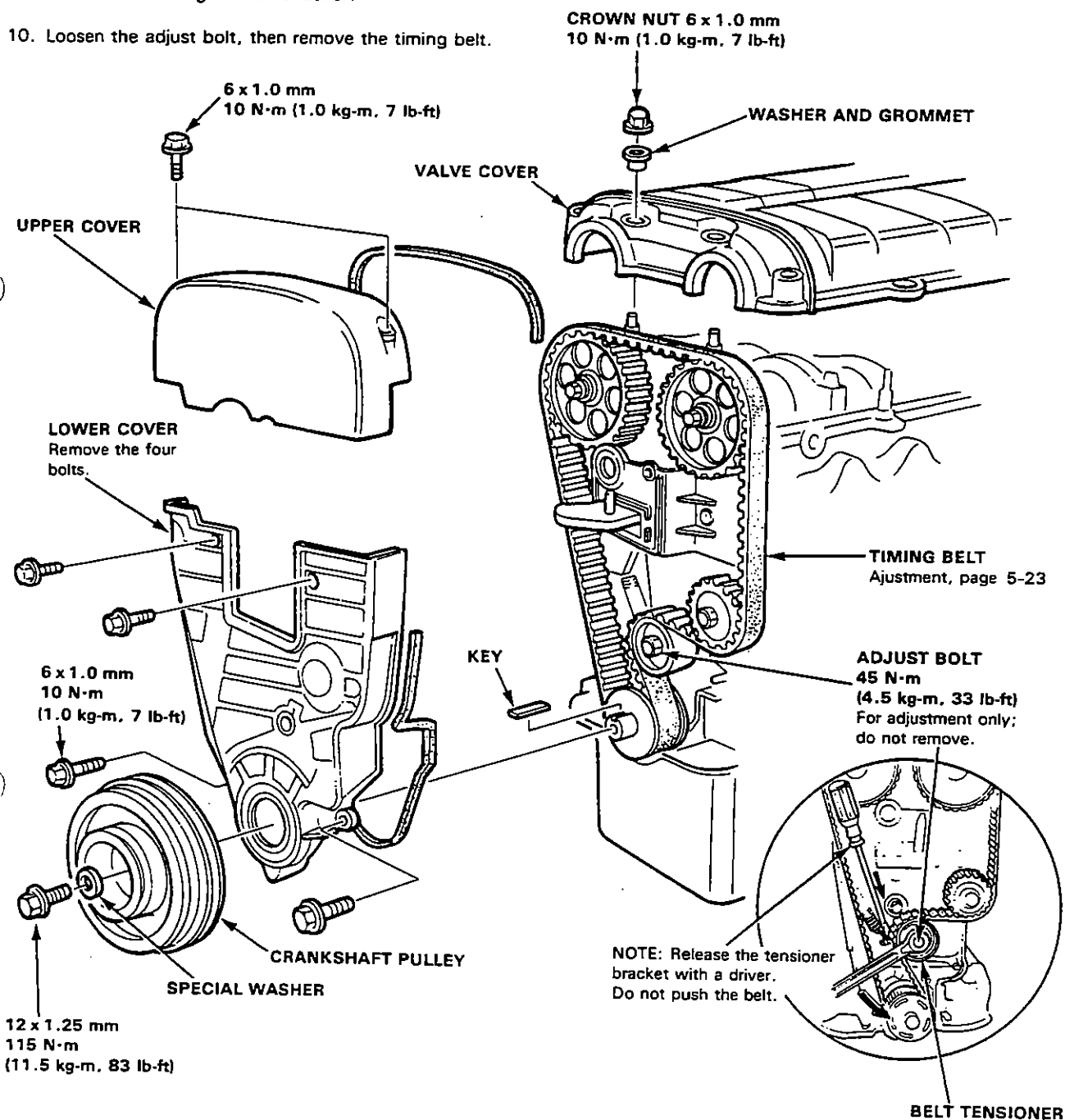


6. After installation, adjust the tension of each belt. See page 5-6 for alternator belt tension adjustment. See page 5-7 for A/C compressor belt tension adjustment. See page 5-7 for P/S pump belt tension adjustment.
7. Remove the engine support bolts and nut, then remove the side mount rubber.





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

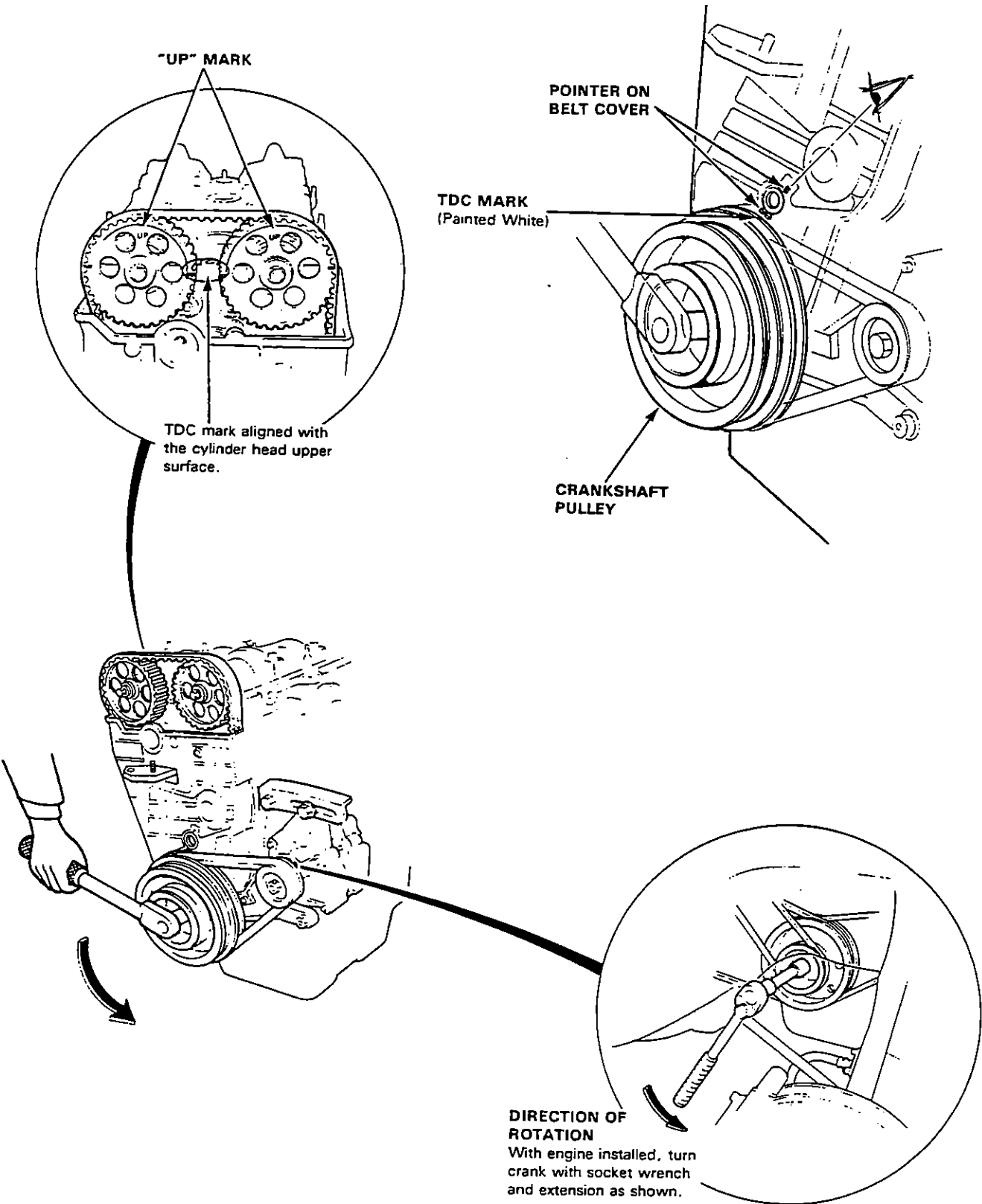


11. Install in the reverse order of removal; adjust the valve timing (page 5-26).
12. Carry out timing belt tension adjustment (page 5-23).

Timing Belt

- Positioning Crankshaft Before Installing Timing Belt

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



Cylinder Head Removal/Installation

SOHC	5-29
DOHC	5-35



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Cylinder Head Removal/Installation

<SOHC>

Removal5-30

Installation5-33

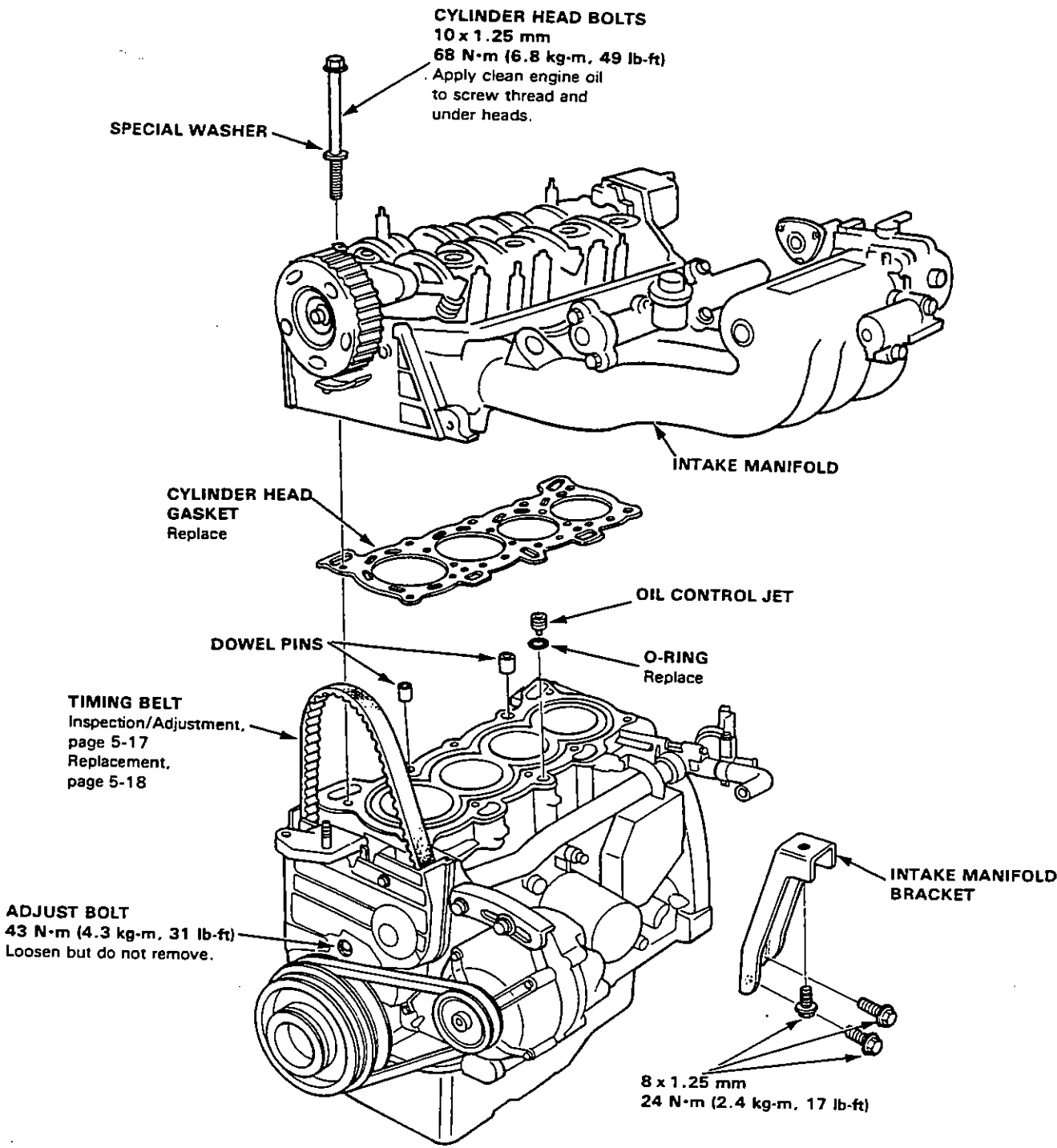


Cylinder Head

- Removal (engine removal not required)

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

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





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

NOTE:

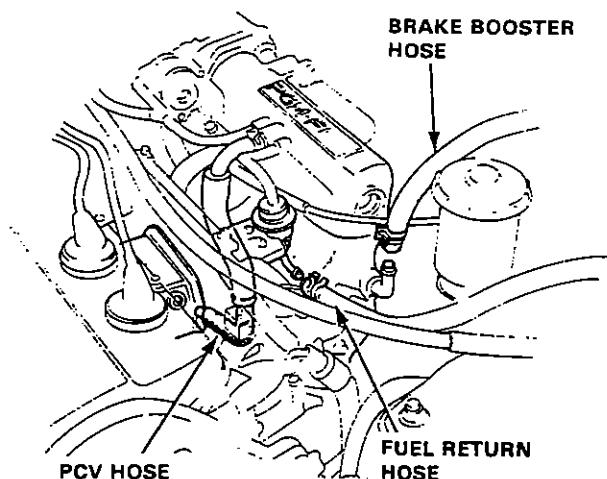
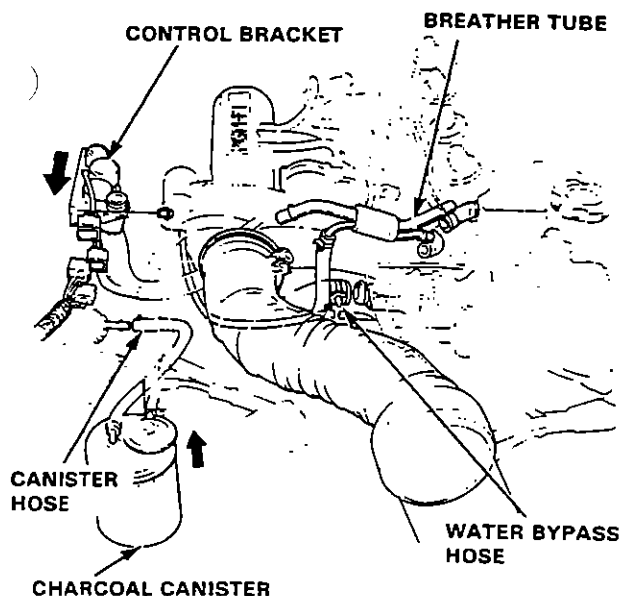
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

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

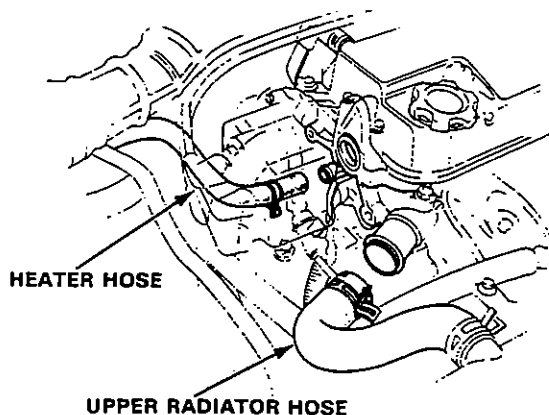
WARNING Do not smoke while working on fuel system, keep open flame or spark away from work area. Drain fuel only into an approved container.

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

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



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

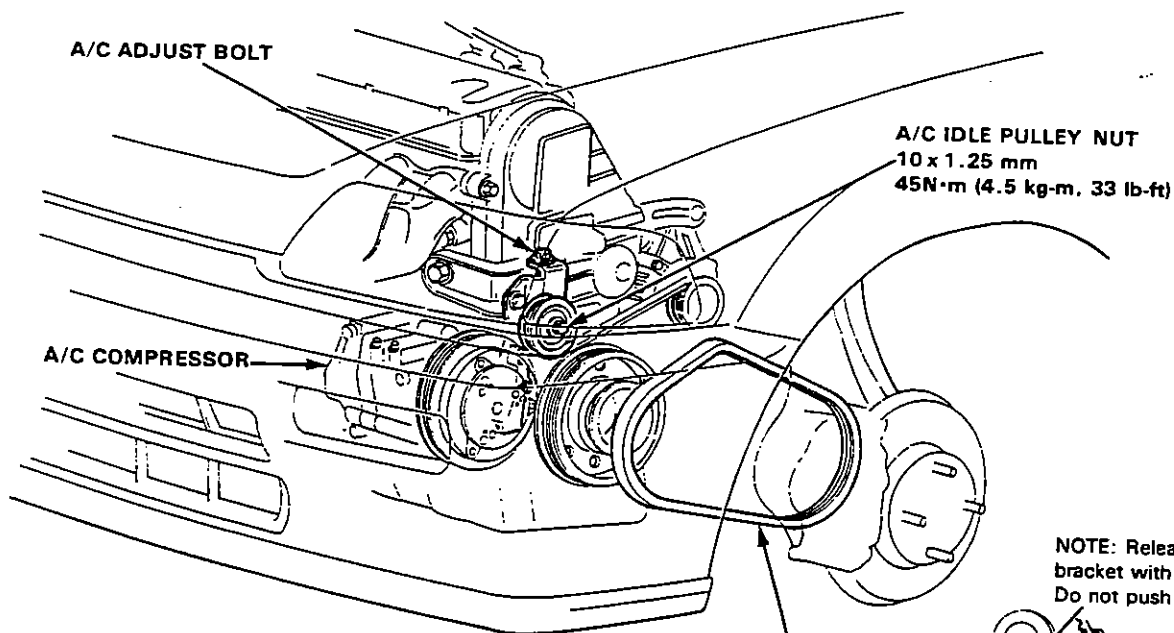


11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
 - Ignition coil connector (from distributor)
 - EACV connector
 - Engine ground wire
 - Thermounit connector
 - Coolant temperature sensor connector
 - Intake air temperature sensor connector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

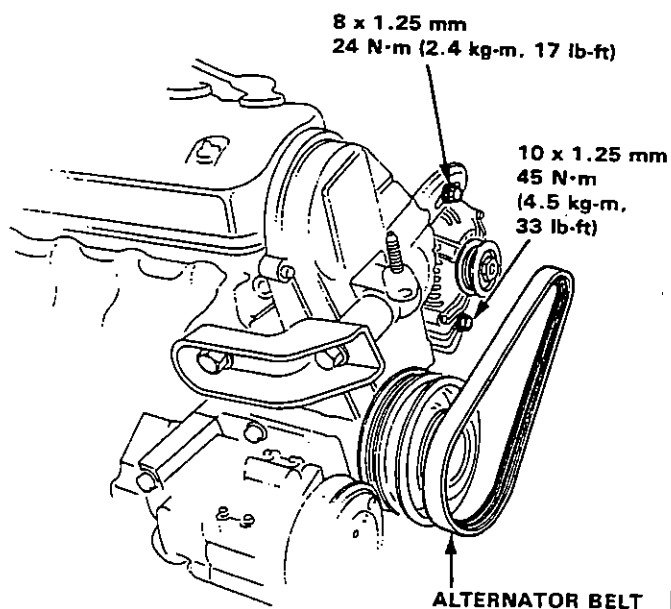
(cont'd)

Cylinder Head

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

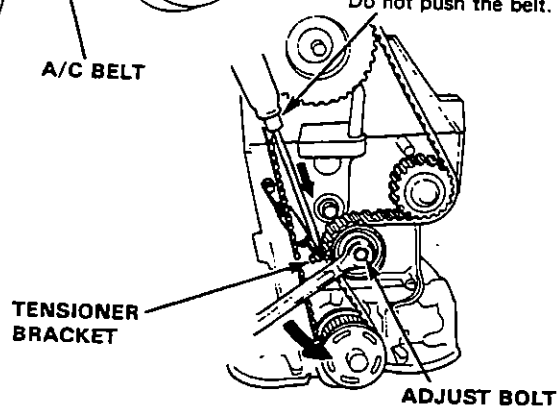


12. Remove the alternator belt.



13. Remove the intake manifold bracket.

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



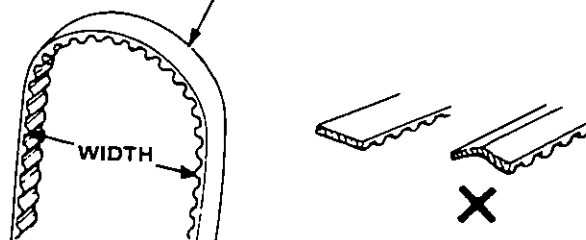
15. Remove the exhaust manifold shroud, then remove exhaust manifold.

16. Remove the distributor and valve cover.

17. Remove the timing belt upper cover.

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

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



19. Remove the cylinder head.

20. Remove the intake manifold from the cylinder head.

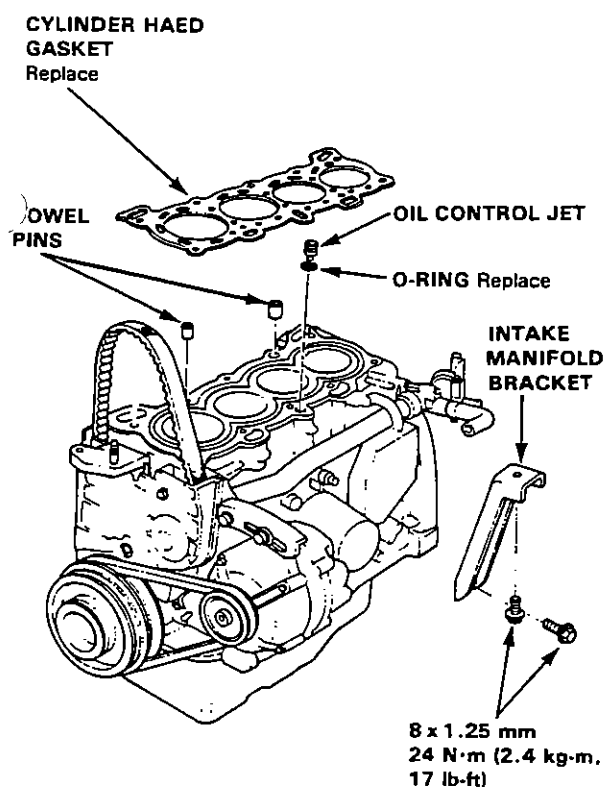


Installation

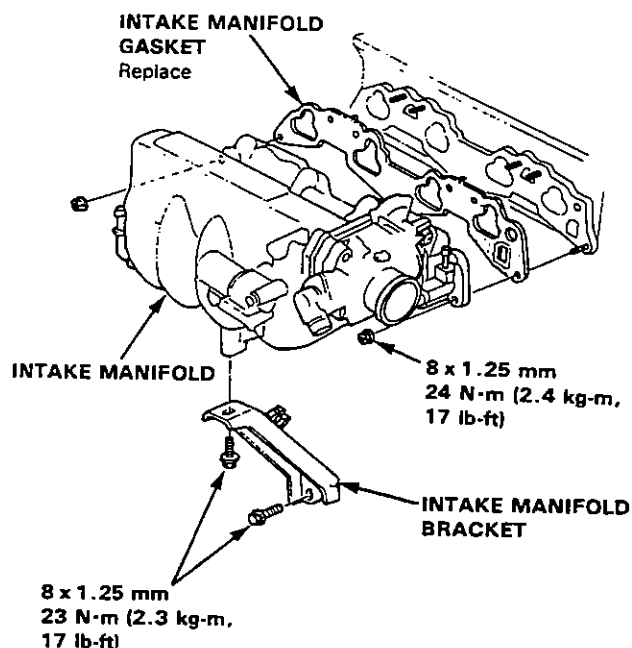
1. Install the cylinder head in reverse order of removal:

- 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.

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



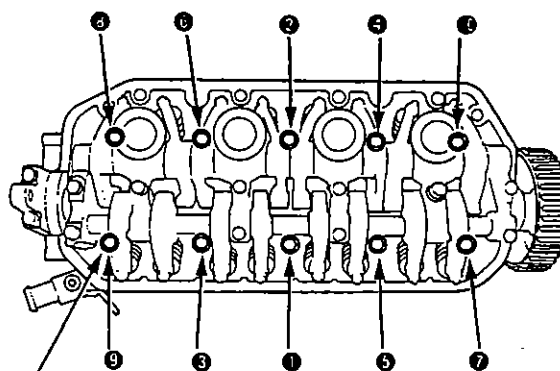
3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.



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

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

CYLINDER HEAD TORQUE SEQUENCE



CYLINDER HEAD BOLT
10 x 1.25 mm
68 N·m (6.8 kg-m, 49 lb-ft)

5. Adjust the valve timing.

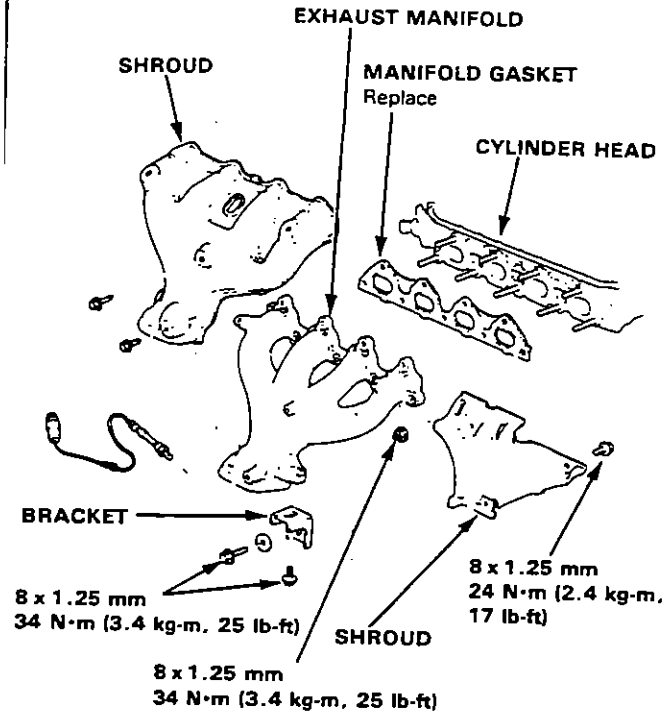
6. Install the exhaust manifold and bracket.

(cont'd)

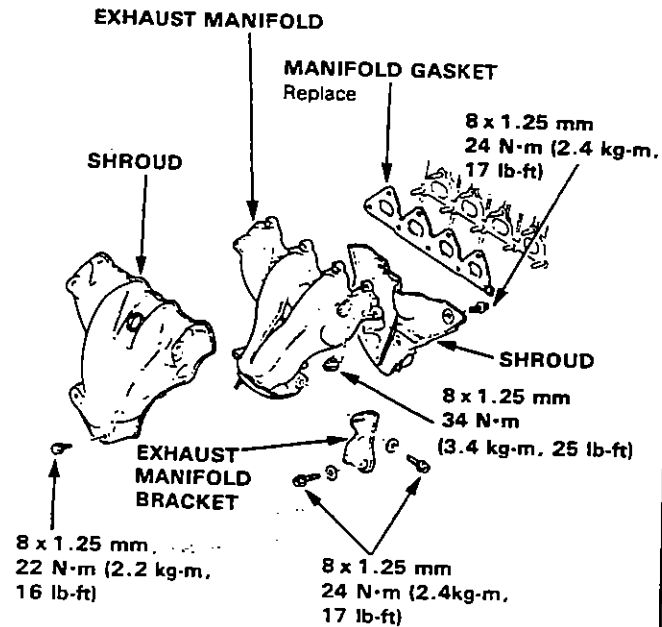
Cylinder Head

Installation (cont'd)

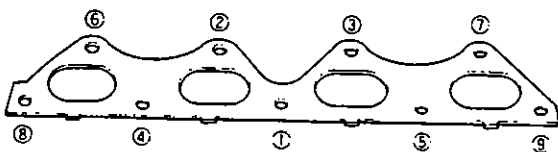
1.6 l with CATA:



1.6 l without CATA:



EXHAUST MANIFOLD TORQUE SEQUENCE



Cylinder Head Removal/Installation

<DOHC>

Removal5-36

Installation5-40

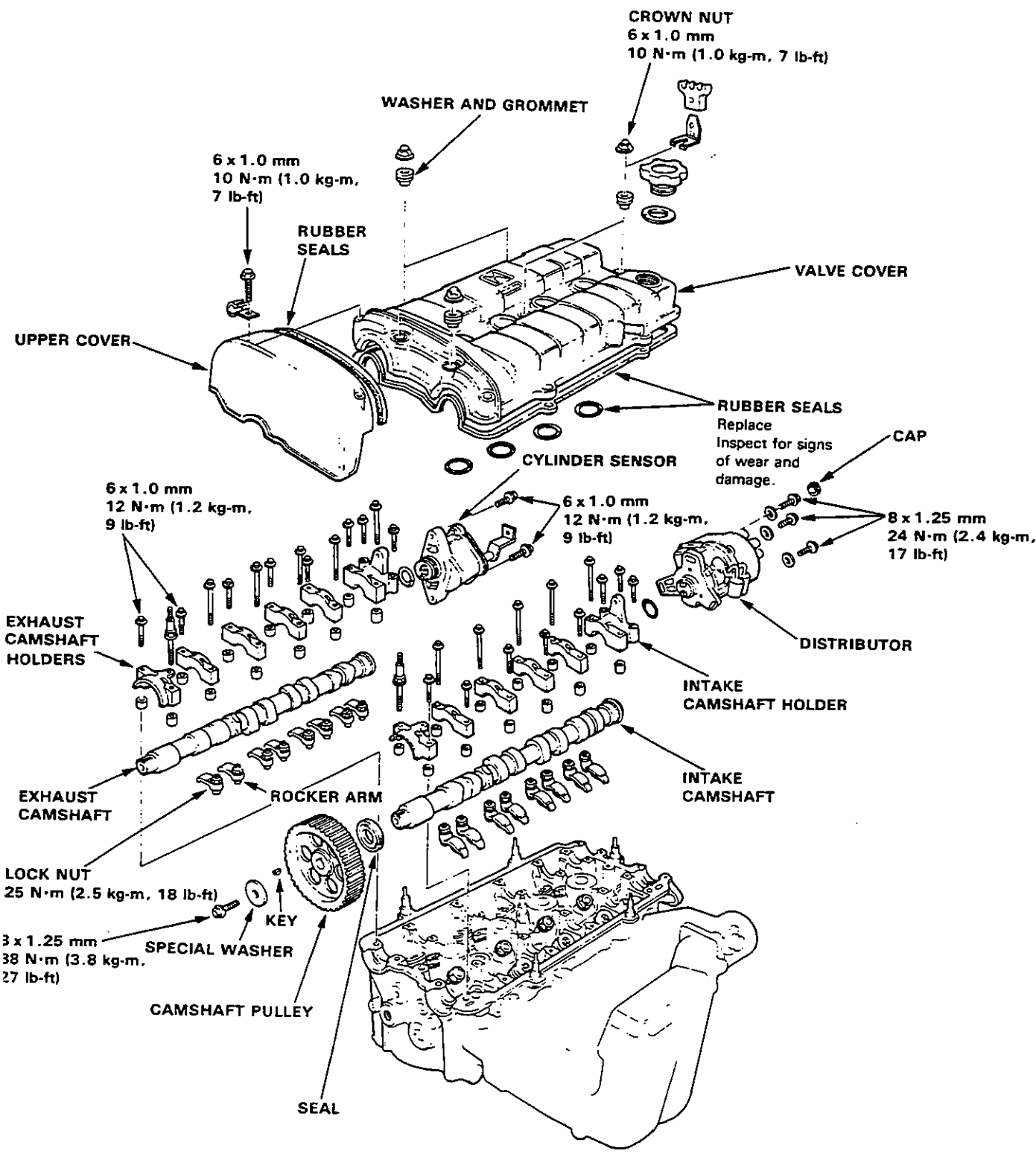


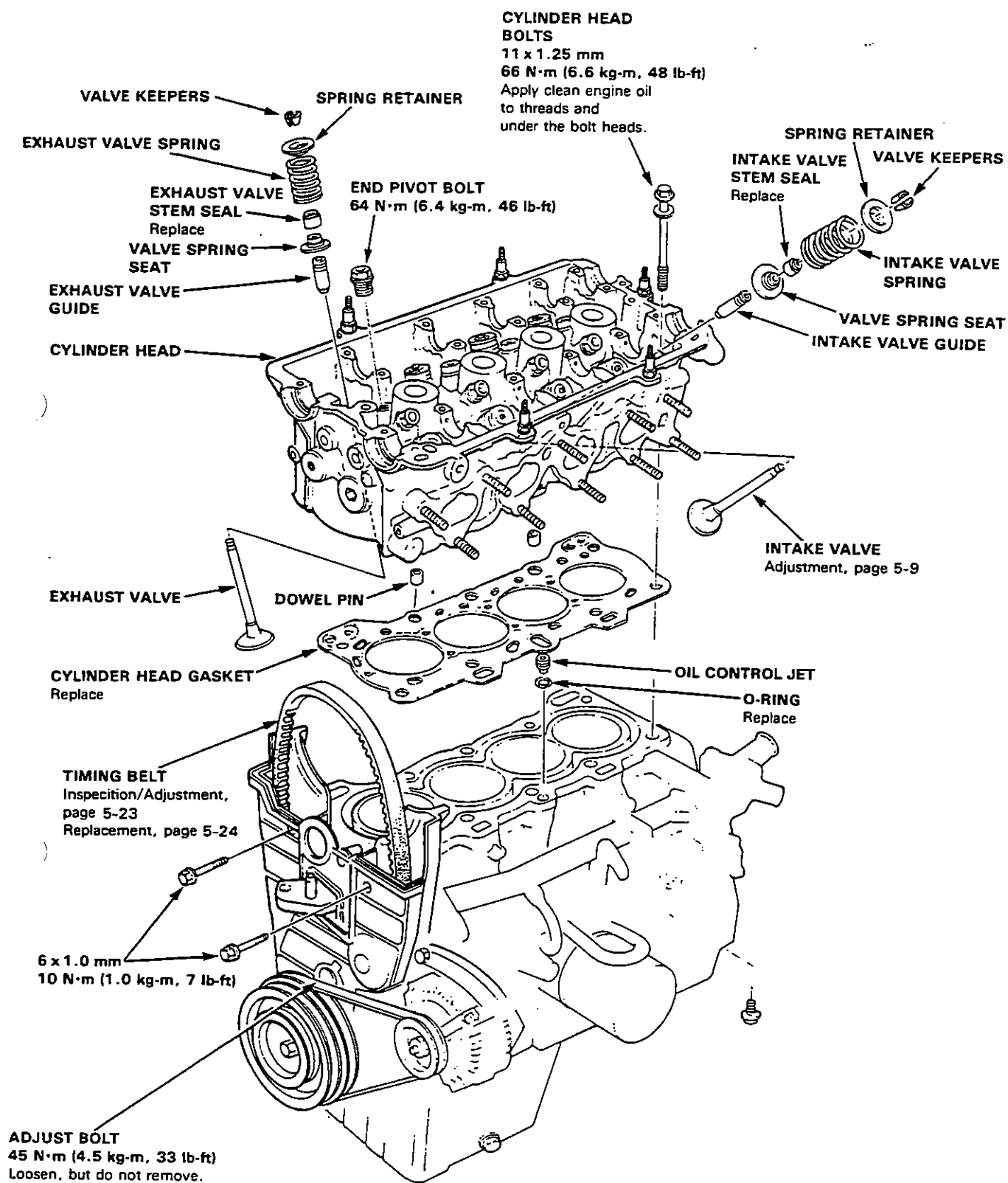
Cylinder Head

- Removal (engine removal not required)

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

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





(cont'd)

Cylinder Head

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

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

NOTE:

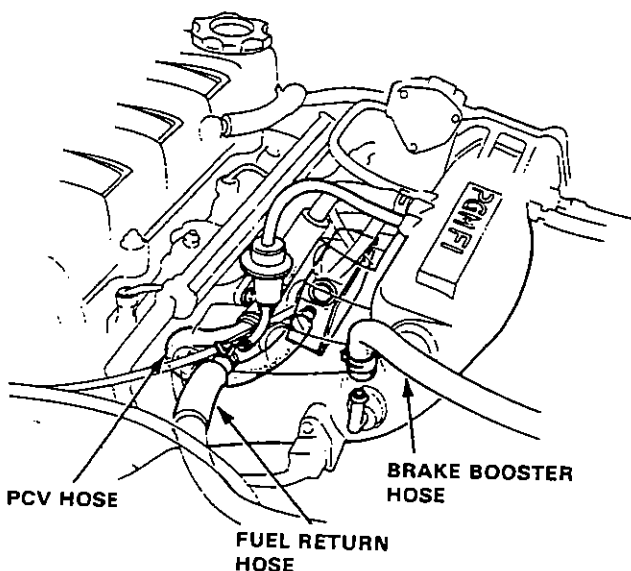
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions hoses before disconnecting them.

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

WARNING

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

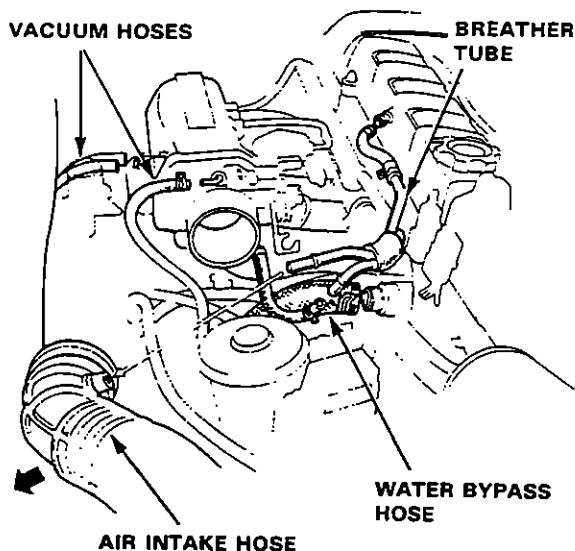
5. Remove the brake booster vacuum hose.
6. Disconnect the PCV hose.



7. Disconnect the breather tube and air intake hose.
8. Disconnect the vacuum hose from the intake manifold.
9. Disconnect the charcoal canister hose.
10. Disconnect the water bypass hose.

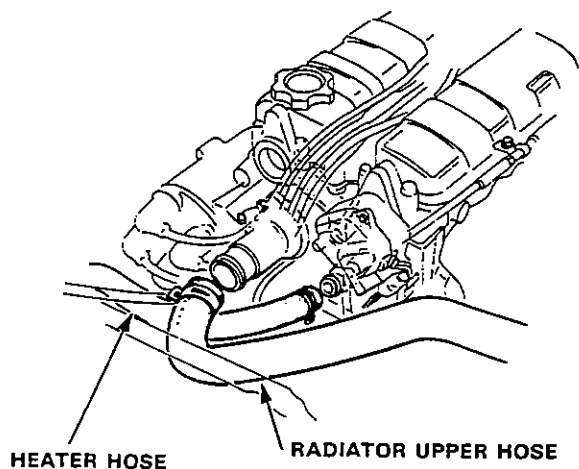
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.

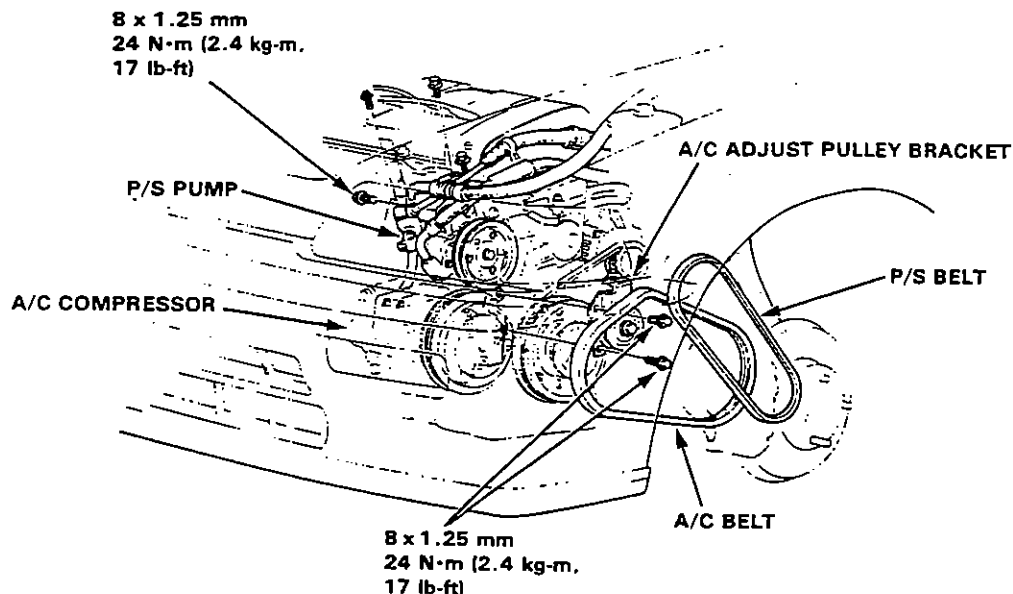
- Ignition coil connector (from distributor)
- EACV connector
- Engine ground wire
- Thermounit connector
- Coolant temperature sensor connector



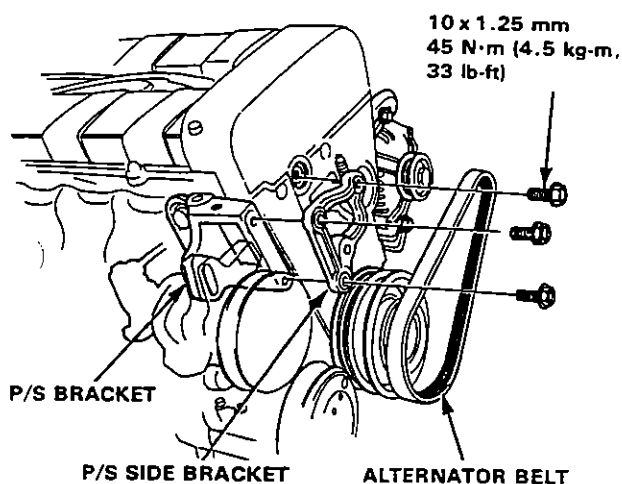
- Intake air pressure sensor connector
- Throttle angle sensor connector
- Injection connector
- TDC/CRANK sensor connector

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





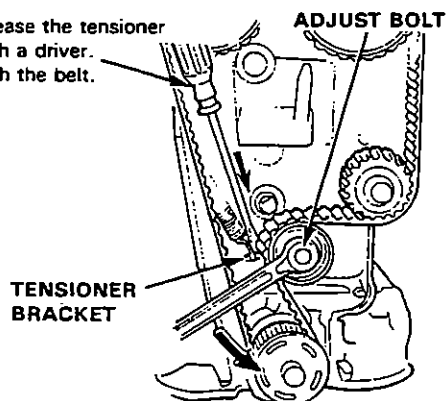
14. Remove the power steering (P/S) pump belt (KQ only) and the alternator belt.
15. Loosen the air conditioning (A/C) idle pulley and remove the A/C belt.
16. Remove the P/S pump bracket (KQ only).



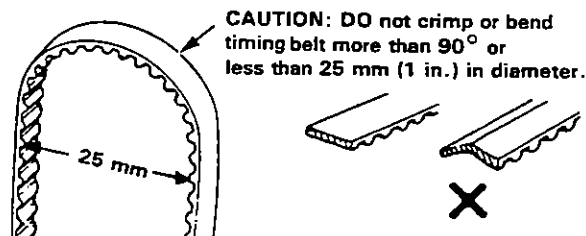
17. Remove the bolts from the intake manifold bracket.
18. Remove the exhaust manifold shroud.
19. Remove the bolts from the exhaust manifold bracket.
20. Remove the self lock nut from the exhaust header pipe.
21. Remove the exhaust manifold assy.
22. Remove the timing belt upper cover.
23. Remove the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

24. Loosen the timing belt adjust bolt, releasing the timing belt, and fix the bolt.

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



25. Remove the timing belt from the driven pulleys.



26. Remove the cylinder head.

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

27. Remove the intake manifold from the cylinder head.

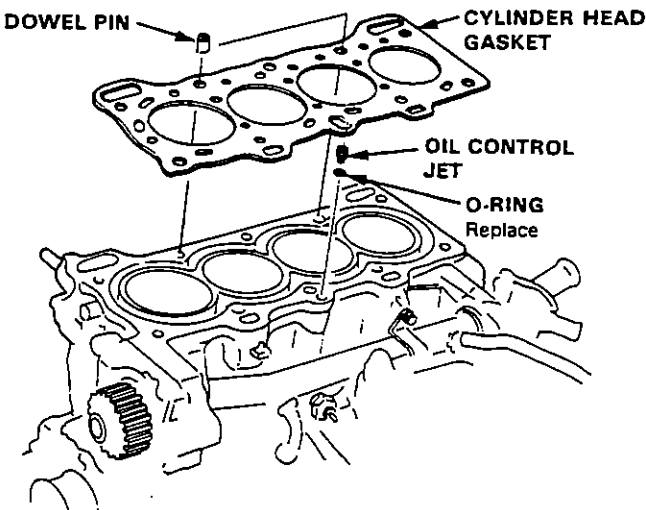
Cylidner Head

Installation

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

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

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

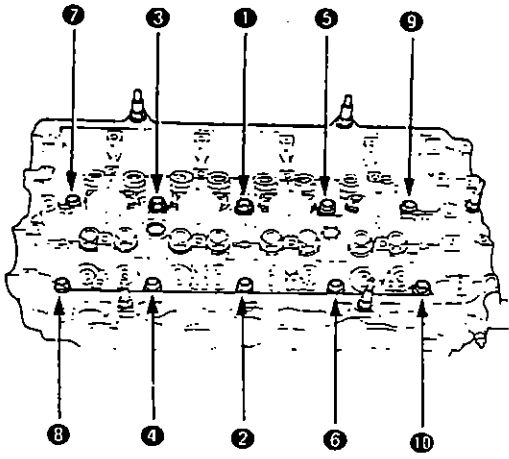


2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft)

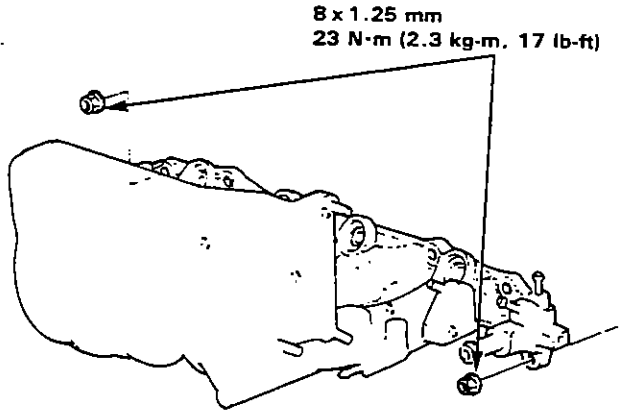
NOTE:

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

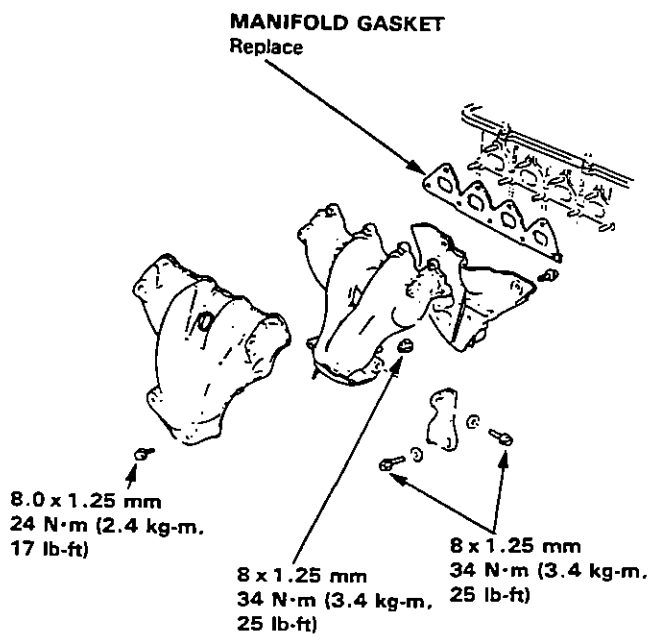
CYLINDER HEAD BOLTS TORQUE SEQUENCE



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



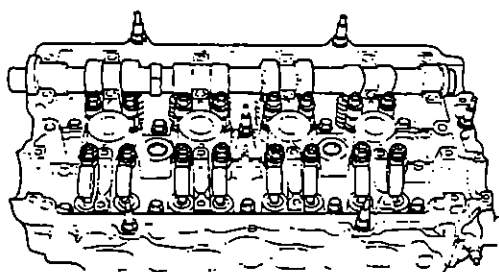
4. Install the exhaust manifold and bracket.





CAUTION:

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

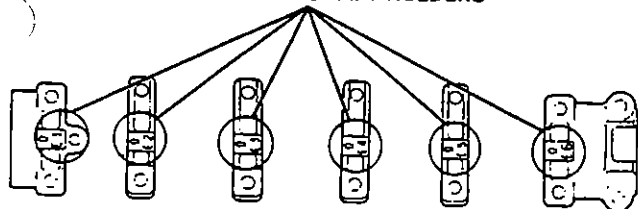


6. Install the camshafts and the camshaft seals with the open side (spring) facing in.

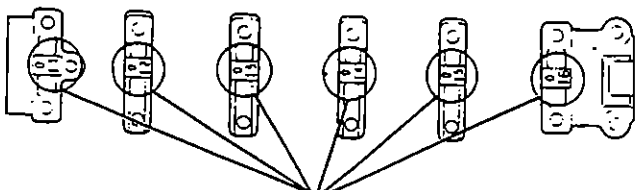
NOTE:

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

EXHAUST CAMSHAFT HOLDERS

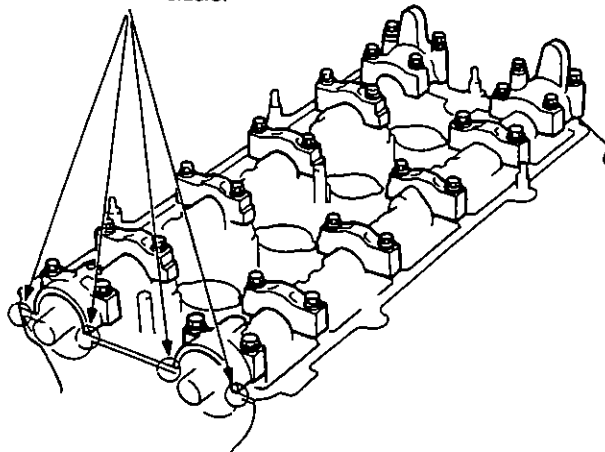


INTAKE CAMSHAFT HOLDERS



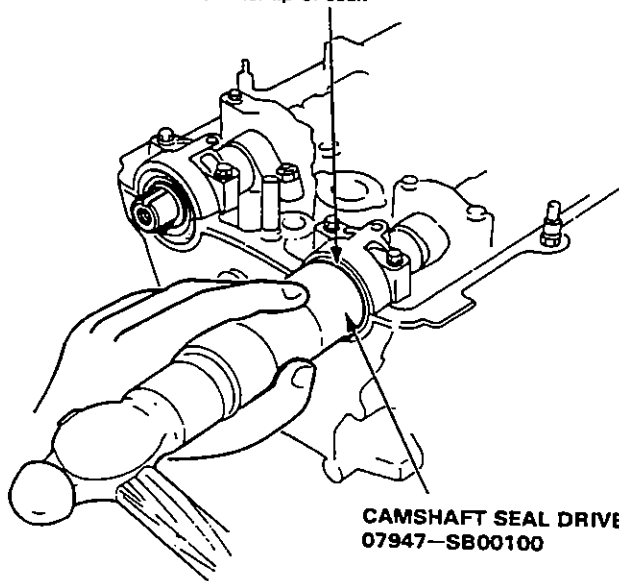
7. Apply liquid gasket to the head mating surfaces of the No. 1 and No. 6 camshaft holders, then install them, along with the No. 2, 3, 4 and 5.
8. Tighten the camshaft holders temporarily.
- Make sure that the rocker arms are properly positioned on the valve stems.

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



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

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



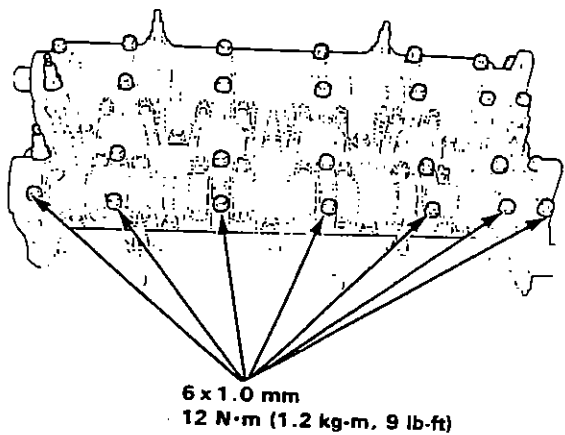
CAMSHAFT SEAL DRIVER
07947-SB00100

(cont'd)

Cylinder Head

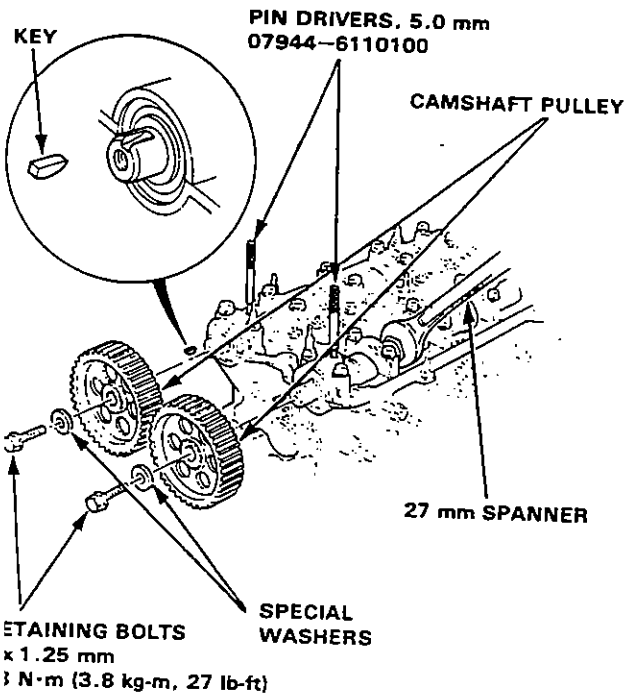
- Installation (cont'd)

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.



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.



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

Engine Removal/Installation



Engine Removal/Installation

WARNING

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

CAUTION: Use fender covers to avoid damaging painted surfaces.

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

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

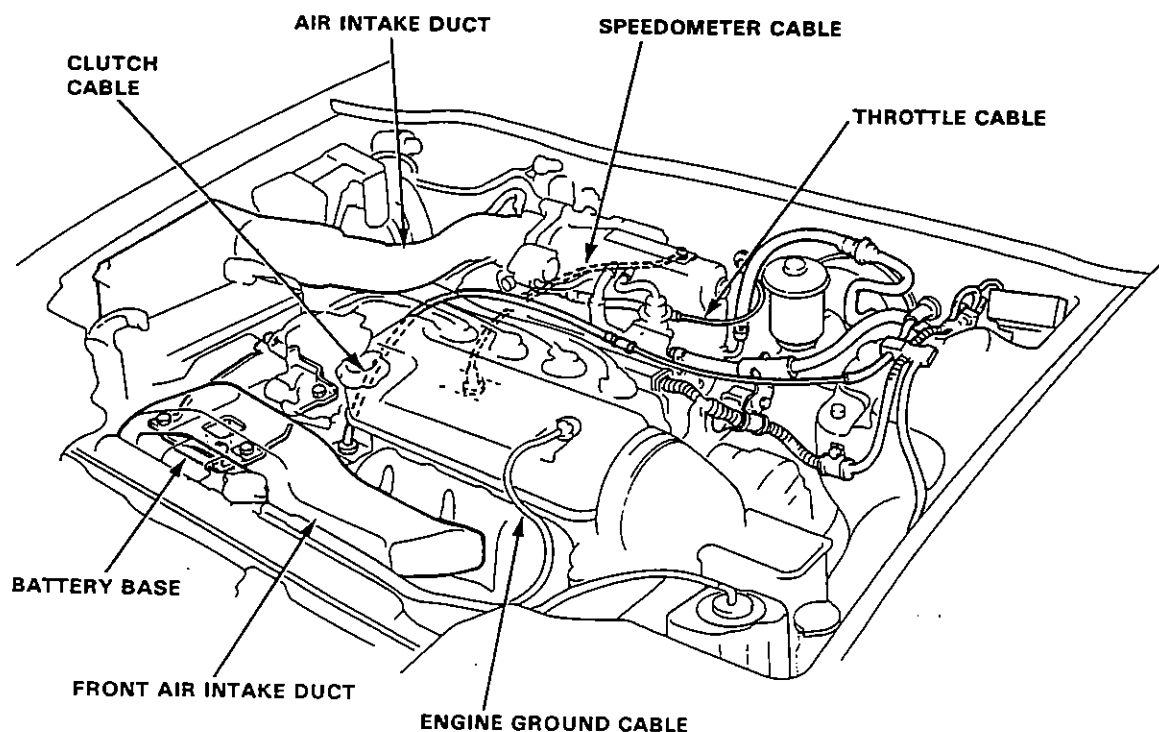
3. Drain the engine oil. Remove the oil filler cap to speed draining. Reinstall the drain plug with a new washer.

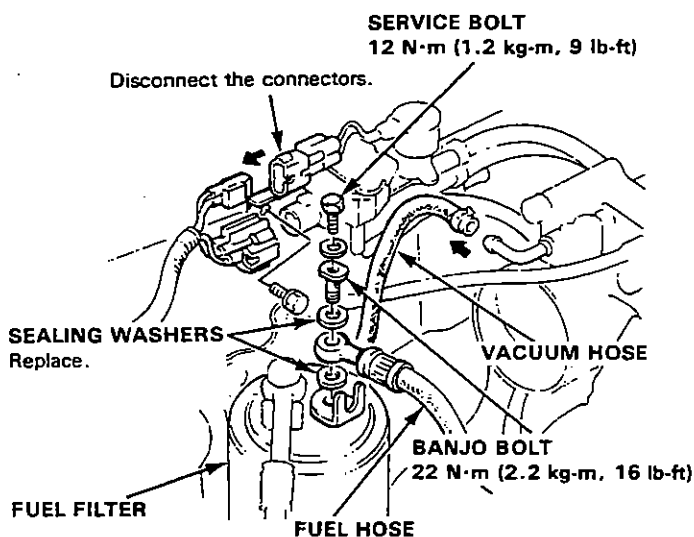
4. Drain the coolant from the radiator into a clean pan so it may be re-used. Remove the radiator cap to speed draining.

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

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

LHD:



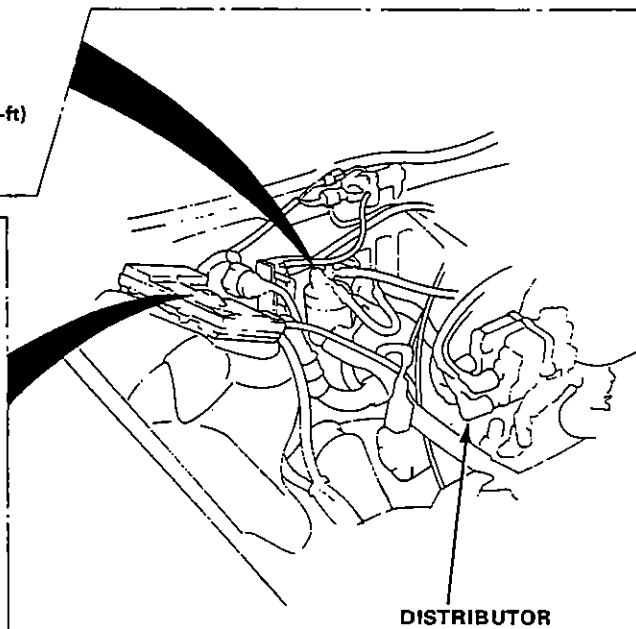
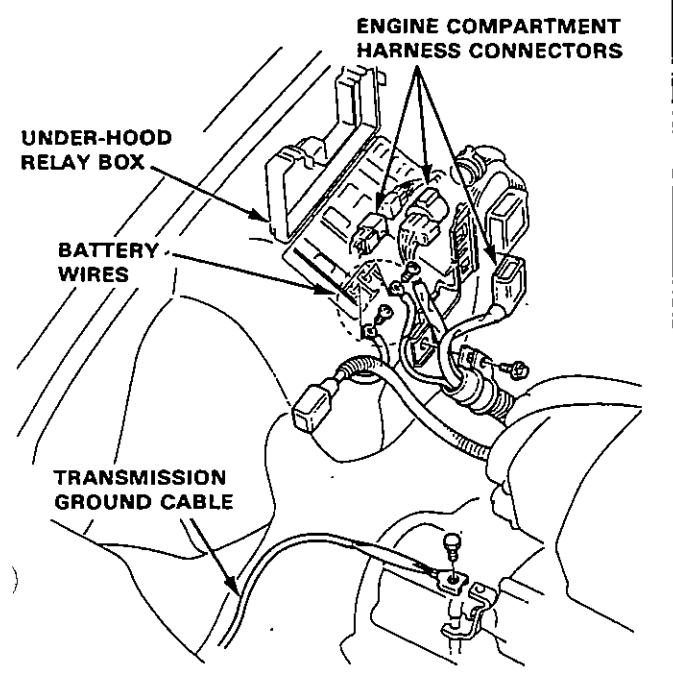


8. Relieve fuel pressure by slowly loosening the service bolt on the fuel filler about one turn. (Section 6).

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

CAUTION:

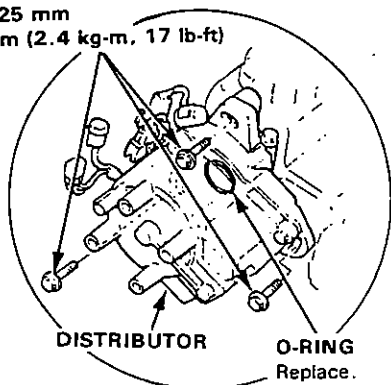
- Before disconnecting any fuel line, the fuel pressure should be relieved as described above.
- Place a shop towel over the fuel filler to prevent pressurized fuel from spraying over the engine.



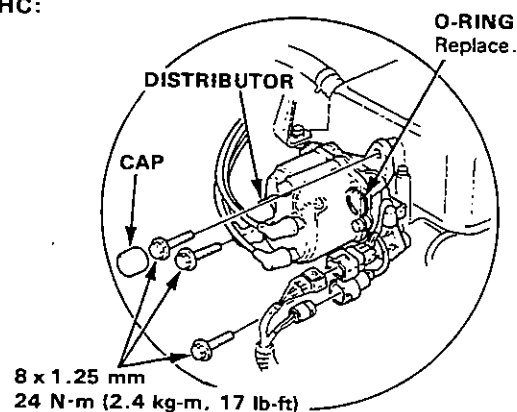
9. Disconnect the engine compartment harness connectors, battery wires and transmission ground cable.
10. Disconnect the engine wire connectors and spark plug wires.
11. Remove the cap and bolts, then remove the distributor from the cylinder head.

DOHC:

8 x 1.25 mm
24 N·m (2.4 kg-m, 17 lb-ft)



SOHC:

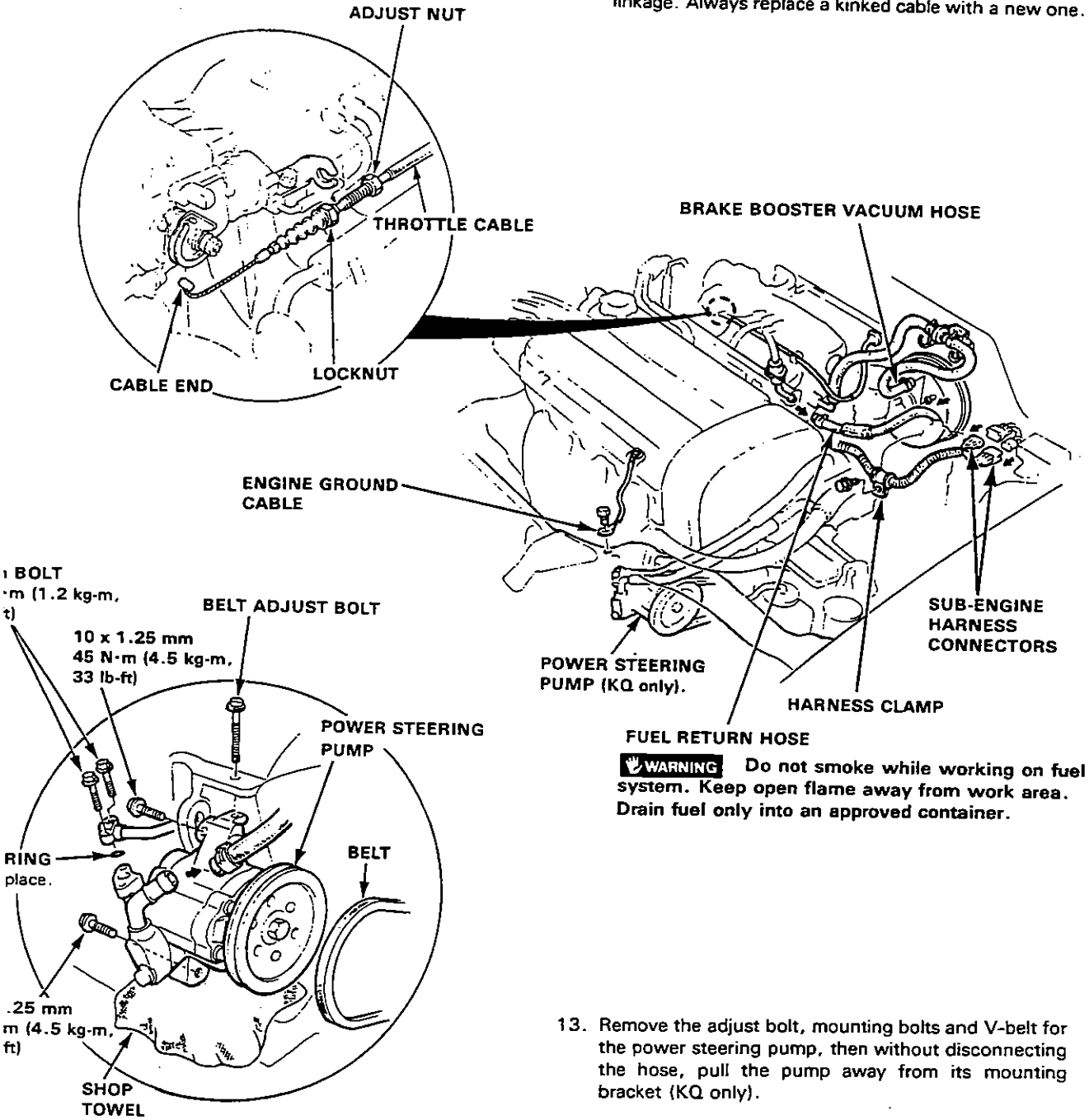


(cont'd)

Engine Removal/Installation (cont'd)

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

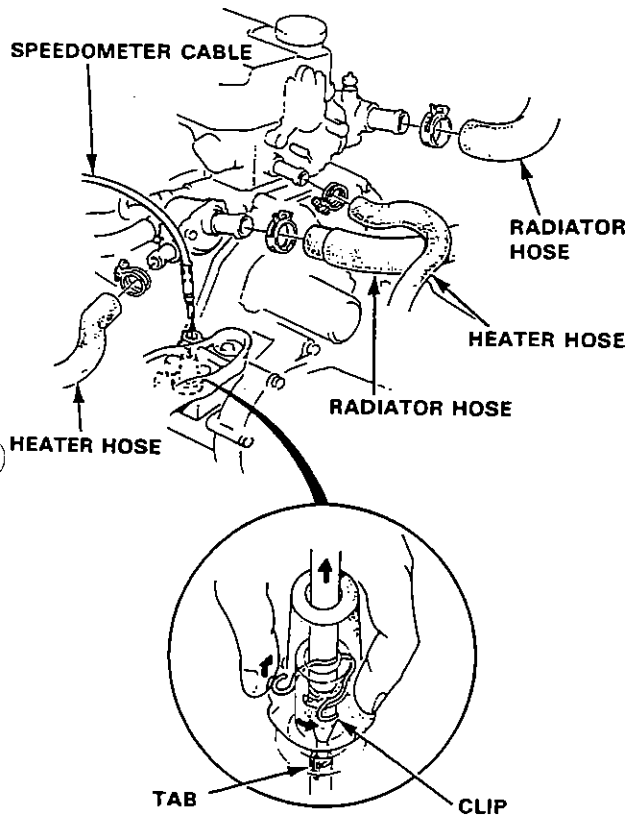
NOTE: Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.



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



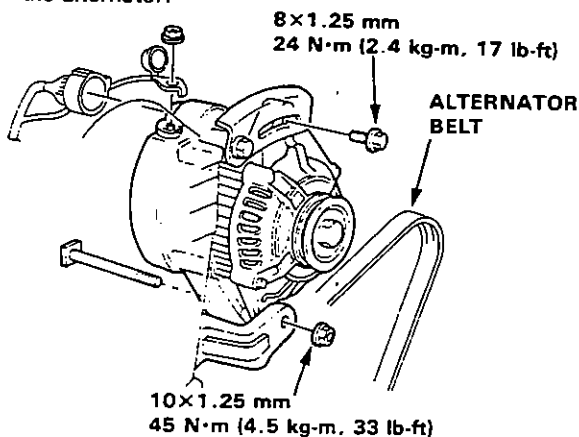
14. Disconnect the radiator hoses and heater hoses.
15. Remove the speedometer cable.



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

16. Remove the alternator: (LHD only)

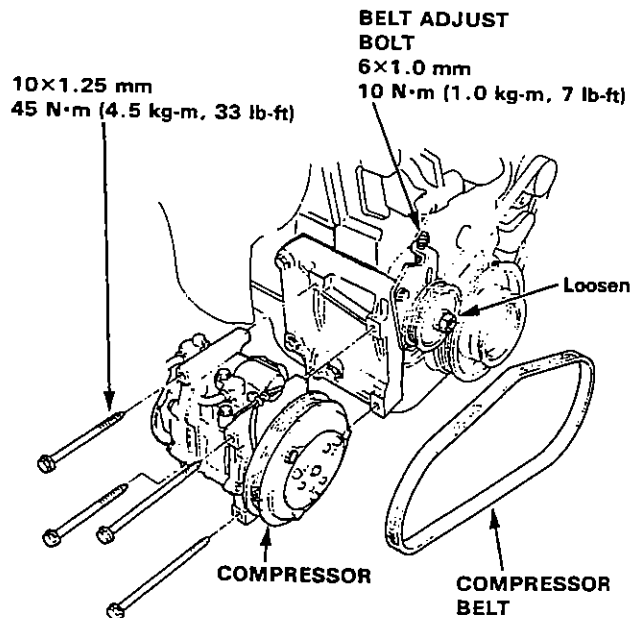
- Disconnect the alternator wire harness connectors.
- Remove the adjust bolt and remove the belt.
- Remove the belt alternator mount bolt and remove the alternator.



17. On cars with A/C:

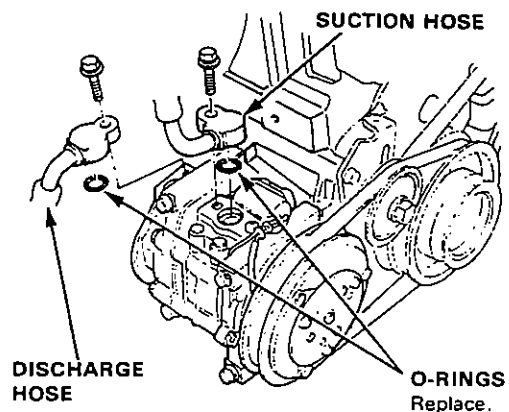
- Loosen the belt adjust bolt and idle pulley nut.
- Remove the compressor mount bolts, then lift the compressor out of the bracket with hoses attached, and wire it up to the front beam.

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



If necessary:

- Disconnect the suction and discharge hoses from the compressor.



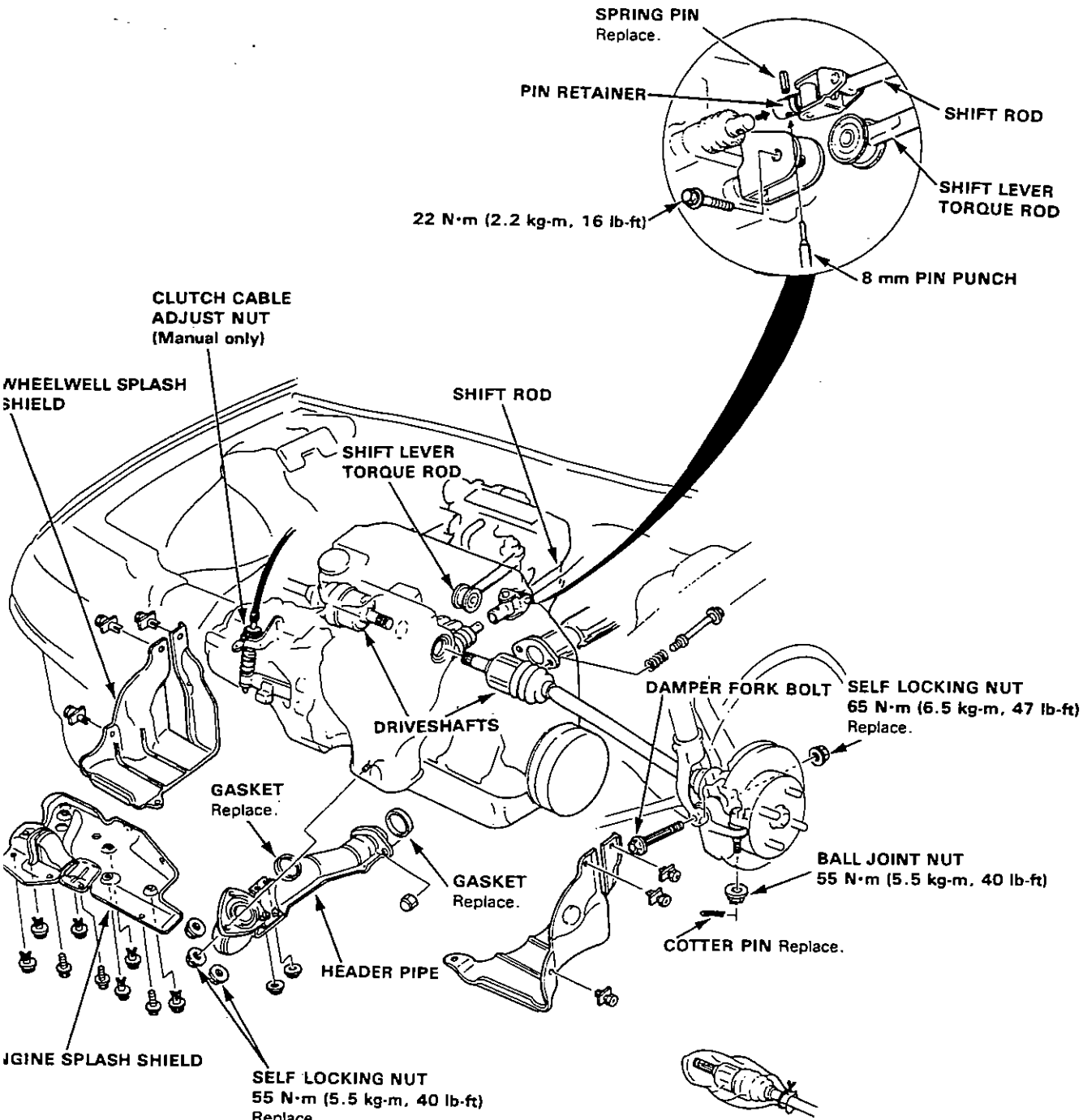
(cont'd)

Engine Removal/Installation (cont'd)

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

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

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



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

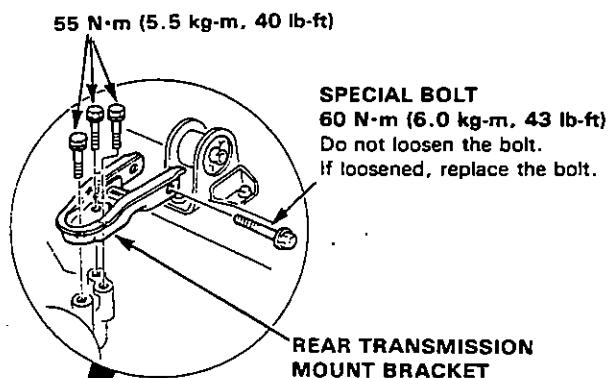


20. Attach a chain hoist to the engine block hoist brackets and raise the hoist just enough to remove slack from the chain.

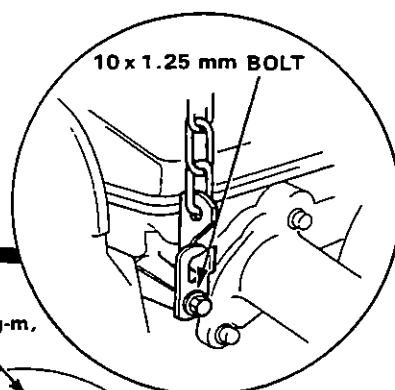
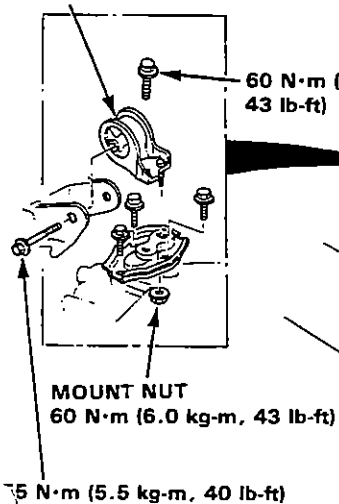
NOTE:

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

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

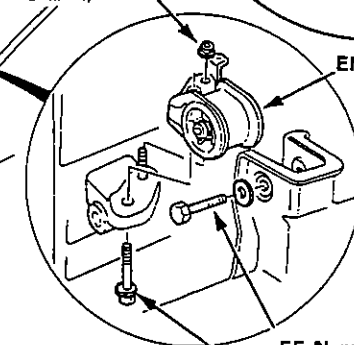


SIDE TRANSMISSION MOUNT



60 N·m (6.0 kg-m, 43 lb-ft)

ENGINE SIDE MOUNT

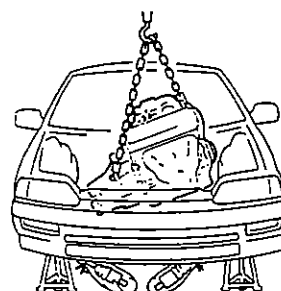


55 N·m (5.5 kg-m, 40 lb-ft)
60 N·m (6.0 kg-m, 43 lb-ft)

SPECIAL BOLT
60 N·m (6.0 kg-m, 43 lb-ft)
Do not loosen the bolt.
If loosened, replace the bolt.

FRONT TRANSMISSION MOUNT
40 N·m (4.0 kg-m, 29 lb-ft)

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



(cont'd)

Engine Removal/Installation (cont'd)

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

- Torque engine mount bolts in sequence shown.

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

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

CAUTION: Use new spring clips on installation.

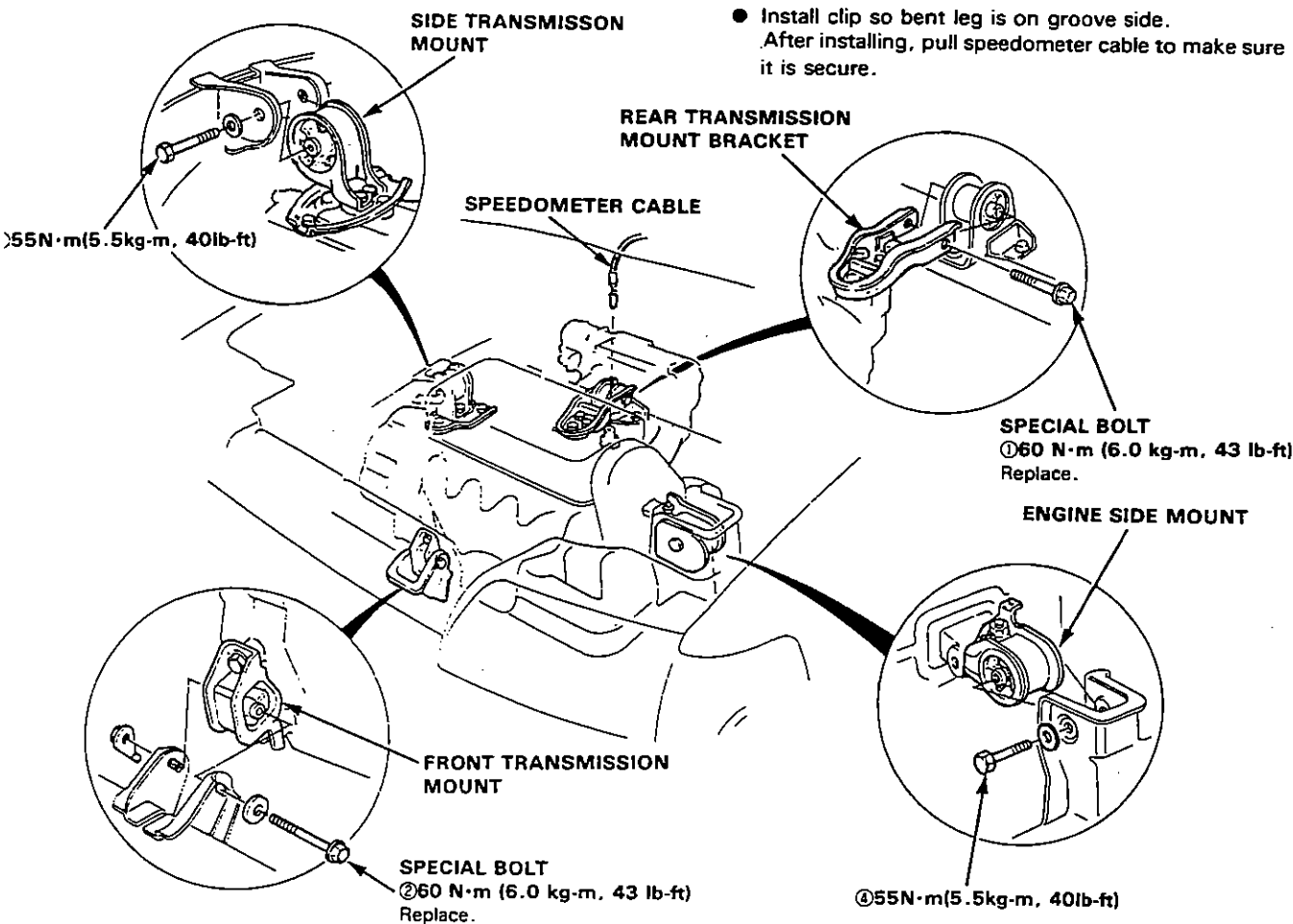
- Inspection for fuel leakage.

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

- Bleed air from the cooling system at the bleed bolt with the heater valve open.
- Adjust the throttle cable tension. (See Section 11).
- Adjust the alternator belt tension.
- Check the clutch pedal free play.
- Check that the transmission shifts into gear smoothly.
- Reinstall the A/C compressor and A/C wiring.
- Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.
- Check the ignition timing. (See Section 16).
- Charge the system and test performance. (See Section 15).

ENGINE MOUNT TORQUE SEQUENCE

NOTE: Check the mount and bracket for damage.

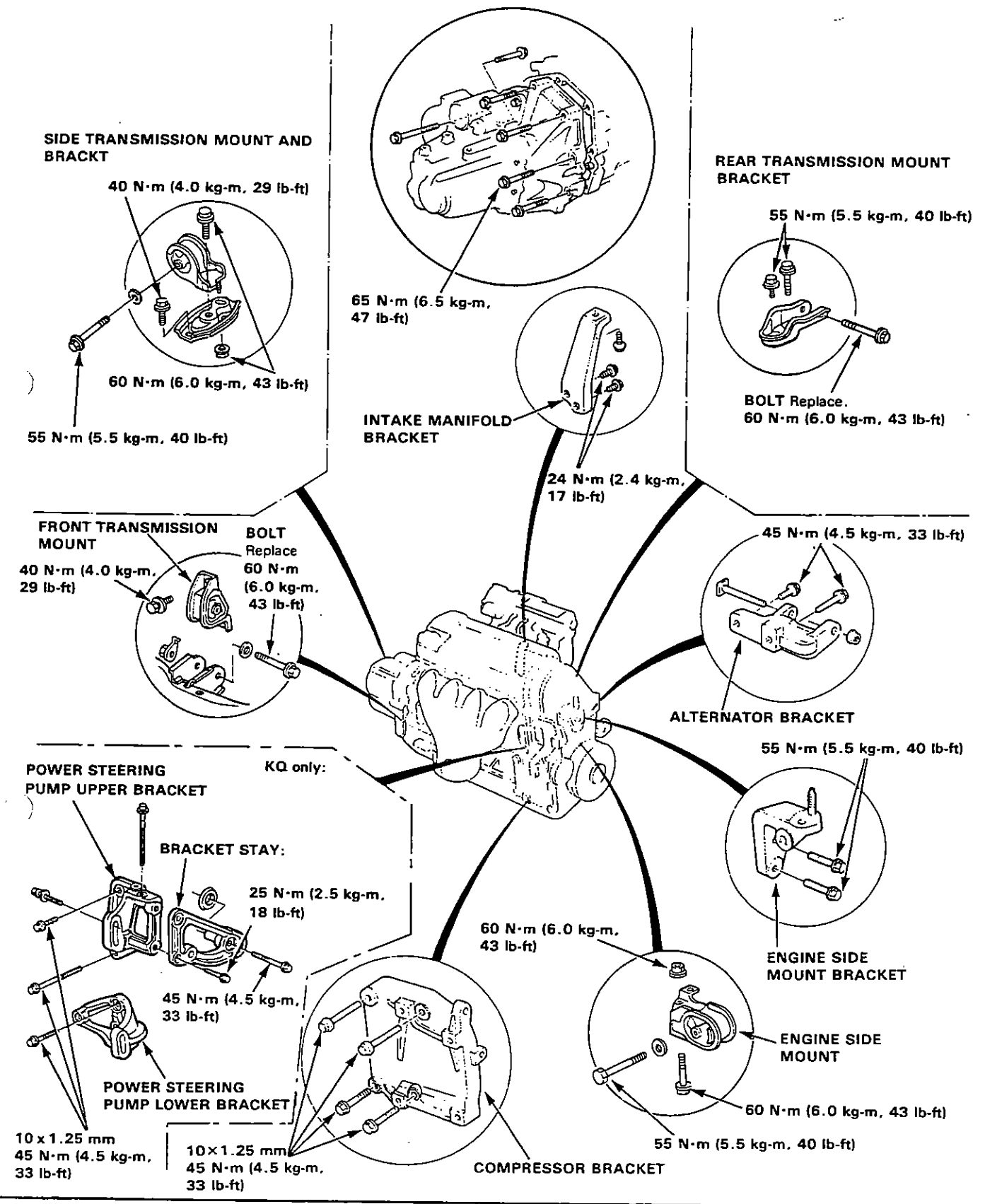


Speedometer cable Installation:

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



Additional Torque Specifications:



Exhaust Pipe and Muffler



Replacement



Radiator

Illustrated Index	5-56
Replacement	5-58
Refilling and Bleeding	5-59
Cap Testing	5-60
Radiator Testing	5-60
Thermostat Replacement	5-61
Water Pump Replacement	5-62



diator

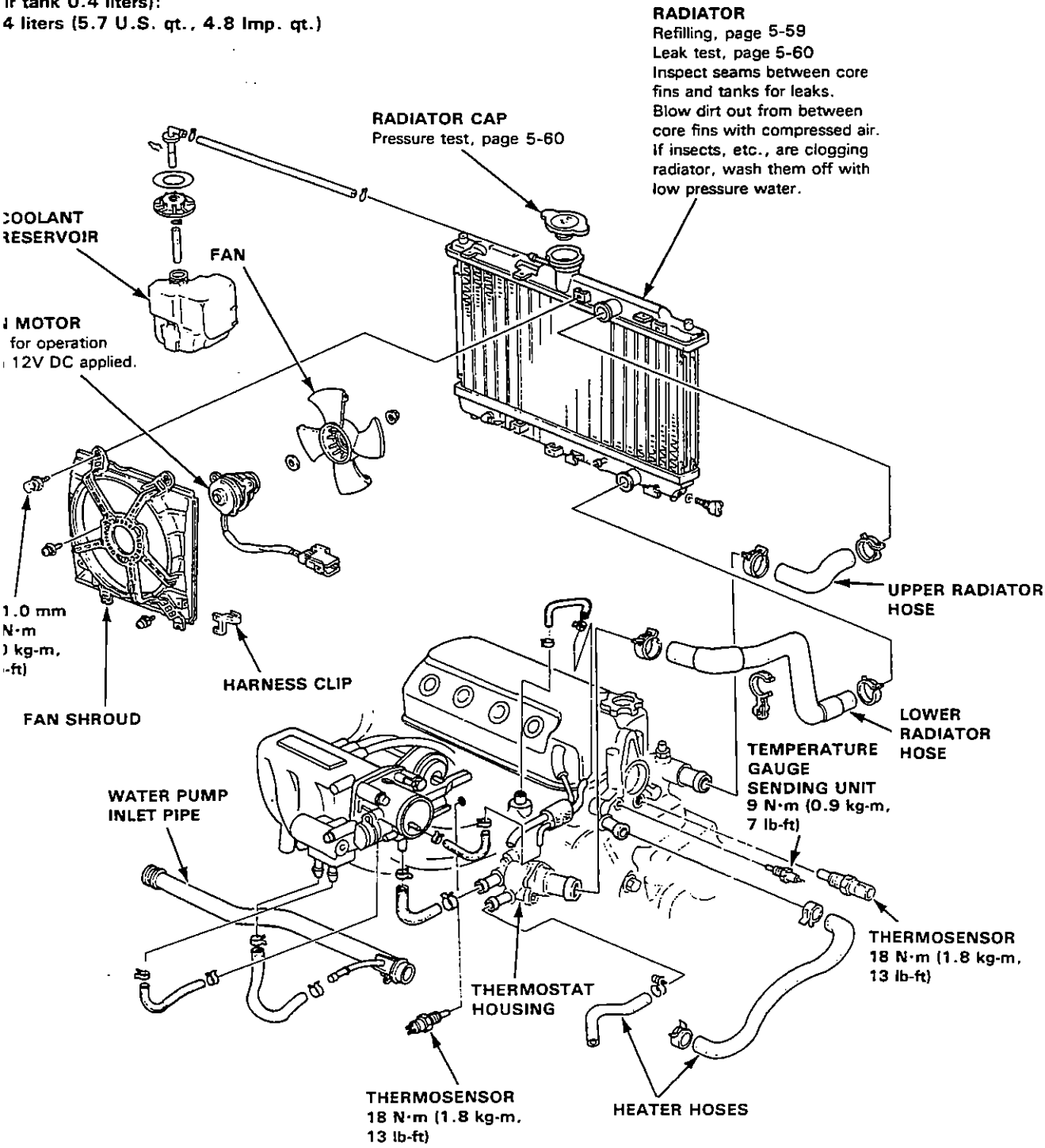
lustrated Index

6 / SOHC Fuel-Injected Engine:

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

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

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





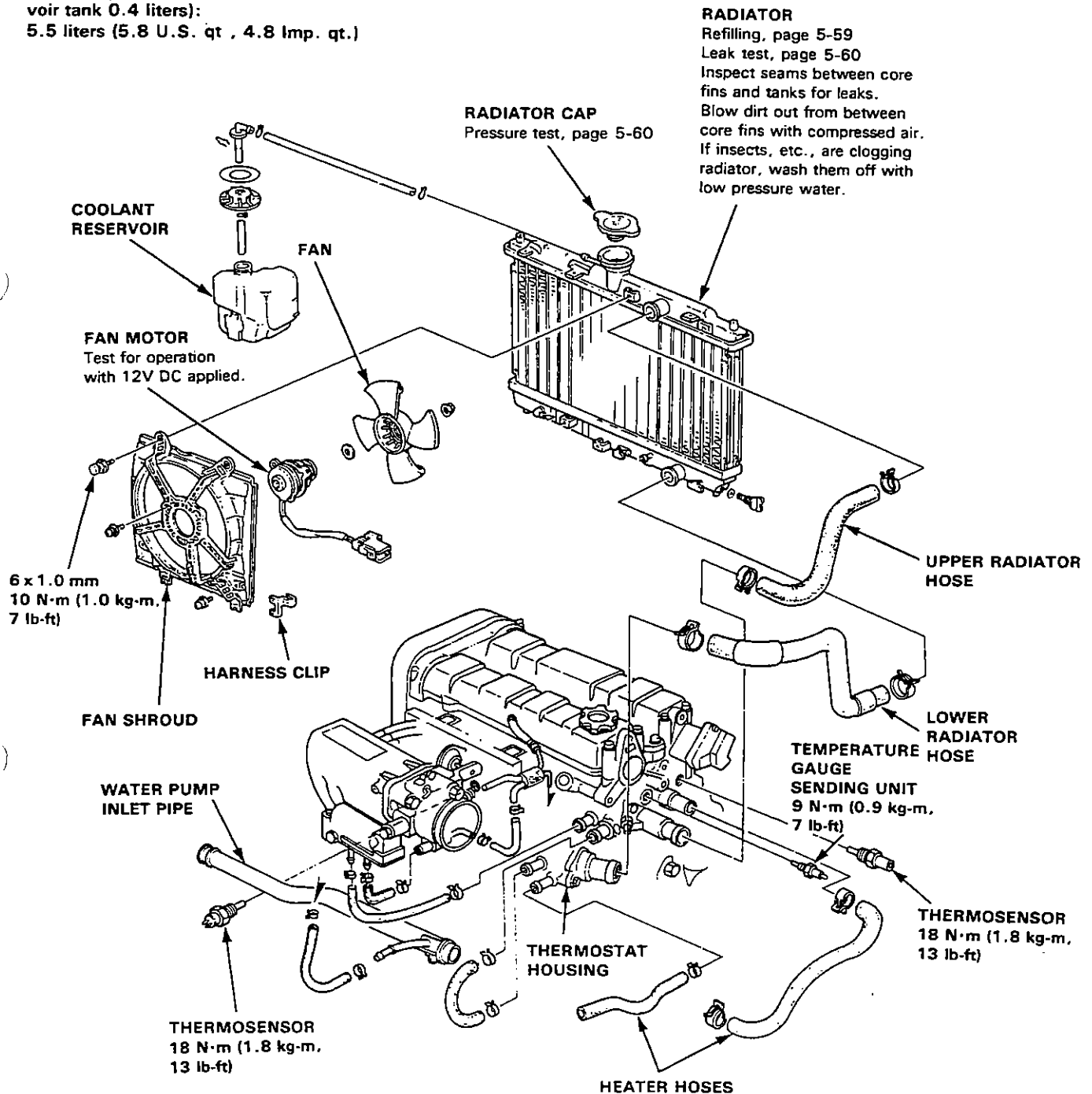
DOHC Fuel-Injected Engine:

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

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

NOTE:

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



Radiator

Replacement

Drain the coolant from the radiator.

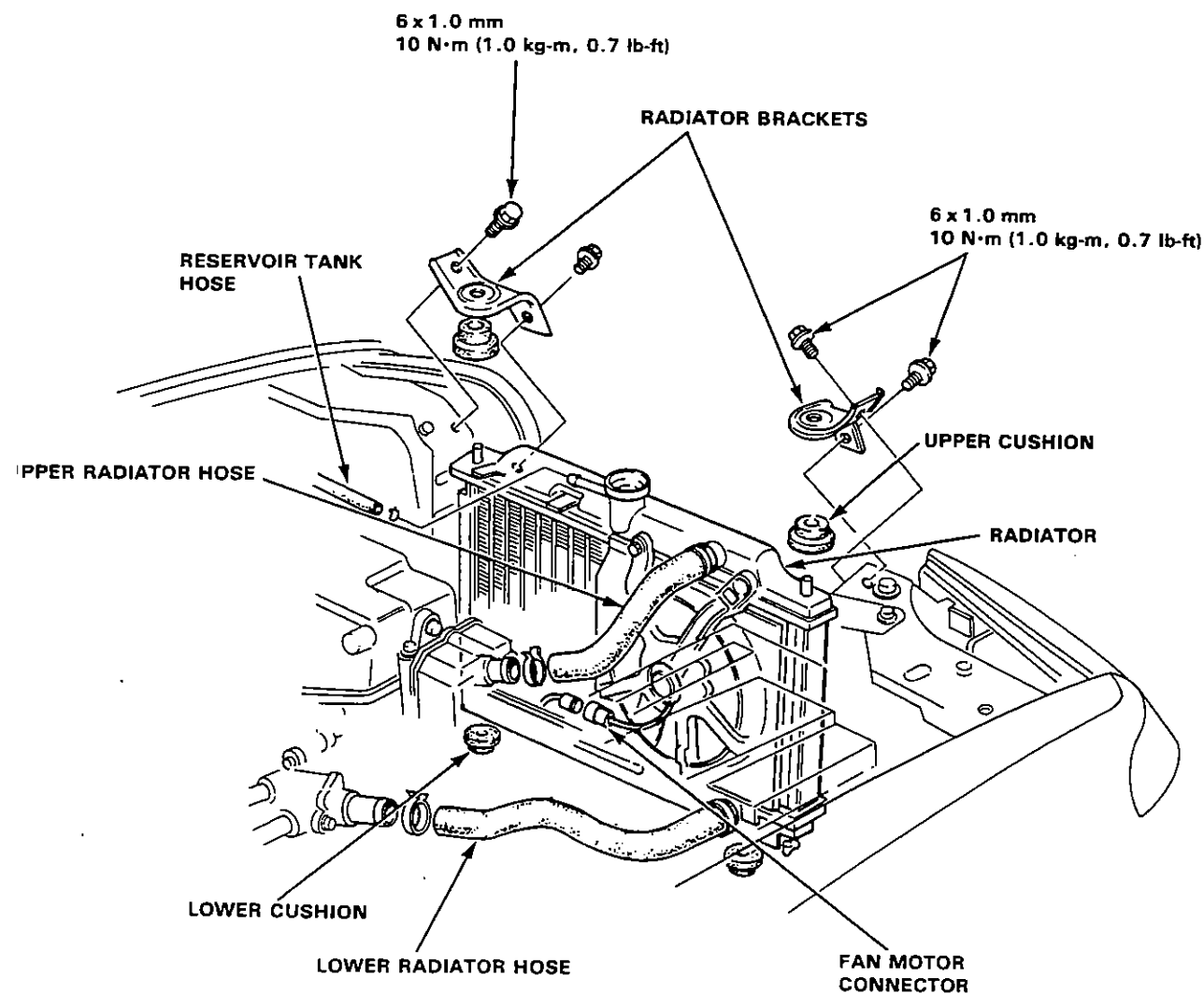
- Remove the radiator cap to speed draining.

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

Remove the connectors from the cooling fan motor and thermoswitch.

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

4. Remove the radiator bracket and radiator.



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.

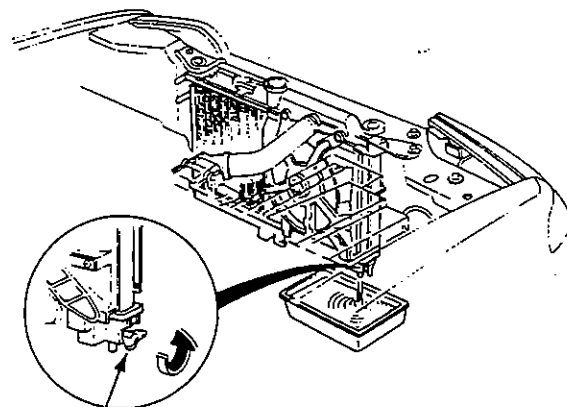
CAUTION:

- 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:

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

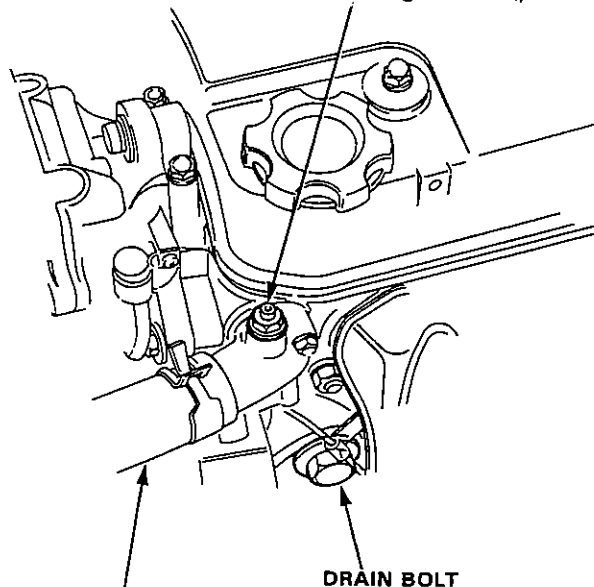
Including reservoir tank capacity:
0.4 ℓ (0.42 U.S.qt., 0.35 Imp. qt.)



DRAIN PLUG

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.

BLEED BOLT
10 x 1.25 mm
9 N·m (0.9 kg-m, 7 lb-ft)



UPPER RADIATOR HOSE

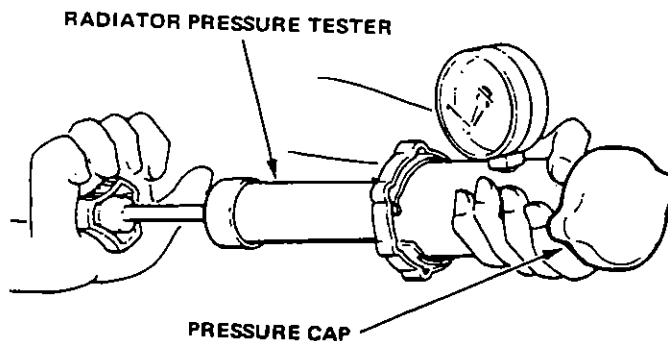
DRAIN BOLT
45 N·m (4.5 kg-m, 33 lb-ft)

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

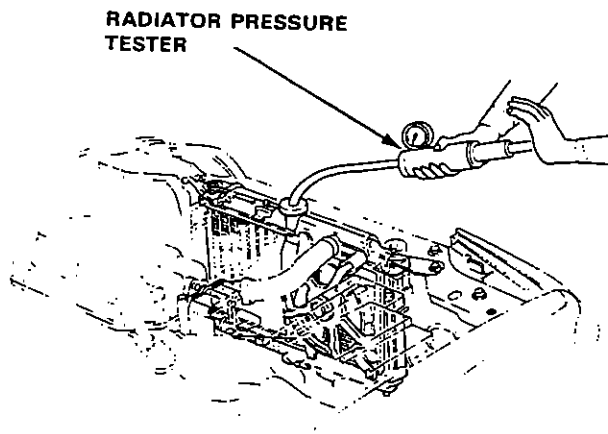
1. Remove the radiator cap, wet its seal with coolant, then install it on the pressure tester.
2. Apply a pressure of 74–103 kPa (0.75–1.05 kg/cm², 11–15 psi).
3. Check for a drop in pressure.



- 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.

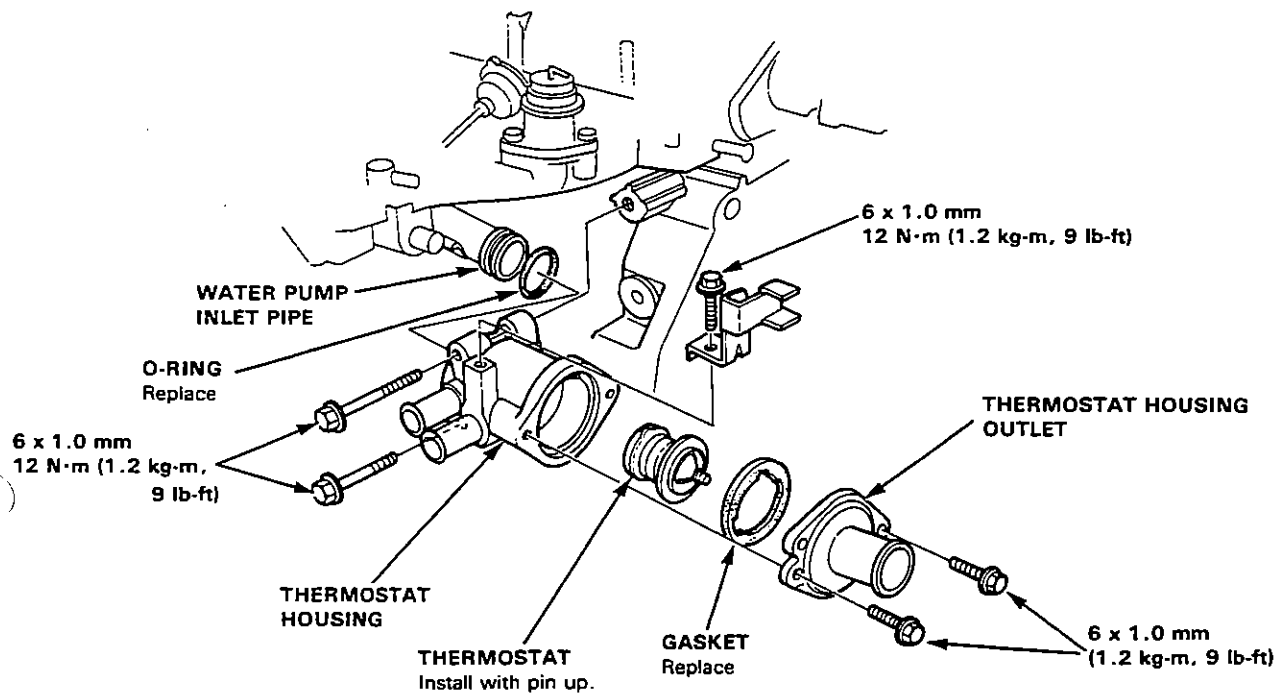


Thermostat



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.

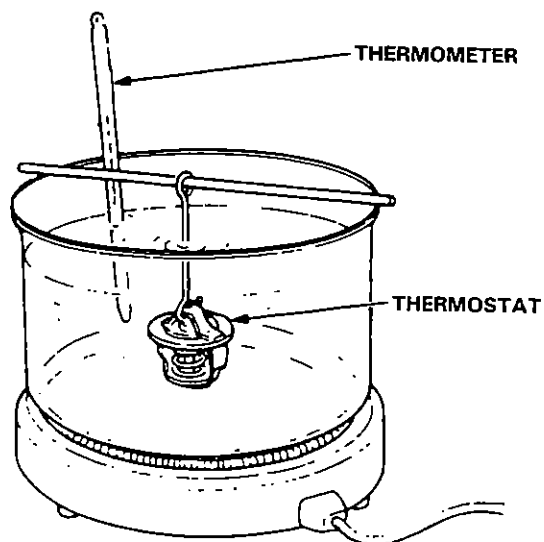
3. Measure lift height of thermostat when fully open.

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

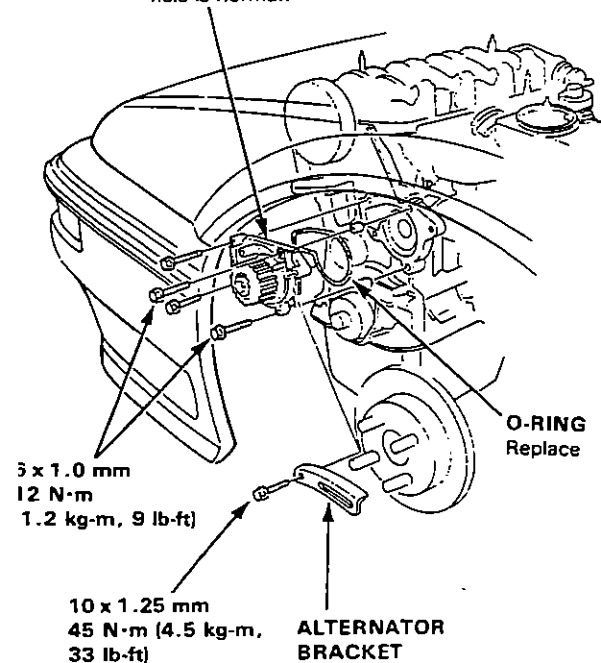
Replacement

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

Remove the water pump by removing five bolts.

WATER PUMP

Inspect for signs of seal leakage or bearing deterioration.
NOTE: Small amount of "weeping" from bleed hole is normal.



Install the water pump in the reverse order of removal.

Fuel and Emissions

Special Tools	6-2
Component Locations	
Index	6-3
System Description	
Vacuum Connections	6-7
Electrical Connections	6-12
Troubleshooting	
Troubleshooting Guide	6-14
Self-diagnostic Procedure	6-18
How to Read Flowcharts.....	6-20

PGM-FI Control System

Troubleshooting Flowcharts	
Electronic Control Unit.....	6-21
Oxygen Sensor	6-24
Mainfold Absolute Pressure	
Sensor.....	6-26
TDC/CRANK Sensor.....	6-32
TDC/CRANK/CYL Sensor	6-36
Coolant Temperature Sensor	6-42
Throttle Angle Sensor	6-44
CYL Sensor	6-46
Intake Air Temperature Sensor	6-48
IMA Sensor	6-50
Atmospheric Pressure Sensor	6-52
Ignition Output Signal	6-54
Vehicle Speed Sensor	6-56
CYL Sensor	6-57

Idle Control System

System Troubleshooting Guide	6-59
Troubleshooting Flowcharts	
Electronic Air Control Valve	6-61
Air Conditioning Signal.....	6-64
Alternator FR Signal	6-66
Starter Switch Signal	6-68
Idle Speed Setting	6-69

Fuel Supply System

System Troubleshooting Guide	6-70
Fuel Pressure	6-71
Fuel Injectors	6-72
Injector Resistor	6-76
Pressure Regulator.....	6-76
Fuel Filter	6-77
Fuel Pump.....	6-78
Main Relay	6-79
Fuel Tank	6-81

Air Intake System

System Troubleshooting Guide	6-82
Throttle Cable	6-83
Throttle Body	6-84
Throttle Control System	6-86

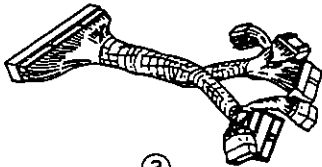
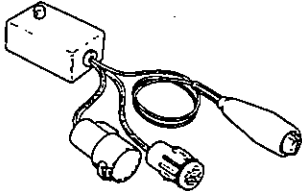
Emission Control System

System Troubleshooting Guide	6-89
Tailpipe Emission	6-90
Positive Crankcase Ventilation	
System	6-90
Catalytic Converter	6-91
Evaporative Emission Controls	6-92



pecial Tools

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



Component Locations



Index

SOHC With CATA

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Troubleshooting, page 6-26

DASHPOT CONTROL SOLENOID VALVE
Troubleshooting, page 6-86

PURGE CUT-OFF SOLENOID VALVE
Troubleshooting, page 6-92 or 96

INJECTOR RESISTOR
Testing, page 6-76

EACV
Troubleshooting, page 6-61

THROTTLE ANGLE SENSOR
Troubleshooting, page 6-44

TDC/CRANK/CYL SENSOR
Troubleshooting, page 6-36

OXYGEN (O₂) SENSOR
Troubleshooting, page 6-24

INTAKE AIR TEMPERATURE (TA) SENSOR
Troubleshooting, page 6-48

COOLANT TEMPERATURE (TW) SENSOR
Troubleshooting, page 6-42

SOHC Without CATA

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Troubleshooting, page 6-26

DASHPOT CONTROL SOLENOID VALVE
Troubleshooting, page 6-86

THROTTLE ANGLE SENSOR
Troubleshooting, page 6-44

EACV
Troubleshooting, page 6-61

INJECTOR RESISTOR
Testing, page 6-76

TDC/CRANK/CYL SENSOR
Troubleshooting, page 6-36

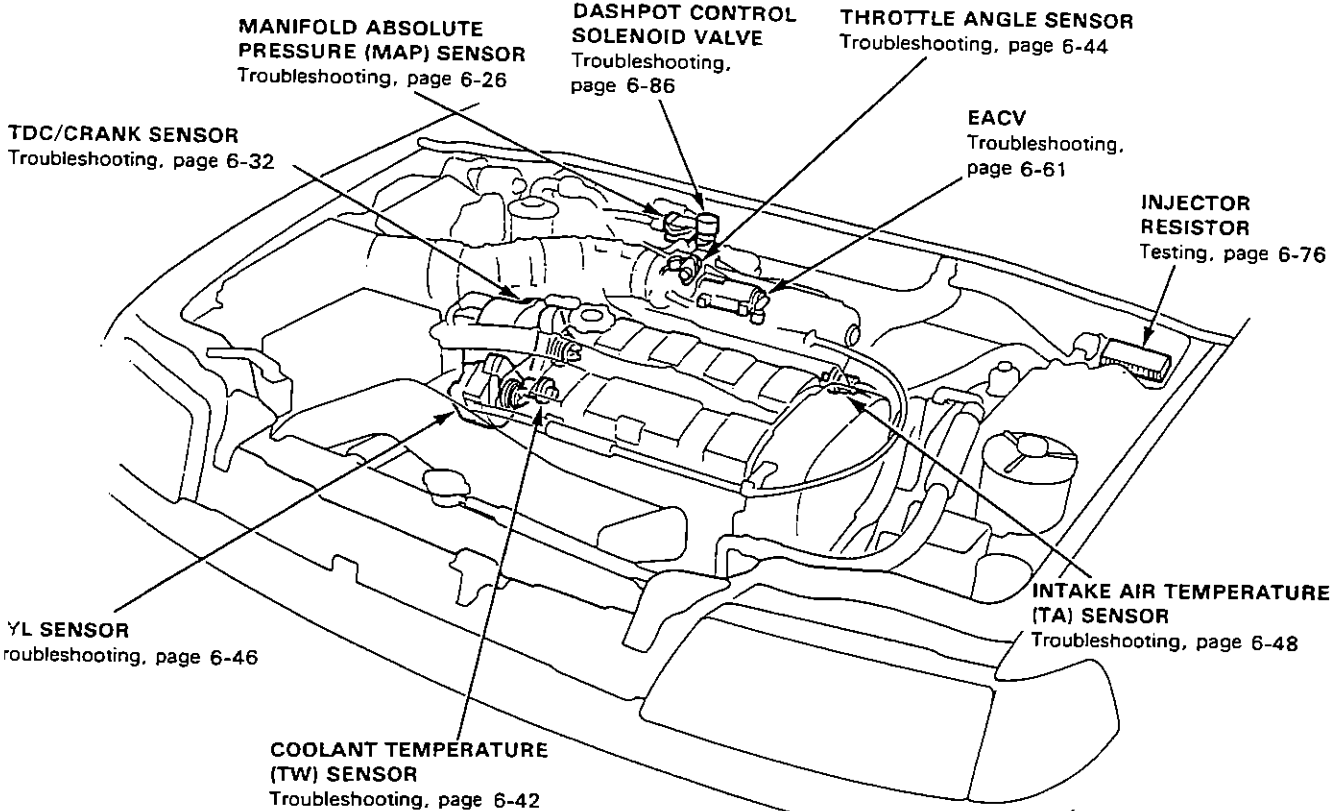
COOLANT TEMPERATURE (TW) SENSOR
Troubleshooting, page 6-42

INTAKE AIR TEMPERATURE (TA) SENSOR
Troubleshooting, page 6-48

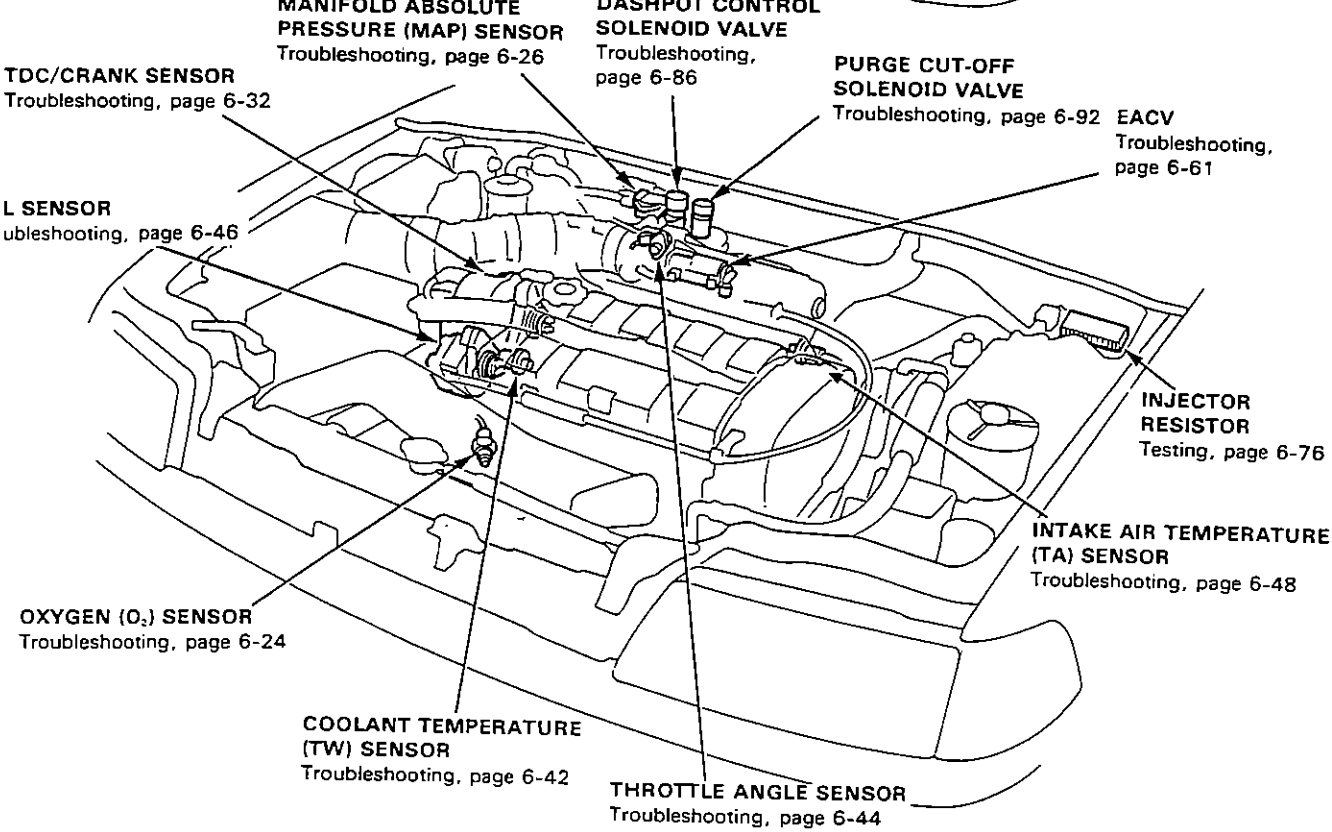
Component Locations

Index

DOHC without CATA



DOHC with CATA





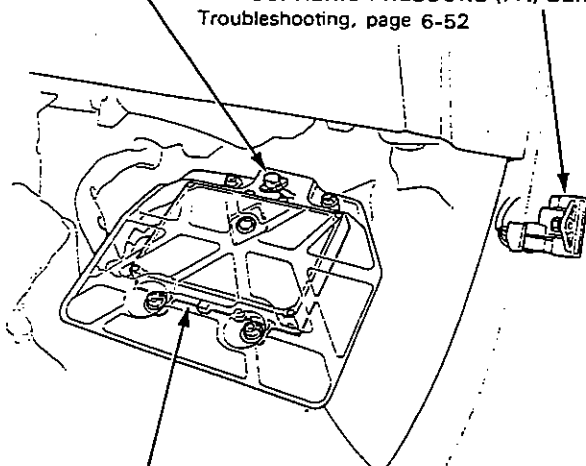
LHD

IMA SENSOR [Without CATA]

Troubleshooting, page 6-50

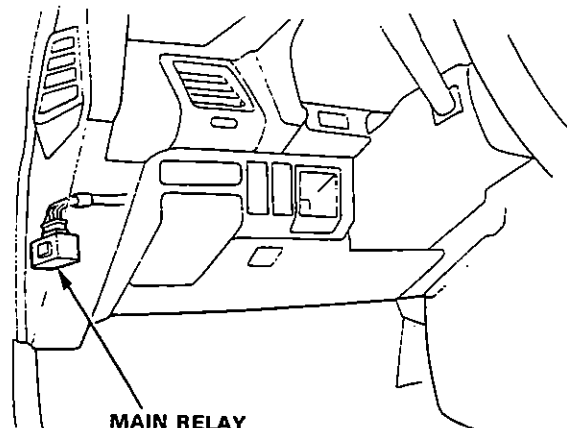
ATMOSPHERIC PRESSURE (PA) SENSOR

Troubleshooting, page 6-52



ELECTRONIC CONTROL UNIT (ECU)

Troubleshooting, page 6-21



MAIN RELAY

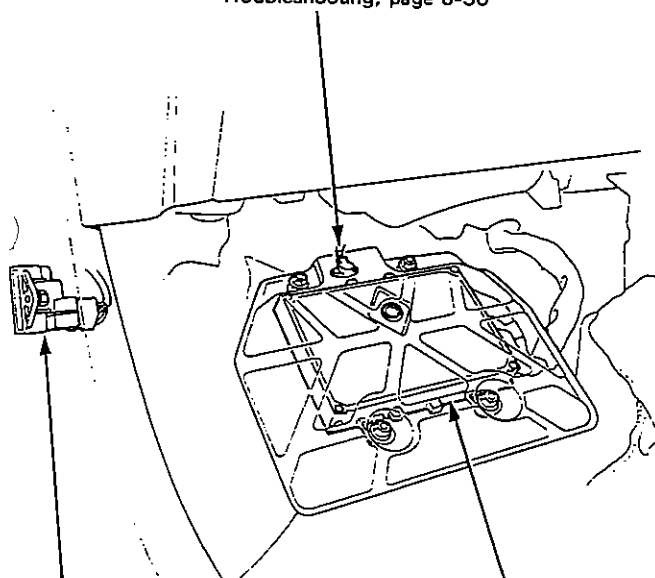
Relay Testing, page 6-79

Harness Testing, 6-80

RHD

IMA SENSOR [KE]

Troubleshooting, page 6-50

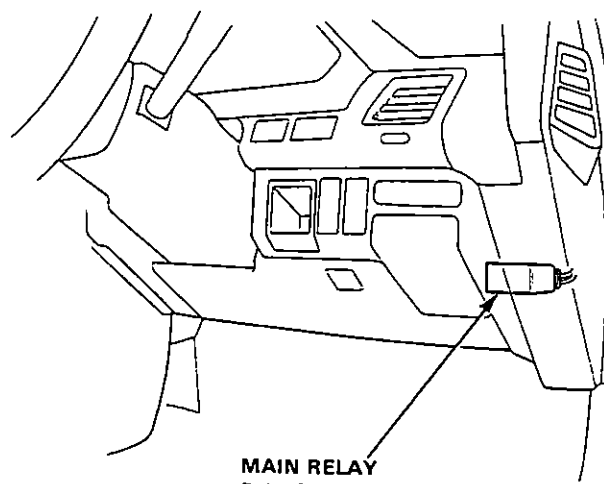


ATMOSPHERIC PRESSURE (PA) SENSOR [KE]

Troubleshooting, page 6-52

ELECTRONIC CONTROL UNIT (ECU)

Troubleshooting, page 6-21



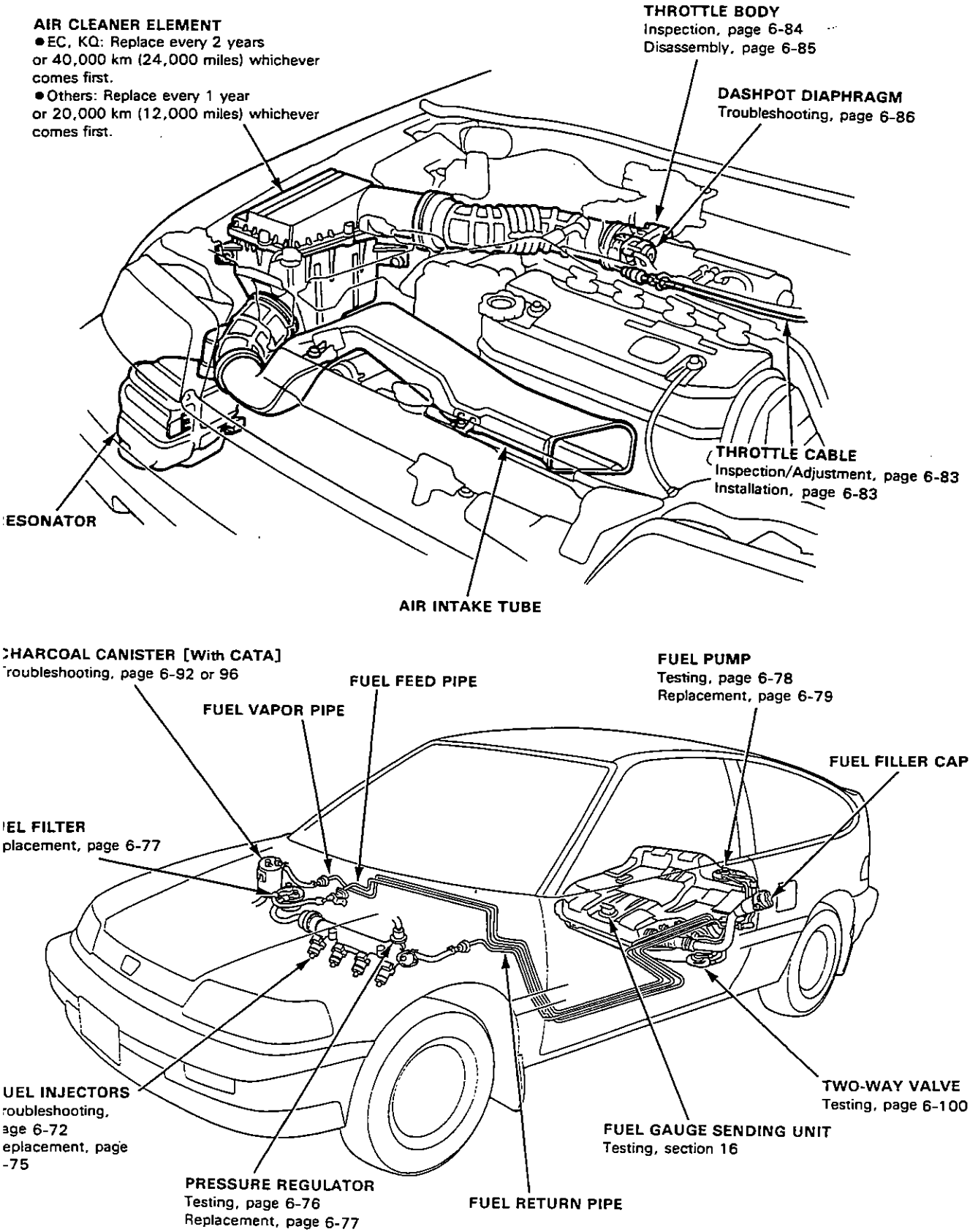
MAIN RELAY

Relay Testing, page 6-79

Harness Testing, 6-80

Component Locations

Index



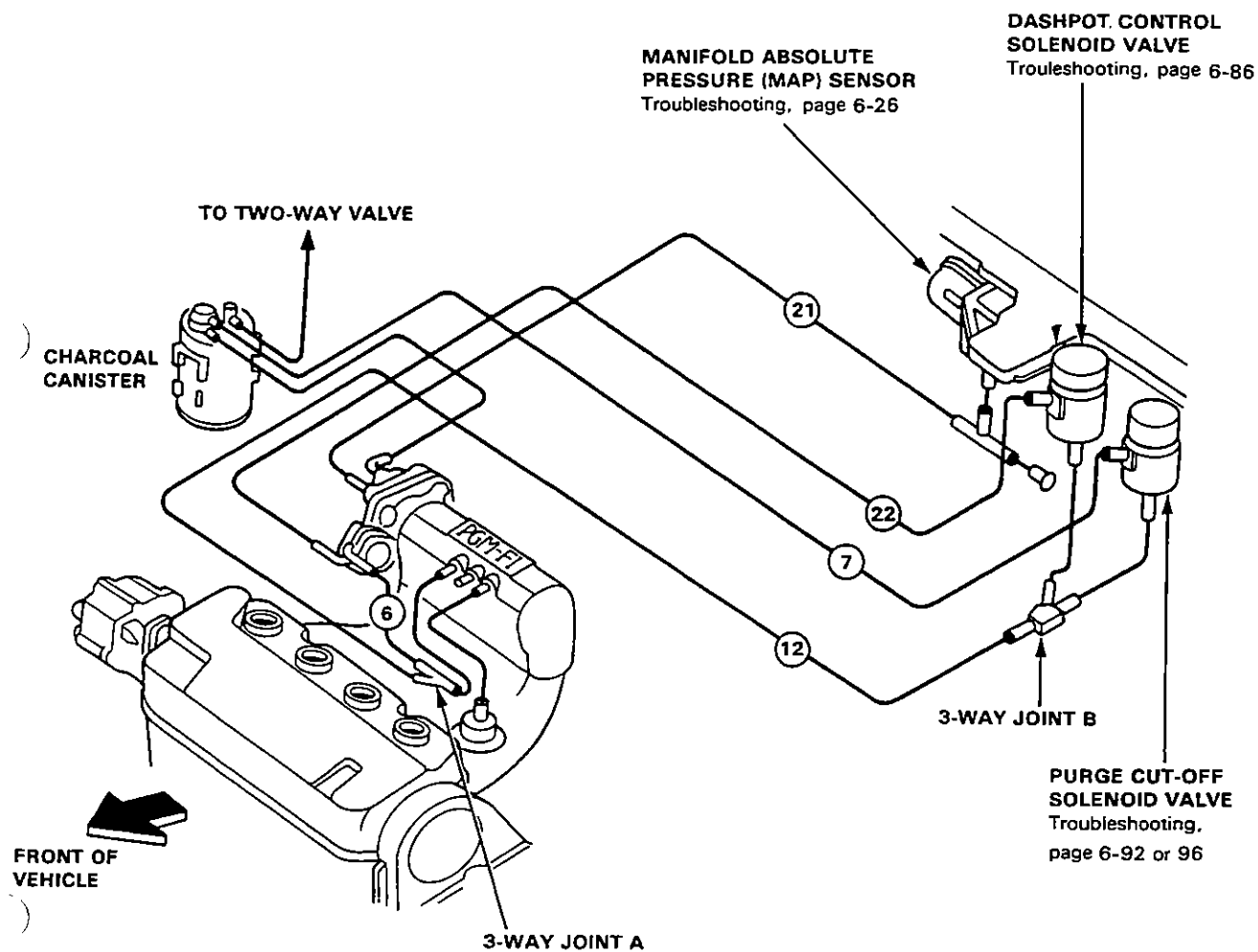
Systems Description



Vacuum Connections

With CATA

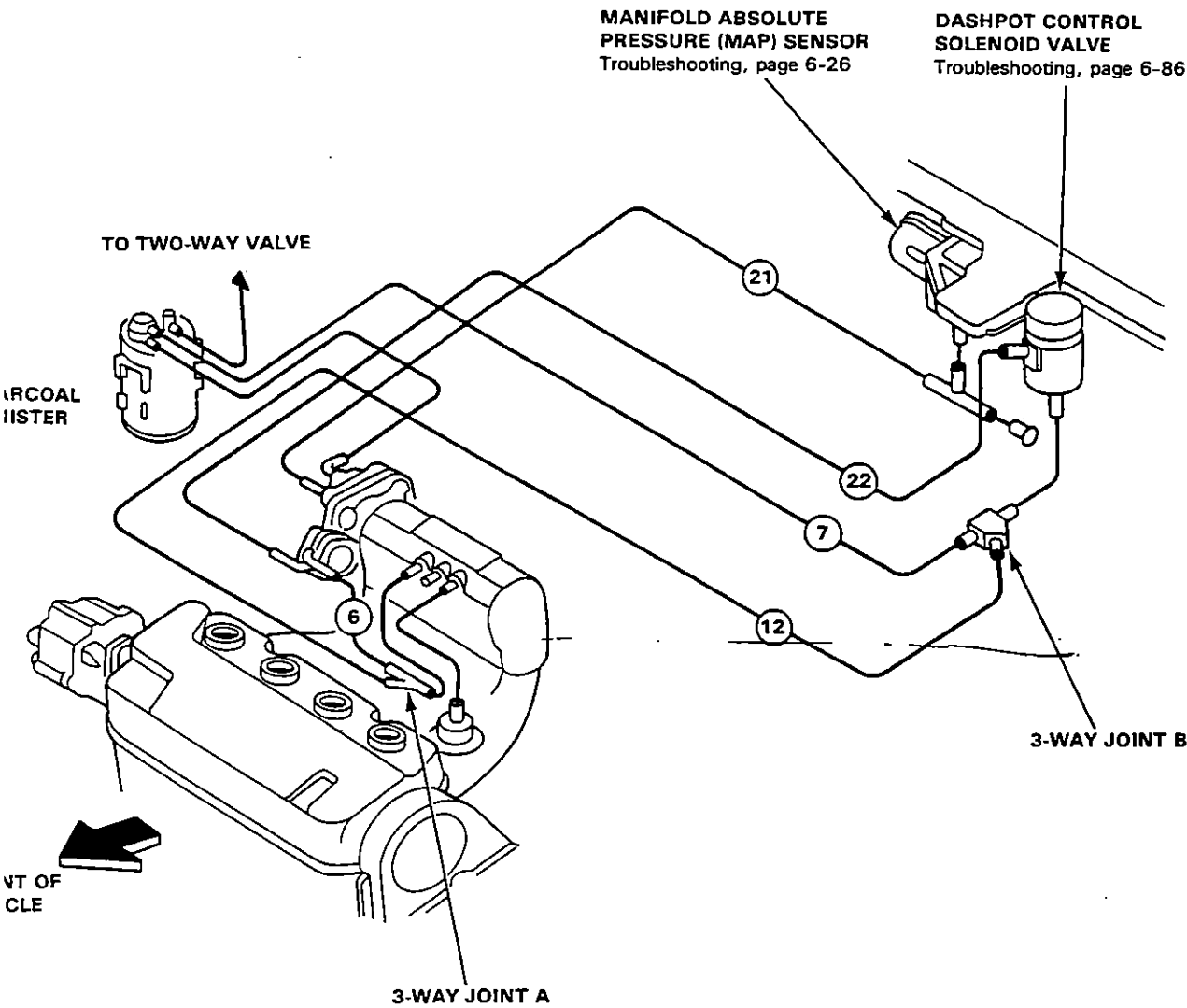
NOTE: The illustration is SOHC type. DOHC type is the same as of SOHC type, except for the cylinder head.



Systems Description

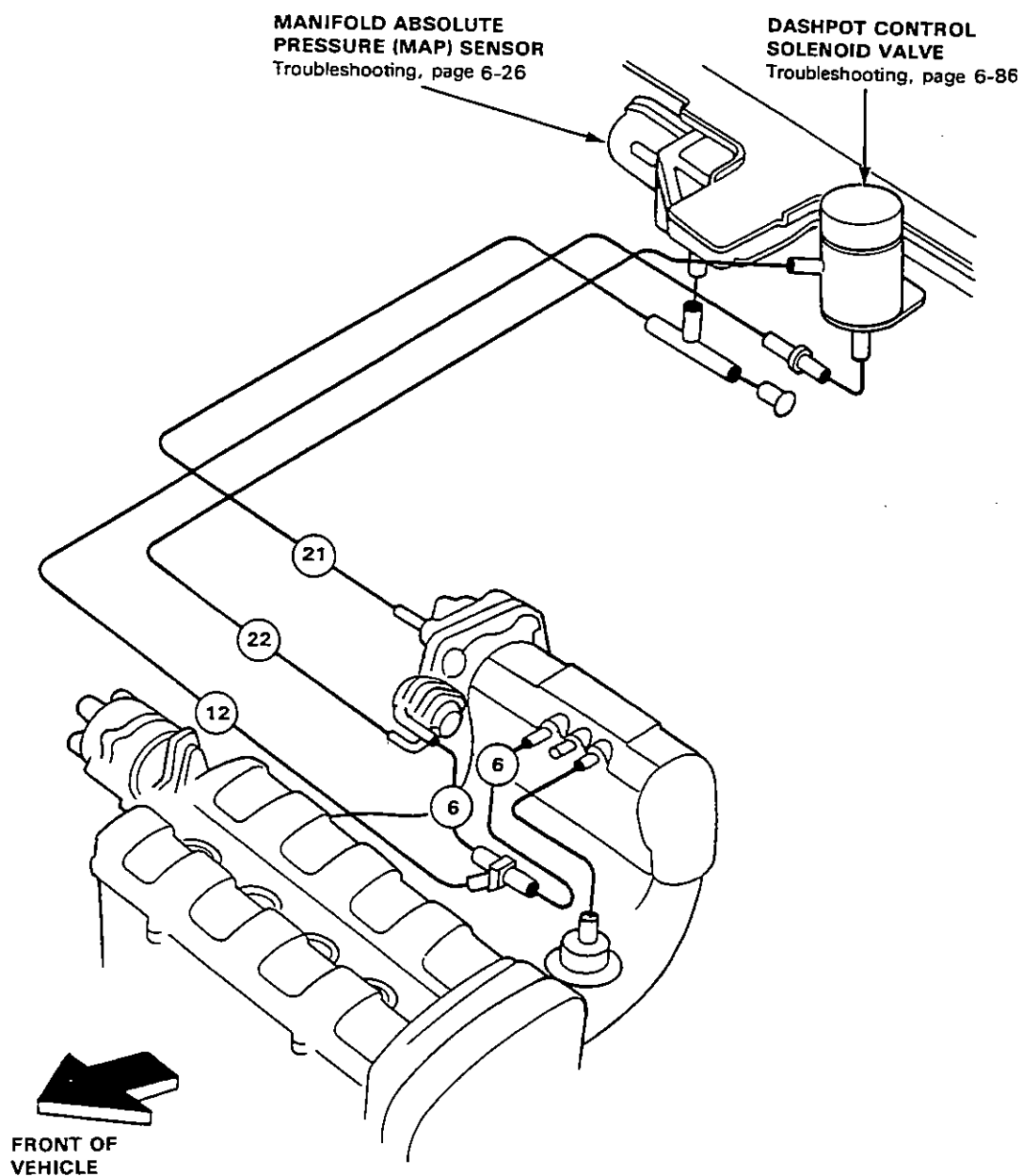
Vacuum Connections

KY



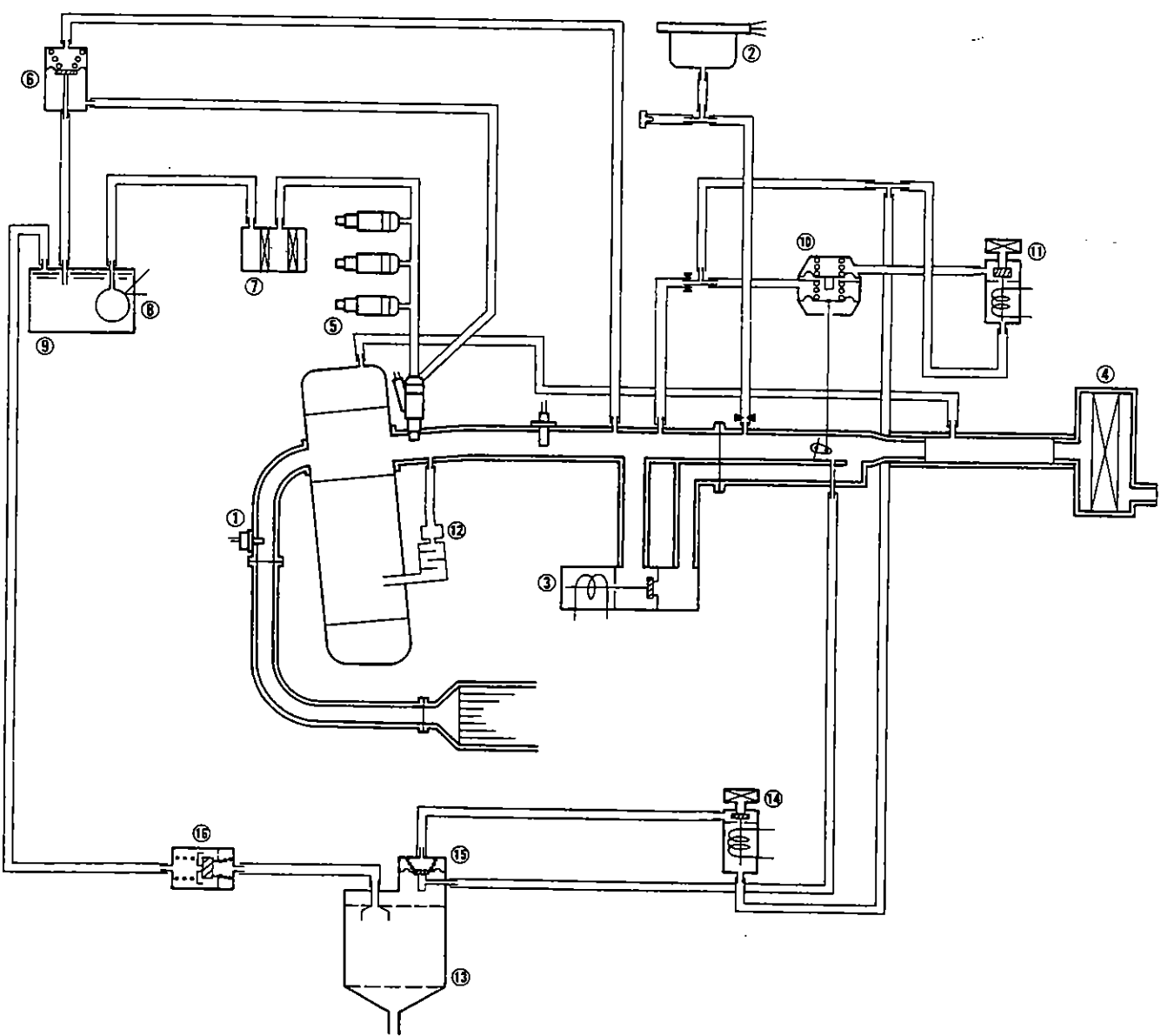


Without CATA Ex. KY



Systems Descriptions

Vacuum Connections [With CATA]

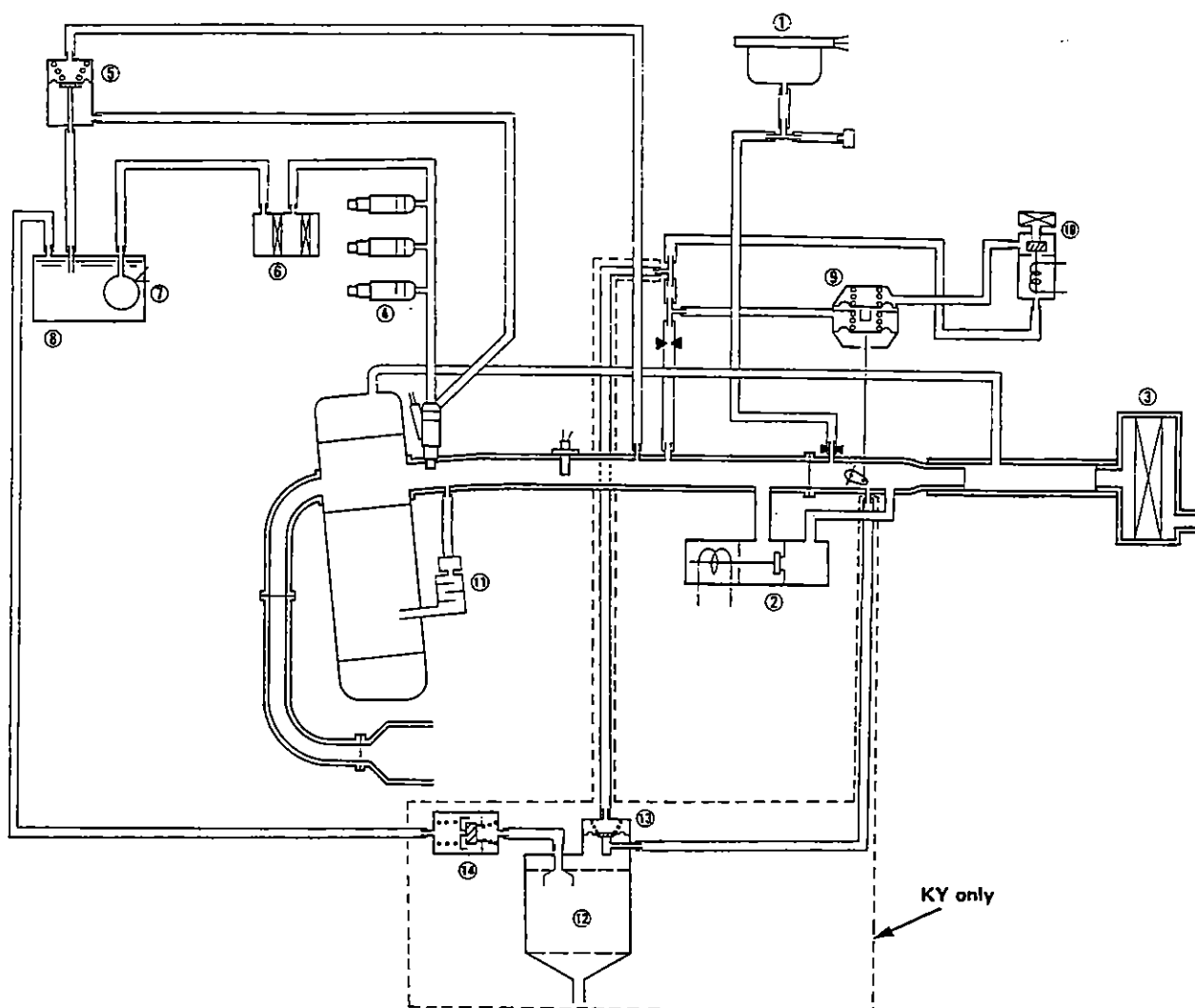


- ① OXYGEN (O₂) SENSOR
- ② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
- ③ ELECTRONIC AIR CONTROL VALVE (EACV)
- ④ AIR CLEANER
- ⑤ FUEL INJECTOR
- ⑥ PRESSURE REGULATOR
- ⑦ FUEL FILTER
- ⑧ FUEL PUMP
- ⑨ FUEL TANK
- ⑩ DASHPOT DIAPHRAGM

- ⑪ DASHPOT CONTROL SOLENOID VALVE
- ⑫ PCV VALVE
- ⑬ CHARCOAL CANISTER
- ⑭ PURGE CUT-OFF SOLENOID VALVE
- ⑮ PURGE CONTROL DIAPHRAGM VALVE
- ⑯ TWO-WAY VALVE



Vacuum Connections [Without CATA]



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

Electrical Connections [With CATA]

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

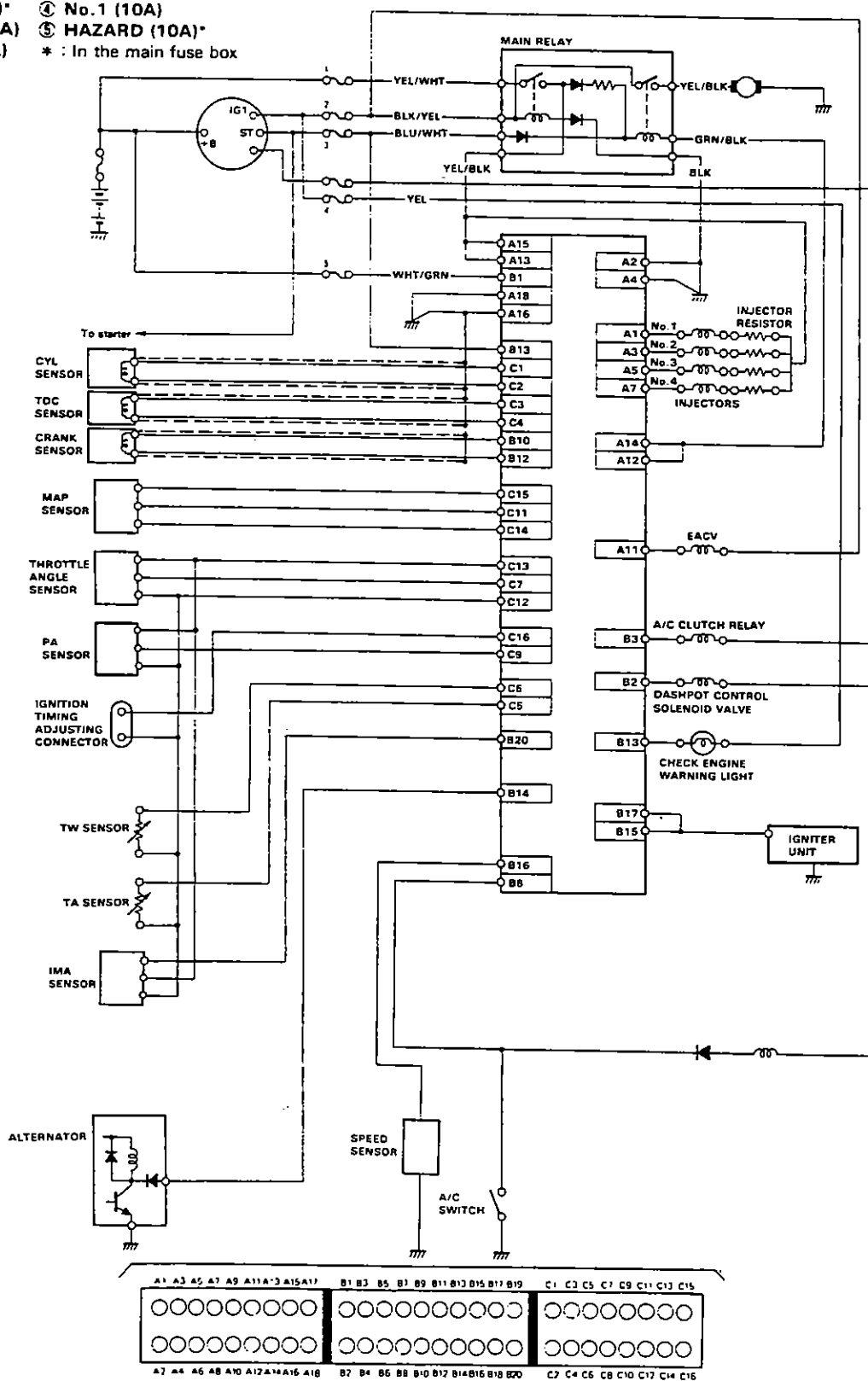




Electrical Connections [Without CATA]

FUSES

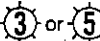
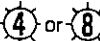
- ① ECU (15A)*
 - ② No.14 (10A)
 - ③ No.2 (10A)
 - ④ No.1 (10A)
 - ⑤ HAZARD (10A)*
- * : In the main fuse box



Troubleshooting

Troubleshooting Guide [With CATA]

NOTE: Across each row in the chart, the systems that could be sources of a symptom are ranked in the order they should be 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	PGM-FI						
			ECU	OXYGEN SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERATURE SENSOR
SYMPTOM		21	24	26	32	46	36	42	44
CHECK ENGINE WARNING LIGHT TURNS ON		 or 							
SELF-DIAGNOSIS INDICATOR (LED) BLINKS									
ENGINE WON'T START									
DIFFICULT TO START ENGINE WHEN COLD									
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC								
	ROUGH IDLE								
	WHEN WARM IDLE SPEED TOO HIGH								
	WHEN WARM IDLE SPEED TOO LOW								
FREQUENT STALLING	WHILE WARMING UP								
	AFTER WARMING UP								
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING								
	FAILS EMISSION TEST								
	LOSS OF POWER								

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

troubleshooting

Troubleshooting Guide [Without CATA]

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

PAGE		SYSTEM	PGM-FI						
			ECU	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERA- TURE SENSOR	THROTTLE ANGLE SENSOR
SYMPTOM		21	26	32	46	36	42	44	48
CHECK ENGINE WARNING LIGHT TURNS ON		 or 							
SELF-DIAGNOSIS INDICATOR (LED) BLINKS									
ENGINE WON'T START									
DIFFICULT TO START ENGINE WHEN COLD									
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC								
	ROUGH IDLE								
	WHEN WARM IDLE SPEED TOO HIGH								
	WHEN WARM IDLE SPEED TOO LOW								
FREQUENT STALLING	WHILE WARMING UP								
	AFTER WARMING UP								
POOR PERFORM- ANCE	MISFIRE OR ROUGH RUNNING								
	FAILS EMISSION TEST								
	LOSS OF POWER								

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

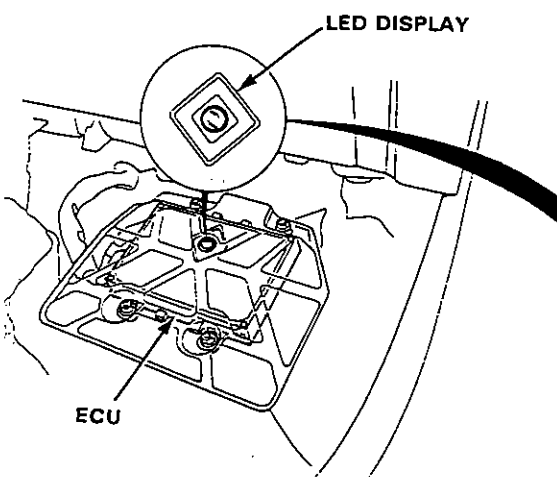


PGM-FI				IDLE CONTROL		FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
IMA SENSOR	ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS			
50	52	54	56	61	59	70	82	89
								
								
		②				①		
					②			
				①	②			
				③	①			
				②	①			
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



LED DISPLAY

ECU

Separate Problems:

 = See Problem CODE 1

 = See Problem CODE 2

 = See Problem CODE 3

Simultaneous Problems:

 = See Problem CODE 1 and 2

 = See Problem CODE 2 and 4

 = See Problem CODE 1, 2 and 3

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

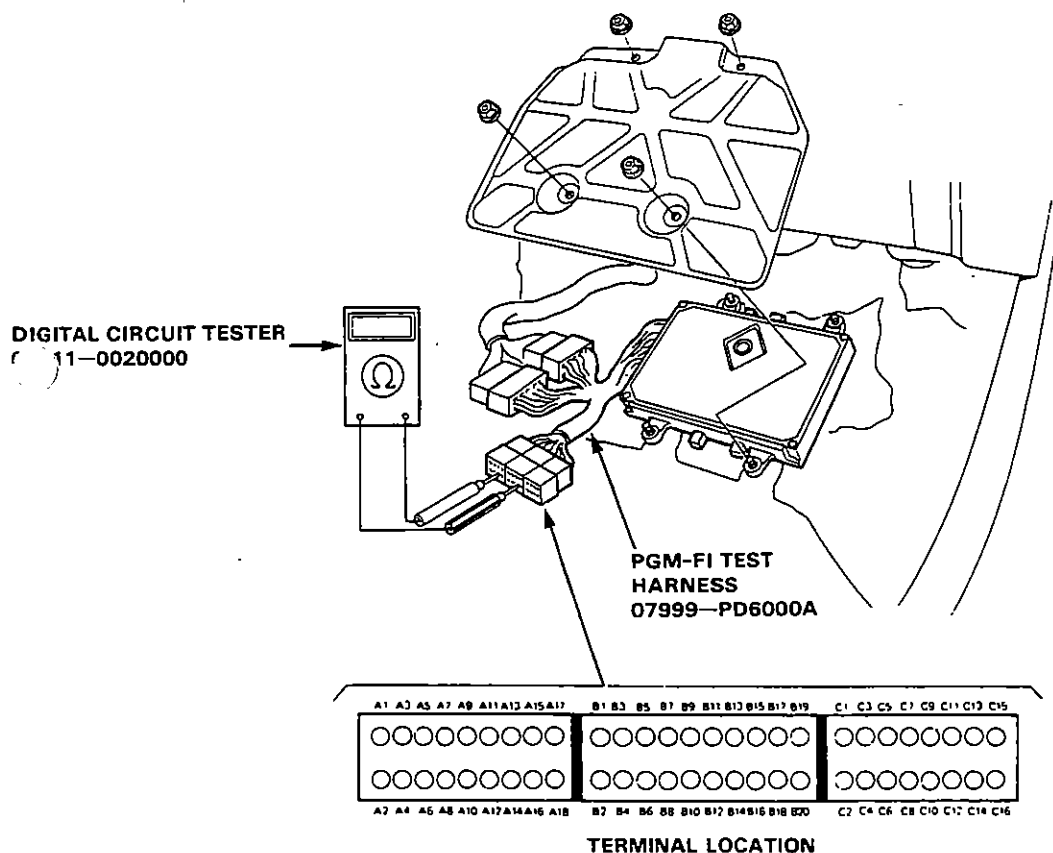
If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

If 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.

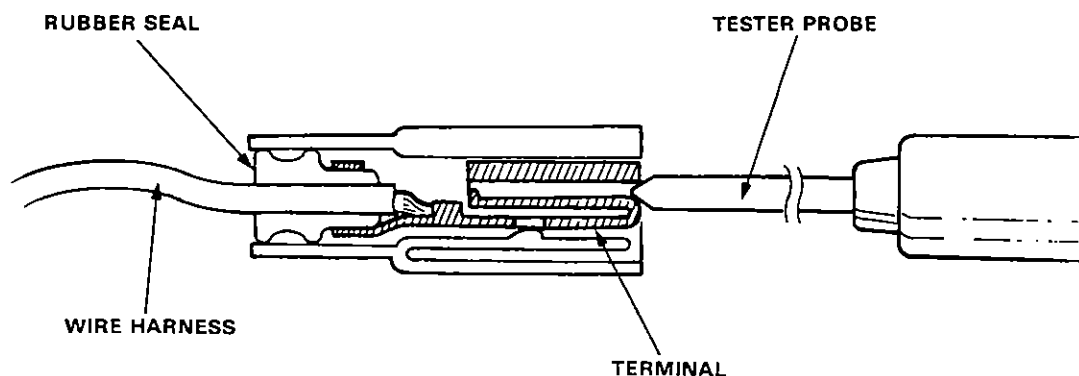


If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure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



CAUTION:

- Puncturing the insulation on a wire can cause poor or intermittent electrical connections.
- For testing at connectors other than the PGM-FI test harness, bring the tester probe into contact with the terminal from the connector side of wire harness connectors in the engine compartment. For female connectors, just touch lightly with the tester probe and do not insert the probe.



troubleshooting

How to Read Flowcharts

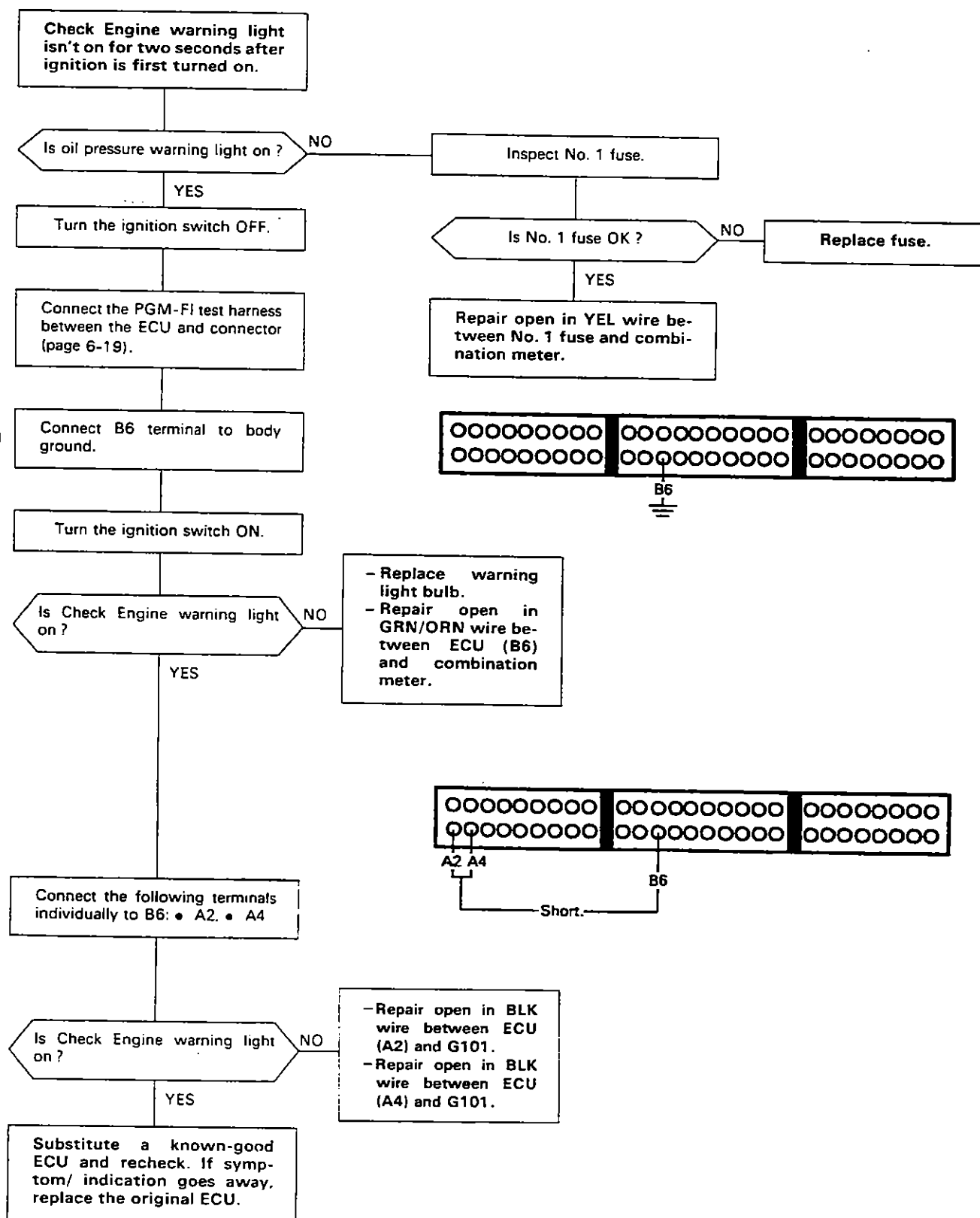
A flowchart is designed to be used from start to final repair. It's like a map showing you the shortest distance. But beware: if you go off the "map" anywhere but a "stop" symbol, you can easily get lost.

- 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.



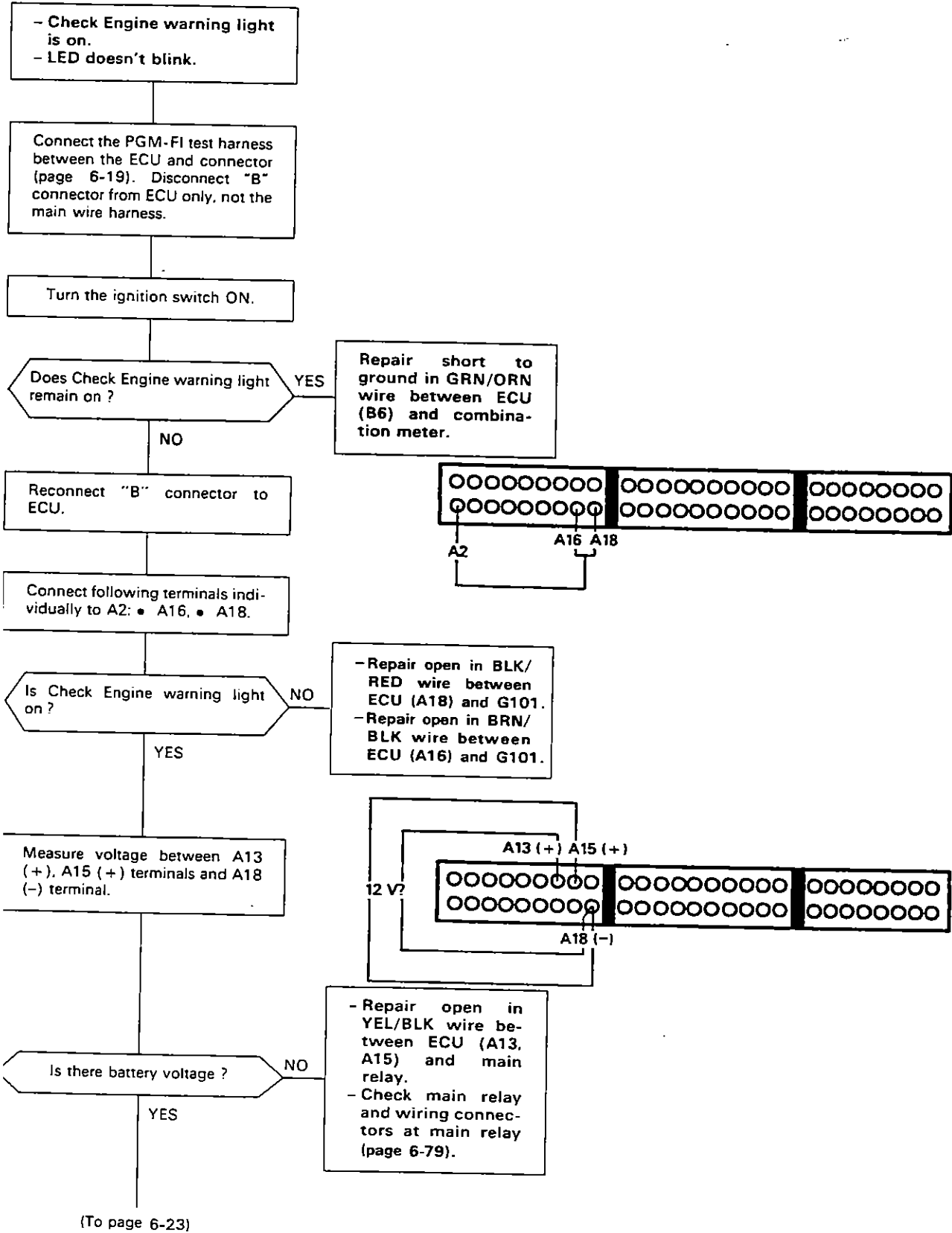
Troubleshooting Flowchart — ECU —



(cont'd)

3M-FI Control System

Troubleshooting Flowchart — ECU (cont'd) —





(From page 6-22)

Turn the ignition switch OFF.

Disconnect the 3P connector of each sensor one at a time:

- MAP sensor
- Throttle angle sensor
- PA sensor (Ex. KQ)
- IMA sensor (Without CATA)

Start the engine.

Does LED indicate the CODE for the sensor disconnected?

NO

Replace the sensor that did not cause the CODE to appear upon its disconnection.

YES

Reconnect all connectors.

Turn the ignition switch OFF.

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

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

- C13
- C15

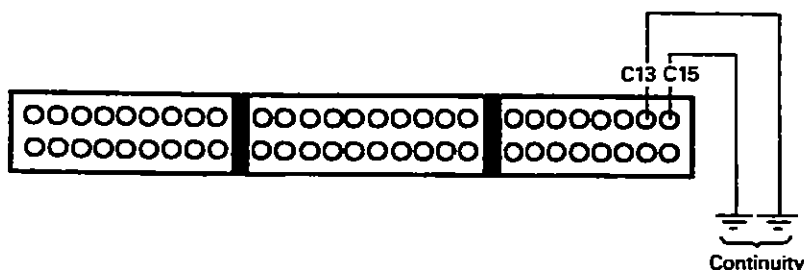
Does continuity exist?

YES

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

NO

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

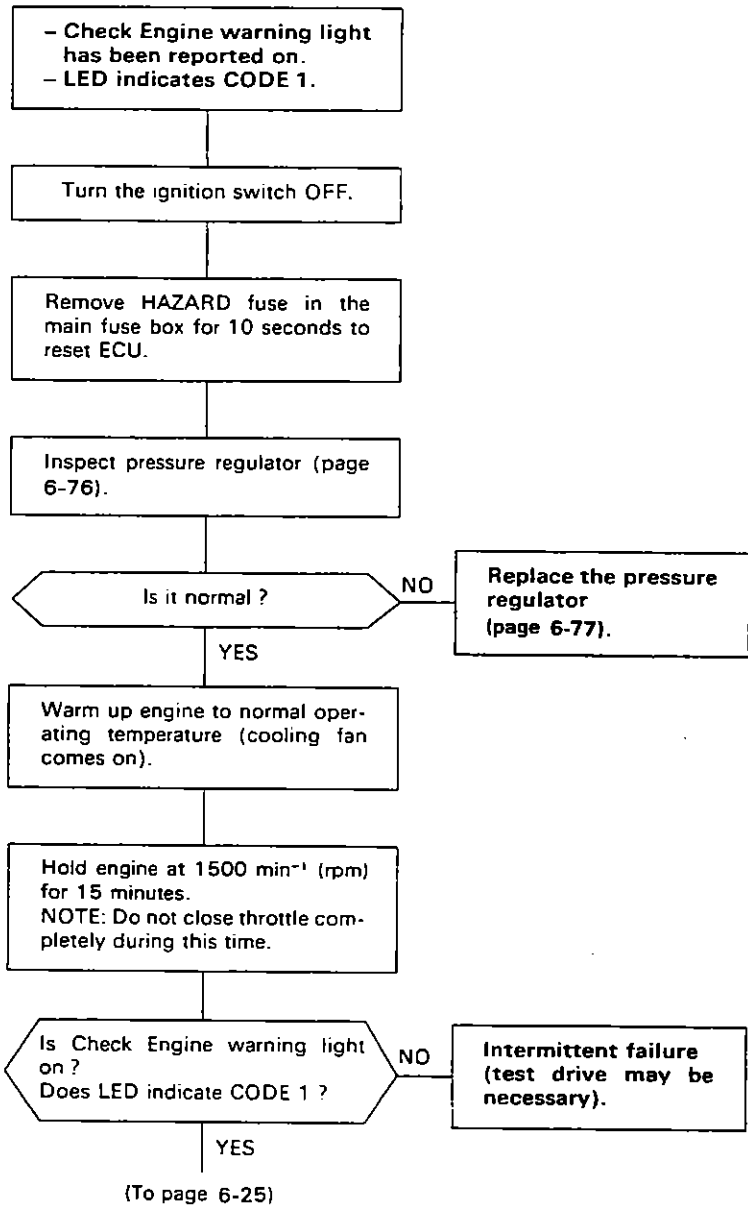


IM-FI Control System

Troubleshooting Flowchart — Oxygen Sensor [With CATA]



Self-diagnosis LED blinks once: A problem in the Oxygen (O₂) Sensor circuit.





(From page 6-24)

Disconnect engine wire harness from O₂ 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 O₂ sensor.

YES

Stop engine.

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

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

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

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

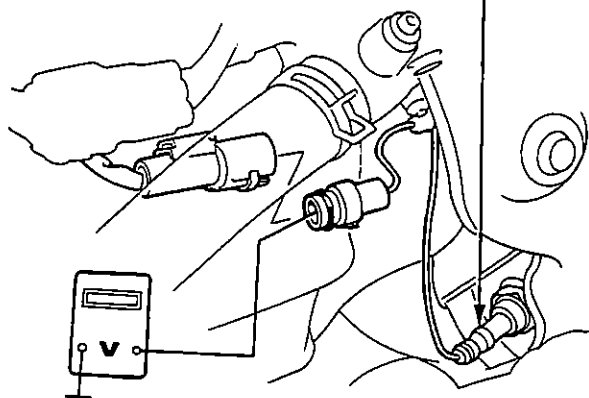
NO

Repair short or open in WHT wire between ECU (C16) and O₂ sensor.

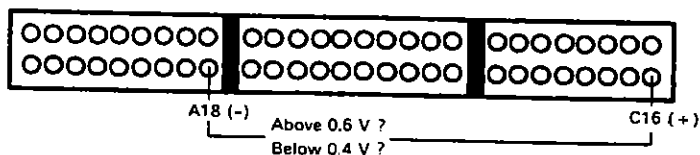
YES

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

O₂ SENSOR
45 N·m (4.5 kg-m, 33lb-ft)



DIGITAL CIRCUIT TESTER
07411-0020000



M-FI Control System

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).

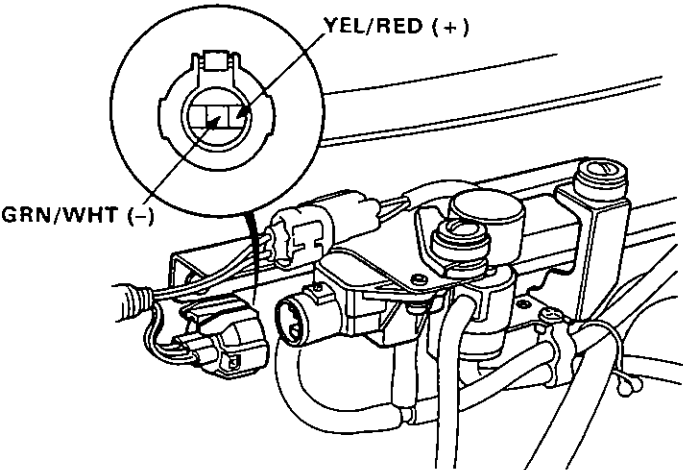
YES

Turn the ignition switch OFF.

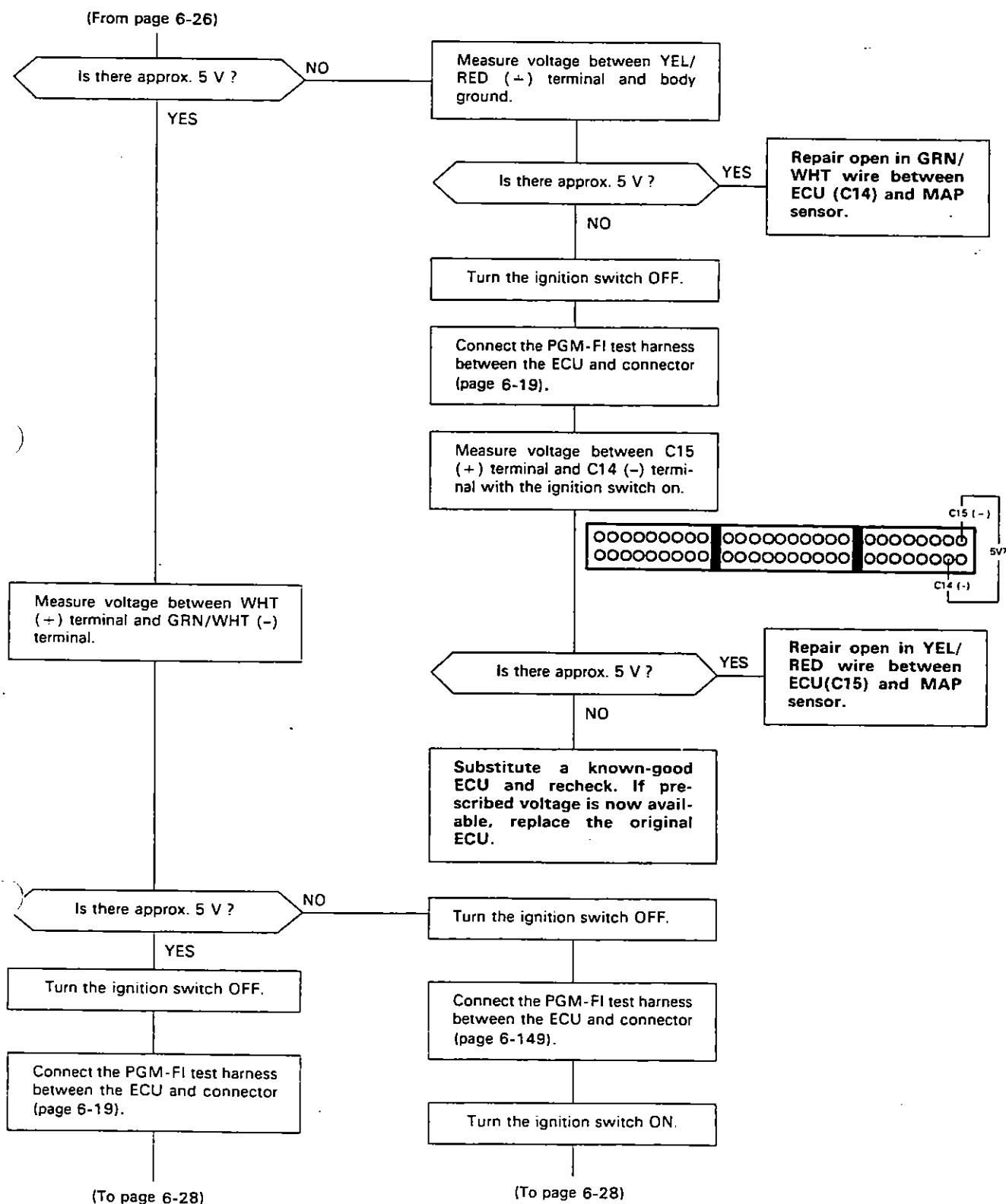
Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

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

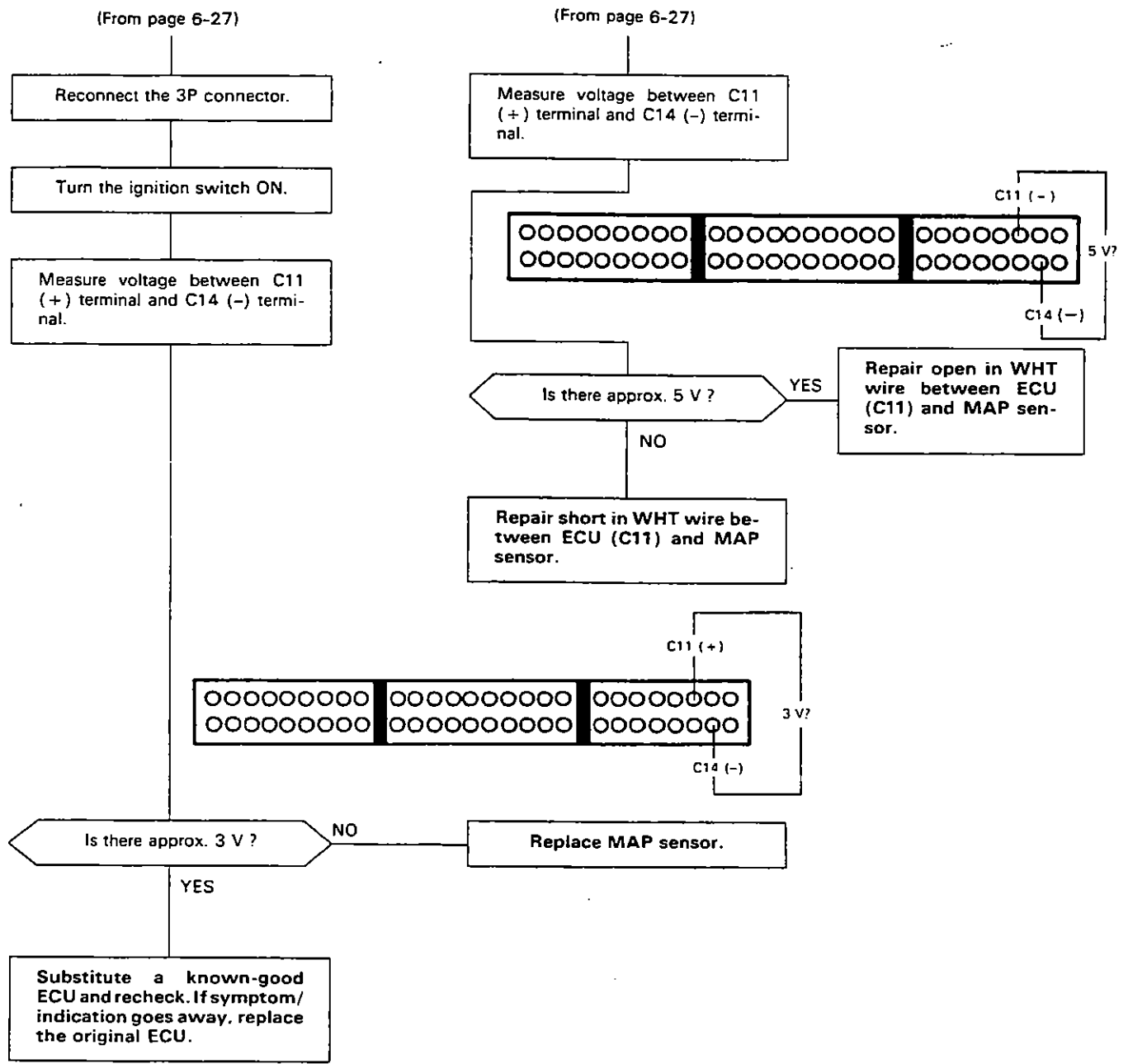


(To page 6-27)



GM-FI Control System

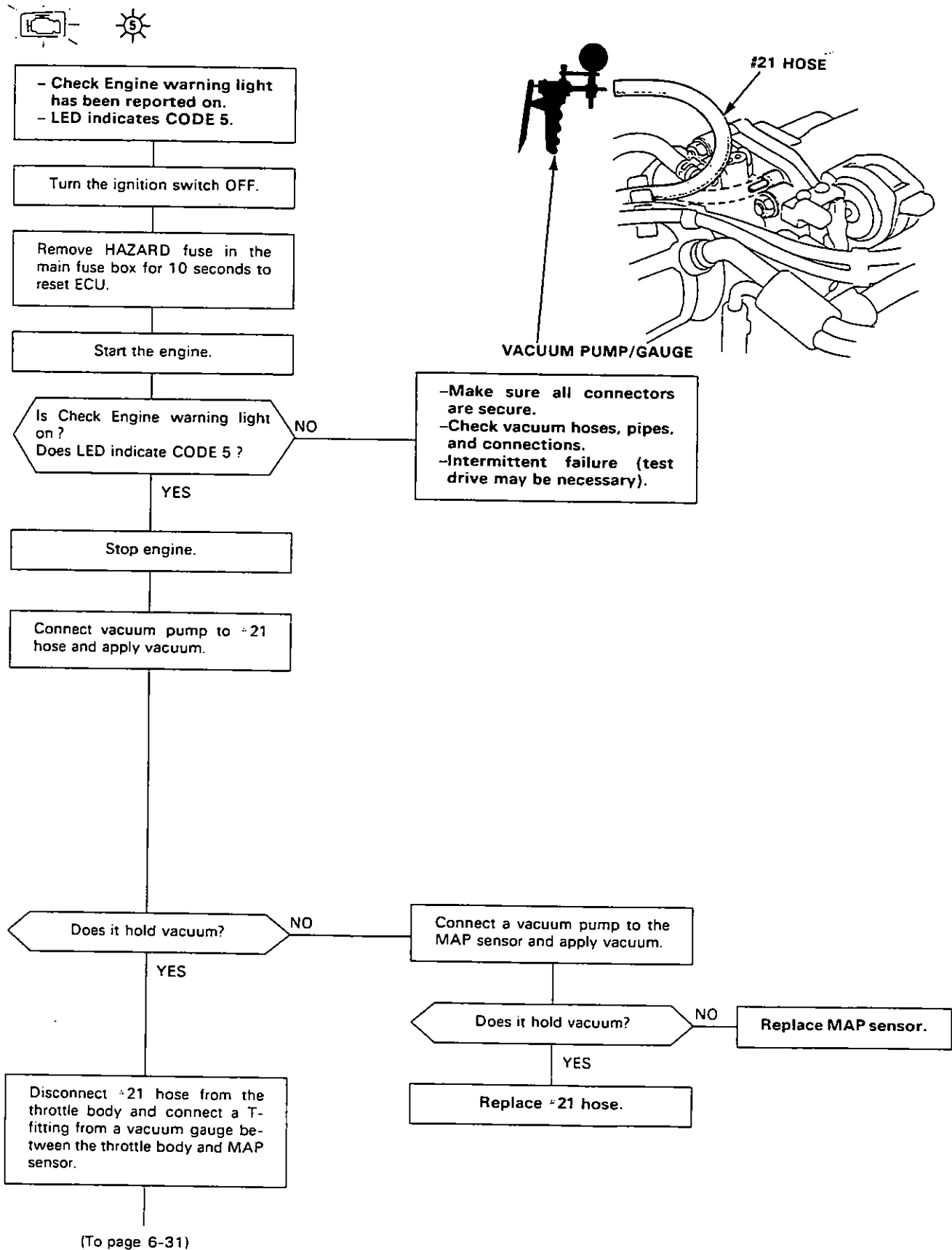
- Troubleshooting Flowchart — MAP Sensor (cont'd) —

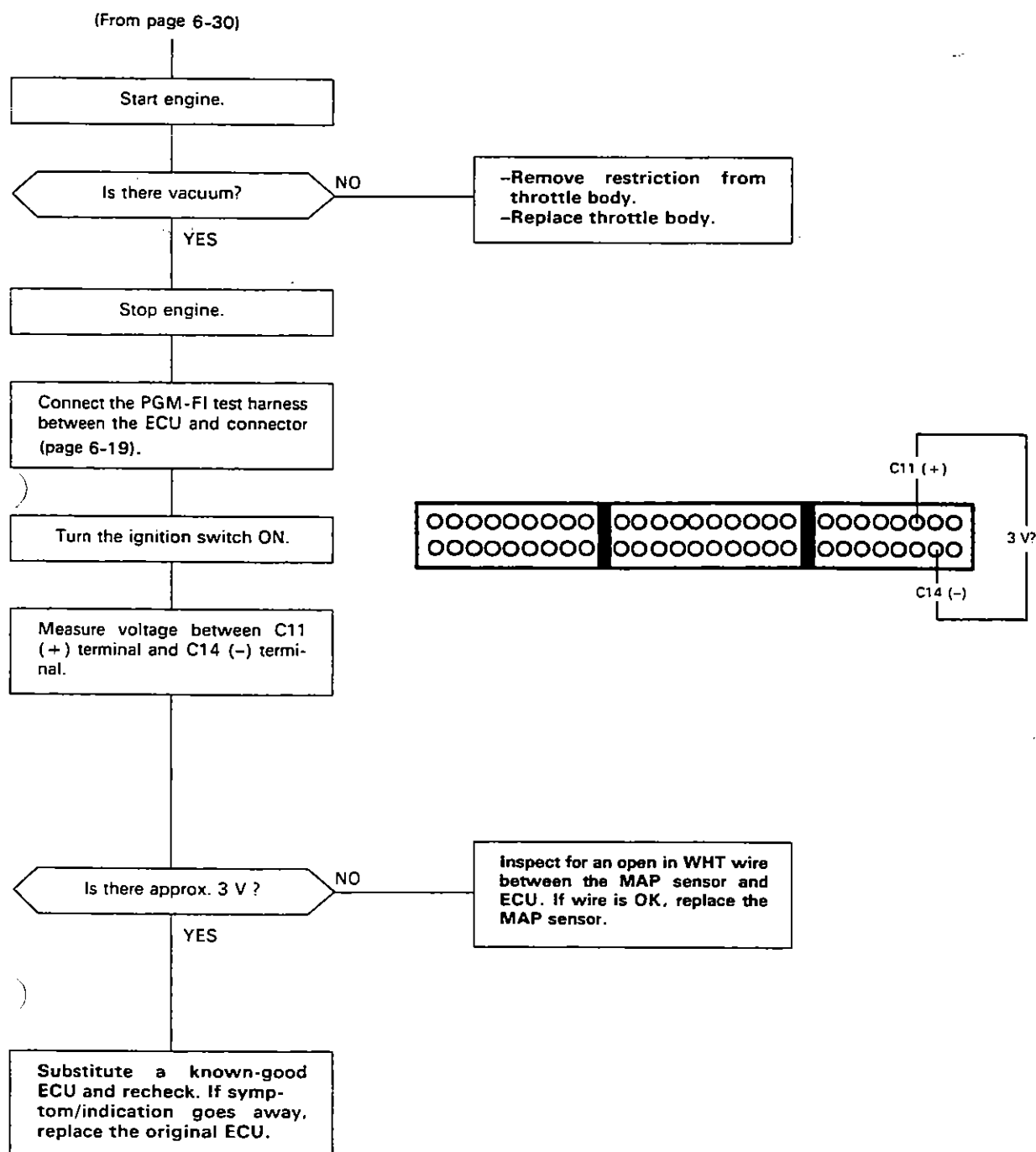




PGM-FI Control System

— Troubleshooting Flowchart — MAP Sensor (cont'd)





PGM-FI Control System

Troubleshooting Flowchart — TDC/CRANK Sensor [DOHC]



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



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



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

Turn the ignition switch OFF.

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

Start engine.

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

NO

Intermittent failure
(test drive may be necessary).

YES

Stop engine.

Disconnect 6P connector from the TDC/CRANK sensor.

Measure resistance between D terminal and E terminal.

Is there 350-550 Ω ?

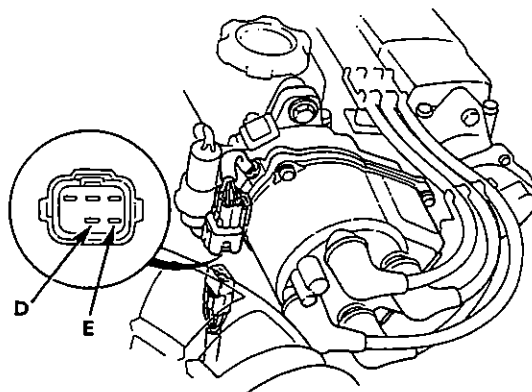
NO

Replace the distributor assembly
(section 16).

YES

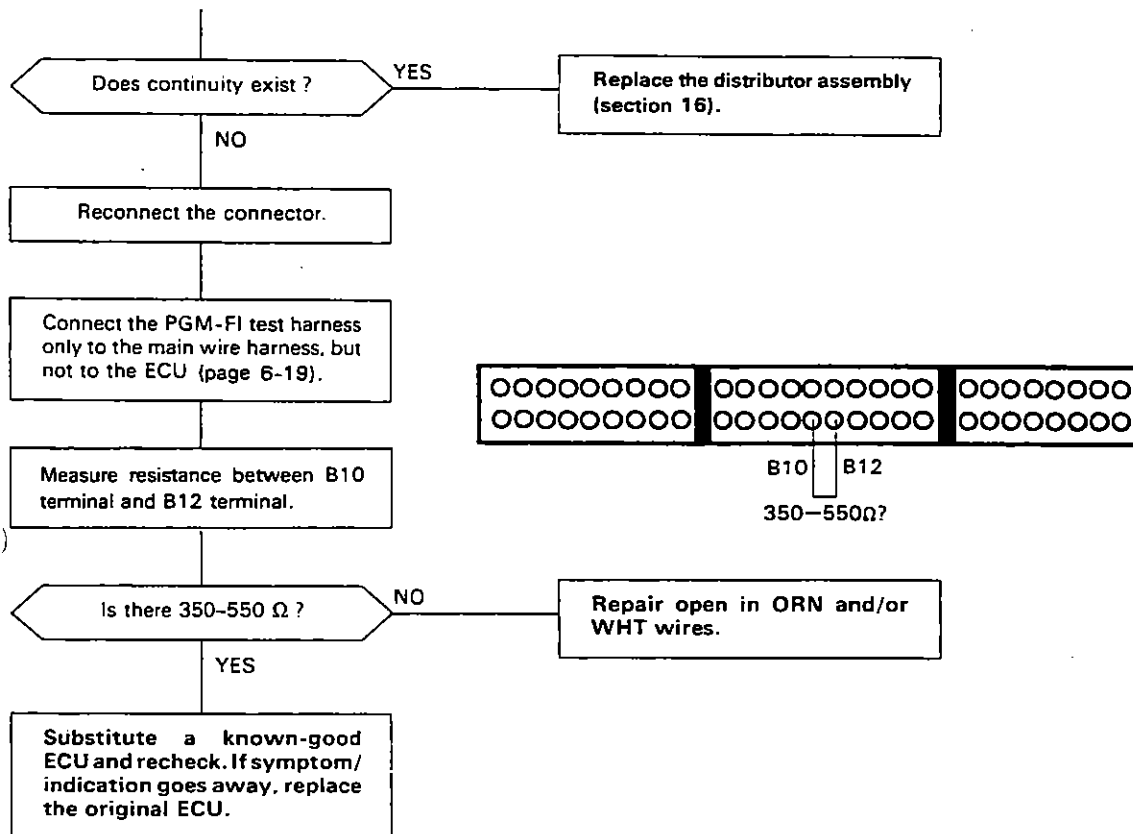
Check for continuity to body ground on D terminal and E terminal individually.

(To page 6-33)





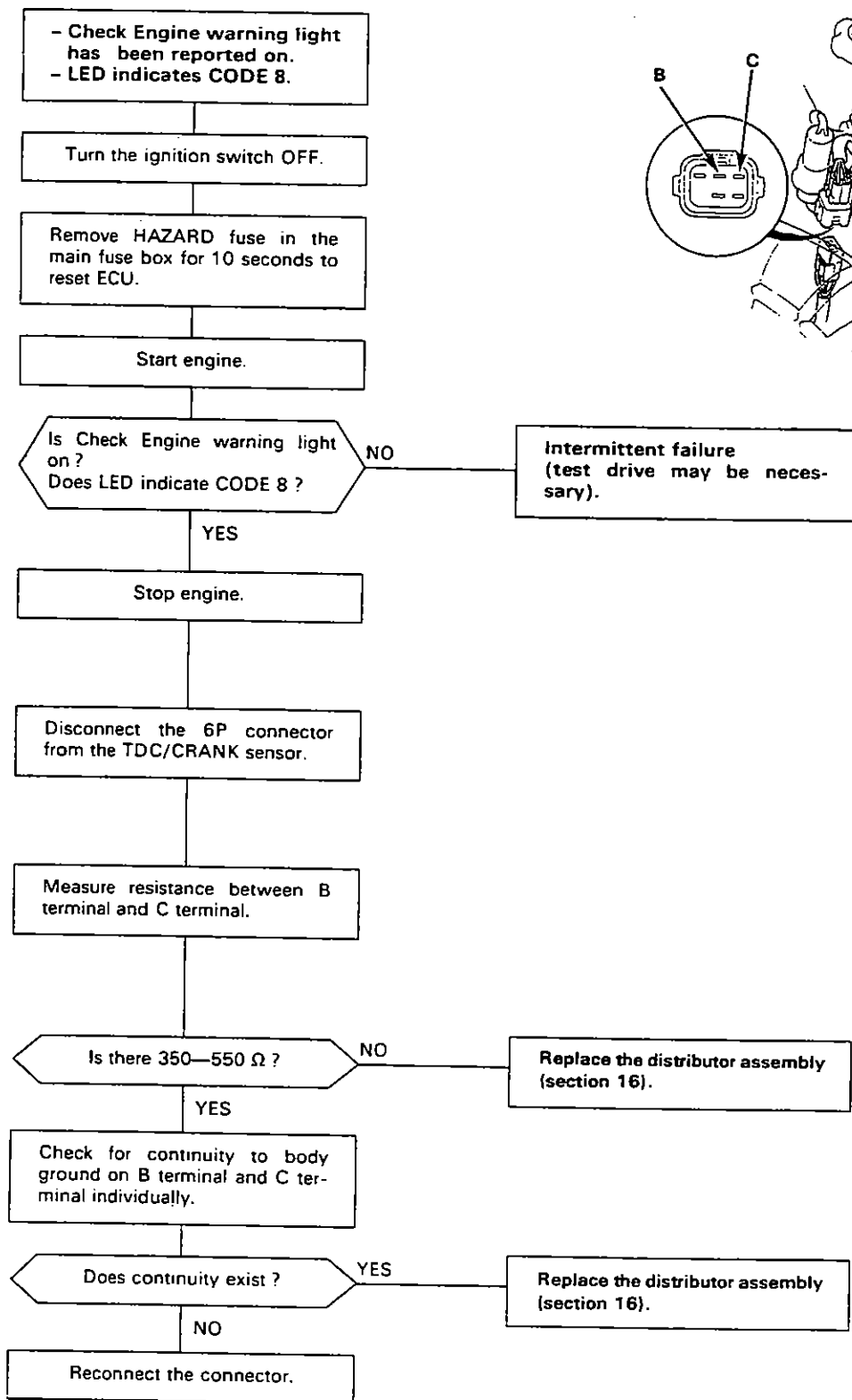
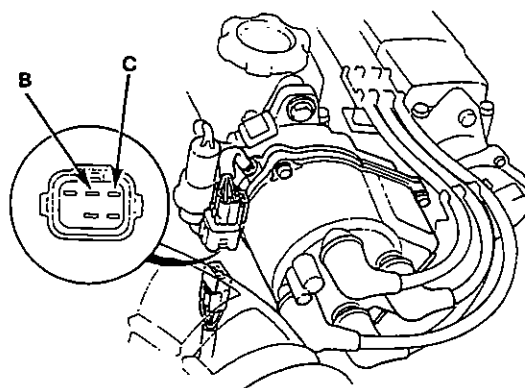
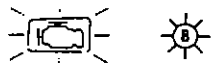
(From page 6-32)



(cont'd)

PGM-FI Control System

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



(To page 6-35)



(From page 6-34)

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

Measure resistance between C3 terminal and C4 terminal.

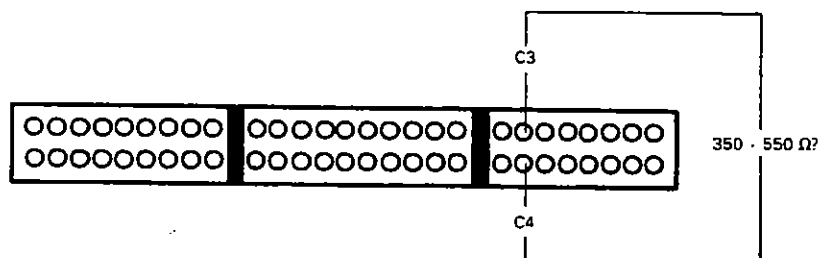
Is there 350 — 550 Ω ?

NO

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

YES

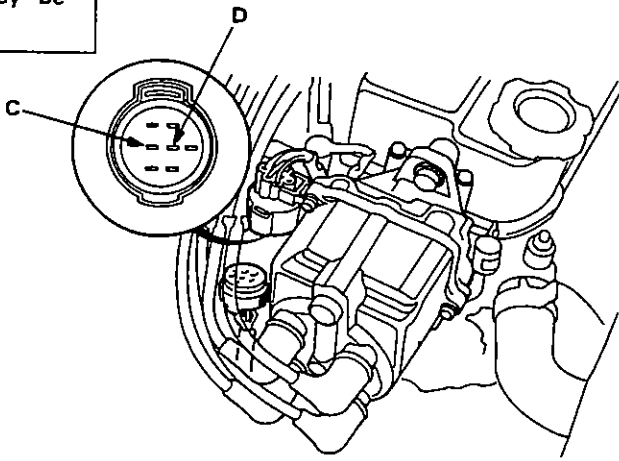
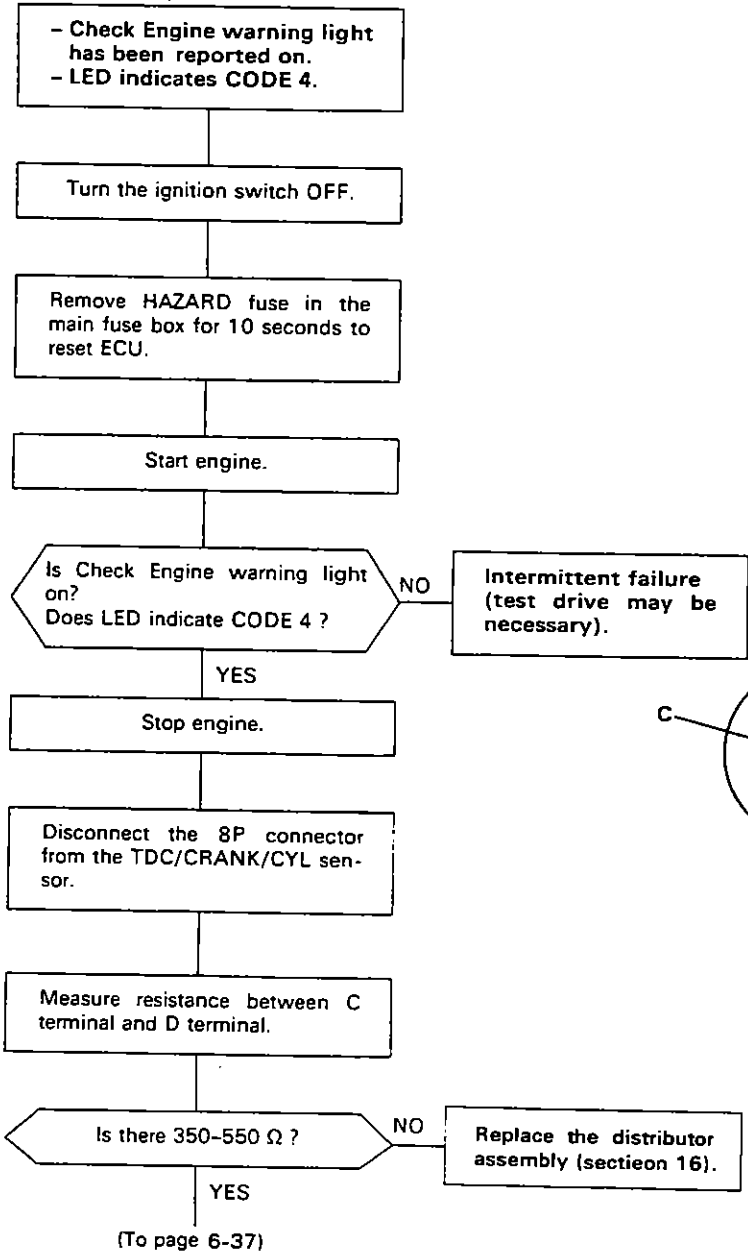
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



GM-FI Control System

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

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





(From page 6-36)

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

Does continuity exist ?

YES

Replace the distributor assembly (section 16).

NO

Reconnect the connector.

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

Measure resistance between B10 terminal and B12 terminal.

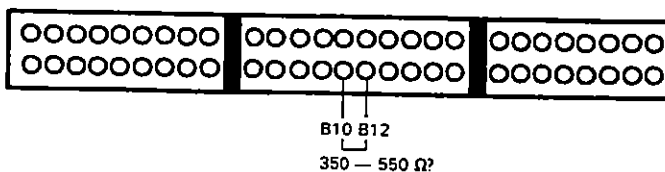
Is there 350-550 Ω ?

NO

Repair open in ORN and/or WHT wires.

YES

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



(cont'd)

GM-FI Control System

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



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

Turn the ignition switch OFF.

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

Start engine.

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

NO
Intermittent failure (test drive may be necessary).

YES
Stop engine.

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

Measure resistance between A terminal and B terminal.

Is there 350—550 Ω ?

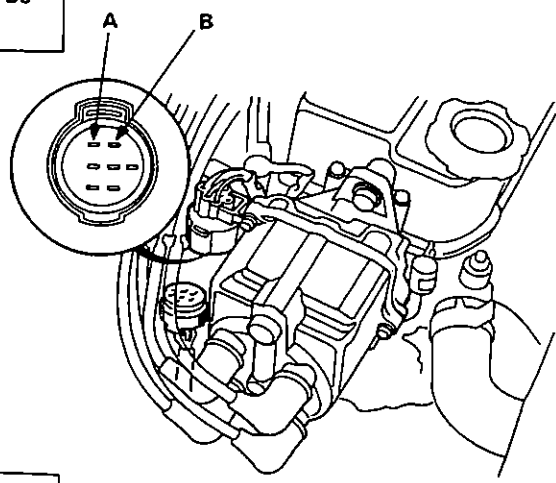
NO
Replace the distributor assembly (section 16).

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

Does continuity exist ?

YES
Replace the distributor assembly (section 16).

NO
Reconnect the connector.



(To page 6-39)



(From page 6-38)

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

Measure resistance between C3 terminal and C4 terminal.

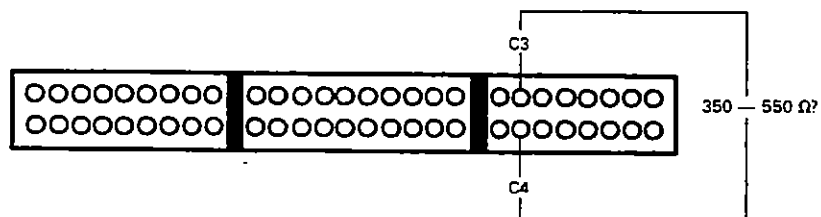
Is there 350 — 550 Ω ?

NO

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

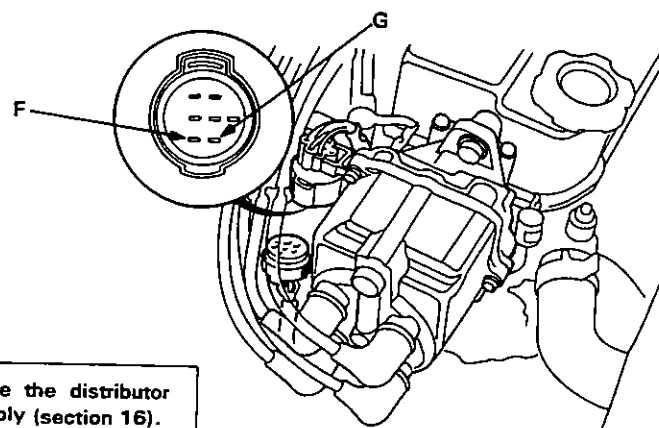
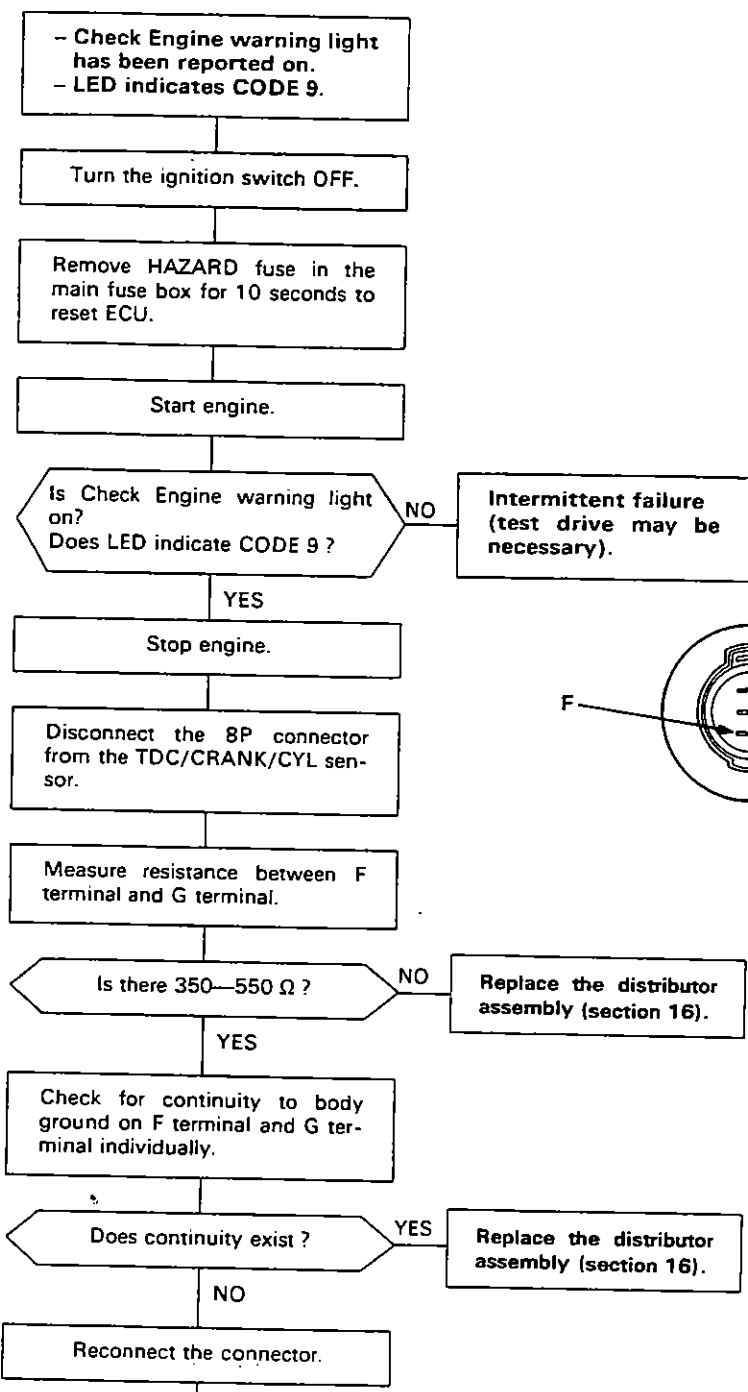
YES

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



GM-FI Control System

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



(To page 6-41)



(From page 6-40)

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

Measure resistance between C1 terminal and C2 terminal.

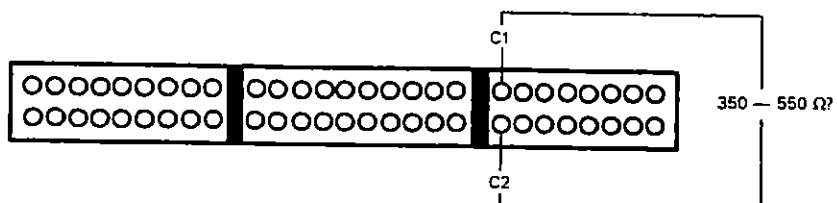
Is there 350 — 550 Ω ?

NO

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

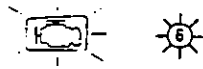
YES

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



— Troubleshooting Flowchart — TW Sensor —

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



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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

NO

Intermittent failure.
(test drive may be necessary).

YES

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

Disconnect C210 and C151 connectors.

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

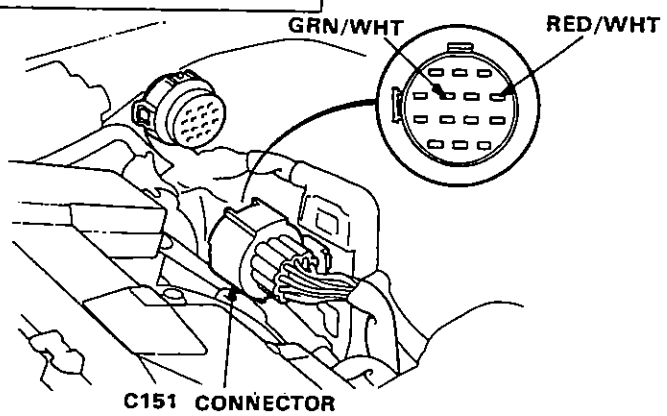
Is there 200—400 Ω ?

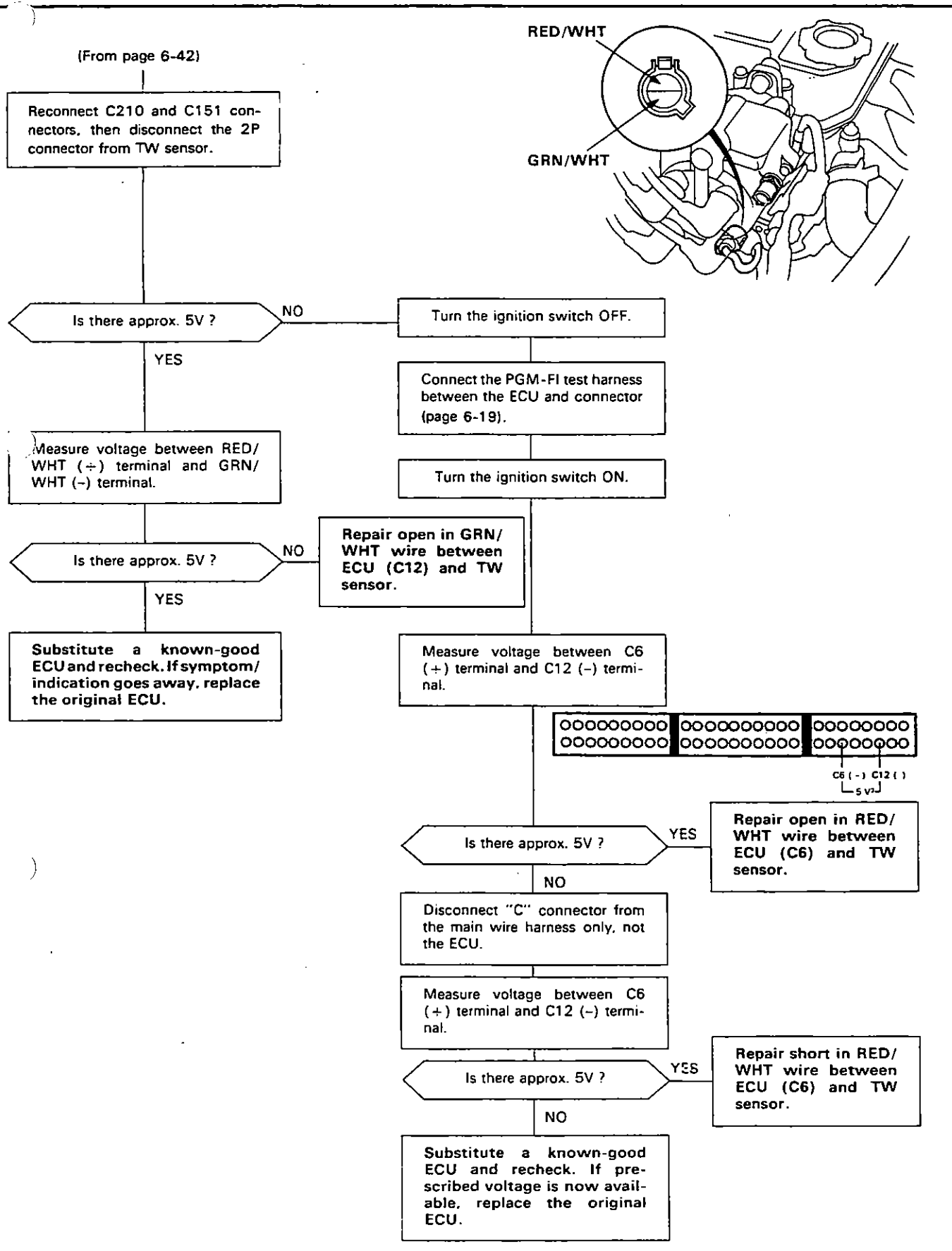
NO

Inspect for open or short in RED/WHT or GRN/WHT wire between C151 connector and TW sensor. If wires are OK, replace TW sensor.

YES

(To page 6-43)



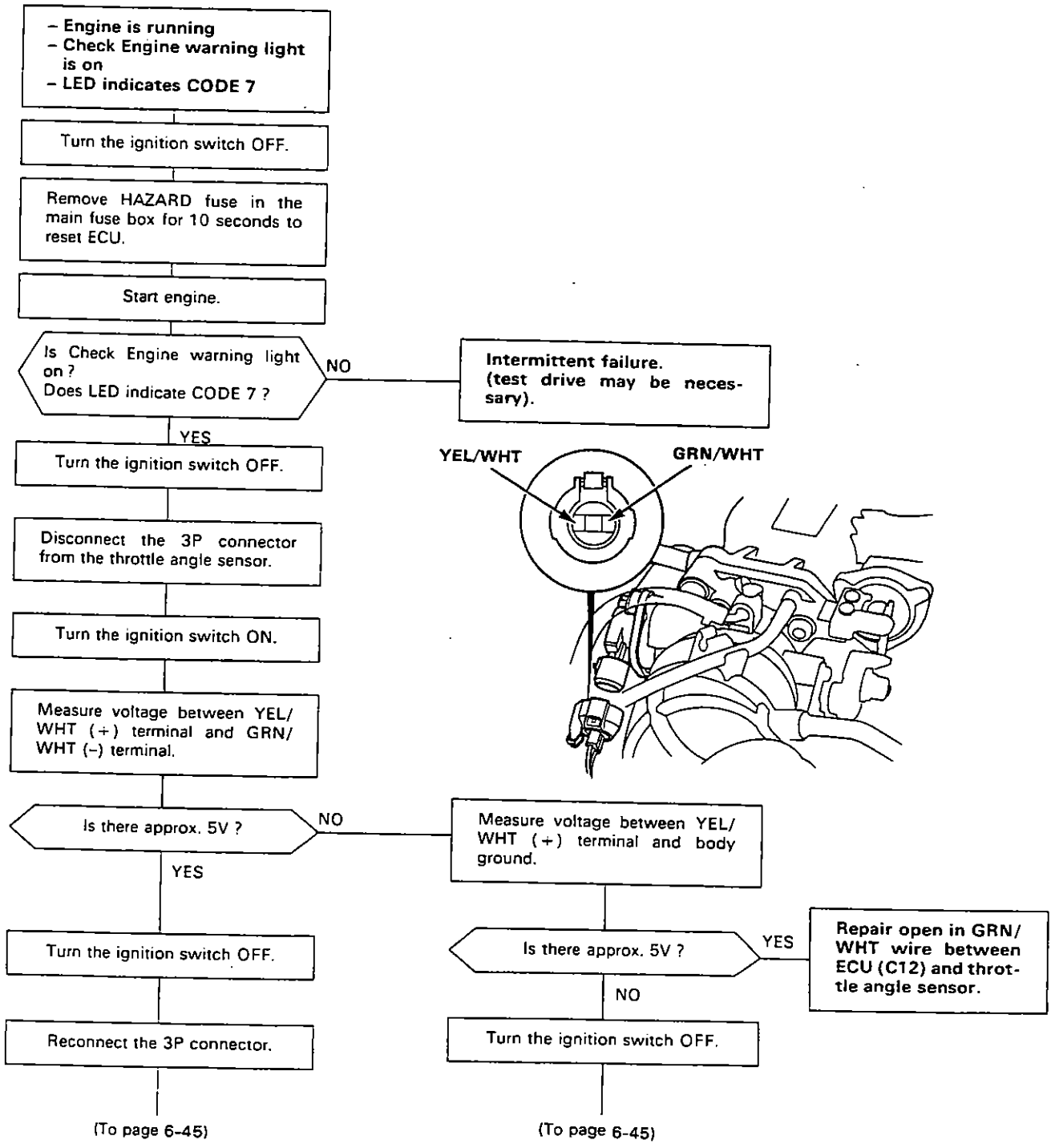


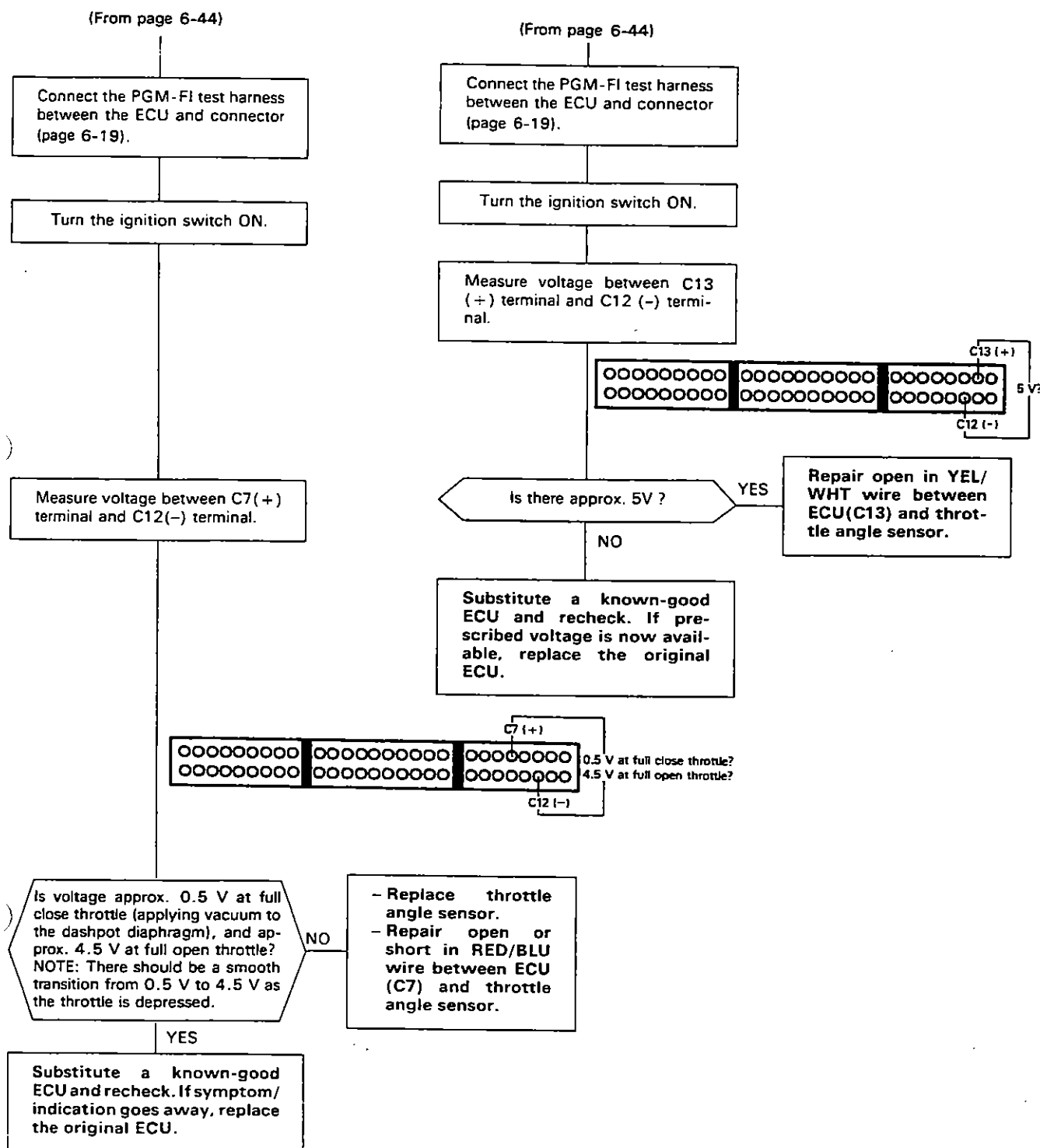
PGM-FI Control System

— Troubleshooting Flowchart — Throttle Angle Sensor —



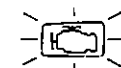
Self-diagnosis LED indicator blinks seven times: Most likely a problem in the Throttle Angle Sensor circuit.

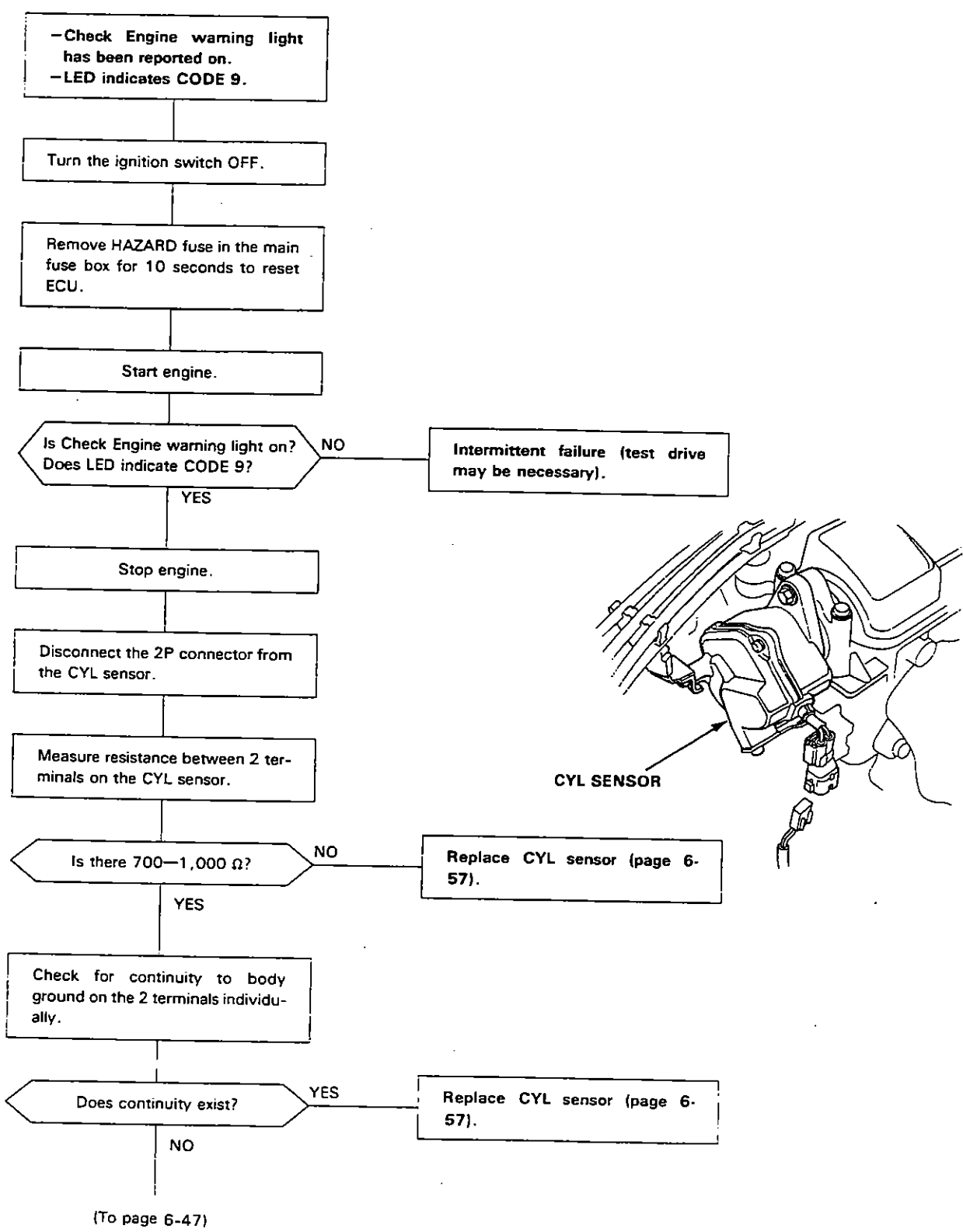




PGM-FI Control System

- Troubleshooting Flow Chart — CYL Sensor [DOHC]

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





(From page 6-46)

Reconnect the connector.

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

Measure resistance between C1 terminal and C2 terminal.

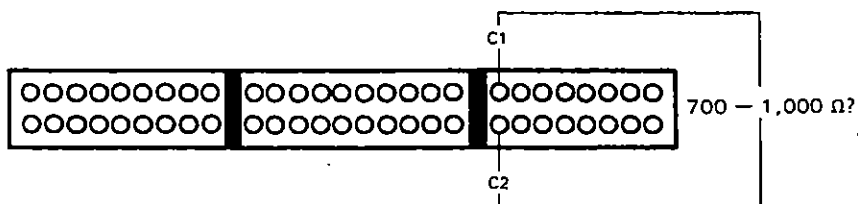
Is there 700—1,000 Ω ?

NO

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

YES

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



PGM-FI Control System

— 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 k Ω ?

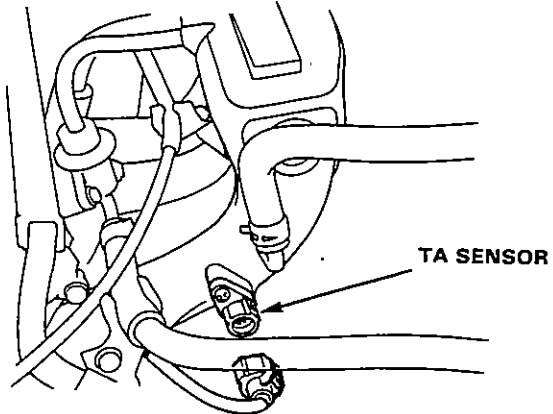
NO

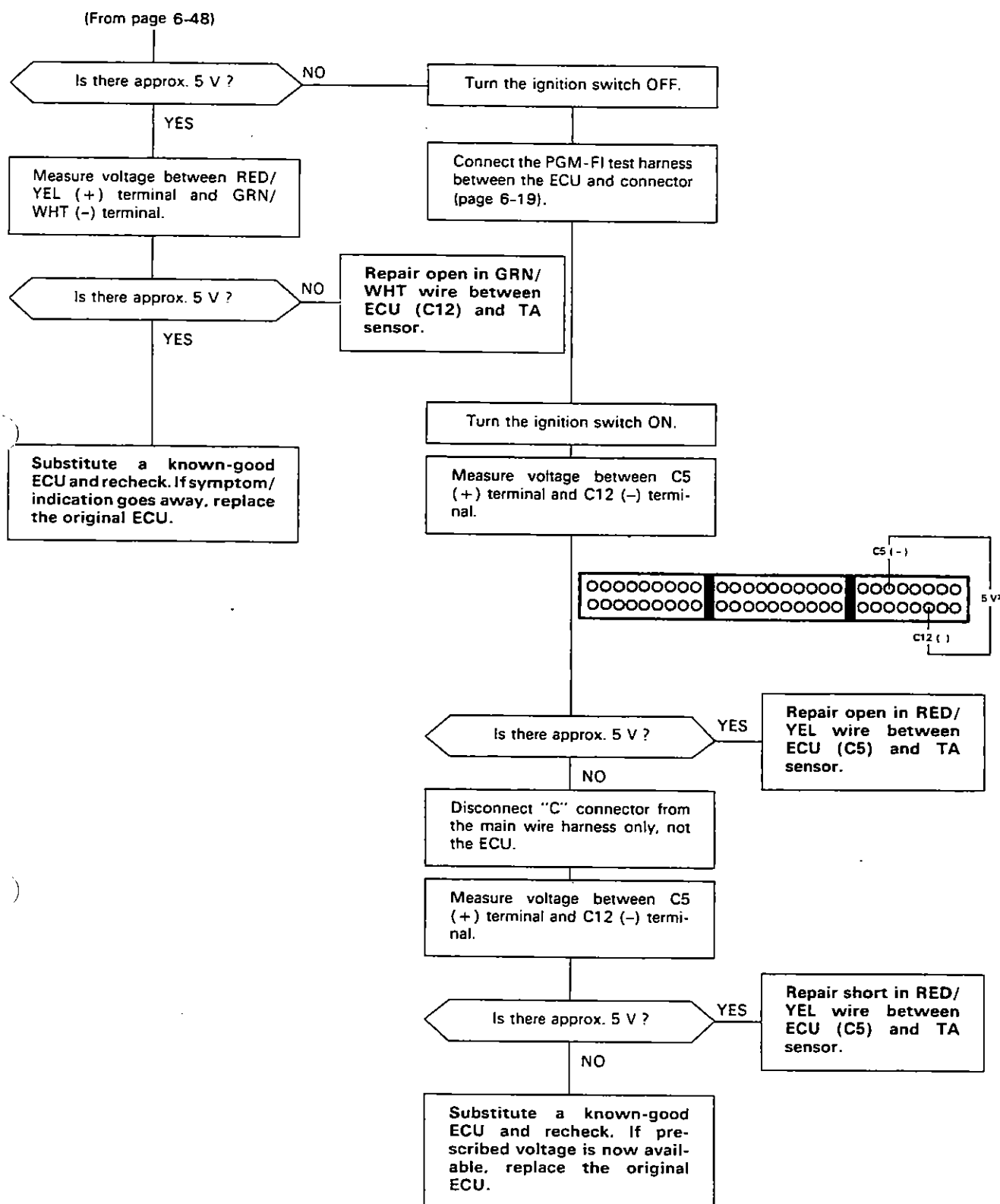
Replace TA sensor.

YES

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

(To page 6-49)





PGM-FI Control System

- Troubleshooting Flow Chart — IMA Sensor [Without CATA]



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

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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

NO

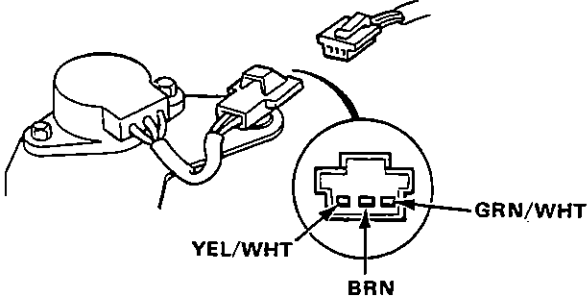
Intermittent failure (test drive may be necessary).

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the IMA sensor.

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



Is there 4—6 kΩ?

NO

Replace IMA sensor.

YES

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

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

NO

Replace IMA sensor.

YES

(To page 6-51)

1

2

3

4



(From page 6-50)

Turn the ignition switch ON.

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

Is there approx. 5V?

YES

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

Is voltage 0.5—4.5V?

YES

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

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 IMA sensor.

NO

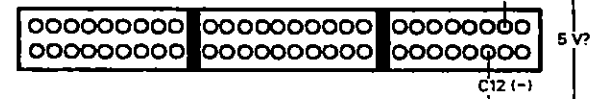
Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

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



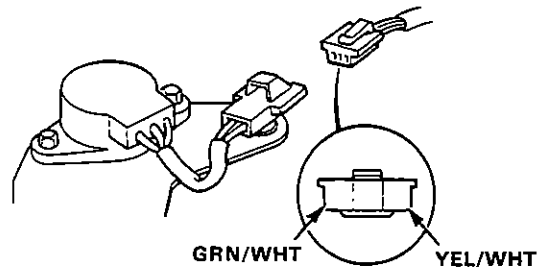
Is there approx. 5V?

YES

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

NO

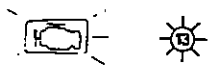
Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.



PGM-FI Control System

— Troubleshooting Flowchart — PA Sensor [Ex. KQ]

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



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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

NO
Intermittent failure (test drive may be necessary).

YES

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

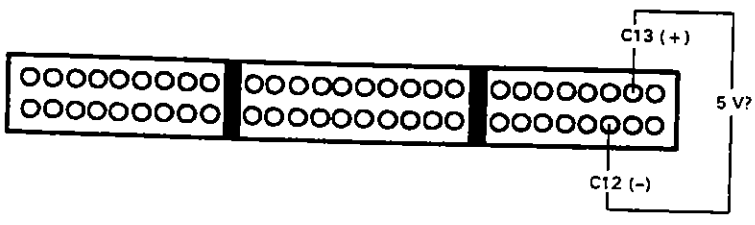
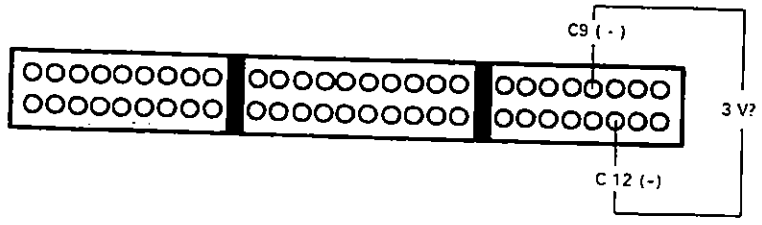
Is there approx. 5V?

NO

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

YES

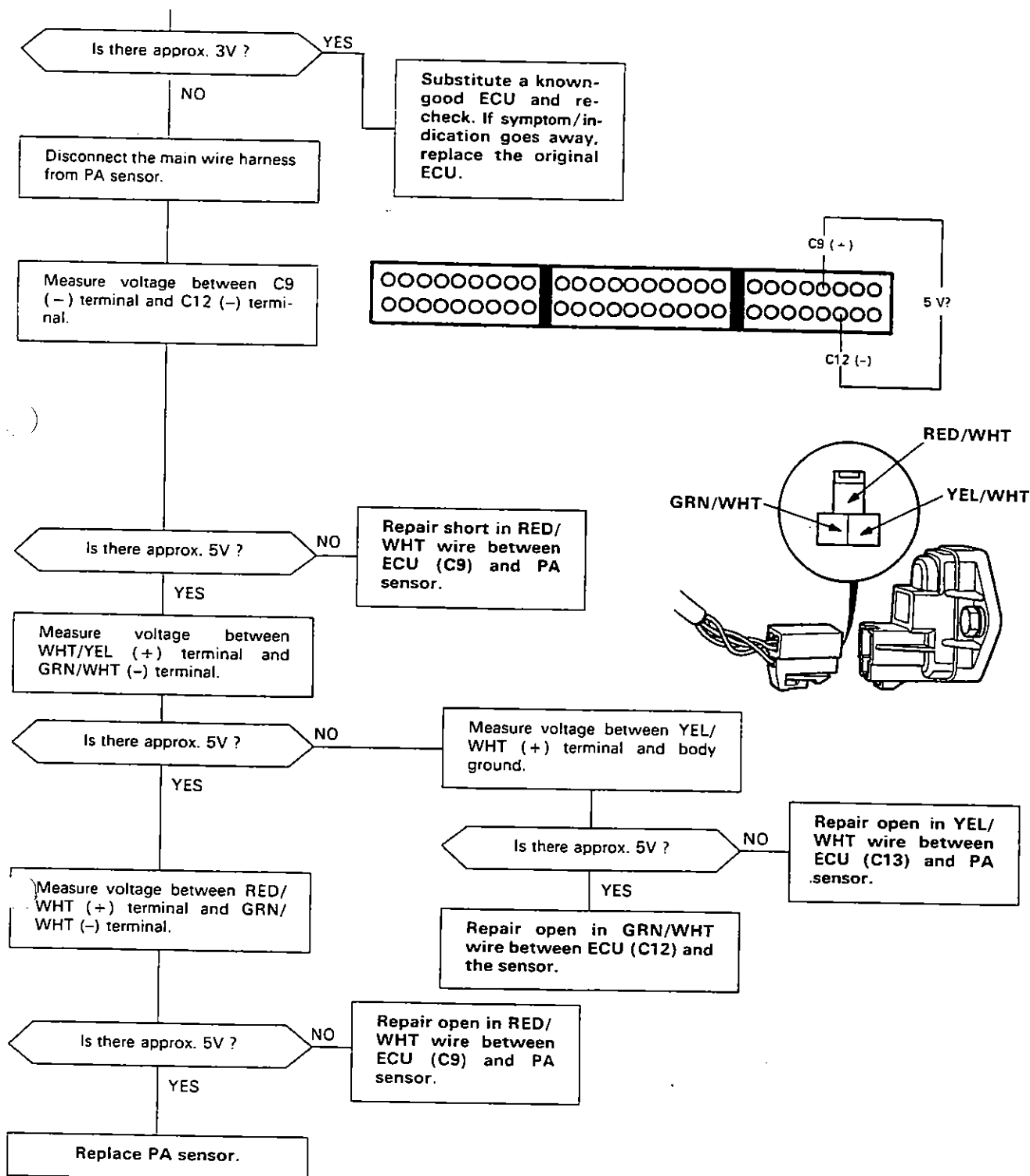
Measure voltage between C9 (+) terminal and C12 (-) terminal.



(To page 6-53)



(From page 6-52)



PGM-FI Control System

Troubleshooting Flowchart — Ignition Output Signal



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

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

Turn the ignition switch OFF.

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

Start engine.

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

NO

Intermittent failure
(test drive may be necessary).

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the distributor.

Turn the ignition switch ON.

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

Is there battery voltage?

NO

Repair open in BLK/YEL wire between the 2P connector and ignition switch.

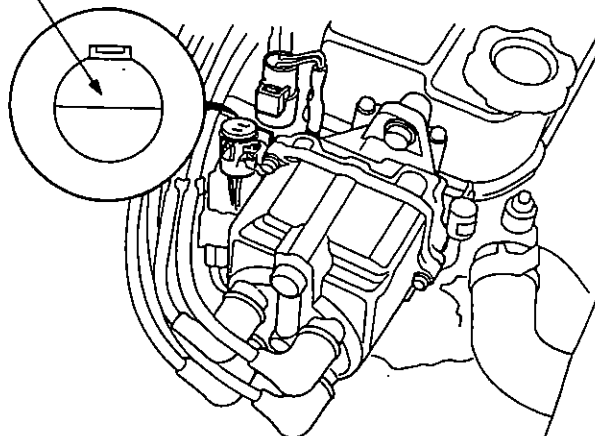
YES

Turn the ignition switch OFF.

Reconnect the 2P connector.

(To page 6-55)

BLK/YEL





(From page 6-54)

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

Turn the ignition switch ON.

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

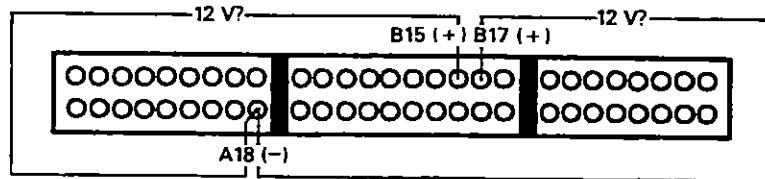
Is there battery voltage ?

NO

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

YES

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



PGM-FI Control System

— Troubleshooting Flowchart — Vehicle Speed Sensor —



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

— Check Engine warning light is on.
— LED indicates CODE 17.

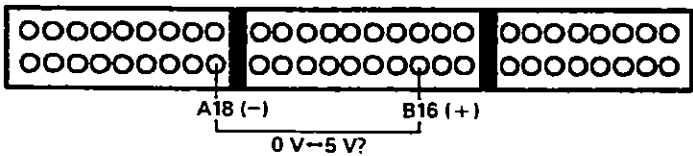
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stands.

WARNING Block rear wheels before jacking up front of car.

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

Turn the ignition switch ON.

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



Does voltage pulse 0V and 5V ?

YES

NO

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

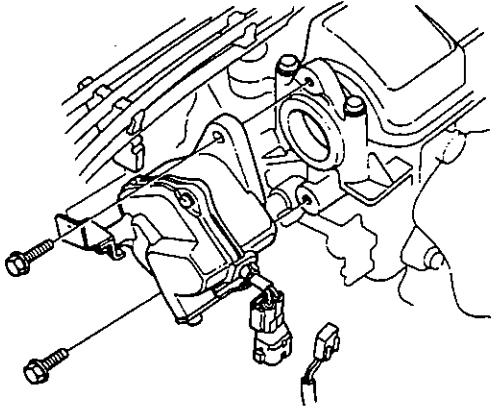
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



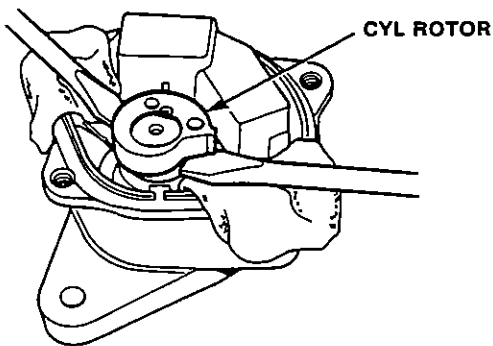
— CYL Sensor Overhaul —

Disassembly:

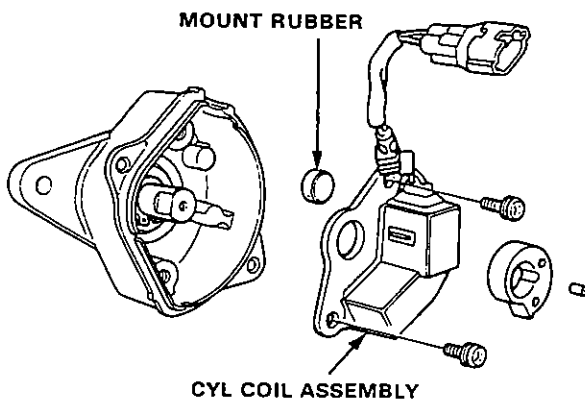
1. Remove the CYL sensor from the engine.



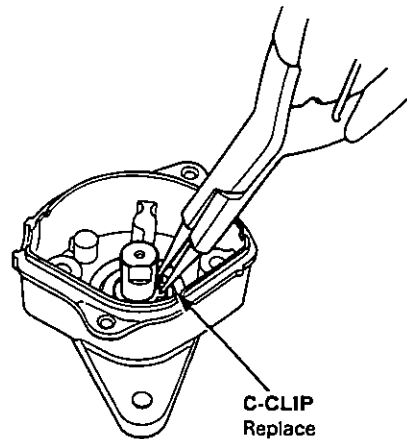
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



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

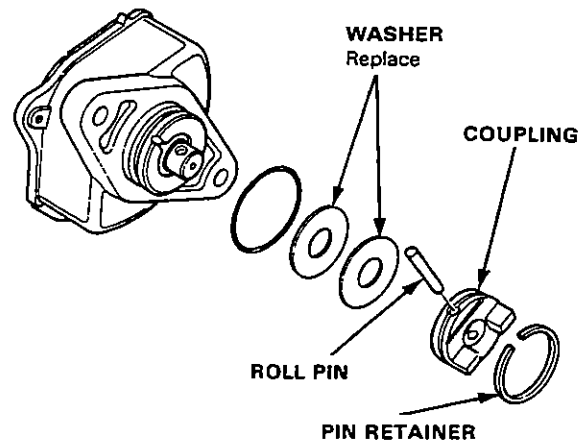


4. Remove the C-clip.

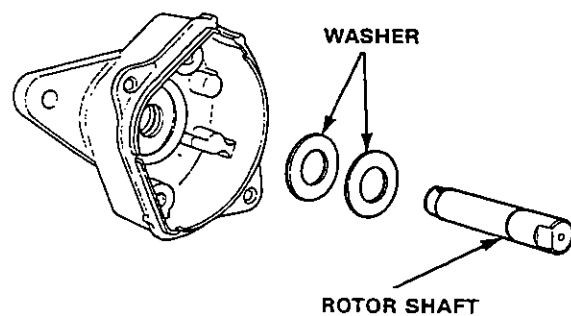


5. Slide off the pin retainer being careful not to stretch it.

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



7. Remove the rotor shaft.



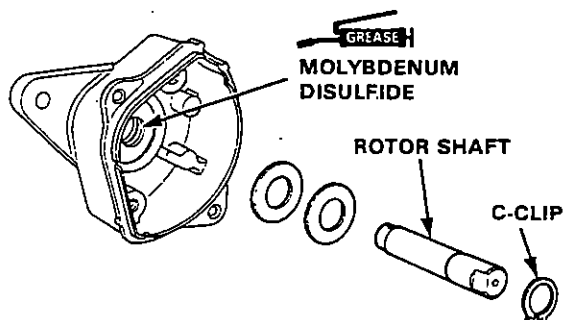
(cont'd)

PGM-FI Control System

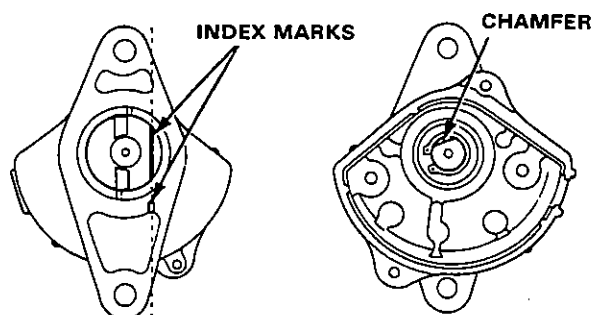
- CYL Sensor Overhaul (cont'd)

Reassembly:

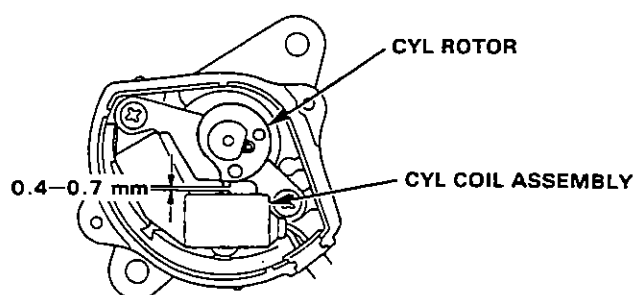
1. Apply molybdenum disulfide grease to the sensor housing, install the washers on the rotor shaft, then install it in the sensor housing. Install a new C-clip.



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

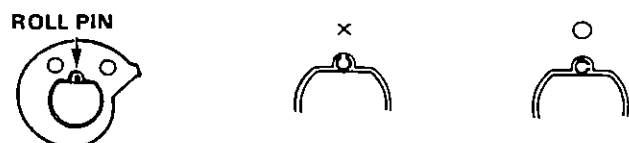


3. Install the mount rubber, then install the CYL coil assembly and the CYL rotor. Adjust the air gap to 0.4 - 0.7 mm.



NOTE:

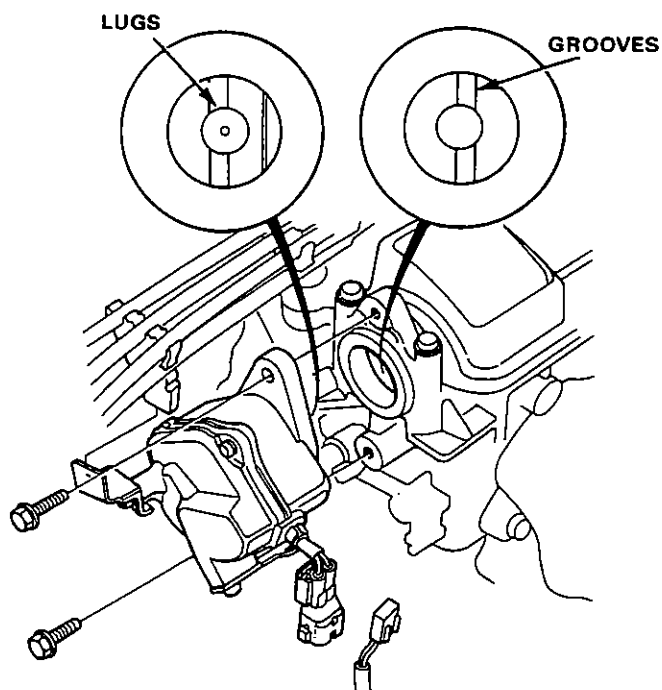
- Install the rotor with the part number facing up.
- Install the roll pin so that it faces as shown below.



Installation:

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

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





Idle Control System

System Troubleshooting Guide

NOTE:

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

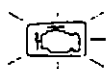
PAGE	SUB SYSTEM	IDLE ADJUST- ING SCREW	EACV	AIR CONDI- TIONING SIGNAL	ALTER- NATOR FR SIGNAL	STARTER SWITCH SIGNAL	HOSES AND CONNEC- TIONS
	SYMPTOM	69	61	64	66	68	*
	ENGINE WON'T START		②				①
	DIFFICULT TO START ENGINE WHEN COLD	②	①				
	WHEN COLD FAST IDLE OUT OF SPEC (1,000—2,000 min ⁻¹ , rpm)	②	①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

Idle Control System

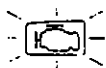
1. When the idle speed is out of specification and LED does not blink CODE 14, check the following items:
 - Adjust the idle speed (page 6-69)
 - Air conditioning signal (page 6-64)
 - Alternator FR signal (page 6-66)
 - Starter switch signal (page 6-68)
 - Hoses and connections
 - EACV and O-rings for mounting conditions.
2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 6-69).
 - If the idle speed still cannot be adjusted to specification (and LED does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.



Troubleshooting Flowchart — EACV



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



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

Turn the ignition switch OFF.

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

Start engine.

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

NO

Intermittent failure
(test driving may be necessary)

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

Is there 8—15Ω?

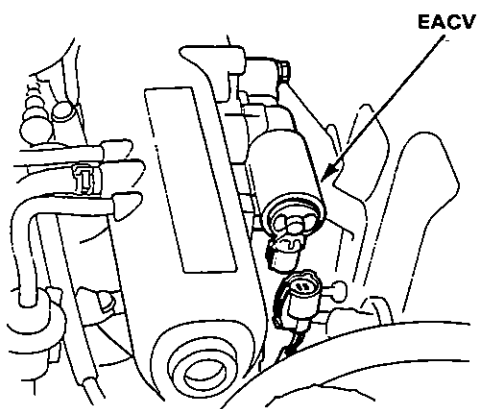
NO

Replace EACV.

YES

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

(To page 6-62)

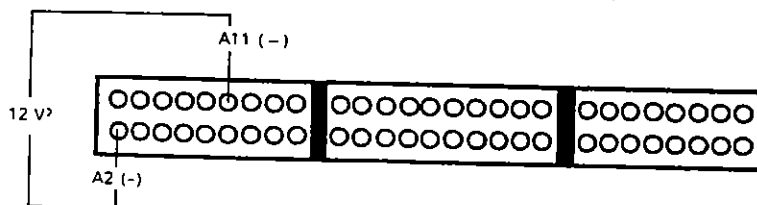
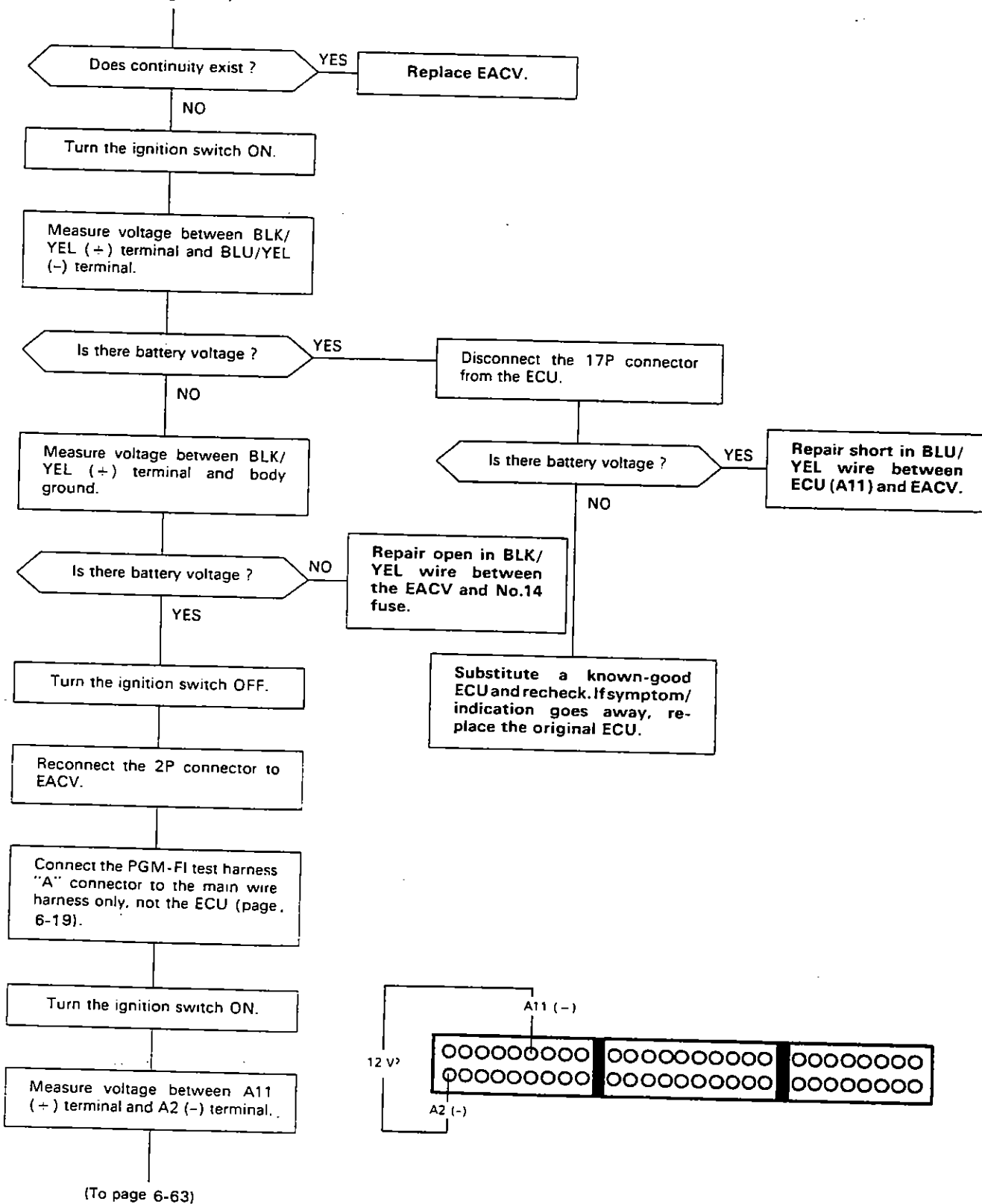


(cont'd)

Idle Control System

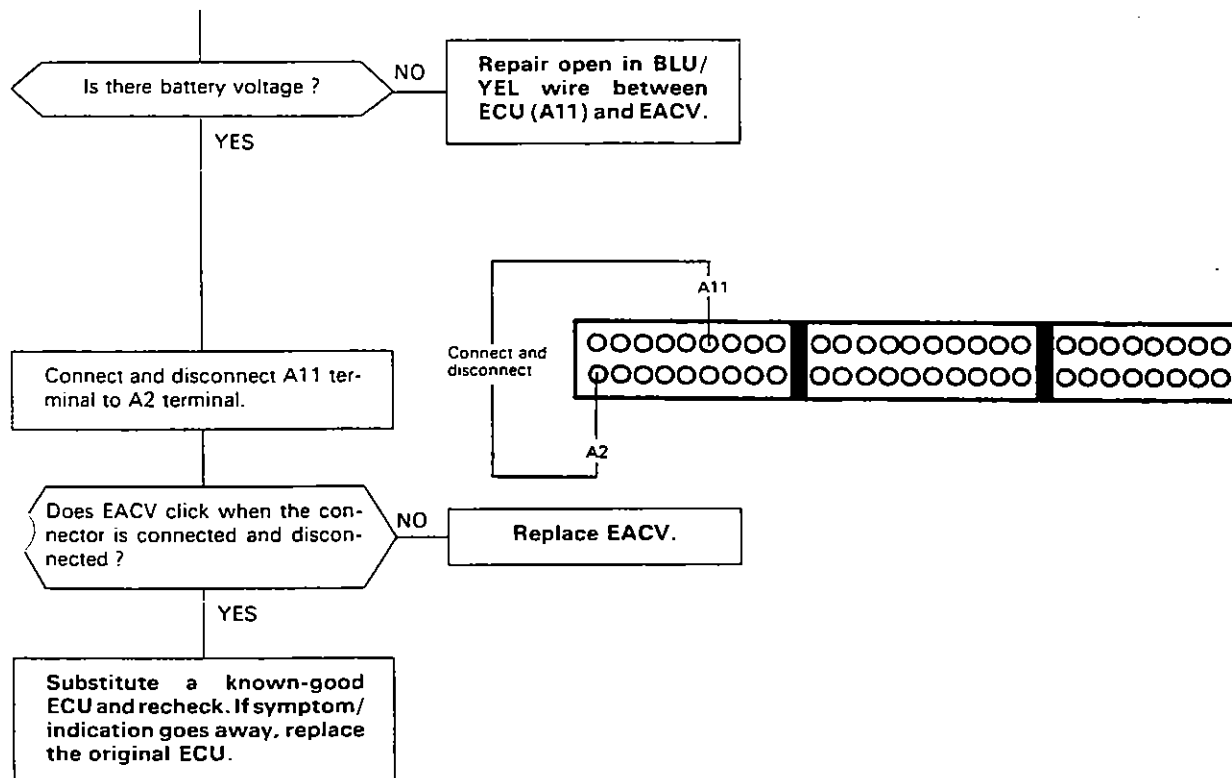
Troubleshooting Flowchart — EACV (cont'd)

(From page 6-61)



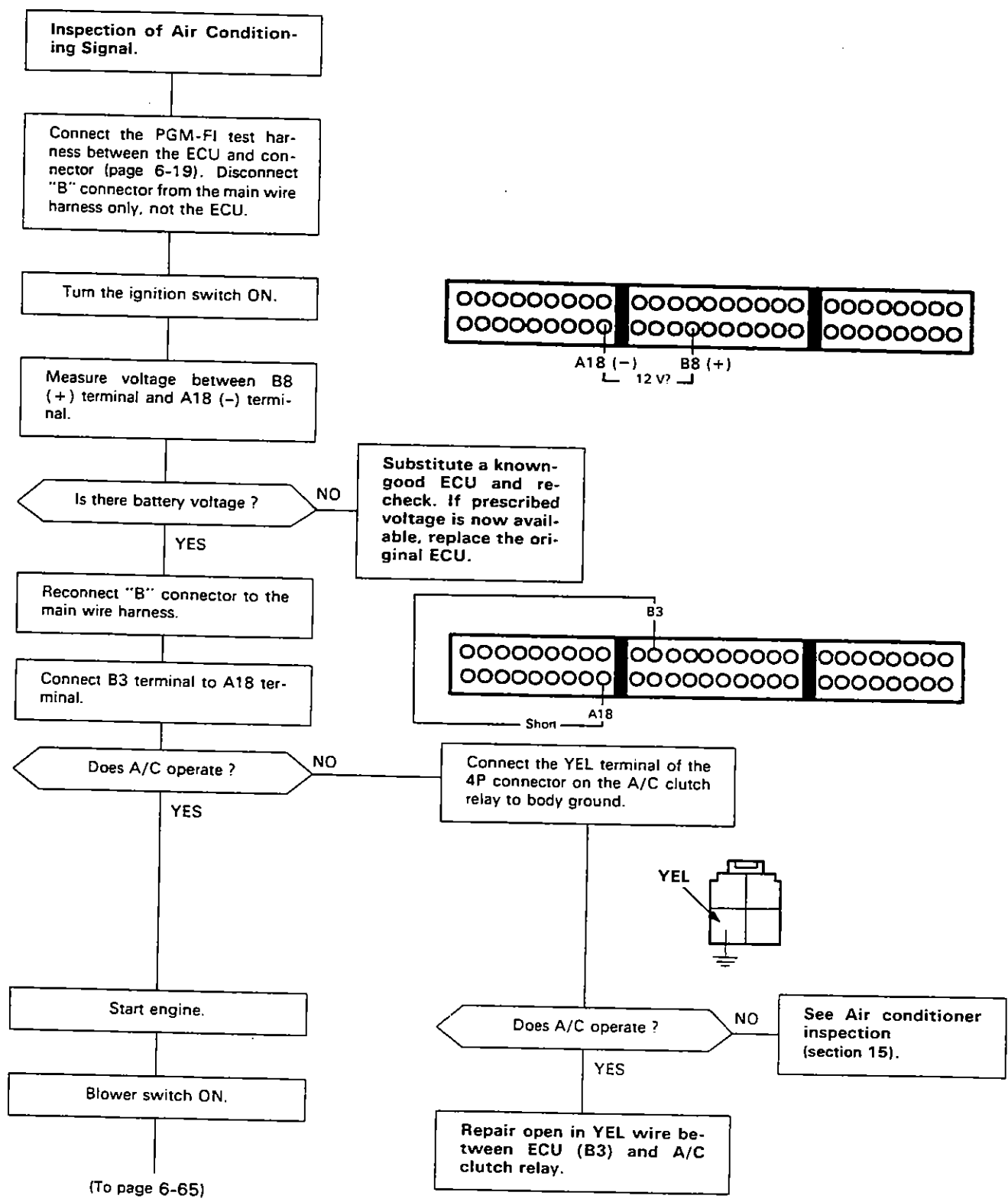


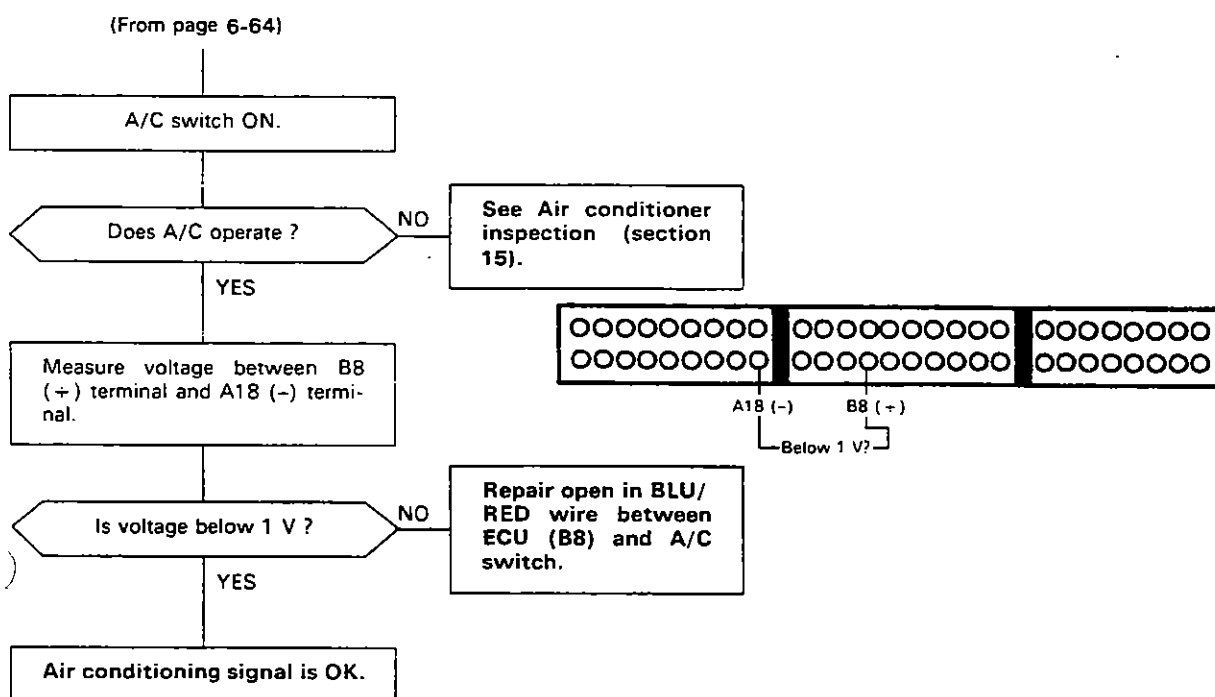
(From page 6-62)



Idle Control System

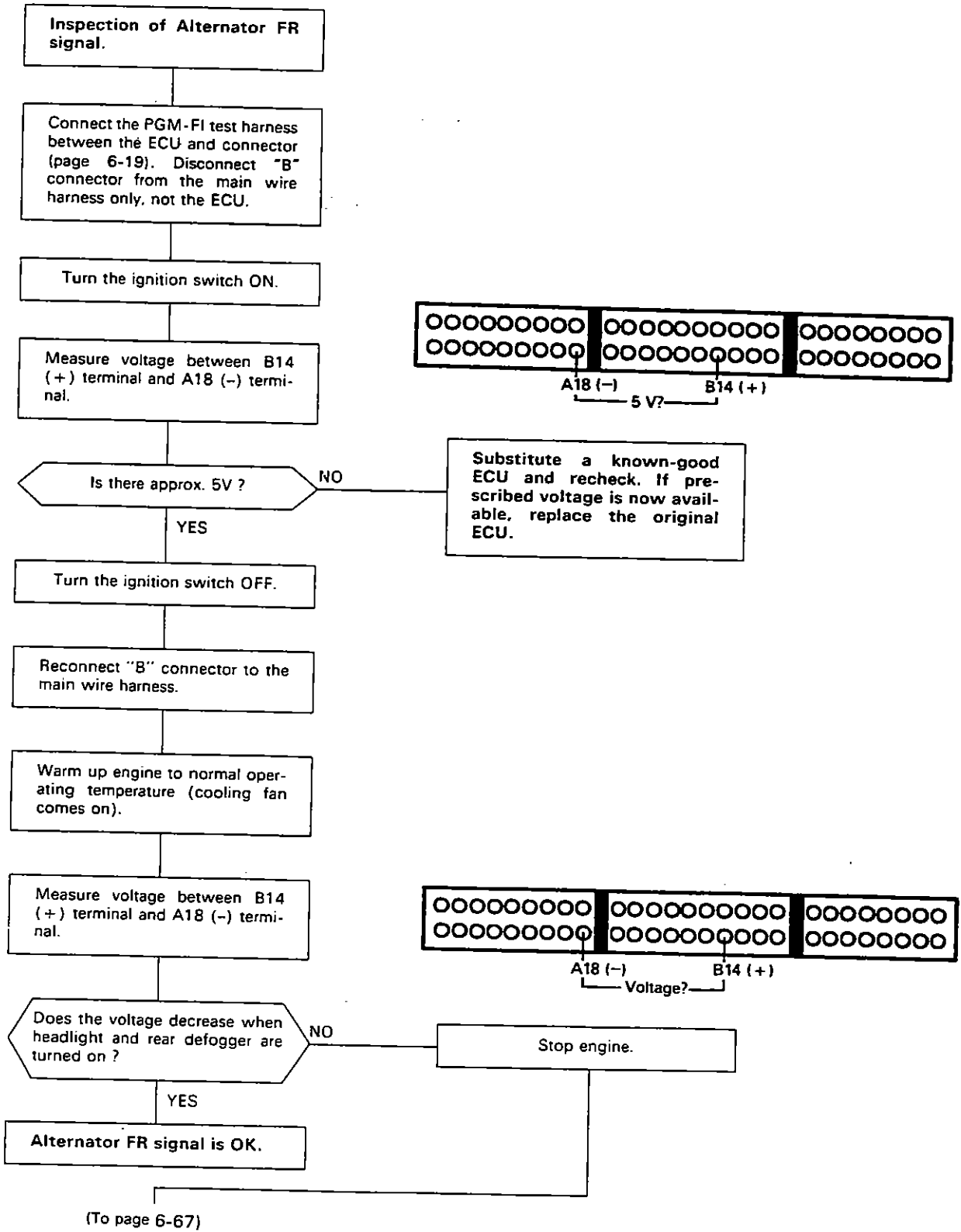
— Troubleshooting Flowchart — Air Conditioning Signal —





Idle Control System

— Troubleshooting Flowchart — Alternator FR Signal —





(From page 6-66)

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

Disconnect the negative battery cable from the battery.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

Disconnect GRN connector from the alternator.

NO

Disconnect GRN connector from the alternator.

GRN CONNECTOR

Connect BLU wire to body ground.

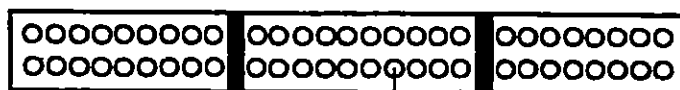
Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

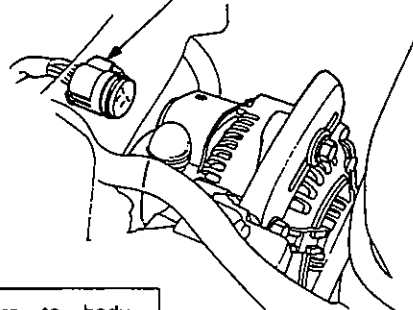
NO

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



B14

Continuity?



Check for continuity between B14 terminal and body ground.

Does continuity exist ?

NO

See Alternator Inspection (section 16).

YES

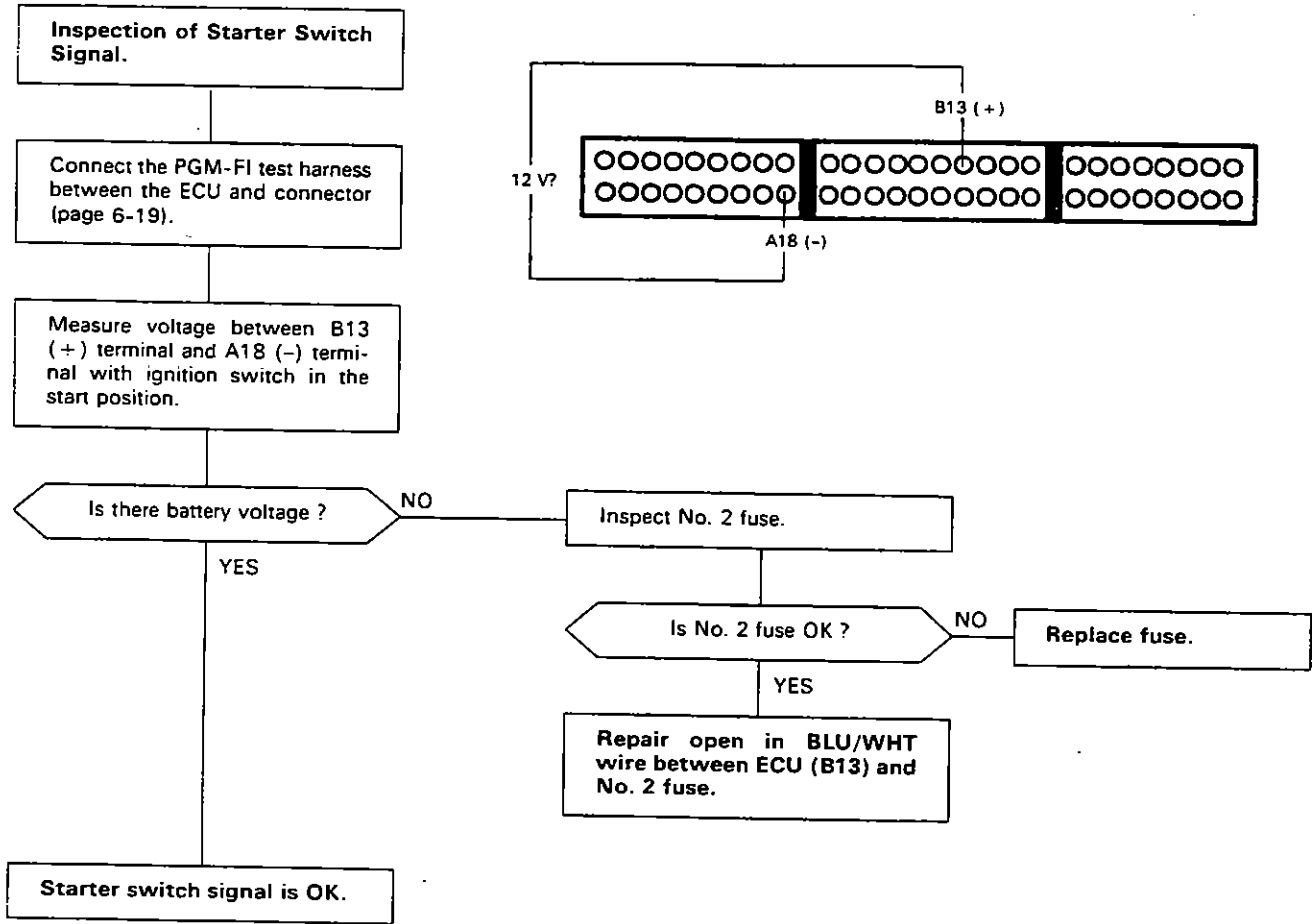
Repair short in BLU wire between ECU (B14) and alternator.

See Alternator Inspection (section 16).

Idle Control System

- Troubleshooting Flowchart — Starter Switch Signal

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

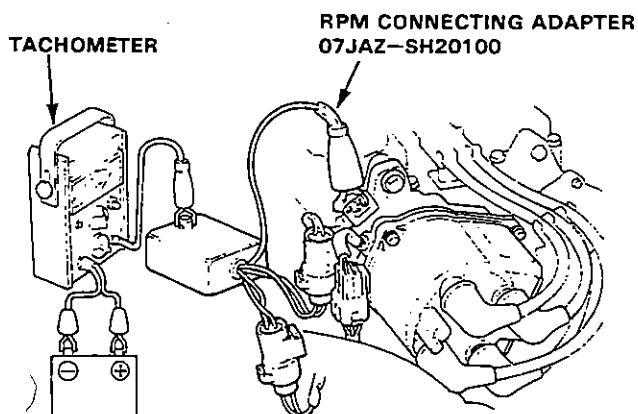




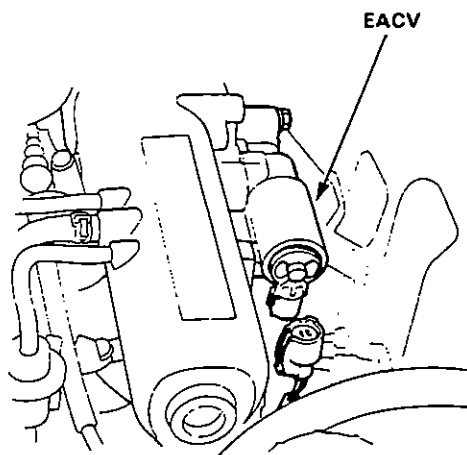
Idle Speed Setting

Inspection/Adjustment

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



3. Disconnect the 2P connector from the EACV.



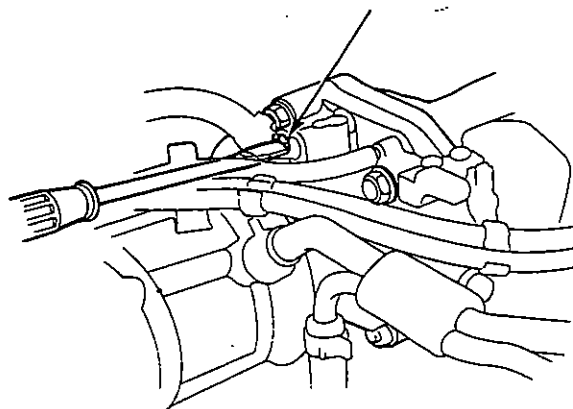
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be: $650 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

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

IDLE ADJUSTING SCREW



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 operating for one minute, then check the idle speed.

SOHC With CATA and KQ	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
KY	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Idle Speed should be:

SOHC With CATA and KQ	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
KY	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Idle Speed should be:

SOHC and KQ	$780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
DOHC Ex. KQ	$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Fuel Supply System

System Troubleshooting Guide

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

PAGE		SUB SYSTEM	FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	FUEL TANK	CONTAMINATED FUEL
SYMPTOM			72	76	76	77	78	79	81	*
ENGINE WON'T START				③		③	①	②		
DIFFICULT TO START ENGINE WHEN COLD			③			②	①			
ROUGH IDLE			①		②					③
FREQUENT STALLING	WHILE 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

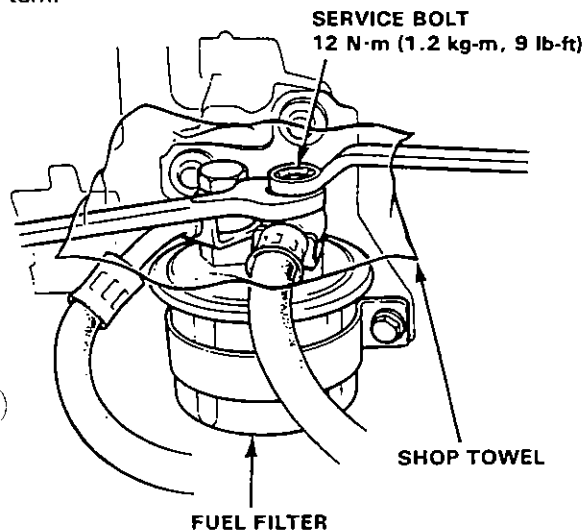
Relieving

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:

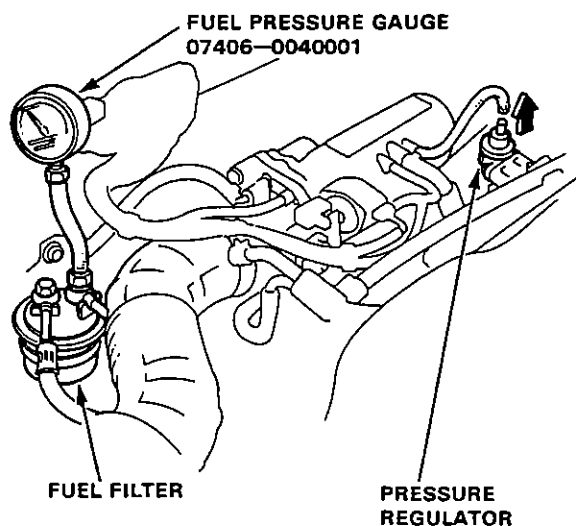
- A fuel pressure gauge can be attached at the 6 mm service bolt hole.
- Always replace the washer between the service bolt and the special banjo bolt, whenever the service bolt is loosened to relieve fuel pressure.
- Replace all washers whenever the bolts are removed to disassemble parts.

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/cm², 35–41 psi)



- If the fuel pressure is not as specified, first check the fuel pump (page 6-78). If the pump is OK, check the following:
 - If the pressure is higher than specified, inspect for:
 - Pinched or clogged fuel return hose or piping.
 - Faulty pressure regulator (page 6-76).
 - If the pressure is lower than specified, inspect for:
 - Clogged fuel filter.
 - Pressure regulator failure (page 6-76).
 - Leakage in the fuel line.

Fuel Supply System

Fuel Injectors

Troubleshooting Flowchart



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



With CATA

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

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

Turn the ignition switch OFF.

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

Turn the ignition switch to START position.

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

Does the engine start ?

NO

YES

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

NO

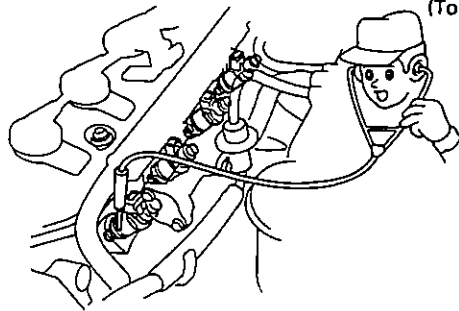
Intermittent failure
(Test drive may be necessary.)

With CATA only

YES

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

(To page 6-73)



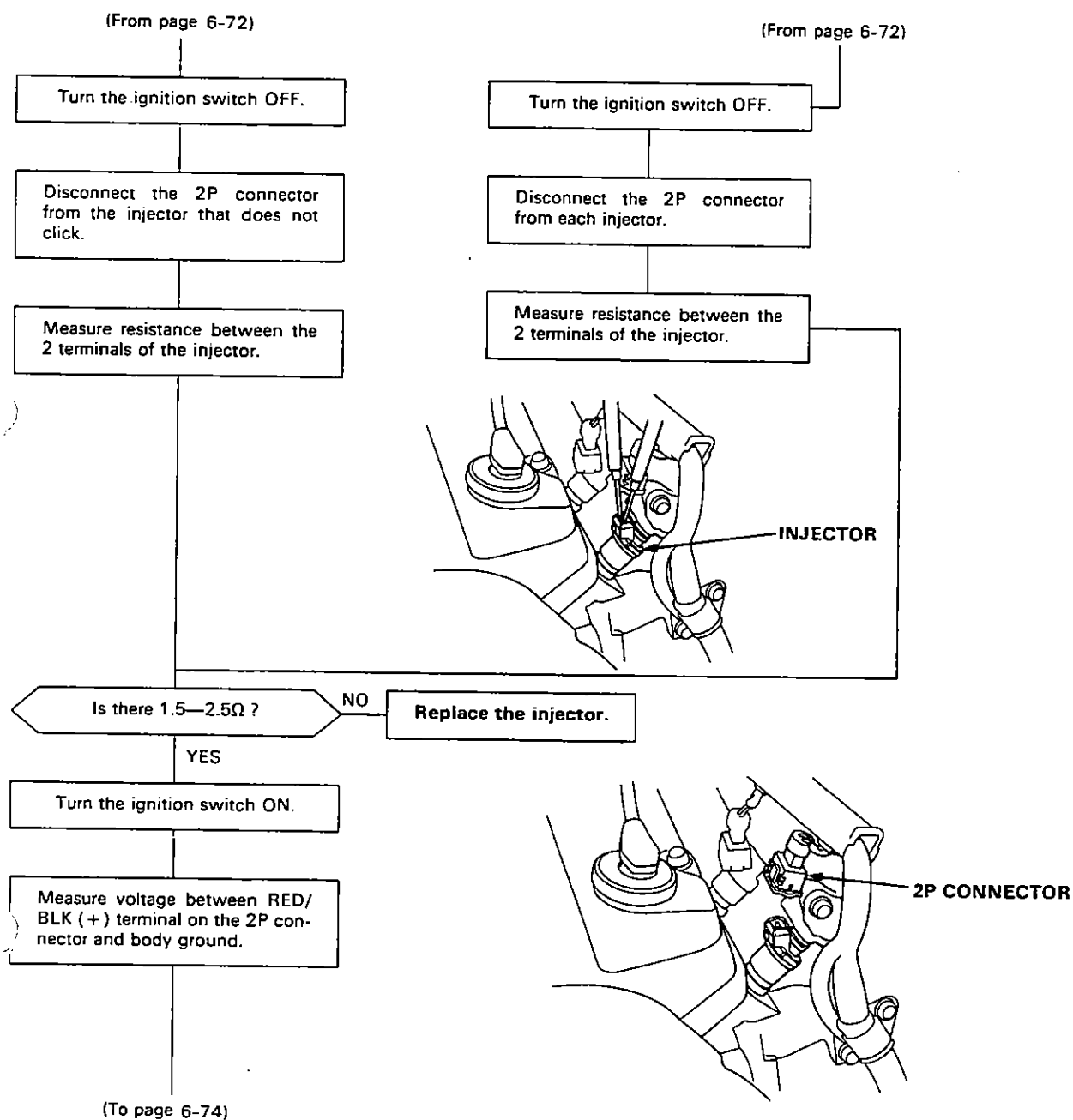
Do the injectors click ?

YES

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

NO

(To page 6-73)



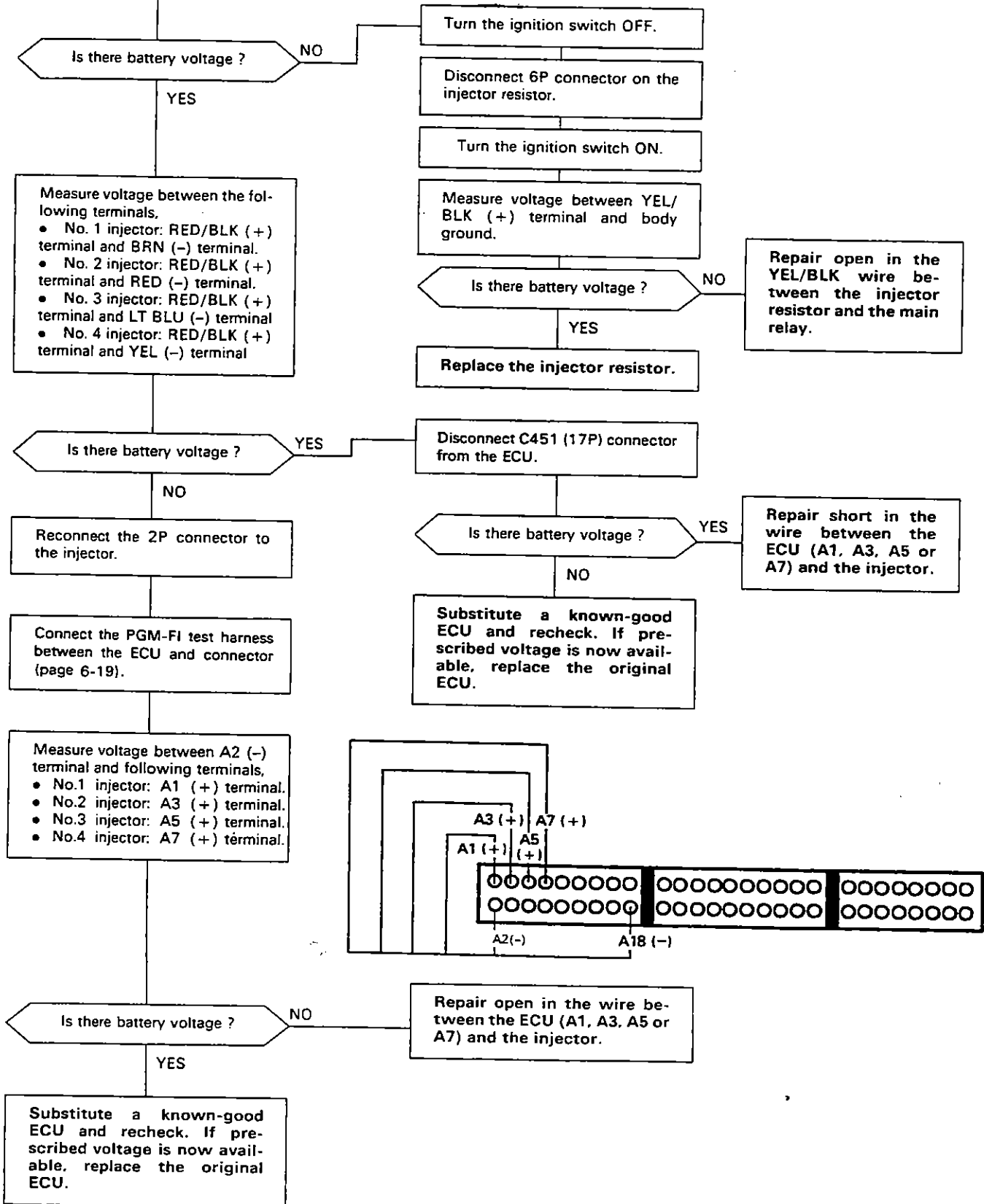
(cont'd)

Fuel Supply System

Fuel Injector

Troubleshooting Flowchart (cont'd)

(From page 6-73)





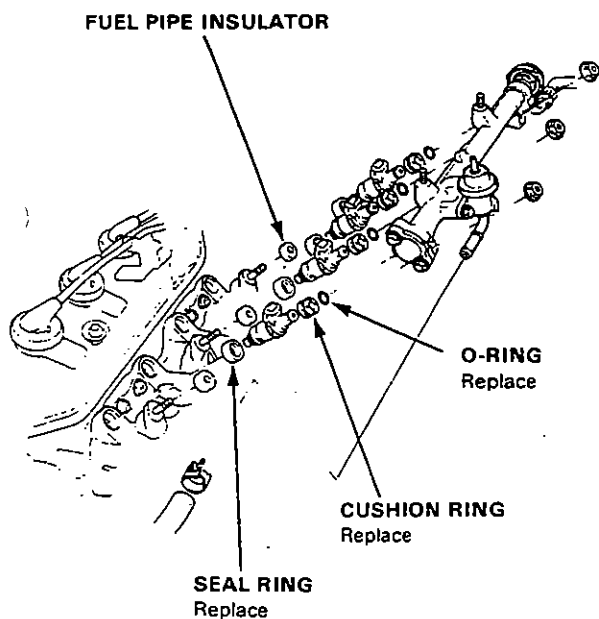
Replacement

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

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

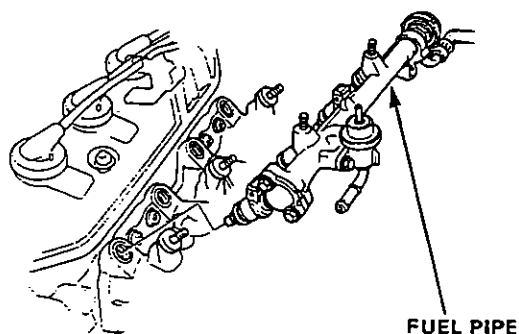
NOTE: Place a rag or shop towel over the hoses before disconnecting them.

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

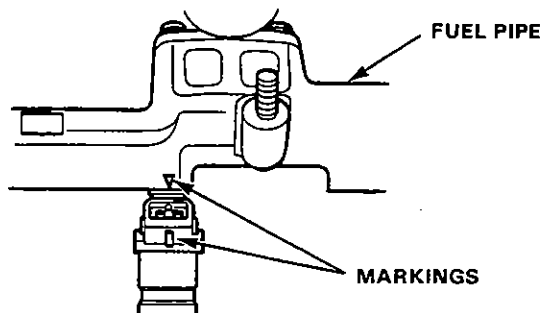


8. Slide new cushion rings onto the injectors.
9. Coat new O-rings with clean engine oil and put them on the injectors.
10. Insert the injectors into the fuel pipe first.
11. Coat new seal rings with clean engine oil and press them into the intake manifold.
12. Install the injectors and fuel pipe assembly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

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



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



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

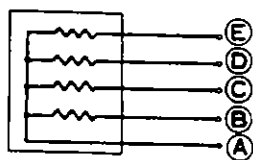
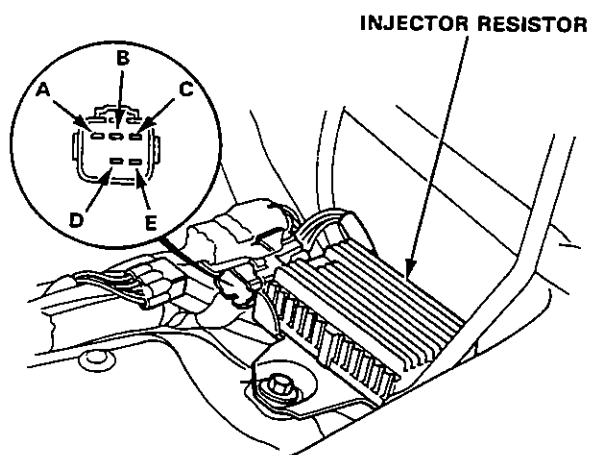
Fuel Supply System

Injector Resistor

Testing

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

Resistance should be: 5–7 Ω



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

Pressure Regulator

Testing

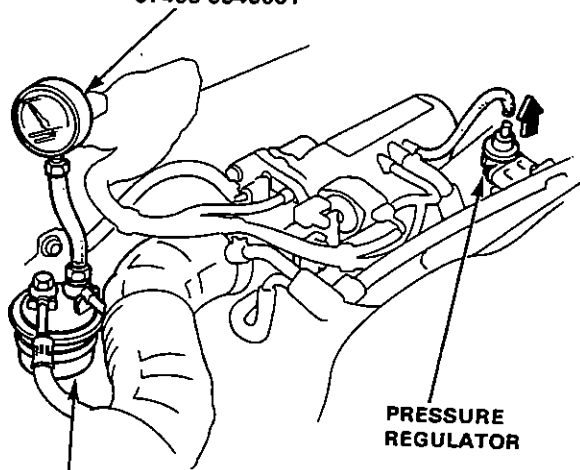
WARNING Do not smoke during the test. Keep open flames away from your work area.

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

Pressure should be:

240–279 kPa (2.45–2.85 kg/cm², 35–41 psi)
(with the regulator vacuum hose disconnected)

FUEL PRESSURE GAUGE
07406-0040001

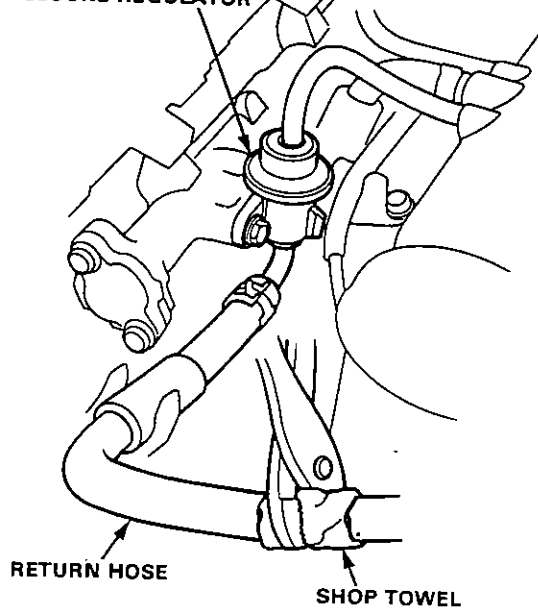


FUEL FILTER

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.

PRESSURE REGULATOR



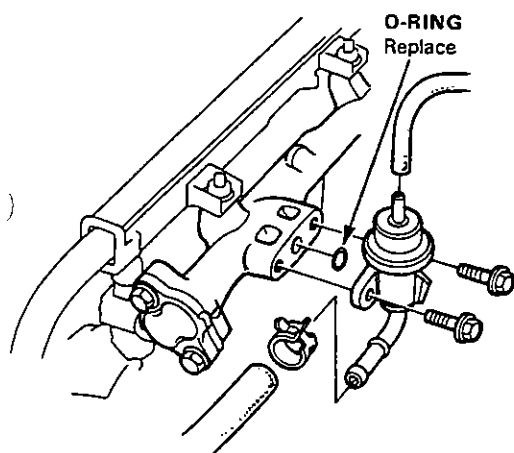
- If the pressure does not rise, replace the regulator and retest.



Replacement

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

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



NOTE:

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

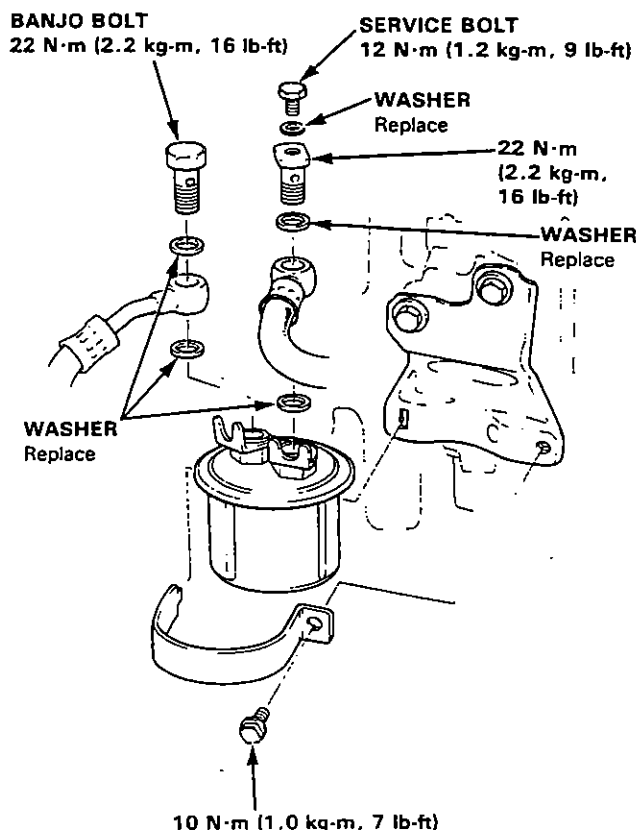
Fuel Filter

Replacement

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

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

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



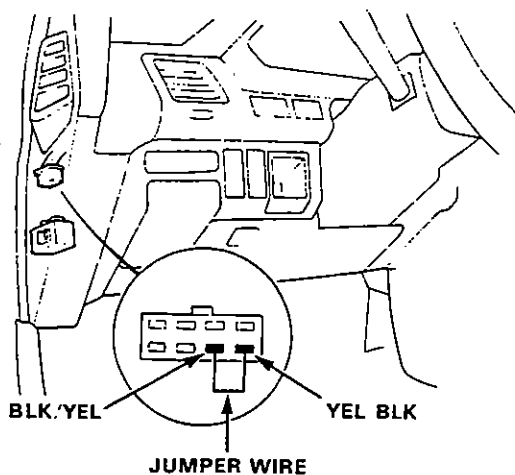
Fuel Supply System

Fuel Pump

Testing

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

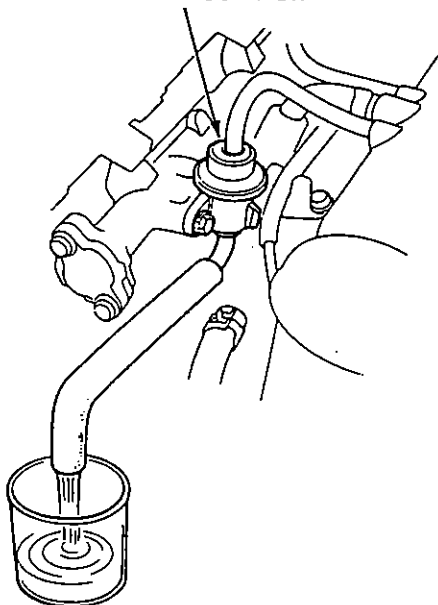
1. With the ignition switch OFF, disconnect the connector from the main relay at left side of the cowl.
2. Connect the BLK/YEL wire and YEL/BLK wire with a jumper wire.



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

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

PRESSURE REGULATOR



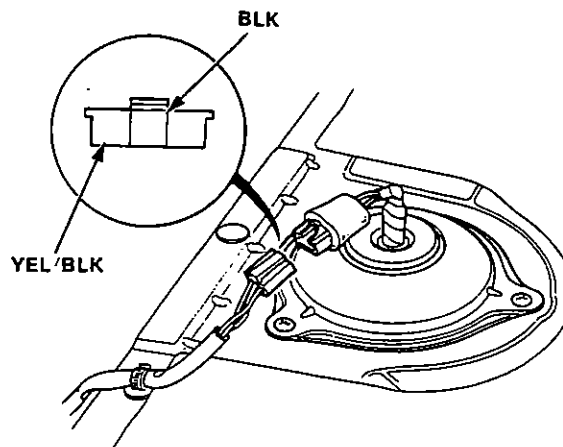
- If fuel flow is less than 230 cm³ (7.8 oz), or there is no fuel flow, check for:
 - Clogged fuel filter.
 - Clogged fuel line.
 - Pressure regulator failure (page 6-76).

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON, you will hear some noise if you hold your ear to the fuel filler port with the fuel filler cap removed. If the pump does not make noise, check as follows:

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

CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

3. Check that battery voltage is available at the fuel pump connector when the ignition switch is turned ON (positive probe to the YEL/BLK wire, negative probe to the BLK wire).



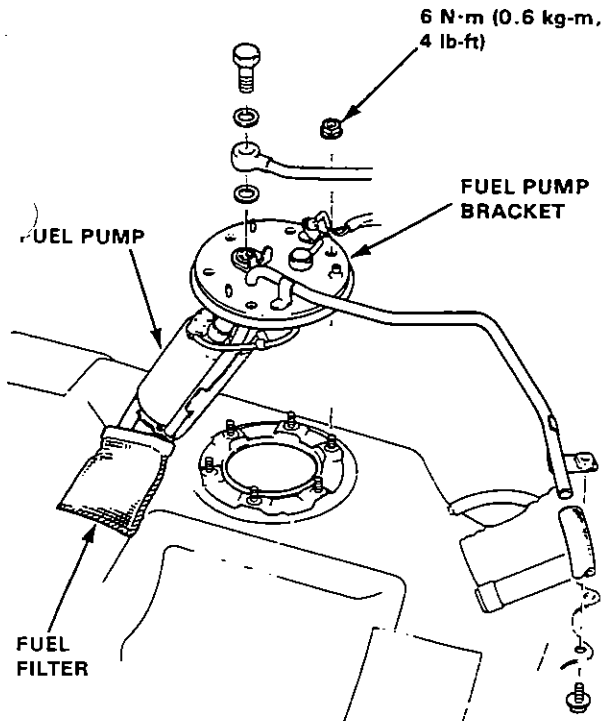
- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness (page 6-79).



Replacement

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

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

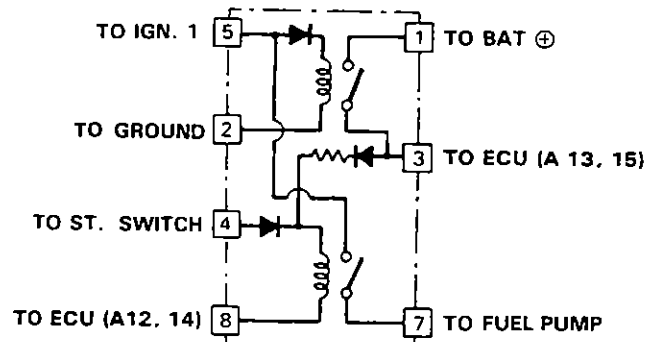
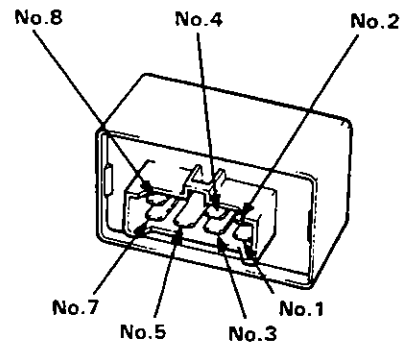


Main Relay

Relay Testing

1. Remove the main relay.
2. Attach the battery positive terminal to the No. 4 terminal and the battery negative terminal to the No. 8 terminal of the main relay. Then check for continuity between the No. 5 terminal and No. 7 terminal of the main relay.

- If there is continuity, go on to step 3.
- If there is no continuity, replace the relay and retest.



3. Attach the battery positive terminal to the No. 5 terminal and the battery negative terminal to the No. 2 terminal of the main relay. Then check that there is continuity between the No. 1 terminal and No. 3 terminal of the main relay.

- If there is continuity, go on to step 4.
- If there is no continuity, replace the relay and retest.

4. Attach the battery positive terminal to the No. 3 terminal and battery negative terminal to the No. 8 terminal of the main relay. Then check that there is continuity between the No. 5 terminal and No. 7 terminal of the main relay.

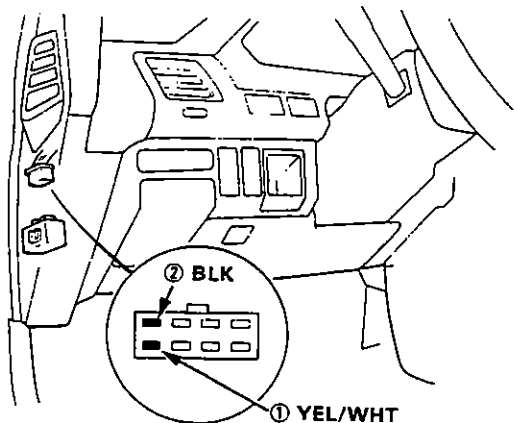
- If there is continuity, the relay is OK; If the fuel pump still does not work, go to Harness Testing in the next column.
- If there is no continuity, replace the relay and retest.

Fuel Supply System

Main Relay

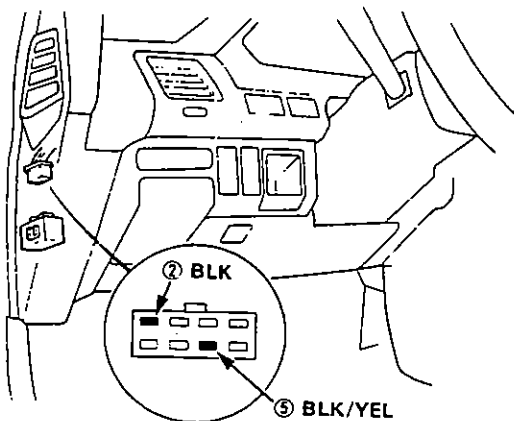
Harness Testing

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



Battery voltage should be available.

- If there is no voltage, check the wiring between the battery and the main relay as well as ECU fuse (15A) in the main fuse box.
5. Attach the positive probe of voltmeter to the BLK/YEL wire (5) and the negative probe to the BLK wire (2).

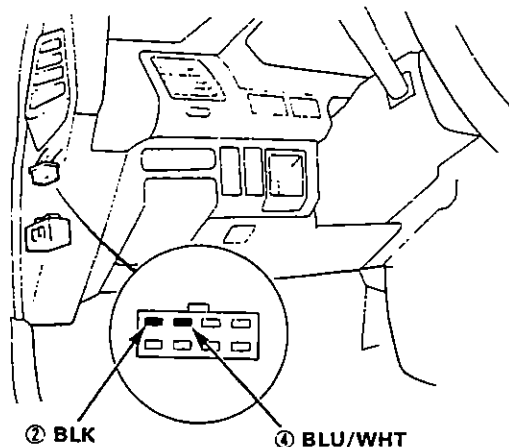


6. Turn the ignition switch ON.

Battery voltage should be available.

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

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

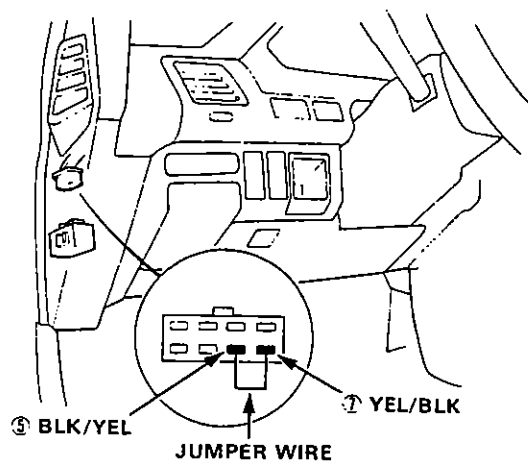


8. Turn the ignition switch to START position.

Battery voltage should be available.

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

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



10. Turn the ignition switch ON.

The fuel pump should work.

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



Fuel Tank

Replacement

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

1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Remove the rear seat and disconnect the 3P connector.
4. Remove the two-way valve cover and fuel hose protector.
5. Disconnect the hoses.

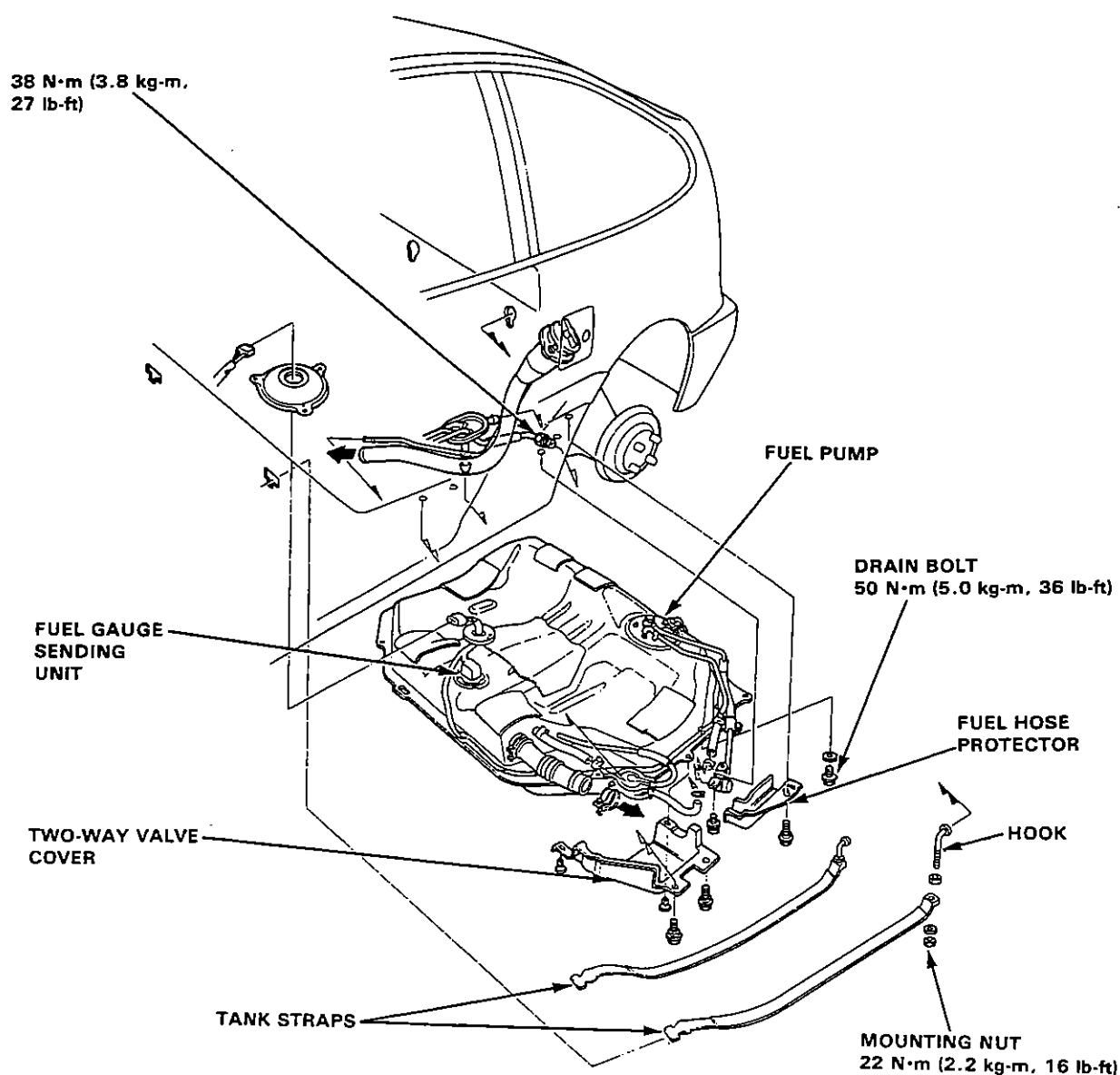
CAUTION:

- When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.
- Clean the flared joint of high pressure hoses thoroughly before reconnecting them.

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

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

9. Install a new washer on the drain bolt, then install parts in the reverse order of removal.



Air Intake System

System Troubleshooting Guide

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

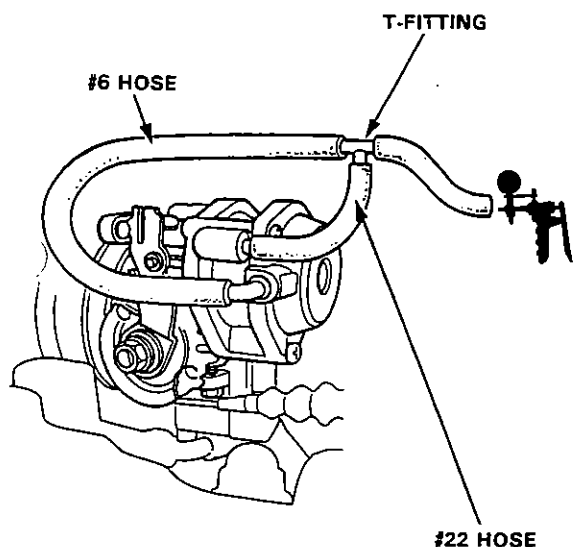
PAGE	SUB SYSTEM	THROTTLE CABLE	THROTTLE BODY	THROTTLE CONTROL SYSTEM
		83	84	86
ENGINE WON'T START				①
DIFFICULT TO START ENGINE WHEN COLD				①
WHEN COLD FAST IDLE OUT OF SPEC		③	②	①
WHEN WARM ENGINE SPEED TOO HIGH		③	②	①
WHEN WARM ENGINE SPEED TOO LOW			①	
FREQUENT STALLING WHILE WARMING UP		①	②	②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



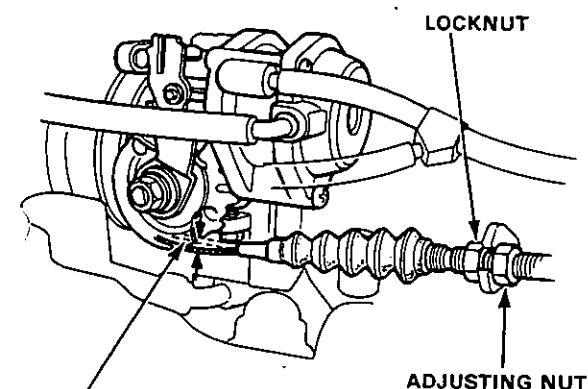
Throttle Cable

Inspection/Adjustment

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



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

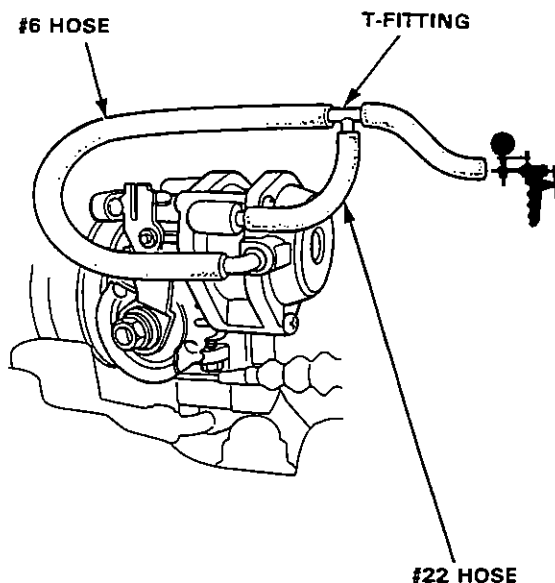


Deflection 10–12 mm

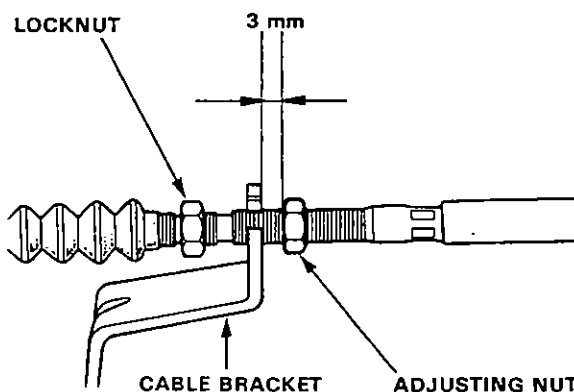
5. If deflection is not within specs, loosen the locknut and turn the adjusting nut until the deflection is as specified.
6. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure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

Installation

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



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



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

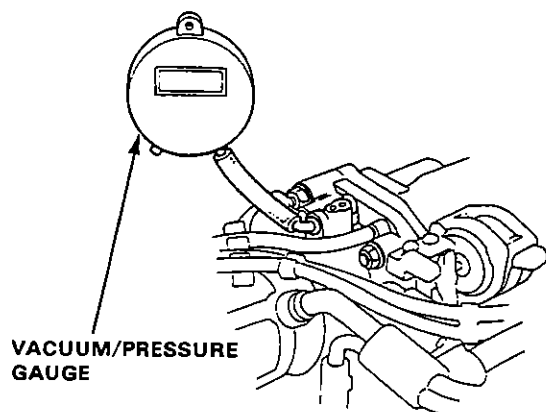
Air Intake System

Throttle Body

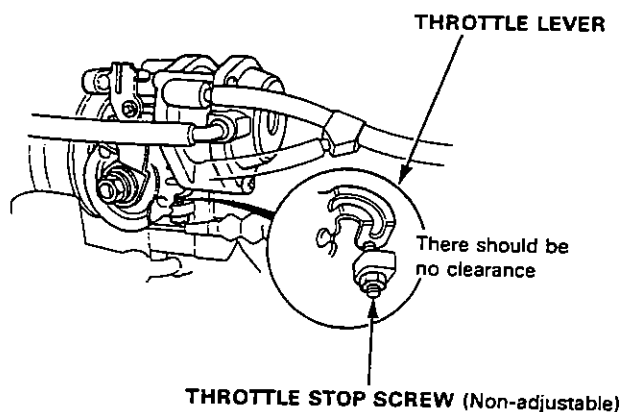
Inspection

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

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



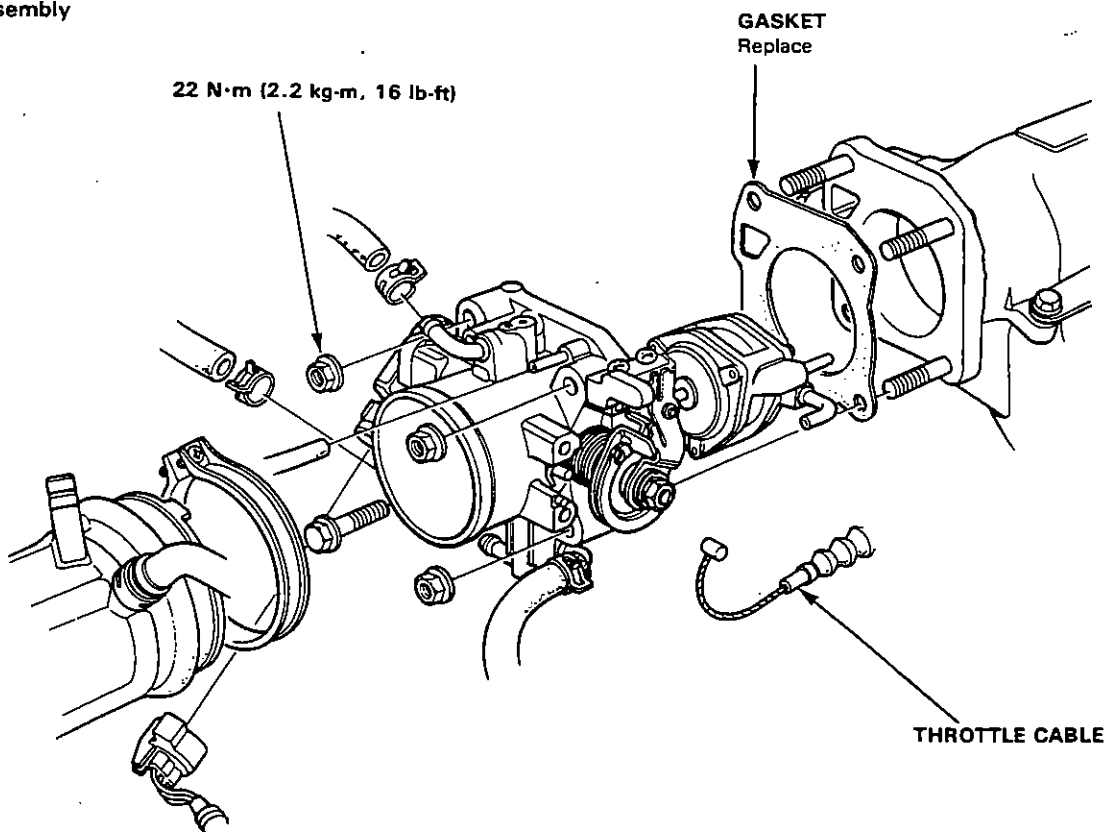
3. Allow the engine to idle and check that the gauge indicates no vacuum.
 - If there is vacuum, check the throttle control system (page 6-86).
4. Check that vacuum is indicated on the gauge when the throttle is opened slightly from idle.
 - If the gauge indicates no vacuum, check the canister port. If the canister port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly without binding or sticking.
 - If there are any abnormalities in the above steps, check for:
 - Excessive wear or play in the throttle valve shaft.
 - Sticky or binding throttle lever at full close position.
 - Clearance between throttle stop screw and throttle lever at full close position.



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

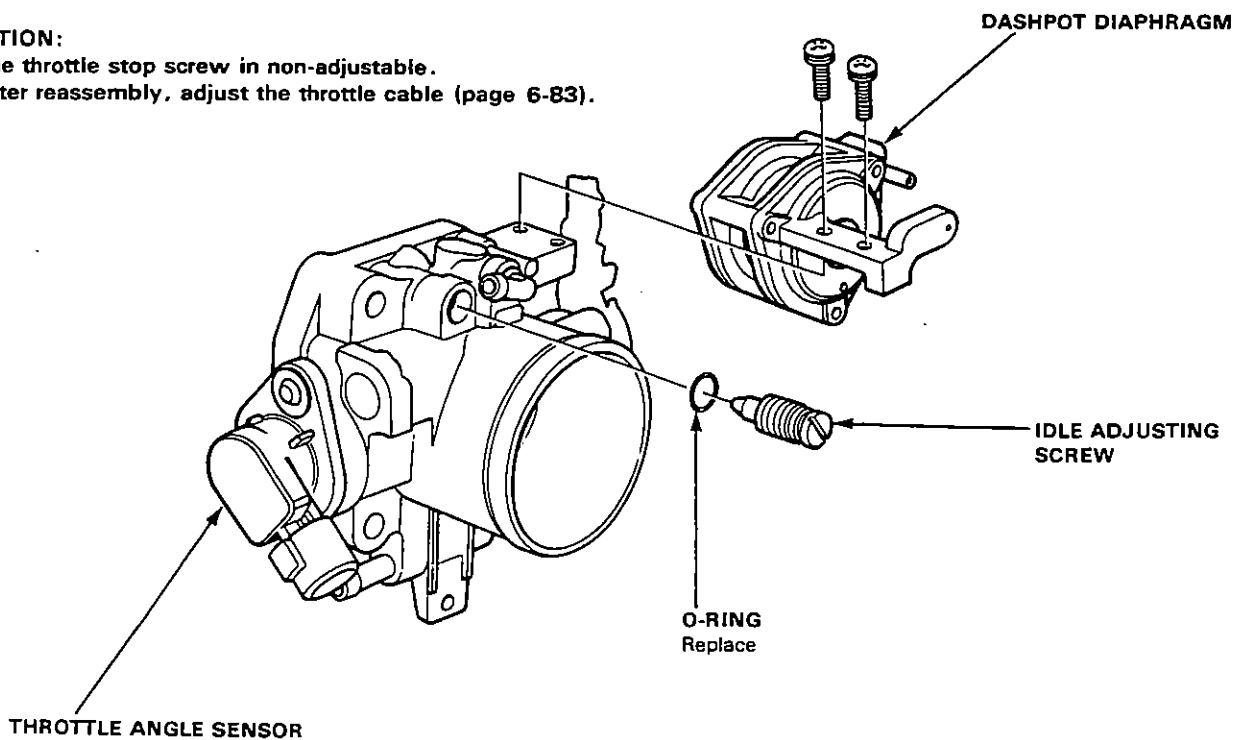


Disassembly



CAUTION:

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



Air Intake System

Throttle Control System

Troubleshooting Flowchart

Inspection of Throttle Control System

Start the engine and allow to idle.

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

Is there vacuum?

NO

— Check the 3-way joint A.
— Repair blockage at port or pinch in #6 hose.

YES

Disconnect #22 hose from the dashpot diaphragm and connect a vacuum gauge.

NOTE:

- Coolant temperature must be below -10°C (14°F).
- Fast idle speed must be below $1,800\text{ min}^{-1}$ (rpm).

Is there vacuum?

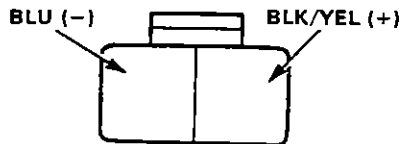
YES

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

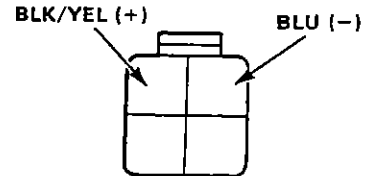
NO

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

(Without CATA)



(With CATA)



Is there battery voltage?

YES

Replace the dashpot control solenoid valve.

NO

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

Is there battery voltage?

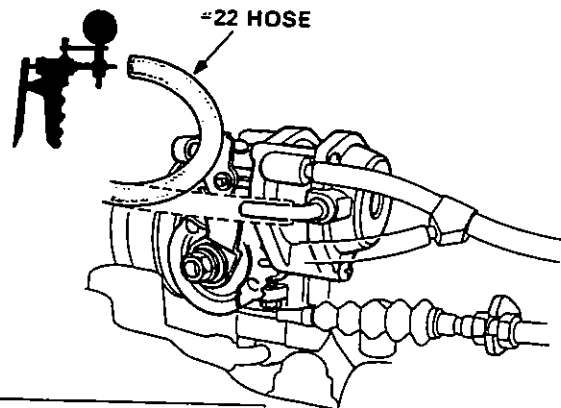
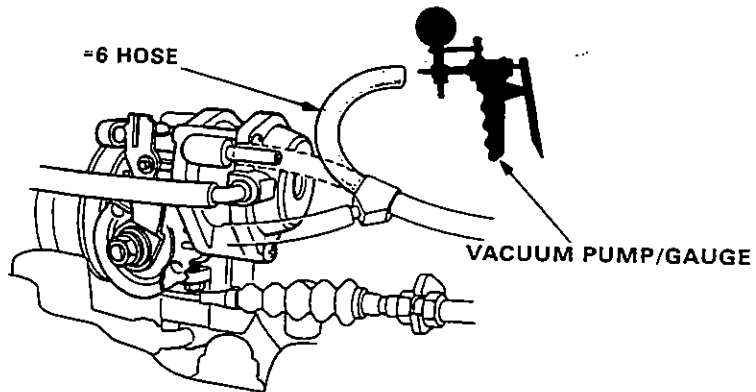
NO

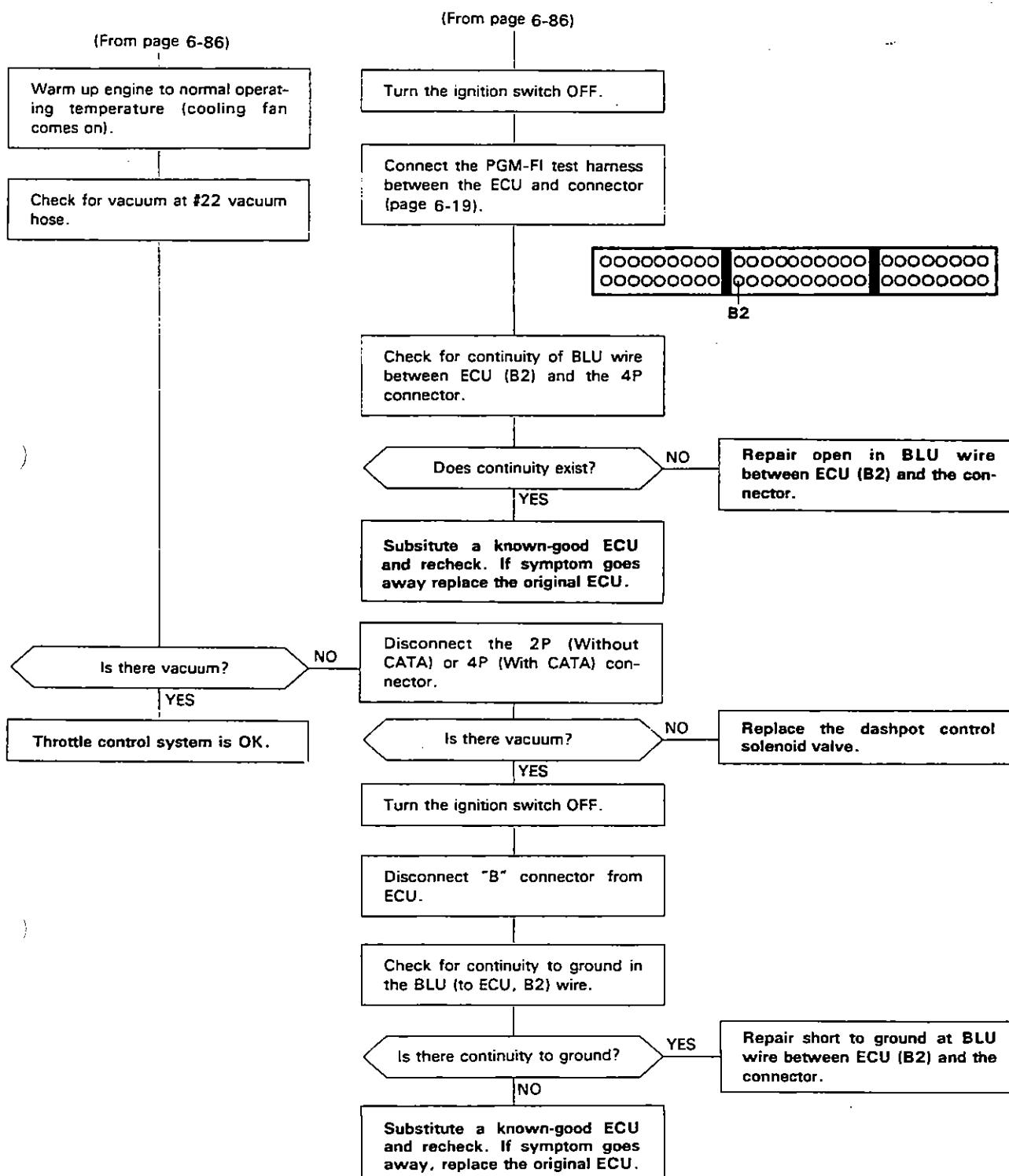
Repair open in BLK/YEL wire between No.14 fuse and the connector.

YES

(To page 6-87)

(To page 6-87)





Air Intake System

—Throttle Control System

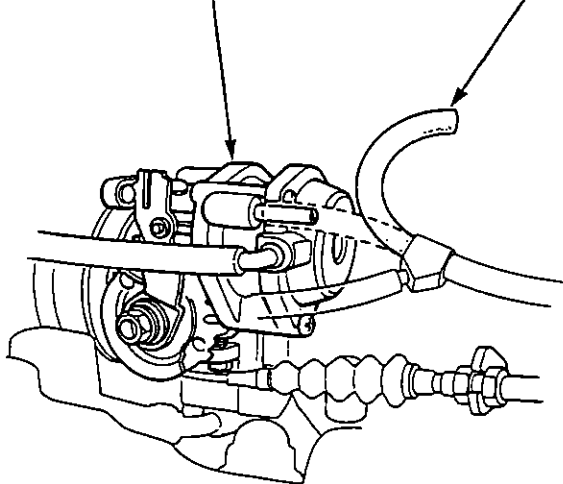
Dashpot Diaphragm Testing

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

Engine speed should be $2,500 \pm 500 \text{ min}^{-1} \text{ (rpm)}$

DASHPOT DIAPHRAGM

#6 HOSE



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

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

Emission Control System

Tailpipe Emission

Inspection

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

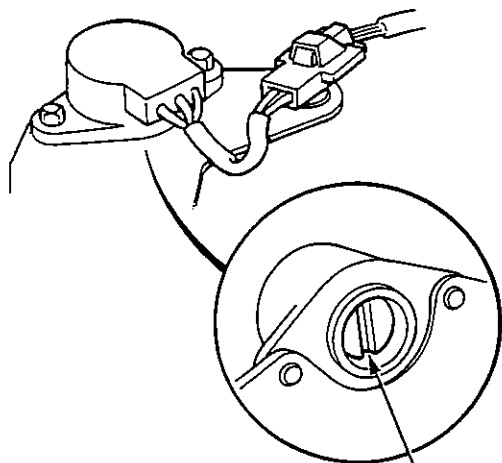
1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-69).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:

With CATA: 0.1% maximum

Without CATA: $1.0 \pm 1.0\%$

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



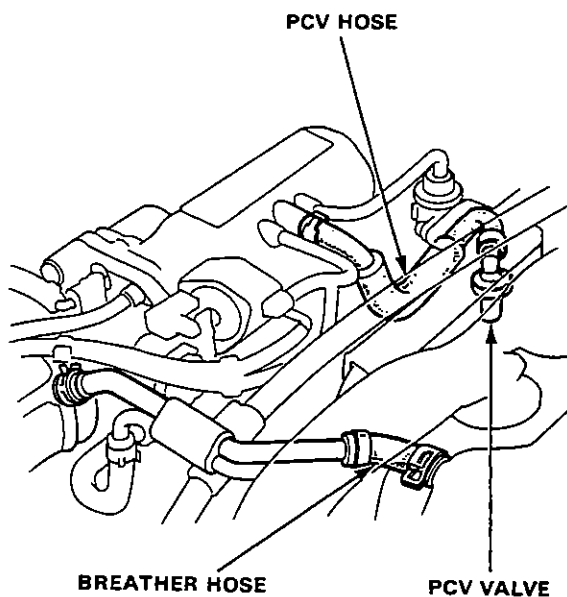
ADJUSTING SCREW

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

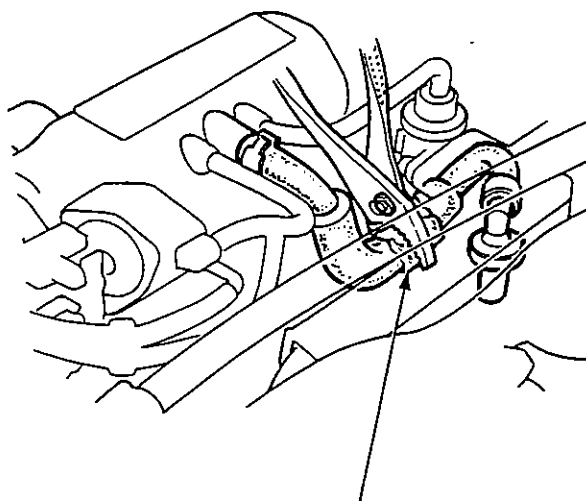
Positive Crankcase Ventilation System

Inspection

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



2. At idling, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold is lightly pinched with your fingers or pliers.



Gently pinch here

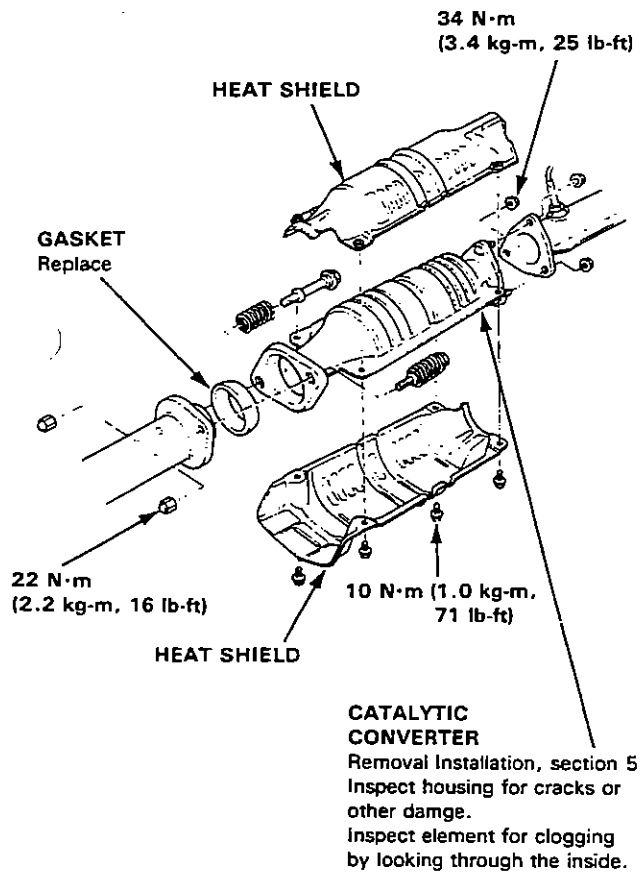
- If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



Catalytic Converter

Inspection

If excessive exhaust system back-pressure is suspected, remove the catalytic converter from the car and make a visual check for plugging, melting or cracking of the catalyst. Replace the catalytic converter if more than 50% of the visible area is damaged or plugged.



Emission Control System

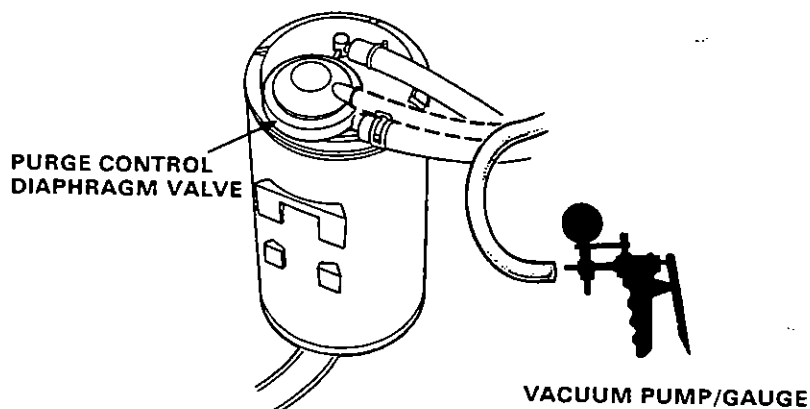
Evaporative Emission Controls [With CATA Ex. KQ]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 57 °C (135 °F).



Is there vacuum ?

YES

Disconnect the 4P connector.

NO

BLK (-)

GRN (+)

Measure voltage between GRN (+) terminal and BLK (-) terminal.

Is there battery voltage ?

YES

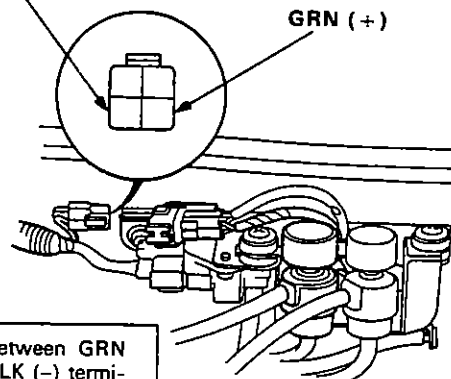
Replace purge cut-off solenoid valve.

NO

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

(To page 6-93)

(To page 6-93)





(From page 6-92)

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

Check for vacuum at #7 hose 5 seconds after starting the engine.

(From page 6-92)

Is there battery voltage ?

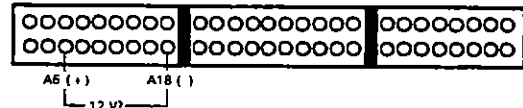
YES

Repair open in BLK wire between the 4P connector and G201.

NO

Turn the ignition switch OFF.

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



Turn the ignition switch ON.

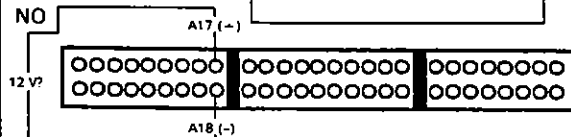
Measure voltage between A6 (+) terminal and A18 (-) terminal.

Is there battery voltage?

YES

Repair open in GRN wire between ECU (A6) and the 4P connector.

NO



Measure voltage between A17 (+) terminal and A18 (-) terminal.

Is there battery voltage ?

NO

Inspect No. 14 fuse.

Is No. 14 fuse OK ?

NO

Replace fuse.

YES

Repair open in BLK/YEL wire between ECU (A17) and No. 14 fuse.

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

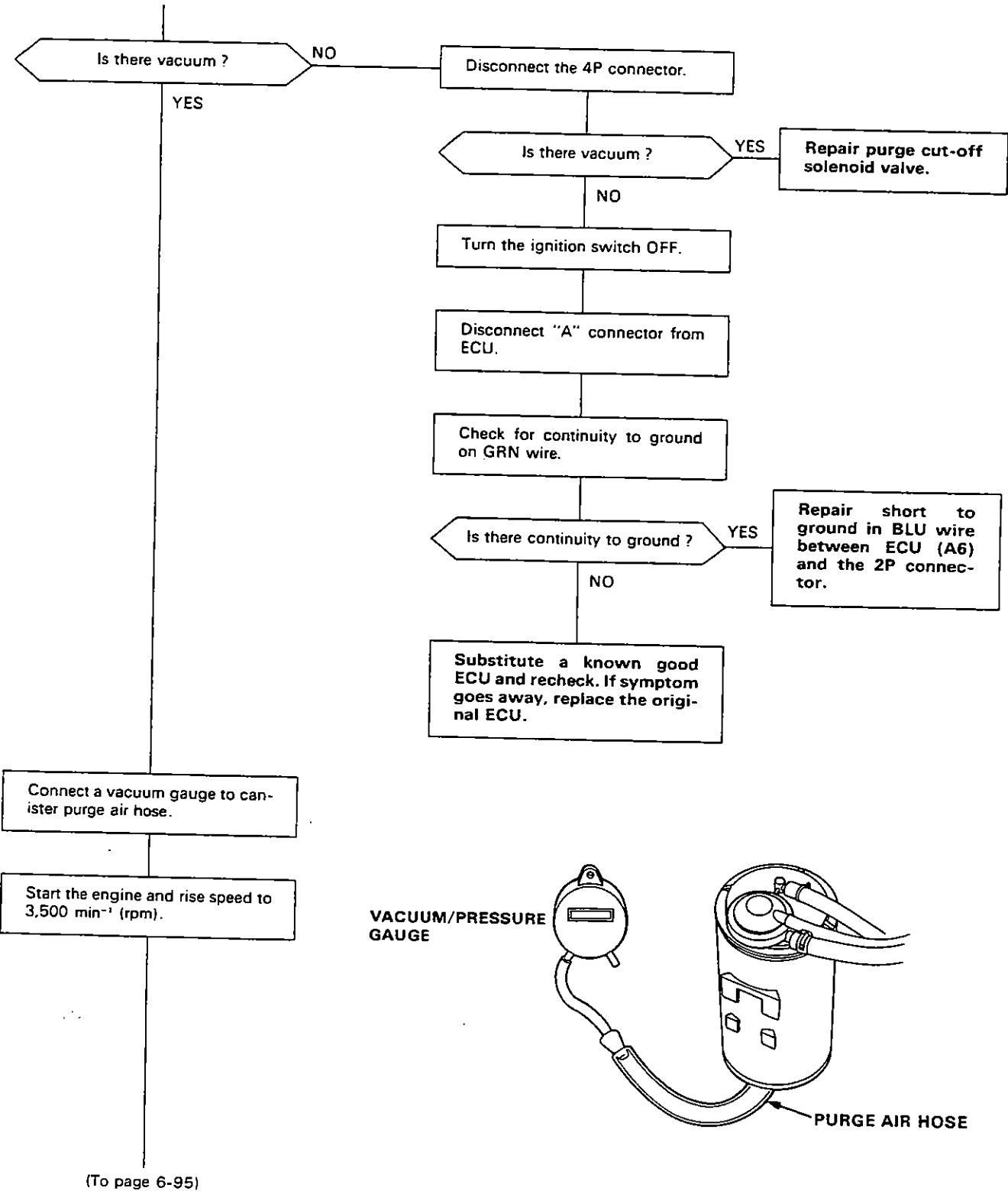
(To page 6-94)

(cont'd)

Emission Control System

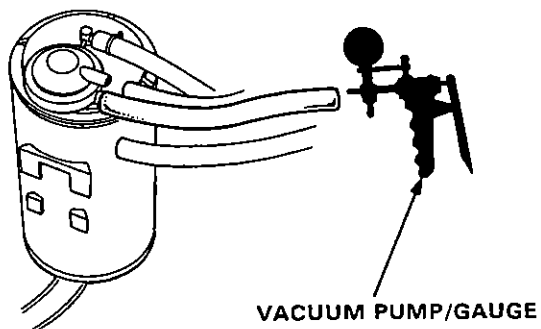
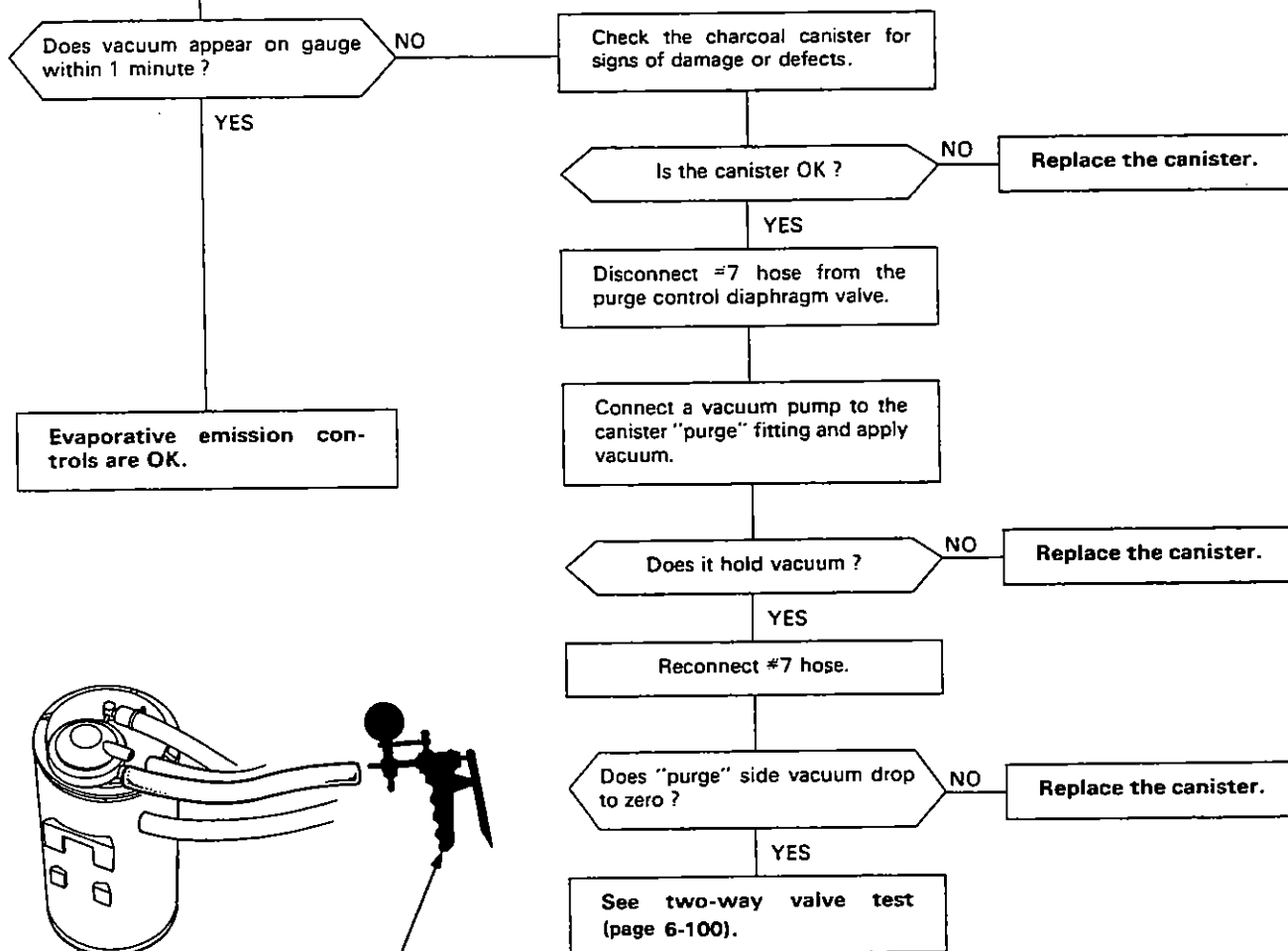
Evaporative Emission Controls [With CATA Ex. KQ]

Troubleshooting Flowchart (cont'd)
(From page 6-93)





(From page 6-94)



Emission Control System

Evaporative Emission Control [KQ]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

Disconnect #7 hose from the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.

Start the engine and allow to idle.
NOTE: Engine coolant temperature must be below 80°C (176°F).

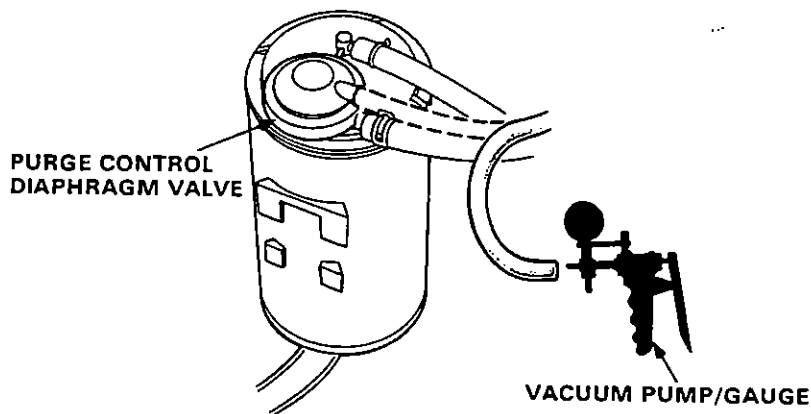
Is there vacuum?

YES

Disconnect the 2P connector.

NO

(To page 6-97)



BLK/YEL (+)

GRN (-)

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

Is there battery voltage?

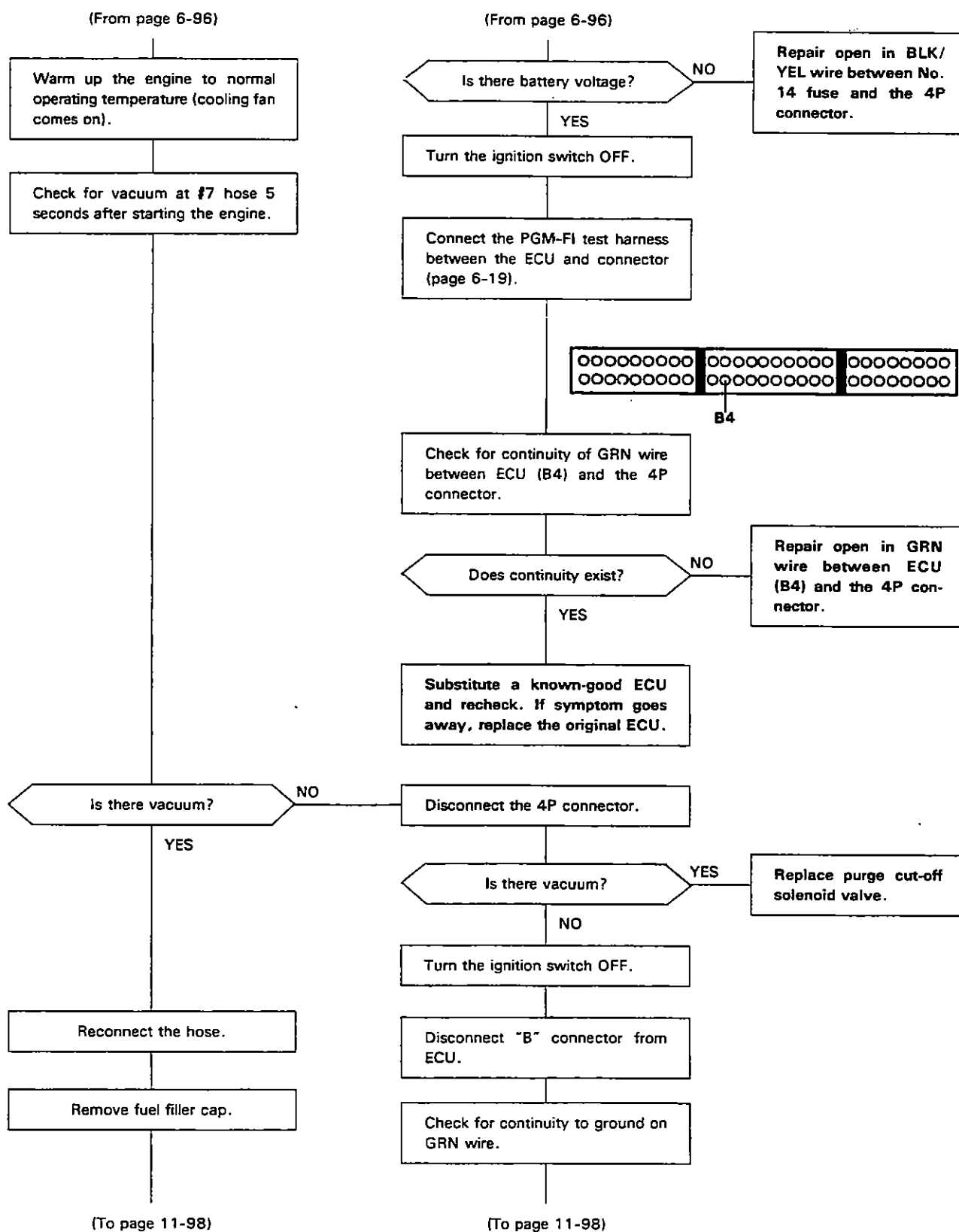
YES

Replace purge cut-off solenoid valve.

NO

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

(To page 6-97)



(cont'd)

Emission Control System

Evaporative Emission Controls [KQ]

Troubleshooting Flowchart (cont'd)

(From page 6-97)

Connect a vacuum gauge to canister purge air hose.

Start the engine and raise speed to 3,500 min⁻¹ (rpm).

Does vacuum appear on gauge within 1 minute?

YES

Evaporative emission controls are OK.

NO

Check the charcoal canister for signs of damage or defects.

Is the canister OK?

NO

Replace the canister.

YES

Disconnect #7 hose from the purge control diaphragm valve.

Connect a vacuum pump to the canister "purge" fitting and apply vacuum.

Does it hold vacuum?

NO

Replace the canister.

YES

Reconnect #7 hose.

Does "purge" side vacuum drop to zero?

NO

Replace the canister.

YES

See two-way valve test (page 6-100).

(From page 6-97)

Is there continuity to ground?

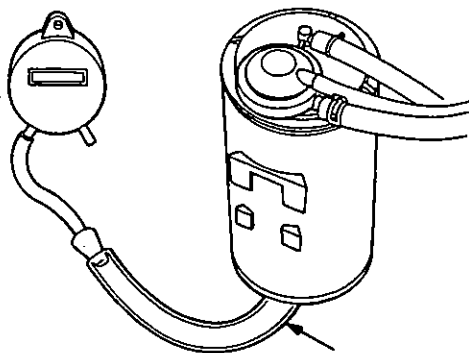
YES

Repair short to ground in BLU wire between ECU (B4) and the connector.

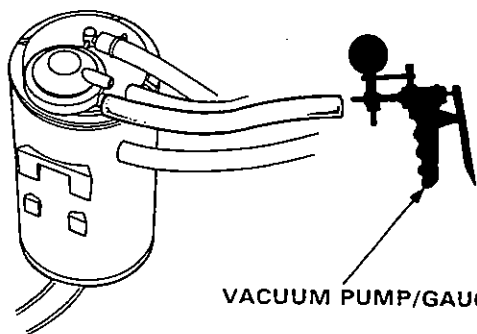
NO

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

VACUUM/PRESSURE GAUGE



PURGE AIR HOSE

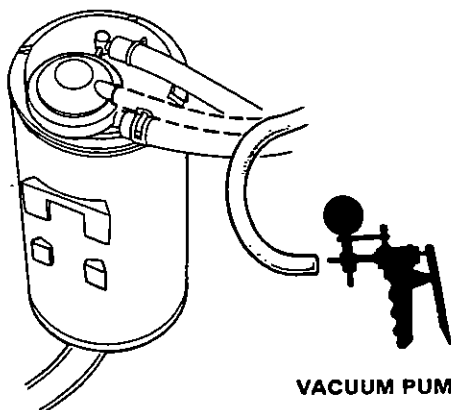


VACUUM PUMP/GAUGE



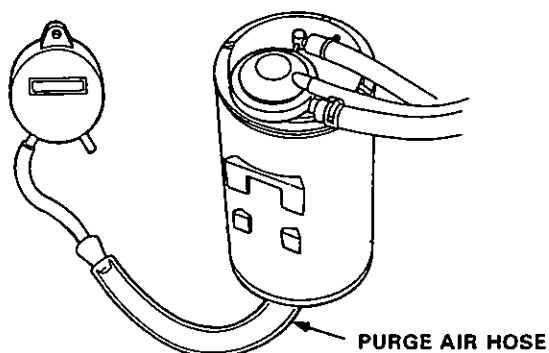
Evaporative Emission Controls [KY]

1. Remove the fuel filler cap.
2. Start the engine and allow to idle.
3. Disconnect #7 hose at the purge control diaphragm valve (on the charcoal canister) and connect a vacuum gauge to the hose.



VACUUM PUMP/GAUGE

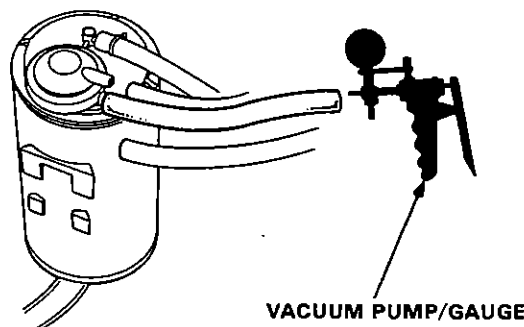
- If there is no vacuum, check #7 hose for blockage, cracks or disconnected hose, as well as vacuum port for blockage.
4. Disconnect the vacuum gauge and reconnect the hose.
 5. Connect a vacuum gauge to canister purge air hose.



PURGE AIR HOSE

6. Raise engine speed to 3,500 min⁻¹ (rpm). Vacuum should appear on gauge within 1 minute.
 - If vacuum appears on gauge in 1 minute, remove gauge, test is complete.
 - If no vacuum, disconnect vacuum gauge and reinstall fuel filler cap.
7. Remove charcoal canister and check for signs of damage or defects.
 - If defective, replace canister.
8. Stop engine. Disconnect upper vacuum hose from canister "PCV" fitting. Connect a vacuum pump to canister "purge" fitting as shown, and apply vacuum.

Vacuum should remain steady.



VACUUM PUMP/GAUGE

- If vacuum drops, replace canister and retest.
9. Restart engine. Reconnect hose to canister "PCV" fitting.

"PURGE" side vacuum should drop to zero.

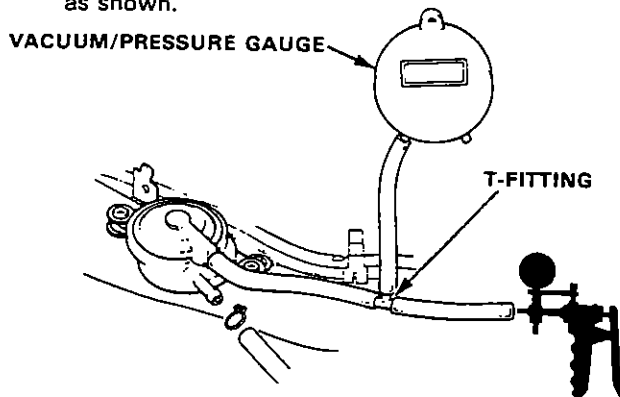
 - If "PURGE" side vacuum does not drop to zero, replace the canister and retest.

Emission Control System

Evaporative Emission Controls

Two-Way Valve Test [With CATA and KY]

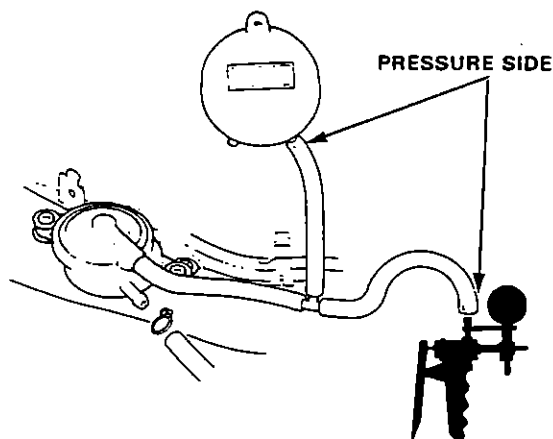
1. Remove the fuel filler cap.
2. Remove vapor line from the fuel tank and connect to T-fitting from vacuum gauge and vacuum pump as shown.



3. Slowly apply vacuum while watching the gauge.

Vacuum should stabilize momentarily at 5 to 15 mmHg (0.2 to 0.6 in. Hg).

- If vacuum stabilizes (valve opens) below 5 mmHg (0.2 in. Hg) or above 15 mmHg (0.6 in. Hg), install new valve and retest.
4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



5. Slowly pressurize the vapor line while watching the gauge.

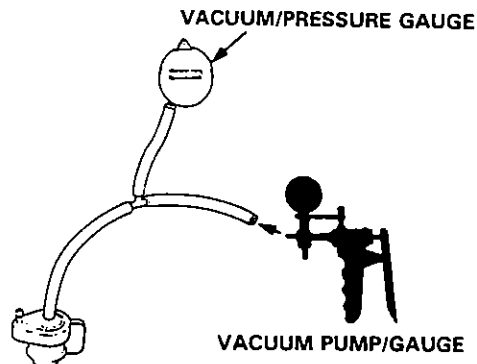
Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in. Hg).

- If pressure momentarily stabilizes (valve opens) at 10 to 35 mmHg (0.4 to 1.4 in. Hg), the valve is OK.
- If pressure stabilizes below 10 mmHg (0.4 in. Hg) or above 35 mmHg (1.4 in. Hg), install a new valve and retest.

Two-Way Valve [Without CATA Ex. KY]

Test

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

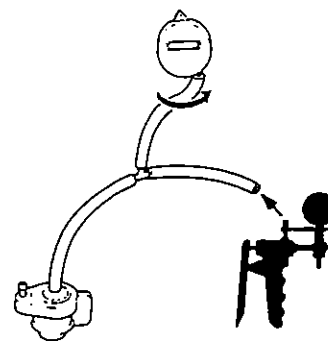


3. Slowly draw a vacuum while watching the gauge. Vacuum should stabilize at 15 to 30 mmHg (0.6 to 1.2 in. Hg).

- If vacuum stabilizes momentarily (Two-way Valve opens) between 15 and 30 mmHg (0.6 and 1.2 in. Hg), go on Step 4.

- If vacuum stabilizes (valve opens) below 15 mmHg or above 30 mmHg (1.2 in. Hg), install new valve and retest.

4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



5. Slowly pressurize the vapor line while watching the gauge.

Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in. Hg).

- If pressure momentarily stabilizes (Valve opens) at 10 to 25 mmHg (0.4 to 1.0 in. Hg), the valve is OK.

- If pressure stabilizes below 10 mmHg (0.4 in. Hg) or above 25 mmHg (1.0 in. Hg), install a new valve and re-test.

Transaxle

Clutch

Illustrated Index	7-2
Clutch Adjustment	7-3
Release Bearing	7-4
Pressure Plate	7-6
Clutch Disc	7-7
Flywheel	7-8
Flywheel Bearing	7-8
Flywheel and Clutch	7-9

Manual Transmission

Maintenance	8-2
Back-up Light Switch	8-2
Gearshift Mechanism	8-3
Transmission	8-4

Driveshafts

Driveshafts	10-2
Intermediate Shaft	10-6



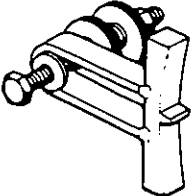
Clutch

Illustrated Index	7-2
Clutch Adjustment	7-3
Release Bearing	7-4
Pressure Plate	7-6
Clutch Disc	7-7
Flywheel	7-8
Flywheel Bearing	7-8
Flywheel and Clutch	7-9

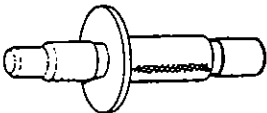


Special Tools

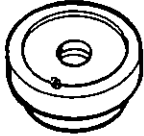
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07924-PD20003	Ring Gear Holder	1	or 07924-PD20002
②	07JAF-PM70100	Clutch Disc Alignment Tool	1	
③	07746-0010100	Attachment 32 x 35 mm	1	
④	07749-0010000	Driver	1	



①



②



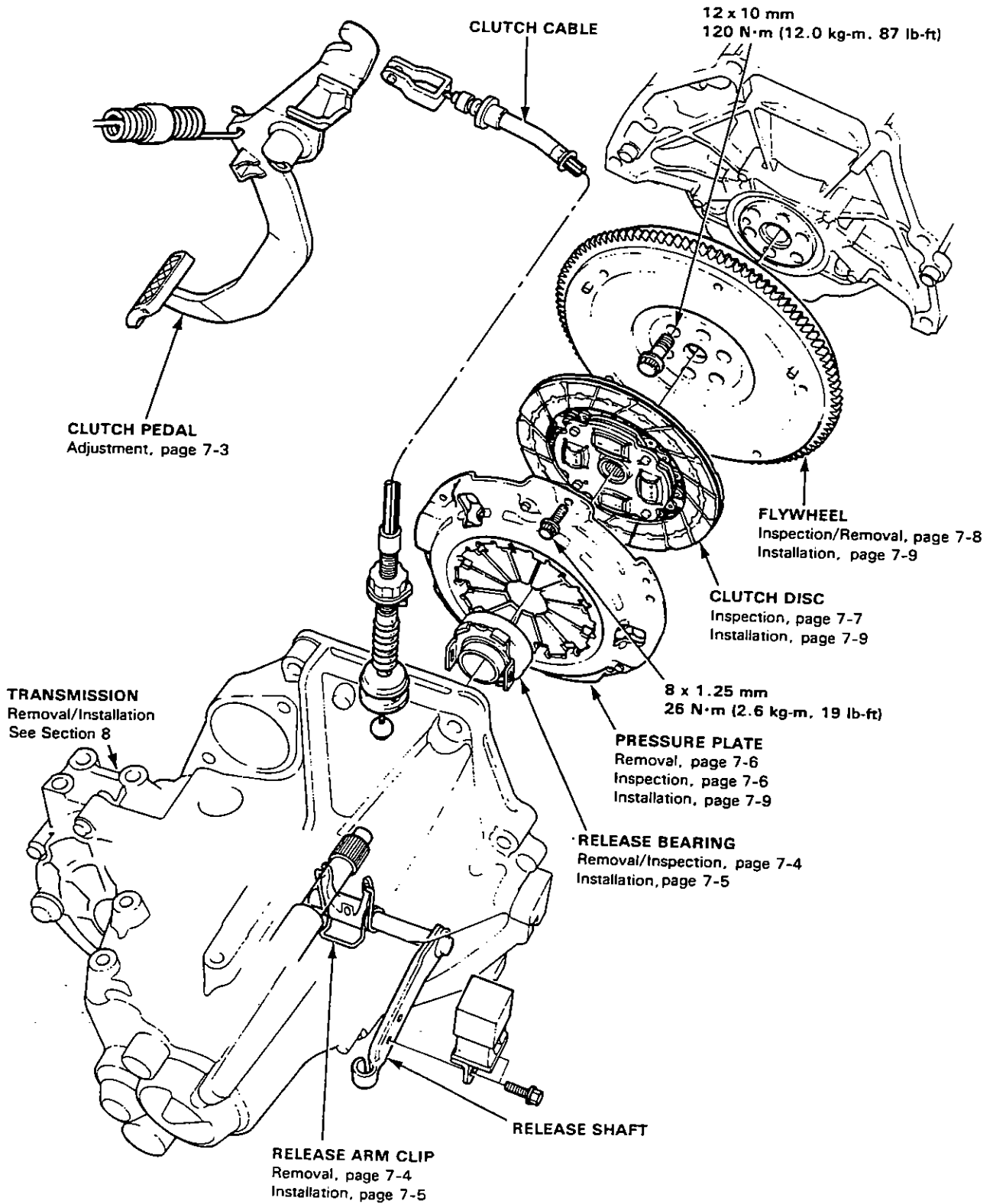
③



④

Illustrated Index

NOTE: Whenever the transmission is removed, the release bearing sliding surface should be cleaned and greased (Molybdenum Disulfide).

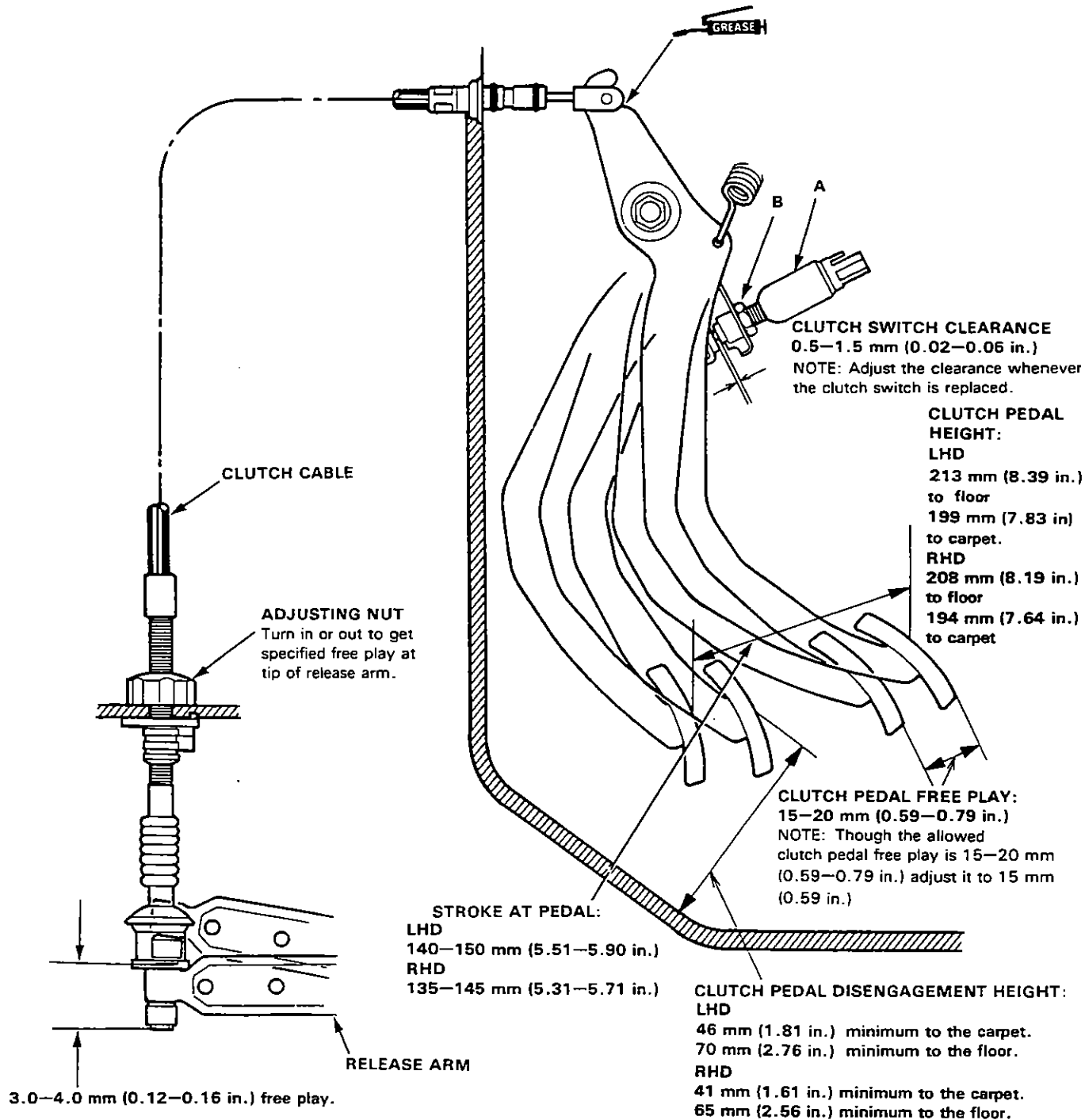


Clutch



Adjustment

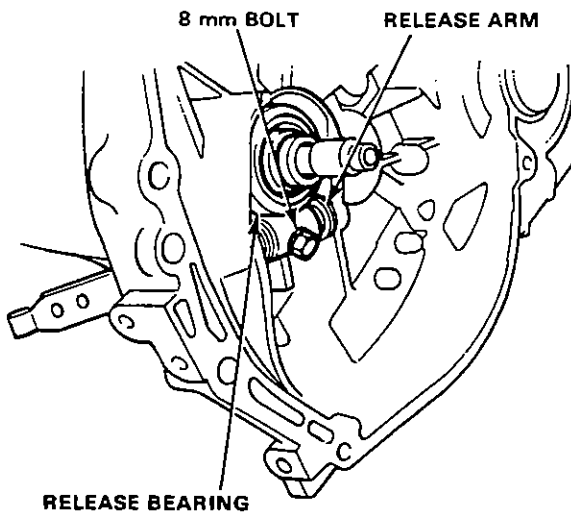
1. Measure the clutch pedal disengagement height.
2. Measure the clutch pedal free play.
3. Adjust the clutch free play by turning the adjusting nut.
4. Make sure that there is 3.0–4.0 mm (0.12–0.16 in.) free play at the tip of release arm after the adjustment.
5. Turn A to right or left to bring the clutch pedal stroke to the specification and tighten nut B.
6. When clutch switch is replaced, install the switch and turn nut B to adjust clearance.



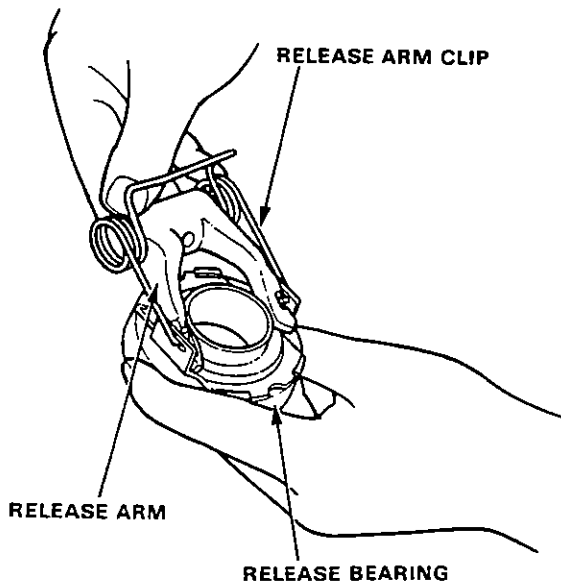
Release Bearing

Removal

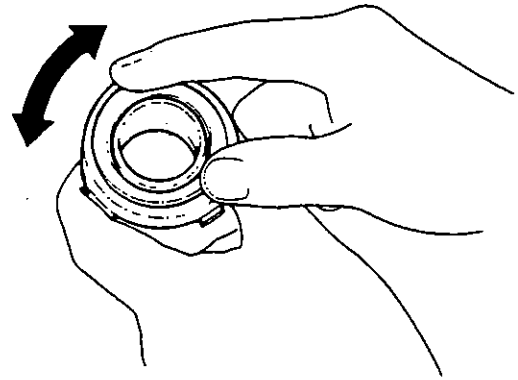
1. Remove the 8 mm special bolt.
2. Remove the release shaft and release bearing assembly.



3. Separate the release arm from the bearing by removing the clip from the holes in the release bearing.



4. Check the release bearing for excessive play by spinning it by hand.



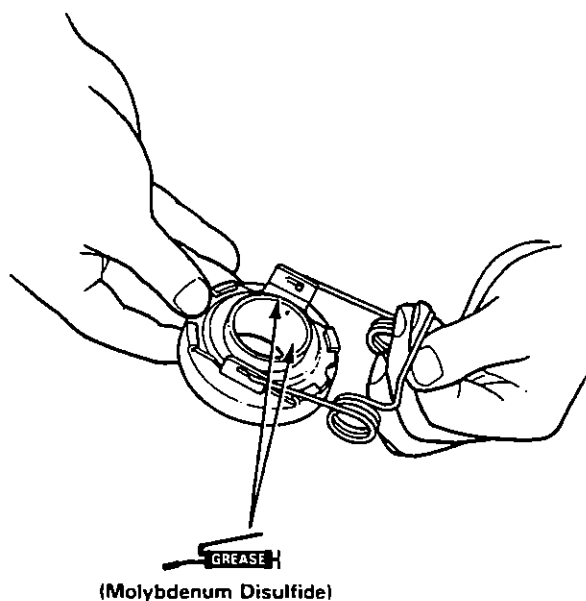
5. Replace the bearing with a new one if there is excessive play.

CAUTION: The bearing is packed with grease. Do not wash it in solvent.



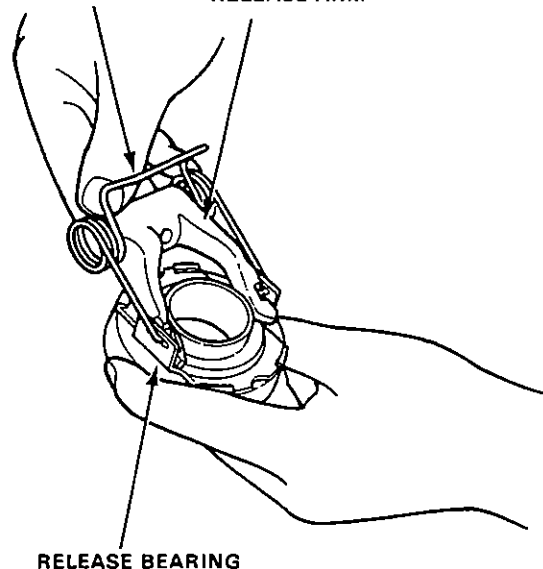
Installation

1. Align the release arm with the locating holes of the release bearing.

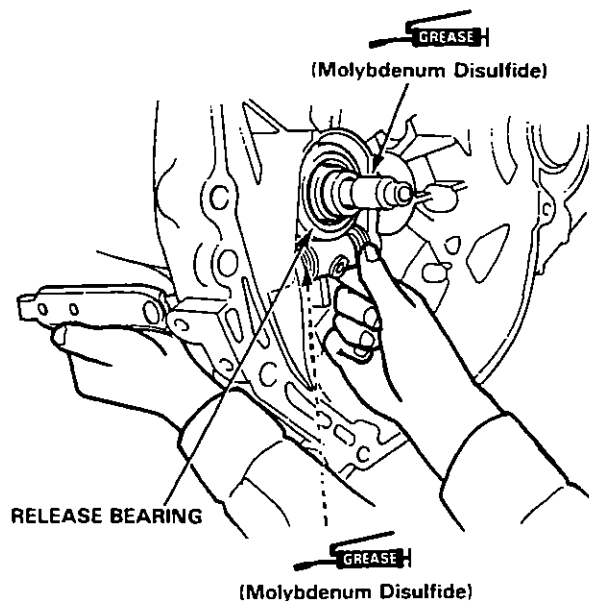


2. Install the release arm clip in the locating holes as shown.

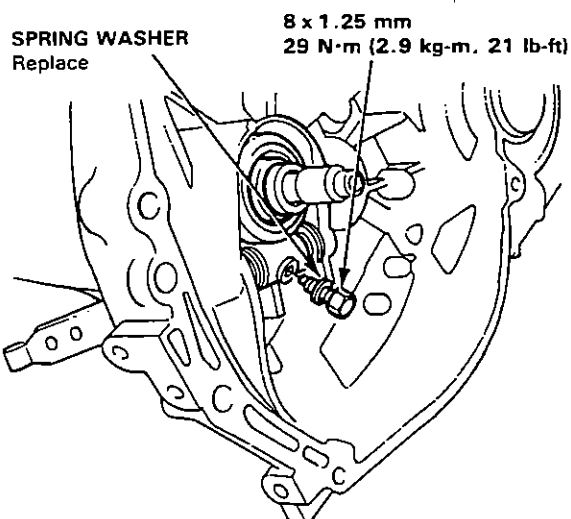
RELEASE ARM CLIP **RELEASE ARM**



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.



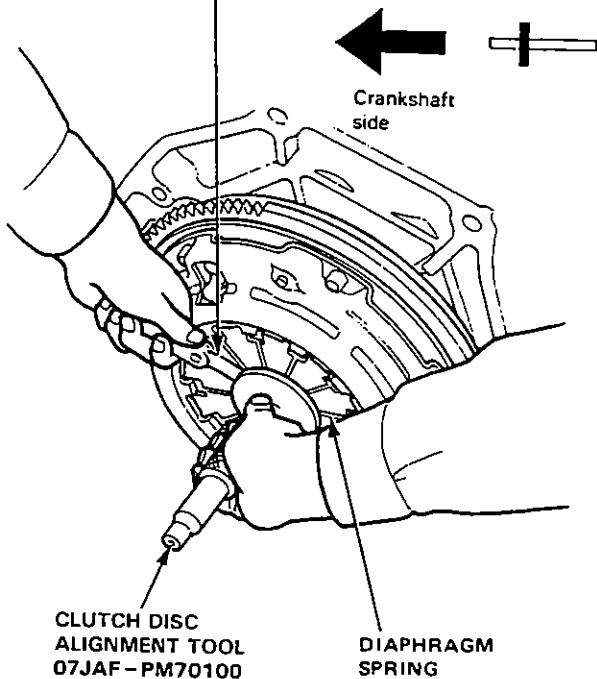
5. Move the release arm up and down to make sure the fork fits properly against the bearing, and that the bearing slides freely.

Pressure Plate

Removal/Inspection

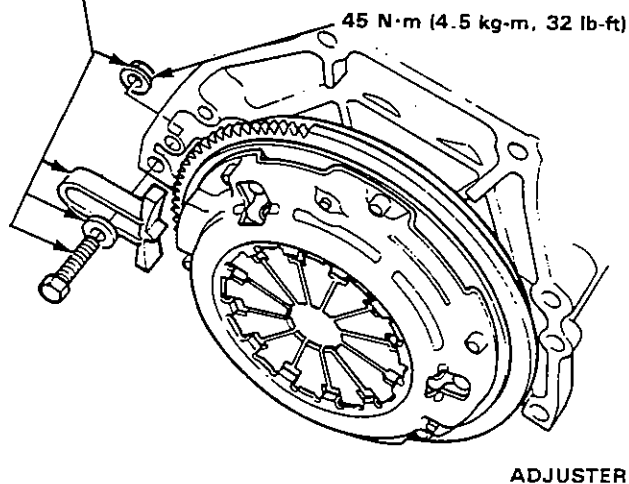
1. Inspect the fingers of the diaphragm spring for wear at the release bearing contact area.
2. Check the diaphragm spring fingers for height using the Clutch Disc Alignment Tool and feeler gauge.

Service Limit: 1.0 mm (0.04 in.) Max.
FEELER GAUGE



3. Install the Ring Gear Holder.

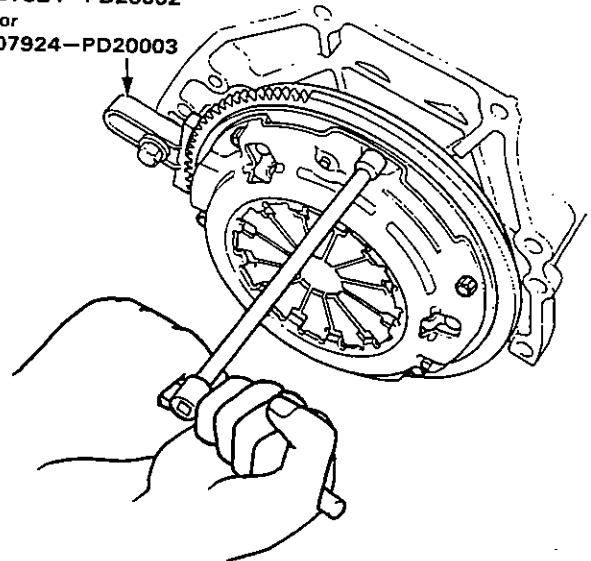
RING GEAR HOLDER
07924-PD20002
or
07924-PD20003



When installing the ring gear holder, do not install the adjuster shown to the right.

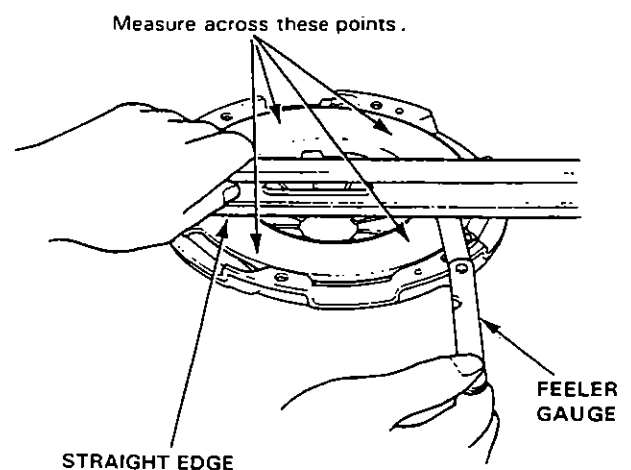
4. To prevent warping, unscrew the pressure plate mounting bolts two turns at a time in a crisscross pattern using a 10 mm T-wrench, then remove the pressure plate and clutch disc.

RING GEAR HOLDER
07924-PD20002
or
07924-PD20003



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.

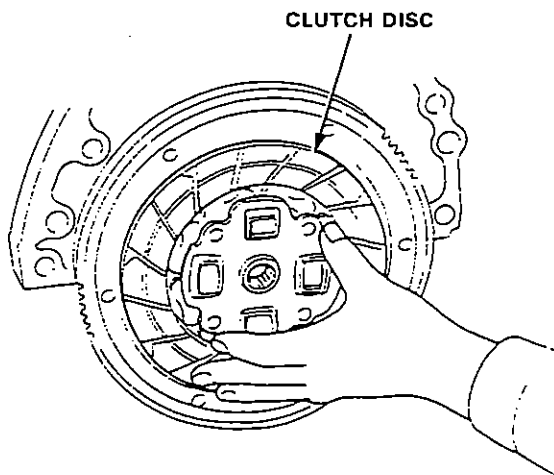


Clutch Disc



Inspection

1. Inspect lining of the clutch disc for signs of slipping or oil. Replace it if it is burned black or oil soaked.



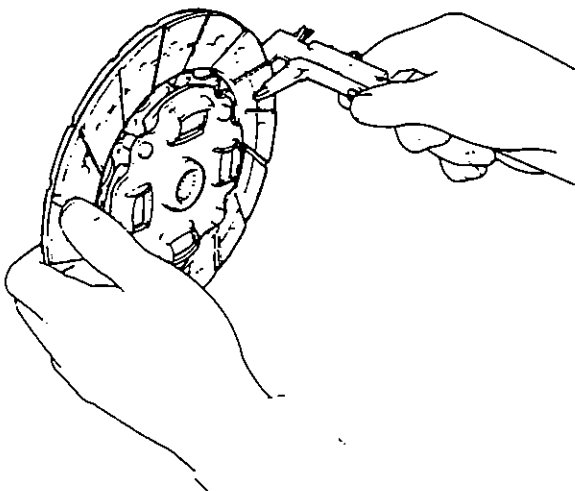
2. Measure the clutch disc thickness.

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.)

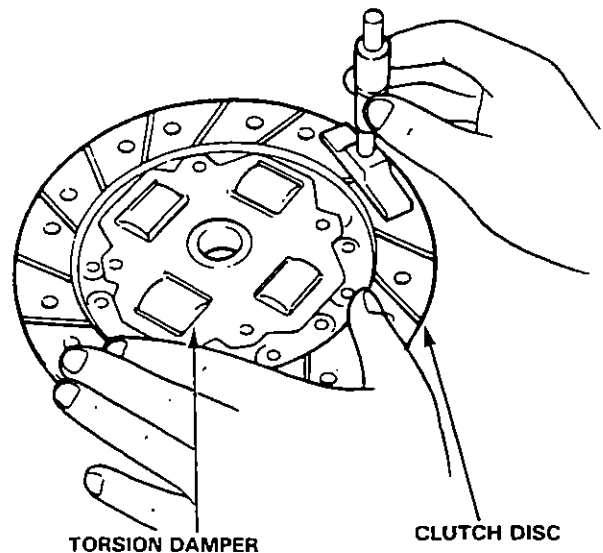


3. Check for loose rubber torsion dampers. Replace the clutch disc if any are loose.
4. Measure the depth from the lining surface to the rivets, on both sides.

Rivet Depth:

Standard (New): 1.3 mm (0.051 in.) min.

Service Limit: 0.2 mm (0.008 in.)

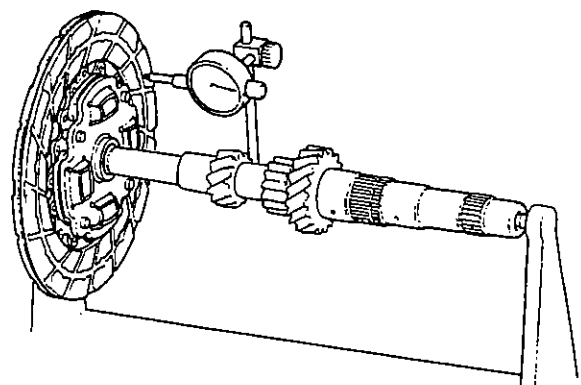


5. Measure the clutch plate runout with the mainshaft and a dial indicator.

Clutch plate runout:

Standard: 0.8 mm (0.031 in.) max.

Service Limit: 1.0 mm (0.039 in.)



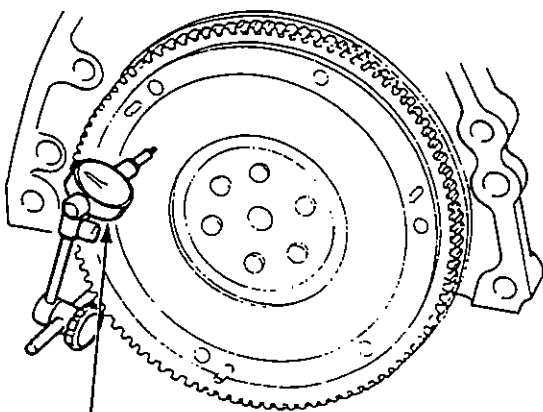
Flywheel

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.

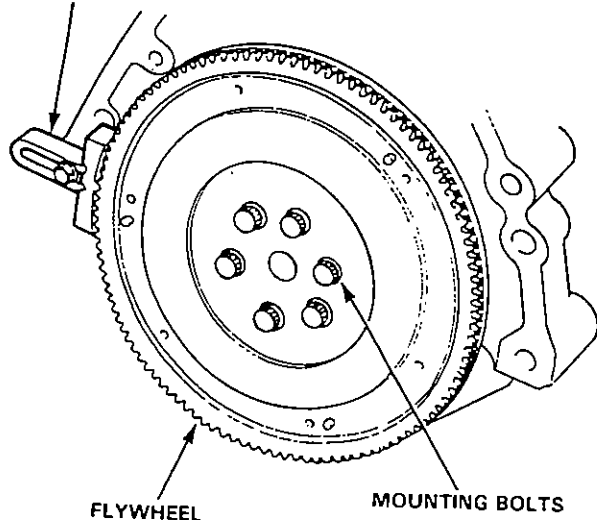
Standard (New): 0.05 mm (0.002 in.) max.
Service Limit: 0.15 mm (0.006 in.)



DIAL INDICATOR

4. Remove the six flywheel mounting bolts and flywheel.

RING GEAR HOLDER
07924-PD20002
or
07924-PD20003



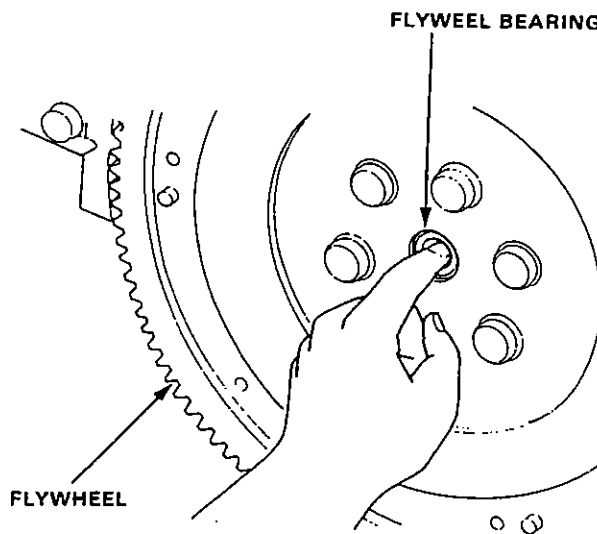
FLYWHEEL

MOUNTING BOLTS

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.



FLYWHEEL BEARING

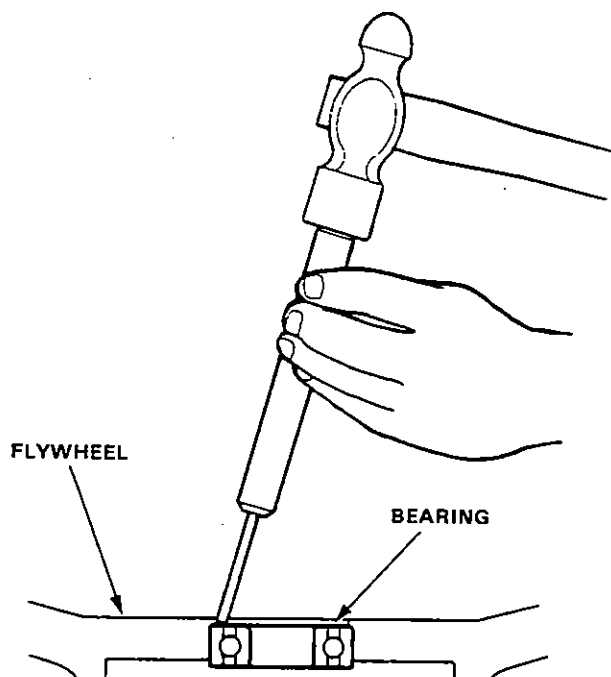
FLYWHEEL



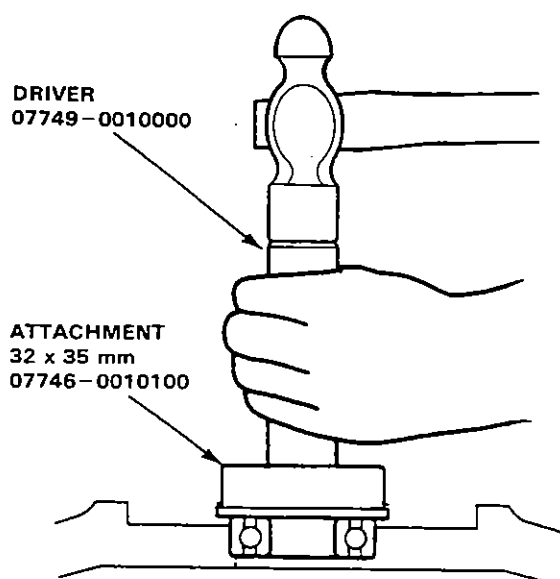
Flywheel and Clutch

Installation

2. Remove the bearing from the flywheel.



3. Drive in the new bearing in the flywheel.



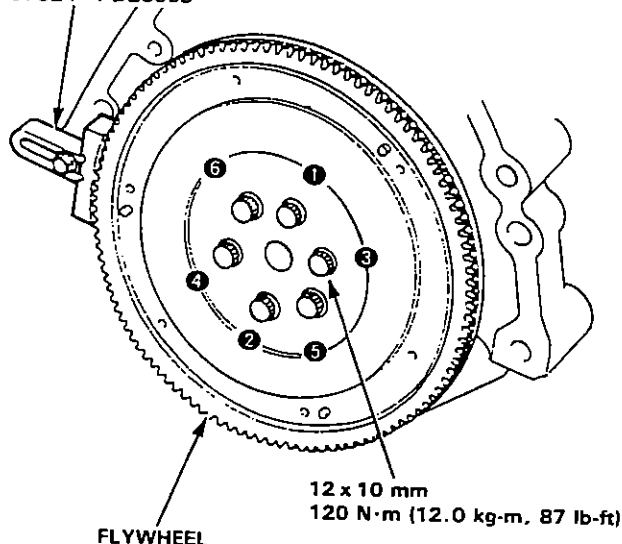
1. Align the hole in flywheel with the crankshaft dowel pin and assemble. Install the bolts only finger tight.
2. Install the Ring Gear Holder, then torque the flywheel bolts in a crisscross pattern, as shown.

RING GEAR HOLDER

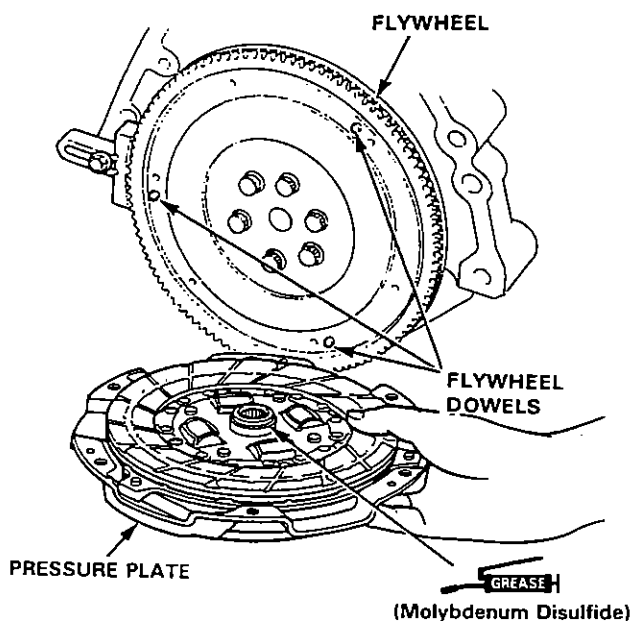
07924-PD20002

or

07924-PD20003



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.

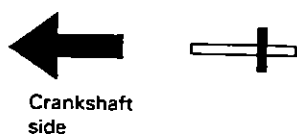
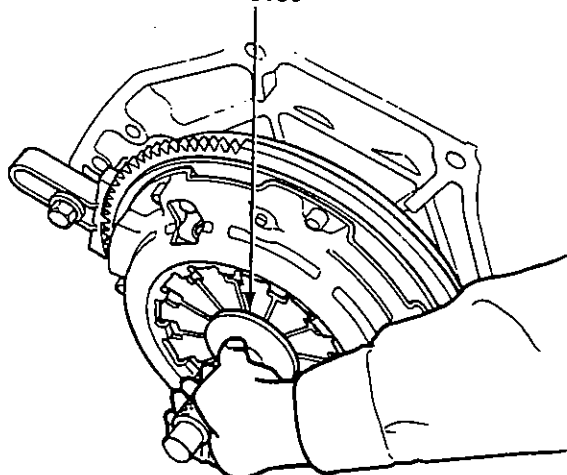
(cont'd)

Flywheel and Clutch

Installation (cont'd)

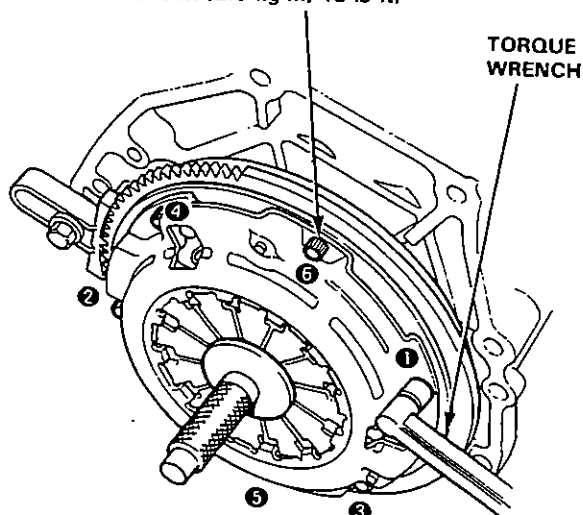
5. Insert the Clutch Disc Alignment Tool in the splined hole in the clutch disc.

CLUTCH DISC ALIGNMENT TOOL
07JAF-PM70100



6. Torque the bolts in a crisscross pattern as shown. Tighten them two turns at a time to prevent warping the diaphragm spring.

8 x 1.25 mm
26 N·m (2.6 kg-m, 19 lb-ft)



7. Remove the Alignment Tool and Ring Gear Holder.

Manual Transmission

Maintenance	8-2
Back-up Light Switch	8-2
Gearshift Mechanism	8-3
Transmission	
Removal	8-4
Installation	8-7



Maintenance

Oil Level Inspection

1. Check with oil at operating temperature, engine OFF, and car on level ground.
2. Remove oil filler plug and check level with finger.
3. Oil level must be up to fill hole. If it is below hole, add oil until it runs out, then reinstall plug.

Oil Change

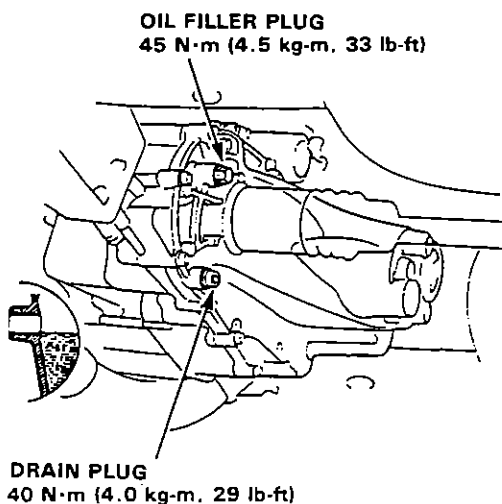
Use only SAE 10W-30 or 10W-40 oil rated SE or SF grade.

1. Drain with transmission oil at operating temperature, engine OFF, and car on level ground.
2. Remove the oil filler plug, then remove the drain plug and drain transmission.
3. Reinstall drain plug with new washer, and refill to proper level.

NOTE: Drain plug washer should be replaced at every oil change.

Oil Capacity

- 1.8 l (1.9 U.S. qt.) after drain.
1.9 l (2.0 U.S. qt.) after overhaul.

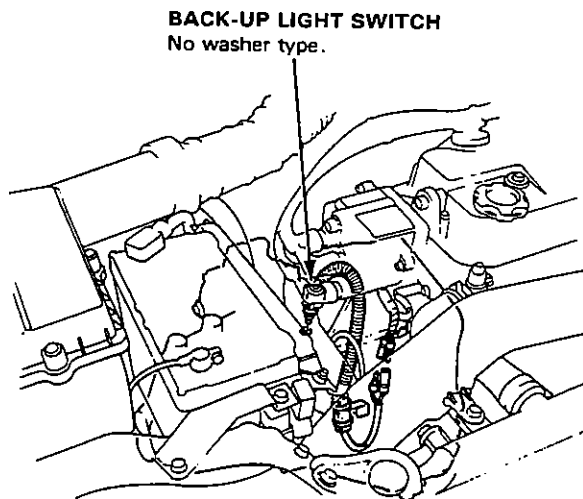


Back-up Light Switch

Replacement

NOTE: Check the switch see Section 16.

1. Disconnect the back-up light switch wire connectors.
2. Remove the back-up light switch.

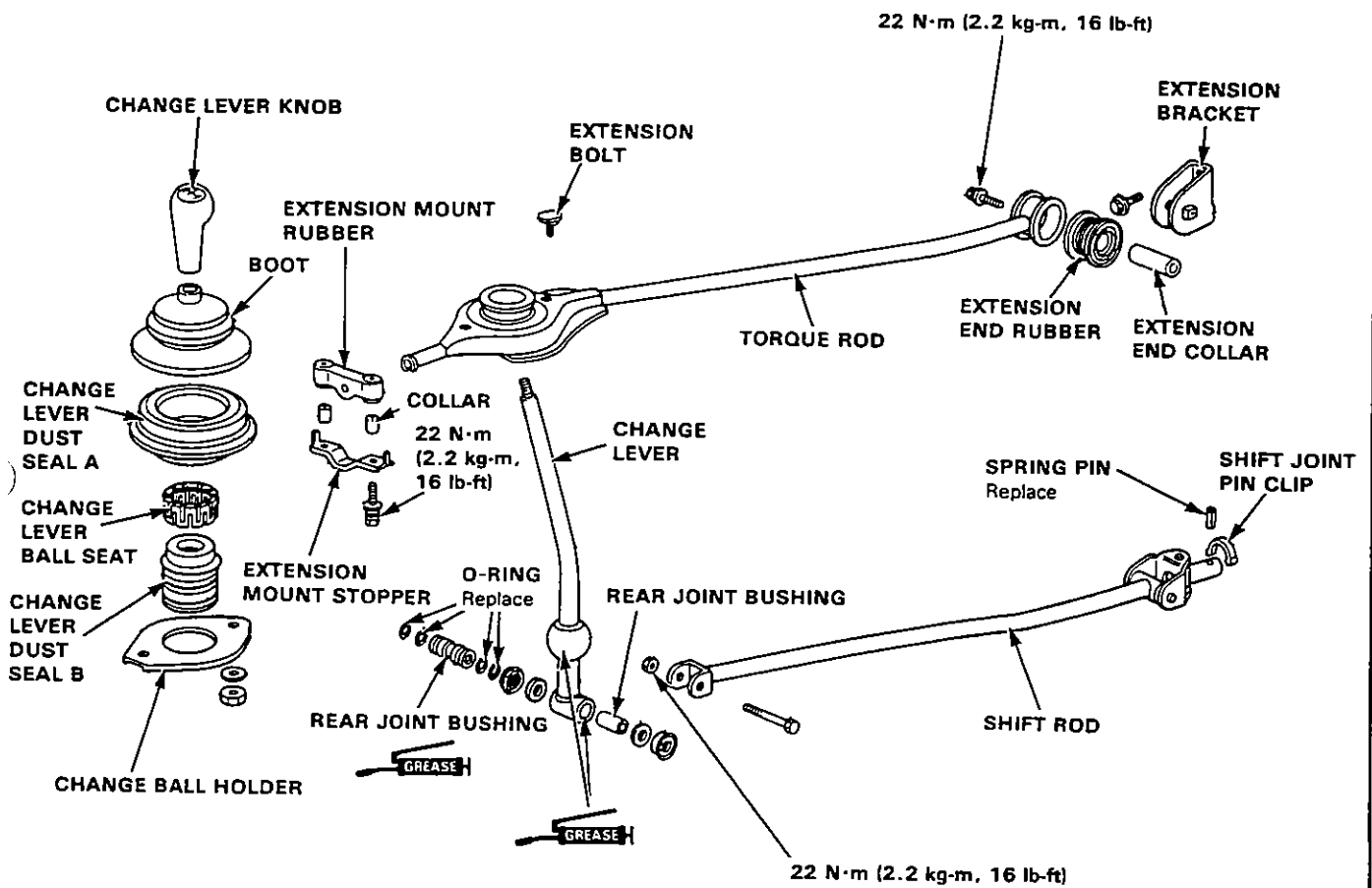


3. Install the back-up light switch.

Gearshift Mechanism



Overhaul



Transmission

Removal

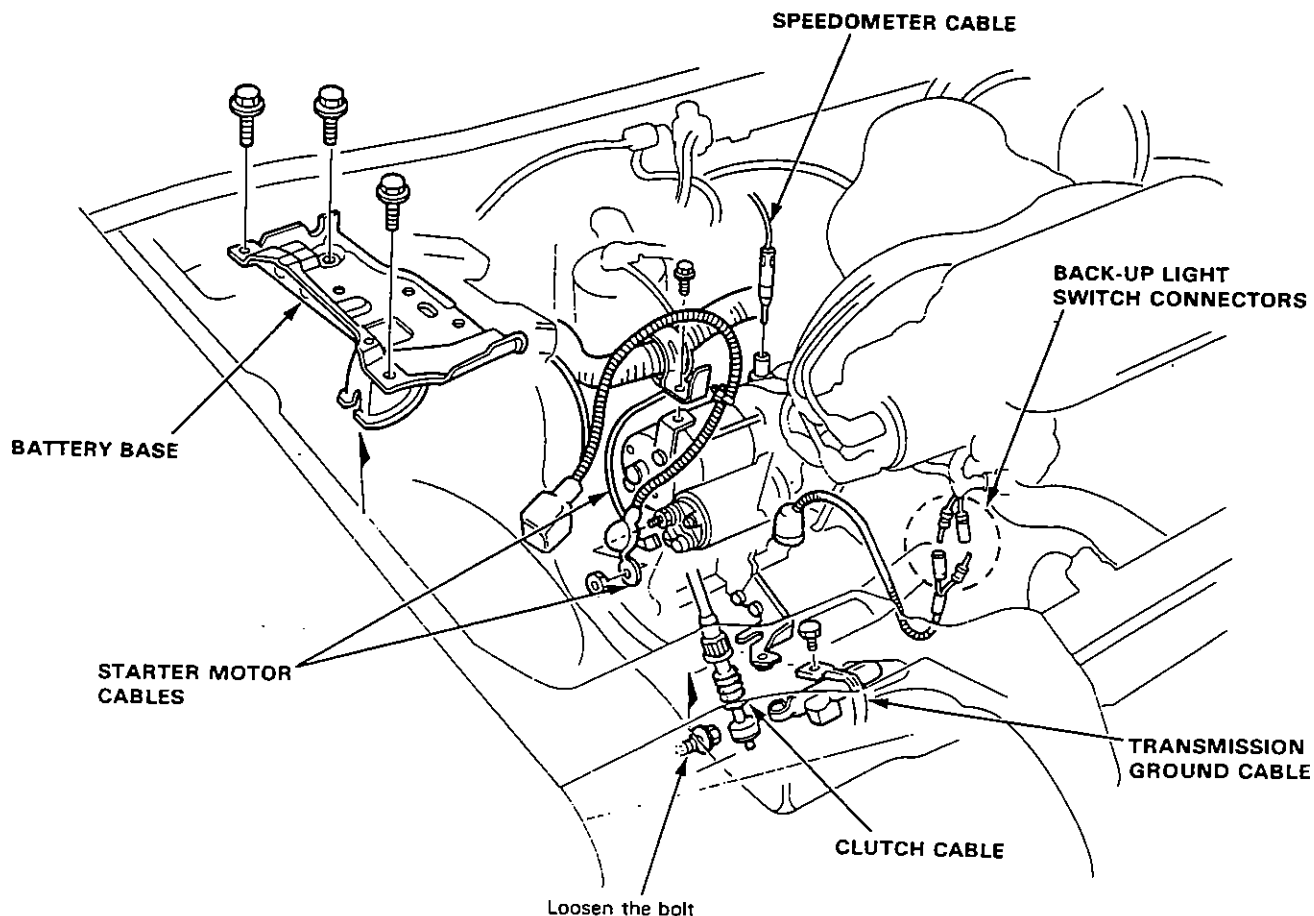
WARNING

- 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.

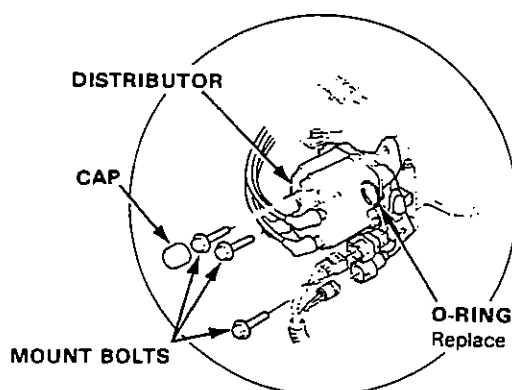
1. Disconnect the battery negative (-) and positive (+) cables from the battery.
 2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base. Remove the intake hose band of the throttle body.
 3. Remove the air cleaner case complete with the intake hose (See Section 6).
 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.

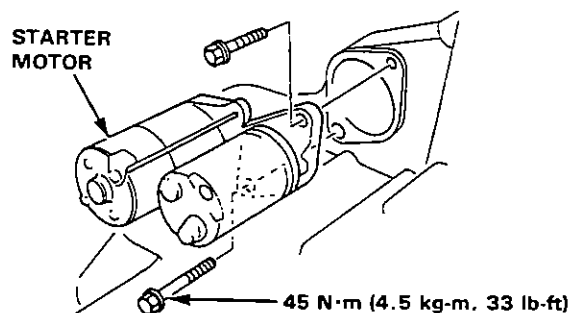
11. Remove the engine splash shield and the right wheelwell splash shield.

12. Remove the header pipe.

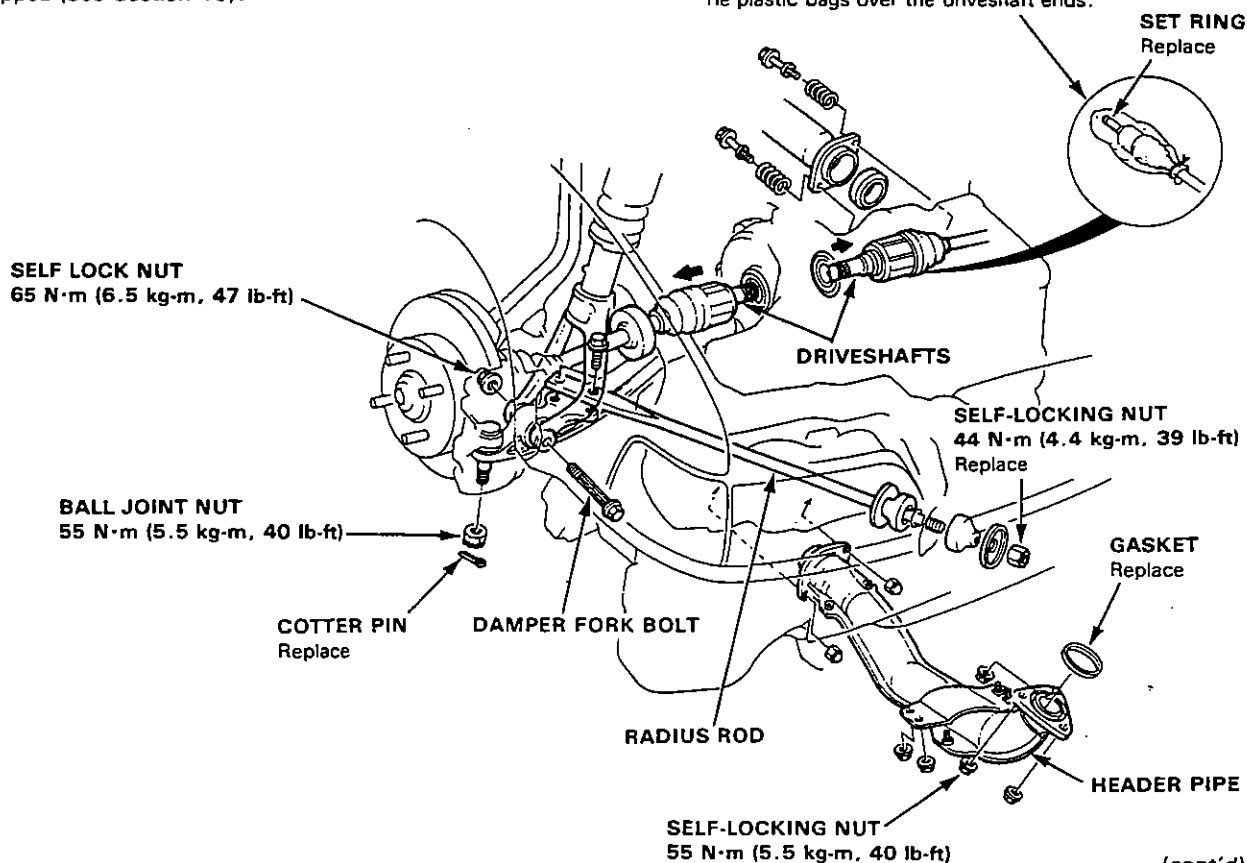
13. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm.

14. Remove the bolts and nut, then remove the right radius rod.

15. Remove the right driveshaft (See Section 10). Remove the left driveshaft and intermediate shaft if equipped (See Section 10).



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

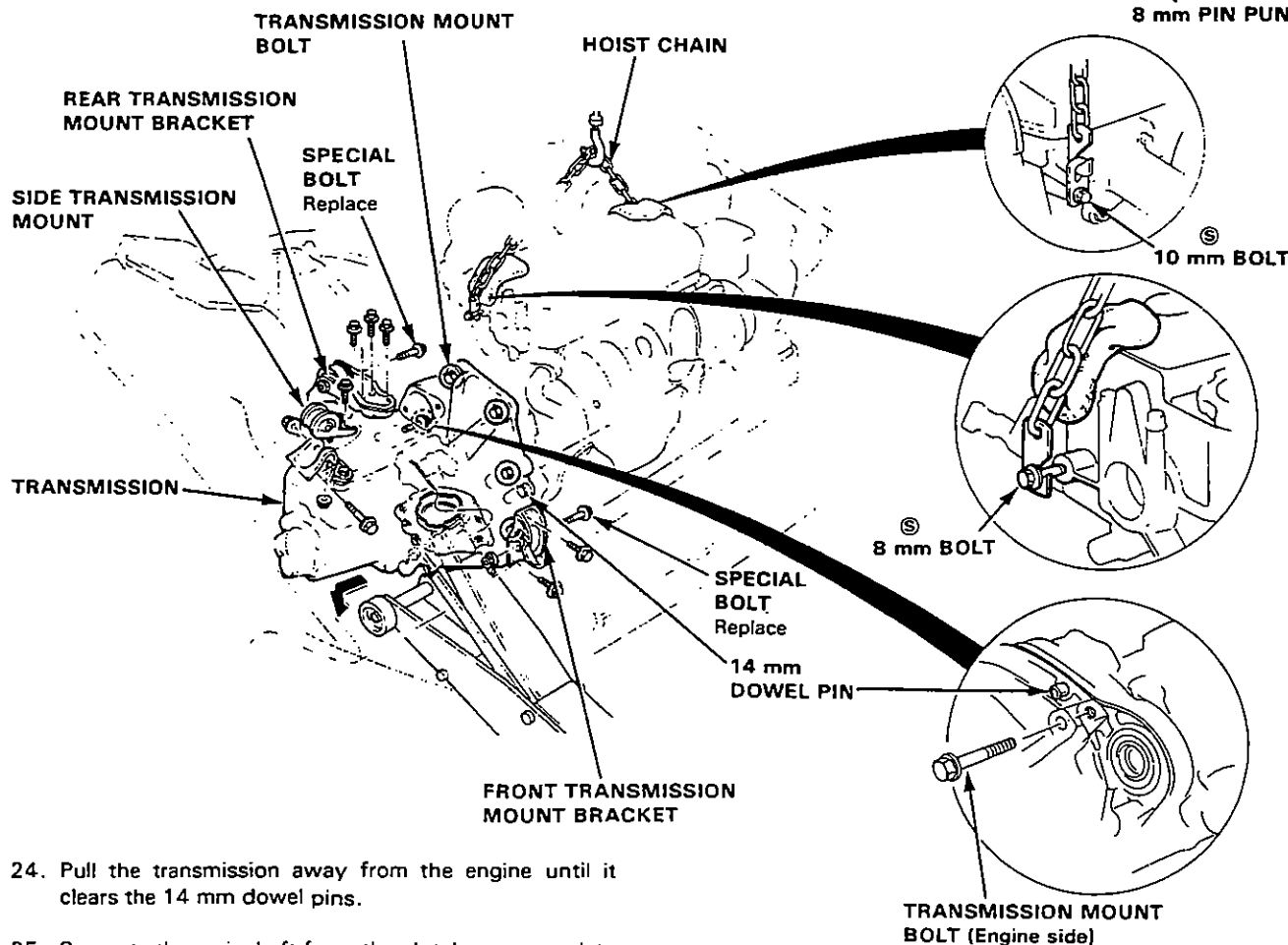
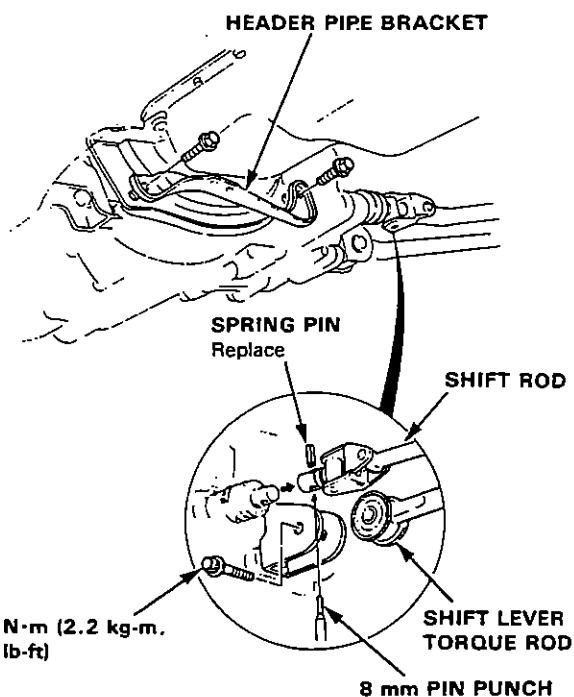


(cont'd)

Transmission

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 ⑤ at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plate ⑥, 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.

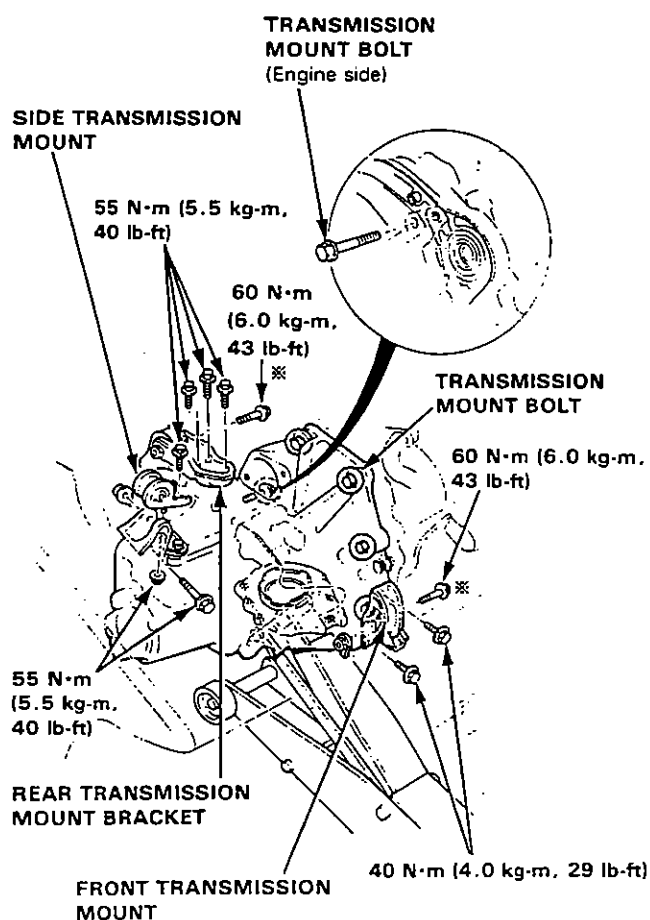


24. Pull the transmission away from the engine until it clears the 14 mm dowel pins.
25. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.

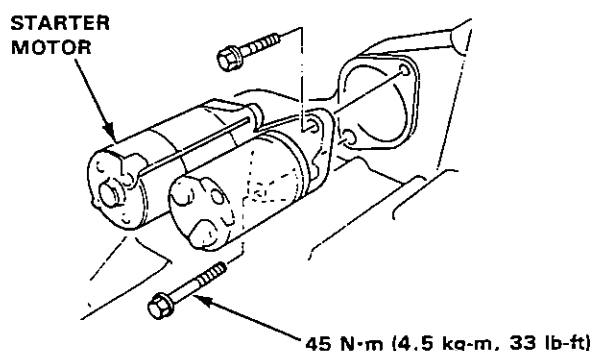


Installation

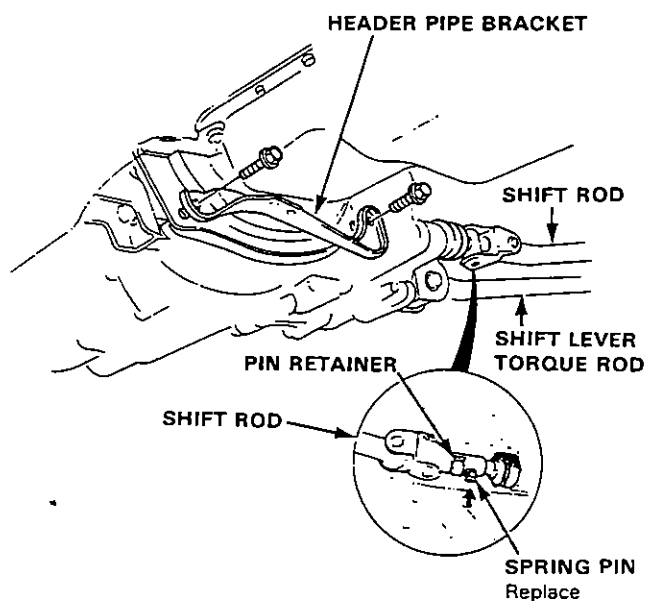
1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the clutch housing.
3. Loosely install the transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side 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.



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.

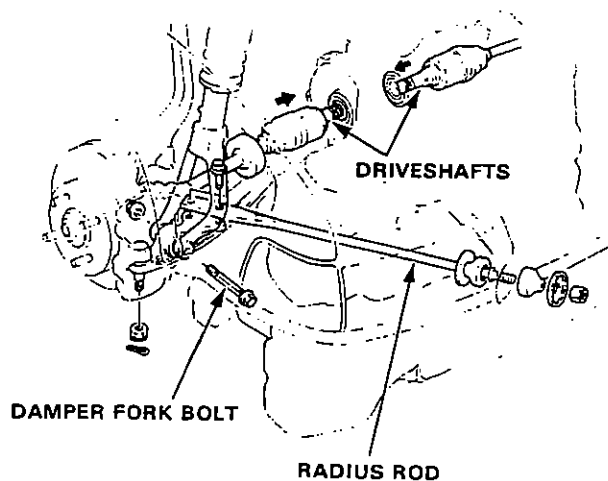
(cont'd)

Transmission

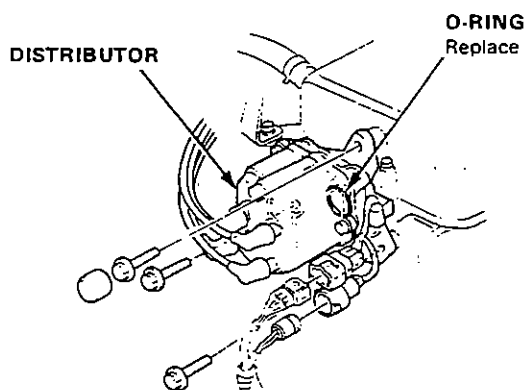
Installation (cont'd)

12. Install a new set rings on the end of each driveshaft.
13. Install the right driveshaft (See Section 10).
Install the left driveshaft and intermediate shaft if removed (See Section 10).

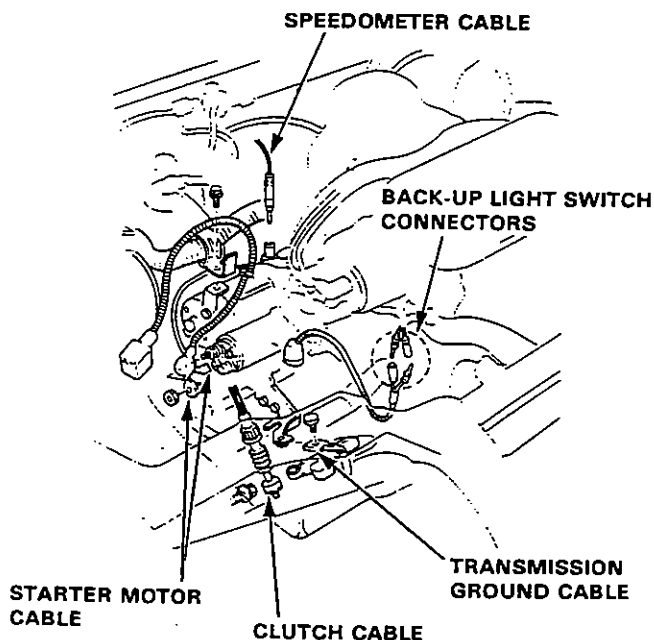
NOTE: Turn the right steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage side gear.



14. Install the damper fork and radius rod.
15. Install the ball joints to the lower arm.
16. Install the splash shields and exhaust header pipe.
Install the distributor.



17. Connect the speedometer cable.
18. Connect the clutch cable to release arm.
19. Connect the back-up light switch connector.
20. Install the 3 bolts located at the side of the battery base, and retighten the intake hose band of the throttle body.



21. Refill the transmission with oil.
22. Connect the starter motor and transmission ground cables.
23. Connect the battery positive (+) and negative (-) cables to the battery.
24. Install the air cleaner case and intake hose.
25. Check the ignition timing (See Section 16).
26. Check the transmission for smooth operation.

Driveshafts

Driveshafts

Special Tools	10-1
Removal	10-2
Disassembly/Inspection	10-3
Reassembly	10-4

Intermediate Shaft

Replacement	10-6
Disassembly	10-6
Index/Inspection	10-7
Reassembly	10-8



Special Tools

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



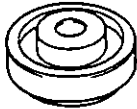
①



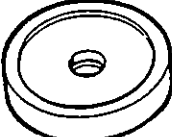
②



③



④



⑤



⑥

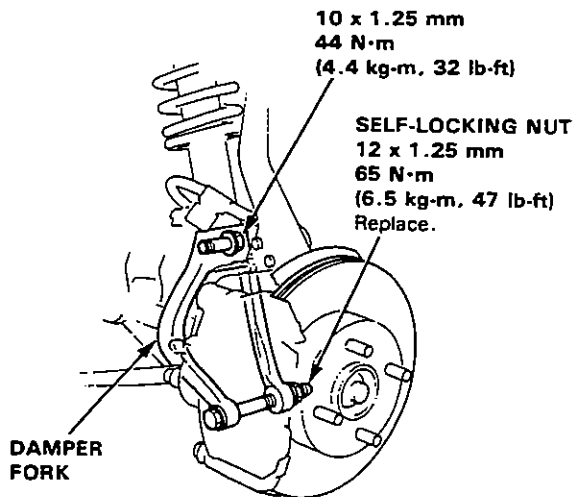
Driveshafts

Removal

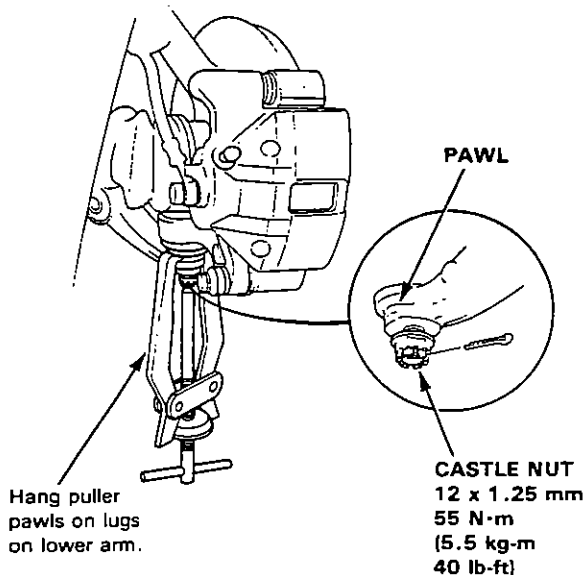
1. Loosen the front wheel lug nuts.
2. Raise the front end of the car and place safety stands in the proper locations. Remove the front wheels.
3. Drain the transmission oil.

NOTE: It is not necessary to drain the transmission oil when only the left driveshaft is removed.

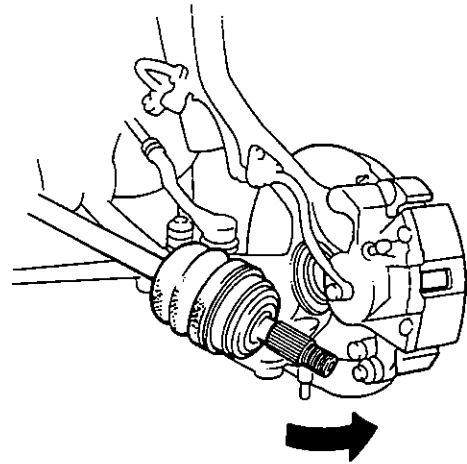
4. Raise the locking tab on the spindle nut and remove it with a 36 mm (1-7/16 in.) socket wrench.
5. Remove the damper fork nut and damper pinch bolt. Remove the damper fork.



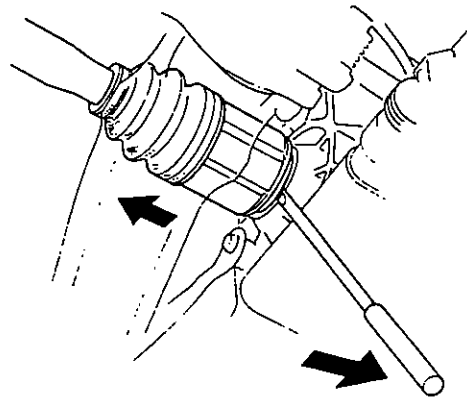
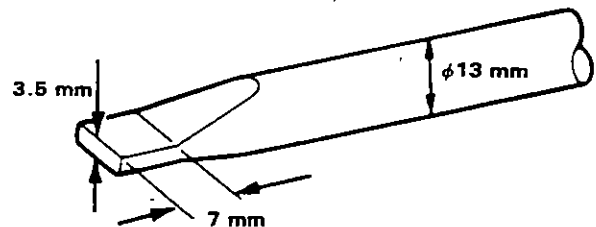
6. Remove the knuckle-to-lower arm castle nut, and separate the lower arm from the knuckle using a puller with the pawls applied to the lower arm.



7. Pull the knuckle outward and remove the driveshaft outboard joint from the knuckle using a plastic hammer.



8. Pry the driveshaft assembly with a screwdriver as shown to force the set ring at the driveshaft end past the groove.
9. Pull the inboard joint and remove the driveshaft and CV joint out of the differential case as an assembly.



CAUTION:

- Do not pull on the driveshaft, as the CV joint may come apart.
- Use care when prying out the assembly and pull it straight to avoid damaging the differential oil seal or intermediate shaft dust seal.



Disassembly/Inspection

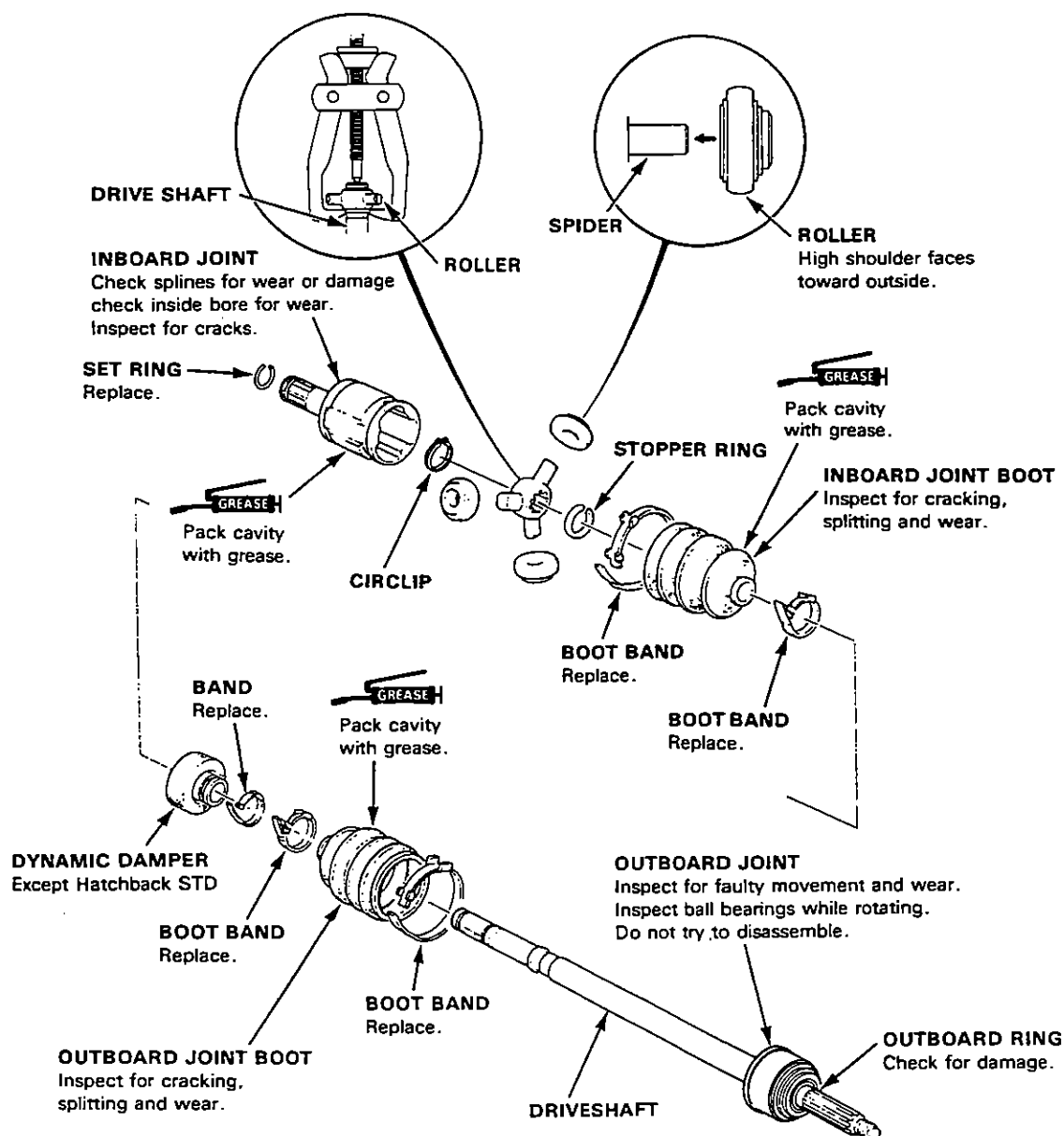
NOTE:

- Mark the rollers and roller grooves during disassembly to ensure proper positioning during reassembly.
- Before disassembly, mark the spider and driveshaft so they can be reinstalled in their original positions.
- The inboard joint must be removed to replace the boots.

GREASE Thoroughly pack the inboard joint and both joint boots with high quality molybdenum disulfide grease when reassembling.

Grease Quantity:

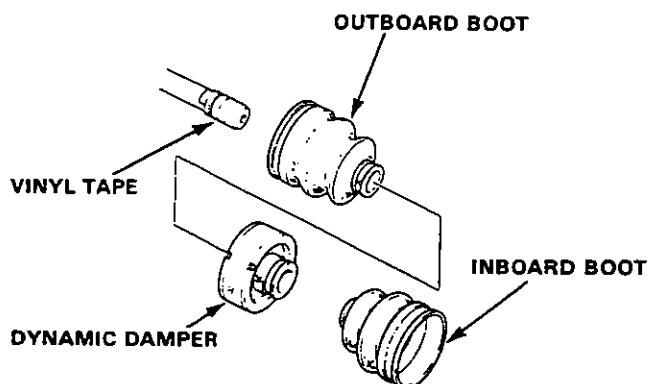
Inboard Joint	120–130 g
Outboard Joint	90–100 g



Driveshafts

Reassembly

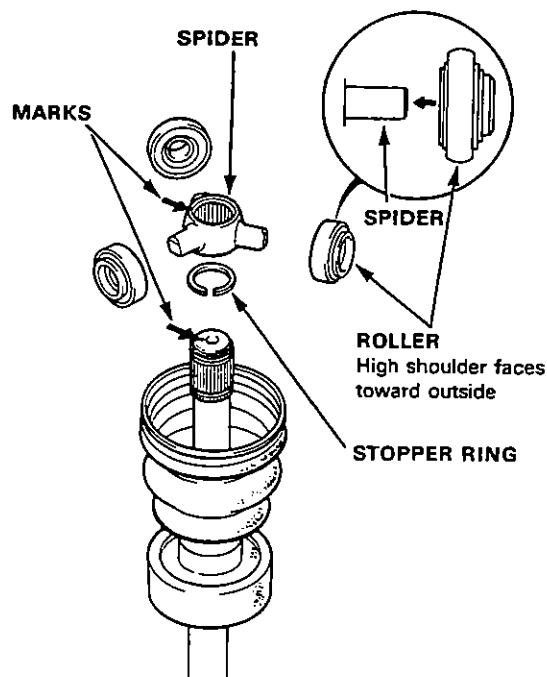
1. Wrap the splines with vinyl tape to prevent damage to the boots and dynamic damper.
2. Install the outboard boot, dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape.



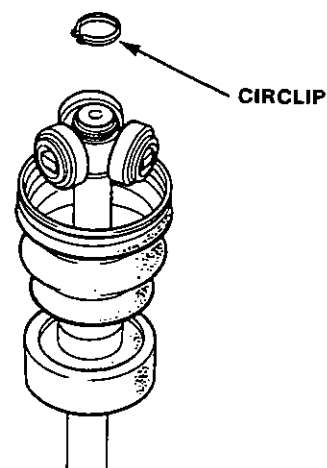
3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the rollers to the spider with their high shoulders facing outward.

CAUTION:

- Reinstall the rollers to their original positions on the spider.
- Hold the driveshaft assembly so the spider and roller points up, to prevent it from falling off.

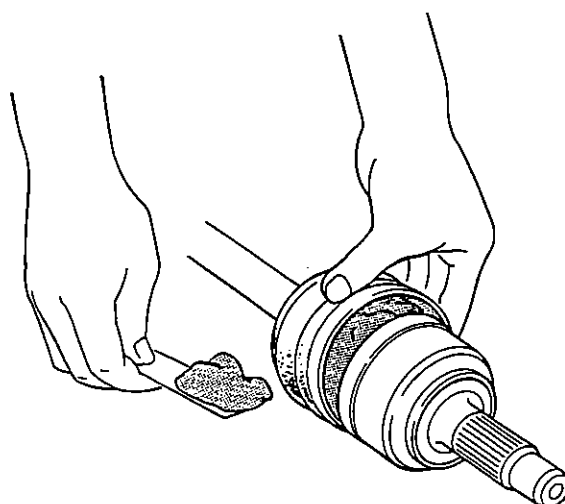


6. Fit the circlip onto the driveshaft groove.



7. Pack the outboard joint boot with molybdenum disulfide grease.

Grease Quantity: 90—100 g



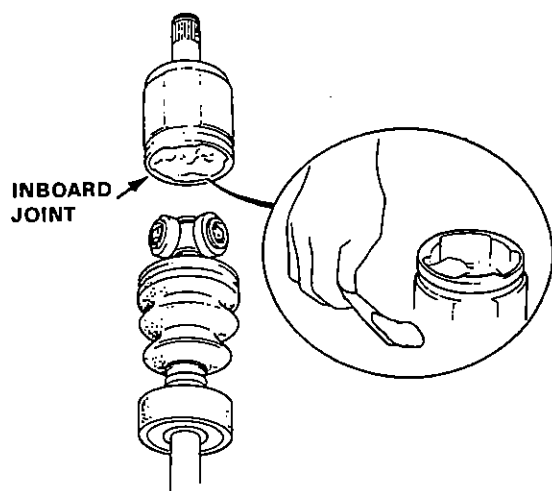


8. Pack the inboard joint with molybdenum disulfide grease.

Grease Quantity: 120–130 g

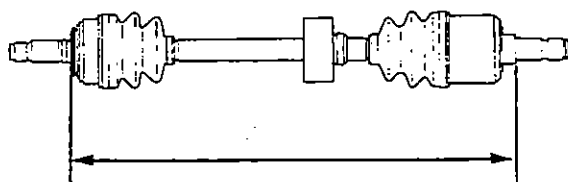
9. Fit the inboard joint onto the driveshaft.

CAUTION: Hold the driveshaft assembly so the inboard joint points up, to prevent it from falling off.



10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full extension.

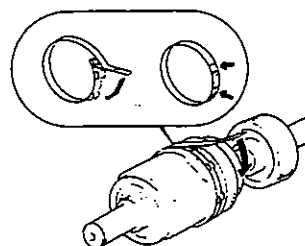
NOTE: The ends of boots seat in the groove of the driveshaft and joint.



	Left	Right
With Intermediate Shaft	485–490 mm (19.09–19.29 in)	485–490 mm (19.09–19.29 in)
Without Intermediate Shaft	774.5–779.5 mm (30.50–30.69 in)	481.5–486.5 mm (18.96–19.15 in)

11. Install new boot bands on the boot and bend both sets of locking tabs.

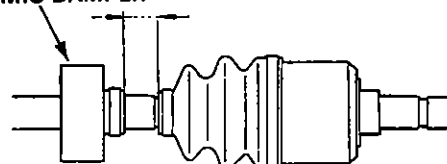
12. Lightly tap on the doubled-over portions to reduce their height.



13. Position the dynamic damper as shown below.
14. Lightly tap on the doubled-over portion to reduce its height.
15. Install a new dynamic damper band and bend down both sets of locking tabs.

	Left	Right
KQ, KY Models	30±2 mm (1.20±0.08 in)	30±2 mm (1.20±0.08 in)
KG, KS and KW (SOHC) Models	53.7±2 mm (2.10±0.08 in)	20±2 mm (0.78±0.08 in)
Other Models	25±2 mm (0.98±0.08 in)	30±2 mm (1.20±0.08 in)

DYNAMIC DAMPER

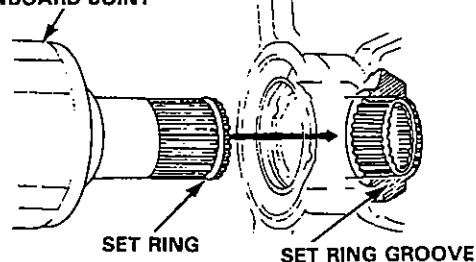


16. Install a new set ring in the driveshaft groove.
17. Install the inboard end of the driveshaft into the differential or intermediate shaft.

CAUTION:

- Always use a new set ring whenever the driveshaft is being installed.
- Make sure the driveshaft locks in the differential side gear groove, and the CV joint subaxle bottoms in the differential or intermediate shaft.

INBOARD JOINT

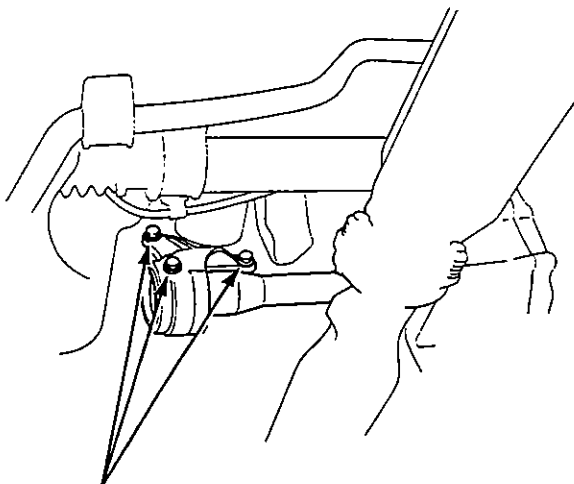


18. Refill the transmission.

Intermediate Shaft

Replacement

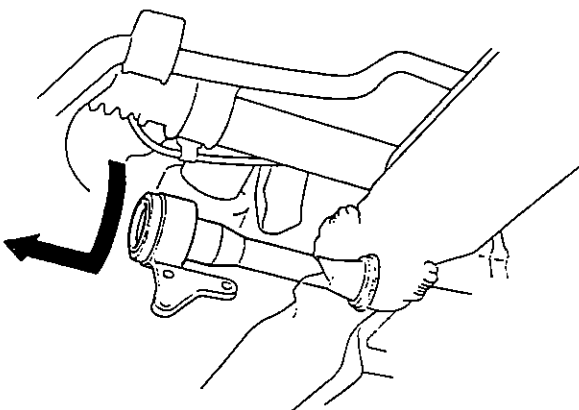
1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



10 x 1.25 mm
40 N·m (4.0 kg-m, 29 lb-ft)

3. Lower the bearing support close to the steering gear-box and remove the intermediate shaft from the differential.

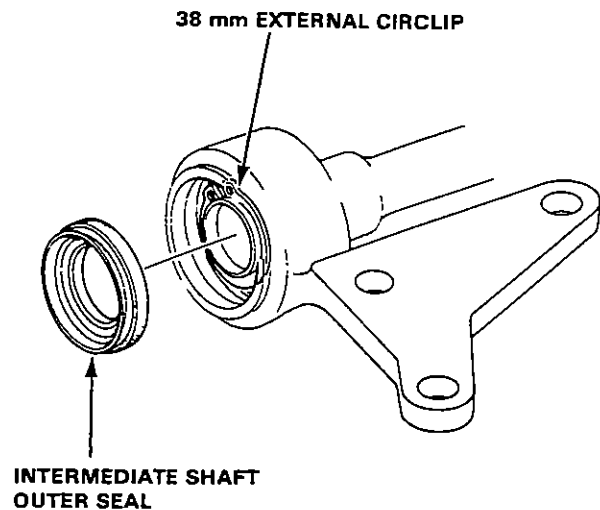
CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



Installation is the reverse order of removal.

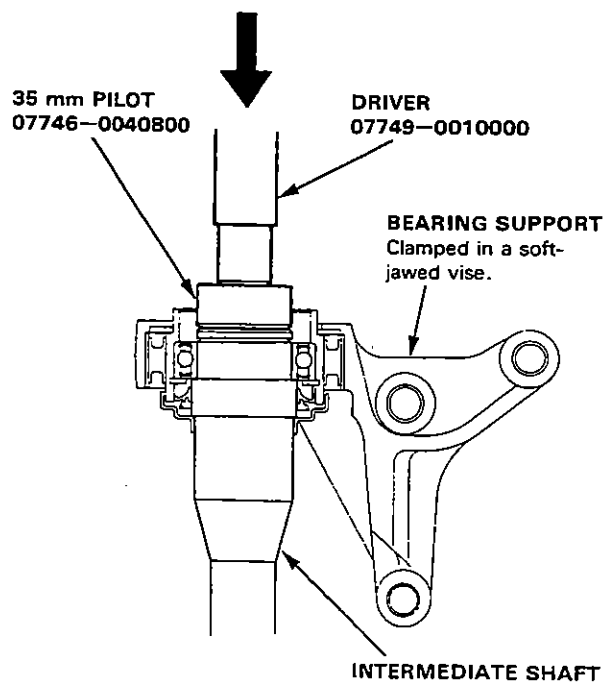
Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the 38 mm external circlip.



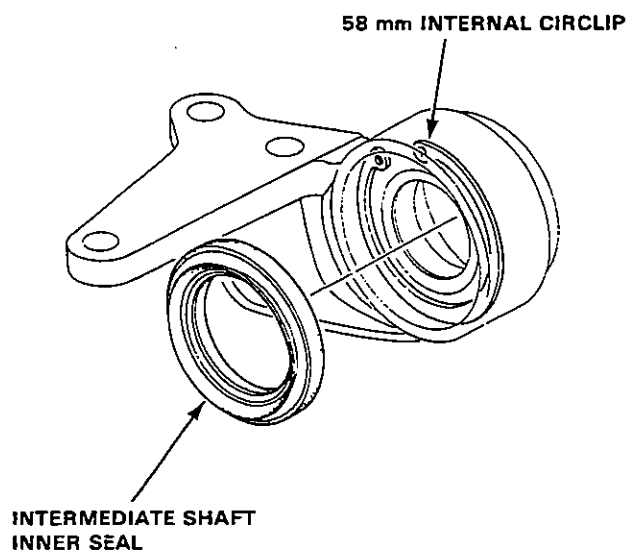
3. Drive out the intermediate shaft out of the shaft bearing.

NOTE: The shaft can be hammered out using the driver and pilot, if the bearing support is clamped in a soft-jawed vise.

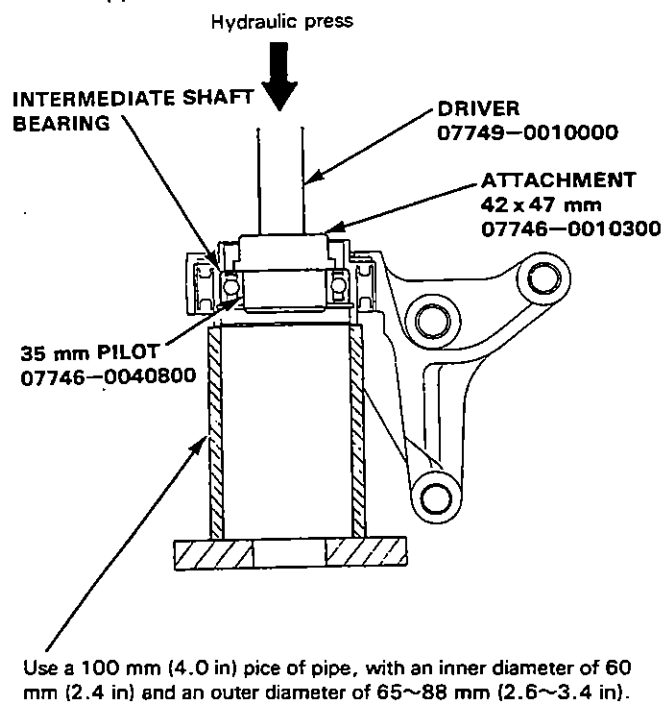




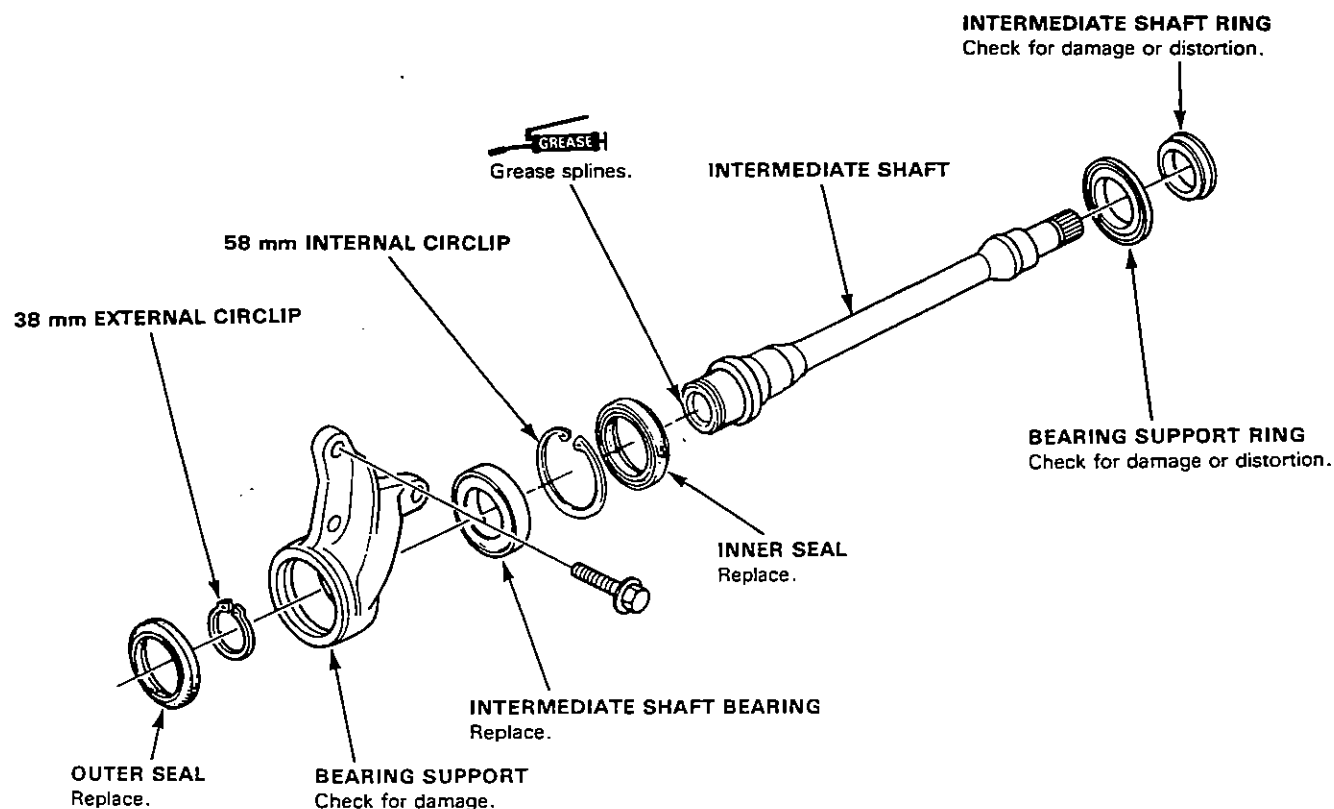
4. Remove the intermediate shaft inner seal.
5. Remove the 58 mm internal circlip.



6. Press the intermediate shaft bearing out of the bearing support.



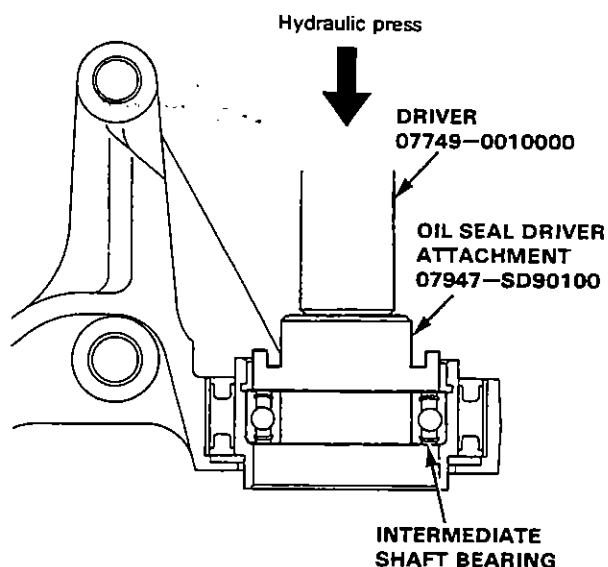
Index/Inspection



Intermediate Shaft

Reassembly

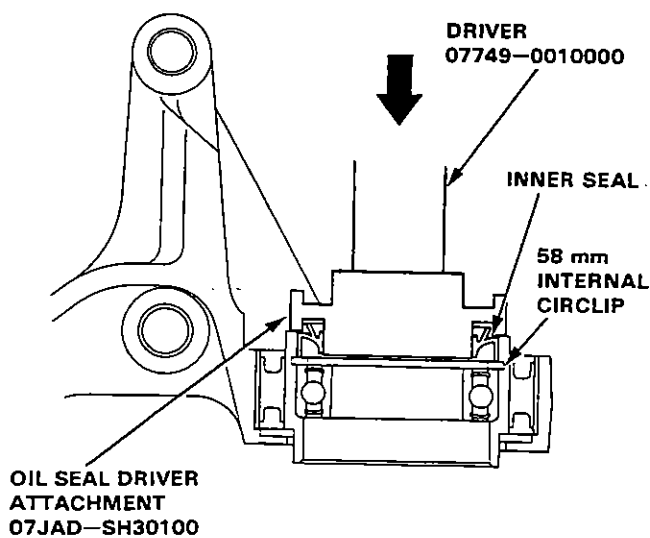
1. Press the intermediate shaft bearing into the bearing support.



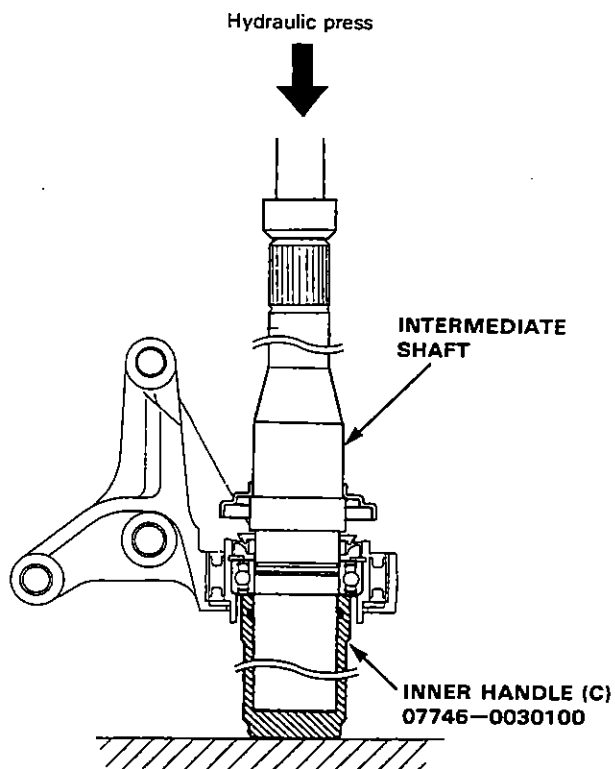
2. Seat the 58 mm internal circlip in the groove of the bearing support.

CAUTION: Install the circlip with the tapered end facing out.

3. Press the intermediate shaft inner seal into the bearing support.



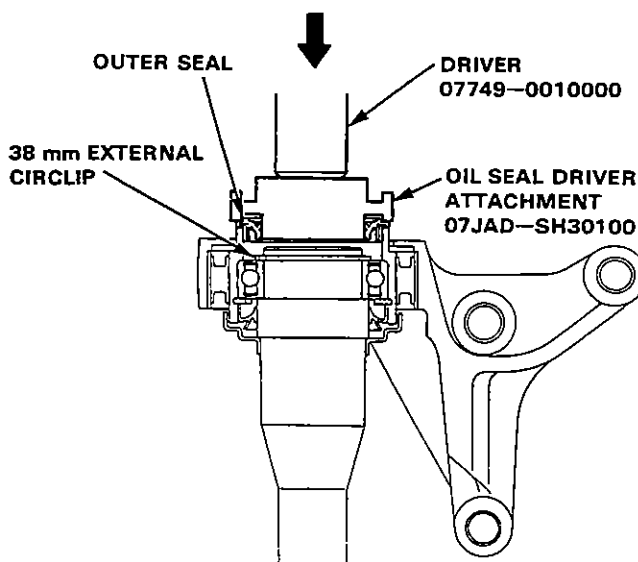
4. Press the intermediate shaft into the shaft bearing.



5. Seat the 38 mm external circlip in the groove of the intermediate shaft.

CAUTION: Install the circlip with the tapered end facing out.

6. Press the outer seal into the bearing support.



Steering

Manual Steering

Special Tools	11-2
Component Location	
Index	11-3
Inspection	
Steering Wheel Rotational Play	11-4
Steering Effort Check	11-4
Steering Gearbox Adjustment ..	11-4
Gearbox	
Removal/Installation	11-5
Disassembly/Inspection	11-7
Reassembly	11-8
Steering Wheel	
Disassembly/Reassembly	11-10
Steering Column	
Removal.....	11-11
Disassembly/Inspection	11-13
Reassembly	11-14
Installation.....	11-16

Power Steering

Special Tools	11-19
Component Location	
Index	11-20
Troubleshooting	
General Troubleshooting	11-21
Noise and Vibration	11-24
Fluid Leaks	11-25
Maintenance.....	11-26
On-Car Checks	
Rack Guide Adjustment	11-26
Fluid Replacement.....	11-27
Pump Pressure Check	11-27
Steering Wheel Rotational Play	11-28
Power Assist Check	11-28

Steering Column

Removal.....	11-29
Disassembly/Inspection	11-31
Reassembly	11-32
Installation.....	11-35

Steering Lock

Lock Replacement	11-37
Lock Cylinder Replacement	11-37
Ignition Switch Testing-See	

Electrical Section

Steering Pump

Illustrated Index	11-38
Replacement	11-39
Preload Inspection	11-39
Pulley Replacement	11-40
Control Valve Inspection	
and Replacement	11-40
Housing Disassembly	11-43
Housing Reassembly.....	11-44

Steering Gearbox

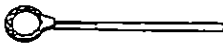
Illustrated Index	11-46
Valve Body Unit Removal	11-47
Valve Body Unit Overhaul	11-47
Valve Body Unit Installation	11-52
Steering Rack Removal	11-53
Steering Gearbox Overhaul.....	11-56
Steering Gearbox Installation.....	11-69



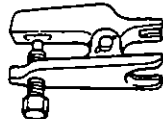
Special Tools

Special Tools

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



①



②

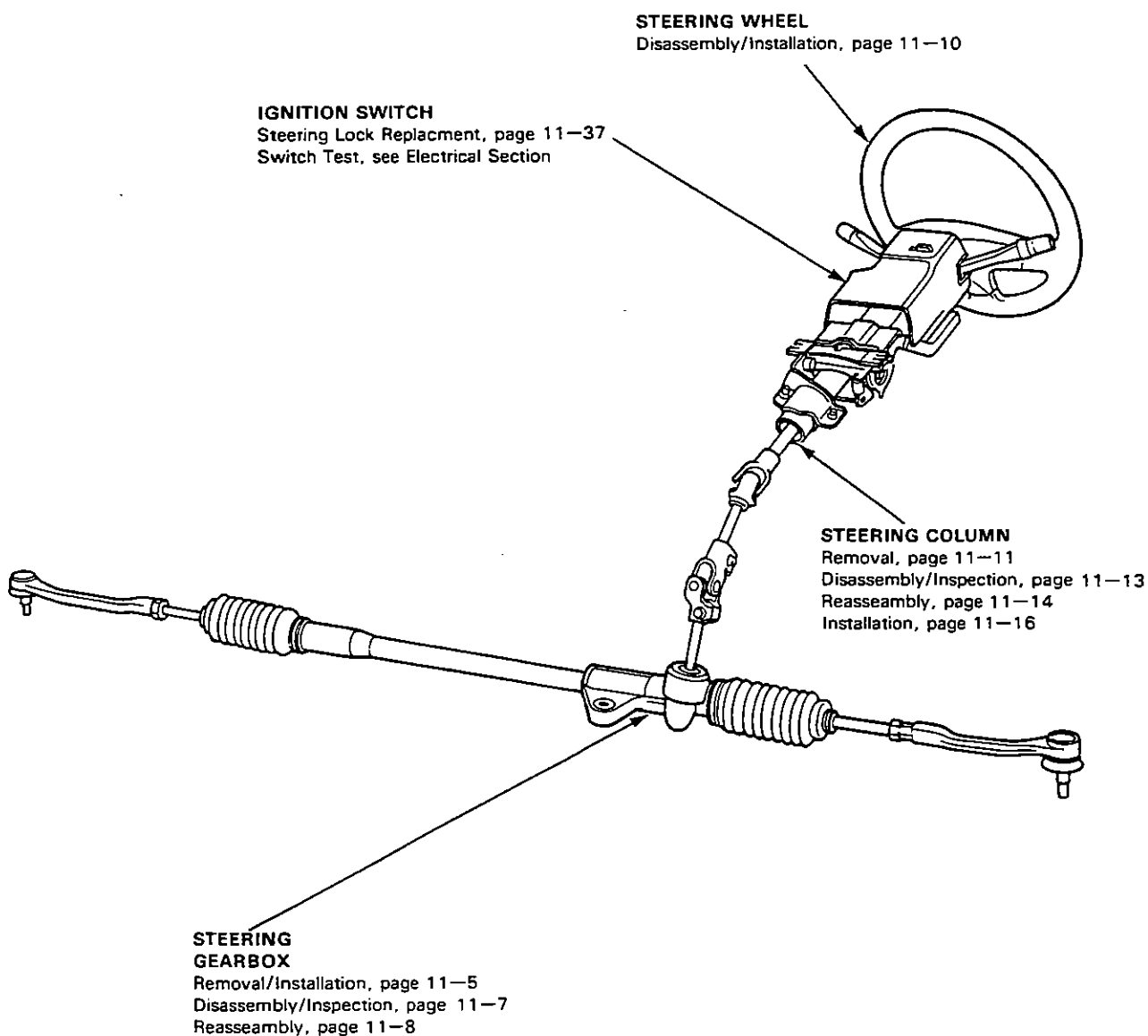


③

Component Location



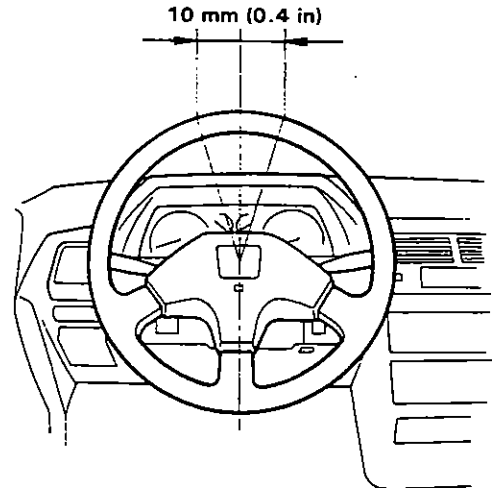
Index



Inspection

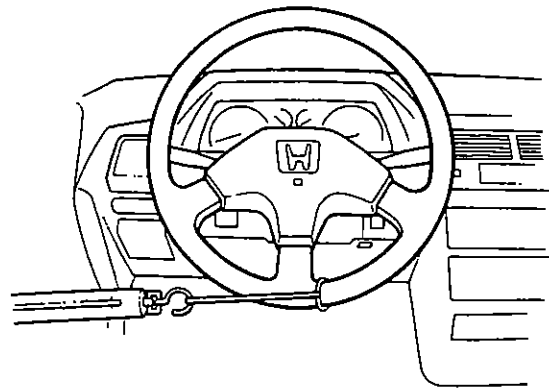
Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.
Service Limit: 10 mm (0.4 in)



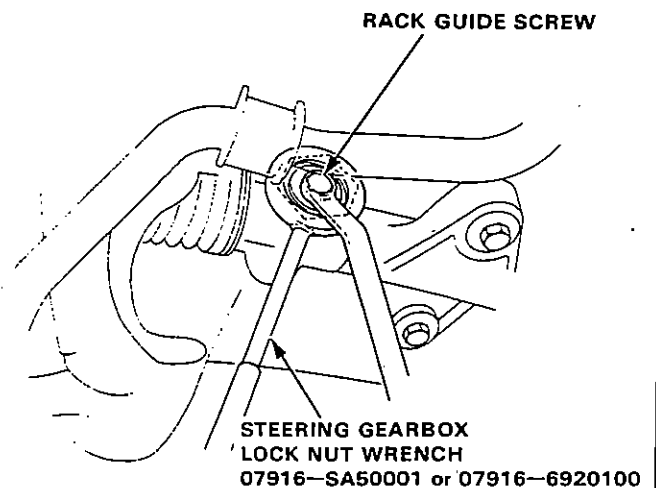
Steering Effort Check

1. Raise the front wheels off the ground.
2. Turn the steering wheel with a spring gauge and check its reading.
3. If the reading exceeds the service limit, adjust the steering gearbox as shown below.
Service Limit: 15 N(1.5 kg, 3.3 lbs)



Steering Gearbox Adjustment

1. Loosen the rack screw locknut. Then:
2. Tighten, loosen and re-tighten the rack guide screw two times, to 5 N·m (0.5 kg-m, 3.6 lb-ft) then, back it off $15^{\circ} \pm \frac{0}{5}$ (front wheels pointed straight ahead).
3. Tighten the locknut on the rack guide screw to the 68 N·m (6.8 kg-m, 49 lb-ft).
4. Check for tight or loose steering through the complete turning travel.
5. Recheck steering effort as shown above.

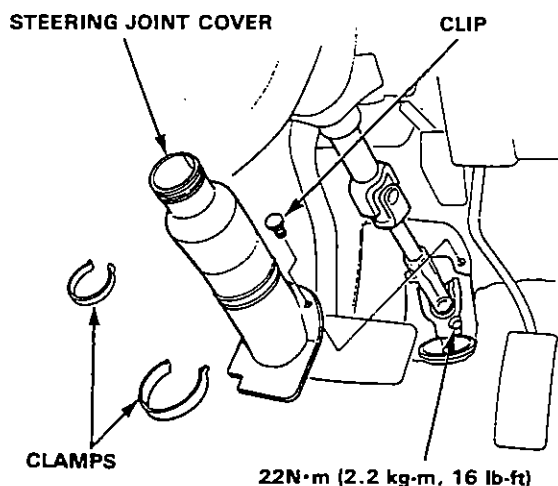


Gearbox

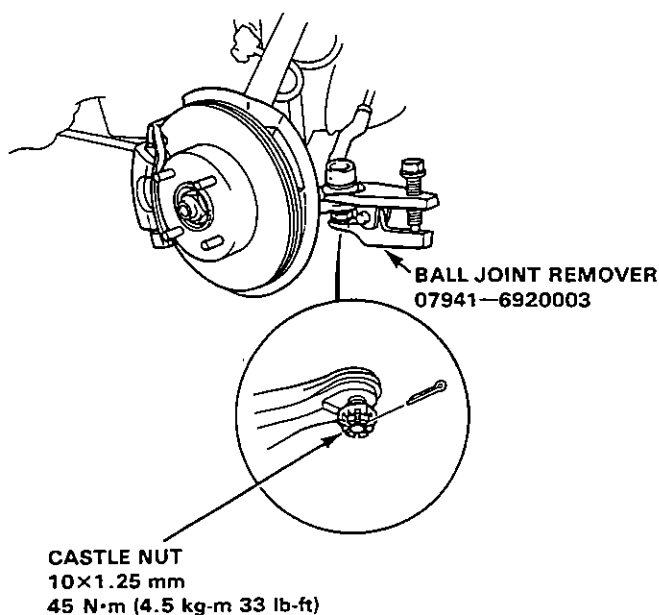


Removal/Installation

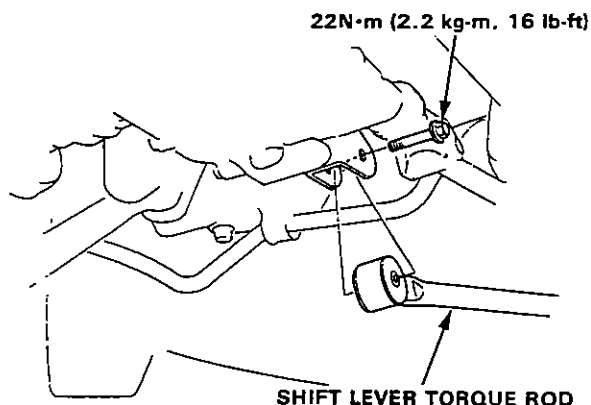
1. Remove the cover panel and steering joint cover, then disconnect the steering shaft from the gearbox.



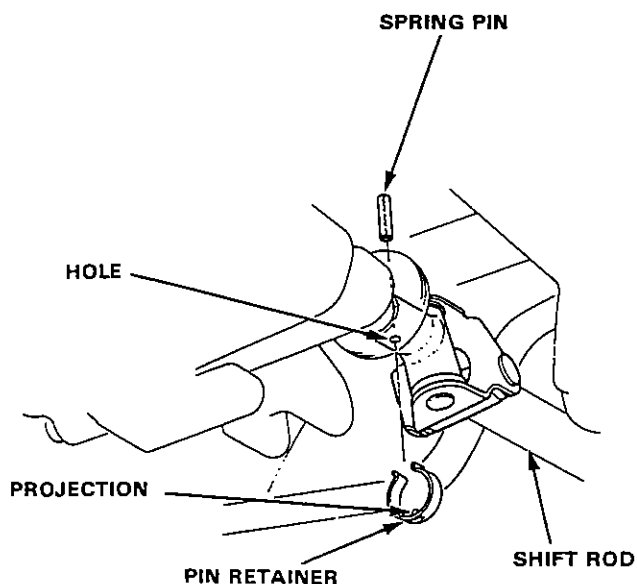
2. Raise the front of car on jack stands and remove the front wheels.
3. Remove the cotter pins, and unscrew the tie-rod end ball joint nuts halfway.
4. Break the ball joints loose using the ball joint remover.
5. Then remove the nuts, and lift the tie-rod ends out of the steering knuckles.



6. Disconnect the shift lever torque rod from the clutch housing.



7. Remove the pin retainer, drive out spring pin with punch, then disconnect the shift rod.



NOTE: On reassembly, reinstall the pin retainer after driving in pin and be sure that the projection on the pin retainer is in the hole.

(cont'd)

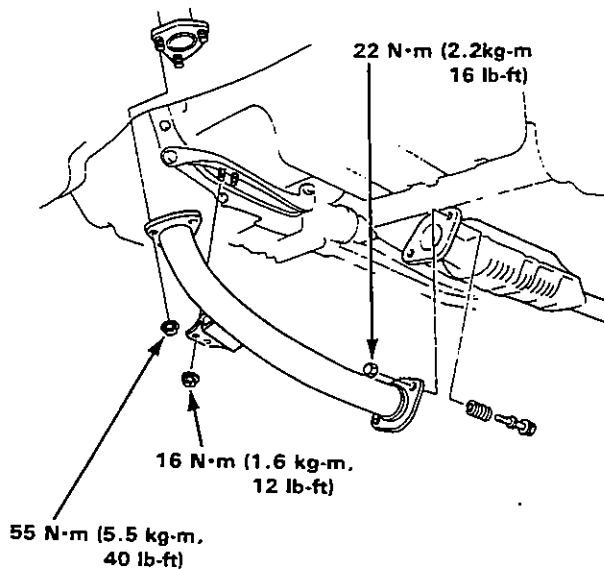
Gearbox

Removal/Inspection (cont'd)

8. Remove the self-locking nuts connecting exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.

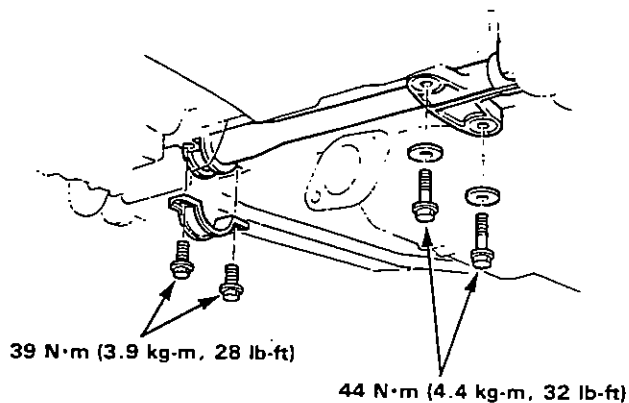
CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

9. Remove the header pipe.

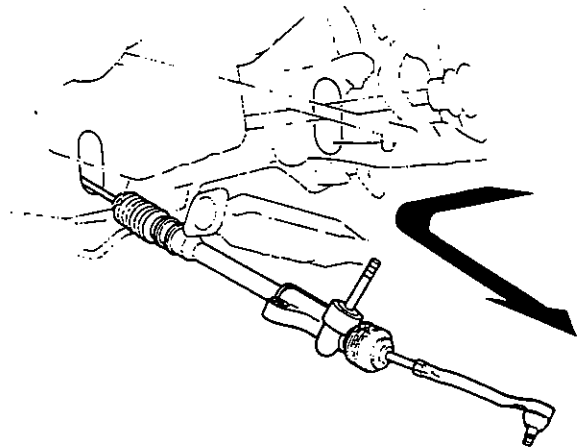


10. Remove the steering gearbox brackets.

11. Remove the steering gearbox mounting bolts.



12. Slide tie rod all the way to the right side.



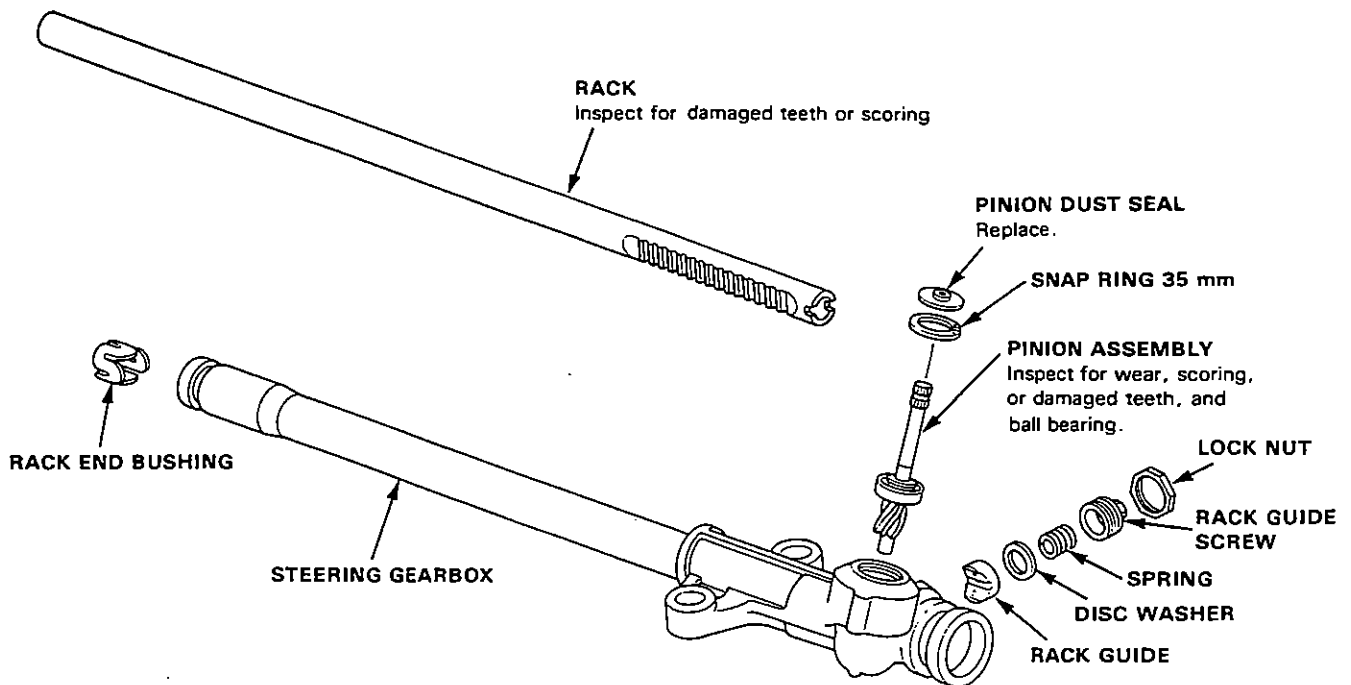
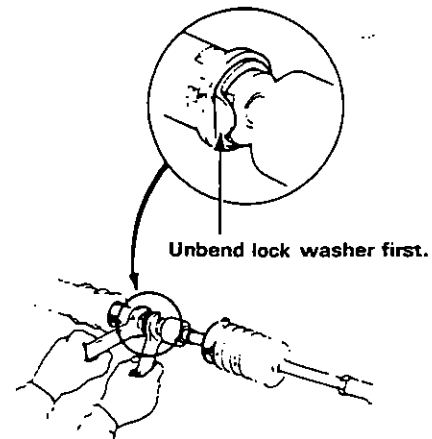
13. Slide the gear box right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.

14. Re-install is in the reverse order of removal.



Disassembly/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.

Gearbox

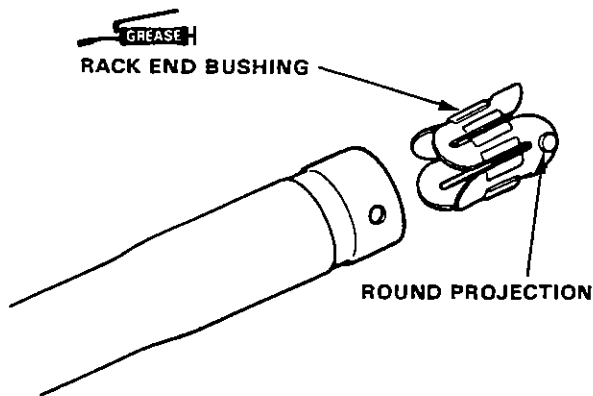
Reassembly

1. Apply a thin coat of grease to the inside surface of the rack end bushing.

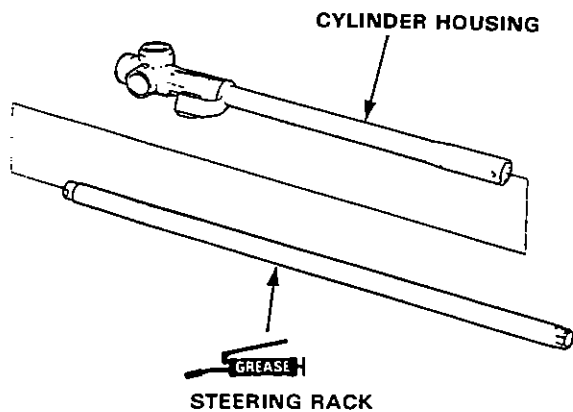
Grease quantity: 1—3g

CAUTION: Do not fill the slots with grease; they must remain open to serve as air passages.

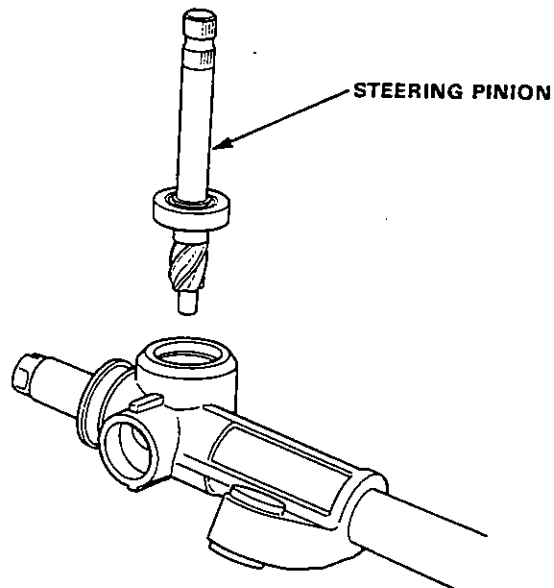
2. Install the rack end bushing by aligning the round projections on the bushing with the holes in the cylinder housing.



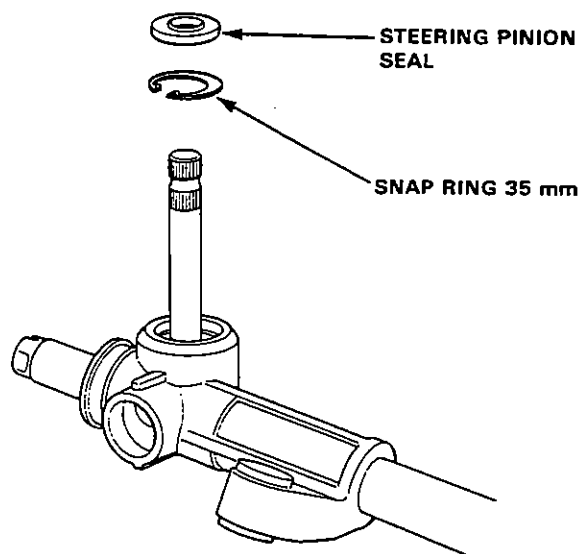
3. Apply grease to the steering rack.
4. Install the steering rack into the cylinder housing carefully to avoid damaging the steering rack sliding surface.



5. Install the steering pinion in the gear housing.

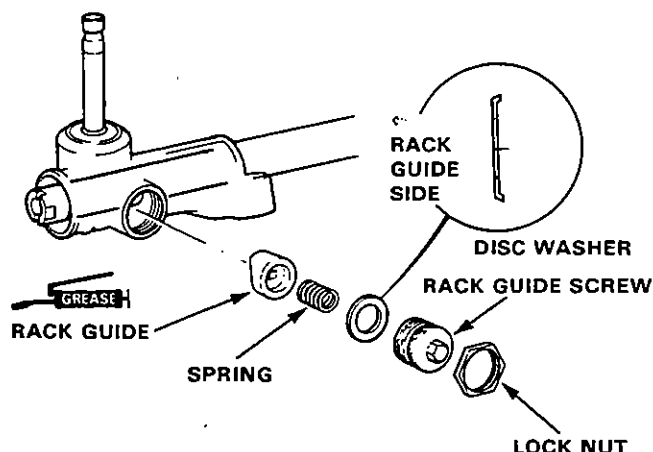


6. Install the 35 mm snap ring securely in the gear housing groove.
7. Grease the Steering pinion seal, and install it on the gear housing.

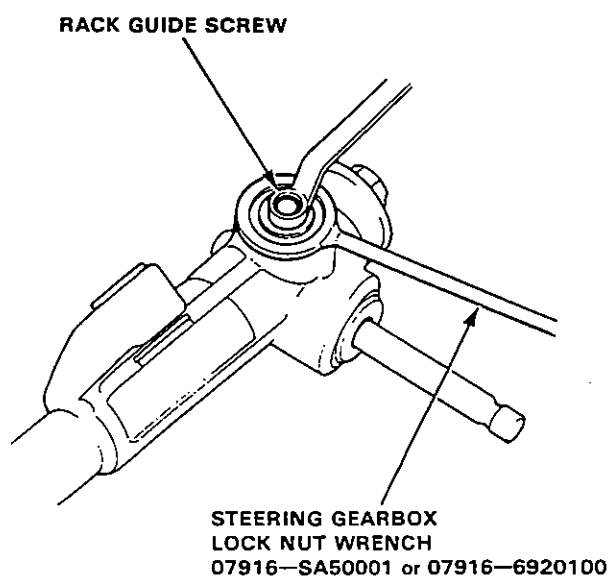




8. Coat the rack guide with grease.
9. Install the rack guide, spring, disc washer and rack guide screw on the gear housing.



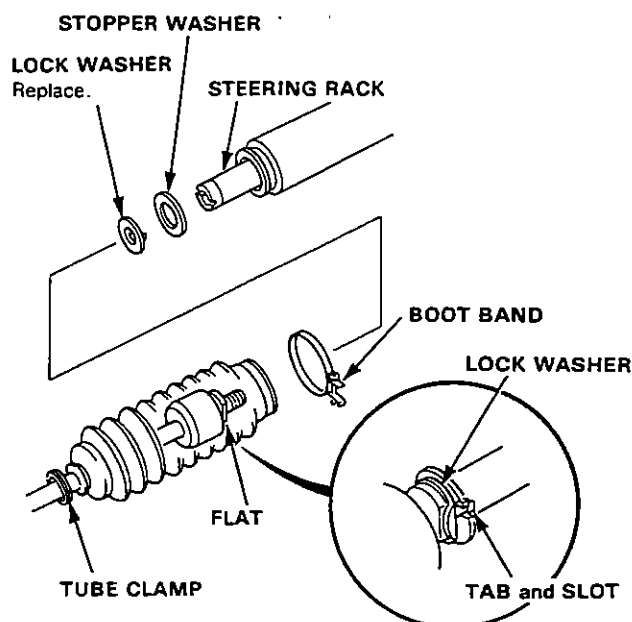
- Tighten, loosen and re-tighten the rack guide screw two times, to 5 N·m (0.5 kg-m, 3.6 lb-ft) then back it off $15^{\circ} \pm \frac{1}{2}$ (front wheels pointed straight ahead).
 - Tighten the locknut on the rack guide screw to the 68 N·m (6.8 kg-m, 49 lb-ft).
10. Tighten the lock nut while holding the rack guide screw with the special tool.



11. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

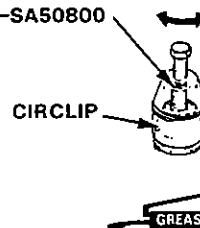
NOTE: Install the stopper washer with the chamfered side facing out.

12. Tighten the tie-rod securely, then bend the lock washer back against the flat on the flange as shown.



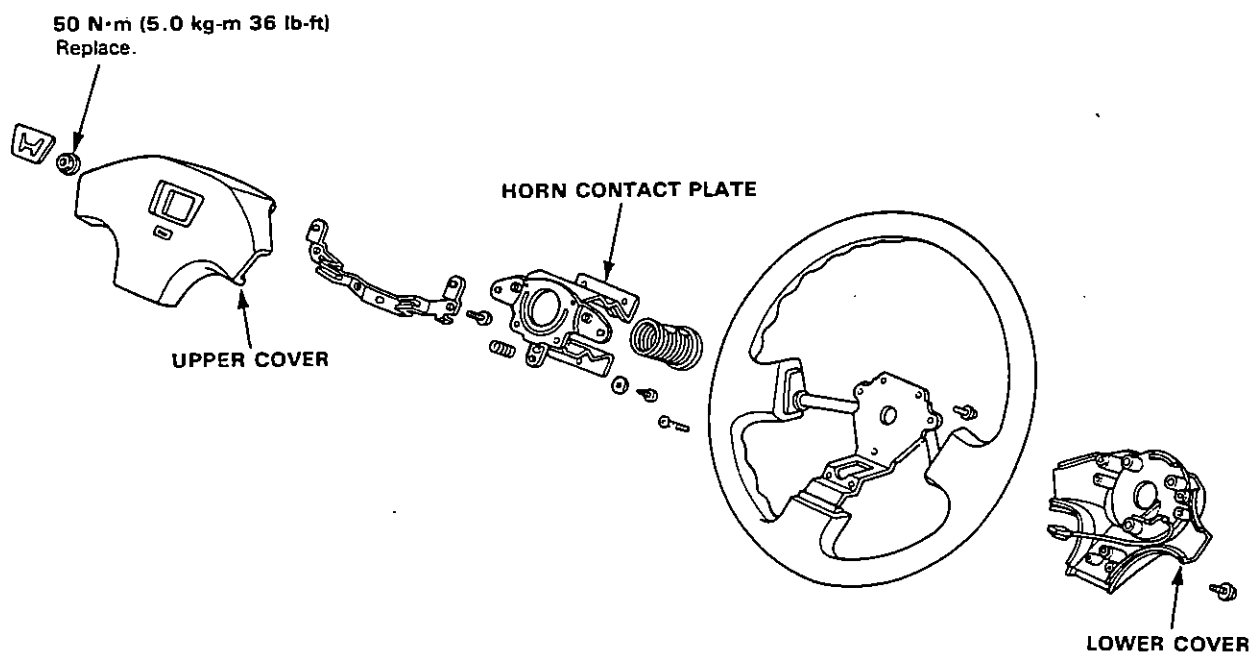
13. Install the boots and secure with boot band and tube clamp.
14. Check that the boots are not twisted or collapsed by sliding the rack.
15. Install the tie-rod ends on the tie-rods. Do not tighten the locknuts until after tie-rod adjustment.
16. Fill the tie-rod boots with grease and install; replace boots that are cut or split.
17. Bleed air from the boots by gently squeezing them from the bottom up.
18. Use the special tool's bolt to adjust the depth of the tool's large end. Align the large end of the tool with the groove on the boot. Slide the clip into position over the tool.

BALL JOINT BOOT
CLIP GUIDE B
07974-SA50800



Steering Wheel

Disassembly/Reassembly

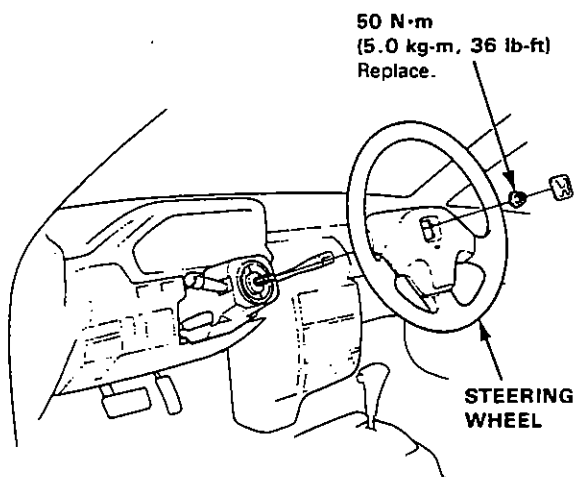


Steering Column

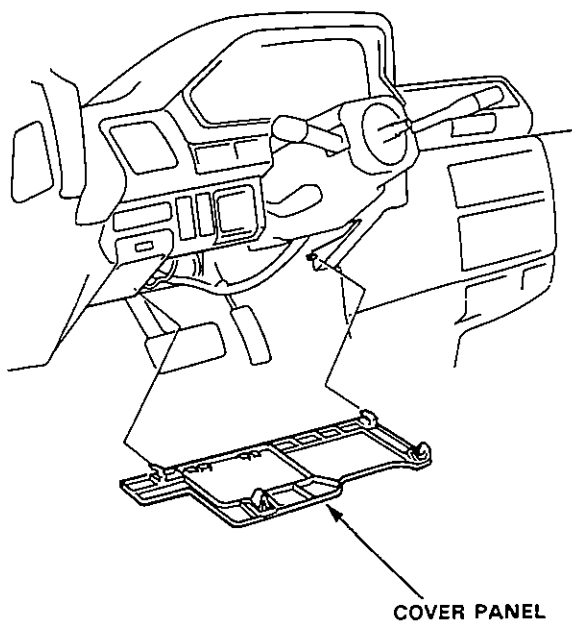


Removal

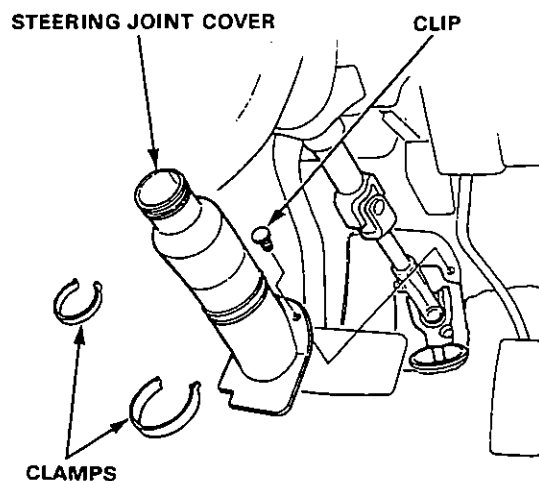
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



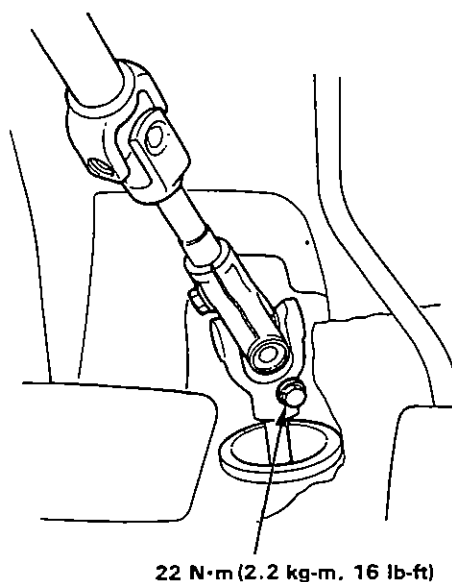
4. Remove the cover panel.



5. Remove the steering joint cover.



6. Remove the lower steering joint bolt.

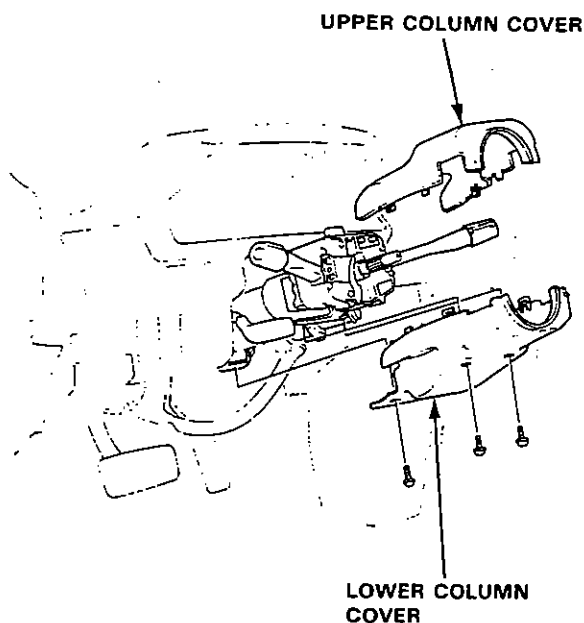


(cont'd)

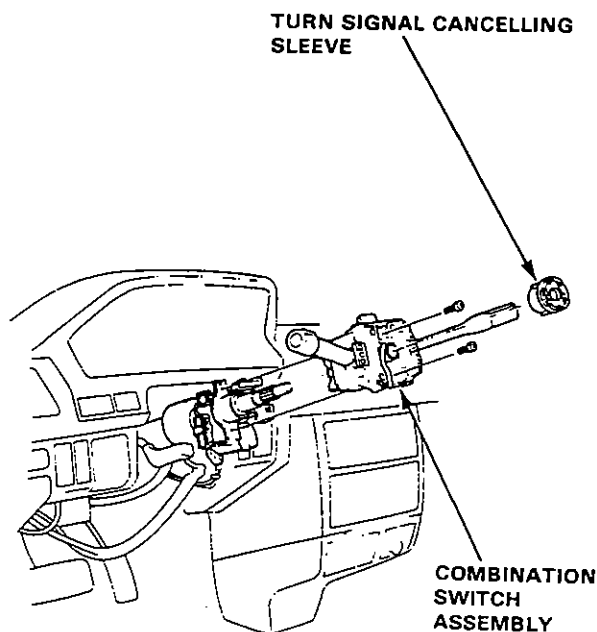
Steering Column

Removal (cont'd)

7. Remove the upper and lower column covers.

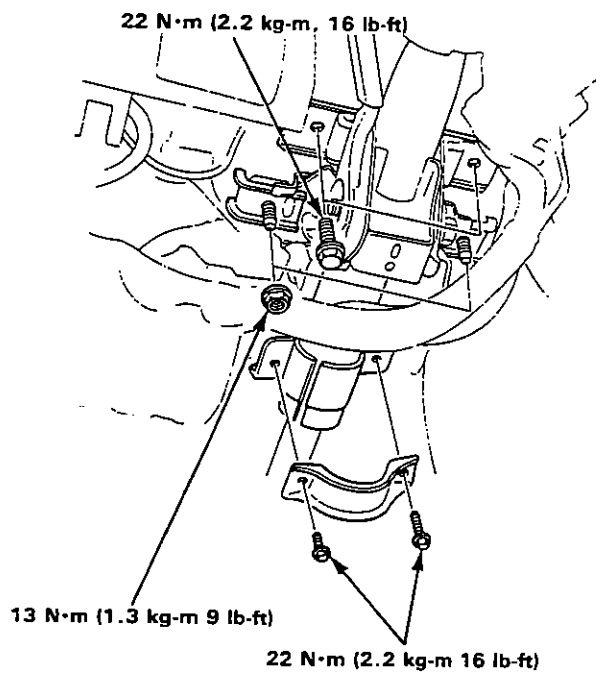


8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal cancelling sleeve and combination switch assembly.



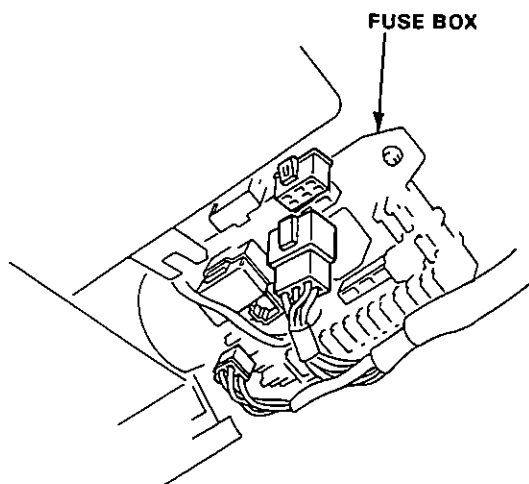
10. Remove the lower column bracket.

11. Remove the nuts attaching the bending plate guide and bending plate.



12. Disconnect each wire coupler from the fuse box at under-dash left side.

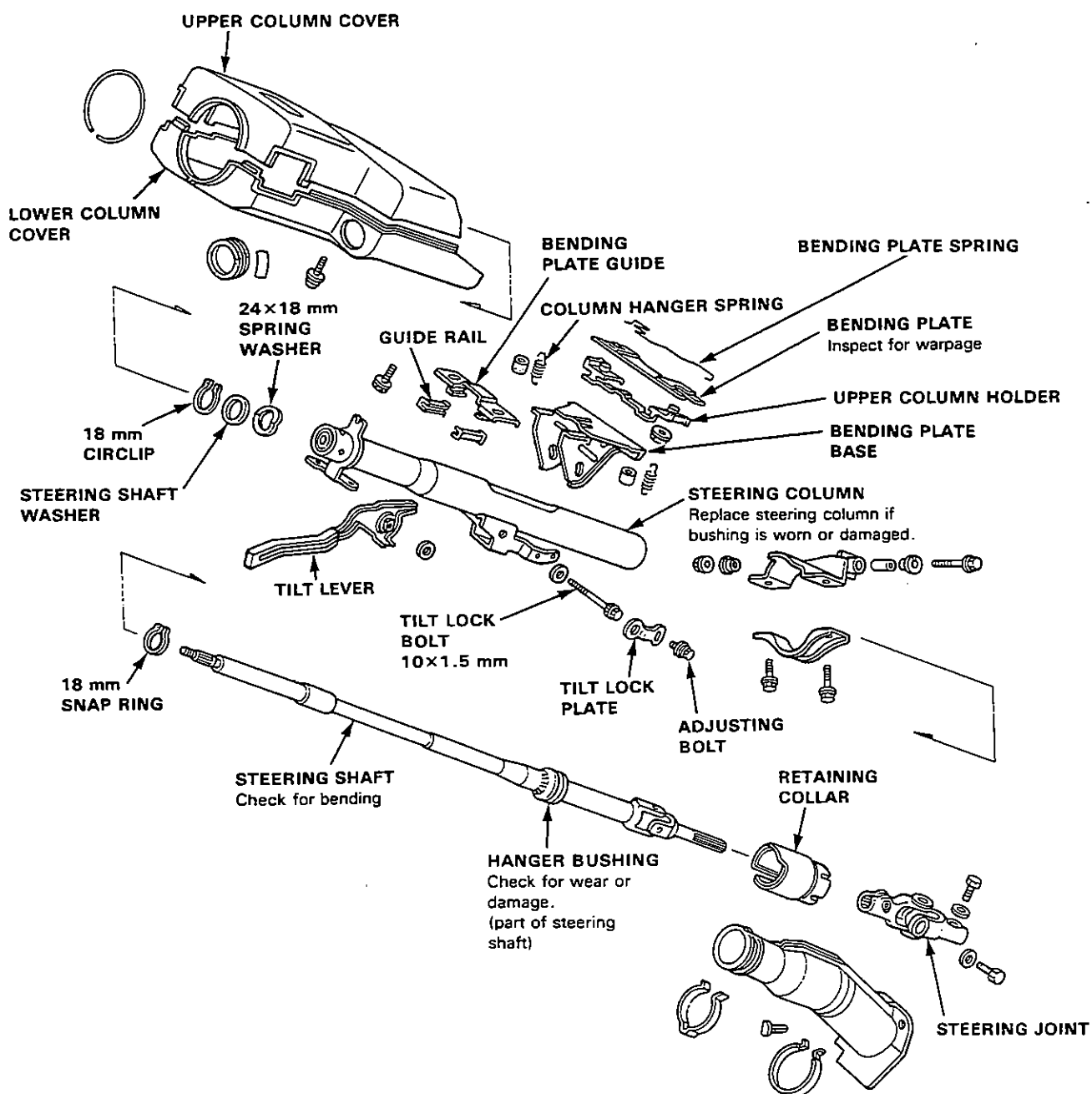
13. Remove the steering column assembly.





Disassembly/Inspection

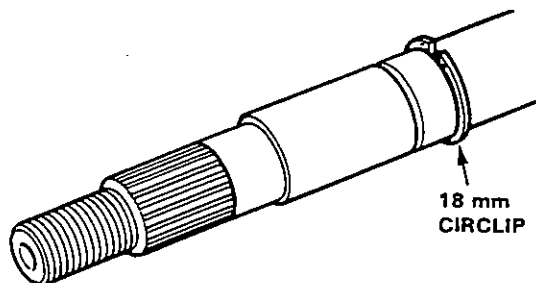
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I".
5. Remove the snap ring, then remove the steering shaft from the bottom of the column.
6. Remove the retaining collar.



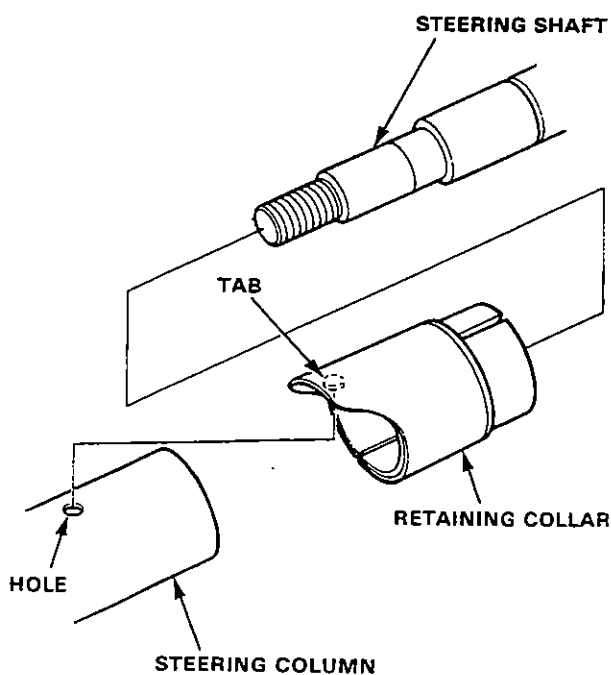
Steering Column

Reassembly

1. Install the circlip on the steering shaft.

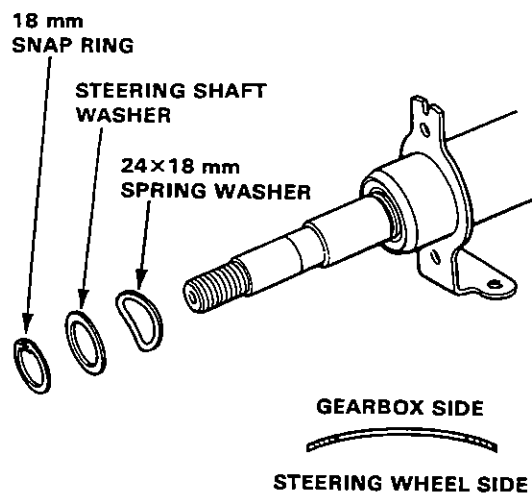


2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.

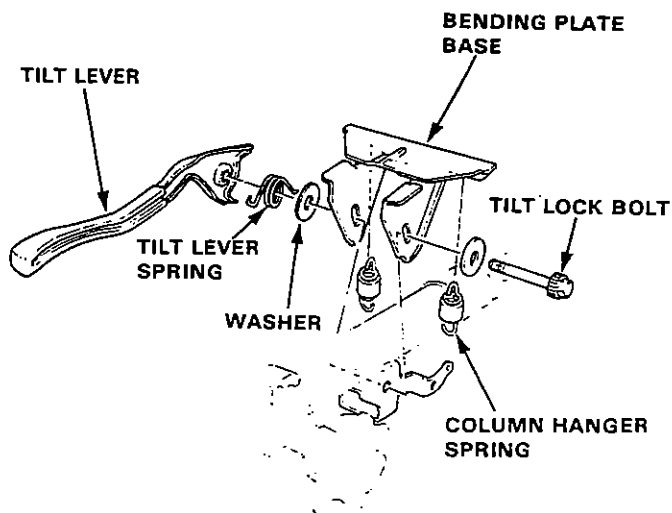


3. Insert the steering shaft into the steering column from the bottom.
4. Install the 24×18 mm spring washer and steering washer on the steering shaft and secure with the 18 mm snap ring.

NOTE: Install the spring washer as shown.

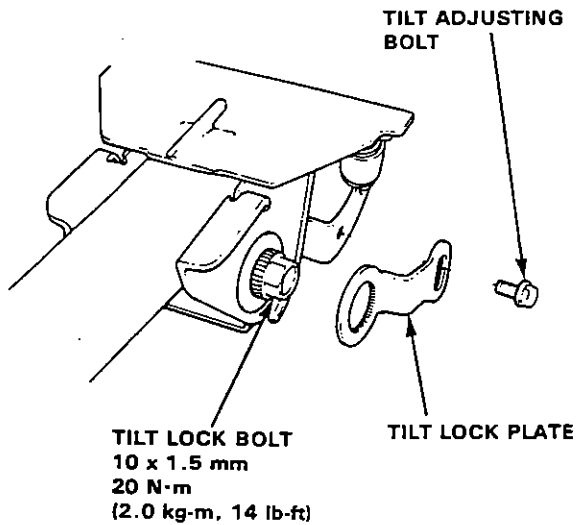


5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, tilt lever spring, washers, and the bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.



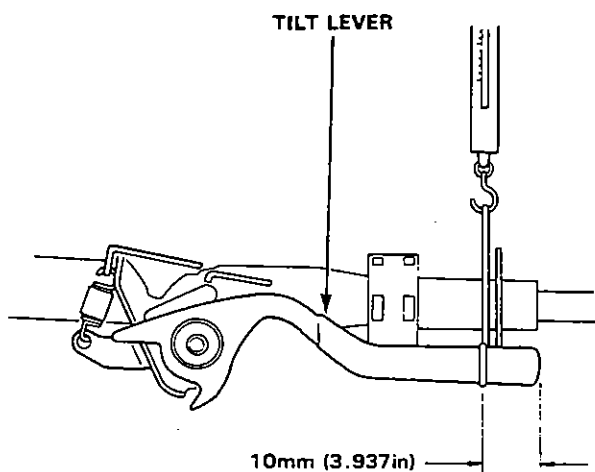


8. Tighten the tilt lock bolt to 20N·m (2.0 kg-m 14lb-ft), then position the tilt lock plate on the splined portion of the tilt lock bolt and loosely attach with the tilt adjusting bolt.

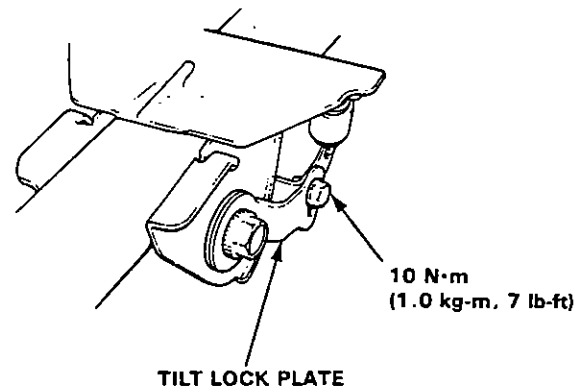


9. Attach a spring scale 10mm(3.937in) from the end of the knob. Measure the force required to move the lever.

Preload: 80N(8.0kg, 18lbs)

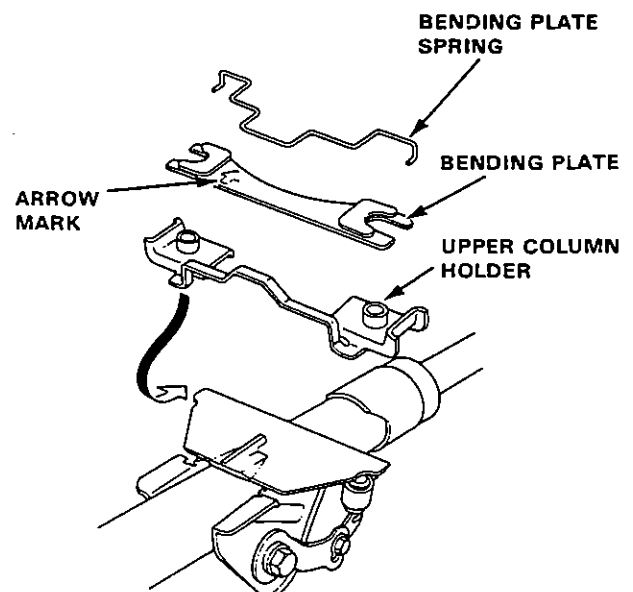


10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.
12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

NOTE: Install the bending plate with arrow mark facing the steering gearbox.

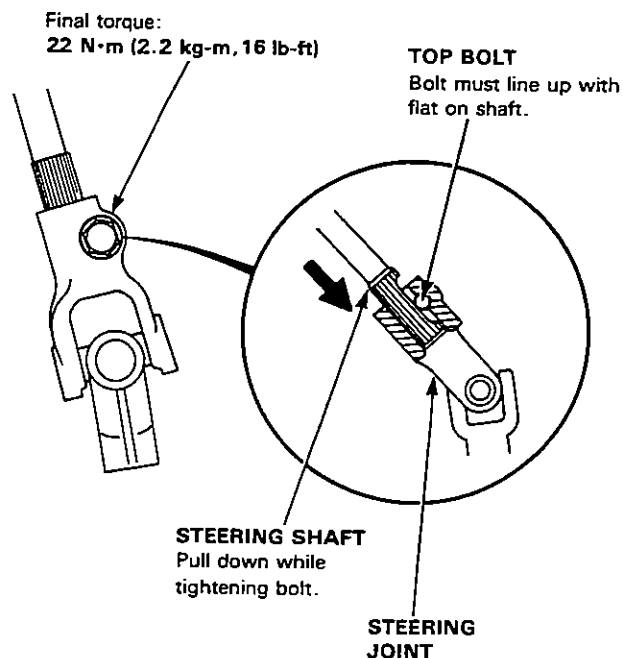


(cont'd)

Steering Column

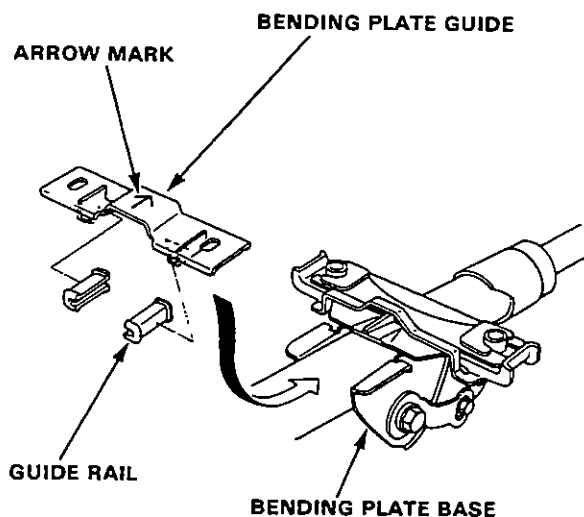
Reassembly (cont'd)

13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the top bolt.



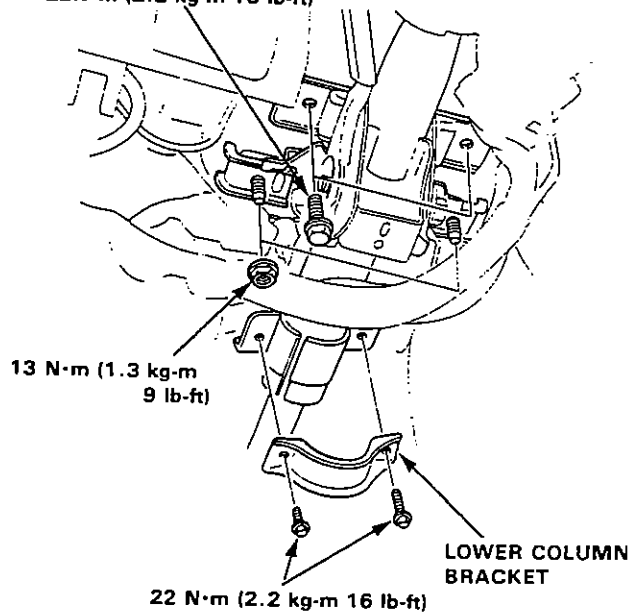
Installation

1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.
NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



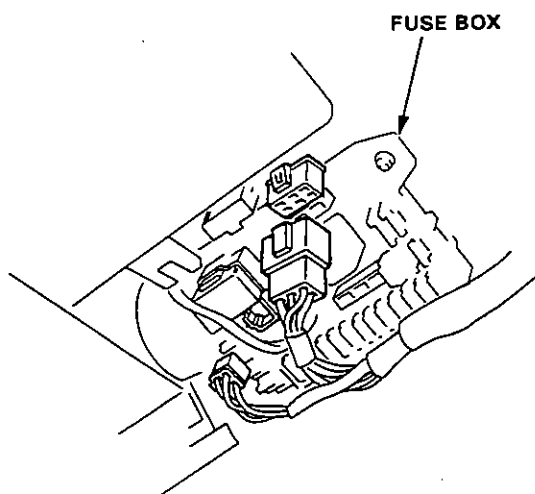
2. Loosely install the steering column assembly with the nuts, bolts, and lower column bracket.

Tighten to these torques in step 7, page 11-17:
22N·m (2.2 kg-m 16 lb-ft)

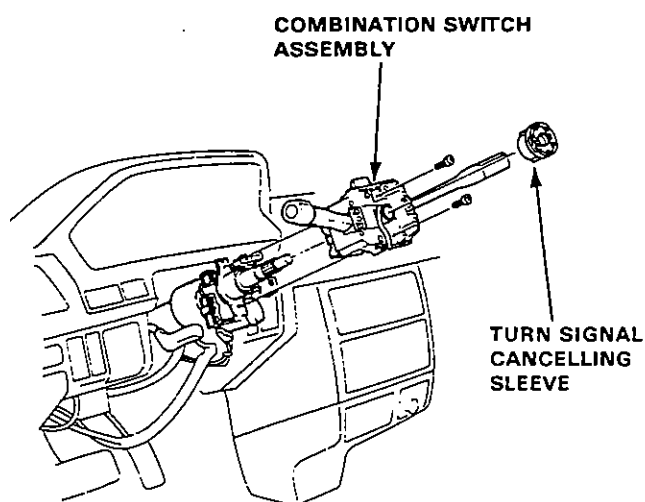




3. Connect each wire coupler to the fuse box at the under dash left side.

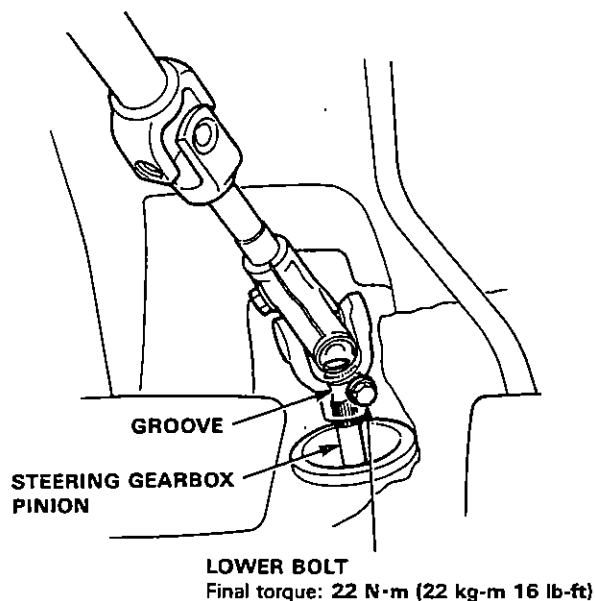


4. Install the combination switch assembly and turn signal cancelling sleeve.
5. Connect each wire coupler to the combination switch.

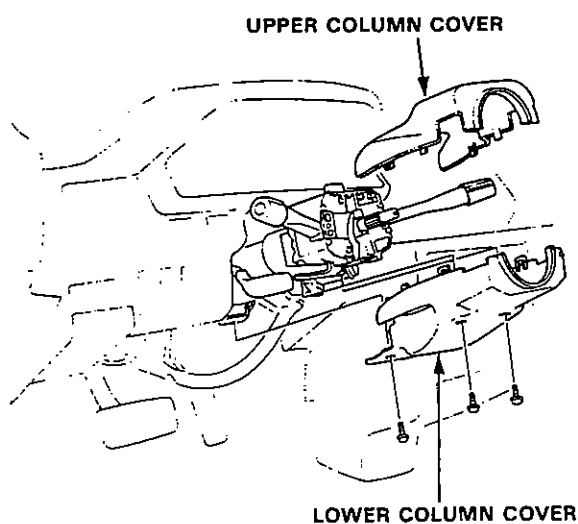


6. Loosely install the steering joint on the steering gearbox pinion.

NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.



7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.
8. Tighten the steering joint lower and top bolts.
9. Install the upper column cover and lower column cover.

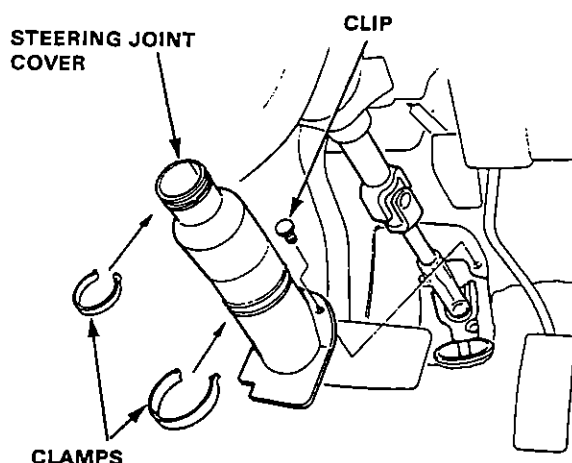


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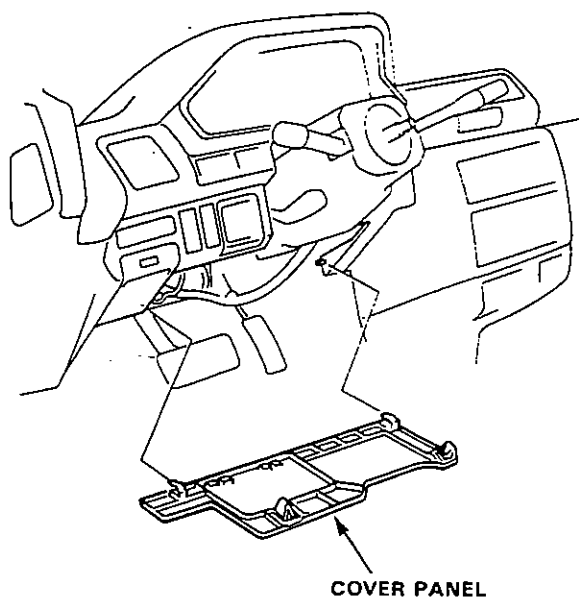
Steering Column

Installation (cont'd)

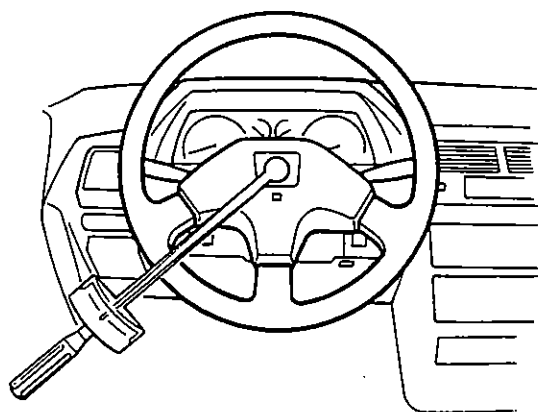
10. Install the steering joint cover with the clamps and clip.



11. Install the cover panel.



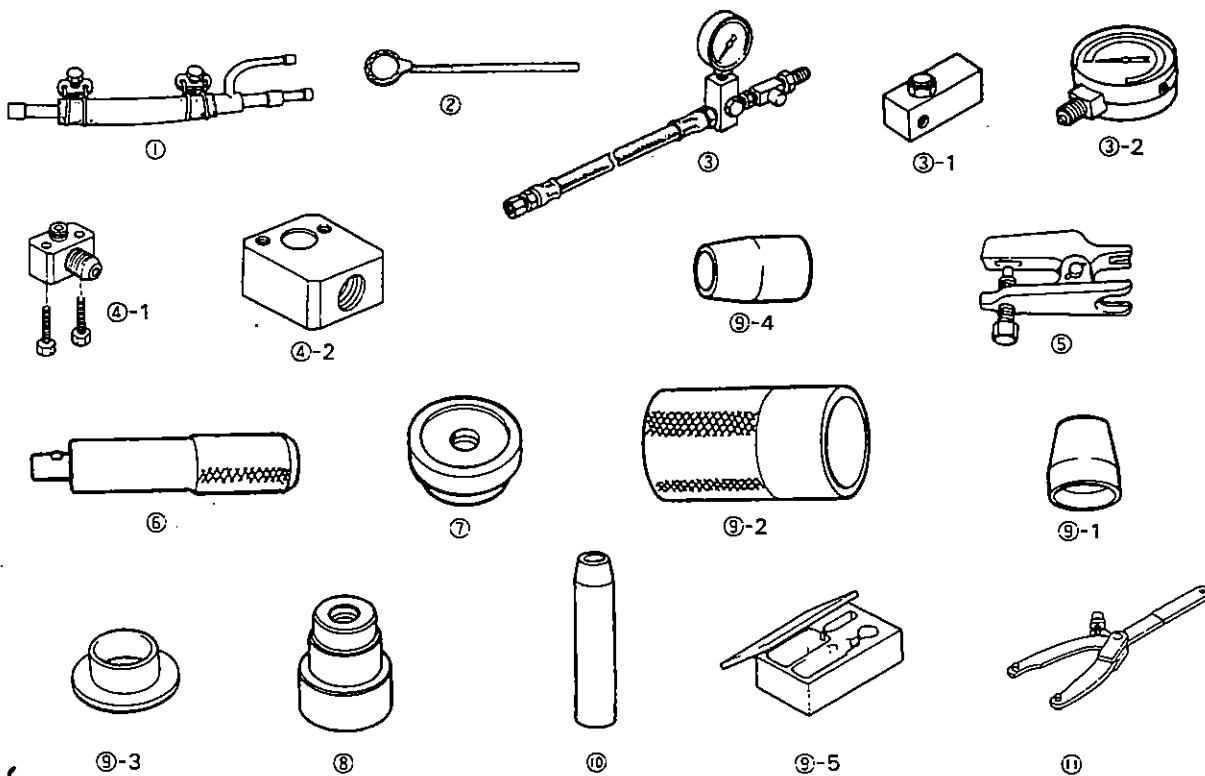
12. Install the steering wheel in a straight ahead position.
13. Tighten the steering wheel mount nut and torque to 50 N·m (5.0 kg-m, 36 lb-ft).
14. Check that the horn works properly, then install the center pad.





Special Tools

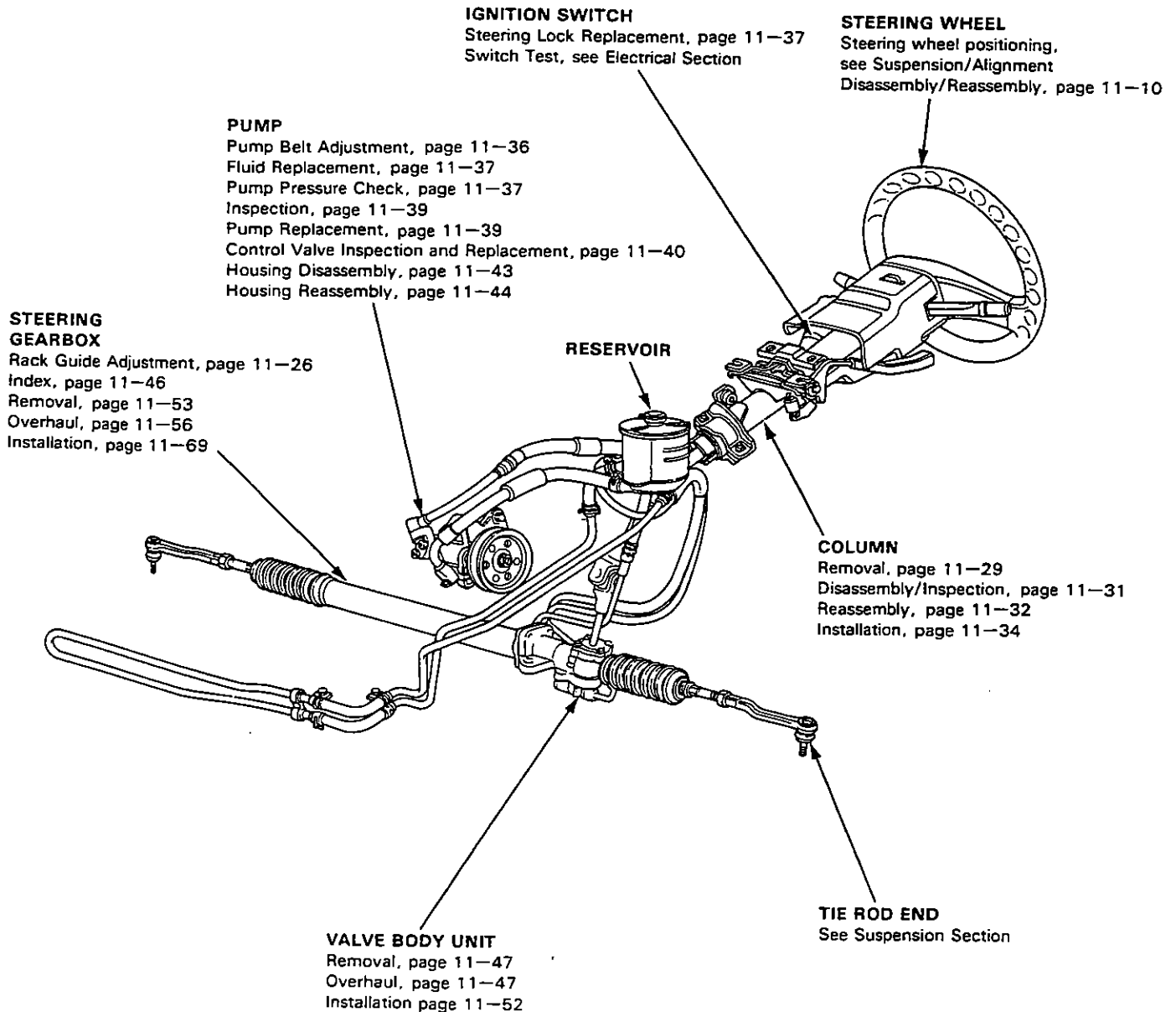
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07406-0010101	Bypass Tube Joint	1	
②	07916-SA50001	Steering Gearbox Lock Nut Wrench	1	
③	07406-0010200	P/S Pressure Gauge Set	1	
③-1	07406-0010300	Pressure Control Valve	1	
③-2	07406-0010400	Pressure Gauge	1	
④	07GAK-SE00100	P/S Pressure Gauge Adapter Set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



Component Location

Index

The power steering is rack and pinion type. The power operating assembly is integral with the steering gear. Road feel is maintained throughout the entire speed range of the vehicle.



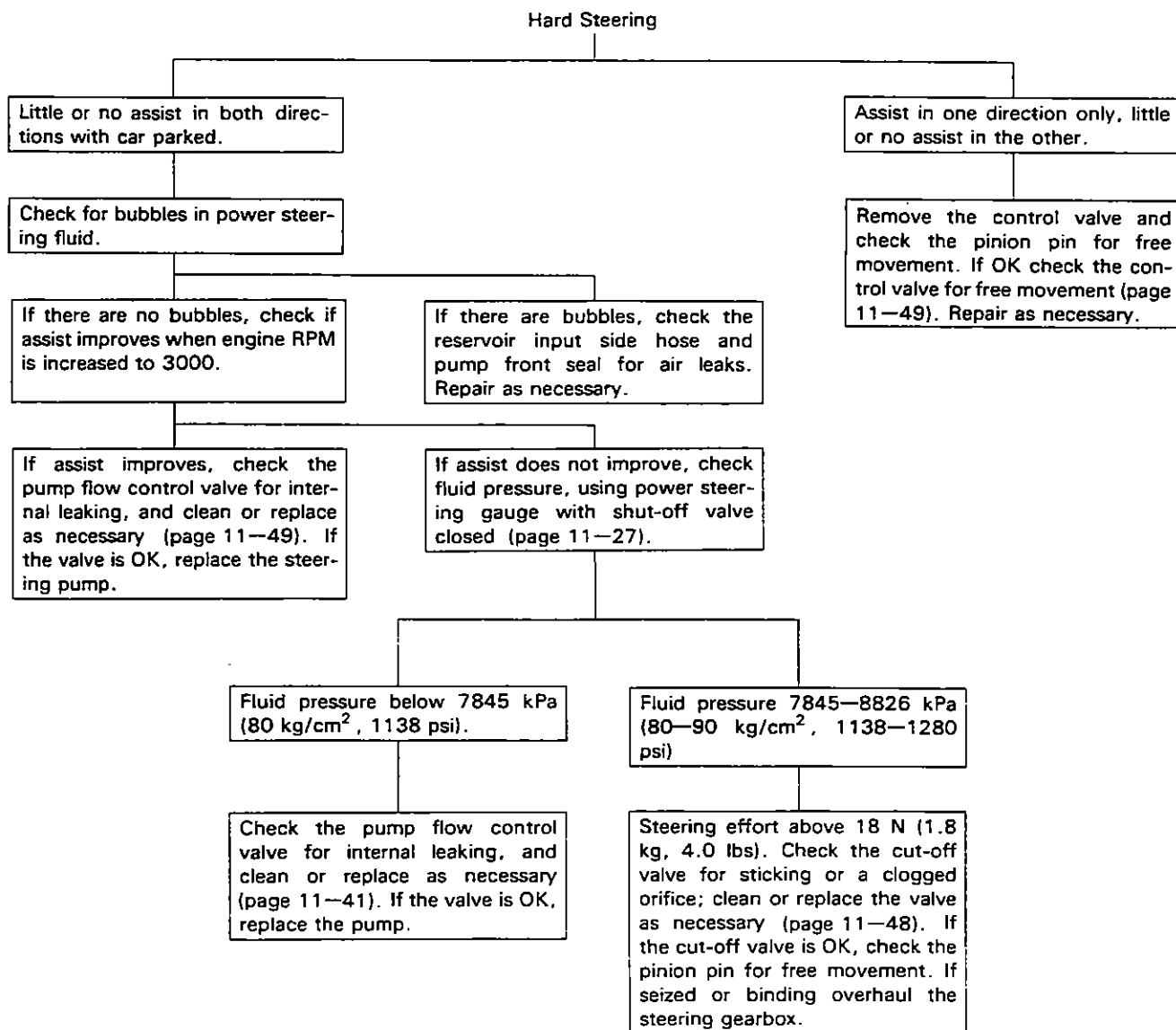
Troubleshooting



General Troubleshooting

Check the following before you begin:

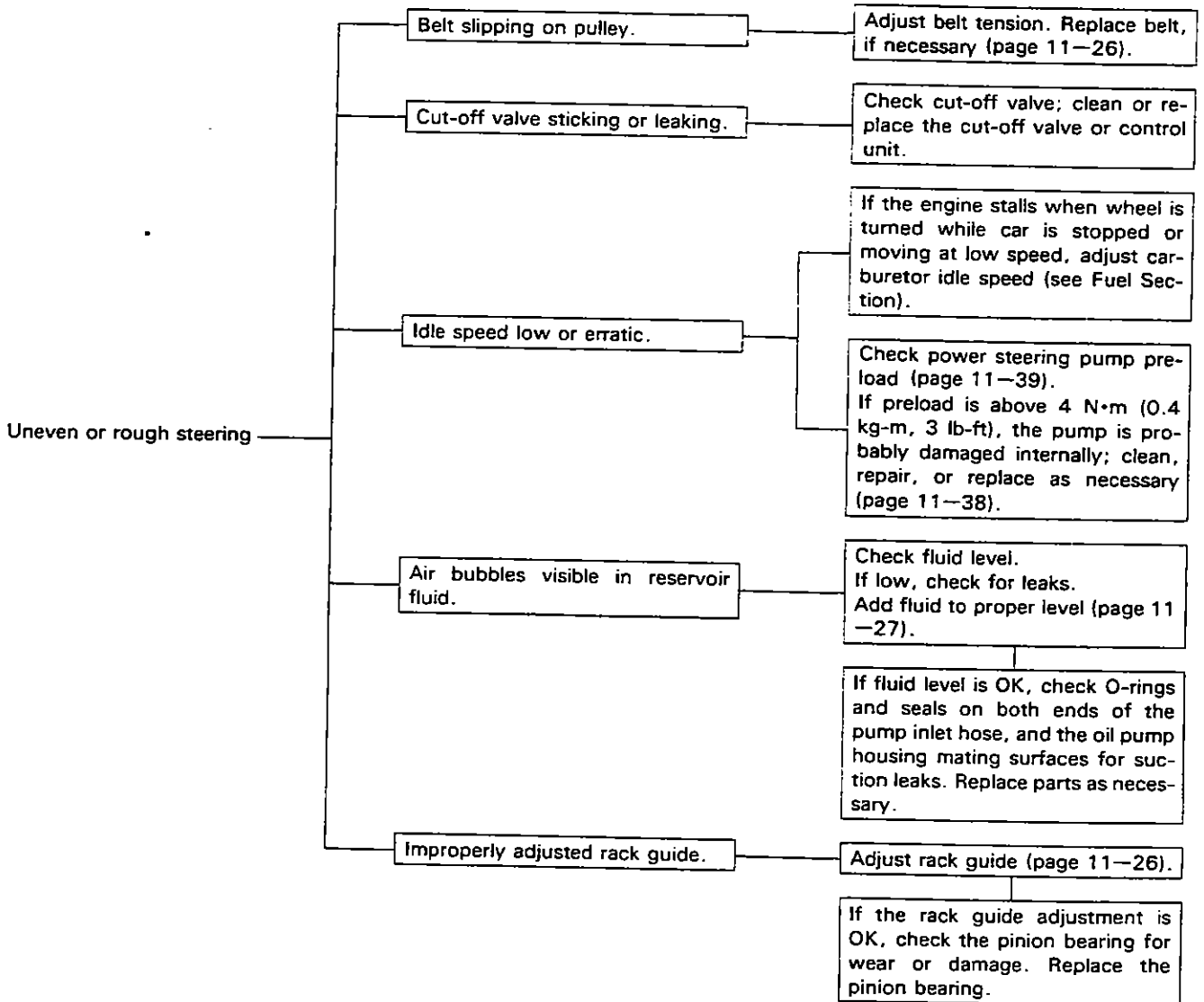
- Has the suspension been modified in a way that would affect steering?
- Are tire size and air pressure correct?
- Is the steering wheel original equipment or equivalent?
- Is the power steering pump belt properly adjusted?
- Is steering fluid reservoir filled to proper level?
- Is the engine idle speed correct and steady?

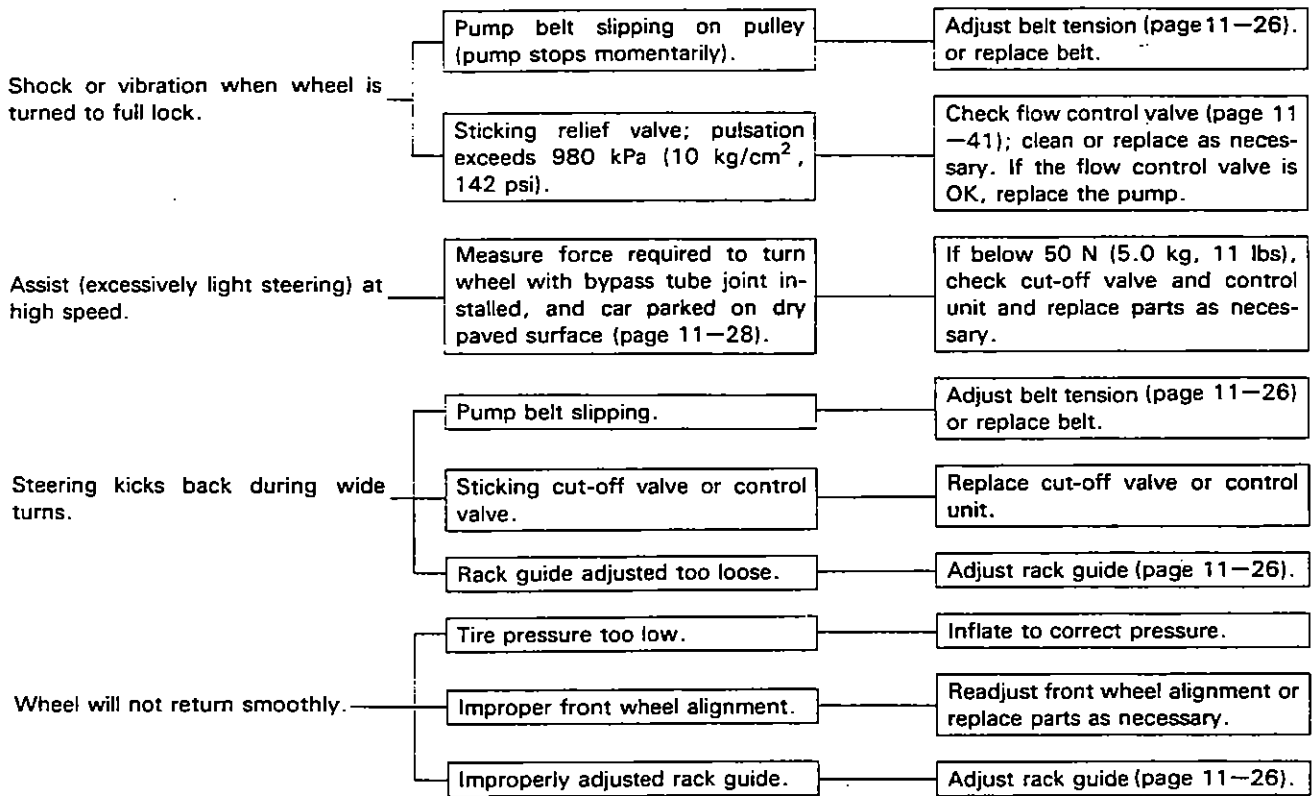


(cont'd)

Troubleshooting

General Troubleshooting (cont'd)

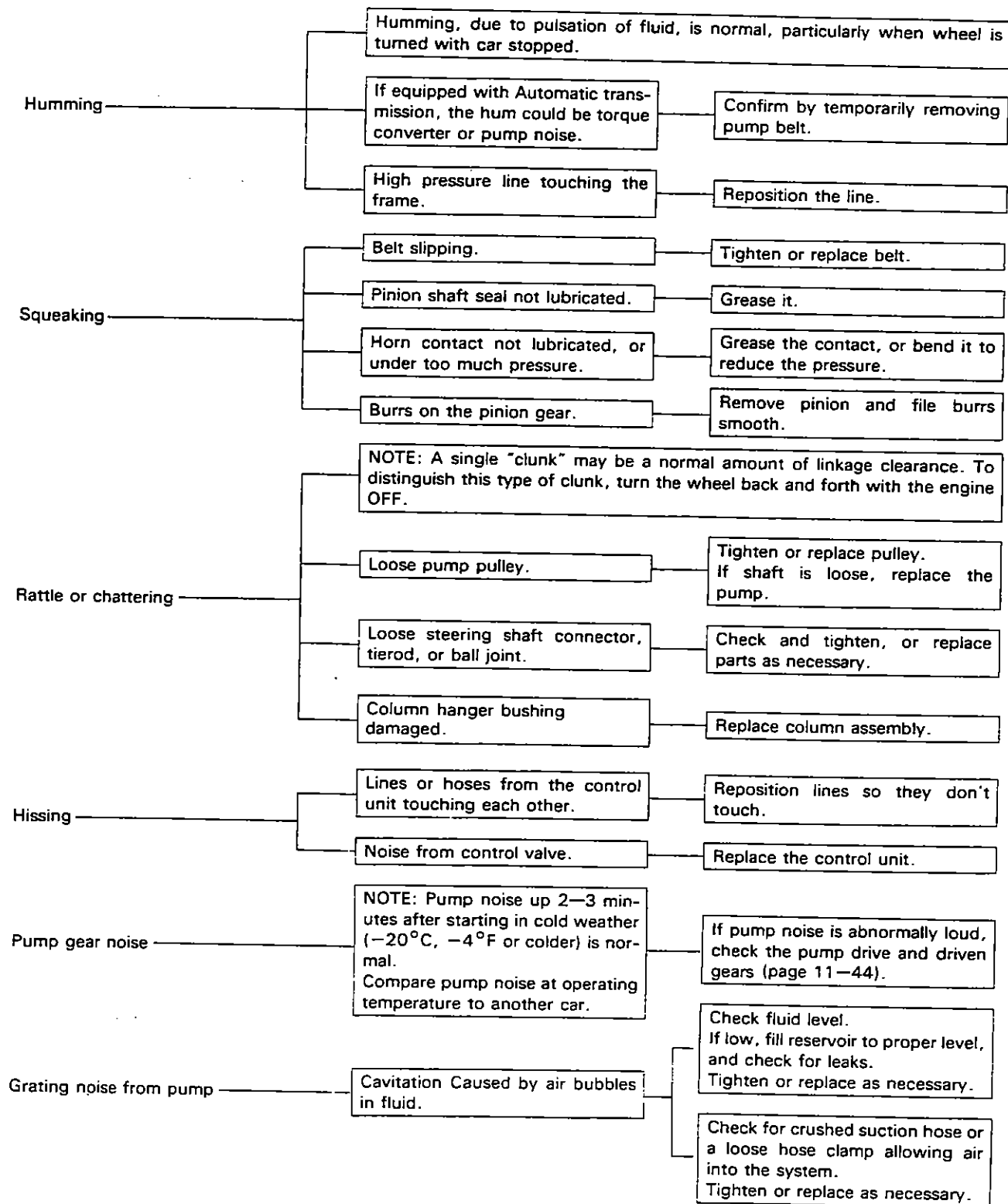




Troubleshooting

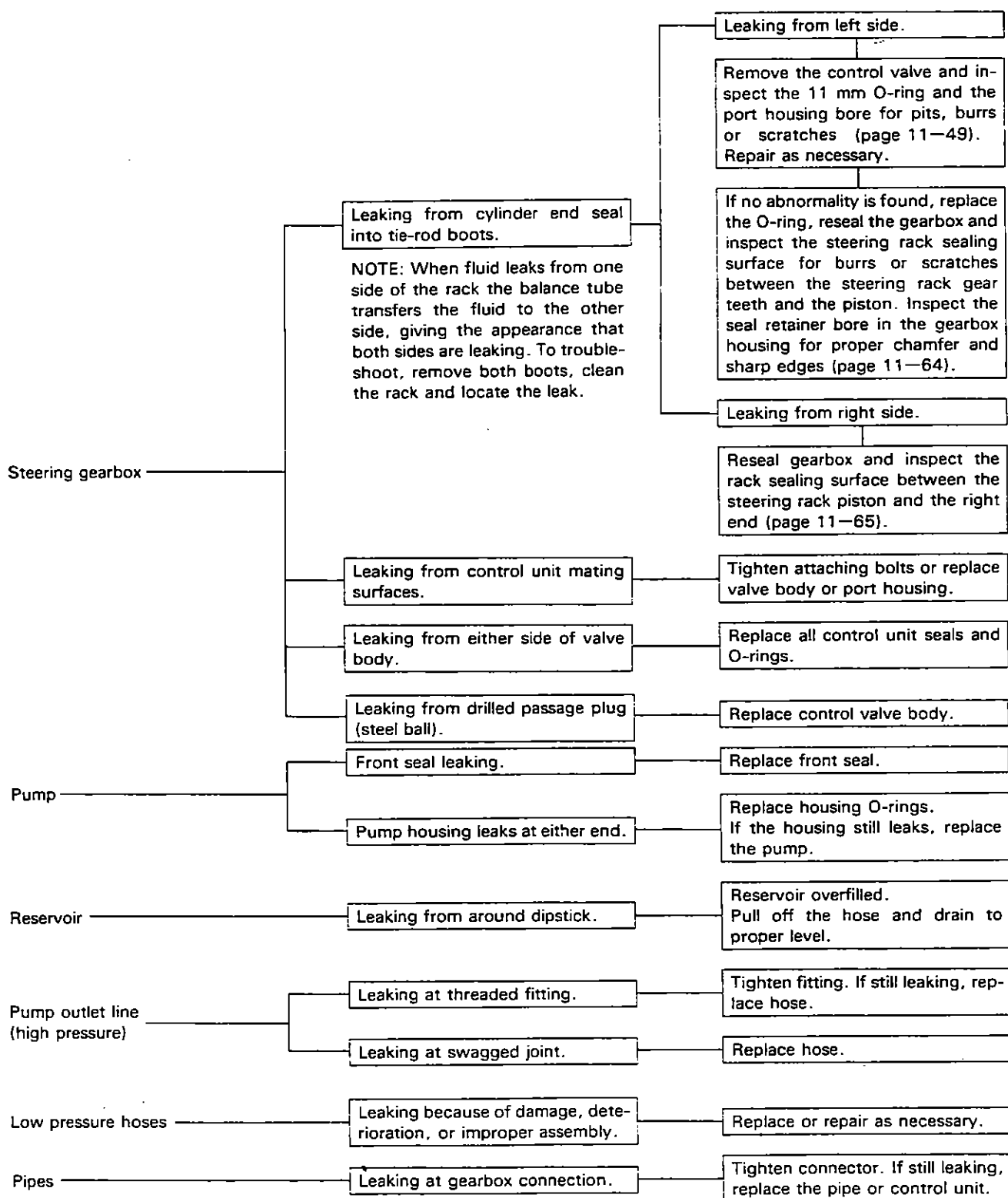
Noise and Vibration

NOTE: Pump noise in first 2—3 minutes after starting in cold weather (-20°C , -4°F or colder) is normal.





Fluid Leaks



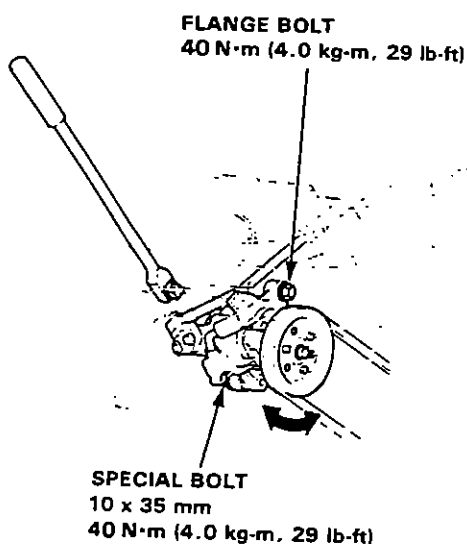
Maintenance

Pump Belt Adjustment

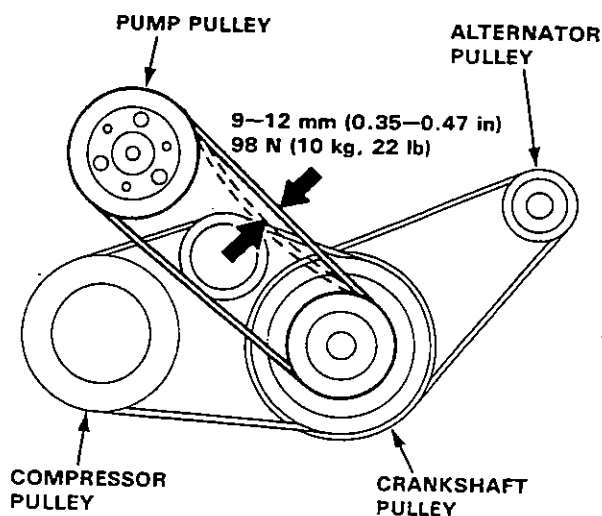
A properly adjustment belt should deflect about 9—12 mm (0.35—0.47 in) when you push on it mid-way between the pulleys with a force of about 98 N (10 kg; 22 lbs).

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

1. Loosen the pump special bolt and flange bolt.
2. Pry pump away from the engine to get the proper tension, then retighten the special bolt and flange bolt.



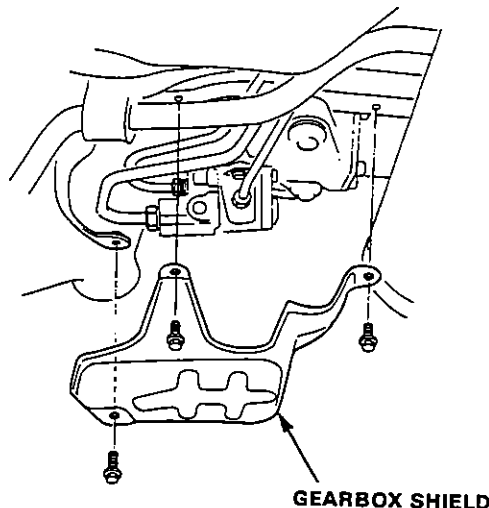
3. Start the engine and turn the steering wheel from lock-to-lock several times, then recheck the belt tension.



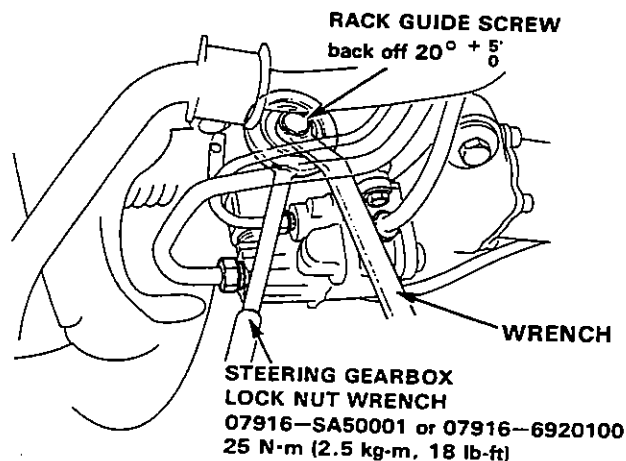
On-Car Checks

Rack Guide Adjustment

1. Remove the gearbox splash splash.



2. Loosen the lock nut on the rack guide screw with the special tool as shown.



3. Tighten the guide screw until it compresses the spring and seats against the guide, then loosen it.

Re-tighten it to about:
4 N·m (0.4 kg-m, 3 lb-ft)

Then back it off about:
20° + 5°
0

Tighten the lock nut to about 25 N·m (2.5 kg-m, 18 ft-lb) while preventing the guide screw from turning.

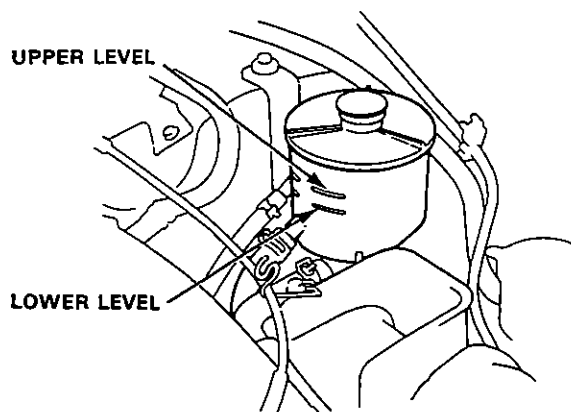
4. Check the steering effort as described on page 11—28.



Fluid Replacement

Check the reservoir at regular intervals, and add fluid as necessary.

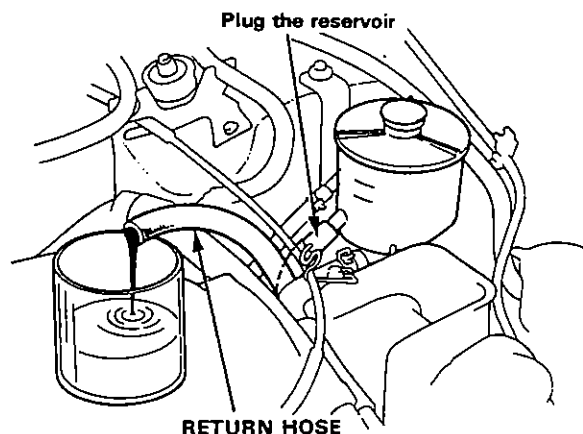
CAUTION: Use only **GENUINE HONDA** Power Steering Fluid. Using other fluids such as ATF or other manufacturer's power steering fluid will damage the system.



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.

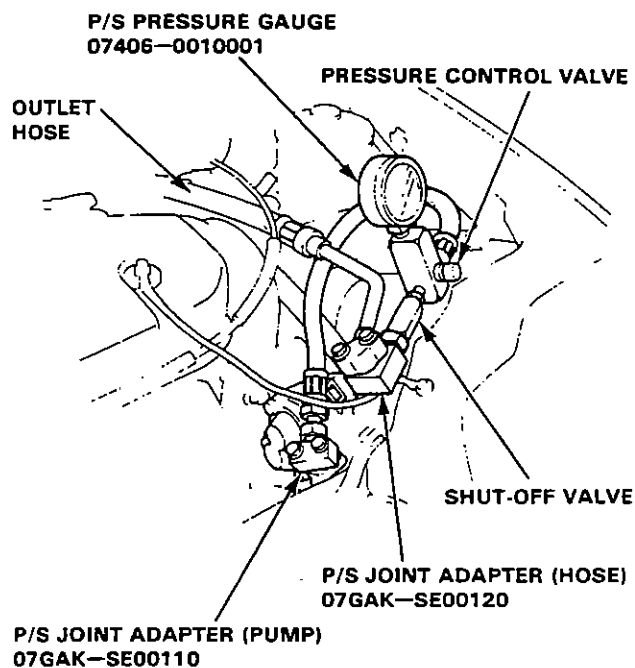
CAUTION: Do not fill the reservoir beyond the upper level mark.

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)

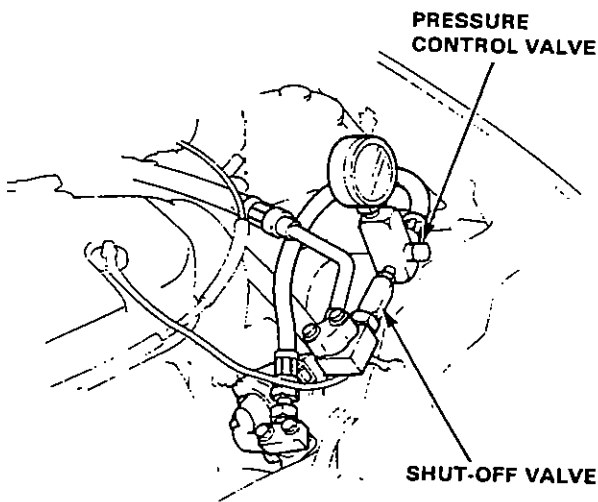
On-Car Checks

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.

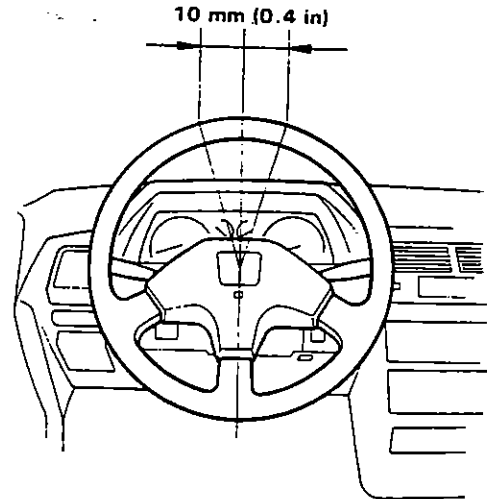
CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

If the pump is in good condition, the gauge should read at least 7845—8826 kPa (80—90 kg/cm², 1138—1280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



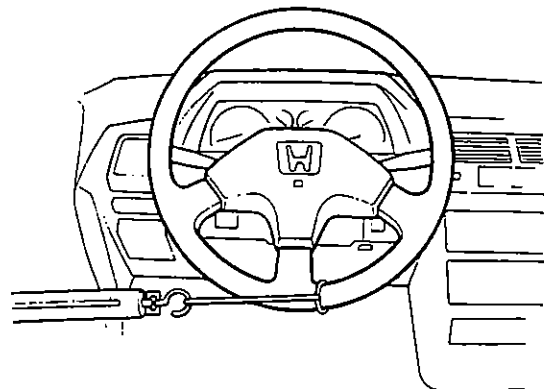
Steering Wheel Rotational Play

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.



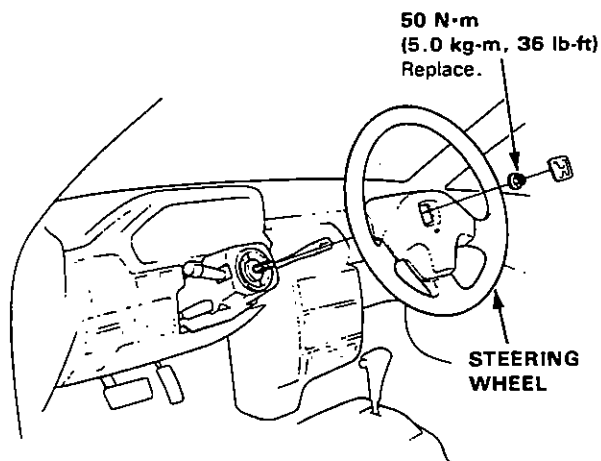
4. The scale should read no more than 18 N (1.8 kg, 4 lb). If it reads more or less, check the gearbox and pump.

Column

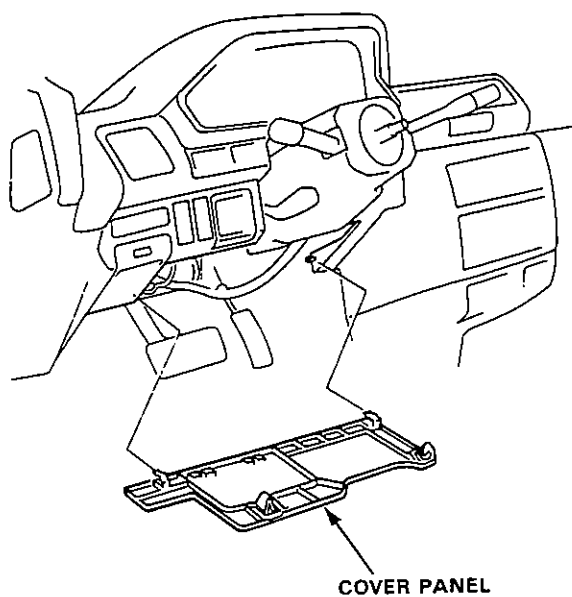
Removal



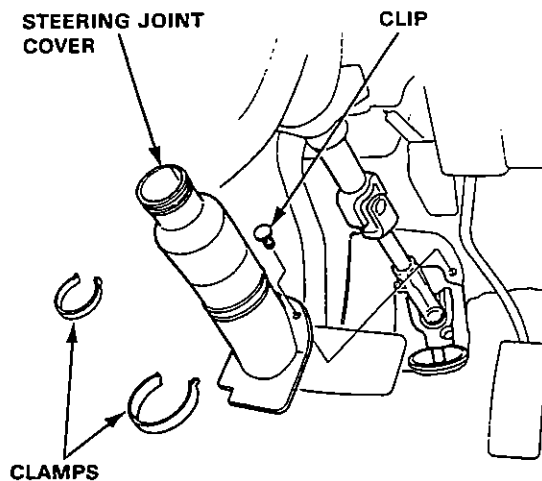
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.



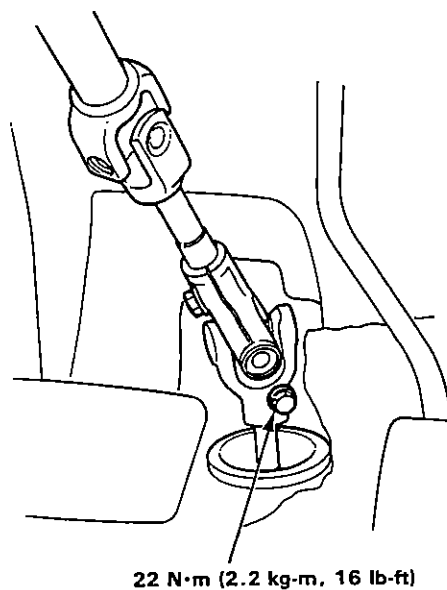
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.



6. Remove the steering joint bolt, and move the joint toward the column.

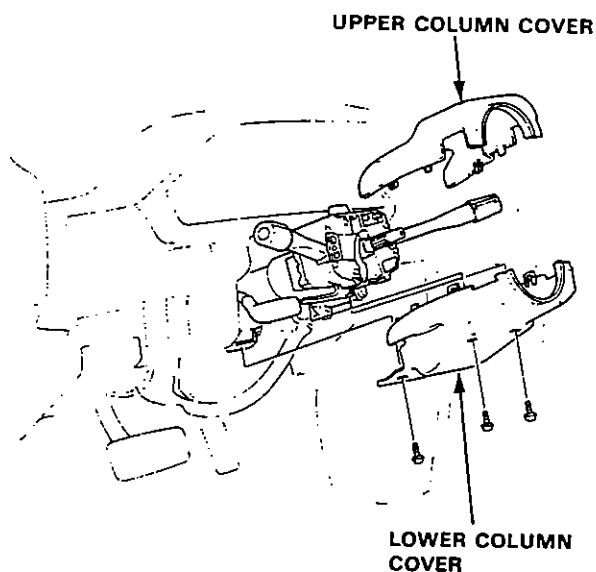


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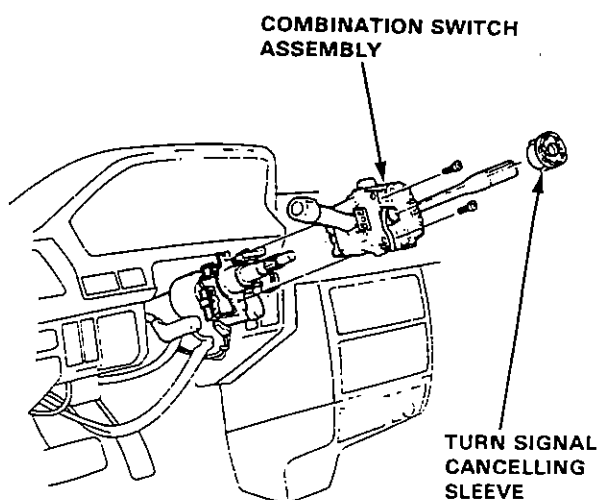
Column

Removal (cont'd)

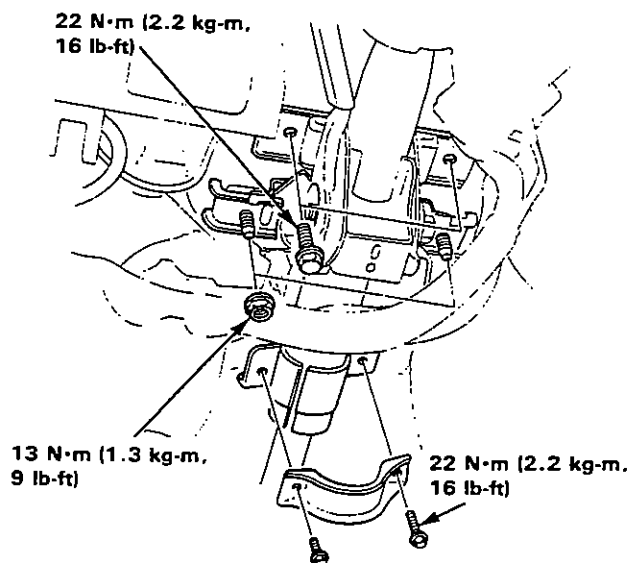
7. Remove the upper and lower column covers.



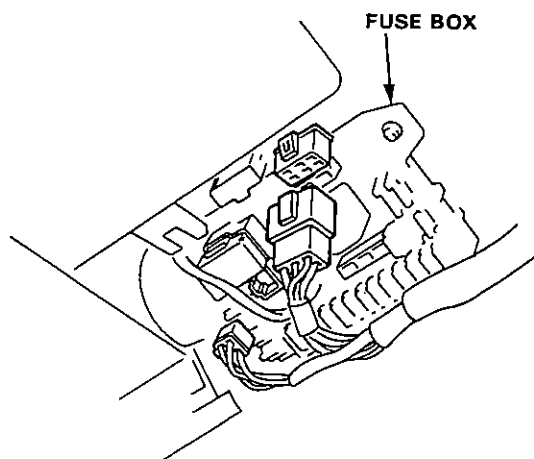
8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal cancelling sleeve and combination switch assembly.



10. Remove the lower column bracket.
11. Remove the nuts attaching the bending plate guide and bending plate.



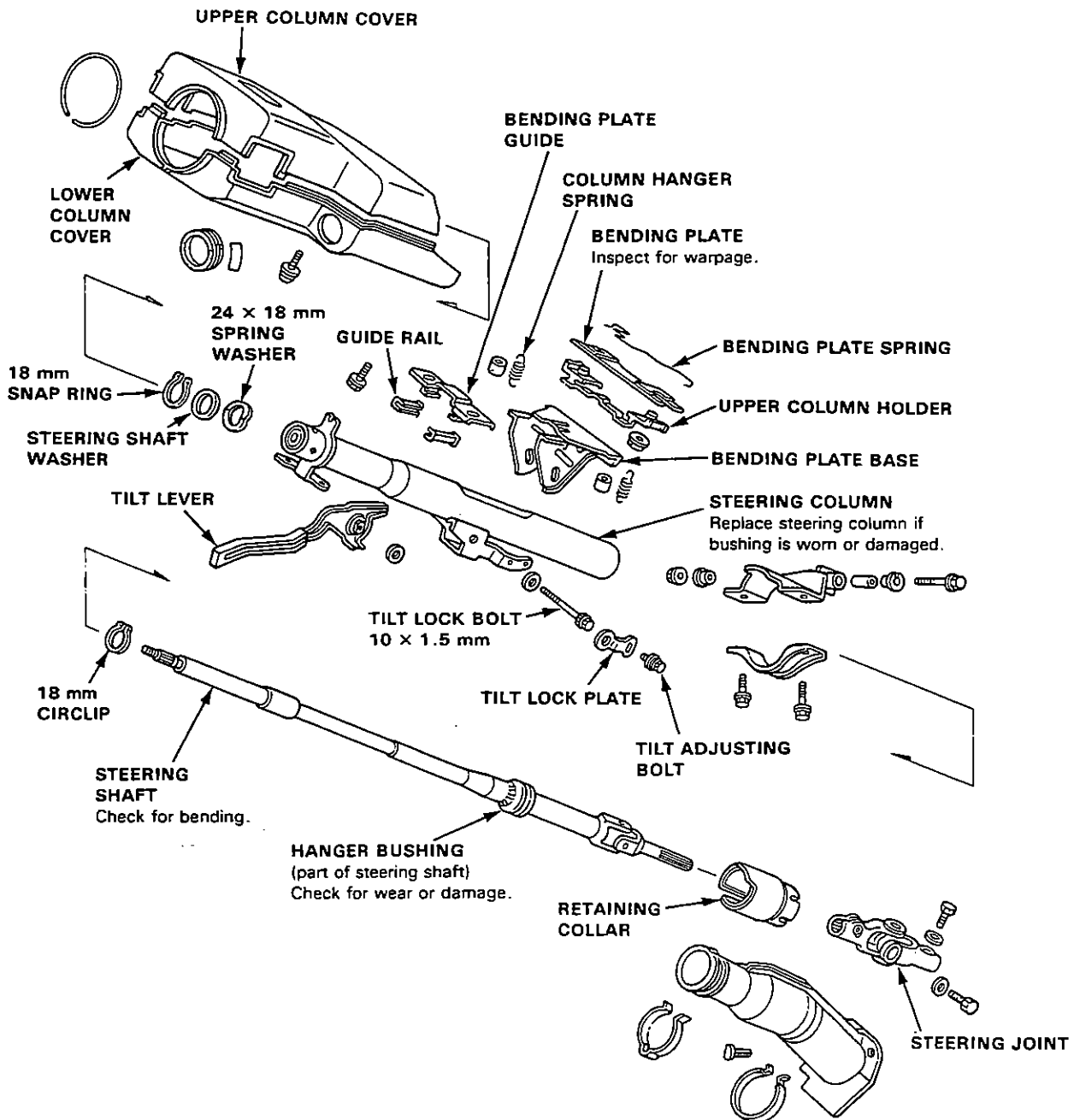
12. Disconnect each wire coupler from the fuse box at under dash left side.
13. Remove the steering column assembly.





Disassembly/Inspection

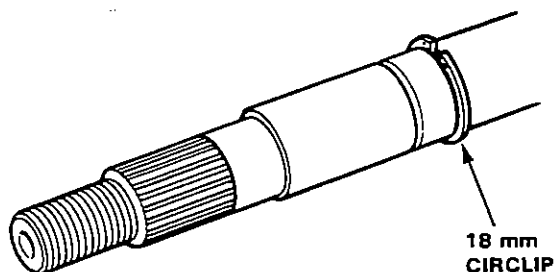
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I."
5. Remove the snapping, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.



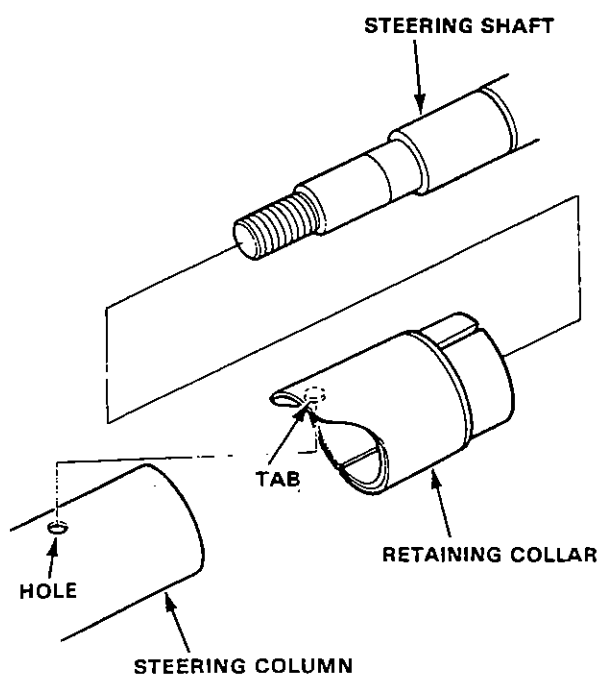
Column

Reassembly

1. Install the circlip on the steering shaft.

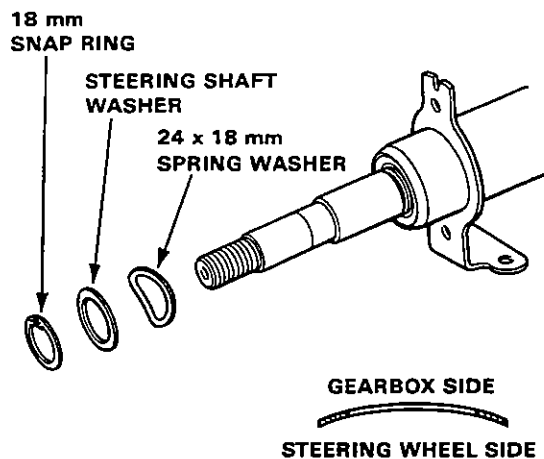


2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.

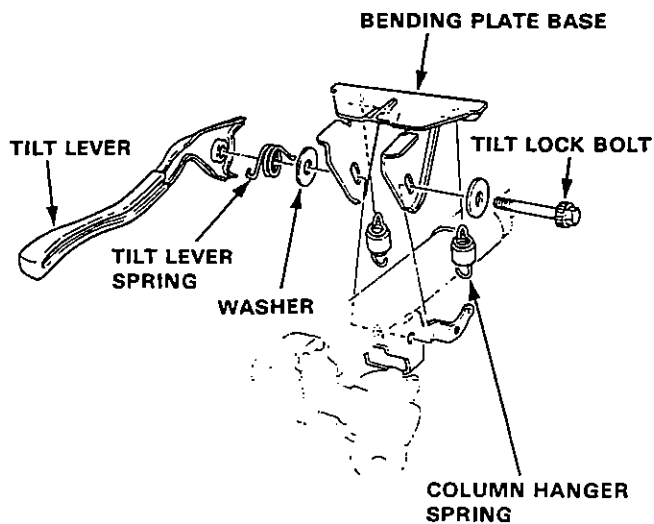


3. Insert the steering shaft into the steering column from the bottom.
4. Install the 24x18 mm spring washer and steering shaft washer on the steering shaft and secure with the 18 mm snap ring.

NOTE: Install the spring washer as shown.

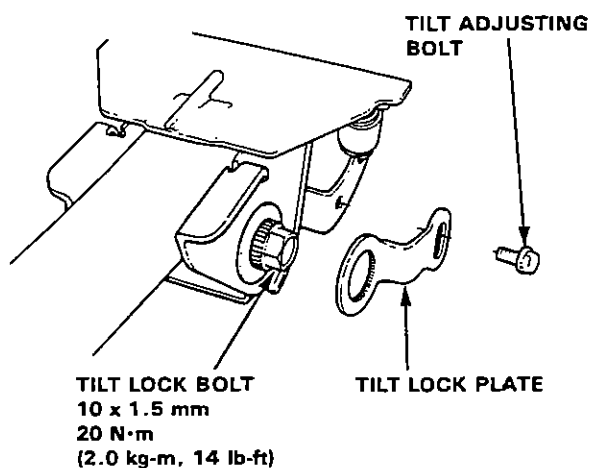


5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, spring, washers, and bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.



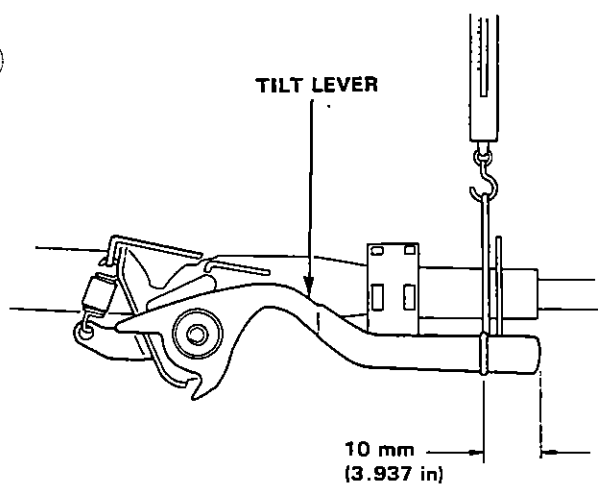


8. Tighten the tilt lock bolt to 20 N·m (2.0 kg-m, 14 lb-ft), then position the tilt lock plate on the splined portion of tilt lock bolt and loosely attach with the tilt adjusting bolt.

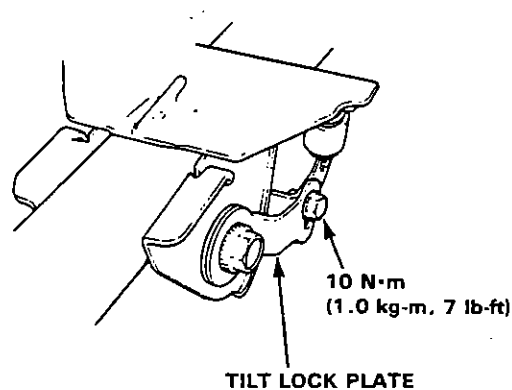


9. Attach a spring scale 10 mm (3.937 in) from the end of the knob. Measure the force required to move the lever.

Preload: 80 N (8.0 kg, 18 lbs)

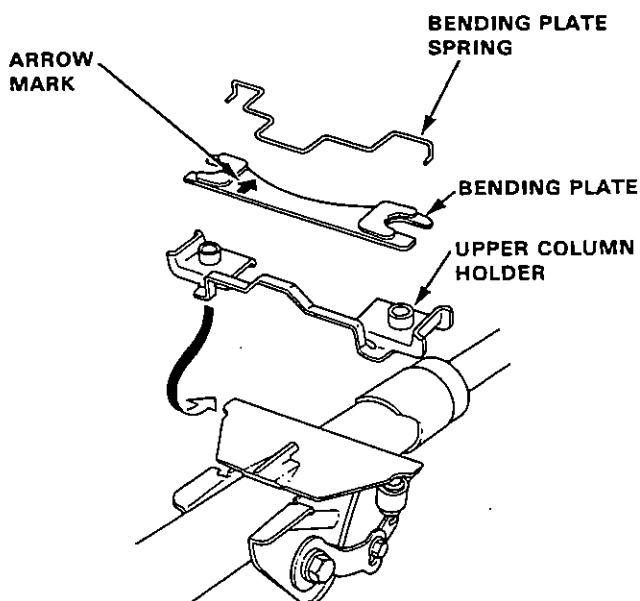


10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



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.

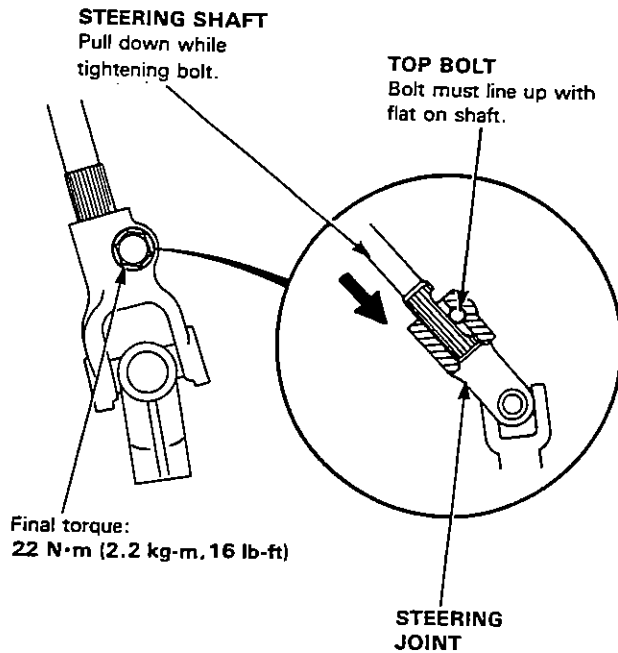


(cont'd)

Column

Reassembly (cont'd)

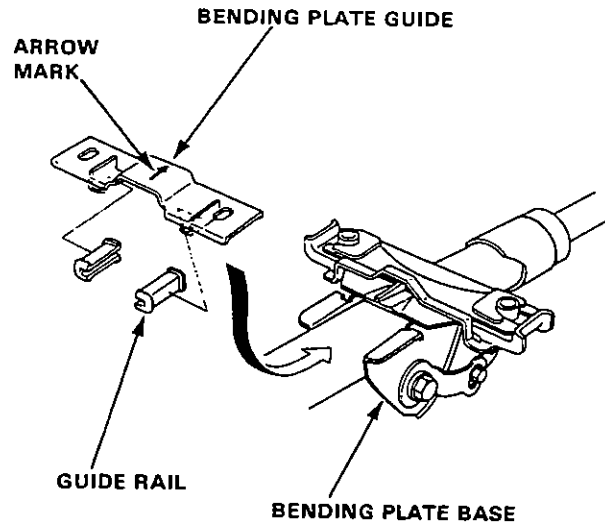
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the top bolt.



Installation

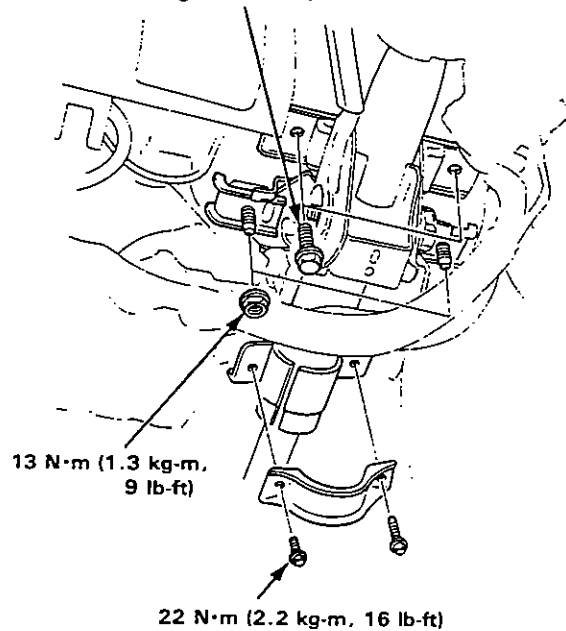
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



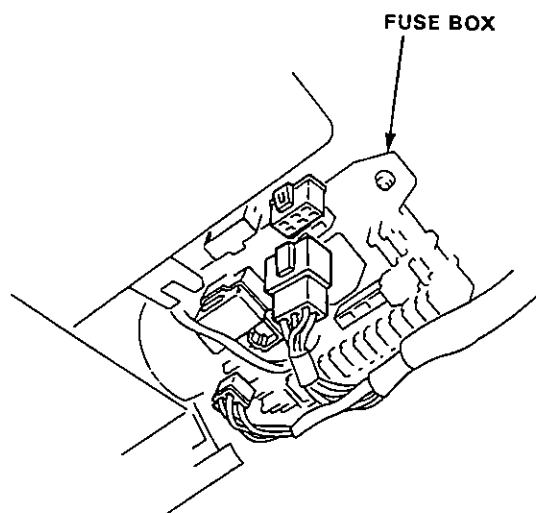
2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket.

Tighten to these torques in step 7, page 11—33:
22 N·m (2.2 kg-m, 16 lb-ft)

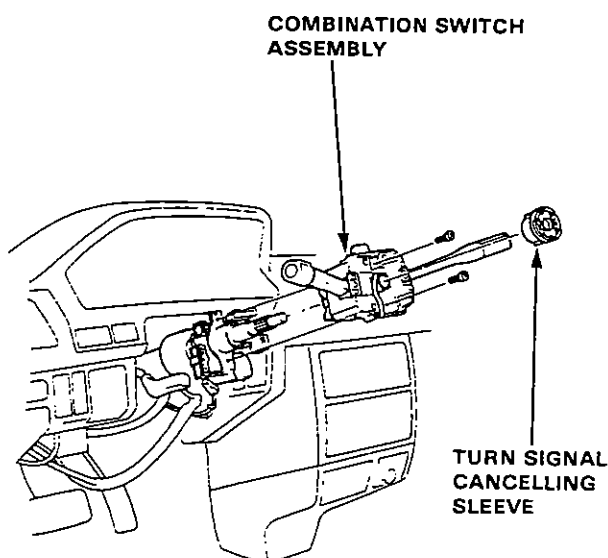




3. Connect each wire coupler to the fuse box at the under dash left side.

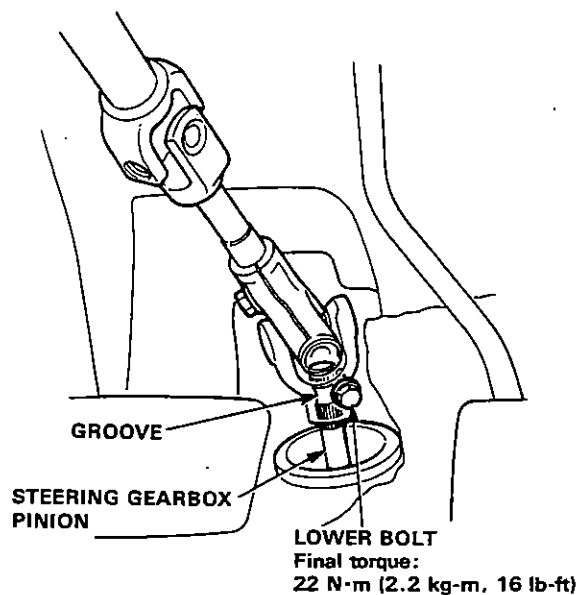


4. Install the combination switch assembly and turn signal cancelling sleeve.
5. Connect each wire coupler to the combination switch.

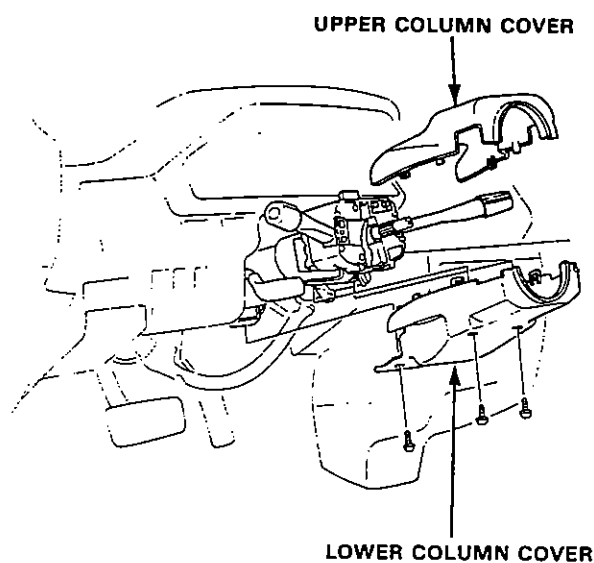


6. Loosely install the steering joint on the steering gearbox pinion.

NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.



7. Tighten the steering column mounting bolts, nuts and bracket loosely installed in step 2.
8. Tighten the and upper steering joint lower and top bolts.
9. Install the upper column cover and lower column cover.

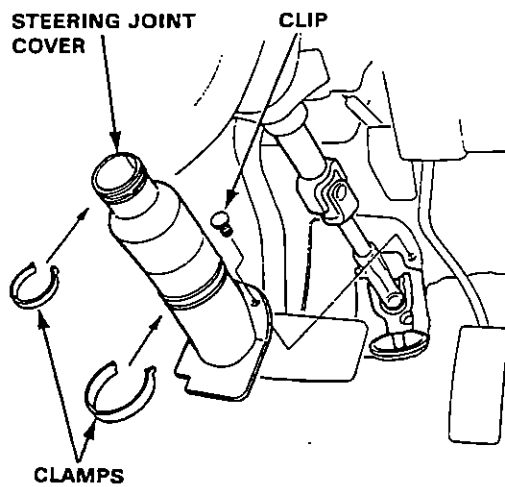


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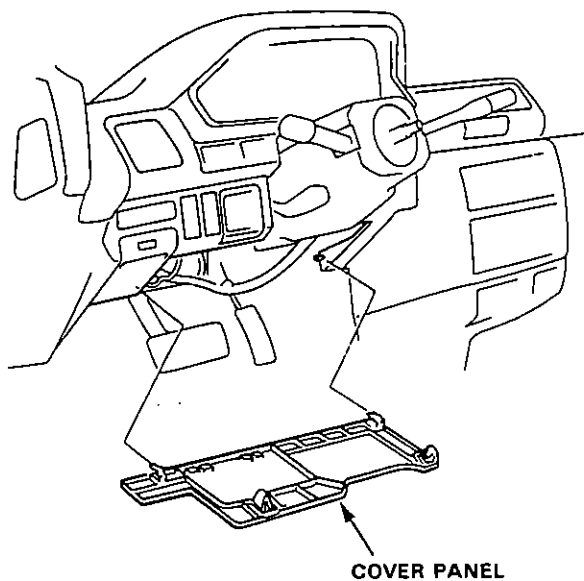
Column

Installation (cont'd)

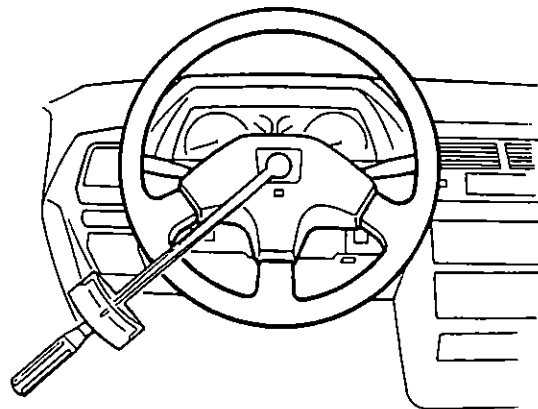
10. Install the steering joint cover with the clamps and clip.



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

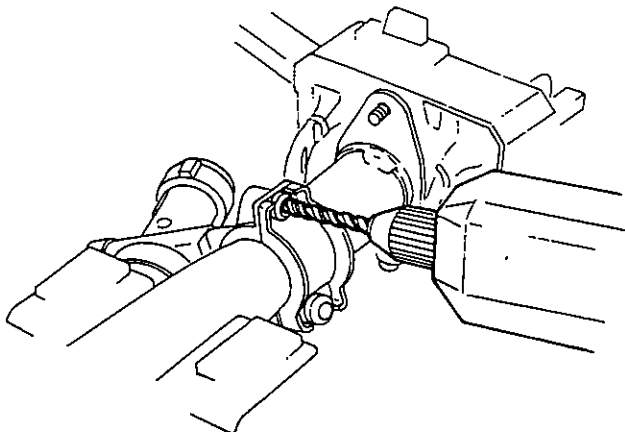


Lock Replacement

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.

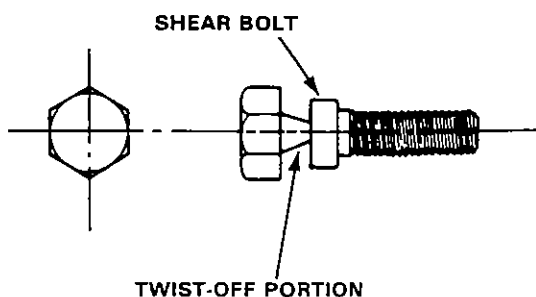
4. Remove the shear bolts from the switch body.



5. Install the new ignition switch without the key inserted.
6. Loosely tighten the new shear bolts.

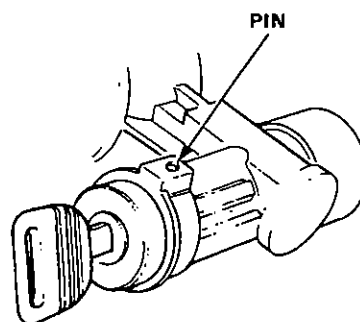
NOTE: Make sure the projection on the ignition switch is aligned with the hole in the steering column.

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.

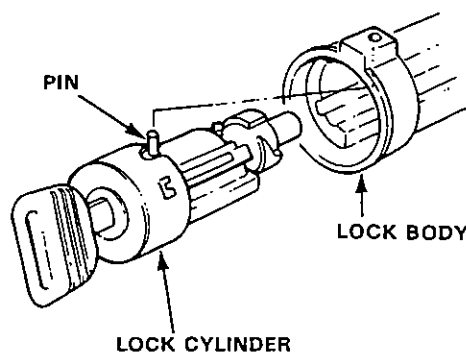


Lock Cylinder Replacement

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.



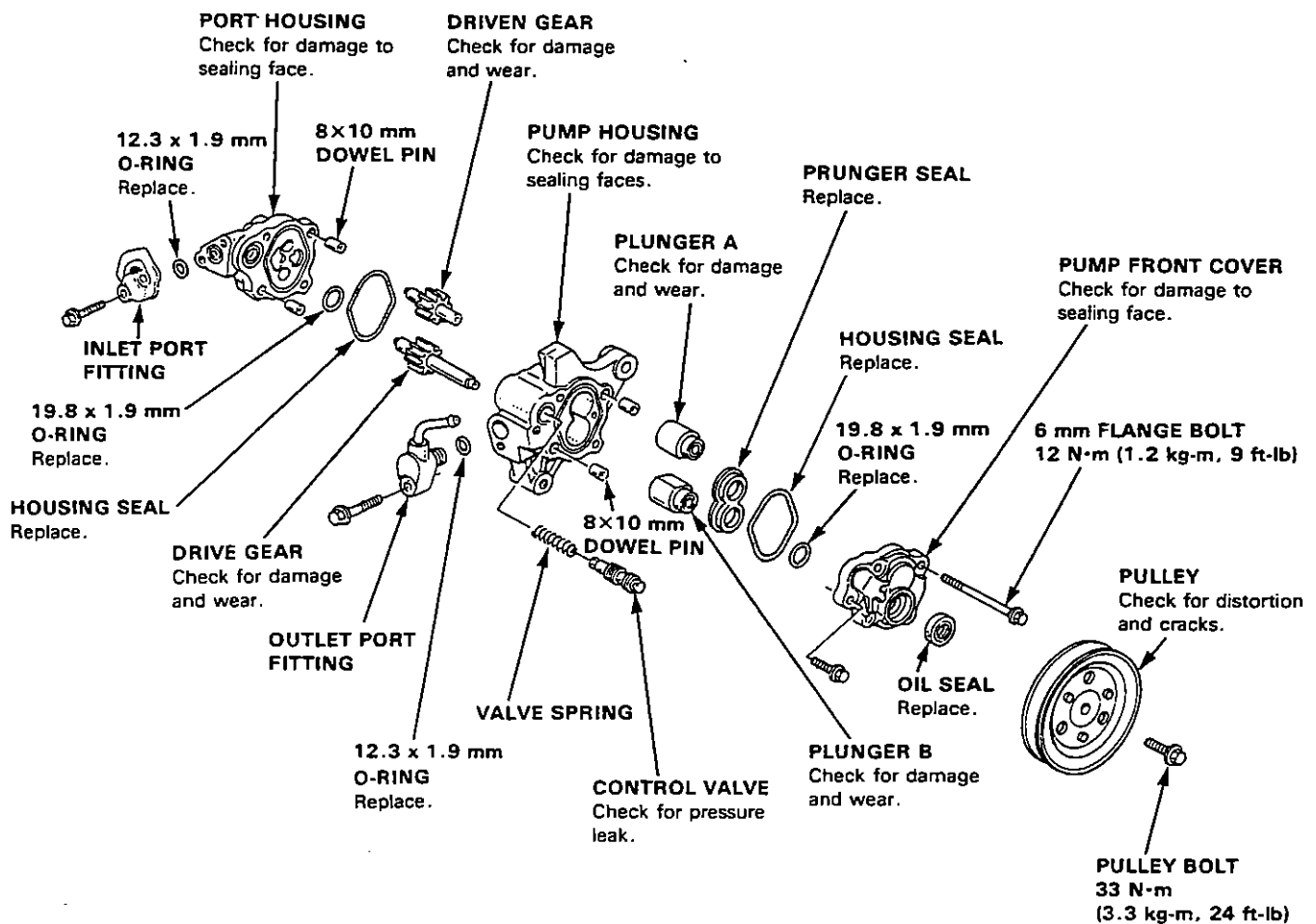
7. Install the ignition switch.

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.

11 N·m (1.1 kg-m, 8 lb-ft)

40 N·m (4.0 kg-m, 29 lb-ft)

8.8 x 1.9 mm
O-RING
Replace.

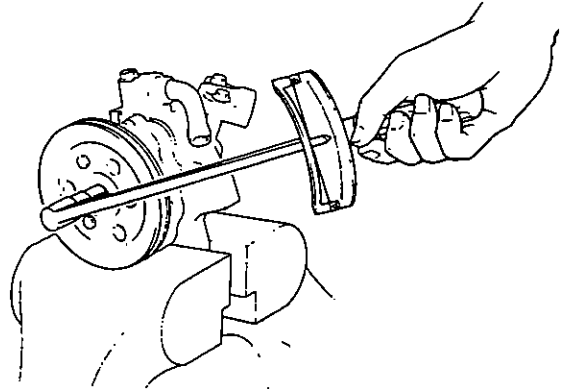
40 N·m (4.0 kg-m, 29 lb-ft)

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.

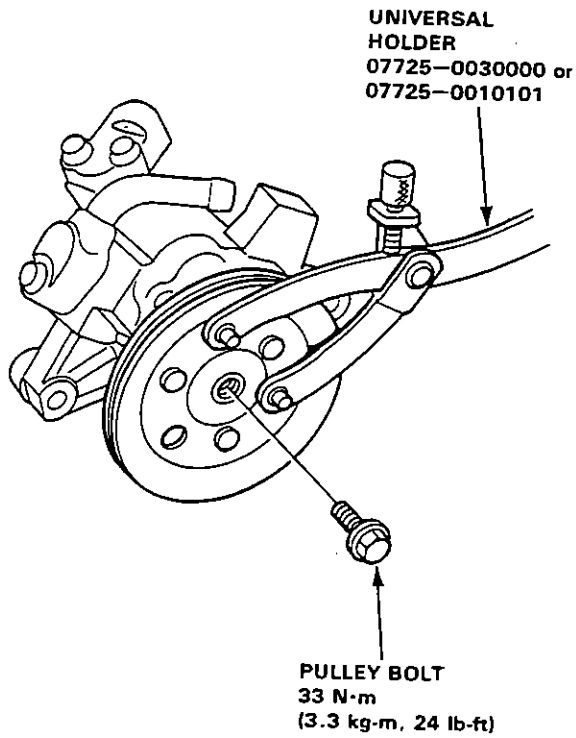


Steering Pump

Pulley Replacement

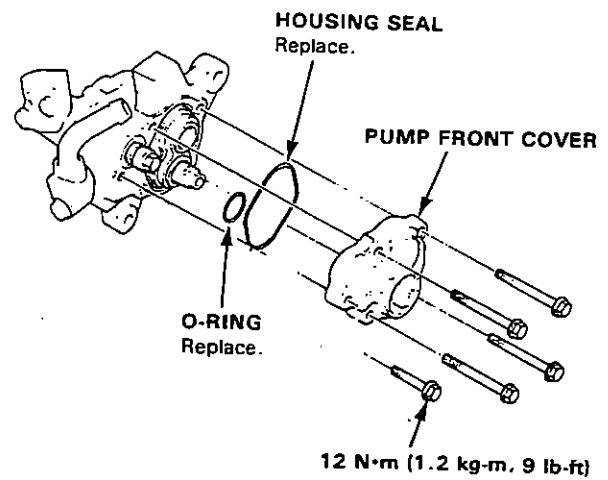
Remove the pulley bolt using the special tool, then remove the pulley.

NOTE: Pulley bolt has left hand threads.

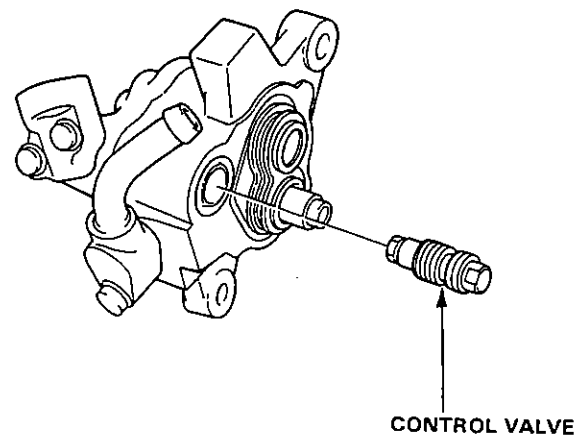


Control Valve Inspection and Replacement

1. Remove the five 6 mm bolts in the order shown, then separate the pump front cover, pump housing and port housing.

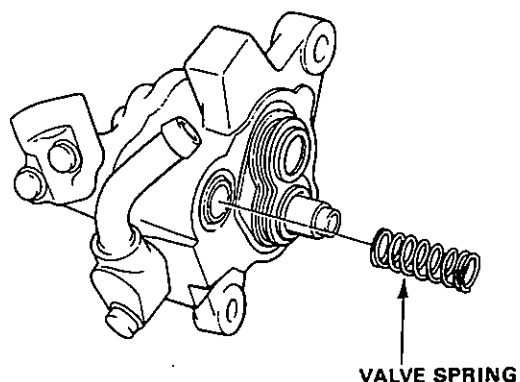


2. Remove the control valve from the pump housing.

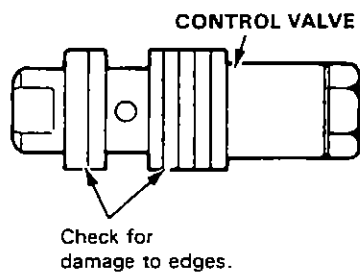




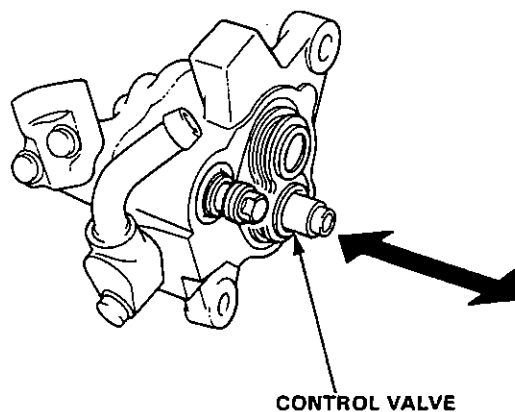
3. Remove the valve spring from the pump housing.



4. Check for wear, burrs, and other damage to the edges of the grooves in the valve.

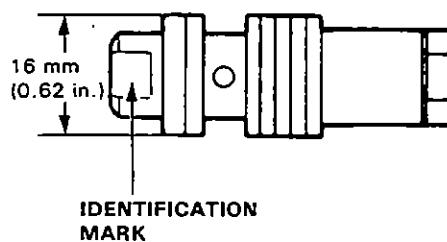


5. Slip the valve back in the pump and check that it moves in and out smoothly.



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)

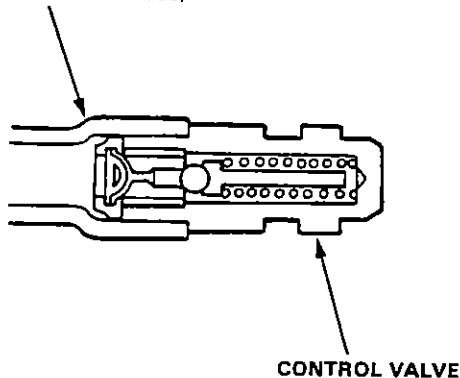
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Steering Pump

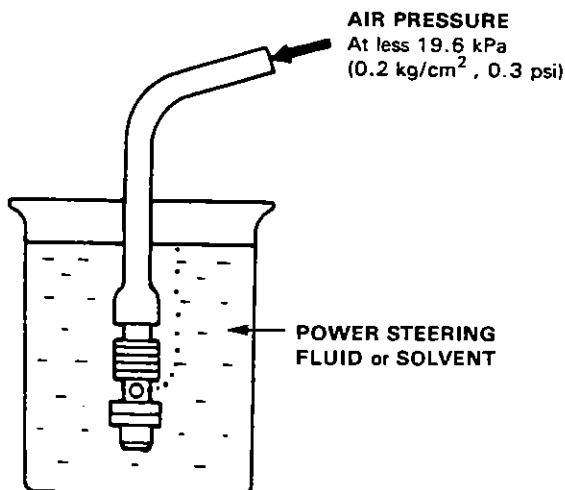
Control Valve Inspection and Replacement (cont'd)

6. Attach a hose to the end of the valve as shown.

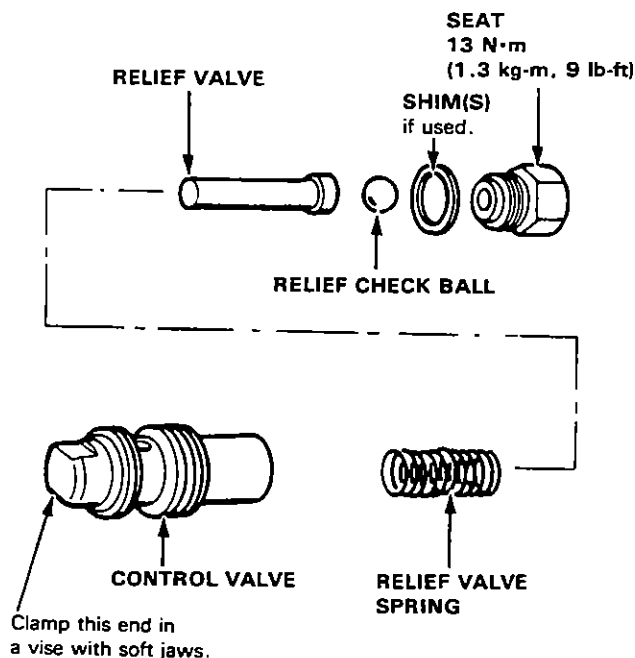
HOSE
9.5 mm ID (0.374 in)
(The power steering
return hose is recommended)



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.

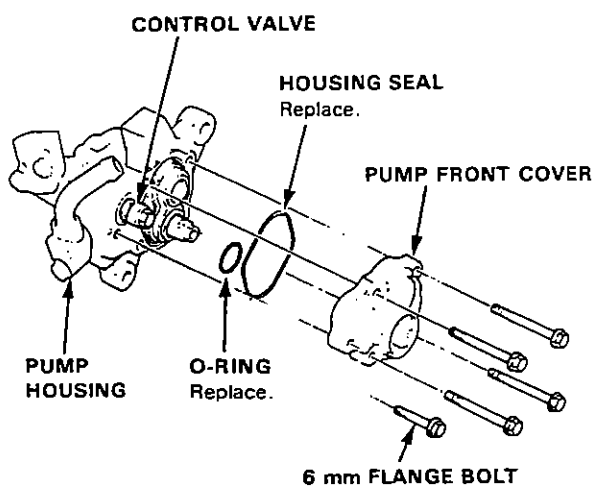
- Apply steering grease (Honda P/N 08740—99969) to new O-rings.
- Coat the control valve with power steering fluid then install it and its spring.



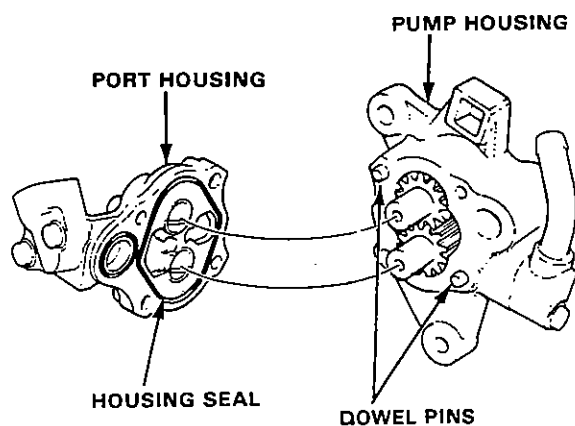
Housing Disassembly

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.

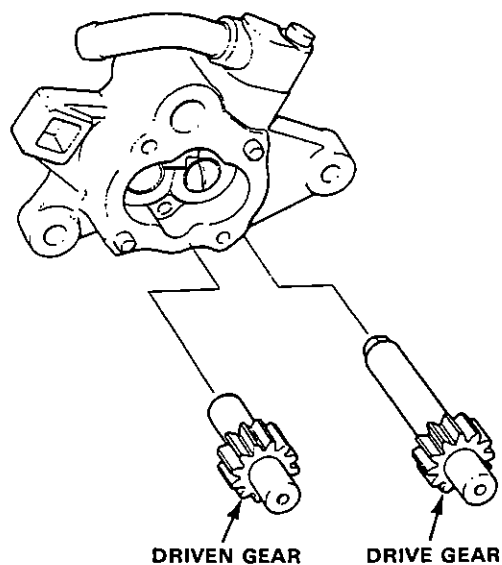


3. Remove the housing seal from the pump housing.
4. Remove the dowel pins, plunger seal, control valve O-ring from the pump housing.
5. Separate the port housing from the pump housing.



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.



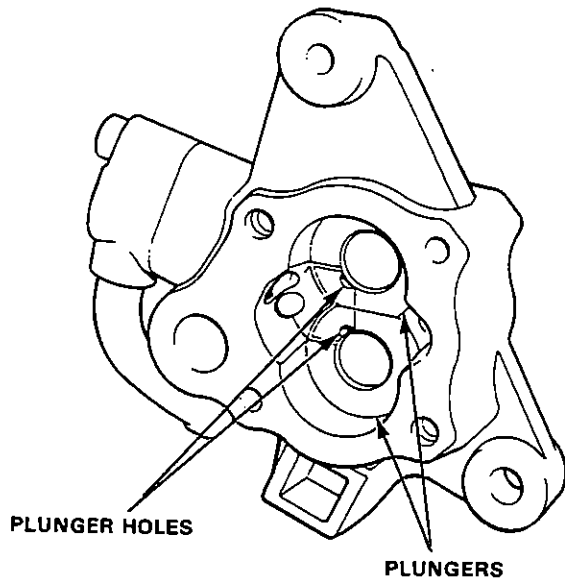
8. Remove the plungers from the pump housing.
9. Pry the oil seal out of the pump front cover.



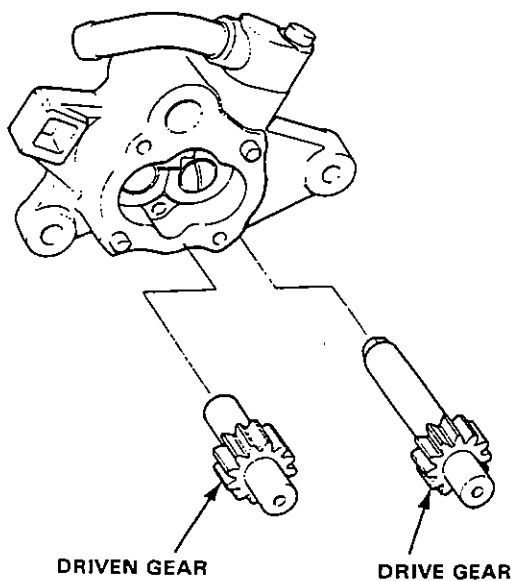
Steering Pump

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.



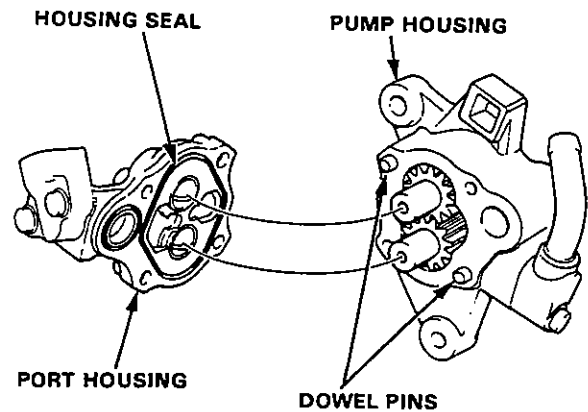
2. Coat the inside of the plungers with power steering fluid.
3. Install the pump drive and driven gears in the pump housing.



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.

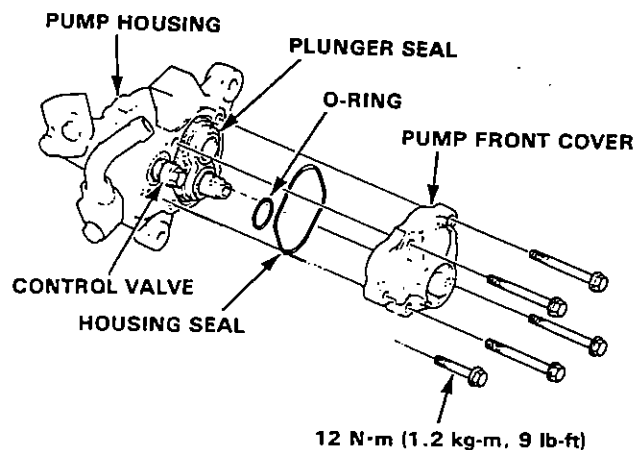
NOTE: Coat the new housing seal with grease.

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.

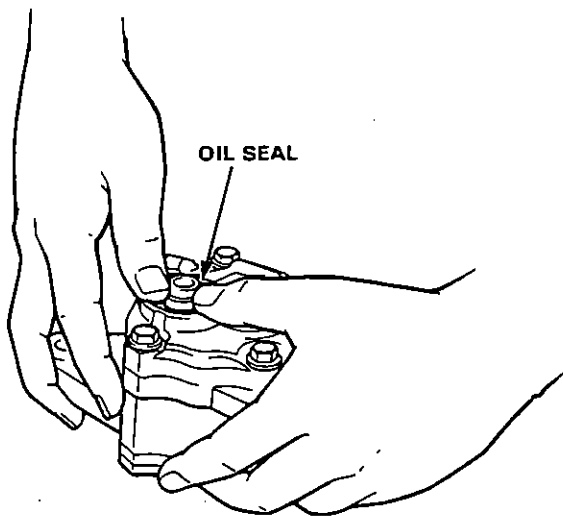
NOTE: Tighten the front cover bolts in the order shown.



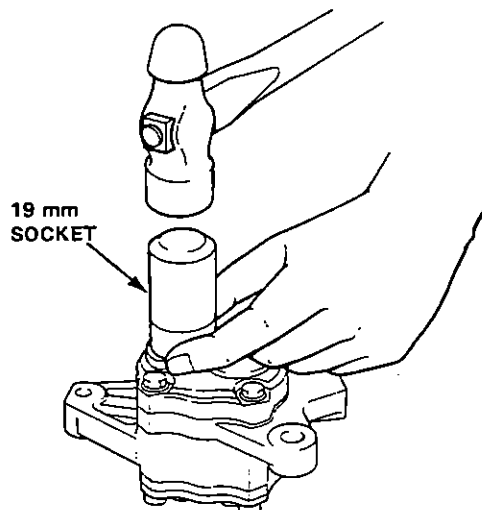


14. Loosely install the new oil seal in the pump front cover.

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.



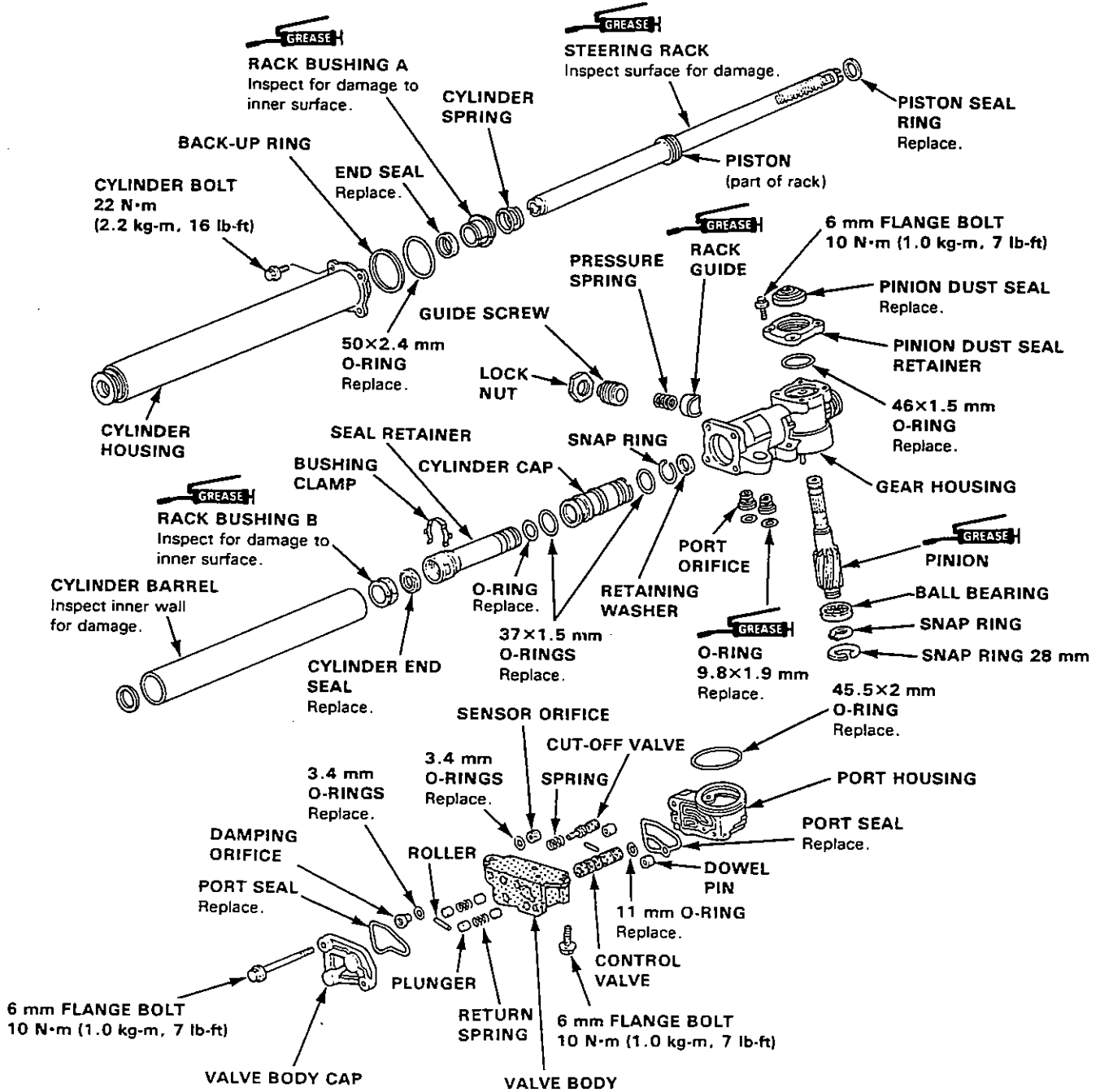
Steering Gearbox

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

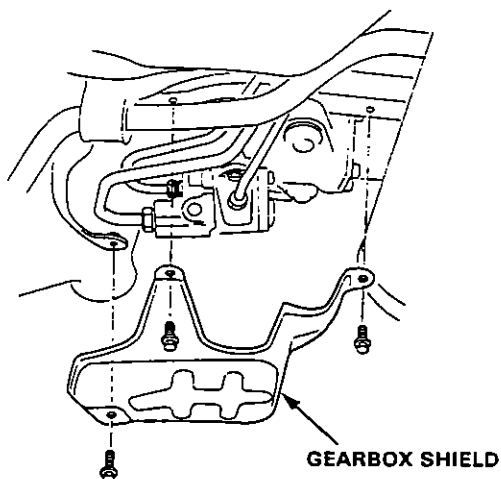




Valve Body Unit Overhaul

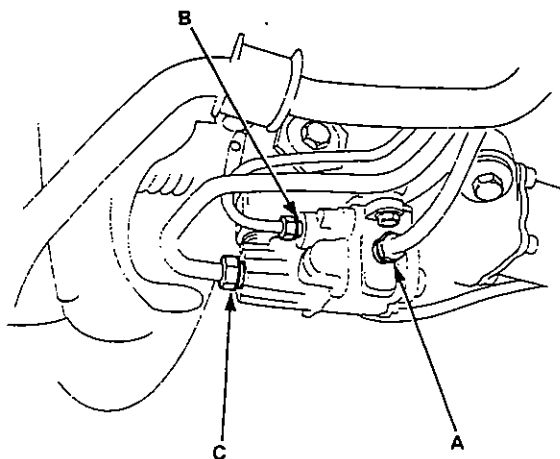
Removal:

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.



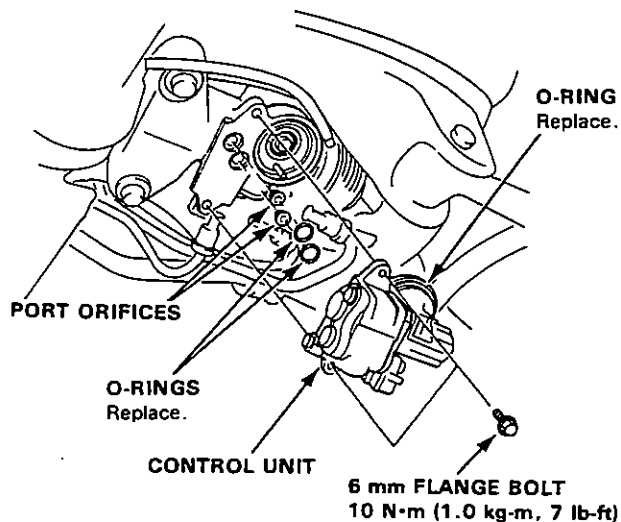
4. Using flare nut wrenches, disconnect the four lines from the control unit.

- 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)

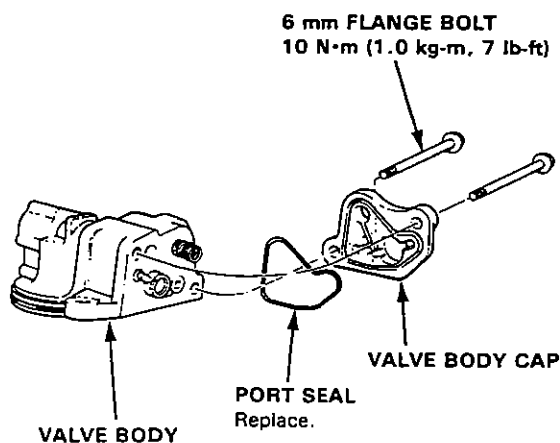


Disassembly:

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.

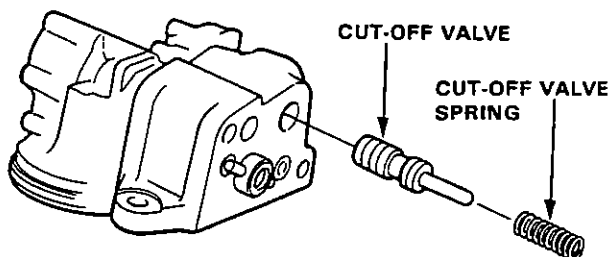


(cont'd)

Steering Gearbox

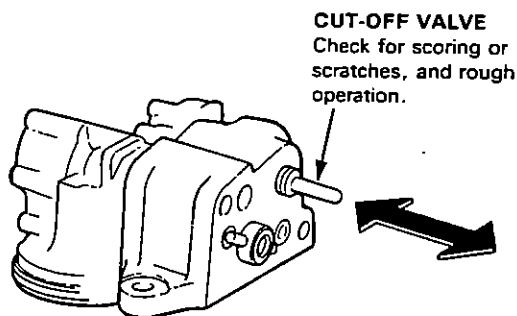
Valve Body Unit Overhaul (cont'd)

10. Remove the cut-off valve and spring from the valve body.



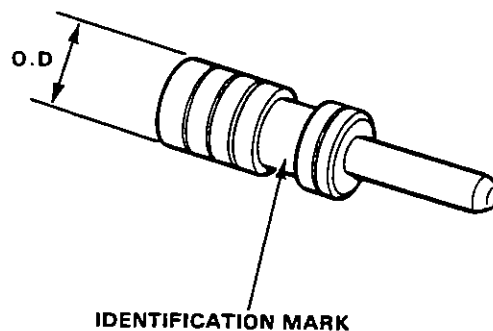
11. Check the cut-off valve:

- Inspect its surface for scoring or scratches.
- Slip it back into the valve body, and make sure it slides smoothly without drag and without side play.



NOTE:

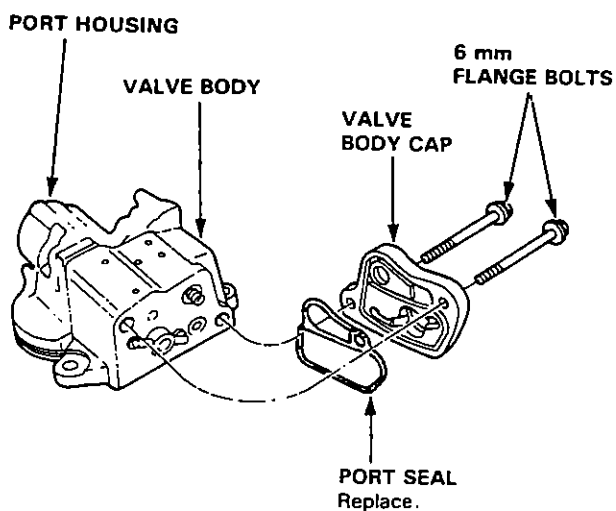
- The cut-off valve is sized to fit the valve body, so, if you replace it, make sure the new valve has the same identification mark on it.
- If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.



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.

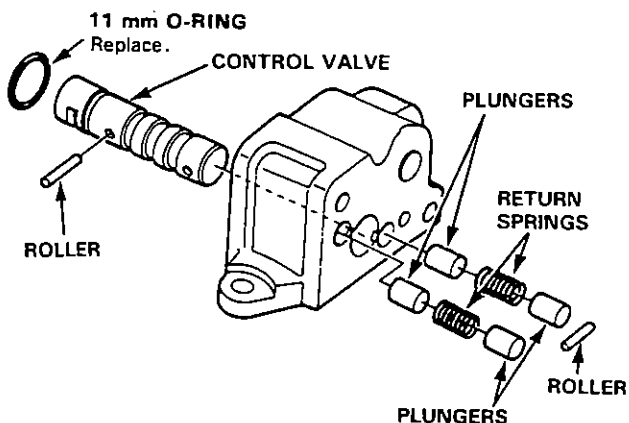
13. Remove the seal and dowel pins from the port housing.





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.



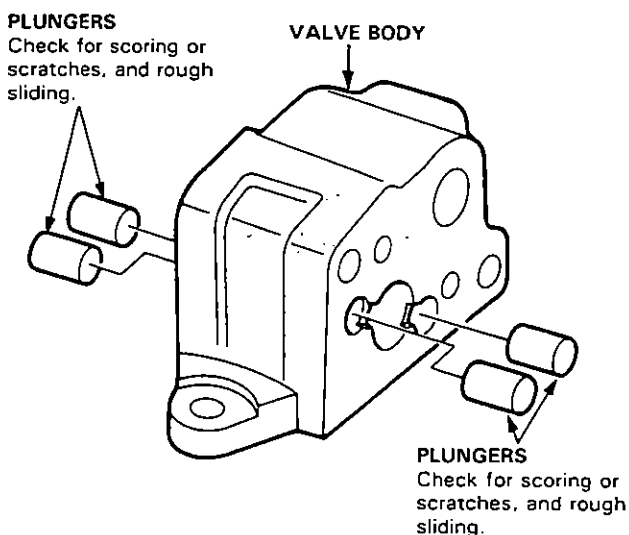
15. Remove the plungers, return springs and control valve from the valve body.

16. Remove the 11 mm O-ring from the control valve.

17. Check the plungers.

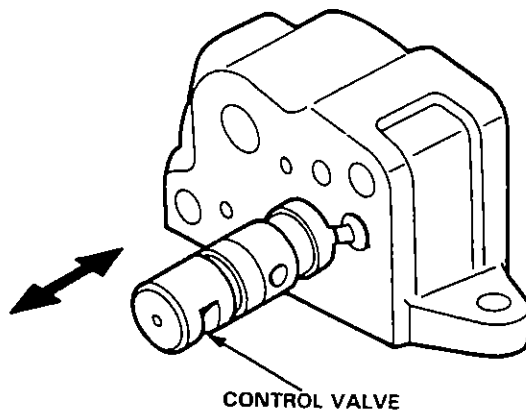
- Inspect their surface for scoring or scratches.
- Slip each plunger into the valve body, and make sure it slides smoothly, without drag or side play. If any plunger is damaged, replace it.

NOTE: If the valve body is damaged, replace all three parts (valve body, cut-off valve and control valve) as a set.



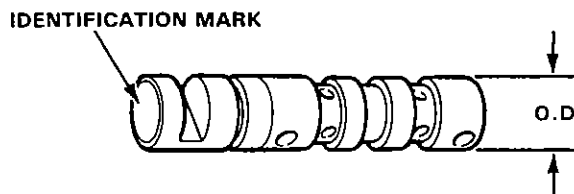
18. Check the control valve.

- Inspect its surface for scoring or scratches.
- Slip it into the valve body, and make sure it slides 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.



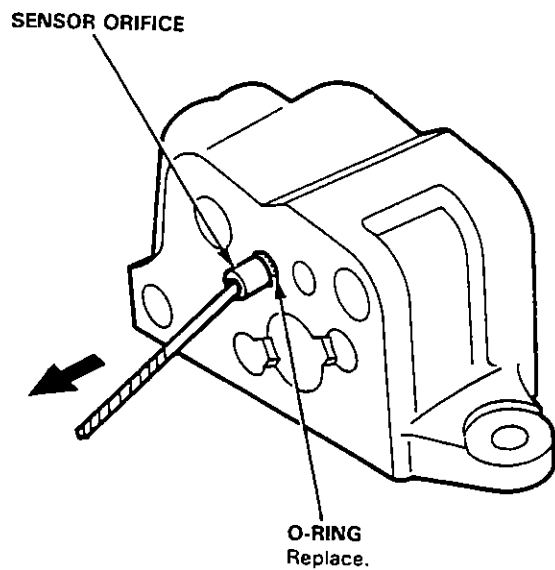
Identifica- tion mark	Outside diameter	Part number
X	13.998—14.003 mm (0.5511—0.5513 in)	53646—SH3—950
Y	13.993—13.998 mm (0.5509—0.5511 in)	53647—SH3—950
Z	13.988—13.993 mm (0.5507—0.5509 in)	53648—SH3—950

(cont'd)

Steering Gearbox

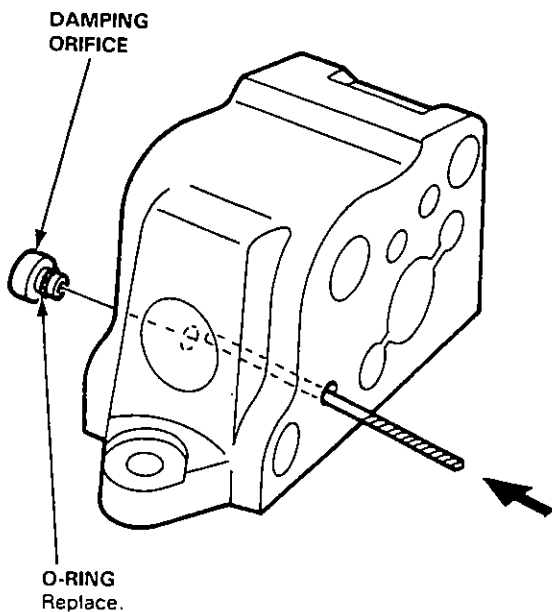
Valve Body Unit Overhaul (cont'd)

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

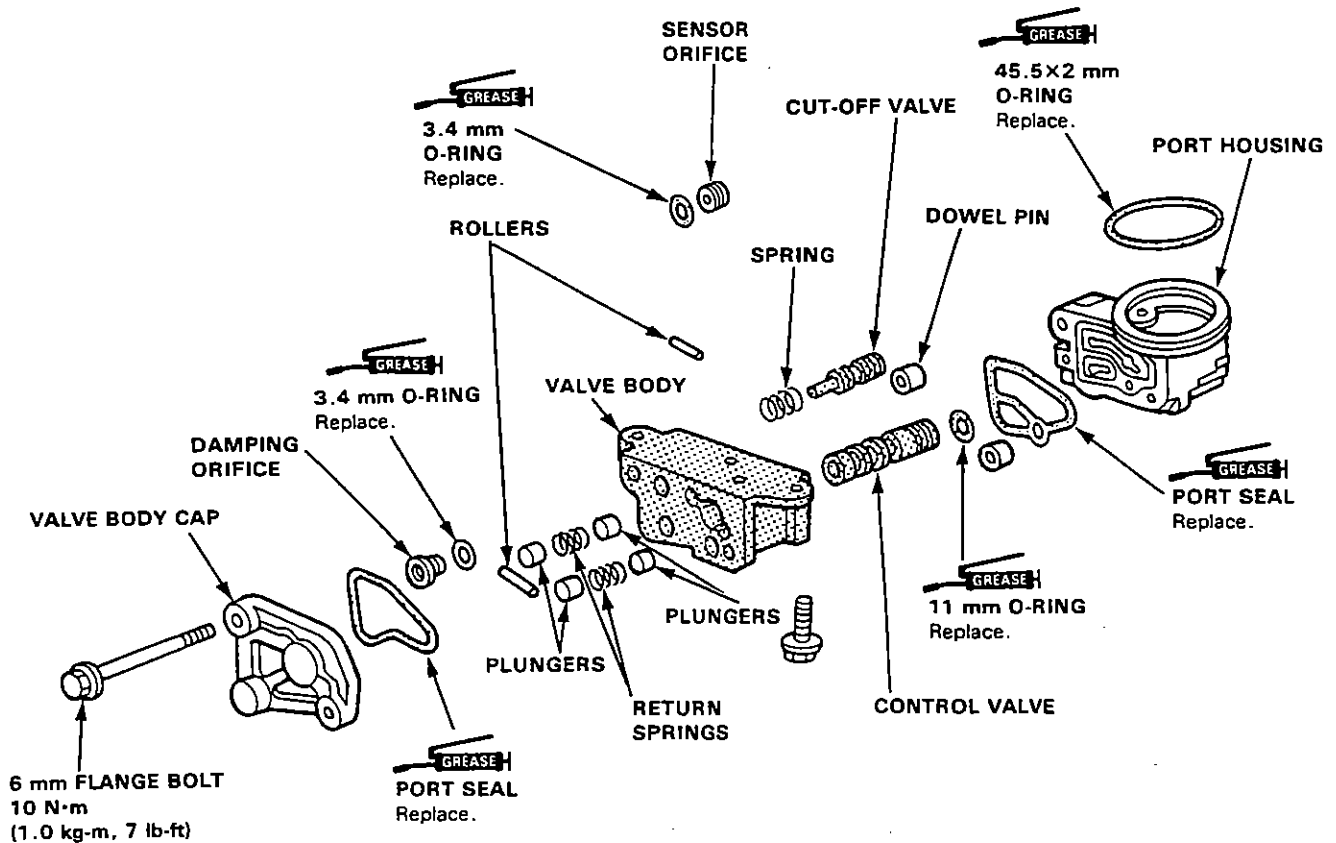
Assembly:

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.

-  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).

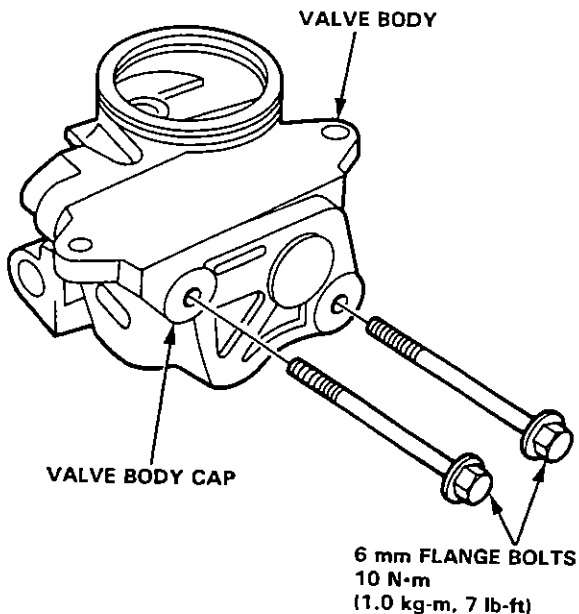
(cont'd)

Steering Gearbox

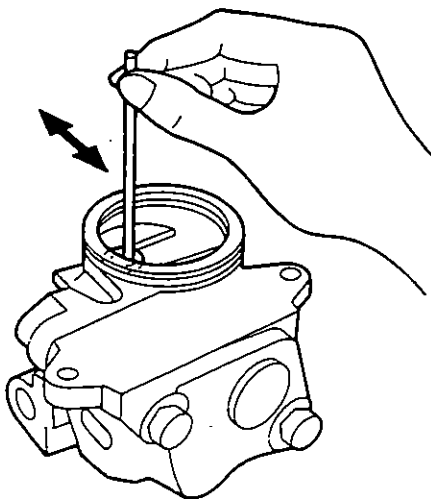
Valve Body Unit Overhaul (cont'd)

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.

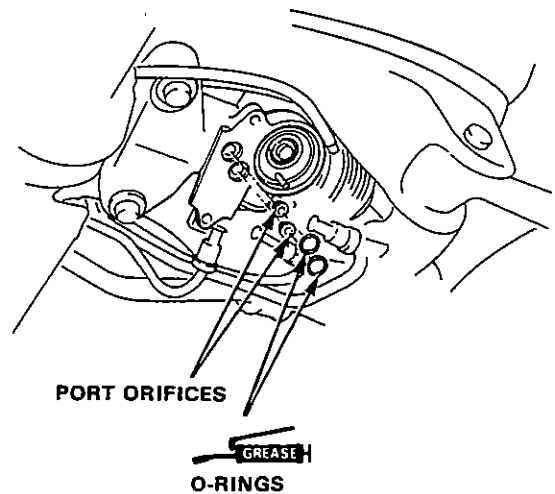


5. Make sure the control valve moves smoothly, and returns to neutral position.



Installation:

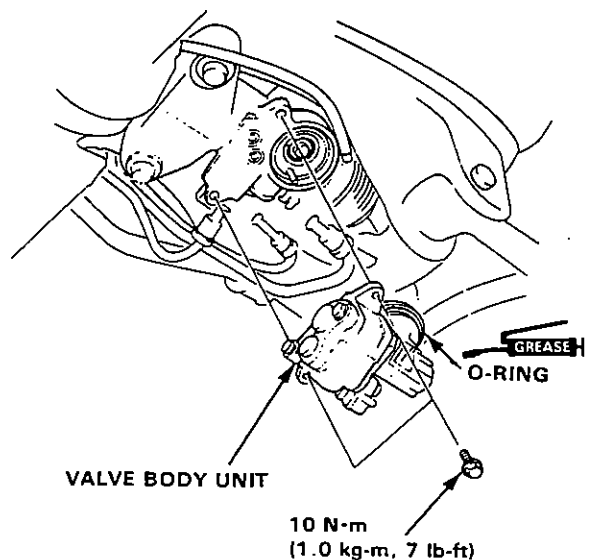
6. Coat the 9.8×1.9 mm O-rings with grease, and install them together with the orifices.



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:

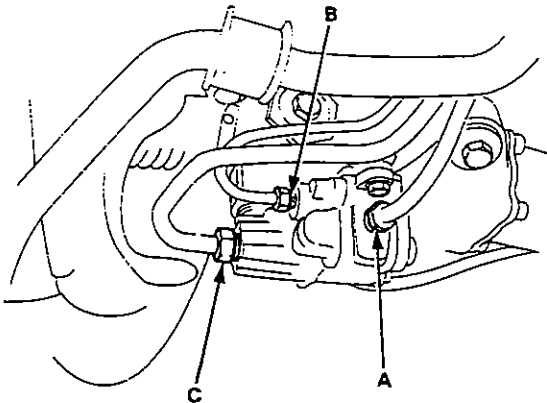
- When installing, be careful not to hit the pinion holder pin.
- Make sure the O-rings are in place and not pinched.



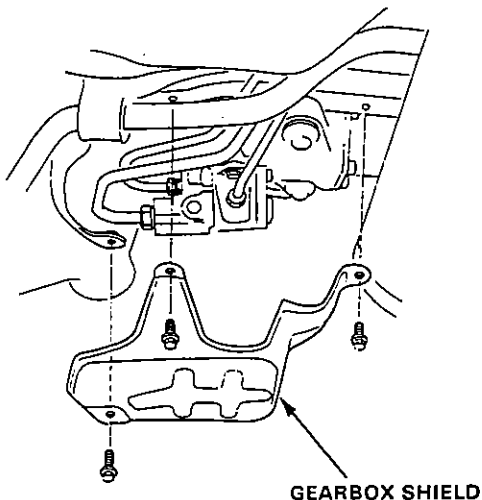


8. Connect the four lines to the control unit, using flare nut wrenches.

- 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)



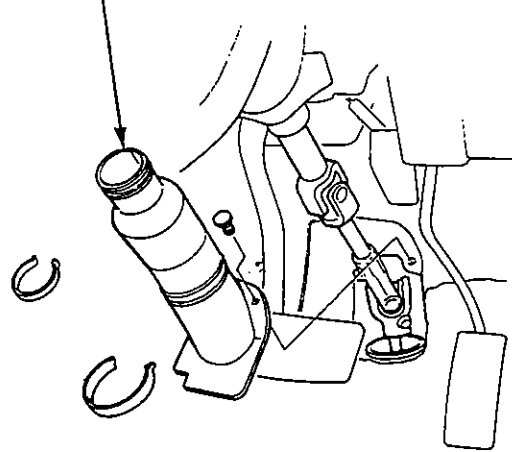
9. Fill the reservoir with power steering fluid and bleed air from the system by turning the steering wheel from lock to lock several times with the engine warm.
10. Make sure there are no fluid leaks, then install the shield.
11. Recheck the fluid level in the reservoir (page 11-27).



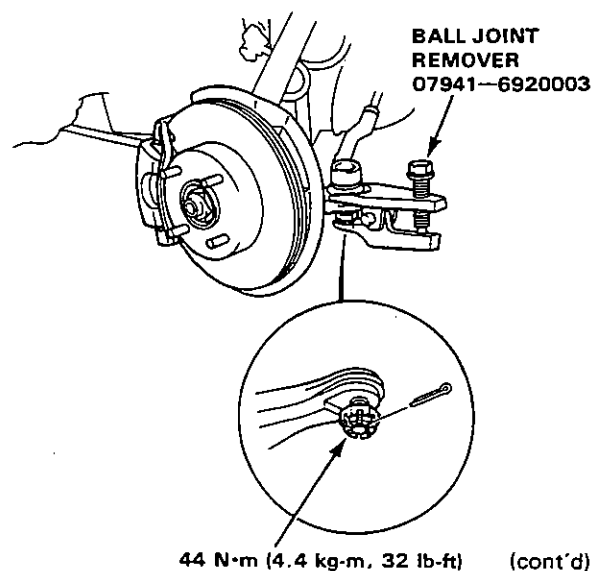
Steering Rack Removal

1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.

STEERING JOINT COVER



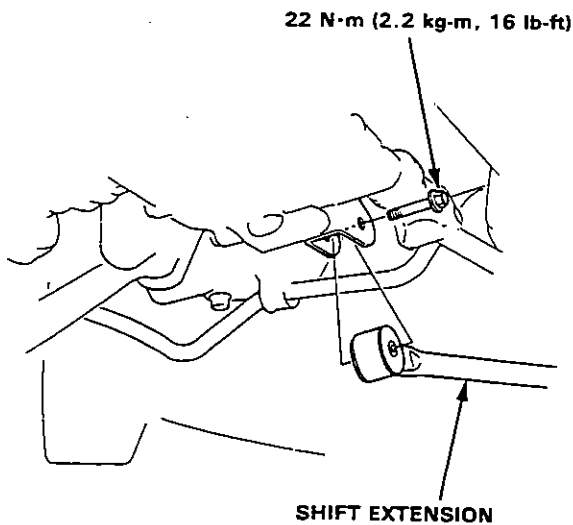
2. Drain the power steering fluid as described on page 11-27.
3. Remove the gearbox shield.
4. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.
5. Raise the front of car and support on safety stands in the proper locations.
6. Remove the front wheels.
7. Disconnect the tie rods from the steering knuckles using the special tool shown.



Steering Gearbox

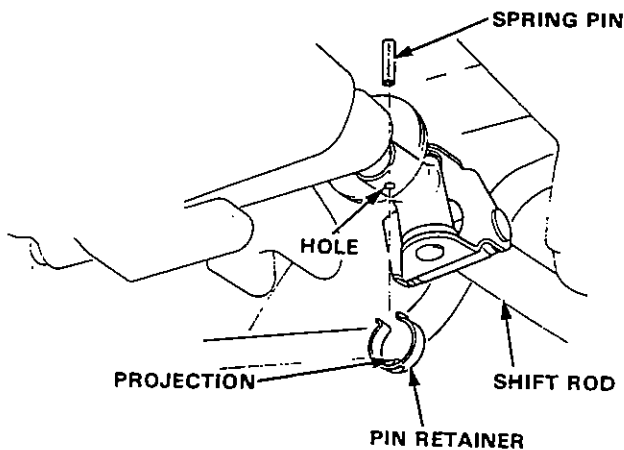
Steering Rack Removal (contd)

8. Remove the shift extension from the transmission case.



9. Slide the boot at the connecting position of the gear shift rod.
10. Drive out the spring pin with a punch, then disconnect the shift rod.

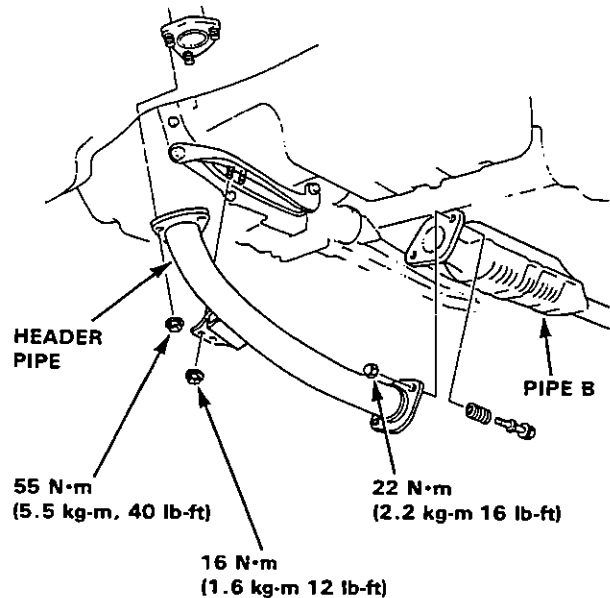
NOTE: On reassembly, install the pin retainer back into place after driving in the spring pin as shown.



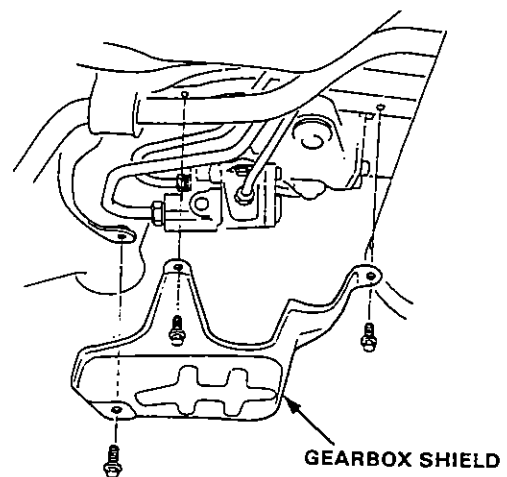
11. Remove the self-locking nuts connecting the exhaust header pipe to exhaust pipe B, then separate exhaust pipe B from the header pipe.

CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

12. Remove the header pipe.



13. Remove the gearbox shield.





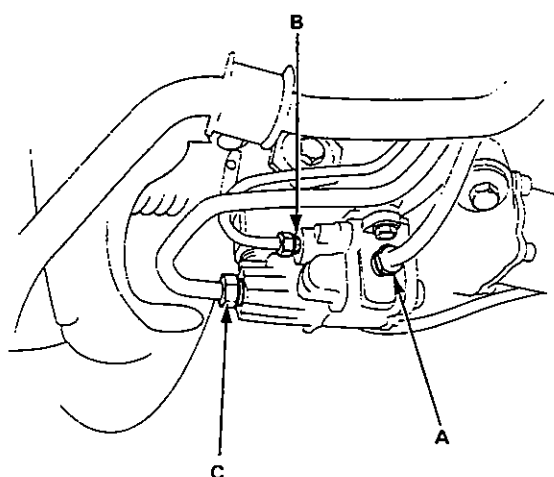
14. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.

15. Disconnect the three lines from the control unit.

A: From pump: 14 mm wrench
38 N·m (3.8 kg-m, 28 lb-ft)

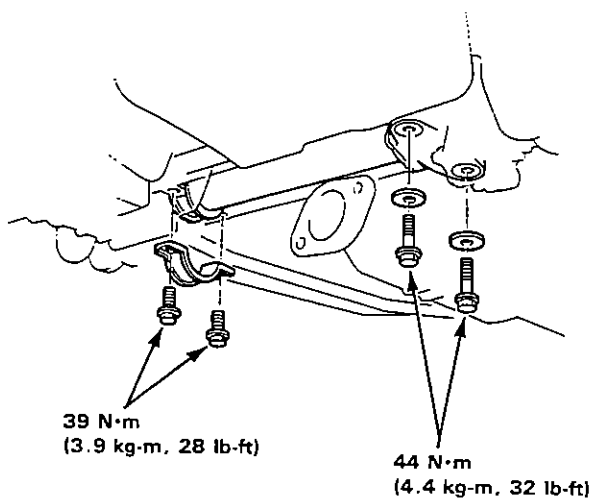
B: To reservoir: 12 mm wrench
13 N·m (1.3 kg-m, 9 lb-ft)

C: To oil Cooler: 17 mm wrench
29 N·m (2.9 kg-m, 20 lb-ft)

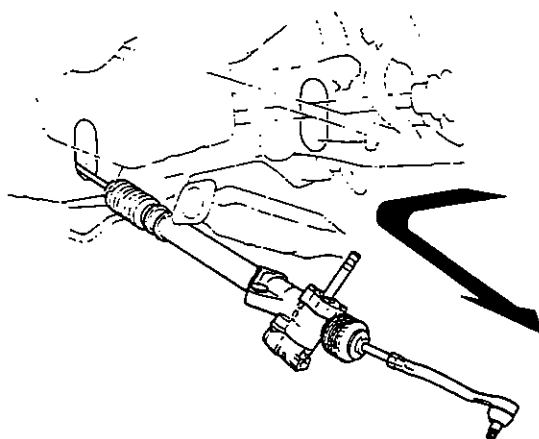


16. Slide the tie rod all the way to the right side.

17. Remove the steering gearbox mounting bolts.



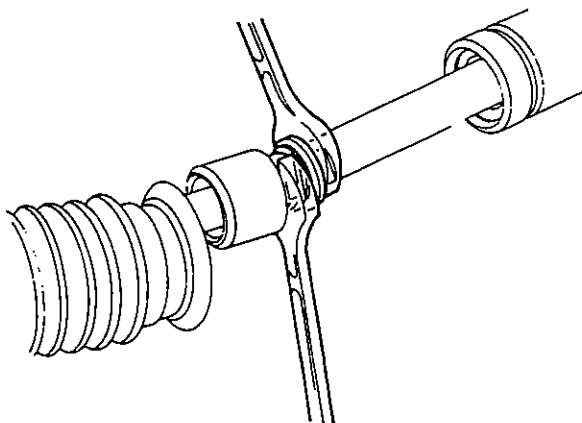
18. Slide the gearbox right so that the left tie rod clears the bottom of the rear beam, then remove the gearbox.



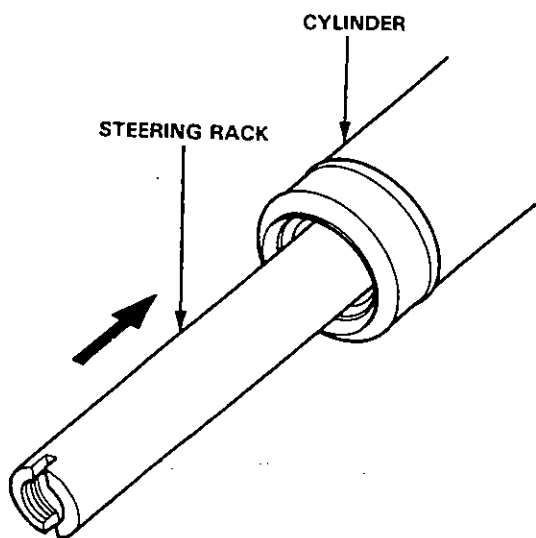
Steering Gearbox

Overhaul

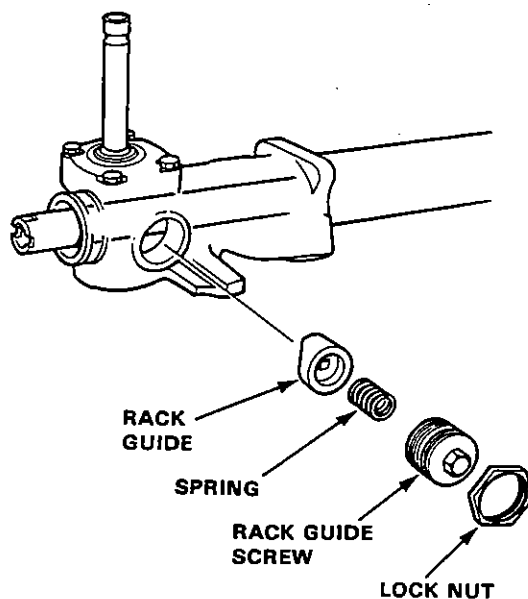
1. Remove the control unit as described on page 11-47.
2. Carefully clamp the gearbox in a vise with soft jaws.
3. Loosen the bands, pull the boots away from the ends of the gearbox, and unbend the tie-rod lock washers. Hold the rack with a 22 mm wrench, and unscrew the tie-rods with a 17 mm wrench.



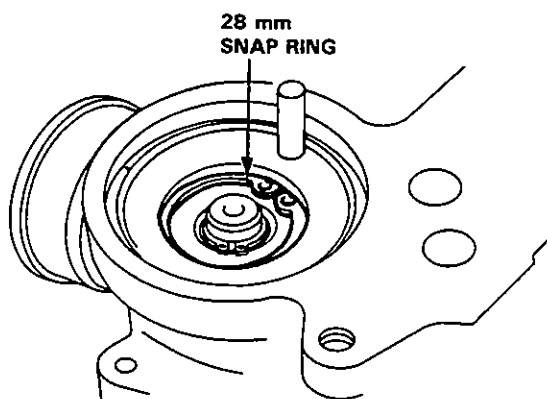
4. Push the right end of the rack back into the cylinder housing so the smooth surface that rides against the seal won't be damaged.



5. Loosen the rack screw lock nut, and remove the rack guide screw.

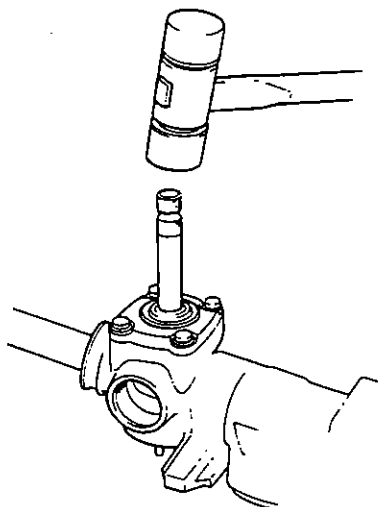


6. Remove the 28 mm snap ring from the bottom of the gear housing.



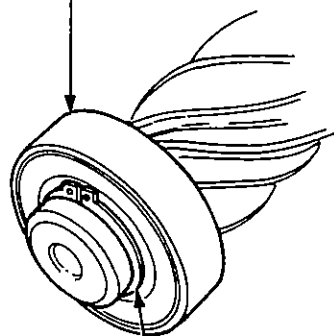


7. Remove the pinion from the gear housing by tapping it lightly.



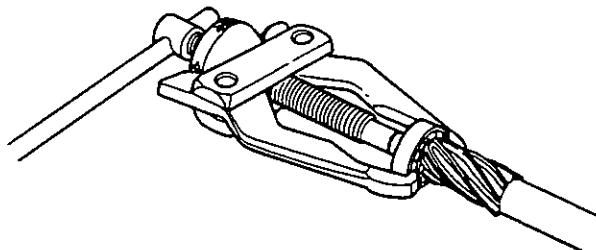
8. Check the pinion lower ball bearing for play.

PINION LOWER
BALL BEARING



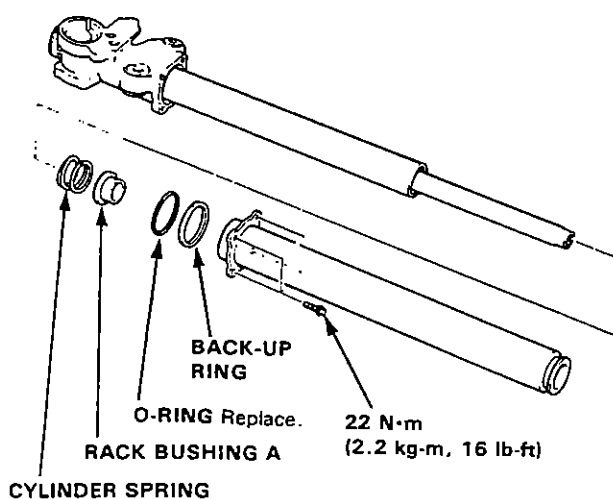
12 mm SNAP RING

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)

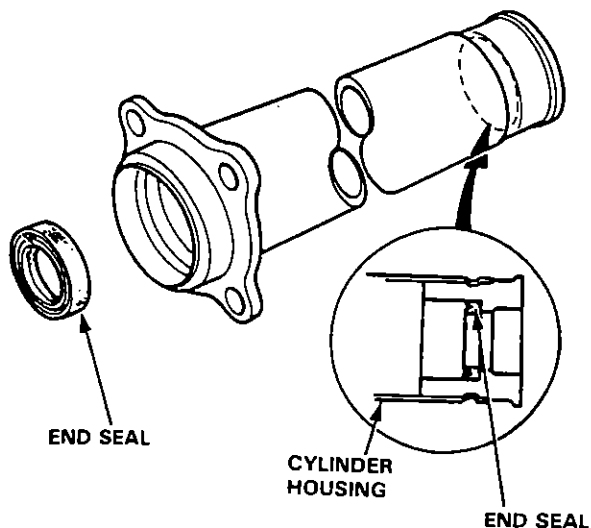
Steering Gearbox

Overhaul(cont'd)

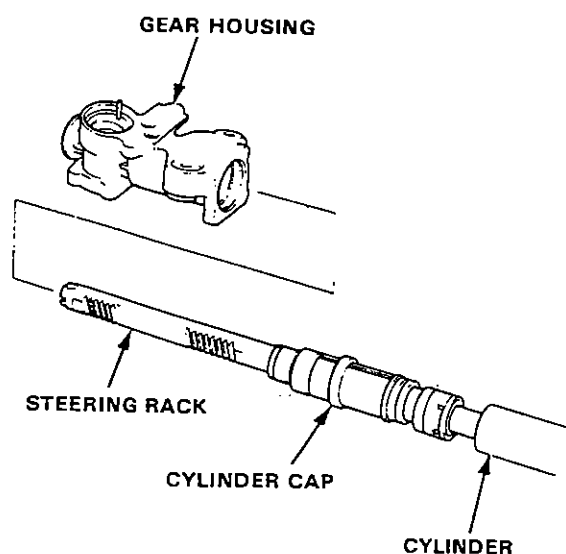
12. Remove the O-ring, back-up ring, steering rack bushing A and cylinder spring.

13. Remove the cylinder end seal from the cylinder housing.

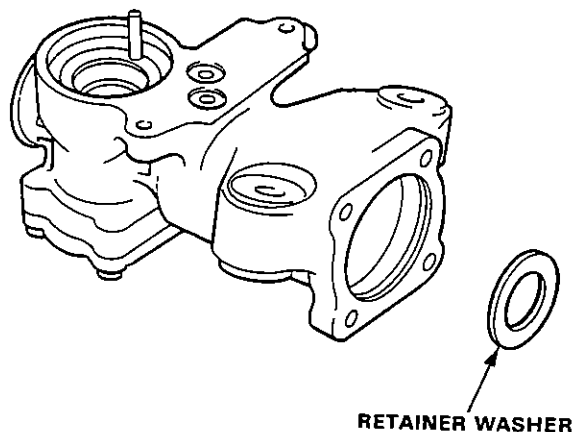
14. Use your fingers or a wooden stick to avoid damaging the housing.



15. Remove the cylinder, cylinder seal retainer, cylinder cap and steering rack from the gear housing.

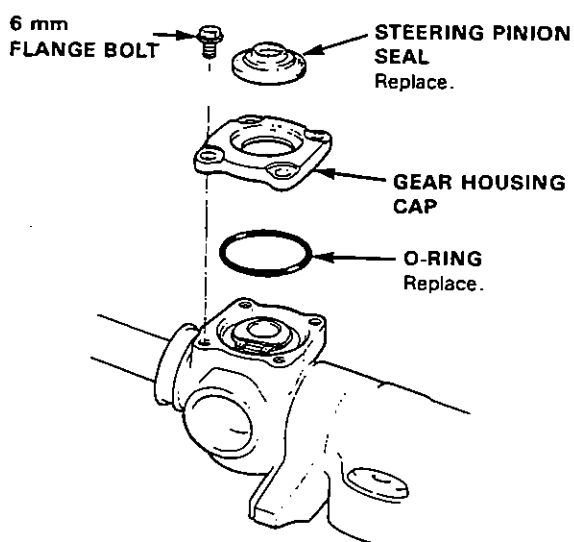


16. Remove the retainer washer from the gear housing.



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.



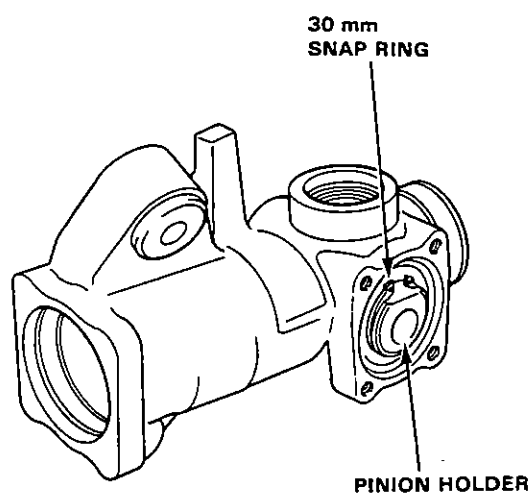
19. Remove the O-ring from the gear housing.



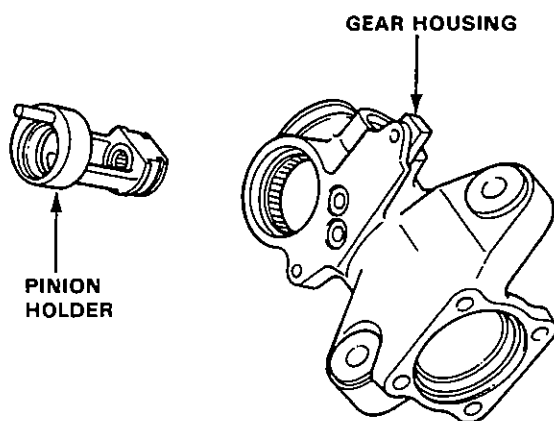
20. Check the upper bearing for free movement and excessive play; if it is good and the grease in it is clean, go on step 20.

If it is damaged, or if dirt has gone past the seal into the grease, replace the bearing.

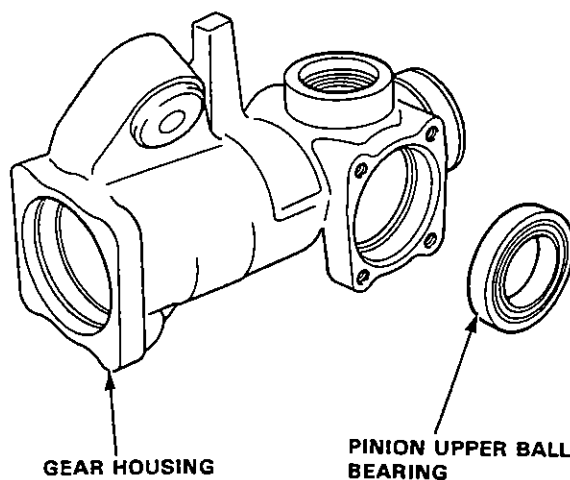
- Remove the 30 mm snap ring from the pinion holder.



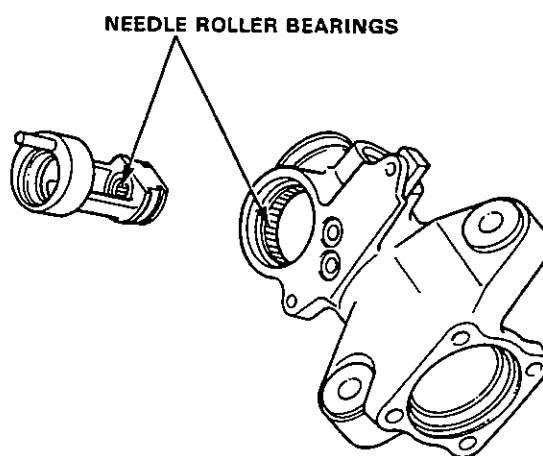
- Remove the pinion holder from the gear housing.



- 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.

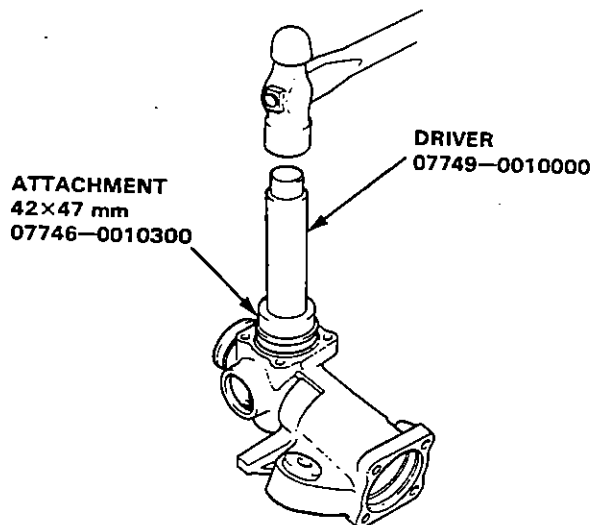


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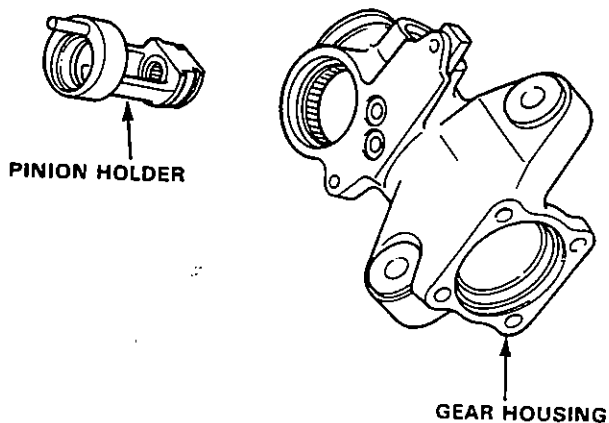
Steering Gearbox

Overhaul (cont'd)

- Pack a new upper bearing with grease, then drive the bearing into the gear housing with its sealed side facing out.

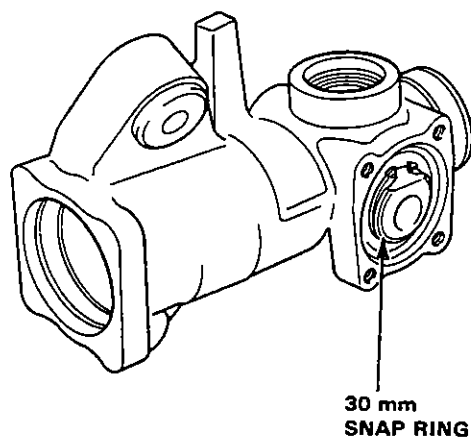


- Install the pinion holder in the gear housing.

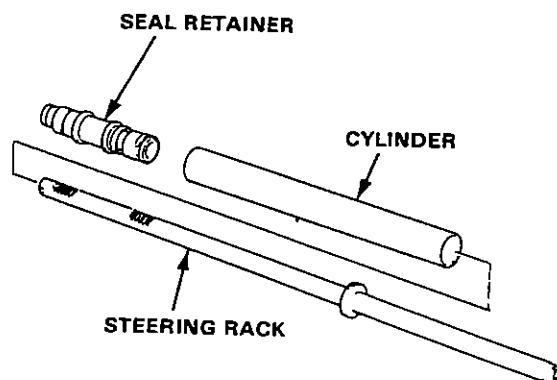


- Reinstall the 30 mm snap ring with its tapered side facing out.

NOTE: Snap ring ends must be aligned with the flat area.



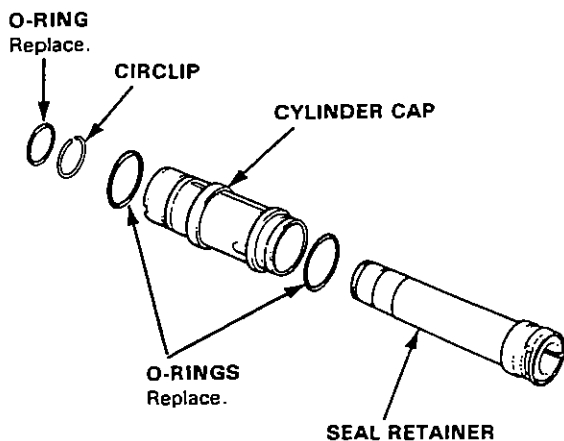
21. Remove the cylinder and seal retainer from the steering rack.





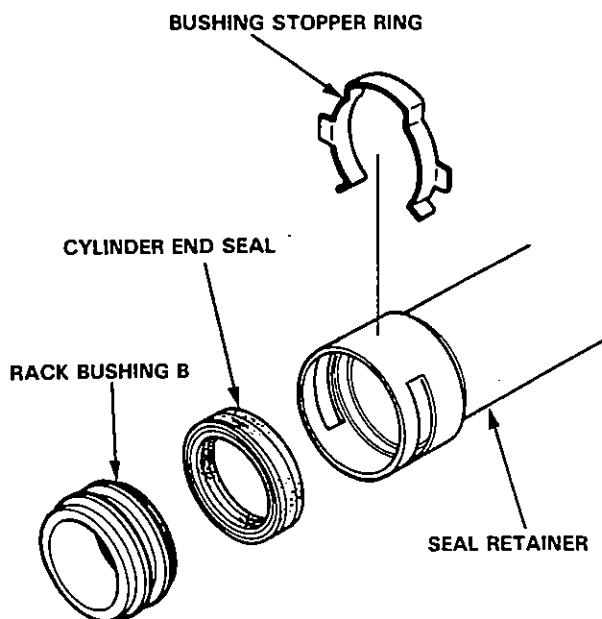
22. Remove the O-rings and circlip from the seal retainer, then remove the cylinder cap from the seal retainer.

23. Remove the O-rings from the cylinder cap.

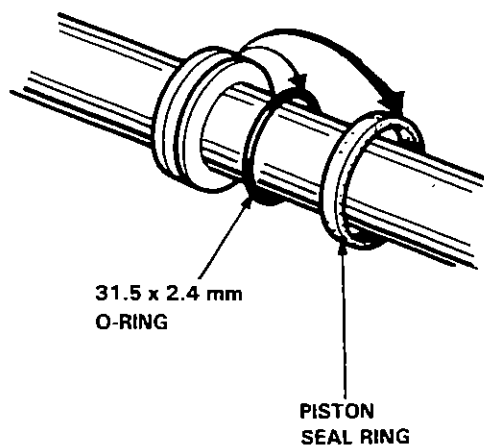


24. Remove the bushing stopper ring from the seal retainer.

25. Remove the cylinder end seal.

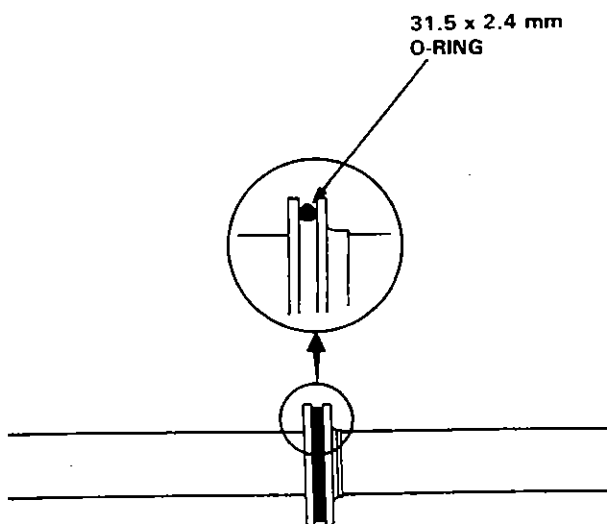


26. Carefully pry the piston seal ring and O-ring off the rack.



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.

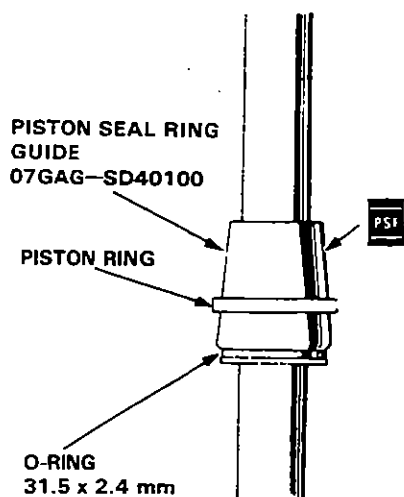


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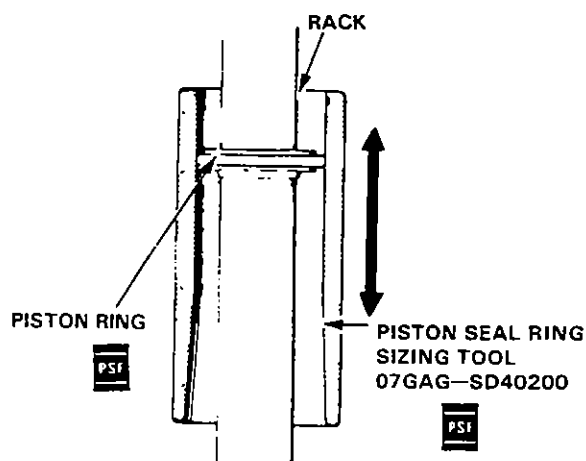
Steering Gearbox

Overhaul (cont'd)

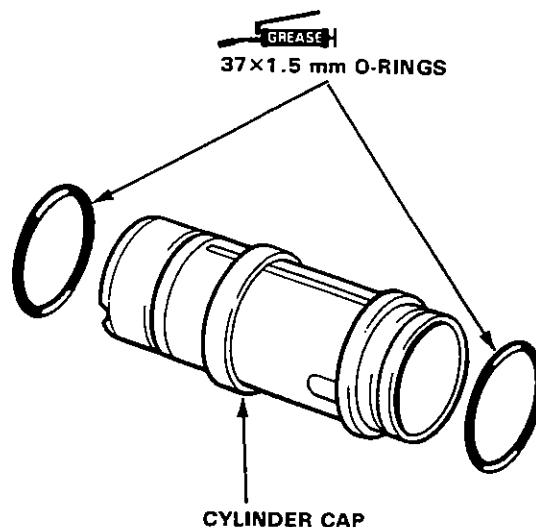
28. Coat the pinion seal ring guide with power steering fluid, and slide it onto the rack, big end first.
29. Position the new piston seal ring on the special tool, slide it down to to big end of the tool, and then pull it off into the piston groove on top of the O-ring.



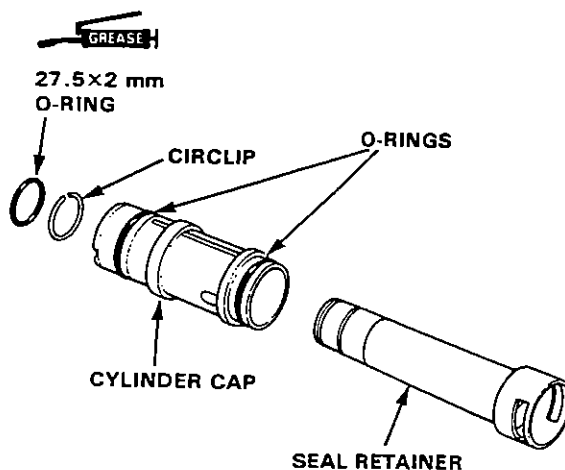
30. Coat the piston seal ring and inside of the special tool with power steering fluid. Carefully slide the tool onto the rack and over the piston ring, then rotate the tool as you move it up and down to seat the piston ring.



31. Coat new O-rings with grease and install them on the cylinder cap.

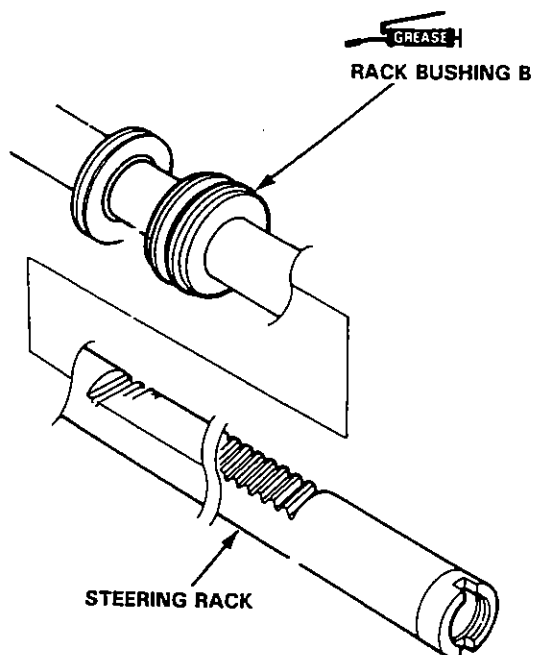


32. Slide the cylinder cap onto the seal retainer.
33. Install the circlip and O-ring on the seal retainer.



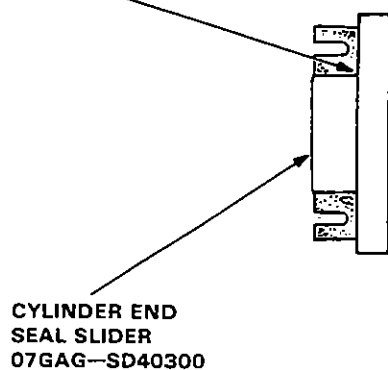


34. Grease the sliding surface of the steering rack bushing B, and install the bushing on the steering rack with the groove of the bushing facing the steering rack piston.



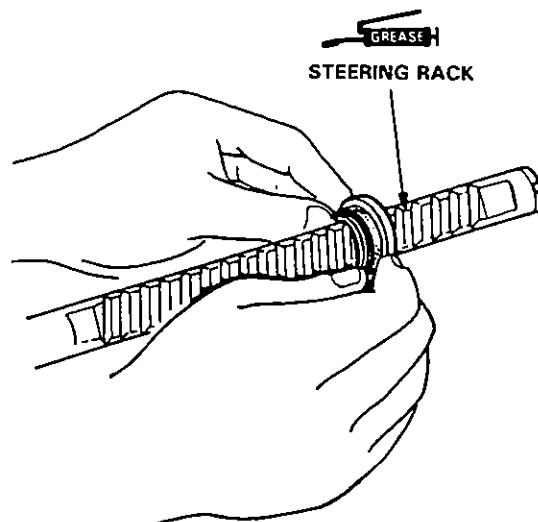
35. Grease the sliding surfaces of the new cylinder end seal and the special tool, then place the seal on the special tool with its grooved side facing opposite the slider.

Install end seal with its grooved side facing opposite seal slider.

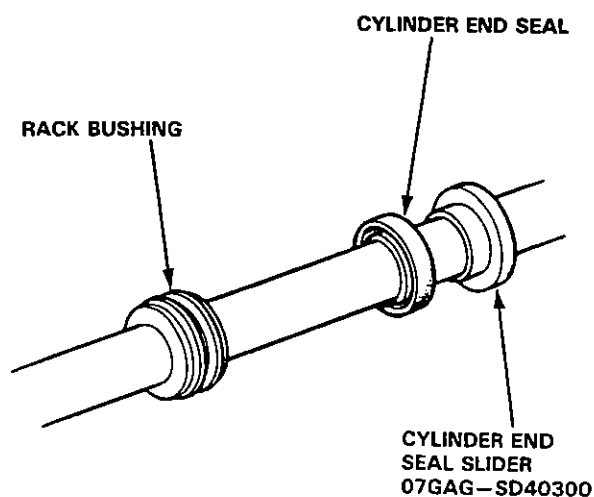


36. Grease the steering rack, and install the special tool.

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.

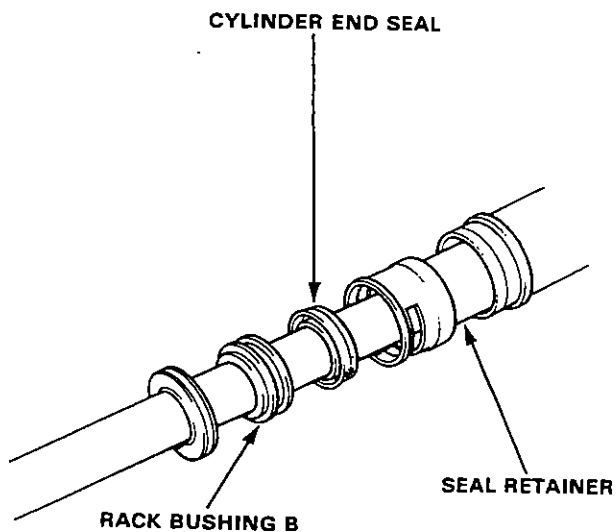


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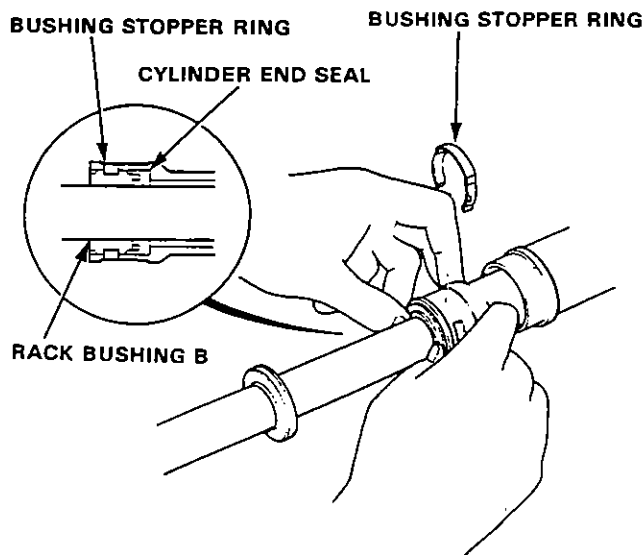
Steering Gearbox

Overhaul(cont'd)

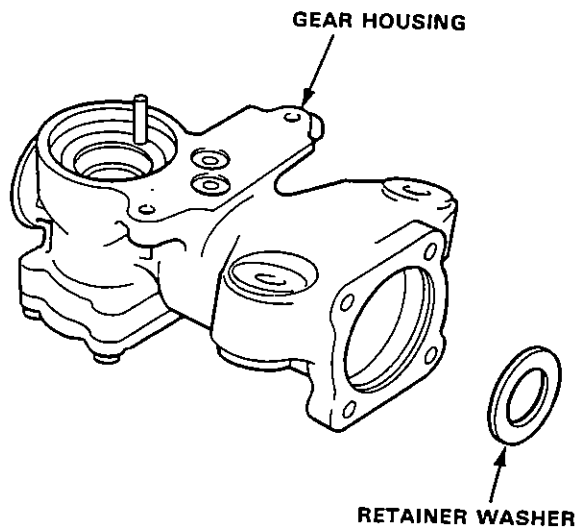
38. Fit the seal retainer on the steering rack.



39. Push the rack bushing B toward the seal retainer by hand until the cylinder end seal is seated in the retainer. Fit the seal stopper ring in the groove of the seal retainer securely.

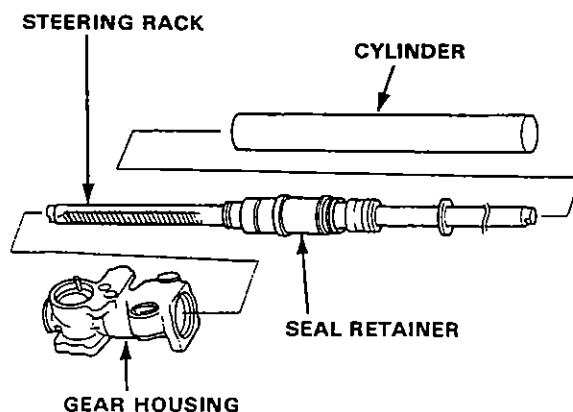


40. Install the retainer washer on the gear housing.



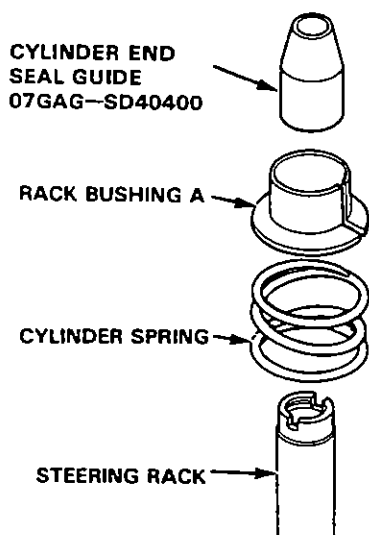
41. Place the gear housing on the work bench and insert the seal retainer and steering rack into the gear housing.

42. Coat the inside surface of the cylinder with power steering fluid, slide it over the rack and into the gear housing; press it into to housing until it seats.

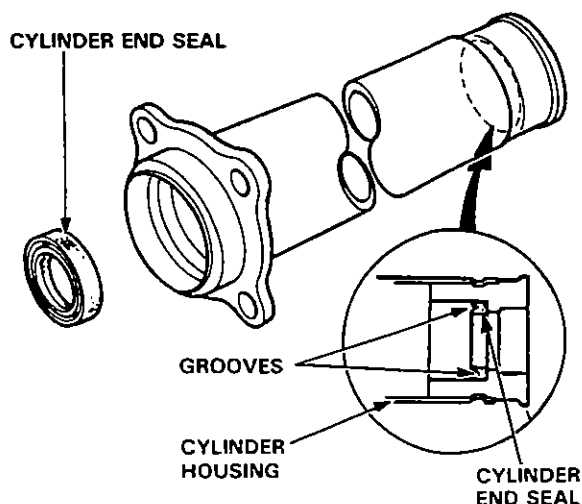




43. Install the cylinder spring over the rack, then coat the rack bushing A with power steering fluid and install it on the spring.
44. Grease the special tool and slip it onto the end of the steering rack.



45. Coat the inside surface of the cylinder with power steering fluid and install the cylinder end seal with its grooved side facing out.

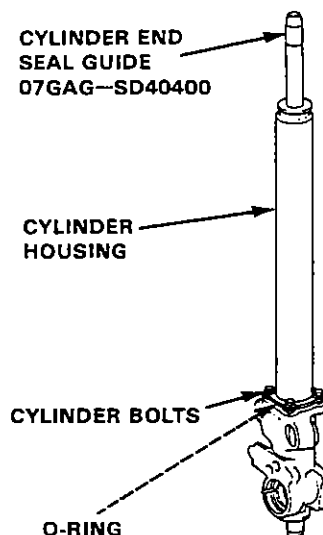


46. Install the O-ring and back-up ring on the gear housing.

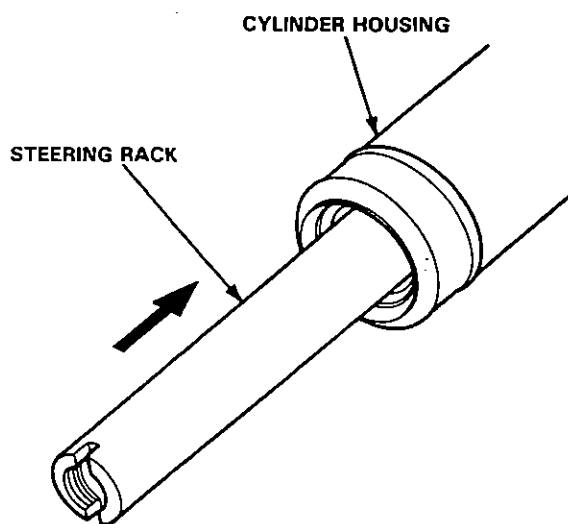
47. Carefully position the cylinder on the gear housing and loosely install with four bolts.

CAUTION: Be careful not to damage the end seal in the cylinder housing.

48. Remove the special tool from the steering rack.



49. Insert the steering rack into the cylinder housing, being careful not to damage the steering rack sliding surface.



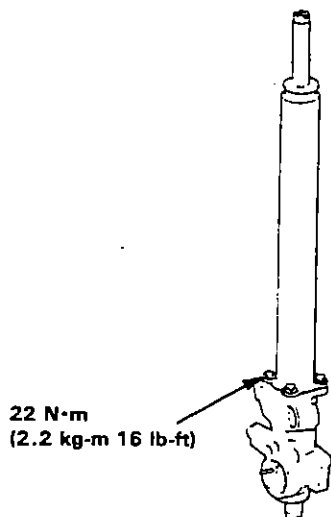
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Steering Gearbox

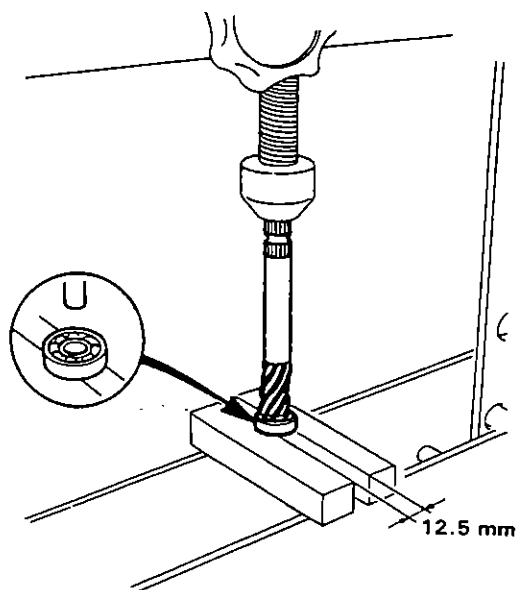
Overhaul (cont'd)

50. Tighten the cylinder housing to the gear housing.

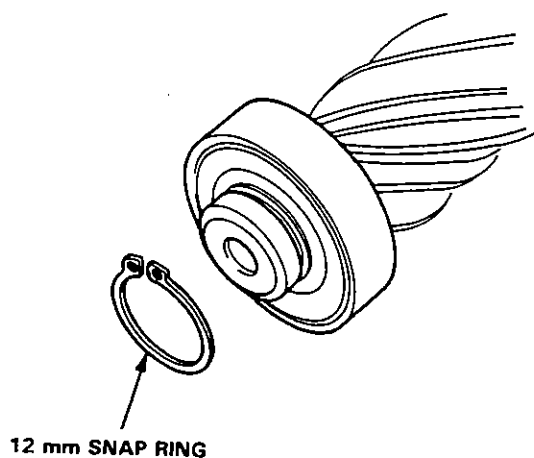
NOTE: Before tightening the bolts, make sure the mating surfaces of the cylinder and gear housings fit properly by pushing them together; hold them together while tightening the bolts.



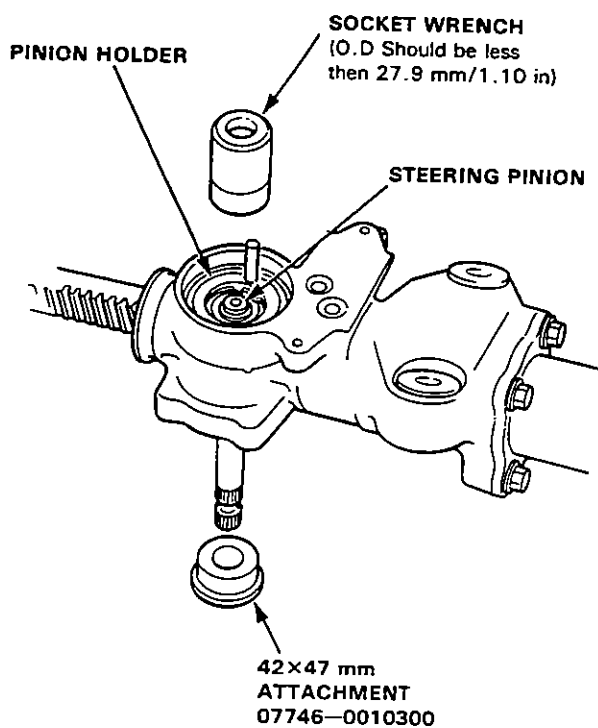
51. Press the lower ball bearing onto the pinion with its shielded side facing down.



52. Install the 12 mm snap ring on the steering pinion, apply grease to the lower ball bearing and check for smooth operation.

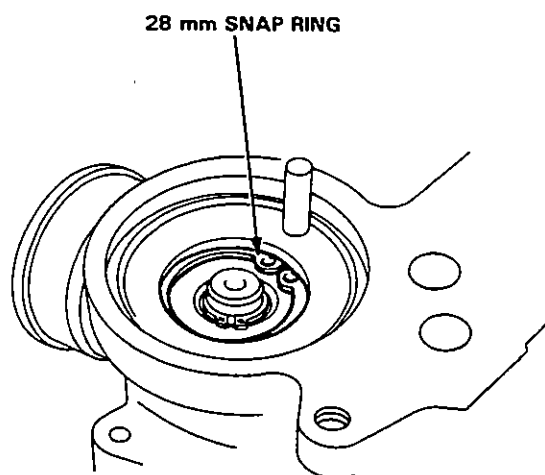


53. Install the steering pinion in the pinion holder.

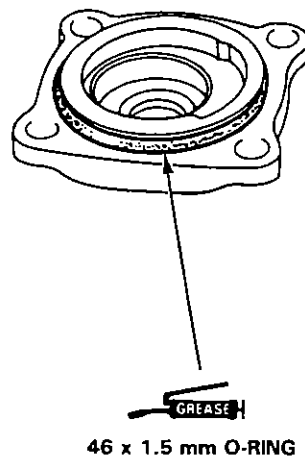




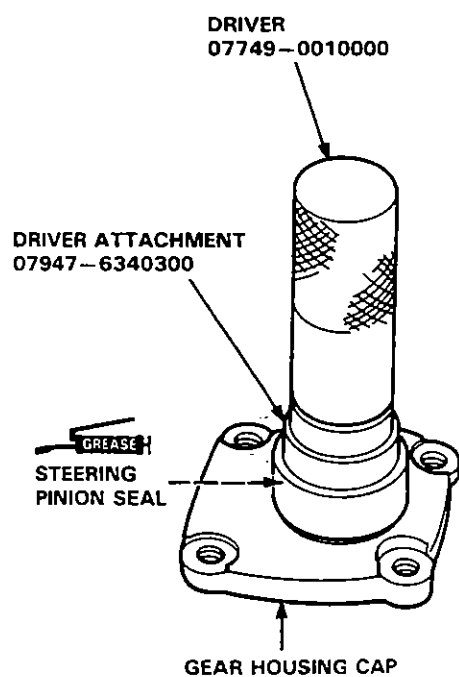
54. Install the 28 mm snap ring securely in the pinion holder groove.



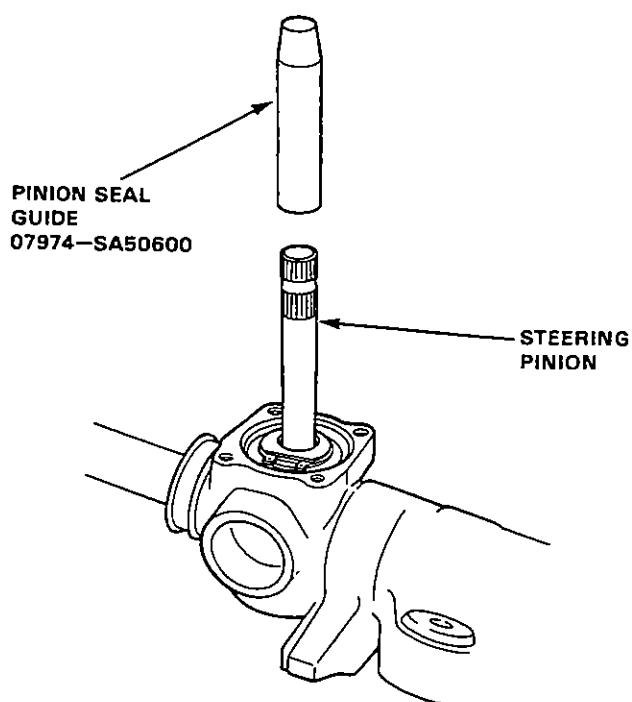
56. Grease the new O-ring and install it in the groove in the gear housing cap.



55. Grease the steering pinion seal, and install it on the gear housing using the special tools.



57. Grease the special tool and fit it over the steering pinion.

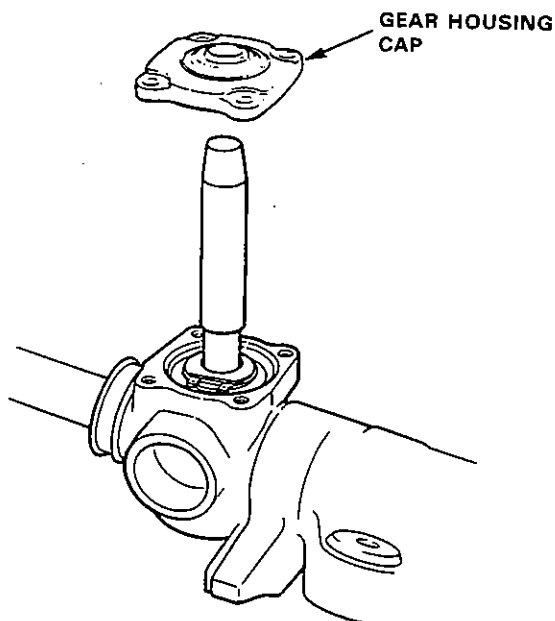


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Steering Gearbox

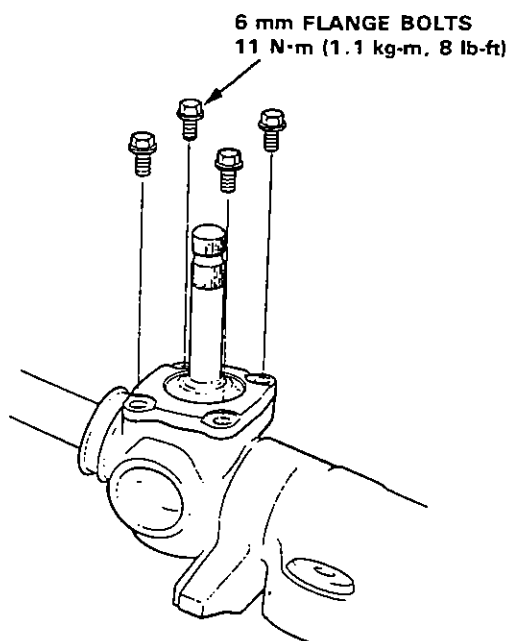
Overhaul (cont'd)

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.

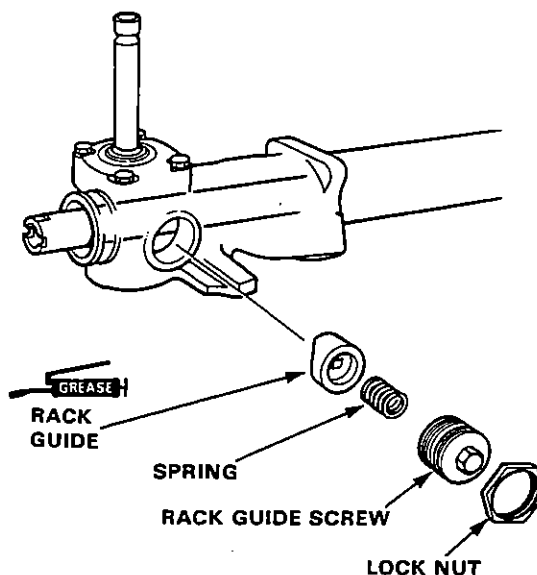
60. Tighten the four flange bolts.



61. Install the control valve unit on the gear housing.

62. Coat the rack guide with grease.

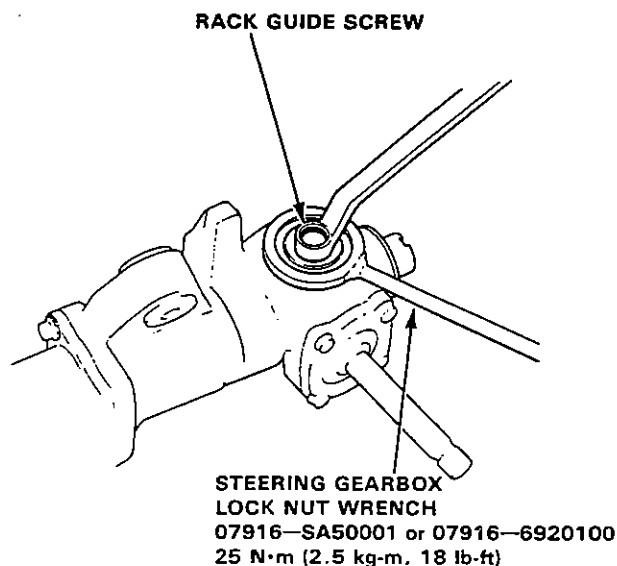
63. Install the rack guide, spring and rack guide screw on the gear housing.



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 $20^{\circ} \pm 5^{\circ}$ 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.



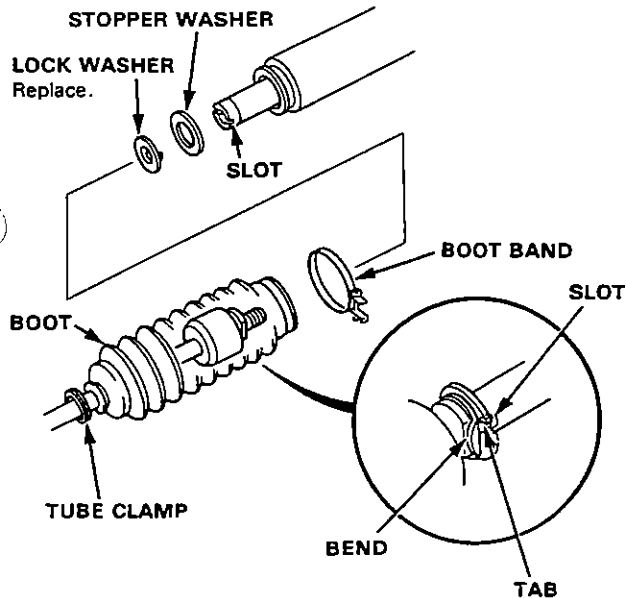


67. Screw each tie-rod into the rack while holding the lock washer so its tabs are in the slots in the rack end.

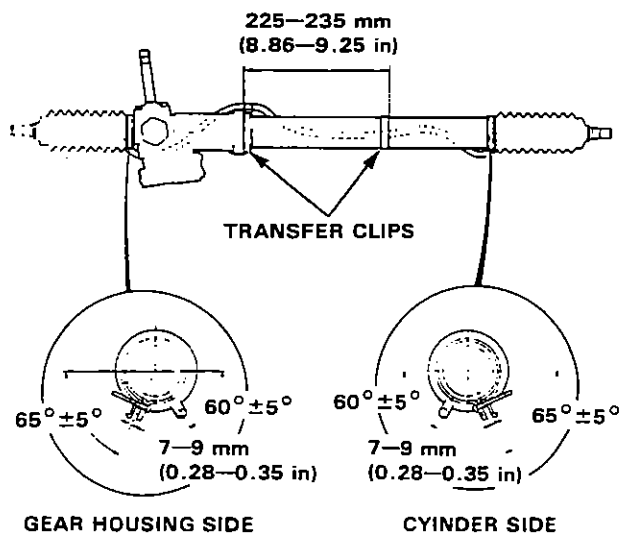
NOTE: Install the stopper washer with the chamfered side facing out.

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.

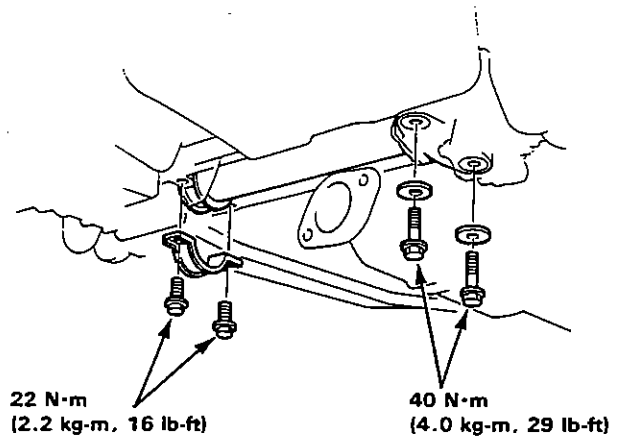


70. Install the air transfer hose and clamp with transfer clips as shown.



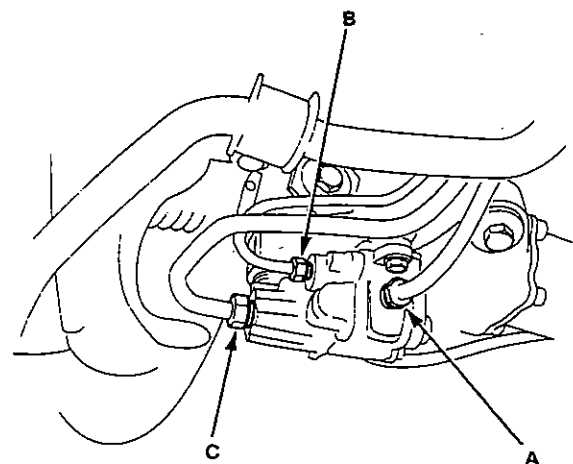
Installation

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)

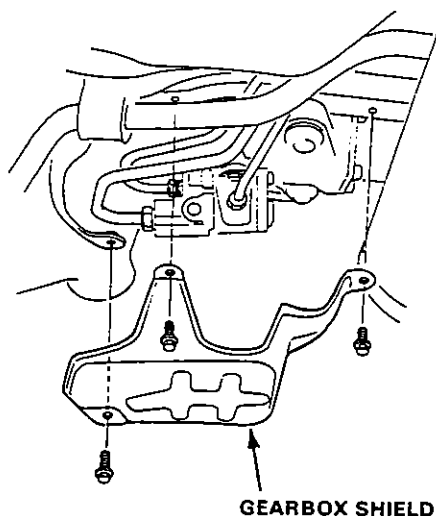


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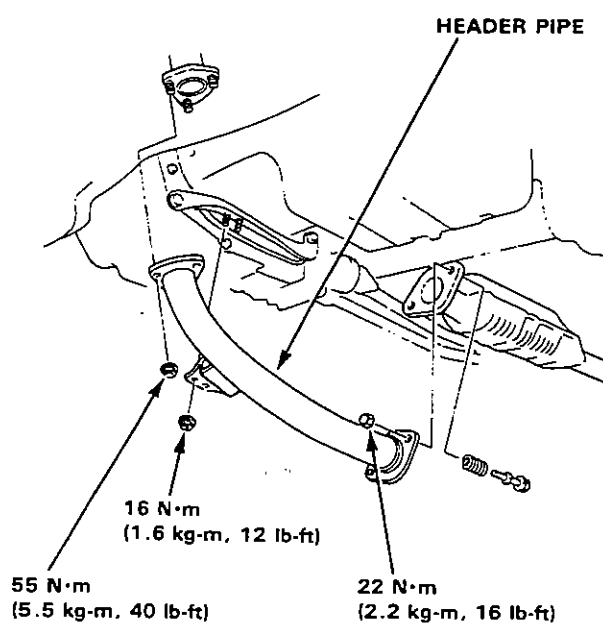
Steering Gearbox

Installation (cont'd)

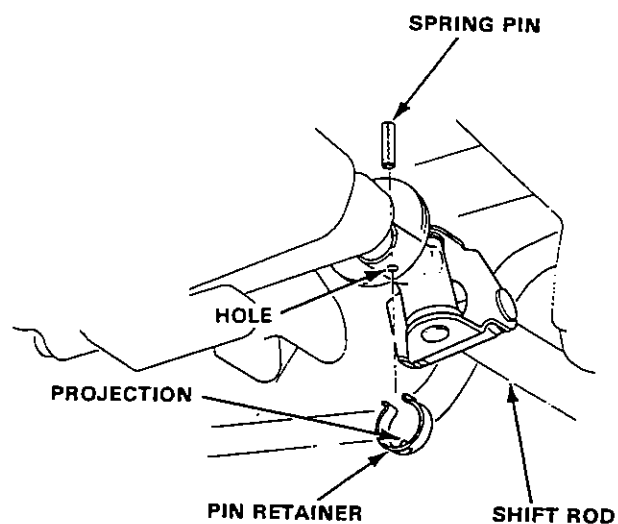
4. Install the gearbox shield.



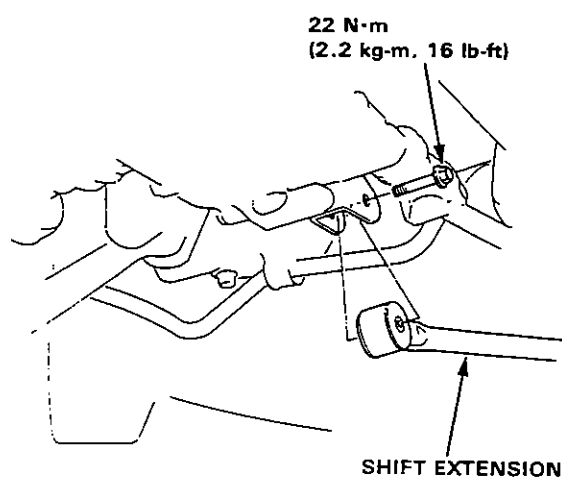
5. Install the header pipe with new gasket, and tighten the bolts and nuts.



6. Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.

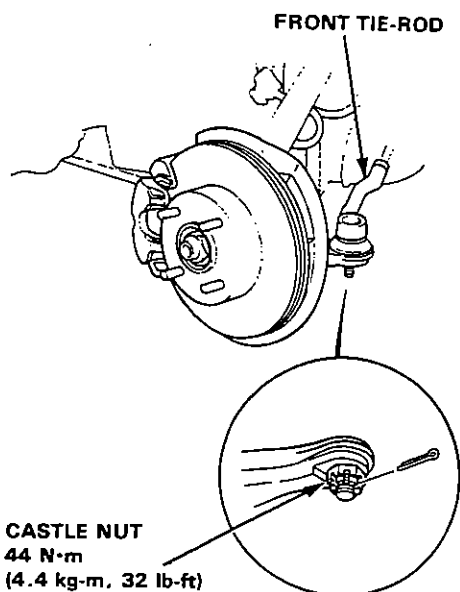


7. Install the shift extension to the transmission case.





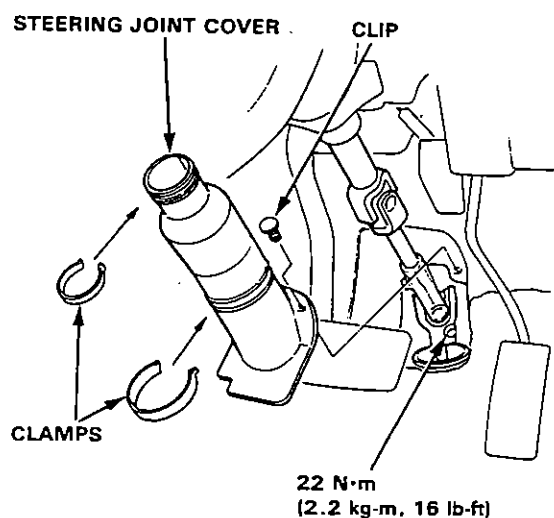
8. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.



9. Re-connect the steering shaft to the gearbox.

10. Install the steering joint cover.

CAUTION: Before tightening the steering joint bolts, pull up the steering joint to make sure that the steering joint is fully seated.



11. Fill the system:

- Fill the reservoir with new Honda Power Steering Fluid.
- Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
- Check the fluid again, and add more if necessary.

12. Check the gearbox for leaks, then re-install the shield.

13. Re-install the front wheels.

Suspension

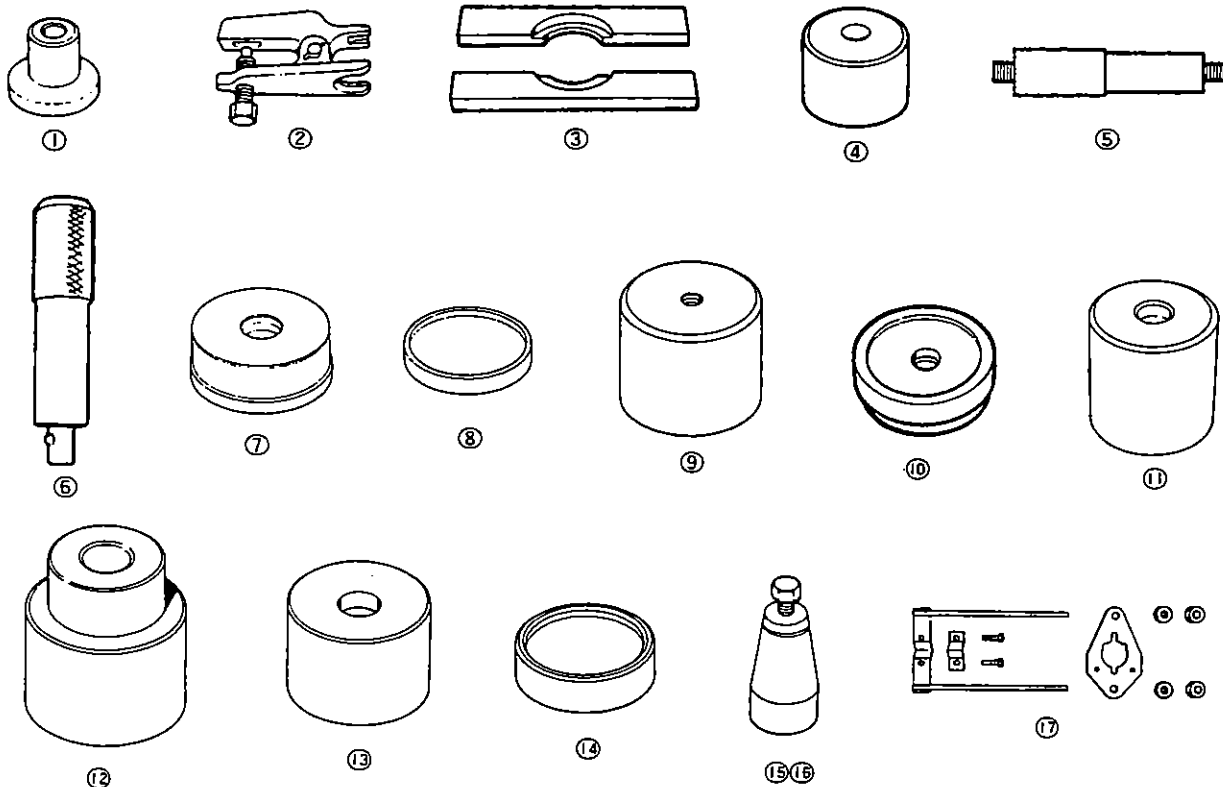
Special Tools	12-2
Component Location	
Index	12-3
Wheel Alignment	
Caster	12-4
Camber	12-4
Rear Toe Inspection/Adjustment.....	12-5
Front Toe Inspection/Adjustment	12-5
Turning Angle Inspection/Adjustment	12-6
Wheel Measurements	
Bearing End Play	12-7
Runout	12-7
Front Suspension	
Torque Specifications	12-8
Illustrated Index	12-9
Knuckle/Hub Replacement	12-11
Lower Ball Joint Replacement.....	12-15
Upper Arm Bushing Replacement	12-16
Damper	
Removal	12-17
Disassembly/Inspection	12-17
Reassembly	12-19
Installation	12-19
Rear Suspension	
Torque Specifications	12-20
Illustrated Index	12-21
Upper Arm Bushing Replacement	12-22
Compensator Arm Bushing Replacement ...	12-22
Hub Unit Bearing Replacement	12-23
Damper	
Removal	12-23
Disassembly/Inspection	12-24
Disposal	12-24
Reassembly	12-26
Installation	12-26



Special Tools

Special Tools

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



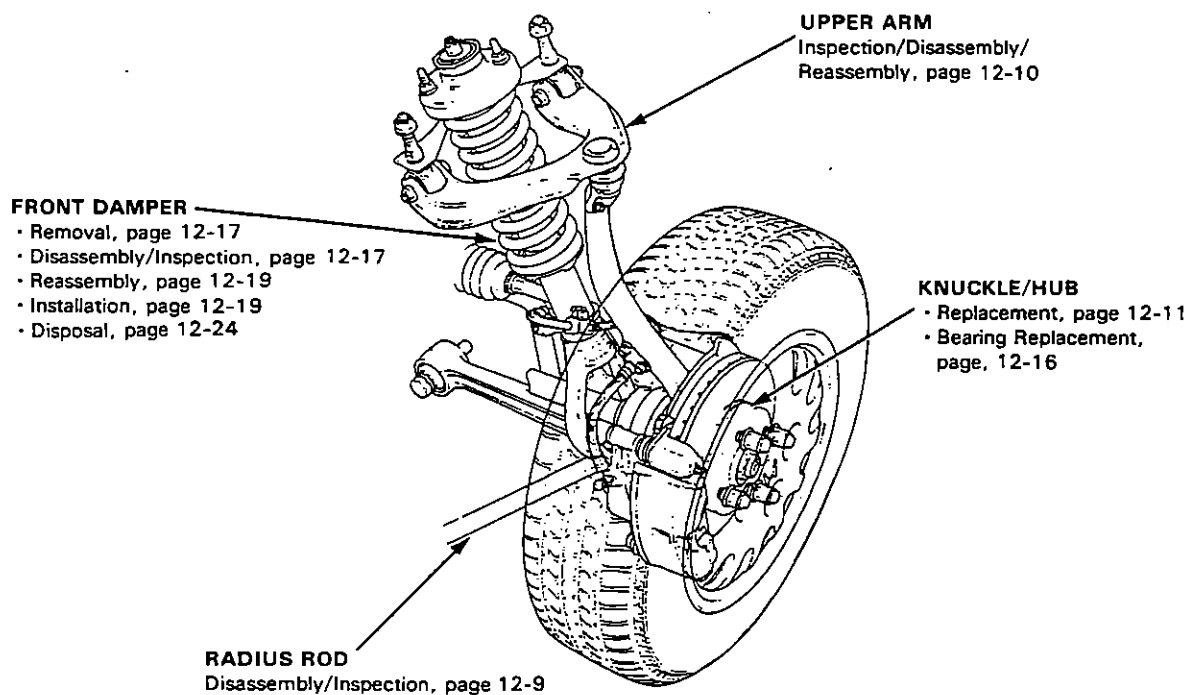
Component Location



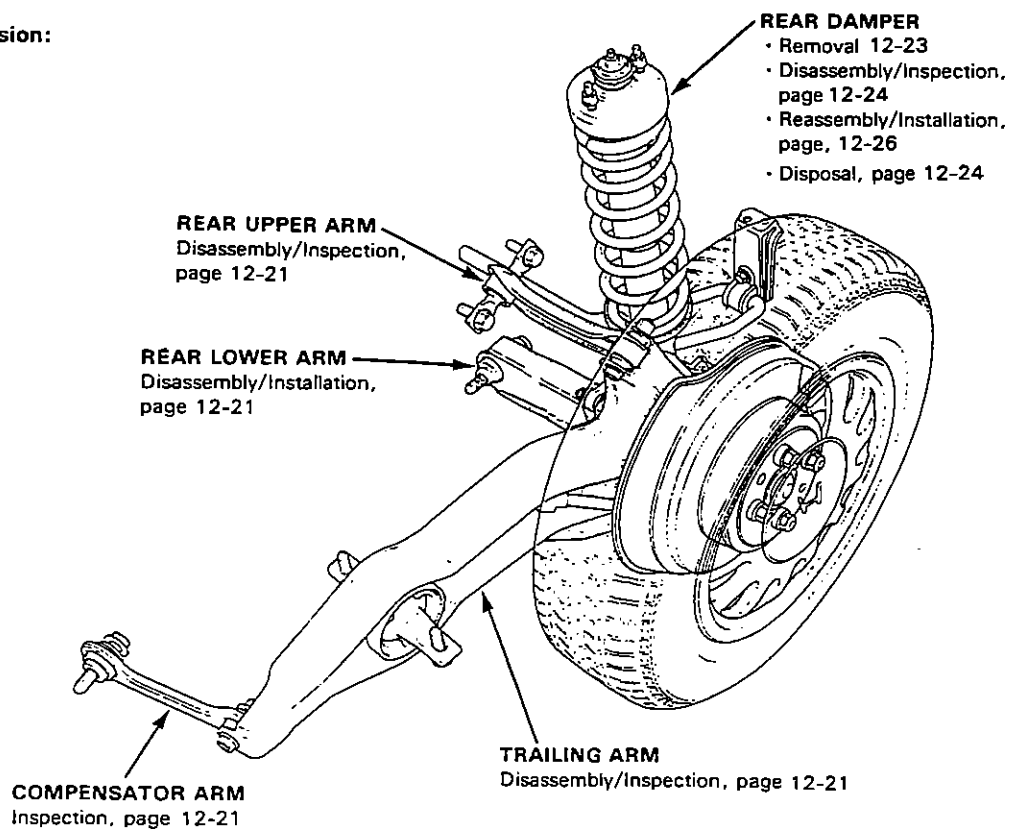
Index

WARNING The front and rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal explosion and possible injury when scrapping.

Front Suspension:



Rear Suspension:



Wheel Alignment

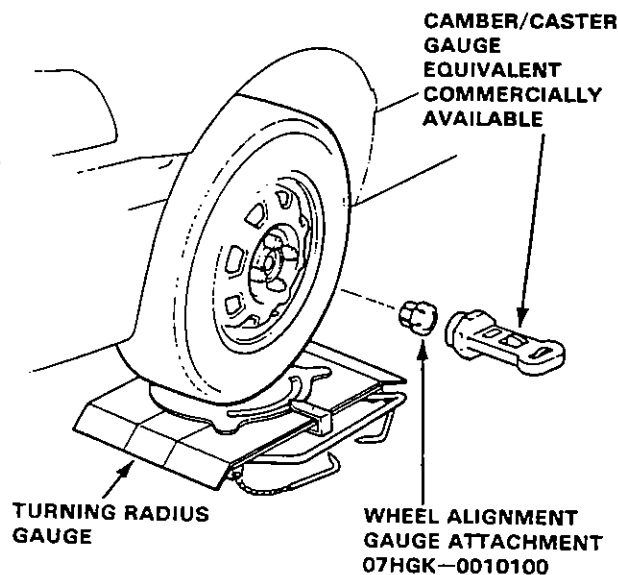
Caster

Inspection

1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel alignment attachments.
4. Install a camber/caster gauge on the Wheel Alignment Gauge Attachment and apply the front brake. Turn the wheel 20° inward.
5. Turn the adjust screw so that the bubble in the caster gauge is at 0°.
6. Turn the wheel outward 20° and read the caster on the gauge with the bubble at the center of the gauge.

Caster Angle: 3° 00' ± 1°



7. If out of specification, check for bent or damaged suspension components.

Camber

Inspection

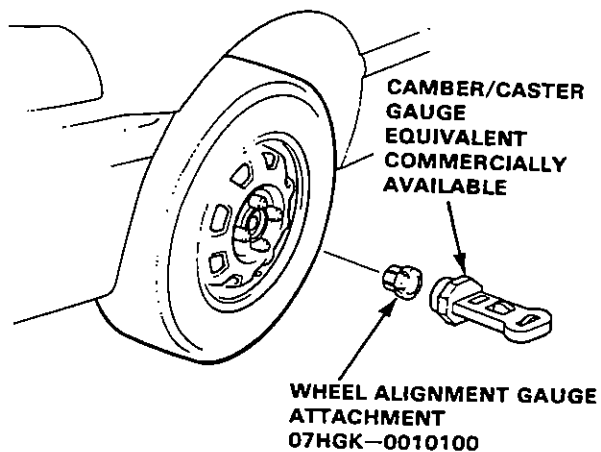
1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the Wheel Alignment Gauge Attachments on the wheels.

NOTE: Make sure the wheel hubs are clean and rust-free before installing the wheel alignment attachments.
4. Read the camber on the gauge with the bubble at the center of the gauge.

Camber angle:

KY Model Only Front: 0° 15' ± 1°
Rear: 0° 15' ± 1°

Other Models Front: 0° 00' ± 1°
Rear: -0° 25' ± 1°



5. If out of specification, check for bent or damaged suspension components.



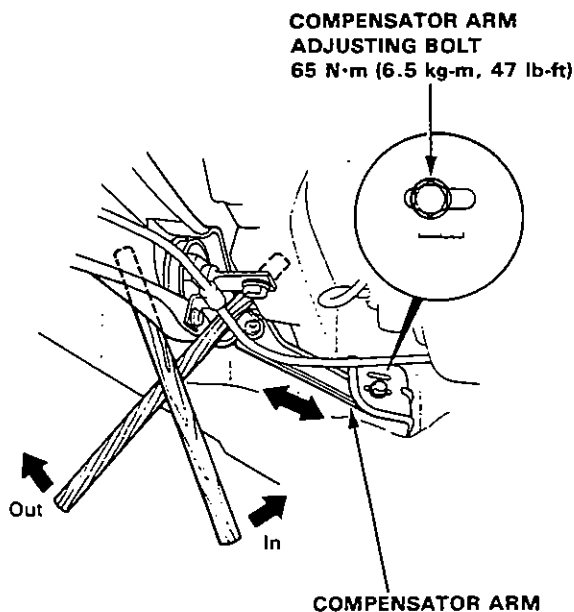
Rear Toe Inspection/ Adjustment

1. Release parking brake.

NOTE: If the parking brake is engaged, you may get an incorrect reading.

Rear toe in: 2 ± 2 mm (0.079 ± 0.079 in.)

- If adjustment is required, go to step 2.
 - If no adjustment is required, remove alignment equipment.
2. Before adjustment, note the locations of right and left compensator arm adjusting bolts.
 3. Loosen the adjusting bolt and slide the compensator arm in or out as shown, to adjust the toe.
 4. Tighten the adjusting bolt.



● Example

- After the rear toe inspection, the wheel is 2 mm (0.079 in.) out of the specification.
- Move the arm so the adjusting bolt moves 2 mm (0.079 in) inward from the position recorded before the adjustment.
 - The distance the adjusting bolts is moved should be equal to the amount of out-of-specification.

Front Toe Inspection/ Adjustment

NOTE: Check the tire pressure before inspection.

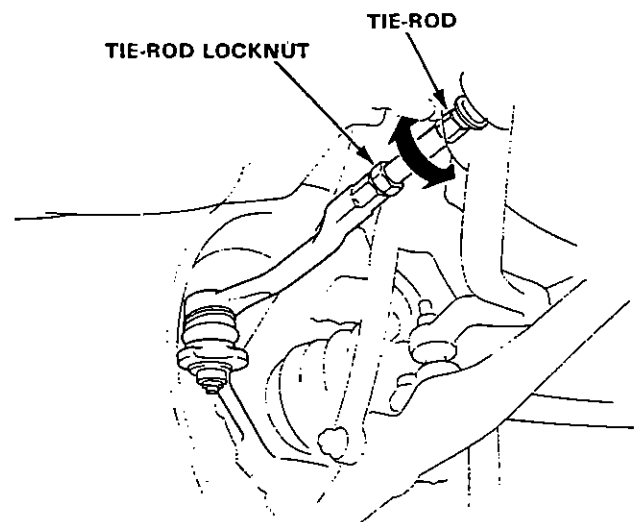
1. Center Steering Wheel spokes.

NOTE: Measure difference in toe measurements with the wheels pointed straight ahead.

Front toe-in: 0 ± 3 mm (0 ± 0.118 in)

- If adjustment is required, go on to step 2.
 - If no adjustment is required, remove alignment equipment.
2. Loosen the tie-rod locknuts and turn both tie-rods in the same direction until the front wheels are in straight ahead position.
 3. Turn both tie-rods equally until the toe reading on the turning radius gauge is correct.
 4. After adjusting, tighten the tie-rod locknuts.

NOTE: Reposition the tie-rod boot if twisted or displaced after adjustment has been made.



Wheel Alignment

Turning Angle Inspection/ Adjustment

1. Jack up the front of the car, set the turning radius gauges beneath the front wheels, then lower the car.
2. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

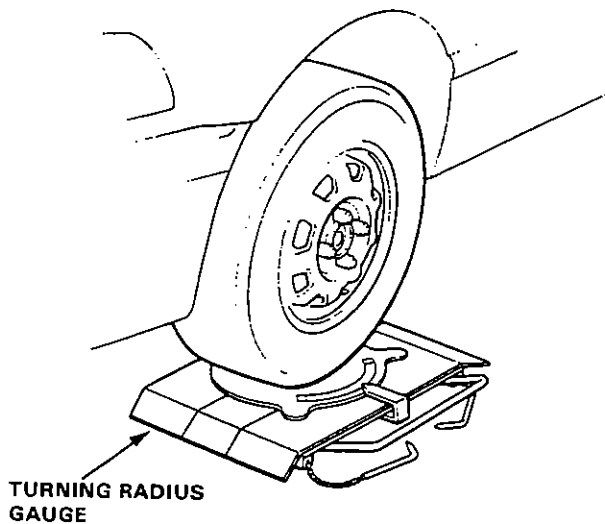
Turning angle:

Inward wheel: $41^{\circ} 30' \pm 2'$

Outward wheel: $33^{\circ} 30' \pm 2'$

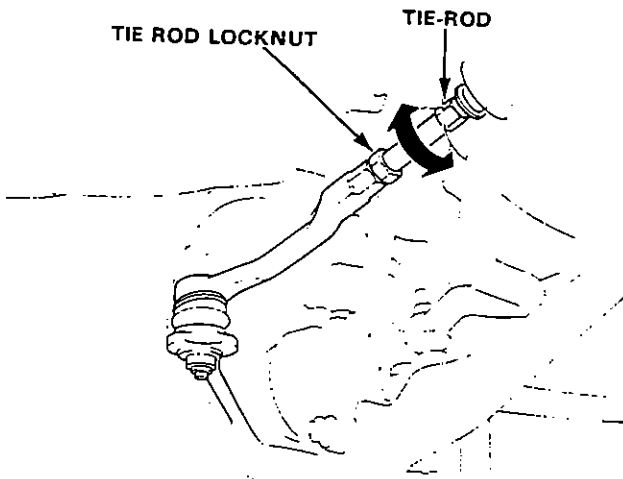
3. If the measurements are not within the specifications, adjust as required by turning the tie-rods.

NOTE: After adjustments, recheck the front wheel toe and readjust if necessary. Reposition the tie rod boot if twisted or displaced after adjustment has been made.



TIE ROD LOCKNUT

TIE-ROD



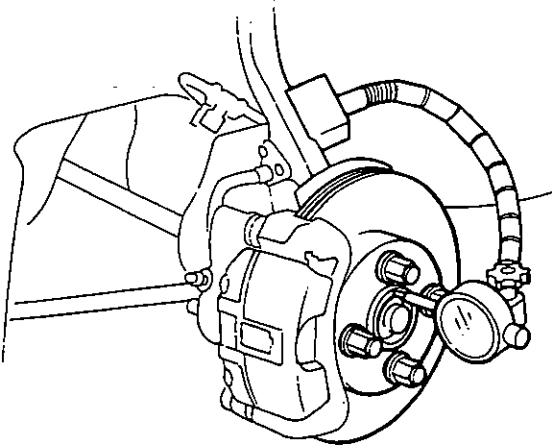
Wheel Measurements



Bearing End Play

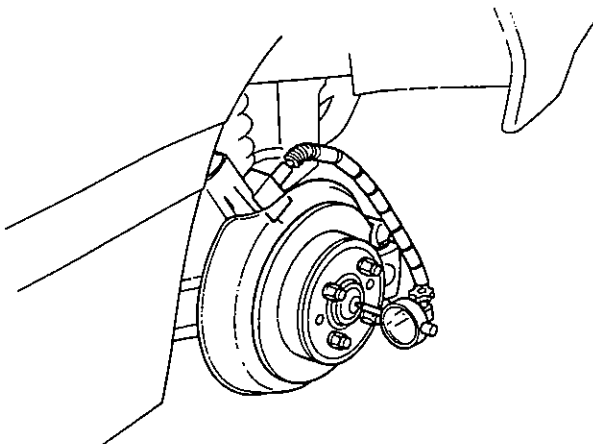
Front Wheel End Play

Standard: 0–0.05 mm (0–0.002 in.)



Rear Wheel End Play

Standard: 0–0.05 mm (0–0.002 in.)



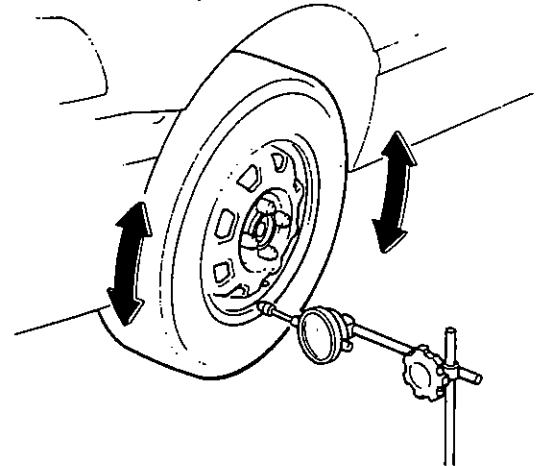
Runout

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.)

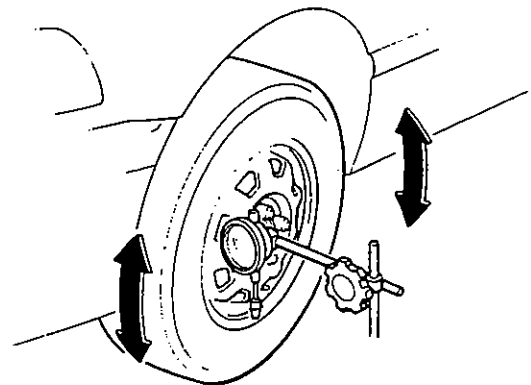


Front and Rear Wheel Radial Runout

Standard:

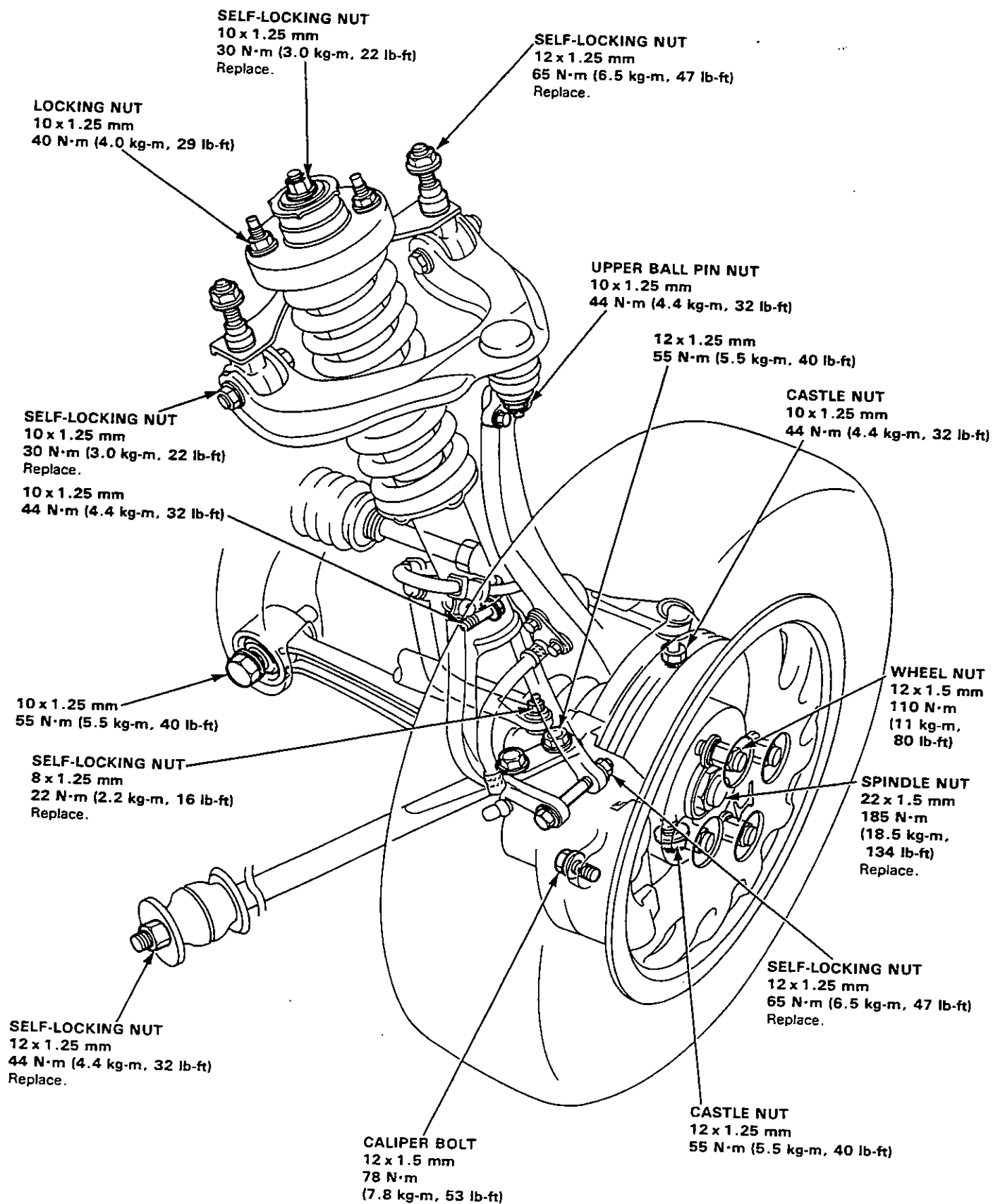
Steel Wheel: 0–1.0 mm (0–0.039 in.)

Aluminum Wheel: 0–0.7 mm (0–0.028 in.)



Front Suspension

Torque Specifications





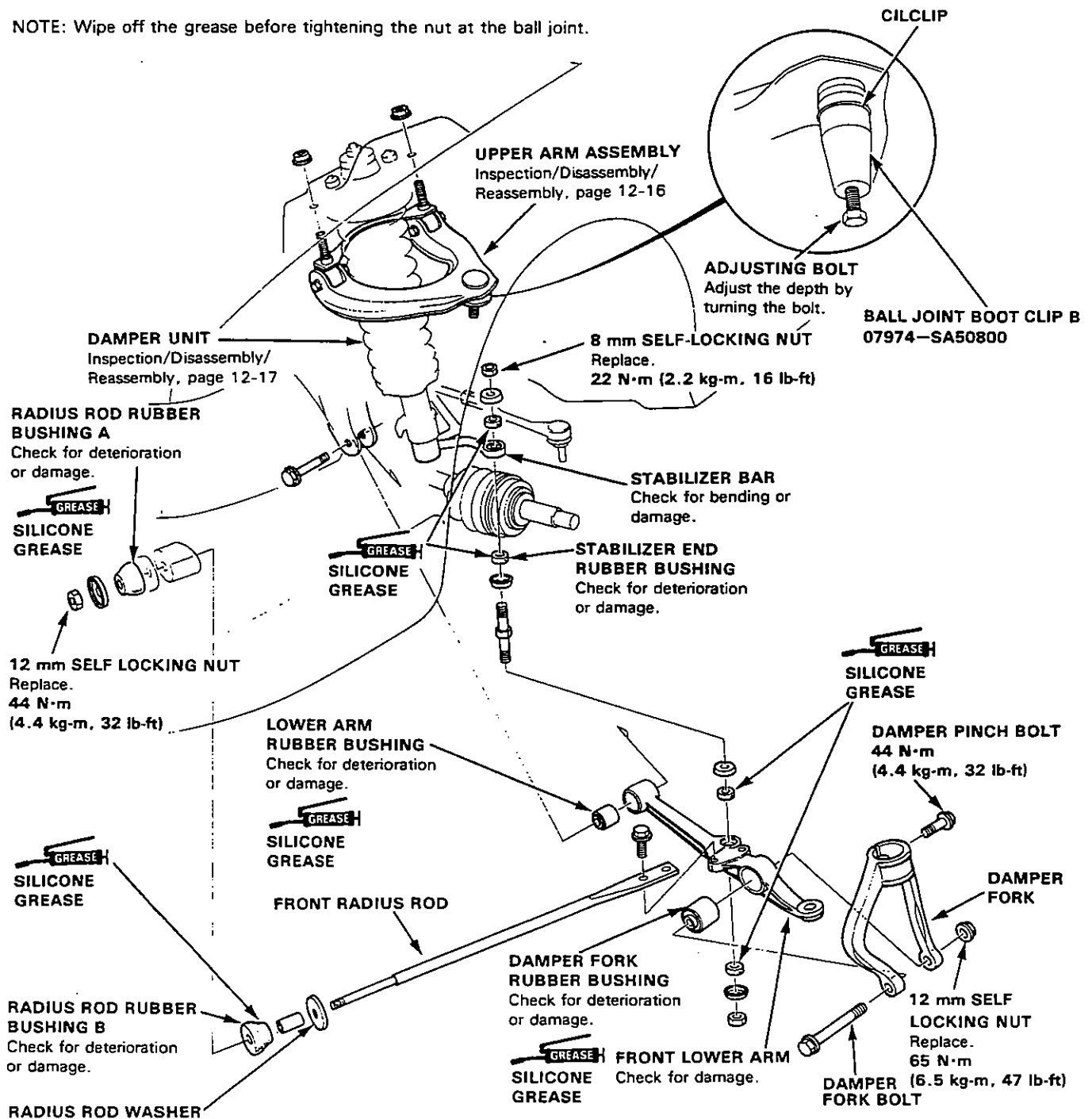
Illustrated Index

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.

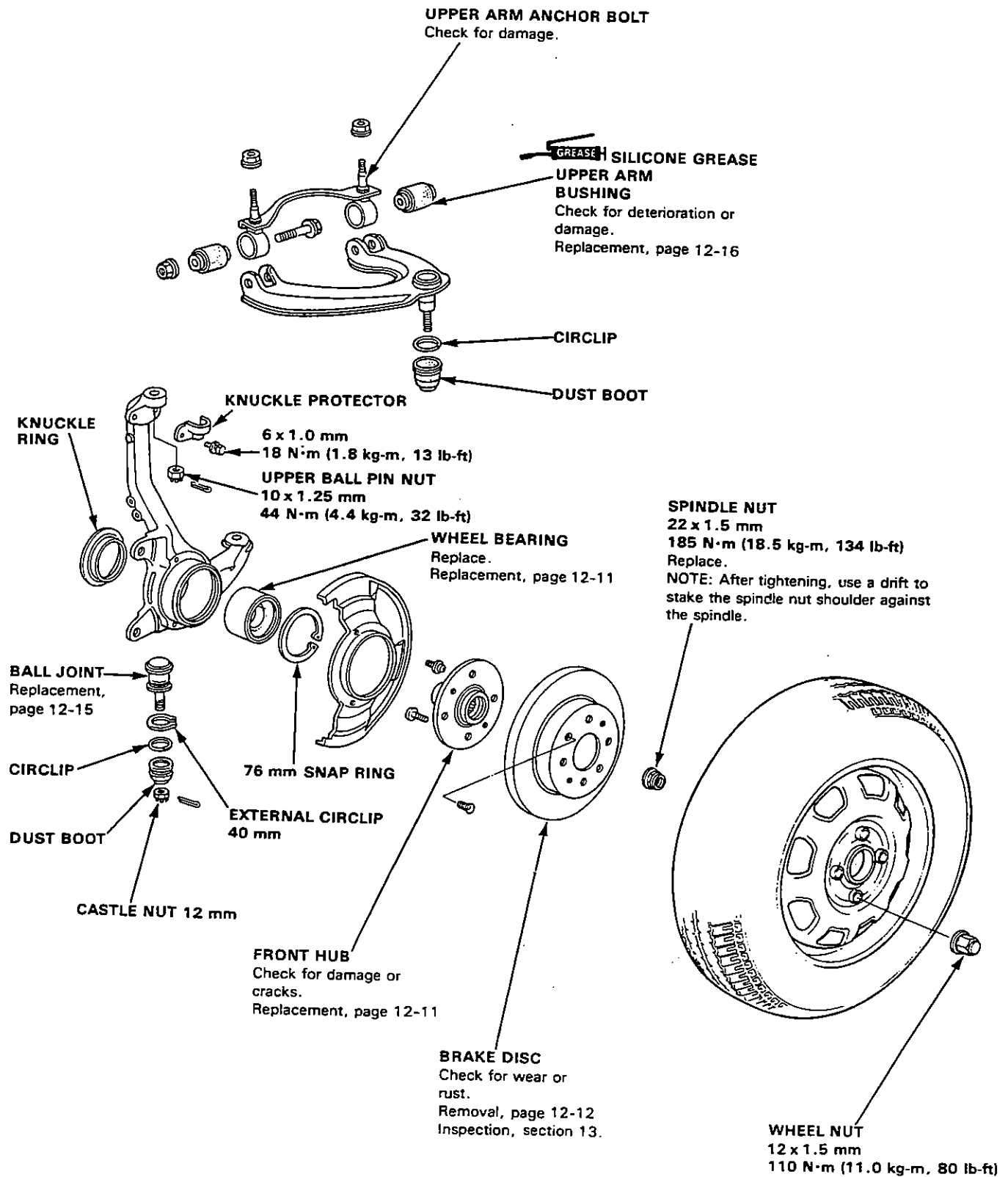
NOTE: Wipe off the grease before tightening the nut at the ball joint.



CAUTION: Do not interchange the radius rod rubber bushings. The thick bushing should be installed in front position.

Front Suspension

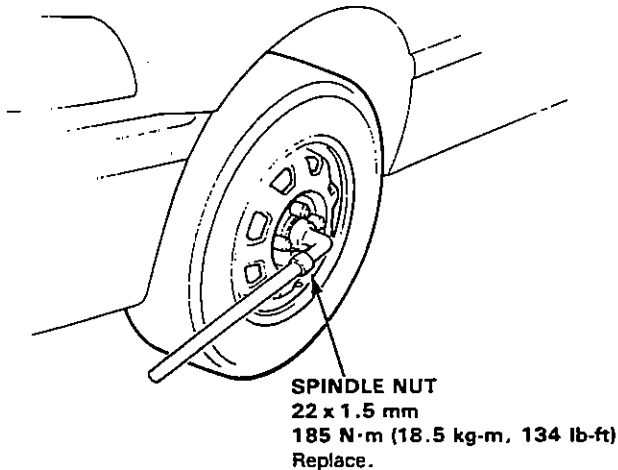
Knuckle/Hub





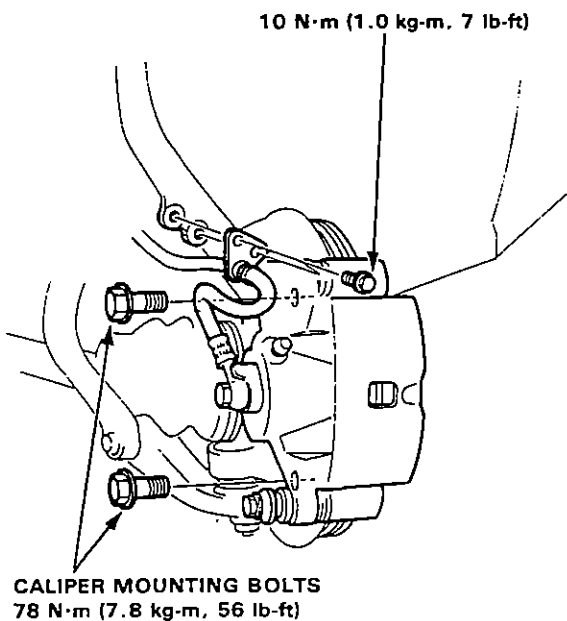
Knuckle/Hub Replacement

1. Pry the spindle nut stake away from the spindle, then loosen the nut using a 32 mm socket.



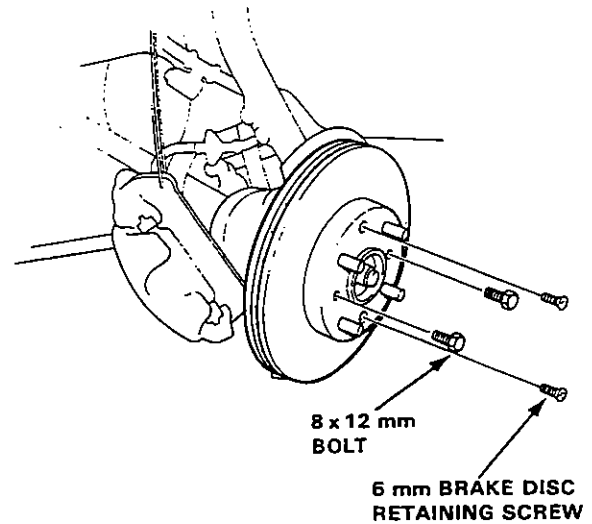
2. Loosen the wheel nuts slightly.
3. Raise the front of car and support on safety stands in proper locations.
4. Remove the wheel nuts, wheels, and spindle nut.
5. Remove the caliper mounting bolts and hang the caliper assembly to one side.

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.

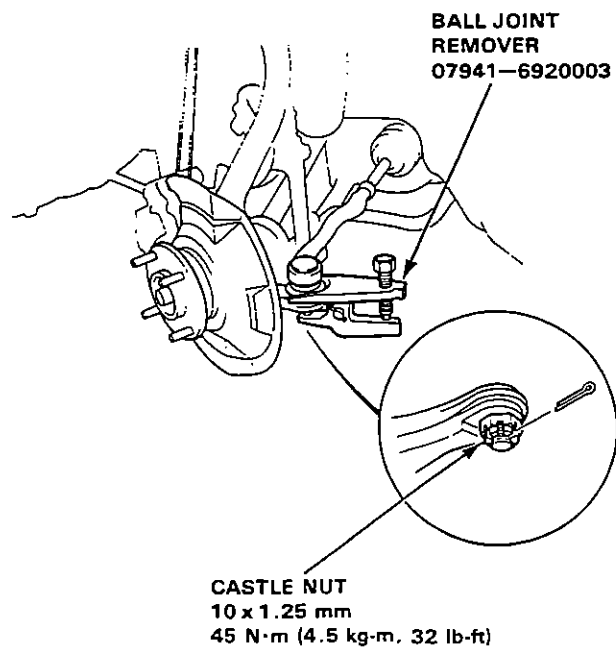


6. Remove the 6 mm brake disc retaining screws.
7. Screw two 8 x 12 mm bolts into the disc to push it away from the hub.

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)

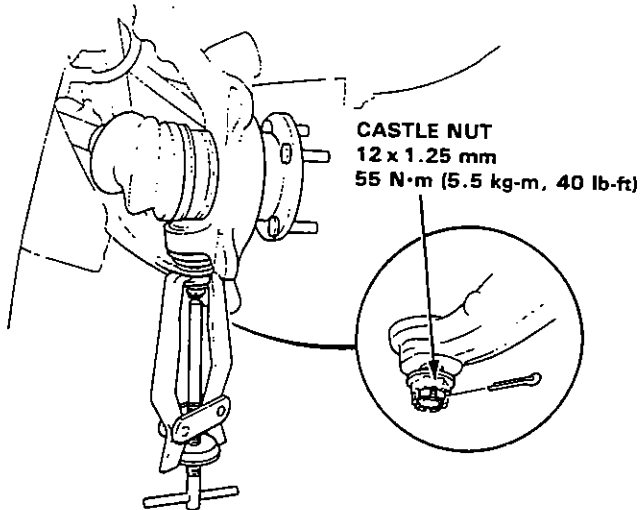
Front Suspension

Knuckle/Hub Replacement (cont'd)

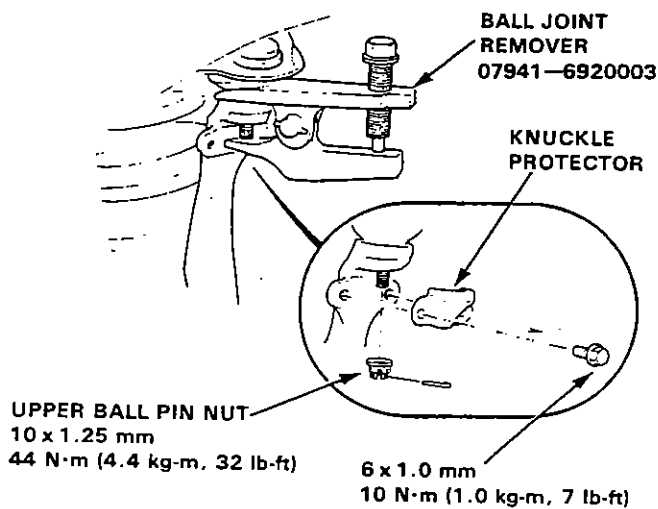
10. Remove the cotter pin and loosen the lower arm ball joint nut half the length of the joint threads.
11. Separate the ball joint and lower arm using a puller with the pawls applied to the lower arm.

CAUTION: Avoid damaging the ball joint boot.

NOTE: If necessary, apply penetrating type lubricant to loosen the ball joint.

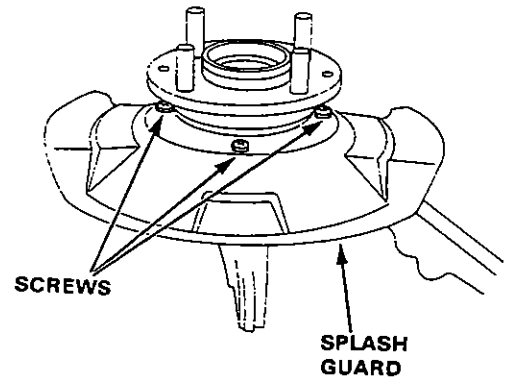


12. Remove the knuckle protector.
13. Remove the cotter pin and remove the upper ball pin nut.
14. Separate the upper ball joint and knuckle using the special tool.



15. Remove the knuckle and hub by sliding them off the driveshaft.

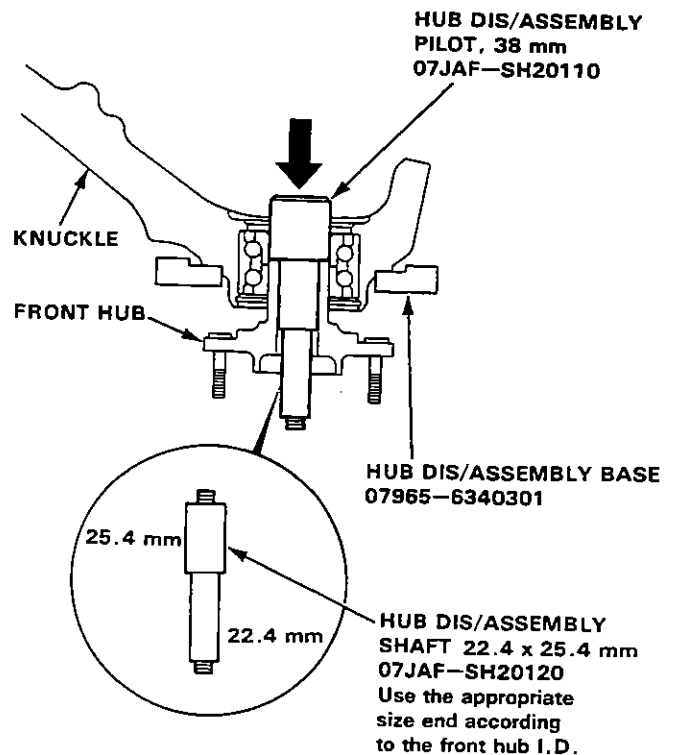
16. Remove the splash guard screws from the knuckle.



17. Separate the hub from the knuckle using the special tools and a hydraulic press.

CAUTION:

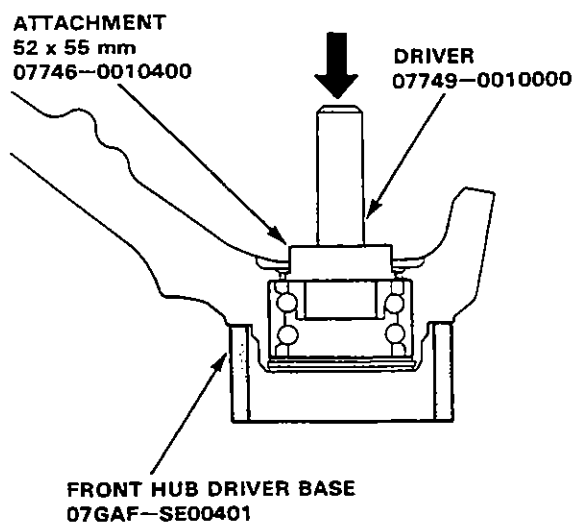
- Take care not to distort the splash guard.
- Hold onto the hub to keep it from falling when pressed clear.
- To prevent damage to the tool make sure the threads are fully engaged before pressing.





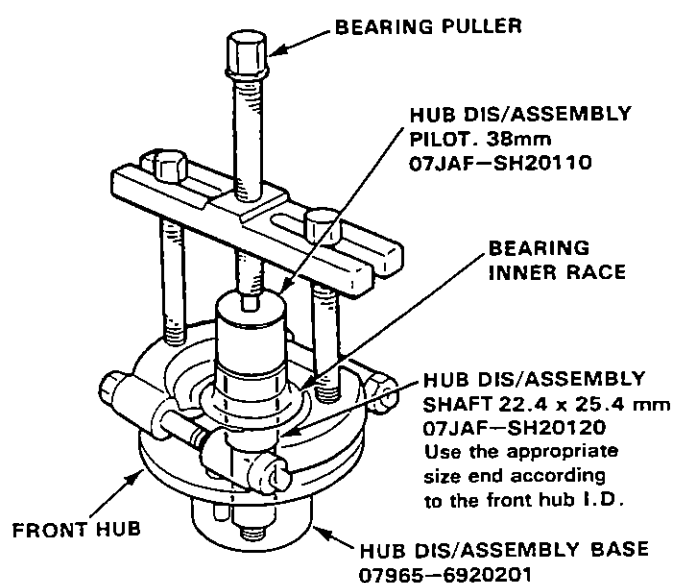
NOTE: Replace the bearing with a new one after removal.

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.



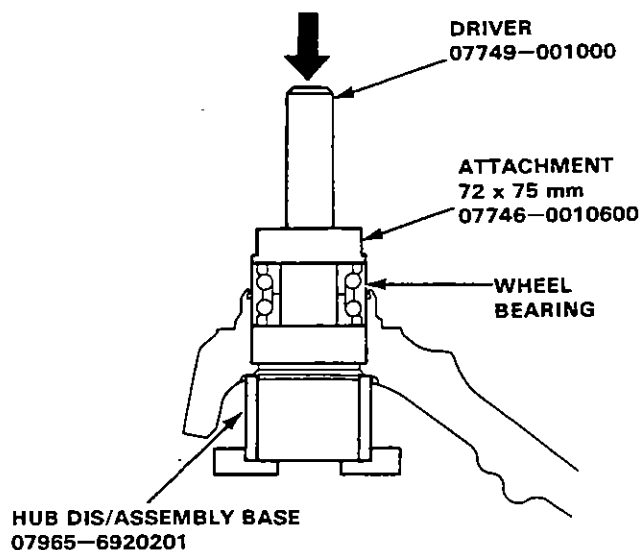
20. Remove the outboard bearing inner race from the hub using the special tools shown and a bearing puller.

CAUTION: To prevent damage to the tool make sure the threads are fully engaged before pressing.

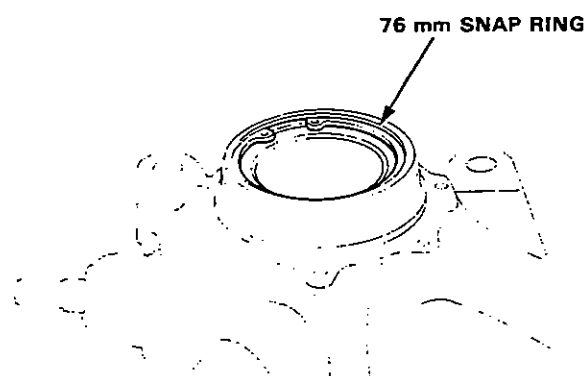


NOTE: Wash the knuckle and hub thoroughly in high flashpoint solvent before reassembly.

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.

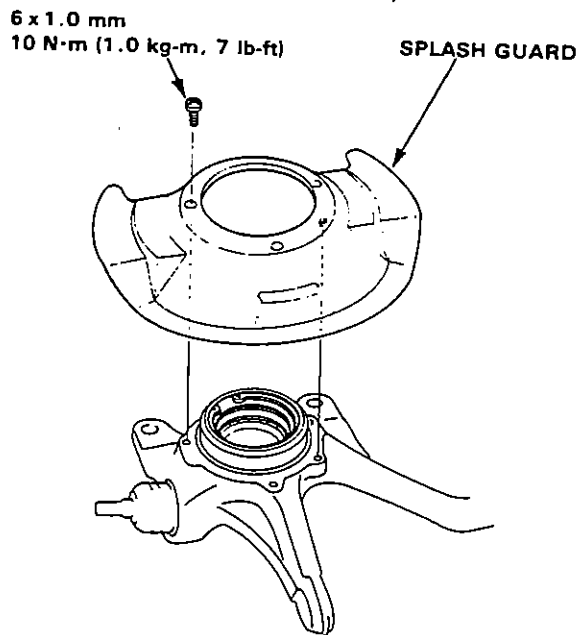


(cont'd)

Front Suspension

Knuckle/Hub Replacement (cont'd)

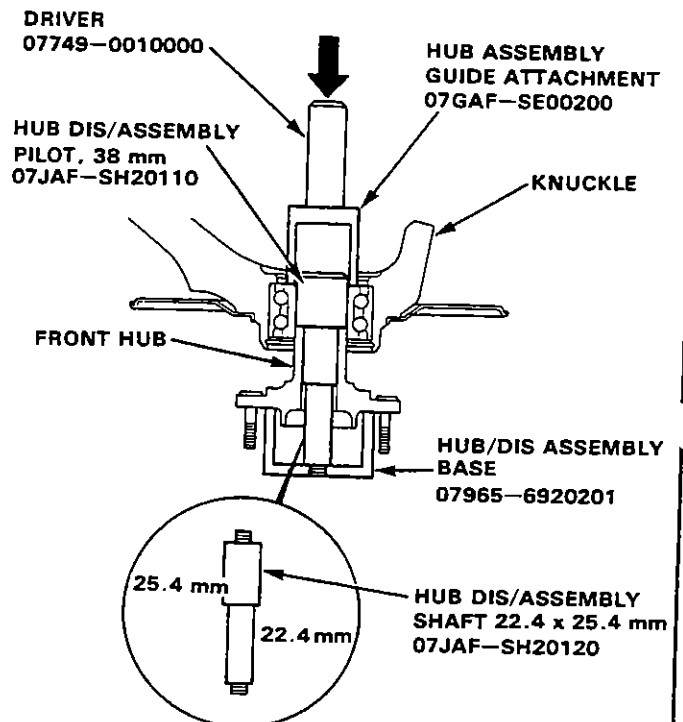
23. Install the splash guard and tighten the screws.



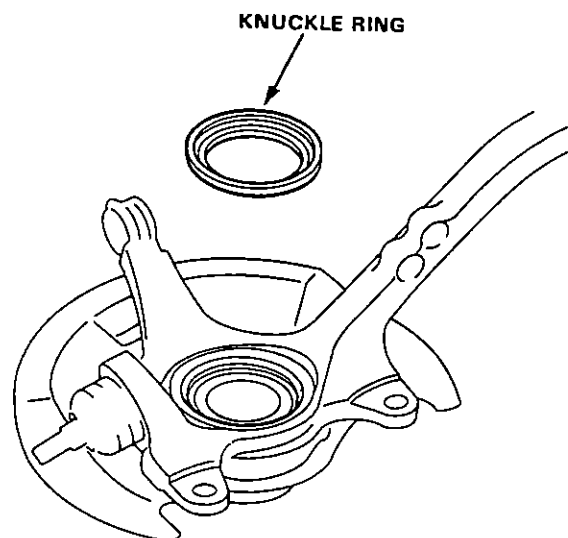
24. Install the shaft into the base with the appropriate size end according to the front hub I.D.
25. Place the front hub onto the special tools and install the pilot.
26. Set the knuckle in position and install using the special tools and a hydraulic press.

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.



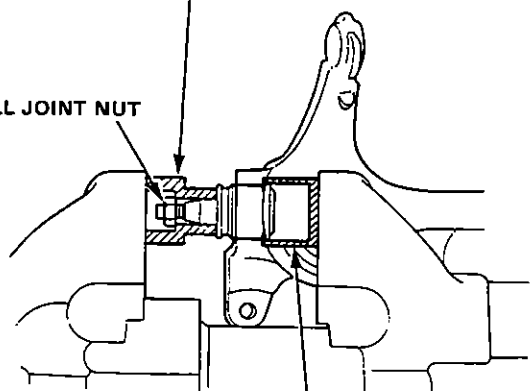


Lower Ball Joint Replacement

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.

BALL JOINT REMOVER/INSTALLER
07965-SB00100

BALL JOINT NUT

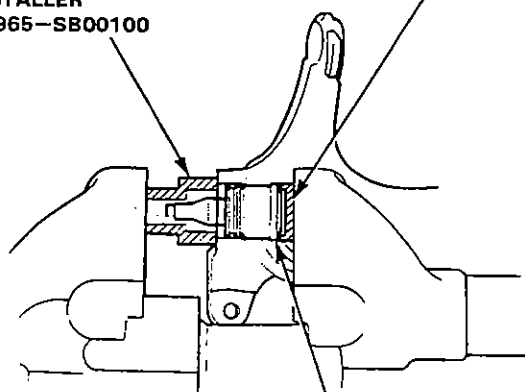


BALL JOINT REMOVER BASE
07JAF-SH20200

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.

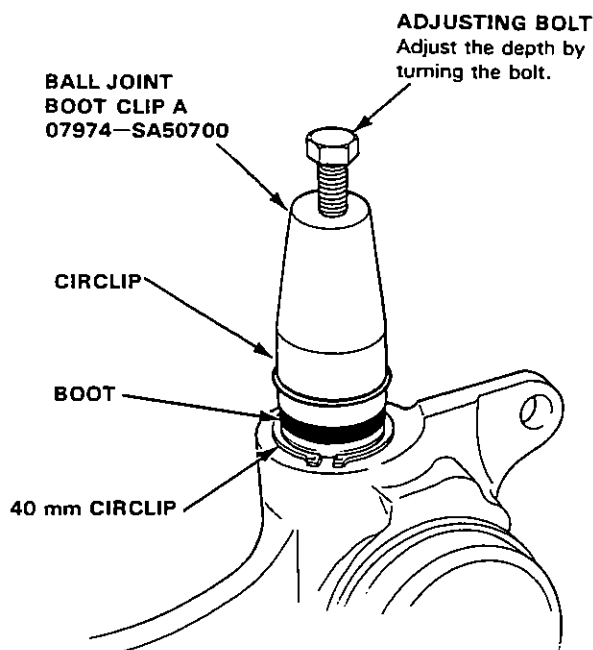
**BALL JOINT REMOVER/
INSTALLER**
07965-SB00100

BALL JOINT INSTALLER BASE
07965-SB00200



Ball joint housing
surface

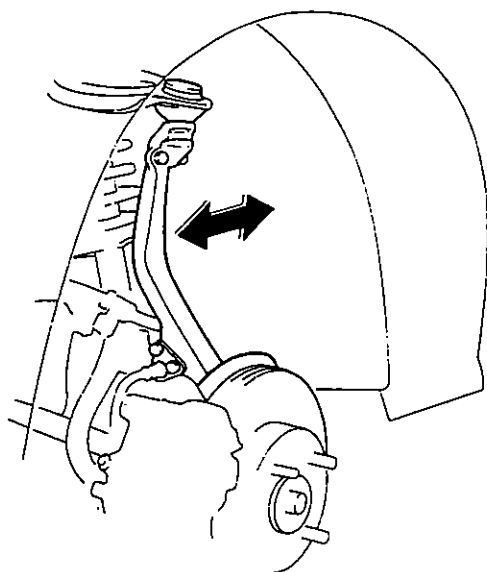
8. Install the 40 mm circlip.
9. Adjust the special tool with the adjusting bolt until the end of the tool aligns with the groove on the boot. Slide the clip over the tool and into position.



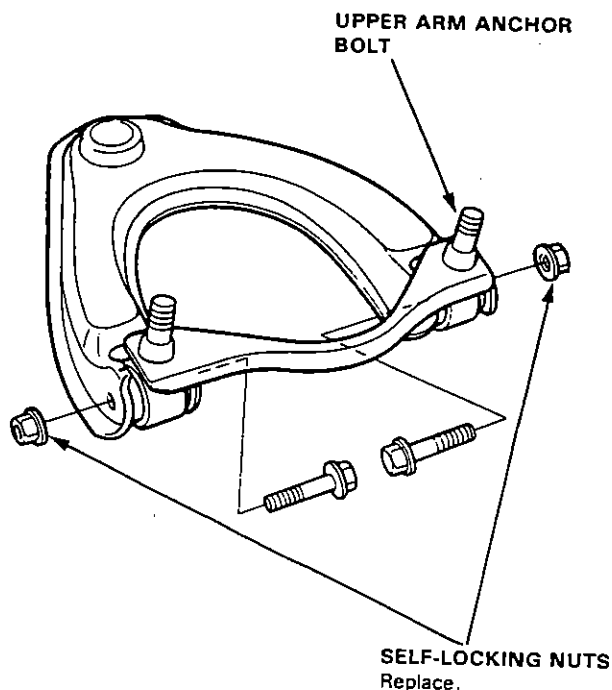
Front Suspension

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.

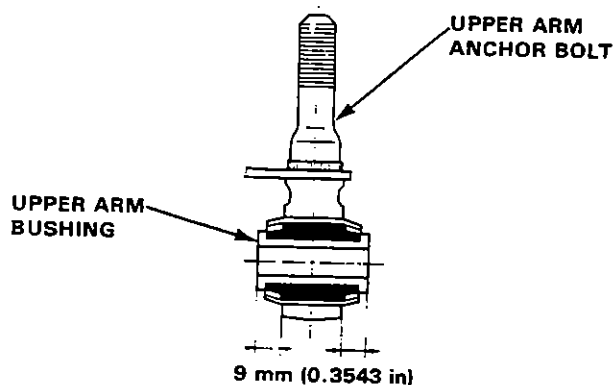


4. Remove the self-locking nuts, upper arm bolts and upper arm anchor bolts.



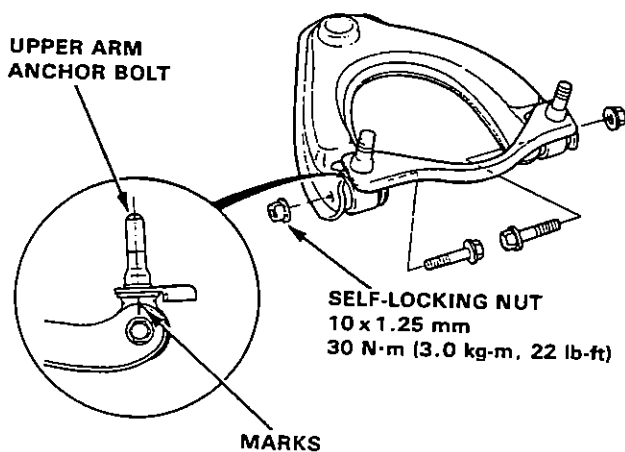
5. Place each upper arm anchor bolt in a vise and drive out the upper arm bushings.
6. Drive the new upper arm bushings into the upper arm anchor bolts.

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.

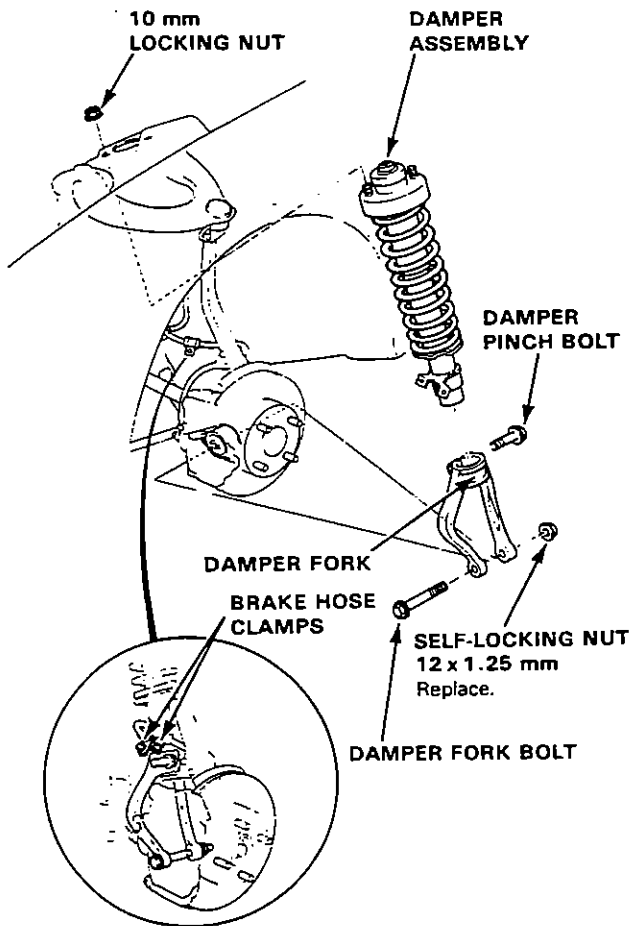


9. After installation, check the camber (page 12-4).



Damper Removal

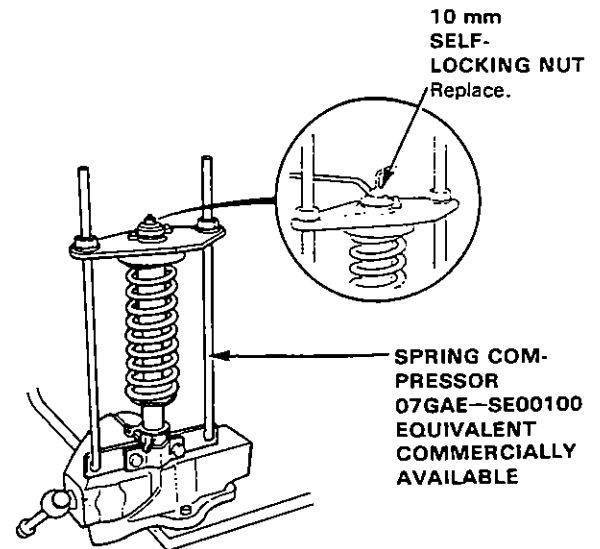
1. Remove the brake hose clamps from the damper.
2. Remove the damper pinch bolt.
3. Remove the damper fork bolt and remove the damper fork.
4. Remove the damper by removing the two 10 mm nuts.



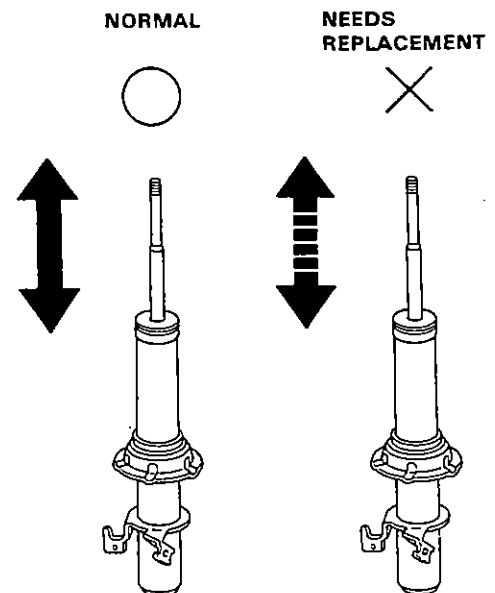
Damper Disassembly/Inspection

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.

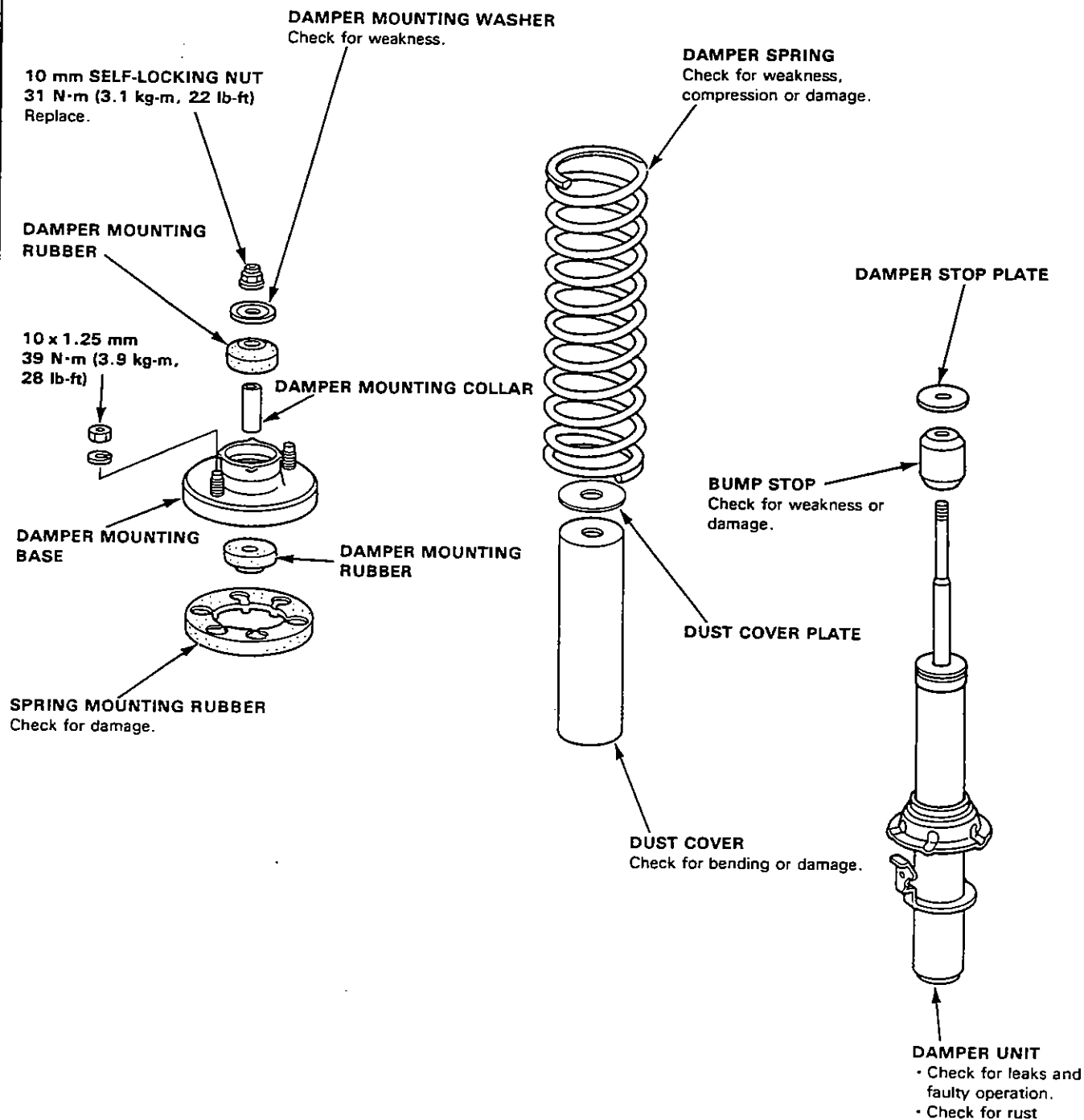


4. Also check for smooth operation in short strokes of 5—10 cm (2—4 in). Replace the damper if resistance is uneven or jerky.
5. Check for oil leaks abnormal noises or binding during these tests.

(cont'd)

Front Suspension

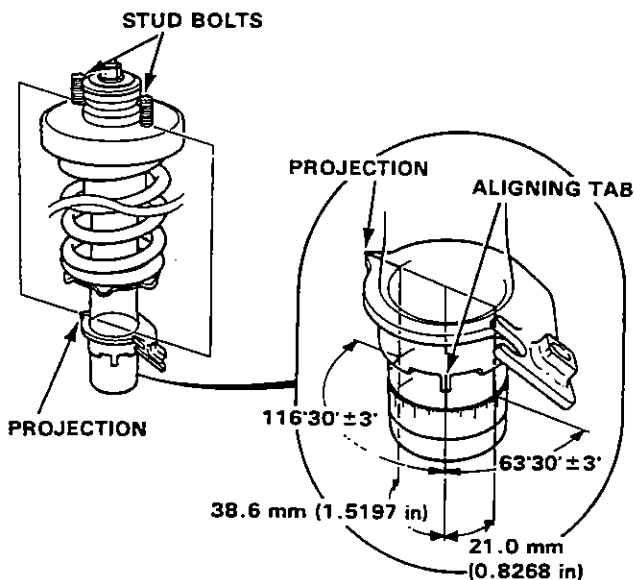
Damper Disassembly/Inspection (cont'd)





Damper Reassembly

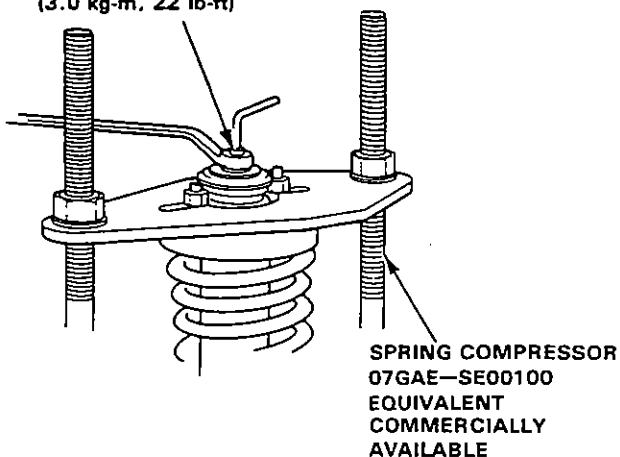
1. Install the damper unit, damper spring, bump stop, boot, upper spring seat, damper bushings, and collar on the spring compressor.
2. Mark the damper at two points by measuring around from the damper fork aligning tab. Align the two points with the stud bolts on the mounting base.
NOTE: Some damper 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.

10 mm SELF-LOCKING NUT
30 N·m
(3.0 kg-m, 22 lb-ft)

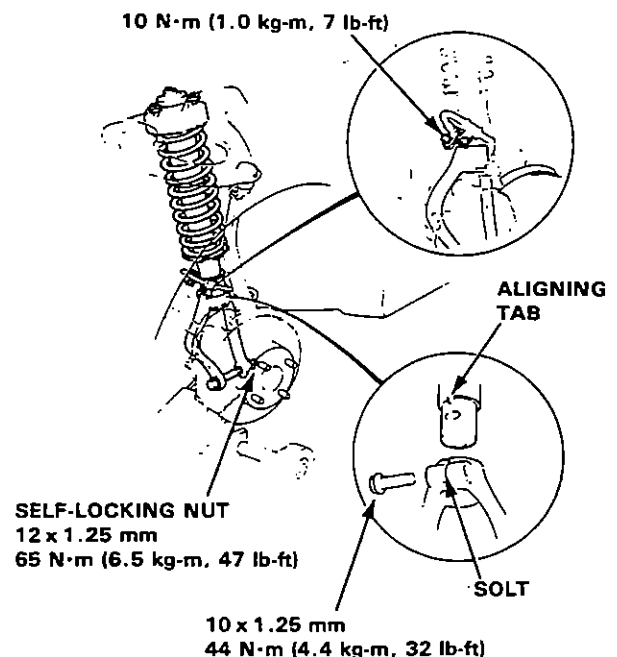


Damper Installation

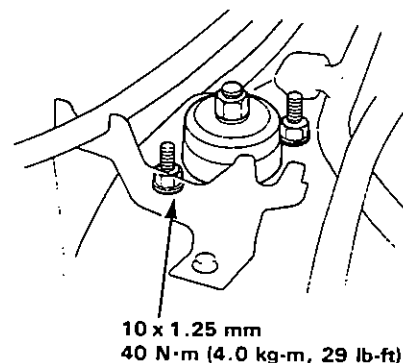
1. Loosely install the damper on the frame with the aligning tab facing inside.
2. Install the damper fork on the driveshaft and lower arm. Install the damper in the damper fork so the aligning tab is aligned with the slot in the damper fork. Hand tighten the bolts and nuts.
3. Raise the knuckle with a floor jack until the car just lifts off the safety stand.

NOTE: The mount base nuts should be tightened with the damper under vehicle load.

4. Tighten the damper pinch bolt.
5. Secure the damper fork bolt with a new 12 mm self locking nut.
6. Install the brake hose clamps with the two bolts.

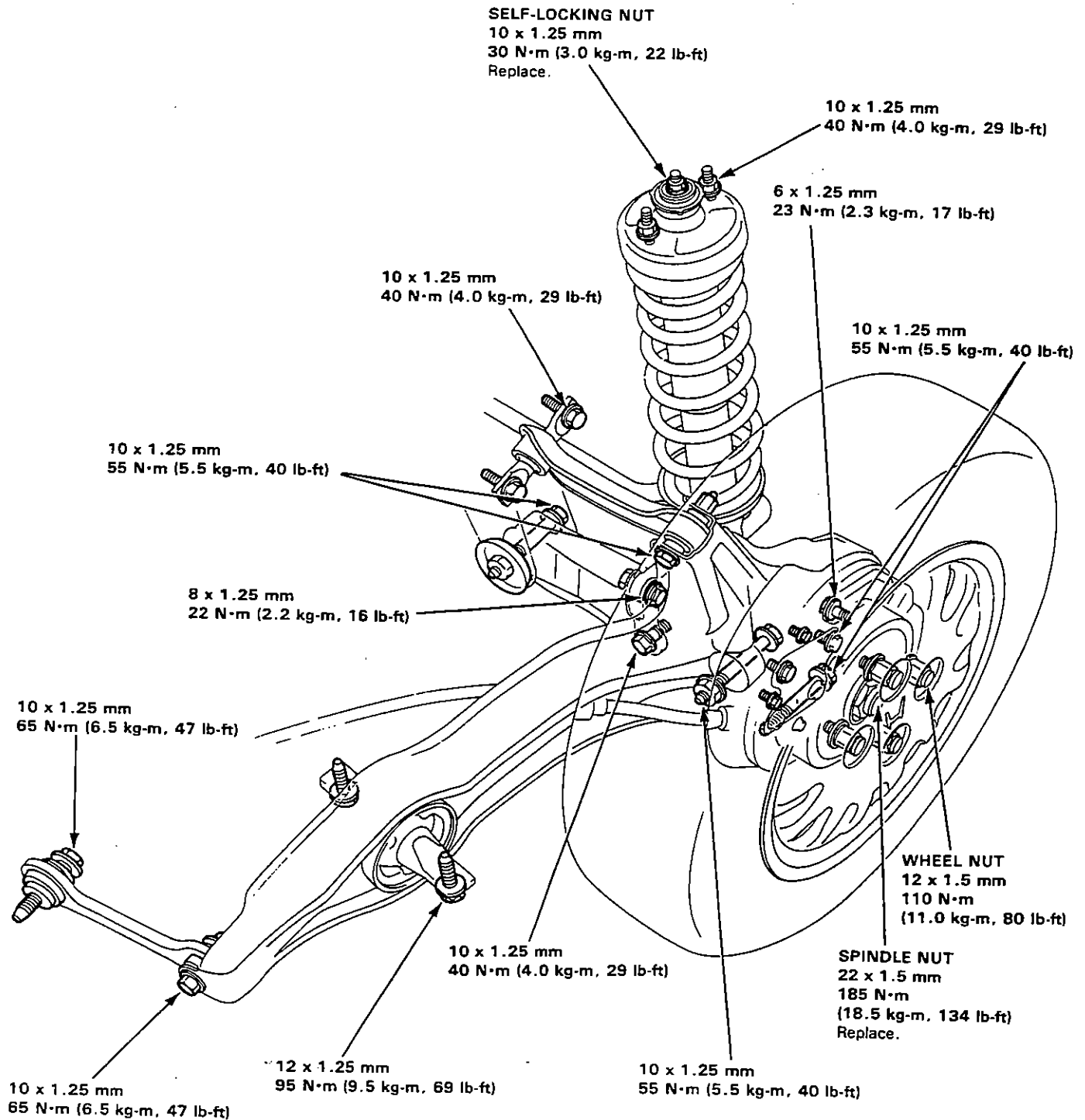


7. Secure the damper assembly to the frame with the 10 mm locking nuts.



Rear Suspension

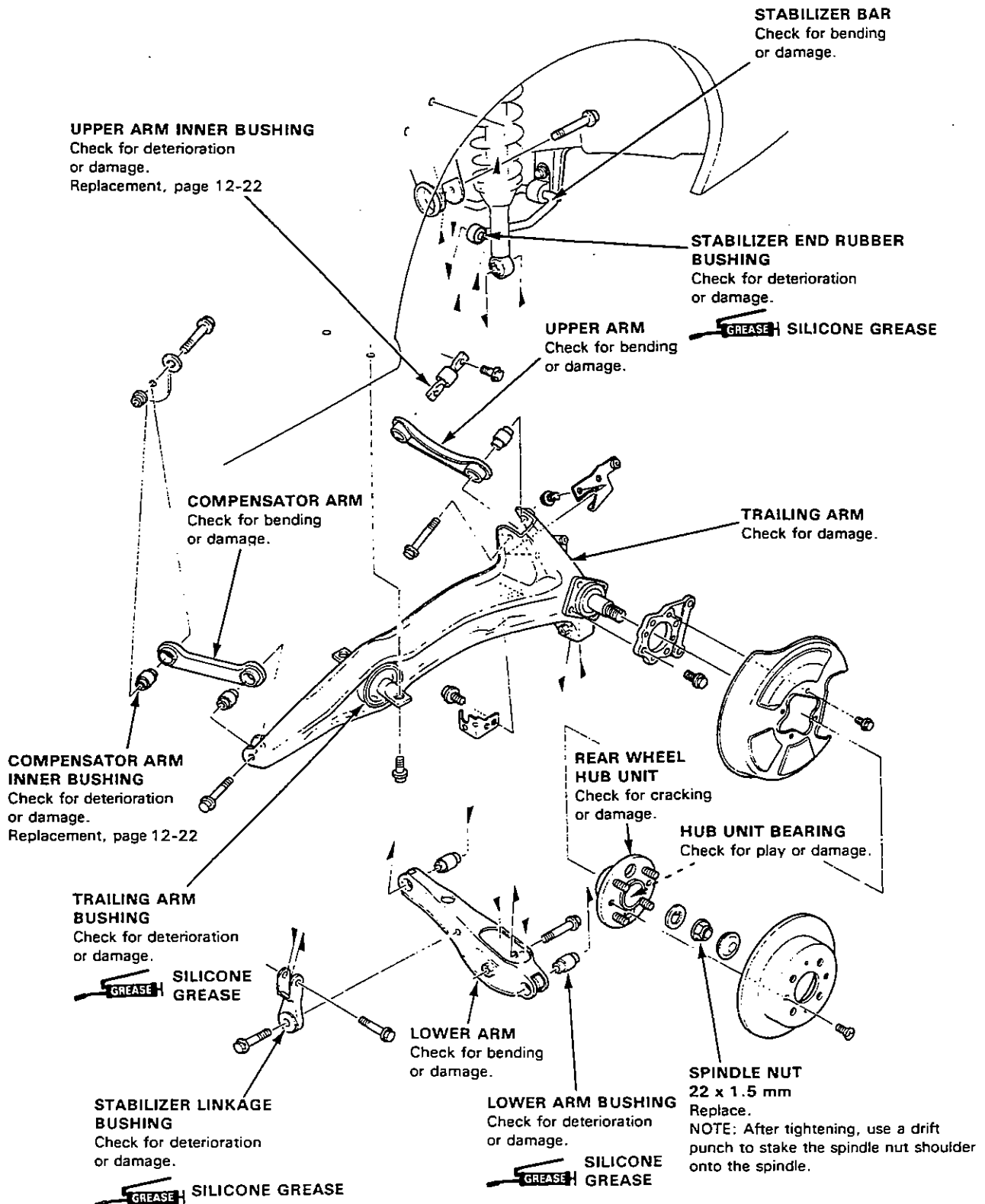
Torque Specifications



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.



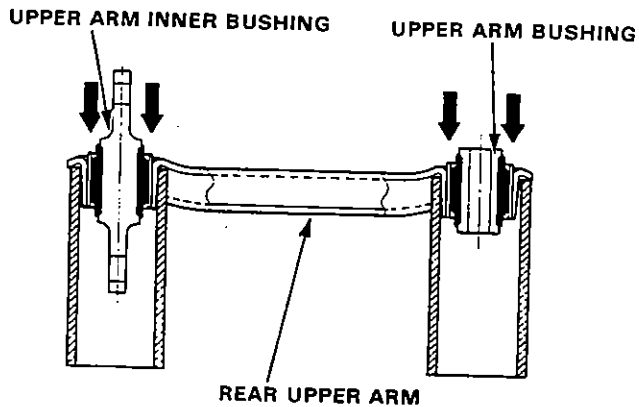
Illustrated Index



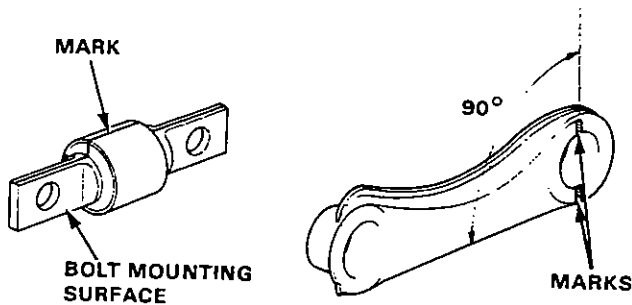
Rear Suspension

Upper Arm Bushing Replacement

1. Remove the upper arm bushing and inner bushing as shown.

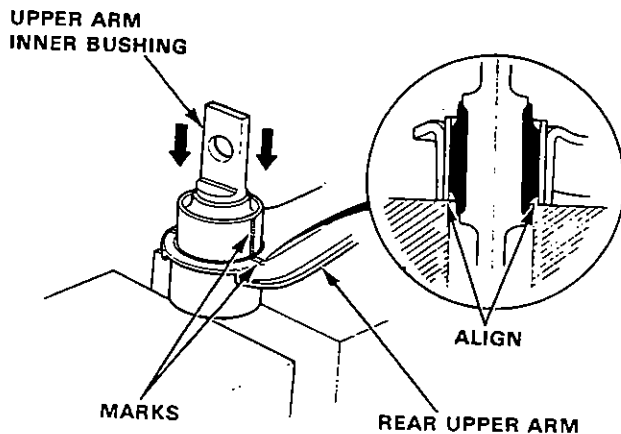


2. Mark a scribe line on the upper arm inner bushing so that it is in line with the bolt mounting surface.
3. Mark on the upper arm at two points so that they are in line and make a right angle with the arm as shown in the drawing.



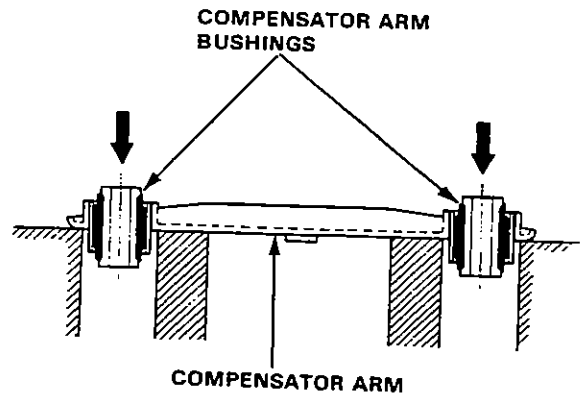
4. Drive in the upper arm inner bushing with the marks aligned.
5. Drive the upper arm bushing into the upper arm.

NOTE: Drive in the upper arm bushing and inner bushing until their leading edges are flush with the upper arm.



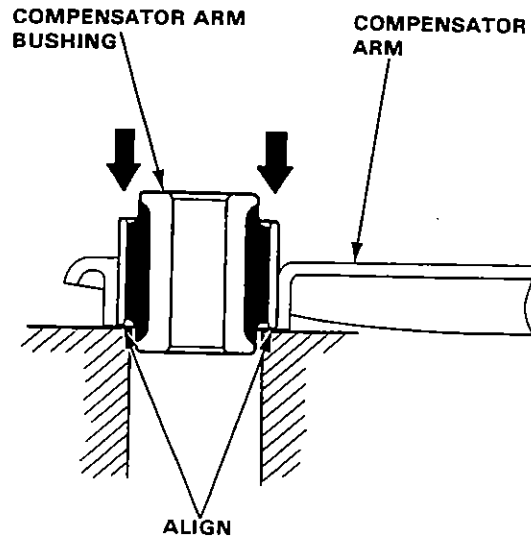
Compensator Arm Bushing Replacement

1. Drive the compensator arm bushing out of the compensator from the direction indicated.



2. Drive in the compensator arm bushings from the direction indicated.

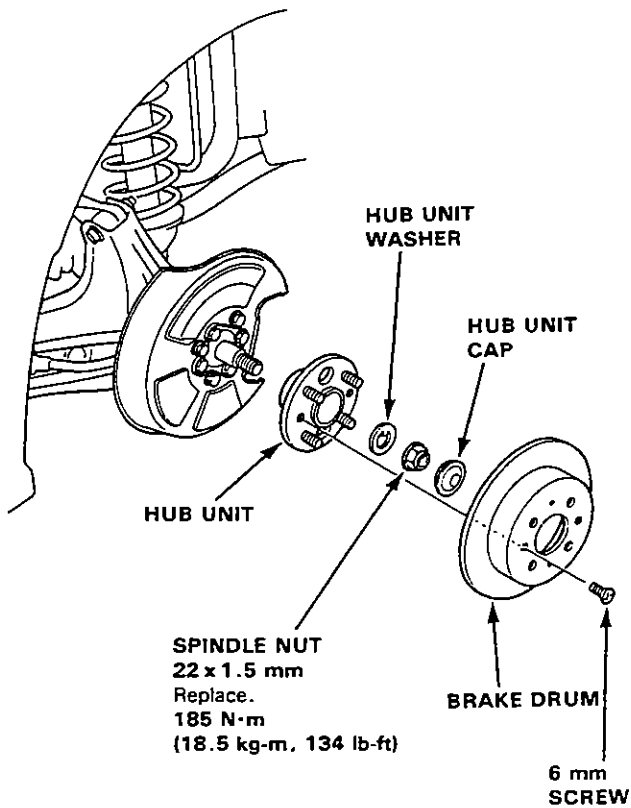
NOTE: Drive in the compensator arm bushings so that their leading edges are flush with the compensator arm.





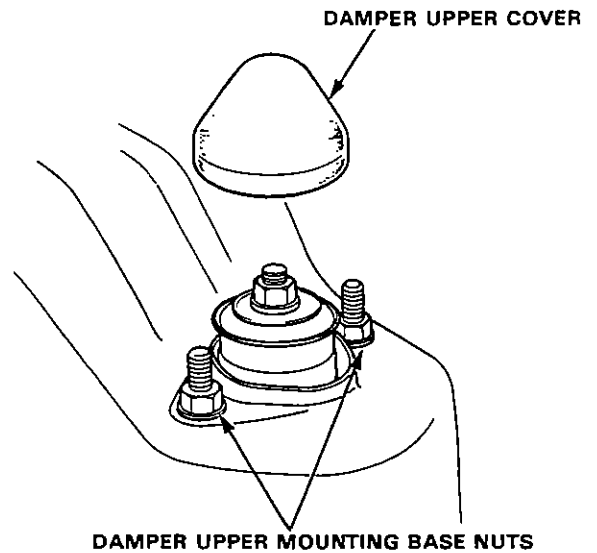
Hub Unit Bearing Replacement

1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel, two 6 mm screws and brake disc.
NOTE: If the brake disc is difficult to remove, install 8 mm bolts into the threaded and tighten them.
3. Remove the hub unit cap unstack the spindle nut, then loosen the spindle nut.
4. Remove the hub unit and hub unit bearing.

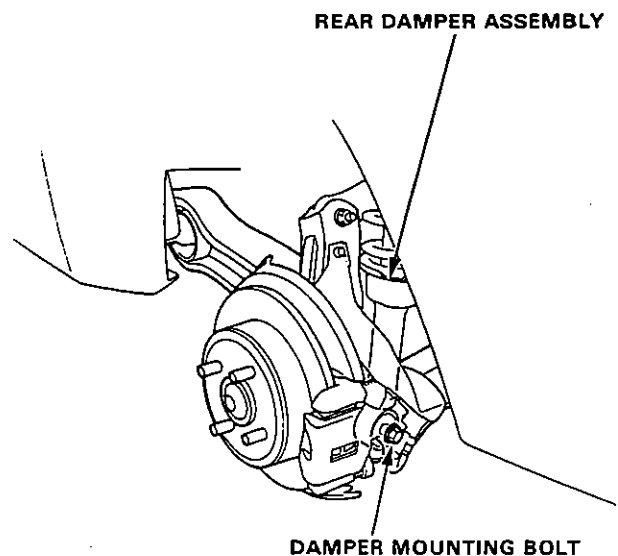


Damper Removal

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.



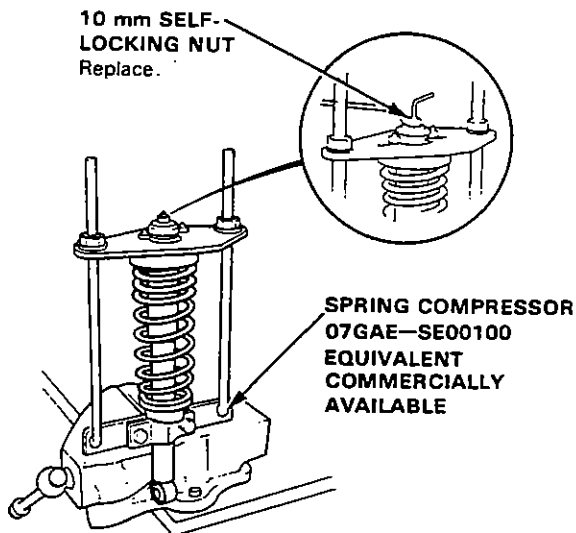
Rear Suspension

Damper Disassembly/Inspection

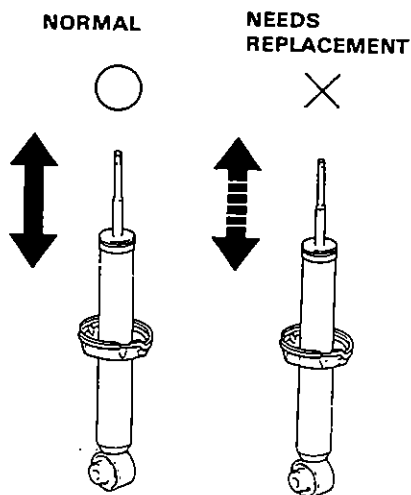
1. Compress the damper spring with the spring compressor according to the manufacturer's instructions.

CAUTION: Do not compress the spring more than necessary to remove the 10 mm self locking nut.

2. Remove the 10 mm self locking nut from the damper assembly.



3. Remove the spring compressor and disassemble the damper as shown on the next page.
4. Check for smooth operation through a full stroke, both compression and extension.



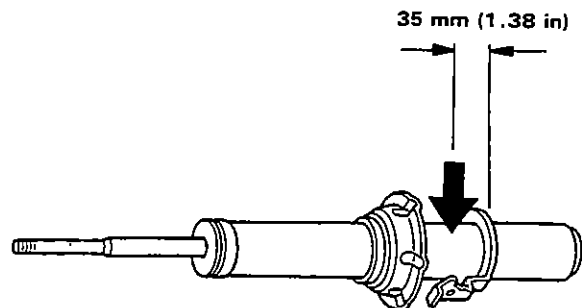
5. Also check for smooth operation in soft strokes of 5–10 cm (2–4 in). Replace the damper if resistance is uneven or jerky.
6. Check for oil leaks, abnormal noises or binding during these tests.

Damper Disposal

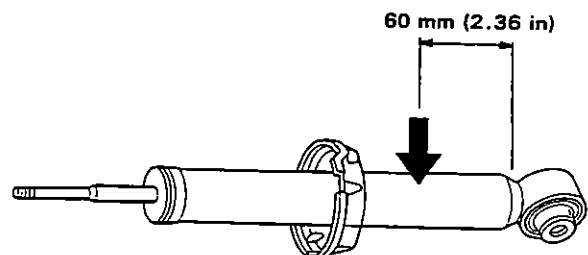
WARNING The front and rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal to prevent explosion and possible injury.

Place the damper on a level surface with its rod extended and drill a hole of 2–3 mm (0.078–0.118 in) diameter in the body to release the gas.

Front Damper



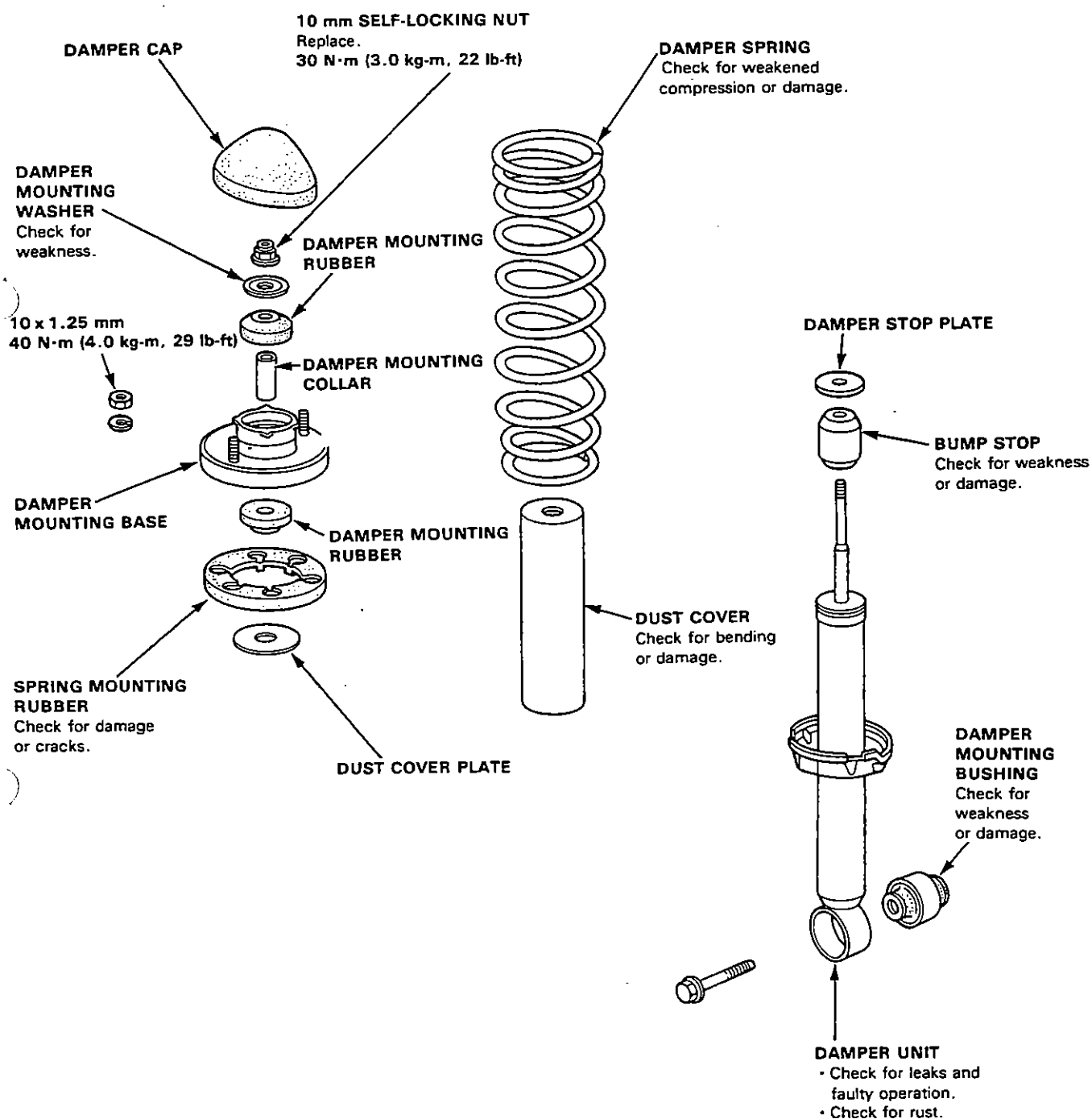
Rear Damper



WARNING Always wear eye protection to avoid getting metal shavings in your eyes when the gas damper pressure is relieved.



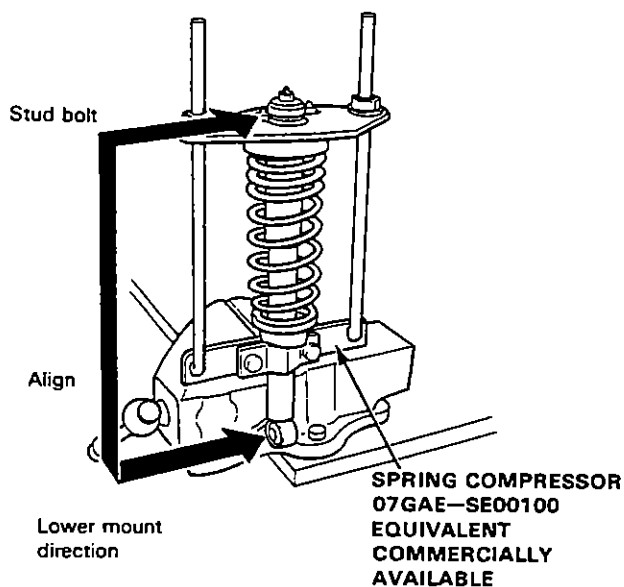
Damper Disassembly/Inspection



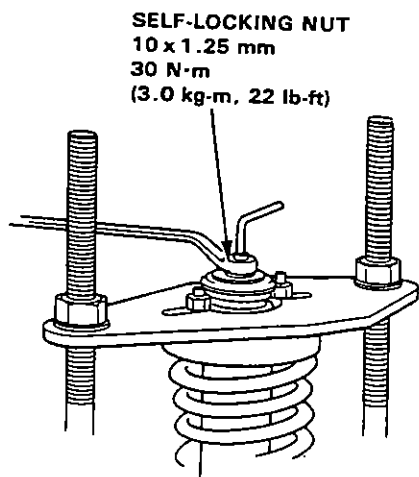
Rear Suspension

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.

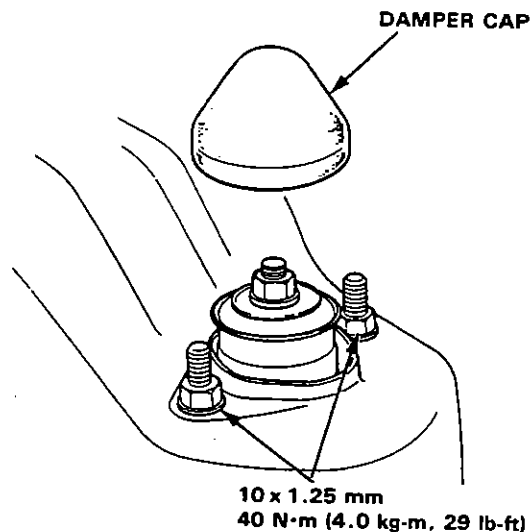


4. Compress the coil spring.
5. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self-locking nut.
6. Hold the damper shaft and tighten the 10 mm self-locking nut.

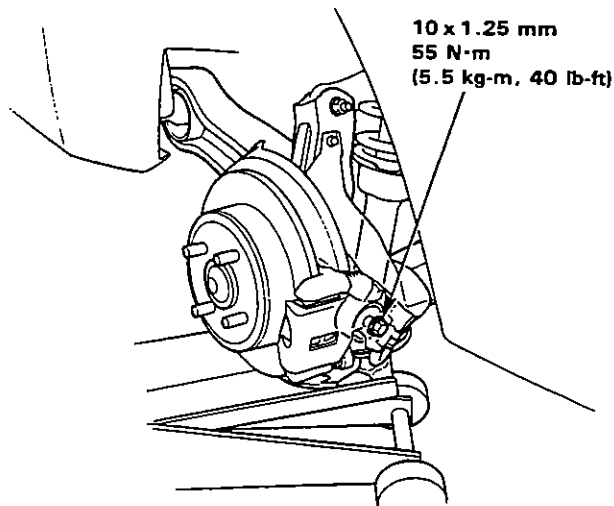


Damper Installation

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	13-2
Illustrated Index	13-3
Pedal Height Adjustment.....	13-4
Parking Brake Adjustment	13-4

Front Brake

Inspection	13-5
Brake Pad Inspection/ Replacement	13-6
Brake Caliper Disassembly	13-7
Reassembly	13-8
Brake Disc Inspection	13-9
Bleeding.....	13-10

Master Cylinder

Index	13-11
Overhaul/Inspection	13-12
Disassembly	13-13
Reassembly	13-14

Brake Booster

Index and Inspection.....	13-15
Tests	13-16
Disassembly	13-17
Rebuild Kit	13-19
Reassembly	13-20
Pushrod Adjustment	13-24
Pushrod Clearance Adjustment...	13-25

Rear Brake

Rear Disc Brake Inspection	13-27
Rear Brake Pad/Disc Inspection and Replacement...	13-28
Rear Caliper Disassembly	13-30
Reassembly	13-33

Brake Hoses/Pipes

Inspection	13-36
Brake Hose Replacement	13-37

Parking Brake

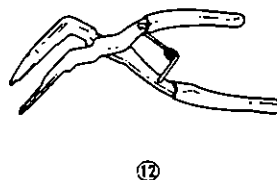
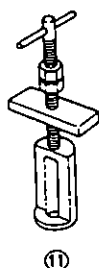
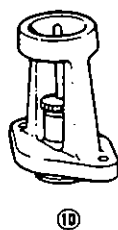
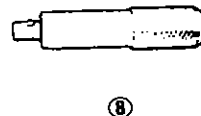
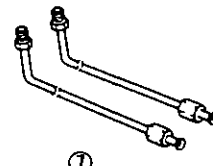
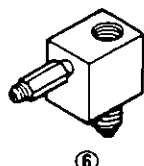
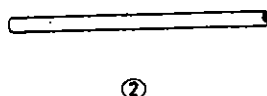
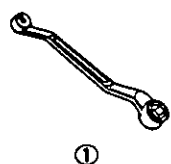
Disassembly and Reassembly ...	13-38
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Special Tools

Special Tools

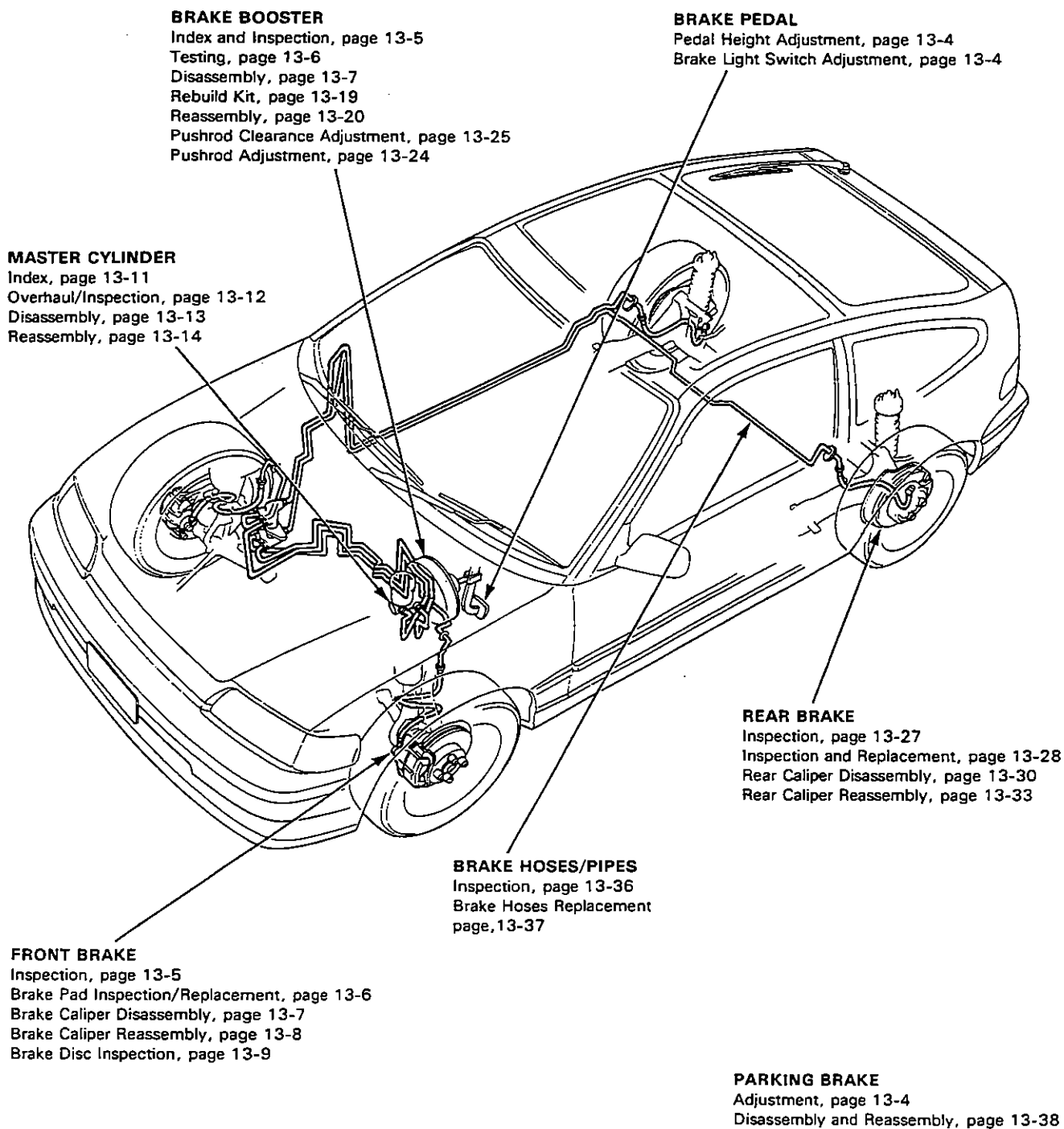
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07921-0010001	Flare Nut Wrench	1	
②	07510-6340300	Vacuum Joint Tube A	1	
③	07404-5790300	Vacuum Gauge	1	
④	07410-5790500	Tube Joint Adaptor	1	
⑤	07406-5790200	Pressure Gauges	2	
⑥	07410-5790100	Pressure Gauge Attachment C	2	
⑦	07510-6340100	Pressure Gauge Joint Pipe	2	
⑧	07749-0010000	Driver	1	
⑨	07947-6890300	Driver Attachment C	1	
⑩	07GAG-SE00100	Pushrod Adjustment Gauge	1	
⑪	07HAE-SG00100	Brake Spring Compressor	1	
⑫	07914-SA50001	Snap Ring Pliers	1	



Brake



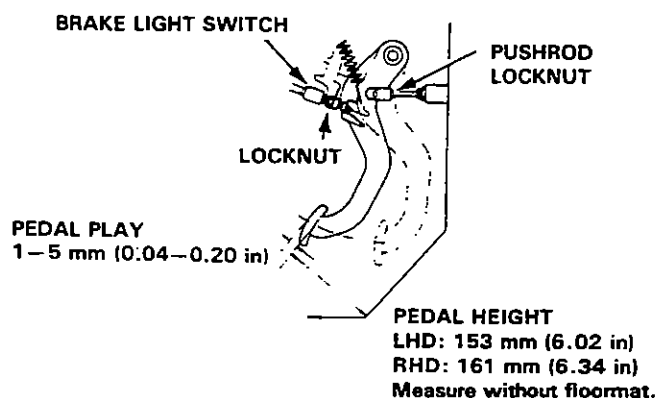
Illustrated Index



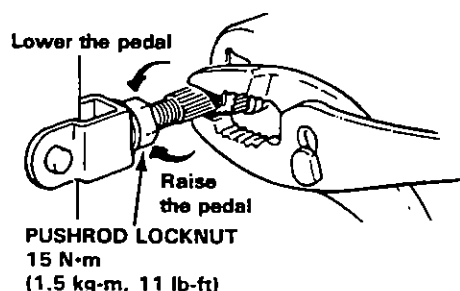
Pedal Height

Adjustment

1. Loosen brake light switch locknut and back off brake light switch until it is no longer touching brake pedal.

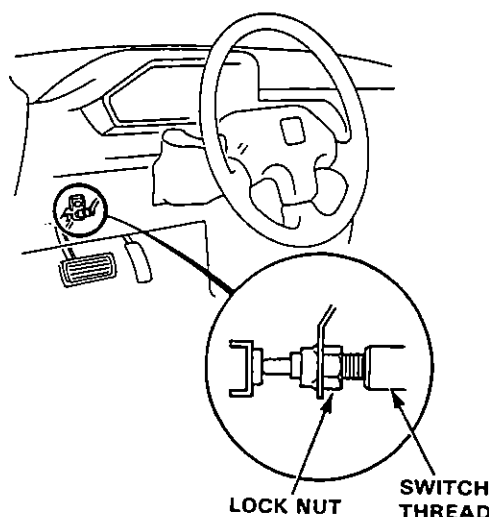


2. Loosen pushrod locknut and screw pushrod in or out with plier until the pedal height from the floor is 153 mm (6.02 in). After adjustment, tighten the locknut firmly.



3. Screw in the brake light switch until its plunger is fully depressed (threaded end touching pad on pedal arm). Then back off switch 1/2 turn and tighten locknut firmly.

CAUTION: Check that brake lights go off when pedal is released.



Parking Brake

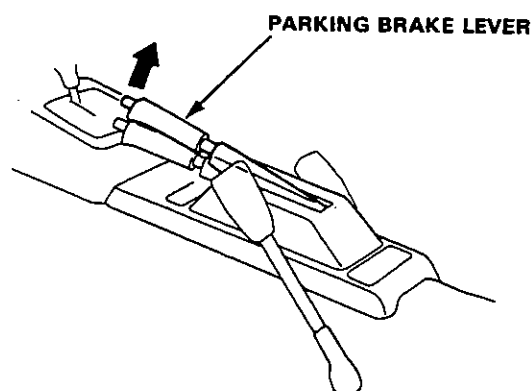
Adjustment

NOTE:

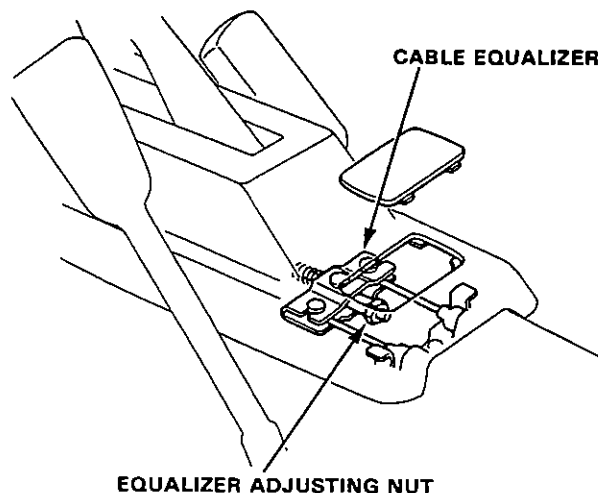
- Be sure the rear brakes are properly adjusted before adjusting the parking brake.
- Incorrectly adjusted rear brakes affect the parking brake adjustment.
- If rear brake adjustment is required repair the rear adjuster first.
- If doing this adjustment after brake drum installation, start the engine and depress the brake pedal several times to set self-adjusting brakes before adjusting parking brake cable.

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

1. Raise the rear wheels off the ground.
2. Pull the parking brake lever up one notch.



3. Tighten the equalizer adjusting nut until rear wheels drag slightly when turned.
4. Release brake lever and check that rear wheels do not drag when turned. Readjust if necessary.
5. With the equalizer properly adjusted, the rear brakes should be fully applied when the parking brake lever is pulled up 6 to 10 clicks.





Inspection

WARNING Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.

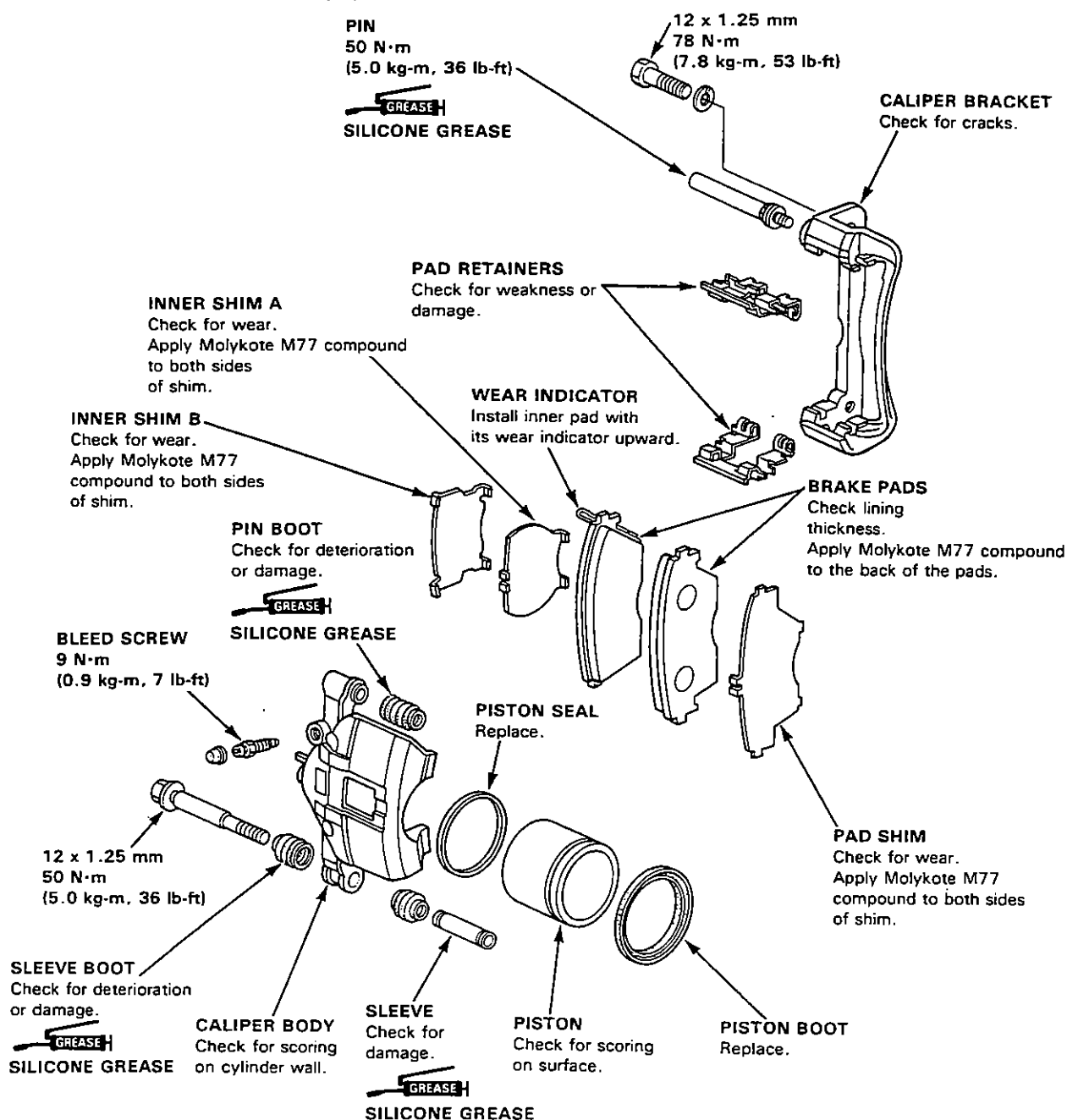
CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.

- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

NOTE:

- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.

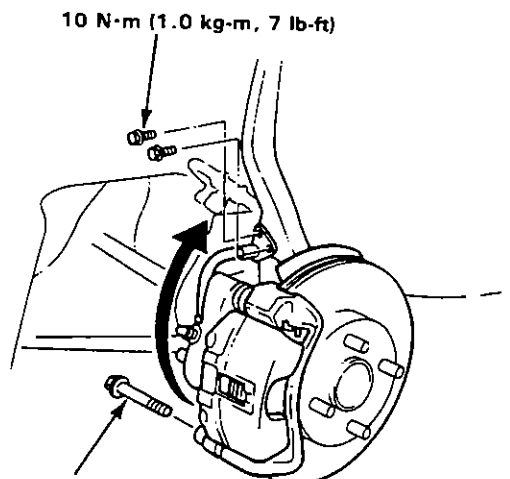


Brake Pad

Inspection/Replacement

WARNING Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.

1. Remove the front wheels and support the front of car on safety stands.
2. Remove the brake hose clamp bolts from the knuckle.
3. Remove caliper bolt and pivot caliper up out of the way.



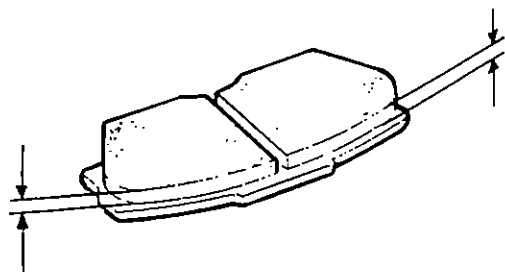
12 x 1.25 mm
50 N·m (5.0 kg-m, 36 lb-ft)

4. Remove the pad shims, pad retainers and pads.
5. Using a vernier caliper, measure the thickness of each brake pad lining.

Brake Pad Thickness:

Standard: 9.0 mm (0.35 in)

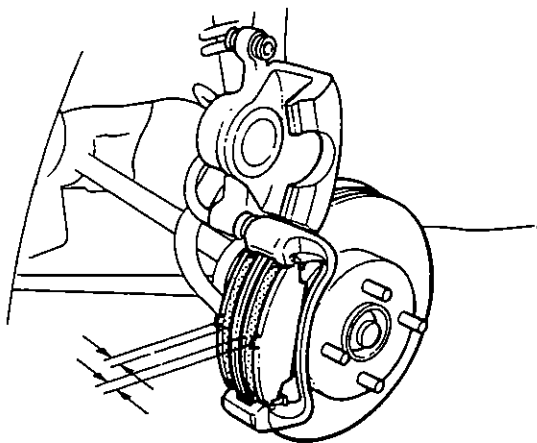
Service Limit: 3.0 mm (0.12 in)



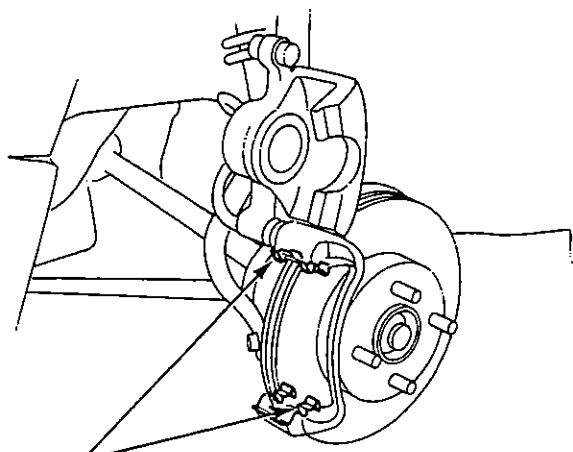
NOTE: Measurement does not include pad backing thickness.

6. If lining thickness is less than service limit, replace both pads as a set.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.



7. Clean the caliper thoroughly; remove any rust, and check for grooves or cracks.
8. Install the pad retainers.



PAD RETAINERS

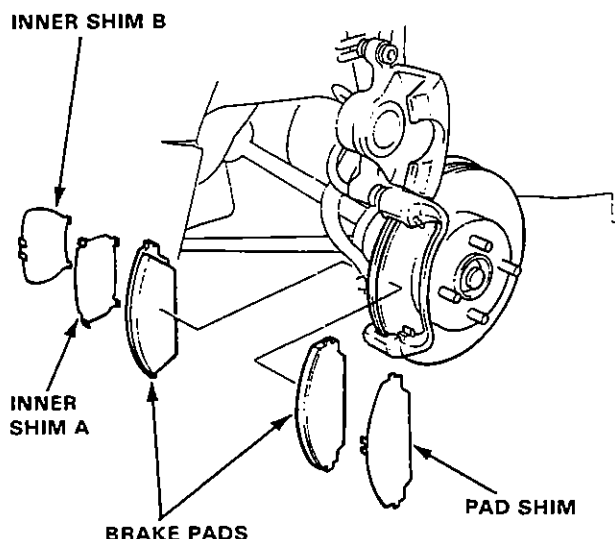


Brake Caliper

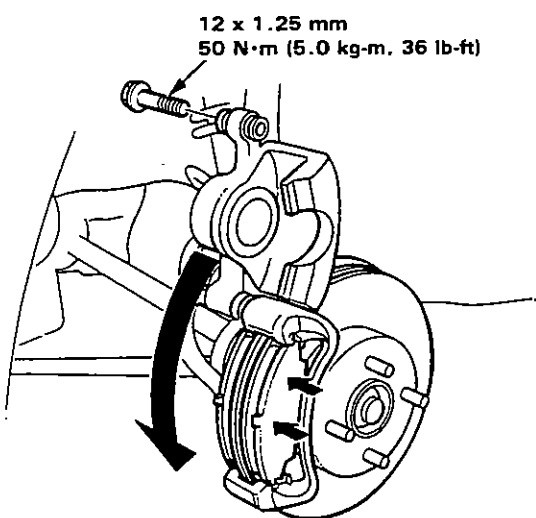
Disassembly

9. Apply Molykote M77 compound to both sides of the pad shims and back of the pads.
10. Install the brake pads and pad shims.

NOTE: Install the pad with the wear indicator on the inside.



11. Push in the piston so that the caliper will fit over the pads. Keep the boot in position to prevent damaging the boot when pivoting the caliper down.
12. Pivot the caliper down into position, then install the bolt B and tighten to 45 N·m (4.5 kg-m, 33 lb-ft).



13. Install the brake hose clamp bolts to the Knuckle.
14. Depress the brake pedal several times to make sure the brakes work, then road-test.

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.

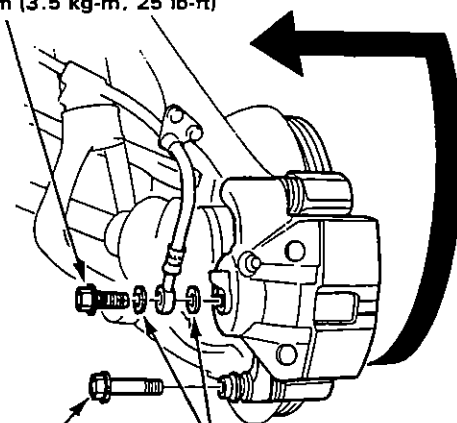
1. Remove the banjo bolt and disconnect the brake hose from the caliper.
2. Remove the caliper bolt, then remove the caliper.

NOTE: Avoid damaging the splash guard.

BANJO BOLT
10 x 1.0 mm
35 N·m (3.5 kg-m, 25 lb-ft)

CALIPER BOLT
12 x 1.25 mm
50 N·m
(5.0 kg-m, 36 lb-ft)

SEALING
WASHER
Replace.



(cont'd)

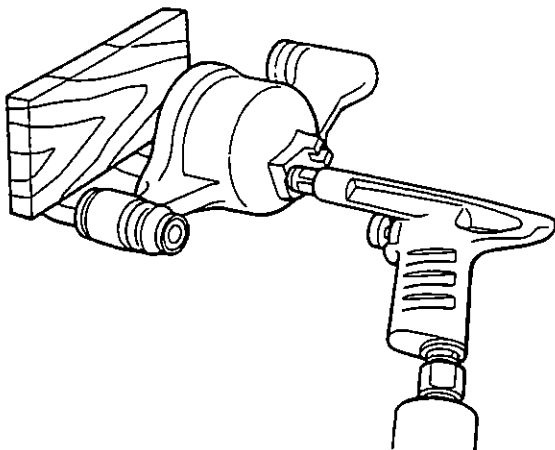
Brake Caliper

Disassembly (cont'd)

3. Place a wooden block or shop rag in the caliper opposite the piston, then carefully remove the piston from the caliper by applying air pressure through the brake line hole.

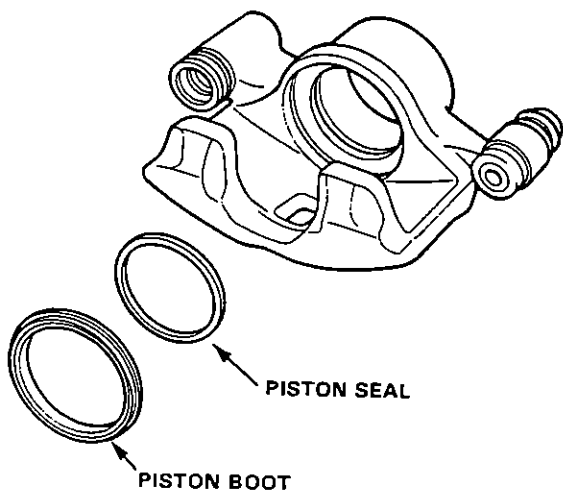
WARNING

- Do not place your fingers in front of the piston.
- Do not use high air pressure; use the approved 30 PSI nozzle.



4. Remove the piston boot and piston seal.

CAUTION: Take care not to damage the cylinder.

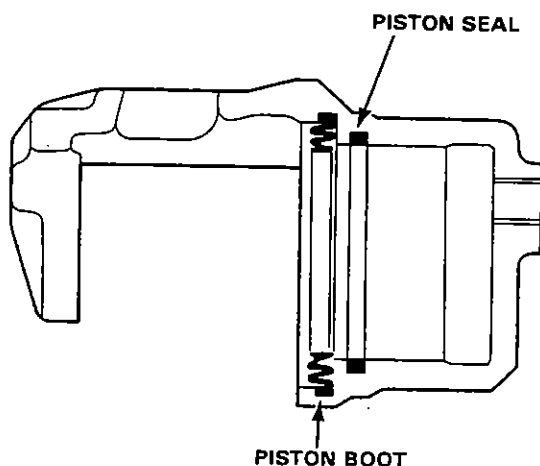


Reassembly

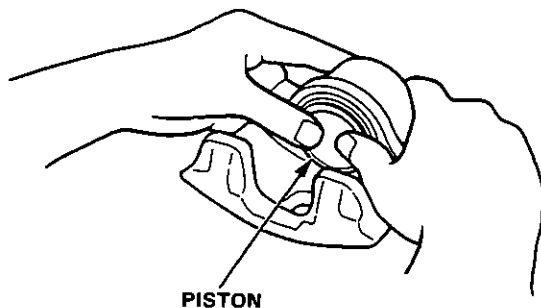
CAUTION:

- Make sure all parts are clean before reassembly.
- Use only new replacement parts.
- Use only clean brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different brands of brake fluid.
- Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish.
- Wash spilled brake fluid off immediately with clean water.

1. Clean the piston and caliper bore with brake fluid and inspect for wear or damage.
2. Apply brake cylinder grease to a new piston seal, then install the piston seal in the cylinder groove.
3. Install the piston boot.



4. Lubricate the caliper cylinder and piston with brake fluid, then install the piston in the cylinder with the dished end facing in.



5. Reinstall the caliper in the reverse order of removal.
6. Fill the brake reservoir up and bleed the brake system (page , 13-10).

Brake Disc



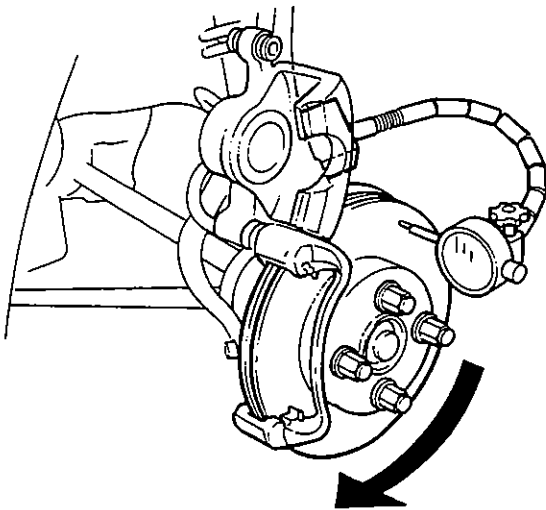
Run-Out Inspection

1. Remove the front wheels, and support the front of the car on safety stands.
2. Remove caliper pin bolt, then pivot the caliper up out of the way on the caliper pin bolt, and remove the pads and pad retainers.
3. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.
4. Use the lug nuts to hold the disc securely against the hub, then mount a dial indicator as shown.

Brake Disc Runout:

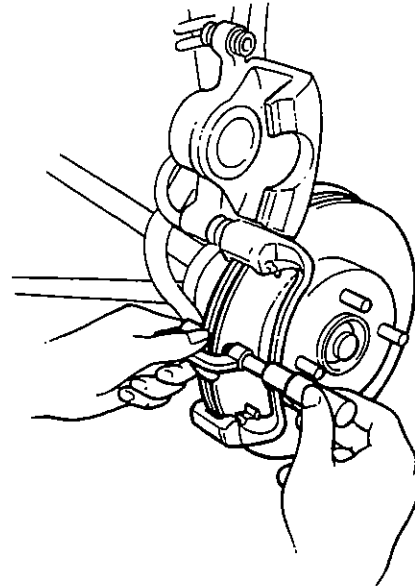
Service Limit: 0.15 mm (0.006 in)

5. If the disc is beyond the service limit, refinish the rotor with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front brake disc lathe" offered by Snap-on Tools Co. are approved for this operation.



Thickness and Parallelism Inspection

1. Remove the front wheels, and support the front of car on safety stands.
2. Move the caliper and pads out of the way as described in the preceding column.
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in.) in from the outer edge of the disc.



Brake Disc Thickness:

Standard: 19 mm (0.75 in)

Max: Refinishing Limit 17 mm (0.67 in)

Brake Disc Parallelism:

The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in.)

4. If the disc is beyond the limits for thickness or parallelism, refinish the rotor with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front brake disc lathe" offered by Snap-on Tools Co. are approved for this operation.

NOTE: A new disc should be ground if its run-out is greater than 0.10 mm (0.004 in.).

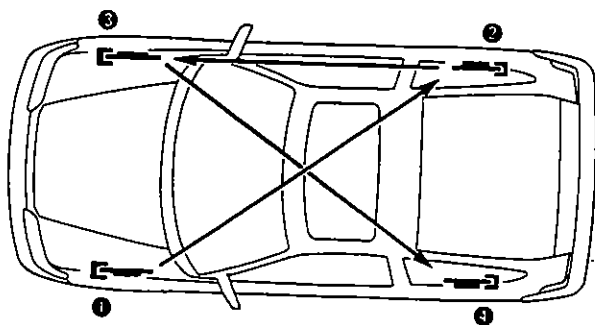
Bleeding

CAUTION

- Make sure all parts are clean before reassembly.
- Use only clean brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different brands of brake fluid.
- Avoid spilling brake fluid on painted, plastic or rubber surfaces as it can damage the finish; Wash spilled brake fluid off immediately with clean water.

NOTE: The reservoir on the master cylinder must be full at the start of bleeding procedure, and checked after bleeding each wheel cylinder. Add fluid as required. Use only DOT 3 brake fluid.

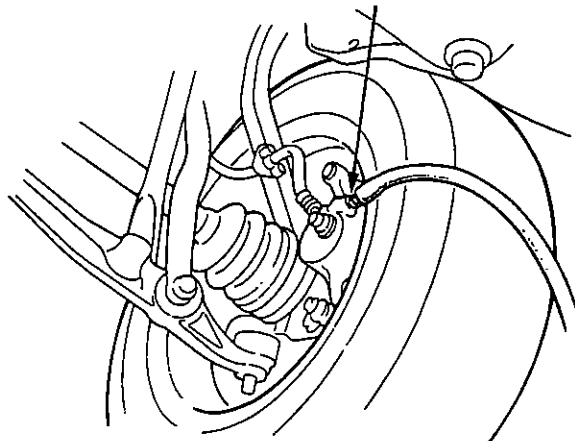
Bleeding Sequence



1. Have someone slowly pump the brake pedal several times, then apply steady pressure.
2. Loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
3. Repeat the procedure for each wheel in the sequence shown above, until air bubbles no longer appear in the fluid.
4. Check brake performance by road testing.

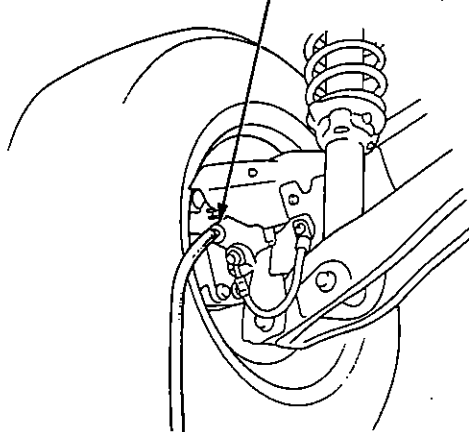
FRONT

FRONT BLEED SCREW
9 N·m (0.9 kg-m, 7 lb-ft).



REAR

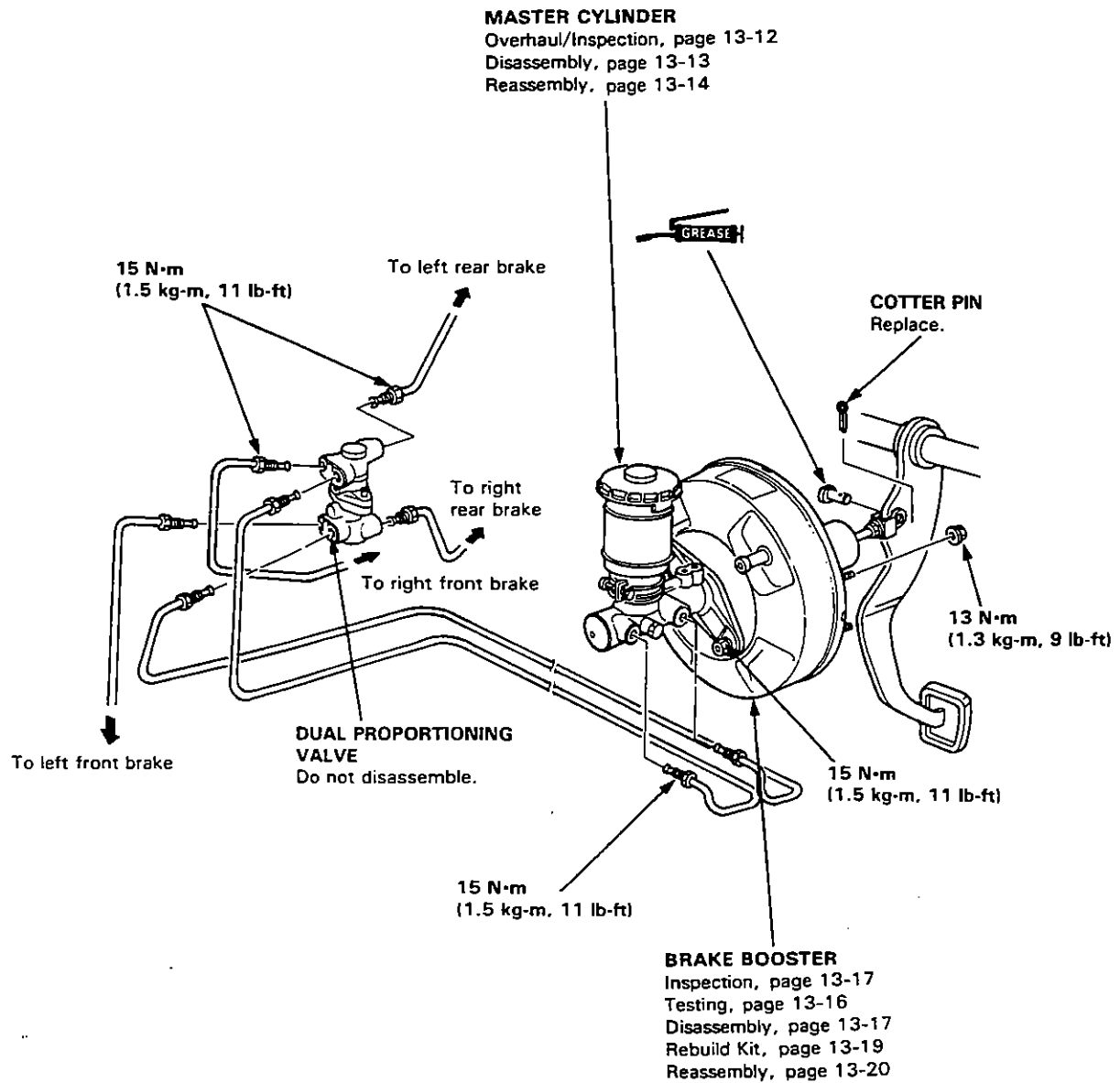
REAR BLEED SCREW
9 N·m (0.9 kg-m, 7 lb-ft)



Master Cylinder Booster



Index



Master Cylinder

Overhaul/Inspection

CAUTION:

- Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at once and rinse well with clean water.

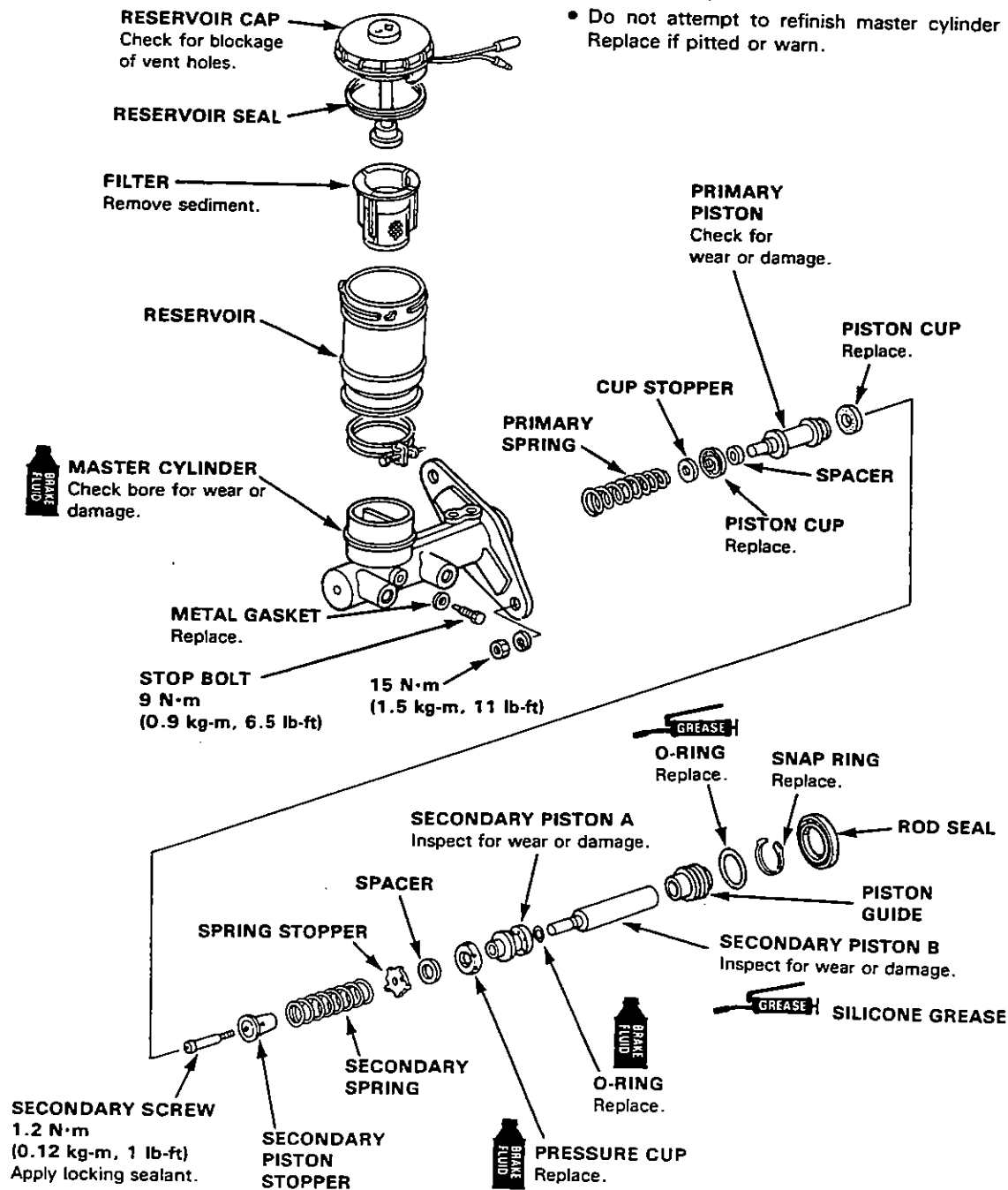
 This symbol represents brake fluid. Use only DOT 3 brake fluid.

 Use only HONDA cylinder grease (P/N 08733-B020E) or equivalent.

- Carefully inspect the bore of the master cylinder for pits, scratches or scoring.
- Replace the master cylinder if the bore is damaged or worn. Do not hone or attempt to refinish the bore.

NOTE:

- Wash all removed parts in brake fluid and blow dry with compressed air. Blow open all passages and fluid ports.
- Replace all rubber parts with new ones whenever the cylinder is disassembled.
- To prevent damage, liberally apply clean brake fluid to the piston cups before installation. Use special tool to install the cups.
- Do not attempt to refinish master cylinder bore. Replace if pitted or worn.



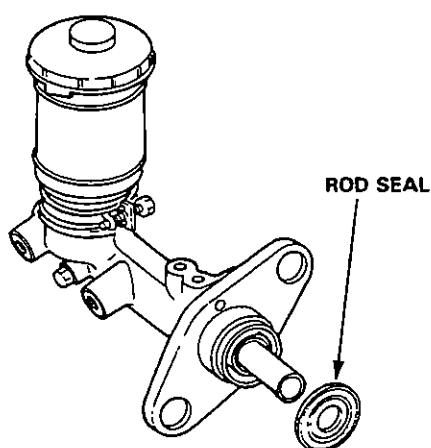


Disassembly

CAUTION:

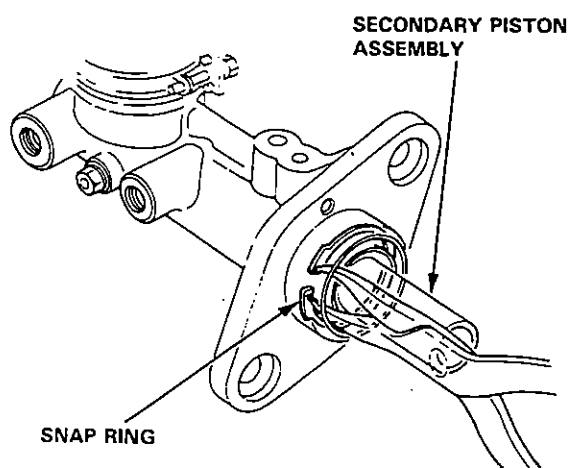
- Avoid spilling fluid on painted, plastic or rubber parts as it may damage the finish.
- Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.
- Use only new clean brake fluid.
- Clean all parts thoroughly with brake fluid. Blow 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.

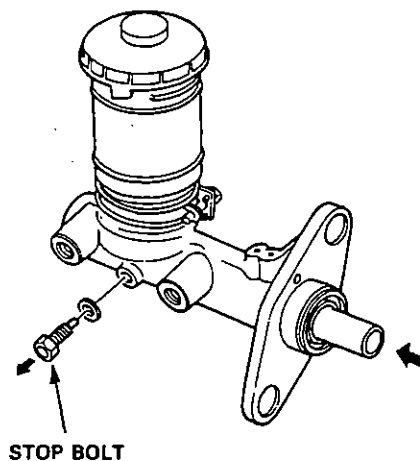


2. Push the secondary piston assembly, then remove the snap ring.

CAUTION: Avoid damaging the master cylinder wall.



3. Remove the stop bolt while pushing in the secondary piston assembly.



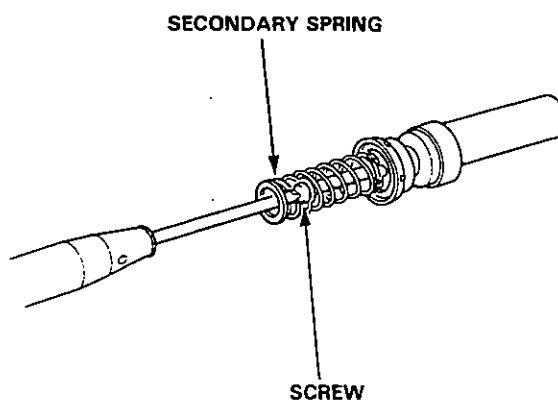
4. Remove the piston guide, secondary piston assembly and primary piston assembly.

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

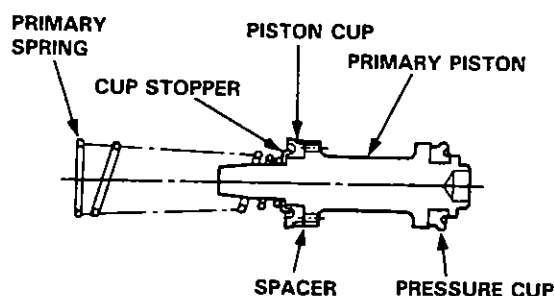
Reassembly

CAUTION:

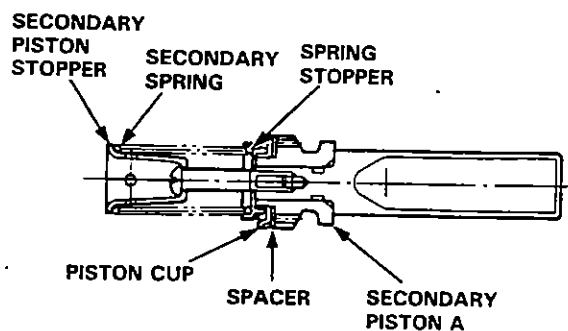
- Make sure all parts are clean before reassembly.
 - Use only new replacement parts.
 - Use only clean brake fluid.
 - Do not allow dirt or other foreign matter to contaminate the brake fluid.
 - Do not mix different brands of brake fluid.
 - Avoid spilling brake fluid on painted, plastic or rubber 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.

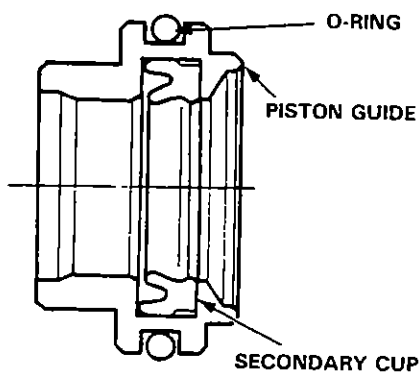
PRIMARY PISTON ASSEMBLY



SECONDARY PISTON ASSEMBLY



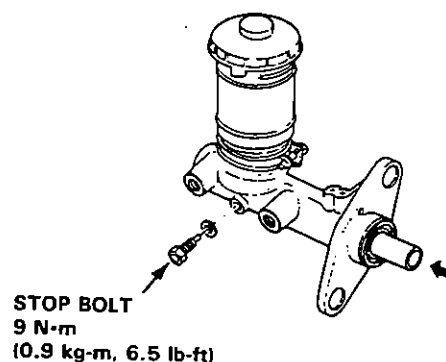
PISTON GUIDE ASSEMBLY



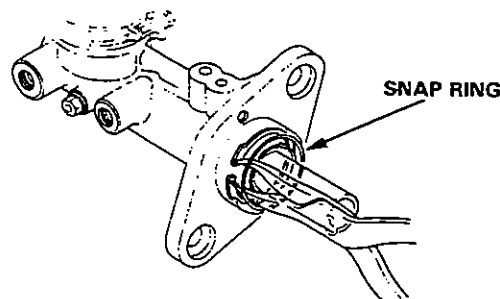
2. Install the piston assemblies in the master cylinder.

NOTE: To ease assembly, rotate the pistons while inserting.

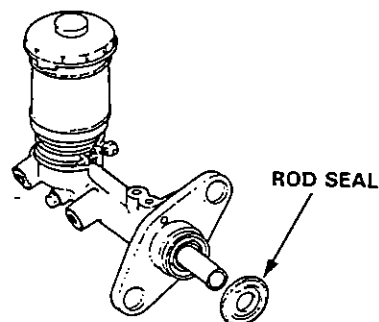
3. Install the stop bolt and new sealing washer while pushing in the secondary piston assembly, then tighten the stop bolt.



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 is no interference between the brake pipes and other parts.

Brake Booster

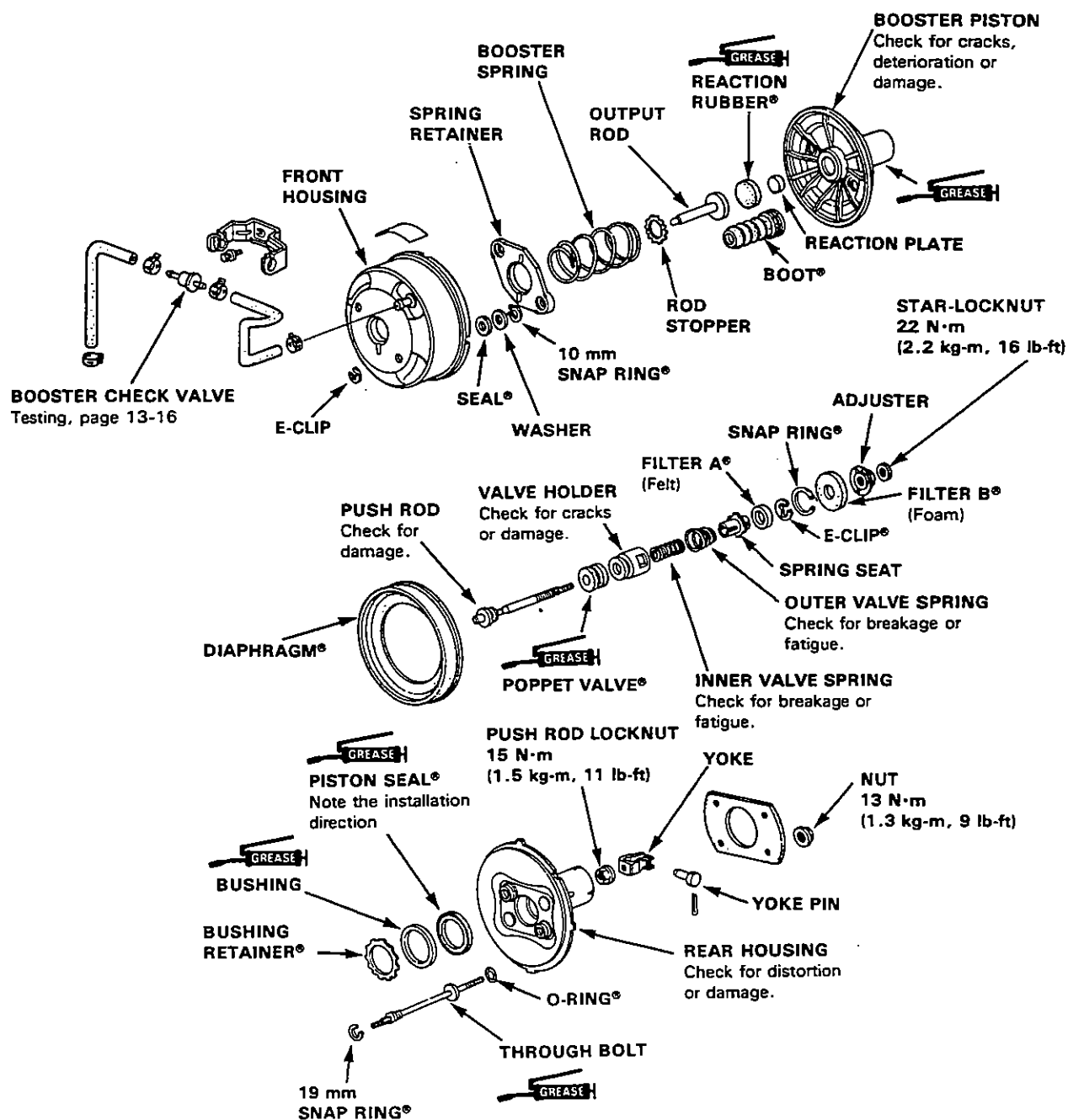


Index and Inspection

Booster testing is on next page.

NOTE:

- Parts marked* are available with rebuild kit and must be replaced whenever disassembled.
- **GREASE** on this page refers to silicone grease.
- Scribe an aligning mark across the front and rear housings so you can reassemble in their original positions (page 13-17).



Brake Booster

Test

Leak Test

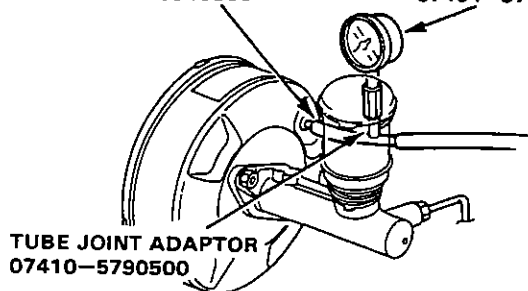
1. Install the Brake Power Kit (07504-6340100) as shown.
2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 300-500 mmHg (11.8-19.7 inHg), then stop the engine.
3. Read the vacuum gauge.

If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.

- Check valve
- Vacuum hose
- Seals
- Diaphragm
- Master cylinder O-ring and cup

VACUUM JOINT TUBE A
07510-6340300

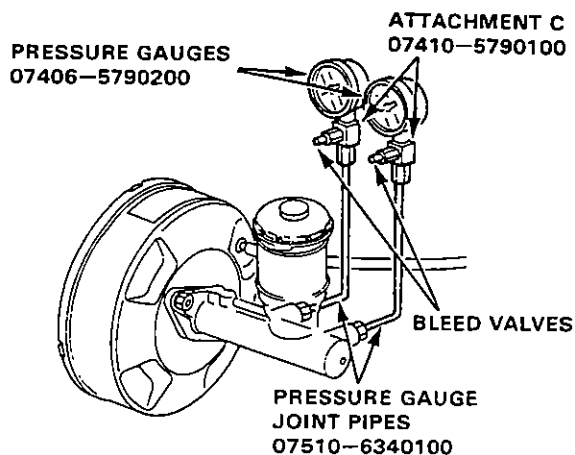
VACUUM GAUGE
07404-5790300



Function Test

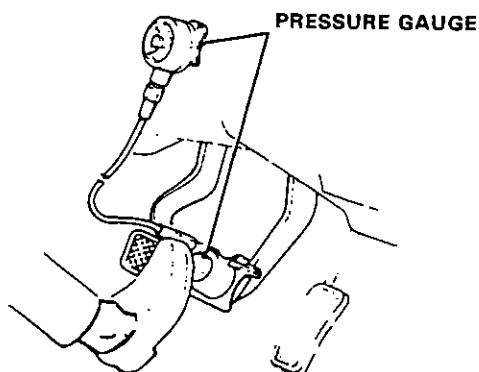
1. Install the vacuum gauge as same the leak test.
2. Connect the oil pressure gauges to the master cylinder using the attachments as shown.
3. Bleed air through the valves.

CAUTION: Avoid spilling brake fluid on painted, plastic or rubber parts as it may damage the finish.



4. Start the engine.

5. Depress the brake pedal with a 200 N (20 kg, 44 lbs) of pressure. The following pressures should be observed at the pressure gauges in each vacuum.

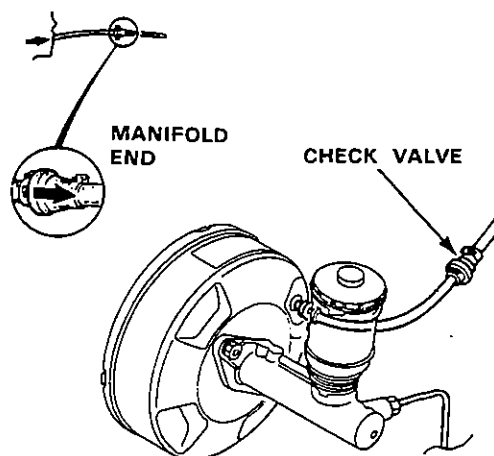


Vacuum mmHg	Line Pressure kpa (kg/cm ² , psi)
0	1363 (13.9, 198)
300	4511 (46, 654)
500	6610 (67.4, 958)

6. Inspect the master cylinder pistons and cups in the readings do not fall within the limits shown above.

Check Valve Test

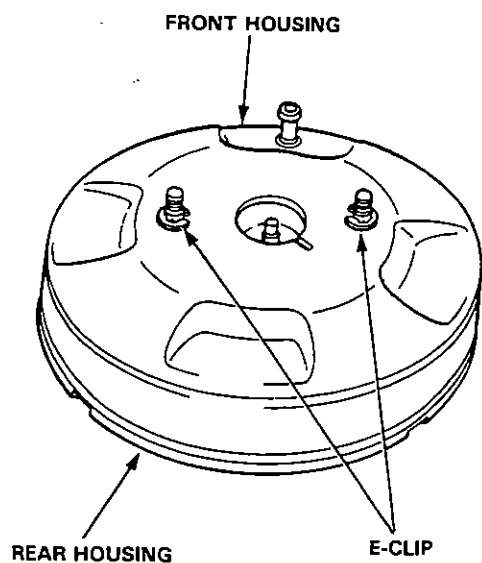
1. Remove the check valve, blow on one end of the hose and then the other; if you can blow through the booster end, but not through the manifold end, the check valve is OK.



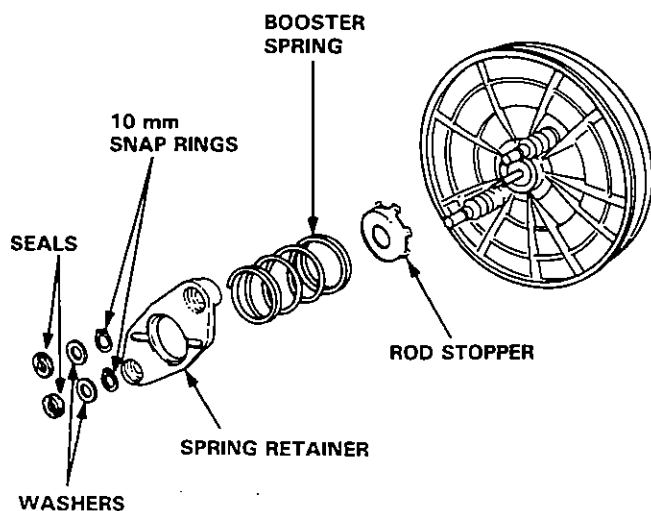


Disassembly

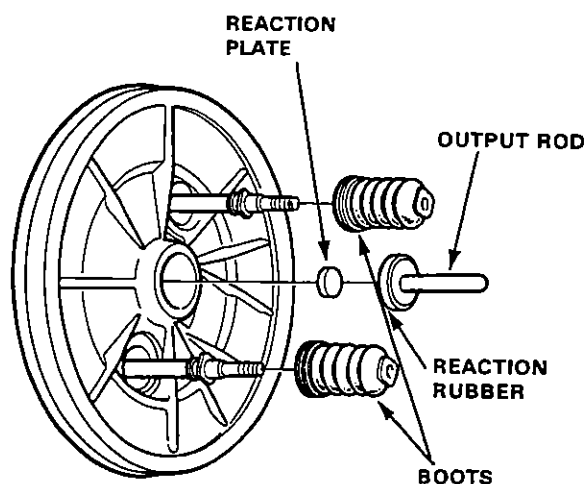
1. Scribe an aligning mark across the front and rear booster housings to ensure proper positioning of parts on reassembly.
2. Remove the E-clips, and separate the front booster housing and the rear booster housing.



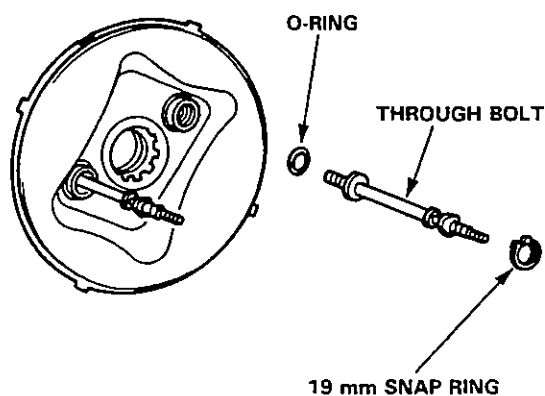
3. Remove the seals and washers from the spring retainer, then remove the spring retainer, booster spring and rod stopper by removing the 10 mm snap rings.



4. Remove the output rod, reaction rubber and reaction plate.
5. Remove the boots.



6. Separate the booster piston from the housing.
7. Remove the 19 mm snap ring and remove the through bolts with O-rings from the rear housing.

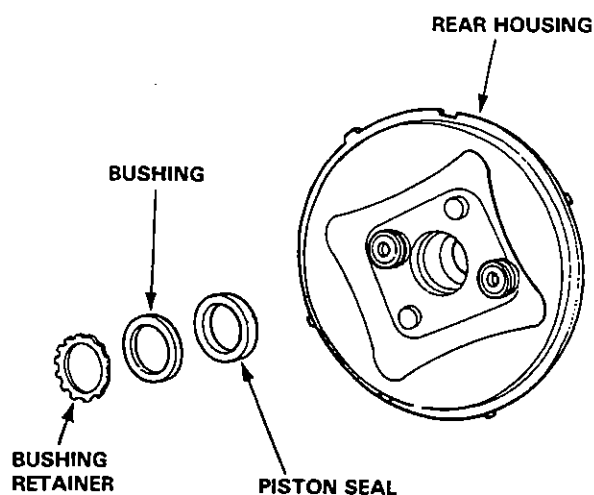


(cont'd)

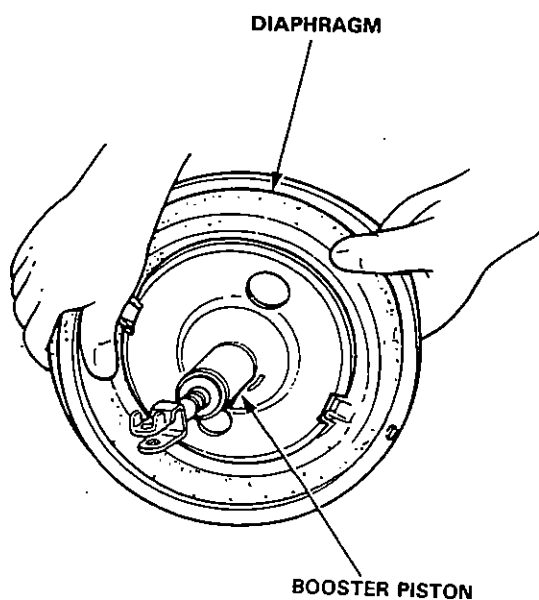
Brake Booster

Disassembly (cont'd)

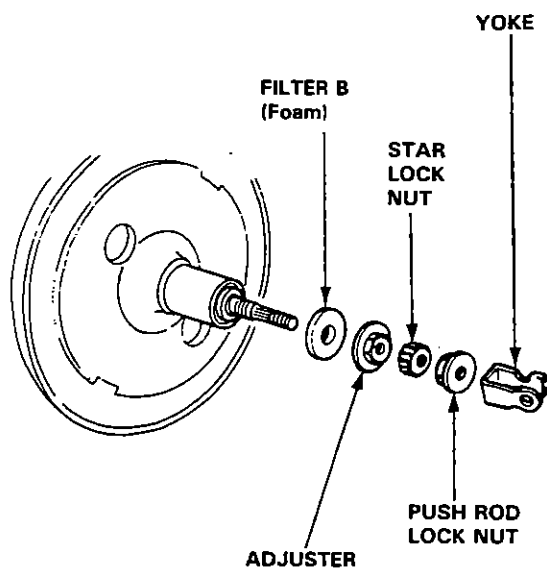
8. Remove the bushing retainer, bushing and piston seal from the rear housing.



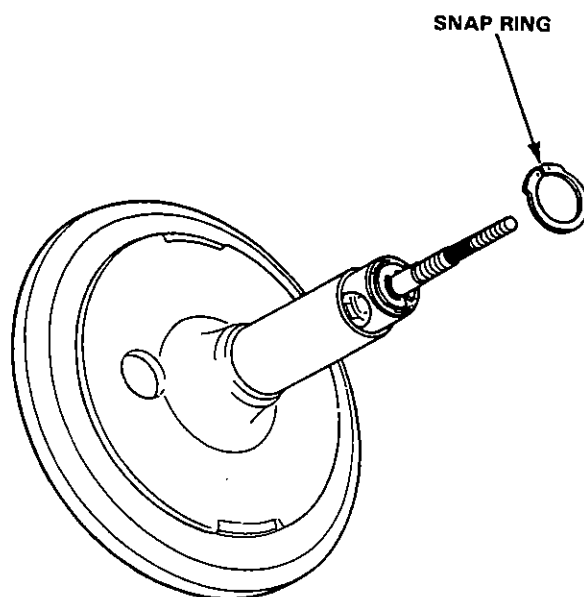
9. Remove the diaphragm from the booster piston.



10. Remove the push rod yoke, push rod lock nut, star lock nut, adjuster and filter B (foam) from the booster piston.

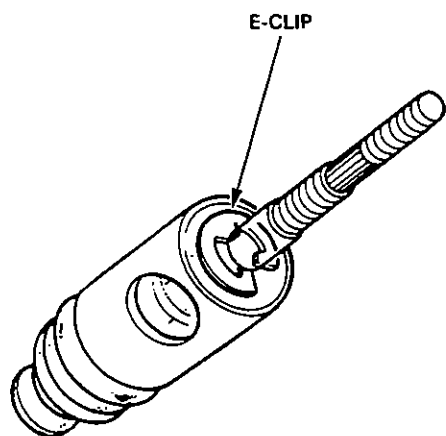


11. Remove the push rod by removing the snap ring.

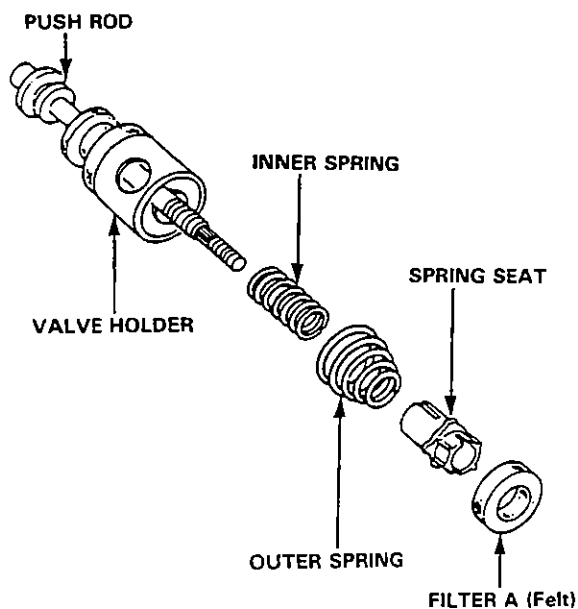




12. Remove the E-clip from the push rod.



13. Remove filter A (Felt), spring seat, outer valve spring, inner valve spring, valve holder, poppet valve and push rod.



Rebuild Kit

E-CLIP

SEAL

10 mm SNAP RING

REACTION RUBBER

BOOT

DIAPHRAGM

POPPET VALVE

FILTER A (Felt)

E-CLIP

FILTER B (Foam)

SNAP RING

BUSHING RETAINER

BUSHING

PISTON SEAL

19 mm SNAP RING

O-RING

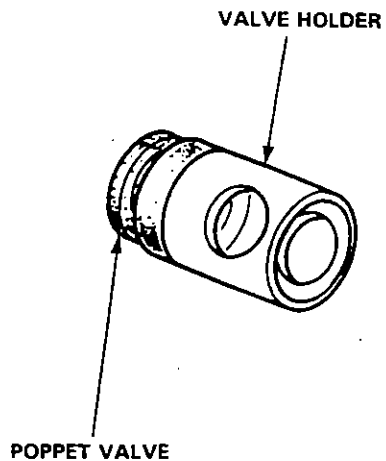
SILICONE GREASE

Brake Booster

Reassembly

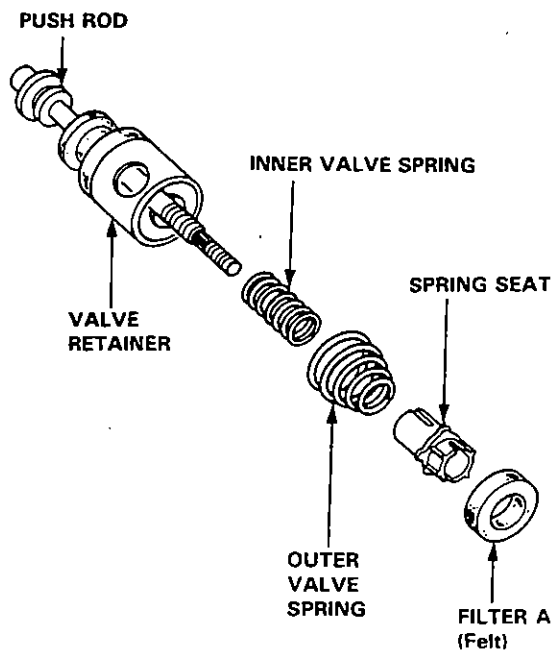
NOTE: Clean all parts before reassembly.

1. Install the poppet valve on the valve holder.

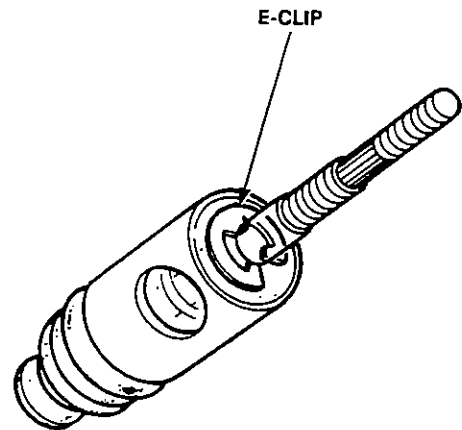


2. Install the valve holder, inner valve spring, outer valve spring and spring seat on the push rod.

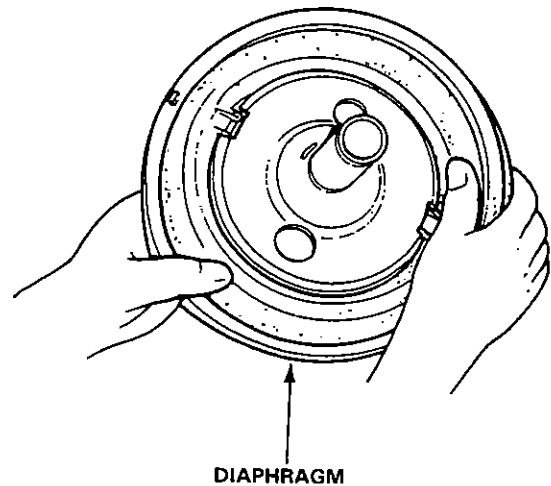
NOTE: Install the spring seat with its short end facing the filter side.



3. Install a new filter A (felt) on the push rod and secure with a new E-clip.

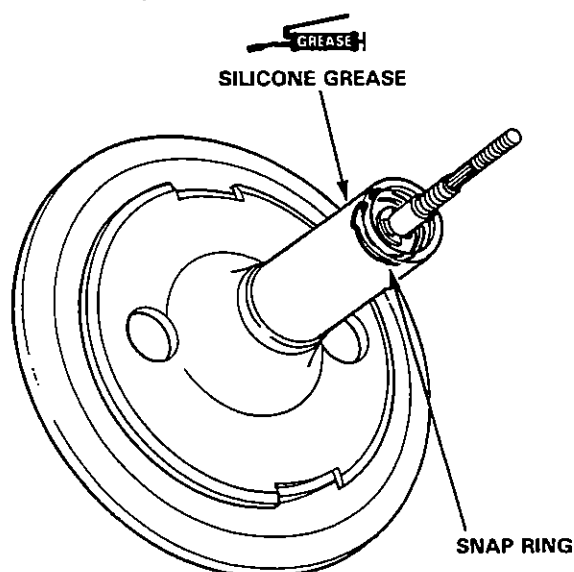


4. Install the diaphragm on the booster piston.

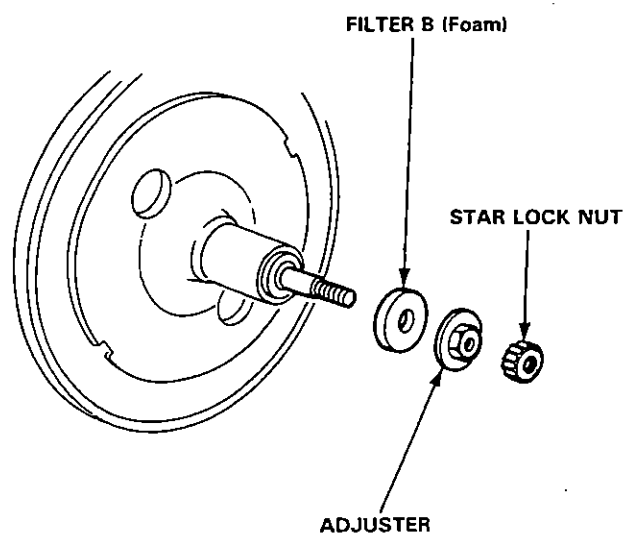




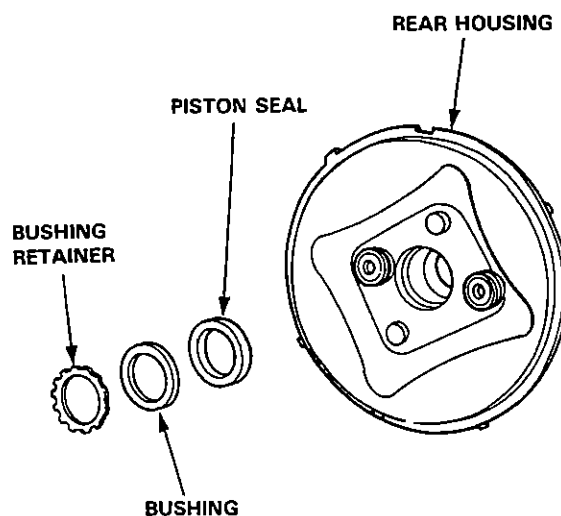
5. Apply silicone grease to the inner and outer surface of the booster piston tube.
6. Install the push rod assembly and secure with the snap ring.



7. Install filter B (foam) on the push rod, then loosely install the adjuster and start lock nut.



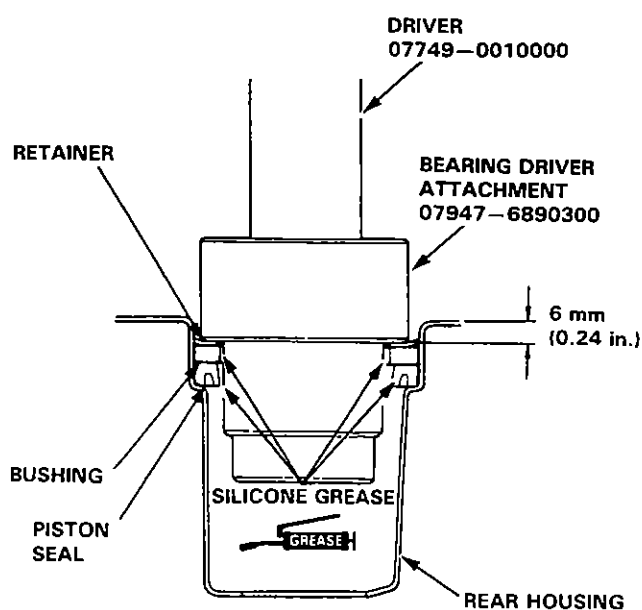
8. Apply silicone grease to the piston seal.
9. Position the piston seal, bushing and bushing retainer on the rear housing.



NOTE: Make sure the lip of the seal is facing in, as shown in drawing below.

10. Drive the bushing retainer in until it is 6 mm below the edge of the rear housing.

CAUTION: If you drive the retainer more than 6 mm, the piston seal may distort.

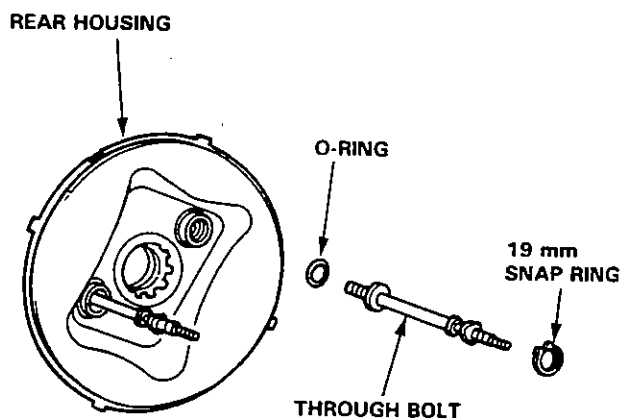


(cont'd)

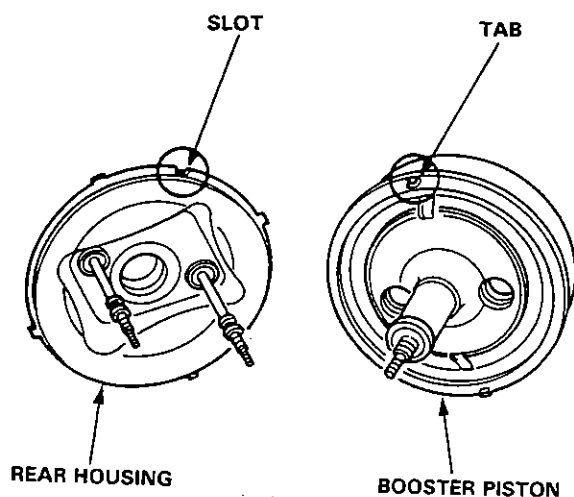
Brake Booster

Disassembly (cont'd)

11. Install the O-rings and through bolts on the rear housing and secure with 19 mm snap ring.

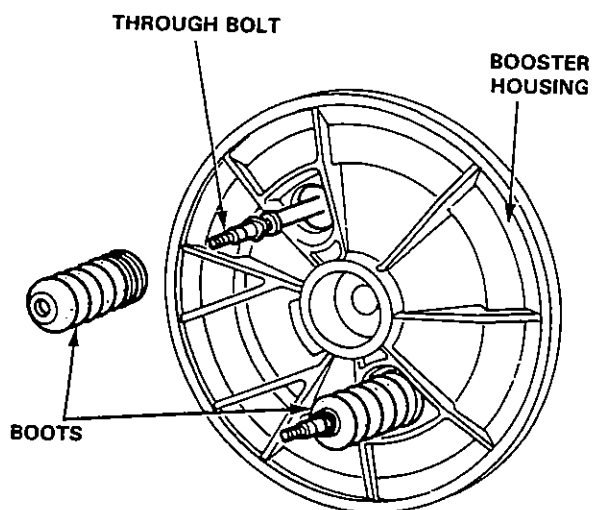


12. Install the booster piston on the rear housing aligning their tabs and slots.



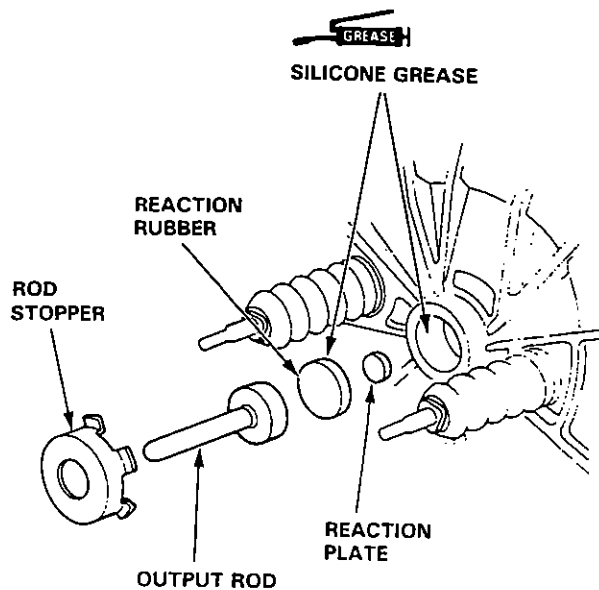
13. Install the boots on the through bolts.

NOTE: Make sure not to damage the boots when installing.



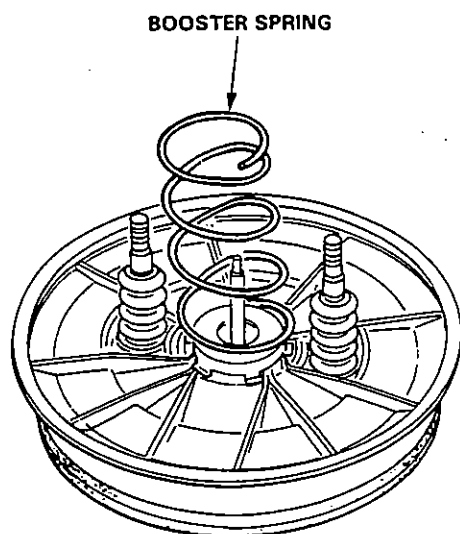
14. Apply silicone grease to the bore of the booster piston and reaction rubber.

15. Install the reaction plate, reaction rubber, output rod and rod stopper on the booster piston.



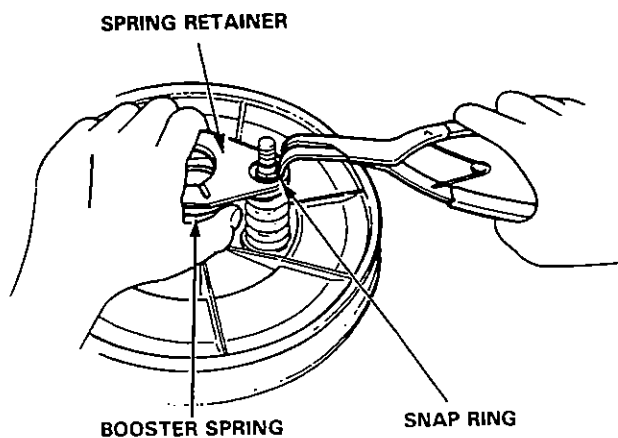


16. Install the booster spring.



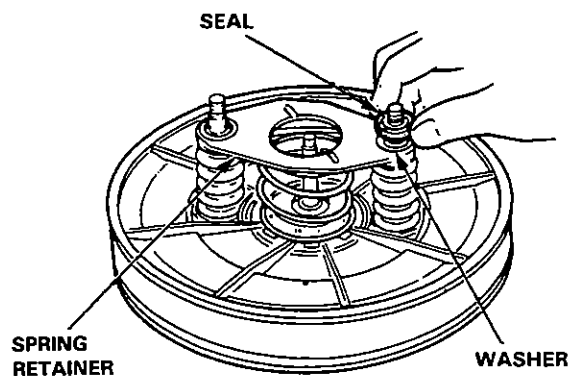
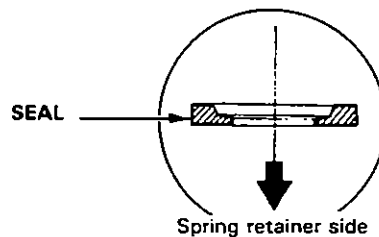
17. Install the spring retainer on the through bolts aligning the square portions of the bolts and retainer.

18. Compress the booster spring, then install the 10 mm snap ring on the through bolts.

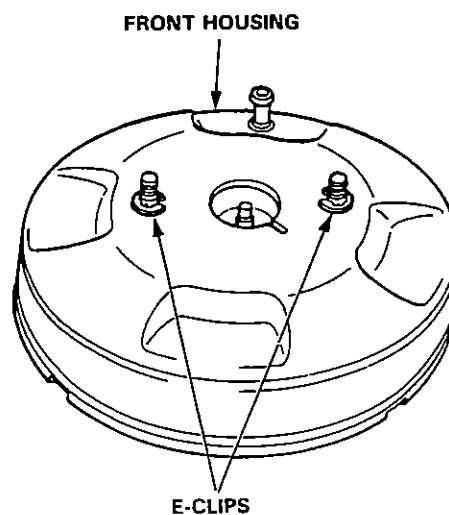


19. Install the washers and seals on the through bolts.

NOTE: Install the seals with the flat sides facing the spring retainer side as shown.



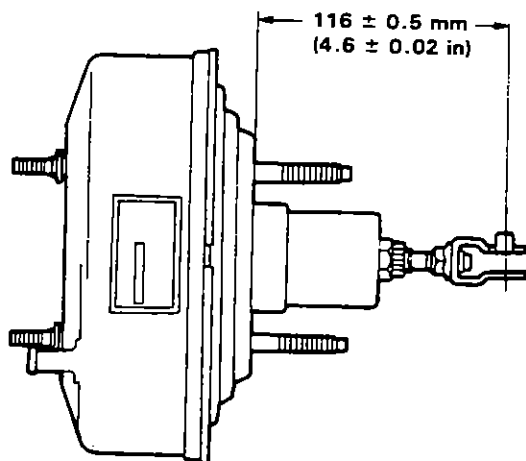
20. Install the front housing and secure with E-clips.



Brake Booster

Pushrod Adjustment

Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.

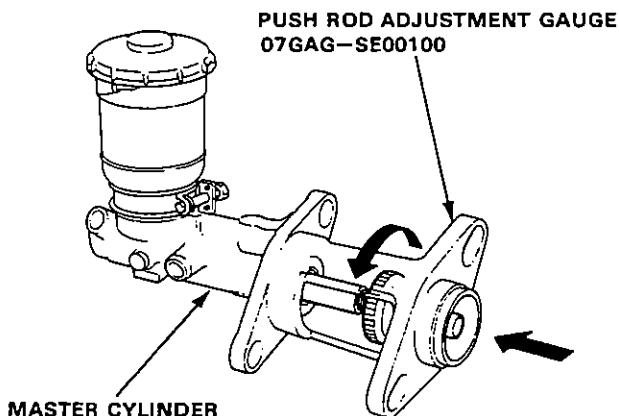




Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing master cylinder.

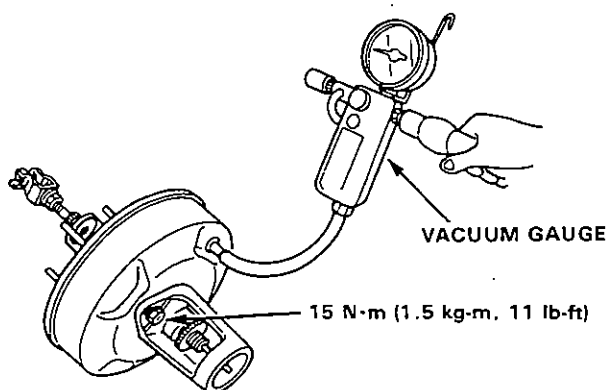
1. Using the Push Rod Adjustment Gauge, adjust bolt so the top of it is flush with end of master cylinder piston.



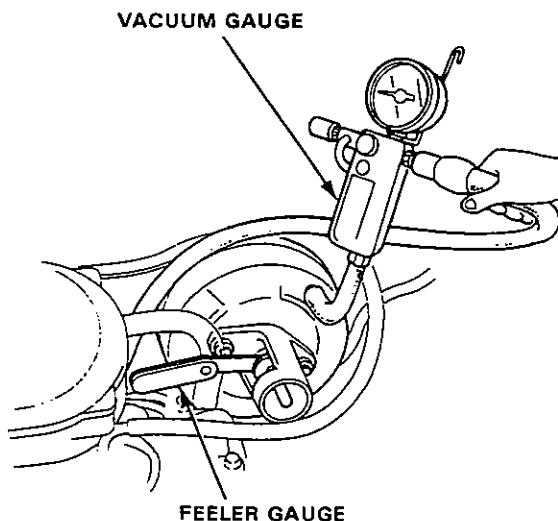
2. Install the master cylinder rod seal between the push rod adjustment gauge and brake booster.
3. Without disturbing the adjusting bolt's position, put the gauge upside down on the booster.
4. Install the master cylinder nuts and tighten to the specified torque.
5. Connect the booster in-line with 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)

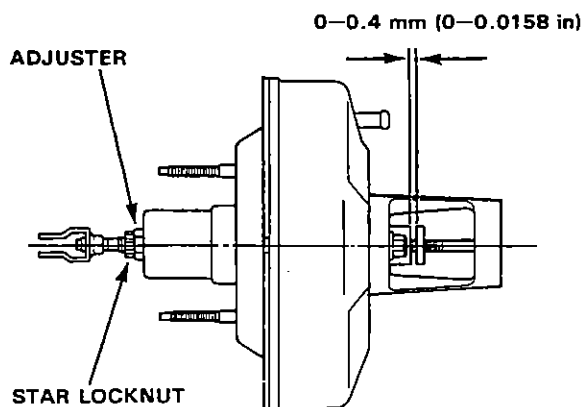
- Booster out of car.



- 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)

Brake Booster

Pushrod Clearance Adjustment (cont'd)

9. After adjustment, loosen the clevis end pushrod lock-nut and turn the pushrod to obtain the correct pedal height.

PEDAL HEIGHT FROM FLOOR:

LHD: 153 mm (6.02 in)

RHD: 161 mm (6.34 in)

(with floor mat removed)

The pedal should have

1–5 mm free play.

10. Adjust the brake light switch (page 13-4).

Rear Disc Brake

Inspection



WARNING Do not use an air hose to blow the brake assembly clean. Use the vacuum cleaner, to avoid breathing brake dust.

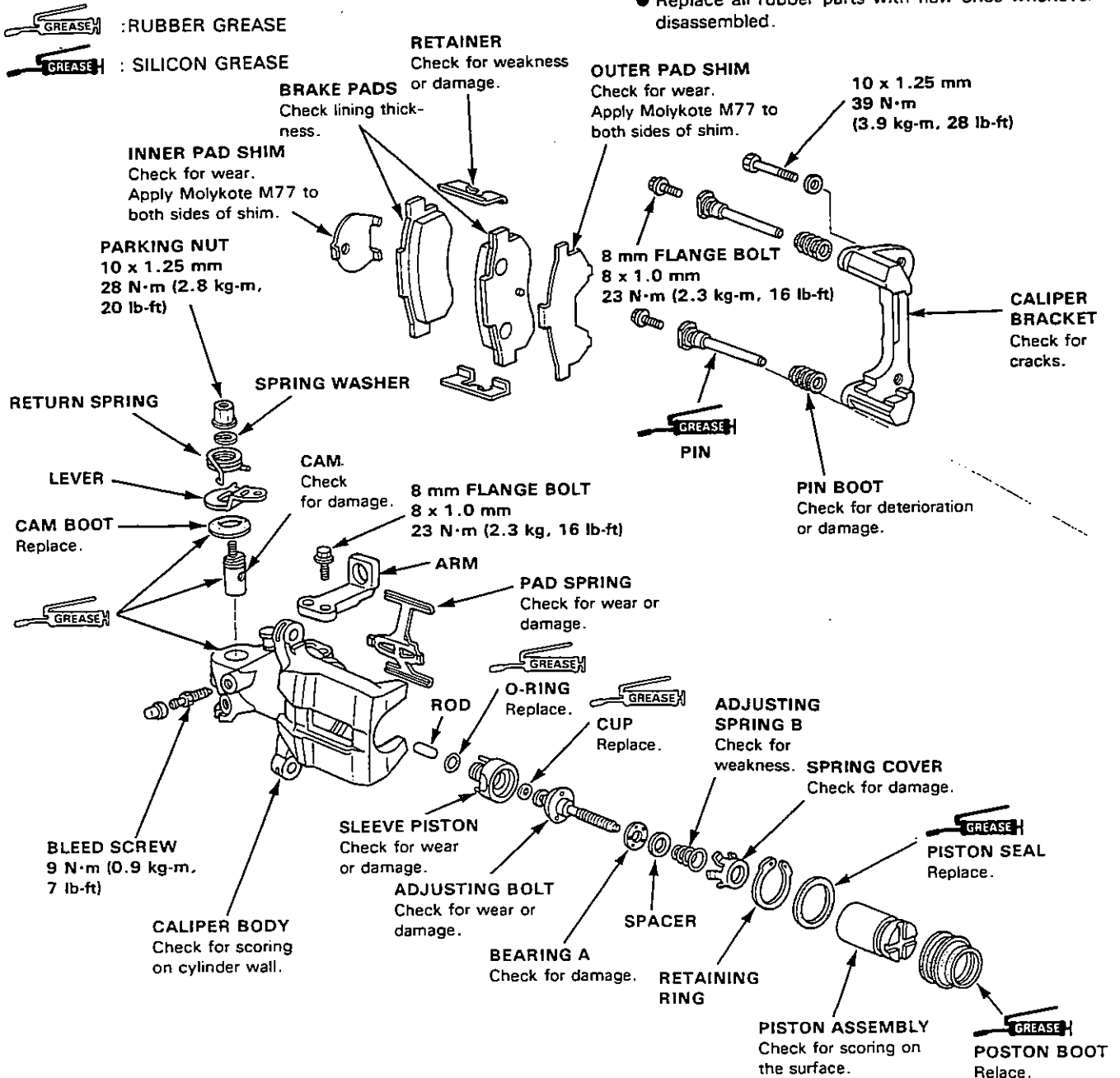
CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.

- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

NOTE:

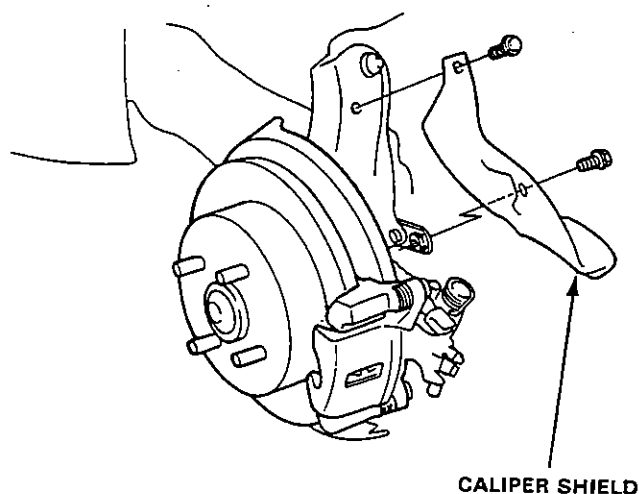
- Coat piston, piston seal, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.



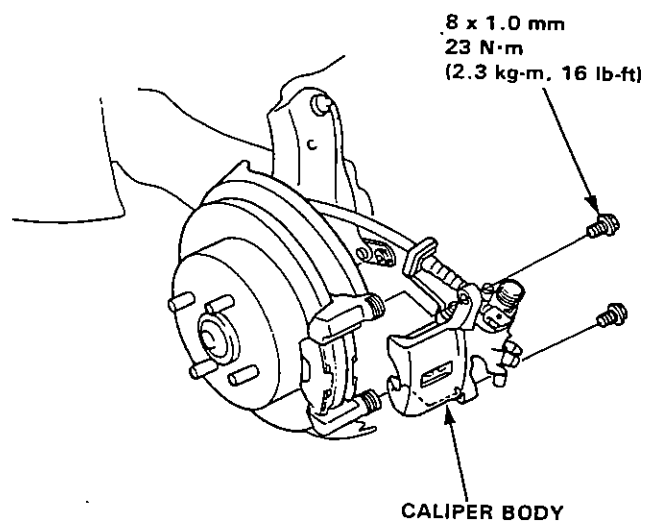
Rear Brake Pad/Disc

Inspection and Replacement

1. Block the front wheels, support the rear of car on safety stands, then remove the rear wheels.
2. Remove the caliper shield.



3. Remove the two caliper mounting bolts and the caliper from the bracket.

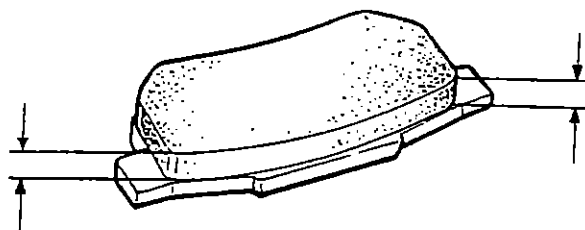


4. Remove the pads and measure the thickness of each brake pad lining using a vernier caliper.

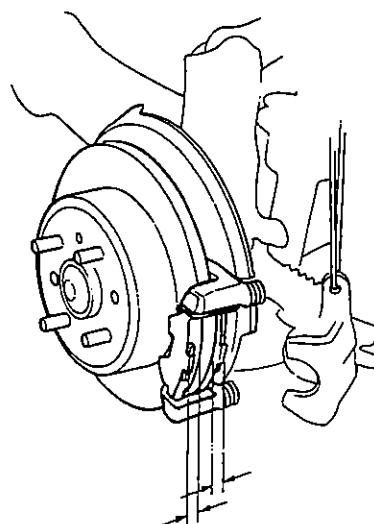
Brake Pad Thickness:

Standard: 8.0 mm (0.31 in)

Service limit 1.6 mm (0.06 in)



5. If the lining thickness is less than service limit, replace the brake pads as a set.





6. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.

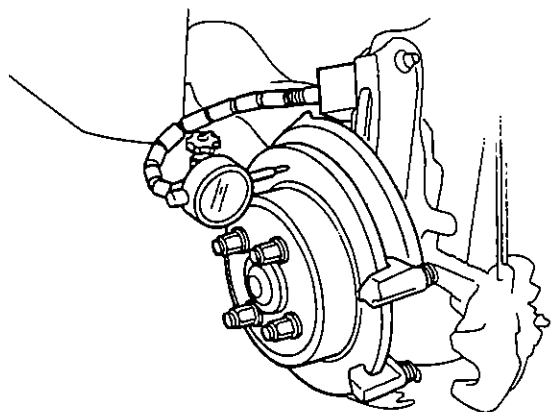
7. Mount dial indicator as shown and measure the run-out at 10 mm (0.39 in) from the outer edge of the disc.

CAUTION: Use wheel nuts and 3 mm thickness washers to hold the disc securely.

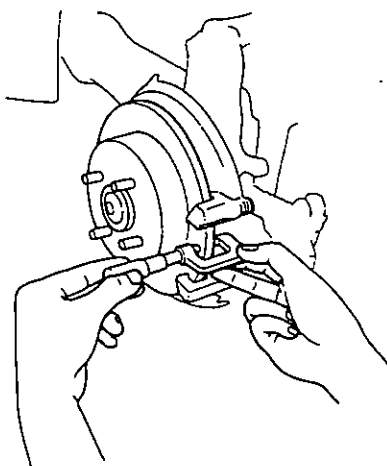
Brake Disc Run-out:

Service Limit: 0.15 mm (0.0006 in)

8. Replace the brake disc if beyond the service limit.



9. Using a micrometer, measure the rear brake disc thickness at eight points, approximately 45° apart and 10 mm (0.39 in) from the outer edge of the disc.



10. Replace the disc if it exceeds the following service limits.

Brake Disc Thickness:

Standard: 10.0 mm (0.39 in)

Service limit: 8.0 mm (0.31 in)

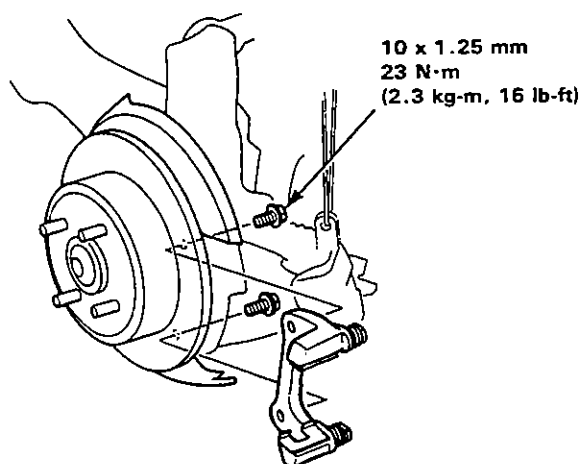
Brake Disc Parallelism:

The difference between any thickness measurements should not be more than 0.015 mm (0.0006 in).

11. Replace the brake disc if beyond the limits.

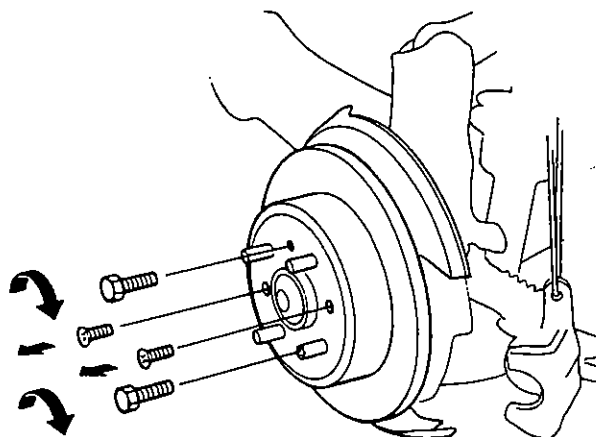
NOTE: A new disc should be ground if its run-out is greater than 0.10 mm (0.004 in).

12. Remove the two caliper bracket mounting bolts and caliper bracket.



13. Remove the two 6 mm screws and brake disc.

NOTE: If the brake disc is difficult to remove, install 8 mm bolts into the threaded holes and tighten them.



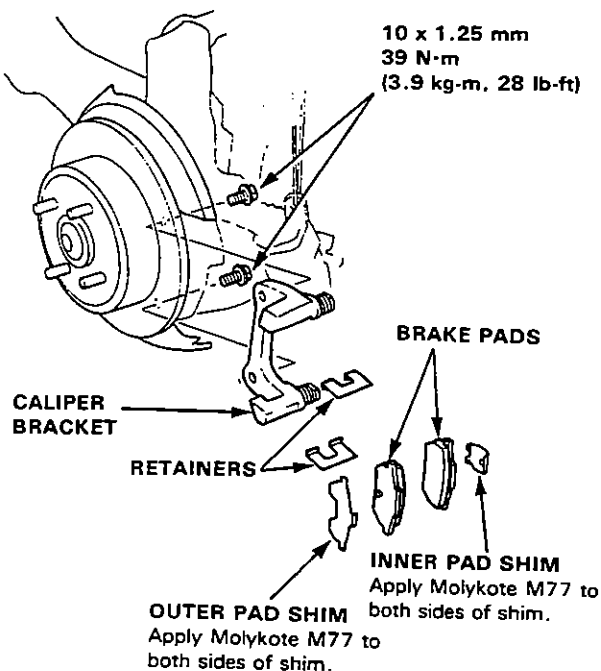
(cont'd)

Rear Brake Pad/Disc

Inspection and Replacement (cont'd)

14. Install the new brake disc.
15. Clean the caliper bracket and retainers, then install the caliper bracket with two bolts and retainers.

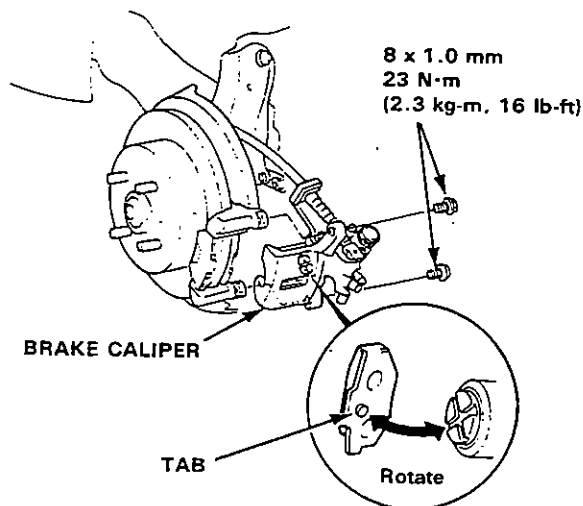
Install the new brake pads and pad shims onto the caliper bracket.



16. Rotate the caliper piston clockwise into place in the cylinder, then align the cutout in the piston with the tab on the inner pad by turning back the piston back.

CAUTION: Lubricate the boot with silicone to avoid twisting the piston boot. If the piston boot is twisted, back it out so it sits properly.

17. Install the brake caliper.



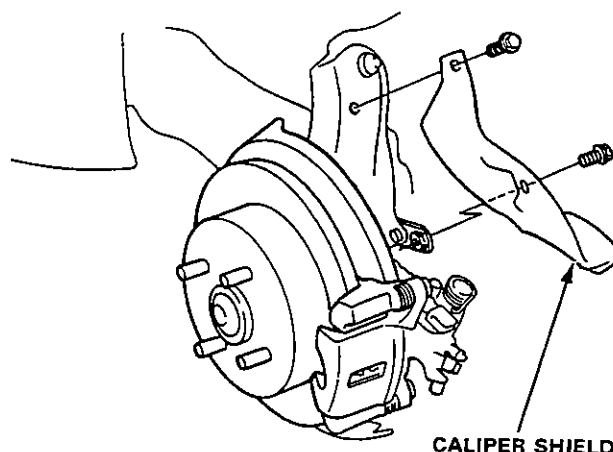
Rear Caliper

Disassembly

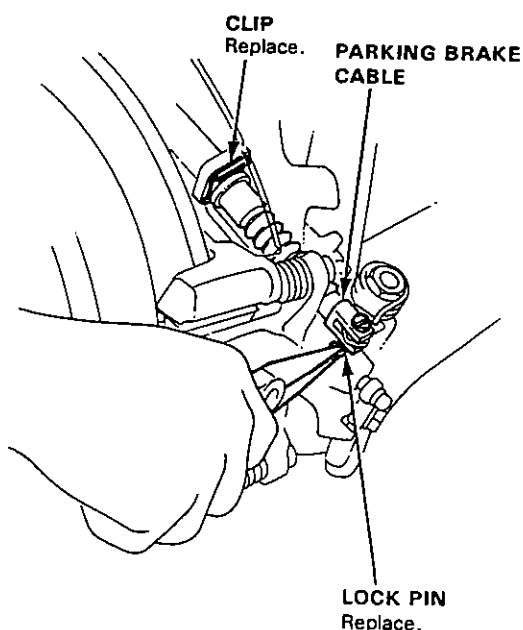
CAUTION:

- Make sure all parts are clean before 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 it can damage to finish. Wash spilled brake fluid off immediately with clean water.

1. Remove the caliper shield.



2. Disconnect the parking brake cable from the lever on the caliper by removing the lock pin.

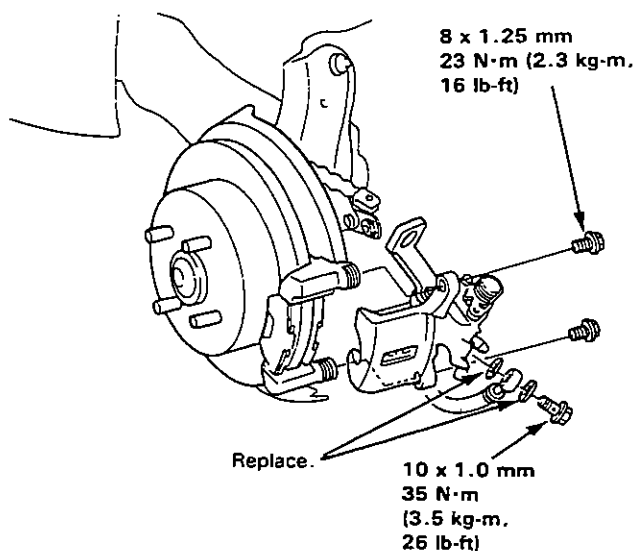




3. Remove the banjo bolt and disconnect the brake hose from the caliper.
4. Remove the two caliper mounting bolts and the caliper from the bracket.

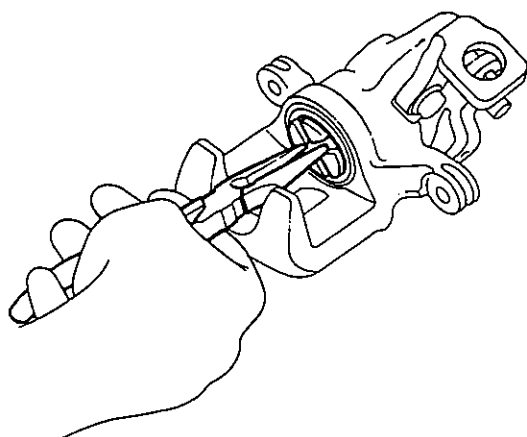
CAUTION:

- Thoroughly clean the outside of the caliper to prevent dust and dirt from entering inside.
- Plug the end of the brake hose to prevent brake fluid from flowing out.

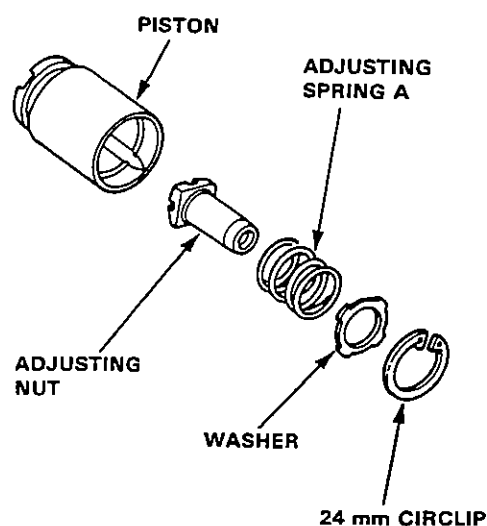


5. Remove the pad spring from the caliper.
6. Remove the piston and piston boot while rotating the piston.

CAUTION: Avoid damaging the piston and piston boot.

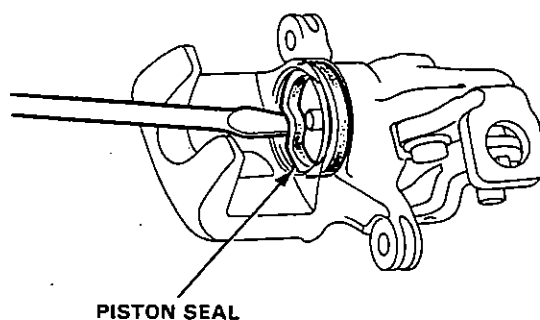


7. Remove the circlip, then washer, adjusting spring A, and the adjusting nut from the piston.



8. Remove the piston seal.

CAUTION: Take care not to damage the cylinder bore.

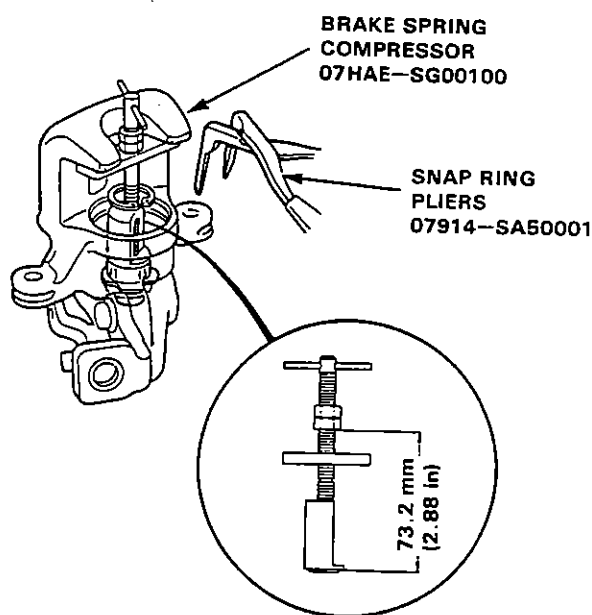


(cont'd)

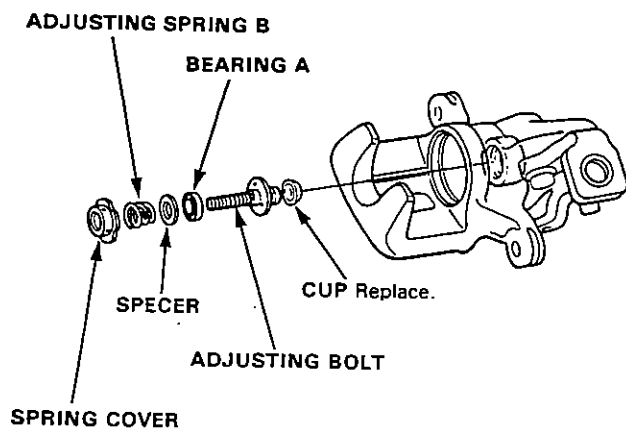
Rear Caliper

Dissassembly (cont'd)

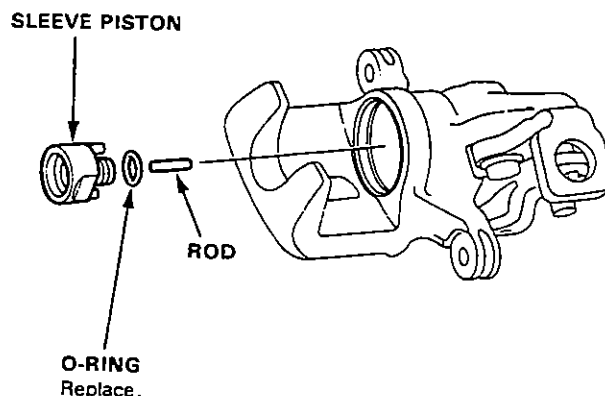
9. Install the special tool between the caliper body and spring guide as shown.
10. Compress the adjusting spring B by turning the shaft of the special tool, then remove the circlip with snap ring pliers.



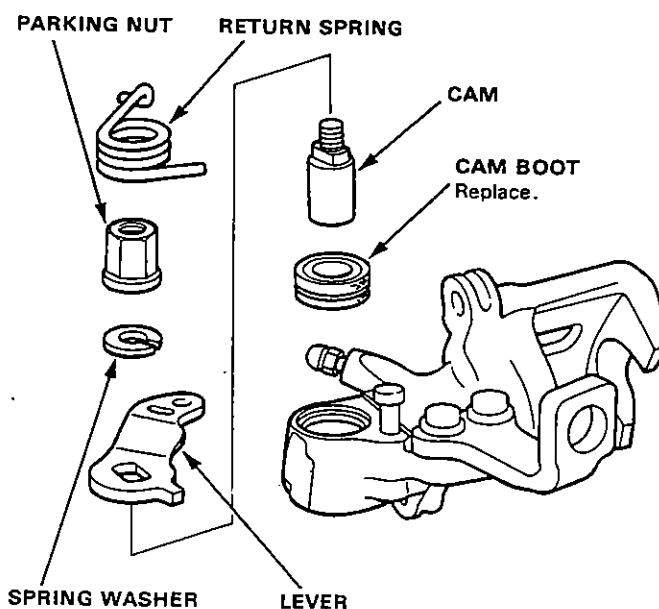
11. Remove the brake spring compressor from caliper body.
12. Remove the spring cover, adjusting spring B, spacer, bearing A, adjusting bolt and cup.



13. Remove the sleeve piston, then remove the rod from the cam.



14. Remove the return spring, parking nut, spring washer, lever, cam and cam boot.



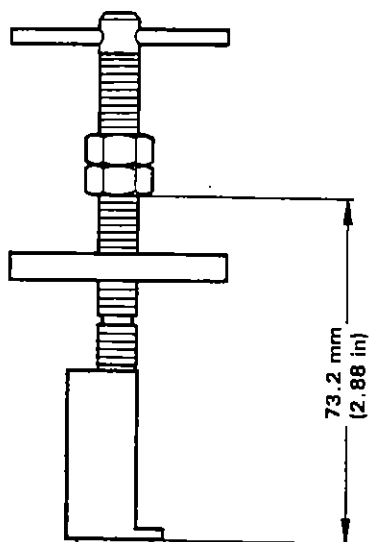


Reassembly

CAUTION:

- Make sure all parts are clean before reassembly.
- Use only new replacement parts.
- Use only new clean brake fluid.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not mix different brands of brake fluid.
- Avoid spilling brake fluid on painted, plastic or rubber surfaces as its can damage the finish. Wash spilled brake fluid off immediately with clean water.

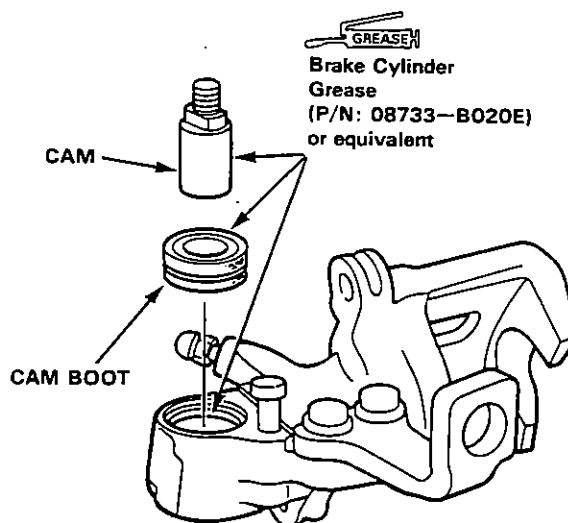
1. Adjust the brake spring compressor (special tool) as shown.



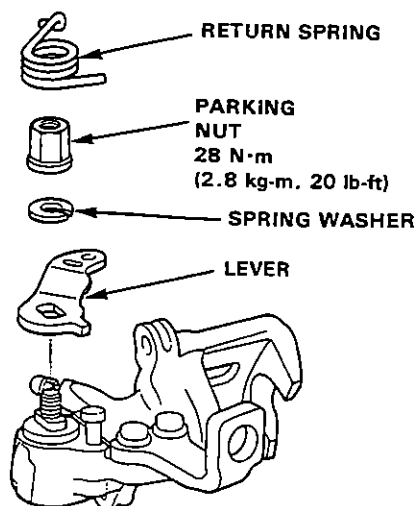
2. Pack all cavities of the needle bearing with Brake Cylinder Grease (P/N: 08733-B020E), or equivalent rubber grease.
3. Coat the new cam boot with Brake Cylinder Grease (P/N: 08733-B020E), or equivalent rubber grease and install in the caliper.

4. Install the cam with threaded end facing up.

CAUTION: Avoid damaging the cam boot since it must be installed before the cam.



5. Install the lever, spring washer and parking nut, then tighten parking nut.
6. Install the return spring.

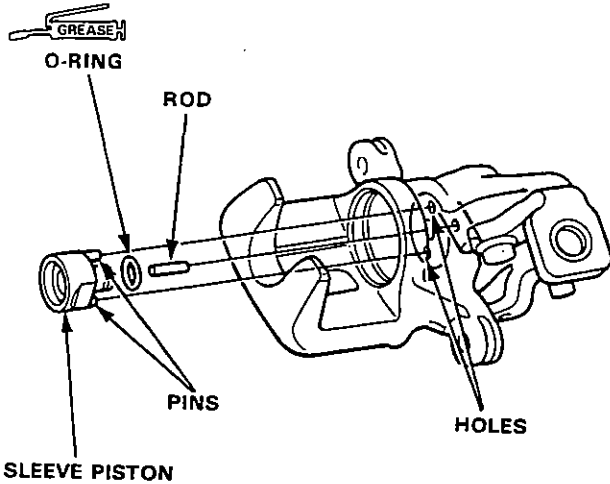


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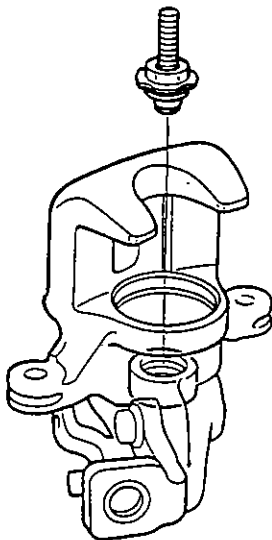
Rear Caliper

Reassembly (cont'd)

7. Install the rod in the cam.
8. Install a new O-ring on the sleeve piston.
9. Install the sleeve piston so the hole in the bottom of the piston is aligned with the rod in the cam, and two pins on the piston are aligned with the holes in the caliper.

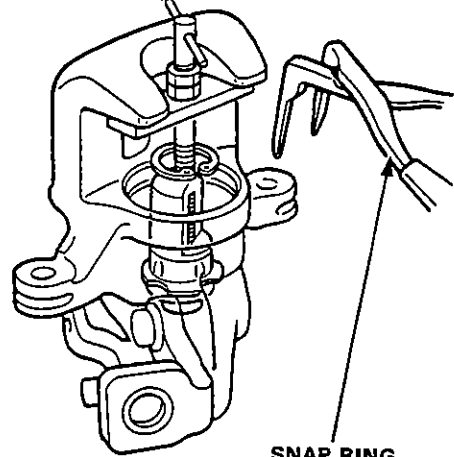


10. Install a new cup with its groove facing the bearing A side on the adjusting bolt.
11. Fit the bearing A, spacer, adjusting spring B and spring cover on the adjusting bolt, and install in the caliper cylinder.



12. Install the brake spring compressor (special tool) as shown.

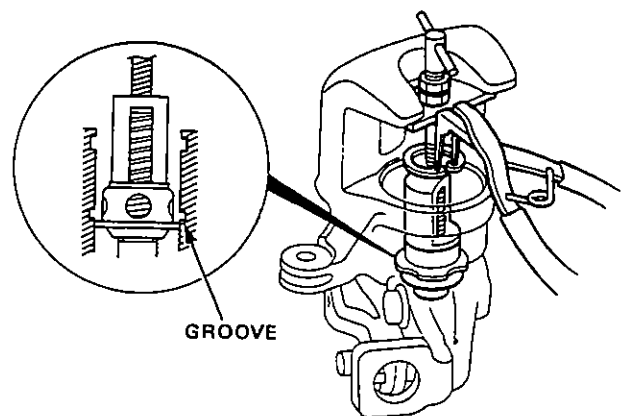
BRAKE SPRING COMPRESSOR
07HAE-SG00100



SNAP RING PLIERS
07914-SA50001

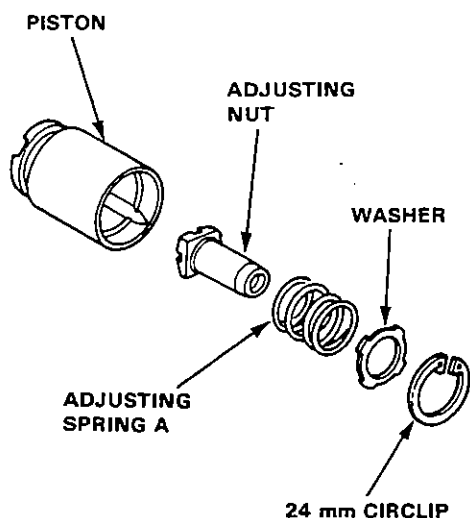
13. Compress the spring until it bottoms out.
14. Check that the flared end of the spring cover is below the circlip groove.
15. Install the circlip then remove the brake spring compressor.

NOTE: Check that the circlip is seated in the groove properly.

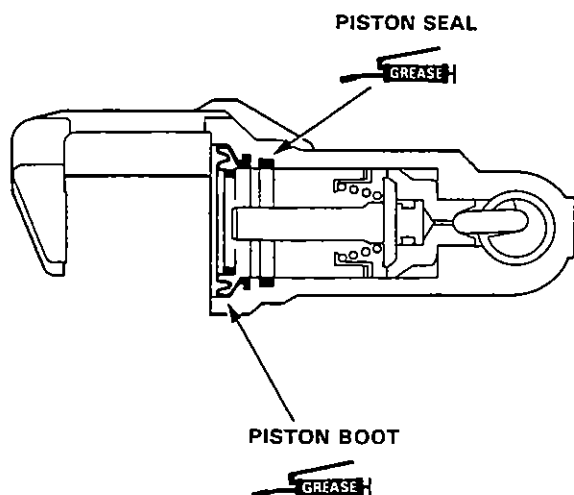




16. Install the adjusting nut, adjusting spring A, and washer, and secure with the circlip.

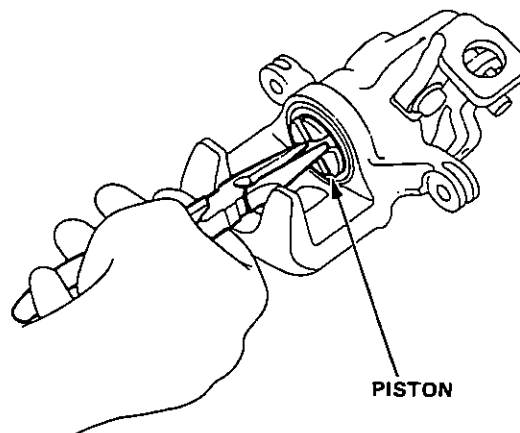


17. Coat the new piston seal and piston boot with silicone grease and install them in the caliper.



18. Coat the outside of the piston with silicone grease, and install it on the adjusting bolt while rotating it clockwise.

CAUTION: Avoid damaging the piston boot.



19. Install the brake pad retainers and brake pads.
20. Install the pad springs on the caliper.
21. Install the caliper on the caliper bracket and tighten the caliper mounting bolts.
22. Connect the brake hose to the caliper with new sealing washers and tighten the banjo bolt.
23. Connect the parking brake cable to the arm on the caliper.
24. Fill the brake reservoir up and bleed the brake system (page 13-10).
25. Operate the brake pedal several times, then adjust the parking brake lever.

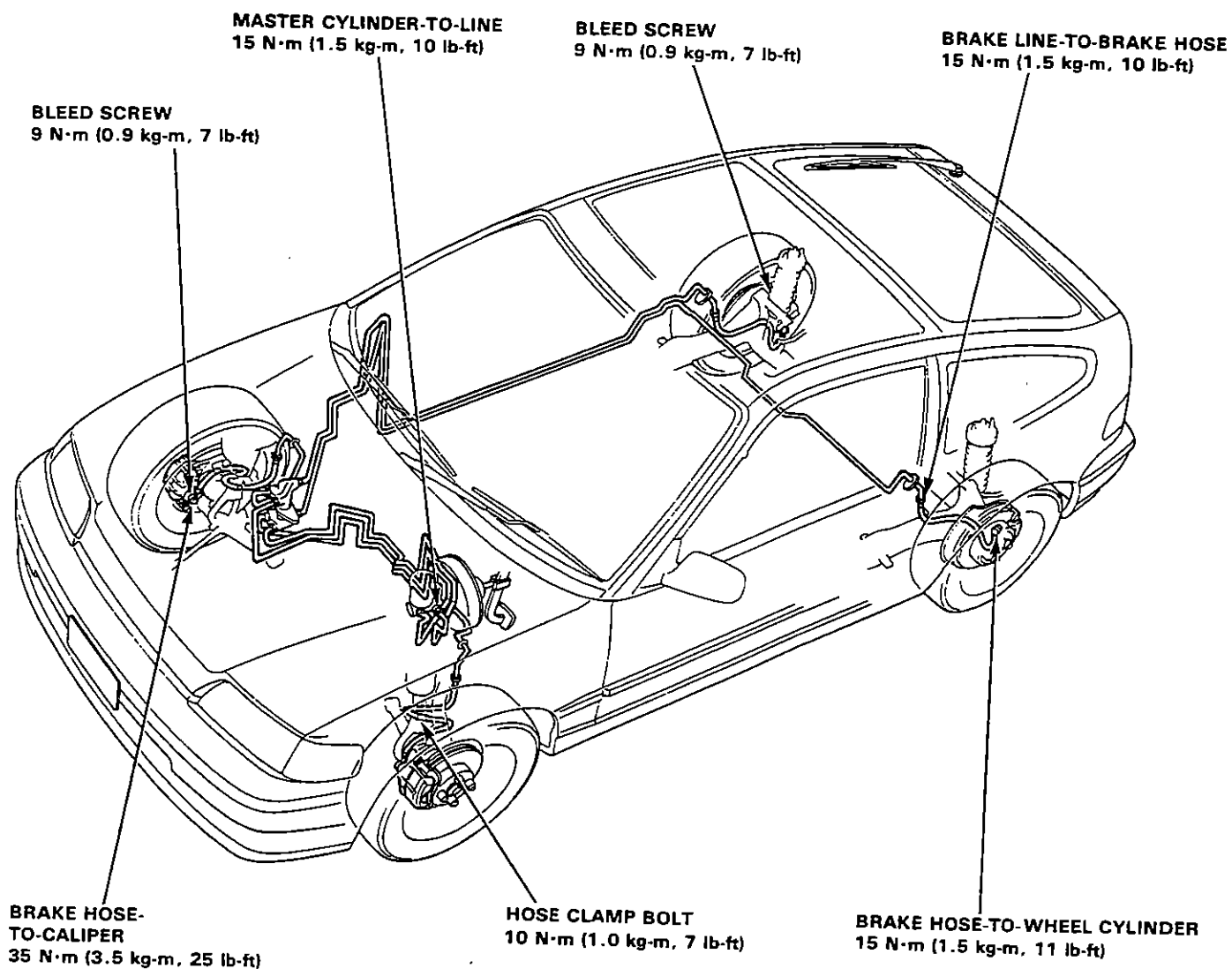
NOTE: Before adjustments, make sure the parking brake arm on the caliper touches the pin.

26. Install the caliper shield and tighten the bolts.

Brake Hoses/Pipes

Inspection

1. Inspect the brake hoses for damage, leaks, interference or twisting.
2. Check the brake lines for damage, rusting or leakage. Also check for bent brake lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.



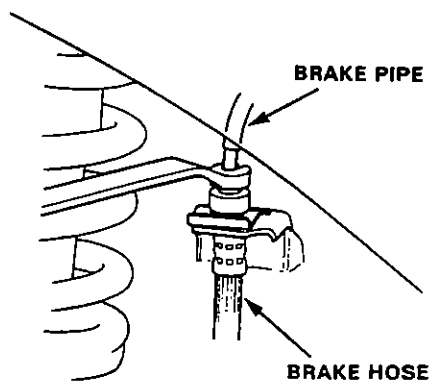


Brake Hose Replacement

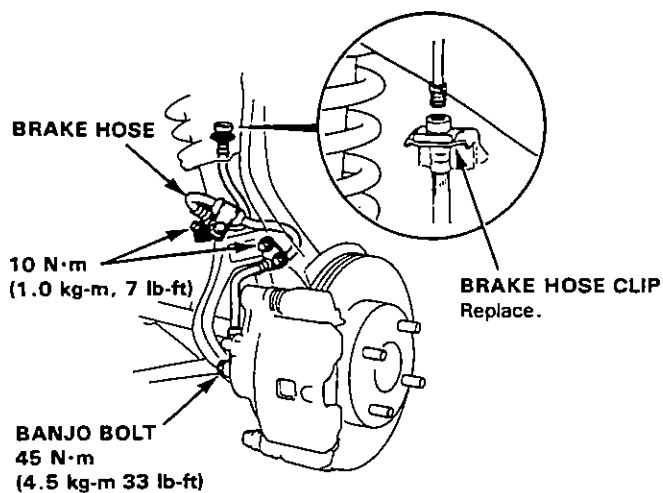
CAUTION

- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Use only clean brake fluid.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not spill brake fluid on the car, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

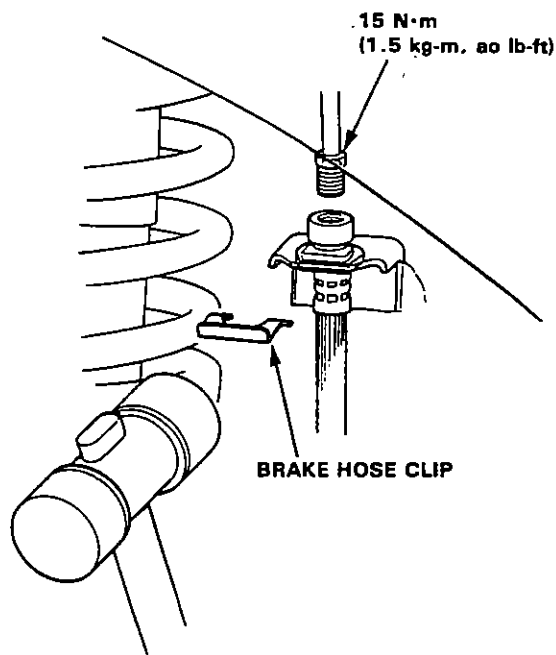
1. Replace the brake hose if the hose is twisted, cracked or if it leaks.
2. Disconnect the brake hose from the brake pipe using a 10 mm flare nut wrench.



3. Remove and discard the brake hose clip from the brake hose.
4. Remove the banjo bolt and disconnect the brake hose from the caliper.



5. Install a new brake hose clip to the brake hose.
6. Connect the brake line to the brake hose.

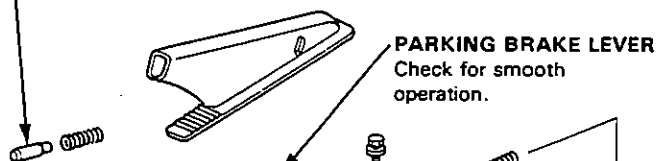


7. Connect the brake hose to the caliper.
8. Install the brake hose on the knuckle and damper mounting clamp.
9. After installing the brake hose, check the hose and line joints for leaks, and tighten as necessary.

Parking Brake

Disassembly and Reassembly

RELEASE BUTTON



PARKING BRAKE LEVER
Check for smooth operation.

PARKING BRAKE SWITCH
Test, Section 16

GREASE
Apply grease to sliding surface.

Check for faulty movement.

CABLE EQUALIZER

CABLE ADJUSTING NUT

22 N·m
(2.2 kg-m, 16 lb-ft)

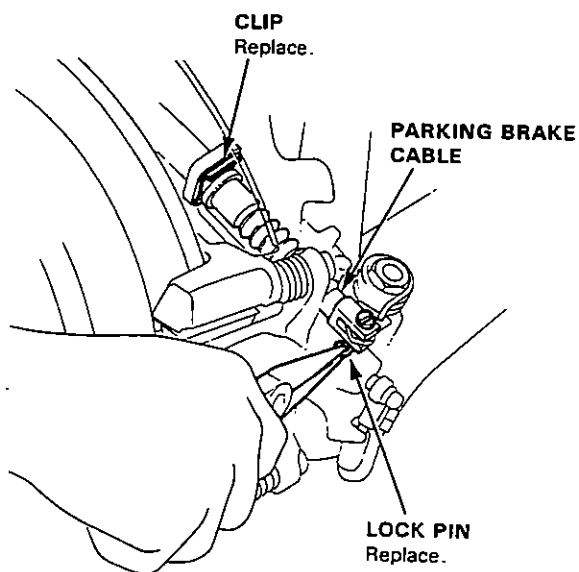
CLIP
Replace.

PIN

LOCK PIN
Replace.

PARKING BRAKE CABLE
Check for smooth operation.

Disconnect the parking brake cable from the lever on the rear caliper by removing the lock pin and pin.



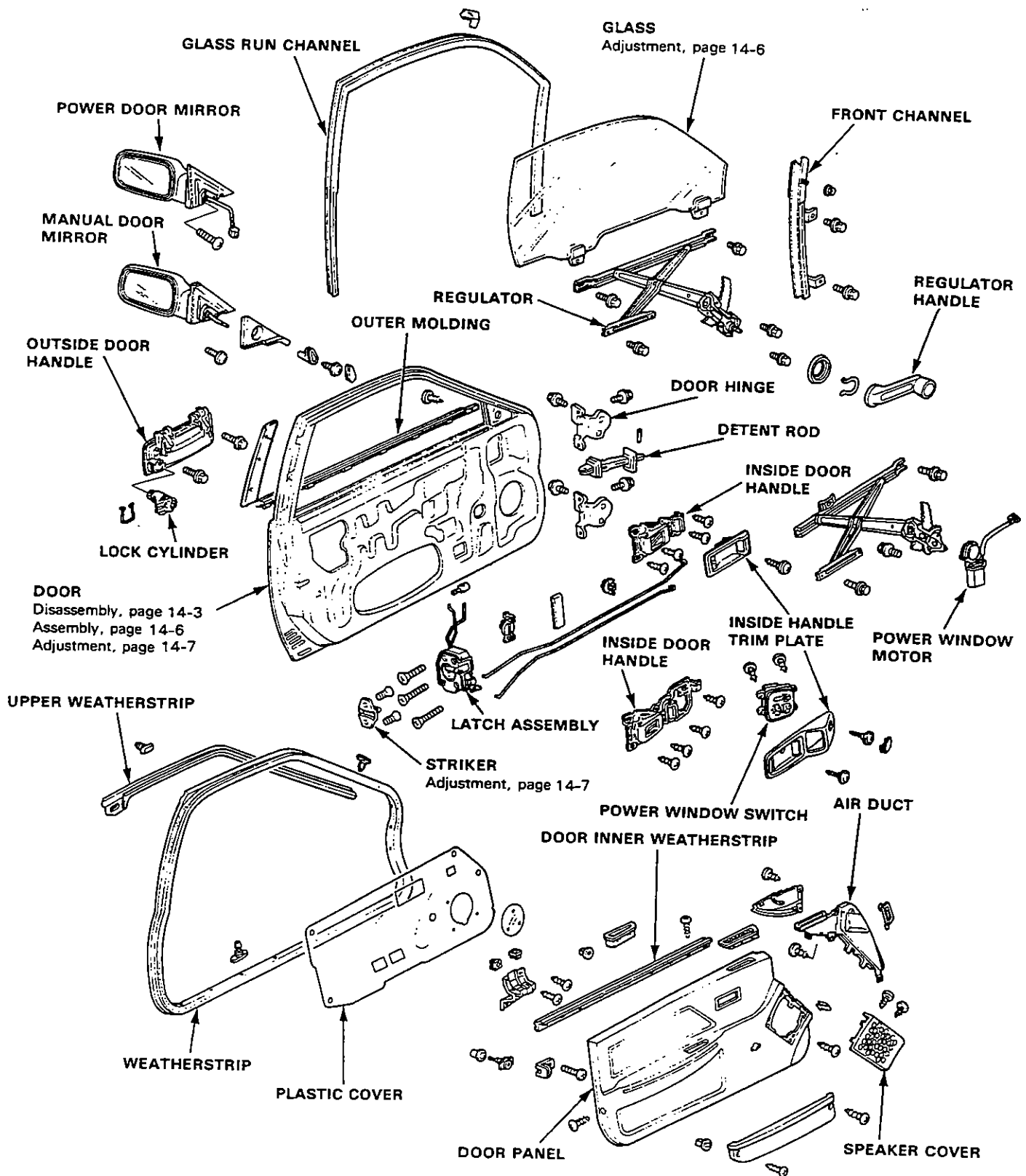
Body

Bumpers		
Front	14-58	
Rear	14-59	
Carpet	14-54	
Console	14-53	
Dashboard		
Components	14-55	
Replacement	14-56	
Doors		
Index	14-2	
Disassembly	14-3	
Assembly	14-6	
Position	14-7	
Frame Repair Chart	14-66	
Fuel Filler Cable	14-63	
Headliner	14-45	
Hood		
Replacement/Adjustment	14-60	
Opener/Latch Replacement	14-61	
Interior Trim	14-44	
Mirrors		
Door Mirror (Manual)	14-9	
Mirror Glass Replacement (Manual)		
Door Mirror (Power)	14-8	
Mirror Glass Replacement (Power)		
Rearview Mirror	14-51	
Rear Panel and Corner Panels	14-64	
Rear Shelf	14-52	
Rear Spoiler	14-64	
Security Compartment	14-52	
Seats		
Front Disassembly	14-46	
Front Cover Replacement	14-47	
Rear Seat Replacement	14-48	
Seat Belts		
Front Replacement	14-49	
Rear Replacement	14-50	
Inspection	14-51	
Side Panels	14-65	
Sunroof		
Index	14-32	
Troubleshooting	14-33	
Height Adjustment	14-34	
Side Clearance Adjustment	14-34	
Closing Fit	14-35	
Closing Force Check	14-35	
Sunroof Panel Replacement	14-36	
Seal Repair/Installation	14-36	
Wind Deflector Replacement	14-37	
Wind Deflector Adjustment	14-37	
Rear Slide Bracket		
Replacement	14-38	
Rear Slide Bracket		
Wear Inspection	14-38	
Drain Tube/Frame/Frame Seal ...	14-39	
Frame Sealing	14-40	
Motor Removal/Installation	14-41	
Lift-up Link Replacement	14-41	
Guide Rail Replacement	14-42	
Cable Removal/Installation/		
Inspection	14-43	
Tailgate		
Replacement/Adjustment	14-62	
Opener Replacement	14-63	
Windshield, Rear Window Glass,		
Lower Hatch Glass, Quarter Glass		
Components	14-10	
Windshield	14-13	
Rear Window	14-20	
Lower Hatch Glass	14-24	
Quarter Glass	14-28	



Doors

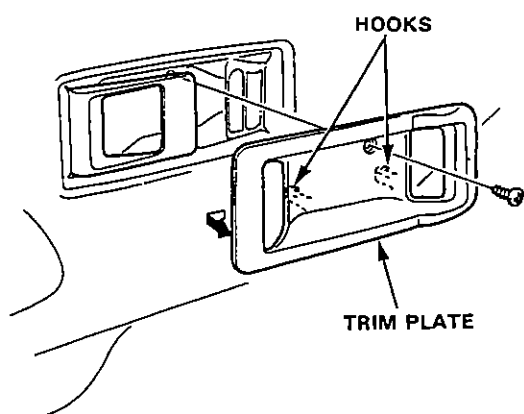
Index



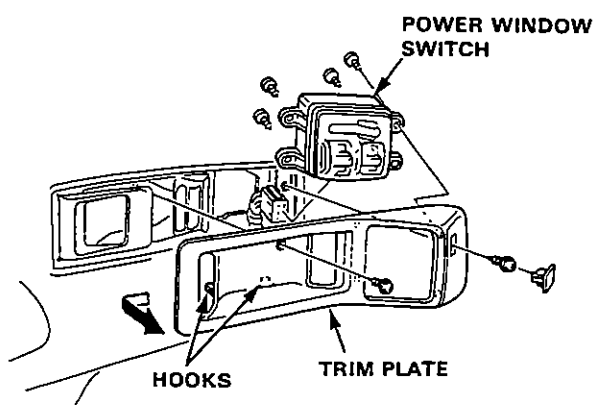


Disassembly

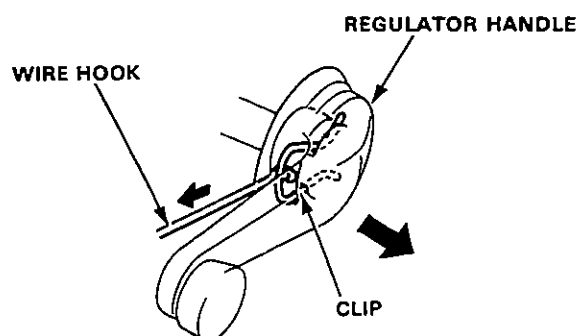
1. Remove the trim plate screw, then carefully remove the trim plate.



2. Remove the power window switch, if equipped, from the trim plate by removing the 4 screws.



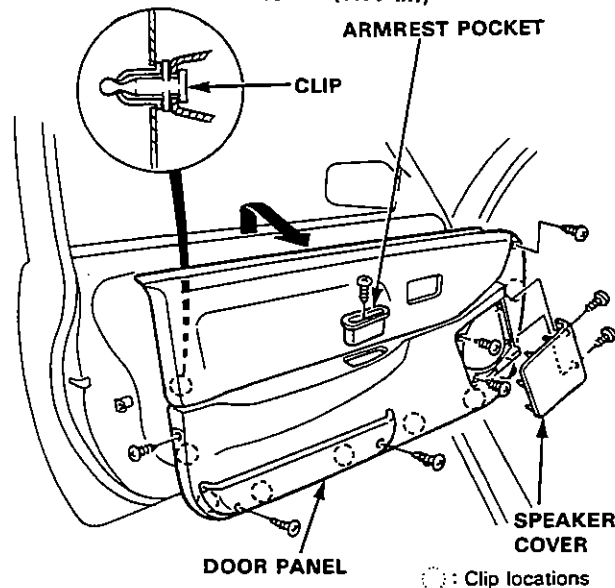
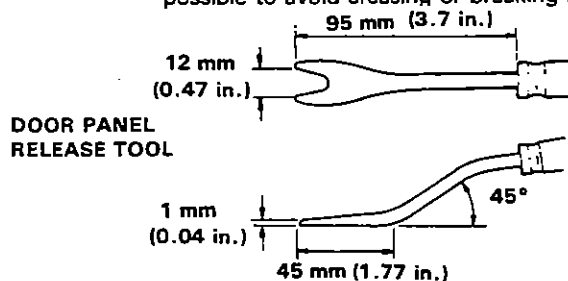
3. If applicable, remove the regulator handle by pulling the clip out with a wire hook.



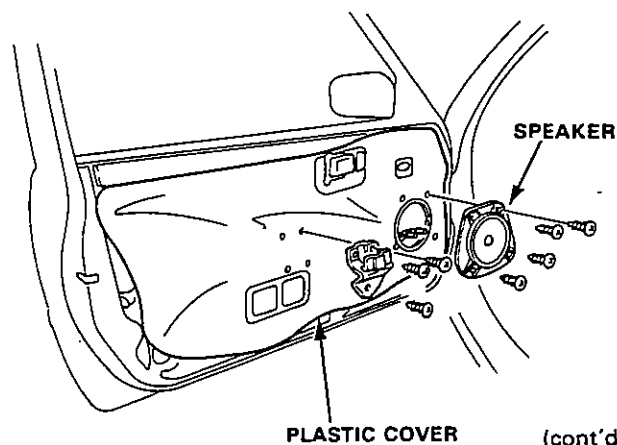
4. Remove the screw and carefully pry up the armrest pocket. Remove the screws, then remove the speaker cover. Remove the screws and clips (see door panel release tool) attaching the door panel. Remove the door panel by pulling it upward.

NOTE ● The speaker cover has 6 hooks on its back side.

- Remove the panel with as little bending as possible to avoid creasing or breaking it.



5. Remove the screws, then remove the speaker and door panel bracket.
6. Carefully remove the plastic cover.

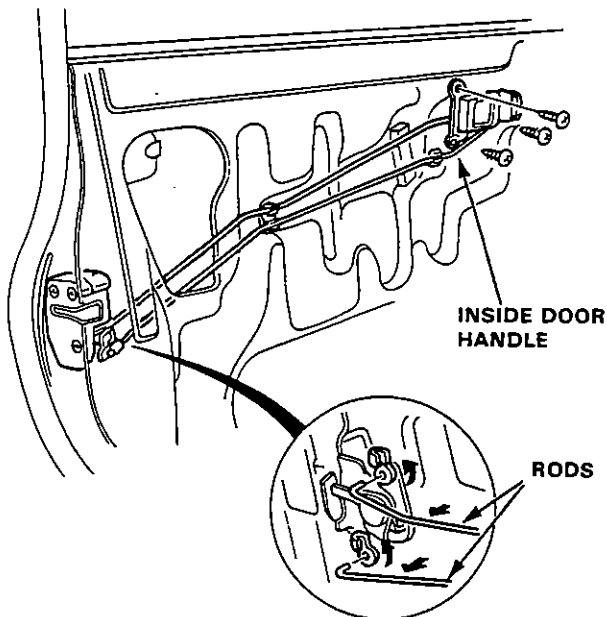


(cont'd)

Doors

Disassembly (cont'd)

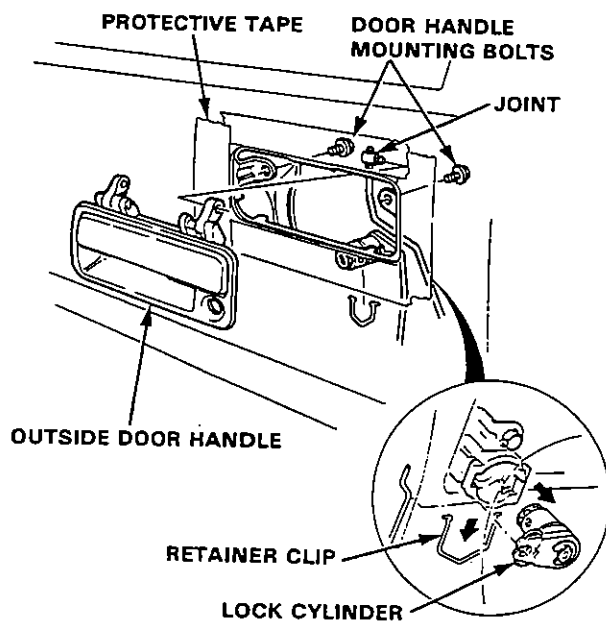
7. Raise the window fully.
8. Remove the 3 screws, disconnect the latch rods, then remove the inside door handle.



9. Pull out the retainer clip, take out the lock cylinder, then disconnect the lock rod.

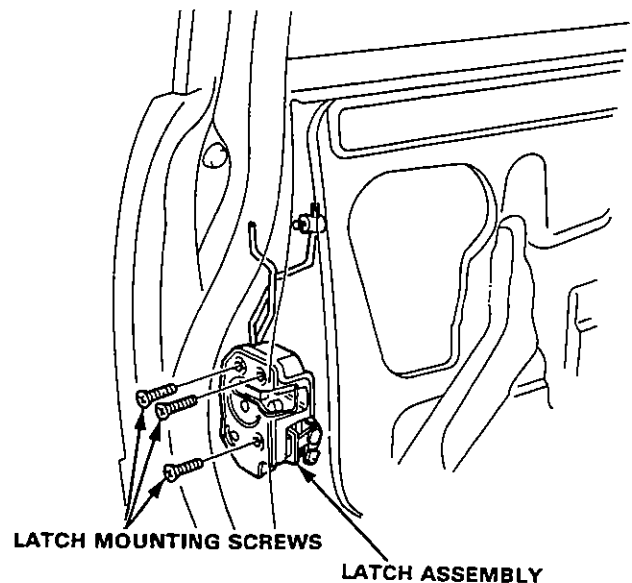
NOTE: Use protective tape around the edge of the door handle to prevent scratching the paint.

10. Remove the mounting bolts for the outside door handle.

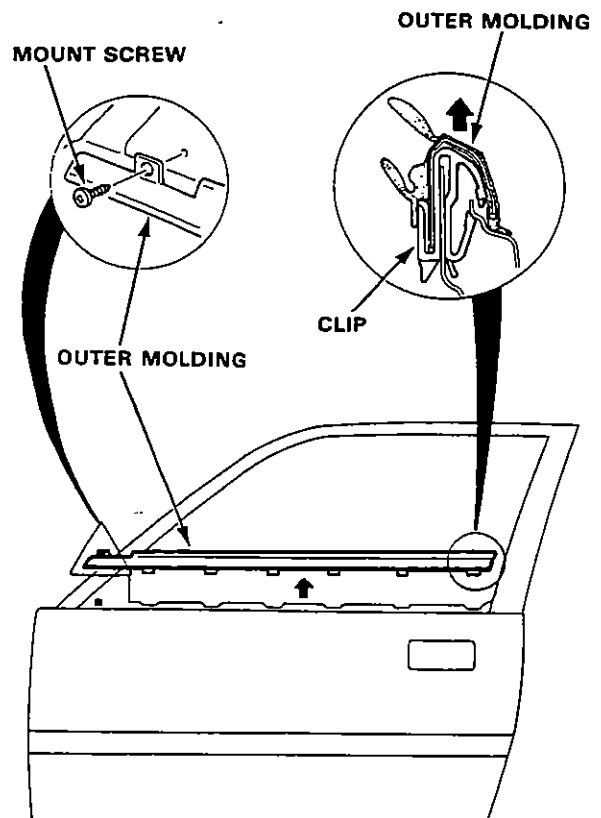


11. Pull the outside door handle out, and pry the joint off the handle with a flat-tip screwdriver. Remove the handle from the rod.

12. Remove the screws, take the door latch off the door, then push the door latch and rod inside the door.

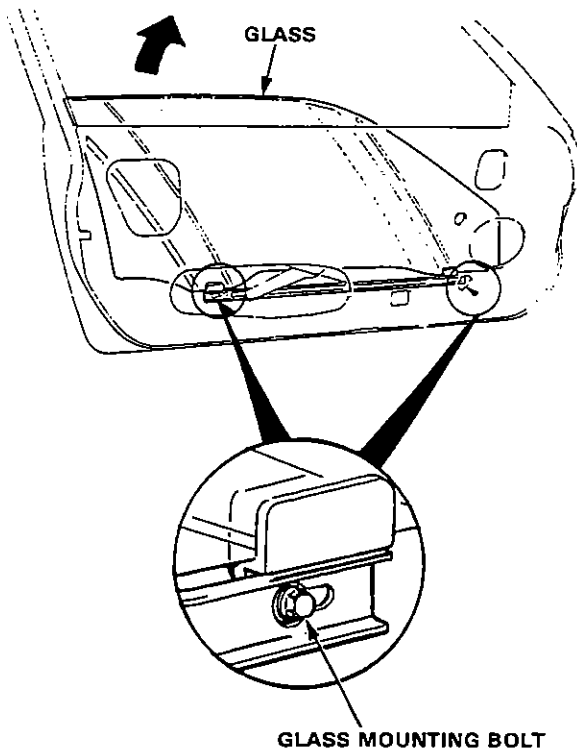


13. Lower the window fully.
14. Remove the door mirror (page 14-8, 9).
15. Remove the screw and detach the clips, then remove the outer molding.

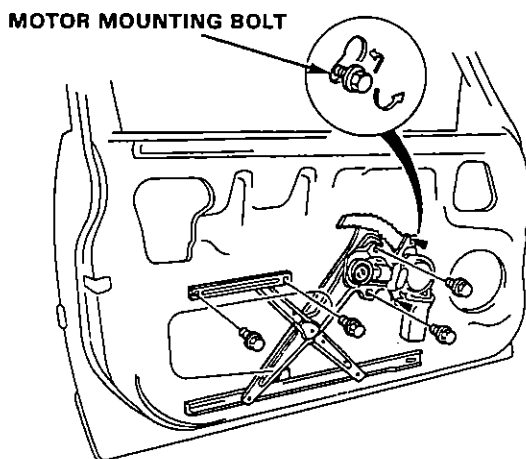




16. Carefully raise the window until you can see its mounting bolts. Loosen the bolts and pull the door glass out through the window slot.



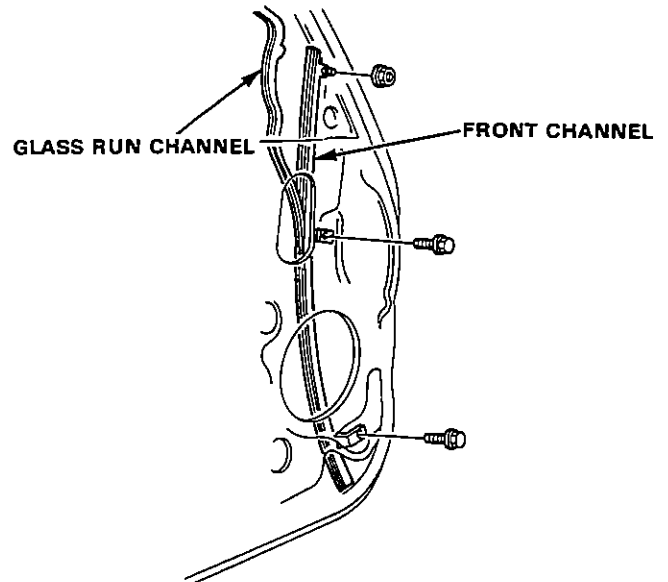
17. Remove the 4 mounting bolts and loosen the 2 motor mounting bolts, then take out the regulator assembly through the lower hole in the door.



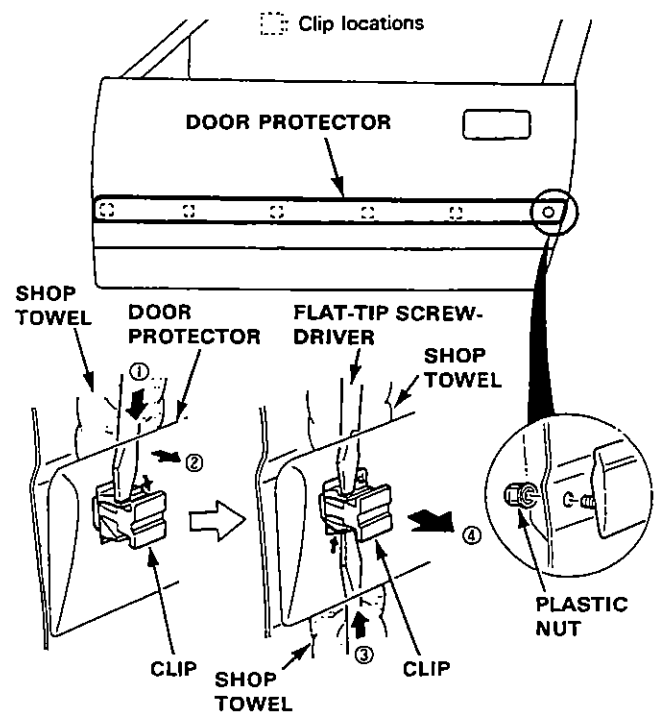
18. Remove the glass run channel.

19. Remove the front channel by removing the 2 bolts and the nut.

NOTE: Before installation, insert the glass run channel into the front channel.



20. Remove the door protector by removing the nut and detach the clips from the inside, or outside.

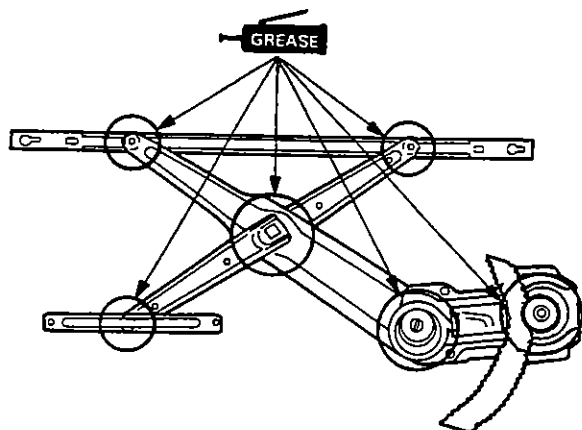


Doors

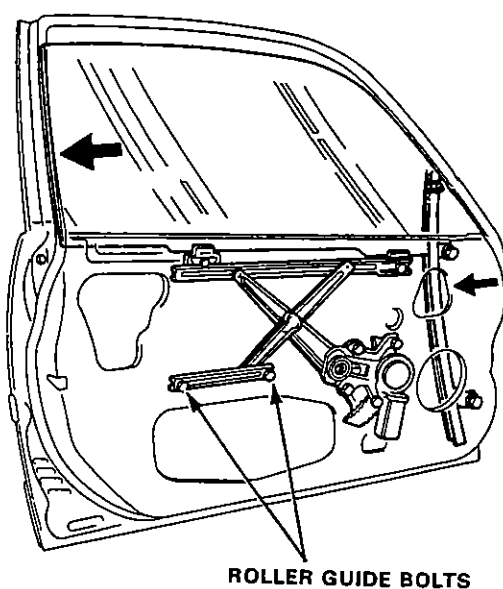
Assembly

Assemble the door in the reverse order of disassembly, and also:

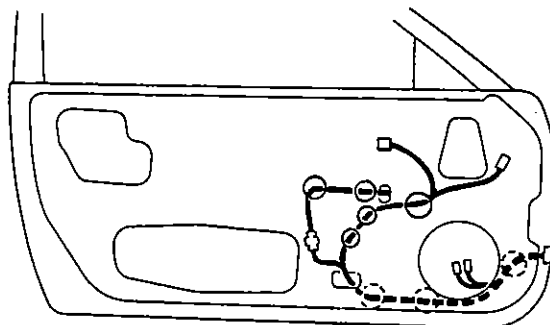
1. Grease all the sliding surfaces of the window regulator where shown.



2. To adjust window fit in the door, raise the window as far up as possible and hold it against the door sash. Then, tighten the roller guide bolts.



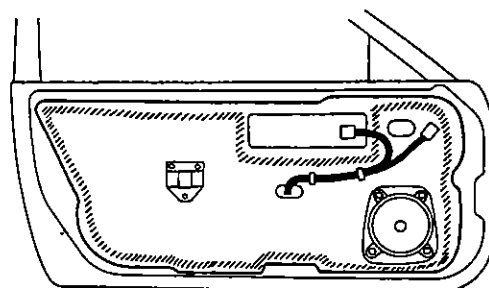
3. Fix the wire harness correctly on the door.



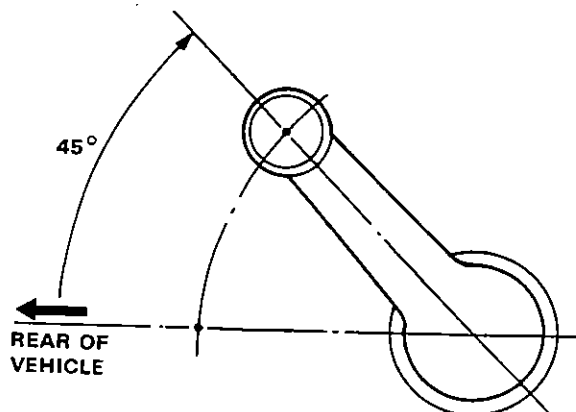
○: Clip locations

4. When reinstalling the plastic cover, apply adhesive along the edge where necessary to maintain a continuous seal and prevent air/water leaks.

NOTE: Repair any torn section of the plastic cover.



5. Install the regulator handle so it points backward, and up at a 45 degree angle with the window closed.





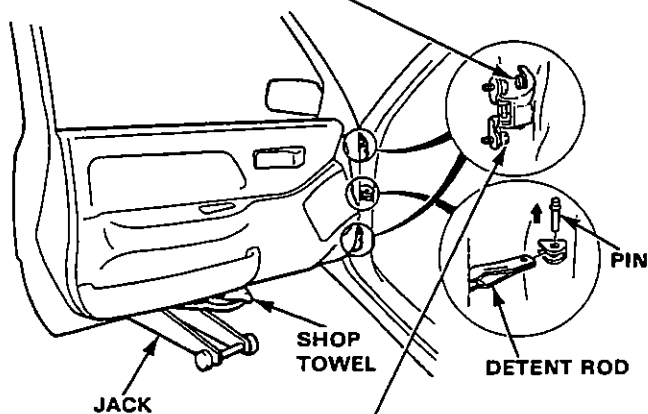
Door Position Adjustment

After installing the door, check for a flush fit with the body, then check for equal gap between the front and rear, and top and bottom door edges and the body. The door and body edges should also be parallel. Adjust at the hinges as shown.

CAUTION: Place a shop towel on the jack to prevent damage to the door when the hinge bolts are loosened for adjustment.

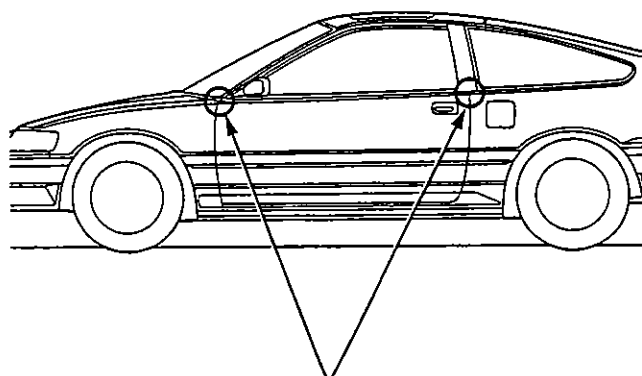
HINGE MOUNTING BOLTS

Loosen the bolts, and move the door BACKWARD or FORWARD, UP or DOWN as necessary to equalize the gaps.



DOOR MOUNTING BOLTS

Loosen the bolts slightly to move the door IN or OUT until flush with the body. If necessary, you can install a shim behind one hinge to make the door edges PARALLEL with the body.

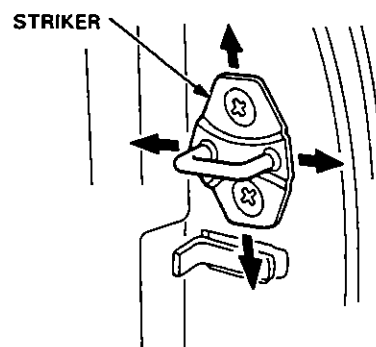


The door and body edges should be parallel.

Door Striker Adjustment

Make sure the door latches securely without slamming. If it needs adjustment:

1. Draw a line around the striker plate for reference.
2. Loosen the striker screws, and move the striker IN or OUT to make the latch fit tighter or looser. Move the striker UP or DOWN to align it with the latch opening. Then lightly tighten the screws and recheck.



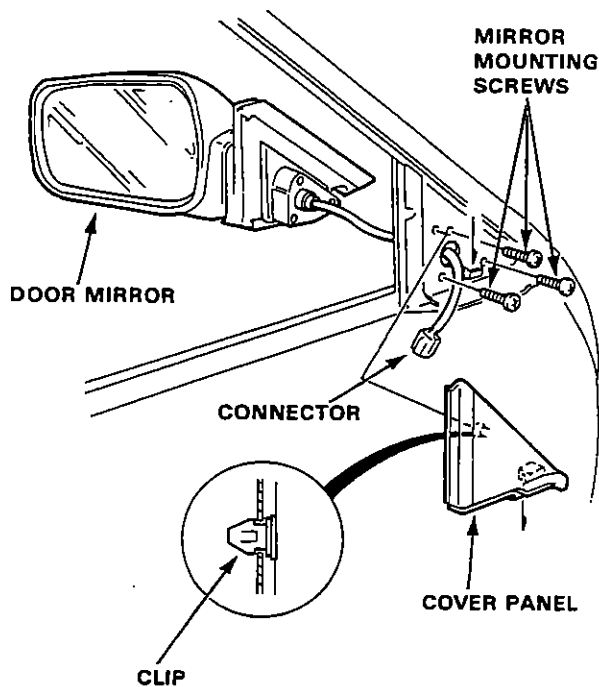
NOTE: Hold the outside handle out and push the door against the body to be sure the striker allows a flush fit.

3. If the door latches properly, tighten the screws and recheck.

Power Door Mirror

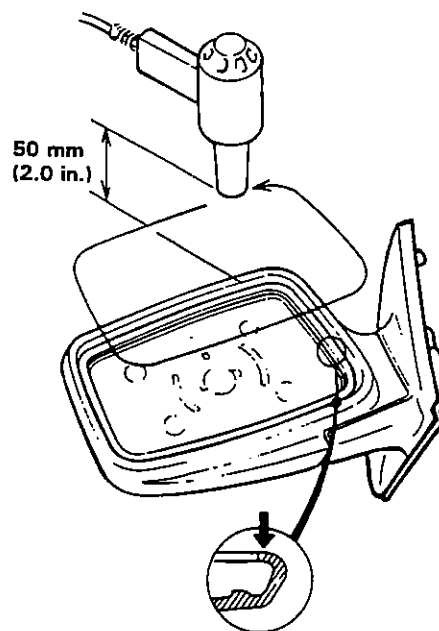
Removal

1. Remove the door panel and disconnect the power mirror connector.
2. Pry out the cover panel with a flat-tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.

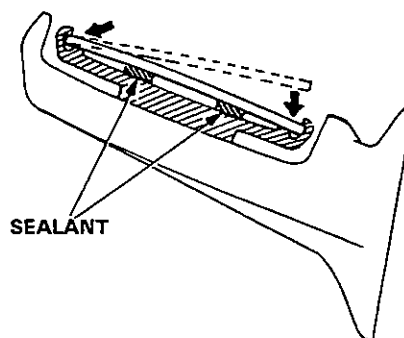
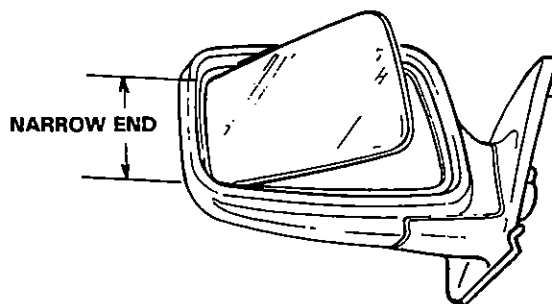


Mirror Glass Replacement

1. Heat the edge of the glass with a low powered heat gun for several minutes, then remove the glass.



2. Install the glass in the mirror case, narrow end first.

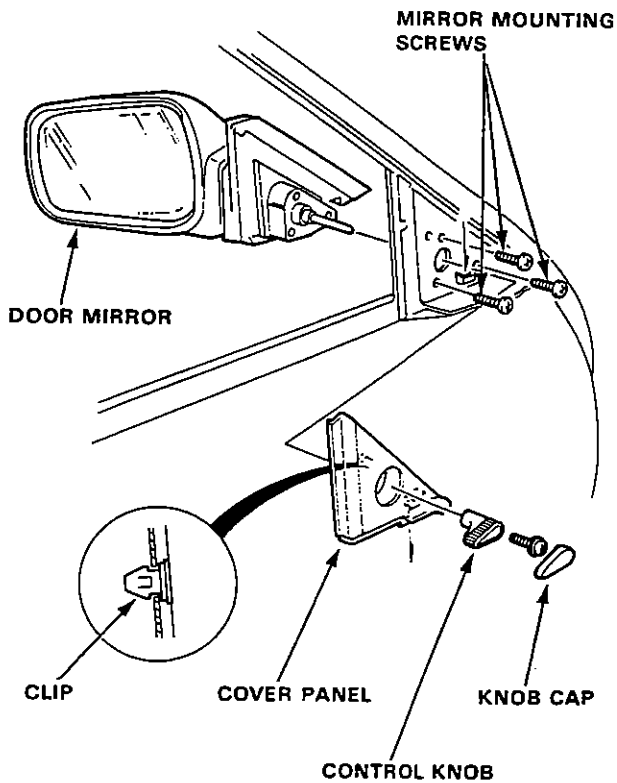


Manual Door Mirror



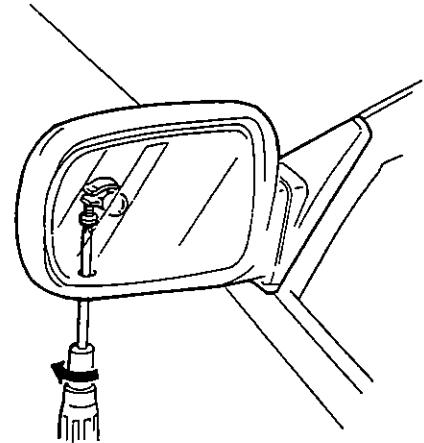
Removal

1. Remove the knob cap and screw, then remove the control knob.
2. Pry out the cover panel with a flat-tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.



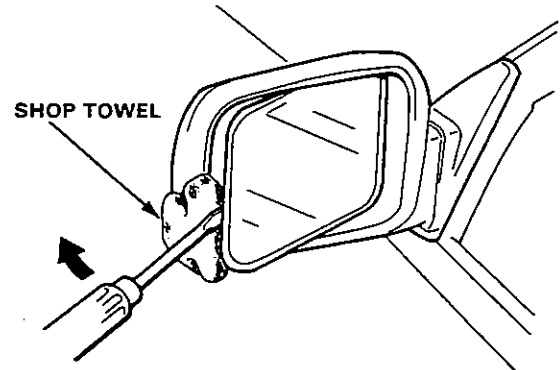
Mirror Glass Replacement

1. Insert a screwdriver in the mirror through the service hole, and loosen the glass retaining screw.

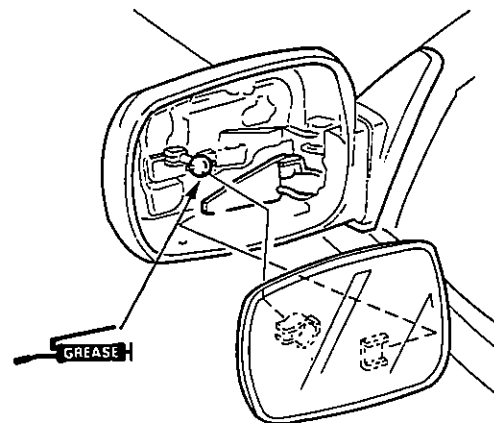


2. Carefully pry out the mirror with a flat-tip screwdriver as shown.

CAUTION: To prevent damage to the mirror, wrap the end of the screwdriver with a shop towel.



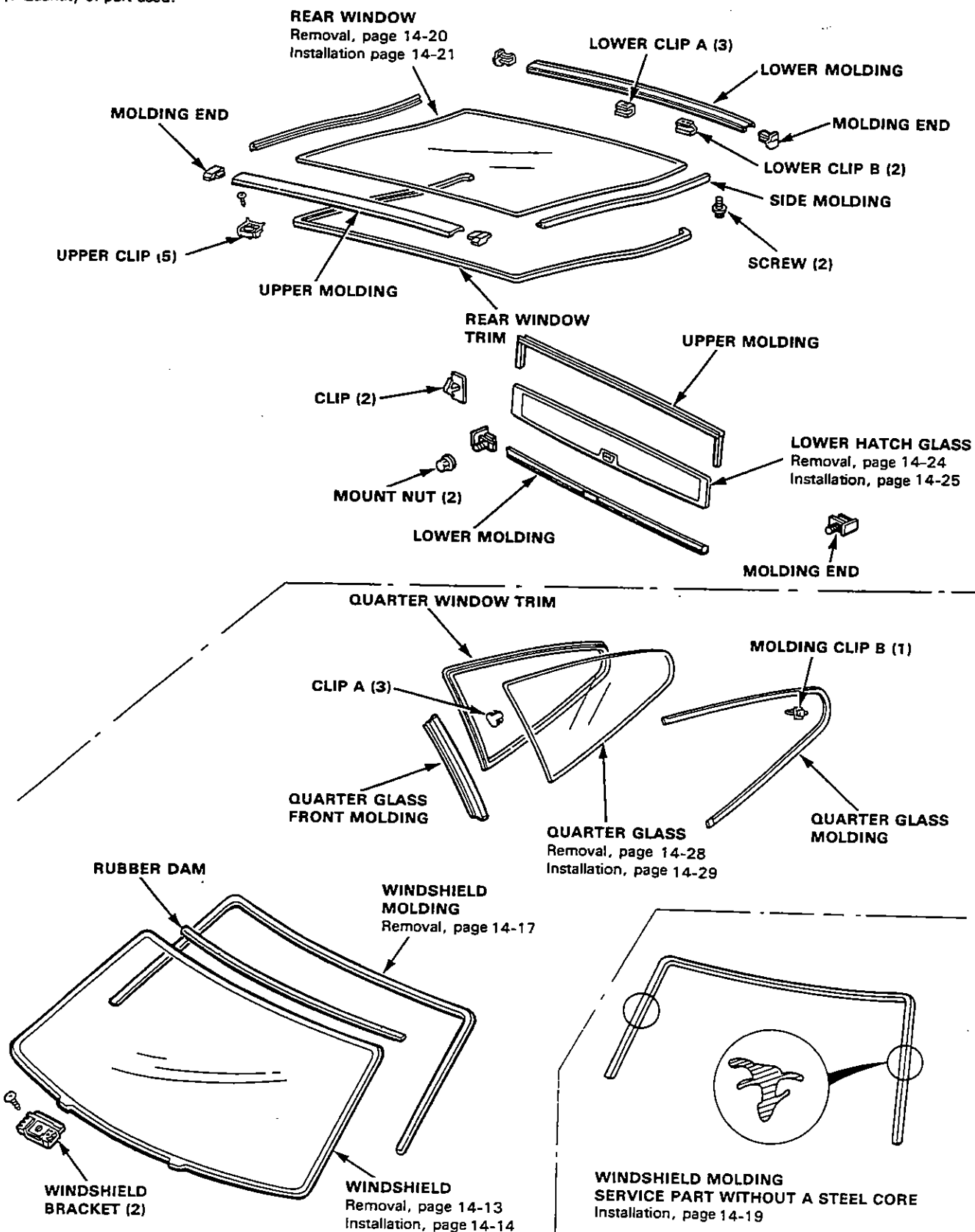
3. Install the mirror in the reverse order of removal, and also apply grease to the location shown.



Windshield, Rear Window Glass, Lower Hatch Glass, Quarter Glass

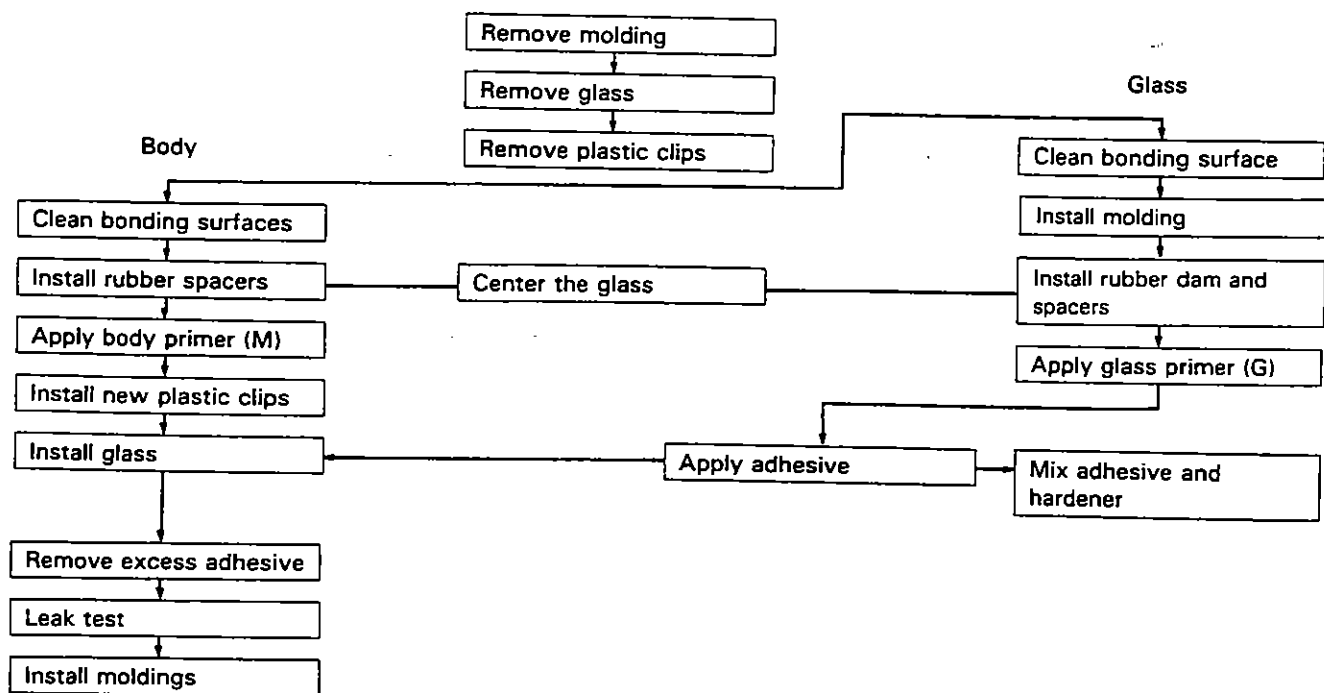
Index

(): Quantity of part used.





Installation



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 (3ft)) Gauze Cartridge Sponge	For glass primer (G) For applying primers

Tools

Tool/Material	Remarks
Glass or steel plate Putty knife Caulking gun Suction cups Knife Awl Two wood sticks Toluene or alcohol	To mix adhesive and hardener on To mix adhesive and remove excess To apply bead of adhesive to windshield To install windshield To scrape bonding surface around window opening To make hole through existing adhesive for piano wire To hold piano wire To clean bonding surfaces

Windshield, Rear Window Glass, Lower Hatch Glass, Quarter Glass

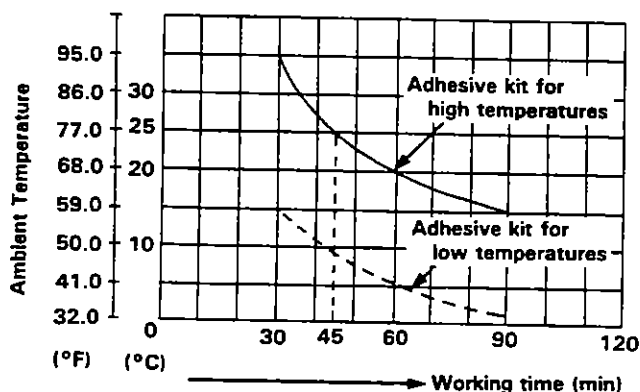
Workable Time

Adhesive workable time varies widely according to temperature, so choose the correct adhesive kit for the temperature range you will be working in.

After mixing and applying adhesive, you should install the windshield within the time shown on the chart.

For example, when the ambient temperature is 25°C (77°F), the glass should be installed within 45 minutes using the high temperature type adhesive.

Kit part numbers and contents are listed on the page before.



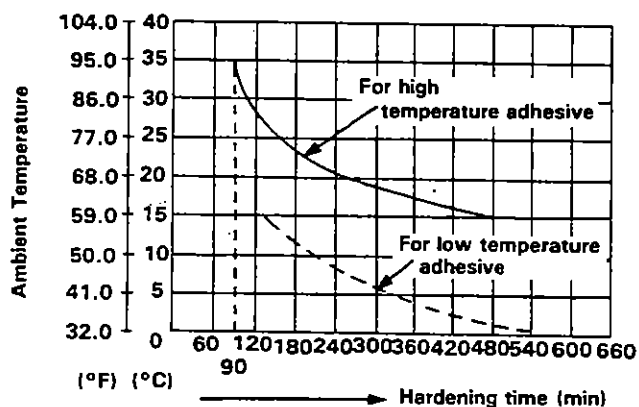
Notes

- Both kits have two types of adhesive primer: one for the body (metal), and one for glass.
- Always use new genuine Honda adhesive, or equivalent.
- Do not use the adhesive if 6 months have elapsed since date of manufacture.
- Store adhesive in a cool, dry place.
- Open only immediately before you are going to use it.

Hardening Time

Hardening time can be shortened by heating with infrared light.

For example, the adhesive will start to harden within 270 minutes mixing at 20°C (63°F). If however, it is heated to 35°C (95°F), it will start to harden within 90 minutes.



Broken Glass Removal

Remove as much broken glass as possible with a vacuum cleaner.

Blow out the glass in the heater and behind the dashboard with low pressure compressed air:

WARNING Wear eye protection while using the air gun.

- Set the temperature control knob to COLD.
- Push the HEAT button on the function panel.
- Make sure the recirculation button is out (OFF).
- Blow compressed air through the defroster center vent outlet.
- Remove the blower duct, and remove any glass from the air mix chamber.
- Remove the any glass from the top of the vent/defrost door.
- Remove any glass from top and bottom of carpet and seats with a vacuum cleaner.

NOTE: It is recommended to remove the seats to shake off any glass (page 14-46).

Windshield

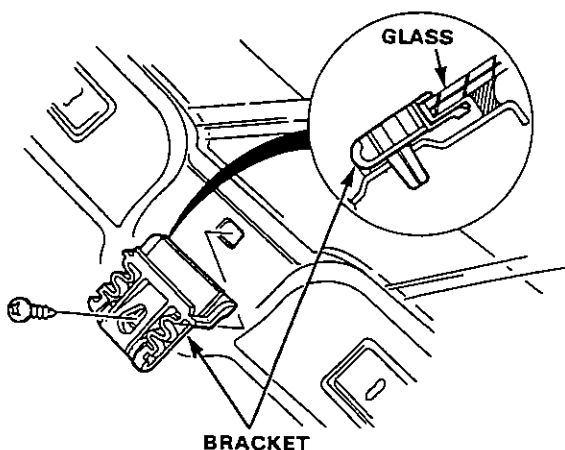


Removal

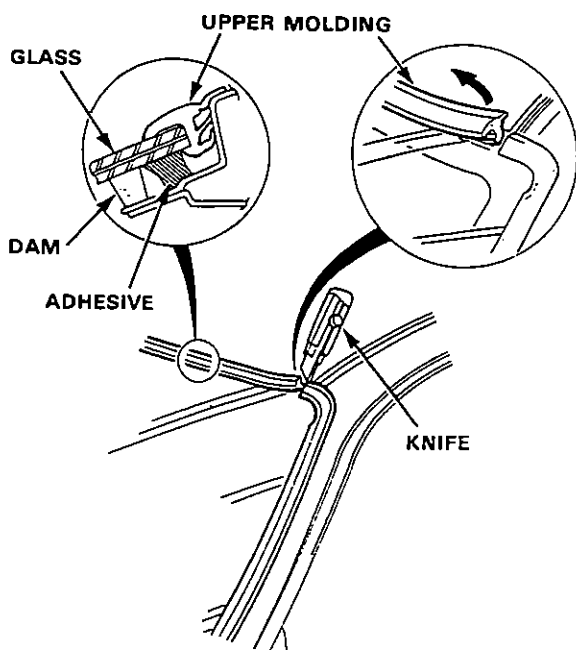
- To remove the windshield, first remove the:
 - Rearview mirror (page 14-51).
 - Sun visors and holders.
 - Front pillar trim (page 14-44).
 - Front wiper and air scoop.
 - Lower molding.
 - Front of weatherstrip.

NOTE: Do not damage the painted surface.

- Remove the screws, then remove the right and left glass brackets.

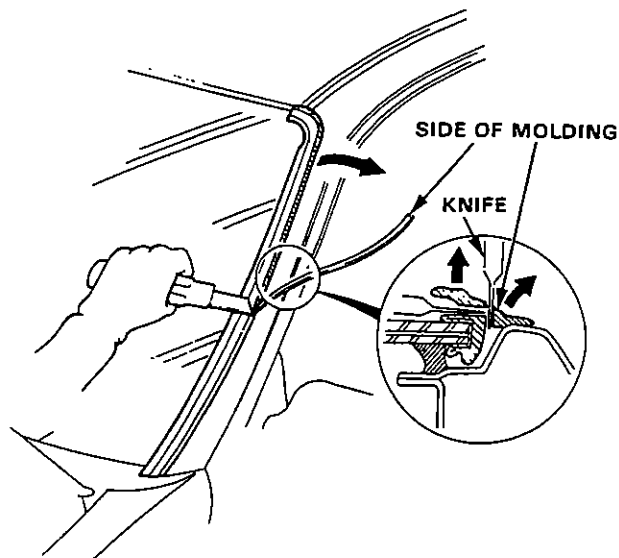


- Cut the end of the upper molding as shown.



- Pull away the upper molding.

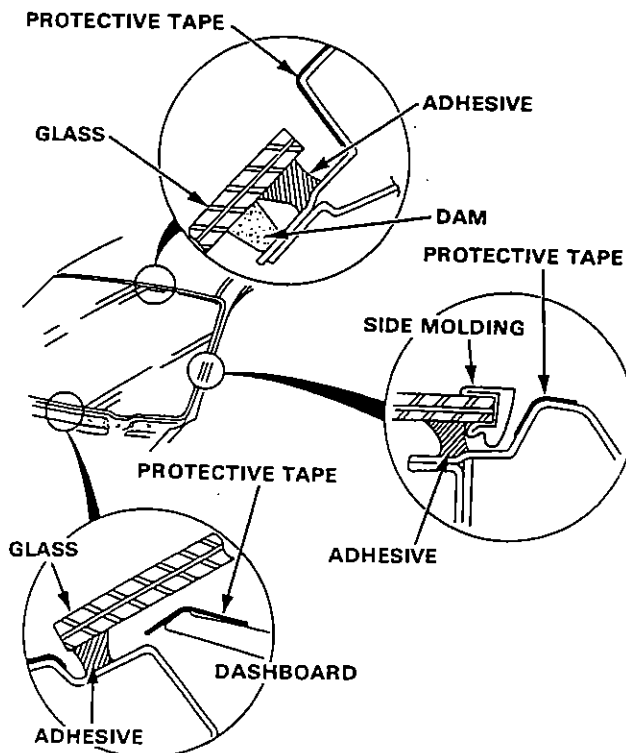
- Cut the side rubber portion off the molding as shown (Page 14-17).



- Lower the front of the headliner.

NOTE: Take care not to bend the headliner excessively.

- Apply protective tape along the edge of the dashboard and body next to the glass as shown.

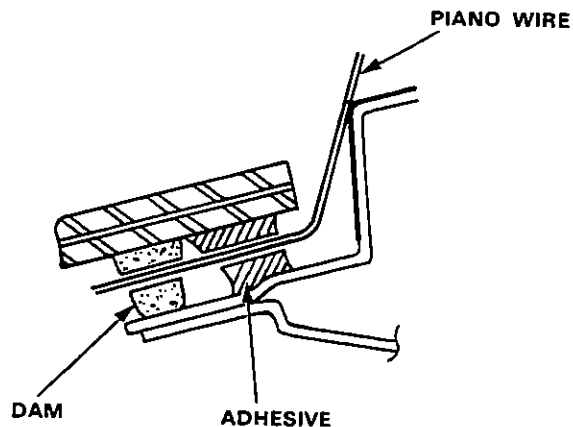


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Windshield

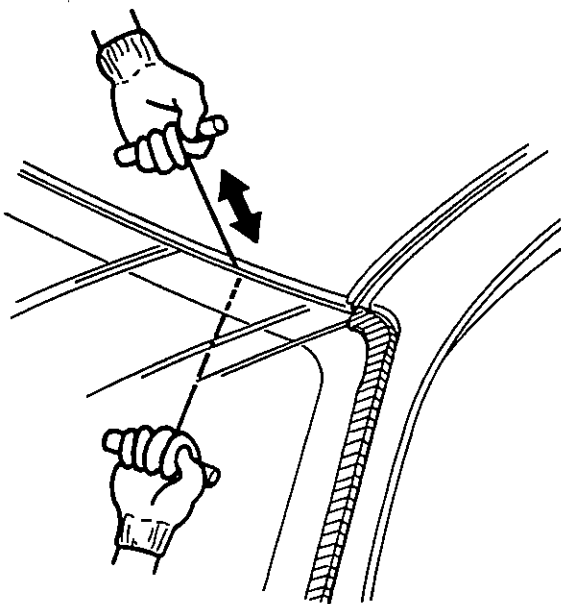
Removal (cont'd)

8. Using an awl, make a hole through the adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.



9. With a helper on the outside, pull the wire back and forth in a sawing motion and carefully cut through the adhesive around the entire glass.

CAUTION: Hold the piano wire as close to the glass as possible to prevent damage to the body and dashboard.



10. Remove the side molding from the glass.

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

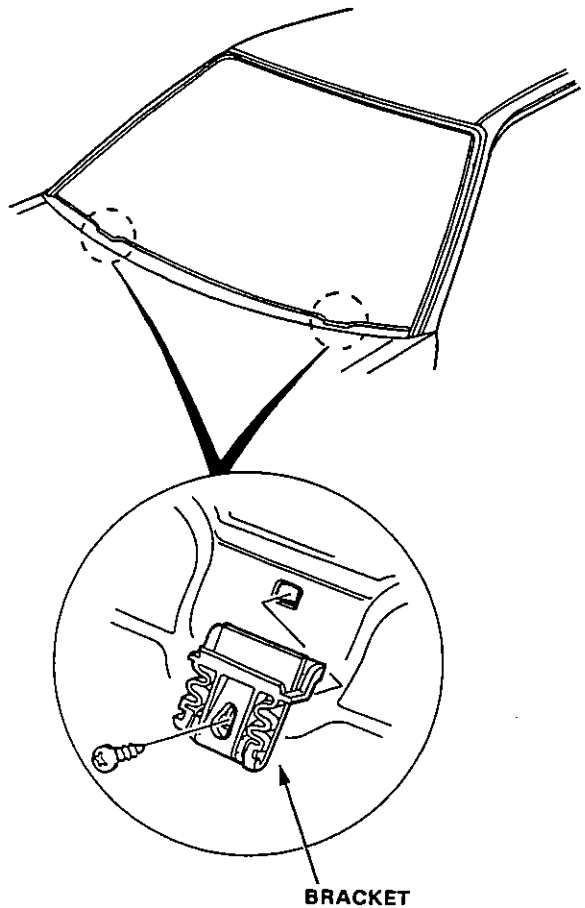
NOTE:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. Install the glass brackets as shown.

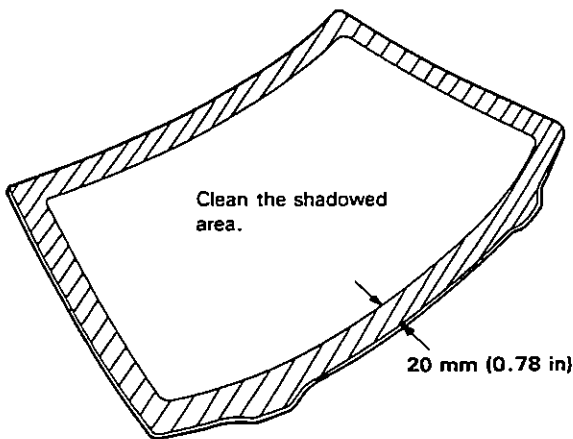




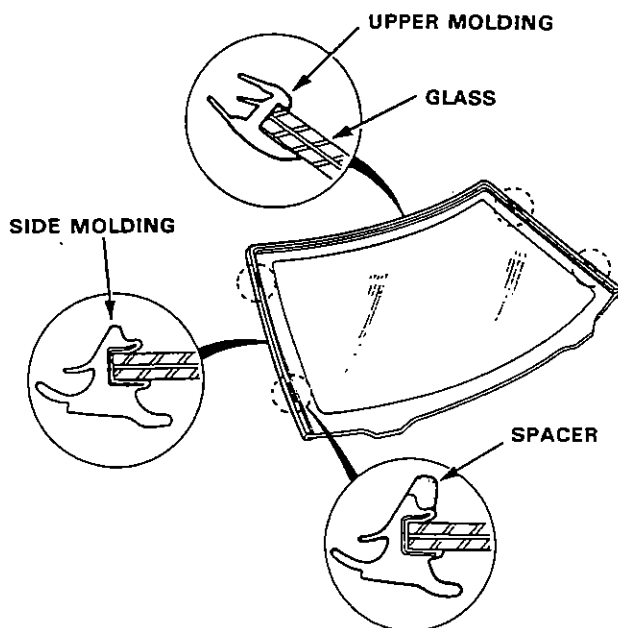
4. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

NOTE: Make sure the bonding surface is kept free of water, oil and grease.

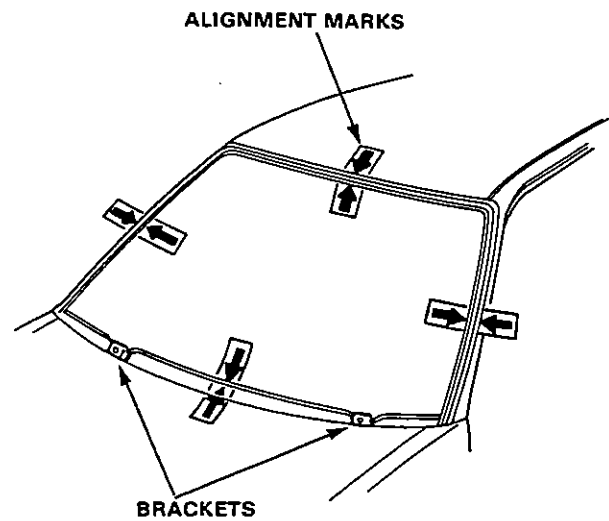
CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.



5. Apply the windshield moldings to the glass as shown.



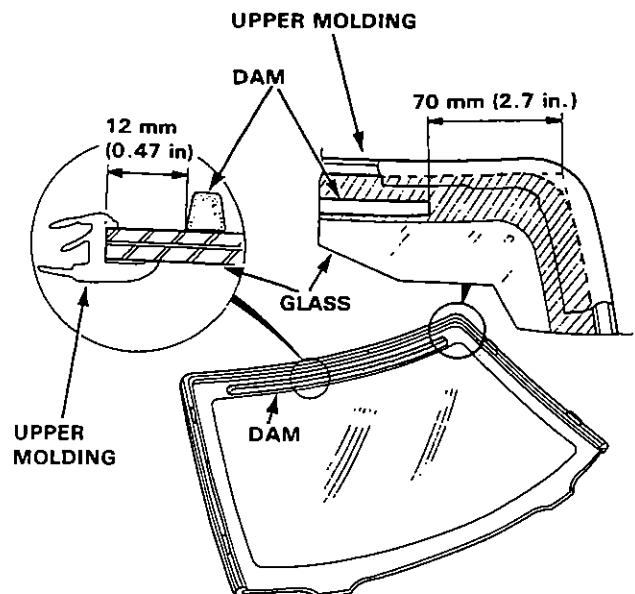
6. Set the glass upright on the spacers, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.



7. Center and glue the rubber dam to the inside face of the glass as shown, to contain the adhesive during installation.

NOTE:

- Be careful not to touch the glass where adhesive will be applied.
- Mask off surrounding surfaces before applying primer.



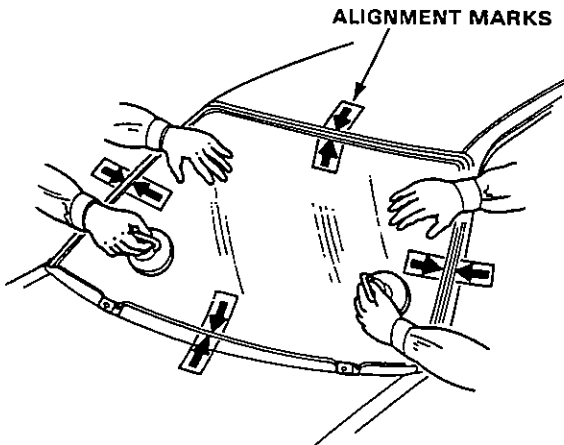
(cont'd)

Windshield Molding



13. Use suction cups to hold the glass over the opening, align it with the marks made in step 6 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the doors until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

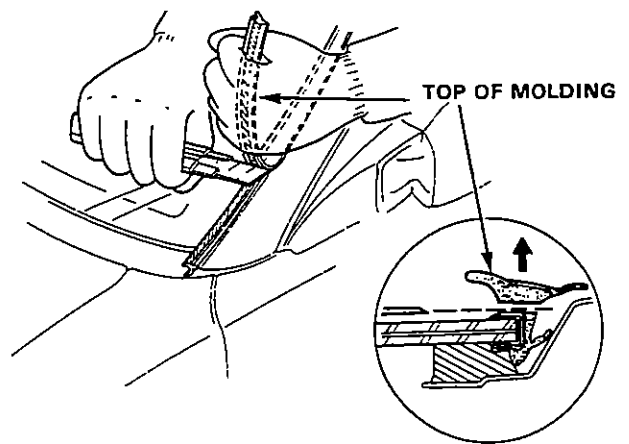
15. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

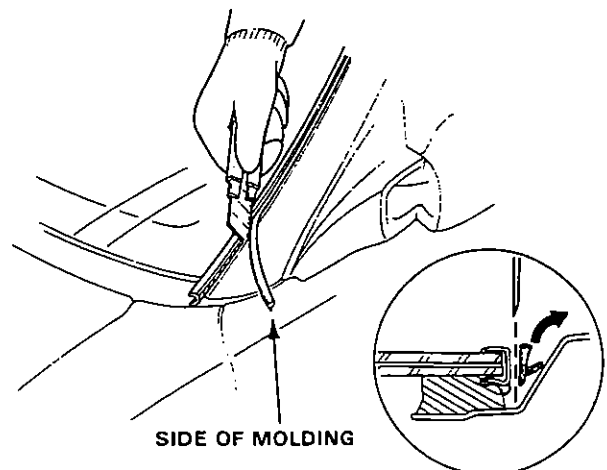
16. Reinstall all remaining removed parts.

Removal

1. To remove the front windshield molding, first remove the:
 - Front wiper and air scoop
 - Lower molding.NOTE: Do not damage the painted surface during removal procedure.
2. Cut the top rubber portion off the side of molding as shown.



3. Cut the side rubber portion off the molding as shown.



(cont'd)

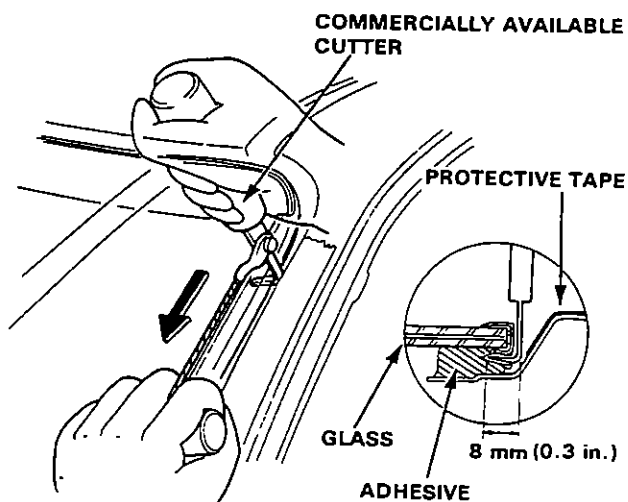
Windshield Molding

Removal (cont'd)

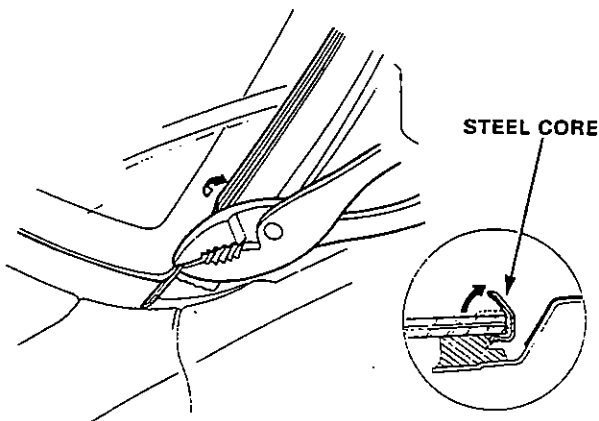
4. Apply protective tape along the edge of the body next to the glass as shown. Cut the bottom of the side molding as shown. Cut through the adhesive holding the underside of the side moldings.

NOTE:

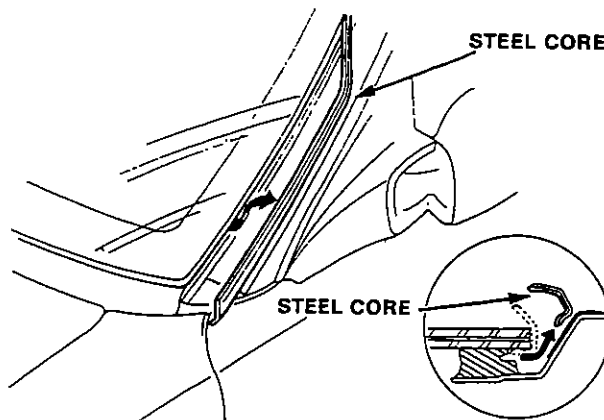
- You will need a commercially available cutter with an L-angled blade having 8 mm of cutting surface, in order to cut only the molding adhesive without cutting the glass adhesive. The blade supplied with some cutters may need to be ground down to 8 mm.
- Windshield moldings can be cut easily with a hot-tip type L-angle bladed cutter.



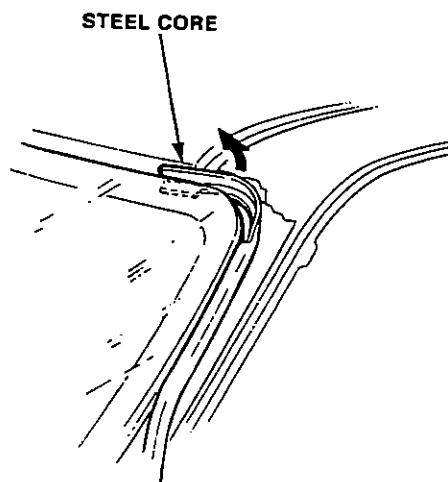
5. Carefully bend up the top side of the steel core as shown.



6. Pull the molding steel core away from the glass.
NOTE: The upper molding can be removed by simply pulling it up.



CAUTION: Remove the steel core without damaging the glass.





Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

NOTE:

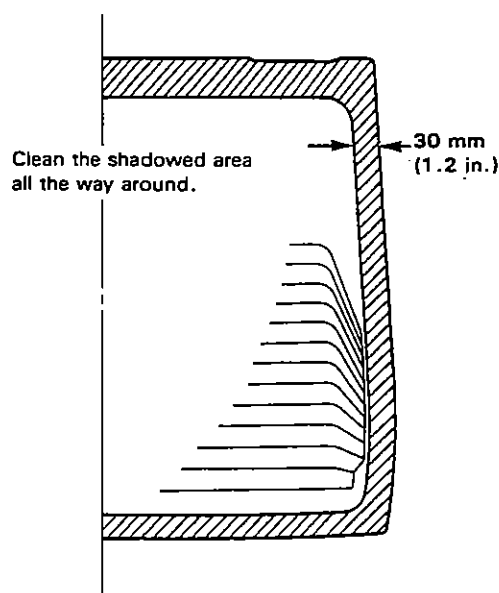
- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

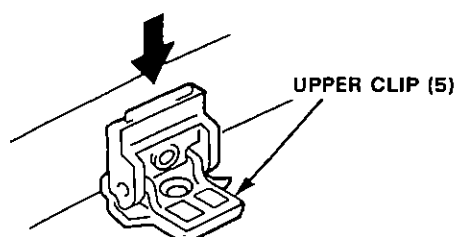
NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

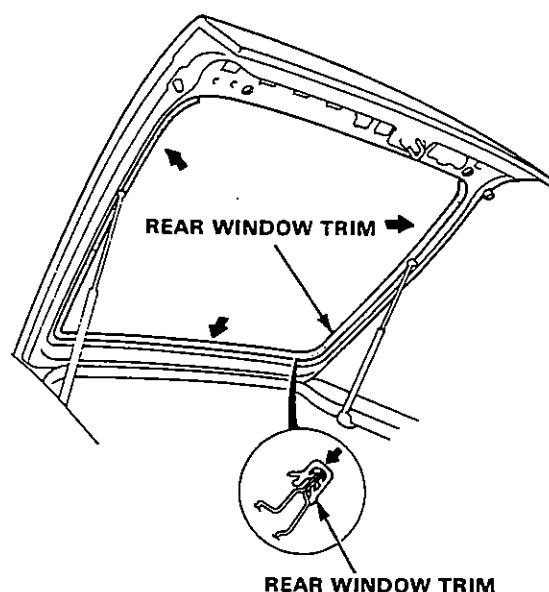
NOTE: Make sure the bonding surface is kept free of water, oil and grease.



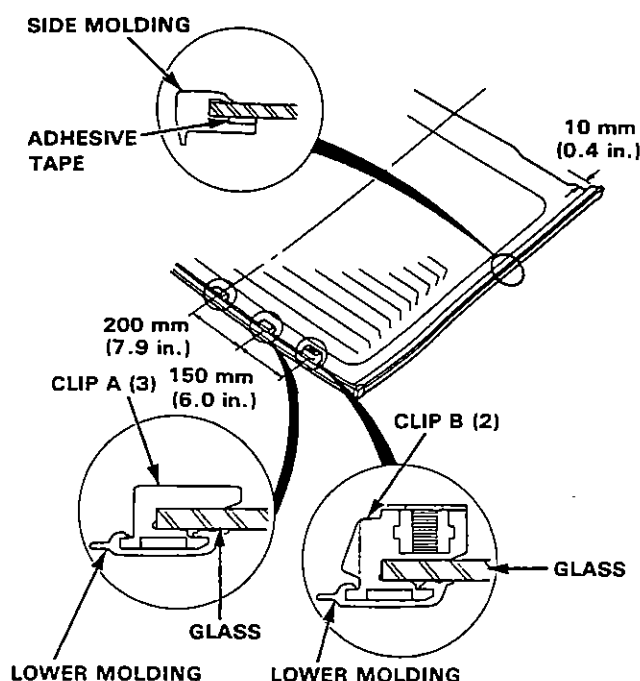
4. Install the upper clips.



5. Install the rear window trim in the tailgate.



6. Adhere the side moldings, lower molding clips and lower molding to the side and lower edge of the glass as shown.



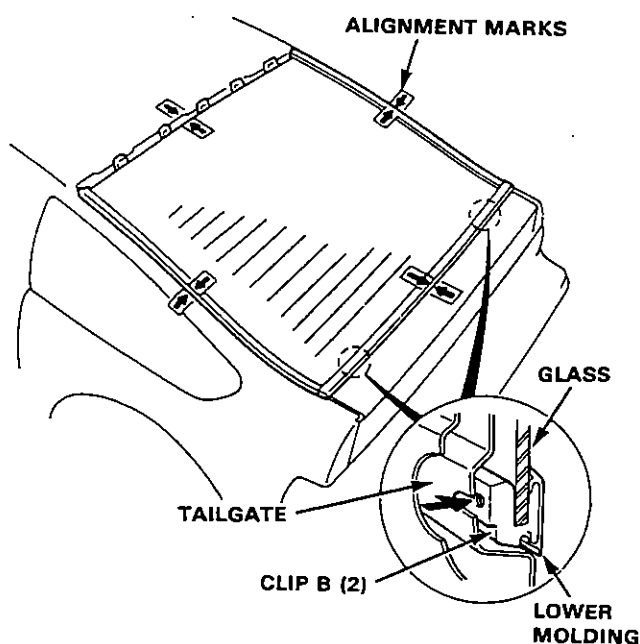
(cont'd)

Rear Window

Installation (cont'd)

- Set the glass upright on the tailgate, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.

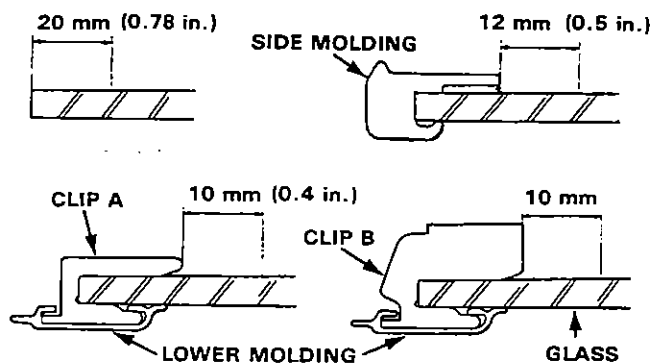
NOTE: Check that the lower molding clip B mount holes and tailgate holes align with each other as shown.



- 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:

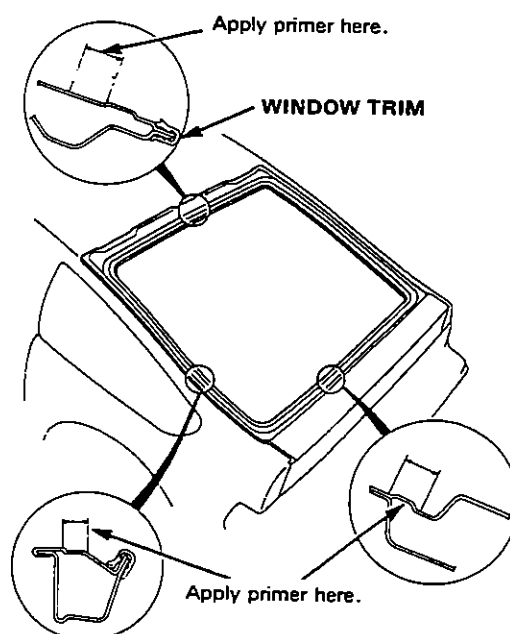
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



- 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.

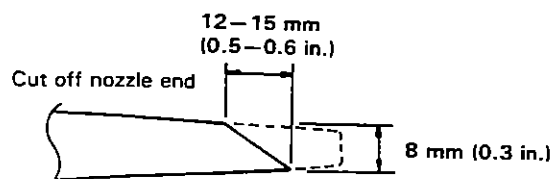


- Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE:

- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

- Before filling a cartridge, cut off the end of the nozzle at the angle shown.

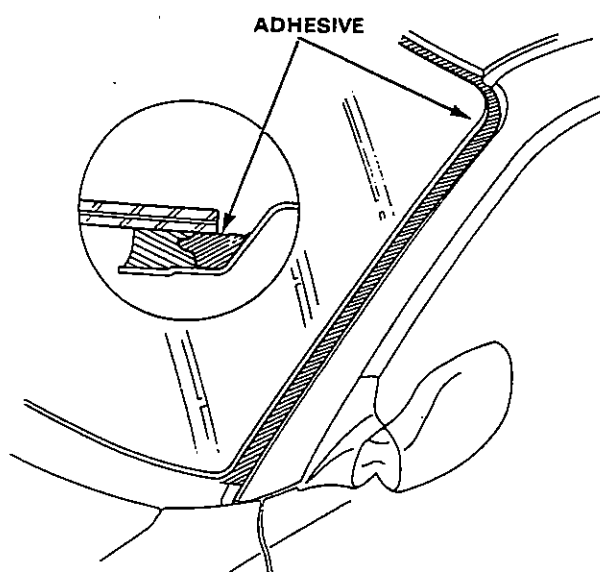




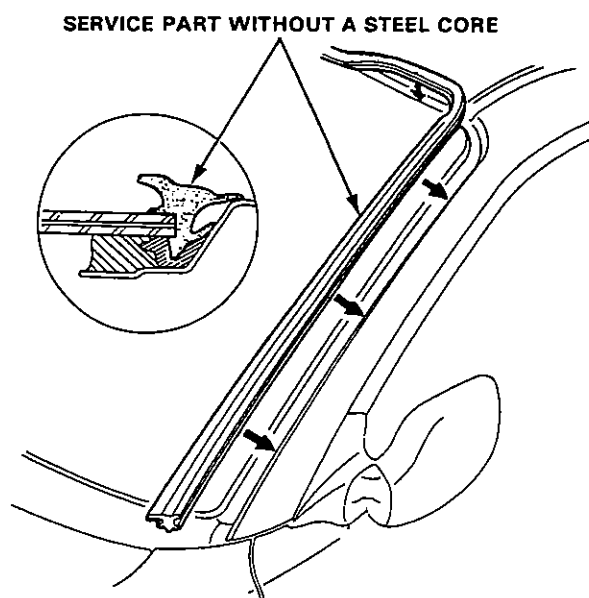
Installation

NOTE: When only replacing the molding (with the windshield remaining in place) use the replacement molding that has no steel core.

1. Apply adhesive around the glass as shown.



2. Install the coreless molding, starting at the upper corners then smoothly pushing the top and side portions into place.



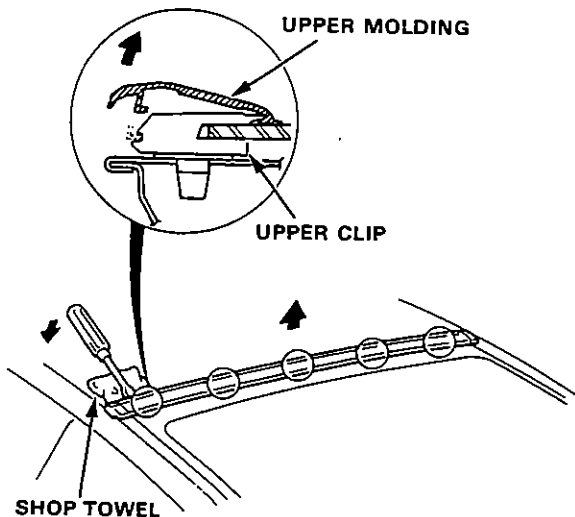
Rear Window

Removal

CAUTION:

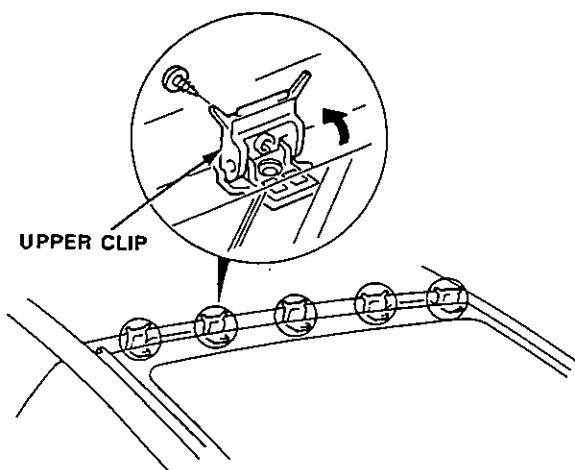
- Wear gloves to remove and install the glass.
- Do not damage the defroster grid lines.

1. To remove the rear window glass, first remove the:
 - Tailgate trim panel (pages 14-62).
 - Rear wiper (See section 16).
 - Rear spoiler (page 14-64).
2. Remove the upper molding by prying it upward.



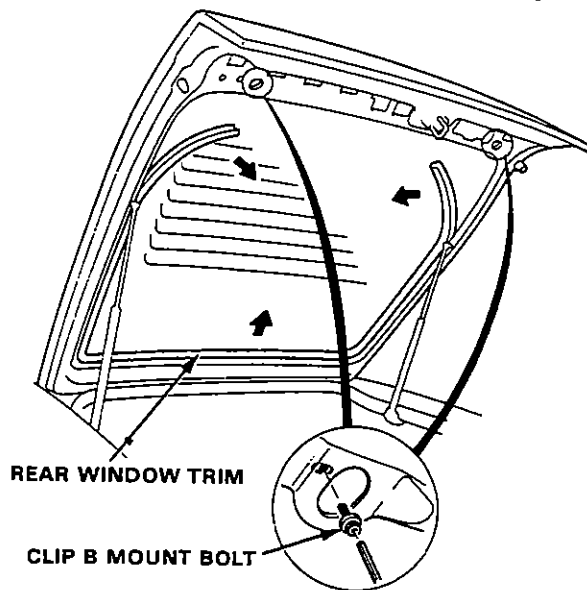
NOTE: Do not damage the painted surface.

3. Remove the screw, then raise the upper clips as shown.

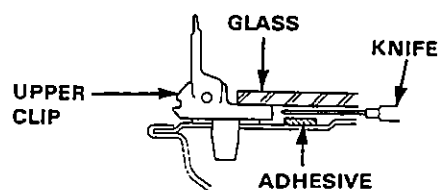
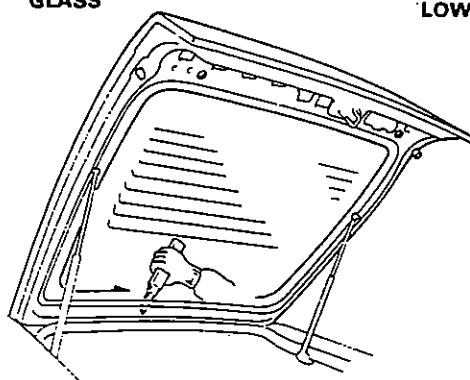
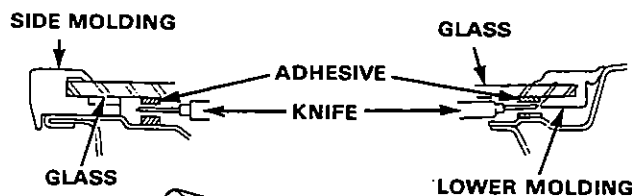


4. Remove the rear window trim, and remove the rear window lower molding clip B mount bolts.

NOTE: Take care not to scratch or score the glass.



5. From inside the car, use a knife to cut through the glass adhesive all the way around the glass area.



6. Remove the rear window molding when the glass is to be reused.



Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

NOTE:

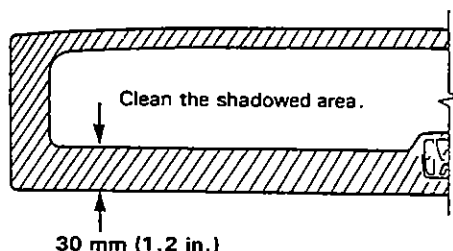
- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

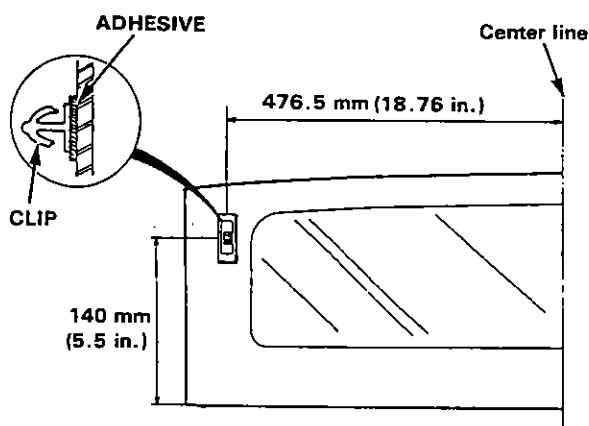
NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

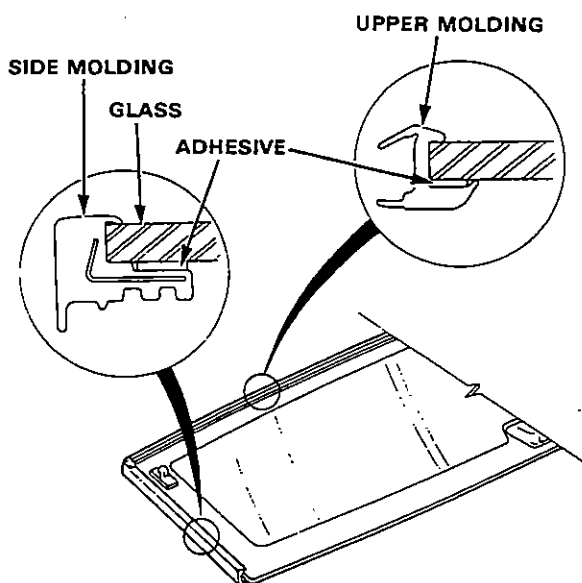
NOTE: Make sure the bonding surface is kept free of water, oil and grease.



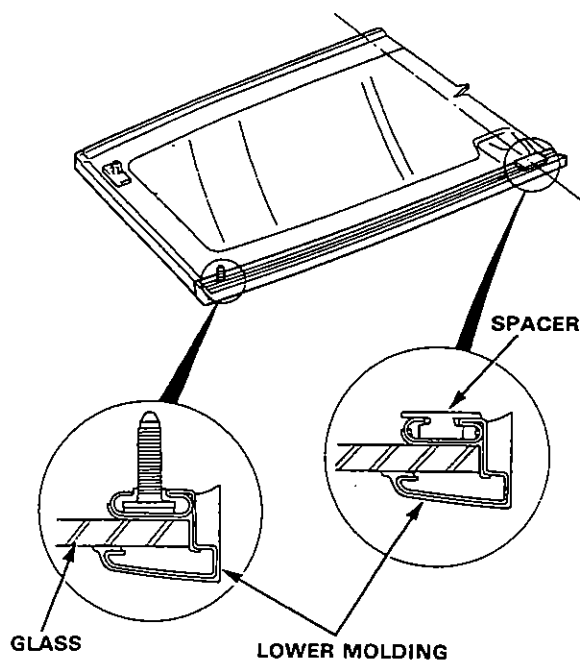
4. Glue the clips to the inside face of the glass as shown.



5. Adhere the upper and side moldings to the edge of the glass as shown.



6. Install the lower molding on the glass as shown.



(cont'd)

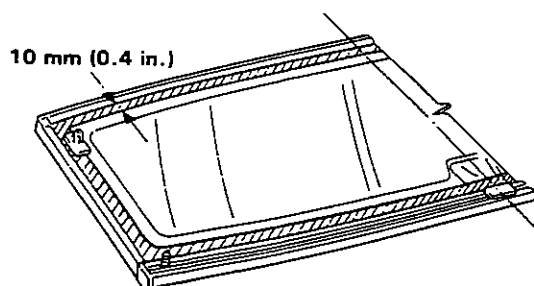
Lower Hatch Glass

Installation (cont'd)

7. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

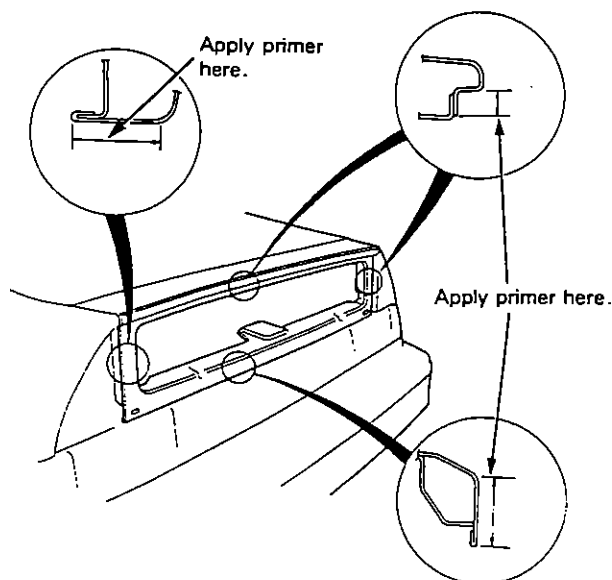
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



8. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

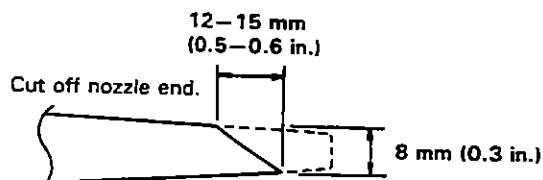


9. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE: Clean the plate with a sponge and alcohol before mixing.

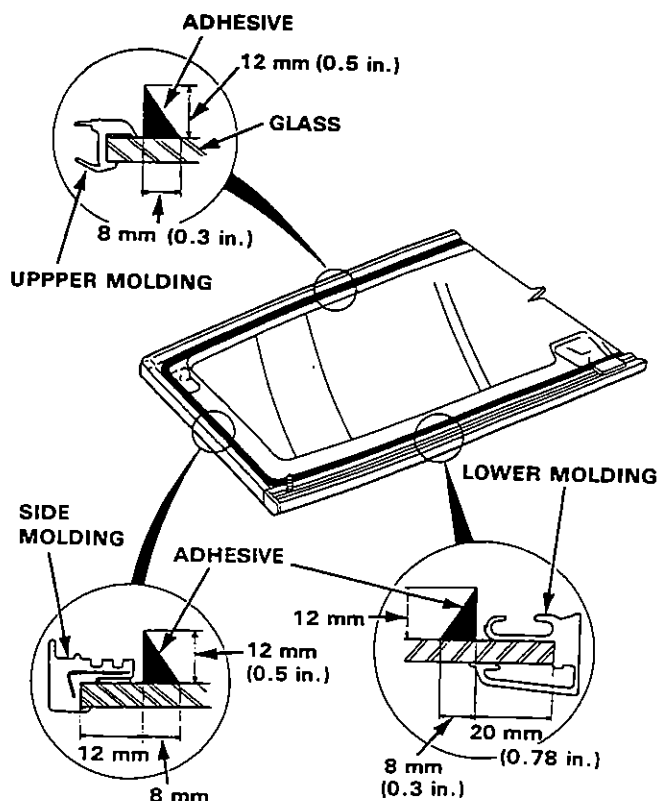
10. Follow the instructions that came with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



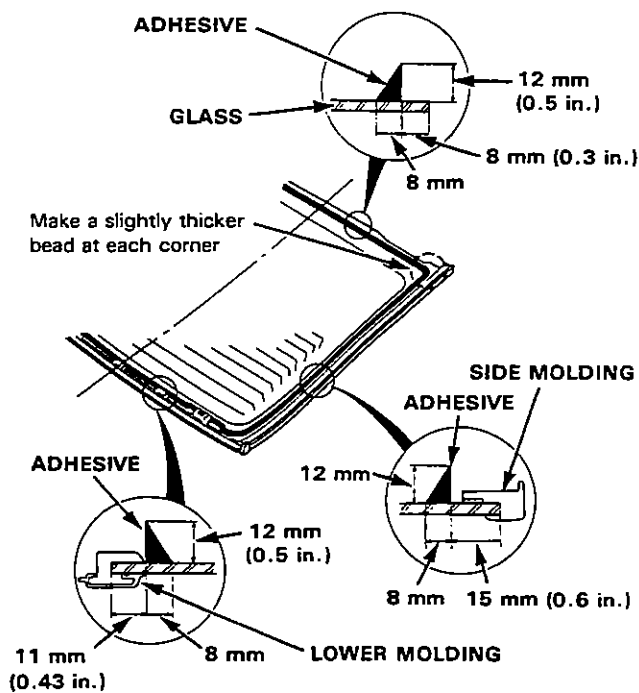
12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

NOTE: Peel off the backing of dam.



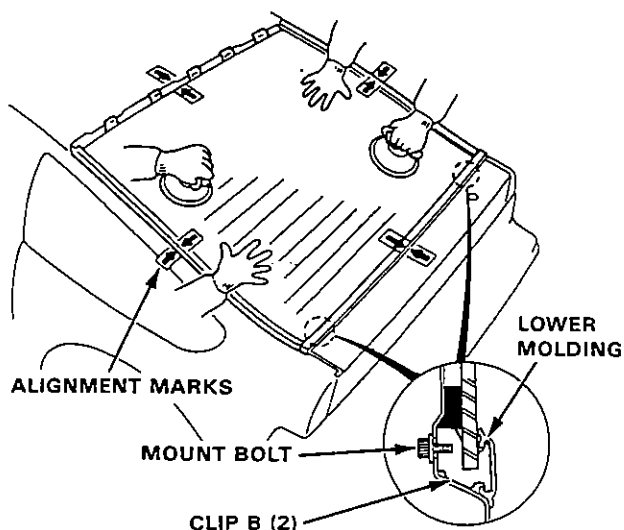


12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

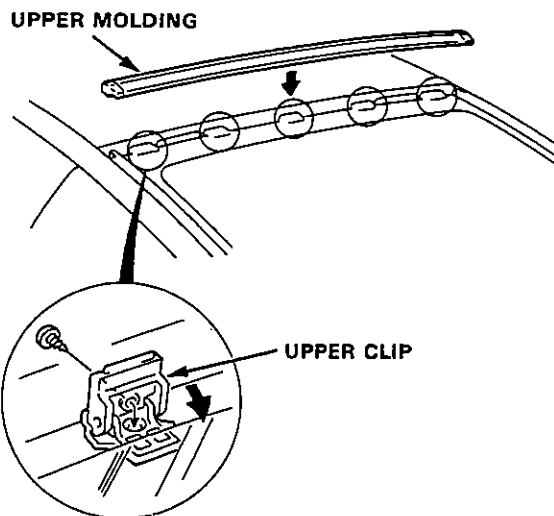


13. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the doors until the adhesive is dry.



14. Fold down the upper clips and install the screws. Install the upper molding by pressing down on the upper edge as shown.



15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

16. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

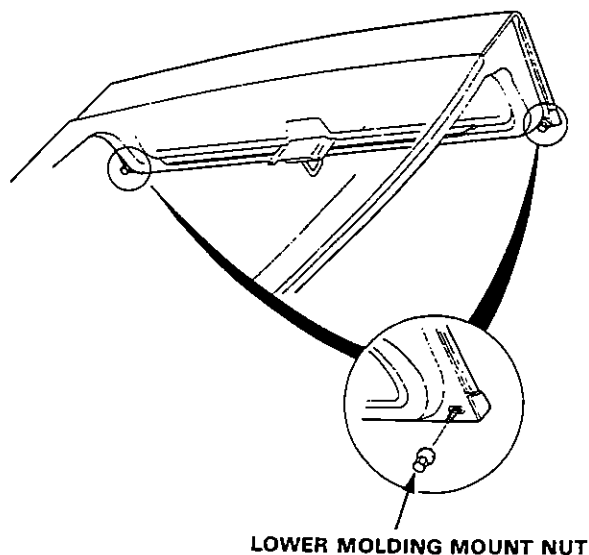
17. Reinstall all remaining removed parts.

Lower Hatch Glass

Removal

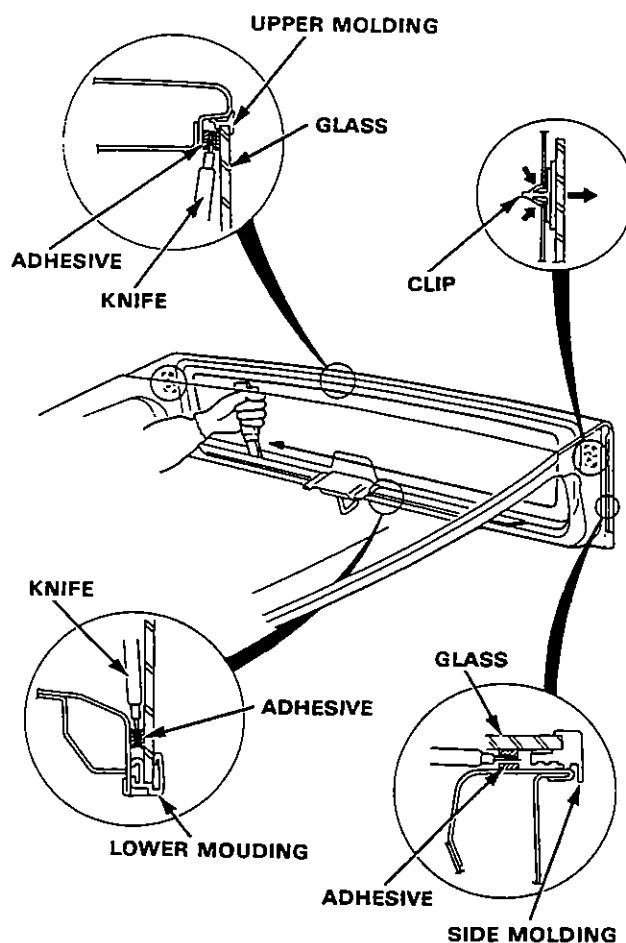
NOTE: To remove the lower hatch glass first remove the tailgate trim panel (page 14-62).

1. Remove the lower molding mount nuts.



NOTE: Take care not to scratch or score the glass.

2. Detach the 2 clips and from inside the car, use a knife to cut through the glass adhesive all the way around.



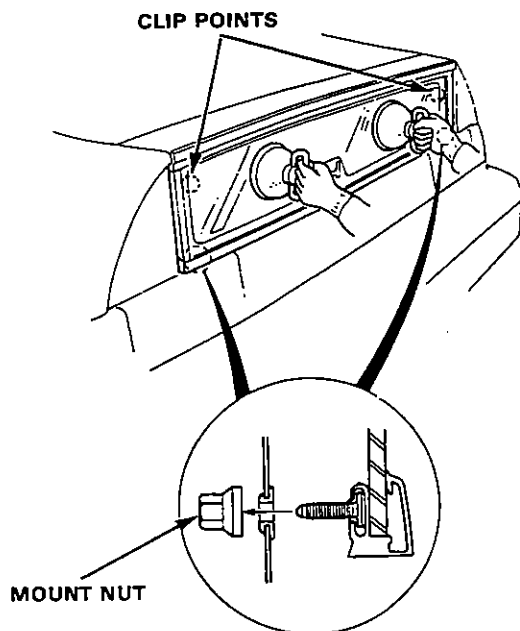
3. Remove the glass.
4. Remove the lower and side molding if the glass is to be reused.

NOTE: Do not damage the painted surface.



13. Use suction cups to hold the glass, then set it on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the tailgate until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

15. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

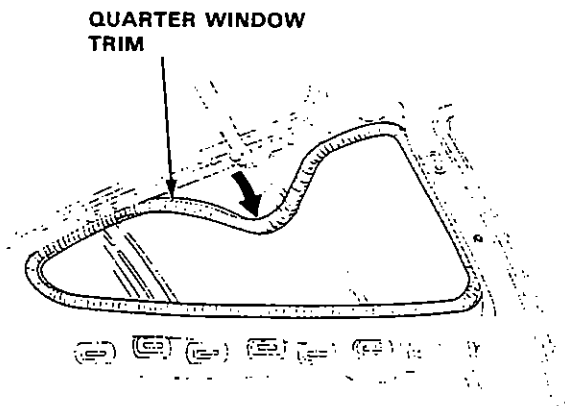
16. Reinstall all remaining removed parts.

Quarter Glass

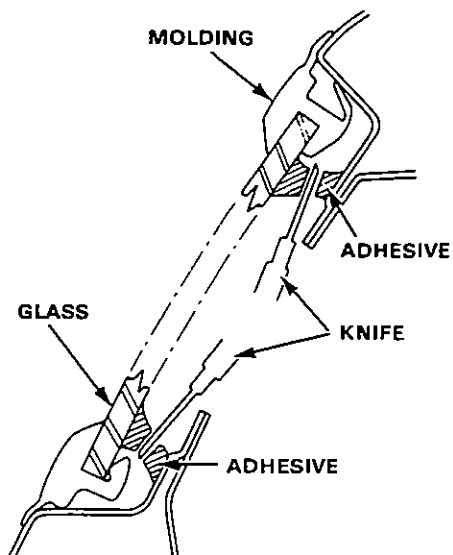
Removal

NOTE: To remove the quarter glass, first remove the quarter window trim panel and quarter trim panel (page 14-44).

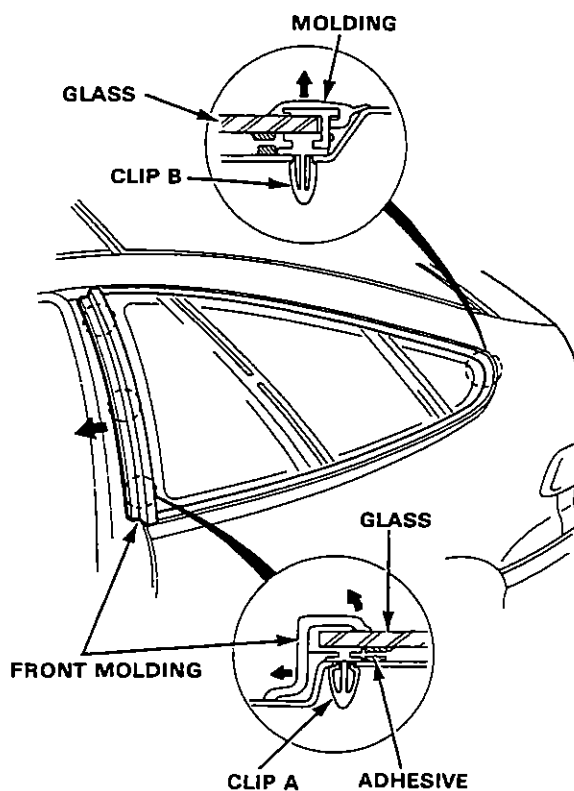
1. Remove the quarter window trim.



2. From inside the car, use a knife to cut through the glass adhesive all the way around.



3. As an assembly, pry the glass and upper and front moldings away from the car at the clip points shown.



4. Remove the quarter glass molding if the glass is to be reused.



Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

NOTE:

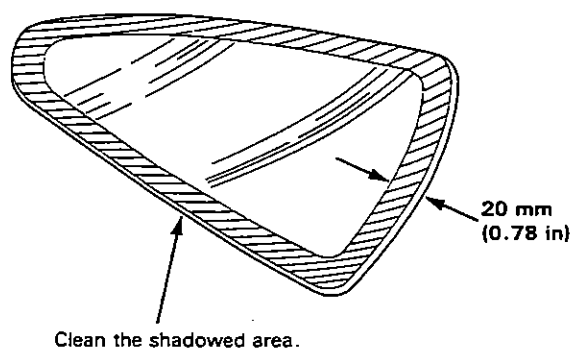
- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

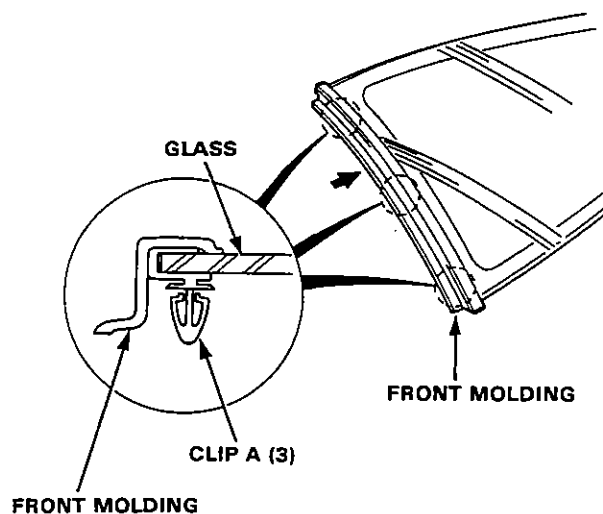
NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

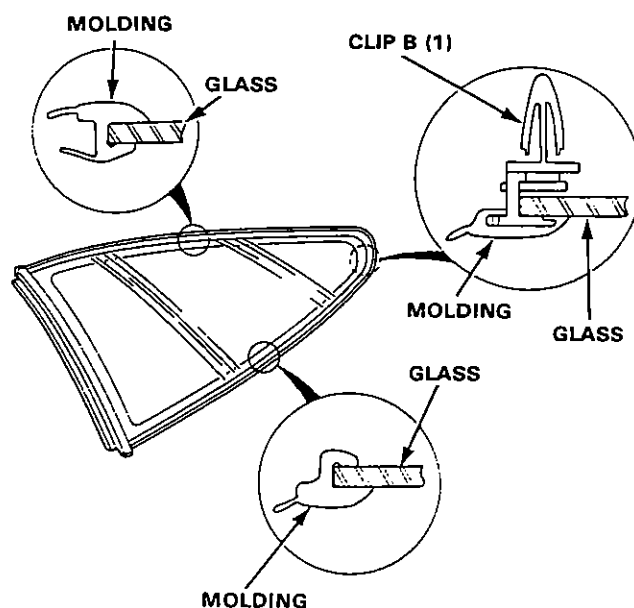
NOTE: Make sure the bonding surface is kept free of water, oil and grease.



4. Attach the front molding and 3 clips to the front edge of the quarter glass as shown.



5. Install the quarter molding on the glass by using the clips shown.



(cont'd)

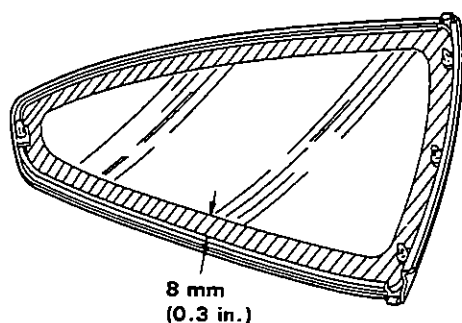
Quarter Glass

Installation (cont'd)

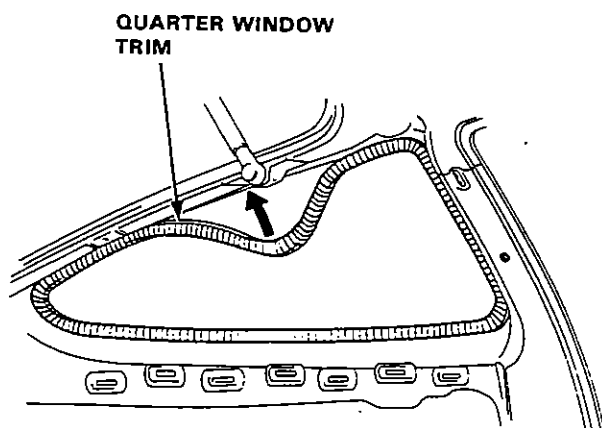
6. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



7. Install the quarter window trim.

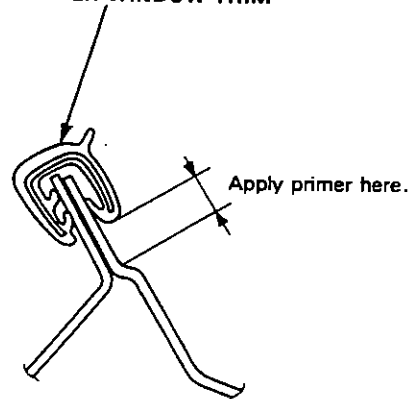


8. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

QUARTER WINDOW TRIM

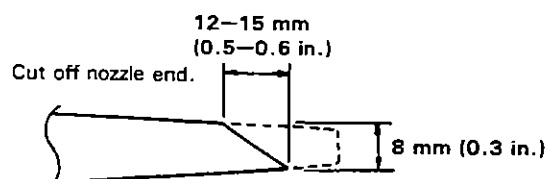


9. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE:

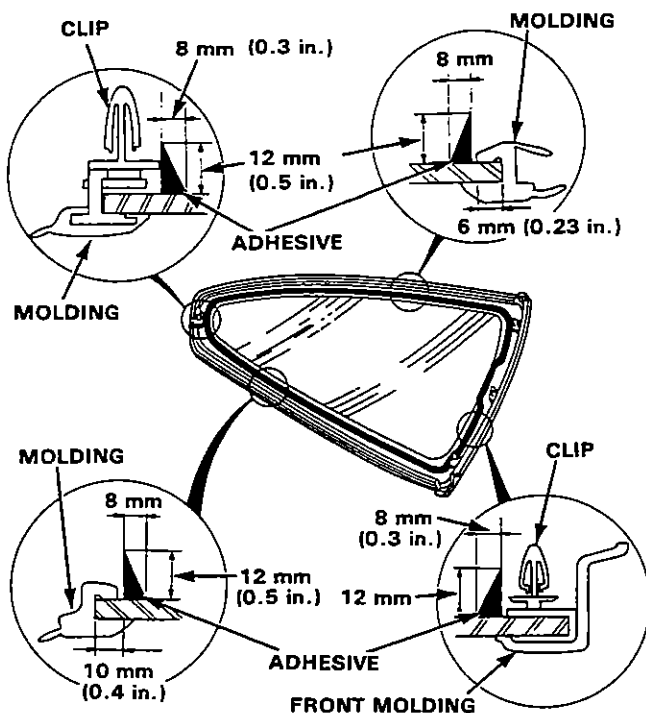
- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

10. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



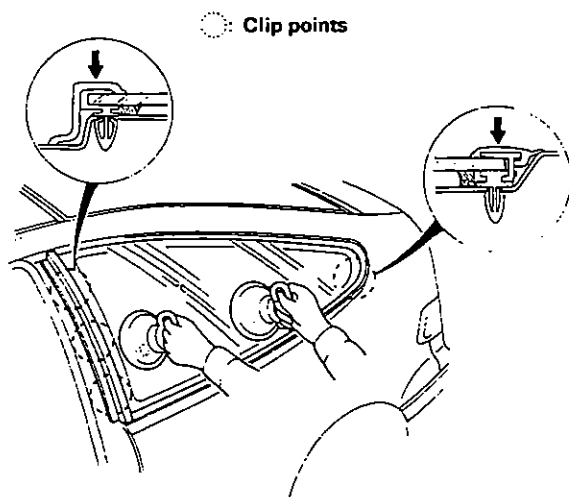


11. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



12. Use suction cups to hold the glass, then set it on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the doors and tailgate until the adhesive is dry.



13. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

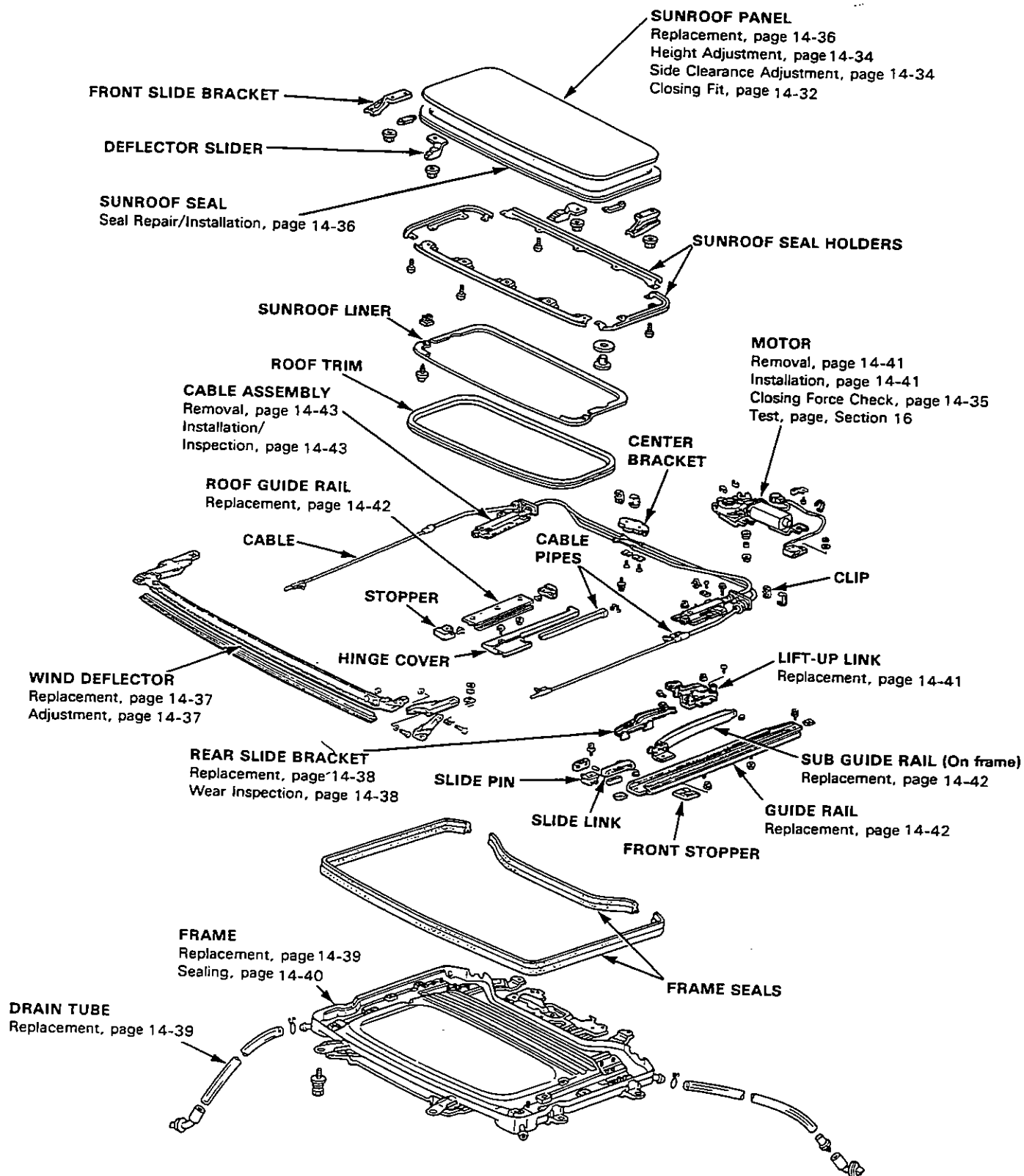
14. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

15. Reinstall all remaining removed parts.

Sunroof

Index





Troubleshooting

Symptom	Probable Causes
Water leak	1. Improperly installed sunroof seal and sunroof panel (page 14-36). 2. Gap between sunroof seal and roof panel (page 14-34). 3. Clogged drain tube. 4. Gap between frame seal and frame. 5. Improper sealing between cable pipe and frame (page 14-40). 6. Improper sealing between guide rail and frame (page 14-40).
Wind noise	1. Improper clearance between sunroof seal and roof panel (page 14-34). 2. Loose headliner and roof trim.
Deflector noise	1. Improper clearance between deflector blade and roof panel (page 14-37). 2. Insufficient deflector extension. 3. Deformed deflector.
Motor noise	1. Loose motor. 2. Worn gear or bearing. 3. Worn cable. 4. Deformed cable pipe.
Sunroof does not move, but motor turns.	1. Foreign matter stuck between guide rail and sub guide rail (page 14-38). 2. Interference between moving parts. 3. Cable slider loose. 4. Cable pipe loose or not attached properly. 5. Clutch out of adjustment (page 14-35). 6. Sunroof not tilting up properly.
Sunroof does not move and motor does not turn (Sunroof can be moved manually).	1. Blown fuse. 2. Faulty switch (Section 16). 3. Faulty relay (Section 16). 4. Faulty motor.
Sunroof vibrates	1. Worn rear slide bracket (page 14-38). 2. Improperly installed guide rails.
Sunroof remains tilted	1. Faulty cable slider (page 14-43). 2. Faulty limit switch (Section 16).

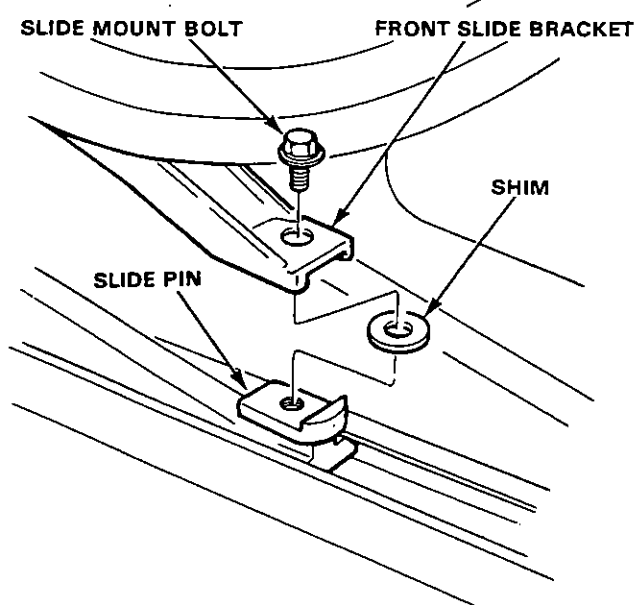
Sunroof

Height Adjustment

The roof panel should be flush with the sunroof seal.

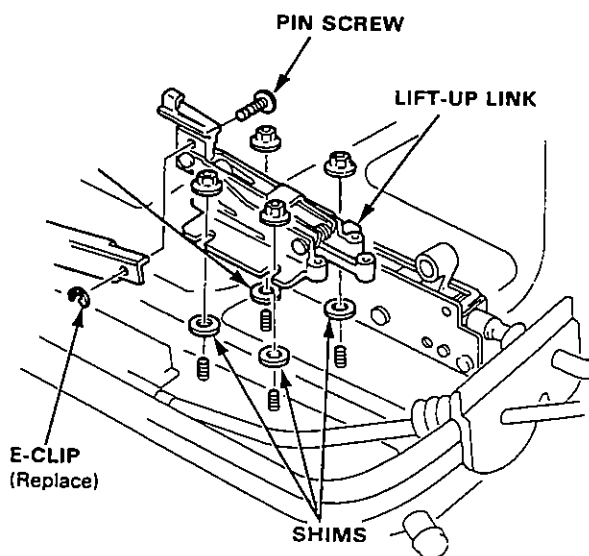
1. To adjust the front of the sunroof, remove the slide bracket mount bolt and add or remove shims between the slide bracket and the slide pin as shown.

NOTE: The shims should be of equal thickness on both sides.



2. To adjust the rear height, remove the lift-up link (page 14-41) and add or remove shims between the lift-up link and frame as shown.

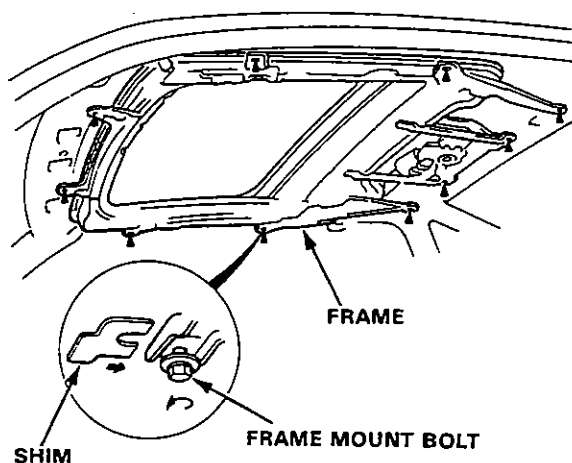
NOTE: The shims should be of equal thickness on both sides.



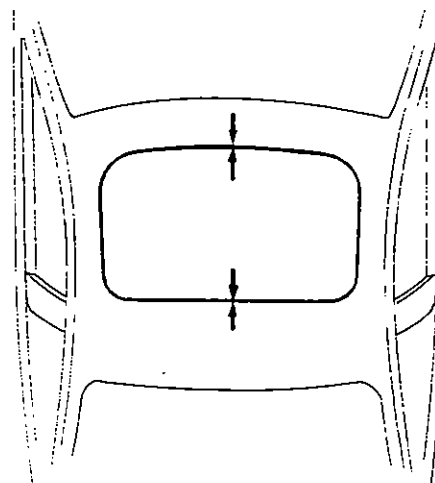
Side Clearance Adjustment

If sunroof seal fits too tightly against the roof panel on one side when closed, remove the headliner, then:

1. Loosen all frame mount bolts.



2. Side-to-side fit of sunroof seal can be adjusted by moving it right or left by hand.
3. If necessary, use shims as required to make the sunroof panel fit flush with the roof panel.

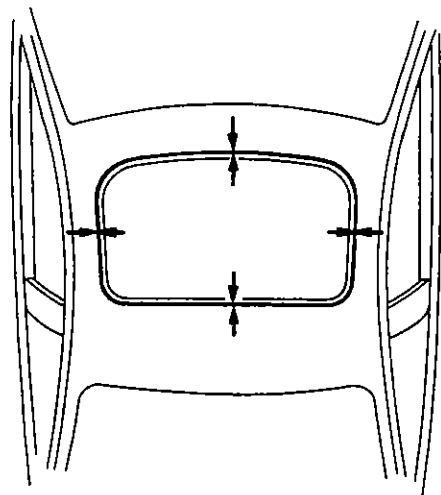


3. Tighten bolts, recheck.

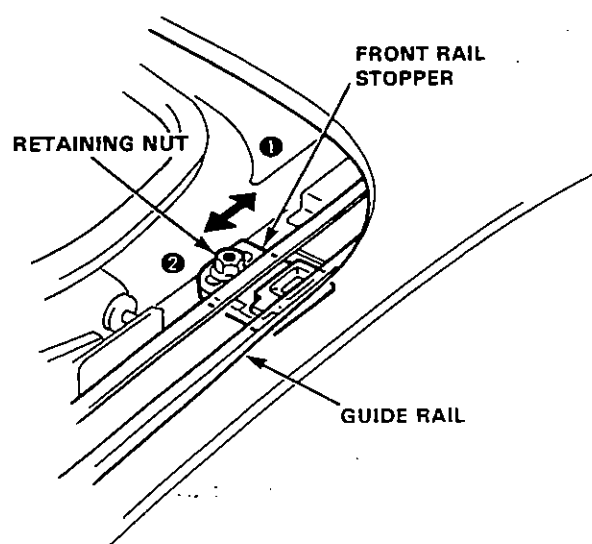


Closing Fit

If the fit of the sunroof seal is too tight at the front seal when the sunroof is closed, or too tight at the rear seal when it is pulled down into the closed position, proceed as follows:



1. Open the sunroof fully.
2. Loosen the front rail stopper nuts.



3. Slide the stoppers forward or backward until the sunroof closes snugly.

NOTE: Slide the right and left stoppers equally.

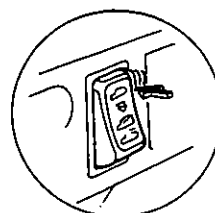
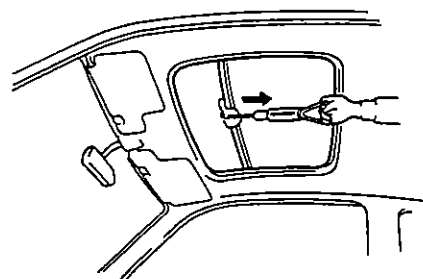
- ① : To increase clearance at rear seal.
- ② : To increase clearance at front seal.

Closing Force Check

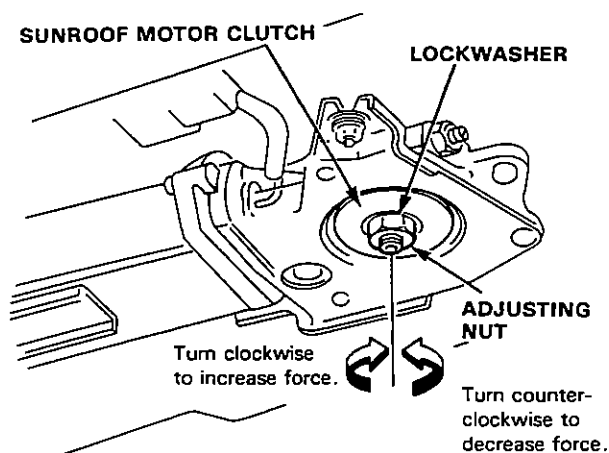
1. After installing all removed parts, have a helper hold the switch to close the sunroof while you measure force required to stop it. Attach spring scale as shown. Read force as soon as sunroof stops moving, then immediately release the switch and spring scale.

CAUTION: When using the spring scale, protect the leading edge of the sunroof with a shop towel.

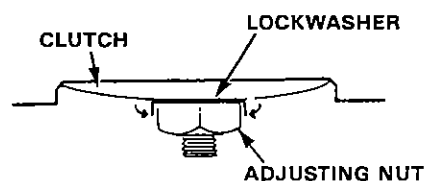
Closing Force: 196–245 N (20–30 kg, 44–66 lb)



2. If force is not within specification, adjust by turning sunroof motor clutch adjusting nut.



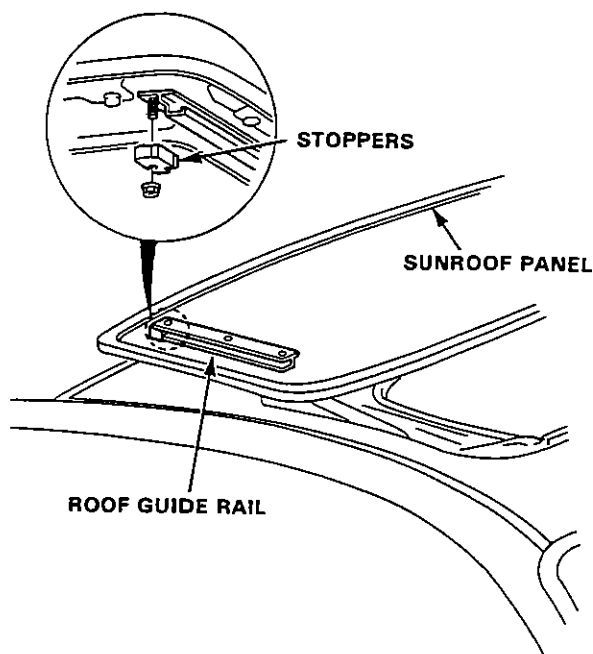
3. After adjusting, install a new lockwasher and bend it flat against the adjusting nut.



Sunroof

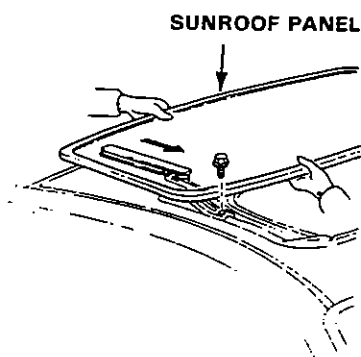
Sunroof Panel Replacement

1. Open the sunroof.
2. Remove the rear stoppers by removing the attaching nuts.



3. Remove the front mounting bolts. Remove the sunroof panel from the rear slide bracket by sliding it forward by hand.

NOTE: Use extreme care to avoid damaging the body when removing the panel.



4. Install the sunroof panel in the reverse order of removal.

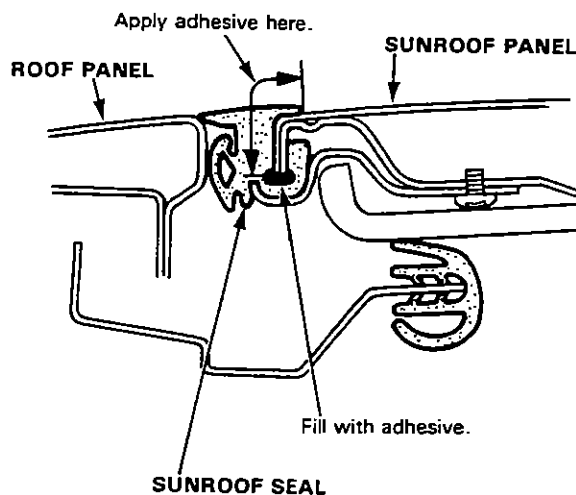
Seal Repair/Installation

If a seal is leaking, or if it is to be replaced, proceed as follows.

1. Remove the sunroof panel, remove the sunroof liner, front slide bracket and deflector slider.
2. Remove the seal holder. Carefully peel the seal off the sunroof panel.
3. Clean the seal attaching surfaces with a clean cloth dampened in alcohol.

NOTE: After cleaning, keep oil, grease or water from getting on the surface.

4. Fill the seal groove with adhesive. Coat the seal attaching surfaces of the sunroof panel with the same adhesive.

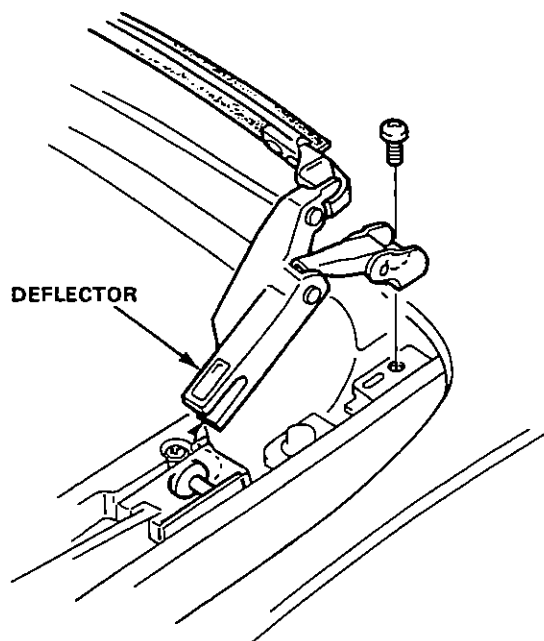


5. Fit the seal onto the sunroof panel evenly all the way around.
6. Wipe off excess adhesive with a clean cloth dampened with alcohol.
7. Allow the adhesive to cure for at least 4 hours after seal installation and before operating the sunroof.



Wind Deflector Replacement

1. Remove the deflector mount screws, then remove the deflector.

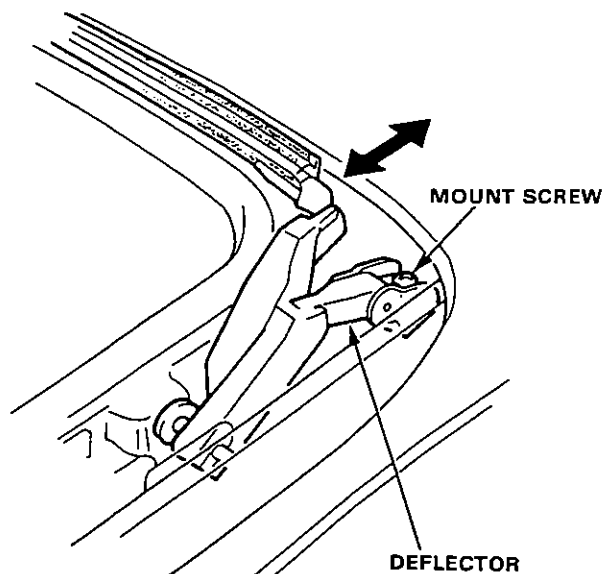


2. Install the deflector in the reverse order of removal. Adjust the deflector.

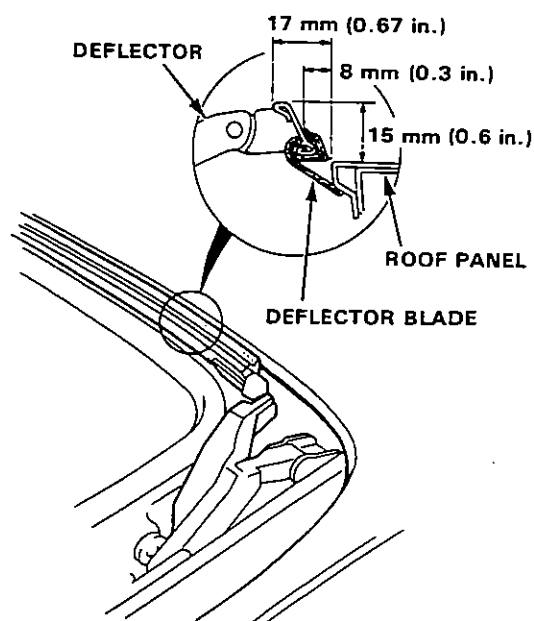
Wind Deflector Adjustment

NOTE: A gap between deflector blade and roof opening edge will cause excessive wind noise when driving at high speed with the roof open.

1. Open the sunroof fully.
2. Loosen the deflector mount screws.



3. Adjust the deflector forward or backward so the edge of its blade touches the front edge of the roof opening evenly.



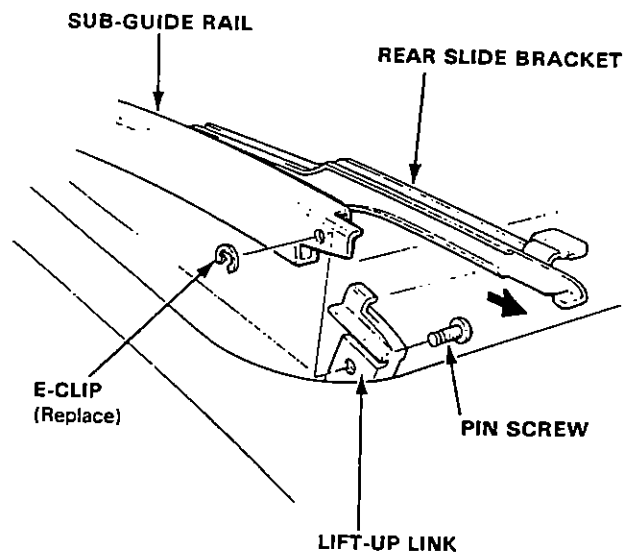
4. Check the height of the deflector.

NOTE: The height of the deflector cannot be adjusted. If damaged or deformed, replace or repair it.

Sunroof

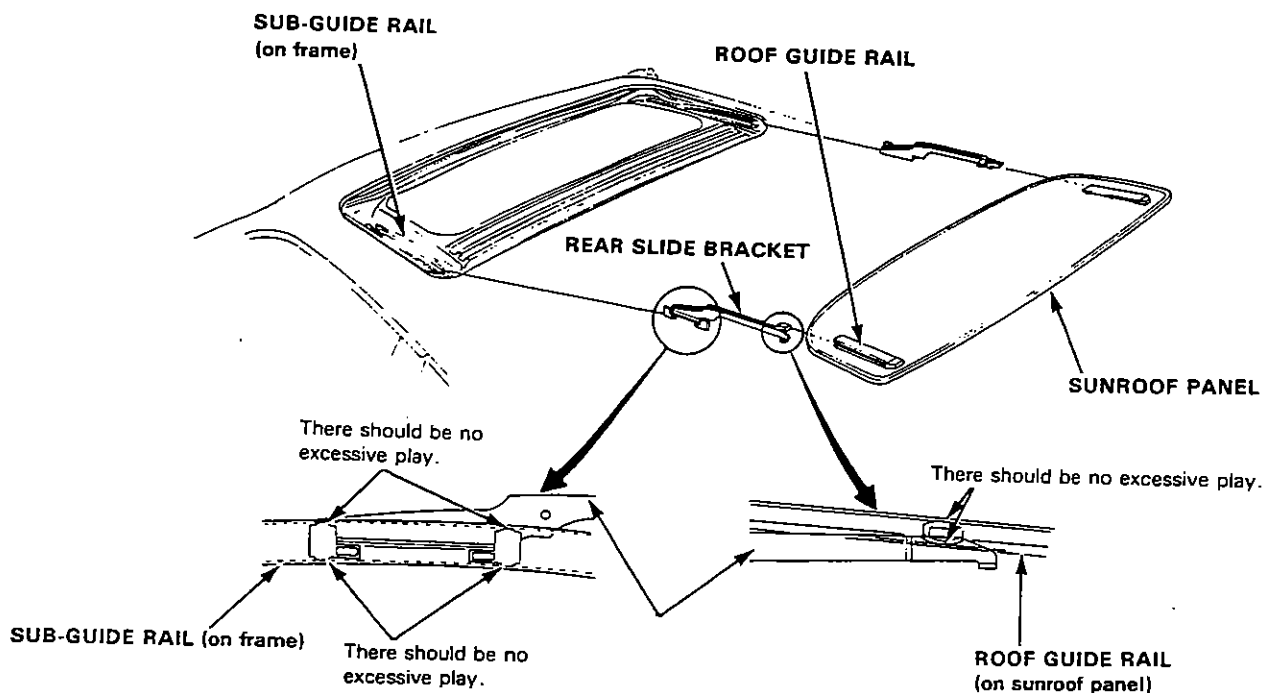
Rear Slide Bracket Replacement

1. Remove the sunroof panel (page 14-36).
2. Remove the e-clip and pin screw, then separate the lift-up link and sub-guide rail.
3. Slide the rear slide brackets off the guide rail.
4. Install the brackets in the reverse order of removal. Before installing the rear slide brackets, check that there is no excessive play between the brackets and roof guide rails (on the sunroof panel and the frame.)



Rear Slide Bracket Wear Inspection

Remove the rear slide brackets. Check the roof guide rails (on the sunroof panel and the frame) and rear slide brackets for excessive wear on the sliding faces. Replace the rear slide brackets with new ones if worn excessively.





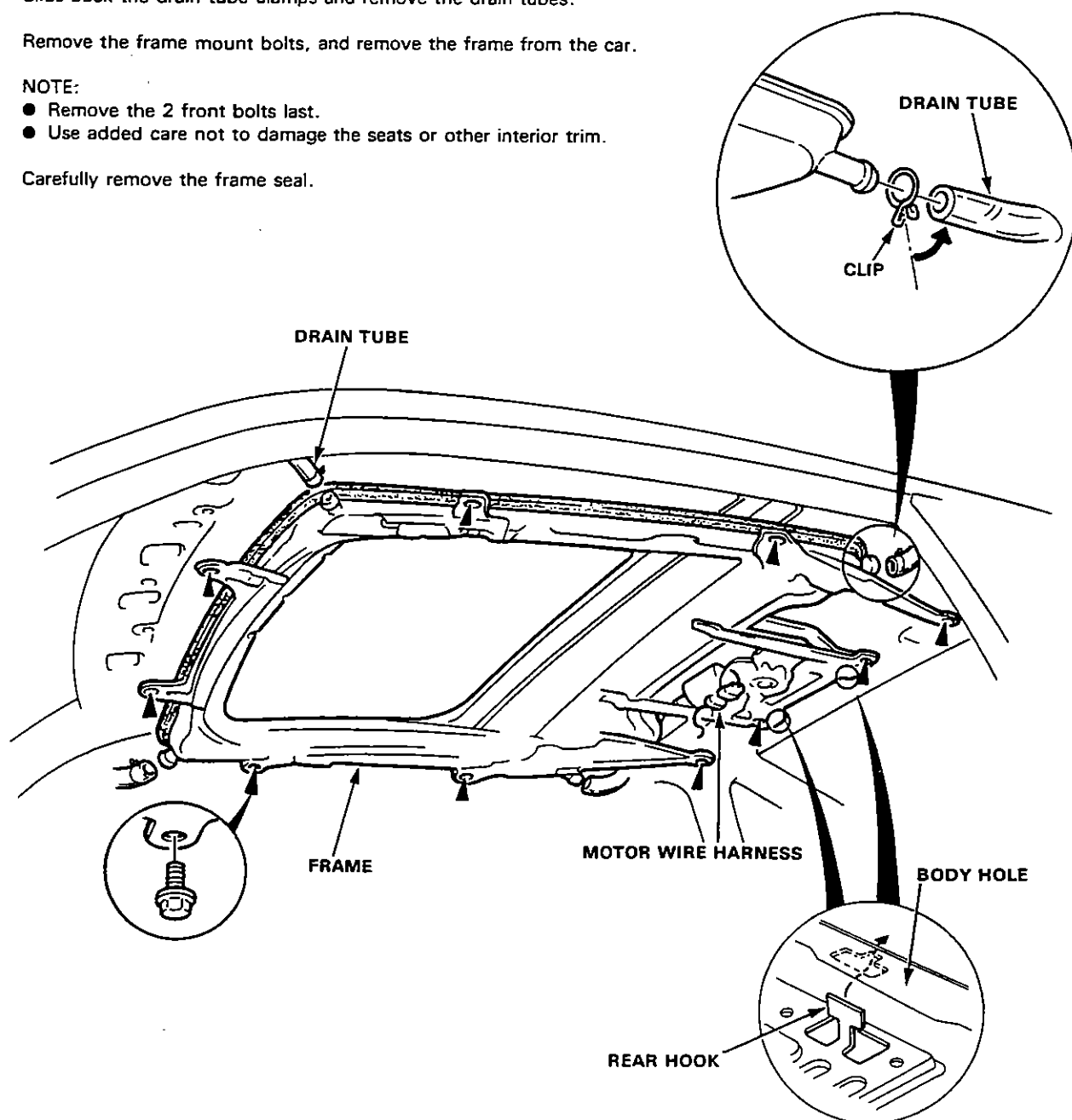
Drain Tube, Frame, and Frame Seal Replacement

1. Remove the sunroof panel (page 14-36) and the headliner (page 14-45).
2. Disconnect the motor wire harness.
3. Slide back the drain tube clamps and remove the drain tubes.
4. Remove the frame mount bolts, and remove the frame from the car.

NOTE:

- Remove the 2 front bolts last.
- Use added care not to damage the seats or other interior trim.

5. Carefully remove the frame seal.



6. To install, insert the frame's rear hooks into the body holes, then install parts in the reverse order of removal.

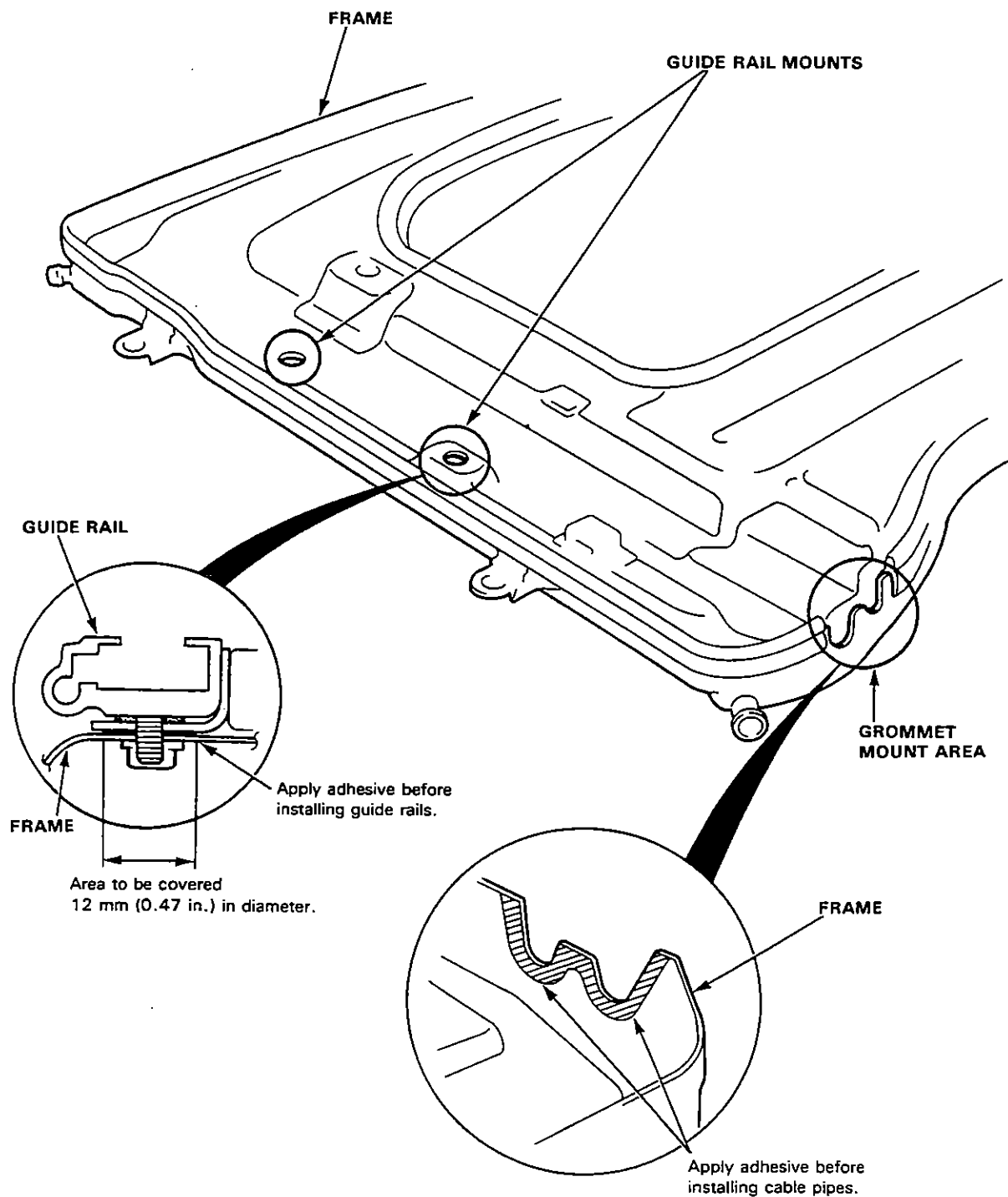
NOTE:

- Do not tighten the frame mount bolts before adjusting the side clearance of the sunroof (page 14-34).
- Install the tube clips with the ends facing the side to ease installation of the headliner.

Sunroof

Frame Sealing

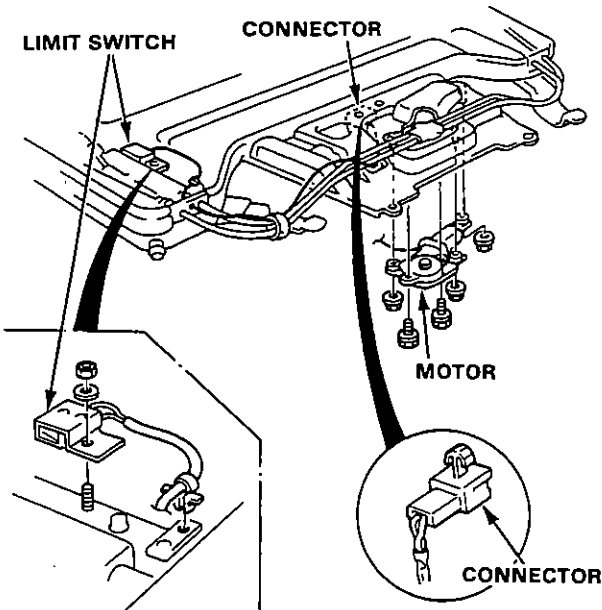
Water may leak through one or more of the 4 guide rail mounts or cable pipe grommets. Use adhesive at the points shown, to avoid leaks when the guide rails or cable pipes are reinstalled.





Motor Removal

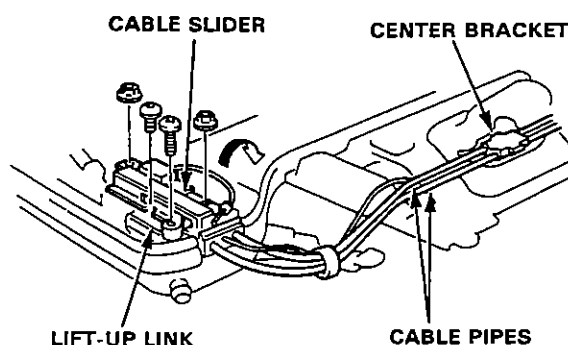
1. Remove the headliner (page 14-45).
2. Disconnect the motor and the limit switch.
3. Remove the motor by removing the 2 bolts and 3 nuts.



Lift-up Link Replacement

1. Remove the frame (page 14-39).
2. Remove the 2 nuts and 2 screws attaching the cable slider.
3. Raise the cable slider just enough to remove the lift-up link nuts.

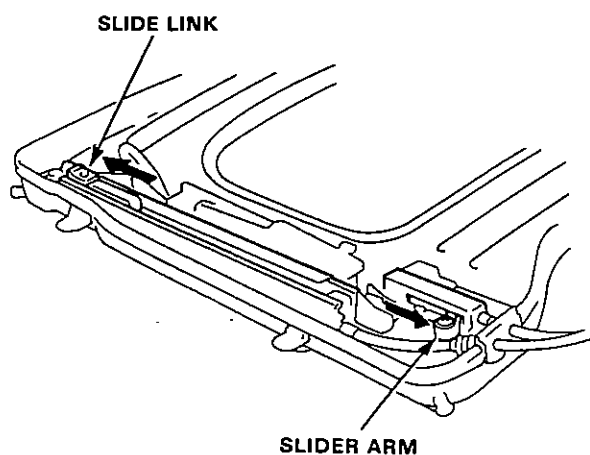
NOTE: Do not force the slider up as this will deform the cable pipes. If you encounter difficulty in raising the slider, remove the motor and center bracket.



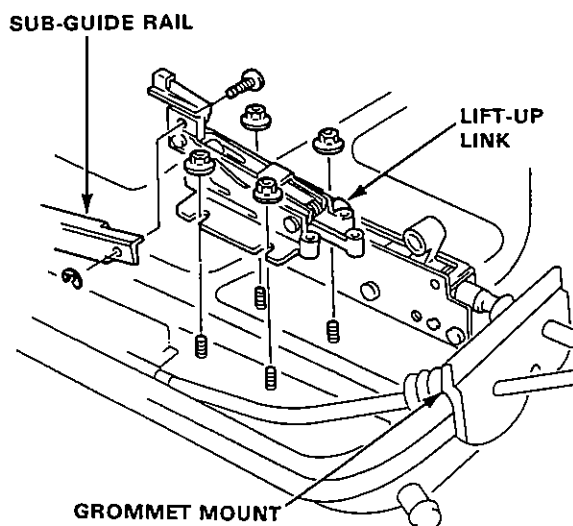
4. Remove the lift-up link by removing the sub-guide rail (on frame) screw and the 4 link nuts.

Motor Installation

1. Check that the slide links are fully forward, and cable slider arms are fully to the rear (Sunroof completely closed).



2. Check the gears for wear or damage; then install the motor.



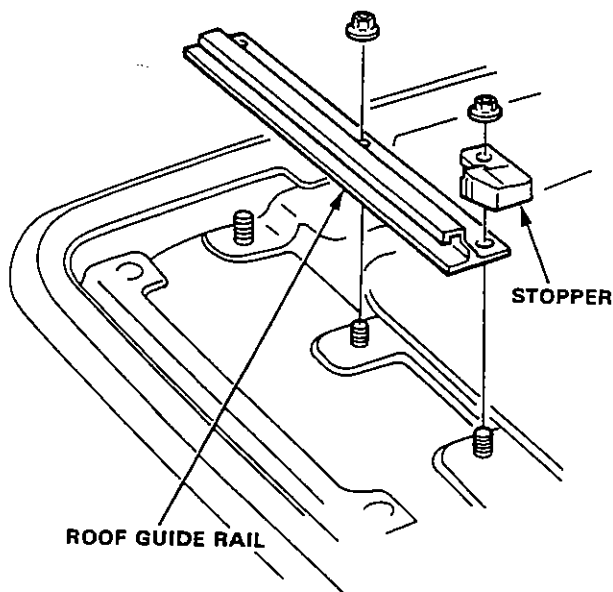
5. Install the link in the reverse order of removal. Before installing the cable pipes, apply adhesive to the grommet mount area of the frame (page 14-40).

Sunroof

Guide Rail Replacement

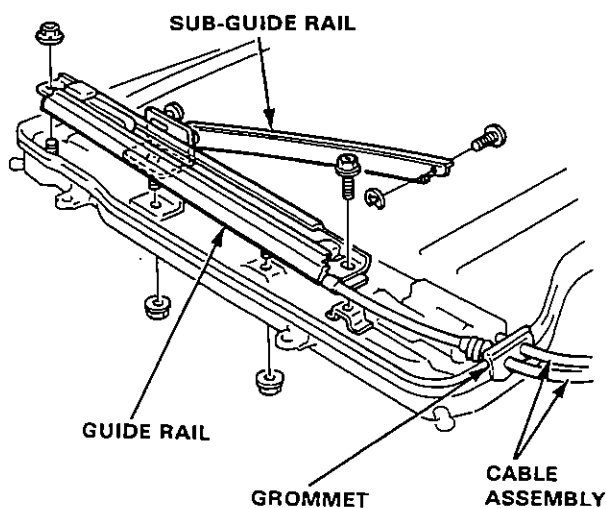
Roof Guide Rail (on Sunroof panel):

1. Remove the sunroof panel (page 14-36).
2. Remove the nuts and sub-guide rails.



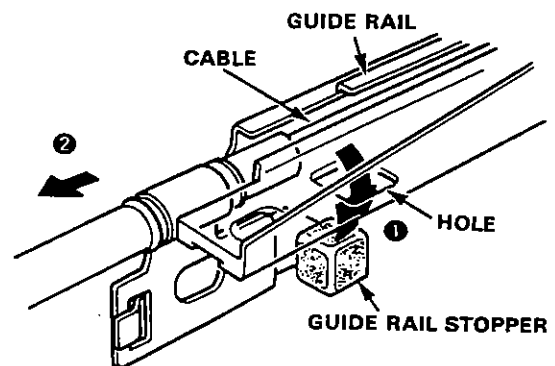
Guide Rail:

1. Remove the frame (page 14-39).
2. Remove 1 bolt and the 3 nuts attaching the guide rail.
3. Remove the sub-guide rail.



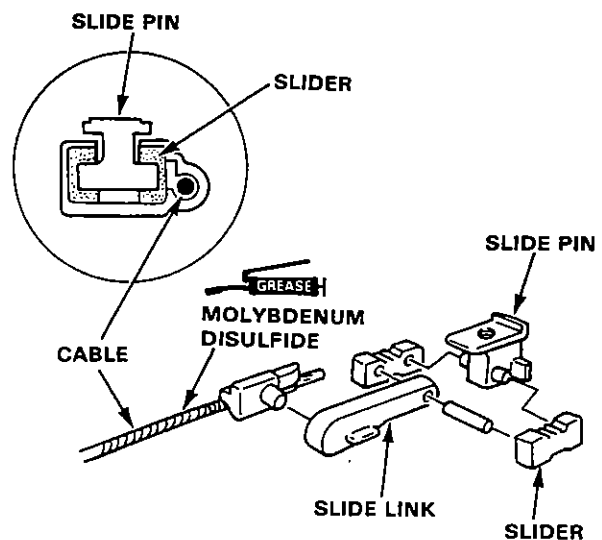
4. Pry the guide rail stopper out of the hole of the guide rail; pull out the cable.

NOTE: Remove the guide rail slowly and carefully; it is cemented to the frame.



5. Install the guide rail in the reverse order of removal.

- Check that the slide pin, slider and slide link are reassembled properly when installing the cable to the guide rail.

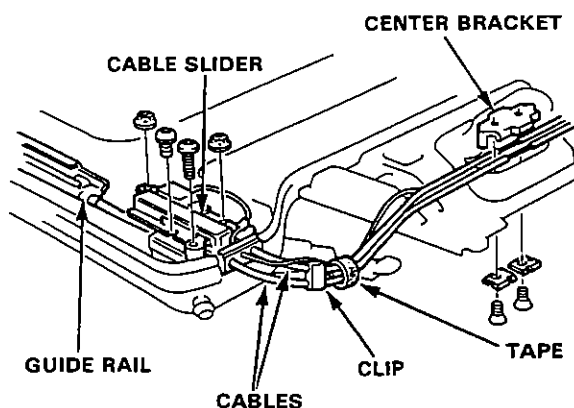


- Before installing the cable pipes and guide rails on the frame, coat the cable pipe grommets and guide rail attaching surfaces with adhesive (page 14-40).



Cable Removal

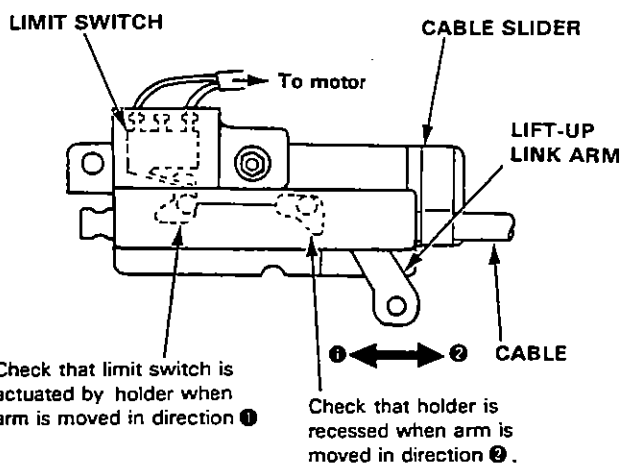
1. Remove the frame (page 14-39) and the motor (page 14-41).
2. Remove the guide rails (page 14-42).
3. Remove the screws and center bracket, then pry off all cable clips.
4. Take the cable slider off the frame by removing the 2 nuts and 2 screws.



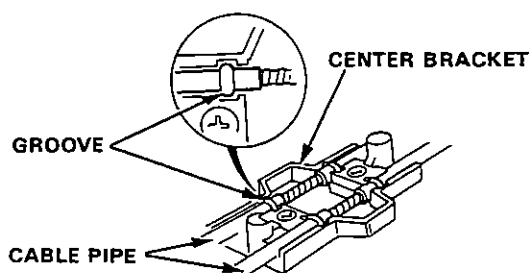
5. Carefully remove the cables being sure not to bend the cable pipes.

Cable Installation/Inspection

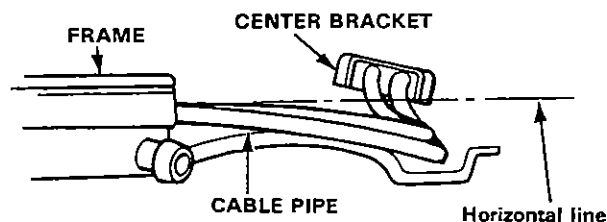
1. Check the cables for wear or damage.
2. Apply molybdenum disulfide grease to the cables. Route the cables through the cable pipes.
3. Check operation of the cable slider.



4. Apply adhesive to the cable pipe grommets and guide rail mount faces of the frame (page 14-40).
5. Attach the cables to the guide rails, then install them on the frame. Secure the cable pipes with the center bracket and clips.



NOTE: Check that the center bracket is not tilted. If it is tilted, check the cable pipes for deformation or improper installation.

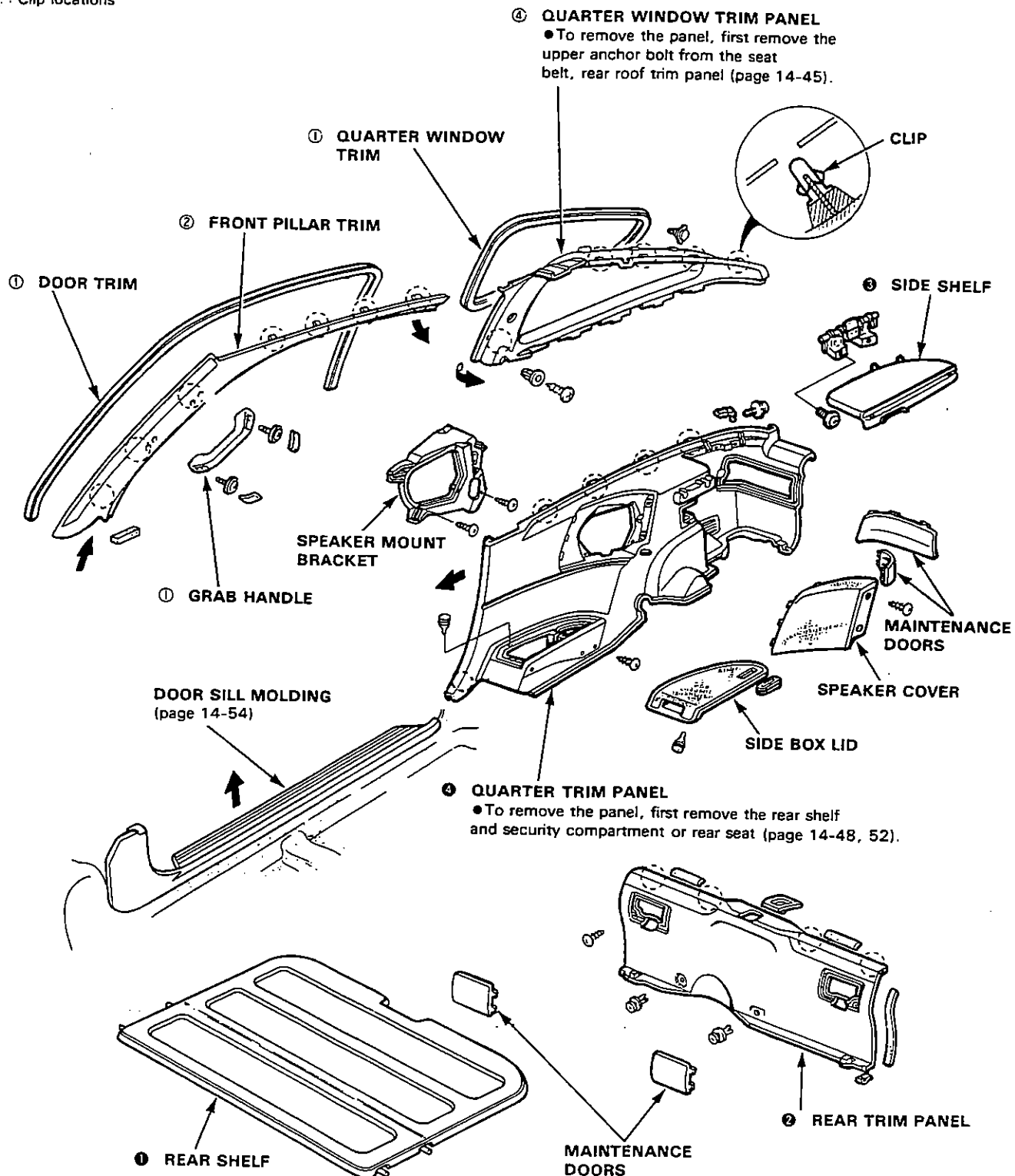


Interior Trim

Replacement

Disassemble in numbered sequence.

○ : Clip locations

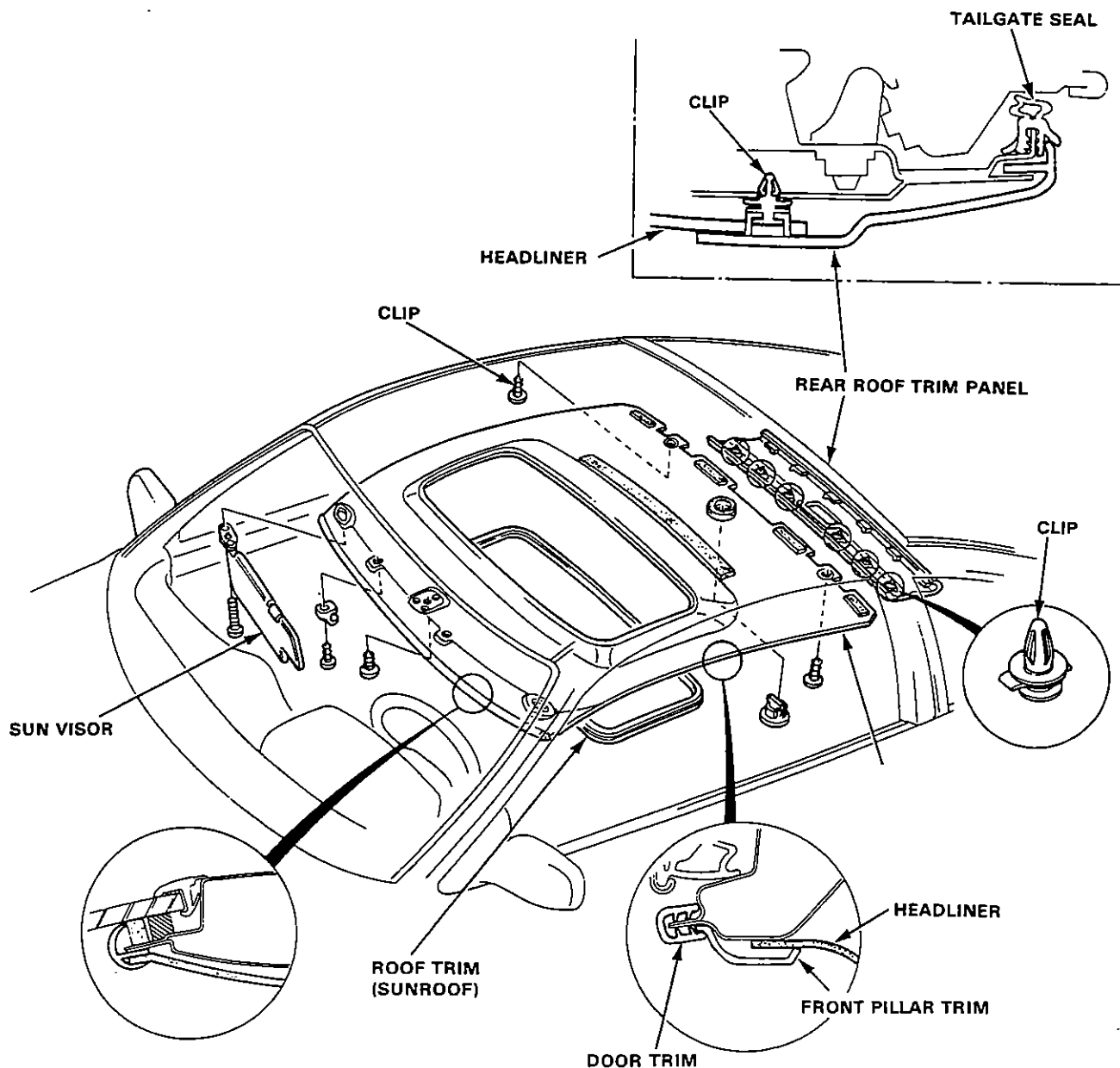


Headliner



Replacement

1. Remove:
 - Sun visors and holders.
 - Rearview mirror assembly (page 14-51).
 - Front pillar trim (page 14-44).
 - Quarter window trim panel (page 14-44).
 - Dome light.
 - Roof trim (Sunroof model).
2. Remove the clips and rear roof trim panel, then remove the headliner.



3. Assemble the headliner in the reverse order of disassembly.

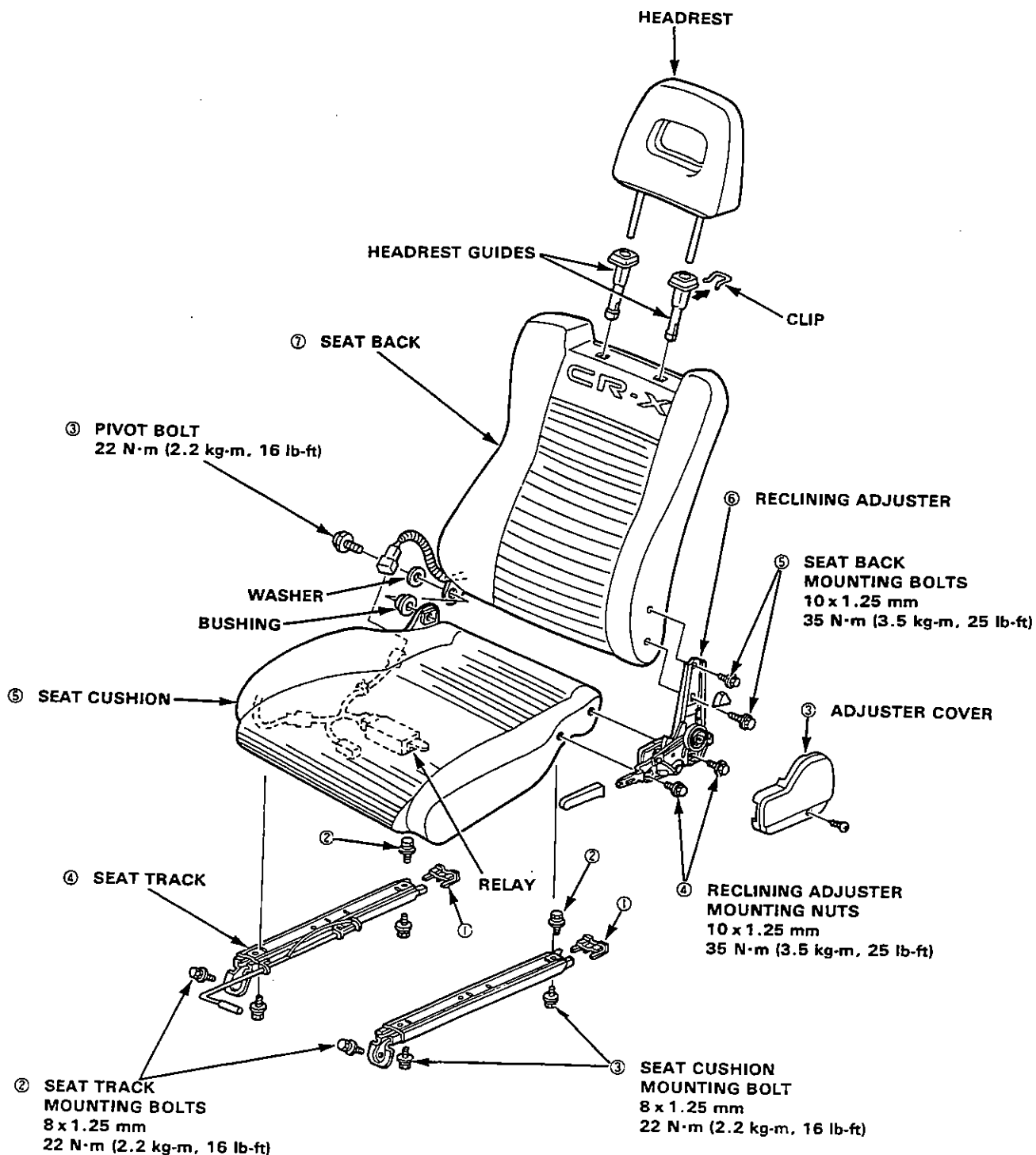
NOTE:

- When installing the headliner inside the passenger compartment, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check that the two sides of the headliner are securely attached to the trim.

Seats

Front Disassembly

Disassemble in numbered sequence.

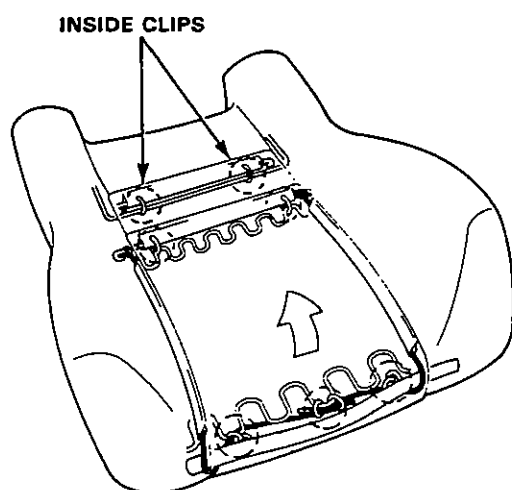
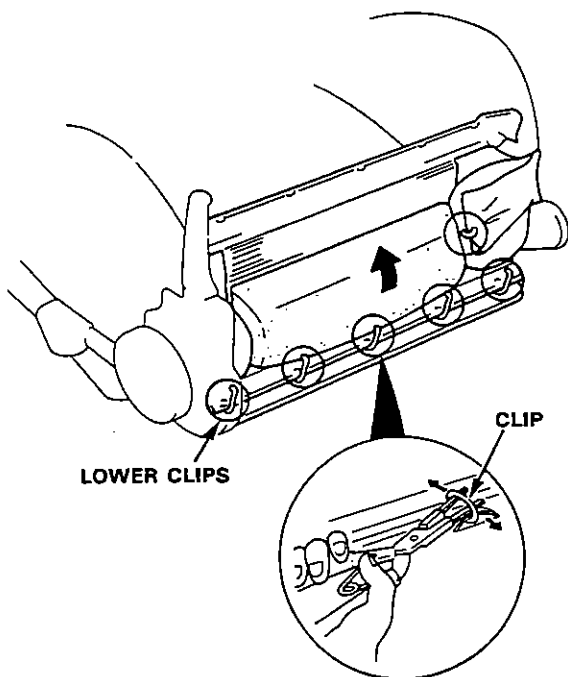




Trim Cover Replacement

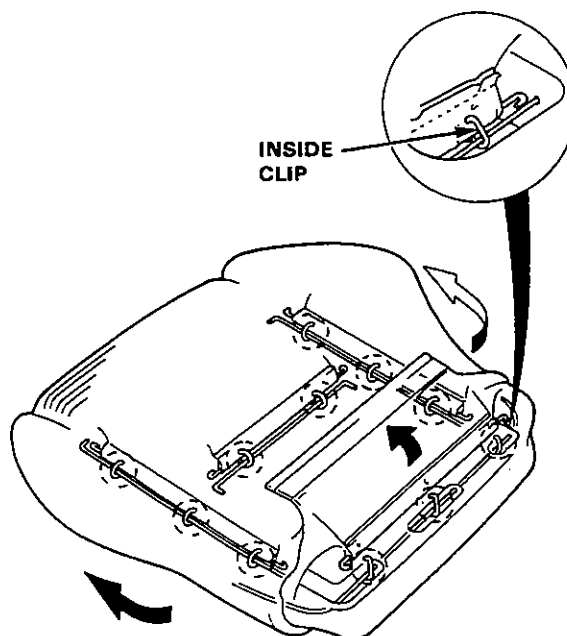
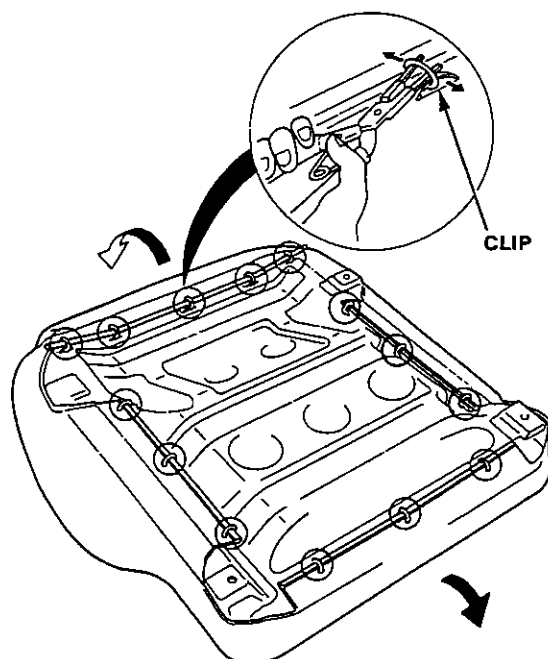
Seat Back:

1. Separate the seat cushion and back. (page 14-46).
2. Remove the headrest and headrest guide (page 14-46).
3. Remove the lower clips.
4. Remove the inside clips, then remove the trim cover.



seat cushion:

5. Remove the 14 clips and turn over the trim cover.
6. Remove the inside clips, then remove the trim cover.



NOTE: To prevent wrinkles when installing a seat cover, make sure the material is stretched evenly over the frame before securing all the clips.

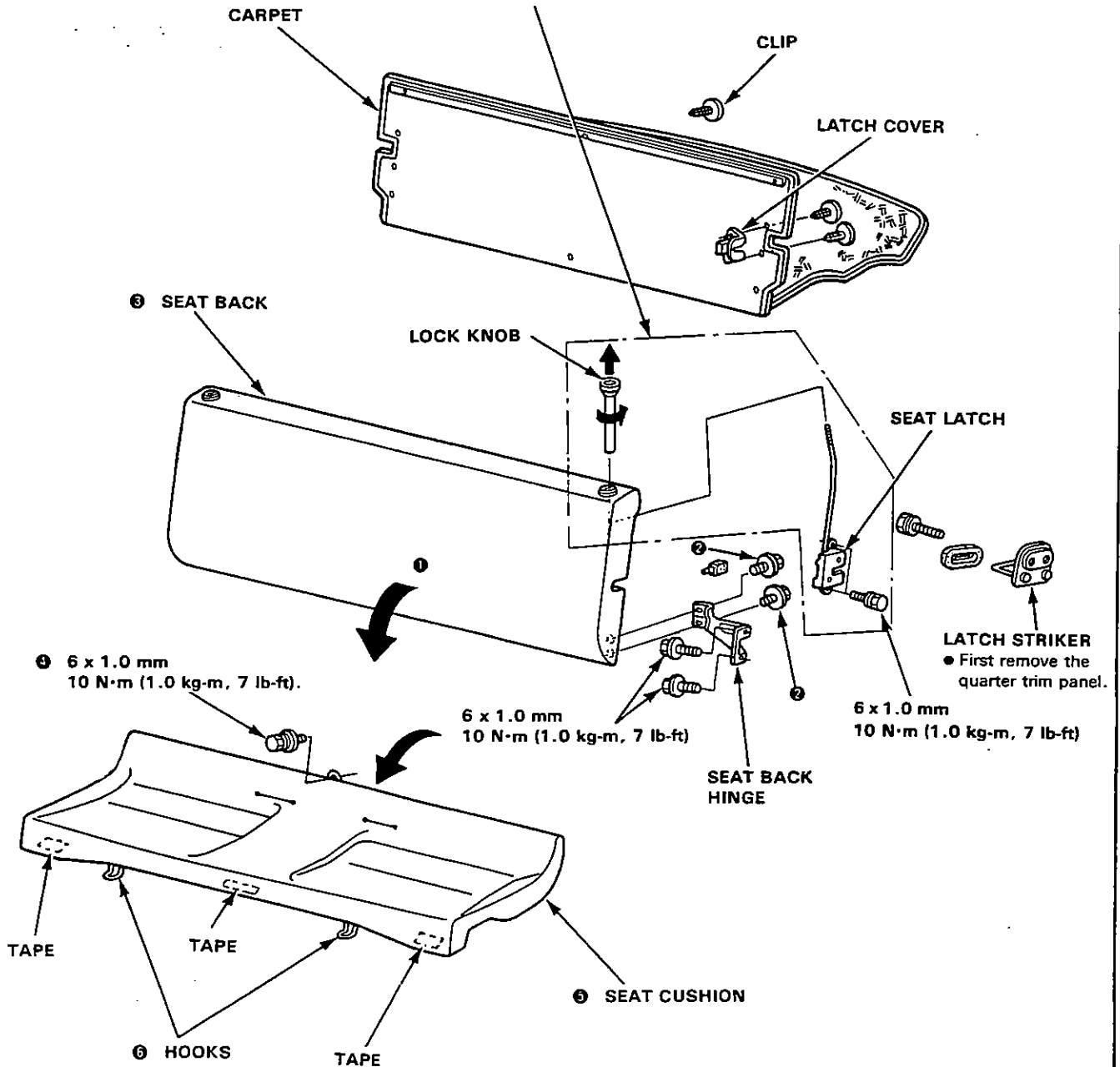
Seats

Rear Disassembly

Disassemble in numbered sequence.

REAR SEAT LATCH

- Remove the clips, then remove the latch cover and carpet.
- Unscrew the knob and turn over the seat back trim cover, then remove the 2 bolts and seat latch.



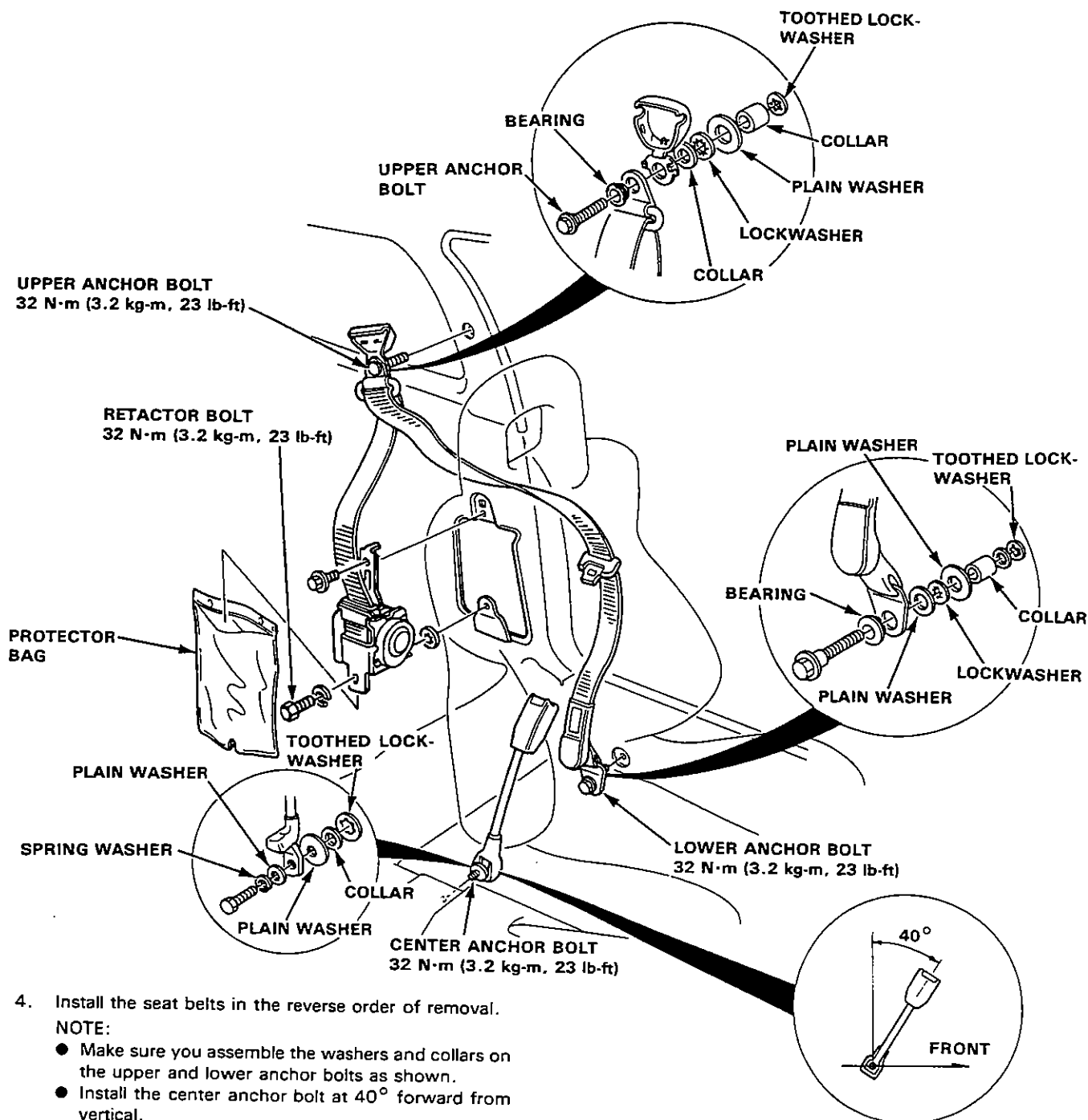
Seat Belts



Front Replacement

CAUTION: Check the seat belts for damage (page 14-51), and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the quarter trim panel (page 14-44).
2. Remove the upper anchor bolt, lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.
3. Slide the front seat forward until the seat belt center anchor bolt is accessible, then remove the bolt and the center anchor.



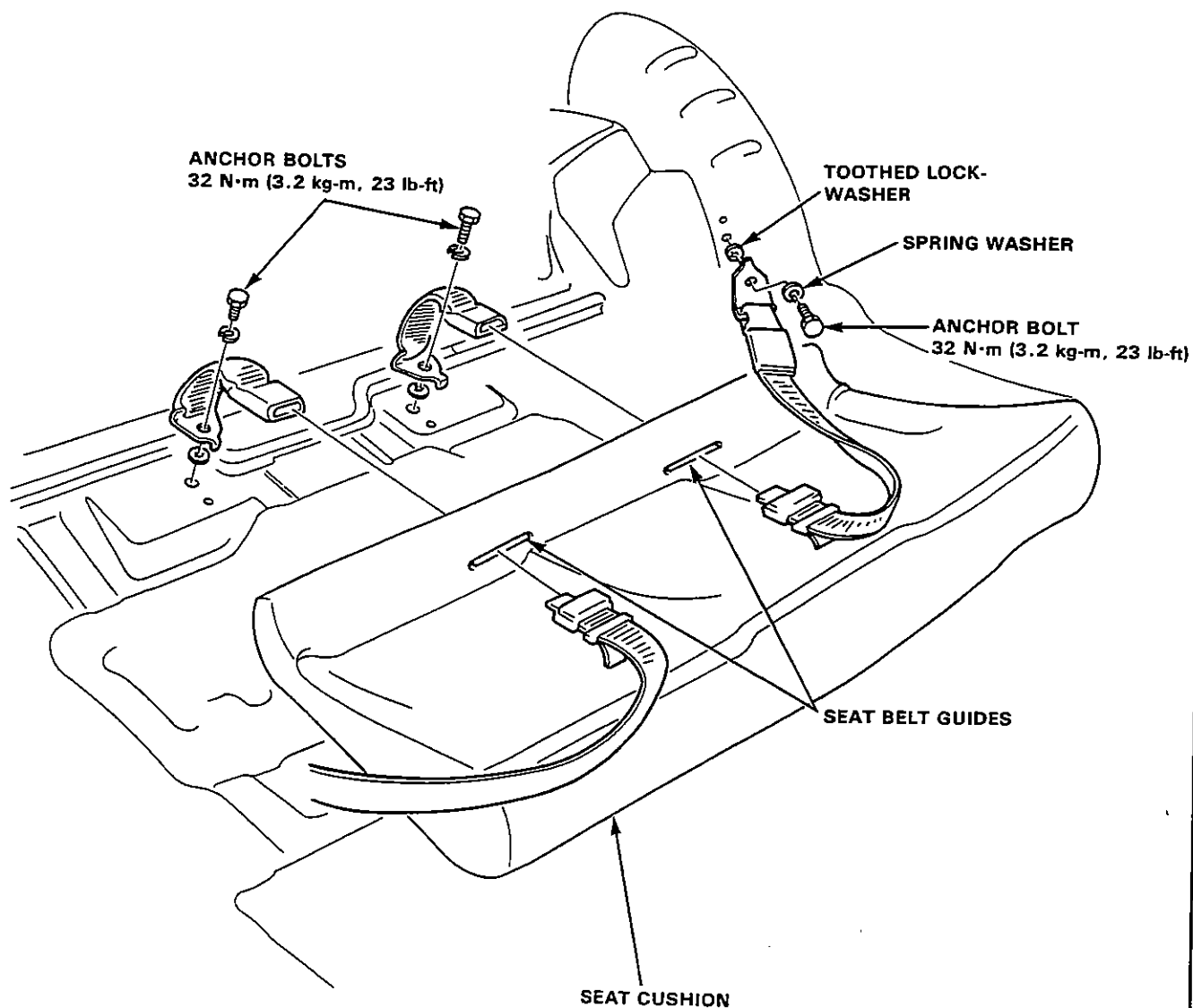
4. Install the seat belts in the reverse order of removal.
- NOTE:**
- Make sure you assemble the washers and collars on the upper and lower anchor bolts as shown.
 - Install the center anchor bolt at 40° forward from vertical.
 - Before attaching the quarter trim panel, make sure there are no twists or kinks in the belts.

Seat Belts

Rear Replacement

CAUTION: Check the seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the rear seat (page 14-48).
2. Remove the quarter trim panel (page 14-44).
3. Remove the anchor bolts with a 17 mm socket or box-end wrench.



4. Install the seat belt in the reverse order of removal.

NOTE:

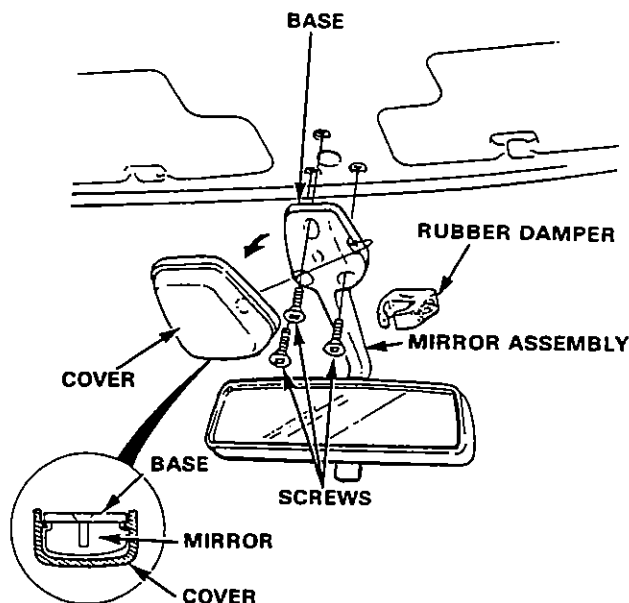
- Before attaching the quarter trim panel, make sure there are no twists in the belts.
- Pass the seat belts through the seat belt guides of the seat cushion and side box lid (page 14-44).



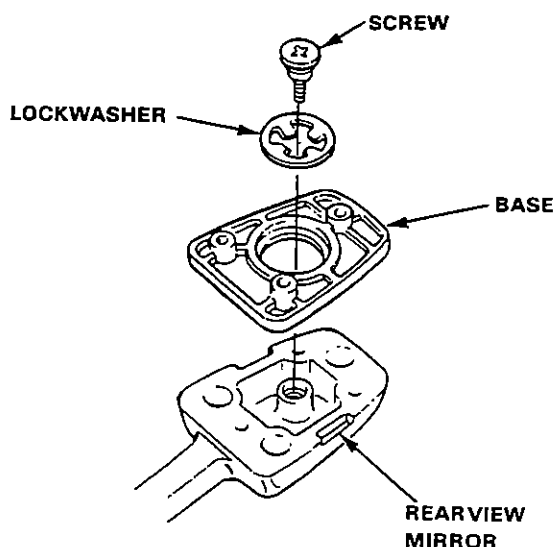
Rearview Mirror

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.

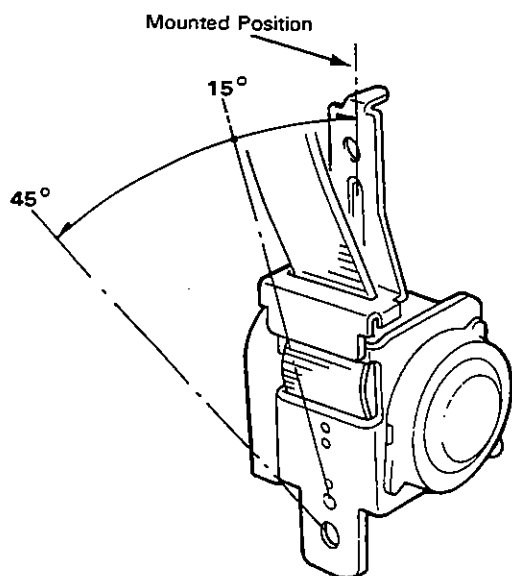


Inspection

Retractor Inspection

1. With the retractor installed, check that the belt can be pulled out freely.
2. Make sure that the belt does not lock when the retractor is leaned slowly up to 15° from the mounted position. The belt should lock when the retractor is leaned over 45° .

CAUTION: Do not attempt to disassemble the retractor.



3. Replace the belt with a new one if there is any abnormality.

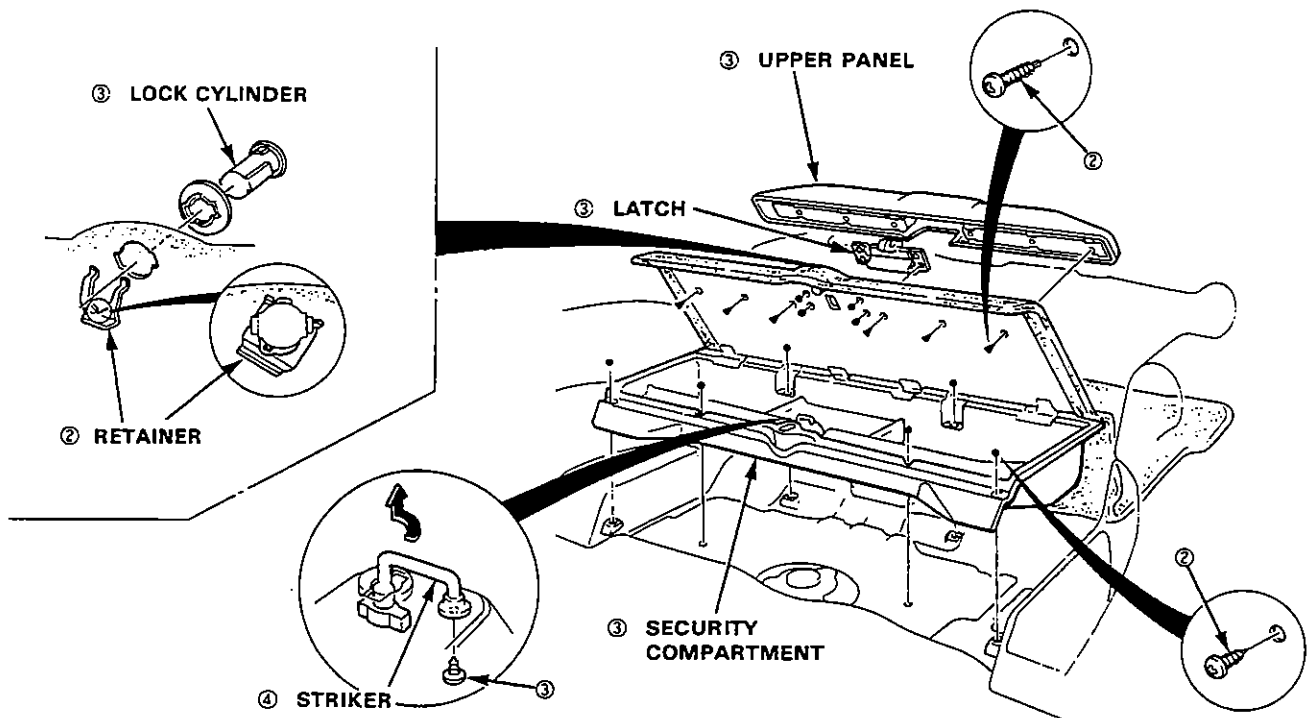
On-the-Car Belt Inspection

1. Check that the belt is not twisted or caught on anything.
2. After installing the anchor, check for free movement on its retaining bolt. If necessary, remove the bolt and check that the washers and other parts are not damaged or improperly installed.
3. Check the belts for damage or discoloration. Clean with a shop towel if necessary.
CAUTION: Use only soap and water to clean.
4. Check that the belt does not lock when pulled out slowly. The belt is designed to lock only during a sudden stop or impact.
5. Make sure that the belt will retract automatically when released.
6. Replace the belt with a new one if there is any abnormality.

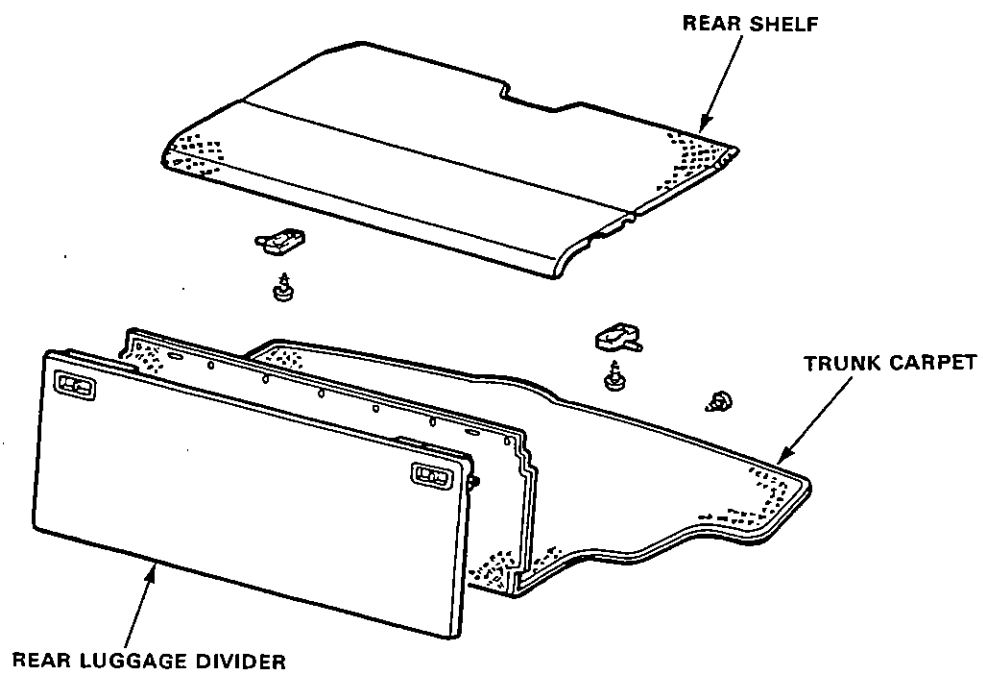
Security Compartment/Rear Shelf

Security Compartment Replacement

Disassemble in numbered sequence.



Rear Shelf Replacement



Console

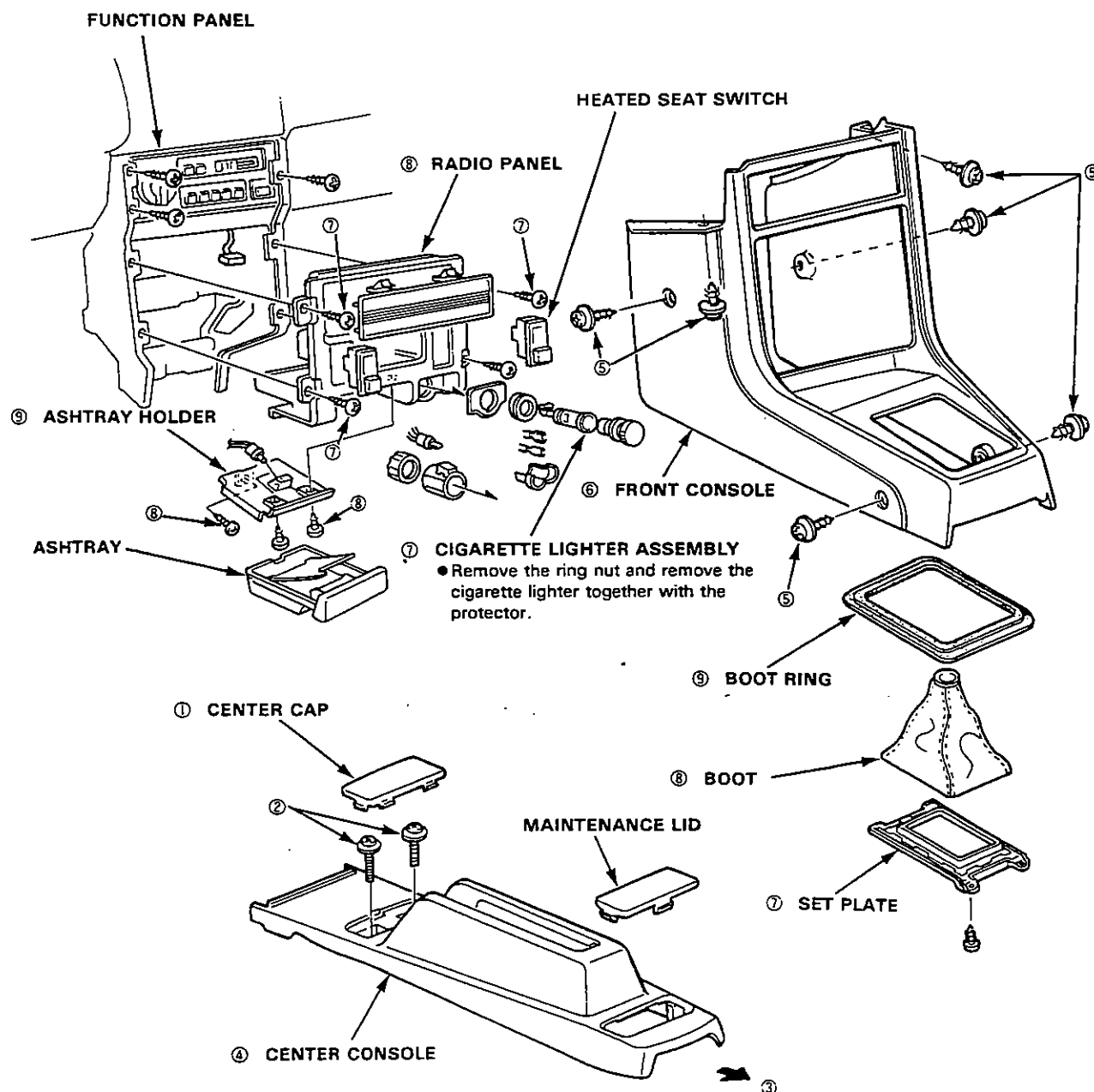


Replacement

Disassemble in numbered sequence:

NOTE:

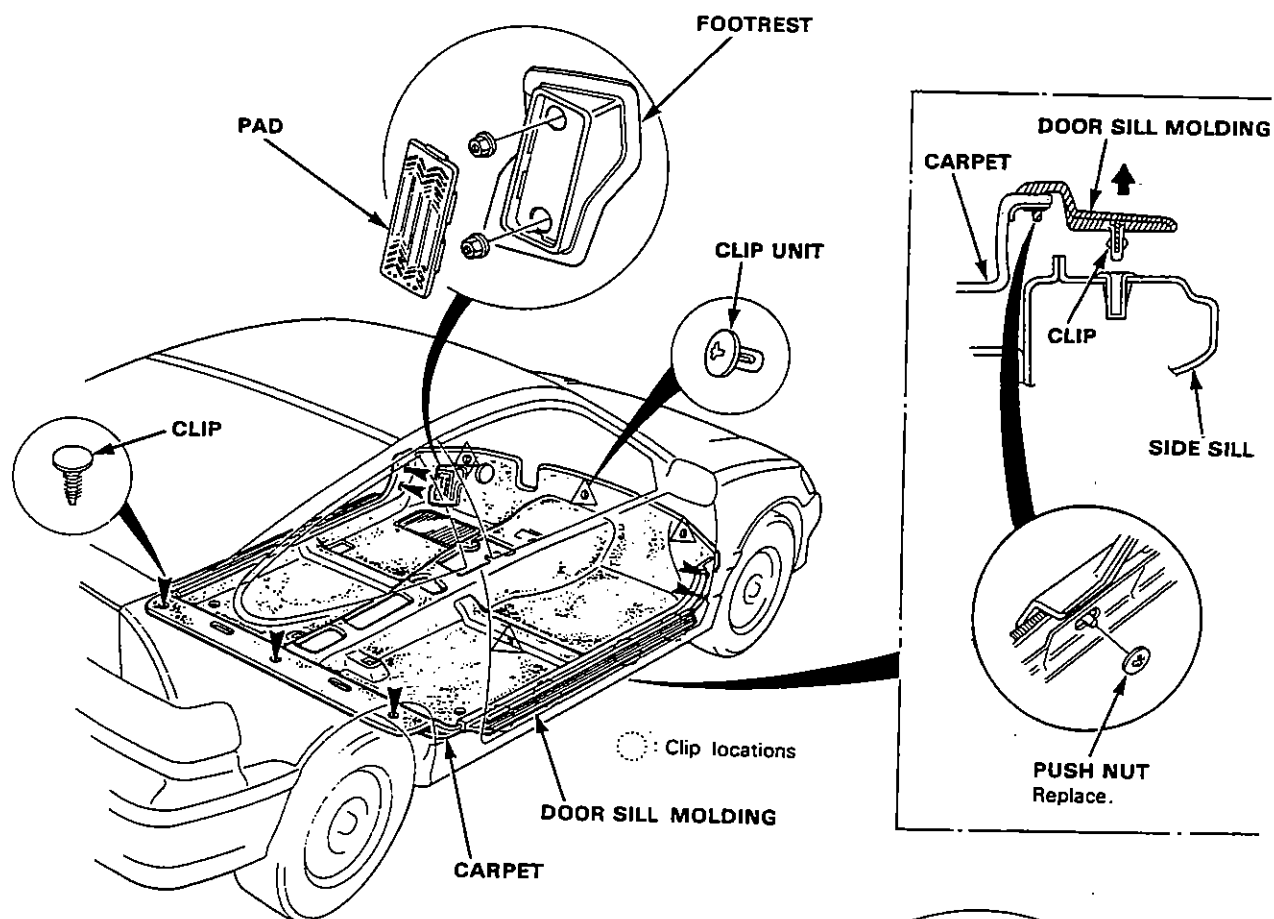
- Lift up the parking brake lever.
- For manual transmission models, remove the shift lever knob.



Carpet/Door Sill Moldings

Replacement

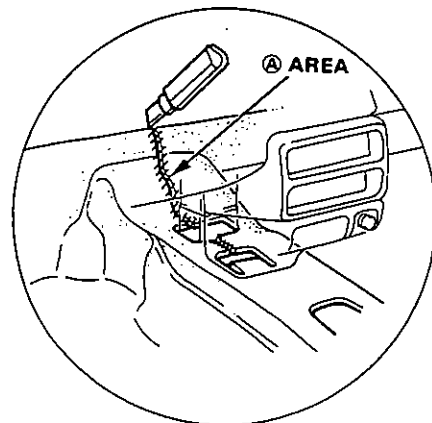
1. Remove:
 - Front seats (page 14-46).
 - Security compartment (page 14-52).
 - Center console (page 14-53).
 - Hood release handle.
 - Fuel filler door and tailgate openers.
 - Front of quarter trim panel.
2. Pry out the clips and pull up the door sill moldings.
3. Remove the push nuts, then separate the door sill moldings and carpet.
4. Pry out the clips at the rear edge and under the dashboard, peel off the tape and remove the clip nuts.



5. Cut the ① area first, then pull back the carpet as shown.
6. Remove the carpet.
7. Install the carpet in the reverse order of removal.

NOTE:

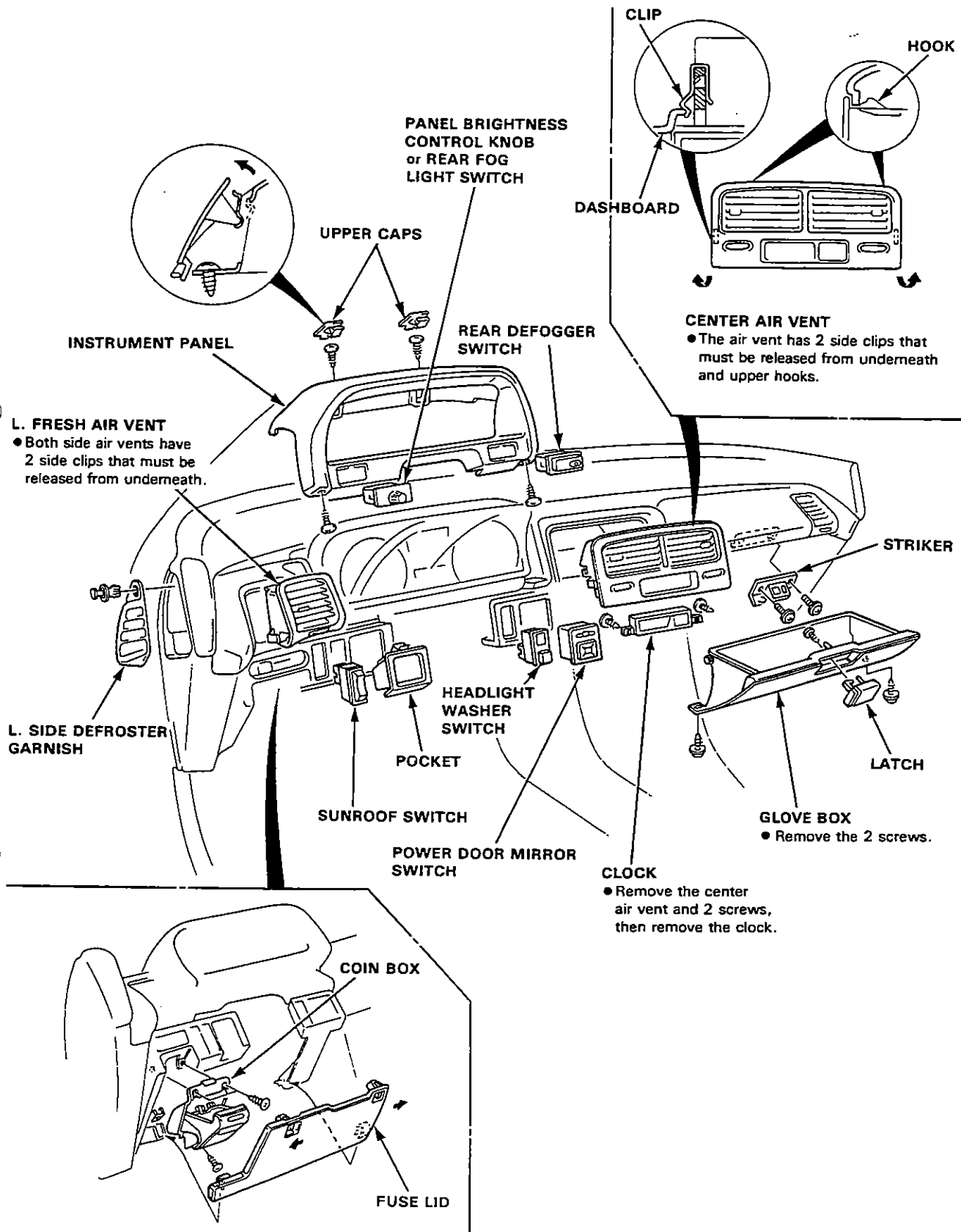
- Reattach the cut areas with tape and tie bands.



Dashboard



Component Removal/Installation



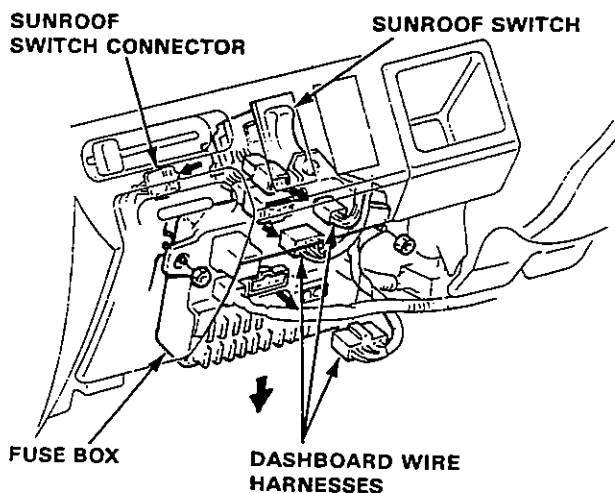
Dashboard

Replacement

1. To remove the dashboard, first slide the seats back fully and remove the:

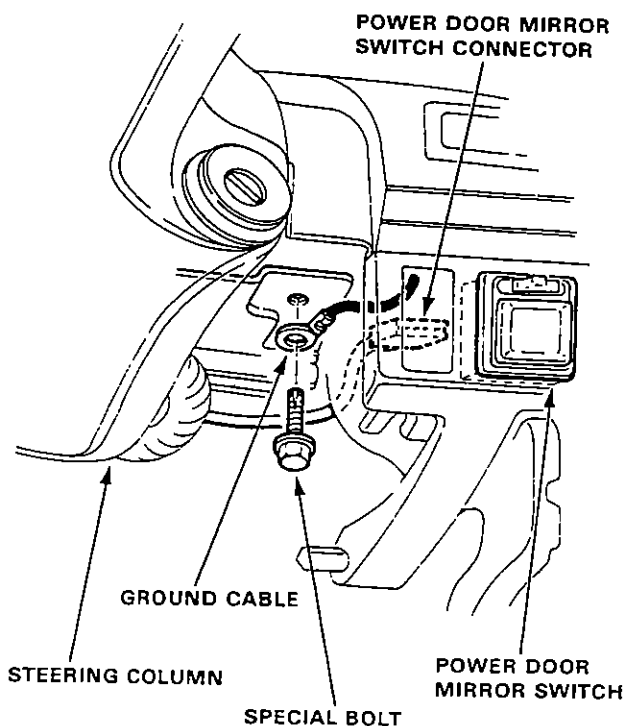
- Front console. (page 14-53).

2. Remove the fuse lid and disconnect the wire harnesses from the connector holder, and fuse box. Disconnect the sunroof switch connector.



NOTE: Remove the fuse box mounting nuts, then lower the fuse box, if necessary.

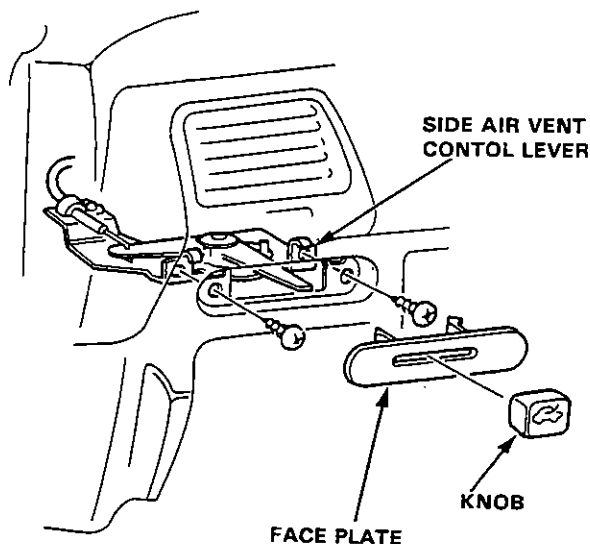
3. Disconnect the ground cable at right of steering column and power door mirror switch connector.



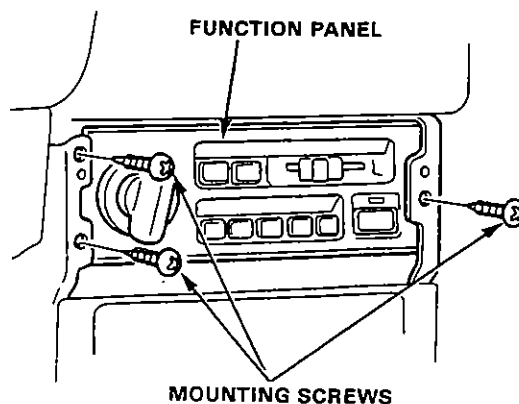
4. Remove the coin box.

5. Remove the knob, then remove the side air vent face plate.

6. Remove the 2 screws attaching the side air vent control lever.



7. Remove the 3 screws attaching the function panel to the dashboard.

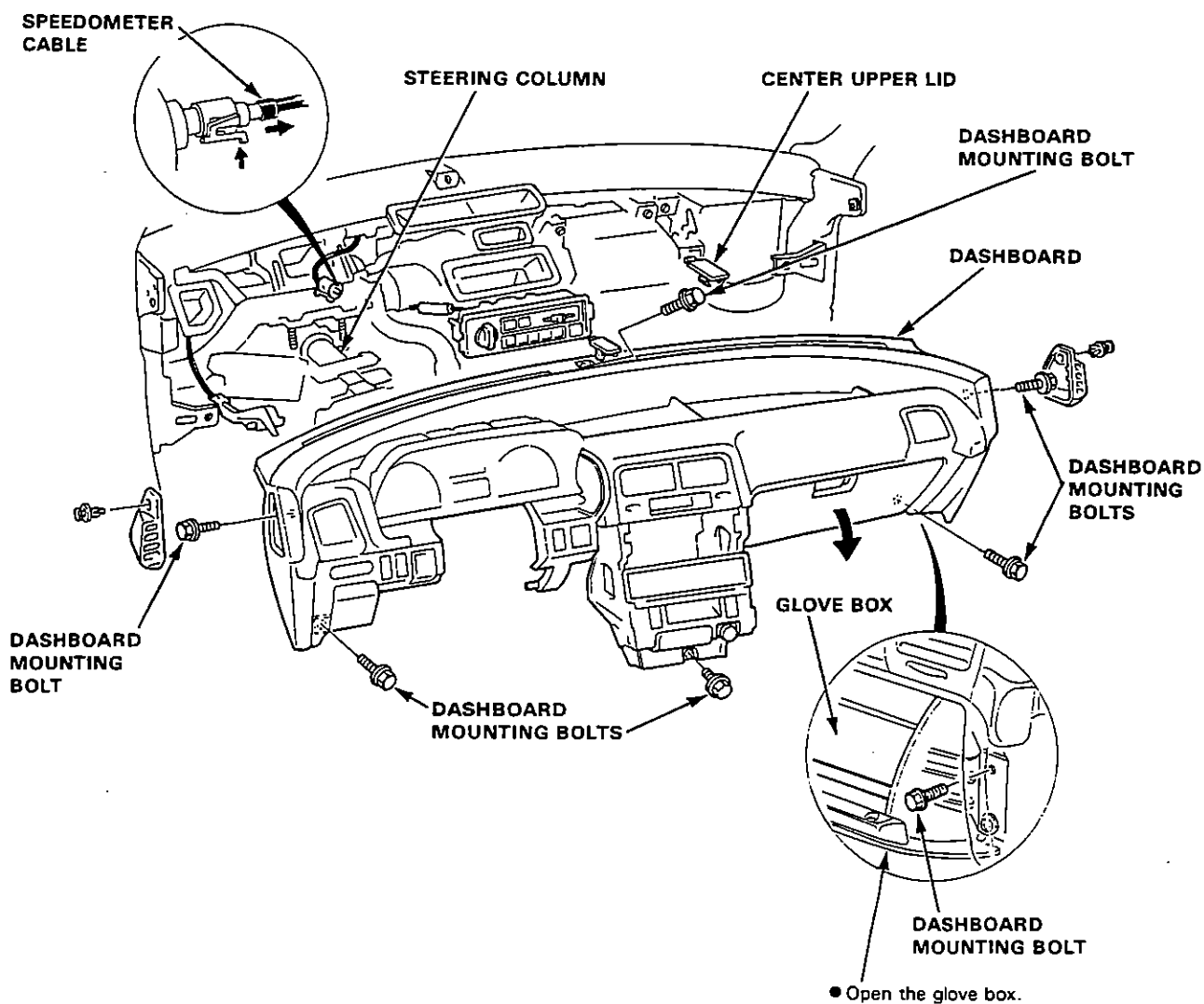




8. Remove the instrument panel (Page 14-55).
9. Disconnect the speedometer cable.
10. Remove the center upper lid from the top of the dashboard.
11. Remove the side defroster garnishes from both ends of the dashboard.
12. Lower the steering column (See section 11).
13. Remove the dashboard mounting bolts.
14. Lift and remove the dashboard.

Reassembly NOTE:

- Make sure the dashboard fits onto the body correctly.
- Before tightening the dashboard bolts, make sure the dashboard wires are not pinched, and that the dashboard is not interfering with the heater control cable.



Front Bumper

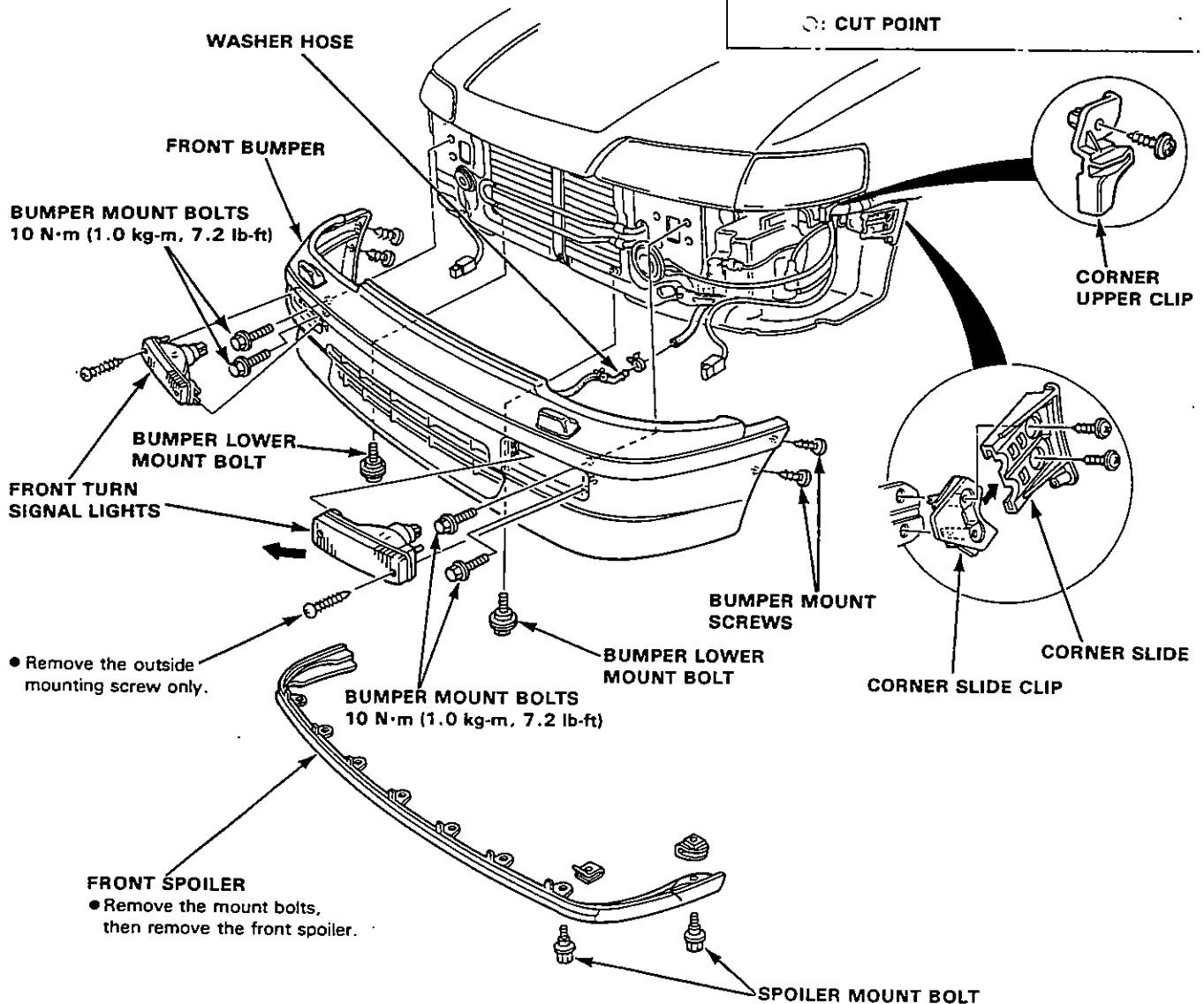
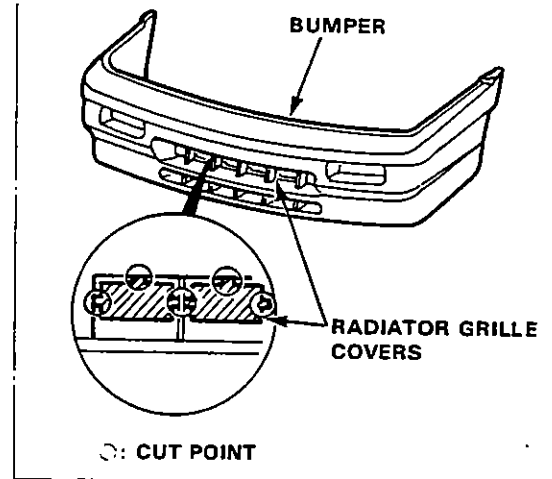
Replacement

1. Remove the right and left front turn signal lights.
2. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
3. Remove the 2 bumper lower mount bolts and the 4 bumper mount bolts.
4. Disconnect the headlight washer hose.
5. Remove the bumper by sliding it forward.

If necessary:

6. Remove the screws, then remove the corner slide and slide clip.
7. Installation sequence is essentially the reverse order of removal.

NOTE: When installing a new bumper on a car with A/C, cut off and discard the 5 radiator grille covers.



Rear Bumper

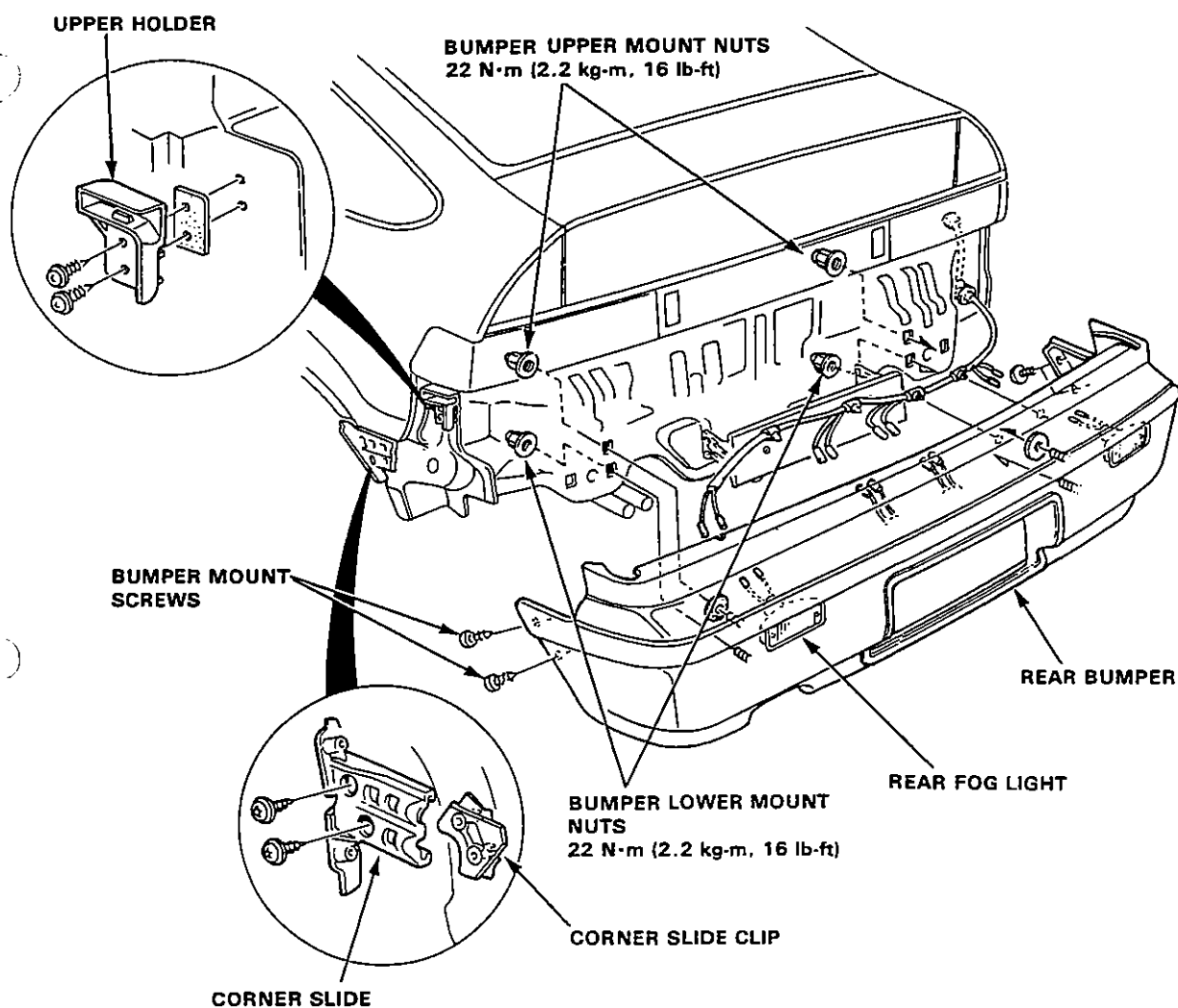


Replacement

1. Remove the 2 bumper mount screws on each side at the corner edge of the bumper.
 2. Remove the 2 bumper lower mount nuts.
 3. Remove the rear trim panel.
 4. Remove the 2 bumper upper mount nuts from the trunk area.
 5. Remove the bumper by sliding it to the rear and disconnect the license light/rear fog light wire connectors.
- NOTE: Do not damage the threads of the bumper bolts.

If necessary:

6. Remove the screws, then remove the corner slide and slide clip.

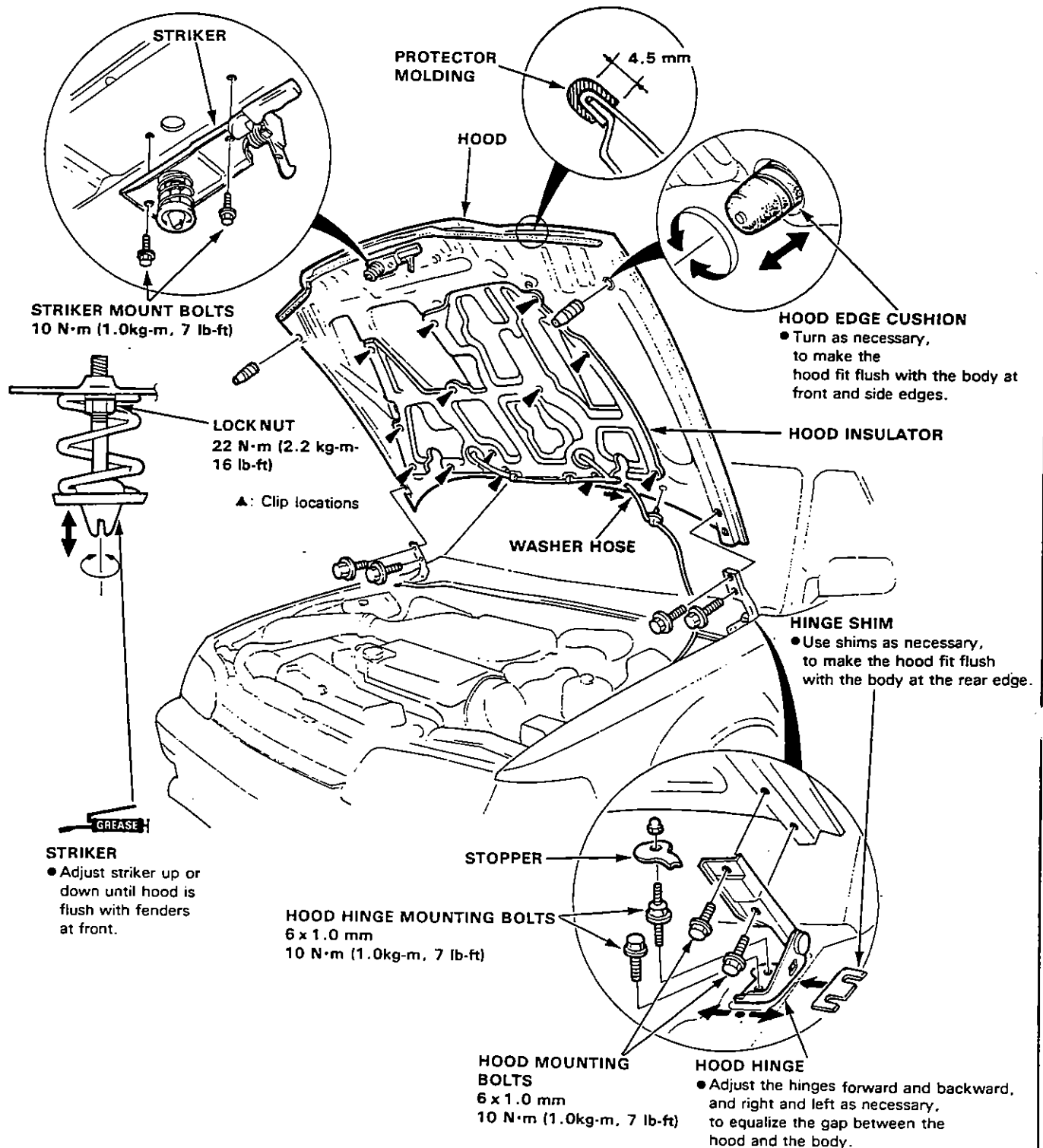


7. Installation sequence is essentially the reverse order of removal.

Hood

Replacement/Adjustment

1. Pull the windshield 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.





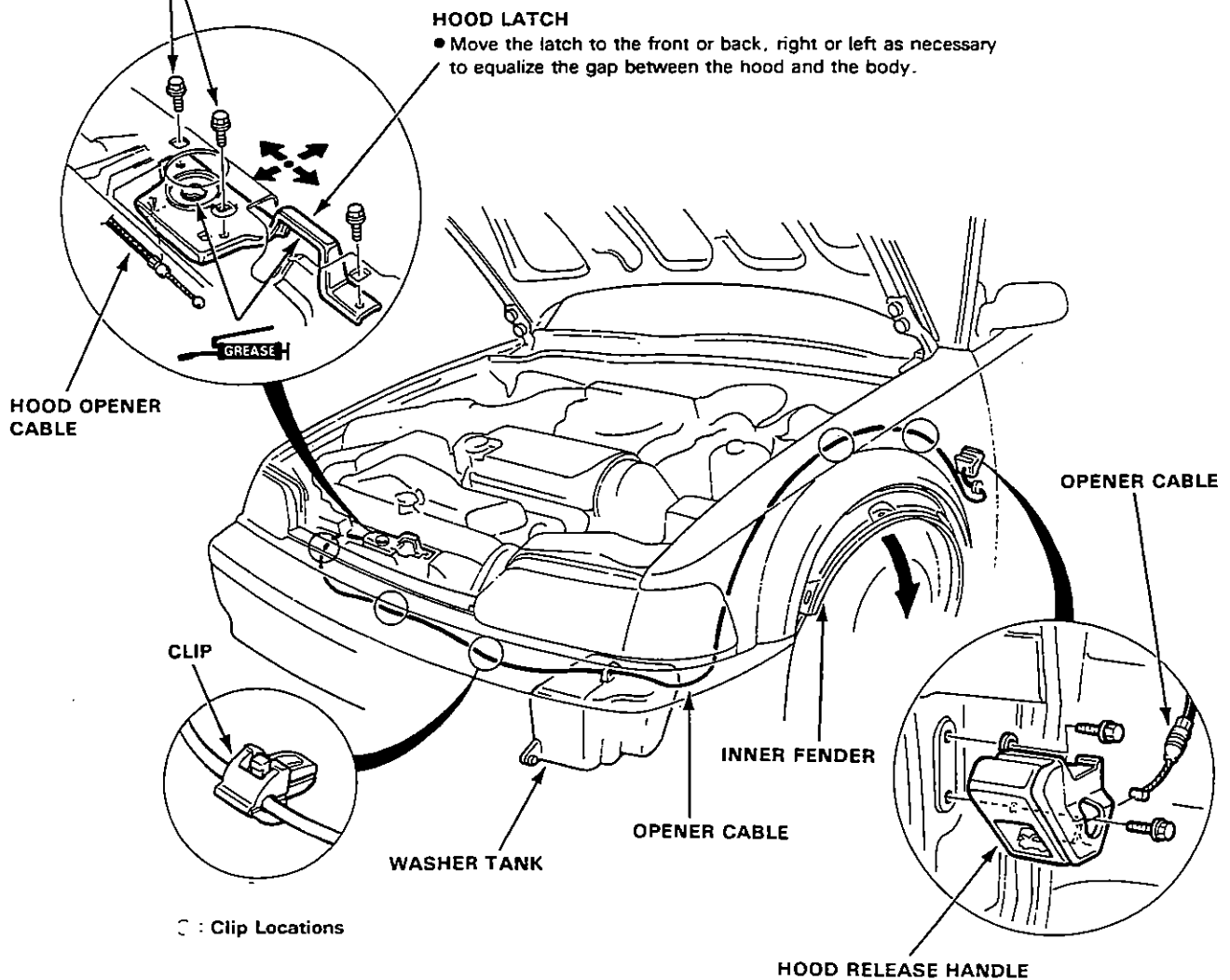
Opener and Latch Replacement

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.

10 N·m (1.0kg-m, 7 lb-ft)



Tailgate

Replacement/Adjustment

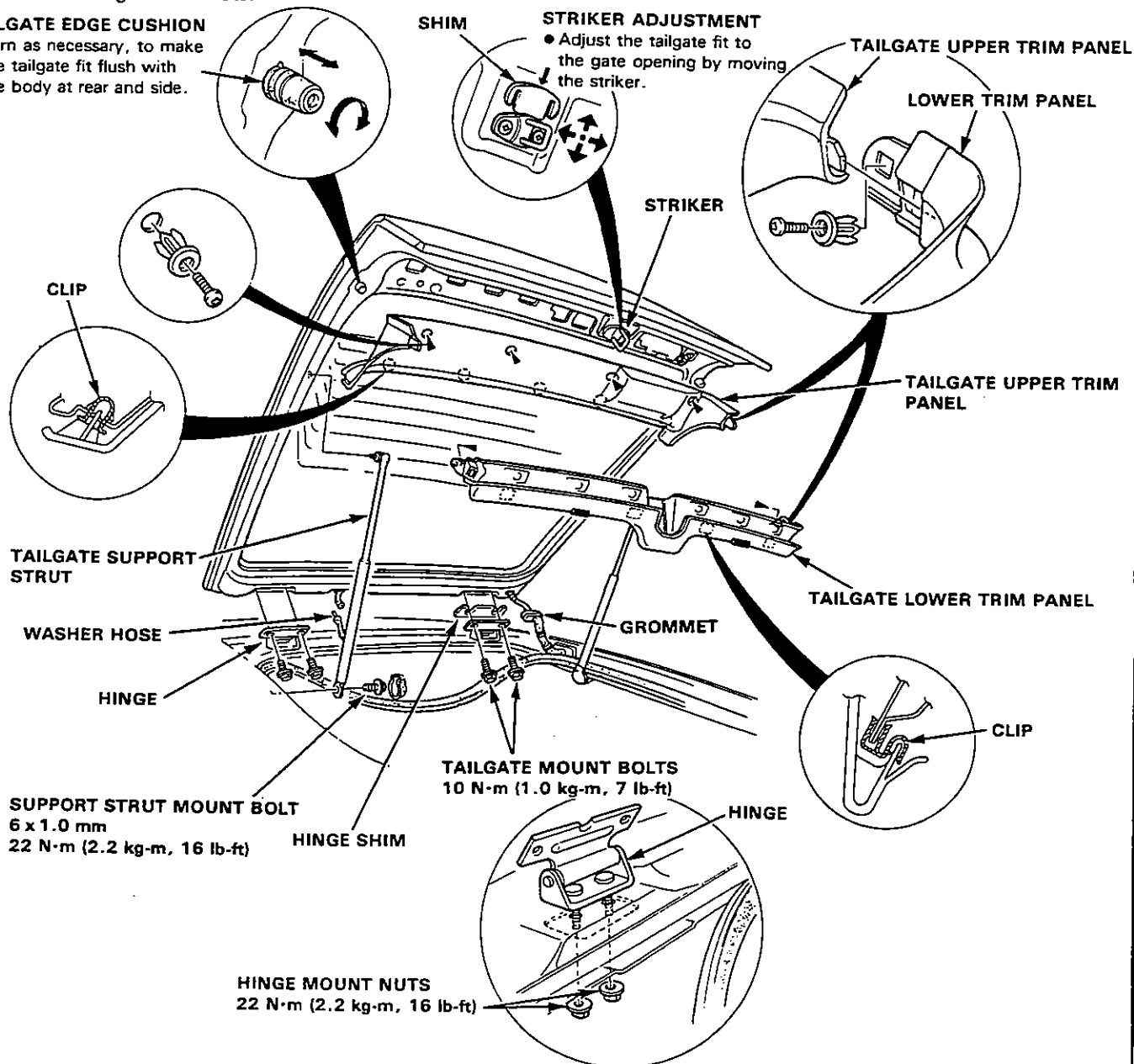
1. Remove the screws and detach the clips, then remove the tailgate upper and lower trim panel.
2. Pull the wire harness out of the tailgate and disconnect the washer hose.
NOTE: Before pulling out the wire harnesses, tie a string to the end of it so you can pull it back in when the tailgate is reinstalled.
3. Remove the tailgate support struts.
NOTE: Let an assistant hold the tailgate when removing the struts.
4. Remove the tailgate by removing the tailgate mount bolts.
NOTE: Take care not to damage the roof panel.

If necessary:

- Lower the rear of the headliner just enough to gain access to the hinge mount nuts, then remove the hinge by removing the hinge mount nuts.

TAILGATE EDGE CUSHION

- Turn as necessary, to make the tailgate fit flush with the body at rear and side.



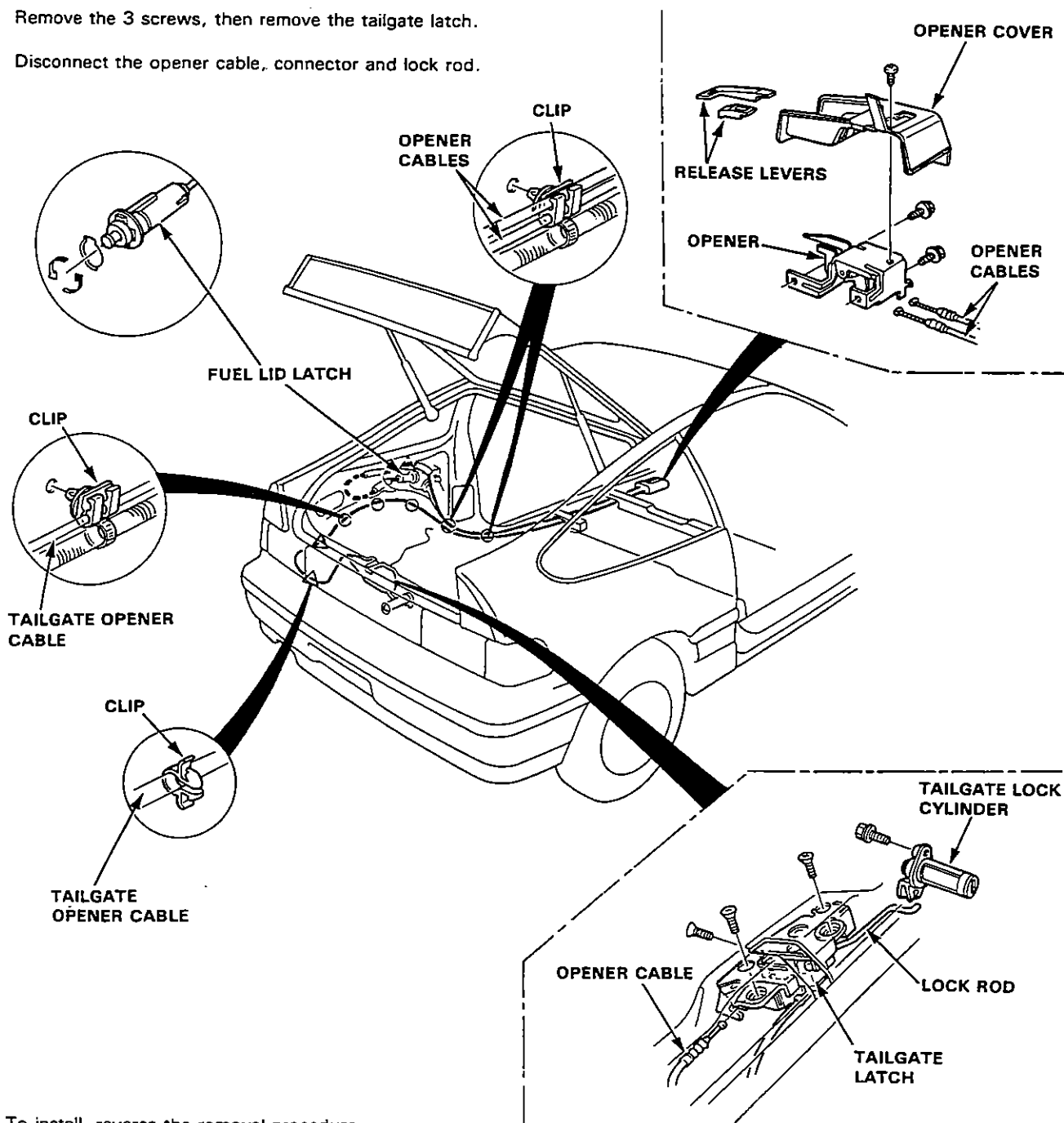
5. Installation sequence is essentially the reverse order of removal. However, observe the following:
 - Before tightening the hinge nuts, adjust the tailgate fit and striker.
 - Use care when pulling the wire harness back in to avoid damaging the body.
 - Coat the inside and outside of the grommet with sealer.



Fuel Filler/Tailgate Opener

Replacement

1. To remove the opener cables, remove the following parts:
 - Left side door sill molding, left half of carpet.
 - Left quarter trim panel, and rear trim panel.
2. Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts.
3. Remove the fuel lid latch by turning it 90°.
4. Remove the bolt, then remove the tailgate lock cylinder.
5. Remove the 3 screws, then remove the tailgate latch.
6. Disconnect the opener cable, connector and lock rod.



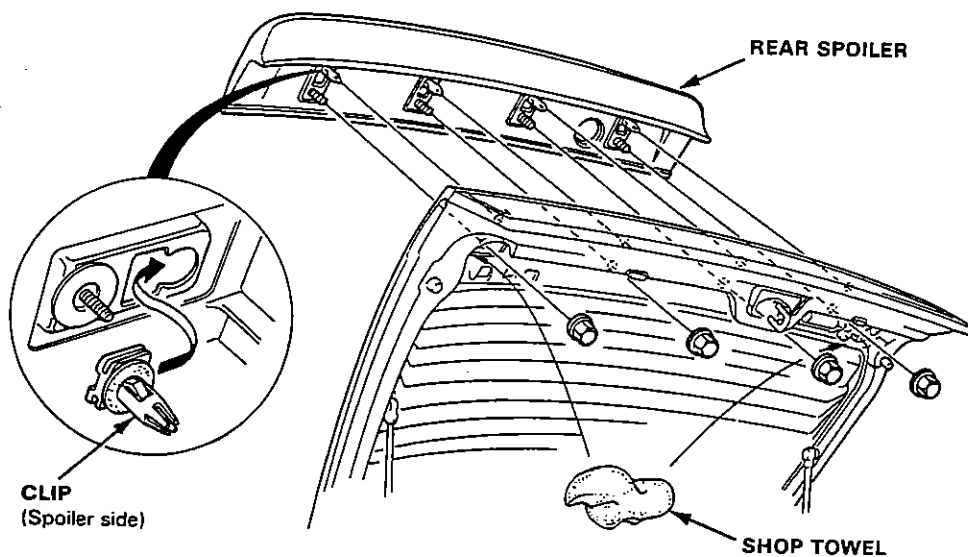
7. To install, reverse the removal procedure.
Check that the tailgate and fuel lid opener cables are routed and connected properly.

Rear Spoiler/Rear Panel and Corner Panel

Rear Spoiler Replacement

1. Remove the tailgate trim panel (page 14-62) and rear wiper.
2. Remove the 4 mount nuts and detach the 4 clips, then remove the rear spoiler.

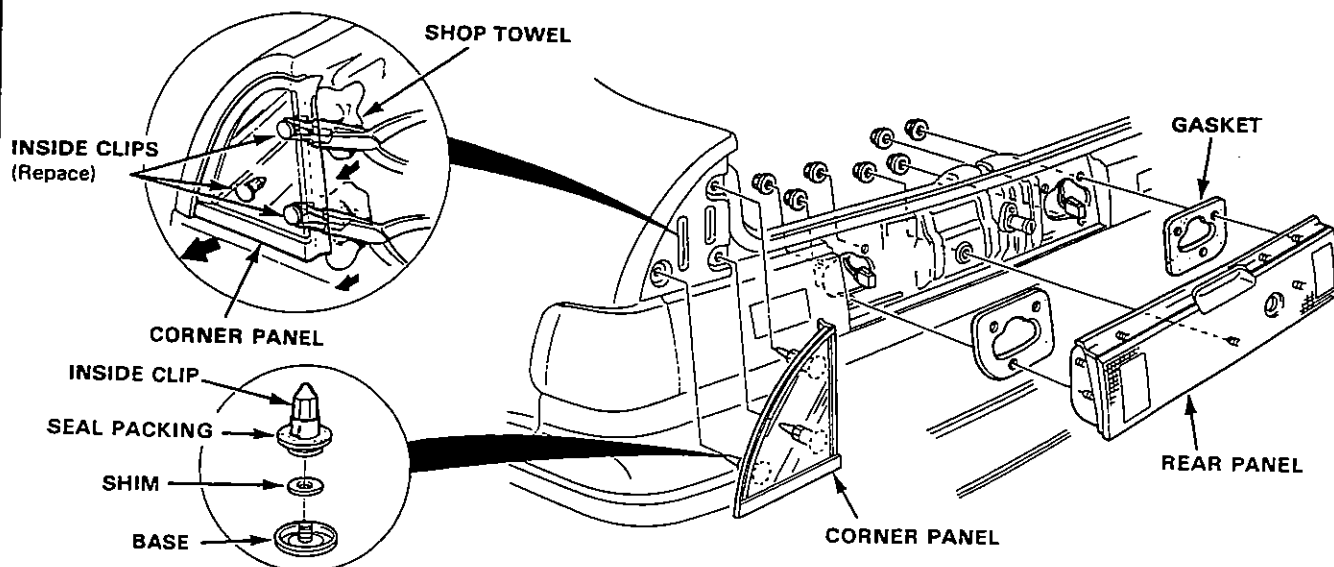
NOTE: Be careful not to drop the nuts inside the tailgate panel.



3. Install the spoiler in the reverse order of removal.
- NOTE: Before attaching the spoiler, install the clips to the spoiler.

Rear Panel and Corner Panel Replacement

1. Remove the rear trim panel, then remove the rear panel by removing the 7 mount nuts and disconnecting the connectors.
2. Carefully pull out the 3 inside clips, then remove the corner panels.



3. Install the panels in the reverse order of removal.
- NOTE: Before attaching the corner panels, install new clips and shims.

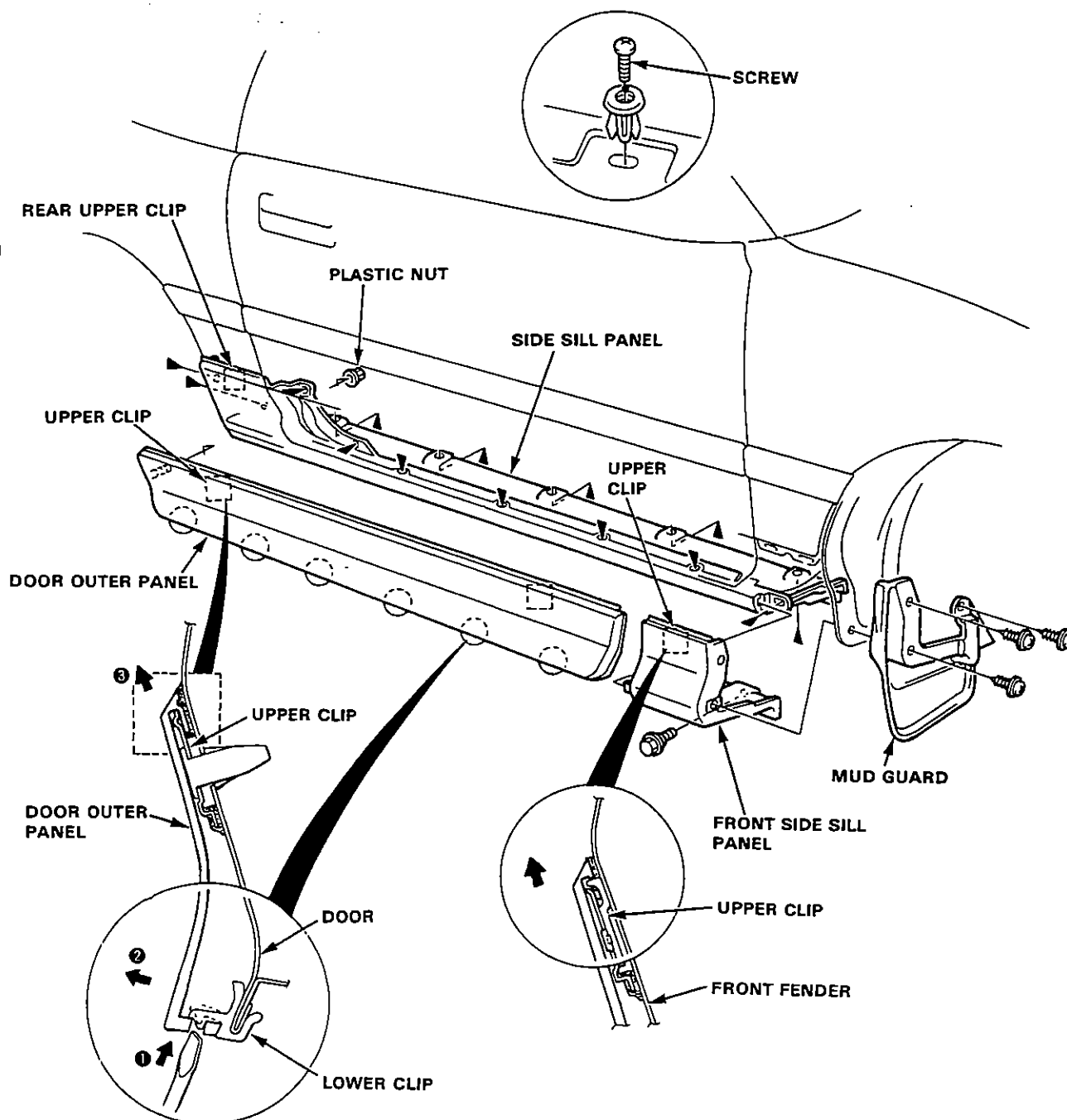
Side Panels

Replacement



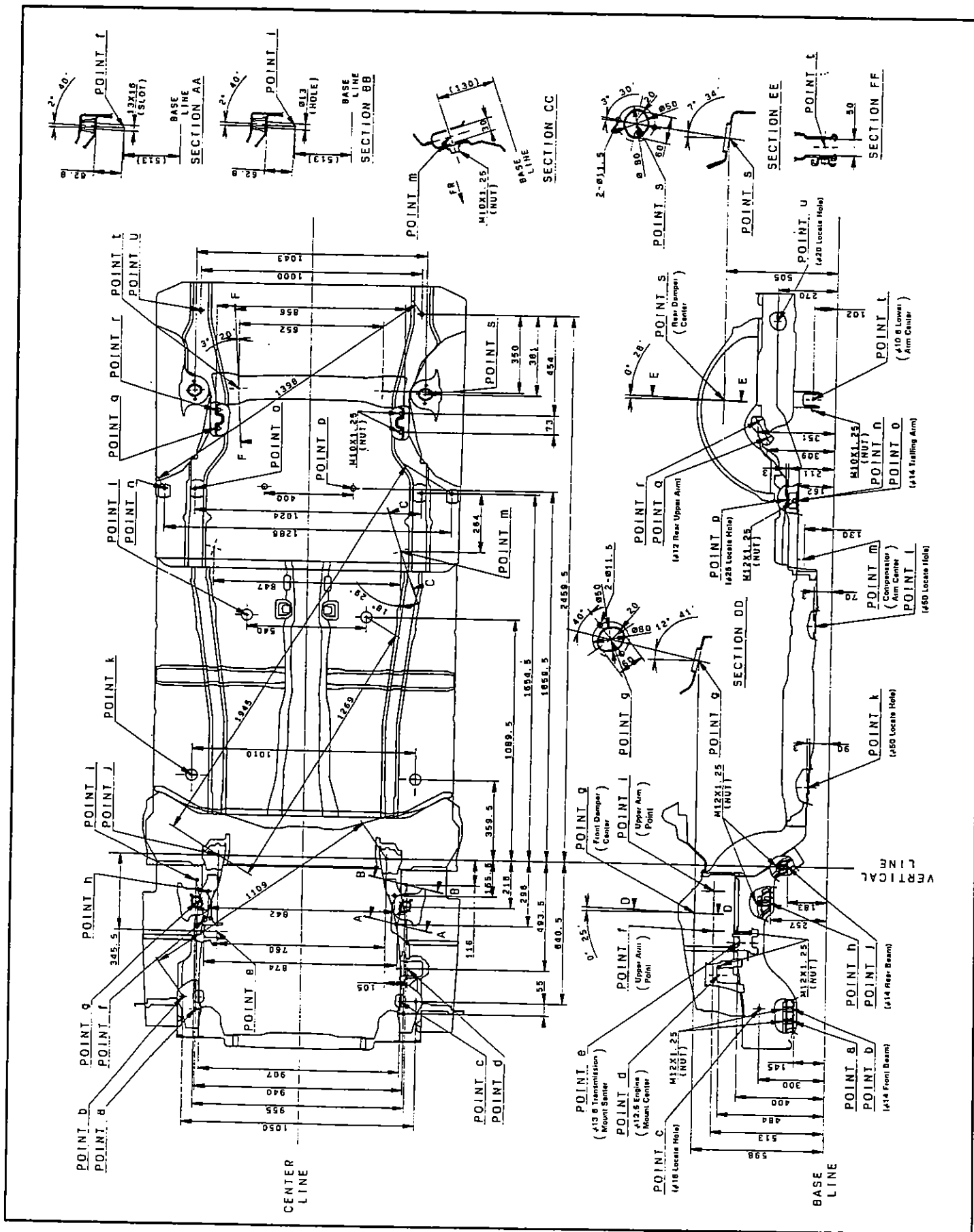
1. Remove the plastic nut and 6 lower clips with a long flat-tip screwdriver.
 2. Lift the door outer panel straight up off the 2 upper clips, then remove the door outer panel.
 3. Remove the bolt, screw and 1 upper clip, then remove the front side sill panel.
 4. Remove the 14 screws and 1 rear upper clip, then remove the side sill panel.
- NOTE: Take care not to damage the side sill and door.

▲ : Screw location



5. Install the side panel in the reverse order of removal.

Frame Repair Chart



Heater and Air Conditioner

Heater	15-1
Air Conditioner	15-25



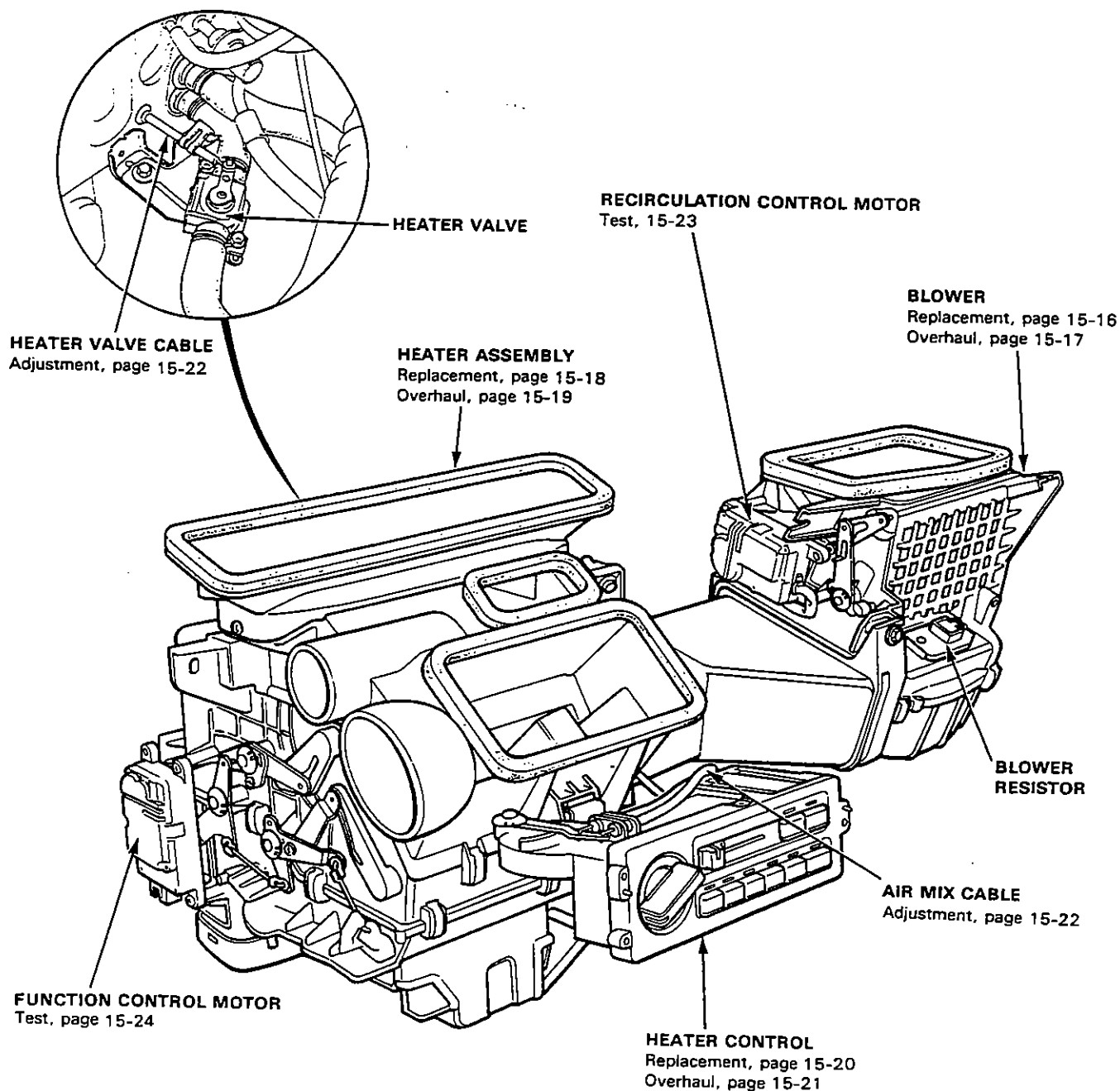
Heater

Illustrated Index	15 – 2
Heater Door Position	15 – 3
Circuit Diagram	15 – 6
Troubleshooting	
Symptom Chart	15 – 8
Troubleshooting Flow Chart	
Blower	15 – 9
Recirculation Control	15 – 12
Function Control	15 – 14
Blower	
Replacement	15 – 16
Overhaul	15 – 17
Heater Assembly	
Replacement	15 – 18
Overhaul	15 – 19
Heater Control	
Replacement	15 – 20
Overhaul	15 – 21
Heater Control Cables	
Air Mix Cable Adjustment	15 – 22
Heater Valve Cable Adjustment ...	15 – 22
Test	
Fan Switch	15 – 23
Recirculation Control Motor	15 – 23
Function Control Switch	15 – 24
Function Control Motor	15 – 24



Heater

Illustrated Index



NOTE: LH Drive shown, RH Drive is similar.

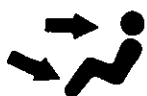
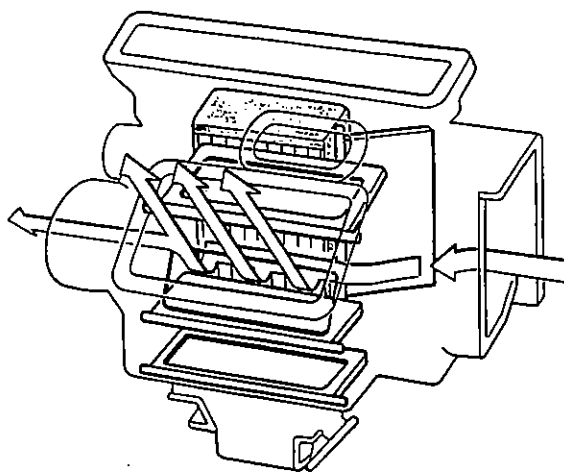
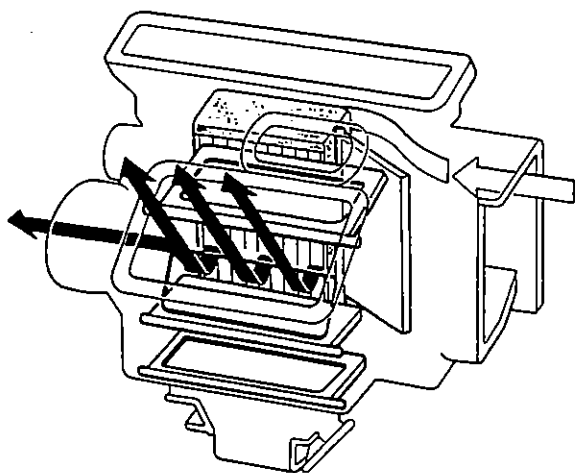


Heater Door Position

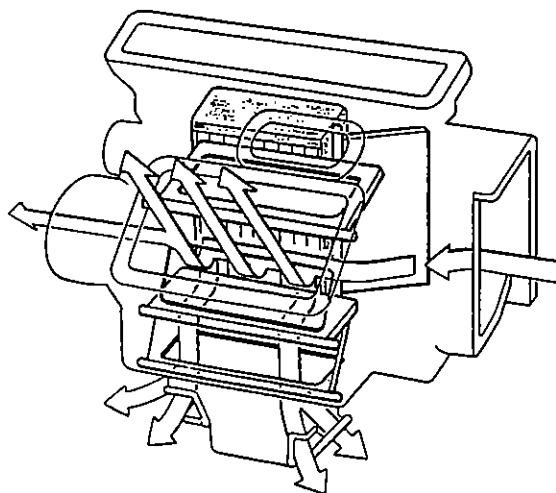
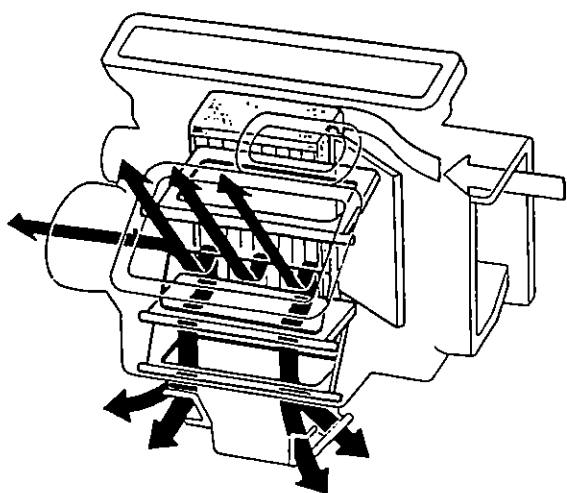


(VENT)

→ HOT
→ COLD



(HEAT/VENT)



(cont'd)

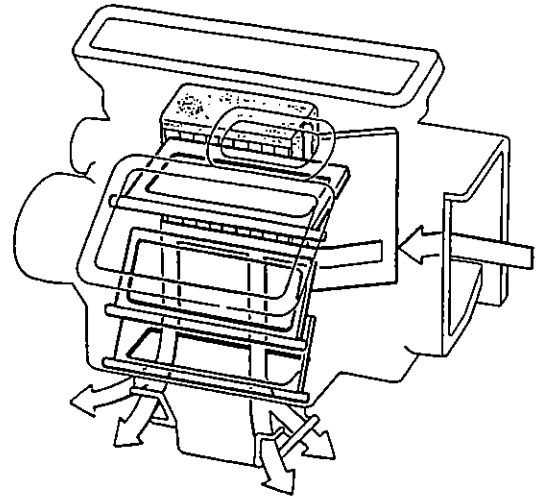
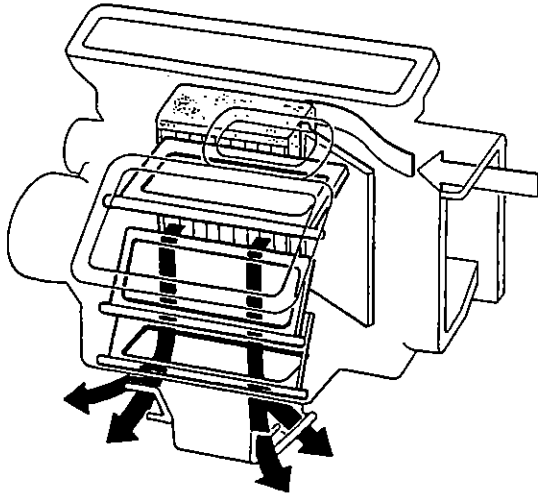
Heater

Heater Door Position (cont'd)

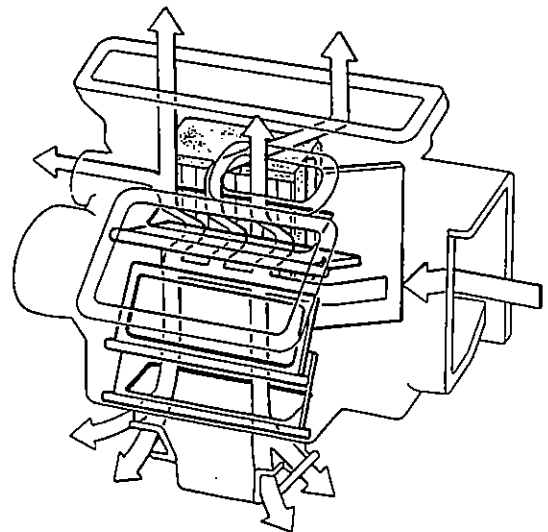
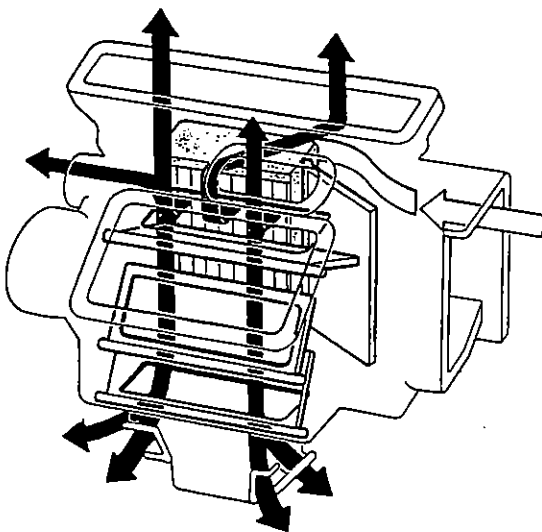


(HEAT)

→ HOT
→ COLD

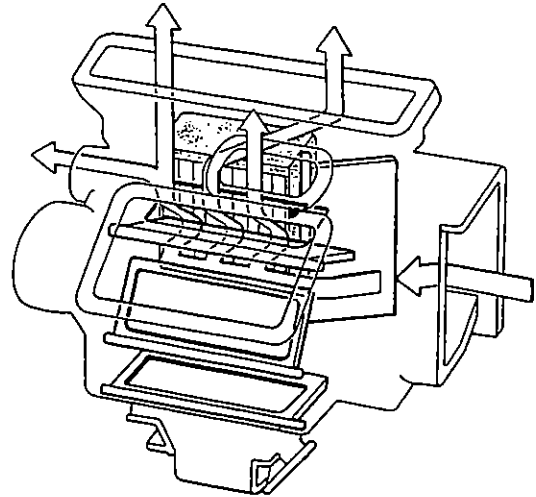
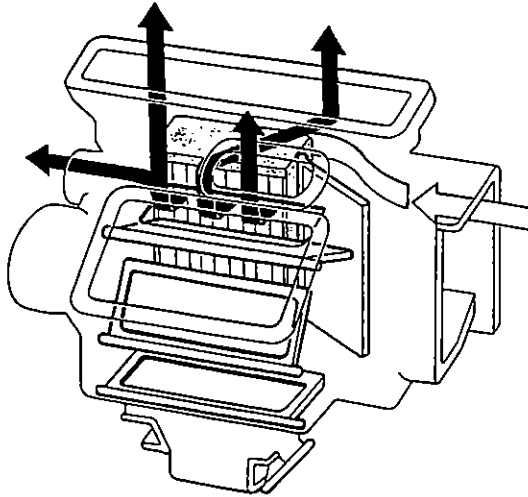


(HEAT/DEF)





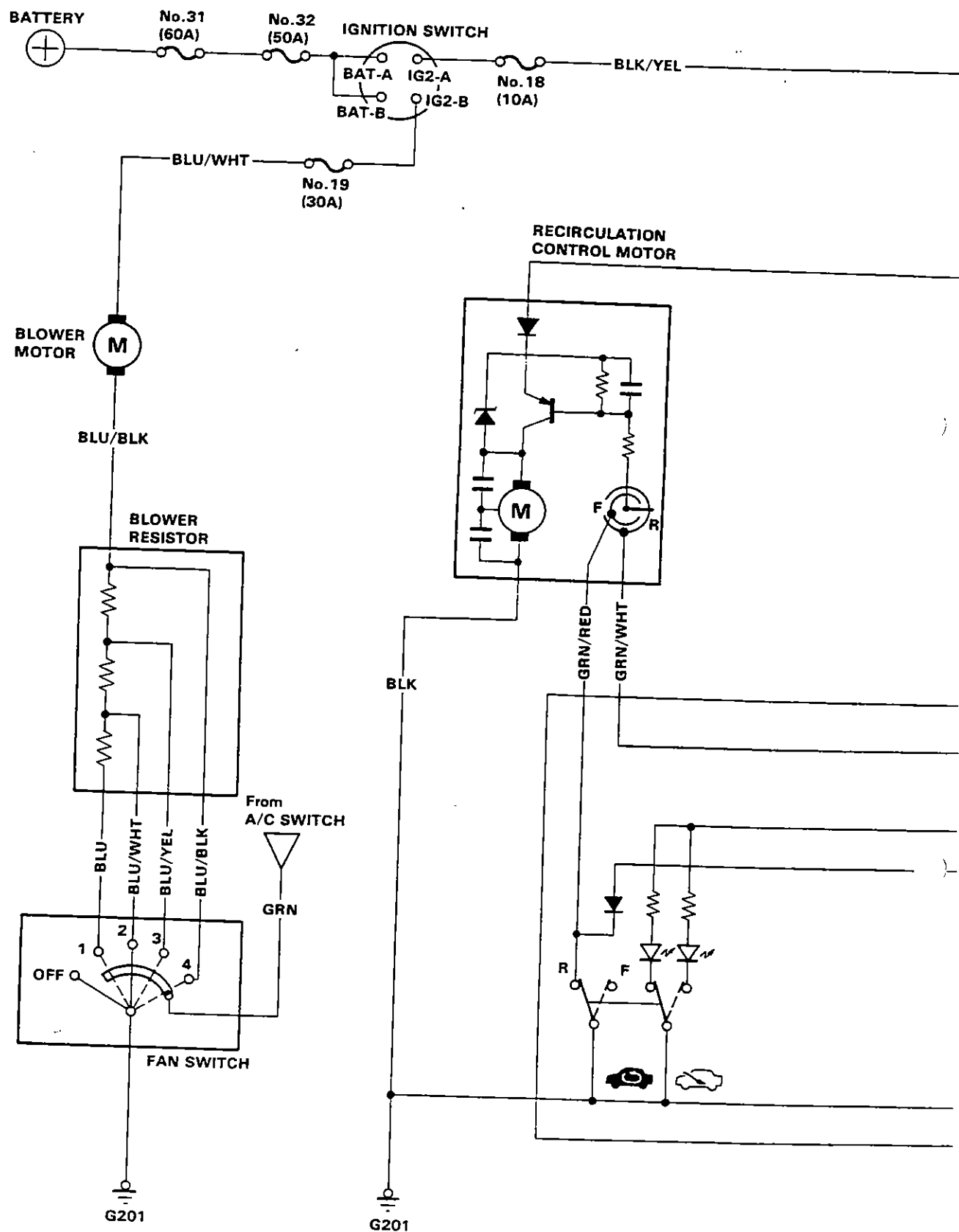
(DEF)

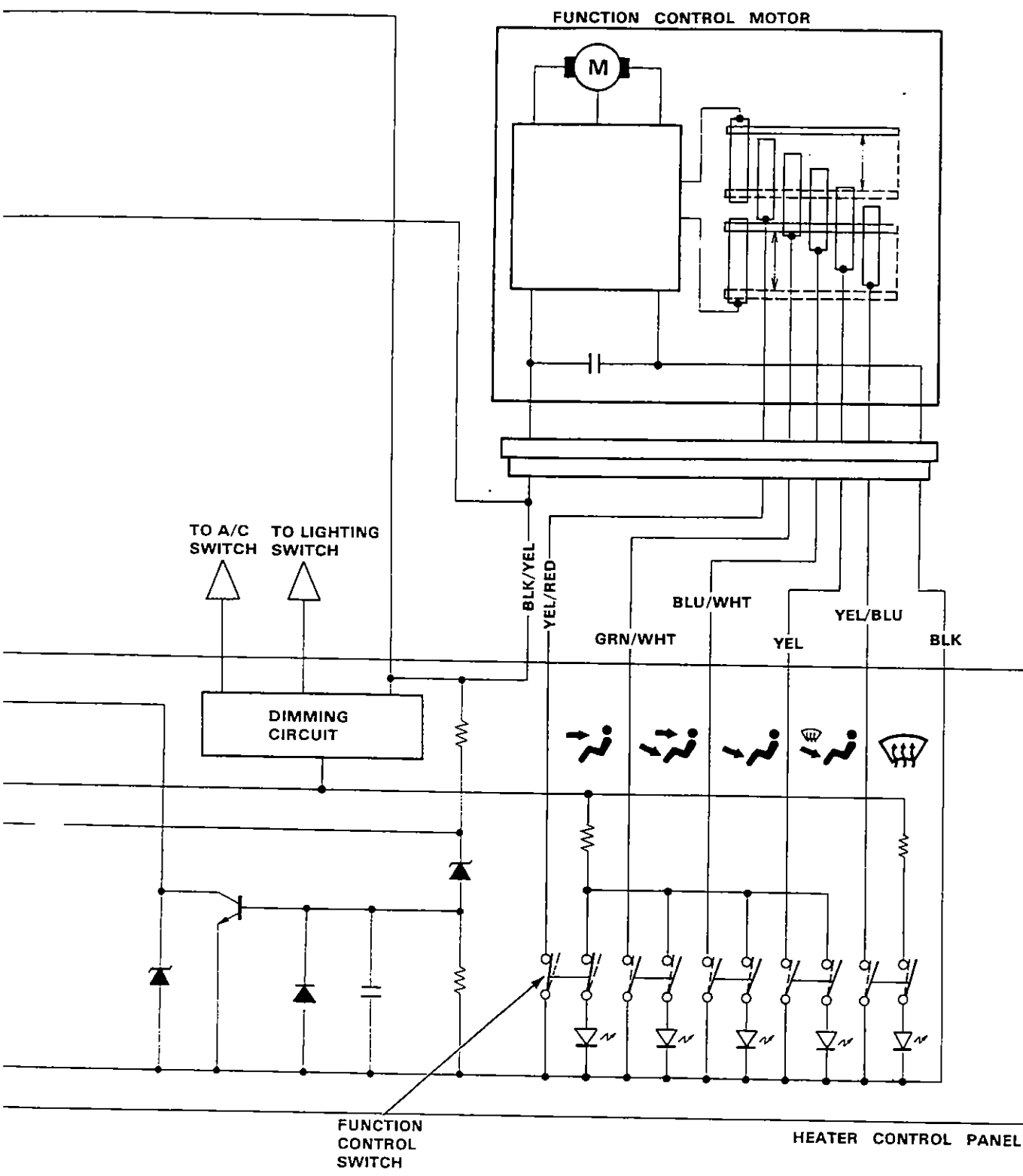


◁LHD▷

Heater

Circuit Diagram





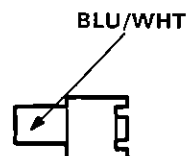
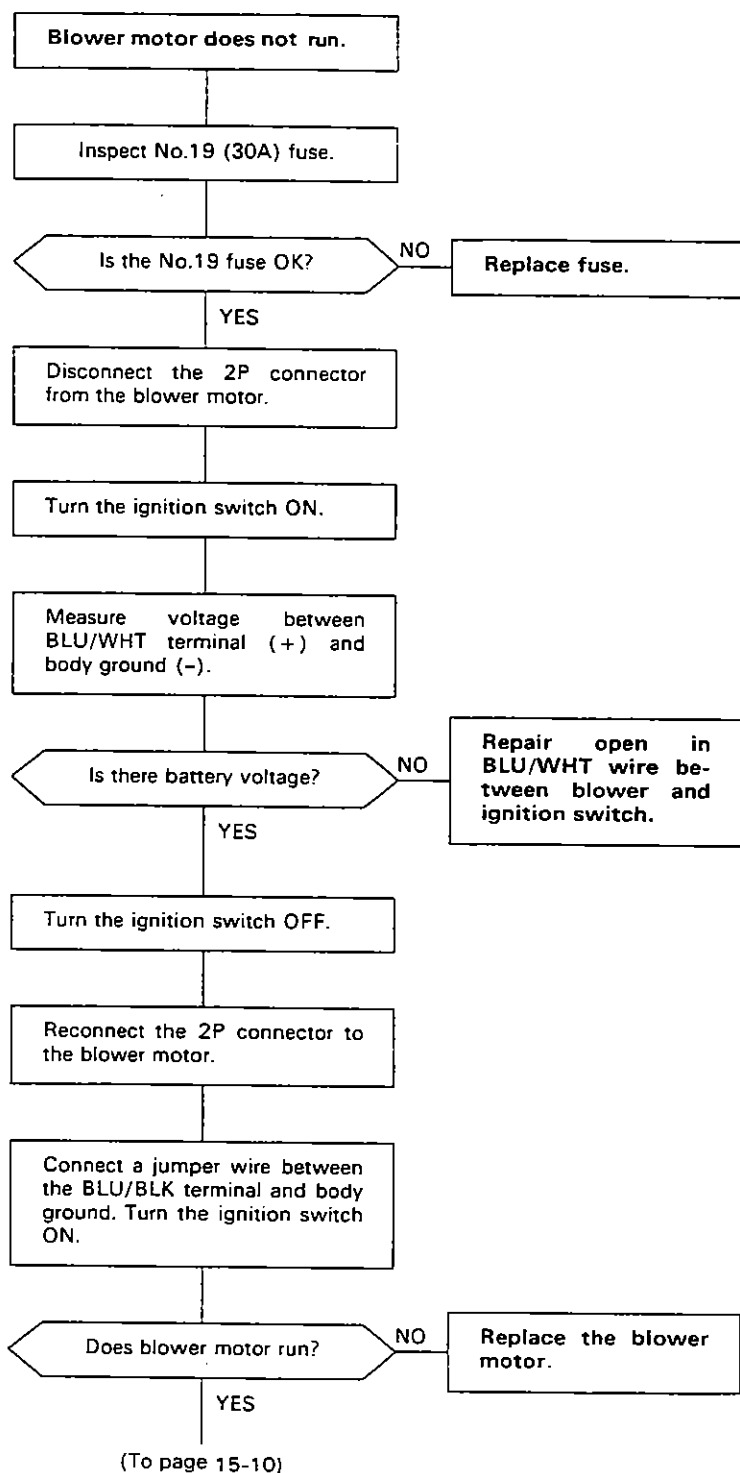
Troubleshooting

Symptom Chart

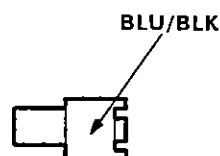
SYMPTOM		REMEDY
No hot air flow	Blower motor does not run	Perform the flowchart (page 15-9)
	Blower motor runs	Check following: • Clogged heater duct • Clogged blower outlet • Clogged heater valve • Faulty air mix door • Air mix cable adjustment • Faulty thermostat
Hot air flow is low	Blower speed does not change	Perform flow chart (page 15-11)
	Blower runs properly	Check following: • Clogged heater duct • Clogged blower outlet • Incorrect door position
Function does not change	Function control motor does not run	Perform flow chart (page 15-14)
	Function control motor runs	Check for the heater door linkage and cable adjustments.
Recirculation door does not change	Recirculation motor does not run	Perform flow chart (page 15-12)
	Recirculation motor runs	Check for the door linkage or perform flow chart (page 15-17)



Flow Chart-Blower



View from wire side



View from wire side

(cont'd)

Troubleshooting

Flow Chart-Blower (cont'd)

(From page 15-9)

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the 6P connector from the fan switch.

Connect the jumper wire between the BLU/BLK terminal and body ground.

Turn the ignition switch ON.

Does the blower motor run?

NO

Repair open in BLU/BLK wire between blower and fan switch.

YES

Turn the ignition switch OFF.

Remove the jumper wire.

Inspect the fan switch (page 15-23).

Is the fan switch OK?

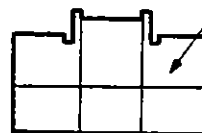
NO

Replace the fan switch.

YES

Repair open in BLK wire between the fan switch and body ground or poor ground (G201).

BLU/BLK



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.

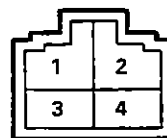
Is there continuity?

NO

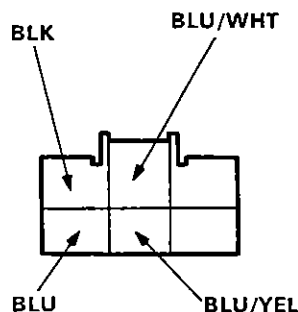
Repair open in BLK wire between the fan switch and body ground or poor ground (G201).

YES

Replace the fan switch.



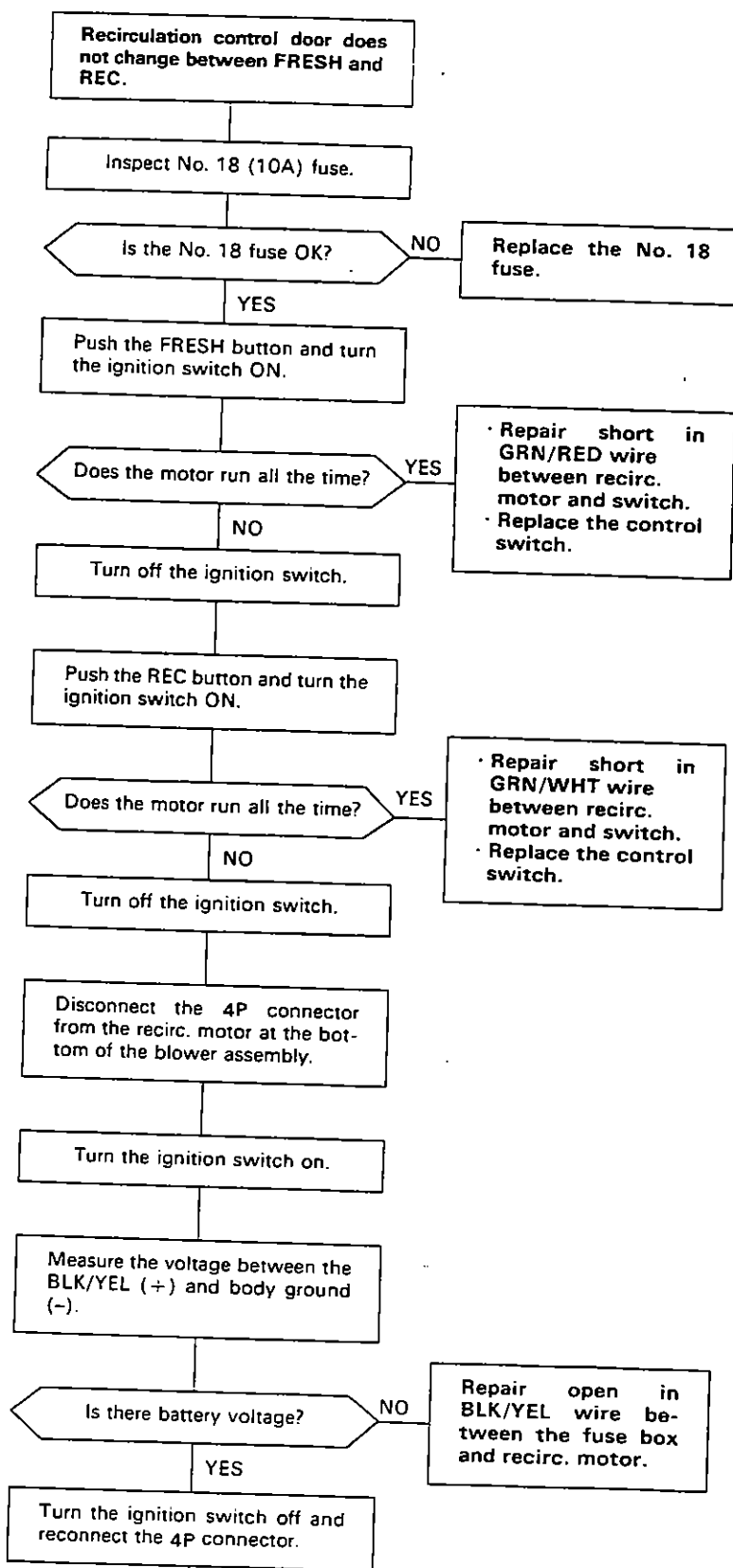
View from terminal side



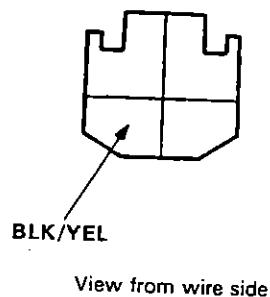
View from wire side

Troubleshooting

Flow Chart — Recirculation Control



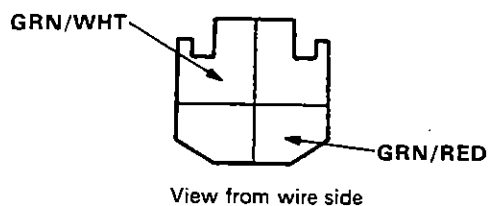
(To page 15-13)





(From page 15-12)

Connect the GRN/RED and GRN/WHT terminals to the body ground using a jumper wire. Turn the ignition switch ON.



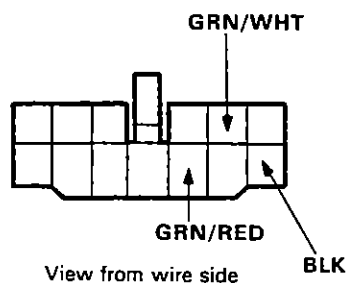
Does the motor run all the time?

NO

Replace the recirculation control motor.

YES

Turn the ignition switch OFF. Remove the heater control panel and disconnect the 13P connector.



Connect the GRN/WHT and GRN/RED terminals to BLK terminal using a jumper wire. Turn the ignition switch ON.

Does the motor run all the time?

YES

Replace the heater control panel.

NO

Check for continuity between the BLK terminal to body ground.

Is there continuity?

NO

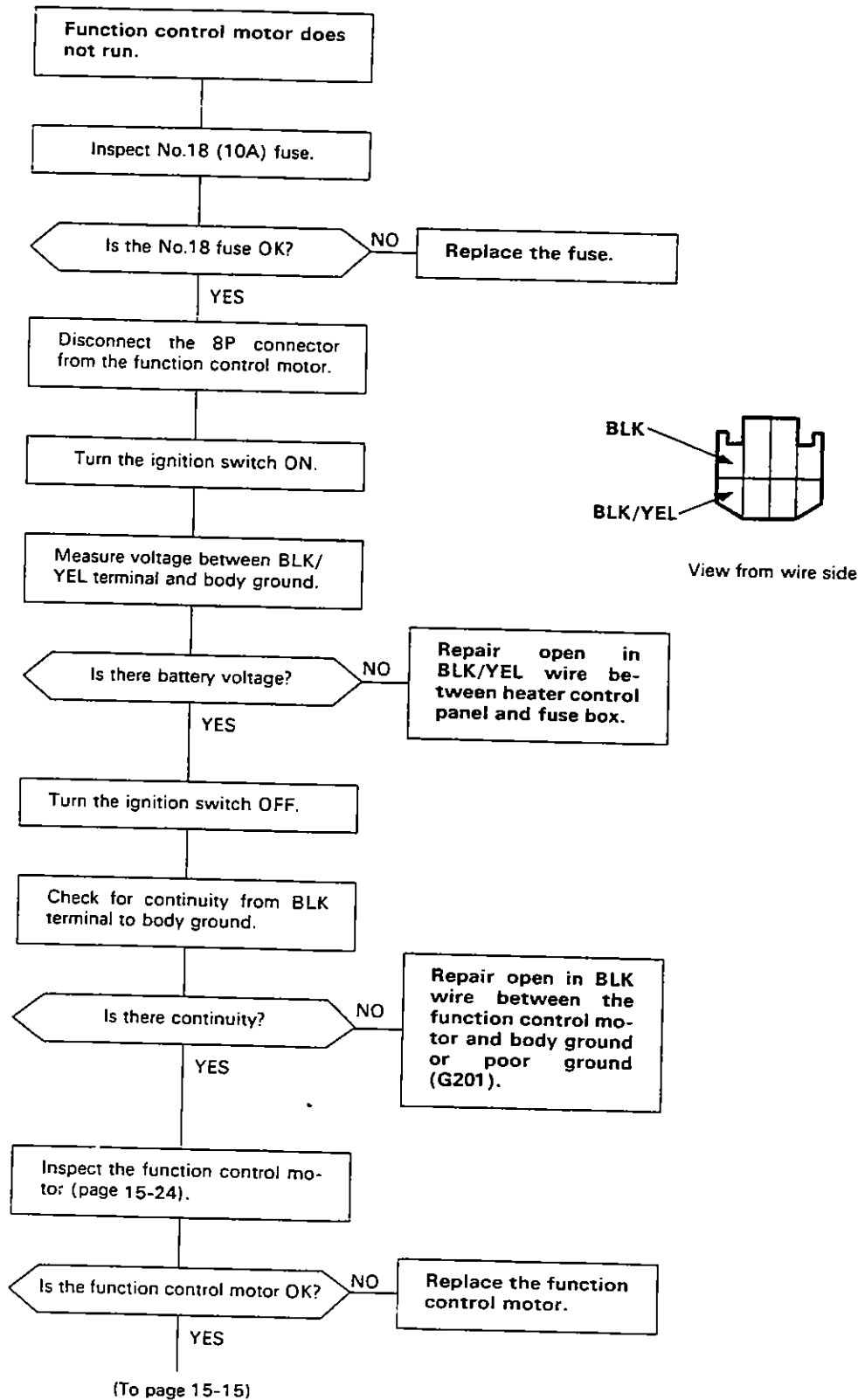
Repair the poor ground (G201) or open in BLK wire between the heater control panel and blower.

YES

Repair open in GRN/RED or GRN/WHT between the heater control panel and blower.

Troubleshooting

Flow Chart — Function Control





(From page 15-14)

Disconnect the 13P connector from the heater control panel.

Check for continuity at each wire (BLU/WHT, GRN/WHT, YEL, YEL/RED, YEL/BLU) between the 8P and 13P connectors.

Is there continuity?

NO

Repair open wire.

YES

Check for continuity from each wire (BLU/WHT, GRN/WHT, YEL/RED, YEL/BLU, YEL) to body ground.

Is there continuity?

YES

Repair short to body ground in problem wire.

NO

Check for continuity between BLK terminal to body ground.

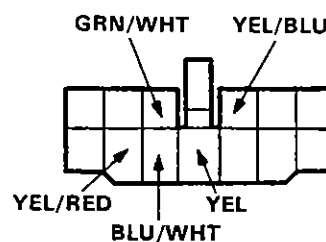
Is there continuity?

NO

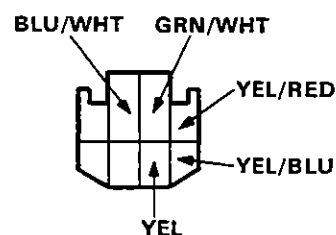
Repair open in BLK wire or poor ground (G201).

YES

Replace the heater control panel.



View from wire side



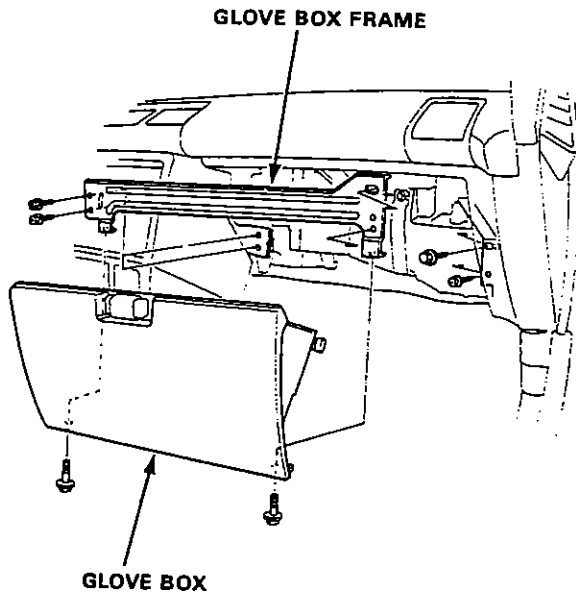
View from wire side

NOTE: If any of the wires are shorted to ground, the function control motor will not change positions.

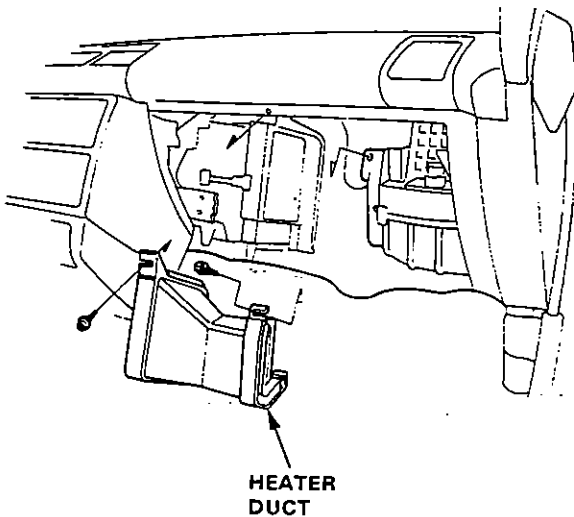
Blower

Replacement

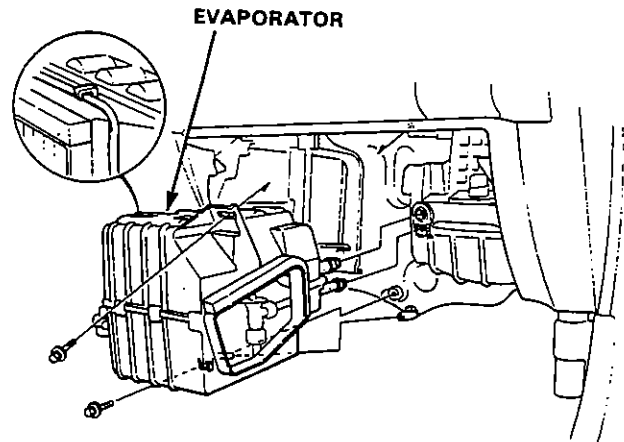
1. Disconnect the battery negative terminal.
2. Remove the glove box and glove box frame.



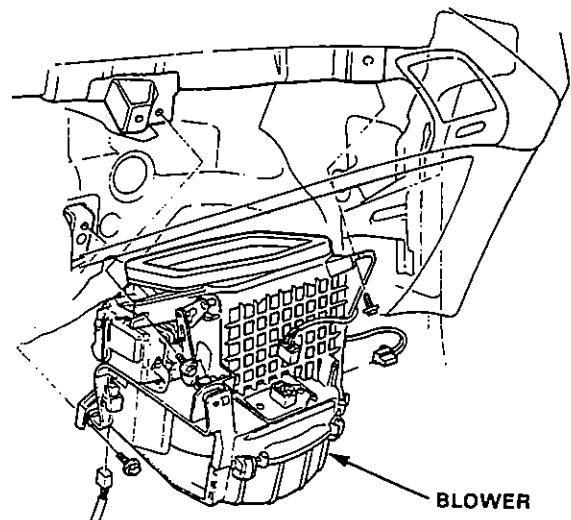
- 3-a Remove the tapping screws (2) and remove the heater duct.



- 3-b Remove the A/C bands and the evaporator.



4. Remove the mounting bolts (3).
5. Disconnect the connectors from the blower motor, resistor and recirculation control motor, then remove the blower.



6. Install the blower in the reverse order of removal and make sure there is no air leakage.



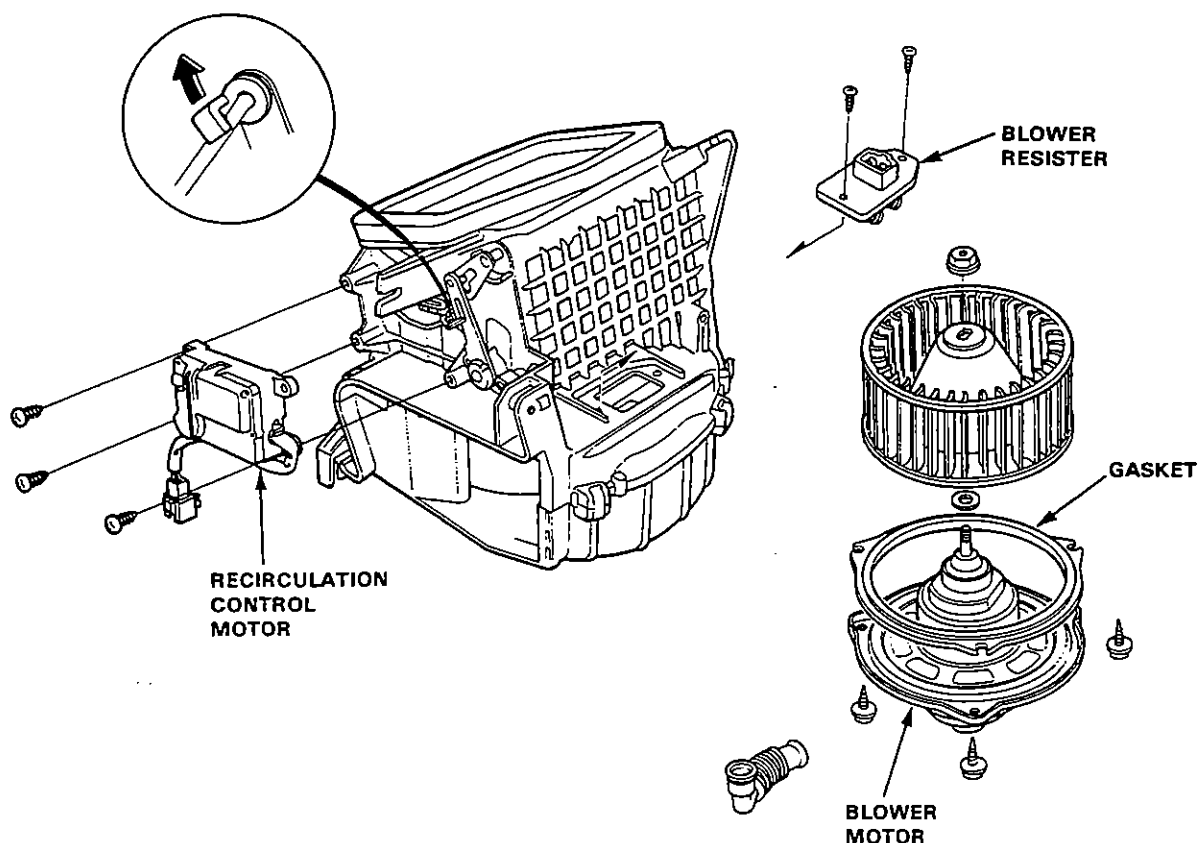
Overhaul

NOTE

- Before reassembly, make sure that the air door and linkage moves smoothly without binding.
- When re-attaching the actuator, make sure its positioning will not allow the air door to be pulled too far. Attach the actuator and all linkage, then apply battery voltage and watch the door movement. If necessary, loosen the holding screw and move the actuator up or down.

To adjust the control rod:

Connect the recirc. control motor connector to the main wire harness, push the RECIRC and open the air doors. Then connect the control rod to the arm while holding the air doors open.



Heater Assembly

Replacement

1. When the engine is cool, drain coolant from the radiator (Section 5).

WARNING

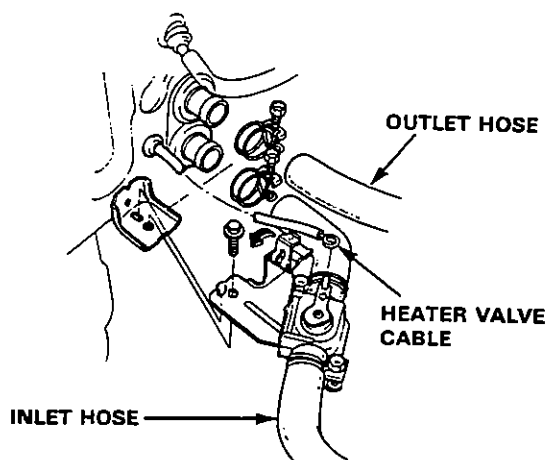
- Do not remove the radiator cap when the engine is hot, the coolant is under pressure and could severely scald you.
- Keep hands away from the radiator fan. The fan may start automatically without warning and run for up to 30 minutes, even after the engine is turned off.

CAUTION: Radiator coolant will damage paint. Quickly rinse any spilled coolant from painted surfaces.

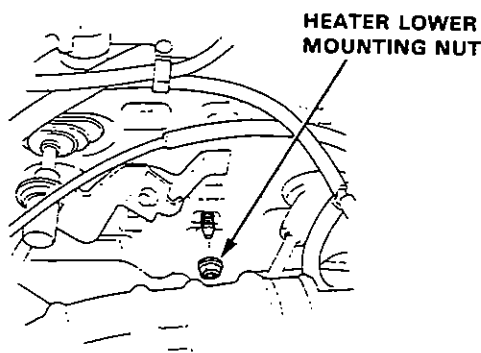
2. Disconnect the heater hoses at the heater.

NOTE: Coolant will run out when the hoses are disconnected, drain it into a clean drip pan.

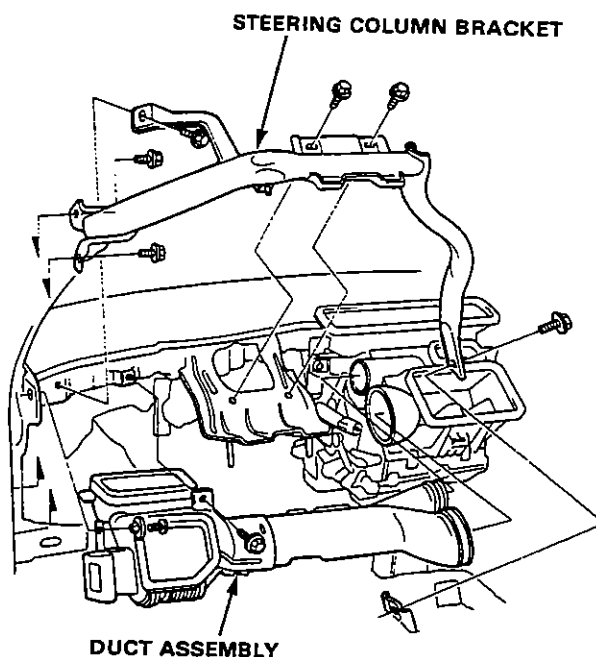
3. Disconnect the heater valve cable from the heater valve.



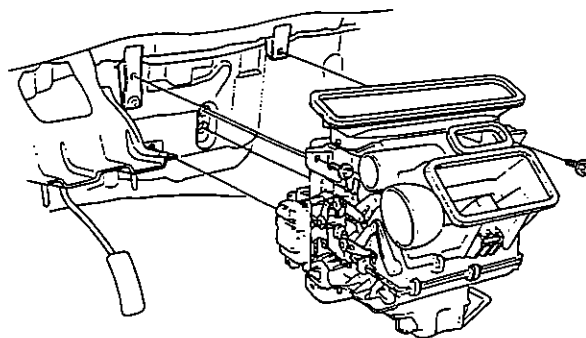
4. Remove the dashboard (Section 14)
5. Remove the heater duct (page 15-10).
6. Remove the heater lower mounting nut.



7. Remove the steering column bracket and the duct assembly.



8. Remove the heater mounting bolts (2), disconnect the wire harness connector from the function control motor, and then remove the heater assembly.



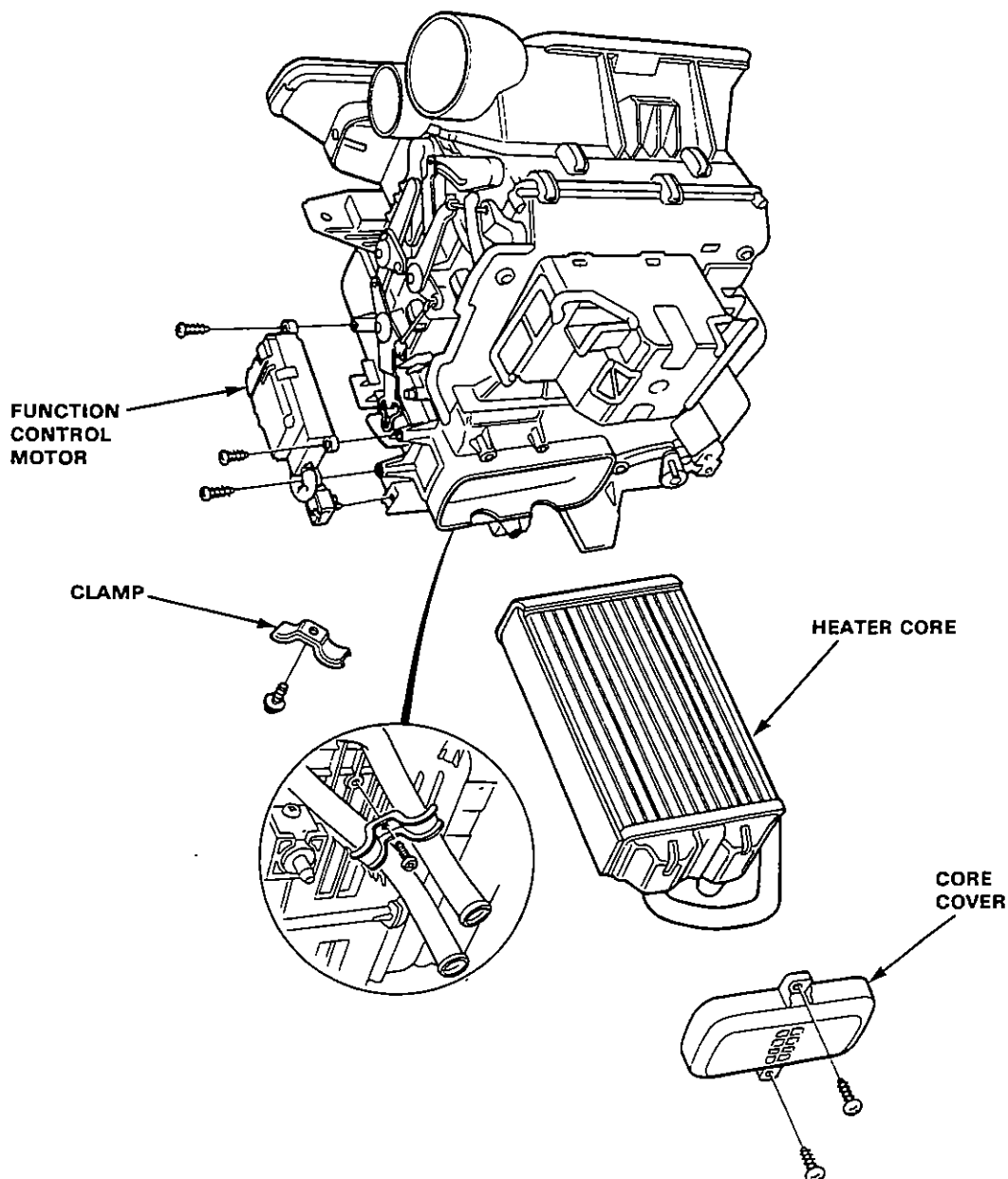
9. Install in the reverse order of removal, and:

- Apply a sealant to the grommets.
- Do not interchange the inlet and outlet hoses. Make sure that the hose clamps are secure.
- Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.
- Connect all cables and make sure they are properly adjusted (page 15-16).



Overhaul

1. Remove the heater assembly.
2. Remove the tapping screws (2) and heater core cover.
3. Remove the tapping screw and clamp.
4. Pull out the heater core from the heater housing.
5. Remove the function control motor if necessary.



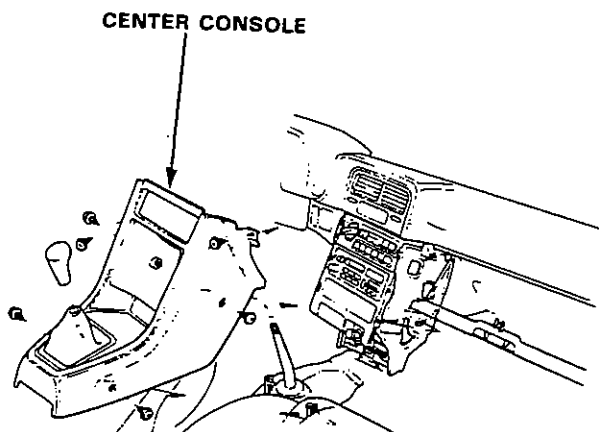
Install in the reverse order of removal and:

Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.

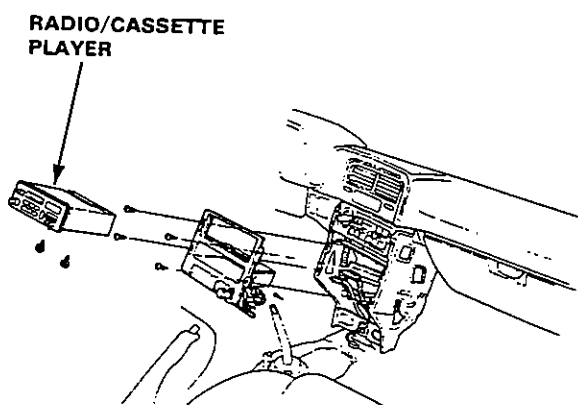
Heater Control

Replacement

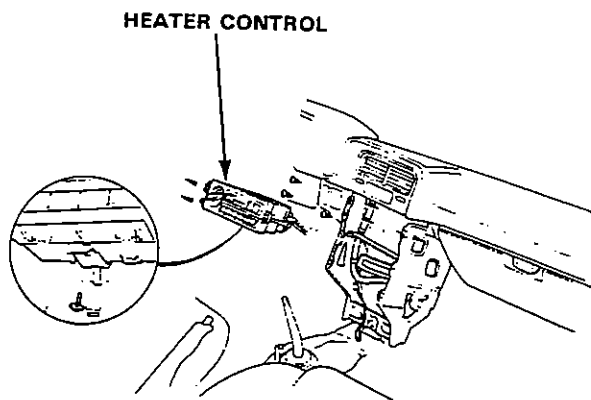
1. Remove the center console.



2. Remove the radio/cassette player.



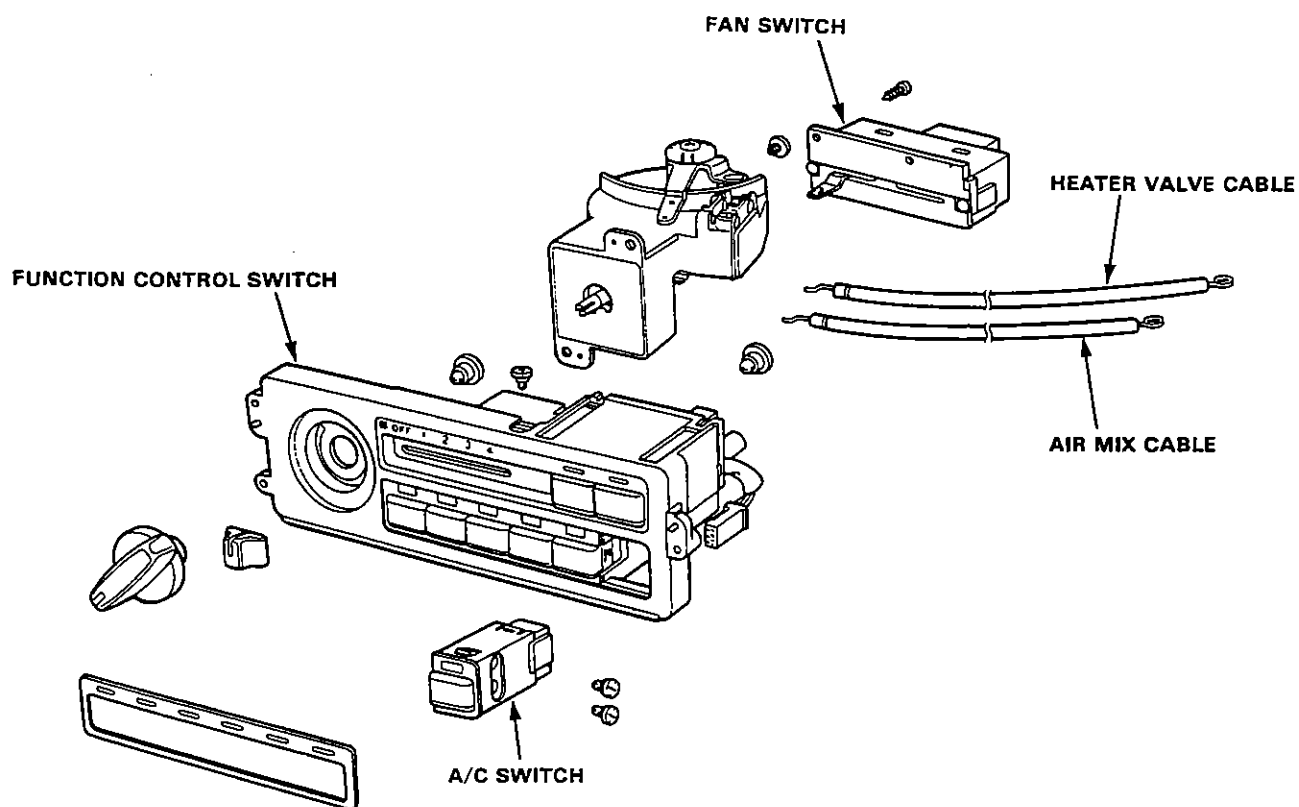
4. Disconnect the air mix cable at the heater assembly.
5. Remove the tapping screws (4) and setting plate, then disconnect the wire harness connectors and cables. Remove the heater control.



6. Install in the reverse order of removal and connect and make sure that it is properly adjusted (page 15-22).

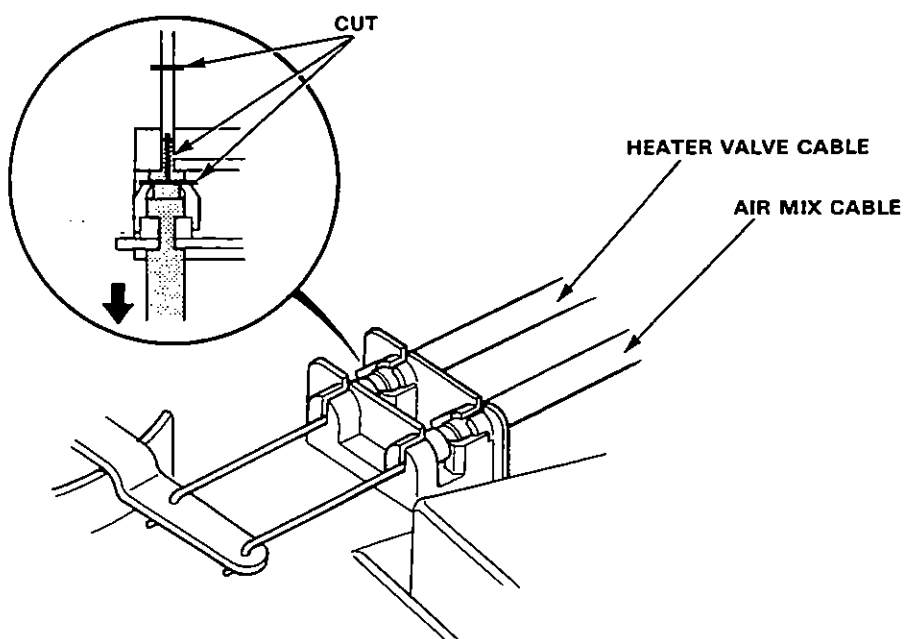


Overhaul



Cable Replacement

1. Cut and pull the cable.
2. Set the new one.

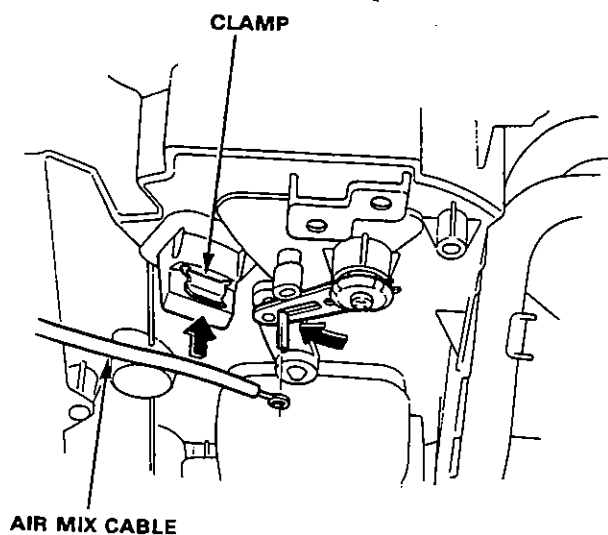


NOTE After assembly check that the air mix lever slides smoothly.

Heater Control Cables

Air Mix Cable Adjustment

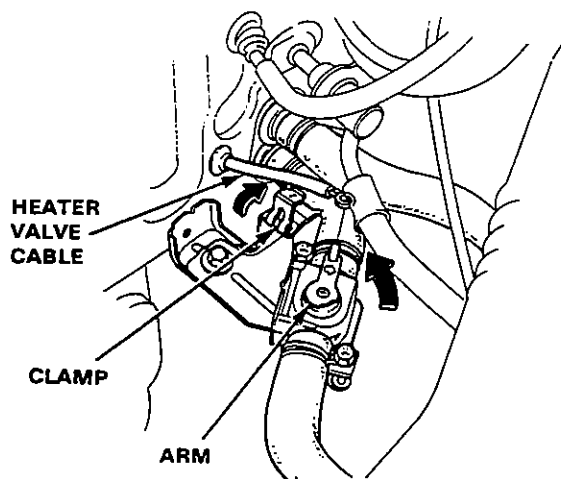
1. Slide the temperature control lever to HOT.
2. Turn the air mix door shaft arm to the left and connect the end of the cable to the arm.
3. Gently slide the cable outer housing back from end enough to take up any slack in the cable, but not enough to make temperature control lever move, then snap the cable housing into the clamp.



NOTE: Heater valve cable should be adjusted if the air mix cable has been disconnected.

Heater Valve Cable Adjustment

1. Slide the temperature control lever to HOT.
2. Gently slide the cable housing back from end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then hold the cable housing and snap it in the clamp.



NOTE: Air mix cable should be adjusted if the heater valve cable has been disconnected.

Test

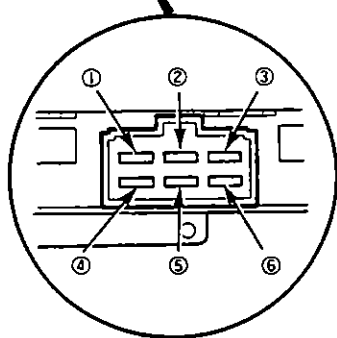
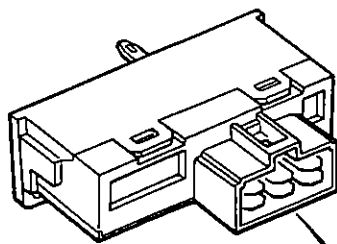


Fan Switch

1. Disconnect the 6P connector from the fan switch.
2. Check for continuity between the terminals of the fan switch according to the table below.

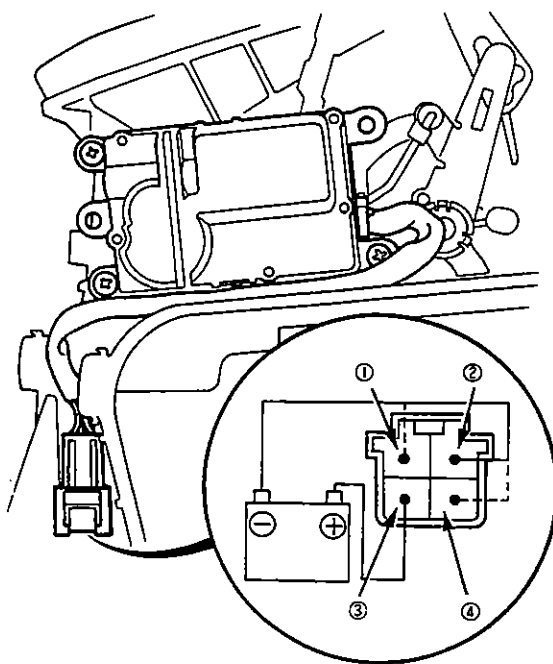
SWITCH CONNEHTION

Terminal No. Position	①	②	③	④	⑤	⑥
OFF						
1	○	—		○	—	○
2	○	○	—			○
3	○		—		○	○
4	○		○			○



Recirculation Control Motor

1. Connect the battery positive to the ③ terminal of the recirculation control motor connector and negative to ② terminal.
2. Using a jumper wire connect the ② terminal and ① or ④ terminal.
 - On the recirculation door REC position, the motor should turn with the ② terminal connected to ① terminal.
 - On the door FRESH position, the motor should turn with the ② terminal connected to ④ terminal.
4. The motor automatically stops after half turn with the jumper wire connected.



View from
terminal side

Test

Function Control Switch

1. Disconnect the 13P connector from the heater control.
2. Check for continuity between the terminals according to the table.

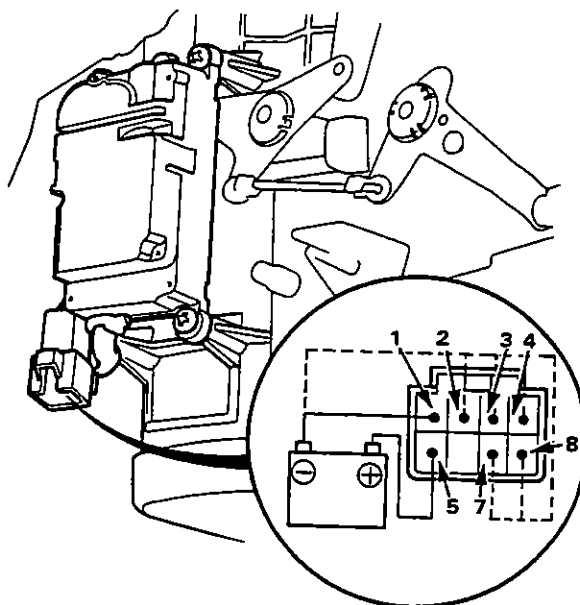
Terminal No. Position	4	10	9	3	8	12 or 13
					○	○
				○		○
			○			○
		○				○
	○					○

1	2	3		4	5	6
7	8	9	10	11	12	13

Function Control Motor

1. Connect the battery positive terminal to the 5 terminal of the function control motor and negative to the 1 terminal.
2. Using jumper wire short the 1 terminal individually to the 2, 3, 4, 7 and 8 terminals to follow the order.

- The motor should run each time the short circuit is made.



View from
terminal side

Air Conditioner

Illustrated Index	15-26
Wire Harness Routing	15-27
Circuit Diagram	15-28
Troubleshooting	15-29

Troubleshooting Flow chart

Compressor	15-30
Either Fan	15-33
Both Fans	15-34
Compressor And Either Fan	15-37
Service Tips	15-41
Discharge Procedure	15-42
Condensor Replacement	15-42

Evaporator

Replacement	15-44
Overhaul	15-45

Compressor

Description	15-46
Troubleshooting	15-47
Replacement	15-48
Clutch Inspection	15-50
Clutch Overhaul	15-51
Thermal Protector Inspection	15-53
Thermal Protector Replacement	15-54
Shaft Seal Replacement	15-54

System Charging

System Evacuation	15-56
Leak Test	15-57
Charging Procedure	15-58

Test

Performance Test	15-59
Thermostat Switch	15-60
Relay	15-60
A/C Switch	15-61



Air Conditioner

Illustrated Index

DUAL PRESSURE SWITCH

When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi) due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to protect the compressor.

EVAPORATOR

As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.
Replacement, page 15-44
Overhaul, page 15-45

SIGHT GLASS

CONDENSER

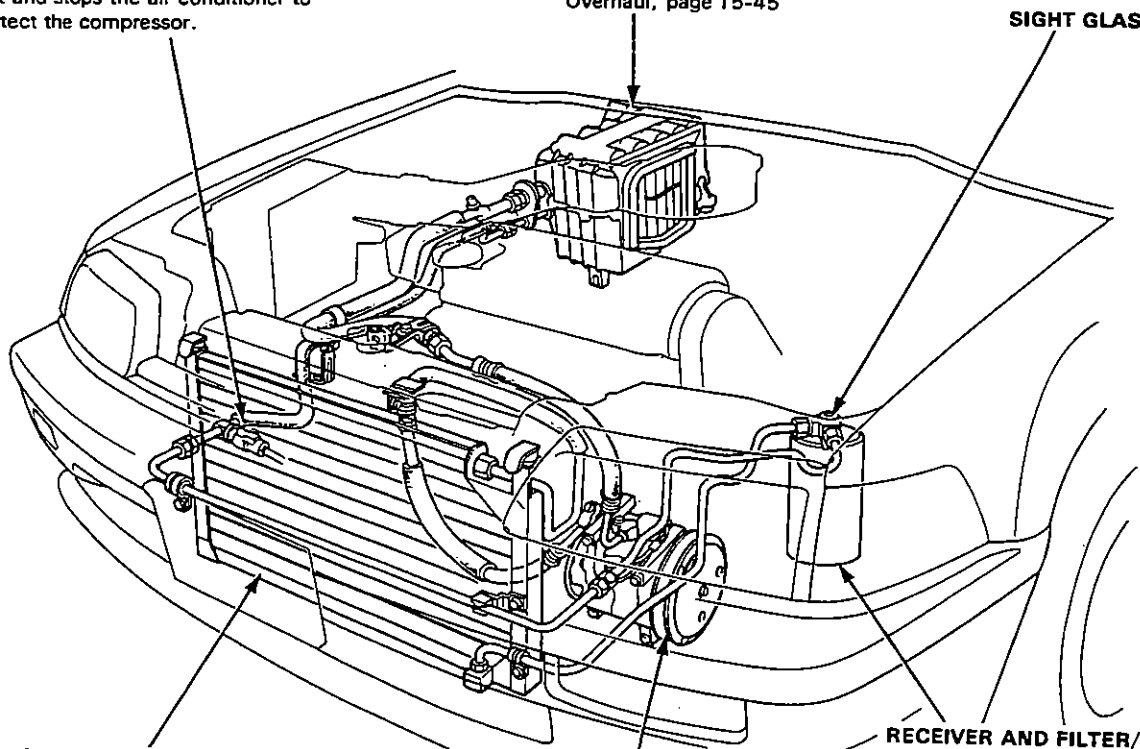
Dissipates the heat which was absorbed by the refrigerant.
Replacement, page 15-42

COMPRESSOR

Compresses the refrigerant and then forces it through the condenser.
Replacement, page 15-48

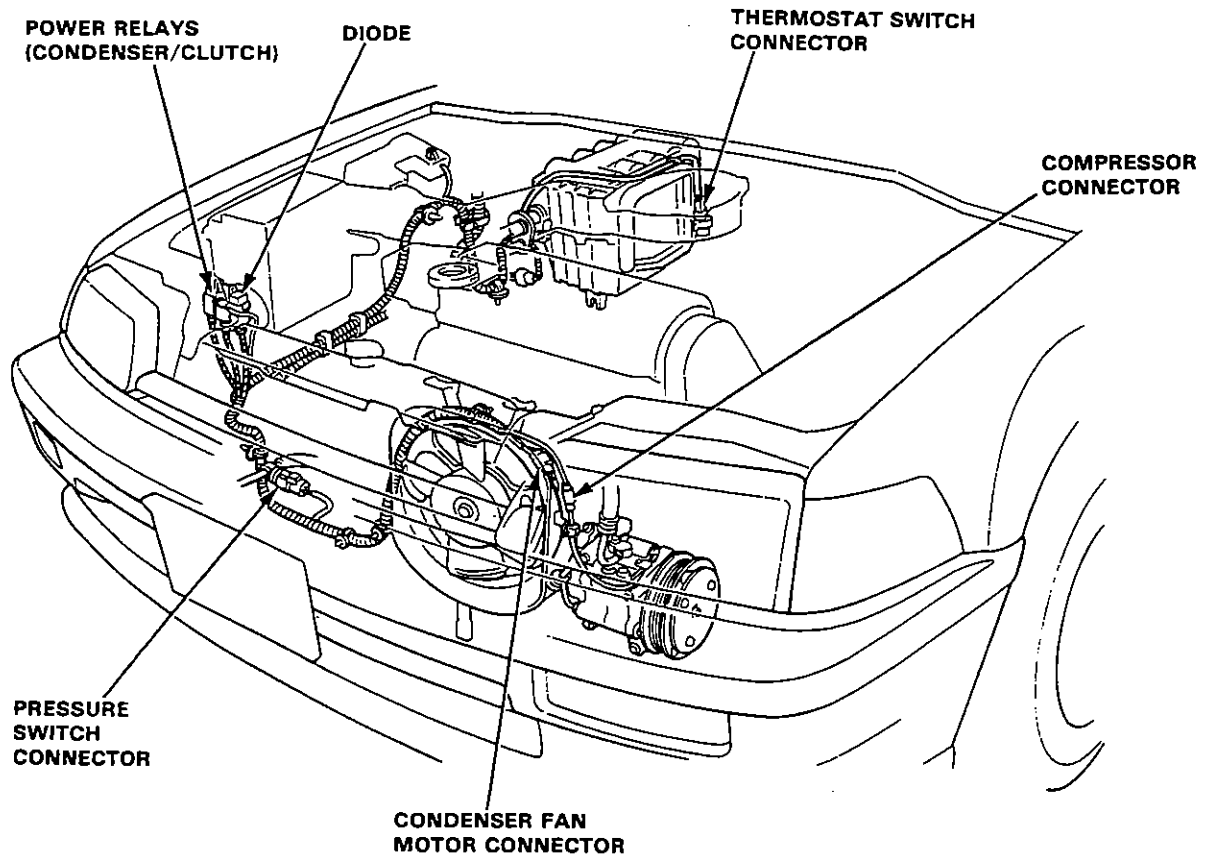
RECEIVER AND FILTER/DRYER

Serves as a reservoir which filters and removes moisture from the refrigerant.



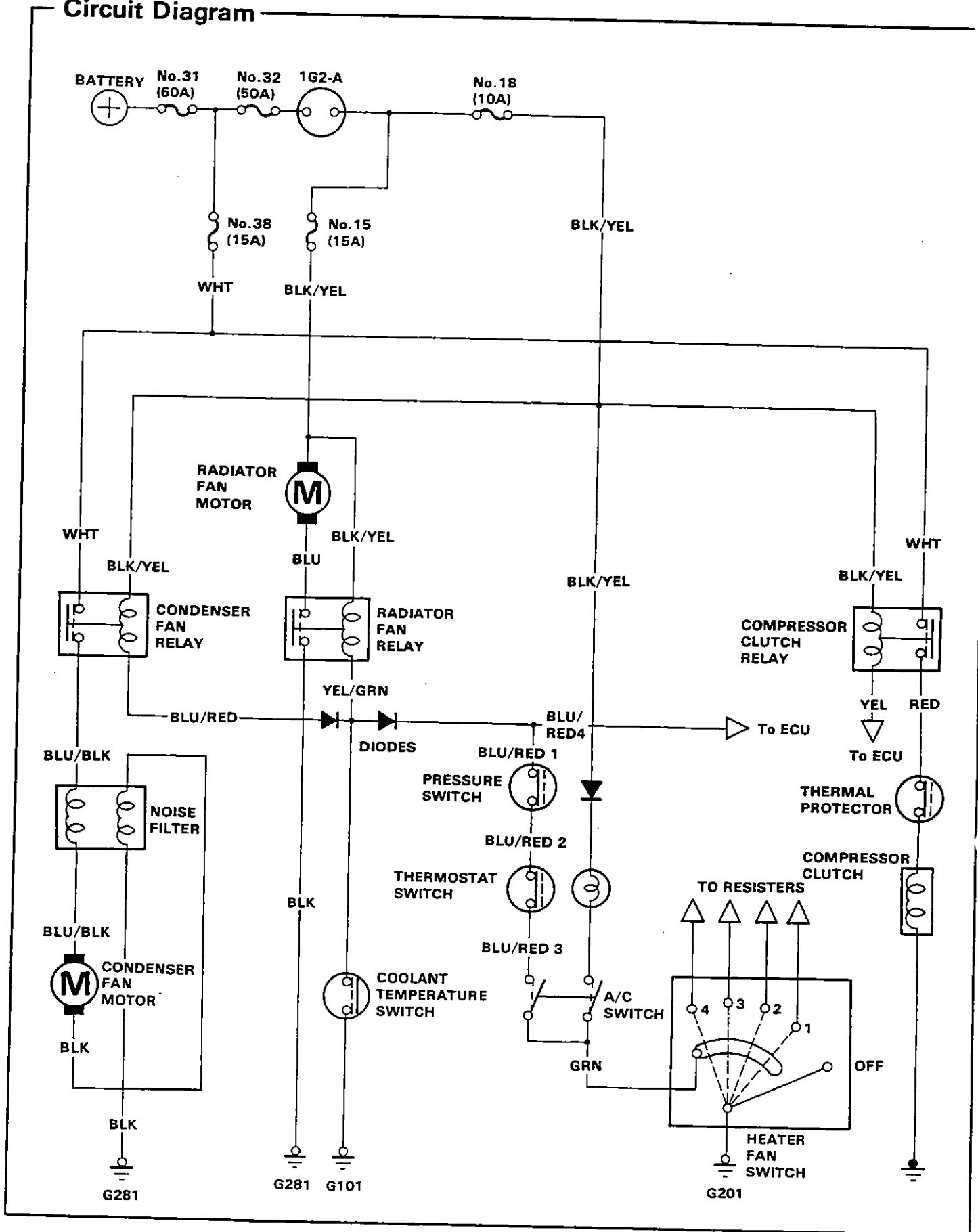


Wire Harness Routing



Air Conditioner

Circuit Diagram





Troubleshooting

- Any abnormality must be corrected before continuing the test.
- Because of the precise measurements needed, use a voltmeter and ammeter when testing.

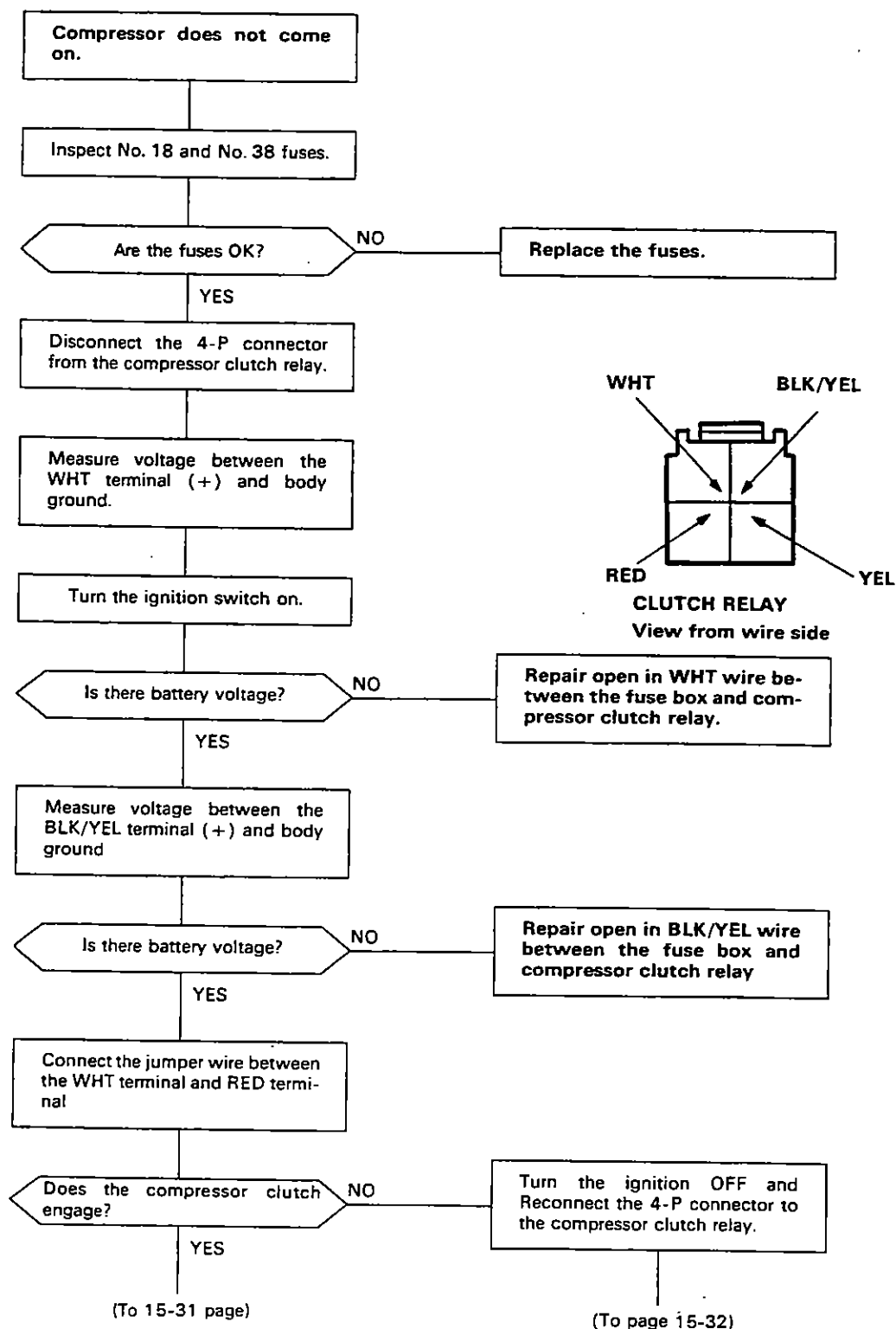
Before performing any troubleshooting procedures check:

- Fuses No.15, 18, 32, 38
- All electrical connections are clean and tight.

SYMPTOM	REMEDY
Compressor does not come on.	Perform the procedures in the flow chart. (page 15-30)
Only radiator fan (or condensor fan) does not run.	Perform the procedures in the flow chart. (page 15-33)
Radiator fan and condensor fan do not run.	Perform the procedures in the flow chart. (page 15-34)
Compressor and radiator fan (or condensor fan) do not run.	Perform the procedures in the flow chart. (page 15-37)
	Discharge (high) pressure abnormally high or low.
Idle boost does not work.	See the fuel and emission section.

Troubleshooting

Flow Chart: Compressor

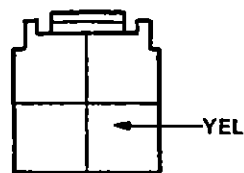




(from 15-30 page)

Turn the ignition switch OFF and reconnect the 4-P connector to the compressor clutch relay.

Turn the ignition switch on and connect the jumper wire between the YEL terminal and body ground.



CLUTCH RELAY
View from wire side

Does the compressor clutch engage?

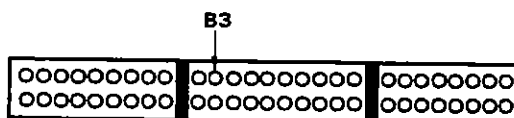
NO

Replace the compressor clutch relay.

YES

Turn the ignition OFF and disconnect the PGM-FI-ECU connector and connect the PGM-FI-ECU test harness.

Turn the ignition switch ON and connect the jumper wire between B-3 terminal and body ground.



PGM-FI-ECU test harness

Does the compressor clutch engage?

NO

Repair open in YEL wire between the compressor clutch relay.

YES

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

(cont'd)

Troubleshooting

Flow Chart : Compressor (cont'd)

(From page 15-30)

Disconnect the RED terminal and turn the ignition switch on.

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

Is there battery voltage?

NO

Repair open in RED wire between the compressor clutch relay and compressor clutch connector.

YES

Turn the ignition switch OFF and check the thermal protector (page 15-53).

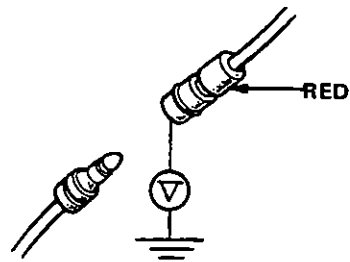
Is the thermal protector OK?

NO

Replace the thermal protector.

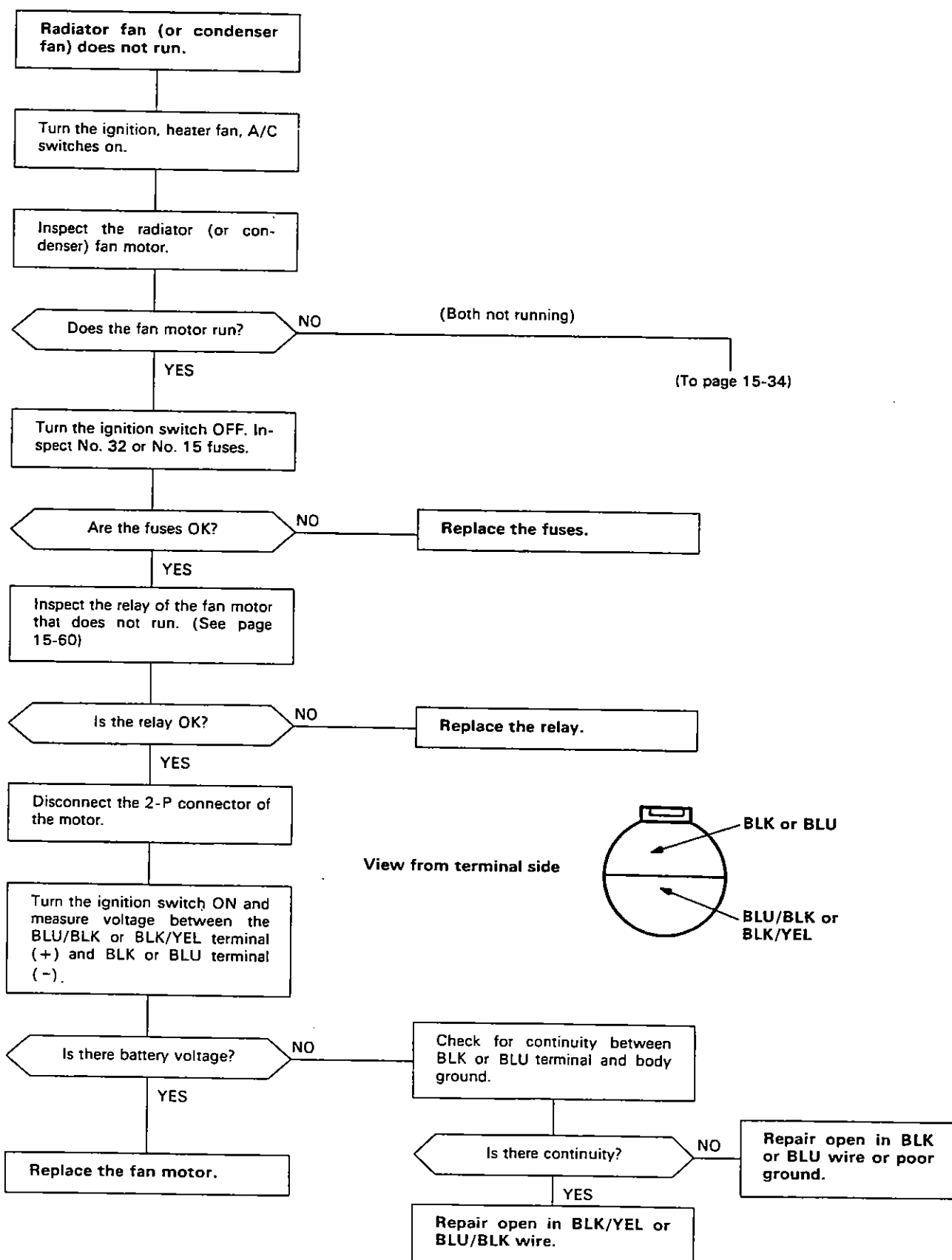
YES

Replace the compressor clutch.



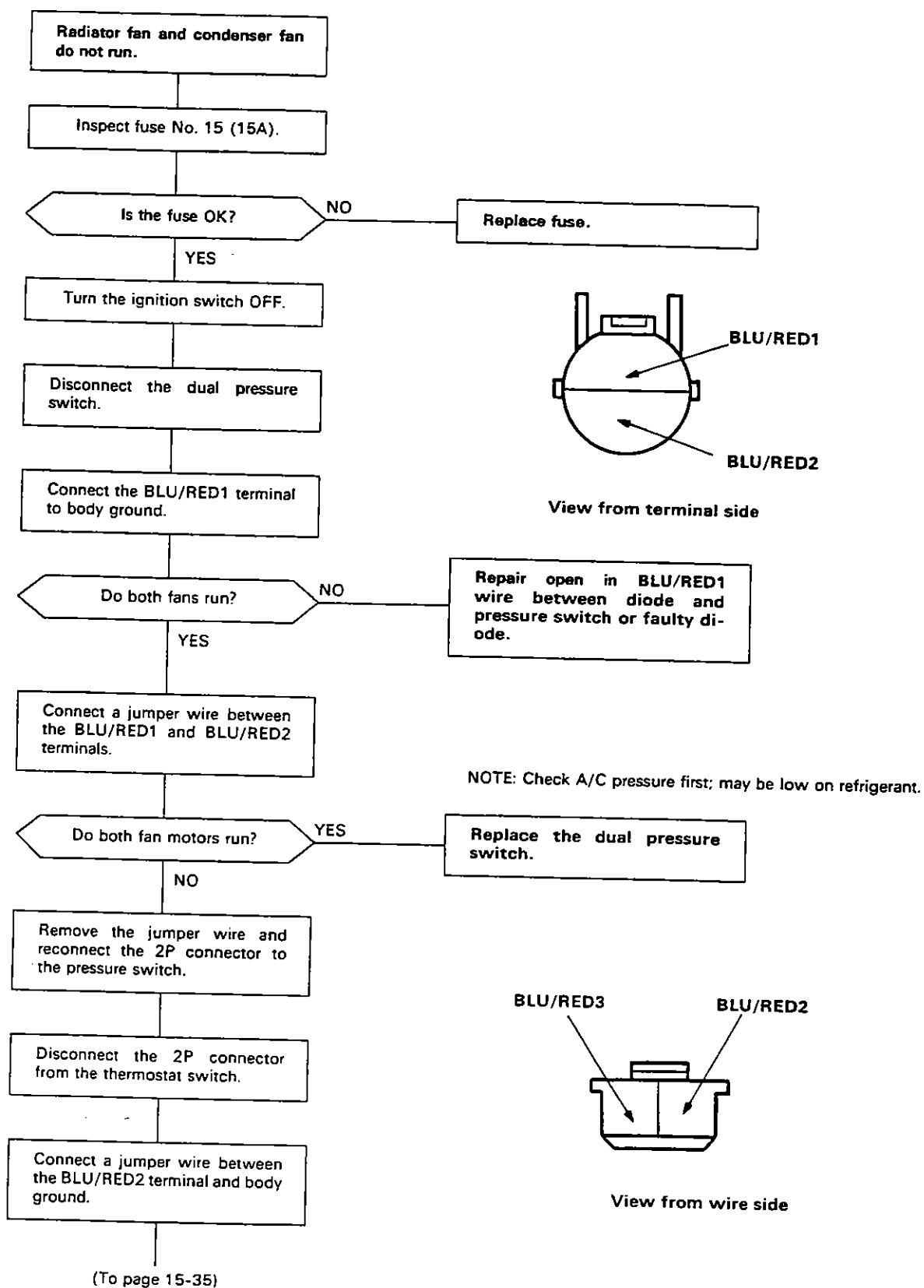


Flow Chart: Either Fan



Troubleshooting

Flow Chart : Both Fans





(From page 15-34)

Turn the ignition switch ON.

Do both fan motors run?

NO

Repair open in BLU/RED2 wire between the pressure switch and thermostat switch.

YES

Connect a jumper wire between the BLU/RED2 and BLU/RED3 terminals of the thermostat switch connector.

Do both fan motors run?

YES

Replace the thermostat switch.

NO

Reconnect the 2P connector to the thermostat switch. Disconnect the 5P connector from the A/C switch.

Connect the BLU/RED3 terminal to the body ground.

Do both fan motors run?

NO

Repair open in BLU/RED3 wire between the thermostat switch and A/C switch.

YES

Connect the BLU/RED3 and GRN terminals with a jumper wire.

Do both fan motors run?

YES

Replace the A/C switch.

NO

Check the heater fan switch (page 15-23).

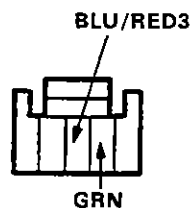
Is the heater fan switch OK?

NO

Replace the heater fan switch.

YES

(To page 15-36)



View from wire side

(cont'd)

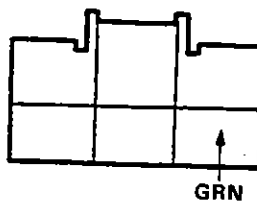
Troubleshooting

Flow Chart : Both Fans (cont'd)

(From page 15-35)

Reconnect the 5P connector to the A/C switch and disconnect the 6P connector from the heater fan switch.

Connect a jumper wire between the GRN terminal and body ground.



View from wire side

Do both fans run?

NO

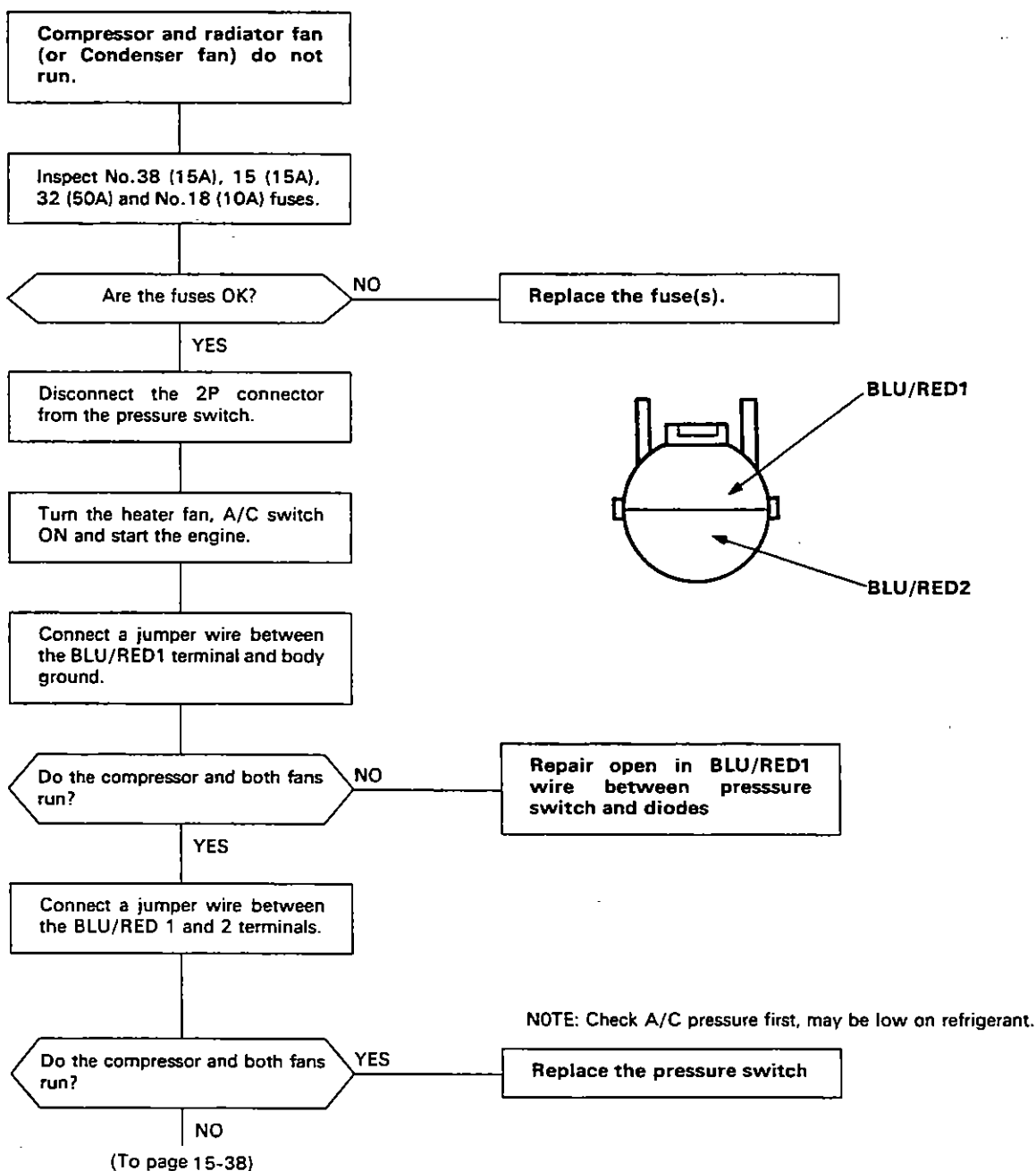
Repair open in GRN wire between the heater fan switch and A/C switch.

YES

Repair open in BLK wire between the heater fan switch and ground or poor ground (G201).



Flow Chart: Compressor And Either Fan



(cont'd)

Troubleshooting

Flow Chart : Compressor And Either Fan (cont'd)

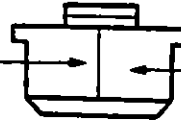
(From page 15-37)

Reconnect the 2P connector to the pressure switch.

Disconnect the 2P connector from the thermostat switch.

Connect a jumper wire between the BLU/RED2 terminal and body ground.

BLU/RED3



BLU/RED2

View from wire side

Do the compressor and both fans run?

NO

Repair open in BLU/RED2 wire between pressure and thermostat switches.

YES

Connect a jumper wire between the BLU/RED2 and 3 terminals.

Do the compressor and both fans run?

YES

Replace the thermostat switch.

NO

Turn the ignition switch OFF

Reconnect the 2P connector to the thermostat switch.

Disconnect the 5P connector from the A/C switch.

(To page 15-39)



(From page 15-38)

Connect a jumper wire between the BLU/RED3 terminal and body ground.

Start the engine.

Do the compressor and both fans run?

NO



BLU/RED3

Repair open in BLU/RED3 wire between the thermostat and A/C switch.

YES

Connect a jumper wire between the BLU/RED and GRN terminals.

Do the compressor and both fans run?

YES

Inspect the A/C switch.
page 15-61.

NO

Is the A/C switch OK?

NO

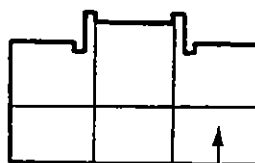
Replace the A/C switch.

YES

Reconnect the 5P connector to the A/C switch and turn A/C switch ON.

Disconnect the 6P connector from the fan switch.

Connect a jumper wire between the GRN terminal and body ground.



GRN

View from wire side

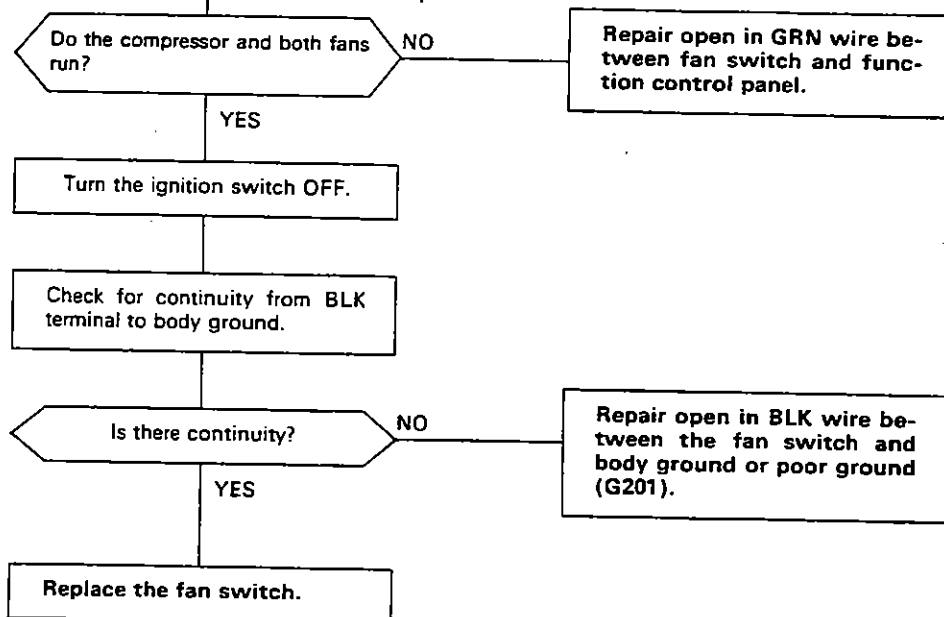
(To page 15-40)

(cont'd)

Troubleshooting

Flow Chart : Compressor And Either Fan (cont'd)

(From page 15-39)





CAUTION:

1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil after replacing the following parts:

Condenser10 cc (1/3 fl oz)

Evaporator30 cc (1 fl oz)

Line or hose10 cc (1/3 fl oz)

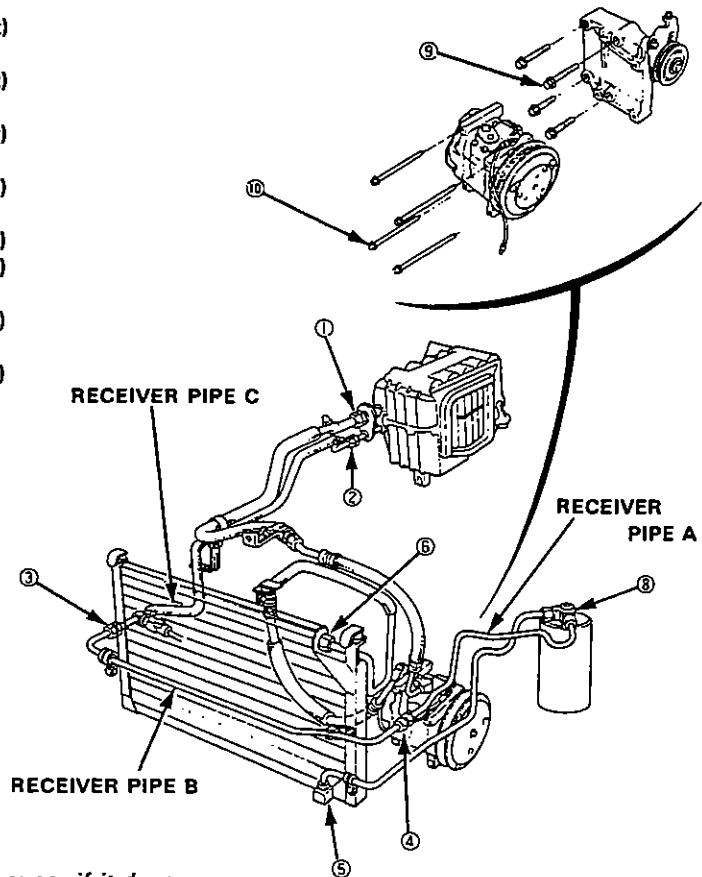
Receiver10 cc (1/3 fl oz)

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 side32 N·m (3.2 kg-m, 23 lb-ft)
- ② Receiver pipe C
evaporator side17 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
Condenser17 N·m (1.7 kg-m, 12 lb-ft)
- ⑥ Discharge hose to
Condenser22 N·m (2.3 kg-m, 16 lb-ft)
- ⑦ Compressor hose
mounting bolts30 N·m (3.0 kg-m, 22 lb-ft)
- ⑧ Receiver tank17 N·m (1.7 kg-m, 12 lb-ft)
- ⑨ Compressor bracket
mounting bolts48 N·m (4.8 kg-m, 35 lb-ft)
- ⑩ Compressor mounting
bolts25 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

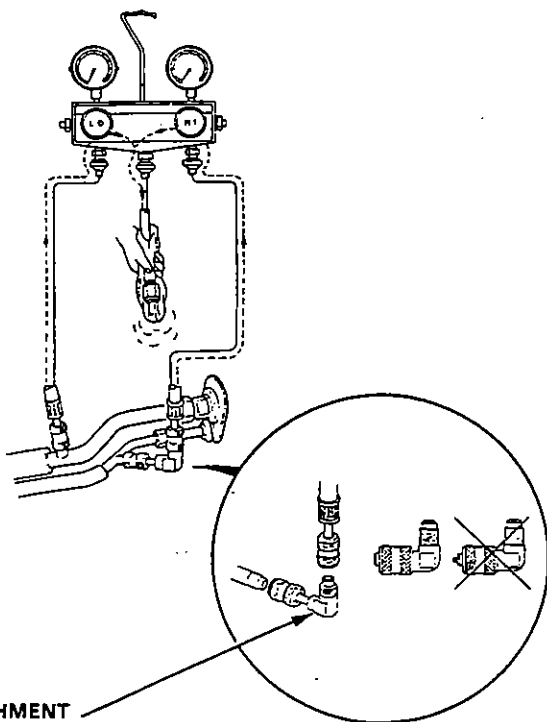
WARNING

- 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 refrigerant.

CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.

4. After the high pressure gauge reading has dropped below 1000 kPa (142 psi), open the low side valve to discharge both high and low sides of the system.
5. Note the gauge readings and, as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 psi).



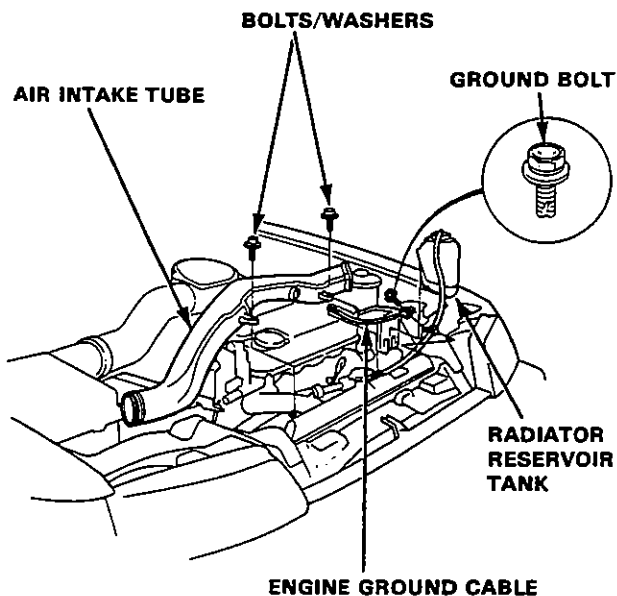
ATTACHMENT (COMMERCIALLY AVAILABLE)

NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

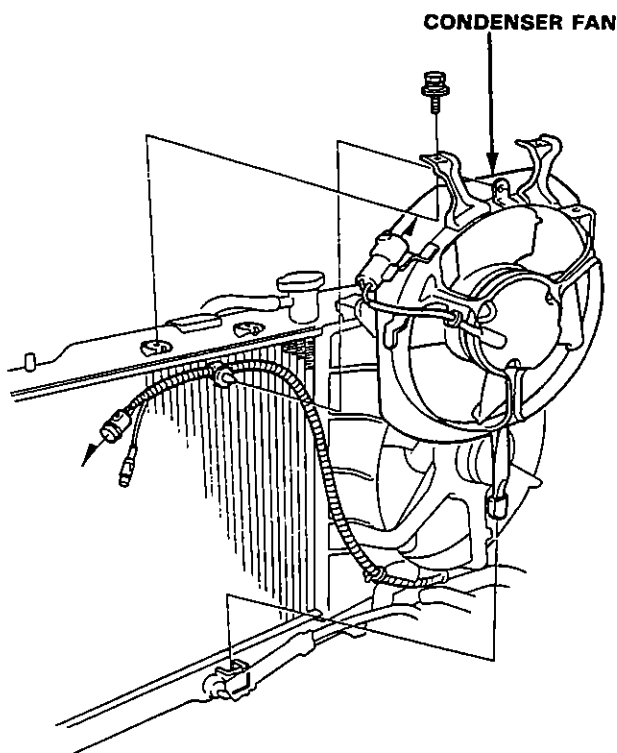
Condenser

Replacement

1. Discharge the refrigerant.
2. Disconnect the engine ground cable.
3. Remove the radiator reservoir tank and the air intake tube.

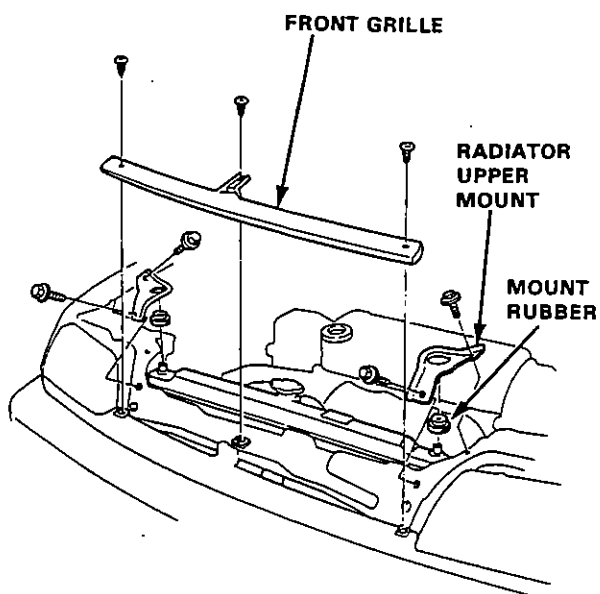


4. Remove the condenser fan with the two bolts.

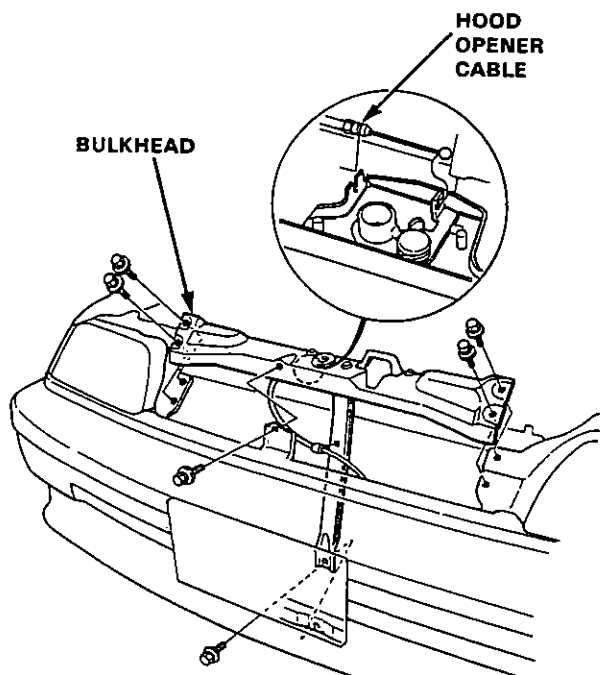




5. Remove the front grille with three screws and radiator upper mounts with two bolts each.

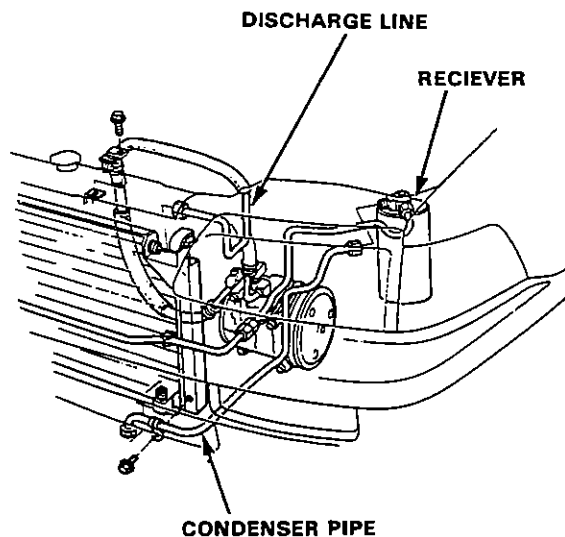


6. Remove the front bulkhead with six bolts, then remove the hood opener cable.

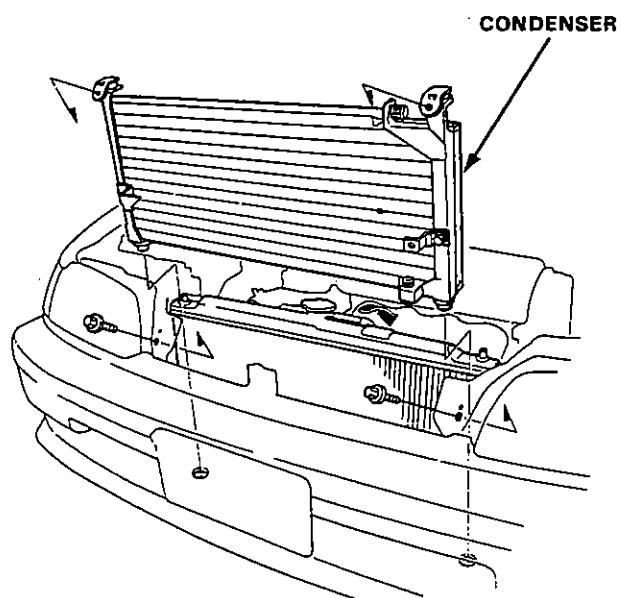


7. Disconnect the condenser pipe and discharge pipe from the condenser.

CAUTION: Cap the open fittings immediately to keep moisture and dirt out of system.



8. Remove the mounting bolts (2) and condenser.



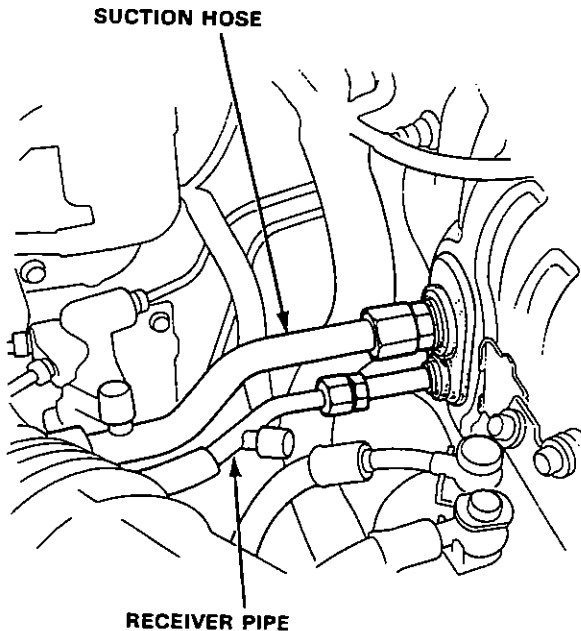
9. Install in the reverse order of removal, charge the system (page 15-56) and test performance (page 15-59).

Evaporator

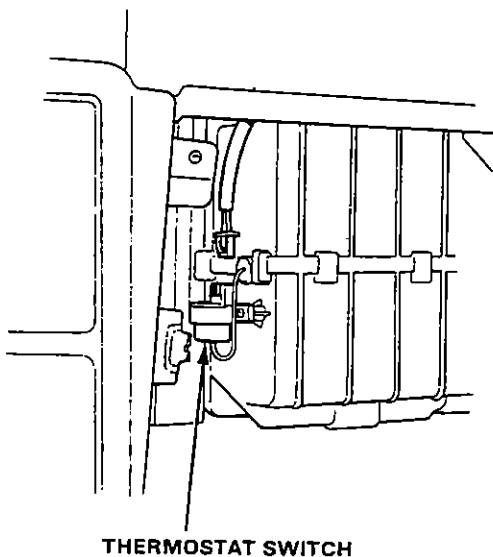
Replacement

1. Disconnect the battery negative terminal.
2. Discharge the refrigerant (page 15-42).
3. Disconnect the receiver line and suction hose from the evaporator.

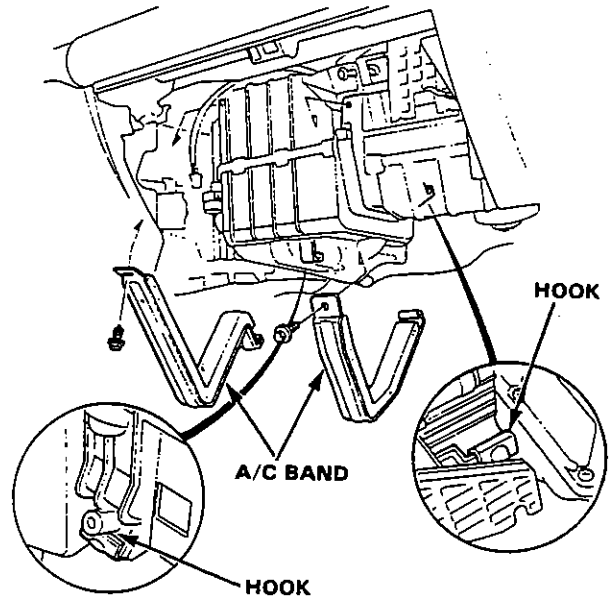
CAUTION: Cap the open fittings immediately to keep moisture out of the system.



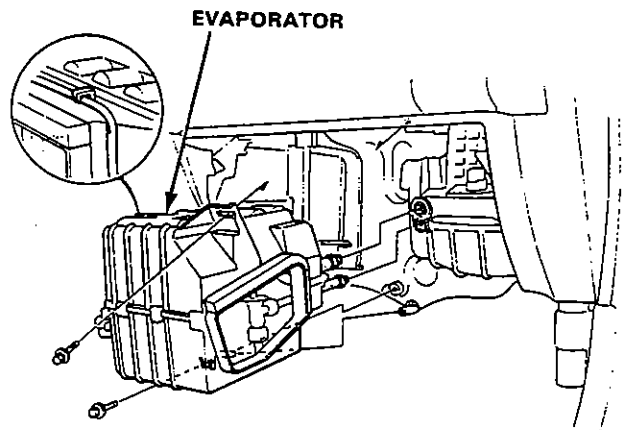
4. Remove the glove box (section 14).
5. Disconnect the connector from the thermostat switch and pull off the wire harness from the clamps.



6. Remove the tapping screws (2) and A/C bands.



7. Remove the mounting bolts (2) and evaporator.



8. Install in the reverse order of removal, and:

- Apply a sealant to the grommets.
- Make sure that there is no air leakage.
- Charge the system (page 15-56) and test performance (page 15-59).

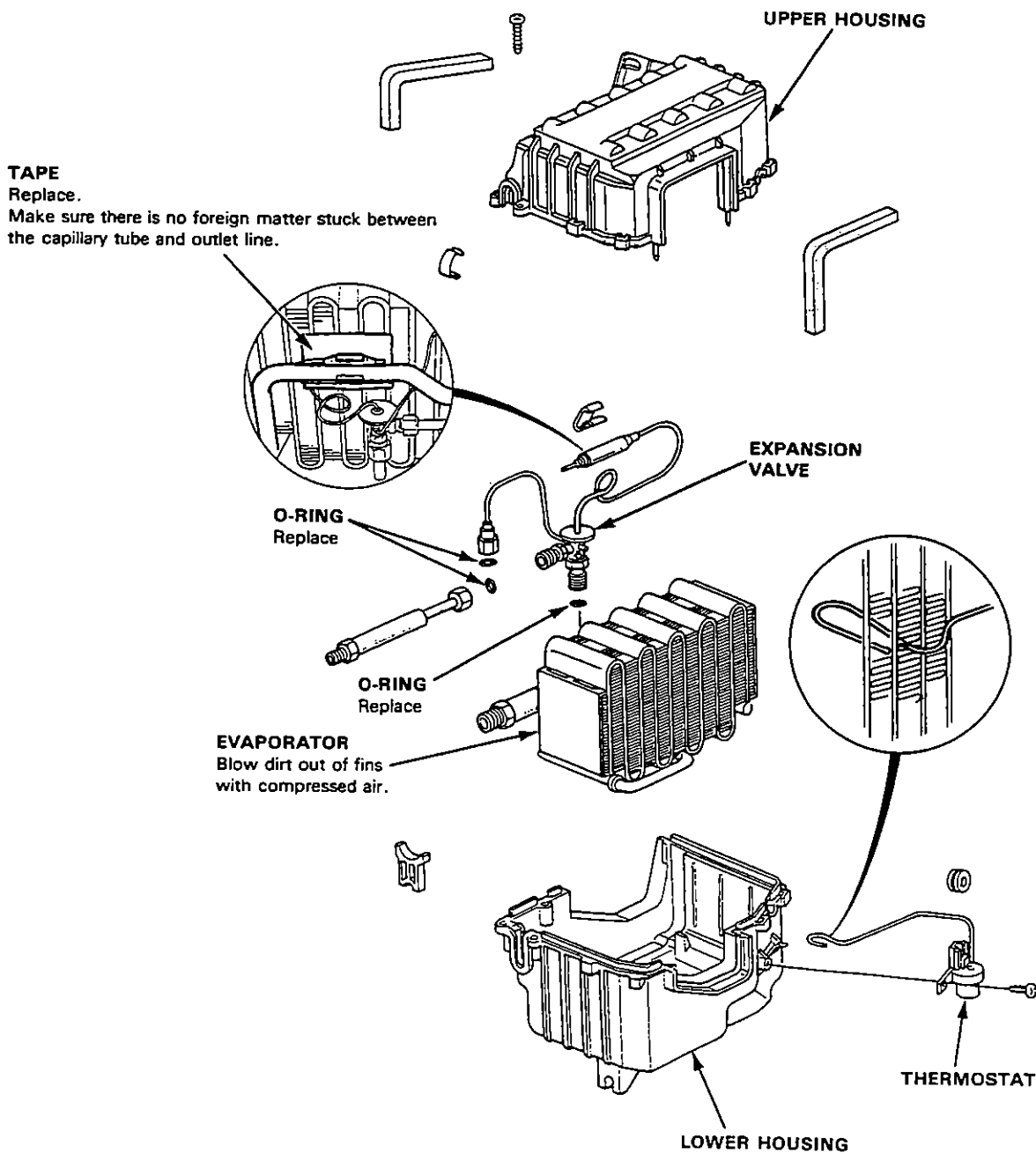


Overhaul

1. Pull out the evaporator sensor from the evaporator fins.
2. Remove the tapping screws and clips from the housing.
3. Carefully separate the housings and remove the evaporator covers.
4. Remove the expansion valve if necessary.

Assemble the evaporator in the reverse order of disassembly, and:

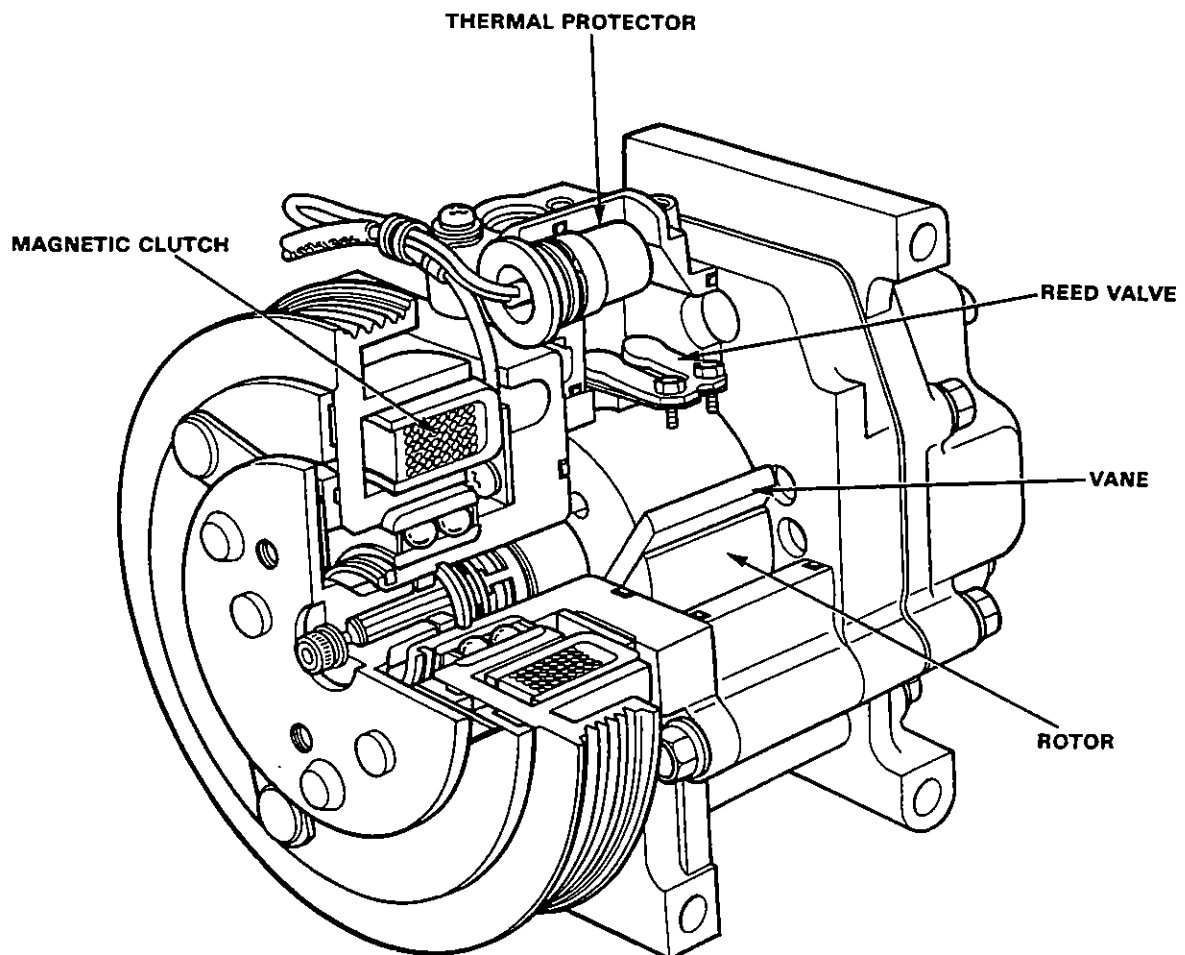
- Install the expansion valve capillary tube against the suction line, and wrap it with tape.
- Reinstall the evaporator sensor in its original location.



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.





Troubleshooting

NOTE: Performance Test on page 15-59.

TEST RESULTS	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system; then recharge Evacuation: page 15-56 Recharging: 15-58
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as required
	Reduced or no air flow through condenser.	• Clogged condenser or radiator 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
	Outlet of expansion valve is not frosted, low pressure gauge indicates vacuum	• Faulty expansion valve	Repair or Replace
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	Insufficient refrigerant • Frozen expansion valve • Faulty expansion valve	Check for leaks. Charge as required. Replace expansion valve
	Discharge temperature is low and the air flow from vents is restricted	Frozen evaporator	Run the fan with compressor off then check the thermostat and capillary tube.
	Expansion valve frosted	Clogged expansion valve	Clean or Replace
	Receiver dryer is cool (should be warm during operation)	Clogged receiver dryer	Replace
Suction pressure abnormally high	Low pressure hose and check joint are cooler than around evaporator	• Expansion valve open too long • Loose expansion valve	Repair or Replace
	Suction pressure is lowered when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary
	High and low pressure are equalized as soon as the compressor is stopped	• Faulty gasket • Faulty high pressure valve • Foreign particle stuck in high pressure valve	Replace compressor
Suction and discharge pressures abnormally high	Reduced air flow through condenser	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean condenser and radiator • Check voltage and fan rpm
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary.
Suction and discharge pressure abnormally low	Low pressure hose and metal end areas are cooler than evaporator	Clogged or kinked low pressure hose parts	Repair or Replace
	Temperature around expansion valve is too low compared with that around receiver-driver.	Clogged high pressure line	Repair or Replace
Refrigerant leaks	Compressor clutch is dirty	Compressor shaft seal leaking	Replace compressor shaft seal
	Compressor bolt(s) are dirty	Leaking around bolt(s)	Replace compressor
	Compressor gasket is wet with oil	Gasket leaking	Replace compressor

Compressor

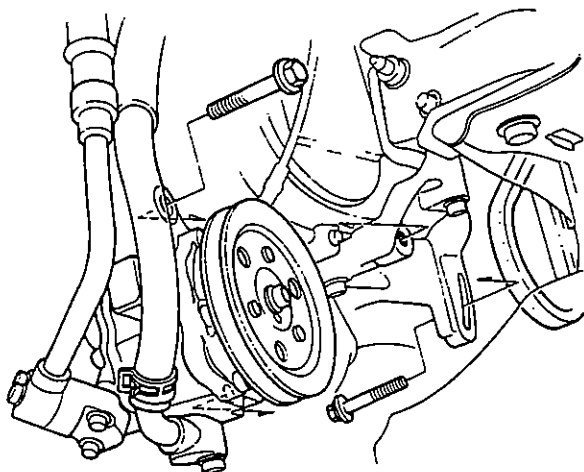
Replacement

1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.

2. Discharge the refrigerant very slowly from the system (page 15-42).

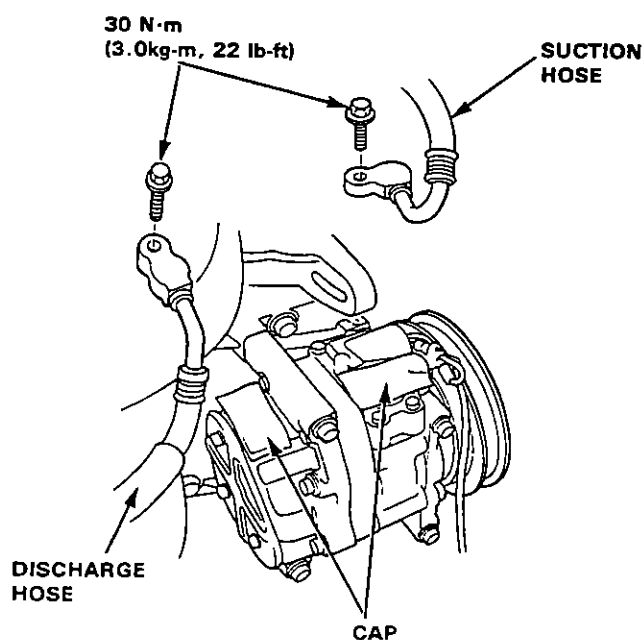
With power steering:

3. Remove the mounting bolts (2) the power steering pump belt, and the power steering pump.

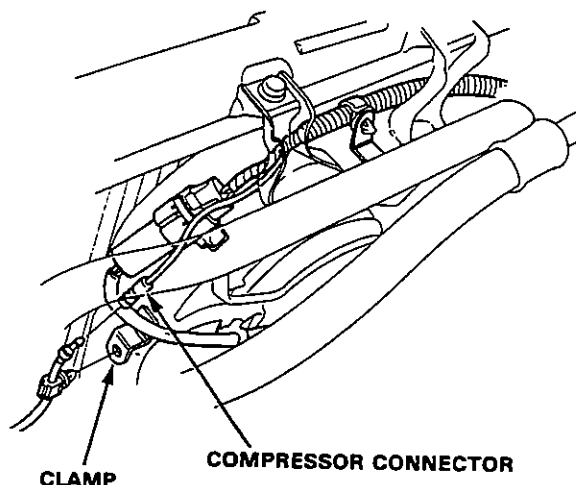


4. Disconnect the suction and discharge hoses from the compressor.

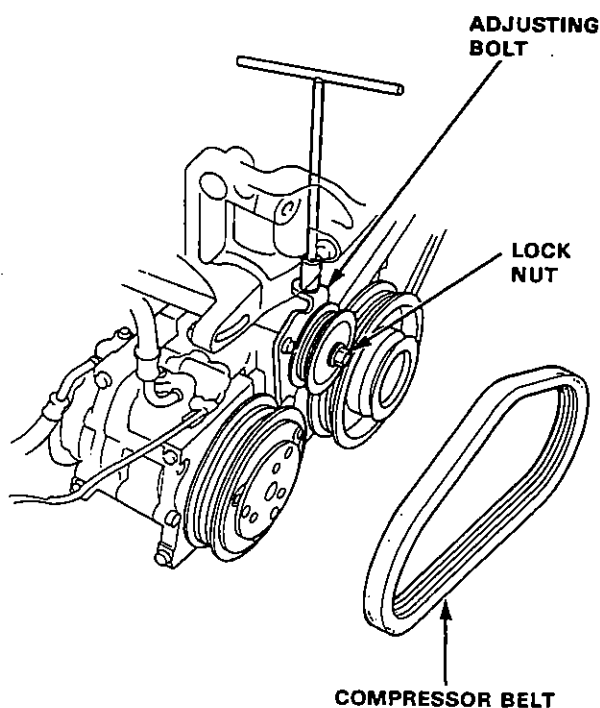
CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.



5. Disconnect the compressor connector and the clamp.

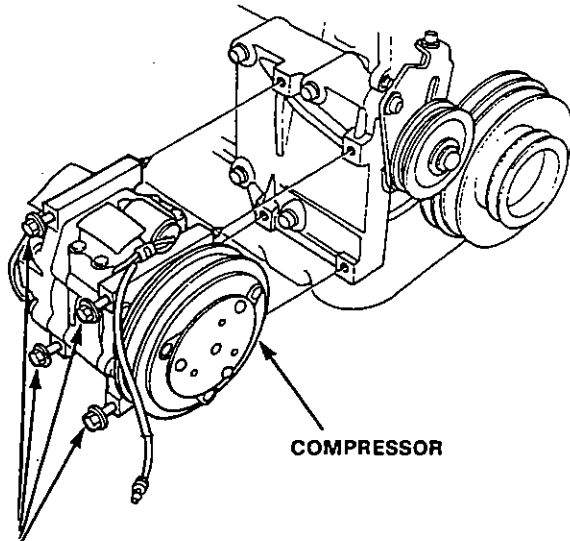


6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.





7. Remove the compressor mounting bolts (4) and compressor. Rest the compressor on the front beam.

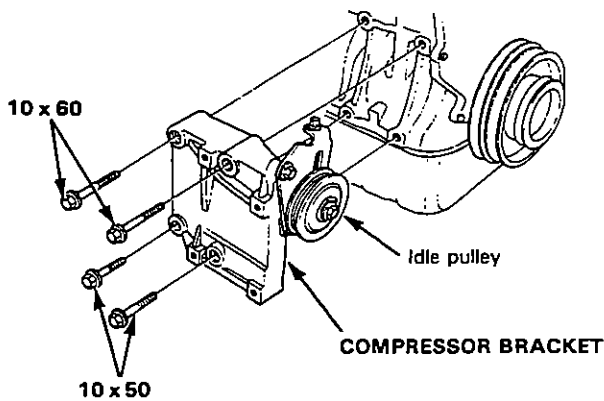


COMPRESSOR MOUNTING BOLTS
25 N·m
(2.5kg-m, 18 lb-ft)

8. Remove the mounting bolts (4) and compressor bracket with idle pulley.

ALL TORQUE:

48 N·m (4.8kg-m, 35 lb-ft)



9. Remove the compressor.

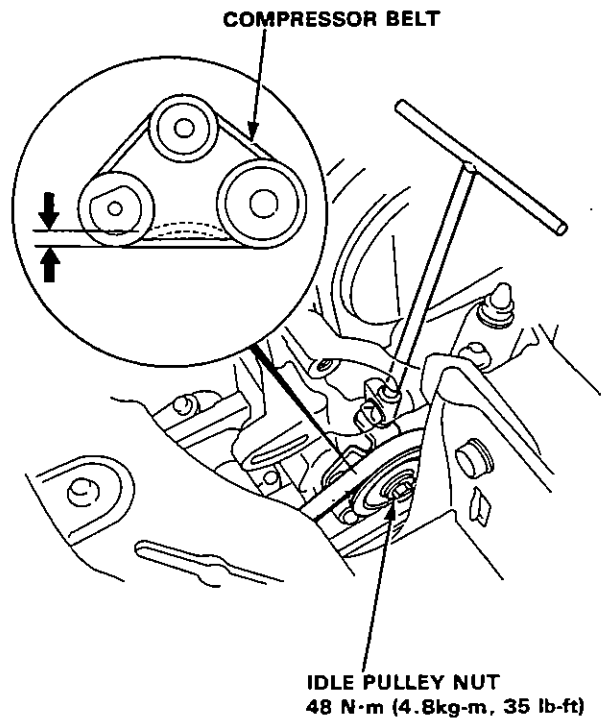
10. Install in the reverse order of removal and:

- If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
150 cc (5fl oz,) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the compressor belt.

NOTE: Measure the deflection when 98 N (10 kg, 22 lb) force is applied between the pulleys.

Compressor belt Adjustemnt.
9—11 mm (0.35—0.43 in)

{ 7—9 mm (0.28—0.35 in) when new belt is intalled }



IDLE PULLEY NUT
48 N·m (4.8kg-m, 35 lb-ft)

- Charge the system (page 15-56).
- Test the performance (page 15-59).

(cont'd)

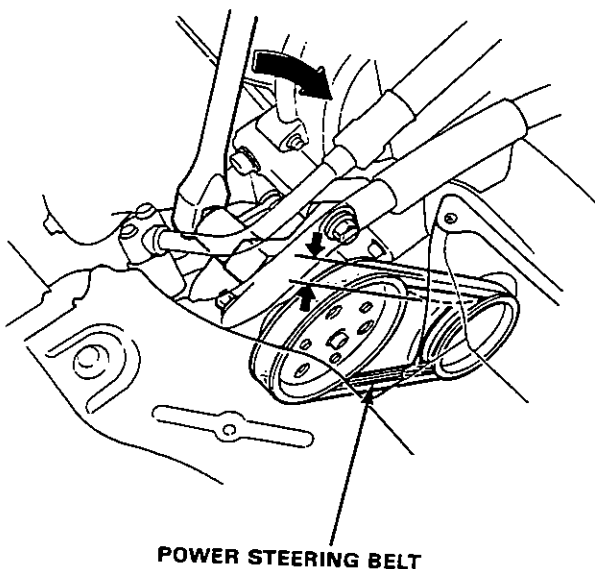
Compressor

Replacement (cont'd)

11. With power steering:

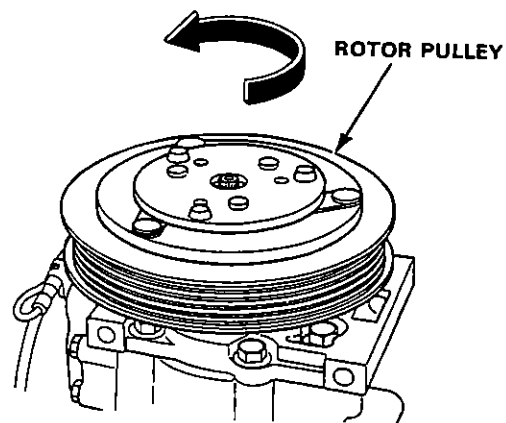
Power steering belt adjustment.
9—12 mm (0.35—0.47 in)

(7—10 mm (0.28—0.39 in) when new
belt is intalled)



Clutch Inspection

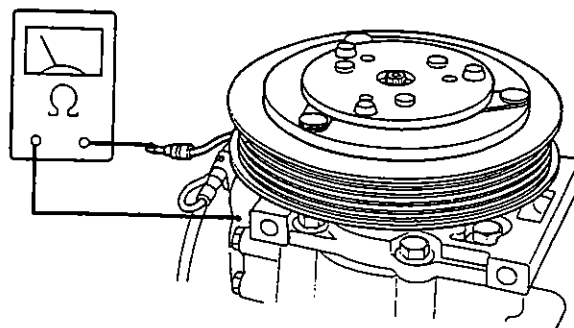
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.



- Check resistance of the field coil:

Field Coil Resistance: 3.33 ± 0.17 ohm at
20°C (68°F)

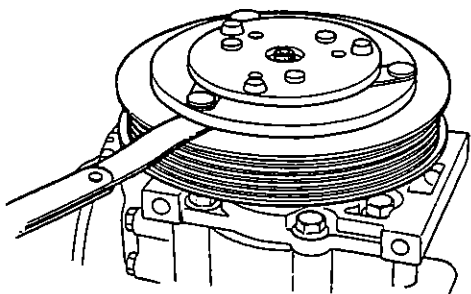
If resistance is not within specifications, replace the coil.



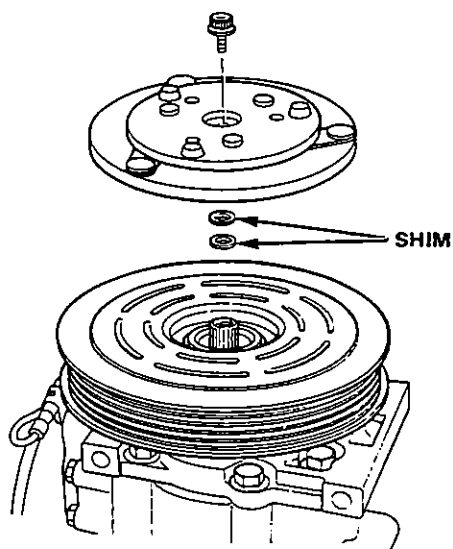


- Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

CREARANCE: 0.4—0.6 mm (0.016—0.024 in)

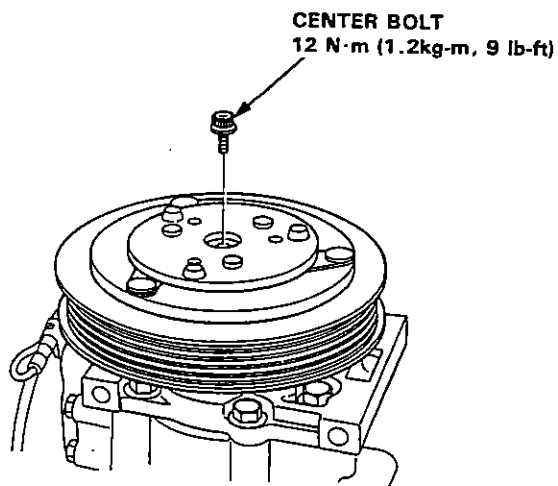


NOTE: The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

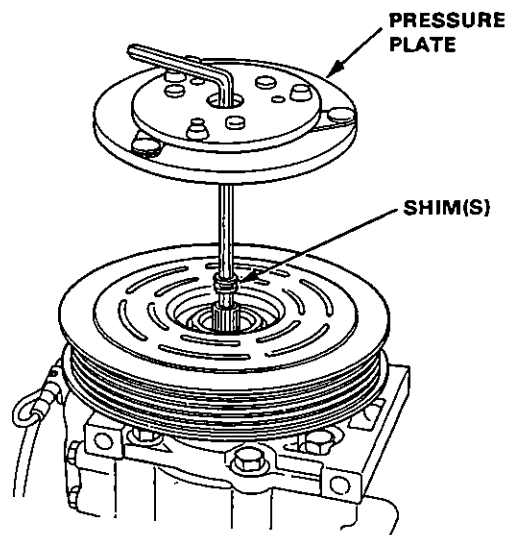


Clutch Overhaul

1. Remove the center bolt and washers.



2. Remove the pressure plate and shim(s) taking care not to lose the shims.

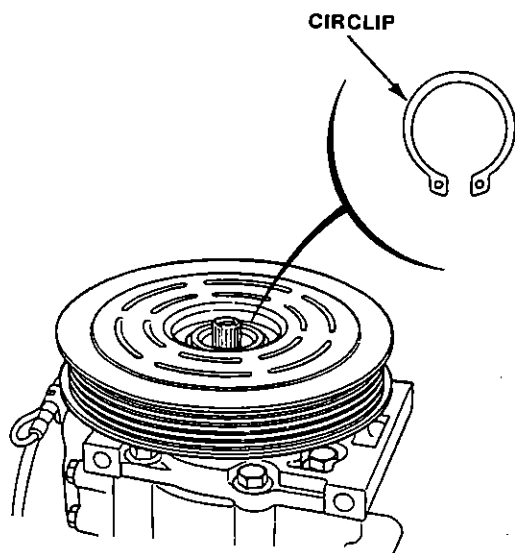


(cont'd)

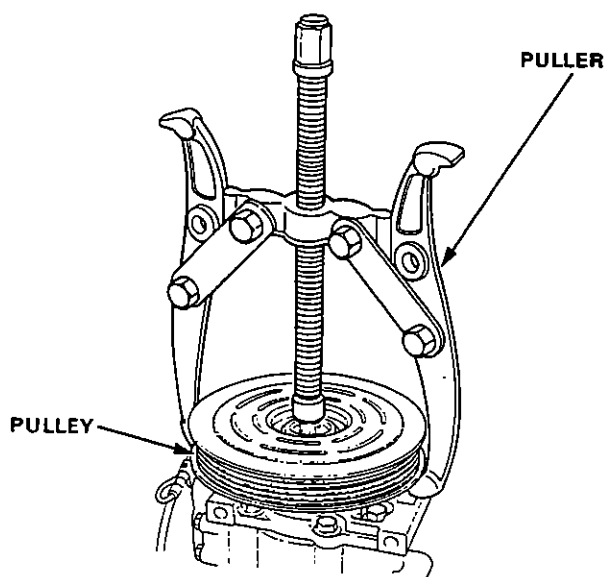
Compressor

Clutch Overhaul (cont'd)

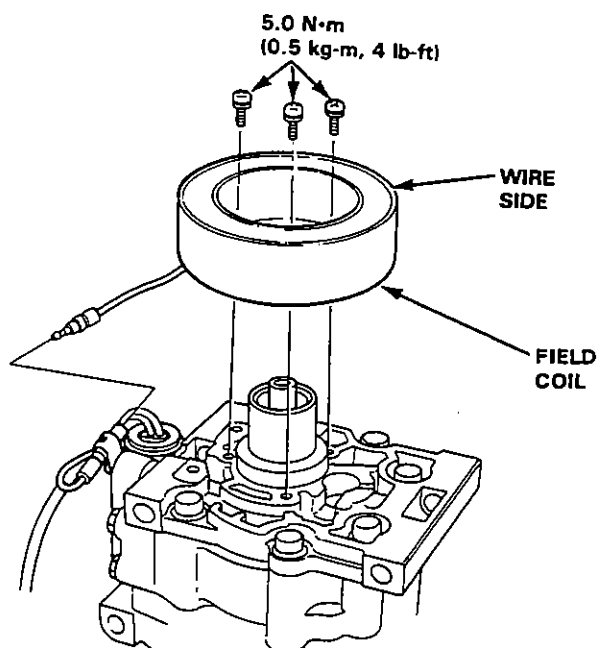
3. Use circlip pliers to remove the circlip.



4. Remove the pulley from the shaft using a 2 or 3 jaw puller.
5. Check the pulley, replace the assembly if the pulley is damaged or deformed.



6. Disconnect the field coil connector and remove the screws (3) and field coil.

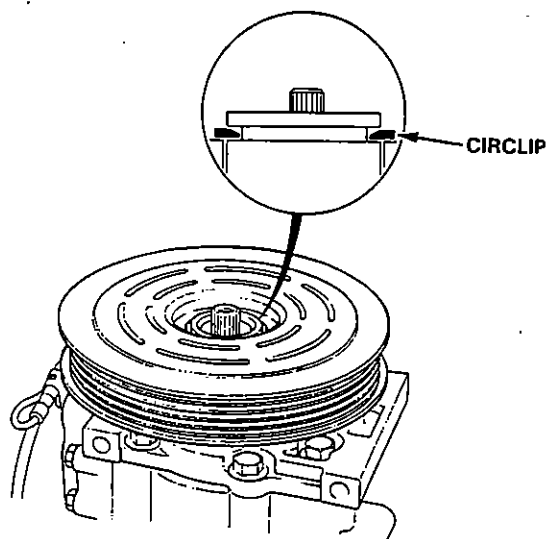


7. Install in the reverse order of removal and:

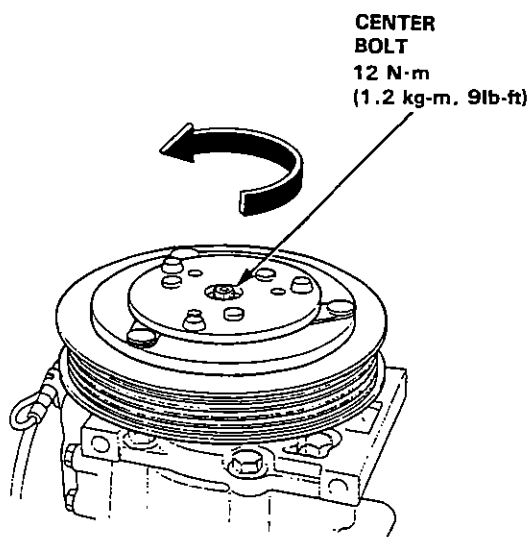
- Install the field coil with the wire side facing up (see above).
- Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
- Check the pulley bearings for excessive play.



- Make sure the circlip is fitted to the groove properly.



- Apply locking agent to the thread of the center bolt and tighten it securely.
- Make sure that the pulley turns smoothly.

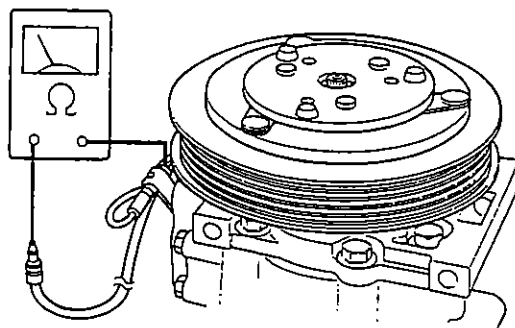


Thermal Protector Inspection

Check for continuity between the 1 and 3 terminals of the compressor connector.

There should be continuity.

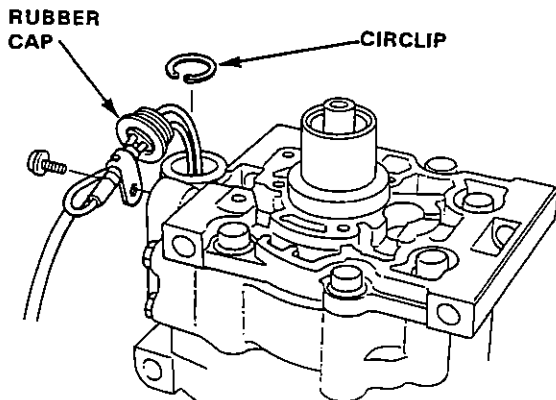
- If no continuity, replace the thermal protector (page 15-54).



Compressor

Thermal Protector Replacement

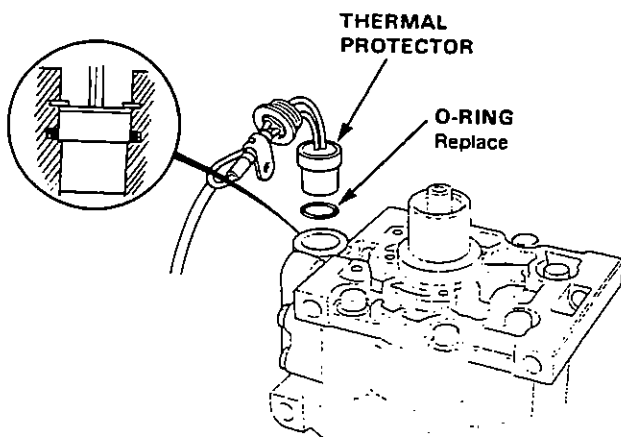
1. Remove the pressure plate and field coil (page 15-51).
2. Pull the rubber cap out from the thermal protector.
3. Remove the screws and wire clips.
4. Remove the circlip and thermal protector.



5. Install in the reverse order of removal

NOTE:

- Replace the O-rings with new ones.
- Set the new O-rings in place as shown.



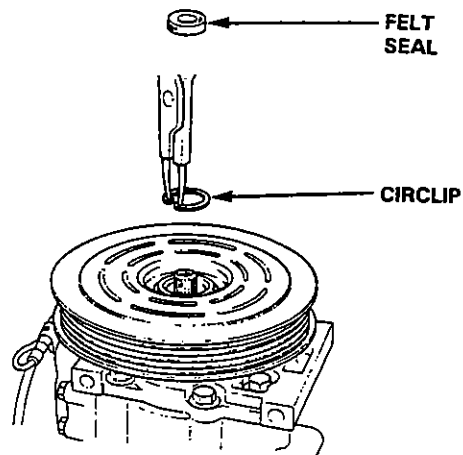
Shaft Seal Replacement

NOTE: Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate (page 15-51).

NOTE: Removal of the clutch pulley and coil is not necessary.

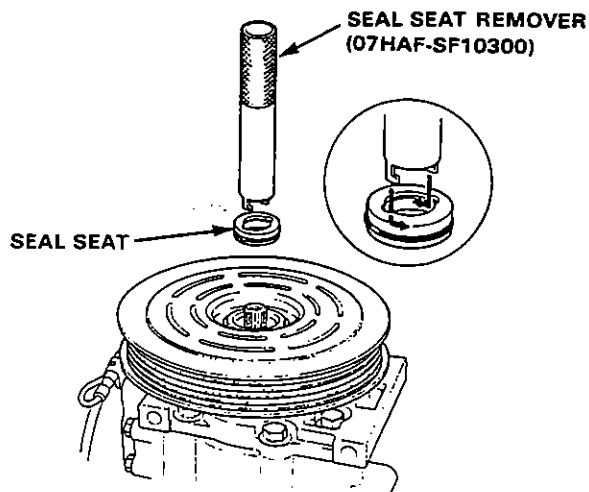
2. Remove the felt seal and circlip.



3. Remove the shim(s).

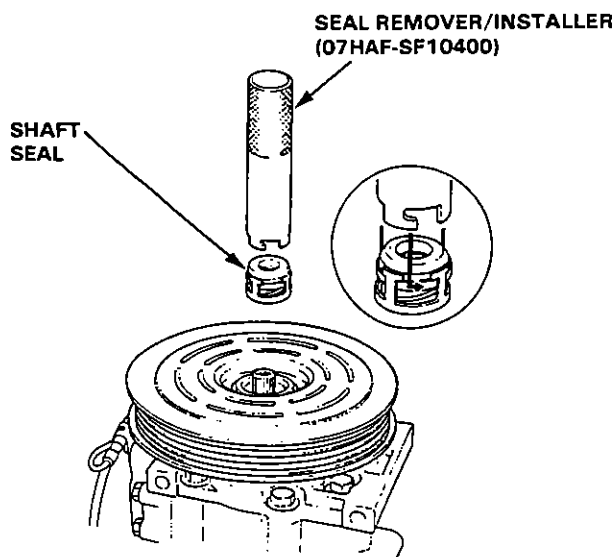
NOTE: After removing, place shim(s) safely in a parts rack.

4. Insert the Special tool into the compressor aligning the cutout of the remover with the groove of the seal seat.
5. Rotate the Special tool counterclockwise to make sure that the cutout is engaged with the seal seat.
6. Pull out the seal seat.





7. Insert the special tool into the compressor aligning the cutout of the remover with the metal pawl of the seal case.
8. Rotate the special tool counter clock wise to make sure that the cutout is engaged with the metal pawl.



9. Withdraw the remover.
10. Lay down the compressor and clean the shaft seal contacting face of the compressor with cleaning solvent.

CAUTION:

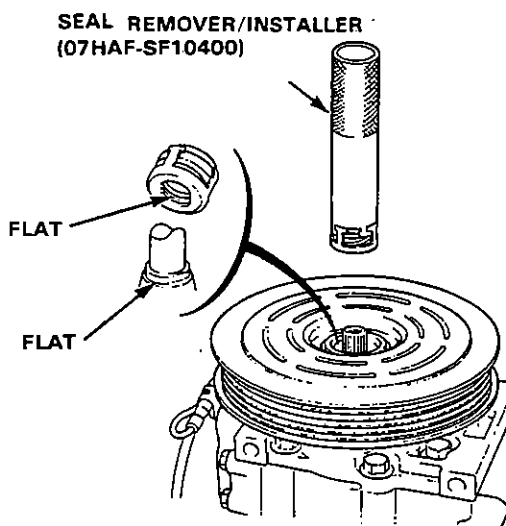
- Keep the cleaning solvent and dirt out of the compressor.
- Do not use any cloth for cleaning, clean only by rinsing with solvent.
- Do not spill the refrigerant oil from the compressor. Refill the same amount of the oil if the oil is spilled out.

11. Clean the new shaft seal thoroughly with cleaning solvent.
12. Lubricate the shaft seal with refrigerant oil (SUNISO 5GS or equivalent) and install it on the shaft seal remover.

NOTE:

- Use only clean refrigerant oil.
- Do not touch the sealing surfaces of the shaft seal after lubricating.

13. Liberally lubricate the compressor shaft with refrigerant oil.
14. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.



15. Clean the seal seat with cleaning solvent, then lubricate the seal seat with refrigerant oil (SUNISO 5GS or equivalent).

NOTE:

- Use only clean refrigerant oil.
- Do not touch the sealing surface of the seal plate after lubricated.

16. First slide the seal seat into the compressor by hand as far as possible.
17. Press the seal seat with the grip side of the remover.
18. Install the circlip with its chamfered edge inside.
19. Press the circlip with the grip side of the remover, then install the felt seal.
20. Install the shim(s).
21. Install the pressure plate. Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within the specified limits, (0.3—0.45 mm (0.012—0.018 in)) shims must be added or removed as required.

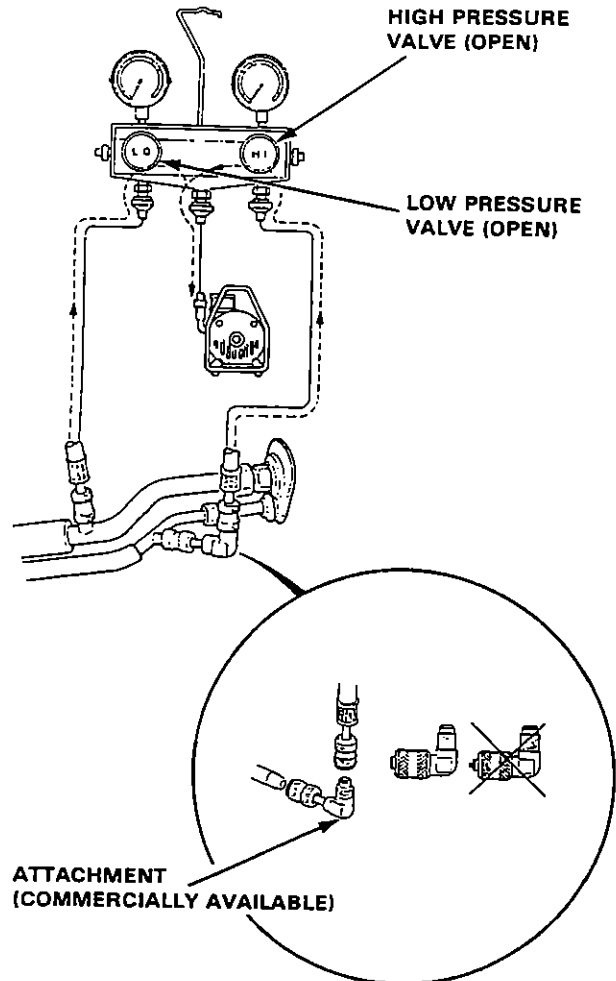
System Charging

System Evacuation

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).
2. Attach a gauge set and pump as shown, connecting the center charging hose to the pump inlet.
3. Start the pump, then open both gauge valves. Run the pump for about 15 minutes. Close the valves and stop the pump. The low gauge should indicate above 700 mm Hg (27 in-Hg) and remain steady with the valves closed.

NOTE: If low pressure does not reach more than 700 mm Hg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test below).

4. If there are no leaks open the valves and continue pumping for at least another 15 minutes, then close both valves, stop the pump and disconnect it from the center charging hose.



NOTE: Set the attachment to the gauge hose at high pressure side, then install the gauge set as shown.

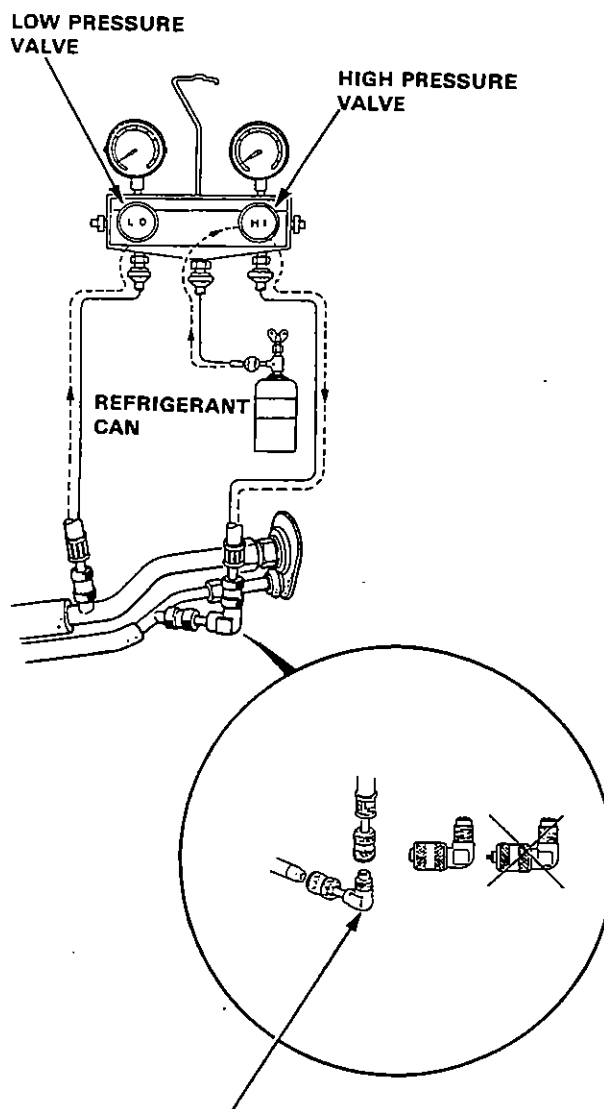


Leak Test

WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
 - Do not rub your eyes or skin.
 - Splash large quantities of cool water in your eyes or on your skin.
 - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.
- Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.

1. Attach a refrigerant supply and gauge set as shown, with all valves closed. Then open the refrigerant supply valve on the can.
2. Loosen the center charging hose fitting at the gauge to purge any air from the hose, until it hisses for a few seconds, then tighten it again.
3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.
4. Check the system for leaks using a leak detector.
5. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system according to the Discharge Procedure on page 15-42.
6. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 15-56).



**ATTACHMENT
(COMMERCIALLY AVAILABLE)**

NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown.

System Charging

Charging Procedures

WARNING Always wear eye protection when charging the system.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect a gauge set and refrigerant can (right side up) as shown, with the gauge valves closed. Purge air from the charging hose by opening the refrigerant valve, then loosening the center connector at the gauge, letting it hiss for a few seconds, and retighten it.
2. Open the high gauge valve and charge with approximately 300 g (10.5 oz) of refrigerant.

WARNING Do not start the engine with high gauge valve open.

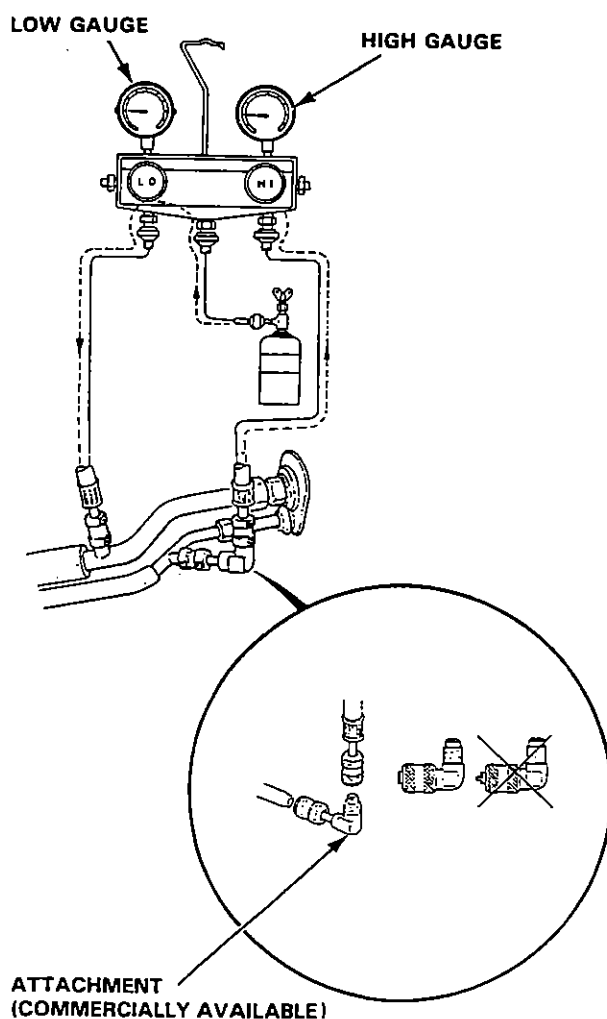
NOTE:

- Be sure to charge with 300 g (10.5 oz) refrigerant. If low, the vane in the compressor (if new compressor is installed) will not operate.
 - Do not open the low gauge valve.
3. After charging with 300 g (10.5 oz) refrigerant, close the high gauge valve.
 4. Start the engine and turn on the A/C switch and heater fan switch and turn the air mix lever to "COLD."
 5. Run the engine at 1500–2000 rpm, and check that the low gauge pressure suddenly drops.
 6. If the low pressure does not drop:
 - (a) Raise the engine speed to 2500 rpm and turn the A/C switch ON and OFF.
If the low pressure does not drop, turn the ignition switch OFF and wait for 1–2 minutes, then restart the engine and raise to 2500 rpm and turn the A/C switch ON and OFF.
 - (b) If the low pressure still does not drop, stop the engine and close the low gauge valve and recharge with additional 100 g (3.5 oz) of refrigerant. Repeat step (a).
 - (c) If the low pressure does not drop after repeating the procedure in step (a) several times. Stop the engine and re-evacuate and repeat steps 1 thru 6.

7. Open the low gauge valve and charge refrigerant with the engine running at 2,500 rpm.

WARNING Do not open the high gauge valve and keep the refrigerant can right side-up.

8. Charge the system with 850–950 g (29–34 oz) of refrigerant until sight glass is free of any bubbles, indicating a full charge.
9. When fully charged, close the gauge valves, then the valve on the can. Slowly disconnect the refrigerant hose from the center gauge connection to allow excess refrigerant to escape. Quickly remove the gauges from the system to minimize refrigerant loss.



NOTE: Set the attachment to the gauge hose at high pressure side first, then install the gauge set as shown. When disconnecting the gauge hose at high pressure side, remove the attachment from the high pressure charging valve.

Test

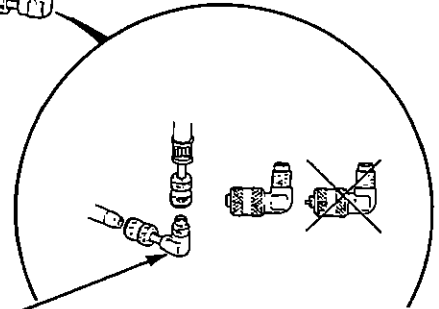
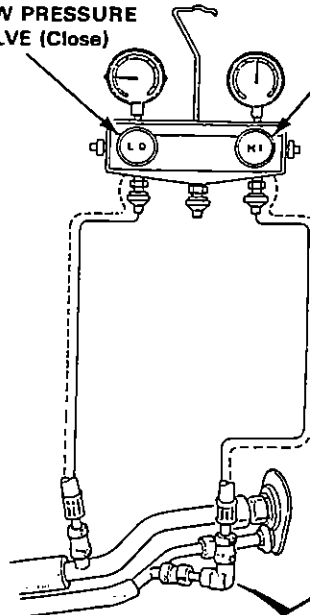


Performance Test

The performance test will help determine if the air conditioning system is operating within specifications.

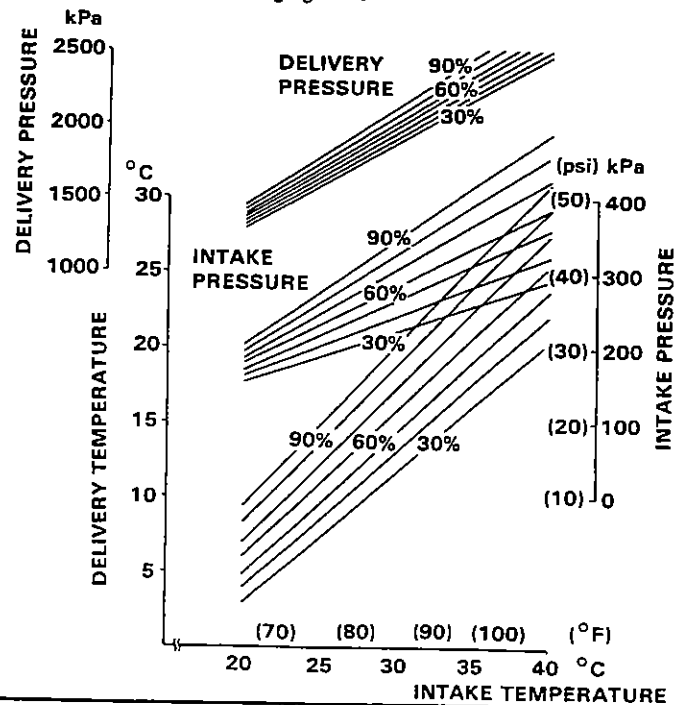
1. Connect the gauges as shown.
2. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.
3. Test conditions:
 - Avoid direct sunlight.
 - Open engine hood.
 - Open front doors.
 - Set the 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.

LOW PRESSURE VALVE (Close) HIGH PRESSURE VALVE (Close)



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.



Test

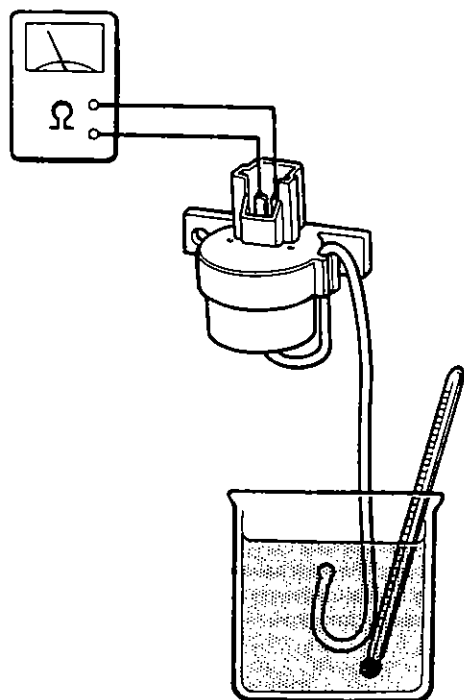
Thermostat Switch

Dip the evaporator sensor into a pan filled with ice water, and check for continuity between the terminals.

Cut off 1.5—0.5°C (35—33°F)

Cut in 2.5—5°C (36—41°F)

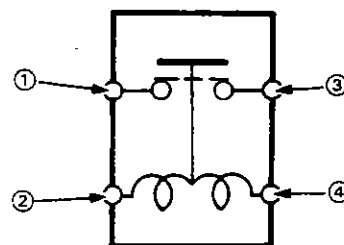
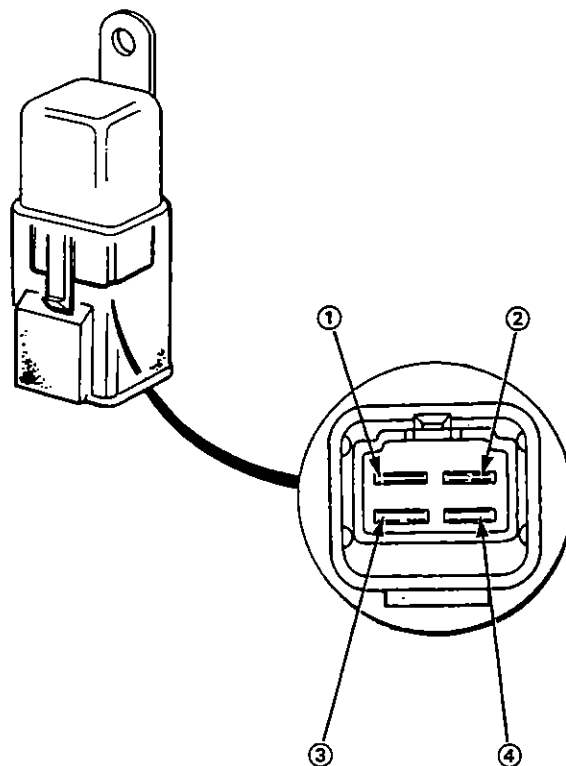
If cut off or cut in temperature is too low or too high, replace the thermostat switch.



Relay

NOTE: All A/C system relays are similar.

1. Check for continuity between terminals ① and ③.
2. Connect a 12 V battery across terminals ② and ④. There should be continuity between terminals ① and ③.

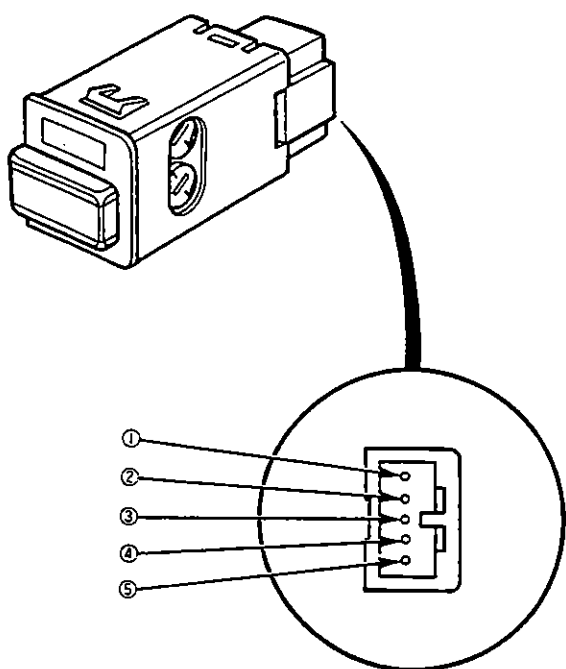


Test

- A/C Switch -

Check for continuity between the terminals according to the table.

Terminal No. Position	①	②	③	④	⑤
OFF	○	○	○	○	○
ON	○	○	○	○	○



Electrical

How to Use This Section

Special Tool	16-2
Troubleshooting Precautions.....	16-2
What the Symbols Mean	16-3
Wire Color Codes	16-3
Relays and Control Unit	
Locations	16-4

Index to Circuits and Systems

Air Conditioner	Section 15
Alternator	16-58
Battery	16-28
Blower Controls	Section 15
Charging System	16-55
Cigarette Lighter.....	16-120
Clock	16-119
Cooling Fan System	16-65
Defogger, Rear Window.....	16-128
Distributor.....	16-48
Fuel Pump	Section 6
Fuses	
Main Fuse Box	16-17
Dash Fuse Box	16-18
Gauges	
Circuit Diagram	16-70
Coolant Temperature	
Gauge	16-80
Fuel Gauge	16-78
Speedometer	16-69
Tachometer.....	16-69
Grounds	
Distribution	16-24
Locations	16-8
Heater Controls.....	Section 15
Horns	16-123
Ignition Switch	16-30
Ignition System	16-45
Ignition Timing Control	16-47
Indicator	
High Beam Indicator	16-71
Turn Signal Indicator	16-71
Integrated Control Unit	16-81

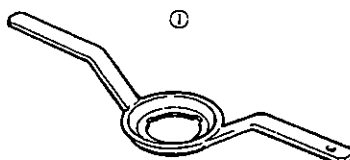
Lights, Exterior	
Back-up Lights	16-106
Brake Lights	16-108
Hazard Lights	16-110
Headlights	16-102
Rear Fog Light	16-107
Taillights	16-103
Turn Signal Lights	16-109
Lights, Interior	
Dashlight Brightness	
Control	16-113
Dome Light.....	16-104
Trunk Light	16-105
Lighting System	16-94
Mirrors, Power	16-124
PGM-FI System	Section 6
Power Distribution.....	16-20
Relay Locations	16-4
Seat Heaters	16-147
Spark Plugs	16-54
Starting System	16-32
Stereo Sound System	16-115
Sunroof	16-134
Turn Signal/Hazard	
Flasher System	16-109
Warning System	
Brake Warning Light	16-92
Charge Warning Light	16-57
Check Engine Warning Light	Section 6
Choke Warning	Section 6
Hazard Warning Light.....	16-110
Oil Pressure Warning Light	16-91
Seat Belt Beeper/	
Reminder Light.....	16-91
Washer	
Headlights	16-152
Rear Window	16-152
Windshield	16-152
Windows, Power	16-140
Wipers	
Rear Window	16-152
Windshield	16-152
Wires and Harnesses	
Wire Color Codes.....	16-3
Ground and Wire Harness	
Routing	16-8
Wiring Diagrams.....	16-163



Special Tool/Troubleshooting

Special Tool

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



Troubleshooting Precautions

Before Troubleshooting

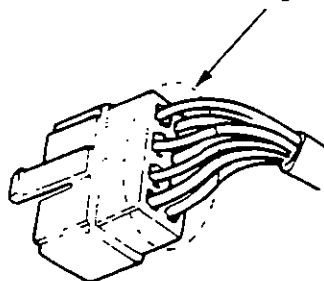
- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

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).
Pack with grease

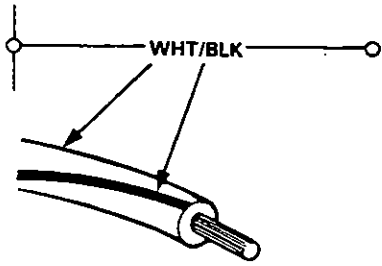


CAUTION:

- 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.

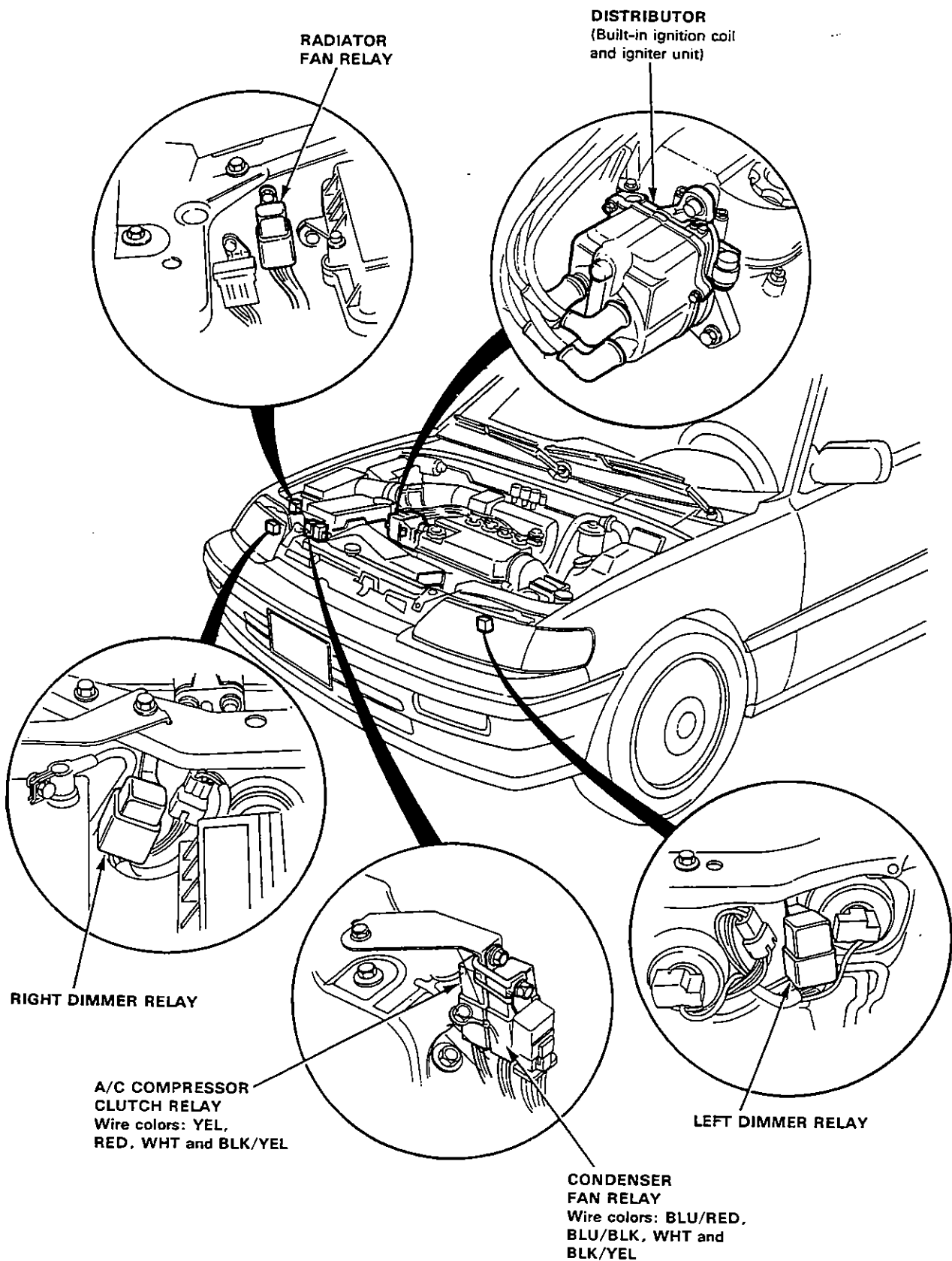


Schematic Symbols

Schematic Symbols					
BATTERY	GROUND		FUSE	COIL, SOLENOID	CIGARETTE LIGHTER
 or 	Ground terminal 	Component ground 			
RESISTOR	VARIABLE RESISTOR	THERMISTOR	IGNITION SWITCH	BULB	HEATER
MOTOR	PUMP	CIRCUIT BREAKER	HORN	DIODE	SPEAKER, BUZZER
ANTENNA		TRANSISTOR (Tr)		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. 	
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 			

Relays and Control Unit Locations

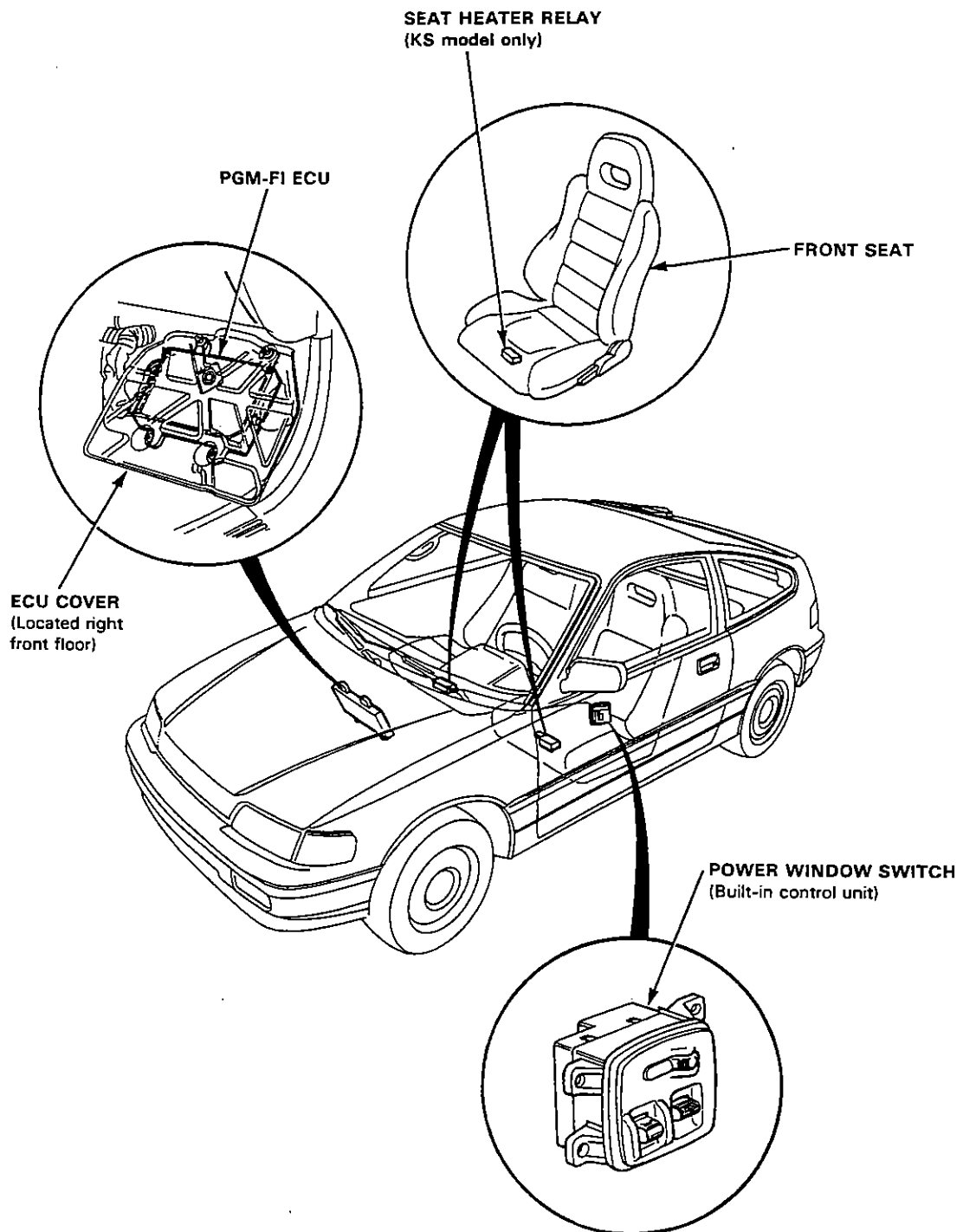
Engine Compartment





Door and Floor

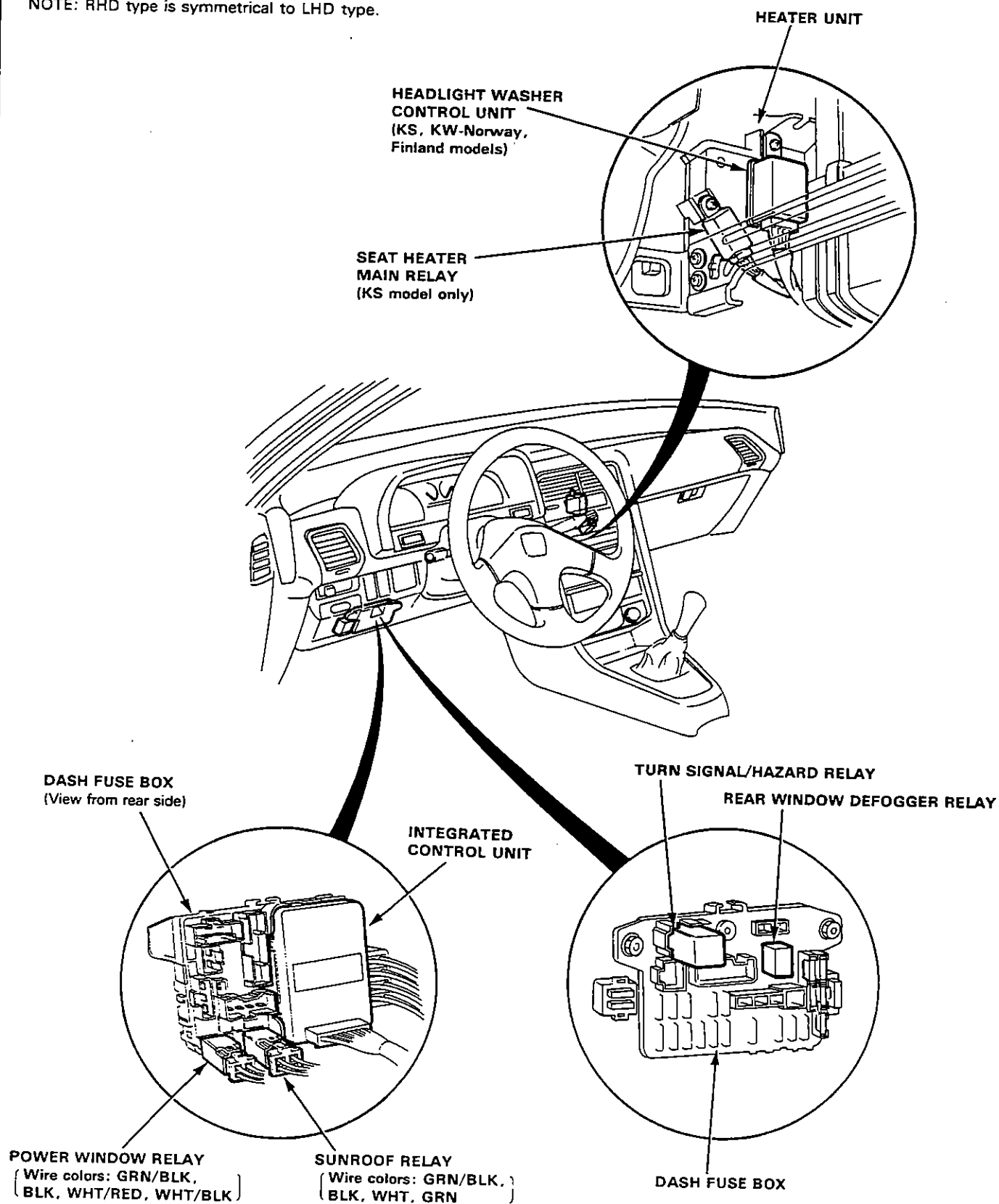
NOTE: RHD type is symmetrical to LHD type.



Relays and Control Unit Locations

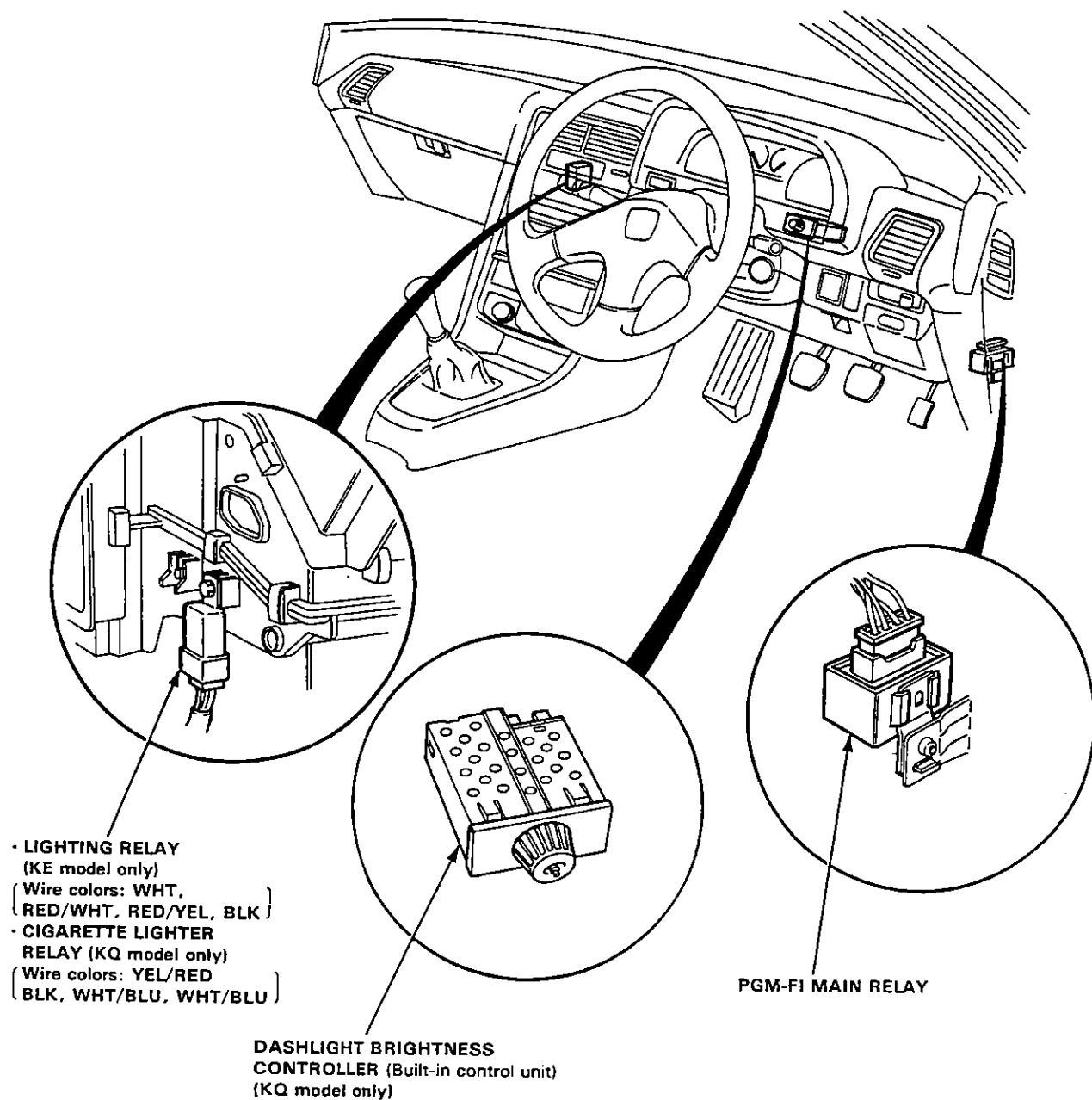
Dashboard

NOTE: RHD type is symmetrical to LHD type.

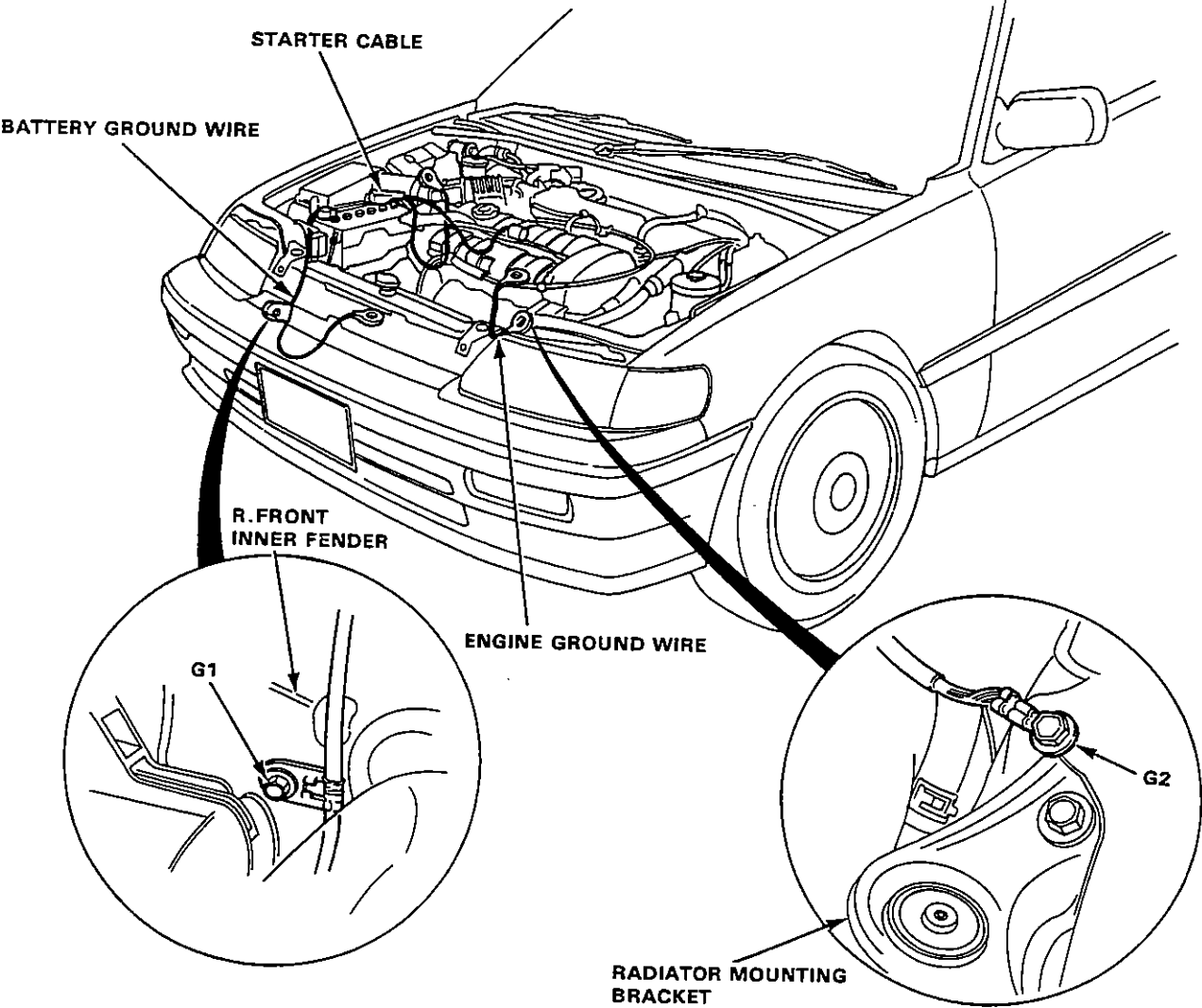


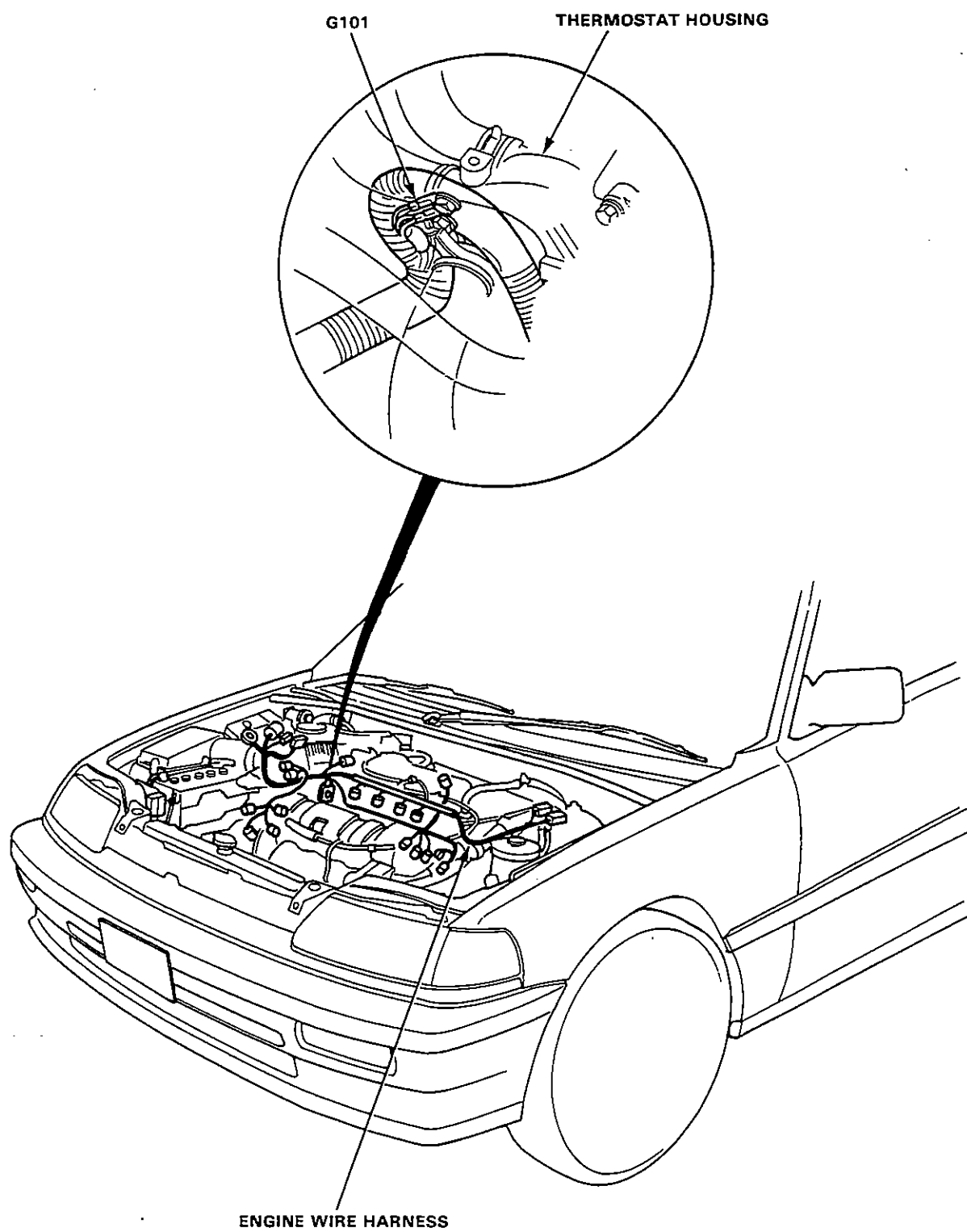


NOTE: LHD type is symmetrical to RHD type.



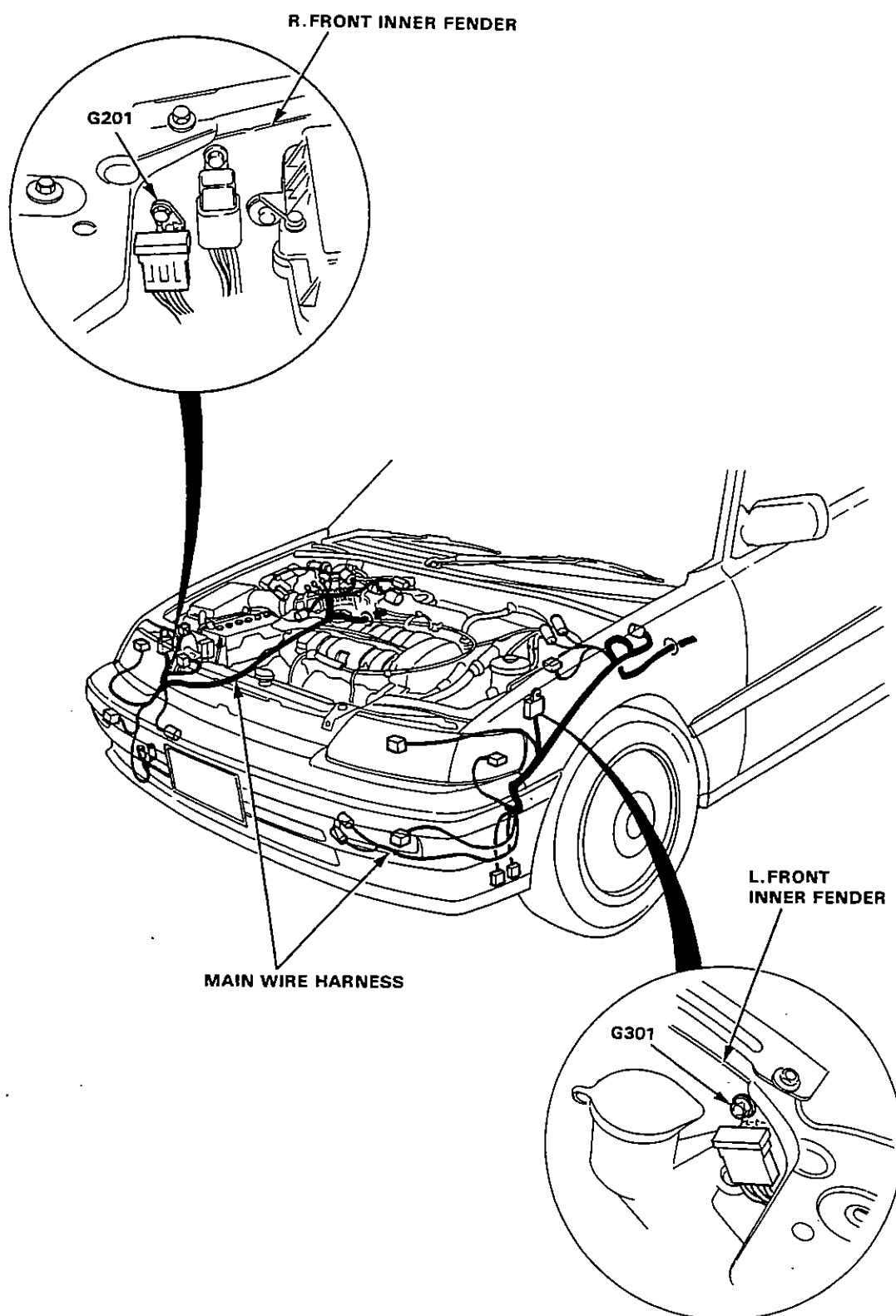
Ground and Wire Harness Routing





(cont'd)

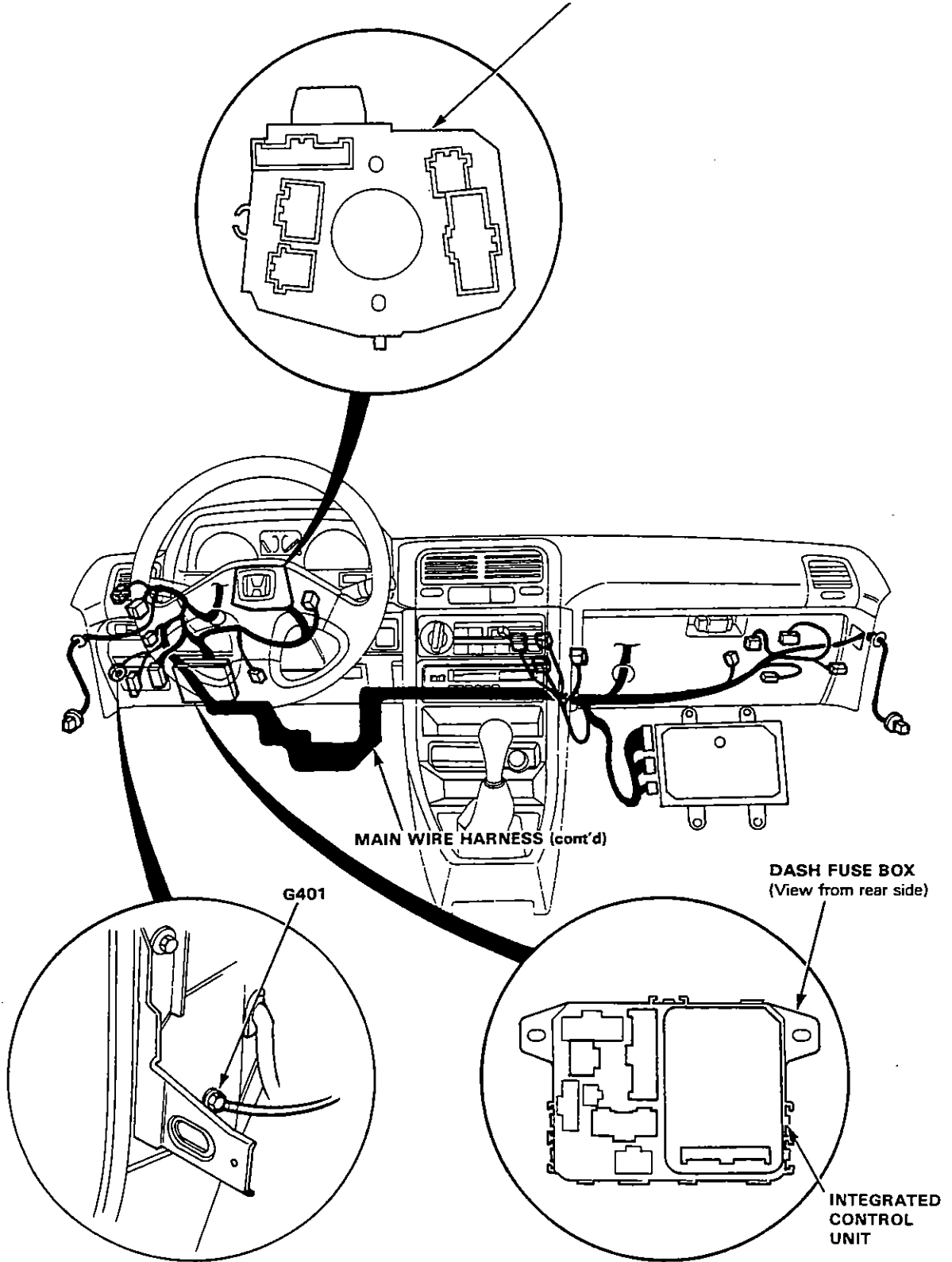
Ground and Wire Harness Routing





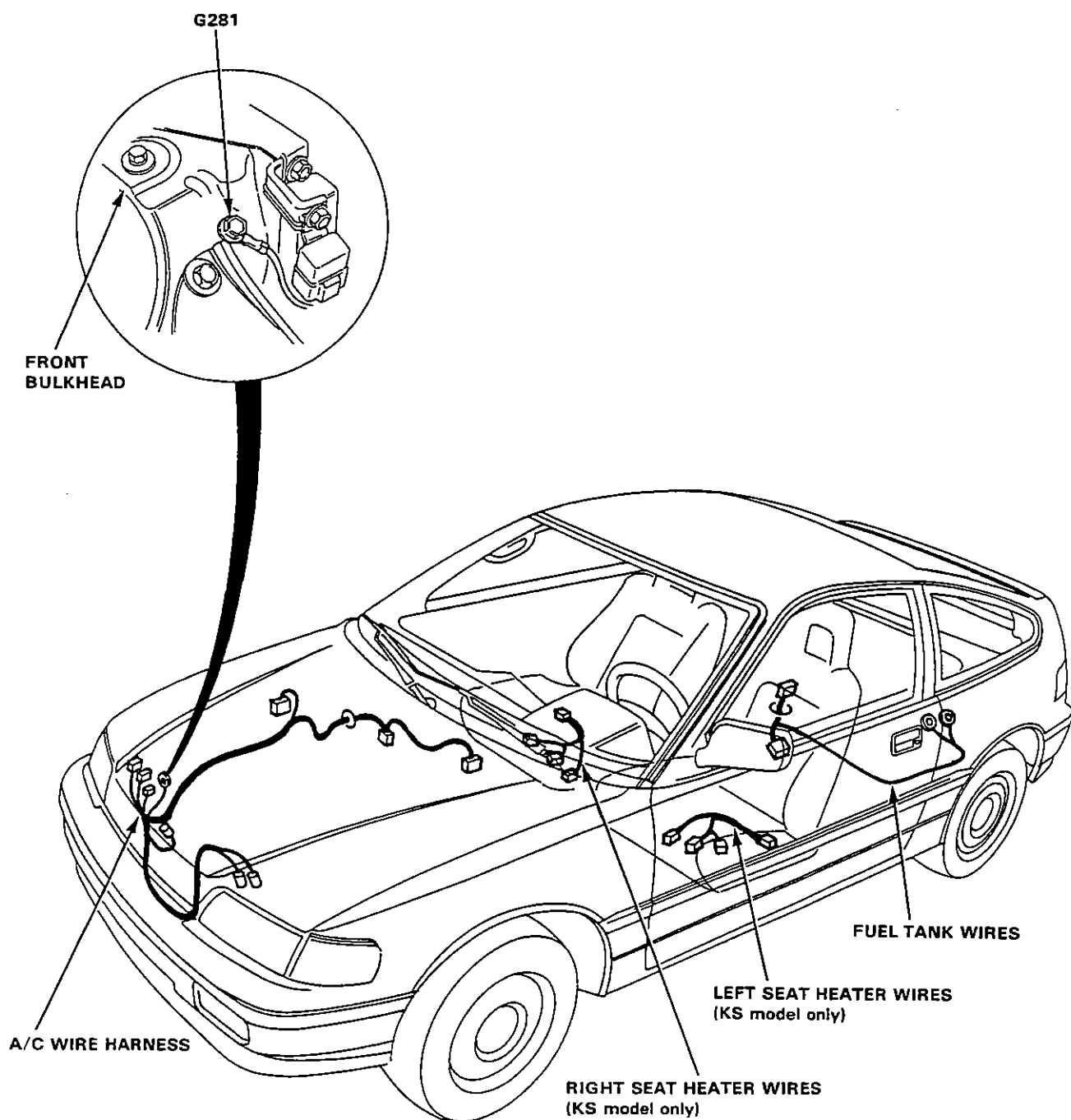
NOTE: RHD type is symmetrical to LHD type.

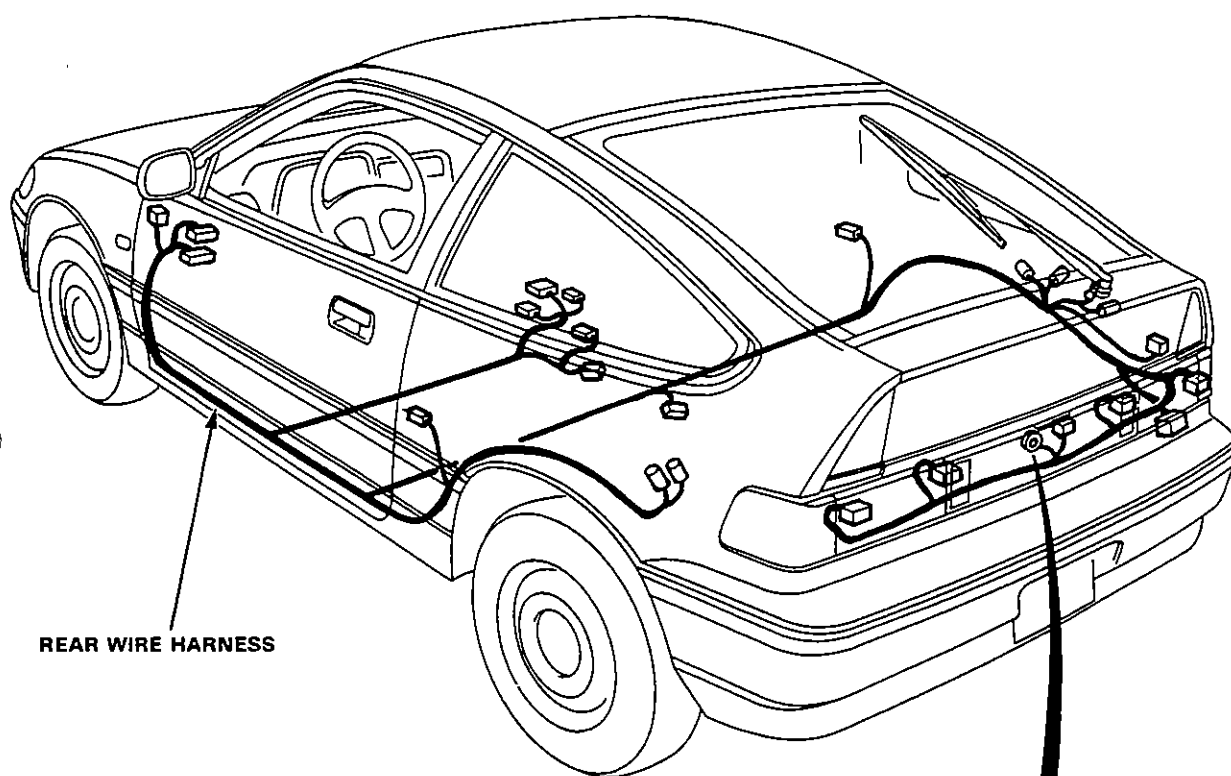
COMBINATION SWITCH
(View from rear side)



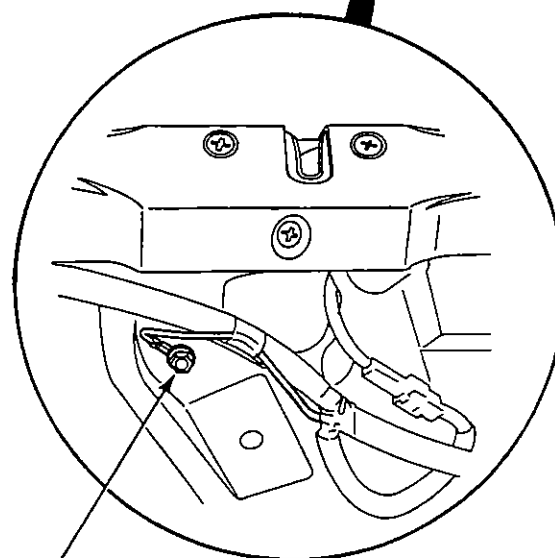
(cont'd)

Ground and Wire Harness Routing





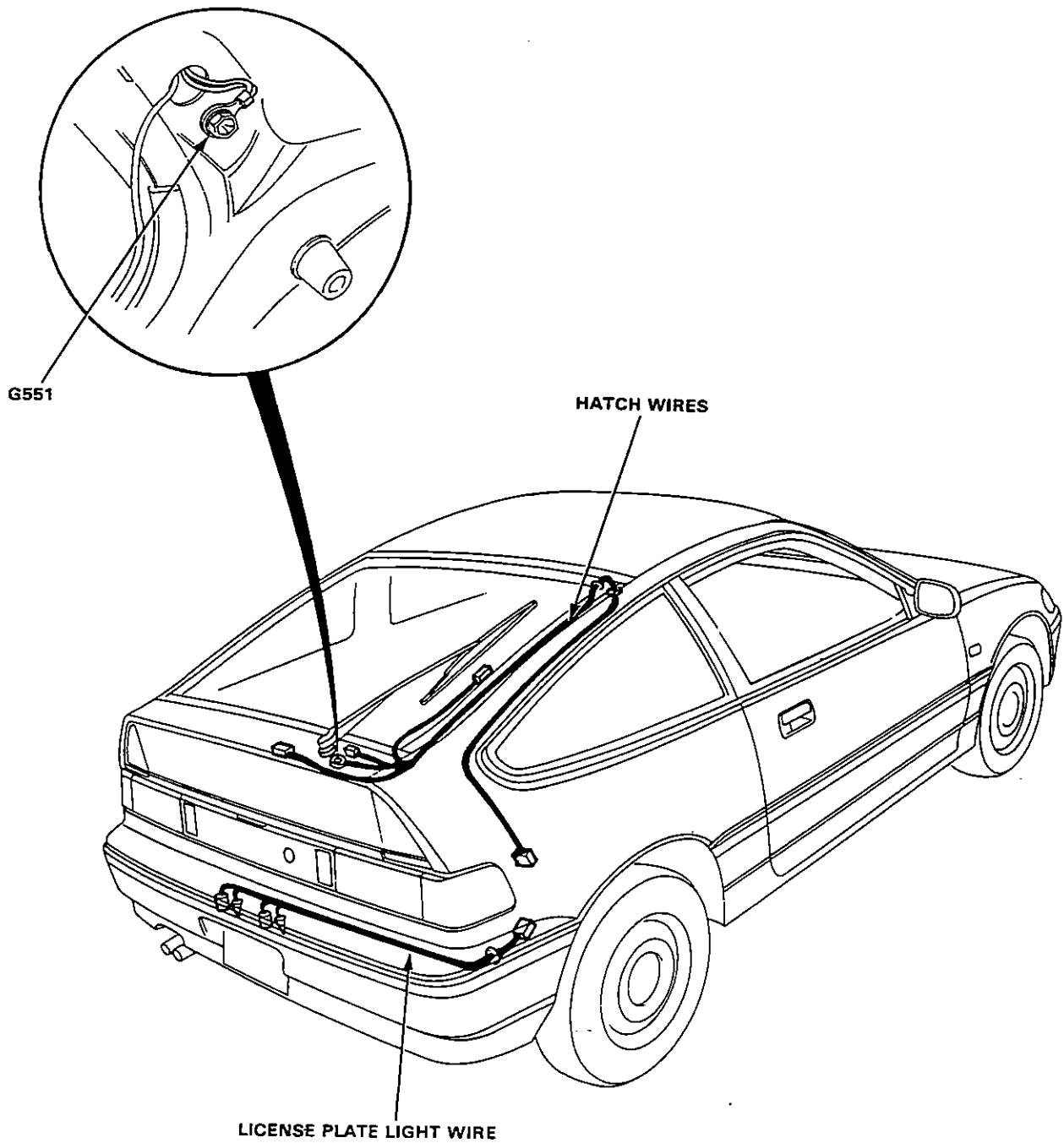
REAR WIRE HARNESS



G511

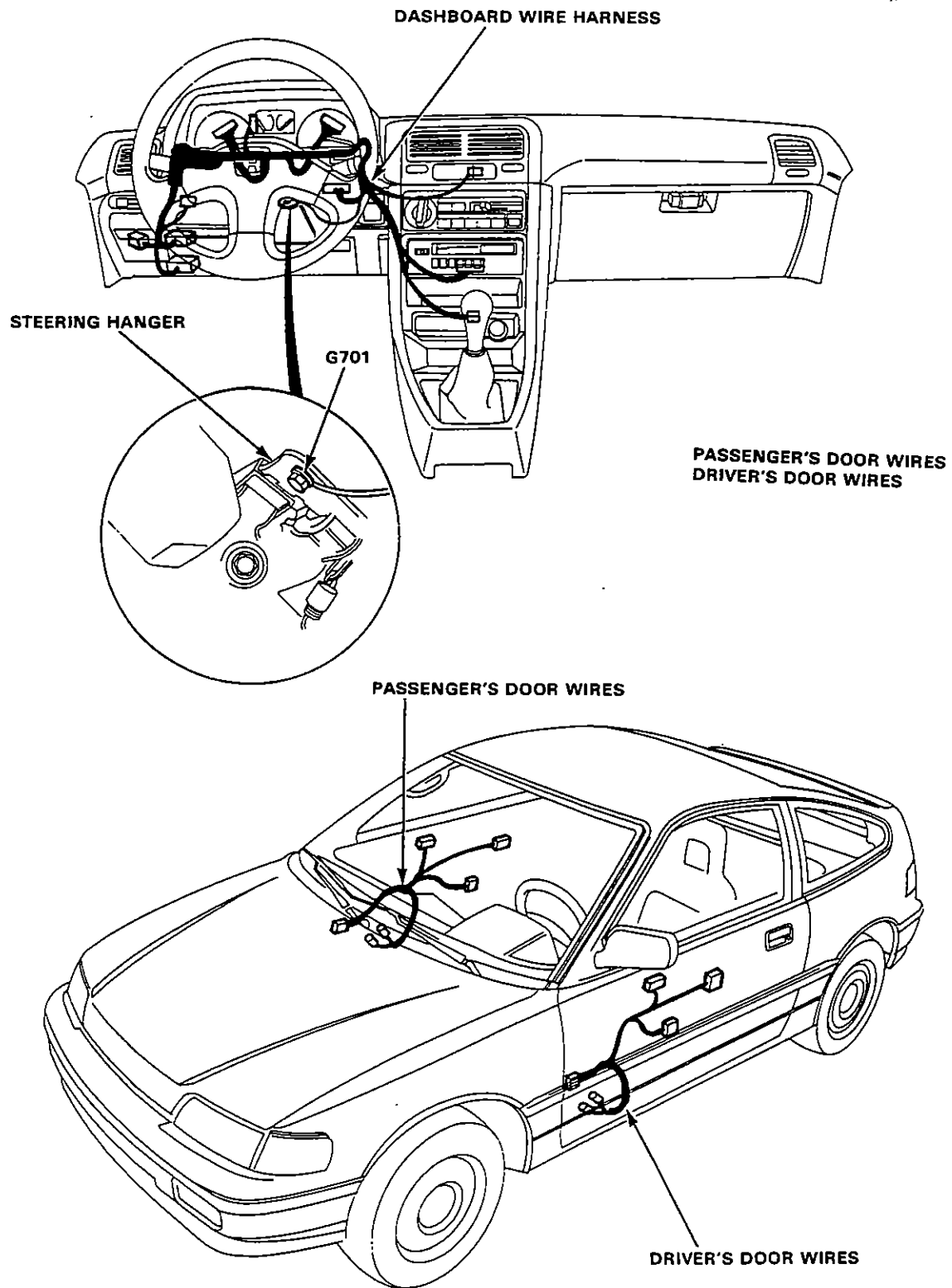
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Ground and Wire Harness Routing



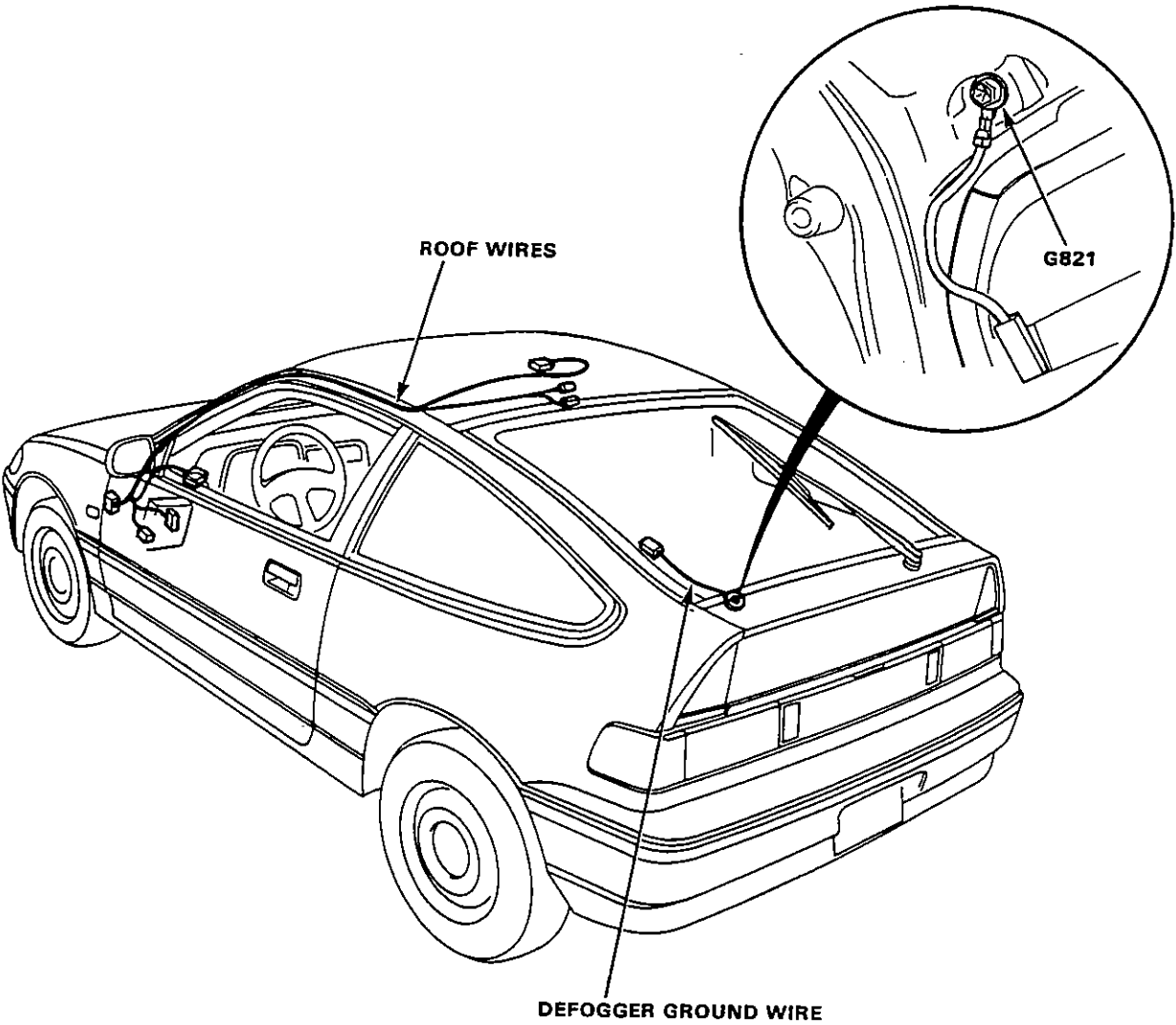


NOTE: RHD type is symmetrical to LHD type.



(con'd)

Ground and Wire Harness Routing

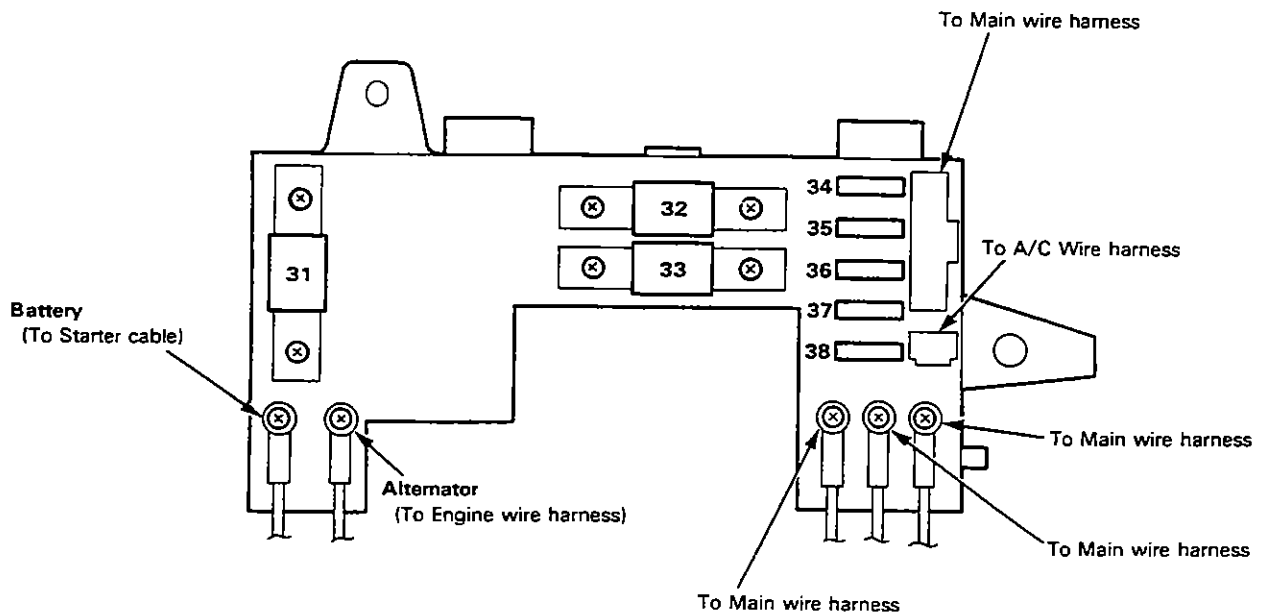


Fuses



Main Fuse Box

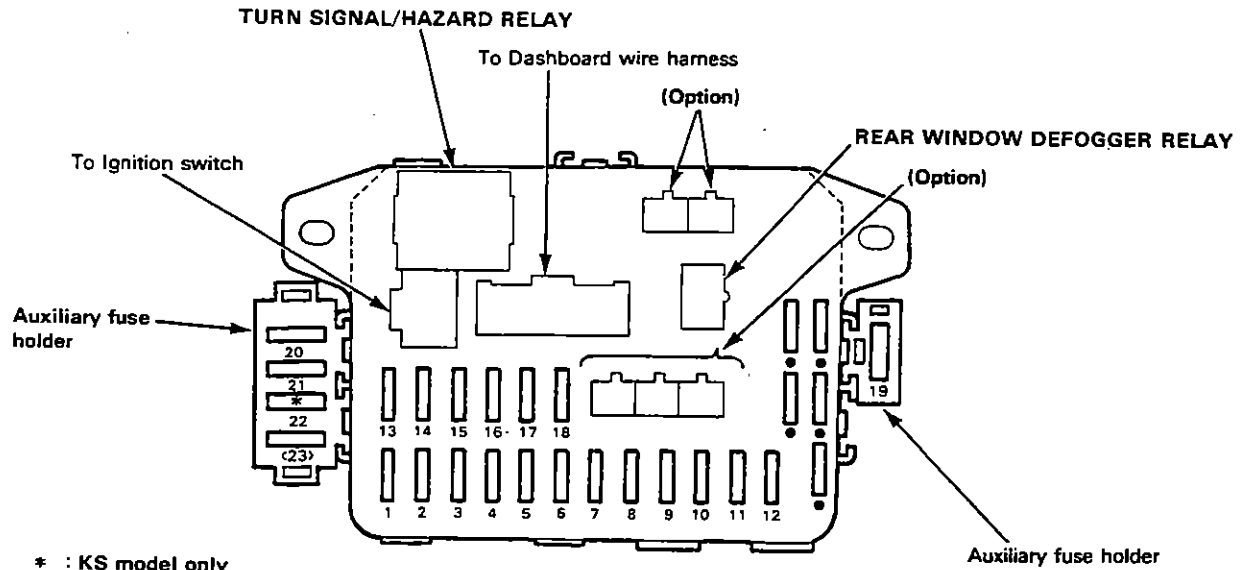
NOTE: Main fuse box is located right side, engine compartment.



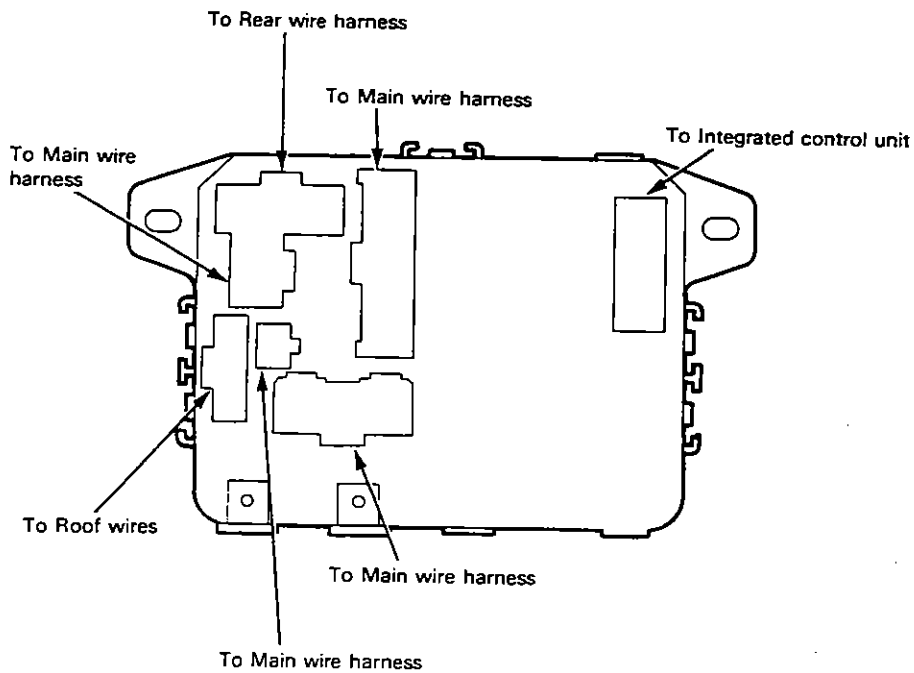
Fuses

Dash Fuse Box (LHD)

NOTE: Dash fuse box is located left side, under dash.



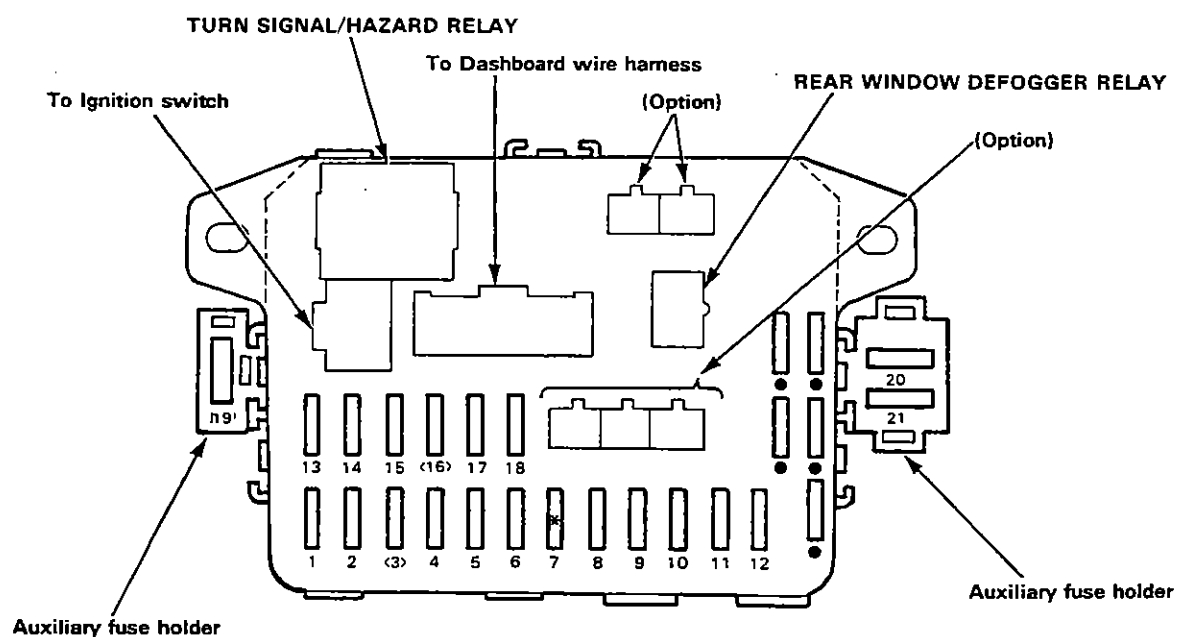
- * : KS model only
- () : KS, KW (Norway, Finland) models
- < > : Not used
- : Spare fuse



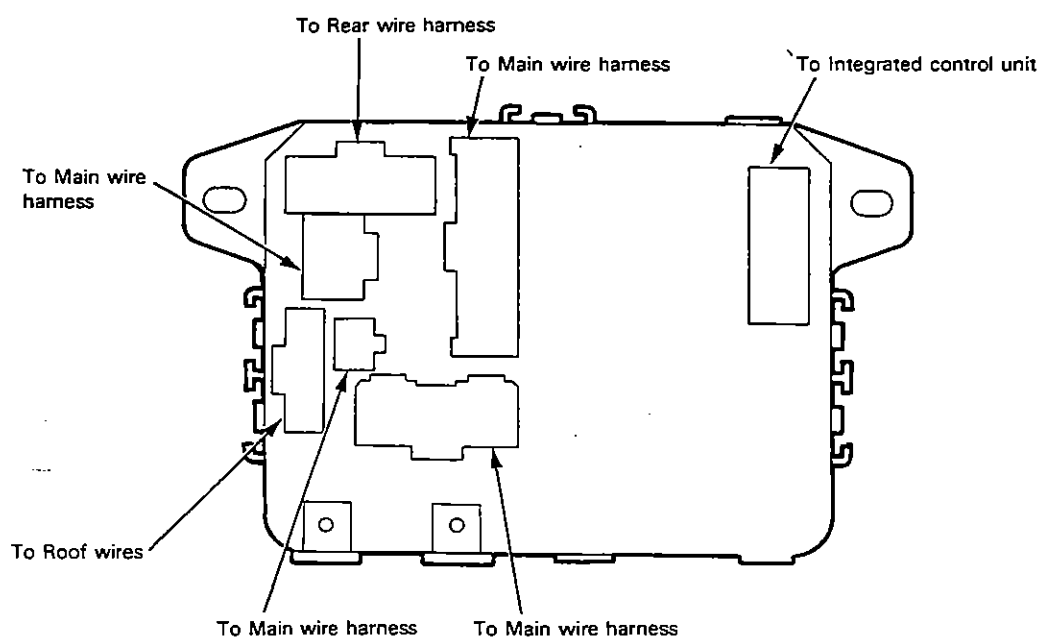


(RHD)

NOTE: Dash fuse box is located right side, under dash.

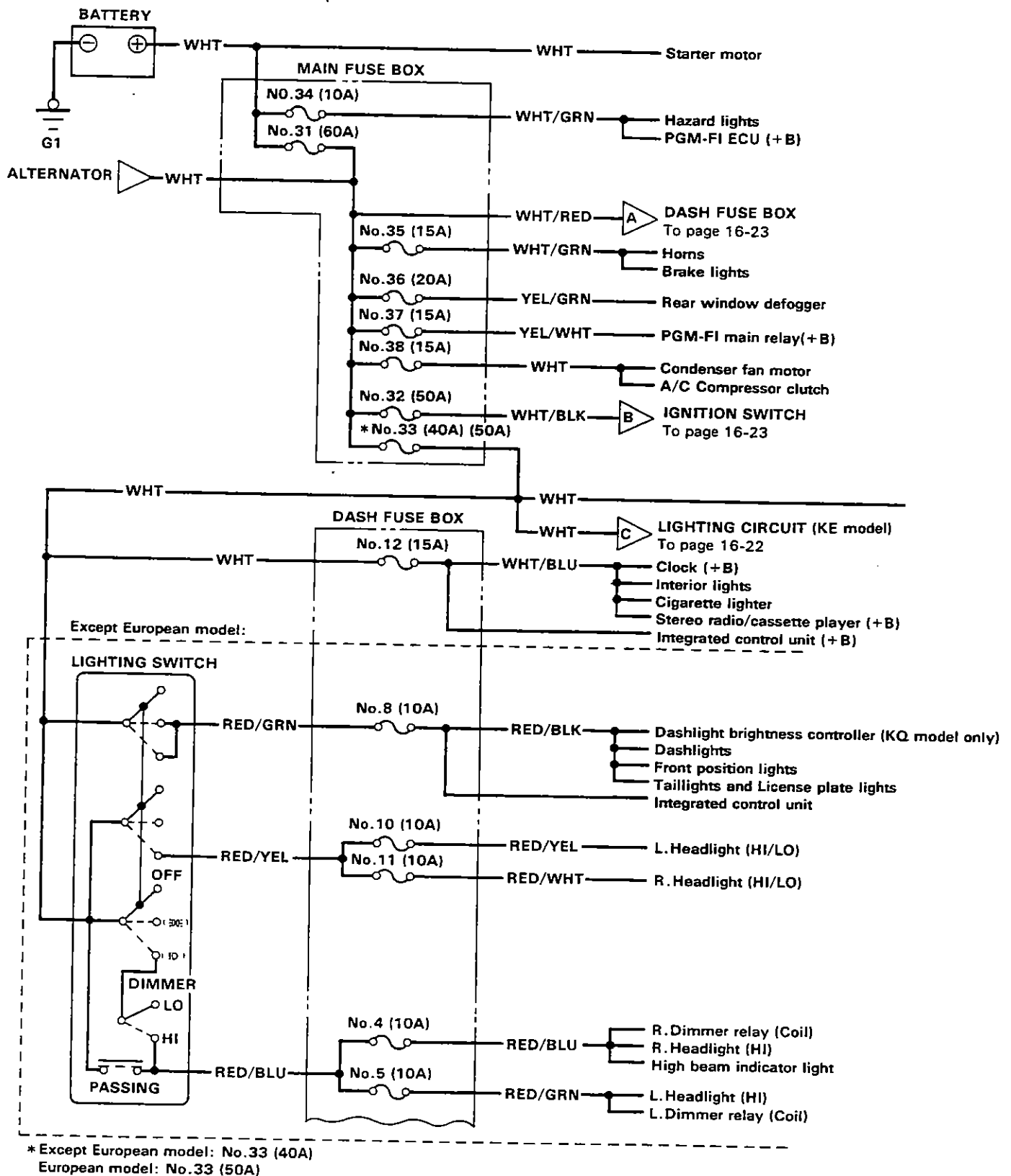


- * : KE model only
- < > : Not used
- : Spare fuse



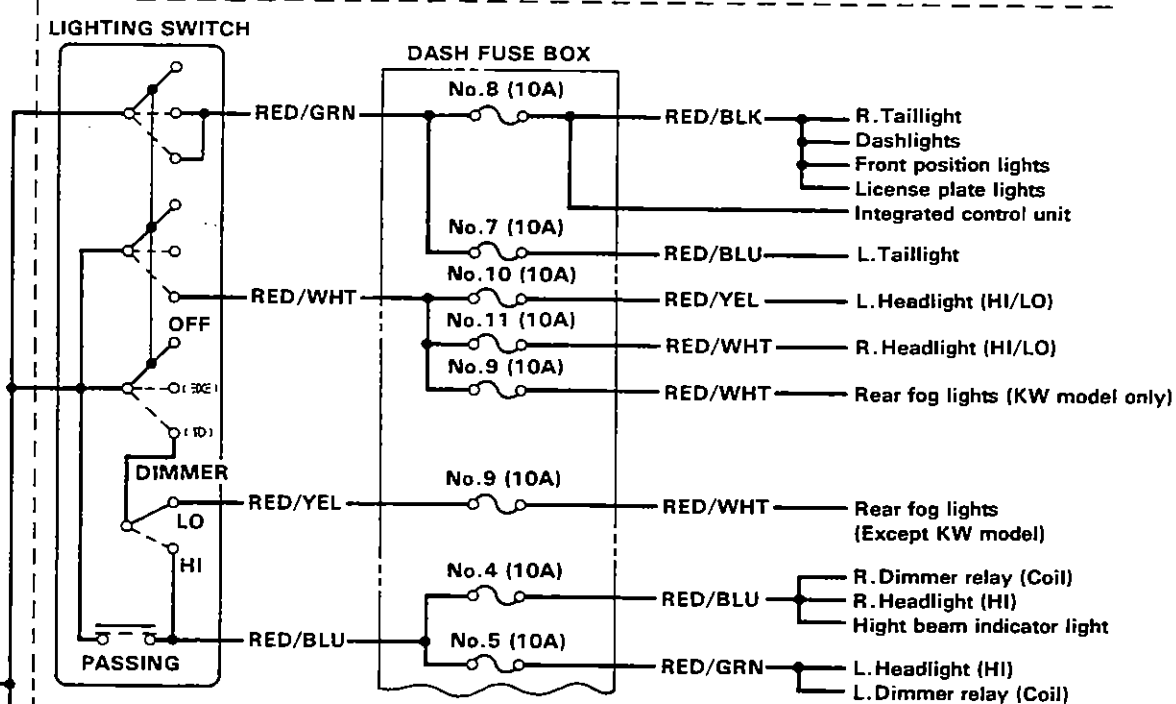
Power Distribution

Circuit Identification

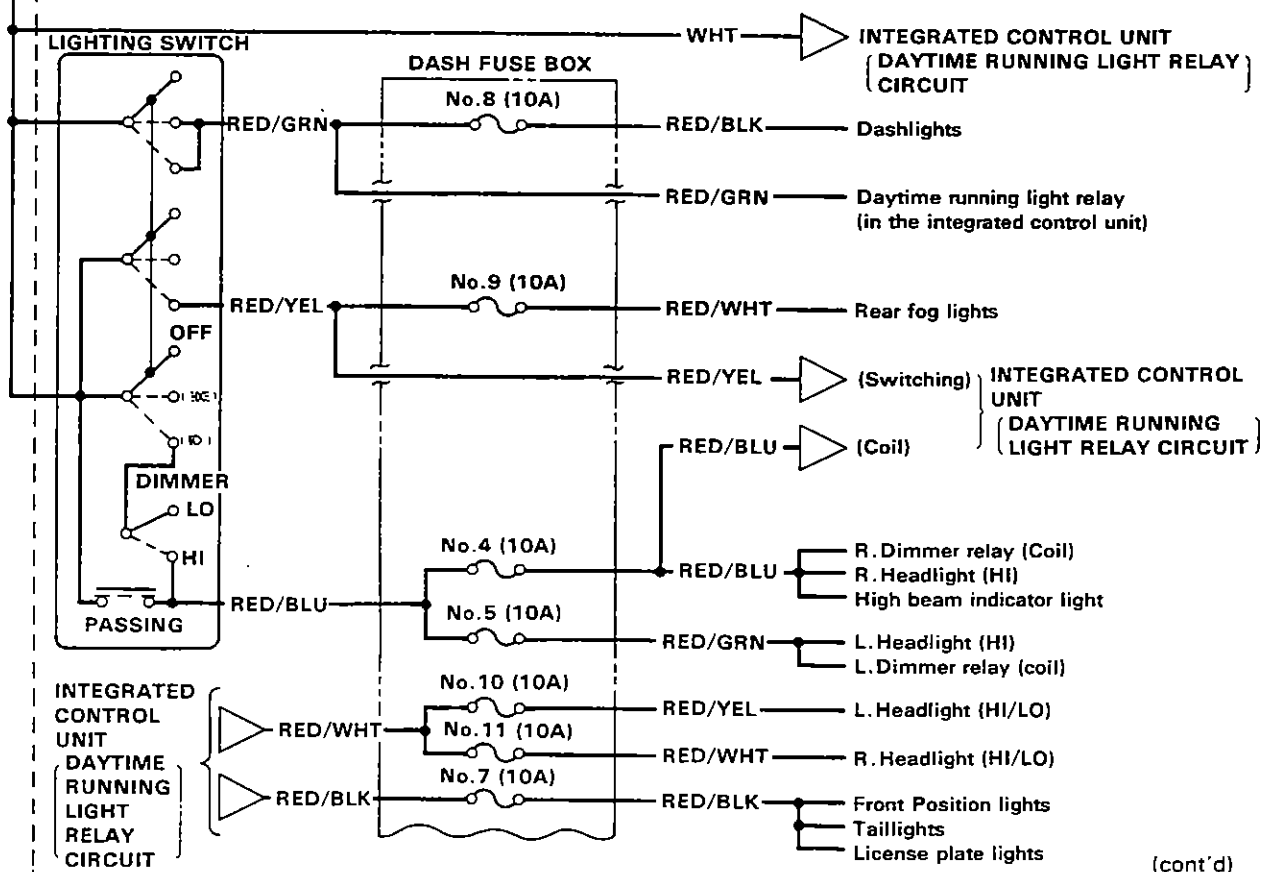




KG, KX, KB and KW (Except Finland, Norway) models:



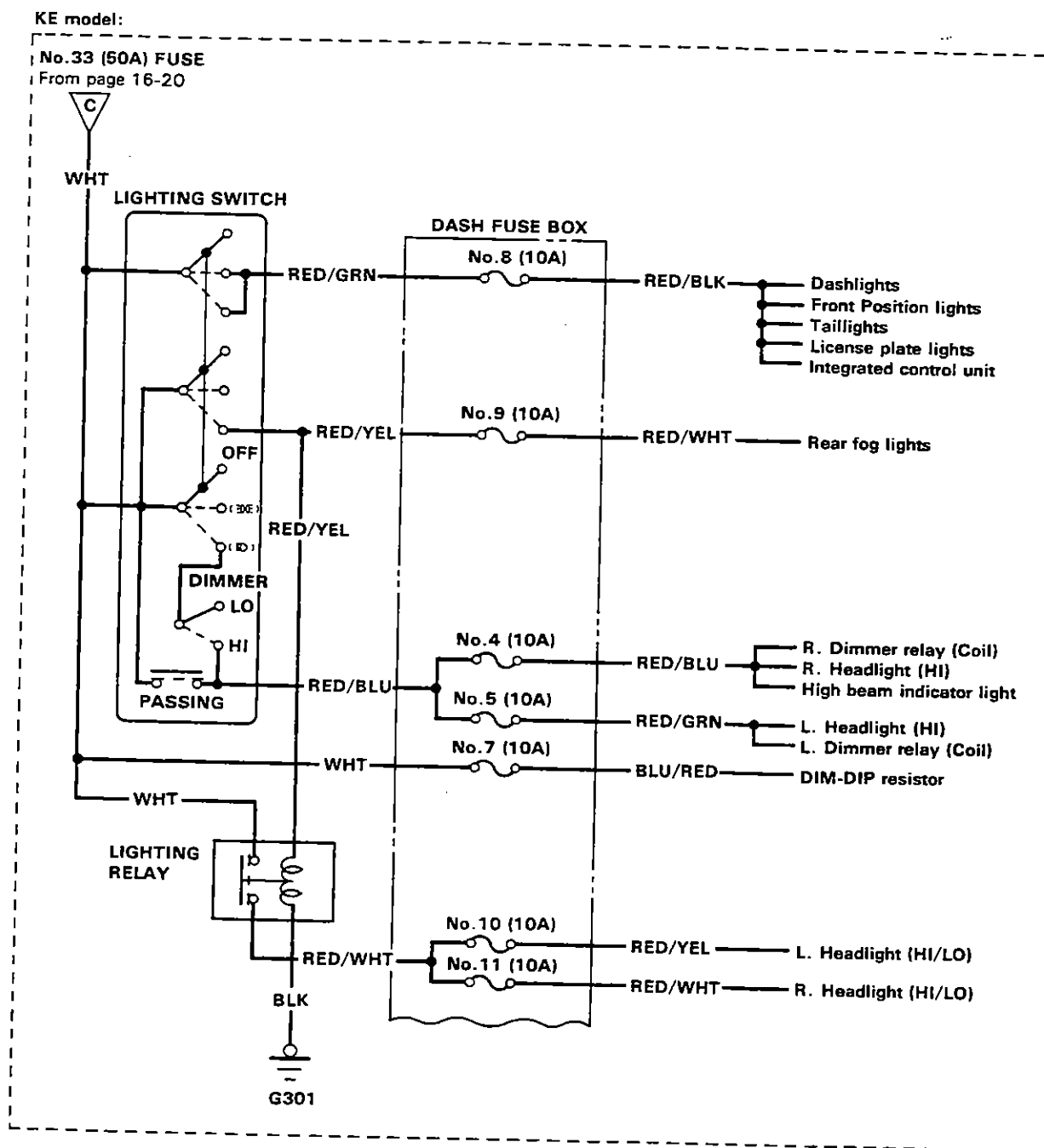
KS, KW (Finland, Norway) models:



(cont'd)

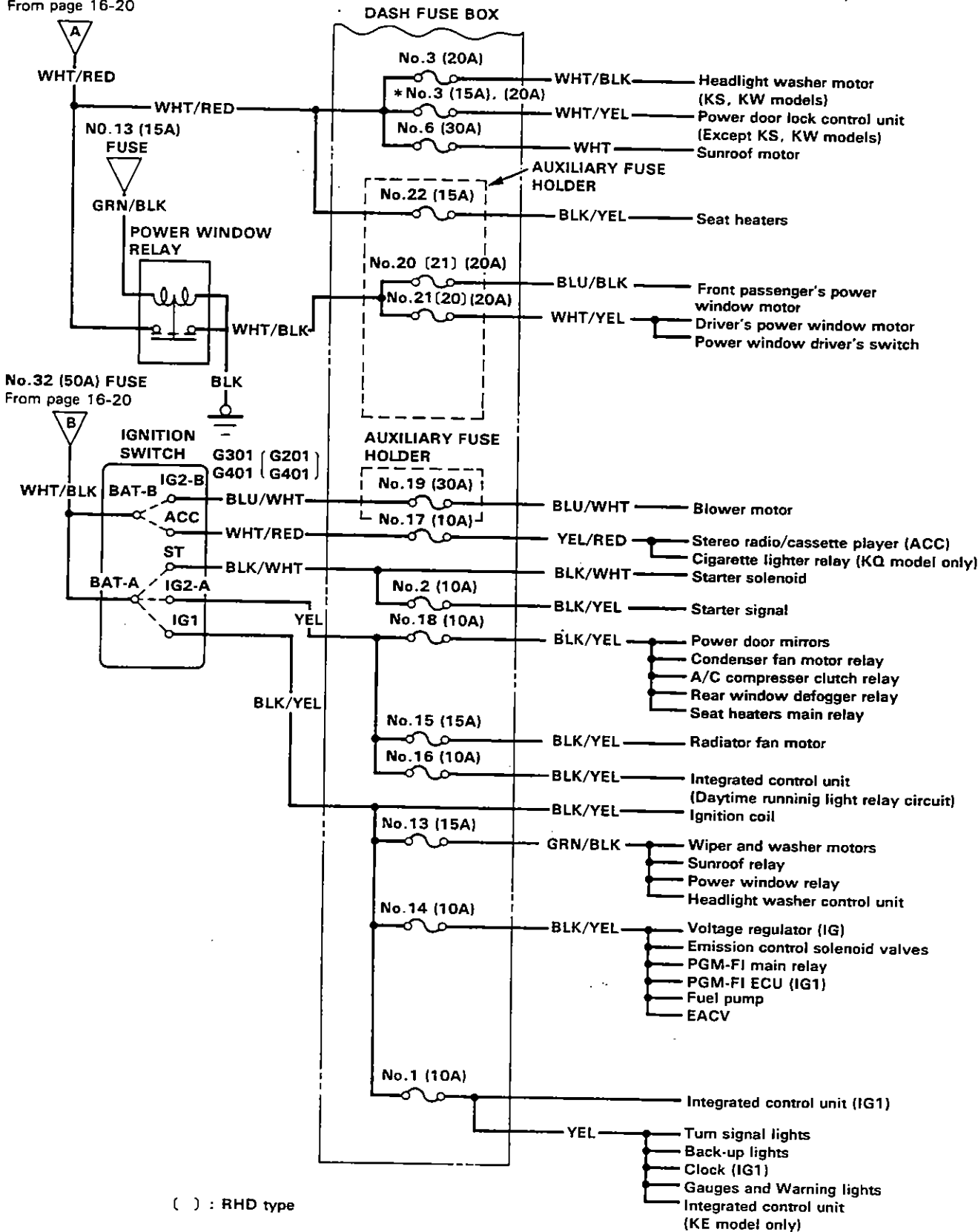
Power Distribution

Circuit Indentification (cont'd)





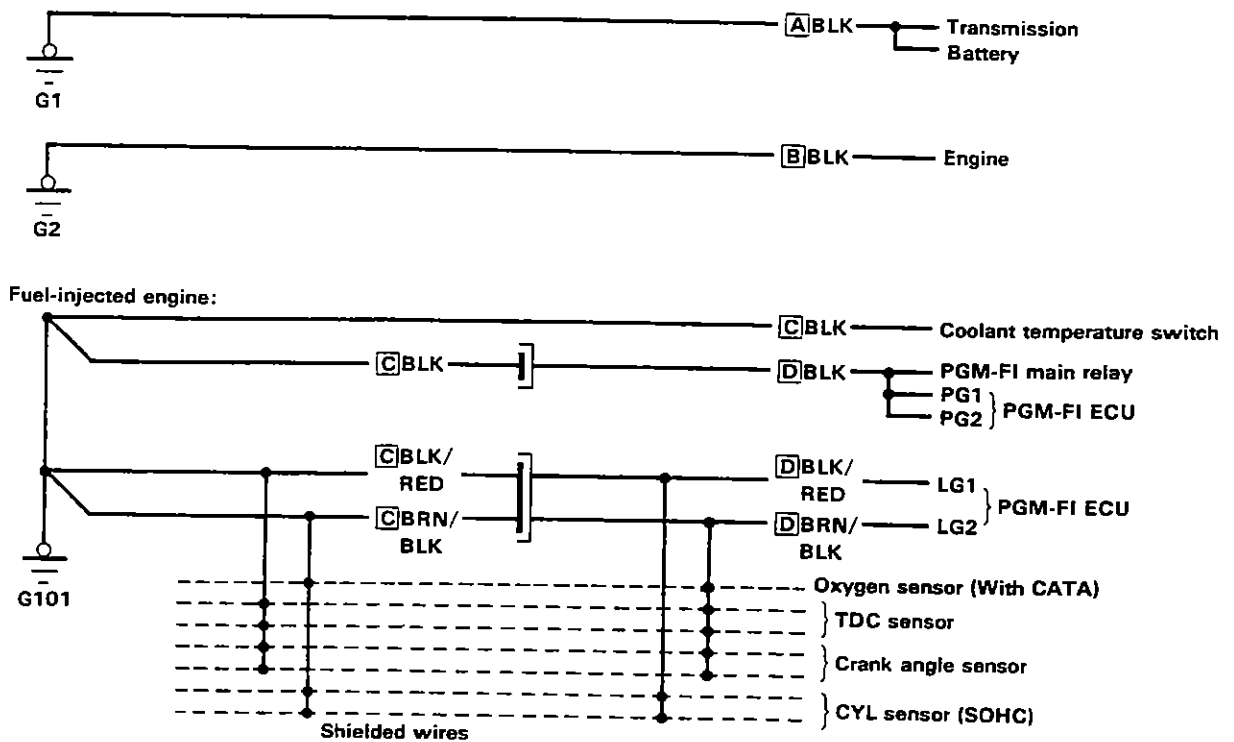
No.31 (60A) FUSE
From page 16-20



Ground Distribution

Circuit Identification

NOTE: See page 16-8 and 9 for illustrated ground locations.

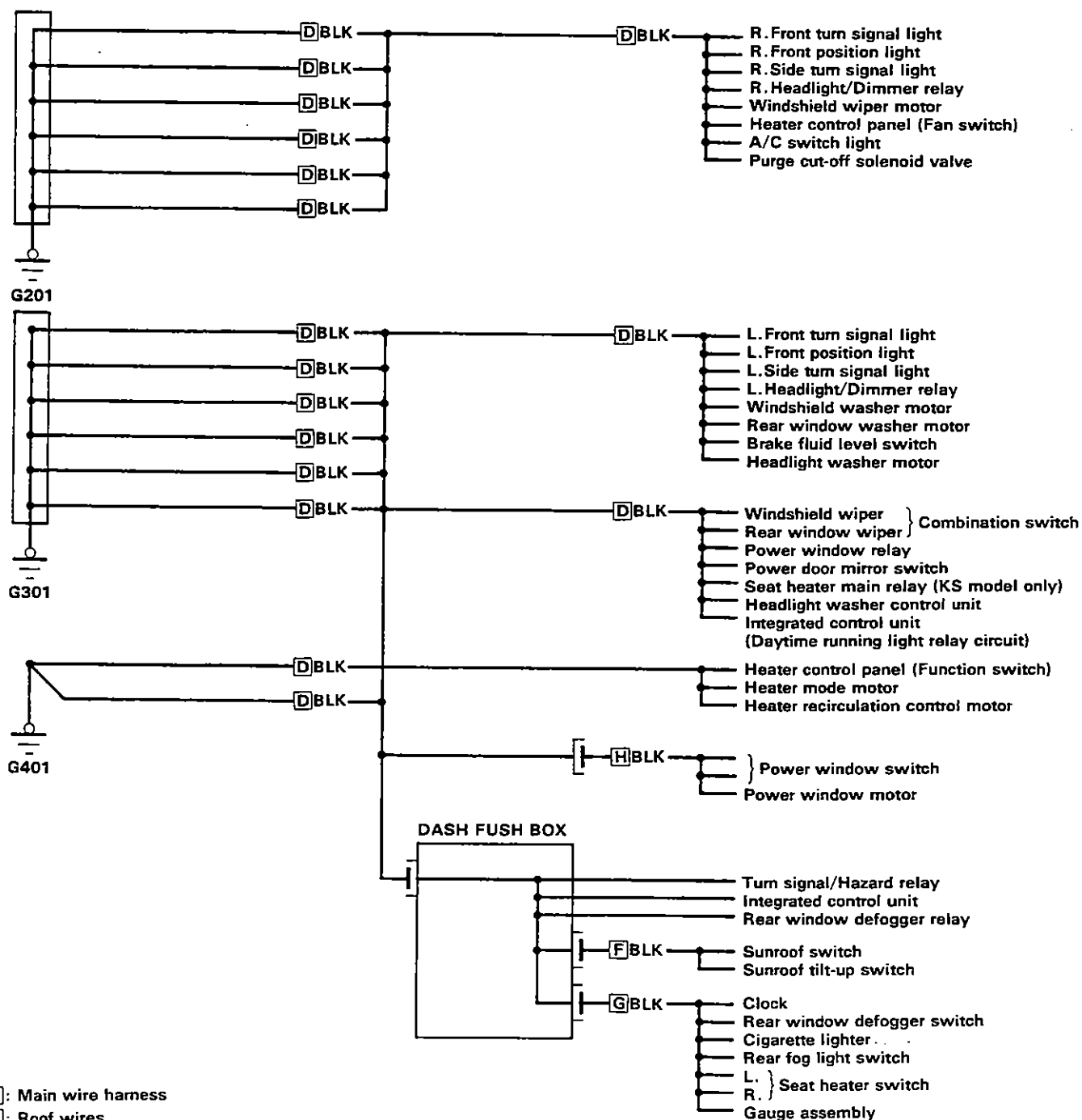


- A:** Battery ground wire
- B:** Engine ground wire
- C:** Engine wire harness
- D:** Main wire harness



LHD:

NOTE: See pages 16-10 and 11 for illustrated ground locations.



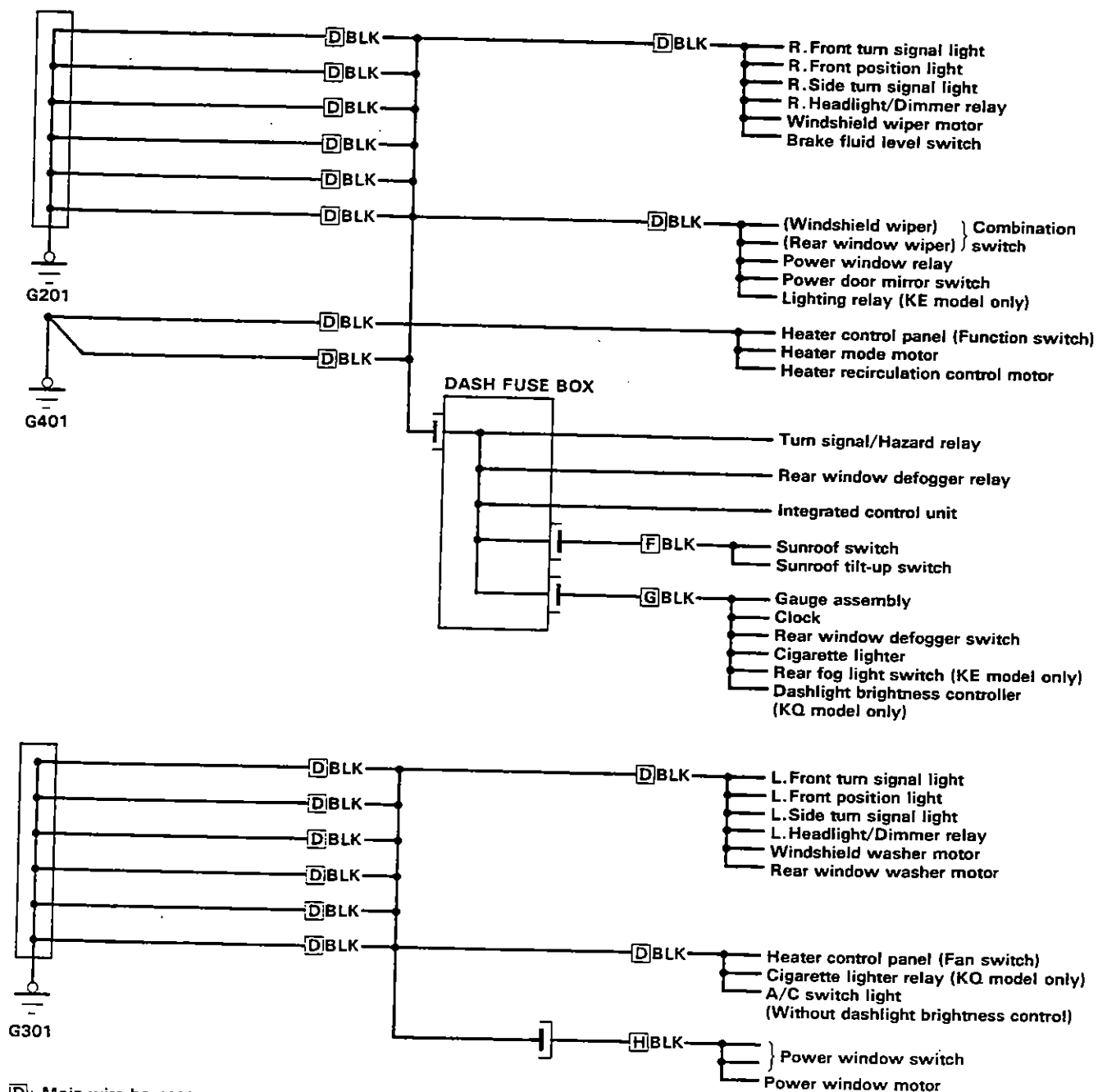
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

RHD:

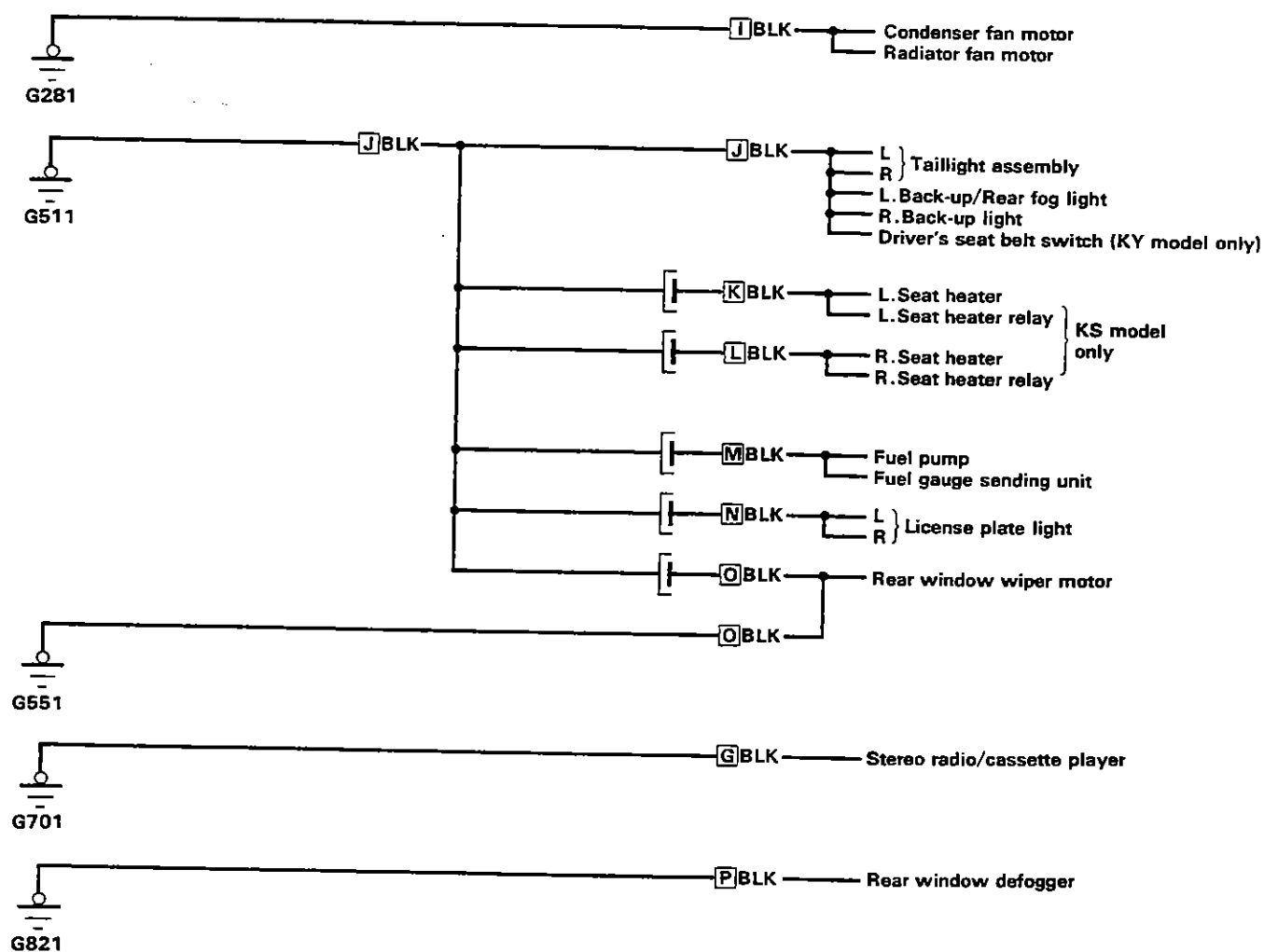
NOTE: See pages 16-10 and 11 for illustrated ground locations.



- [D]: Main wire harness
- [F]: Roof wires
- [G]: Dashboard wire harness
- [H]: Driver's door wires



NOTE: See pages 16-12 thru 16 for illustrated ground locations.



- G**: Dashboard wire harness
- I**: A/C wire harness
- J**: Rear wire harness
- K**: Left seat heater wires
- L**: Right seat heater wires
- M**: Fuel tank wires
- N**: License plate light wires
- O**: Hatch wires
- P**: Defogger ground wire

Battery

Test

NOTE: To get accurate results, the temperature of the electrolyte must be between 15 and 38°C (59 and 100°F) before testing.

Test Equipment Required:

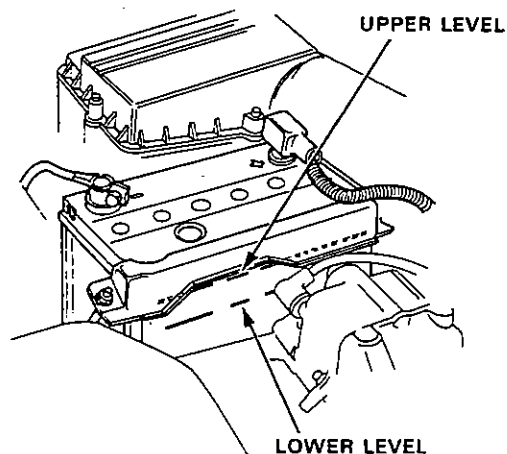
- Battery tester with:
Voltmeter with 0–18 V scale, Ammeter with 0–100 A and 0–500 A scales, and a carbon pile with 0–300 W.
- 12 V Battery Charger:
Fast charge capability of 50 A and slow charge capability of 5 A.

Test Procedure:

WARNING Keep sparks, flames and cigarettes away while charging battery.

CAUTION: Battery electrolyte is a sulfuric acid solution.

- If it spills on painted surfaces, clothing, or skin, rinse it off with water immediately to minimize the damage.
 - Always wear safety goggles or a face shield when servicing a battery.
1. Check for damage: If the case is cracked or the posts are loose, replace the battery.
 2. Check the battery electrolyte level:
Check the electrolyte level in each cell.
If it's low, add distilled water until the electrolyte rises to the UPPER mark.



3. Test battery load capacity by connecting a battery tester, and applying a load of 3 times the battery ampere hour rating.

When the load has been applied for exactly 15 seconds, the battery voltage reading should stay above 9.6 V.

- If the reading stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
- If the reading is between 6.5 and 9.6 V, fast charge the battery by connecting a battery charger, for 3 minutes at an initial rate of 40 amps.

CAUTION: Amperage will drop as voltage increases; do not increase the amperage to compensate or you may damage the battery.

Watch the battery voltage during the entire 3 minutes; the highest reading should stay below 15.5 V.

- If the reading stays below 15.5 V, the battery is OK; clean its terminals and case, and reinstall it.
- If the reading exceeds 15.5 V any time during the 3 minutes of fast charge, the battery is no good; replace it.
- If the reading drops below 6.5 V, slow charge the battery by connecting a battery and charge, at 5 amps for no more than 24 hours, (or until the indicator shows full charge, or the specific gravity of the electrolyte is at least 1.250). Then test load capacity again.
- If the voltage stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
- If the voltage still drops below 6.5 V, the battery is no good; replace it.

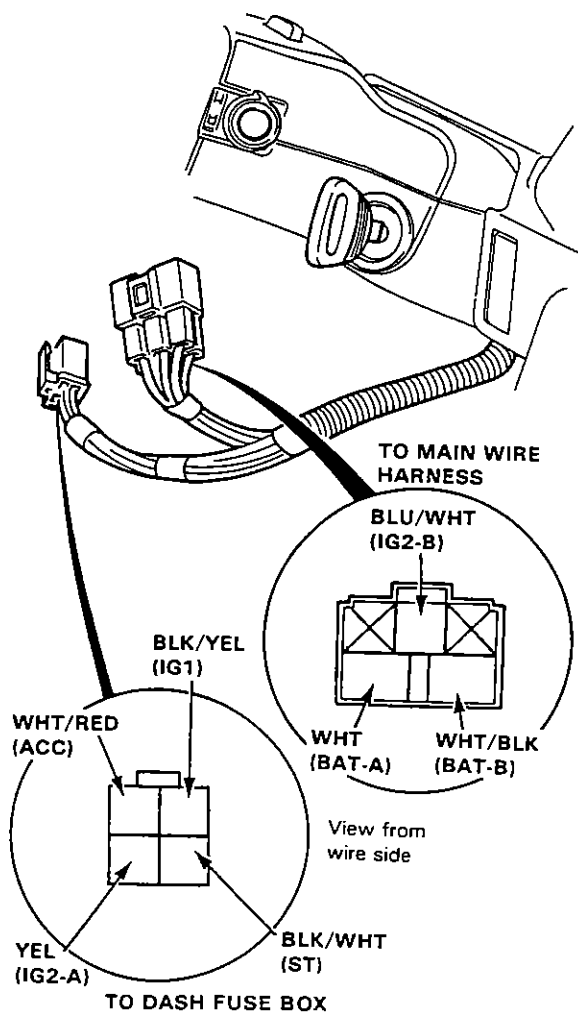


Ignition Switch

Test

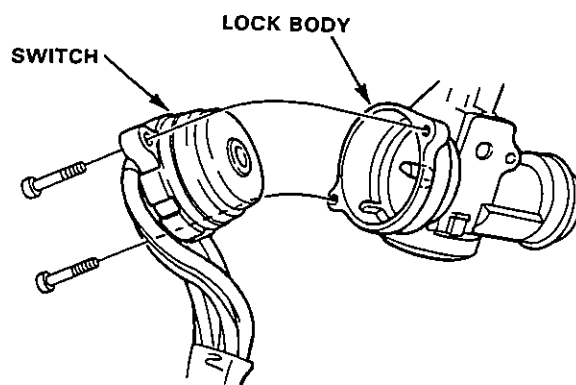
1. Remove the dashboard lower panel.
2. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	WHT/ RED (ACC)	WHT/ BLK BAT -B	BLU/ WHT IG2 -B	WHT BAT -A	BLK/ YEL (IG1)	YEL (IG2 -A)	BLK/ WHT (ST)
O							
I	—	—					
II	—	—	—	—	—	—	
III				—	—	—	—



Electrical Switch Replacement

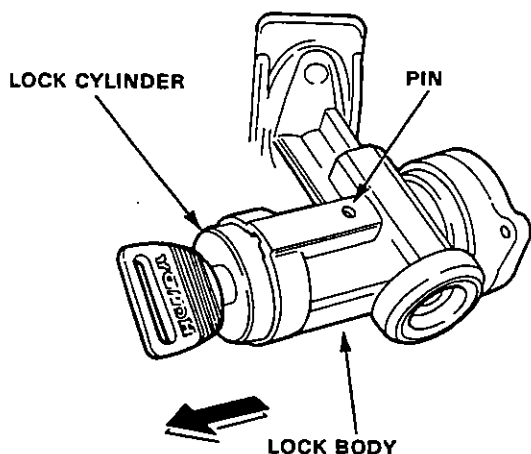
1. Remove the dashboard lower panel.
2. Remove the steering column lower cover.
3. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
4. Insert the key and turn it to "O."
5. Remove the 2 screws and replace the base of the switch



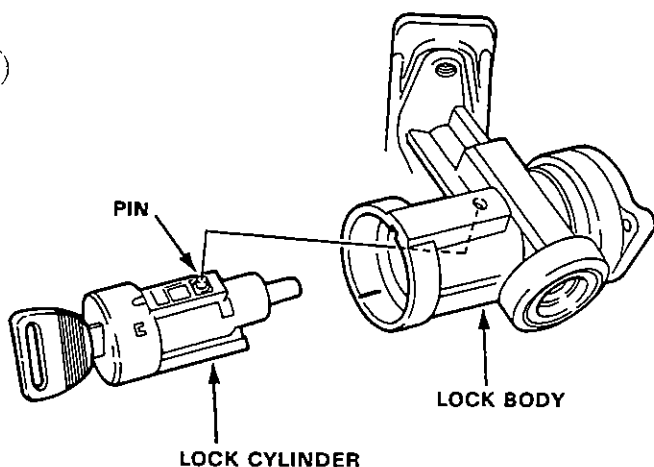


Lock Cylinder Replacement

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 cylinder into the lock until the pin clicks into place.

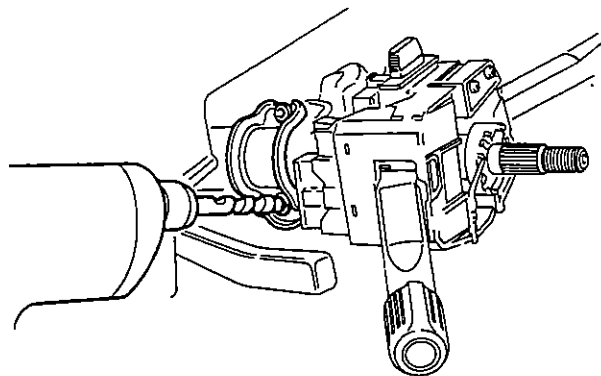


Steering Lock Replacement

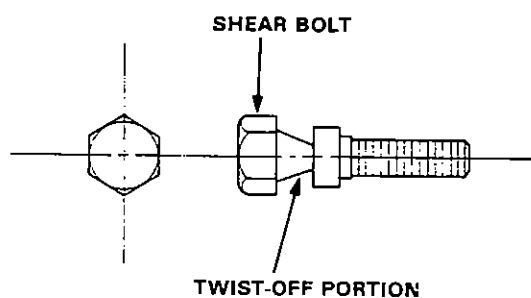
1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Center punch each of the 2 shear bolts and drill their heads off with a 3/16 in. drill bit.

CAUTION Do not damage the switch body when removing the shear heads.

4. Remove the shear bolts from the switch body.

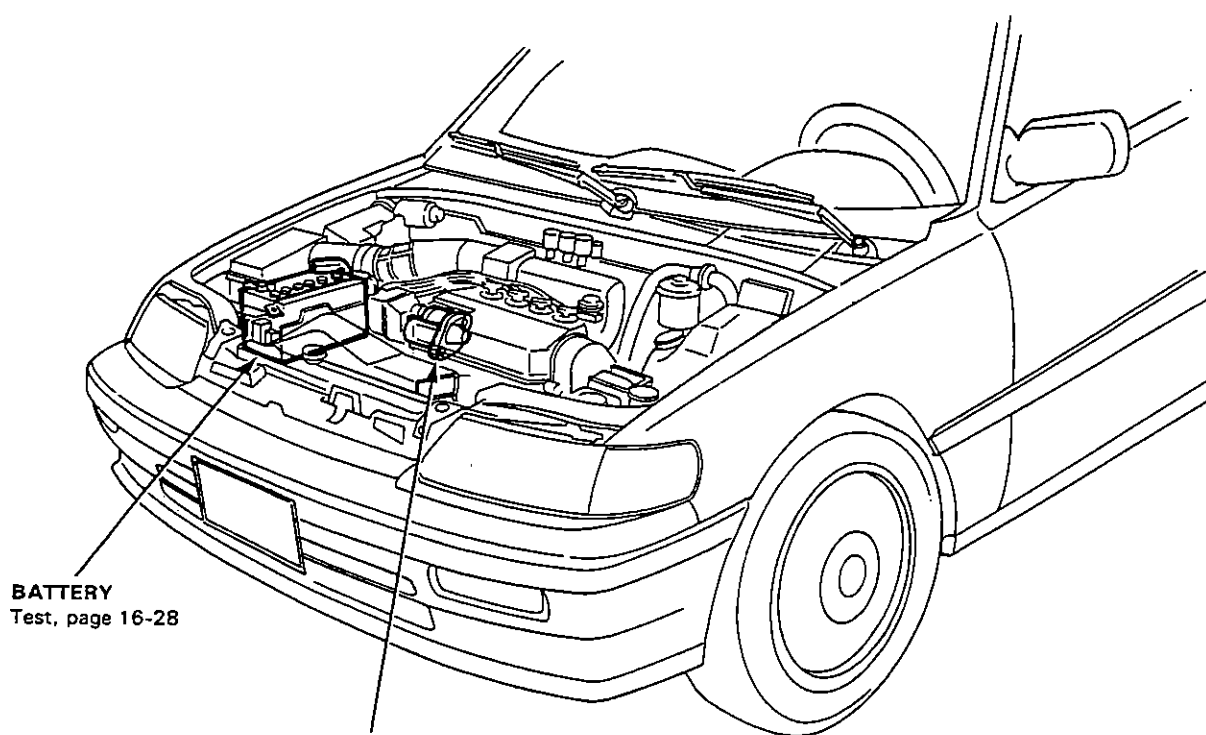


5. Install the new ignition switch without the key inserted.
 6. Loosely tighten the new shear bolts.
- NOTE:** Make sure the projection on the ignition switch is aligned with the hole in the steering column.
7. Insert the ignition key and check for proper operation of the steering wheel lock and that ignition key turns freely.
 8. Tighten the shear bolts until the hex heads twist off.



Starting System

Component Location Index

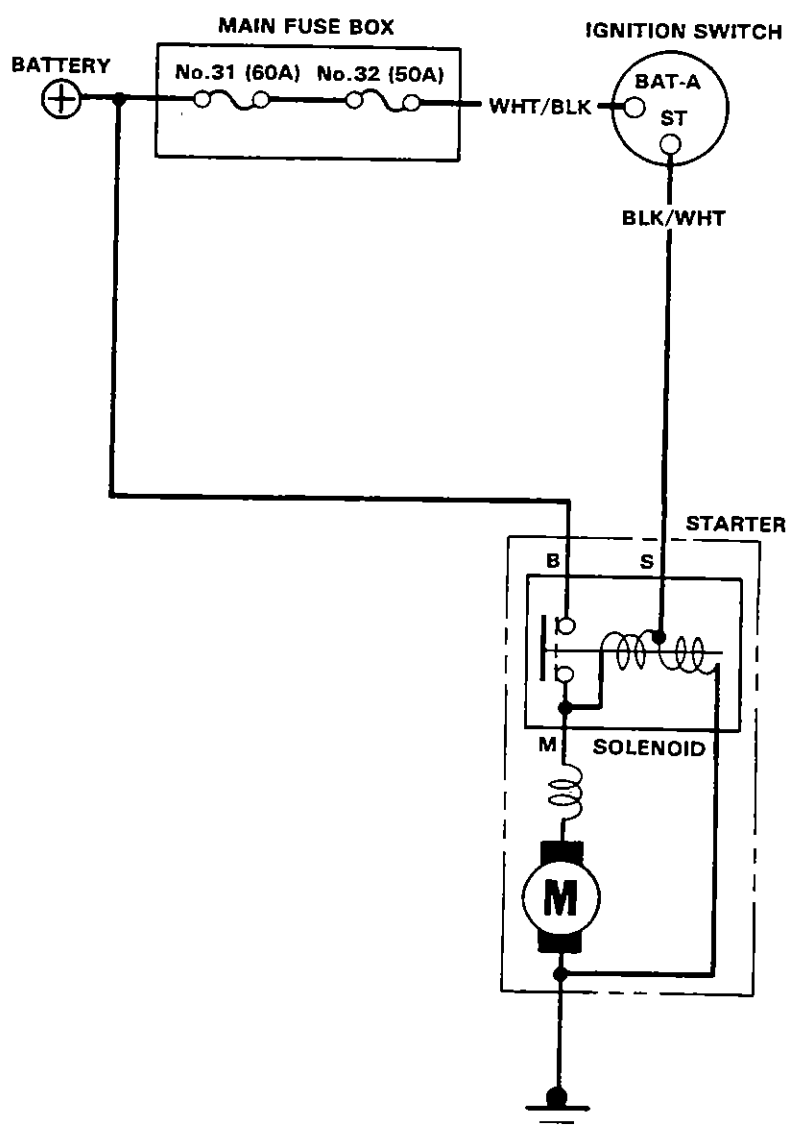


BATTERY
Test, page 16-28

STARTER
Test, page 16-34
Solenoid Test, page 16-36
Replacement, page 16-37
Overhaul, page 16-38
Reassembly, page 16-44



Circuit Diagram



Starting System

Starter Test

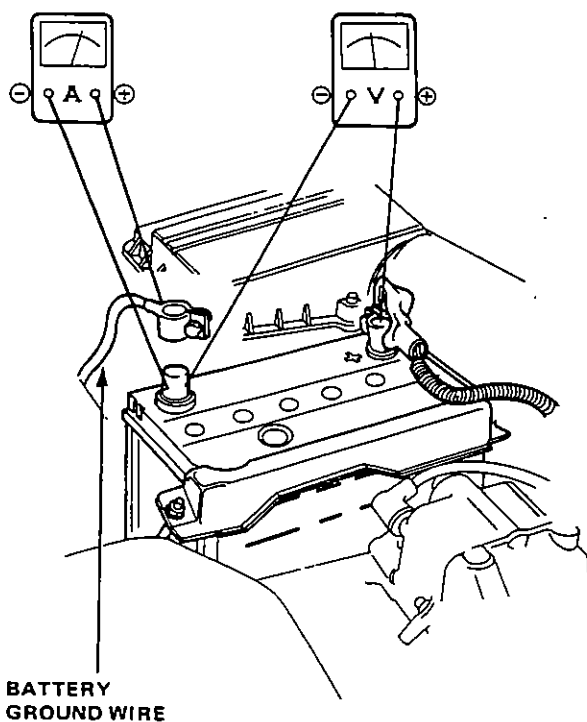
NOTE: The air temperature must be between 15 and 38°C (59 and 100°F) before testing.

Recommended Procedure:

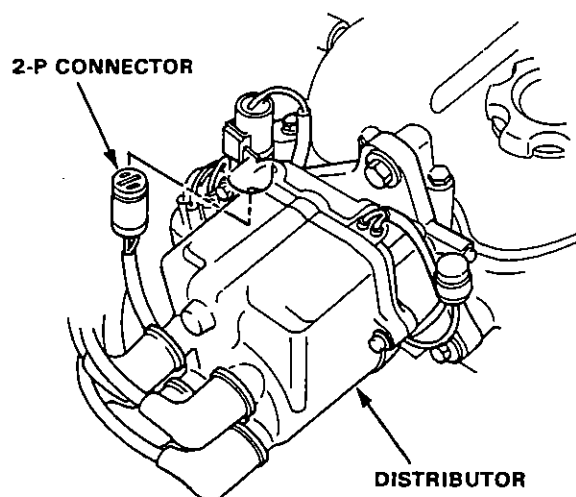
Use a starter system tester.
Connect and operate the equipment in accordance with manufacturer's instructions.
Test and troubleshoot as described.

Alternate Procedure:

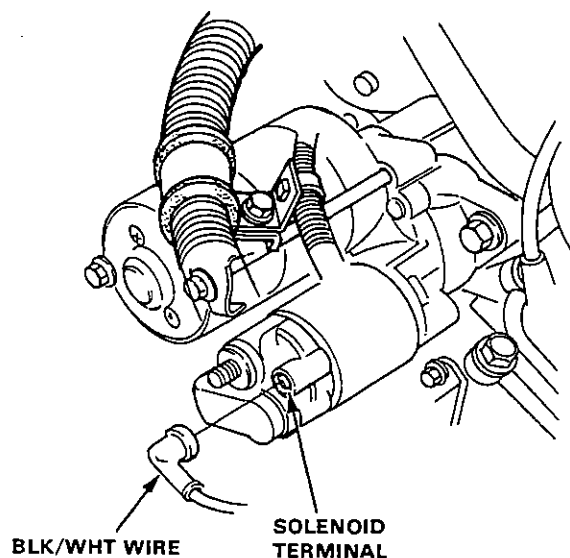
- Use the following equipment:
 - Ammeter, 0–400 A
 - Voltmeter, 0–20 V (accurate within 0.1 volt)
 - Tachometer, 0–1200 rpm
- Hook up voltmeter and ammeter as shown.



1. Disconnect the 2-P connector (Ignition coil primary lead) from the distributor.



2. Check the starter engagement:
Turn the ignition switch to "Start". The starter should crank the engine.
- If the starter does not crank the engine, check the battery, battery positive wire and ground, and the wire connections for looseness or corrosion.
 - Test again.
If the starter still does not crank the engine, bypass the ignition switch circuit as follows:
Unplug the connector (BLK/WHT wire) from the starter. Connect a jumper wire from the battery positive (+) terminal to the solenoid terminal. The starter should crank the engine.





— If the starter still does not crank the engine, remove the starter and diagnose its internal problems.

— If the starter cranks the engine, check for an open in the BLK/WHT wire circuit between the starter and ignition switch, and connectors. Check the ignition switch.

3. Check for wear or damage:
The starter should crank the engine smoothly and steadily.

If the starter engages, but cranks the engine erratically, remove the starter motor. Inspect the starter, drive gear, and flywheel ring gear for damage. Check the drive gear overrunning clutch for binding or slipping when the armature is rotated with the drive gear held. Replace the gears if damaged.

4. Check cranking voltage and current draw.
Voltage should be no less than specified below:
1.2kw and 1.4kw: 8 volts
Current should be no greater than specified below:
1.2 kw: 280 amperes
1.4 kw: 350 amperes

If voltage is too low, or current draw too high, check for:

- Battery fully charged.
- Open circuit in starter armature commutator segments.
- Starter armature dragging.
- Shorted armature winding.
- Excessive drag in engine.

5. Check cranking min^{-1} (rpm):
Engine speed during cranking should be above 100 min^{-1} (rpm).

- Loose battery or starter terminals.
- Excessively worn starter brushes.
- Open circuit in commutator segments.
- Dirty or damaged helical spline or drive gear.
- Defective drive gear overrunning clutch.

6. Check the starter disengagement:
Turn the ignition switch to "Start" and release to "Run." The starter drive gear should disengage from the flywheel ring gear.

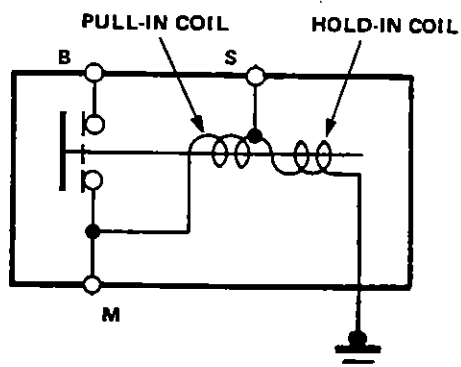
If the drive gear hangs up on the flywheel ring gear, check:

- Solenoid plunger and switch for malfunction.
- Drive gear assembly for dirty or damaged over-running clutch.

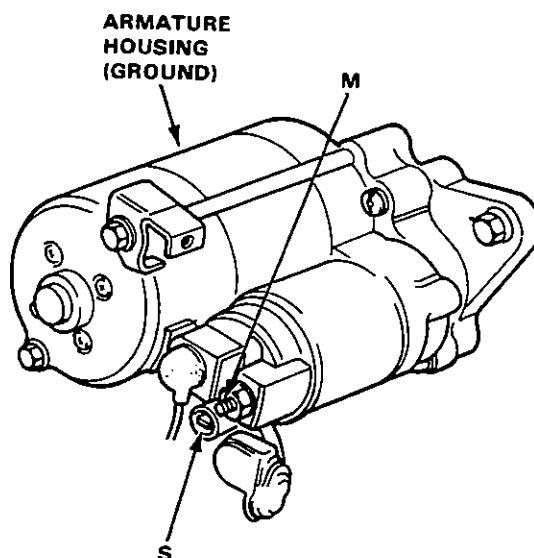
Starting System

Starter Solenoid Test

1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground).
Coil is OK if there is continuity.
2. Check the pull-in coil for continuity between the S and M terminals.
Coil is OK if there is continuity.

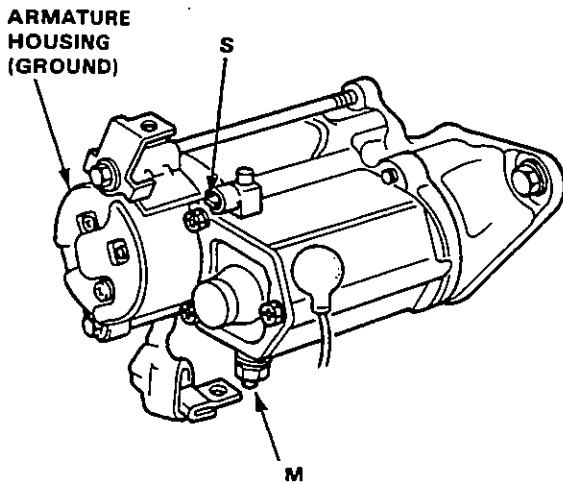


Mitsuba (1.4 kw) type:



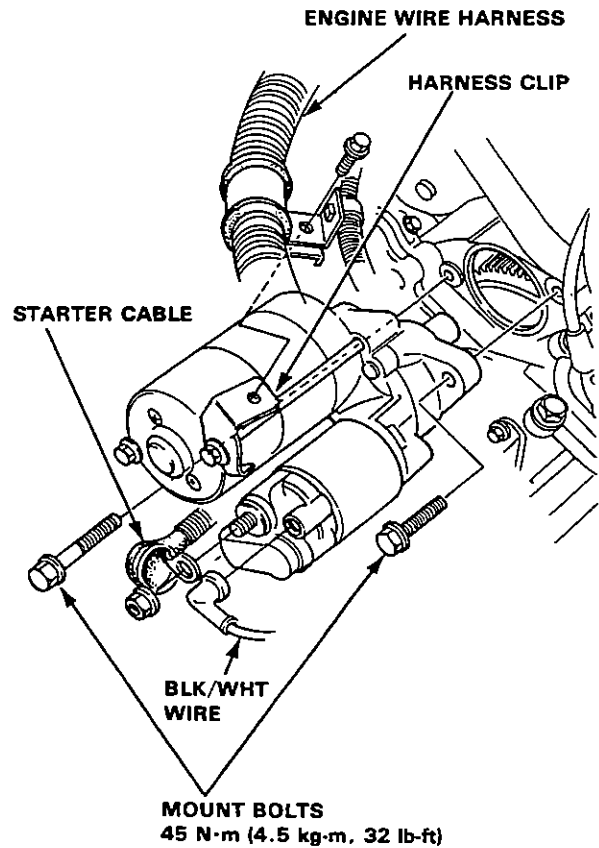


Nippon Denso (1.2 kw) type:



Starter Replacement

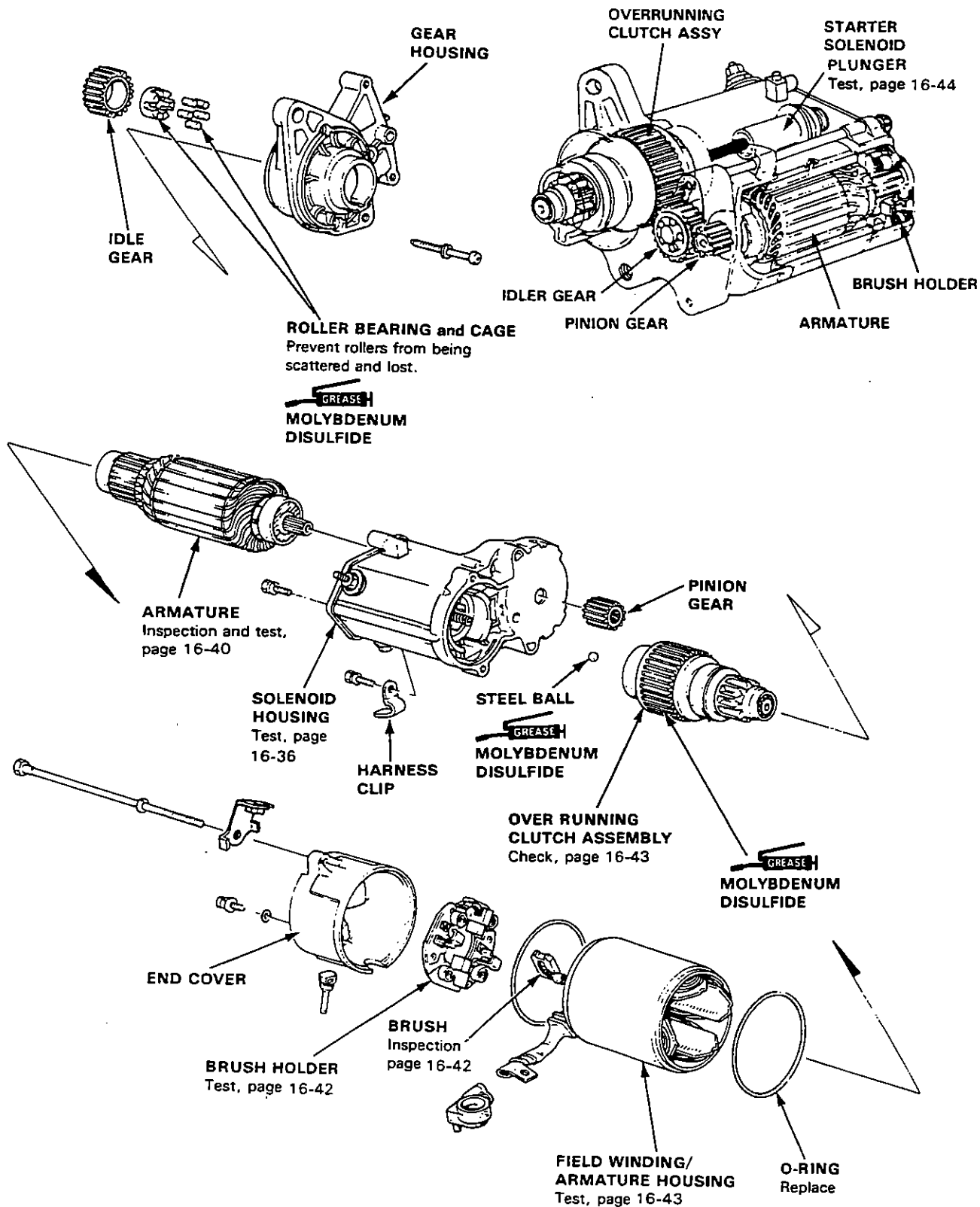
1. Disconnect the ground wire from the battery negative (-) post.
2. Remove the engine wire harness from the harness clip on the starter motor.
3. Disconnect the starter cable from the B terminal on the solenoid, and the BLK/WHT wire from the S terminal.
4. Remove the 2 bolts holding the starter, and remove the starter.



Starting System

Starter Overhaul (Gear Reduction ND type)

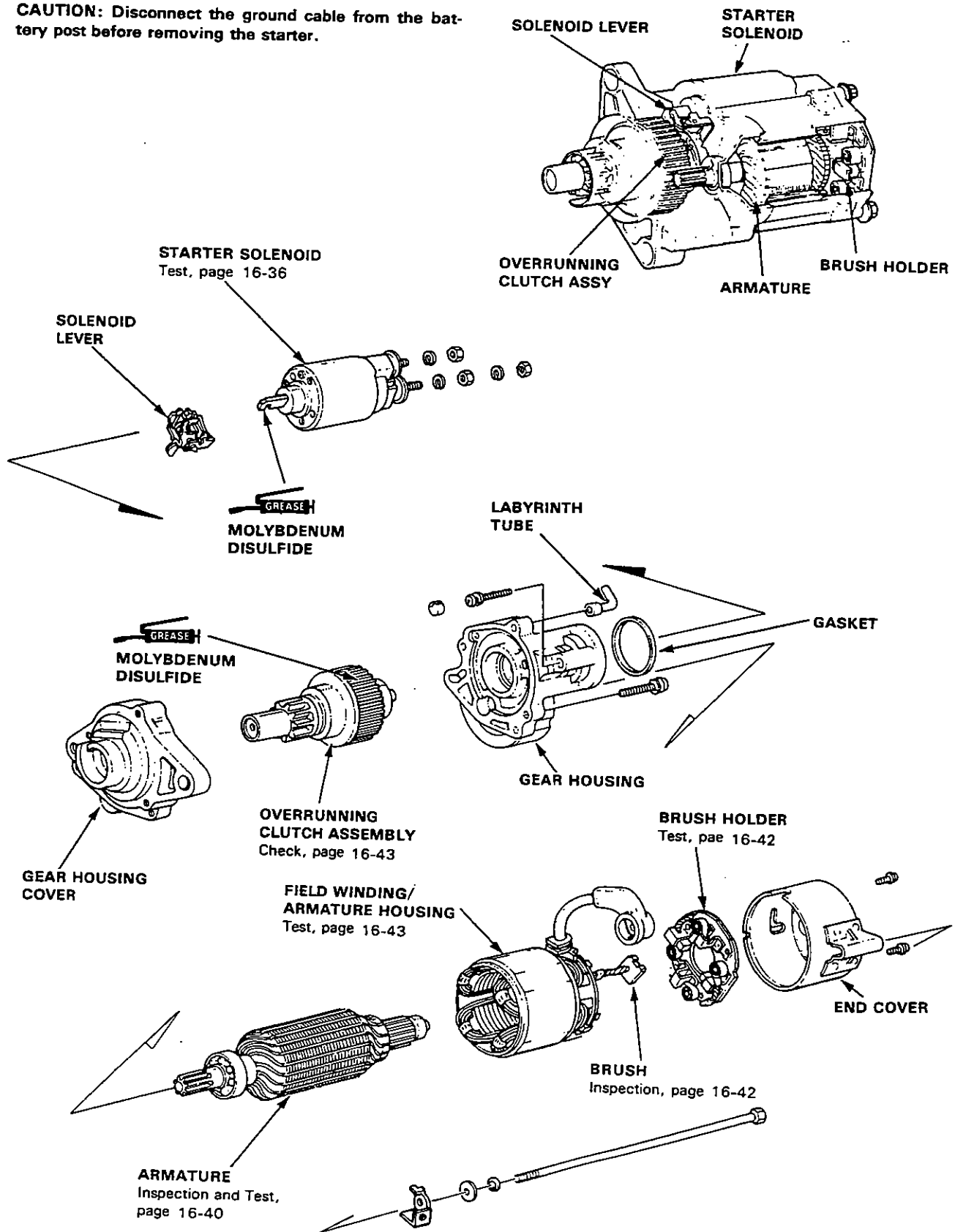
CAUTION: Disconnect ground wire from the battery post before removing the starter.





(Gear Reduction Mitsuba type)

CAUTION: Disconnect the ground cable from the battery post before removing the starter.

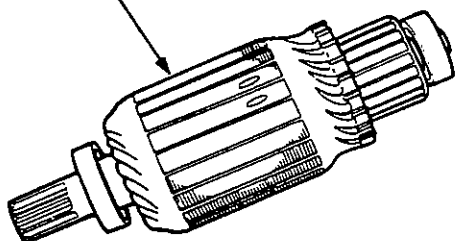


Starting System

Armature Inspection and Test

1. Inspect the armature for wear or damage due to contact with the field coil magnets.

Inspect for damage.

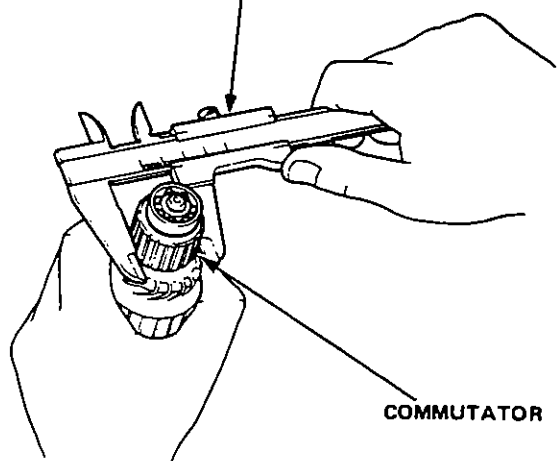


2. A dirty or burnt commutator surface may be resurfaced with emery cloth or a lathe within the following specifications.

Commutator Diameter

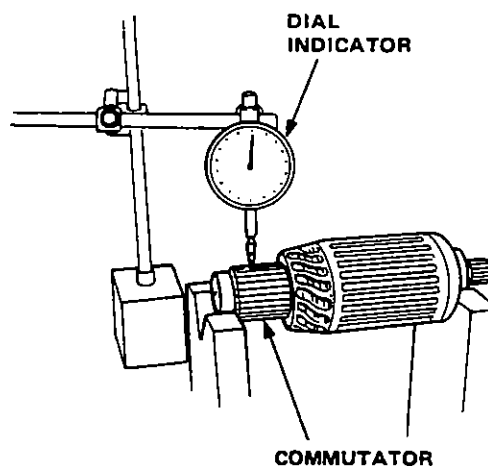
	Standard (New)	Service Limit
ND	28.0—30.0 mm (1.177—1.181 in)	29.0 mm (1.14 in)
Mitsuba	26.0—28.1 mm (1.102—1.106 in)	27.5 mm (1.08 in)

VERNIER CALIPER



Commutator Runout

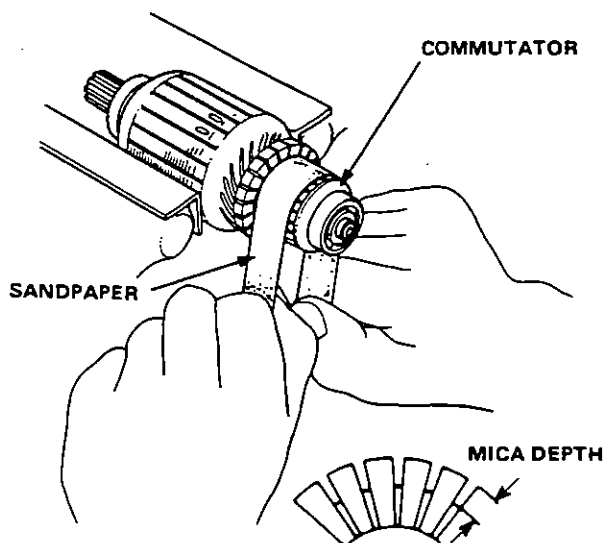
	Standard (New)	Service Limit
ND and Mitsuba	0—0.02 mm (0—0.001 in)	0.05 mm (0.002 in)



3. If the commutator runout and diameter are within limits, check the commutator for damage or for carbon dust or brass chips between the segments.



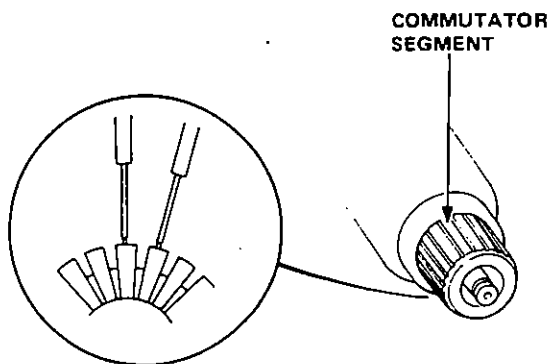
4. If surface is dirty, recondition it with a #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth.



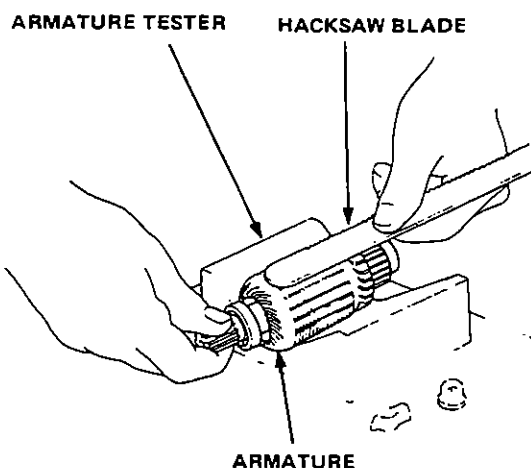
Commutator Mica Depth

	Standard (New)	Service Limit
ND	0.5—0.8 mm (0.020—0.031 in)	0.2mm (0.008 in)
Mitsuba	0.4—0.5mm (0.016—0.020 in)	0.15 mm (0.006 in)

5. Check for continuity between each segment of the commutator. If an open circuit exists between any segment, replace the armature.

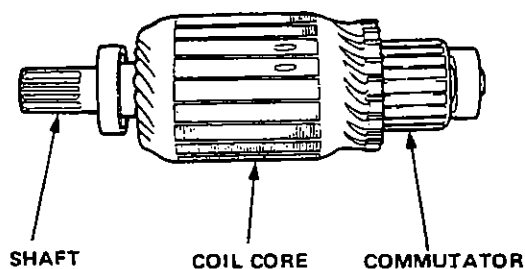


6. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.



If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

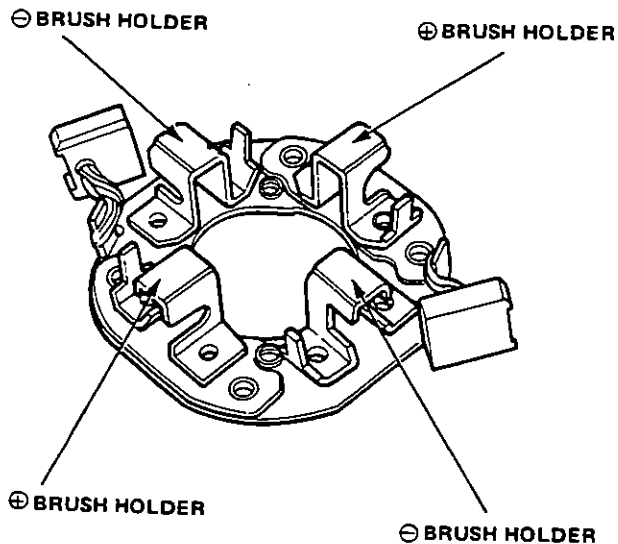
7. With an ohmmeter, check that no continuity exists between the commutator and armature coil core, and between the commutator and armature shaft. If continuity exists, replace the armature.



Starting System

Starter Brush Holder Test

1. Check that there is no continuity between the $\oplus$ and $\ominus$ brush holders. If continuity exists, replace the brush holder assembly.

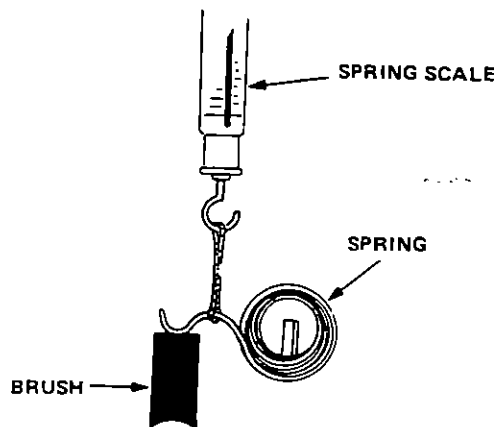


2. Insert the brush into the brush holder, and bring the brush into contact with commutator, then attach a spring scale to the spring. Measure the spring tension at the moment the spring lifts off the brush.

Spring Tension:

ND: 18.5–24.4 N (1.85–2.44 kg, 4.1–5.41 lb)

Mitsuba: 20.5–27.0 N (2.05–2.70 kg, 4.5–6.016 lb)

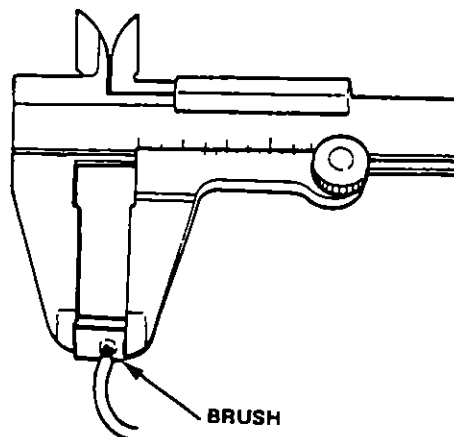


Starter Brush Inspection

Measure brush length. If not within service limit, replace the armature housing and brush holder assembly.

Brush Length

	Standard (New)	Service Limit
ND	12.5–13.5 mm (0.49–0.53 in)	8.5 mm (0.33 in)
Mitsuba	14.3–14.7 mm (0.56–0.58 in)	9.3mm (0.37in)

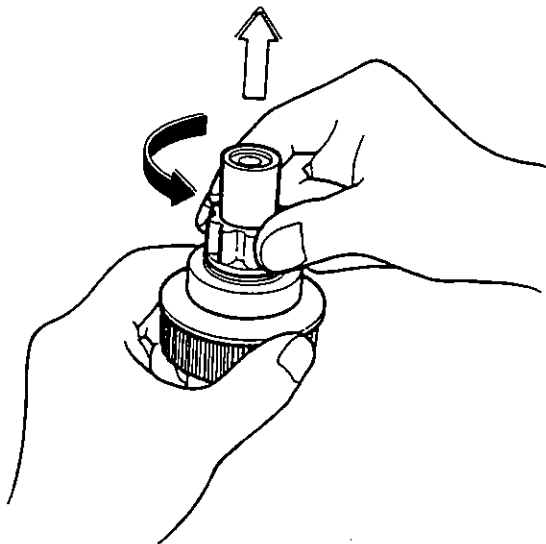


NOTE: To seat new brushes after installing them in their holders, slip a strip of #500 or #600 sandpaper, with the grit side up, over the commutator, and smoothly rotate the armature. The contact surface of the brushes will be sanded to same contour as the commutator.



Overrunning Clutch Check

1. Check if the overrunning clutch moves along the shaft freely. If not, replace the overrunning clutch assembly.
2. Check if the overrunning clutch locks in one direction and rotates smoothly in reverse. If it does not lock in either direction or it locks in both directions, replace the overrunning clutch assembly.

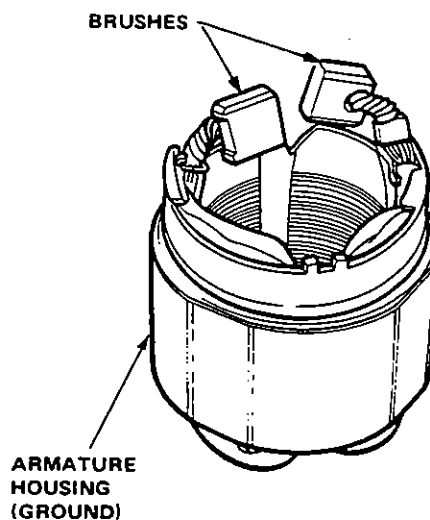


3. Check if the starter drive gear is worn or damaged. If the gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

NOTE: Check condition of the flywheel if the starter drive gear teeth are damaged.

Starter Field Winding Test

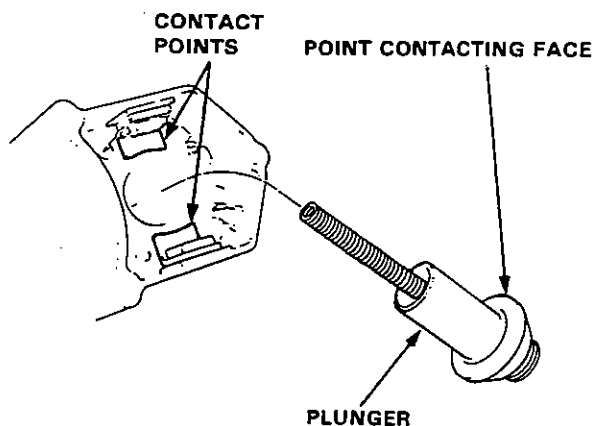
1. Check for continuity between the brushes. If no continuity, replace the armature housing.
2. Check for continuity between each brush and the armature housing (ground). If continuity exists, replace the armature housing.



Starting System

Solenoid Plunger Inspection (ND type)

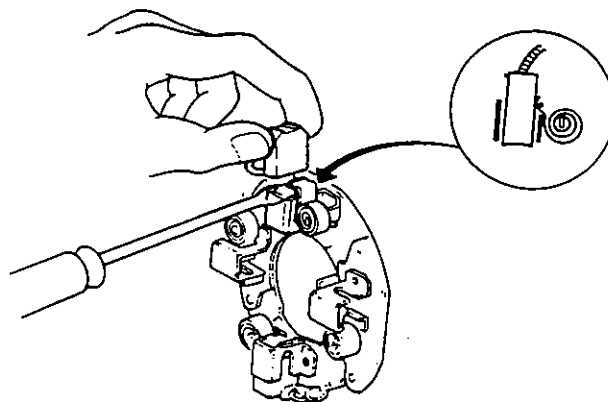
Check the contact points, and face of the starter solenoid plunger for burning, pitting or any other defects. If surfaces are rough, recondition with a strip of #500 or #600 sandpaper.



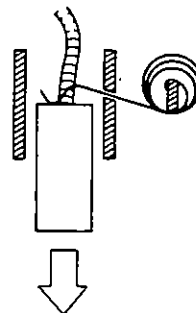
Starter Reassembly

Reassemble the starter in the reverse order of disassembly.

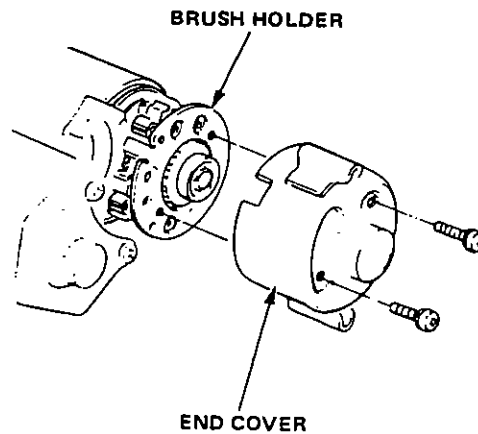
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



2. Install the armature in the housing. Next pry back each brush spring again and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



3. Install the end cover on the brush holder.



Ignition System



—Component Location Index—

IGNITION TIMING CONTROL SYSTEM

Troubleshooting, section 5

Inspection and Setting, page 16-47

DISTRIBUTOR

Top End Inspection, page 16-48

Removal/Installation, page 16-48 and 49

Overhaul, page 16-50

Reassembly, page 16-51

Ignition coil Test/Replacement,
page 16-52 and 53

IGNITION WIRES

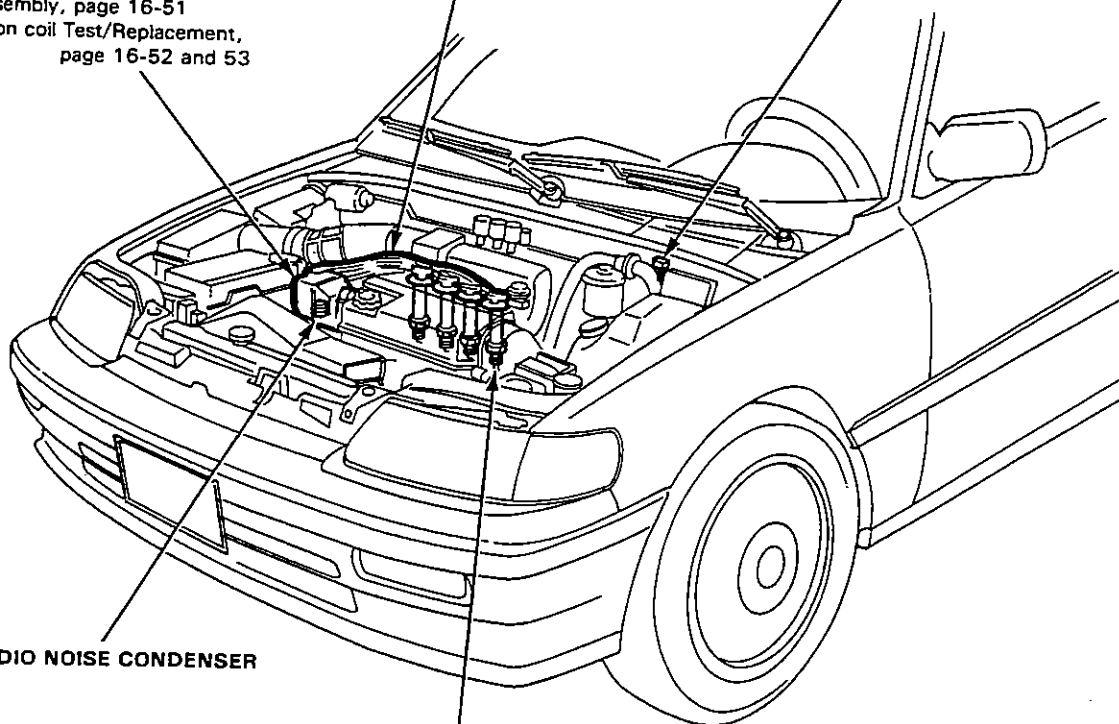
Inspection and Test, page 16-51

IGNITION TIMING ADJUSTING CONNECTOR

RADIO NOISE CONDENSER

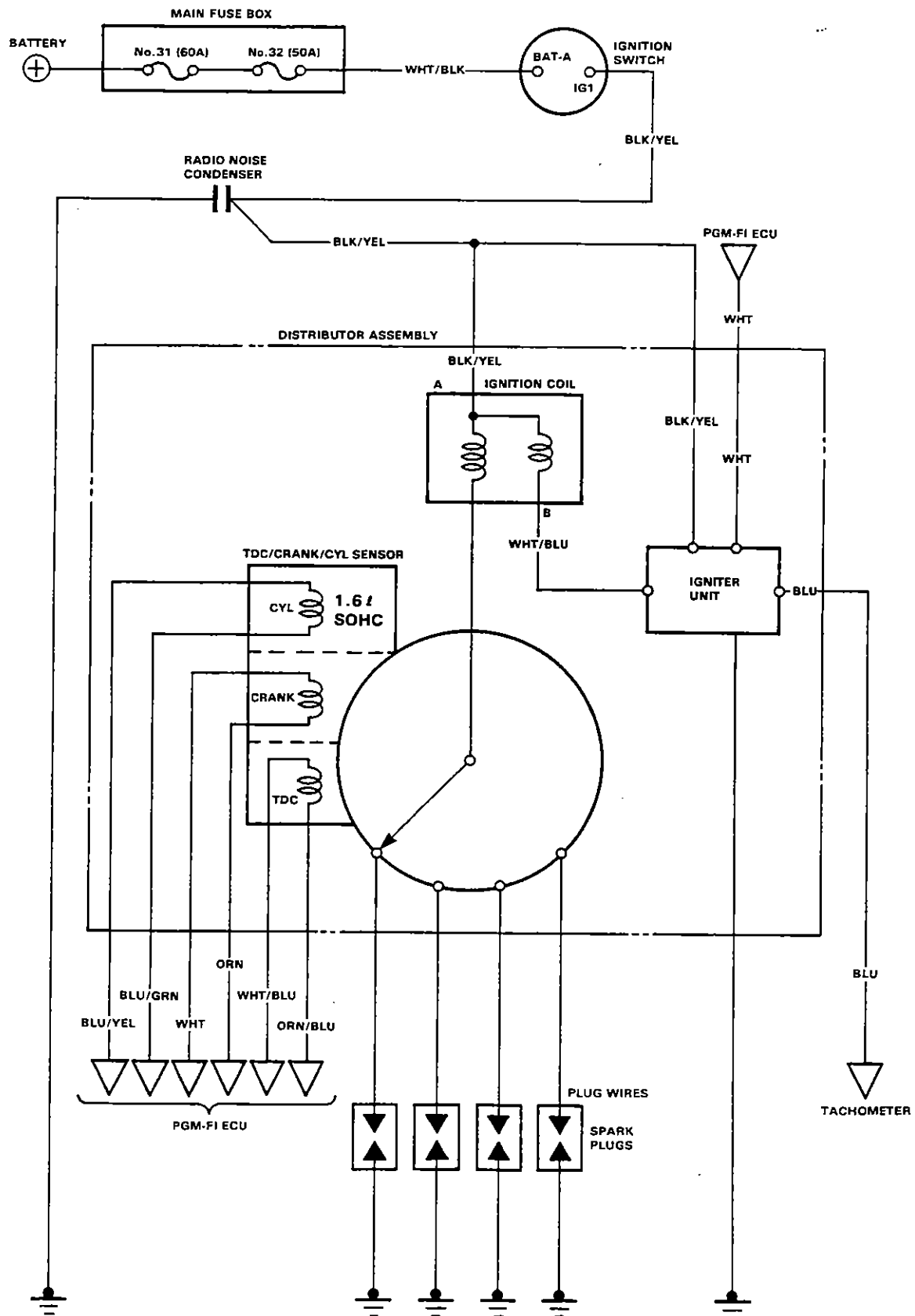
SPARK PLUG

Inspection, page 16-54



Ignition System

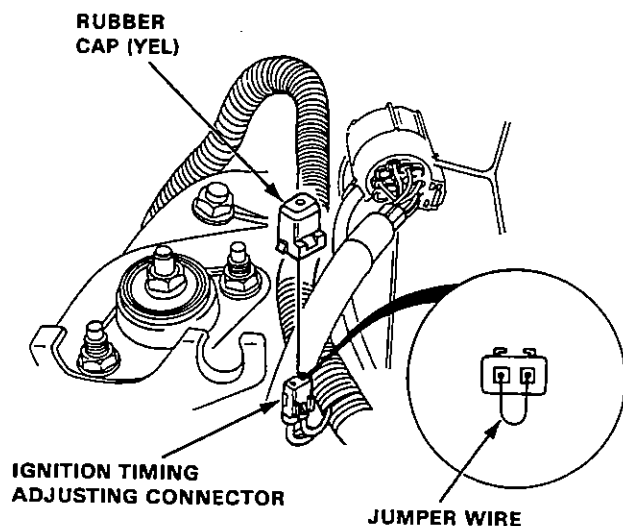
Circuit Diagram



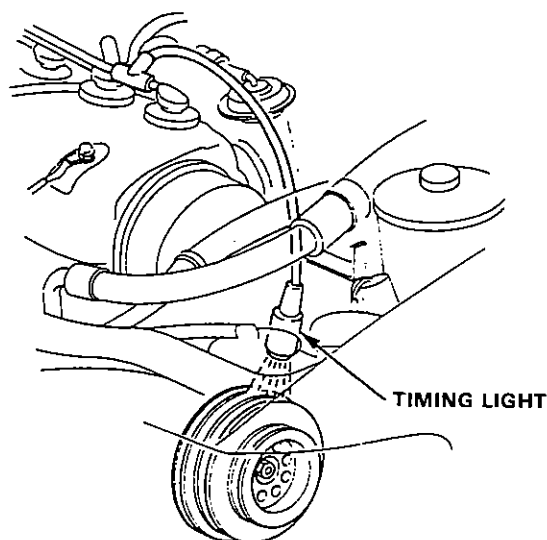


Ignition Timing Inspection and Setting

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



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



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

Ignition Timing

1.6 l SOHC (With CATA):

$18^{\circ} \pm 2^{\circ}$ BTDC (RED) at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral

1.6 l SOHC (Without CATA):

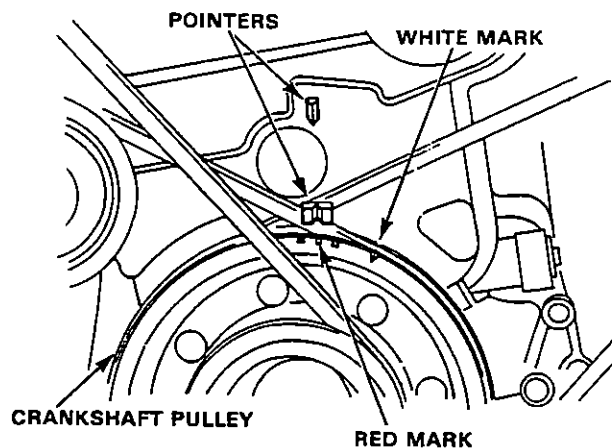
$18^{\circ} \pm 2^{\circ}$ BTDC (RED) at $780 \pm 50 \text{ min}^{-1}$ (rpm) in neutral

1.6 l DOHC (EX. KQ model):

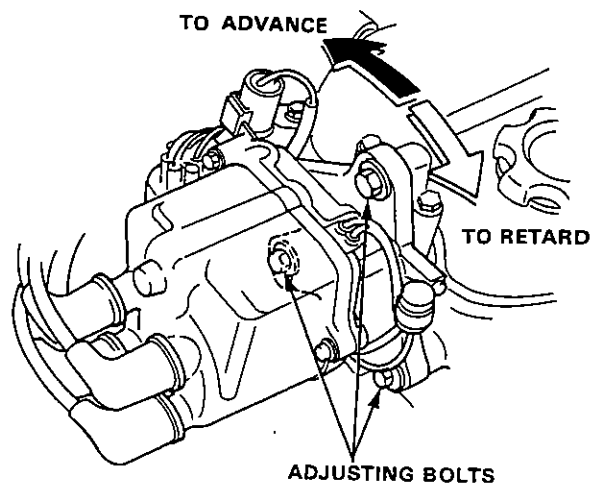
$16^{\circ} \pm 2^{\circ}$ BTDC (RED) at $800 \pm 50 \text{ min}^{-1}$ (rpm) in neutral

1.6 l DOHC (KQ model):

$16^{\circ} \pm 2^{\circ}$ BTDC (RED) at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral



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

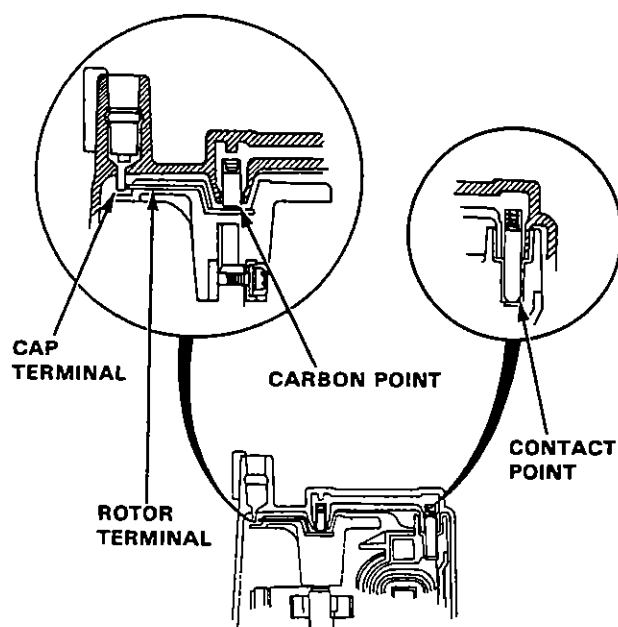


6. Tighten the adjusting bolts and recheck the timing.
7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

Ignition System

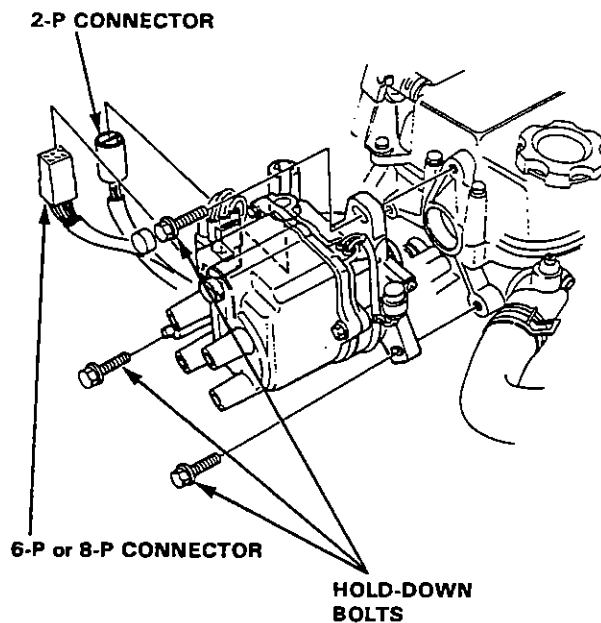
Distributor Top End Inspection

1. Check for rough or pitted rotor and cap terminals.
2. Scrape or file off the carbon deposits. Smooth the rotor terminal with an oil stone or #600 sandpaper if rough.
3. Check the distributor cap for cracks, wear and damage. If necessary, clean or replace it.



Distributor Removal

1. Disconnect the 2-P and 6-P or 8-P connectors from the distributor.
2. Disconnect the spark plug wires from the distributor cap.



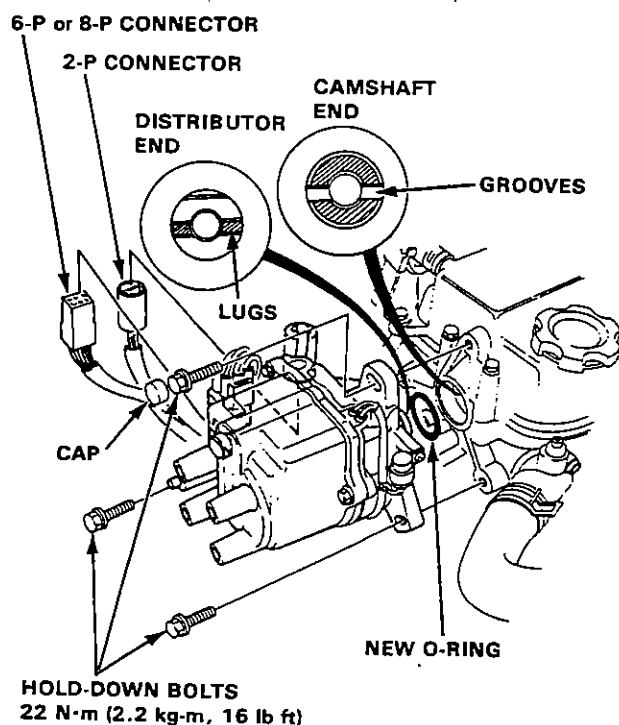
3. Remove the distributor hold-down bolts, then remove the distributor from the cylinder head.



Distributor Installation

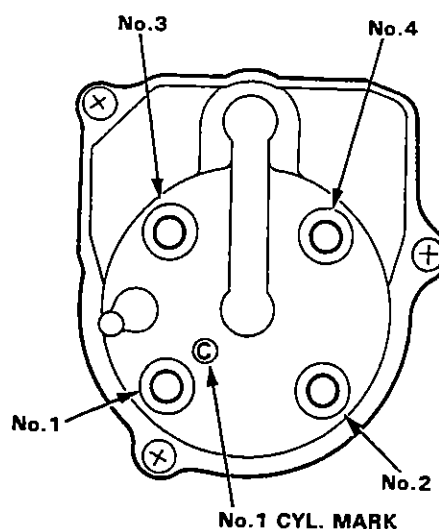
1. Coat a new O-ring with engine oil then install it.
2. Slip the distributor into position.

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



3. Install the hold-down bolts and tighten temporarily.
4. Connect the 2-P and 6-P or 8-P connectors to the distributor.

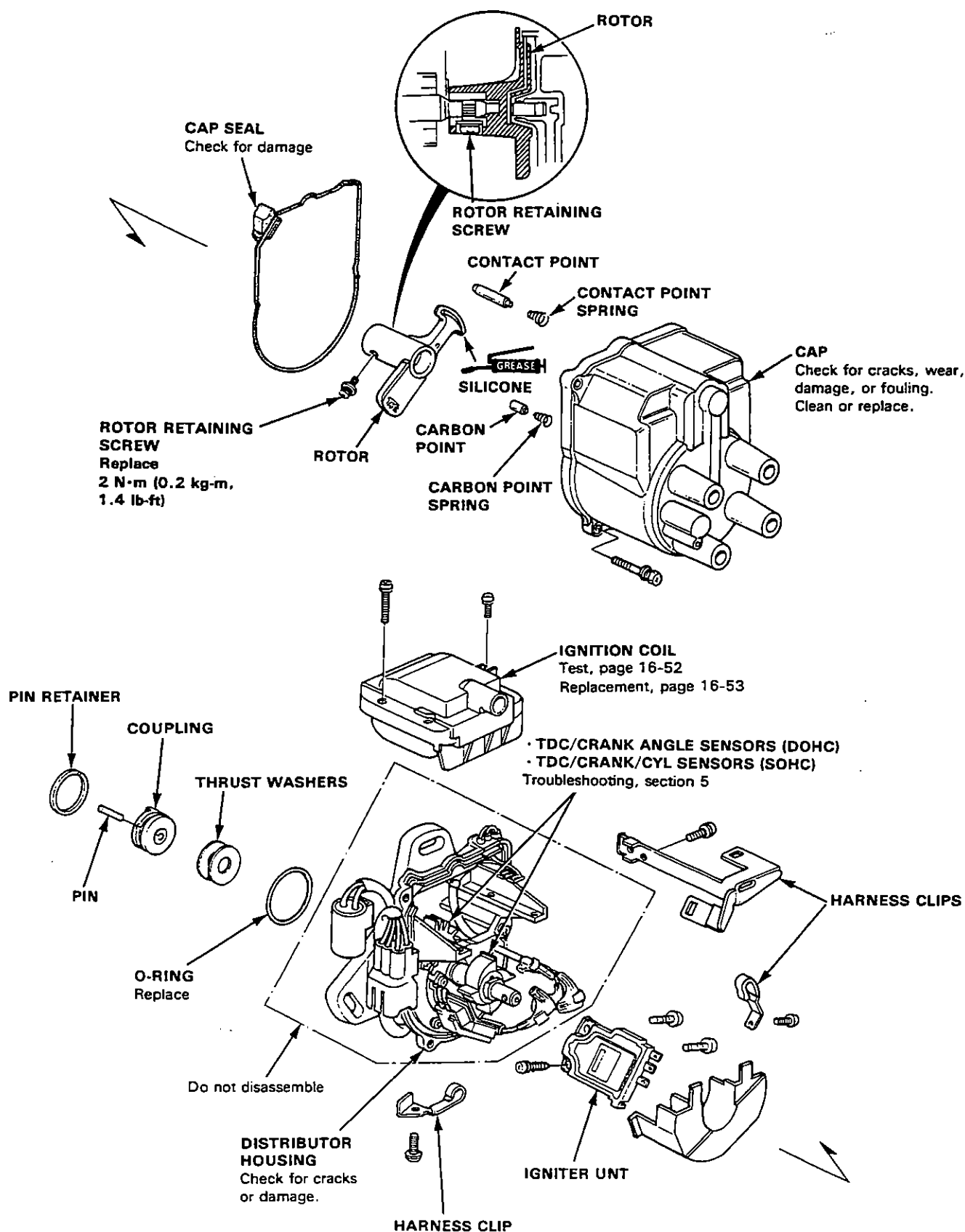
5. Connect the spark plug wires as shown.



6. Set the timing with a timing light as shown on page 16-47.
7. After adjusting, tighten the hold-down bolts, then install the cap on the bolt.

Ignition System

Distributor Overhaul

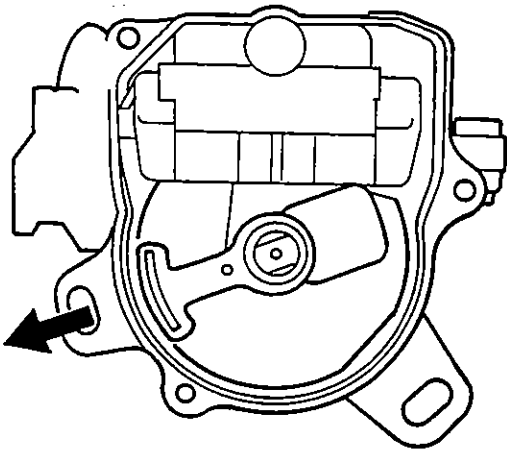




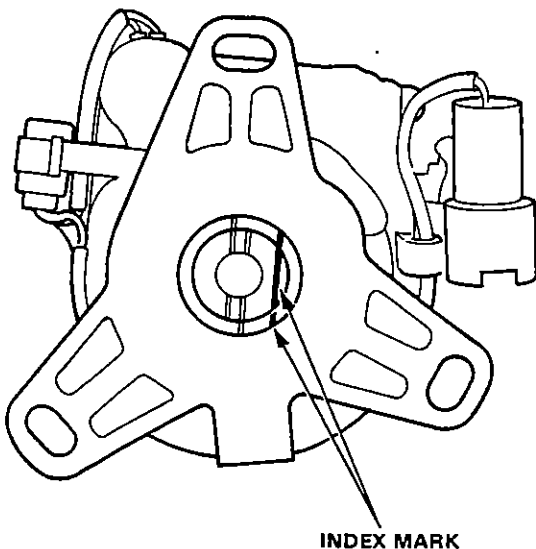
Distributor Reassembly

Reassemble the distributor in the reverse order of disassembly.

1. Install the rotor, then turn it so that it faces in the direction shown (toward the No. 1 cylinder).



2. Set the thrust washer and coupling on the shaft.
3. Check that the rotor is still pointing toward the No. 1 cylinder, then align the index mark on the housing with the index mark on the coupling.

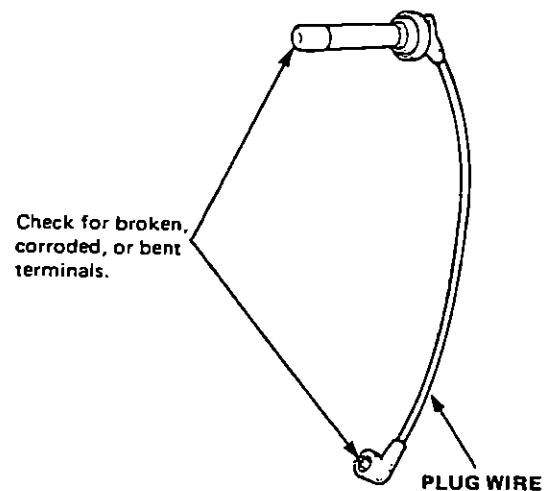


4. Drive in the pin and secure it with the pin retainer.

Ignition Wire Inspection and Test

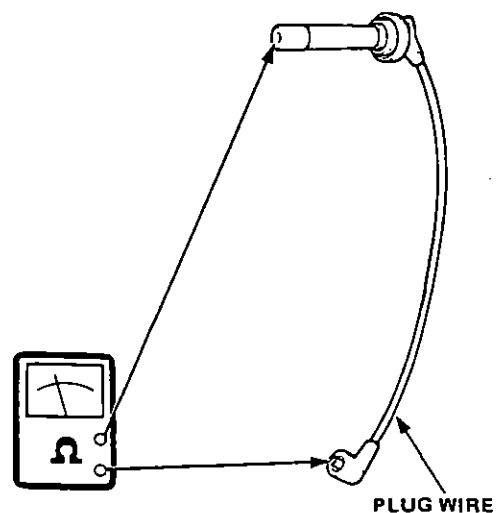
CAUTION: Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wire or the conductor may be broken.

1. Check the condition of the wire terminals. If any terminal is corroded, clean it, and if it is broken or distorted, replace the wire.



2. Connect ohmmeter probes and measure resistance.

Ignition Wire Resistance:
25,000 ohms max. at 20°C (70°F)

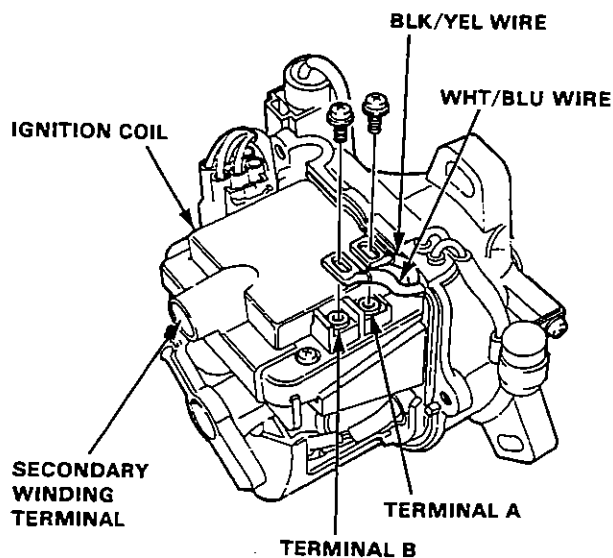


3. If resistance exceeds 25,000 ohms, replace the ignition wire.

Ignition System

Ignition Coil Test

1. With the ignition switch OFF, remove the distributor cap.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.



3. Using an ohmmeter, measure resistance between the terminals. Replace the coil if the resistance is not within specifications.

NOTE: Resistance will vary with the coil temperature; specifications are at 20°C (70°F)

Primary Winding Resistance

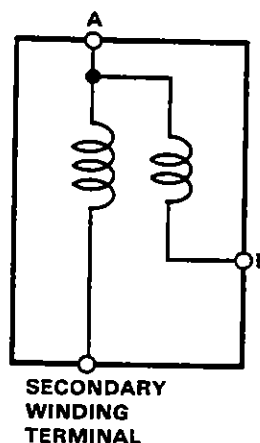
(between the A and B terminals):

0.3–0.5 ohms

Secondary Winding Resistance

(between the A and secondary winding terminals):

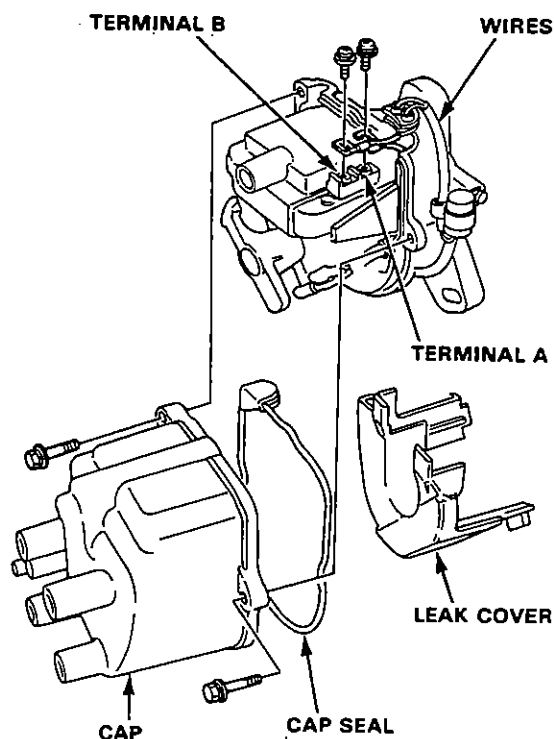
9,440–14,160 ohms



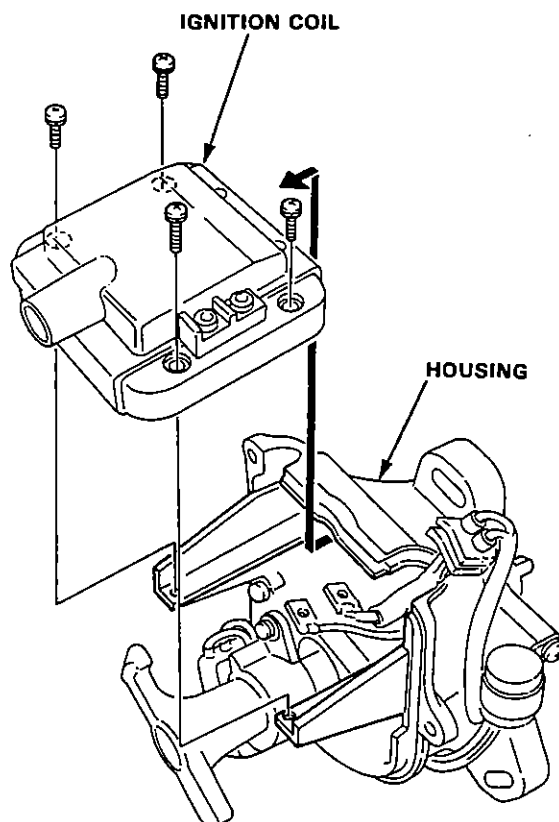


Ignition Coil Replacement

1. With ignition switch OFF, remove the distributor cap and cap seal, then remove the leak cover.
2. Remove the 2 screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A and B respectively.



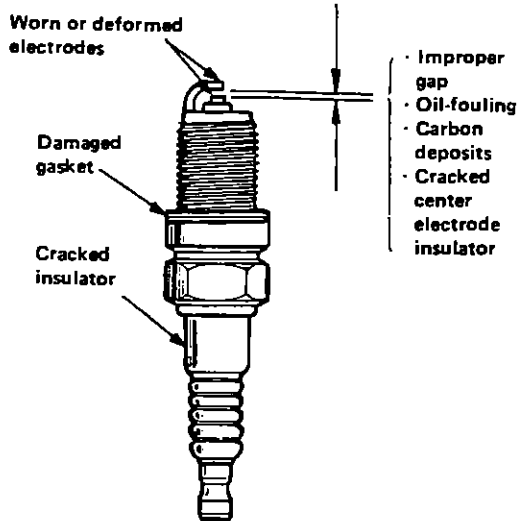
3. Remove the 4 screws and slide the ignition coil out of the distributor housing.



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:

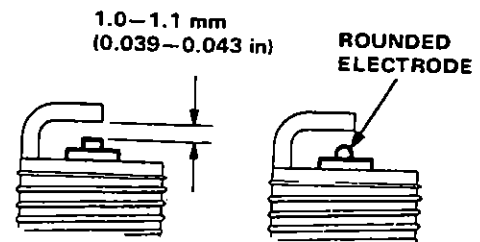
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

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)

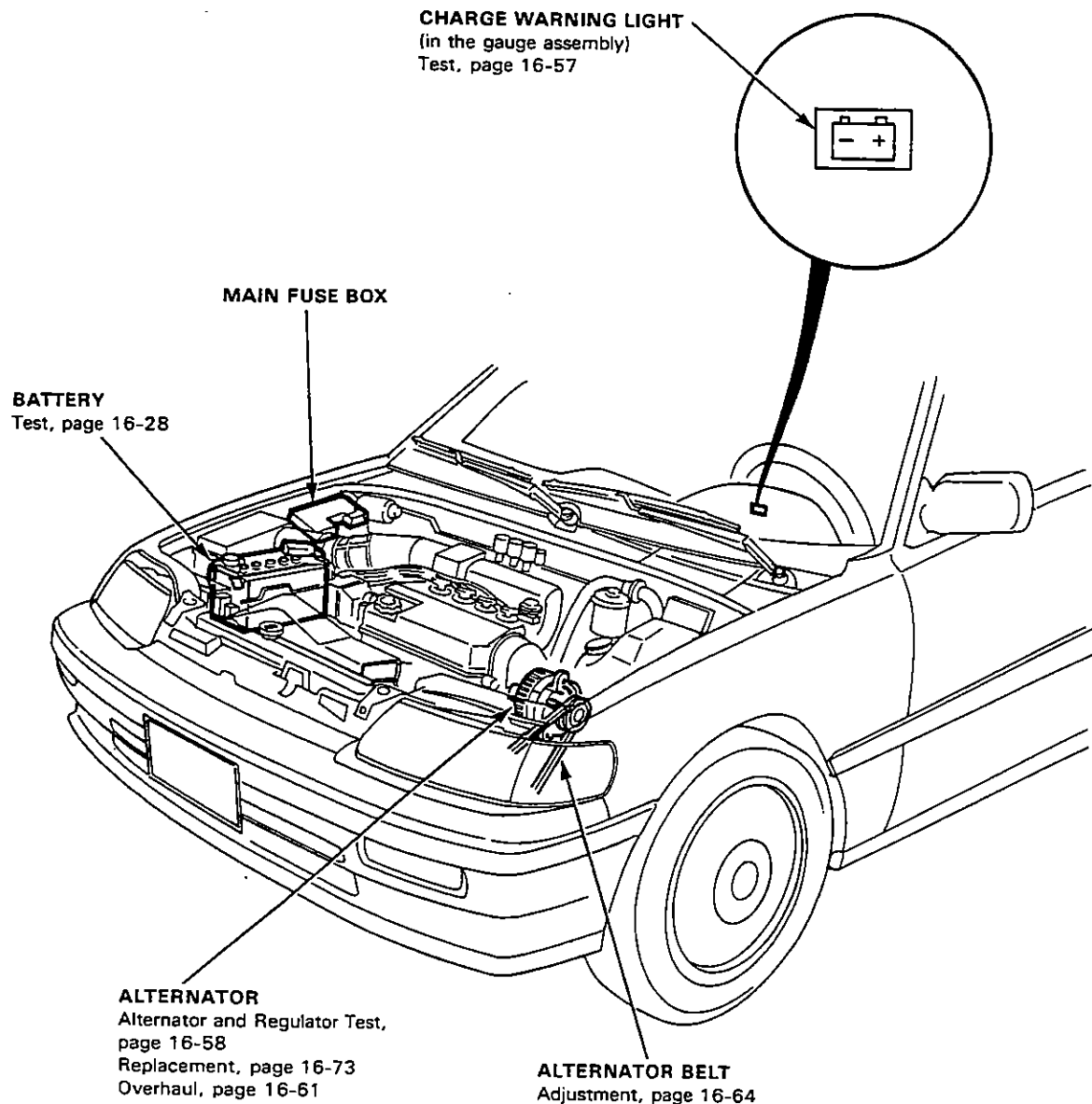
4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg·m, 13 lb·ft).

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

Charging System

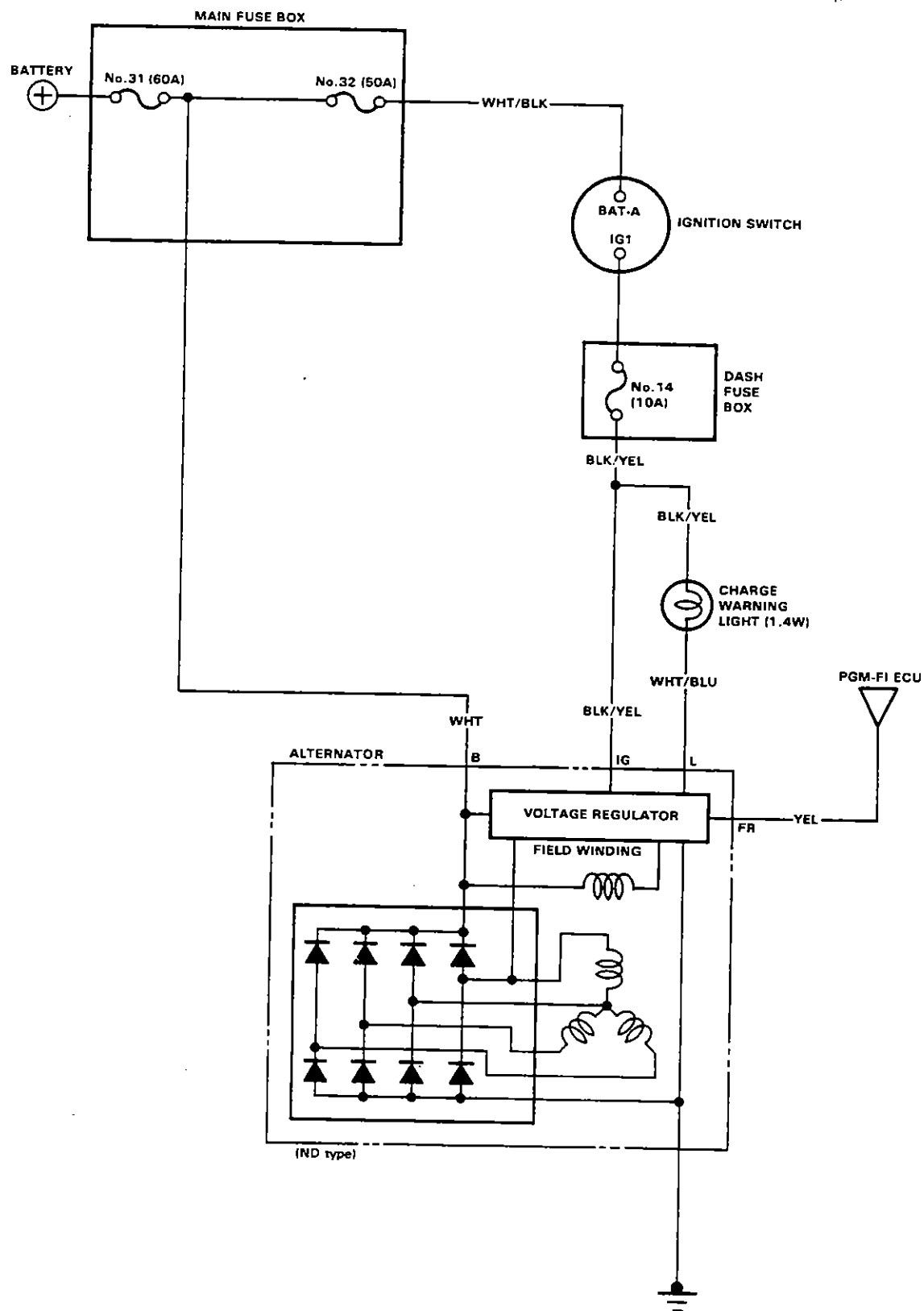


Component Location Index



Charging System

Circuit Diagram



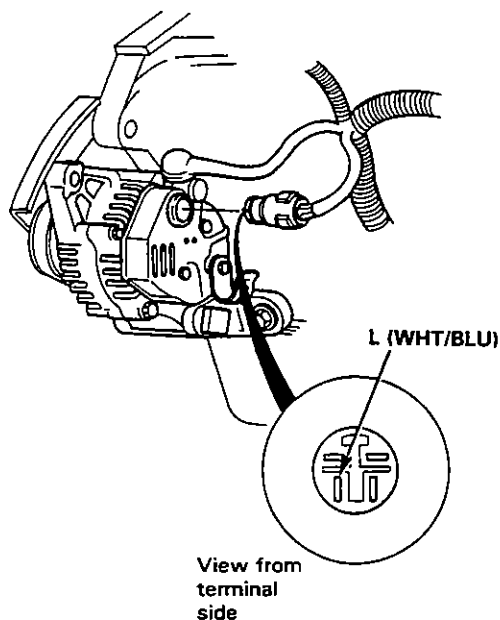
Charging System



Charge Warning Light Test

NOTE: Before testing, check the wire harness connection and alternator belt tension.

1. Turn the ignition switch on. The charge warning light should come on.
If it does not come on, unplug the alternator connector and short the pin of the L (WHT/BLU) terminal to ground.



- If the warning light still does not come on, check for:

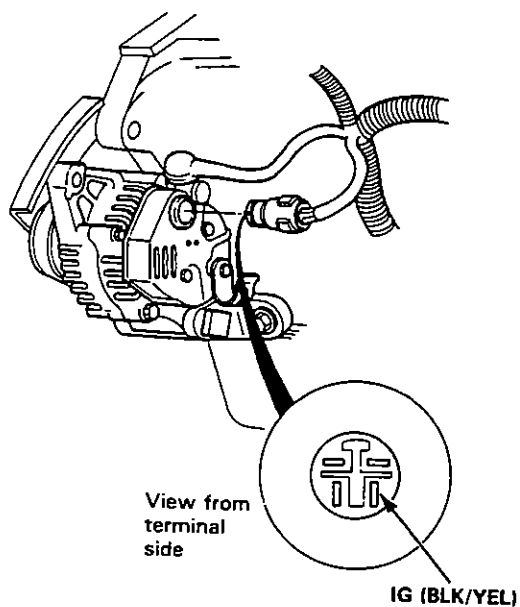
- Blown No. 14 (10 A) fuse in the dash fuse box.
- Bad bulb.
- An open in the WHT/BLU wire between the warning light and voltage regulator.
- An open in the BLK/YEL wire between the warning light and the dash fuse box, or the dash fuse box and the ignition switch.

- If the light comes on, check the alternator and regulator (see page 16-58).

2. Start the engine and let it idle. The charge warning light should go off.
If it stays on this time, check the alternator and regulator (see page 16-58).

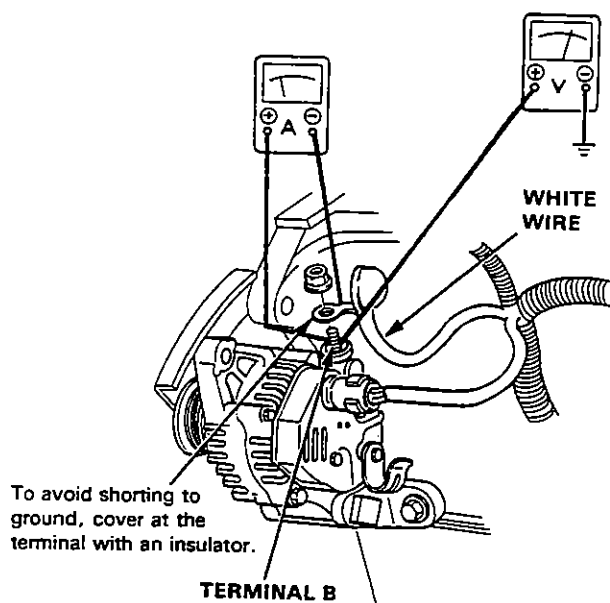
Alternator and Regulator Test

1. First make sure you have a good battery, and that the alternator belt, and connections at the alternator and main fuses are good. Next, check the No.14 (10A) fuse in the dash fuse box. (If blown, the charge warning light will come on even if the system is working properly)
2. Disconnect the alternator connector from the alternator.
With the ignition switch on, there should be battery voltage between the IG (BLK/YEL) terminal and body ground.



- If there is no voltage, check for an open in the BLK/YEL wire between the dash fuse box and voltage regulator.
- If there is battery voltage, go to step 3.

3. If these check OK, connect a voltmeter between the alternator terminal B and body ground, and an ammeter (100 amp capacity or higher) between the alternator terminal B and the white wire as shown. (An inductive pick up can be used instead of disconnecting the white wire.)



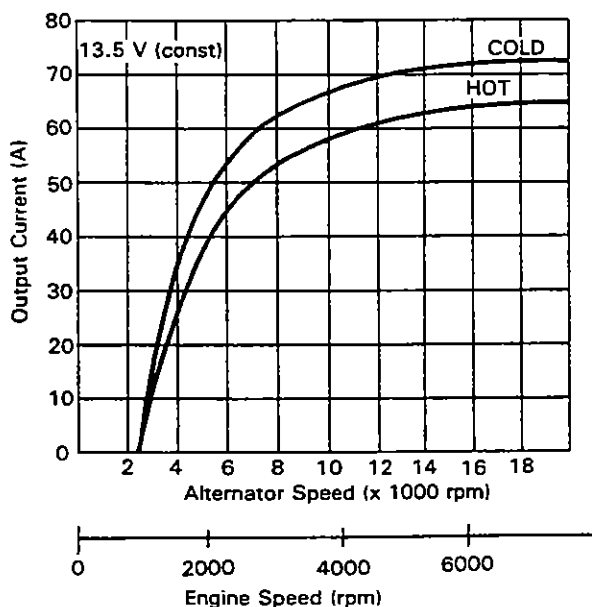
4. Start the engine, and turn on the headlights, blower motor, rear window defogger, etc.

NOTE: If voltage stays above 13.5 V, apply electrical load more to lower the voltage to less than 13.5 V. If the voltage exceeds 16 V, stop the engine and replace the voltage regulator.



5. Compare the readings to the chart below. If no output or below specification, go to step 7. If output is within specification, go to step 6.

NOTE: Subtract 5 to 10 amperes from the maximum reading due to engine operation.

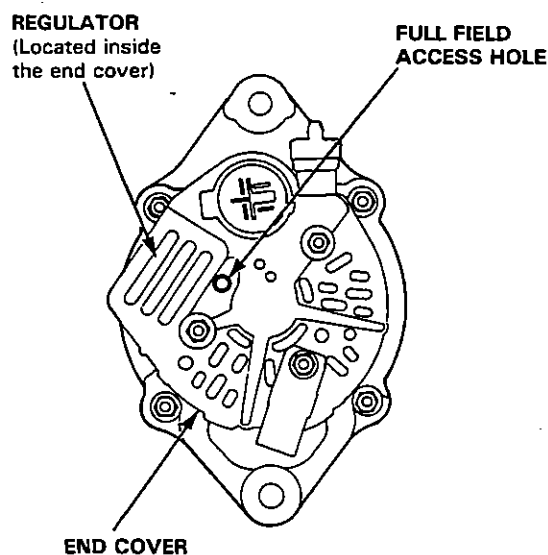


6. Turn off all loads in step 4, then measure the alternator output voltage at 1,500 rpm.

- If the voltage is between 13.9 V and 15.1 V, the alternator and regulator are OK. If the charge warning light is still on, see Charge Warning Light Test.

7. Perform a full-field test: Insert a short screwdriver into the full field access hole at the back of the alternator. While grounding the screwdriver and check amperage reading.

CAUTION: The voltage will rise quickly when the alternator is full fielded. Do not allow the voltage to exceed 18 volts or damage to the electrical system may result.

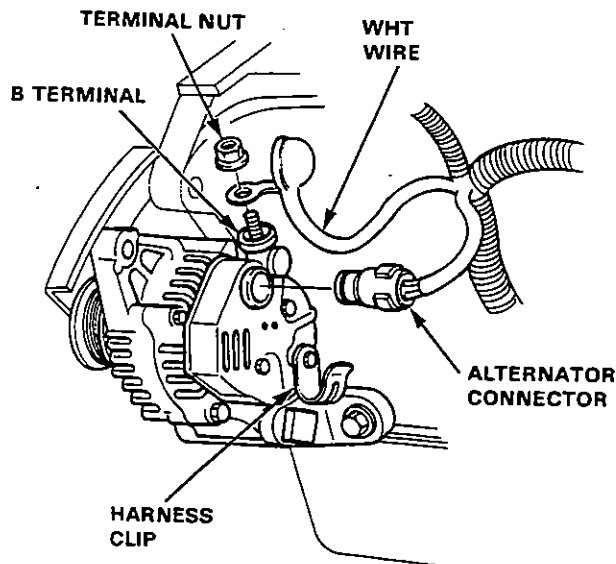


- If the amperage is not within specification, replace the alternator.
- If the amperage is within specification, replace the voltage regulator.

Charging System

Alternator Replacement

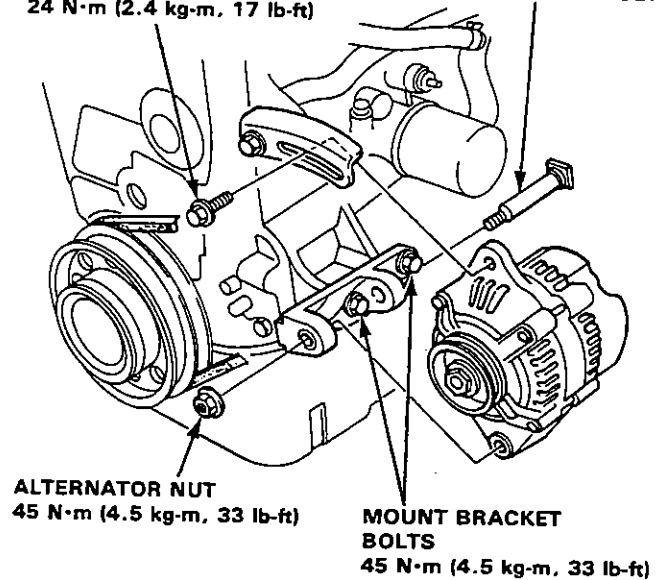
1. Disconnect the ground wire from the battery negative (-) post.
2. Disconnect the alternator connector from the alternator.
3. Remove the terminal nut and the WHT wire from the B terminal.



4. Remove the adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.
5. Remove the alternator through bolt, then remove the alternator.

**ALTERNATOR
ADJUSTING BOLT**
24 N·m (2.4 kg-m, 17 lb-ft)

**ALTERNATOR
THROUGH BOLT**



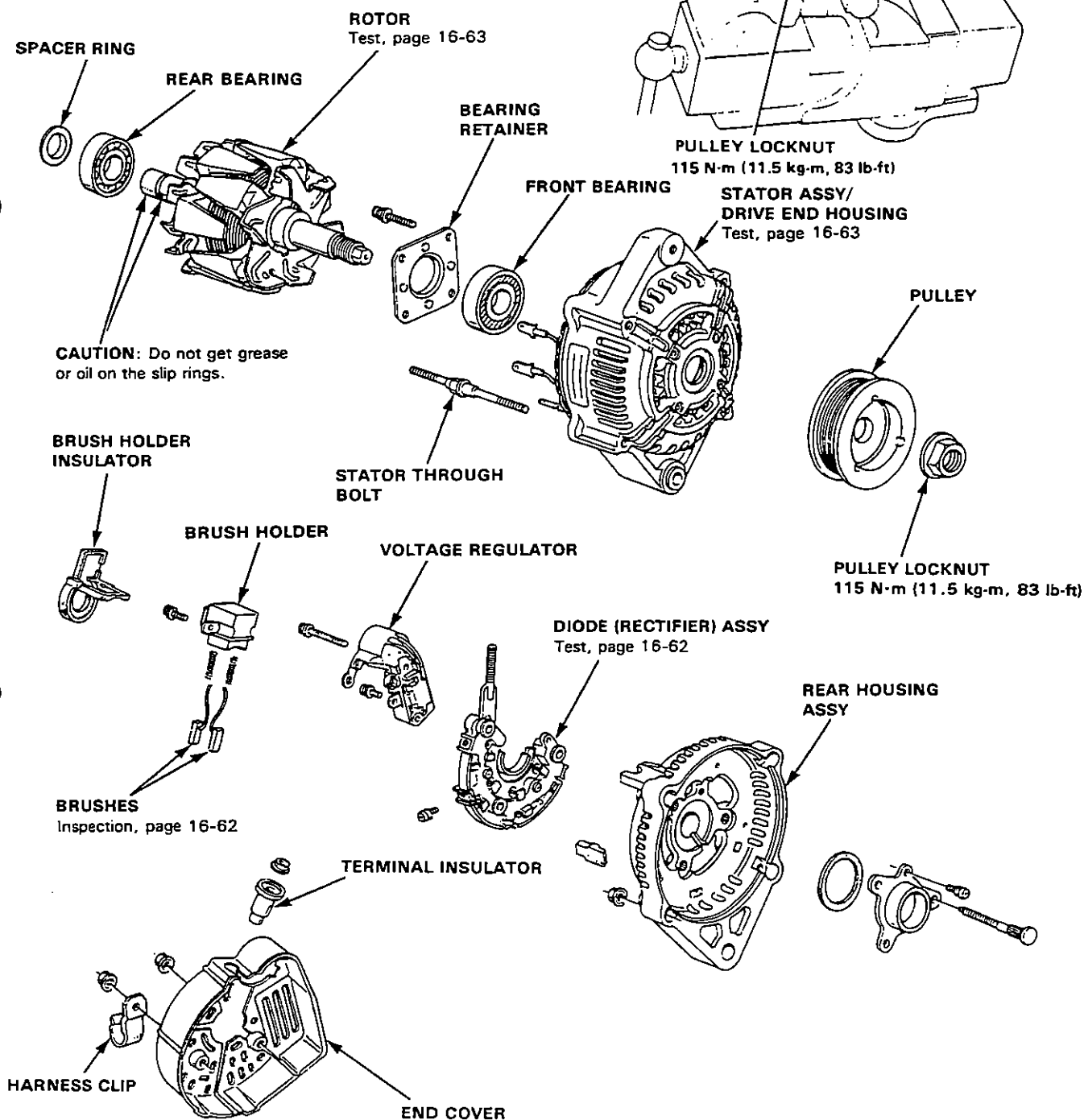
6. If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.
7. adjust the alternator belt tension after installation (see page 16-58).



Alternator Overhaul

NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

To remove the pulley and rotor, use 10 mm and 22 mm box wrenches to loosen the pulley locknut. Use an impact wrench to remove the nut if necessary.



Charging System

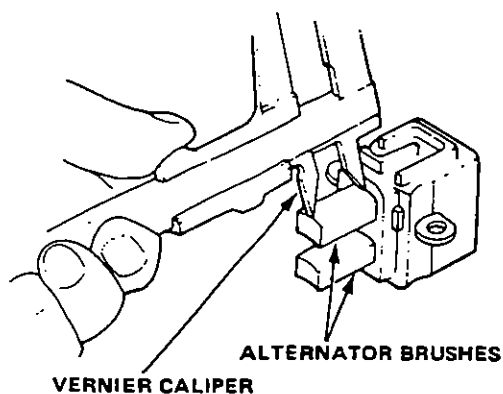
Alternator Brush Inspection

CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

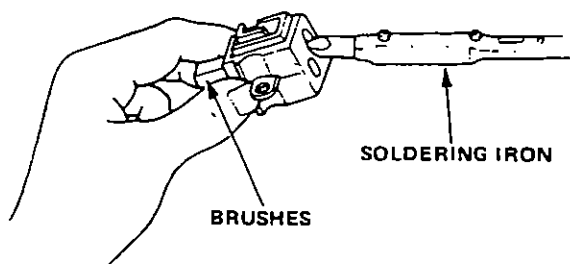
1. Remove the end cover, then take out the brush holder by removing its 2 screws.
2. Measure length of the brushes with a vernier caliper.

Alternator Brush Length:

Standard : 15.5 mm (0.61 in)
Service Limit: 5.3 mm (0.21 in)



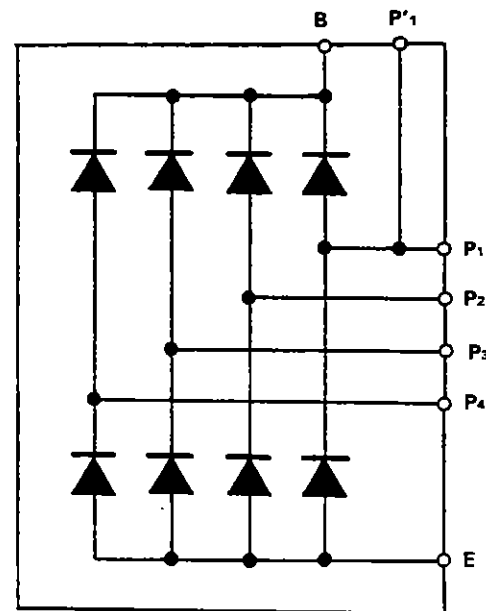
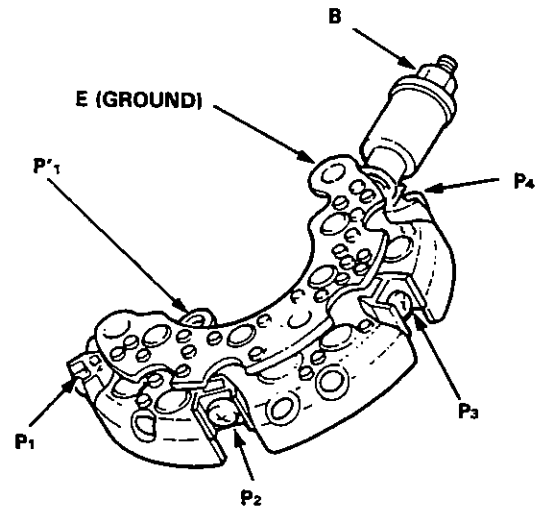
If the brushes are not within the service limit, replace them.



Rectifier Test

NOTE: The diodes are designed to pass current in one direction and block current in the opposite direction. Since the alternator rectifier is made up of eight diodes (4 pairs), each diode must be tested for continuity in both directions; a total of 16 checks.

1. Check for continuity in each direction, between the B and P (of each diode pair) terminals, and between the E (ground) and P (of each diode pair) terminals. All diodes should have continuity in only one direction.

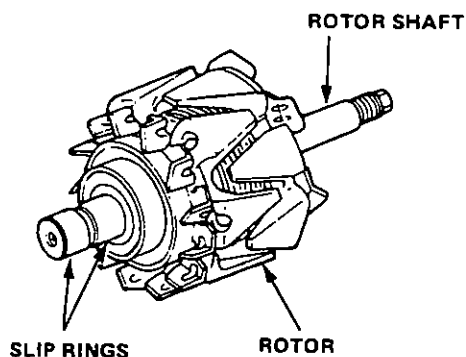


2. If any of the 8 diodes fails, replace the rectifier assembly (diodes are not available separately).



Rotor Slip Ring Test

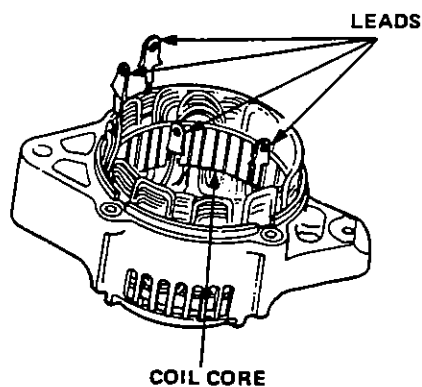
1. Check that there is continuity between the slip rings.
2. Check that there is no continuity between the rings and the rotor or rotor shaft.



3. If the rotor fails either continuity check, replace it.

Stator Test

1. Check that there is continuity between each pair of leads.
2. Check that there is no continuity between each lead and the coil core.



3. If the coil fails either continuity check, replace the stator.

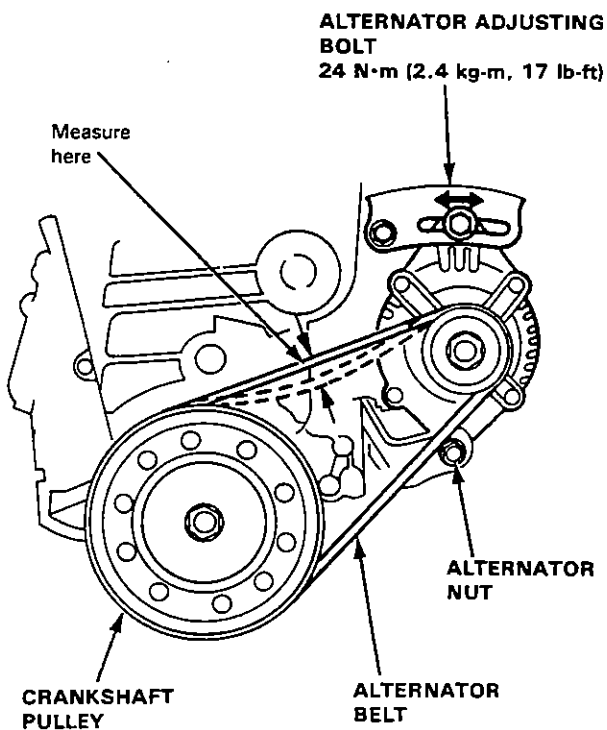
Charging System

Alternator Belt Adjustment

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

Deflection: 9–11 mm (0.35–0.43 in)

NOTE: On a brand-new belt, the deflection should be 7–9 mm (0.25–0.35 in) when first measured.



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

Cooling Fan System



Component Location Index

A/C CLUTCH RELAY

See Air Conditioner, section 15

CONDENSER FAN RELAY

Test, page 16-68

A/C DIODE

See Air Conditioner, section 15

RADIATOR FAN RELAY

Test, page 16-68

RADIATOR FAN MOTOR

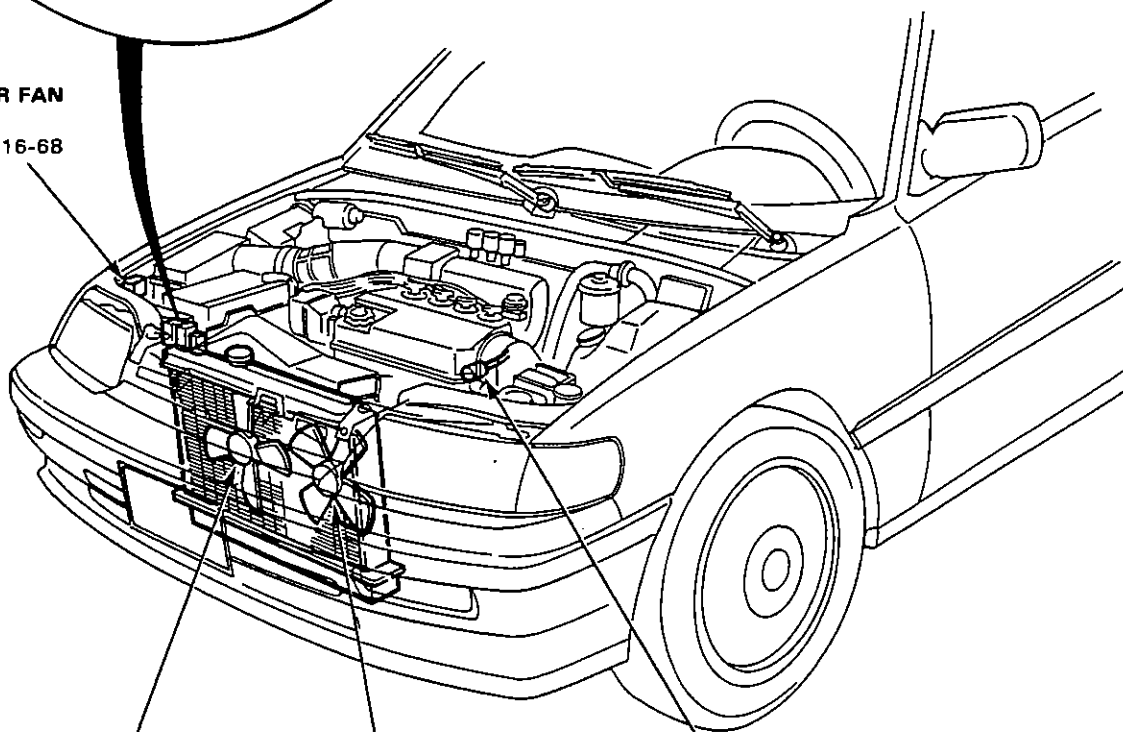
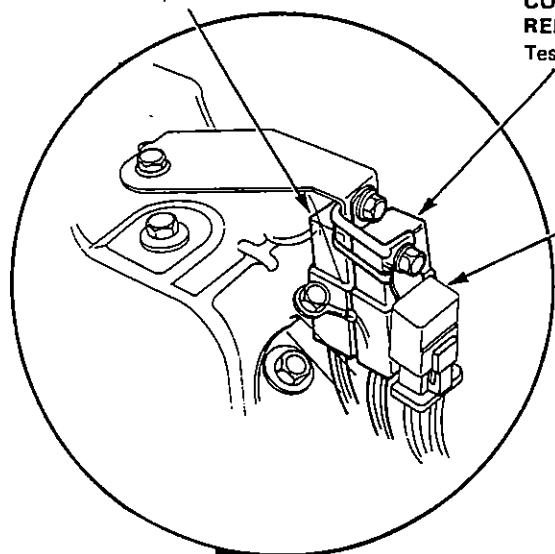
Test, page 16-67
Replacement, section 5

CONDENSER FAN MOTOR

Test, page 16-67
Replacement, section 5

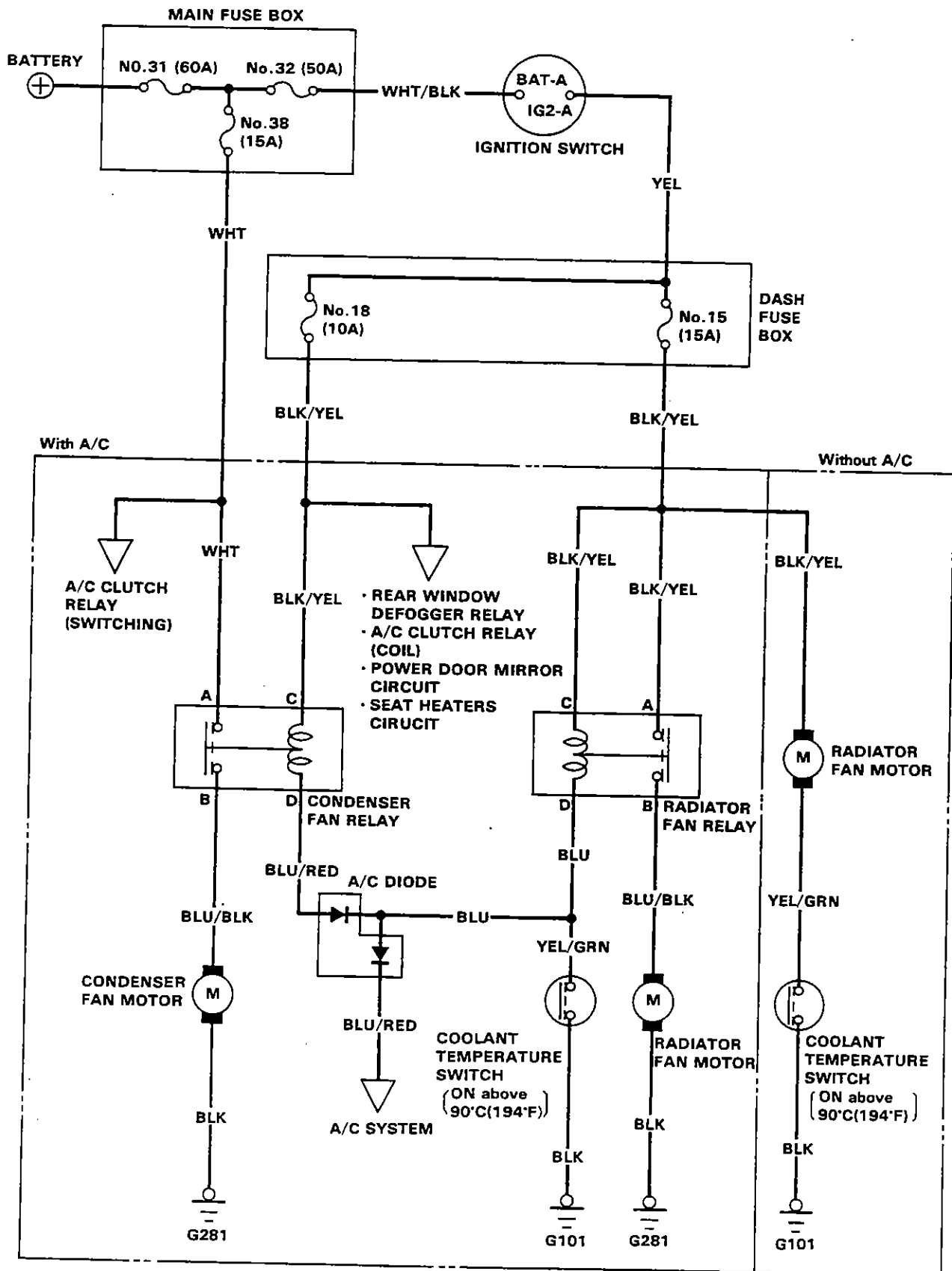
COOLANT TEMPERATURE SWITCH

Test, page 16-84



Cooling Fan System

Circuit Diagram



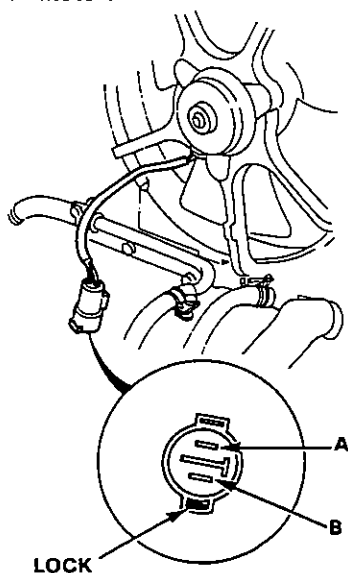


Fan Motor Test

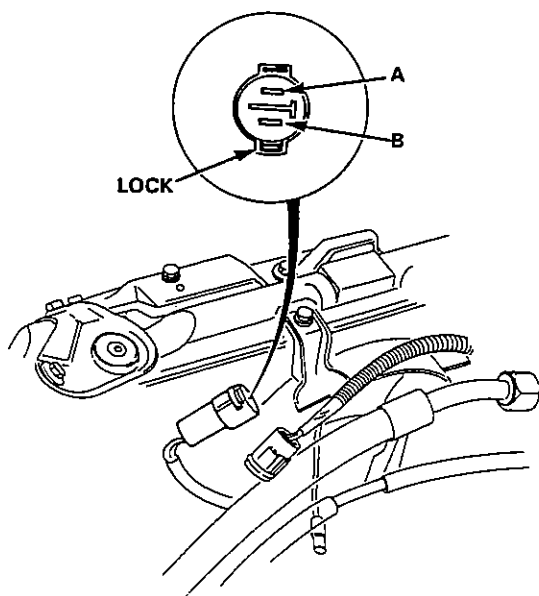
1. Disconnect the 2-P connector from the fan motor.
2. Test motor operation by connecting battery positive to the A terminal, and negative to the B terminal.
3. If the motor fails to run smoothly, replace it.

<A-Type>

Radiator Fan Motor:

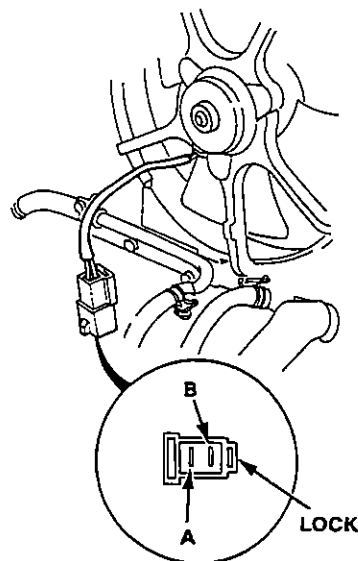


Condenser Fan Motor:

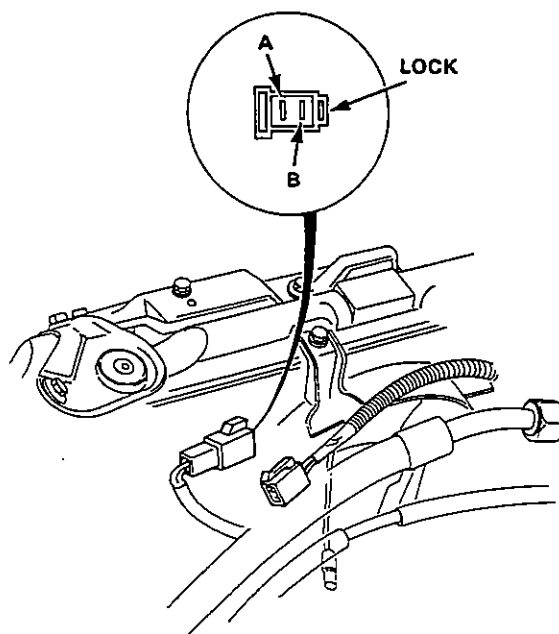


<B-Type>

Radiator Fan Motor:



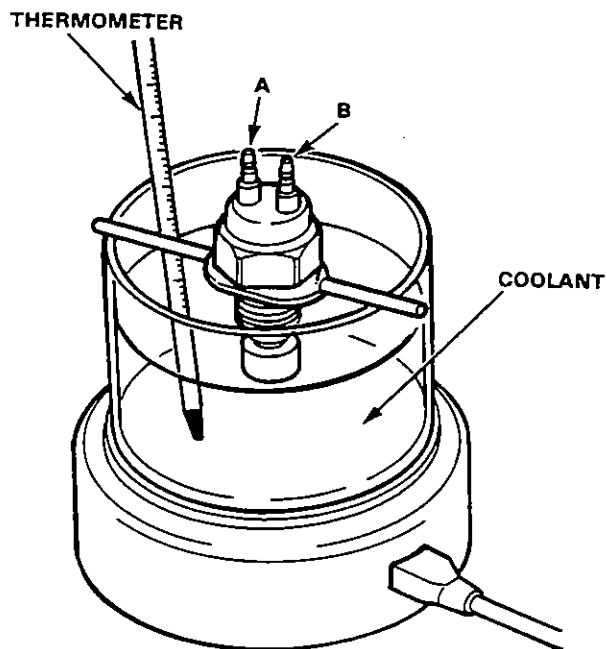
Condenser Fan Motor:



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.

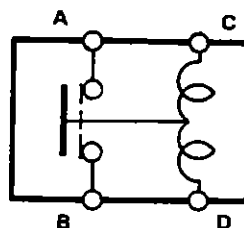
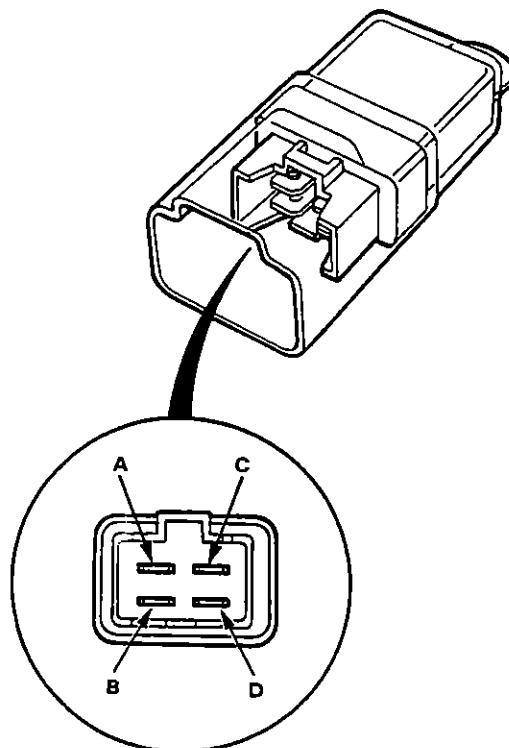


3. Heat the coolant and check coolant temperature with a thermometer (see table below).
4. Check for continuity between the A and B terminals according to the table.

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 is connected to the C and D terminals. There should be no continuity when the battery is disconnected.



Gauge Assembly

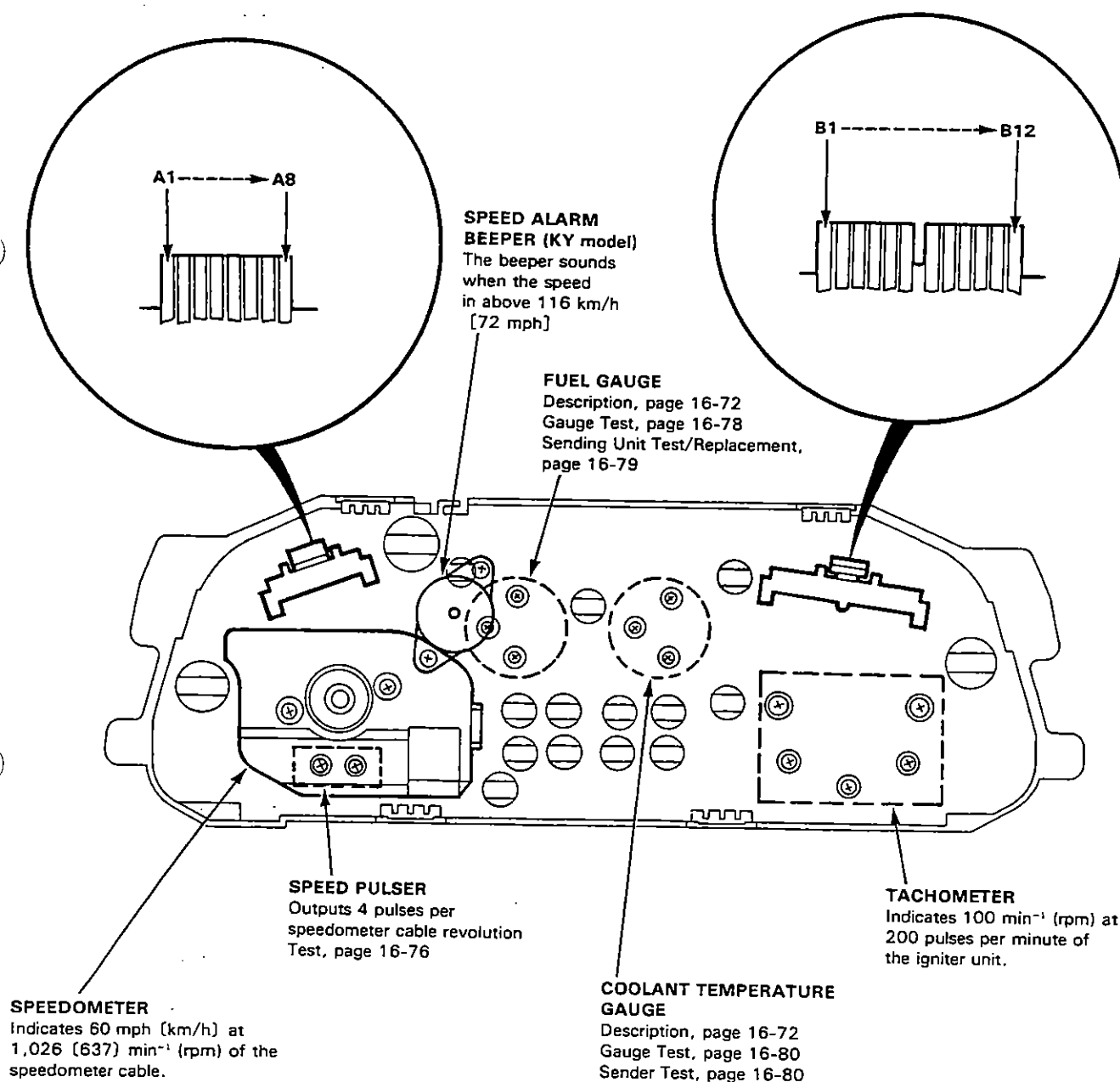
Gauge/Indicator Location Index



GAUGE ASSEMBLY

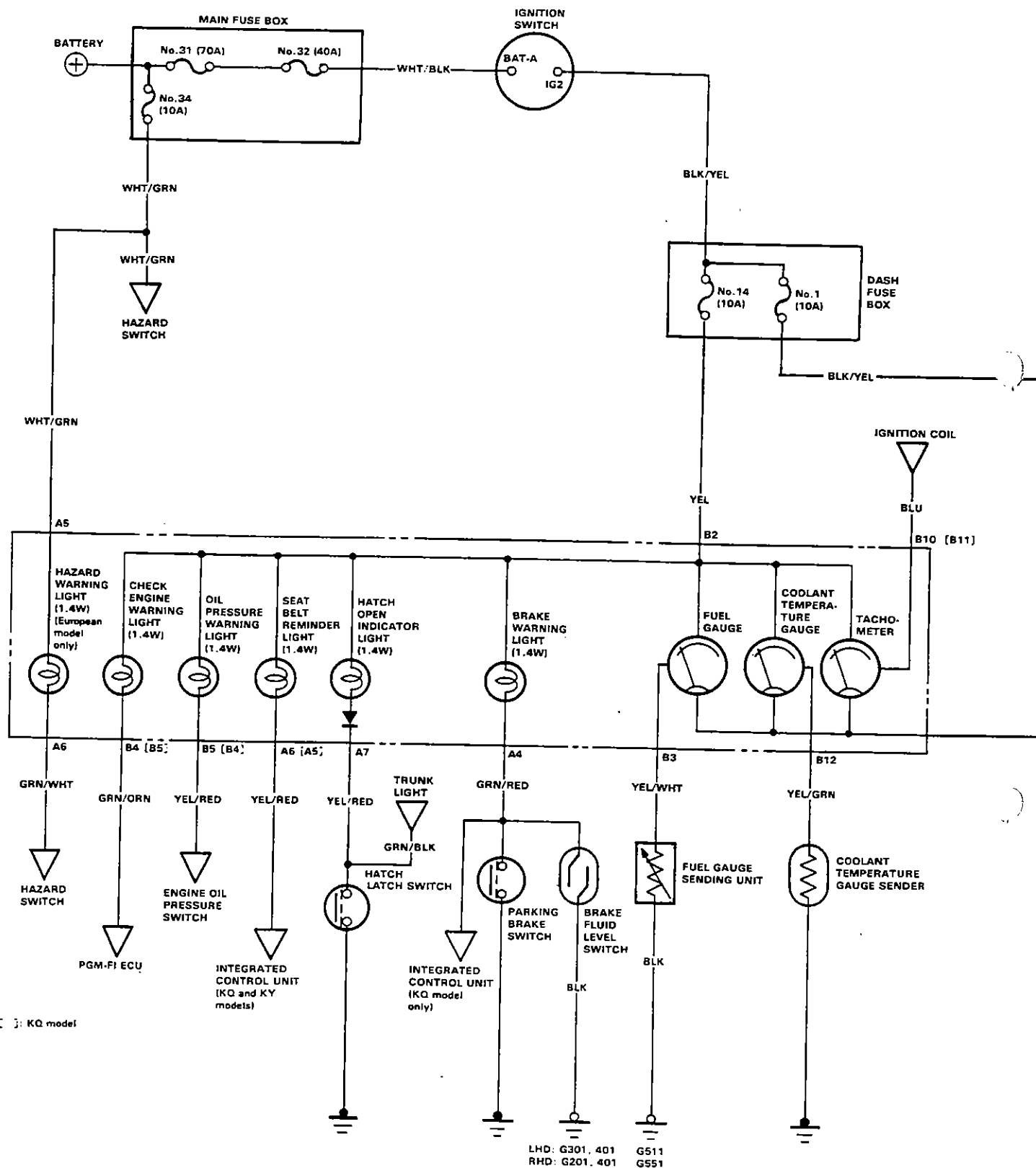
Removal, page 16-73

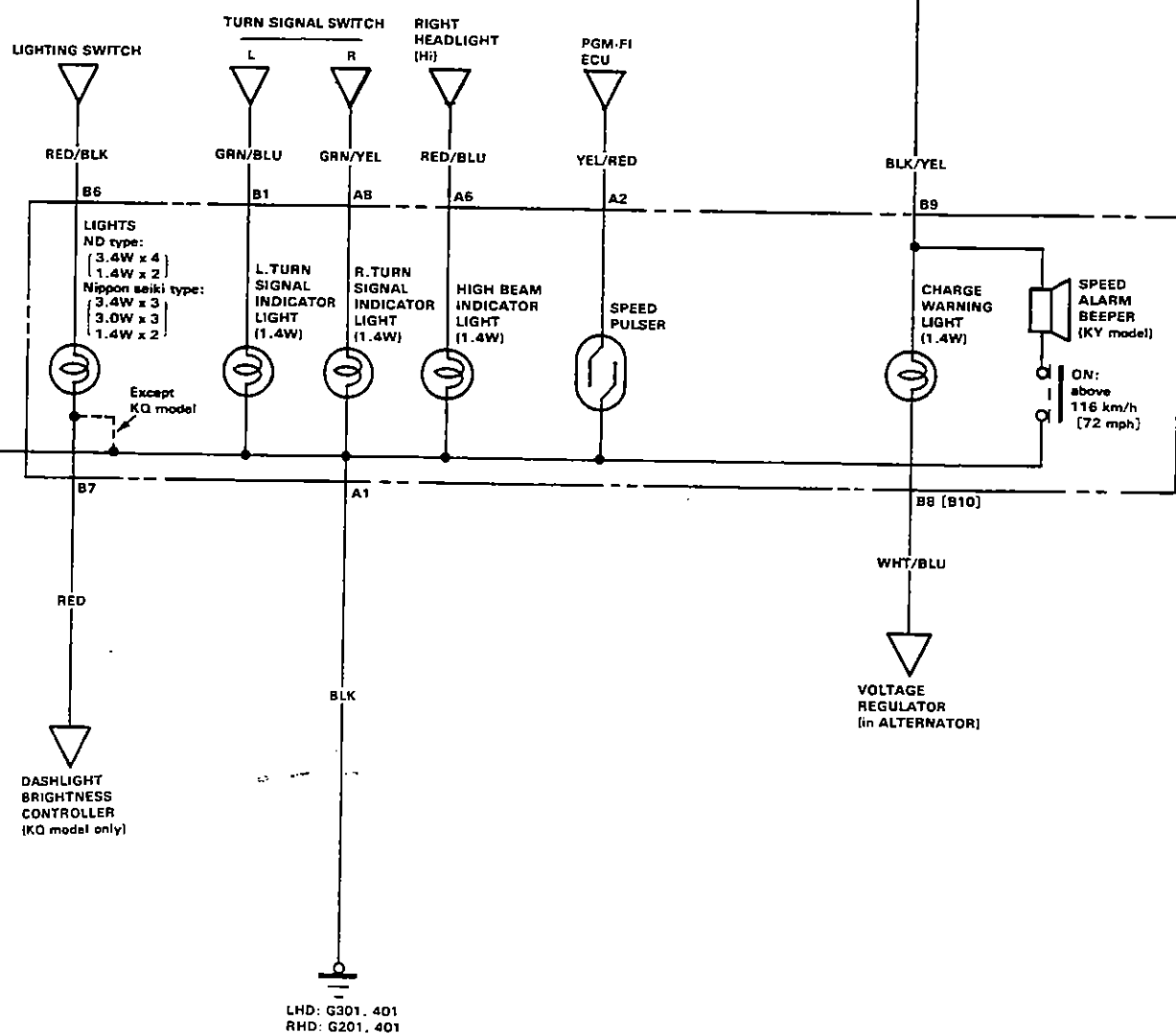
Disassembly, page 16-77



Gauge Assembly

Circuit Diagram



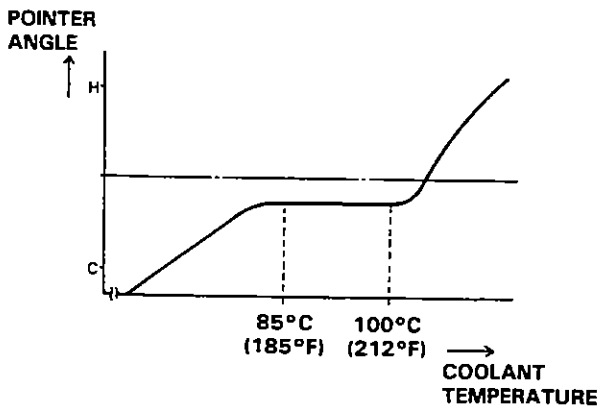


Gauge Assembly

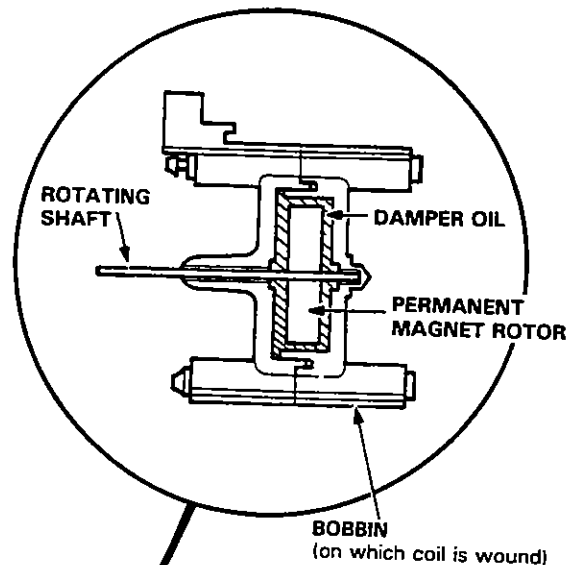
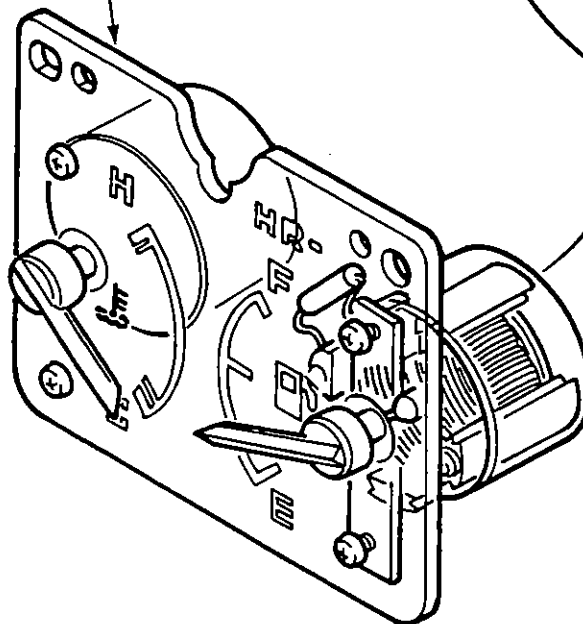
Description

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).



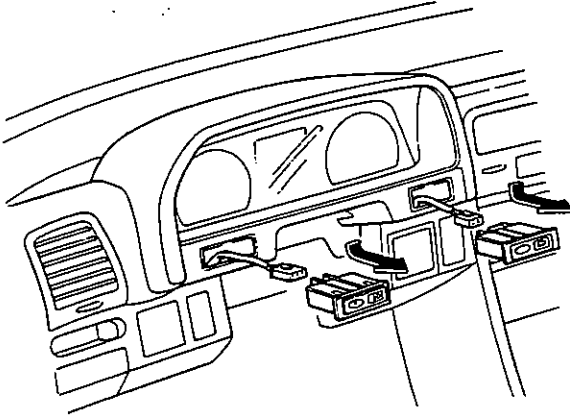
FUEL GAUGE/COOLANT TEMPERATURE GAUGE



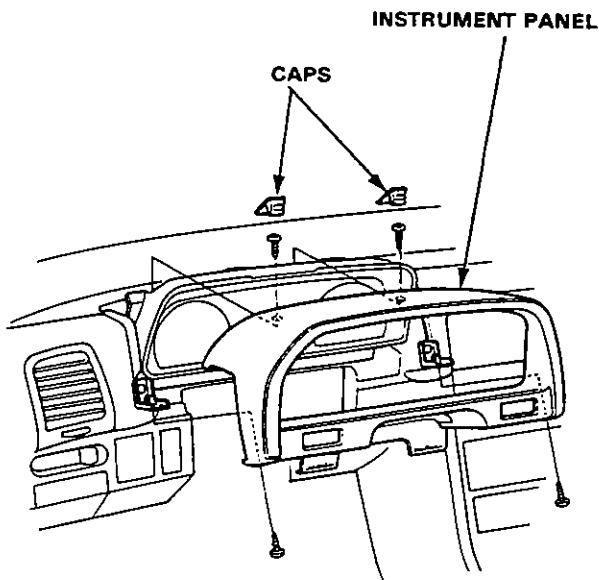


Removal

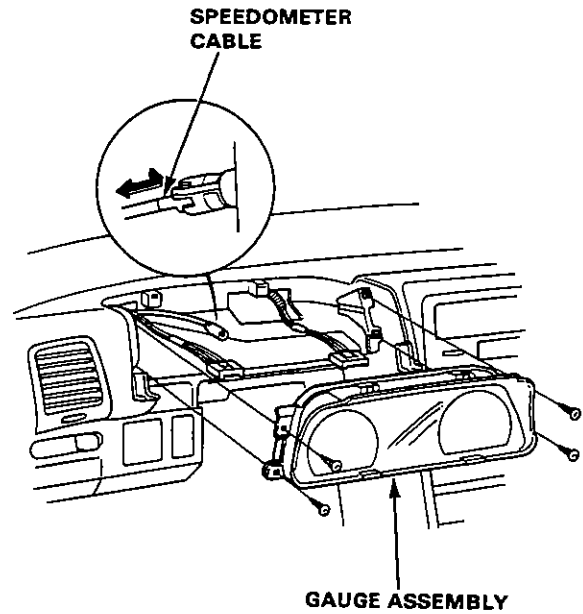
1. Remove the switches from the instrument panel.



2. Remove the caps and 4 screws, then remove the instrument panel from the dashboard.

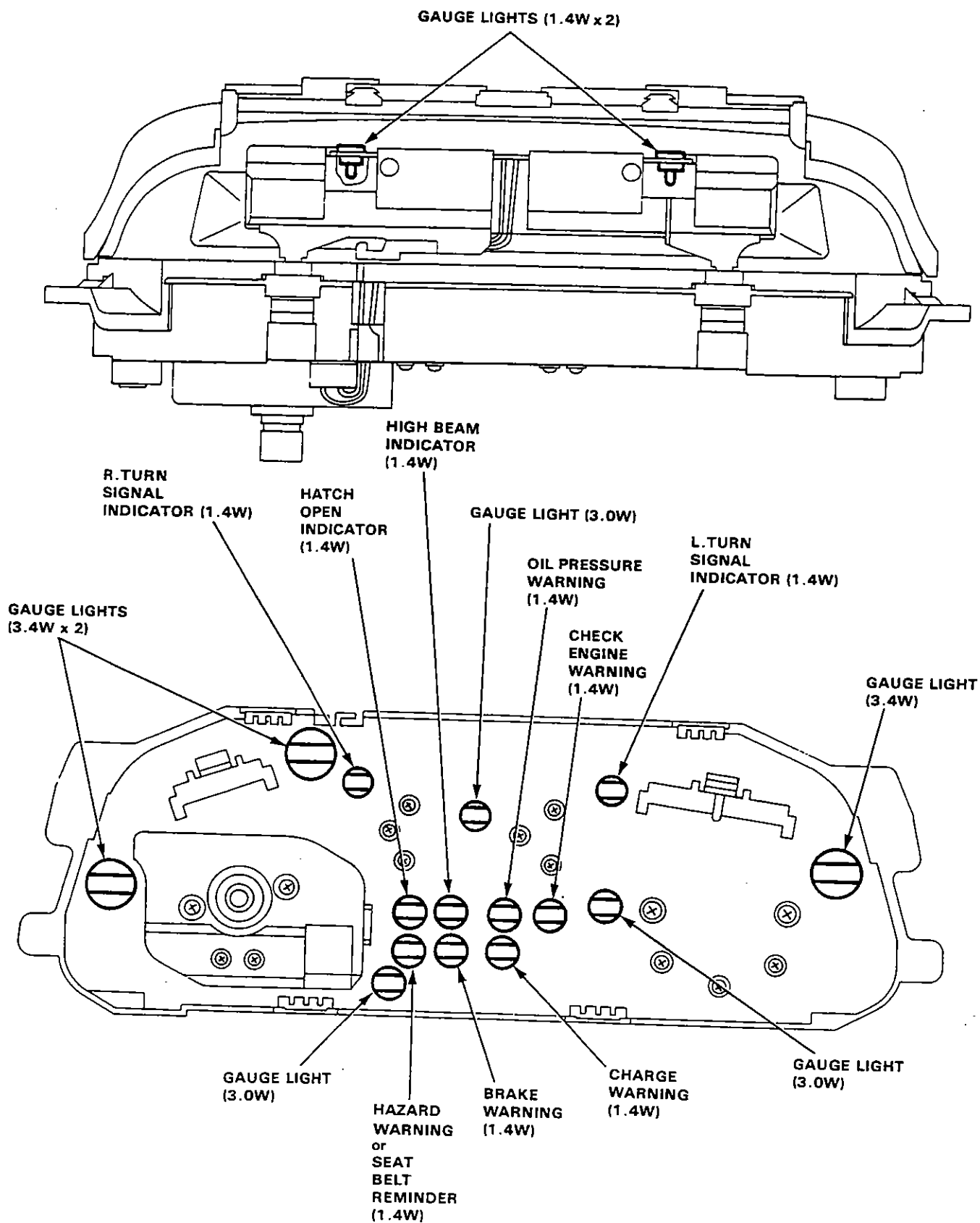


3. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.



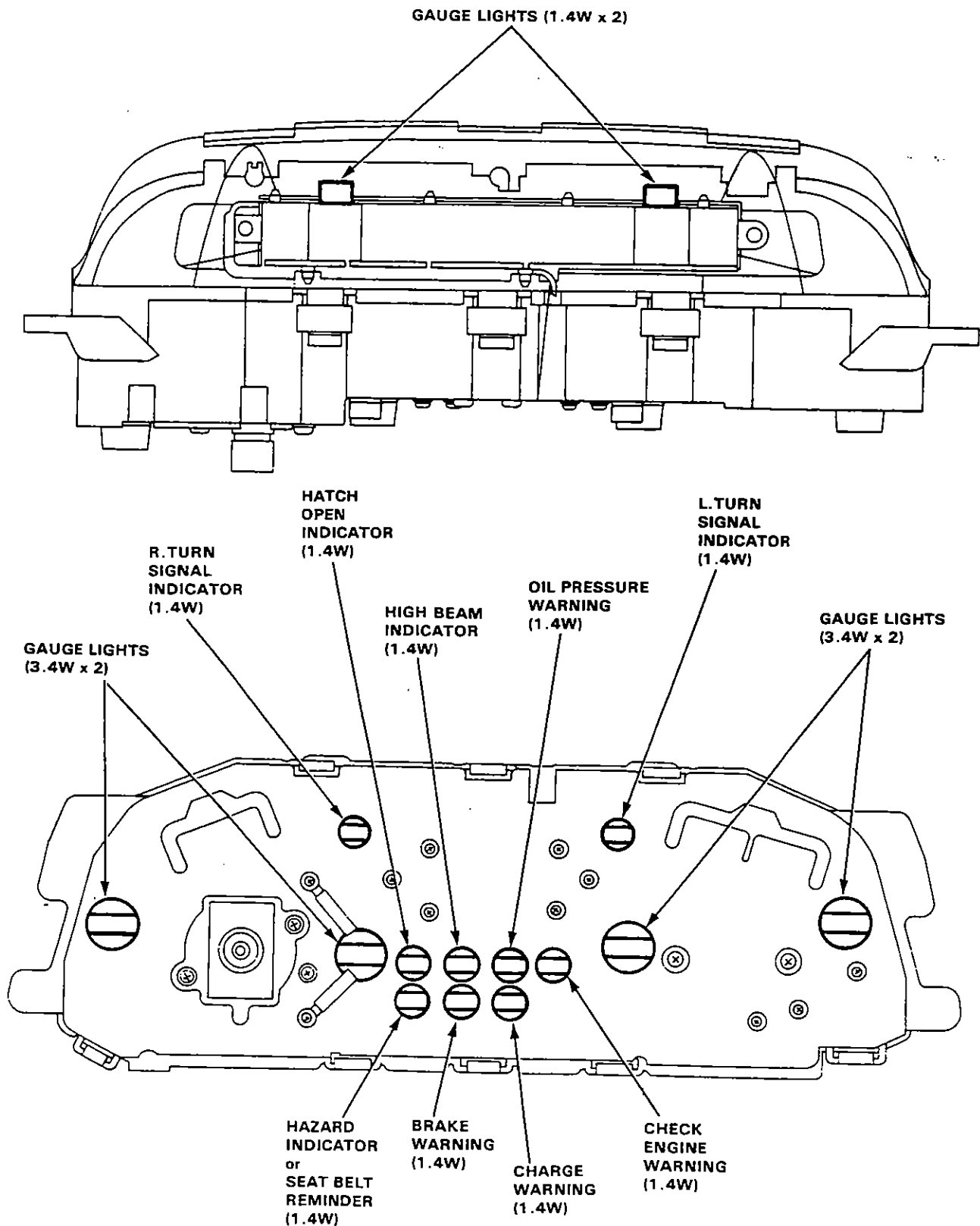
Gauge Assembly

Bulb Locations (Nippon Seiki type)





(Nippon Denso type)

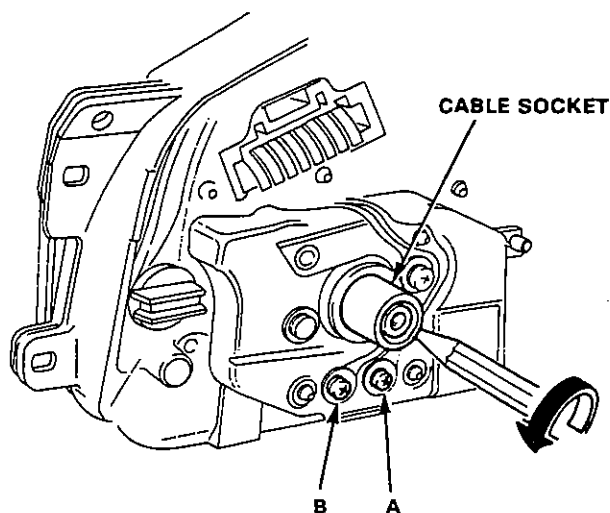


Gauge Assembly

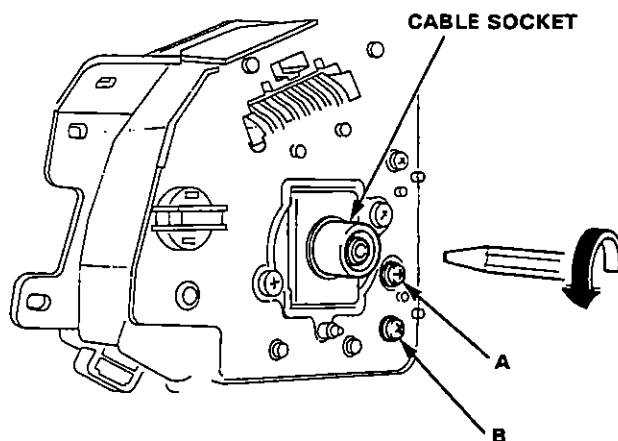
Speed Pulser Test

1. Remove the gauge assembly from the dashboard, then turn it over.
2. Break the lead off a pencil tip then insert the pencil into the speedometer cable connector socket and turn it. Connect an ohmmeter between the A and B terminals. There should be continuity 4 times between the A and B terminals per revolution.

Nippon Seiki type:



Nippon Denso type:

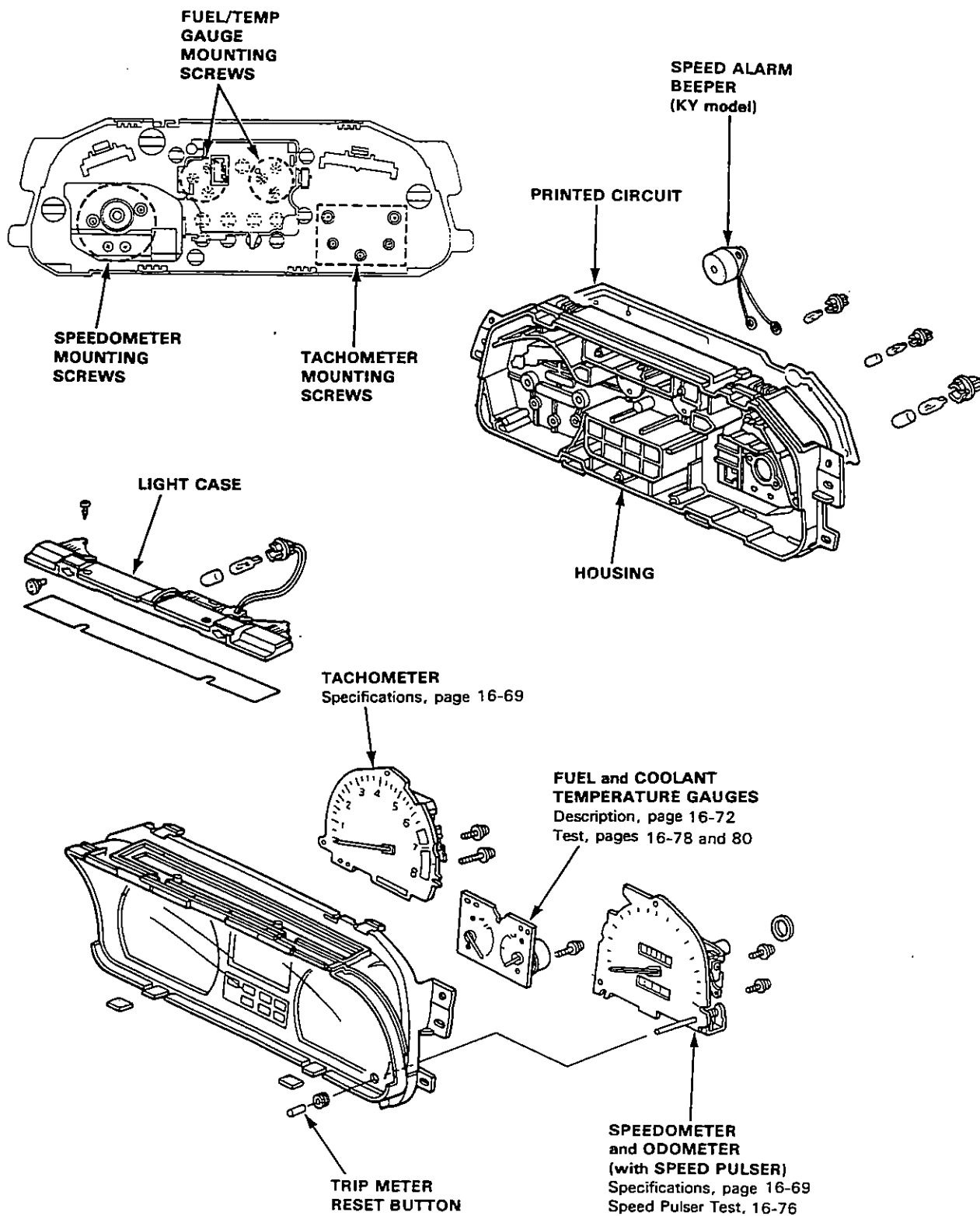




Disassembly

NOTE:

- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is shown below.

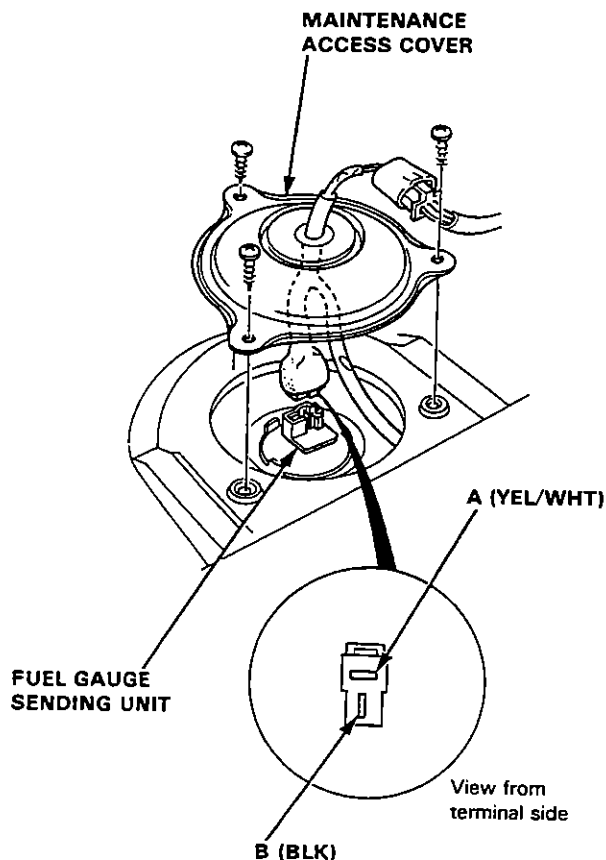


Fuel Gauge

Gauge Test

NOTE: Refer to page 16-70 for wiring description of the fuel gauge circuit.

1. Remove the rear seat (see section 14), then remove the maintenance access cover.
2. Disconnect the 2-P connector from the fuel gauge sending unit.



3. Connect the voltmeter positive probe to the A (YEL/WHT) terminal and the negative probe to the B (BLK) terminal, then turn the ignition switch ON. There should be battery voltage.

- If there is battery voltage, go to step 4.

- If the voltage is not specified, check for:
 - Blown No. 1 (10A) fuse in the dash fuse box.
 - An open in the YEL, YEL/WHT or BLK wire.
 - Poor ground (G511, G551).

4. Turn the ignition switch OFF. Attach a jumper wire between the A (YEL/WHT) and B (BLK) terminals.

Turn the ignition switch ON.

Check that the pointer of the fuel gauge starts moving toward "F" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "F" mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F" mark may cause damage to the fuel gauge.

NOTE: The fuel gauge is a bobbin (cross coil) type, hence the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

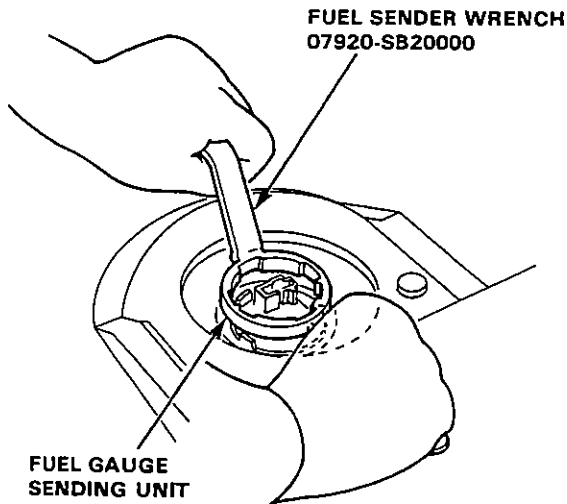
- If the pointer of the fuel gauge does not swing at all, replace the gauge.
- Inspect the fuel gauge sending unit if the gauge is OK.



Sending Unit Test/Replacement

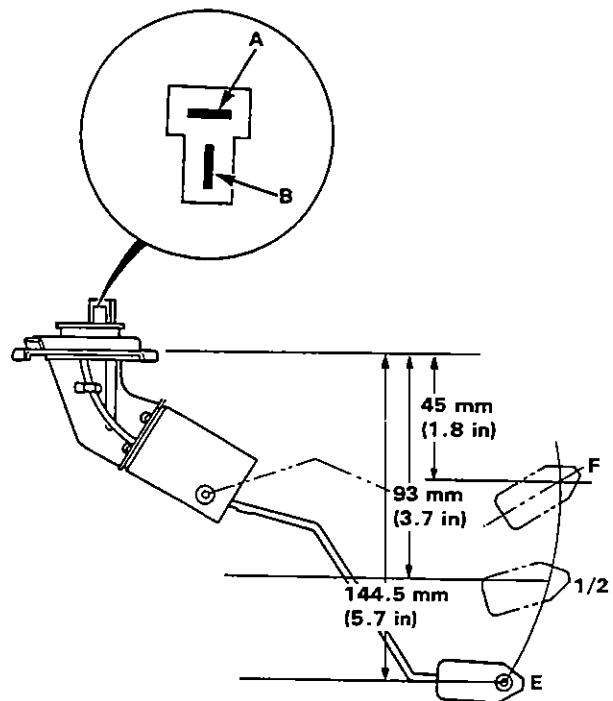
WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Remove the rear seat (see section 14), then remove the maintenance access cover.
2. Check that the ignition switch OFF, then disconnect the 2-P connector from the fuel gauge sending unit.
3. Remove the fuel gauge sending unit.



4. Measure the resistance between the A and B terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance (Ω)	105—110	25.5—39.5	2—5



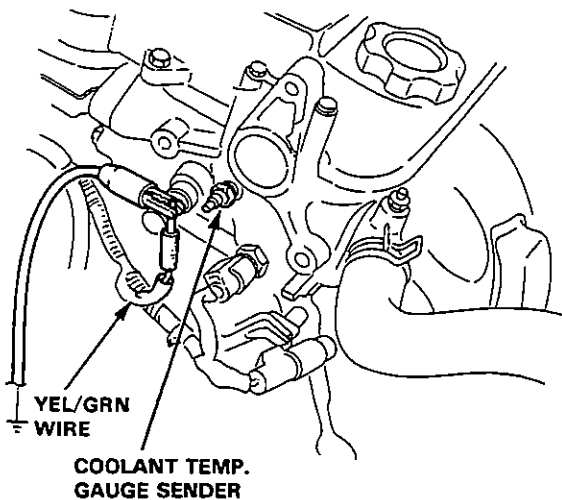
5. If unable to obtain the above readings, replace the fuel gauge sending unit.

Coolant Temperature Gauge

Gauge Test

NOTE: Refer to page 16-70 for wiring description of the coolant temperature gauge circuit.

1. Make sure the ignition switch is OFF, then disconnect the YEL/GRN wire from the coolant temperature gauge sender and ground it with a jumper wire.



2. Turn the ignition switch ON. Check that the pointer of the coolant temperature gauge starts moving toward "H" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "H" mark on the gauge dial. Failure to turn the ignition OFF quickly enough may cause damage to the gauge.

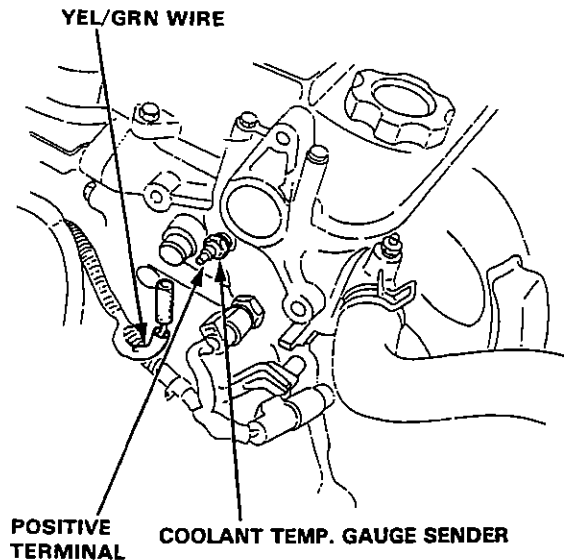
- If the pointer of the gauge does not swing at all, check for:
 - Blown No. 1 (10 A) fuse in the dash fuse box.
 - An open in the YEL or YEL/GRN wire.

Replace the coolant temperature gauge if the fuse and wiring are normal.

- Inspect the gauge sender if the gauge is OK.

Sender Test

1. Disconnect the YEL/GRN wire from the sender.
2. With the engine cold, use an ohmmeter to measure resistance between the positive terminal and the engine (ground).



3. Check the temperature of the coolant.
4. Run the engine and measure the change in resistance with the engine at operating temperature (cooling fan comes on).

Temperature	56°C (133°F) ["C" mark]	85°C (185°F)– 100°C (212°F)
Resistance (Ω)	142	49 – 32

5. If obtained readings are substantially different from specifications above, replace the gauge sender.

Integrated Control Unit (Without Daytime and Dim-Dip Light)

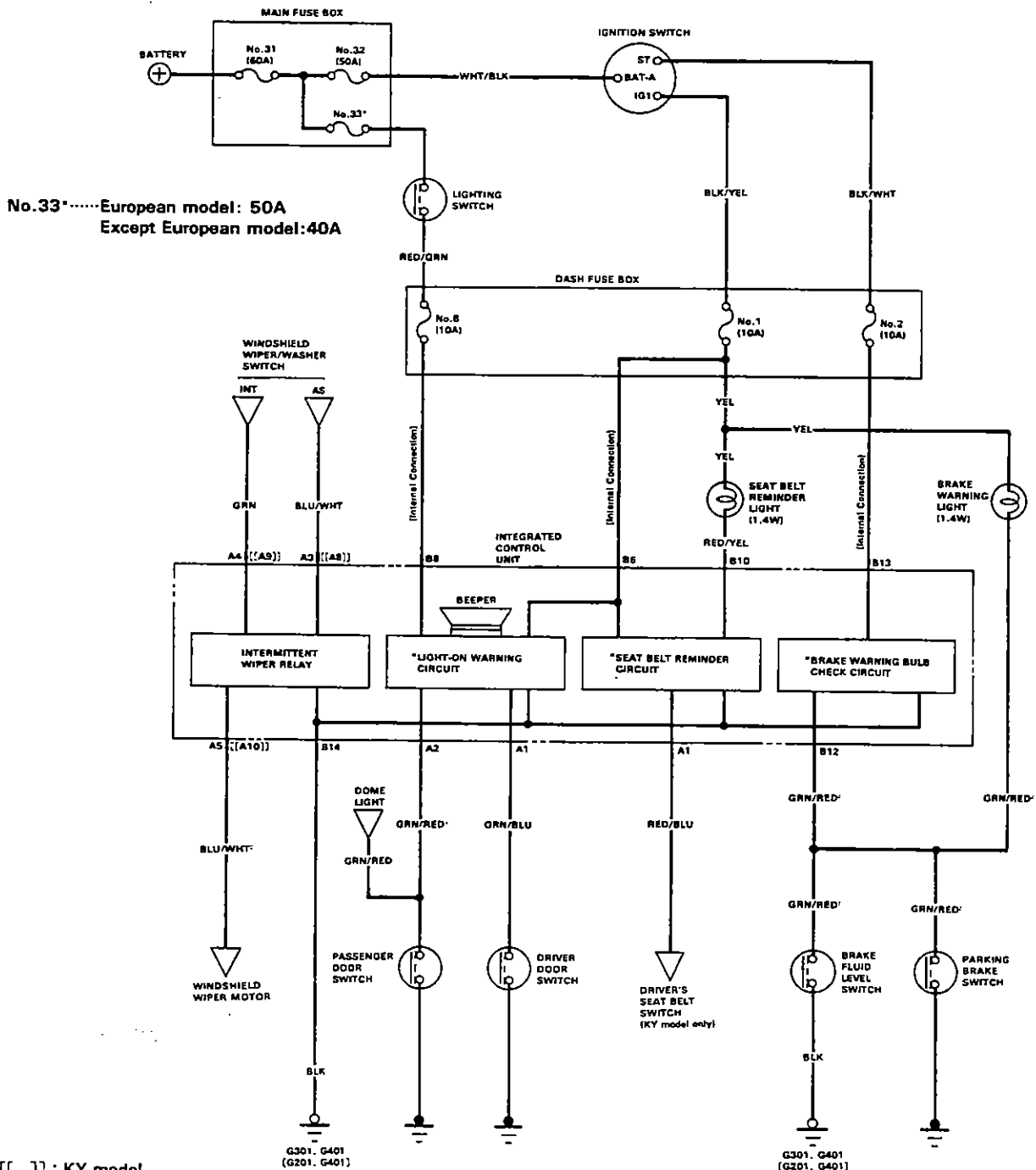


Circuit Diagram

Description:

A multi function control unit located under the driver side of the dashboard, integrates the function of brake warning bulb check circuit (KQ model only), seat belt reminder (KY model only), light-on warning circuit (Except KY model) and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/RED¹ and GRN/RED² are not the same).



[[]]: KY model

[]: RHD

* Light-on Warning Circuit: (Except KY model)

• Seat Belt Reminder Circuit: (KY model only)

• Brake Warning Bulb Circuit: (KQ model only)

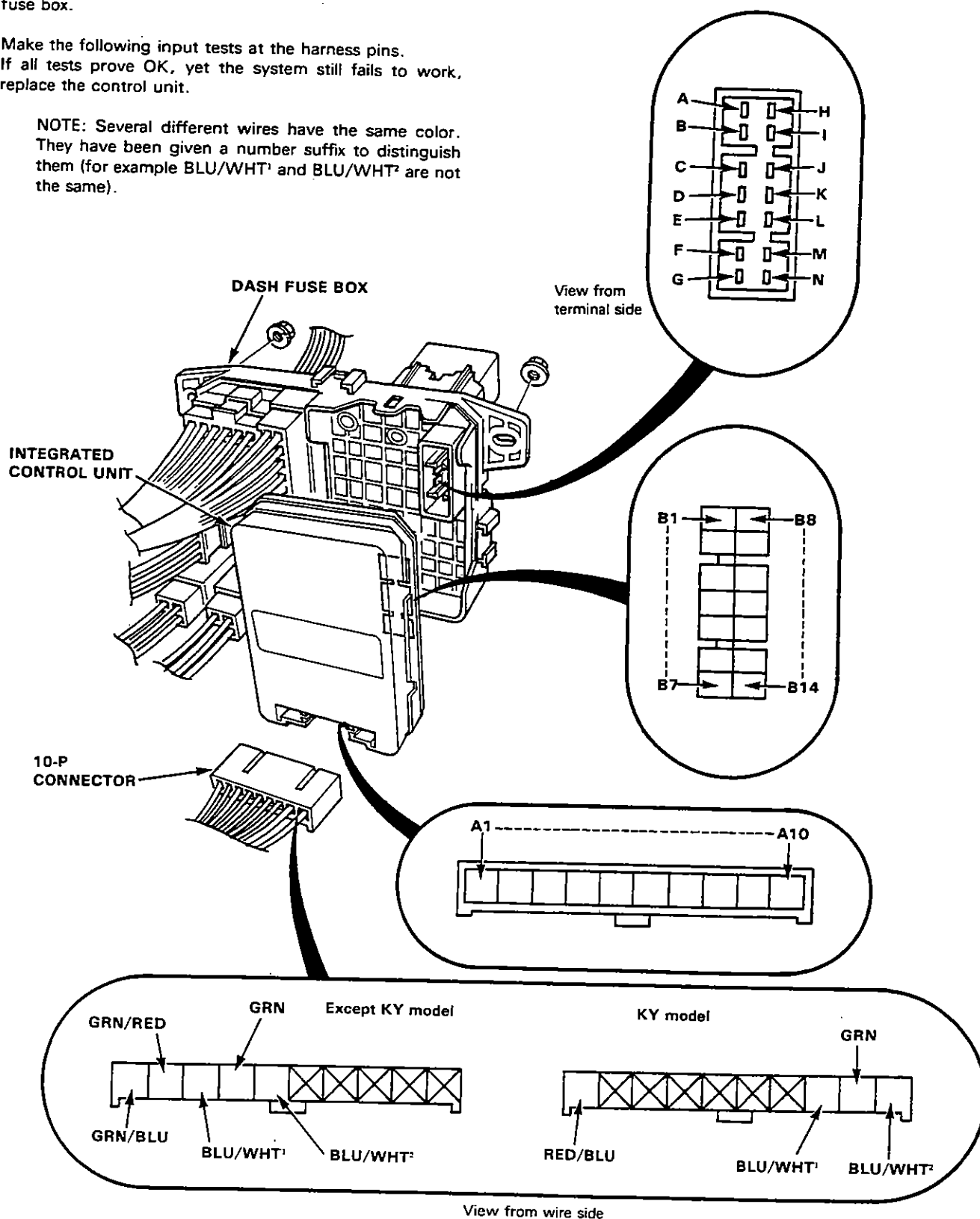
Integrated Control Unit (Without Daytime and Dim-Dip Light)

Input Test

Remove the dashboard lower panel and dash fuse box, then disconnect the 10-P connector from the integrated control unit and remove the integrated control unit from the dash fuse box.

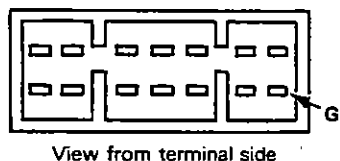
Make the following input tests at the harness pins. If all tests prove OK, yet the system still fails to work, replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT¹ and BLU/WHT² are not the same).

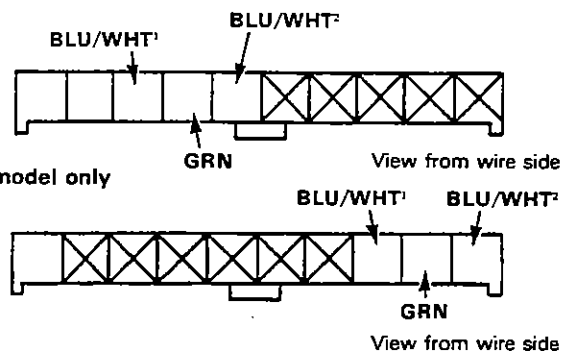




Wiper System:



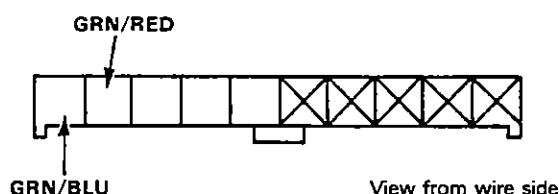
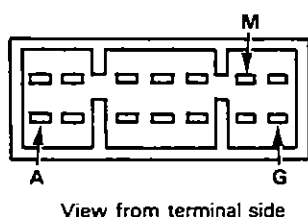
Except KY model



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 (G201, G401))
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT.	Check for voltage to ground: should be battery voltage.	• Blown No. 13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

[]: RHD

Light-on Warning System: Except KY model



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 (G201, G401)). • An open in the wire.
2	A	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the wire.
4	GRN/RED	Passenger door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No.12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	GRN/BLU	Driver door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

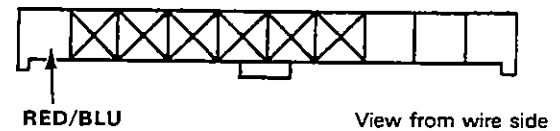
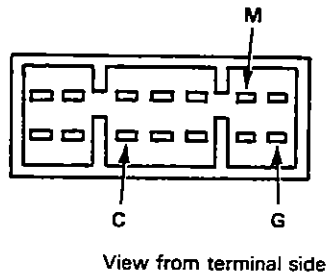
[]: RHD

(cont'd)

Integrated Control Unit (Without Daytime and Dim-Dip Light)

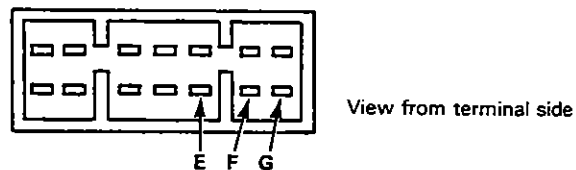
Input Test (cont'd)

Seat Belt Reminder System:



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 wire.

Brake Warning System: KQ model only



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 in 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 in the wire.

Integrated Control Unit (With Daytime and Dim-Dip Light)

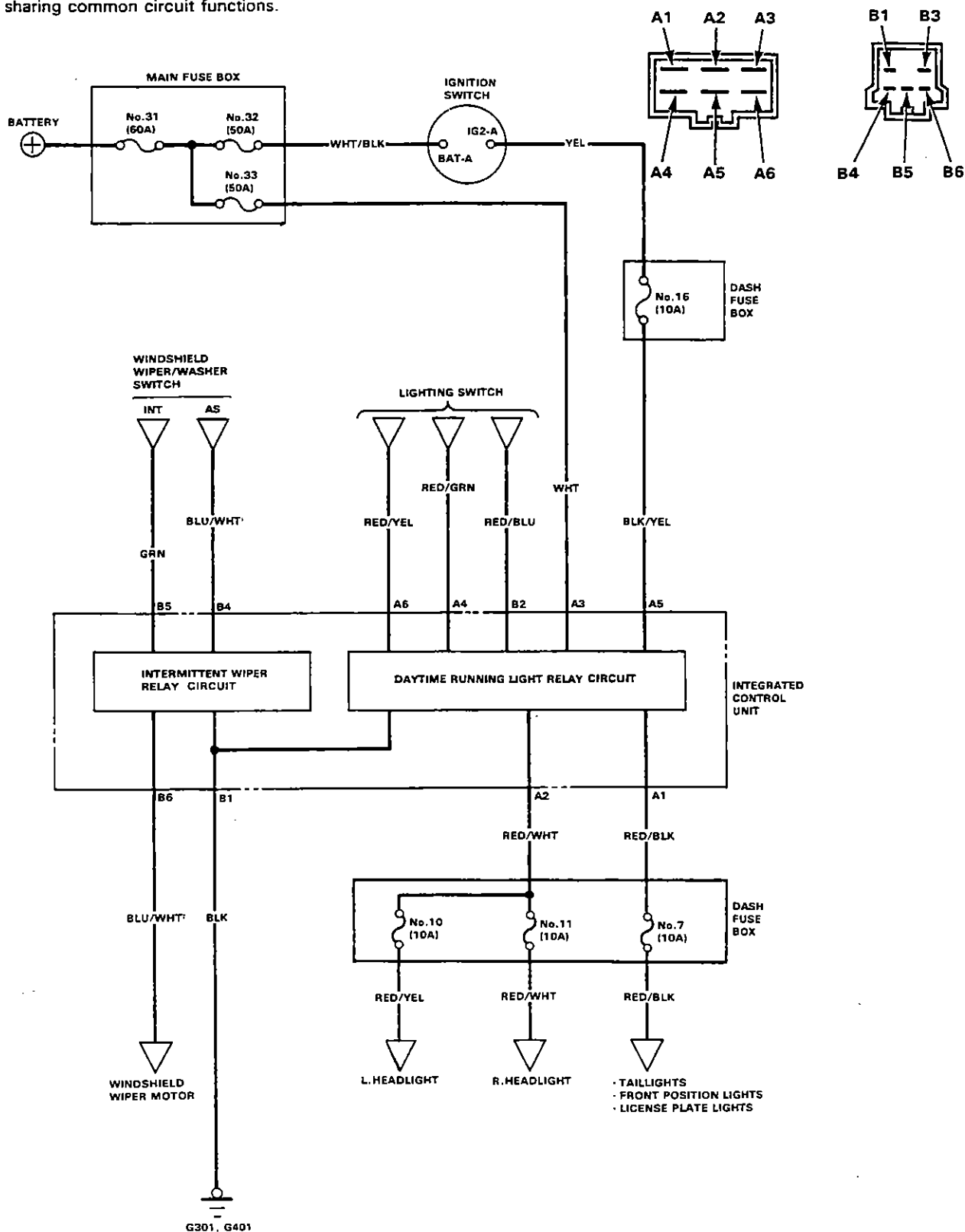


Circuit Diagram (With Daytime Light)

Description:

A multi function control unit located under the left side of the dashboard, integrates the functions of daytime running light relay and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit
Terminals:...



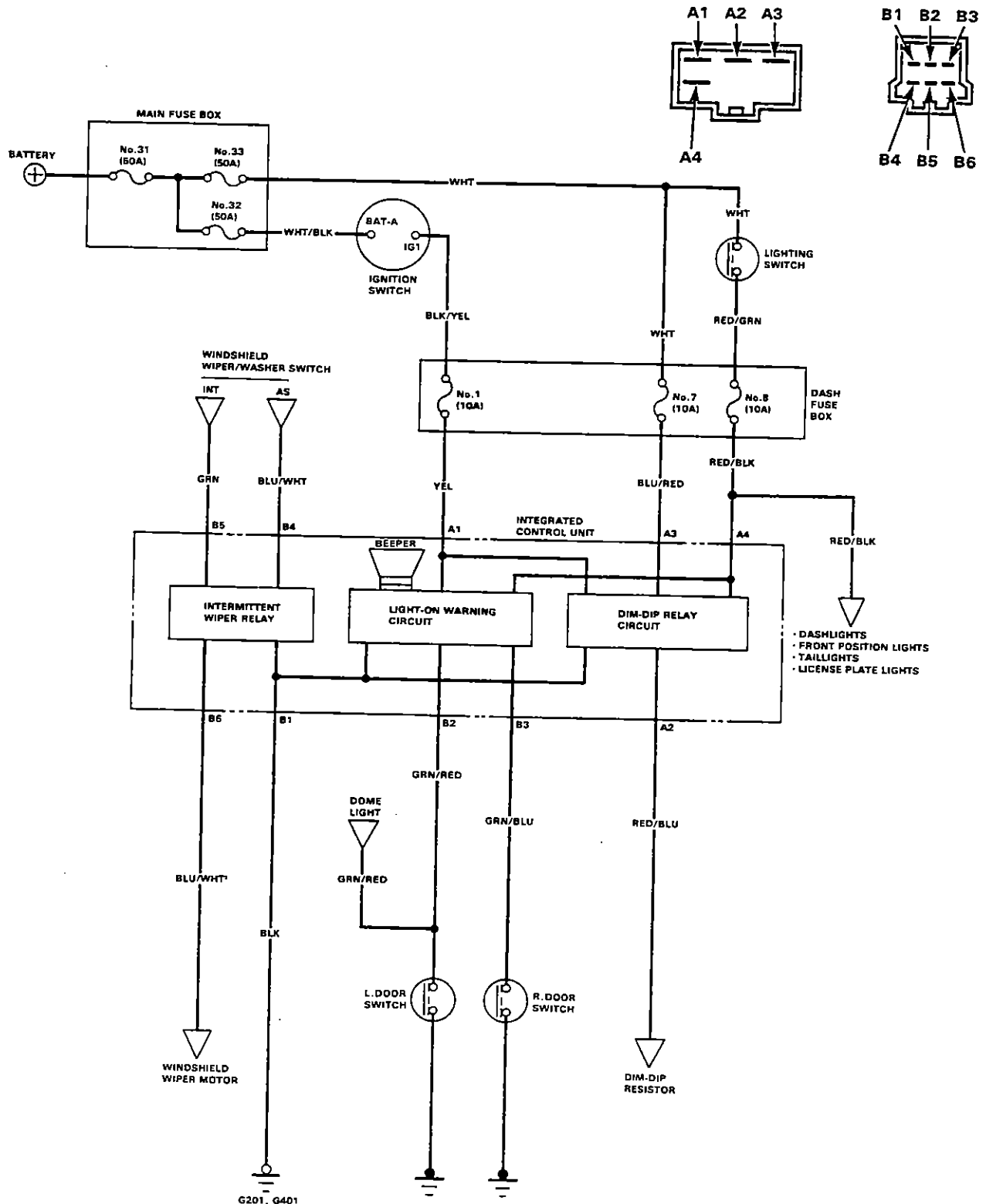
Integrated Control Unit (With Daytime and Dim-Dip Light)

Circuit Diagram (With Dim-Dip Light)

Description:

A multi function control unit located under the right side of the dashboard, integrates the functions of dim-dip relay circuit, light-on warning and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

Integrated Control Unit
Terminals:





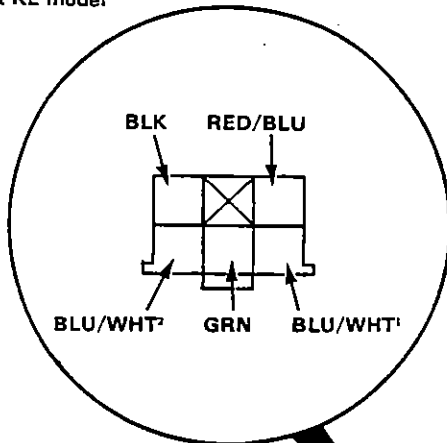
Remove the dashboard lower panel and dash fuse box, then disconnect the 6-P connectors from the integrated control unit.

Make the following input tests at the harness pins.

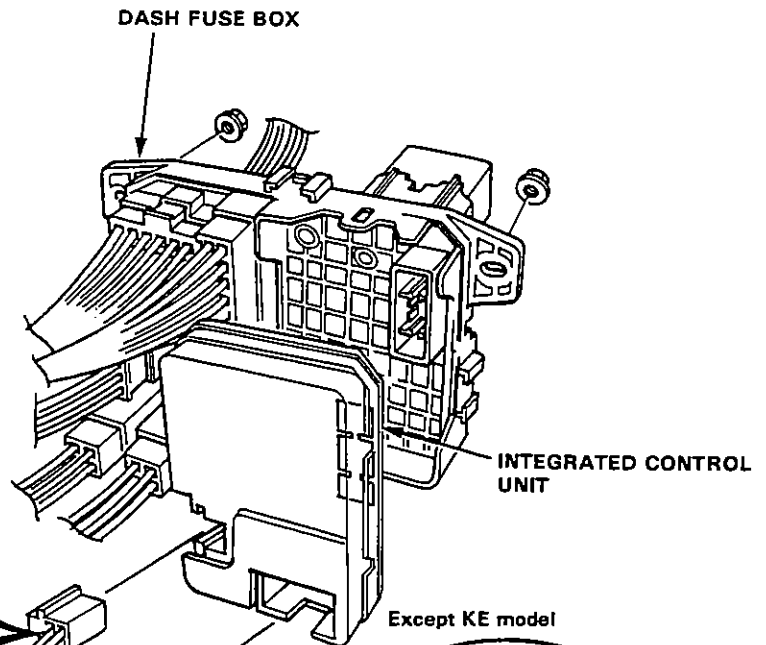
If all tests prove OK, yet the system still fails to work, replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/WHT¹ and BLU/WHT² are not the same).

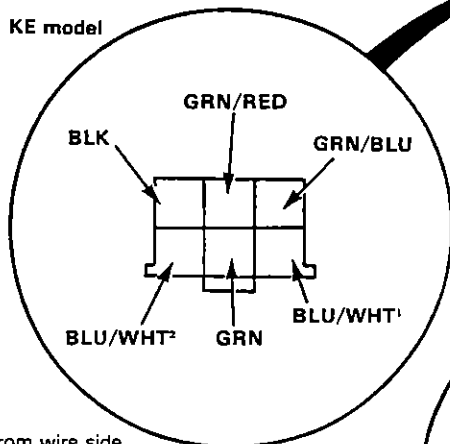
Except KE model



View from wire side

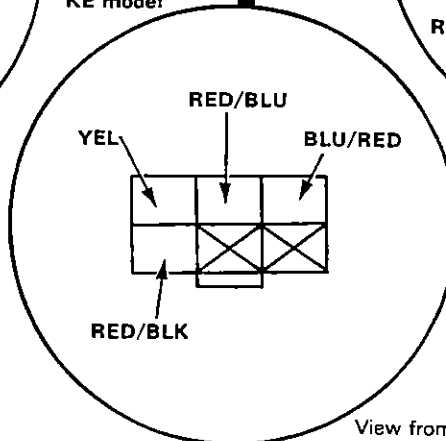


KE model



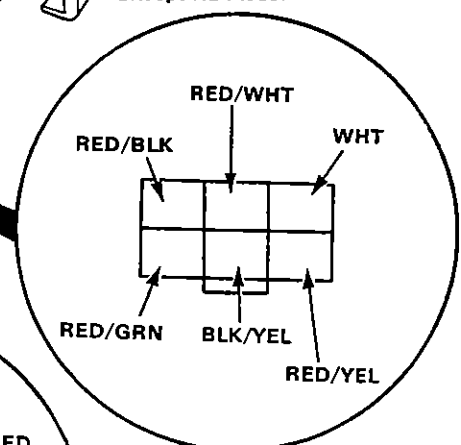
View from wire side

KE model



View from wire side

Except KE model



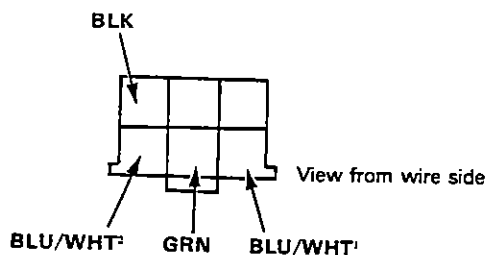
View from wire side

(cont'd)

Integrated Control Unit (With Daytime and Dim-Dip Light)

Input Test (cont'd)

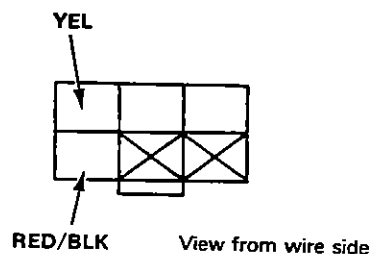
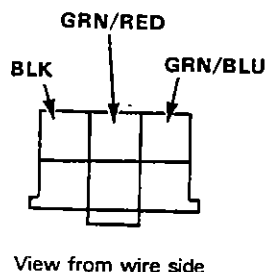
Wiper System:



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 (G201, G401)).
2	BLU/WHT¹ and BLU/WHT²	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BLU/WHT¹ and BLU/WHT² terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	GRN	Ignition switch ON and wiper switch INT	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

() : RHD

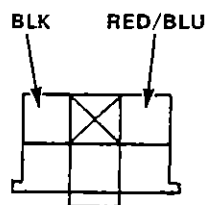
Light-on Warning System:



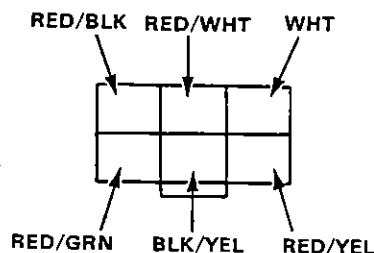
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery 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.



Daytime Running Light System:



View from wire side



View from wire side

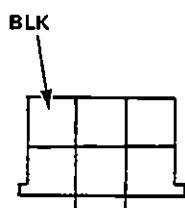
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT	Under all conditions.	Check for voltage to ground: should be battery voltage.	• An open in the wire.
3	RED/GRN	Lighting switch	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
4	RED/YEL	Lighting switch	Check for voltage to ground: should be battery voltage.	• Faulty lighting switch. • An open in the wire.
5	RED/BLU	Lighting switch Dimmer switch Hi.	Check for voltage to ground: should be battery voltage.	• Blown No.5 (10A) fuse. • An open in the wire.
6	BLK/YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.16 (10A) fuse. • An open in the wire.
7	RED/BLK	Connect the WHT terminal to the RED/BLK terminal.	Front position lights, taillights and license plate lights should come on.	• Blown bulbs. • An open in the wire.
8	RED/WHT	Connect the WHT terminal to the RED/WHT terminal.	Headlights (Lo) should come on.	• Blown bulbs. • Blown No.10 (10A) or No.11 (10A) fuse. • Poor ground (G201, G301, G401).

(cont'd)

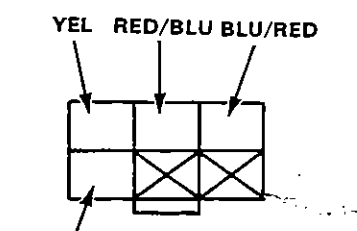
Integrated Control Unit (With Daytime and Dim-Dip Light)

Input Test (cont'd)

Dim-Dip Headlight System:



View from wire side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	BLU/RED	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.7 (10A) fuse. • An open in the wire.
3	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the wire.
4	RED/BLK	Lighting switch	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • An open in the wire.
5	RED/BLU	Lighting switch	Check for voltage to ground: should be battery voltage.	• Faulty Dim-Dip resistor. • Blown No.10 (10A) and No.11 (10A) fuse. • Faulty lighting relay. • An open in the wire.

Seat Belt Reminder System

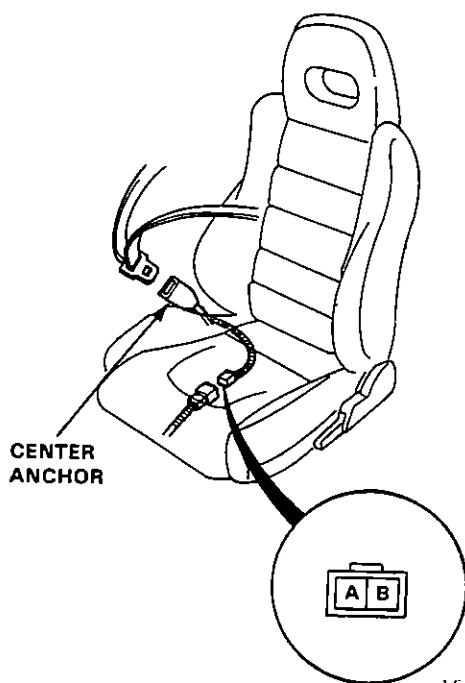
Description

NOTE: Refer to page 16-81 for wiring description of the seat belt beeper/timer circuit.

With the ignition switch in "Run" or "Start", Voltage is applied to the beeper/timer of the integrated control unit. When you unbuckle the driver's seat belt, the beeper/timer circuit senses ground at the A1 terminal. With voltage at the "B6" terminal and ground at the "B14" terminal, the seat belt beeper sounds 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.



View from terminal side

Oil Pressure Warning System



Description

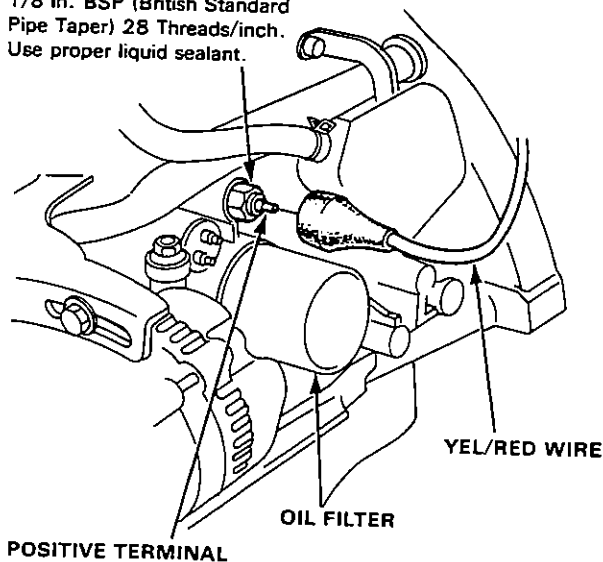
NOTE: Refer to page 16-70 for wiring description of the oil pressure warning circuit.

With the engine running and normal oil pressure, the oil pressure switch is open and the oil pressure warning light does not operate. If engine oil pressure falls below 29kpa (0.3 kg/cm², 4.3 psi), the oil pressure switch is closed, current flows through the oil pressure warning light and the oil pressure switch to ground, and the oil pressure light goes on.

Oil Pressure Switch Test

1. Disconnect the YEL/RED wire from the oil pressure switch.
2. There should be continuity between the positive terminal and the engine(ground) with the engine stopped. There should be no continuity when the engine runs.

OIL PRESSURE SWITCH
18 N·m (1.8 kg-m, 13 lb-ft)
1/8 in. BSP (British Standard
Pipe Taper) 28 Threads/inch.
Use proper liquid sealant.



3. If the switch fails to operate, check the engine oil level, then inspect the oil pump and pressure if the oil level is correct (see section 8).

Brake Warning System

Description

NOTE: Refer to page 16-81 for wiring description of the circuit check system.

Description:

The brake warning light goes on if the parking brake is applied, if the brake fluid level is low, and as a circuit test while cranking the engine.

Parking Brake:

With the ignition switch in "Run" or "Start", and the parking brake switch closed, the brake warning light operates to remind the driver that the parking brake is applied.

Brake Fluid Level:

With the ignition switch in "Run" or "Start", and the brake fluid level switch closed, the brake warning light operates to warn the driver of low brake fluid level in the brake master cylinder.

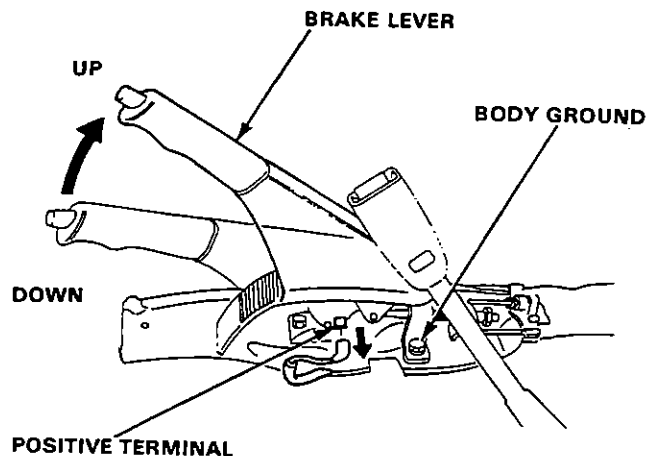
NOTE: Low fluid level indicates brake wear or system leaks; check brake pad wear before adding fluid.

Circuit Check: KQ model only

With the ignition switch in "Start" voltage is applied through the No.2 (10A) fuse in the dash fuse box to the circuit check built into the integrated control unit. The circuit check transistor is on, and current flows through the No.1 (10A) fuse in the dash fuse box, the brake warning light and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and the circuit transistor to ground. The brake warning light operates. This operation tests the brake warning circuit and bulb.

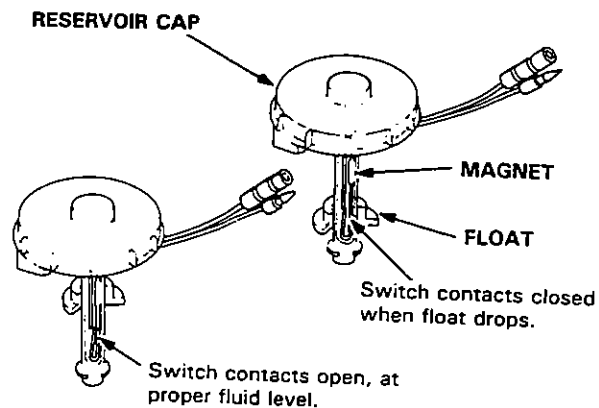
Parking Brake Switch Test

1. Remove the center console and disconnect the connector from the switch.
2. There should be continuity between the positive terminal and body ground with the brake lever up. There should be no continuity with the brake lever down.



Brake Fluid Level Switch Test

1. Remove the reservoir cap. Check that the float moves up and down freely. Replace the reservoir cap assembly if the float does not move freely.
2. Check for continuity between the terminals with the float up and down. There should be continuity with the float down and no continuity with the float up. Replace the reservoir cap assembly if necessary.



Light-on Warning System



Description

NOTE: Refer to 16-81, [86] for wiring description of the light-on warning circuit, and page 16-82, [87] for the input test of the warning circuit.

When the light on, voltage is applied to the warning circuit on the integrated control unit. When you open the driver's door, the warning circuit senses ground through closed door switch.

With voltage at the "B8, [A4]" terminal, ground at the "A1, [B3]" terminal, the beeper is activated to remind the driver to turn off the lights.

[] : KE model

Lighting System

Component Location Index

• REAR FOG LIGHT SWITCH

Removal, page 16-73

Test, page 16-102

HIGH BEAM INDICATOR LIGHT

(in the gauge assembly)

Gauge Assembly, page 16-71

LIGHTING SWITCH

Test, page 16-99

Replacement, page 16-100

DIM-DIP RESISTOR

(KE model only)

Test, page 16-101

LIGHTING RELAY

(KE model only)

Test, page 16-101

DIMMER RELAYS

Test, page 16-100

HEADLIGHTS

Adjustment, page 16-102

Replacement, page 16-103

• DAYTIME RUNNING

LIGHT RELAY

KS, KW (Norway, Finland)
model

Input Test, page 16-87

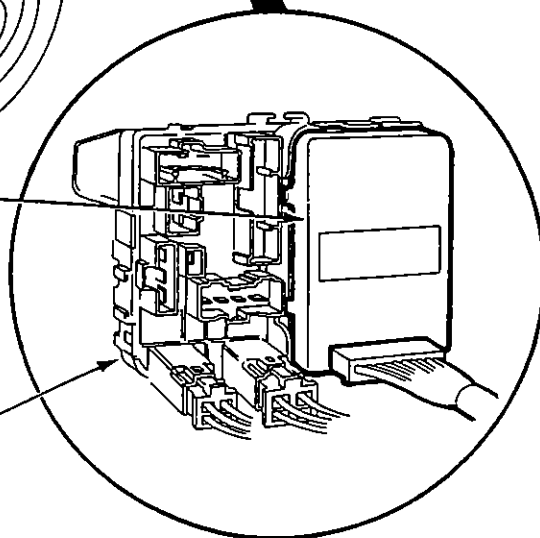
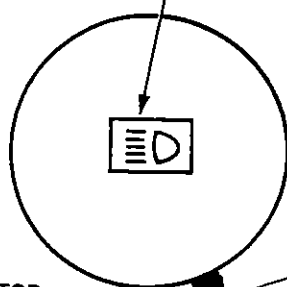
• DIM-DIP RELAY

KE model only

Input Test, page 16-87

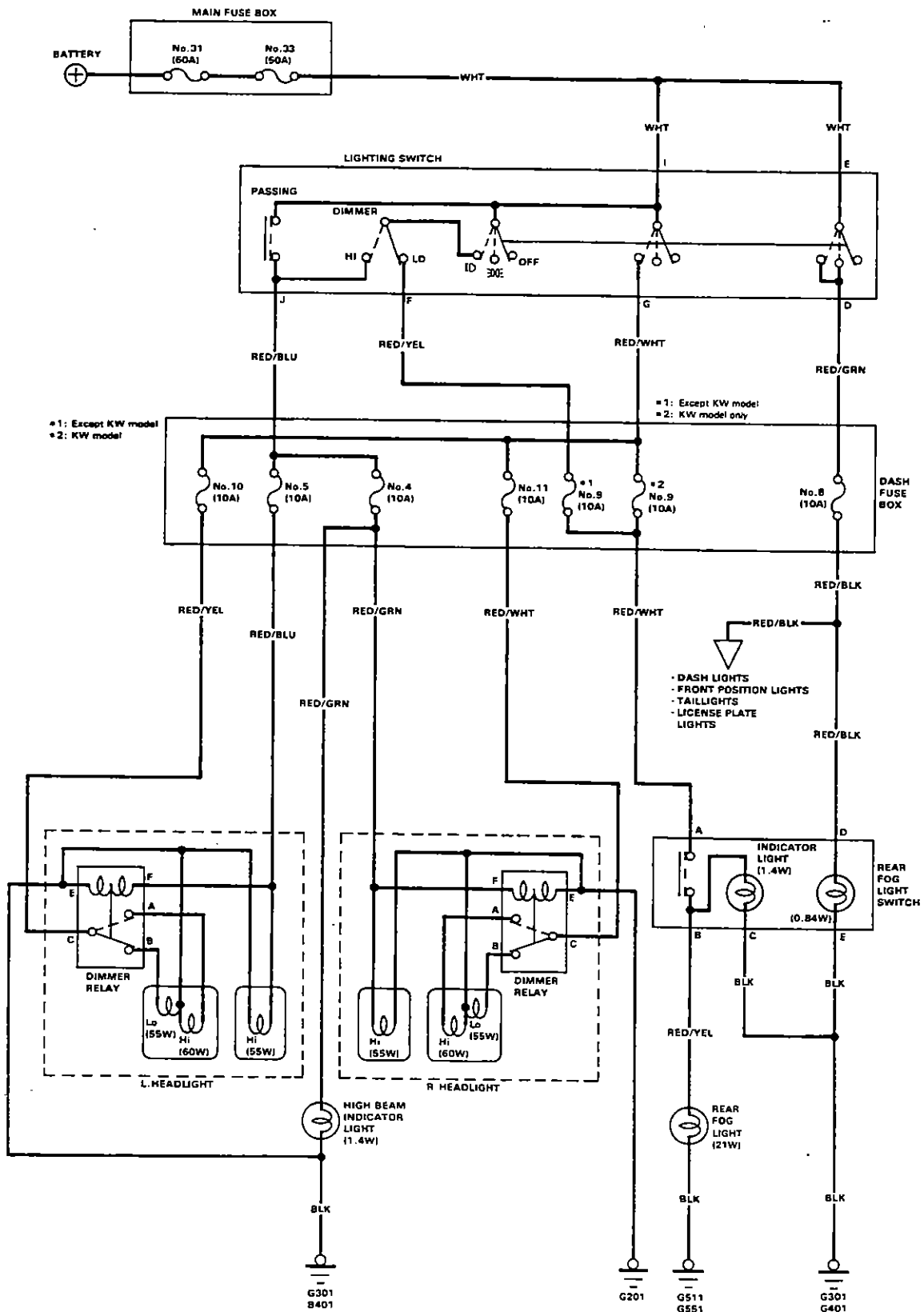
DASH FUSE BOX

(Located under dash, driver side)



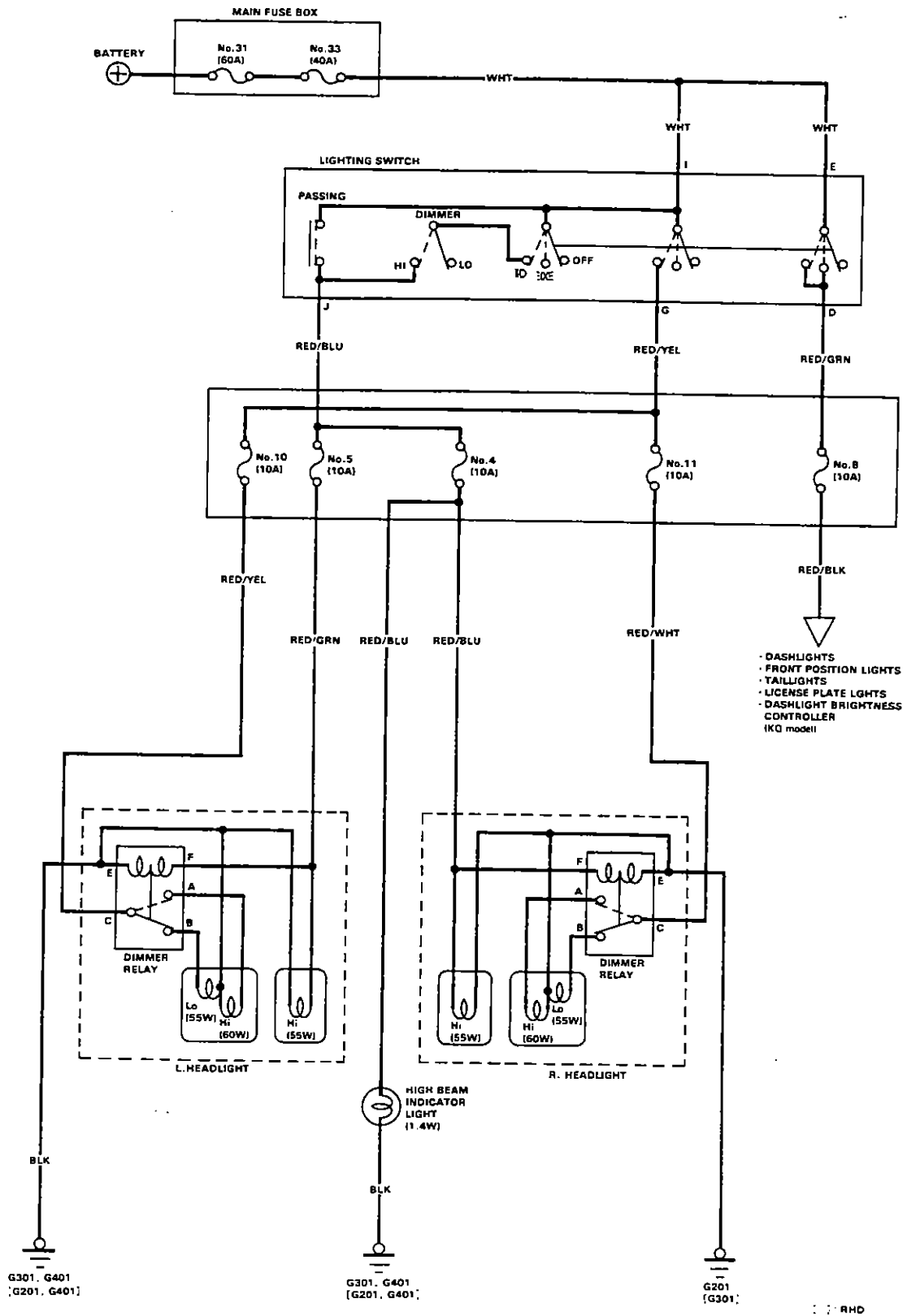
Lighting System

Circuit Diagram (KG, KF, KB, KW and KX models)



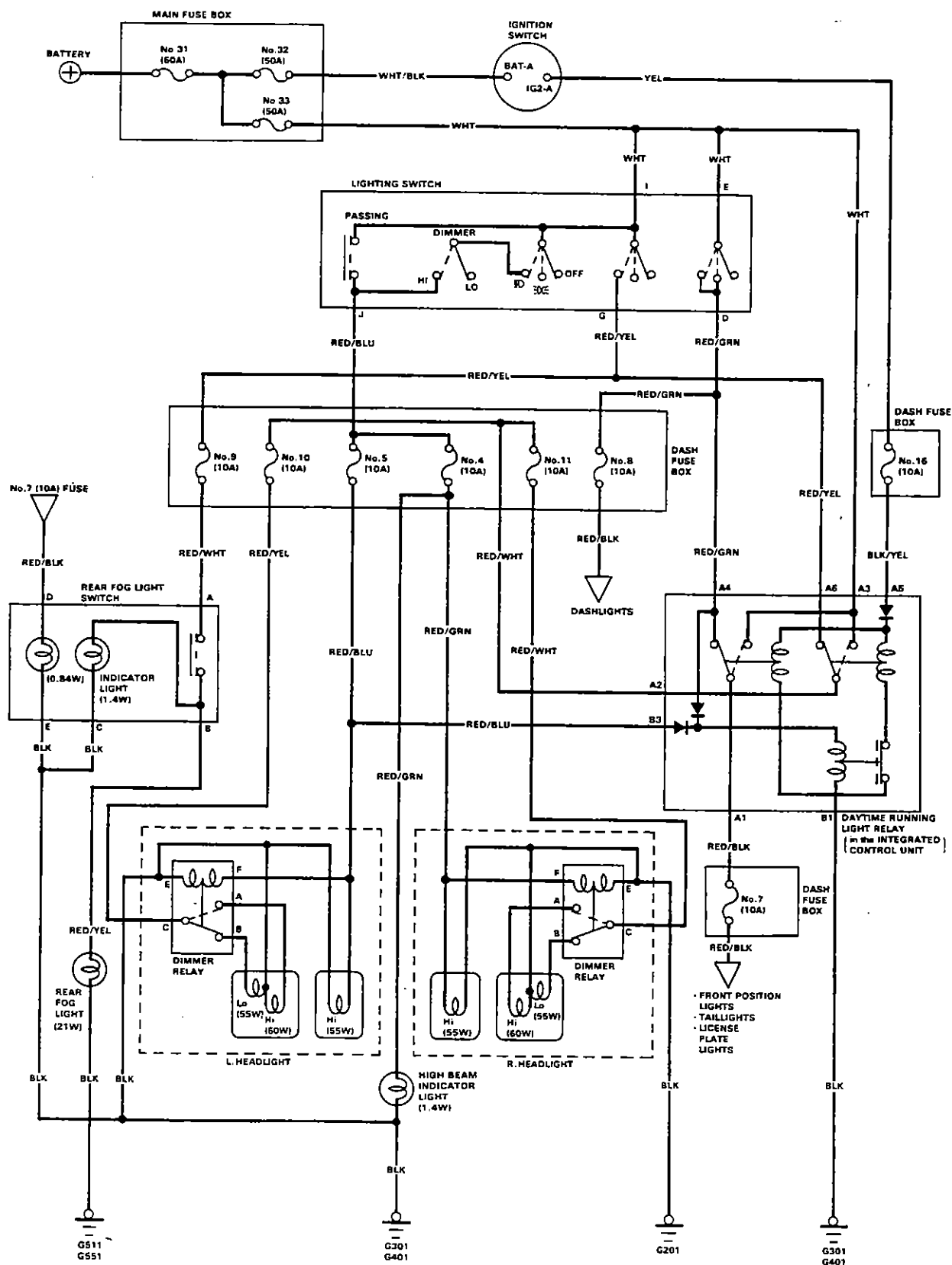
Lighting System

Circuit Diagram (KQ and KY models)



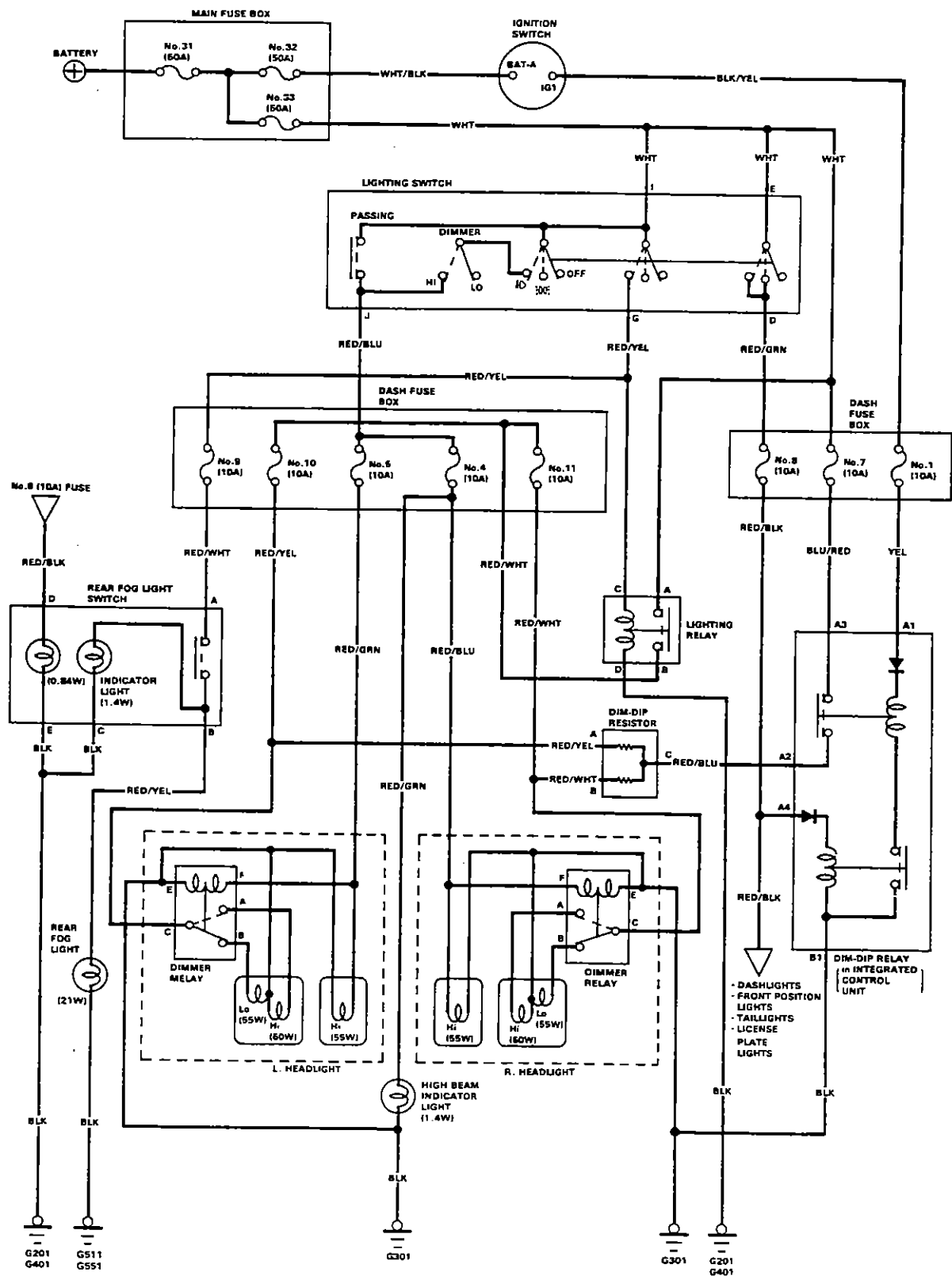


Circuit Diagram(With Daytime Light)



Lighting System

-Circuit Diagram (with Dim-Dip Headlight)



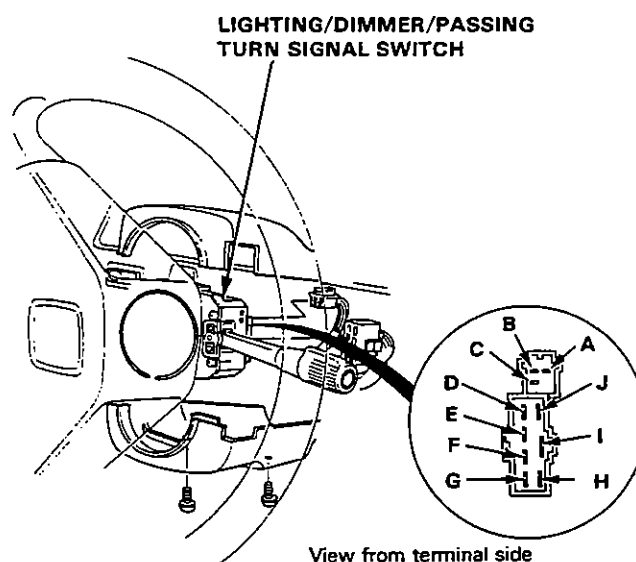
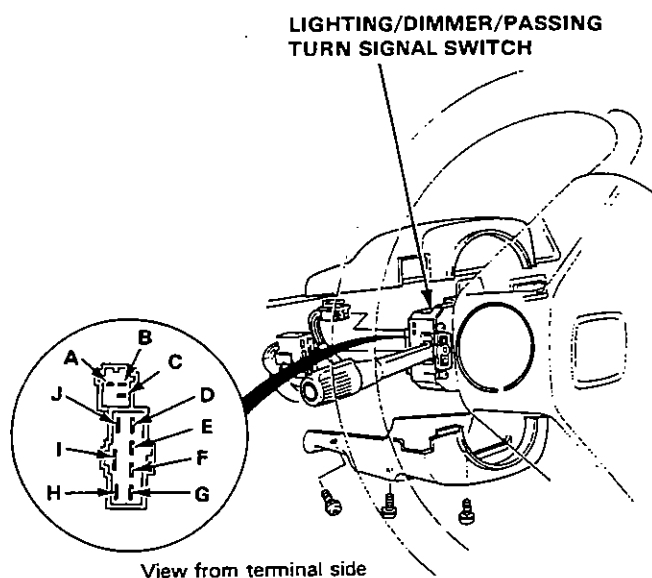


Lighting/Turn Signal Switch Test

1. Remove the column covers.
2. Disconnect the 7-P and 4-P connectors from the switch.
3. Check for continuity between the terminals in each switch position according to the tables.

LHD:

RHD:



Lighting/Dimmer/Passing Switch

Terminal		D	E	F*	G	I	J
Position							
Lighting switch	OFF						
	☺	○	○				
	☹				○	○	
Dimmer switch	LOW			○	○	○	
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

Turn Signal Switch

Terminal		A	B	C
Position				
LHD:	R	○		○
	NEUTRAL			
	L	○	○	
RHD:	R	○	○	
	NEUTRAL			
	L	○		○

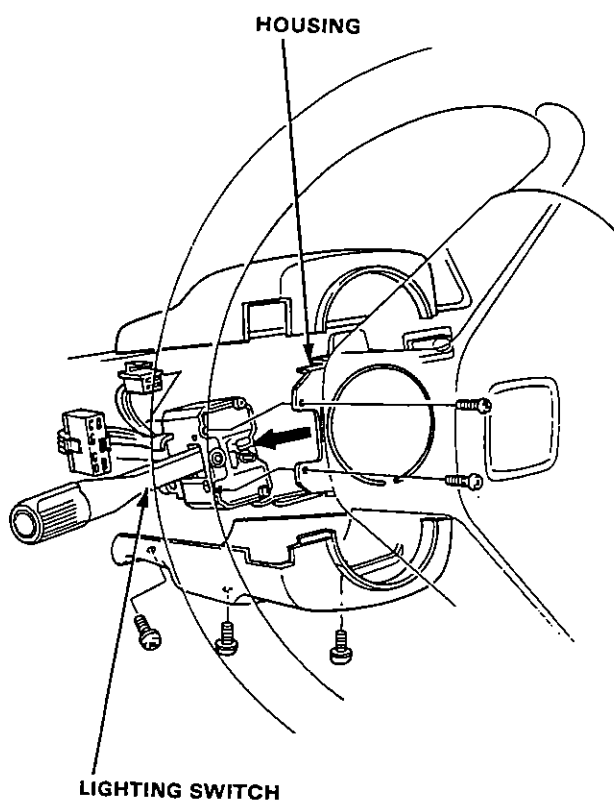
* : KW (Except Norway, Finland) model

Lighting System

Lighting Switch Replacement

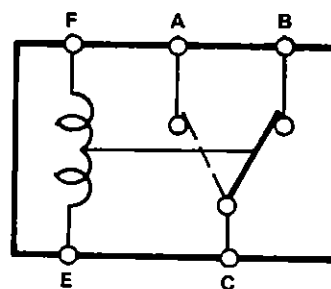
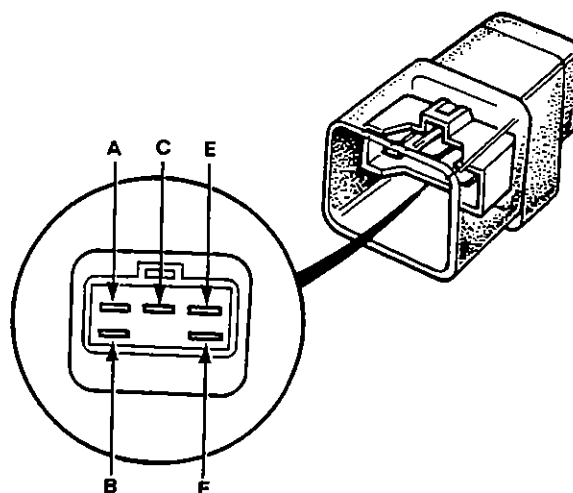
1. Remove the lower and upper covers from the steering column.
2. Disconnect the 7-P and 4-P connectors.
3. Remove the 2 screws and slide the lighting switch out of the housing as shown.

NOTE: Be carefull not to damage the steering wheel cover.



Dimmer Relay Test

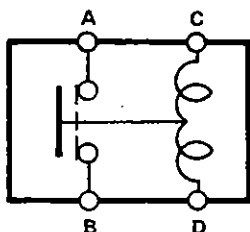
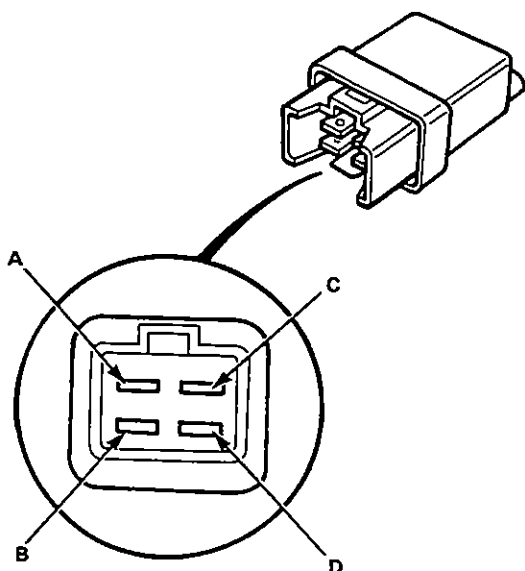
1. Remove the dimmer relays from the headlight units.
2. There should be continuity between the A and C terminals when the battery is connected to the E and F terminals.
There should be continuity between the B and C terminals when the battery is disconnected.





Lighting Relay Test

1. Remove the lighting relay.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.

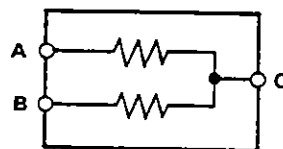
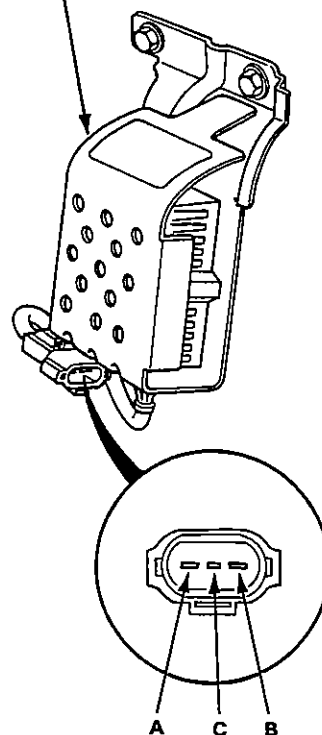


DIM-DIP Resistor Test

CAUTION: Dim-Dip resistor becomes very hot in use of Dim-Dip headlights; do not touch it or the attaching hardware immediately after they have been turned off.

1. Disconnect the 3-P connector from the resistor.
2. There should be continuity between A and C; between B and C terminals.

RESISTOR (Located left side, engine compartment)

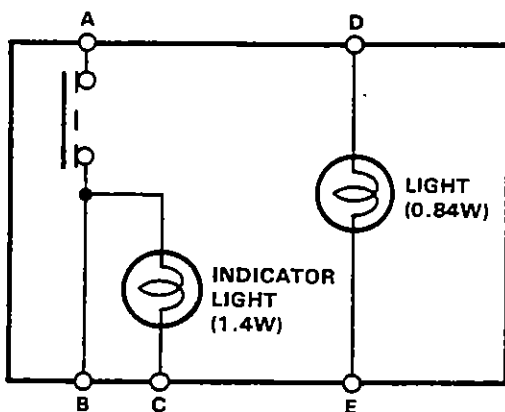
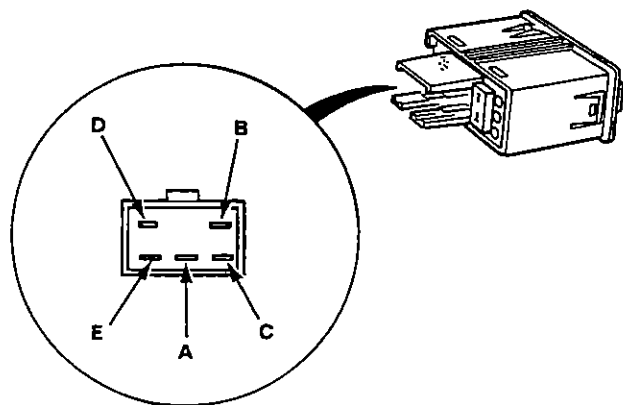


Lighting System

Rear Fog Light Switch Test

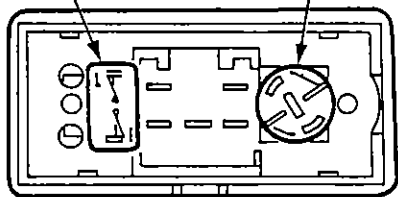
1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal Position	A	B	C	D	E
ON	○	○	○	○	○
OFF					



BULB/SOCKET
(0.84W)

BULB/SOCKET
(1.4W)

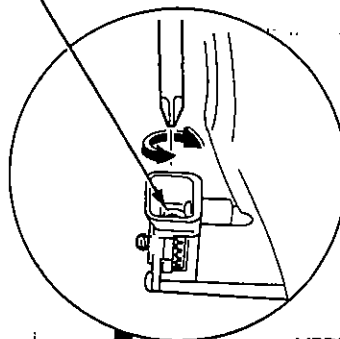


Headlights

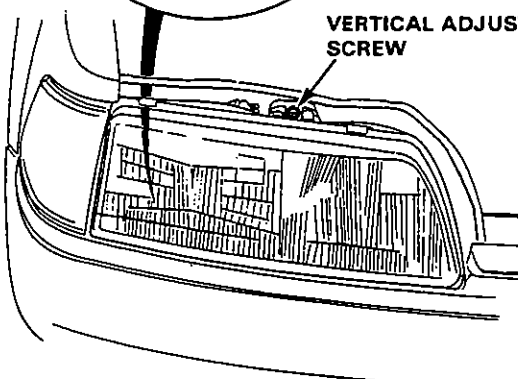
Adjustment

NOTE: Adjust the headlights to local requirements.

HORIZONTAL ADJUSTING POINT



VERTICAL ADJUSTING SCREW



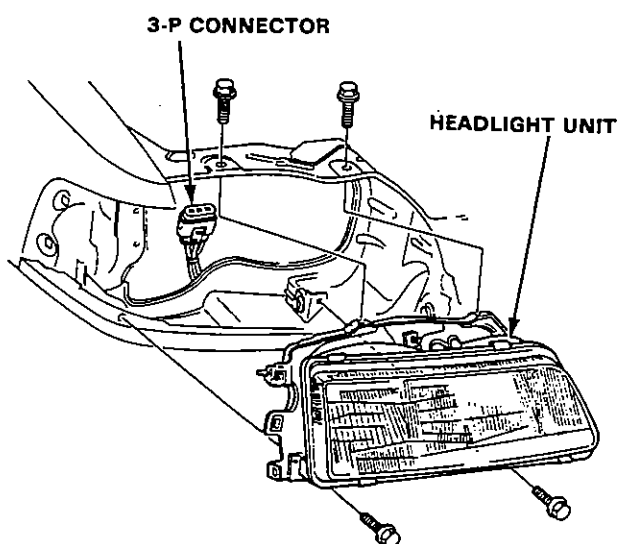
Replacement

CAUTION:

- Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.

- Do not try to replace or clean the headlights with the lights on.

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and 4 mount bolts, then remove the unit.



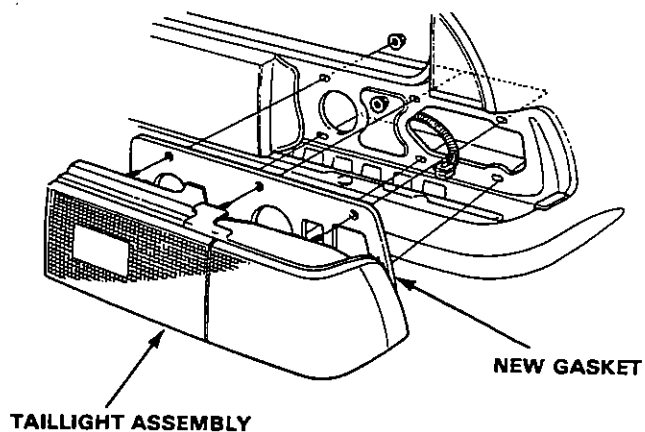
3. After installing the unit, adjust the headlights to local requirements.

Taillight Assembly



Replacement

1. Open the hatch and the maintenance cover of the taillight.
2. Disconnect the 6-P connector from behind the taillight.
3. Remove the 6 mount nuts and the taillight assembly.

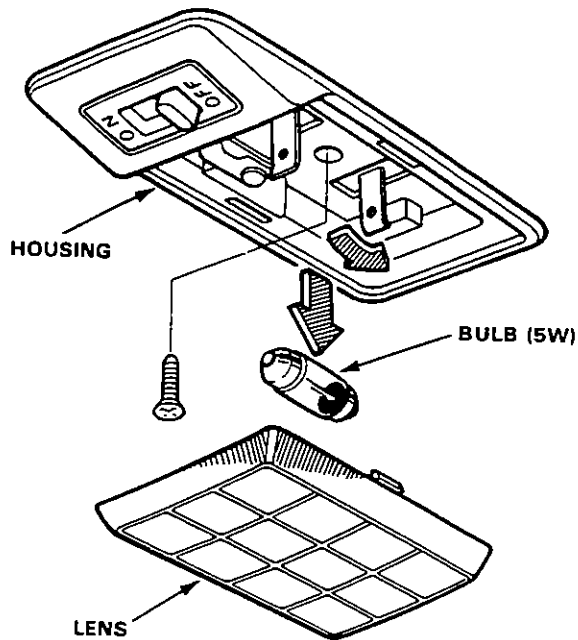


4. Inspect the gasket; replace if it is distorted or overly compressed.

Dome Light

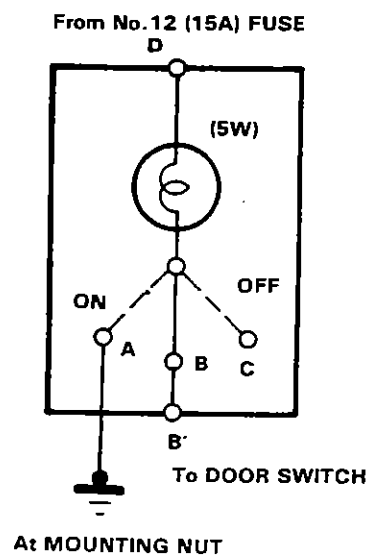
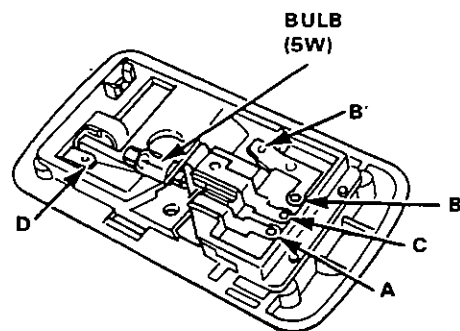
Test

1. Turn the light switch OFF.
2. Pry off the lens.
3. Remove the screw and the housing.
4. Disconnect the two connectors from the housing.



5. Check for continuity between the terminals in each switch position according to the table.

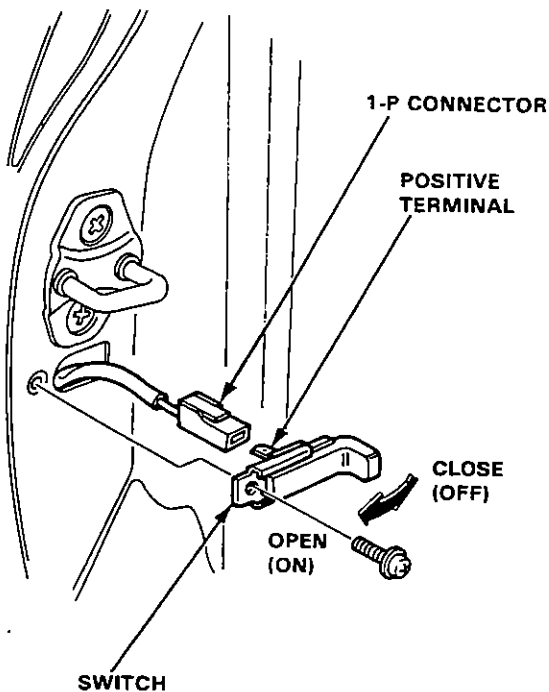
Terminal Position	A	B or B'	C	D
OFF				
MIDDLE				
ON				



Door Switches

Test

1. Open the door.
2. Remove the screw and pull out the door switch.
3. Disconnect the 1-P connector from the switch.



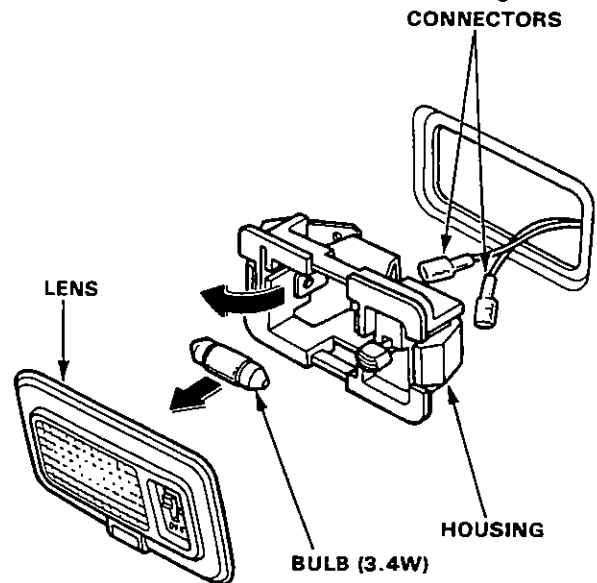
4. There should be continuity between the positive terminal and base plate (ground) with the switch released (door opened). There should be no continuity with the switch pushed (door closed).

Trunk Light

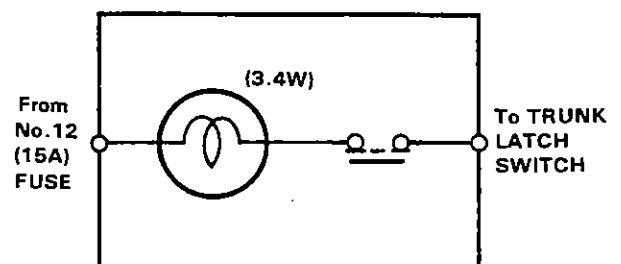
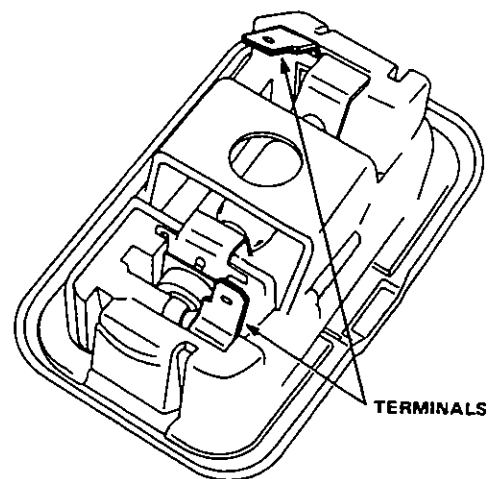


Test

1. Pry off the trunk light lens from the housing.
2. Pry off the light assembly.
3. Disconnect the connectors from the housing.



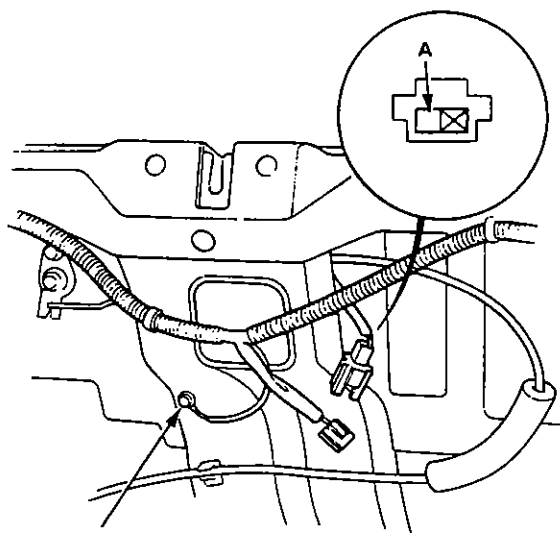
4. Make sure that the bulb is in good condition. Set the trunk light switch in the ON position and check for continuity between terminals.



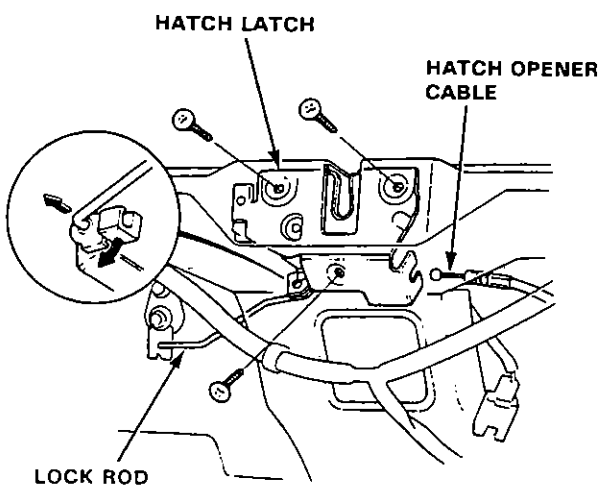
Latch Switch

Test/Replacement

1. Open the hatch and remove the rear panel lining.
2. Disconnect the 2-P connector from the hatch latch.
3. There should be continuity between the A terminal and body ground.

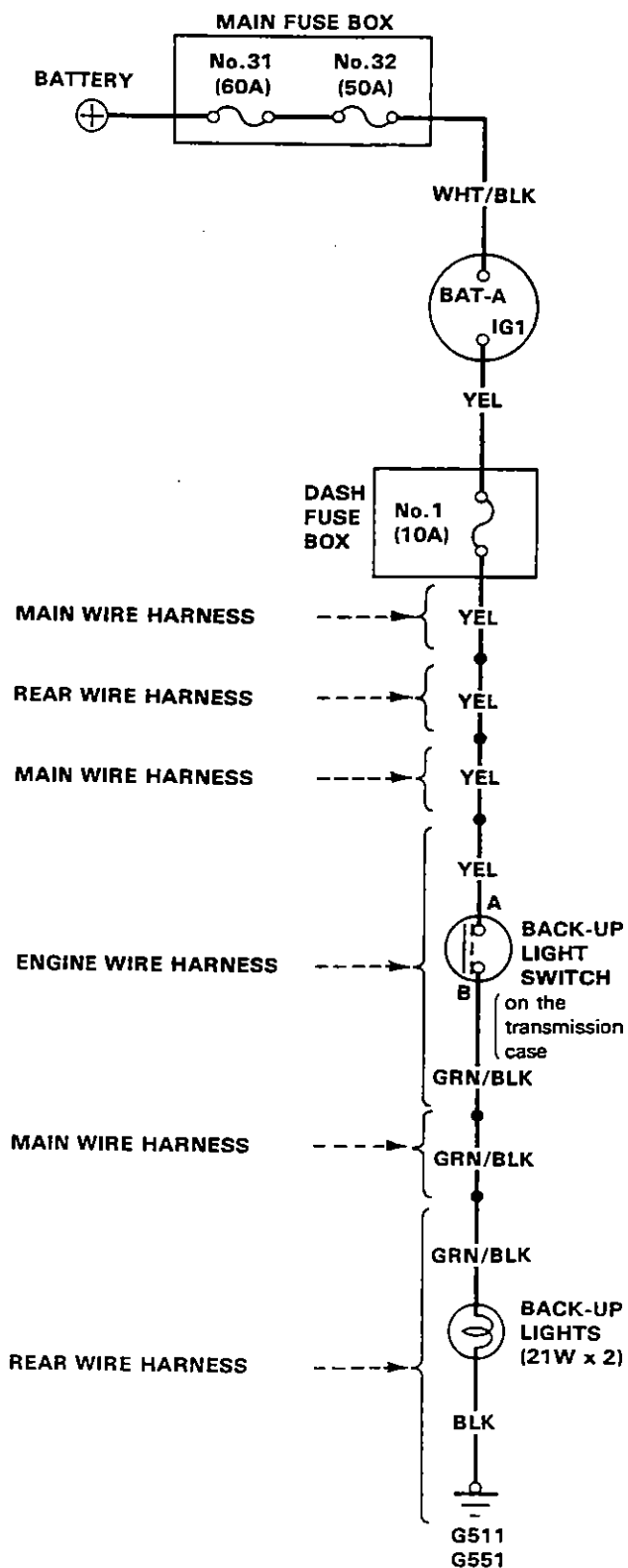


4. If necessary, remove the 3 bolts to pull out the latch from the trunk, then disconnect the lock rod from the latch.
5. Disconnect the hatch opener cable from the latch.



Back-Up Lights

Circuit Diagram



Back-Up/Rear Fog Lights

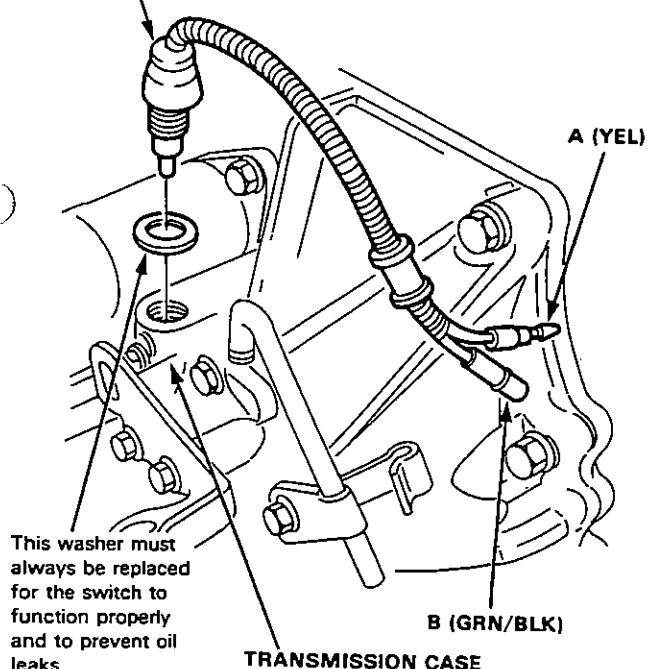


-Test

1. Test back-up light switch by placing the select lever in reverse and turning the ignition switch to ON.
2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the taillight assembly.
3. If the fuse and bulbs are OK, disconnect the connectors from the back-up light switch.

SWITCH

25 N·m (2.5 kg·m, 18 lb-ft)

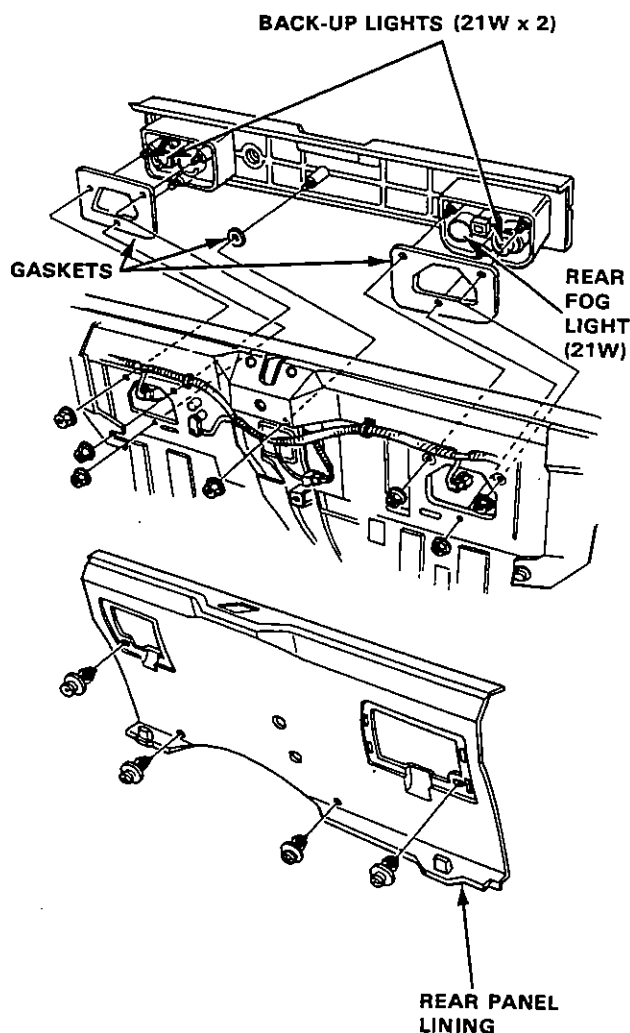


4. Check for continuity between the A and B wires with the switch installed to the transmission case. There should be continuity as the select lever engages "R"

- If no continuity, replace the switch.
- If there is continuity, but the back-up lights do not go on:
 - Poor ground (G511, G551).
 - An open in the YEL or GRN/BLK wire.

Replacement

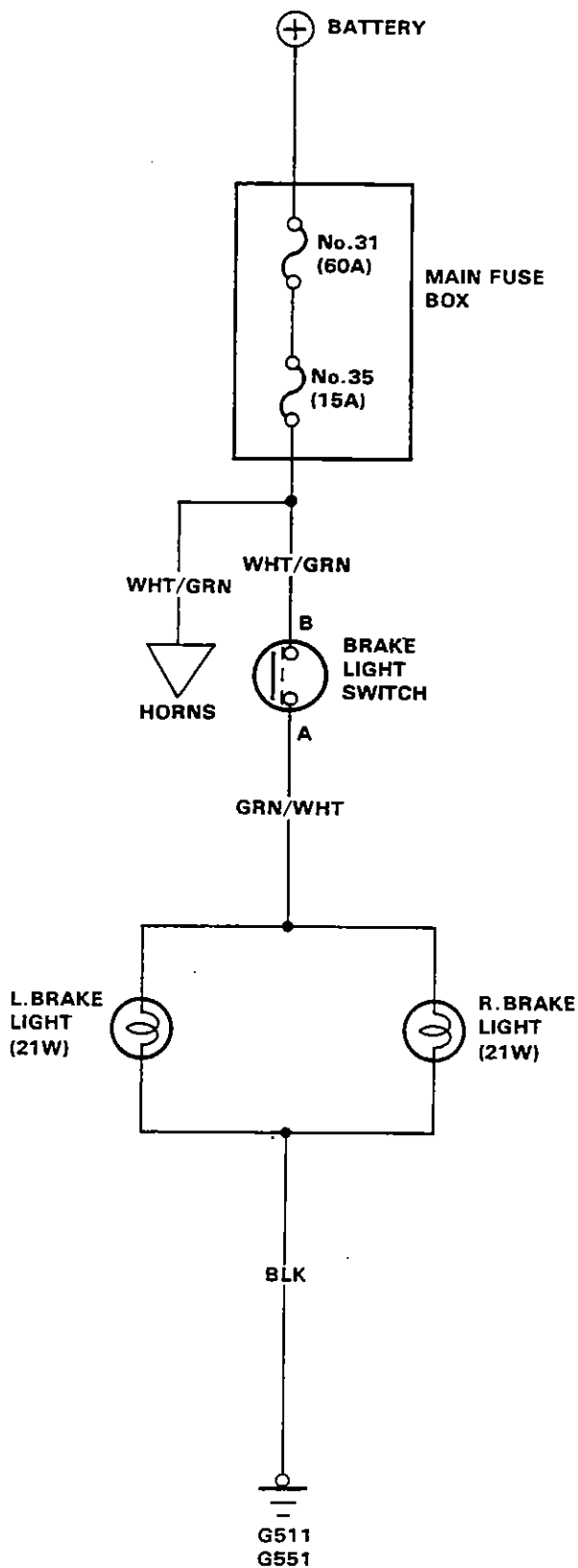
1. Remove the rear panel lining.
2. Disconnect the 4-P connectors from behind the back-up lights.
3. Remove the 7 mount nuts and the back-up light assembly.



4. Inspect the gaskets; replace if distorted or overly compressed.

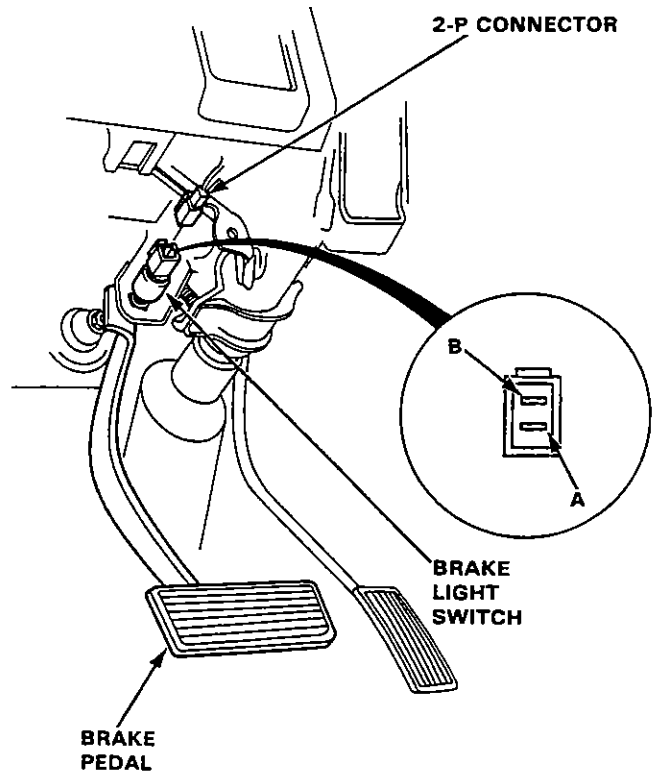
Brake Lights

Circuit Diagram



Test

1. If the brake lights do not go on, check the No. 35 (15A) fuse in the main fuse box, and the brake light bulbs in the taillight assembly.
2. If the fuse and bulbs are OK, disconnect the 2-P connector from the brake light switch.



3. Check for continuity between the A and B terminals. There should be continuity with the brake pedal pushed.
 - if no continuity, replace the switch or adjust pedal height (see section 13).
 - If there is continuity, but the brake lights do not go on:
 - Poor ground (G511, G551).
 - An open in the WHT/GRN or GRN/WHT wire.



Turn Signal/Hazard Flasher System

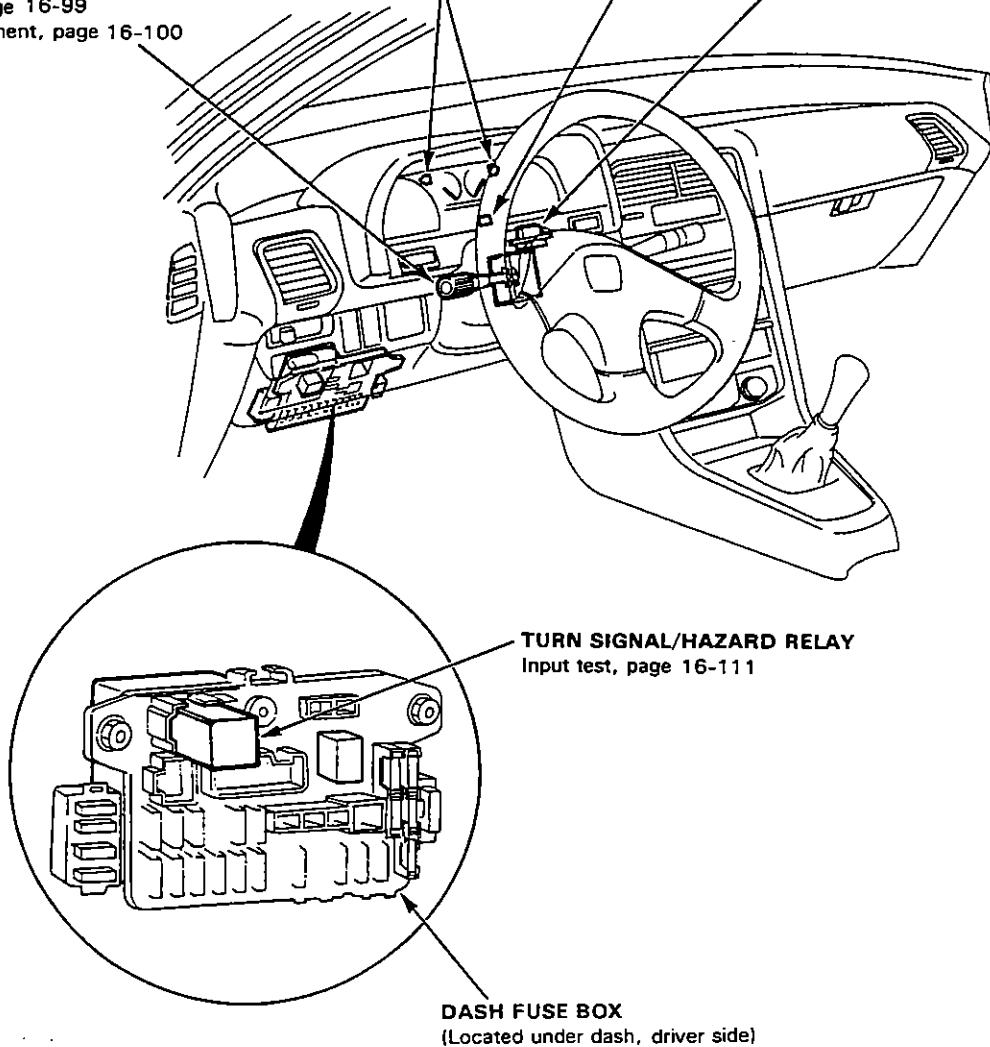
— Component Location Index —

LIGHTING/TURN SIGNAL SWITCH
Test, page 16-99
Replacement, page 16-100

TURN SIGNAL INDICATOR LIGHTS
(in the gauge assembly)
Gauge Assembly, page 16-71

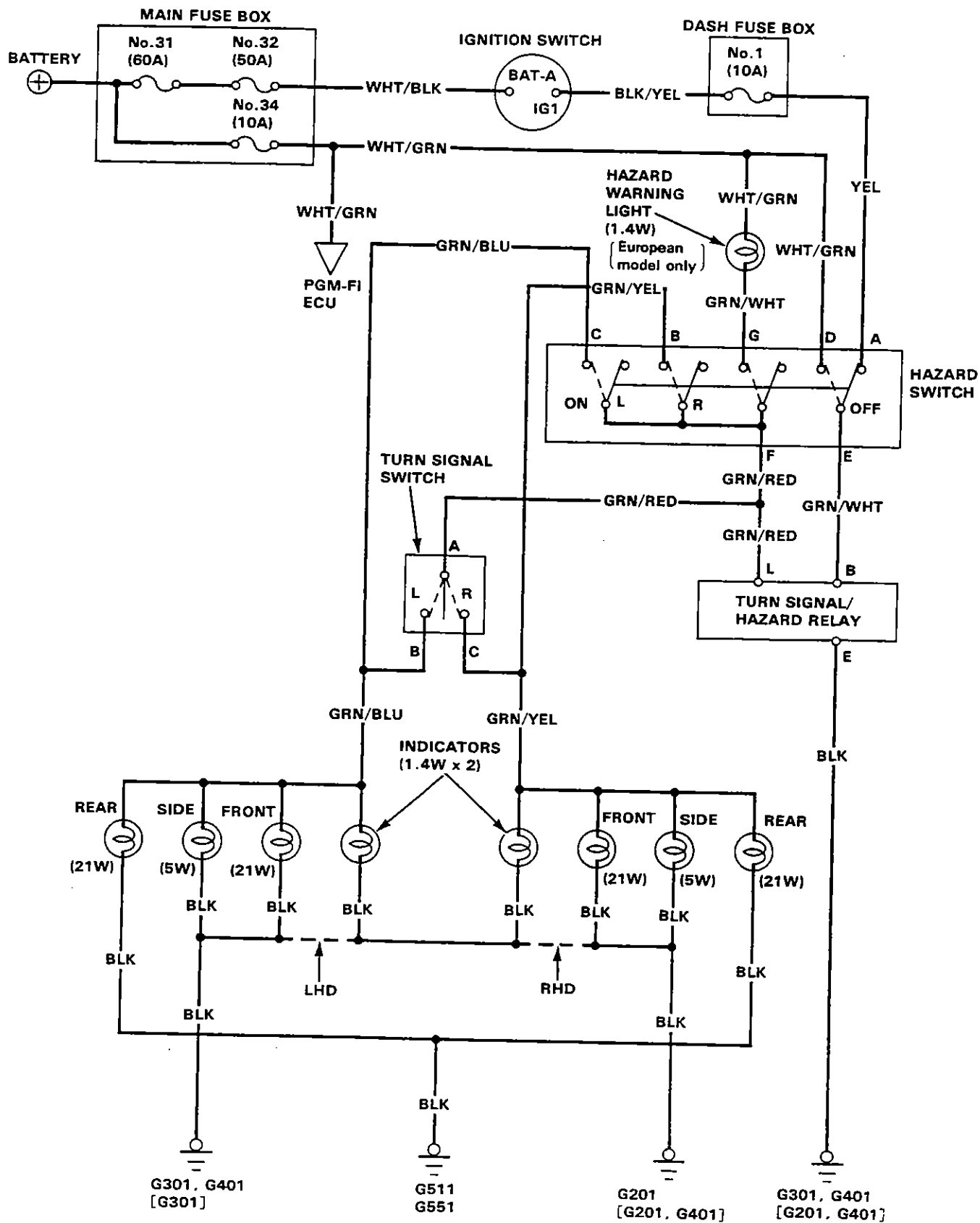
HAZARD WARNING LIGHT
(in the gauge assembly)
Gauge Assembly, page 16-70

HAZARD SWITCH
Removal, page 16-112
Test, page 16-112



Turn Signal/Hazard Flasher System

Circuit Diagram



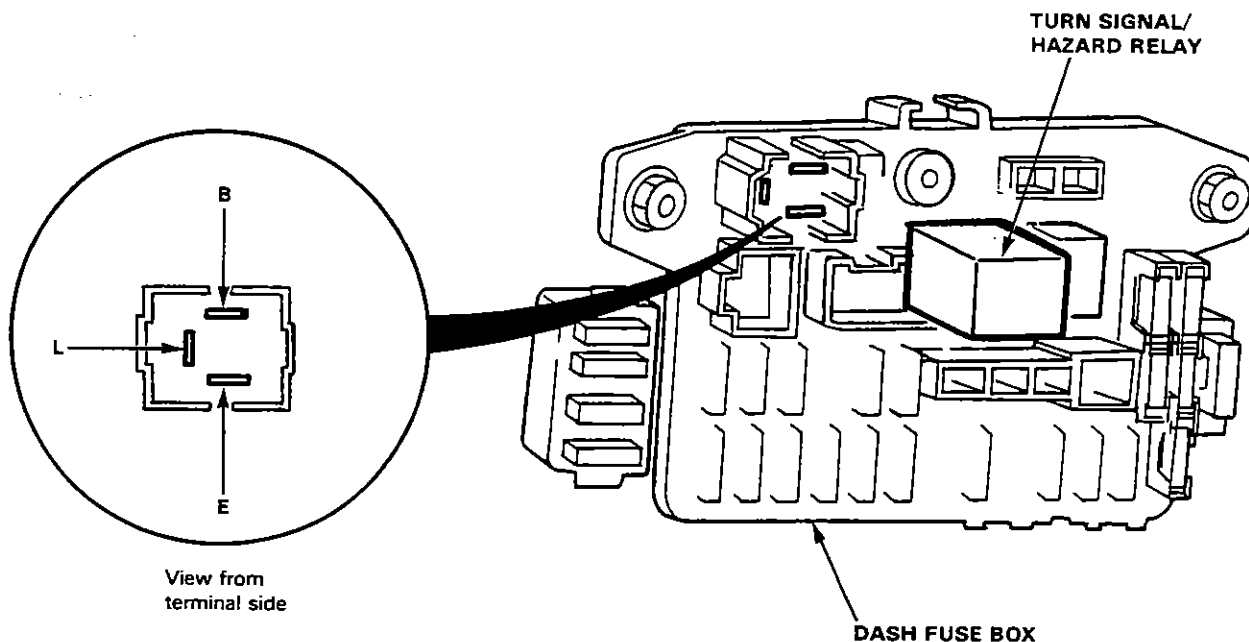
[] : RHD

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.



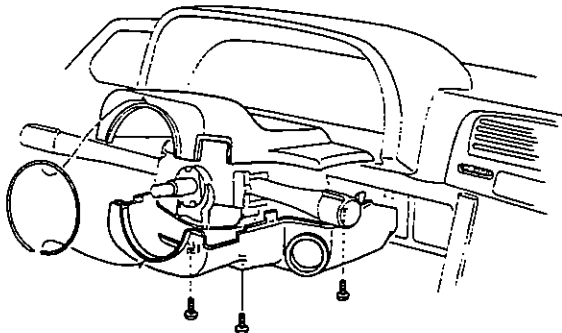
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	E	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G201, G401]) • An open in the BLK wire.
2	B	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the YEL or GRN/WHT wire. • Faulty hazard switch.
3	B and L	Hazard switch ON and connect the B terminal to the L terminal.	Hazard lights should come on.	• Blown No.34 (10A) fuse. • Blown bulb. • Faulty hazard switch. • An open in the WHT/GRN, GRN/RED, GRN/YEL or GRN/BLU wire.
		Ignition switch ON and turn signal switch in R or L and connect the B terminal to the L terminal.	R or L side turn lights should come on.	• Faulty turn signal switch.

[]: RHD

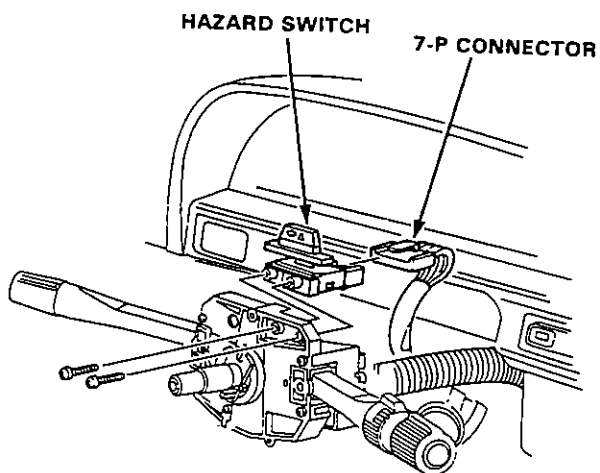
Turn Signal/Hazard Flasher System

Hazard Switch Removal

1. Remove the steering wheel then remove the column covers.



2. Disconnect the 7-P connector, then remove the switch from the combination switch by releasing the 2 mounting screws.

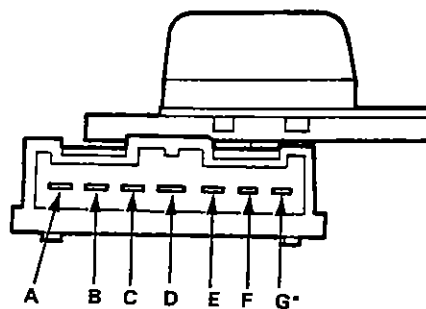


Hazard Switch Test

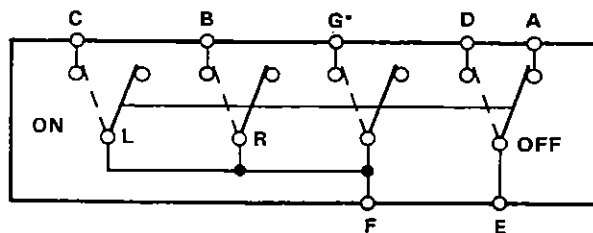
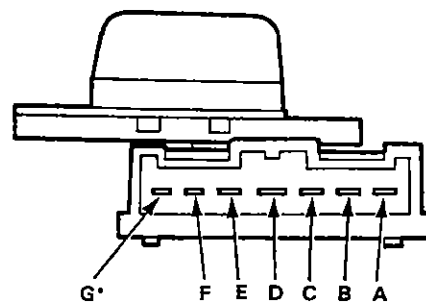
1. Remove the hazard switch
2. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	A	B	C	D	E	F	G
OFF	○				○		
ON		○	○	○	○	○	○

LHD:



RHD:

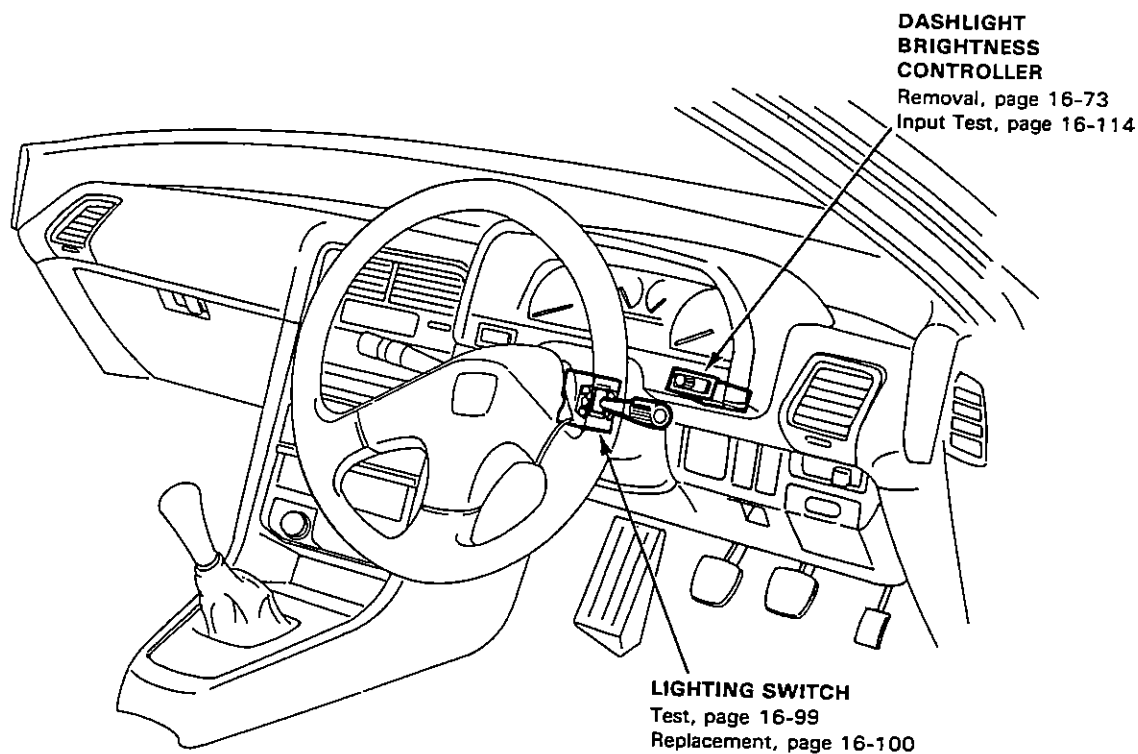


G*.....European model only

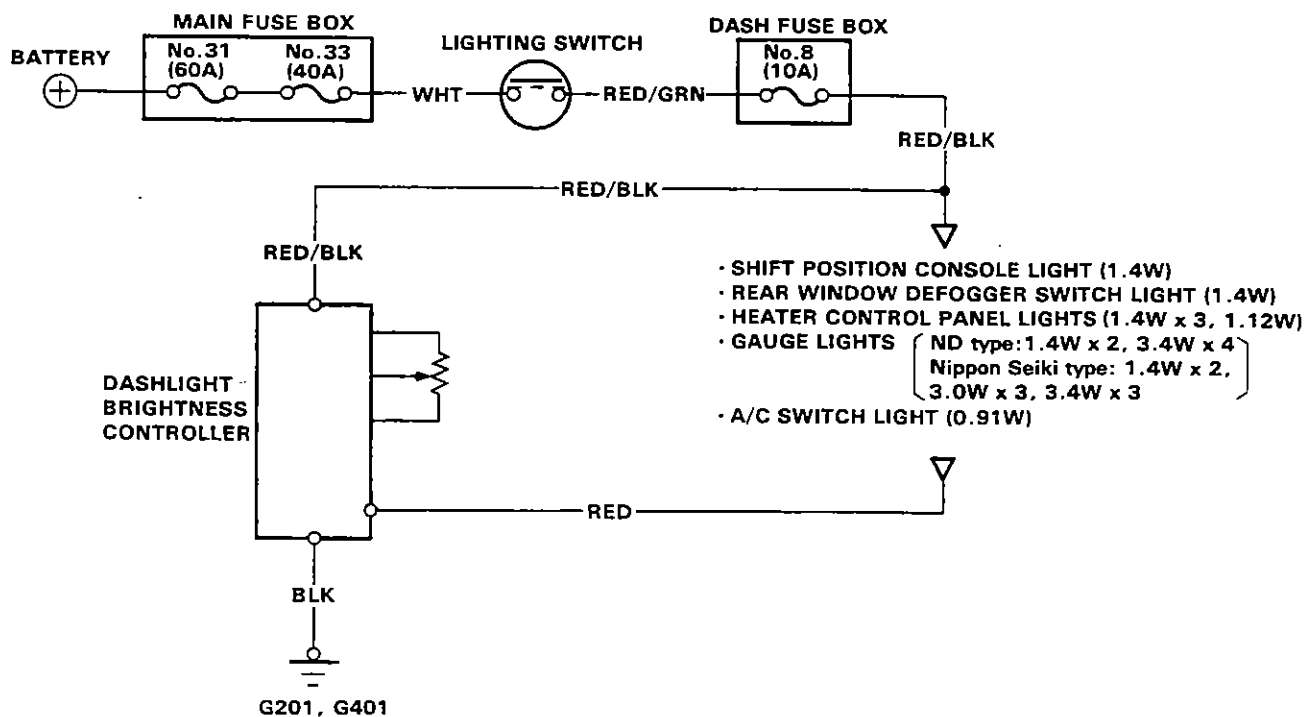
Dashlight Brightness Control (KQ model only)



Component Location Index



Circuit Diagram



Dashlight Brightness Control (KQ model only)

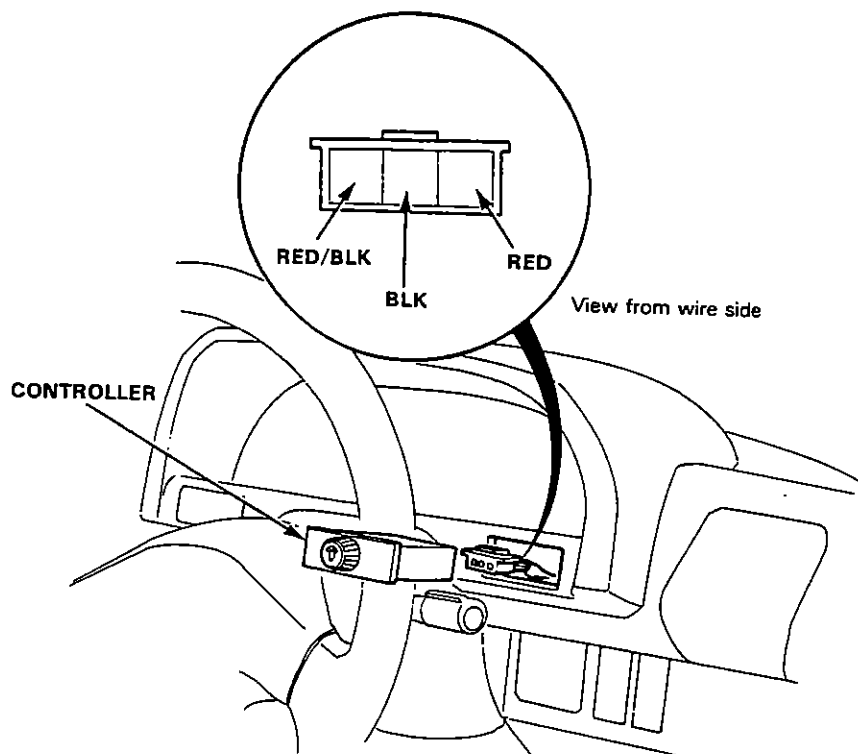
Controller Input Test

NOTE: The control unit is built in the dashlight brightness controller.

Remove the controller from the instrument panel, then disconnect the 3-P connector from the controller.

connector from the controller.

Make the following input tests at the harness pins. If all tests prove OK, yet the dashlights still can not be controlled, check the connector for good connection. If OK, then replace the controller.

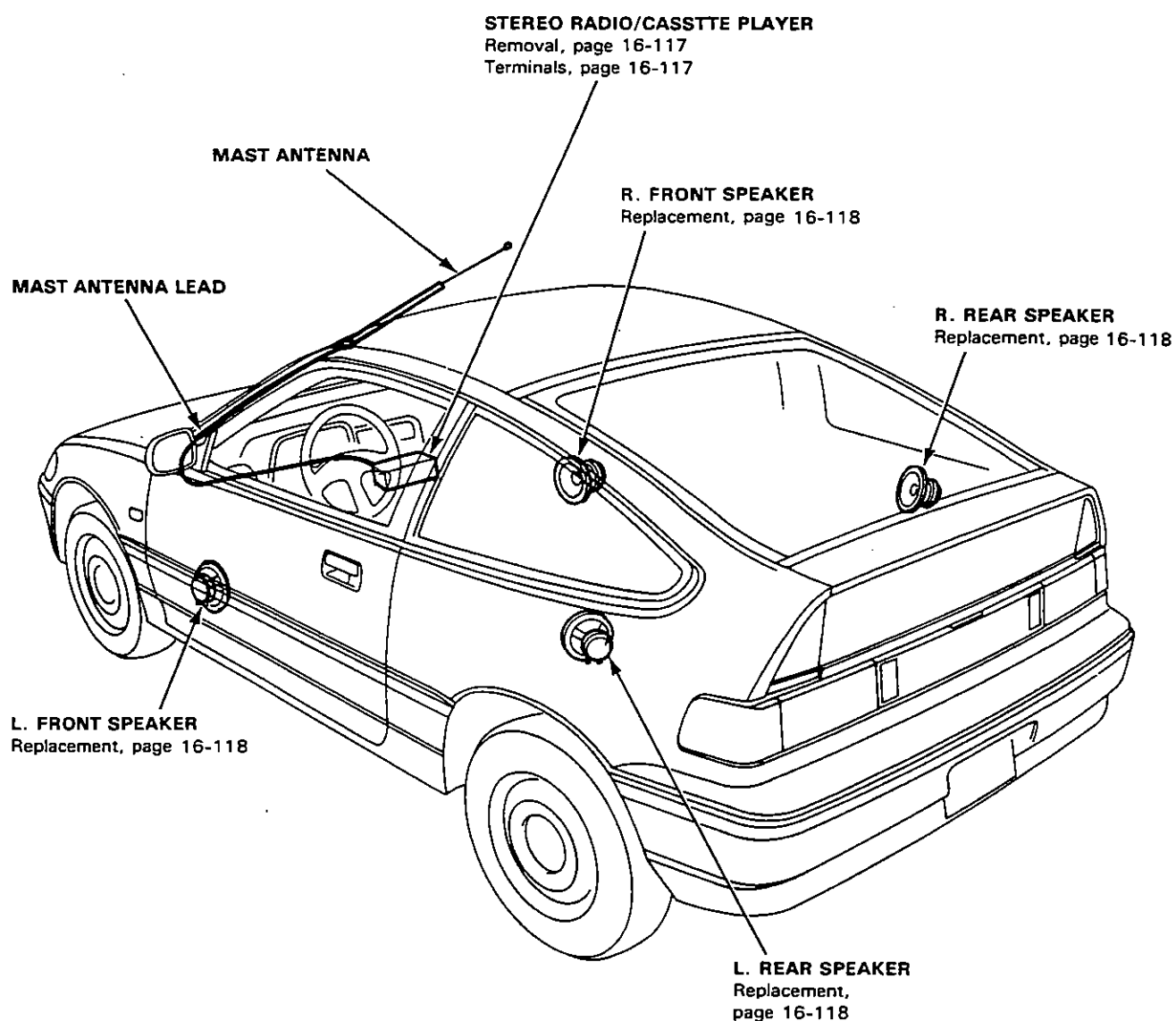


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity,	• Poor ground (G201, G401) • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	RED	Lighting switch ON.	Attach to ground: dashlights should come on full bright. NOTE: If the fuse blows, the RED and the RED/BLK wires are connected.	• An open in the RED/BLK or RED wire.

Stereo Sound System

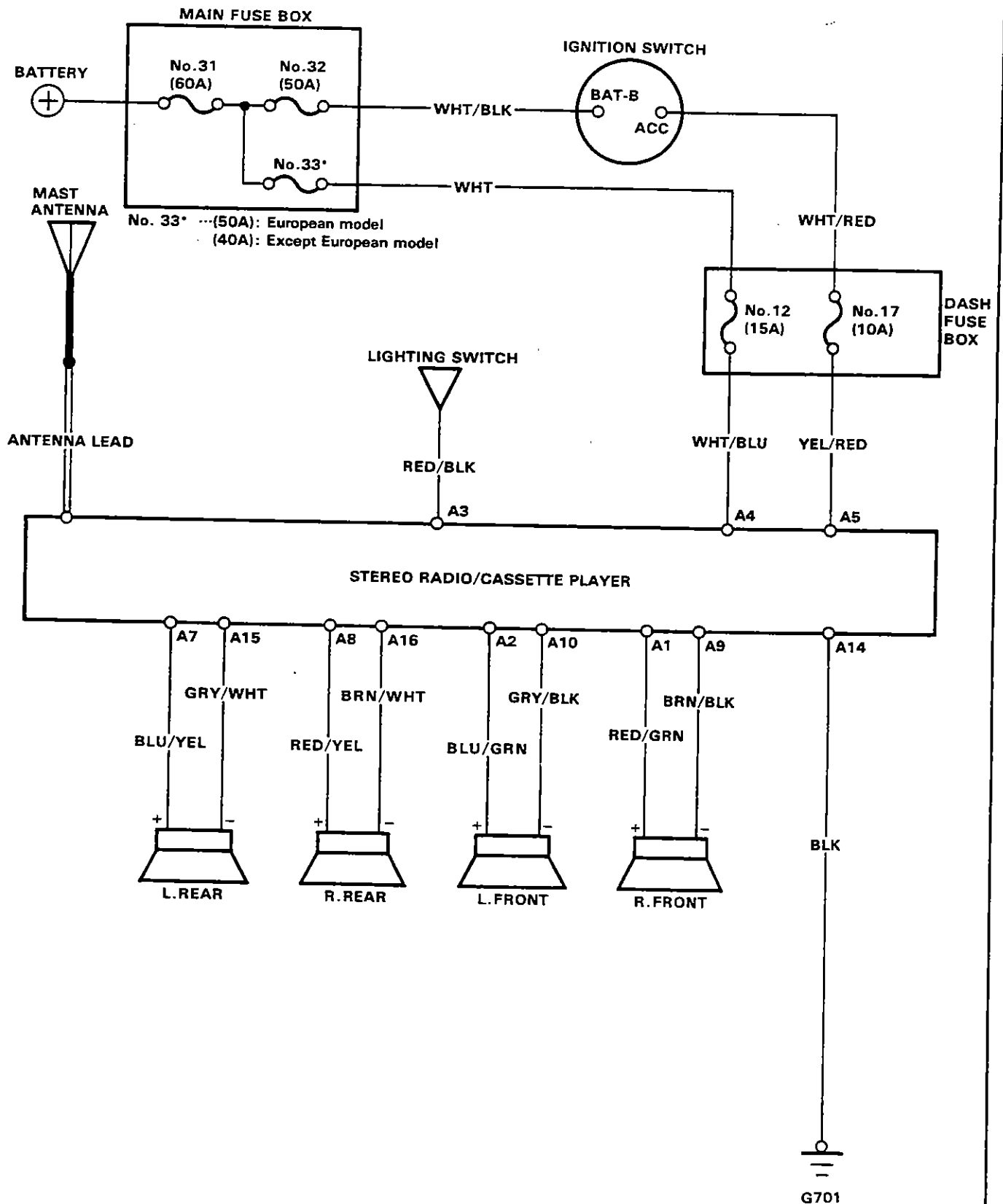


Component Location Index



Stereo Sound System

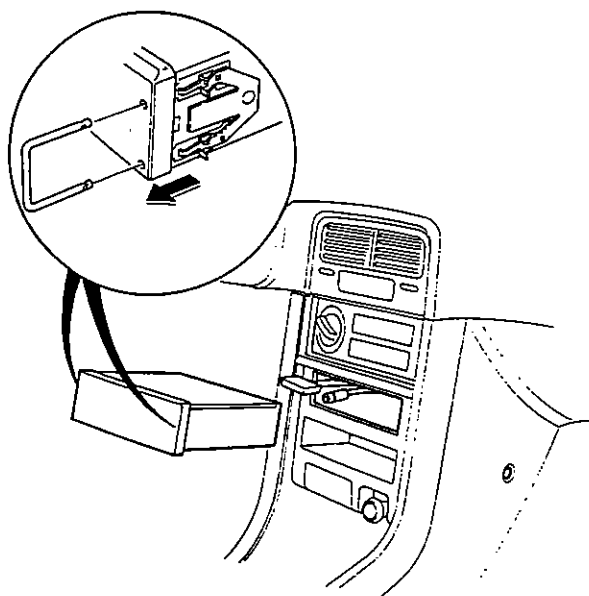
Circuit Diagram





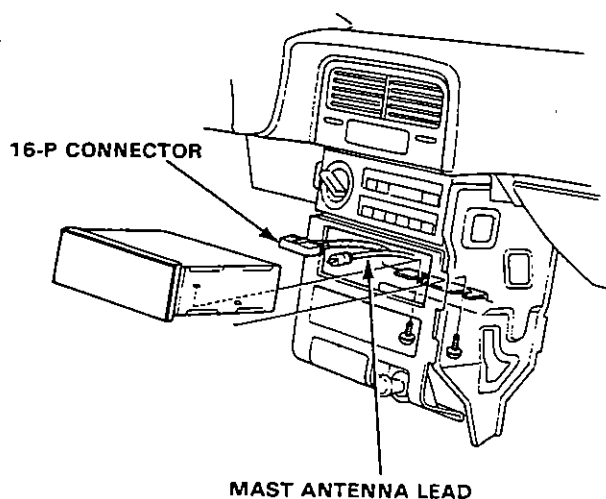
Unit Removal

A-Type:

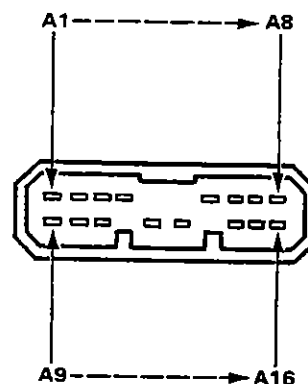


B-Type:

1. Remove the front console.
2. Remove the 2 screws and pull the stereo radio/cassette player out of the center instrument panel, then disconnect the 16-P connector and mast antenna lead from the stereo radio/cassette player.



Unit Terminals



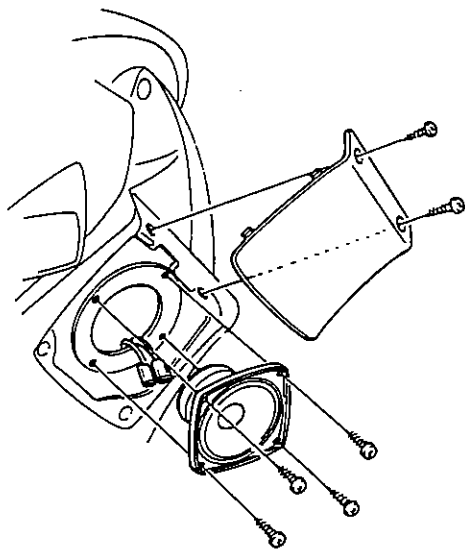
Terminal	Wire	Destination
A1	RED/GRN	Right front speaker ⊕
A2	BLU/GRN	Left front speaker ⊕
A3	RED/BLK	Light-on signal
A4	WHT/BLU	Constant power (Tuning memory)
A5	YEL/RED	ACC (Main stereo power supply)
A6		(Not used)
A7	BLU/YEL	Left rear speaker ⊕
A8	RED/YEL	Right rear speaker ⊕
A9	BRN/BLK	Right front speaker ⊖
A10	GRY/BLK	Left front speaker ⊖
A11		(Not used)
A12		(Not used)
A13		(Not used)
A14	BLK	Ground
A15	GRY/WHT	Left rear speaker ⊖
A16	BRN/WHT	Right rear speaker ⊖

Stereo Sound System

Speaker Replacement

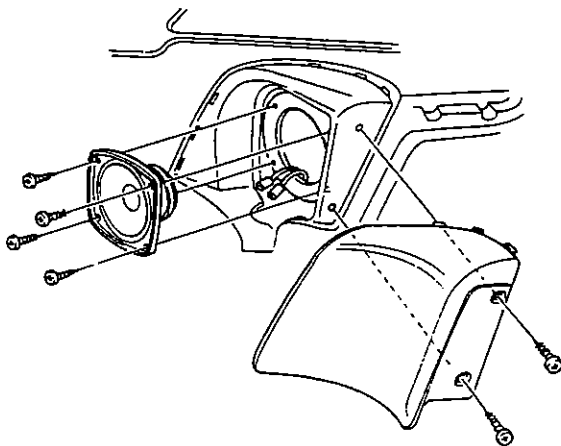
Front Speakers:

1. Remove the 2 screws on the front edge of the grille.
2. Remove the screws, then disconnect the wires from the speaker.



Rear Speakers:

1. Remove the 2 screws on the edge of the grille.
2. Remove the screws, then disconnect the wires from the speaker.

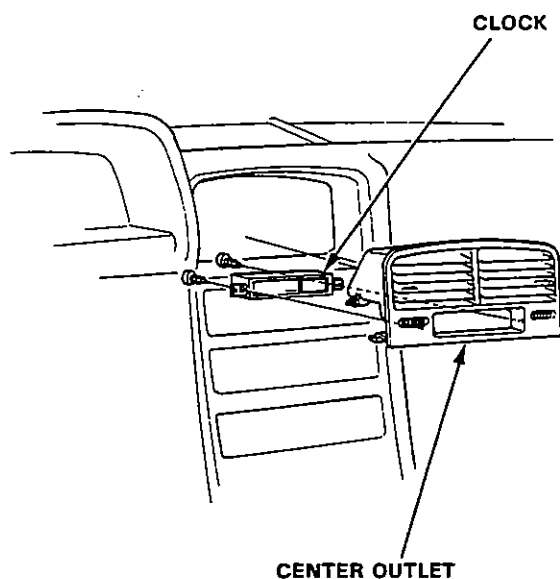


Clock

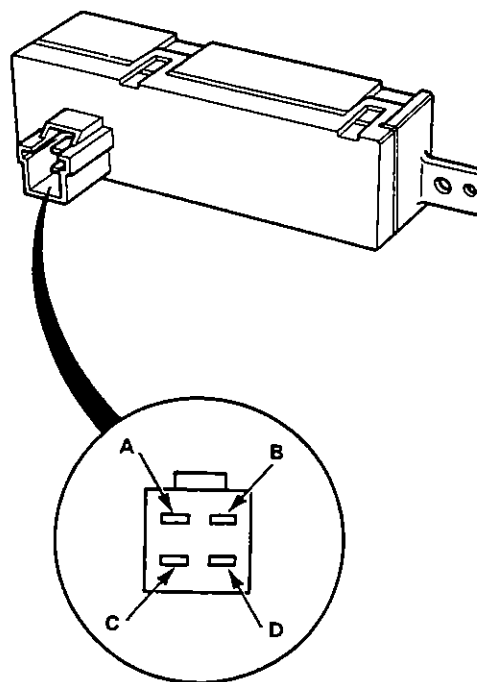


Removal

1. Remove the center outlet from the dashboard, then disconnect the 4-P connector from the clock.
2. Remove the 2 screws and clock from the center outlet.



Terminals

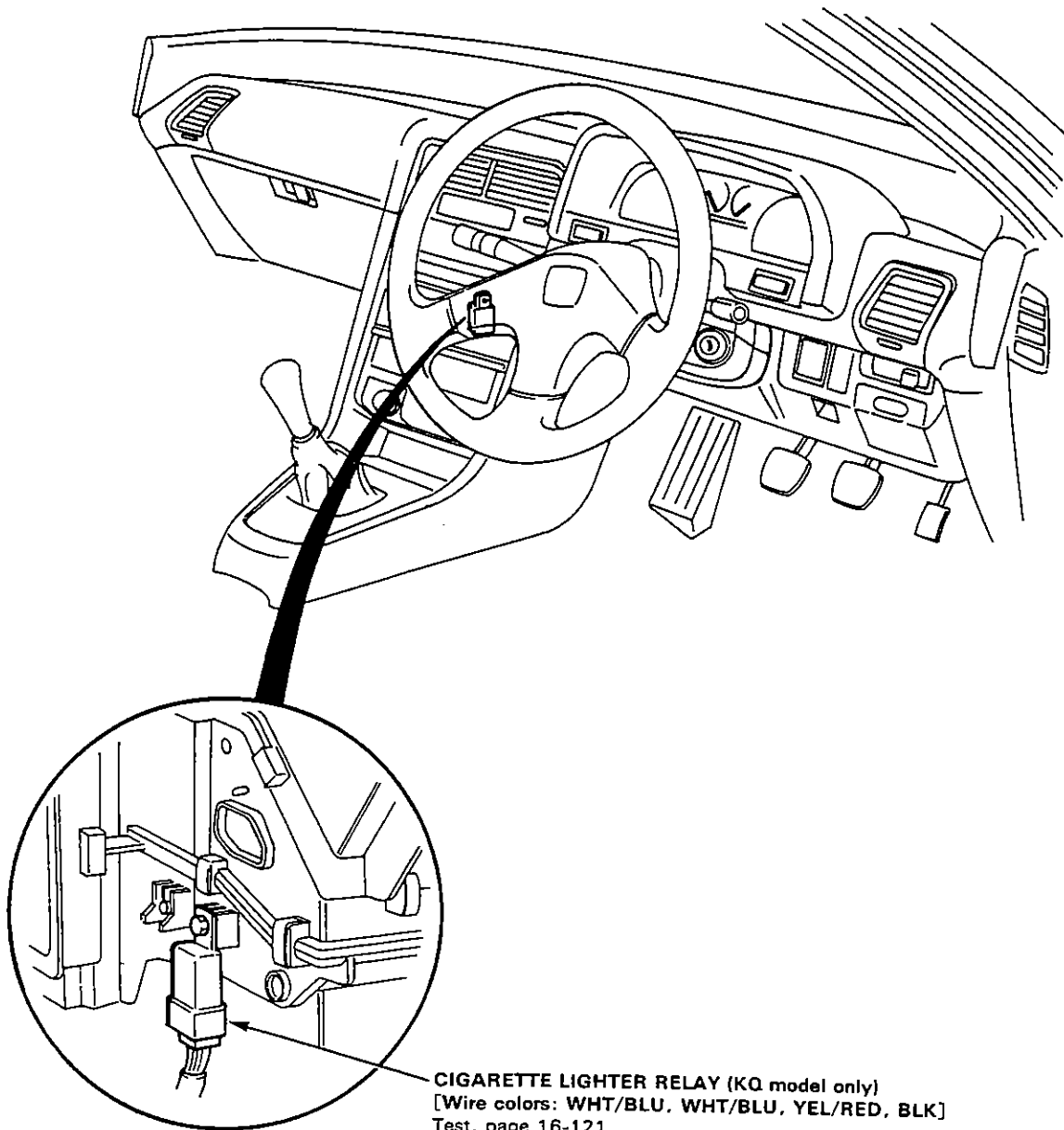


Terminal	Wire	Destination
A	WHT/BLU	Constant power (Time memory)
B	YEL	IG1 (Main clock power supply)
C	RED/BLK	Light-on signal
D	BLK	Ground

Cigarette Lighter

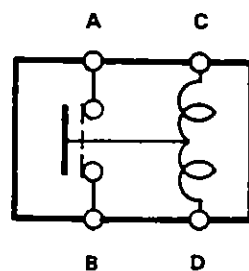
Component Location Index

- CIGARETTE LIGHTER
Replacement, page 16-122





Cigarette Lighter Relay Test

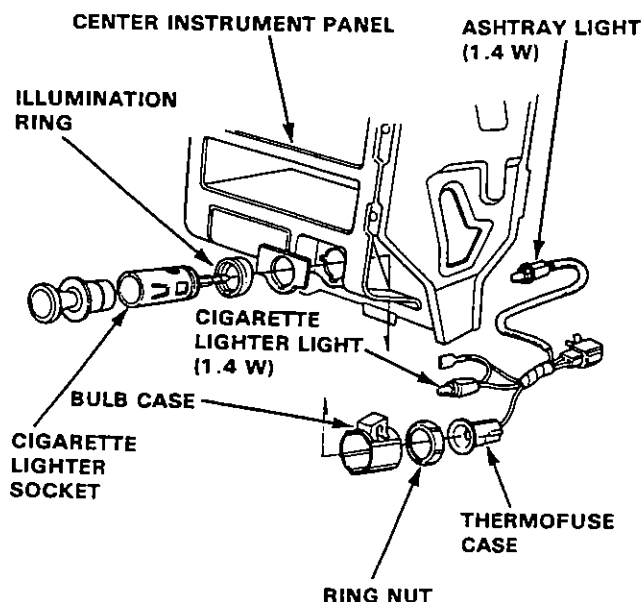


Cigarette Lighter

Replacement

Si model:

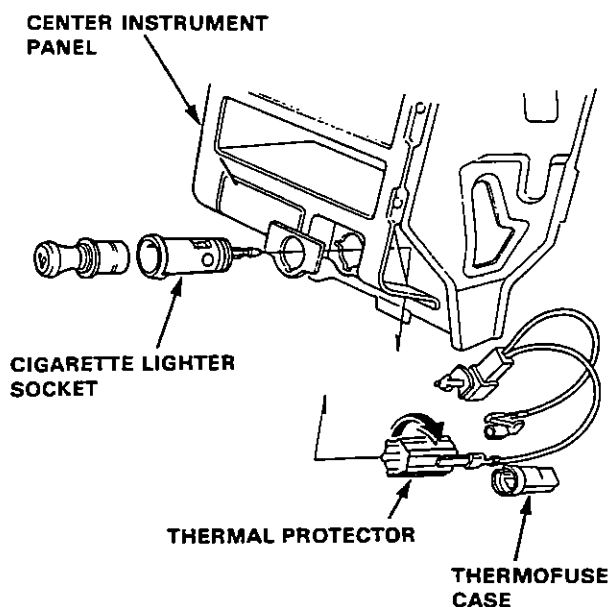
1. Remove the front console.
2. Remove the 6 screws and the center instrument panel with the stereo radio/cassette player, then disconnect the 16-P connector, the mast antenna lead and the 4-P connector.
3. Disconnect the thermofuse case from the socket end.
4. Remove the ring nut and separate the cigarette lighter socket from the thermal protector.



5. When installing the cigarette lighter, align each lug on the illumination ring and cigarette lighter socket with the groove in the hole, then position the bulb case on the thermal protector between the stoppers of the center panel.
6. Make sure that the ground wire, bulb socket and thermofuse case are seated to the cigarette lighter assembly.

Std model:

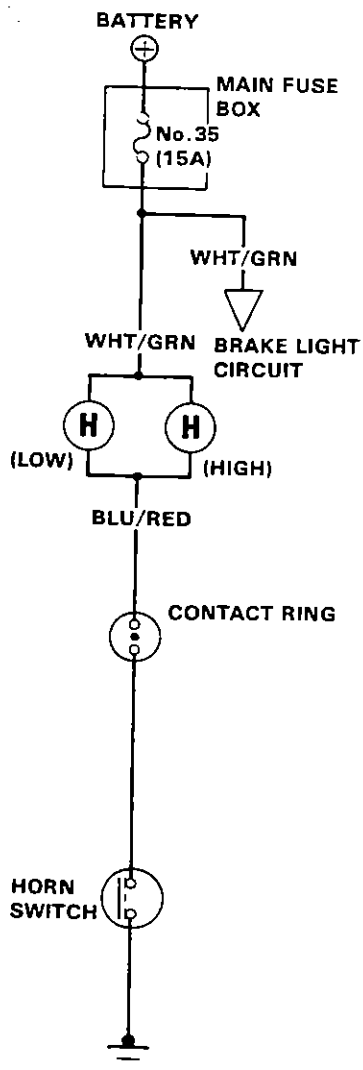
1. Remove the front console.
2. Remove the 6 screws and the center instrument panel with the stereo radio/cassette player, then disconnect the 16-P connector, the mast antenna lead and the 2-P connector from the cigarette lighter.
3. Disconnect the thermofuse case from the socket end.
4. Remove the thermal protector and separate the cigarette lighter socket.



5. When installing the cigarette lighter, align the lug on the cigarette lighter socket with the groove in the hole.
6. Make sure that the ground wire, thermofuse case are seated to the cigarette lighter assembly.

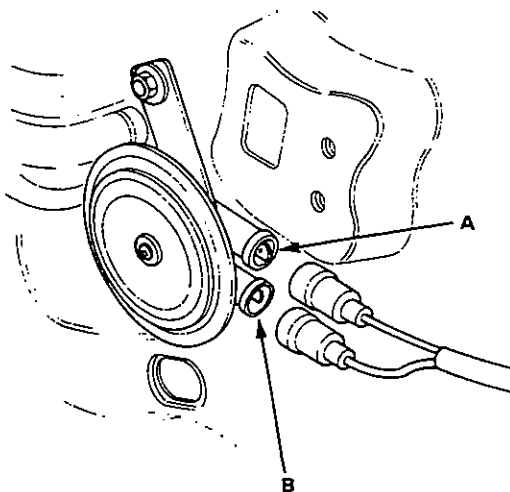
Horns

Circuit Diagram



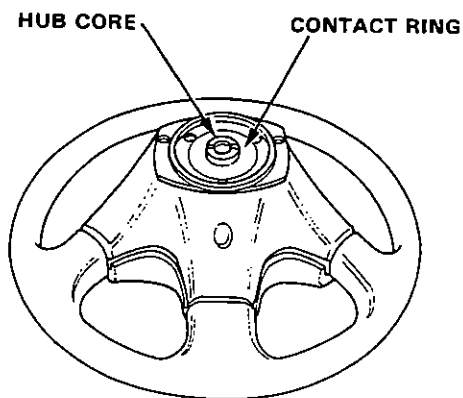
Horn Test

1. Remove the front bumper.
2. Disconnect the wires from the horn.
3. Test the horn by connecting battery voltage to the A and B terminals. The horn should sound.
4. If the horn fails to sound, replace it.



Switch Test

1. Remove the steering wheel, then turn it over.
2. Check for continuity between the contact ring and hub core on the steering wheel with the horn switch pressed. There should be continuity.

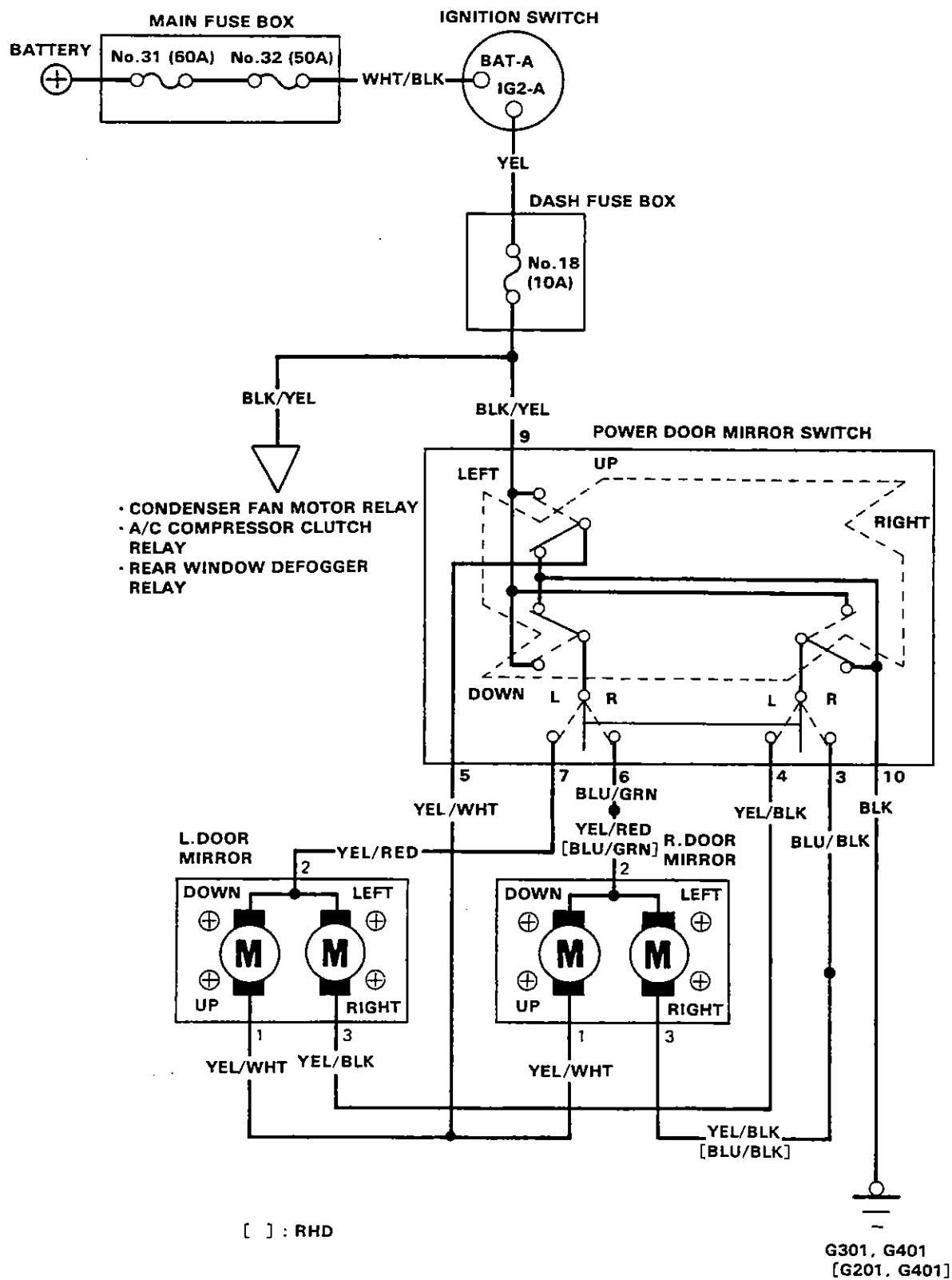


3. If there is no continuity, repair the horn switch.



Power Door Mirrors

Circuit Diagram

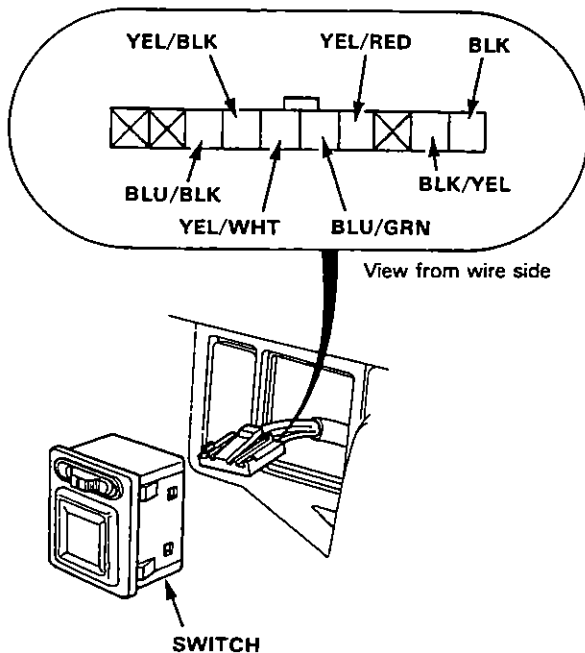


Power Door Mirrors



Function Test

NOTE: Before testing, remove the dashboard lower panel and push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.



Mirror Test

One or both inoperative:

1. Check for voltage between the BLK/YEL terminal and body ground with the ignition switch ON. There should be battery voltage.
 - If there is no voltage, check for
 - Blown No.18 (10A) fuse in the dash fuse box.
 - An open in the BLK/YEL wire.
 - If there is battery voltage, go to step 2.

2. Check for continuity between the BLK terminal and body ground.

There should be continuity.

- If there is no continuity, check for
 - An open in the BLK wire.
 - Poor ground (G301, G401 [G201, G401]).

Left inoperative:

Connect the BLK/YEL terminal to the YEL/RED terminal and the YEL/WHT (or YEL/BLK) terminal to the body ground with jumper wires.

The left mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the left door trim panel and check for open in the YEL/WHT (or YEL/BLK) wire between the left door mirror and switch.
- If the wire is OK, check the left door mirror.

- If the mirror neither tilts down nor swings left, repair the YEL/RED wire.

- If the mirror operates properly, check the mirror switch.

Right inoperative:

Connect the BLK/YEL terminal to the BLU/GRN terminal and the YEL/WHT (or BLU/BLK) terminal to the body ground with jumper wires.

The right mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the right door trim panel and check for open in the YEL/WHT (or YEL/BLK [BLU/BLK] and BLU/BLK) wire between the right door mirror and the switch.
- If the wire is OK, check the right door mirror.

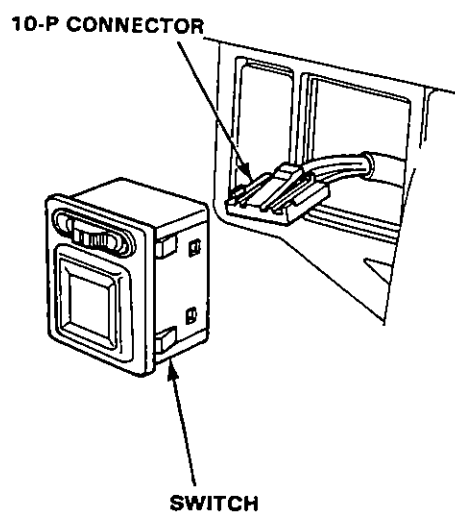
- If the mirror neither tilts down nor swing left, repair the YEL/RED [BLU/GRN] and BLU/GRN wire.

- If the mirror operates properly, check the mirror switch.

[] : RHD

Switch Removal

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 10-P connector to remove the switch.

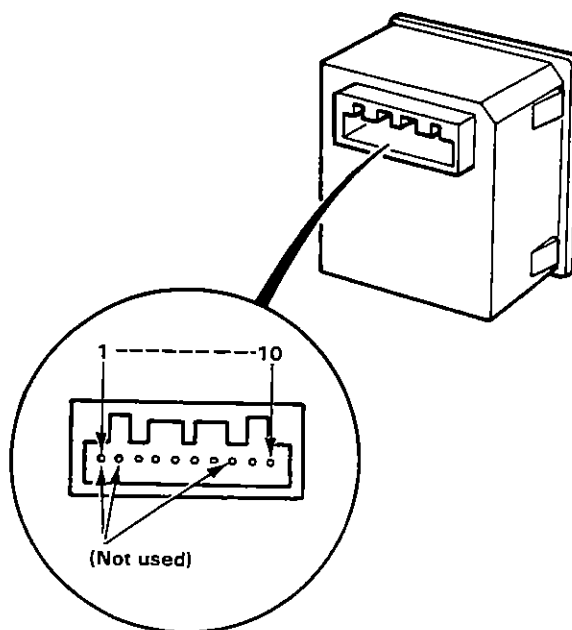


Switch Test

1. Remove the power door mirror switch from the instrument panel.
2. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch

		Terminal							
Position		3	4	5	6	7	9	10	
R	OFF	○		○	○				○
	UP			○			○		
	DOWN	○			○		○		
	LEFT			○	○		○		
	RIGHT	○					○		
L	OFF		○	○		○			○
	UP			○			○		
	DOWN		○				○		
	LEFT			○	○		○		
	RIGHT		○				○		

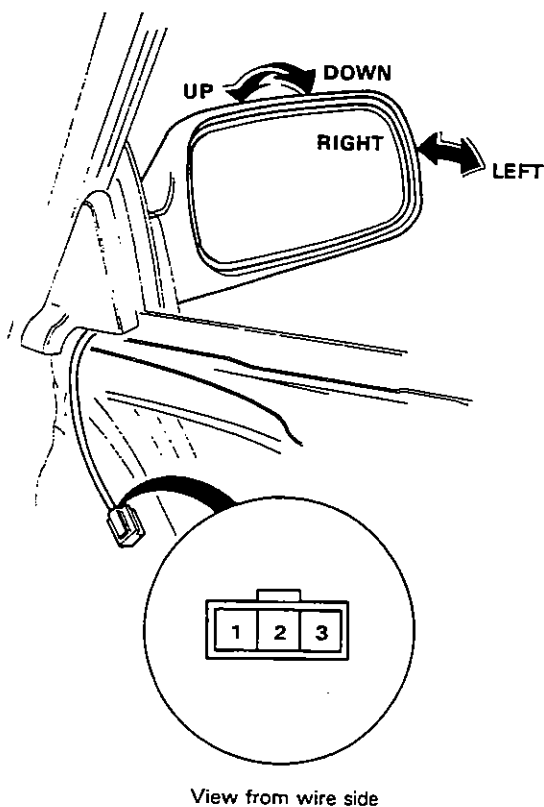


Power Door Mirrors



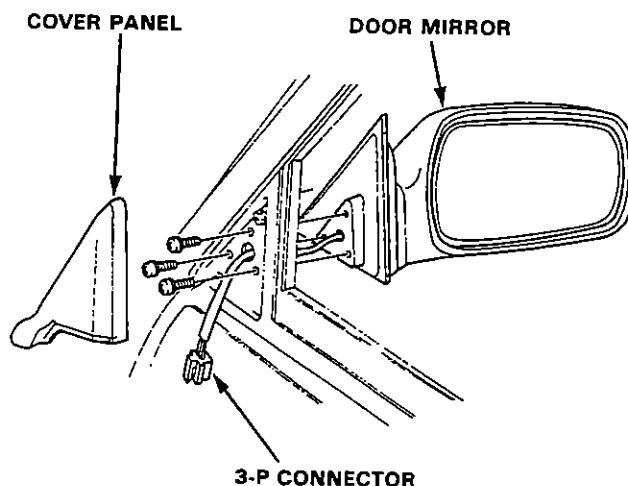
Door Mirror Test

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: Connect battery positive to the No.2 terminal and negative to the No.1 terminal.
SWING LEFT: Connect battery positive to the No.2 terminal and negative to the No.3 terminal.
SWING RIGHT: Connect battery positive to the No.3 terminal and negative to the No.2 terminal.
3. If the mirror fails to operate properly, replace it.



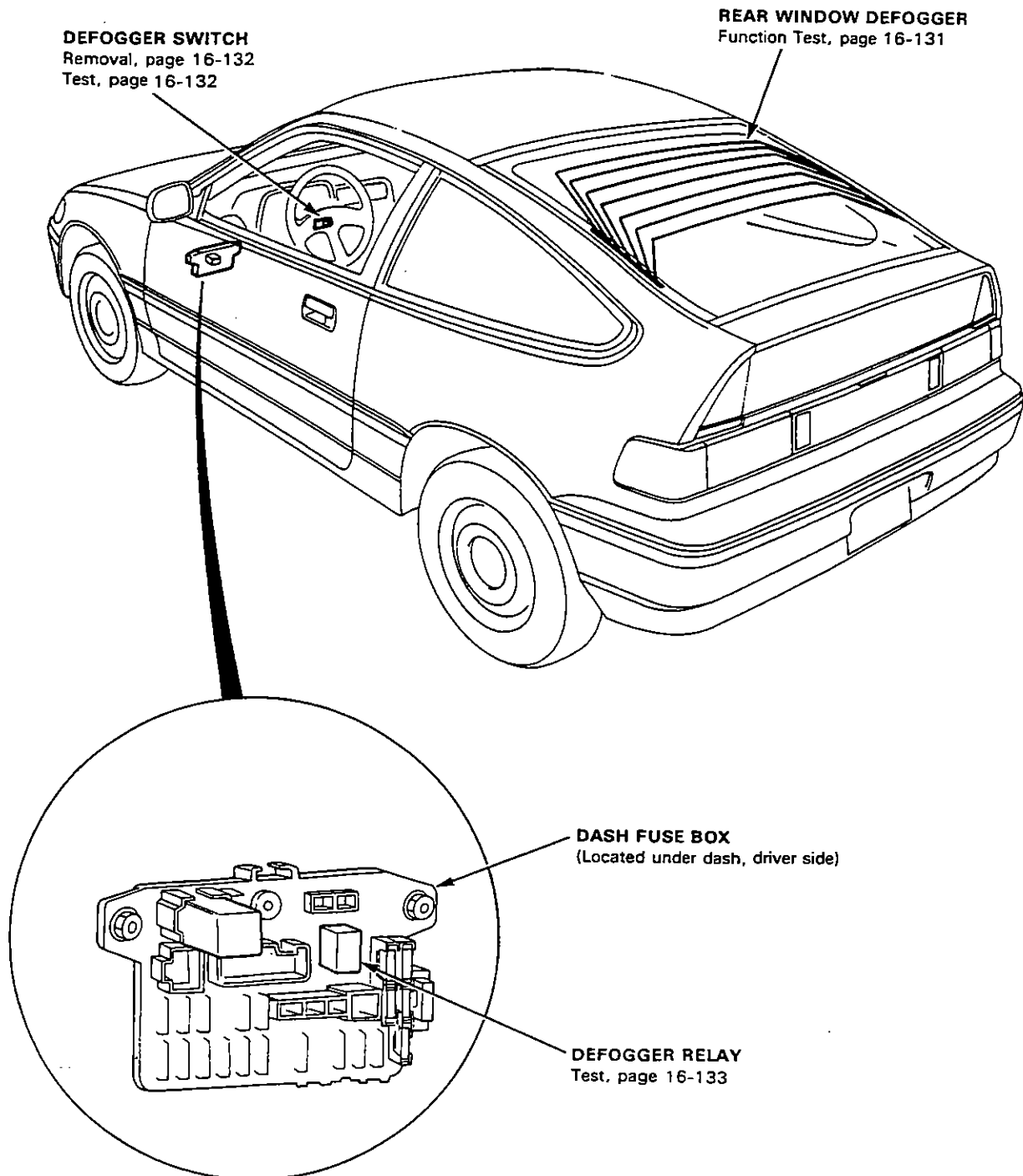
Door Mirror Replacment

1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Carefully pry out the cover panel with a flat tip screwdriver.
3. While holding the mirror with one hand, remove its mount screws with the other.



Rear Window Defogger

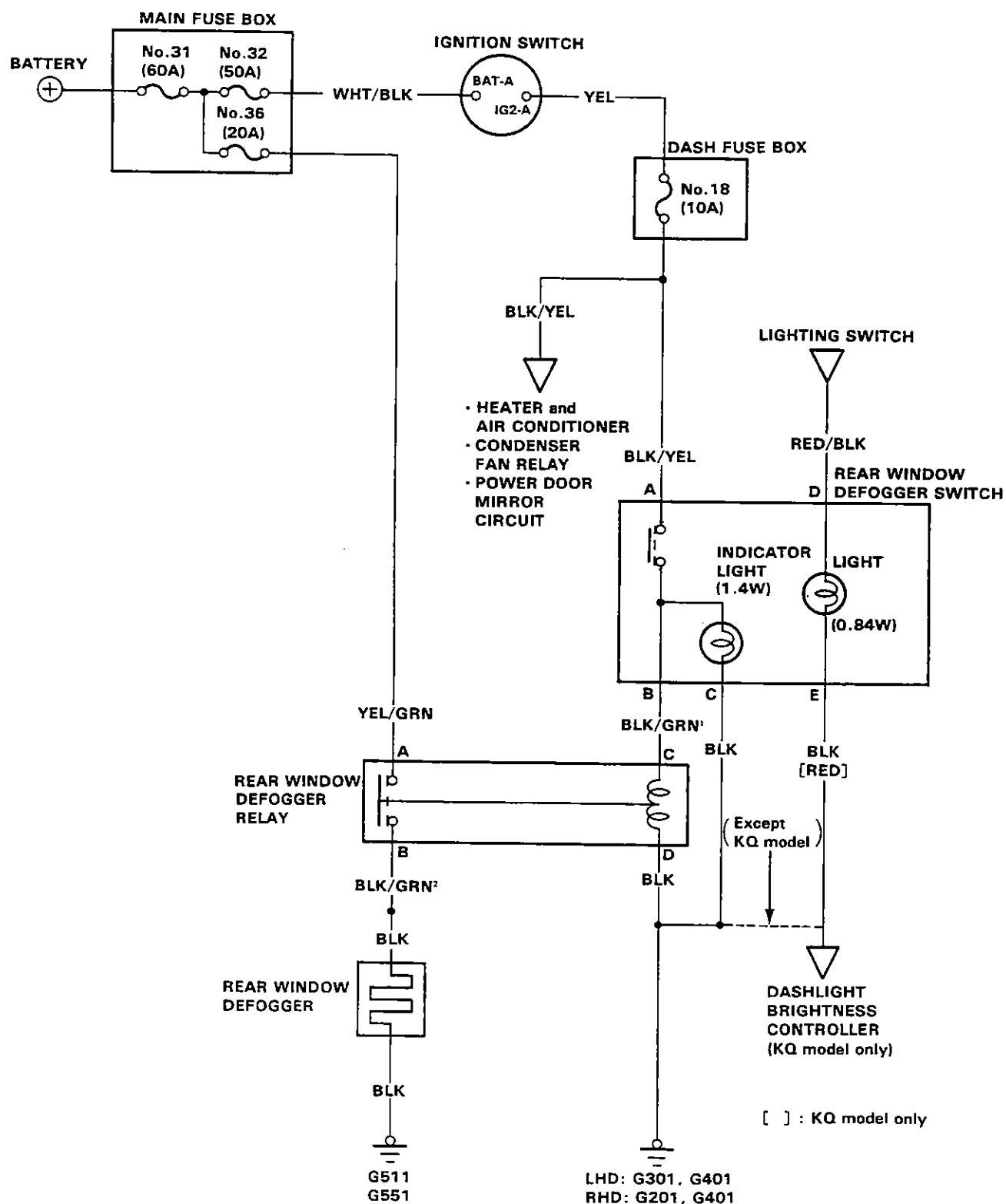
Component Location Index





Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/GRN¹ and BLK/GRN² are not the same).



Rear Window Defogger

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected							Poor ground	Open circuit in wires or loose or disconnected terminals
	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		
Defogger operates, but indicator light does not go on.	1								
Defogger does not operate and indicator light does not go on.		1		2				G301, G401 [G201, G401]	BLK/YEL or BLK/GRN ¹
Defogger does not operate, but indicator light goes on.			1		2	3		G511, G551	YEL/GRN or BLK/GRN ²
Broken defogger wire							1		

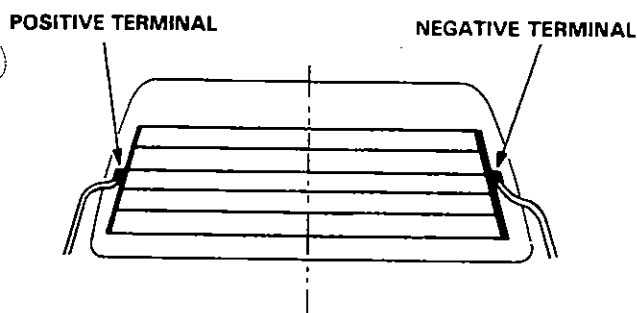
[] : RHD



Function Test

CAUTION: Be careful not to scratch or damage the defogger wires with the tester probe end.

1. Check for voltage between the positive terminal and body ground with the ignition switch and the defogger switch ON.
There should be battery voltage.
 - If there is no voltage, check for:
 - Faulty defogger relay.
 - An open in the BLK, BLK/GRN² or YEL/GRN wire.
 - If there is battery voltage, go to step 2.

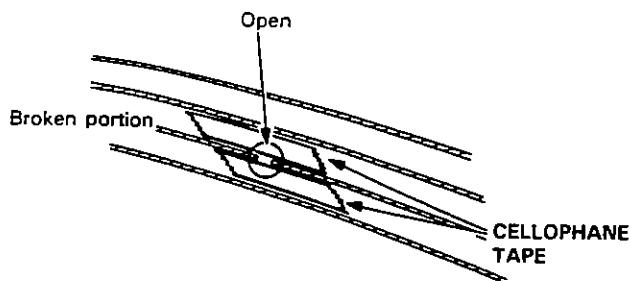


2. Check for continuity between the negative terminal and body ground.
If no continuity, check for open in the defogger ground wire.
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.
There should be approximately 6 V with the ignition switch and the defogger switch ON.
 - If the voltage is as specified, the defogger wire is OK.
 - If there is battery voltage, the defogger wire is broken in the negative side from the center.
 - If there is no voltage, the defogger wire is broken in positive side from the center.

Defogger Wire Repair

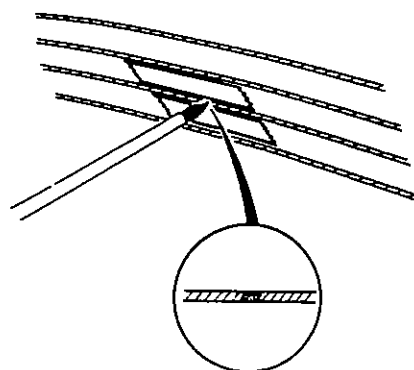
NOTE: Repair section must be no longer than one inch.

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: Thoroughly mix paint before use.

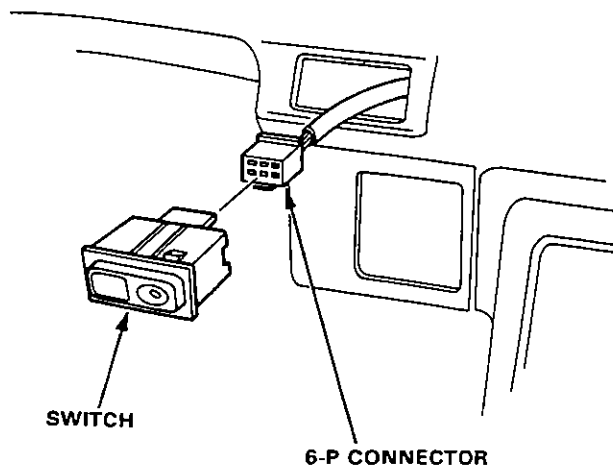


4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).
5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.

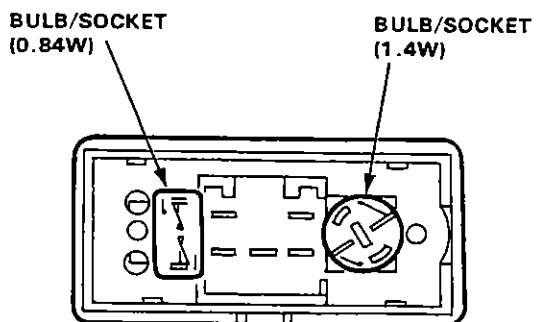
Rear Window Defogger

Switch Removal

1. Pull out the switch from the instrument panel, then disconnect the 6-P connector from the switch.



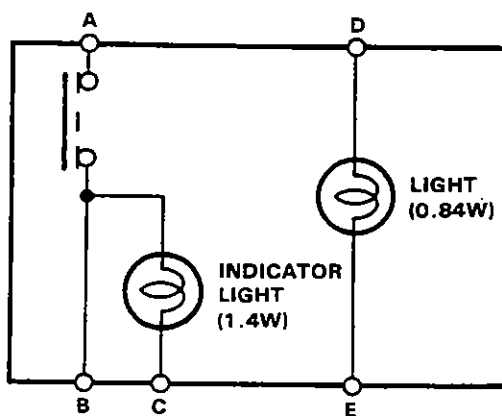
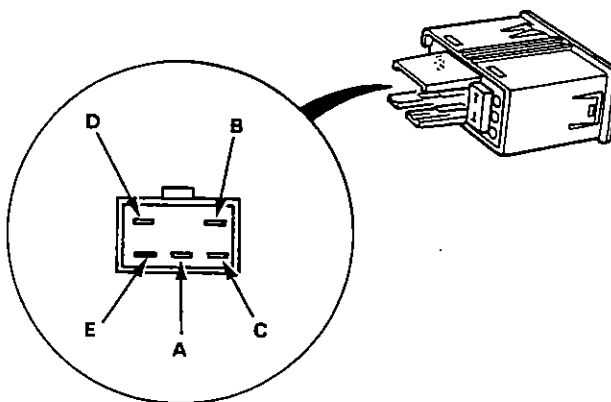
2. Turn the socket 45° counterclockwise (1.4W) and pull out the socket (0.84W) to remove it.



Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

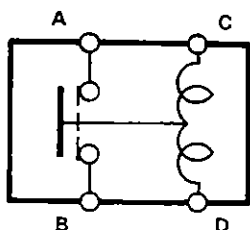
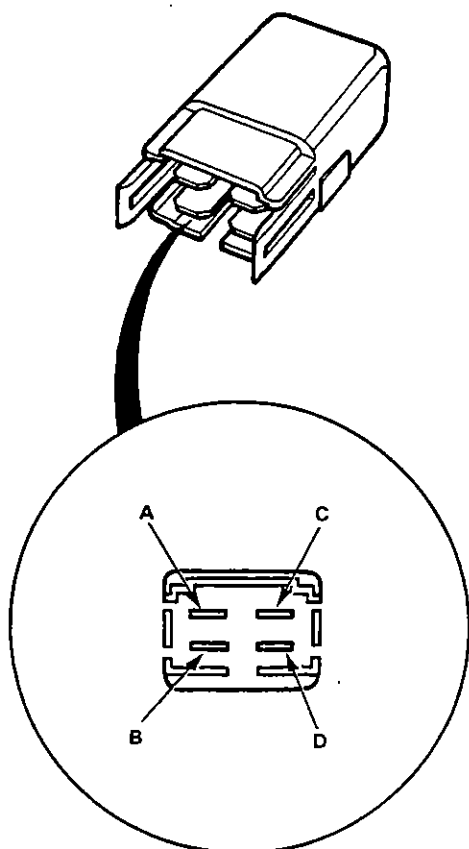
Terminal Position	A	B	C	D	E
ON	○	○	○	○	○
OFF					





Relay Test

1. Remove the defogger relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.



Sunroof

Component Location Index

TILT-UP SWITCH

Test, page 16-138

SUNROOF MOTOR

Test, page 16-139

Replacement, Section 14

SUNROOF SWITCH

Function Test, page 16-137

Test, page 16-138

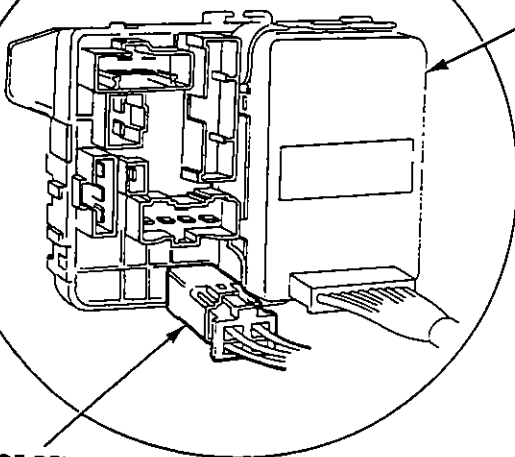
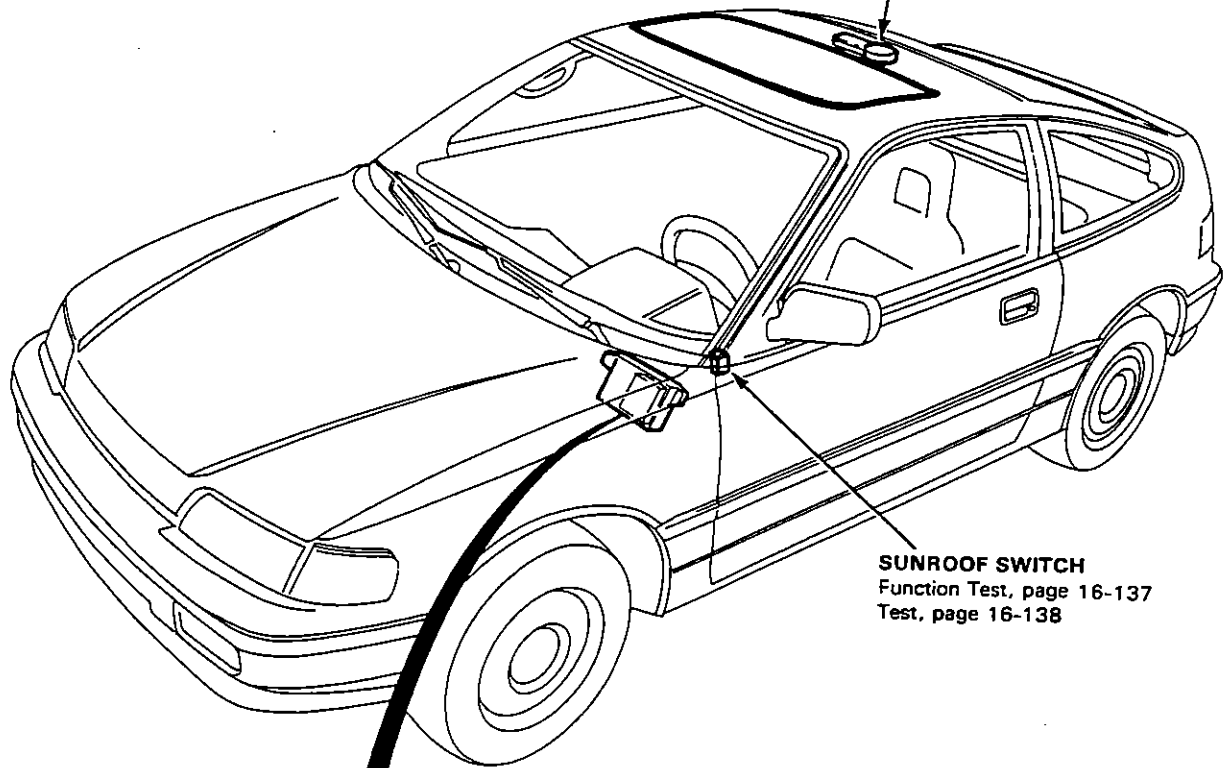
DASH FUSE BOX

(Located under dash, driver side)

SUNROOF RELAY

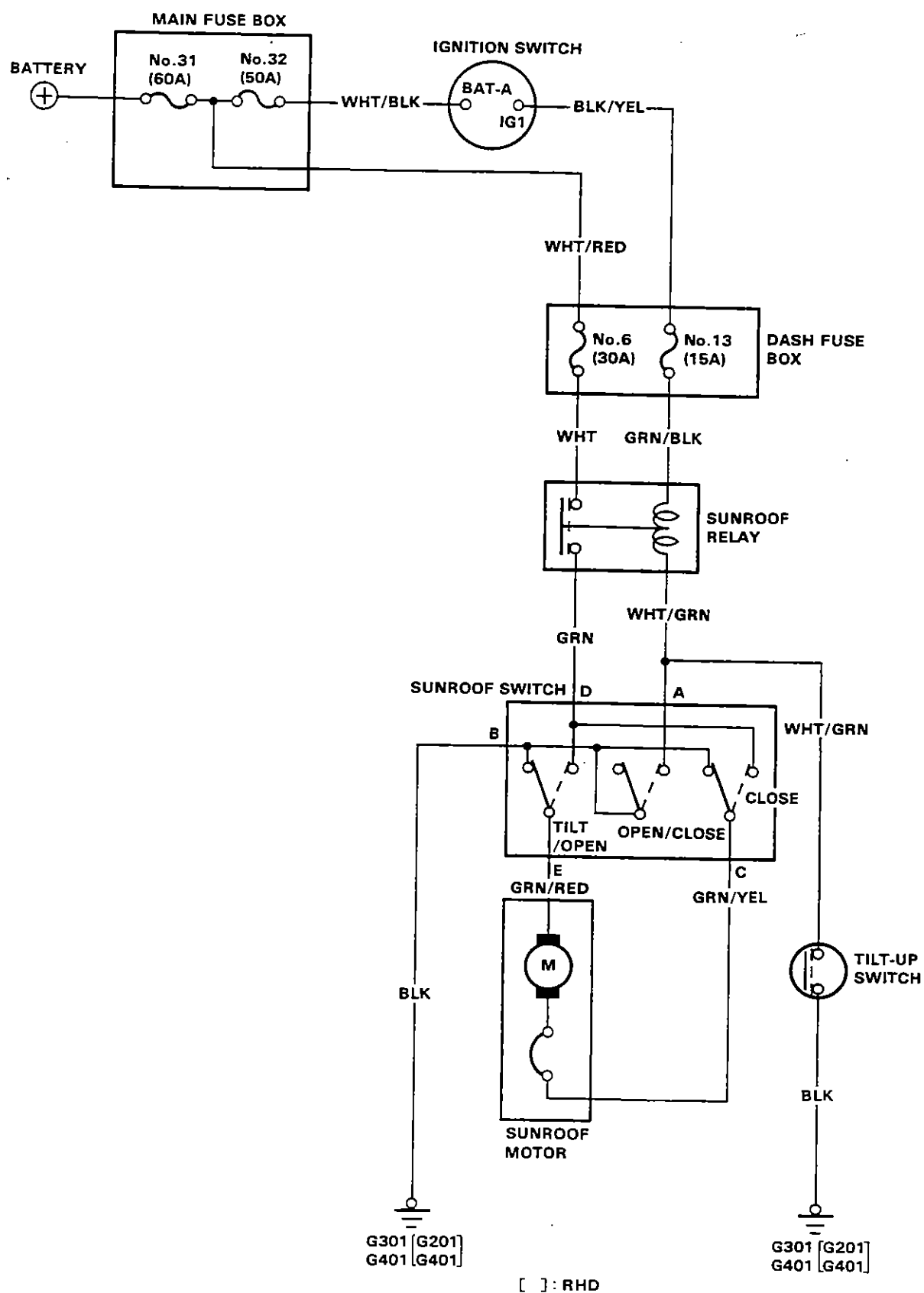
Wire colors: WHT, GRN
GRN/BLK, WHT/GRN

Test, page 16-139





Circuit Diagram



Sunroof

Electrical Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

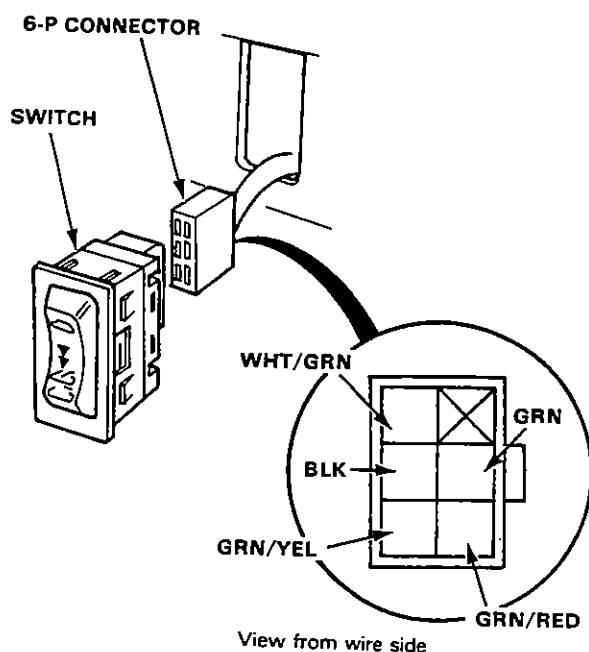
Item to be inspected		Clutch out of adjustment, foreign matter stuck between guide rail and sunroof, or outer cable not attached properly	Blown No. 6 (30A) fuse (in the dash fuse box)	Blown No. 13 (15A) fuse (in the dash fuse box)	Function test	Sunroof relay	Sunroof motor	Tilt-up switch in the cable assembly	Sunroof switch	Poor ground	Open circuit in wires or loose or disconnected terminals.
Symptom											
Sunroof does not move, but motor turns.		1									
Sunroof does not move and motor does not turn (sunroof can be moved with sunroof wrench).	In all switch positions		1	2	3	4	5			G301, G401 [G201, G401]	WHT, GRN/BLK, GRN WHT/GRN, GRN/RED or GRN/YEL
	With OPEN switch.								1		
	With CLOSE switch.								1		
	With TILT switch.							2	1	G301, G401 [G201, G401]	

[] --RHD



Function test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 6-P connector to remove the switch.



3. Check for continuity between the BLK terminal and body ground.
If no continuity, check for poor ground (LHD: G301, 401 RHD: G201, 401)
4. Check for continuity between the WHT/GRN terminal and body ground with the ignition switch OFF.
There should be continuity when the sunroof is closed.
There should be no continuity when the sunroof is opened.
 - If the continuity is not as specified, check for:
 - Faulty tilt-up switch.
 - Poor ground of the tilt-up switch (LHD: G301, 401 RHD: G201, 401)
 - If the continuity is specified, go to step 5.

5. Check for voltage between the WHT/GRN terminal and the BLK terminal with the ignition switch ON.
There should be battery voltage when the sunroof is opened.

- If there is no voltage, check for:
 - Faulty sunroof relay.
 - An open in the GRN/BLK or WHT/GRN wire.
- If there is battery voltage, go to step 6.

6. Check for voltage between the GRN terminal and BLK terminal with the ignition switch ON.
There should be battery voltage when the sunroof is closed.

- If there is no voltage, check for:
 - Faulty sunroof relay.
 - An open in the WHT or GRN wire.
- If there is battery voltage, go to step 7.

7. Connect the WHT/GRN terminal to body ground, and the GRN terminal to the GRN/RED terminal, and the GRN/YEL terminal to the BLK terminal with jumper wires.
The sunroof should open when the ignition switch is turned ON.

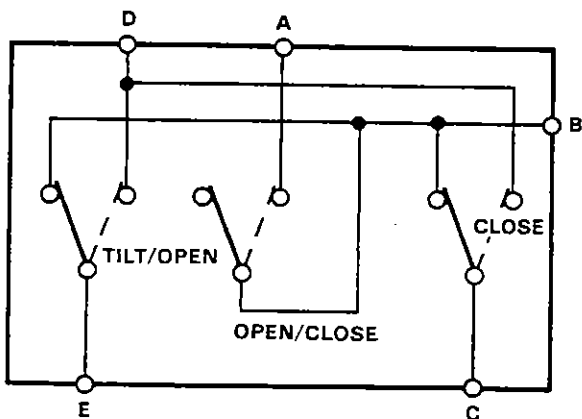
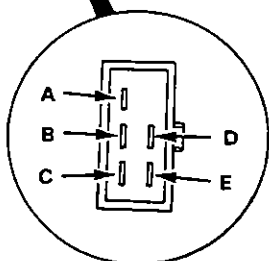
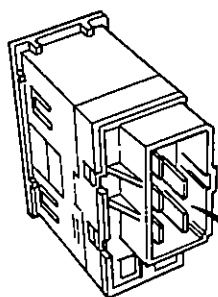
- If the sunroof opens, check the sunroof switch.
- If not, remove the headlining and check the motor.

Sunroof

Switch test

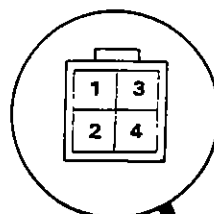
1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 6-P connector to remove the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	A	B	C	D	E
OFF		○	○		○
TILT				○	○
OPEN	○	○		○	○
CLOSE	○	○	○	○	



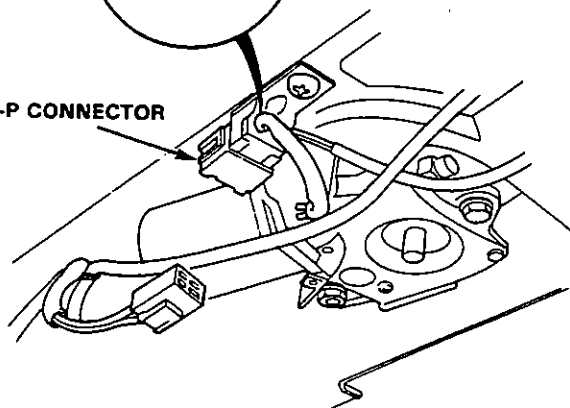
Tilt Up Switch

1. Remove the headliner (See section 14).
2. Disconnect the 4-P connector from the sunroof motor.
3. Check for continuity between the No.1 and No.2 terminals. There should be continuity when the sunroof is not tilted. There should be no continuity when the sunroof is the tilt-up position.



View from wire side

4-P CONNECTOR

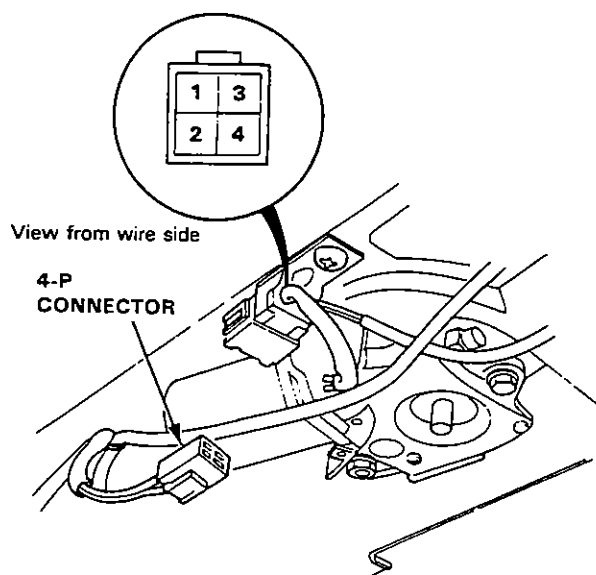




Motor Test

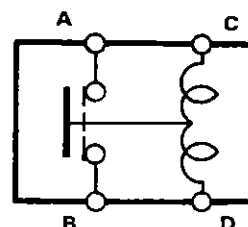
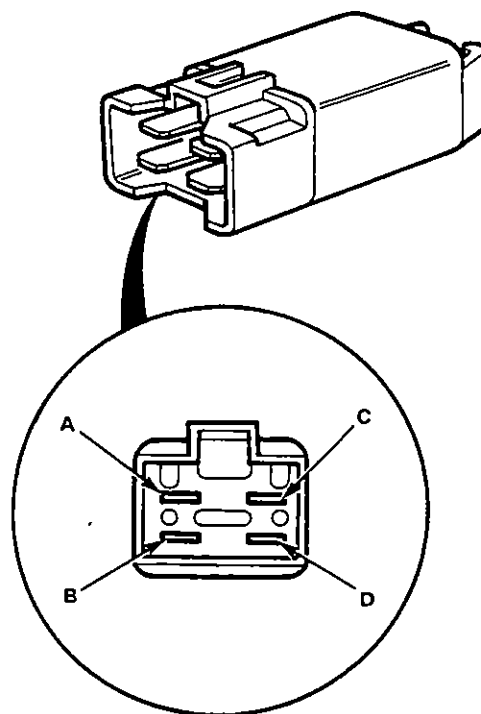
1. Remove the headliner.
2. Disconnect the 4-P connector from the sunroof motor.
3. Test motor operation by connecting battery to the No. 3 and No.4 terminals. Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.

NOTE: See Closing Force Check in section 20 for motor clutch test.



Relay Test

1. Remove the sunroof relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals. There should be no continuity when the battery is disconnected.



Power Windows

Component Location Index

DRIVER'S SWITCH
Input Test, page 16-143
Test, page 16-144
Replacement, page 16-145

PASSENGER'S SWITCH
Test, page 16-145
Replacement, page 16-145

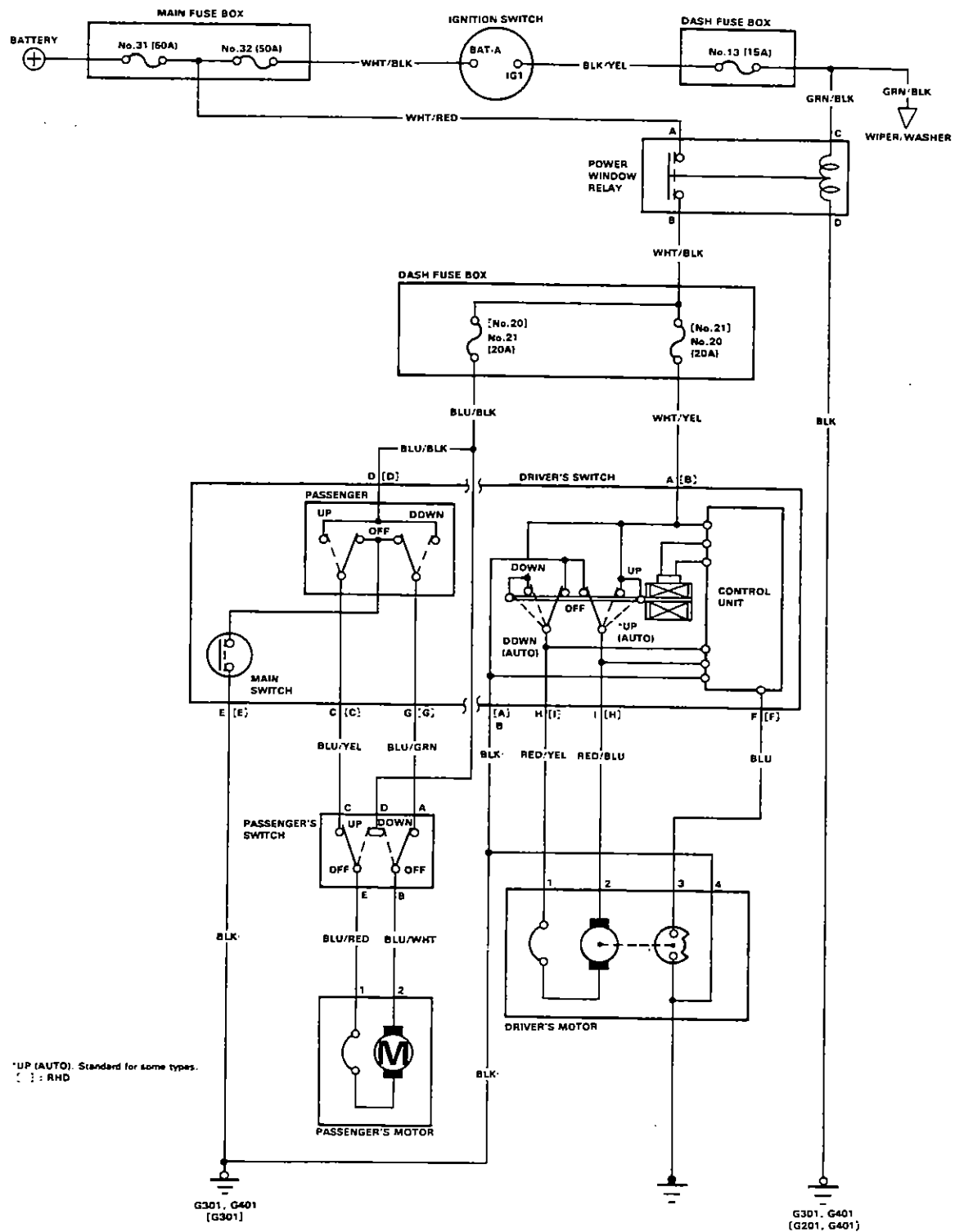
PASSENGER'S MOTOR
Test, page 16-146
Replacement, section 14

DRIVER'S MOTOR
Test, page 16-146
Replacement, section 14

POWER WINDOW RELAY
[Wire colors: WHT/RED, WHT/BLK, GRN/BLK, BLK]
Test, page 16-142



Circuit Diagram



Power Windows

Troubleshooting

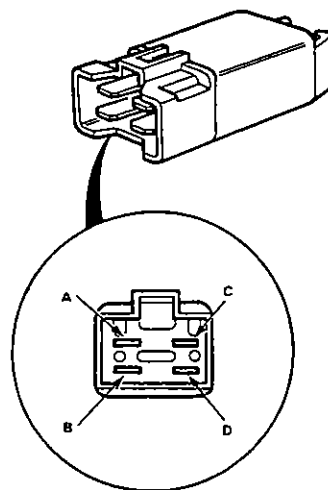
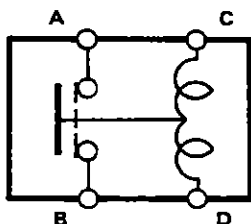
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected		Power window relay	in the dash fuse box		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
	State of charge and clean and tight connections of battery	Blown No. 13 (15A) fuse (in the dash fuse box)		Blown No. 21 [No. 20] (20A) fuse	Blown No. 20 [No. 21] (20A) fuse									
All windows do not operate.	1	2	3										G301, G401 [G201, G401]	BLK/YEL, WHT/RED, GRN/BLK ¹ or WHT/BLK
Driver's window does not operate.				1				2			3	4		WHT/YEL
Driver's window does not operate in AUTO.						1			2			3		BLU
Passenger's window do not operate.					1	2	3			4	5			BLU/BLK

[] : RHD

Relay Test

1. Remove the relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.



Power Windows

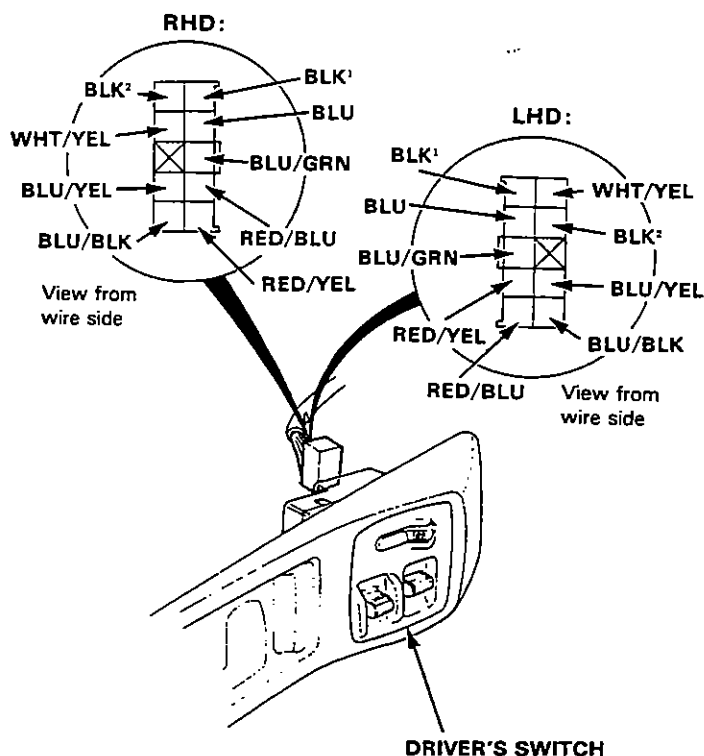


Driver's Switch Input Test

NOTE: The control unit is built into the driver's switch, and only controls driver's door window operation.

Remove the 2 screws. Disconnect the 10-P connector and remove the driver's switch from the door trim panel. Make the following input tests at the harness pins.

NOTE: Recheck the connections between the 10-P connector and the driver's switch, then replace the driver's switch if all input tests prove OK.



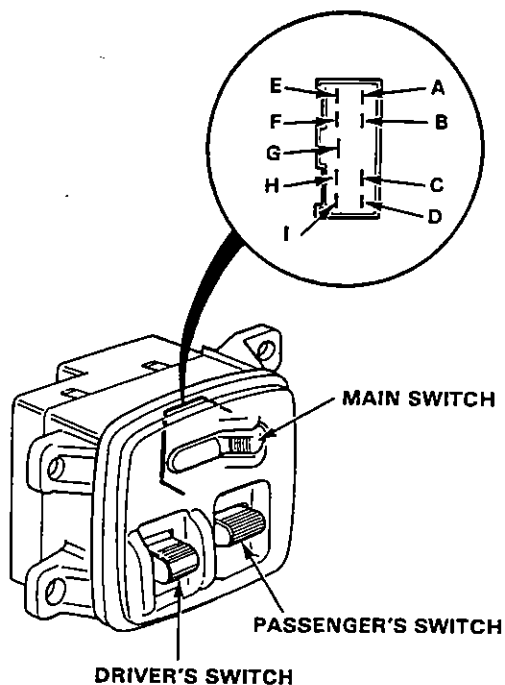
No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK ¹	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401 [G301]) • An open in the wire.
2	WHT/YEL BLU/BLK	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.20 or 21 (20A) fuse. • Faulty power window relay. • An open in the wire.
3	RED/BLU and RED/YEL	Connect the WHT/YEL terminal to the RED/BLU terminal, and the RED/YEL terminal to the BLK terminal, then ignition switch ON.	Check the driver's motor operation: should run.	• Faulty driver's motor. • An open in the wire.
4	BLU/YEL and BLU/GRN	Connect the BLU/BLK terminal to the BLU/YEL terminal, and the BLU/GRN terminal to the BLK terminal, then ignition switch ON.	Check the right front motor operation: should run.	• Faulty passenger's motor • Faulty passenger's switch • An open in the wire.
5	BLU and BLK ²	Connect the WHT/YEL terminal to the RED/YEL terminal, and the BLK ¹ terminal to the RED/BLU terminal, then ignition Switch ON.	Check for resistance between the BLU and BLK ² terminals: should indicate between 20-50 ohms as the driver's motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire.

Power Windows

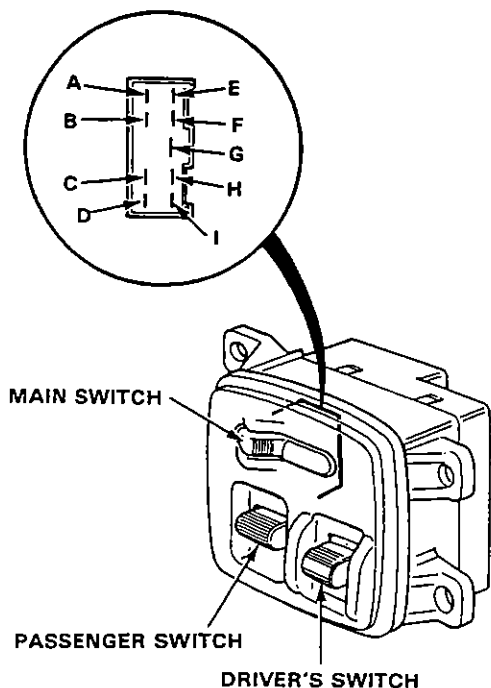
Driver's Switch Test

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the tables.

LHD:



RHD:



LHD:

DRIVER'S SWITCH

Terminal Position	A	B	H	I
OFF		○	○	○
UP (AUTO)	○			○
UP	○			○
DOWN	○		○	
DOWN (AUTO)	○		○	

PASSENGER'S SWITCH

Terminal Position	Main switch	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○

RHD:

DRIVER'S SWITCH

Terminal Position	A	B	H	I
OFF	○		○	○
UP (AUTO)		○	○	
UP		○	○	
DOWN		○		○
DOWN (AUTO)		○		○

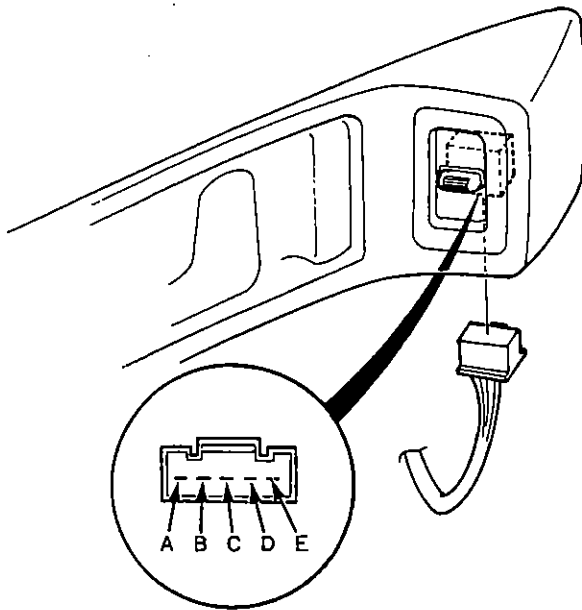
PASSENGER'S SWITCH

Terminal Position	Main switch	C	D	E	G
OFF	ON	○		○	○
	OFF	○			○
UP	ON	○	○		
	OFF	○	○		
DOWN	ON		○		○
	OFF		○		○



Passenger Switch Test

1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.

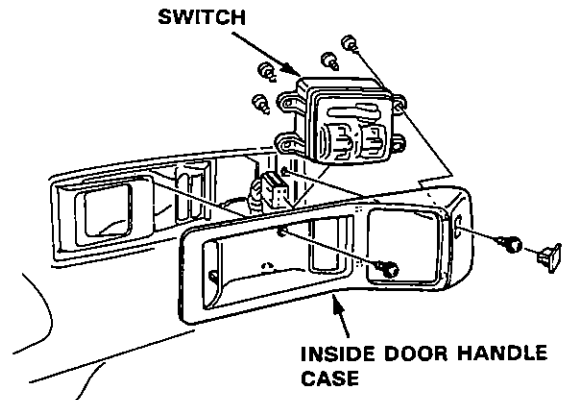


Terminal Position	A	B	C	D	E
UP				○	○
OFF	○	○	○	○	○
DOWN		○	○	○	

Switch Replacement

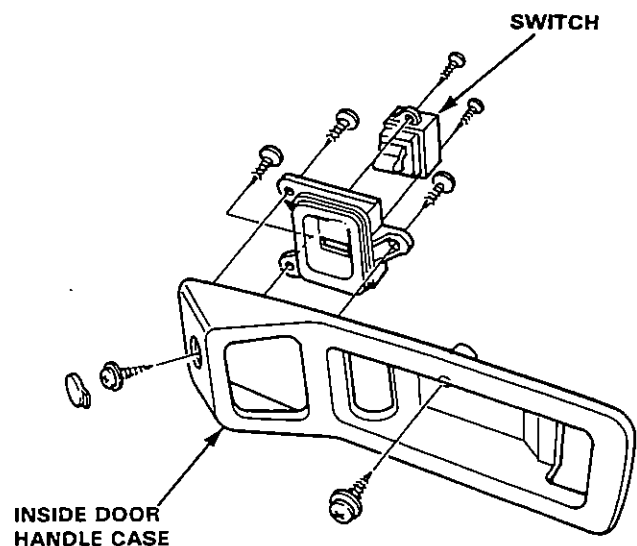
Driver's Switch:

1. Remove the 2 screws. Disconnect the 10-P connector and remove the switch from the door trim panel.
2. Remove the 4 screws and switch from the inside door handle case.



Passenger Switch:

1. Remove the 2 screws. Disconnect the 5-P connector and remove the switch from the door trim panel.
2. Remove the 2 screws and switch from the inside door handle case.

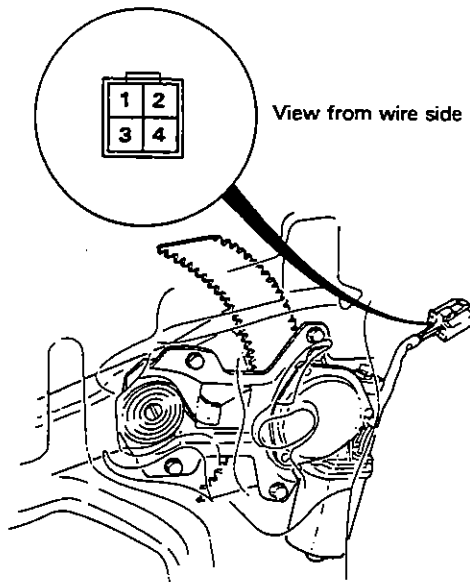


Power Windows

Driver's Motor Test

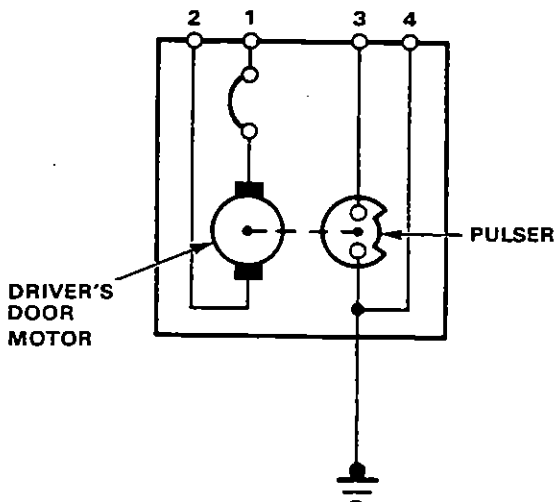
Motor Test:

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Test motor operation by connecting battery voltage to the No.1 and No.2 terminals.
Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.



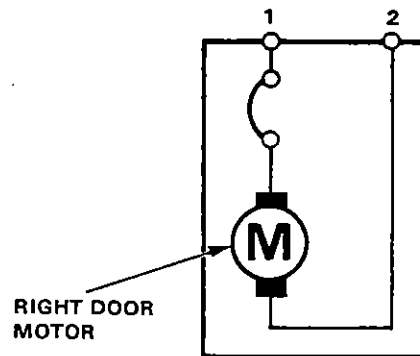
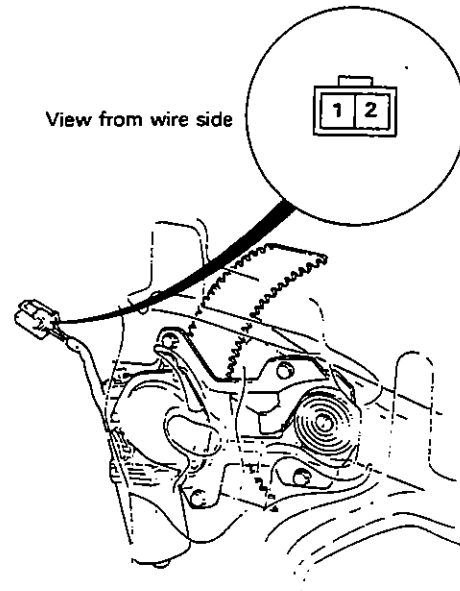
Pulser Test:

Measure resistance between the No.3 and No.4 terminals when running the motor by connecting battery voltage to the No.1 and No.2 terminals. Ohmmeter should indicate between 20-50 ohms as the motor runs.



Passenger's Motor Test

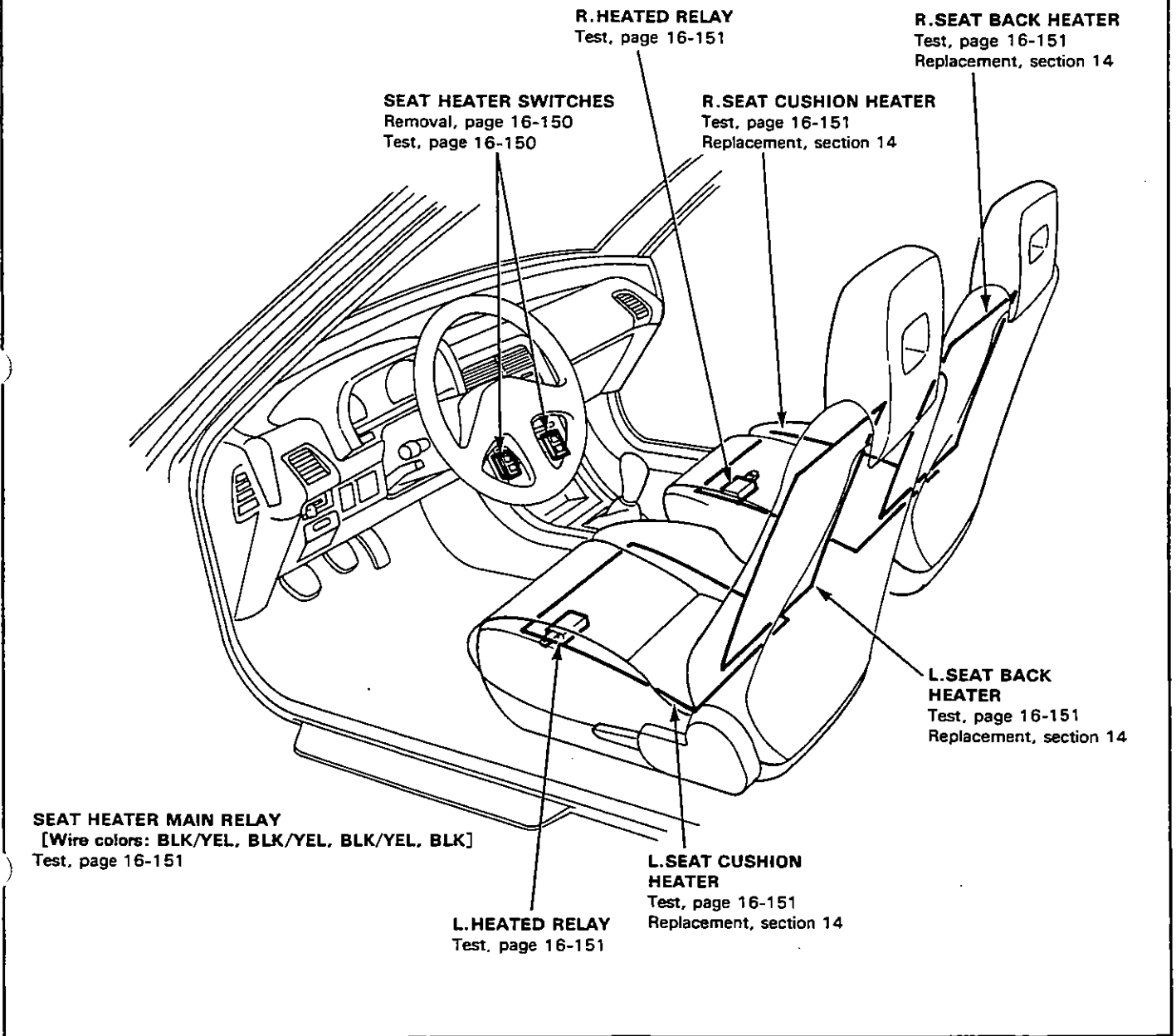
1. Remove the door trim panel.
2. Disconnect the 2-P connector from the motor.
3. Test motor operation by applying battery voltage to the No.1 and No.2 terminals.
Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.





Seat Heaters (KS model only)

Component Location Index

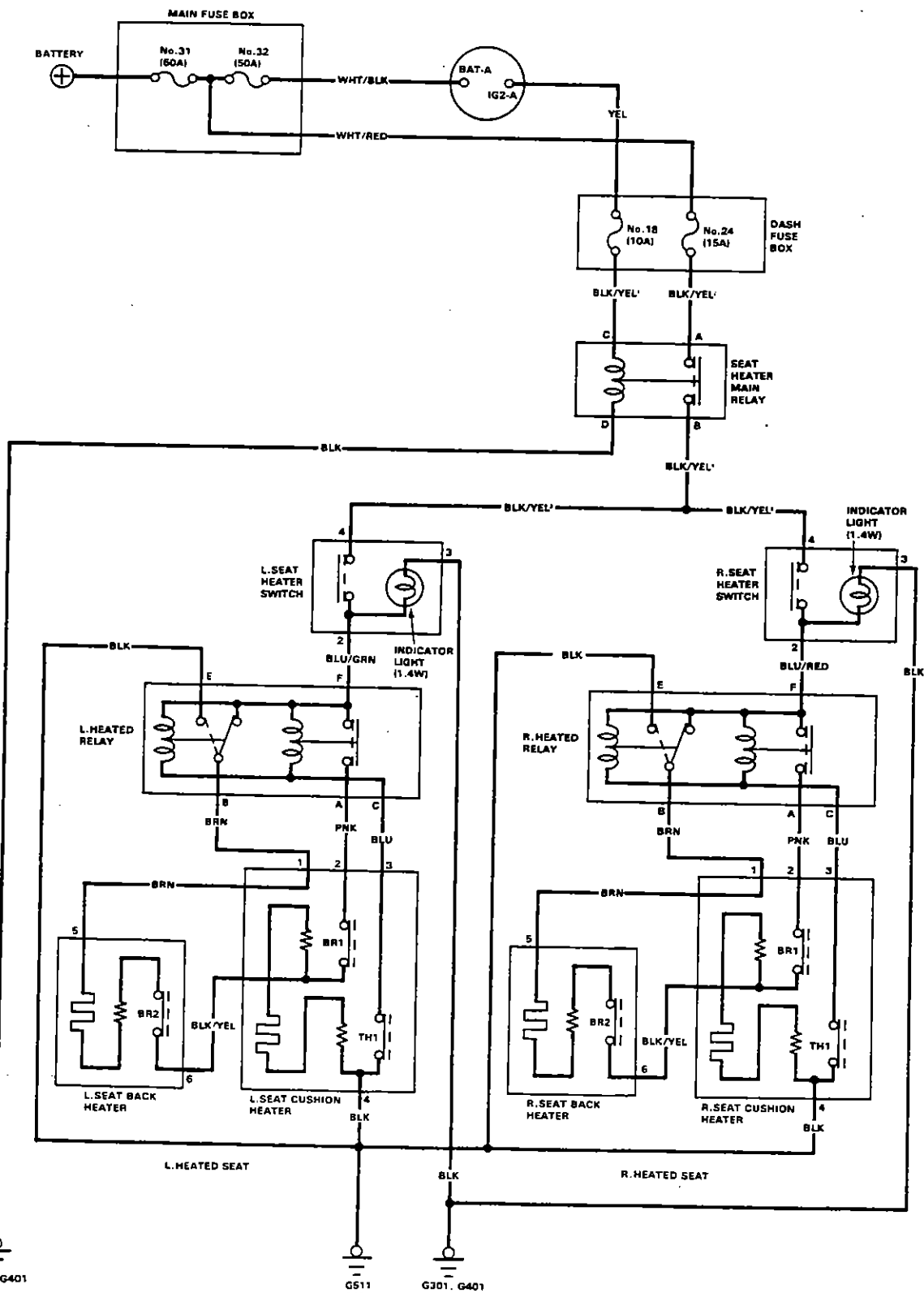


Description

Two heaters are provided in each front seat; one in the seat cushion and one in the seat back. In normal use, temperature is automatically controlled by the thermostat [OFF above 40°C (104°F)] built in each seat cushion heater. In emergency case, the breaker 1 [OFF above 50°C (122°F)] and the breaker 2 [OFF above 70°C (158°F)] cut off the circuit to prevent abnormal temperature rise.

Seat Heaters (KS model only)

Circuit Diagram



BR1: BREAKER [OFF above 50°C (122°F)]
 TH1: THERMOSTAT [OFF above 40°C (104°F)]
 BR2: BREAKER [OFF above 70°C (158°F)]



Troubleshooting

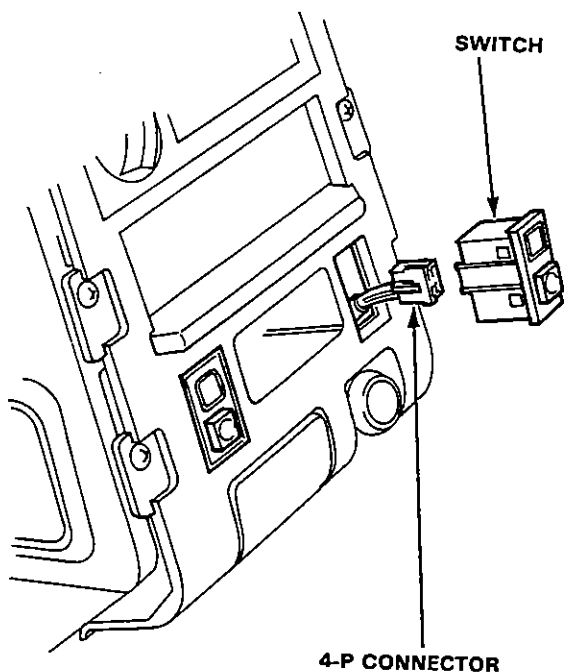
NOTE: The numbers in the table show the troubleshooting sequence.

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
Symptom								
Seat heaters operate, but indicator light does not go on.			1				G301 G401	
Seat heaters do not operate and indicator light does not go on.		1		2			G301 G401 G511 G551	BLK/YEL ¹ , BLK/YEL ²
Seat heaters do not operate, but indicator light goes on.	Left and Right seat					1	G511 G551	BLU/GRN, BLU/RED, BRN, BLK/YEL, PNK, BLU
Seat cushion heater or seat back heater does not operate, but indicator light goes on.					1			

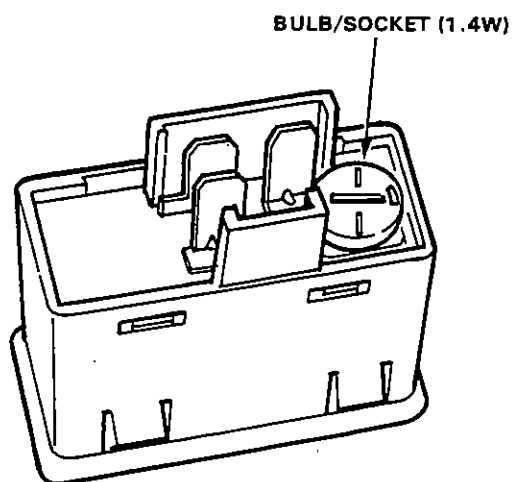
Seat Heaters (KS model only)

Switch Removal

1. Remove the front console.
2. Disconnect the 4-P connector to remove the switch, then push the switch behind the center instrument panel.

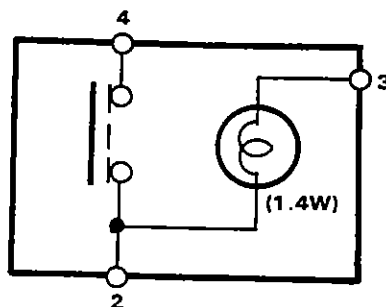
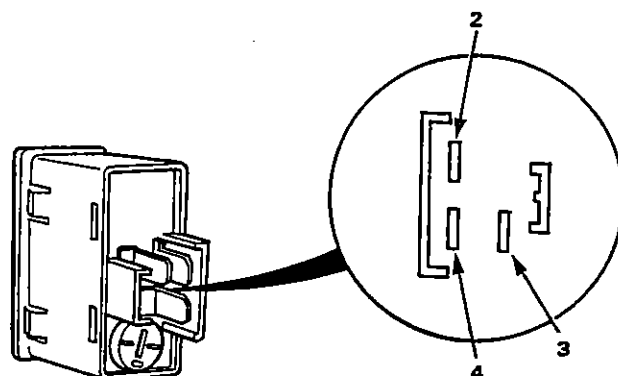


3. Turn the socket 45° counter-clockwise to remove it.



Switch Test

1. Remove the seat heater switch from the center instrument panel.
2. There should be continuity between the No. 4 and No. 2 terminals when the switch is clicked into ON. There should be no continuity when the switch is clicked into OFF.

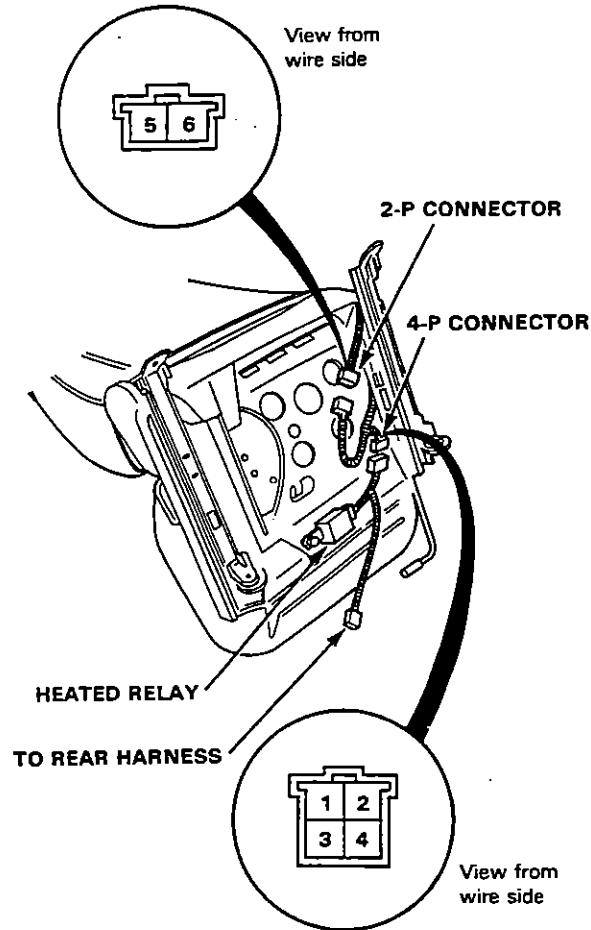




Heater Test

1. Disconnect the 4-P connector and 2-P connector as shown below.

NOTE: Left front seat is shown. Right front seat is similar.

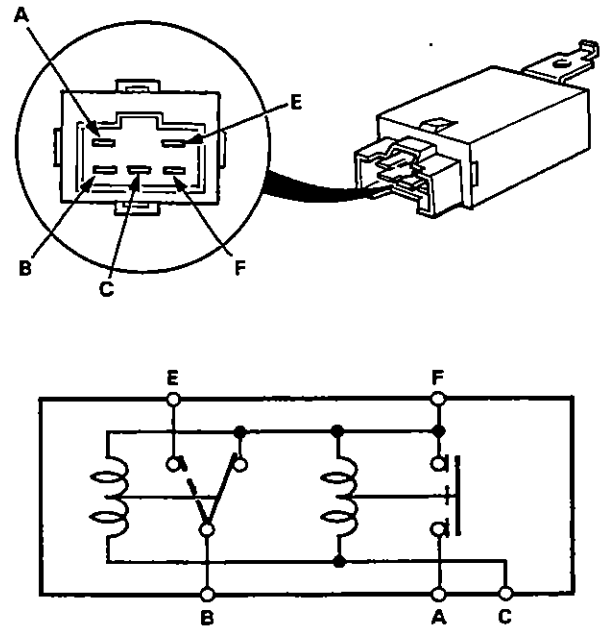


2. Check for continuity between the No.2 and No.3 terminals; between the No.5 and No.6 terminals (R x 10^3 scale)
There should be continuity.

Relay Test

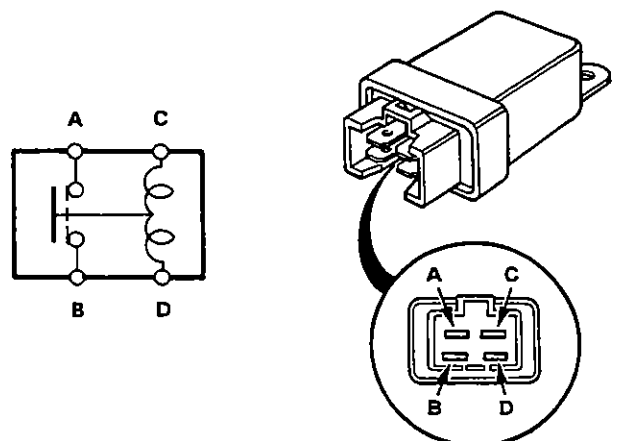
Heated relay:

1. Remove the front seat, then remove the relay from the bottom of the seat.
2. There should be continuity between the F and A; between E and B terminals when the battery is connected across the F and C terminals.
There should be continuity between the F and B terminals when the battery is disconnected.



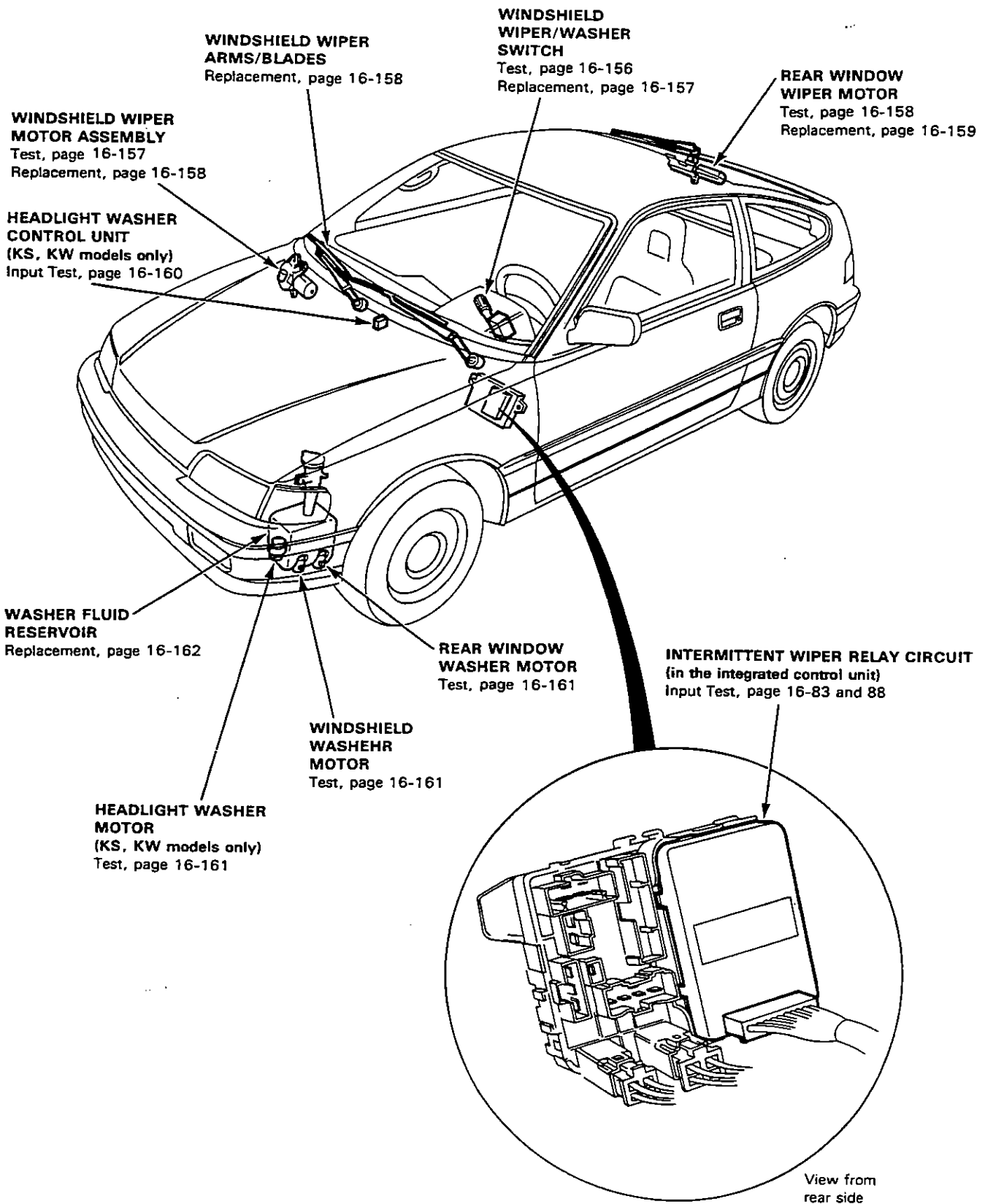
Main relay:

There should be continuity between the A and B terminals when the battery is connected across the C and D terminals.
There should be no continuity when the battery is disconnected.



Wipers/Washers

Component Location Index

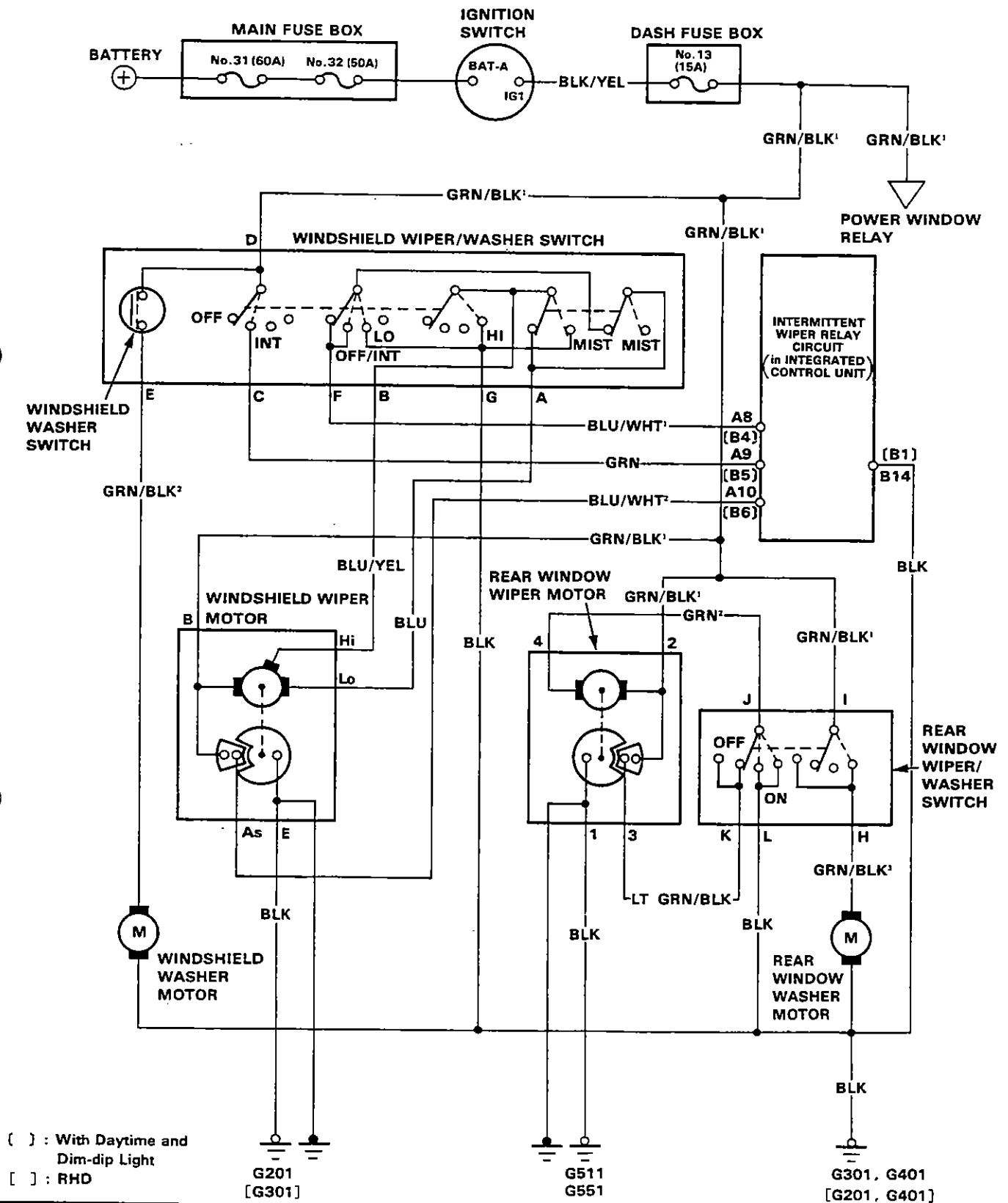


Wipers/Washers



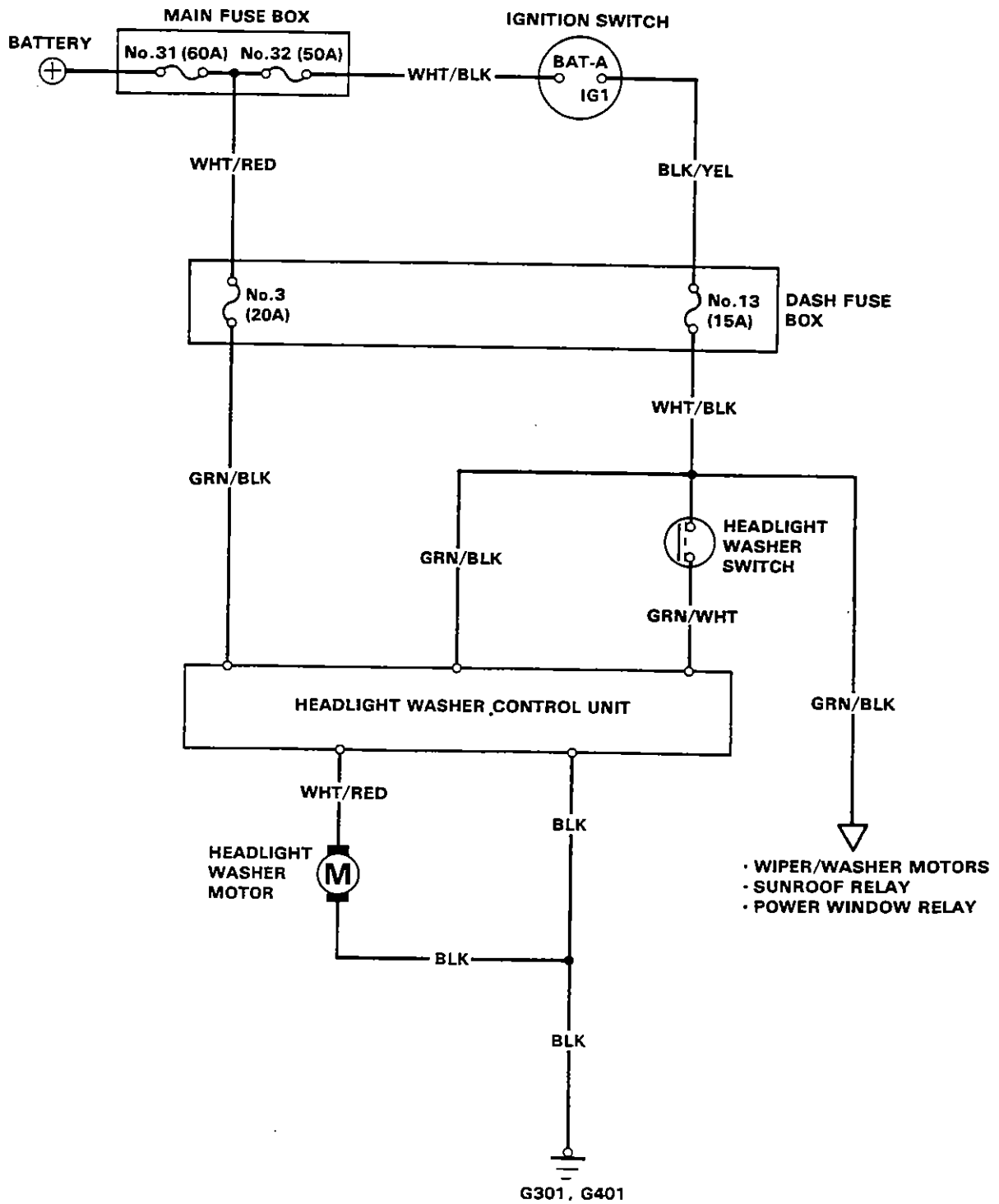
Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example GRN/BLK¹ and GRN/BLK² are not the same).



Wipers/Washers

Circuit Diagram (Headlight Washer)
(KS, KW models only)





Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

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
Symptom												
Wipers do not operate.	In all positions	1	4	2						3	G301, G401 [G201, G401]	GRN/BLK ¹
	In INT		1				2					GRN, BLU/WHT ¹
	In LO or HI		1	2								
	In Mist		1									
Rear window wiper does not operate.		1	3	2							G301, G401 [G201, G401]	GRN/BLK ¹ or GRN ²
Blades do not return to park position when wipers are turned OFF.			2	1								BLU/WHT ²
Erratic intermittent cycle or wipers do not operate intermittently.			1				2					GRN/BLK ² or GRN/BLK ³
Little or no washer fluid is pumped.					4	3		1	2		G301, G401 [G201, G401]	BLK/YEL

[] : RHD

Wipers/Washers

Wiper/Washer Switch Test

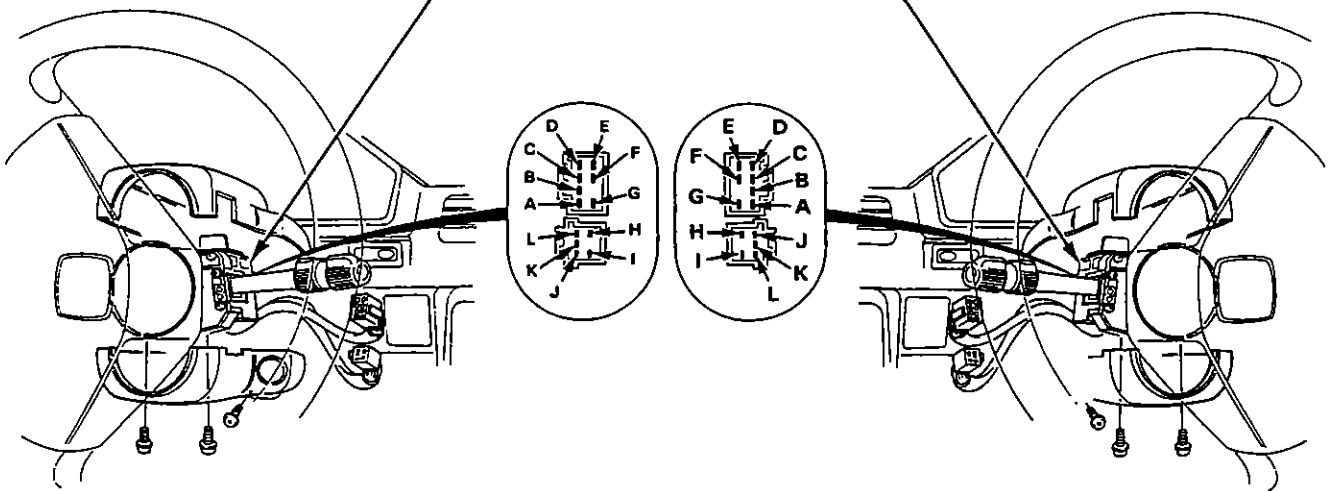
1. Remove the steering column covers.
2. Disconnect 8-P and 6-P connectors from the switch.
3. Check for continuity between the terminal in each switch position according to the table.

LHD:

WIPER/WASHER
SWITCH

RHD:

WIPER/WASHER
SWITCH



Windshield

Terminal Position	A	B	C	D	E	F	G
OFF	○					○	
INT	○		○	○		○	
LO	○						○
HI		○					○
Mist Switch "ON"		○					○
Washer Switch "ON"				○	○		

Rear Window

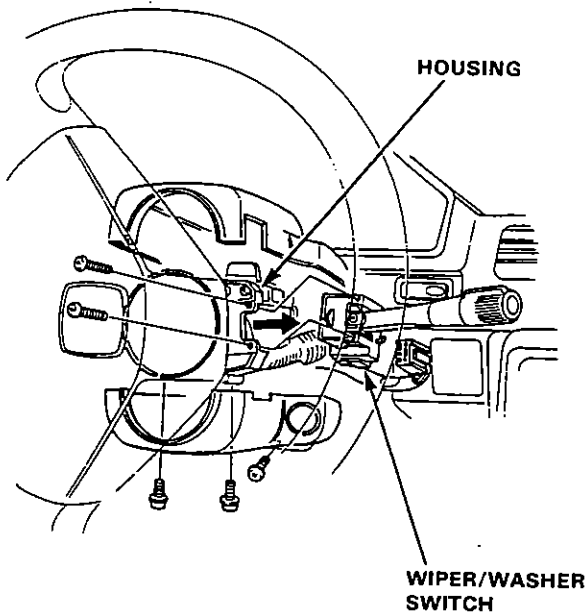
Terminal Position	H	I	J	K	L
Washer Switch "ON"	○	○			
OFF			○	○	
ON			○		○
Washer Switch "ON"	○	○			



Wiper/Washer Switch Replacement

1. Remove the lower and upper covers from the steering column.
2. Disconnect the 8-P and 6-P connectors from the wiper/washer switch.
3. Remove the 2 screws and slide the wiper/washer switch out of the housing as shown.

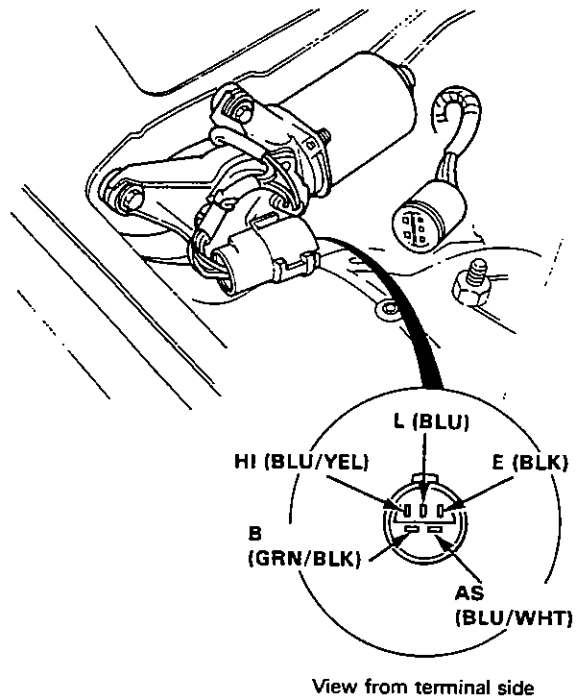
NOTE: Be careful not to damage the steering wheel cover.



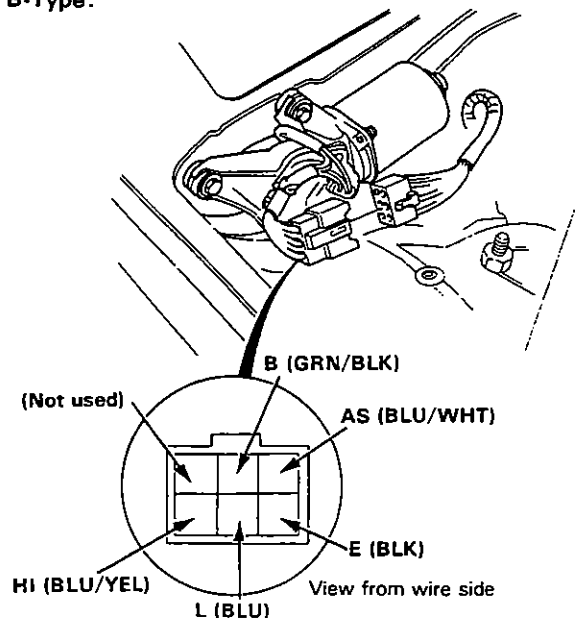
Windshield Wiper Motor Test

1. Disconnect the 5-P connector of the wiper motor assembly.
2. Test motor operation:
LOW SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Lo (BLU) terminal.
HIGH SPEED: Connect battery positive to the B (GRN/BLK) terminal and negative to the Hi (BLU/YEL) terminal.
3. If the motor fails to run smoothly, replace it.

A-Type:



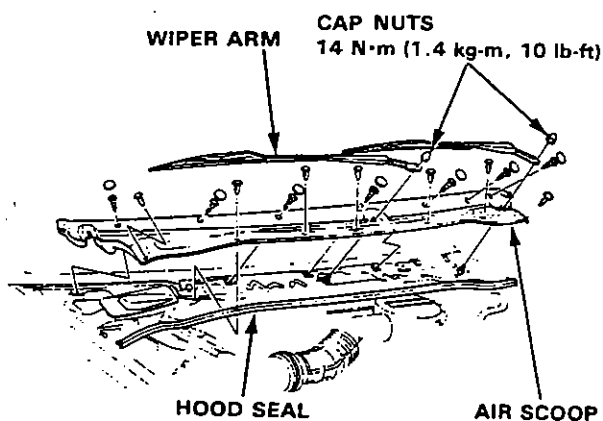
B-Type:



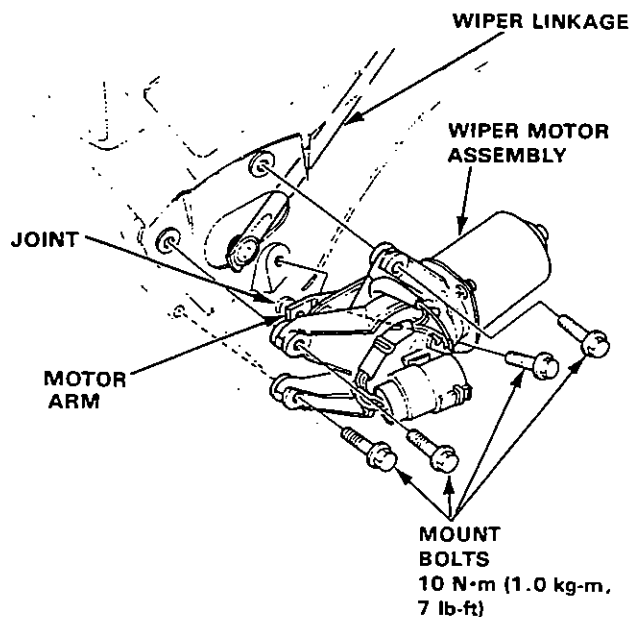
Wipers/Washers

Windshield Wiper Motor Replacement

1. Remove the cap nuts and the wiper arms.
2. Remove the hood seal and air scoop by prying off the trim clips and removing the screws.



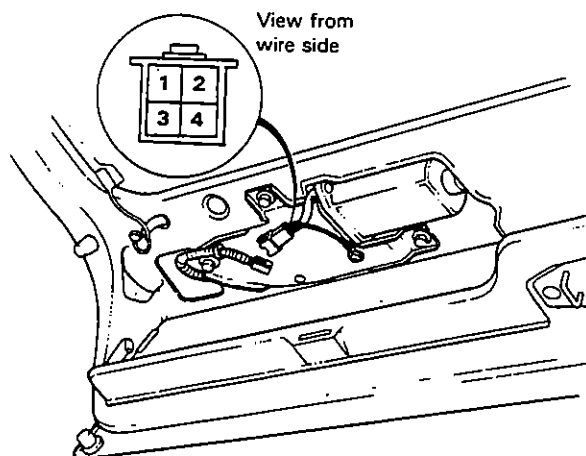
3. Pry the wiper linkage off the motor arm with a screw driver.
4. Disconnect the 5-P connector from the wiper motor assembly, then remove the 4 mount bolts and the wiper motor assembly.



5. Install the wiper motor assembly in the reverse order of removal.

Rear Window Wiper Motor Test

1. Remove the hatch trim panel.
2. Disconnect the 4-P connector.
3. Test wiper motor operation by connecting battery positive wire to the No.2 terminal and negative to the No.4 terminal.
4. If the motor fails to run smoothly, replace it.



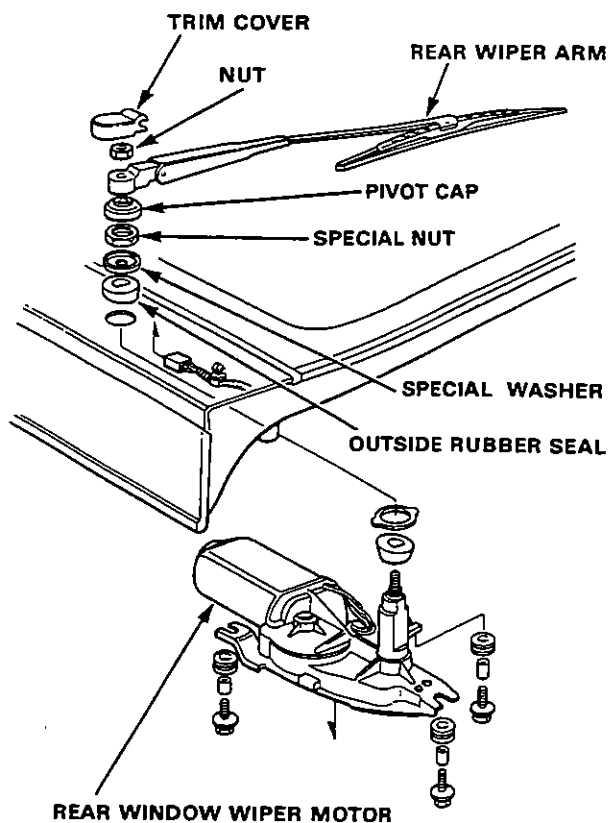
5. Check for continuity between the terminals according to the table.

Terminal	1	2	3
Wiper Blade			
At park position		○	○
At center position	○		○



Rear Window Wiper Motor Replacement

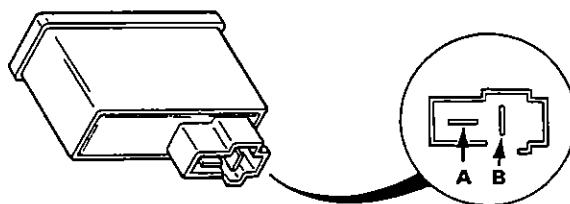
1. Remove the hatch trim panel.
2. Remove the trim cover, nut, wiper arm, special nut, special washer and the outside rubber seal.
3. Disconnect the 4-P connector from the wiper motor.
4. Remove the 3 mount bolts and the wiper motor.



Headlight Washer Switch Test

1. Remove the dashboard lower panel. Push out the switch from behind the instrument panel, then disconnect the 2-P connector from the switch.
2. Check for continuity between the terminals according to the table.

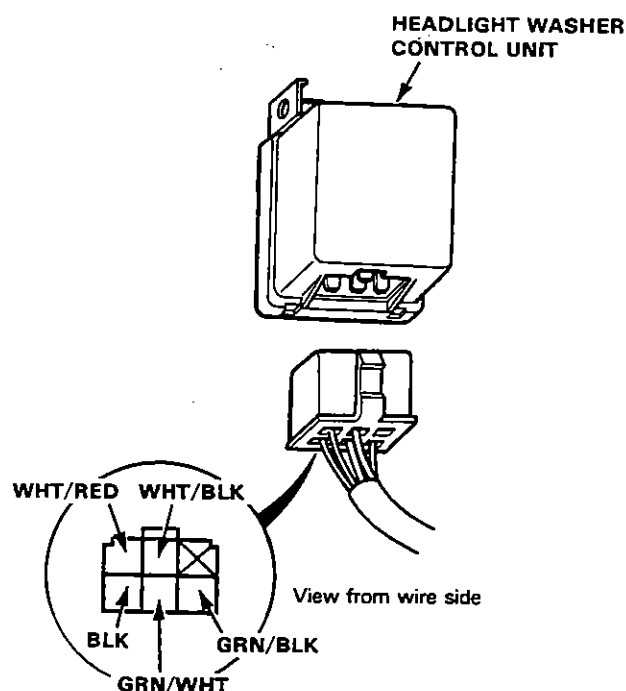
Terminal Position	A	B
OFF		
ON		



Wipers/Washers

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.

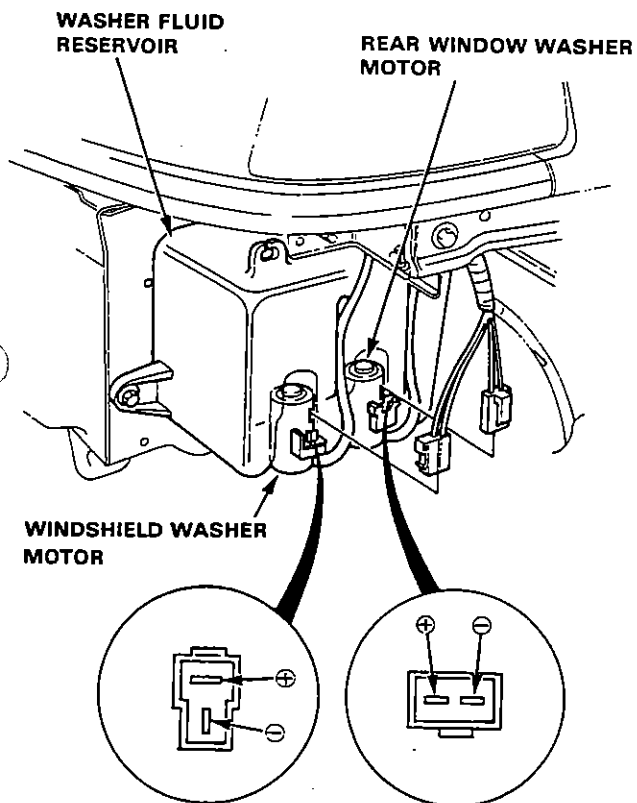


No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G301, G401). • An open in the wire.
2	WHT/BLK	Under all conditions.	Check for voltage to ground: should be battery 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.

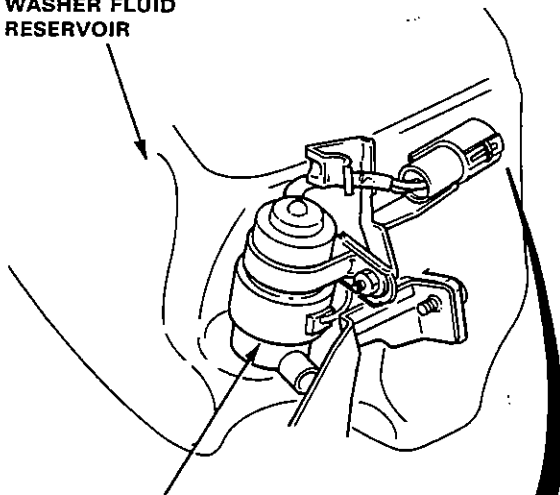


Washer Motor Test

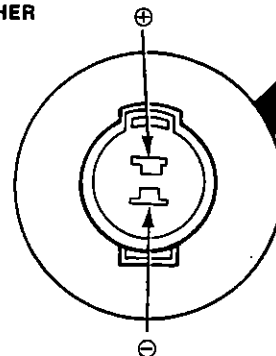
1. Remove the front bumper and disconnect the 2-P connector from the washer motor.
2. Test either washer motor operation by connecting battery positive to the $\oplus$ terminal and negative to the $\ominus$ terminal.



WASHER FLUID RESERVOIR



HEADLIGHT WASHER MOTOR



- 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.

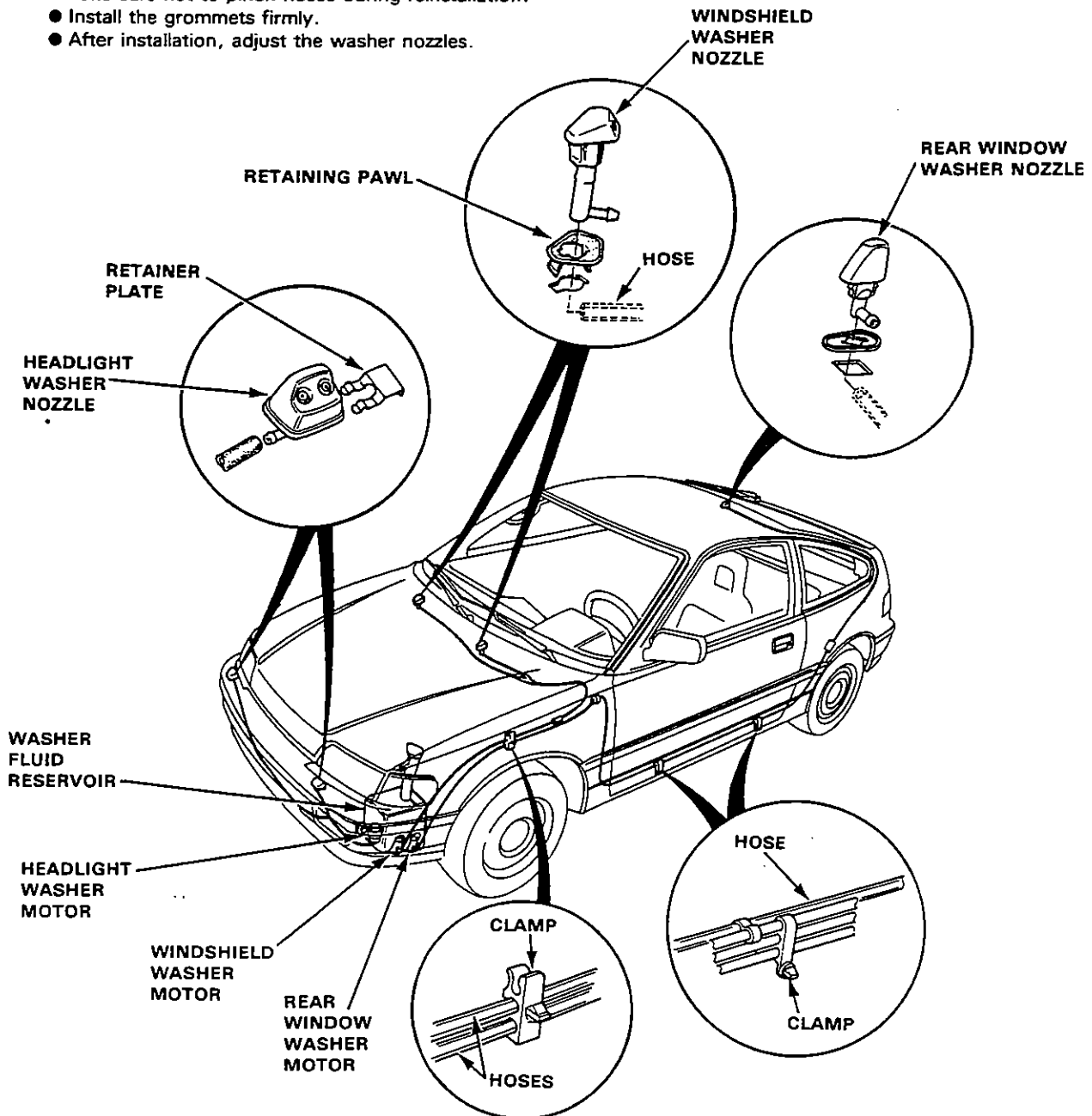
Wipers/Washers

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

Air Conditioner	11	Lighting System	3
Battery	1	Mirrors, Power	7
Blower Controls	11	Seat Heaters	8
Charging System	1	Starting System	1
Cigarette Lighter	6	Stereo Sound System	7
Clock	6	Sunroof	7
Cooling Fan System	2	Turn Signal/Hazard	
Defogger, Rear Window	7	Flasher System	6
Fuel-Injected System	9	Warning System	
Gauges	2	Brake Warning	2
Heater Controls	11	Charge Warning	1
Horns	6	Check Engine Warning	10
Ignition Switch	1	Oil Pressure Warning	2
Ignition System	1	Seat Belt Reminder	2
Integrated Control Unit	2	Hatch-open Warning	2
Lights, Exterior		Washers	
Back-up Lights	6	Windshield	8
Brake Lights	6	Rear Window	8
Fog Lights, Rear	3	Headlight	9
Hazard Lights	6	Windows, Power	9
Headlights	3	Wipers	
License Plate Lights	3	Windshield	8
Marker Lights, Front	3	Rear Window	8
Taillights	3		
Turn Signal Lights	6		
Lights, Interior			
Dashlight Brightness			
Control	3		
Dome Light	6		
Trunk Light	6		

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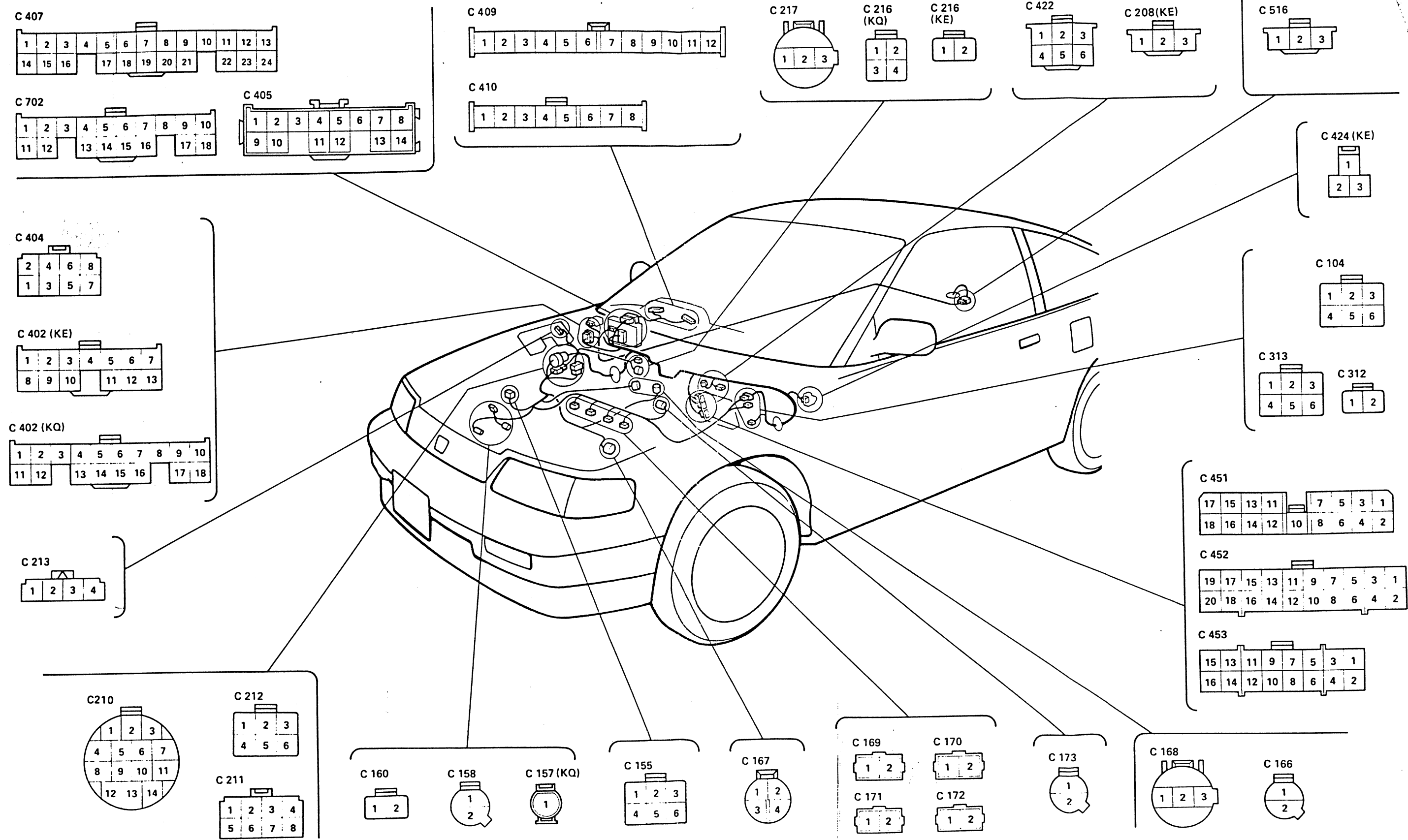
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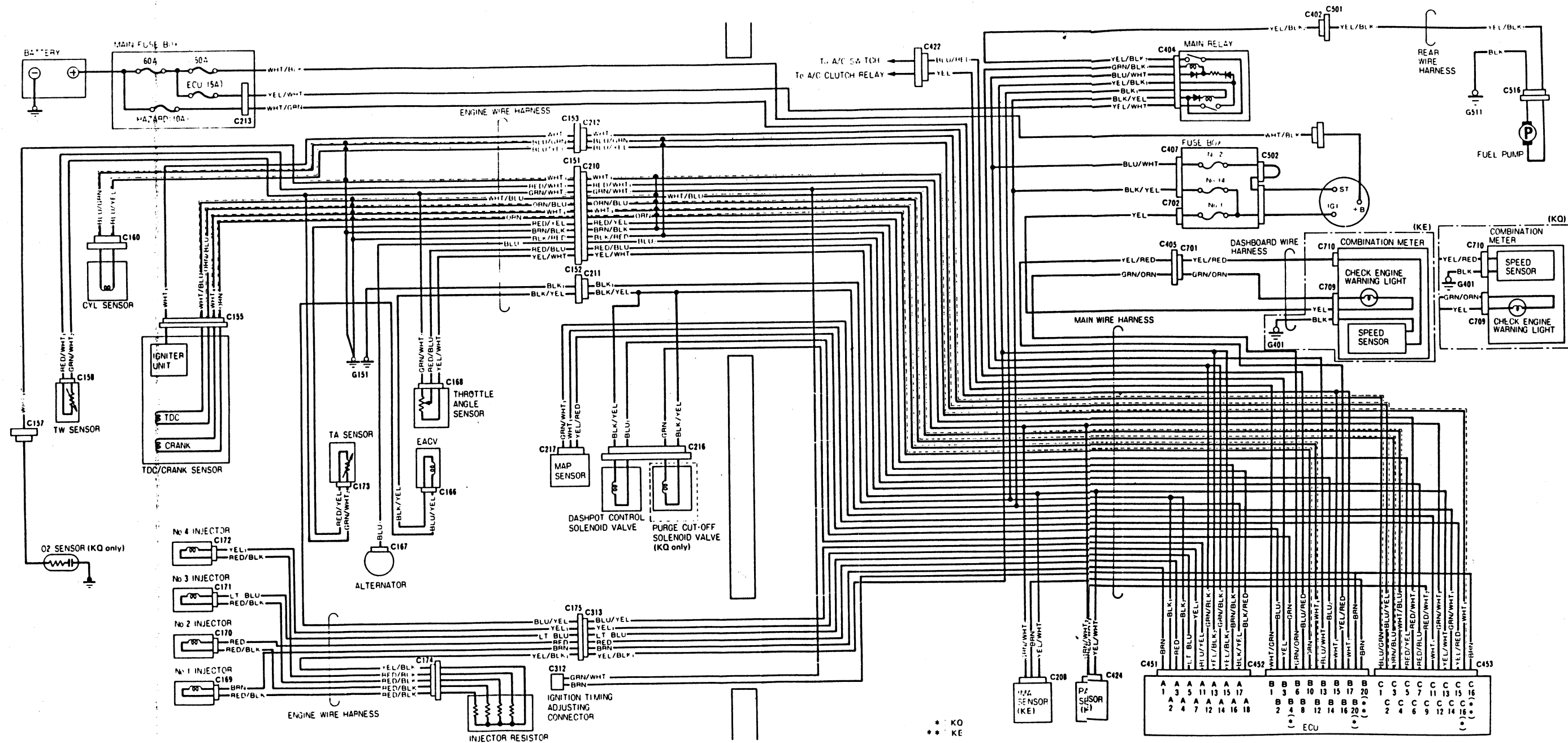
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HONDA
HONDA MOTOR CO., LTD. TOKYO, JAPAN

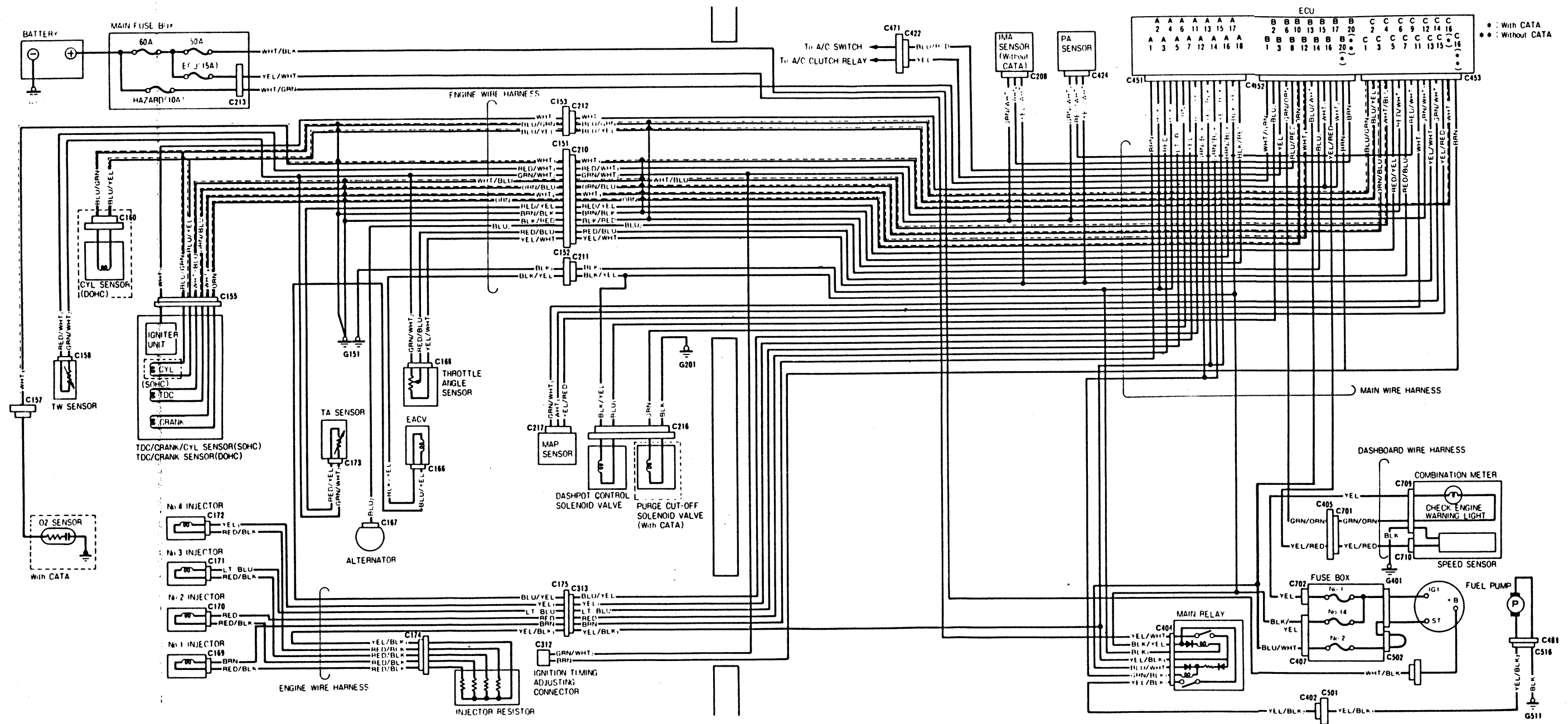
Fuel-Injected System Connectors (RHD)

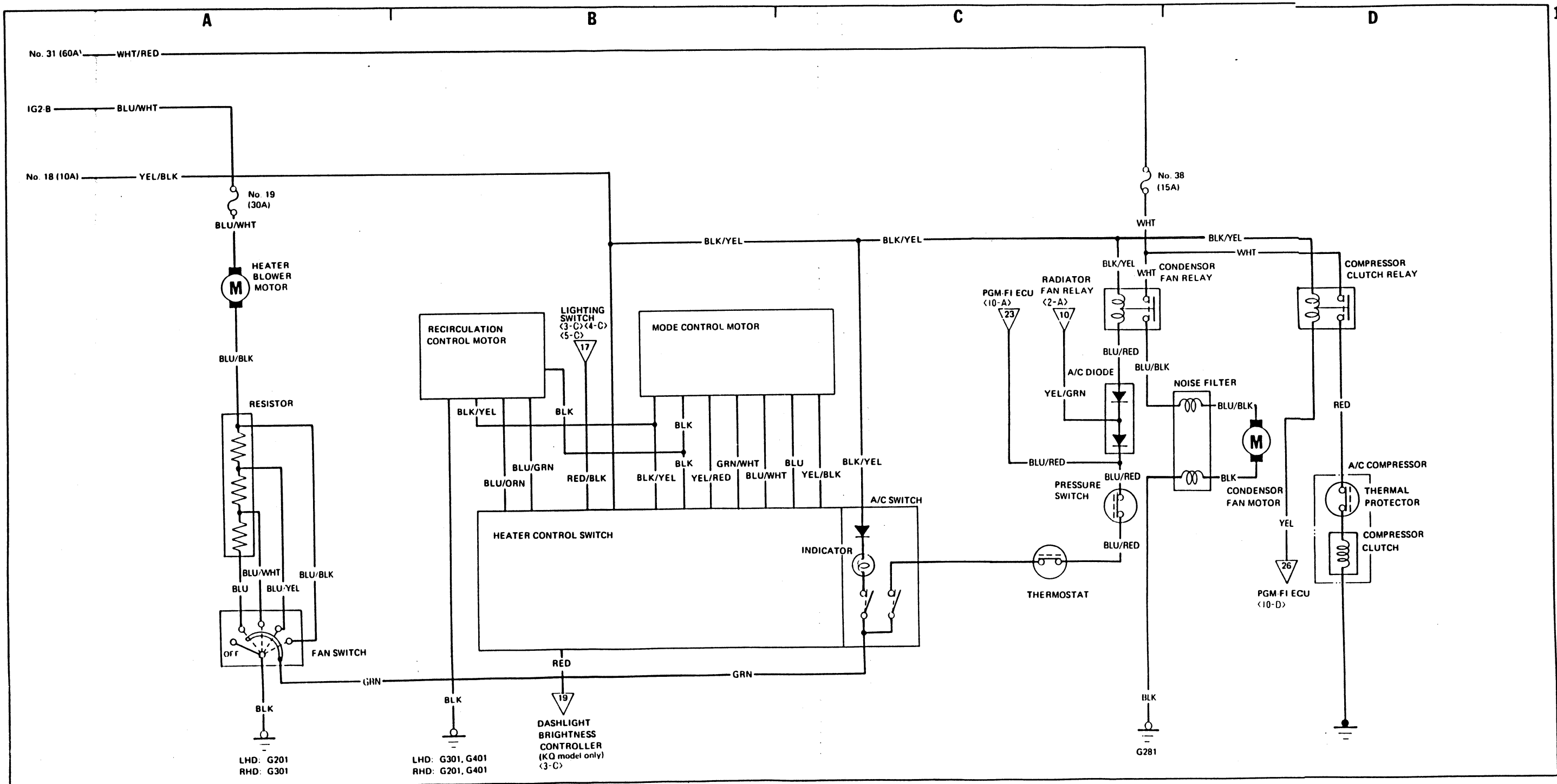


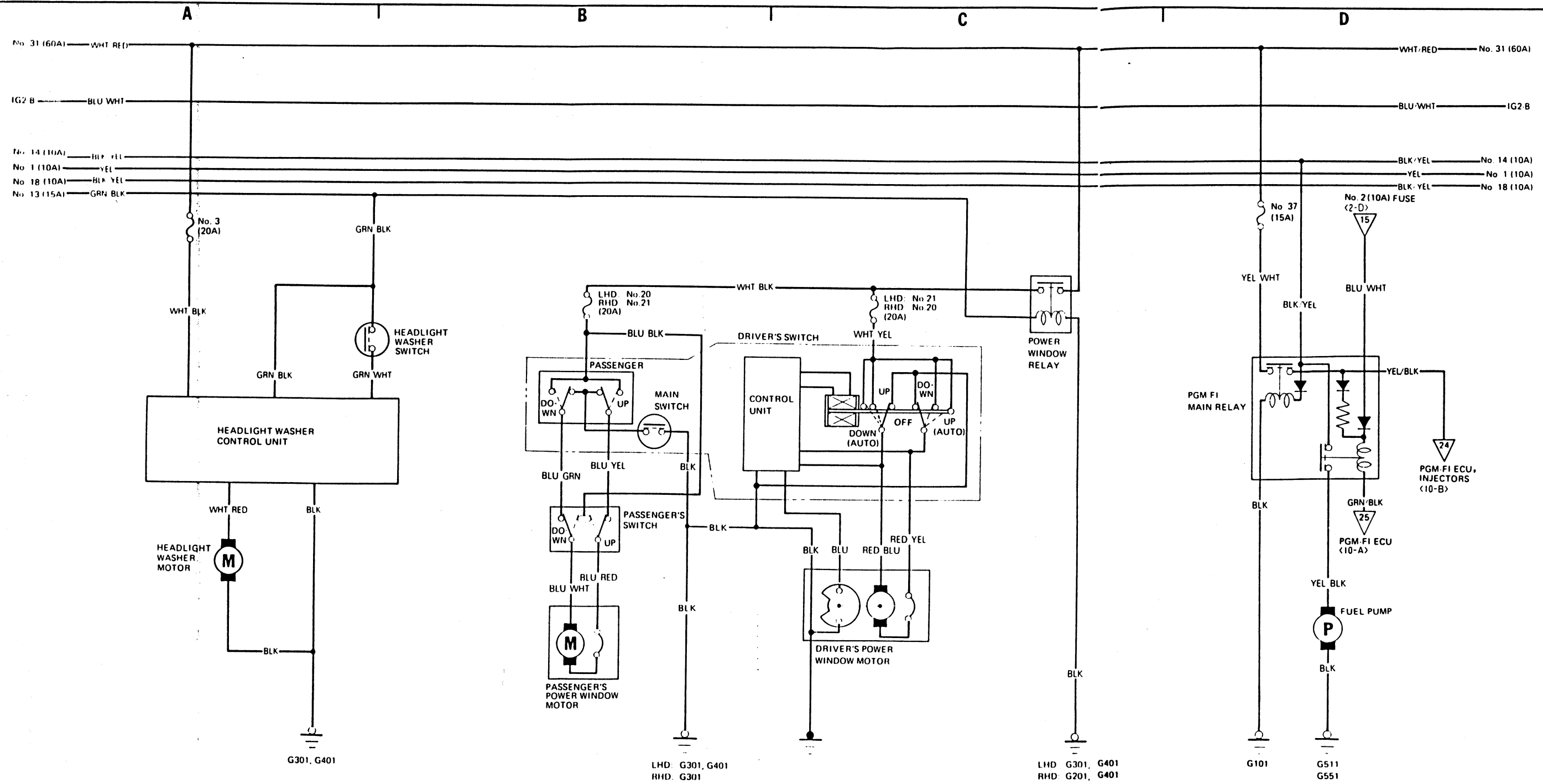
Fuel-Injected System Diagram (RHD)

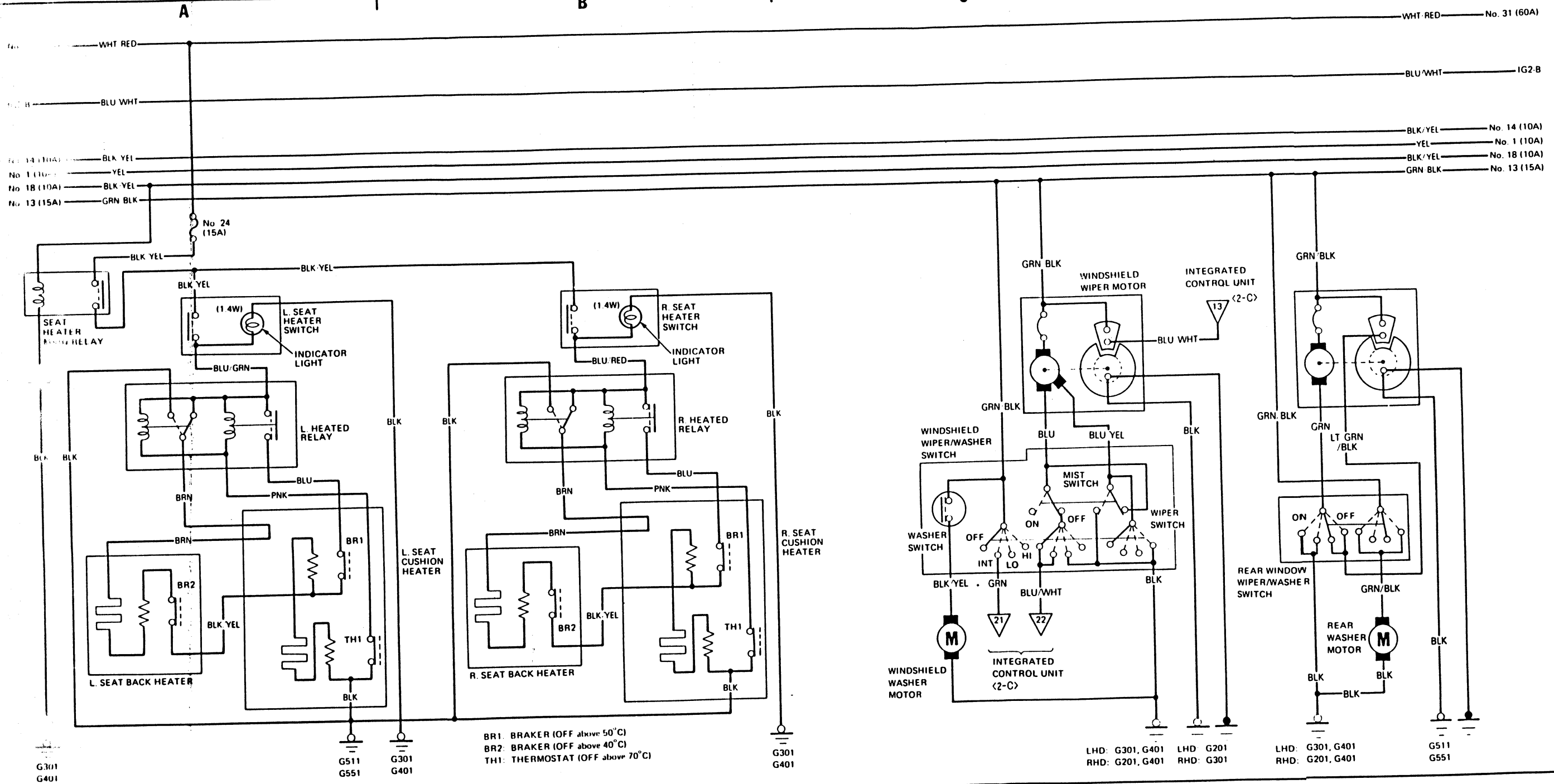


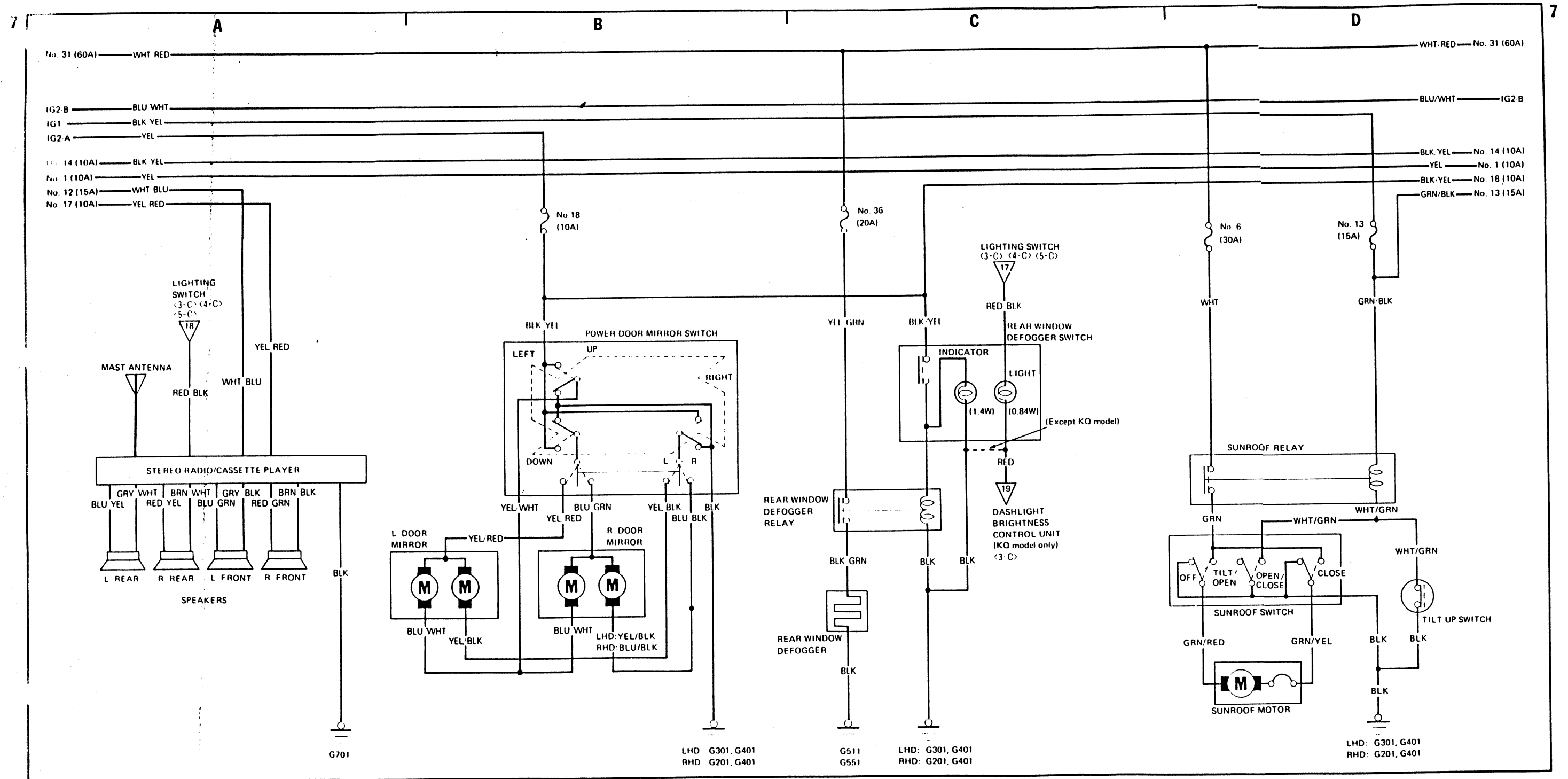
Fuel-Injected System Diagram (LHD)

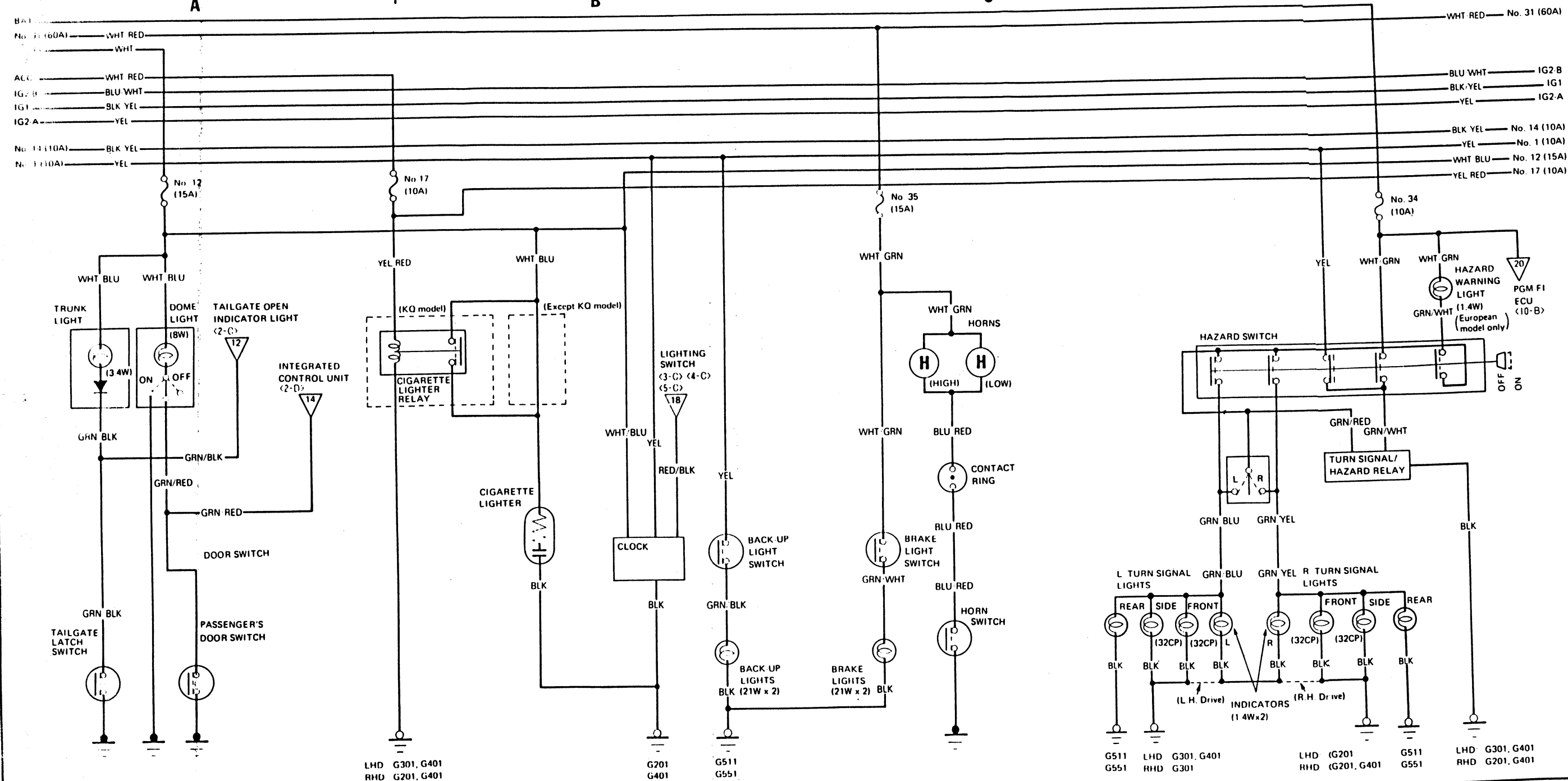


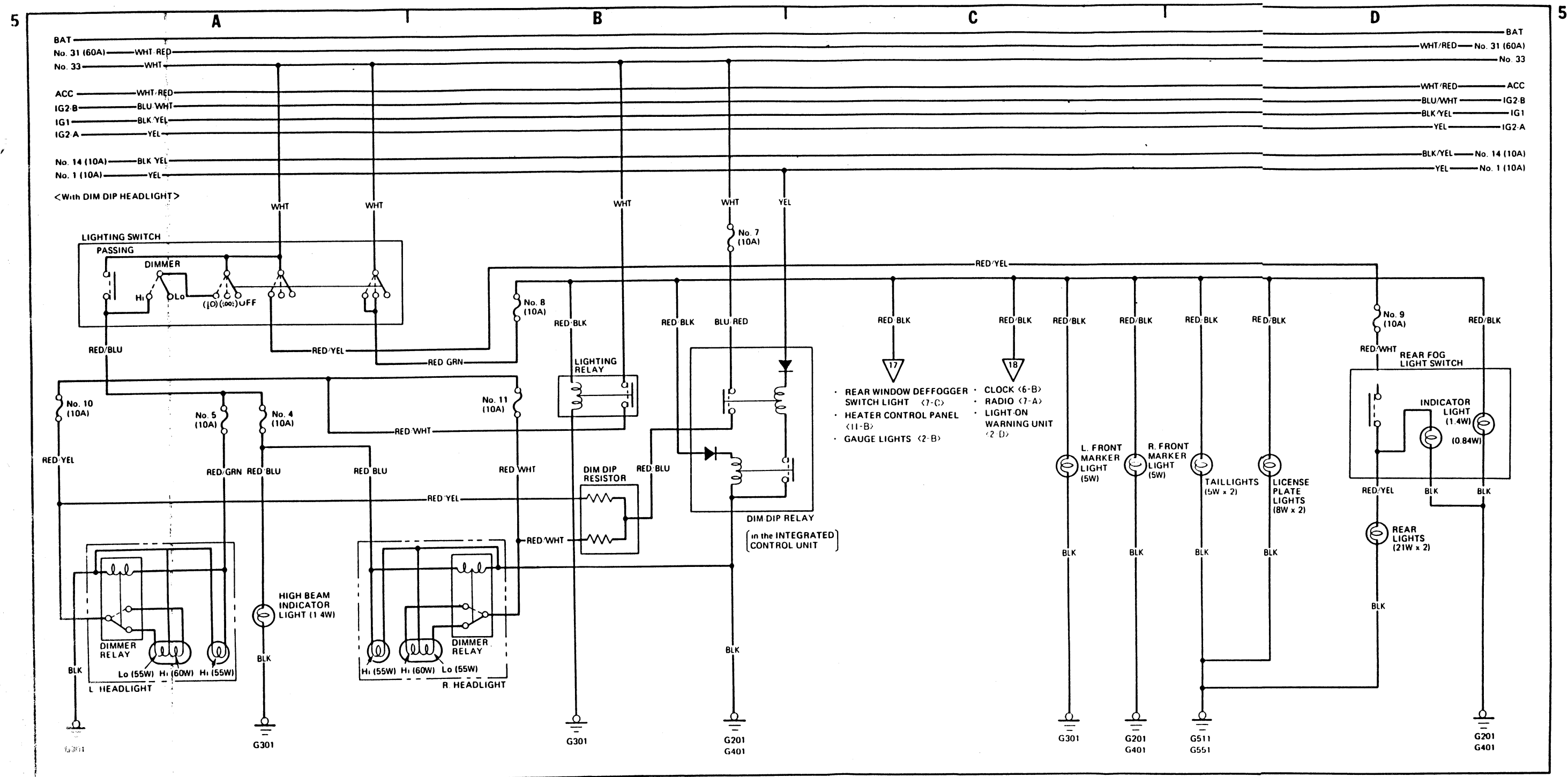


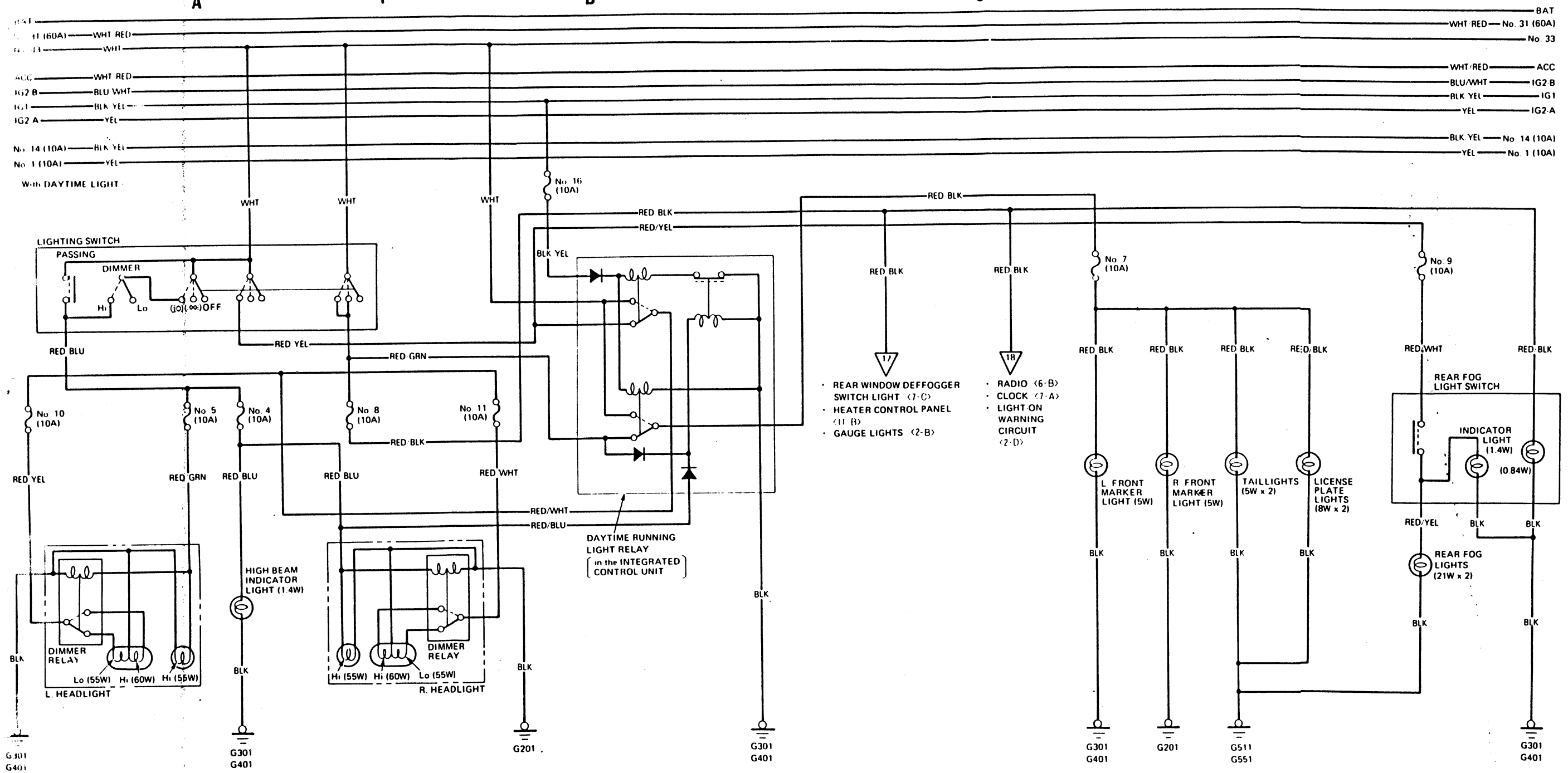




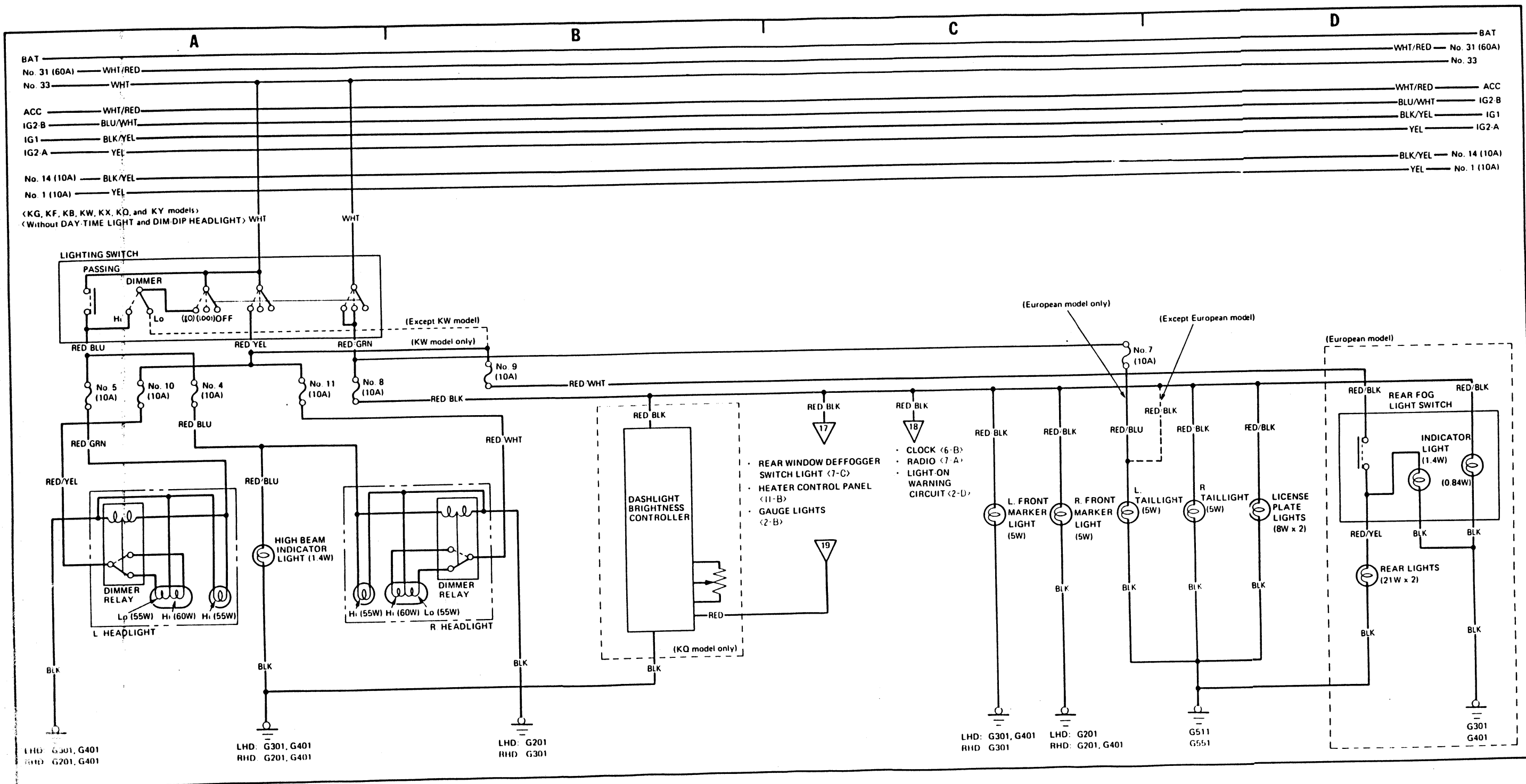








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