

Chassis and Engine Number

Vehicle Identification Number

SAH HW H L L B A D 100001

Manufacture Code _____
Rover Group Ltd.

Model Type _____
HW : Concerto

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

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

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

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

Model Year _____
A : 1990

Factory Code _____
D : Longbridge

Serial Number _____

Engine Number

D14A1-E000001

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

Serial Number _____

Transmission Number

P7-1000001

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

Serial Number _____
P7 : 1000001~
L4 : 4000001~



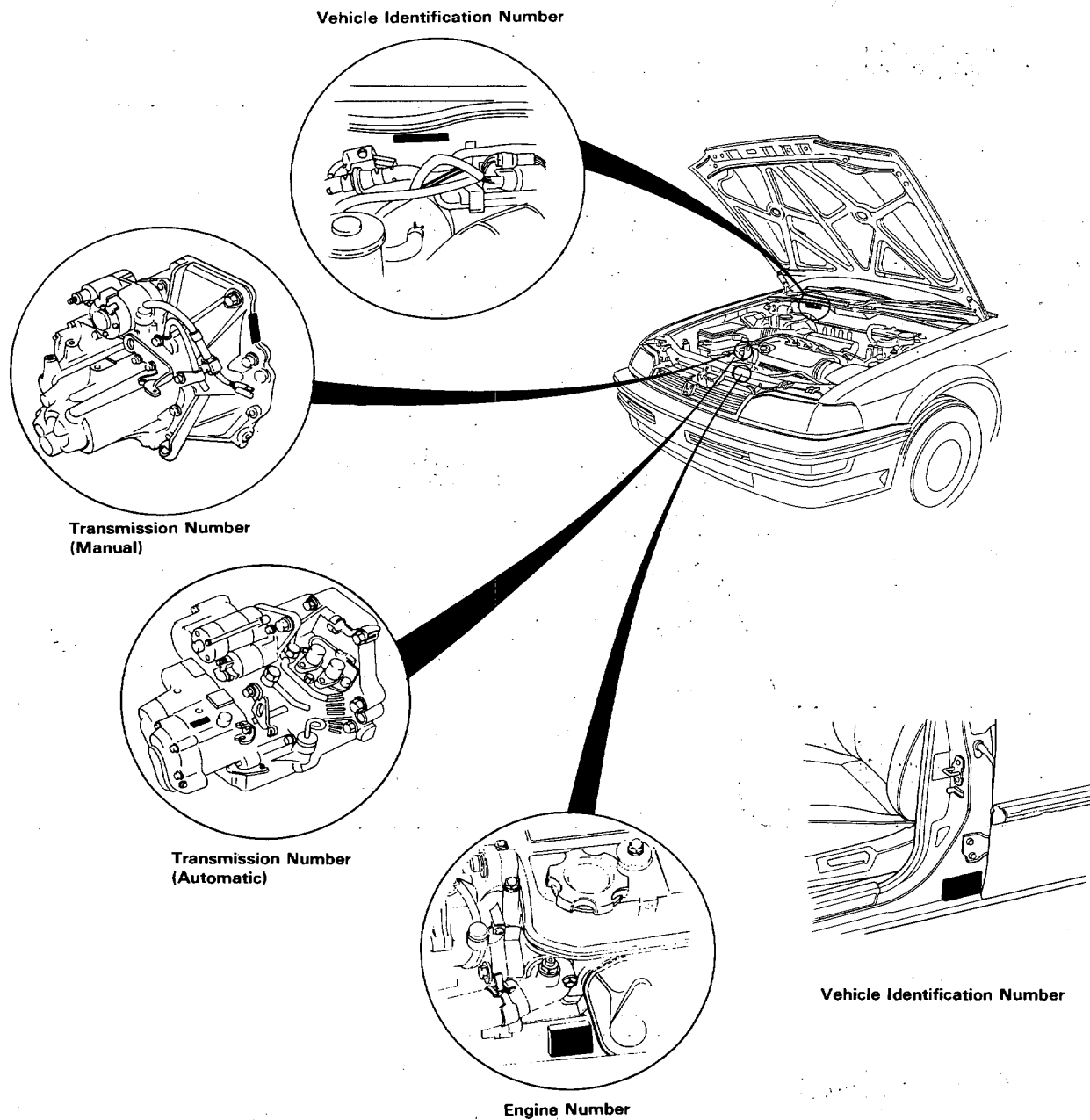
MODEL YEAR	DOOR	ENGINE	GRADE	AREA	SHIFT TYPE	FRAME NUMBER	ENGINE NUMBER	TRANSMISSION NUMBER				
1990	5D	1400 2 Carb.	DX	KB	MT	SAHHW HWLNAD100001~	D14A1-E000001~	P7-1000001~				
					AT	SAHHW HWLZAD100001~		L4-4000001~				
				KE	MT	SAHHW HWLBAD100001~		P7-1000001~				
					AT	SAHHW HWLMAD100001~		L4-4000001~				
				KF	MT	SAHHW HWLNAD100001~		P7-1000001~				
					AT	SAHHW HWLZAD100001~		L4-4000001~				
				KR	MT	SAHHW HWLNAD100001~		P7-1000001~				
					AT	SAHHW HWLZAD100001~		L4-4000001~				
				1500 PGM-FI	KG	MT		SAHHW HWPNAD100001~	D15B2-E000001~	P7-1000001~		
						AT		SAHHW HWPVAD100001~		L4-4000001~		
				1600 2 Carb.	LX	KB		MT	SAHHW MWWVSAD100001~	D16Z1-E000001~	P7-1000001~	
								AT	SAHHW MWWWAD100001~		L4-4000001~	
		KE	MT			SAHHW MWWVAD100001~	P7-1000001~					
			AT			SAHHW MWWLAD100001~	L4-4000001~					
		KF	MT			SAHHW MWWVSAD100001~	P7-1000001~					
			AT			SAHHW MWWWAD100001~	L4-4000001~					
		KR	MT			SAHHW MWWVSAD100001~	P7-1000001~					
			AT			SAHHW MWWWAD100001~	L4-4000001~					
		EX	KE			MT	SAHHW YWWVAD100001~	P7-1000001~				
						AT	SAHHW YWWLAD100001~	L4-4000001~				
			KF			MT	SAHHW YWVSAD100001~	P7-1000001~				
						AT	SAHHW YWWWAD100001~	L4-4000001~				
			EX (A.L.B.)		KE	MT	SAHHW YWVAD100001~	P7-1000001~				
						AT	SAHHW YWWLAD100001~	L4-4000001~				
		1600 PGM-FI	EX		KG	MT	SAHHW YWMPAD100001~	D16Z2-E000001~	P7-1000001~			
						AT	SAHHW YWMXAD100001~		L4-4000001~			
					KX	MT	SAHHW YWMPAD100001~		P7-1000001~			
						AT	SAHHW YWMXAD100001~		L4-4000001~			
			EX (A.L.B.)		KG	MT	SAHHW YWMPAD100001~		P7-1000001~			
						AT	SAHHW YWMXAD100001~		L4-4000001~			
					KX	MT	SAHHW YWMPAD100001~		P7-1000001~			
						AT	SAHHW YWMXAD100001~		L4-4000001~			
			1600 DOHC PGM-FI		SX	KB	MT		SAHHW WWURAD100001~		D16A9-E000001~	P7-1000001~
							AT		SAHHW WWUYAD100001~		D16Z4-E000001~	L4-4000001~
				KE		MT	SAHHW WWUDAD100001~		D16A9-E000001~	P7-1000001~		
						AT	SAHHW WWUKAD100001~		D16Z4-E000001~	L4-4000001~		
		KF		MT		SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~				
				AT		SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~				
		KG		MT		SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~				
				AT		SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~				
		KR		MT		SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~				
				AT		SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~				
		SX (A.L.B.)		KB		MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~			
						AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~			
				KE	MT	SAHHW WWUDAD100001~	D16A9-E000001~	P7-1000001~				
					AT	SAHHW WWUKAD100001~	D16Z4-E000001~	L4-4000001~				
				KF	MT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~				
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~				
				KG	MT	SAHHW WWNRAD100001~	D16A8-E000001~	P7-1000001~				
					AT	SAHHW WWURAD100001~	D16A9-E000001~	P7-1000001~				
				KR	MT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~				
					AT	SAHHW WWUYAD100001~	D16Z4-E000001~	L4-4000001~				
				KX	MT	SAHHW WWNRAD100001~	D16A8-E000001~	L4-4000001~				

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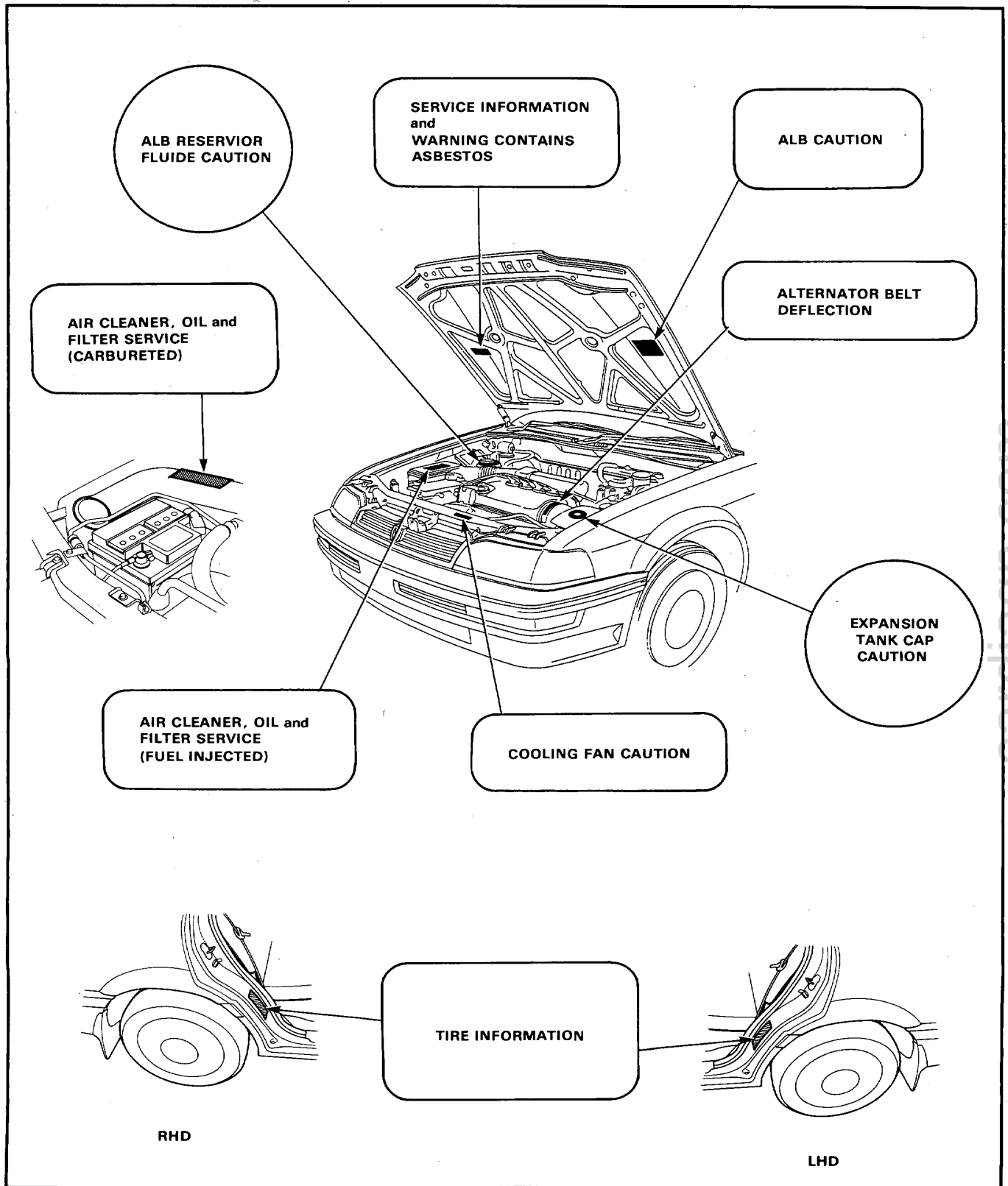
Chassis and Engine Numbers (cont'd)

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

Identification Number Location



Label Locations



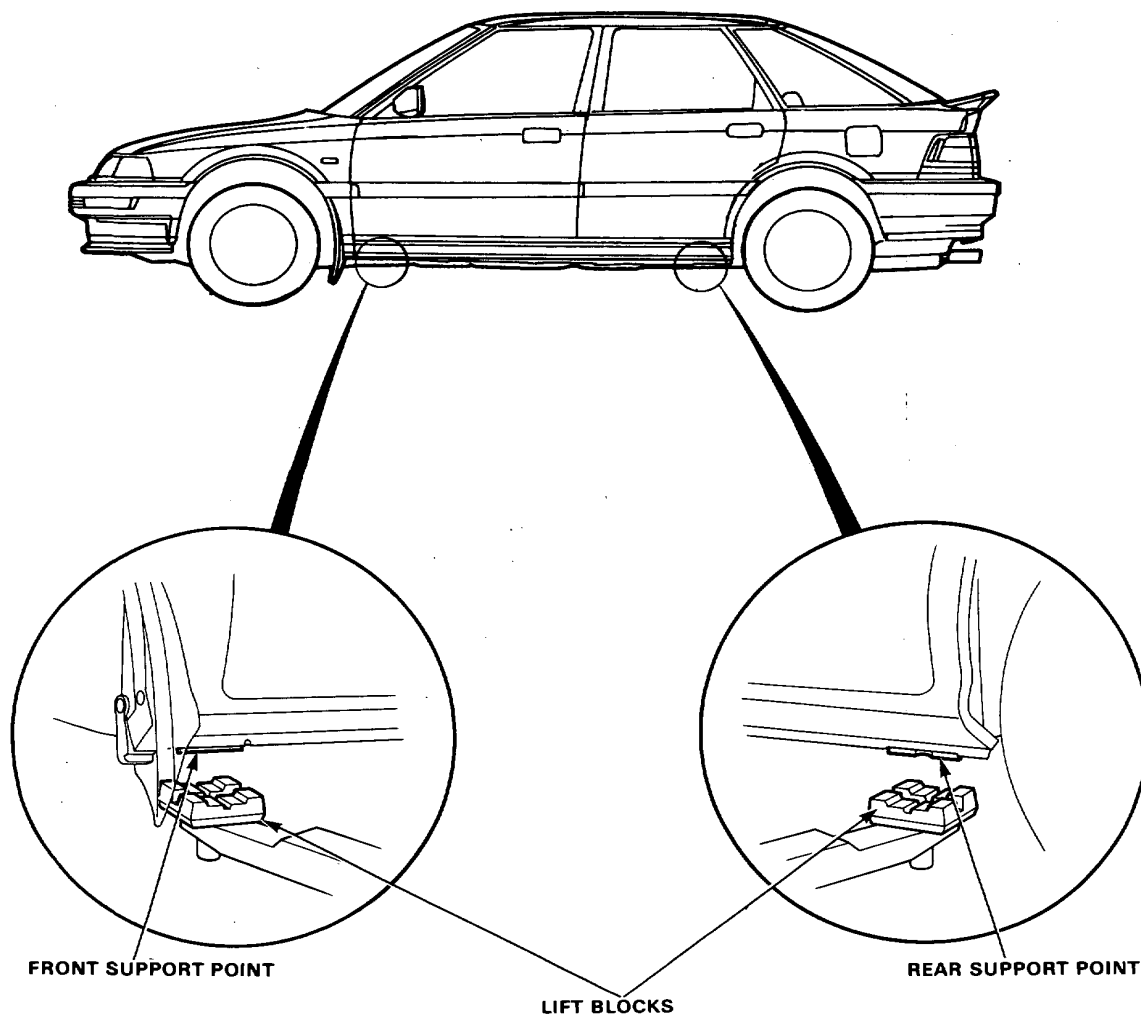
Lift and Support Points

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 the hoist to full height and inspect lift points for solid support.

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

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



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Lift and Support Points (cont'd)

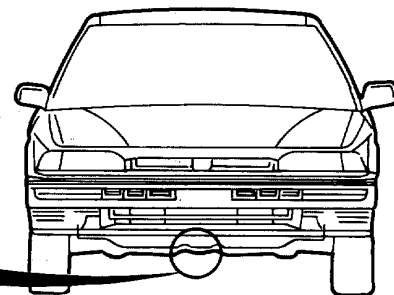
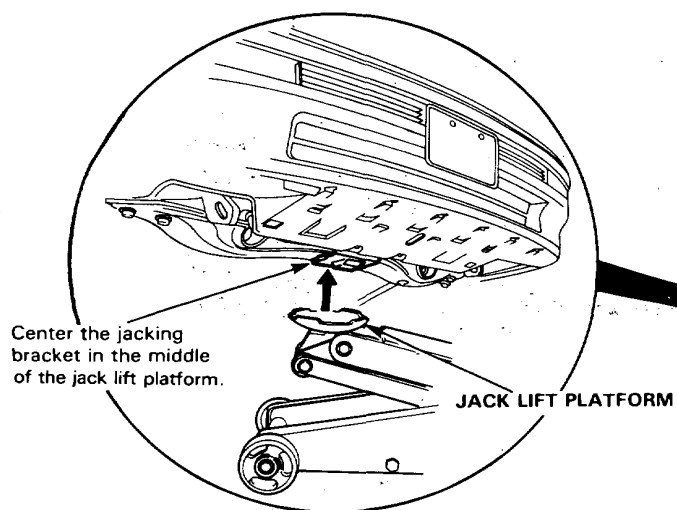
Floor Jack

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

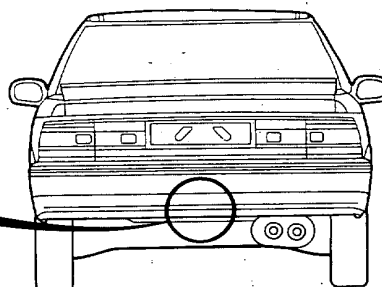
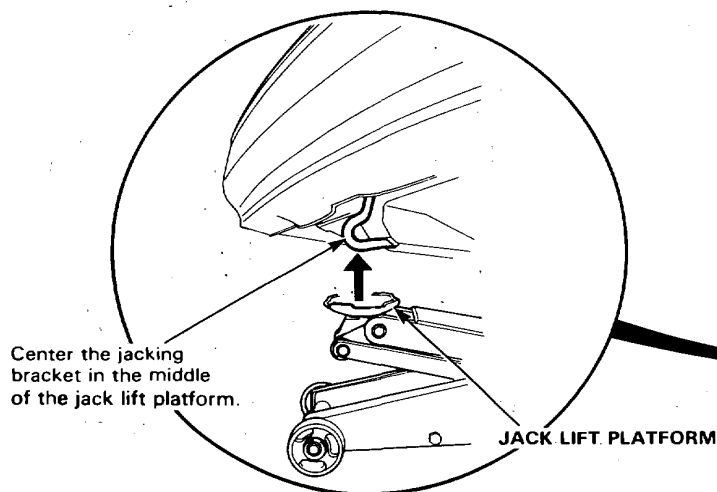
⚠ WARNING

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

Front

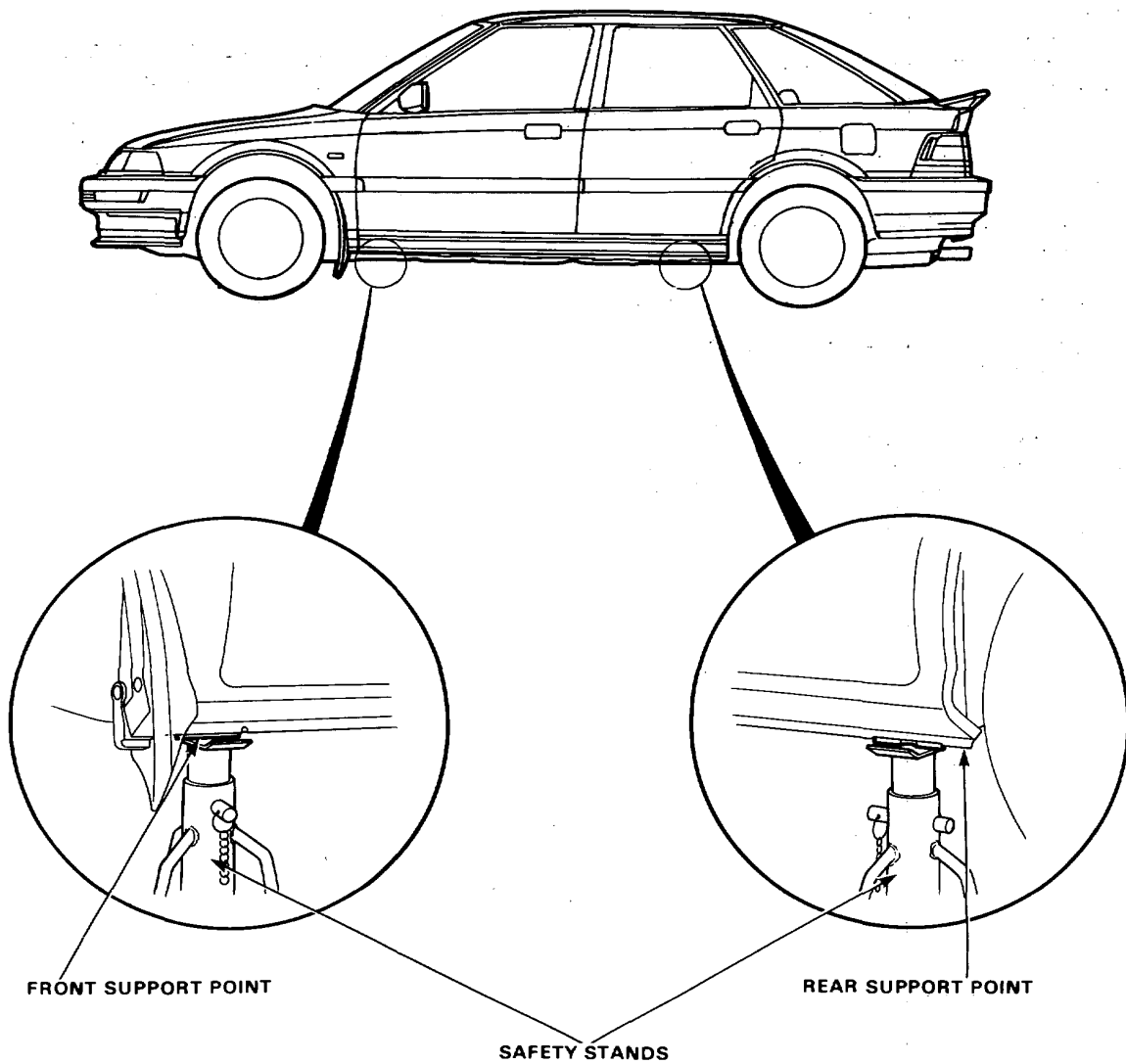


Rear





Safety Stands



Towing

If possible, always tow the car with the front wheels off the ground.

The tow truck driver should position wood spacer blocks between the car's frame and chains and lift straps, to avoid damaging the bumper and the body under it.

Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing. A chain may be attached to the hook as shown in the picture. Do not attach a tow bar to either bumper.

⚠ WARNING Do not push or tow a car to start it. The forward surge when the engine starts could cause a collision. On some types, also, under some conditions, the catalytic converter could be damaged. A car equipped with an automatic transmission cannot be started by pushing or towing.

If the car is to be towed with the front wheels on the ground, observe the following precautions:

Manual Transmission

Shift the transmission to Neutral and turn the ignition key to the "I" position.

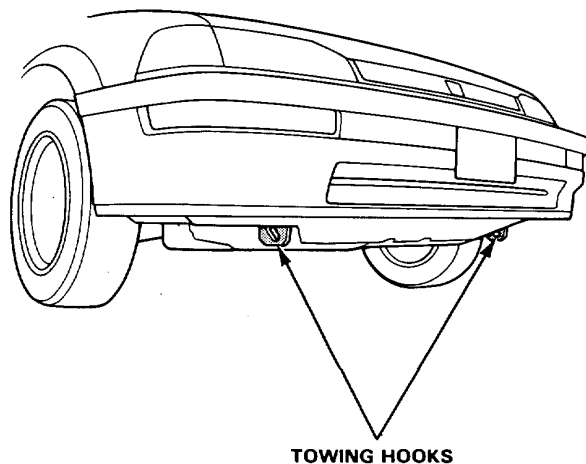
Automatic Transmission

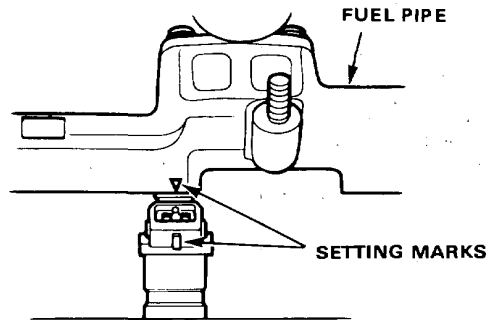
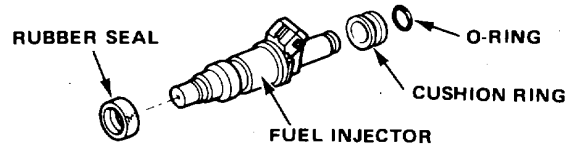
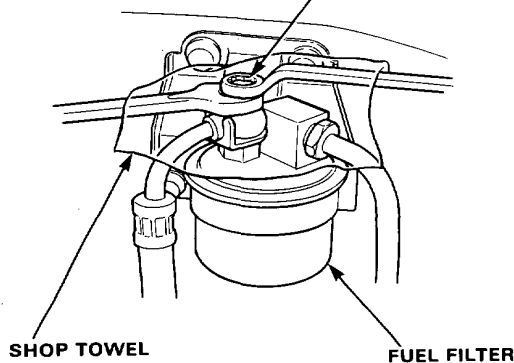
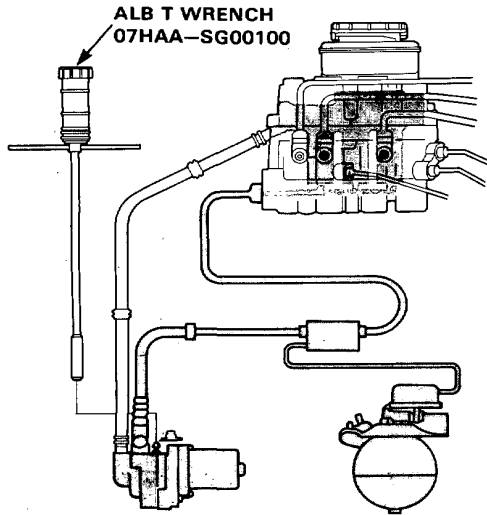
First, check the automatic transmission fluid level (see section 9).

Start the engine and shift to D₄, then to N. Return the ignition key to the "I" position.

CAUTION:

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





Preparation of Work

Special Caution Items For This Car (cont'd)

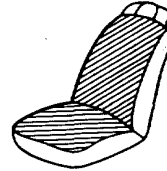
4. Installation of an amateur radio for cars equipped with PGM-FI and ALB.

Care has been taken for the PGM-FI control unit and its wiring to prevent erroneous operation from external interference, but erroneous operation of the control unit may be caused by extremely strong radio waves. Attention must be paid to the following items to prevent erroneous operation of the control unit.

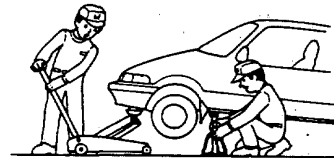
- The antenna and the body of the radio must be at least 200 mm (7.9 in.) away from the control unit.
 - PGM-FI control unit location: Passenger's side front lower panel.
 - ALB control unit location: Luggage area Light side panel.
 - Do not lead the antenna feeder and the coaxial cable over a long distance parallel to the car's wiring. When crossing with the wiring is required, execute crossing at a right angle.
 - Do not install a radio with a large output (max. 10W).
5. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use HONDA genuine liquid gasket Part No. OY740-99986.
- Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
 - Apply liquid gasket evenly, being careful to cover all the mating surface.
 - To prevent leakage of oil, apply liquid gasket to the inner threads of the bolt holes.
 - Do not install the parts if 20 minutes or more have elapsed since applying liquid gasket. Instead reapply liquid gasket after removing the old residue.
 - After assembly, wait at least 30 minutes before filling the appropriate liquid (engine oil, coolant and other similar fluid).

CAUTION: Observe all safety precautions and notes while working.

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



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



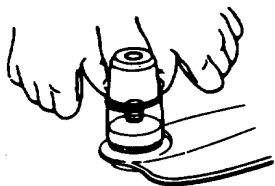
3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



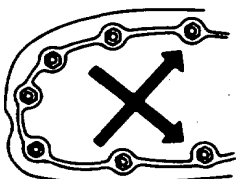
4. Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.



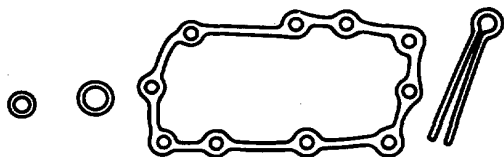
5. Use the special tool when use of such a tool is specified.



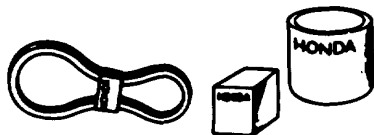
6. Parts must be assembled with the proper torque according to the maintenance standards established.
7. When tightening a series of bolts or nuts, begin with the center or large diameter bolts and tighten them in crisscross pattern in two or more steps.



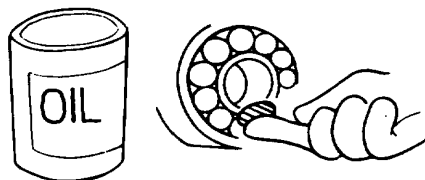
8. Use new packings, gaskets, O-rings and cotter pins whenever reassembling.



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



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



11. Brake fluid and hydraulic components

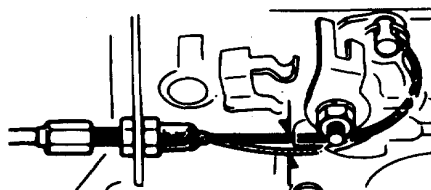
- When replenishing the system, use extreme care to prevent dust and dirt from entering the system.
- Do not mix different brands of fluid as they may not be compatible.
- Do not reuse drained brake fluid.
- Because brake fluid can cause damage to painted and resin surfaces, care should be taken not to spill it on such materials. If spilled accidentally, quickly rinse it with water or warm water from painted or resin surfaces.
- After disconnecting brake hoses or pipes, be sure to plug the openings to prevent loss of brake fluid.
- Clean all disassembled parts only in clean BRAKE FLUID. Blow open all holes and passages with compressed air.



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

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

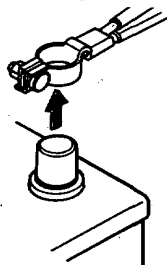
13. Upon assembling, check every part for proper installation and operation.



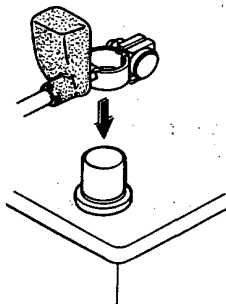
Preparation of Work

Electrical

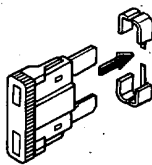
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (-) terminal.



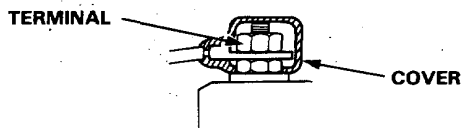
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (-) cable.



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

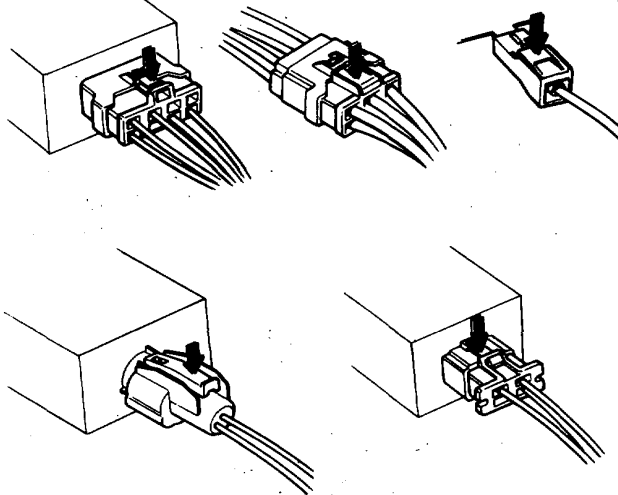


- Be sure to install the terminal cover over the connections after a wire or wire harness has been connected.

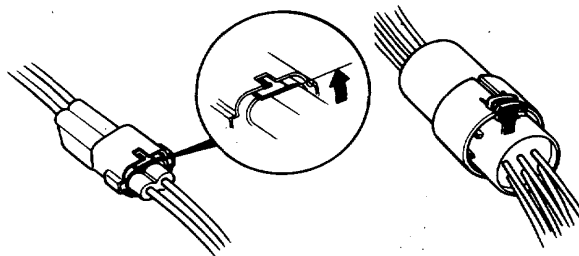


- As to locking connectors, be sure to disengage the lock before disconnecting.
- Conventional connectors may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following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

Press to disengage:



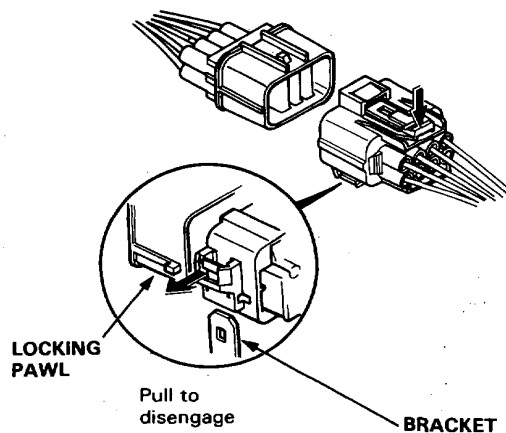
Pull up to disengage:



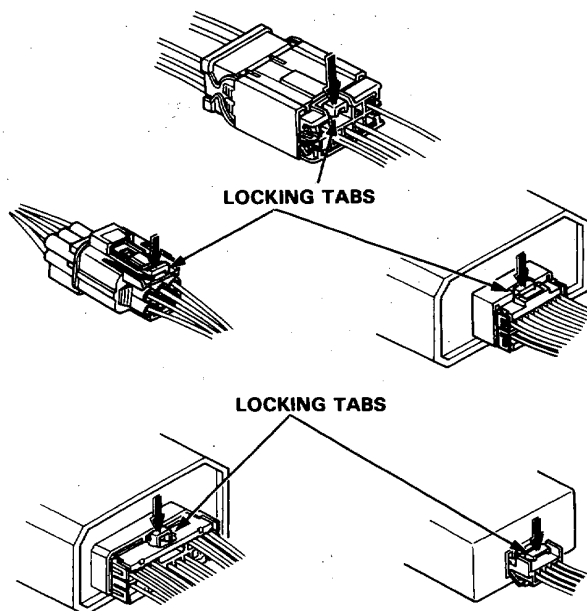


When new type connectors are used, connection and disconnection of them should be done paying attention to the following precautions.

- Because all the connectors except terminal of 1-P are equipped with push-down type locks, unlock them first before disconnecting the connectors.
- On the connectors installed on the bracket a pull type lock is equipped between the bracket and the connector.
Some connectors of this type can not be disconnected unless they are removed from their brackets. When disconnecting, check their shapes.
- On the bracket mounted connector with dual locks, remove the connector from the bracket before disconnecting.



- Push the locking tab to disconnect.

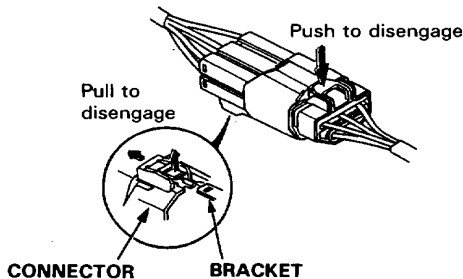


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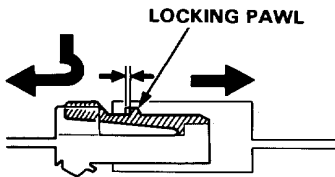
Preparation of Work

Electrical (cont'd)

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



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



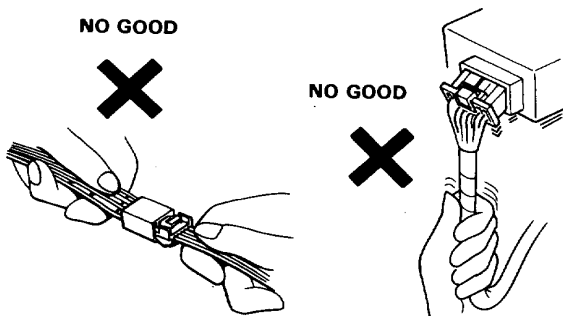
- When disconnecting a connector, pull it off from the mating connector by holding on both connectors.
- Never try to disconnect connectors by pulling on their wires.



NO GOOD

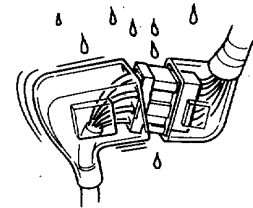


NO GOOD



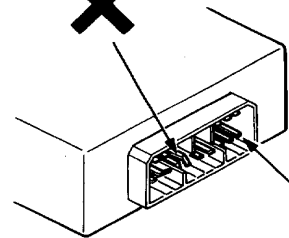
- Place the plastic cover over the mating connector after reconnecting. Also check that the cover is not distorted.

NO GOOD



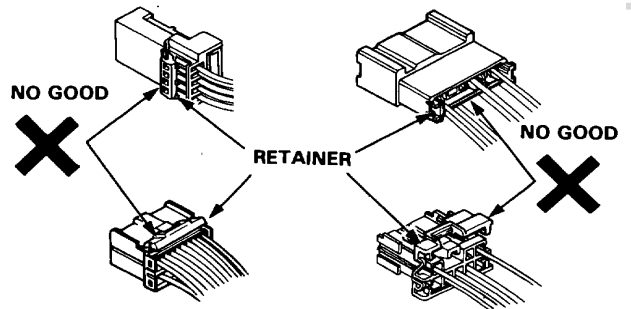
- Before connecting connectors, check to see that the terminals are in place and not bent or distorted.

NO GOOD



GOOD

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



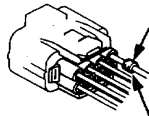
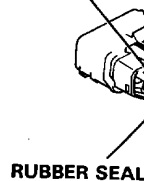
- Example of waterproof connector:



NO GOOD

RETAINER

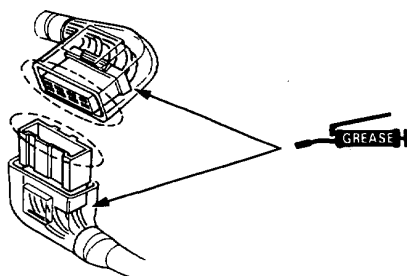
RUBBER SEAL



NO GOOD



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



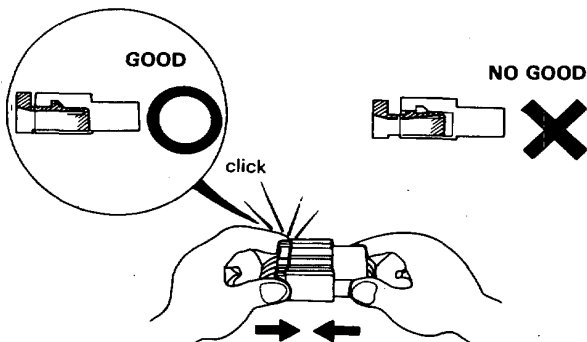
- Insert the connector tightly and make sure it is securely locked.
- Check all the wire harnesses are connected.
- There are two types of locking tab: one that you have to push and the other you should not touch when connecting the connector. Check the shape of the locking tab before connecting.
- The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



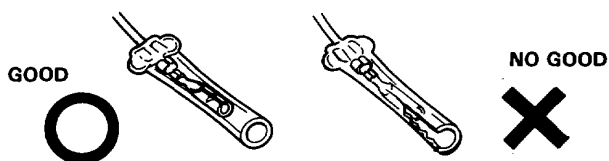
- The locking tab with an angle end should be pushed when connecting.



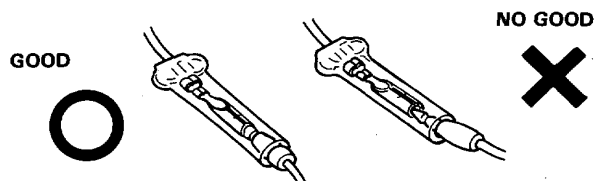
- Insert connectors fully until they will no longer go.
- The connectors must be aligned and engaged securely.
- Do not use wire harnesses with a loose wire or connector.



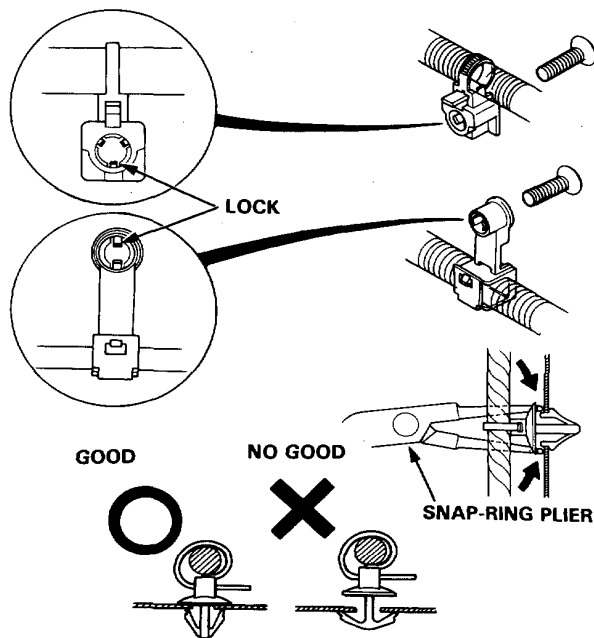
- Before connecting, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover faces down.



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

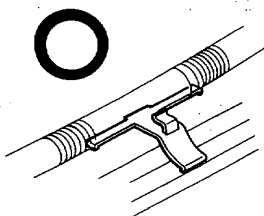


(cont'd)

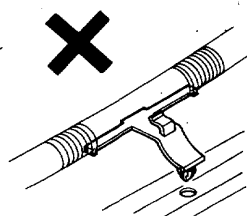
Preparation of Work

Electrical (cont'd)

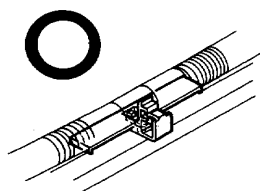
GOOD



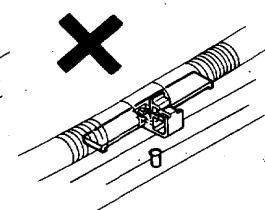
NO GOOD



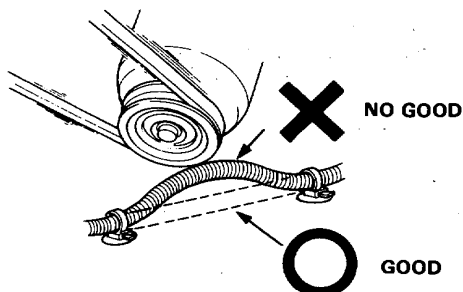
GOOD



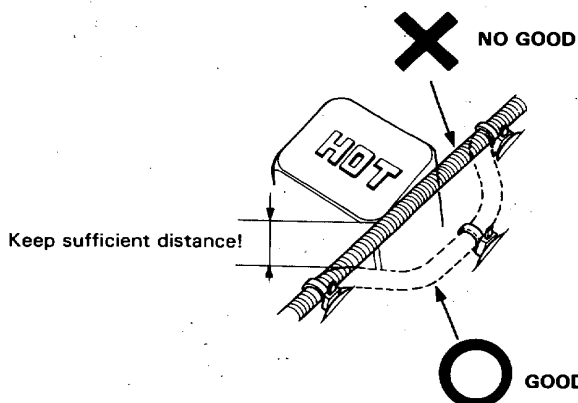
NO GOOD



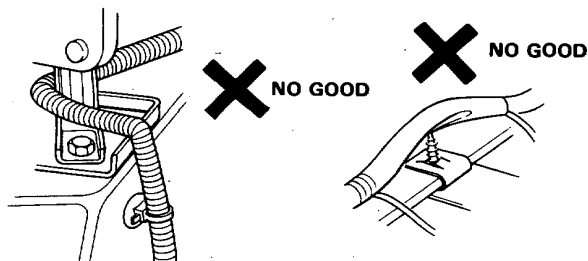
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



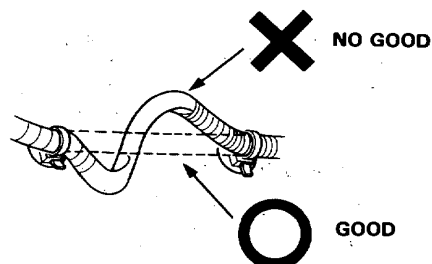
- Always keep a safe distance between wire harnesses and any heated parts.



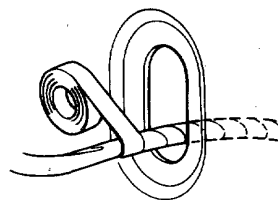
- Do not bring wire harnesses in direct contact with sharp edges or corners.
- Also avoid contact with the projected ends of bolts, screws and other fasteners.



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



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

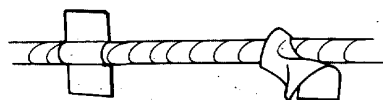


- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol if necessary.

GOOD

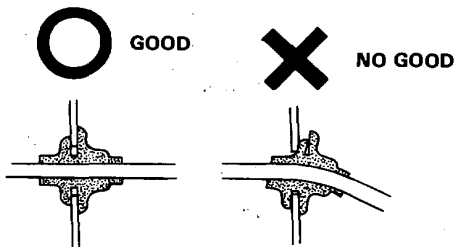


NO GOOD

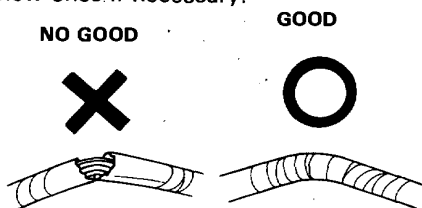




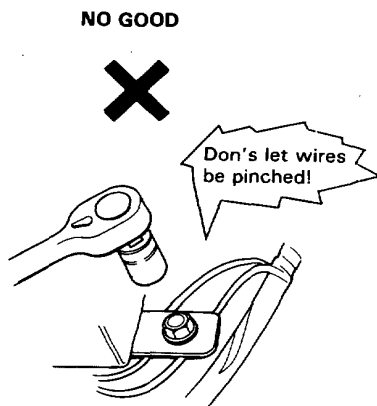
- Seat grommets in their grooves properly.



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

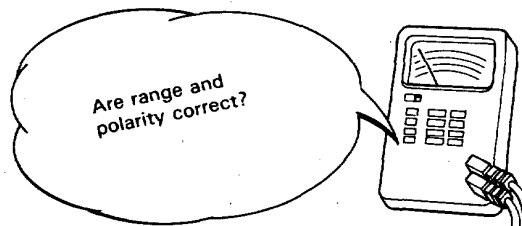


- After installing parts, make sure that wire harnesses are not pinched.

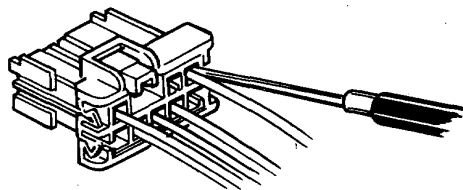


- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses should be routed so that they are not pulled taut, slackened excessively, pinched, or interfering with adjacent or surrounding parts in all steering positions.

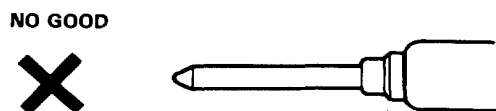
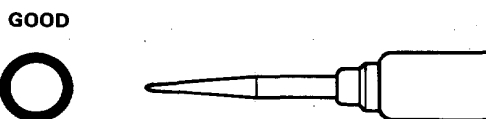
- When using the Service Tester, follow the manufacturer's instructions and those described in the Shop Manual.



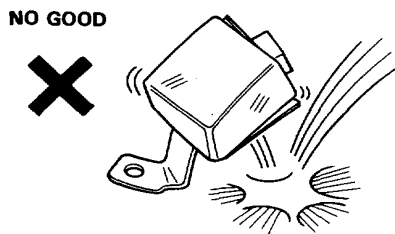
- Always insert the probe of the tester from the wire harness side (except waterproof connector).



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



- Do not drop parts.



Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.



:Apply Automatic Transmission Fluid.



: Apply Power Steering Fluid.



:Apply or check vacuum.

①, ②, ③, ...

①, ②, ③, ...

:Sequence for removal or installation.

Abbreviation

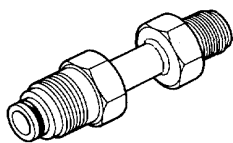
4D	4-door Saloon
5D	5-door Saloon
A/C	Air Conditioner
A/T	Automatic Transmission
ATF	Automatic Transmission Fluid
B or BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	Electronic Control Unit
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L	Left
LHD	Left Hand Drive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

P	Parking
R	Reverse
N	Neutral
D	Drive Position (1st~4th)
D	Drive Position (1st~3rd)
2	2nd speed

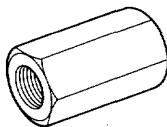
Special Tools

New Tools

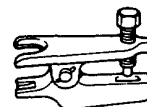
Ref. No.	Tool Number	Description	Q'ty	Remarks	section
①	07LAK-SK30110	P/S Pump Joint Adaptor	1		11
②	07LAK-SK30120	P/S Hose Joint Adaptor	1		11
③	18G 1584	Ball Joint Separator	1		10,11,12
④	18G 1596	Piston Retractor	1		13
⑤	18G 1600	Lower Arm Bush Front Remover/Replacer	1		12
⑥	18G 1602	Lower Arm Bush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



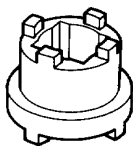
①



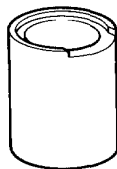
②



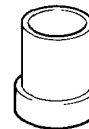
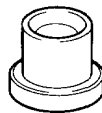
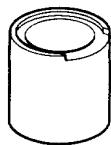
③



④



⑤



⑥



5. Engine

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD-PH70100	Valve Guide Seal Installer	1	For DOHC
②	07HAD-PJ70100	Driver	1	For crankshaft seal (pulley side)
③	07HAD-PJ70200	Valve Guide Seal Installer	1	For SOHC
④	07HAH-PJ70100	Valve Guide Reamer, 5.5 mm	1	For SOHC
⑤	07HAJ-SG90100	Radiator Tester Attachment A	1	
⑥	07HAJ-SG90200	Radiator Tester Attachment B	1	
⑦	07JAB-0010000	Crank Pulley Holder Set	1	
⑦-1	07JAA-0010100	Socket Wrench 17 mm	(1)	Component tools
⑦-2	07JAB-0010100	Pulley Holder Attachment	(1)	
⑦-3	07JAB-0010200	Handle	(1)	
⑧	07JAZ-SH20100	RPM Connecting Adaptor	1	
⑨	07JGG-0010100	Belt tension Gauge	1	
⑩	07KAK-SJ40100	Engine Tilt Hanger Set	1	
⑪	07406-0030000	Oil Pressure Gauge Adaptor	1	For pressure measurement
⑫	07742-0010100	Valve Guide Driver, 5.5 mm	1	For SOHC
⑬	07743-0020000	Adjustable Valve Guide Driver	1	
⑭	07744-0010400	Pin Driver 5.0 mm	2	For DOHC
⑮	07749-0010000	Driver	1	
⑯	07757-0010001	Valve Spring Compressor	1	07957-3290001 may also be used.
⑰	07912-6110001	Oil Filter Socket Wrench	1	Used for Japan-made oil filter
⑱		Oil Filter Wrench (Apply from LABINAL S.A.)	1	Used for France-made oil filter
⑲	07924-PD20003	Ring Gear Holder	1	07924-PD20002 may also be used.
⑳	07942-0010200	Valve Guide Driver 6.6 mm	1	For DOHC
㉑	07942-0110000	Valve Guide Driver 6.6 mm	1	For DOHC
㉒	07944-6110200	Pin Driver, 8 mm	1	
㉓	07948-SB00800	Driver Seal Attachment	1	For crankshaft seal (Clutch side)
㉔	07973-PE00200	Pilot Collar	1	
㉕	07973-PE00302	Adjustable Piston Pin Driver	1	
㉖	07973-PE00400	Piston Pin Base Insert	1	
㉗	07973-SB00100	Piston Base Head	1	
㉘-1	07973-6570500	Piston Base	(1)	Component tools
㉘-2	07973-6570600	Base Spring	(1)	
㉙	07984-657010C	Valve Guide Reamer 6.6 mm	1	For DOHC

6. Fuel and Emissions

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

Special Tools

7. Clutch

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

8. Manual Transmission

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

9. Automatic Transmission

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



10. Driveshafts

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

11. Steering

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

Special Tools

12. Suspension

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

13. Brakes (without ALB)

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

13. Brakes (with ALB)

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



15. Heater and Air Conditioner

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

16. Electrical

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

Standards and Service Limits

Unit: mm (in.)

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 (3.7381-3.7421)	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.	0.06 (0.002)
	Cam lobe height			—
	1.4ℓ (2-Carb.)	IN	36.603 (1.4411)	—
	1.5ℓ (PGM-FI)	EX M/T	36.747 (1.4467)	—
		A/T	36.750 (1.4468)	—
	1.6ℓ (2-Carb.)	IN	36.782 (1.4481)	—
Valve		EX	36.947 (1.4546)	—
	1.6ℓ (PGM-FI)	IN	36.782 (1.4481)	—
		EX	36.947 (1.4546)	—
	Valve clearance	IN	0.17-0.22 (0.007-0.009)	—
		EX	0.22-0.27 (0.009-0.011)	—
	Valve stem O.D.	IN	5.48-5.49 (0.2157-0.2161)	5.45 (0.2146)
		EX	5.45-5.46 (0.2147-0.2150)	5.42 (0.2134)
	Stem-to-guide clearance	IN	0.02-0.05 (0.001-0.002)	0.08 (0.003)
Valve seat		EX	0.45-0.08 (0.002-0.003)	0.11 (0.004)
	Stem installed height	IN	46.985-47.455 (1.8498-1.8683)	47.705 (1.8781)
		EX	48.965-49.435 (1.9278-1.9562)	49.685 (1.9561)
	Width	IN	0.85-1.15 (0.033-0.045)	1.6 (0.06)
		EX	1.25-1.55 (0.049-0.061)	2.0 (0.08)
	Free length			
	1.4ℓ (2-Carb.)	IN	48.58 (1.9126)	47.64 (1.8756)
		EX	48.49 (1.9091)	47.68 (1.8772)
Valve spring	Others	IN	48.58 (1.9126)	47.64 (1.8756)
		EX	49.19 (1.9366)	48.32 (1.9024)
Valve guide	I.D.	IN and EX	5.51-5.53 (0.2169-0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-aft clearance	IN	0.017-0.050 (0.0007-0.0020)	0.08 (0.003)
		EX	0.018-0.054 (0.0007-0.0021)	0.08 (0.003)

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 (5.1949–5.1988)	0.05 (0.002)
Camshaft	End play Oil clearance Runout Cam lobe height	IN EX	0.05–0.15 (0.002–0.006) 0.050–0.089 (0.002–0.004) 0–0.03 (0–0.001) max. 33.021 (1.3000) 32.382 (1.2749)	0.5 (0.02) 0.15 (0.006) 0.06 (0.002) —
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance Stem installed height	IN EX IN EX IN EX	0.12–0.17 (0.005–0.007) 0.14–0.19 (0.006–0.008) 6.58–6.59 (0.2591–0.2595) 6.55–6.56 (0.2579–0.2583) 0.02–0.05 (0.001–0.002) 0.05–0.08 (0.002–0.003) 45.545–46.015 (1.7931–1.8116) 44.735–45.205 (1.7612–1.7797)	— — 6.55 (0.2579) 6.52 (0.2567) 0.08 (0.003) 0.11 (0.005) 46.265 (1.8215) 45.455 (1.7896)
Valve seat	Width	IN and EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length	IN EX	47.49 (1.8697) 46.89 (1.8461)	46.46 (1.8291) 45.93 (1.8083)
Valve guide	I.D.	IN and EX	6.61–6.63 (0.2602–0.2610)	6.55 (0.2579)

5. Engine/Engine Block

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface Bore diameter Bore taper Reboring limit		— 75.00–75.02 (2.9528–2.9535) — —	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 (2.9516) 0.05 (0.002) 0.13 (0.005) 0.13 (0.005)
Piston ring	Ring end gap	Top 2nd Oil	0.15–0.30 (0.006–0.012) 0.30–0.45 (0.012–0.018) 0.20–0.80 (0.008–0.031)	0.6 (0.02) 0.6 (0.02) 0.9 (0.04)
Connecting rod	Pin-to-rod interference Large end bore diameter 1.4 ℓ 1.5 ℓ 1.6 ℓ End play installed on crankshaft		0.014–0.040 (0.0006–0.0016) Nominal 43.0 (1.69) Nominal 45.0 (1.77) Nominal 48.0 (1.89) 0.15–0.30 (0.006–0.012)	— — — — 0.40 (0.016)
Crankshaft	Main journal diameter except 1.6 ℓ 1.6 ℓ Taper/out-of-round, main journal Rod journal diameter 1.4 ℓ 1.5 ℓ 1.6 ℓ Taper/out-of-round, rod journal End play Runout		44.976–45.000 (1.7707–1.7718) 54.976–55.000 (2.1644–2.1654) 0.0025 (0.0001) max. 39.976–40.000 (1.5739–1.5748) 41.976–42.000 (1.6526–1.6535) 44.976–45.000 (1.7707–1.7765) 0.0025 (0.0001) max. 0.10–0.35 (0.004–0.014) 0.03 (0.0012) max.	— — 0.010 (0.004) — — — 0.010 (0.004) 0.45 (0.018) 0.06 (0.0024)
Bearings	Main bearing-to-journal oil clearance except 1.6 ℓ (No. 1, 5 journals) (No. 2, 3, 4 journals) 1.6 ℓ (No. 1, 5 journals) (No. 2, 4 journals) (No. 3 journal) Rod bearing-to-journal oil clearance		0.018–0.036 (0.0007–0.0014) 0.024–0.042 (0.0010–0.0017) 0.018–0.036 (0.0007–0.0014) 0.024–0.042 (0.0010–0.0017) 0.030–0.048 (0.0012–0.0019) 0.020–0.038 (0.0008–0.0015)	0.05 (0.002) 0.05 (0.002) 0.05 (0.002) 0.05 (0.002) 0.05 (0.002) 0.05 (0.002)

Standards and Service Limits

Unit: mm (in.)

5. Engine/Engine Lubrication

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

5. Engine/Cooling

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

6. Fuel and Emission (PGM-FI)

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

6. Fuel and Emissions (Carbureted Engine)

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure kPa (kg/cm ² , psi) Displacement cc/minutes	6.8-22.6 (0.07-0.23, 1.0-3.2) 833.3 min.
Fuel Tank	Capacity ℓ (US gal, Imp gal)	55 (14.5, 12.1)
Fast idle		See section 6
Idle speed	With headlights and cooling fan off min ⁻¹ (rpm)	750 ± 50 700 ± 50
Idle CO	%	below 1.0

7. Clutch

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

8. Manual Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	1.8 (1.9, 1.6) at oil change 1.9 (2.0, 1.7) at assembly	
Mainshaft	End play Diameter of ball bearing contact area Diameter of third gear contact area Diameter of 4th, 5th gear contact area Diameter of ball bearing contact area Runout	0.11-0.18 (0.004-0.007) 25.977-25.990 (1.0227-1.0232) 33.984-34.000 (1.3380-1.3386) 26.980-26.993 (1.0622-1.0627) 21.987-22.000 (0.8656-0.8661) 0.02 (0.0008) max.	Adjust with a shim 25.92 (1.020) 33.93 (1.336) 26.93 (1.060) 21.93 (0.863) 0.05 (0.002)
Mainshaft third and fourth gears	I.D. End play Thickness	3rd 4th 3rd 4th 39.009-39.025 (1.5358-1.5364) 0.06-0.21 (0.0024-0.008) 0.06-0.19 (0.0024-0.0075) 30.22-30.27 (1.1898-1.1917) 30.12-30.17 (1.1858-1.1878)	39.07 (1.538) 0.33 (0.013) 0.31 (0.012) 30.15 (1.187) 30.05 (1.183)
Mainshaft fifth gears	I.D. End play Thickness	37.009-37.025 (1.4570-1.4577) 0.06-0.19 (0.0024-0.0075) 28.42-28.47 (1.1189-1.1209)	37.07 (1.459) 0.31 (0.012) 28.35 (1.116)
Countershaft	End play Diameter of needle bearing contact area Diameter of ball bearing contact area Diameter of low gear contact area Runout	0.17-0.38 (0.0067-0.0150) 30.000-30.015 (1.1811-1.817) 24.980-24.993 (0.9835-0.9840) 35.984-36.000 (1.4167-1.4173) 0.02 (0.0008) max.	0.53 (0.021) 29.95 (1.179) 24.93 (0.981) 35.93 (1.415) 0.05 (0.002)
Countershaft low gear	I.D. End play, after tightening with specified torque Thickness	41.009-41.025 (1.6145-1.6152) 0.03-0.10 (0.0012-0.0039) 29.41-29.44 (1.1579-1.1591)	41.07 (1.617) 0.22 (0.009) 29.36 (1.156)

Standards and Service Limits

Unit: mm (in.)

8. Manual Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Countershaft second gear	I.D. End play, after tightening with specified torque Thickness	44.009–44.025 (1.7326–1.7333) 0.03–0.11 (0.0012–0.0043) 29.92–29.97 (1.1780–1.1799)	44.07 (1.735) 0.23 (0.009) 29.85 (1.175)
Spacer collar (Countershaft second gear)	I.D. O.D. Length	32.975–32.985 (1.2982–1.2986) 38.989–39.000 (1.5350–1.5354) 30.03–30.06 (1.1823–1.1835)	33.03 (1.300) 38.93 (1.533) 30.01 (1.181)
Spacer collar (Mainshaft fourth and fifth gears)	I.D. O.D. 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 paul groove width Fork-to-reverse idler gear clearance Groove width Fork-to-fifth/reverse shift piece pin clearance	12.7–13.0 (0.500–0.512) 0.5–1.1 (0.020–0.043) 7.05–7.25 (0.278–0.285) 0.05–0.35 (0.002–0.014)	— 1.8 (0.071) — 0.5 (0.02)
Shift arm A	Diameter of shift rod contact area Shift arm A-to-shift rod clearance	13.005–13.130 (0.5120–0.5169) 0.005–0.230 (0.0002–0.0091)	— 0.35 (0.0138)
Shift arm B	Diameter of shift arm shaft contact area Shift arm B-to-shift arm shaft clearance Shift arm B-to-shift piece clearance Shift piece diameter of shift fork shaft contact area	13.973–14.000 (0.5501–0.5512) 0.013–0.070 (0.0005–0.0028) 0.2–0.5 (0.0079–0.0197) 12.9–13.0 (0.5079–0.5118)	— 0.16 (0.0063) 0.62 (0.0244) 12.78 (0.5031)
Ring gear	Backlash	0.070–0.130 (0.0028–0.0051)	0.18 (0.007)
Differential carrier	Pinionshaft bore diameter Carrier-to-pinionshaft clearance Driveshaft bore diameter 1.4 ℓ (2-Carb.), 1.5 ℓ (PGM-FI), 1.6 ℓ (2-Carb.) 1.6 ℓ (PGM-FI), 1.6 ℓ DOHC Carrier-to-driveshaft clearance Carrier-to-intermediate shaft clearance 1.6 ℓ (PGM-FI), 1.6 ℓ DOHC only Side clearance	18.000–18.018 (0.7087–0.7094) 0.017–0.047 (0.0007–0.0019) 26.025–26.045 (1.0246–1.0254) 28.025–28.025 (1.1033–1.1041) 0.045–0.086 (0.0017–0.0034) 0.075–0.111 (0.0030–0.0044) 0.15 max.	— 0.095 (0.004) — — 0.14 (0.006) 0.16 (0.006) —
Differential pinion gear	Backlash Pinion gear bore diameter Pinion gear-to-pinionshaft clearance	0.05–0.15 (0.002–0.006) 18.042–18.066 (0.7103–0.7113) 0.059–0.095 (0.0023–0.0037)	Adjust with a washer — 0.15 (0.006)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.4 (2.5, 2.1) at oil change 5.4 (5.7, 4.8) at assembly	
Hydraulic pressure	Line pressure at 2,000 min ⁻¹ (rpm)	785-834 kPa (8.0-8.5 kg/cm ² , 114-121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)
	2nd, 3rd, 4th clutch pressure at 2,000 min ⁻¹ (rpm) in $\overline{D_2}$ and $\overline{D_3}$	412 kPa (4.2 kg/cm ² , 60 psi) Throttle control lever full closed	363 kPa (3.7 kg/cm ² , 53 psi) (closed)
		785-834 kPa (8.0-8.5 kg/cm ² , 114-121 psi) Throttle control lever open 2/8 or more	736 kPa (7.5 kg/cm ² , 107 psi) (2/8 open)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) in $\overline{2}$	785-834 kPa (8.0-8.5 kg/cm ² , 114-121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)
	1st clutch pressure at 2,000 min ⁻¹ (rpm)		
	Governor pressure at 60 km/h (37.5 mph) 1.4 ℓ (2-Carb.) 1.6 ℓ (2-Carb.) 1.5 ℓ (PGM-FI), 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC	151-161 kPa (1.54-1.64 kg/cm ² , 22-23 psi) 148-158 kPa (1.51-1.61 kg/cm ² , 21-23 psi) 161-171 kPa (1.64-1.75 kg/cm ² , 23-25 psi) 165-176 kPa (1.68-1.78 kg/cm ² , 24-25 psi)	146 kPa (1.49 kg/cm ² , 21 psi) 143 kPa (1.46 kg/cm ² , 21 psi) 156 kPa (1.59 kg/cm ² , 23 psi) 160 kPa (1.63 kg/cm ² , 23 psi)
	Throttle pressure B Full closed Full open	0 785-834 kPa (8.0-8.5 kg/cm ² , 114-121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)
	Throttle pressure A Full closed Full open 1.4 ℓ (2-Carb.) 1.6 ℓ (2-Carb.) 1.5 ℓ (PGM-FI) 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC	0-4.9 kPa (0-0.05 kg/cm ² , 0-0.7 psi) 505-520 kPa (5.15-5.30 kg/cm ² , 73-75 psi) 456-471 kPa (4.65-4.80 kg/cm ² , 66-68 psi) 477-490 kPa (4.85-5.00 kg/cm ² , 69-71 psi)	— 500 kPa (5.1 kg/cm ² , 73 psi) 451 kPa (4.6 kg/cm ² , 65 psi) 471 kPa (4.8 kg/cm ² , 68 psi)
Stall speed	min ⁻¹ (rpm)	2,300-2,900	—
Clutch	Clutch initial clearance 1 st 2 nd 3 rd, 4 th	0.65-0.85 (0.026-0.033) 0.65-0.85 (0.026-0.033) 0.40-0.60 (0.016-0.024)	— — —
	Clutch return spring free length 1 st except 1 st	31.0 (1.22) 30.5 (1.20) 1.88-2.0 (0.074-0.079)	29.0 (1.14) 28.5 (1.12) Until grooves worn out.
	Clutch disc thickness	1.55-1.65 (0.061-0.065)	Discoloration
	Clutch plate thickness except 1 st	1.95-2.05 (0.077-0.081)	
	Clutch end plate thickness 1.4 ℓ (2-Carb.)	2.05-2.15 (0.081-0.085)	
	Mark 1	2.20-2.30 (0.087-0.091)	
	Mark 2	2.35-2.45 (0.093-0.096)	
	Mark 3	2.50-2.60 (0.098-0.102)	
	Mark 4	2.65-2.75 (0.104-0.108)	
	Mark 5	2.80-2.90 (0.110-0.114)	
	Mark 11	2.95-3.05 (0.116-0.120)	
	Mark 12	3.10-3.20 (0.122-0.126)	
	Mark 13	3.25-3.35 (0.128-0.132)	
	Mark 14	3.40-3.50 (0.134-0.138)	
	Mark 15	3.55-3.65 (0.140-0.144)	
	Mark 16		

(cont'd)

Standards and Service Limits

Unit: mm (in)

9. Automatic Transmission (cont'd)

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

9. Automatic Transmission

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

(cont'd)

Standards and Service Limits

Unit: mm (in)

Automatic Transmission (cont'd)

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

(FI): (Fuel-Injected)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)			
		Wire Diameter	O.D.	Free Length	No. of Coils
Springs	Shift timing valve spring	0.9 (0.04)	8.6 (0.34)	42.9 (1.69)	21.4
	Kick down valve spring	0.9 (0.04)	10.1 (0.40)	40.8 (1.61)	14.5
	Reverse control spring	0.7 (0.03)	7.6 (0.30)	37.2 (1.46)	15.3
	L/C cut spring	0.7 (0.03)	7.6 (0.30)	29 (1.14)	18
	3-2 timing valve spring	1.2 (0.05)	7.7 (0.30)	45.1 (1.78)	19.8
	Low oneway ball spring	0.29 (0.01)	4.0 (0.16)	14 (0.55)	13
	4th exhaust spring	0.9 (0.04)	6.1 (0.24)	43.7 (1.72)	20.3
	Servo control valve spring	1.0 (0.04)	7.6 (0.30)	44 (1.73)	18.2
	Reverse timing spring	0.7 (0.03)	5.6 (0.22)	43.8 (1.72)	21.7
		STANDARD (NEW)		SERVICE LIMIT	
Ring gear	Backlash	0.086-0.143 (0.0034-0.0056)		0.25 (0.01)	
Differential carrier	Pinionshaft bore diameter	18.000-18.018 (0.7087-0.7094)		—	
	Carrier-to-pinionshaft clearance	0.017-0.047 (0.0007-0.0019)		0.095 (0.004)	
	Driveshaft bore diameter	—		—	
	1.4 $\pm$, 1.5 $\pm$, 1.6 $\pm$ (2-Carb.)	26.025-26.045 (1.0246-1.0254)		—	
	1.6 $\pm$ (PGM-FI), 1.6 $\pm$ DOHC	28.025-26.045 (1.1033-1.1041)		—	
	Carrier-to-driveshaft clearance	0.045-0.111 (0.0030-0.0044)		0.14 (0.006)	
Differential pinion gear	Carrier-to-intermediate shaft clearance	0.075-0.111 (0.0030-0.0044)		0.16 (0.006)	
	1.6 $\pm$ (PGM-FI), 1.6 DOHC only	0.15 max.		—	
	Side clearance	—		—	
		—		—	
Differential pinion gear	Backlash	0.05-0.15 (0.002-0.006)		Adjust with a washer	
	Pinion gear bore diameter	18.042-18.066 (0.7103-0.7113)		—	
	Pinion gear to pinionshaft clearance	0.059-0.095 (0.0023-0.0037)		0.15 (0.006)	

11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
	Starting torque of power steering wheel N (kg, lb)	27-30 (2.7-3.0, 6.0-6.6)	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft) with P/S	0.49-1.67 (0.05-0.17, 0.36-1.27) 0.98 (0.1, 0.72) max.	—
Pump	Pump pressure with valve closed (Oil temp./ speed: 40°C (104°F) min/idle. Do not run for more than 5 seconds) kPa (kg/cm ² , psi)	6,566-7,154 (67-73, 952-1,038)	
Power steering fluid	Fluid capacity ℓ (US qt, Imp qt)	Reservoir: 0.4 (0.42, 0.35) At change: approx. 1.2 (1.3, 1.1)	
Power steering belt	Deflection between pulleys with 98N (10kg, 22lb) force Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)	9-12 (0.35-0.47) for used belt 7-10 (0.28-0.39) for new belt 343-490 (35-50, 77-110) for used belt 441-686 (45-70, 99-154) for new belt	

Standards and Service Limits

12. Suspension

12. Suspension					
	MEASUREMENT		STANDARD (NEW)		
Wheel alignment	Total toe	(°)	Front OUT 0°04'±8' OUT 0.7±1.4 (0.028±0.055)	Rear IN 0°13.5'±8' IN 2.3±1.4 (0.091±0.055)	
	Camber		-0°20'±30'	-0°26'±30'	
	Side slip		0±3 (0±0.12)		
	Turning angle (max.)				
	Inward wheel		41°30'±2°		
	Outward wheel		33°30'±2°		
			STANDARD (NEW)		SERVICE LIMIT
Wheel	Rim runout	Steel Aluminum	0—1.0 (0—0.039) 0—0.7 (0—0.028)	2.0 (0.08) 1.5 (0.06)	
Wheel bearing	End play	Front Rear	0 0	0.05 0.05	

13. Brake

13. Brake					
	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT	
Parking brake lever	Play in stroke	200N (20 kg, 44 lbs)	To be locked when pulled 6-10 notches		
Foot brake pedal	Pedal height		161 (6.3) from floor	—	
	Free play		1-5 (0.04-0.20)	5 (0.20)	
Master cylinder	Piston-to-push rod clearance		0-0.4 (0-0.016)	—	
Disc brake	Disc thickness	Front	21.0 (0.827)	19.0 (0.748)	
		Rear	10.0 (0.394)	8.0 (0.315)	
	Disc runout	Front	—	0.10 (0.004)	
		Rear	—	0.15 (0.006)	
	Disc parallelism		—	0.015 (0.0006)	
	Pad thickness	Front	11.0 (0.433)	1.6 (0.063)	
		Rear	8.0 (0.315)	1.6 (0.063)	
Brake Drum	I.D.		203 (7.99)	204 (8.03)	
	Lining thickness		5.0 (0.20)	2.0 (0.08)	
Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kg/cm ² (psi)	
				without ALB	with ALB
		0	20 (44)	13.0 (184) min.	10.0 (142) min.
		300	20 (44)	50.0 (711) min.	56.6 (805) min.
	500	20 (44)	74.0 (1,052) min.	87.7 (1,247) min.	

15. Air Conditioner

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

16. Electrical

16. Electrical

	MEASUREMENT		STANDARD (NEW)			
Ignition coil	Rated voltage		12 Volts			
	Primary winding resistance		PGM-FI: 0.3—0.5 ohms 2-Carb: 0.6—0.7 ohms			
	Secondary winding resistance		PGM-FI: 9,440—14,160 ohms 2-Carb: 14,400—21,600 ohms			
Ignition wire	Resistance		25,000 ohms max.			
Spark plug	Type	NGK	1.5 ℓ, 1.6 ℓ (PGM-FI) 1.6 ℓ DOHC* ¹	BCPR6E-11	BCPR7E-11, BCPR6EY-N11 BCPR7EY-N11	
			1.4 ℓ, 1.6 ℓ (2-Carb)	BCPR6E-11	BCPR7E-11	
			1.6 ℓ DOHC* ²	BCPR6E-11	BCPR7E-11	
		ND	1.5 ℓ, 1.6 ℓ (PGM-FI), 1.6 ℓ DOHC* ¹	Q20PR-U11	Q22PR-U11	
			1.4 ℓ, 1.6 ℓ (2-Carb)	Q20PR-U11	Q22PR-U11	
			1.6 ℓ DOHC* ²	Q20PR-UL11	Q20PR-U11, Q22PR-U11 Q22PR-UL11	
		*1: with CATA *2: without CATA				
	Gap		1.0—1.1 (0.039—0.043)			
Ignition timing	At idling	PGM-FI engine Carbureted engine	SOHC: 18° ± 2° (Red) BTDC DOHC: 16° ± 2° (Red) BTDC 16° ± 2° (Red) BTDC			
Battery	Lighting capacity (20-hour rate) Starting capacity (Voltage after 5 sec.)		47 ampere hours 8.6 V min. at 300 ampere draw /—15°C			
Alternator			ND		MITSUBISHI	
	Output		13.5V/60A			
	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Coil resistance (rotor)		2.8—3.0 ohm	±0.1 ohm	3.4—3.8 ohm	±0.2 ohm
	Slip ring O.D.		32.5 (1.28)	32.1 (1.26)	22.7 (0.89)	22.2 (0.87)
	Brush length		13.5 (0.53)	4.5 (0.18)	22 (0.87)	8 (0.31)
	Brush Spring tension		300—500 g (10.6—17.6 oz)	—	300—450 g (10.6—15.9 oz)	—
Alternator belt	Deflection between pulleys with 98N (10kg, 22lb) force Belt tension between pulleys N (kg, lb) (measured with belt tension gauge)		9—11 (0.35—0.43) for used belt 7—9 (0.28—0.35) for new belt 294—392 (30—40, 66—88) with used belt 392—588 (40—60, 88—132) with new belt			
Starting motor			ND 1.2 kw		MITSUBA 1.0 kw, 1.4 kw	
	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth		0.5—0.8 (0.020—0.031)	0.2 (0.008)	0.4—0.5 (0.016—0.020)	0.15 (0.006)
	Commutator		0—0.02 (0.008)	0.05 (0.002)	0—0.02 (0.0008)	0.05 (0.002)
	Commutator O.D.		29.9—30.0 (1.18)	29.0 (1.14)	28.0—28.1 (1.10—1.11)	27.5 (1.08)
	Brush length		12.5—13.5 (0.49—0.53)	8.5 (0.33)	14.3—14.7 (0.56—0.58)	9.3 (0.37)
	Spring pressure (new)		18.1—23.5 N (1.85—2.4 kg, 4.1—5.3 lb)	—	20.1—26.5 N (2.05—2.7 kg, 4.5—6.0 lb)	—

Design Specifications

	ITEM		METRIC	ENGLISH	NOTES
DIMENSIONS	Overall Length	5D	4,265 mm	167.9 in	KE, KF, KB, KR KX, KS, KG
		4D	4,410 mm	173.6 mm	
	Overall Width		1,690 mm	66.5 in	
	Overall Height		1,395 mm	54.9 in	
	Wheelbase		2,550 mm	100.4 in	
	Track, Front/Rear		1,475/1,470 mm	58.1/57.9 in	
	Ground Clearance		160 mm	6.3 in	
	Turning Circle Diameter (at body end)		150 mm	5.9 in	
	Seating Capacity		10.2 m	33.5 ft	
			Five		
Weight (5-door)	Curb Weight				
	DX 1.4ℓ 2-Carb.	M/T	1,030 kg	2,271 lb	} KB,KE,KF
		A/T	1,050 kg	2,315 lb	
	DX 1.5ℓ PGM-FI	M/T	1,035 kg	2,282 lb	} KG
		A/T	1,055 kg	2,326 lb	
	LX 1.6ℓ 2-Carb.	M/T	1,060 kg	2,337 lb	} KR
		A/T	1,080 kg	2,381 lb	
	EX 1.6ℓ 2-Carb.	M/T	1,075 kg	2,370 lb	} KB, KE, KF
		A/T	1,095 kg	2,414 lb	
	EX 1.6ℓ PGM-FI	M/T	1,085 kg	2,391 lb	} KE, KF
		A/T	1,105 kg	2,436 lb	
	SX 1.6ℓ DOHC	M/T	1,100 kg	2,425 lb	} KG, KX
		A/T	1,120 kg	2,469 lb	
	SX 1.6ℓ DOHC with CATA	M/T	1,100 kg	2,425 lb	} KS
		M/T	1,110 kg	2,447 lb	
	Weight Distribution (Front/Rear)				
	DX 1.4ℓ 2-Carb.	M/T	590/440 kg	1,301/ 970 lb	} KB
		A/T	610/440 kg	1,345/ 970 lb	
	DX 1.5ℓ PGM-FI	M/T	595/440 kg	1,312/ 970 lb	} KE, KF
		A/T	615/440 kg	1,356/ 970 lb	
	LX 1.6ℓ 2-Carb.	M/T	615/445 kg	1,356/ 981 lb	} KG
		A/T	635/445 kg	1,367/ 981 lb	
	EX 1.6ℓ 2-Carb.	M/T	620/455 kg	1,400/ 981 lb	} KR
		A/T	640/455 kg	1,411/ 981 lb	
	EX 1.6ℓ PGM-FI	M/T	625/460 kg	1,378/1,014 lb	} KB, KE, KF
		A/T	645/460 kg	1,422/1,014 lb	
	SX 1.6ℓ DOHC	M/T	635/465 kg	1,400/1,025 lb	} KE, KF
		A/T	655/465 kg	1,444/1,025 lb	
	SX 1.6ℓ DOHC with CATA	M/T	635/465 kg	1,400/1,025 lb	} KB, KS
		M/T	640/470 kg	1,411/1,036 lb	
	Max. Permissible Weight (European)				
	DX, LX		1,530 kg	3,373 lb	} * KS (Sweden)
	EX, SX		1,580 kg	3,483 lb	
	EX*1	M/T	1,520 kg	3,351 lb	
	SX*1	A/T	1,540 kg	3,395 lb	
Weight (4-door)	Curb Weight				
	DX 1.4ℓ 2-Carb.	M/T	1,020 kg	2,249 lb	} KB,KF
		A/T	1,040 kg	2,293 lb	
	LX 1.6ℓ 2-Carb.	M/T	1,050 kg	2,315 lb	} KB,KE
		A/T	1,070 kg	2,359 lb	
	EX 1.6ℓ 2-Carb.	M/T	1,065 kg	2,348 lb	} KF,KR
		A/T	1,085 kg	2,392 lb	
	SX 1.6ℓ DOHC	M/T	1,090 kg	2,403 lb	} KE,KF
		A/T	1,110 kg	2,447 lb	
	Weight Distribution (Front/Rear)				
	DX 1.4ℓ 2-Carb.	M/T	590/430 kg	1,301/948 lb	} KB,KF
		A/T	610/430 kg	1,345/948 lb	
	LX 1.6ℓ 2-Carb.	M/T	615/435 kg	1,356/959 lb	} KB,KE
		A/T	635/435 kg	1,400/959 lb	
	EX 1.6ℓ 2-Carb.	M/T	620/445 kg	1,367/981 lb	} KF,KR
		A/T	640/445 kg	1,411/981 lb	
	SX 1.6ℓ DOHC	M/T	635/455 kg	1,400/1,003 lb	} KE,KF
		A/T	655/455 kg	1,440/1,003 lb	
	Max. Permissible Weight (European)				
	DX, LX		1,530 kg	3,373 lb	} KB,KE
	EX, SX		1,580 kg	3,483 lb	

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

Design Specifications

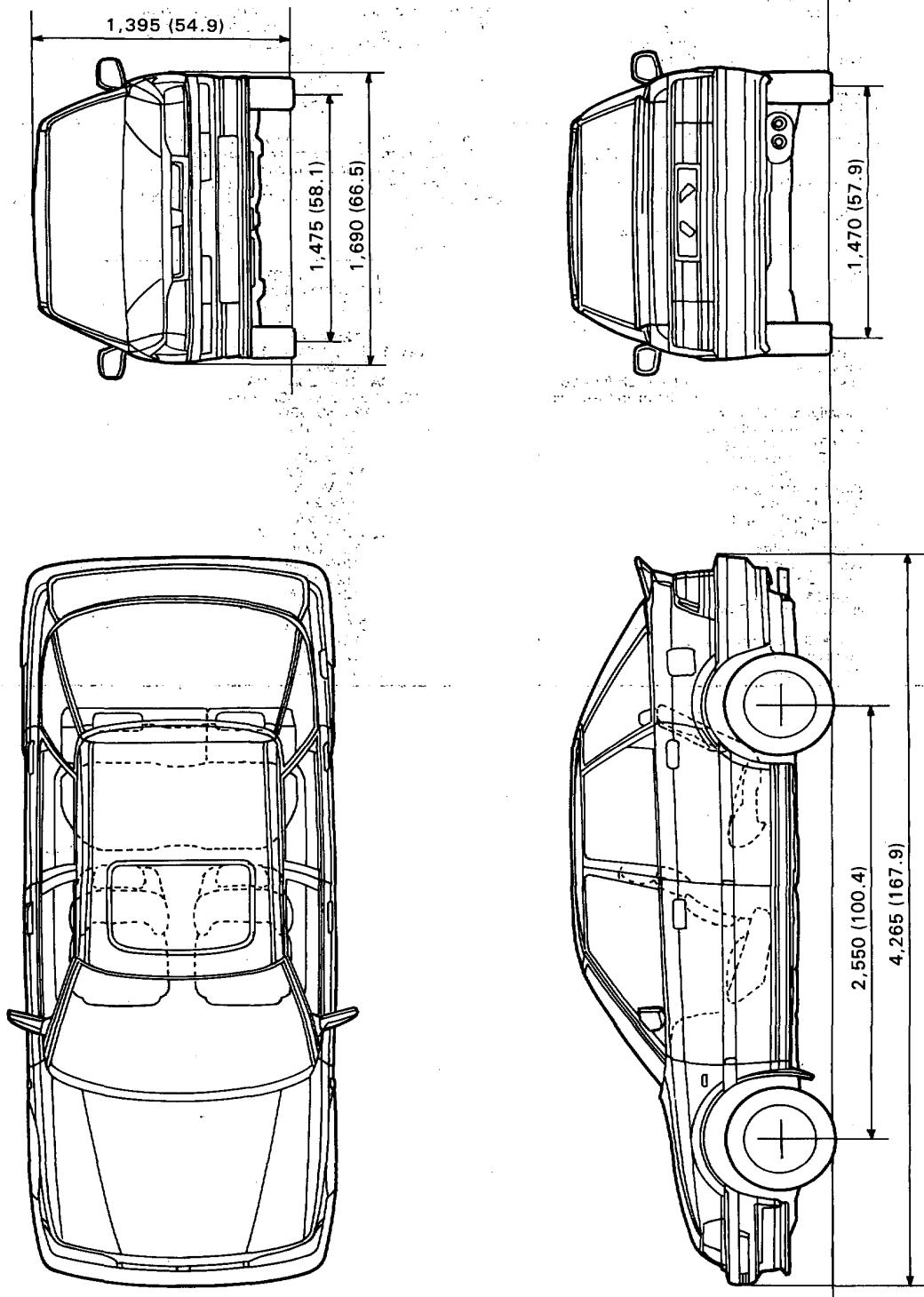
	ITEMS	METRIC	ENGLISH	NOTES
STARTER	Type Normal Output Normal Voltage Hour Rating Direction of Rotation Weight	1.0kW, 1.2kW, 1.4kW 1.0kW MITSUBA 1.0kW, 1.2kW ND 1.4kW MITSUBA	Gear reduction type 1.0kW, 1.2kW, 1.4kW 12V 30 seconds Clockwise as viewed from gear end 3.4 kg 3.85 kg 3.7 kg	7.5 lb 8.5 lb 8.2 lb
TRANSMISSION	Clutch Clutch Facing Area Transmission Type Primary Reduction	M/T A/T M/T M/T A/T	Single plate dry, diaphragm spring Torque converter 160 cm ² 5-speed forward, synchromesh, 1 reverse 4-speed forward, with lock-up clutch, 1 reverse 1,000	24.8 sq. in.
	Type		5-speed manual except DOHC	5-speed manual DOHC
	Gear Ratio	1st 2nd 3rd 4th 5th Reverse Final	3.250 1.894 1.259 0.937 0.771 3.153 4.437	3.250 1.944 1.346 1.033 0.848 3.153 4.250
	Type		4-speed automatic except DOHC	4-speed automatic DOHC
		1st 2nd 3rd 4th Reverse Final	2.705 1.560 1.027 0.780 1.954 3.933*1 4.214*2	2.705 1.560 1.085 0.825 1.954 4.124
	Final Reduction Gear Type		Single helical gear	
				*1 Carbureted *2 Fuel-Injected
AIR CONDITIONER	Compressor		MATSUSHITA	
	Cooling Capacity —Conditions: Compression min ⁻¹ (rpm) Outside Air Temperature Outside Air Humidity Condenser Air Temperature Condenser Air Velocity Blower Capacity	3,850 kcal/h 1,800 min ⁻¹ (rpm) 27.0°C 35°C 4.5 m/sec. 440 m ³ /h	81°F 50% 95°F 14.8 ft/sec. 15.118 cu. ft/h	
	Compressor Type Number of Vane Displacement Max. min ⁻¹ (rpm) Lubricant Capacity	Vane rotary type 3 130cc/rev. 7,500 min ⁻¹ (rpm) 130 cc	7.93 cu. in./rev 7.93 cu. in.	
	Receiver Dryer With Desiccant		Includes fusible safety plug	
	Condenser		Corrugated fin type	
	Evaporator		Corrugated fin type	
	Blower Type Motor input Speed control Max. capacity	Sirocco fan 170W (12V) 4 speeds 390 m ³ /h	13,773 cu ft/h	
	Temp. Control		Air-mix type	
	Comp. Clutch Type Power consumption		Dry, single plate, V-belt 32W max. 12V	
	Refrigerant Type Quantity		R-12 0.90±0.05 kg 1.98±0.11 lbs	
STEERING SYSTEM	Type Overall Ratio Turn, lock-to-lock Steering Wheel Dia Power Steering Fluid Capacity Power Steering Fluid		Rack and pinion 19.95: 1, 16.96 (with power assist) 4.0, 3.4 (with power assist) 370 mm 1.2 lit. Use only DEXRON® II Automatic Transmission Fluid(A.T.F.)	14.6 in 13 US. qt., 1.1 Imp. qt.
SUSPENSION SYSTEM	Type, Front Rear		Independent strut with coil spring and stabilizer Independent double wishbone with coil spring (SX: with coil spring and stabilizer) Telescopic, Nitrogen gas filled.	
	Shock Absarber Front/Rear			

	ITEMS		METRIC	ENGLISH	NOTES
WHEEL ALIGNMENT	Wheel alignment				
	Total Toe	Front Rear (°) Front/Rear	OUT 0.7±1.4 mm IN 2.3±1.4 mm	OUT 0.028±0.055 IN 0.091±0.055	
	Camber	Front Rear	OUT 0°04'±8' -0°20'±30' -0°26'±30' 1°38'±30' 12°07'		
	Caster Kingpin Inclination				
BRAKE SYSTEM	Type	Front Rear DX, LX EX, SX	Power assisted self-adjusting ventilated discs Power assisted leading/trailing shoe drums Power assisted self-adjusting solid discs		
	Lining Surface Area	Front Rear	49.2 cm² X4 65.6 (21.0) cm² X4	7.63 sq.in.X4 10.17 (3.25) sq.in.X4	(°): EX,SX
	Effective Diameter	Front Rear	214 mm 208 mm	8.43 in. 8.19 in.	
	Brake Drum (DX, LX)	Rear (EX,SX)	203 mm	7.99 in.	
TIRES	Size	DX, LX EX SX	175/65R14 82T 175/65R14 82H 185/60R14 82H		
ELECTRICAL	Battery		12V-47AH		
	Starter		12V-1.0kW, 1.2kW, 1.4kW		
	Alternator		12V-60 amps		
	Fuses	In the dash fuse box In the main fuse box	10A, 15A, 20A, 30A 10A, 15A, 30A, 40A, 60A		
	Headlights High/Low		12V-60/55W		
	Front Turn Signal Lights		12V-21W		
	Rear Turn Signal Lights		12V-21W		
	Side Turn Signal Lights		12V-5W		
	Stop/Tailights		12V-21/5W		
	Side Marker Lights		12V-5W		
	Back-up Lights		12V-21W		
	License Plate Lights		12V-5W		
	Gauge Lights		12V-3.0W, 1.4W		
	Indicator Lights		12V-1.4W		
	Warning Lights		12V-1.4W		
	Dome Light		12V-5W		
	Luggage Area Light		12V-3.4W		
	Illumination and Pilot Lights		12V-1.4W		
	Heater Illumination Lights		0.91W, LED		
	Courtesy Lights		12V-1.4W		
	Rear fog lights		12V-3.4W		
			12V-21W		

Body Specifications

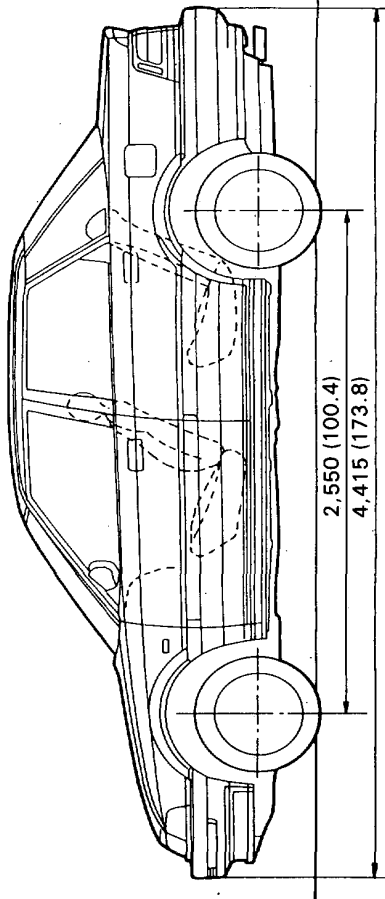
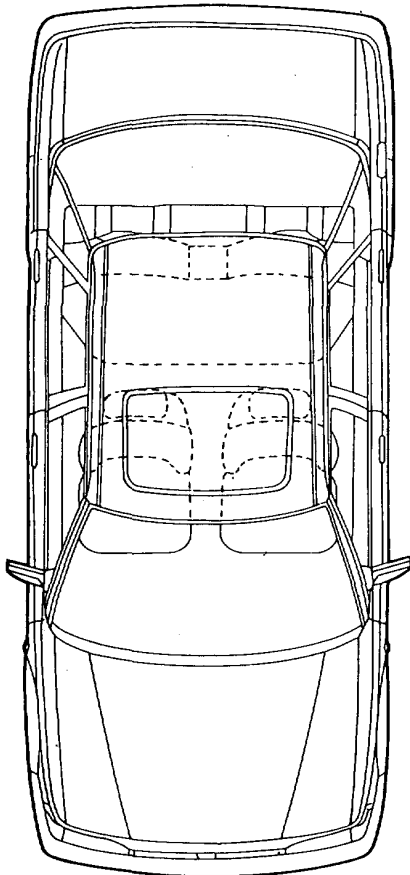
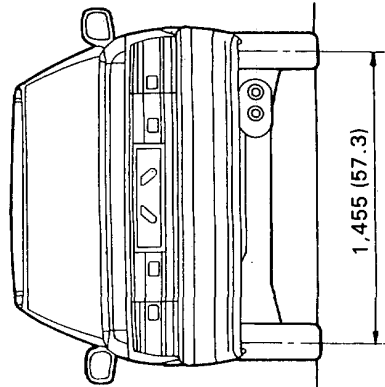
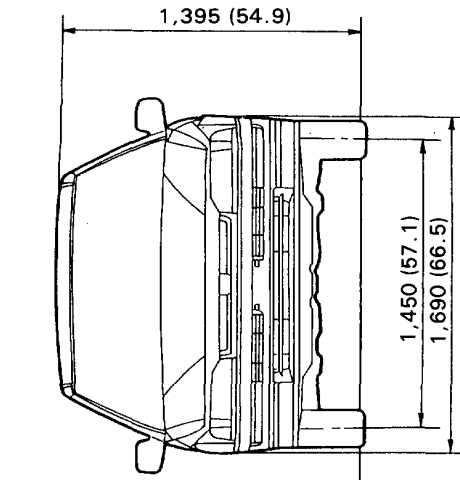
5D

Unit: mm (in.)



4D

Unit: mm (in.)

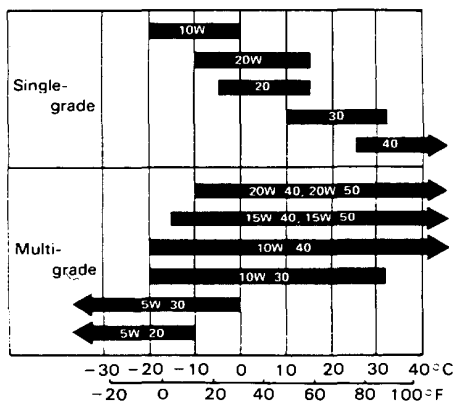


cardiagn.com

Lubrication Points

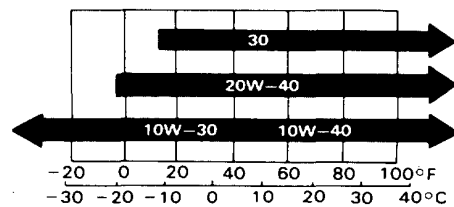
No.	LUBRICATION POINTS	LUBRICANT
1	Engine	API Service Grade: SE, SF or SG SAE Viscosity : See chart below
2	Transmission Manual Automatic	API Service Grade: SE or SF SAE Viscosity: See chart below DEXRON® or DEXRON®II Automatic transmission fluid
3	Brake line (ALB Line for ALB models)	Brake fluid DOT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

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



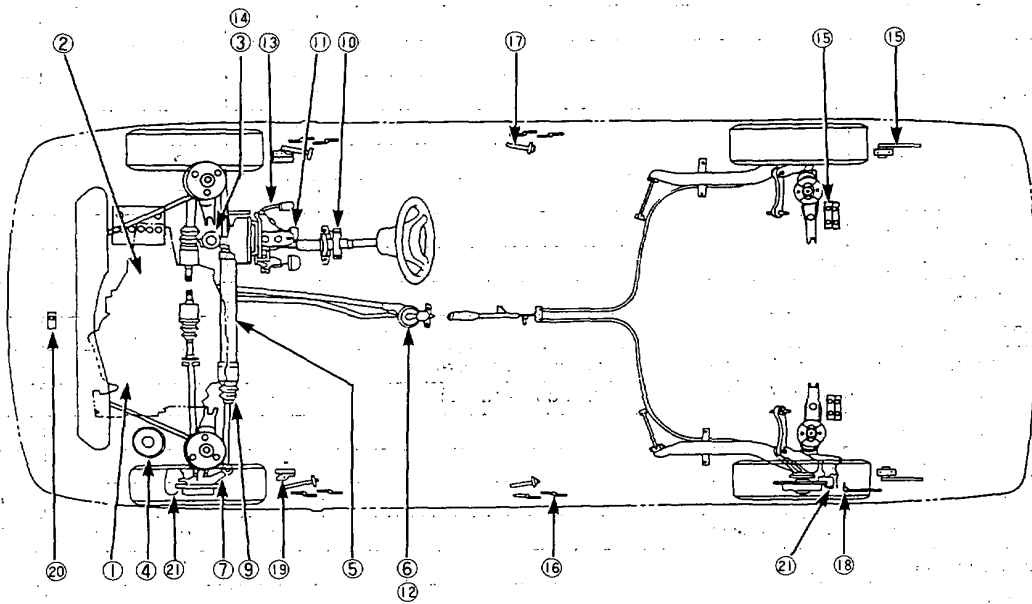
Engine oil viscosity for
ambient temperature ranges

Recommended Manual Transmission Oil
(SE or SF Grade oil)



Transmission oil viscosity for
ambient temperature ranges

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



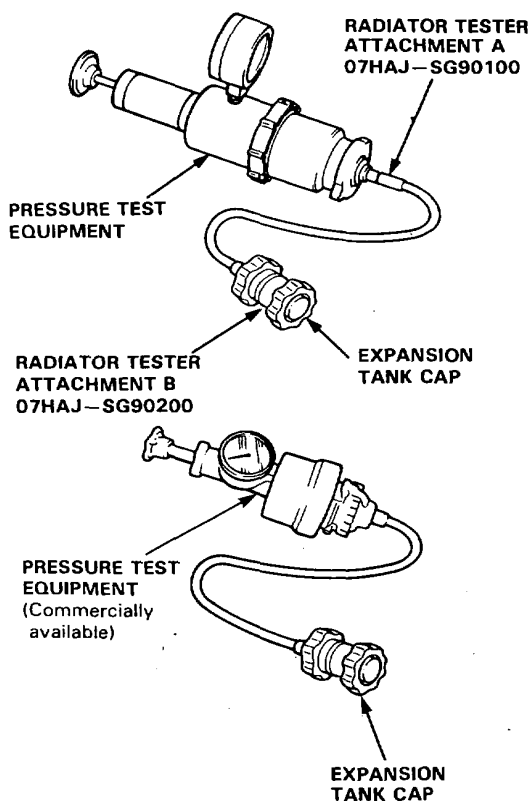
Engine Tune-up

Expansion Tank Cap Testing



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

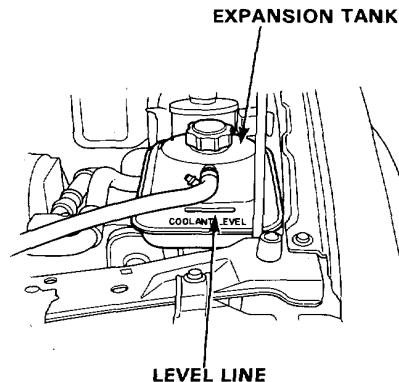
1. Remove the expansion tank cap, wet its seal with coolant, then install it on the pressure tester.
2. Apply pressure of 74–103kpa (0.75–1.05kg/cm², 11–15psi).
3. Check for a drop in pressure.
4. If there is a drop in pressure, replace the cap.



Coolant Level Inspection

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

1. Check the coolant level.



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

NOTE :

- Use only HONDA-RECOMMENDED anti-freeze/coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 50% 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 :

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

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

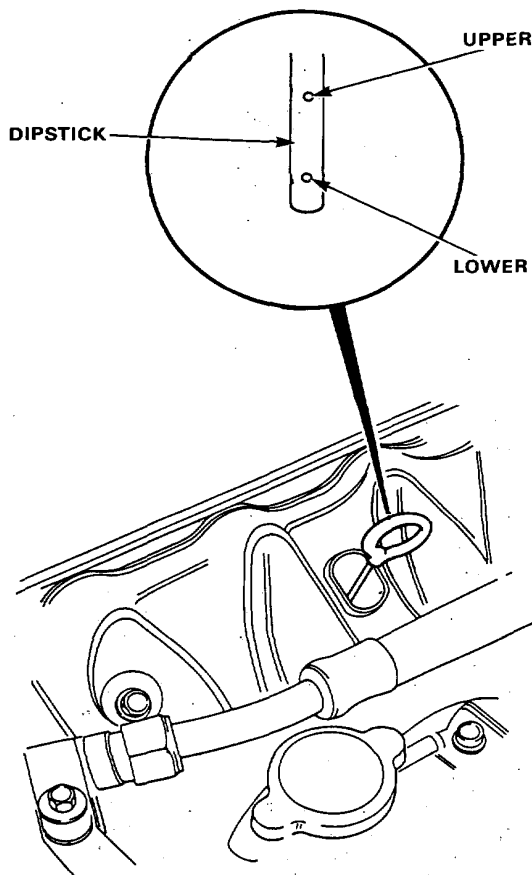
3. See page 5-84 for refilling.

Engine Tune-up

Oil Level Inspection

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

CAUTION : Insert the dipstick carefully to avoid bending it.



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

Engine Oil Replacement

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

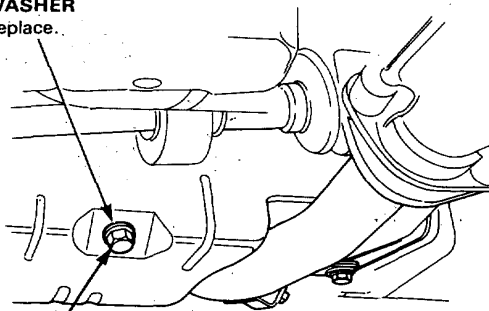
WARNING

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

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

NOTE : Remove the filler cap to speed draining.

WASHER
Replace.



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.

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

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

Engine oil change interval

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



Oil Filter Replacement

JAPAN-MADE TYPE

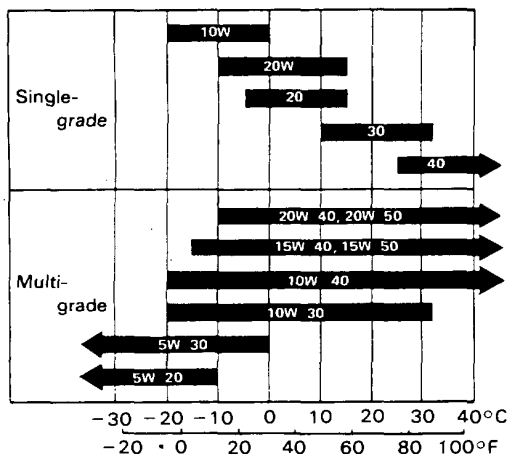
WARNING After the engine has been run, the exhaust pipes will be hot; be careful when working around the exhaust manifold.

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

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

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

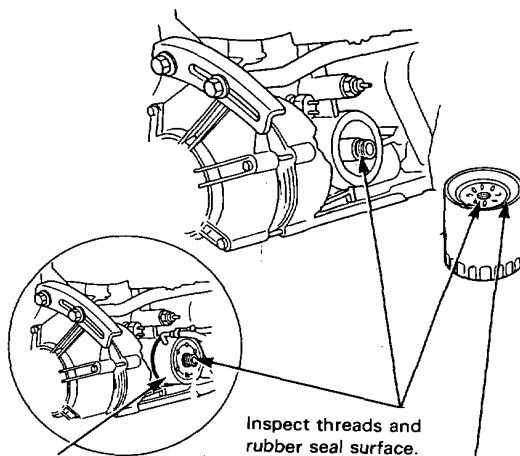
Recommended Engine Oil
(SE, SF or SG Grade Oil)



Engine oil viscosity for
ambient temperature ranges

NOTE:

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



ENGINE OIL COOLER
(Standard for some types)



Apply oil to rubber seal
before installing.

(cont'd)



Oil Filter Replacement

JAPAN-MADE TYPE

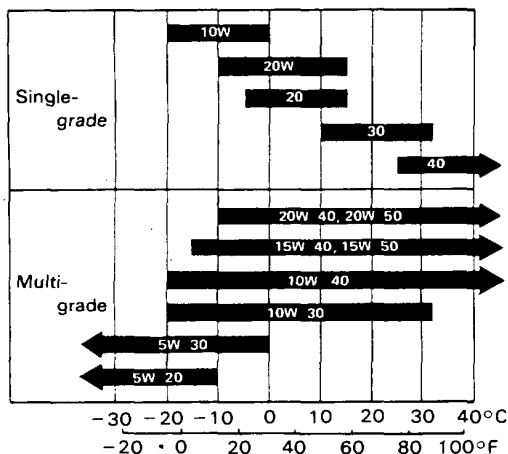
WARNING After the engine has been run, the exhaust pipes will be hot; be careful when working around the exhaust manifold.

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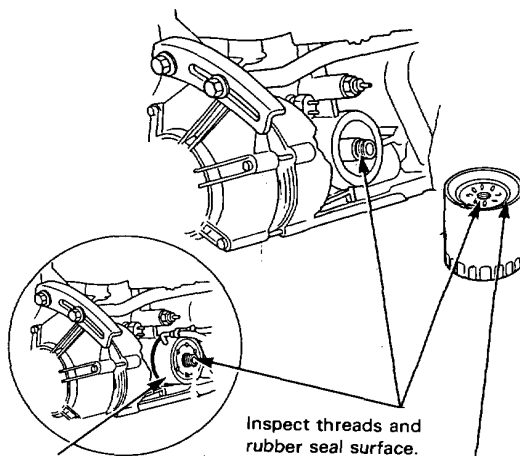
Recommended Engine Oil
(SE, SF or SG Grade Oil)



Engine oil viscosity for
ambient temperature ranges

NOTE:

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 - Frequent traveling on unpaved roads.
 - Use in cold climates.
 - Frequent idling.
 - Repeated short distance travel.
 - Use as a tractor.



ENGINE OIL COOLER
(Standard for some types)



Apply oil to rubber seal before installing.

(cont'd)

Engine Tune-up

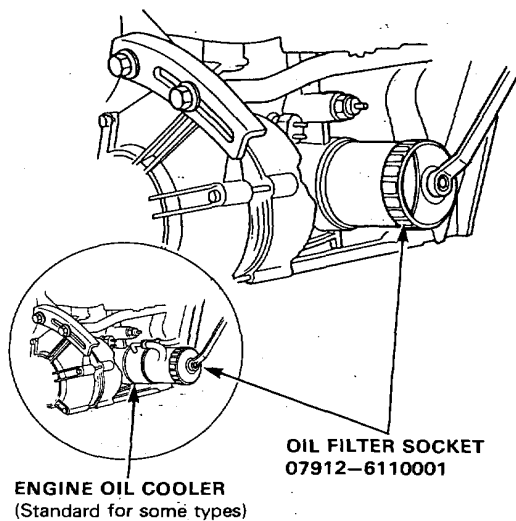
Oil Filter Replacement (cont'd)

3. Install the oil filter by hand.
4. After the rubber seal is seated, tighten the oil filter clockwise with the special tool.

Tighten: 7/8 turn clockwise.

Tightening torque: 22 N·m (2.2 kg-m, 16 lb-ft)

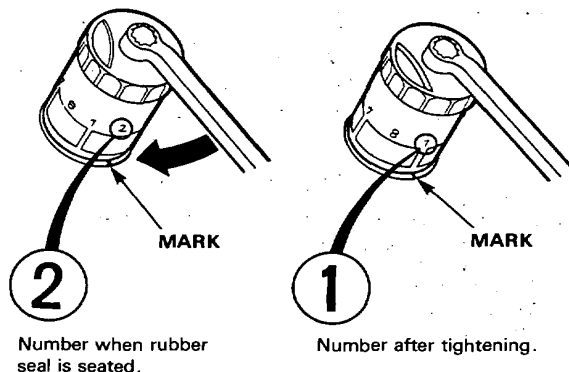
CAUTION: Installation other than the above procedure could result in serious engine defects due to oil leakage.



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

The following explains the procedure for tightening filters using these numbers.

- 1) Make a mark on the cylinder block under the number that shows at the bottom of the filter when the rubber seal is seated.
- 2) Tighten the filter by turning it clockwise seven numbers from the marked point. For example, if a mark is made under the number 2 when the rubber seal is seated, the filter should be tightened until the number 1 comes up to the marked point.



Number when rubber seal is seated	1	2	3	4	5	6	7	8
Number after tightening	8	1	2	3	4	5	6	7

5. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

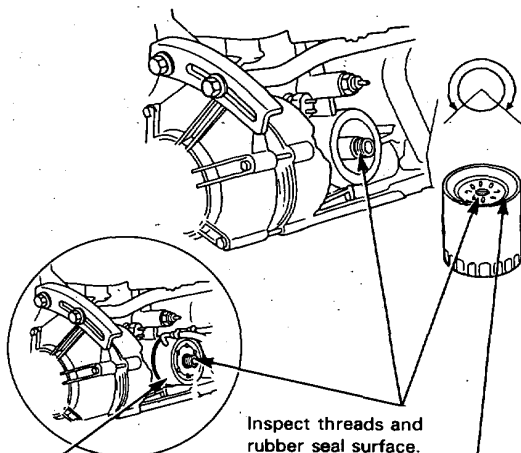


FRANCE-MADE TYPE

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

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

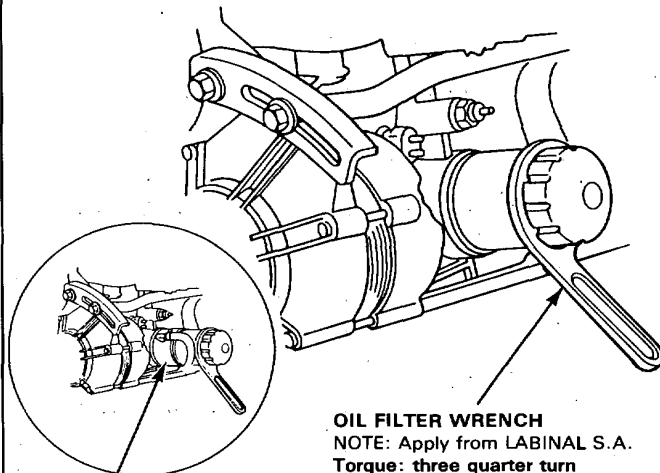
1. Remove the oil filter with the special oil filter socket or wrench.
2. Inspect the threads and rubber seal on the new filter. Wipe off seat on engine block, then apply a light coat of oil to the rubber seal, and install filter.
3. After the rubber seal is seated, tighten the filter by turning approximately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



ENGINE OIL COOLER
(Standard for some types)



Apply oil to rubber seal before installing.



OIL FILTER WRENCH
NOTE: Apply from LABINAL S.A.
Torque: three quarter turn
22 N·m (2.2 kg-m, 16 lb-ft)

ENGINE OIL COOLER
(Standard for some types)

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

Engine Tune-up

Air Cleaner Element Inspection/Replacement

Inspection

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

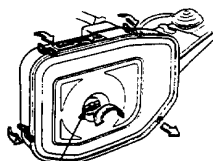
NOTE: No cleaning is necessary for the air cleaner element, because its filter takes in oil (: viscous type). Replace the air cleaner element every 40,000 km (24,000 miles) or 24 months, whichever comes first (more often in extremely dusty conditions).

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

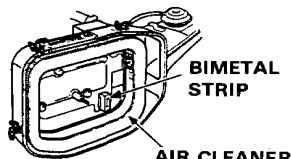
Replacement

Carbureted Engine:

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



WING NUT



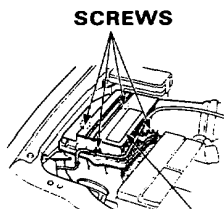
BIMETAL STRIP
AIR CLEANER ELEMENT

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

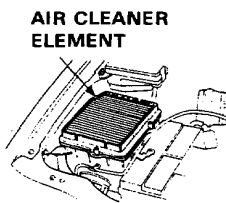
Fuel-Injected Engine:

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

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



SCREWS



AIR CLEANER ELEMENT

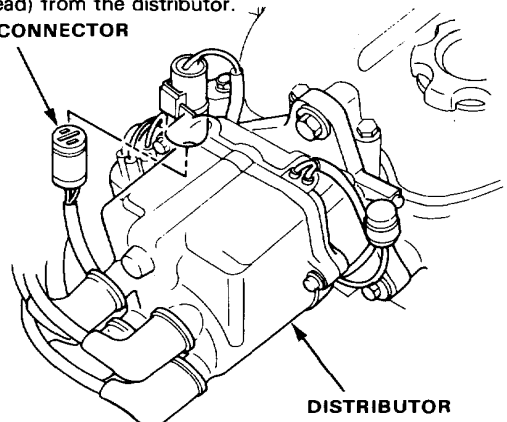
COVER

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

Compression Pressure Inspection

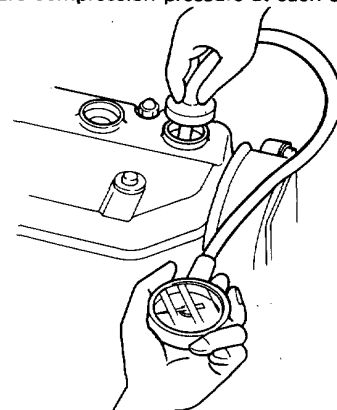
1. Before inspection, run the engine until it warms up (the cooling fan comes on).
2. Disconnect spark plugs (4).
3. Disconnect the 2-P connector (ignition coil primary lead) from the distributor.

2-P CONNECTOR



DISTRIBUTOR

4. Fit the compression gauge adapter into a plug hole.
5. Open the throttle valve fully, then run the engine with starter motor.
NOTE: Use a full charged battery.
6. Measure compression pressure at each cylinder.



Compression pressure :

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

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

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

Difference between cylinders :

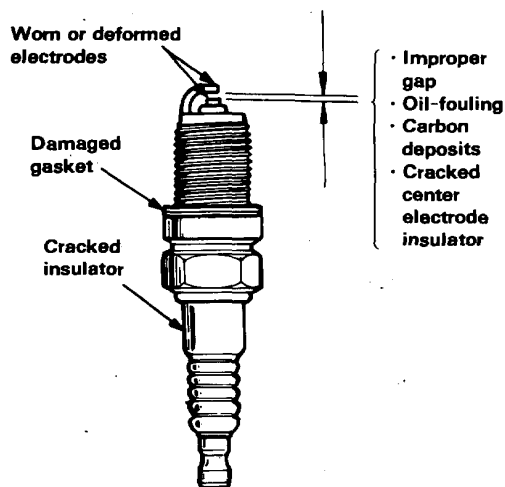
169 kPa (2.0 kg/cm², 28 psi)

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



Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for :



Burned or worn electrodes may be caused by :

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

Fouled plug may be caused by :

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

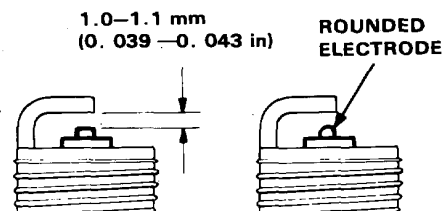
2. Replace the plug if the center electrode is rounded as shown below.

Spark Plug:

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

* 1: with CATA

* 2: without CATA



3. Adjust the gap with a suitable gapping tool.

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

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

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

Engine Tune-up

Drive Belts Inspection

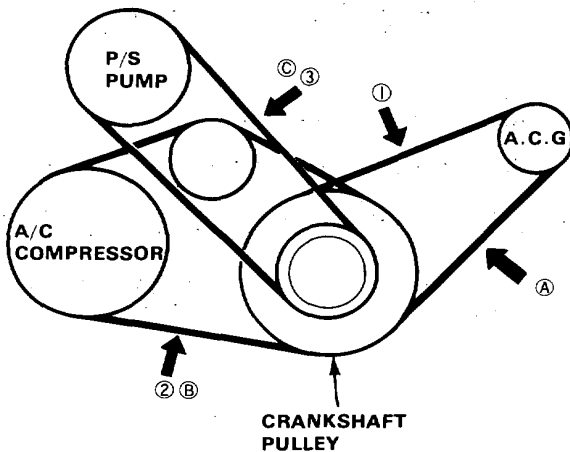
Drive Belts Deflection :

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

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

Measure with the belt tension gauge :

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



Alternator Belt Adjustment

NOTE: If there are cracks or any damage evident on the belt, replace it with a new one.

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

Deflection: 9–11 mm (0.35–0.43 in)

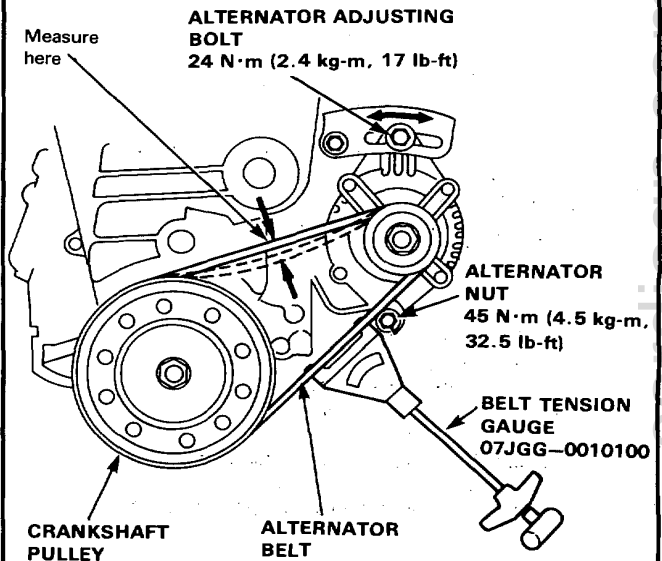
NOTE: On a brand-new belt, the deflection should be 7–9 mm (0.28–0.35 in) when first measured.

Measure with the belt tension gauge:

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

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

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



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



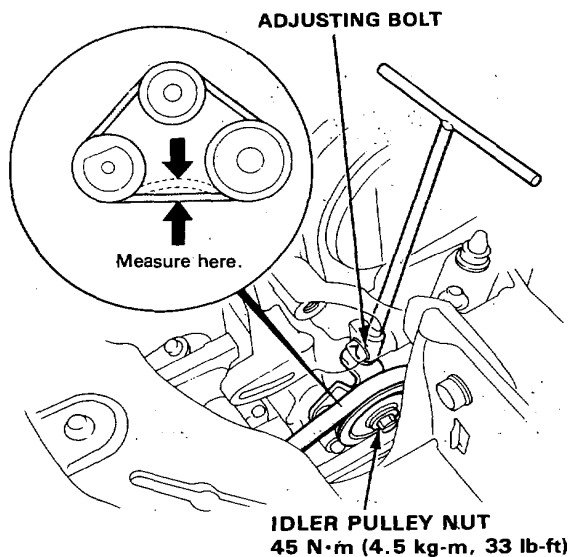
A/C Compressor Belt Adjustment

NOTE: If there are cracks or any damage evident on the belt, replace it with a new one.

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

Deflection: 9–11 mm (0.35–0.43 in.)

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



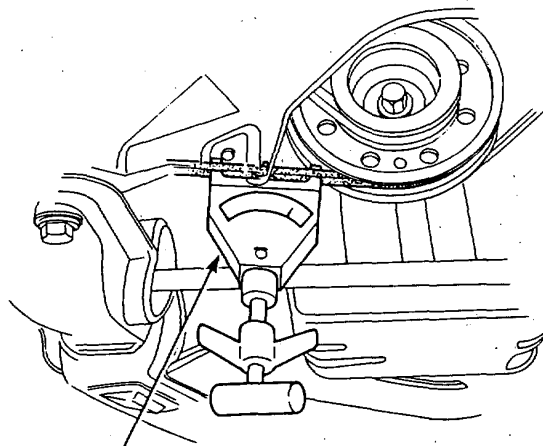
Measure with the belt tension gauge:

Attach the belt tension gauge to the belt and measure the tension of the belt.

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

NOTE:

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



BELT TENSION GAUGE
07JGG-0010100

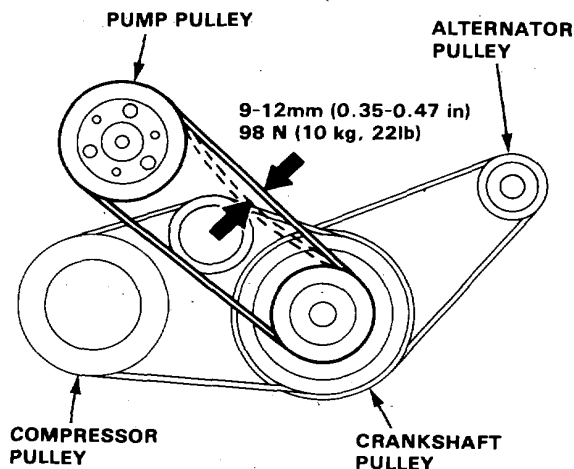
2. Loosen the idler pulley nut.
3. Turn the adjusting bolt to get the proper belt tension, then retighten the idler pulley nut.
4. Recheck the deflection of the belt.

Engine Tune-up

P/S Pump Belt Adjustment

A properly adjusted belt should deflect about 9.0-12.0 mm (0.35-0.47 in.) when you push on it mid-way between the pulleys with a force of about 98 N (10 kg, 22 lbs).

NOTE: On a brand new belt, the deflection should be 7.0-10.0 mm (0.28-0.39 in.) when first measured.



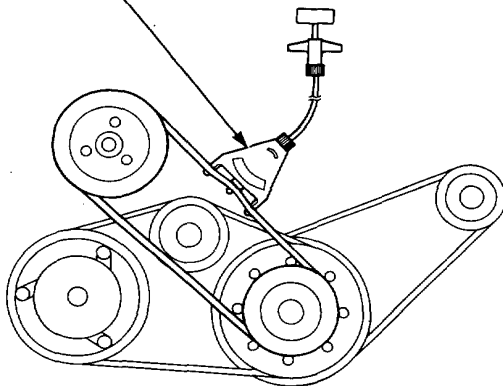
Test by the Belt Tension Gauge; 07JGG-0010100. Attach the tension gauge to the belt and measure the tension of the belt.

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

NOTE:

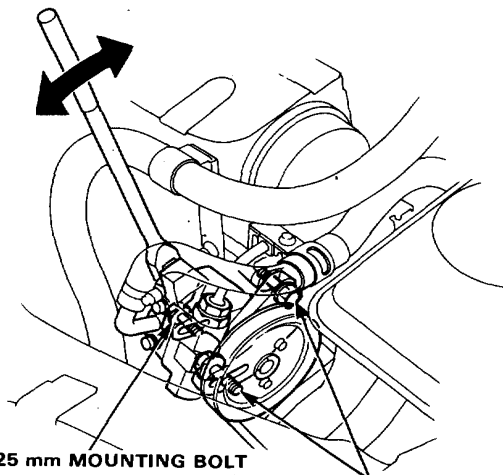
- On a brand-new belt, the tension should be 441-686 N (45-70 kg, 99-154 lb) when first measured.
- See the instructions for the tension gauge.

BELT TENSION GAUGE
07JGG-0010100



SOHC Engine:

Loosen the three mounting bolts and move the pump to get proper tension, then retighten the mounting bolts.



8 x 1.25 mm MOUNTING BOLT

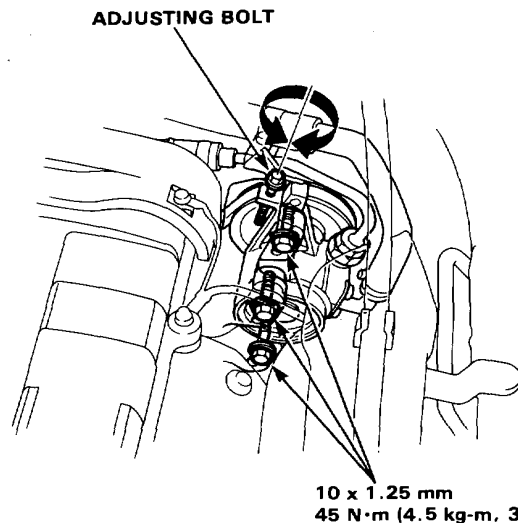
24 N·m
(2.4 kg-m, 17 lb-ft)

10 x 1.25 mm MOUNTING BOLTS

45 N·m
(4.5 kg-m, 33 lb-ft)

DOHC Engine:

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



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



Valve Clearance Adjustment

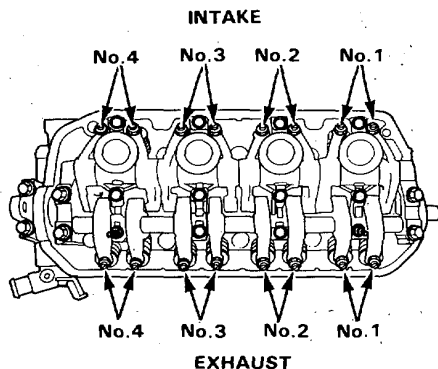
SOHC Engine :

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

NOTE :

- Valves should be adjusted cold when the cylinder head temperature is less than 38°C (100°F). Adjustment is the same for intake and exhaust valves.
- If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

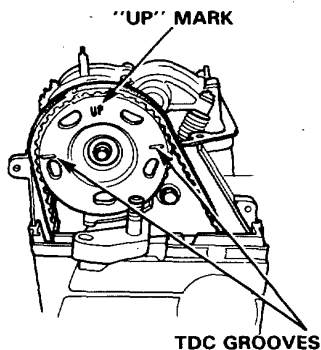
1. Remove the valve cover.



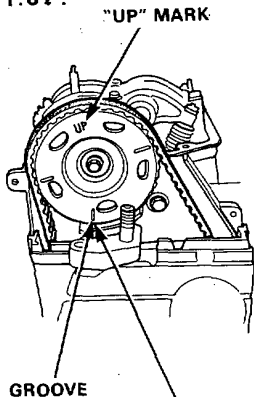
2. Set No. 1 piston at TDC "UP" mark on the pulley should be at top, and TDC groove on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

Number 1 piston at TDC

1.4 l :



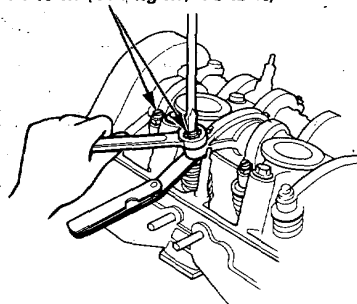
1.6 l :



TDC mark aligned with the pointer on cylinder head back cover.

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

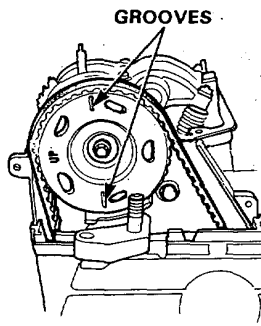
INTAKE and EXHAUST VALVE
LOCKNUTS 7 x 0.75 mm
14 N·m (1.4 kg-m, 10 lb-ft)



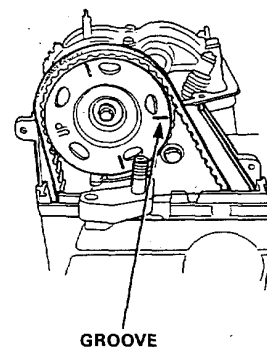
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC

1.4 l :



1.6 l :



(cont'd)

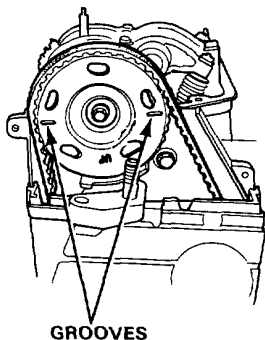
Engine Tune-up

Valve Clearance

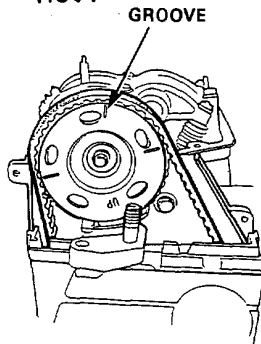
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No. 4 plug wire. Adjust valves on No. 4 cylinder.

Number 4 piston at TDC

1.4ℓ :



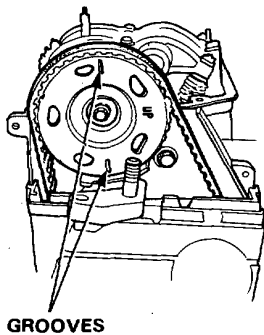
1.6ℓ :



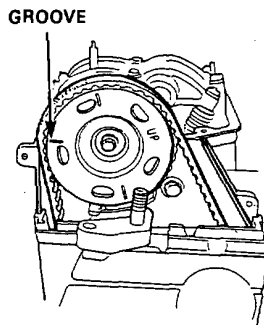
8. Rotate crankshaft 180° counterclockwise to bring No. 2 piston to TDC. The "UP" mark should be at intake side. Distributor rotor should point to No. 2 plug wire. Adjust valves on No. 2 cylinder.

Number 2 piston at TDC

1.4ℓ :



1.6ℓ :

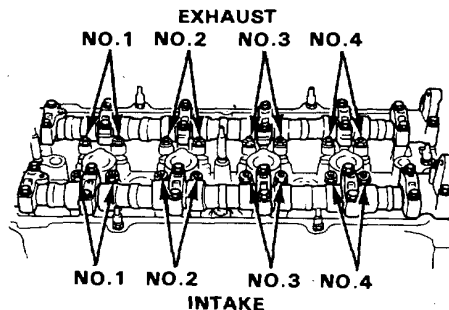


DOHC Engine:

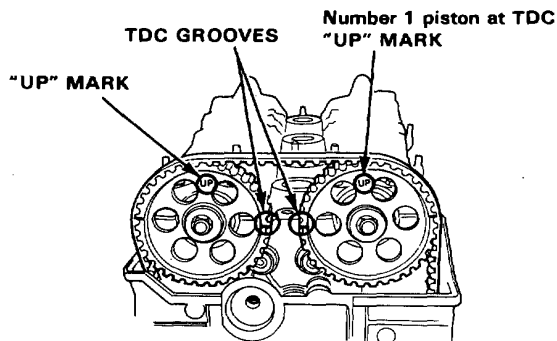
NOTE:

- Valves should be adjusted cold when the cylinder head temperature is less than 38°C (100°F). Adjustment is the same for intake and exhaust valves.
- If pulley bolt broke loose while turning the crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

1. Remove the valve cover.



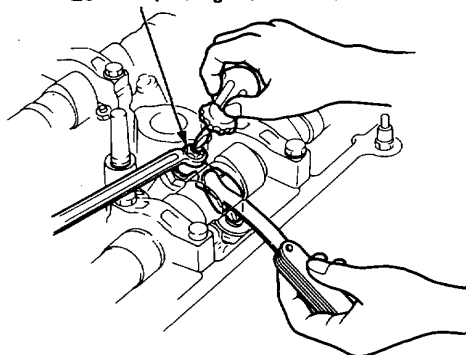
2. Set the No. 1 piston at TDC. "UP" marks in the pulleys should be at top, and the TDC grooves on back side of pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.





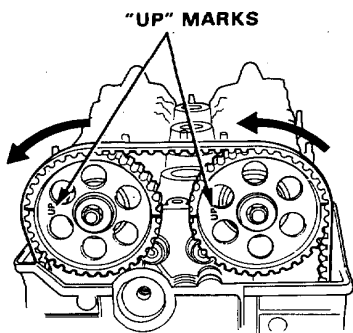
3. Adjust valves on No.1 cylinder.
Intake: 0.13–0.17 mm (0.005–0.007 in.)
Exhaust: 0.15–0.19 mm (0.006–0.007 in.)
4. Loosen locknut and turn adjusting screw until feeler gauge slides back and forth with slight amount of drag.

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



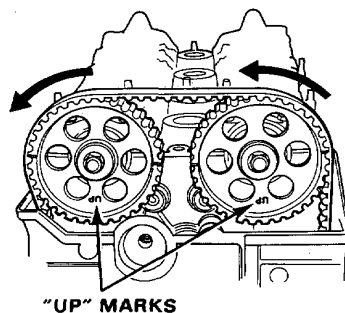
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" marks should be at exhaust side. Distributor rotor should point to No.3 plug wire. Adjust valves on No. 3 cylinder.

Number 3 piston at TDC



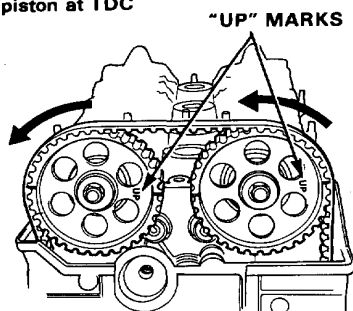
7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both "UP" marks should be at bottom and distributor rotor points to No.4 plug wire. Adjust valves on No.4 cylinder.

Number 4 piston at TDC



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

Number 2 piston at TDC



Engine Tune-up

Idle Speed Inspection/Adjustment (Carbureted Engine)

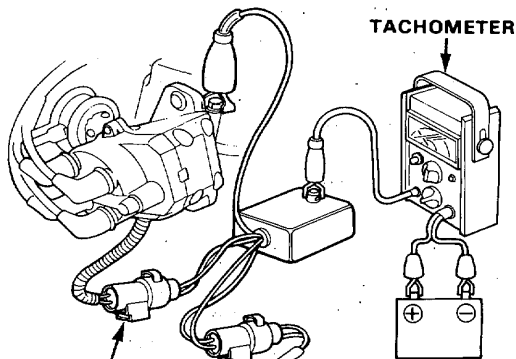
NOTE:

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

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

CO Meter Method

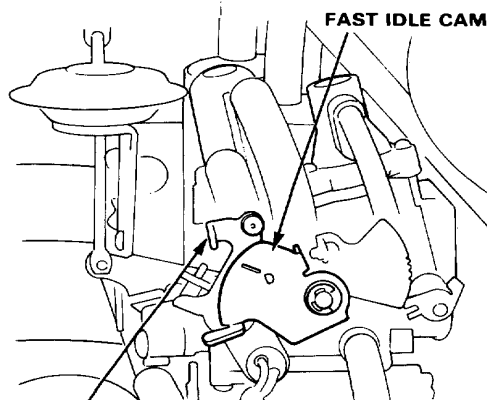
1. Warm up and calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm and connect a tachometer.



R.P.M. CONNECTING ADAPTOR
07JAZ-SH20100

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

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



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

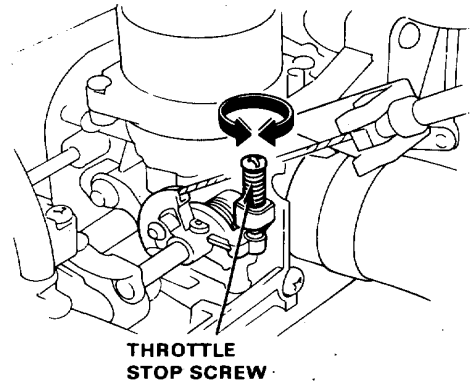
4. Check the idle speed with no load.

Idle speed should be:

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

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

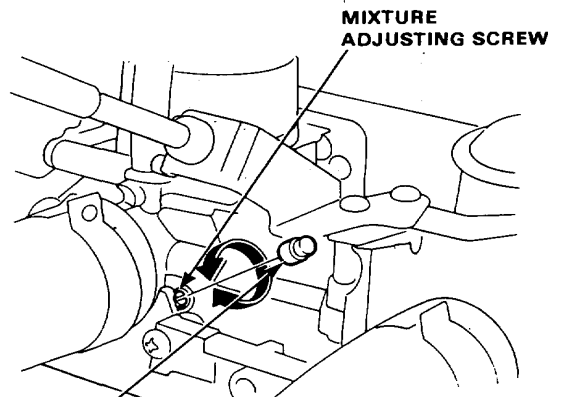
If idle speed cannot be adjusted properly, check for proper throttle cable adjustment.



6. Check specification for idle CO with no load.

Specified CO %: below 1.0 %

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



HOLE CAP

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

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



8. Install the hole plugs.

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

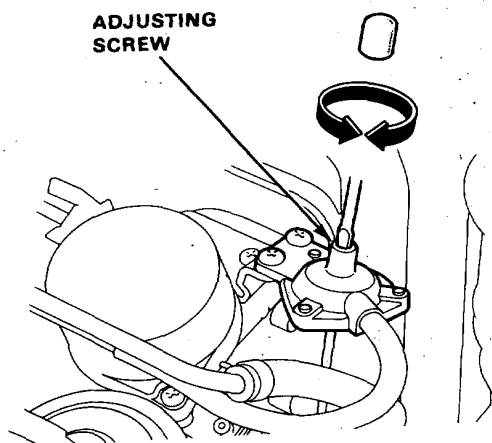
9. If equipped with air conditioner, check the idle speed with the A/C on.

Idle speed should be:

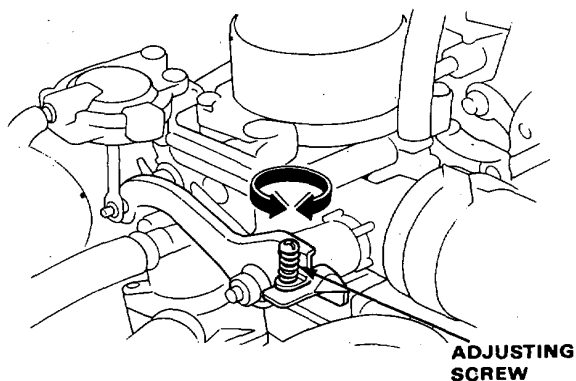
Manual	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
Automatic	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (N or P)

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

(1.4 l Engine)



(1.6 l Engine)



Tailpipe Emissions (Carbureted Engine)

Inspection

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

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

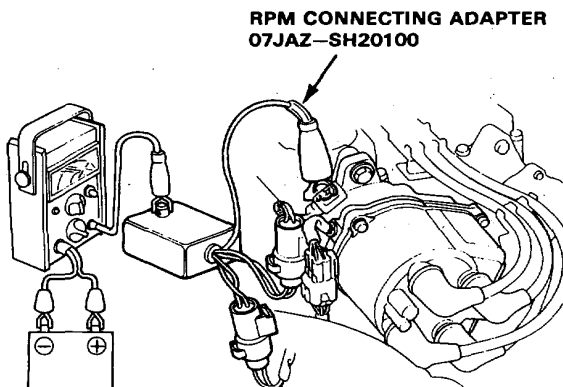
Specified CO% ; 1:0%

Engine Tune-up

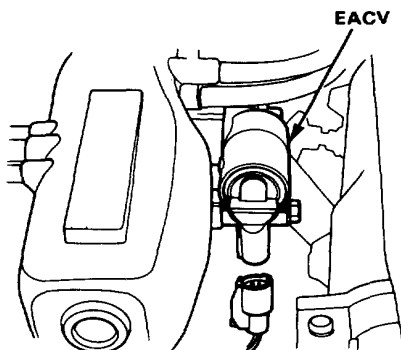
Idle Speed Inspection/Adjustment (Fuel-Injected Engine)

1.6 Fuel-Injected Engine:

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



3. Disconnect the 2P connector from the EACV.



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

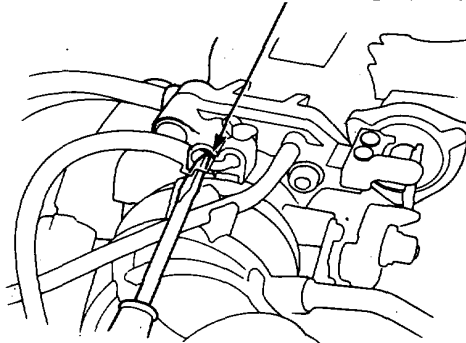
Idle speed should be:

(SOHC)
 $680 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N** or **P**)
(DOHC with CATA)
 $700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $650 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (in **N** or **P**)

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

NOTE: If the idle speed is excessively high, check the throttle control system (page 6-169).

IDLE ADJUSTING SCREW



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

Idle speed should be:

(SOHC)
 $780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N** or **P**)
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (in **N** or **P**)

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

Idle speed should be:

(SOHC)
 $780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Idle speed should be:

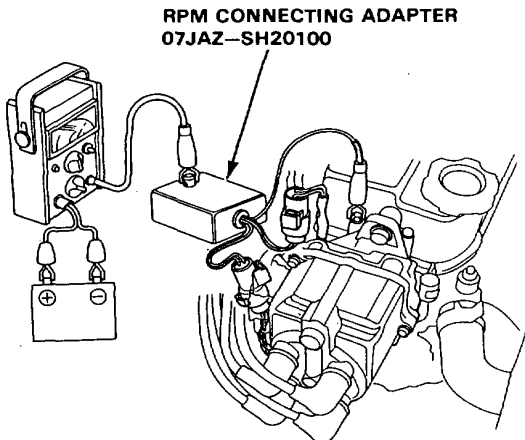
(SOHC)
 $810 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

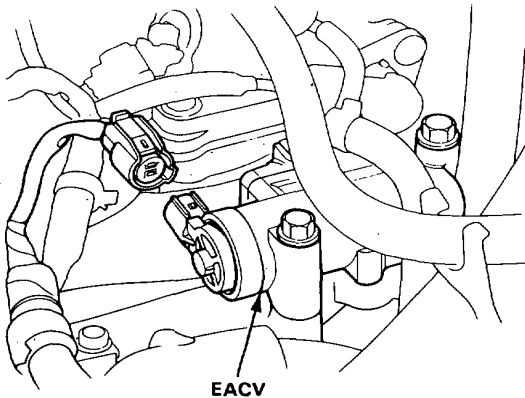


1.5 l Fuel-Injected Engine:

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



3. Disconnect the 2P connector from the EACV.



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

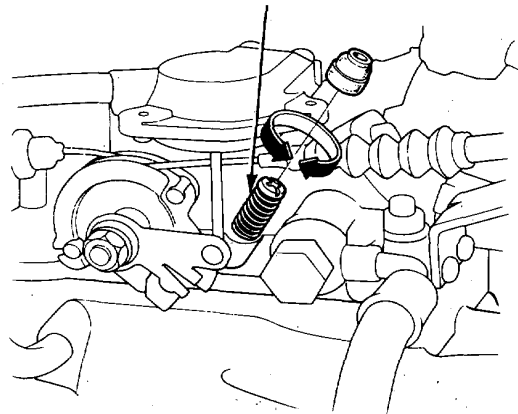
Idle speed should be:

$700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N or **P**)**

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

NOTE: If the idle speed is excessively high, check the throttle control system (page 6-126)

IDLE ADJUSTING SCREW



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

Idle speed should be:

$800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N or **P**)**

8. Idle the engine for one minute with headlights (Hi) and rear defogger ON and check the idle speed.
Idle speed should be: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
9. Idle the engine for one minute with heater fan switch at HI (right end) and air conditioner on, then check the idle speed.

Idle speed should be: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Engine Tune-up

Tailpipe Emission (Fuel-Injected Engine)

Inspection

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

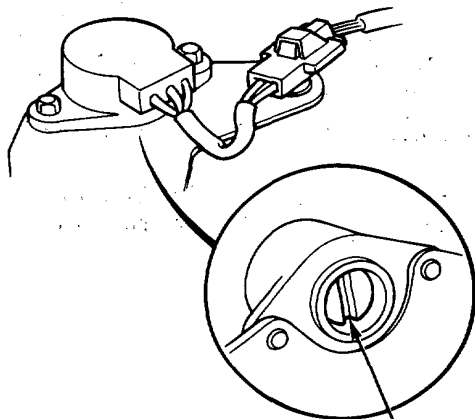
1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-133, 134).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:

With CATA: 0.1% maximum

Without CATA: 0.5 + 0.5%
- 0.3%

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



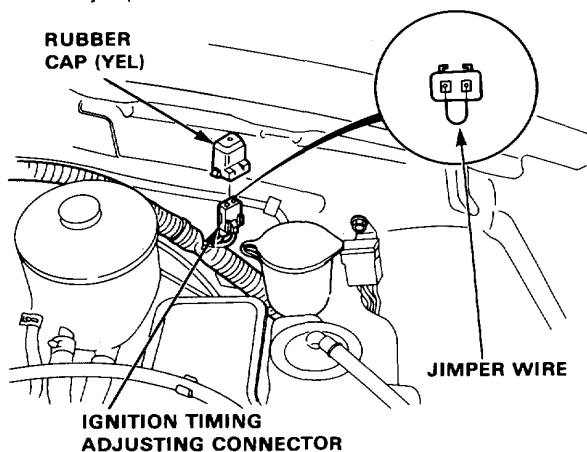
ADJUSTING SCREW

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

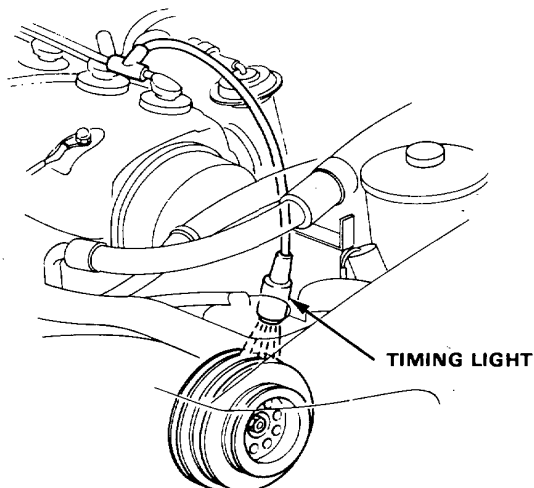


Ignition Timing Inspection and Setting (Fuel-Injected Engine)

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



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



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

Ignition Timing

1.5 l SOHC (MT, AT)

18°±2° BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral

1.6 l SOHC (MT, AT)

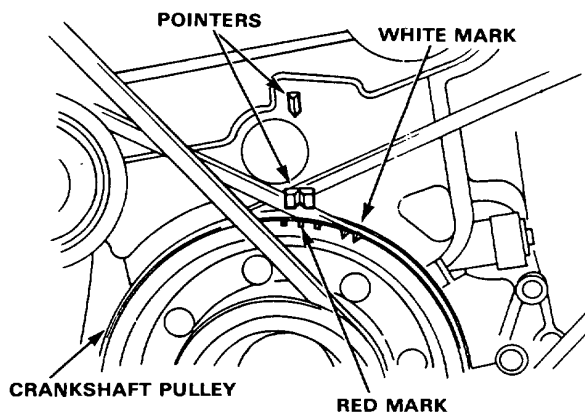
18°±2° BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral

1.6 l DOHC (MT):

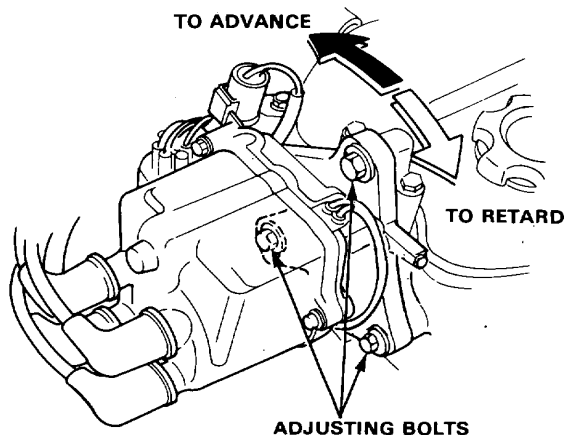
16°±2° BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral

1.6 l DOHC (AT):

16°±2° BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral



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

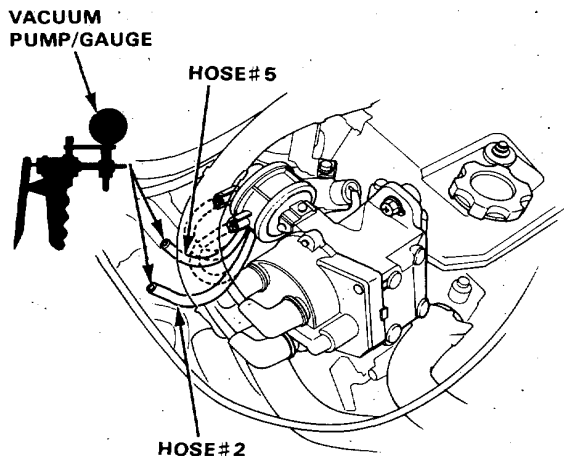


6. Tighten the adjusting bolts and recheck the timing.
7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

Engine Tune-up

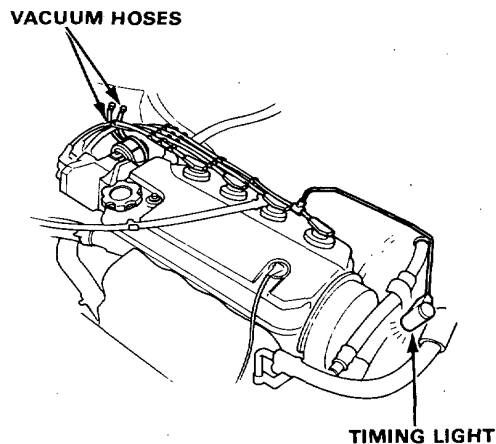
Ignition Timing Inspection and Setting (2-Carbureted Engine)

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



2. Start the engine and let it idle.
3. When the engine is cool. Coolant temperature is below [45°C (113°F)]. Check each hose for vacuum. The #2 and #5 hoses should have vacuum.
 - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
 - If the #5 hose has no vacuum, check the #5 hose for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged. If the #5 hose, and the check valve have no problem, replace the thermostatic valve and recheck the #5 hose for vacuum.

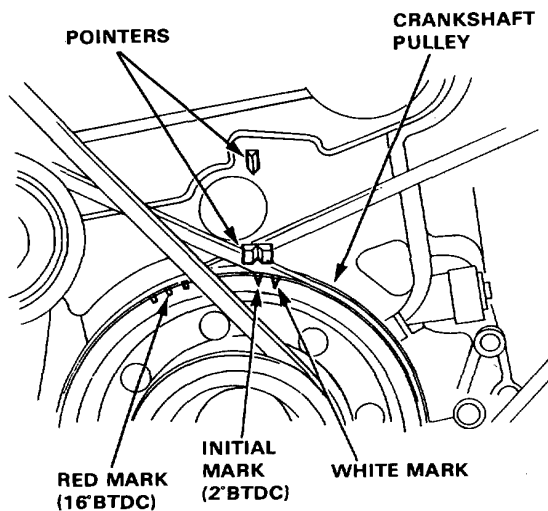
4. Connect the vacuum hoses to the vacuum advance diaphragm and allow the engine to warm up. (cooling fan comes on).
5. Disconnect the #5 hose from the vacuum advance diaphragm and connect the vacuum pump/gauge to the #5 hose.
6. Check the #5 hose for vacuum. The #5 hose should have no vacuum.
 - If the #5 hose has vacuum, replace the thermostatic valve and recheck the #5 hose for vacuum.
7. Disconnect the vacuum hoses from the vacuum advance diaphragm and plug them.
8. Connect a timing light.



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



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



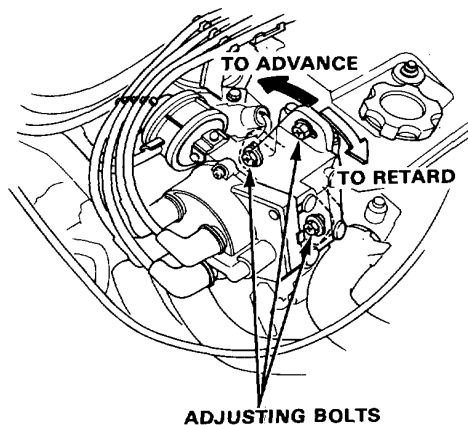
11. Timing when initial timing mark is aligned to the pointer.

Initial Timing

2° BTDC

- Manual Transmission [at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral]
- Automatic Transmission [at $700 \pm 50 \text{ min}^{-1}$ in gear]

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



13. Tighten the distributor adjusting bolts, then recheck the timing.
14. Connect the vacuum hose to the vacuum advance diaphragm and inspect ignition timing at idle.

Ignition Timing

1.6 l : $16^\circ \pm 2^\circ$ BTDC (Red)

1.4 l : $18^\circ \pm 2^\circ$ BTDC (Red)

- Manual Transmission [at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral]
- Automatic Transmission [at $700 \pm 50 \text{ min}^{-1}$ in gear]

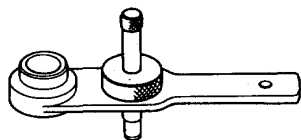
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

Special Tools

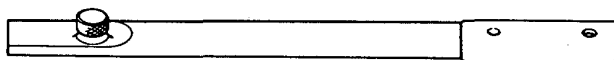
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB-0010000	Crank Pulley Holder Set	1	for Crankshaft pulley bolt
①-1	07JAA-0010100	Socket Wrench 17 mm	(1)	
①-2	07JAB-0010100	Pulley Holder Attachment	(1)	
①-3	07JAB-0010200	Handle	(1)	



①-1



①-2



①-3



Timing Belt

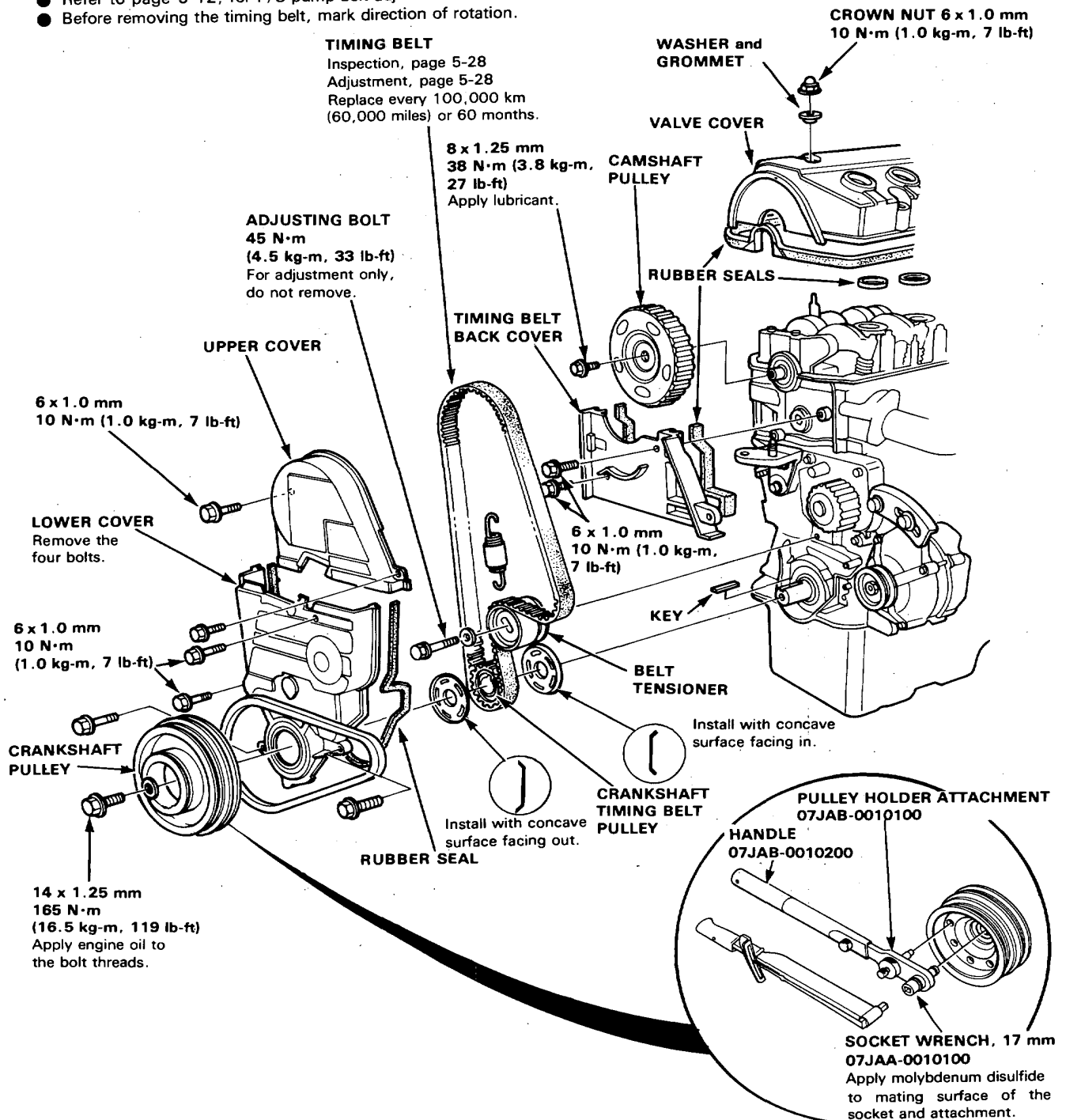
Illustrated Index

NOTE :

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

TIMING BELT

Inspection, page 5-28
Adjustment, page 5-28
Replace every 100,000 km
(60,000 miles) or 60 months.



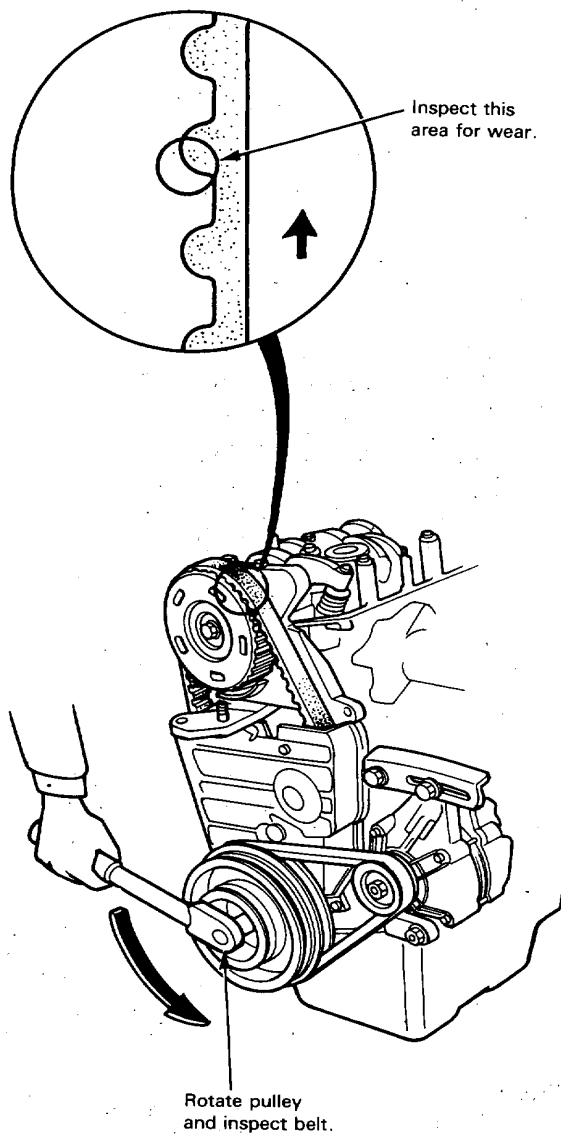
Timing Belt

Inspection

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

NOTE:

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



Tension Adjustment

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

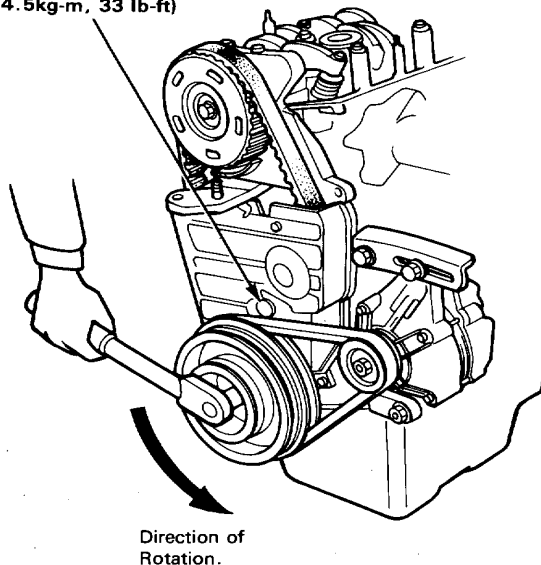
NOTE:

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

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

ADJUSTING BOLT

45 N·m
(4.5kg-m, 33 lb-ft)



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

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

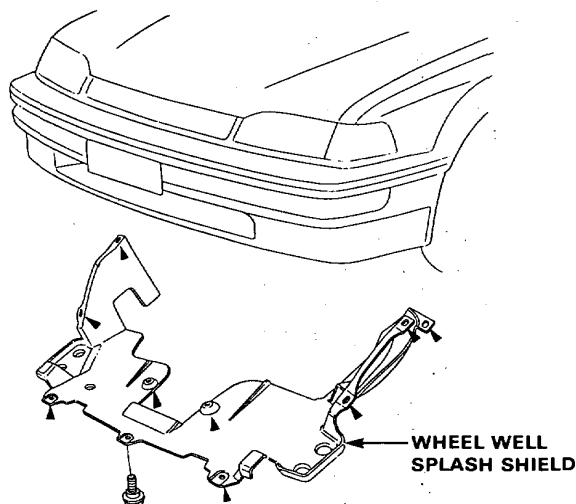


Replacement

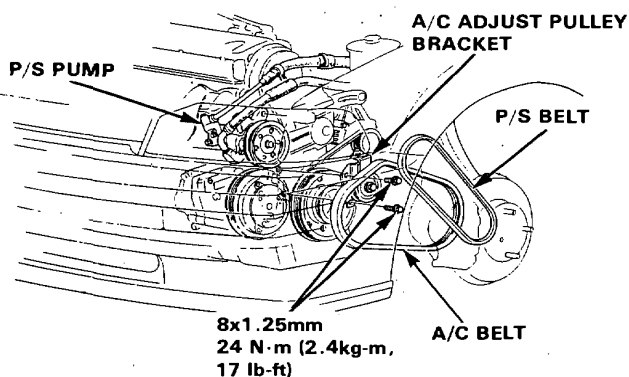
NOTE:

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

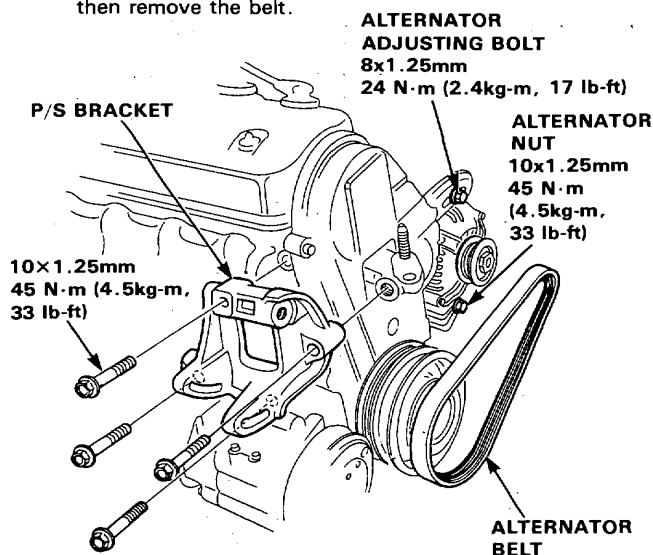
1. Remove the wheel well splash shield.



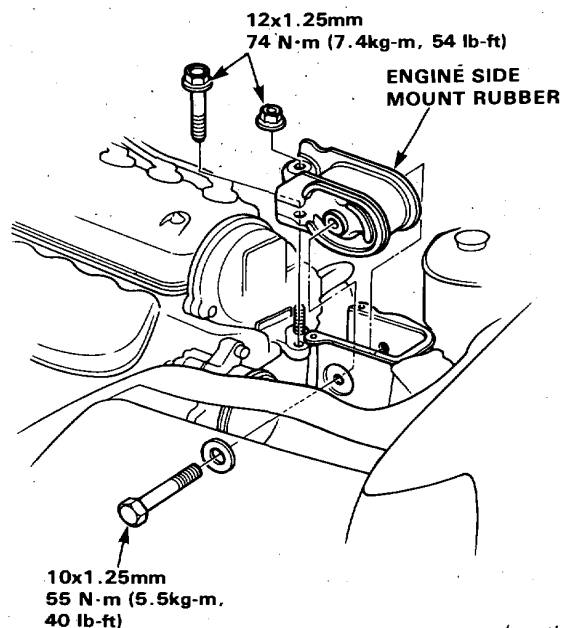
2. Remove the power steering pump (5-61 and 63).
3. Remove the A/C compressor adjust pulley with bracket and the belt (standard for some types).



4. Remove the power steering bracket.
5. Loosen the alternator adjusting bolt and through bolt, then remove the belt.



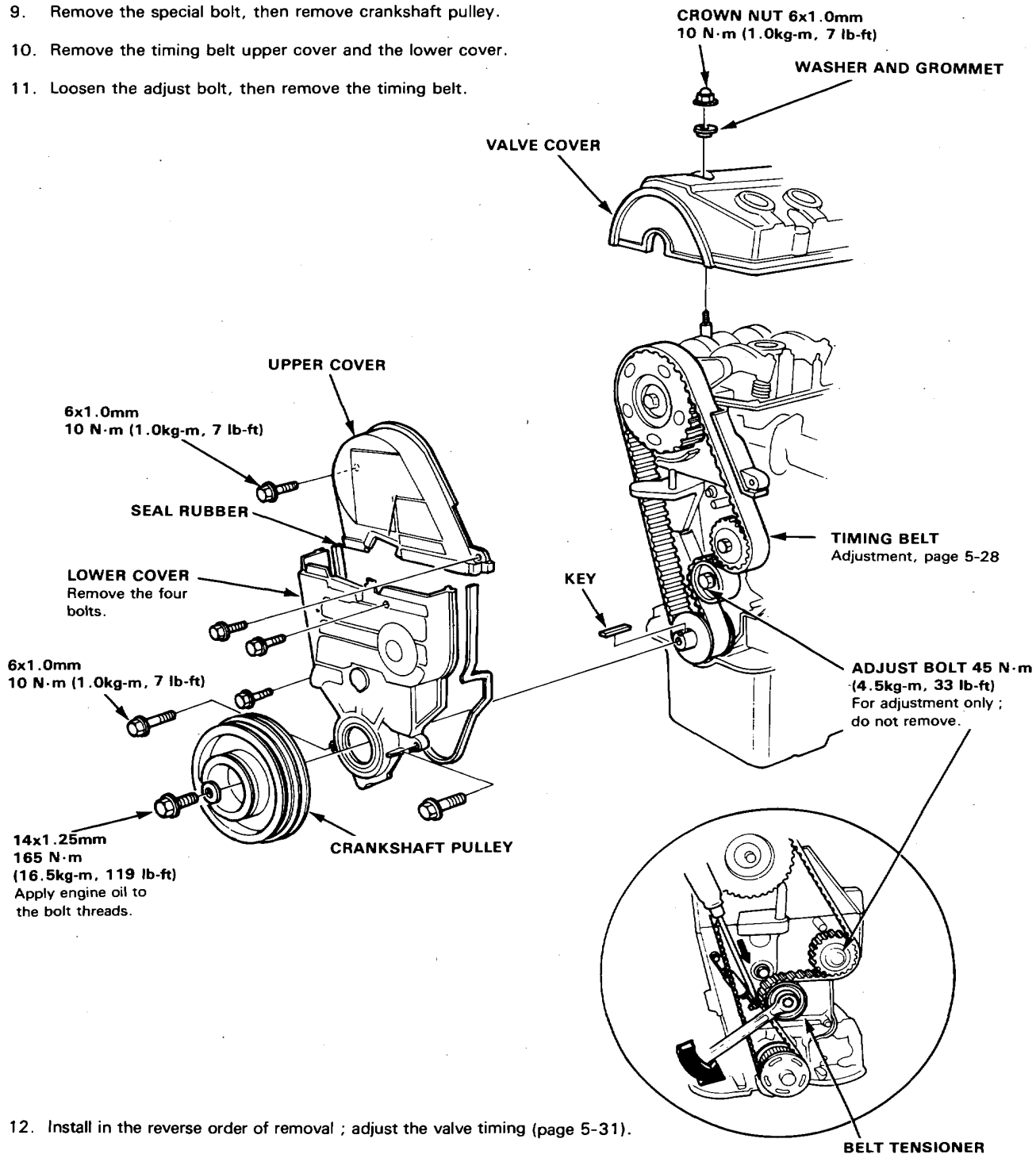
6. After installation, adjust the tension of each belt. See page 5-10 for alternator belt tension adjustment. See page 5-11 for A/C compressor belt tension adjustment. See page 5-12 for power steering pump belt tension adjustment.
7. Remove the engine support bolts and nut, then remove the side mount rubber.



(cont'd)

Timing Belt Replacement (cont'd)

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



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

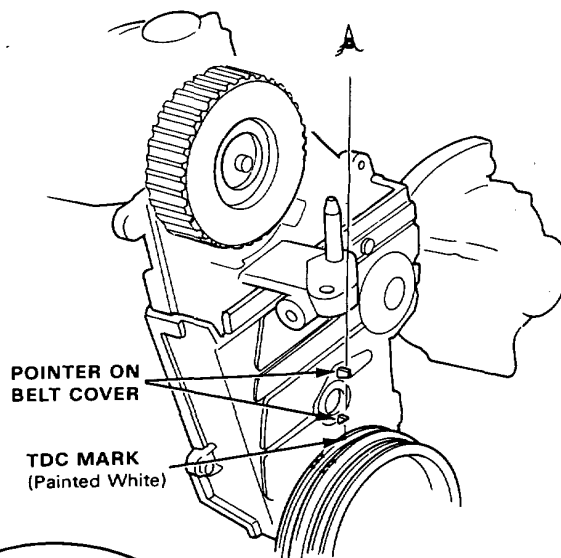
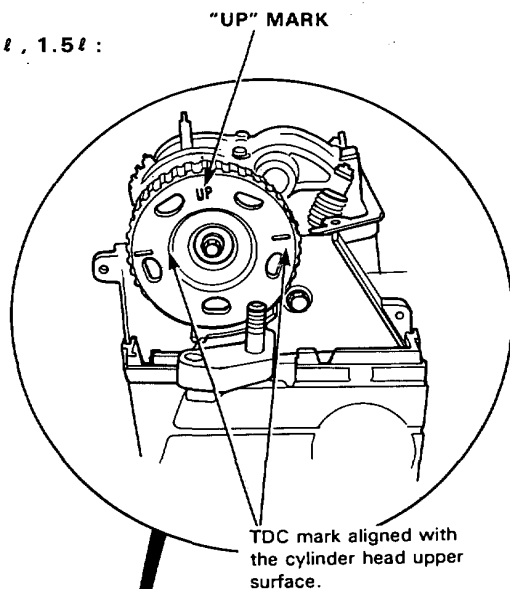


Positioning Crankshaft Before Installing Timing Belt

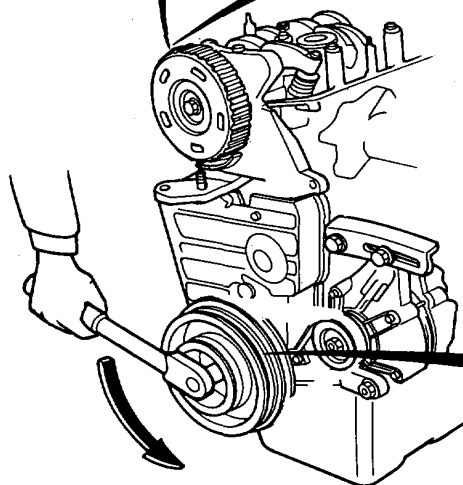
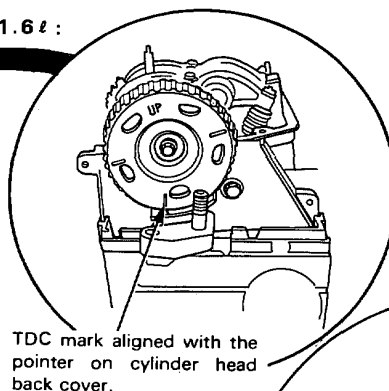
NOTE:

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

1.4ℓ, 1.5ℓ :

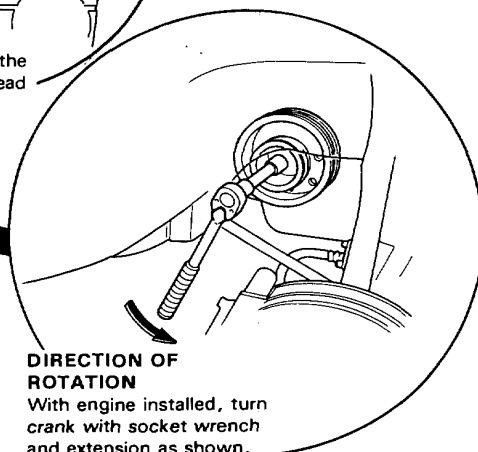


1.6ℓ :



NOTE:

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

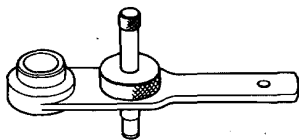


Special Tools

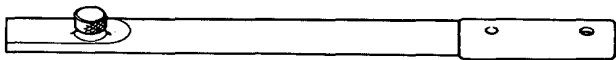
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB-0010000	Crank Pulley Holder Set	1	for Crankshaft pulley bolt
①-1	07JAA-0010100	Socket Wrench 17 mm	(1)	
①-2	07JAB-0010100	Pulley Holder Attachment	(1)	
①-3	07JAB-0010200	Handle	(1)	



①-1



①-2



①-3

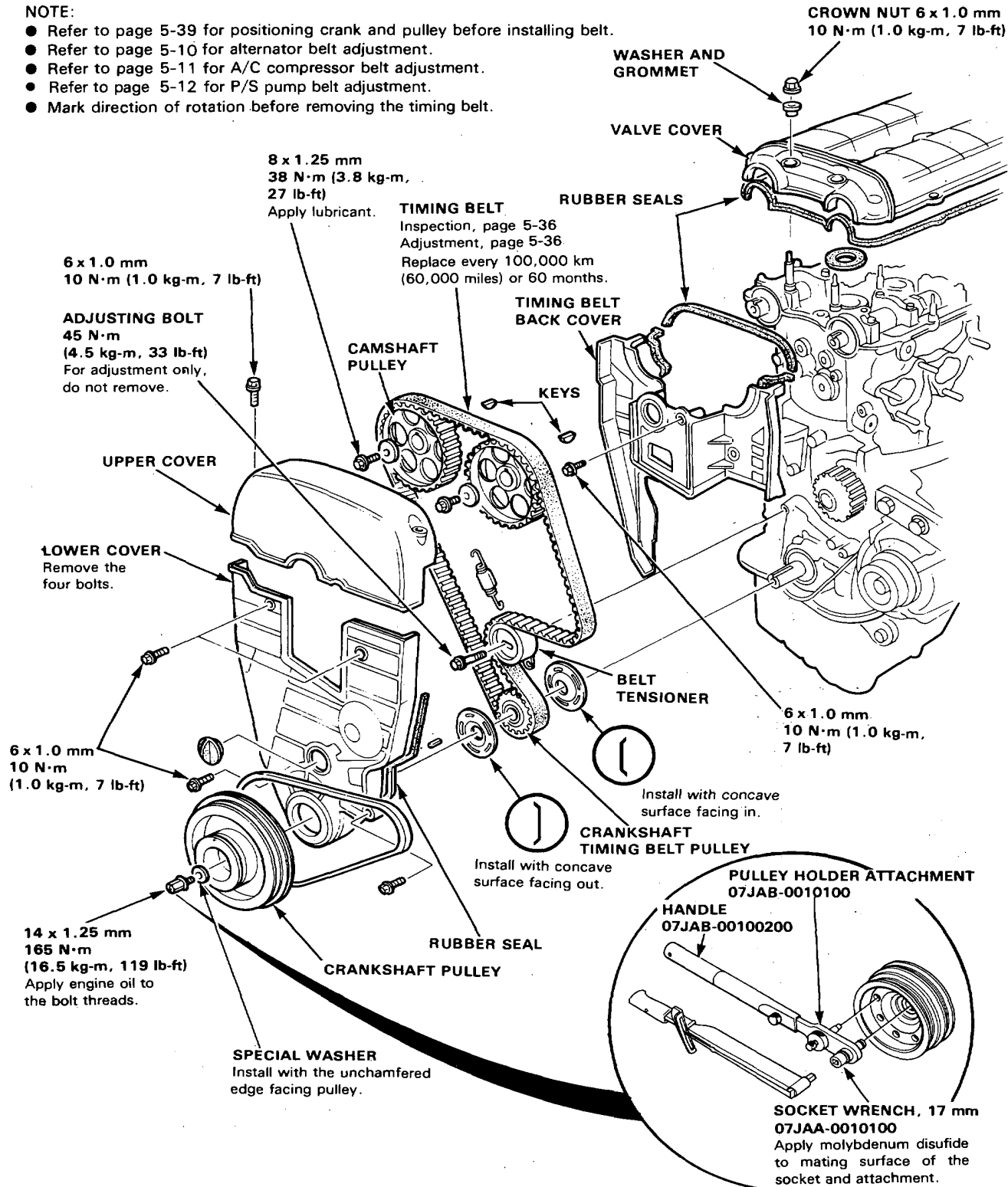
Timing Belt

Illustrated Index



NOTE:

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



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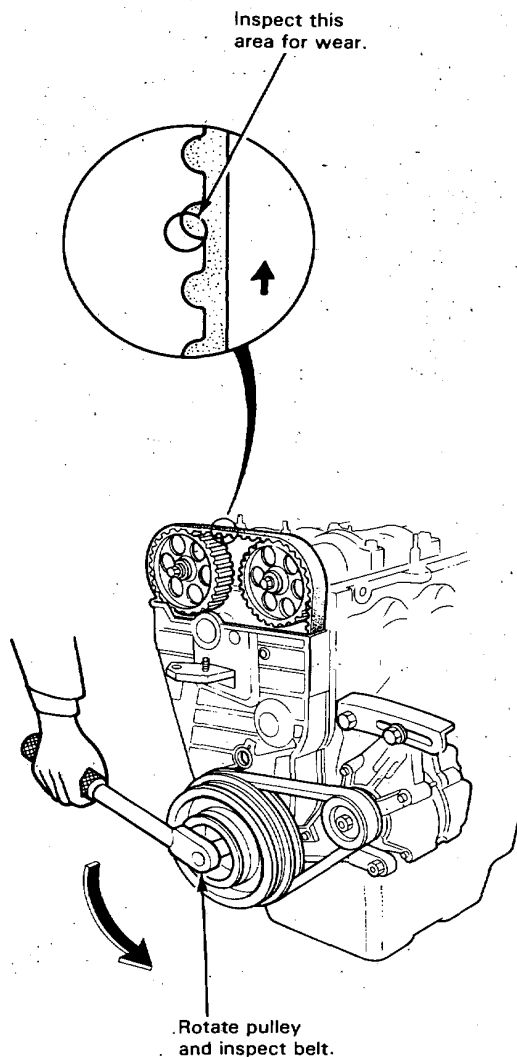
Timing Belt

Inspection

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

NOTE:

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



Tension Adjustment

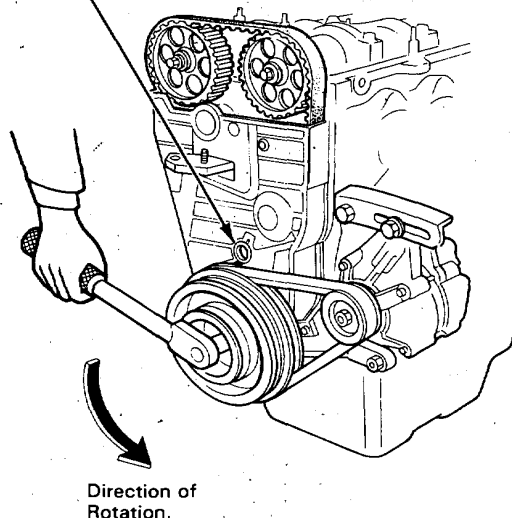
CAUTION: Always adjust timing belt tension with the engine cold.

NOTE:

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

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

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



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

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

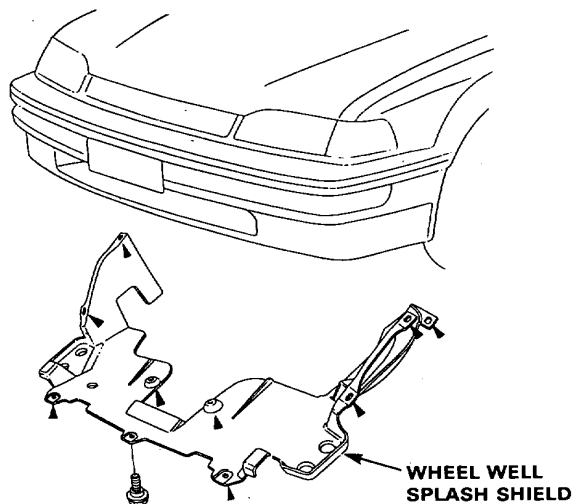


Replacement

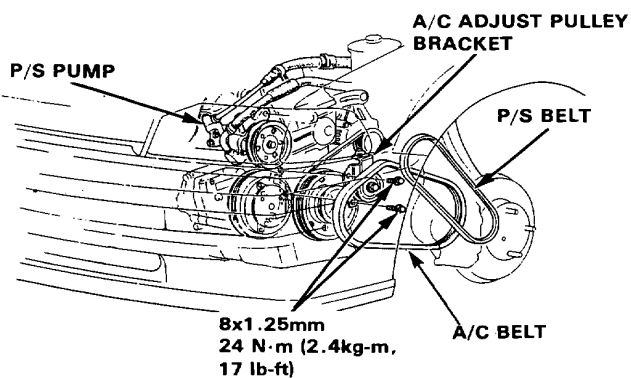
NOTE:

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

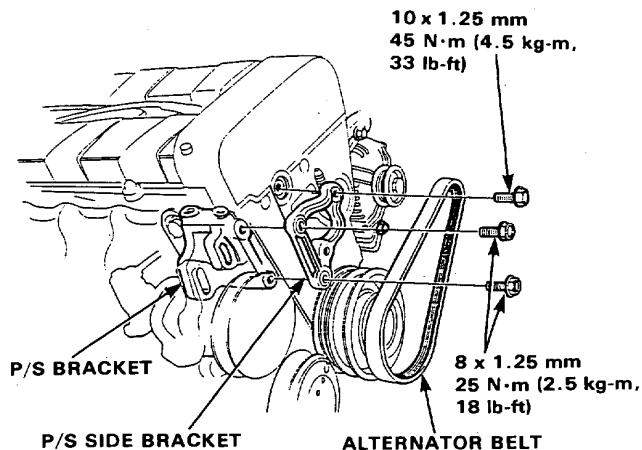
1. Remove the wheel well splash shield.



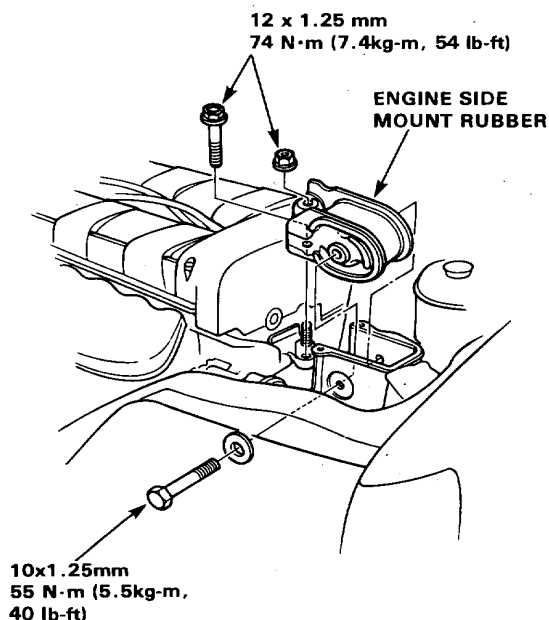
2. Remove the power steering pump (5-61 and 63).
3. Remove the A/C compressor adjust pulley with bracket and the belt (standard for some types).



4. Remove the power steering bracket.
5. Loosen the alternator adjust bolt and through bolt, then remove the belt.



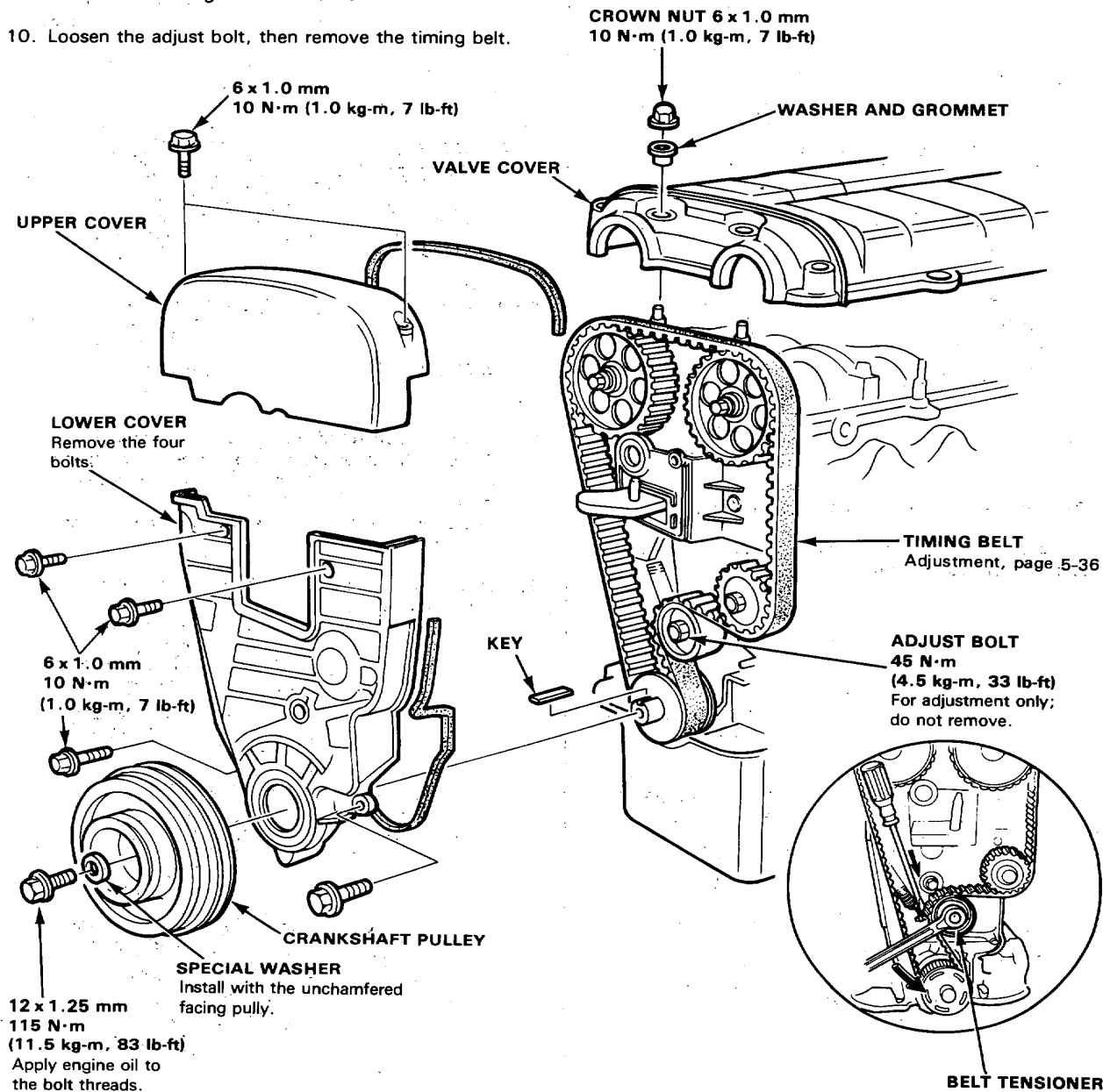
6. After installation, adjust the tension of each belt. See page 5-10 for alternator belt tension adjustment. See page 5-11 for A/C compressor belt tension adjustment. See page 5-12 for power steering pump belt tension adjustment.
7. Remove the engine support bolts and nut, then remove the side mount rubber.



(cont'd)

Timing Belt Replacement (cont'd)

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



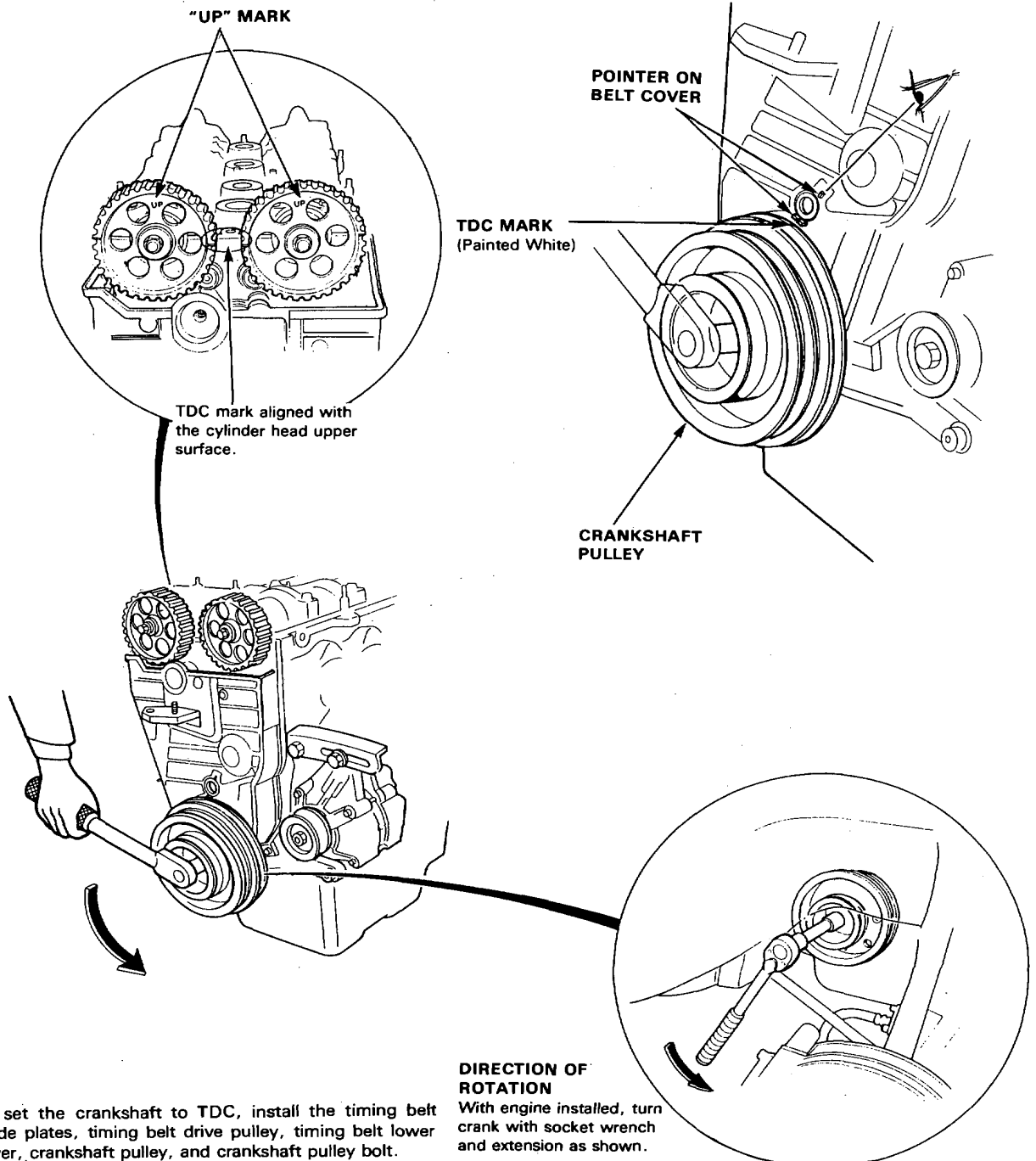
11. Install in the reverse order of removal; adjust the valve timing (page 5-39).
12. Carry out timing belt tension adjustment (page 5-36).



Positioning Crankshaft Before Installing Timing Belt

NOTE:

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

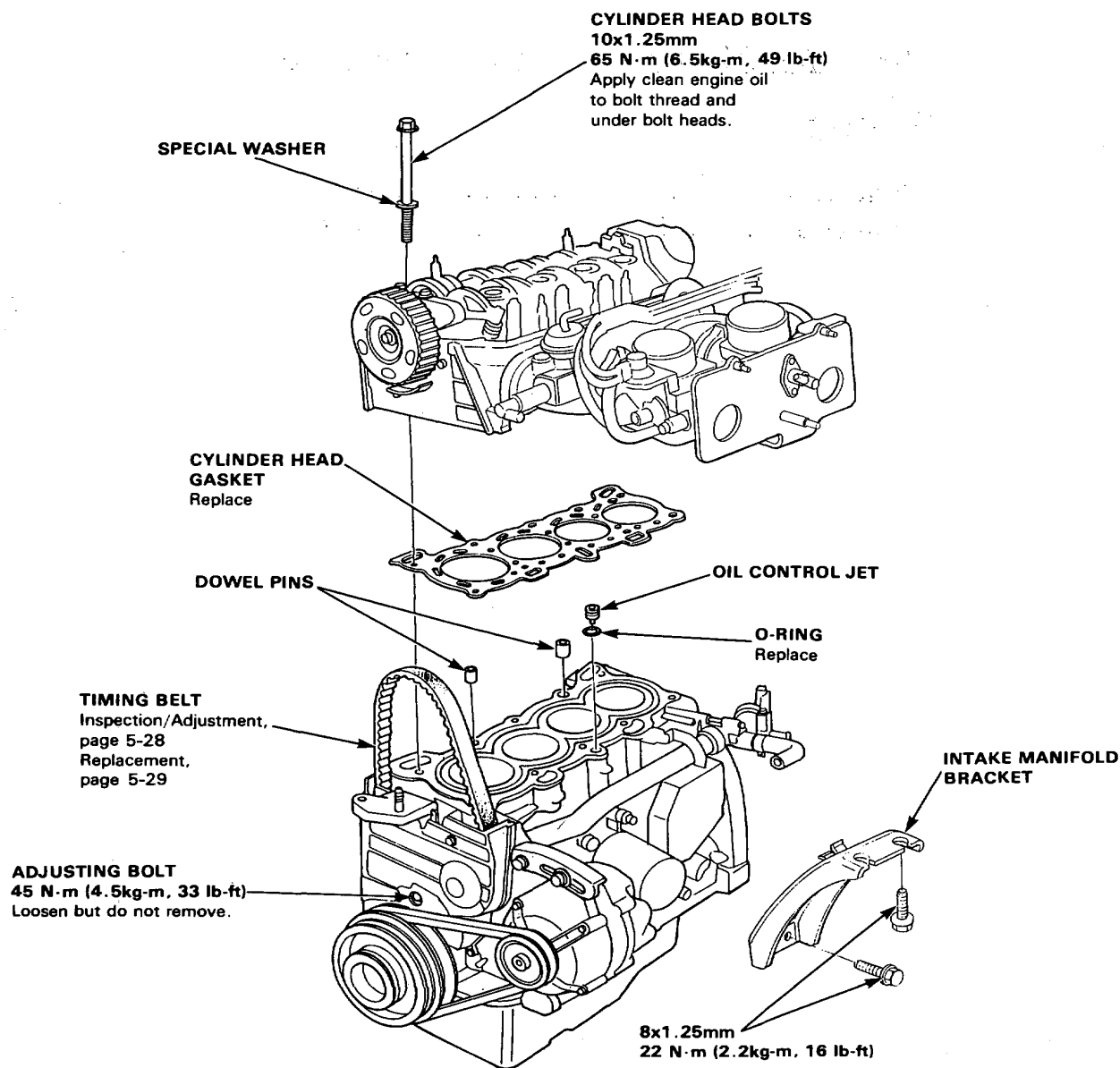


Cylinder Head

Removal (engine removal not required)

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

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





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

NOTE :

- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emissions tubes before disconnecting them.
- Be careful not to damage the cylinder head and engine block mating surface, and keep them clean.

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

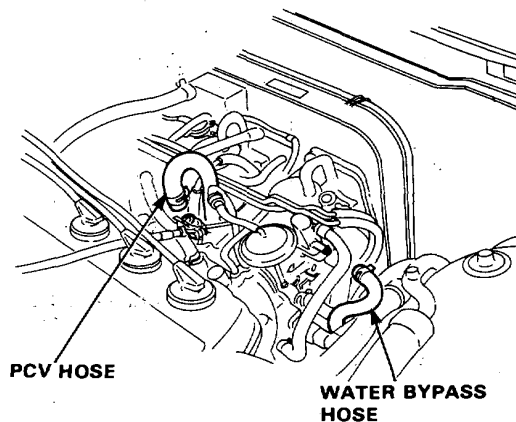
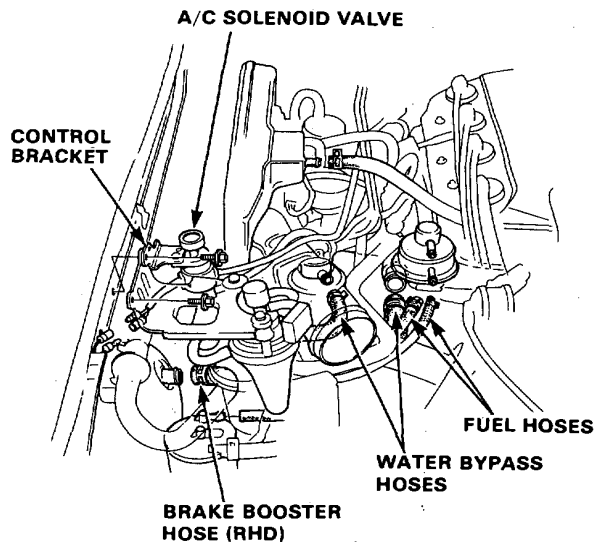
⚠ WARNING Do not smoke while working on fuel system, keep open flame or spark away from work area. Drain fuel only into an approved container.

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

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

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

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

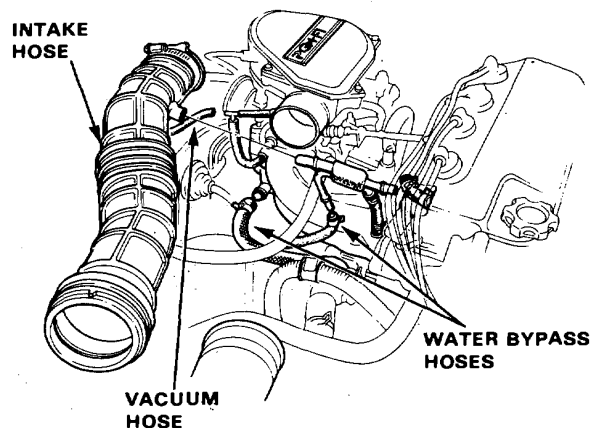


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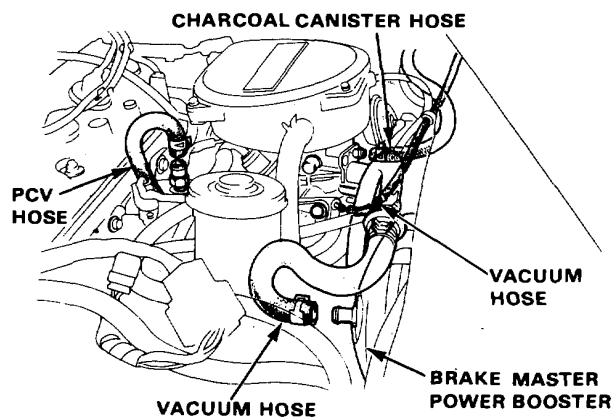
Cylinder Head

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

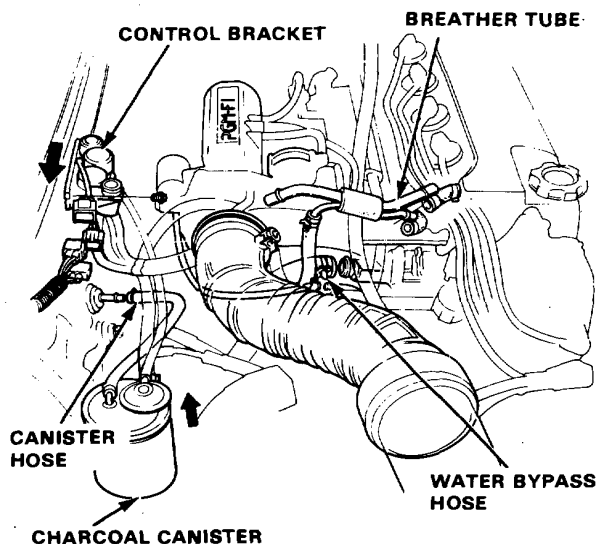
1.5 l PGM-FI Engine:



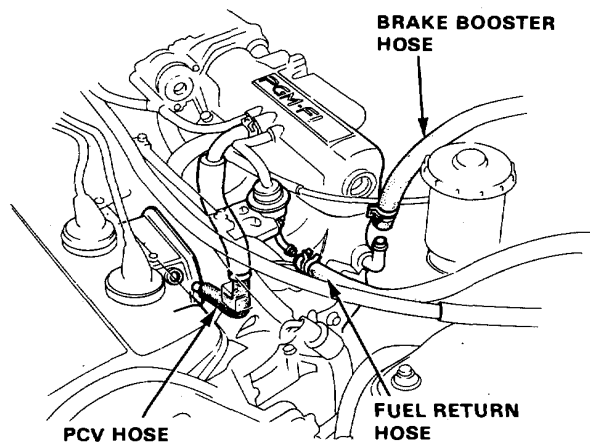
1.5 l PGM-FI Engine:



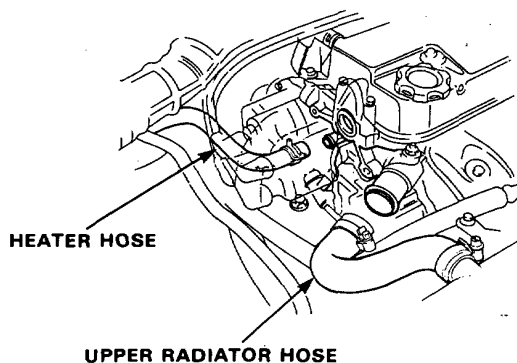
1.6 l PGM-FI Engine:



1.6 l PGM-FI Engine:



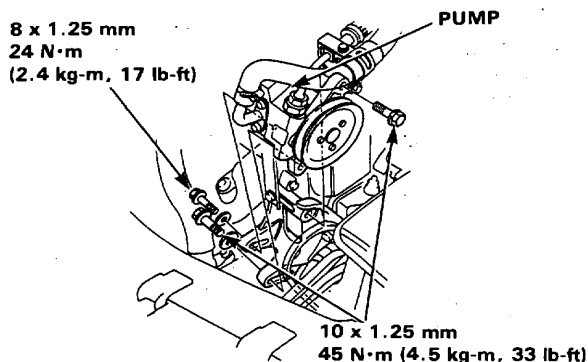
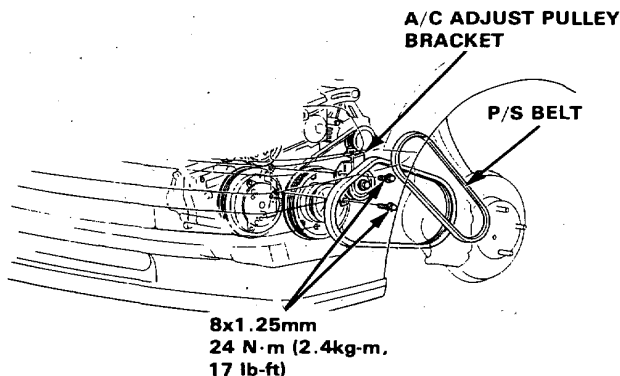
13. Remove the upper radiator hose and the heater hose from the cylinder head.



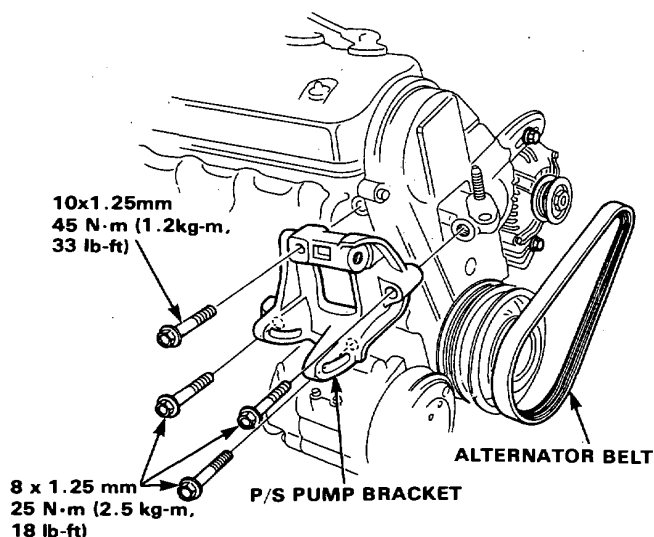
14. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
 - Ignition coil connector (from distributor)
 - EACV connector
 - Engine ground wire
 - Thermounit connector
 - Coolant temperature sensor connector
 - Carburetor solenoid valve, inner bent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



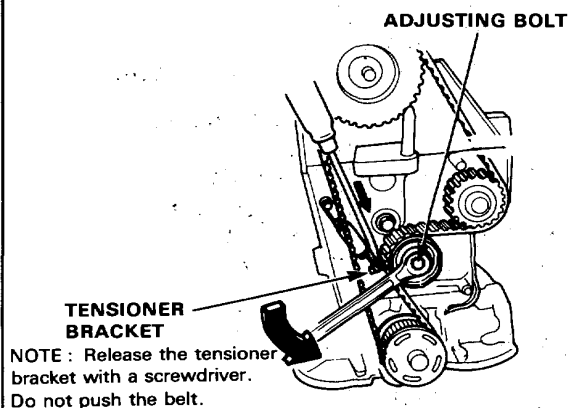
15. Remove the power steering belt.
16. Remove the power steering pump.
 - Do not disconnect the power steering hoses.



17. Remove the power steering bracket.
18. Remove the alternator belt.

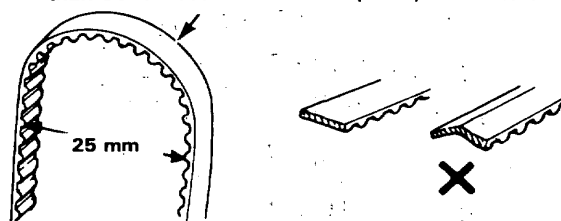


19. Jack-up and set the rigid rack.
20. Remove the L.tire and L.wheel.
21. Remove the L.wheel well splash shield.
22. Remove the intake manifold bracket.
23. Remove the exhaust manifold bracket, then remove the exhaust pipe A.



24. Remove the exhaust manifold shroud, then remove exhaust manifold.
25. Remove the distributor and valve cover.
26. Remove the timing belt upper cover.
27. Loosen the timing belt adjust bolt, then remove the timing belt from the camshaft pulley.

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



28. Remove the cylinder head.

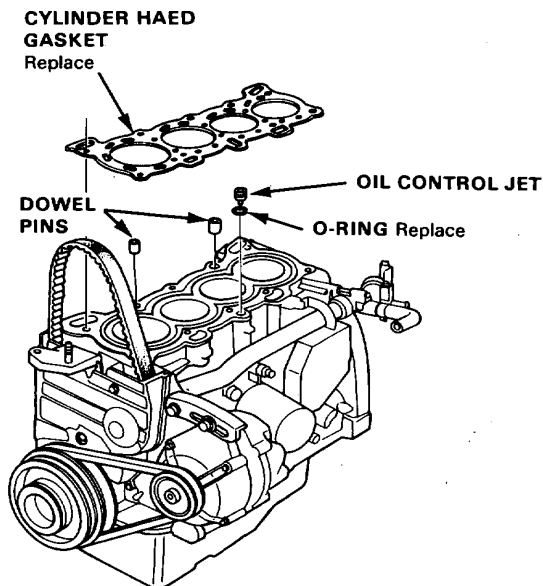
CAUTION: Do not loosen one head bolt completely but loosen the bolts gradually from the outside diagonally.

29. Remove the intake manifold from the cylinder head.

Cylinder Head

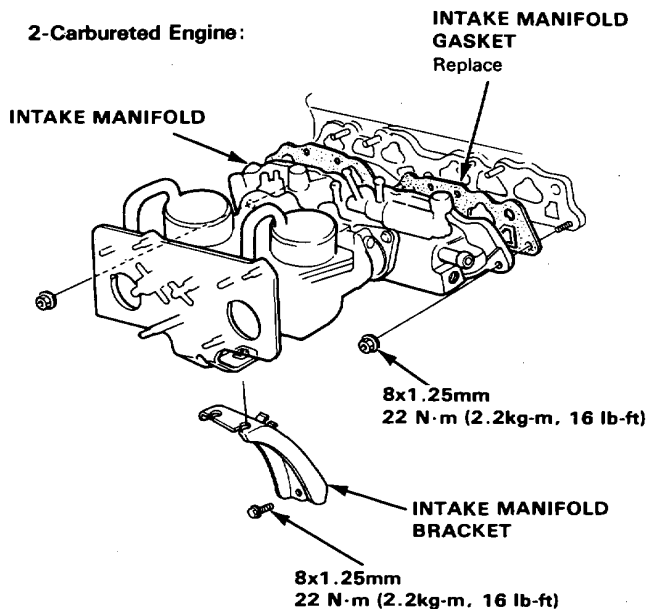
Installation

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

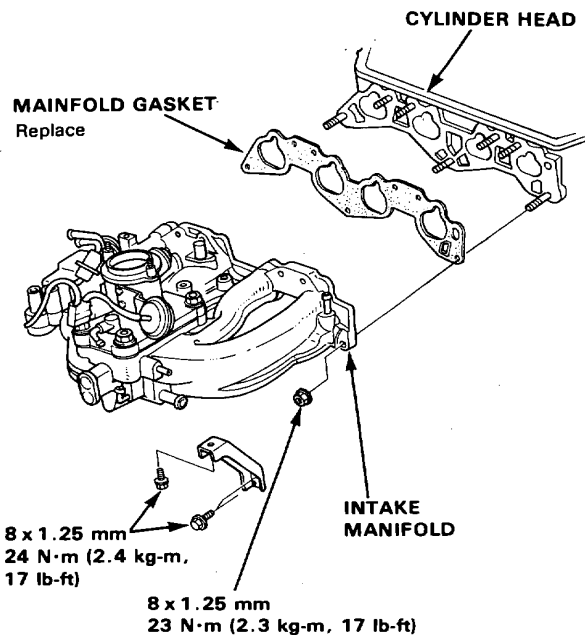


3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.

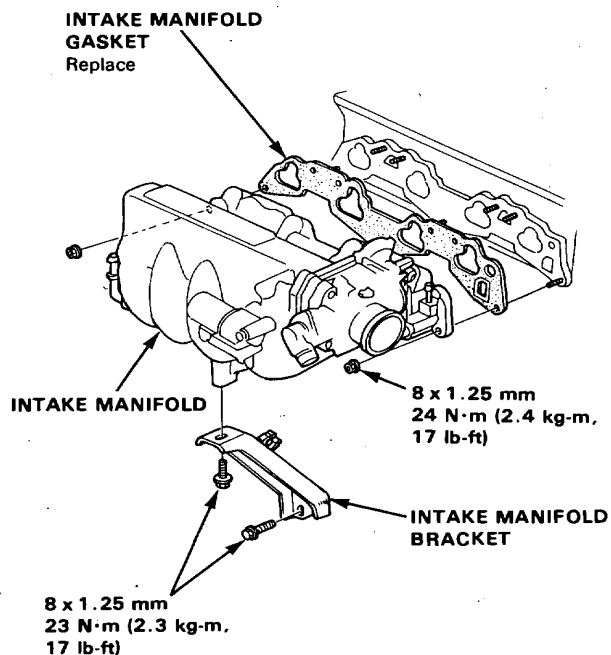
2-Carbureted Engine:



1.5 l PGM-FI Engine:



1.6 l PGM-FI Engine:

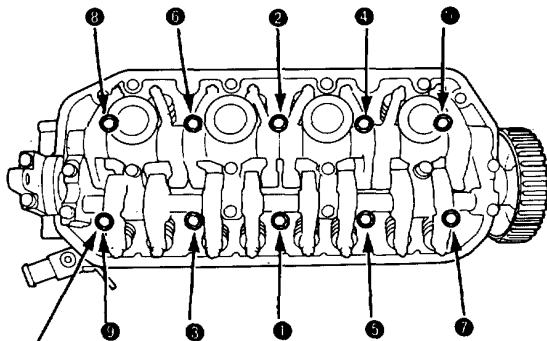




4. Tighten cylinder head bolts in two steps. In the first step tighten all bolts and nuts, in sequence, to about 30 N·m (3.0kg, 22 lb-ft) ; in the final step tighten, in same sequence, to 65 N·m (6.5kg-m, 47 lb-ft).

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

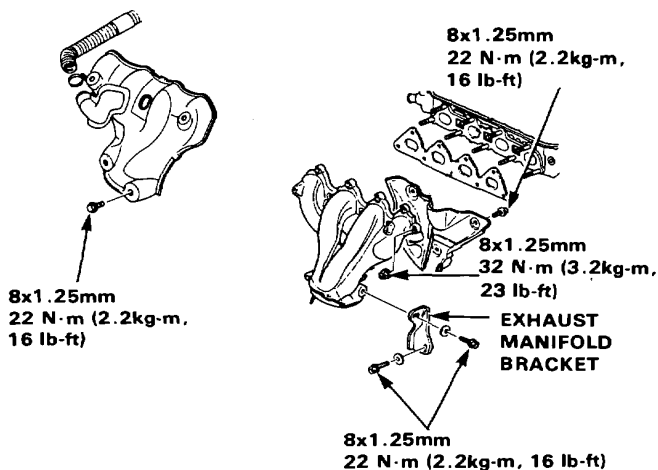
CYLINDER HEAD TORQUE SEQUENCE



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

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

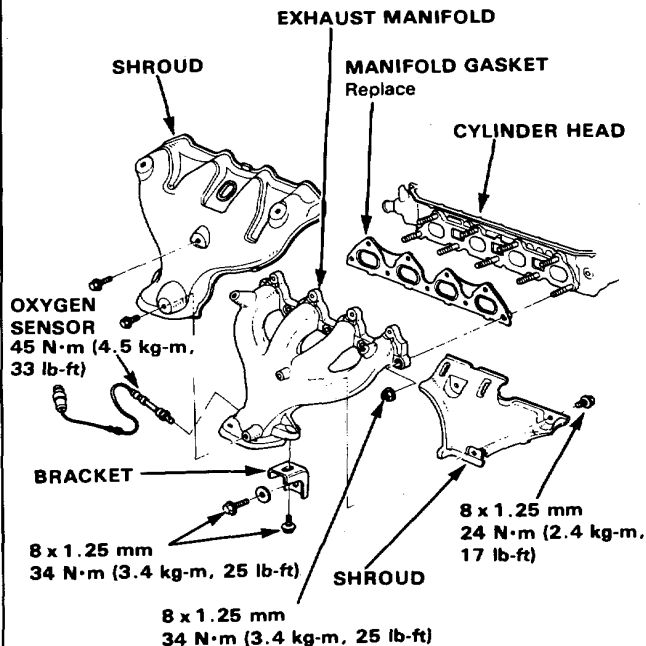
Carbureted Engine:



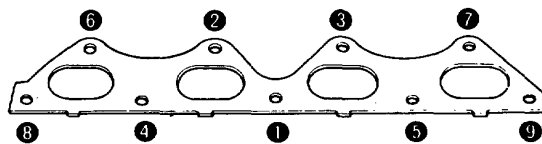
NOTE:

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

1.5 l, 1.6 l PGM-FI with CATA:



EXHAUST MANIFOLD TORQUE SEQUENCE



Special Tools

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

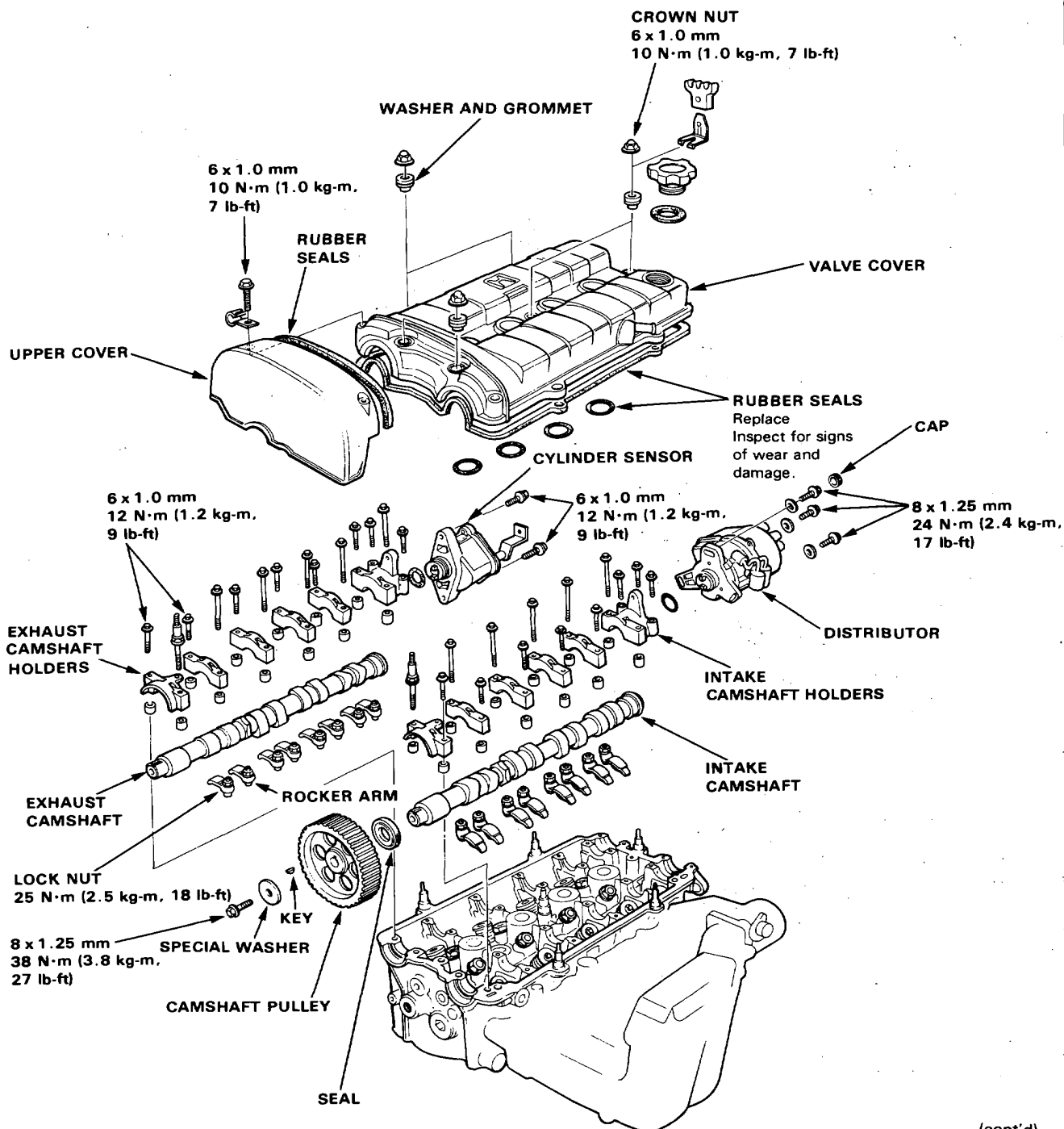


Cylinder Head

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.

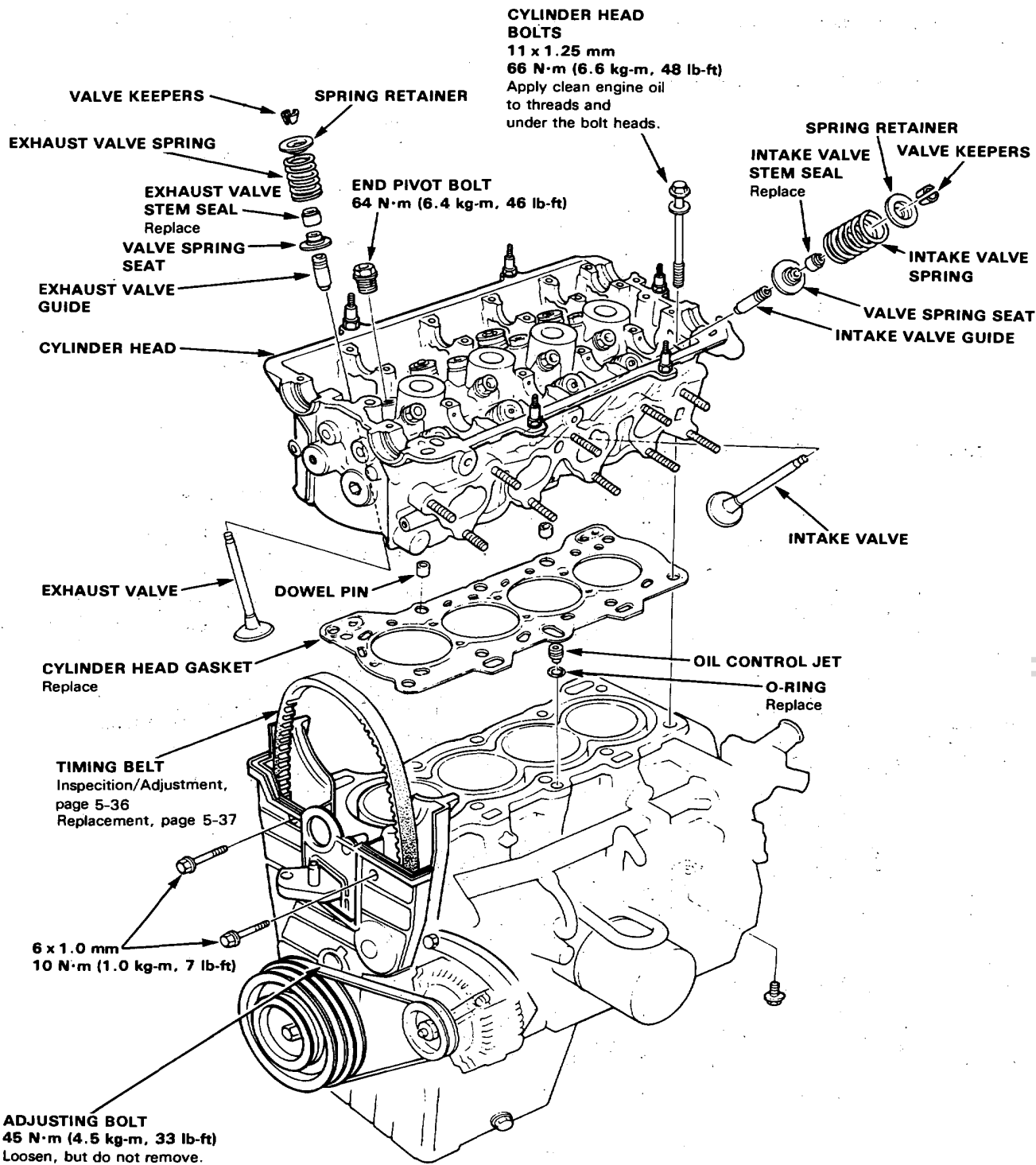
NOTE: Use new O-rings and gaskets whenever reassembling.



(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:

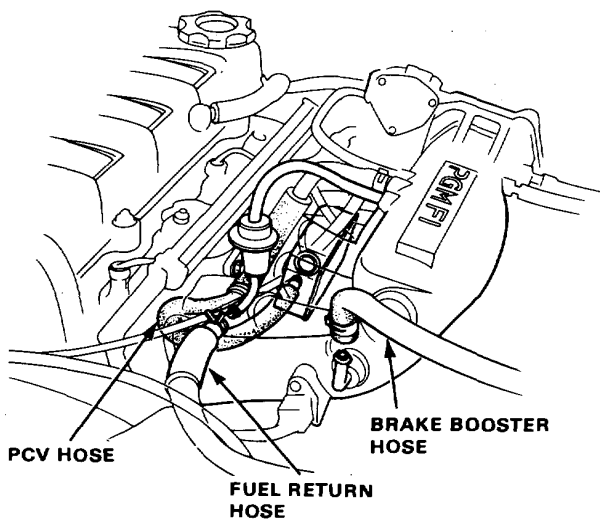
- Inspect the timing belt before removing the cylinder head.
- Turn the crankshaft pulley so that the No. 1 cylinder is at top-dead-center.
- Mark all emission hoses before disconnecting them.

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

⚠ WARNING

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

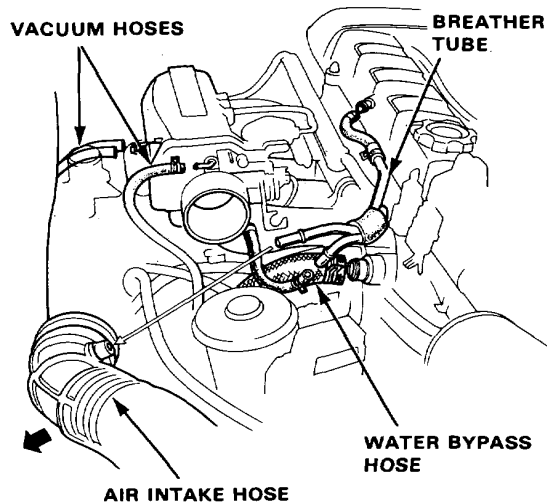
5. Remove the brake booster vacuum hose.
6. Disconnect the PCV hose.



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

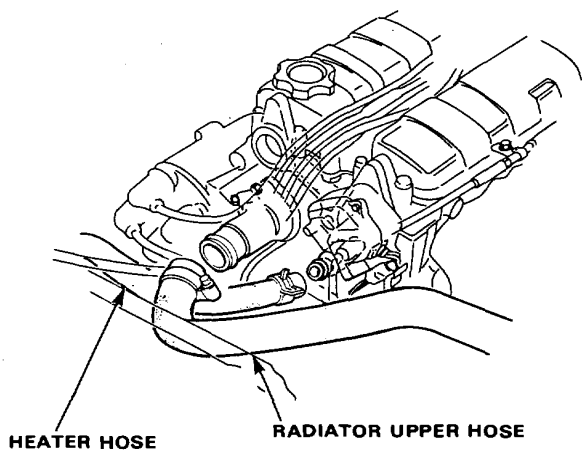
11. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.

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



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

12. Disconnect the radiator upper hose and the heater hose at the engine.

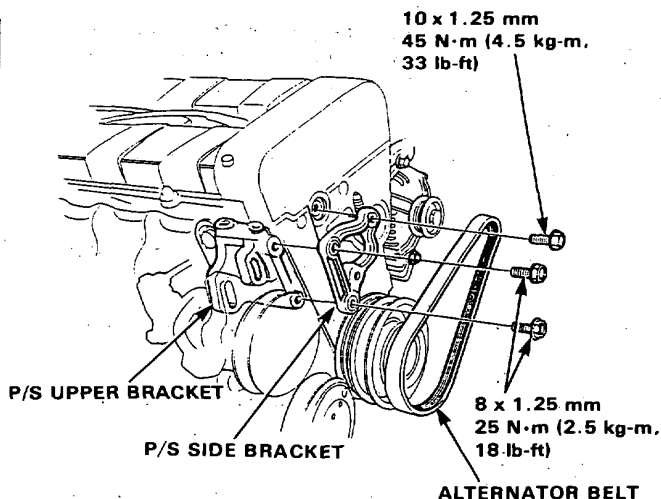
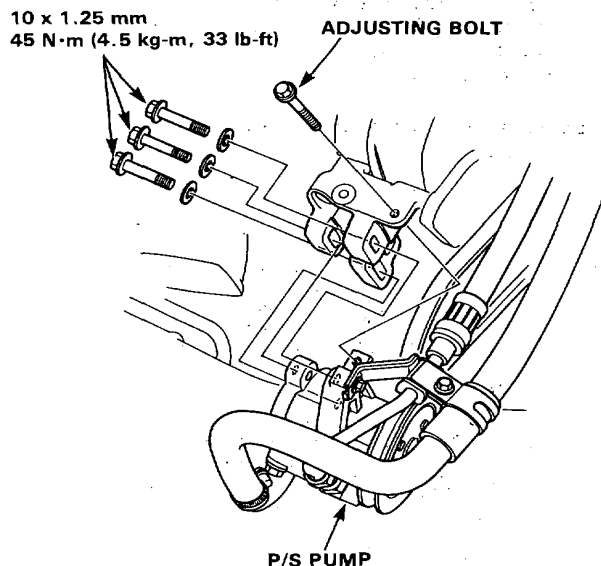
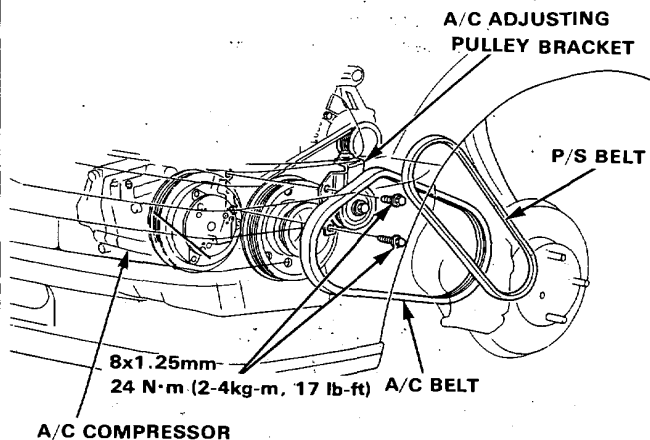


(cont'd)

Cylinder Head

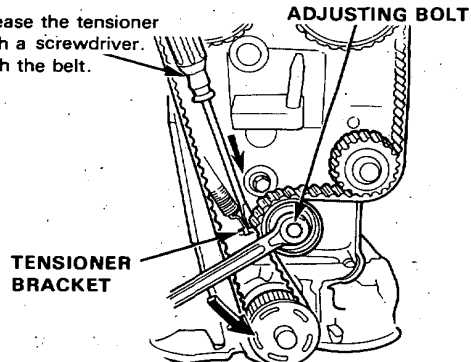
Removal (engine removal not required) (cont'd)

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

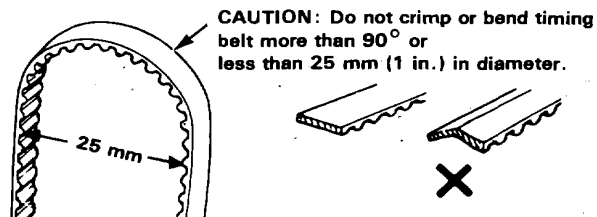


16. Remove the bolts from the intake manifold bracket.
17. Remove the exhaust manifold shroud.
18. Remove the bolts from the exhaust manifold bracket.
19. Remove the self-locking nut from the exhaust pipe A.
20. Remove the exhaust manifold assy.
21. Remove the timing belt upper cover.
22. Remove the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

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



24. Remove the timing belt from the driven pulleys.



25. Remove the cylinder head.

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

26. Remove the intake manifold from the cylinder head.

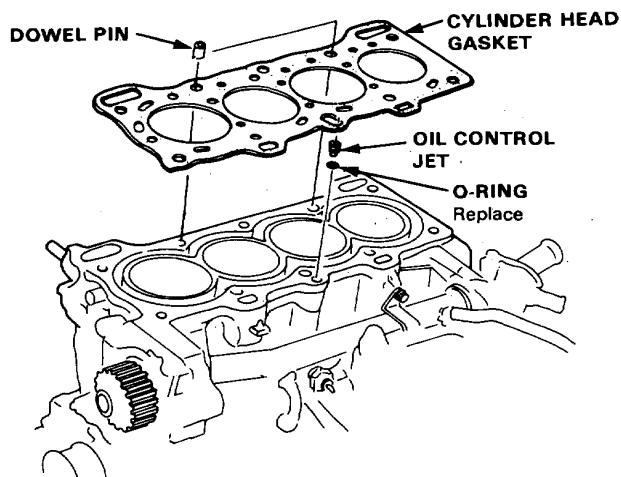


Installation

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

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

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

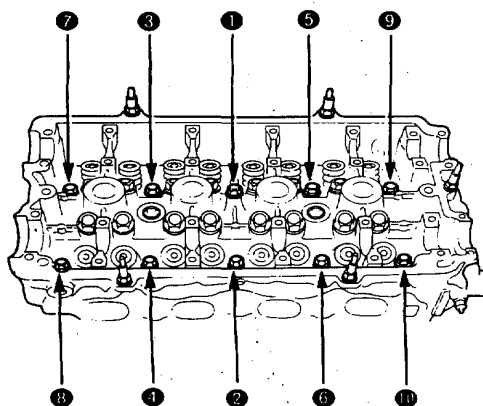


2. Tighten cylinder head bolts in two steps. In the first step tighten all bolts, in sequence, to about 30 N·m (3.0 kg-m, 22 lb-ft); in the final step tighten, in same sequence, to 68 N·m (6.8 kg-m, 49 lb-ft)

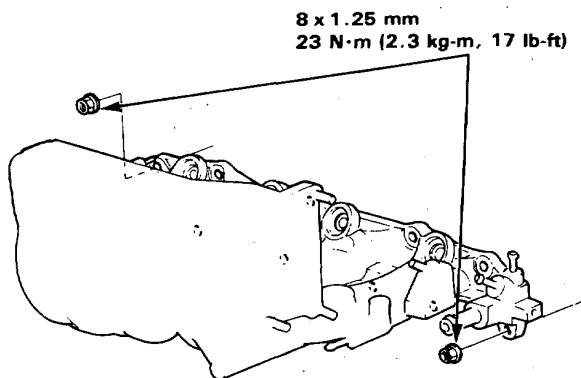
NOTE:

- Apply engine oil to the cylinder head bolts and the washers.
- Use the longer bolts at the position ① and ② as shown.

CYLINDER HEAD BOLTS TORQUE SEQUENCE

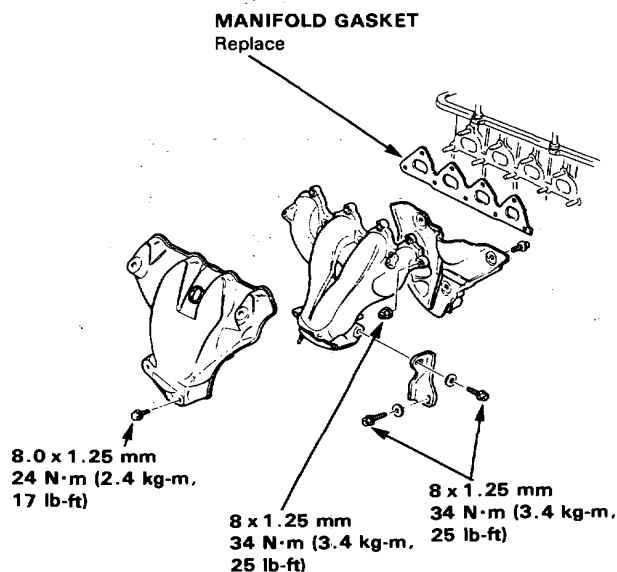


3. Install the intake manifold and tighten the nuts in a criss-cross pattern in 2 or 3 steps, beginning with the inner nuts.



4. Install the exhaust manifold and bracket.

Without CATA:



(cont'd)

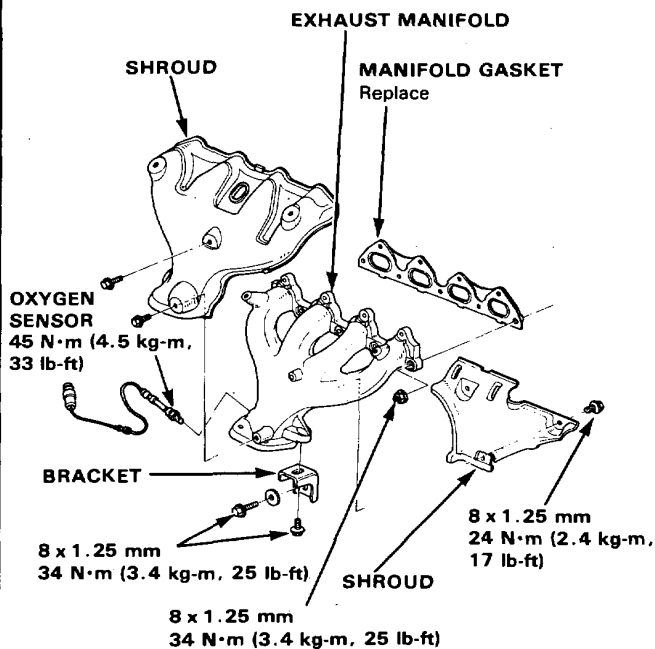
Cylinder Head

Installation (cont'd)

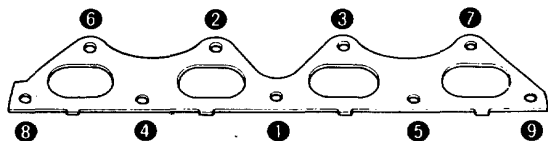
NOTE:

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

With CATA:

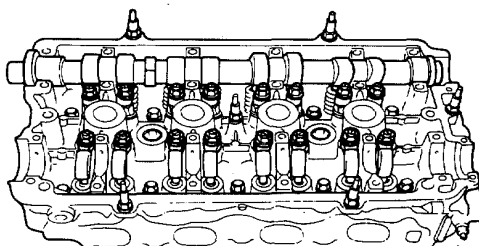


EXHAUST MANIFOLD TORQUE SEQUENCE



CAUTION:

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

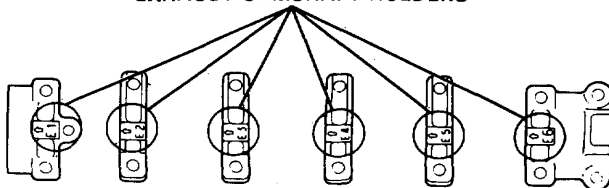


6. Install the camshafts and the camshaft seals with the open side (spring) facing in.

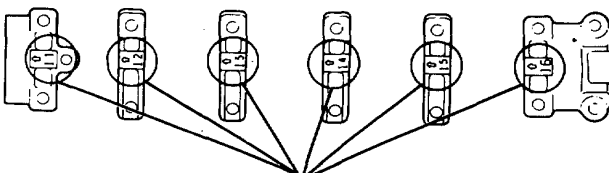
NOTE:

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

EXHAUST CAMSHAFT HOLDERS



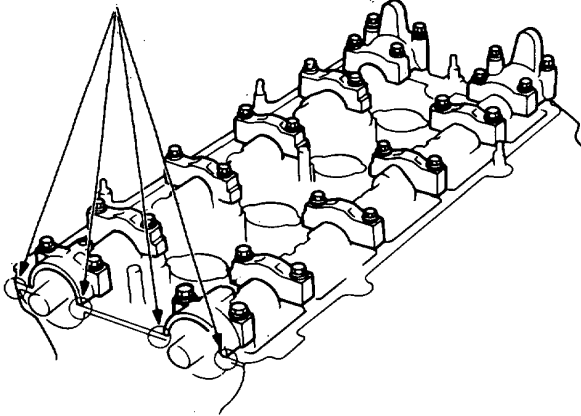
INTAKE CAMSHAFT HOLDERS





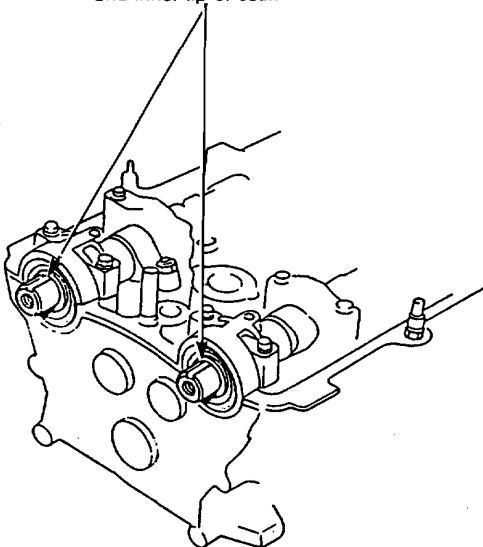
7. Apply liquid gasket to the head mating surfaces of the No. 1 and No. 6 camshaft holders, then install them, along with the No. 2, 3, 4 and 5.
8. Tighten the camshaft holders temporarily.
 - Make sure that the rocker arms are properly positioned on the valve stems.

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

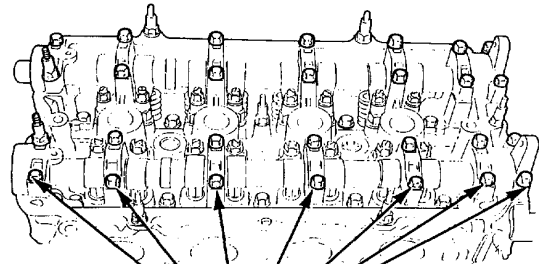


9. Press in the camshaft oil seal securely with the special tool.

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



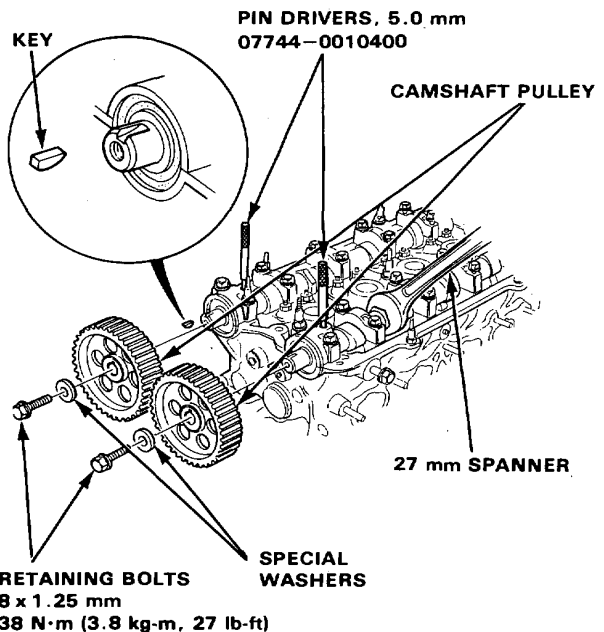
10. Tighten each bolt two turns at a time in the sequence shown below to insure that the rockers do not bind on the valves.



6 x 1.0 mm
12 N·m (1.2 kg-m, 9 lb-ft)

11. Install keys into grooves in camshafts.

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



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

Special Tools

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



Engine Removal/Installation



⚠ WARNING

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

CAUTION:

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

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

CAUTION: Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.

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

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

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

⚠ WARNING

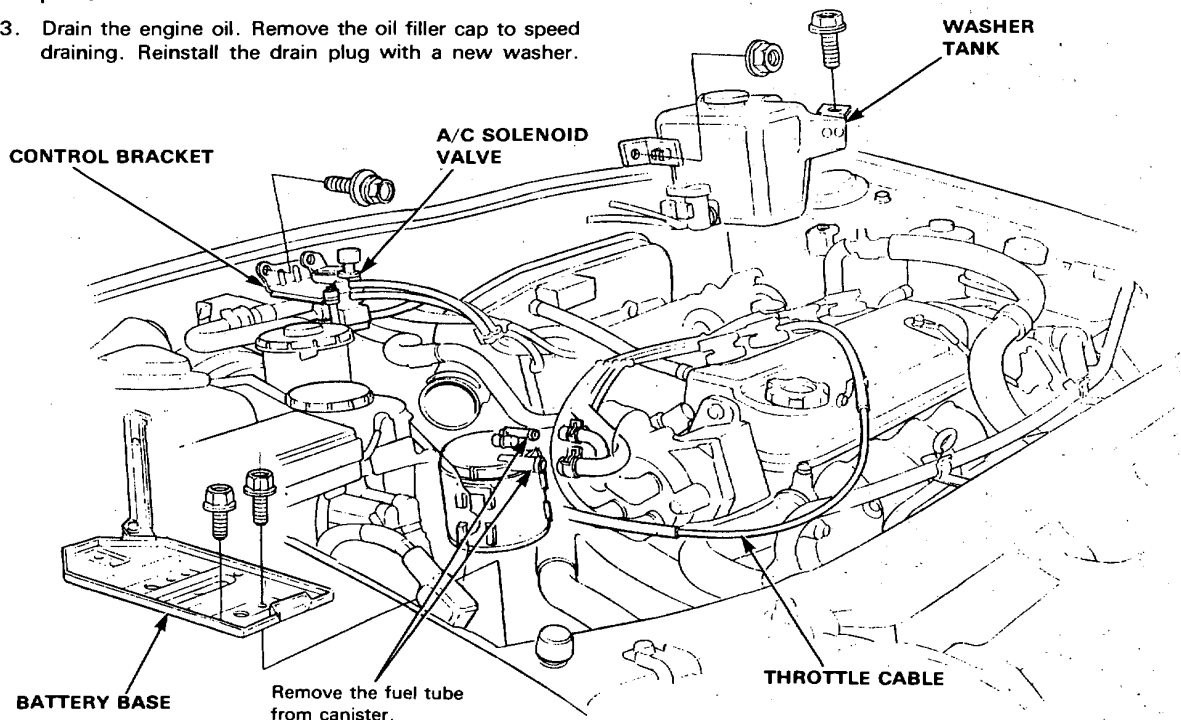
Use care when removing expansion tank cap to avoid scalding by hot coolant or steam.

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

Carbureted engine: Go to steps 8 through 15.
PGM-FI engine: Go to steps 16 through 23.

8. Disconnect the coupler connection to remove the bolts, and put the emission control box on the engine.

- Don't remove the tubes.



(cont'd)

Engine Removal/Installation (cont'd)

UNDER-HOOD
RELAY BOX

BATTERY
WIRES

TRANSMISSION
GROUND CABLE

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

BRAKE BOOSTER
VACUUM HOSE

ENGINE GROUND
CABLE

ENGINE HARNESS
CONNECTORS

FUEL HOSE FUEL PUMP

10. Disconnect the engine ground cable.
11. Disconnect the fuel hoses at the fuel pump.



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

CAUTION :

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

12. Disconnect the engine wire connectors and spark plug wires.
13. Remove the bolts, then remove the distributor from the cylinder head.

NOTE : Check the ignition timing after installation.

DISTRIBUTOR

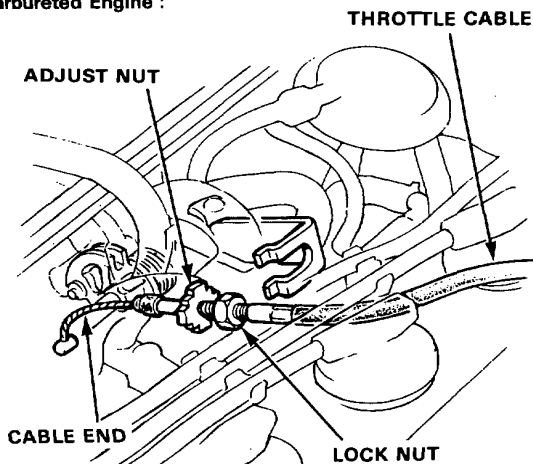
VACUUM TUBES

O-RING
Peplace

8x1.25mm
24 N·m (2.4kg-m, 17 lb-ft)



Carbureted Engine :



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

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

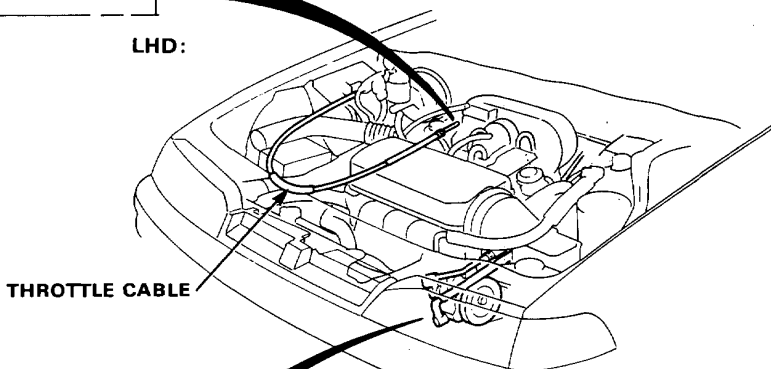
NOTE :

- Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.
- Adjust the throttle cable tension after installation.

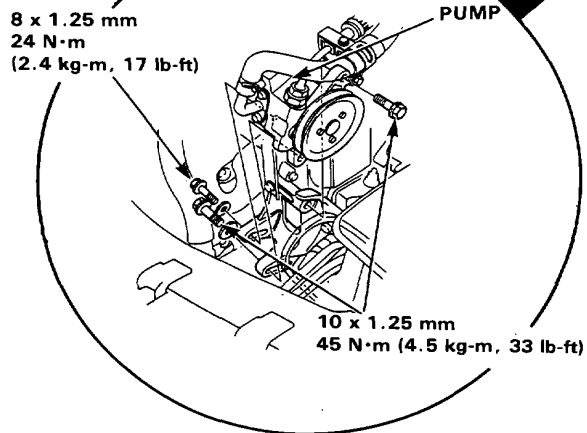
15. Remove the mounting bolts and V-belt for the power steering pump, then without disconnecting the hose, pull the pump away from its mounting bracket.

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

LHD:



RHD:



BATTERY BASE

WASHER TANK

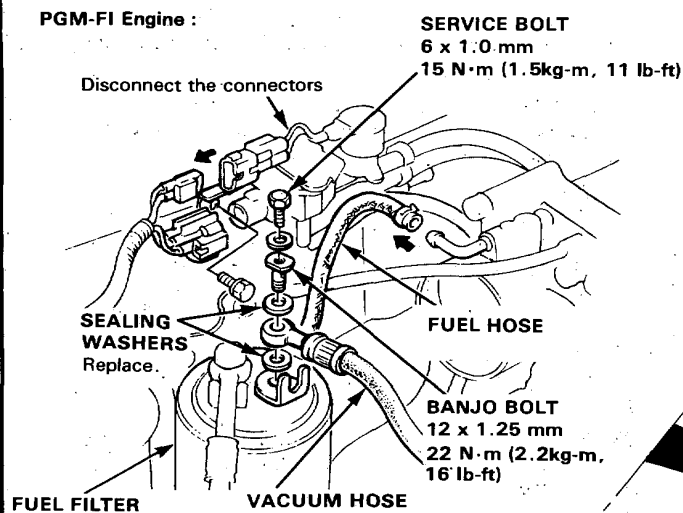
THROTTLE CABLE

ENGINE GROUND CABLE

(cont'd)

Engine Removal/Installation (cont'd)

PGM-FI Engine :

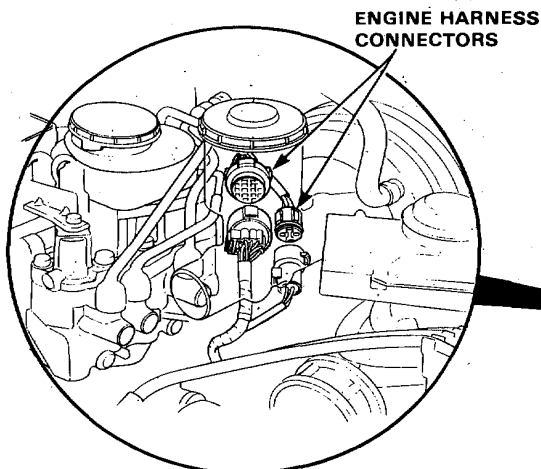


16. Relieve fuel pressure by slowly loosening the service bolt on the fuel filter about one turn. (Section 6).

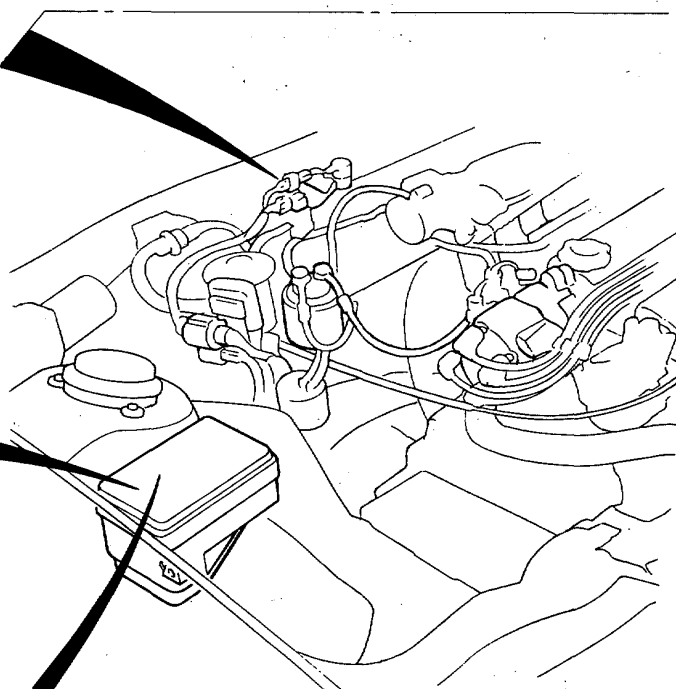
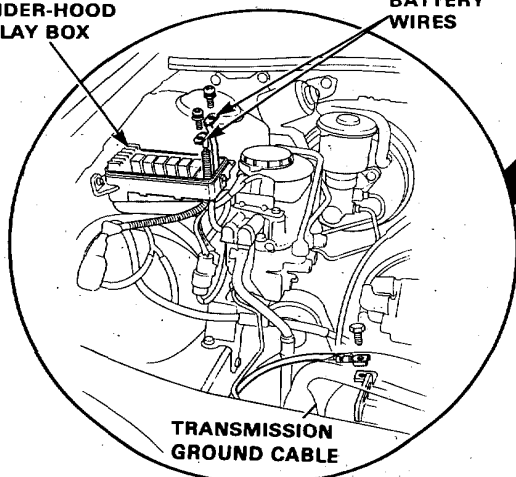
⚠ WARNING Do not smoke while working on fuel system. Keep open flame away from work area. Drain fuel only into an approved container.

CAUTION:

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



UNDER-HOOD RELAY BOX



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

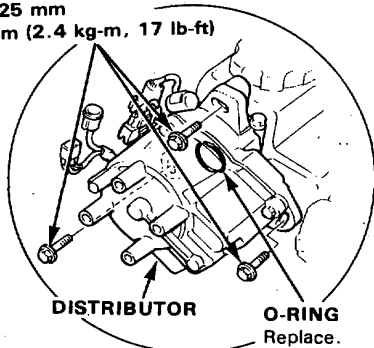
18. Disconnect the engine wire connectors and spark plug wires.



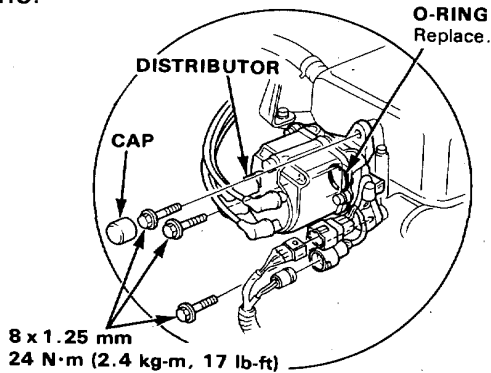
19. Remove the cap and bolts, then remove the distributor from the cylinder head.

DOHC:

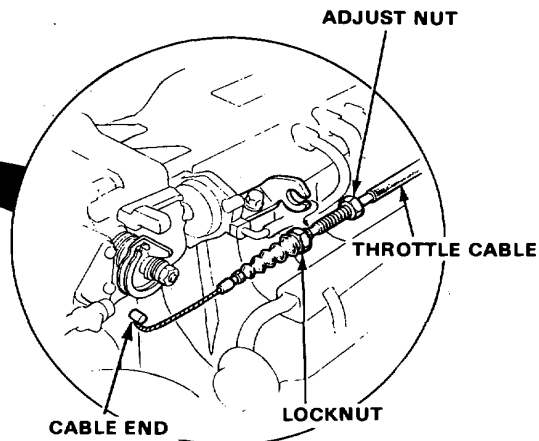
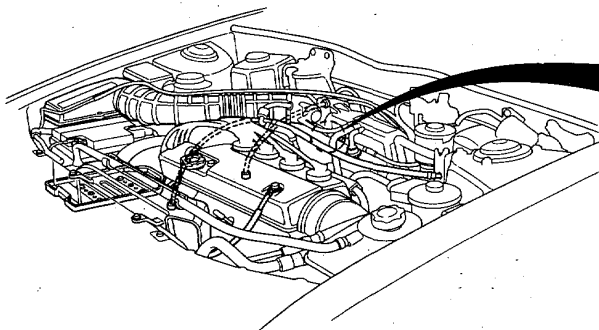
8 x 1.25 mm
24 N·m (2.4 kg-m, 17 lb-ft)



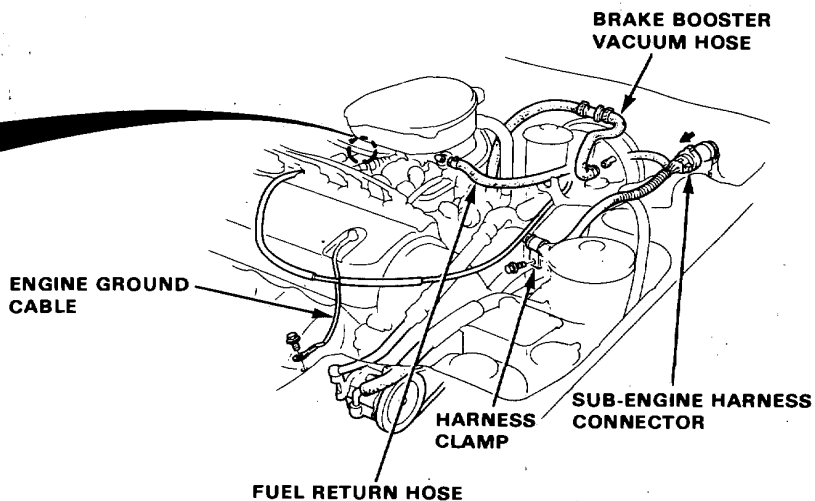
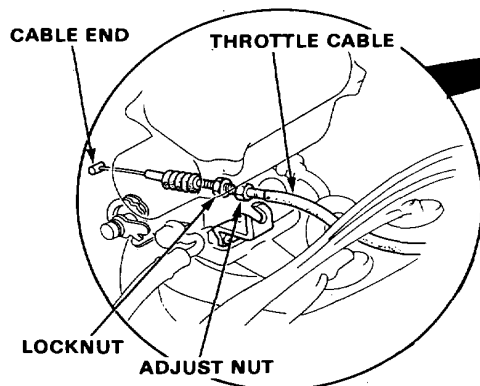
SOHC:



1.6 L PGM-FI SOHC Engine:



1.5 L PGM-FI Engine:

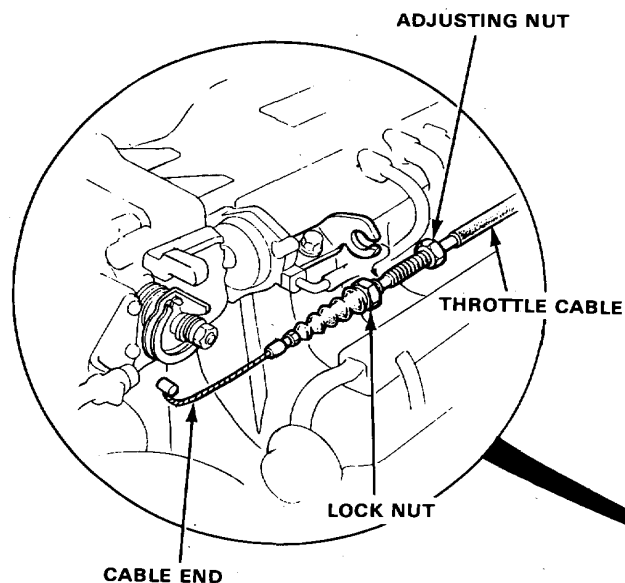


⚠ WARNING Do not smoke while working on fuel system. Keep open flame away from work area.
Drain fuel only into an approved container.

(cont'd)

Engine Removal/Installation (cont'd)

PGM-FI DOHC Engine:



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

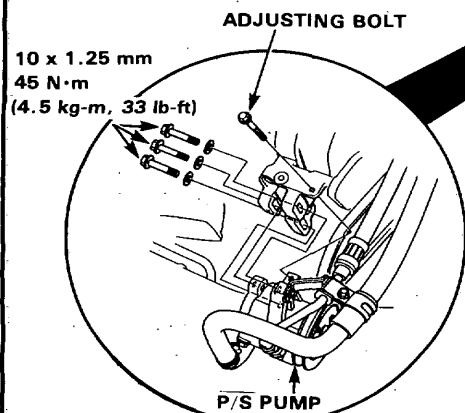
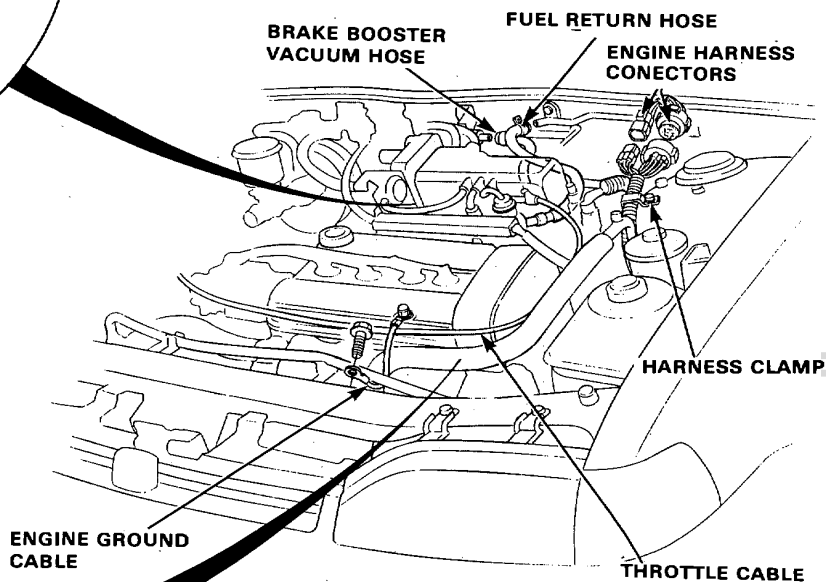
CAUTION: Be careful not to damage the throttle cable during engine removal. On installation, check the cable is not kinked or binding.

NOTE:

- Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.
- Adjust the throttle cable tension after installation.

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

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



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

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



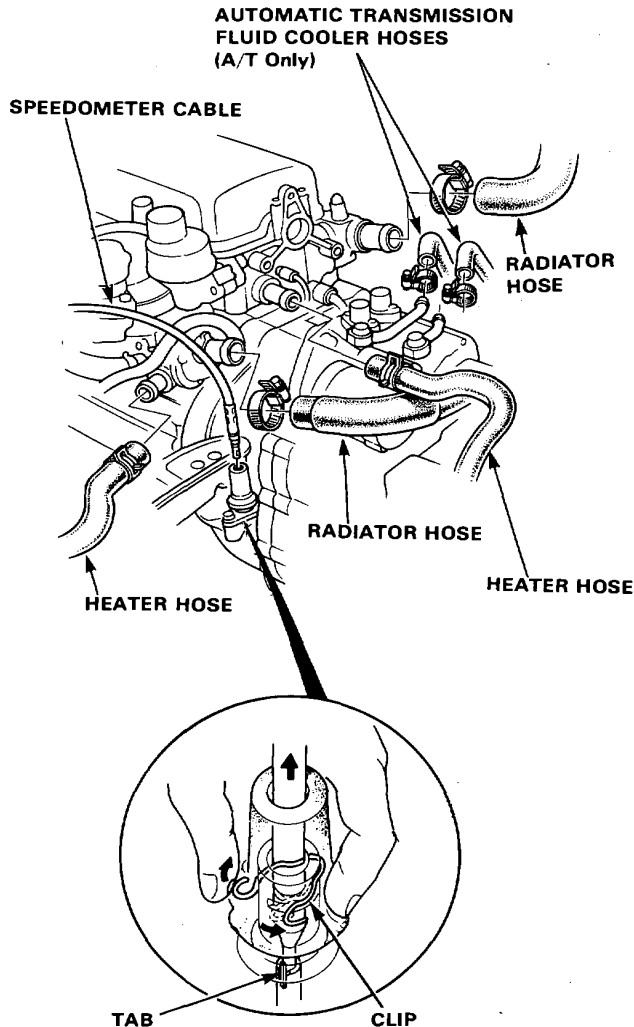
24. Disconnect the radiator hoses and heater hoses.

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

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

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

26. Remove the speedometer cable.



CAUTION:

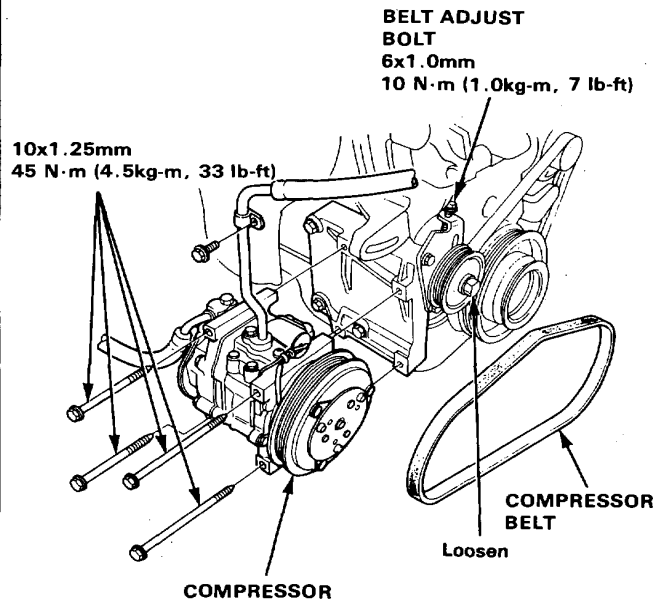
- Do not remove the holder because the speedometer gear may fall into the transmission housing.
- Turn the clip from the top of the boots, and pull out the speedometer cable.

27. On cars with A/C:

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

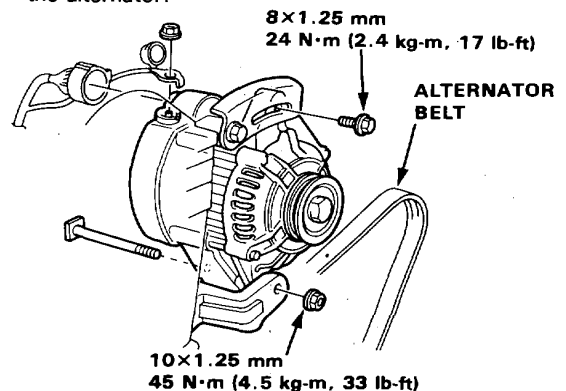
NOTE:

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



28. Remove the alternator.

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



(cont'd)

Engine Removal/Installation (cont'd)

29. Remove the exhaust pipe A with bracket from exhaust pipe B and then from engine block. (carbureted engine)
30. Remove the right and left driveshafts. (see section 10)

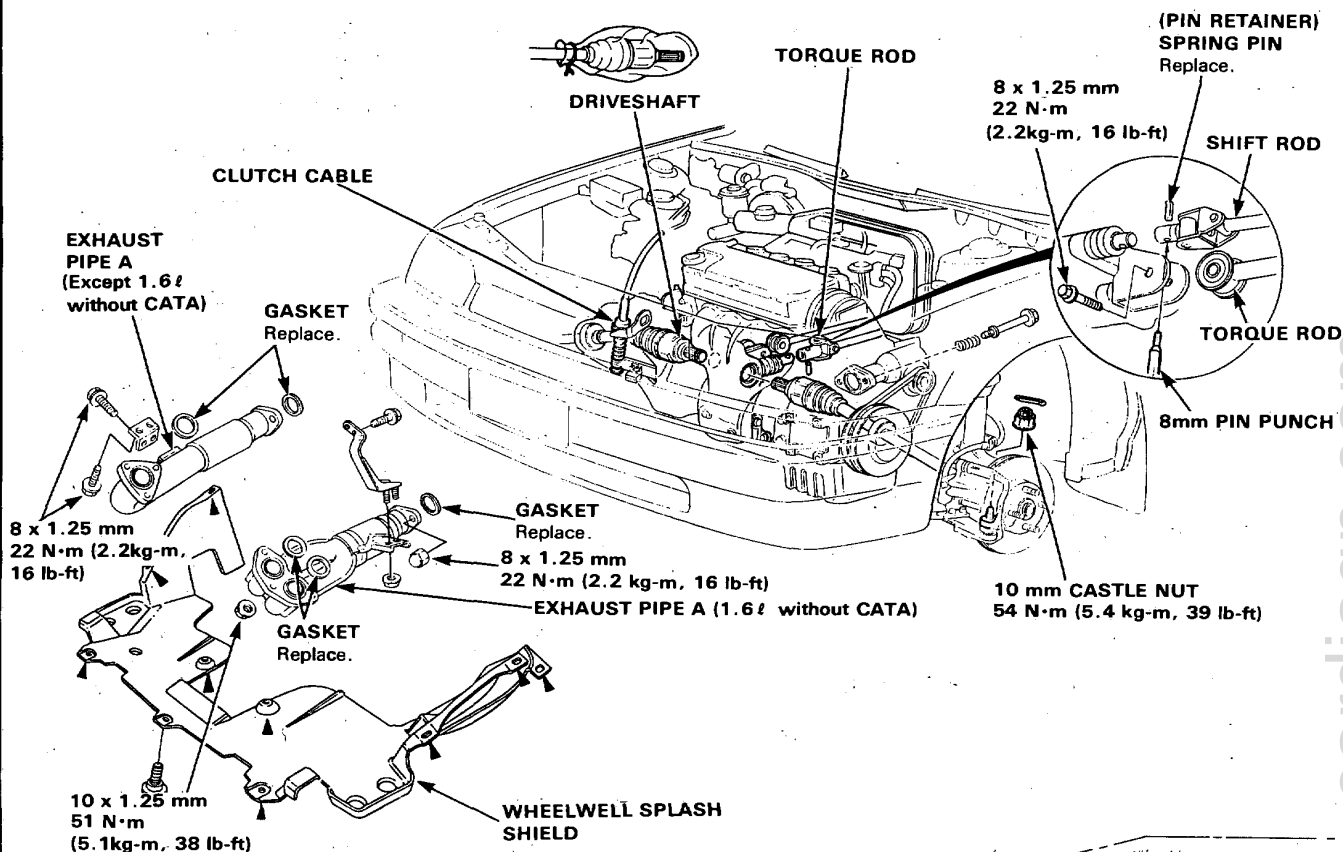
NOTE: Coat all precision finished surfaces with clean engine oil or grease.

Tie plastic bags over the driveshaft ends.

(On Manual Transmission Cars:)

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

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



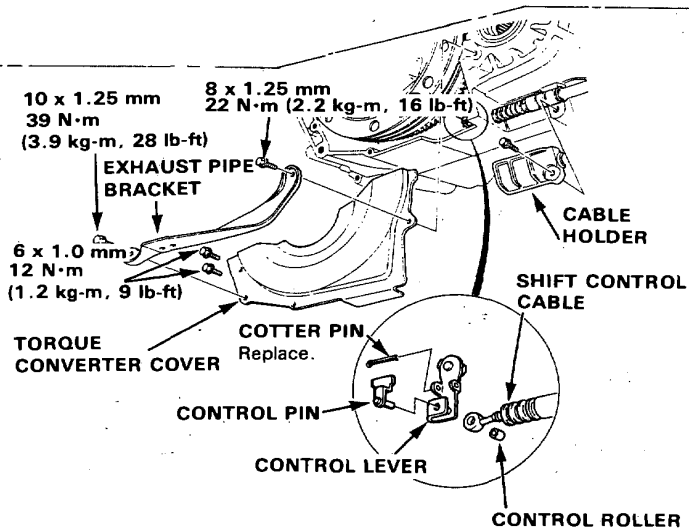
(On Automatic Transmission Cars:)

32. Remove the torque converter cover and cable holder.
33. Remove the shift control cable by removing the cotter pin, control pin and control lever roller from the control lever.

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

NOTE:

- Take care not to bend the cable when removing it. Do not use pliers to remove the cable from the linkage. Always replace a kinked cable with a new one.
- On reassembly, check the cable adjustment. (see section 9)





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

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

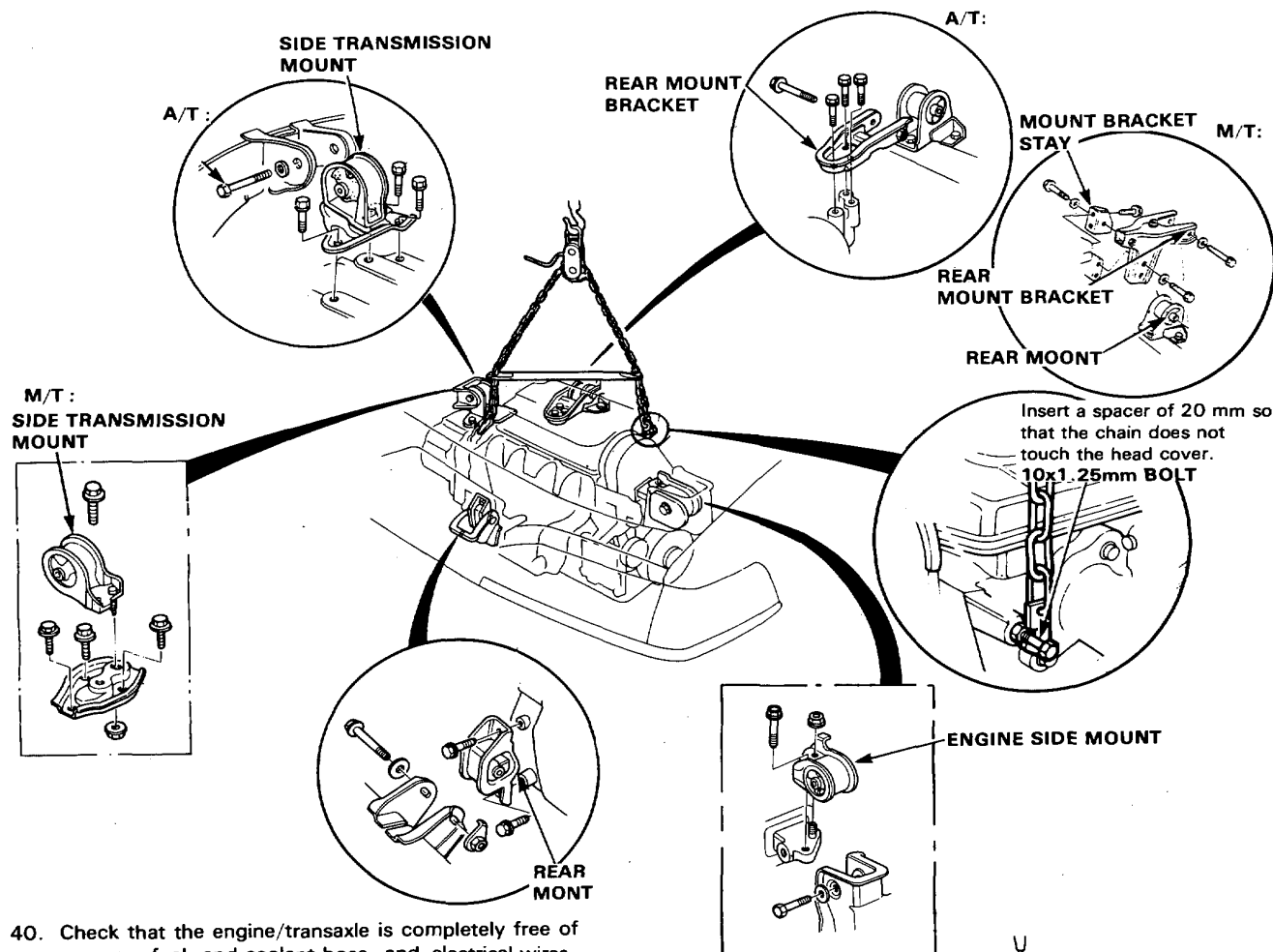
35. Remove the rear transmission mount bracket.

36. Remove the bolts from the front transmission mount.

37. Remove the bolts from the engine side mount.

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

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

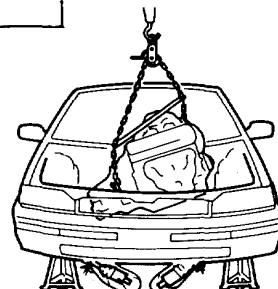


40. Check that the engine/transaxle is completely free of vacuum, fuel, and coolant hose, and electrical wires.

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

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

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



(cont'd)

Engine Removal/ Installation (cont'd)

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

- Torque engine mount bolts in sequence shown.

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

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

CAUTION : Use new spring clips on installation.

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

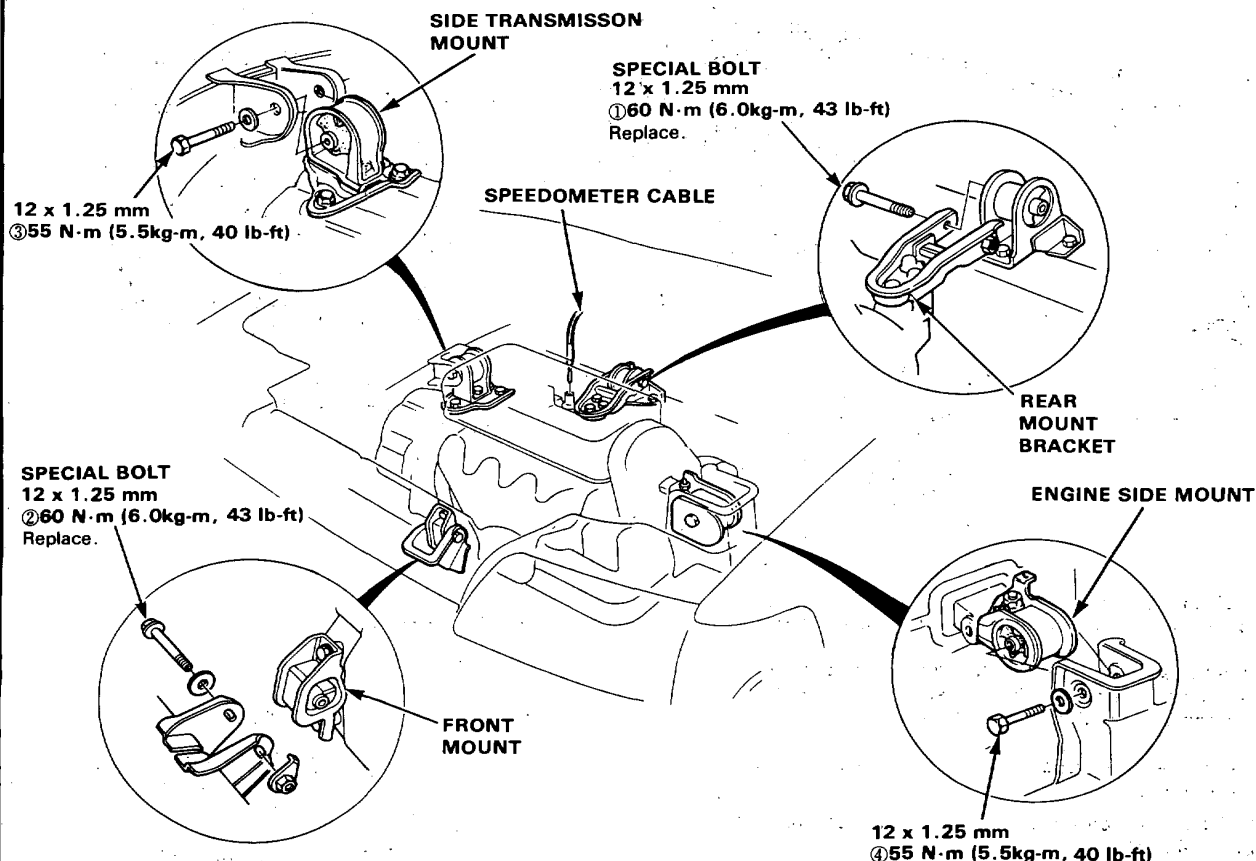
- Bleed air from the cooling system at the bleed bolt with the heater valve open.
- Adjust the throttle cable tension. (See Section 11).
- Adjust the alternator belt tension.
- Check the clutch pedal free play.
- Check that the transmission shifts into gear smoothly.
- Reinstall the A/C compressor and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

Speedometer cable Installation:

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

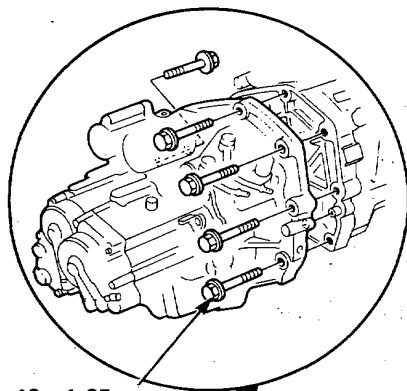
ENGINE MOUNT TORQUE SEQUENCE

NOTE : Check the mount and bracket for damage.



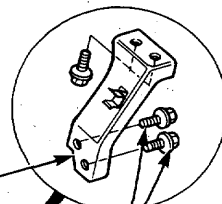


Additional Torque Specifications:



12 x 1.25 mm
58 N·m (5.8kg-m,
42 lb-ft)

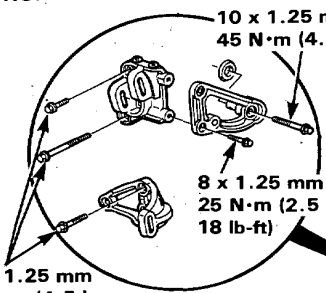
INTAKE MANIFOLD
BRACKET



8 x 1.25 mm
25 N·m (2.5 kg-m,
18 lb-ft)

POWER STEERING PUMP BRACKETS

DOHC:

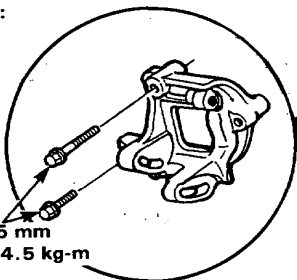


10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

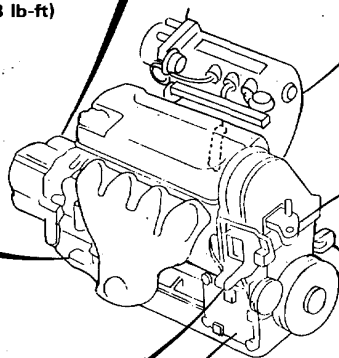
8 x 1.25 mm
25 N·m (2.5 kg-m,
18 lb-ft)

10 x 1.25 mm
45 N·m (4.5 kg-m,
33 lb-ft)

SOHC:

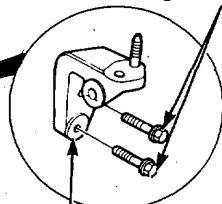


10 x 1.25 mm
45 N·m (4.5 kg-m,
33 lb-ft)



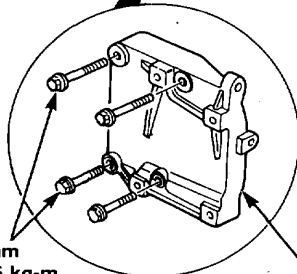
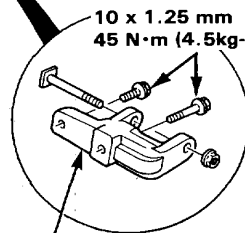
12 x 1.25 mm
55 N·m (5.5kg-m, 40 lb-ft)

ENGINE SIDE
MOUNT BRACKET



10 x 1.25 mm
45 N·m (4.5kg-m, 33 lb-ft)

ALTERNATOR BRACKET



10 x 1.25 mm
45 N·m (4.5 kg-m,
33 lb-ft)

COMPRESSOR BRACKET

(cont'd)

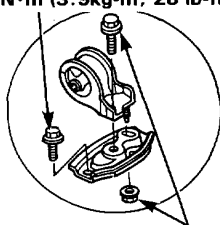
Engine Removal/Installation (cont'd)

Additional Torque Specifications:

SIDE TRANSMISSION MOUNT AND BRACKET

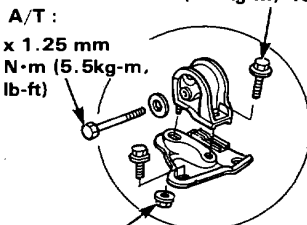
M/T: 10 x 1.25 mm
39 N·m (3.9kg-m, 28 lb-ft)

M/T:



10 x 1.25
55 N·m (5.5kg-m, 40 lb-ft)

A/T: 12 x 1.25 mm
55 N·m (5.5kg-m, 40 lb-ft)



12 x 1.25 mm
55 N·m (5.5kg-m, 40 lb-ft)

10 x 1.25 mm
39 N·m (3.9kg-m, 28 lb-ft)

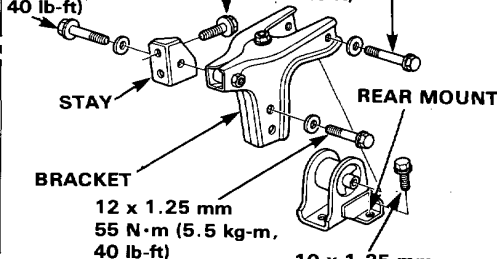
REAR MOUNT AND BRACKET

10 x 1.25 mm
39 N·m (3.9 kg-m,
28 lb-ft)

M/T:

12 x 1.25 mm
55 N·m (5.5 kg-m,
40 lb-ft)

SPECIAL BOLT Replace
12 x 1.25 mm
60 N·m (6.0 kg-m,
43 lb-ft)



STAY

REAR MOUNT

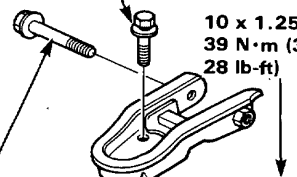
BRACKET

12 x 1.25 mm
55 N·m (5.5 kg-m,
40 lb-ft)

10 x 1.25 mm
39 N·m (3.9 kg-m,
28 lb-ft)

A/T:

12 x 1.25 mm
55 N·m (5.5kg-m, 40 lb-ft)

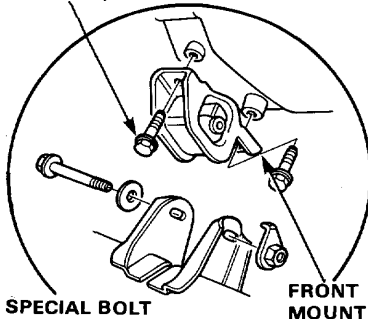


10 x 1.25 mm
39 N·m (3.9kg-m,
28 lb-ft)

SPECIAL BOLT Replace
12 x 1.25 mm
60 N·m (6.0kg-m, 43 lb-ft)

REAR
MOUNT

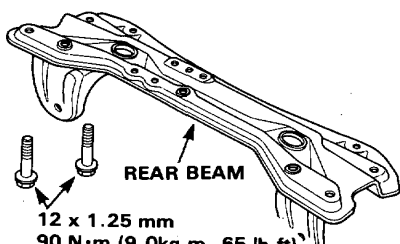
12 x 1.25 mm
55 N·m (5.5kg-m,
40 lb-ft)



SPECIAL BOLT
Replace

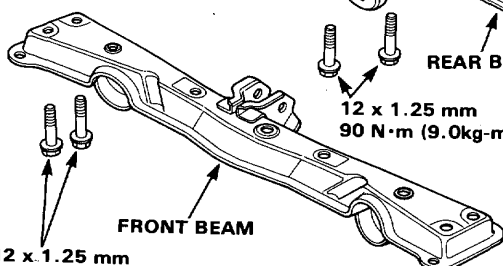
12 x 1.25 mm
60 N·m (6.0kg-m, 43 lb-ft)

FRONT
MOUNT



REAR BEAM

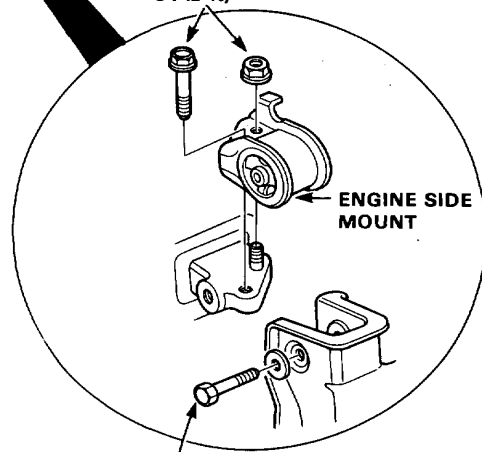
12 x 1.25 mm
90 N·m (9.0kg-m, 65 lb-ft)



FRONT BEAM

12 x 1.25 mm
90 N·m (9.0kg-m, 65 lb-ft)

12 x 1.25 mm
74 N·m (7.4kg-m,
54 lb-ft)

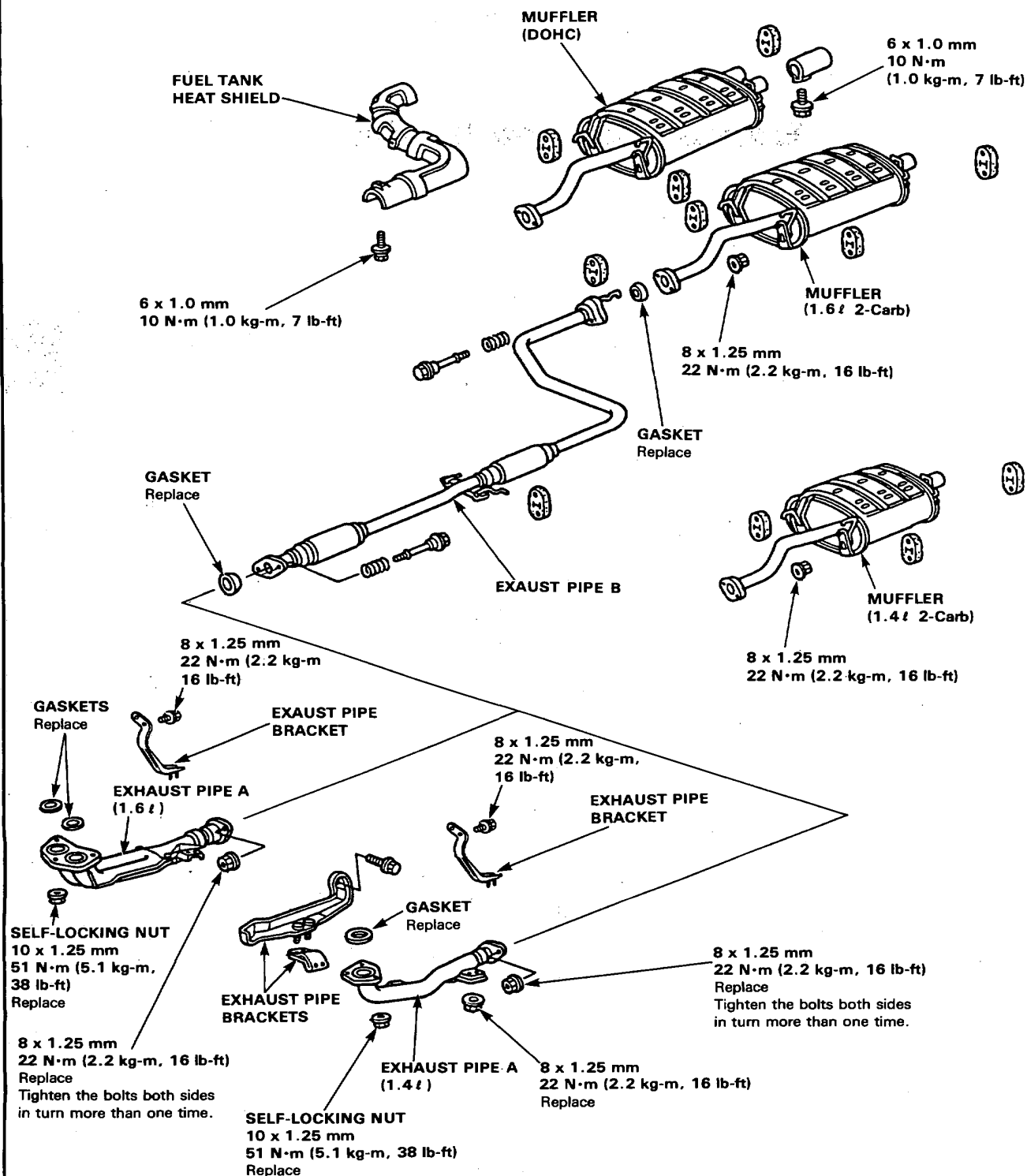


ENGINE SIDE
MOUNT

12 x 1.25 mm
55 N·m (5.5kg-m, 40 lb-ft)

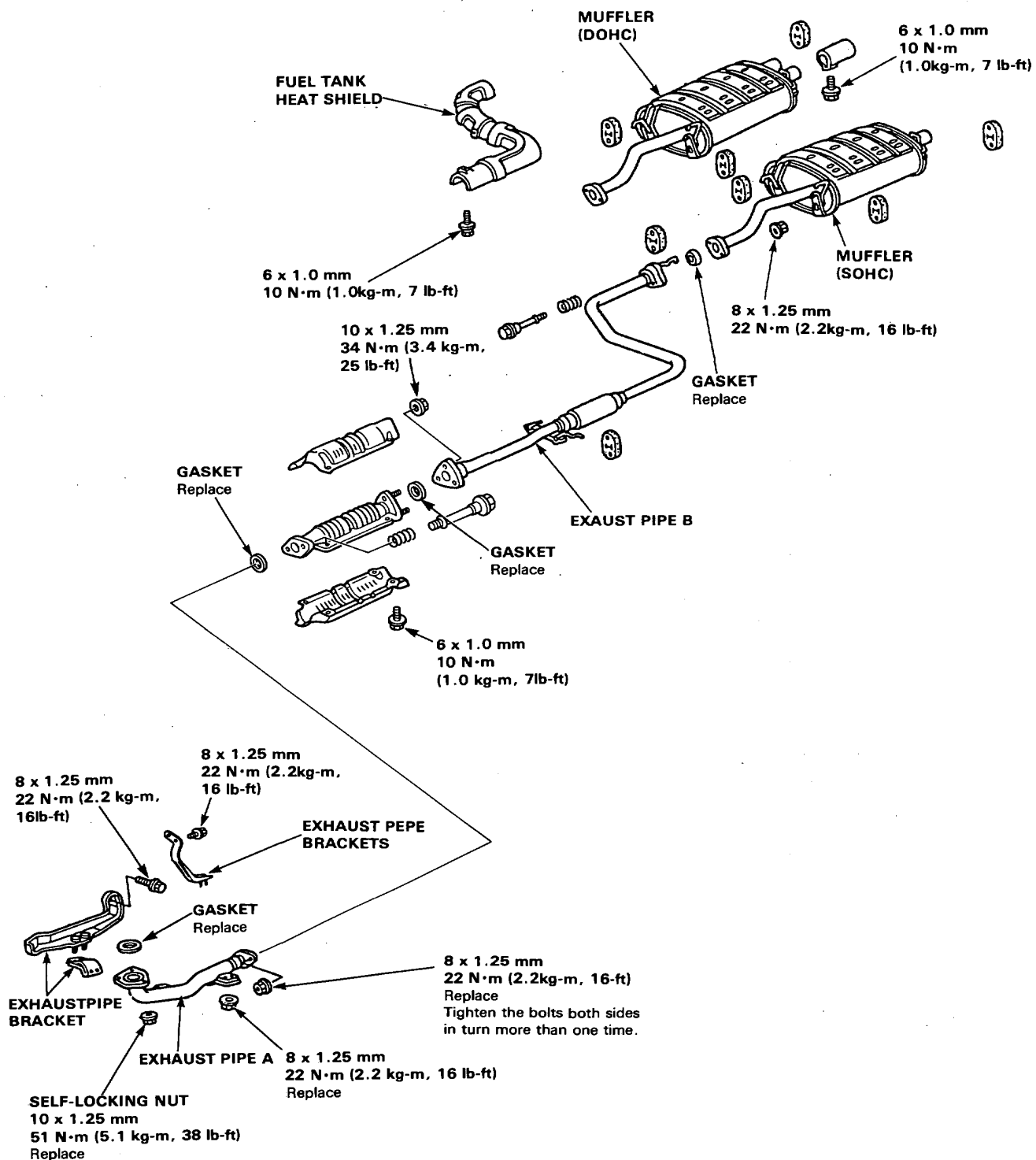
Exhaust Pipe and Muffler

Replacement (without CATA)





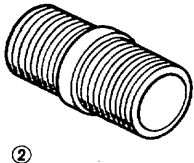
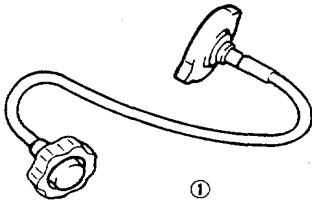
Replacement (with CATA)



Special Tools

Special Tools

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



Radiator

Illustrated Index



Carbureted Engine:

WARNING

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

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

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

1.4 l

M/T: 5.4 l (5.7 US qt, 4.8 Imp qt)

A/T: 5.3 l (5.6 US qt, 4.7 Imp qt)

1.6 l

M/T: 5.5 l (5.8 US qt, 4.8 Imp qt)

A/T: 5.4 l (5.7 US qt, 4.8 Imp qt)

NOTE:

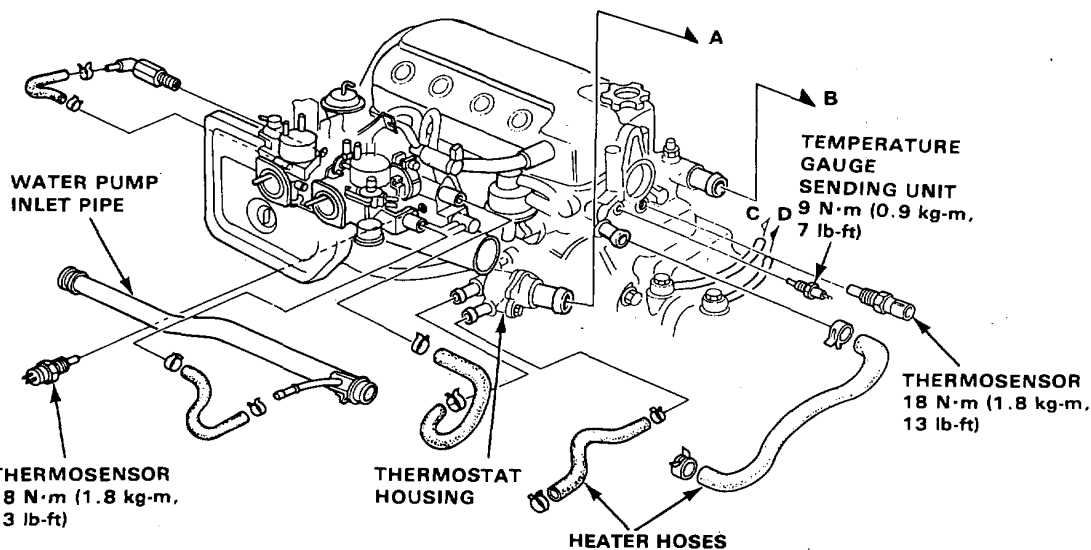
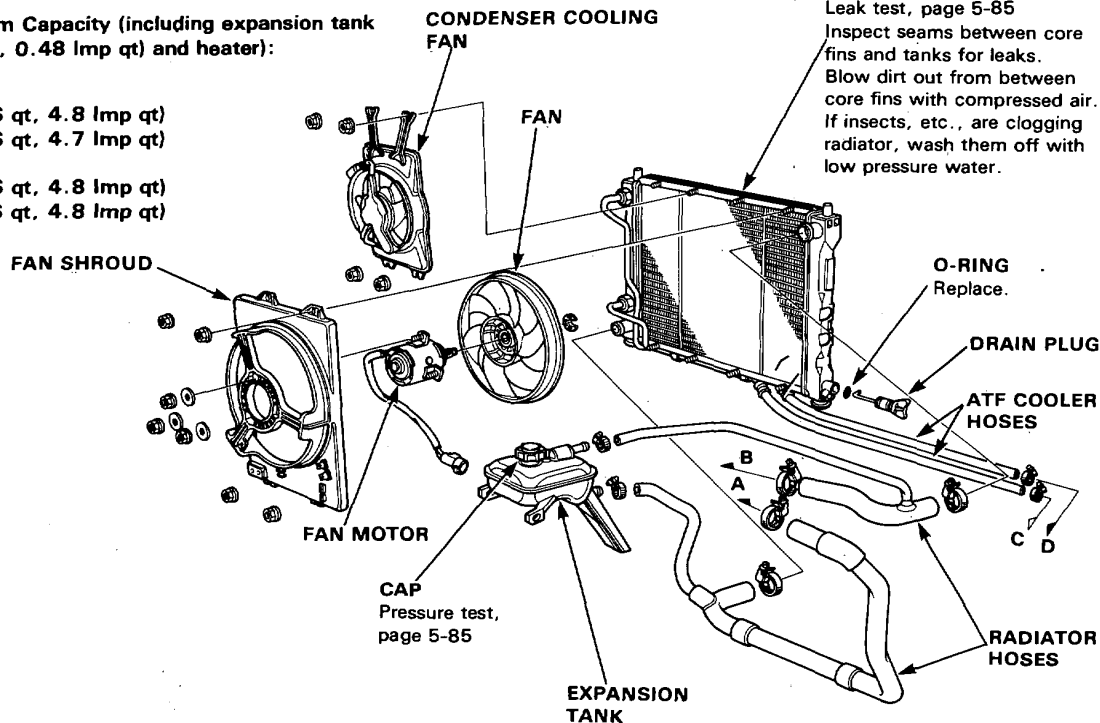
- Check all cooling system hoses for damage, leaks or deterioration and replace if necessary.
- Check all hose clamps and retighten if necessary.
- Use new O-rings when reassembling.

RADIATOR

Refilling page 5-84

Leak test, page 5-85

Inspect seams between core fins and tanks for leaks. Blow dirt out from between core fins with compressed air. If insects, etc., are clogging radiator, wash them off with low pressure water.



Radiator

Illustrated Index

DOHC Fuel-Injected Engine:

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

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

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

M/T 5.5 ℓ (5.8 US qt, 4.8 Imp qt)

A/T 5.4 ℓ (5.7 US qt, 4.8 Imp qt)

NOTE:

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

RADIATOR

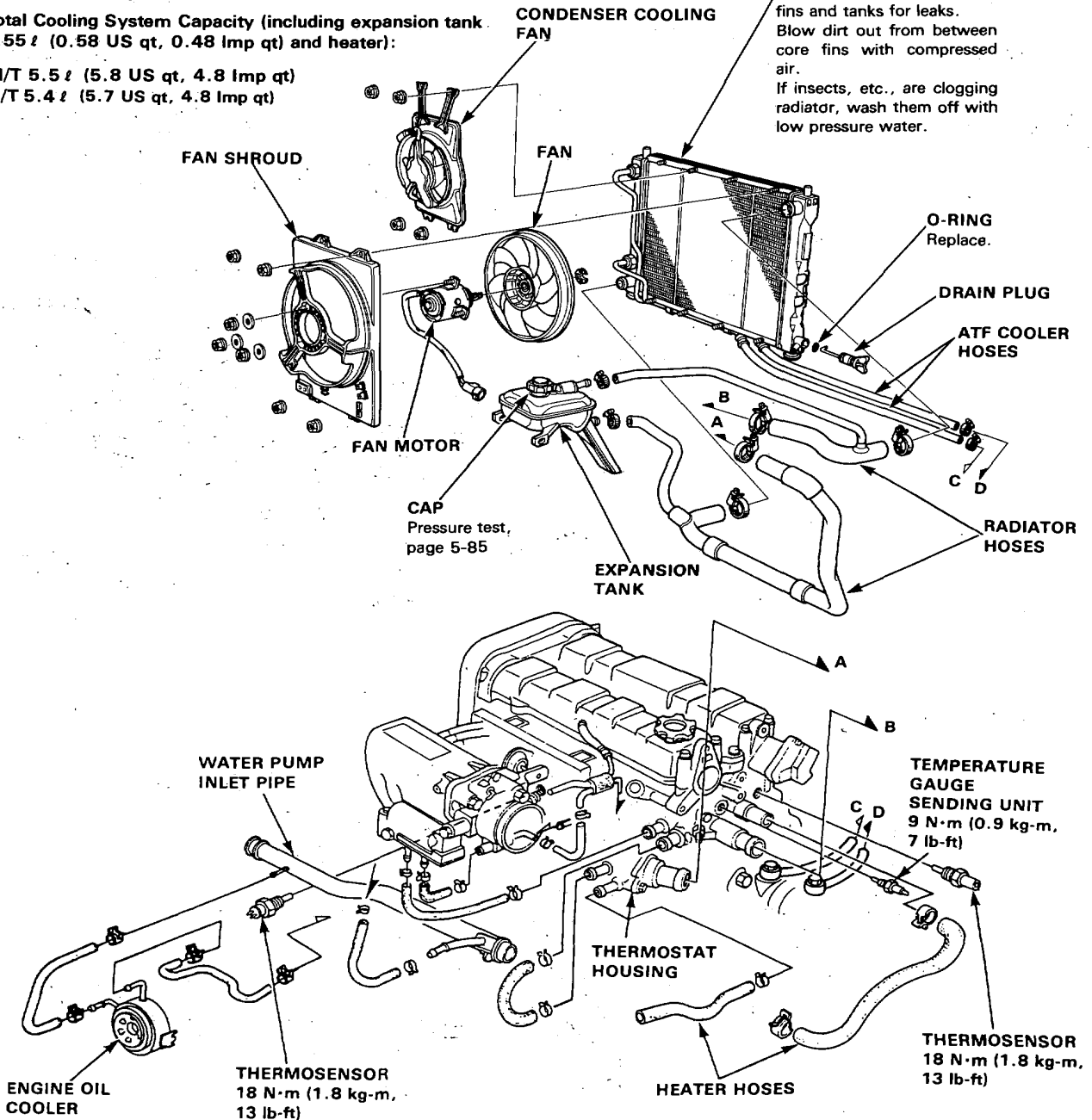
Refilling, page 5-84

Leak test, page 5-85

Inspect seams between core fins and tanks for leaks.

Blow dirt out from between core fins with compressed air.

If insects, etc., are clogging radiator, wash them off with low pressure water.





1.5 l Fuel-Injected

⚠ WARNING

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

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

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

M/T: 5.5 l (5.8 US qt, 4.8 Imp qt)

A/T: 5.4 l (5.7 US qt, 4.8 Imp qt)

NOTE:

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

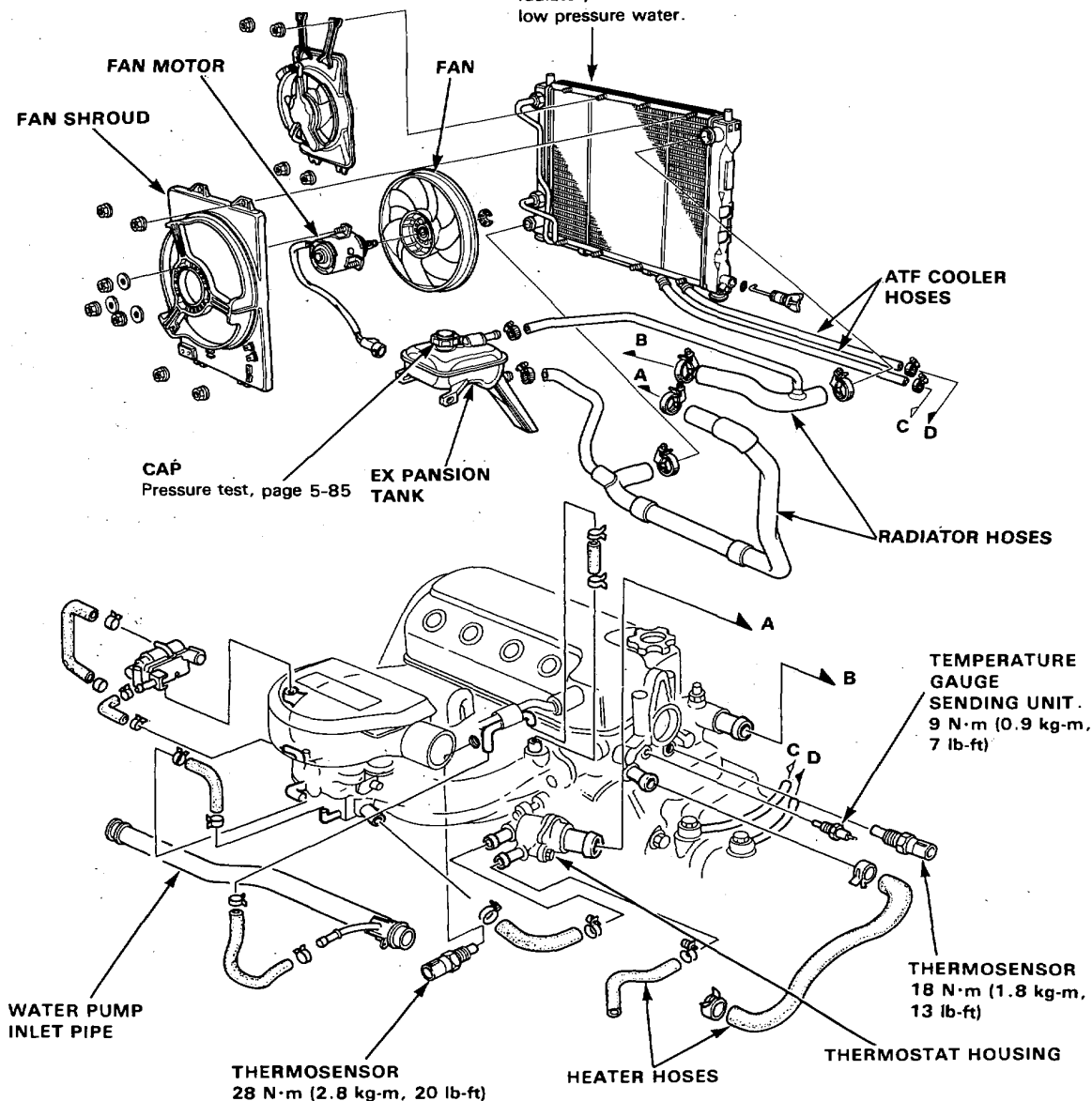
RADIATOR

Refilling, page 5-84

Leak test, page 5-85

Inspect seams between core fins and tanks for leaks.

Blow dirt out from between core fins with compressed air. If insects, etc., are clogging radiator, wash them off with low pressure water.



Radiator

Illustrated Index

1.6 SOHC Fuel-Injected

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

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

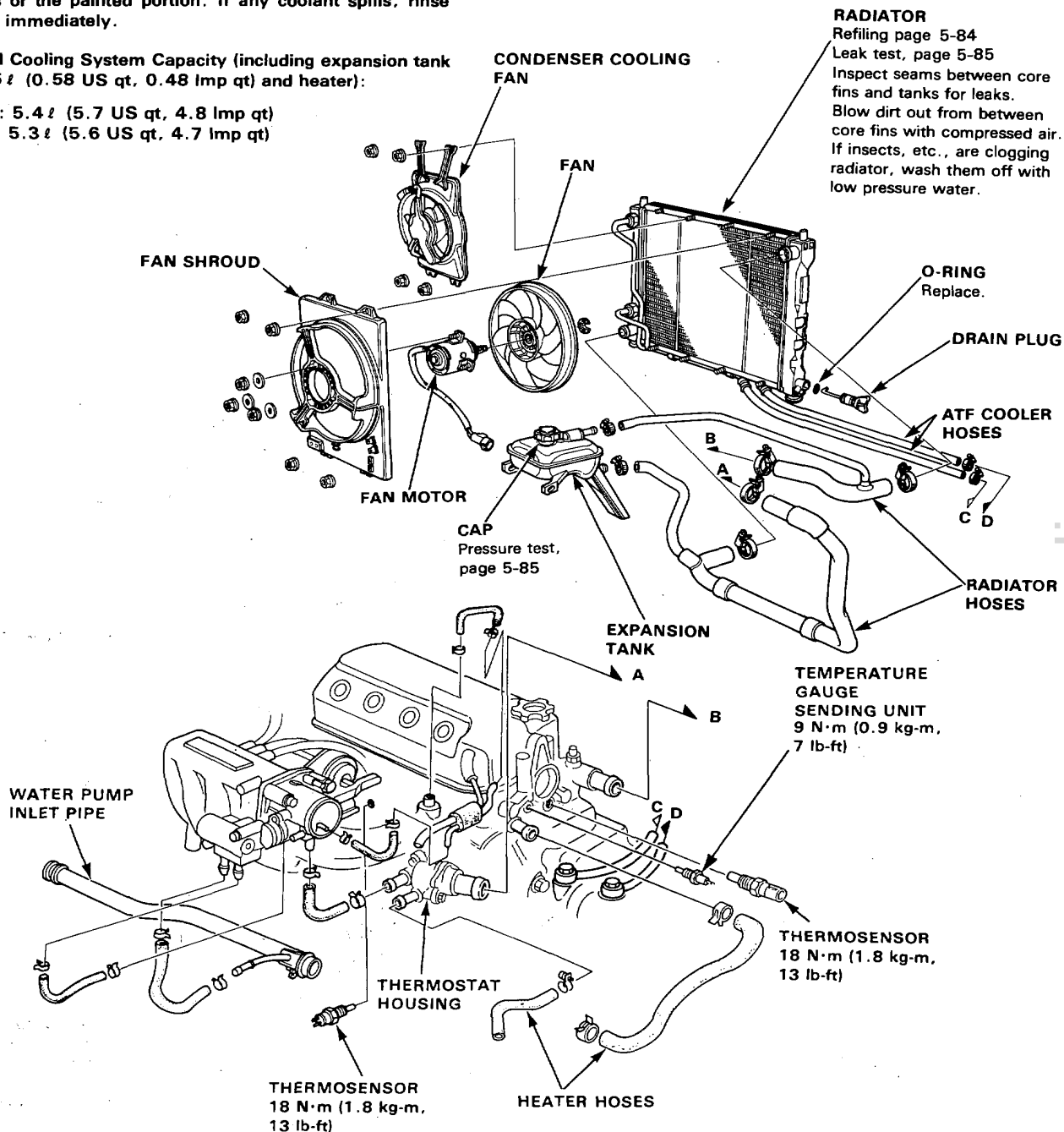
Total Cooling System Capacity (including expansion tank 0.55 l (0.58 US qt, 0.48 Imp qt) and heater):

M/T: 5.4 l (5.7 US qt, 4.8 Imp qt)

A/T: 5.3 l (5.6 US qt, 4.7 Imp qt)

NOTE:

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





Replacement

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

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

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

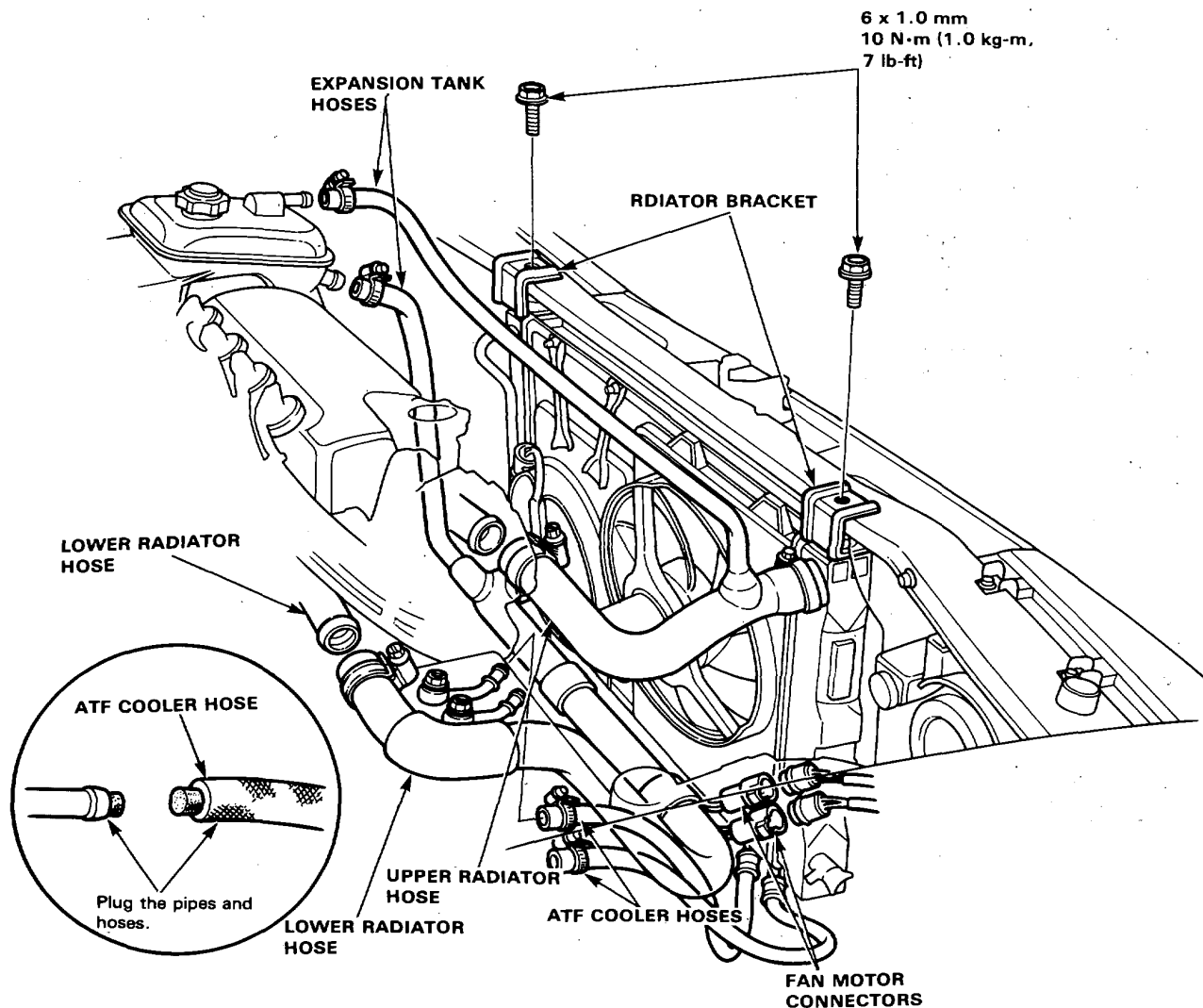
3. Disconnect the upper and lower radiator hoses from cylinder head.

4. Disconnect the expansion tank hoses.

5. Disconnect the ATF cooler hose (A/T).

NOTE: Plug the hoses and pipes.

6. Remove the radiator bracket and radiator.



NOTE :

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

Radiator

Refilling and Bleeding

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

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

NOTE:

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

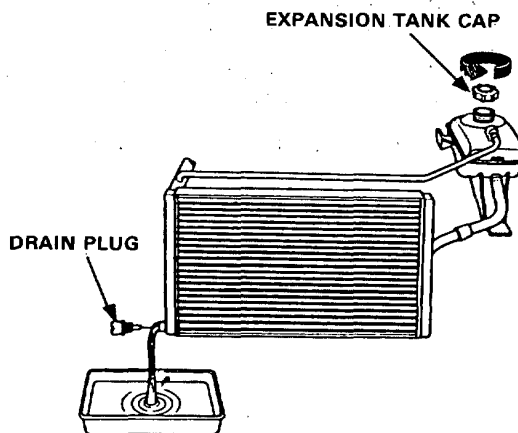
CAUTION:

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

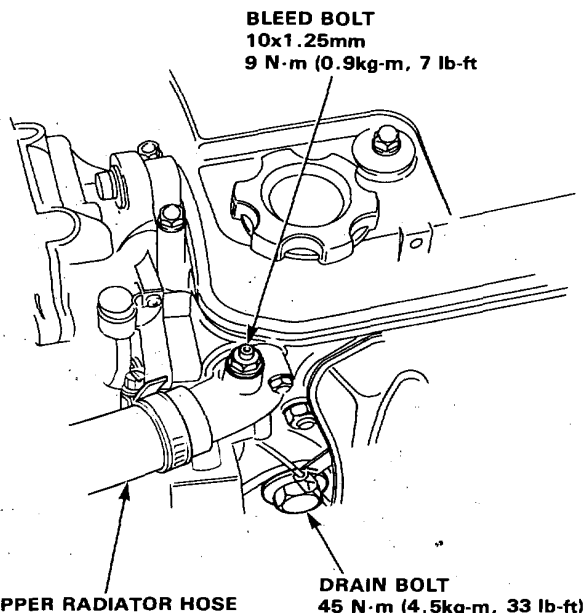
Radiator Coolant Refill Capacity:

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

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



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

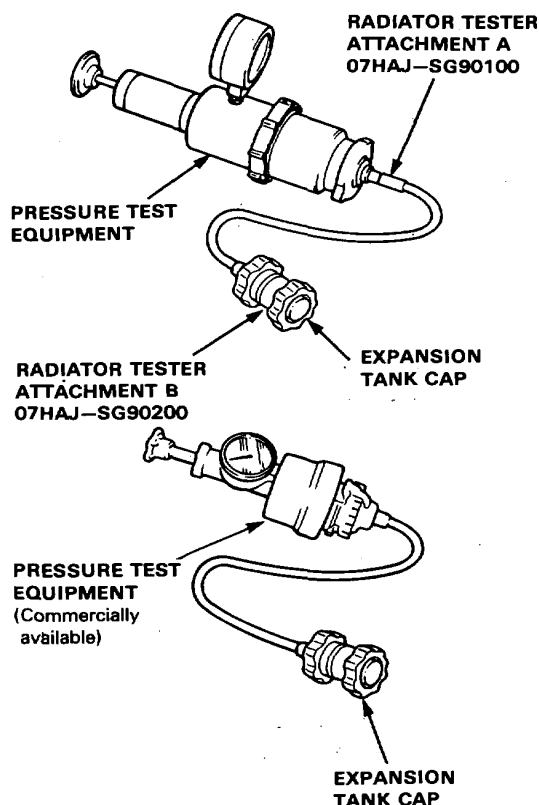


7. With the expansion tank cap off, start the engine and let it run until warmed up (fan goes on at least twice). If necessary, add more coolant mixture to bring the level back up to the bottom of the filler neck.
8. Put the expansion tank cap on, then run the engine again and check for leaks.



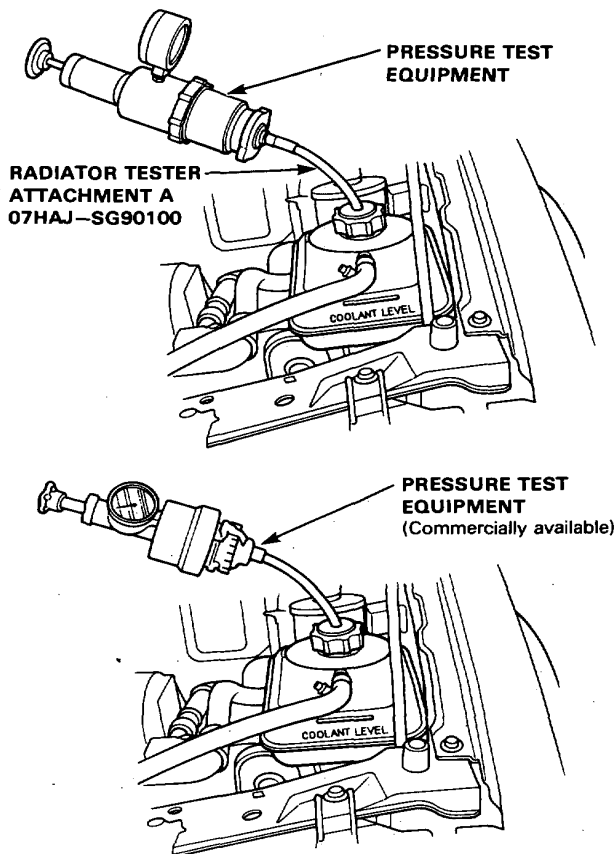
Expansion Tank Cap Testing

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



Leak Testing

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



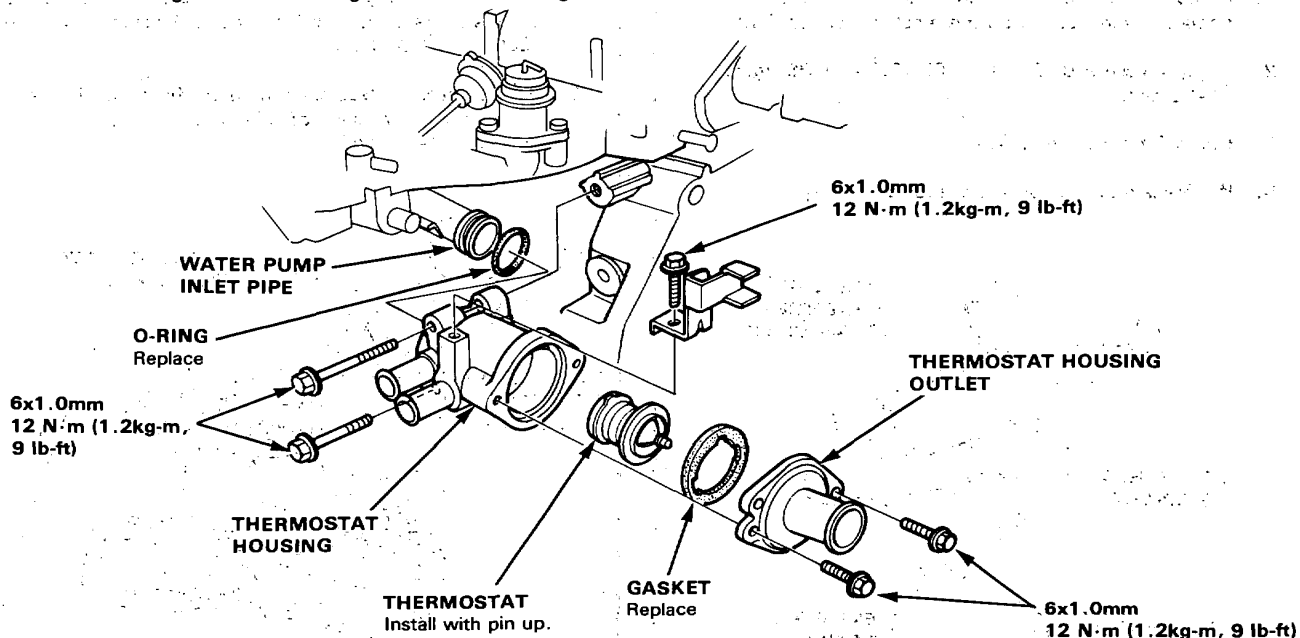
3. Check the system for leakage: there should not be a drop in pressure. If it does, locate the leak and repair it.

NOTE:

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

Thermostat Replacement

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



Testing

Replace thermostat if it is open at room temperature.
To test a closed thermostat:

1. Suspend the thermostat in a container of water as shown.
2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.

CAUTION : Do not let thermometer touch bottom of hot container.

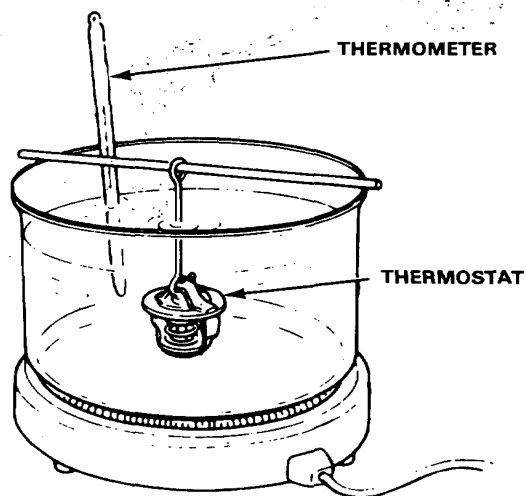
3. Measure lift height of thermostat when fully open.

STANDARD THERMOSTAT

Lift height : 8mm (0.31in.)

Starts opening : 78°C ± 2°C (172°F ± 3°F)

Fully open : 90°C (194°F)



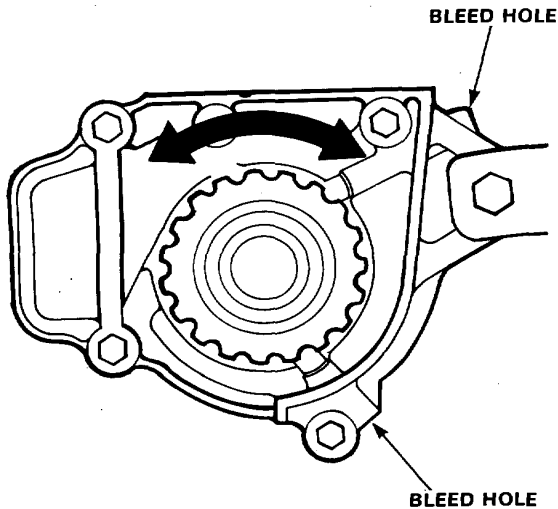
Water Pump



Inspection

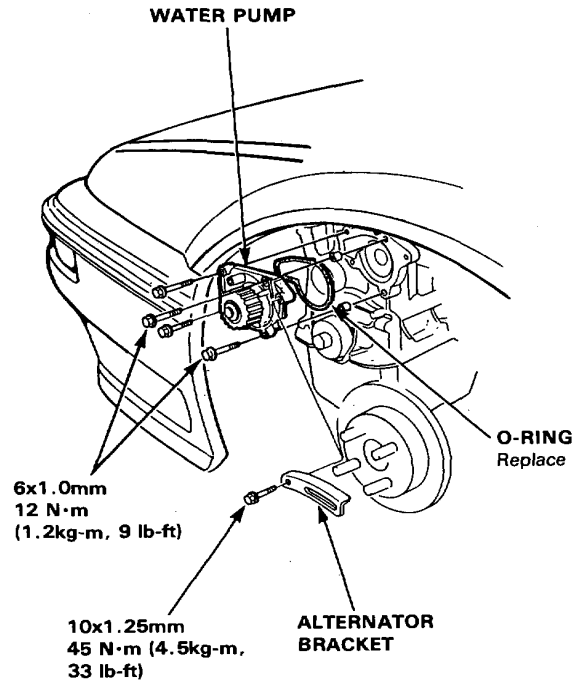
1. Remove the timing belt (SOHC, page 5-29), (DOHC, page 5-37).
2. Check the water pump pulley turns freely.
3. Check the signs of seal leakage.

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



Replacement

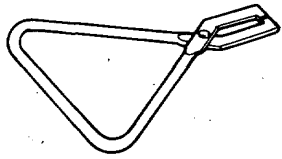
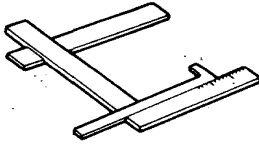
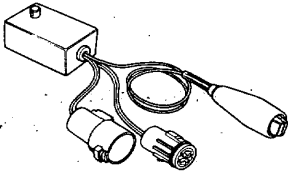
1. Remove the timing belt (SOHC, page 5-29), (DOHC, page 5-37).
2. Remove the water pump by removing five bolts.



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

Special Tools

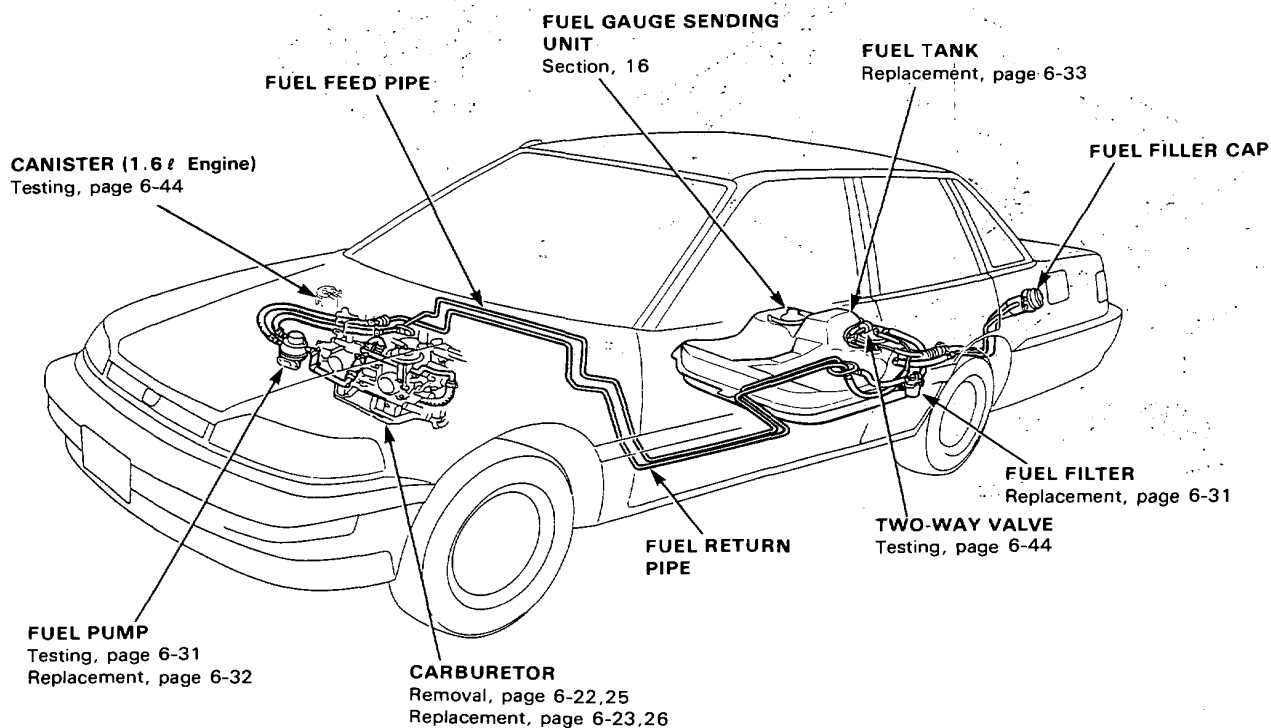
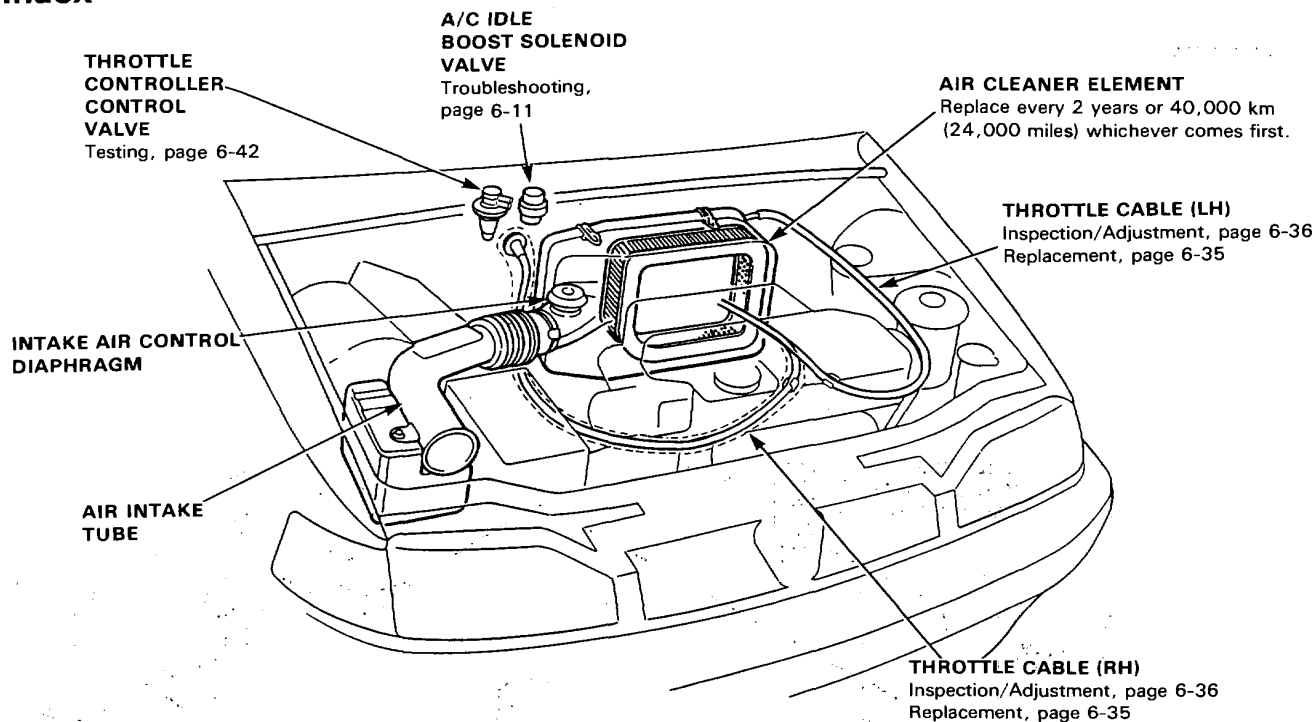
Special Tools				
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ-SH20100	R.P.M. Connecting Adaptor	1	
②	07401-0010000	Float Level Gauge	1	
③	07614-0050100	Fuel Line Clamp	1	



① ② ③

Component Locations

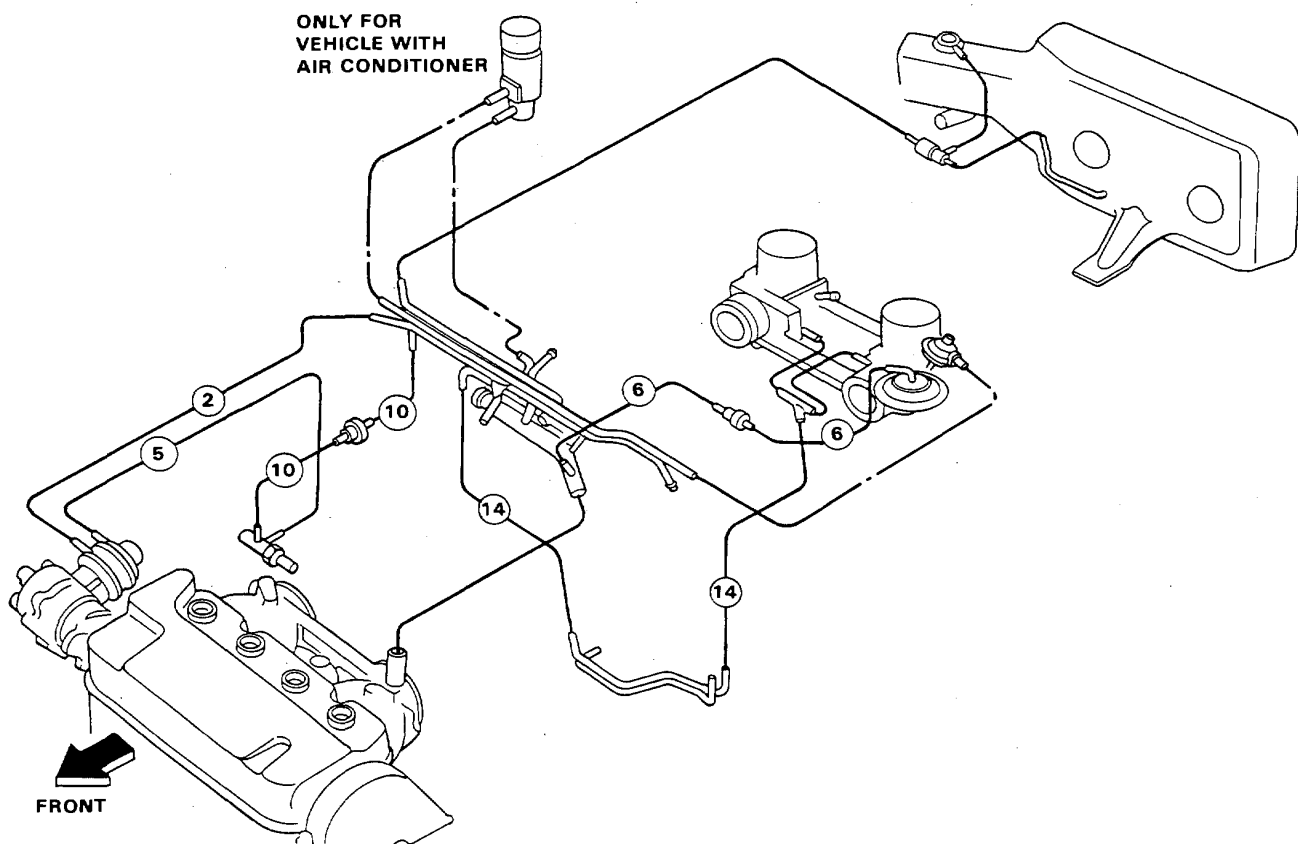
Index



System Description

Vacuum Connections

(1.4 l Engine)





(1.6 l Engine)

ONLY FOR VEHICLE
WITH AIR CONDITIONER

THROTTLE CONTROLLER
CONTROL VALVE (M/T)

AIR CLEANER

CHARCOAL
CANISTER

A/T

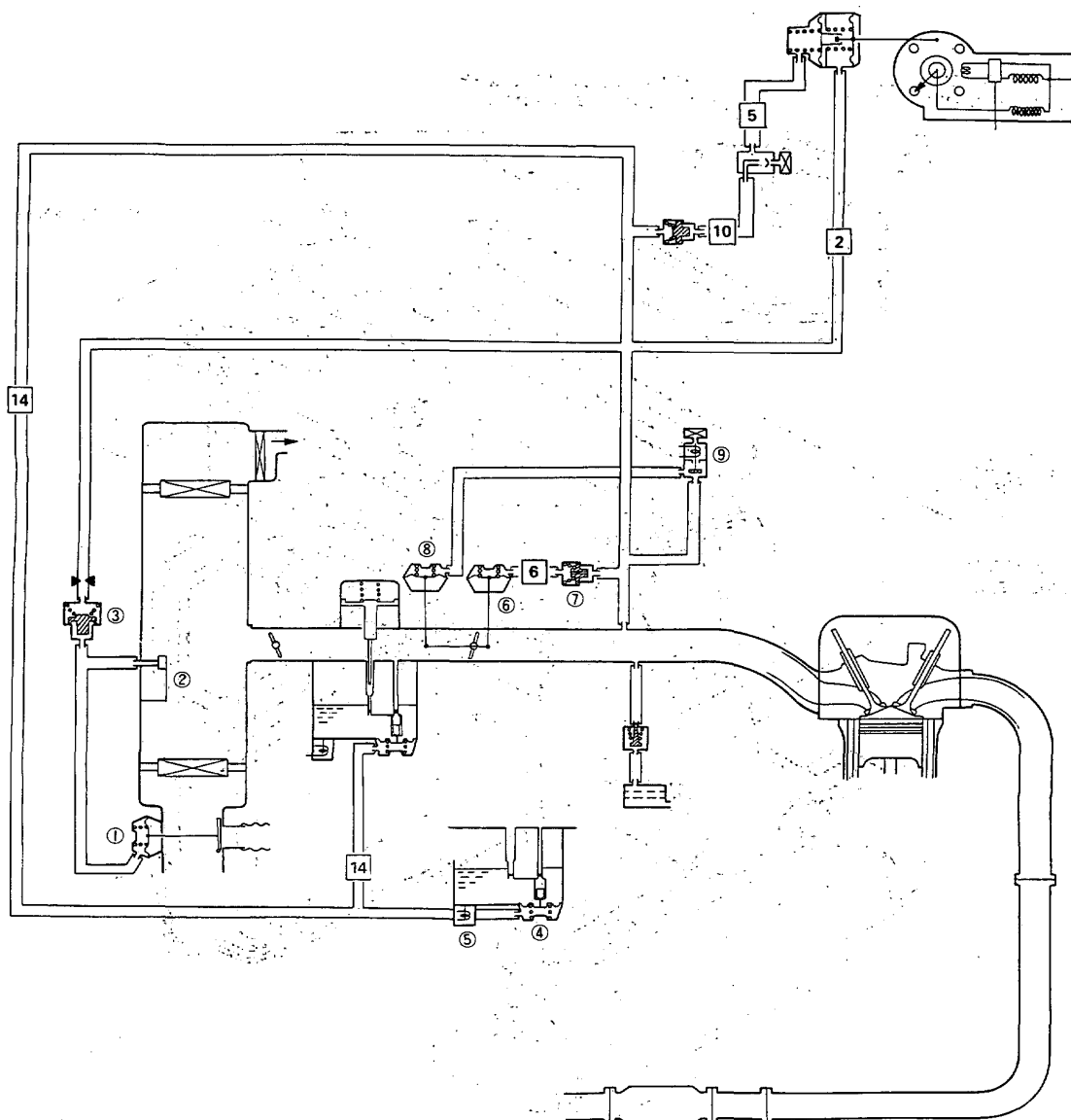
FRONT OF
VEHICLE

(cont'd)

System Description

Vacuum Connections (cont'd)

(1.4 L Engine)

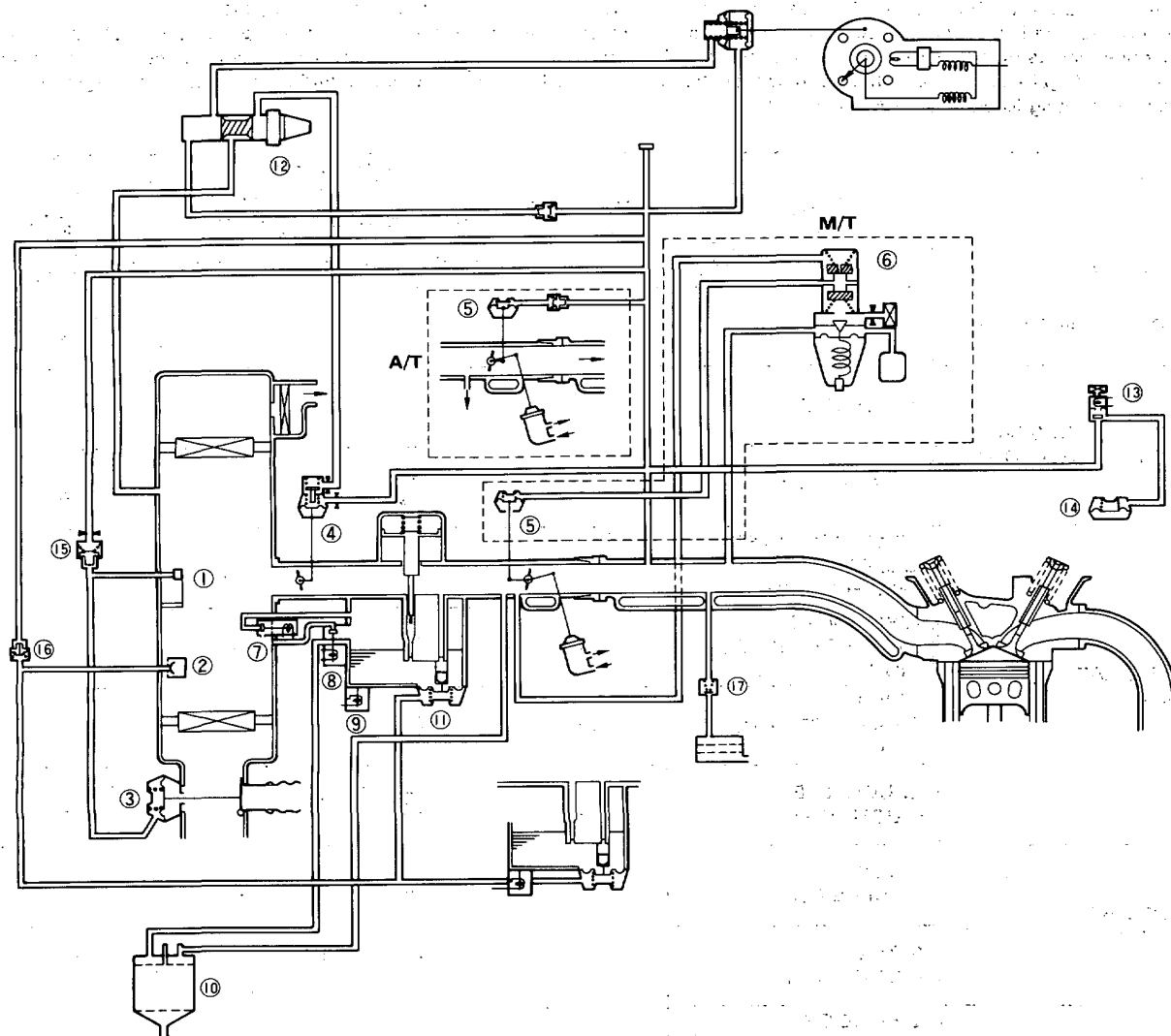


- ① AIR CONTROL DIAPHRAGM
- ② AIR BLEED VALVE
- ③ CHECK VALVE
- ④ POWER VALVE
- ⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE

- ⑥ THROTTLE CONTROLLER
- ⑦ CHECK VALVE
- ⑧ IDLE BOOST THROTTLE CONTROLLER
- ⑨ A/C IDLE BOOST SOLENOID VALVE



(1.6 l Engine)



- ① AIR BLEED VALVE A
- ② AIR BLEED VALVE B
- ③ AIR CONTROL DIAPHRAGM
- ④ CHOKE OPENER
- ⑤ THROTTLE CONTROLLER
- ⑥ THROTTLE CONTROLLER CONTROL VALVE
- ⑦ INNER VENT SOLENOID VALVE
- ⑧ AIR VENT CUT-OFF SOLENOID VALVE
- ⑨ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE

- ⑩ CANISTER
- ⑪ POWER VALVE
- ⑫ THERMOVALVE
- ⑬ A/C IDLE BOOST SOLENOID VALVE
- ⑭ A/C IDLE BOOST THROTTLE CONTROLLER
- ⑮ CHECK VALVE A
- ⑯ CHECK VALVE B
- ⑰ PCV VALVE

Carburetor

Symptom-to-System Chart

NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the self-diagnosis indicator, valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in page 6-8 and 6-9

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



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

Carburetor

Idle Control System (A/C only)

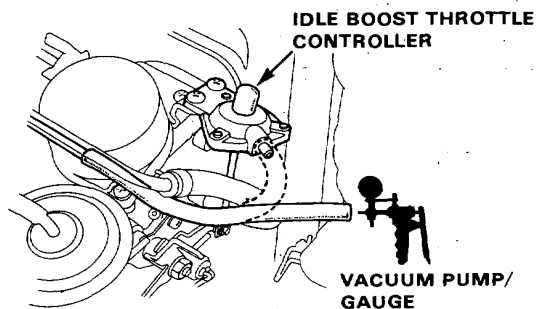
Testing

Idle speed too high in no-load conditions

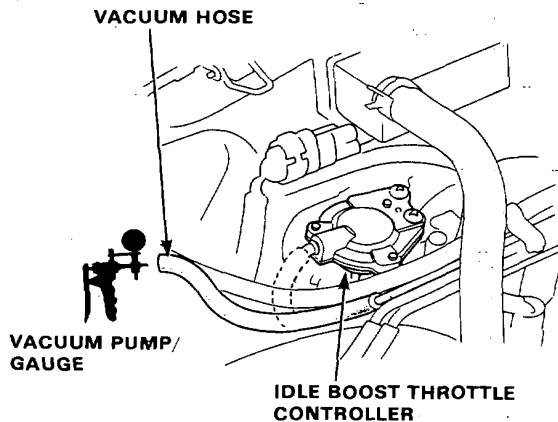
1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the vacuum hose from the idle boost throttle controller and check for vacuum.

There should be no vacuum.

(1.4 l Engine)



(1.6 l Engine)



- If there is no vacuum, check the throttle valve shaft for binding or sticking, and replace the idle boost throttle controller.
- If there is vacuum, go to troubleshooting (page 6-11).

Idle speed is low with A/C on

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

There should be vacuum.

- If there is vacuum, check the throttle valve shaft for binding or sticking, and replace the idle boost throttle controller.
- If there is no vacuum, go to troubleshooting (page 6-11).



Troubleshooting Flow Chart

A/C Idle Boost Solenoid Valve

Inspection of A/C Idle Boost System

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

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

Is there vacuum ?

YES

Disconnect the connector near the solenoid valve.

NO

Turn the blower switch ON.

Turn the A/C switch ON.

Is there vacuum ?

NO

Disconnect the connector near the solenoid valve.

YES

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

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

Is there battery voltage ?

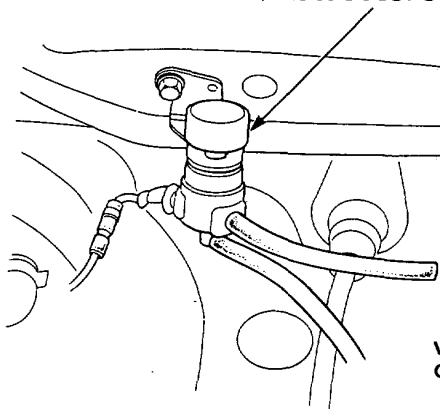
NO

YES

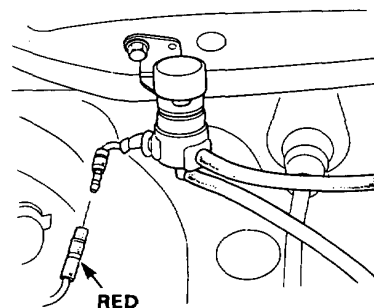
Repair open or short in RED wire between the solenoid valve and compressor control unit.

(To page 6-12)

A/C IDLE BOOST SOLENOID VALVE



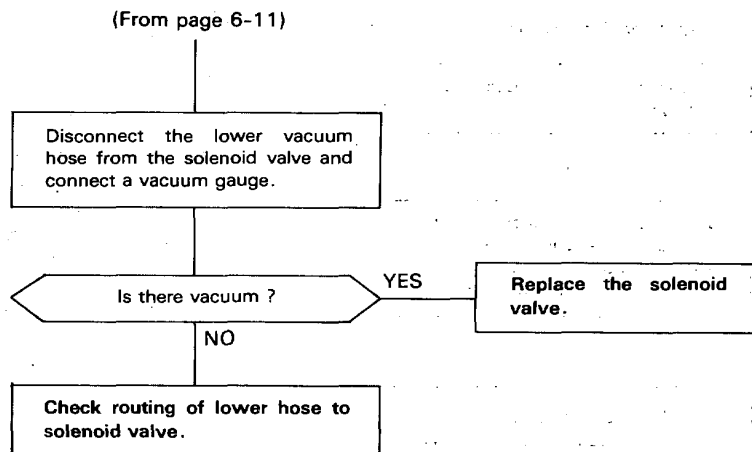
**VACUUM PUMP/
GAUGE**



(cont'd)

Carburetor

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



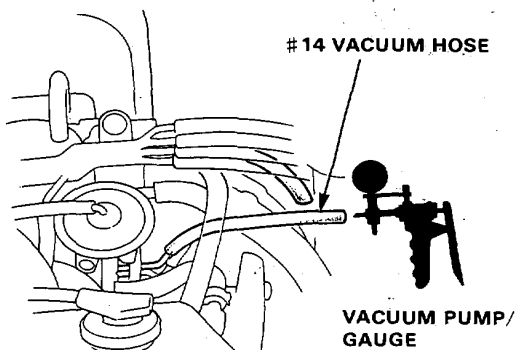


Power Valve

Testing (COLD ENGINE)

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

It should hold vacuum.



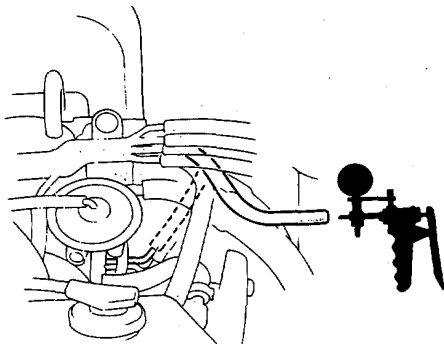
- If it does not hold vacuum, replace the diaphragm and retest (page 6-24,27).

2. (1.6 L Engine)

Start the engine and disconnect the #14 vacuum hose from the vacuum hose manifold, and connect a vacuum pump/gauge to the manifold.

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

There should be no vacuum.

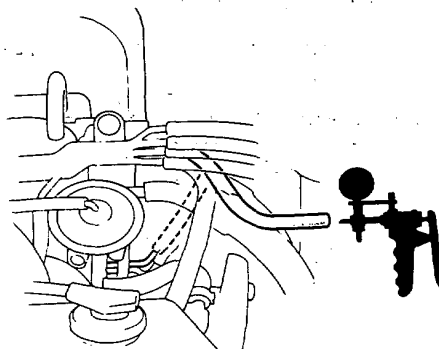


- If there is vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, then, if necessary, replace the air bleed valve B.

Testing (HOT ENGINE)

1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Disconnect the #14 vacuum hose from the vacuum hose manifold and connect a vacuum pump/gauge.

There should be vacuum.



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

1.6 L Engine: then, if necessary, replace the air bleed valve B.

Carburetor

Primary Slow Mixture Cut-off Solenoid Valve

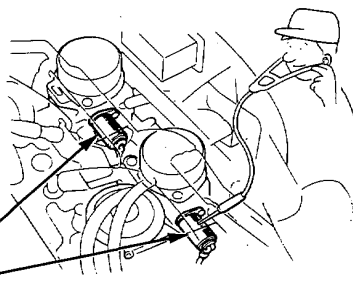
Troubleshooting Flow Chart Primary Slow Mixture Cut-off Solenoid Valve

Inspection of Primary Slow Mixture Cut-off Solenoid Valve

Turn the ignition switch ON.

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

PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE



Does the solenoid valve click?

NO

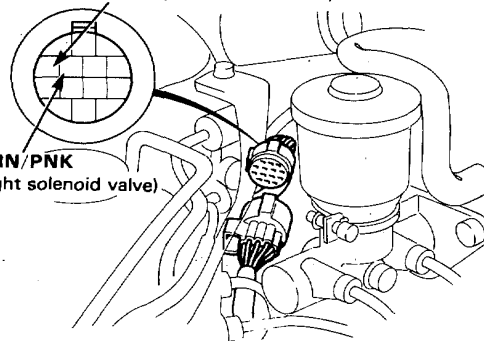
Turn the ignition switch OFF.

YES

Solenoid valve is OK.

GRN/PNK (left solenoid valve)

GRN/PNK (right solenoid valve)



Disconnect the 14P connector.

Turn the ignition switch ON.

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

Is there battery voltage?

YES

NO

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

Repair open or short in BLK/YEL wire between the solenoid valve and the 14P connector.
If OK;

right solenoid valve:
replace the solenoid valve.

left solenoid valve:
inspect open in BLK wire between the solenoid valve and G201, and replace the solenoid valve.



Idle Speed/Mixture

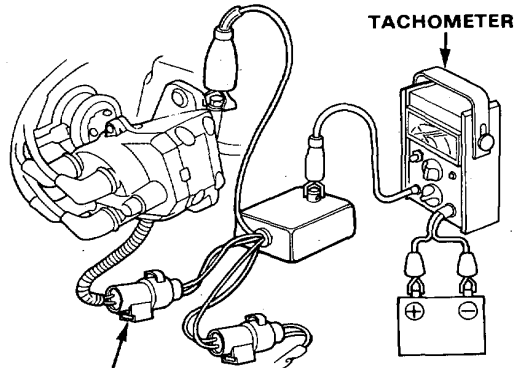
NOTE:

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

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

CO Meter Method

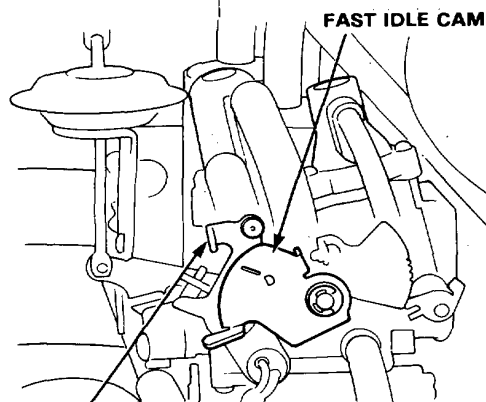
1. Warm up and calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures.
2. Insert exhaust gas sampling probe into the tail pipe at least 40 cm and connect a tachometer.



R.P.M. CONNECTING ADAPTOR
07JAZ-SH20100

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

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



FAST IDLE LEVER

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

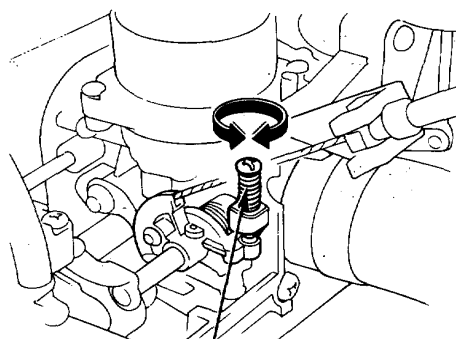
4. Check the idle speed with no load.

Idle speed should be:

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

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

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

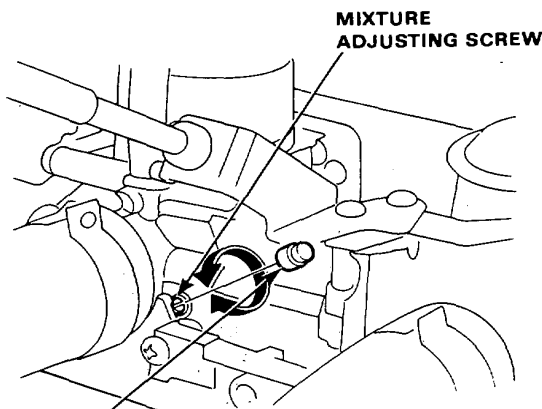


THROTTLE
STOP SCREW

6. Check specification for idle CO with no load.

Specified CO %: below 1.0 %

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



HOLE CAP

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

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

(cont'd)

Carburetor

Idle Speed/Mixture (cont'd)

8. Install the hole plugs.

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

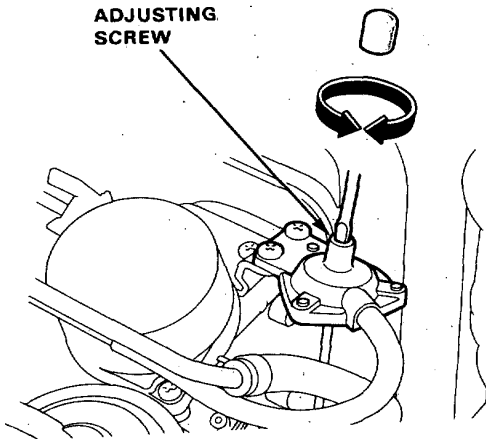
9. If equipped with air conditioner, check the idle speed with the A/C on.

Idle speed should be:

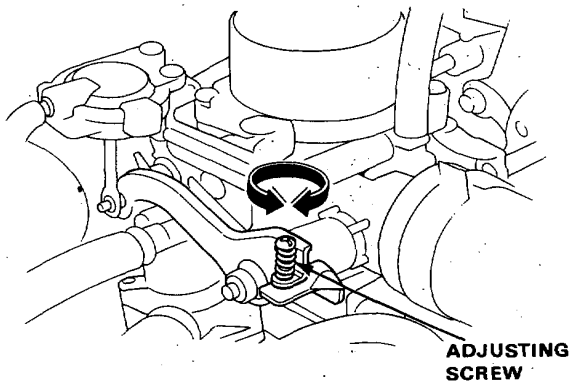
Manual	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
Automatic	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (N or P)

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

(1.4 l Engine)



(1.6 l Engine)



Float Level

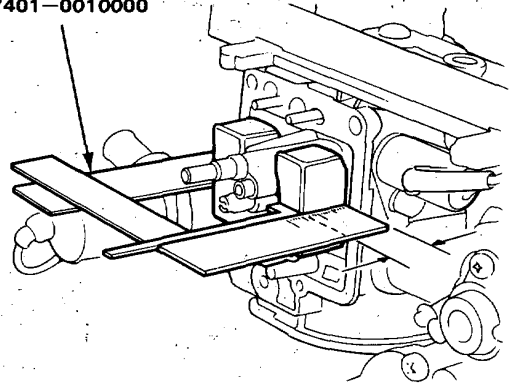
Inspection

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

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

Float Level: $16 \pm 1 \text{ mm}$ ($0.6 \pm 0.04 \text{ in.}$)

FLOAT LEVEL GAUGE
07401-0010000





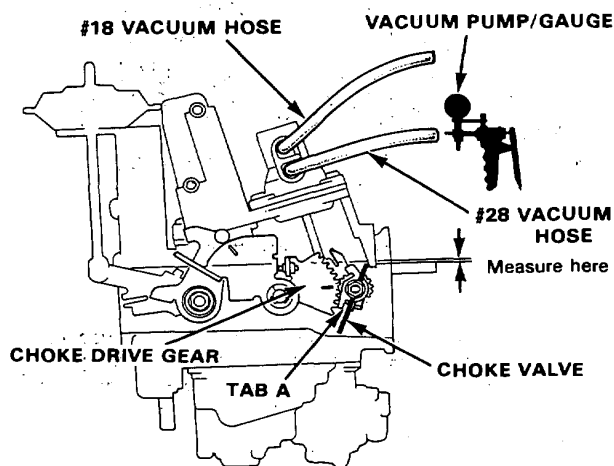
Choke Linkage (1.6 l Engine)

Adjustment

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

NOTE: If vacuum drops below 200 mm Hg (8 in. Hg), slowly reapply vacuum until you can maintain the highest level without losing vacuum.

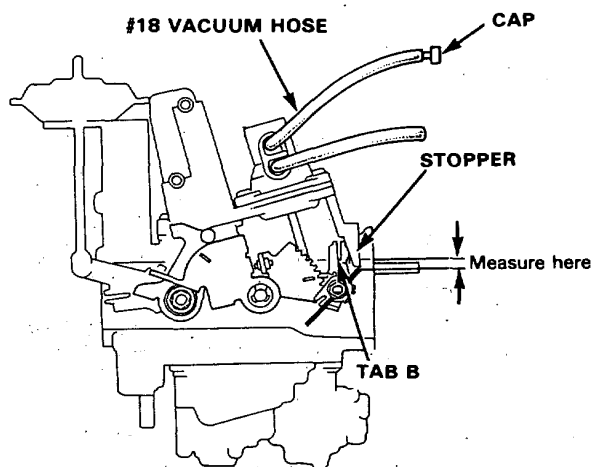
3. Turn the choke drive gear clockwise and measure the clearance between the choke valve and the casting.



1st Stage Clearance:
 $1.37 \pm 0.15 \text{ mm } (0.054 \pm 0.006 \text{ in.})$

Adjust clearance by bending Tab A.

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



2nd Stage Clearance:
M/T: $3.53 \pm 0.2 \text{ mm } (0.139 \pm 0.008 \text{ in.})$
A/T: $3.70 \pm 0.2 \text{ mm } (0.146 \pm 0.008 \text{ in.})$

Adjust clearance by bending Tab B.

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

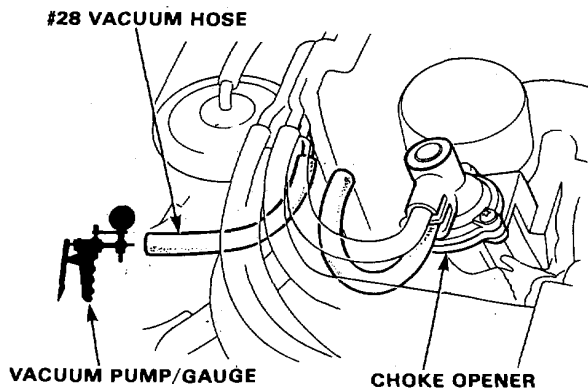
Carburetor

Choke Opener

Testing (COLD ENGINE)

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

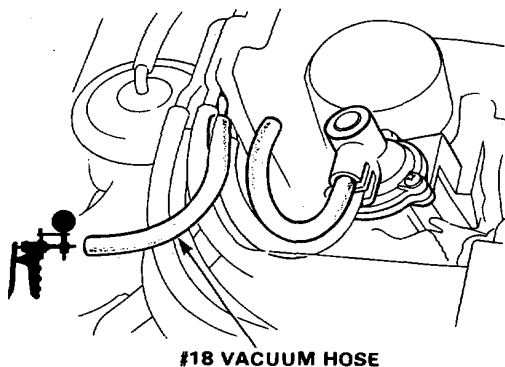
1. Disconnect the #28 vacuum hose from the choke opener and connect a vacuum pump.



2. Start the engine and check the vacuum.

There should be vacuum.

- If there is no vacuum, check the #28 vacuum hose for proper connection, cracks, blockage or disconnected hose.
3. Disconnect the #18 vacuum hose from the choke opener, then connect a vacuum pump.



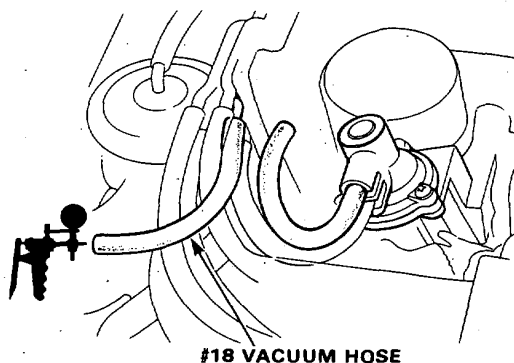
It should not hold vacuum.

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

Testing (HOT ENGINE)

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #18 vacuum hose from the choke opener and connect a vacuum pump.

It should hold vacuum.

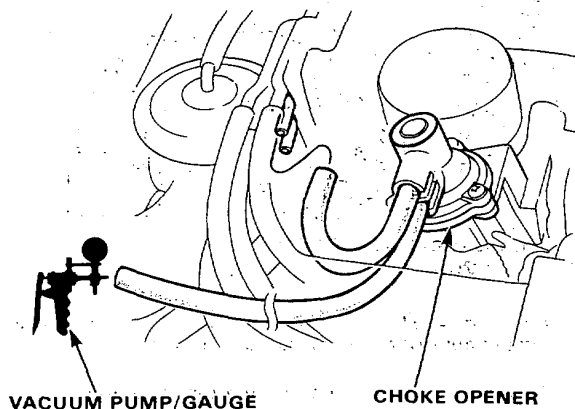


- If it does not hold vacuum, check the #18 vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, replace the thermostatic valve and retest.

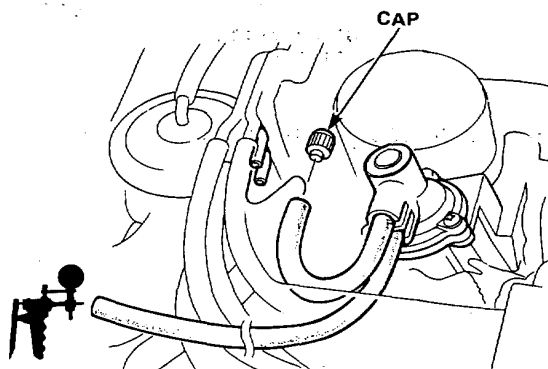


Choke Opener Diaphragm Testing

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



3. Apply vacuum.
Vacuum should stabilize at 100 to 200 mm Hg (4 to 8 in. Hg) and it should pull the opener rod.
 - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-25).
4. Cap the end of the #18 vacuum hose and apply vacuum.
It should pull the opener rod.

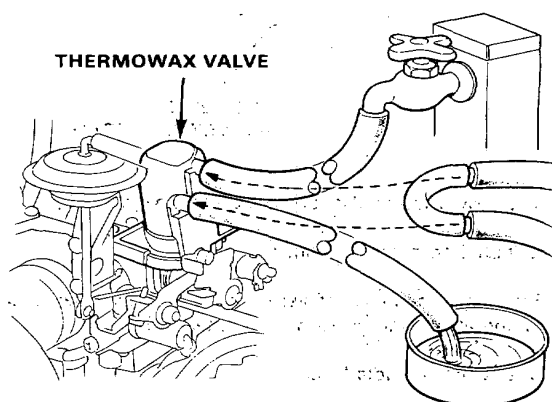


- If not, replace the left carburetor (page 6-25).

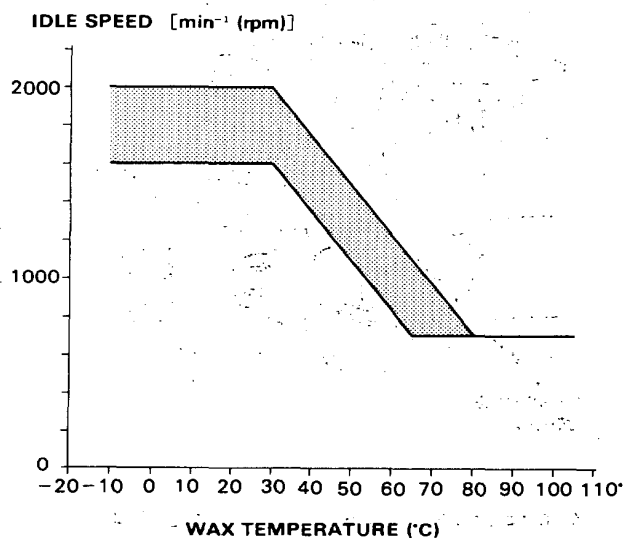
Fast Idle (1.6 l Engine)

Inspection/Adjustment

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



5. Connect a tachometer and check the idle speed.



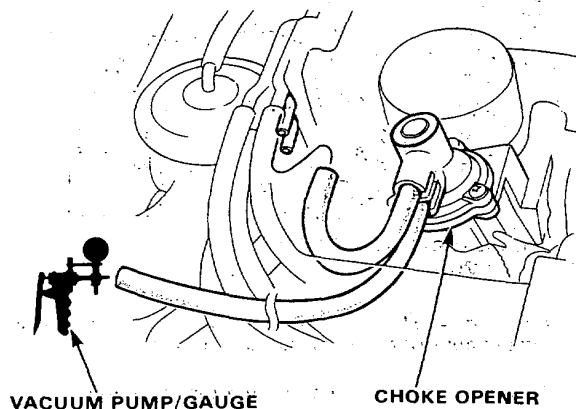
Adjust the idle speed, if necessary, by turning the fast idle adjusting screw.

(cont'd)

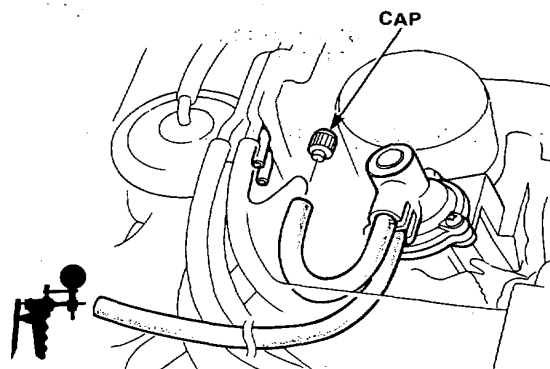


Choke Opener Diaphragm Testing

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



3. Apply vacuum.
Vacuum should stabilize at 100 to 200 mm Hg (4 to 8 in. Hg) and it should pull the opener rod.
 - If not, check the linkage for signs of mechanical binding and replace the left carburetor (page 6-25).
4. Cap the end of the #18 vacuum hose and apply vacuum.
It should pull the opener rod.

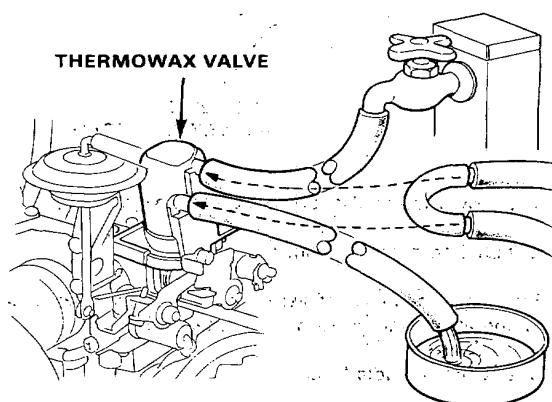


- If not, replace the left carburetor (page 6-25).

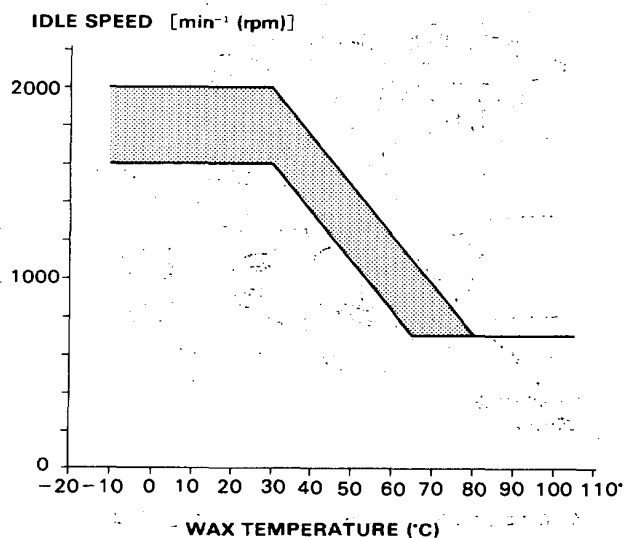
Fast Idle (1.6 l Engine)

Inspection/Adjustment

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



5. Connect a tachometer and check the idle speed.

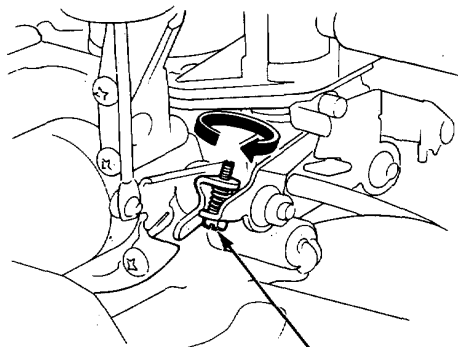


Adjust the idle speed, if necessary, by turning the fast idle adjusting screw.

(cont'd)

Carburetor

Fast Idle (1.6 l Engine) (cont'd)

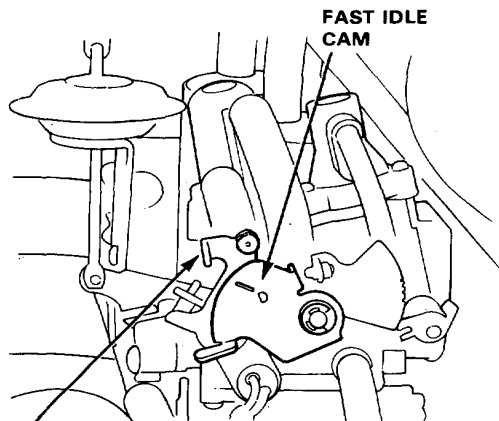


**FAST IDLE
ADJUSTING SCREW**

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

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

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

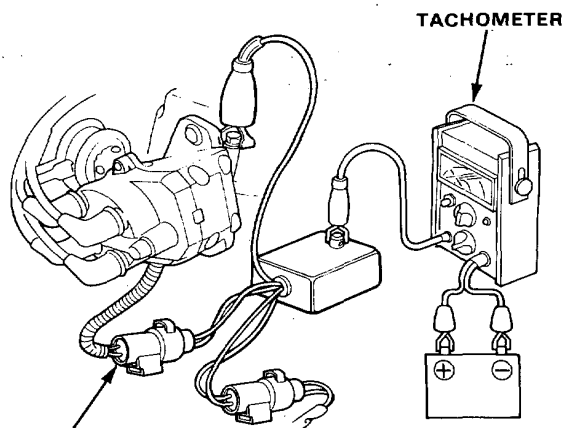


**FAST IDLE
LEVER**

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

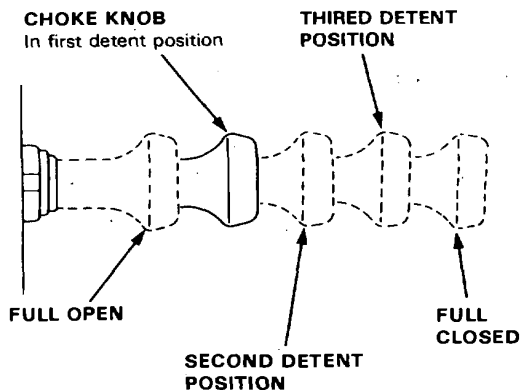
Manual Choke /Fast Idle (1.4 l Engine)

1. Connect a tachometer.



**R.P.M. CONNECTING ADAPTOR
07JAZ-SH20100**

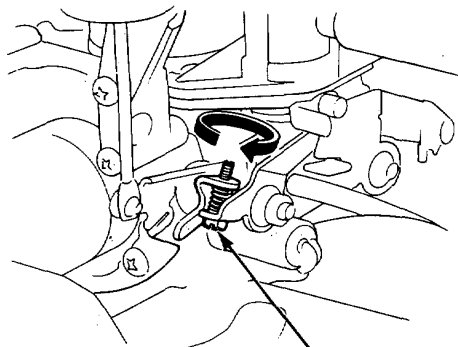
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
3. Place choke control knob in first detent position.



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

Carburetor

Fast Idle (1.6 l Engine) (cont'd)

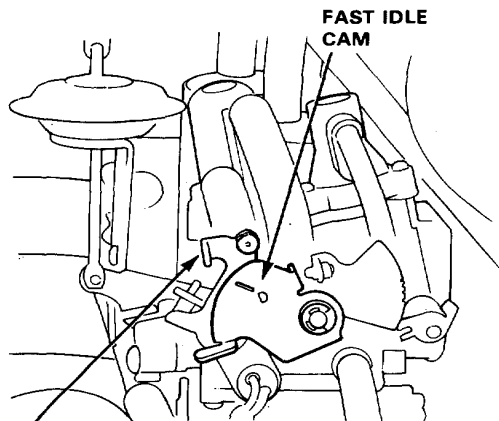


**FAST IDLE
ADJUSTING SCREW**

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

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

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

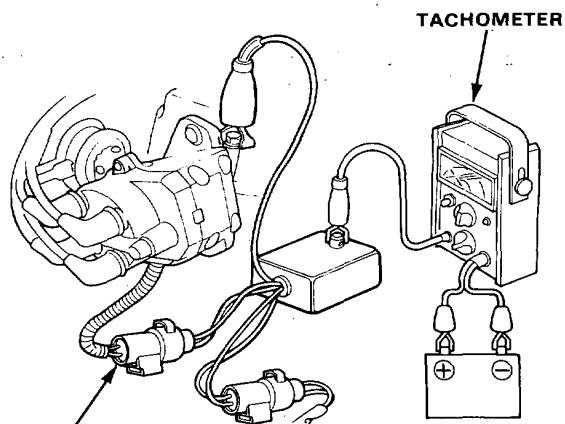


**FAST IDLE
LEVER**

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

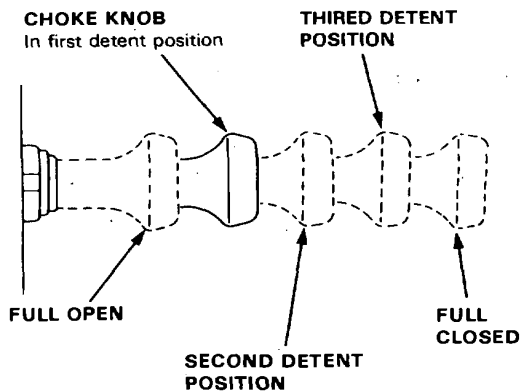
Manual Choke /Fast Idle (1.4 l Engine)

1. Connect a tachometer.



**R.P.M. CONNECTING ADAPTOR
07JAZ-SH20100**

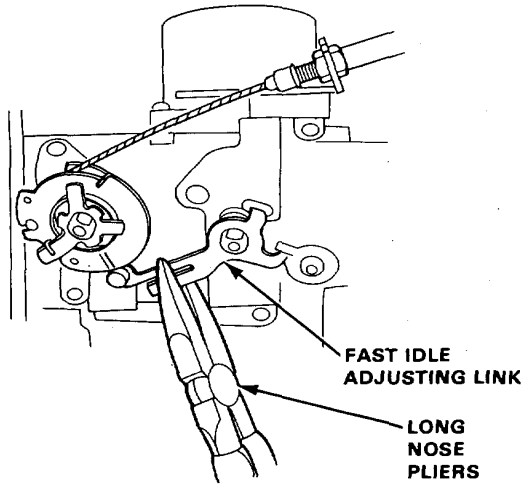
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
3. Place choke control knob in first detent position.



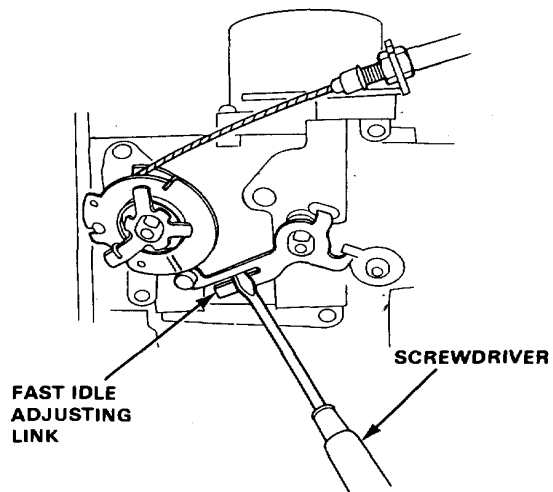
Fast idle should be: 1,500—2,500 min⁻¹ (rpm)



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

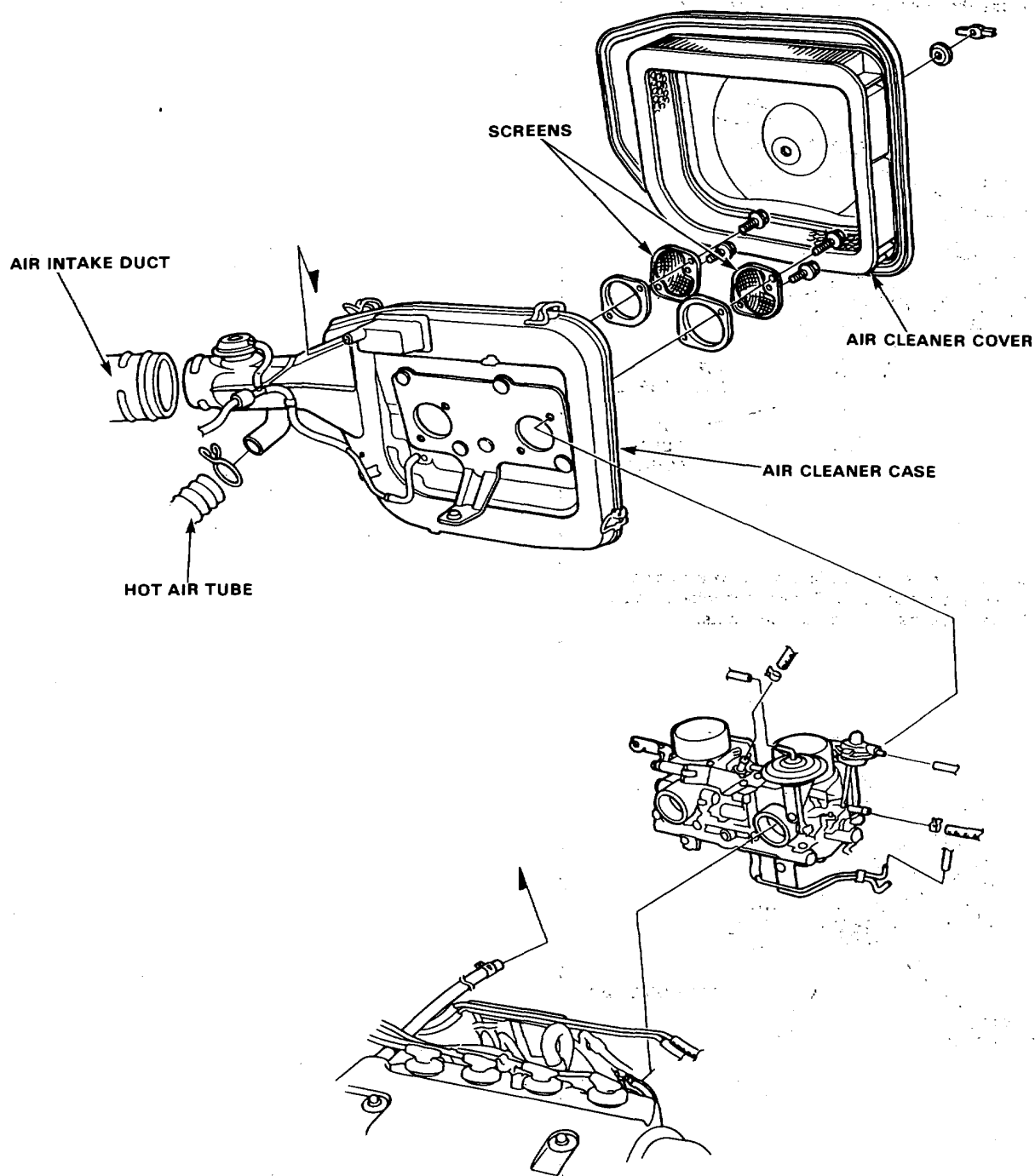


- If the engine speed is too low, insert a screwdriver in the fast idle adjusting link slot and widen the slot. Make adjustments in small increments.



Carburetor

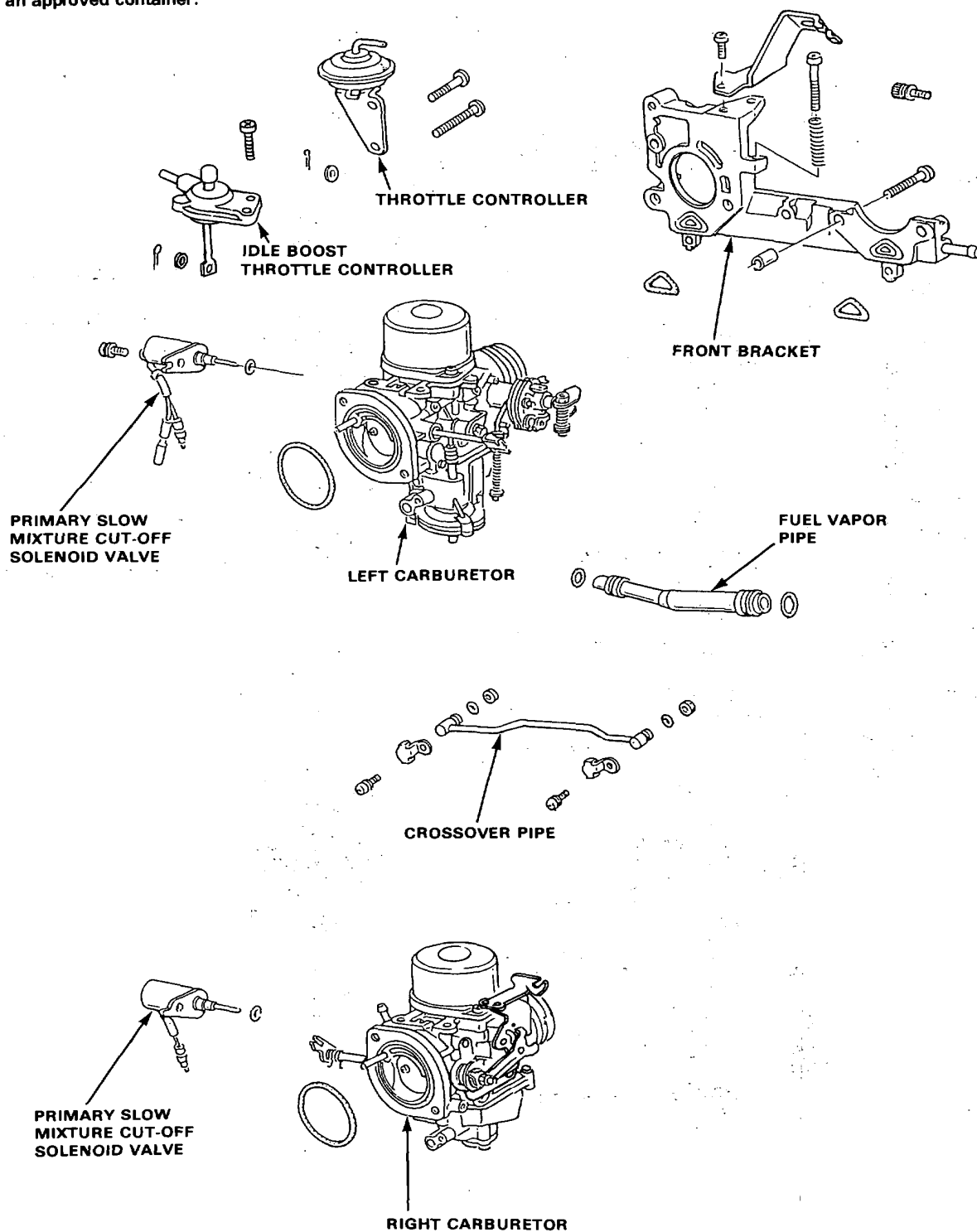
Removal (1.4 l Engine)





Replacement (1.4 l Engine)

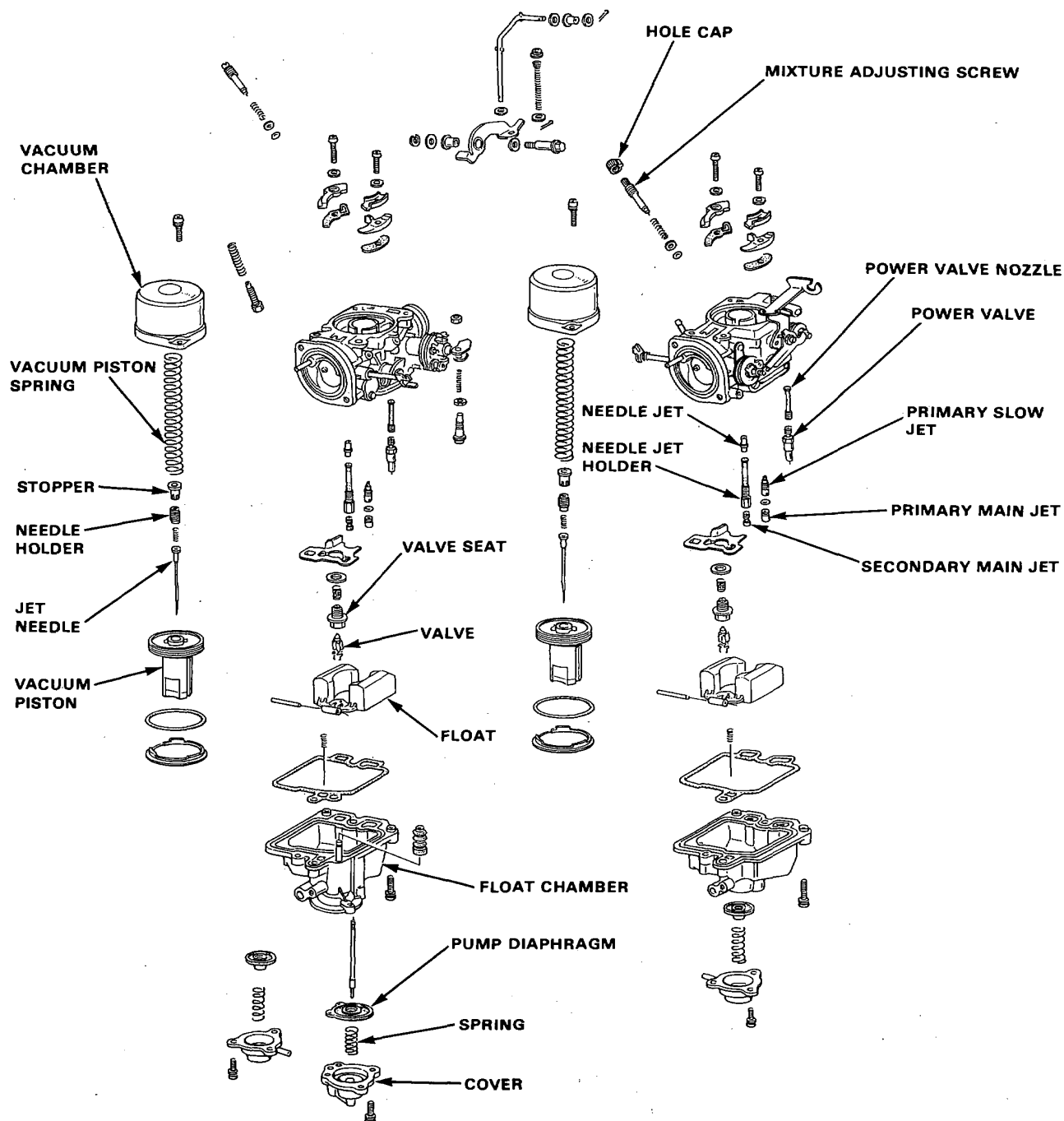
⚠ WARNING Do not smoke while working on fuel system. Keep any open flame away from your work area. Drain fuel in to an approved container.



(cont'd)

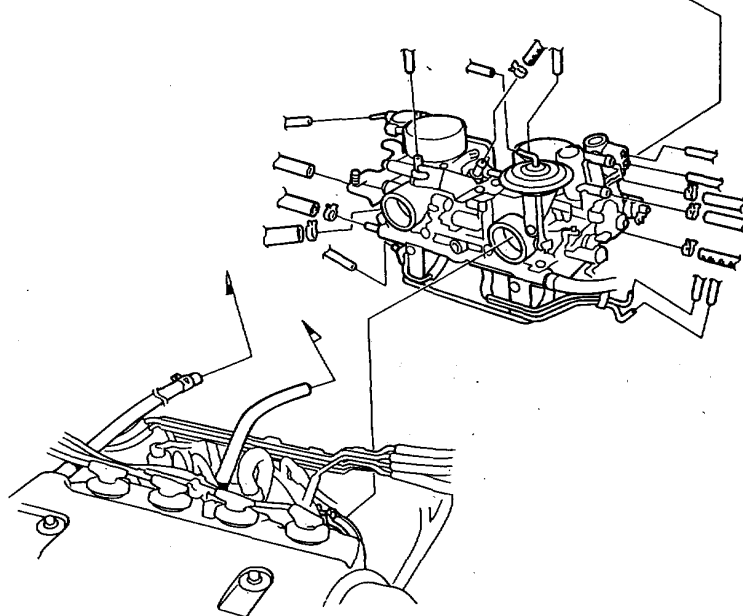
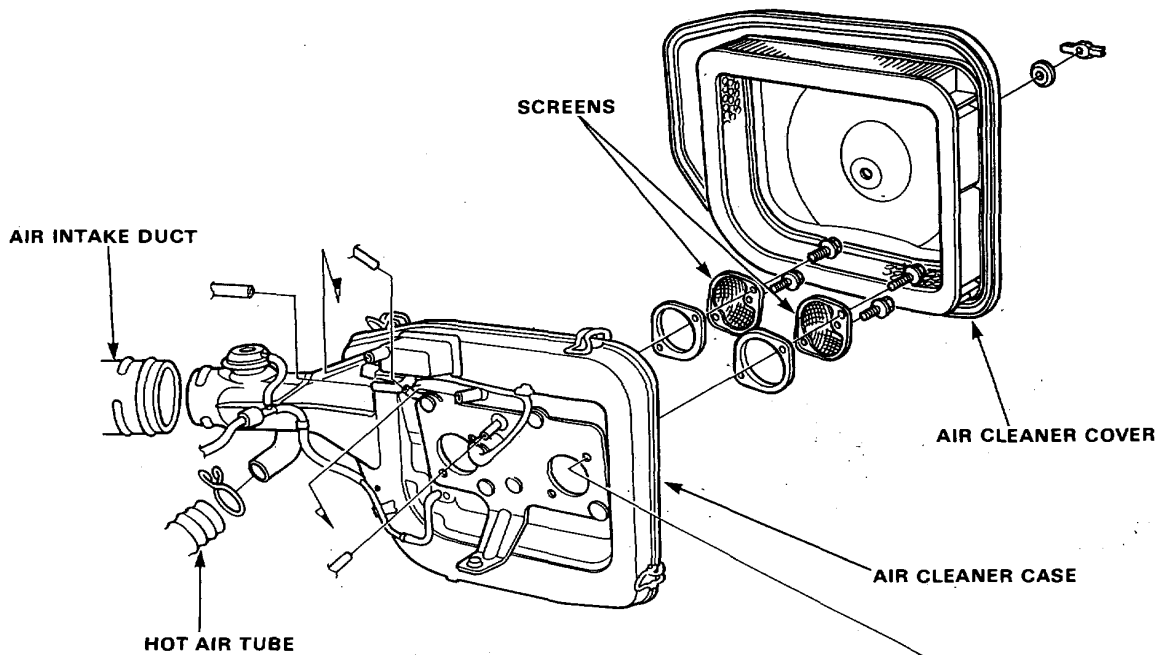
Carburetor

Replaccment (cont'd)
(1.4 l Engine)





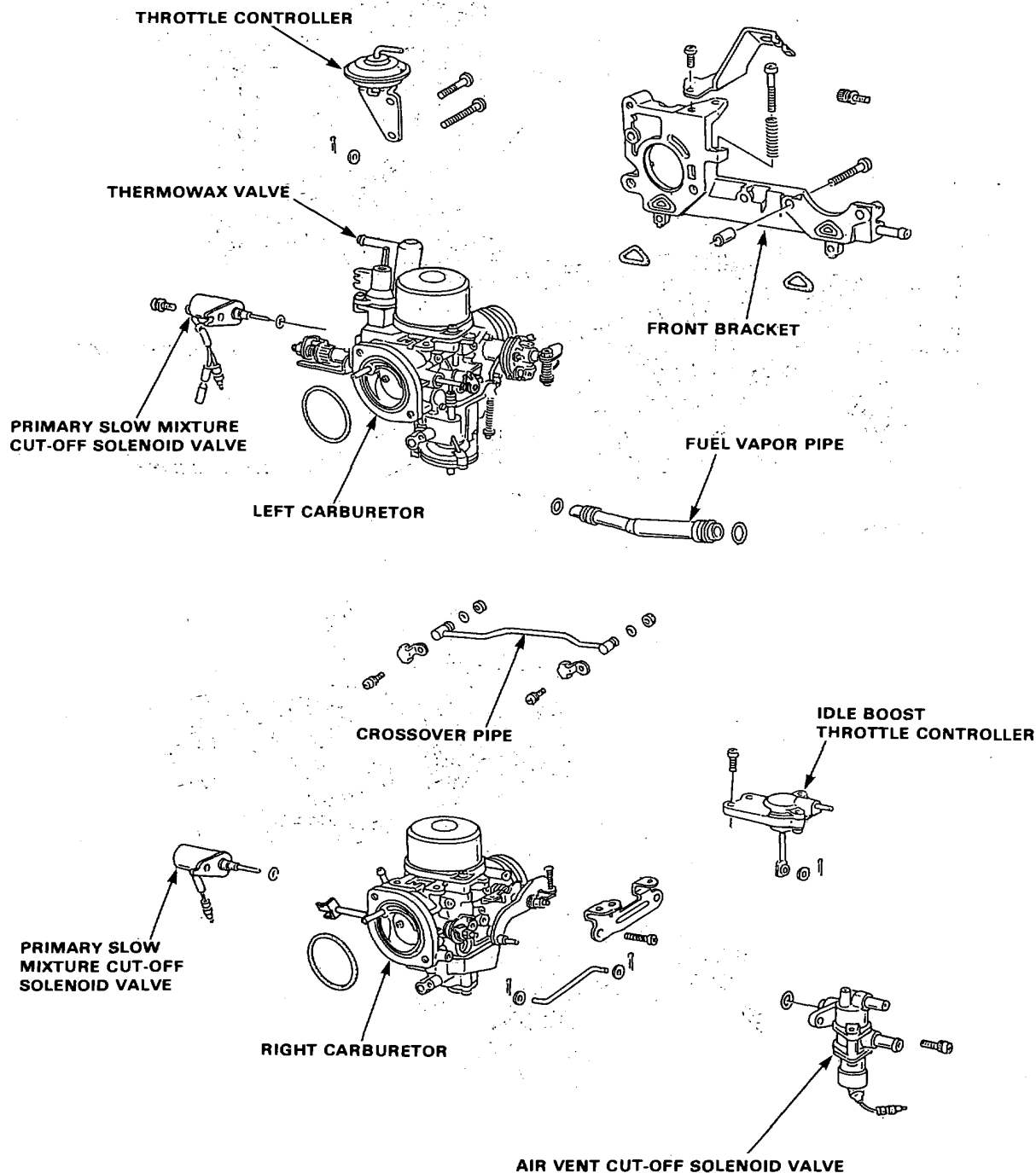
Removal (1.6 l Engine)

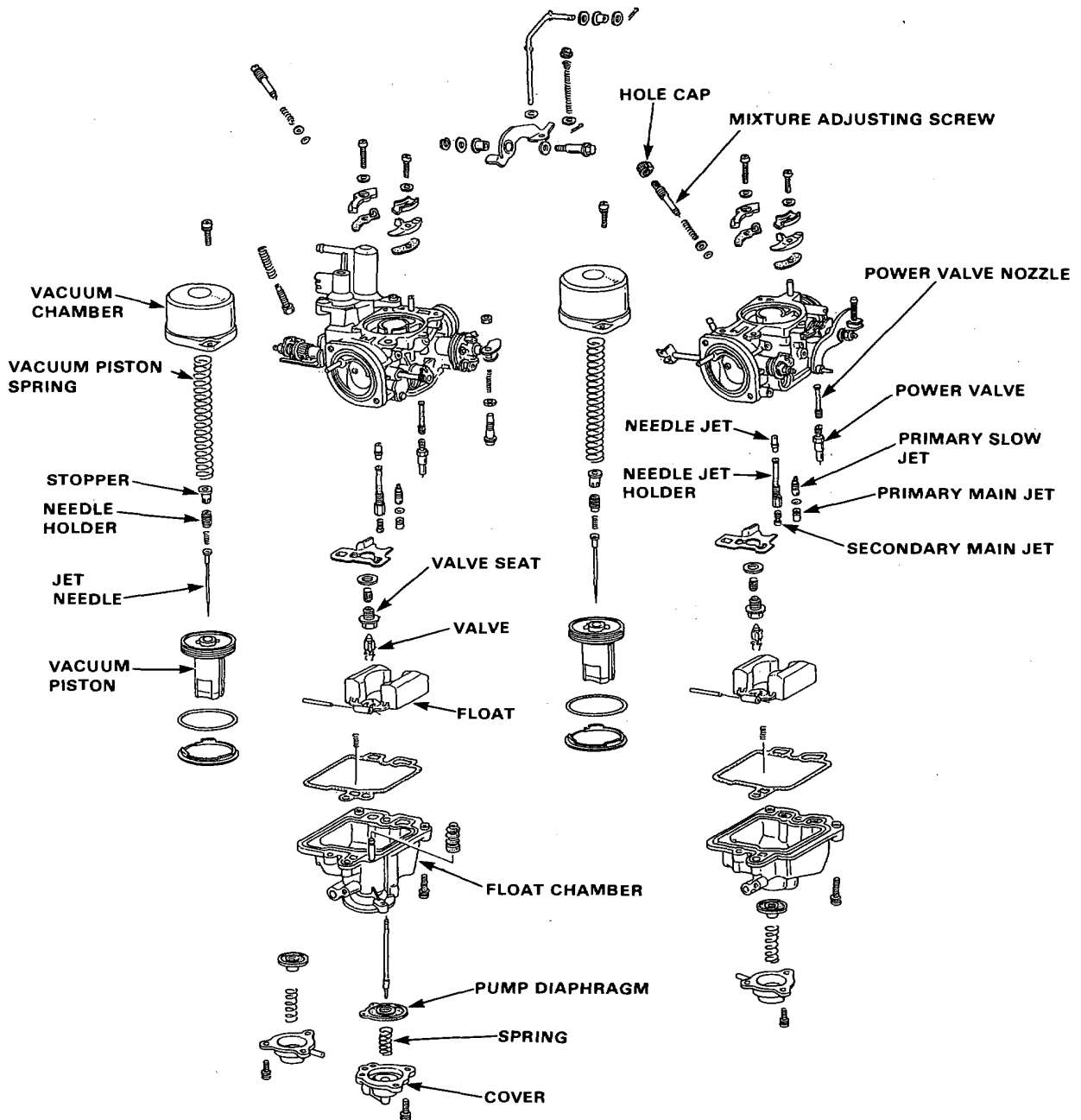


Carburetor

Replacement (1.6 l Engine)

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





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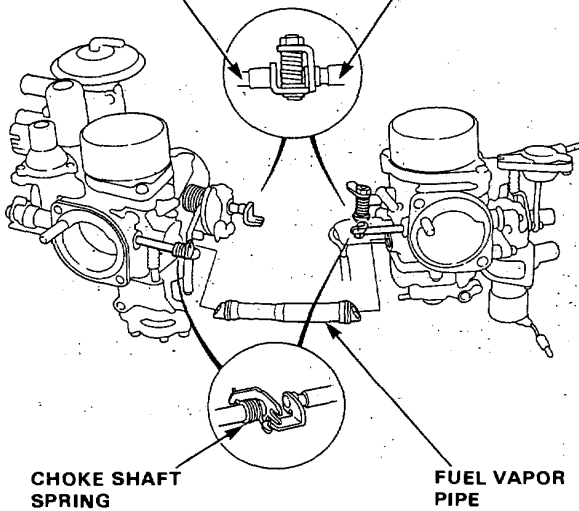
Carburetor

Reassembly

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

LEFT CARBURETOR
THROTTLE SHAFT

RIGHT CARBURETOR
THROTTLE SHAFT

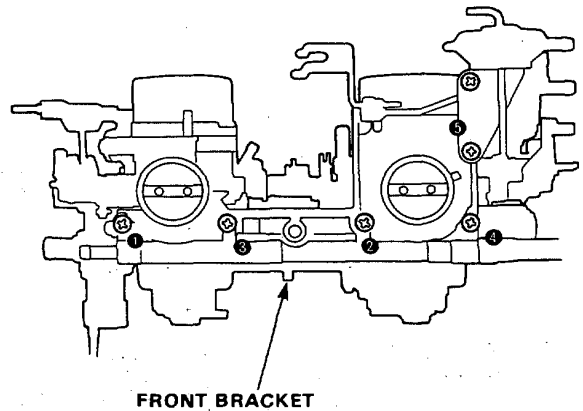


4. Connect the choke shaft spring.
5. Install the front bracket, with new gaskets, but don't tighten its screws yet.

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

6. Check that the choke and throttle shafts move smoothly without binding.

7. Tighten the screws in the sequence shown.



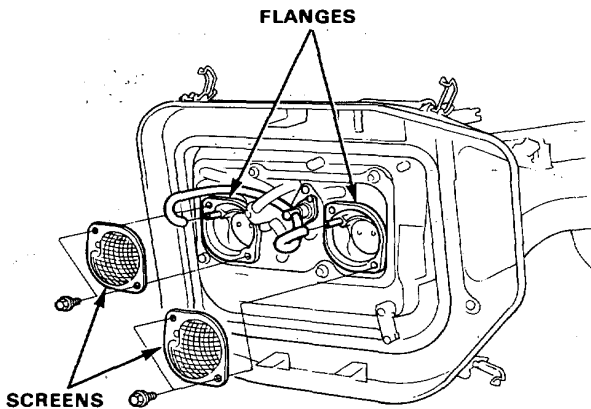


Synchronization

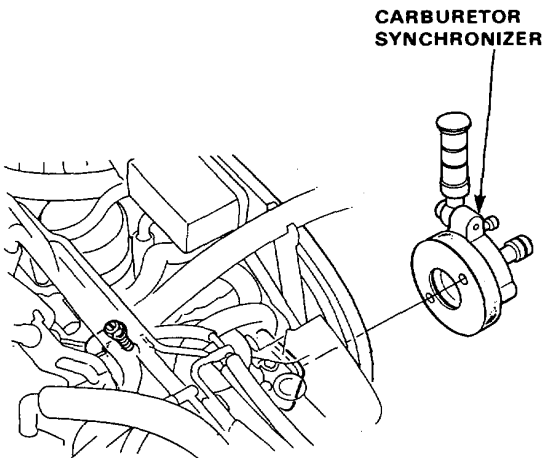
1. Remove the air cleaner cover and element.

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

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



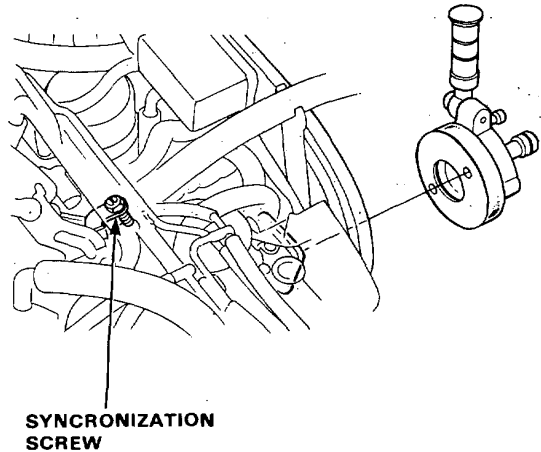
3. Install the carburetor synchronizer.



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

5. Measure the air flow using the carburetor synchronizer.

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



6. Tighten the adjusting screw lock nut and recheck the flow rates. Adjust as necessary.
7. Remove the carburetor synchronizer and reinstall the remaining parts in the reverse order of disassembly.

Fuel Supply System

Symptom-to-sub System Chart

NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

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

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



Fuel Filter

Replacement

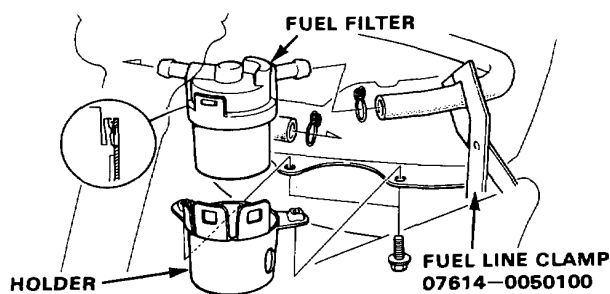
Replace rear filter at every 2 years or 40,000 km (24,000 miles) whichever comes first.

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

1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Push in the tab of the fuel filter to release the holder, then remove the filter from its bracket.
3. Attach fuel line clamps to the fuel lines and disconnect the lines from the filter.

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

4. Install in the reverse order of removal.



Fuel Pump

Testing

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

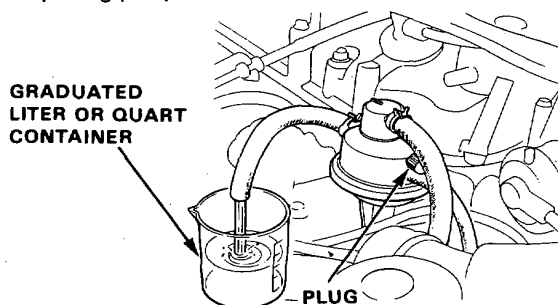
NOTE: Check for a clogged fuel filter and/or fuel line before checking fuel pump pressure.

1. Disconnect the fuel line, and hold a graduated container under the hose as shown.
2. Disconnect the fuel return line at the fuel pump and plug the return fitting with a cap.
3. Start the engine, and allow it to idle for 60 seconds, then stop the engine.

Fuel flow should be more than 833.3 cm³ (27.9 oz).

- If fuel flow is less than specified, replace the fuel pump and retest.

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



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

(cont'd)



Fuel Filter

Replacement

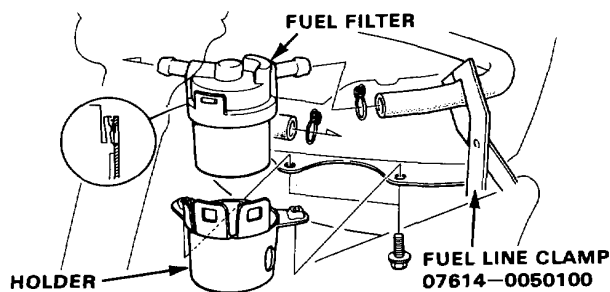
Replace rear filter at every 2 years or 40,000 km (24,000 miles) whichever comes first.

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

1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Push in the tab of the fuel filter to release the holder, then remove the filter from its bracket.
3. Attach fuel line clamps to the fuel lines and disconnect the lines from the filter.

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

4. Install in the reverse order of removal.



Fuel Pump

Testing

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

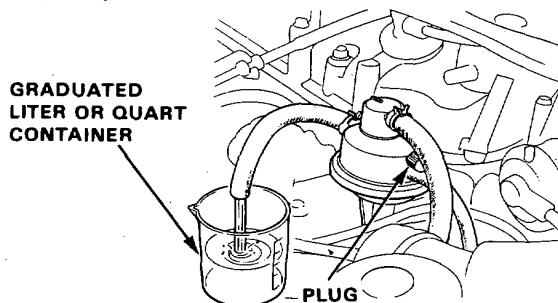
NOTE: Check for a clogged fuel filter and/or fuel line before checking fuel pump pressure.

1. Disconnect the fuel line, and hold a graduated container under the hose as shown.
2. Disconnect the fuel return line at the fuel pump and plug the return fitting with a cap.
3. Start the engine, and allow it to idle for 60 seconds, then stop the engine.

Fuel flow should be more than 833.3 cm³ (27.9 oz).

- If fuel flow is less than specified, replace the fuel pump and retest.

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



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

(cont'd)

Fuel Supply System

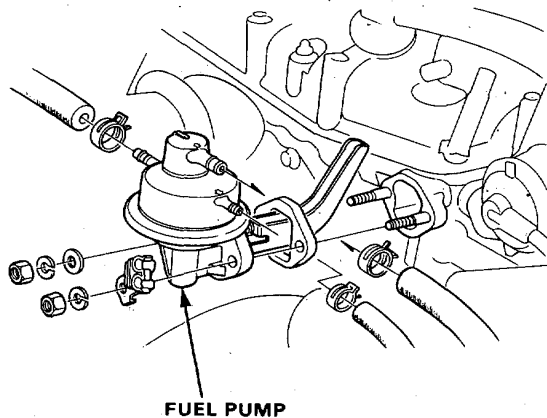
Fuel Pump (cont'd)

Replacement

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

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

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



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

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



Fuel Tank

Replacement

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

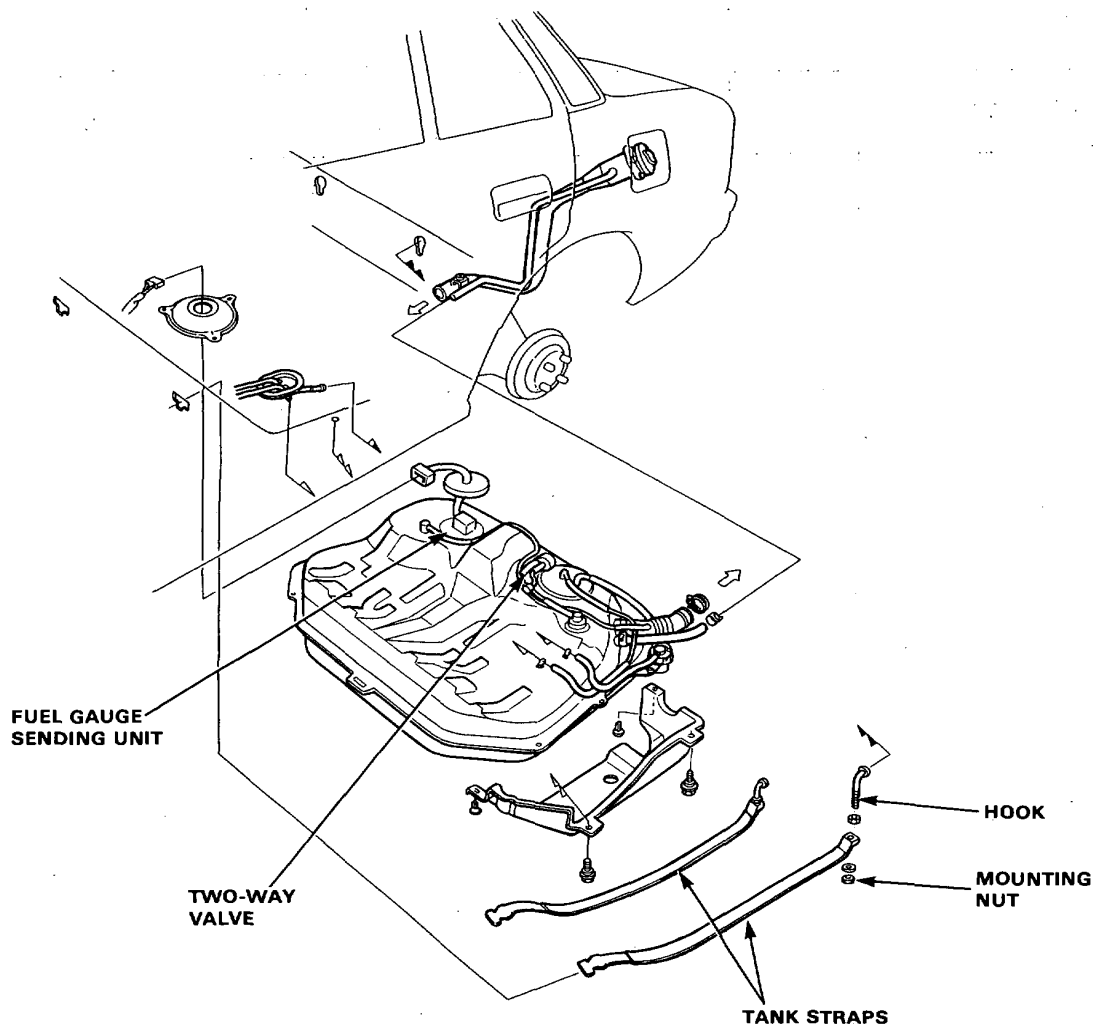
1. Block front wheels. Jack up up the rear of the car and support with jackstands.
2. Disconnect the fuel gauge sending unit connector.
3. Disconnect the hoses.

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

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

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

7. Install parts in the reverse order of removal.



Air Intake System

Symptom-to-sub System Chart

NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

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

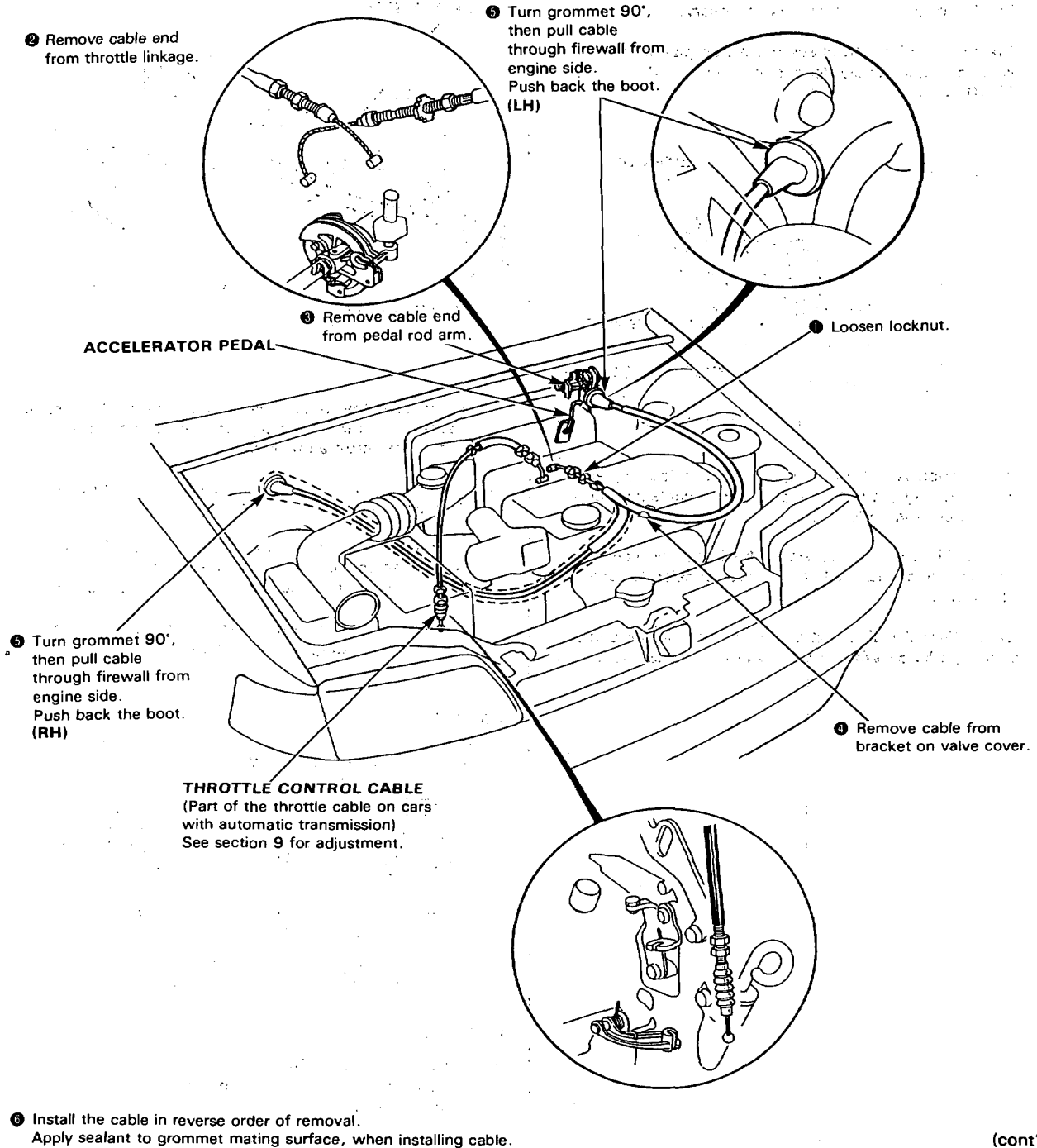


Throttle Cable

Replacement

NOTE:

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



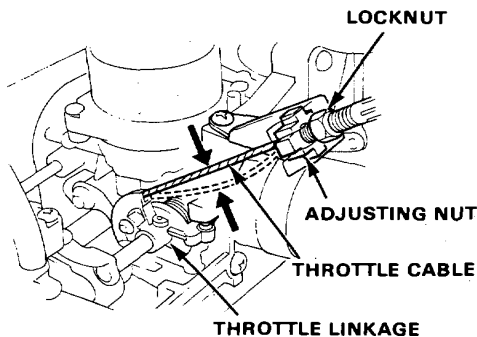
(cont'd)

Air Intake System

Throttle Cable (cont'd)

Inspection/Adjustment

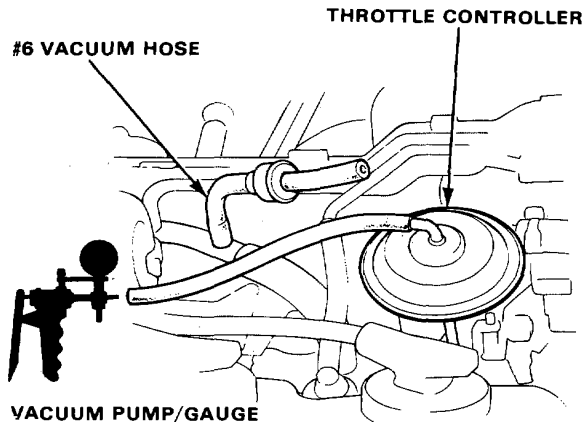
1. Warm up the engine to normal operating temperature (the cooling fan comes on).
2. Check that throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. Start the engine and check cable free-play at throttle linkage at idle. Cable deflection should be 4–10 mm (3/16–3/8 in.).



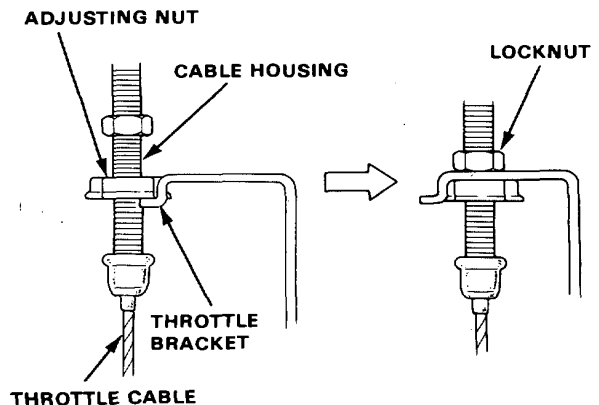
4. If deflection is not within specs, loosen locknut and turn adjusting nut until you can deflect cable as specified. Then tighten locknut.
5. With cable properly adjusted, check throttle valve to be sure it opens fully when you push accelerator pedal to the floor.

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

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



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

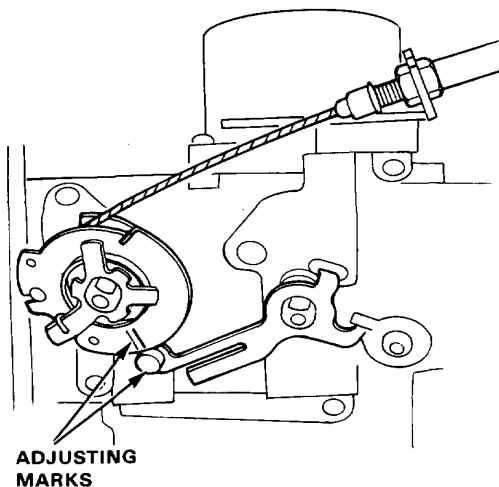


6. (Except 1.6 l M/T Engine)
Disconnect the vacuum pump and connect the #6 vacuum hose.



Choke Cable (1.4 l Engine)

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



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

Air Intake System

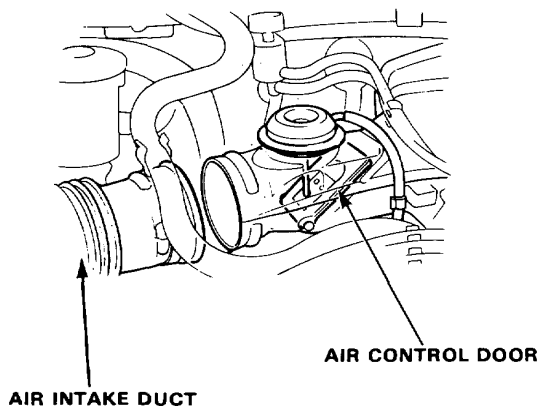
Intake Air Control System

Testing (COLD ENGINE)

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

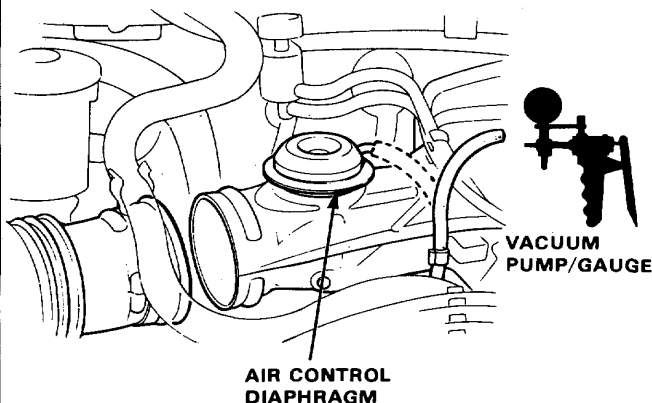
1. Disconnect the air intake duct and start the engine.

The air control door should rise.



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

There should be vacuum.

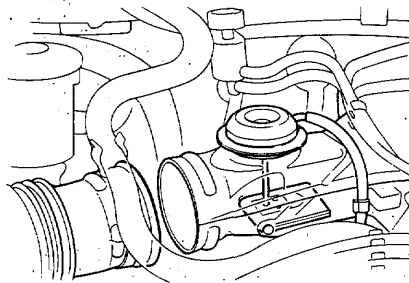


- If there is vacuum, replace the air control diaphragm and retest.
- If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve A.

Testing (HOT ENGINE)

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

The air control door should be down.



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

There should be no vacuum.

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

Emission Control System

Sympton-to-sub System Chart



NOTE:

- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- Before starting inspection, check that other items that affect engine performance are within specification. Check the valve clearance, air cleaner, and PCV valve. In addition, check the ignition timing, function of the vacuum and centrifugal advance, and the condition of the spark plugs. If those items are all within specifications, begin with the troubleshooting listed in this page.

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

Emission Control System

Tailpipe Emissions

Inspection

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

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

Specified CO% ; 1.0%



Throttle Control System

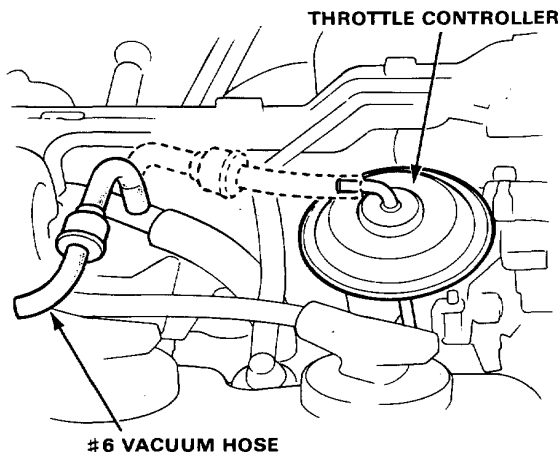
Testing (HOT ENGINE)

(1.4 l Engine and 1.6 l A/T Engine)

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

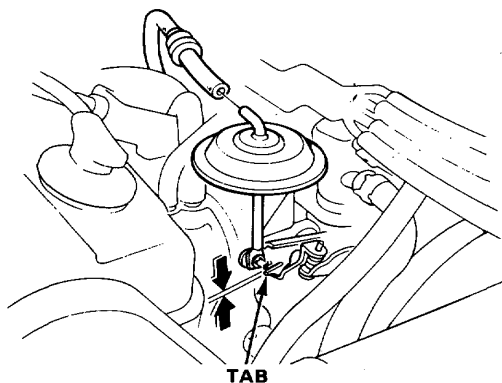
Engine speed should be:

Manual	$2,200 \pm 500 \text{ min}^{-1} \text{ (rpm)}$
Automatic	$1,900 \pm 500 \text{ min}^{-1} \text{ (rpm)}$

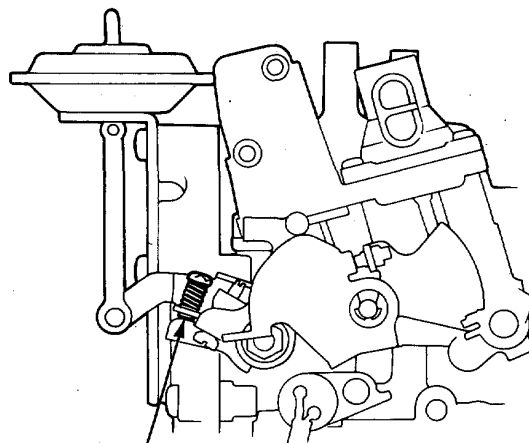


- If the engine speed is excessively high:
1.4 l Engine; adjust by bending TAB.
1.6 l Engine; adjust by turning the adjusting screw.

(1.4 l Engine)



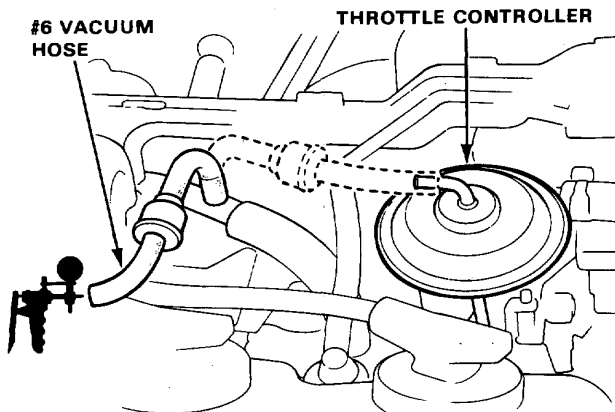
(1.6 l A/T Engine)



ADJUSTING SCREW

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

There should be vacuum.



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

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

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

(cont'd)

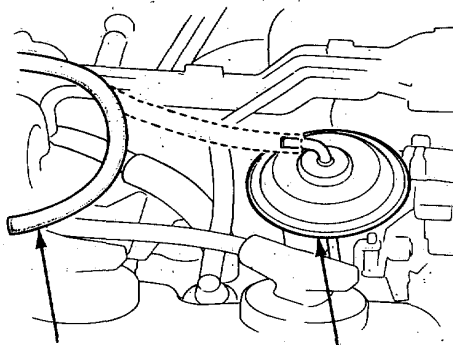
Emission Control System

Throttle Control System (cont'd)

(1.6 l M/T Engine)

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect #6 vacuum hose from the throttle controller, connect a vacuum pump to the controller and apply 400 mmHg (16 in. Hg) vacuum:

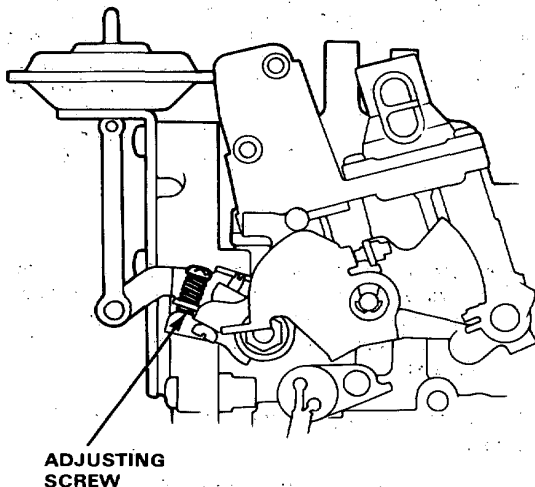
Engine speed should rise to 1,500–2,500 min^{-1} (rpm) within 1 minute.



6 VACUUM HOSE

THROTTLE
CONTROLLER

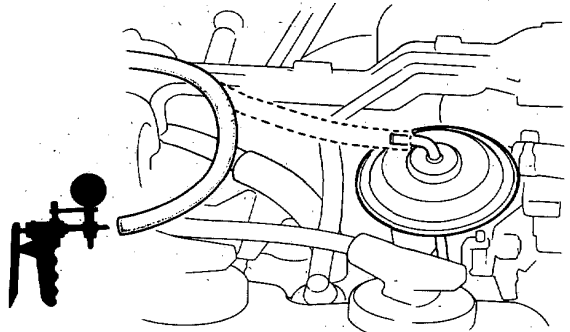
- If the engine speed is excessively high, adjust the engine speed by turning adjusting screw.



ADJUSTING
SCREW

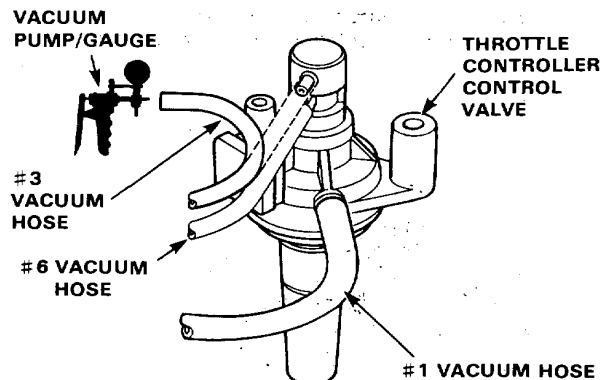
- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose. Raise the engine speed to 3,500 min^{-1} (rpm) and close the throttle suddenly, then check vacuum.

There should be vacuum.



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

There should be vacuum.



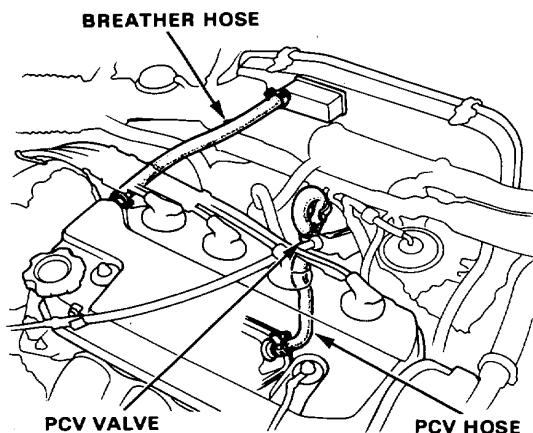
- If there is vacuum, check the #1 vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the throttle controller control valve.
 - If there is no vacuum, check the #3 vacuum hose for proper connection, cracks, blockage or disconnected hose.
3. Reconnect the #6 vacuum hose and check the idle speed. Idle speed should be within specification (page 6-15).



Positive Crankcase Ventilation

PCV Valve Test

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

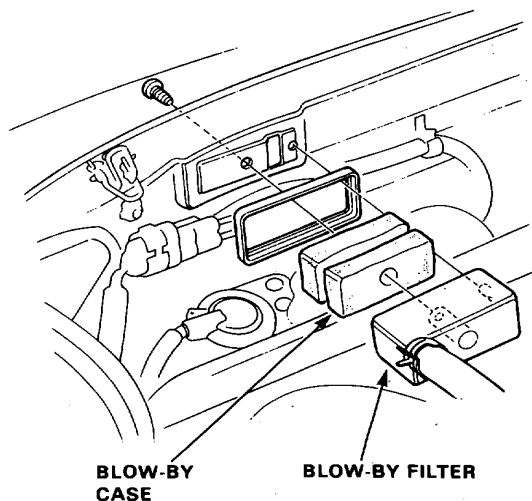


2. At idle, make sure there is a clicking sound from the PCV valve when you lightly pinch the PCV hose with your fingers or pliers.
 - If no clicking sound is heard, replace PCV valve and recheck.

Blow-by Filter Test

Inspect the condition of the blow-by filter.

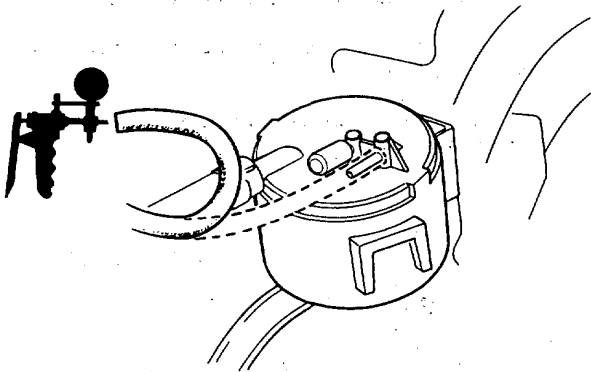
- Replace the filter in the following instances:
 - When the filter is stuck fast and oil is dripping or seeping through.
 - When the filter is covered with dust and dirt so that clogging is evident.



Emission Control System

Evaporative Emission Controls (1.6 l Engine)

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



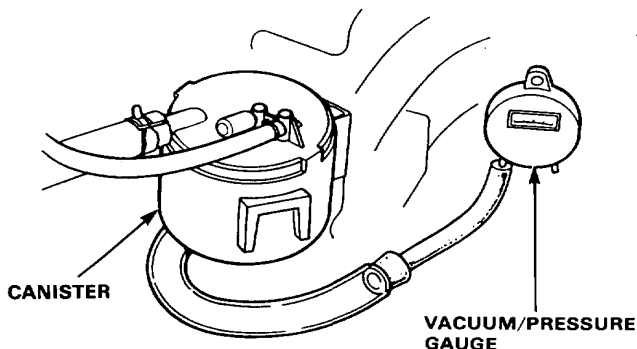
2. Start the engine and raise speed to 3,500 min⁻¹ (rpm).

There should be vacuum.

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

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

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

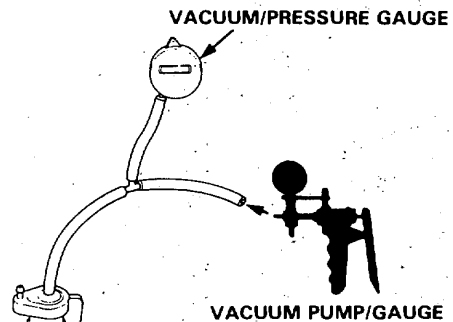


5. Raise engine speed to 3,500 min⁻¹ (rpm). Vacuum should appear on gauge within 1 minute.

- If no vacuum, replace the charcoal canister.

Two-way Valve Testing

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

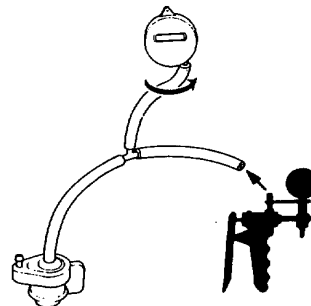


3. Slowly draw a vacuum while watching the gauge. Vacuum should stabilize at 15 to 30 mmHg (0.6 to 1.2 in. Hg).

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

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

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



5. Slowly pressurize the vapor line while watching the gauge. Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in. Hg).

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

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



Emission Control System

Evaporative Emission Controls (1.6 l Engine)

Troubleshooting Flow Chart Inner Vent Solenoid Valve

Inspection of Inner Vent Solenoid Valve.

Remove the air cleaner cover and filter element.

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

Apply vacuum.

Does solenoid valve hold vacuum?

NO

Replace the solenoid valve.

YES

Turn the ignition switch ON

Apply vacuum.

Does solenoid valve hold vacuum?

YES

Turn the ignition switch OFF.

NO

Solenoid valve is OK.

Disconnect the 2P connector near the air cleaner.

Turn the ignition switch ON.

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

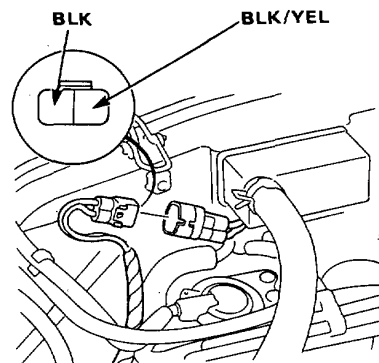
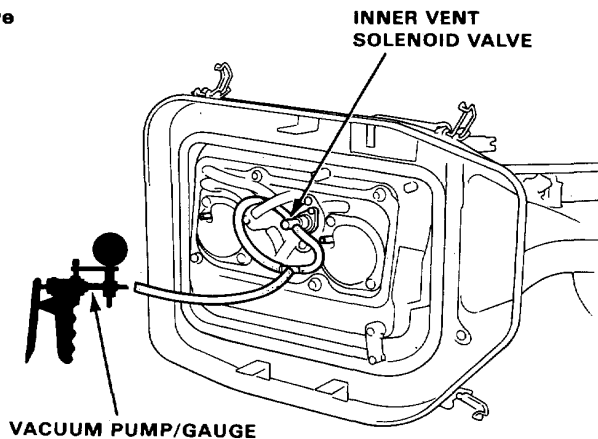
Is there voltage?

YES

Replace the solenoid valve.

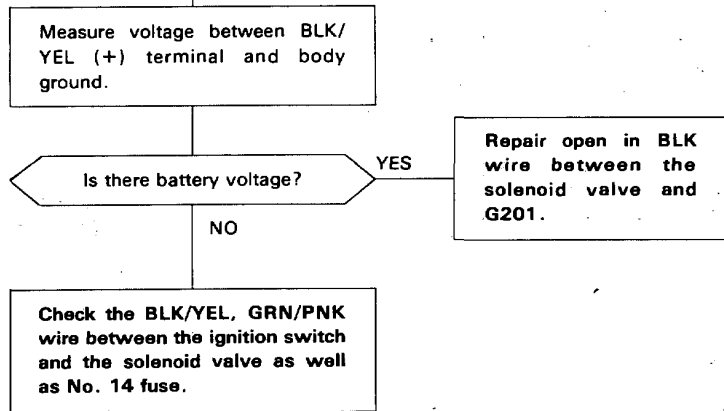
NO

(To page 6-47)





(From page 6-46)



(cont'd)

Emission Control System

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

Troubleshooting Flow Chart Air Vent Cut-off Solenoid Valve

Inspection of Air Vent Cut-off Solenoid Valve.

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

Apply vacuum.

Does solenoid valve hold vacuum ?

NO

Replace the solenoid valve.

YES

Turn the ignition switch ON.

Apply vacuum.

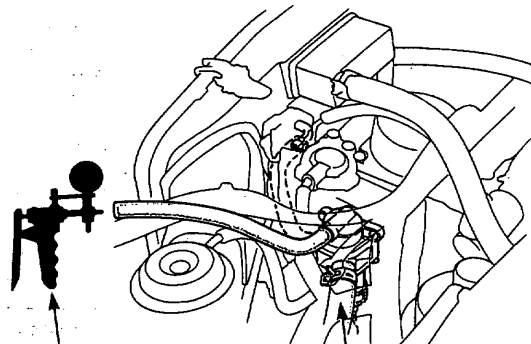
Does solenoid valve hold vacuum?

YES

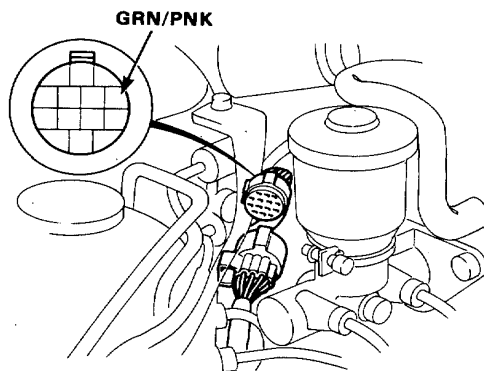
Turn the ignition switch OFF.

NO

Solenoid valve is OK.



VACUUM PUMP/GAUGE AIR VENT CUT-OFF SOLENOID VALVE



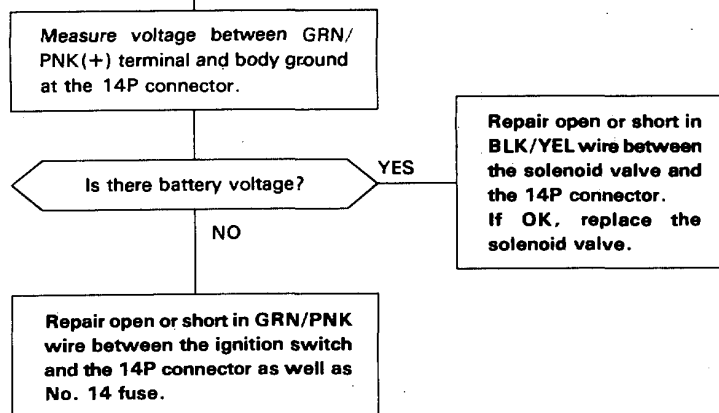
Disconnect the 14P connector.

Turn the ignition switch ON.

(To page 6-49)



(From page 6-48)



Special 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 Set	1	
②-1	07406—0040100	Pressure Gauge	(1)	
②-2	07406—0040201	Hose Assy	(1)	
③	07999—PD6000A	Test Harness	1	
④	07411—0020000	Digital Circuit Tester	1	

①

②

②-1

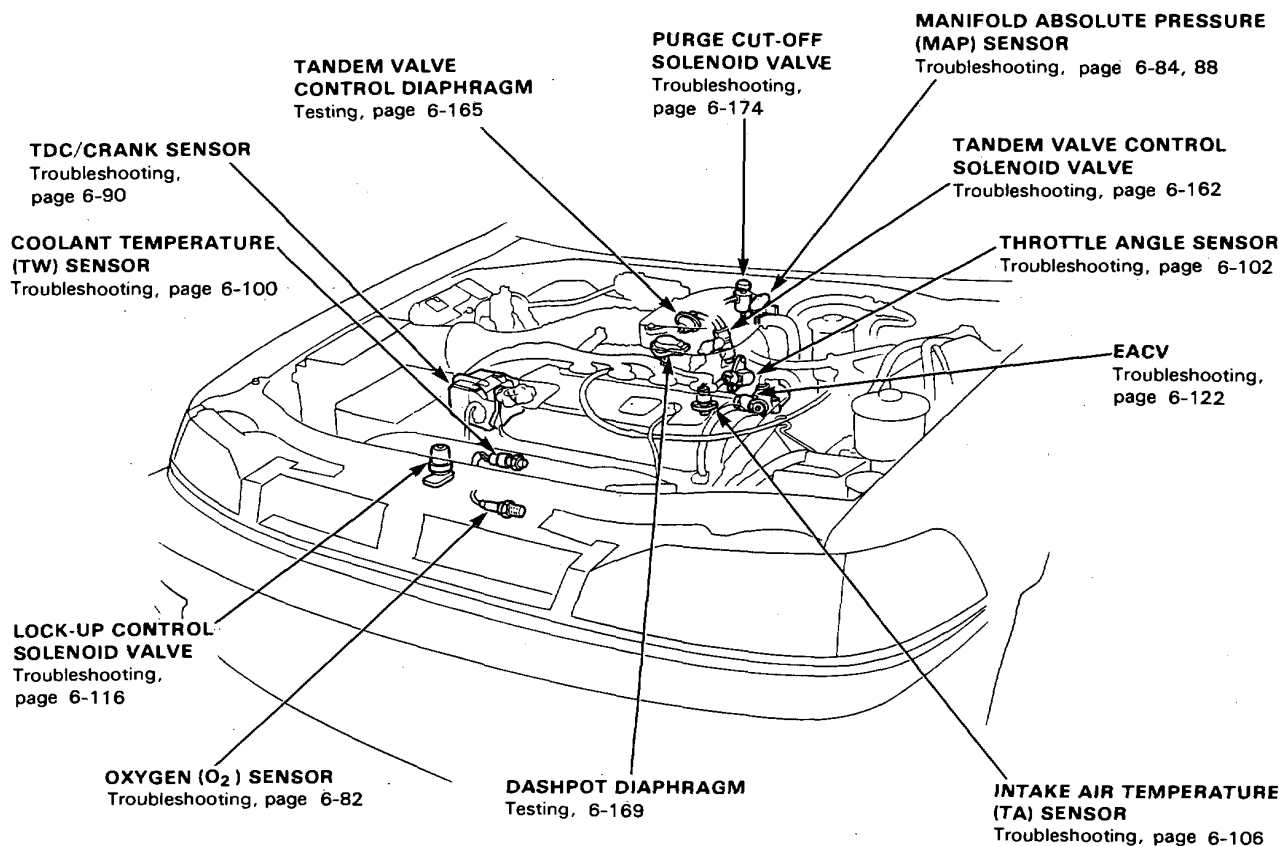
②-2

③

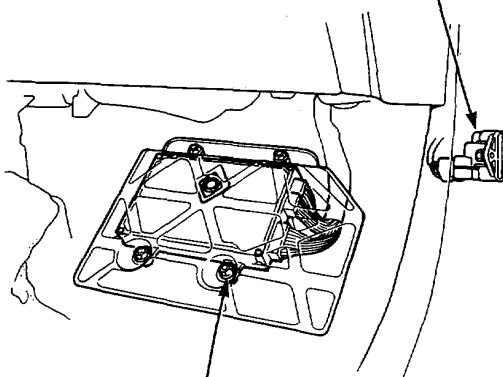
④

Component Locations

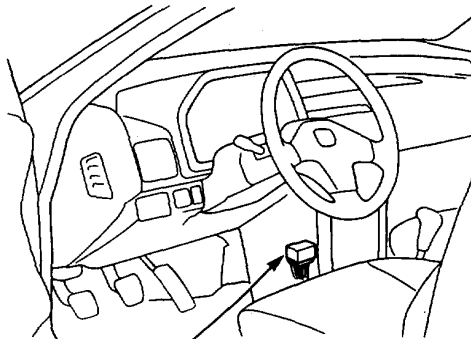
Index [1.5 l]



ATMOSPHERIC PRESSURE (PA) SENSOR
Troubleshooting, page 6-110



ELECTRONIC CONTROL UNIT (ECU)
Troubleshooting, page 6-78

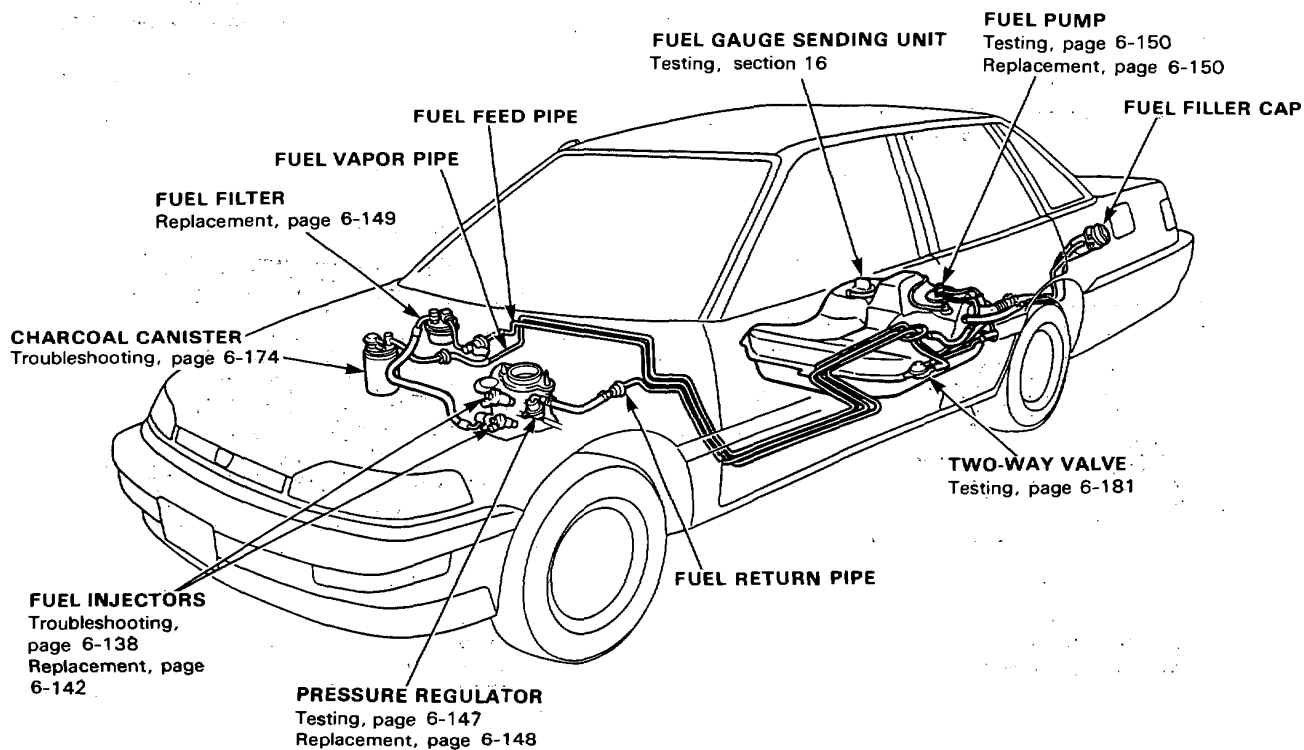
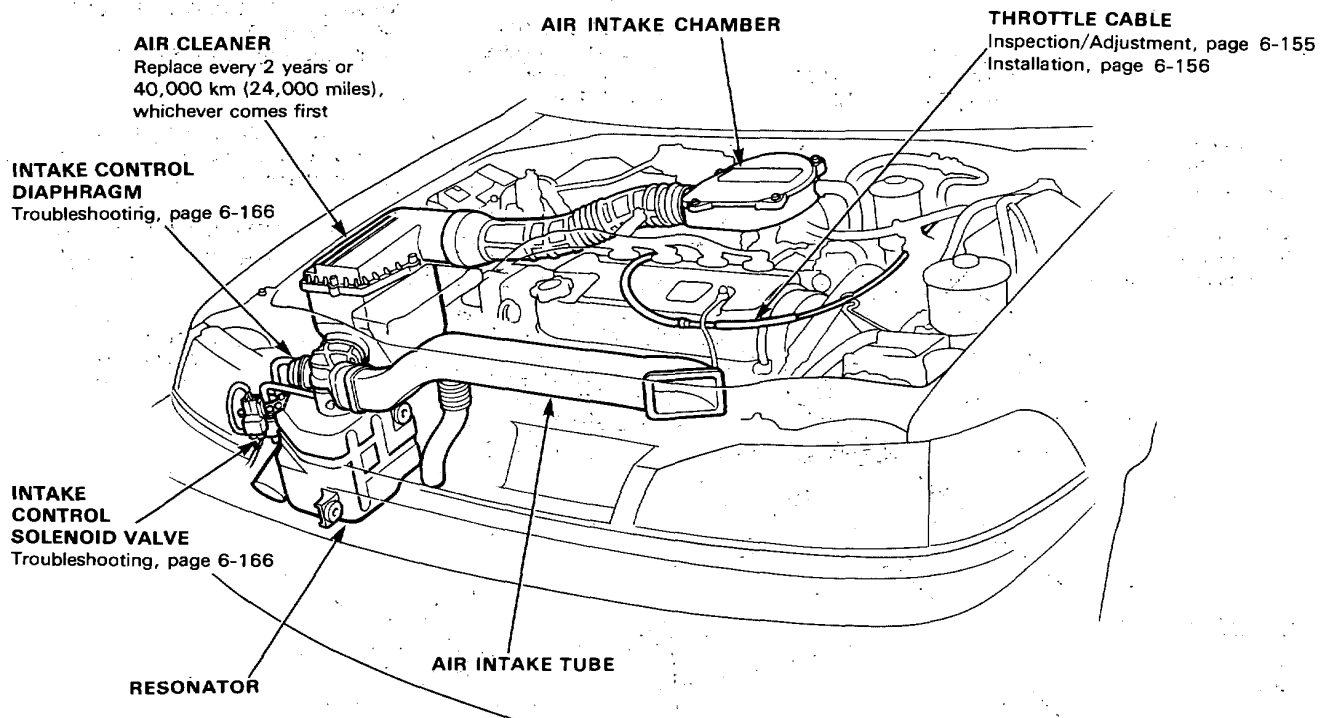


MAIN RELAY
Relay Testing, page 6-151
Harness Testing, 6-151

(cont'd)

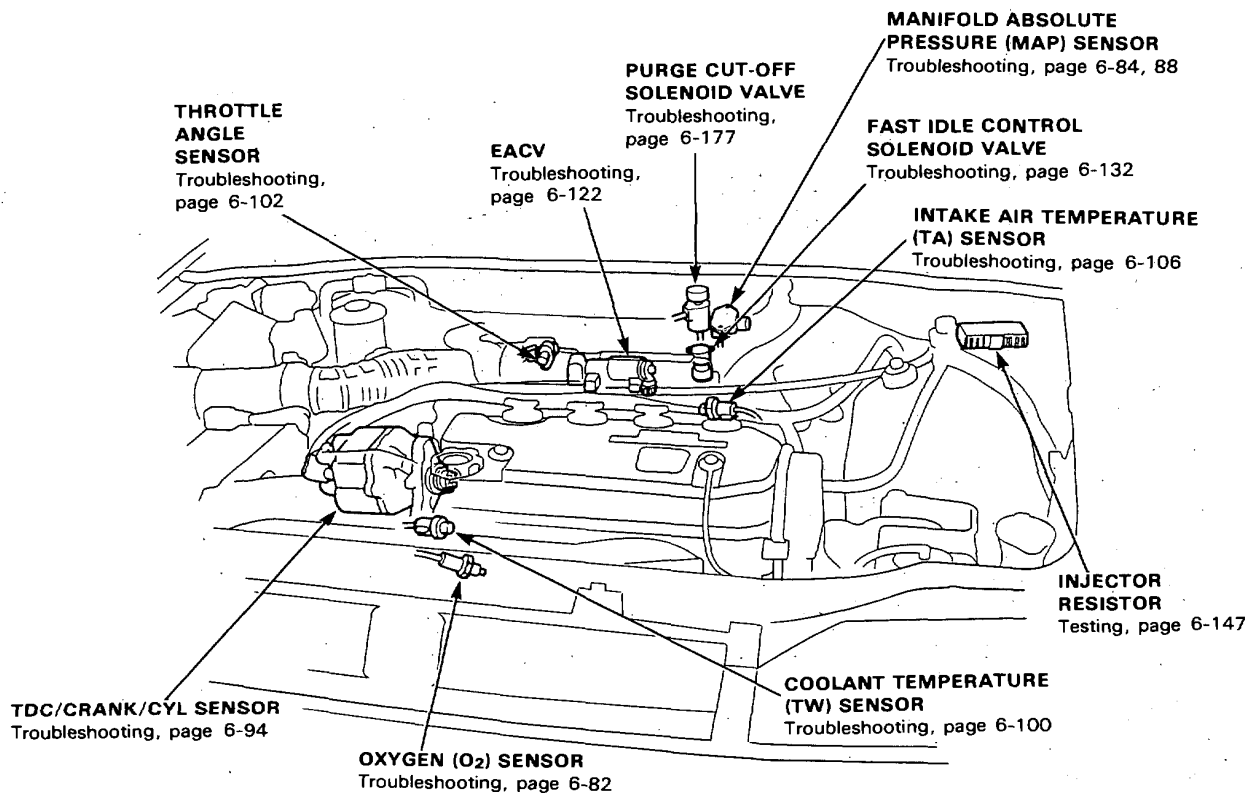
Component Locations

Index [1.5 l] (cont'd)



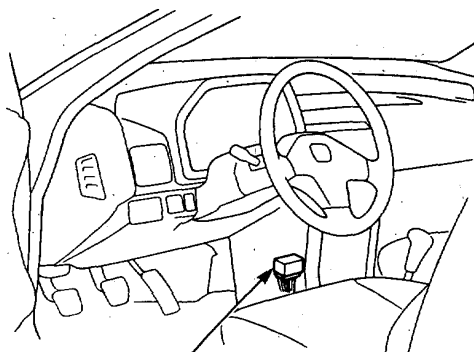
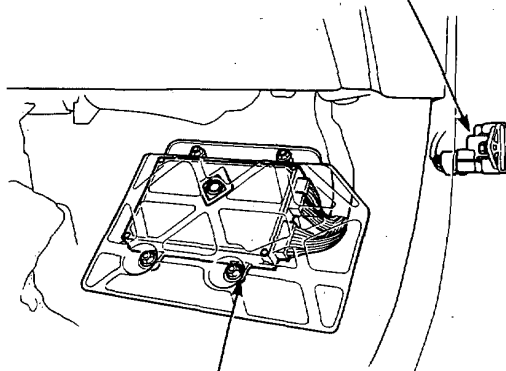


Index [1.6 l With CATA]



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

ATMOSPHERIC PRESSURE (PA) SENSOR
Troubleshooting, page 6-110

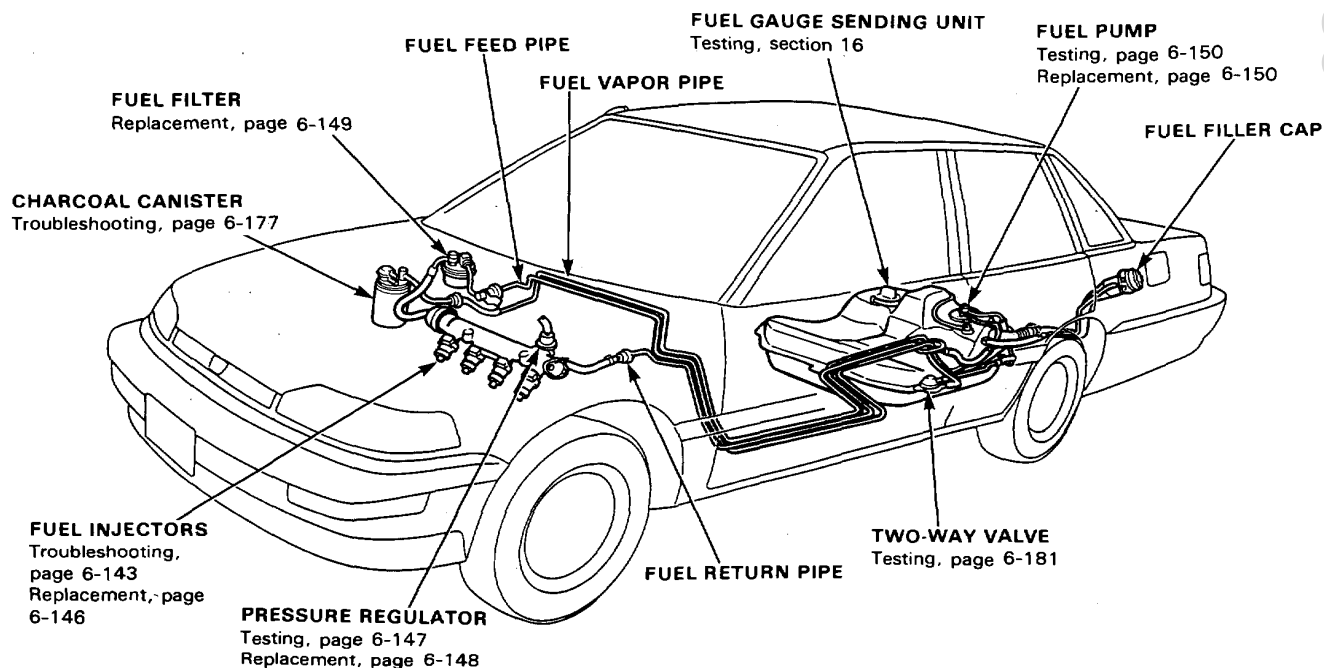
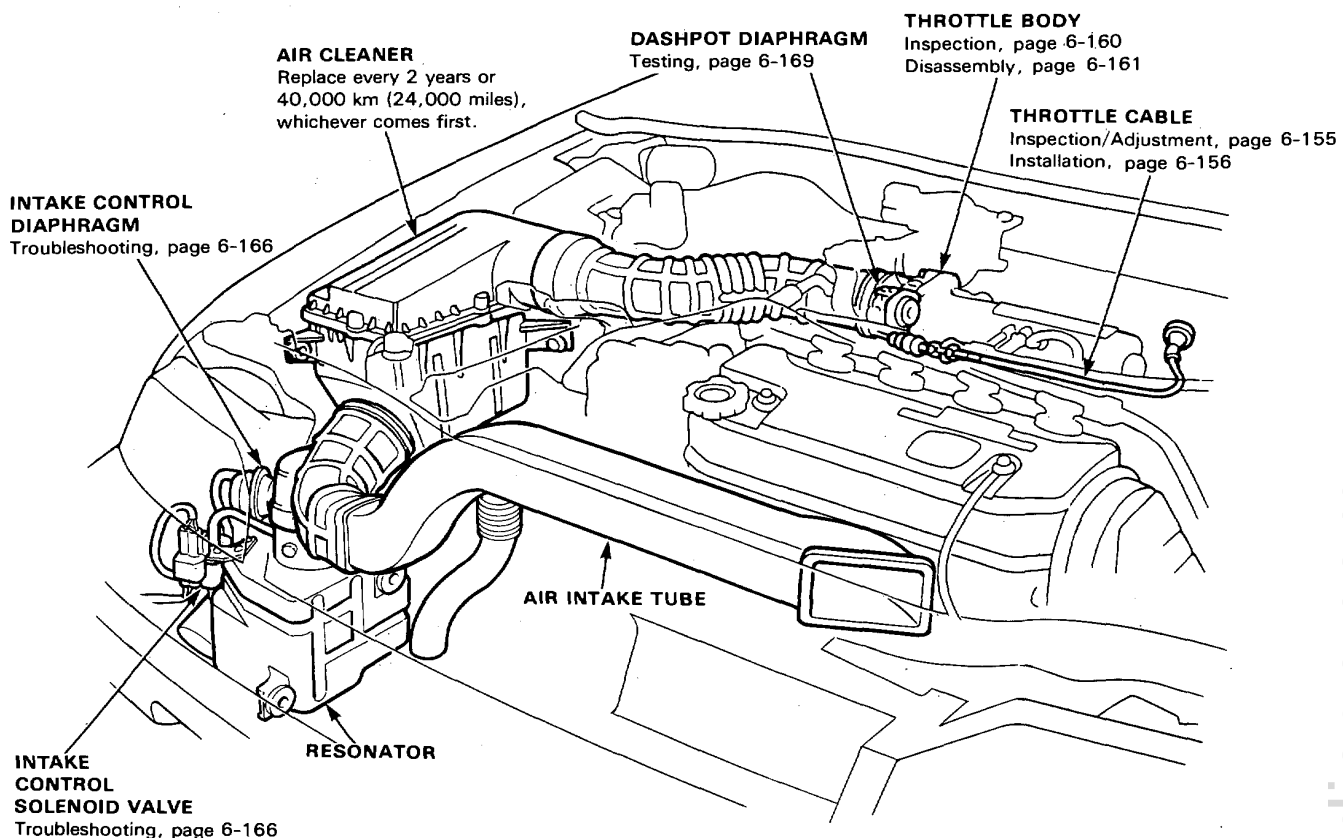


MAIN RELAY
Relay Testing, page 6-151
Harness Testing, 6-151

(cont'd)

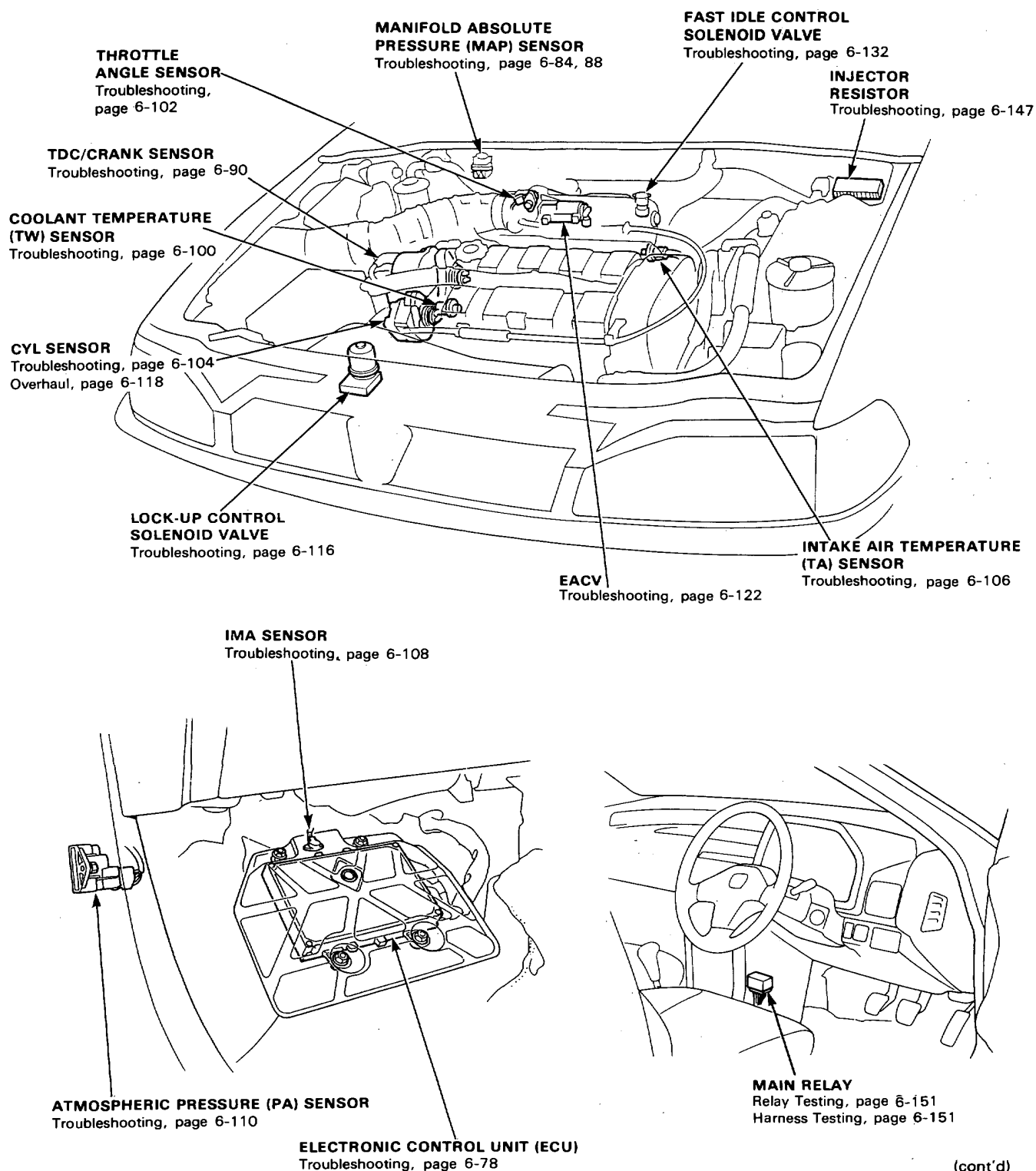
Component Locations

Index [1.6 l with CATA] (cont'd)





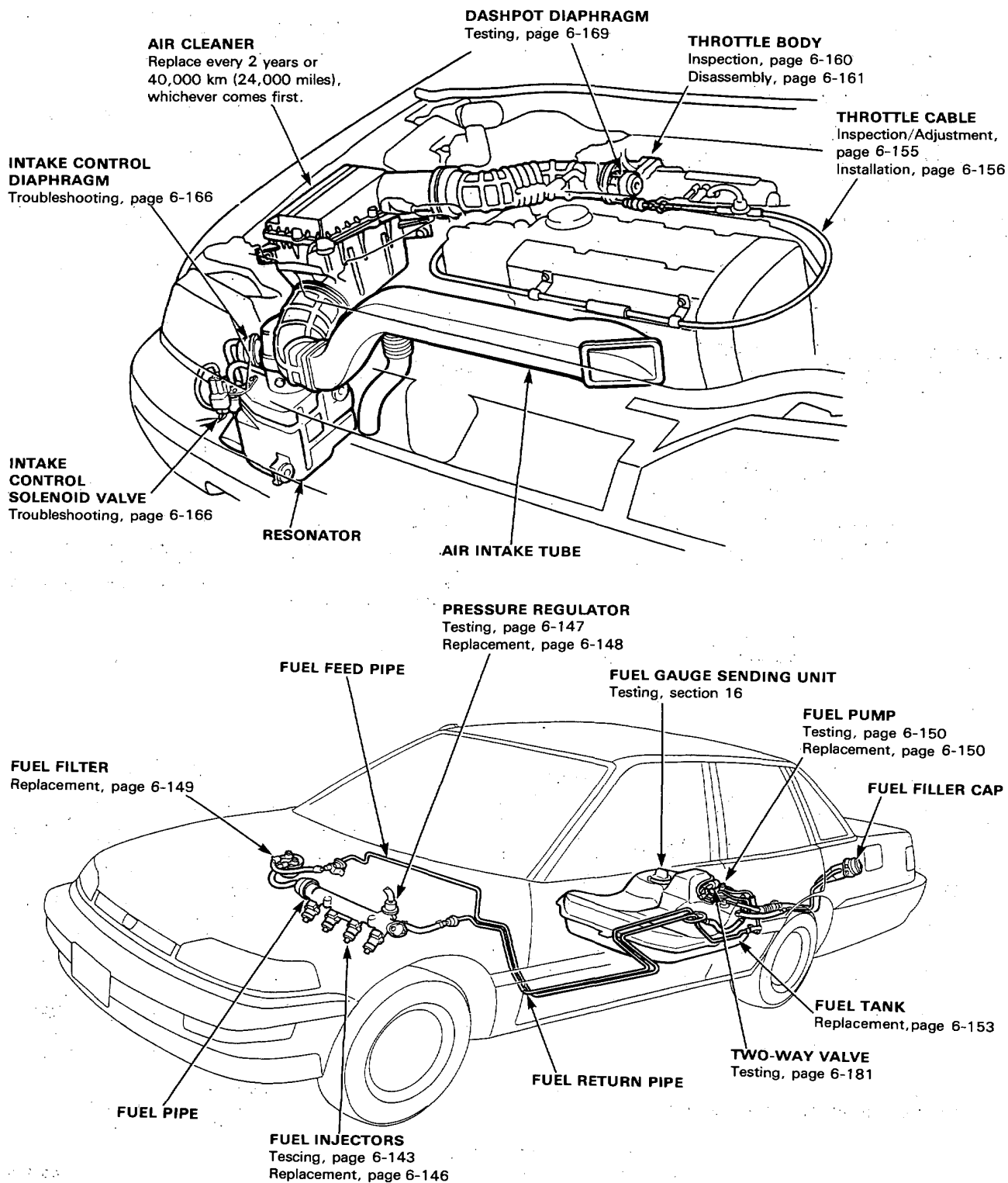
Index [1.6 l with out CATA]



(cont'd)

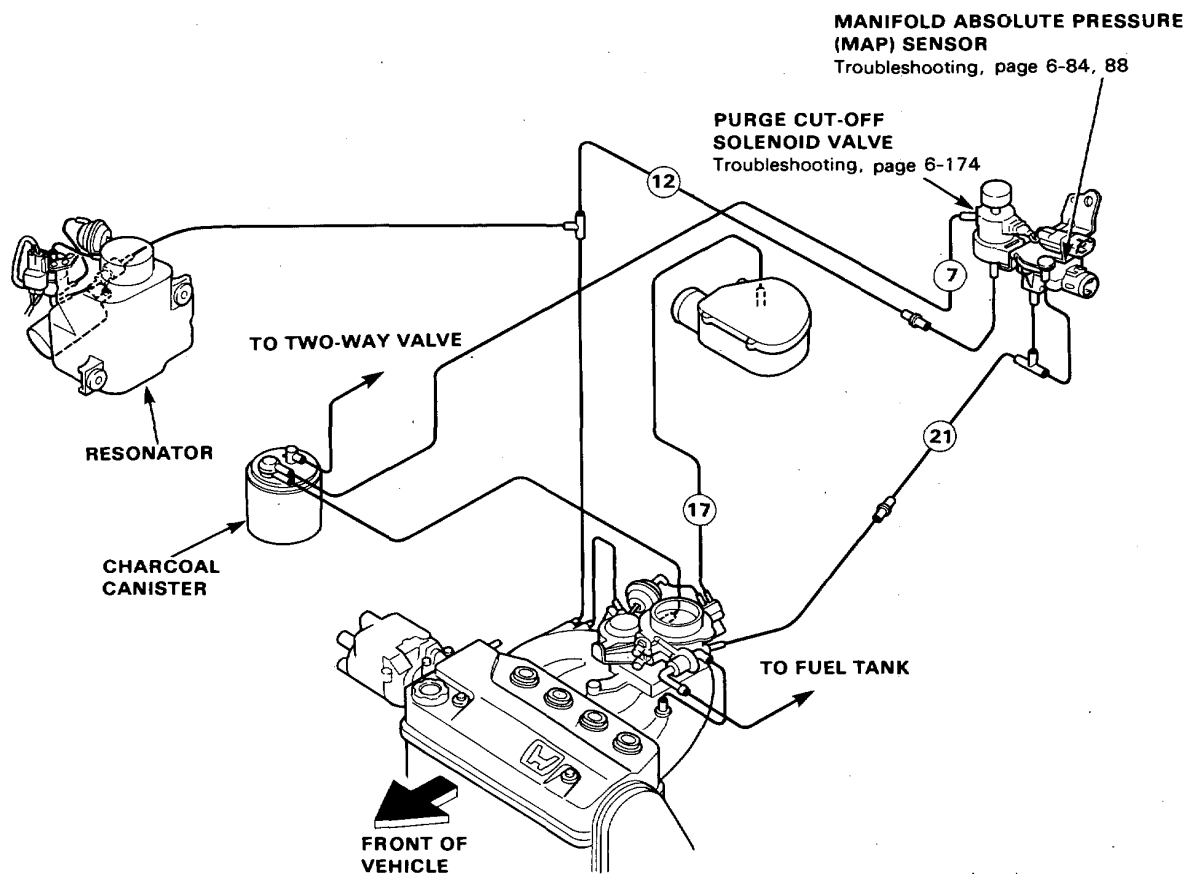
Component Locations

Index [1.6 l with out CATA] (cont'd)



System Description

Vacuum Connections [1.5 l]

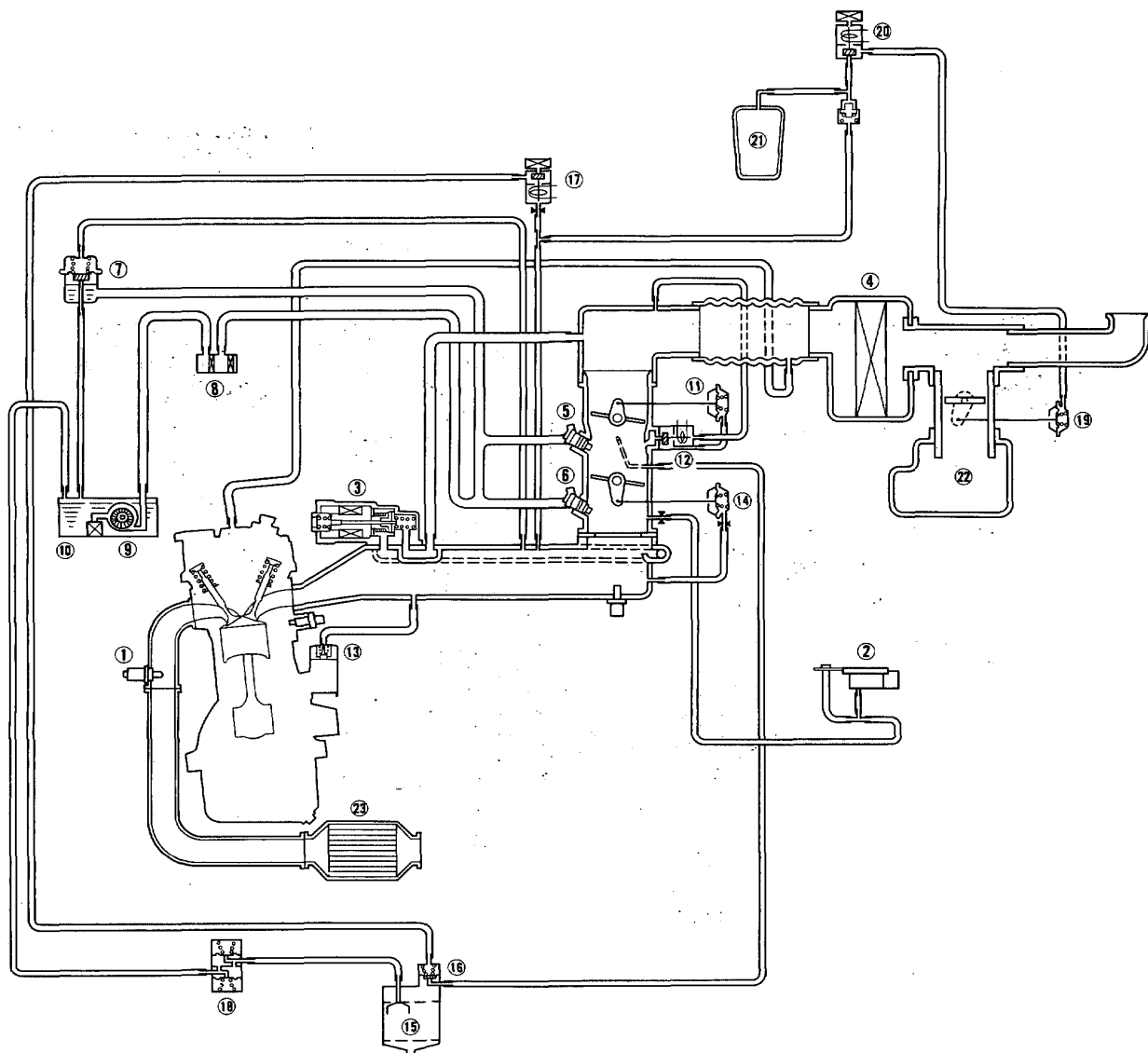


cardiagn.com

(cont'd)

System Description

Vacuum Connections [1.5 l] (cont'd)



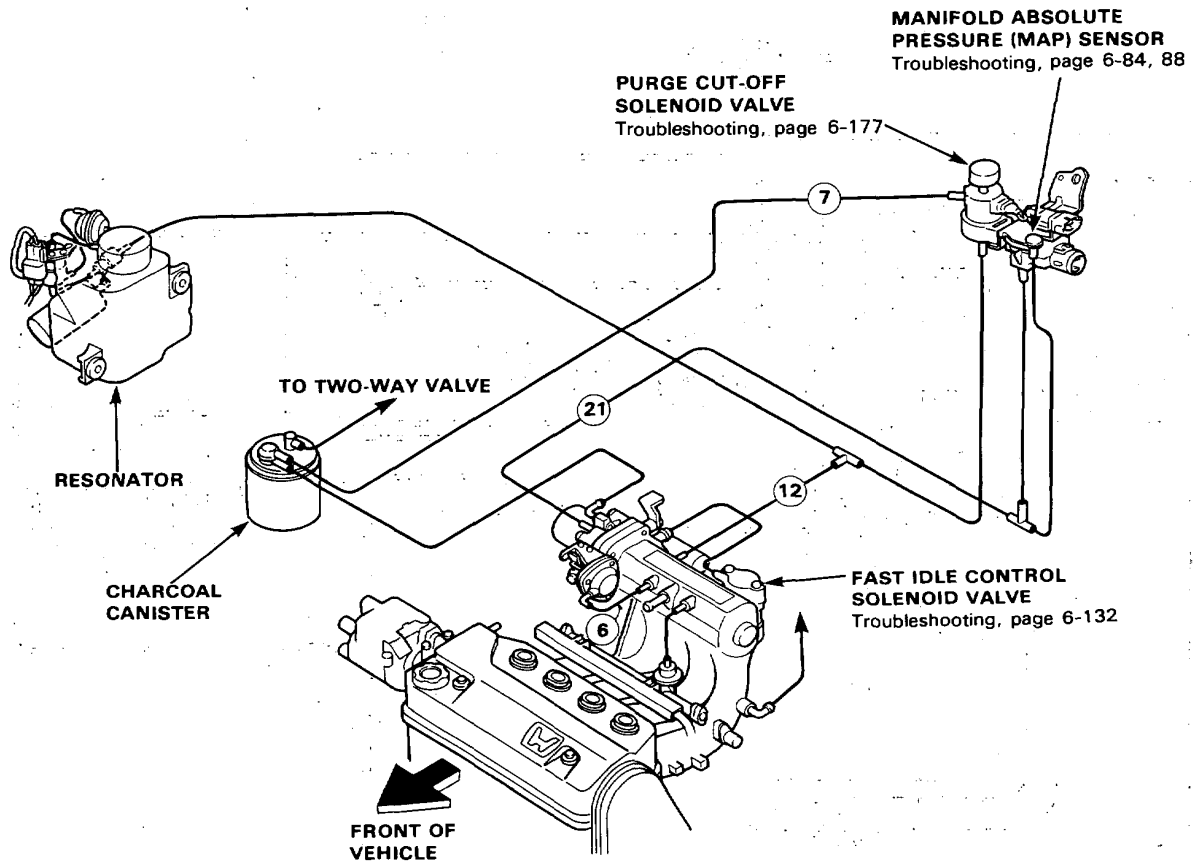
- ① OXYGEN (O₂) SENSOR
- ② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
- ③ ELECTRONIC AIR CONTROL VALVE (EACV)
- ④ AIR CLEANER
- ⑤ MAIN INJECTOR
- ⑥ AUX. INJECTOR
- ⑦ PRESSURE REGULATOR
- ⑧ FUEL FILTER
- ⑨ FUEL PUMP
- ⑩ FUEL TANK
- ⑪ TANDEM VALVE CONTROL DIAPHRAGM
- ⑫ TANDEM VALVE CONTROL SOLENOID VALVE

- ⑬ PCV VALVE
- ⑭ DASHPOT DIAPHRAGM
- ⑮ CHARCOAL CANISTER
- ⑯ PURGE CONTROL DIAPHRAGM VALVE
- ⑰ PURGE CUT-OFF SOLENOID VALVE
- ⑱ TWO-WAY VALVE
- ⑲ INTAKE CONTROL DIAPHRAGM
- ⑳ INTAKE CONTROL SOLENOID VALVE
- ㉑ VACUUM TANK
- ㉒ RESONATOR
- ㉓ CATALYTIC CONVERTER



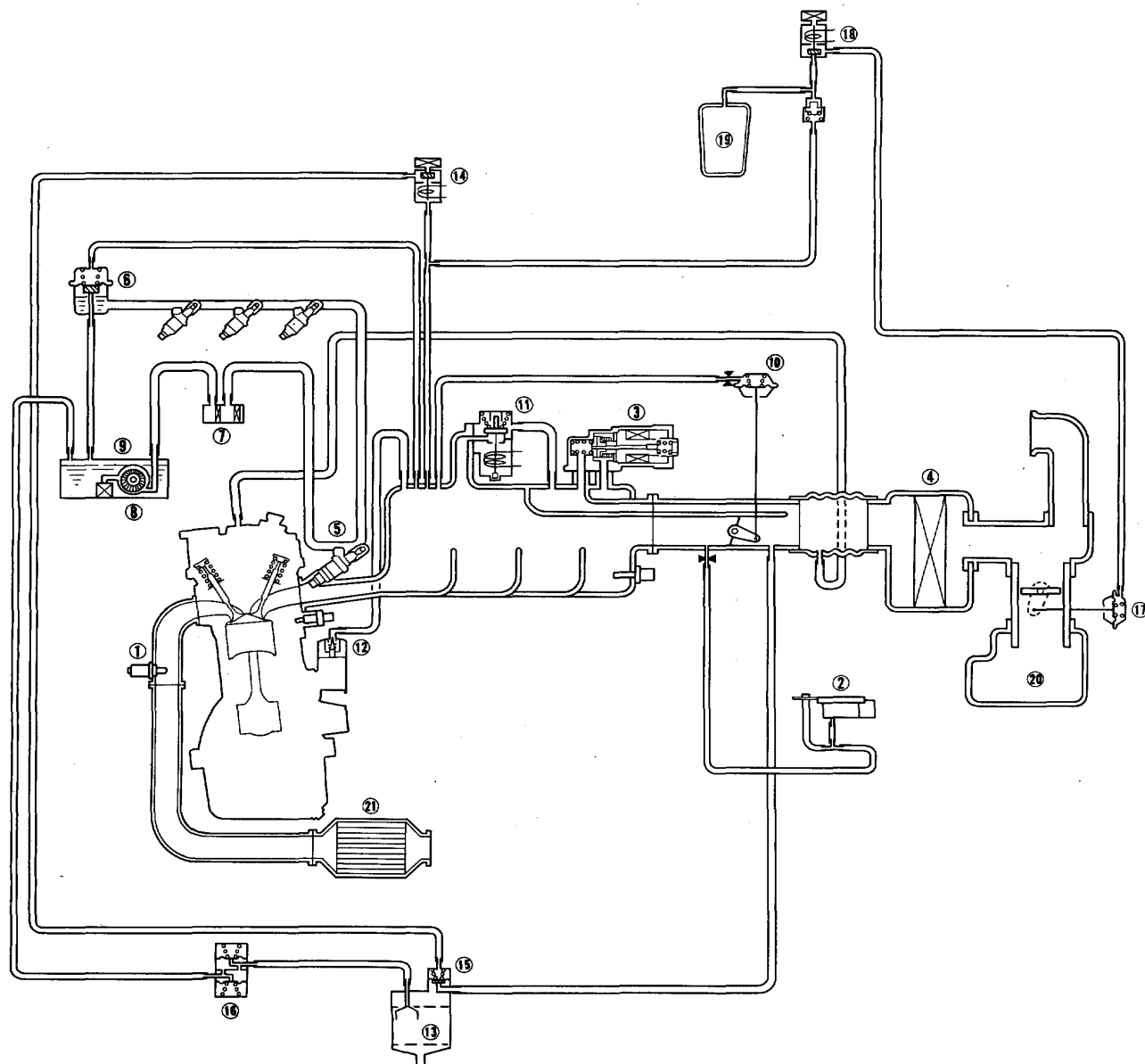
Vacuum Connections [1.6 l with CATA]

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



System Description

Vacuum Connections [1.6 l] (cont'd)

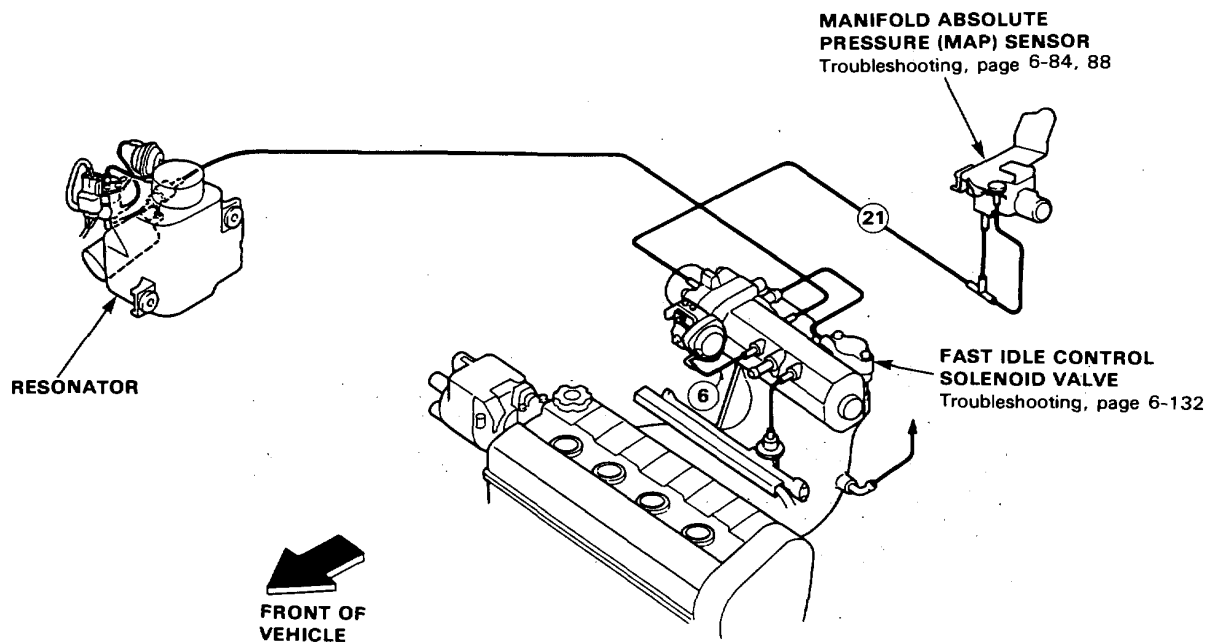


- ① OXYGEN (O₂) SENSOR
- ② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
- ③ ELECTRONIC AIR CONTROL VALVE (EACV)
- ④ AIR CLEANER
- ⑤ FUEL INJECTOR
- ⑥ PRESSURE REGULATOR
- ⑦ FUEL FILTER
- ⑧ FUEL PUMP
- ⑨ FUEL TANK
- ⑩ DASHPOT DIAPHRAGM
- ⑪ FAST IDLE CONTROL SOLENOID VALVE

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



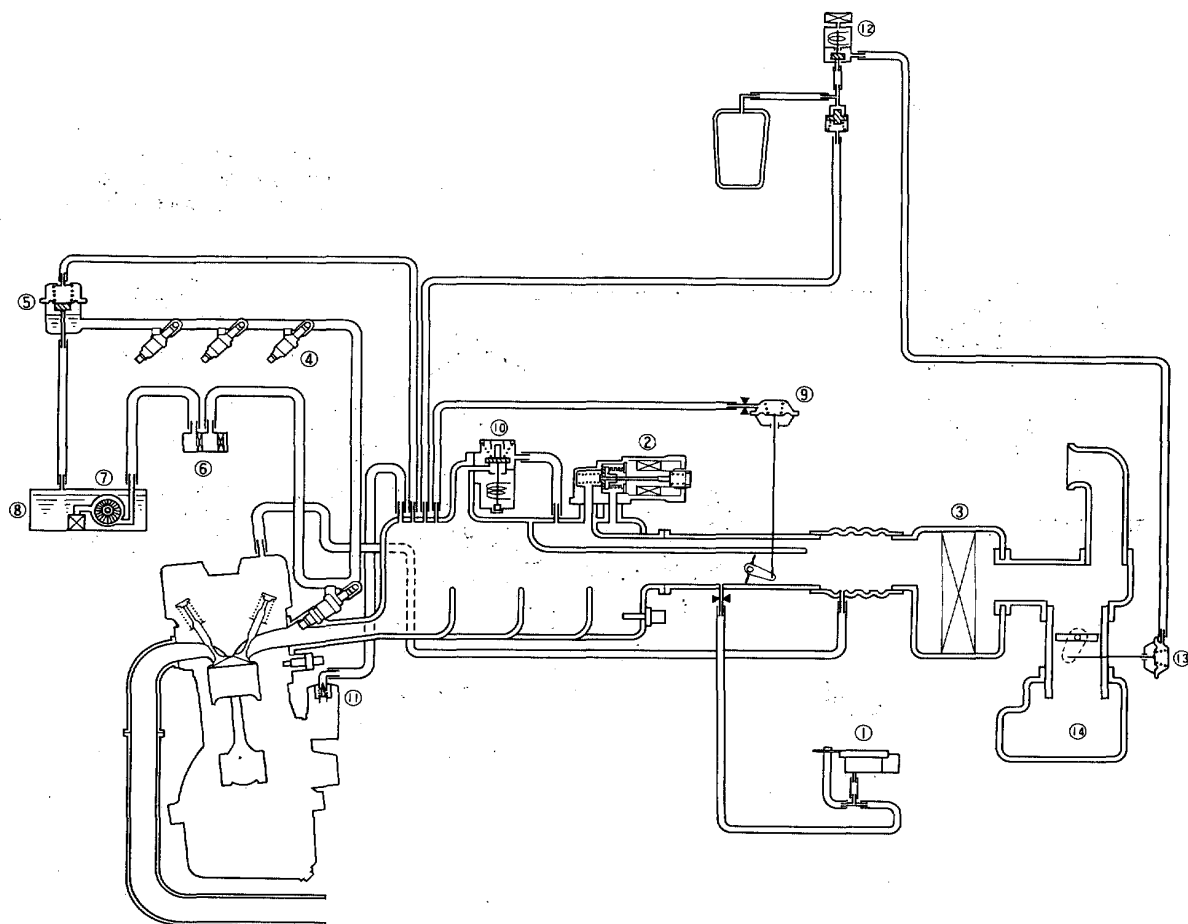
Vacuum Connections [1.6 l with out CATA]



(cont'd)

System Description

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



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

- ⑨ DASHPOT DIAPHRAGM
- ⑩ FAST IDLE CONTROL SOLENOID VALVE
- ⑪ PCV VALVE
- ⑫ INTAKE CONTROL SOLENOID VALVE
- ⑬ INTAKE CONTROL DIAPHRAGM
- ⑭ RESONATOR



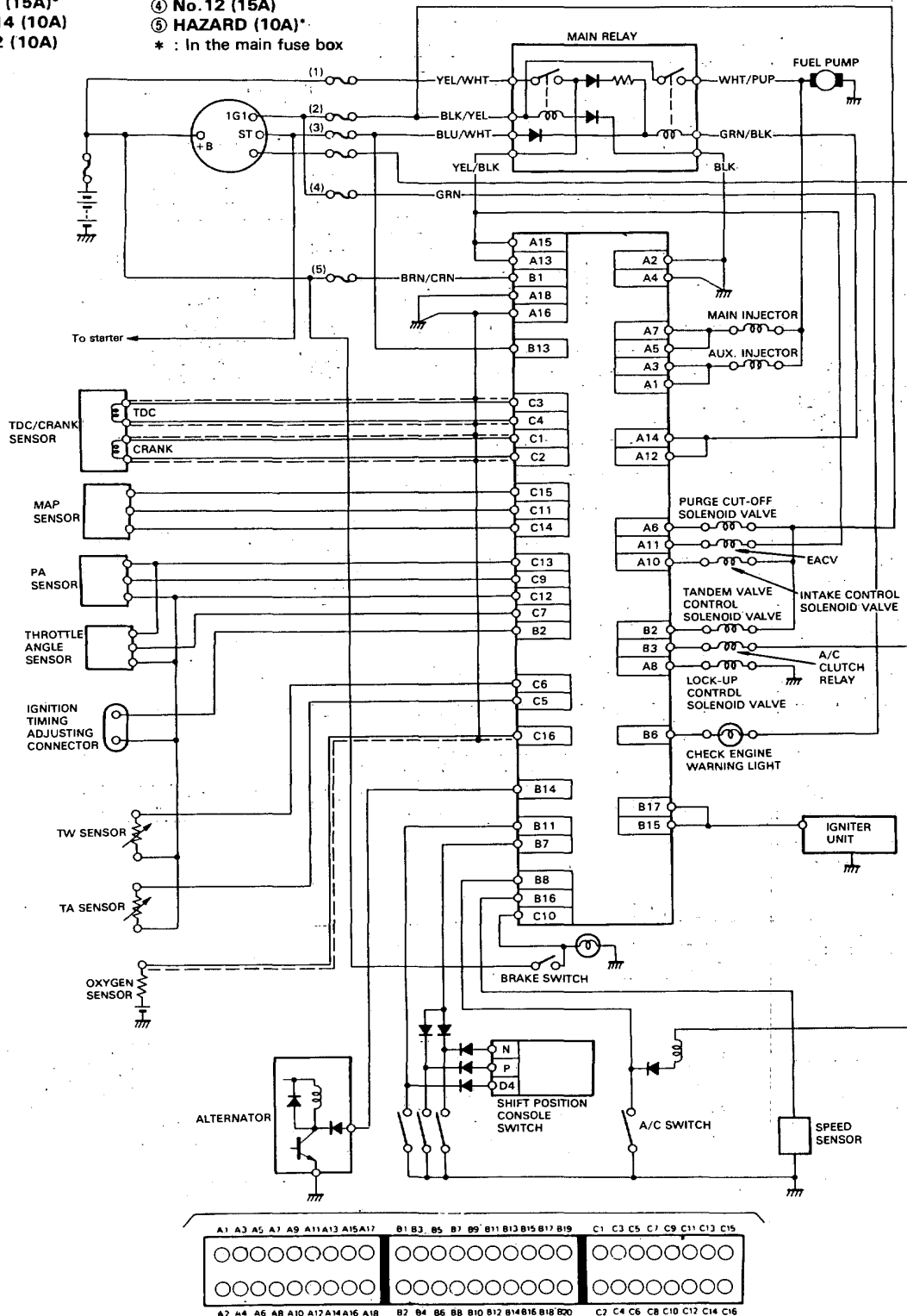
Electrical Connections [1.5 l]

FUSES

- ① ECU (15A)*
- ② No.14 (10A)
- ③ No.2 (10A)

- ④ No.12 (15A)
- ⑤ HAZARD (10A)*

* : In the main fuse box



TERMINAL LOCATION

System Description

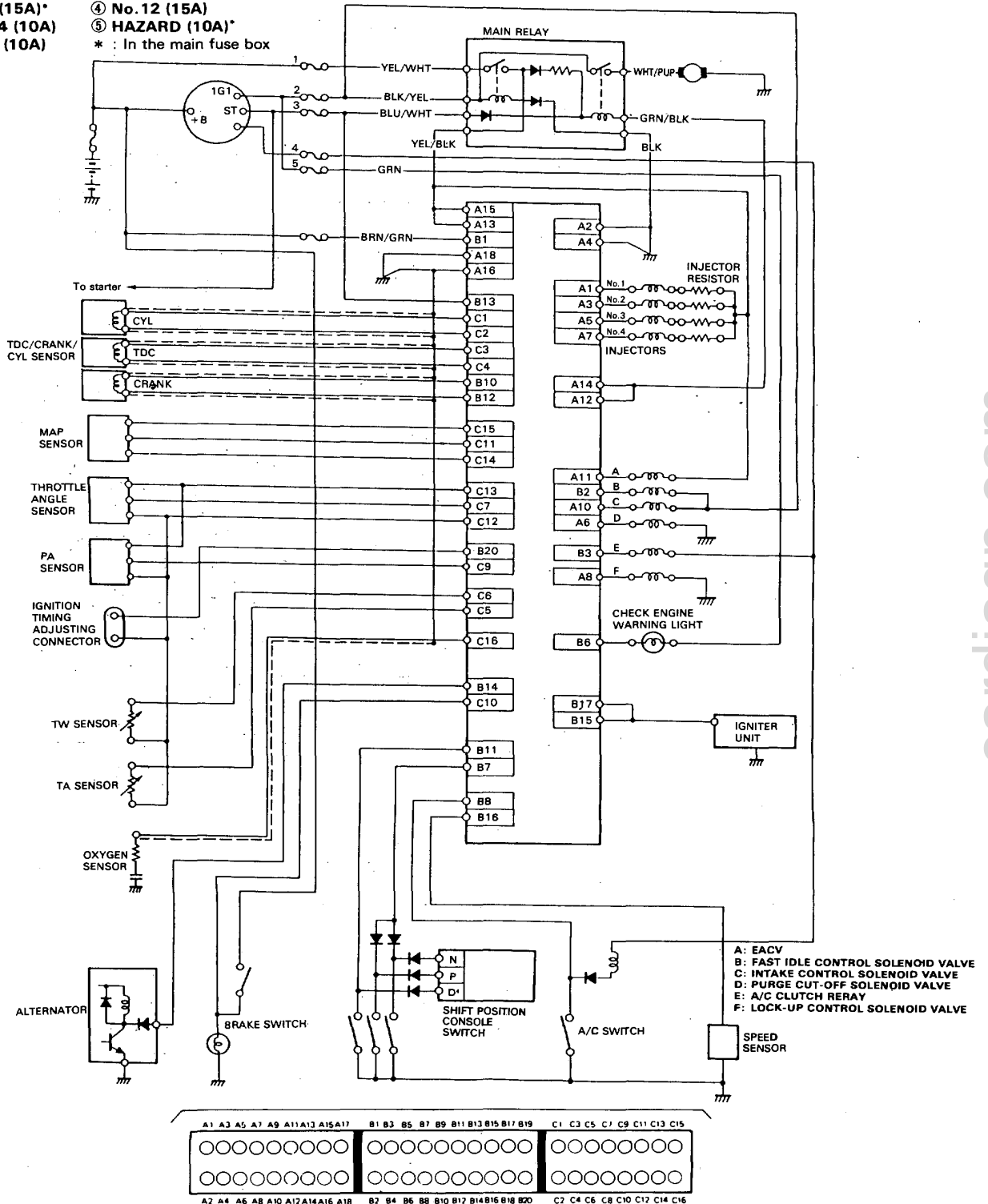
Electrical Connections [1.6 l with CATA]

FUSES

- ① ECU (15A)*
- ② No.14 (10A)
- ③ No.2 (10A)

- ④ No.12 (15A)
- ⑤ HAZARD (10A)*

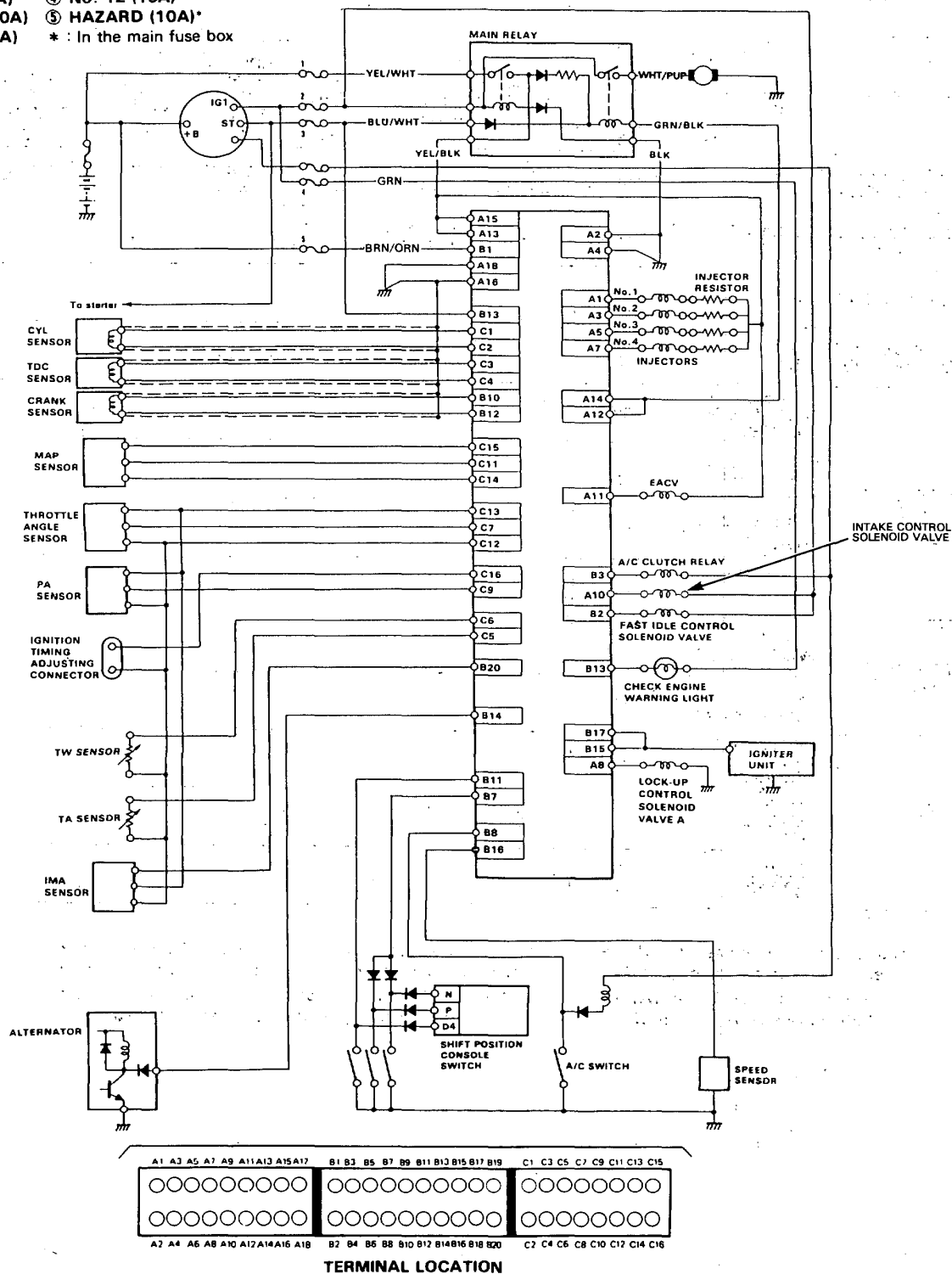
* : In the main fuse box



Electrical Connections [1.6 l without CATA]

FUSES

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



Troubleshooting

Troubleshooting Guide [1.5 l]

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

PAGE	SYSTEM	PGM-FI							
		ECU	OXYGEN SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/CRANK SENSOR	COOLANT TEMPERATURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERATURE SENSOR	ATMOSPHERIC PRESSURE SENSOR
	SYMPTOM	78	82	84, 88	90	100	102	106	110
	CHECK ENGINE WARNING LIGHT TURNS ON	□ or 							
	SELF-DIAGNOSIS INDICATOR (LED) BLINKS	① or * 	① 	③ or ⑤ 	④ or ⑧ 	⑥ 	⑦ 	⑩ 	⑬ 
	ENGINE WON'T START	③							
	DIFFICULT TO START ENGINE WHEN COLD	(BU)		③		①			
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	(BU)				③			
	ROUGH IDLE	(BU)		③					
	WHEN WARM IDLE SPEED TOO HIGH	(BU)				③			
	WHEN WARM IDLE SPEED TOO LOW	(BU)							
FREQUENT STALLING	WHILE WARMING UP	(BU)		③					
	AFTER WARMING UP	(BU)							
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	(BU)							
	FAILS EMISSION TEST	(BU)	③	②					
	LOSS OF POWER	(BU)					②		

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

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



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

Troubleshooting

Troubleshooting Guide [1.6 l With CATA]

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

PAGE		SYSTEM	PGM-FI						
			ECU	OXYGEN SENSOR	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR **	CYL SENSOR **	TDC/CRANK/CYL SENSOR *	COOLANT TEMPERATURE SENSOR
SYMPTOM		78	82	84, 88	90	118	94	100	102
CHECK ENGINE WARNING LIGHT TURNS ON		 or 							
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		 or 		 or 	 or 		 or  or 		
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	LOCK-UP CONTROL SOLENOID VALVE	ELECTRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS	FUEL INJECTOR	OTHER FUEL SUPPLY		
106	110	112	114	116	122	120	143	135	154	171
										
⑩	⑬	⑮	⑰	⑲	⑭		⑯			
		③					②	①		
						②				
					①	②				
					③	①				
					②	①				
					①	②				
					①	②		③		
					①	②		③		
							②	①		
								①		
							③	①		

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Troubleshooting

Troubleshooting Guide [1.6 l Without CATA]

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

PAGE	SYSTEM	PGM-FI						
		ECU	MANIFOLD ABSOLUTE PRESSURE SENSOR	TDC/ CRANK SENSOR	CYL SENSOR	COOLANT TEMPERA- TURE SENSOR	THROTTLE ANGLE SENSOR	INTAKE AIR TEMPERA- TURE SENSOR
SYMPTOM		78	84, 88	90	118	100	102	106
CHECK ENGINE WARNING LIGHT TURNS ON		 or 						
SELF-DIAGNOSIS INDICATOR (LED) BLINKS		① or *	③ or ⑤	④ or ⑧	⑨	⑥	⑦	⑩
ENGINE WON'T START		②						
DIFFICULT TO START ENGINE WHEN COLD		⑧U	③			①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPEC	⑧U				②		
	ROUGH IDLE	⑧U	③					
	WHEN WARM IDLE SPEED TOO HIGH	⑧U						
	WHEN WARM IDLE SPEED TOO LOW	⑧U						
FREQUENT STALLING	WHILE WARMING UP	⑧U	③					
	AFTER WARMING UP	⑧U	③					
POOR PERFORM- ANCE	MISFIRE OR ROUGH RUNNING	⑧U	②					
	FAILS EMISSION TEST	⑧U	②					
	LOSS OF POWER	⑧U	③				②	

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

⑧U: When the Check Engine warning light and the self-diagnosis indicator are on, the back-up system is in operation. Substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

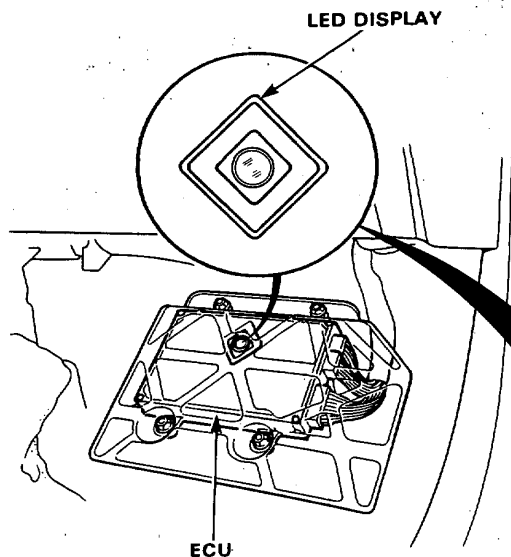


PGM-FI					IDLE CONTROL		FUEL SUPPLY	AIR INTAKE	EMISSION CONTROL
IMA SENSOR	ATMO-SPHERIC PRESSURE SENSOR	IGNITION OUTPUT SIGNAL	VEHICLE SPEED SENSOR	LOCK-UP CONTROL SOLENOID VALVE	ELEC-TRONIC AIR CONTROL VALVE	OTHER IDLE CONTROLS			
108	110	112	114	116	122	120	135	154	171
									
									
		②				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

Troubleshooting

Self-diagnostic Procedure

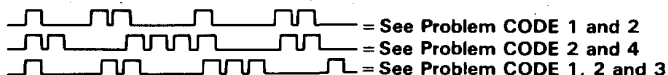
When the Check Engine warning light has been reported on, turn the ignition on, pull down the passenger's side carpet from under the dashboard and observe the LED on the top of the ECU. The LED indicates a system failure code by blinking frequency. The ECU LED can indicate any number of simultaneous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



Separate Problems:



Simultaneous Problems:



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

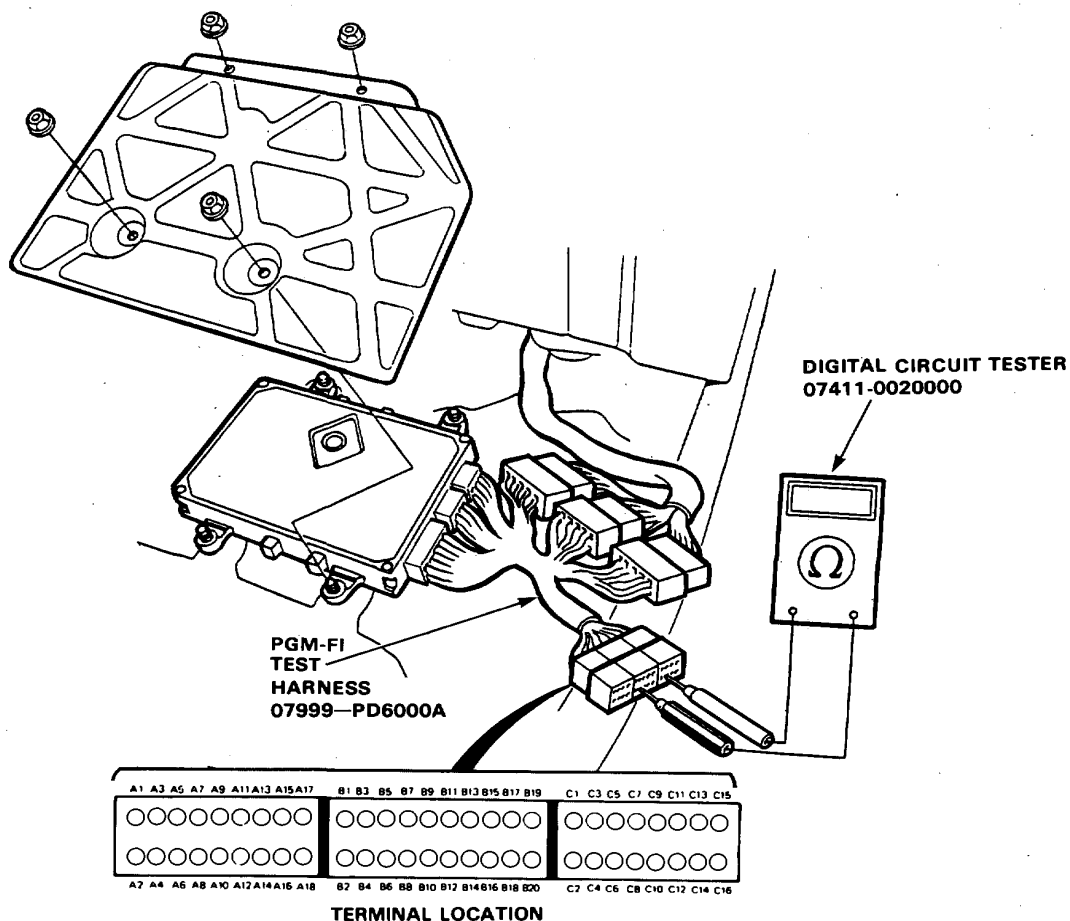
If codes other than those listed above are indicated, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.

The Check Engine warning light and ECU LED may come on, indicating an system problem, when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.

If the Check Engine warning light is on and LED stays on, replace the ECU.

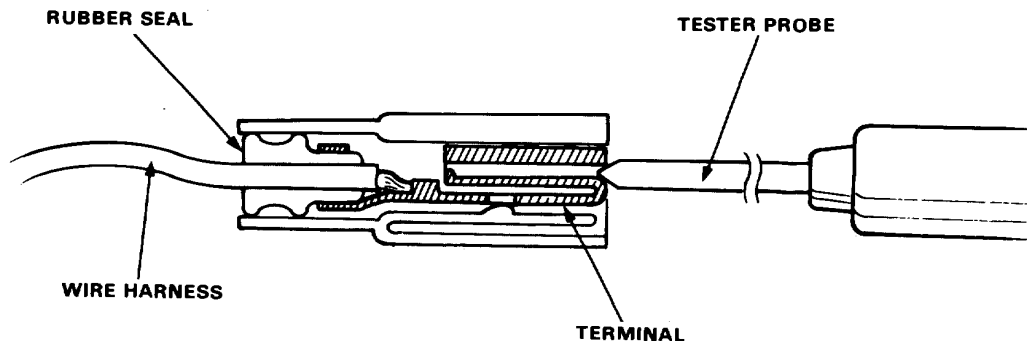


If the inspection for a particular failure code requires the PGM-FI test harness, remove the right door sill molding, the small cover on the right kick panel, and pull the carpet back to expose the ECU. Unbolt the ECU bracket. Connect the PGM-FI test harness. Then check the system according to the procedure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

STOP

(bold type)

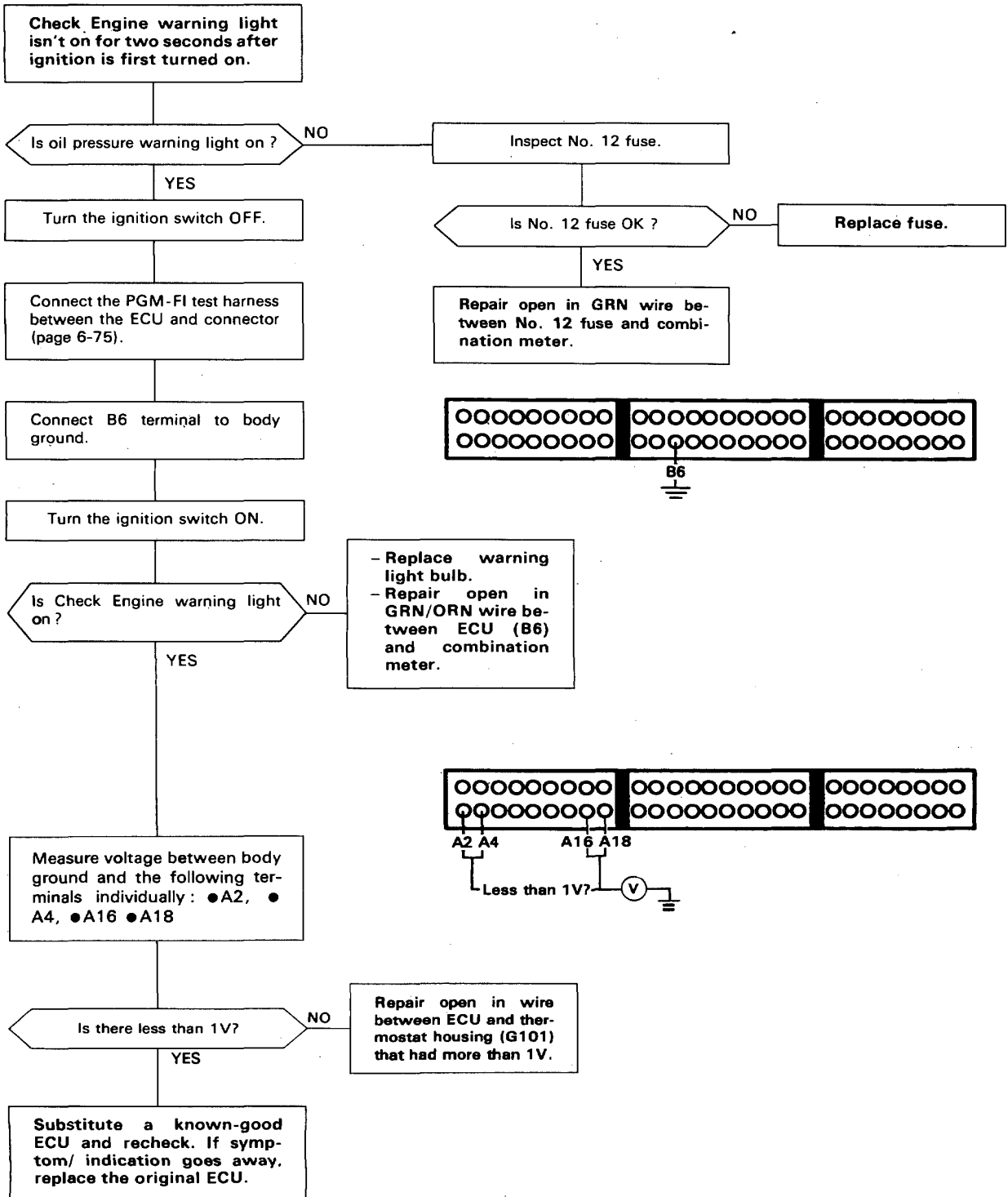
The end of a series of actions and decisions, describes a final repair action and sometimes directs you to an earlier part of the flow to confirm your repair.

NOTE:

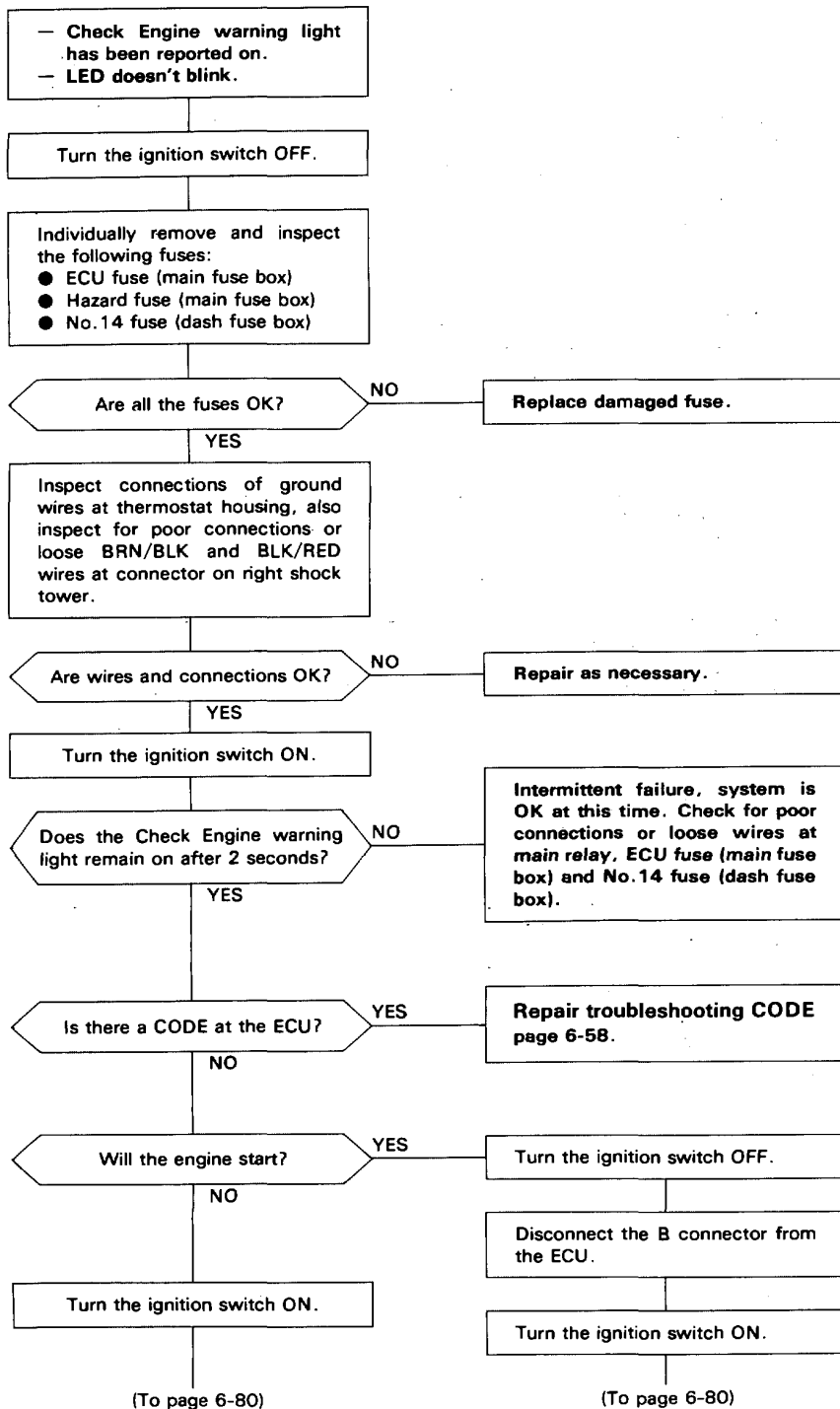
- The term "Intermittent Failure" is used several times in these charts. It simply means a system may have had a failure, but it checks out OK through all your tests. You may need to road test the car to reproduce the failure or if the problem was a loose connection, you may have unknowingly solved it while doing the tests. In any event, if the warning light on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting.
- "Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground. In simple electronics, this usually means something won't work at all. In complex electronics (like ECUs), this can sometimes mean something works, but not the way it's supposed to.
- If the electrical readings are not as specified when using the PGM-FI test harness, check the test harness connections before proceeding.

PGM-FI Control System

Troubleshooting Flowchart — ECU



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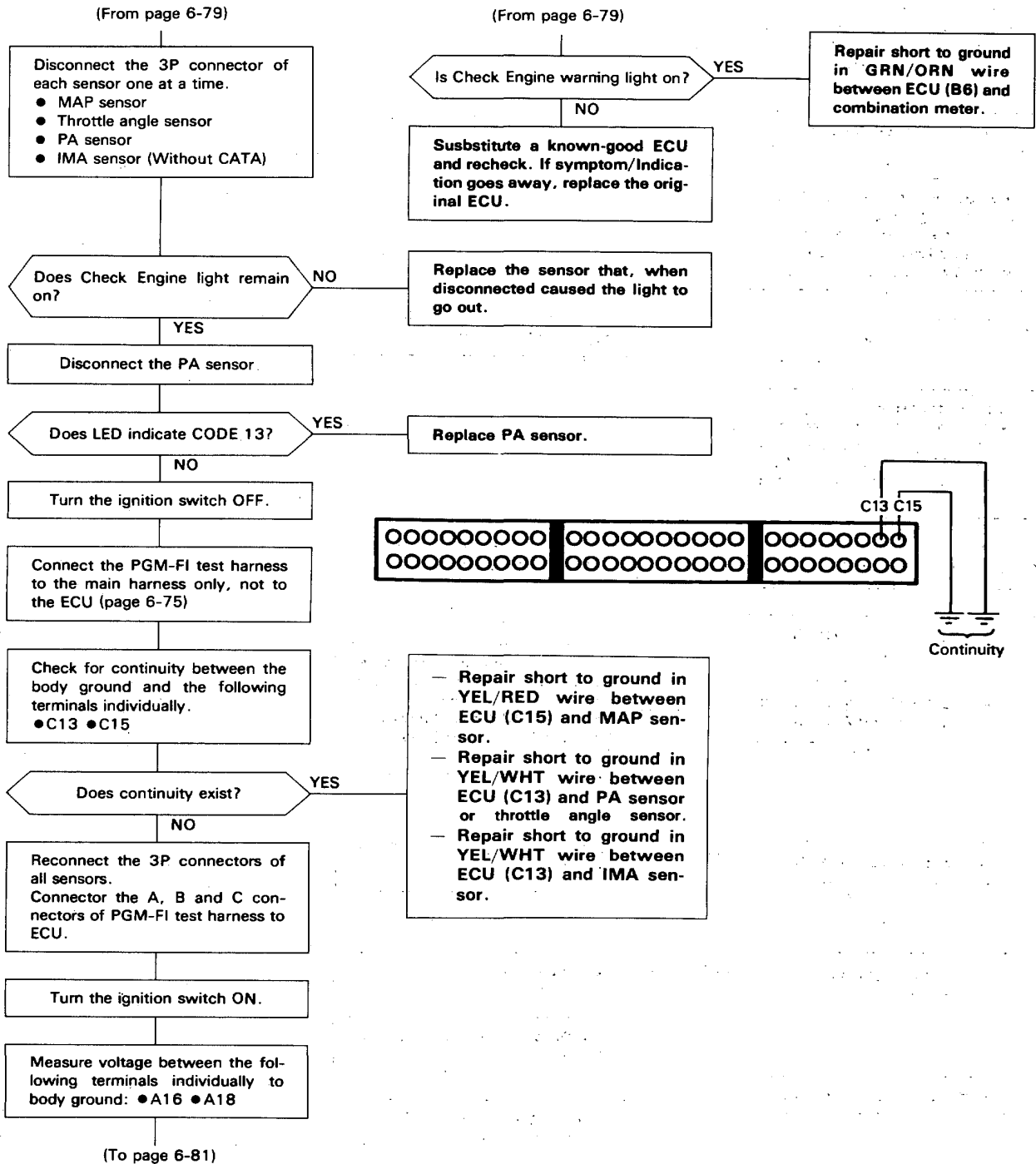


(cont'd)

PGM-FI Control System

Troubleshooting Flowchart

ECU (cont'd)





(From page 6-80)

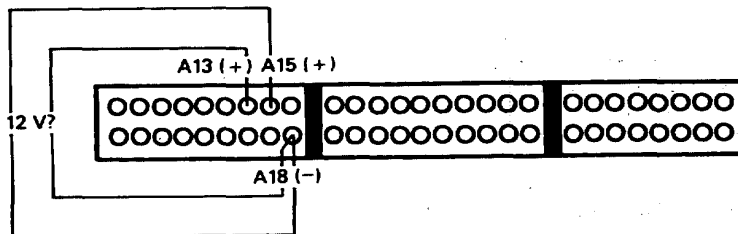
Is there less than 1V?

NO

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

YES

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



Is there battery voltage?

NO

- Repair open in YEL/BLK wire between ECU (A13, A15) and main relay
- Check main relay and wiring connectors at main relay.

YES

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

PGM-FI Control System

Troubleshooting Flowchart — Oxygen Sensor



Self-diagnosis LED indicates code 1: A problem in the Oxygen (O₂) Sensor circuit.



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

Turn the ignition switch OFF.

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

Inspect pressure regulator (page 11-1011).

Is it normal ?

NO

Replace the pressure regulator (page 6-148).

YES

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

1.5 l

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

WARNING Block rear wheels before jacking up front of car.

1.6 l

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

Is Check Engine warning light on and does LED indicate CODE 1?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the thermostat housing, O₂ sensor.

YES

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

Are connections and wires OK?

NO

Repair as necessary.

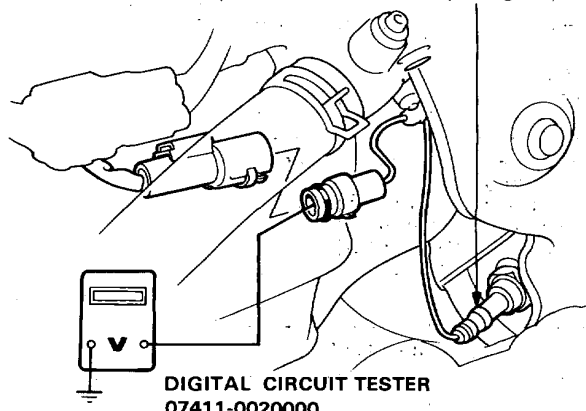
YES

(To page 6-83)



(From page 6-82)

O₂ SENSOR
45 N·m (4.5 kg-m, 33lb-ft)



Disconnect engine wire harness from O₂ sensor.

Connect a voltmeter between the O₂ sensor (+) and body ground (-).

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

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

NO

Replace O₂ sensor.

YES

Stop engine.

Reconnect O₂ sensor.

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

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

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

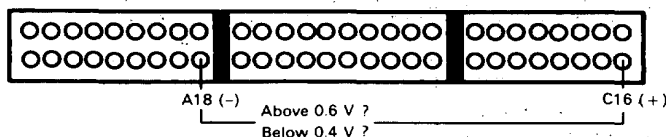
Was voltage above 0.6V at 4,000 min⁻¹ (rpm)? Was voltage below 0.4V during closed throttle deceleration from 4,000 min⁻¹ (rpm)?

NO

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

YES

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



PGM-FI Control System

Troubleshooting Flowchart — MAP Sensor



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



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



- Engine is warm and running.
- Check Engine warning light has been reported on.
- LED indicates CODE 3.

Turn the ignition switch OFF.

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

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

Is Check Engine warning light on and does LED indicate CODE 3?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connection or loose wires at MAP sensor connector and ECU.

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

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

Is there approx. 5V?

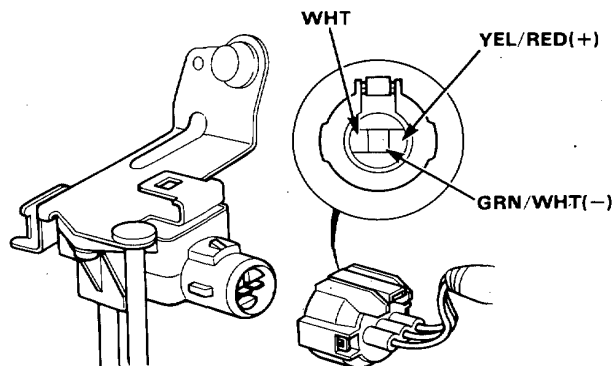
NO

(To page 6-85)

YES

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

(To page 6-85)





(From page 6-84)

Repair open in YEL/RED wire between ECU (C15) and MAP sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(From page 6-84)

Is there approx. 5V?

NO

Repair open in GRN/WHT wire between ECU (C14) and MAP sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

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

Is there approx. 5V?

NO

Repair open or short in WHT wire between ECU (C11) and MAP sensor. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

Turn the ignition switch OFF.

Reconnect the 3P connector to the MAP sensor.

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

Turn the ignition switch ON.

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

(To page 6-86)

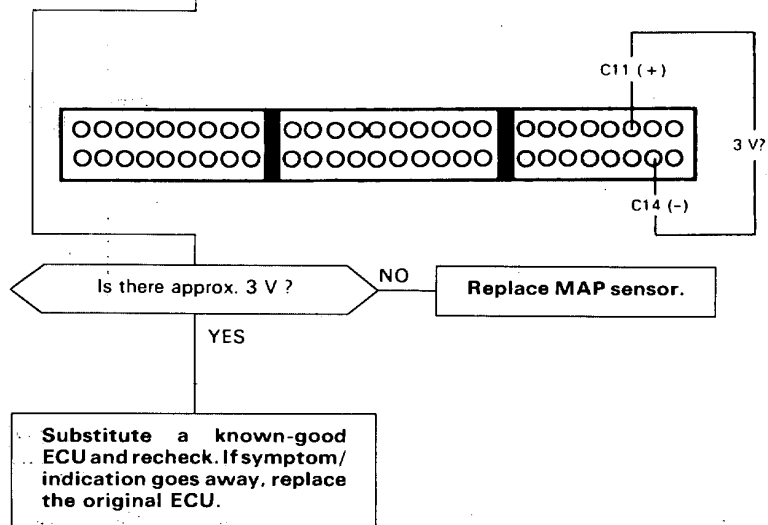
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(cont'd)

PGM-FI Control System

Troubleshooting Flowchart — MAP Sensor (cont'd)

(From page 6-85)



(cont'd)



PGM-FI Control System

Troubleshooting Flowchart — MAP Sensor (cont'd)



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

Turn the ignition switch OFF.

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

Start the engine.

Is Check Engine warning light on and does LED indicate CODE 5?

NO

YES

Stop engine.

Connect vacuum pump to #21 hose and apply vacuum.

Does it hold vacuum?

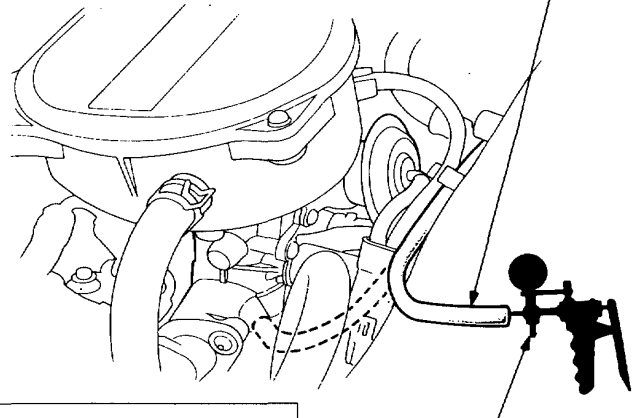
NO

YES

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

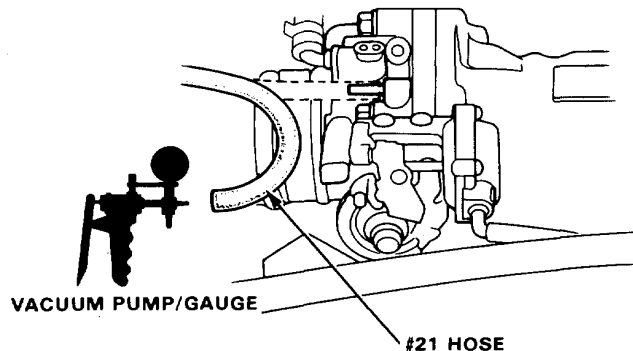
(To page 6-89)

(1.5 l)



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

(1.6 l)



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

Does it hold vacuum?

NO

Replace MAP sensor.

YES

Replace #21 hose.



(From page 6-88)

Start engine.

Is there manifold vacuum?

NO

-Remove restriction from throttle body.
-Replace throttle body.

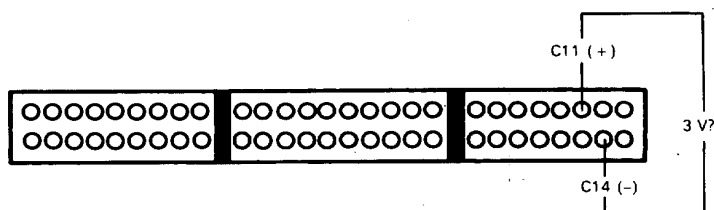
YES

Stop engine.

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

Turn the ignition switch ON.

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



Is there approx. 3 V?

NO

Inspect for an open in WHT wire between the MAP sensor and ECU. If wire is OK, replace the MAP sensor.

YES

Start the engine and allow it to idle..

Is there approx 1V?

NO

Replace MAP sensor.

YES

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

PGM-FI Control System

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



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



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



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

Turn the ignition switch OFF.

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

Start engine.

Is Check Engine warning light on and does LED indicate CODE 4?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector.

YES

Stop engine.

Disconnect 6P connector from the TDC/CRANK sensor.

Measure resistance between D terminal and E terminal.

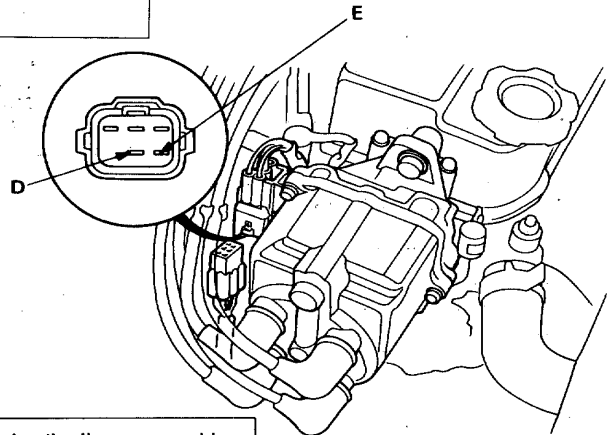
Is there 350–550 Ω ?

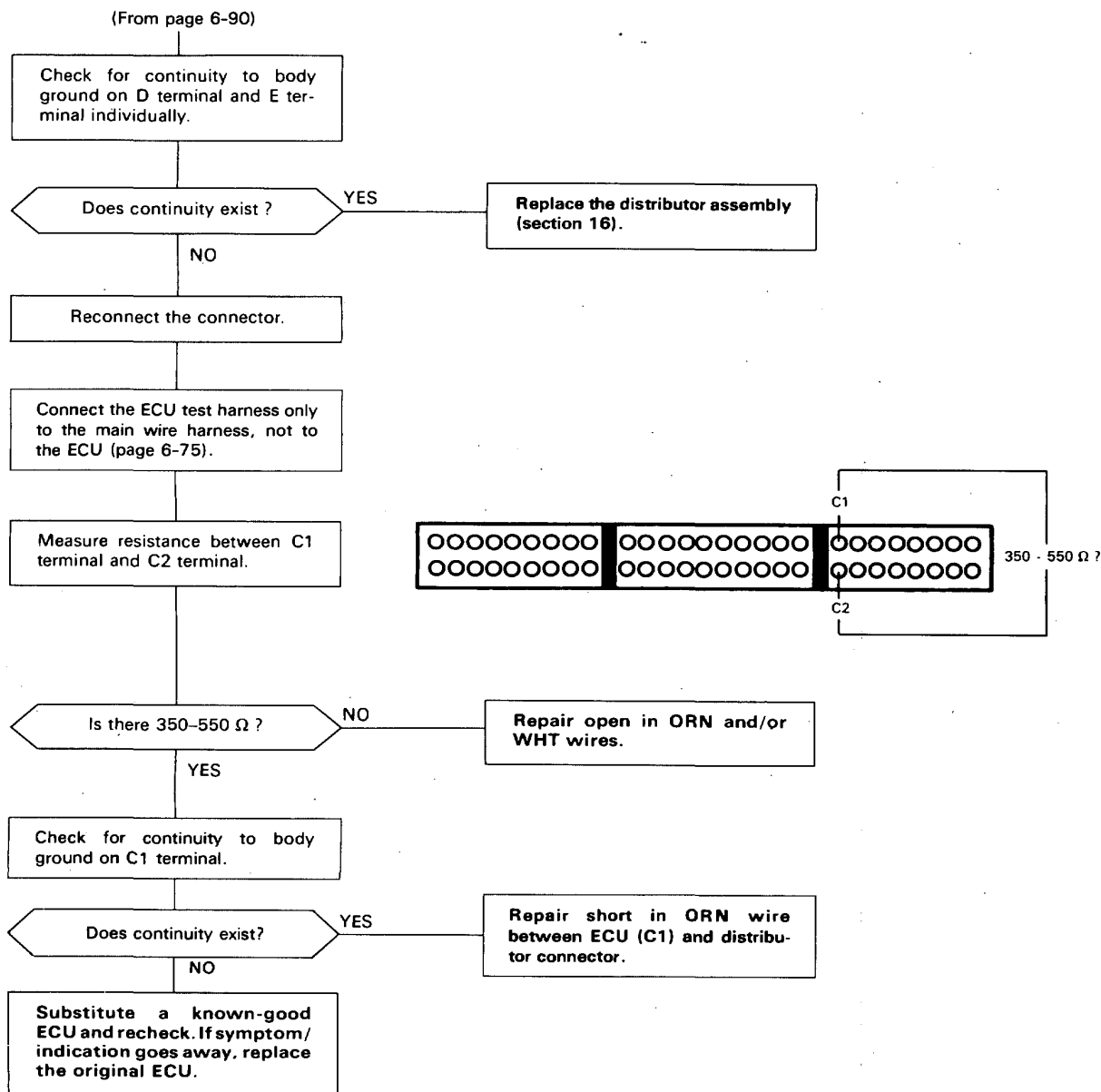
NO

Replace the distributor assembly (section 16).

YES

(To page 6-91)





PGM-FI Control System

Troubleshooting Flowchart — TDC/CRANK sensor [1.5 l and 1.6 l DOHC] — (cont'd)



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

Turn the ignition switch OFF.

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

Start engine.

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

YES

Stop engine.

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

Measure resistance between B terminal and C terminal.

Is there 350—550 Ω ?

YES

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

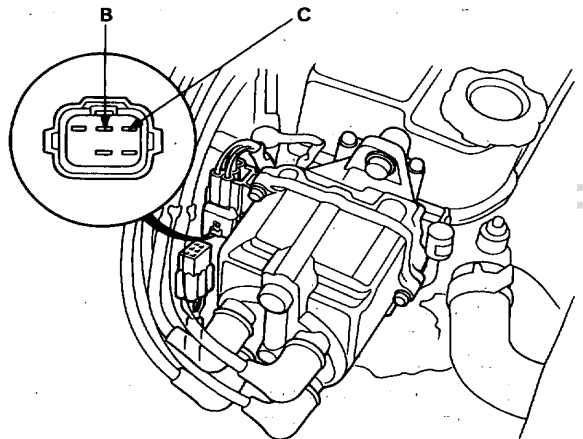
Does continuity exist ?

NO

Reconnect the connector.

(To page 6-93)

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at distributor connector.



Replace the distributor assembly (section 16).

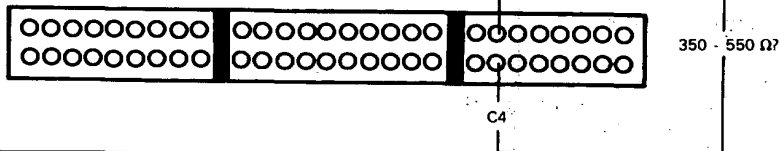
Replace the distributor assembly (section 16).



(From page 6-92)

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

Measure resistance between C3 terminal and C4 terminal.



Is there 350 — 550 Ω ?

NO

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

YES

Check for continuity to body ground on C3 terminal.

Does continuity exist?

YES

Repair short in ORN/
BLU wire between
ECU (C3) and distribu-
tor connector.

NO

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

PGM-FI Control System

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



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



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



Self-diagnosis LED indicates code 9: A problem in the CYL circuit of the TDC/CRANK/CYL Sensor.



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

Turn the ignition switch OFF.

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

Start engine.

Is Check Engine warning light and does LED indicate CODE 4?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector.

YES

Stop engine.

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

Measure resistance between C terminal and D terminal.

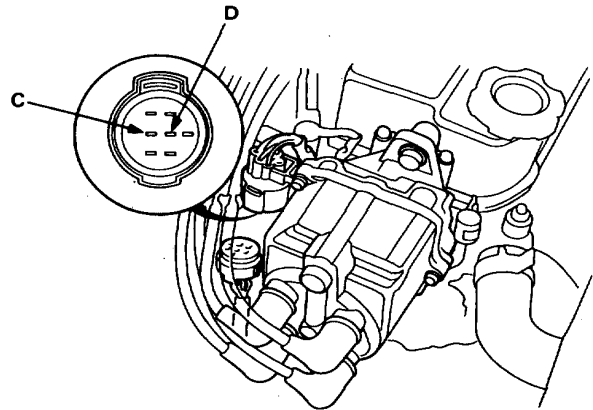
Is there 350–550 Ω ?

NO

Replace the distributor assembly (section 16).

YES

(To page 6-95)



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(From page 6-94)

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

Does continuity exist?

YES

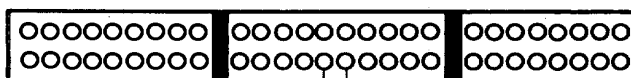
Replace the distributor assembly (section 16).

NO

Reconnect the connector.

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

Measure resistance between B10 terminal and B12 terminal.



B10 B12
350 — 550 Ω ?

Is there 350–550 Ω ?

NO

Repair open in ORN and/or WHT wires.

YES

Check for continuity to body ground on B10 terminal.

Does continuity exist?

YES

Repair short in ORN wire between ECU (B10) and distributor connector.

NO

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

(cont'd)

PGM-FI Control System

Troubleshooting Flowchart — TDC/CRANK/CYL sensor [1.6 l SOHC] — (cont'd)



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

Turn the ignition switch OFF.

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

Start engine.

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

NO

YES

Stop engine.

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

Measure resistance between A terminal and B terminal.

Is there 350—550 Ω ?

NO

Replace the distributor assembly (section 16).

YES

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

Does continuity exist ?

YES

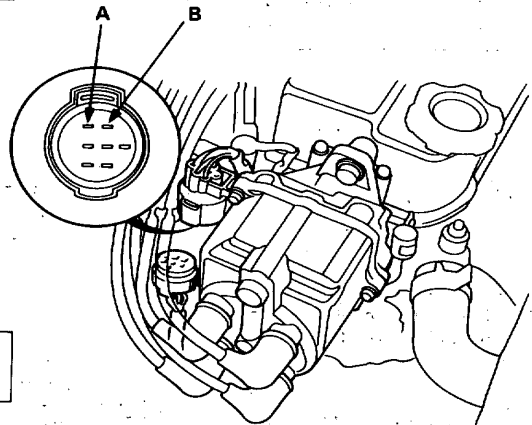
Replace the distributor assembly (section 16).

NO

Reconnect the connector.

(To page 6-97)

Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at the distributor connector.



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(From page 6-96)

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

Measure resistance between C3 terminal and C4 terminal.

Is there 350 — 550 Ω ?

NO

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

YES

Check for continuity to body ground on C3 terminal.

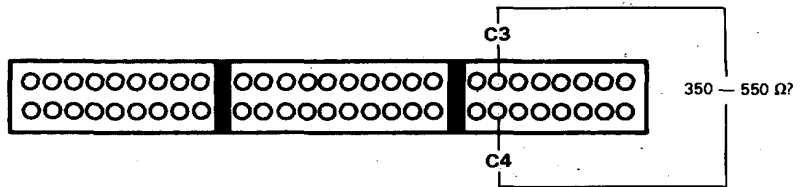
Does continuity exist?

YES

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

NO

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



PGM-FI Control System

Troubleshooting Flowchart — TDC/CRANK/CYL Sensor [1.6 l SOHC] — (cont'd)



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

Turn the ignition switch OFF.

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

Start engine.

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

NO

YES

Stop engine.

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

Measure resistance between F terminal and G terminal.

Is there 350—550 Ω ?

NO

YES

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

Does continuity exist ?

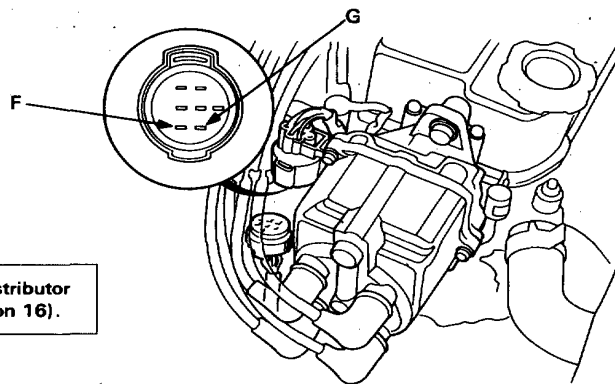
YES

NO

Reconnect the connector.

(To page 6-99)

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector.



Replace the distributor assembly (section 16).

Replace the distributor assembly (section 16).



(From page 6-98)

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

Measure resistance between C1 terminal and C2 terminal.

Is there 350 — 550 Ω ?

NO

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

YES

Check for continuity to body ground on C1 terminal.

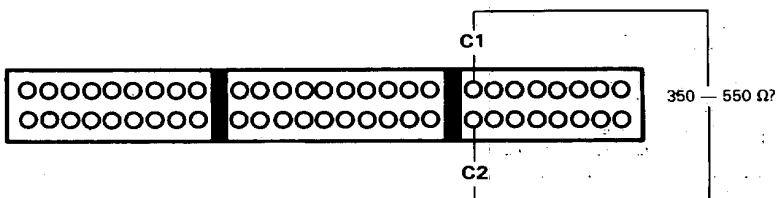
Does continuity exist?

YES

Repair short in BLU/GRN wire between ECU (C1) and distributor connector.

NO

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



PGM-FI Control System

Troubleshooting Flowchart — TW Sensor



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



- Check Engine warning light has been reported on.
- LED indicates CODE 6.

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 6?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at TW sensor.

(SOHC)

YES

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

Turn the ignition switch OFF.

Disconnect the 2P connector from the TW sensor.

Measure resistance between the 2 terminals on the TW sensor.

Is there 200—400 Ω ?

NO

Replace the TW sensor.

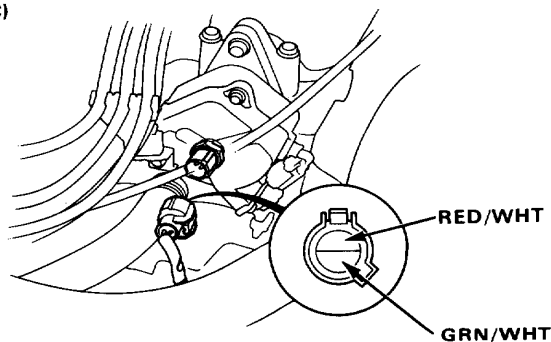
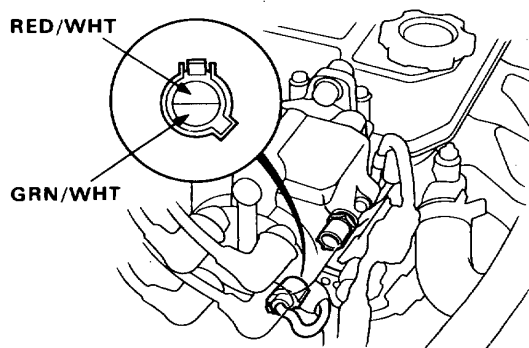
(DOHC)

YES

Turn the ignition switch ON.

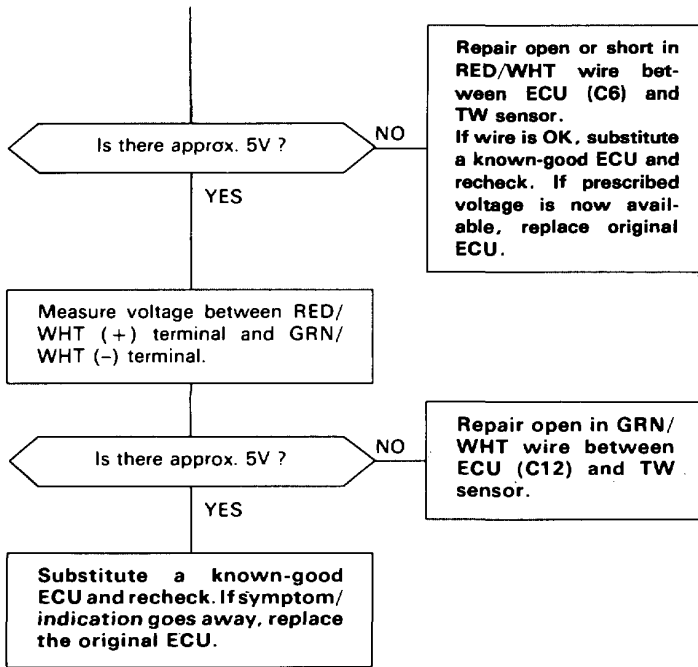
Measure voltage between RED/WHT (+) and body ground.

(To page 6-101)





(From page 6-100)



PGM-FI Control System

Troubleshooting Flowchart — Throttle Angle Sensor



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



- Engine is running
- Check Engine warning light has been reported on.
- LED indicates CODE 7

Turn the ignition switch OFF.

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

Start engine.

Is Check Engine warning light on and does LED indicate CODE 7?

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the throttle angle sensor.

Turn the ignition switch ON.

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

Is there approx. 5V?

YES

Turn the ignition switch OFF.

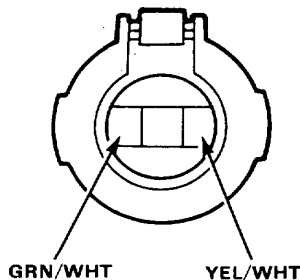
Reconnect the 3P connector.

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

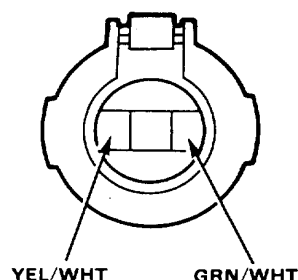
(To page 6-103)

Intermittent failure, system is OK at this time (test drive may be necessary). Check for poor connections or loose wires at throttle angle sensor.

(1.5 l)



(1.6 l)



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

Is there approx. 5V?

YES

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

NO

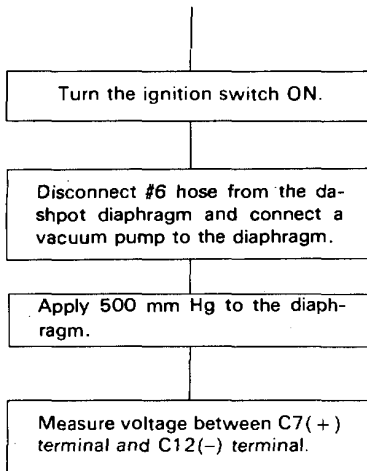
Turn the ignition switch OFF.

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

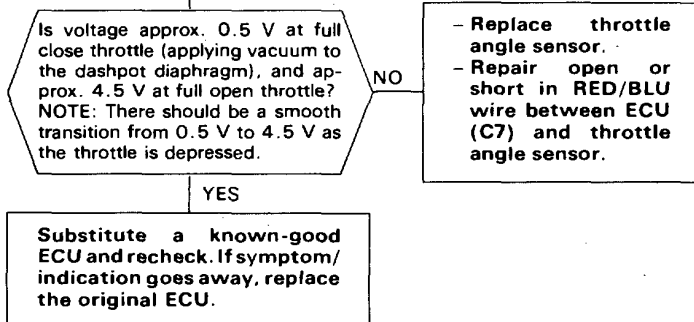
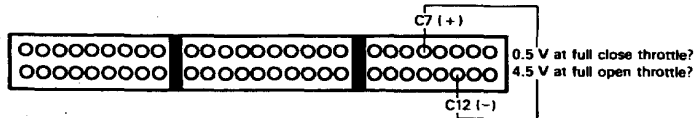
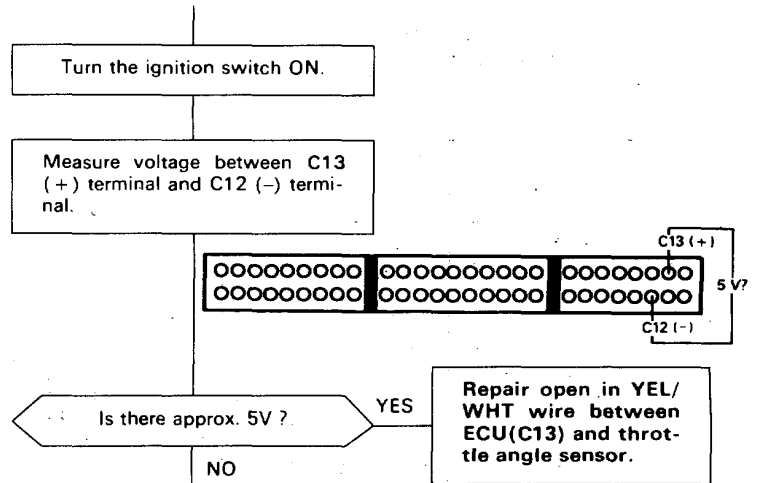
(To page 6-103)



(From page 6-102)



(From page 6-102)



PGM-FI Control System

Troubleshooting Flowchart — CYL Sensor [1.6 l DOHC only]



Self-diagnosis LED indicates code 9: A problem in the CYL Sensor.

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

Turn the ignition switch OFF.

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

Start engine.

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

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connection or loose wires at the distributor connector.

YES

Stop engine.

Disconnect the 2P connector from the CYL sensor.

Measure resistance between 2 terminals on the CYL sensor.

Is there 700–1,000 Ω ?

NO

Replace CYL sensor (page 6-118).

YES

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

Does continuity exist ?

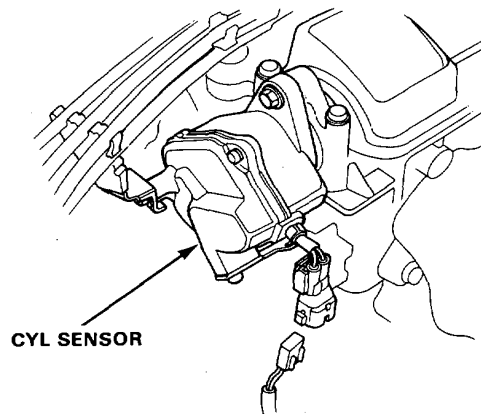
YES

Replace CYL sensor (page 6-118).

NO

Reconnect the connector.

(To page 6-105)



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(From page 6-104)

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

Measure resistance between C1 terminal and C2 terminal.

Is there 700-1000 Ω ?

NO

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

YES

Check for continuity to body ground on C1 terminal.

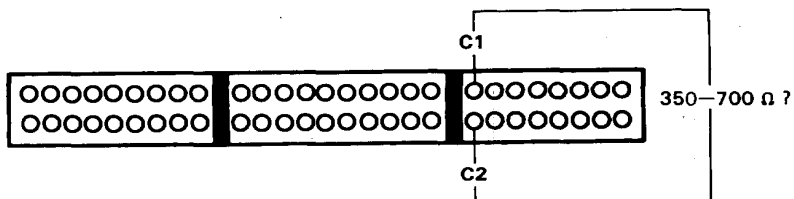
Does continuity exist?

YES

Repair short in BLU/GRN wire between ECU (C1) and distributor connector.

NO

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



PGM-FI Control System

Troubleshooting Flowchart — TA Sensor



Self-diagnosis LED indicates code 10: Most likely a problem in the Intake Air Temperature (TA) Sensor circuit.



- Check Engine warning light has been reported on.
- LED indicates CODE 10

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 10?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at TA sensor.

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the TA sensor.

Measure resistance between the 2 terminals on the TA sensor.

Is there 1-4 kΩ?

NO

Replace TA sensor.

YES

Turn the ignition switch ON.

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

Is there approx. 5 V?

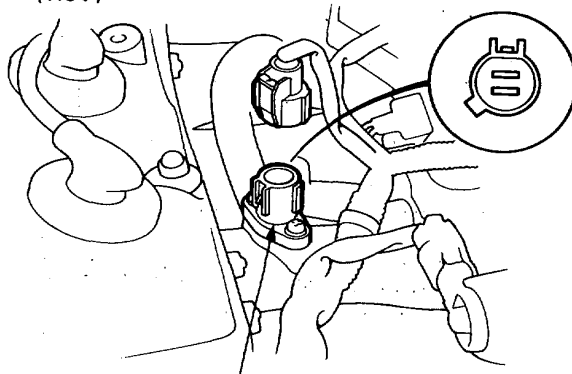
NO

Repair open or short in RED/YEL wire between ECU (C5) and TA sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

YES

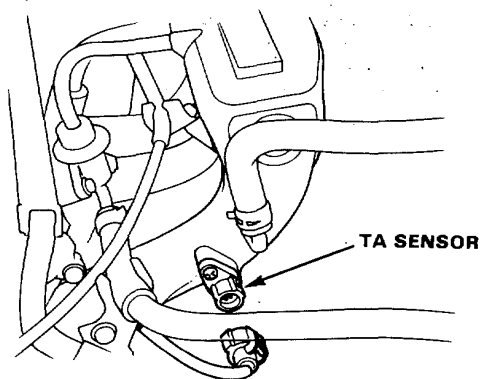
(To page 6-107)

(1.5 l)



TA SENSOR

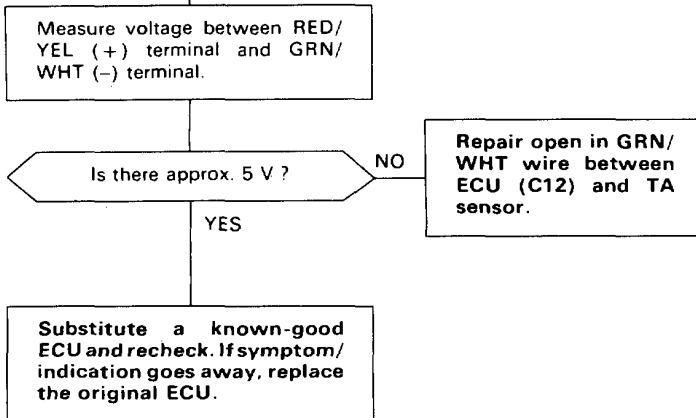
(1.6 l)



TA SENSOR



(From page 6-106)



PGM-FI Control System

Troubleshooting Flowchart — IMA Sensor



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

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

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

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

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the IMA sensor.

YES

Turn the ignition switch OFF.

Disconnect the 3P connector from the IMA sensor.

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

Is there 4—6 k Ω ?

NO

Replace IMA sensor.

YES

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

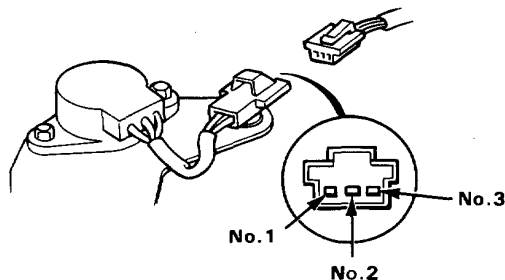
Does the sum of the two resistance checks equal 4—6 k Ω ?

NO

Replace IMA sensor.

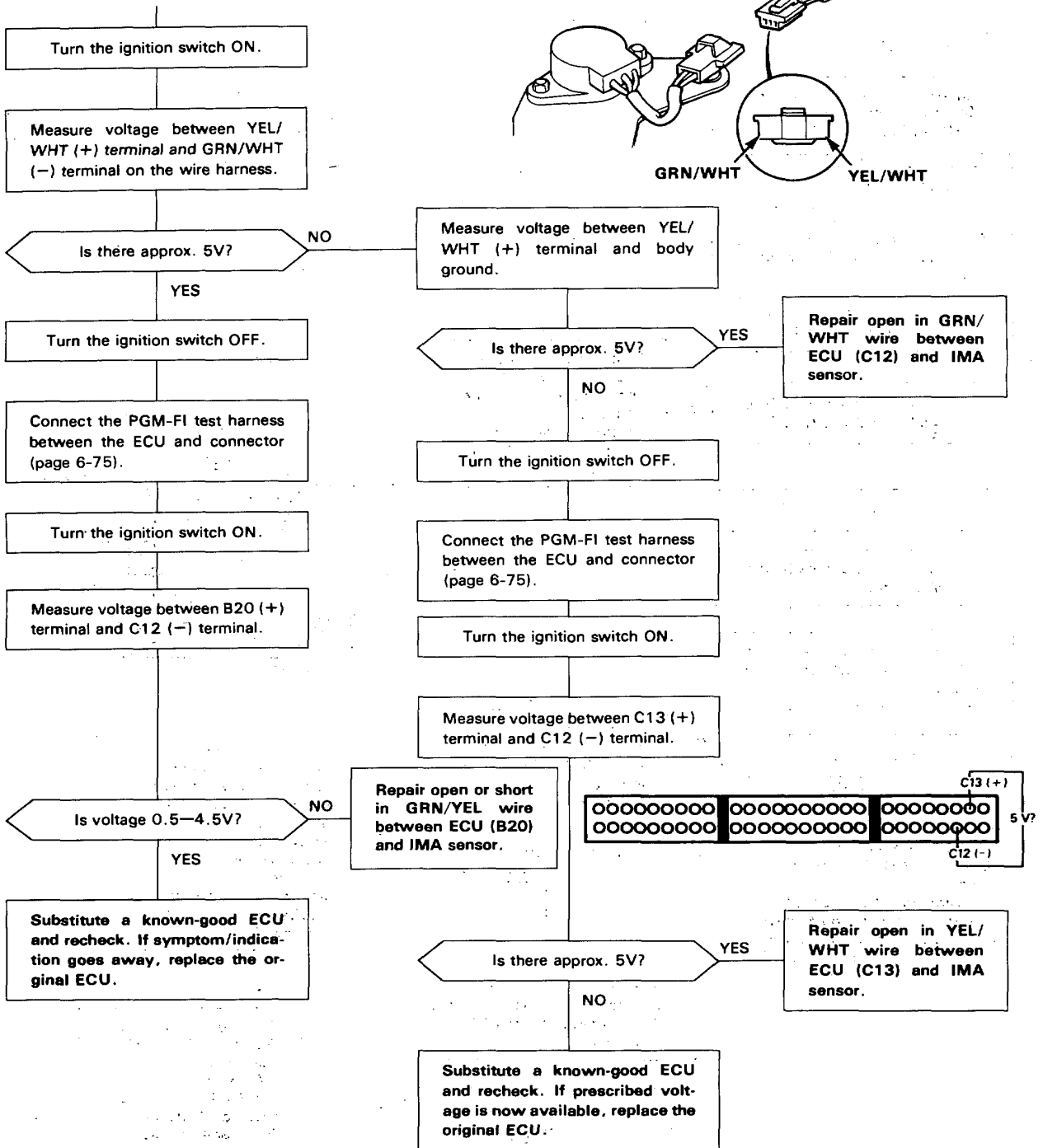
YES

(To page 6-109)





(From page 6-108)



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PGM-FI Control System

Troubleshooting Flowchart — PA Sensor



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



- Check Engine warning light has been reported on.
- LED indicates CODE 13.

Turn the ignition switch OFF.

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

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 13?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the PA sensor.

YES

Turn the ignition switch OFF.

Disconnect the main wire harness from PA sensor.

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

Is there approx. 5V?

YES

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

Repair open in YEL/WHT wire between ECU (C13) and the sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available replace the original ECU.

NO

Is there approx. 5V?

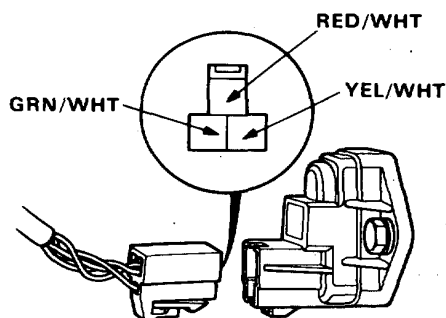
YES

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

Is there approx. 5V?

YES

(To page 6-111)



Repair open or short in GRN/WHT wire between ECU (C12) and the sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

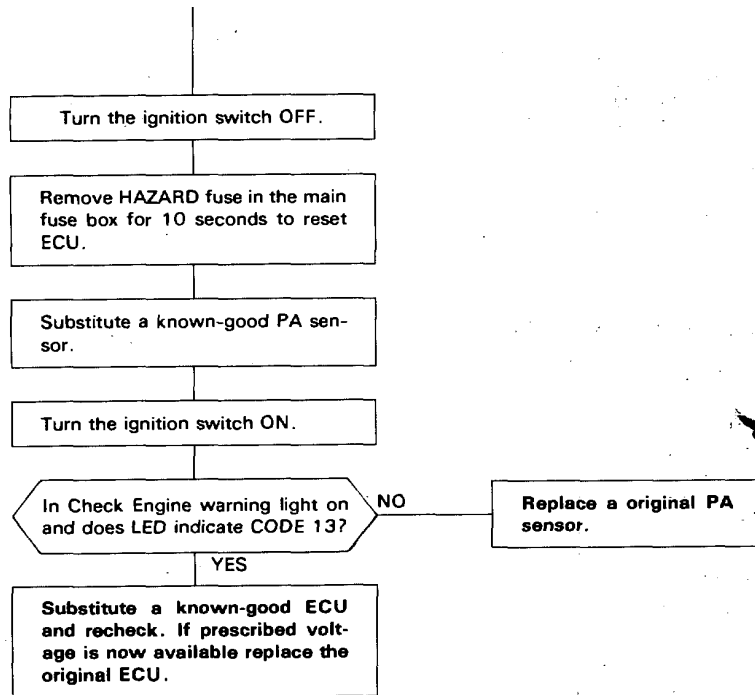
NO

Repair open or short in RED/WHT wire between ECU (C9) and PA sensor.
If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

NO



(From page 6-110)



PGM-FI Control System

Troubleshooting Flowchart — Ignition Output Signal



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

- Check Engine warning light has been reported on.
- LED indicates CODE 15.

Turn the ignition switch OFF.

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

Start engine.

Is Check Engine warning light on and does LED indicate CODE 15?

NO

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

YES

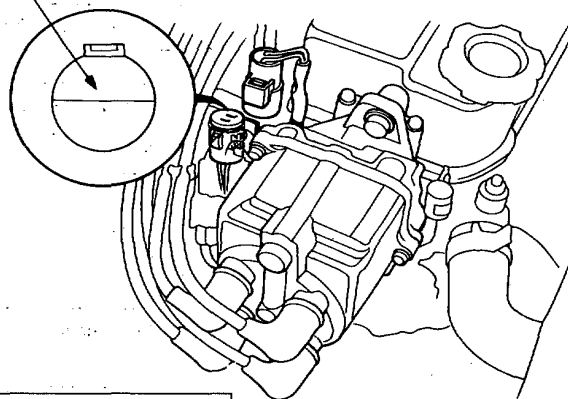
Turn the ignition switch OFF.

Reconnect the 2P connector.

(To page 6-113)

(SOHC)

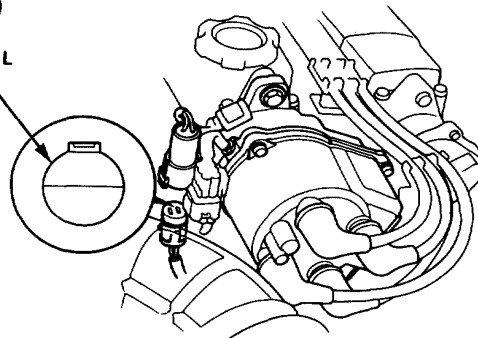
BLK/YEL



Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at the distributor connector.

(DOHC)

BLK/YEL



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



(From page 6-112)

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

Turn the ignition switch ON.

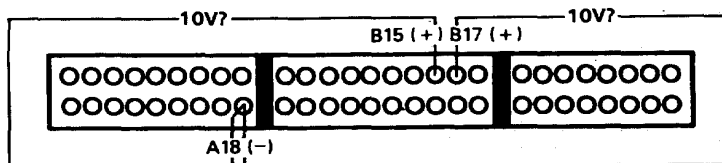
Measure voltage individually between B15 (+), B17 (+) terminals and A18 (-) terminal.

Is there approx. 10 volts?

NO

YES

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



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

NOTE: If the WHT wire was shorted, the igniter may be damaged.

PGM-FI Control System

Troubleshooting Flowchart — Vehicle Speed Sensor



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

- Check Engine warning light has been reported on.
- LED indicates CODE 17.

Turn the ignition switch OFF.

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

Road test necessary:
In 2nd gear accelerate to 3,500 min^{-1} (rpm) and decelerate to 1,500 min^{-1} (rpm) with throttle fully closed.

Is Check Engine warning light and does LED indicate CODE 17?

NO

Intermittent failure, system is OK at this time.
Check for poor connections or loose wires.

YES

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

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

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

Turn the ignition switch ON.

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

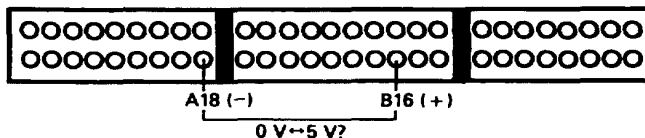
Does voltage pulse 0V and 5V?

NO

- Repair open or short in YEL/RED wire between ECU (B16) and the speed sensor.
- Faulty speed sensor.
- Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

YES

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



PGM-FI Control System

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



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

— Check Engine warning light has been reported on.
— LED indicates CODE 19.

Turn the ignition switch OFF.

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

Drive vehicle.

Is Check Engine warning light on and does LED indicate CODE 19 ?

NO

Intermittent failure.
Check connectors at lock-up control solenoid valve.

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). Disconnect "A" connector from the ECU only, not the main wire harness.

Disconnect the 2P connector from the lock-up control solenoid valve.

Check for continuity individually between A8 terminal and body ground.

Does continuity exist ?

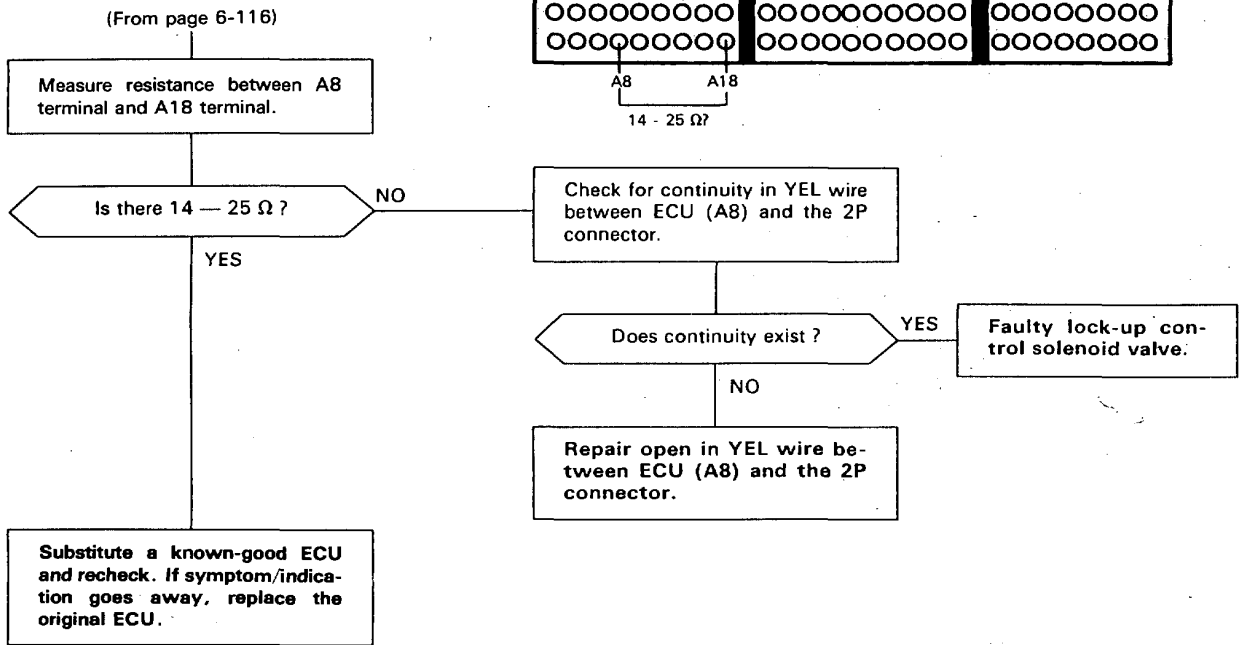
YES

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

NO

Reconnect the 2P connector.

(To page 6-117)

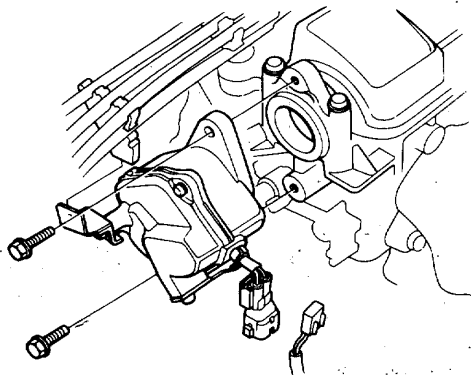


PGM-FI Control System

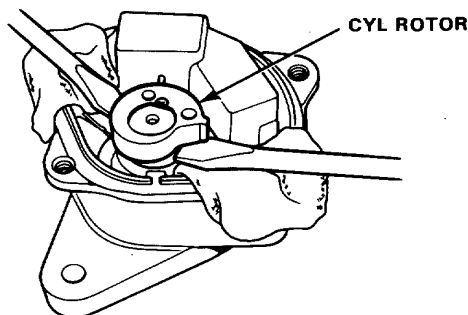
CYL Sensor Overhaul [1.6 l DOHC only]

Disassembly

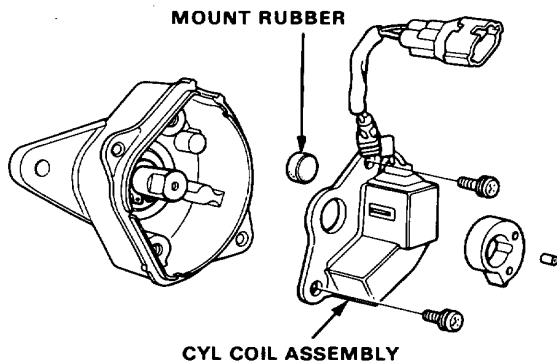
1. Remove the CYL sensor from the engine.



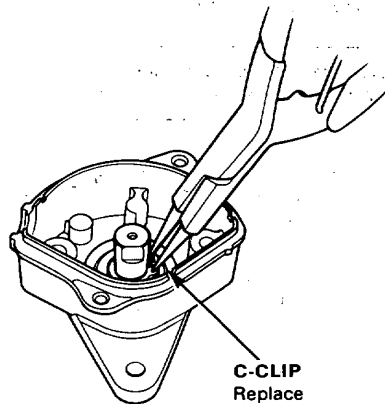
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



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

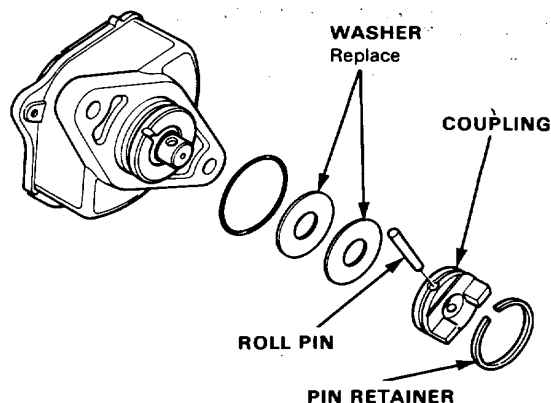


4. Remove the C-clip.

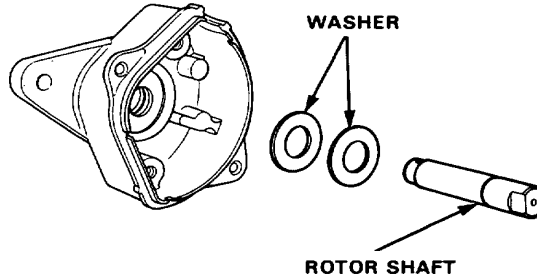


5. Slide off the pin retainer being careful not to stretch it.

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



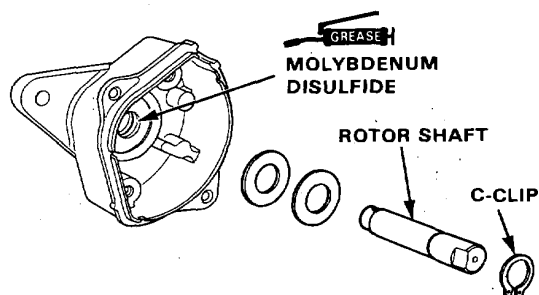
7. Remove the rotor shaft.



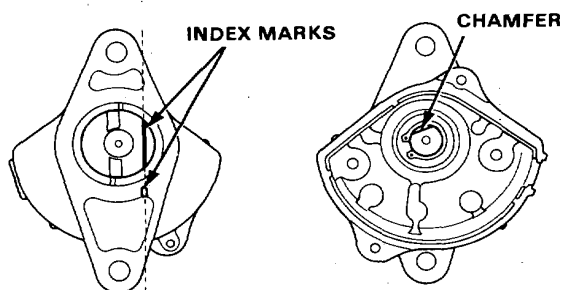


Reassembly

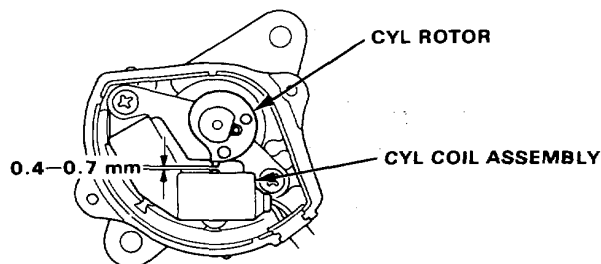
1. Apply molybdenum disulfide grease to the sensor housing, install the washers on the rotor shaft, then install it in the sensor housing. Install a new C-clip.



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



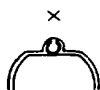
3. Install the mount rubber, then install the CYL coil assembly and the CYL rotor. Adjust the air gap to 0.4–0.7 mm.



NOTE:

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

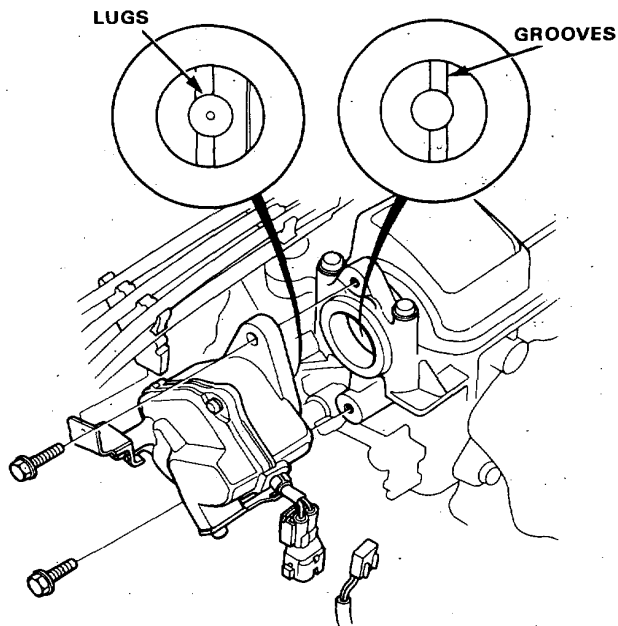
ROLL PIN



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 6-121.

PAGE	SUB SYSTEM	IDLE ADJUST- ING SCREW	EACV	AIR CONDI- TIONING SIGNAL	ALTER- NATOR FR SIGNAL	A/T SHIFT POSITION SIGNAL (Automatic)	STARTER SWITCH SIGNAL	FAST IDLE CONTROL (1.6 l)	HOSES AND CONNEC- TIONS
SYMPTOM		133, 134	122	125	127	129	131	132	*
ENGINE WON'T START			②						①
DIFFICULT TO START ENGINE WHEN COLD		②	①						
WHEN COLD FAST IDLE OUT OF SPEC [1,000-2,000 min ⁻¹ (rpm)]		②	①						③
ROUGH IDLE		③	②						①
WHEN WARM IDLE SPEED TOO HIGH		③	②						①
WHEN WARM IDLE SPEED TOO LOW	Idle speed is below specified (no load)	②	①		③				
	Idle speed does not increase after initial start up.		①				②		
	On models with automatic transmis- sion, the idle speed drops in gear	③	②			①			
	Idle speeds drops when air conditioner in ON	③	②	①					
FREQUENT STALLING	WHILE WARMING UP	②	①						
	AFTER WARMING UP	②	①						
FAILS EMISSION TEST									①



1. When the idle speed is out of specification and LED does not blink CODE 14, check the following items:
 - Adjust the idle speed (page 6-133, 134)
 - Air conditioning signal (page 6-125)
 - Alternator FR signal (page 6-127)
 - A/T shift position signal (page 6-129)
 - Starter switch signal (page 6-131)
 - Fast idle control (page 6-132)
 - Hoses and connections
 - EACV and its mounting O-rings.
2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 133, 134)
 - If the idle speed still cannot be adjusted to specification (and LED does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Idle Control System

Troubleshooting Flowchart — EACV



Self-diagnosis LED indicates code 14: A problem in the Electronic Air Control Valve (EACV) circuit.



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

Turn the ignition switch OFF.

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

Start engine.

Is Check Engine warning light on and does LED indicate CODE 14?

NO

Intermittent failure, system is OK at this time (test driving may be necessary). Check for poor connections or loose wires at EACV.

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

Is there 8—15Ω ?

NO

Replace EACV.

YES

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

Does continuity exist ?

YES

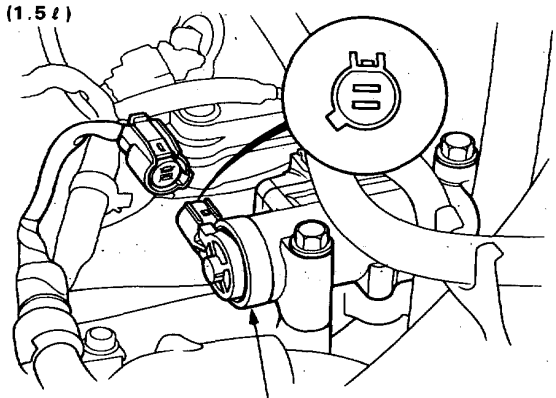
Replace EACV.

NO

Turn the ignition switch ON.

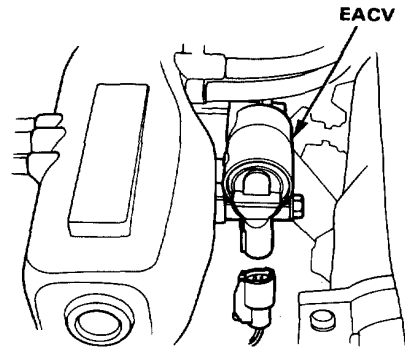
(To page 6-123)

(1.5 l)

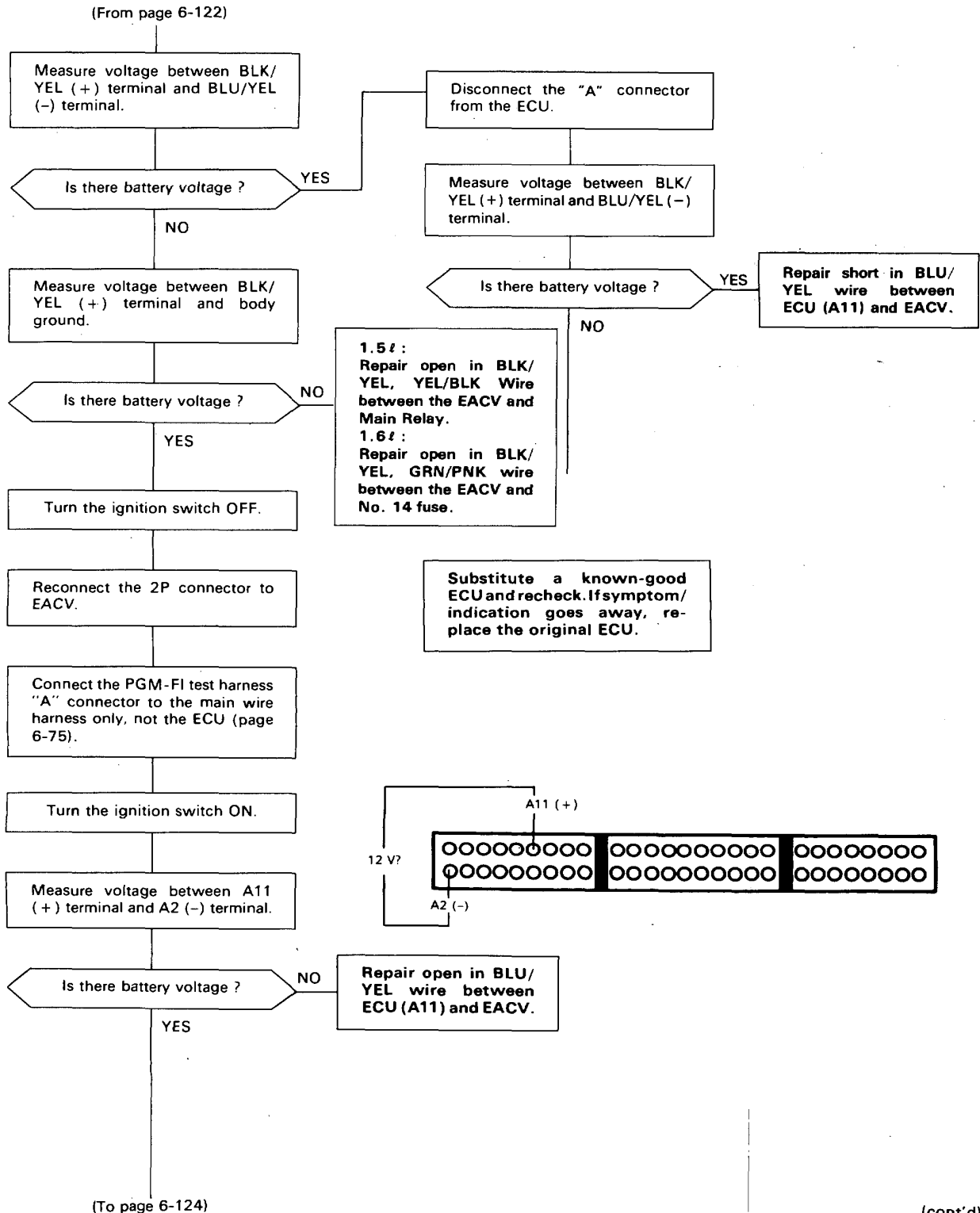


EACV

(1.6 l)



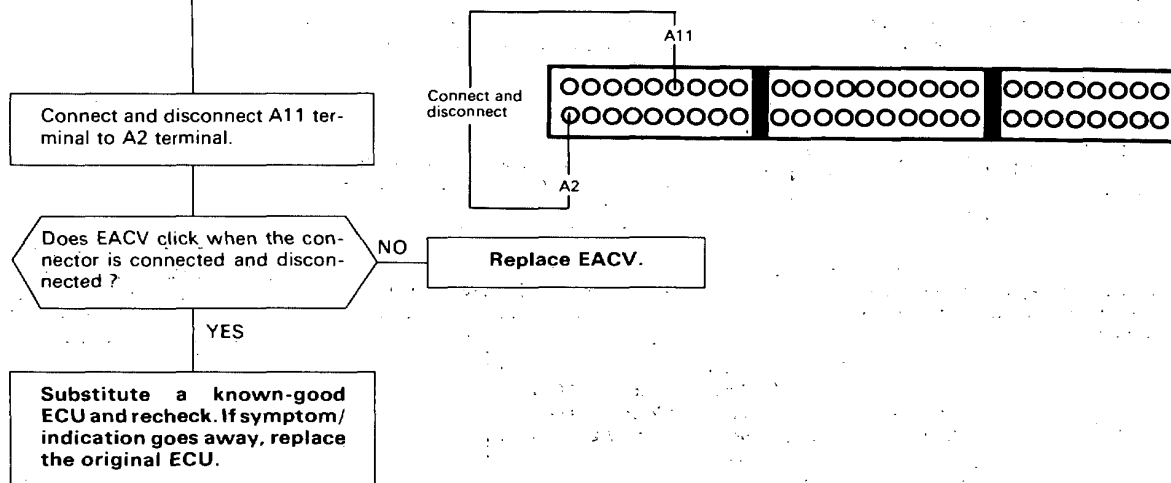
EACV



Idle Control System

Troubleshooting Flowchart — EACV (cont'd)

(From page 6-123)





Troubleshooting Flowchart—Air Conditioning Signal

Inspection of Air Conditioning Signal.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.

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

Is there approx. 4.5 V?

YES

Reconnect "B" connector to the main wire harness.

Momentarily connect B3 terminal to A18 terminal several times.

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

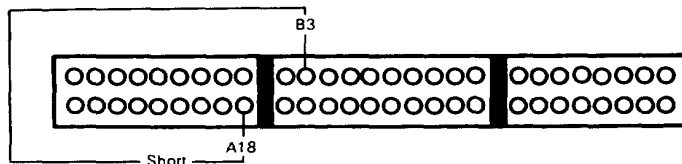
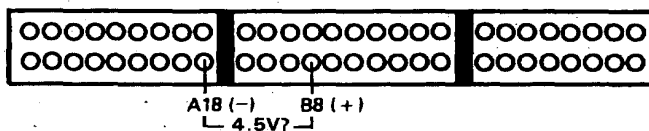
YES

Start engine.

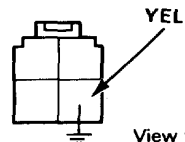
Blower switch ON.

(To page 6-126)

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



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



View from wire side

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

NO

See Air conditioner inspection (section 15).

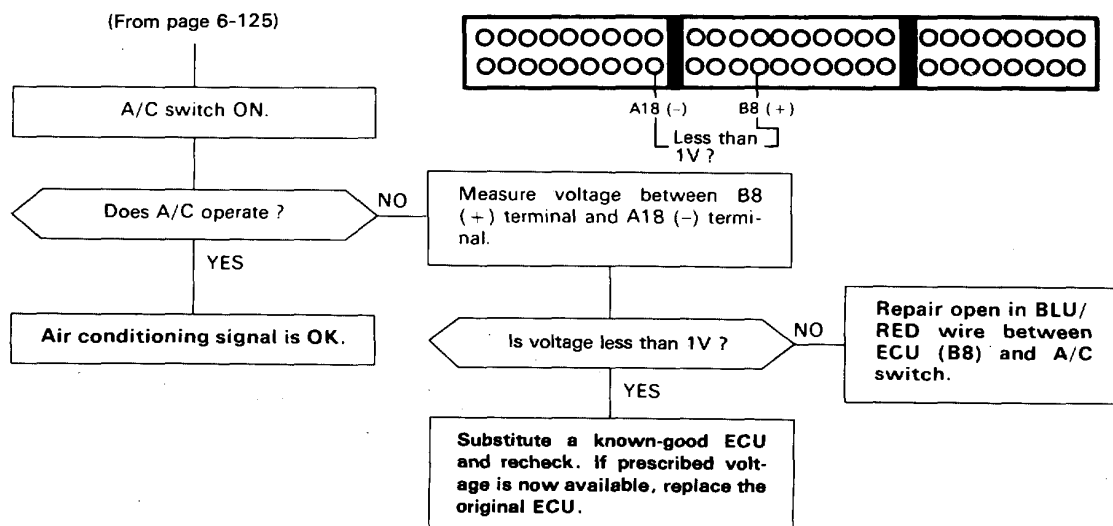
YES

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

(cont'd)

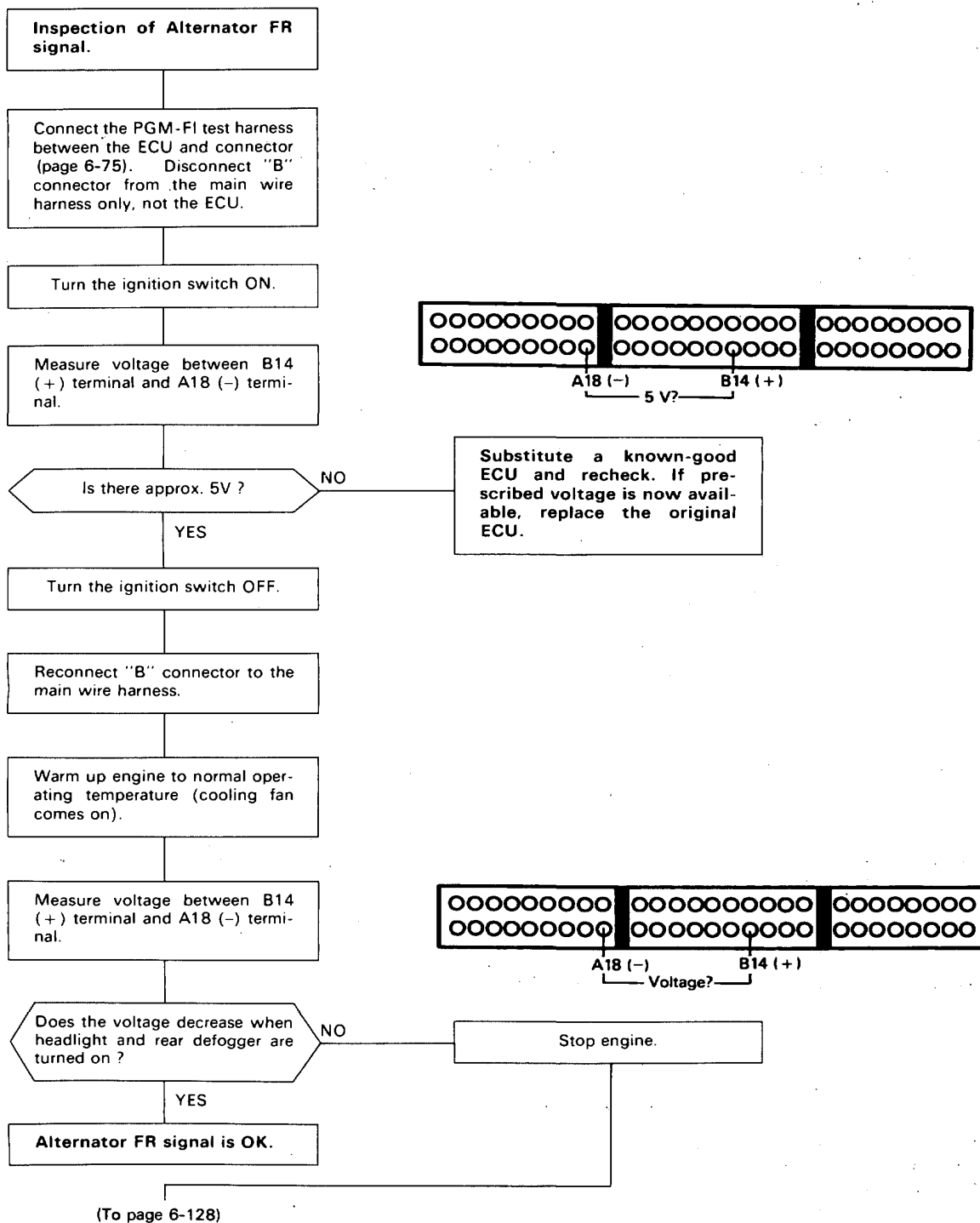
Idle Control System

Troubleshooting Flowchart — Air Conditioning Signal (cont'd)





Troubleshooting Flowchart — Alternator FR Signal



(cont'd)

Idle Control System

Troubleshooting Flowchart — Alternator FR Signal (cont'd)

(From page 6-127)

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

Disconnect the negative battery cable from the battery.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

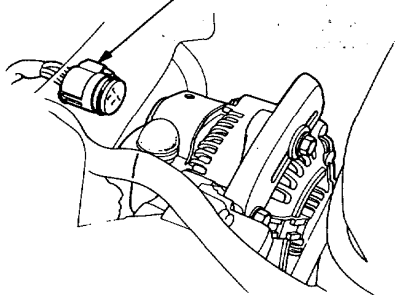
YES

Disconnect GRN connector from the alternator.

NO

Disconnect GRN connector from the alternator.

GRN CONNECTOR



Connect YEL wire to body ground.

Check for continuity between B14 terminal and body ground.

Does continuity exist ?

YES

NO

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

See Alternator Inspection (section 16).



Troubleshooting Flowchart — A/T Shift Position Signal

Inspection of A/T Shift Position Signal

Turn the ignition switch ON.

Observe the A/T shift indicator and select each position separately.

Does the indicator light properly?

NO

See A/T shift position Indicator Inspection (section 16).

YES

Turn the ignition switch OFF.

Connect the PGM-FI test harness between the ECU and connector (page 6-75). Disconnect "B" connector from the main wire harness only, not the ECU.

Turn the ignition switch ON.

Measure voltage individually between B7 (+), B11 (+) terminals and A18 (-) terminal.

Is there approx. 5 V?

NO

YES

Turn the ignition switch OFF.

Reconnect "B" connector to the main wire harness.

Turn the ignition switch ON.

Measure voltage between B7 (+) terminal and A18 (-) terminal in Neutral position.

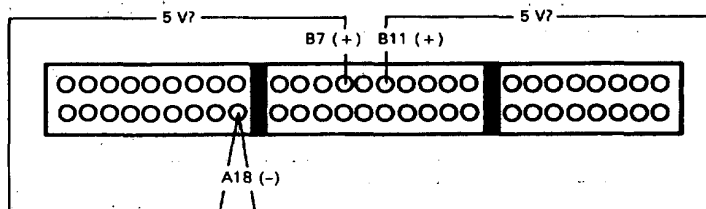
Is voltage less than 1 V?

NO

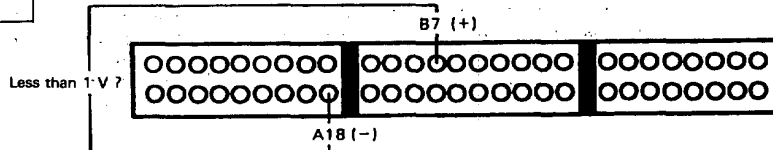
YES

Measure voltage between B7 (+) terminal and A18 (-) terminal in Park position.

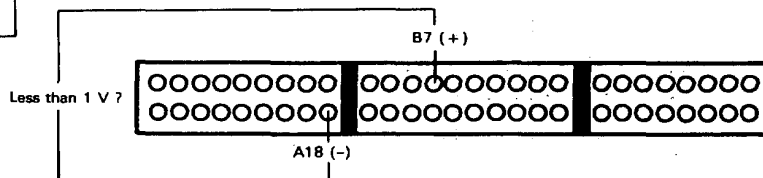
(To page 6-130)



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



- Repair open in GRN wire between ECU (B7) and combination meter.
- Repair open in GRN wire between the combination meter and shift position console switch.

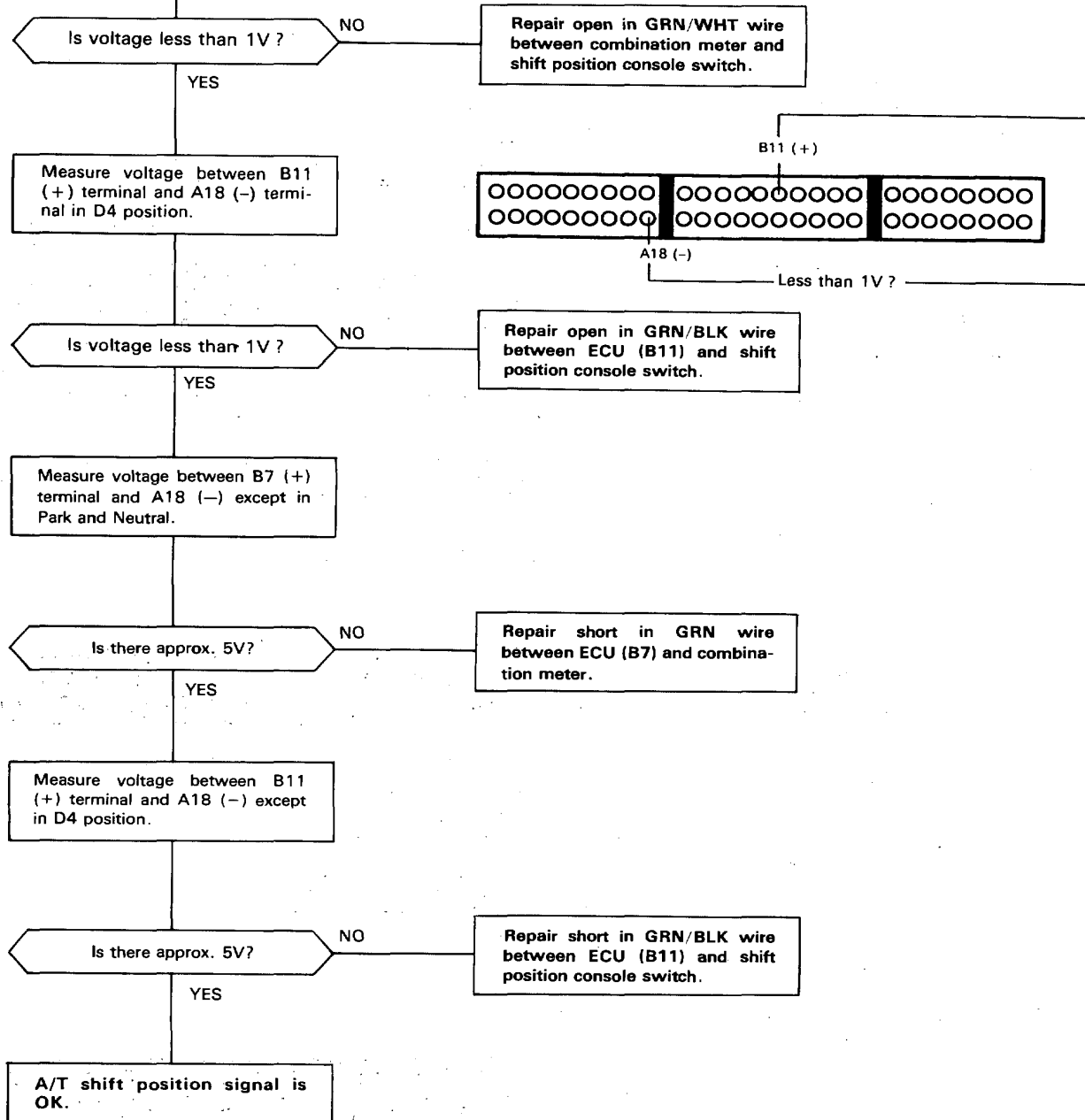


(cont'd)

Idle Control System

Troubleshooting Flowchart — A/T Shift Position Signal (cont'd)

(From page 6-129)





Troubleshooting Flowchart — Starter Switch Signal

Inspection of Starter Switch Signal

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

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

Is there battery voltage ?

YES

Starter switch signal is OK.

NO

Inspect No. 2 fuse.

Is No. 2 fuse OK ?

YES

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

B13 (+)

12.V?

A18 (-)

Replace fuse.

Idle Control System

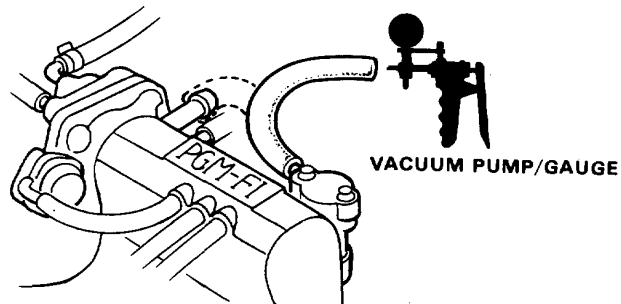
Fast Idle Control [1.6 l only]

Troubleshooting Flow Chart

Inspection of Fast Idle Control Solenoid Valve.

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

Disconnect the upper vacuum hose from the fast idle control solenoid valve and connect a vacuum gauge to the valve.



Is there any vacuum?

YES

Disconnect the 2P connector from the solenoid valve

NO

Turn the ignition switch OFF.

Disconnect the 2P connector from the solenoid valve.

Connect battery positive to terminal B and battery negative to terminal A of the solenoid valve.

Is there any vacuum?

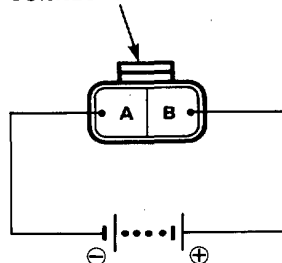
YES

Replace the fast idle control solenoid valve.

NO

Repair short to ground at BLU wire between ECU (B2) and the 2P connector.
If wire is OK, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

SOLENOID VALVE 2P CONNECTOR



Is there manifold vacuum?

NO

Replace the fast idle control solenoid valve.

YES

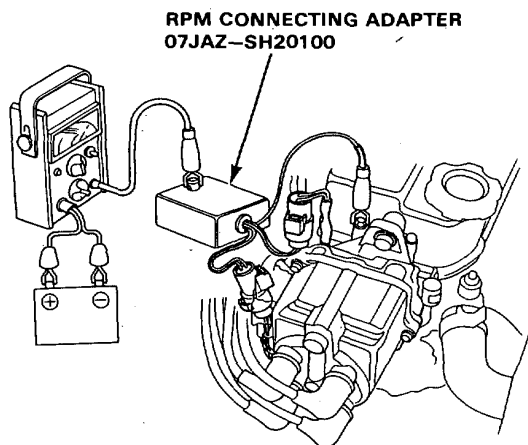
Fast Idle Control Solenoid valve is OK.



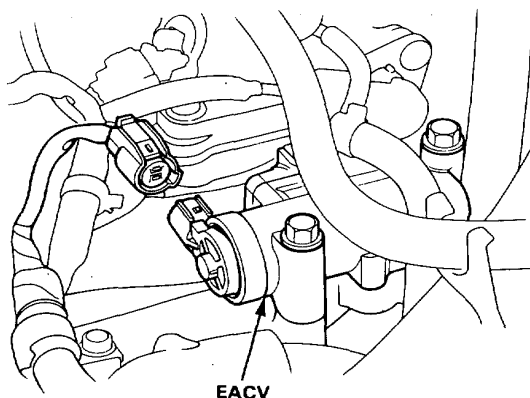
Idle Speed Setting [1.5 l]

Inspection/Adjustment

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



3. Disconnect the 2P connector from the EACV.



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

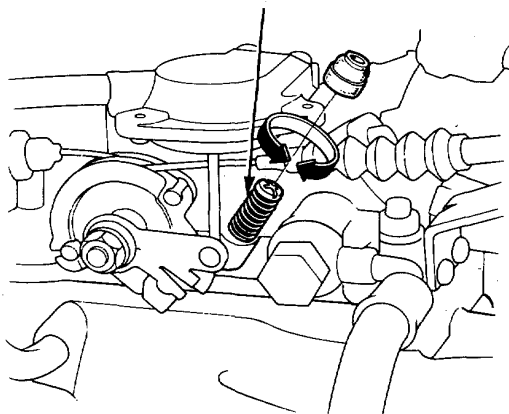
Idle speed should be:

$700 \pm 50 \text{ min}^{-1} (\text{rpm})$ (A/T: in **N or **P**)**

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

NOTE: If the idle speed is excessively high, check the throttle control system (page 6-126)

IDLE ADJUSTING SCREW



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

Idle speed should be:

$800 \pm 50 \text{ min}^{-1} (\text{rpm})$ (A/T: in **N or **P**)**

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

Idle speed should be: $800 \pm 50 \text{ min}^{-1} (\text{rpm})$

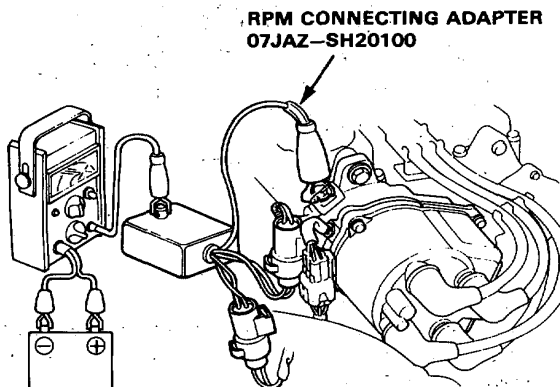
NOTE: If the idle speed is not within specifications, see System Troubleshooting Guide on page 6-120.

Idle Control System

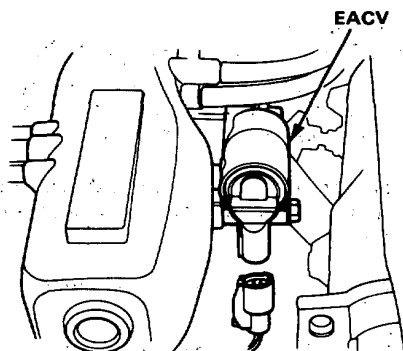
Idle Speed Setting [1.6 l]

Inspection/Adjustment

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



3. Disconnect the 2P connector from the EACV.



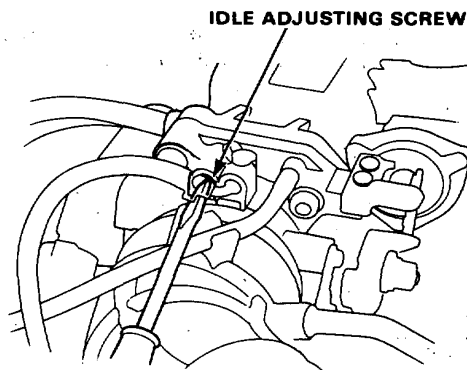
4. Check idling in no-load conditions in which the headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

Idle speed should be:

(SOHC)
 $680 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N** or **P**)
(DOHC with CATA)
 $700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $650 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (in **N** or **P**)

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

NOTE: If the idle speed is excessively high, check the throttle control system (page 6-169).



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

Idle speed should be:

(SOHC)
 $780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (A/T: in **N** or **P**)
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (in **N** or **P**)

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

Idle speed should be:

(SOHC)
 $780 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Idle speed should be:

(SOHC)
 $810 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC with CATA)
 $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
(DOHC without CATA)
M/T: $800 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
A/T: $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

Fuel Supply System



System Troubleshooting Guide

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

1.5 l

PAGE	SUB SYSTEM	FUEL INJECTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	CONTAMINATED FUEL
SYMPTOM		138	147	149	150	151	*
ENGINE WON'T START		③		③	①	②	
DIFFICULT TO START ENGINE WHEN COLD		②	③	①			
ROUGH IDLE		①	②				
FREQUENT STALLING	WHILE WARMING UP	①		②	③		
	AFTER WARMING UP	①	③	③	②		③
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	①	②				③
	FAILS EMISSION TEST	①	②				
	LOSS OF POWER	③		①	③		②

1.6 l

PAGE	SUB SYSTEM	FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	CONTAMINATED FUEL
SYMPTOM		143	147	147	149	150	151	*
ENGINE WON'T START			③		③	①	②	
DIFFICULT TO START ENGINE WHEN COLD		③			②	①		
ROUGH IDLE		①		②				
FREQUENT STALLING	WHILE WARMING UP	①			②	③		
	AFTER WARMING UP	①		③	③	②		
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	①		②				
	FAILS EMISSION TEST	①		②				
	LOSS OF POWER				①	③		

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

Fuel Supply System

Fuel Pressure

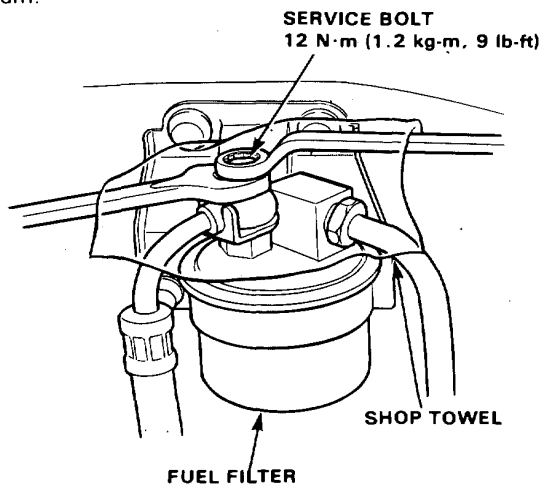
Relieving

⚠ WARNING

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

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

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



NOTE:

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

Inspection

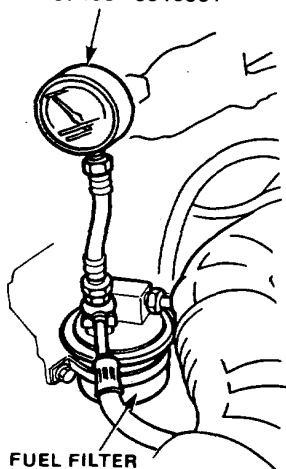
1. Relieve fuel pressure.
2. Remove the service bolt on the top of the fuel filter while holding the banjo bolt with another wrench and attach the fuel pressure gauge.
3. Start the engine. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected.

Pressure should be:

240–279 kPa (2.45–2.85 kg/cm², 35–41 psi)

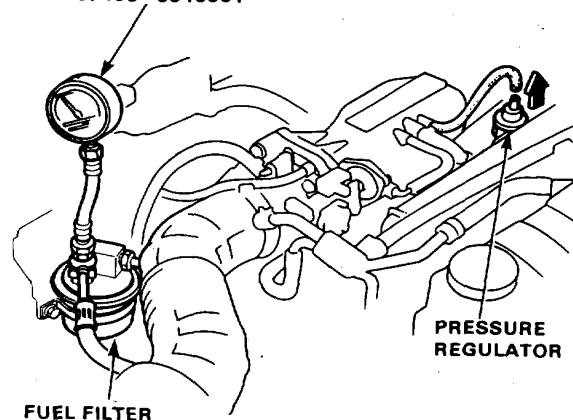
(1.5 l)

FUEL PRESSURE GAUGE
07406-0040001



(1.6 l)

FUEL PRESSURE GAUGE
07406-0040001





- If the fuel pressure is not as specified, first check the fuel pump (page 6-150). If the pump is OK, check the following:
 - If the pressure is higher than specified, inspect for:
 - Pinched or clogged fuel return hose or piping.
 - Faulty pressure regulator (page 6-147).
 - If the pressure is lower than specified, inspect for:
 - Clogged fuel filter.
 - Pressure regulator failure (page 6-147).
 - Leakage in the fuel line.

Fuel Supply System

Fuel Injectors [1.5 l]

Troubleshooting Flowchart



Self-diagnosis LED indicates code 16: A problem in the fuel injector circuit.



—Check Engine warning light has been reported on.
—LED indicates CODE 16.

Turn the ignition switch OFF.

Check for loose wires or connectors at injectors.

Are connections OK?

NO

Repair as necessary.

YES

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

Start engine and hold at 2000 min⁻¹ (rpm) for 1 minute.

NOTE: If engine will not start, continue cranking for at least 15 seconds to reproduce CODE on ECU.

Does the engine start and run at 2000 min⁻¹ (rpm) for 1 minute.

NO

Is Check Engine warning light on and does LED indicate CODE 16 ?

NO

See Troubleshooting Guide (page 6-135).

YES

Is Check Engine warning light on and does LED indicate CODE 16 ?

NO

Intermittent failure (test drive may be necessary).

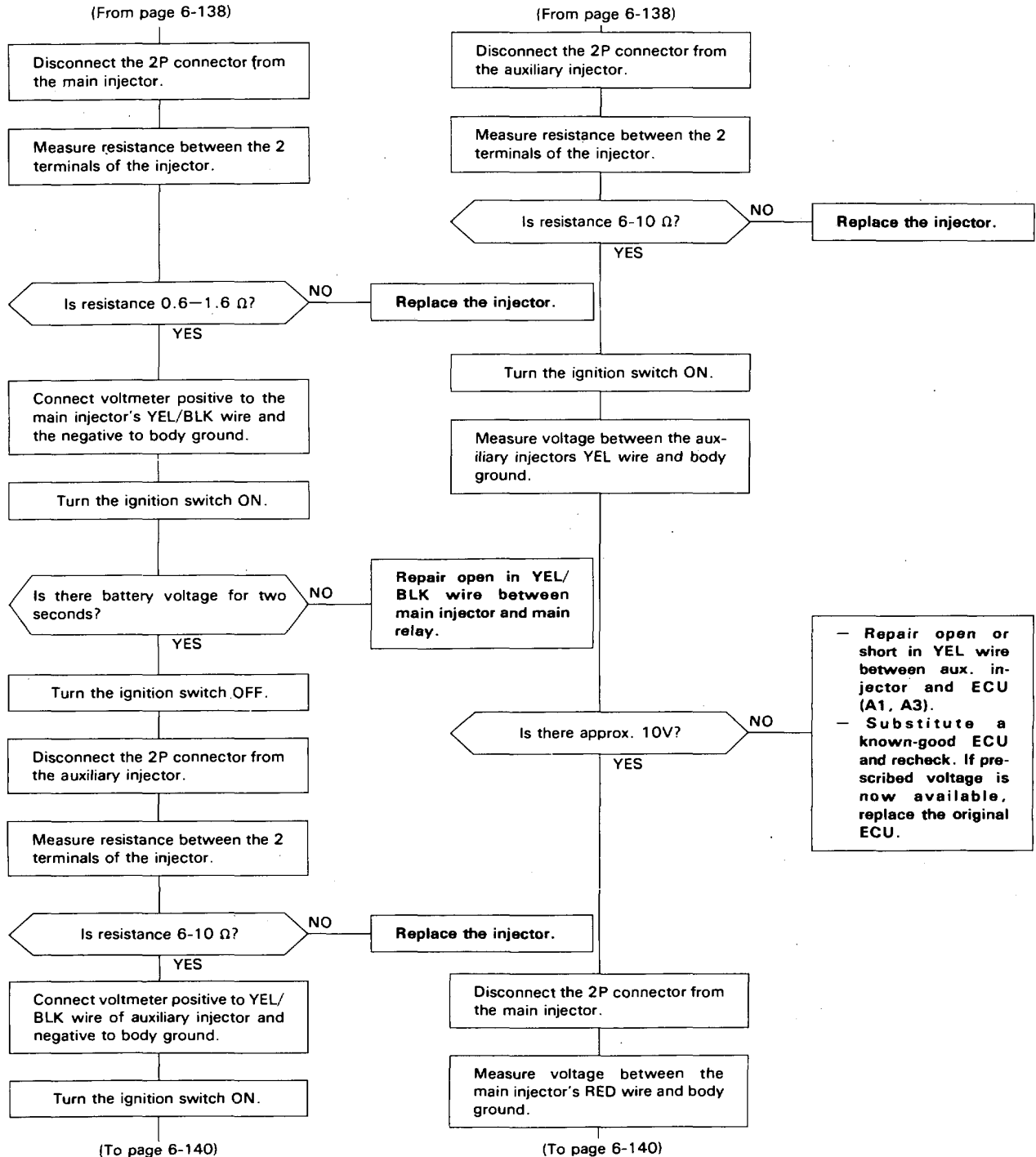
YES

Turn the ignition switch OFF.

Turn the ignition switch OFF.

(To page 6-139)

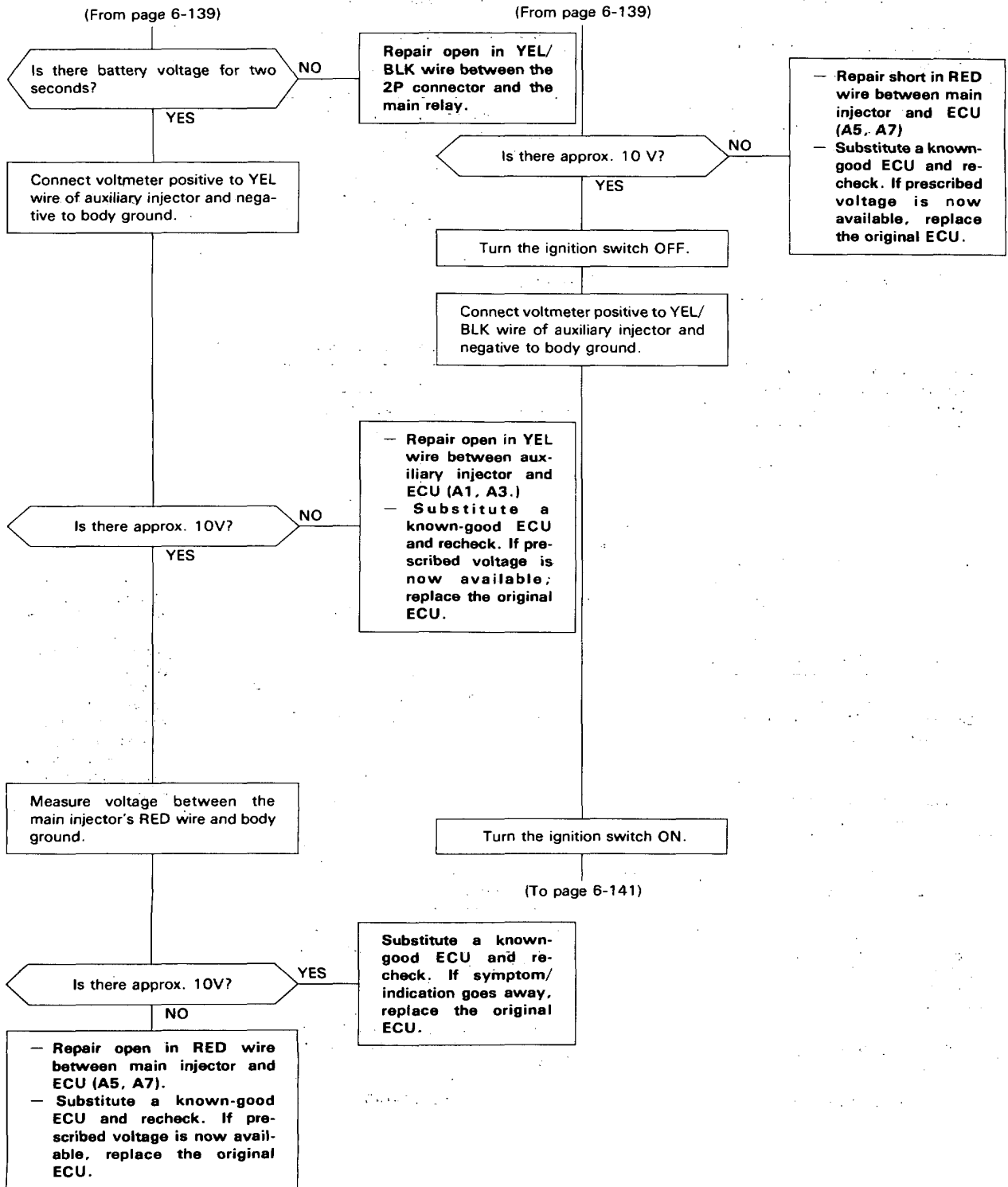
(To page 6-139)



(cont'd)

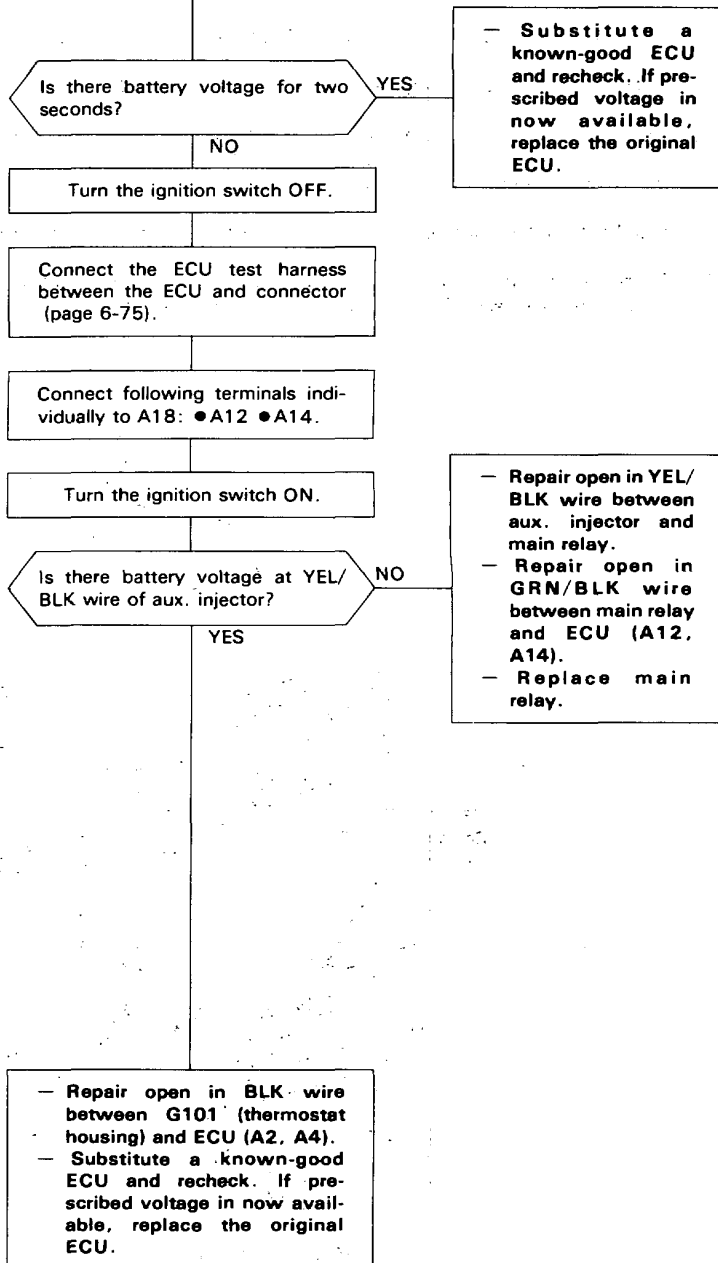
Fuel Supply System

Fuel Injectors [1.5 l] (cont'd)





(From page 6-140)



(cont'd)

Fuel Supply System

Fuel Injectors [1.5 l] (cont'd)

Replacement

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

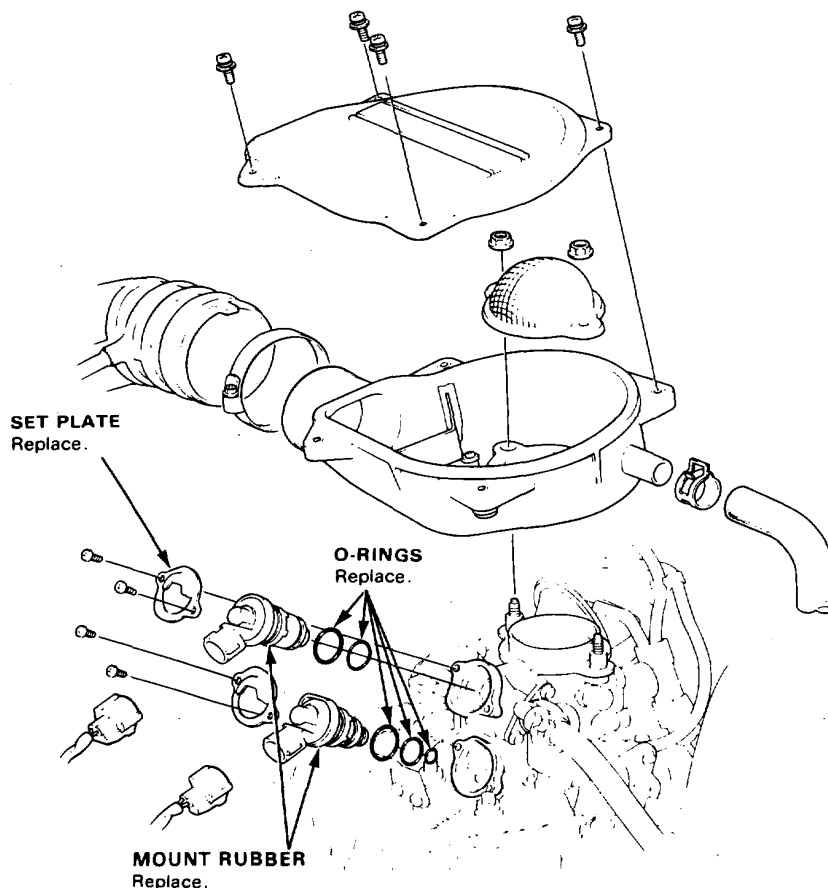
1. Relieve fuel pressure (page 6-136).
2. Remove the air intake chamber.
3. Disconnect the 2P connector from the injector.
4. Loosen the screws, then remove the injector from the throttle body.

NOTE: Place a rag or shop towel over the throttle body.

5. Coat new O-rings with clean engine oil and put them on the injector.
6. Insert the injector into the throttle body.

NOTE: After the injector is inserted, be sure that it turns smoothly about 30°.

7. Turn the ignition switch ON but do not operate the starter. After the fuel pump runs for approx. 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.





Fuel Injectors [1.6 l]

Troubleshooting Flowchart



Self-diagnosis LED indicates code 16: A problem in the fuel injector circuit (with CATA).

(With CATA)



- Check Engine warning light has been reported on.
- LED indicates CODE 16.

Turn the ignition switch OFF.

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

Turn the ignition switch to START position.

Does the engine start ?

NO

(With CATA)

YES

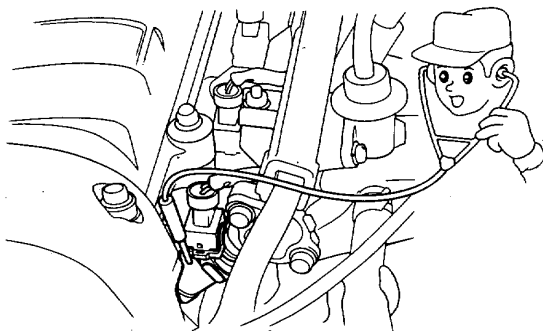
Is Check Engine warning light on and does LED indicate CODE 16?

NO

YES

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at injectors, injector resistor.

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



Do the injectors click ?

YES

NO

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

(To page 6-144)

(To page 6-144)

(cont'd)

Fuel Supply System

Fuel Injectors [1.6 l] (cont'd)

(From page 6-143)

Turn the ignition switch OFF.

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

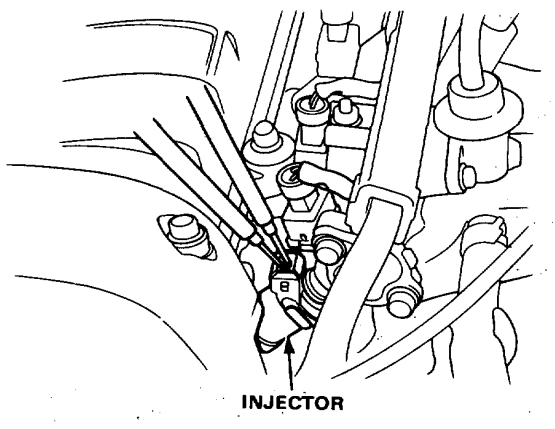
Measure resistance between the 2 terminals of the injector.

(From page 6-143)

Turn the ignition switch OFF.

Disconnect the 2P connector from each injector.

Measure resistance between the 2 terminals of the injector.



Is there 1.5—2.5Ω ?

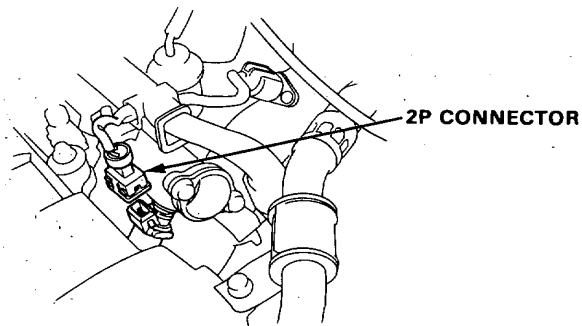
NO

Replace the injector.

YES

Turn the ignition switch ON.

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



Is there battery voltage ?

NO

Turn the ignition switch OFF.

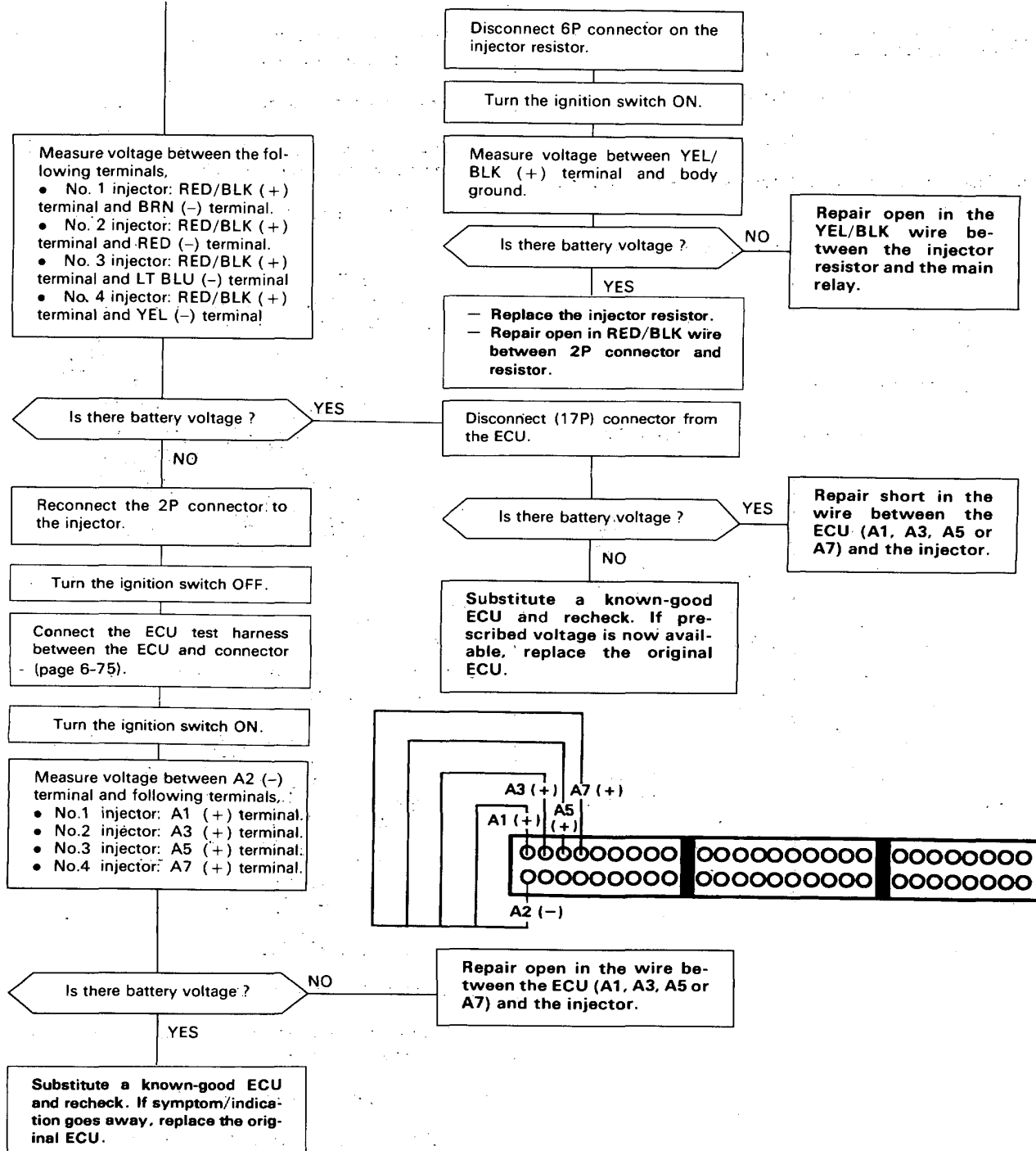
YES

(To page 6-145)

(To page 6-145)



(From page 6-144)



(cont'd)

Fuel Supply System

Fuel Injectors [1.6 l] (cont'd)

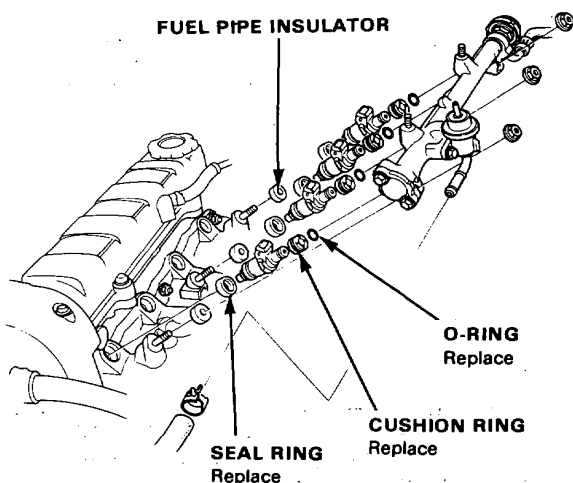
Replacement

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

1. Relieve fuel pressure (page 6-136).
2. Disconnect the connectors from the injectors.
3. Disconnect the vacuum hose and fuel return hose from the pressure regulator.

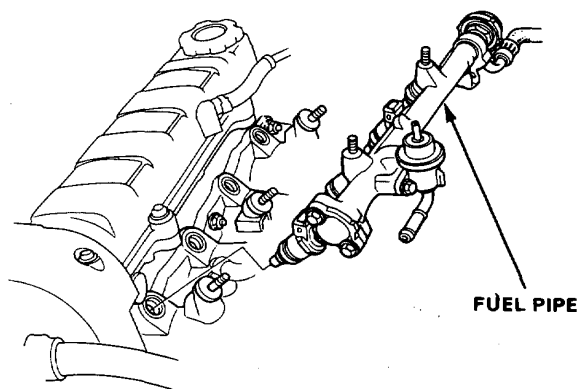
NOTE: Place a rag or shop towel over the hoses before disconnecting them.

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

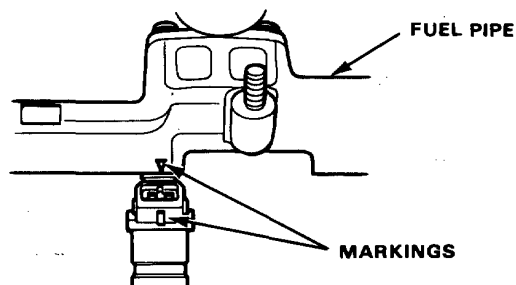


7. Slide new cushion rings onto the injectors.
8. Coat new O-rings with clean engine oil and put them on the injectors.
9. Insert the injectors into the fuel pipe first.
10. Coat new seal rings with clean engine oil and press them into the intake manifold.
11. Install the injectors and fuel pipe assembly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

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



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



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

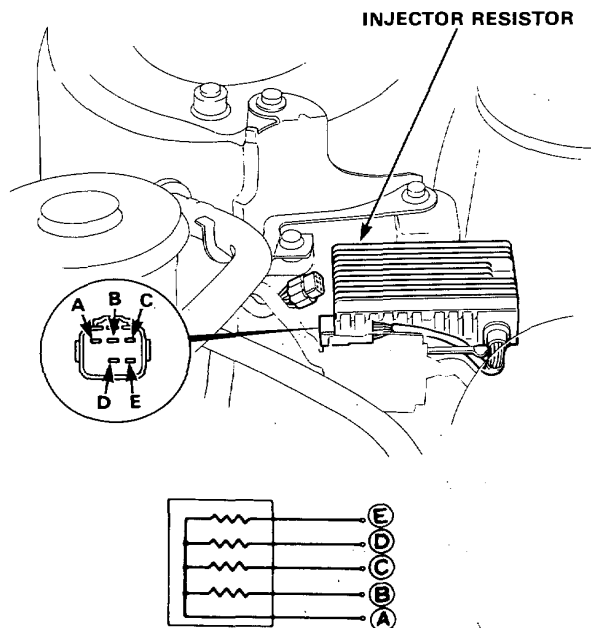


Injector Resistor

Testing

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

Resistance should be: 5–7 Ω



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

Pressure Regulator

Testing

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

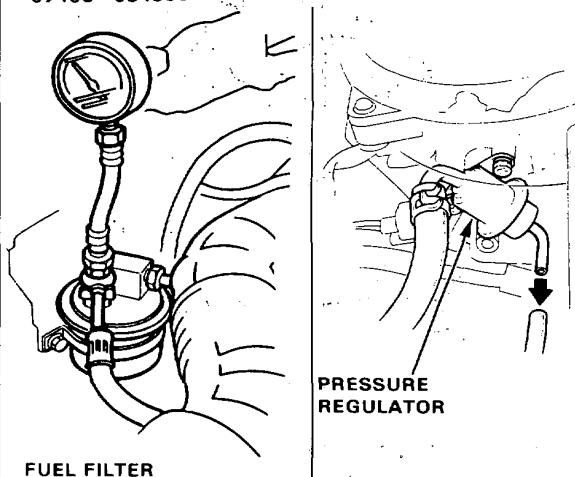
1. Attach a pressure gauge to the service port of the fuel filter (page 6-136).

Pressure should be:

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

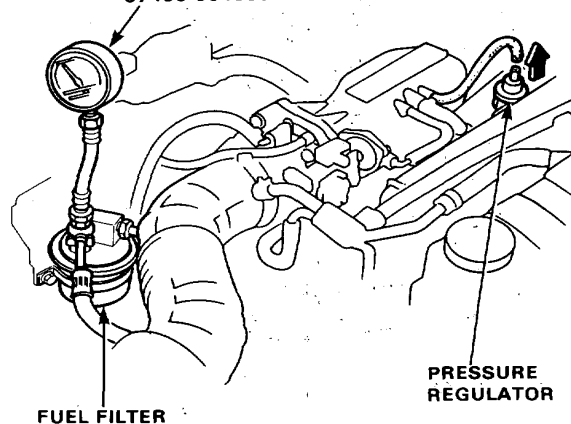
(1.5 l)

FUEL PRESSURE GAUGE
07406-0040001



(1.6 l)

FUEL PRESSURE GAUGE
07406-0040001



(cont'd)

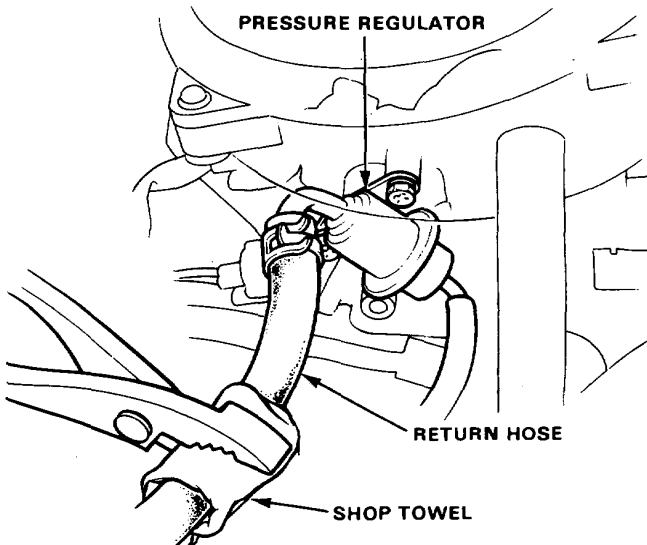
Fuel Supply System

Pressure Regulator (cont'd)

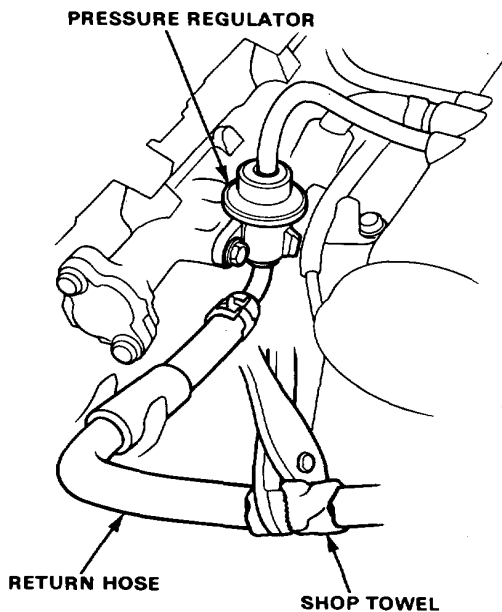
2. Check that the fuel pressure rises when the vacuum hose from the regulator is disconnected.

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

(1.5 l)



(1.6 l)



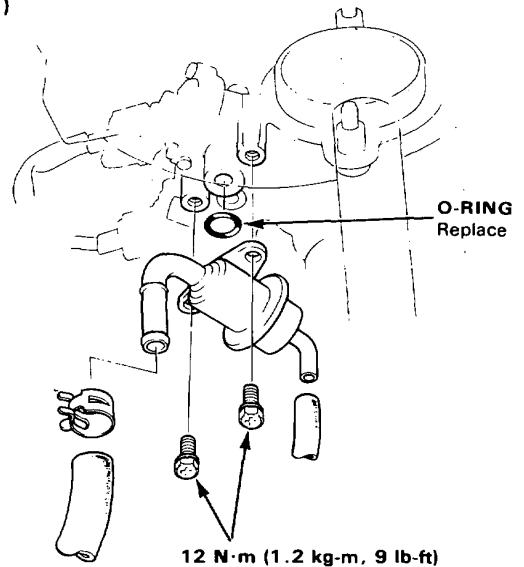
- If the pressure does not rise, replace the regulator and retest.

Replacement

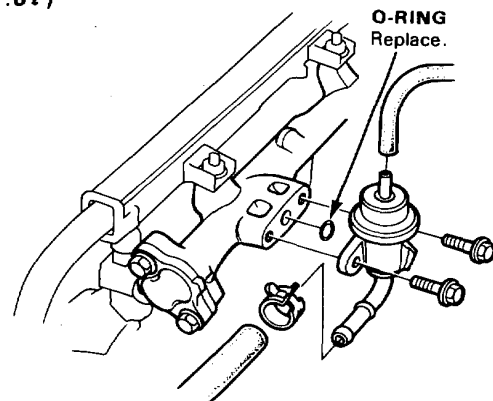
⚠ WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

1. Place a shop towel under pressure regulator, then relieve fuel pressure (page 6-136).
2. Disconnect the vacuum hose and fuel return hose.
3. Remove the two 6 mm retainer bolts.

(1.5 l)



(1.6 l)



NOTE:

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



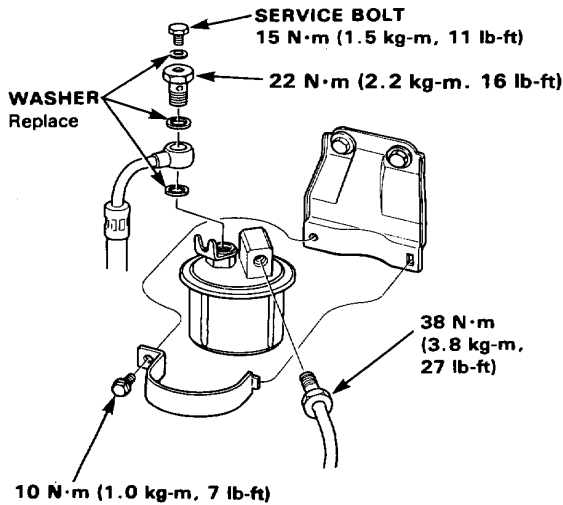
Fuel Filter

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. Place a shop towel under and around the fuel filter.
2. Relieve fuel pressure (page 6-136).
3. Remove the 12 mm banjo bolt and the fuel feed pipe from the filter.
4. Remove the fuel filter clamp and fuel filter.
5. When assembling, use new washers, as shown.



CAUTION: Clean the flared joint of high pressure hoses thoroughly before reconnecting them.

Fuel Supply System

Fuel Pump

Testing

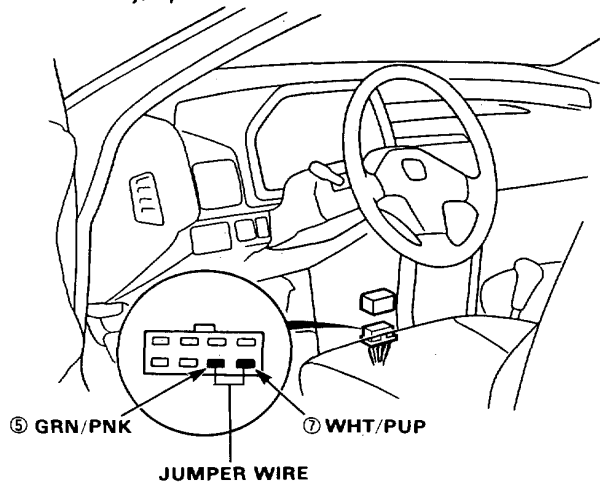
⚠ WARNING Do not smoke during the test. Keep open flame away from your work area.

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

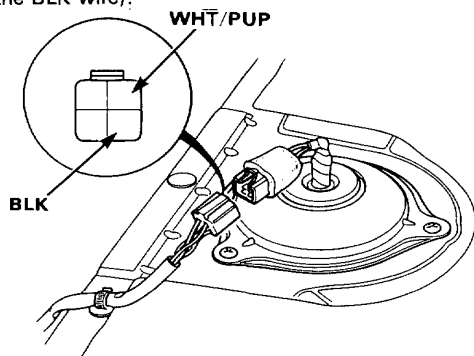
1. Remove the rear seat.
2. Disconnect the 4P connector.

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

3. Connect the GRN/PNK ⑤ wire and WHT/PUP ⑦ wire with a jumper wire.



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

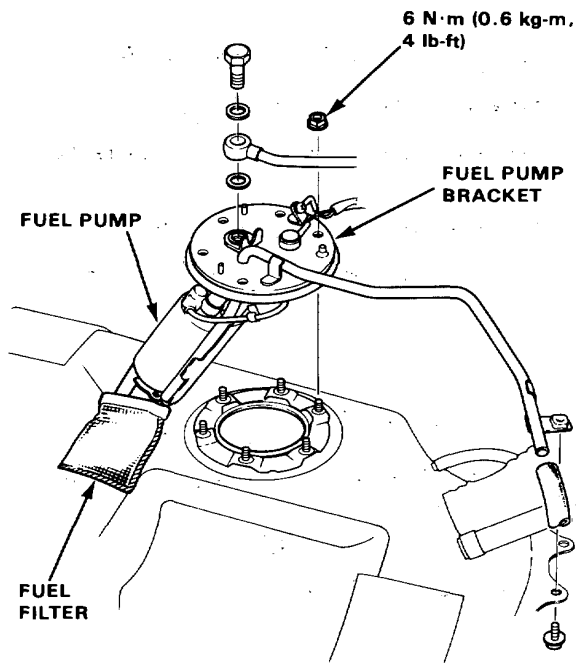


- If battery voltage is available, replace the fuel pump.
- If there is no voltage, check the main relay and wire harness (page 6-151).

Replacement

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

1. Remove the fuel tank (page 6-153).
2. Remove the fuel pump mounting nuts.
3. Remove the fuel pump from the fuel tank.



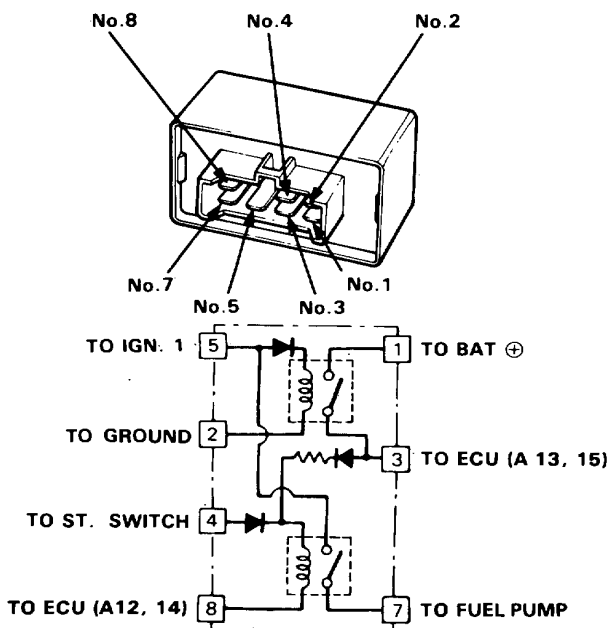


Main Relay

Relay Testing

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

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



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

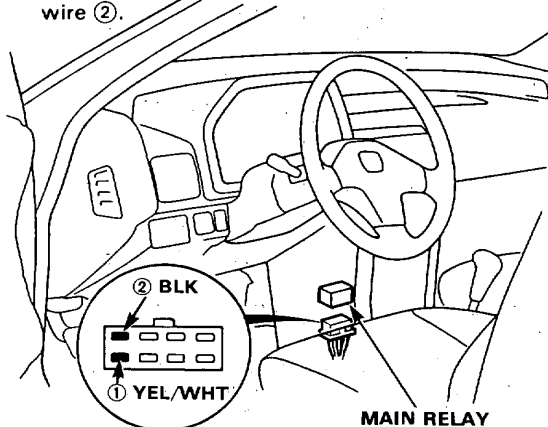
- If there is continuity, go on to step 4.
- If there is no continuity, replace the relay and retest.

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

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

Harness Testing

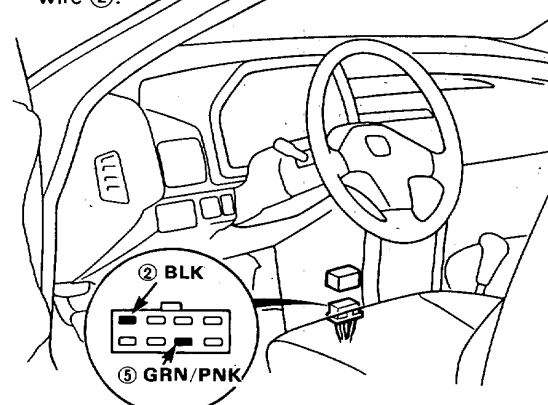
1. Keep the ignition switch in the OFF position.
2. Disconnect the main relay connector.
3. Check for continuity between the BLK wire ② in the connector and body ground.
4. Attach the positive probe of voltmeter to the YEL/WHT wire ① and the negative probe to the BLK wire ②.



Battery voltage should be available.

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

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



6. Turn the ignition switch ON.

Battery voltage should be available.

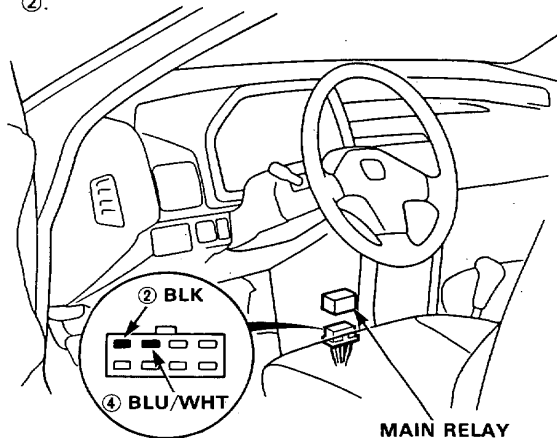
- If there is no voltage, check No. 14 fuse and the wiring from the ignition switch to the fuse box and the wiring from the fuse box to the main relay.

(cont'd)

Fuel Supply System

Main Relay (cont'd)

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

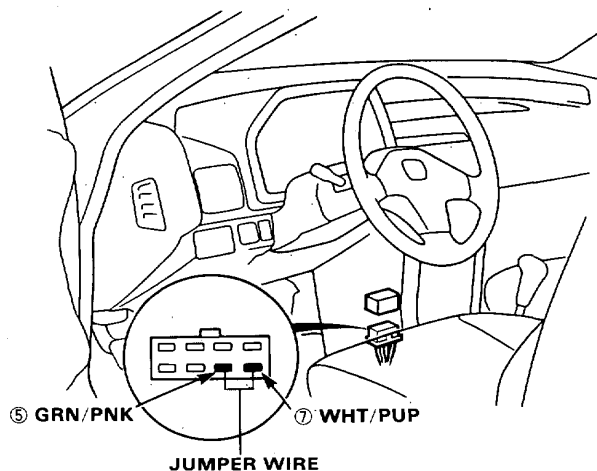


8. Turn the ignition switch to START position.

Approximately 10 volts should be available.

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

9. Connect a jumper wire between the GRN/PNK wire ⑤ and WHT/PUP wire ⑦.



10. Turn the ignition switch ON.

The fuel pump should work.

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



Fuel Tank

Replacement

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

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

CAUTION:

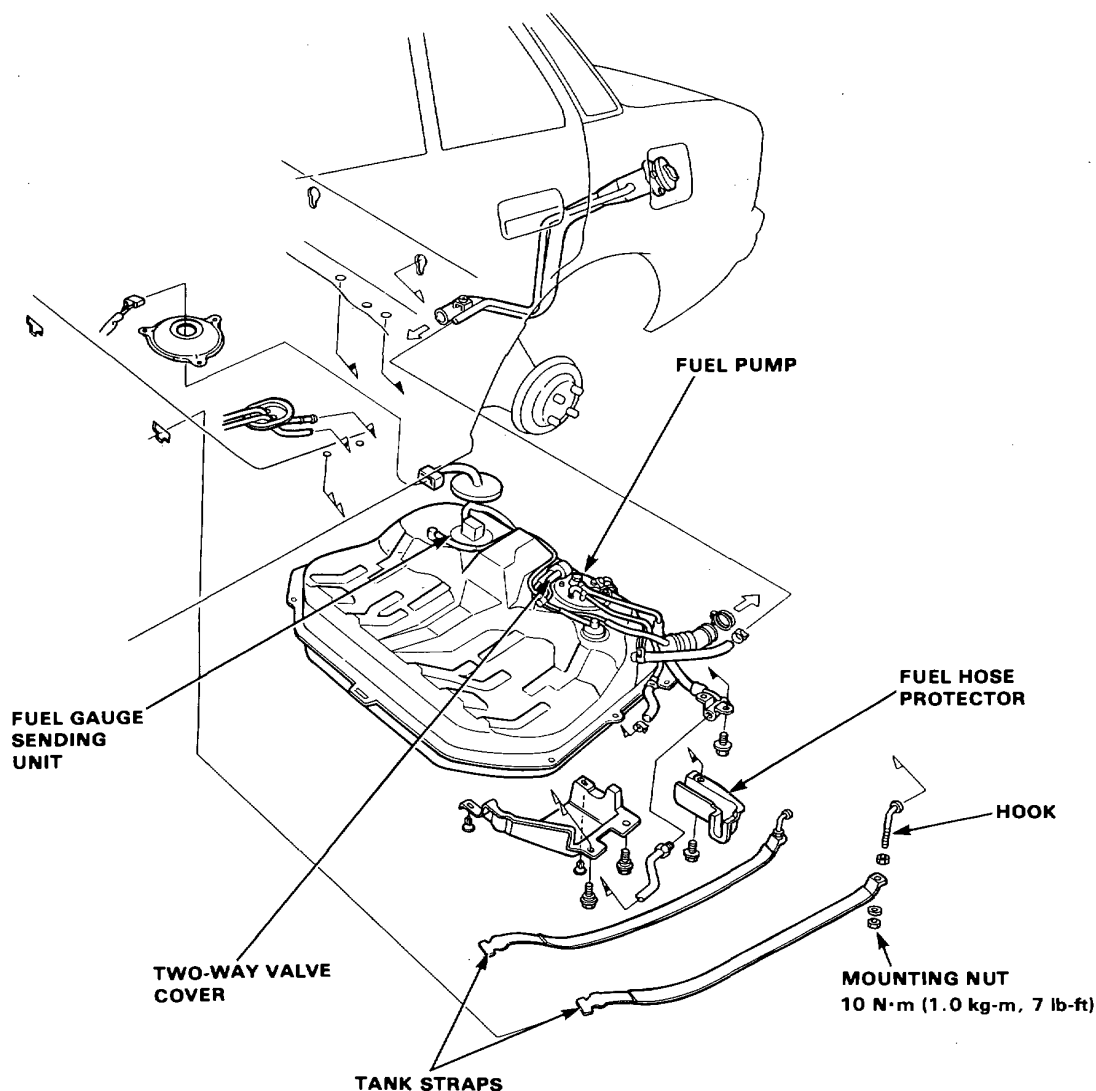
● When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.

● Clean the flared joint of high pressure hoses thoroughly before reconnecting them.

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

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

8. Install parts in the reverse order of removal.



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	TANDEM CONTROL SYSTEM (1.5 l)	THROTTLE CONTROL SYSTEM
SYMPTOM		155	157,160	162	169
DIFFICULT TO START ENGINE WHEN COLD				①	
WHEN COLD FAST IDLE OUT OF SPEC		③	②		①
WHEN WARM RPM TOO HIGH		③	②		①
WHEN WARM RPM TOO LOW			①		
FREQUENT STALLING WHILE WARMING UP		③	②	①	
LOSS OF POWER		③	②	①	

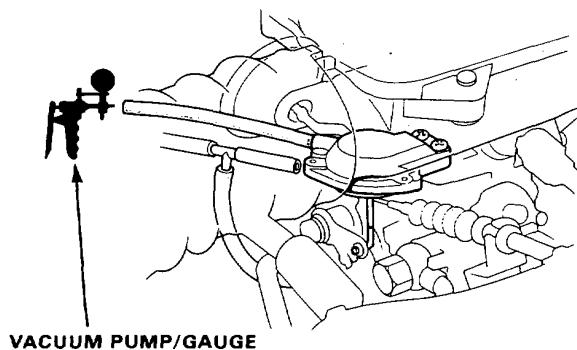


Throttle Cable

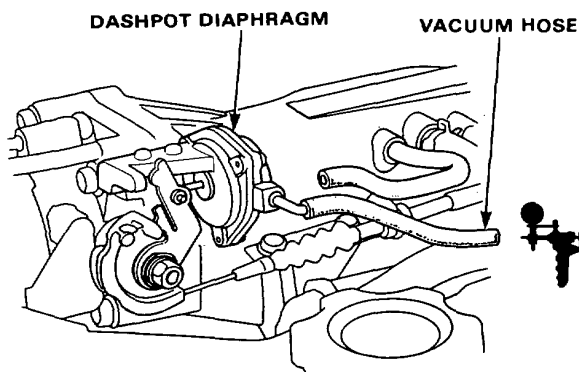
Inspection/Adjustment

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

(1.5 l)

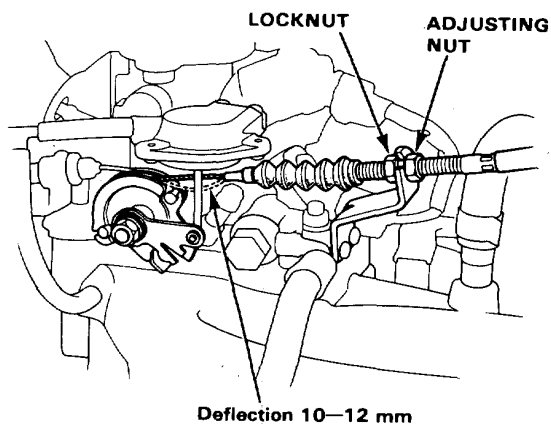


(1.6 l)

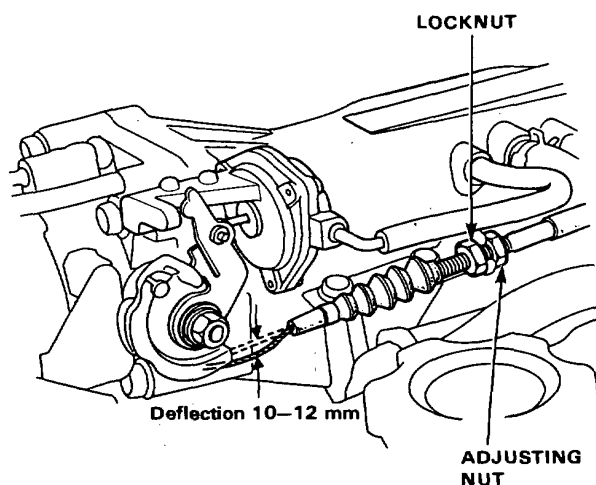


4. Check cable free play at the throttle linkage. Cable deflection should be 10–12 mm

(1.5 l)



(1.6 l)



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

(cont'd)

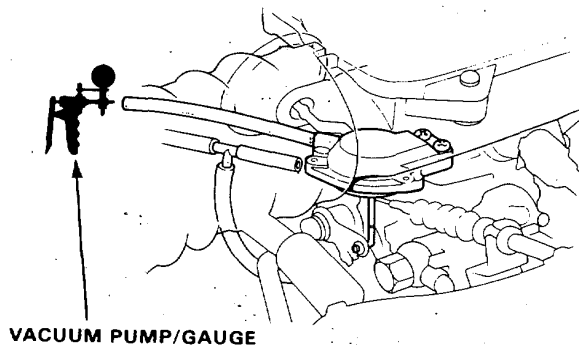
Air Intake System

Throttle Cable (cont'd)

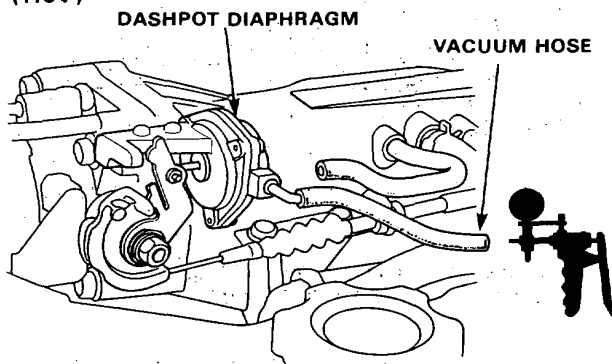
Installation

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

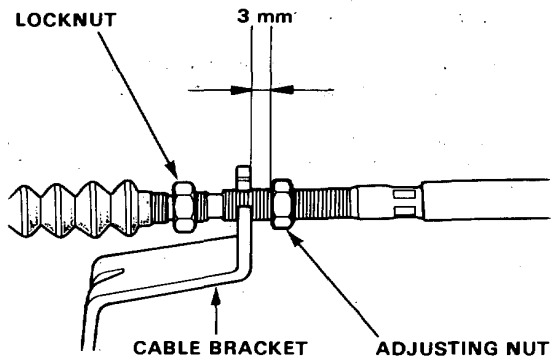
(1.5 l)



(1.6 l)



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



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

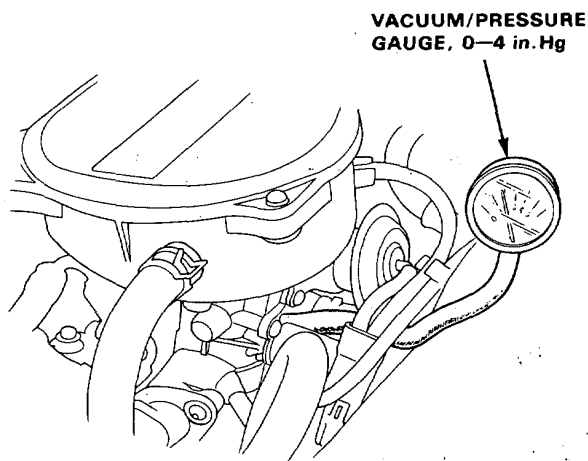


Throttle Body [1.5 l]

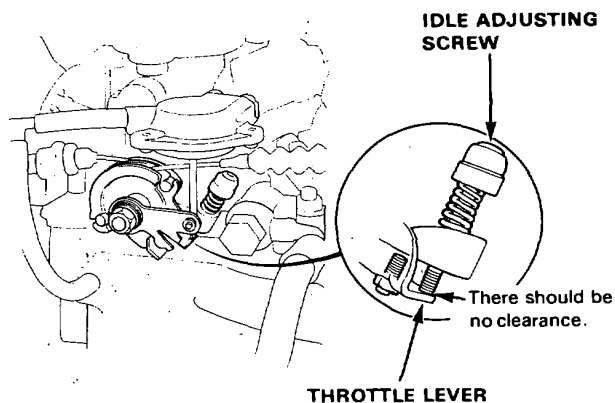
Inspection

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

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).
2. Disconnect the vacuum hose (to the canister) from the throttle body and connect a vacuum gauge to the throttle body.



3. Allow the engine to idle and check that the gauge indicates little or no vacuum.
 - If there is measurable vacuum, check the throttle control system (page 6-169).
4. Check that vacuum increases when the throttle is opened slightly from idle.
 - If there is no increase in vacuum, check the throttle body port. If the throttle body port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly without binding or sticking.
 - If there are any abnormalities in the above steps, check for:
 - Excessive wear or play in the throttle valve shaft.
 - Sticky or binding throttle lever at full close position.
 - Clearance between idle adjusting screw and throttle lever at full close position.



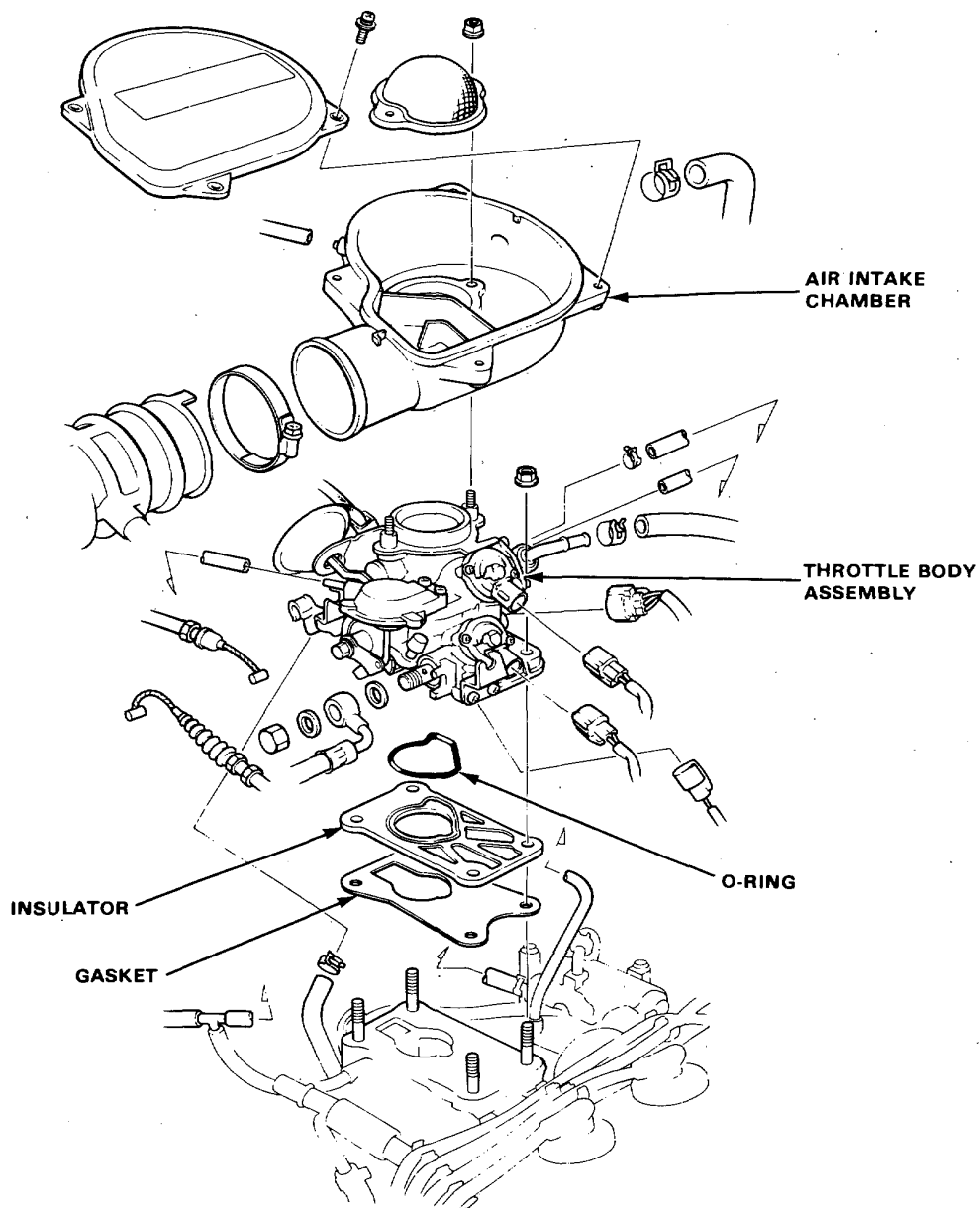
Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.

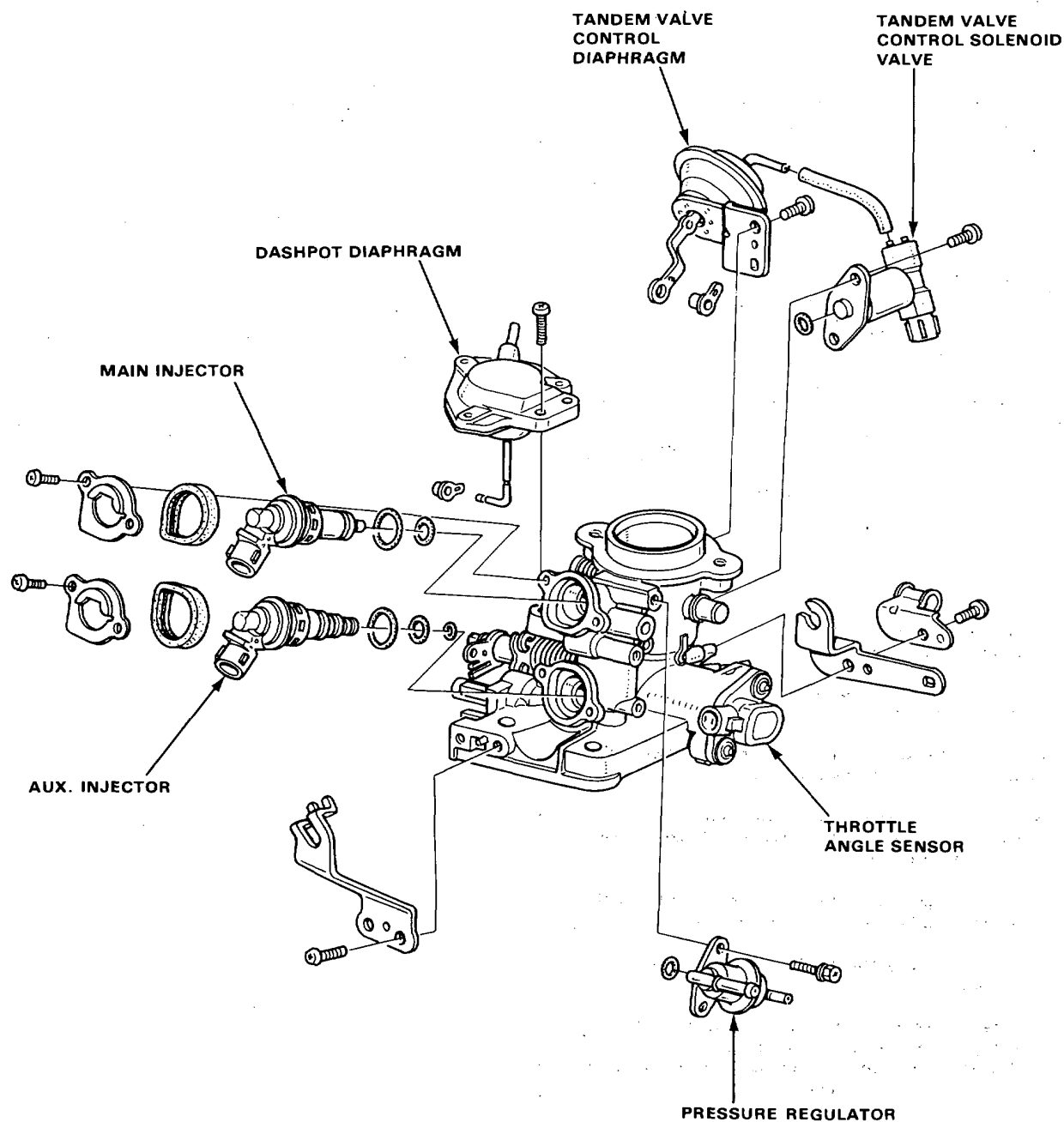
(cont'd)

Air Intake System

Throttle Body [1.5 l] (cont'd)

Disassembly





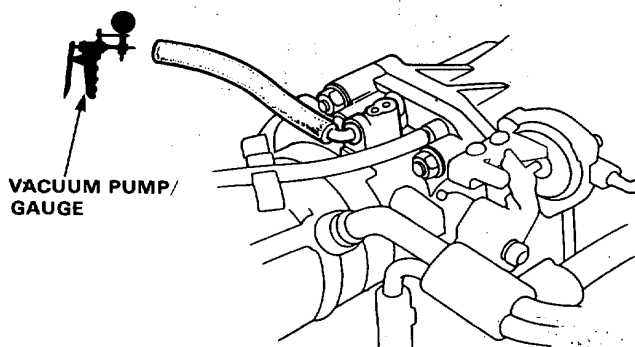
Air Intake System

Throttle Body [1.6 l]

Inspection

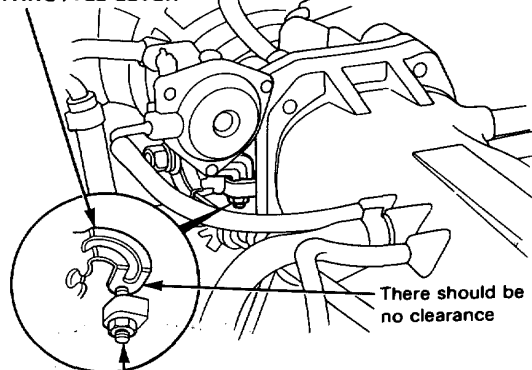
CAUTION: Do not adjust the throttle stop screw since it can not be reset except at the factory.

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



3. Allow the engine to idle and check that the gauge indicates no vacuum.
 - If there is vacuum, check the throttle control system (page 6-169).
4. Check that vacuum is indicated on the gauge when the throttle is opened slightly from idle.
 - If the gauge indicates no vacuum, check the canister port. If the canister port is clogged, clean it with carburetor cleaner.
5. Stop the engine and check that the throttle cable operates smoothly without binding or sticking.
 - If there are any abnormalities in the above steps, check for:
 - Excessive wear or play in the throttle valve shaft.
 - Sticky or binding throttle lever at full close position.
 - Clearance between throttle stop screw and throttle lever at full close position.

THROTTLE LEVER



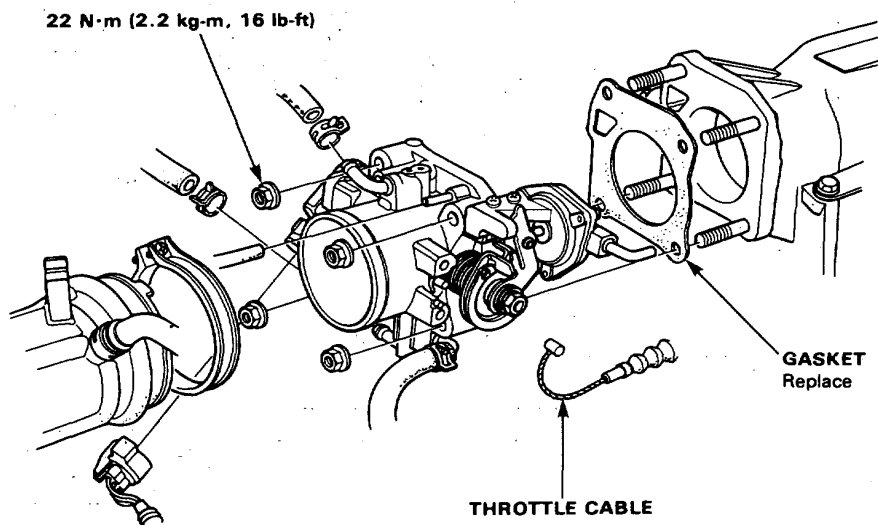
THROTTLE STOP SCREW (Non-adjustable)

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



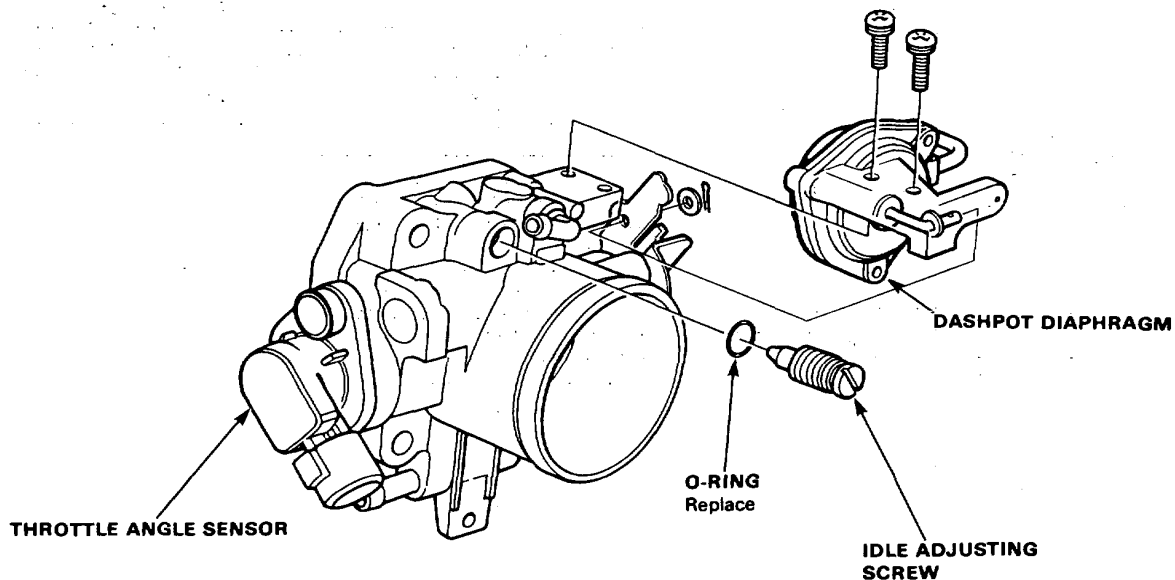
— Throttle Body [1.6 l] —

Disassembly



CAUTION:

- The throttle stop screw is non-adjustable.
- After reassembly, adjust the throttle cable (page 6-155).



Air Intake System

Tandem Control System [1.5 l]

Troubleshooting Flowchart

Inspection of Tandem Control System

Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum gauge to the hose.

Start engine and allow to idle.
NOTE: Coolant temperature must be below 70°C (160°F).

Is there vacuum?

YES

Disconnect the 2P connector from the tandem valve control solenoid valve.

Is there vacuum?

YES

Replace the solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "B" connector from ECU.

Check for continuity to ground on the ORN wire.

Is there continuity to ground?

YES

Repair short to ground at ORN wire between ECU (B2) and the 2P connector.

NO

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

Raise engine speed to,
• Manual: 3,000 min⁻¹ (rpm)
• Automatic: 2,000 min⁻¹ (rpm)

Is there vacuum?

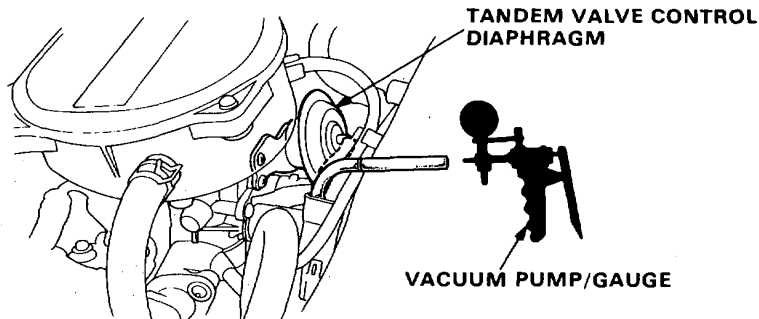
NO

Disconnect the 2P connector from the tandem valve control solenoid valve.

YES

(To page 6-163)

(To page 6-163)

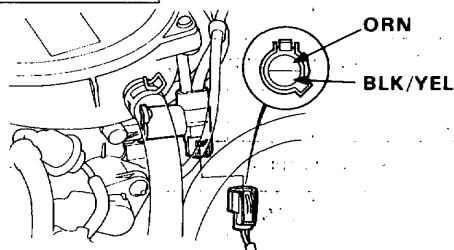




(From page 6-162)

(From page 6-162)

Measure voltage between BLK/YEL (+) terminal and ORN (-) terminal at 3,000 min⁻¹ (rpm)



Is there battery voltage ? YES

Remove the solenoid valve from the throttle body and check the port for blockage. If the port is OK, replace the solenoid valve.

NO

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

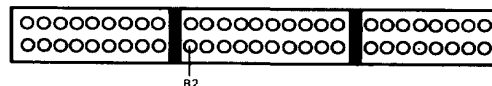
Is there battery voltage ? NO

Repair open in BLK/YEL wire between the 2P connector and No. 14 fuse.

YES

Turn the ignition switch OFF.

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



Check for continuity of ORN wire between ECU (B2) and the 2P connector.

Does continuity exist ? NO

Repair open in ORN wire between ECU (B2) and the 2P connector.

YES

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

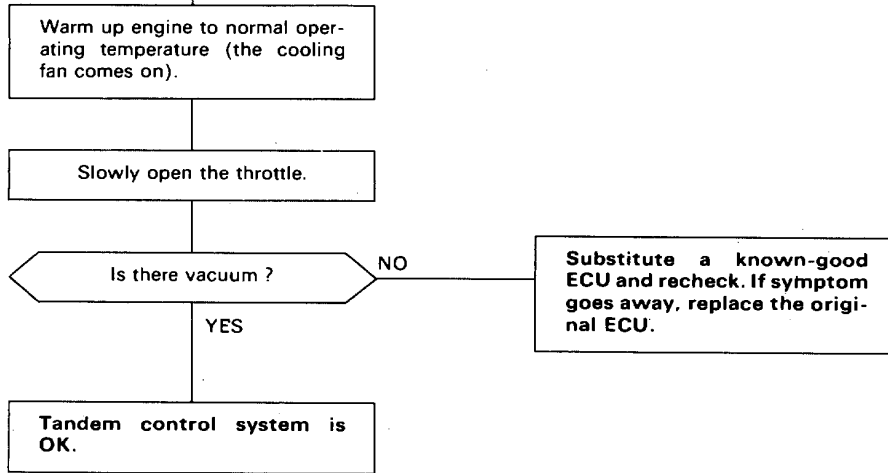
(To page 6-164)

(cont'd)

Air Intake System

Tanden Control System [1.5 l] (cont'd)

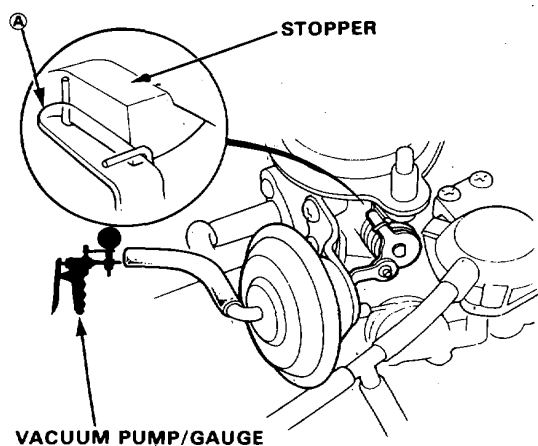
(From page 6-163)





Tandem Valve Control Diaphragm Testing

1. Check the tandem valve shaft for binding or sticking.
2. Check the bypass valve for smooth movement.
 - If any fault is found, clean the linkage and shafts with carburetor cleaner.
3. Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum pump to the diaphragm.
4. Apply vacuum and check that Ⓐ of the tandem valve is in close contact with the stopper when the tandem valve is fully open.



- If any fault is found, replace the tandem valve control diaphragm.

Air Intake System

Intake Control System

Throubleshooting Flow Chart

Inspect of Intake Control System.

Start engine and allow to idle.

Remove the vacuum hose from the intake control diaphragm and connect a vacuum gauge to the hose.

Is there vacuum?

YES

(To page 6-167)

NO

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

Is there vacuum?

YES

Disconnect the connector from the resonator control solenoid valve.

Measure voltage between GRN PNK (+) terminal and RED (-) terminal.

Is there battery voltage?

NO

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

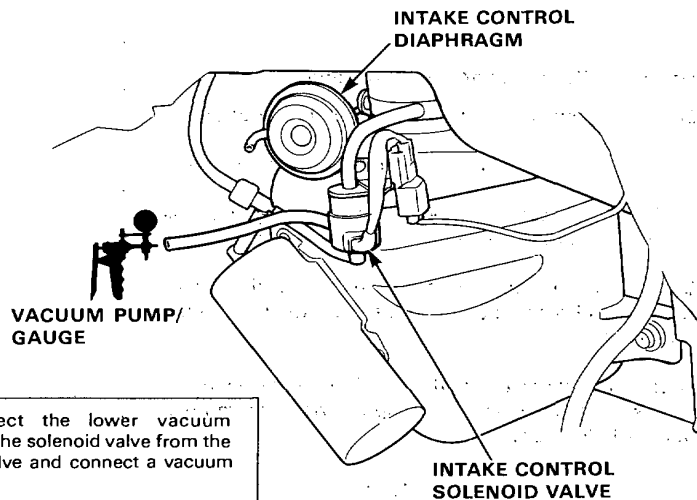
(To page 6-167)

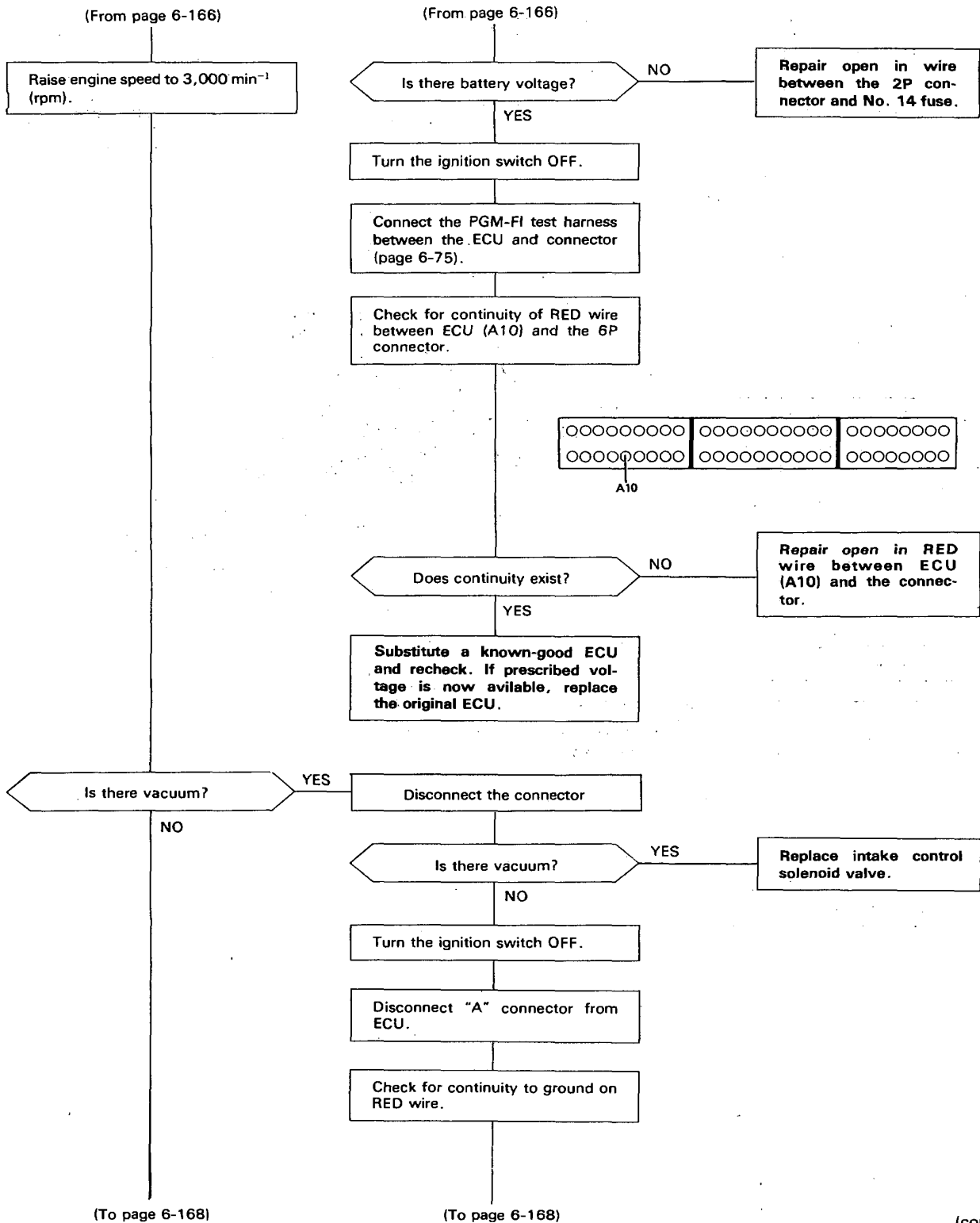
NO

Check the vacuum line for proper connection, cracks, blockage or disconnected hose.

YES

Replace the intake control solenoid valve.

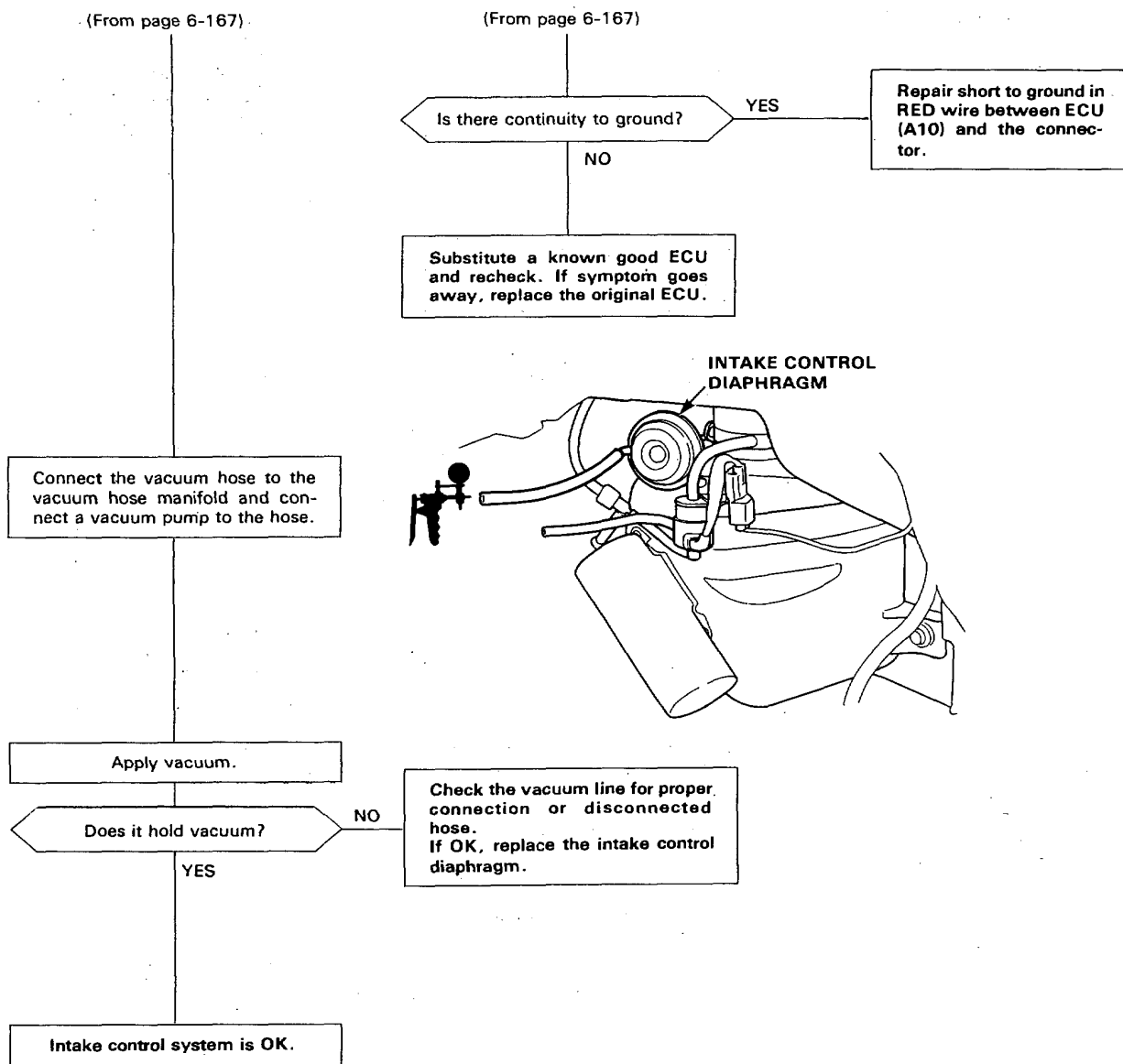




(cont'd)

Air Intake System

Intake Control System (cont'd)





Throttle Control System

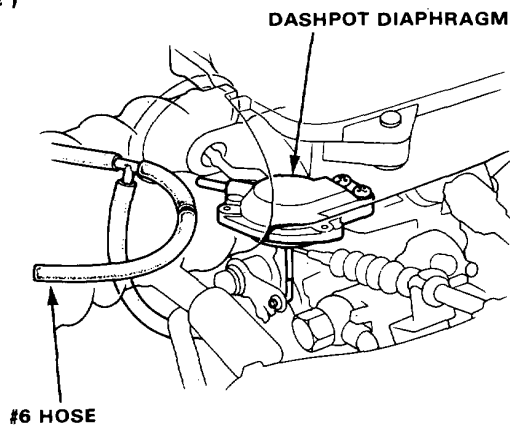
Testing

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

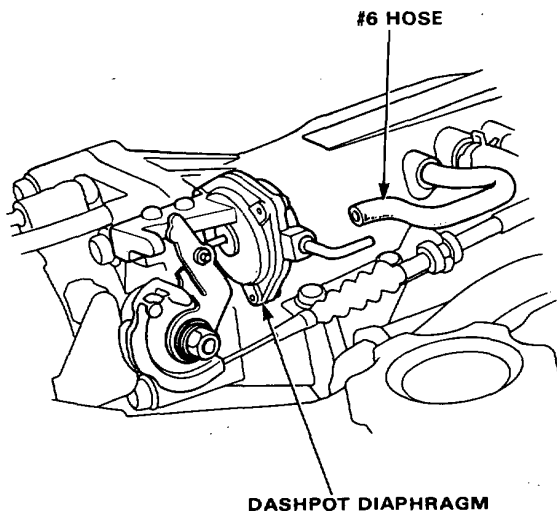
Engine speed should be:

Manual	$2,500 \pm 500 \text{ min}^{-1} (\text{rpm})$
Automatic	$2,500 \pm 500 \text{ min}^{-1} (\text{rpm})$

(1.5 l)

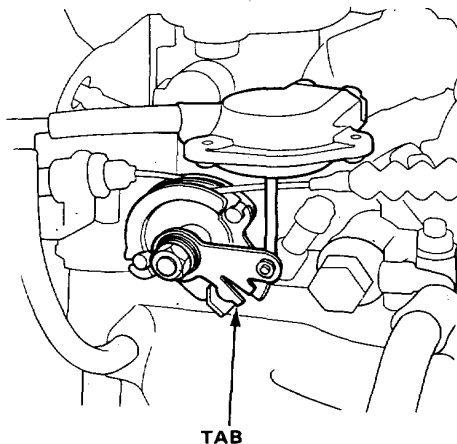


(1.6 l)

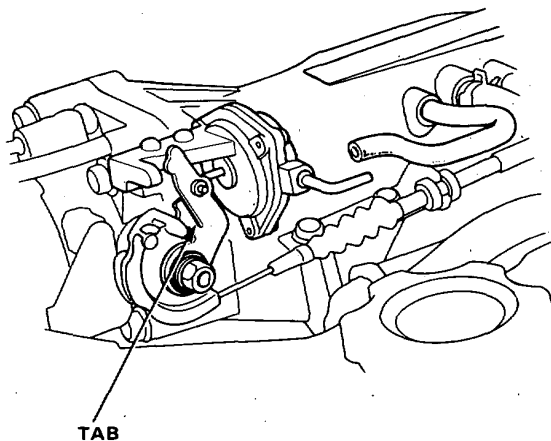


- If the engine speed is excessively high, adjust the engine speed by bending TAB.

(1.5 l)



(1.6 l)



(cont'd)

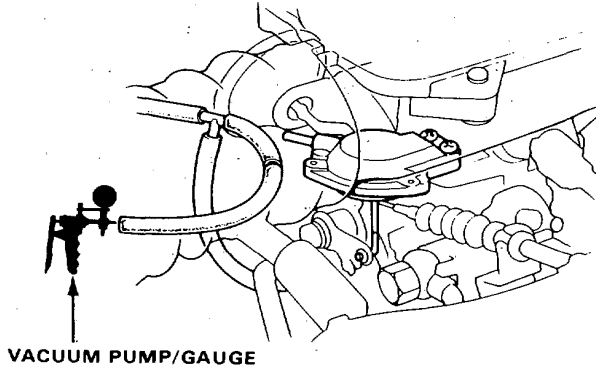
Air Intake System

Tandem Control System (cont'd)

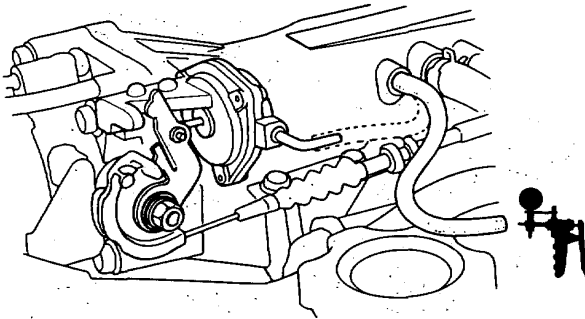
- If the engine speed does not change, connect a vacuum pump to the #6 vacuum hose and check vacuum.

There should be vacuum.

(1.5 l)



(1.6 l)



- If there is no vacuum, check the #6 vacuum hose for proper connection, cracks, blockage or disconnected hose and replace the 3-way joint (1.5 l).
 - If there is vacuum, replace the dashpot diaphragm and retest.
3. Reconnect the #6 vacuum hose and check the idle speed.

Idle speed should be within specification (page 6-133 or 134).

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		172	173	174, 177
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.

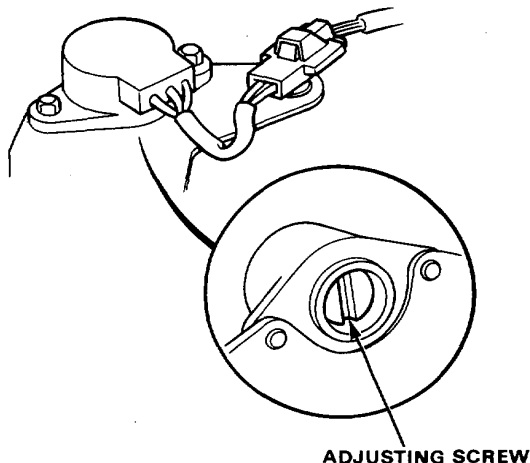
1. Start the engine and warm up to normal operating temperature (cooling fan comes on).
2. Connect tachometer.
3. Check idle speed and adjust the idle speed, if necessary (page 6-133, 134).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%:

With CATA: 0.1% maximum

Without CATA: 0.5 + 0.5%
- 0.3%

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

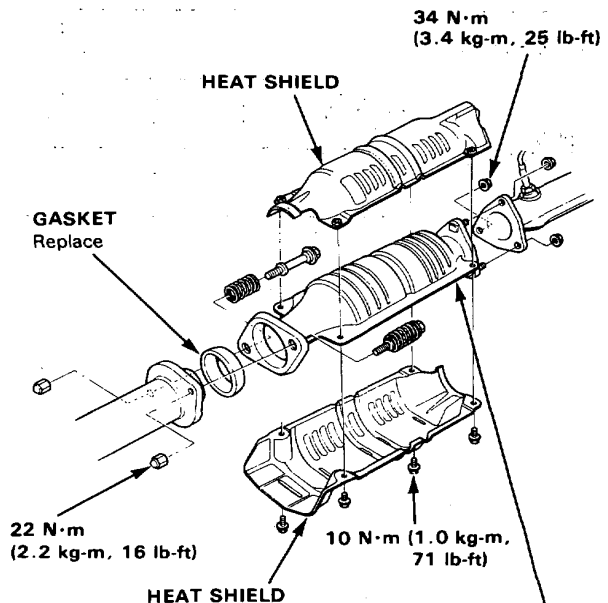


- If unable to obtain a CO reading of specified % by this procedure, check the engine tune-up condition.

Catalytic Converter

Inspection

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



CATALYTIC CONVERTER

Removal Installation, section 5
Inspect housing for cracks or other damage.
Inspect element for clogging by looking through the inside.

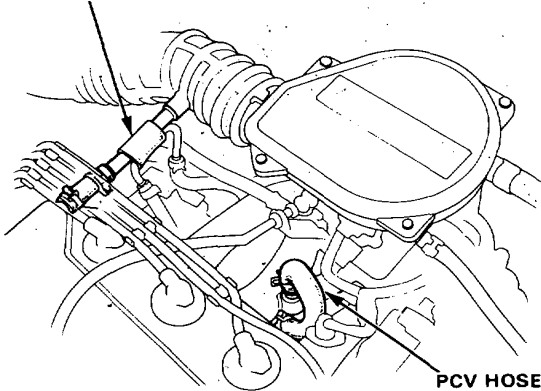


Positive Crankcase Ventilation System

Inspection (1.5 l)

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

BREATHER HOSE



2. At idle, make sure there is a clicking sound from the PCV valve when you lightly pinch the PCV hose with your fingers or pliers.

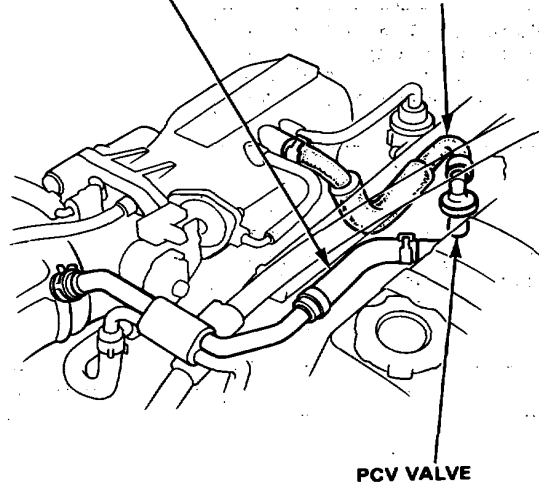
- If no clicking sound is heard, replace PCV valve and recheck.

Inspection (1.6 l)

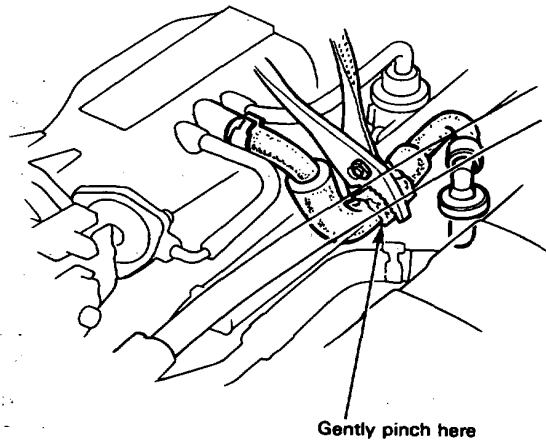
1. Check the crankcase ventilation hoses and connections for leaks and clogging.

BREATHER HOSE

PCV HOSE



2. At idle, 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.



- 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.

Emission Control System

Evaporative Emission Controls [1.5 l]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

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

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

PURGE CONTROL
DIAPHRAGM VALVE

VACUUM PUMP/GAUGE

Is there vacuum ?

YES

Disconnect the 2P connector.

NO

GRN/PNK (+)

GRN(-)

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

Is there battery voltage ?

YES

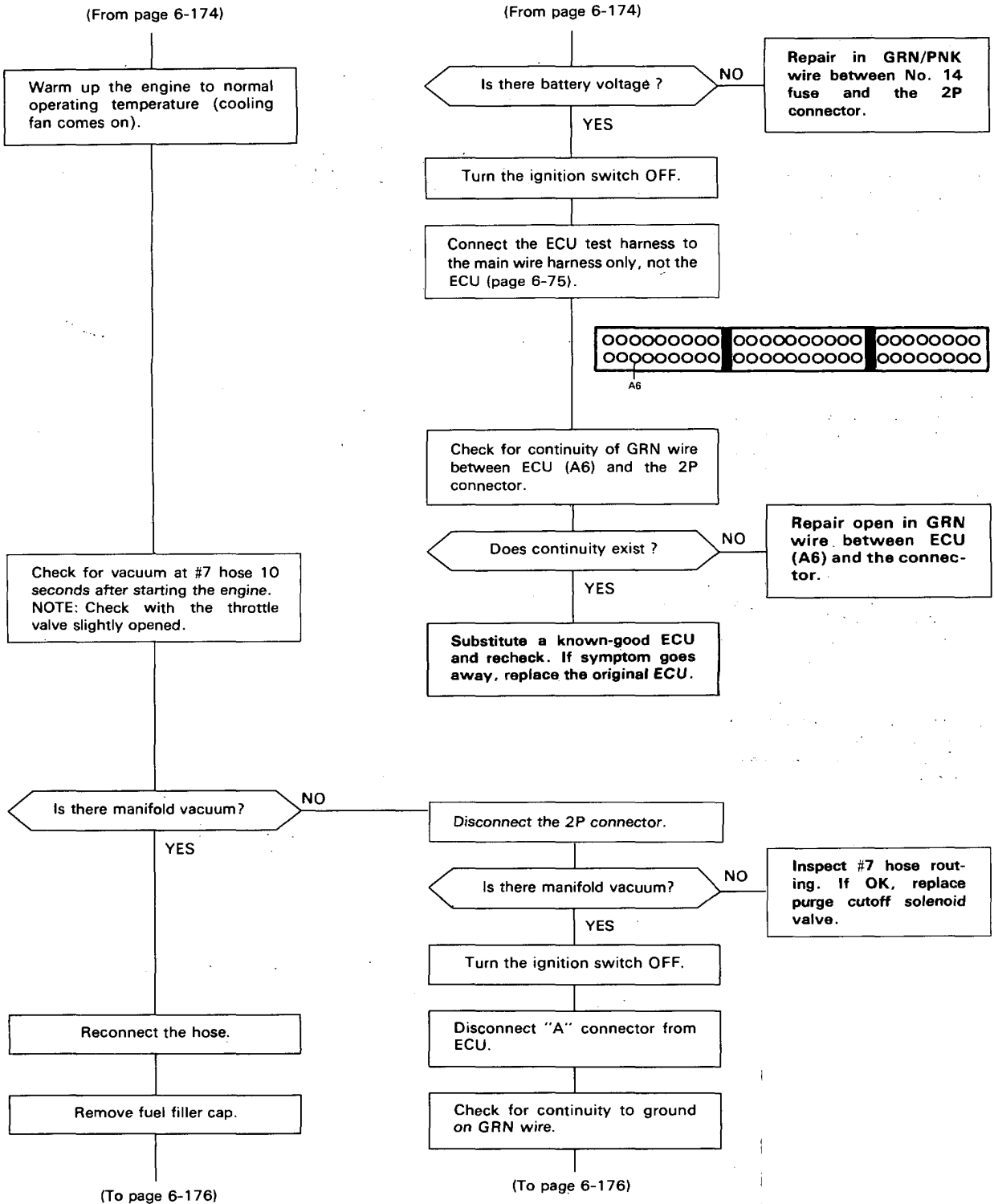
Inspect #7 hose routing. If OK, replace
purge cut-off solenoid
valve.

NO

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

(To page 6-175)

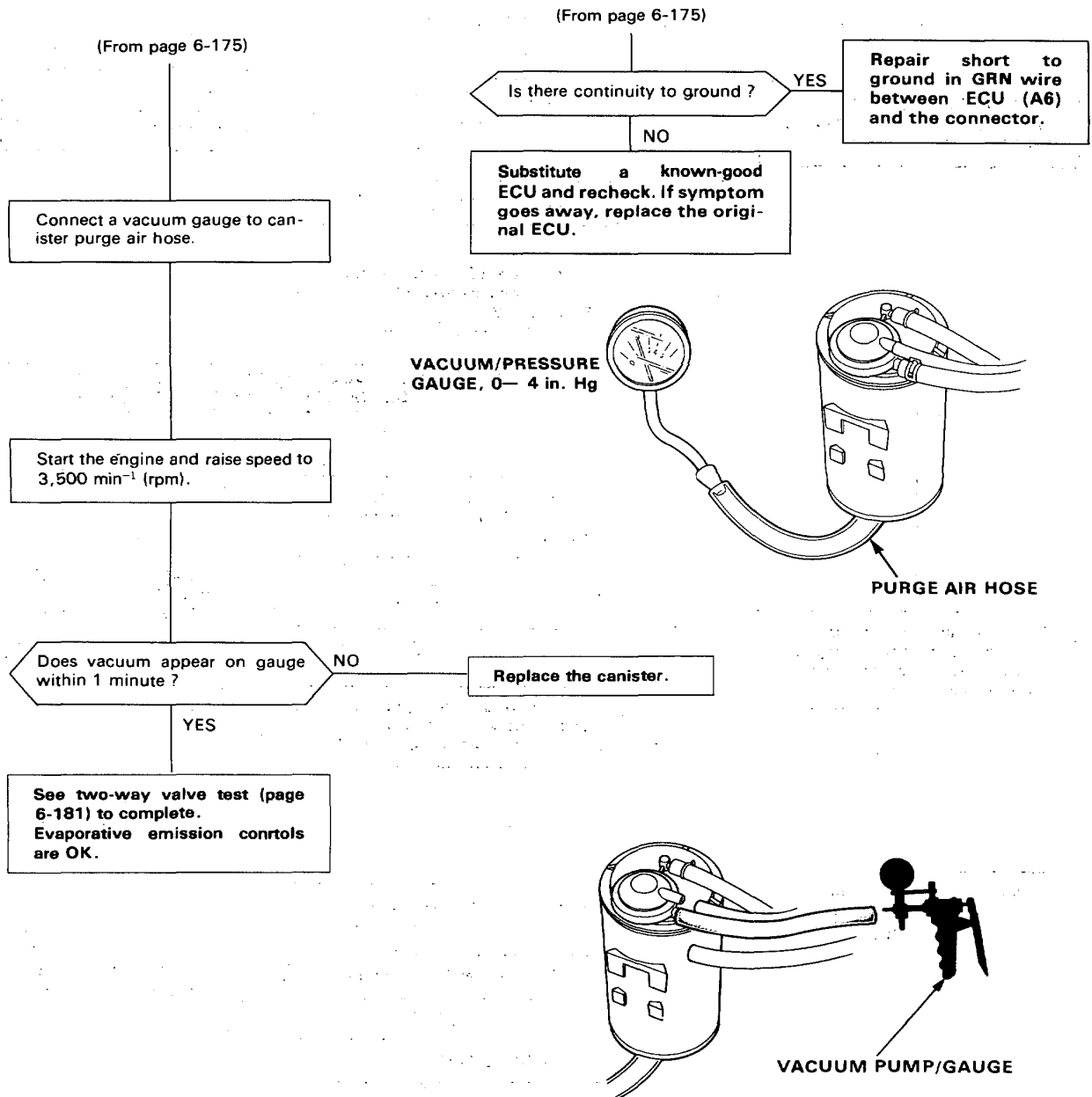
(To page 6-175)



(cont'd)

Emission Control System

Evaporative Emission Control [1.5 l] (cont'd)





Evaporative Emission Control [1.6 l]

Troubleshooting Flowchart

Inspection of Evaporative Emission Controls

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

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

PURGE CONTROL
DIAPHRAGM VALVE

VACUUM PUMP/GAUGE

Is there vacuum ?

YES

Disconnect the 2P 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 6-178)

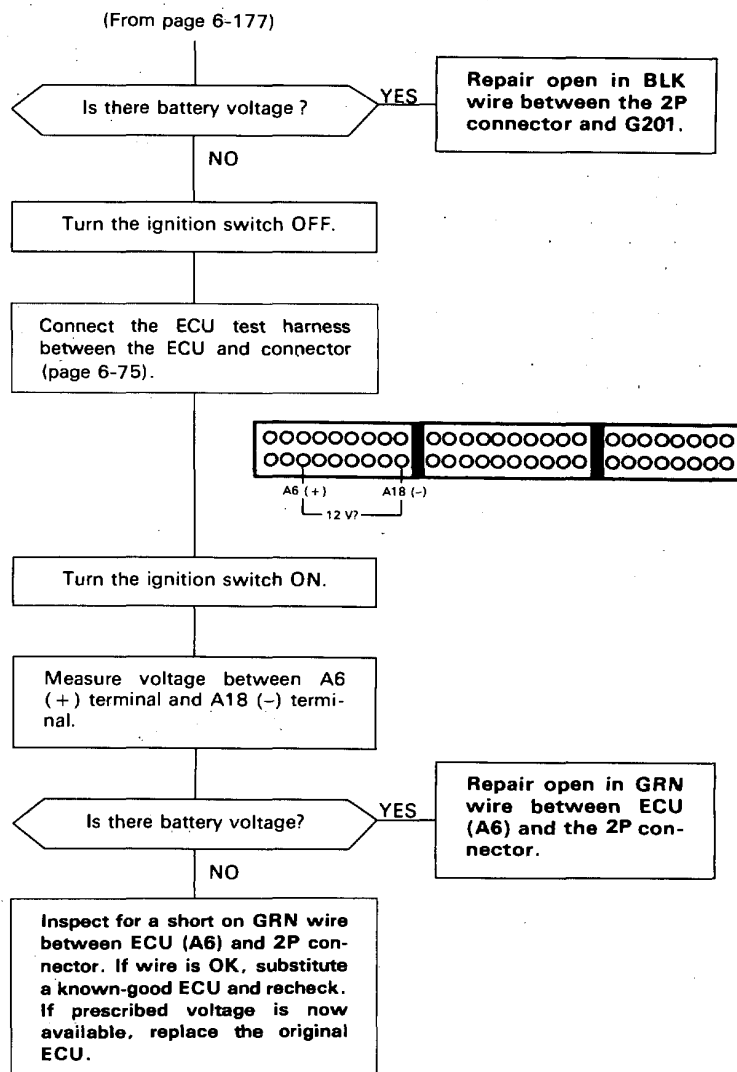
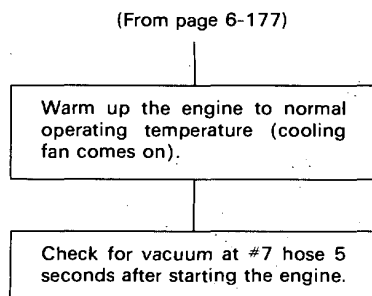
(To page 6-178)

(cont'd)

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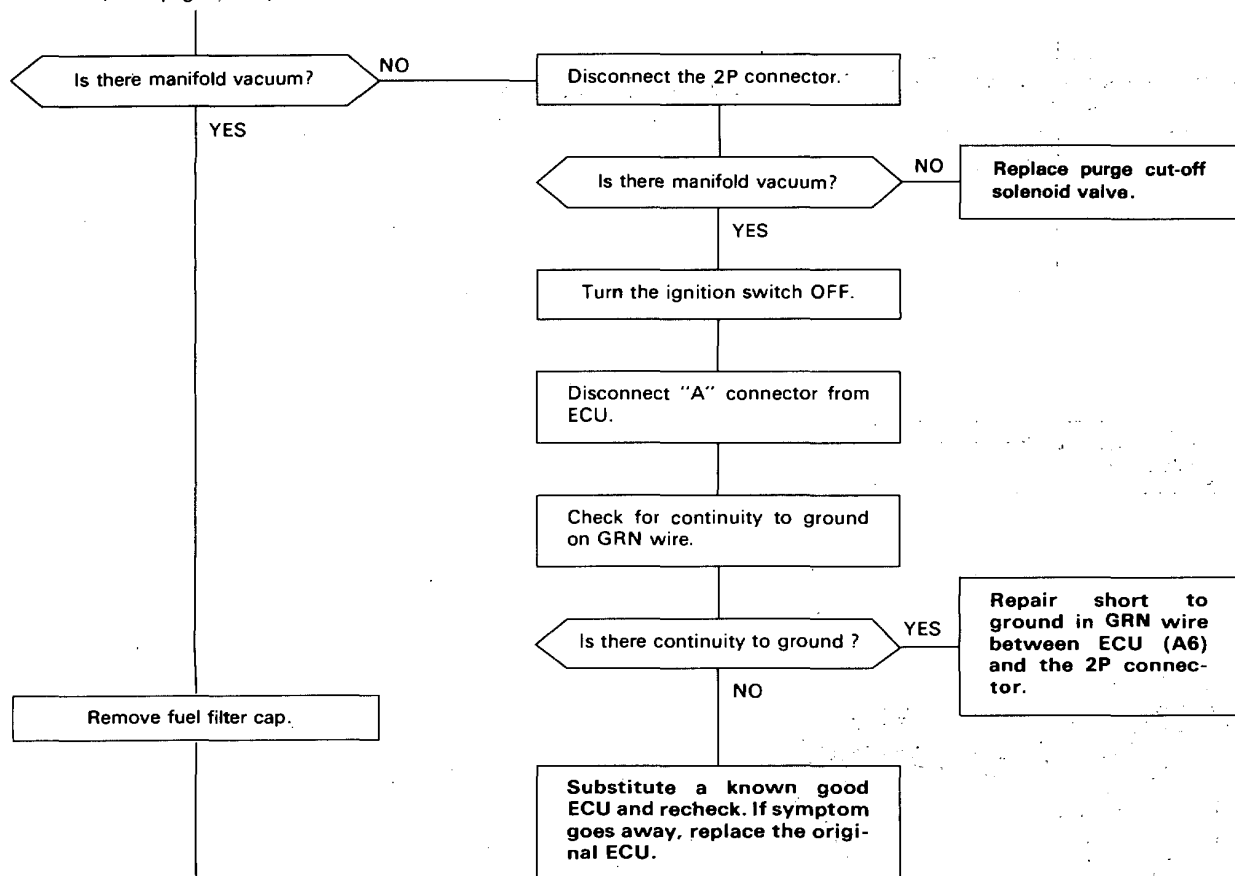
Emission Control System

Evaporative Emission Controls [1.6 l] (cont'd)





(From page 6-178)



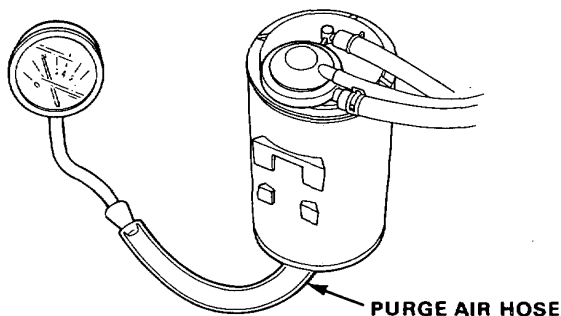
Remove fuel filter cap.

Connect a vacuum gauge to canister purge air hose.

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

(To page 6-180)

VACUUM/PRESSURE
GAUGE, 0—4 in. Hg

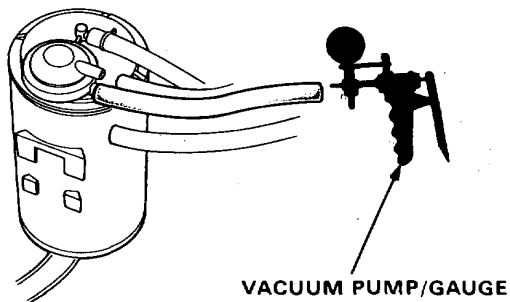
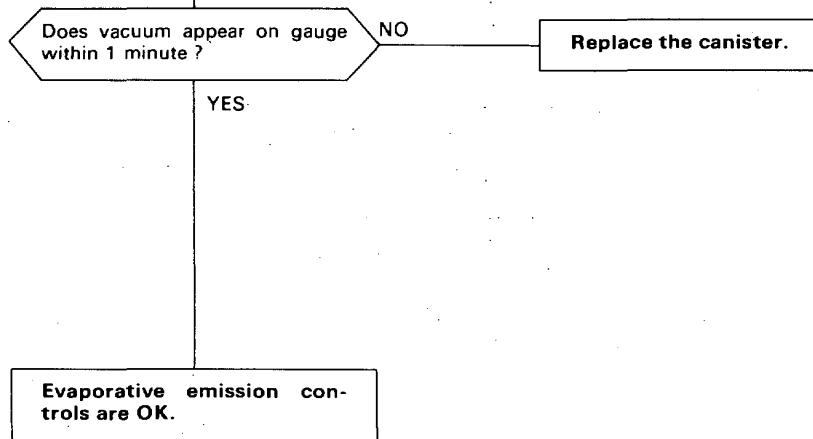


(cont'd)

Emission Control System

Evaporative Emission Control [1.6 l] (cont'd)

(From page 6-179)



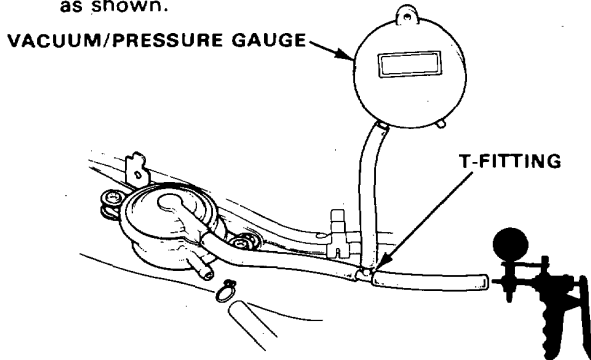
Emission Control System



Evaporative Emission Controls [With CATA]

Two-Way Valve Test

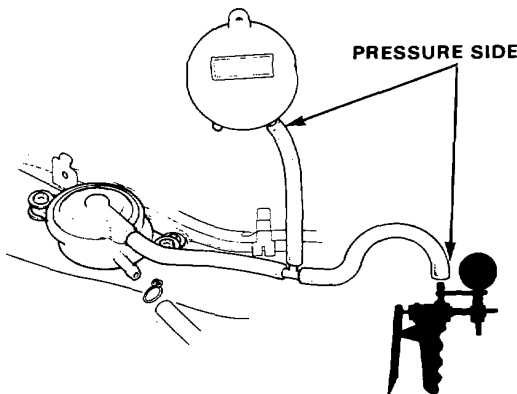
1. Remove the fuel filler cap.
2. Remove vapor line from the fuel tank and connect to T-fitting from vacuum gauge and vacuum pump as shown.



3. Slowly apply vacuum while watching the gauge.

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

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



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

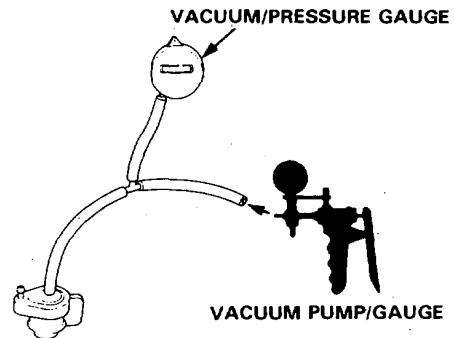
Pressure should stabilize at 10 to 35 mmHg (0.4 to 1.4 in. Hg).

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

Two-Way Valve [Without CATA]

Test

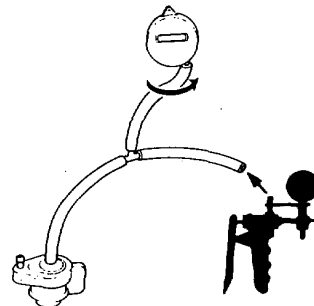
1. Remove the fuel filler cap.
2. Remove the vapor line from the canister or frame, and connect to a T-fitting from the vacuum gauge and the vacuum pump as shown.



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

- If vacuum stabilizes momentarily (Two-way Valve opens) between 15 and 30 mmHg (0.6 and 1.2 in. Hg), go on Step 4.
- If vacuum stabilizes (valve opens) below 15 mmHg or above 30 mmHg (1.2 in. Hg), install new valve and retest.

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



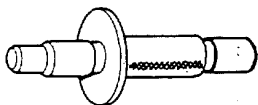
5. Slowly pressurize the vapor line while watching the gauge. Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in. Hg).

- If pressure momentarily stabilizes (Valve opens) at 10 to 25 mmHg (0.4 to 1.0 in. Hg), the valve is OK.
- If pressure stabilizes below 10 mmHg (0.4 in. Hg) or above 25 mmHg (1.0 in. Hg), install a new valve and re-test.

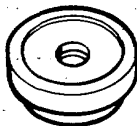
Special Tools

Special Tools

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



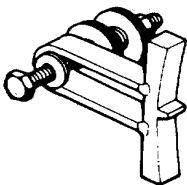
①



②



③

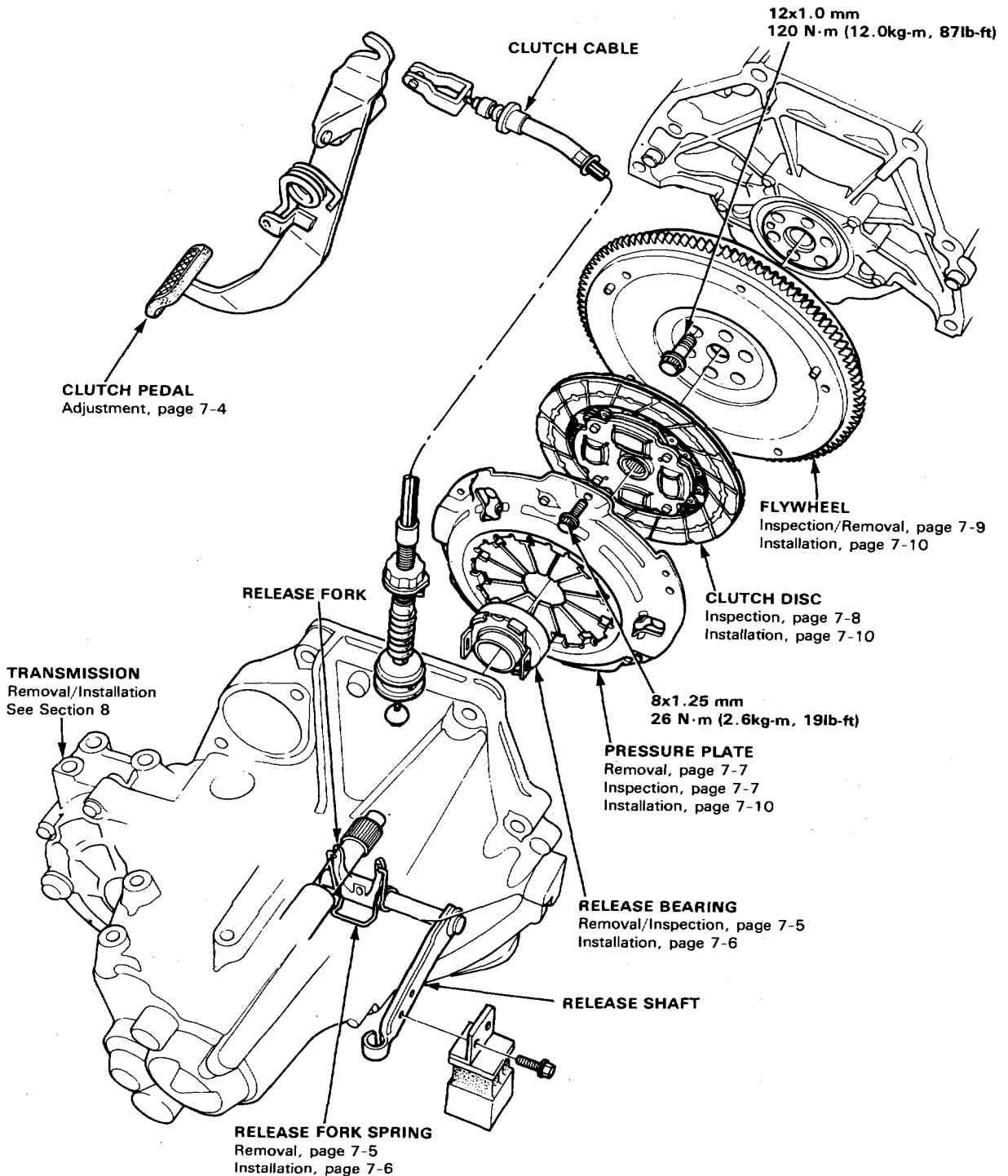


④

Illustrated Index



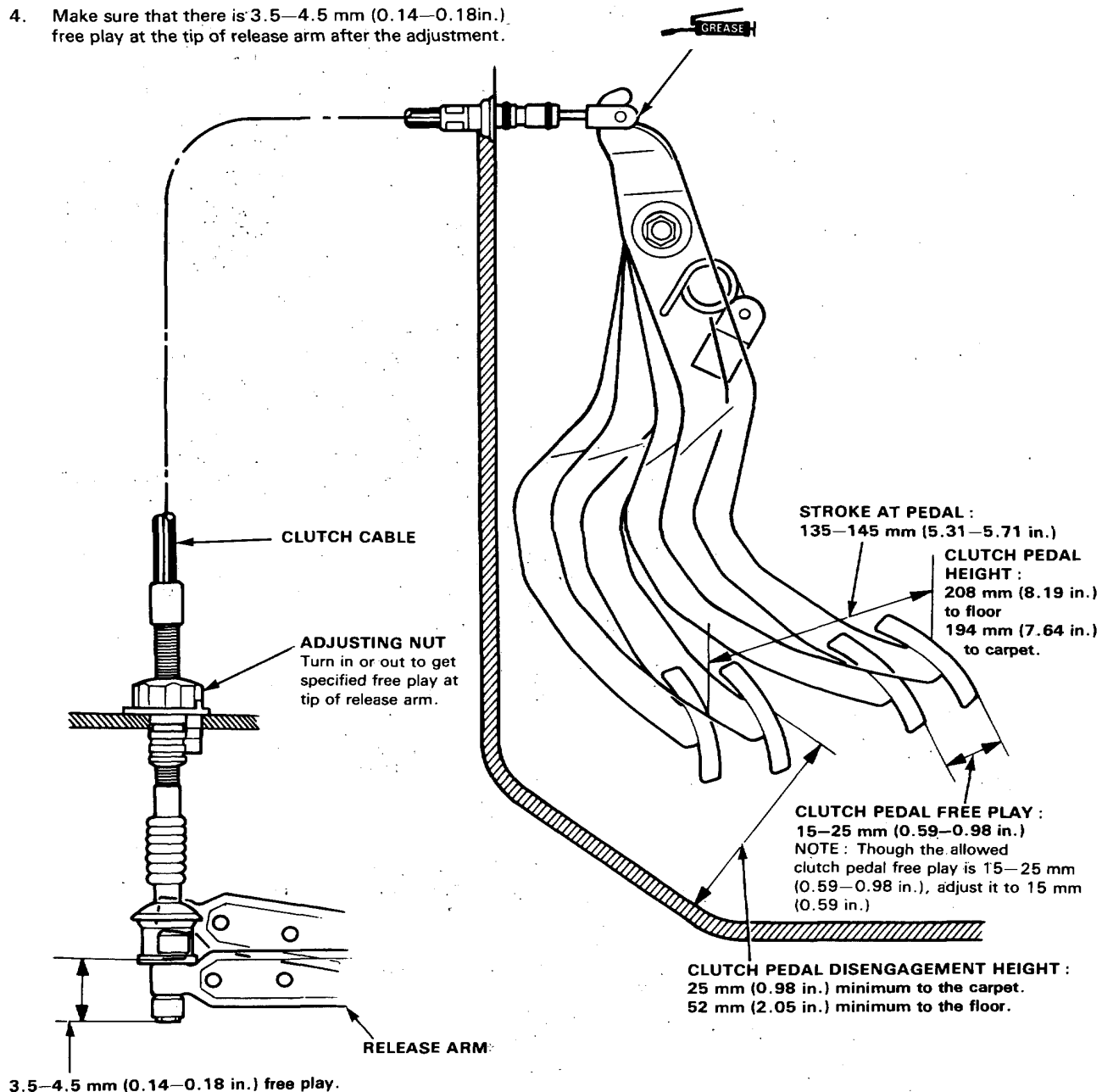
NOTE : Whenever the transmission is removed, the release bearing sliding surface should be cleaned and greased (Molybdenum Disulfide).



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Clutch Adjustment

1. Measure the clutch pedal disengagement height.
2. Measure the clutch pedal free play.
3. Adjust the clutch free play by turning the adjusting nut.
4. Make sure that there is 3.5—4.5 mm (0.14—0.18 in.) free play at the tip of release arm after the adjustment.

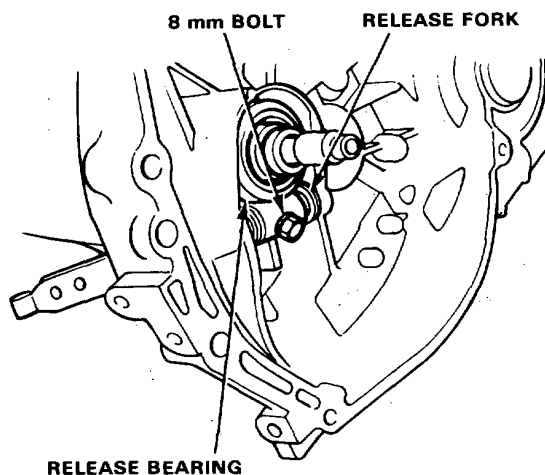




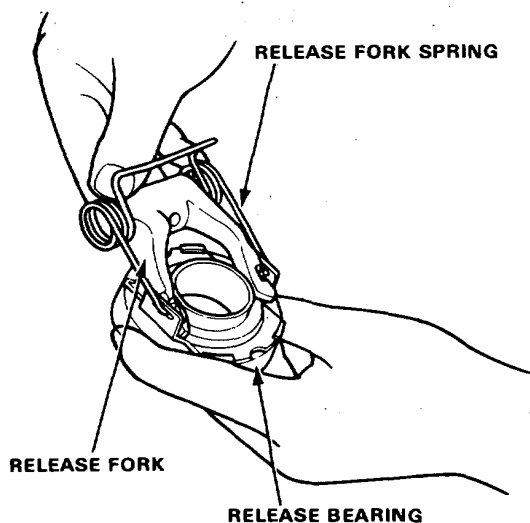
Release Bearing

Removal

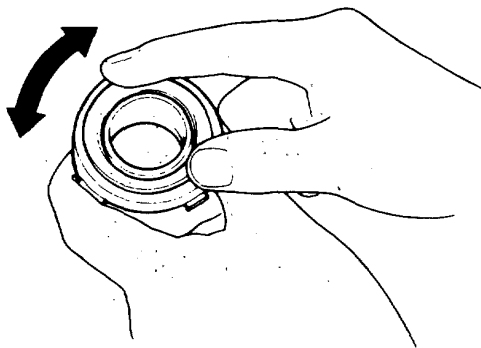
1. Remove the 8 mm special bolt.
2. Remove the release shaft and release bearing assembly.



3. Separate the release fork from the bearing by removing the release fork spring from the holes in the release bearing.



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



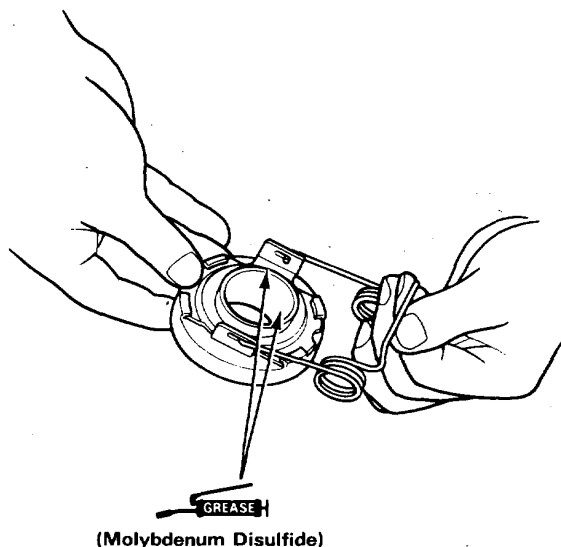
5. Replace the bearing with a new one if there is excessive play.

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

Release Bearing

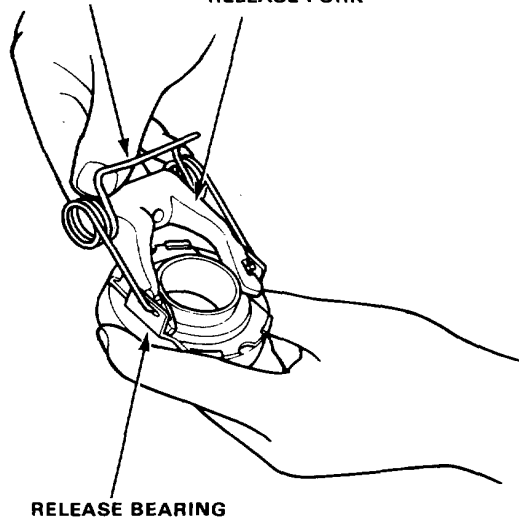
Installation

1. Install the release fork spring in the locating holes as shown.

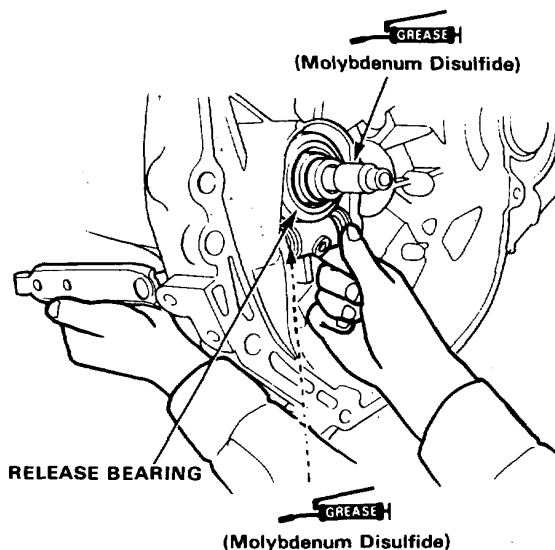


2. Align the release fork with the locating holes of the release bearing.

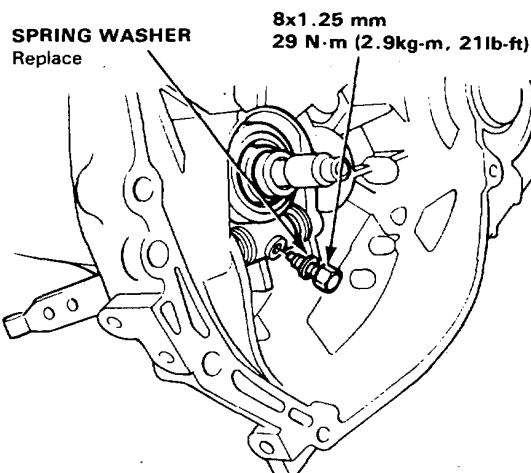
RELEASE FORK SPRING RELEASE FORK



3. Install the release shaft and the release bearing.
NOTE: Apply molybdenum disulfide grease to the release shaft.



4. Align the release shaft and release fork, then install a new spring washer and bolt.



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

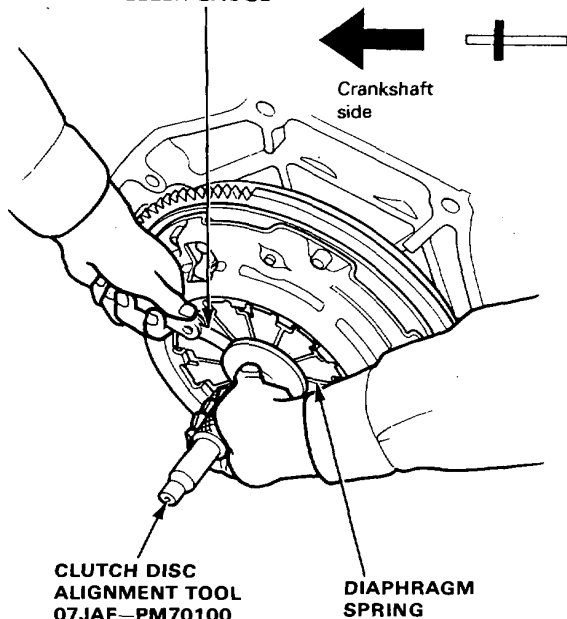
Pressure Plate

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



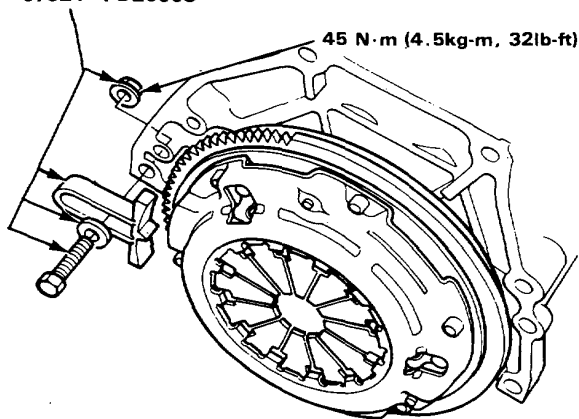
3. Install the Ring Gear Holder.

RING GEAR HOLDER

07924-PD20002

or

07924-PD20003



When installing the ring gear holder, do not install the adjuster shown to the right.

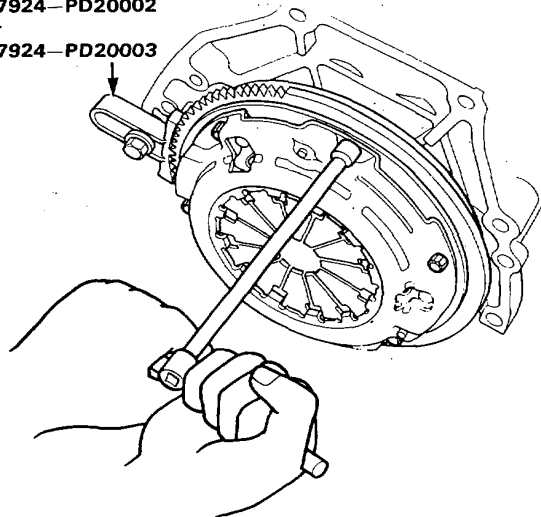
4. To prevent warping, loosen the pressure plate mounting bolts two turns at a time in a crisscross pattern using a 10 mm T-wrench, then remove the pressure plate and clutch disc.

RING GEAR HOLDER

07924-PD20002

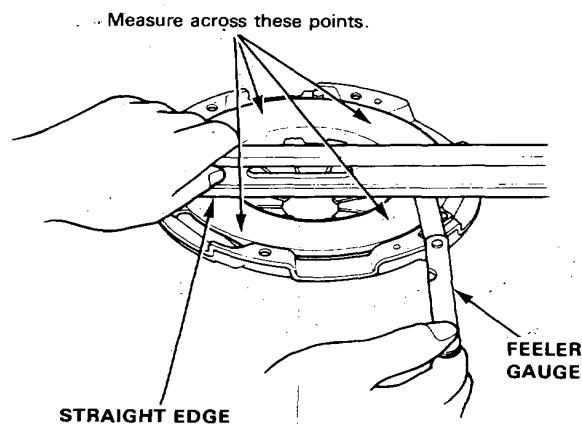
or

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

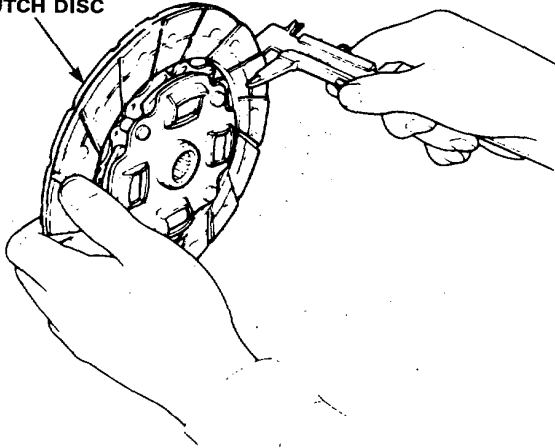
1. Inspect lining of the clutch disc for signs of slipping or oil. Replace it if it is burned black or oil soaked.
2. Measure the clutch disc thickness.

Clutch Disc Thickness :

Standard (New) : 8.4—8.9 mm (0.331—0.350 in.)

Service Limit : 5.9 mm (0.232 in.)

CLUTCH DISC

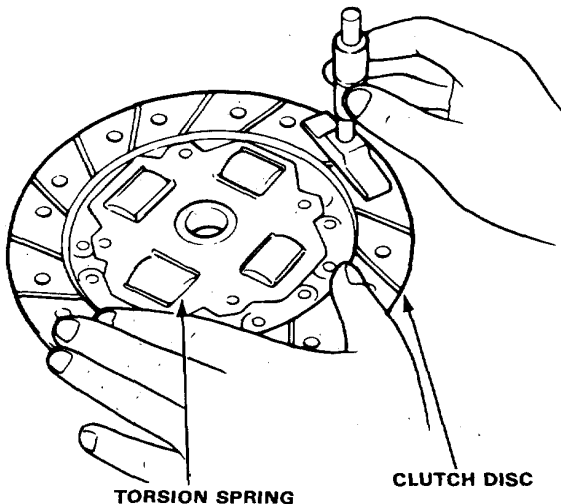


3. Check for loose torsion springs. Replace the clutch disc if any are loose.
4. Measure the depth from the lining surface to the rivets, on both sides.

Rivet Depth :

Standard (New) : 1.3 mm (0.051 in.) min.

Service Limit : 0.2 mm (0.008 in.)

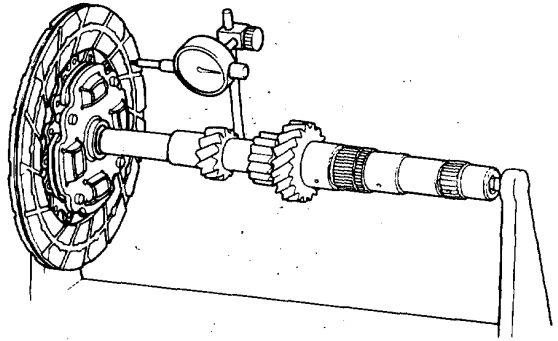


5. Measure the clutch plate runout with the mainshaft and a dial indicator.

Clutch plate runout :

Standard : 0.8 mm (0.031 in.) max.

Service Limit : 1.0 mm (0.039 in.)



Flywheel

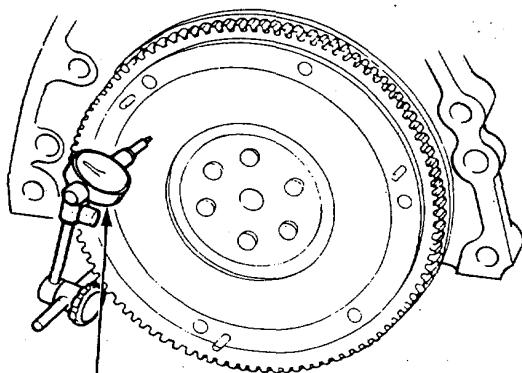
Inspection/Removal

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

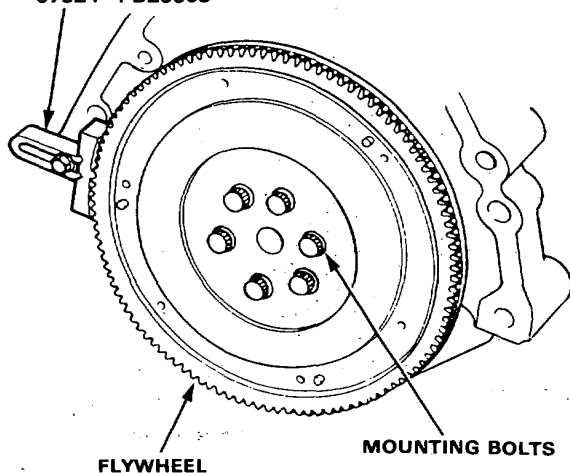
4. Remove the six flywheel mounting bolts and flywheel.

RING GEAR HOLDER

07924-PD20002

or

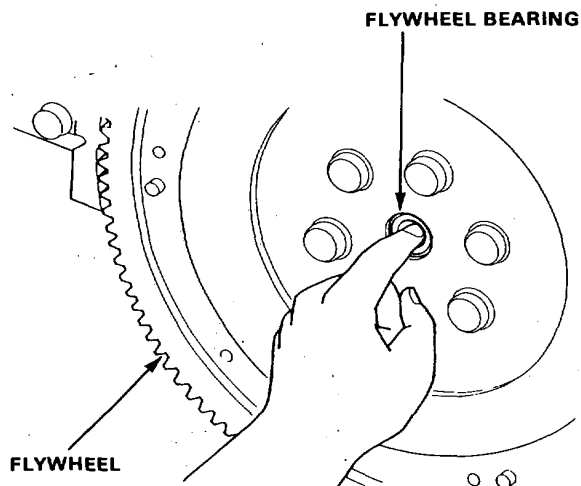
07924-PD20003



Flywheel Bearing

Inspection/Replacement

1. Turn the inner race of the bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the flywheel. Replace the bearing if the race does not turn smoothly, quietly, or fit tightly in the flywheel.

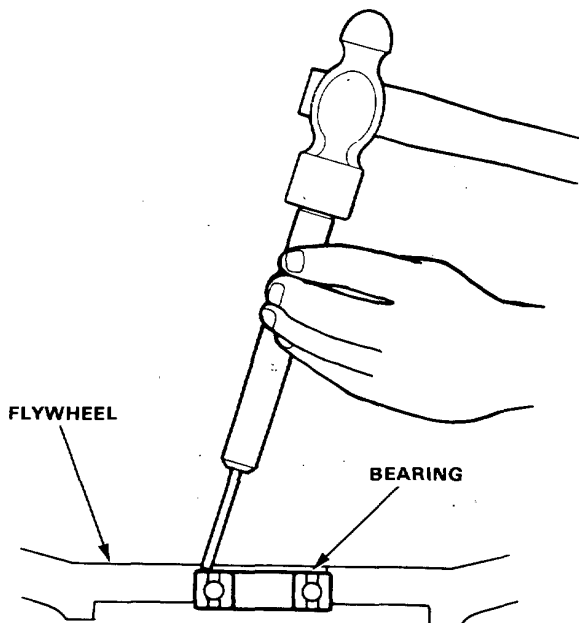


(cont'd)

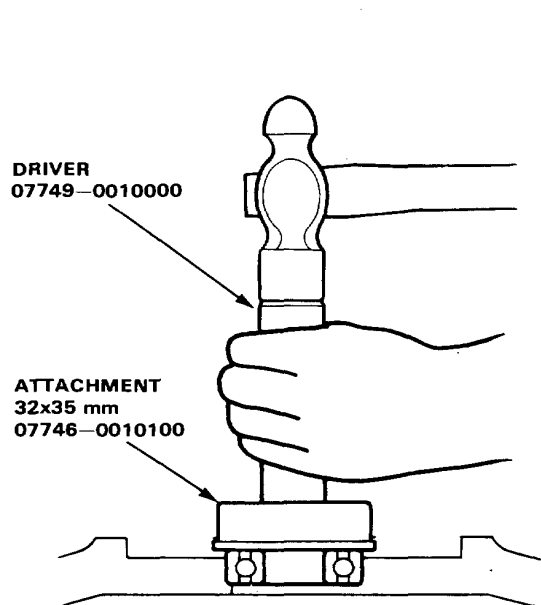
Flywheel Bearing

Inspection/Replacement (cont'd)

2. Remove the bearing from the flywheel.



3. Drive in the new bearing in the flywheel.



Flywheel and Clutch

Installation

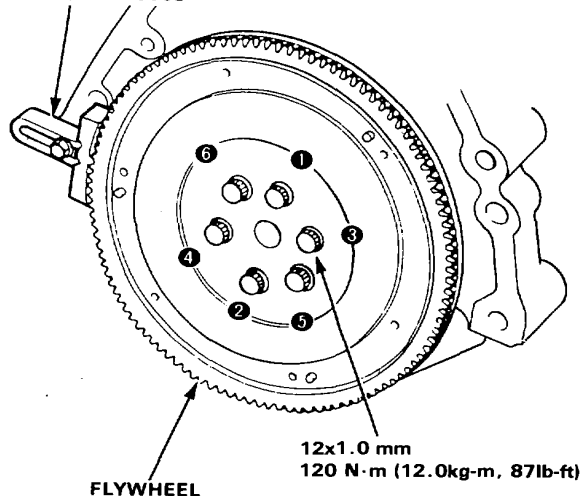
1. Align the hole in flywheel with the crankshaft dowel pin and assemble. Install the bolts only finger tight.
2. Install the Ring Gear Holder, then torque the flywheel bolts in a crisscross pattern, as shown.

RING GEAR HOLDER

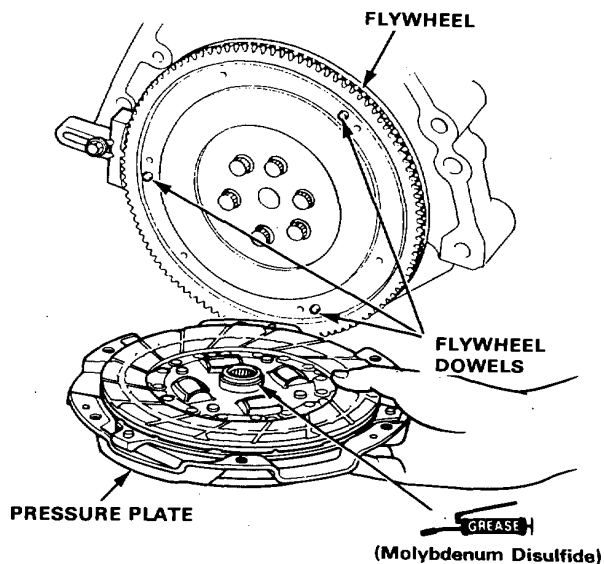
07924-PD20002

or

07924-PD20003



3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.

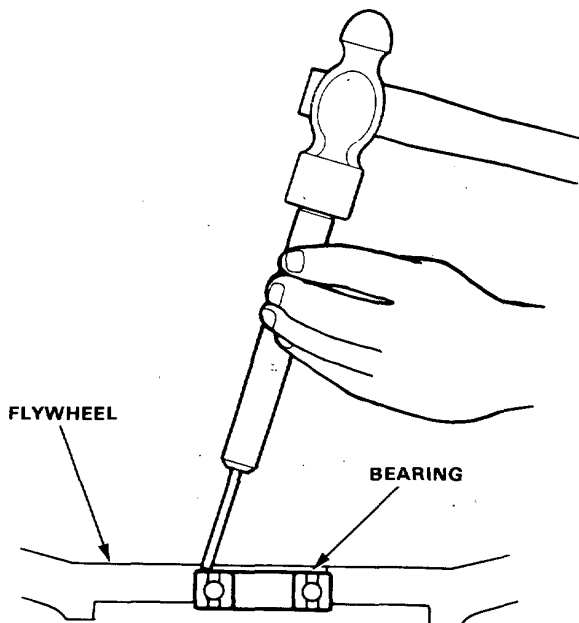


4. Install the attaching bolts finger tight.

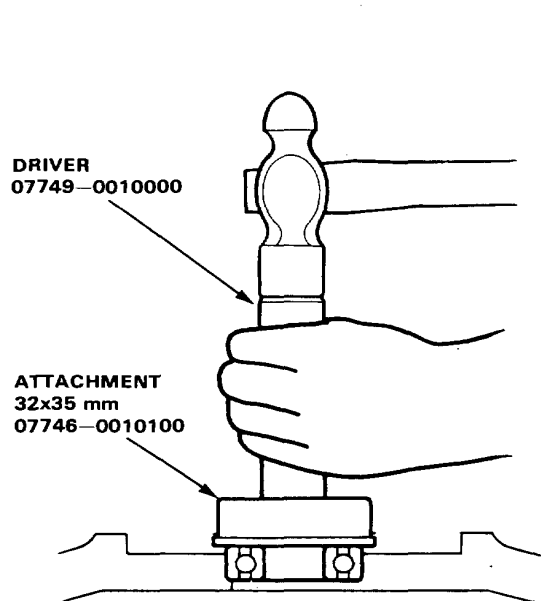
Flywheel Bearing

Inspection/Replacement (cont'd)

2. Remove the bearing from the flywheel.



3. Drive in the new bearing in the flywheel.



Flywheel and Clutch

Installation

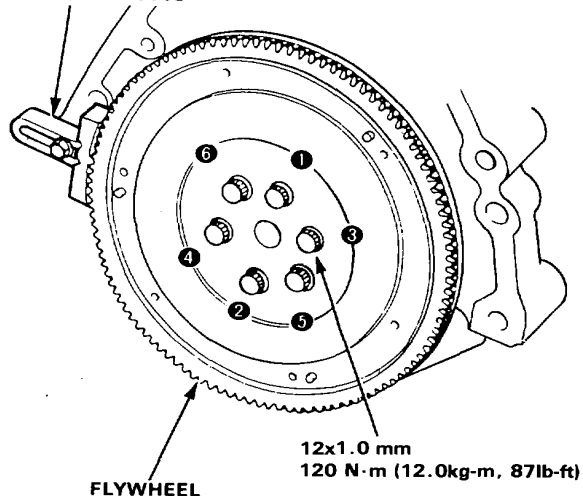
1. Align the hole in flywheel with the crankshaft dowel pin and assemble. Install the bolts only finger tight.
2. Install the Ring Gear Holder, then torque the flywheel bolts in a crisscross pattern, as shown.

RING GEAR HOLDER

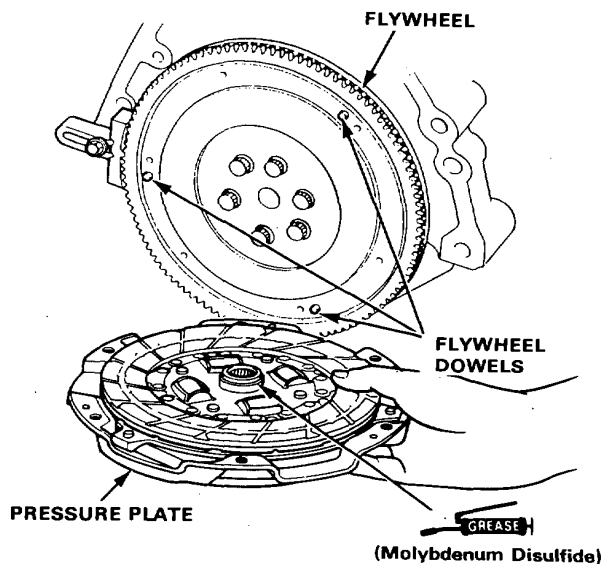
07924-PD20002

or

07924-PD20003



3. Install the clutch disc and pressure plate by aligning the flywheel dowels with dowel holes in the pressure plate.

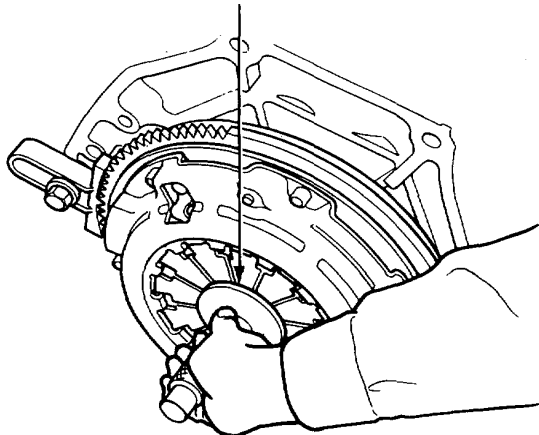


4. Install the attaching bolts finger tight.



5. Insert the Clutch Disc Alignment Tool in the splined hole in the clutch disc.

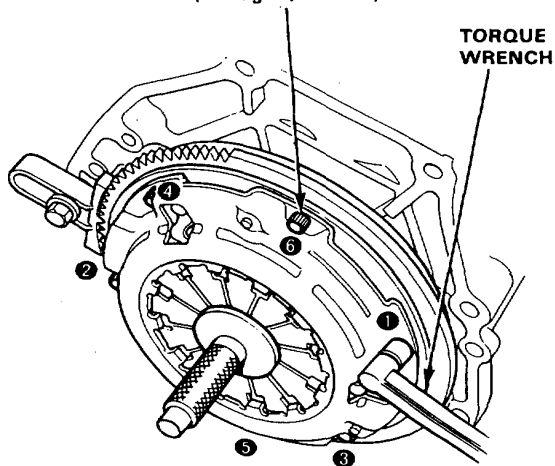
**CLUTCH DISC ALIGNMENT TOOL
07JAF-PM70100**



Crankshaft
side

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.

Special Tools

Special Tools				
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07GAJ-PG20102	Mainshaft Clearance Inspection Tool Set	1	
①-1	07GAJ-PG20110	Mainshaft Holder	1	
①-2	07GAJ-PG20120	Collar	1	
①-3	07GAJ-PG20130	Mainshaft Base	1	
②	07744-0010200	Pin Driver 3.0 mm	1	
③	07744-0010400	Pin Driver 5.0 mm	1	
④	07744-0010600	Pin Driver 8.0 mm	1	
⑤	07979-PJ40001	Magnet Stand Base	1	

①-1 →

①-3 →

①-2 ←

②

③

④

⑤

Maintenance

Transmission Oil

Oil Level Inspection

1. Check with oil at operating temperature, engine OFF, and car on level ground.
2. Remove oil filler plug and check level with finger.
3. Oil level must be up to fill hole. If it is below hole, add oil until it runs out, then reinstall plug.

Oil Change

Use only SAE 10W-30 or 10W-40 oil rated SE or SF grade.

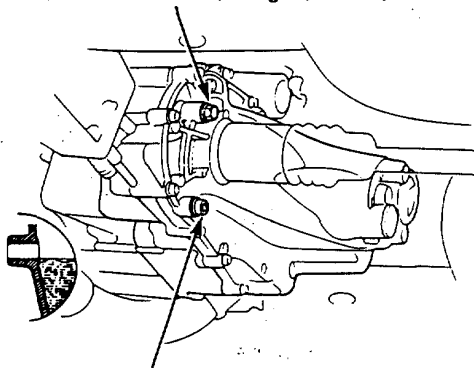
1. Drain with transmission oil at operating temperature, engine OFF, and car on level ground.
2. Remove the oil filler plug, then remove the drain plug and drain transmission.
3. Reinstall drain plug with new washer, and refill to proper level.

NOTE: Drain plug washer should be replaced at every oil change.

Oil Capacity

- 1.8 ℓ (1.9 U.S.qt.) after drain.
- 1.9 ℓ (2.0 U.S.qt.) after overhaul.

FILLER PLUG
45 N·m (4.5kg-m, 33lb-ft)



DRAIN PLUG
40 N·m (4.0kg-m, 29lb-ft)

Back-up Light Switch

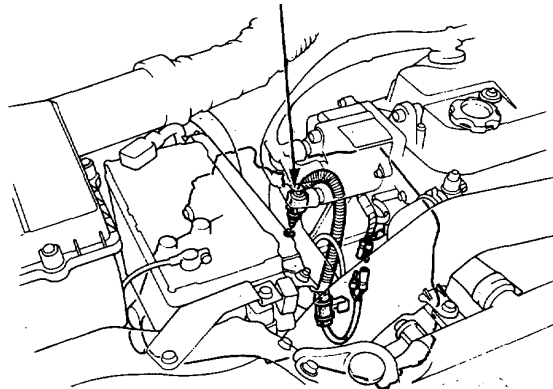


Replacement

NOTE: Check the switch see Section 16.

1. Disconnect the back-up light switch wire connectors.
2. Remove the back-up light switch.

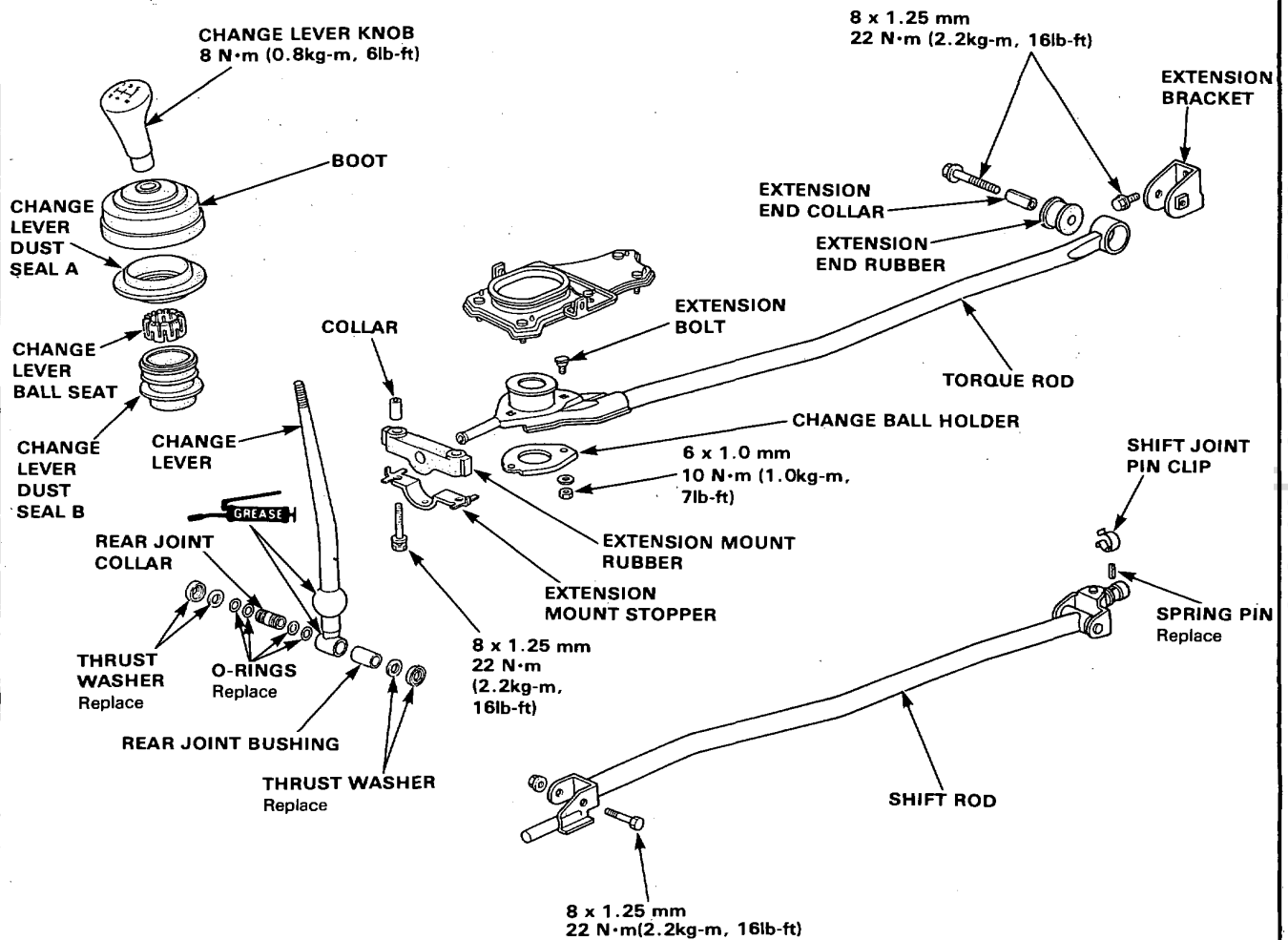
BACK-UP LIGHT SWITCH
25 N·m (2.5kg-m, 18lb-ft)
No washer type.



3. Install the back-up light switch.

Gearshift Mechanism

Overhaul



Transmission

Removal



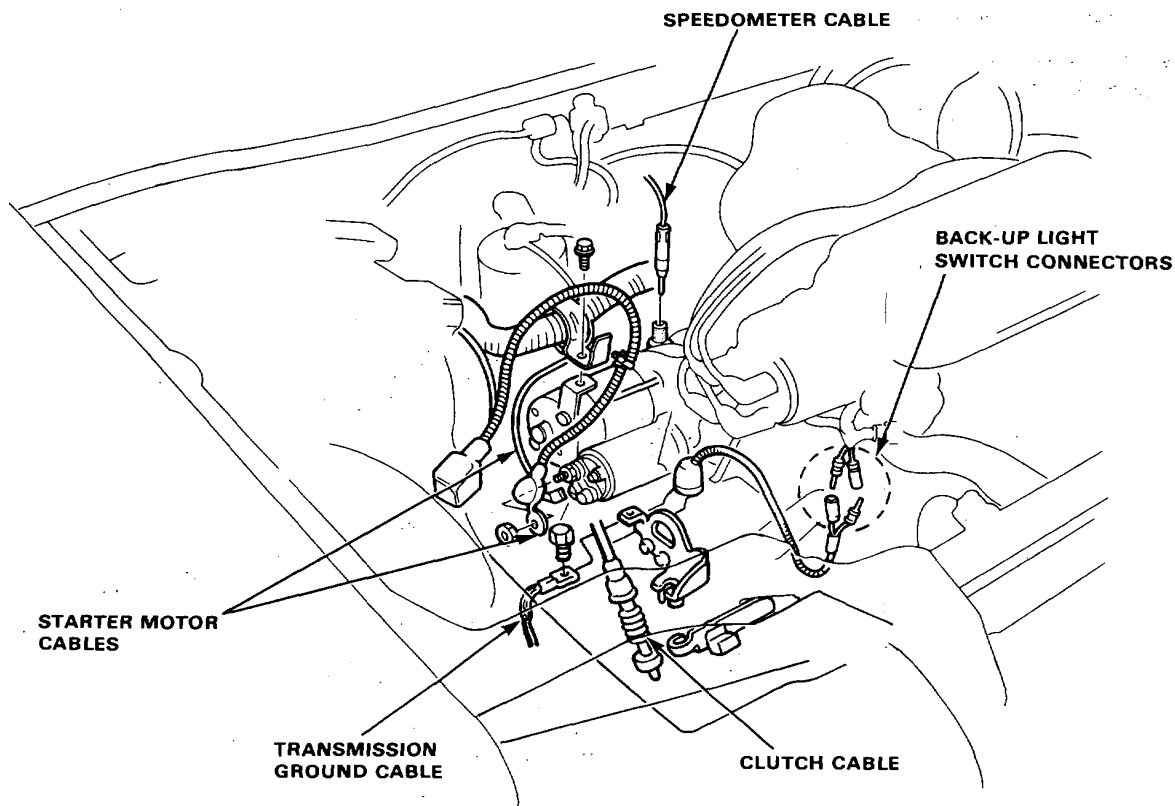
⚠ WARNING

- 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, and remove the battery.
 2. Remove the battery base. Remove the intake hose.
 3. Remove the air cleaner case complete with the intake hose (See Section 6).
 4. Disconnect the starter motor and transmission ground cables.
 5. Disconnect the speedometer cable (See Section 5).
- NOTE:** Do not disassemble speedometer gear holder.

6. Disconnect the back-up light switch connector.
7. Disconnect the clutch cable at release arm.
8. Drain transmission oil. Use a socket wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.

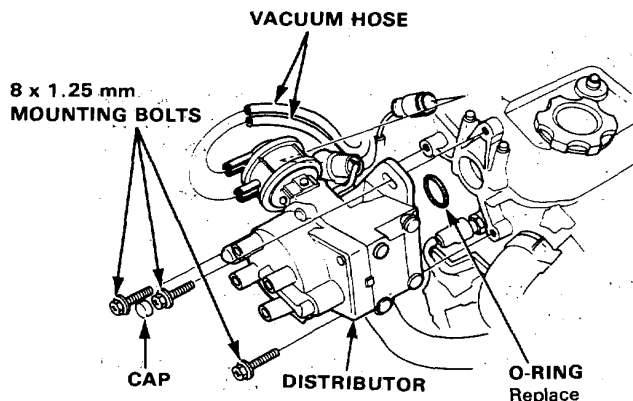


(cont'd)

Transmission

Removal (cont'd)

9. Disconnect the connectors and remove the mounting bolts, then remove the distributor from the cylinder head.



10. Remove the bolts attaching the starter motor, and remove the starter motor.

11. Remove the engine splash shield and the right wheelwell splash shield.

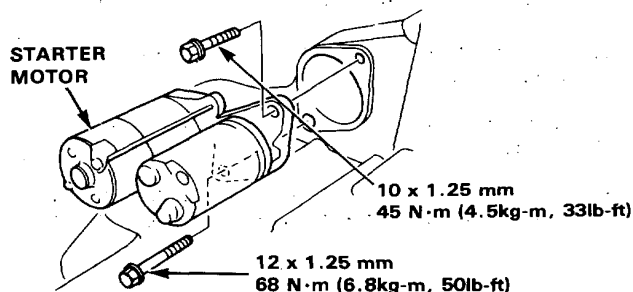
12. Remove the exhaust pipe A. (page 5-72, 73)

13. Remove the cotter pin and front lower arm ball joint nut, separate the ball joint and lower arm. (page 12-11)

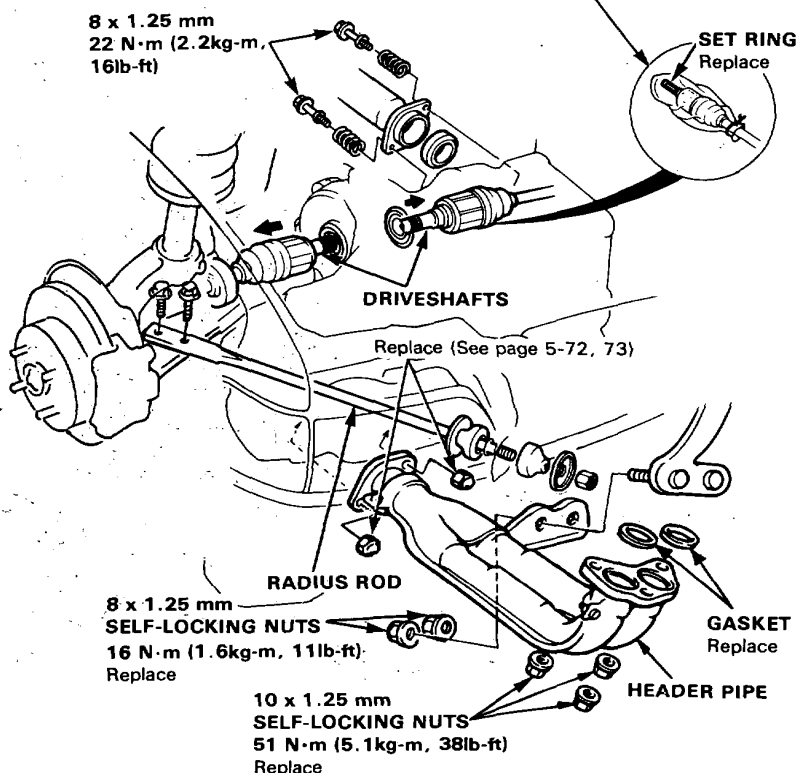
14. Remove the self locknut, and remove the damper fork bolt. (page 12-12)

15. Remove the bolts and nut, then remove the right radius rod. (page 12-8, 9)

16. Remove the driveshaft (intermediate shaft). (See Section 10)



NOTE: Coat all precision finished surfaces with clean engine oil or grease.
Tie plastic bags over the driveshaft ends.





17. Remove the 2 clutch cover mounting bolts.
18. Remove the shift lever torque rod and shift rod from clutch housing.
19. Install the bolt at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plate, then lift the engine slightly to unload the mounts.
20. Place a jack under the transmission and raise transmission just enough to take the weight off the mounts.
21. Remove the bolts from the front transmission mount.
22. Remove the rear transmission mount bracket by removing the 4 mounting bolts.
23. Remove the bolts and nut, then remove the side transmission mount.
24. Remove the 5 transmission mounting bolts.

REAR TRANSMIION MOUNT BRACKET

SPECIAL BOLT Replace
12 x 1.25 mm

**TRANSMISSION-
MOUNTING BOLTS**

HOIST CHAIN

12 x 1.25 mm
BOLTS

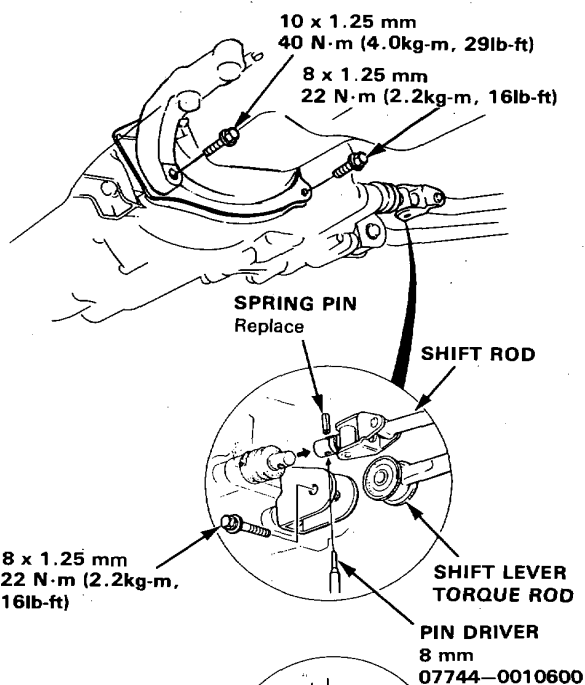
12 x 1.25 mm
BOLTS

**SIDE TRANSMISSION
MOUNT**

TRANSMISSION

**FRONT TRANSMISSION
MOUNT BRACKET**

25. Pull the transmission away from the engine until it clears the 14 mm dowel pins.
26. Separate the mainshaft from the clutch pressure plate and remove the transmission by lowering the jack.



8 x 1.25 mm
22 N·m (2.2kg-m,
16lb-ft)

10 x 1.25 mm **BOLT**

8 x 1.25 mm **BOLT**

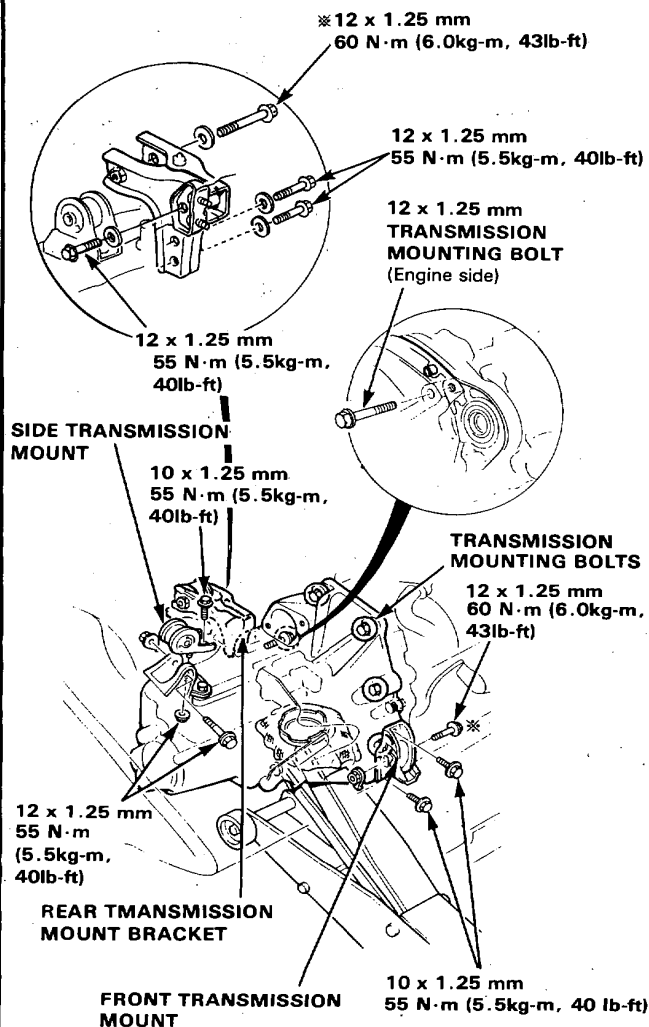
SPECIAL BOLT
Replace
14 mm
DOWEL PIN

12 x 1.25 mm
**TRANSMISSION MOUNTING
BOLT (Engine side)**

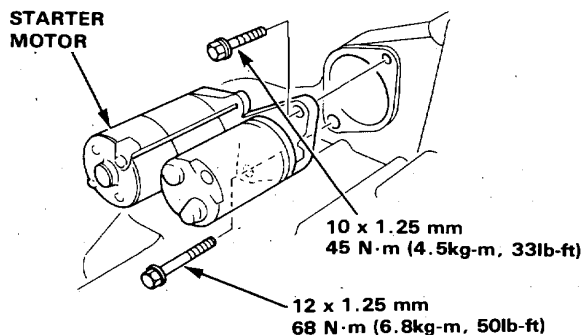
Transmission

Installation

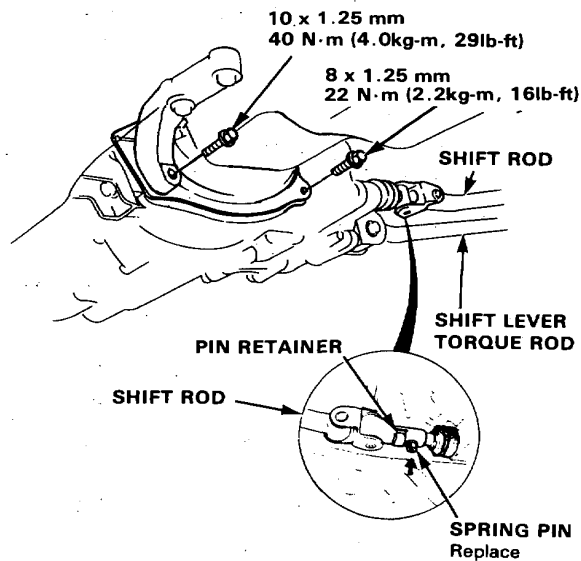
1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the clutch housing.
3. Loosely install the transmission mounting bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12x1.25x70 mm) and torque to 68 N·m (6.8kg-m, 50lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to front and side transmission mounts.



7. Install the starter motor.



8. Remove the transmission jack.
9. Remove the chain hoist by removing the hanger plate and 10 mm bolts.
10. Install the shift lever torque rod and shift rod.



NOTE: On reassembly, slide the retainer back into place after driving in the spring pin.

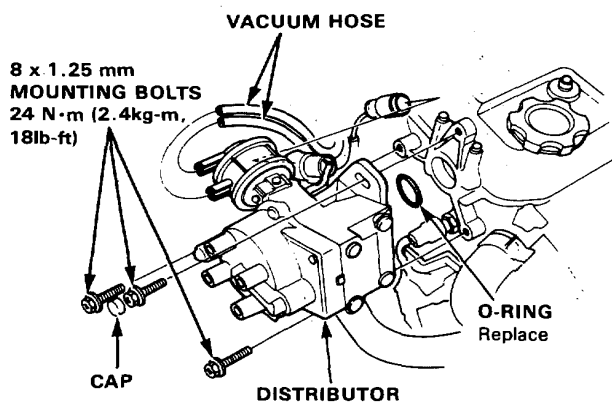
11. Install the clutch cover mounting bolts.



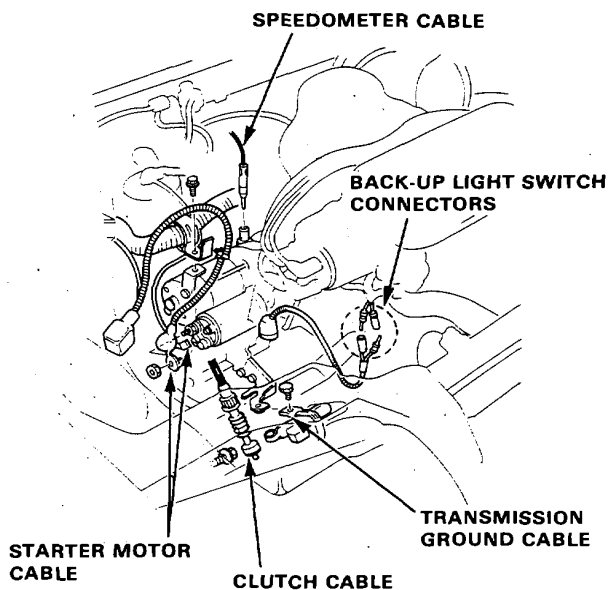
12. Install a new set rings on the end of each driveshaft.
13. Install the driveshaft (intermediate shaft) (See Section 10).

NOTE : Turn the right steering knuckle fully outward, and slide axle into the differential untily you feel its spring clip engage side gear.

14. Install the damper swivel bolt and radius rod. (page 12-8, 9, 12)
15. Install the ball joints to the front lower arm. (page 12-12)
16. Install the splash shields and exhaust pipe A. (page 5-66)
17. Install the distributor and ignition timing inspection (See Section 16 Ignition Timing Control).



18. Connect the speedometer cable.
19. Connect the clutch cable to release arm.
20. Connect the back-up light switch connector.
21. Install the battery base. Install the intake hose.



22. Refill the transmission with oil.
23. Connect the starter motor and transmission ground cables.
24. Connect the battery positive (+) and negative (-) cables to the battery.
25. Install the air cleaner case and intake hose.
26. Check the ignition timing (See Section 16).
27. Check the transmission for smooth operation.

Transmission Maintenance and Repair

Illustrated Index

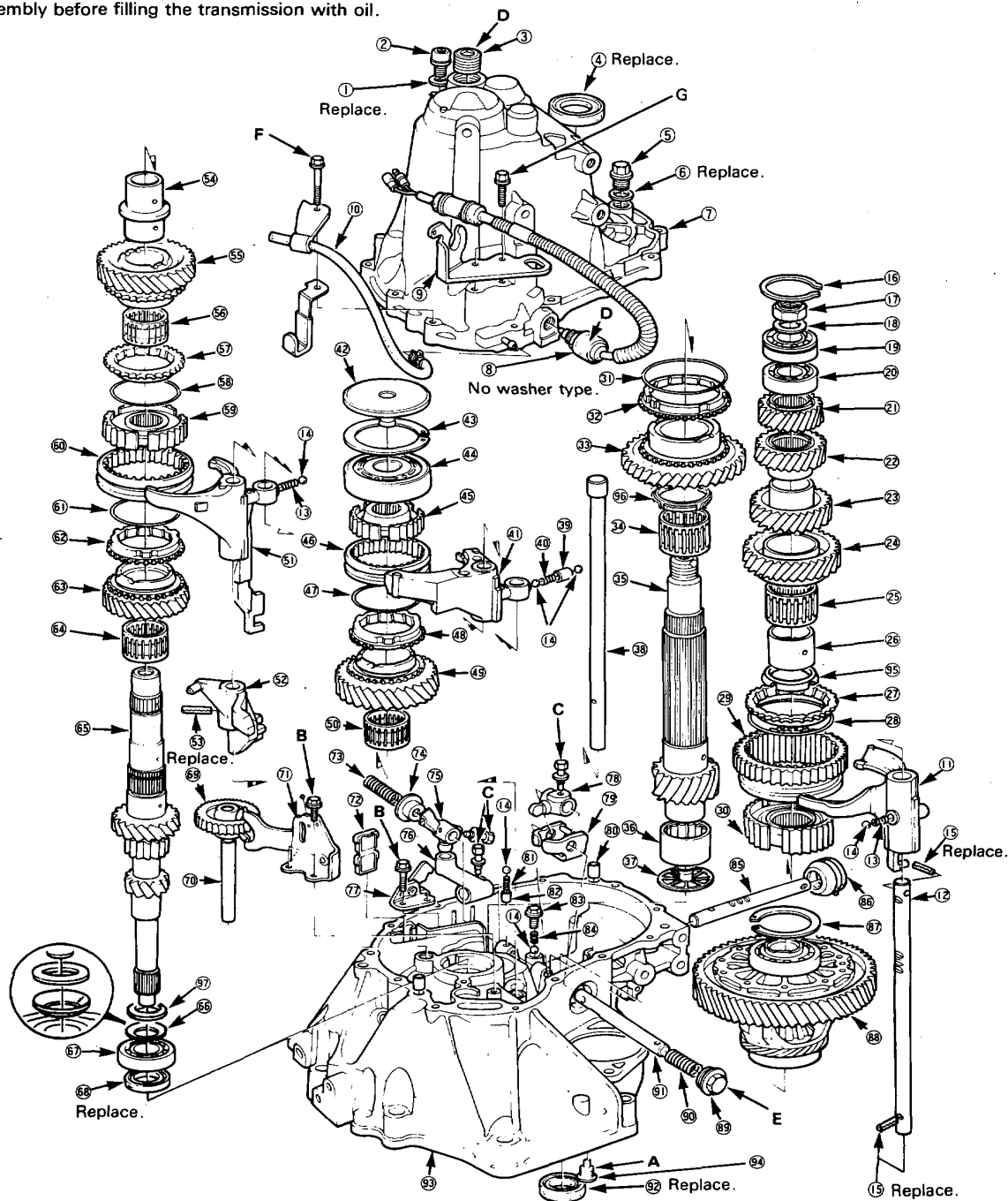
Refer to the drawing below for the transmission disassembly/reassembly.

Clean all parts thoroughly in solvent and dry with compressed air.



Lubricate all parts with oil before reassembly.

NOTE: This transmission uses no gaskets between the major housings; use PART NO. 0Y746-99986 for the liquid gasket. Assemble the housings within 20 minutes after applying the liquid gasket and allow it to cure at least 30 minutes after assembly before filling the transmission with oil.





Torque Value

A	—40 N·m (4.0 kg-m, 29 lb-ft)
B	—15 N·m (1.5 kg-m, 11 lb-ft)
C	—29 N·m (2.9 kg-m, 21 lb-ft)
D	—25 N·m (2.5 kg-m, 18 lb-ft)
E	—55 N·m (5.5 kg-m, 40 lb-ft)
F	—28 N·m (2.8 kg-m, 21 lb-ft)
G	—26 N·m (2.6 kg-m, 19 lb-ft)

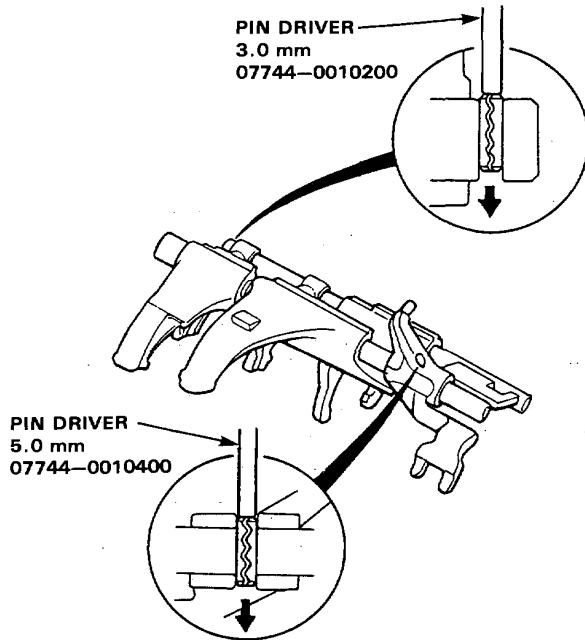
NOTE: Always clean the magnet 72 whenever the transmission housing is disassembled.

① SEALING WASHER ② OIL DRAIN PLUG 40 N·m (4.0 kg-m, 29 lb-ft) ③ 32 mm SEALING BOLT ④ OIL SEAL ⑤ OIL FILLER PLUG 45 N·m (4.5 kg-m, 33 lb-ft) ⑥ SEALING WASHER ⑦ TRANSMISSION HOUSING ⑧ BACK-UP LIGHT SWITCH 25 N·m (2.5 kg-m, 18 lb-ft) ⑨ CLUTCH CABLE BRACKET ⑩ BREATHER TUBE ⑪ 1st/2nd SHIFT FORK ⑫ 1st/2nd SHIFT FORK SHAFT ⑬ SHIFT FORK SPRING ⑭ STEEL BALL ⑮ SPRING PIN ⑯ SNAP RING ⑰ COUNTERSHAFT LOCKNUT 110→0→110 N·m (11.0→0→11.0 kg-m, 80→0→80 lb-ft) ⑱ WASHER ⑲ BALL BEARING Disassembly, page 8-16 Reassembly, page 8-17 ⑳ NEEDLE BEARING ㉑ COUNTERSHAFT 5th GEAR ㉒ COUNTERSHAFT 4th GEAR ㉓ COUNTERSHAFT 3rd GEAR ㉔ COUNTERSHAFT 2nd GEAR ㉕ NEEDLE BEARING ㉖ DISTANCE COLLAR ㉗ SYNCHRO RING ㉘ SYNCHRO SPRING ㉙ REVERSE GEAR ㉚ SYNCHRO HUB	㉛ SYNCHRO SPRING ㉜ SYNCHRO RING ㉝ COUNTERSHAFT 1st GEAR ㉞ NEEDLE BEARING ㉟ COUNTERSHAFT ㊱ NEEDLE BEARING ㊲ OIL GUIDE PLATE ㊳ 5th/REVERSE SHIFT FORK SHAFT ㊴ ROLLER ㊵ 5th DETENT SPRING ㊶ 5th SHIFT FORK ㊷ OIL GUIDE PLATE ㊸ THRUST SHIM Selection, page 8-13 ㊹ BALL BEARING ㊺ SYNCHRO HUB ㊻ SYNCHRO SLEEVE ㊼ SYNCHRO SPRING ㊽ SYNCHRO RING ㊾ 5th GEAR ㊿ NEEDLE BEARING ㉑ 3rd/4th SHIFT FORK ㉒ SHIFT PIECE ㉓ SPRING PIN ㉔ SPACER COLLAR ㉕ 4th GEAR ㉖ NEEDLE BEARING ㉗ SYNCHRO RING ㉘ SYNCHRO SPRING ㉙ SYNCHRO HUB ㉚ SYNCHRO SLEEVE ㉛ SYNCHRO SPRING ㉜ SYNCHRO RING ㉝ 3rd GEAR	㉞ NEEDLE BEARING ㉟ MAINSHAFT ㊱ SPRING WASHER ㊲ BALL BEARING ㊳ OIL SEAL ㊴ REVERSE IDLER GEAR ㊵ REVERSE IDLER SHAFT ㊶ REVERSE SHIFT HOLDER ㊷ MAGNET ㊸ REVERSE SELECT SPRING ㊹ REVERSE RETURN SELECT ㊺ SHIFT ARM C ㊻ SHIFT ARM A ㊼ REVERSE LOCK CAM ㊽ SHIFT ARM B ㊾ INTERLOCK ㊿ DOWEL PIN ㉑ SPRING ㉒ SPRING COLLAR ㉓ SPRING BOLT ㉔ SPRING ㉕ SHIFT ROD ㉖ BOOT ㉗ SHIM ㉘ DIFFERENTIAL ASSEMBLY ㉙ 28 mm PLUG ㉚ 1st/2nd SELECT SPRING ㉛ SHIFT ARM SHAFT ㉜ OIL SEAL ㉝ CLUTCH HOUSING ㉞ INTERLOCK GUIDE BOLT ㉟ FRICTION DAMPER (2nd gear side) Disassembly, page 8-16 Reassembly, page 8-17 ㊱ FRICTION DAMPER (1st gear side) Disassembly, page 8-16 Reassembly, page 8-17 ㊲ THRUST WASHER

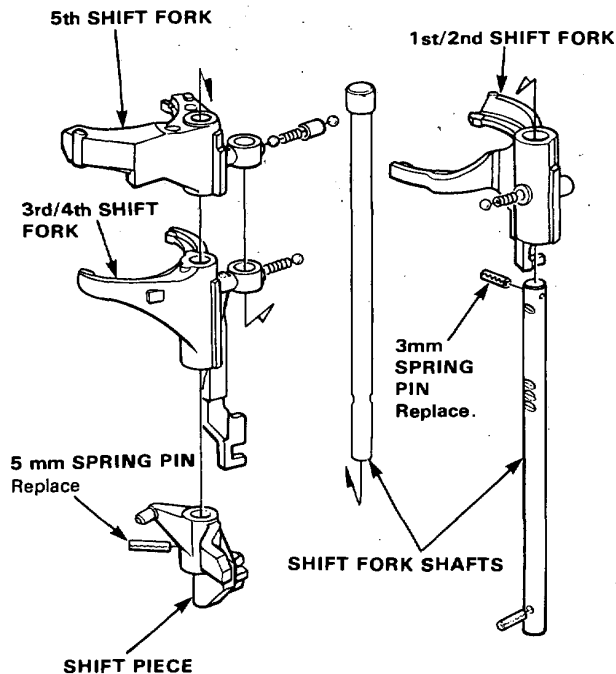
Transmission Maintenance and Repair

Shift Fork Disassembly

1. Remove the shift fork shaft by removing the spring pins from the shift forks.



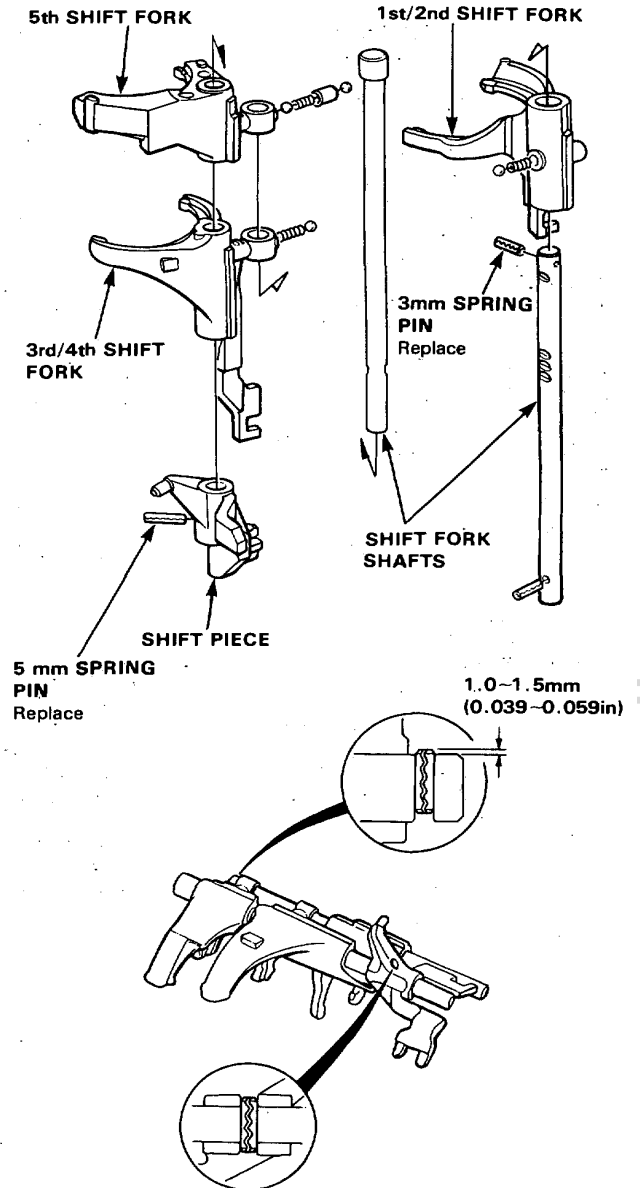
CAUTION: Do not lose the spring-loaded detent while disassembling the shift forks and shift fork shafts.



Shift Fork Reassembly

1. Insert the shift fork shaft into the shift forks and drive in the spring pins.

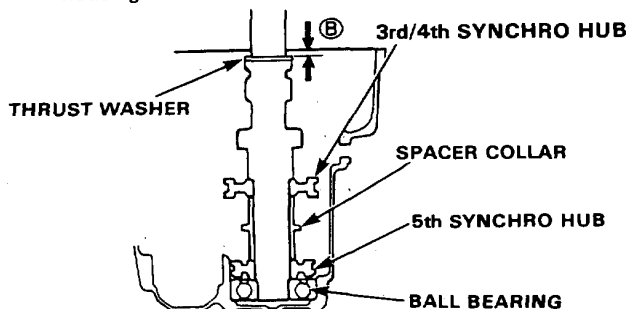
NOTE: Do not lose the steel balls and spring when reassembling.





Mainshaft Thrust Shim Adjustment

1. Remove the thrust shim and oil guide plate from the transmission housing.
2. Install the 3rd/4th synchro hub, spacer collar, 5th synchro hub, ball bearing and thrust washer on the mainshaft. Install the assembly in the transmission housing.



3. Measure the distance B between the end of the transmission housing and thrust washer.

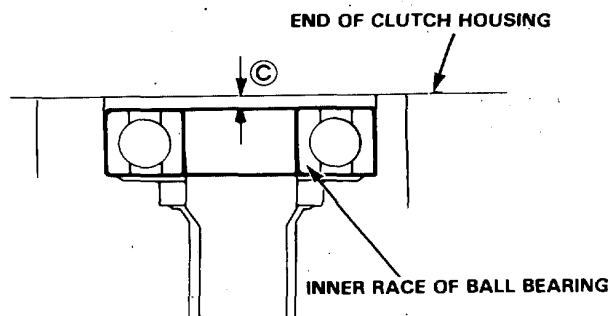
NOTE:

- Use a straight edge and feeler gauge.
- Measure at three locations and average the readings.

4. Measure the distance C between the surfaces of the clutch housing and bearing inner race.

NOTE:

- Use a straight edge and feeler gauge.
- Measure at three locations and average the readings.



5. Select the proper shim (or shim pair) on the basis of the following calculations:

NOTE: Do not use more than two shims.

(Basic Formula)

$$(B) + (C) - 0.95 = \text{shim thickness}$$

Example of calculation:

Distance B (2.00mm) + Distance C (0.09mm) = 2.09mm
subtract the spring washer height (0.95mm) = the required thrust shim (1.14mm)

D14A, D15B: 65 mm Thrust Shim

	PART NUMBER	THICKNESS
A	23931-PL3-A10	0.60 mm (0.0236 in.)
B	23932-PL3-A10	0.63 mm (0.0284 in.)
C	23933-PL3-A10	0.66 mm (0.0260 in.)
D	23934-PL3-A10	0.69 mm (0.0272 in.)
E	23935-PL3-A10	0.72 mm (0.0283 in.)
F	23936-PL3-A10	0.75 mm (0.0295 in.)
G	23937-PL3-A10	0.78 mm (0.0307 in.)
H	23938-PL3-A10	0.81 mm (0.0319 in.)
I	23939-PL3-A10	0.84 mm (0.0331 in.)
J	23940-PL3-A10	0.87 mm (0.0343 in.)
K	23941-PL3-A10	0.90 mm (0.0354 in.)
L	23942-PL3-A10	0.93 mm (0.0366 in.)
M	23943-PL3-A10	0.96 mm (0.0378 in.)
N	23944-PL3-A10	0.99 mm (0.0390 in.)
O	23945-PL3-A10	1.02 mm (0.0402 in.)
P	23946-PL3-A10	1.05 mm (0.0413 in.)
Q	23947-PL3-A10	1.08 mm (0.0425 in.)
R	23948-PL3-A10	1.11 mm (0.0437 in.)
S	23949-PL3-A10	1.14 mm (0.0449 in.)
T	23950-PL3-A10	1.17 mm (0.0461 in.)
U	23951-PL3-A10	1.20 mm (0.0472 in.)
V	23952-PL3-A10	1.23 mm (0.0484 in.)
W	23953-PL3-A10	1.26 mm (0.0496 in.)
X	23954-PL3-A10	1.29 mm (0.0508 in.)
Y	23955-PL3-A10	1.32 mm (0.0520 in.)
Z	23956-PL3-A10	1.35 mm (0.0531 in.)
AA	23957-PL3-A10	1.38 mm (0.0543 in.)
AB	23958-PL3-A10	1.41 mm (0.0555 in.)
AC	23959-PL3-A10	1.44 mm (0.0567 in.)
AD	23960-PL3-A10	1.47 mm (0.0579 in.)
AE	23961-PL3-A10	1.50 mm (0.0591 in.)
AF	23962-PL3-A10	1.53 mm (0.0602 in.)
AG	23963-PL3-A10	1.56 mm (0.0614 in.)
AH	23964-PL3-A10	1.59 mm (0.0626 in.)
AI	23965-PL3-A10	1.62 mm (0.0638 in.)
AJ	23966-PL3-A10	1.65 mm (0.0650 in.)
AK	23967-PL3-A10	1.68 mm (0.0661 in.)
AL	23968-PL3-A10	1.71 mm (0.0673 in.)
AM	23969-PL3-A10	1.74 mm (0.0685 in.)
AN	23970-PL3-A10	1.77 mm (0.0697 in.)
AO	23971-PL3-A10	1.80 mm (0.0709 in.)

(cont'd)

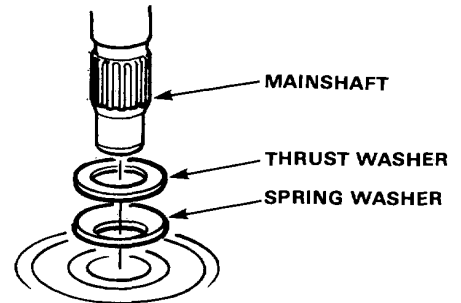
Transmission Maintenance and Repair

Mainshaft Thrust Shim Adjustment (cont'd)

D16A: 70 mm Thrust Shim

	PART NUMBER	THICKNESS
A	23931-PL3-B00	0.60 mm (0.0236 in.)
B	23932-PL3-B00	0.63 mm (0.0284 in.)
C	23933-PL3-B00	0.66 mm (0.0260 in.)
D	23934-PL3-B00	0.69 mm (0.0272 in.)
E	23935-PL3-B00	0.72 mm (0.0283 in.)
F	23936-PL3-B00	0.75 mm (0.0295 in.)
G	23937-PL3-B00	0.78 mm (0.0307 in.)
H	23938-PL3-B00	0.81 mm (0.0319 in.)
I	23939-PL3-B00	0.84 mm (0.0331 in.)
J	23940-PL3-B00	0.87 mm (0.0343 in.)
K	23941-PL3-B00	0.90 mm (0.0354 in.)
L	23942-PL3-B00	0.93 mm (0.0366 in.)
M	23943-PL3-B00	0.96 mm (0.0378 in.)
N	23944-PL3-B00	0.99 mm (0.0390 in.)
O	23945-PL3-B00	1.02 mm (0.0402 in.)
P	23946-PL3-B00	1.05 mm (0.0413 in.)
Q	23947-PL3-B00	1.08 mm (0.0425 in.)
R	23948-PL3-B00	1.11 mm (0.0437 in.)
S	23949-PL3-B00	1.14 mm (0.0449 in.)
T	23950-PL3-B00	1.17 mm (0.0461 in.)
U	23951-PL3-B00	1.20 mm (0.0472 in.)
V	23952-PL3-B00	1.23 mm (0.0484 in.)
W	23953-PL3-B00	1.26 mm (0.0496 in.)
X	23954-PL3-B00	1.29 mm (0.0508 in.)
Y	23955-PL3-B00	1.32 mm (0.0520 in.)
Z	23956-PL3-B00	1.35 mm (0.0531 in.)
AA	23957-PL3-B00	1.38 mm (0.0543 in.)
AB	23958-PL3-B00	1.41 mm (0.0555 in.)
AC	23959-PL3-B00	1.44 mm (0.0567 in.)
AD	23960-PL3-B00	1.47 mm (0.0579 in.)
AE	23961-PL3-B00	1.50 mm (0.0591 in.)
AF	23962-PL3-B00	1.53 mm (0.0602 in.)
AG	23963-PL3-B00	1.56 mm (0.0614 in.)
AH	23964-PL3-B00	1.59 mm (0.0626 in.)
AI	23965-PL3-B00	1.62 mm (0.0638 in.)
AJ	23966-PL3-B00	1.65 mm (0.0650 in.)
AK	23967-PL3-B00	1.68 mm (0.0661 in.)
AL	23968-PL3-B00	1.71 mm (0.0673 in.)
AM	23969-PL3-B00	1.74 mm (0.0685 in.)
AN	23970-PL3-B00	1.77 mm (0.0697 in.)
AO	23971-PL3-B00	1.80 mm (0.0709 in.)

6. Check the thrust clearance in the manner described below.
 - a. Install the shims selected in the transmission housing.
 - b. Install the thrust washer and spring washer in the mainshaft.



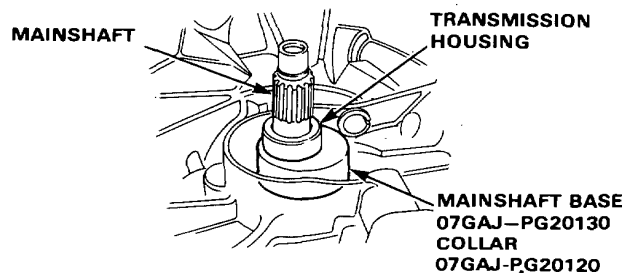
NOTE:

- Clean the thrust washer, spring washer and shim thoroughly before installation.
 - Install the thrust washer, spring washer and shim properly.
- c. Install the mainshaft in the clutch housing.
 - d. Place the transmission housing over the mainshaft and onto the clutch housing.
 - e. Tighten the clutch and transmission housings with several 10mm bolts.
 - f. Tap the mainshaft with a plastic hammer.

7. Check the thrust clearance in the manner described below.

CAUTION: Measurement should be made at room temperature.

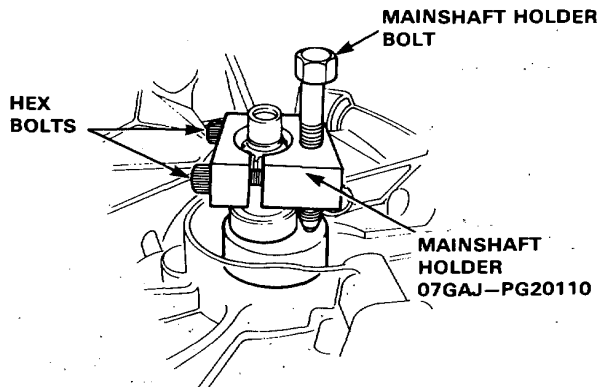
- a. Slide the mainshaft base and the collar over the mainshaft.





b. Attach the mainshaft holder to the mainshaft as follows:

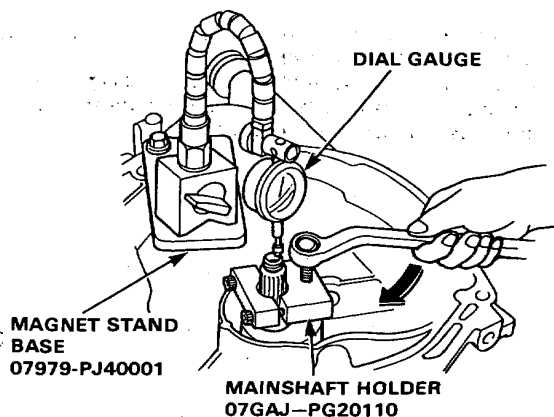
- Back-out the mainshaft holder bolt and loosen the two hex bolts.
- Fit the holder over the mainshaft so its lip is towards the transmission.
- Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



c. Seat the mainshaft fully by tapping its end with a plastic hammer.

d. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.

e. Zero a dial gauge on the end of the mainshaft.



f. Turn the mainshaft holder bolt clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft end play.

CAUTION: Turning the shaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving may damage the transmission.

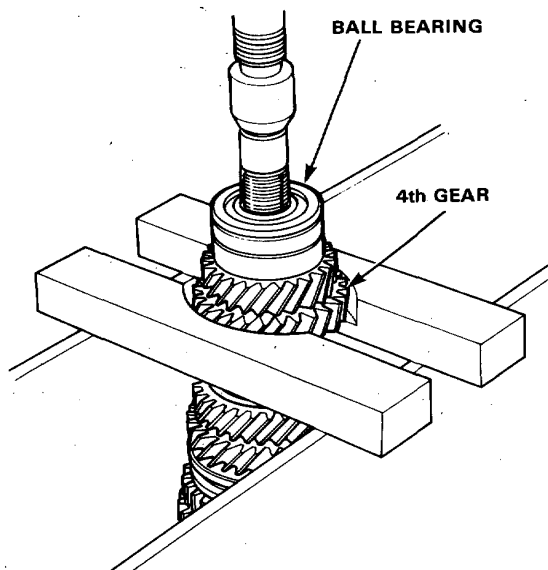
g. Clearance is correct if reading is between 0.13–0.20mm (0.0051–0.0079 in).

If not, recheck necessary shim thickness.

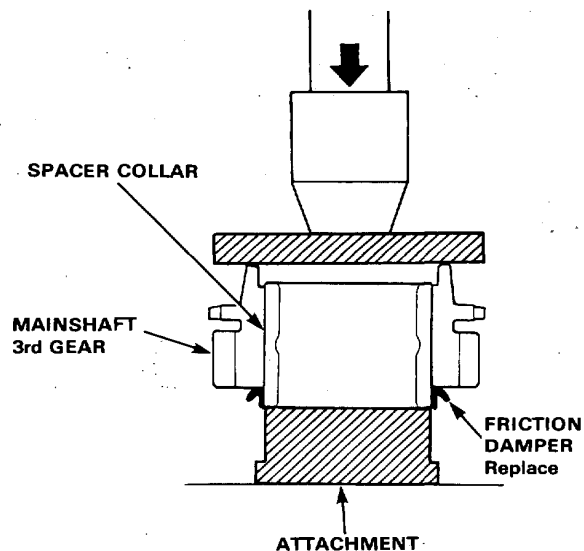
Transmission Maintenance and Repair

Countershaft Disassembly

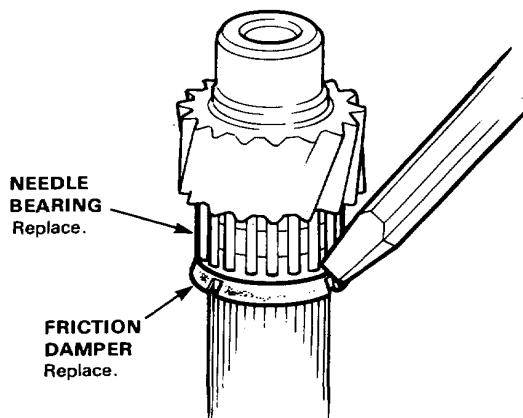
1. Raise the locknut tab from the groove of the shaft and remove the locknut and the spring washer.
2. Support 4th gear on steel blocks as shown and press the shaft out of ball bearing.
CAUTION: Remove the ball bearing using a press and steel blocks as shown. Use of a jaw-type puller can cause damage to the gear teeth.

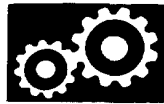


3. Using a press as shown, remove the friction damper (2nd gear side) from the spacer collar.



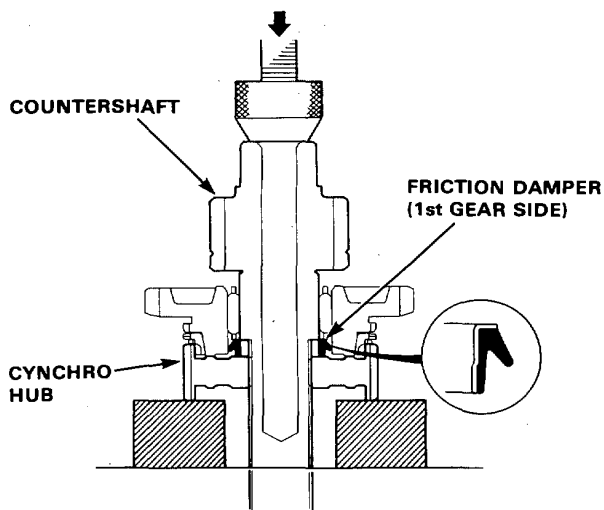
4. Remove the friction damper (1st gear side) and needle bearing from the countershaft.



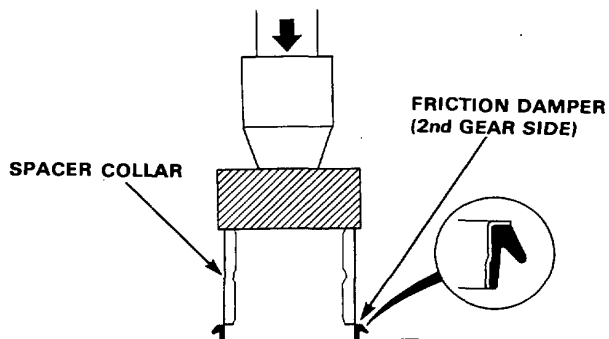


Countershaft Reassembly

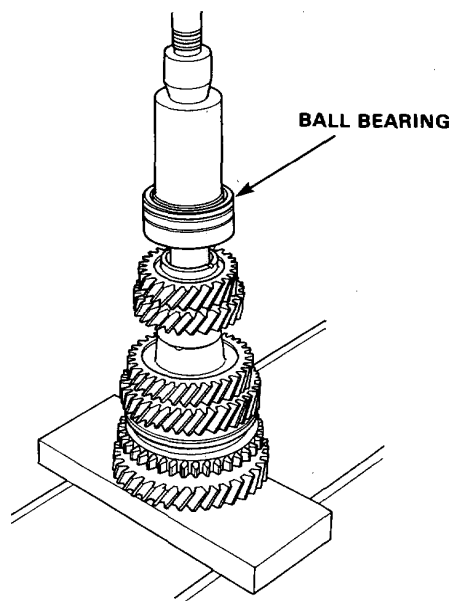
1. Using a press, install the friction damper (1st gear side) to the countershaft as shown.



2. Using a press, install the friction damper (2nd gear side) to the spacer collar as shown.



3. Install the ball bearing using a press as shown.



4. Install the spring washer, tighten the locknut and then stake the locknut tab into the groove.

LOCKNUT

110 → 0 → 110 N·m (11.0 → 0 → 11.0kg-m, 80 → 0 → 80 lb-ft)

Special Tools

Special Tools				
Ref. No	Tool Number	Description	Q'ty	Remarks
①	07406-0020003	Oil Pressure Gauge Set	1	Component Tool
①-1	07406-0020201	Oil Pressure Gauge Hose Attachment	1	
②	07406-0070000	Low Pressure Gauge	1	
③	07749-0010000	Driver	1	
④	07947-6110501	Oil Seal Driver Attachment E	1	
⑤	07JAD-PH80400	Pilot Driver 28 x 30 mm	1	
⑥	07HAD-SF10100	Driver Attachment	1	
A coiled hose with three gauges at one end and connectors at the other. A single hose with connectors at both ends. A square gauge with a single hose attachment. A cylindrical tool with a textured grip. A circular, flat attachment with a central hole. A small cylindrical component. A larger cylindrical component with a flange.				



If the lock-up control electrical system is suspected to be faulty according to the symptom charts on pages 9-4 and 9-5, check the following.

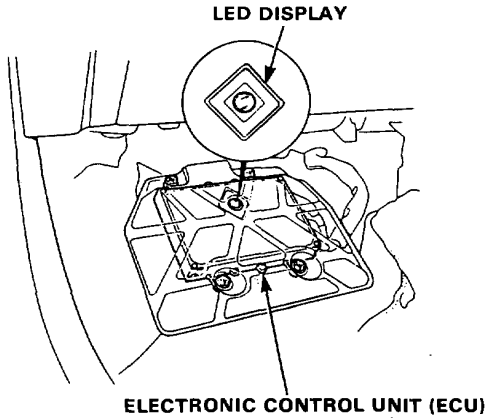
1. **PGM-FI engine type :**

Check the LED of ECU under the instrument panel.

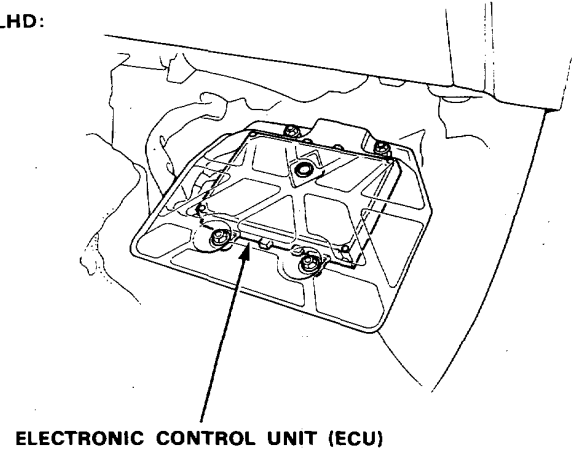
If it blinks, count the number of blinks according to the troubleshooting chart.

*The drawing below is for the PGM-FI engine type.

RHD:



LHD:



2. Check and adjust the throttle control cable (page 9-43).
3. Check for power input signal of the lock-up control solenoid valve (See section 6).
4. Check the lock-up control solenoid valve (page 9-6).
5. Check the hydraulic system according to the troubleshooting in pages 9-4 and 9-5.

Troubleshooting

Symptom-to-System

SYMPTOM	Check these items on PROBABLE CAUSE LIST	Check these items on NOTES PAGE
Engine runs, but car does not move in any gear.	1, 6, 7, 16	K, L, R, S
Car moves in R and 2, but not in D3 or D4.	8, 29, 45, 49	C, M, O
Car moves in D3, D4 and R, but not in 2.	9, 30, 50	C, L
Car moves in D3, D4 and 2, but not in R.	1, 11, 12, 22, 39, 40, 41	C, L, Q
Car moves in N.	1, 8, 9, 10, 11, 47, 48	C, D
Excessive idle vibration.	5, 17	B, K, L
Slips in all gears.	6, 7, 16	C, L, U
Slips in low gear.	8, 29, 45, 46, 49	C, N, O, U
Slips in 2nd gear.	9, 20, 23, 30, 46, 50	C, L, U
Slips in 3rd gear.	10, 21, 23, 31, 45, 46	C, L, U
Slips in 4th gear.	11, 23, 32, 46	C, L, U
Slips in reverse gear.	11, 32	C
Slips on 2 - 3 upshift.	3, 15, 24	E, L, V
Slips on 3 - 4 upshift.	3, 15, 25	E, L, V
No upshift: trans stays in low gear.	12, 13, 14, 19, 23	E, F, G, L
No downshift to low gear.	12, 19	G, L
Late upshift.	2, 12, 13, 14	E, F, L, V
Early upshift.	3, 13, 14	E, F, L, V
Erratic shifting.	2, 14, 26	E, F, V
Harsh shift (up & down shifts).	2, 4, 15, 23, 24, 25, 27, 48	A, E, H, I, L, V
Harsh shift (1 - 2).	2, 9	C, D, V
Harsh shift (2 - 3).	2, 10, 23, 24	C, D, H, L, V
Harsh shift (3 - 4).	2, 11, 23, 25	C, D, I, L, V
Harsh kickdown shifts.	2, 23, 27	L, V, Q
Harsh kickdown shift (2 - 1).	48	O
Harsh downshift (3 - 2) at closed throttle.	15	E, T
Axle(s) slips out of trans on turns.	44, 51	L, P, Q
Axle(s) stuck in trans.	44	L, Q
Ratcheting noise when shifting into R.	6, 7, 39, 40, 41	K, L, Q
Loud popping noise when taking off in R.	39, 40, 41	L, Q
Ratcheting noise when shifting from R to P, or from R to N.	39, 40, 41, 52	L, Q
Noise from trans in all selector lever positions.	6, 17	K, L, Q
Noise from trans only when wheels rolling.	40, 43	L, Q
Gear whine, rpm related (pitch changes with shifts).	6, 42	K, L, Q
Gear whine, speed related (pitch changes with speed).	40, 43	L, Q
Trans will not shift into 4th gear in D4.	1, 21, 28	L
Engine stalls on emergency stops (shift lever in D4 only).	2, 33	L, V
Lockup clutch does not lock up smoothly.	35, 37, 17	L
Lockup clutch does not operate properly.	2, 3, 12, 15, 18, 33, 34, 35, 36, 37, 38	E, L, V
Transmission has multitude of problems shifting, at disassembly large deposits of metal found on magnet.	44	L, Q
Hard to shift into 3rd and 4th in D4 range.	53	
Hard to shift into 3rd in D3 range.	53	
Slow to shift into R range from D3 and D4 ranges.	54	
Excessive shock when shifting into R range from P and N ranges.	54	

The following symptoms can be caused by improper repair or assembly.	Check these items on PROBABLE CAUSE DUE TO IMPROPER REPAIR	Check these items on NOTES PAGE
Car creeps in N.	R1, R2	
Car does not move in D3 or D4.	R5	
Trans locks up in R.	R4	
Trans has no park.	R3	
Excessive drag in trans.	R8	R, K
Excessive vibration, rpm related.	R9	
Noise with wheels moving only.	R7	
Main seal pops out.	R10	S
Various shifting problems.	R11, R12	
Harsh upshifts.	R13	
In D3 or D4 trans starts in 2nd gear.	R6	

PROBABLE CAUSE	
1.	Shift cable broken/out of adjustment
2.	Throttle cable too short
3.	Throttle cable too long
4.	Wrong type ATF
5.	Idle rpm too low high
6.	Oil pump worn or seized
7.	Pressure regulator stuck
8.	Low clutch defective
9.	2nd clutch defective
10.	3rd clutch defective
11.	4th clutch defective
12.	Governor valve stuck
13.	Throttle A valve stuck
14.	Modulator valve stuck
15.	Throttle B valve stuck
16.	Oil screen clogged
17.	Torque convertor defective
18.	Torque governor check valve stuck
19.	1 - 2 shift valve stuck
20.	2 - 3 shift valve stuck
21.	3 - 4 shift valve stuck
22.	Reverse control valve stuck
23.	Clutch pressure control valve stuck
24.	2nd orifice control valve stuck
25.	Orifice control valve stuck
26.	3 - 2 timing valve stuck
27.	kickdown valve stuck
28.	Shift timing valve accumulator stuck
29.	Low clutch accumulator defective
30.	2nd clutch accumulator defective
31.	3rd clutch accumulator defective
32.	4th/reverse accumulator defective
33.	Lockup clutch cut valve stuck
34.	Lockup clutch timing valve A stuck
35.	Lockup clutch timing valve B stuck
36.	Lockup clutch shift valve stuck
37.	Lockup clutch control valve stuck
38.	Lockup control solenoid valve broken
39.	Shift fork bent
40.	Reverse gears worn damaged (3 gears)
41.	Reverse selector worn
42.	3rd gears worn damaged (2 gears)
43.	Final gears worn damaged (2 gears)
44.	Differential pinion shaft worn
45.	Feedpipe O-ring broken



PROBABLE CAUSE	
46.	Servo valve check valve loose
47.	Gear clearance incorrect
48.	Clutch clearance incorrect
49.	Sprag clutch defective
50.	Sealing rings guide worn
51.	Axle-inboard joint clip missing
52.	4th gears worn damaged (2 gears)
53.	Servo control valve stuck
54.	Reverse timing valve stuck

PROBABLE CAUSES DUE TO IMPROPER REPAIR	
R1	Improper clutch clearance
R2	Improper gear clearance
R3	Parking pawl installed upside down
R4	Parking shift arm installed upside down
R5	Sprag clutch installed upside down
R6	Feed pipe missing in governor shaft
R7	Reverse hub installed upside down
R8	Oil pump binding
R9	Torque converter not fully seated in oil pump
R10	Main seal improperly installed
R11	Springs improperly installed
R12	Valves improperly installed
R13	Ball check valves not installed
R14	Shift fork bolt not installed

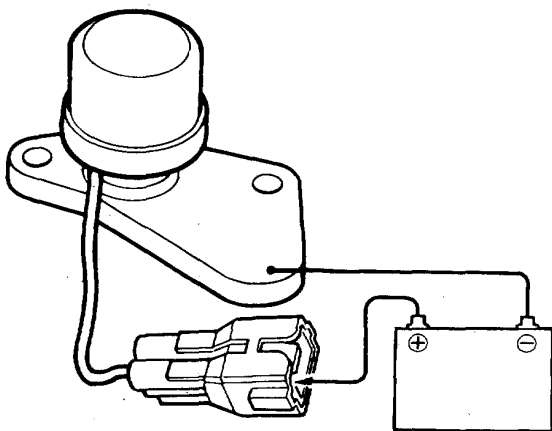
NOTES	
A	Flushing procedure (repeat 3 times): 1. Drain the trans. 2. Refill with 3 qts. of Dexron recommended type ATF. 3. Start the engine and shift trans to D4. 4. Let trans shift through gears at least 5 times. 5. Shift to reverse and neutral at least 5 times. 6. Drain and refill.
B	Set idle rpm in gear to specified idle speed. If still no good, adjust the motor mounts as outlined in engine section of service manual.
C	If the large clutch piston O-ring is broken, inspect the piston groove for rough machining.
D	If the clutch pack is seized, or is excessively worn, inspect the other clutches for wear, and check the orifice control valves and throttle valves for free movement.
E	If throttle valve B is stuck, inspect the clutches for wear.
F	If the modulator valve is stuck open (does not modulate line pressure), the trans will shift normally with less than 5-8 throttle but will shift up very late over 5-8 throttle. If the modulator valve is stuck closed, throttle valve A pressure will be zero and result in early upshifts and no forced downshift.
G	If the 1-2 valve is stuck closed, the transmission will not upshift. If stuck open, the transmission has no low gear.
H	If the 2nd orifice control valve is stuck, inspect the 2nd and 3rd clutch packs for wear.
I	If the 3rd orifice control valve is stuck, inspect the 3rd and 4th clutch packs for wear.
J	If the clutch pressure control valve is stuck closed, the transmission will not shift out of low gear.

NOTES	
K	Improper alignment of main valve body and torque converter case may cause oil pump seizure. The symptoms are mostly an rpm related ticking noise high pitched squeak. In severe instances, it may stall the engine. Follow instruction procedure.
L	If the oil screen is clogged with particles of steel or aluminum, inspect the oil pump and differential pinion shaft. If both are OK, and no cause for the contamination is found, replace the torque converter.
M	If the low clutch feedpipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If OK, replace the end cover as it is dented. The O-ring under the guide is probably broken.
N	Replace the mainshaft if the bushings for the low and 4th feedpipe are loose or damaged. If the low feedpipe is damaged or out of round, replace it. If the 4th feedpipe is damaged or out of round, replace the end cover.
O	A worn or damaged sprag clutch is mostly a result of shifting the trans in D3 or D4 while the wheels rotate in reverse, such as rocking the car in snow.
P	Inspect the frame for collision damage.
Q	Inspect for damage or wear: 1. Governor shaft woodruff key 2. Reverse selector gear teeth chamfers 3. Engagement teeth chamfers of countershaft 4th & reverse gear 4. Shift fork, for scuff marks in center 5. Differential pinion shaft for wear under pinion gears 6. Bottom of 3rd clutch for swirl marks Replace items 1, 2, 3 and 4 if worn or damaged. If trans makes clicking, grinding or whining noise, also replace mainshaft 4th gear and reverse idler gear and counter 4th gear in addition to 1, 2, 3, or 4. If differential pinion shaft is worn, overhaul differential assembly and replace oil screen and thoroughly clean trans, flush torque converter and cooler and lines. If bottom of 3rd clutch is swirled and trans makes gear noise, replace countershaft and ring gear.
R	Be very careful not to damage the torque converter case when replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body; this will result in oil pump seizure if not detected. Use proper tools.
S	Install the main seal flush with the torque converter case. If you push it into the torque converter case until it bottoms out, it will block the oil return passage and result in damage.
T	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer/cam stopper. Throttle control cable adjustment may clear this problem. See page 9-43.
U	Check if servo valve check valve stopper cap is installed. If it was not installed, the check valve may have been pushed out by hydraulic pressure causing a leak (internal) affecting all forward gears.
V	Throttle cable adjustment is essential for proper operation of the transmission. Not only does it affect the shift points if misadjusted but also the shift quality and lockup clutch operation. A too long adjusted cable will result in throttle pressure being too low for the amount of engine torque input into the transmission, and may cause clutch slippage. A too short adjusted cable will result in too high throttle pressures which may cause harsh shifts, erratic shifts and torque converter hunting.

Lock-up Control Solenoid Valve (PGM-FI)

Inspection

1. Disconnect the lock-up control solenoid valve connector.
2. Connect the yellow terminal of the lock-up control solenoid valve to the battery positive (+) terminal and the battery negative (-) terminal to the body ground. A clicking sound should be heard.



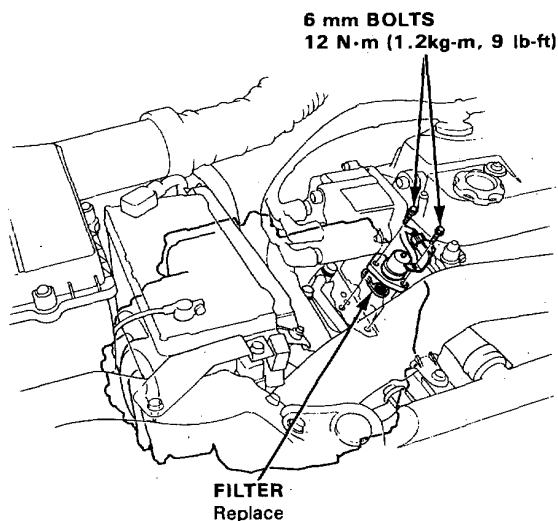
3. If not, check for continuity between the harness and body ground.
4. Replace the lock-up control solenoid valve if there is continuity between the harness and body ground.

Replacement

NOTE: Be sure to replace the lock-up control solenoid valve only when it is suspected to be faulty.

1. Remove the 6x1.0 mm bolts and lock-up control solenoid valve.

2. Check the oil passage in the lock-up control solenoid valve body and replace if is clogged with dirt.



3. Clean the lock-up control solenoid valve mounting surface and oil passage.
4. Install a new filter O-ring and the lock-up control solenoid valve.

CAUTION: Do not use the glove while installing the filter.

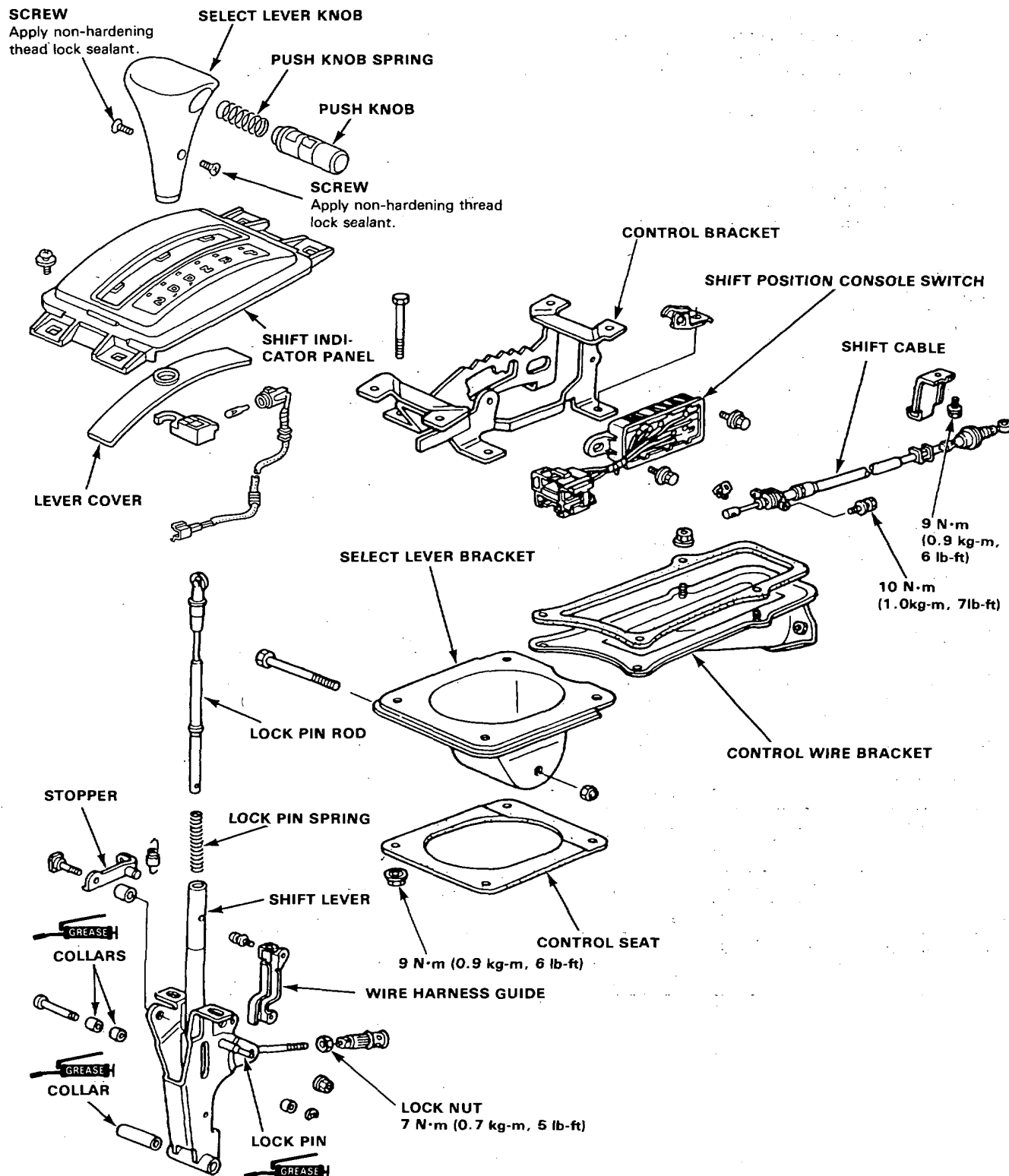
5. Be sure that the connector is not rusted or contaminated with dirt or oil and connect it securely.

NOTE: To ease installation of the bolt, the filter is provided with a cutout as shown in the drawing.



Gear Shift Selector (RHD)

Disassembly/Reassembly



Road Test

NOTE : After transmission is installed :

- Make sure the floor mat does not interfere with accelerator pedal travel. Fully depress accelerator pedal and check to make sure the throttle lever is fully opened.
- Release the accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up the engine to operating temperature.

D3 and D4 Range

1. Apply parking brake and block the wheels. Start the engine, then move the selector to **D4** while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.
2. Check that shift points occur at approximate speeds shown. Also check for abnormal noise and clutch slippage.

Upshift

1.4 l engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8-throttle	km/h	18.2—20.9	31.2—37.9	48.2—54.9	46.0—55.0
	mph	11.3—13.0	19.4—23.6	30.0—34.1	28.6—34.2
Half-throttle	km/h	31.6—40.6	56.7—69.7	91.5—104.5	——
	mph	19.6—25.2	35.2—43.3	56.9—64.9	——
Full-throttle	km/h	53.8—59.3	96.0—104.5	148.1—156.6	147.5—155.5
	mph	33.4—36.9	59.7—64.9	92.0—97.3	91.7—96.6

1.6 l carburetor engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8-throttle	km/h	17.3—20.0	31.7—38.4	49.2—55.9	46.7—55.7
	mph	10.8—12.4	19.7—23.9	30.6—34.7	29.0—34.6
Half-throttle	km/h	30.2—39.2	57.7—70.7	96.2—109.2	——
	mph	18.8—24.4	35.9—43.9	59.8—67.9	——
Full-throttle	km/h	53.5—59.0	97.5—106.5	155.3—163.8	149.7—157.7
	mph	33.3—36.7	60.6—66.2	96.5—101.8	93.0—98.0

DOHC engine:

		1st—2nd	2nd—3rd	3rd—4th	Lock-up ON
1/8 throttle	km/h	17.8—20.5	31.1—37.8	48.0—54.7	63.9—70.9
	mph	11.1—12.7	19.3—23.5	29.8—34.0	39.7—44.1
Half-throttle	km/h	34.2—43.2	57.9—70.9	93.5—106.5	——
	mph	21.3—26.8	36.0—44.1	58.1—66.2	——
Full-throttle	km/h	55.2—60.7	97.8—106.3	144.8—153.3	129.0—137.0
	mph	34.3—37.7	60.8—66.1	90.0—95.3	80.2—85.1

**Downshift**

1.4 l engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 16.4—19.4		10.1—12.6
	mph	4th—2nd: 10.2—12.1		6.3—7.8
Half-throttle	km/h	—	—	—
	mph	—	—	—
Full-throttle	km/h	129.4—138.4	83.1—92.1	41.2—46.7
	mph	80.4—86.0	51.6—57.2	25.6—29.0

1.6 l carburetor engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 16.6—19.6		12.0—14.5
	mph	4th—2nd: 10.3—12.2		7.5—9.0
Half-throttle	km/h	—	—	—
	mph	—	—	—
Full-throttle	km/h	137.1—146.1	84.4—93.4	43.3—48.8
	mph	85.2—90.8	52.5—58.0	26.9—30.3

DOHC engine:

		4th—3rd	3rd—2nd	2nd—1st
1/8-throttle	km/h	4th—2nd: 15.2—18.2		10.4—12.9
	mph	4th—2nd: 9.4—11.3		6.5—8.0
Half-throttle	km/h	—	—	—
	mph	—	—	—
Full-throttle	km/h	126.5—135.5	85.0—94.0	37.7—43.2
	mph	78.6—84.2	52.8—58.4	23.4—26.8

3. Accelerate to about 56 km/h (35mph) so the transmission is in 4th, then shift from **D4** to **2**. The car should immediately begin slowing down from engine braking.

CAUTION : Do not shift from **D4** or **D3** to **2** at speeds over 100km/h (62.5mph) ; you may damage the transmission.

2 (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

R (Reverse)

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake ; the car should not move.

Pressure

Testing

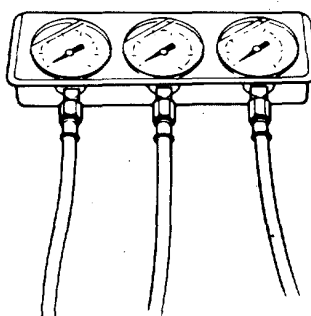
CAUTION: Before testing, be sure transmission is filled to proper level.

NOTE:

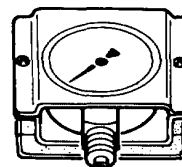
- Stop engine when attaching hoses for pressure tests.
- Torque hose fitting to 18 N·m (1.8kg-m, 12lb-ft).
- Do not reuse aluminum washers.

GAUGE SET 07406-0020003

(includes pressure hose set 07406-0020201)



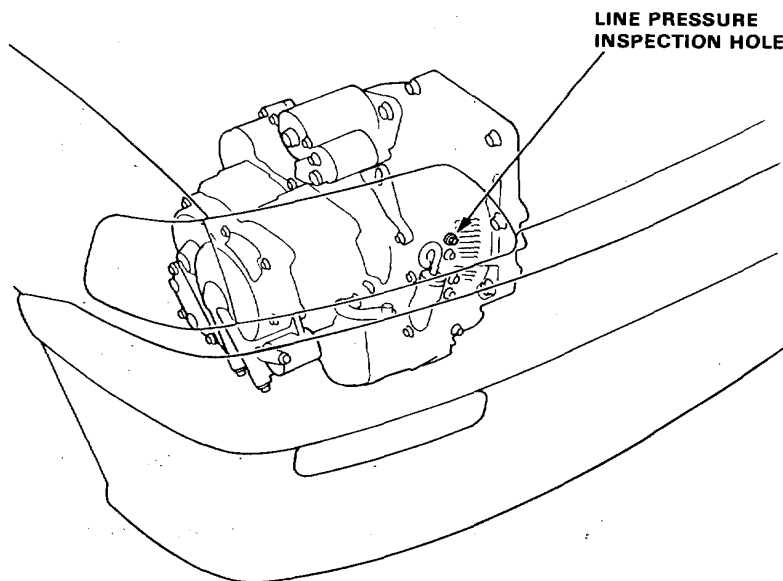
LOW PRESSURE GAUGE (07406-0070000)



HOSE FITTING

Line Pressure Measurement

1. Set the parking brake securely and block the rear wheels.
2. Run the engine at 2,000 min⁻¹ (rpm).



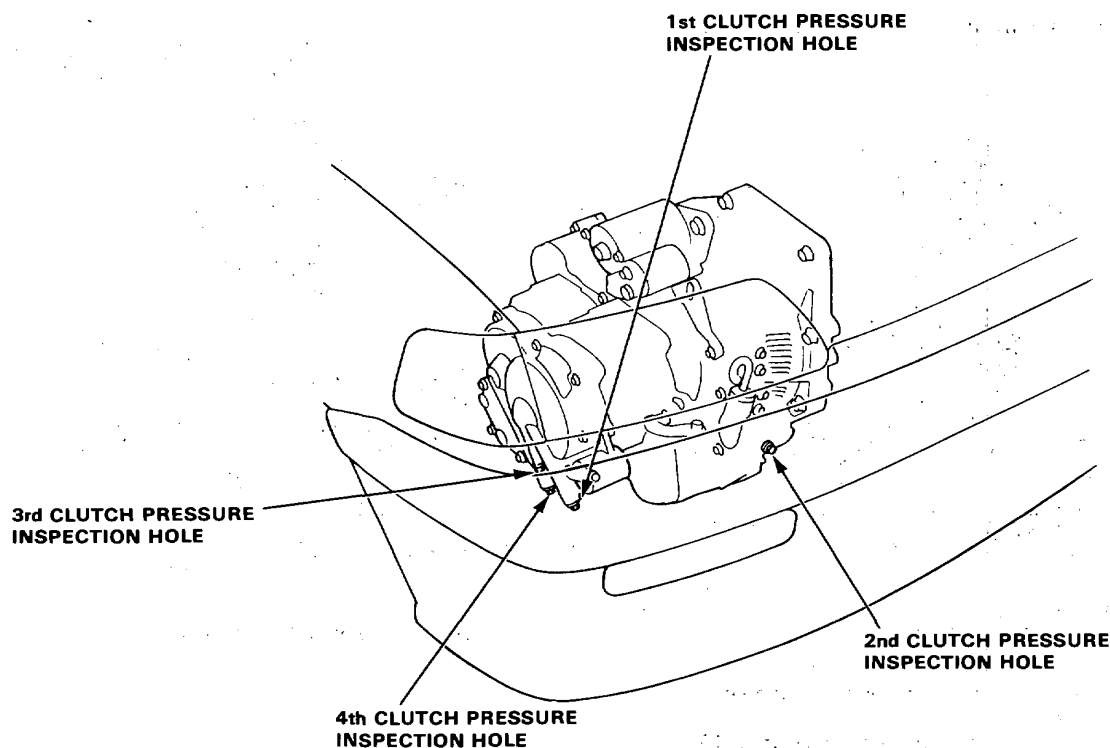
LINE PRESSURE INSPECTION HOLE

PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Line	N or P	No (or low) Line pressure	Torque converter, oil pump pressure regulator, torque converter check valve, oil pump	785–834 kPa (8.0–8.5 kg/cm ² , 114–121 psi)	736kPa (7.5 kg/cm ² , 107 psi)



Clutch Pressure Measurement

1. Set the parking brake securely and block the rear wheels.
2. Jack the up front of the car and support it with jack stands.
3. Run the engine at 2,000 min⁻¹ (rpm).



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
1st Clutch	D3 or D4	No or low 1st pressure	1st Clutch	785—834 kPa (8.0—8.5 kg/cm ² , 114—121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)
2nd Clutch (2nd hold)	2	No or low 2nd pressure	2nd Clutch	785—834 kPa (8.0—8.5 kg/cm ² , 114—121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)
2nd Clutch 3rd Clutch 4th Clutch	D3 or D4	No or low 2nd, 3rd or 4th pressure	2nd, 3rd and 4th Clutch	412 kPa (4.2 kg/cm ² , 60psi) (throttle control lever fully closed) 785—834 kPa (8.0—8.5 kg/cm ² , 114—121 psi) (throttle open more than 1/4)	363 kPa (3.7 kg/cm ² , 53 psi) (throttle control lever fully closed) 736 kPa (7.5 kg/cm ² , 107 psi) (throttle open more than 1/4)
4th Clutch	R	No or low 4th pressure	Servo valve or 4th Clutch	785—834 kPa (8.0—8.5 kg/cm ² , 114—121 psi)	736 kPa (7.5 kg/cm ² , 107 psi)

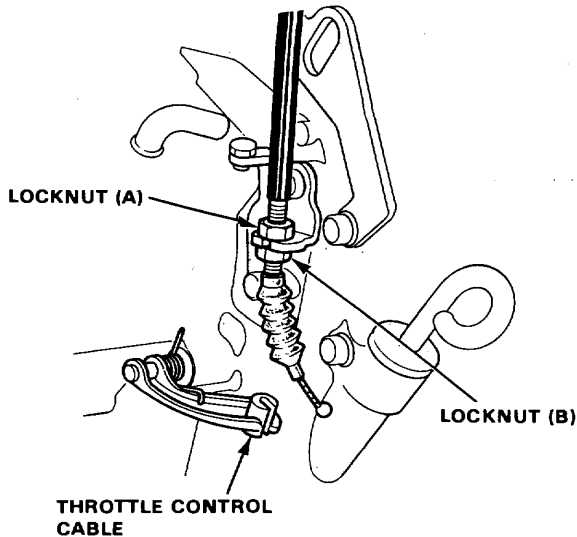
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Pressure

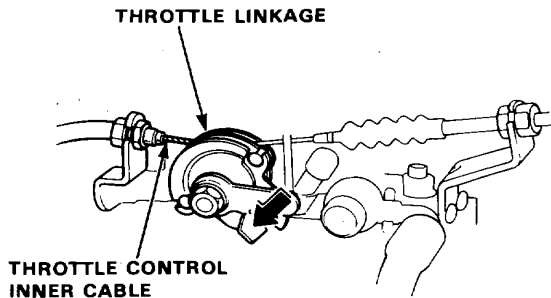
Testing (cont'd)

Low/High Pressure Test

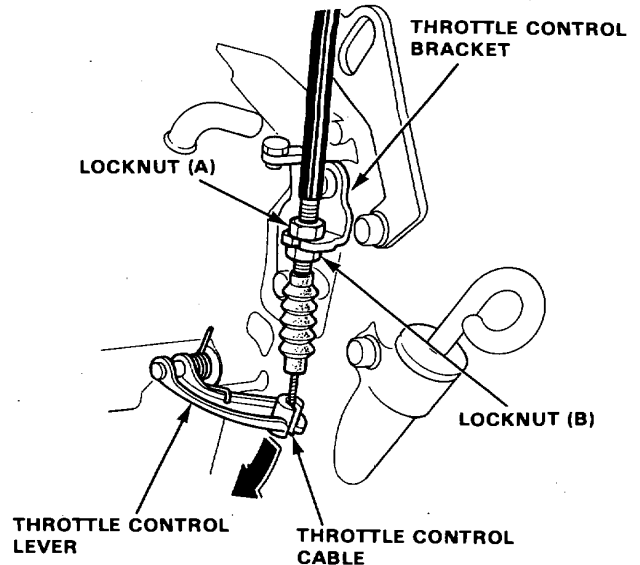
1. Raise car and support with safety stands.
2. Attach the gauge set to the appropriate pressure test port.
3. Remove the cable end of the throttle control cable from the throttle control lever.
NOTE: Do not loosen the locknuts, simply unhook the cable end.



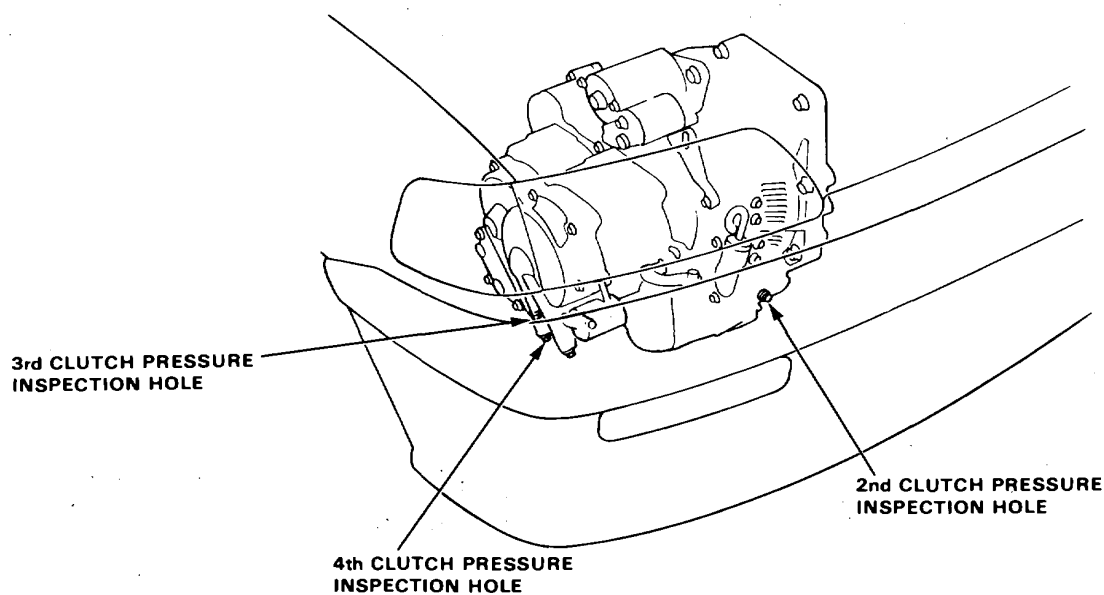
4. Warm up engine to normal operating temperature (cooling fan comes on).
5. With the engine idling, move the selector lever to D3 or D4.
6. Slowly move the throttle linkage to increase engine rpm until pressure is indicated on the appropriate gauge. Then release the throttle linkage, allowing the engine to return to an idle, and record the pressure reading.
7. Repeat step 6 for each clutch pressure being inspected.



8. With the engine idling, lift the throttle control lever up approximately 1/2 of its possible travel and increase the engine rpm until pressure is indicated on the appropriate gauge. Record the highest pressure reading obtained.



9. Repeat step 8 for each clutch pressure being inspected.



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
2nd Clutch	D or D	No or low 2nd pressure	2nd Clutch	412—834 kPa (4.2—8.5 kg/cm ² , 60—121 psi) varies with throttle opening	363 kPa (3.7 kg/cm ² , 53 psi) with lever released. 736 kPa (7.5 kg/cm ² , 107 psi) with lever in full throttle position.
3rd Clutch	D or D	No or low 3rd pressure	3rd Clutch		
4th Clutch	D	No or low 4th pressure	4th Clutch		

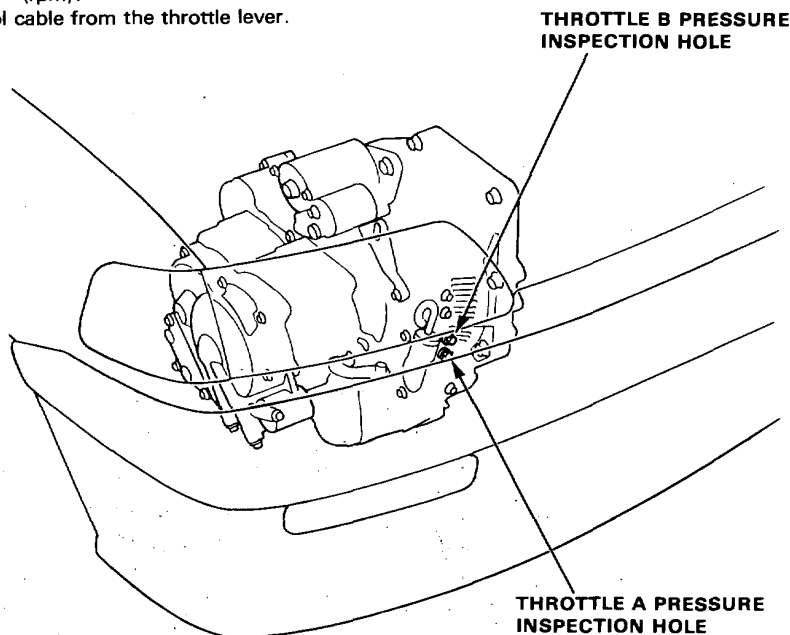
(cont'd)

Pressure

Testing (cont'd)

Throttle Pressure Measurement

1. Set the parking brake securely and block the wheels.
2. Run the engine at $1,000 \text{ min}^{-1}$ (rpm).
3. Disconnect the throttle control cable from the throttle lever.

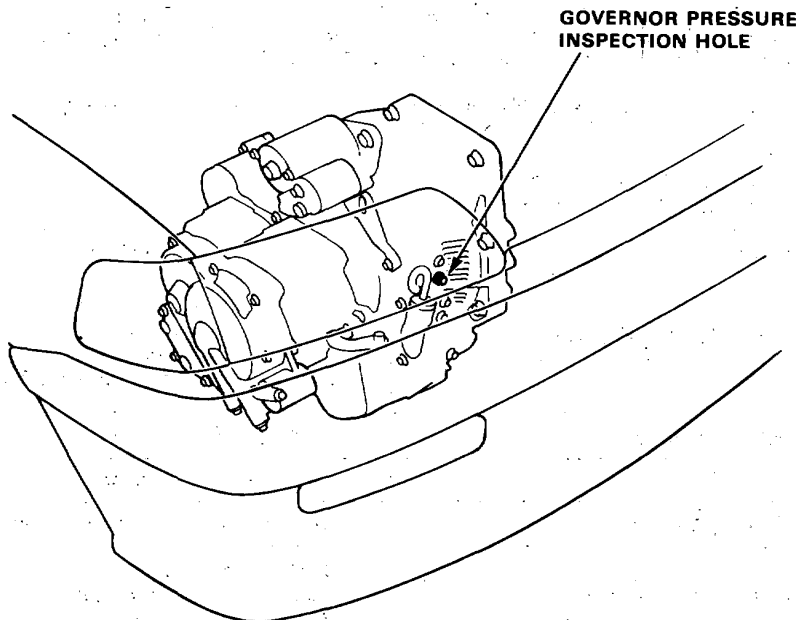


PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Throttle A	D3 or D4	No (or low) throttle pressure	Throttle valve A Throttle modulator valve	0–4.9 kPa (0–0.05 kg/cm², 0–70 psi) with lever released. Carburetor engine: 505–520 kPa (5.15–5.30 kg/cm², 73.2–75.4 psi) PGM-FI engine: 456–471 kPa (4.65–4.80 kg/cm², 66–68 psi) DOHC engine: 477–490 kPa (4.85–5.00 kg/cm², 69–71 psi)	Carburetor engine: 500 kPa (5.1 kg/cm², 72.5 psi) PGM-FI engine: 451 kPa (4.60 kg/cm², 65 psi) DOHC engine: 471 kPa (4.8 kg/cm², 68 psi) With lever in full throttle position.
Throttle B	D3 or D4	No (or low) throttle pressure	Throttle valve B	0 kPa (0 kg/cm², 0 psi) with lever released. 785–834 kPa (8.0–8.5 kg/cm², 114–121 psi) with lever in full throttle position.	736 kPa (7.5 kg/cm², 107 psi) with lever in full throttle position.



Governor Pressure Measurement

1. Set the parking brake securely and block the rear wheels.
2. Jack up the front of the car and support it with jack stands.
3. Run vehicle at 60 km/h (38 mph).



PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Governor	D3 or D4	No (or low) governor pressure	Governor valve	1.4 l engine: 151-161 kPa (1.54-1.64 kg/cm ² , 22-23 psi) 1.6 l Carburetor engine: 148-158 kPa (1.51-1.61 kg/cm ² , 21-23 psi) PGM-FI engine: 220-229 kPa (2.24-2.34 kg/cm ² , 32-33 psi) DOHC engine: 165-176 kPa (1.68-1.78 kg/cm ² , 24-25 psi)	1.4 l engine: 146 kPa (1.49 kg/cm ² , 21 psi) 1.6 l Carburetor engine: 143 kPa (1.46 kg/cm ² , 21 psi) PGM-FI engine: 215 kPa (2.19 kg/cm ² , 31 psi) DOHC engine: 160 kPa (1.63 kg/cm ² , 23 psi)

Stall Speed

Test

CAUTION :

- To prevent transmission damage, do not test stall speed for more than 10 seconds at a time.
- Do not shift the lever while rising the engine speed.
- Be sure to remove the pressure gauge before testing stall speed.

1. Engage parking brake and block the front wheels.
2. Connect safety chains to both front two hooks and attach, with minimum slack, to some strong stationary object.
3. Connect tachometer, and start the engine.
4. After the engine has warmed up to normal operating temperature, shift into **2**.
5. Fully depress the brake pedal and accelerator for 6 to 8 seconds, and note engine speed.
6. Allow 2 minutes for cooling, then repeat same test in **D4**, and **R**.

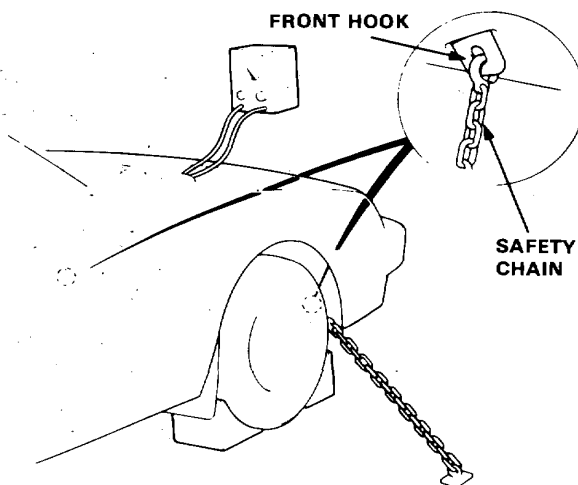
NOTE: Stall speed in **D4**, **2** and **R** must be the same, and must also be within limits:

Stall Speed RPM :

Specification : 2,750 min⁻¹ (rpm)

Service Limit : 2,300—2,900 min⁻¹ (rpm)

TROUBLE	PROBABLE CAUSE
Stall rpm high in 2 , D4 and R .	• Low fluid level • Faulty oil pump • Clogged oil strainer • Pressure regulator valve stuck closed
Stall rpm high in R only	• Slippage of 4th clutch
Stall rpm high in 2 only	• Slippage of 2nd clutch
Stall rpm high in D4 only	• Slippage of 1st clutch or one-way clutch
Stall rpm high in 2 , D4 and R .	• Engine output low • Engine throttle valve not in full open position • Torque converter one-way clutch slipping



Fluid Level

Checking/Changing

Checking

With the car on level ground, pull the transmission dipstick and check the level of fluid immediately after the engine is shut off (within one minute). The fluid level should be between the full and low marks. Push the dipstick all the way in to check the fluid level. If the level is at, or below, the low mark, add DEXRON-II type automatic transmission fluid.

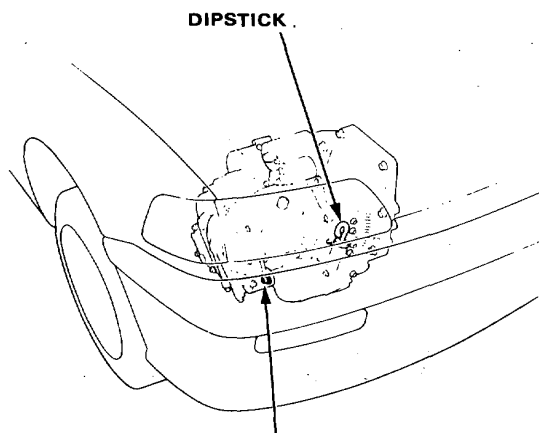
Changing

1. Bring the transmission up to operating temperature by driving the car. Park the car on level ground, turn the engine off, then remove drain plug.
2. Reinstall the drain plug with a new washer, then refill the transmission to the full mark on the dipstick.

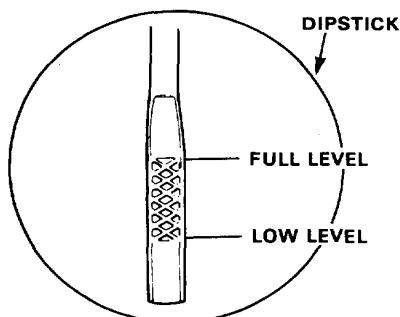
Automatic transmission Capacity:

2.4 l (2.5 U.S.qts, 2.1 Imp.qt) at change

5.4 l (5.7 U.S.qts, 4.8 Imp.qt) after overhaul



DRAIN BOLT/SEALING WASHER
40 N·m (4.0 kg-m, 29 lb-ft)
Replace the sealing washer.



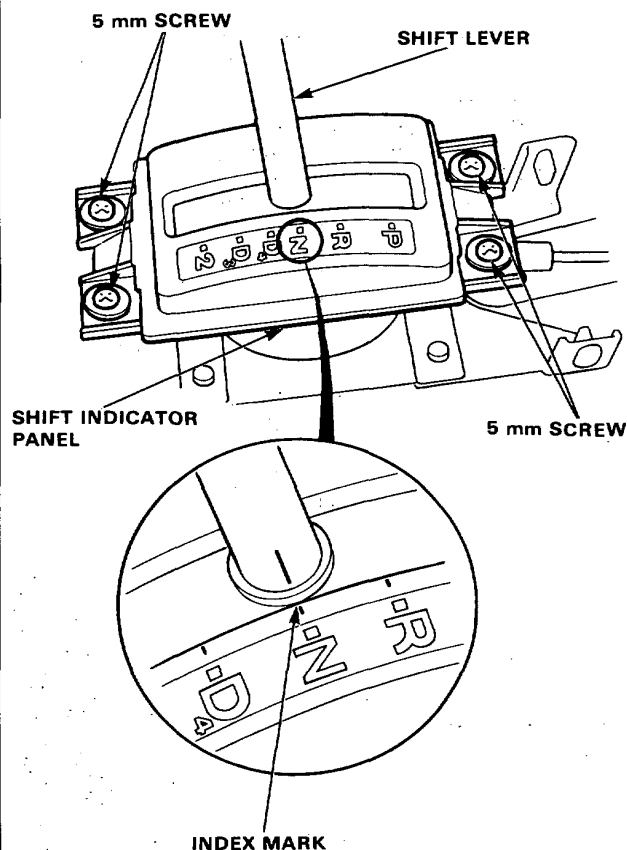
Shift Indicator Panel



Adjustment

1. Check that the index mark of the indicator aligns with the N mark of the shift indicator panel with the transmission in NEUTRAL.
2. If not aligned, remove the panel mounting screws and adjust by moving panel.

NOTE : Whenever escutcheon is removed for indicator bulb replacement etc., reinstall the panel as described above.



Transmission

Removal

⚠ WARNING

- Make sure jacks and safety stands are placed properly, and hoist brackets are attached to correct positions on the engine.
- Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.

CAUTION :

- Use the fender covers to avoid damaging the painted surfaces.
- Disconnect the wires and harnesses by holding the connectors.
- Reconnect the wires, harnesses and hoses properly. Be sure that the hoses and harnesses are not pinched or interfered with any parts.

1. Disconnect the battery negative (–) and positive (+) cables from the battery, and remove the battery.

CAUTION:

- Disconnect the battery negative (–) cable first, then the positive (+) cable from the battery.

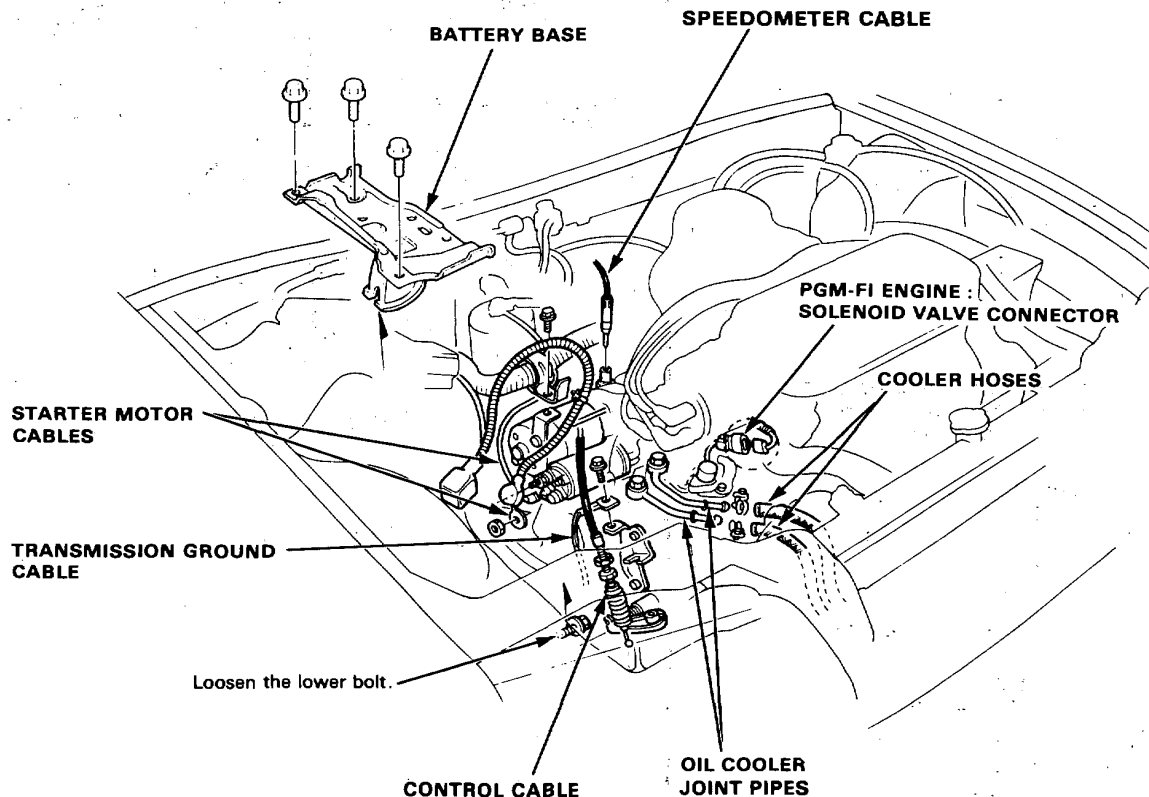
NOTE: Clean the battery terminals with an emery paper and coat with grease before reconnection.

2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base, and intake hose band of the throttle body.
3. Remove the air cleaner case complete with the intake hose (see Section 6).
4. Disconnect the starter motor and transmission ground cables.
5. Disconnect the speedometer cable (See Section 5).

NOTE: Do not disassemble speedometer gear holder.

6. **PGM-FI engine :**
Disconnect the lock-up control solenoid valve wire connector.
7. Disconnect the control cable at the control lever.
8. Drain transmission oil/fluid. Use a socket wrench to remove the drain plug. Remove the oil filler plug to speed draining. Reinstall the drain plug with a new washer.
9. Disconnect the cooler hoses at the joint pipes.
Turn the ends up to prevent ATF from flowing out.

NOTE: Check for any signs of leak at the hose joints.



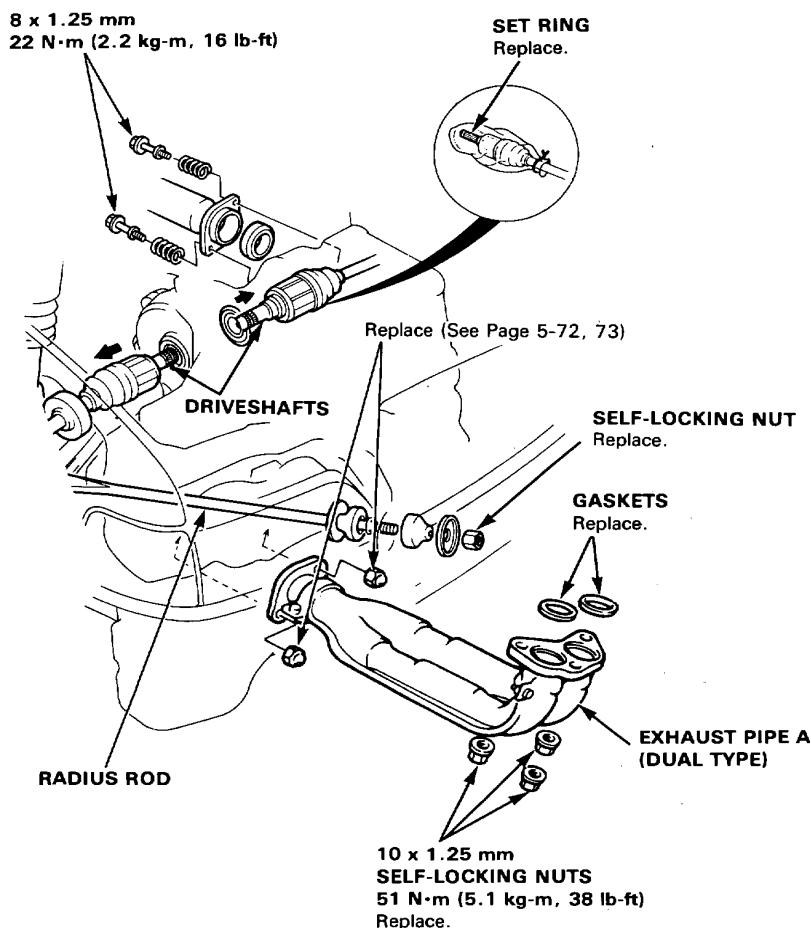
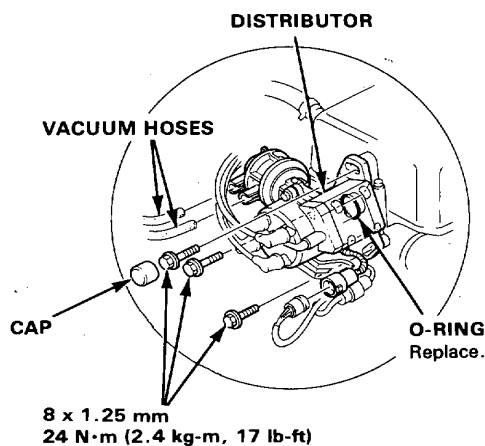


10. Disconnect the vacuum hoses and connectors and remove the mount bolts, then remove the distributor from the cylinder head.

NOTE: Adjust the ignition timing on reinstallation.

11. Remove the right front splash shield.
12. Remove the exhaust pipe A.
13. Remove the cotter pin and front lower arm ball joint nut. Separate the lower arm and ball joint. (page 12-11)
14. Remove the self-locking nut and damper fork bolt. (page 12-12)
15. Remove the two bolts and front side self-locking nut, then remove the right radius rod. (page 12-8, 9)
16. Remove the right and left driveshafts (See section 10).

NOTE: Coat all precision finished surfaces of the driveshaft with clean engine oil or grease. Tie the plastic bags over the driveshaft ends.

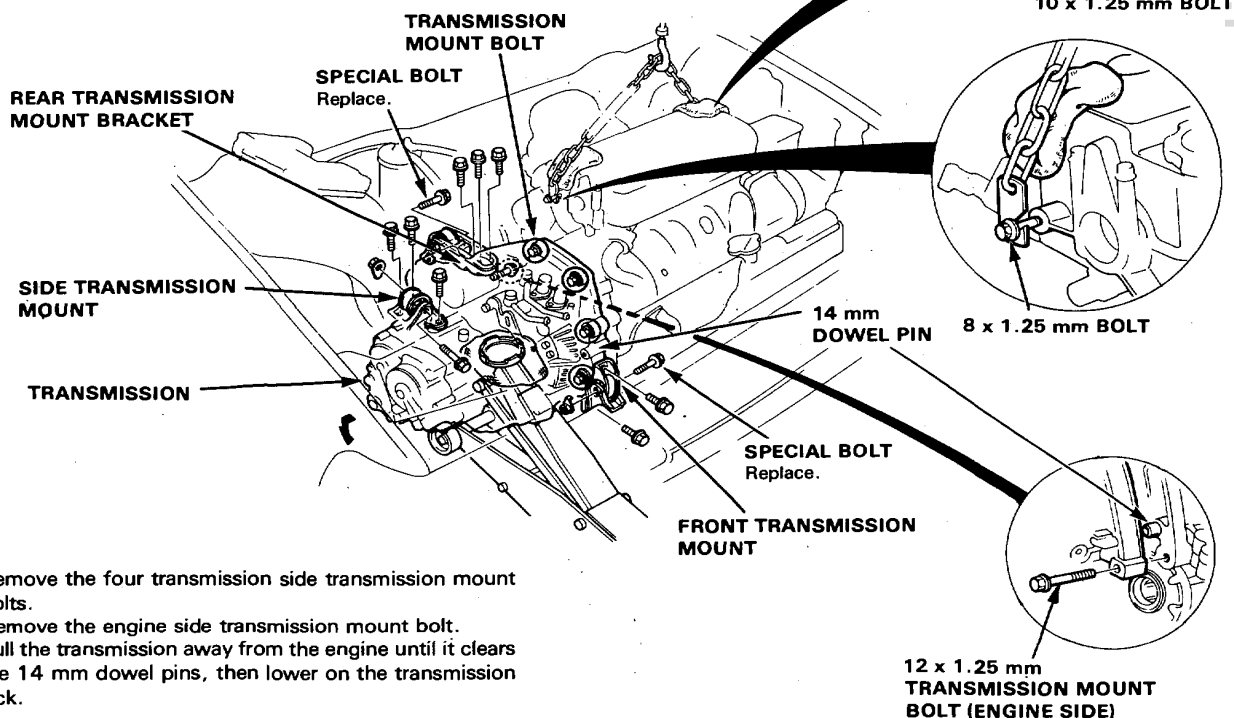
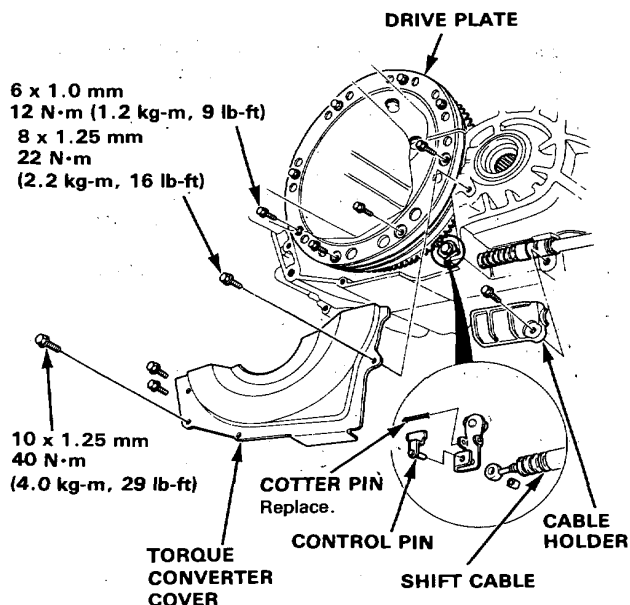


(cont'd)

Transmission

Removal (cont'd)

17. Remove the header pipe bracket and torque converter cover.
18. Remove the cable holder.
19. Remove the shift control cable by removing the cotter pin, control pin and control lever roller from the control lever.
20. Remove the drive plate bolts one at a time while rotating the crankshaft pulley counterclockwise.
CAUTION: The pulley mount bolt has the right hand threads and it might come loose while rotating the pulley. Check the bolt for tightness.
21. Set the 8 mm bolt in the hole at the right side of the cylinder head and 10 mm bolt in the hole at the left side of the cylinder head. Attach the hoist chain to the bolts and lift the engine slightly to unload the mounts.
NOTE: Be sure to set the bolts securely. Protect the cylinder head and cover with a shop towel while lifting.
22. Place a jack under the transmission and raise the transmission just enough to take weights off the mounts.
23. Remove the side transmission mount and bracket by removing the four bolts.
24. Remove the front transmission mount by removing the three bolts.
25. Remove the rear transmission mount bracket by removing the four bolts.



26. Remove the four transmission side transmission mount bolts.
27. Remove the engine side transmission mount bolt.
28. Pull the transmission away from the engine until it clears the 14 mm dowel pins, then lower on the transmission jack.

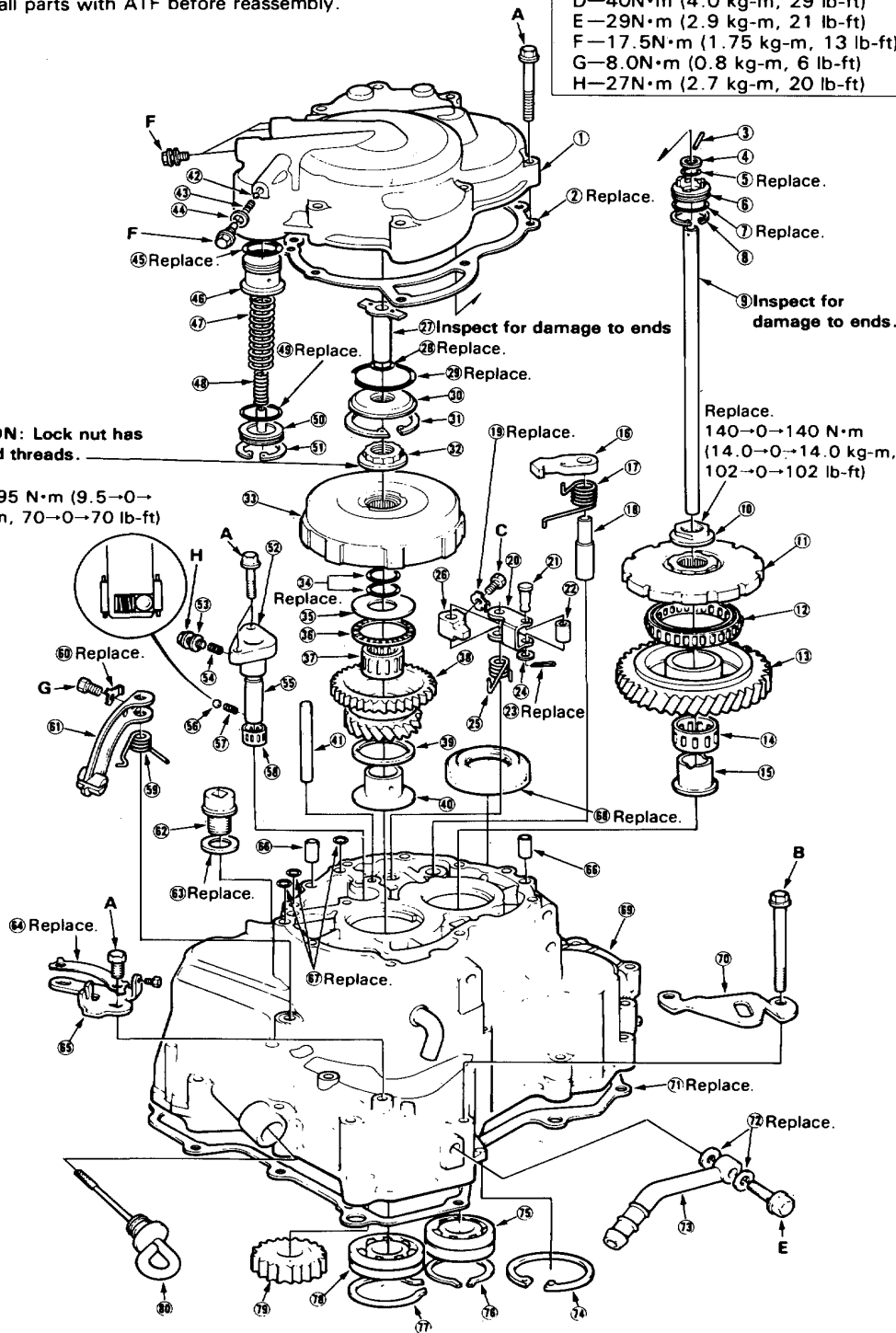
Illustrated Index

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Coat all parts with ATF before reassembly.

Torque Value	Bolt Size
A—12N·m (1.2 kg-m, 9 lb-ft)	6 mm
B—34N·m (3.4 kg-m, 25 lb-ft)	8 mm
C—14N·m (1.4 kg-m, 10 lb-ft)	6 mm
D—40N·m (4.0 kg-m, 29 lb-ft)	14 mm Drain
E—29N·m (2.9 kg-m, 21 lb-ft)	12 mm
F—17.5N·m (1.75 kg-m, 13 lb-ft)	8 mm
G—8.0N·m (0.8 kg-m, 6 lb-ft)	5 mm
H—27N·m (2.7 kg-m, 20 lb-ft)	10 mm

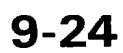
CAUTION: Lock nut has left-hand threads.
Replace.
95→0→95 N·m (9.5→0→9.5 kg-m, 70→0→70 lb-ft)





- ① END COVER
- ② GASKET
- ③ PIN 19.8 mm
- ④ FEED PIPE WASHER
- ⑤ O-RING 7.7 x 1.9 mm
- ⑥ FEED PIPE FLANGE
- ⑦ O-RING 19.8 x 1.9 mm
- ⑧ SNAP RING 26 mm
- ⑨ 3rd CLUTCH FEED PIPE
- ⑩ LOCKNUT 23 mm
- ⑪ PARKING GEAR
- ⑫ ONE-WAY CLUTCH
- ⑬ COUNTERSHAFT 1st GEAR
- ⑭ NEEDLE BEARING
31 x 36 x 14 mm
- ⑮ COLLAR
- ⑯ PARKING PAWL
- ⑰ PARKING PAWL SPRING
- ⑱ PARKING PAWL SHAFT
- ⑲ LOCK WASHER
- ⑳ PARKING SHIFT ARM
- ㉑ ROLLER PIN
- ㉒ PARKING BRAKE ROLLER
- ㉓ COTTER PIN 1.6 mm
- ㉔ WASHER 6 mm
- ㉕ PARKING BRAKE SPRING
- ㉖ PARKING BRAKE STOPPER
- ㉗ 1st CLUTCH FEED PIPE
- ㉘ O-RING 8.5 x 1.9 mm
- ㉙ O-RING 34 x 1.9 mm
- ㉚ FEED PIPE GUIDE A
- ㉛ SNAP RING 38 mm
- ㉜ LOCKNUT 19 mm
- ㉝ 1st CLUTCH ASSEMBLY
- ㉞ O-RINGS 18.8 x 1.9 mm
- ㉟ THRUST WASHER 23 mm
- ㊱ THRUST NEEDLE BEARING
35 x 49 x 2 mm
- ㊲ NEEDLE BEARING
28 x 33 x 16.8 mm
- ㊳ MAINSHAFT 1st GEAR
- ㊴ THRUST WASHER
28 x 40 x 1.5 mm
- ㊵ COLLAR 26 mm
- ㊶ STOP PIN
- ㊷ STEEL BALL
- ㊸ SPRING
- ㊹ SEALING WASHER
- ㊺ O-RING 29 x 2.4 mm
- ㊻ 1st ACCUMULATOR
PISTON
- ㊼ OUTER SPRING
- ㊽ INNER SPRING
- ㊾ O-RING 29 x 2.4 mm
- ㊿ 1st ACCUMULATOR COVER
- ① SNAP RING 38 mm
- ② IDLER SHAFT HOLDER
- ③ WASHER
- ④ IDLER SHAFT SPRING A
- ⑤ IDLER SHAFT
- ⑥ STEEL BALL
- ⑦ IDLER SHAFT SPRING B
14 x 18 x 15 mm
- ⑧ THROTTLE LEVER SPRING
- ⑨ LOCK WASHER
- ⑩ THROTTLE CONTROL LEVER
- ⑪ DRAIN PLUG
- ⑫ SEALING WASHER
- ⑬ LOCK PLATE
- ⑭ THROTTLE CABLE BRACKET
- ⑮ DOWEL PIN 8 x 14 mm
- ⑯ O-RING 7.7 x 2.3 mm
- ⑰ OIL SEAL 35 x 63 x 9 mm
- ⑱ TRANSMISSION HOUSING
- ⑲ TRANSMISSION HOOK
- ㉑ GASKET
- ㉒ SEALING WASHER
- ㉓ COOLER PIPE
- ㉔ SNAP RING 72 mm
- ㉕ BALL BEARING
25 x 64 x 16 mm
- ㉖ SNAP RING 64 mm
- ㉗ SNAP RING 70 mm
- ㉘ BALL BEARING
26 x 70 x 17 mm
- ㉙ REVERSE IDLER GEAR
- ㉚ OIL LEVEL GAUGE

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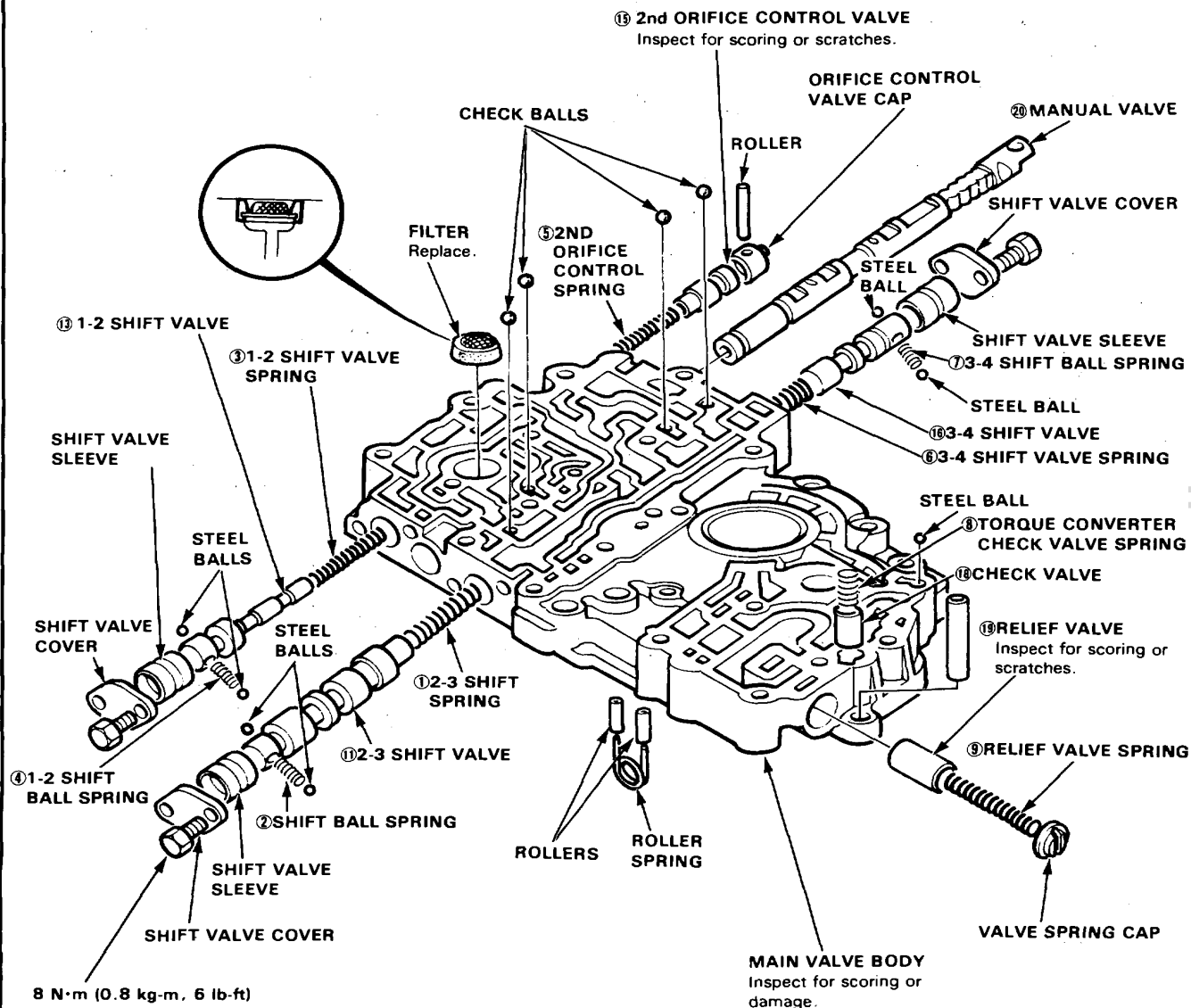
- 81 REVERSE GEAR COLLAR
- 82 NEEDLE BEARING
31 x 36 x 14 mm
- 83 COUNTERSHAFT REVERSE GEAR
- 84 REVERSE GEAR SELECTOR
- 85 SELECTOR HUB
- 86 COUNTERSHAFT 4th GEAR
- 87 NEEDLE BEARING
28 x 33 x 20 mm
- 88 DISTANCE COLLAR 28 mm
- 89 COUNTERSHAFT 2nd GEAR
- 90 COTTER WASHER
- 91 THRUST NEEDLE BEARING
39 x 54 x 2 mm
- 92 COUNTERSHAFT 3rd GEAR
- 93 NEEDLE BEARING
32 x 38 x 20 mm
- 94 THRUST NEEDLE BEARING
35 x 52 x 2 mm
- 95 THRUST WASHER
- 96 3rd CLUTCH ASSEMBLY
- 97 O-RING
31.2 x 1.9 mm
- 98 COUNTERSHAFT
- 99 NEEDLE BEARING
36 x 62 x 18 mm
- 100 OIL GUIDE PLATE
- 101 SNAP RING 26 mm
- 102 THRUST WASHER
26 x 45 x 3 mm
- 103 THRUST NEEDLE BEARING
32 x 44 x 2 mm
- 104 4th GEAR
- 105 REVERSE SHIFT FORK
- 106 LOCK WASHER
- 107 NEEDLE BEARING
32 x 38 x 14 mm
- 108 NEEDLE BEARING
32 x 38 x 20 mm
- 109 THRUST NEEDLE BEARING
39 x 54 x 2 mm
- 110 4th GEAR COLLAR
- 111 THRUST WASHER
26 x 53 x 4.5 mm
- 112 2nd/4th CLUTCH ASSEMBLY
- 113 THRUST WASHER 36.5 mm
- 114 THRUST NEEDLE BEARING
36 x 52 x 11 mm
- 115 2nd GEAR
- 116 NEEDLE BEARING
36 x 41 x 14.8 mm
- 117 THRUST NEEDLE BEARING
42 x 58 x 2 mm
- 118 O-RING 31.2 x 1.9 mm
- 119 MAINSHAFT
- 120 SEALING RING 32 mm
- 121 DISTANCE COLLAR 20 mm
- 122 NEEDLE BEARING
20 x 26 x 20 mm
- 123 SNAP RING 20 mm
- 124 GOVERNOR
- 125 LOCK WASHER ASSEMBLY
- 126 SEPARATOR PLATE
- 127 BY-PASS BODY
- 128 BY-PASS BODY COVER
- 129 LOCK PLATE
- 130 BOOT
- 131 O-RING
- 132 SPEED SENSOR ASSEMBLY
- 133 PIN
- 134 CONTROL SHAFT
- 135 SHIFT LEVER
- 136 PIN
- 137 MANUAL VALVE PIN
- 138 ROLLERS
- 139 WASHER
- 140 PIN
- 141 DIFFERENTIAL ASSEMBLY
- 142 LOCK-UP VALVE ASSEMBLY
- 143 LOCK-UP SEPARATOR PLATE
- 144 REGULATOR VALVE ASSEMBLY
- 145 SPRING
- 146 TORQUE CONVERTER CHECK VALVE
- 147 DOWEL PIN
- 148 CLUTCH PIPE
- 149 MODULATOR VALVE ASSEMBLY
- 150 MODULATOR SEPARATOR PLATE
- 151 MAGNET
- 152 MAGNET HOLDER
- 153 SUCTION PIPE
- 154 ACCUMULATOR COVER
- 155 SERVO VALVE BODY ASSEMBLY
- 156 THROTTLE CONTROL SHAFT
- 157 E-CLIP Replace
- 158 LOCK PLATE
- 159 SERVO SEPARATOR PLATE
- 160 STEEL BALL
- 161 LOCK WASHER Replace
- 162 SECONDARY VALVE BODY ASSEMBLY
- 163 DOWEL PIN
- 164 SECONDARY SEPARATOR PLATE
- 165 FILTER SCREEN
- 166 FILTER
- 167 STEEL BALL
- 168 O-RING 27.5 x 1.7 mm
- 169 STATOR SHAFT
- 170 STOP PIN
- 171 MAIN VALVE BODY ASSEMBLY
- 172 DOWEL PIN
- 173 CHECK VALVE SPRING
- 174 CHECK VALVE
- 175 SUCTION PIPE
- 176 DOWEL PIN
- 177 OIL PUMP DRIVE GEAR
- 178 OIL PUMP DRIVEN GEAR
- 179 OIL PUMP SHAFT
- 180 DOWEL PIN 8 x 14 mm
- 181 MAIN VALVE SEPARATOR PLATE
- 182 CONTROL LEVER
- 183 OIL SEAL 44 x 68 x 8 mm
- 184 BALL BEARING
- 185 OIL SEAL 35 x 56 x 8 mm
- 186 LOCK-UP CONTROL SOLENOID VALVE
- 187 COOLER PIPE
PGM-FI engine only
- 188 TORQUE CONVERTER HOUSING
- 189 SERVO VALVE HOLDER
- 190 MAGNET COVER
- 191 SERVO COVER
- 192 SERVO COVER SEPARATOR PLATE

Main Valve Body

-Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.



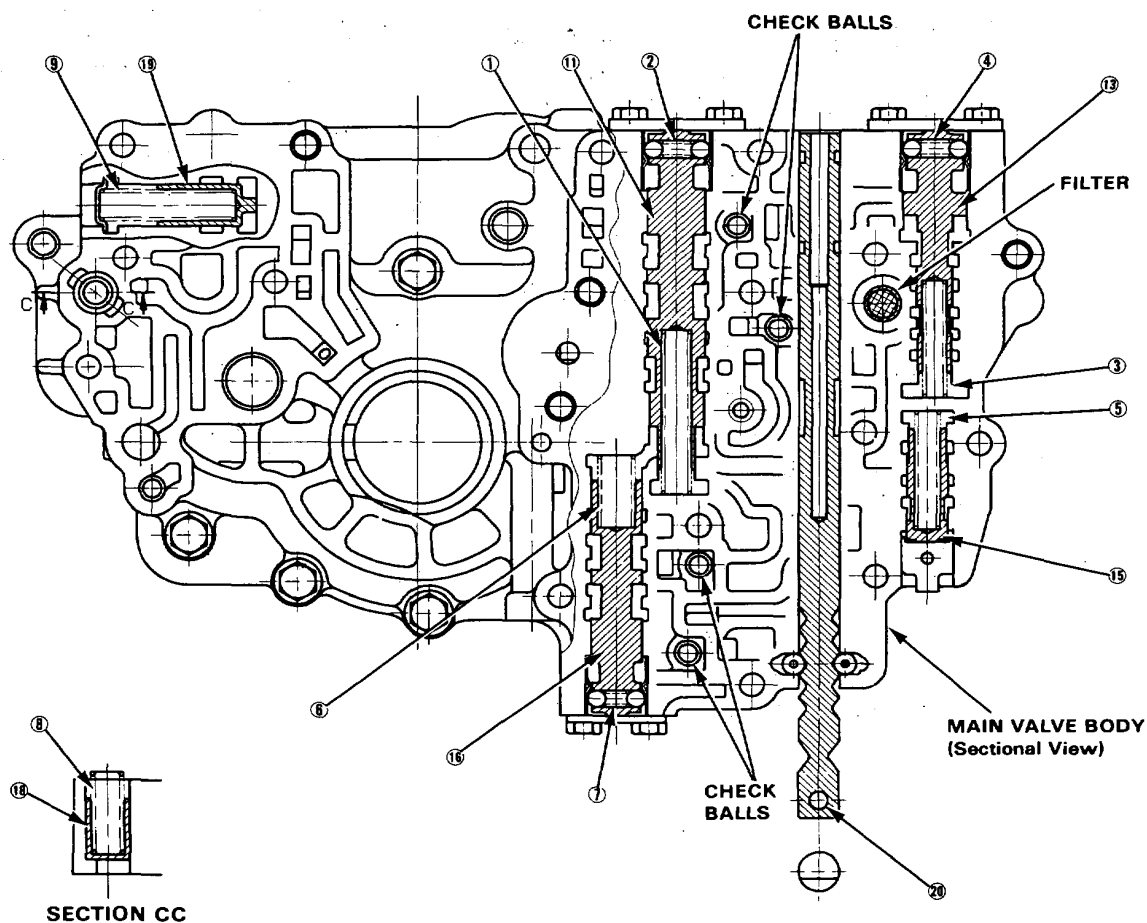


Spring Specifications

Unit of length: mm (in)

No.	Spring		Standard (New)			
			Wire Dia	O. D.	Free Length	No. of Coils
①	2-3 shift spring		0.7 (0.028)	7.6 (0.299)	43.0 (1.693)	12.7
②	2-3 Shift ball spring	Carburetor	0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
		DOHC	0.45 (0.018)	4.5 (0.177)	13.3 (0.524)	8
③	1-2 shift spring	Carburetor	0.5 (0.020)	4.5 (0.177)	46.8 (1.843)	35.1
		DOHC	0.5 (0.020)	4.4 (0.173)	48.5 (1.909)	35.1
④	1-2 shift ball spring	1.6 ℓ Carburetor	0.4 (0.016)	4.5 (0.177)	11.3 (0.445)	8
		1.4 ℓ and DOHC	0.45 (0.018)	4.5 (0.177)	12.7 (0.500)	11
			0.8 (0.031)	6.6 (0.260)	46.3 (1.823)	27.6
⑤	2nd orifice control spring		0.8 (0.031)	6.6 (0.260)	46.3 (1.823)	27.6
⑥	3-4 shift spring	Carburetor	0.7 (0.028)	9.6 (0.378)	32.9 (1.295)	6.4
		DOHC	0.8 (0.031)	9.6 (0.378)	33.9 (1.335)	11.3
⑦	3-4 shift ball spring	Carburetor	0.45 (0.018)	4.5 (0.177)	12.0 (0.472)	6.7
		DOHC	0.5 (0.020)	4.5 (0.177)	10.8 (0.25)	7.4
⑧	Torque converter check spring		1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12
⑨	Relief valve spring		1.0 (0.039)	8.4 (0.331)	52.0 (2.047)	23

Sectional View

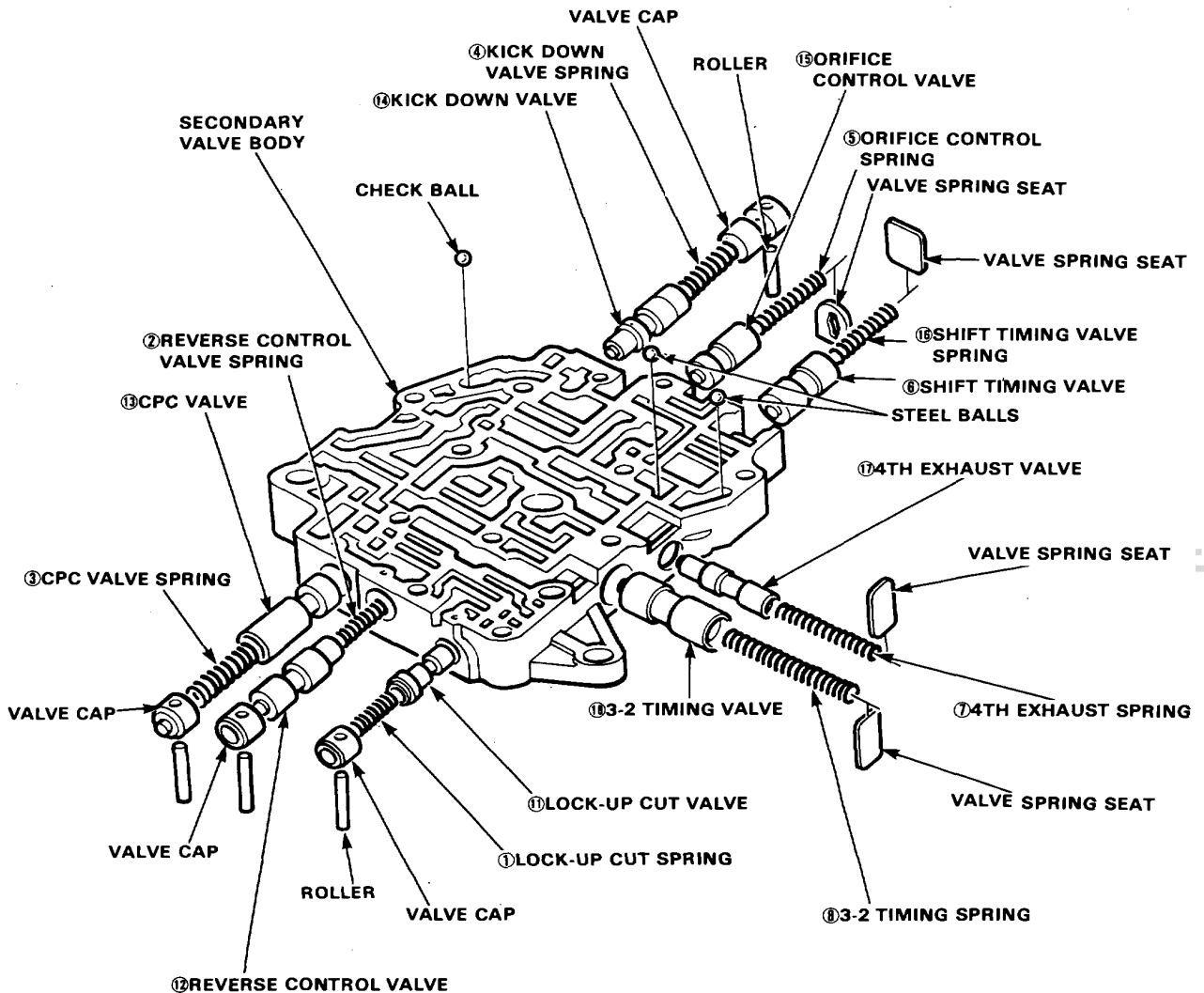


Secondary Valve

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.
- Replace as an assembly if any parts are worn or damaged.

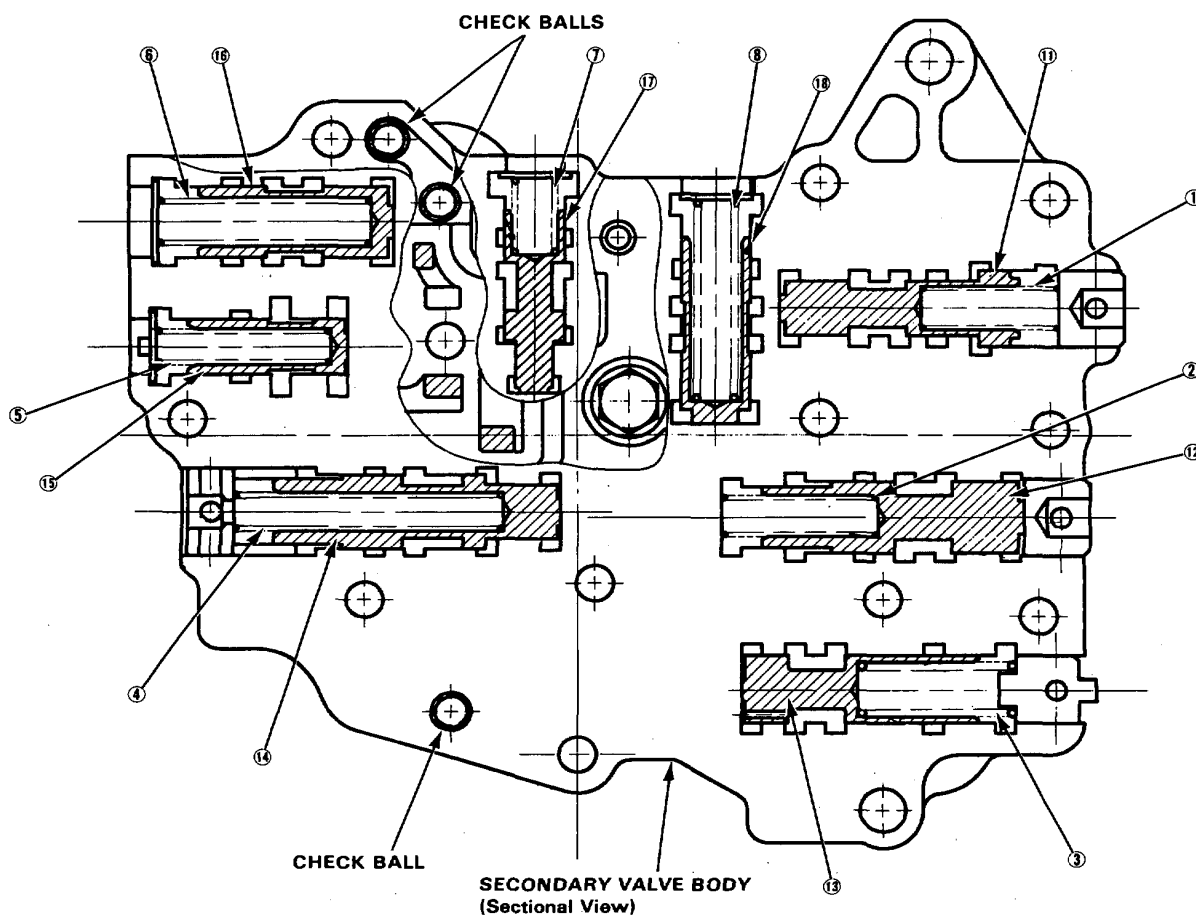




Spring Specifications

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Lock-up cut spring	0.7(0.028)	7.6(0.299)	29.0(1.142)	18
②	Reverse control spring	0.7(0.028)	7.6(0.299)	37.2(1.465)	15.3
③	CPC valve spring	1.4(0.055)	9.4(0.370)	31.6(1.244)	10.9
④	Kick down valve spring	0.9(0.035)	10.1(0.398)	40.8(1.606)	14.5
⑤	Orifice control spring	0.9(0.035)	6.1(0.240)	35.9(1.413)	20
⑥	Shift timing spring	0.9(0.035)	8.6(0.339)	42.9(1.689)	21.4
⑦	4th exhaust spring	0.9(0.035)	6.1(0.240)	43.7(1.720)	20.3
⑧	3-2 timing spring	1.2(0.047)	7.7(0.303)	45.1(1.776)	19.8

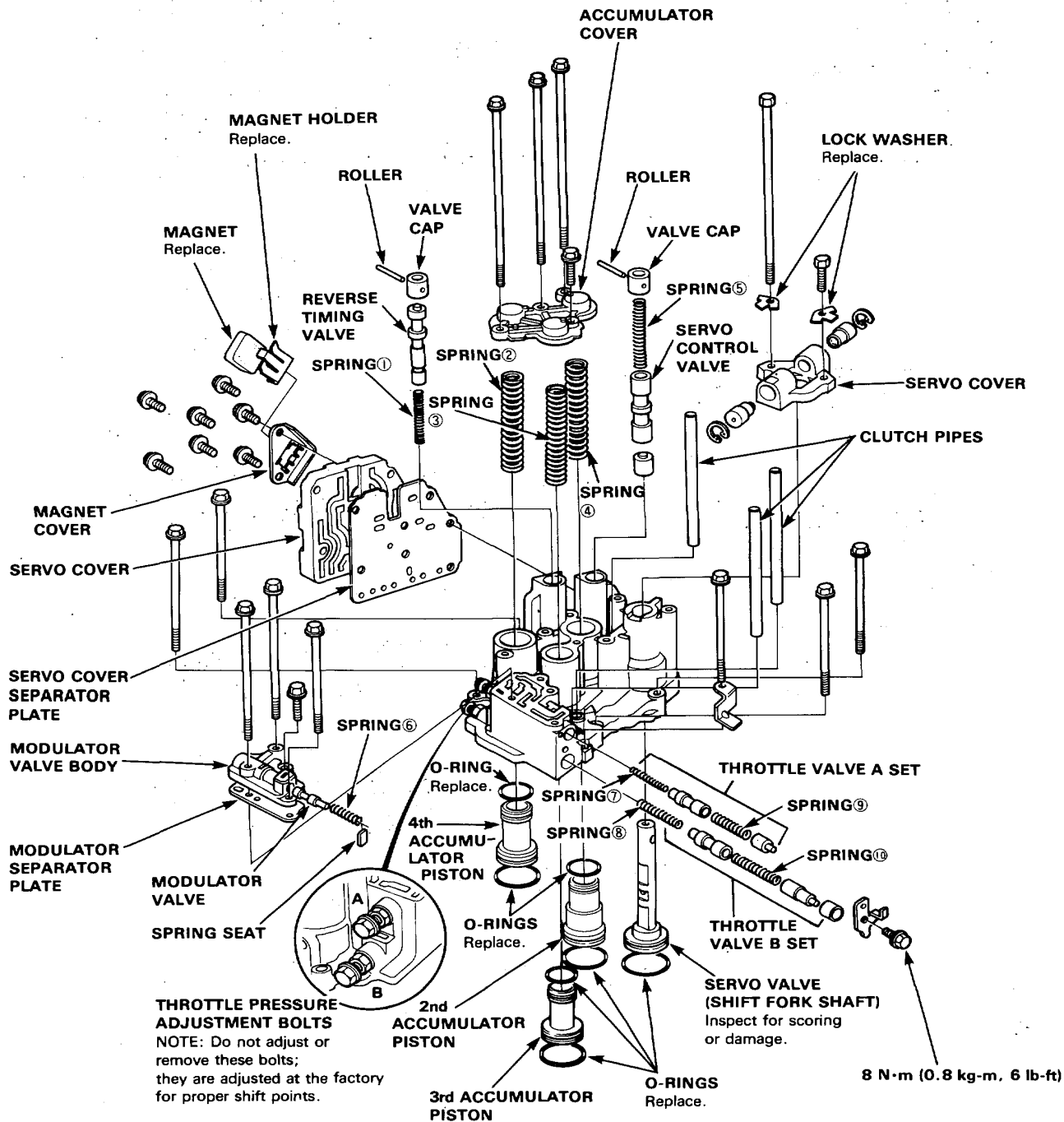


Servo Valve Body

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair.



* All Bolts Torque: 12 N·m (1.2 kg-m, 9 lb-ft)



Spring Specifications

Unit of length mm (in.)

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Reverse timing spring	0.7(0.028)	5.6(0.220)	43.8(1.724)	21.7
②	4th accumulator spring	3.2(0.126)	18.6(0.732)	78.3(3.083)	10
③	3rd accumulator spring	2.7(0.106)	15.5(0.610)	80.0(3.150)	14.8
④	2nd accumulator spring	3.5(0.138)	20.2(0.795)	76.7(3.020)	9.6
⑤	Servo control spring	1.0(0.039)	7.6(0.299)	44.0(1.732)	18.2
⑥	Modulator spring	Carburetor 1.2(0.047)	9.4(0.370)	{ 27.2(1.071) 26.3(1.035) }	8
		PGM-FI 1.2(0.047)	9.4(0.370)	{ 26.3(1.035) 26.4(1.039) }	8
⑦	Throttle A adjusting spring	0.8(0.031)	6.2(0.244)	27.0(1.063)	8.5
⑧	Throttle B adjusting spring	0.8(0.031)	6.2(0.244)	30.0(1.181)	8
⑨	Throttle A spring	1.0(0.039)	8.5(0.335)	22.2(0.874)	6
⑩	Throttle B spring	Except 1.4 ℓ 1.0(0.039)	8.5(0.335)	22.1(0.870)	5.5
		1.6(0.063)	8.5(0.335)	41.3(1.626)	13.9
		1.4 ℓ 1.4(0.055)	8.5(0.335)	41.4(1.630)	8.4

Regulator Valve Body

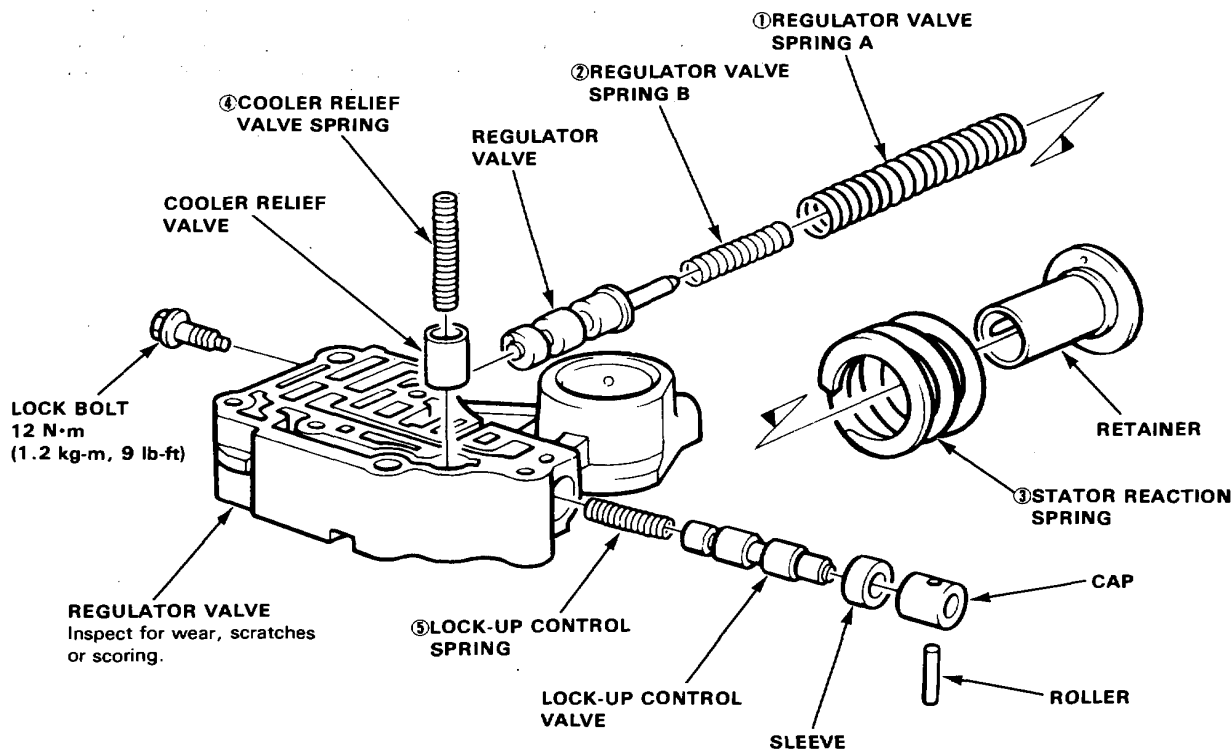
Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement; if any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.

1. Hold the retainer in place while removing the lock bolt. Once the bolt is removed, release the retainer slowly.
2. Reassembly is in the reverse order of disassembly.
NOTE: Align the hole in the retainer with the hole in the valve body, then press the retainer into the valve body and tighten the lock bolt.

PGM-FI engine:



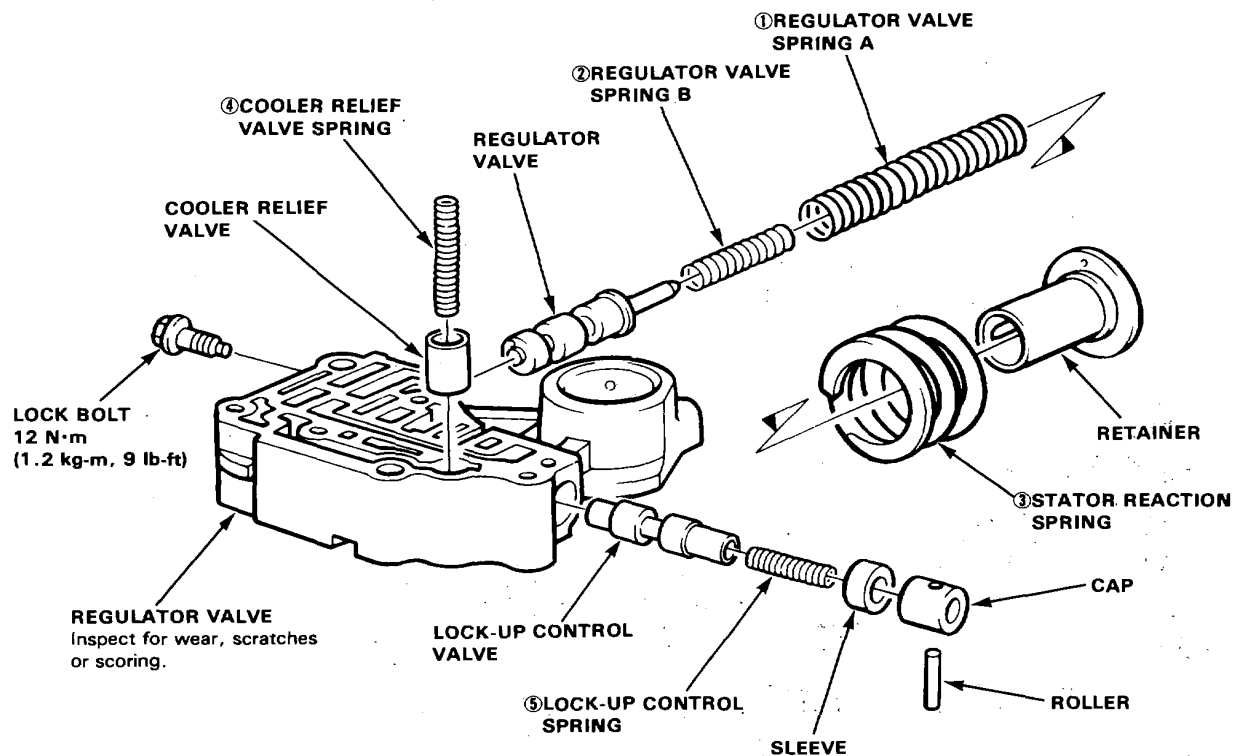
Spring Specifications

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A	1.58 x 2.00 (0.062 x 0.079)	14.7(0.579)	86.5(3.406)	20.9
②	Regulator valve spring B	1.8(0.071)	9.6(0.378)	44.0(1.732)	7.5
③	Stator reaction spring	6.0(0.236)	38.4(1.512)	30.3(1.193)	2
④	Cooler relief valve spring	1.1(0.043)	8.4(0.331)	36.4(1.433)	12
⑤	Lock-up control spring	DOHC	0.7(0.028)	6.6(0.260)	35.3(1.390)
		1.5 l, 1.6 l	0.7(0.028)	6.6(0.260)	33.8(1.331)



Carburetor engine:



Unit of length mm (in.)

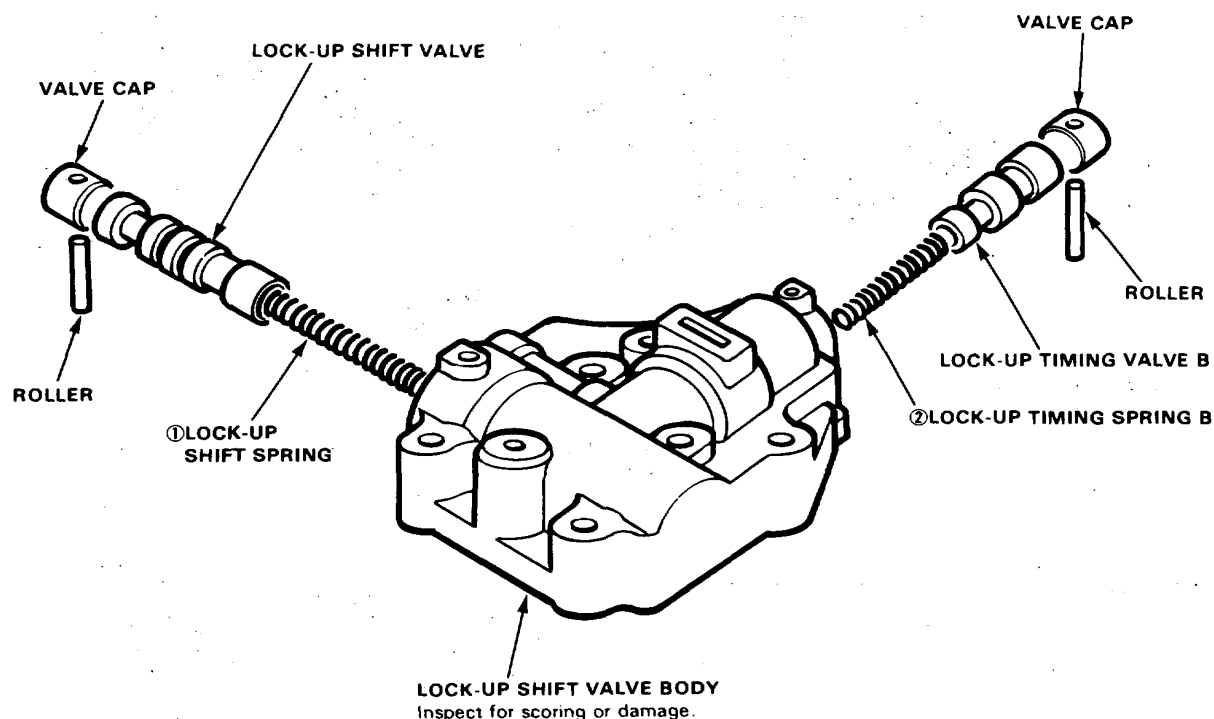
Spring Specifications		Standard (New)			
No.	Spring	Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A	1.58 x 2.00 (0.062 x 0.079)	14.7(0.579)	86.5(3.406)	20.9
②	Regulator valve spring B	1.8(0.071)	9.6(0.378)	44.0(1.732)	7.5
③	Stator reaction spring	6.0(0.236)	38.4(1.512)	30.3(1.193)	2
④	Cooler relief valve spring	1.1(0.043)	8.4(0.331)	36.4(1.433)	12
⑤	Lock-up control spring	0.7(0.028)	6.6(0.260)	32.5(1.280)	14

Lock-Up Shift Valve Body

Disassembly/Inspection

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement; if any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.



Spring Specifications

Unit of length mm (in.)

Spring Specifications						
No.	Spring	Standard (New)				
		Wire Dia.	O.D.	Free Length	No. of Coils	
①	Lock-up shift spring	1.4 ℓ	0.7(0.028)	8.1(0.319)	39.0(1.535)	15.4
		1.6 ℓ Carburetor	0.9(0.035)	8.1(0.319)	44.5(1.752)	18.3
		PGM-FI	1.1(0.043)	8.1(0.319)	51.8(2.039)	22.3
②	Lock-up timing spring B	1.4 ℓ	1.0(0.039)	6.6(0.260)	52.3(2.059)	30.1
		1.5 ℓ , 1.6 ℓ	1.0(0.039)	6.6(0.260)	55.6(2.189)	30

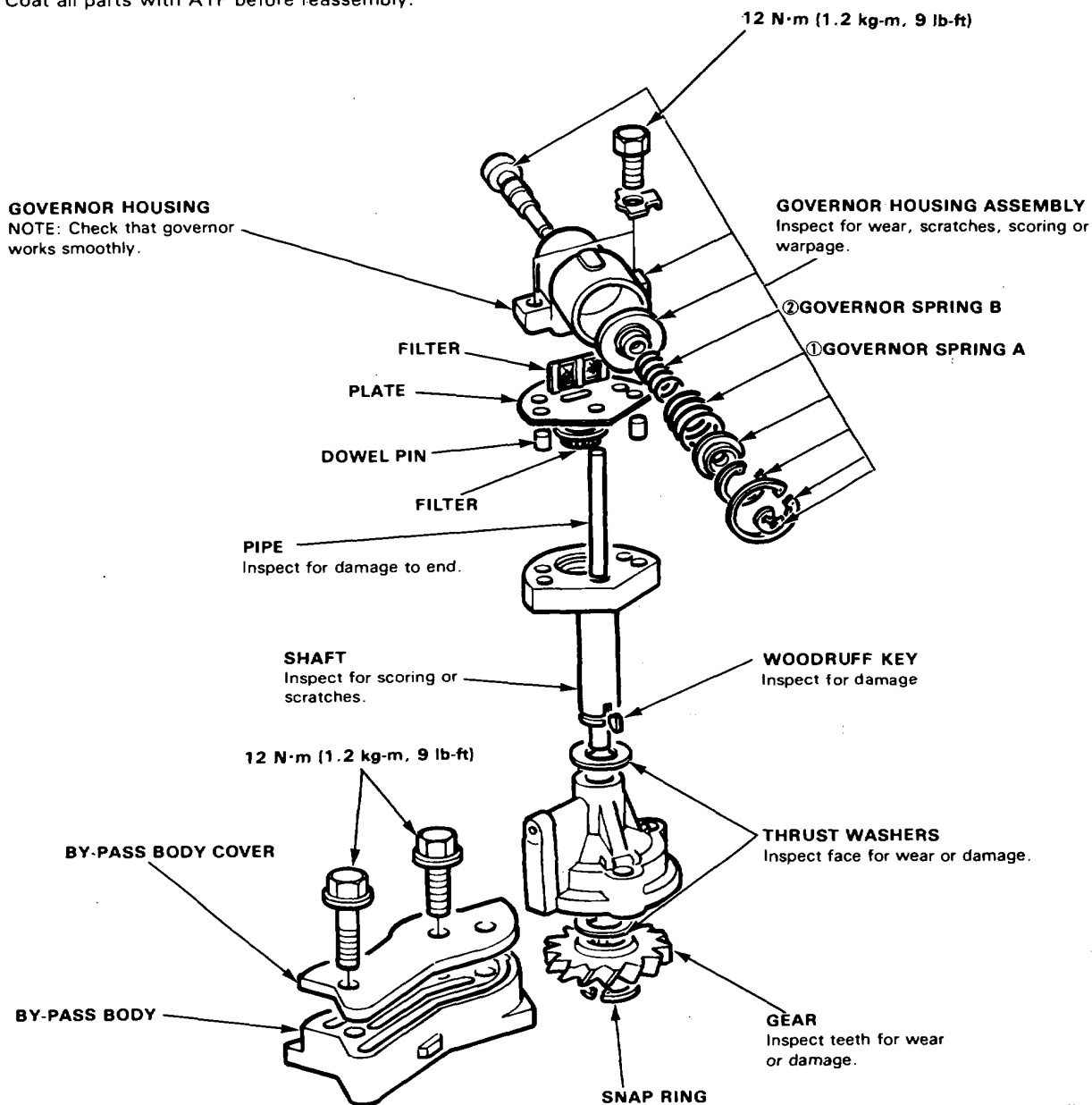


Governor Valve

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check that the governor works smoothly; replace it if it does not.
- Coat all parts with ATF before reassembly.



Spring Specifications

Unit of length mm (in.)

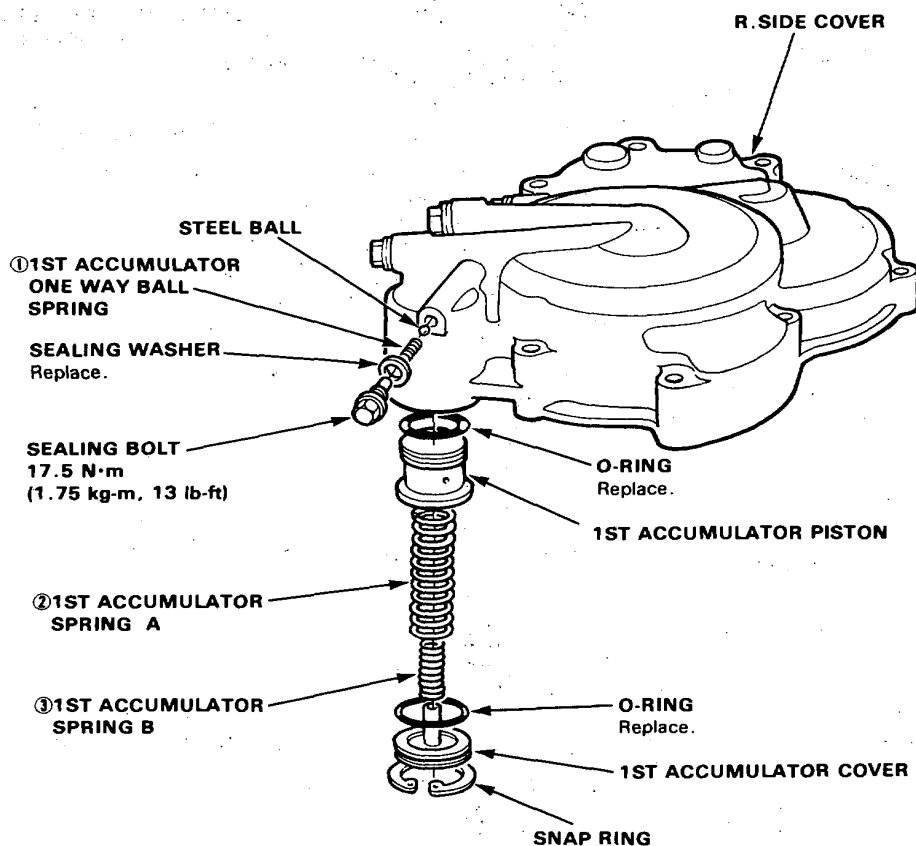
Spring Specifications						
No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	Governor spring A	1.4 ℓ	1.0(0.039)	18.8(0.740)	20.4(0.803)	4
		1.5 ℓ , 1.6 ℓ	1.0(0.039)	18.8(0.740)	38.1(1.500)	4
②	Governor spring B	1.4 ℓ	0.9(0.035)	11.8(0.465)	26.7(1.051)	6
		1.5 ℓ , 1.6 ℓ	0.9(0.035)	11.8(0.465)	27.8(1.094)	6

1st Accumulator

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Coat all parts with ATF before reassembly.



Spring Specifications		Unit of length mm (in.)			
No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	1st accumulator one way ball spring	0.29(0.011)	4.0(0.157)	14.0(0.551)	13
②	1st accumulator spring A	2.34 x 2.90 (0.092 x 0.114)	21.5(0.846)	66.7(2.626)	10.2
③	1st accumulator spring B	2.8(0.110)	13.1(0.516)	40.0(1.575)	8.8

Clutch

Reassembly

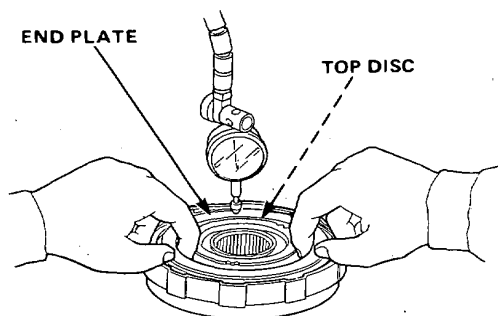
1. Measure the clearance between the clutch end plate and top disc with a dial indicator.

Zero the dial indicator with the clutch end plate lowered and lift it up to the snap ring. Distance where the clutch end plate moves is the clearance between the clutch end plate and top disc.

NOTE: Measure at three locations.

End Plate-to-Top Disc Clearance:

	Service Limit	
1ST	0.65—0.85 mm	(0.026—0.033 in.)
2ND	0.65—0.85 mm	(0.026—0.033 in.)
3RD	0.40—0.60 mm	(0.016—0.024 in.)
4TH	0.40—0.60 mm	(0.016—0.024 in.)

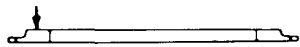


2. If the clearance is not within the service limits, select a new clutch end plate from the following table.

NOTE: If the thickest clutch and plate is installed but the clearance is still over the standard, replace the clutch discs and clutch plates.

P/N	PLATE NO.	THICKNESS
1	22551-PC9-000	2.4 mm (0.094 in.)
2	22552-PC9-000	2.5 mm (0.098 in.)
3	22553-PC9-000	2.6 mm (0.102 in.)
4	22554-PC9-000	2.7 mm (0.106 in.)
5	22555-PC9-000	2.8 mm (0.110 in.)
6	22556-PC9-000	2.9 mm (0.114 in.)
7	22557-PC9-000	3.0 mm (0.118 in.)
8	22558-PC9-000	3.1 mm (0.122 in.)
9	22559-PC9-000	3.2 mm (0.126 in.)
10	22560-PC9-000	3.3 mm (0.130 in.)
11	22561-PC9-000	2.1 mm (0.082 in.)
12	22562-PC9-000	2.2 mm (0.086 in.)
13	22563-PC9-000	2.3 mm (0.090 in.)

NUMBER



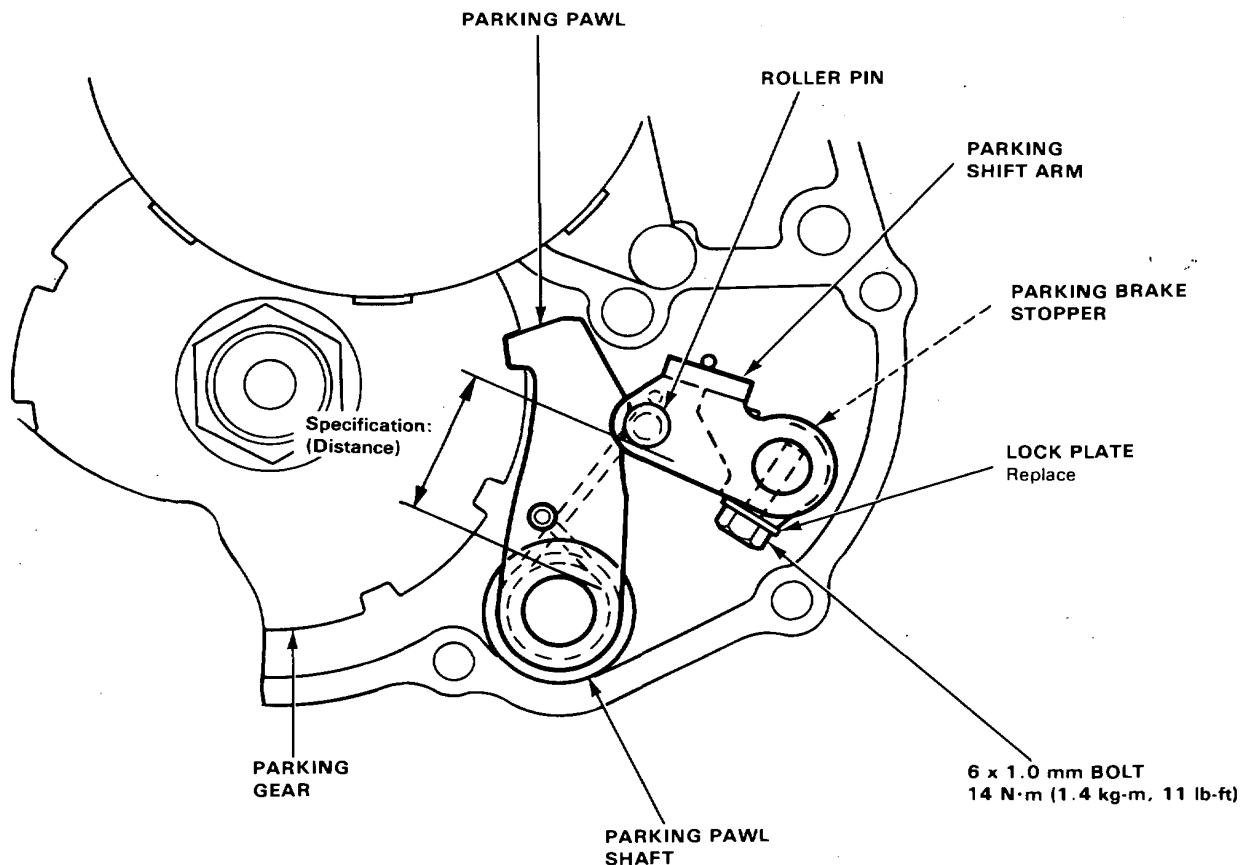
END PLATE

Parking Brake Stopper

Inspection/Adjustment

1. Set the parking shift arm in PARKING position.
2. Measure the distance between the outer face of the parking pawl shaft and outer face of the parking shift arm roller pin.

SPECIFICATION (distance): 28.7–29.7 mm (1.130–1.169 in.)



3. If the measurement is out of the specification (distance), select the appropriate parking stopper using the table below, and install it on the parking shift arm.

No.	PART NUMBER
1	24537-PA9-003
2	24538-PA9-003
3	24539-PA9-003

Transmission

Installation



1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the torque converter housing.
3. Loosely install the 4 transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12 x 1.25 x 70 mm) and torque to 68 N·m (6.8 kg-m, 50 lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to the front and side transmission mounts.

12 x 1.25 mm
75 N·m (7.5 kg-m, 55 lb-ft)

REAR TRANSMISSION MOUNT BRACKET

12 x 1.25 mm
SPECIAL BOLT
60 N·m (6.0 kg-m,
43 lb-ft)
Replace
12 x 1.25 mm
60 N·m (6.0 kg-m,
43 lb-ft)

10 x 1.25 mm
39 N·m (3.9 kg-m,
29 lb-ft)

SIDE TRANSMISSION MOUNT

10 x 1.25 mm
55 N·m (5.5 kg-m,
40 lb-ft)

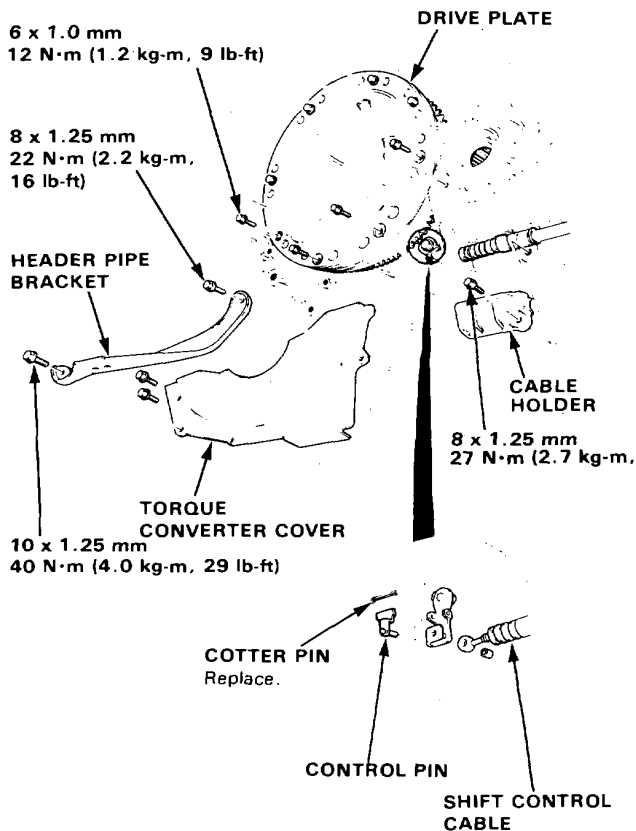
FRONT TRANSMISSION MOUNT

14 mm DOWEL PIN

TRANSMISSION MOUNT BOLT (Engine side)
TRANSMISSION MOUNT BOLTS
12 x 1.25 mm
SPECIAL BOLT
60 N·m (6.0 kg-m,
43 lb-ft)
Replace

10 x 1.25 mm
55 N·m (5.5 kg-m,
40 lb-ft)

7. Remove the transmission jack.
 8. Remove the chain hoist by removing the hanger plates and bolts.
 9. Attach the torque converter to the drive plate with eight (6 x 1.0 x 12 mm) bolts, and torque to 12 N·m (1.2 kg-m, 9 lb-ft). Rotate the crank as necessary to tighten bolts to 1/2 torque, then final torque, in a criss-cross pattern. Check for free rotation after tightening the last bolt.
- CAUTION:** The pulley mount bolt has the right hand threads and it might come loose while rotating the pulley. Check the bolt for tightness.
10. Install the shift control cable and cable holder.



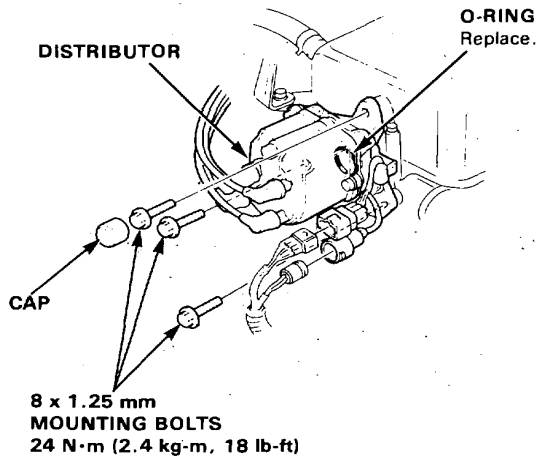
11. Install the torque converter cover and header pipe bracket.

(cont'd)

Transmission

Installation (cont'd)

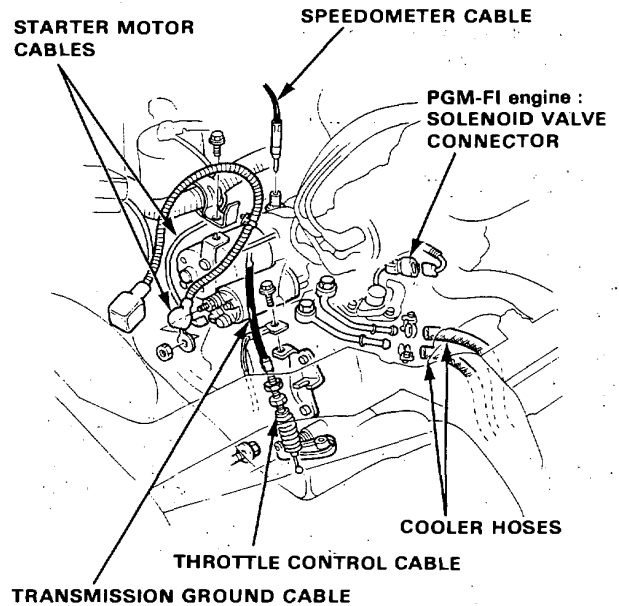
12. Install a new set ring on the end of each driveshaft.
13. Install the right and left driveshafts (See Section 10).
NOTE: Turn the right and left steering knuckle fully outward, and slide axle into the differential until you feel its spring clip engage the side gear.
14. Install the damper swivel bolt and radius rod. (page 12-8, 9, 12)
15. Install the ball joints to the front lower arm. (page 12-12)
16. Install the splash shields and exhaust pipe A. (page 5-66)
17. Install the distributor and ignition timing inspection (See Section 16 Ignition Timing Control)



18. PGM-FI engine :

Connect the lockup control solenoid valve wire connector.

19. Connect the cooler hoses to the joint pipes.
20. Connect the throttle control cable to the control lever.
21. Connect the speedometer cable.
22. Install the 3 bolts, located at the side of the battery base, and retighten the intake hose band of the throttle body.



23. Refill the transmission with ATF.
24. Connect the starter motor and transmission ground cables.
25. Connect the battery positive (+) and negative (-) cables to the battery.
26. Install the air cleaner case and intake hose.
27. Start the engine, set the parking brake, and shift the transmission through all gears three times. Check for proper control cable adjustment.
28. Check the ignition timing (See Section 16).
29. Let the engine reach operating temperature with the transmission in Neutral or Park, then turn it off and check the fluid level.
30. Road test as described on pages 9-8, 9 and 9-46, 47.

Shift Cable

Removal/Installation



⚠ WARNING

- Make sure jacks and safety stands are placed properly and hoist brackets are attached to correct positions on the engine.
- Apply parking brake and block rear wheels, so car will not roll off stands and fall on you while working under it.

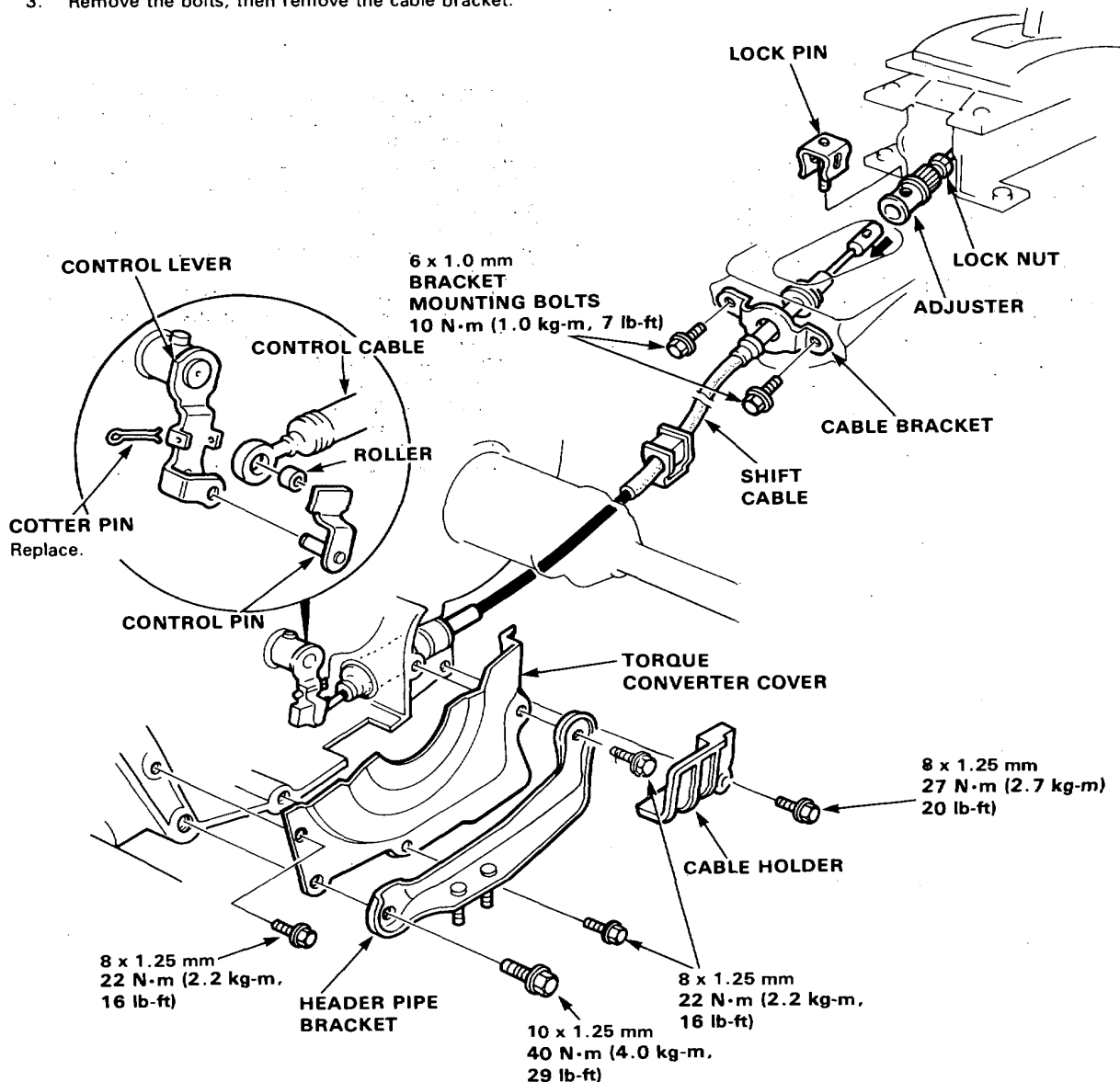
1. Remove the header pipe, header pipe bracket, torque converter cover and cable holder.
2. Remove the shift cable by removing the cotter pin, control pin and control lever roller from the control lever.
3. Remove the bolts, then remove the cable bracket.

4. Remove the front console.

5. Remove the lock pin from the cable adjuster, then remove the shift cable.

CAUTION: Take care not to bend the cable when removing it.

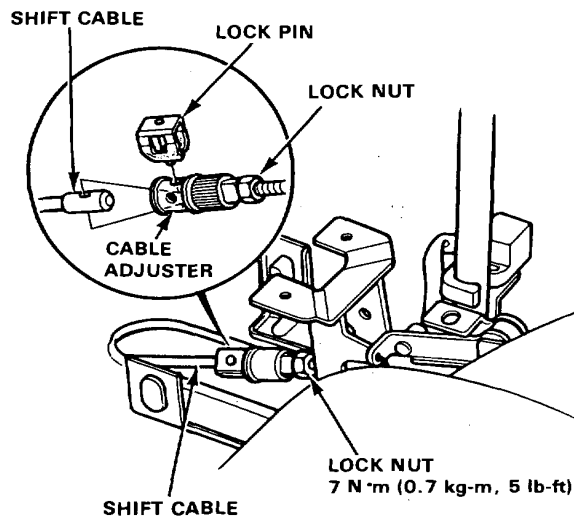
6. Install the shift cable in the reverse order of removal. **NOTE:** On reassembly, check the cable adjustment (page 9-42).



Shift Cable

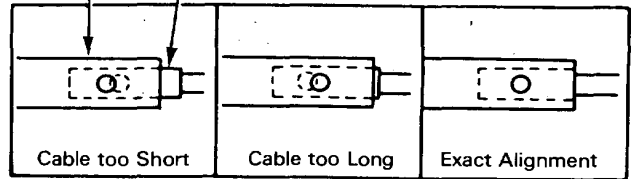
Adjustment

1. Start the engine. Shift to reverse to see if the reverse gear engages.
If it does not engage, refer to the Troubleshooting on pages 9-4 and 9-5 and check for its cause.
2. Stop the engine and remove the center console.
3. Shift to neutral and remove the lock pin from the cable adjuster.



4. Check that the hole in the adjuster is perfectly aligned with the hole in the shift cable.

CABLE ADJUSTER
SHIFT CABLE



NOTE: There are two holes in the end of the shift cable. They are positioned 90° apart to allow cable adjustments in 1/4 turn increments.

5. If not perfectly aligned, loosen the lock nut on the shift cable and adjust by turning the cable adjuster. Insert the lock pin securely.
6. Tighten the lock nut.
7. Start the engine and shift to each gear to check the following.
 - Move the shift lever from neutral to reverse without pressing the push button on the shift lever. The reverse gear should not engage.
 - Engine does not start with the shift lever other than in neutral and park.
 - The back-up light does not come on unless the shift lever is in reverse.
 - Park the car on the inclined surface and shift to park. Check the parking brake for proper operation.



Throttle Control Cable

Adjustment/Inspection

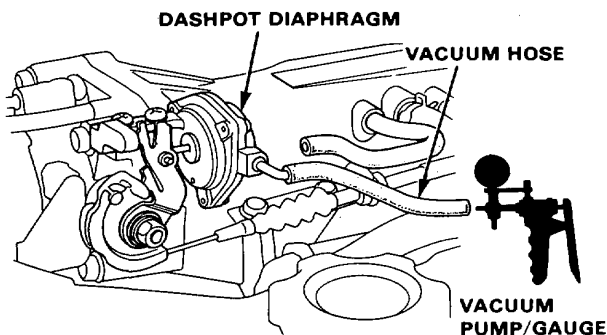
NOTE: Before adjusting the throttle control cable, make sure:

- The throttle cable free play is correct. (See Section 6)
- The engine is at normal operating temperature (cooling fan comes on).
- The idle speed is correct. (See Section 6)

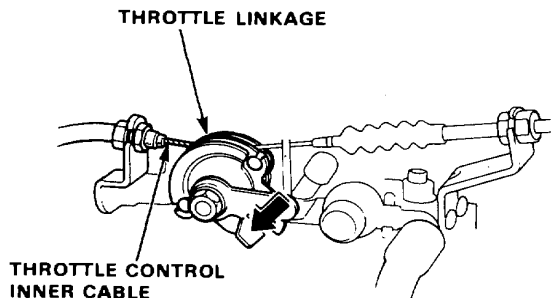
Inspection:

NOTE: You can work the throttle linkage body with your hand.

1. Remove the throttle cable free play.
2. **Carburetor engine:**
Make sure that the choke is released.
PGM-FI engine:
Disconnect #6 hose from the dashpot diaphragm and connect a vacuum pump to the diaphragm. Apply vacuum.



3. Apply light thumb pressure to the throttle control lever, then work the accelerator or throttle linkage. The lever should move just as the engine speed increases above idle. If not, proceed to Adjustment.



Adjustment:

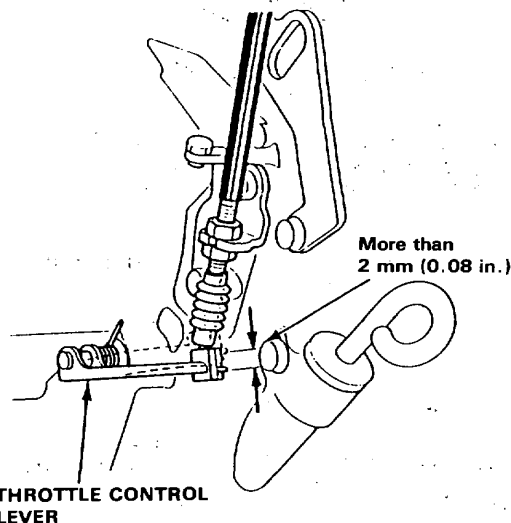
1. Loosen the nuts on the control cable at the transmission end and synchronize the control lever to the throttle.

NOTE:

- While continuing to press down the throttle control lever, the throttle linkage is open. The control lever should begin to move at precisely the same time as the linkage.
- Correct "Fine Tune" adjustment of the throttle control cable is critical for proper operation of the transmission and lock-up torque converter.

2. Check the following items before starting the engine:

Depress the accelerator to the floor. While depressed, check that there is play in the throttle control lever.

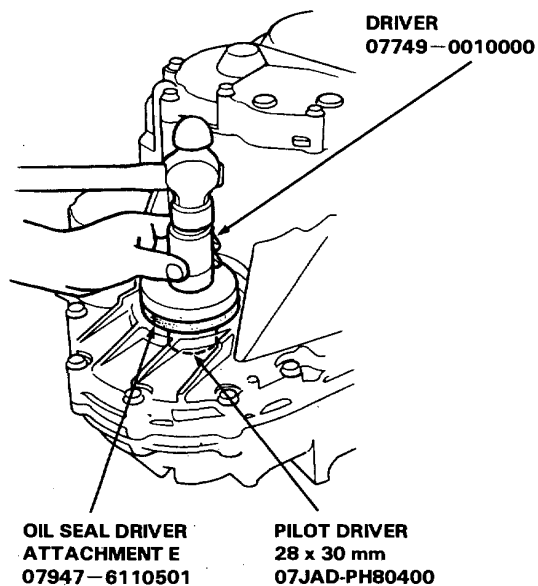


- Check that the cable moves freely by depressing the accelerator.

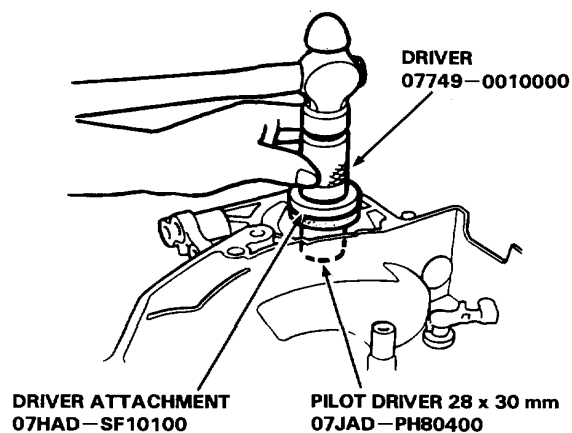
Differential

Oil Seal Installation

1. Install the oil seal in the transmission housing.



2. Install the oil seal in the torque converter housing.



Road Test

NOTE : After transmission is installed :

- Make sure the floor mat does not interfere with accelerator pedal travel. Fully depress accelerator pedal and check to make sure the throttle lever is fully opened.
- Release the accelerator pedal and check both inner control cables to be sure they have slight play.

Warm up the engine to operating temperature.

D3 and D4 Range

1. Apply parking brake and block the wheels. Start the engine, then move the selector to **D4** while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.
2. Check that shift points occur at approximate speeds shown. Also check for abnormal noise and clutch slippage.

Upshift

1.6 l SOHC PGM-FI engine: and 1.5 l engine:
1st—2nd 2nd—3rd 3rd—4th Lock-up ON

1/8-throttle	km/h	20.1—22.8	33.6—40.3	48.3—55.0	61.3—68.3
	mph	12.5—14.2	20.9—25.0	30.0—34.2	38.1—42.4
Half-throttle	km/h	28.8—37.8	57.8—70.8	90.7—103.7	———
	mph	17.9—23.5	35.9—44.0	56.4—64.4	———
Full-throttle	km/h	49.8—55.3	90.2—98.7	144.5—153.0	124.9—132.9
	mph	31.0—34.4	56.1—61.3	89.8—95.1	77.6—82.6



Downshift

1.6 l SOHC PGM-FI engine: and 1.5 l engine:

		4th-3rd	3rd-2nd	2nd-1st
1/8-throttle	km/h	4th-2nd: 29.2-32.2		12.0-14.5
	mph	4th-2nd: 18.1-20.0		7.5-9.0
Half-throttle	km/h	_____	_____	_____
	mph	_____	_____	_____
Full-throttle	km/h	122.6-131.6	76.5-85.5	41.3-46.8
	mph	76.2-81.8	47.5-53.1	25.7-29.1

3. Accelerate to about 56 km/h (35mph) so the transmission is in 4th, then shift from **D4** to **2**. The car should immediately begin slowing down from engine braking.

CAUTION : Do not shift from **D4** or **D3** to **2** at speeds over 100km/h (62.5mph) ; you may damage the transmission.

2 (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

R (Reverse)

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake ; the car should not move.

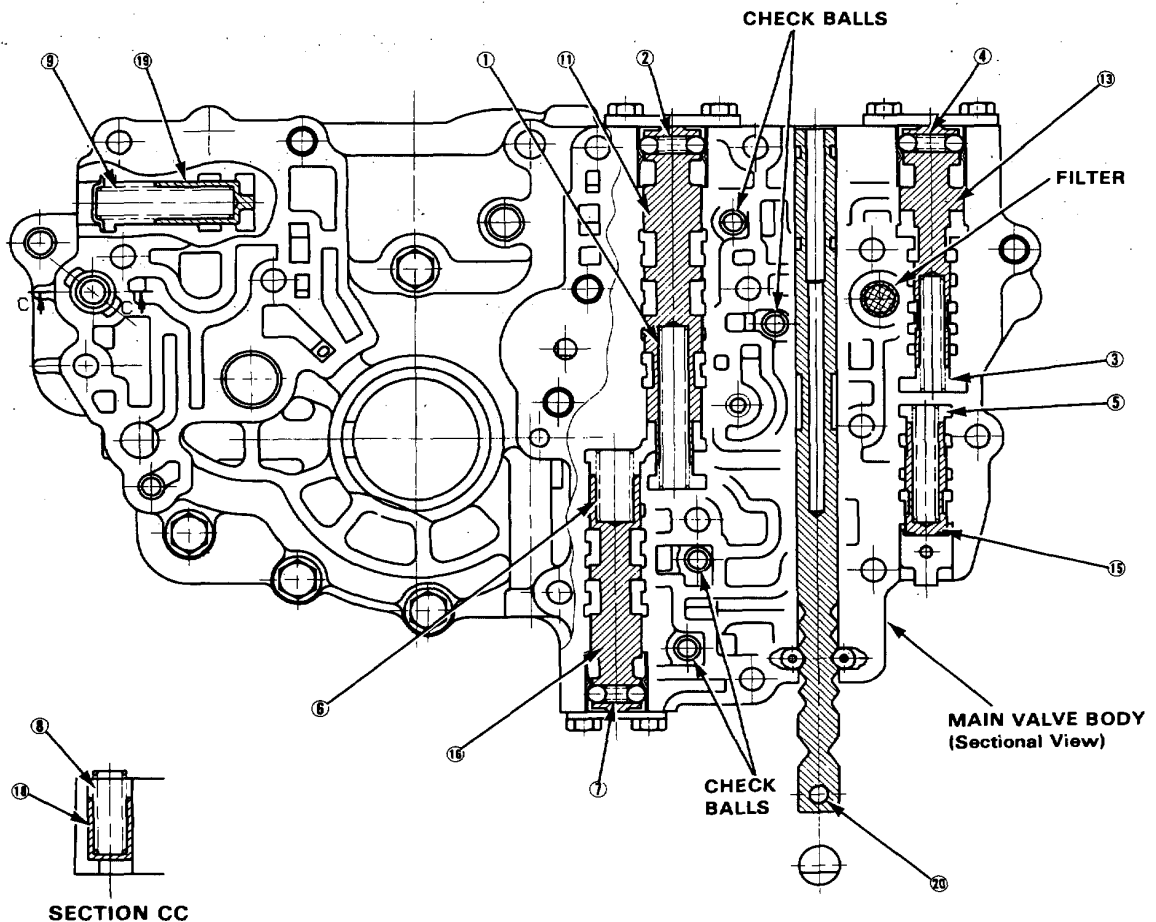
Main Valve Body

1.6 l SOHC PGM-FI engine: and 1.5 l engine:

Unit of length: mm (in)

No.	Spring	Standard (New)			
		Wire Dia	O.D.	Free Length	No. of Coils
①	2-3 shift spring	0.9 (0.035)	7.6 (0.299)	46.5 (1.831)	20.7
②	2-3 Shift ball spring	0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
③	1-2 shift spring	0.6 (0.024)	6.1 (0.240)	41.3 (1.626)	16.5
④	1-2 shift ball spring	0.4 (0.016)	4.5 (0.177)	14.4 (0.567)	8.2
⑤	2nd orifice control spring	0.8 (0.031)	6.6 (0.260)	46.3 (1.823)	27.6
⑥	3-4 shift spring	0.9 (0.035)	9.6 (0.378)	33.1 (1.303)	10
⑦	3-4 shift ball spring	0.5 (0.020)	4.5 (0.177)	11.2 (0.441)	7
⑧	Torque converter check spring	1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12
⑨	Relief valve spring	1.0 (0.039)	8.4 (0.331)	52.0 (2.047)	23

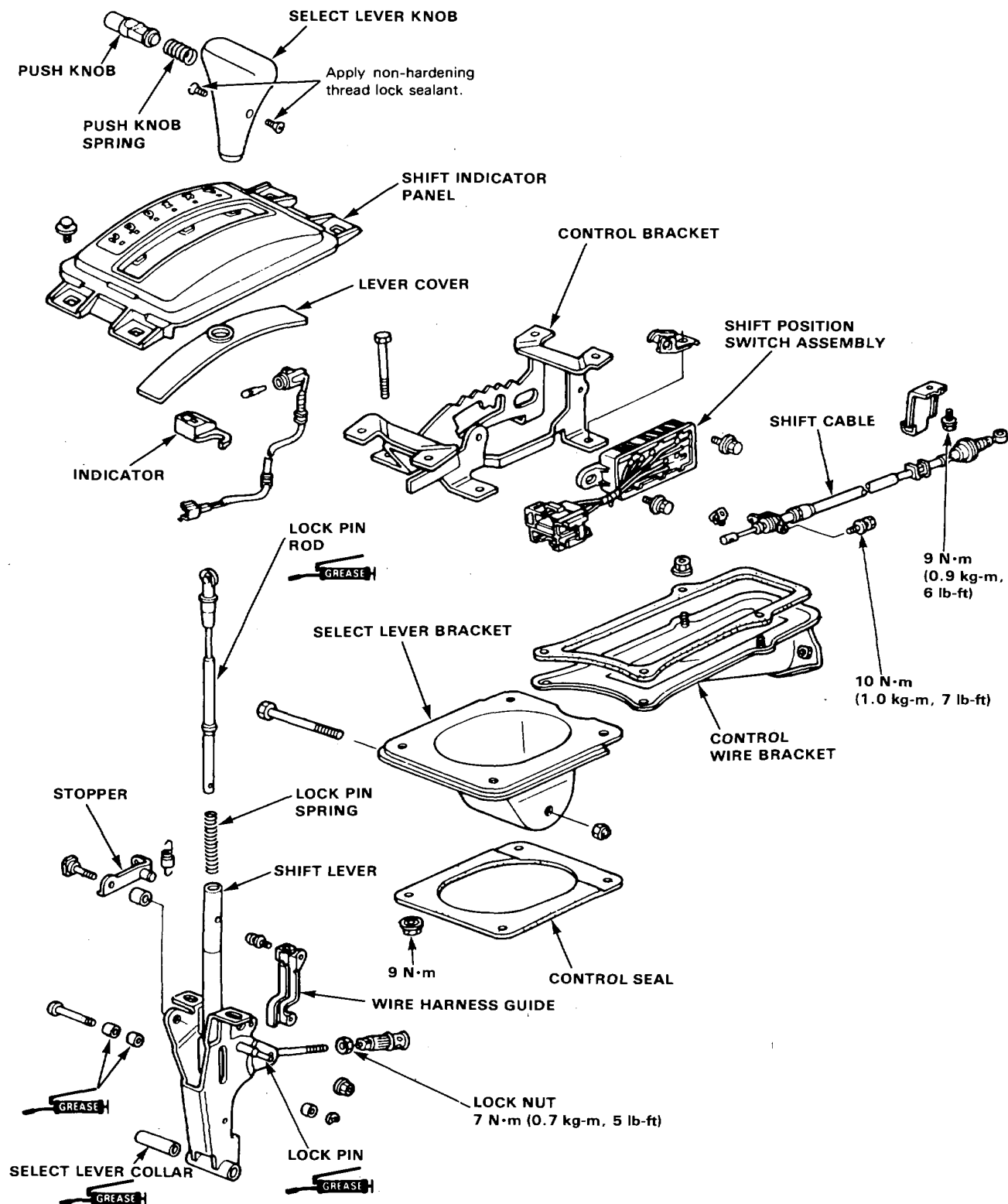
Sectional View





Gear Shift Selector (LHD)

Disassembly/Reassembly



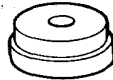
Special Tools

Special Tools

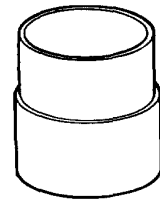
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07749-00100000	Driver	1	
②	07746-0010200	Attacment 37 x 40 mm	1	
③	07965-SD90100	Support Base	1	
④	07GAF-SD40700	Hub Dis/Assembly Bass	2	
⑤	07746-0010300	Attachment 42 x 47 mm	1	
⑥	07965-MA60000	Attachment	1	
⑦	07947-SD90101	Seal Driver Attachment	1	
⑧	07JAD-SH30100	Seal Driver Attachment	1	
⑨	07746-0030100	Driver 40 mm I.D.	1	
⑩	07GAD-PG40100	Seal Driver Attachment	1	
⑪	18G1584	Ball Joint Remover	1	



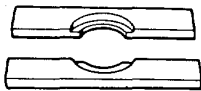
①



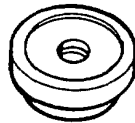
②



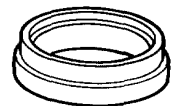
③



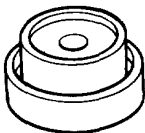
④



⑤



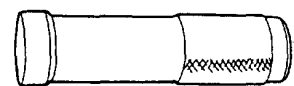
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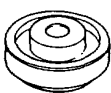
⑦



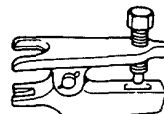
⑧



⑨



⑩



⑪

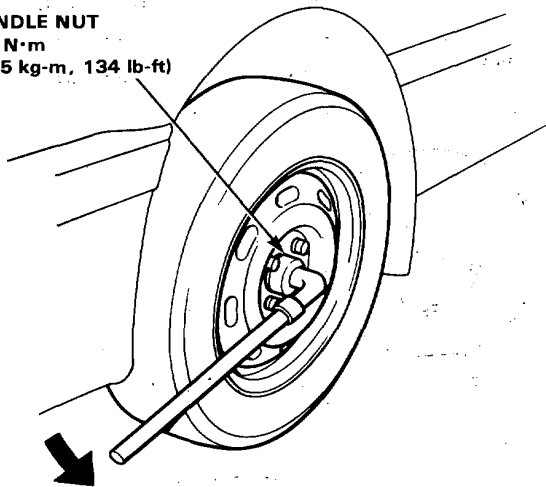
Driveshafts

Removal



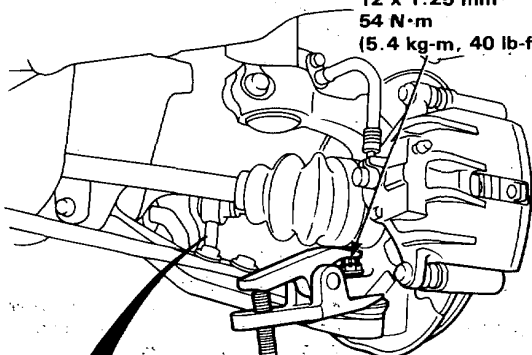
1. Raise the locking tab on the spindle nut and remove it.
2. Loosen the front wheel lug nuts.
3. Raise the front end of the car and place safety stands in the proper locations. Remove the front wheels.
4. Drain the transmission oil.

SPINDLE NUT
185 N·m
(18.5 kg-m, 134 lb-ft)

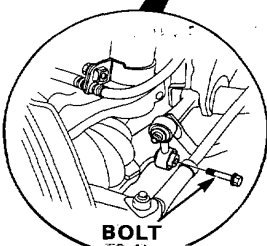


5. Remove the bolt that connects the front stabiliser link and lower arm.
6. Remove the cotter pin and loosen the Knuckle-to-lower arm castle nut, and separate the lower arm from the knuckle using a ball joint remover.

CASTLE NUT
12 x 1.25 mm
54 N·m
(5.4 kg-m, 40 lb-ft)

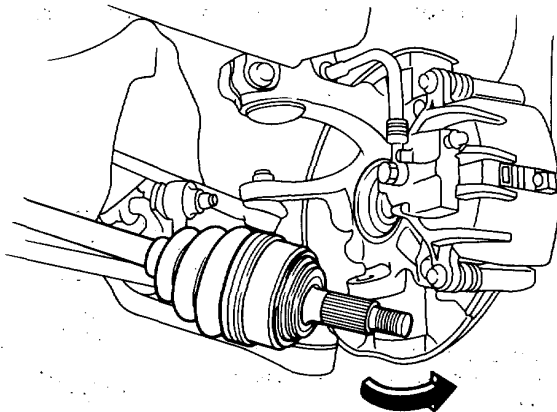


BALL JOINT REMOVER
18G1584

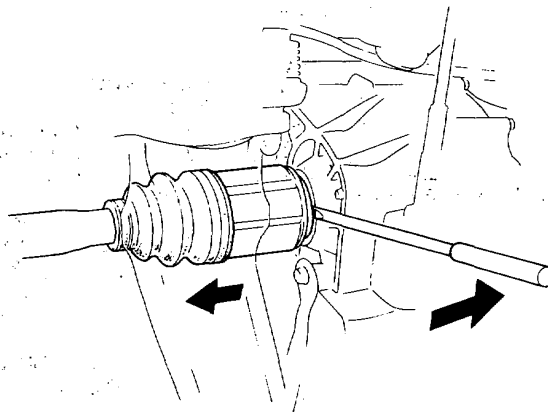
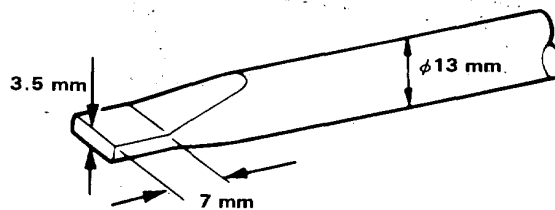


BOLT
45 N·m
(4.5 kg-m, 33 lb-ft)

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.

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Driveshafts

Disassembly/Inspection

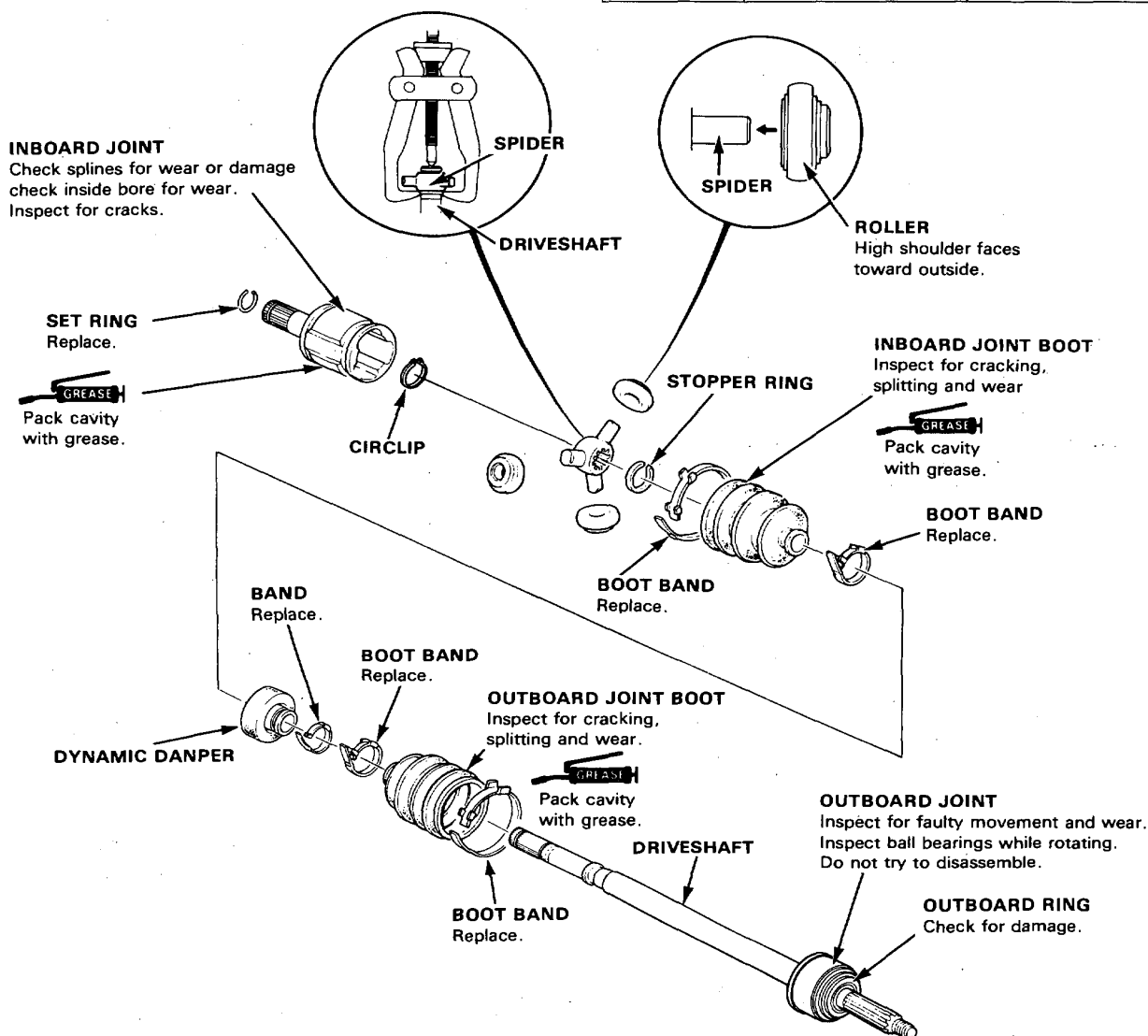
NOTE:

- Mark the rollers and roller grooves during disassembly to ensure proper positioning during reassembly.
- Before disassembly, mark the spider and driveshaft so they can be reinstalled in their original positions.
- The inboard joint must be removed to replace the boots.

GREASE Grease is used on the inside surface of the joint boots. Do not mix the two joint boot. The type of grease used on each boot is different.

Grease Quantity:

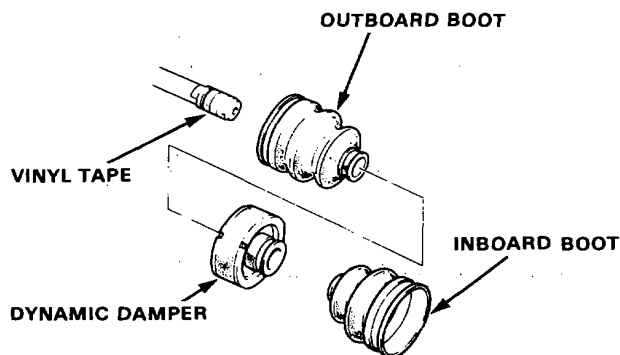
	L. Driveshaft	R. Driveshaft
Inboard Joint	120~130g	120~130g
Outboard Joint	90~100g	90~100g





Reassembly

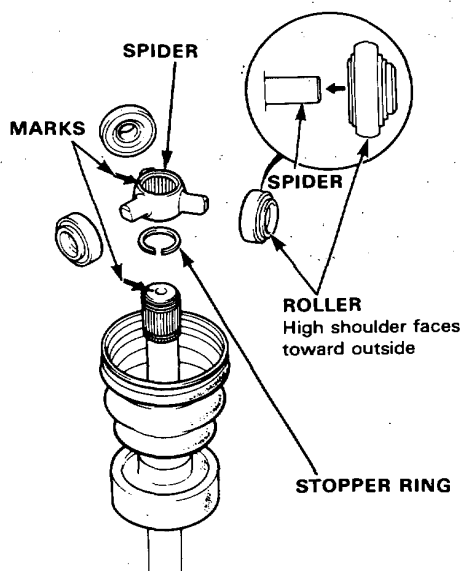
1. Wrap the splines with vinyl tape to prevent damage to the boots and dynamic damper.
2. Install the outboard boot, dynamic damper and inboard boot to the driveshaft, then remove the vinyl tape.



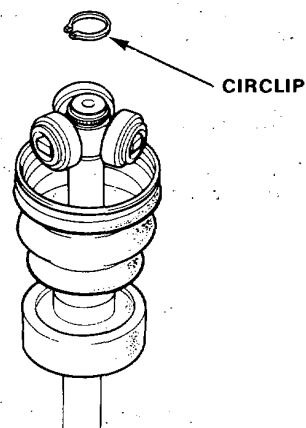
3. Install the stopper ring onto the driveshaft groove.
4. Install the spider on the driveshaft by aligning the marks on the spider and end of the driveshaft.
5. Fit the rollers to the spider with their high shoulders facing outward.

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.

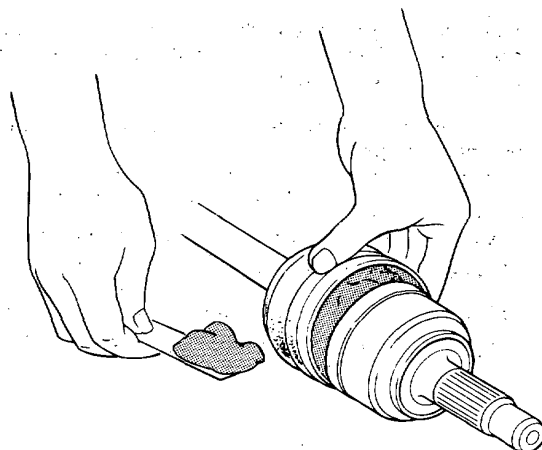


7. Pack the outboard joint boot with grease.

CAUTION:

- Use grease sold with the inboard joint boot.
- Do not use the grease of inboard joint for outboard joint. It may shorten the life of the boot.

Grease Quantity: 90~100g



(cont'd)

Driveshafts

Reassembly (cont'd)

8. Pack the inboard joint with molybdenum disulfide grease.

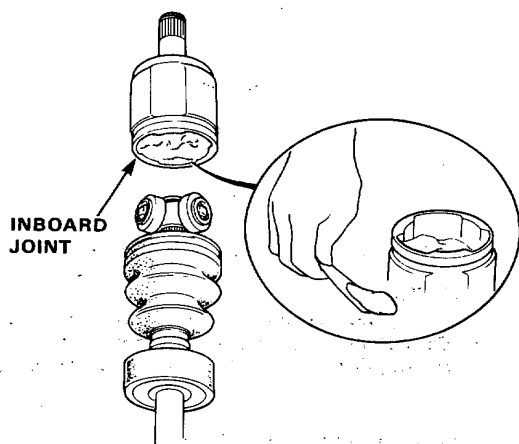
Grease Quantity: 120~130g

CAUTION:

- Use grease sold with the inboard joint boot.
- Do not use the grease of outboard joint for inboard joint. It may shorten the life of the boot.

9. Fit the inboard joint onto the driveshaft.

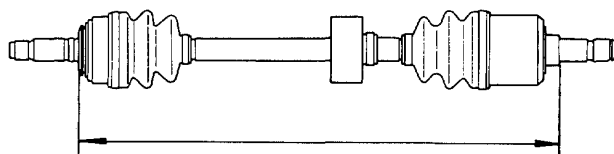
CAUTION: Hold the driveshaft assembly so the inboard joint points up, to prevent it from falling off.



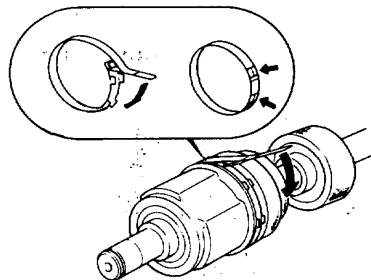
10. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and extension.

NOTE: The ends of boots seat in the groove of the driveshaft and joint.

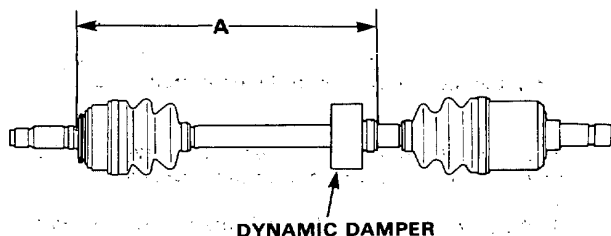
	L. Driveshaft	R. Driveshaft
DOHC Engine	497.6–502.6 mm (19.59–19.79 in)	497.6–502.6 mm (19.59–19.79 in)
SOHC Engine	793.8–798.8 mm (31.25–31.45 in)	496.3–501.3 mm (19.54–19.74 in)



11. Install new boot bands on the boot and bend both sets of locking tabs.
12. Lightly tap on the doubled-over portions to reduce their height.



13. Position the dynamic damper as shown below.



DISTANCE (A):

	L. Driveshaft	R. Driveshaft
DOHC Engine	222±2 mm (8.7±0.08 in)	222±2 mm (8.7±0.08 in)
SOHC Engine	564±2 mm (22.2±0.08 in)	222±2 mm (8.7±0.08 in)

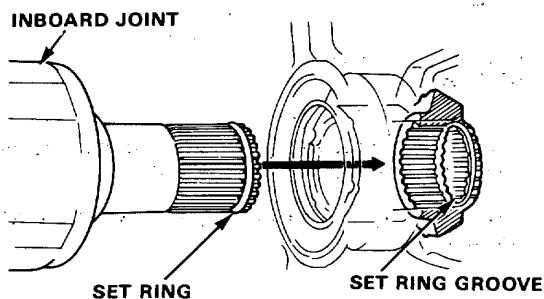
14. Lightly tap on the doubled-over portion to reduce its height.
15. Install a new dynamic damper band and bend down both sets of locking tabs.



16. Install a new set ring in the driveshaft groove:
17. Install the inboard end of the driveshaft into differential.

CAUTION:

- Always use a new set ring whenever the driveshaft is being installed.
- Make sure the driveshaft locks in the differential side gear groove, and the CV joint subaxle bottoms in the differential or intermediate shaft.

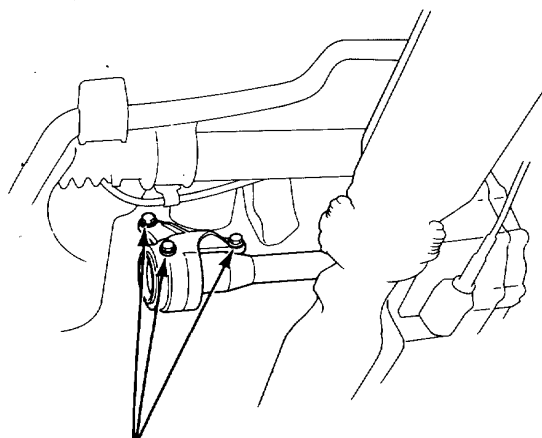


18. Refill the transmission.

Intermediate Shaft

Replacement

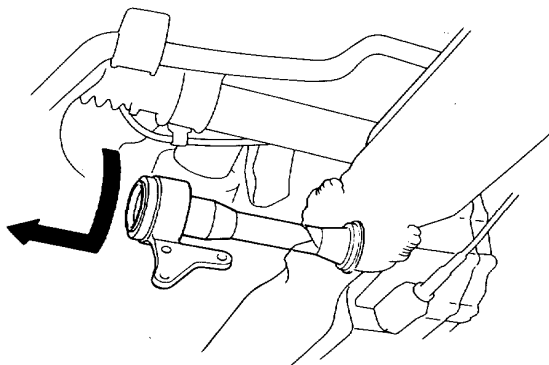
1. Drain oil from the transmission.
2. Remove the three 10 mm bolts.



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.

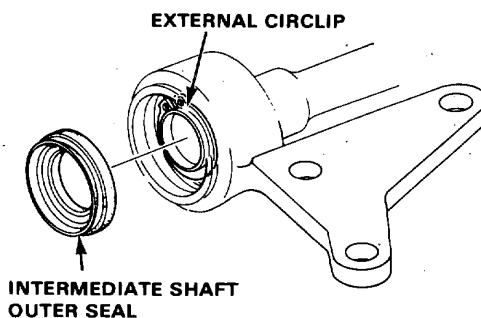
CAUTION: To prevent damage to the differential oil seal, hold the intermediate shaft horizontal until it is clear of the differential.



4. Installation is the reverse order of removal.

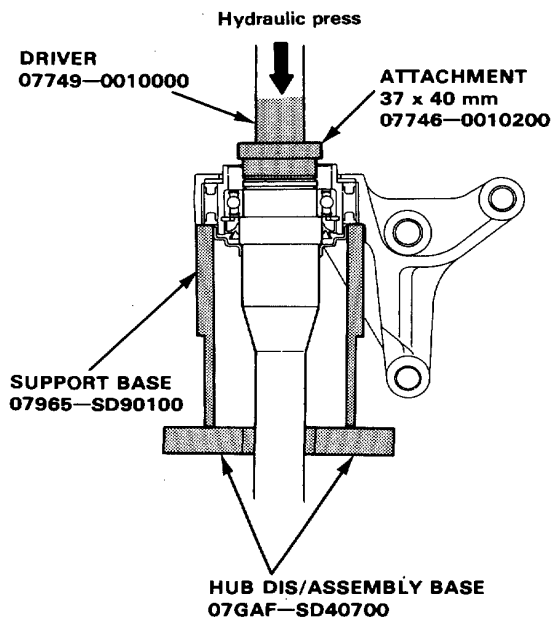
Disassembly

1. Remove the intermediate shaft outer seal.
2. Remove the external circlip.



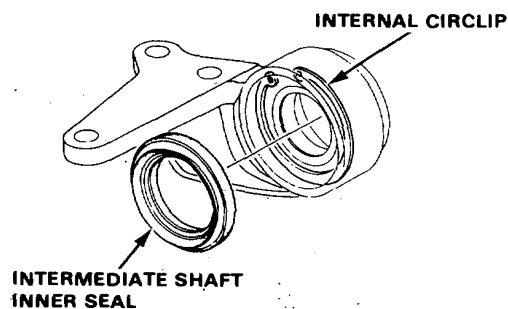
3. Press the intermediate shaft out of the shaft bearing using the special tools.

NOTE: Be sure that the bearing carrier is centered with the tool.

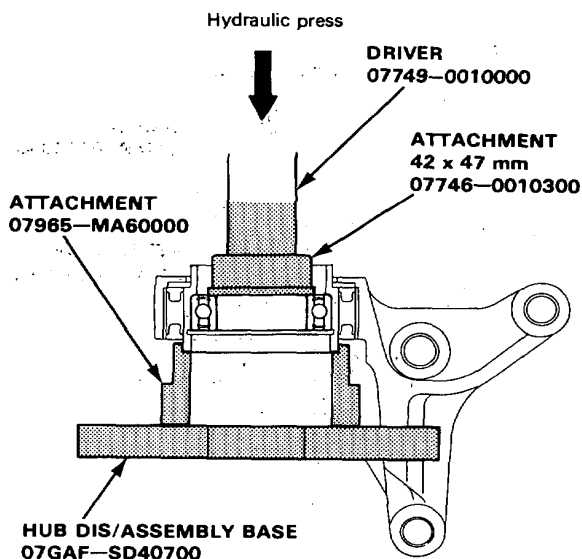




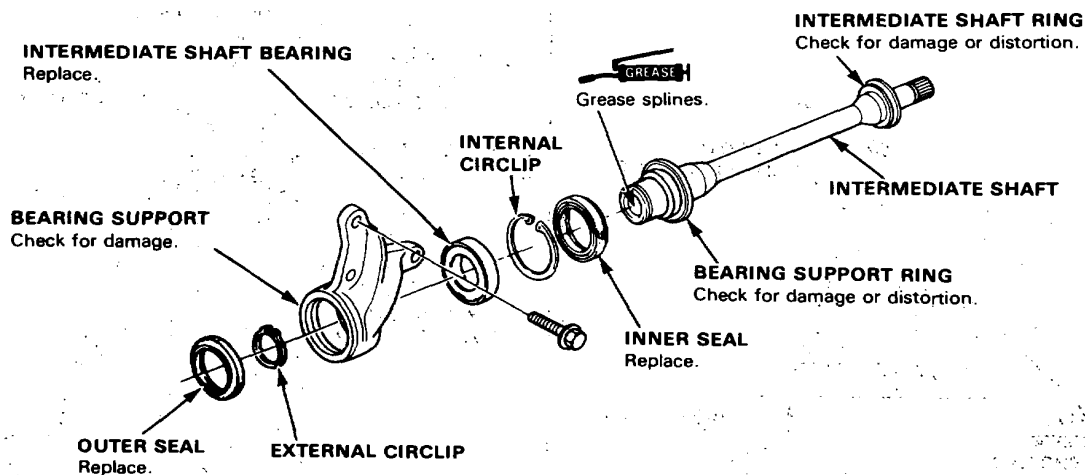
4. Remove the intermediate shaft inner seal.
5. Remove the internal circlip.



6. Press the intermediate shaft bearing out of the bearing support using the special tools.



Index/Inspection

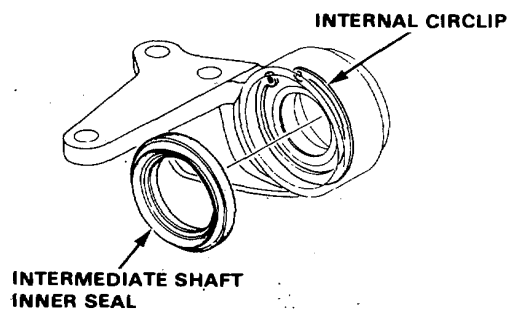


CAUTION: Be careful not to damage the rubber on the bearing support during installation.

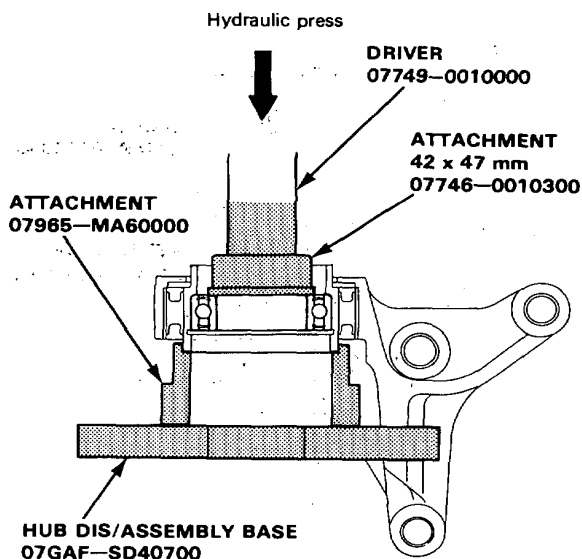


4. Remove the intermediate shaft inner seal.

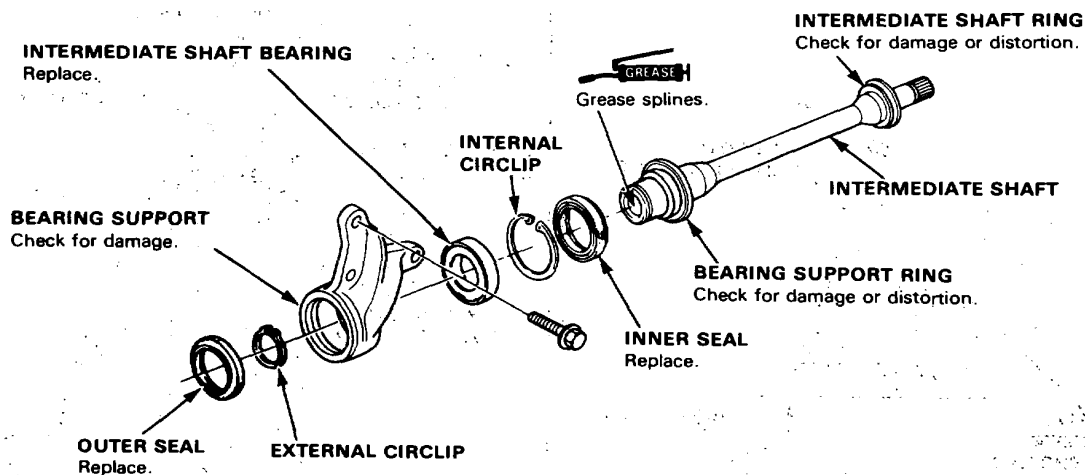
5. Remove the internal circlip.



6. Press the intermediate shaft bearing out of the bearing support using the special tools.



Index/Inspection

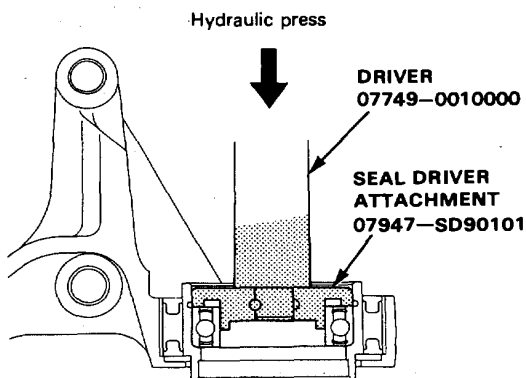


CAUTION: Be careful not to damage the rubber on the bearing support during installation.

Intermediate Shaft

Reassembly

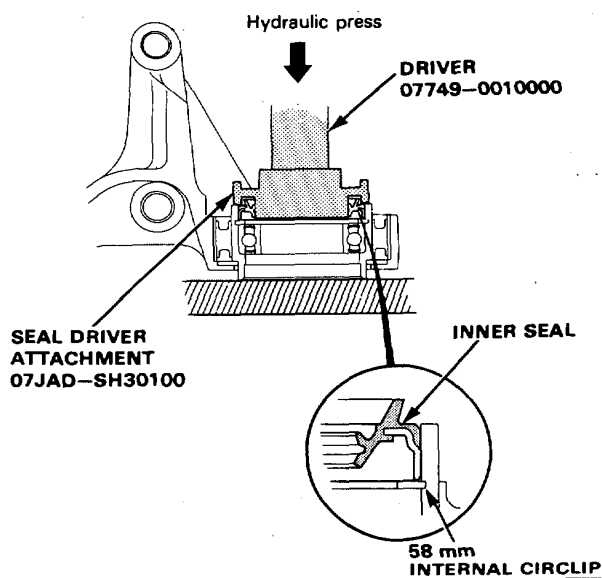
1. Press the intermediate shaft bearing into the bearing support using the special tools.



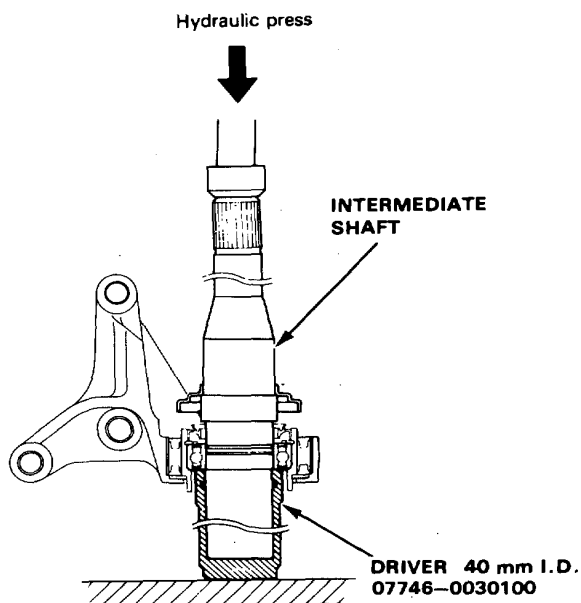
2. Seat the 58 mm internal circlip in the groove of the bearing support.

CAUTION: Install the circlip with the tapered end facing out.

3. Press the intermediate shaft inner seal into the bearing support using the special tools.



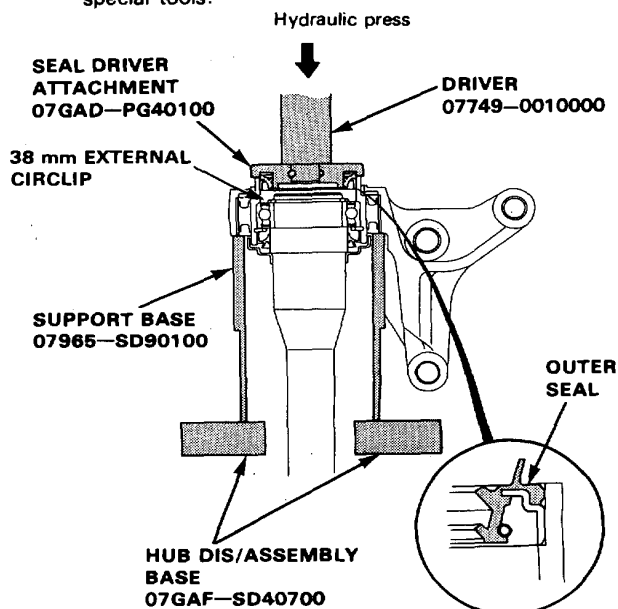
4. Press the intermediate shaft into the shaft bearing using the special tool.



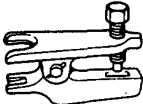
5. Seat the 38 mm external circlip in the groove of the intermediate shaft.

CAUTION: Install the circlip with the tapered end facing out.

6. Press the outer seal into the bearing support using the special tools.



Special Tool

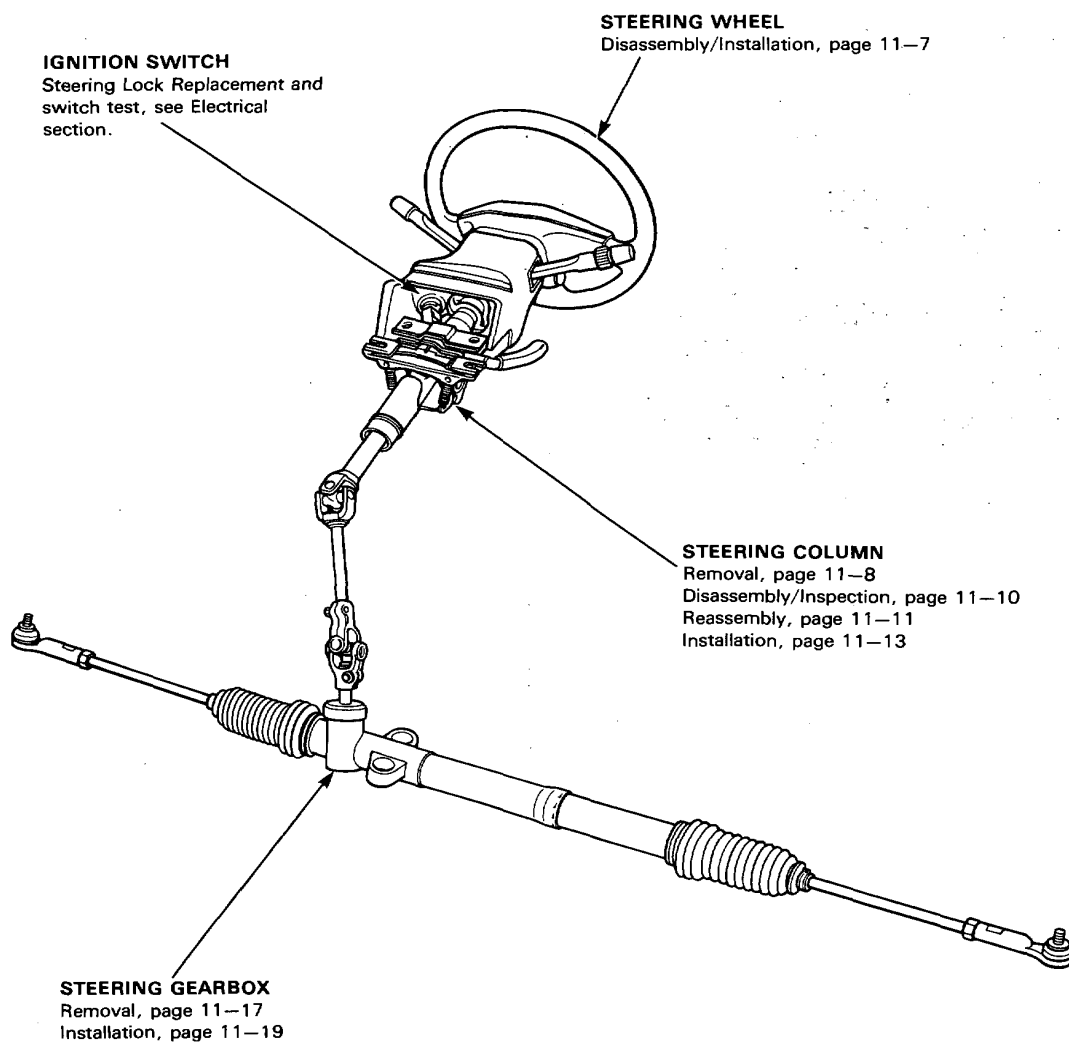
Special Tool				
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	18G1584	Ball Joint Remover	1	
 ①				



Component Location

Index

NOTE: RH Drive shown, LH Drive is similar.



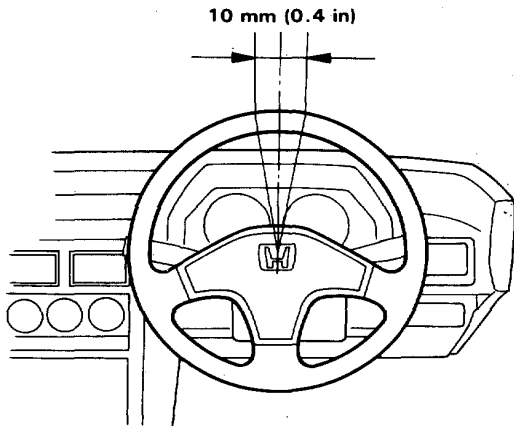
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Inspection

Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.

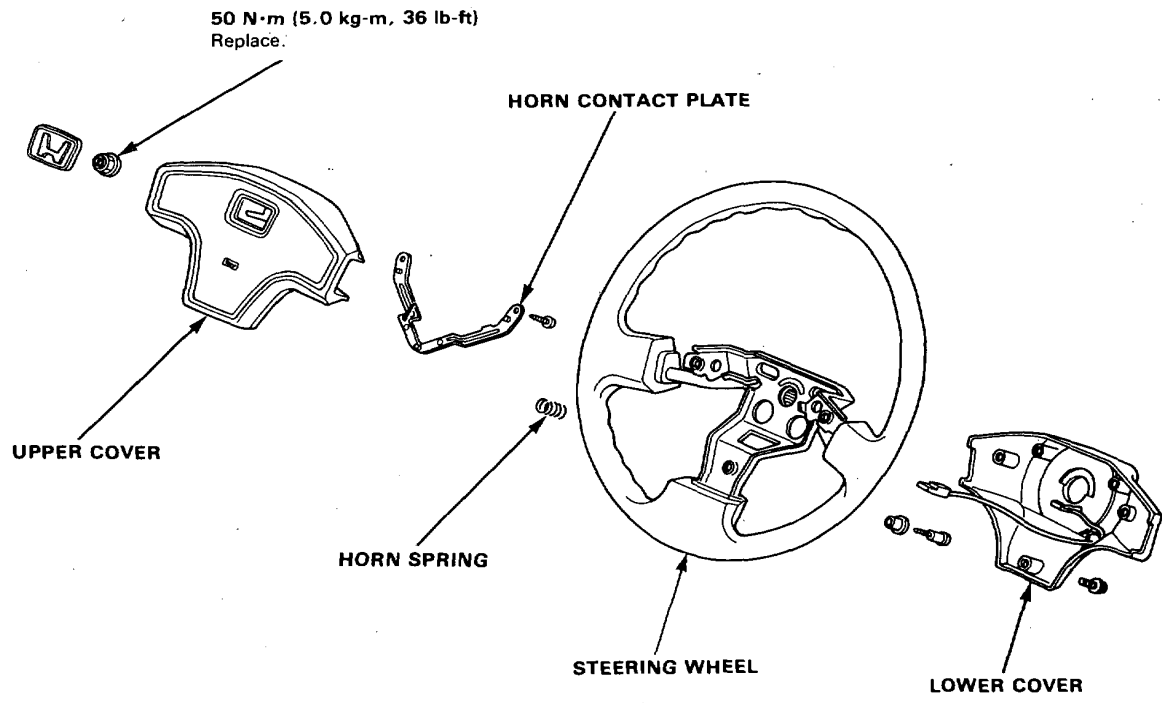
Service Limit: 10 mm (0.4 in)





Steering Wheel

Disassembly/Reassembly



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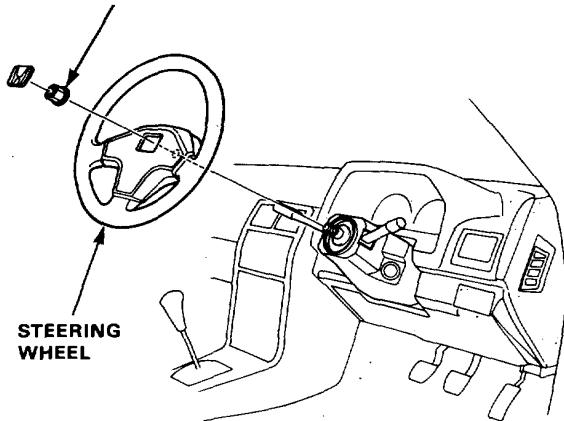
Steering Column

Removal

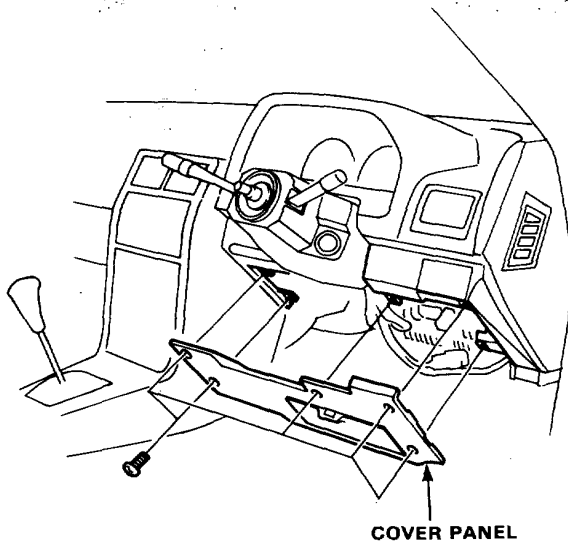
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.

STEERING SHAFT NUT

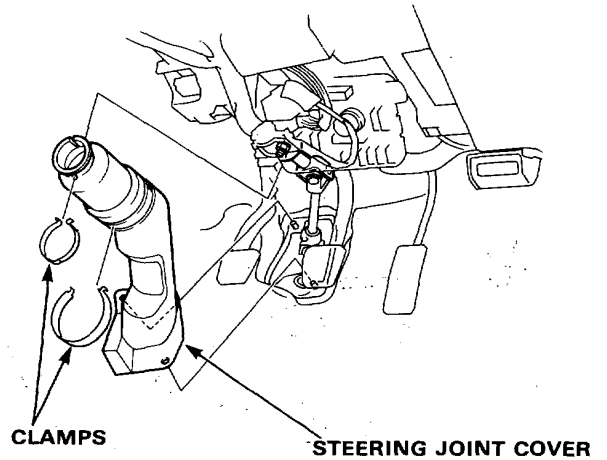
Replace.



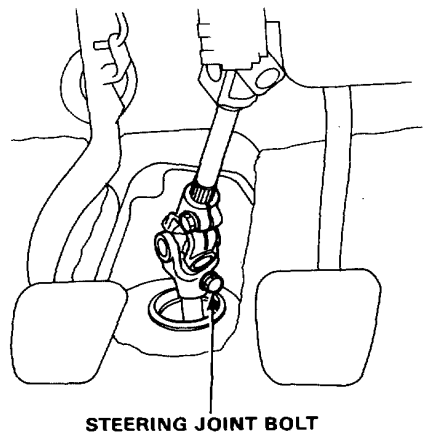
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.

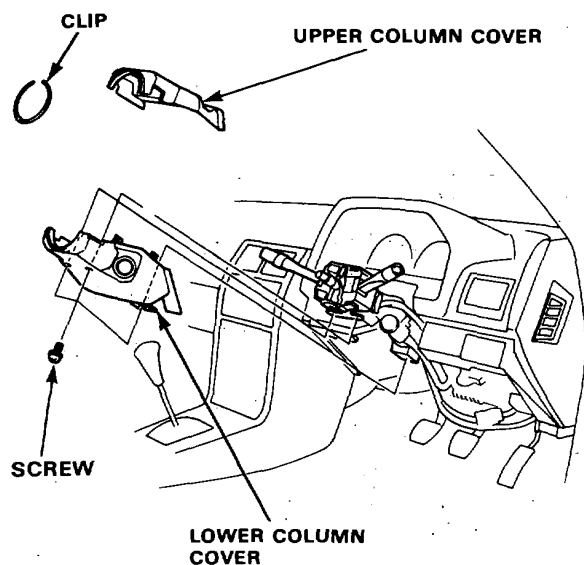


6. Remove the steering joint bolt, and move the joint toward the column.

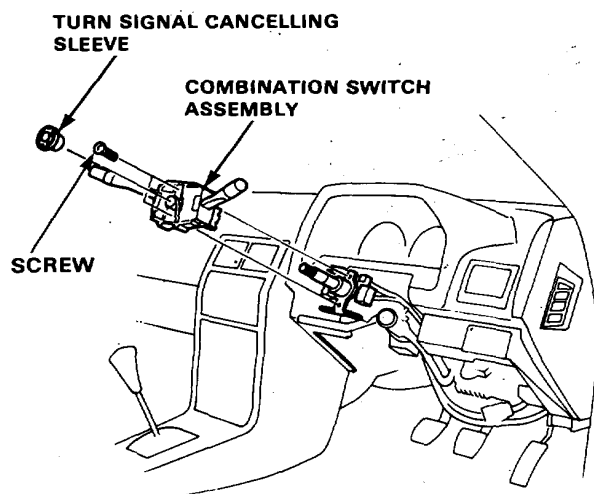




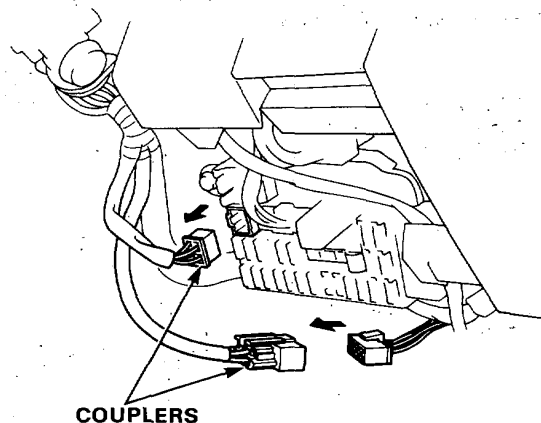
7. Remove the clip and three screws, then remove the upper and lower column covers.



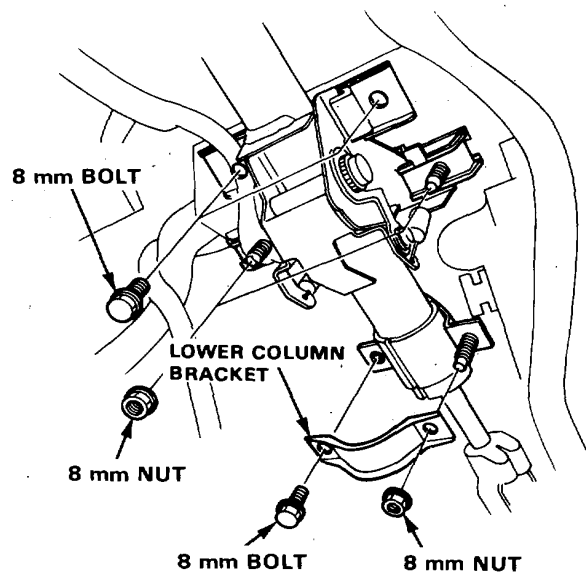
8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal canceling sleeve. Remove the two screws and combination switch assembly.



10. Disconnect each wire coupler from the fuse box at under dash right side.



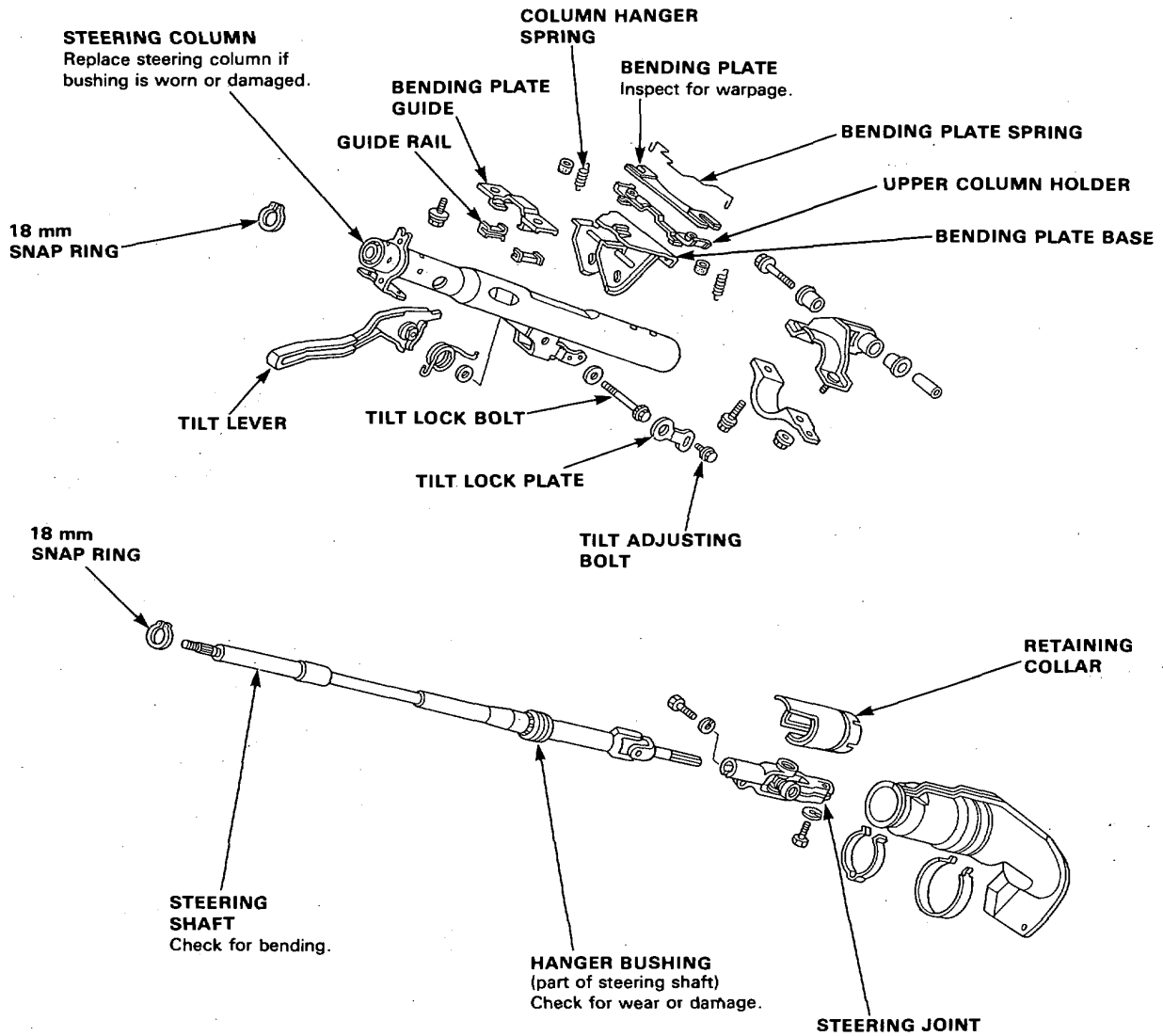
11. Remove the lower column bracket.
12. Remove the bolts and nuts attaching the bending plate guide and bending plate.
13. Remove the steering column assembly.



Steering Column

Disassembly/Inspection

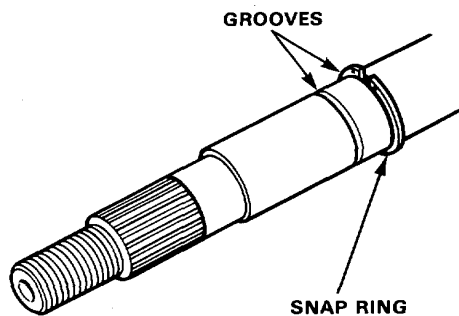
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I".
5. Remove the snapping, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.



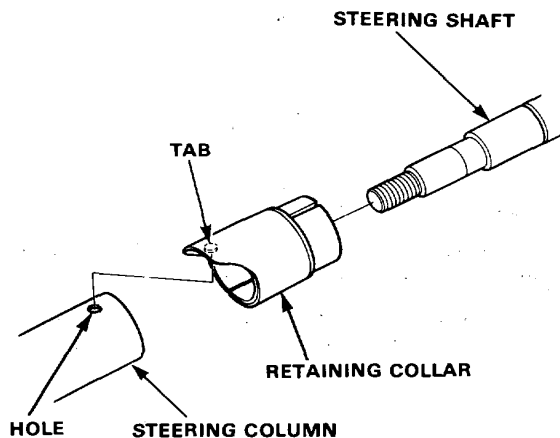


Reassembly

1. Install the snap ring on the groove of the steering shaft as shown.

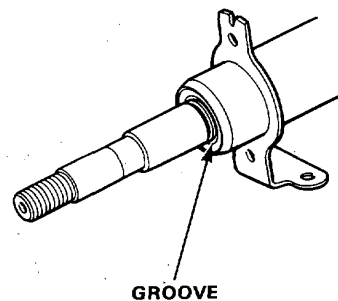


2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.

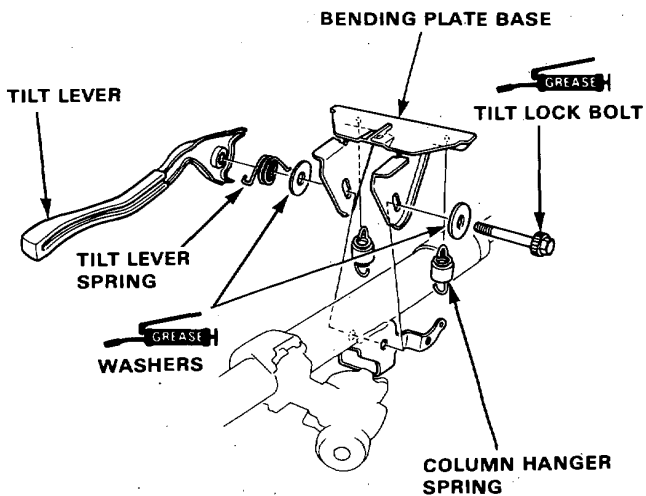


3. Insert the steering shaft into the steering column from the bottom.
4. Install the 18 mm snap ring on the groove of the steering shaft.

18 mm
SNAP RING



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.

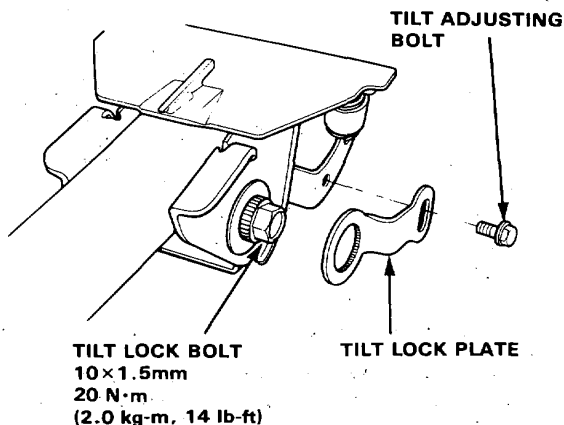


(cont'd)

Steering Column

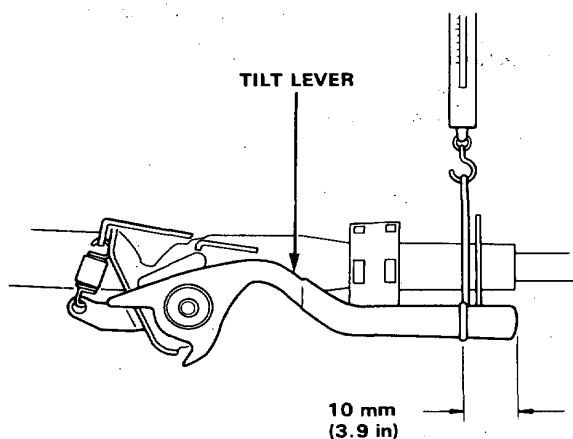
Reassembly (cont'd)

8. Tighten the tilt lock bolt to 20 N·m (2.0 kg-m, 14 lb-ft), then position the tilt lock plate on the splined portion of tilt lock bolt and loosely attach with the tilt adjusting bolt.

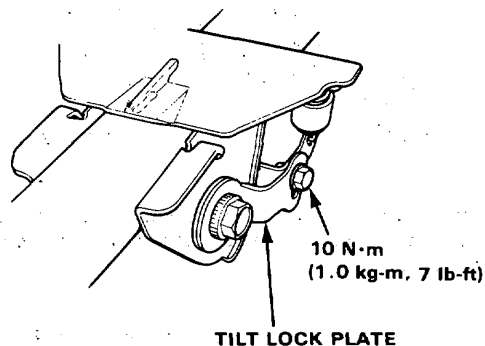


9. Attach a spring scale 10-mm (3.9 in) from the end of the knob. Measure the force required to move the lever.

Preload: 80 N (8.0 kg, 18 lbs)



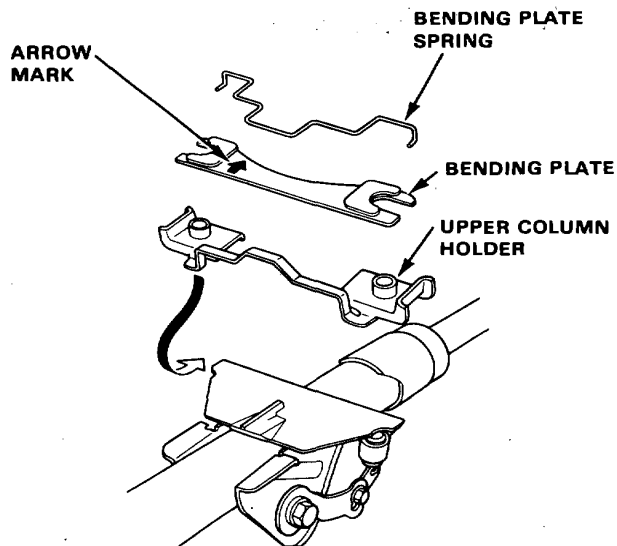
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

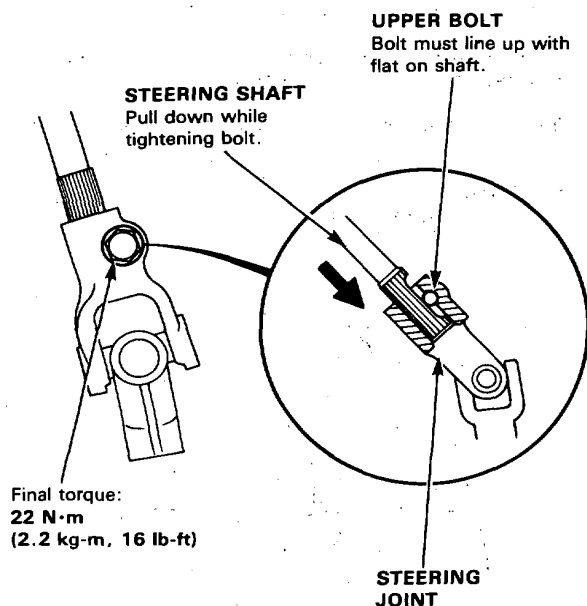
12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

NOTE: Install the bending plate with arrow mark facing the steering gearbox.





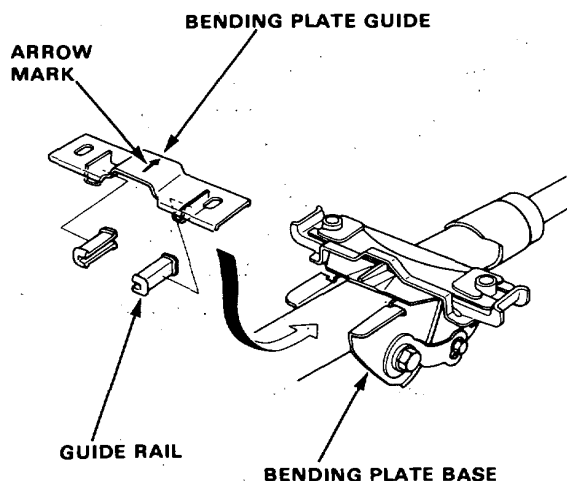
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



Installation

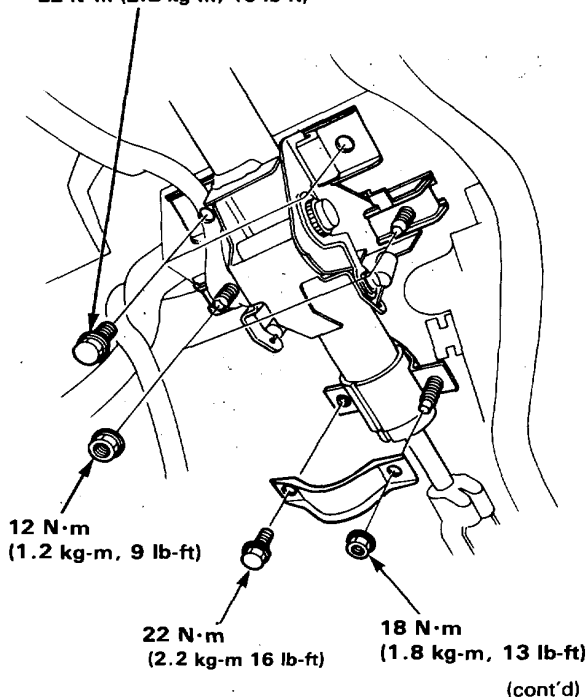
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



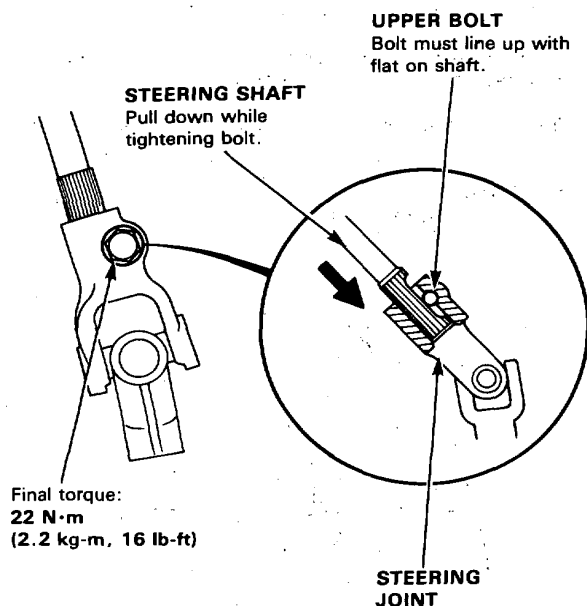
2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket. Tighten to these torques in step 7, page 11–14.

22 N·m (2.2 kg-m, 16 lb-ft)





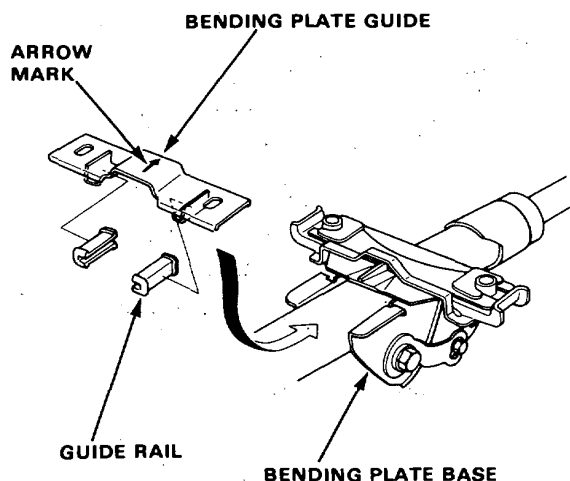
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



Installation

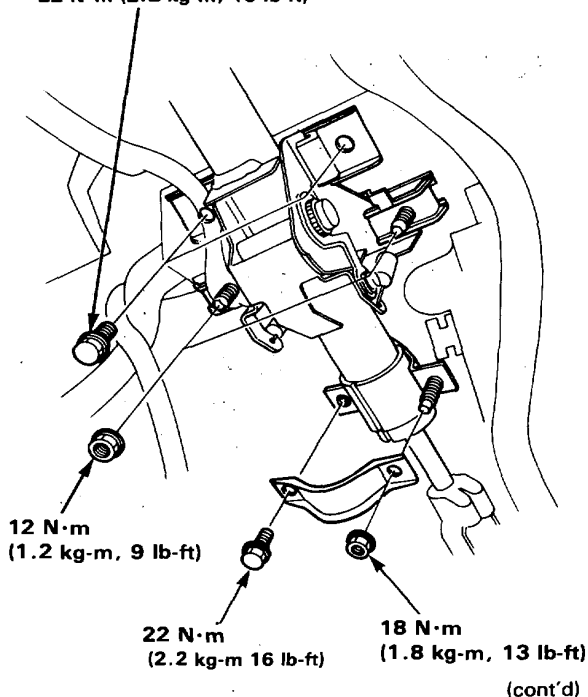
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

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 11–14.

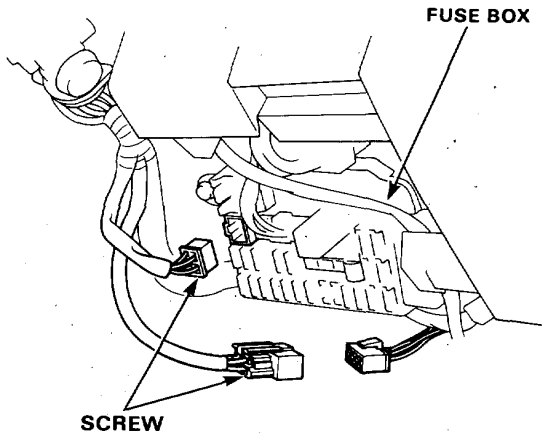
22 N·m (2.2 kg-m, 16 lb-ft)



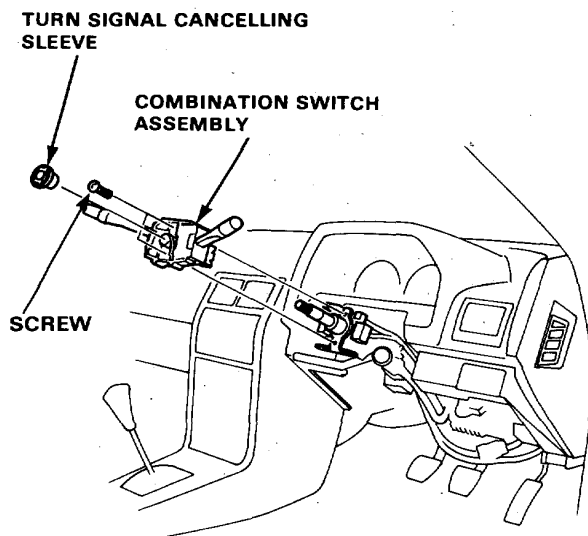
Steering Column

Installation (cont'd)

3. Connect each wire coupler to the fuse box at the under dash right side.



4. Install the combination switch assembly and turn signal cancelling sleeve.
5. Connect each wire coupler to the combination switch.



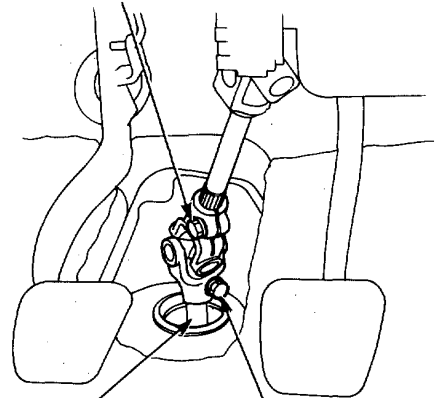
6. Loosely install the steering joint on the steering gearbox pinion.

NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

7. Tighten the steering column mount bolts, nuts and bracket loosely installed in step 2.
8. Tighten the lower and upper steering joint bolts.

UPPER BOLT

22 N·m (2.2 kg-m, 16 lb-ft)



STEERING GEARBOX
PINION

LOWER BOLT

22 N·m (2.2kg-m, 16 lb-ft)

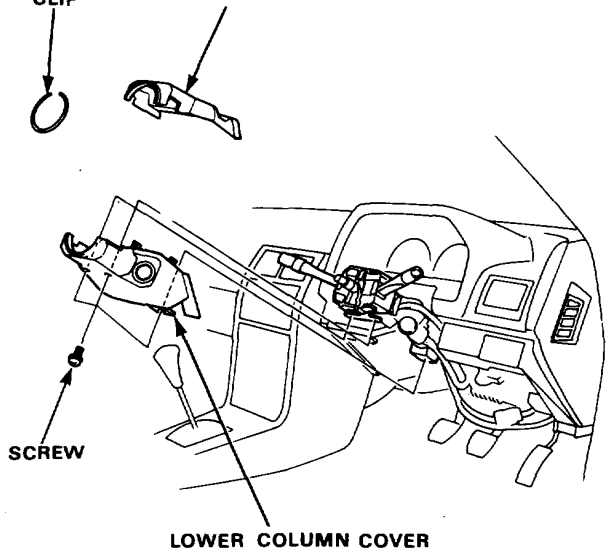
9. Install the upper column cover and lower column cover.

CLIP

UPPER COLUMN COVER

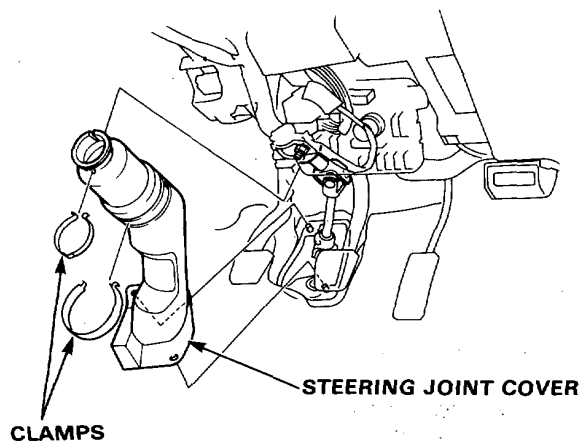
SCREW

LOWER COLUMN COVER

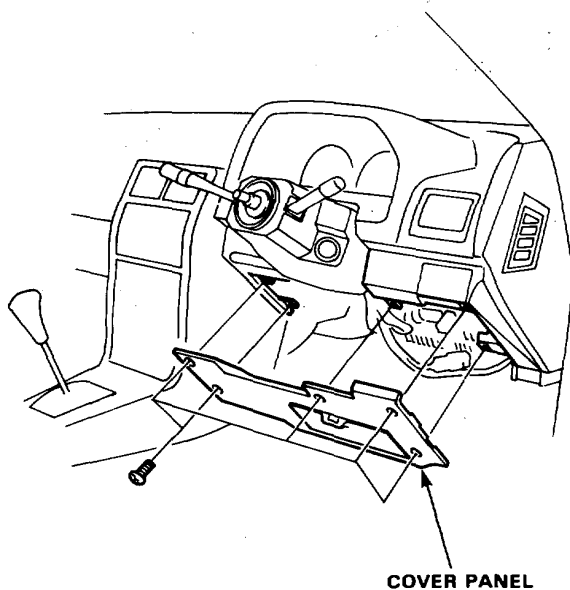




10. Install the steering joint cover with the clamps and clips.



11. Install the cover panel.



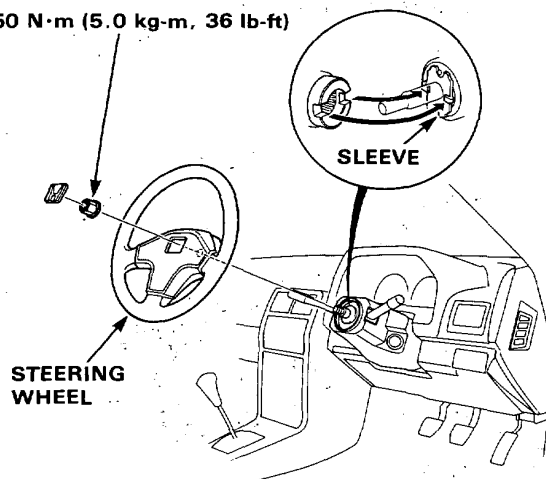
12. Install the steering wheel in a straight ahead position.

NOTE: Align the tabs on the turn signal cancelling sleeve with the grooves on the steering wheel boss.

13. Tighten the steering wheel mount nut and torque to 50 N·m (5.0 kg-m, 36 lb-ft).

14. Check that the horn works properly, then install the center pad.

50 N·m (5.0 kg-m, 36 lb-ft)



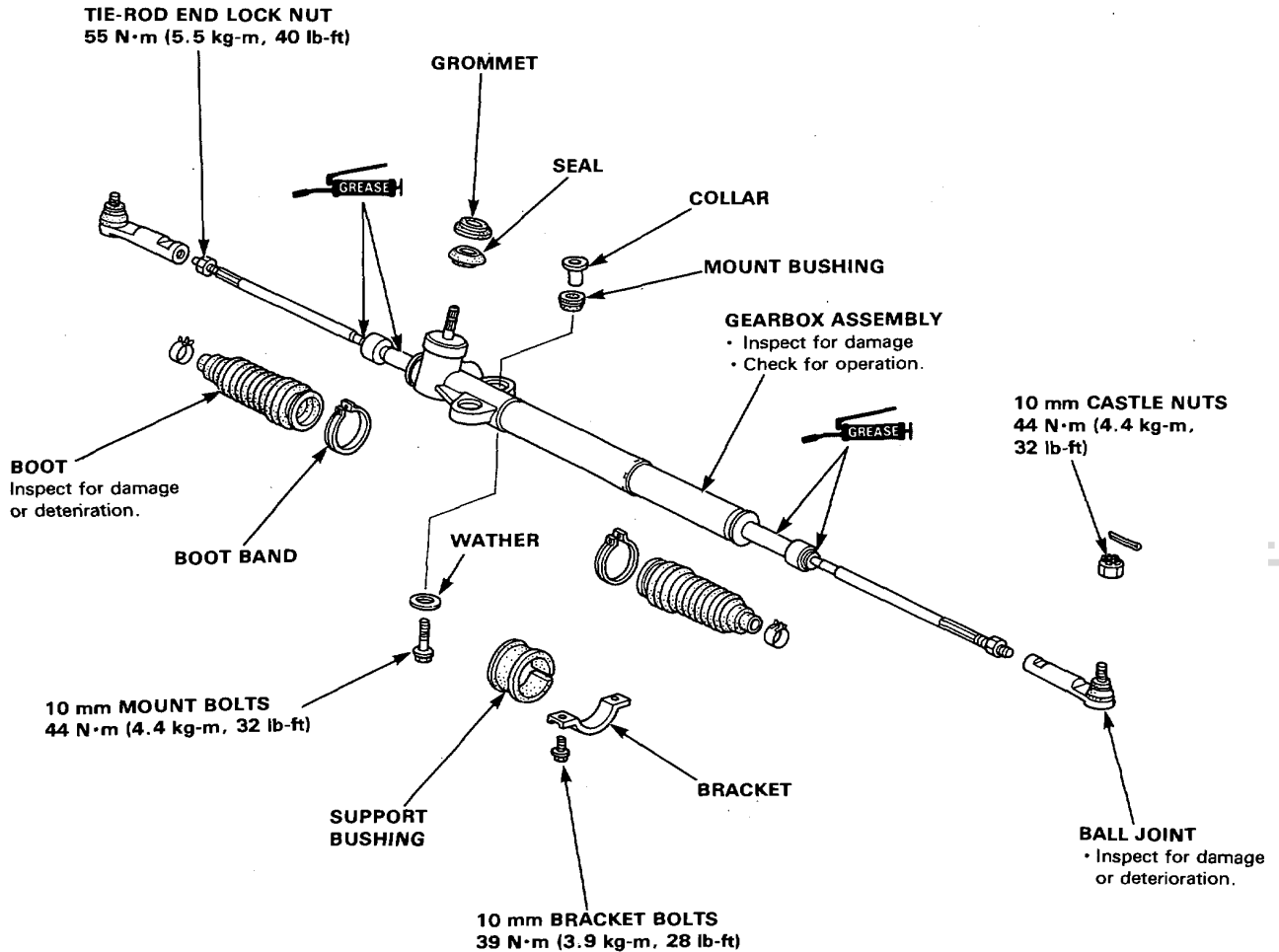
Steering Gearbox

Illustrated Index

CAUTION:

- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Replace parts with damaged sliding surfaces or deterioration.
- Do not try to disassemble the gearbox assembly. If the gearbox is faulty, replace the whole gearbox as an assembly.

NOTE: RH Drive shown, LH Drive is similar.

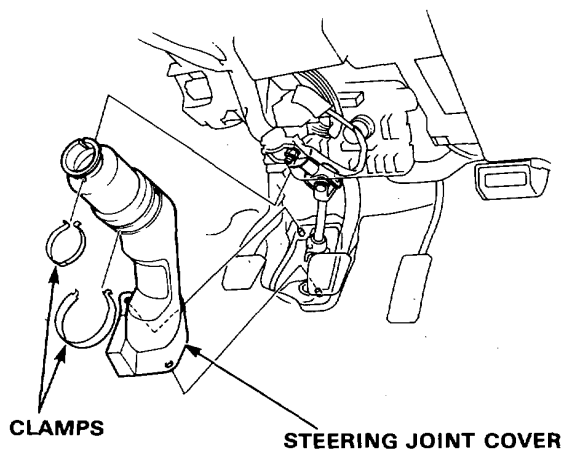


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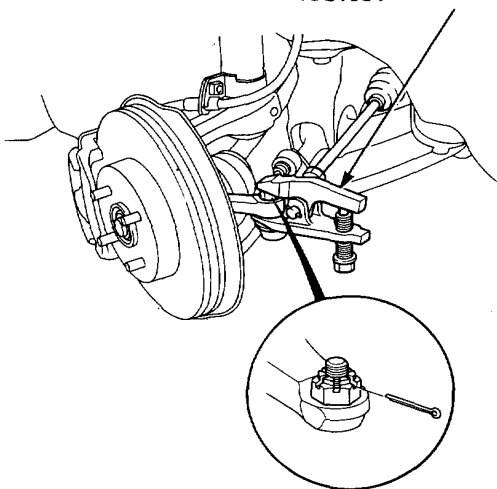
Removal

1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.



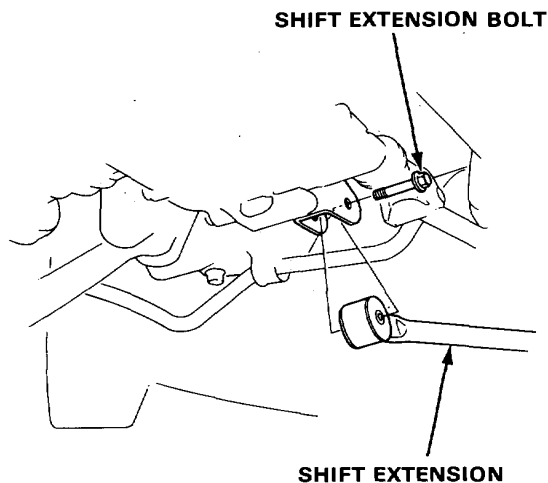
2. Raise the front of car and support on safety stands in the proper locations.
3. Remove the front wheels.
4. Disconnect the tie-rods from the steering knuckles using the special tool shown.

**BALL JOINT REMOVER
18G1584**



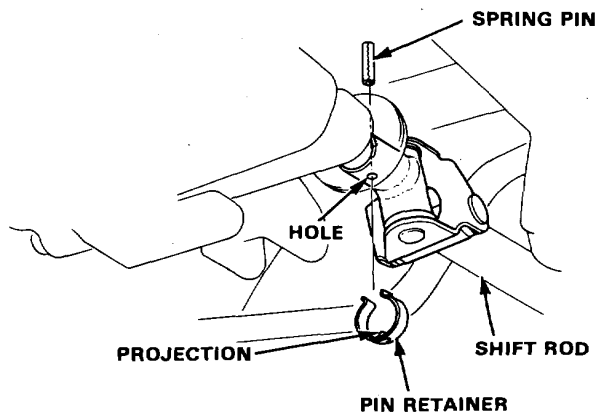
5. (Manual transmission model only)

- Remove the shift extension from the transmission case.



- Slide the boot at the connecting position of the gear shift rod.
- Drive out the spring pin with a punch, then disconnect the shift rod.

NOTE: On reassembly, install the pin retainer back into place after driving in the spring pin as shown.



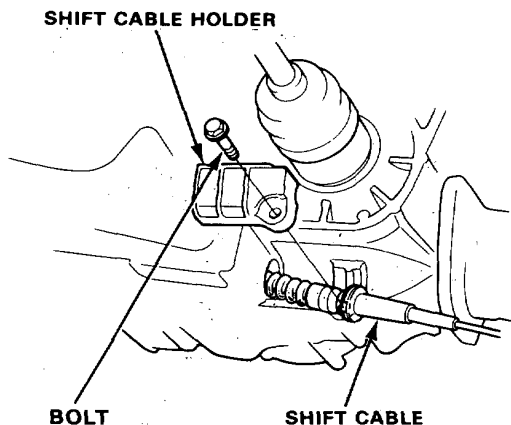
(cont'd)

Steering Gearbox

Removal (cont'd)

6. (Automatic transmission only)

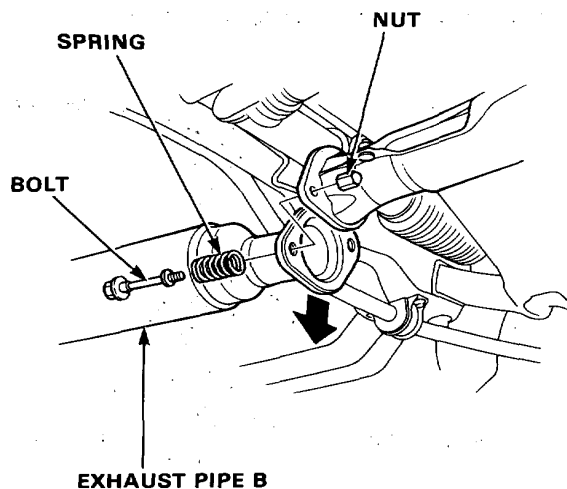
- Remove the shift cable holder and cable from the transmission case.



7. Remove the self-locking nuts connecting the exhaust pipe to exhaust pipe B, then separate exhaust pipe B from the exhaust pipe.

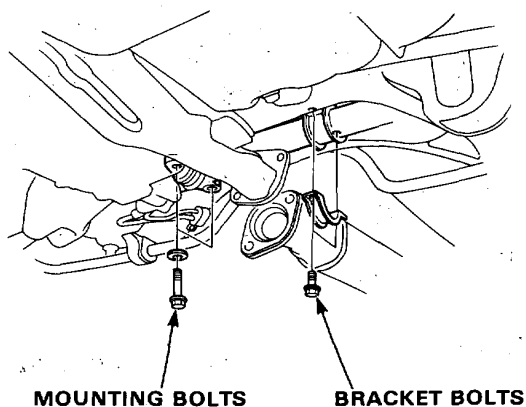
CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

8. Move the exhaust pipe B to downward.

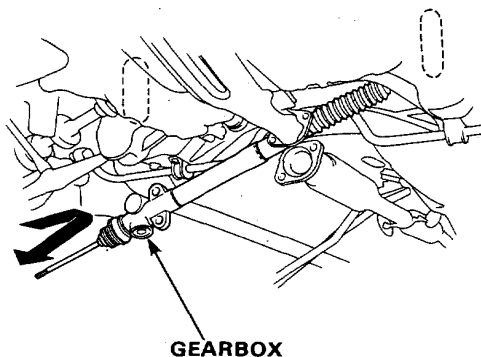


9. Slide the tie-rod all the way to the left side.

10. Remove the steering gearbox mounting and bracket bolts.



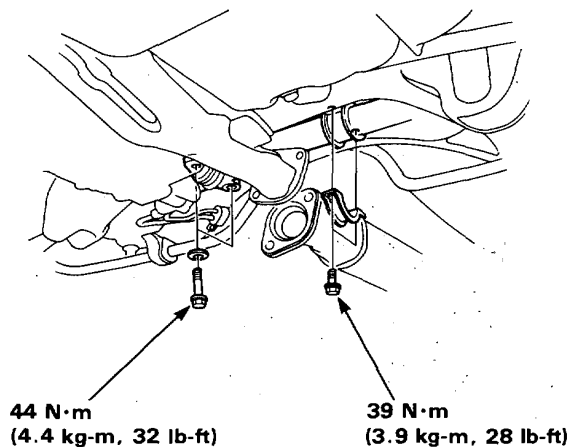
11. Slide the gearbox left so that the right tie-rod clears the bottom of the rear beam, then remove the gearbox.



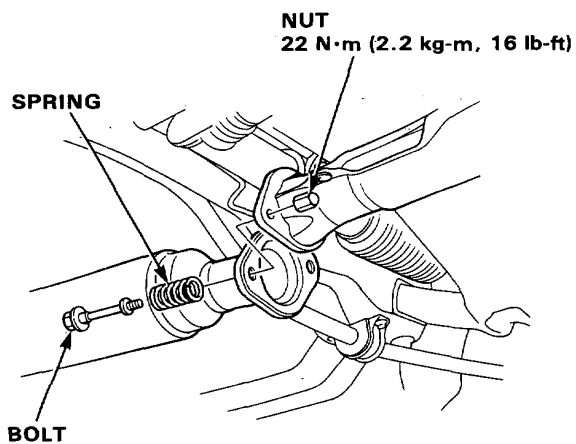


Installation

1. Reinstall the gearbox in the reverse order of removal.
2. Tighten the gearbox mounting and bracket bolts.

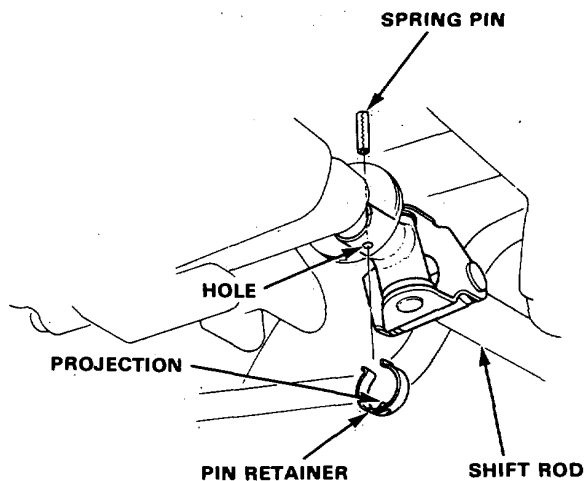


3. Connect the exhaust pipes with new gasket, and tighten the bolts and nuts.

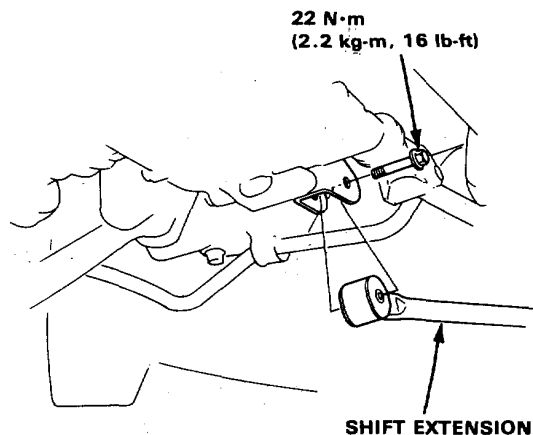


4-1. (Manual transmission model only)

- Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.



- Install the shift extension to the transmission case.



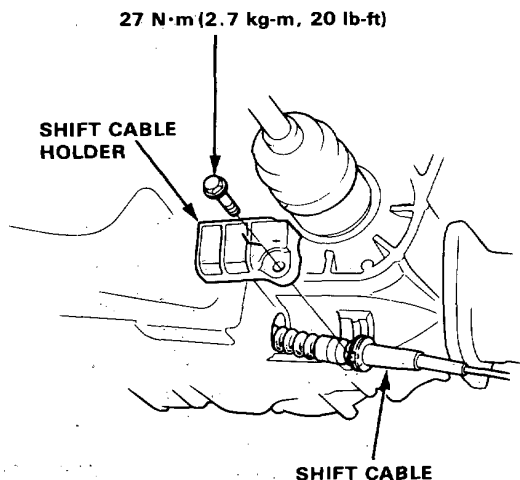
(cont'd)

Steering Gearbox

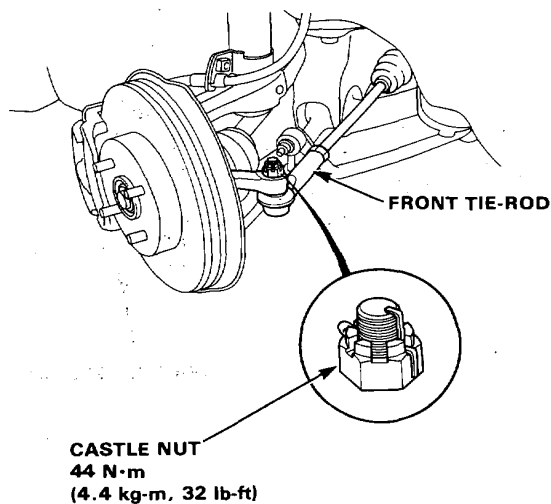
Installation (cont'd)

4-2. (Automatic transmission model only).

- Connect the shift cable to the transmission and install the cable holder.

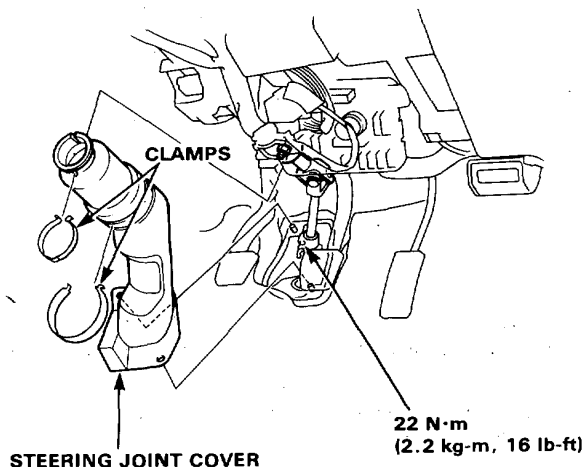


5. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.



6. Reconnect the steering shaft to the gearbox.
7. Install the steering-joint cover.

CAUTION: Before tightening the steering joint bolts, pull up the steering joint to make sure that the steering joint is fully seated.

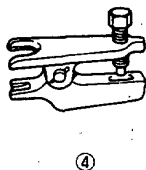
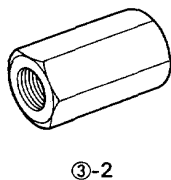
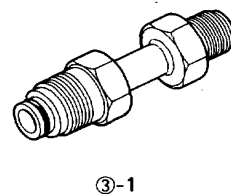
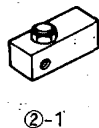
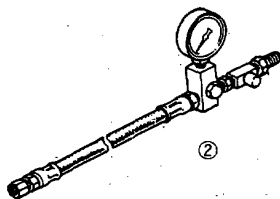
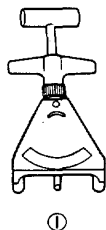


8. Reinstall the front wheels.

Special Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JGG-0010100	Belt Tension Gauge	1	Not Shown
②	07406-0010001	P/S Pressure Gauge Set	1	
②-1	07406-0010300	Pressure Control Valve	1	
②-2	07406-0010400	Pressure Gauge	1	
③	07LAK-SK30100	P/S Pressure Gauge Adapter Set	1	
③-1	07LAK-SK30110	P/S Pump Joint Adapter	1	
③-2	07LAK-SK30120	P/S Hose Joint Adapter	1	
④	18G1584	Ball Joint Remover	1	



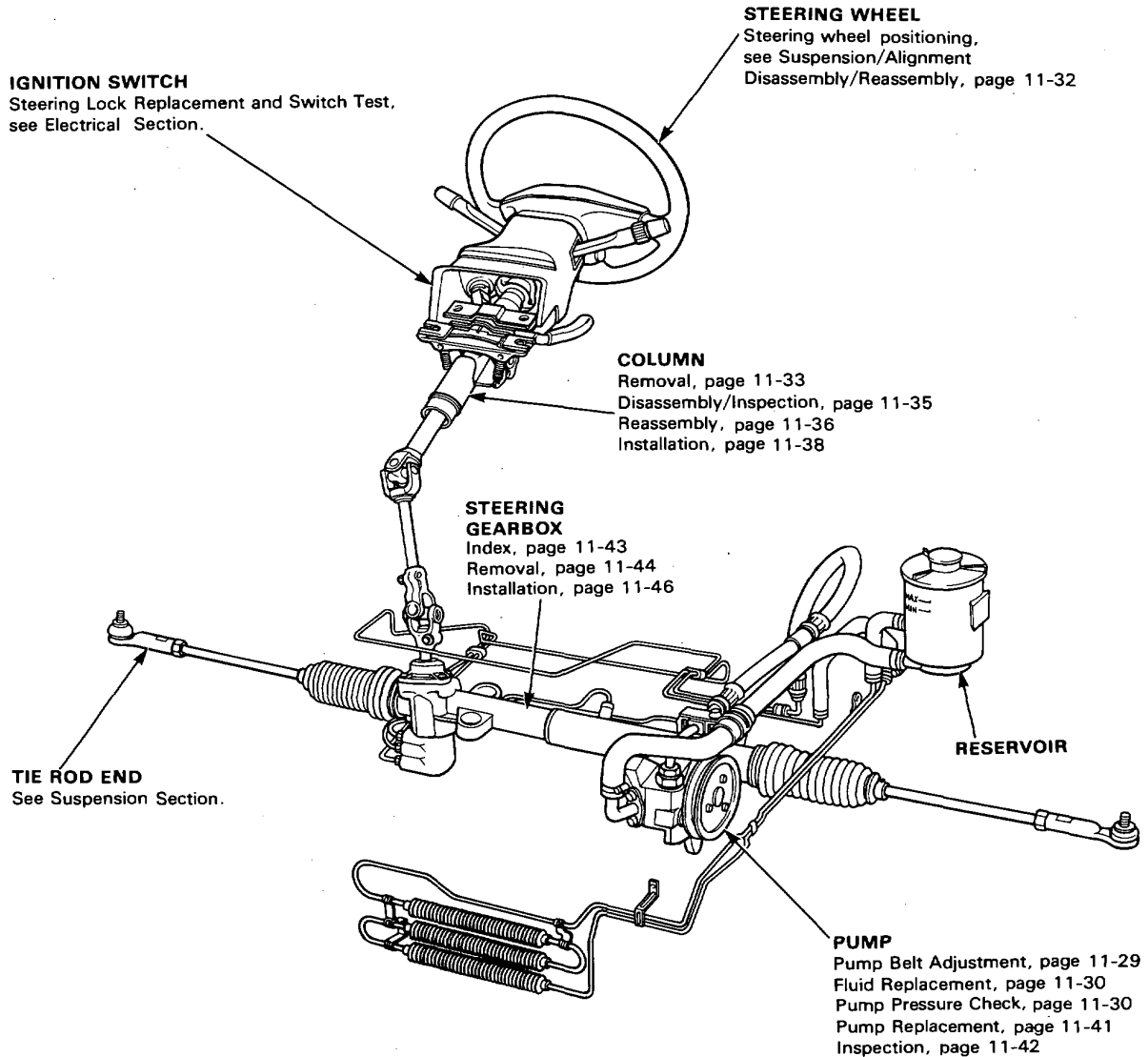
Component Location

Index



The power steering is rack and pinion type. The power operating assembly is integral with the steering gear. Road feel is maintained throughout the entire speed range of the vehicle.

NOTE: RH Drive shown, LH Drive is similar.



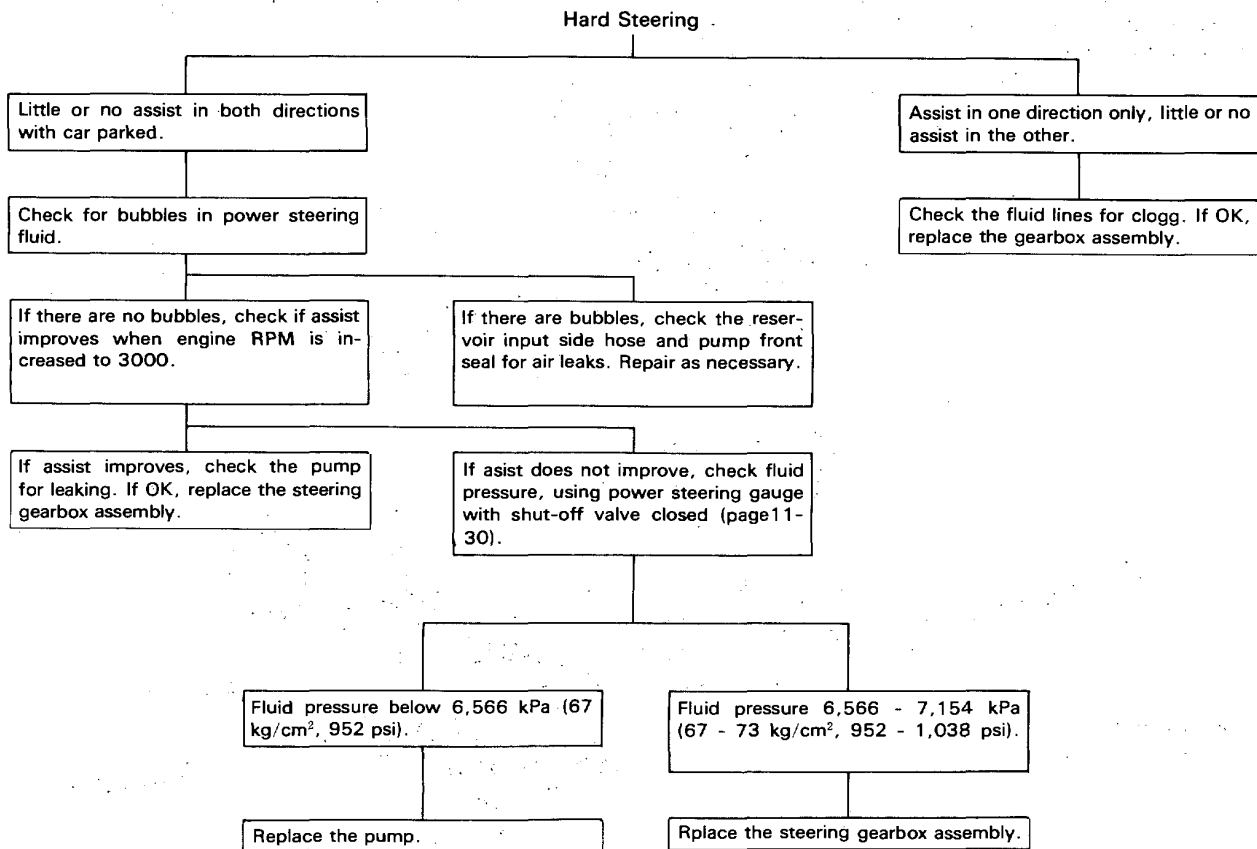
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Troubleshooting

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?





Uneven or rough steering

Belt slipping on pulley.

Adjust belt tension. Replace belt, if necessary (page 11-29).

Idle speed low or erratic.

If the engine stalls when wheel is turned while car is stopped or moving at low speed, adjust idle speed (see Fuel Section).

Check power steering pump shaft rotation. (page 11-42).
If shaft does not turn smoothly, the pump is probably damaged internally; clean, repair, or replace as necessary (page 11-41).

Air bubbles visible in reservoir fluid.

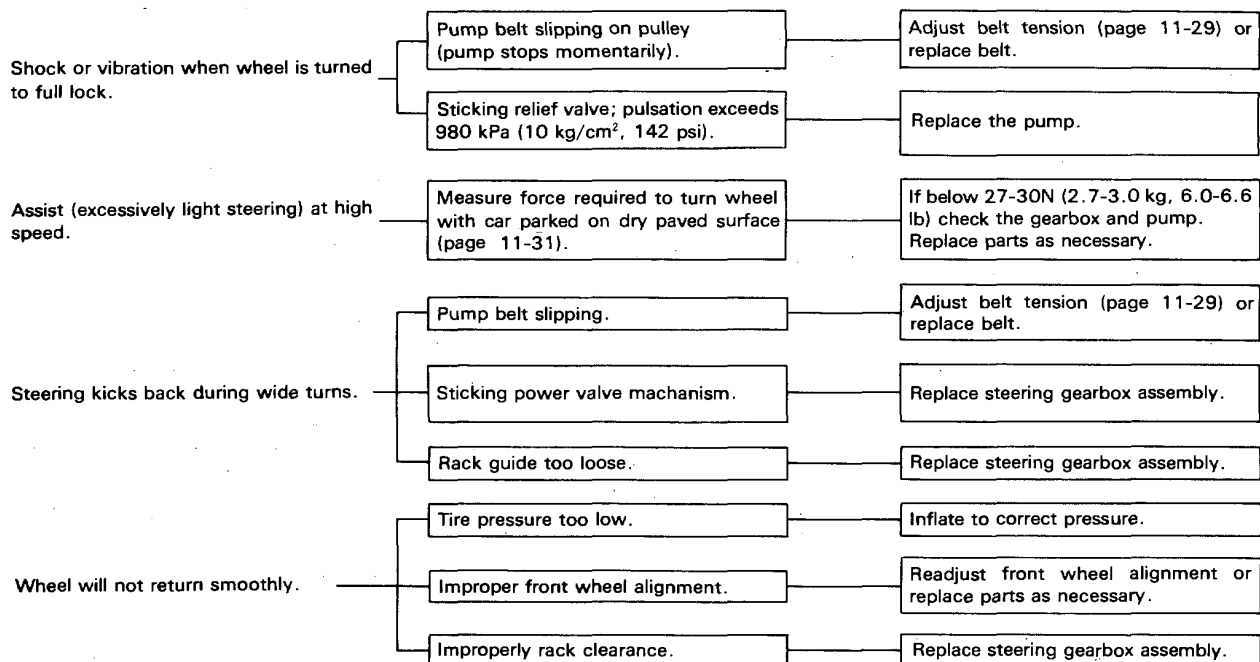
Check fluid level.
If low, check for leaks.
Add fluid to proper level (page 11-30).

If fluid level is OK, check O-rings and seals on both ends of the pump inlet hose, and the oil pump housing mating surfaces for suction leaks. Replace parts as necessary.

(cont'd)

Troubleshooting

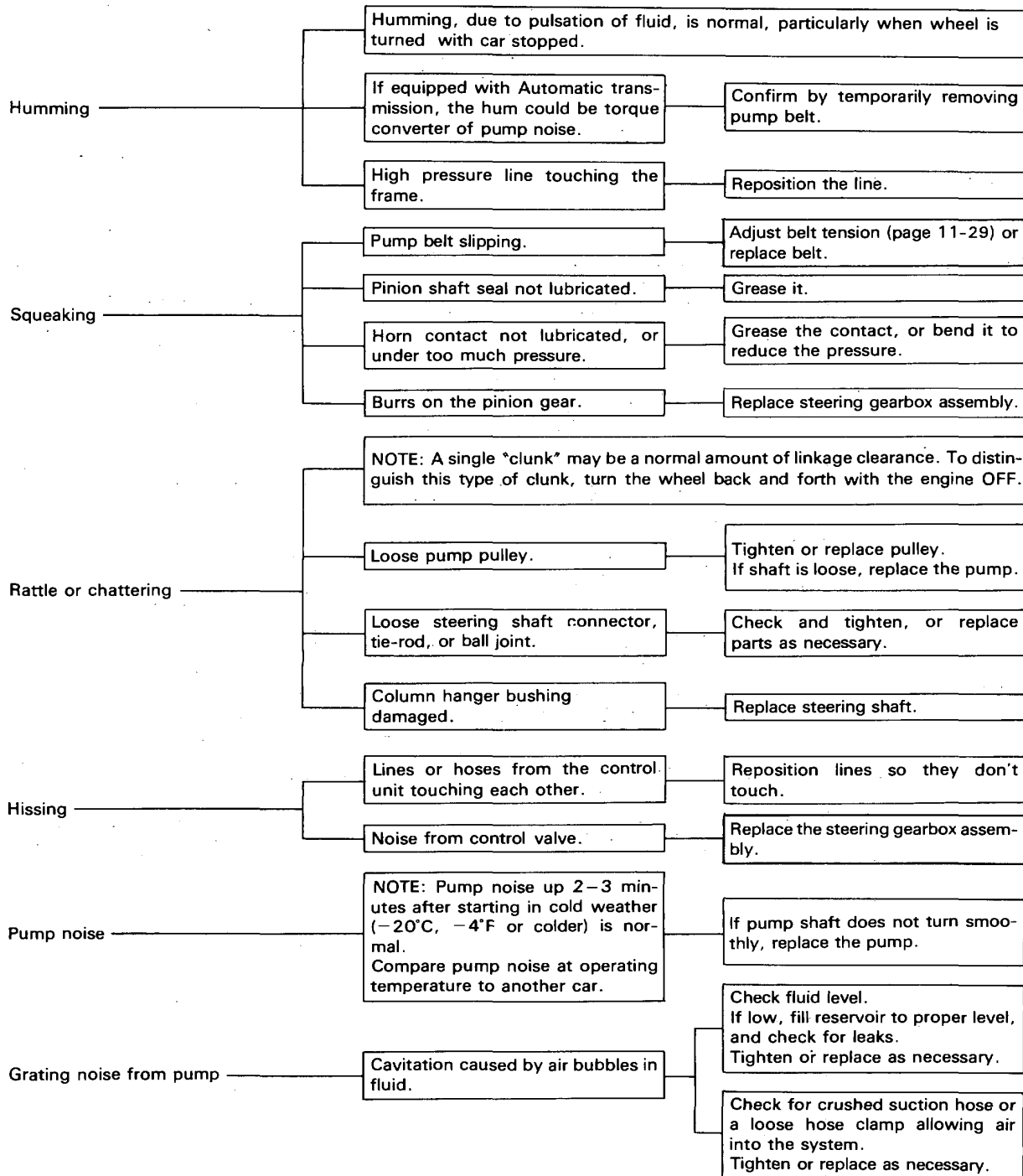
General Troubleshooting (cont'd)





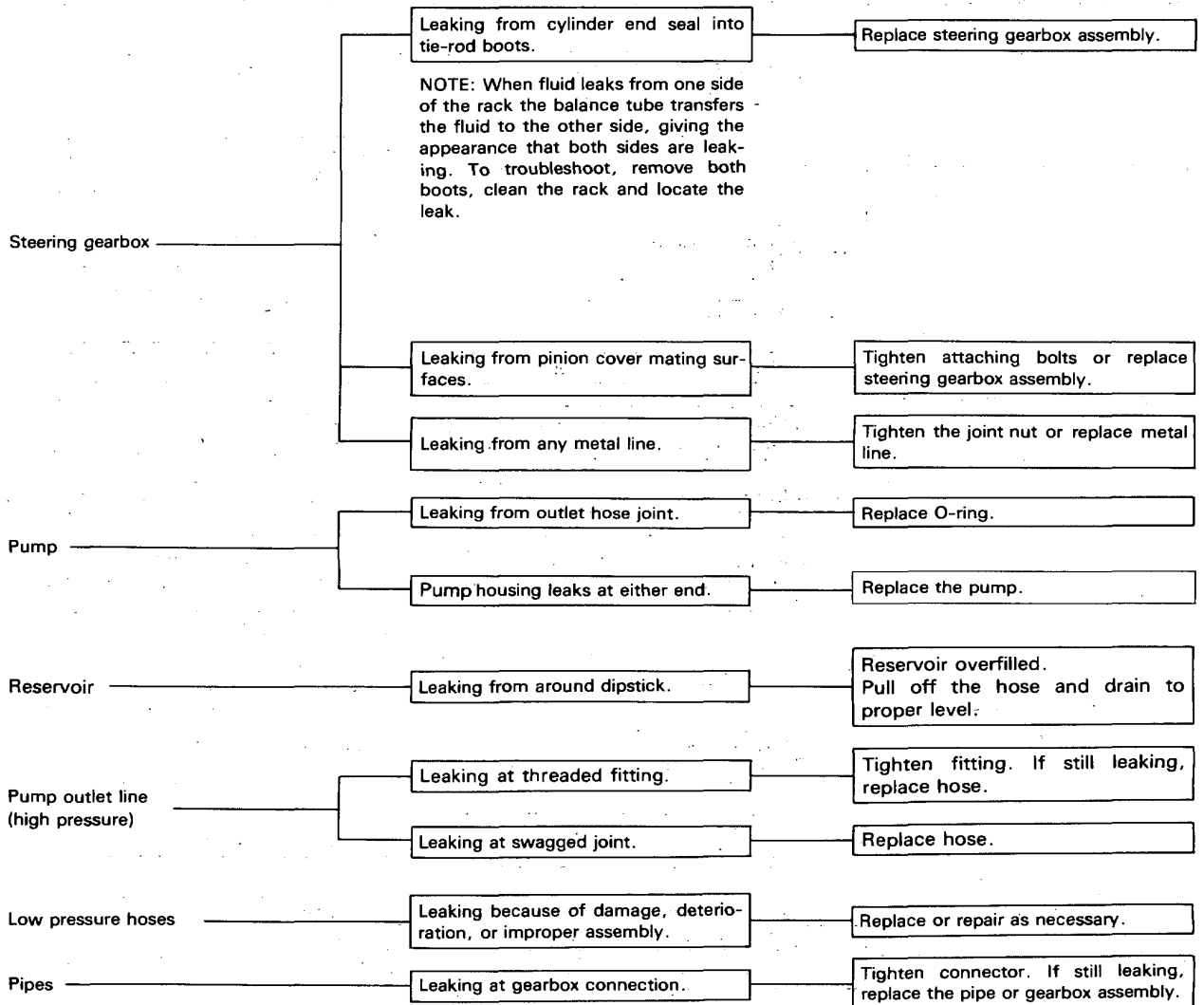
Noise and Vibration

NOTE: Pump noise in first 2–3 minutes after starting in cold weather (–20°C, –4°F or colder) is normal.



Troubleshooting

Fluid Leaks



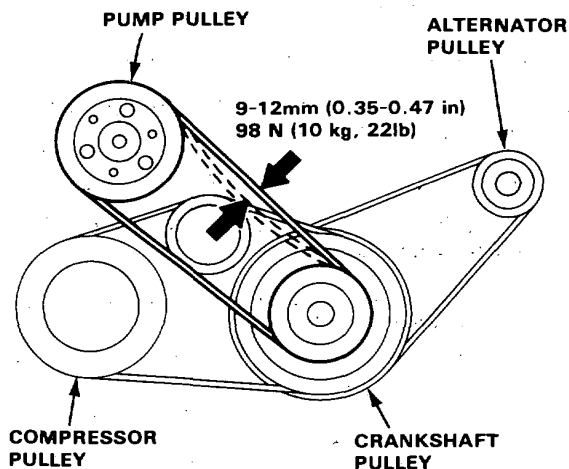


Maintenance

Pump Belt Adjustment

A properly adjusted belt should deflect about 9.0-12.0 mm (0.35-0.47 in.) when you push on it mid-way between the pulleys with a force of about 98 N (10 kg, 22 lbs).

NOTE: On a brand new belt, the deflection should be 7.0-10.0 mm (0.28-0.39 in.) when first measured.



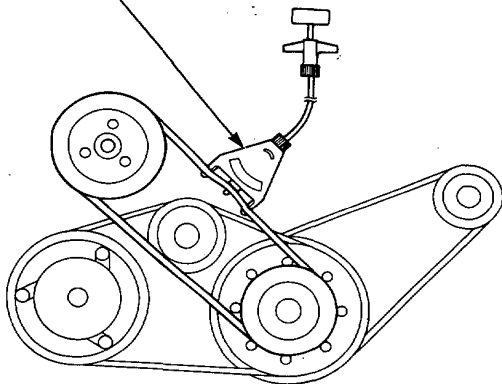
Test by the Belt Tension Gauge; 07JGG-0010100. Attach the tension gauge to the belt and measure the tension of the belt.

Tension: 35-50 kg (77-110 lb)

NOTE:

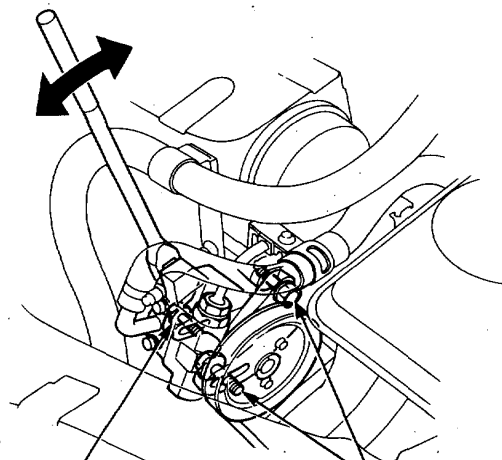
- On a brand-new belt, the tension should be 45-70 kg (99-154 lb) when first measured.
- See the instructions for the tension gauge.

BELT TENSION GAUGE
07JGG-0010100



SOHC Engine:

Loosen the three mounting bolts and move the pump to get proper tension, then retighten the mounting bolts.

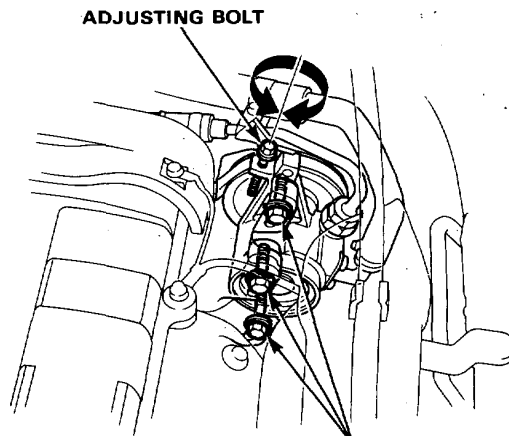


8 mm MOUNTING BOLT
24 N·m
(2.4 kg-m, 17 lb-ft)

10 mm MOUNTING BOLTS
45 N·m
(4.5 kg-m, 33 lb-ft)

DOHC Engine:

Loosen the three mounting bolts and turn the adjusting bolt to get proper tension, then retighten the mounting bolts.



10 mm MOUNTING BOLTS
45 N·m
(4.5 kg-m, 33 lb-ft)

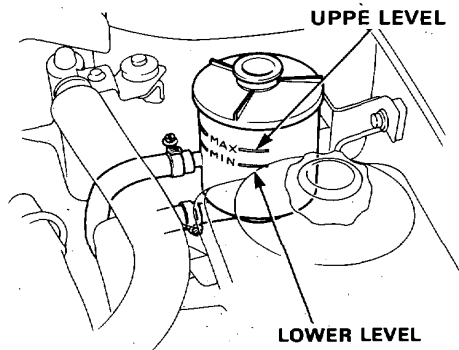
Start the engine and turn the steering wheel from lock-to-lock several times, then recheck the belt tension.

On-Car Checks

Fluid Replacement

Check the reservoir at regular intervals, and add fluid as necessary.

CAUTION: Use only DEXRON® II Automatic Transmission Fluid (ATF). Using other fluids such as ATF or other manufacturer's power steering fluid will damage the system.

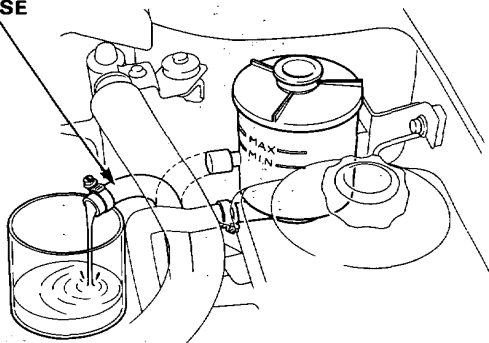


Fluid Replacement

CAPACITY: 1.2 liter (1.3 US qt., 1.1 Imp qt.) at change

1. Drain the fluid from the reservoir.
2. Disconnect the return hose from the gearbox at the reservoir, and put the end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.

RETURN HOSE



4. Re-fit the return hose on the reservoir.
5. Fill the reservoir to the upper level mark.
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add some if necessary.

CAUTION: Do not fill the reservoir beyond the upper level mark.

Pump Pressure Check

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

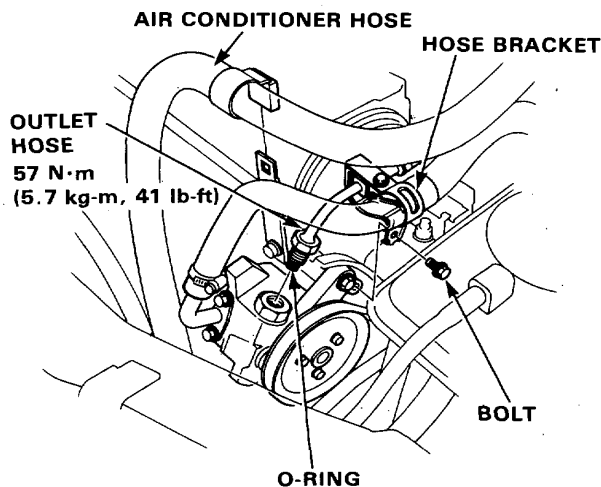
CAUTION: Use fender covers to avoid damaging painted surfaces.

NOTE: First check the power steering fluid level and pump belt tension.

1. Remove the air conditioner hose from the bracket.
2. Remove the hose bracket from the pump bracket by removing the mounting bolt.
3. Disconnect the outlet hose from the pump.

CAUTION: Be careful not to damage the O-ring when disconnecting the hose.

NOTE: Place the shop towel around the pipe fitting to catch the spilled fluid.

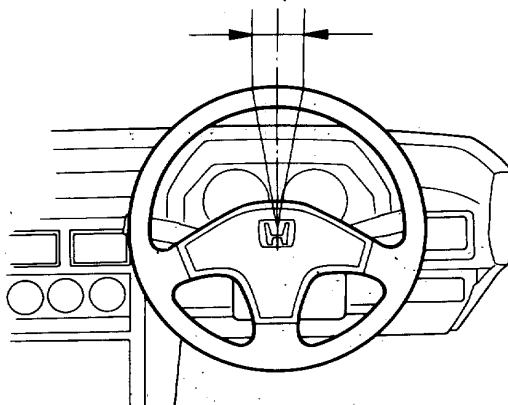




Steering Wheel Rotational Play

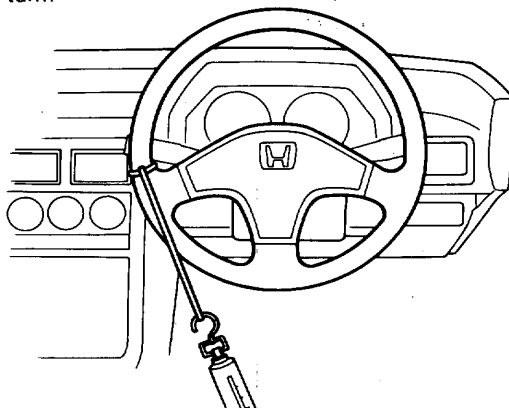
1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.

10 mm (0.4 in)



Power Assist Check with Car Parked

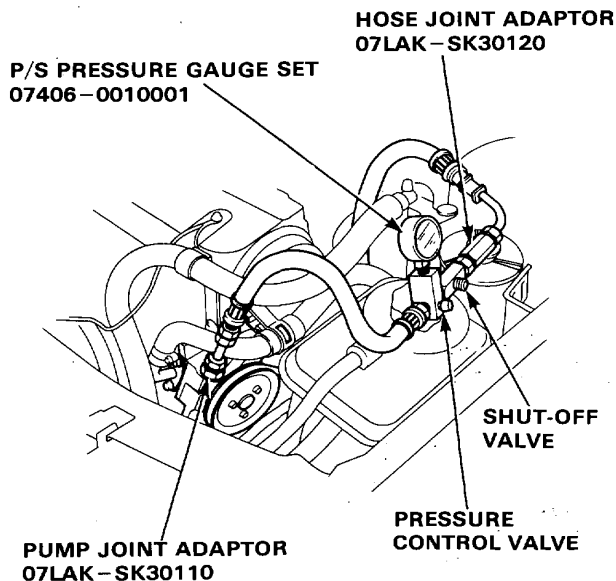
1. Check the power steering fluid level and pump belt tension.
2. Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.



4. The scale should read approximately 27-30N (2.7-3.0 kg, 6.0-6.6 lb)
If the reading is significantly greater or less, check the gearbox and pump.

NOTE: The reading may differ depending on the surface on which the tires lie.

4. Install the pump joint adaptor into the pump outlet and tighten it securely.
5. Install the power steering pressure gauge set between the pump and hose joint adaptors as shown.



6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Close the shut-off valve, then, close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.
9. Immediately open the shut-off valve fully.

CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

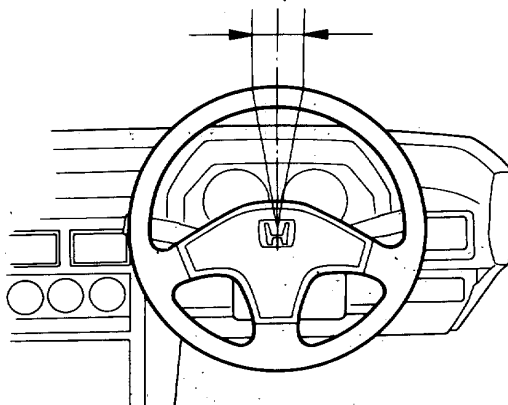
If the pump is in good condition, the gauge should read at least 6,566–7,154 kPa (67–73 kg/cm², 952–1,038 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



Steering Wheel Rotational Play

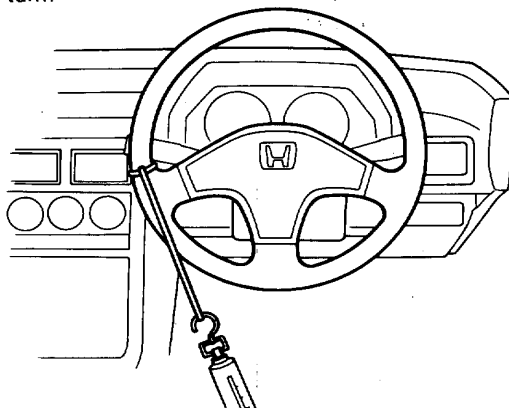
1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels.
2. If the play exceeds the service limit, check all steering components.

10 mm (0.4 in)



Power Assist Check with Car Parked

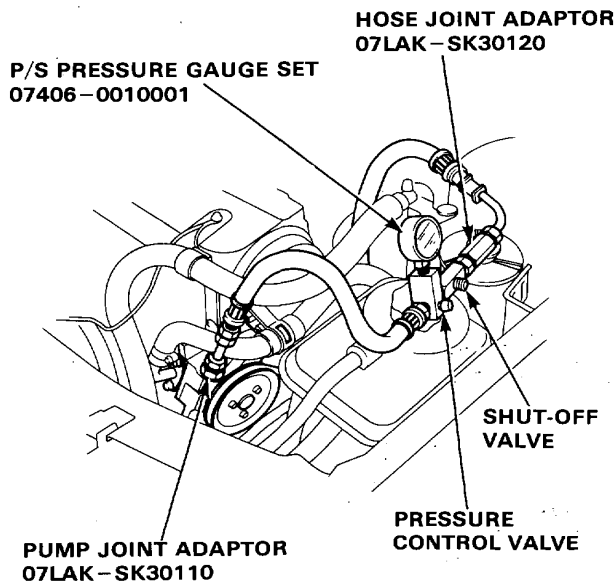
1. Check the power steering fluid level and pump belt tension.
2. Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.



4. The scale should read approximately 27-30N (2.7-3.0 kg, 6.0-6.6 lb).
If the reading is significantly greater or less, check the gearbox and pump.

NOTE: The reading may differ depending on the surface on which the tires lie.

4. Install the pump joint adaptor into the pump outlet and tighten it securely.
5. Install the power steering pressure gauge set between the pump and hose joint adaptors as shown.



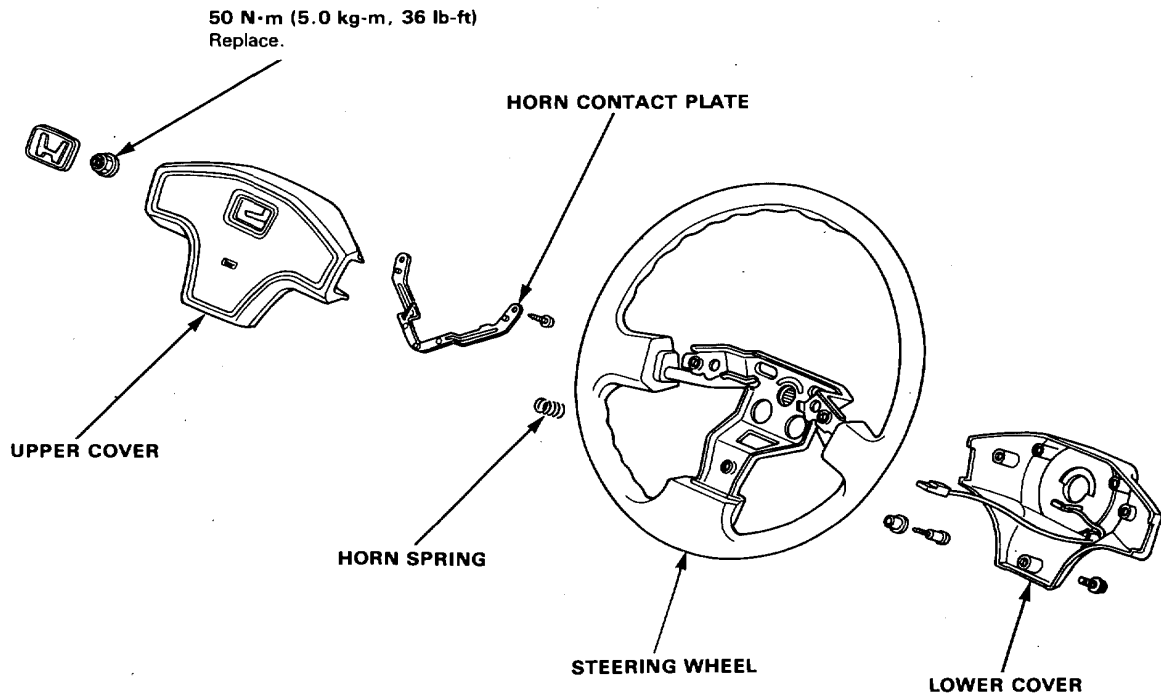
6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Close the shut-off valve, then, close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.
9. Immediately open the shut-off valve fully.

CAUTION: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

If the pump is in good condition, the gauge should read at least 6,566–7,154 kPa (67–73 kg/cm², 952–1,038 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

Steering Wheel

Disassembly/Reassembly





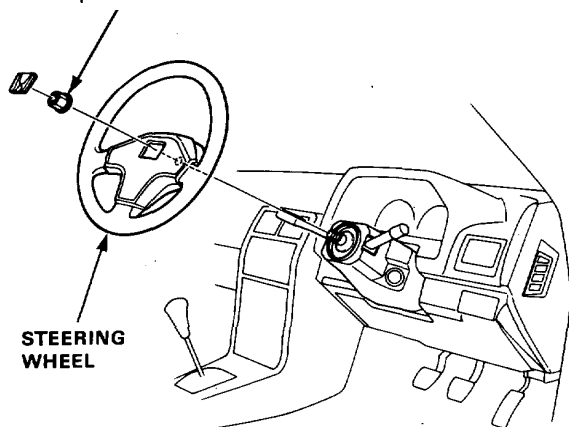
Steering Column

Removal

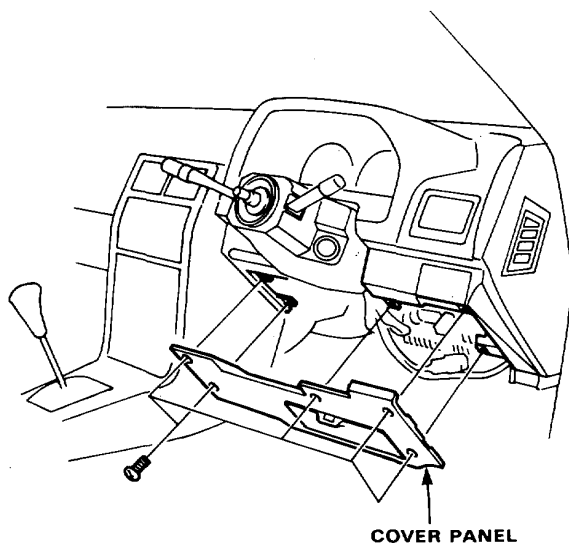
1. Remove the center pad.
2. Remove the steering shaft nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.

STEERING SHAFT NUT

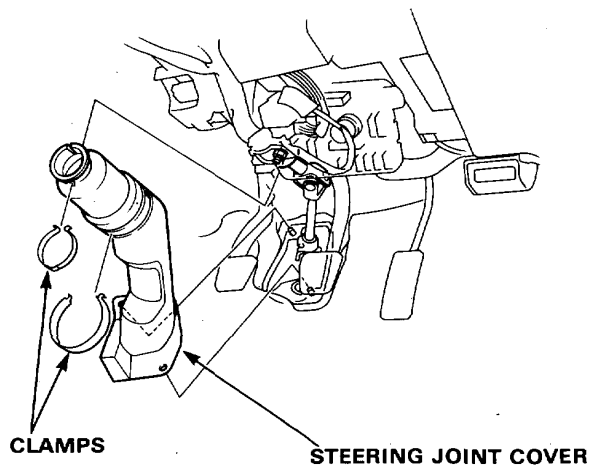
Replace.



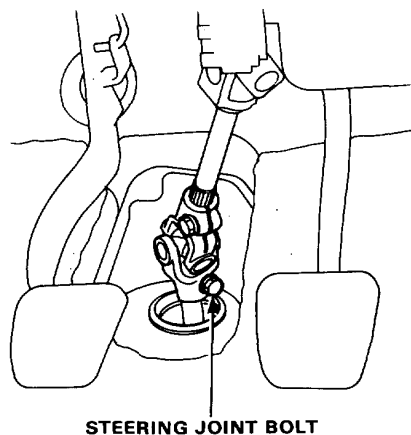
4. Remove the cover panel under the steering column.



5. Remove the steering joint cover.



6. Remove the steering joint bolt, and move the joint toward the column.

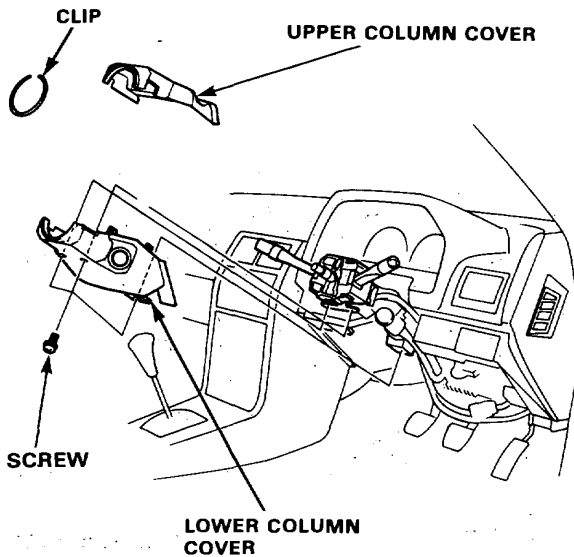


(cont'd)

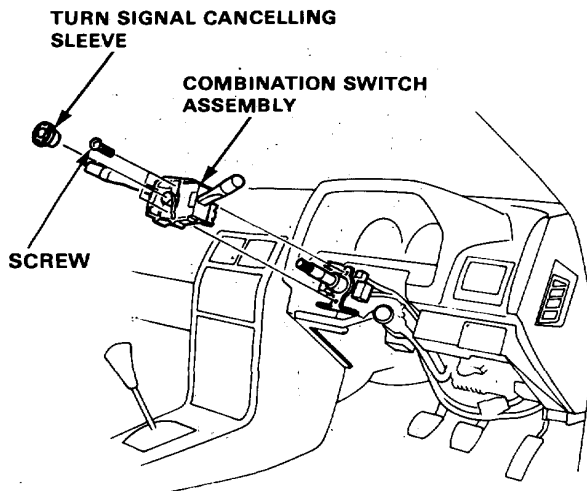
Steering Column

Removal (cont'd)

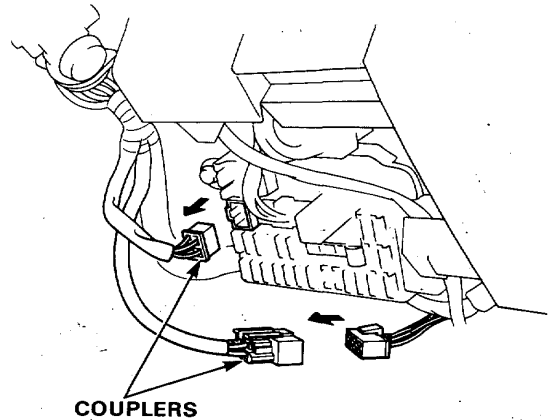
7. Remove the clip and three screws, then remove the upper and lower column covers.



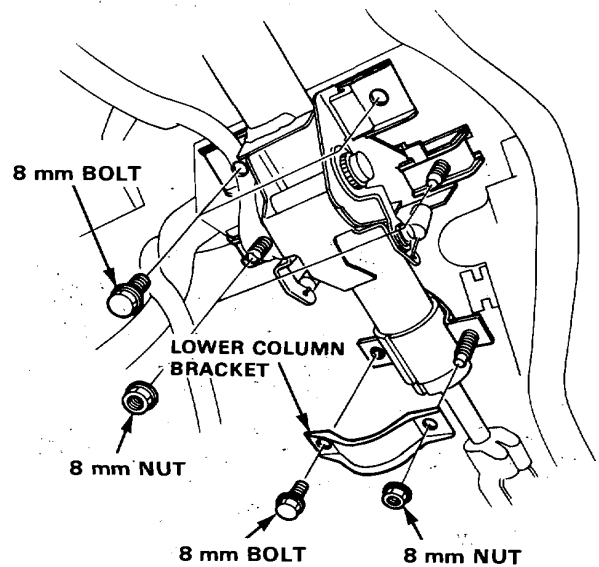
8. Disconnect each wire coupler from the combination switch.
9. Remove the turn signal cancelling sleeve. Remove the two screws and combination switch assembly.



10. Disconnect each wire coupler from the fuse box at under dash right side.



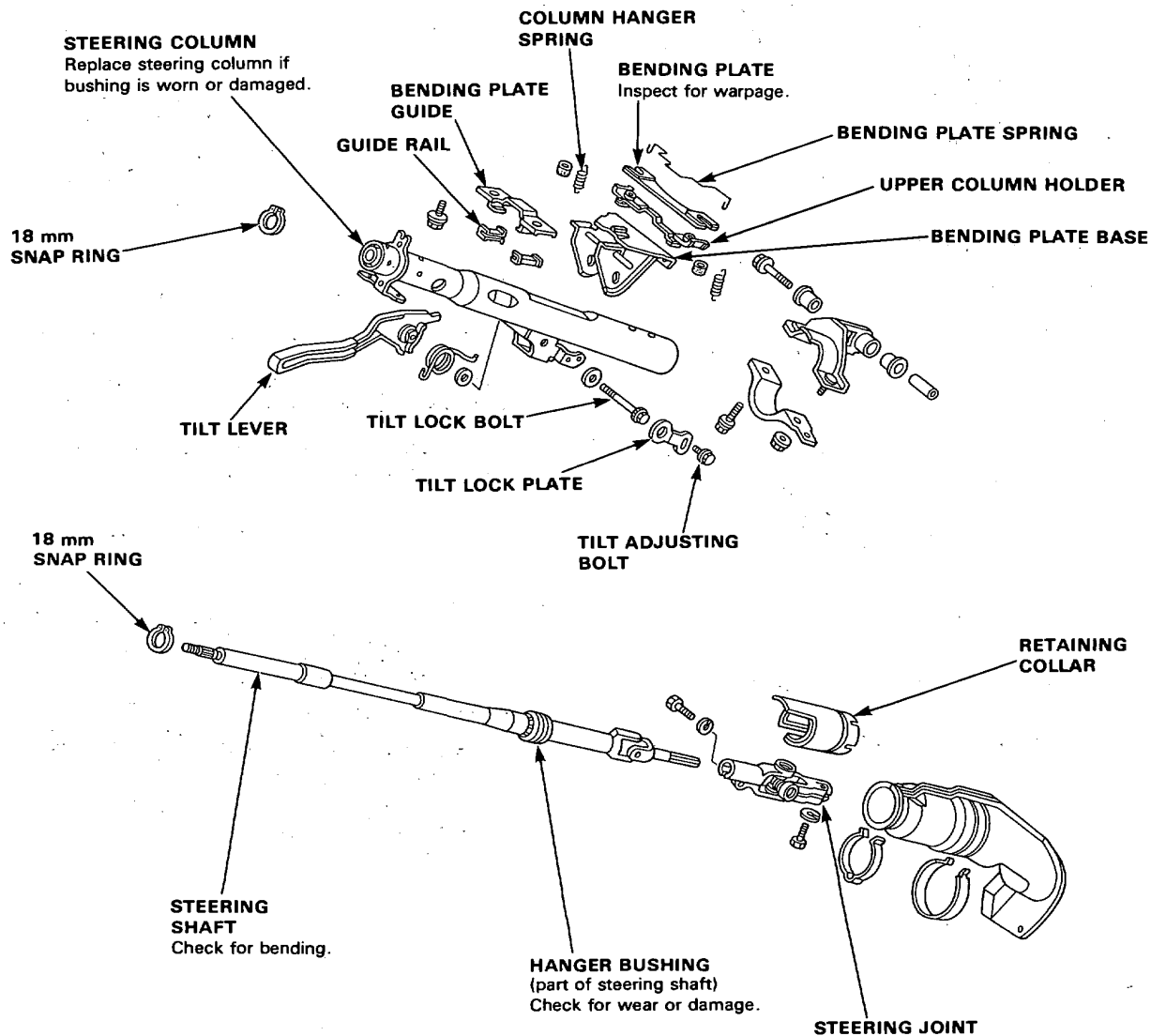
11. Remove the lower column bracket.
12. Remove the bolts and nuts attaching the bending plate guide and bending plate.
13. Remove the steering column assembly.





Disassembly/Inspection

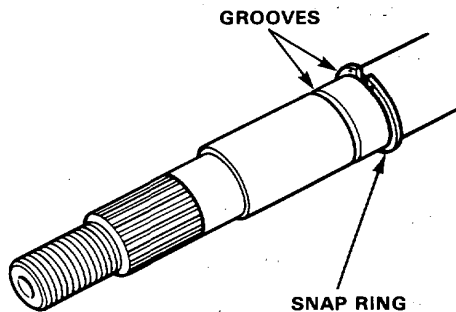
1. Remove the upper column holder, bending plate and bending plate spring.
2. Remove the tilt lock plate by removing the tilt adjusting bolt.
3. Remove the tilt lever, column hanger spring and bending plate base by removing the tilt lock bolt.
4. Position the ignition switch in "I".
5. Remove the snapping, then remove the steering shaft from bottom of the column.
6. Remove the retaining collar.



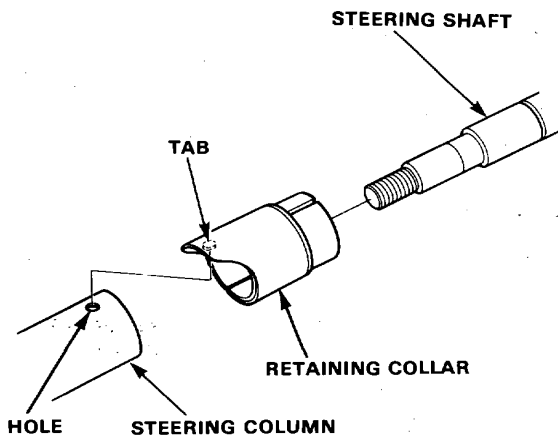
Steering Column

Reassembly

1. Install the snap ring on the groove of the steering shaft as shown.

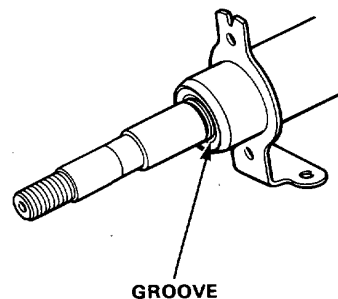


2. Install the retaining collar on the steering column aligning the hole in the column with tab on the retaining collar.

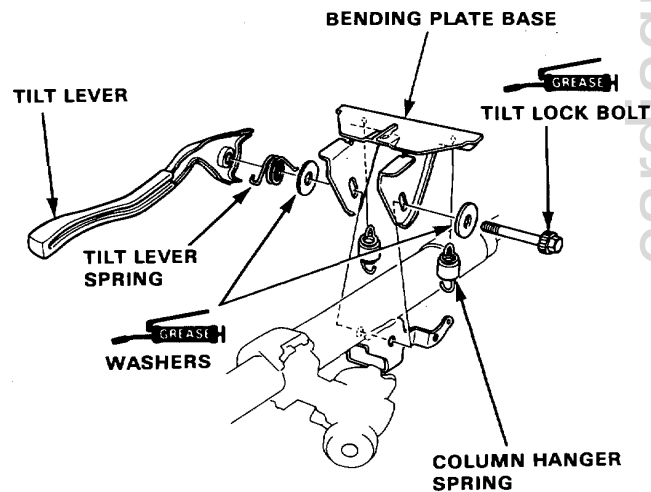


3. Insert the steering shaft into the steering column from the bottom.
4. Install the 18 mm snap ring on the groove of the steering shaft.

18 mm
SNAP RING

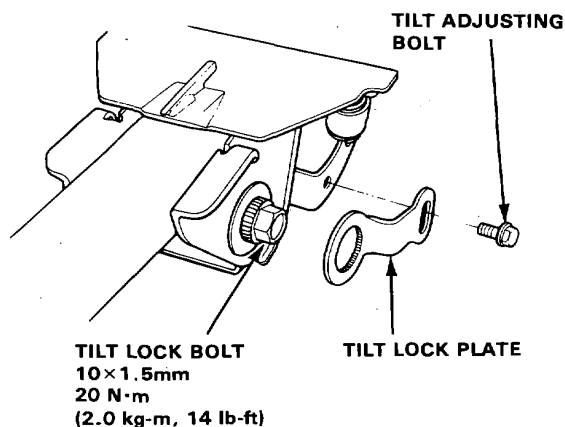


5. Position the bending plate guide on the steering column.
6. Loosely install the tilt lever, spring, washers, and bending plate guide on the steering column with the tilt lock bolt.
7. Install the column hanger springs between the bending plate base and steering column.



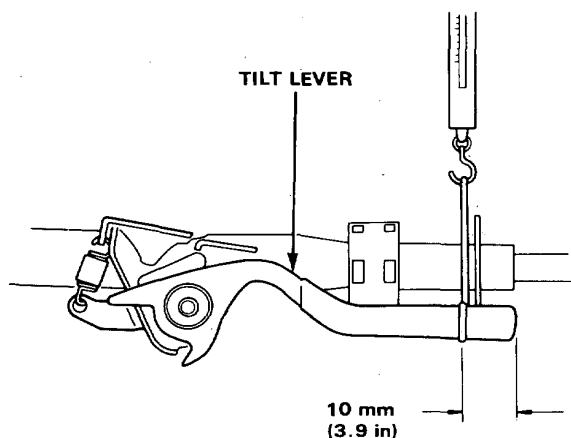


8. Tighten the tilt lock bolt to 20 N·m (2.0 kg-m, 14 lb-ft), then position the tilt lock plate on the splined portion of tilt lock bolt and loosely attach with the tilt adjusting bolt.

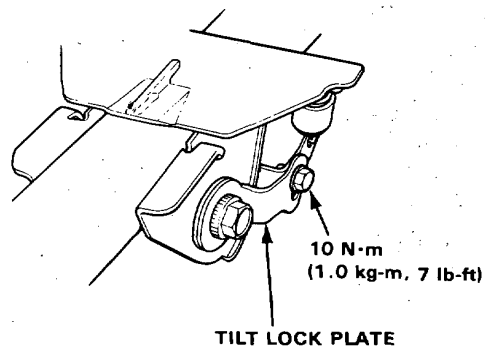


9. Attach a spring scale 10 mm (3.9 in) from the end of the knob. Measure the force required to move the lever.

Preload: 80 N (8.0 kg, 18 lbs)



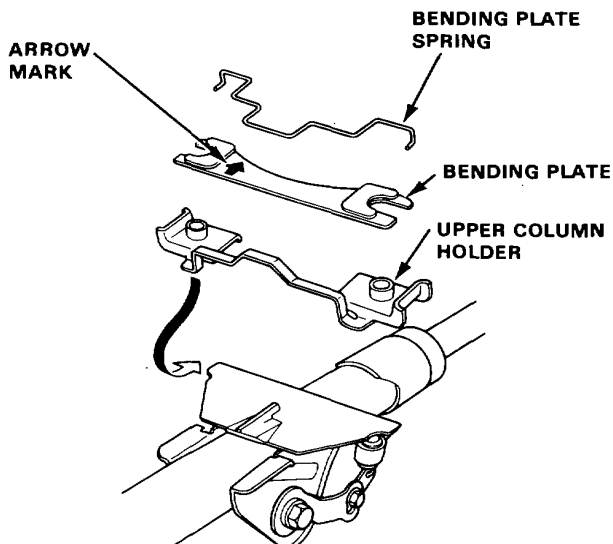
10. If the force measured is not within the specification, remove the tilt lock plate then reset it in the position where the correct force can be obtained.



11. Tighten the tilt adjusting bolt.

12. Install the upper column holder and bending plate with the bending plate spring on the bending plate base.

NOTE: Install the bending plate with arrow mark facing the steering gearbox.

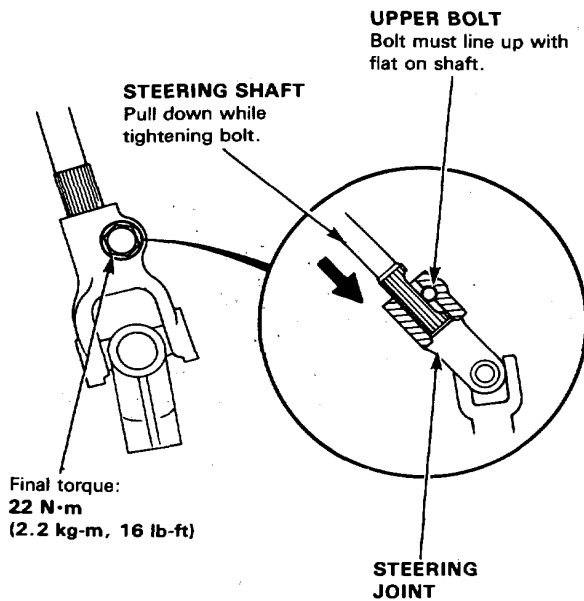


(cont'd)

Steering Column

Reassembly (cont'd)

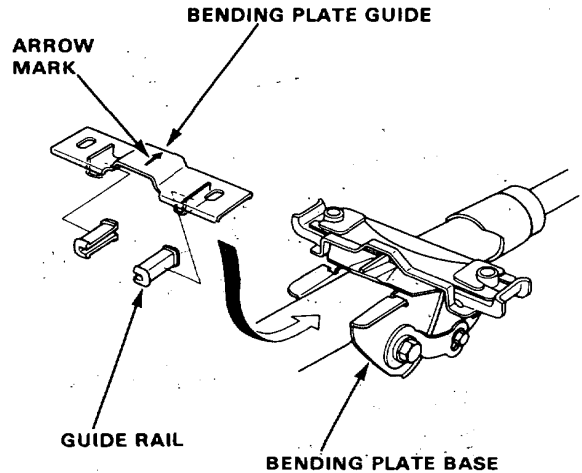
13. Slip the upper end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the upper bolt.



Installation

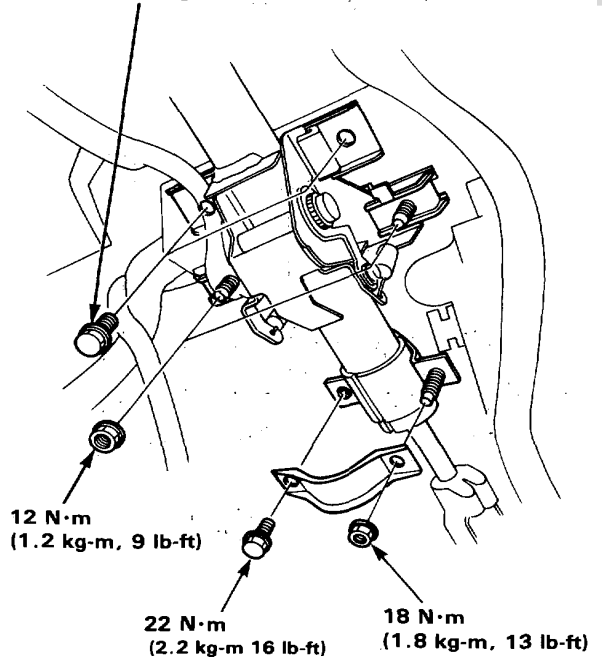
1. Set the guide rails in the bending plate guide and install the bending plate guide on the bending plate base.

NOTE: Install the bending plate guide with its arrow mark toward the gearbox.



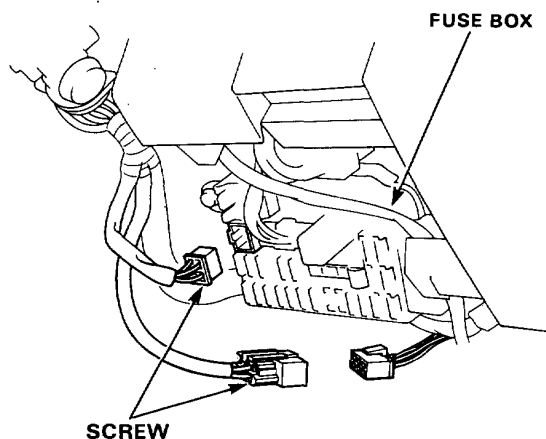
2. Loosely install the steering column assembly with the nuts, bolts and lower column bracket. Tighten to these torques in step 7, page 11-39.

22 N·m (2.2 kg-m, 16 lb-ft)

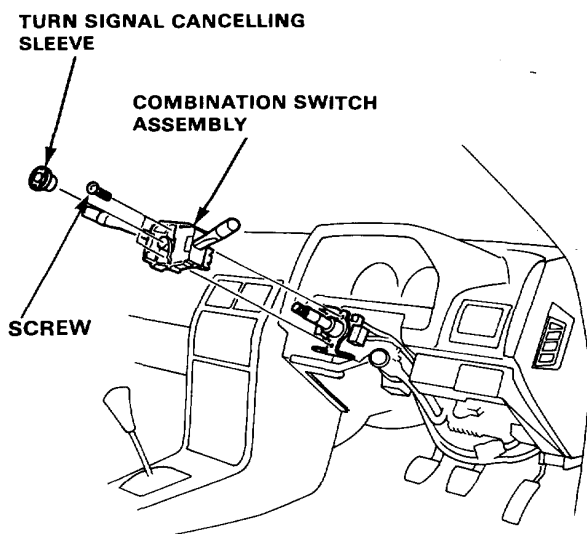




3. Connect each wire coupler to the fuse box at the under dash right side.



4. Install the combination switch assembly and turn signal cancelling sleeve.
5. Connect each wire coupler to the combination switch.

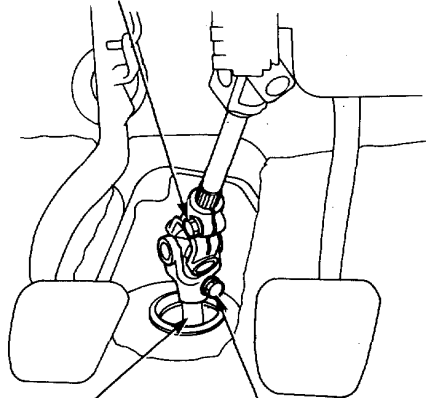


6. Loosely install the steering joint on the steering gearbox pinion.

NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

7. Tighten the steering column mount bolts, nuts and bracket loosely installed in step 2.
8. Tighten the lower and upper steering joint bolts.

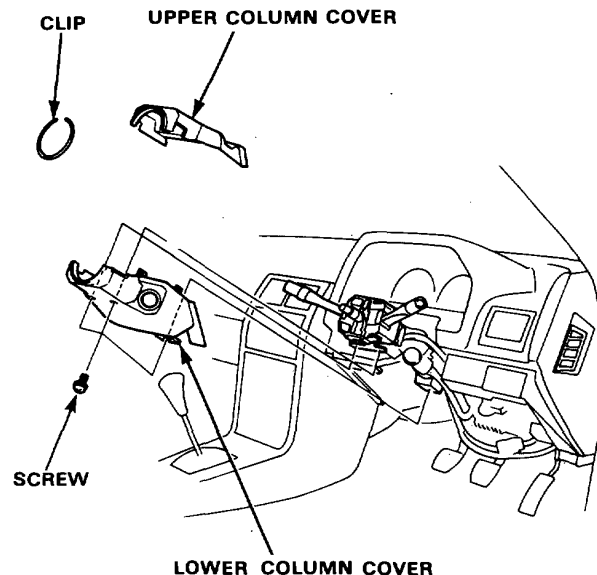
UPPER BOLT
22 N·m (2.2 kg-m, 16 lb-ft)



STEERING GEARBOX PINION

LOWER BOLT
22 N·m (2.2kg-m, 16 lb-ft)

9. Install the upper column cover and lower column cover.

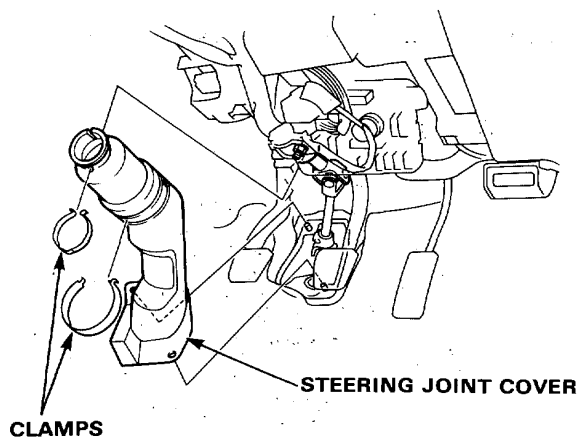


(cont'd)

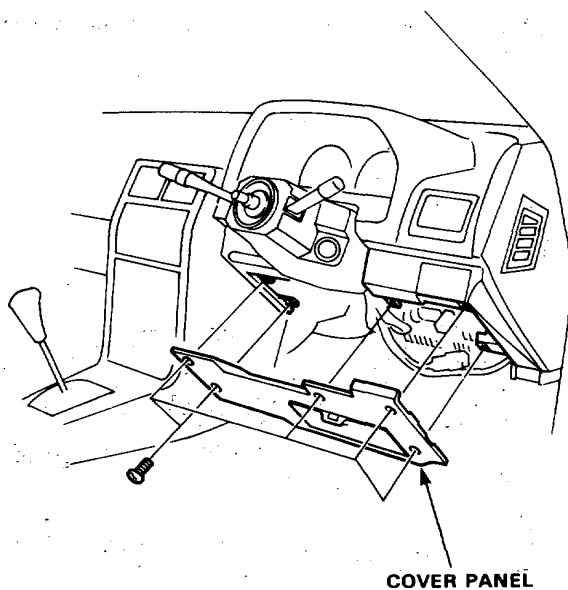
Steering Column

Installation (cont'd)

10. Install the steering joint cover with the clamps and clips.



11. Install the cover panel.



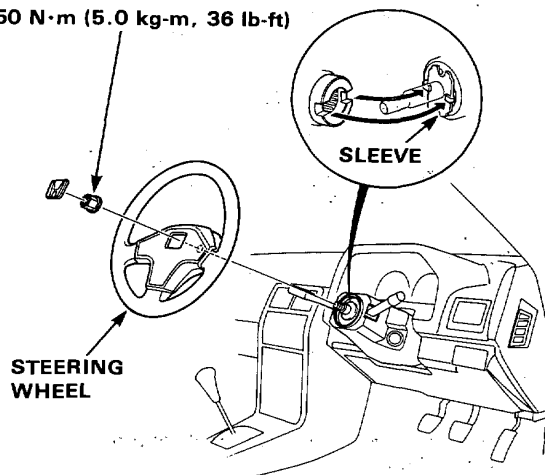
12. Install the steering wheel in a straight ahead position.

NOTE: Align the tabs on the turn signal cancelling sleeve with the grooves on the steering wheel boss.

13. Tighten the steering wheel mount nut and torque to 50 N·m (5.0 kg-m, 36 lb-ft).

14. Check that the horn works properly, then install the center pad.

50 N·m (5.0 kg-m, 36 lb-ft)



Steering Pump

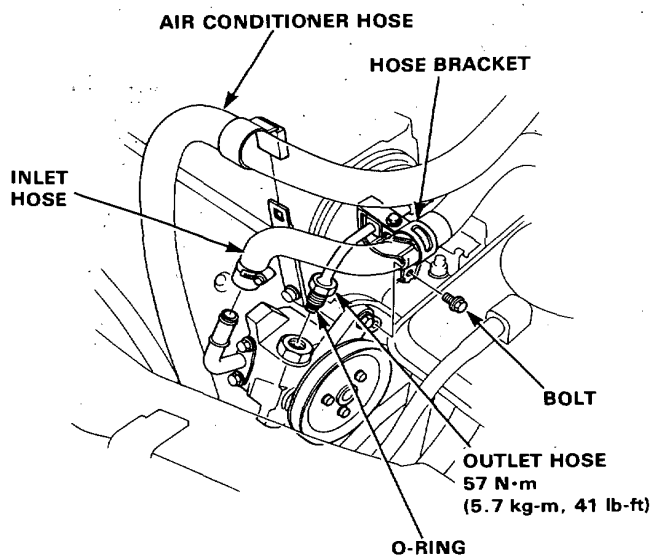
Replacement

CAUTION: Do not allow foreign matter to enter the system.

1. Drain the fluid from the system (page 11-30).
2. Remove the air conditioner hose from the bracket.
3. Remove the hose bracket from the pump bracket by removing the mounting bolt.
4. Disconnect the outlet hose from the pump.

CAUTION: Be careful not to damage the o-ring when disconnecting the hose.

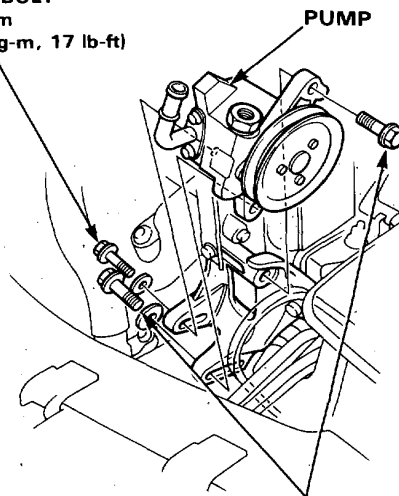
NOTE: Place the shop towel around the pipe fitting to catch the spilled fluid.



5. Disconnect the inlet hose from the pump.
6. Remove the belt by loosening the pump attaching bolts.
7. Remove the bolts, then remove the pump.

SOHC Engine:

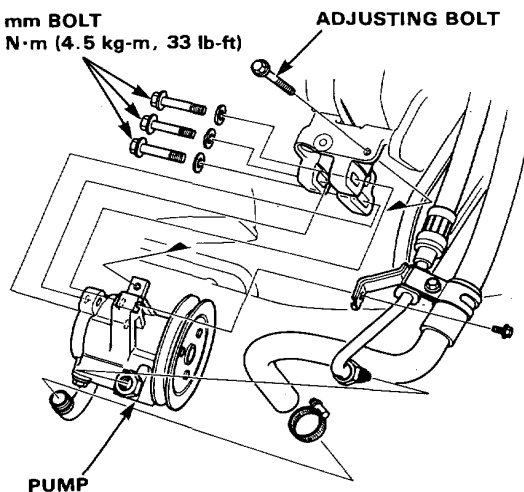
8 mm BOLT
24 N·m
(2.4 kg-m, 17 lb-ft)



10 mm BOLT
45 N·m (4.5 kg-m, 33 lb-ft)

DOHC Engine:

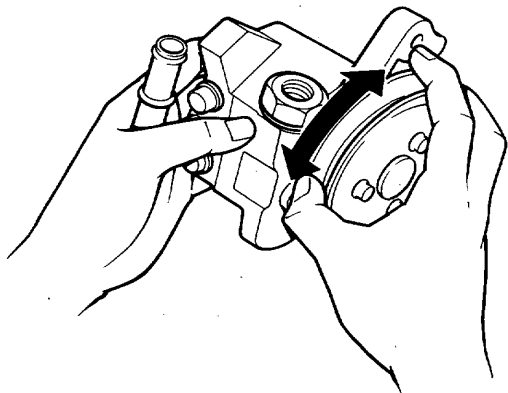
10 mm BOLT
45 N·m (4.5 kg-m, 33 lb-ft)



8. Loosely install the new pump on the bracket.
9. Connect the inlet and outlet hoses to the pump.
10. Install and adjust the belt (page 11-29).
11. Fill the reservoir with new fluid to the UPPER LEVEL on the reservoir.
12. Start the engine and fill the system with new fluid (page 11-30).
13. Check the reservoir and add fluid if necessary.

Inspection

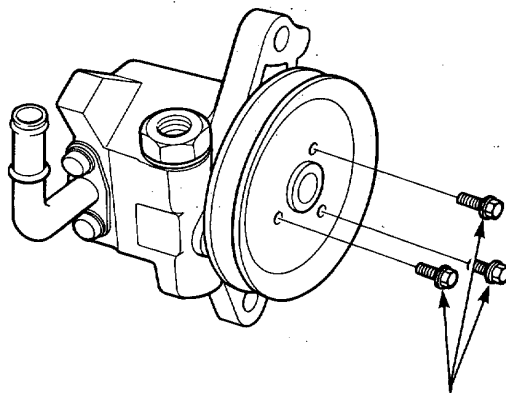
Inspect the steering pump for leak or damage. Turn the pulley and check that the pump shaft turns smoothly.



Pulley Replacement

Hold the pulley in a vise with soft jaws, and remove the three pulley bolt, then remove the pulley.

CAUTION: Do not try to disassemble the pump. If the pump is faulty, replace the whole pump as an assembly.



PULLEY BOLT
10 N·m
(1.0 kg-m, 7 lb-ft)



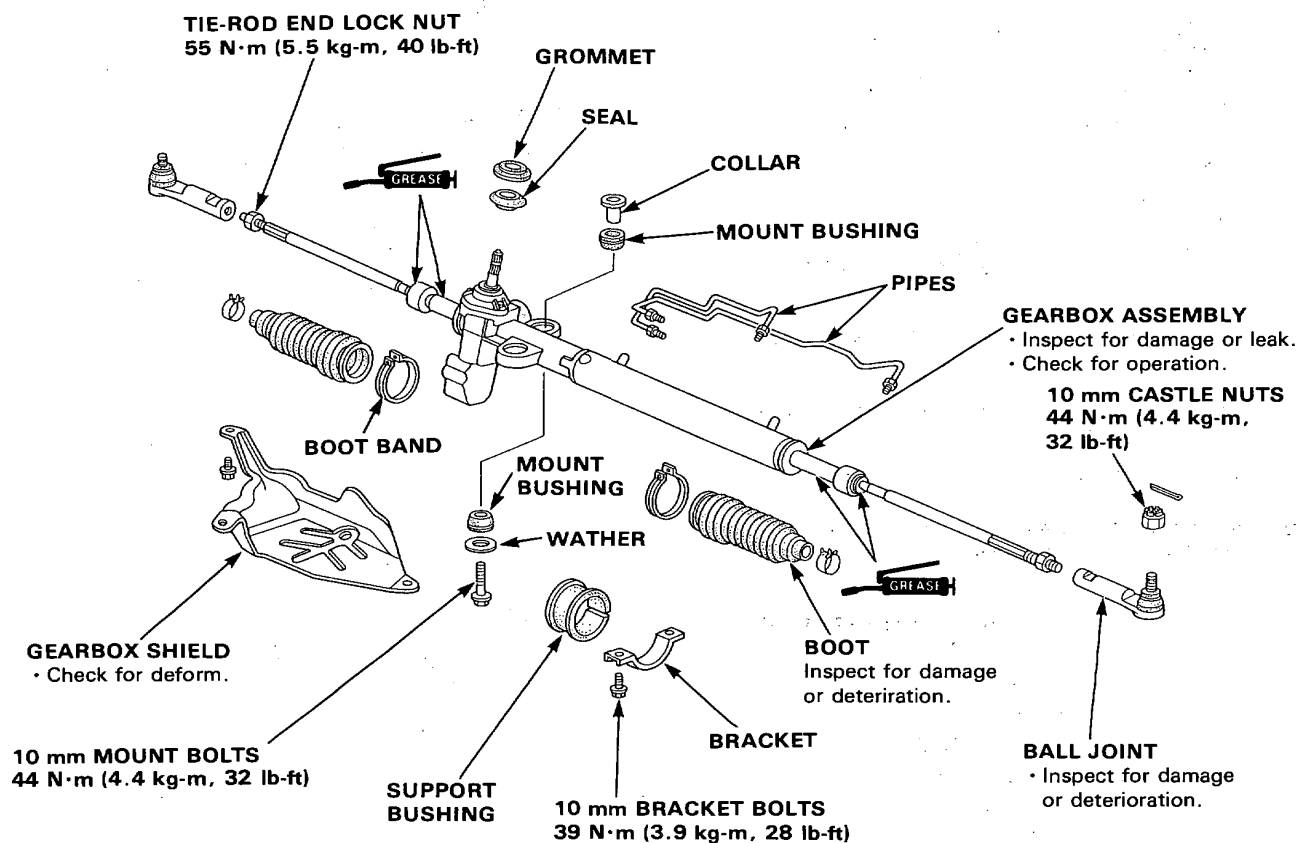
Steering Gearbox

Illustrated Index

CAUTION:

- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Replace parts with damaged sliding surfaces or deterioration.
- Do not try to disassemble the gearbox assembly. If the gearbox is faulty, replace the whole gearbox as an assembly.
- Do not allow foreign matter to enter the system.

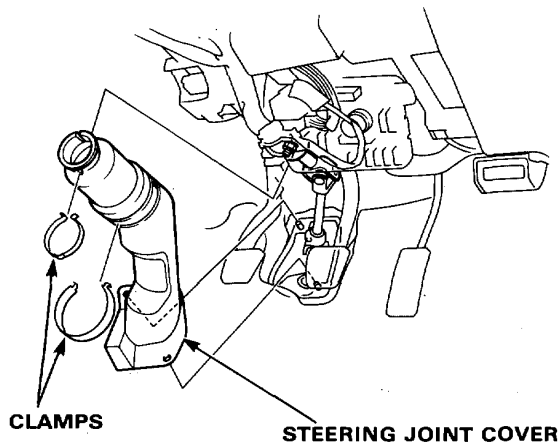
NOTE: RH Drive shown, LH Drive is similar.



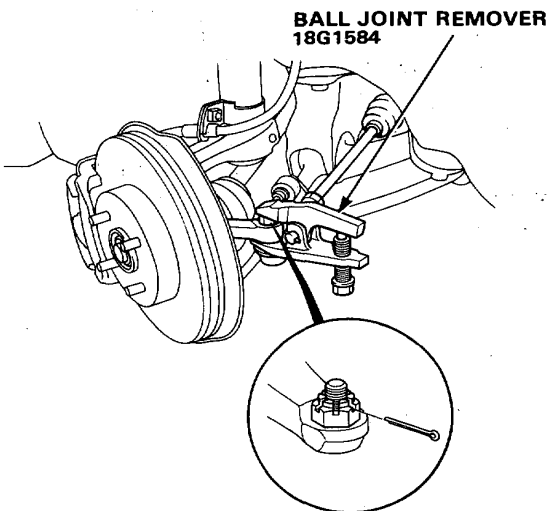
Steering Gearbox

Removal

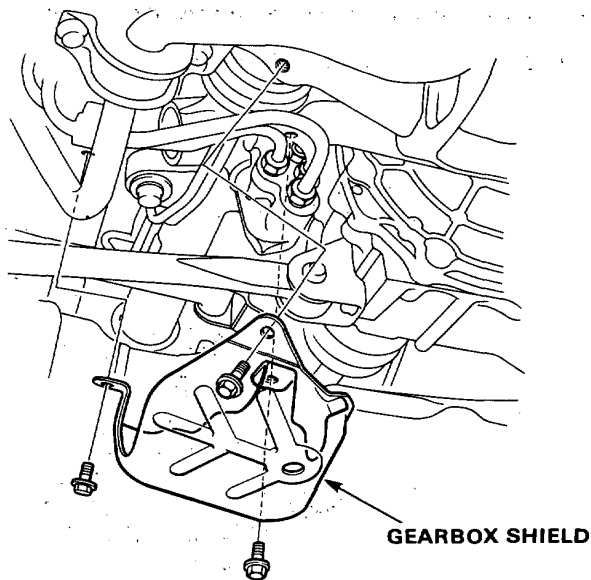
1. Remove the steering joint cover, and disconnect the steering shaft from the gearbox.



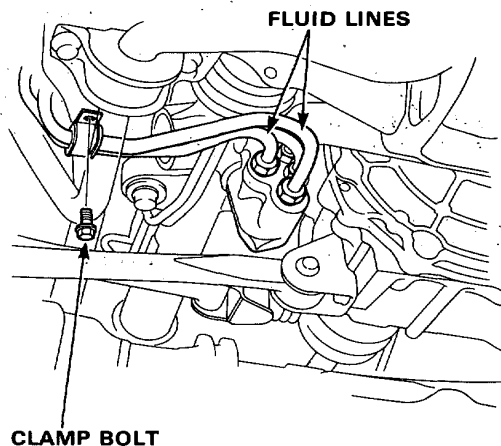
2. Drain the power steering fluid as described on page 11-30.
3. Raise the front of car and support on safety stands in the proper locations.
4. Remove the front wheels.
5. Disconnect the tie-rod from the steering knuckles using the special tool shown.



6. Remove the gearbox shield.
7. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and that end of the gearbox. Blow dry with compressed air.



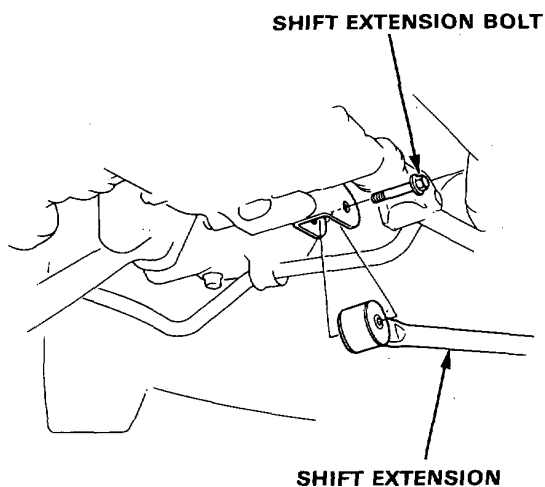
8. Using flare nut wrenches, disconnect the two lines from the control unit. Remove the hose clamp bolt and move the lines outward slightly.





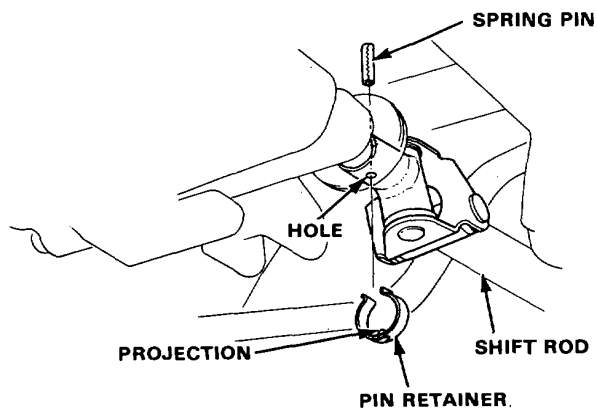
9. (Manual transmission model only)

- Remove the shift extension from the transmission case.



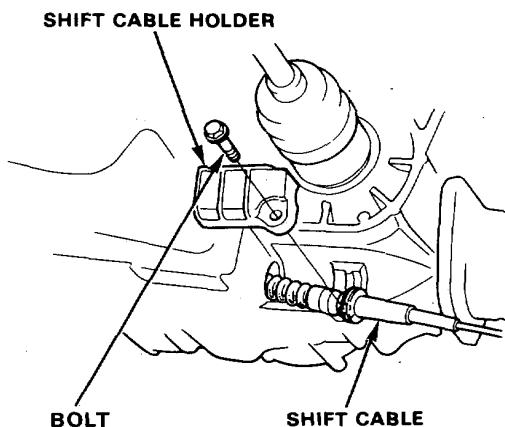
- Slide the boot at the connecting position of the gear shift rod.
- Drive out the spring pin with a punch, then disconnect the shift rod.

NOTE: On reassembly, install the pin retainer back into place after driving in the spring pin as shown.



10. (Automatic transmission only)

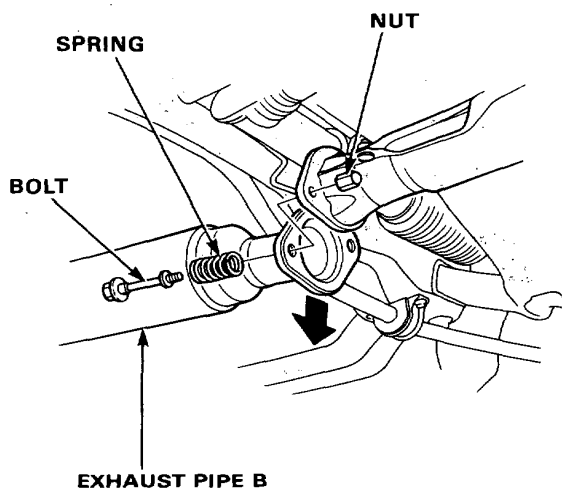
- Remove the shift cable holder and cable from the transmission case.



11. Remove the self-locking nuts connecting the exhaust pipe to exhaust pipe B, then separate exhaust pipe B from the exhaust pipe.

CAUTION: Replace the exhaust gasket and self-locking nuts when you reinstall the pipe.

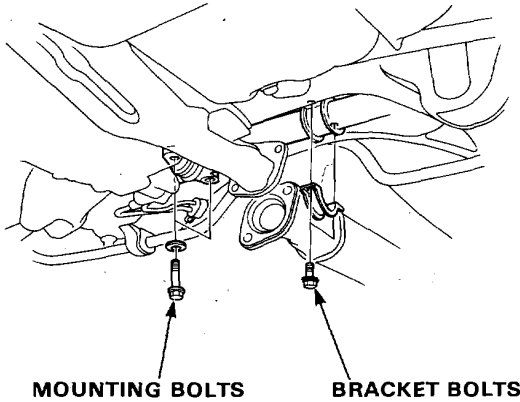
12. Move the exhaust pipe B to downward.



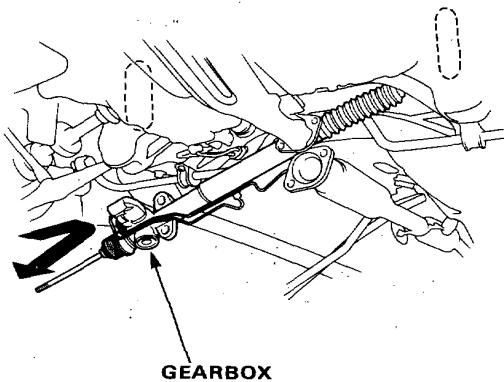
Steering Gearbox

Removal (cont'd)

13. Slide the tie-rod all the way to the left side.
14. Remove the steering gearbox mounting and bracket bolts.



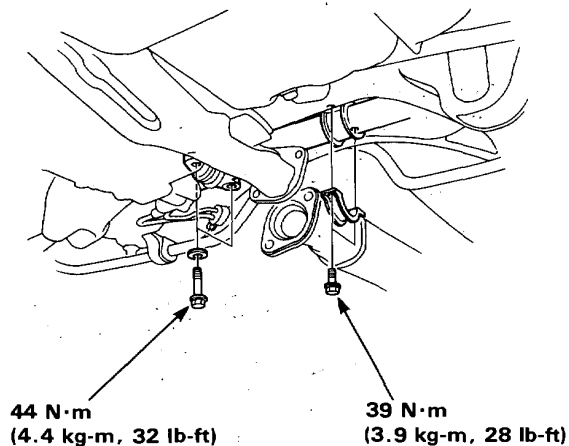
15. Slide the gearbox left so that the right tie-rod clears the bottom of the rear beam, then remove the gearbox.



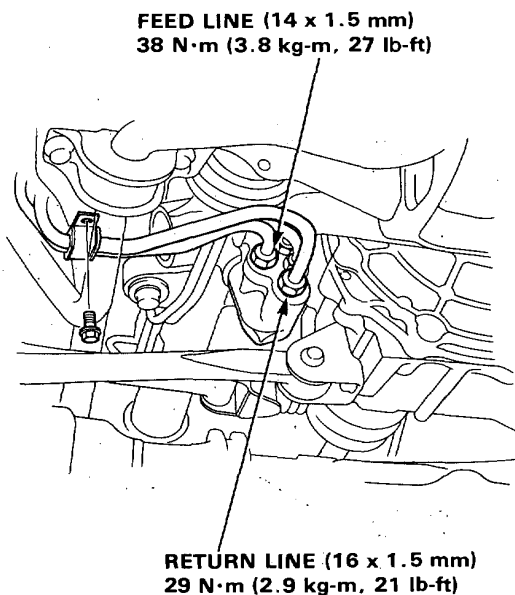


Installation

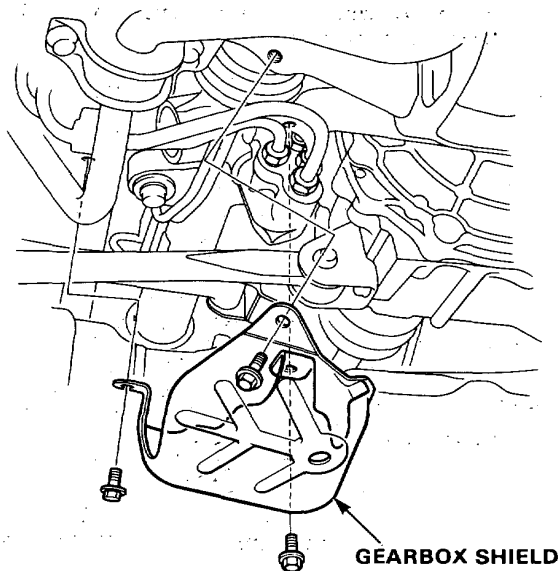
1. Reinstall the gearbox in the reverse order of removal.
2. Tighten the gearbox mounting and bracket bolts.



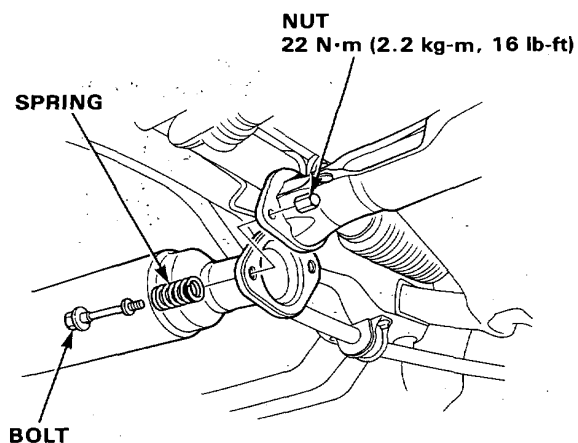
3. Connect the fluid lines to the control unit. Then tighten the clamp bolt.



4. Install the gearbox shield.



5. Connect the exhaust-pipes with new gasket, and tighten the bolts and nuts.

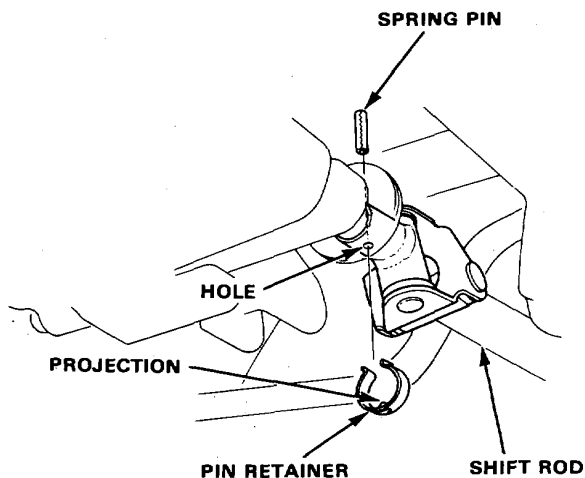


Steering Gearbox

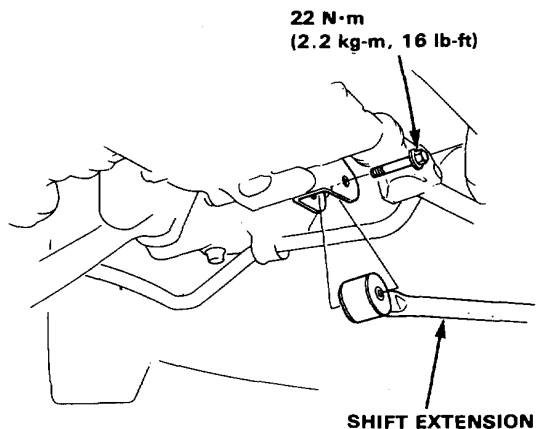
Installation (cont'd)

6-1. (Manual transmission model only)

- Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.

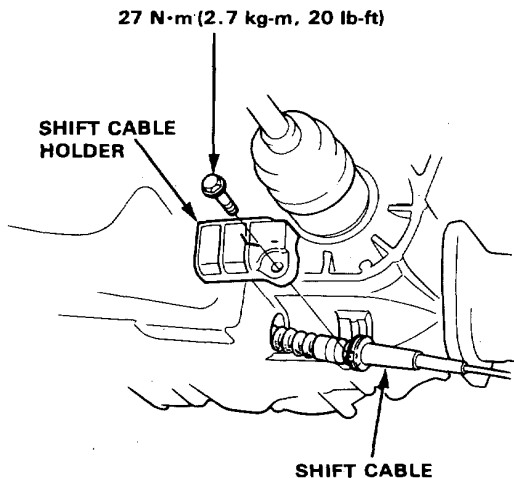


- Install the shift extension to the transmission case.

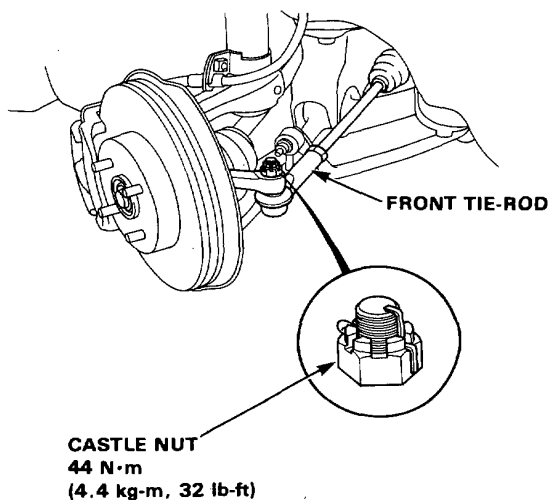


6-2. (Automatic transmission model only).

- Connect the shift cable to the transmission and install the cable holder.



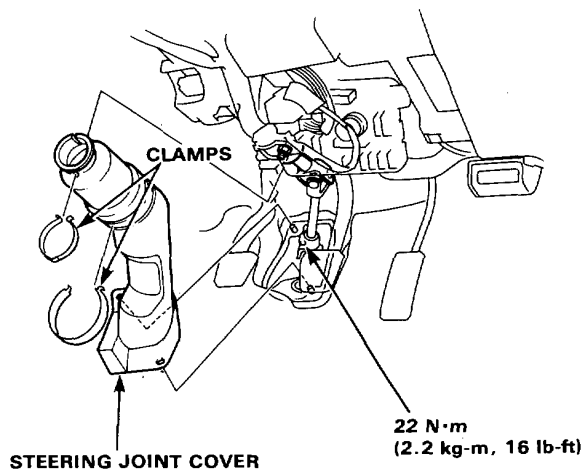
7. Re-connect the tie-rods to the steering knuckles, tighten the castle nut to specified torque, and install new cotter pins.





8. Reconnect the steering shaft to the gearbox.
9. Install the steering joint cover.

CAUTION: Before tightening the steering joint bolts, pull up the steering joint to make sure that the steering joint is fully seated.



10. Fill the system:
 - Fill the reservoir with new Power Steering Fluid.
 - Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
 - Check the fluid again, and add more if necessary.
11. Check the gearbox for leaks, then reinstall the shield.
12. Reinstall the front wheels.

Special Tools

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HGK-0010100	Wheel Alignment Gauge Attachment	1	
②	07941-6920003	Ball Joint Remover	1	
③	07965-6340301	Hub Dis/Assembly Base	1	
④	07JAF-SH20110	Hub Dis/Assembly Pilot	1	
⑤	18G1584	Ball Joint Remover	1	
⑥	07965-6340341	Hub Dis/Assembly Base	1	
⑦	07GAF-SE00100	Hub Dis/Assembly Shaft	1	
⑧	07959-SA5000	Spring Compressor	1	
⑨	07965-6920201	Hub Dis/Assembly Base	1	
⑩	07947-SD90200	Attachment	1	
⑪	07GAF-SE00200	Hub Assembly Guide Attachment	1	
⑫	18G1600	Lower Arm Bush Front Remover/Replacer	1	
⑫-1	18G1600/1	Bush Base	1	Component tools
⑫-2	18G1600/2	Bush Driver	1	
⑬	18G1602	Lower Arm Bush Rear Remover/Replacer	1	
⑬-1	18G1602/1	Bush Base	1	Component tools
⑬-2	18G1602/3	Bush Driver	1	
⑬-3	18G1602/2	Bush Driver	1	
⑭	07GAE-SE00100	Spring Compressor	1	
⑮	07JAF-SH20310	Bush Driver	1	
⑯	07JAF-SH20340	Bush Base B	1	
⑰	07JAF-SH20330	Bush Base A	1	



①



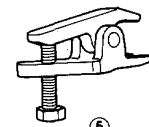
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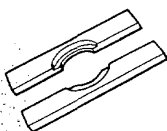
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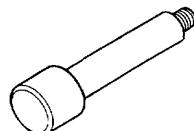
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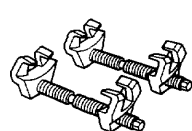
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⑥



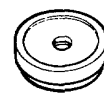
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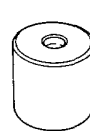
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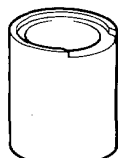
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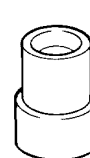
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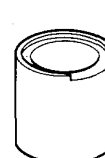
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⑫-1



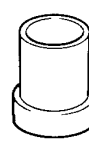
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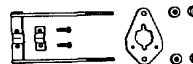
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⑬-2



⑬-3



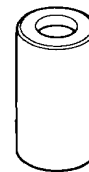
⑭



⑮



⑯



⑰

Component Location

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Wheel Alignment

Caster

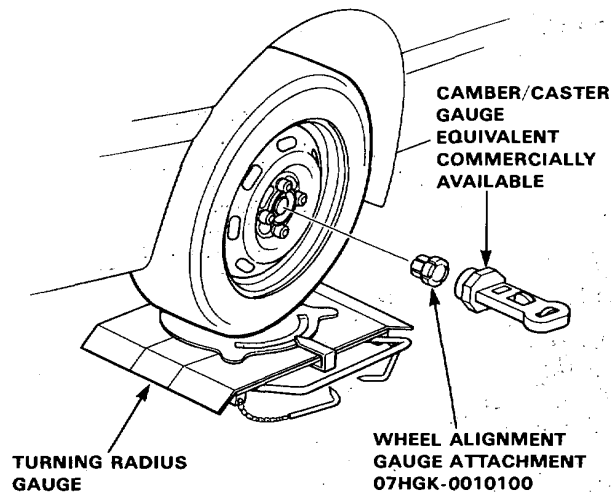
Inspection

1. Check the tire pressure.
2. Check the steering wheel angle: If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the special tool on the wheels.

NOTE: Make sure the wheel hubs are clean and rust-free before installing the special tool.

4. Install a camber/caster gauge on the special tool and apply the front brake. Turn the wheel 20° inward.
5. Turn the adjust screw so that the bubble in the caster gauge is at 0°.
6. Turn the wheel outward 20° and read the caster on the gauge with the bubble at the center of the gauge.

Caster Angle : $1^{\circ}38' \pm 1'$



7. If out of specification, check for bent or damaged suspension components.

Camber

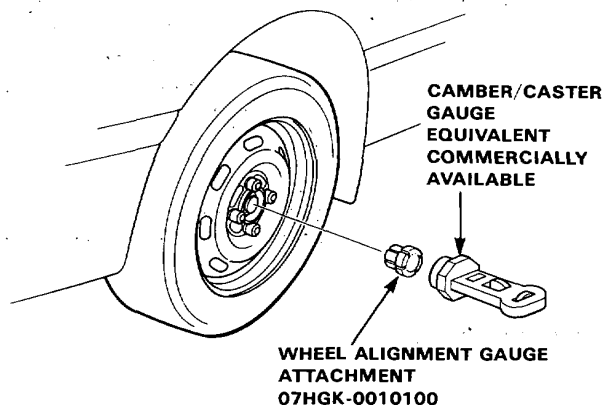
Inspection

1. Check the tire pressure.
2. Check the steering wheel angle. If significantly off center, it may be necessary to remove the steering wheel and reposition it on the splines. Turn the steering wheel to the straight-ahead position.
3. Install the special tool on the wheels.

NOTE: Make sure the wheel hubs are clean and rust-free before installing the special tool.

4. Read the camber on the gauge with the bubble at the center of the gauge.

Camber angle : Front : $-0^{\circ}20' \pm 1'$
Rear : $-0^{\circ}26' \pm 1'$



5. If out of specification, check for bent or damaged suspension components.



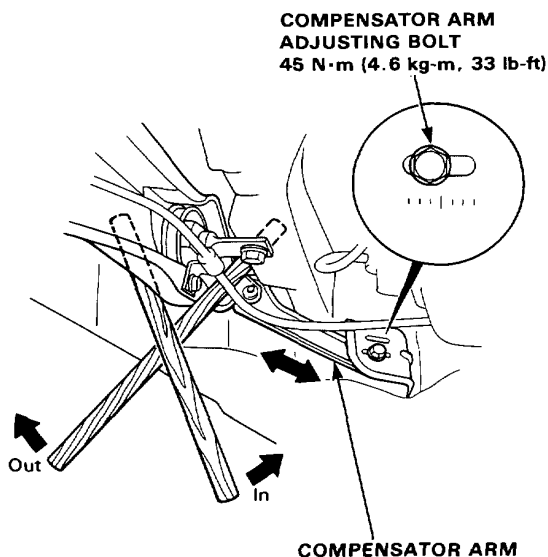
Rear Toe Inspection/ Adjustment

1. Release parking brake.

NOTE: If the parking brake is engaged, you may get an incorrect reading.

Rear toe in: $2.3 \pm 1.4\text{mm}$ ($0.09 \pm 0.05\text{in}$)

- 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.

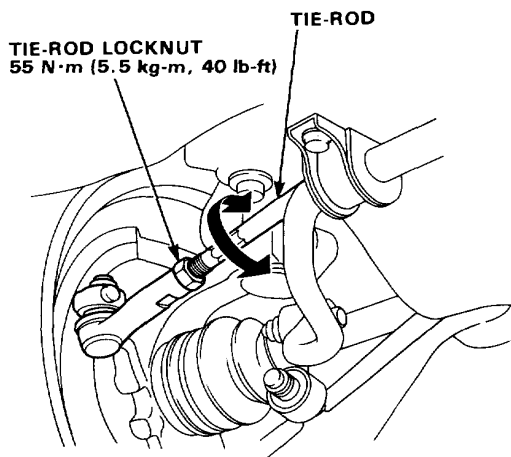
1. Center steering wheel spokes.

NOTE: Measure difference in toe measurements with the wheels pointed straight ahead.

Front toe-out: $0.7 \pm 1.4\text{mm}$ ($0.027 \pm 0.05\text{in}$)

- 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.

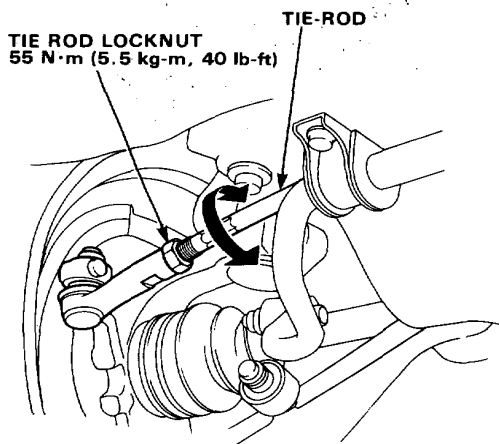
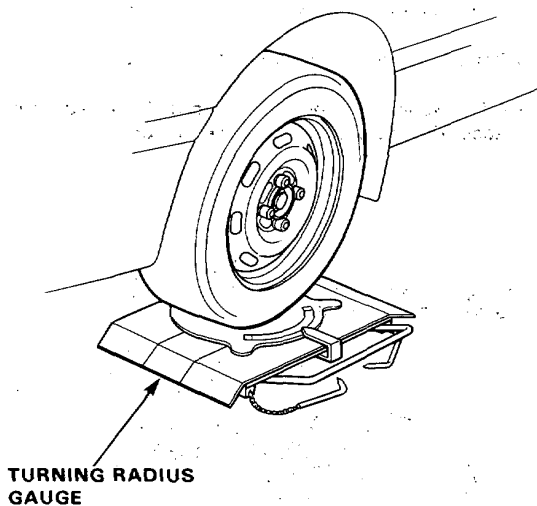
Turning angle:

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.

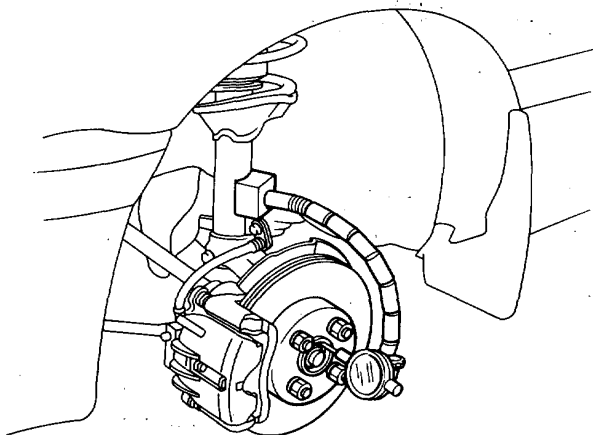


Wheel Measurements

Bearing End Play

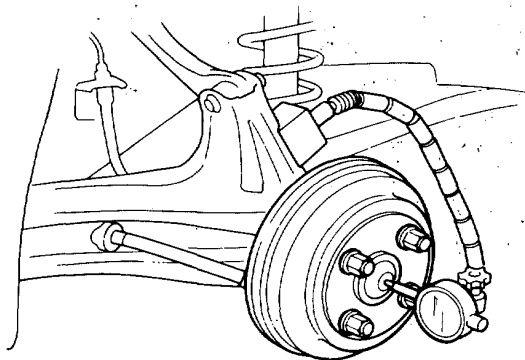
Front Wheel End Play

Standard: 0–0.05 mm (0–0.002 in.)



Rear Wheel End Play

Standard: 0–0.05 mm (0–0.002 in)



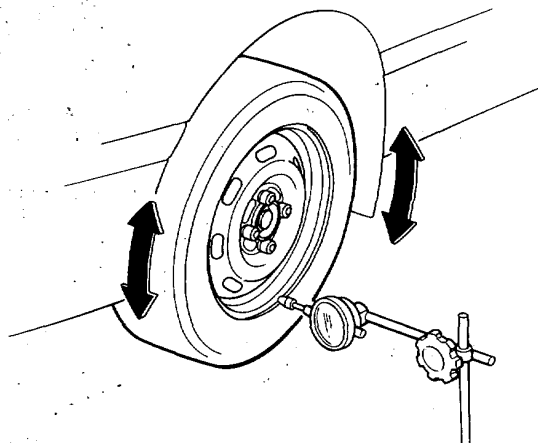
Runout

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)

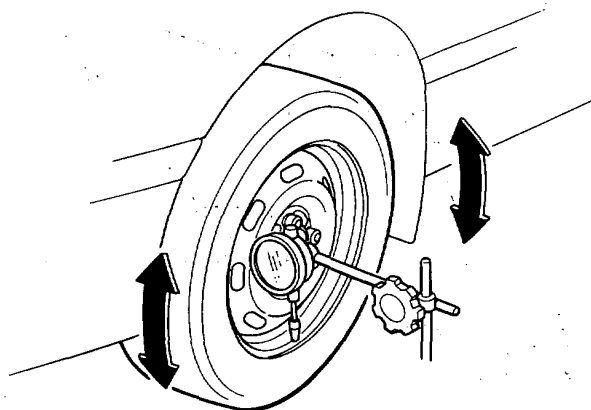


Front and Rear Wheel Radial Runout

Standard:

Steel Wheel: 0–1.0 mm (0–0.039 in.)

Aluminum Wheel: 0–0.7 mm (0–0.028 in)

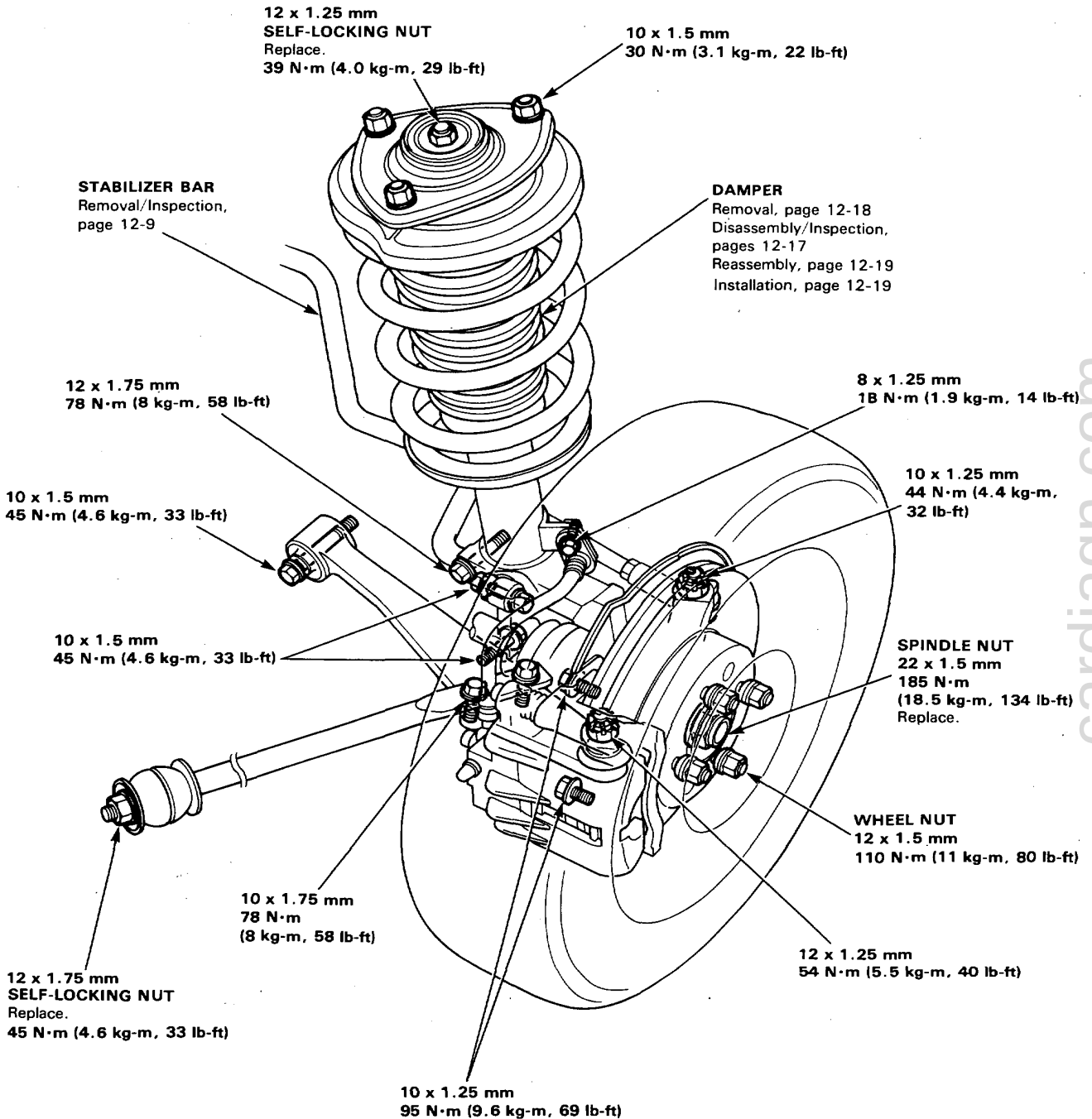


Front Suspension

Torque Specifications

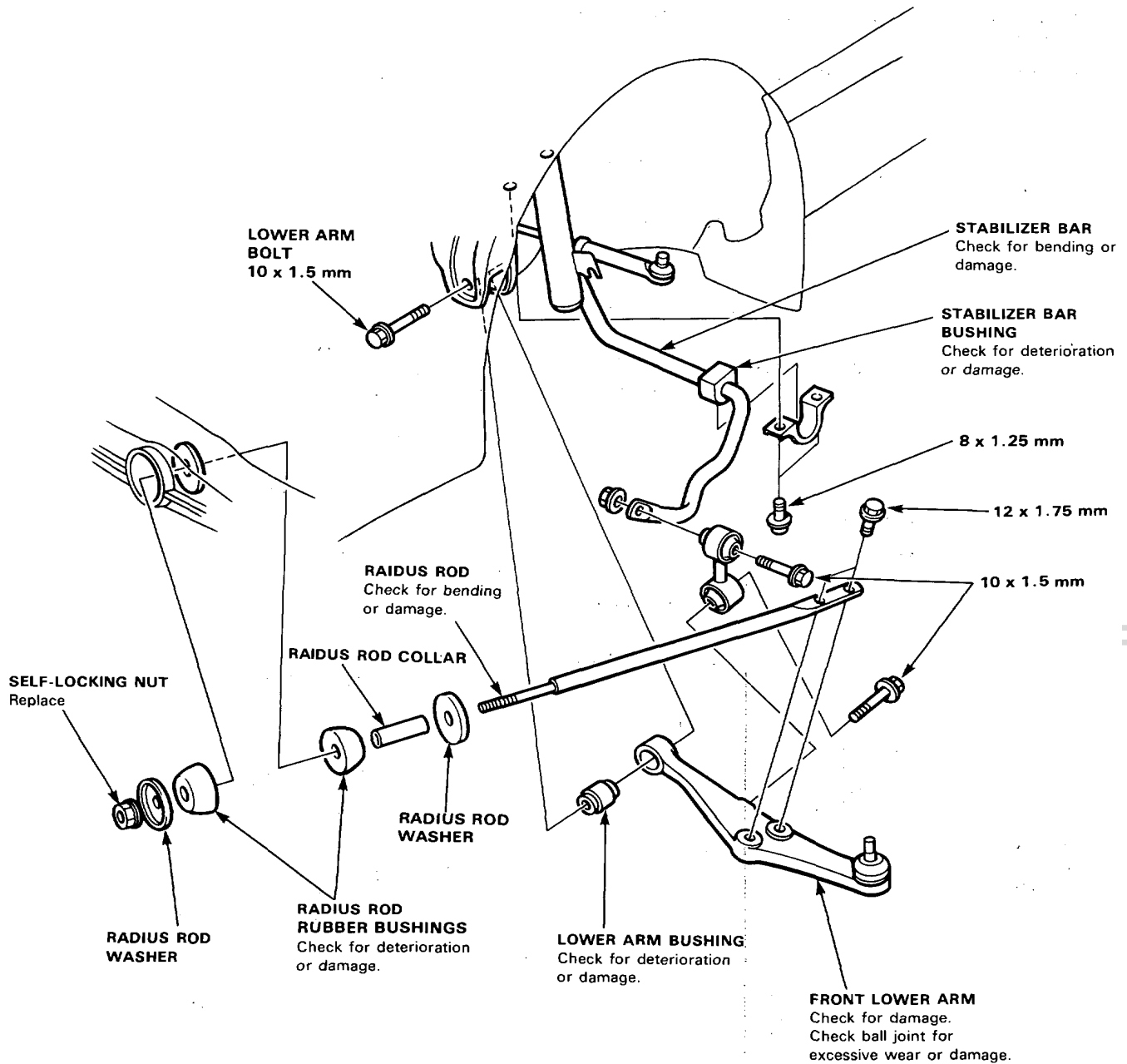
CAUTION:

- Replace the self-locking nuts after removal.
- The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.





Illustrated Index



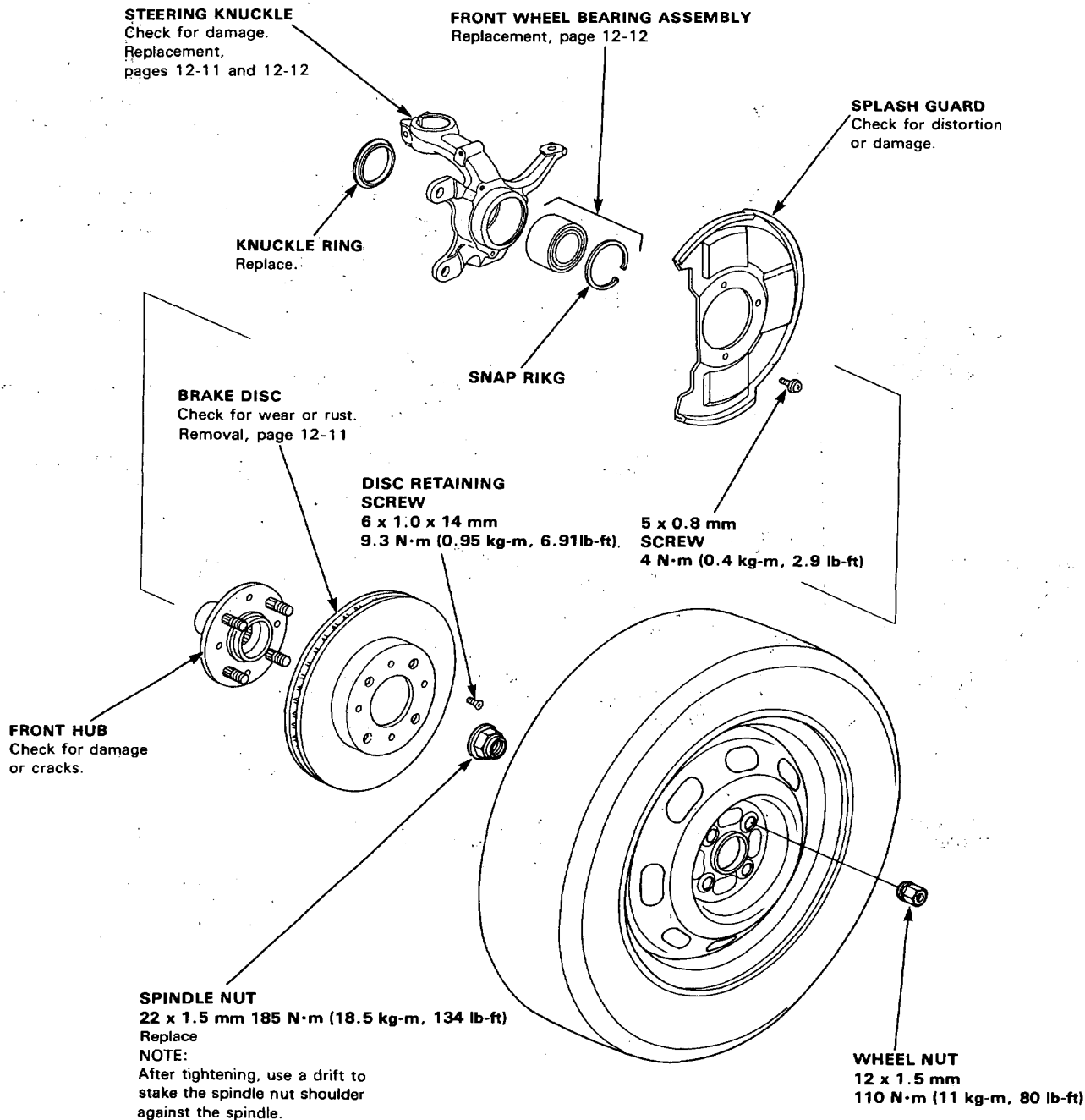
Front Suspension

Knuckle/Hub

NOTE:

- Use only genuine Honda aluminum wheel weights. Non-genuine aluminum wheel weights may corrode and damage aluminum wheels.
- Remove the center cap by prying it out with a flat screwdriver. Avoid damage to the cap by not allowing it to fall during removal.

CAUTION: Use a rag at the point you are going to pry, because aluminum alloy wheels can be easily damaged.





Knuckle/Hub Replacement

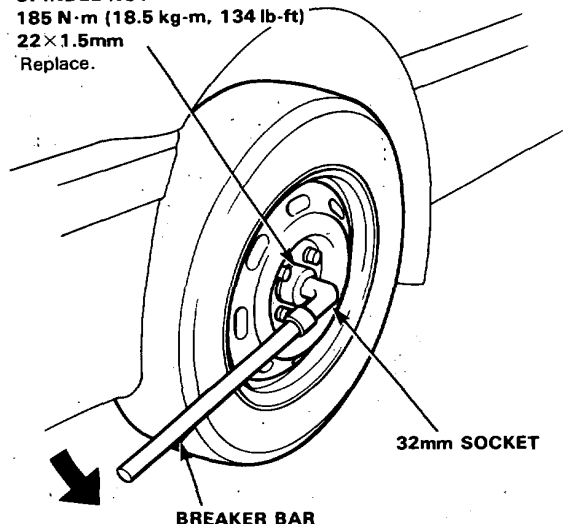
1. Pry nut lock tab away from spindle, then loosen nut using 32 mm socket and breaker bar.

SPINDLE NUT

185 N·m (18.5 kg-m, 134 lb-ft)

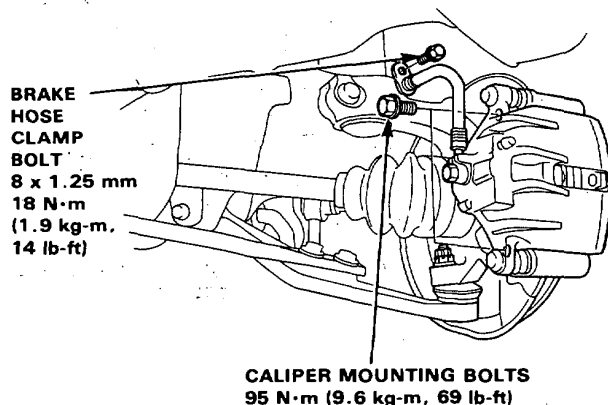
22×1.5mm

Replace.



2. Loosen the wheel nuts slightly.
3. Jack up the front of car and support on safety stands in proper locations.
4. Remove the wheel nuts, wheel, and spindle nut.
5. Remove the brake hose clamp bolt.
6. Remove the caliper mounting bolts and hang the caliper assembly to one side.

CAUTION: To prevent accidental damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage.



BRAKE HOSE CLAMP BOLT

8 x 1.25 mm

18 N·m

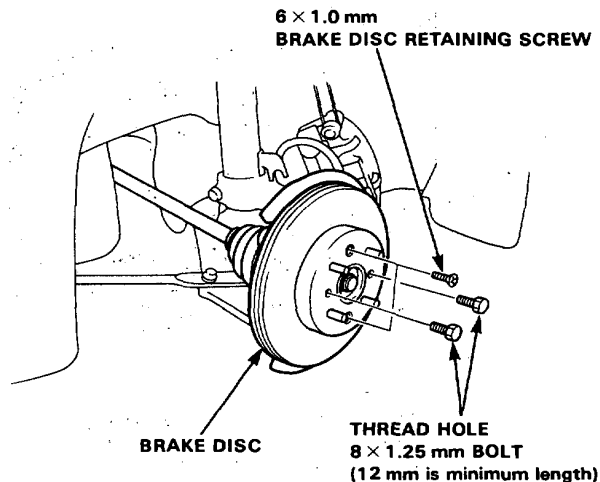
(1.9 kg-m, 14 lb-ft)

CALIPER MOUNTING BOLTS
95 N·m (9.6 kg-m, 69 lb-ft)

7. Remove the 6 mm brake disc retaining screws.

8. Screw two 8 × 1.25 mm bolts into the disc to push it away from the hub.

NOTE: Turn each bolt two turns at a time to prevent cocking disc excessively.



6 × 1.0 mm

BRAKE DISC RETAINING SCREW

BRAKE DISC

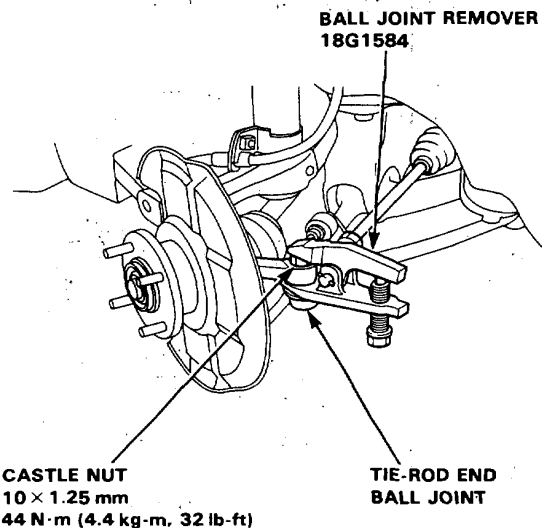
THREAD HOLE

8 × 1.25 mm BOLT

(12 mm is minimum length)

9. Remove the cotter pin from the tie-rod end and remove the castle nut.
10. Break loose the tie-rod ball joint using the Ball Joint Remover, then lift tie-rod out of the knuckle.

CAUTION: Avoid damage the ball joint boot.



BALL JOINT REMOVER
18G1584

CASTLE NUT

10 × 1.25 mm

44 N·m (4.4 kg-m, 32 lb-ft)

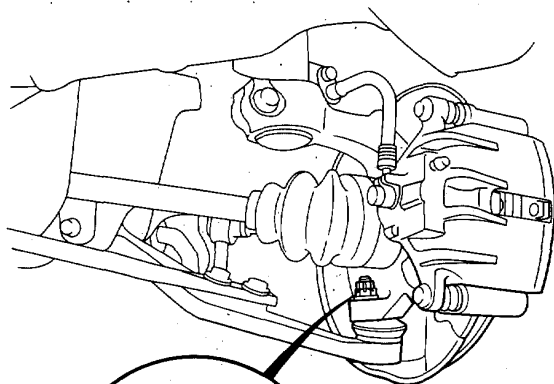
TIE-ROD END
BALL JOINT

(cont'd)

Front Suspension

Knuckle/Hub Replacement (cont'd)

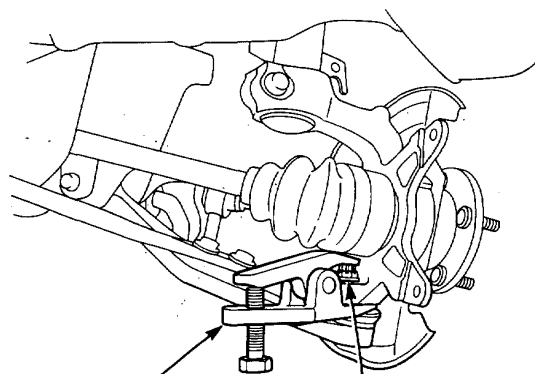
11. Remove the stabilizer link from the front lower arm.
12. Remove the cotter pin from the front lower arm and remove the castle nut.



On reassembly,
bend the pin
as shown.

13. Break loose the front lower arm ball joint using the Ball Joint Remover, then push the lower arm out of the knuckle.

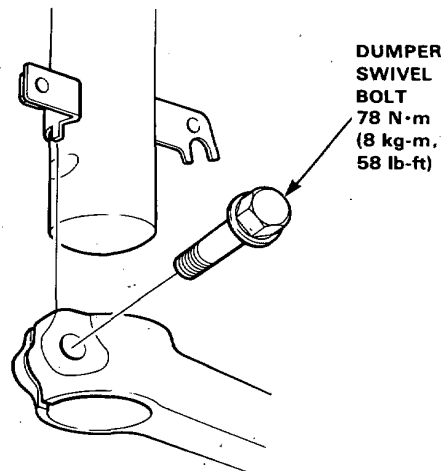
CAUTION: Avoid damaging the ball joint boot.



BALL JOINT REMOVER
18G1584

CASTLE NUT
12 x 1.25 mm
54 N·m (5.5 kg·m, 40 lb·ft)

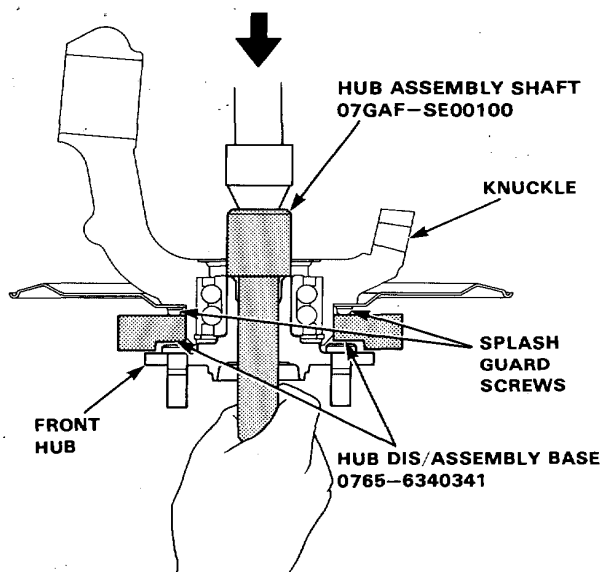
14. Remove the damper swivel bolt, then use a brass or lead hammer to tap knuckle down until it comes off the damper.



15. Remove the knuckle and hub by sliding them off the drive shaft.
16. Remove the hub from the knuckle using special tools and a hydraulic press.

CAUTION:

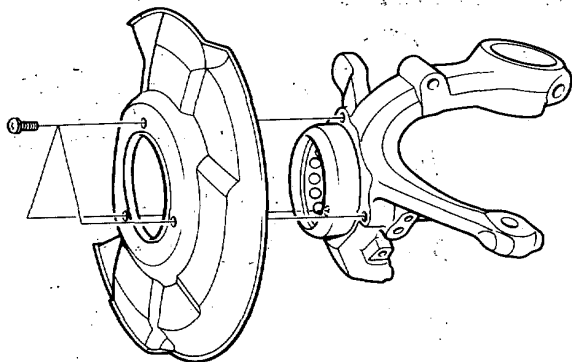
- Take care not to distort splash guard.
- Hold on to the hub to keep it from falling when pressed clear.
- To prevent damage to the tool make sure the threads are fully engaged before pressing.



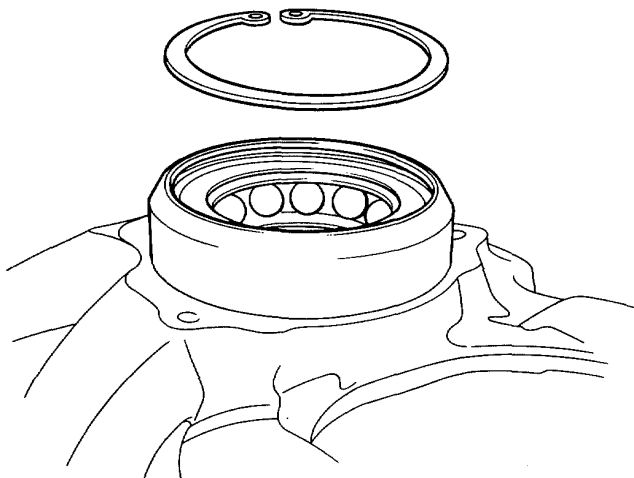
NOTE: Install hub and knuckle in reverse order of disassembly. Use new spindle nut, and stake after torquing.



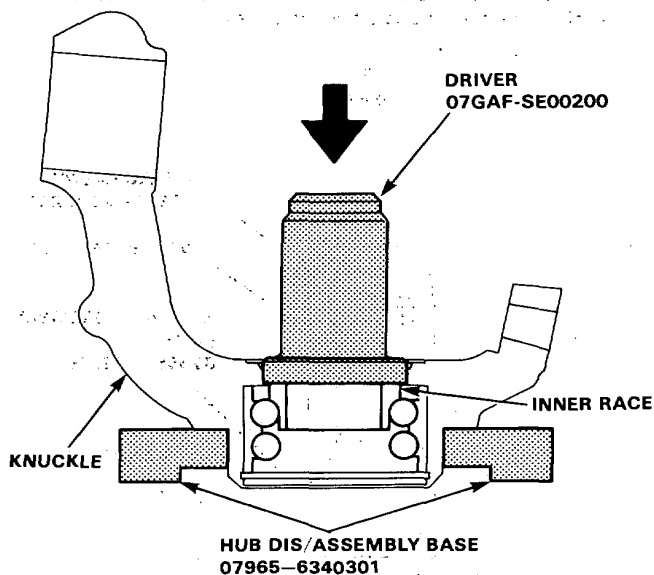
17. Remove the three screws from the splash guard.



18. Remove the knuckle ring and snapping.

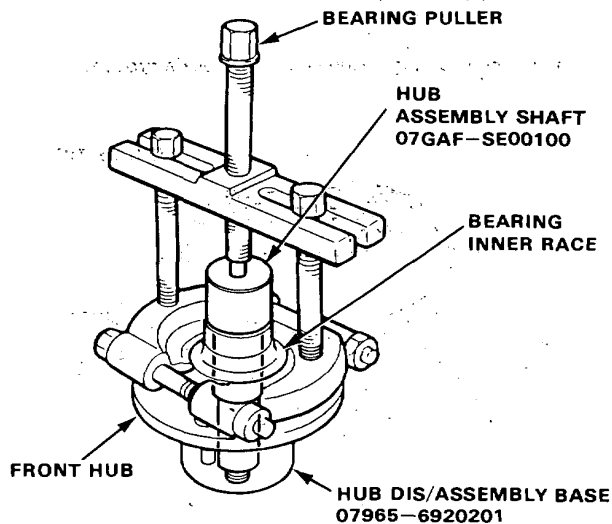


19. Press the wheel bearing out of the knuckle using the special tools, inner race and a hydraulic press as shown below.



20. Remove the out board bearing inner race from the hub, using special tools and a bearing puller.

CAUTION: To prevent damage to the tool make sure the threads are fully engaged before pressing.



NOTE: Wash the knuckle and hub thoroughly in high flashpoint solvent before reassembly.

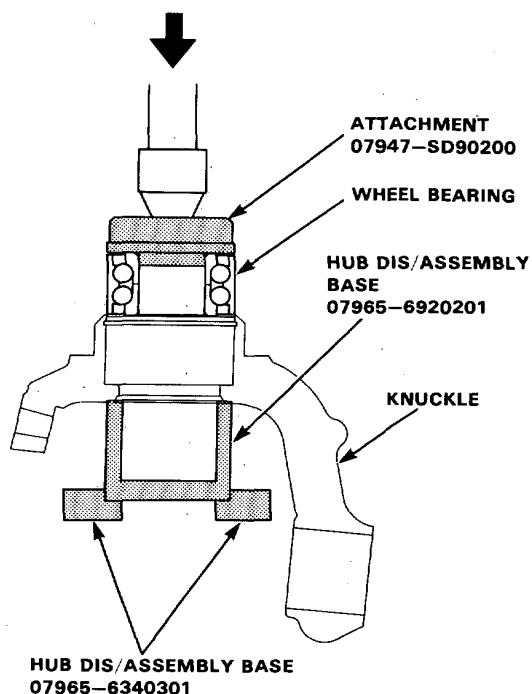
(cont'd)

Front Suspension

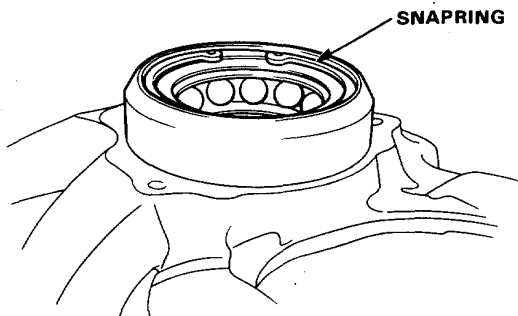
Knuckle/Hub Replacement (cont'd)

NOTE: Replace the bearing with a new one after removal.

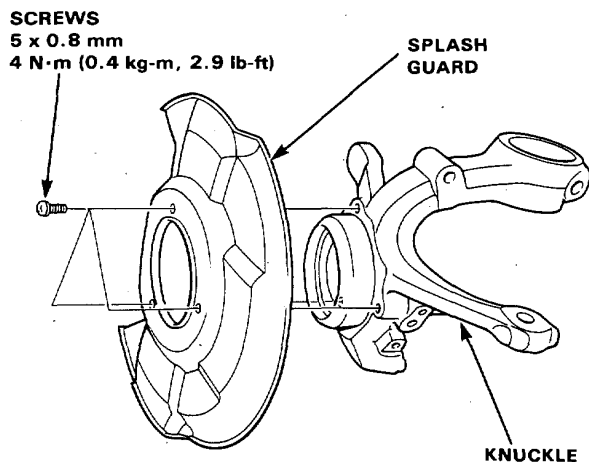
21. Press a new wheel bearing into the hub using the special tools shown and a hydraulic press.



22. Install the snapping securely in the knuckle groove.



23. Install the splash guard and tighten the screws.

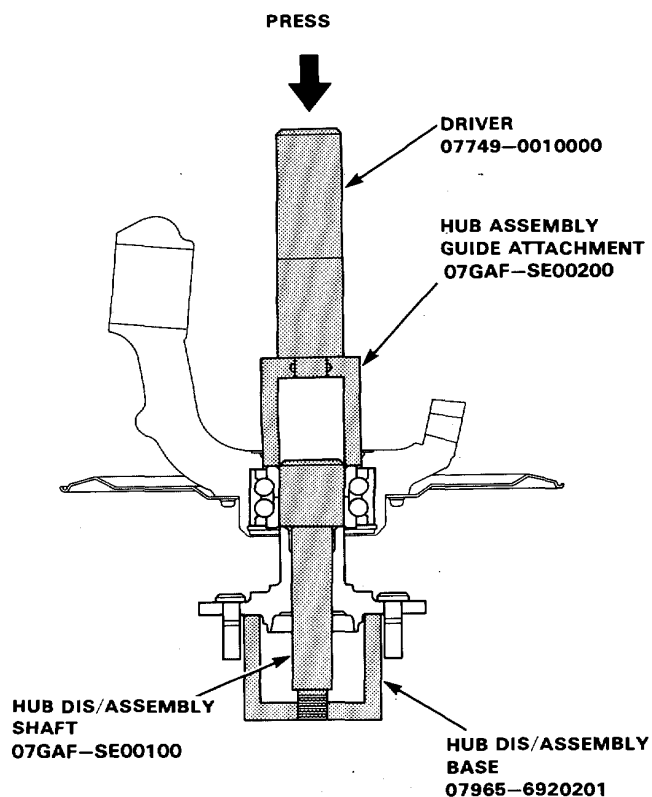




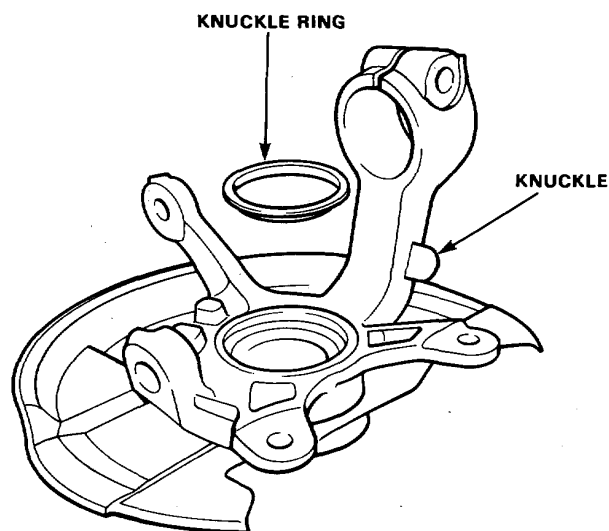
24. Place front hub in special tool fixture, then set knuckle in position and apply downward pressure with hydraulic press.

CAUTION:

- Maximum press load: 2.0 tons
- To prevent damage to the tool make sure the threads are fully engaged before pressing.



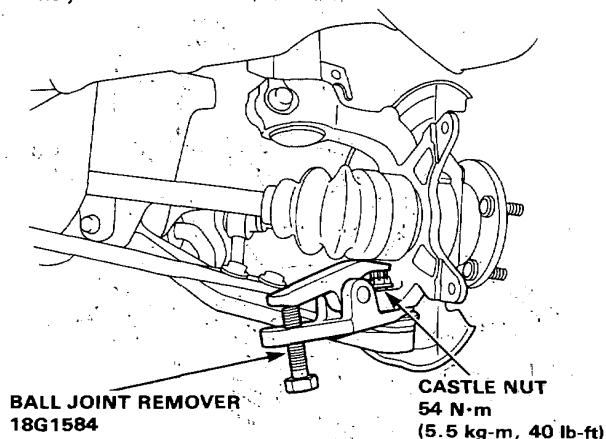
25. Install the front knuckle ring on the knuckle.



Front Suspension

Lower Arm Busing Replacement

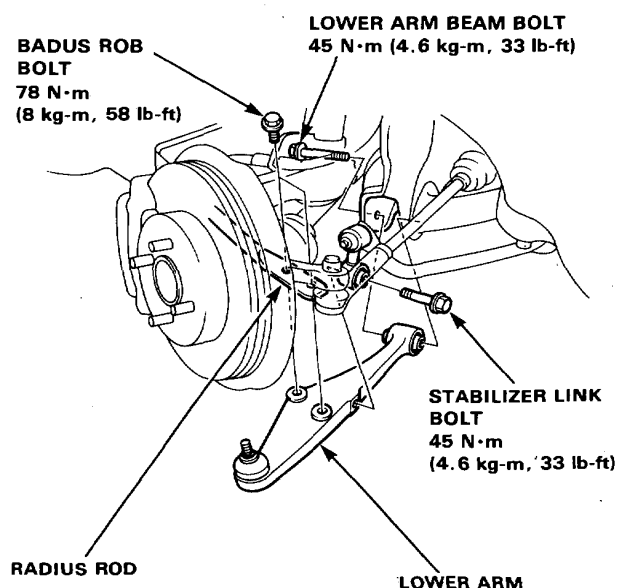
1. Remove the front wheels.
2. Remove the cotter pin from the knuckle and loosen the lower arm ball joint castle nut half the length of the joint threads.



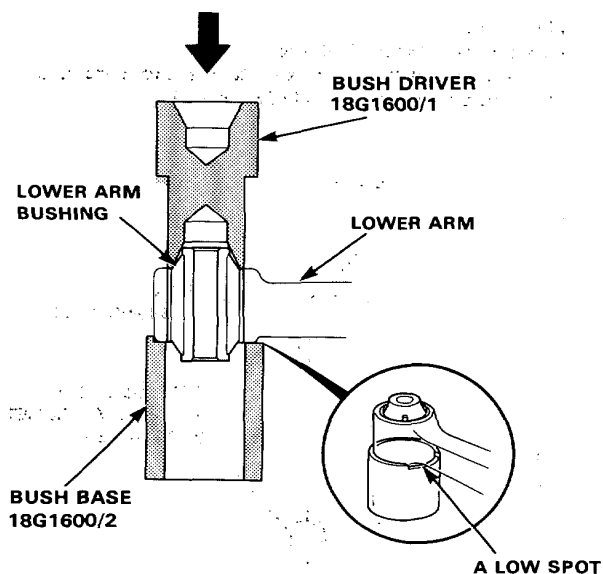
3. Separate the ball joint and knuckle using a ball joint remover.

CAUTION: Avoid damaging the ball joint boot.

4. Remove the stabilizer link bolt from the lower arm.
5. Remove the radius rod bolt from the lower arm.
6. Remove the lower arm beam bolt then remove the lower arm.

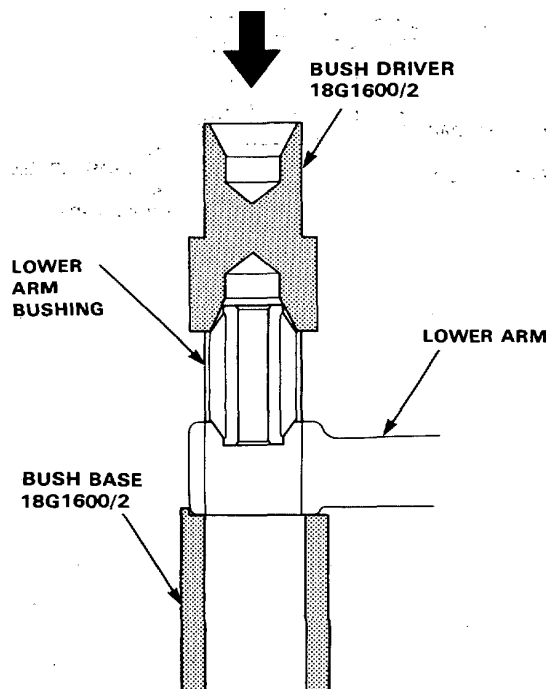


7. Remove the lower arm bushing out of the lower arm from the direction indicated:



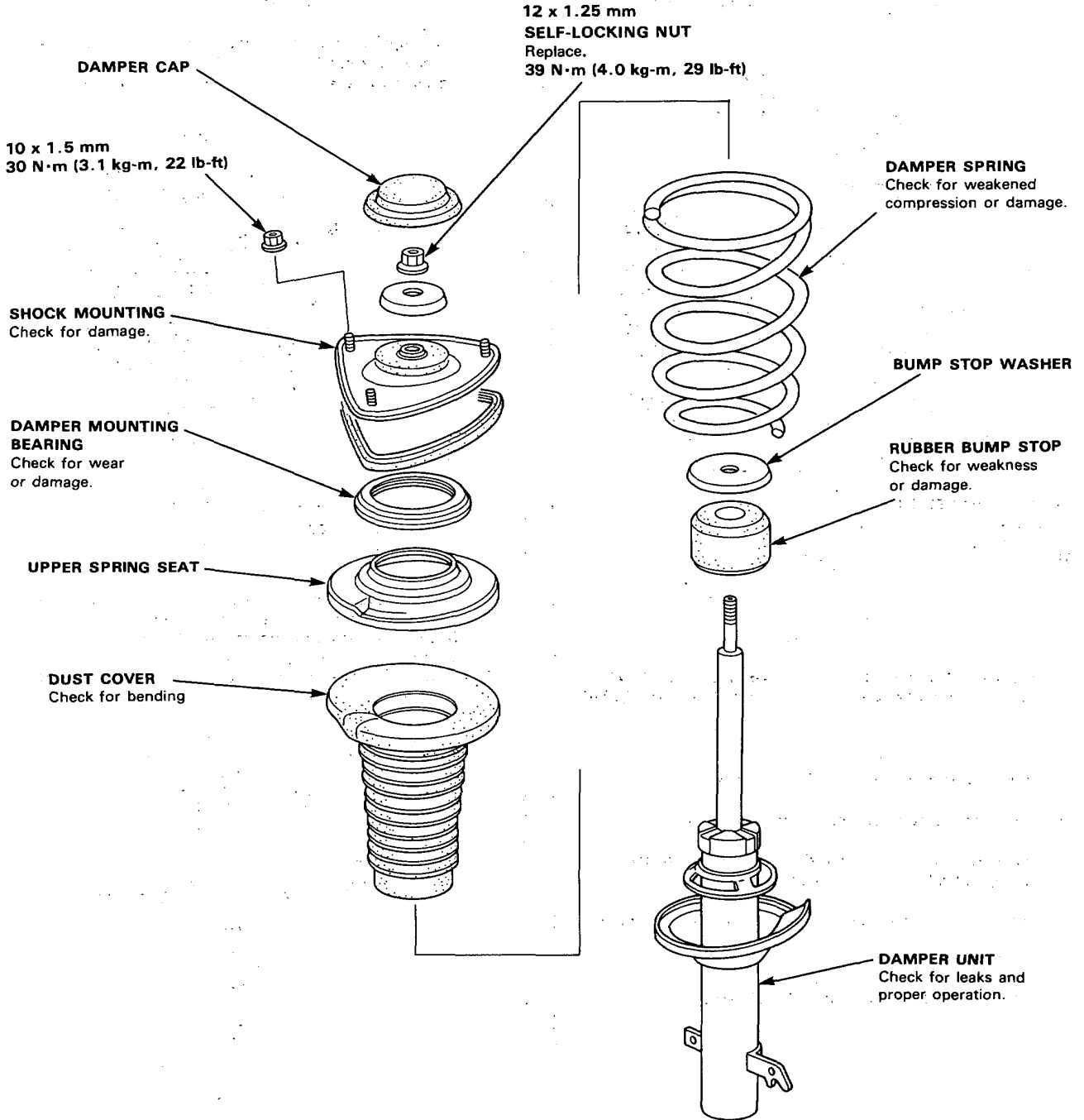
8. Drive the lower arm bushing from the direction indicated.

NOTE: Drive in the lower arm bushing so that their leading edges are flush with the lower arm.





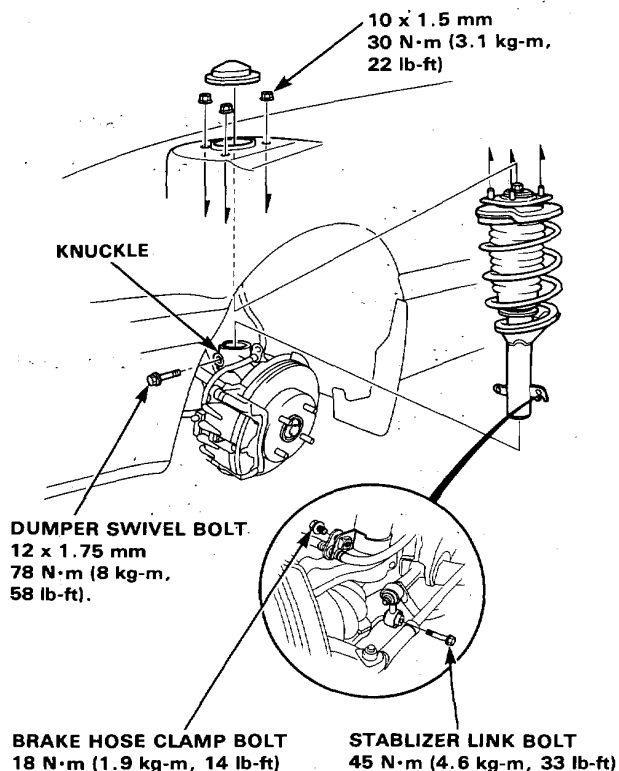
Damper Disassembly/Inspection



Front Suspension

Damper Removal

1. Jack up the front of car and support with safety stands in proper locations, then remove front wheels.



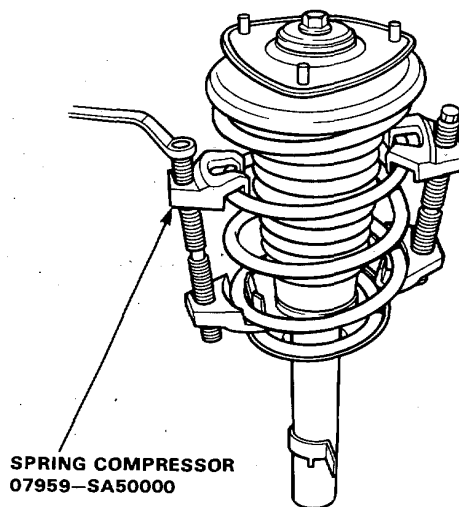
2. Remove brake hose clamp from Damper.
3. Remove the stabilizer link from lower arm.
4. Remove the Damper swivel bolt, then use a hammer to tap knuckle down until it comes off Damper.
5. Remove the rubber cap and nuts from top of Damper.
6. Remove the Damper.

NOTE: Reinstall in reverse order of removal.

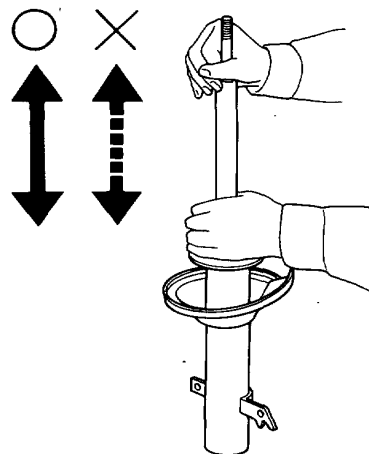
Damper Disassembly

1. Compress damper spring using spring compressor, then remove spring seat nut.

WARNING Follow spring compressor manufacturer's instructions carefully. Do not compress spring more than necessary for access to seat nut.



2. Remove the spring compressor and disassemble the damper as shown in the next column.
3. Check for smooth operation through full stroke, both compression and extension.
4. Also check for smooth operation in short strokes of 5-10cm (2-4in.)



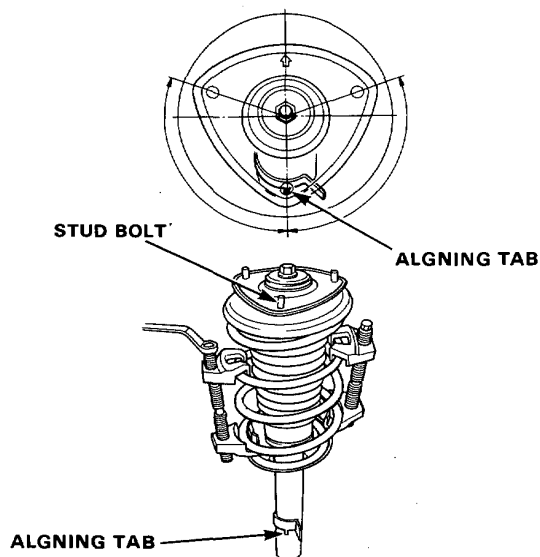
5. Replace the damper if resistance is uneven or jerky.
6. Check for abnormal noise or binding during above tests.
7. Check for oil leaks.



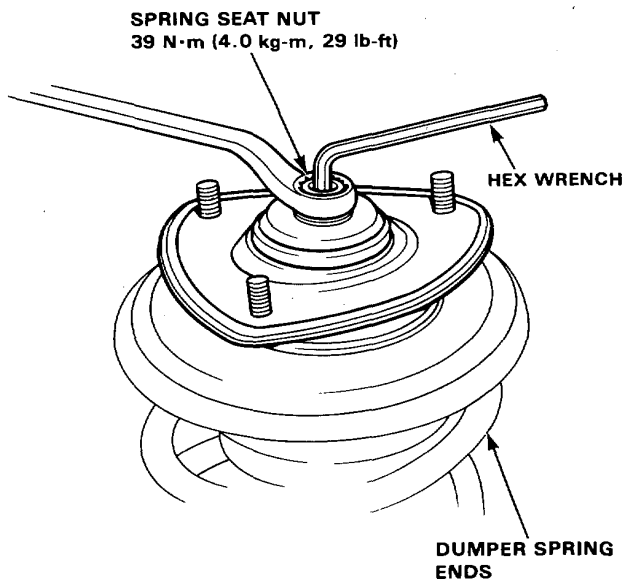
Damper Reassembly

NOTE: Resemble damper in reverse order of disassembly, noting following.

1. Mark the damper at tow points by measuring around from the damper fork aligning tab. Align the two point with the stud bolts on the mounting base.



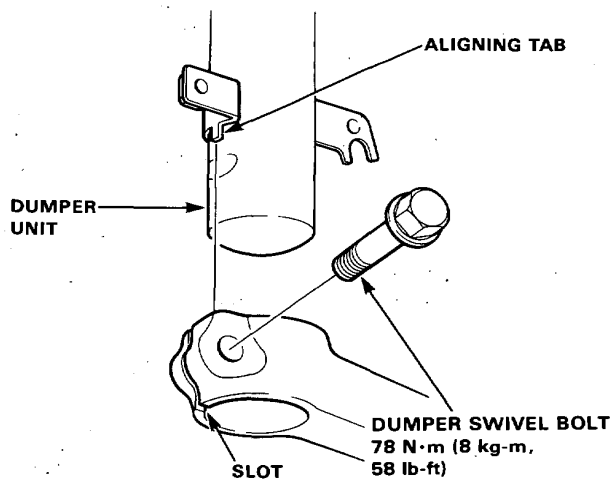
2. Position damper spring ends against steps in upper spring seat and damper unit.
3. To tighten new self locking nut, hold damper rod with hex wrench to keep it from turning.



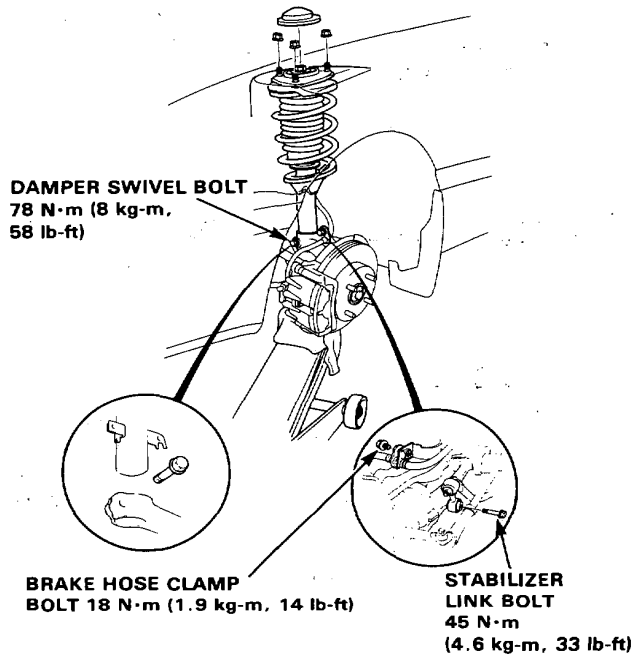
Damper Installation

NOTE: Install front suspension in reverse order of removal, noting the following:

1. Install lower arms loosely in frame.
2. Align tab on damper unit with slot in knuckle and assemble as shown.



3. Place jack under knuckle and raise until car just lifts off of safety stand.



4. Tighten the damper swivel bolt to specified torque.
5. Tighten the stabilizer link bolts.
6. Tighten the brake hose clamp bolt.

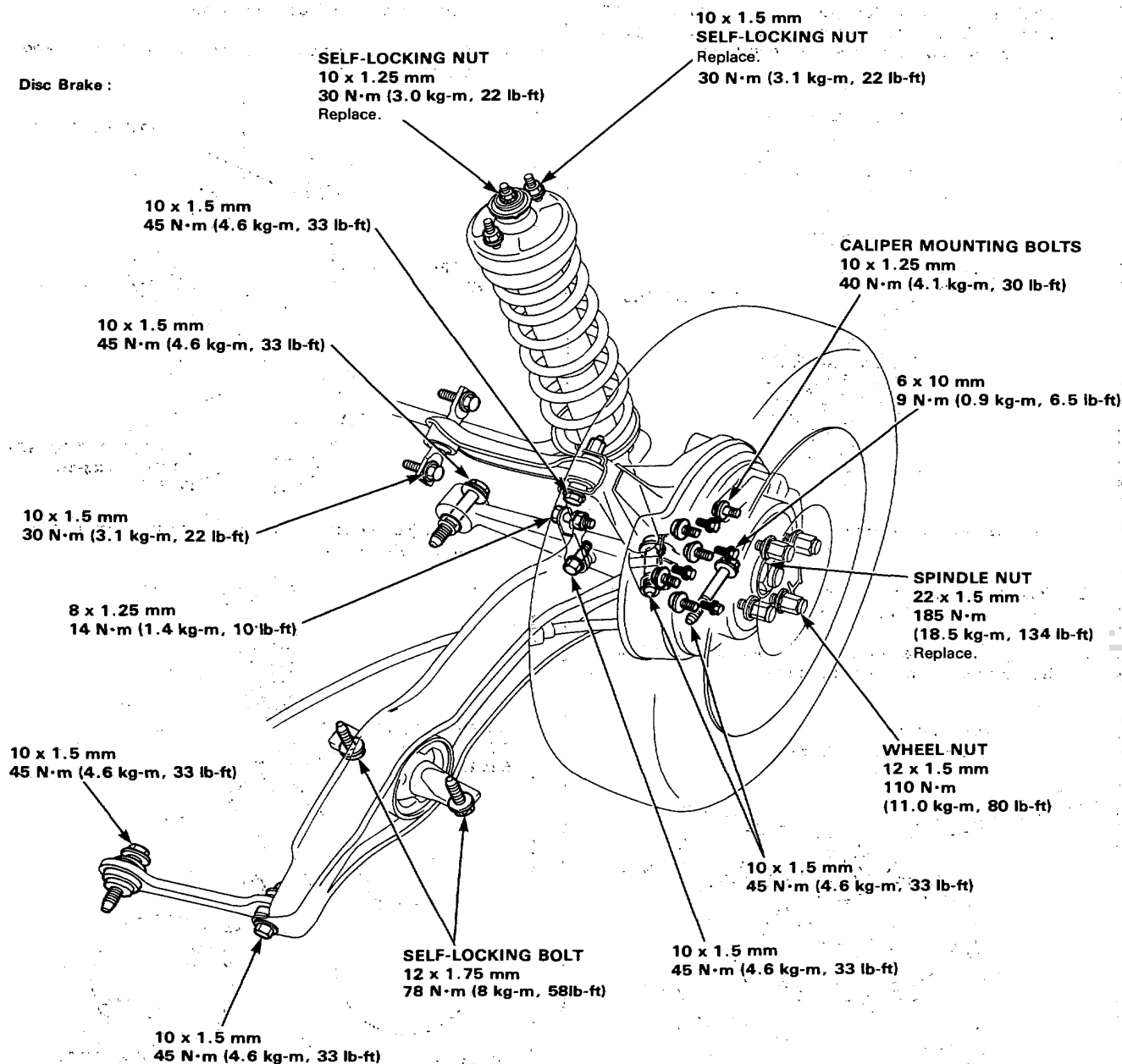
Rear Suspension

Torque specifications

CAUTION:

- Replace the self-locking nuts after removal.
- Replace the self-locking bolts after removal.

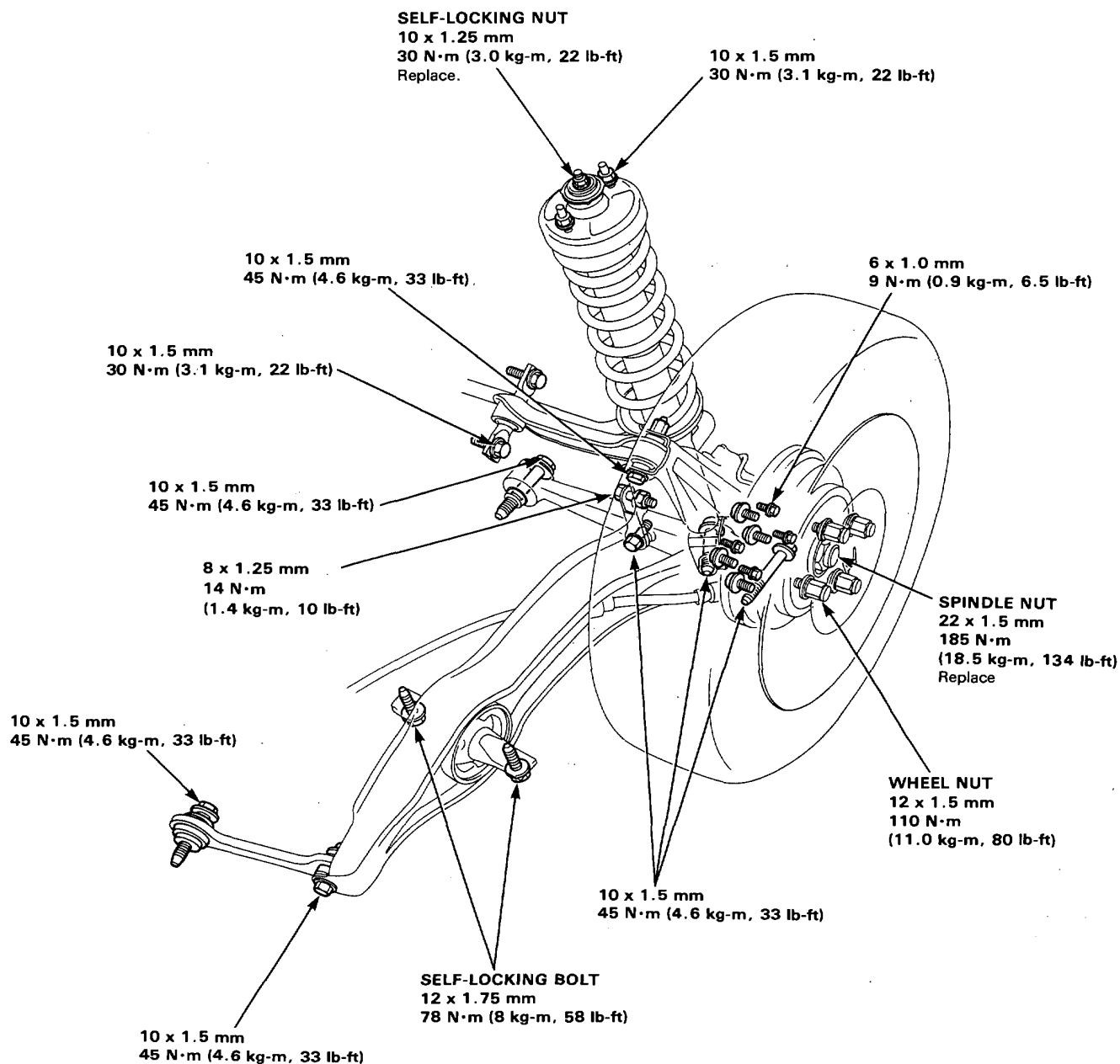
Disc Brake :



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.



Drum Brake:



CAUTION: The vehicle should be on the ground before any bolts or nuts connected to rubber mounts or bushings are tightened.

Rear Suspension

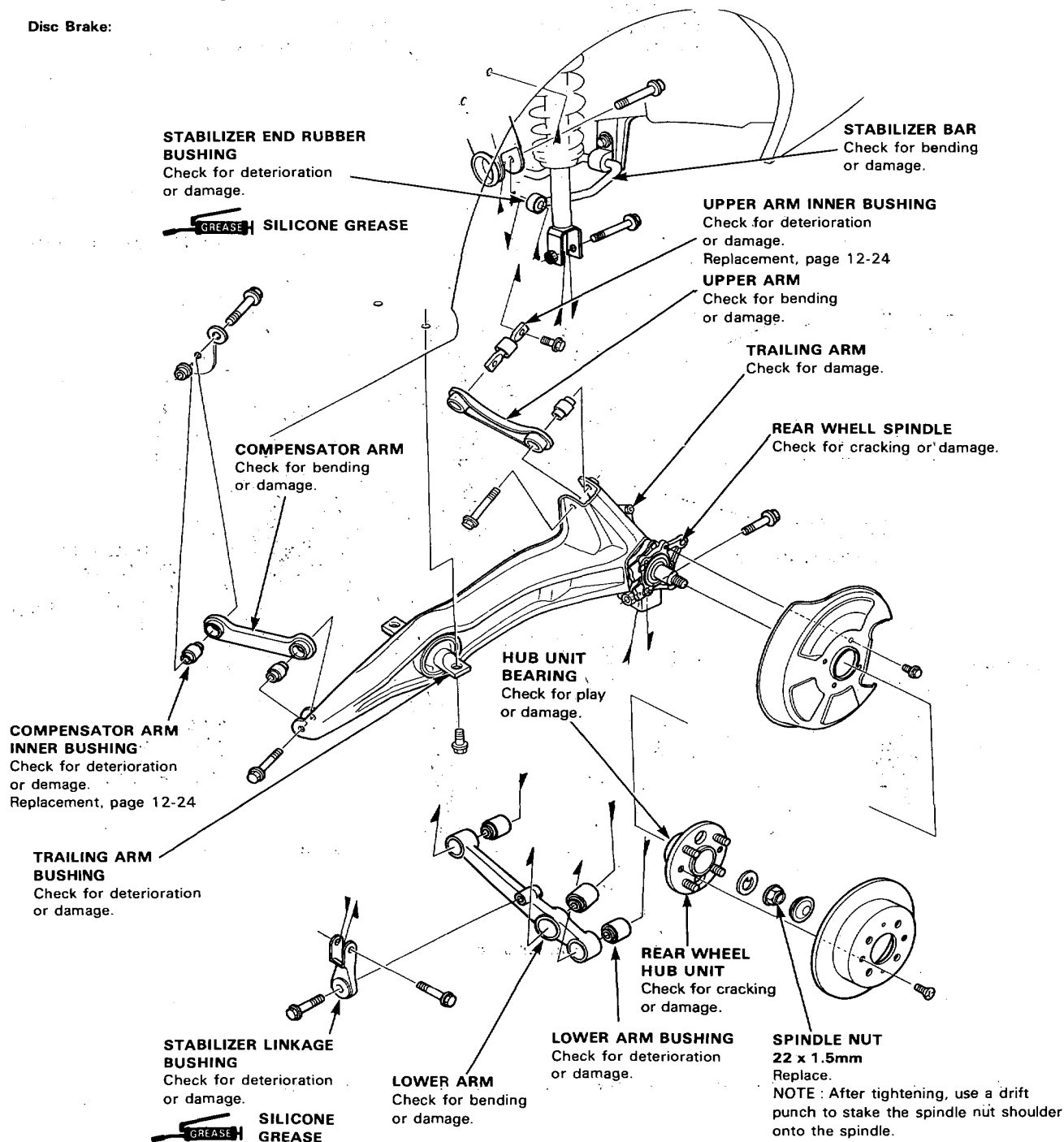
Illustrated Index

NOTE:

- Use only genuine Honda aluminum wheel weights. Non-genuine aluminum wheel weights may corrode and damage aluminum wheels.
- Remove the center cap by prying it out with a flat screwdriver. Avoid damage to the cap by not allowing it to fall during removal.

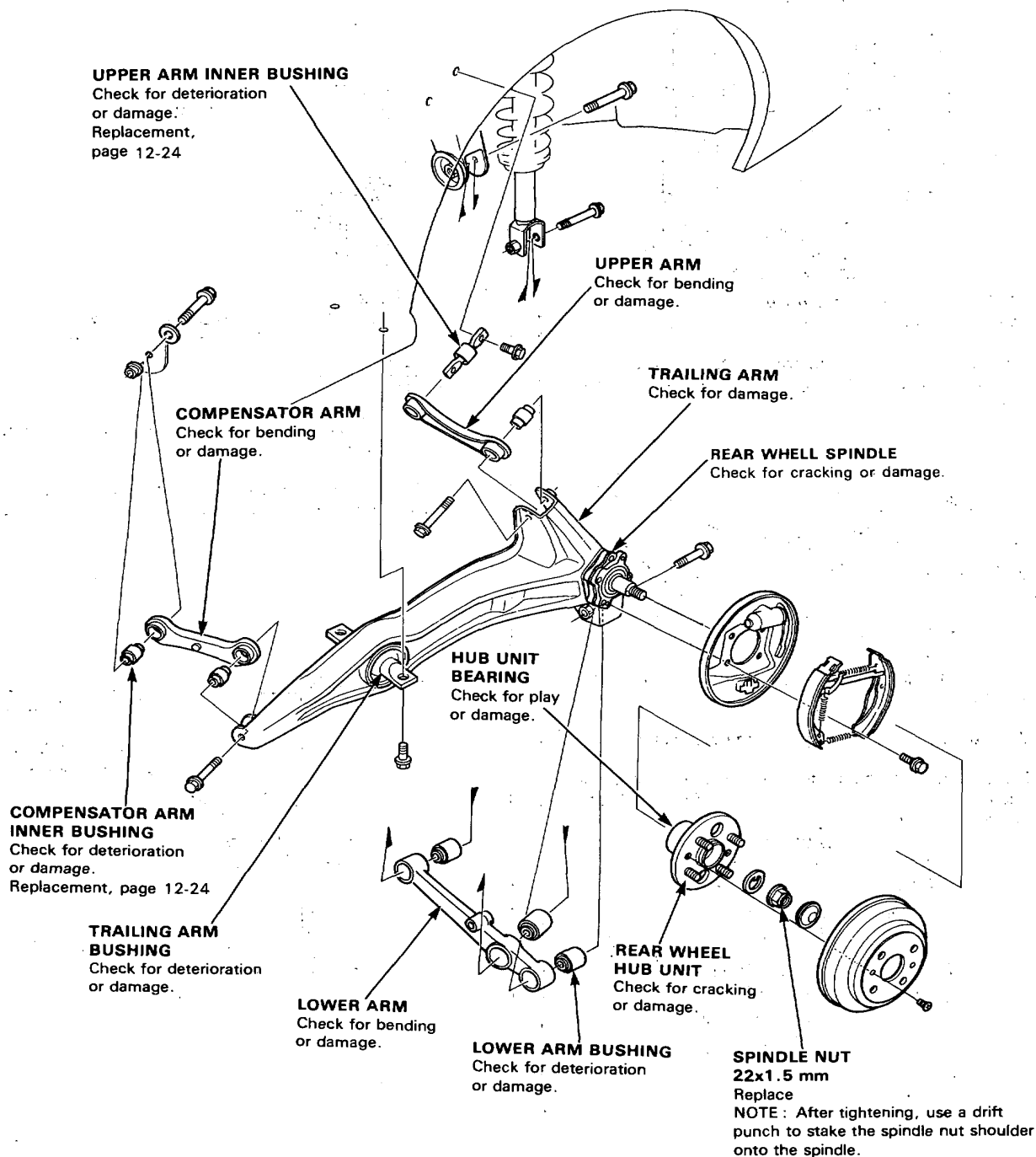
CAUTION: Use a rag at the point you are going to pry, because aluminum alloy wheels can be easily damaged.

Disc Brake:





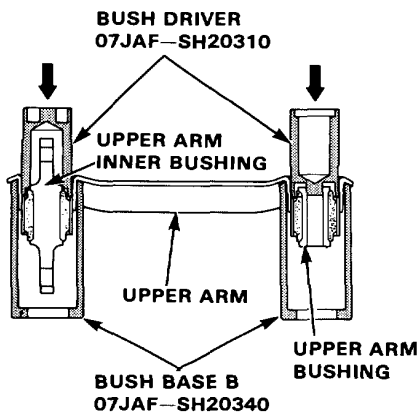
Drum Brake:



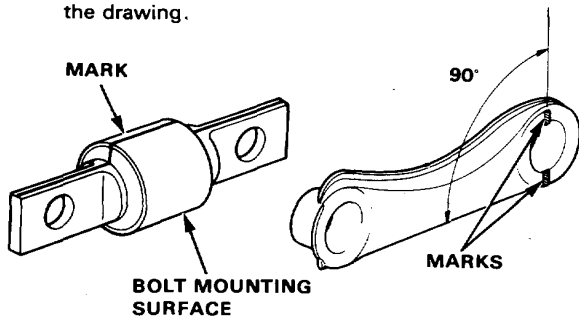
Rear Suspension

Upper Arm Bushing Replacement

1. Remove the upper arm bushing and inner bushing as shown.

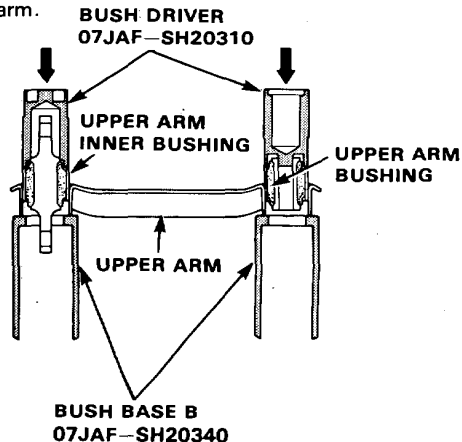


2. Mark a scribe line on the upper arm inner bushing so that it is in line with the bolt mounting surface.
3. Mark on the upper arm at two points so that they are in line and make a right angle with the arm as shown in the drawing.



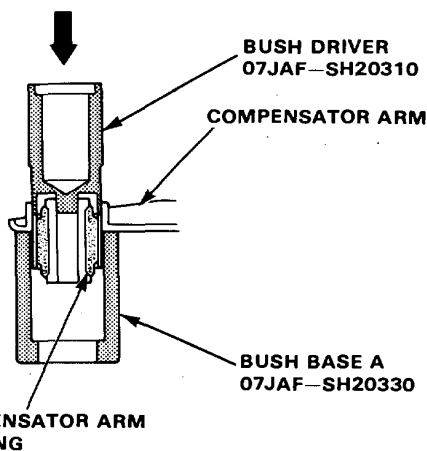
4. Drive in the upper arm inner bushing with the marks aligned.
5. Drive the upper arm bushing into the upper arm.

NOTE: Drive in the upper arm bushing and inner bushing until their leading edges are flush with the upper arm.



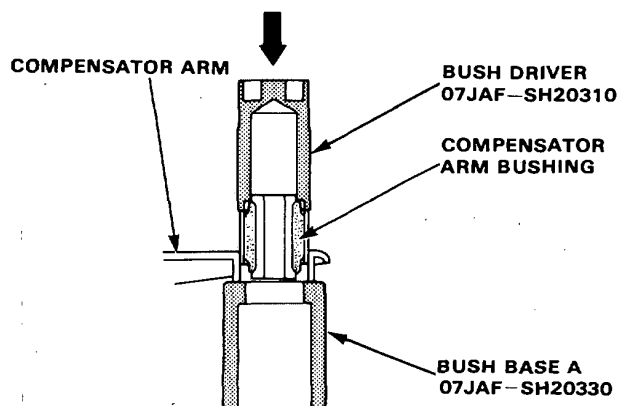
Compensator Arm Bushing Replacement

1. Remove the compensator arm bushings out of the compensator arm from the direction indicated.



2. Drive the compensator arm bushings from the direction indicated.

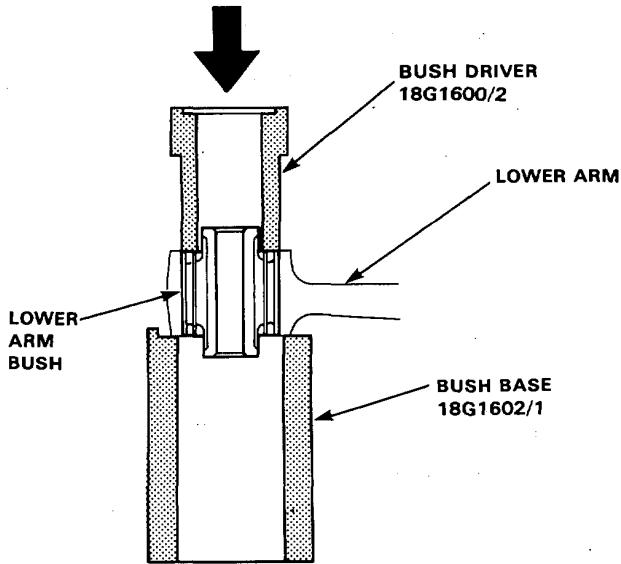
NOTE: Drive in the compensator arm bushings so that their leading edges are flush with the compensator arm.





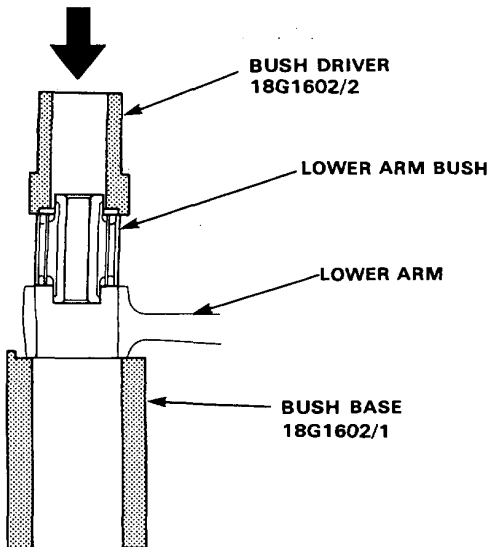
Rear Lower Arm Bushing Replacement

1. Remove the rear lower arm bushings out of the rear lower arm from the direction indicated.



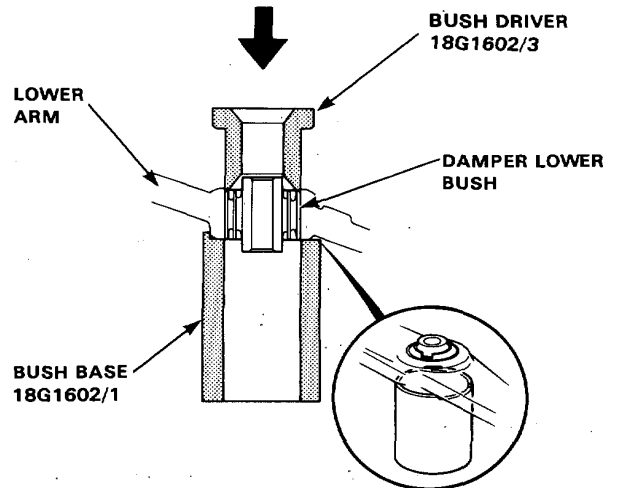
2. Drive the rear lower arm bushings from the direction indicated.

NOTE: Drive in the rear lower arm bushings so that their leading edges are flush with the rear lower arm.



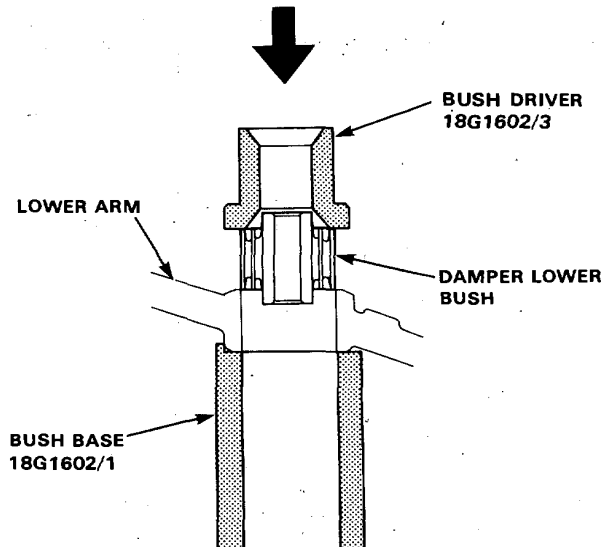
Rear Damper Lower Bushing Replacement

1. Remove the rear damper lower bushing out of the rear lower arm from the direction indicated.



2. Drive the rear damper lower bushing from the direction indicated.

NOTE: Drive in the rear damper lower bushing so that their leading edges are flush with the rear lower arm.

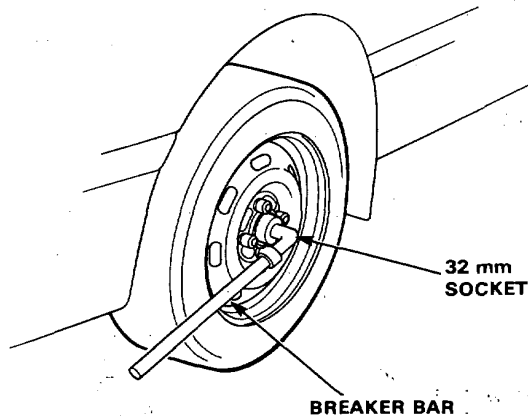


Rear Suspension

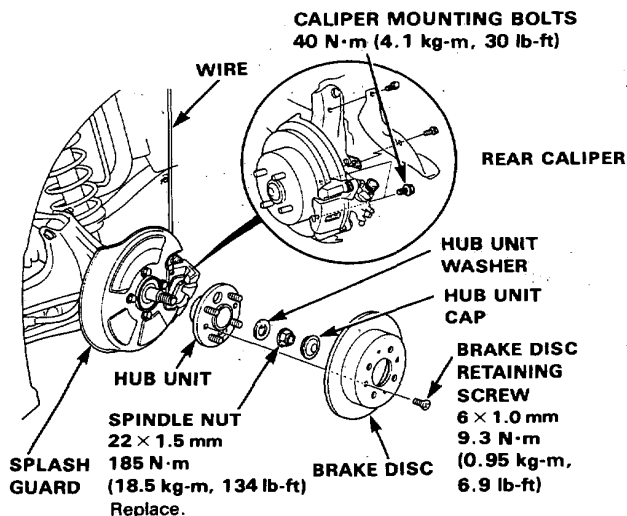
Hub Unit Bearing Replacement

Disc Brake:

1. Pry nut lock tab away from spindle, then loosen nut using 32 mm socket and breaker bar.

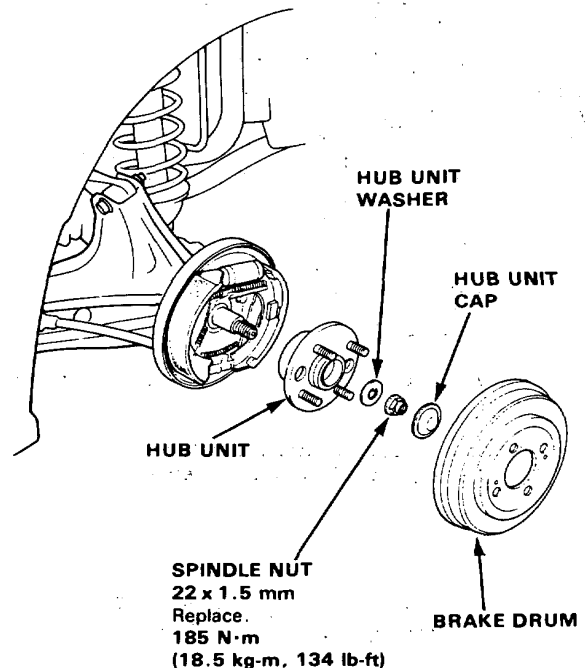


2. Loosen the wheel nuts slightly.
 3. Jack up the rear of car and support on safty stands in proper location.
 4. Remove the wheel nuts, wheel, and spindle nut.
 5. Remove the caliper shield.
 6. Remove the caliper mounting bolts and hang the caliper assembly to one side.
- CAUTION:** To prevent accidental damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the under carriage.
7. Remove the brake disc retaining screws and brake disc.
 8. Remove the hub unit and hub unit bearing.



Drum Brake:

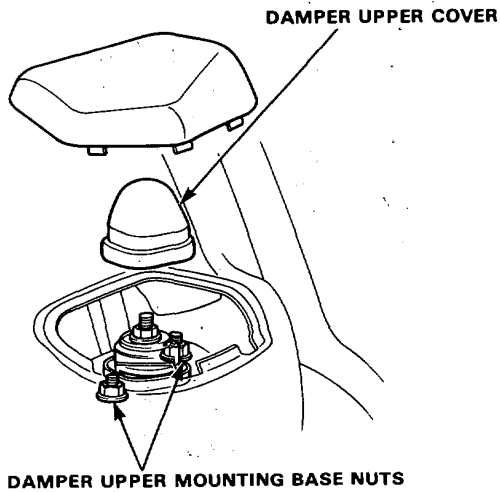
1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel and brake drum.
3. Remove the hub unit cap, unstake the spindle nut, then loosen the spindle nut.
4. Remove the hub unit and hub unit bearing.



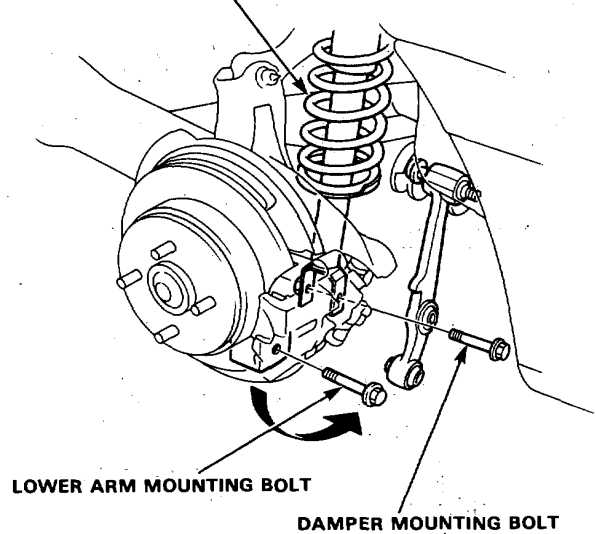


Damper Removal

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.



REAR DAMPER ASSEMBLY



4. Remove the damper mounting bolt.
5. Remove the lower arm mounting bolt.
6. Lower the lower arm and remove the damper assembly.

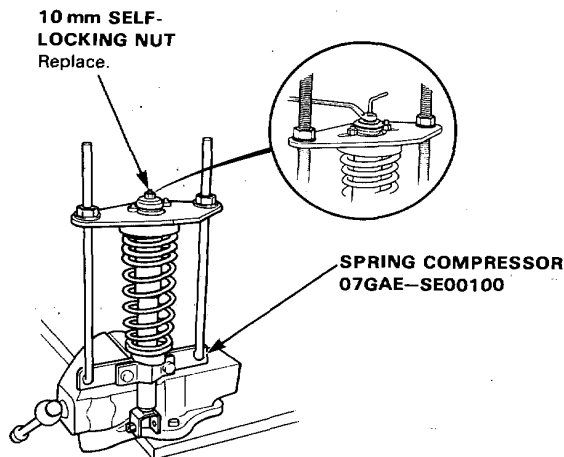
Rear Suspension

Damper Disassembly/Inspection

1. Compress the damper spring with the spring compressor according to the manufacturer's instructions.

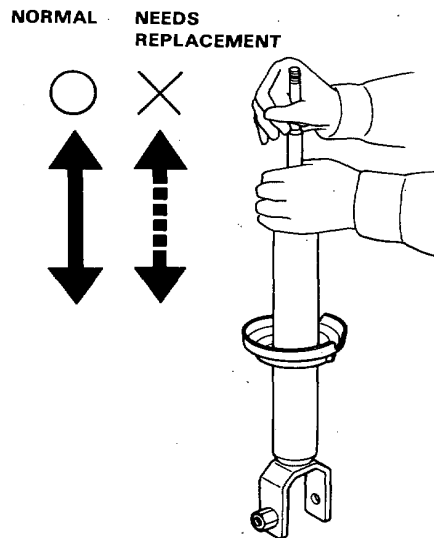
CAUTION: Do not compress the spring more than necessary to remove the 10 mm self locking nut.

2. Remove the 10 mm self locking nut from the damper assembly.

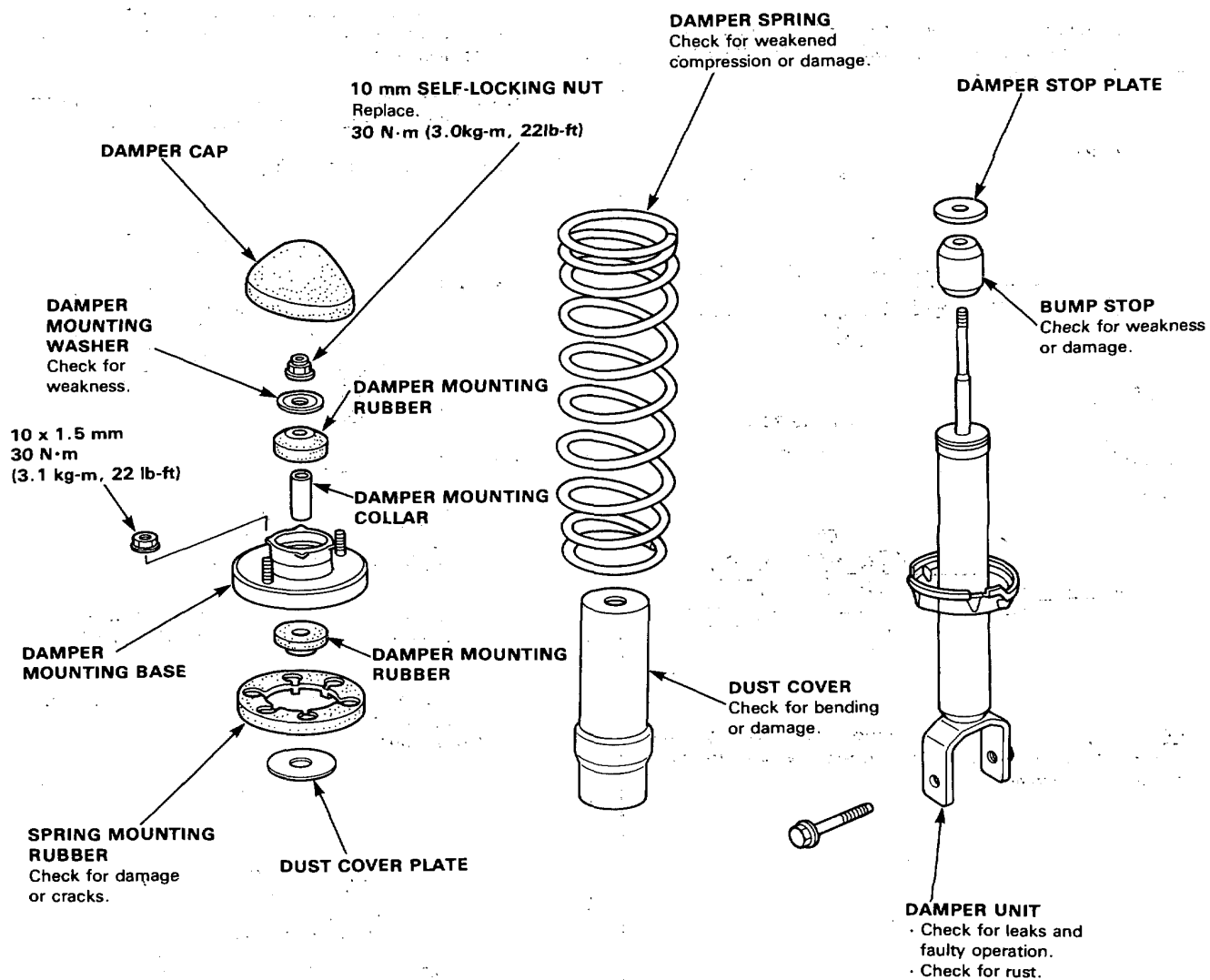


3. Remove the spring compressor and disassemble the damper as shown on the next page.

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.



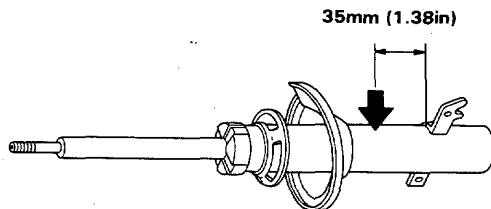
Rear Suspension

Damper Disposal

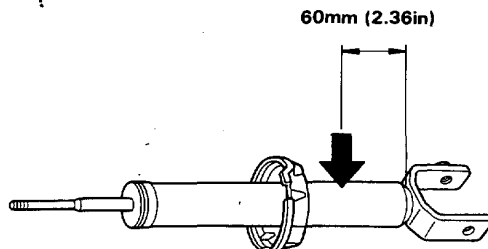
WARNING The rear dampers contain nitrogen gas and oil under pressure. The pressure must be relieved before disposal to prevent possible injury due to explosion.

Place the damper on a level surface with its rod extended and drill a hole of 2–3 mm (0.078–0.118in) diameter in the body to release the gas.

Front Damper



Rear Damper



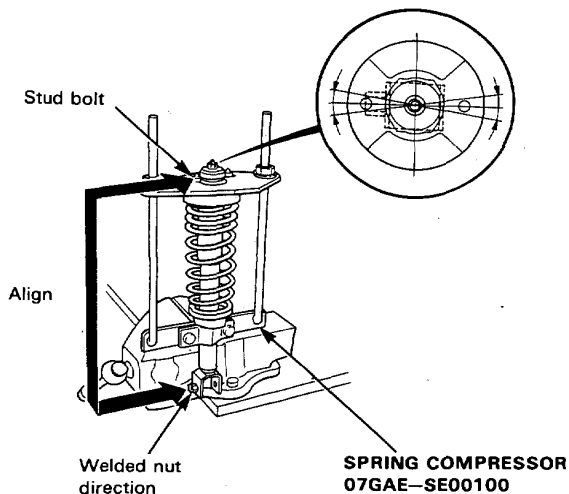
WARNING Always wear eye protection to avoid getting metal shavings in your eyes when the gas damper pressure is relieved.

Damper Reassembly

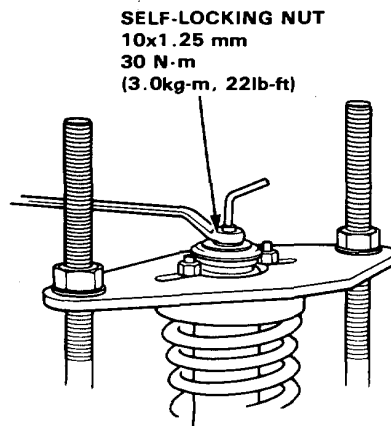
1. Install the damper unit on a spring compressor.
2. Install the damper spring, bump stop, stop plate, dust cover, dust cover plate, mounting rubber, damper mounting rubber, collar and damper mounting base on the damper unit.

CAUTION: Install the damper mounting base so that the angle of the stud bolt is as shown.

3. Compress the damper spring.



4. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self-locking nut.
5. Hold the damper shaft and tighten the 10 mm self-locking nut.

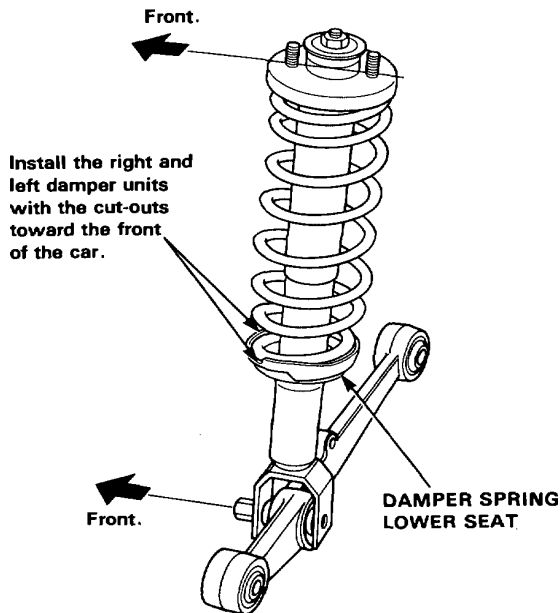




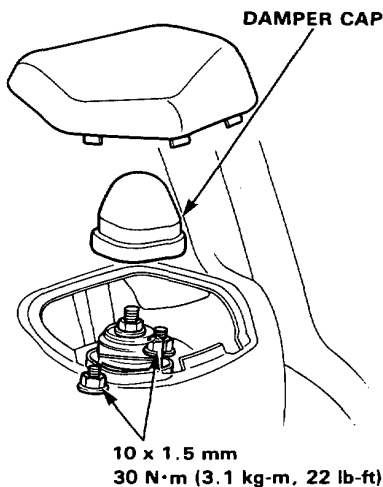
Damper Installation

1. Lower the rear suspension and set the damper assembly.

CAUTION: Be sure that the two cut-outs in the damper spring lower seat are toward the front of the car as shown below.



2. Loosely install the damper mounting bolt.
3. Install the damper upper base mounting nuts and tighten them.

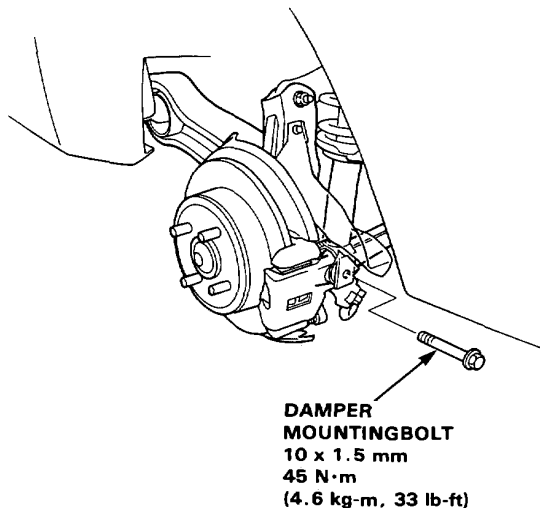


4. Install the damper cap.

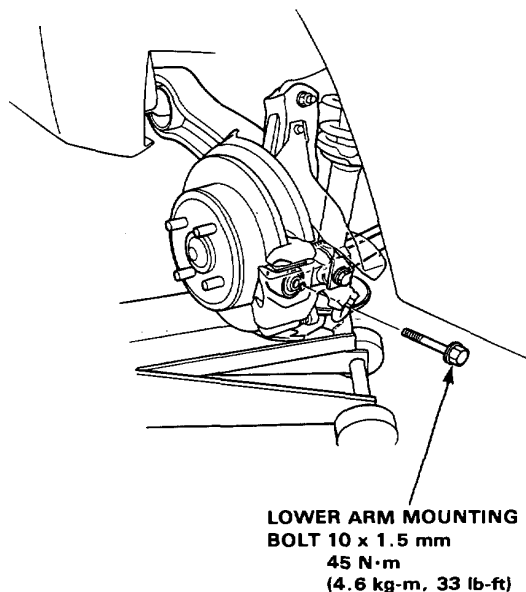
5. Raise the rear suspension with a floor jack until the weight of the car is on the damper.

NOTE: The damper mounting bolts and lower arms' mounting bolt should be tightened with the damper under vehicle load.

6. Tighten the damper mounting bolt.



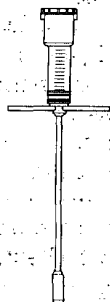
7. Install the lower arm mounting bolt.
8. Tighten the lower arm mounting bolt.



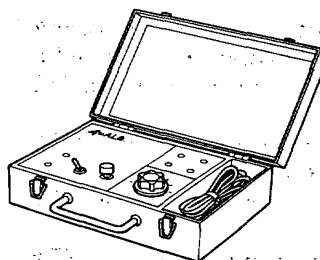
Special Tools

Special Tools

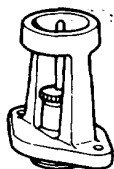
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07HAA—SG00100	Bleeder T-Wrench	1	
②	07HAJ—SG00601 or 07508—SB00000	ALB Checker	1	
	07HAJ—SG00400	Adaptor	1	
③	07JAG—SD40100	Push Rod Adjustment Gauge	1	
④	07404—5790300	Vacum Gauge	1	
⑤	07410—5790500	Tube Joint Adaptor	1	
⑥	07406—5790200	Pressure Gauges	2	
⑦	07410—5790100	Pressure Gauge Attachment C	2	
⑧	07510—6340100	Pressure Gauge Joint Pipe	1	
⑨	07HAK—SG00110	Pressure Gauge Joint Pipe	1	



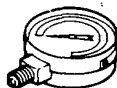
①



②



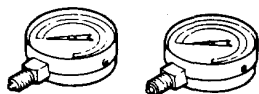
③



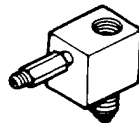
④



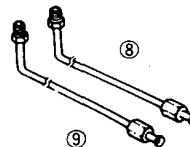
⑤



⑥



⑦

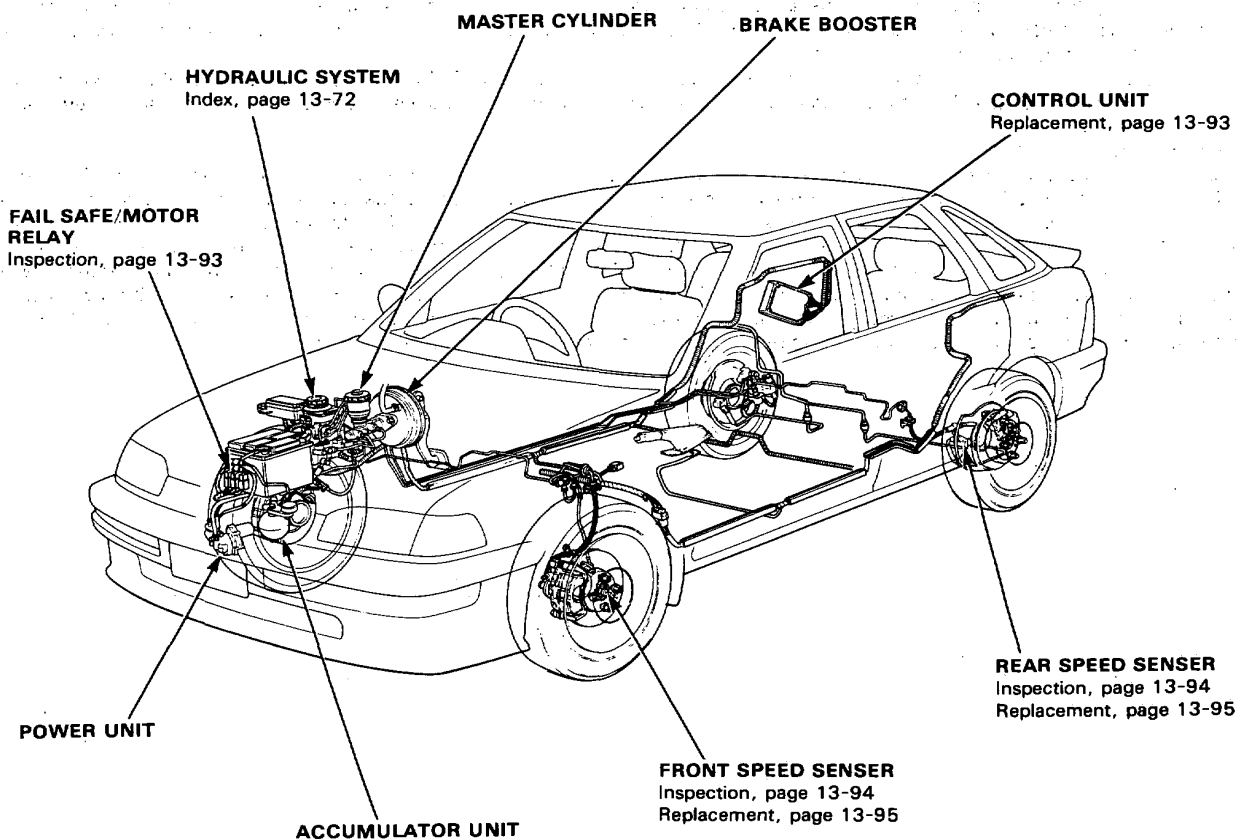


⑧

⑨

Illustrated Index

WARNING The accumulator contains high pressure nitrogen gas, do not puncture expose to flame or attempt to disassemble the accumulator or it may explode; severe personal injury may result.



Description

General/Features/Construction

General

In a conventional brake system, if the brake pedal is depressed excessively, the wheels can lock before the vehicle comes to a stop. In such a case, the stability of the vehicle is reduced if the rear wheels are locked, and maneuverability of the vehicle is reduced if the front wheels are locked, creating an extremely unstable condition.

The Anti-Lock Brake (ALB) system modulates the pressure of the brake fluid applied to each caliper, thereby preventing the locking of the wheels, whenever the wheels are likely to be locked due to excessive braking. It then restores normal hydraulic pressure when there is no longer any possibility of wheel locking.

Features

- Increased braking stability can be achieved regardless of changing driving conditions.
- The maneuverability of the vehicle is improved as the system prevents the front wheels from locking.
- When the ALB goes into action, kick-back is felt on the brake pedal.
- The ALB system is equipped with a self-diagnosis function. When an abnormality is detected, the dash warning light comes on and the LED display on the control unit blinks. The location of the system's trouble can be diagnosed from the frequency of the LED display blinks.
- This system has individual control of the front wheels and common control ("select low") for the rear wheels. "Select Low" means that the rear wheel that would lock first (the one with the lowest resistance to lock-up) determines ALB activation for both rear wheels.

Construction

In addition to the conventional braking system, the ALB system is composed of: gear pulsers attached to the rotating part of individual wheels; speed sensors, which generate pulse signals in correspondence to the revolution of the gear pulsers; control unit, which controls the working of the ALB system by performing calculations based on the signals from the individual speed sensors and the individual switches; modulator unit, which adjusts the hydraulic pressure applied to each caliper on the basis of the signals received from the control unit; an accumulator, in which high-pressure brake fluid is stored; a pressure switch, which detects the pressure in the accumulator and transmits signals to the control unit; a power unit, which supplies the high-pressure working fluid to the accumulator by means of a pump; a motor relay for driving the power unit; a fail-safe relay, which cuts off the solenoid valve ground circuit when the fail-safe device is at work; and, a dash warning light.

Control Unit

Construction

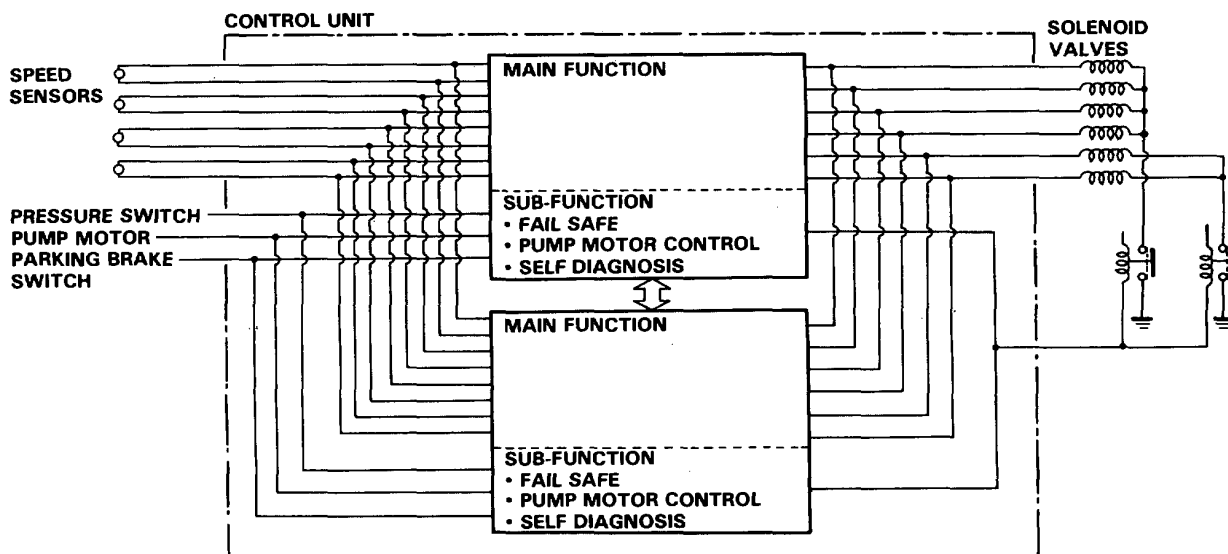
The control unit consists of a main function section, which controls the operation of ALB system, and sub-function, which controls the pump motor and "self-diagnosis."

1. Main Function

The main function section of the control unit performs calculations on the basis of the signals from each speed sensor and controls the operation of the ALB system by putting into action the solenoid valves in the modulator unit for each front brake for the two rear brakes.

2. Sub Function

The sub-function section gives driving signals to the pump motor and also gives "self-diagnosis" signals, necessary for backing up the ALB system.



Self-Diagnostic Function

Since the ALB system modulates the braking pressure when a wheel is about to lock, regardless of the driver's intention, the system operation and the braking power will be impaired if there is a malfunction in the system. To prevent this possibility, at speeds above 10 km/h (6 mph), the self diagnosis function, monitors the main system functions. When an abnormality is detected, the dash warning light goes on.

There is also a check mode of the self-diagnosis system itself: when the ignition switch is first turned on, the dash warning light comes on and stays on for a few seconds after the engine starts, to signify that the self-diagnosis system is functional.

(cont'd)

Description

Control Unit (cont'd)

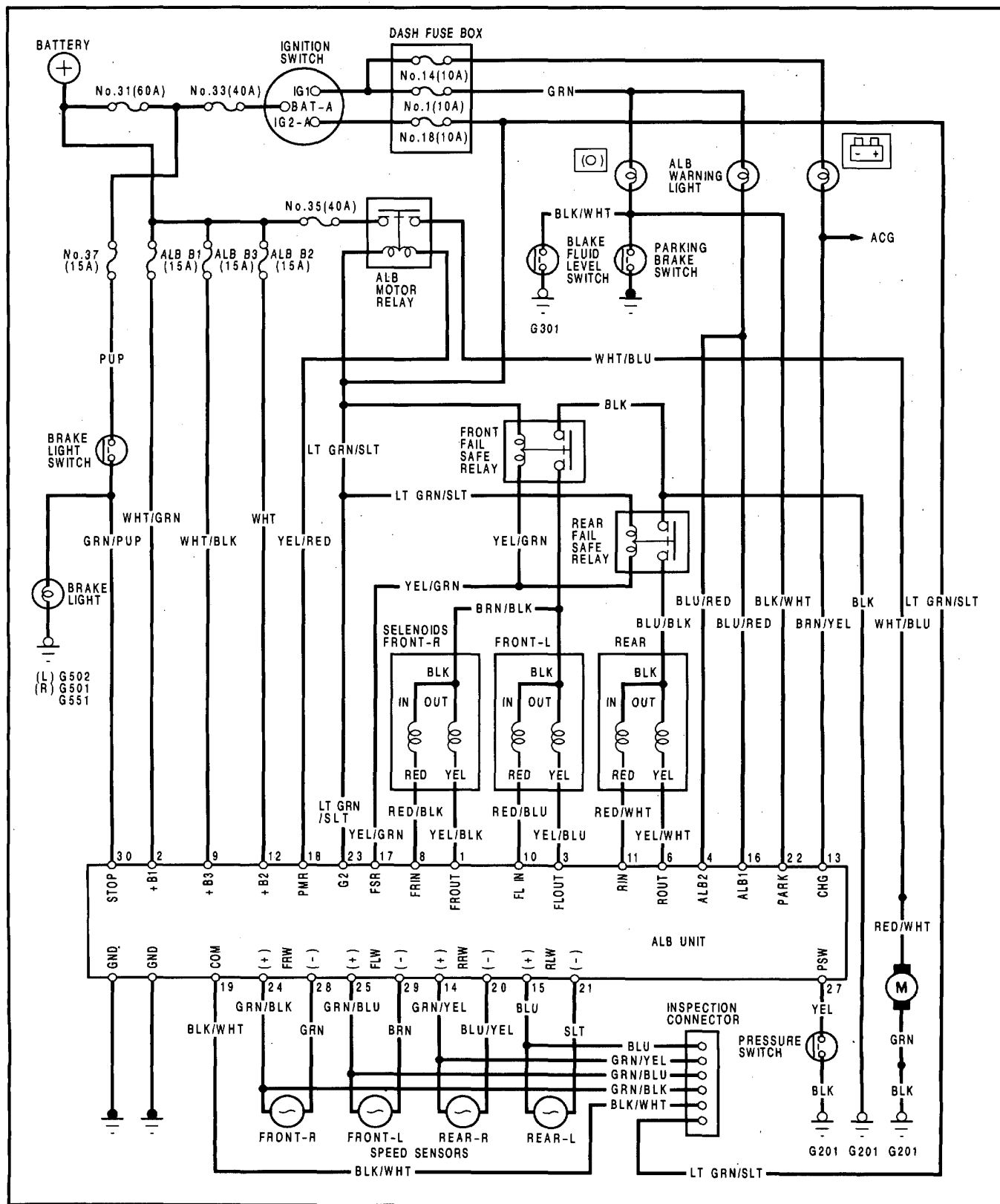
Fail-Safe Function

If an abnormality is detected, the control unit turns off the fail-safe relays and motor relay. In this condition the ALB system is prevented from functioning, yet the basic system continues to operate normally.

The Dash Warning Light comes On

1. When the fluid pressure pump runs more than 120 seconds.
2. When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
3. When the rear wheel(s) is (are) locked more than a specified time.
4. When the wheel rotation signal is not transmitted due to faulty wire or sensor.
5. When the operation time of the solenoid valve(s) exceeds a predetermined value and the control unit finds an open in the solenoid circuit.
6. When the output signals from both main functions in the control unit are not transmitted to the solenoid valve(s).

Circuit Diagram



cardiagn.com

ALB Checker

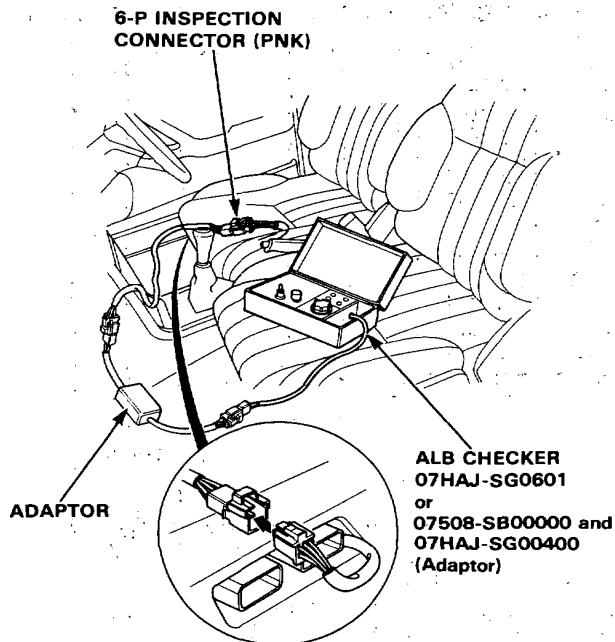
Function Test

NOTE:

- The ALB checker is designed to confirm proper operation of the ALB system by simulating each system function and operating condition. Before using the checker, confirm that the dash **ALB** warning light is not indicating some other problem with the system. The light should go on when the ignition is first turned on and then go off and stay off two seconds after the engine.
- The checker should be used through all modes, 1 to 6, to confirm proper operation of the system, in any one of the following situations:
 - After replacing any ALB system component.
 - After replacing or bleeding the system fluid.
 - After any body or suspension repair that may have affected the sensors or their wiring.
 - As art of P.D.I.

WARNING Be sure to disconnect the 4w A.L.B checker before driving the vehicle. If you drive the vehicle with the checker left connected, the ALB may operate when it is not otherwise supposed to.

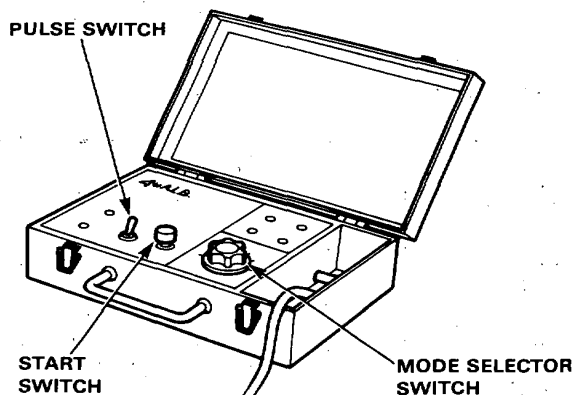
1. With the ignition switch off, disconnect the 6-P inspection connector (PNK) from the connector cover on the floor of the under the right front seat. Connect the 6-P inspection connector to the ALB checker and adaptor.



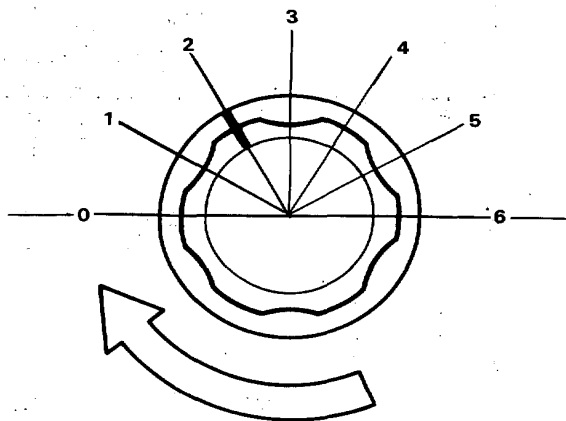
NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG0601.

NOTE: Place the vehicle on level ground with the wheels blocked, put the transmission in neutral for manual transmission models, and in P for Automatic transmission models.

2. Start the engine and release the parking brake.
3. Operate the ALB checker as follows:
 - (1) For ALB checker 07508-SB00000, turn the power switch ON.
For ALB checker 07HAJ-SG0601, select the pulse switch to "50 pulse" side.
 - (2) Turn the Mode Selector switch to "1."
 - (3) Push the Start Test switch:
 - The Busy light should come ON.
 - The dash **ALB** warning light should not come ON (if it comes on, follow the troubleshooting on page 13 -60)

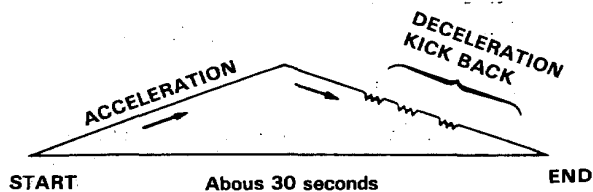


4. Turn the Mode Selector Switch further to "2".



5. Depress the brake pedal and push the Start Test switch.
The dash ALB warning light should not go on while the Busy light is ON. There should be kickback on the brake pedal. If not as described, go to troubleshooting, page 13-60.

NOTE: The operation sequence simulated by Modes 2, 3, 4, 5 and 6:



6. Turn the Mode Selector switch to 3, 4 and 5.
Perform step 5 for each of the test mode positions.

NOTE: If little or no kickback is felt from the brake pedal in modes 2-5, repeat the function test of modes 1-5 several times before beginning to troubleshoot other parts of the system.

Mode 1:

Sends the simulated driving signal 0 km/h (0mph) → 180km/h (112.5mph) → 0km/h (0 mph) of each wheel to the control unit to check the control unit self diagnosis circuit. There should be no kickback.

Mode 2:

Sends the driving signal of each wheel, then sends the lock signal of the rear left wheel to the control unit. There should be kickback.

Mode 3:

Sends the driving signal of each wheel, then sends the lock signal of the rear right wheel to the control unit. There should be kickback.

Mode 4:

Sends the driving signal of each wheel, then sends the lock signal of the front left wheel to the control unit. There should be kickback.

Mode 5:

Sends the driving signal of each wheel, then sends the lock signal of the front right wheel to the control unit. There should be kickback.

Inspection points:

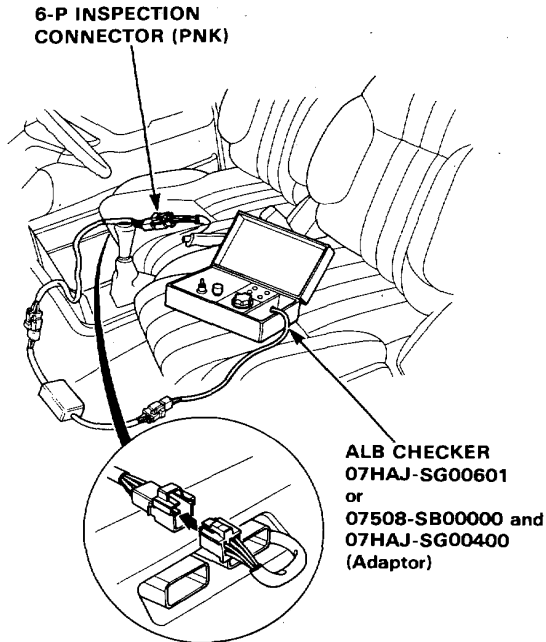
1. The [ALB] warning light goes ON in mode 1.
 - Check the wiring. If there is good condition, the control unit is faulty.
 - If [ALB] warning light goes on 120 seconds later but the power unit stops, refer to page 13-50.
2. There are no kickback in modes 2 through 5.
 - Faulty pressure switch (remains ON)
 - Shorted wires
 - Faulty or disconnected power unit coupler
 - Faulty power unit relay
3. Weak kickback in modes 2 through 5.
 - Bleed high pressure circuits.
4. Power unit stops in mode 1 but it does not stop and there are no kickback in modes 2 through 5.
 - Brake fluid leakage
 - Bleed power unit
 - Clogged power unit outlet
 - Clogged or deteriorated power unit hose

ALB Checker

Wheel Sensor Signal Confirmation

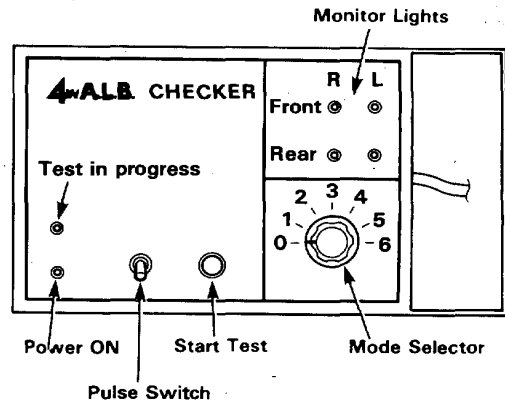
NOTE: Use the ALB checker (mode 0) to confirm proper wheel sensor operation.

1. Connect the 6-P inspection connector (PNK) of under the right front seat to the ALB checker.



NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG00601.

2. Raise the car so that all four wheels are off the ground and support on safety stands.
3. Turn the ignition switch ON.
4. Turn the Mode Selector switch to "0."



5. With the transmission in neutral, rotate each wheel briskly (one revolution per second) by hand and confirm that its respective monitor light on the checker blinks as the wheel rotates.

NOTE:

- Rotating a wheel too slowly will produce only a weak blink of its monitor light that may be difficult to see.
- In bright sunlight, the monitor light may be difficult to see. Perform tests in a shaded area.
- In some instances, it may not be possible to spin the front wheels fast enough to get a monitor indication, if necessary, start the engine and slowly accelerate and decelerate the front wheels. The monitor lights should blink indicating a good wheel sensor signal.

If any monitor light fails to blink, check the suspected sensor, its air gap and its wiring/connectors.

Troubleshooting

Dash Warning Light



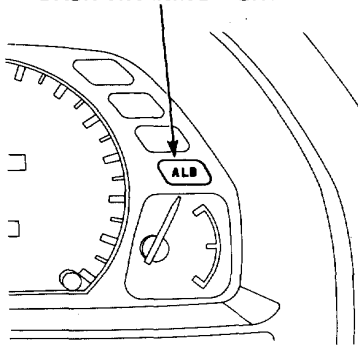
1. The dash warning light will come on and the control unit memorizes the problem under certain conditions.

NOTE: Problem codes explained on page 13-59.

- The tire(s) adhesion is lost due to excessive cornering speed.
Problem codes: 5, 5-4, 5-8.
- The vehicle loses traction when starting from a stuck condition on a muddy, snowy, or sandy road.
Problem code: 4.
- When the parking brake is applied for more than 30 seconds while the vehicle is being driven.
Problem code: 2.
- The vehicle is driven on extremely rough road.

The ALB system is OK, if the dash warning light: goes off after the engine is restarted.

DASH WARNING LIGHT



2. If you receive a customer's report that the dash warning light, sometimes comes on, check the system using the ALB checker to confirm whether there is any trouble in the system.
See page 13-54.
3. The dash warning light will come on and the LED (see page 13-56) will display a problem code when there is insufficient battery voltage to the control unit. An example would be when the battery is so weak that the car must be jump-started.
After the battery is sufficiently recharged, the dash warning light will work normally after the engine is stopped and restarted.

However, after recharging the battery, the LED problem code must be cleared from the control unit's memory by disconnecting the ALB B2 fuse for at least 3 seconds.

Warning Light Circuit:

1. The dash warning light, does not go on when the ignition switch is turned on.
Check the following items. If they are OK, check the control unit connectors.
If not loose or disconnected, install a new control unit and recheck:
 - Blown dash warning light bulb.
 - Open circuit in GRN lead between No.1 fuse and combination meter.
 - Open circuit in BLU/RED lead between combination meter and control unit.
 - Loose component grounding of the control unit to the body.
2. The dash warning light remains ON or after the engine is started, however the LED on the control unit does not blink any code, check for the following.
 - Loose or poor connection of the wire harness at the control unit.
 - Faulty ALB B2 (15 A) fuse.
 - Open circuit in WHT lead between ALB B2 (15 A) fuse and control unit.
 - Open circuit in LT GRN/SLT lead between fuse No. 18 (10 A) and fail safe relay(s).
 - Open or short circuit in the YEL/GRN lead between control units.
 - Short circuit in BLU/RED lead between combination meter and control unit.
 - Open circuit in WHT/BLU or BRN/YEL lead between alternator and control unit.

If the problem is not found substitute a known-good control unit and recheck whether the warning light remains ON.

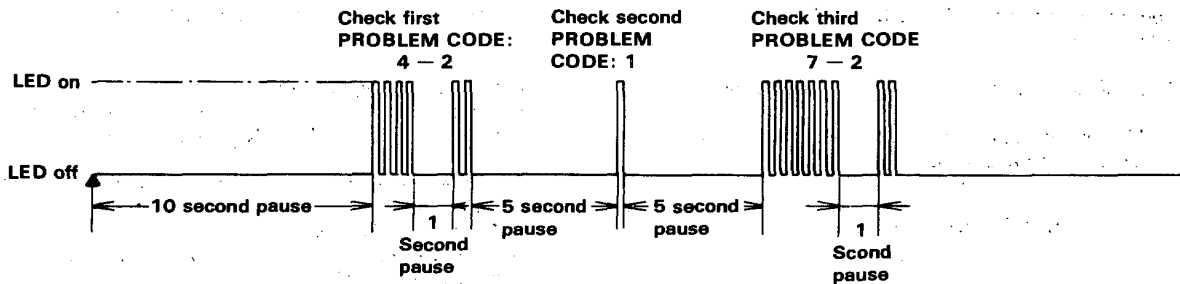
(cont'd)

Troubleshooting

Dash Warning Light (cont'd)

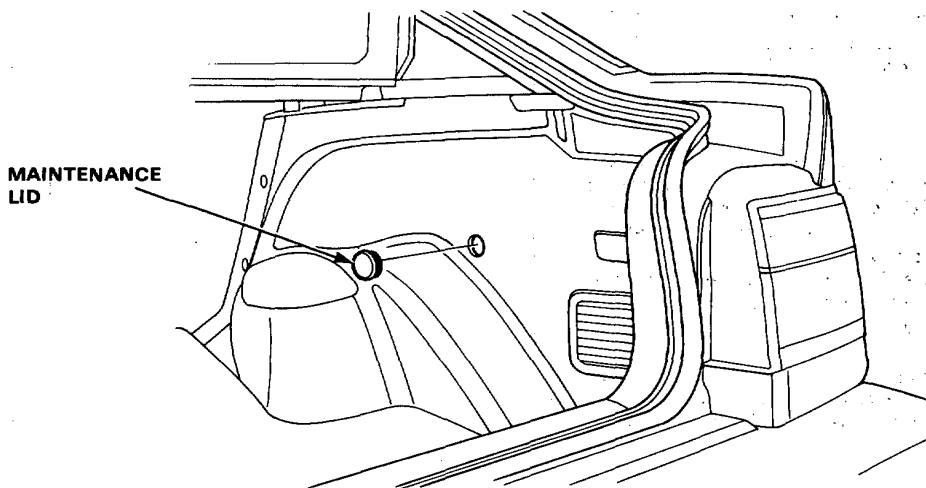
Comes on and remains on while running:

1. Stop the engine.
2. Turn the ignition switch on and make sure that the dash warning light comes on.
3. Restart the engine and check the dash warning light.
 - There is no problem in the ALB system, if the dash warning light goes off.
 - Go step 4, if the dash warning light remains on.
4. Stop the engine.
5. Remove the maintenance lid.
6. Turn the ignition switch on, but do not start the engine.
7. Record the blinking frequency of the LED on the control unit. The blinking frequency indicates the problem code.



NOTE:

- The control unit can indicate up to three problem codes.
- If the LED does not light, see Troubleshooting of warning light Circuit page 13-53.
- If you miscount the blinking frequency, turn the ignition switch off, then turn on to blink the LED again.
- After the repair is completed, disconnect the ALB B2 fuse for at least 3 seconds to erase the control unit's memory. Then turn the ignition key on again and recheck.
- The memory of problem code is erased if the connector is disconnected from the control unit or the control unit is removed from the body.



Symptom-to-System Chart

PROBLEM CODE		PROBLEMATIC COMPONENT/ SYSTEM	AFFECTED				See page	OTHER COMPONENT	See page
MAIN CODE	SUB CODE		FRONT RIGHT	FRONT LEFT	REAR RIGHT	REAR LEFT			
1	—	Hydraulic Controlled Components	—	—	—	—	13-60	—ALB fuse —Motor realey —Pressure Switch —Accumulator —Modulator	13-93
2	—	Parking brake switch-related problem	—	—	—	—	13-63	Brake fluid level switch BRAKE light	
3	1	Pulser(s)	○				13-94		
	2			○					
	4				○	○			
4	1	Speed sensor	○				13-64		
	2			○					
	4				○				
	8					○			
5	—	Speed sensor(s)			○	○	13-65	—Modulator	
5	4				○				
	8					○			
6	—	Fail safe relay	—	—	—	—	13-66 (Function Test)	Front or rear fail safe relay	
6	1		—	—	—	—		Front fail safe relay	
	4		—	—	—	—		Rear fail safe relay	
7	1	Solenoid related problem (Open or short)	○				13-70	ALB 3 fuse	
	2			○				ALB 1 fuse	
	4				○	○		—Rear fail safe relay —Pressure Switch —Motor relay	

NOTE: In the event of simultaneous speed sensor or solenoid problems (codes 4 or 7), the control unit will only indicate the higher number sub-code.

Troubleshooting

Flowchart

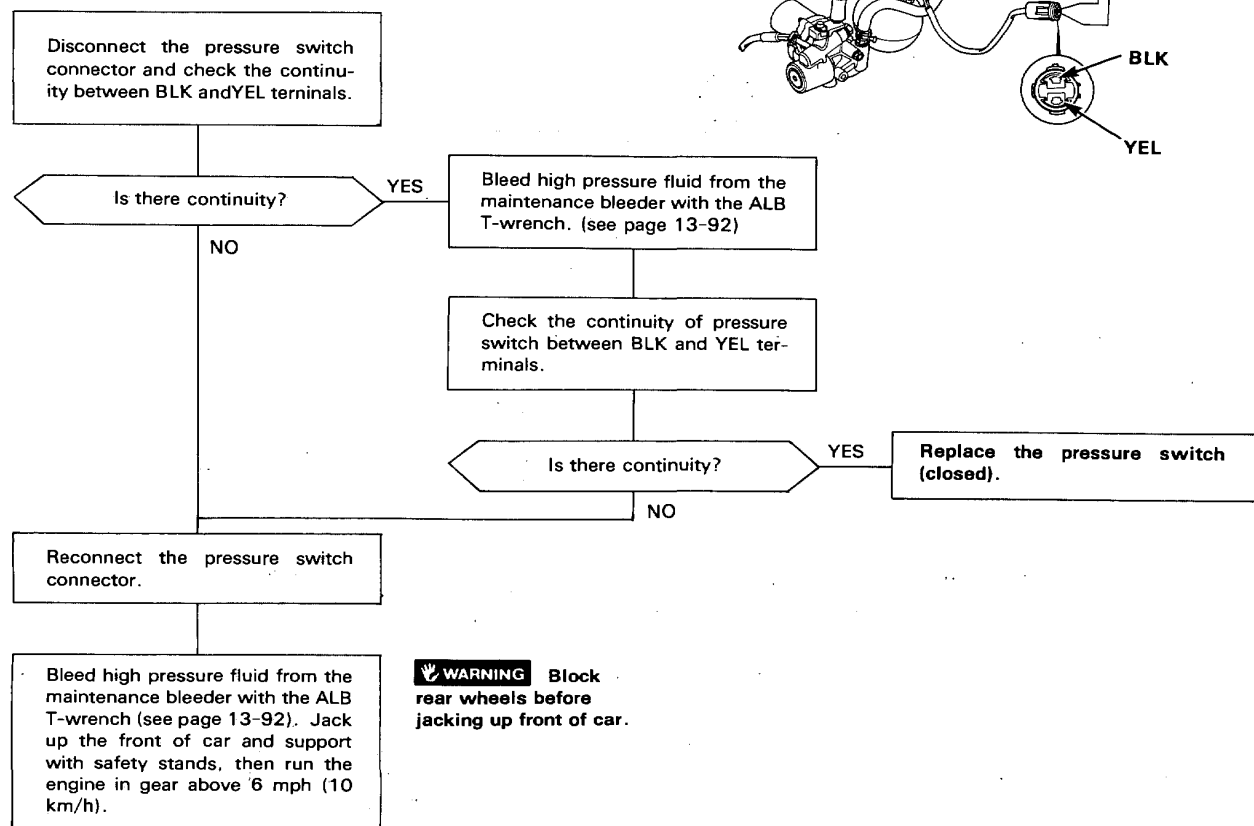
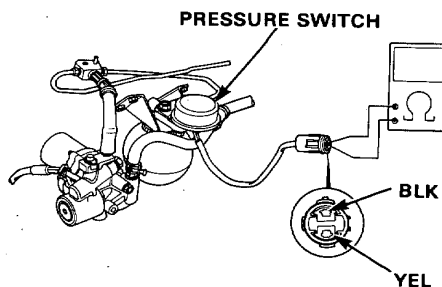
Problem Code 1: Hydraulic Controlled Components.

NOTE: The LED does not blink when the following failures occur.

- The contact points of the motor relay remain closed (the motor runs continuously even after the ignition key is removed).
- YEL/RED lead is shorted or the control unit is internally shorted (the motor stops when the ignition switch is turned lock).

Pre-test steps:

- Check No.35 (40A) Fuse.
- Check all brake system hoses and pipes (low and high pressure) for signs of leaking bending or kinking.
- Check reservoir fluid level, and if necessary, fill to the MAX level.



WARNING Block rear wheels before jacking up front of car.

(From page 13-60)

Does the pump motor run? YES (To page 13-62)
NO

Disconnect the 18P connector from the control unit.

Check for continuity between the YEL terminal and body ground.

Is there continuity? YES Repair short in YEL wire between the control unit and pressure switch.
NO

Connect the YEL/RED terminal to body ground using a jumper wire. Turn the ignition switch ON.

Does the pump motor run? YES Faulty control unit.
NO

Remove the pump motor relay and check the pump motor relay (page 13-93)

Connect the WHT/RED and WHT/BLU terminals using a jumper wire.

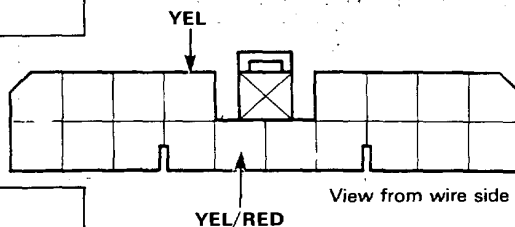
Does the pump motor run? NO (To page 13-63)
YES

Check voltage between the pump motor relay motor side ⊕ terminal and body ground (-).

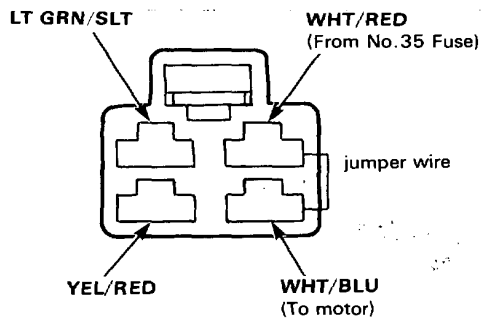
Is there battery voltage? NO Repair open in LT GRN/SLT wire between the No.18 (10A) fuse and pump motor relay.
YES

Repair open in YEL/RED wire between the control unit and pump motor relay.

〈CONTROL UNIT: 18P CONNECTOR〉



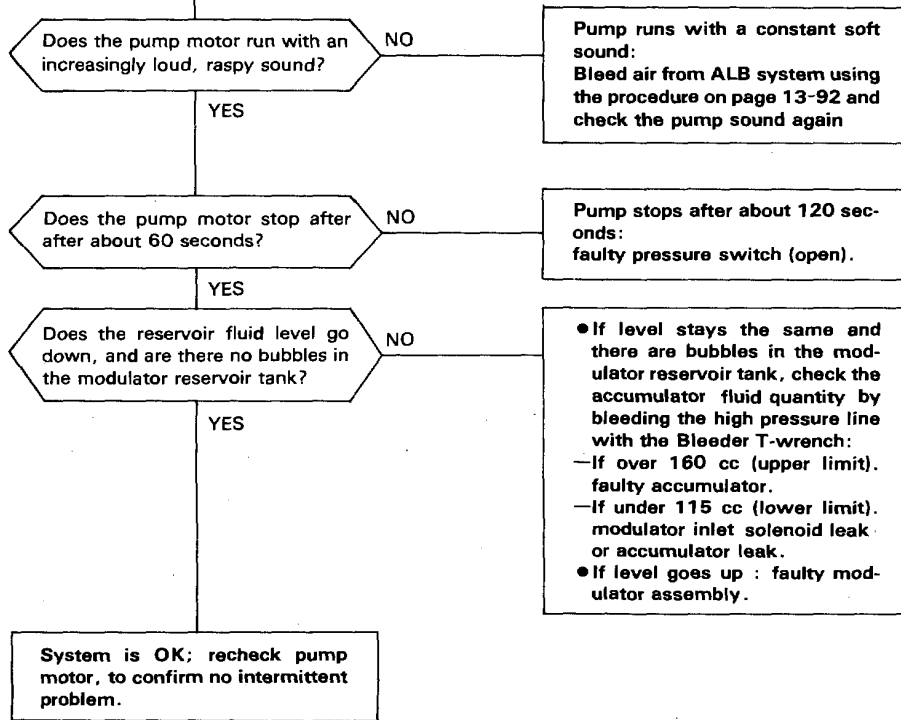
〈PUMP MOTOR RELAY CONNECTOR〉



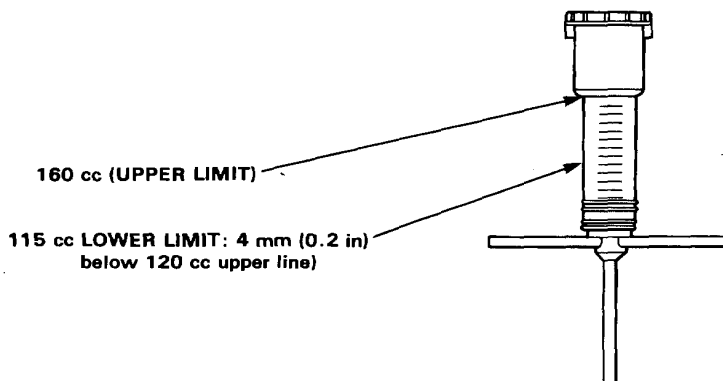
Troubleshooting

Flowchart(cont'd)

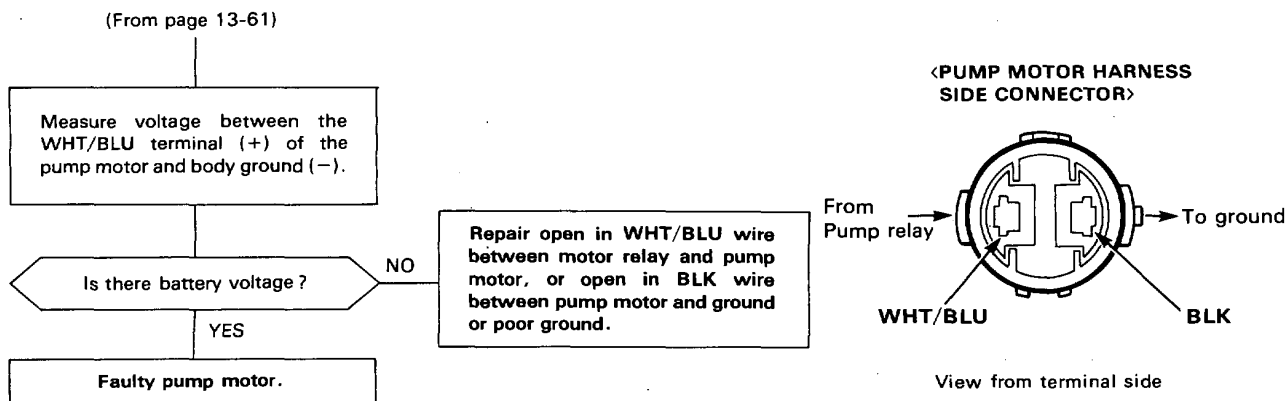
(From page 13-61)



BLEEDER T-WRENCH
07HAA—SG00100



NOTE: The fluid enters the reservoir under pressure; wait 1 or 2 minutes for air bubbles to disappear and level to stabilize.



Problem code 2: Parking Brake Switch Related Problem

If the parking brake has been released, the following items are possible causes. If they are OK, check the control unit connectors for good connection. If not loose or disconnected, substitute a known-good control unit and recheck.

NOTE: Before Troubleshooting Problem Code 2, remove the ALB 2 fuse for three seconds to clear the control unit's memory, then test drive the car.

If the dash warning light and LED stay off, the probability is that the car was driven with the parking brake applied.

- The parking brake is applied for more than 30 seconds while driving.
- The brake fluid level in the master cylinder is too low.
- WHT/BLU lead is shorted between the **BRAKE** warning light and parking brake switch.
- WHT/BLU lead is shorted between the **BRAKE** warning light and brake fluid level switch.
- The **BRAKE** warning light is blown.
- WHT/BLU has an open between the **BRAKE** warning light and parking brake.
- WHT/BLU has an open between the parking brake switch and control unit.

(cont'd)

Troubleshooting

Flowchart (cont'd)

Problem Code 4-1 to 4-8: Speed Sensor

NOTE: Control unit will only indicate the higher number sub-code.

Ignition switch: OFF

Disconnect wire harness from speed sensor.

Check for resistance between sensor terminals.

Is there 500-1,000Ω?

NO

Faulty speed sensor.

YES

Disconnect the 18P connector from the control unit.

Check each wire for continuity between the sensor and control unit:
 GRN/BLK: Front Right Positive
 GRN/BLU: Front Left Positive
 GRN/YEL: Rear Right Positive
 BLU: Rear Left Positive
 GRN: Front Right Negative
 BRN: Front Left Negative
 BLU/YEL: Rear Right Negative
 SLT: Rear Left Negative

Is there continuity?

NO

Repair open in sensor wire:

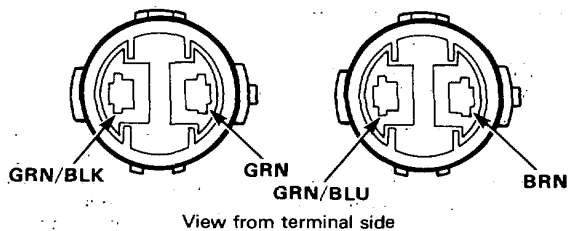
GRN/BLK: Front Right Positive
 GRN/BLU: Front Left Positive
 GRN/YEL: Rear Right Positive
 BLU: Rear Left Positive
 GRN: Front Right Negative
 BRN: Front Left Negative
 BLU/YEL: Rear Right Negative
 SLT: Rear Left Negative

Faulty control unit

〈SENSOR SIDE CONNECTOR〉

FRONT RIGHT

FRONT LEFT

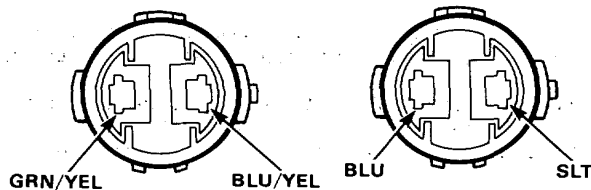


View from terminal side

〈SENSOR SIDE CONNECTOR〉

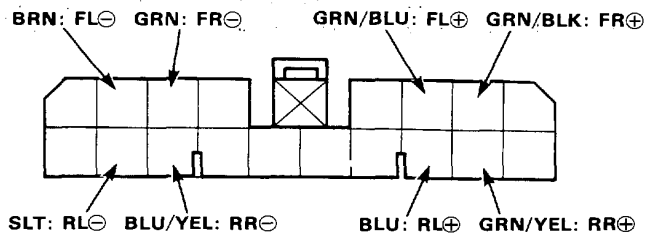
REAR RIGHT

REAR LEFT



View from terminal side

〈CONTROL UNIT 18P CONNECTOR〉



View from wire side

Problem Code 5 to 5-4, 5-8: Speed Sensor(s)

Disconnect wire harness from speed sensor.

Check for resistance between sensor terminals.

Is there 500—1000 Ω ?

NO

Faulty speed sensor.

YES

Disconnect the 18P connector from the control unit.

Check each wire for continuity between the sensor and control unit:
 GRN/BLK: Front Right Positive
 GRN/BLU: Front Left Positive
 GRN/YEL: Rear Right Positive
 BLU: Rear Left Positive
 GRN: Front Right Negative
 BRN: Front Left Negative
 BLU/YEL: Rear Right Negative
 SLT: Rear Left Negative

Is there continuity?

NO

YES

Reconnect the 18P connector to the control unit and connectors to the speed sensors.

Connect ALB checker to inspection connector.

Check ALB function in MODE 2 and 3.

Does it work properly?

NO

Faulty modulator.

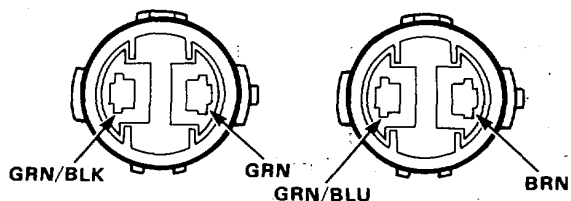
YES

- Incorrect the air gap (page 13-94)
- Faulty control unit.

<SENSOR SIDE CONNECTOR>

FRONT RIGHT

FRONT LEFT

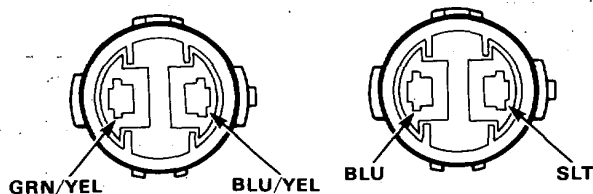


View from terminal side

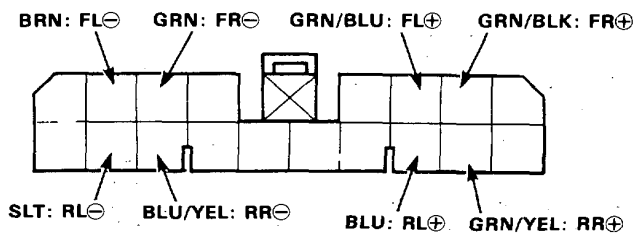
<SENSOR SIDE CONNECTOR>

REAR RIGHT

REAR LEFT



<CONTROL UNIT 18P CONNECTOR>



View from wire side.

Repair open in sensor wire:

GRN/BLK: Front Right Positive	GRN: Front Right Negative
GRN/BLU: Front Left Positive	BRN: Front Left Negative
GRN/YEL: Rear Right Positive	BLU/YEL: Rear Right Negative
BLU: Rear Left Positive	SLT: Rear Left Negative

Troubleshooting

Flowchart (cont'd)

Problem Code 6-1: Front Fail Safe Relay Circuit

Remove front fail safe relay

Check relay function (page 13-93)

Does it work properly?

NO

Faulty the front fail safe relay.

YES

Check for continuity between BLK lead of relay connector and body ground.

Is there continuity?

NO

Repair open in BLK wire between the fail safe relay and ground or poor ground.

YES

Turn ignition switch ON.

Check for voltage between LT GRN/SLT lead (+) and body ground (-).

Is battery voltage available?

NO

Repair open in LT GRN/SLT wire between the fail safe relay and No.18 fuse (10 A).

YES

Turn ignition switch OFF.

Disconnect the 3P connectors from the front solenoids.

Check for continuity in BRN/BLK lead between fail safe relay and solenoids.

Is there continuity?

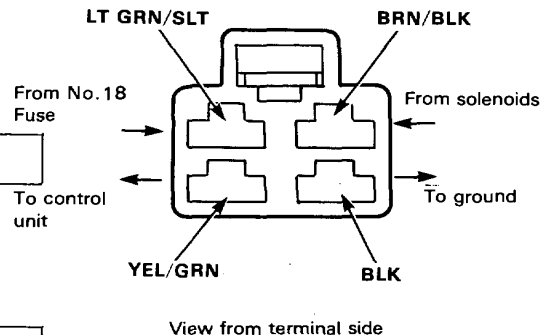
NO

Repair open in BRN/BLK wire between the solenoids and fail safe relay.

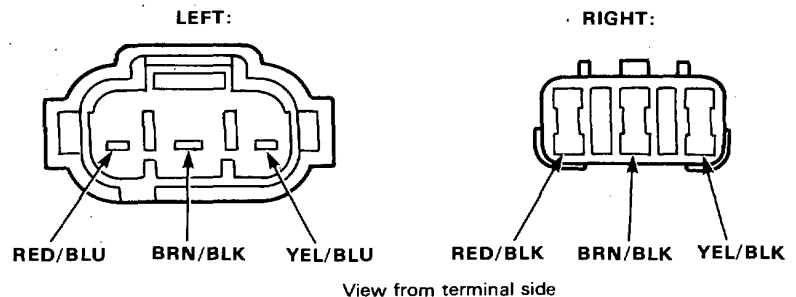
YES

(To page 13-67)

〈FRONT FAIL SAFE RELAY CONNECTOR HARNESS SIDE〉



〈FRONT SOLENOIDS CONNECTOR HARNESS SIDE〉



(From page 13-66)

Check for resistance between RED and BLK terminals of front solenoids.

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Check for resistance between YEL and BLK terminals of front solenoids.

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Disconnect the 12P connector from the control unit.

Check for continuity between control unit and front solenoid.
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet.

Is there continuity?

NO

Repair open in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

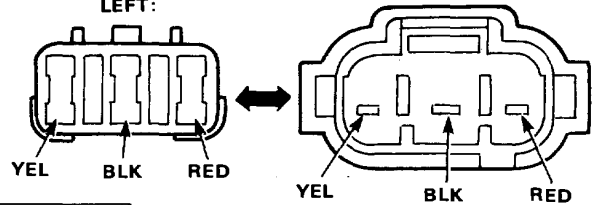
YES

• Faulty control unit.
• Incorrect air gap (page 13-94)

«FRONT SOLENOID CONNECTOR»

RIGHT:

LEFT:

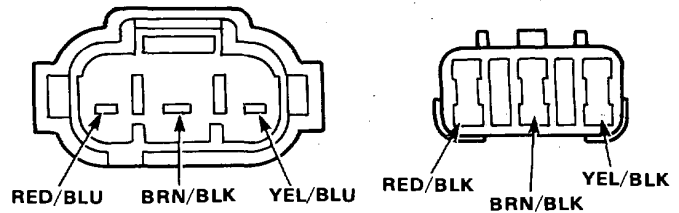


View from terminal side

«FRONT SOLENOIDS CONNECTOR HARNES SIDE»

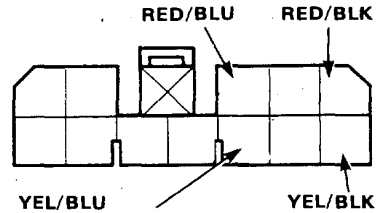
LEFT:

RIGHT:



View from terminal side

«CONTROL UNIT 12P CONNECTOR»

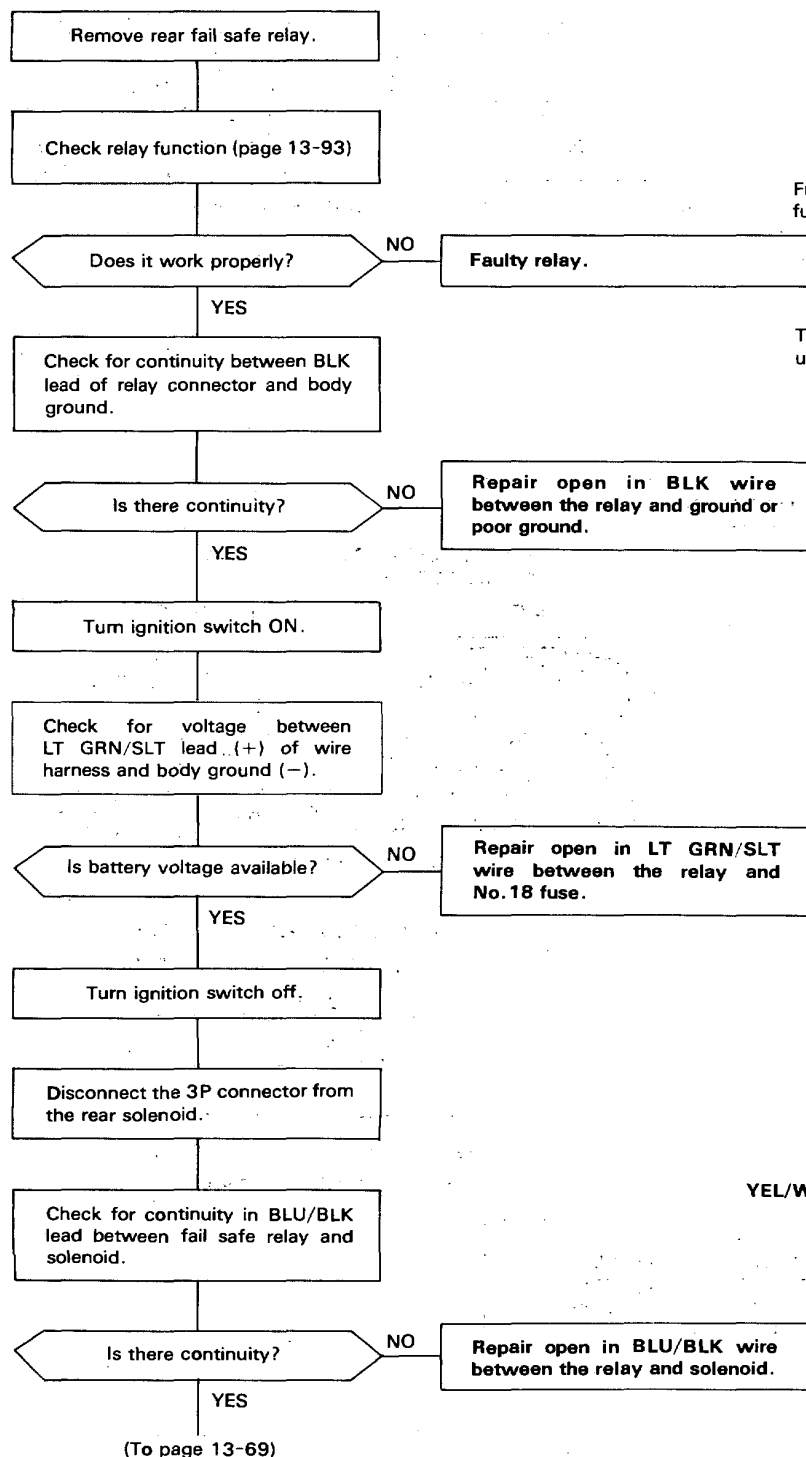


View from wire side.

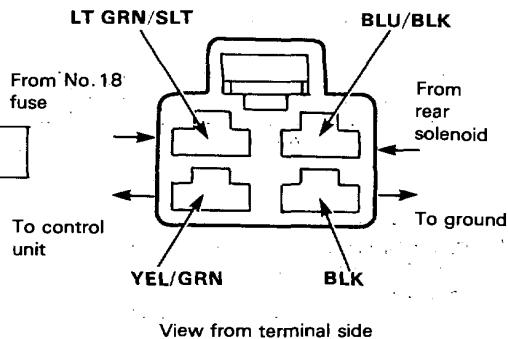
Troubleshooting

Flowchart(cont'd)

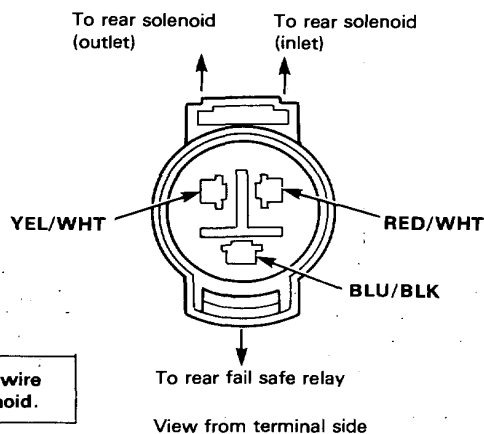
Problem Code 6-4: Rear Fail Safe Relay Circuit



〈REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE〉



〈REAR SOLENOID CONNECTOR HARNESS SIDE〉



(From page 13-68)

Disconnect the 18P and 12P connectors from the control unit.

Check for continuity in YEL/GRN lead between fail safe relay and control unit.

Is there continuity?

NO

Repair open in YEL/GRN wire between the relay and control unit.

YES

Check for continuity between control unit and rear solenoid.
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet

Is there continuity?

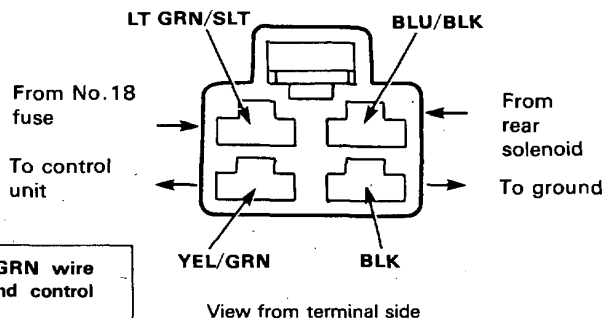
NO

Repair open in wire between the solenoid and control unit:
RED/WHT: Rear Inlet
YEL/WHT: Rear Outlet.

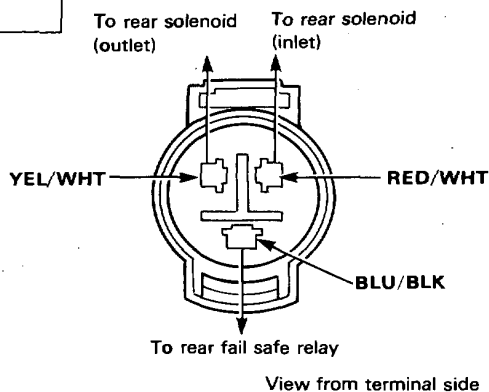
YES

Faulty control unit.

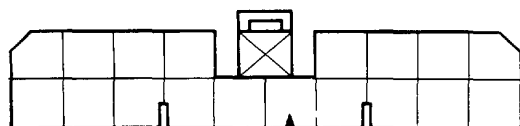
〈REAR FAIL SAFE RELAY CONNECTOR HARNESS SIDE〉



〈REAR SOLENOID CONNECTOR HARNESS SIDE〉



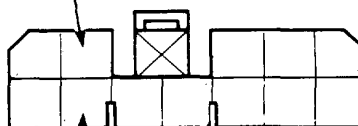
〈CONTROL UNIT 18P CONNECTOR〉



YEL/GRN: from FAIL SAFE RELAY

〈CONTROL UNIT 12P CONNECTOR〉

RED/WHT: from REAR IN SOL.



YEL/WHT: from REAR OUT SOL.

View from wire side

Troubleshooting

Flowchart (cont'd)

Problem Code 7-1 and 7-2 Front Solenoid Related Problem

Disconnect wire harness from front solenoids

Check for resistance between RED and BLK terminals of front solenoid.

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Check for resistance between YEL and BLK terminals of front solenoid.

Is there 1-3 Ω ?

NO

Faulty solenoid.

YES

Disconnect the 12P connector from the control unit.

Check for continuity between control unit and front solenoid:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet.

Is there continuity?

NO

Repair open in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Inlet
YEL/BLU: Front Left Outlet

YES

Check for continuity between control unit and body ground.
RED/BLK: Front Right Intel
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Intel
YEL/BLU: Front Left Outlet

Is there continuity?

YES

Repair short in wire:
RED/BLK: Front Right Inlet
YEL/BLK: Front Right Outlet
RED/BLU: Front Left Intel
YEL/BLU: Front Left Outlet

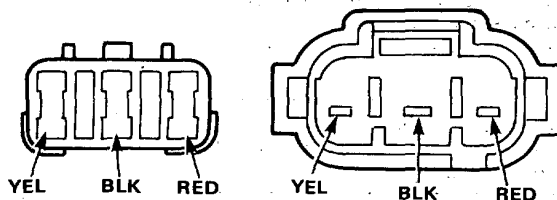
NO

- Faulty control unit.
- Incorrect air gap (page 13-94)

<FRONT SOLENOID CONNECTOR>

LEFT:

RIGHT:

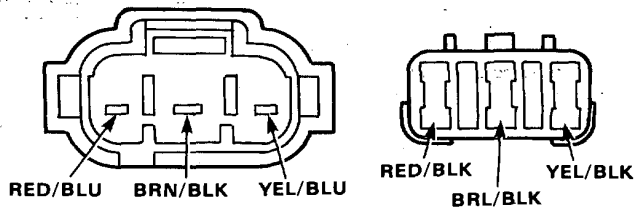


View from terminal side

<FRONT SOLENOIDS CONNECTOR HARNESS SIDE>

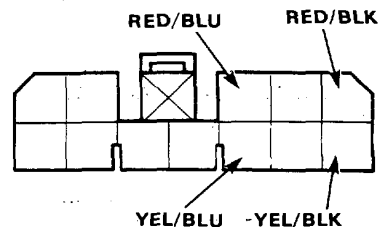
LEFT:

RIGHT:

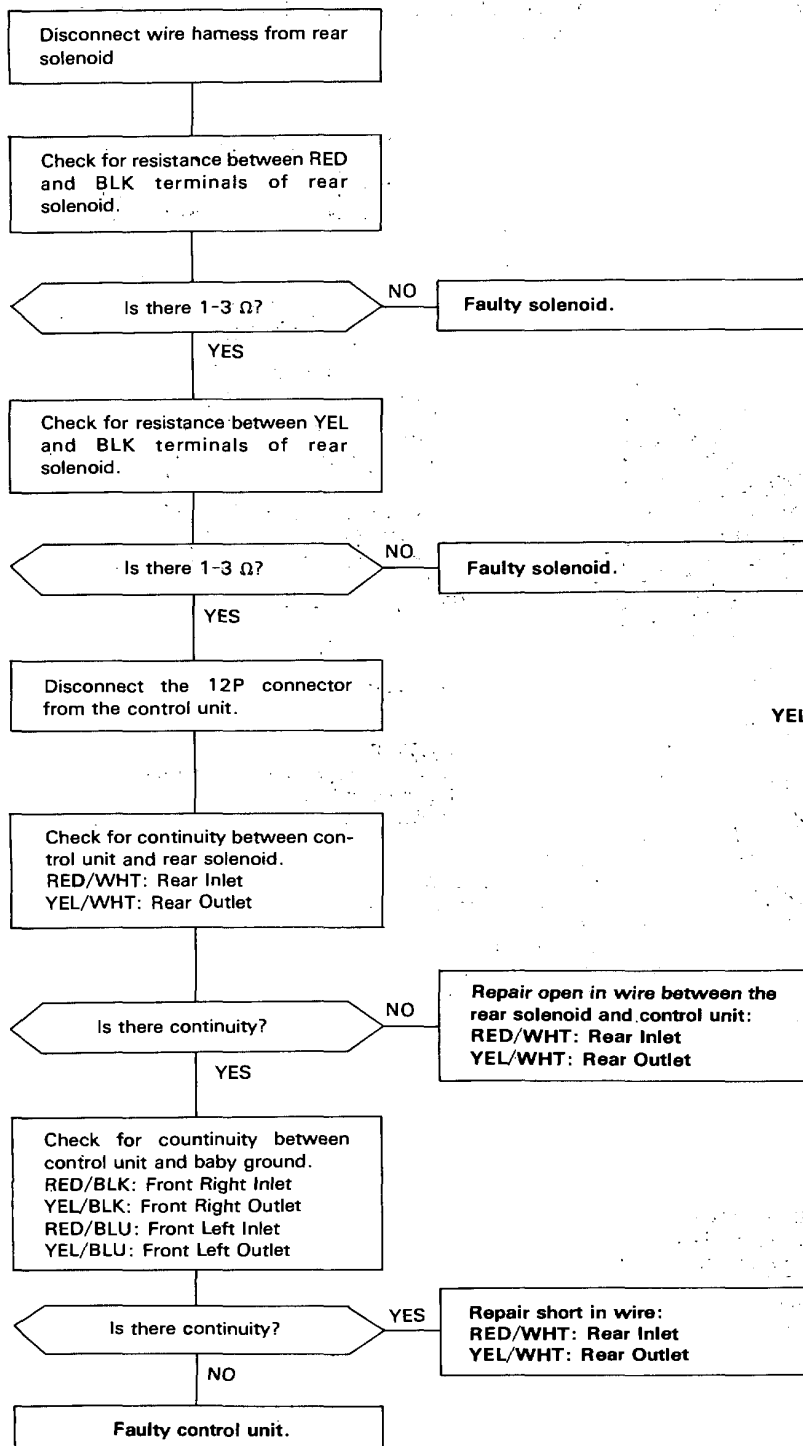


View from terminal side

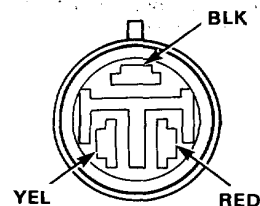
<CONTROL UNIT 12P CONNECTOR>



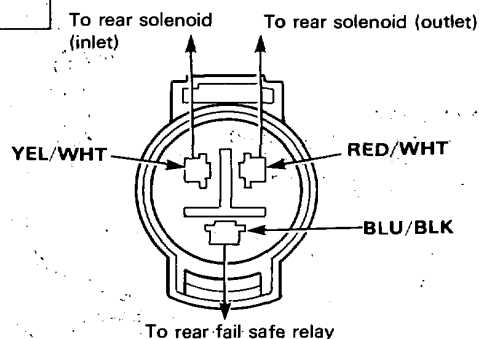
Problem Code 7-4: Rear Solenoid Related Problem



◀REAR SOLENOID CONNECTOR▶

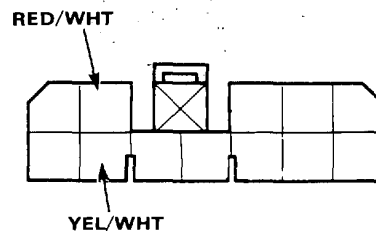


◀REAR SOLENOID CONNECTOR HARNESS SIDE▶



View from terminal side.

◀CONTROL UNIT 12P CONNECTOR▶



View from wire side.

Hydraulic System

Index

CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The flare nuts should be tightened to **19 N·m (1.9 kg-m, 14 lb-ft)**.
- The brake pipes and modulator pipe fittings are color coded.

POWER UNIT

Index/Inspection, page 13-80
Disassembly, page 13-81
Reassembly, page 13-82

15 N·m (1.5 kg-m, 11 lb-ft)

BRAKE BOOSTER

Test, page 13-89
Pushrod adjustment, page 13-90
Pushrod clearance adjustment, page 13-90

MASTER CYLINDER

Overhaul /Inspection, page 13-85
Disassembly, page 13-86
Reassembly, page 13-87

MODULATOR

Index/Inspection, page 13-74
Solenoid Leak Test, page 13-75
Solenoid
Removal, page 13-76
Inspection, page 13-77
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Removal, page 13-78
Installation, page 13-79

ACCUMULATOR

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Accumulator/Pressure Switch,
page 3-84
Accumulator Disposal,
page 13-84

Relieving Accumulator/Line Pressure

WARNING Use the Bleeder T-Wrench before disassembling the parts shaded in the illustration.

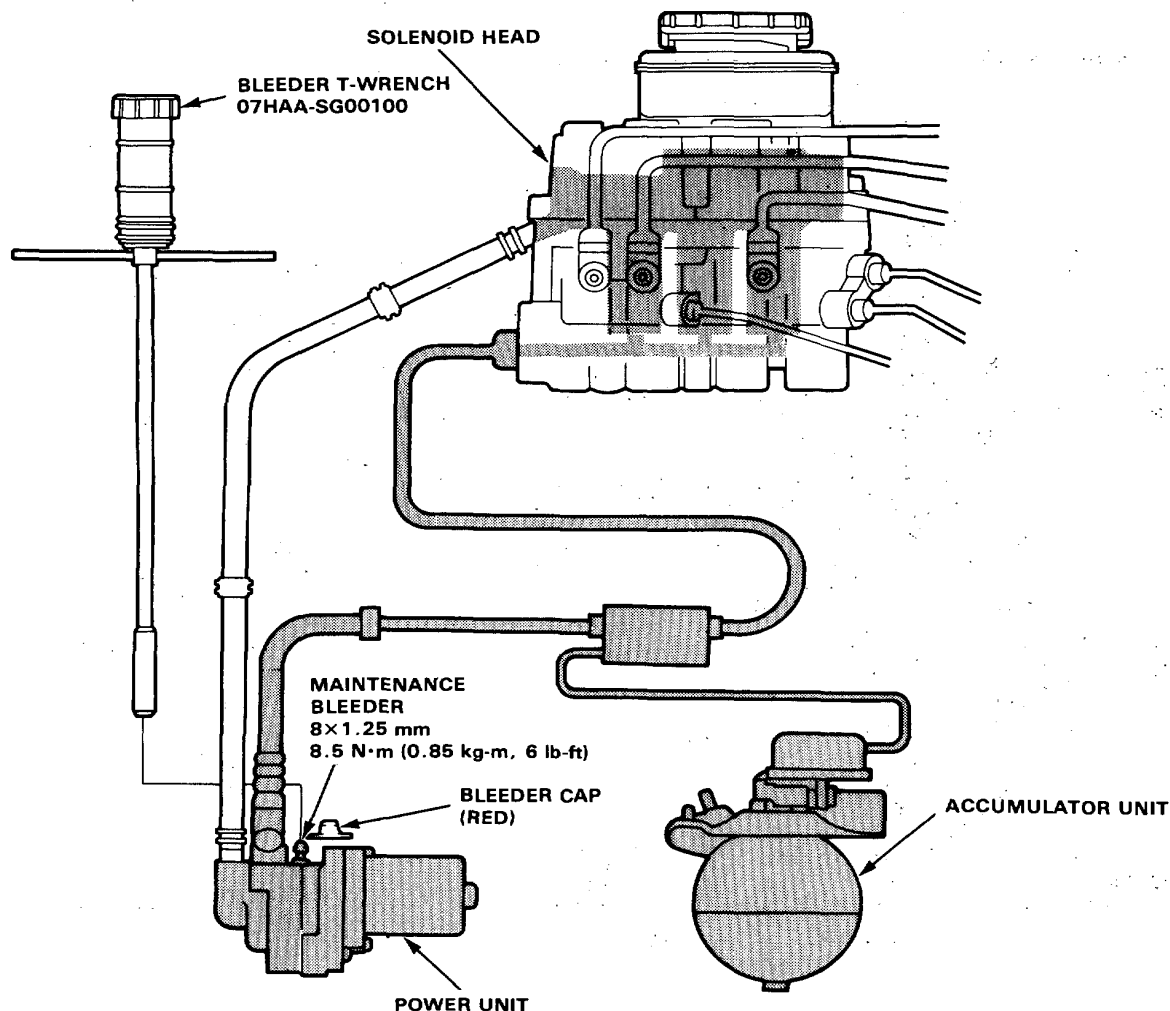
1. Drain the brake fluid from the master cylinder and modulator reservoir thoroughly.
2. On the Fuel-Injected engine, remove the air intake tube.
3. Remove the red cap from the bleeder on the top of the power unit.
4. Install the special tool on the bleeder screw and turn it out slowly 90° to collect high pressure fluid into reservoir. Turn the special tool out one complete turn to drain the brake fluid thoroughly.
5. Retighten the bleeder screw and discard the fluid.
6. Reinstall the red cap.

Brake Fluid Draining

1. Draining brake fluid from modulator tank: The brake fluid may be sucked out through the top of the modulator tank with a syringe. It may also be drained through the pump joint after disconnecting the pump hose.
2. Draining brake fluid from master cylinder: Loosen the bleed screw and pump the brake pedal to drain the brake fluid from the master cylinder.

WARNING

- High pressure fluid will squirt out if the tube shaded is removed or the solenoid head 8 mm and 10 mm bolts are loosened.
- To drain high pressure brake fluid, follow the procedure under Relieving of High Pressure Brake Fluid on this page.



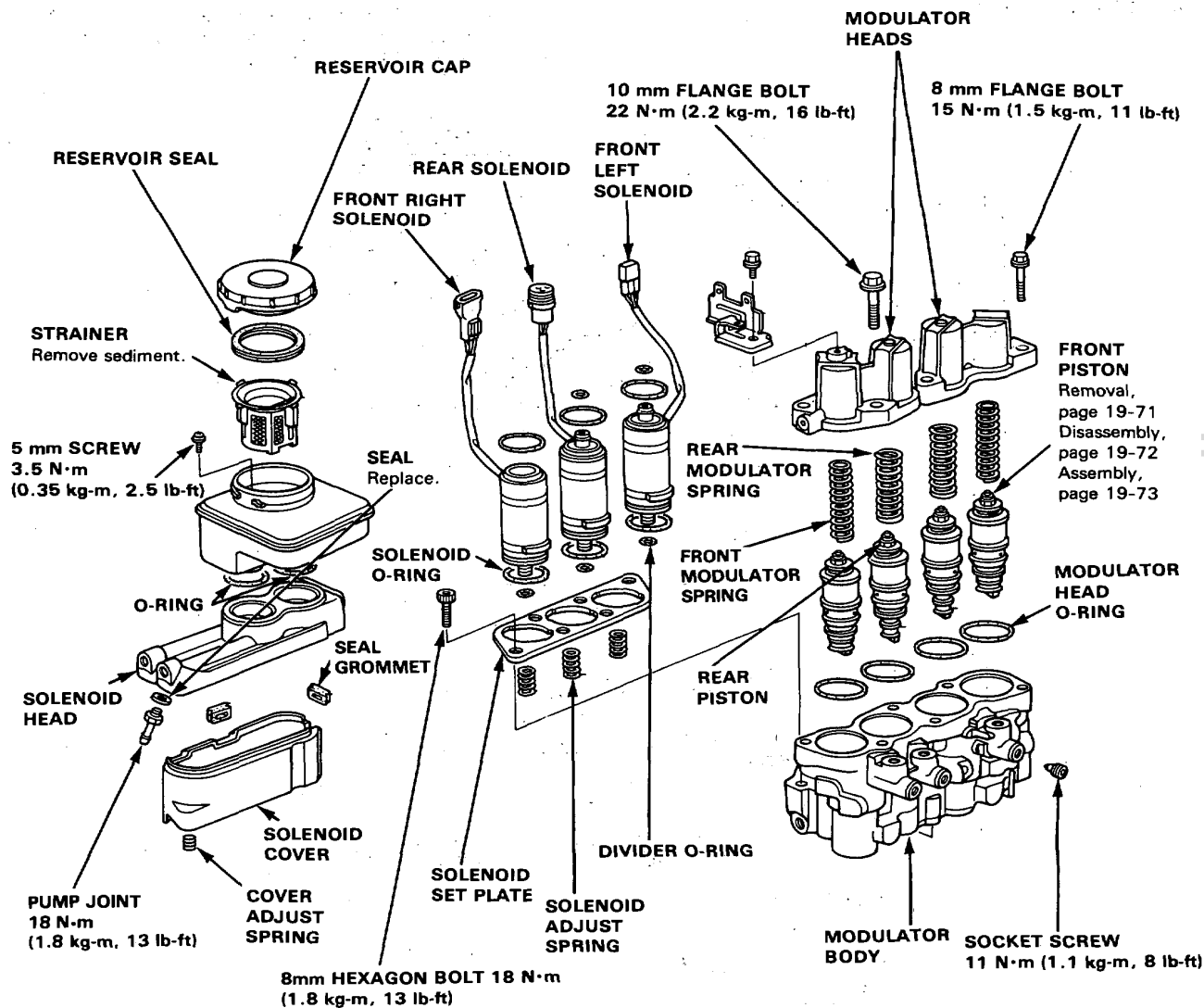
Modulator

Index/Inspection

CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Use only new DOT3 or DOT4 clean brake fluid.

- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.
- Replace all rubber parts with new ones whenever the modulator is disassembled.

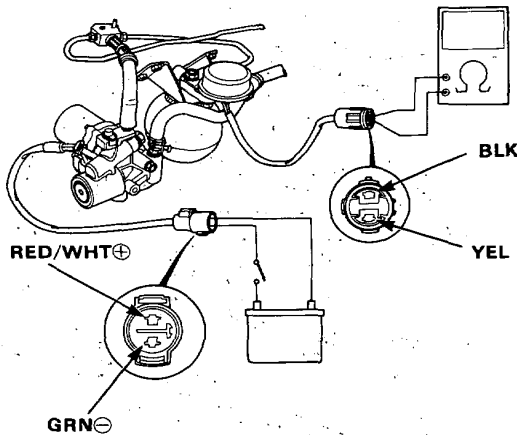


Solenoid



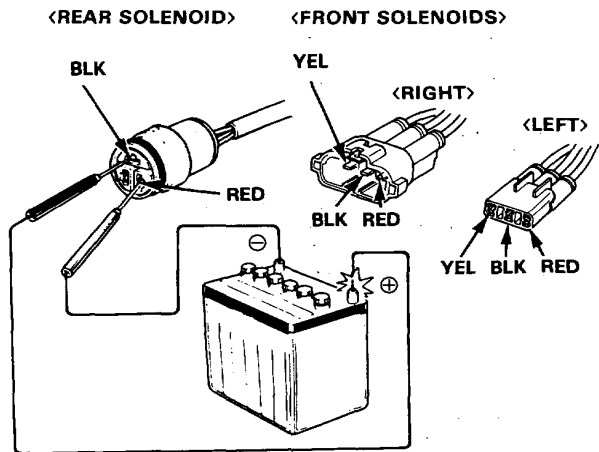
Solenoid Leak Test

1. Connect circuit tester (Ω range) between the BLK and YEL terminals of the accumulator pressure switch connector.
2. Attach the positive (+) lead of a fully charged 12v battery to the RED/WHT terminal of the power unit motor connector and negative (-) lead to the GRN terminal, and install a switch between as shown.
3. Turn the switch on to allow sufficient pressure to build up within the accumulator and check for continuity with the circuit tester. If the circuit tester shows continuity (pressure switch turned on), run the power unit for 4 seconds more, then turn the switch off.



Check for continuity 1 minute after switch was turned off.
No continuity: Leaky solenoid (if the pipe joint is tight) or faulty divider O-ring.

4. Apply 12 V across the BLK and RED terminals of the solenoid connector momentarily.



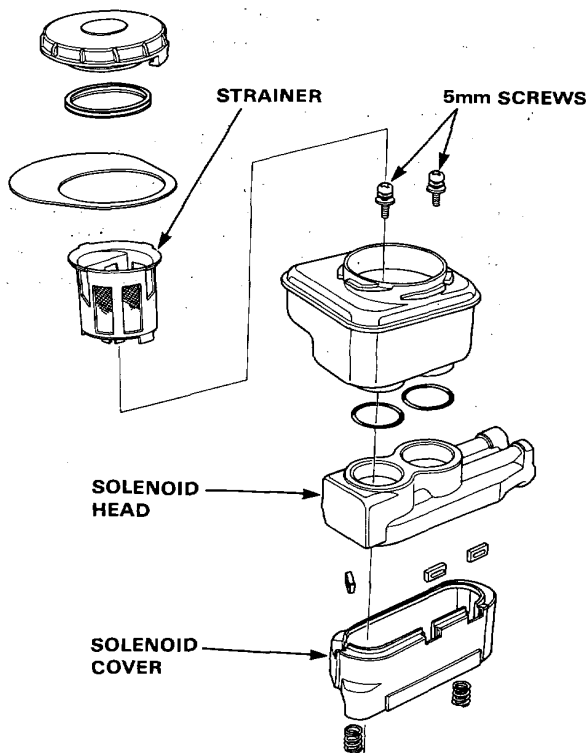
NOTE: Modulator reservoir may overflow.

- Check if the solenoid hisses or squeaks. Replace the modulator if the solenoid hisses or squeaks.
- Make sure that the solenoid does not hiss or squeak after it has clicked into position. Replace the modulator if the solenoid hisses or squeaks.
- Check the pressure switch for continuity within one minute. It is normal if there is continuity. If there is no continuity, solenoid is faulty and must be replaced.

Solenoid

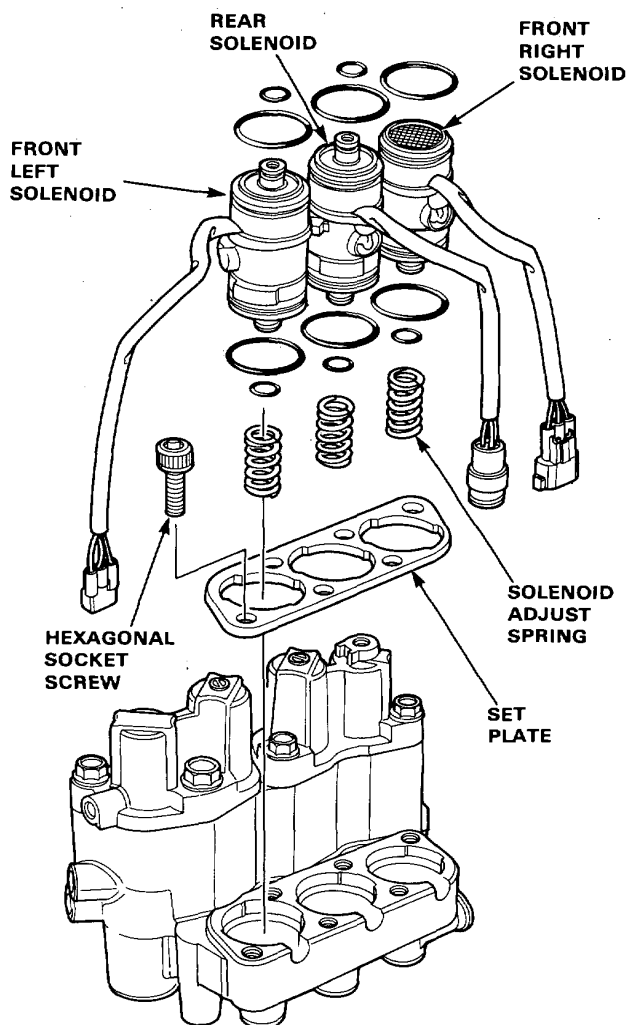
Removal

1. Drain the brake fluid from the modulator tank.
2. Drain the high pressure brake hose (page 13-73).
3. Disconnect the inlet hose.
4. Remove the reservoir strainer.
5. Remove the 5 mm screws and remove the reservoir.
6. Screw the 6 mm bolt into the threaded hole in the center of the solenoid head, raise the solenoid head parallel to the ground and remove it.
7. Remove the solenoid cover.



8. Remove the hexagonal socket screws and loosen the solenoid set plate.
9. Turn the solenoid valves several times until they move freely and turn the solenoid valves 1/2 turn to align their projection with the cutout in the set plate. Remove the solenoid valves together with the set plate.

CAUTION: The solenoid valves are delicate parts. Be careful not to drop them.



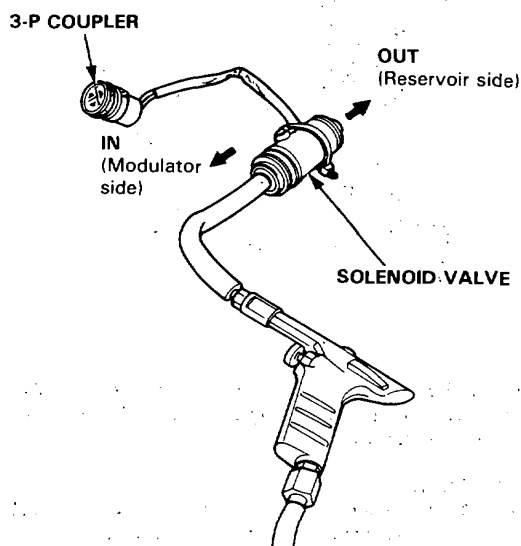
Inspection

1. Connect a tube to the inlet of the solenoid valve. Apply compressed air to the solenoid valve through the tube.
2. Check the solenoid valve for proper operation by connecting a 12 V fully charged battery to the 3-P coupler terminals:

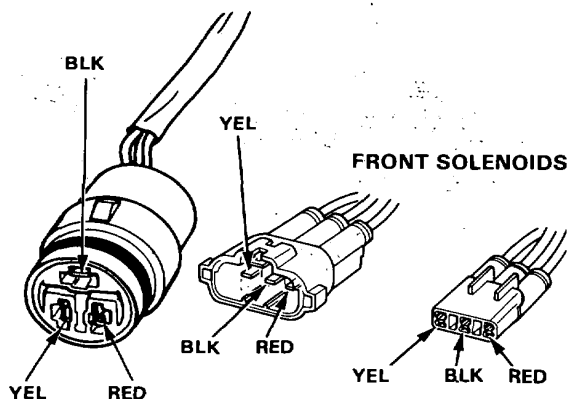
Voltage not applied: There should be no air flow.

BLK — RED: There should be air flow through IN and OUT.

BLK — YEL: There should be air flow through IN.



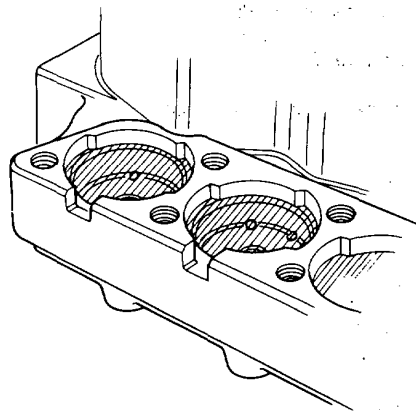
REAR SOLENOID



Reassembly

1. Fill the modulator body with brake fluid up to the step in the solenoid mounting hole.

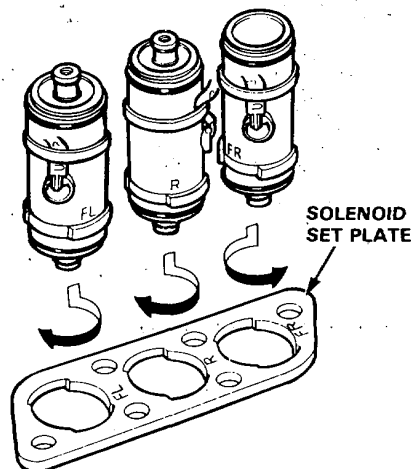
NOTE: On solenoid valve assembly, place shop rags over the solenoid valve and under the modulator valve to prevent the brake fluid from spilling on the valve.



2. Coat the O-ring with the clean brake fluid and install the O-ring onto the solenoid valve.
3. Install the solenoid valves on the set plate.

WARNING Each solenoid valve and set plate are marked for correct installation. If the solenoid valves are interchanged, the system will not work properly. Refer to the marks and be sure to install them in correct positions.

- Align the projection on the solenoid valve with the cutout in the set plate and turn the valve 1/2 turn. The solenoid wire should face rearward.

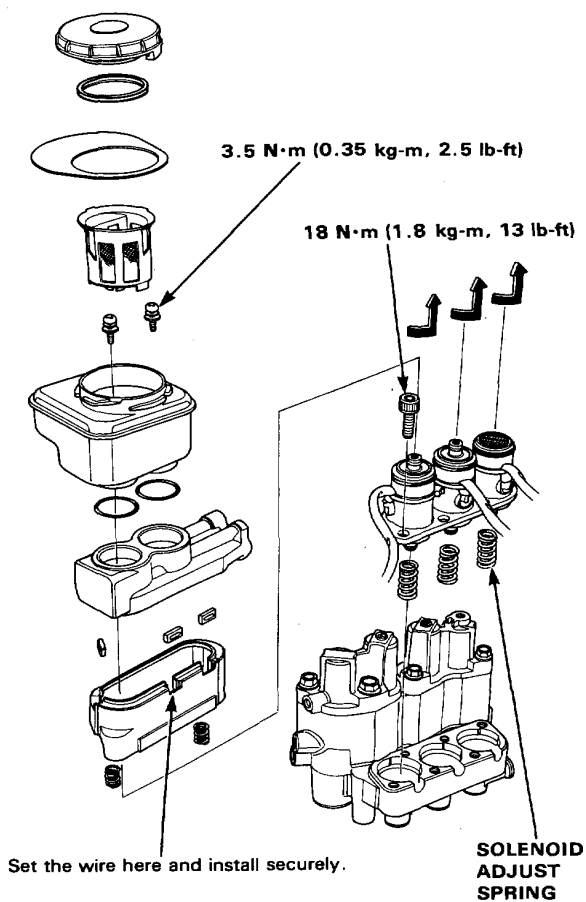


(cont'd)

Solenoid

Reassembly (cont'd)

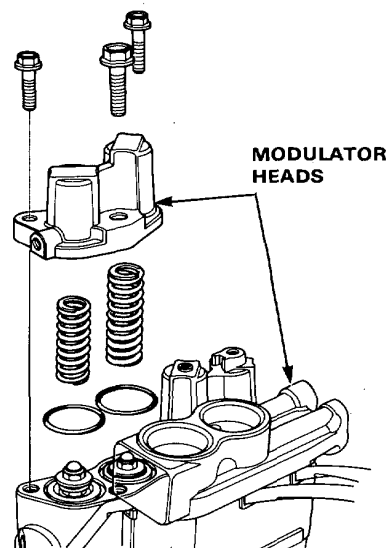
4. Install the solenoid adjust springs on the modulator body.
5. Install the solenoid valves and set plate and secure with the hexagonal socket screws.
6. Install the solenoid cover and solenoid head.
7. Install the reservoir tank.
8. Install the tank filter.
9. Connect the low pressure hose.



Piston

Removal

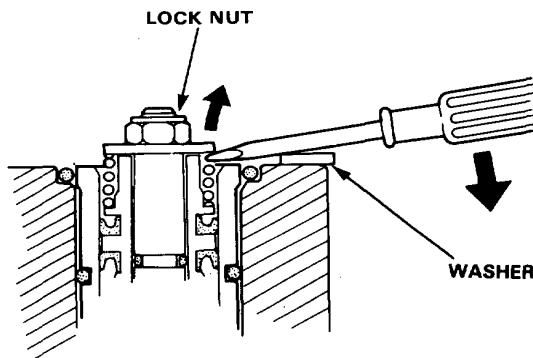
1. Remove the modulator heads.



2. Insert the driver into the spring, pry off the piston assembly until it lifts up slightly and pull out the lock nut with a pair of pliers.

CAUTION:

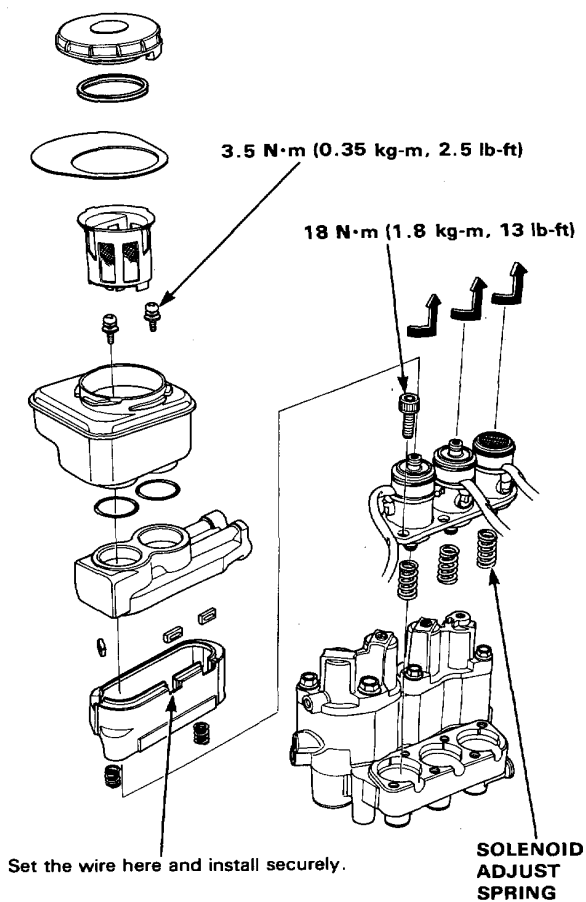
- Set the washer between the driver and modulator body to prevent damage to the body.
- Be careful not to damage the piston sleeve.



Solenoid

Reassembly (cont'd)

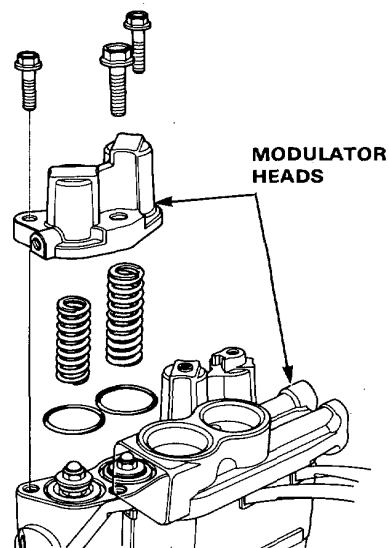
4. Install the solenoid adjust springs on the modulator body.
5. Install the solenoid valves and set plate and secure with the hexagonal socket screws.
6. Install the solenoid cover and solenoid head.
7. Install the reservoir tank.
8. Install the tank filter.
9. Connect the low pressure hose.



Piston

Removal

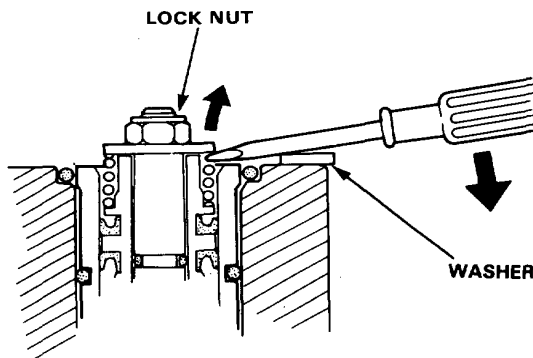
1. Remove the modulator heads.



2. Insert the driver into the spring, pry off the piston assembly until it lifts up slightly and pull out the lock nut with a pair of pliers.

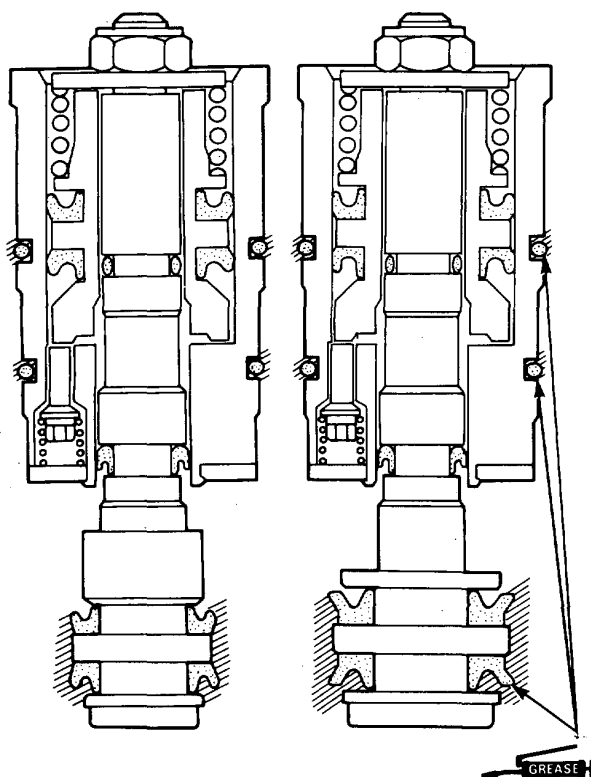
CAUTION:

- Set the washer between the driver and modulator body to prevent damage to the body.
- Be careful not to damage the piston sleeve.

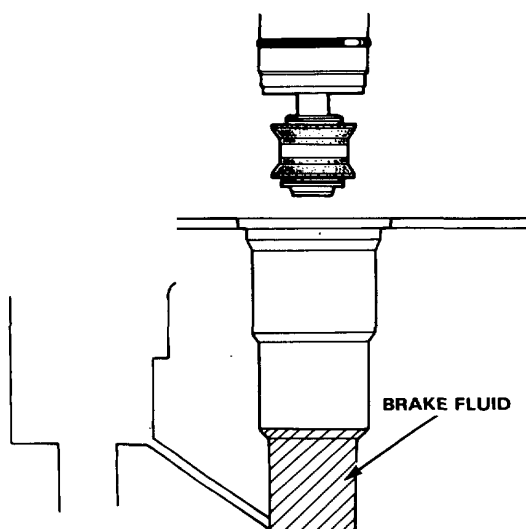


Installation

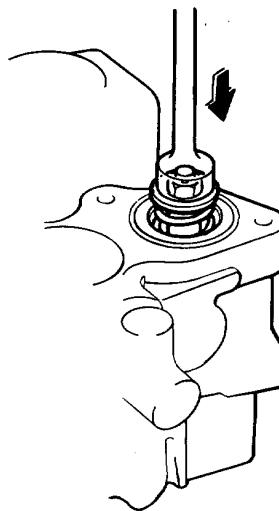
1. Apply rubber grease to the shaded sections of the piston assembly, shown in the drawing below.



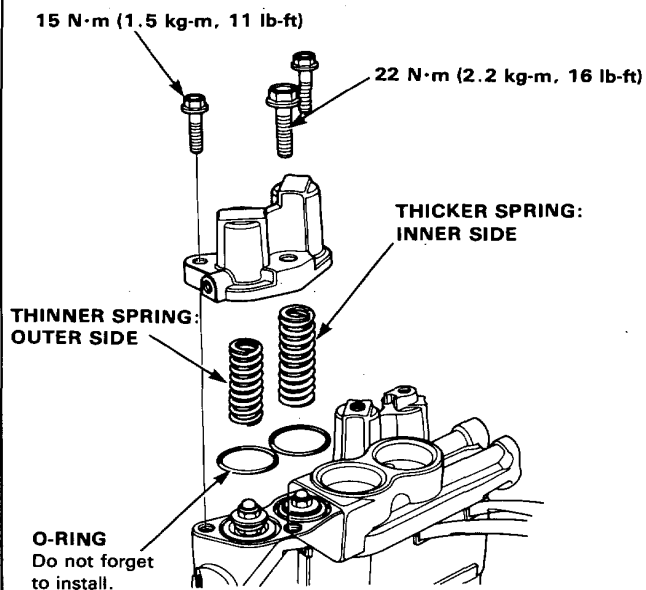
2. Adjust so that the brake fluid flows into the piston mounting hole in the modulator body.



3. Set the piston assembly in the piston mounting hole in the modulator body and push down on the piston.
4. Push on the piston about 5 times until no bubbles come out of the solenoid side.



5. Install the modulator springs.
6. Install the solenoid heads with care not to pinch the O-rings.

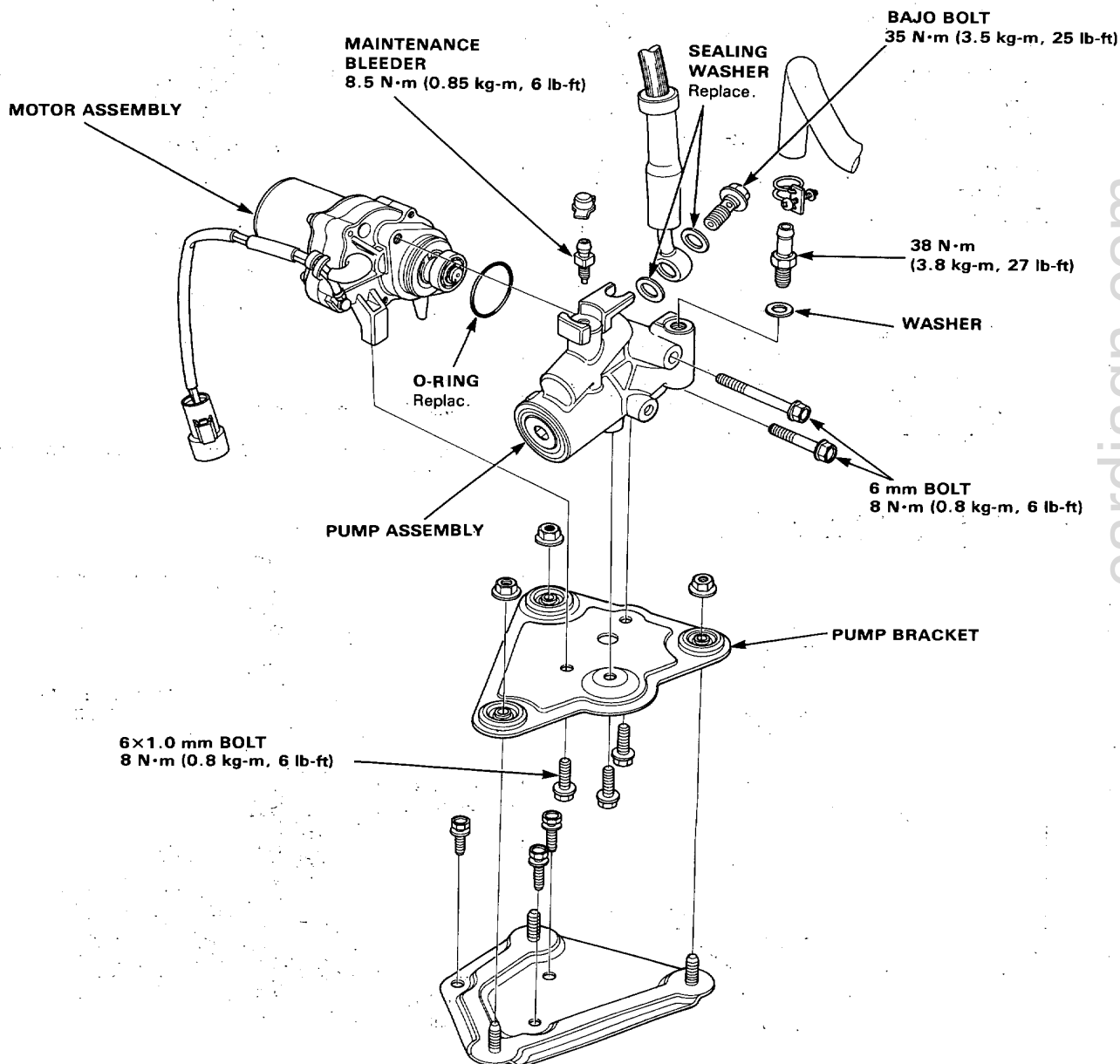


Power Unit

Index/Inspection

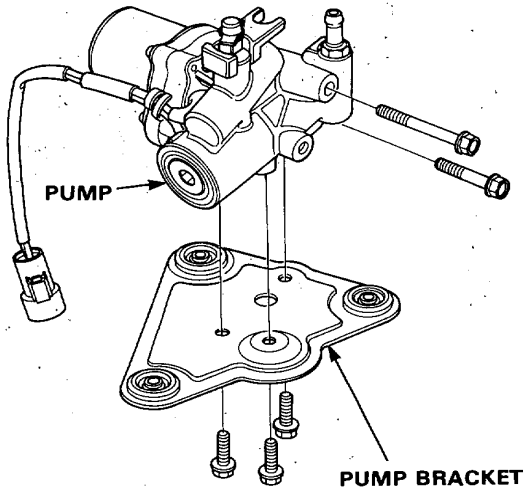
CAUTION:

- Do not attempt to disassemble the power unit parts except for those shown exploded in this illustration.
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

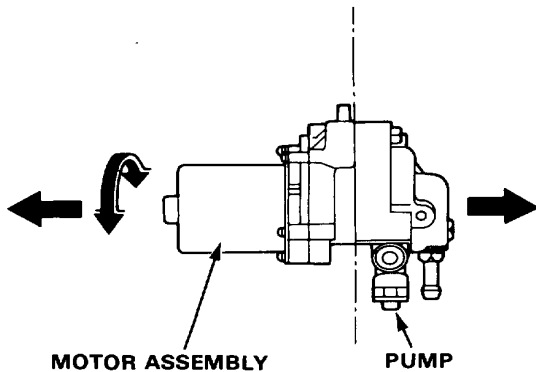


Disassembly

1. Remove the pump bracket.
2. Remove the 6 mm bolts attaching the pump to the pump motor.

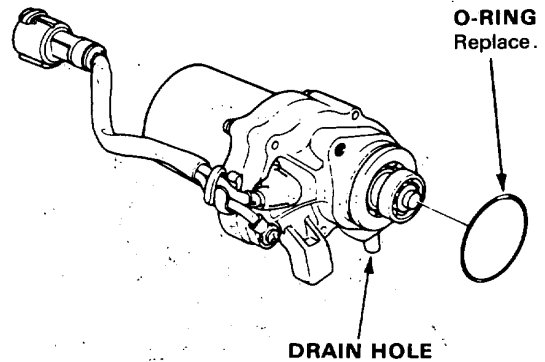


3. Separate the motor from the pump while rotating the pump right and left.



NOTE: About 10 cc(0.6cu-in)of brake fluid will flow out when the motor is removed from the pump.

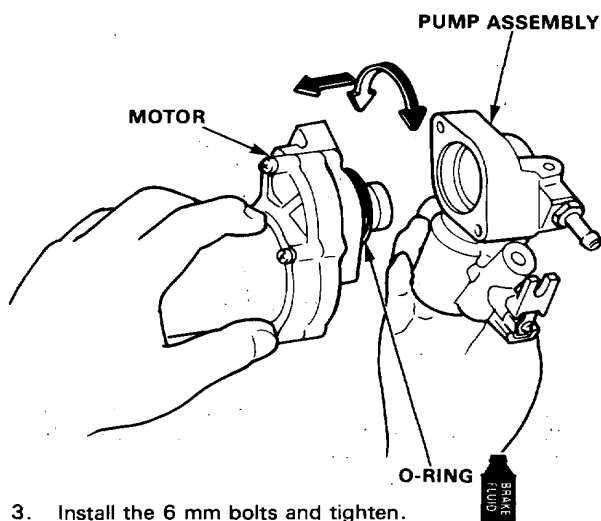
4. Wash the motor with clean brake fluid only on the exposed end and blow dry with compressed air.



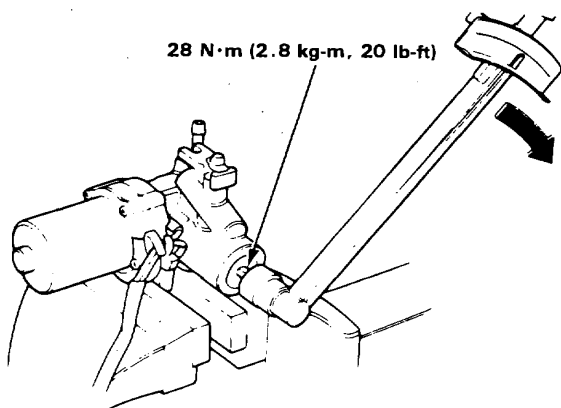
NOTE: Do not wash or dip the motor in brake fluid. Also be careful not to allow oil or water to enter the inside through the water drain hole.

Power Unit Reassembly

1. Install a new O-ring on the pump motor.
2. Coat the O-ring with clean brake fluid and install the pump assembly on the motor while rotating it right and left by hand.

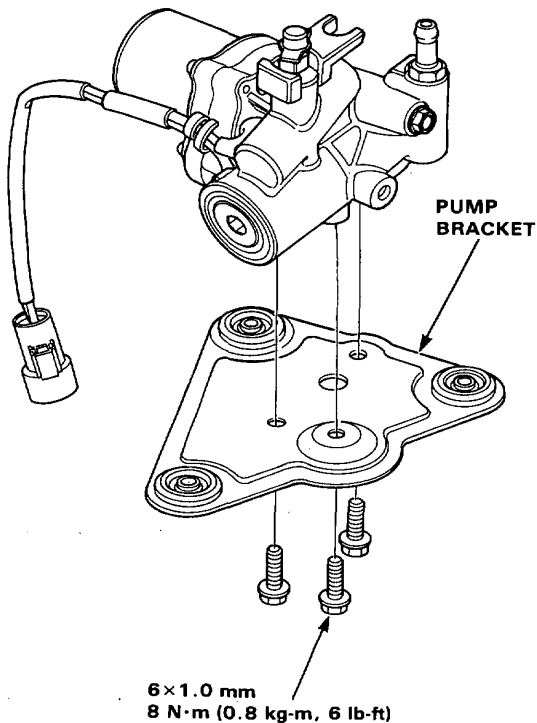


3. Install the 6 mm bolts and tighten.
4. Place the motor in a vise as shown and tighten the outlet plug.



NOTE: Clamp the pump in a vise only as shown above.

9. Install the pump bracket.



Accumulator Unit



Index

CAUTION:

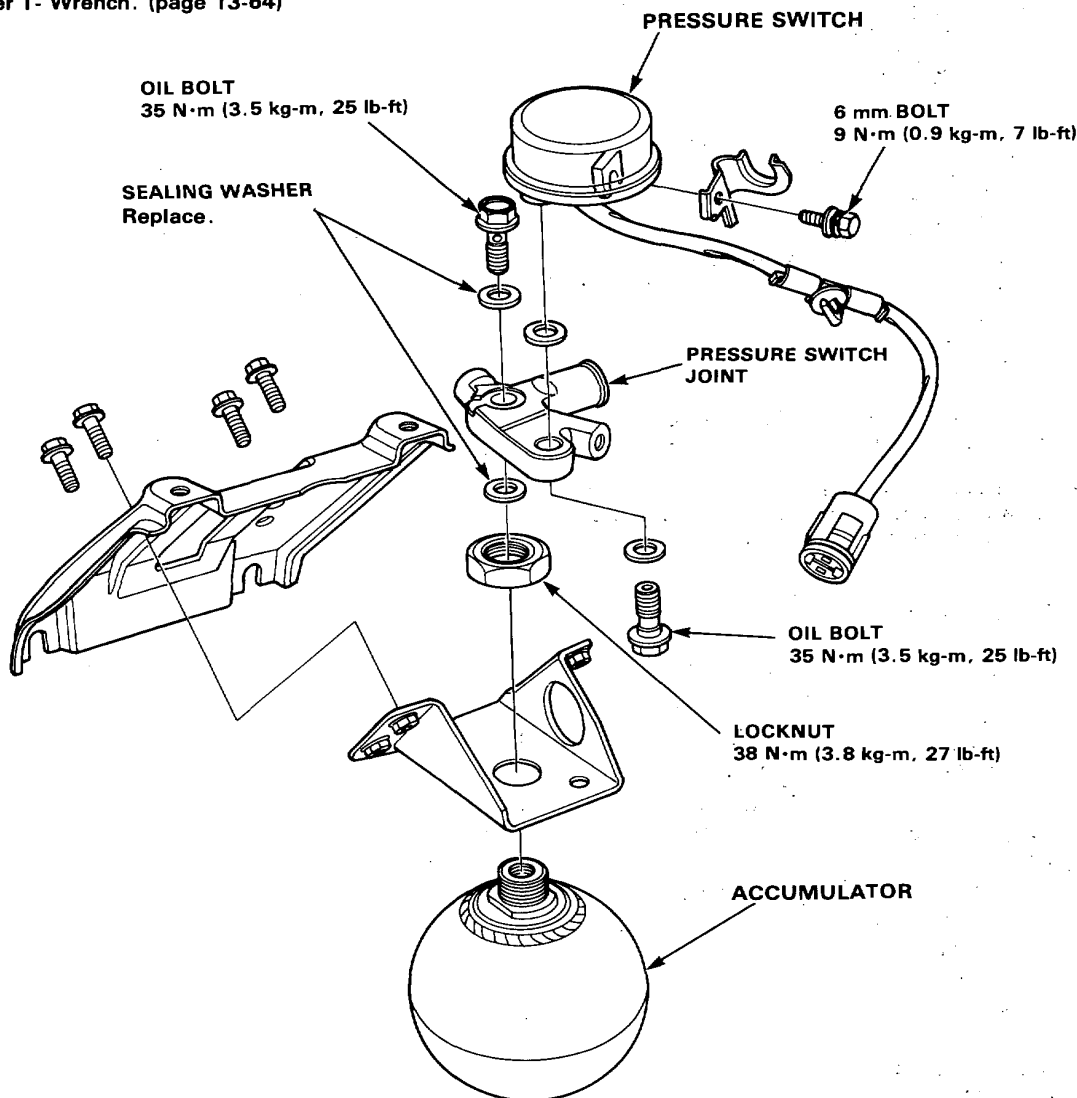
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Before disassembly the accumulator unit, Bleed the high pressure brake fluid out from the system using the Bleeder T- Wrench. (page 13-64)
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

NOTE:

- Replace O-ring with new one whenever disassembled.

WARNING

The accumulator contains high pressure nitrogen gas, do not puncture expose to flame or attempt to disassemble the accumulator or it may explode; severe personal injury may result.

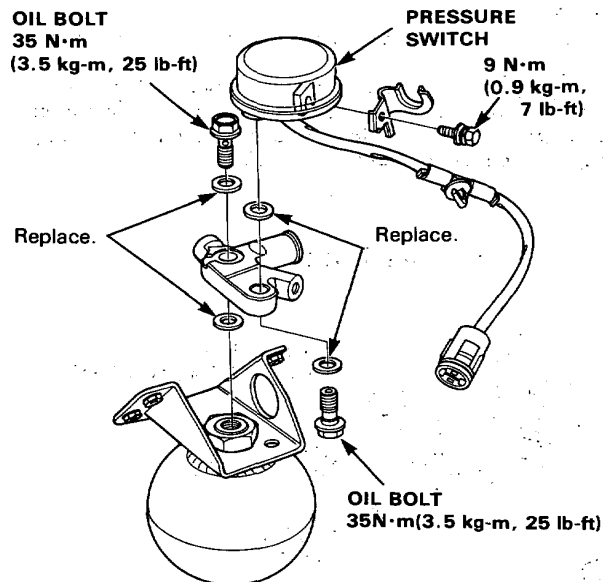


Accumulator

Accumulator/Pressure Switch

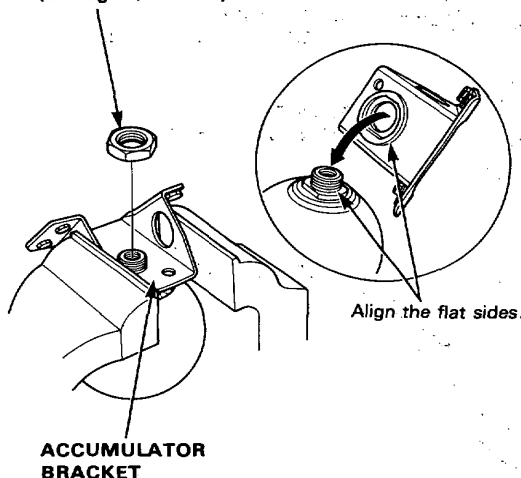
WARNING Drain the high pressure brake fluid from the power unit (see page 13-73).

1. Remove the oil bolt, then remove the accumulator from the pressure switch joint.



2. Remove the oil bolt, then remove the pressure switch from the pressure switch joint.
3. Set the accumulator bracket in a vise, hold the accumulator with your hand, and remove the accumulator nut with 27 mm socket and impact wrench.

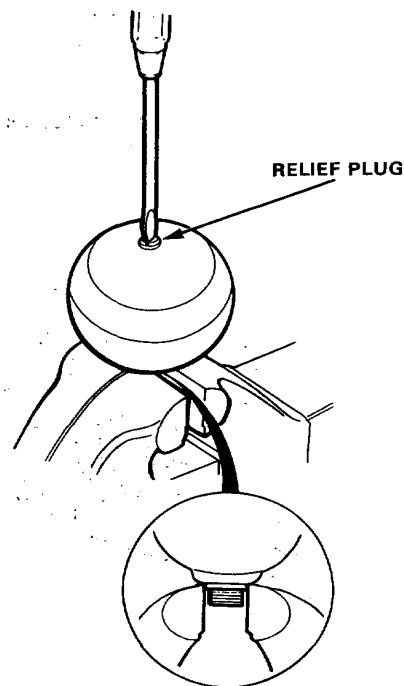
38 N·m (3.8 kg-m, 27 lb-ft)



Accumulator Disposal

WARNING The accumulator contains high pressure nitrogen gas. Do not puncture, expose to the flame, or attempt to disassemble the accumulator or it may explode and severe personal injury may result.

1. Secure the accumulator in a vise so that the relief plug points straight up.
2. Slowly turn the plug 3-1/2 turns and then wait 3 minutes for all pressure to escape.
3. Remove the plug completely and dispose of the accumulator unit.



Master Cylinder

Overhaul/Inspection



CAUTION:

- Avoid spilling brake fluid on painted surfaces as severe damage can result. Wipe up spilled fluid at once and rinse well with clean water.

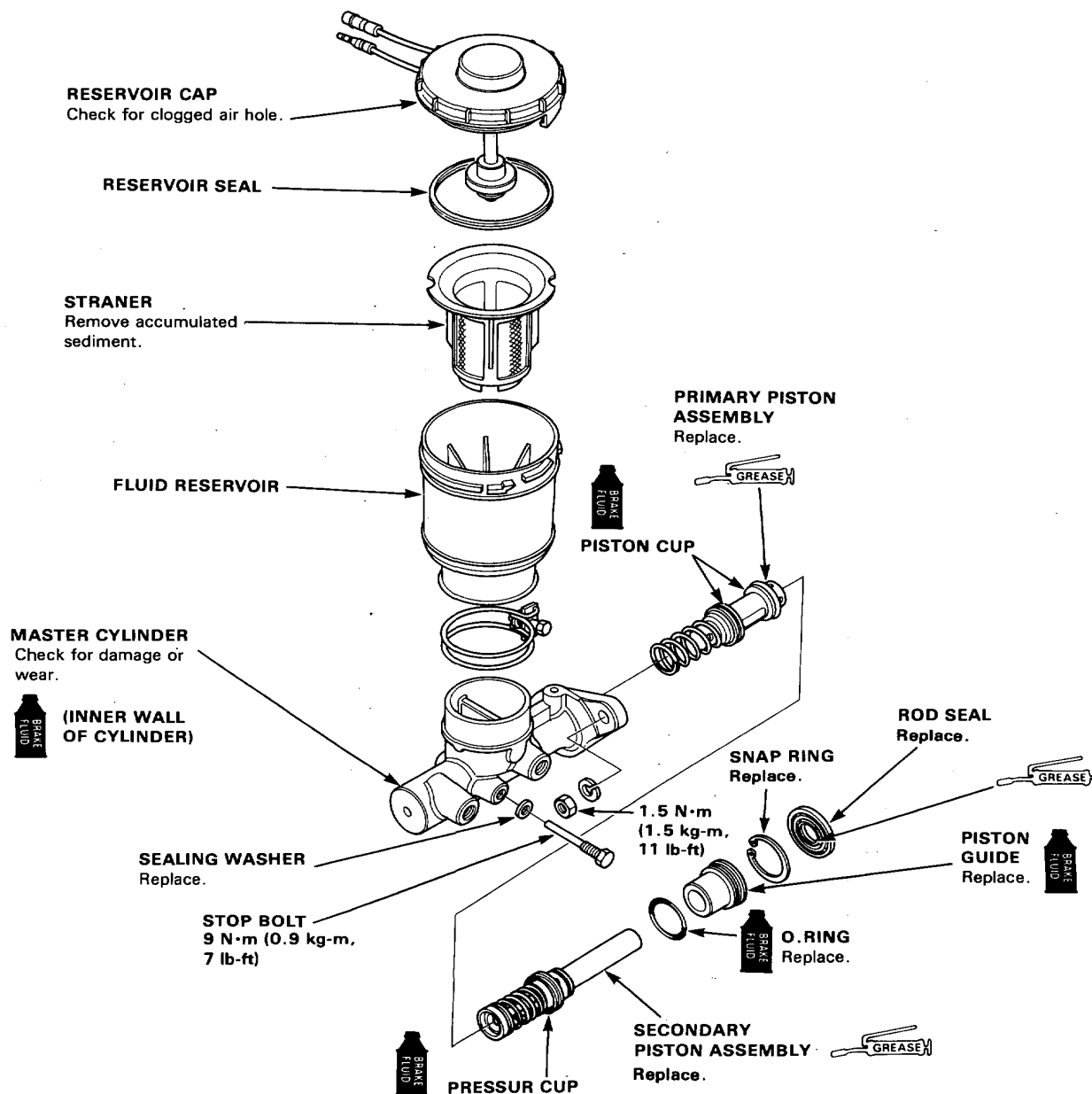
- This symbol represents brake fluid. Use only DOT 3 or 4 brake fluid.

- Use only HONDA Brake Cylinder Grease (P/N 08733-B020E) or equivalent.

- Carefully inspect the bore of the master cylinder for pits, scratches or scoring.
- Replace the master cylinder if the bore 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.
- Do not attempt to refinish master cylinder bore. Replace if pitted or worn.



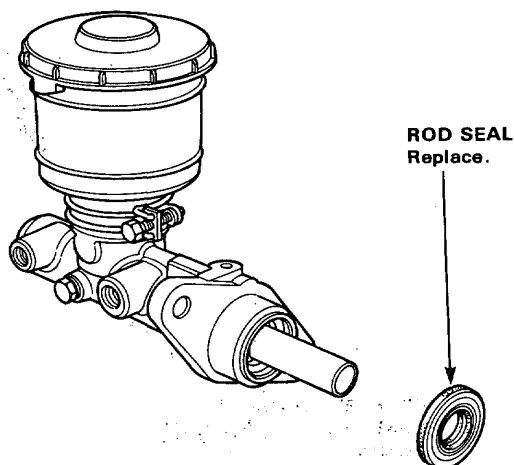
Master Cylinder

Disassembly

CAUTION:

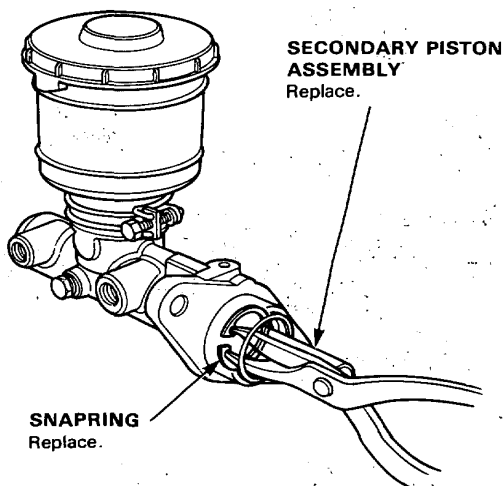
- Avoid spilling fluid on painted, plastic or rubber parts as it may damage the finish.
- Plug the end of the brake hose with a shop rag to prevent brake fluid from flowing out of the brake hose after disconnecting.
- Use only new clean DOT 3 or DOT 4 brake fluid.
- Clean all parts thoroughly with brake fluid. Blow out all passages with compressed air.
- Do not allow foreign matter to enter the system.
- Be careful not to bend or damage the brake pipe when removing the master cylinder.

1. Remove the rod seal.

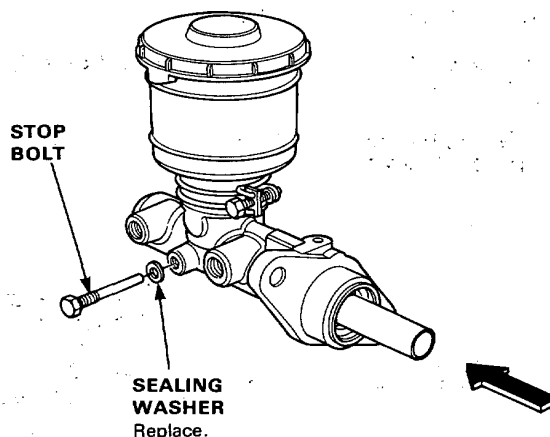


2. Push the secondary piston assembly, then remove the snap ring.

CAUTION: Avoid damaging the master cylinder wall.



3. Remove the stop bolt while pushing in the secondary piston assembly.

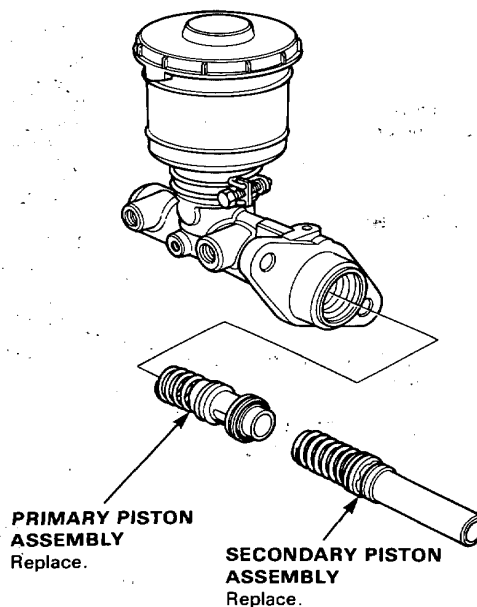


4. Remove the piston guide, secondary piston assembly and primary piston assembly.

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.



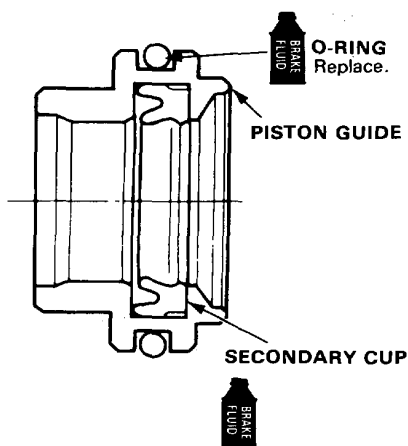
Reassembly

CAUTION:

- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- To prevent spills, cover the hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Use only new clean DOT3 or DOT4 brake fluid.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid as they may not be compatible.
- Do not reuse the drained fluid.

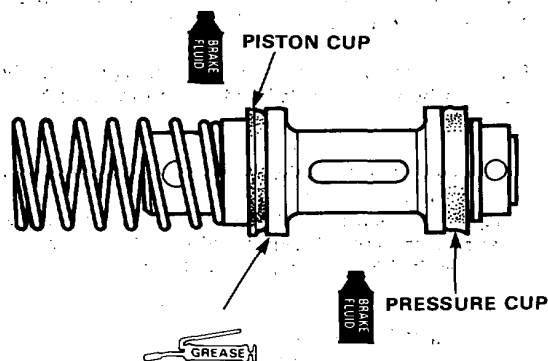
1. Lubricate the new piston parts with brake fluid.
2. Install the new O-ring onto the piston guide.

PISTON GUIDE ASSEMBLY



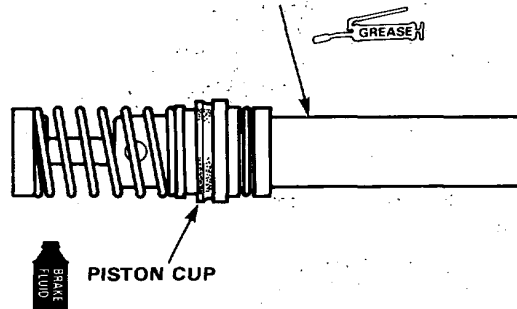
3. Make sure that the primary piston assembly and secondary piston assembly are in good condition.

PRIMARY PISTON ASSEMBLY



NOTE: Reaching through the primary piston stop bolt hole, lightly press on the valve stem to see if it moves smoothly.

SECONDARY PISTON ASSEMBLY



NOTE: Lightly press the stop pin guide to see if the valve stem moves smoothly.

Master Cylinder

Reassembly(cont'd)

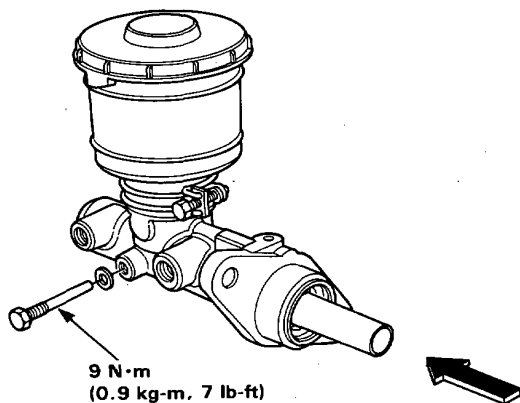
4. Assemble the primary piston assembly, secondary piston assembly and piston guide assembly in the master cylinder body.

NOTE: Install the primary piston with the slot on the cylinder facing the stop bolt hole side.

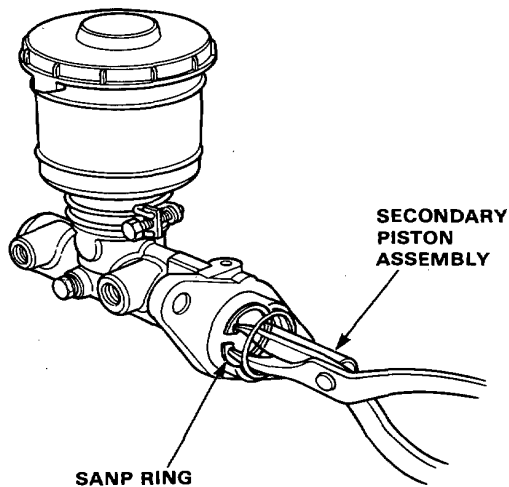
5. Push the secondary piston in until slot aligns with the stop bolt hole, then install and tighten the stop bolt.

CAUTION:

- Replace the stop bolt seal with a new one whenever disassembled.
- Apply brake fluid to the inner wall of the cylinder and piston cups, being careful that they are not turned inside out during installation.

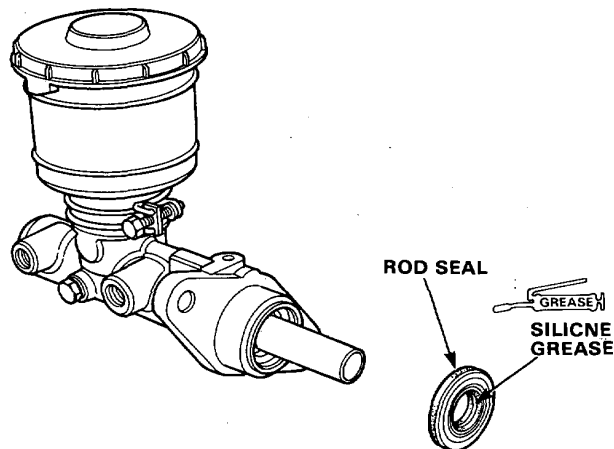


6. Press the secondary piston in and install the new snap ring.



CAUTION: Avoid damaging the sliding surface of the secondary piston when installing the snap ring.

7. Install the new rod seal.



CAUTION:

- Make sure that there is no interference between the brake pipes and other parts when installing.
- Adjust the pushrod length and clearance (page 13-90 and 91).

Brake Booster



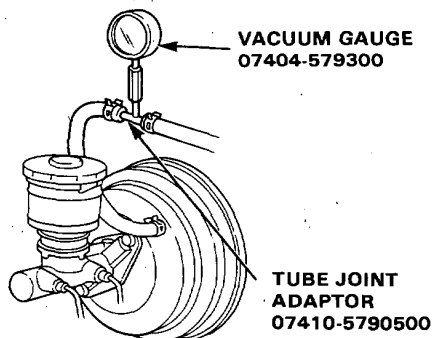
Test

Leak Test

1. Install the Brake Power Pit (07504-6340100) as shown.
2. Start the engine, adjust the engine speed with the accelerator pedal so that the vacuum gauge readings show 300–500 mmHg (11.8–19.7 inHg), then stop the engine.
3. Read the vacuum gauge.

If the vacuum readings decreases 20 mmHg (0.8 inHg) or more after 30 seconds, check following parts for leaks.

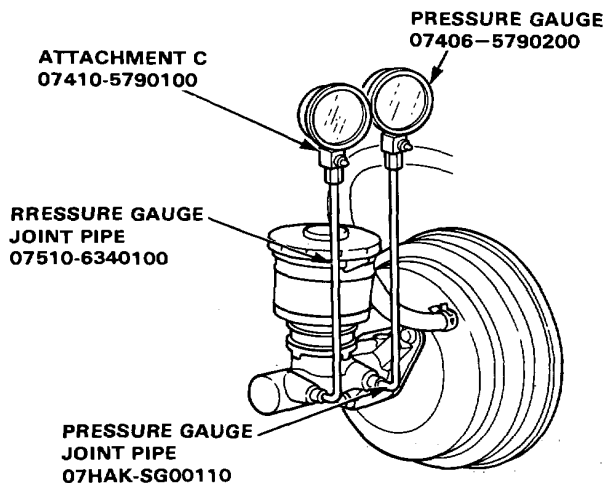
- Check valve
- Vacuum hose
- Seals
- Master cylinder O-ring and cup
- Diaphragm



Function Test

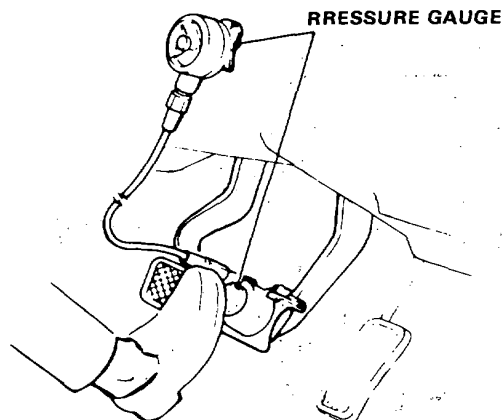
1. Install the vacuum gauge as same the leak test.
2. Connect the oil pressure gauges to the master cylinder using the attachments as shown.
3. Bleed air through the valves.

CAUTION: Avoid spilling brake fluid on 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.

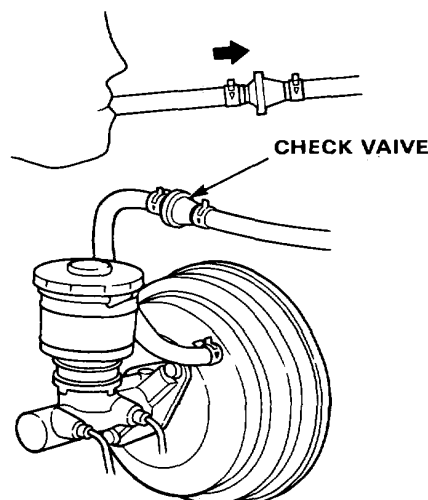


Vacuum mmHg	Line pressure kPa (kg/cm ² , psi)
0	980 (10.0, 142) minimum
300	5,547 (56.6, 804) minimum
500	8,595 (87.7, 1247) minimum

6. Inspect the master cylinder pistons and cups in the readings do not fall within the limits shown above.

Check Valve Test

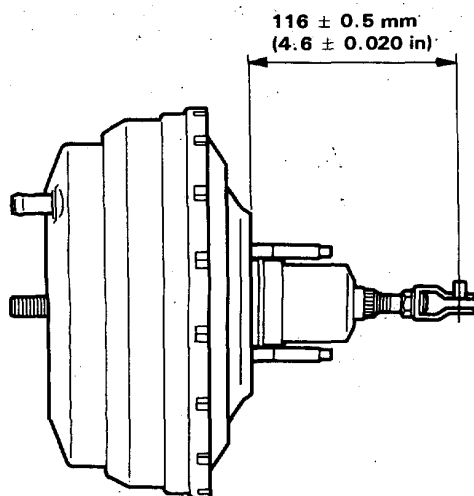
1. Remove the check valve, blow on one end of the hose and then the other; if you can blow through the booster end, but not through the manifold end, the check valve is OK.



Brake Booster

Pushrod Adjustment

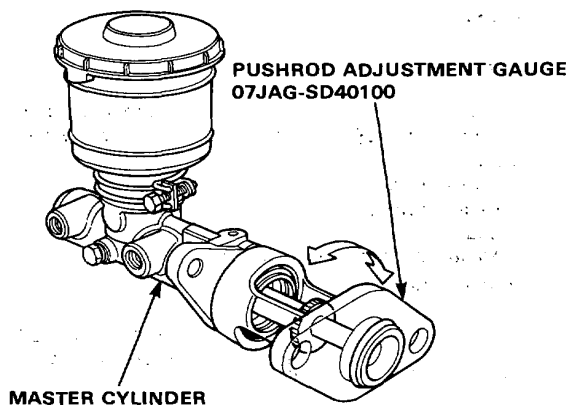
Install the locknut and pushrod yoke on the pushrod, and adjust the pushrod length as shown.



Pushrod Clearance Adjustment

NOTE: Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing or when replacing master cylinder or booster.

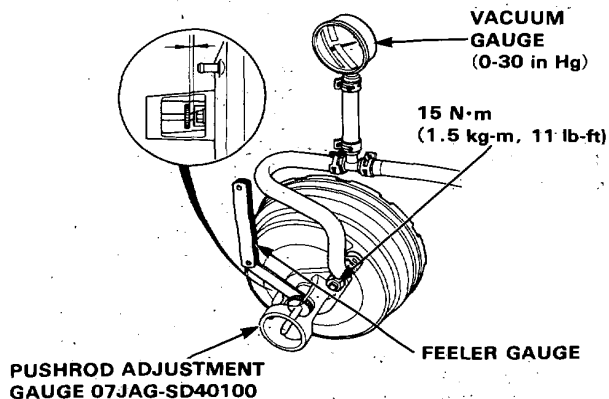
1. Using the special tool, adjust bolt so the top of it is flush with end of master cylinder piston.



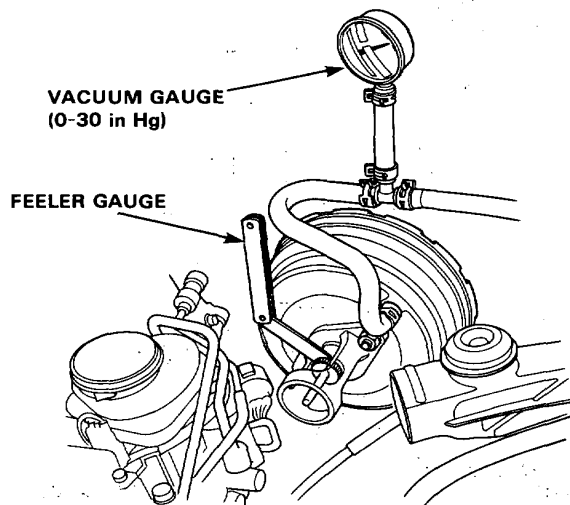
2. Install the master cylinder rod seal on the brake booster.
3. Without disturbing the adjusting bolt's position, put the special tool upside down on the booster.
4. Install the master cylinder nuts and tighten to the specified torque.
5. Connect the booster in-line with a vacuum gauge (0–30 in Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 500 mm Hg (20 in Hg) vacuum.
6. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut.

CLEARANCE: 0–0.4 mm (0–0.016 in)

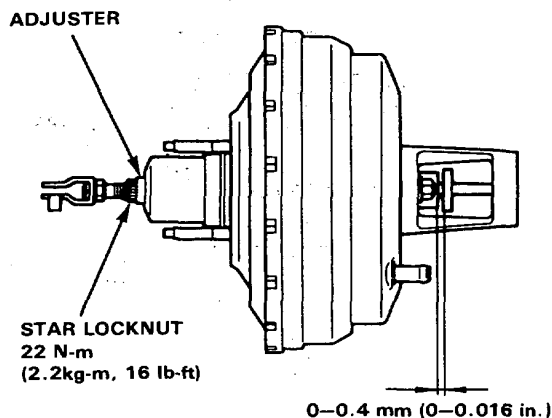
- Inspection with the booster off the car.



- Inspection with the booster on the car.



- If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust. Hold the clevis while adjusting.
- Tighten the star locknut securely.



NOTE: If the clearance between the gauge body and adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm. If the clearance between the gauge body and adjusting nut is 0.4 mm, the pushrod-to-piston clearance is 0 mm.

- After adjustment, loosen the clevis end pushrod locknut and turn the pushrod to obtain the correct pedal height.

**PEDAL HEIGHT FROM FLOOR;
(with floor mat removed)**
The pedal should have
1-5 mm free play.

- Adjust the brake light switch (page 13-4).

Bleeding

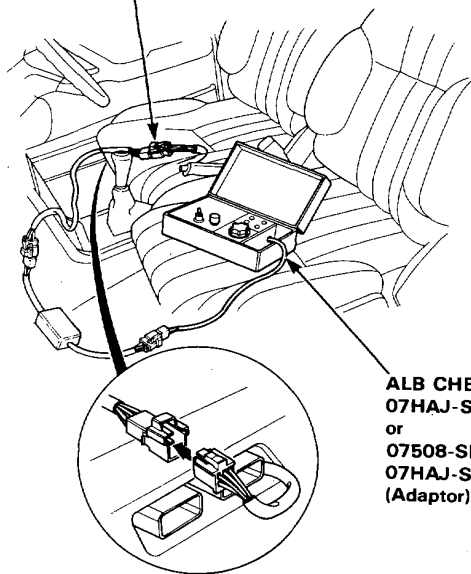
Air Bleeding With ALB Checker

NOTE: Do not depress the pedal during air bleeding. Or the bleeding may be affected.

1. Disconnect the 6-P inspection connector under the right front seat and connect the inspection connector to the ALB checker.

CAUTION: Place the vehicle on level ground with the wheels blocked. Put the transmission in neutral for manual transmission models, and in P for automatic transmission models.

6-P INSPECTION
CONNECTOR (PNK)



ALB CHECKER
07HAJ-SG00601
or
07508-SB00000 and
07HAJ-SG00400
(Adaptor)

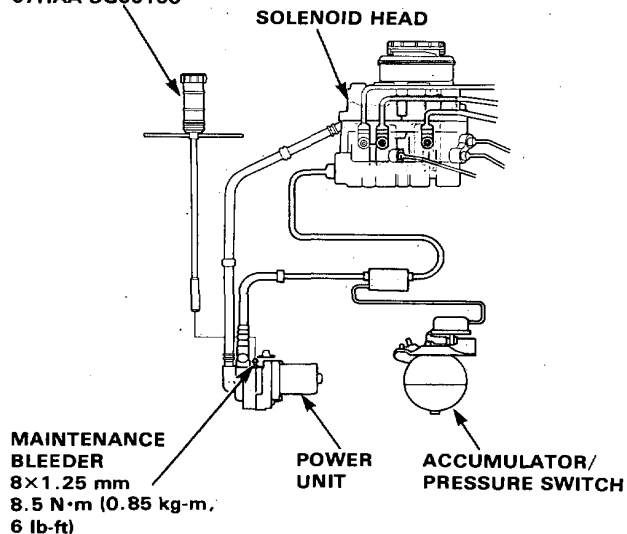
NOTE: The adaptor 07HAJ-SG00400 is not necessary when using of the checker 07HAJ-SG00601.

2. Fill the modulator reservoir to the MAX level.

NOTE: Do not reuse aerated brake fluid that has been bled from the power unit.

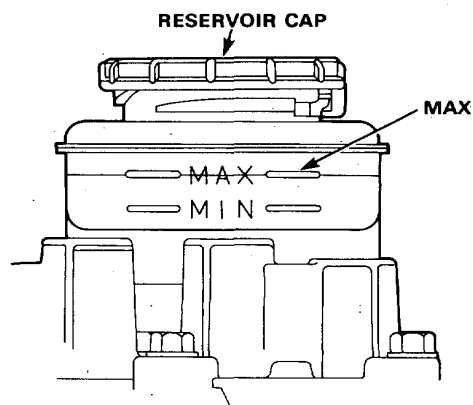
3. Bleed high pressure fluid from the maintenance bleeder with the special tool.

BLEEDER T-WRENCH
07HAA-SG00100



MAINTENANCE
BLEEDER
8×1.25 mm
8.5 N·m (0.85 kg-m,
6 lb-ft)

4. Start the engine and release the parking brake.
5. Turn the Mode Selector to 6, depress the brake pedal firmly and press the Start Test button. There should be at least two strong kickbacks. If not, repeat steps 2 through 5, as necessary.
6. Fill the modulator reservoir up to the MAX level.



7. Install the reservoir cap.
8. Check the ALB function in all modes by using the ALB checker.

CAUTION: If the kickback is weak, re-bleed air from the system.

Electronic Components

Control Unit Replacement

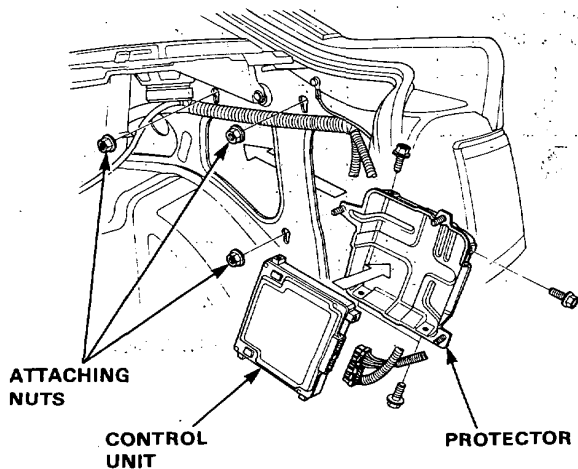
CAUTION:

- Disconnect the battery ground terminal before remove the control unit.
- The memory of the problem code is erased, if disconnect the battery ground terminal.

Remove the control unit attaching nuts, then remove the control unit.

CAUTION:

- Handle the control unit with care.



Installation is the reverse order of removal.

NOTE: Check the dash warning light function by turning the ignition switch ON.

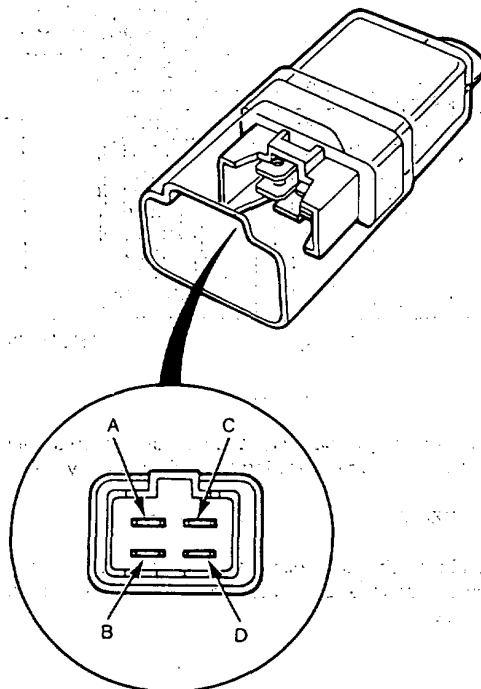
Fail Safe Relays/Motor Relay Inspection

1. Check for continuity between terminals A and B.

There should be no continuity.

2. Connect a 12V battery across terminals C and D.

There should be continuity between terminals A and B.

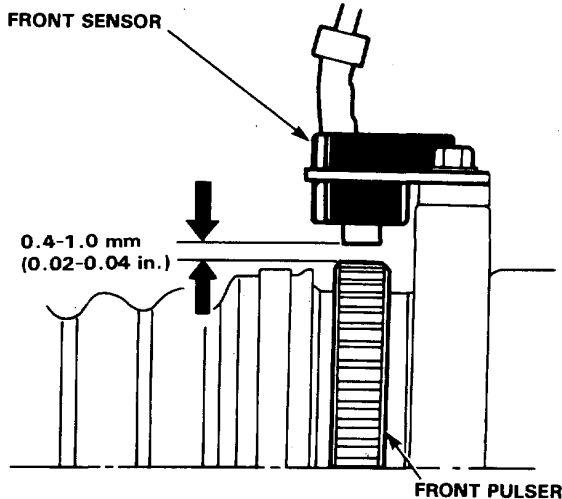


Pulsers/Sensors

Inspection

Front

1. Check the pulser for chipped or damaged teeth.



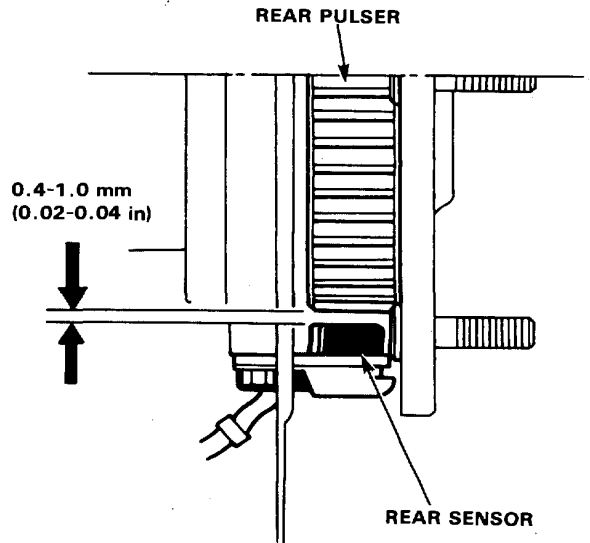
2. Measure air gap between the sensor and pulser all the way around while rotating the driveshaft by hand.

STANDARD: 0.4-1.0 mm (0.02-0.04 in.)

NOTE: If the gap exceeds 1.0 mm (0.04 in.), the probability is a distorted knuckle which should be replaced.

Rear

1. Check the rear pulser for chipped or damaged teeth.



2. Measure the air gap between the sensor and pulser all the way around while rotating the hub bearing unit by hand.

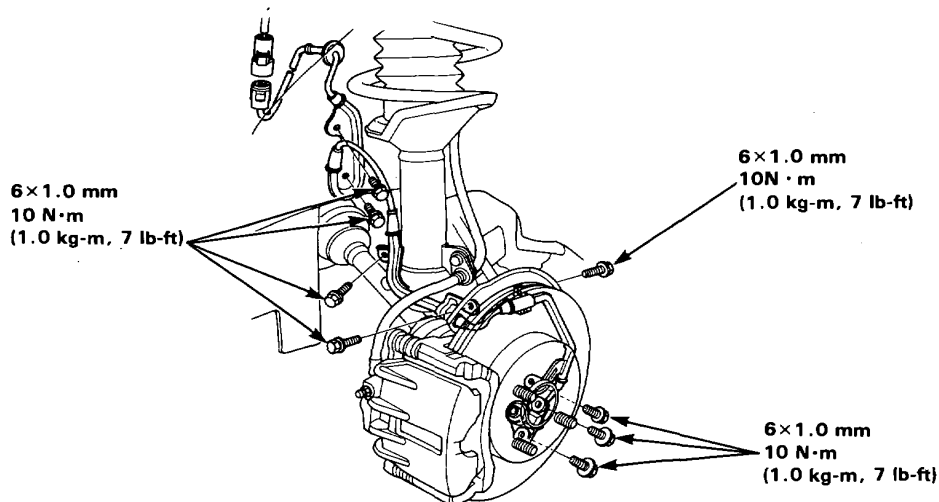
Standard: 0.4-1.0 mm (0.02-0.04 in)

NOTE: If the gap exceeds 1.0 mm (0.04 in.) the probability is a distorted knuckle which should be replaced.

Front Sensor Replacement

NOTE:

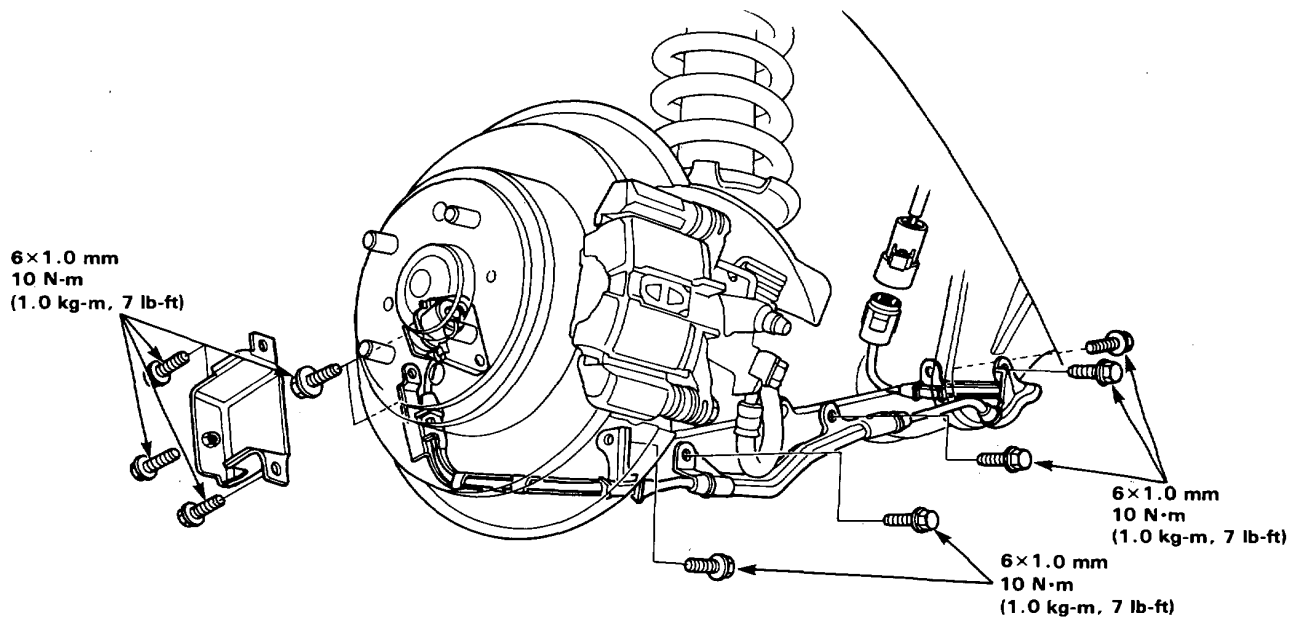
- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement confirm proper operation (page 13-56).



Rear Sensor Replacement

NOTE:

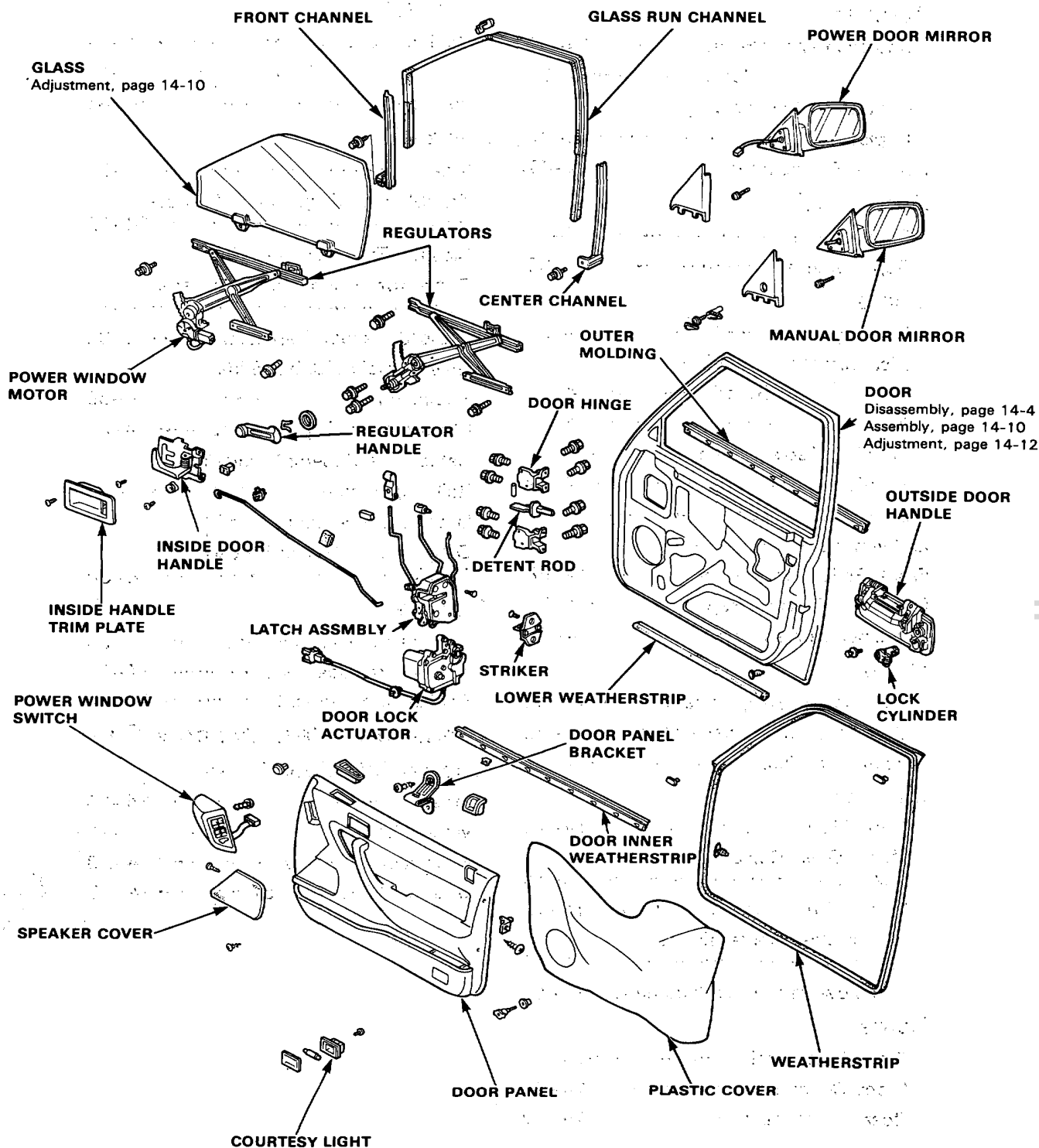
- Be careful when installing the sensors to avoid twisting the wires.
- After sensor replacement, confirm proper operation (page 13-56)



Doors

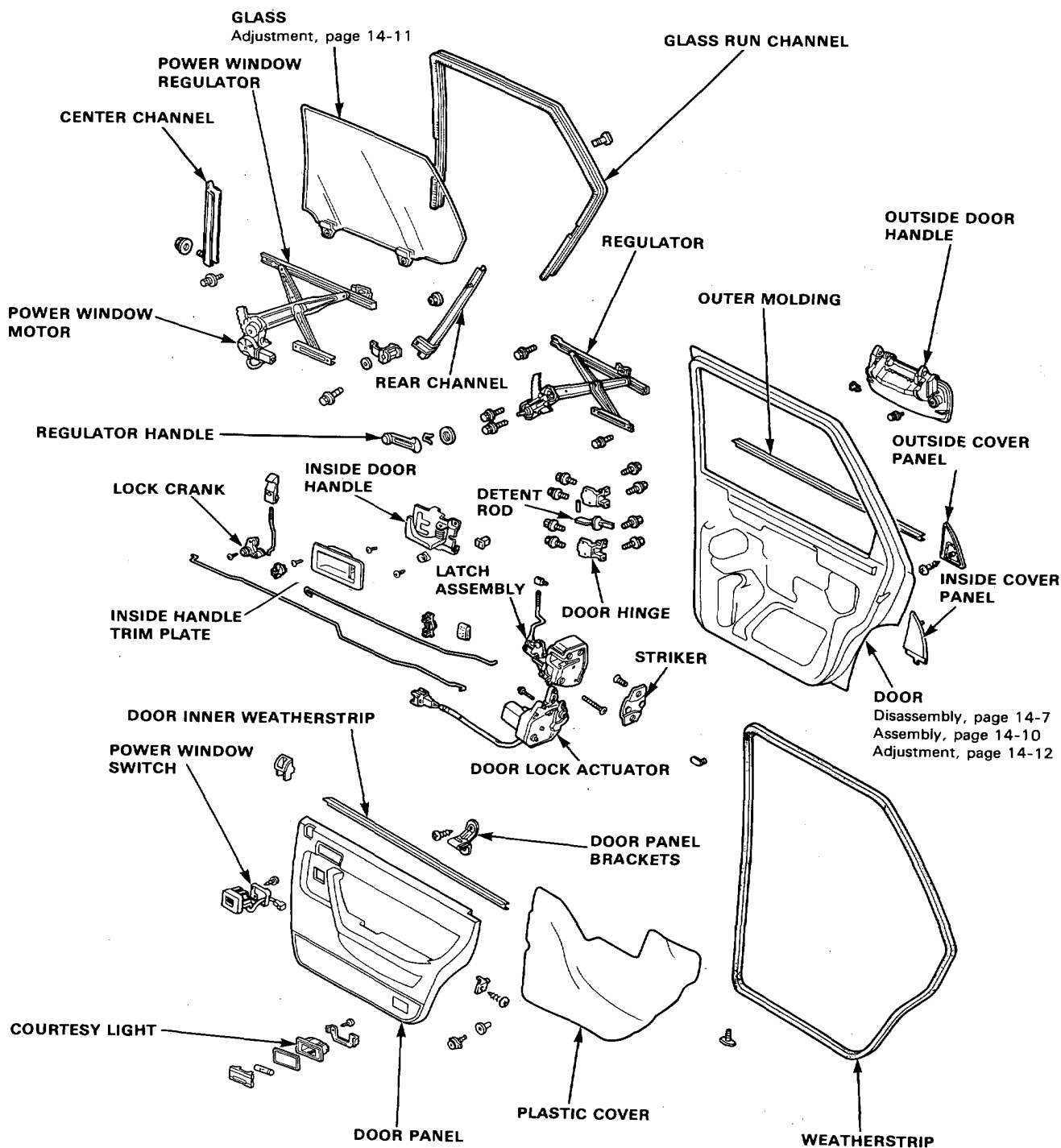
Index

Front:



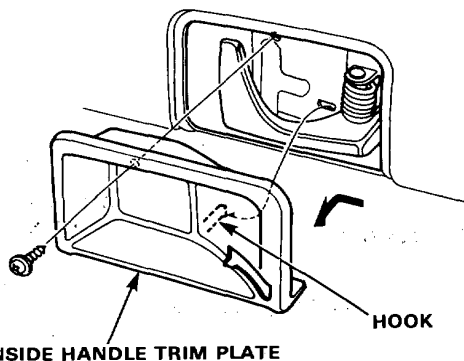


Rear:

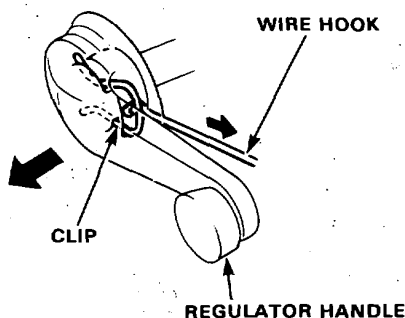


Front Door Disassembly

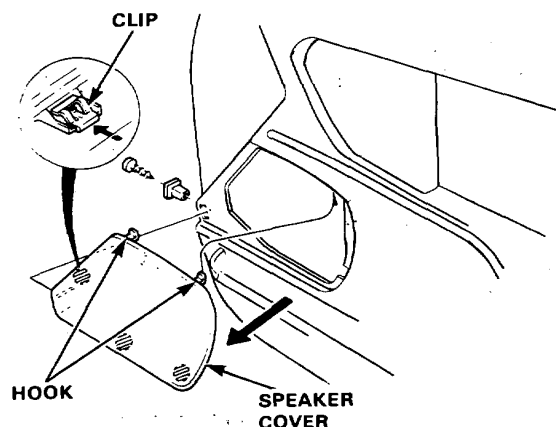
1. Remove the trim plate screw, then carefully remove the inside handle trim plate.



2. If applicable, remove the regulator handle by pulling the clip out with a wire hook.

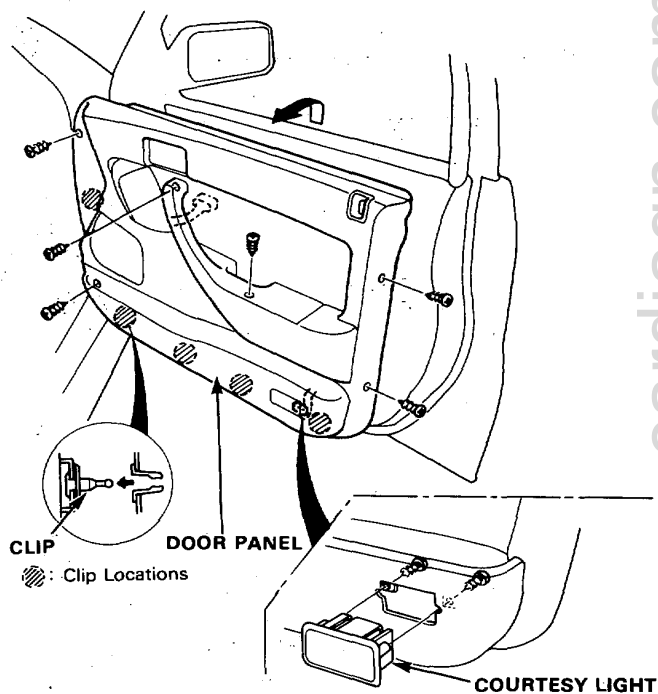
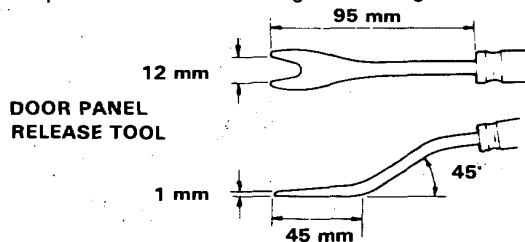


3. Remove the screw and detach the clips, then remove the speaker cover.

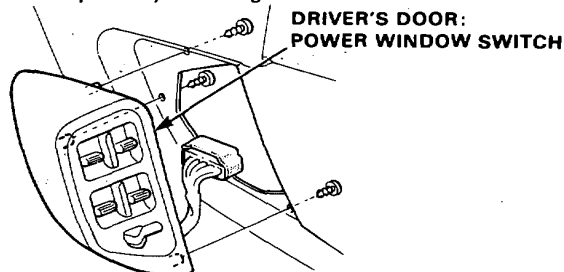


4. Remove the door mirror cover panel (pages 14-13, 14).
5. Remove the screws and clips (See door panel release tool) attaching the door panel. Remove the door panel by pulling it upward and disconnect the power window and courtesy light wires.

NOTE: Remove the panel with as little bending as possible to avoid creasing or breaking it.

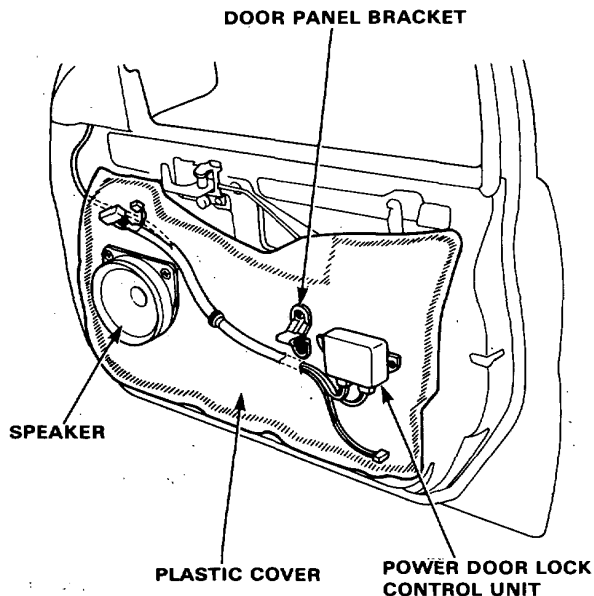


6. Remove the power window switch, if equipped, from the door panel by removing the screws.

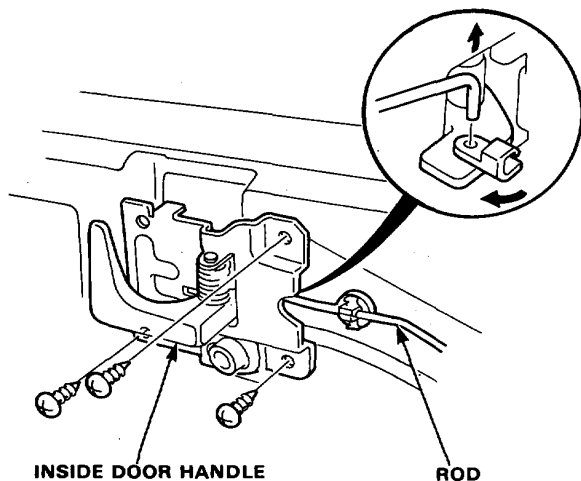




7. Remove the screws, then remove the power door lock control unit, speaker and door panel bracket.
8. Carefully remove the plastic cover.



9. Remove the 3 screws, disconnect the latch rod, then remove the inside door handle.

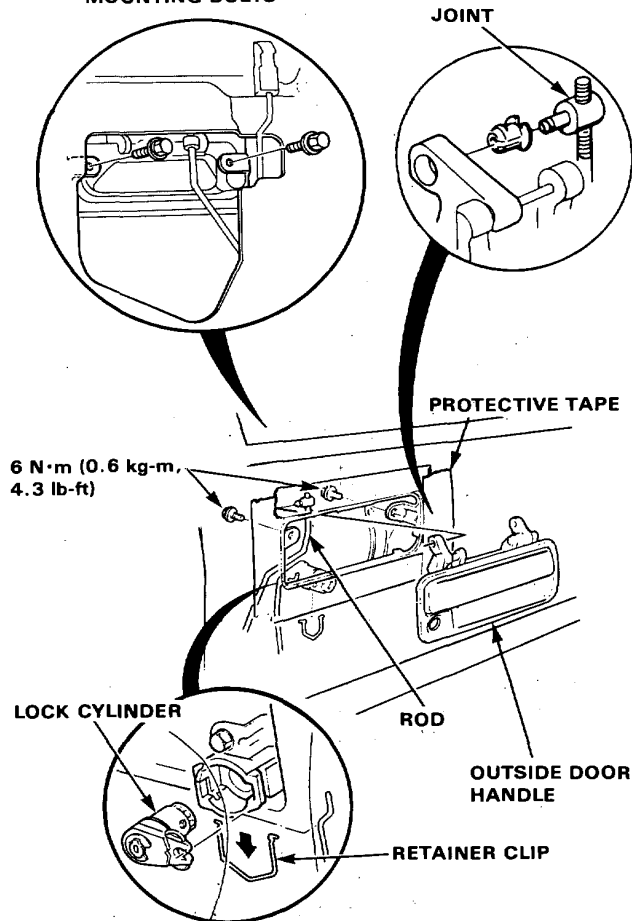


10. Reconnect the window switch or use 12 V battery to operate the window regulator.

11. Raise the window fully.
12. Pull out the retainer clip, and take out the lock cylinder, then disconnect the lock rod.

NOTE: Use protective tape around the edge of the outside door handle to prevent scratching the paint.

OUTSIDE DOOR HANDLE MOUNTING BOLTS



13. Remove the mounting bolts for the outside door handle.
14. Pull the outside door handle out, and pry the joint off the handle with a flat tip screwdriver. Remove the handle from the rod.

(cont'd)

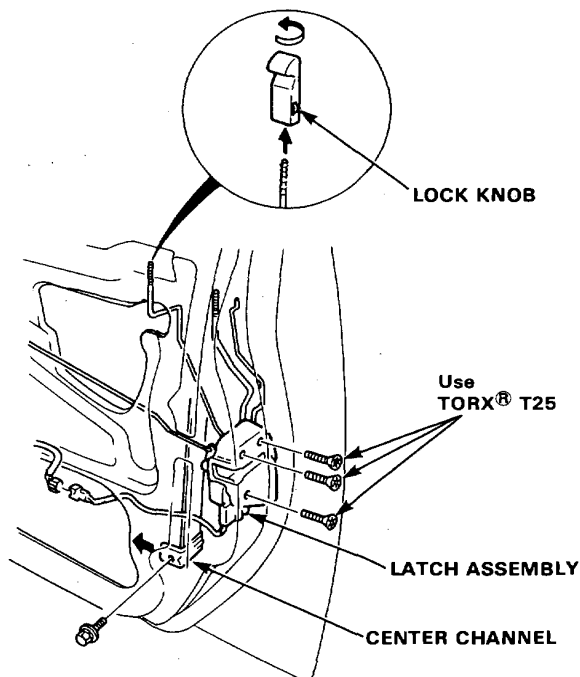
Front Door

Disassembly (cont'd)

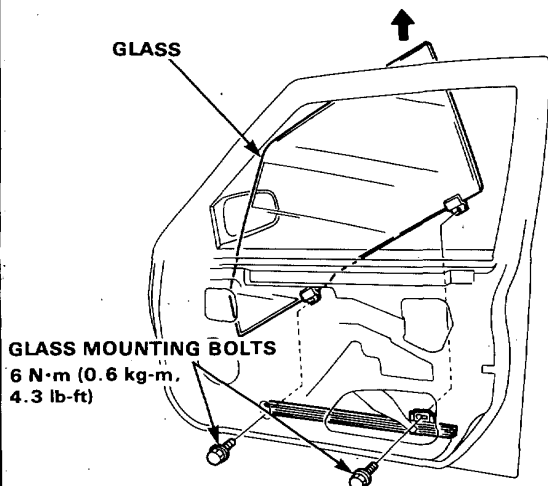
15. Remove the screws and disconnect the wire.
16. Take the door latch off the door, then push the door latch and rod inside the door.

NOTE:

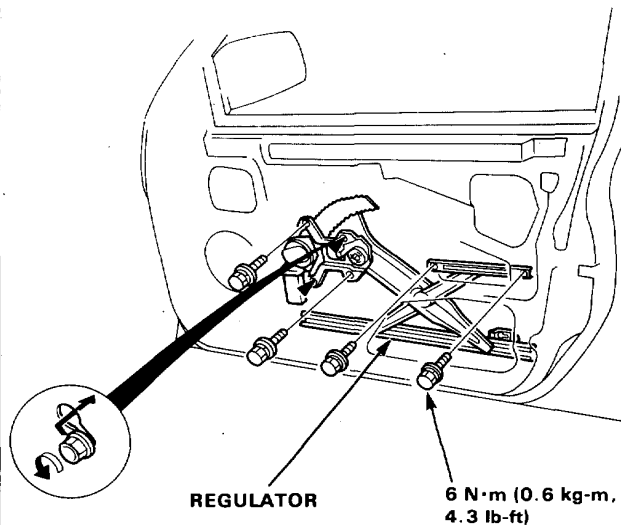
- Remove the lower bolt of the rear channel and slide the rear channel.
- Take care not to bend the latch rods.



17. Carefully lower the window until you can see its mounting bolts. Remove the bolts and pull the door glass out through the window slot.

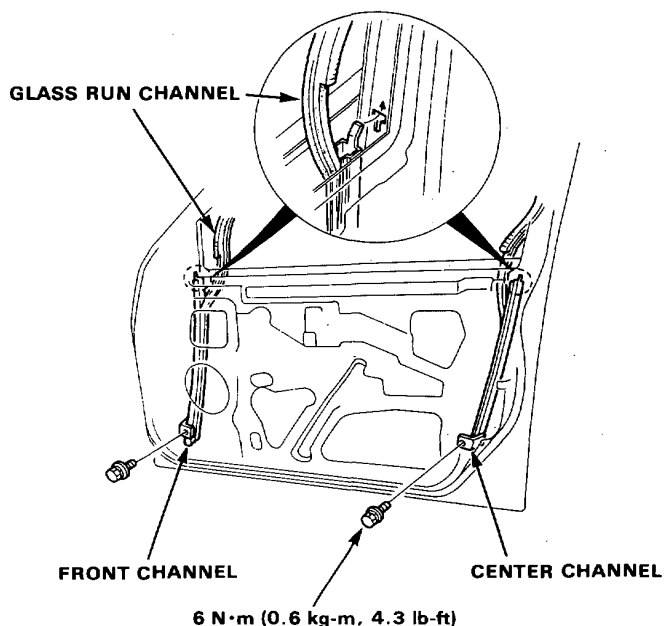


18. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.



19. Remove the glass run channel.
20. Remove the front and center channels by removing the bolts.

NOTE: Before installation, insert the glass run channel into the front and center channels.

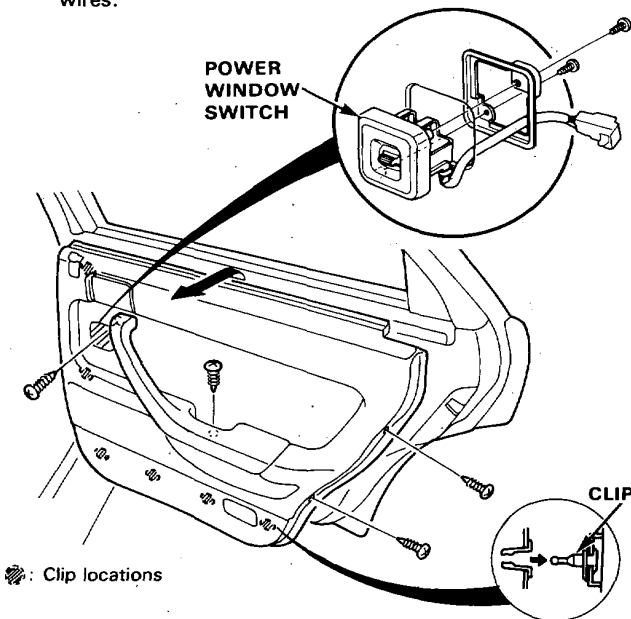




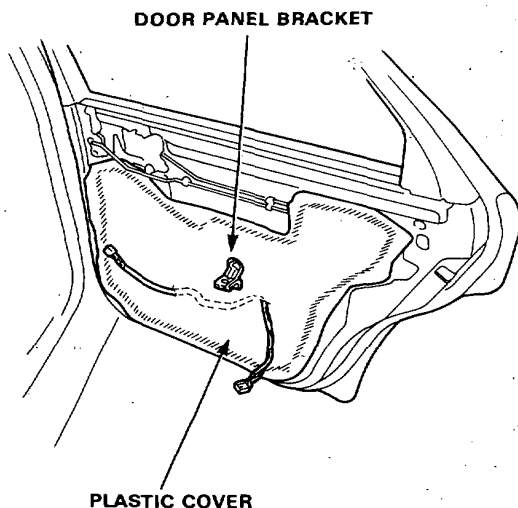
Rear Door

Disassembly

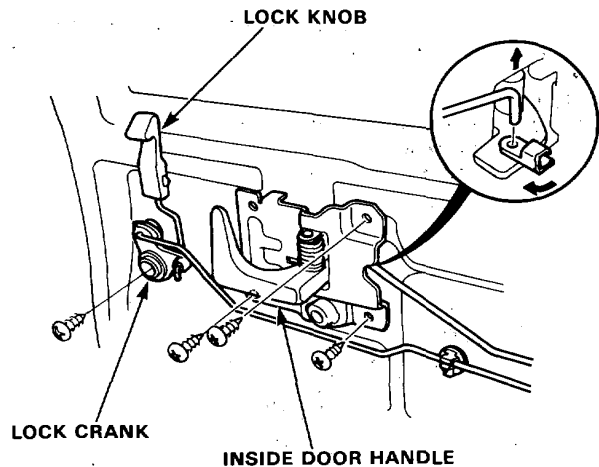
1. Remove the inside handle trim plate and regulator handle (page 14-4).
2. Remove the screws and clips (See door panel release tool) attaching the door panel (page 14-4). Remove the door panel by pulling it upward and disconnect the power window and courtesy light wires.



3. Remove the screws, then remove the door panel brackets.
4. Carefully remove the plastic cover.

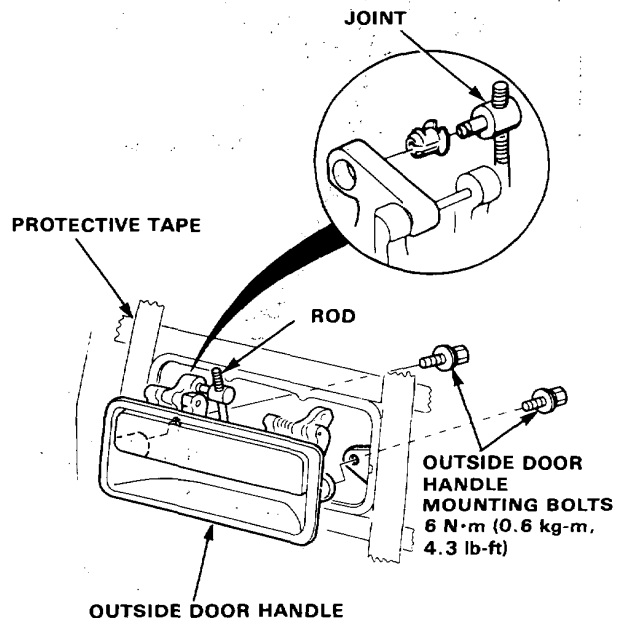


5. Remove the 3 screws of the inside door handle and the screw of the lock crank, then remove it from the door.



6. Reconnect the window switch or use 12 V battery to operate the window regulator.
7. Raise the window fully.
8. Pull the outside door handle out, and pry the joint off the handle with a flat tip screwdriver. Remove the handle from the rod.

NOTE: Use protective tape around the edge of the outside door handle to prevent scratching the paint.



(cont'd)

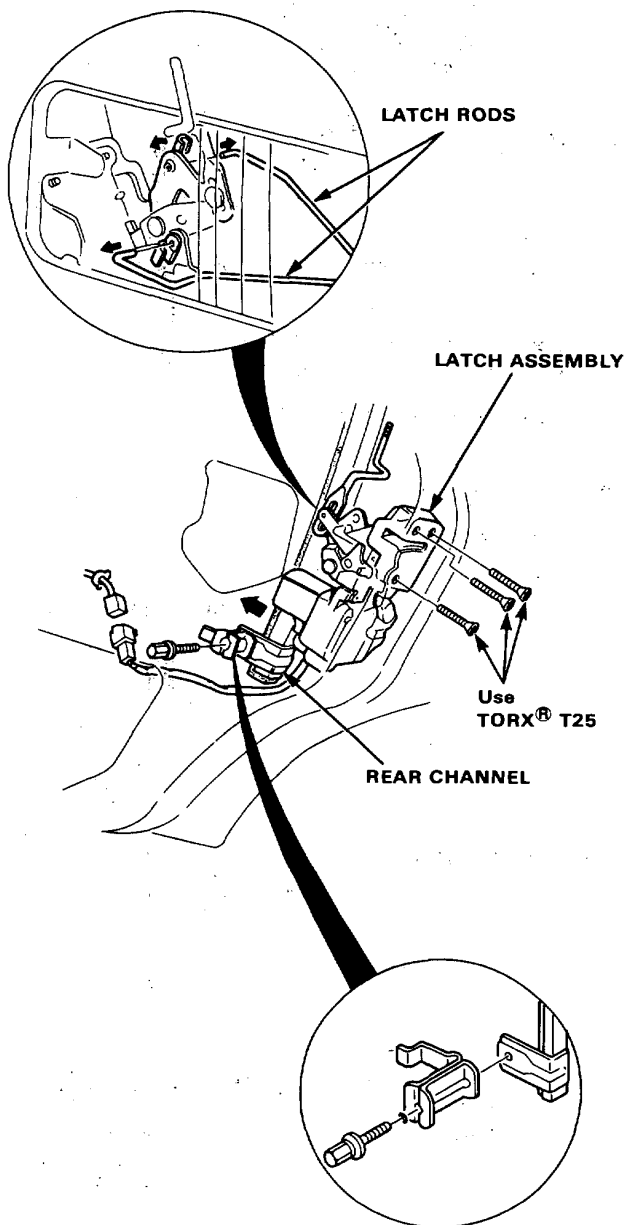
Rear Door

Disassembly (cont'd)

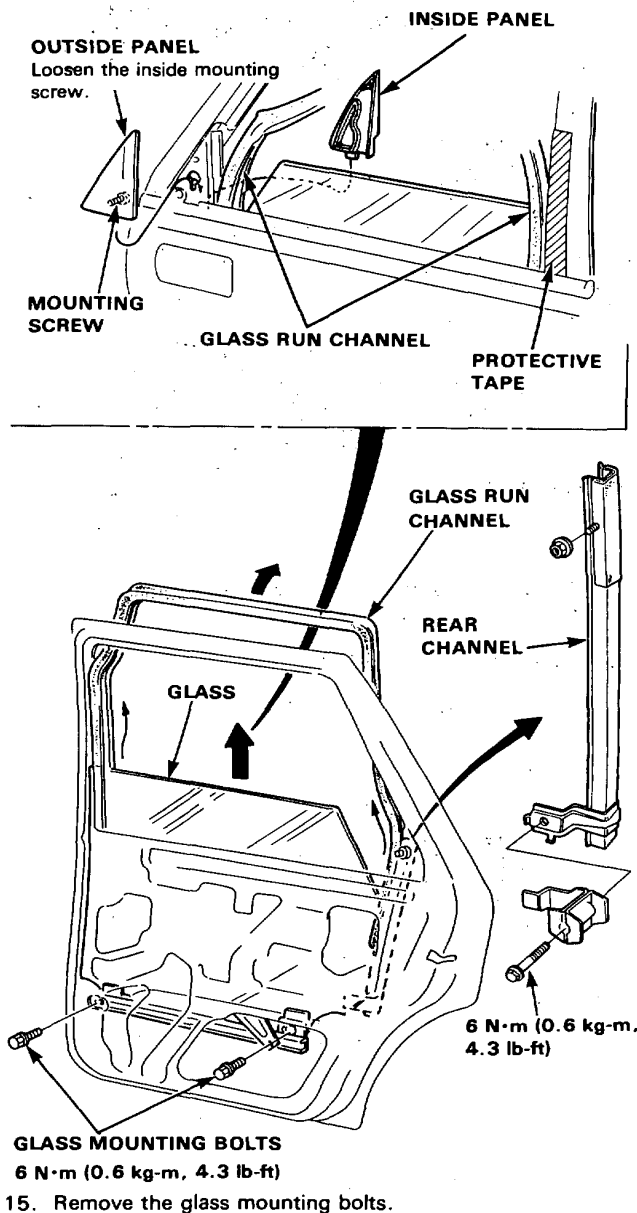
9. Remove the screws and disconnect the latch rod and wire.
10. Take the latch assembly off the door, then push the latch assembly inside the door.

NOTE:

- Remove the lower bolt of the rear channel and slide the rear channel.
- Take care not to bend the latch rods.



11. Carefully lower the door glass until you can see its mounting bolts.
12. Remove the outside and inside cover panels.
13. Remove the glass run channel and rear channel.
14. Use protective tape as shown to prevent scratching the paint.

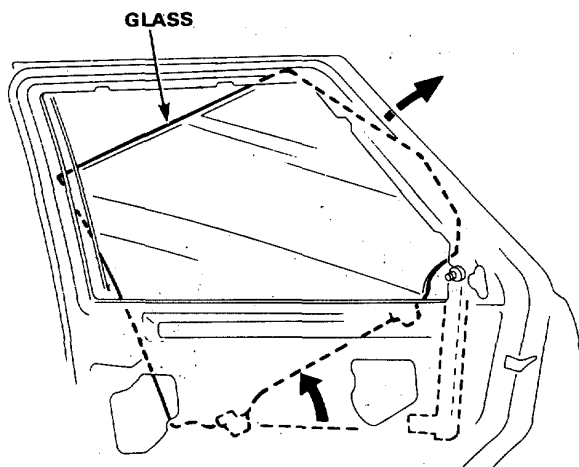




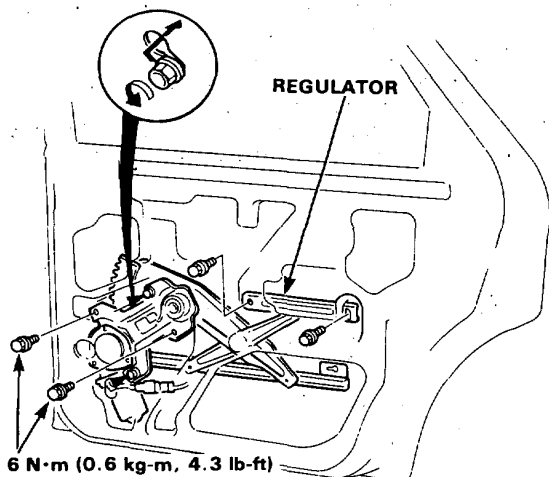
Doors

Molding Replacement

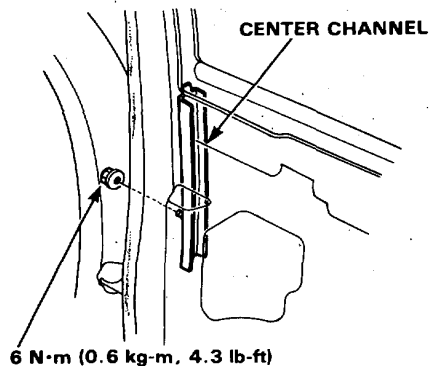
16. Stand next to the outside of the door, tilt the glass as shown, and pull it out through the window opening.



17. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.

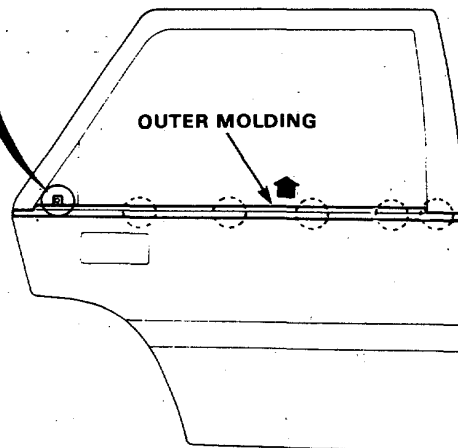
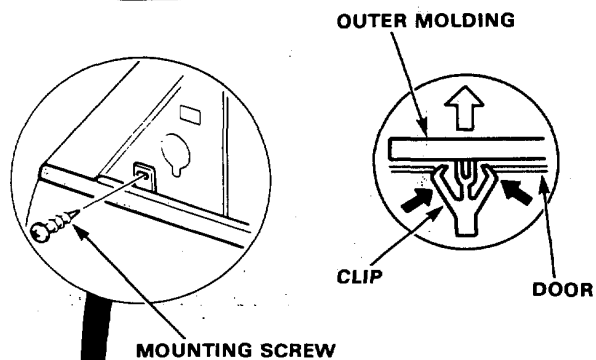
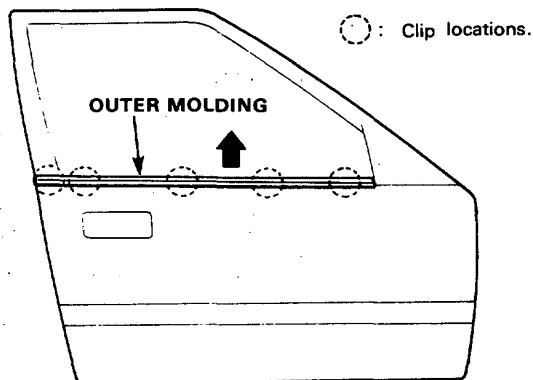


18. Remove the nut, then remove the center channel.



Outer Molding:

1. Lower the window fully.
2. Remove the door mirror (pages 14-13, 14).
3. Remove the screw and detach the clips, then remove the outer molding prying up on the molding starting at the rear.



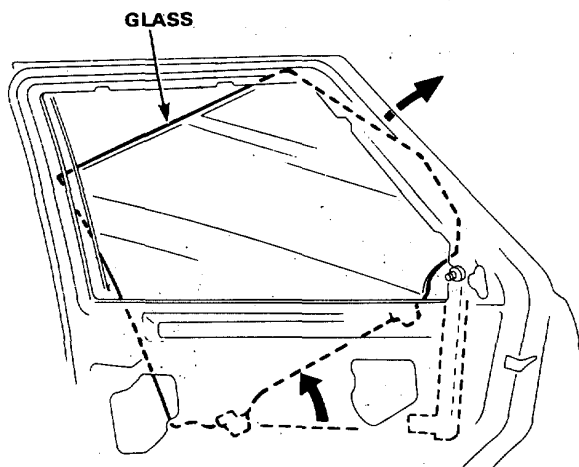
(cont'd)



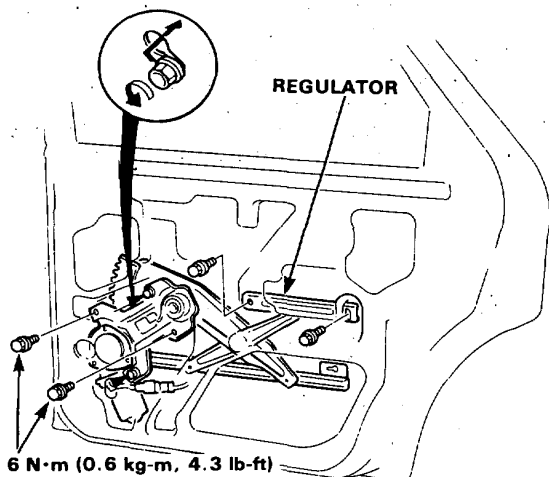
Doors

Molding Replacement

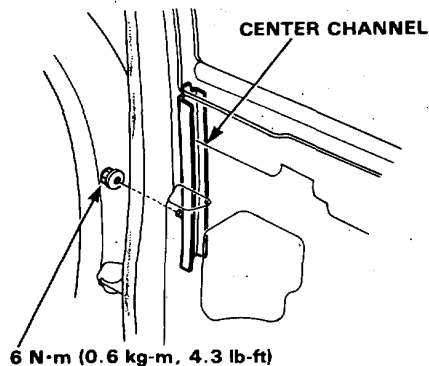
16. Stand next to the outside of the door, tilt the glass as shown, and pull it out through the window opening.



17. Remove the 4 mounting bolts and loosen the 2 motor bolts, then take out the regulator assembly through the lower hole in the door.

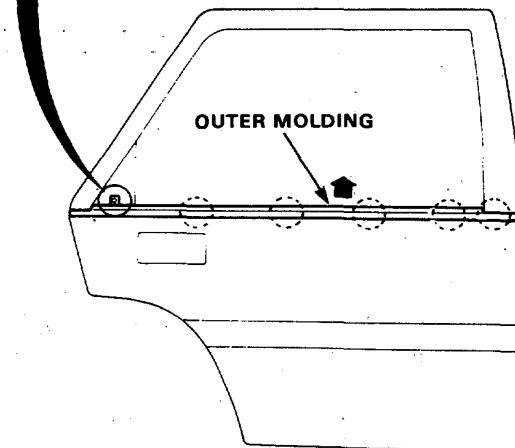
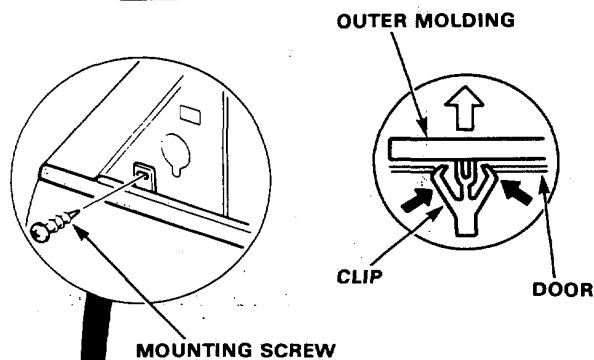
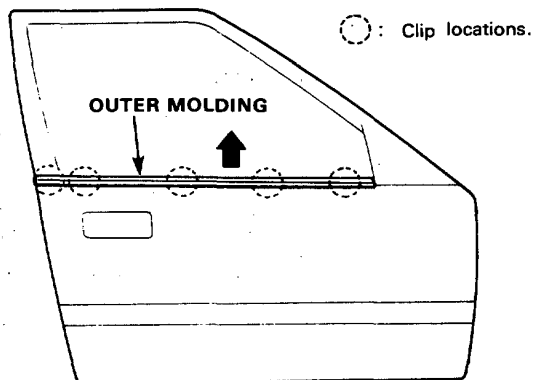


18. Remove the nut, then remove the center channel.



Outer Molding:

1. Lower the window fully.
2. Remove the door mirror (pages 14-13, 14).
3. Remove the screw and detach the clips, then remove the outer molding prying up on the molding starting at the rear.



(cont'd)

Doors

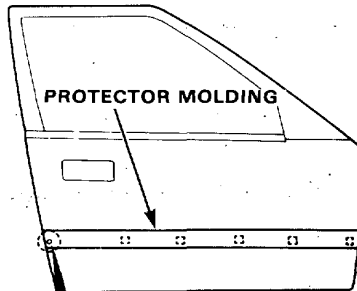
Molding Replacement (cont'd)

Door Protector Molding:

- Remove the door protector molding by removing the nut and detach the clips from the inside, or outside.

□ : Clip locations.

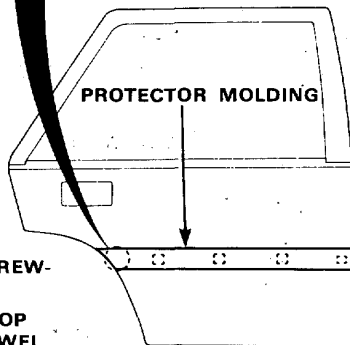
Front:



PROTECTOR MOLDING

PLASTIC NUT

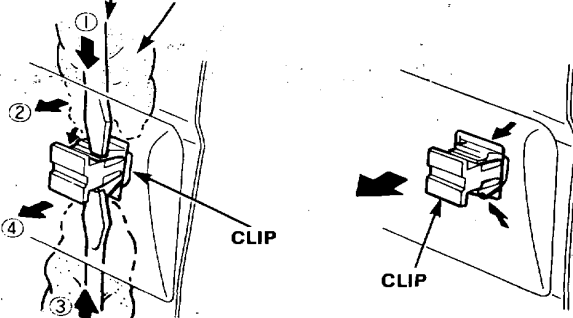
Rear:



PROTECTOR MOLDING

FLAT TIP SCREW-DRIVER

SHOP TOWEL

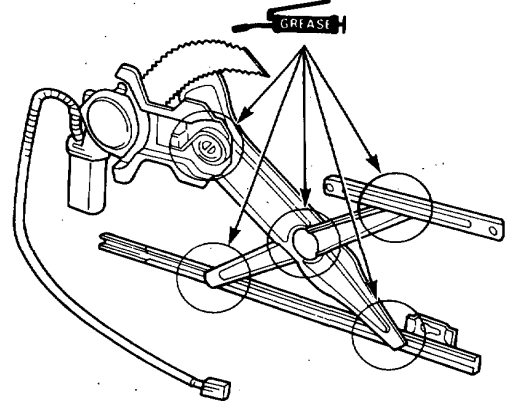


- Set the clips on to the moldings and protectors, then attaching the moldings and protectors.

Assembly

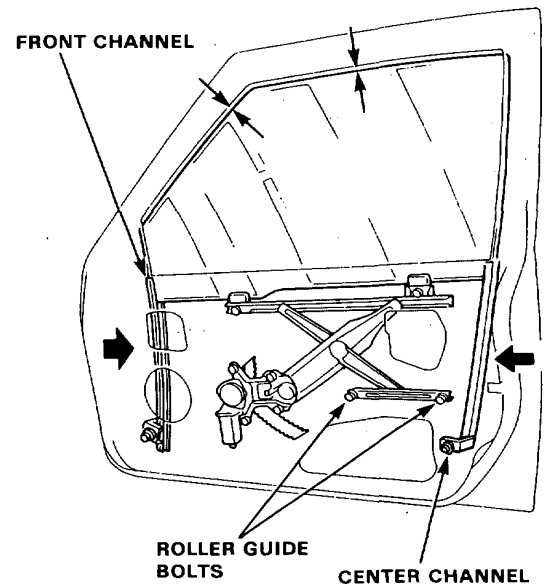
Assemble the door in the reverse order of disassembly, and also:

- Grease all the sliding surfaces of the window regulator where shown.



- 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.
- Lower the window until there is a small gap between the door glass and the glass run channel.
- Loosen the roller guide bolts and adjust the window glass so it parallel with the glass run channel.

Front:



Doors

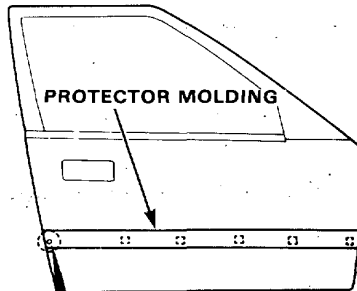
Molding Replacement (cont'd)

Door Protector Molding:

- Remove the door protector molding by removing the nut and detach the clips from the inside, or outside.

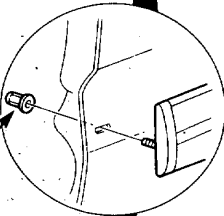
□ : Clip locations.

Front:

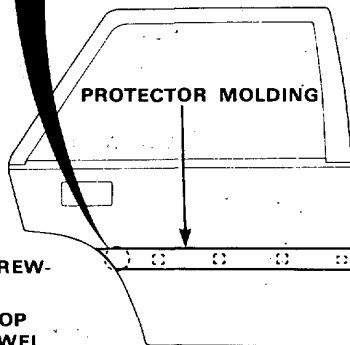


PROTECTOR MOLDING

PLASTIC NUT



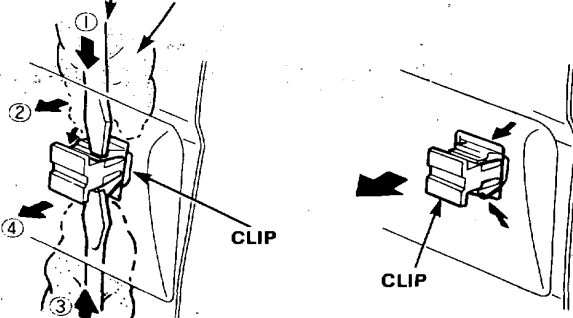
Rear:



PROTECTOR MOLDING

FLAT TIP SCREW-DRIVER

SHOP TOWEL



CLIP

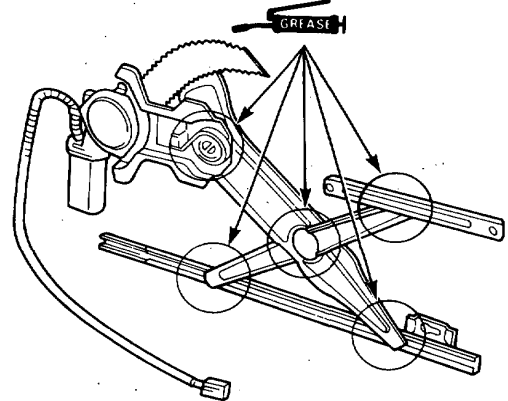
CLIP

- Set the clips on to the moldings and protectors, then attaching the moldings and protectors.

Assembly

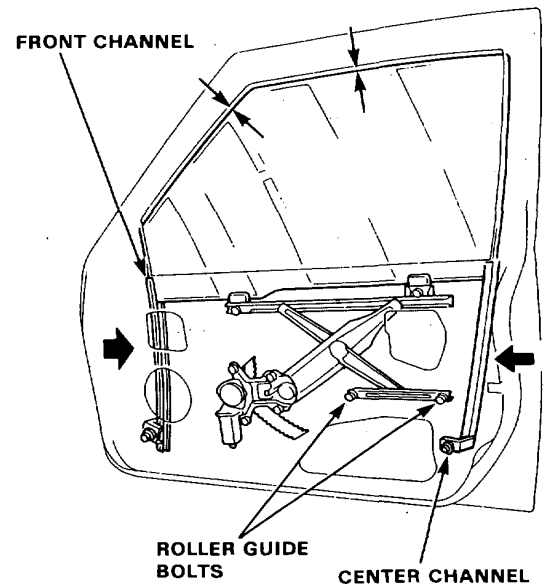
Assemble the door in the reverse order of disassembly, and also:

- Grease all the sliding surfaces of the window regulator where shown.



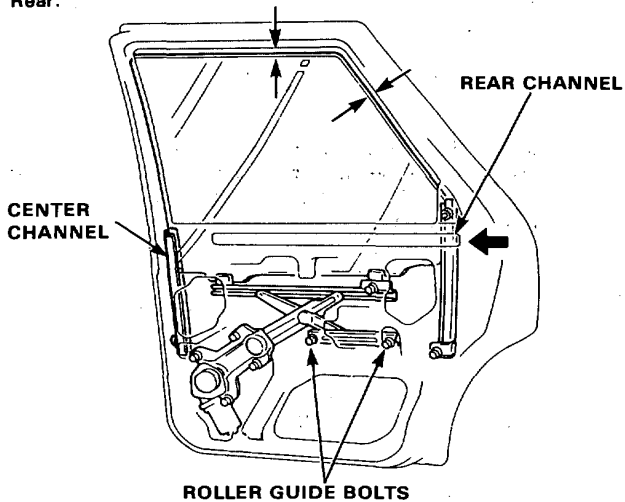
- To adjust window fit in the door, raise the window as far up as possible and hold it against the door sash. Then, tighten the roller guide bolts.
- Lower the window until there is a small gap between the door glass and the glass run channel.
- Loosen the roller guide bolts and adjust the window glass so it parallel with the glass run channel.

Front:





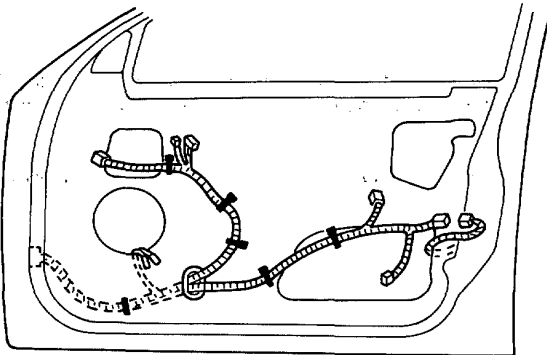
Rear:



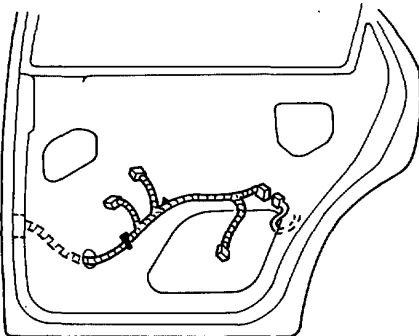
NOTE: Make sure the glass moves smoothly.

5. Raise the door glass fully and check gap.
6. Fix the wire harness correctly on the door.

Front:



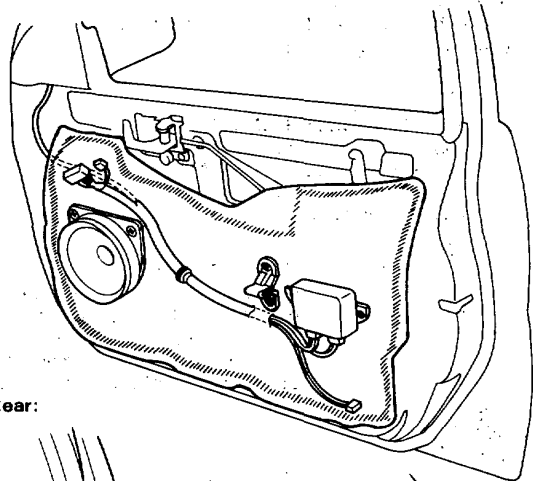
Rear:



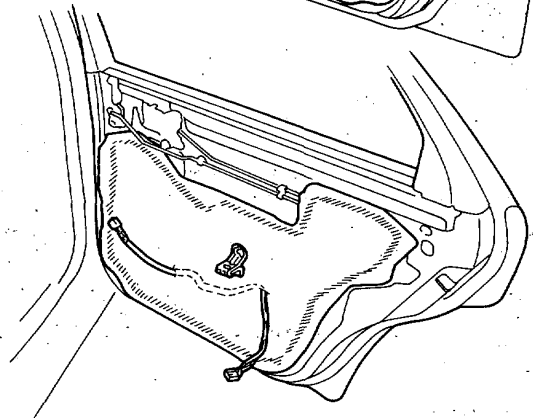
7. When reinstalling the plastic cover, apply adhesive along the edge where necessary to maintain a continuous seal and prevent air/water leaks.

NOTE: Repair any torn section of the plastic cover.

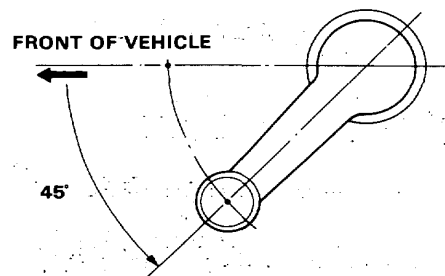
Front:



Rear:



8. Install the regulator handle so it points forward, and down at a 45 degree angle with the window closed.



9. With the door and glass closed fully, check for water and air leaks.

NOTE: Don't use high pressure water.

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Doors

Door Position Adjustment

After installing the door, check for a flush fit with the body, then check for equal gap between the front and rear, and top and bottom door edges and the body. The door and body edges should also be parallel. Adjust at the hinges as shown.

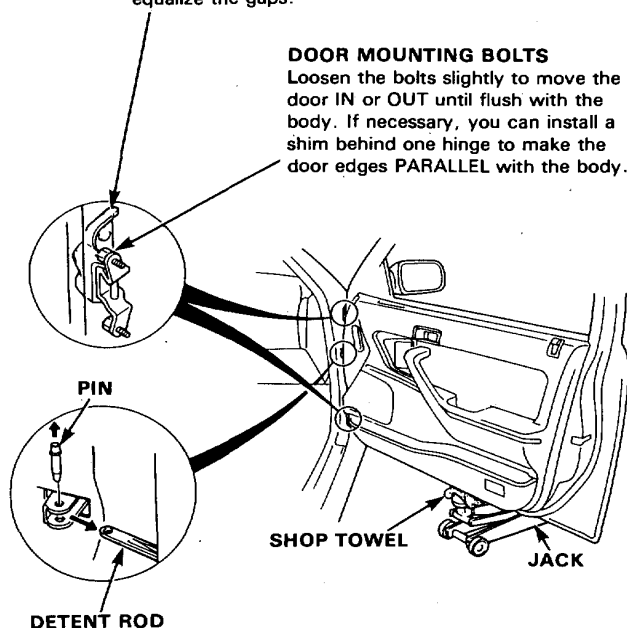
CAUTION: Place a shop towel on the jack to prevent damage to the door when the hinge bolts are loosened for adjustment.

HINGE MOUNTING BOLTS

Loosen the bolts, and move the door BACKWARD or FORWARD, UP or DOWN as necessary to equalize the gaps.

DOOR MOUNTING BOLTS

Loosen the bolts slightly to move the door IN or OUT until flush with the body. If necessary, you can install a shim behind one hinge to make the door edges PARALLEL with the body.



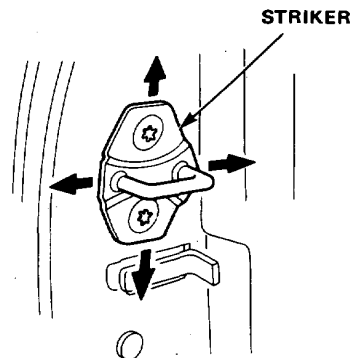
The door and body edges should be parallel.

NOTE: Check for water and air leaks.

Door Striker Adjustment

Make sure the door latches securely without slamming. If it needs adjustment:

1. Draw a line 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.

COVER PANEL

POWER
DOOR MIRROR

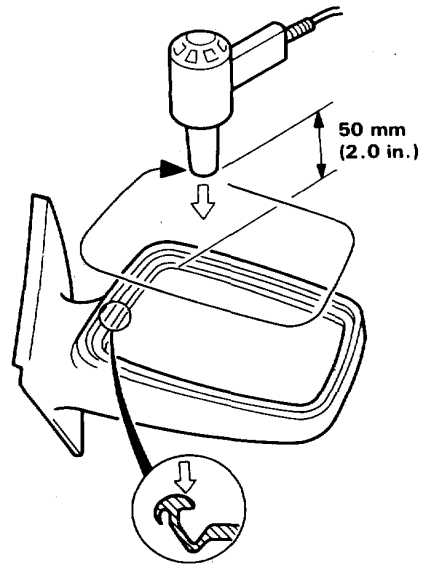
MIRROR
MOUNTING
SCREWS

4. Install the door mirror in the reverse order of removal.
5. With the door and door glass closed fully, check for water and air leaks.

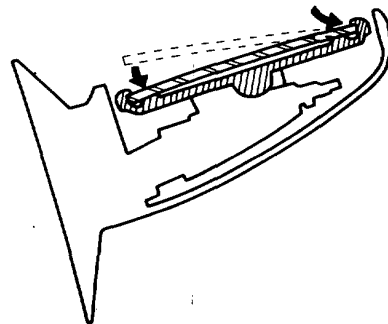
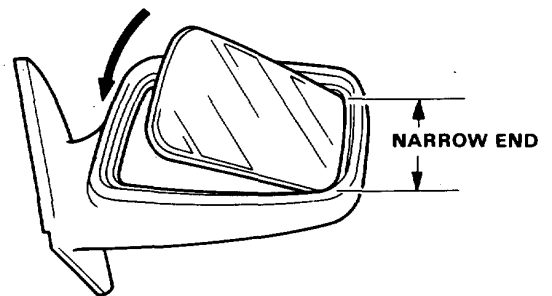
NOTE: Do not use high pressure water.

Mirror Glass Replacement

1. Heat the edge of the glass with a low powered heat gun for several minutes, then remove the glass.



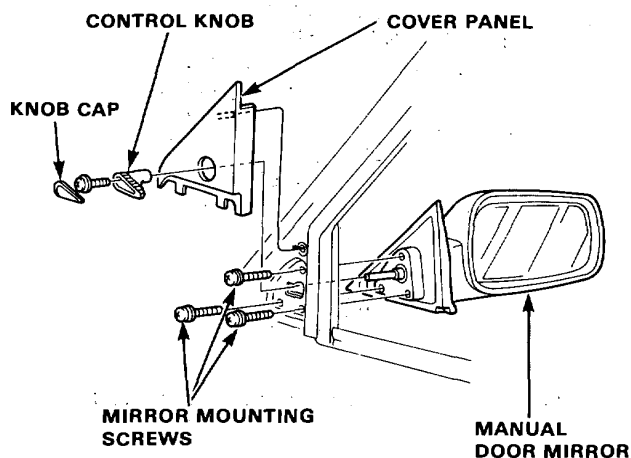
2. Install the glass in the mirror case, narrow end first.



Manual Door Mirror

Removal

1. Remove the knob cap and screw, then remove the control knob.
2. Pry out the cover panel with a flat tip screwdriver, then remove the cover panel.
3. Remove the mirror mounting screws while holding the mirror.

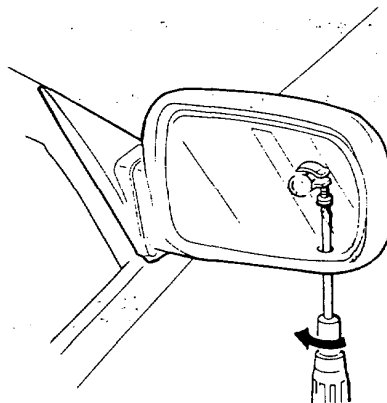


4. Install the door mirror in the reverse order of removal.
5. With the door and door glass closed fully, check for water and air leaks.

NOTE: Do not use high pressure water.

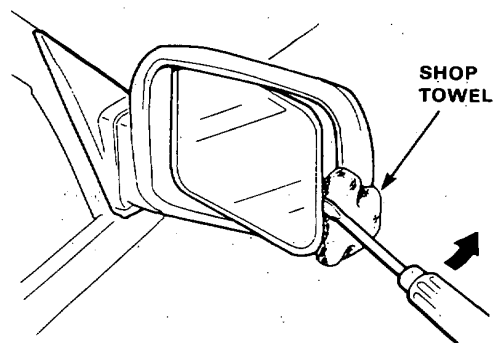
Mirror Glass Replacement

1. Insert a screwdriver in the mirror through the service hole, and loosen the glass retaining screw.

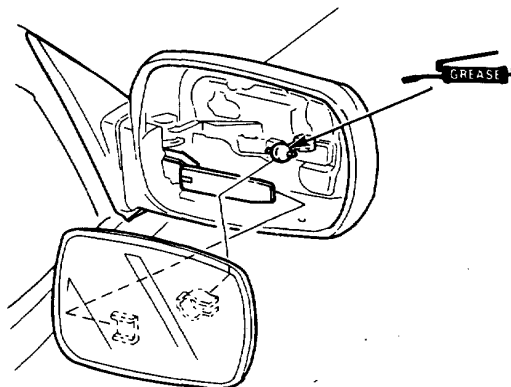


2. Carefully pry out the mirror with a flat tip screwdriver as shown.

CAUTION: To prevent damage to the mirror, wrap the end of the screwdriver with a shop towel.



3. Install the mirror in the reverse order of removal, and also apply grease to the location shown.

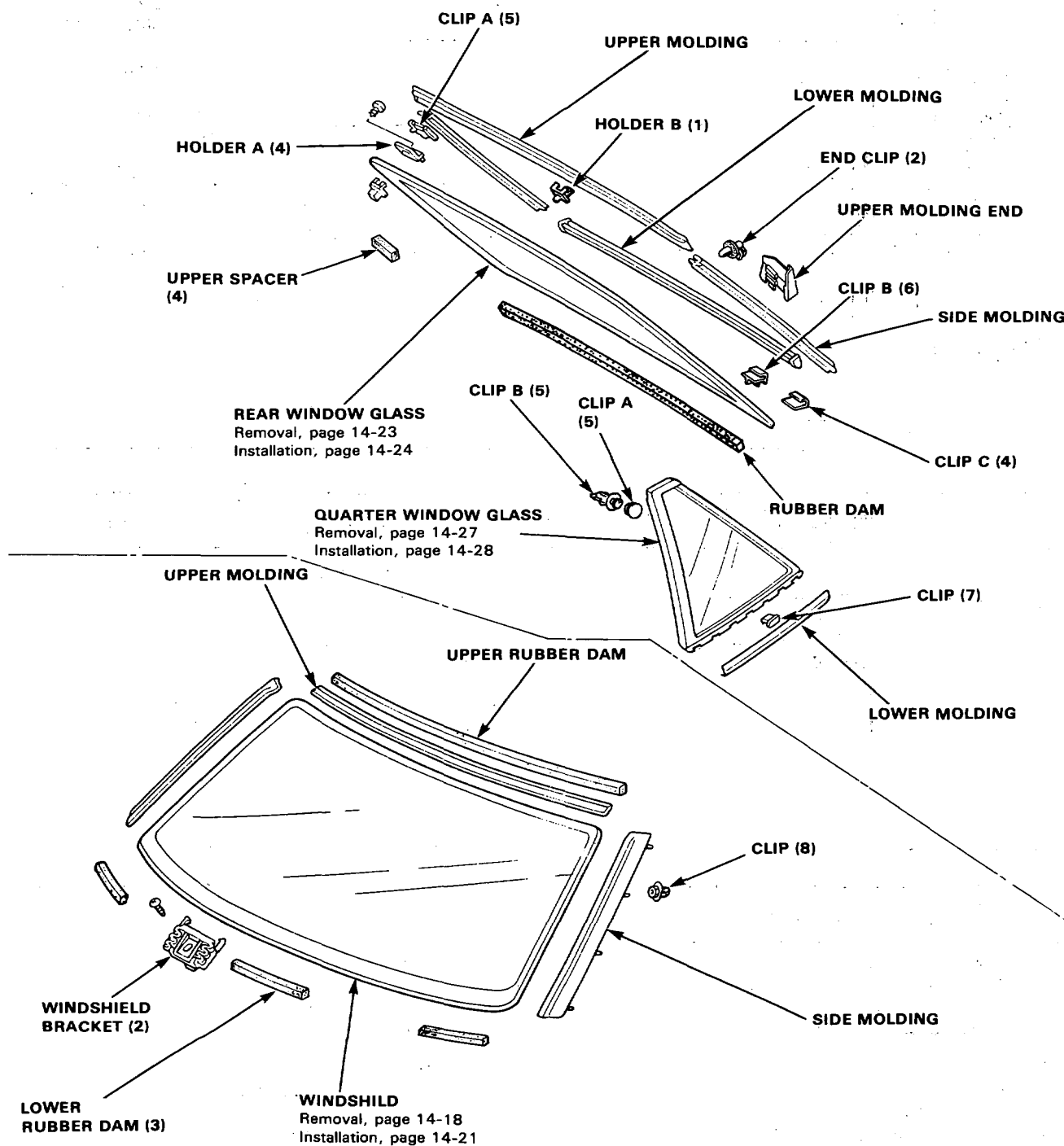


Windshield, Rear Window Glass, Quarter Window Glass

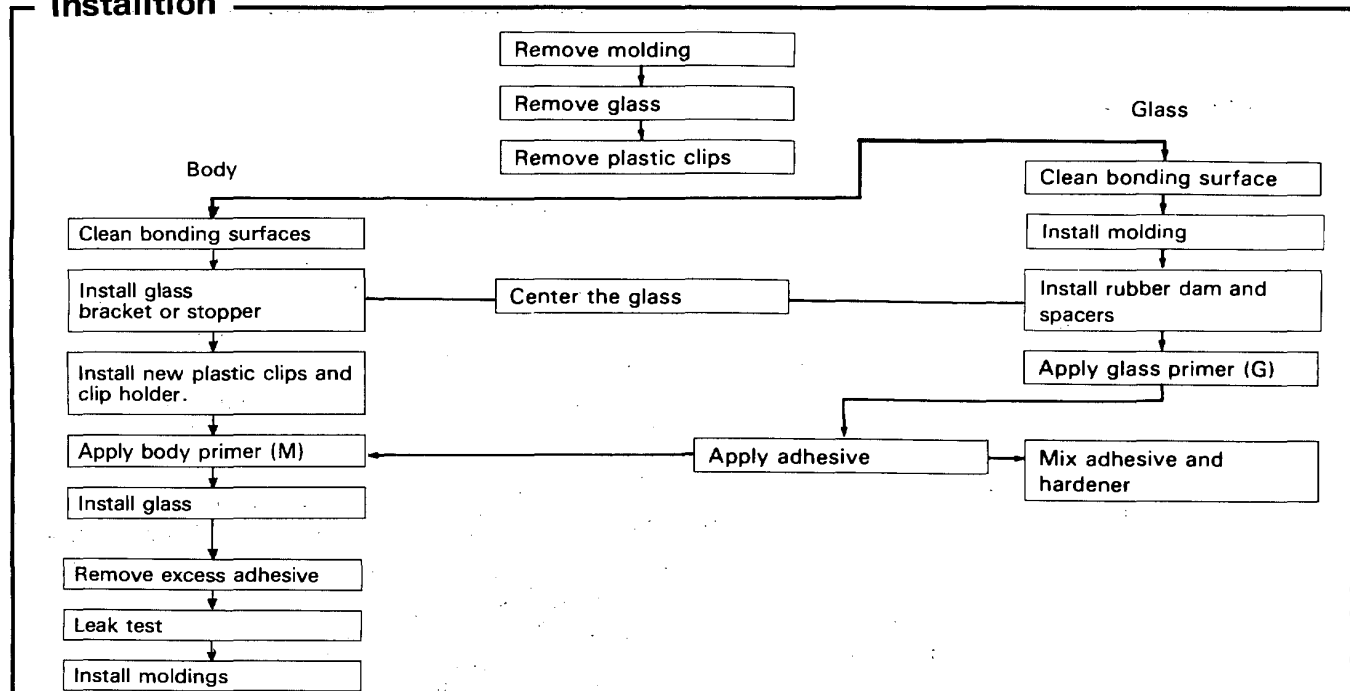


Index

(): Quantity of part used.



Windshield, Rear Window Glass, Quarter Window Glass Installtion



Parts

Part Number	Contents	Comment
Adhesive kit — Low temperature 08718-99960 High temperature 08718-99961	Adhesive sealant (500 g) Hardener (75 g) Glass primer G (20 g) Body primer M (20 g) Piano wire (0.6φ x 1 m (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	To mix adhesive and hardener on To mix adhesive and remove excess To apply bead of adhesive to windshield To install windshield
Knife Awl Two wood sticks Toluene or alcohol	To scrape bonding surface around window opening To make hole through existing adhesive for piano wire To hold piano wire To clean bonding surfaces



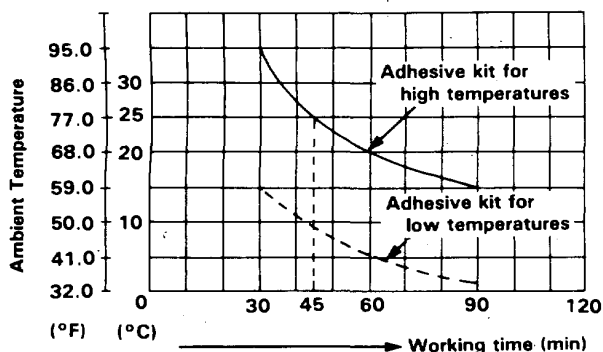
Workable Time

Adhesive workable time varies widely according to temperature, so choose the correct adhesive kit for the temperature range you will be working in.

After mixing and applying adhesive, you should install the windshield within the time shown on the chart.

For example, when the ambient temperature is 25°C (77°F), the glass should be installed within 45 minutes using the high temperature type adhesive.

Kit part numbers and contents are listed on the page before.



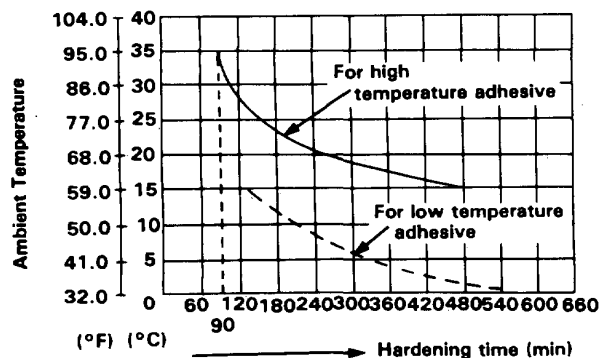
Notes

- Both kits have two types of adhesive primer: one for the body (metal), and one for glass.
- Always use new genuine Honda adhesive, or equivalent.
- Do not use the adhesive if 6 months have elapsed since date of manufacture.
- Store adhesive in a cool, dry place.
- Open only immediately before you are going to use it.

Hardening Time

Hardening time can be shortened by heating with infrared light.

For example, the adhesive will start to harden within 270 minutes mixing at 20°C (63°F). If however, it is heated to 35°C (95°F), it will start to harden within 90 minutes.



Broken Glass Removal

Remove as much broken glass as possible with a vacuum cleaner.

Blow out the glass in the heater and behind the dashboard with low pressure compressed air:



WARNING Wear eye protection while using the air gun.

1. Set the temperature control knob to COLD.
2. Set the mode knob to HEAT/DEF.
3. Set the FRESH/REC lever to REC.
4. Blow compressed air through the defroster center vent outlet.
5. Remove the blower duct, and remove any glass from the air mix chamber.
6. Remove the any glass from the top of the vent/defrost door.
7. Remove any glass from top and bottom of carpet and seats with a vacuum cleaner.

NOTE: It is recommended to remove the seats to shake off any glass.

Windshield Removal

CAUTION:

- Wear gloves to remove and install the glass.
- Use seat covers to avoid damaging surface.

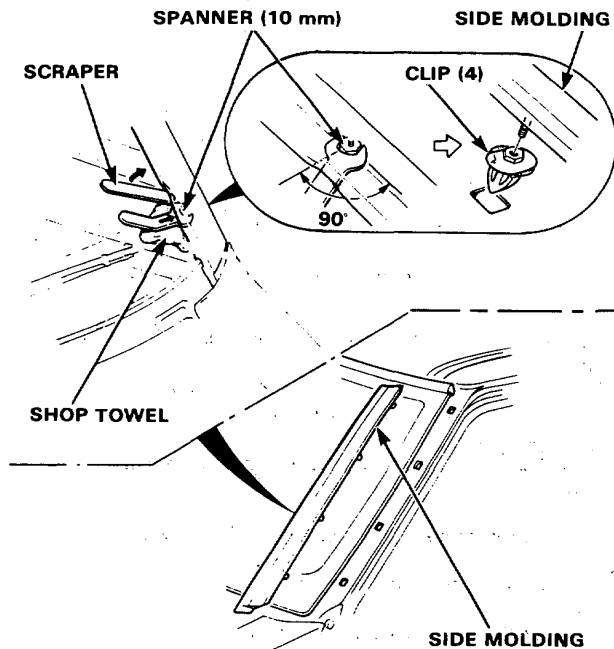
1. To remove the windshield, first remove the:

- Front pillar trim (page 14-39)
- Rearview mirror (page 14-47)
- Sun visors and holders.
- Front wiper and air scoop.
- Front of weatherstrip.

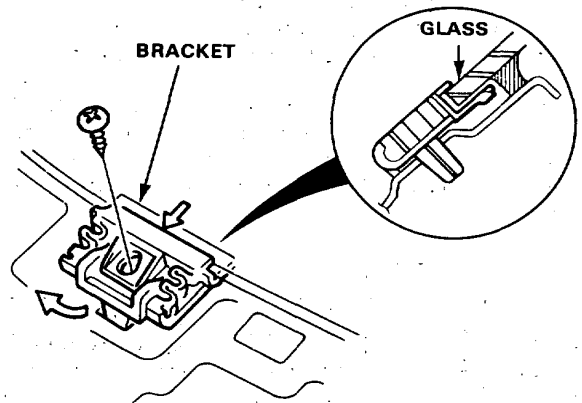
NOTE: Do not damage the painted surface.

2. Pry out the side molding with a scraper.

3. Remove the clips by turning it 90° with a thin spanner, starting at the under side.



4. Remove the screws, then remove the right and left glass brackets.

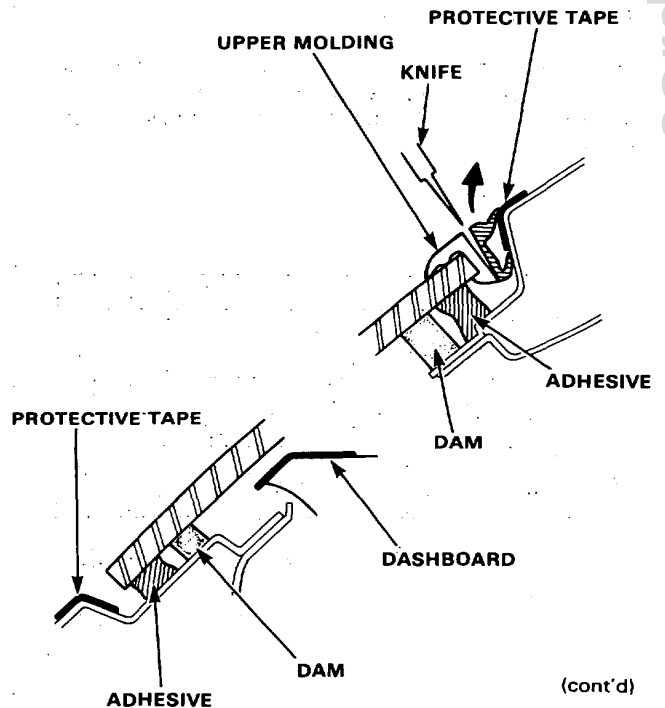


5. Lower the front of the headliner (page 14-40).

CAUTION: Take care not to bend the headliner excessively.

6. Cut the end of upper molding.

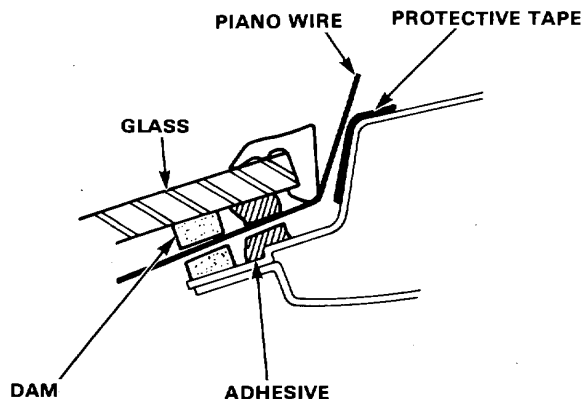
7. Apply protective tape along the edge of the dashboard and body next to the glass as shown.



(cont'd)

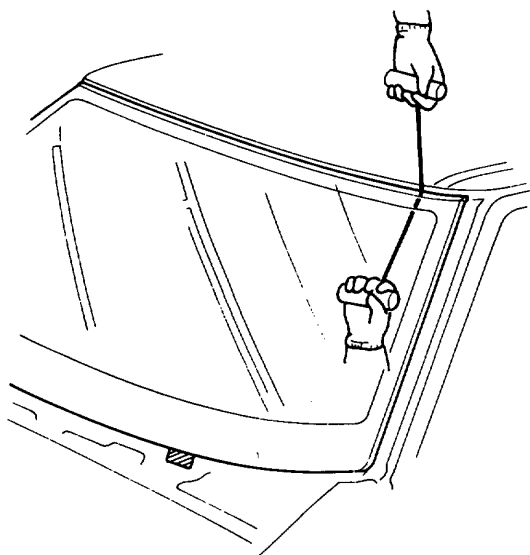


8. Using an awl, make a hole through the adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.



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 molding and the dam.

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

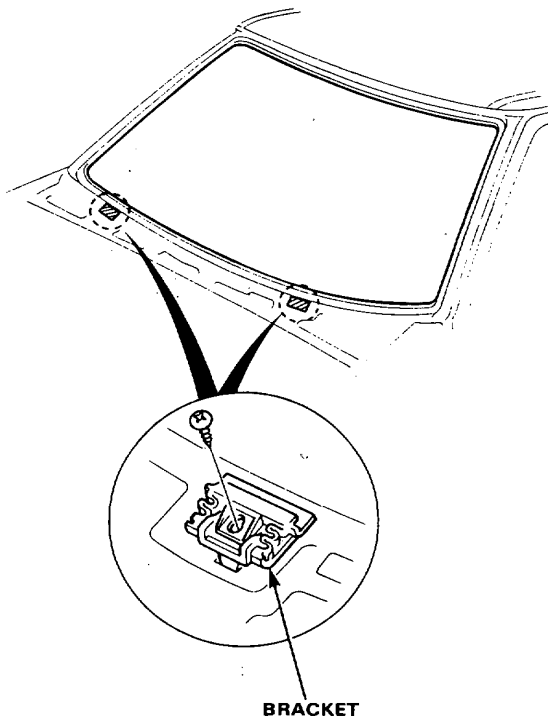
NOTE:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber damer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. Install the glass brackets as shown.



(cont'd)

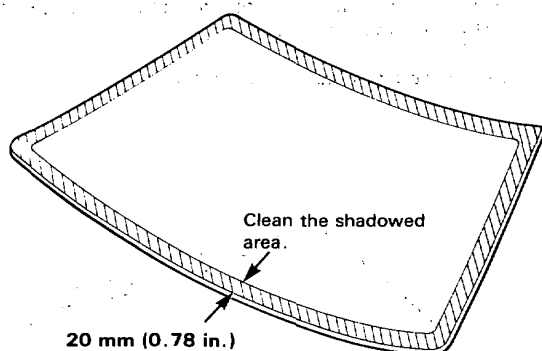
Windshield

Removal (cont'd)

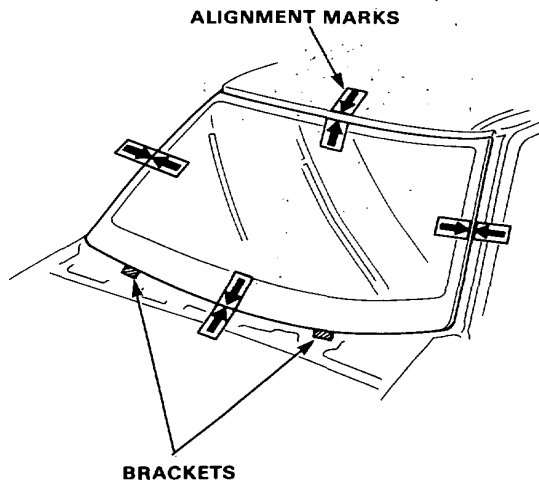
4. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

NOTE: Make sure the bonding surface is kept free of water, oil and grease.

CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.

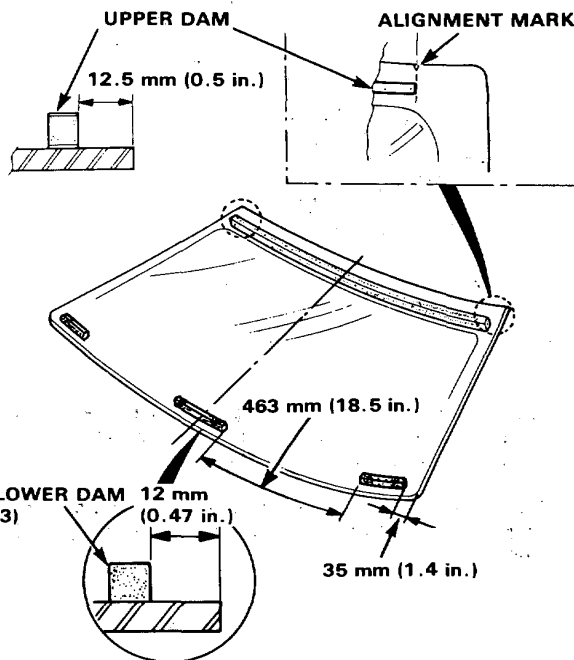


5. Set the glass upright on the spacers, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.

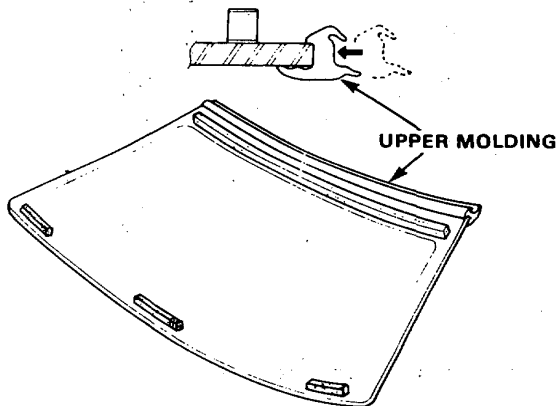


6. Center and glue the rubber dam to the inside face of the glass as shown, to contain the adhesive during installation.

NOTE: Be careful not to touch the glass where adhesive will be applied.



7. Apply the upper molding to the glass as shown.

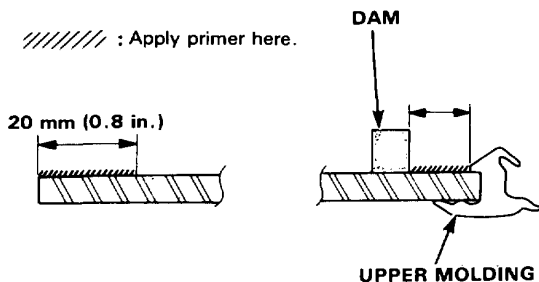




8. With a sponge, apply a light coat of glass primer around the edge of the glass, then lightly wipe it off with gauze or cheesecloth.

NOTE:

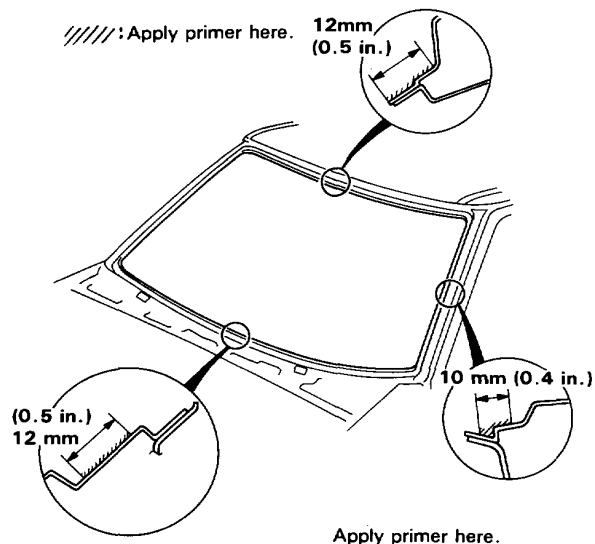
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.
- Mask off the dashboard before painting the flange.

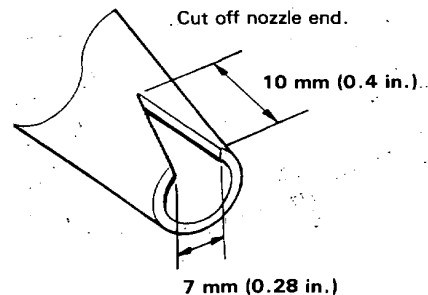


10. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

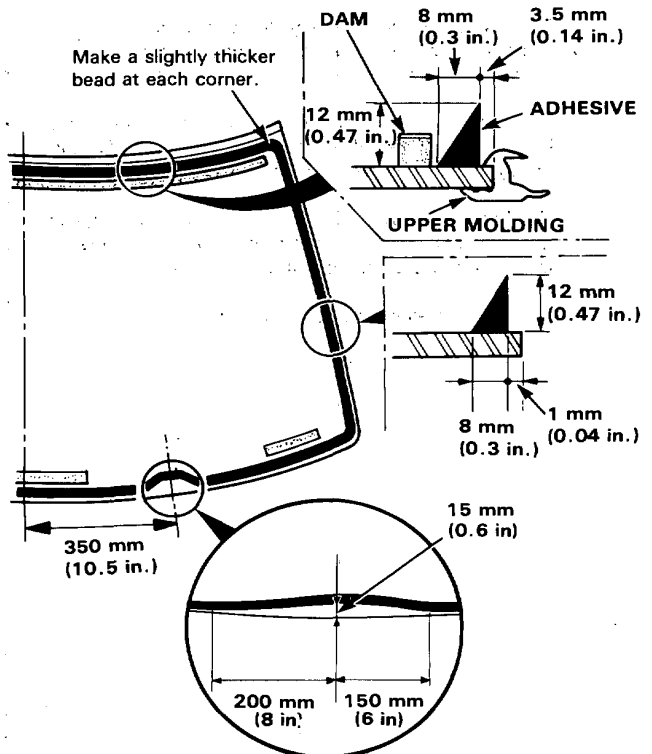
NOTE:

- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that came with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



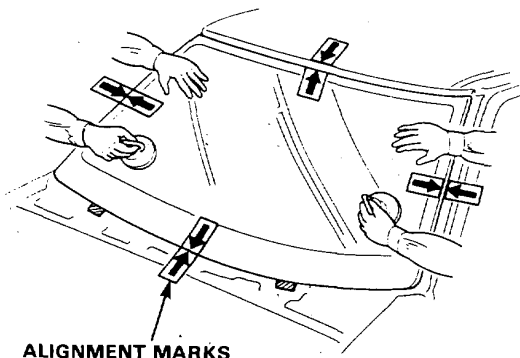
(cont'd)

Windshield

Installation (cont'd)

13. Use suction cups to hold the glass over the opening, align it with the marks made in step 5 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close the doors until the adhesive is dry.



14. Install the front side moldings.
15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

16. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

17. Reinstall all remaining removed parts.

Rear Window Glass



Removal

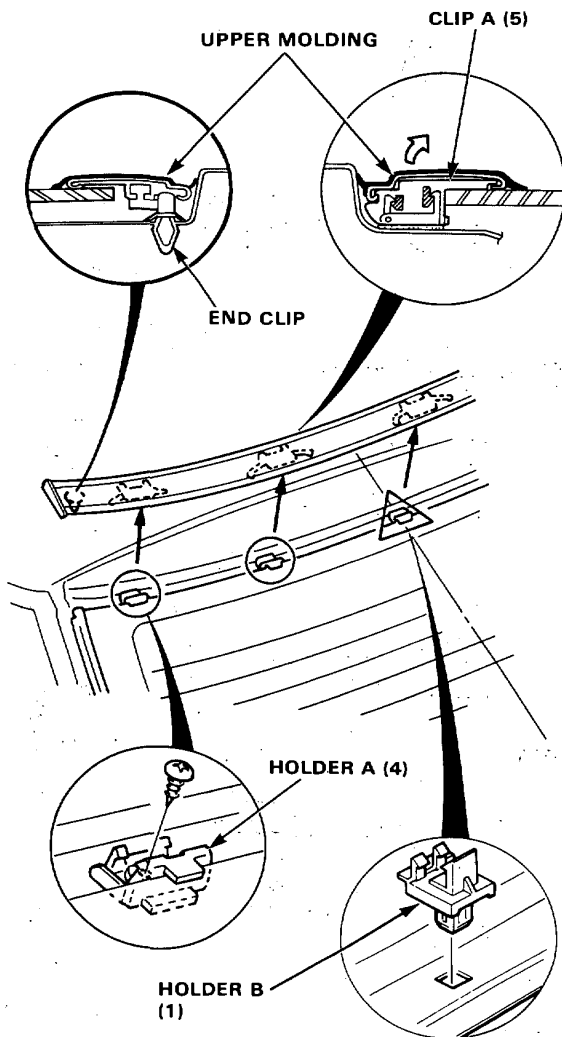
CAUTION:

- Wear gloves to remove and install the glass.
- Do not damage the defroster grid lines.
- Use seat covers to avoid damaging surface.

1. To remove the rear window glass, first remove the:
 - Tailgate trim panel (page 14-56).
 - Rear wiper (See section 16).
2. Disconnect the defroster leads, and remove their holders.

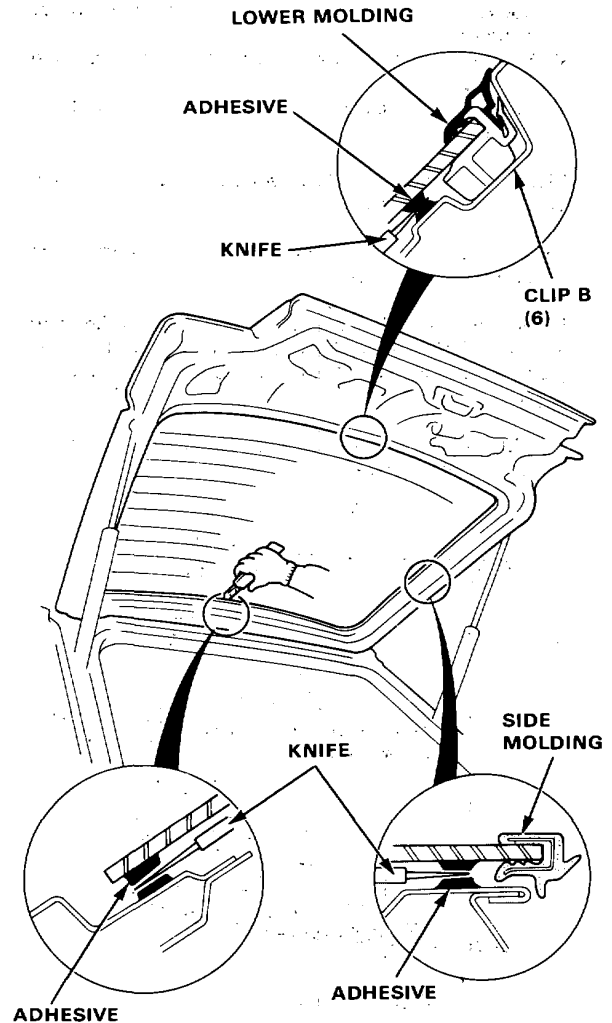
NOTE: Take care not scratch or score the glass with the cutter blade.

3. Detach the clips and remove the upper molding.



4. Remove the screw, then remove the holder A.

5. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area.



6. If the glass is to be reinstalled, remove the side moldings and lower molding.

Rear Window Glass

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

NOTE:

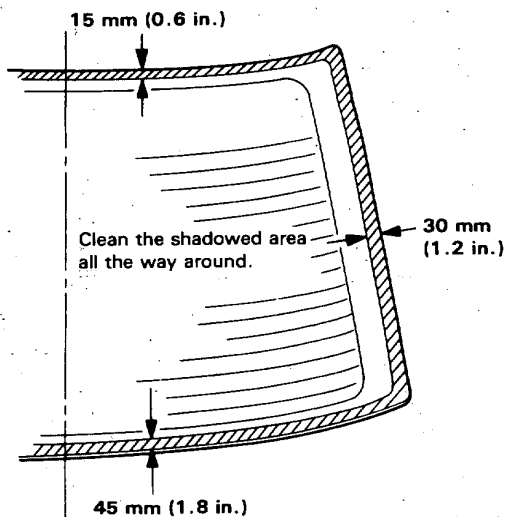
- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer material from the body.
- Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

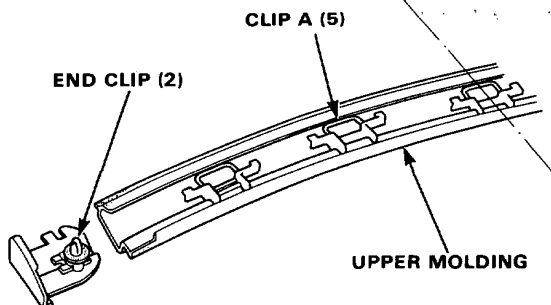
NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

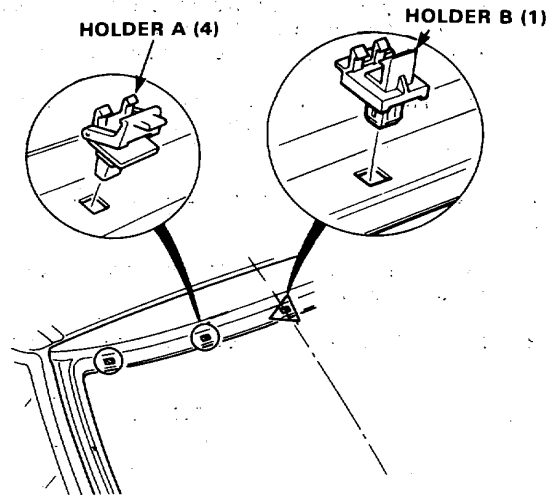
NOTE: Make sure the bonding surface is kept free of water, oil and grease.



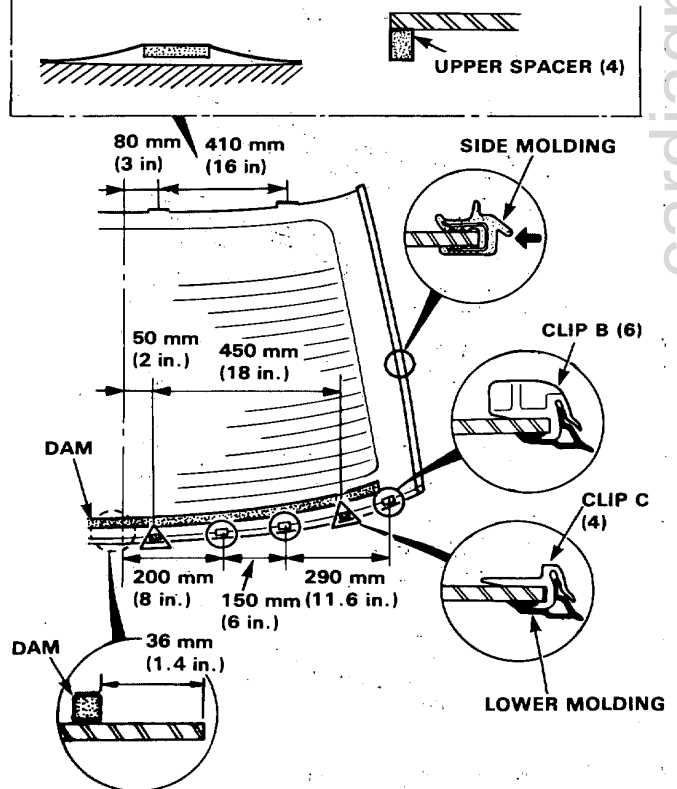
4. Attach the clips to the upper molding as shown.



5. Install the holders to the tailgate.

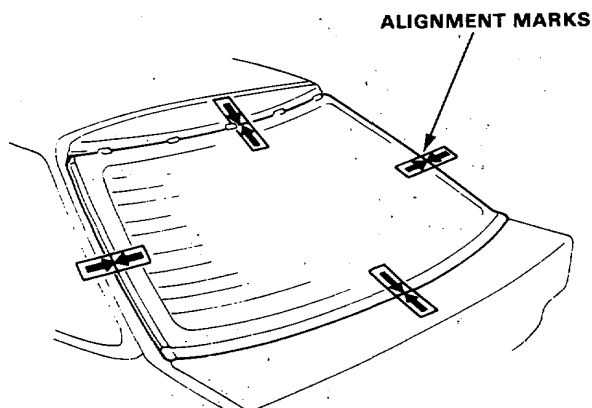


6. Center and glue the rubber dam and upper spacers to the inside face of the glass as shown, to contain the adhesive during installation. Install the lower and side moldings to the glass as shown.





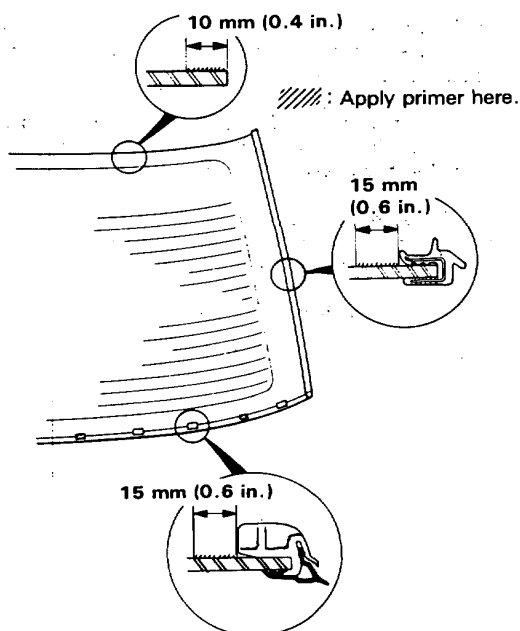
7. Set the glass upright on the tailgate, and center it in the opening. Mark the location by marking lines across the glass and body with a grease pencil at the four points shown.



8. With a sponge, apply a light coat of glass primer around the edge of glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

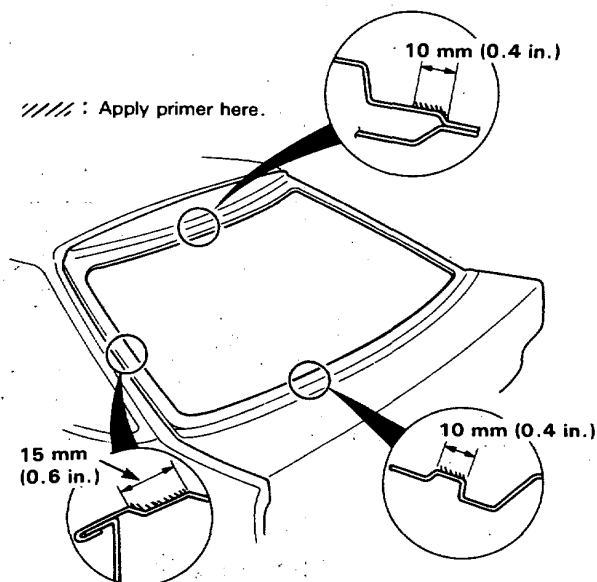
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

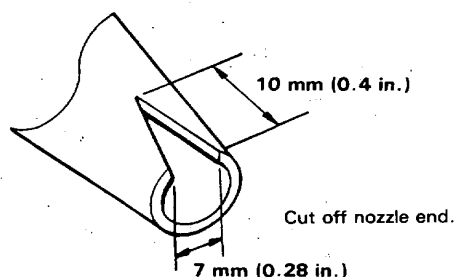


10. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE:

- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

11. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

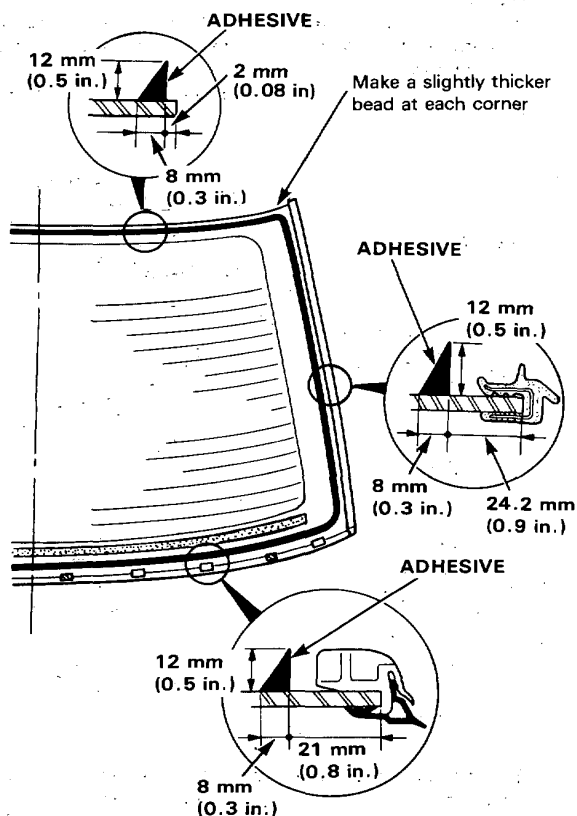


(cont'd)

Rear window Glass

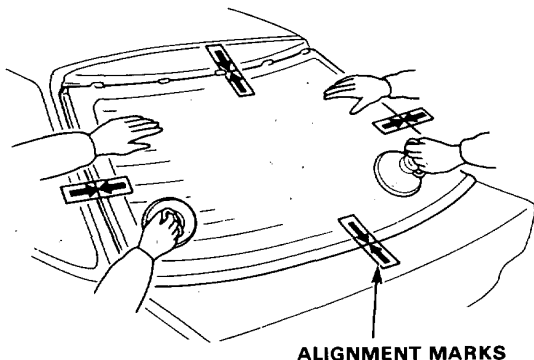
Installation (cont'd)

12. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

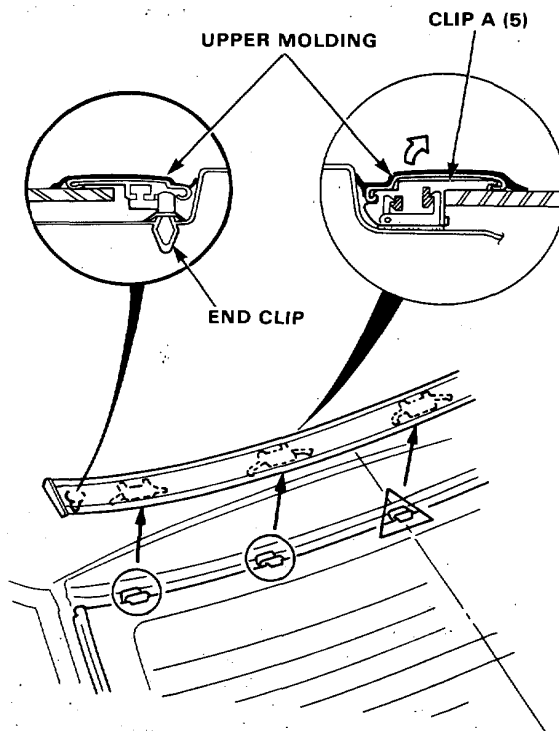


13. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open and close the doors until the adhesive is dry.



14. Install the upper molding as shown.



15. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

16. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

17. Reinstall all remaining removed parts.

Quarter Window Glass

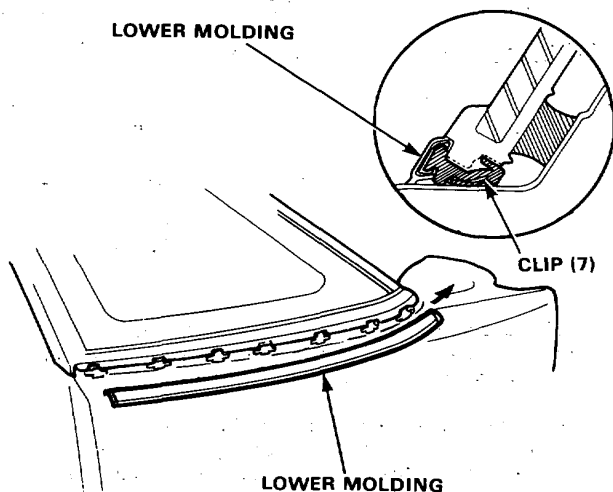


Removal

CAUTION:

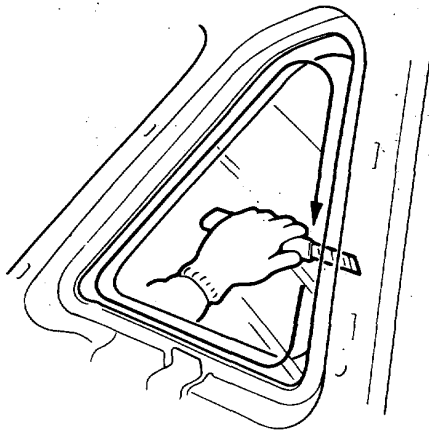
- Wear gloves to remove and install the glass.
- Take care not scratch or score the quarter window moldings.
- Use seat covers to avoid damaging surface.

1. Remove the quarter window trim panel (pages 14-39).
2. Remove the quarter lower molding.



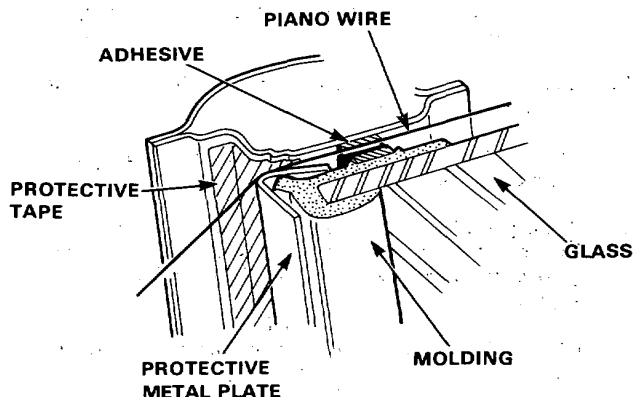
3. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area.

NOTE: Be careful not to cut the molding.

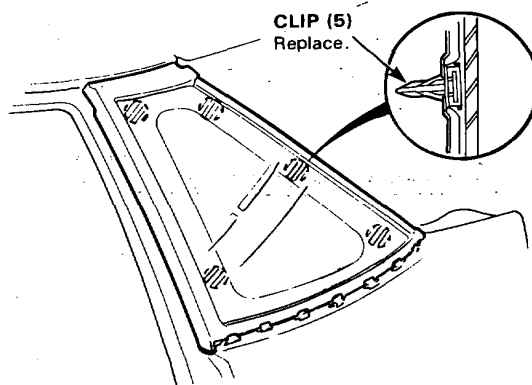


4. Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.

NOTE: Apply protective metal plate along the edge of the body next to the glass.



5. Use a knife to cut the clips from inside the car. NOTE: Be careful not to cut the molding.



6. Carefully take off the clips.

Quarter Window Glass

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

NOTE:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Mask off surrounding surfaces before applying primer.

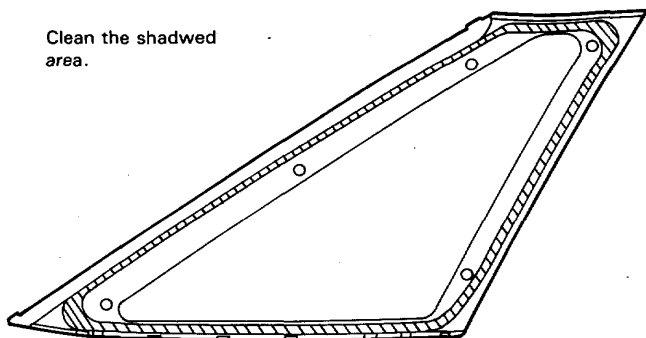
2. Clean the body bonding surface with a sponge dampened in alcohol.

NOTE After cleaning, keep oil, grease or water from getting on the surface.

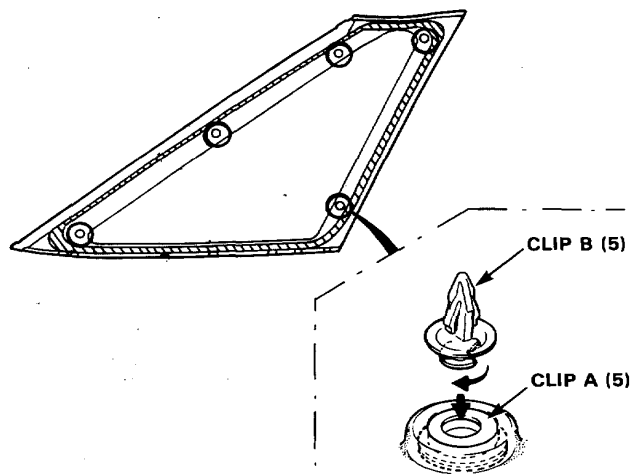
3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

NOTE: Make sure the bonding surface is kept free of water, oil and grease.

Clean the shaded area.



4. Install the clips on the quarter glass as shown.

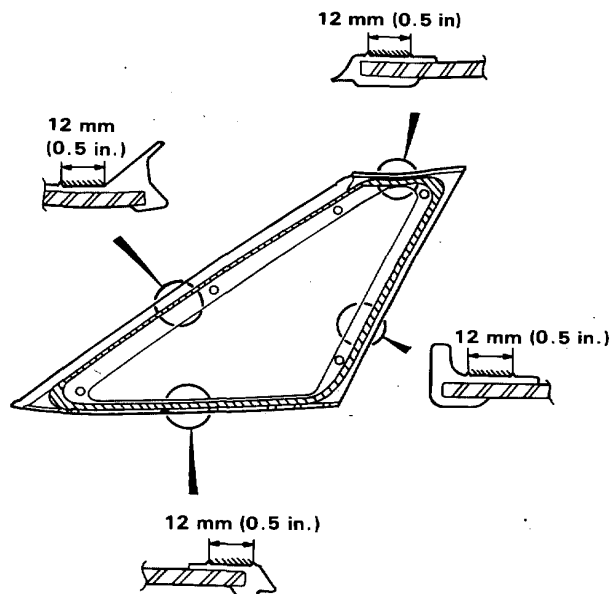


5. With a sponge, apply a light coat of glass primer around the edge of glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water dust, and abrasive materials away from the primed surface.

/// : Apply primer here.



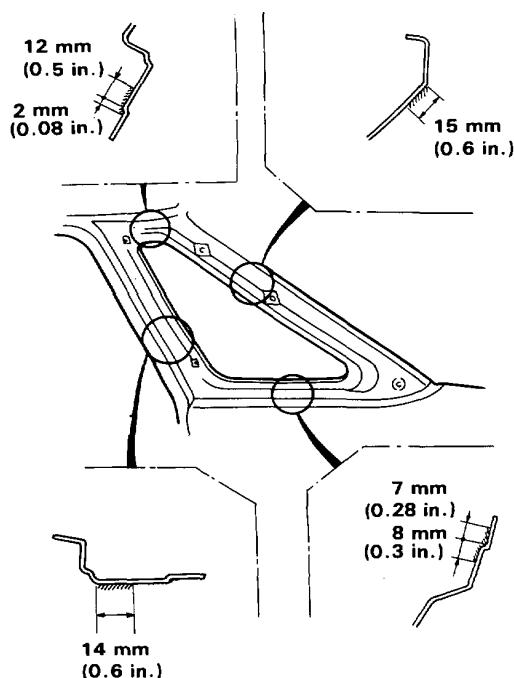


6. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

//// : Apply primer here.

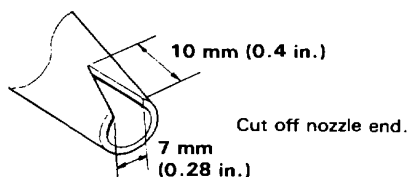


7. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

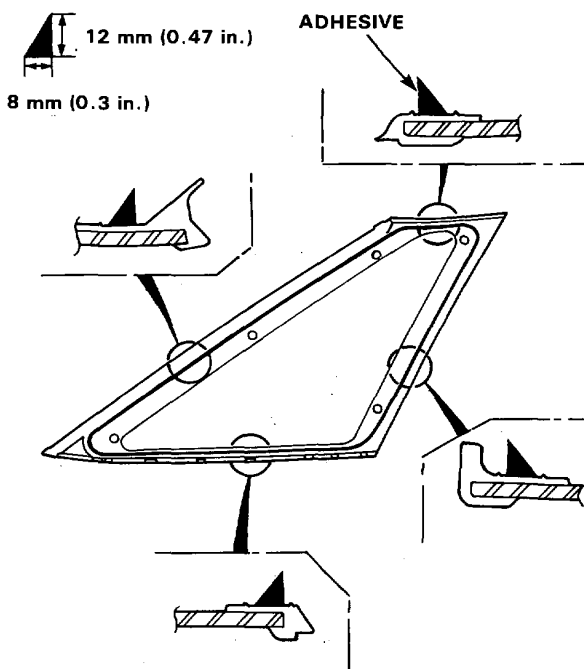
NOTE:

- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

8. Before filling a cartridge, cut off the end of the nozzle at the angle shown.

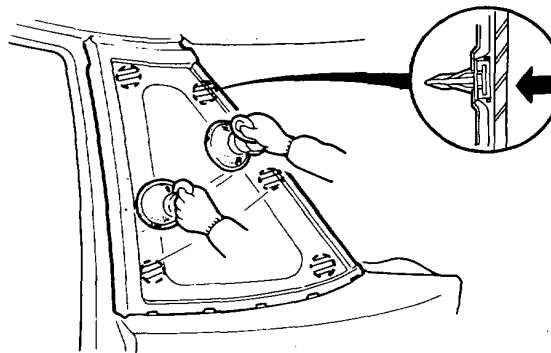


9. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



10. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open and close the doors until the adhesive is dry.

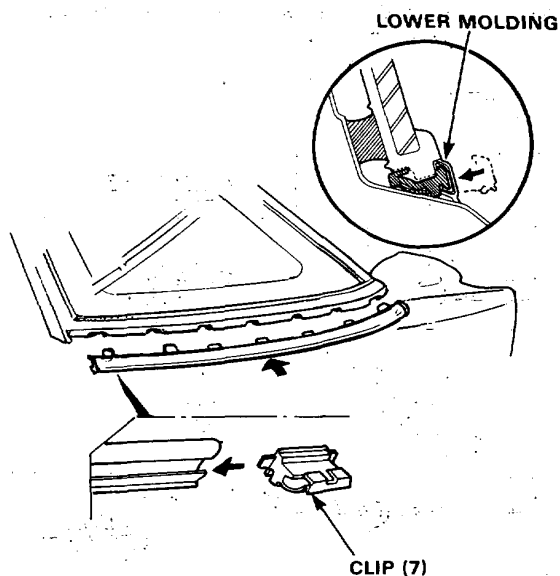


(cont'd)

Quarter Window Glass

Installation (cont'd)

11. Install the quarter lower molding.



12. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

13. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

14. Reassemble all remaining removed parts.



SLIDING GLASS
Replacement, page 14-34
Adjustment, pages 14-32, 33

GLASS MOUNTING SCREW

DRAIN CHANNEL SEAL

DRAIN CHANNEL

SUNSHADE
Replacement, page 14-34

WIND DEFLECTOR
Adjustment/Replacement, page 14-33

GLASS BRACKET

Replacement, page 14-35

CABLE SLIDER

Replacement, page 14-35

DEFLECTOR SEAL

SET PLATE

REAR STOPPER

FRONT DRAIN TUBE
Replacement, page 14-38

GUIDE RAIL COVER

GUIDE RAIL
Removal, page 14-37

FRAME SEAL

RELAY

REAR DRAIN TUBE
Replacement, page 14-38

CABLE PIPE ASSEMBLY
Replacement, page 14-37

SUNROOF FRAME
Replacement, page 14-36

WIRE HARNESS

MOTOR
Replacement, page 14-36
Adjustment, page 14-38

Sunroof

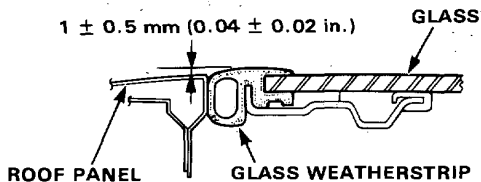
Troubleshooting

Symptom	Probable Cause
Water leak	1. Clogged drain tube. 2. Gap between glass weatherstrip and roof panel. 3. Defective or improperly installed glass weatherstrip. 4. Defective or improperly installed guide rail.
Wind noise	1. Excessive clearance between glass weatherstrip and roof panel.
Deflector noise	1. Improper clearance between deflector seal and roof panel. 2. Insufficient deflector extension. 3. Deformed deflector.
Motor noise	1. Loose motor. 2. Worn gear or bearing. 3. Outer cable deformed.
Sliding glass does not move, but motor turns	1. Clutch out of adjustment. 2. Foreign matter stuck between guide rail and sliding glass panel. 3. Outer cable loose. 4. Outer cable not attached properly.
Sliding glass does not move and motor does not turn (Sliding glass can be moved with sunroof wrench)	1. Blown fuse. 2. Faulty switch. 3. Battery run down. 4. Defective motor.

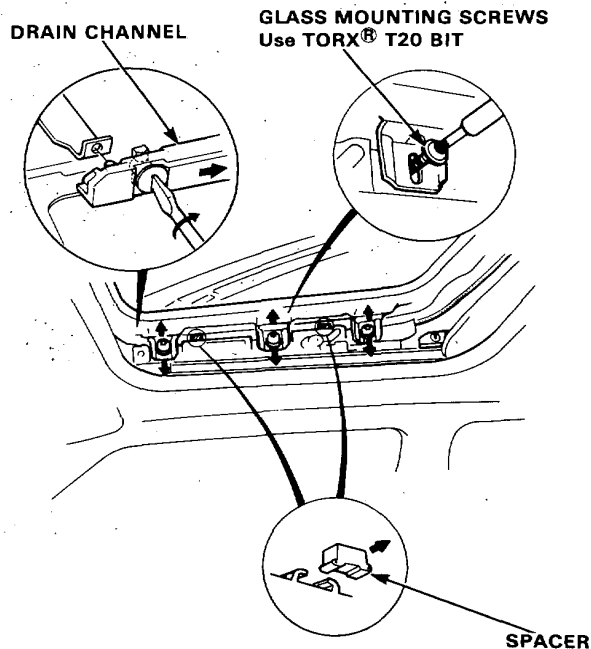
Glass Adjustment

Roof panel should be even with the glass weatherstrip, to within 1 ± 0.5 mm (0.04 ± 0.02 in.) all the way around. If not, slide sunshade back, and:

1. Slide the drain channel to the backward.
2. Loosen the mounting screws and adjust the sliding glass up or down to the gap between the glass weatherstrip and at the roof panel.
3. Repeat on opposite side if necessary.



4. Side-to-side fit of glass weatherstrip can be adjusted by loosen the sunroof frame mounting bolts and moving the frame right or left and forward or backward by hand (page 14-36).



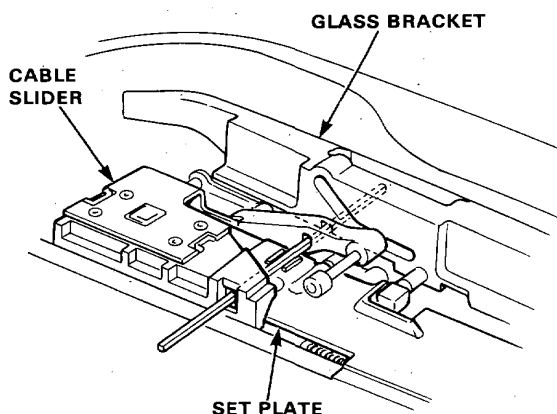


Closing Fit Adjustment

Open the glass about a foot then close it to check where rear edge begins to rise.

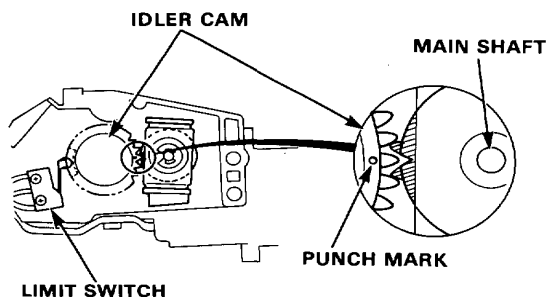
If it rises too soon and seats too tightly against the roof panel, or too late and does not seat tightly enough, adjust it.

1. Remove the sliding glass (page 14-34).
2. Remove the sunroof motor (page 14-36).
3. Align the fully closed position of the cable slider, set plate and glass bracket by inserting the 3.5~4 mm square rod as shown.



4. Check that the alignment left and right, then install the sunroof motor.

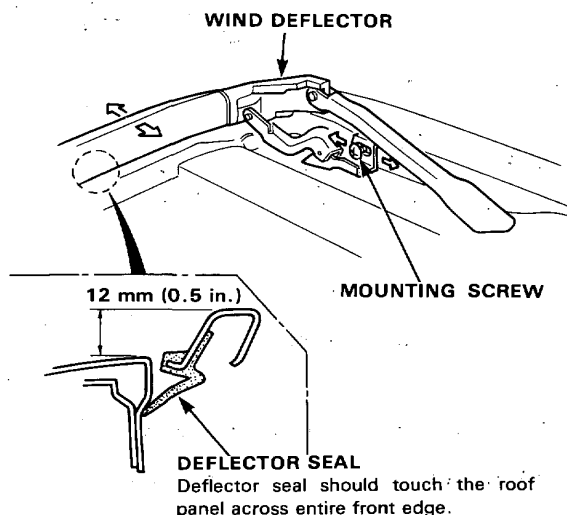
NOTE: If necessary; check that the closed position of sunroof motor (idler cam) as shown.



Wind Deflector Adjustment and Replacement

NOTE: A gap between deflector seal and roof panel will cause wind noise when driving at high speed with the sunroof open.

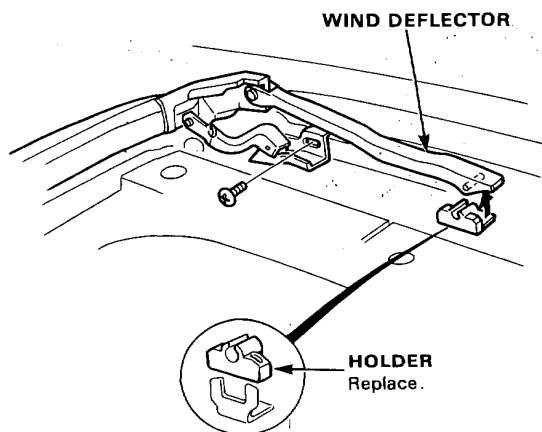
1. Open the sliding glass.
2. Loosen deflector mounting screws.
3. Adjust deflector forward or backward so the edge of its seal touches the roof panel evenly.



Deflector seal should touch the roof panel across entire front edge.

NOTE: The height of the deflector when open can not be adjusted. If damaged or deformed, replace it.

4. If necessary, remove the wind deflector by removing the mounting screws and pry the rear edge of deflector off the holder.

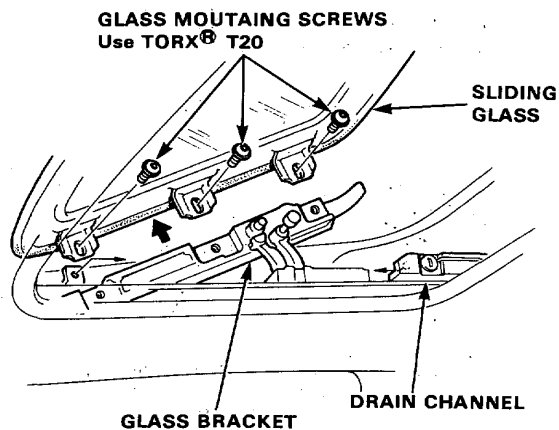


5. Installation is done in the reverse order of removal.

Sunroof

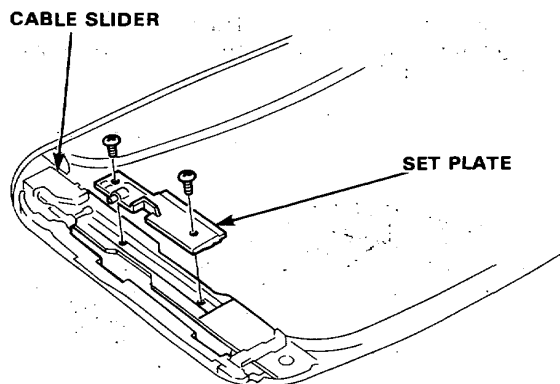
Glass and Sunshade Replacement

1. Tilt-up the sliding glass and open the sunshade.
2. Slide the drain channel to the backward by removing the mounting screws.
3. Remove the glass mounting screws, then lift off the sliding glass from the mounting bracket.

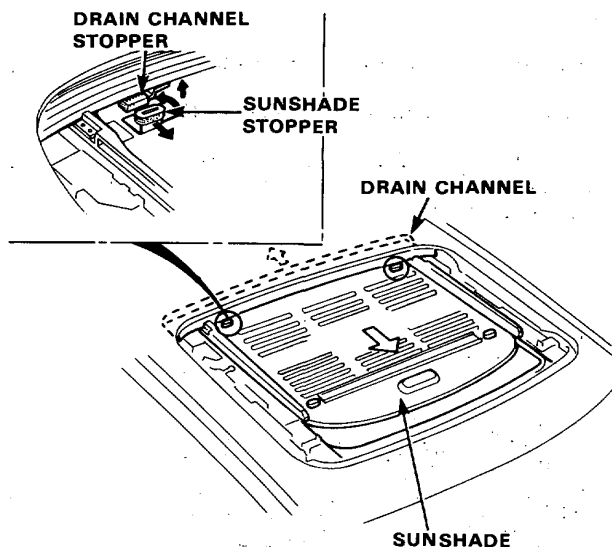


4. Remove the screws, then remove the set plates.

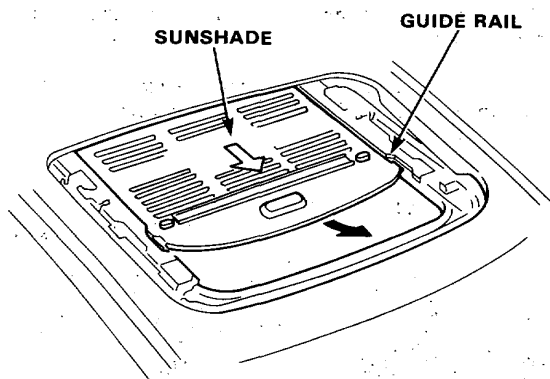
NOTE: Slide the cable slider to the backward.



5. Slide the sunshade fully to the forward by lifting the drain channel stoppers.



6. Pull out and remove the sunshade from the cut-out of the guide rails.



7. To attach, follow the steps described for removal in reverse.

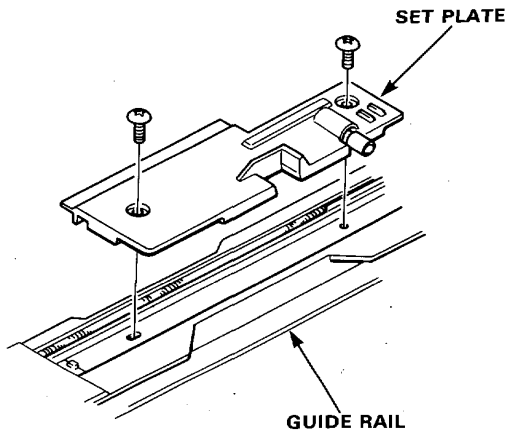
NOTE:

- Check that the sunshade moves smoothly.
- After attachment, check the glass height and alignment.
- Check for water and air leaks.

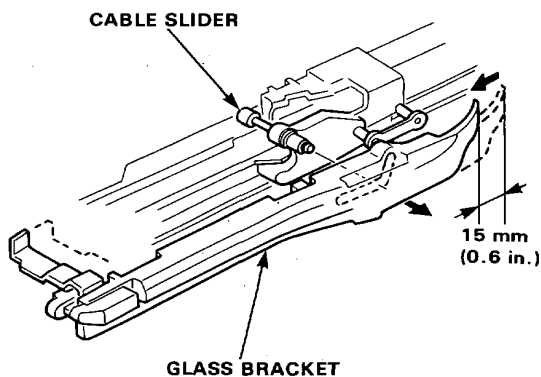


Glass Bracket and Cable Slider Replacement

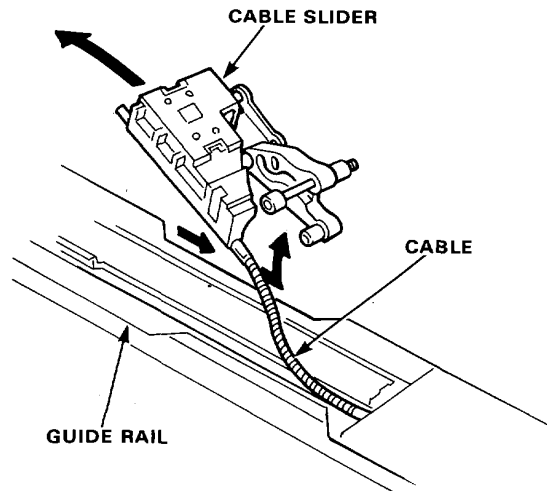
1. Remove the wind deflector (page 14-33).
2. Remove the sliding glass (page 14-34).
3. Pull down the front of headliner.
4. Remove the 3 screws and disconnect the connector, then remove the sunroof motor (page 14-36).
5. Remove the screws, then remove the set plates from the guide rails.



6. Move just the glass bracket backward, then remove the glass brackets from cable sliders as shown below.



7. Lift off the cable sliders from the cut-out of guide rails.
8. Remove the cables from cable pipes.



9. Installation sequence is essentially the reverse order of removal.

NOTE:

- Check the cables for wear or damage.
- Grease all the moving surfaces of the cable sliders and glass brackets.
- Before installing the sunroof motor, check that the cable sliders and glass brackets with the glass tilt-up position.
- Take care not to bend the cable.

Sunroof

Motor and Frame Replacement

CAUTION: Be careful not to damage the seats or other interior trim.

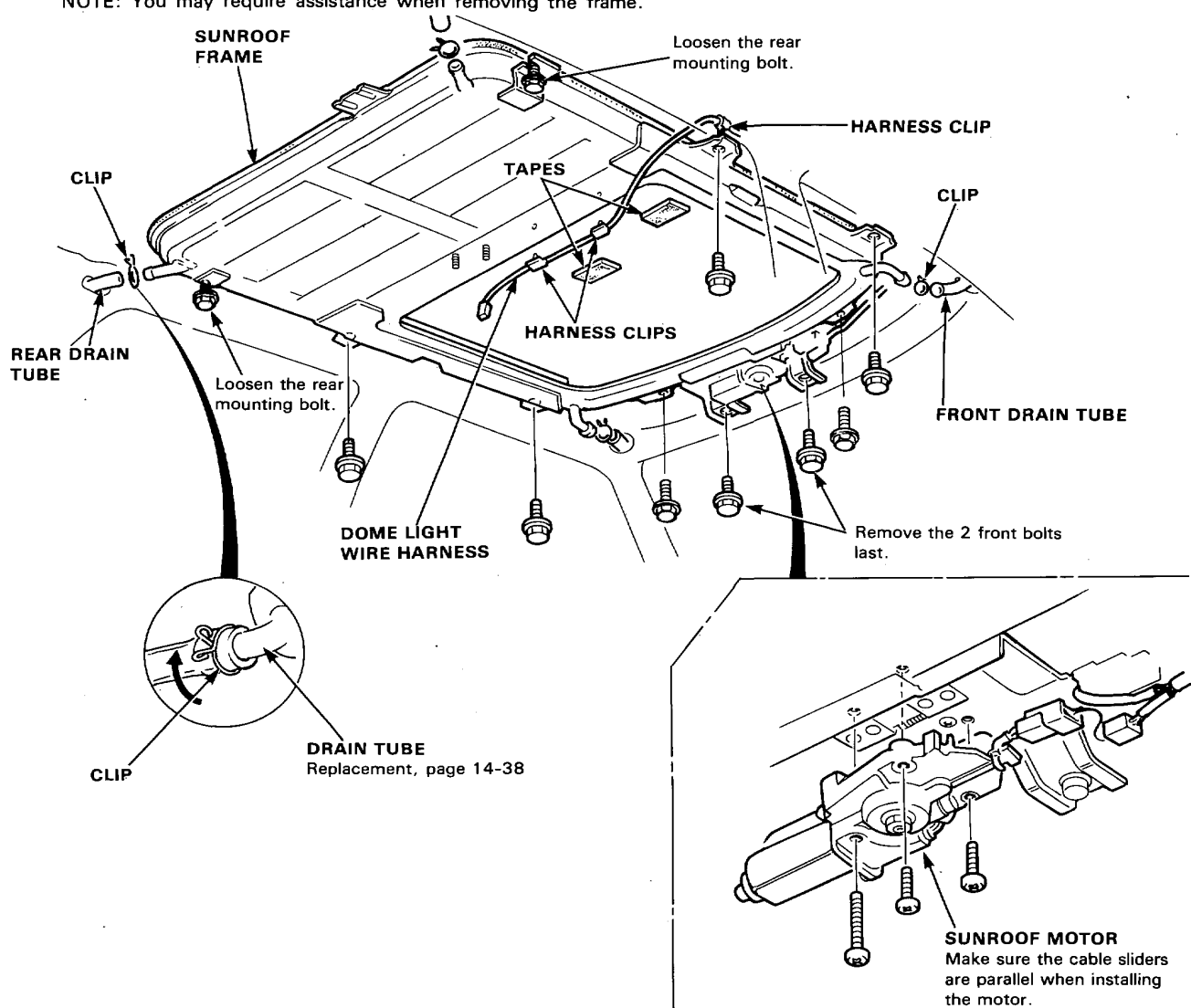
1. Remove the sliding glass (page 14-34) and the headliner (page 14-40).
2. Disconnect the motor and relay wire harness; remove the clips securing the dome light wire harness.

NOTE: When removing the sunroof motor, remove the 3 mounting screws.

3. Disconnect the drain tubes.
4. Remove the 6 × 16 mm mounting bolts from the frame, and loosen the 2 rear mounting bolts.

5. Remove the sunroof frame from the car.

NOTE: You may require assistance when removing the frame.



6. To install, insert the frame's rear hooks into the rear mounting bolts, then install parts in the reverse order of removal.

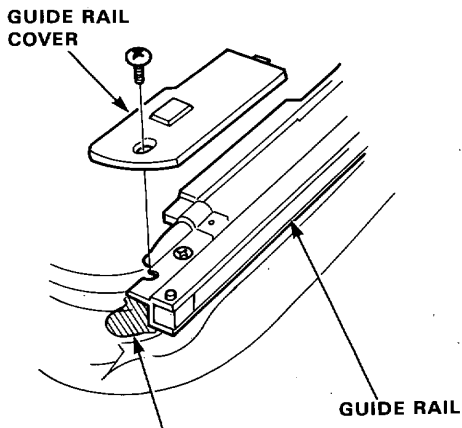
NOTE:

- Install the tube clips with the ends facing the side to ease installation of the headliner.
- Insert over 10 mm of the drain tube onto the nozzle.
- Check for water and air leaks.



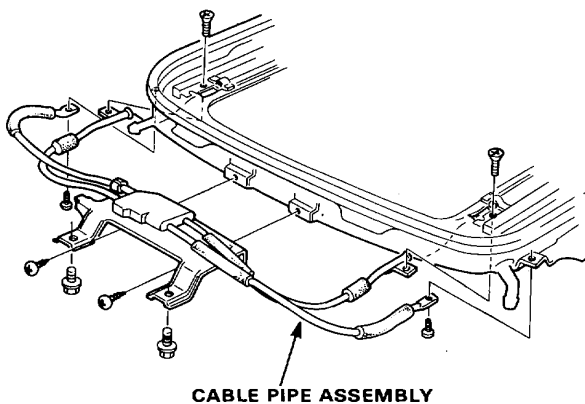
Cable Pipe Assembly Replacement

1. Remove the cable sliders (page 14-35).
2. Remove the guide rail covers.



3. Remove the screws and 2 bolts, then remove the cable pipe assembly from the sunroof frame.

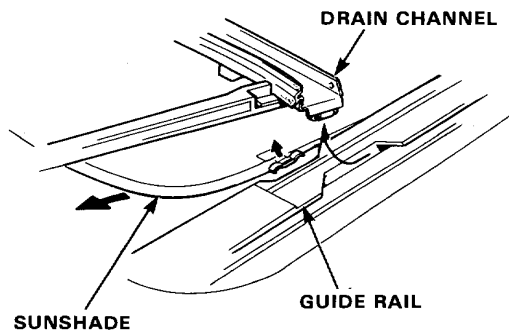
NOTE: Take care not to deform the cable pipes.



4. Install the cable pipe assembly in the reverse order of removal.

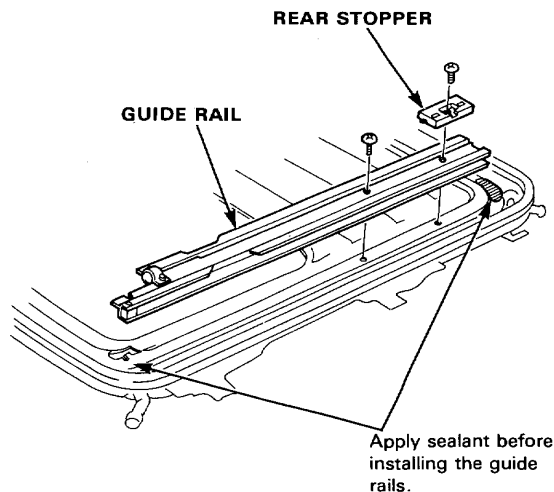
Guide Rail Replacement

1. Remove the sunroof frame (page 14-36).
2. Remove the cable sliders (page 14-35).
3. Lift off the sunshade and drain channel from the cut-out of guide rails.



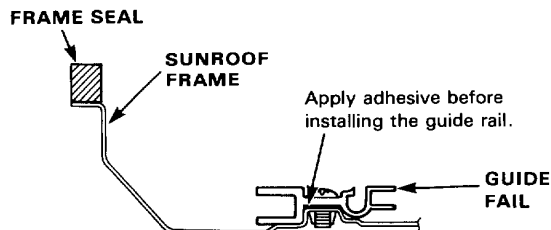
4. Remove the screws and rear stoppers, lift off the guide rails from the frame.

NOTE: Remove the guide rail slowly and carefully; it is cemented to the frame.



5. Install the guide rail in the reverse order of removal.

NOTE: Apply adhesive to guide rails mount faces of the frame.



Sunroof

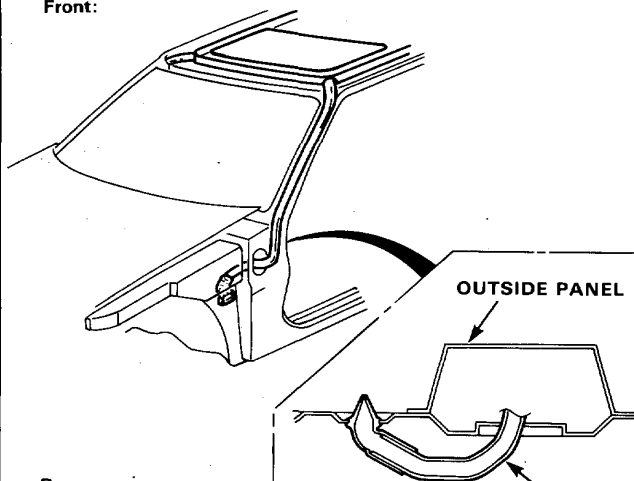
Drain Tube Replacement

1. Detach the clips and grommets.
2. Pull the drain tubes out the front and rear pillars.
NOTE: Before pulling out the drain tube, tie a string to the end of it so you can pull it back in when the pillar is reinstalled.
3. Install the drain tube in the reverse order of removal.

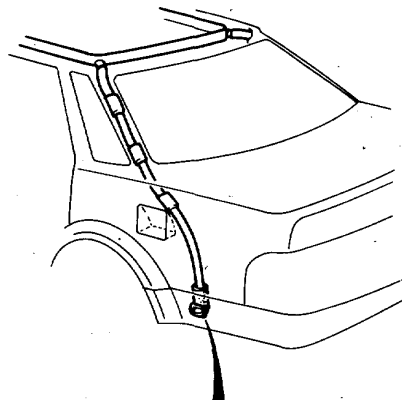
NOTE:

- Take care not to pinch tube during reinstallation.
- Install the grommets firmly.

Front:

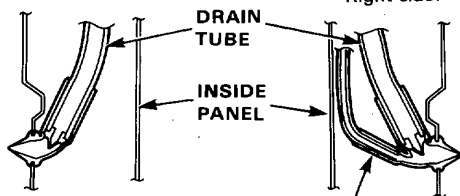


Rear:



Left side:

Right side:



ANTENNA MOTOR DRAIN TUBE

Drag Check/Closing Force Check

CAUTION: When using the spring scale, protect the leading edge of the sliding glass with a shop towel.

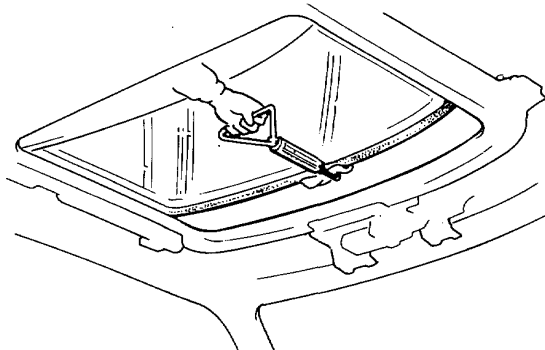
Motor Removed:

1. Before installing the sunroof motor, measure effort required to open sliding glass using a spring scale as shown.
2. If load is over 98 N (10 kg, 22 lb), check side clearance and glass adjustment (page 14-32).

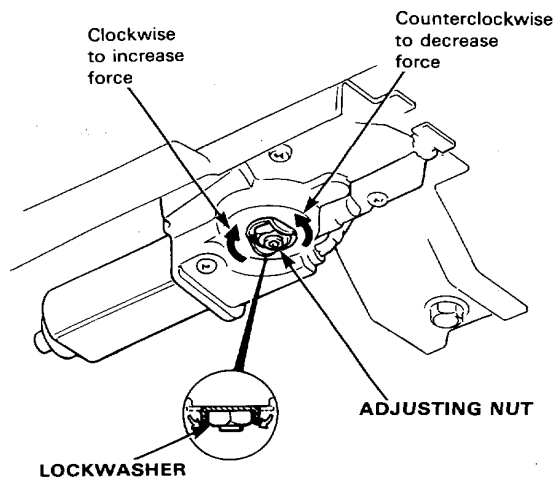
Motor Installed:

1. After installing all removed parts, have a helper hold the switch to close the sunroof while you measure force required to stop it. Attach spring scale as shown. Read force as soon as glass stops moving, then immediately release the switch and spring scale.

Closing Force: 196–245 N
(20–30 kg, 44–55 lb)



2. If force is not within specification, install a new lockwasher, adjust the tension by turning the sunroof motor clutch adjusting nut, and bend the lockwasher against the adjusting nut.

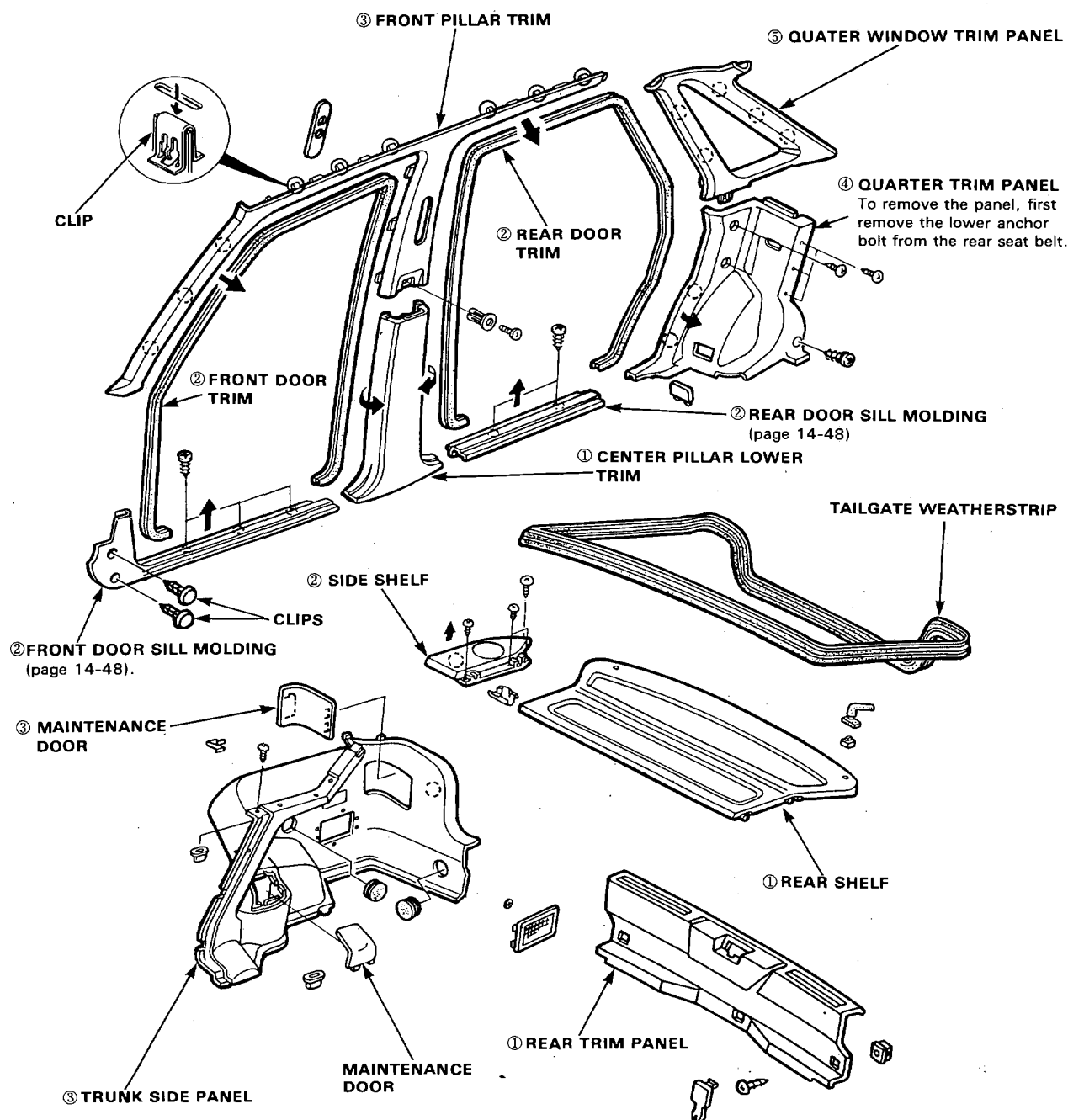




Interior Trim Replacement

Disassemble in nurbered sequence.

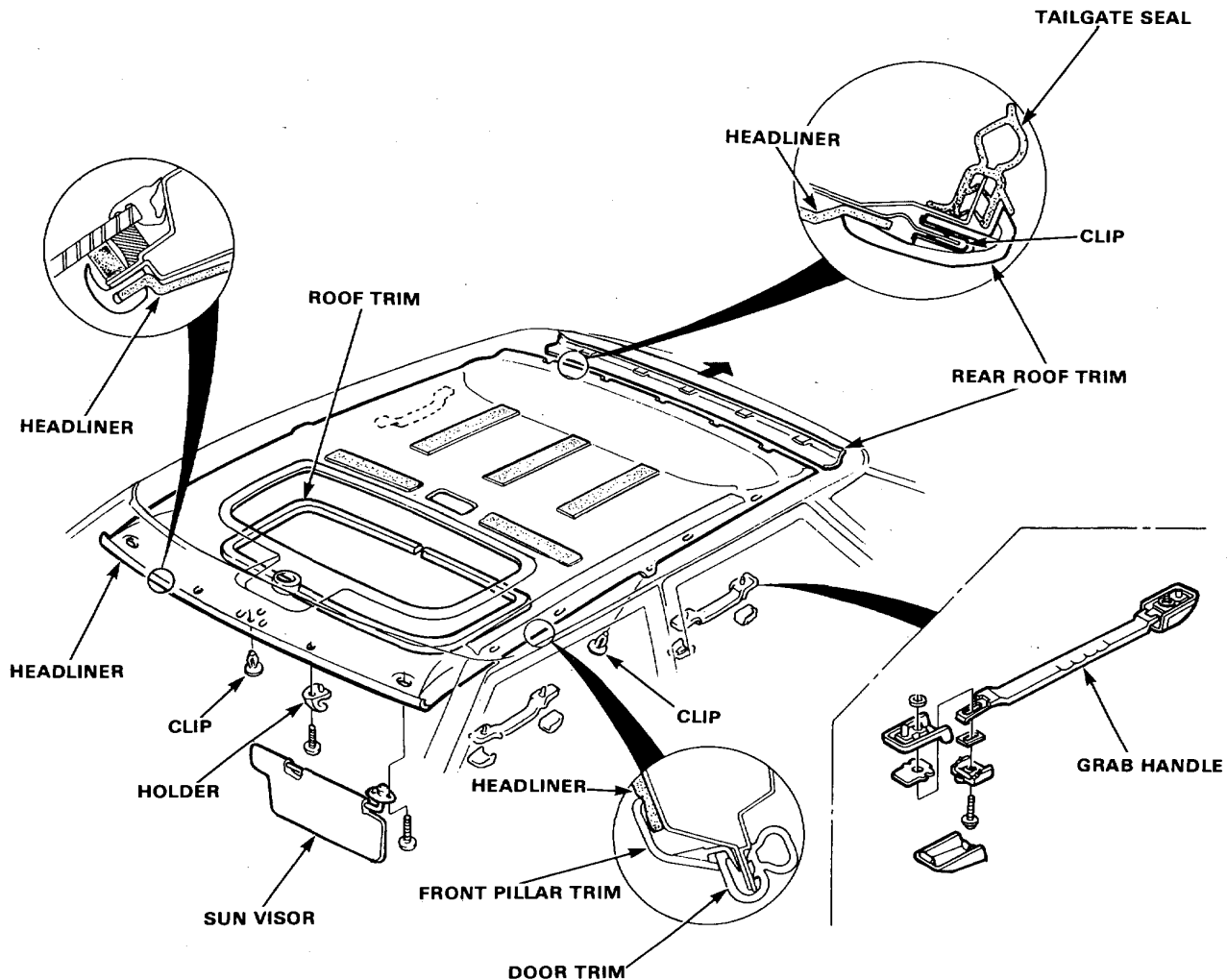
○ : Clip locations



Headliner

Replacement

1. Remove:
 - Sun visors and holders.
 - Front pillar trim (page 14-39).
 - Quarter window trim panel (page 14-39).
 - Dome light.
 - Grab handles.
2. Remove the clips and rear roof trim, then remove the headliner.



3. Assemble the headliner in the reverse order of disassembly.

NOTE:

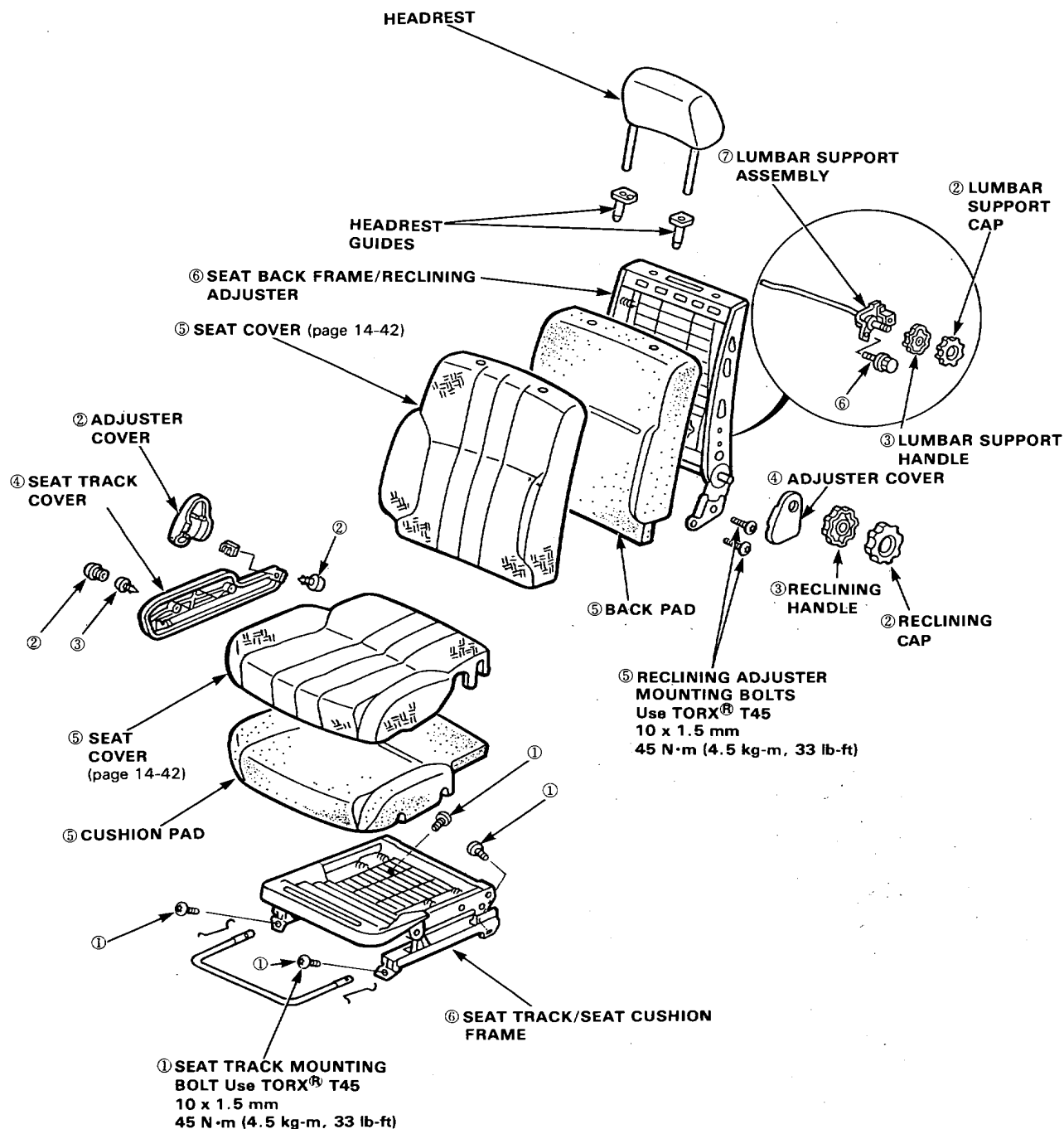
- When installing the headliner inside the passenger cabin, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check that the two sides of the headliner are securely attached to the trim.
- When installing the roof trim, install the joint towards the rear (Sunroof model).



Front Seats

Disassembly

Disassemble in numbered sequence.



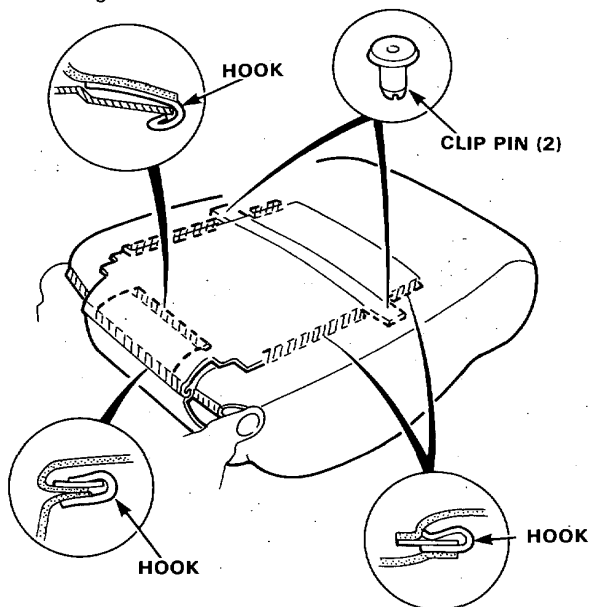
Front Seats

Cover Replacement

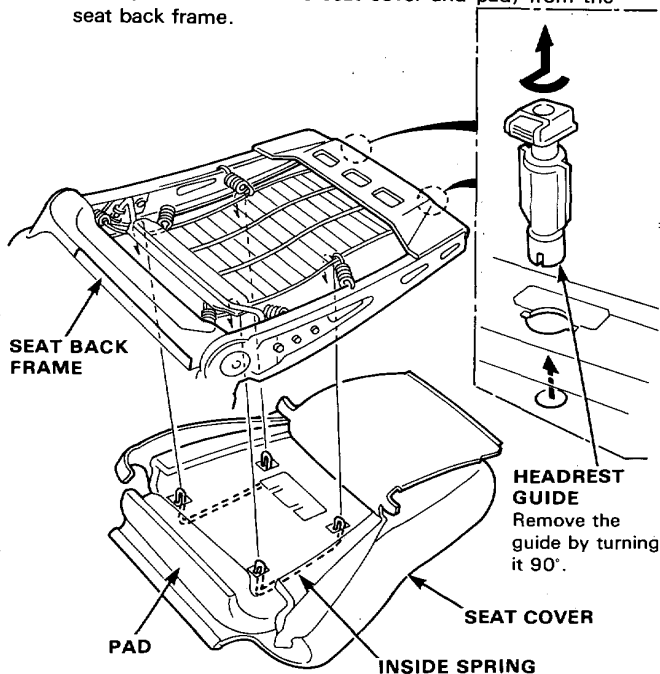
CAUTION: Wear gloves to remove and install the seat cover.

Seat Back removal:

1. Remove the seat assembly from the car.
2. Remove the reclining handle, lumbar support handle and adjuster covers.
3. Remove the clip pins and turn over the seat cover by releasing all the hooks.

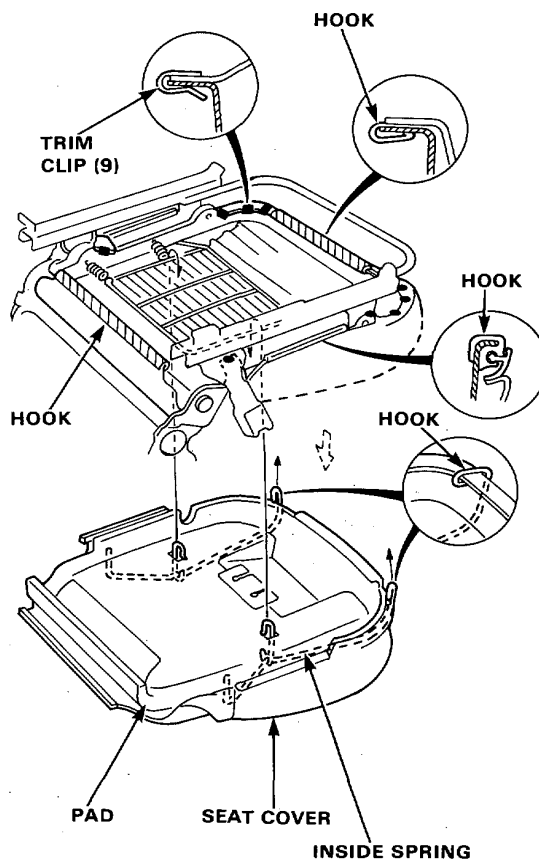


4. Remove the headrest guides and seat back spring hooks, then remove the seat cover and pad, from the seat back frame.



Seat Cushion removal:

1. Remove the the seat track cover.
2. Pry off the clips and turn over the seat cover by releasing all the hooks and inside spring hooks.
3. Remove the seat cover and pad from the cushion frame.



NOTE: To prevent wrinkles when installing a seat cover, make sure the material is stretched evenly over the frame before securing all the clips.

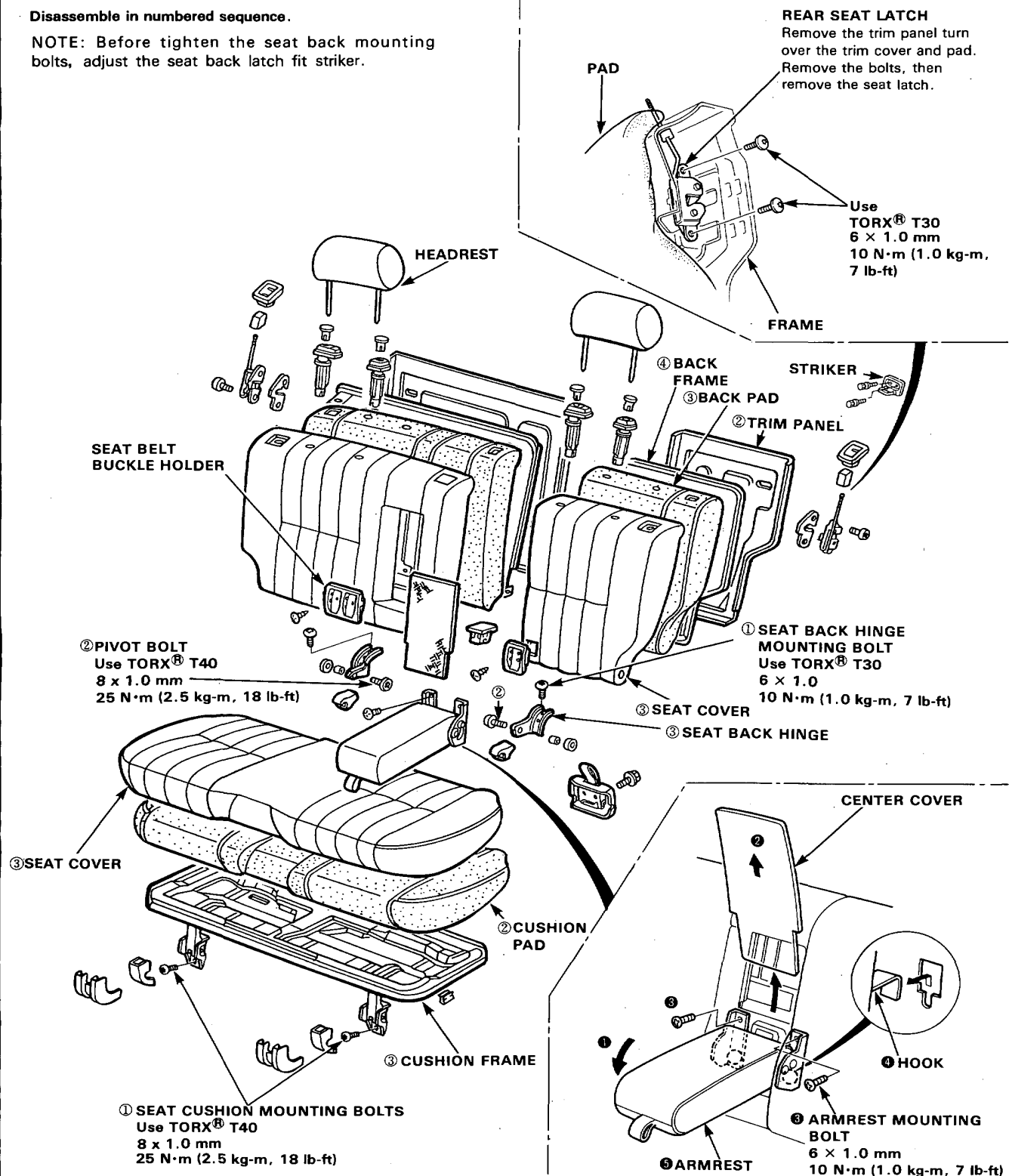


Rear Seats

Disassembly

Disassemble in numbered sequence.

NOTE: Before tighten the seat back mounting bolts, adjust the seat back latch fit striker.

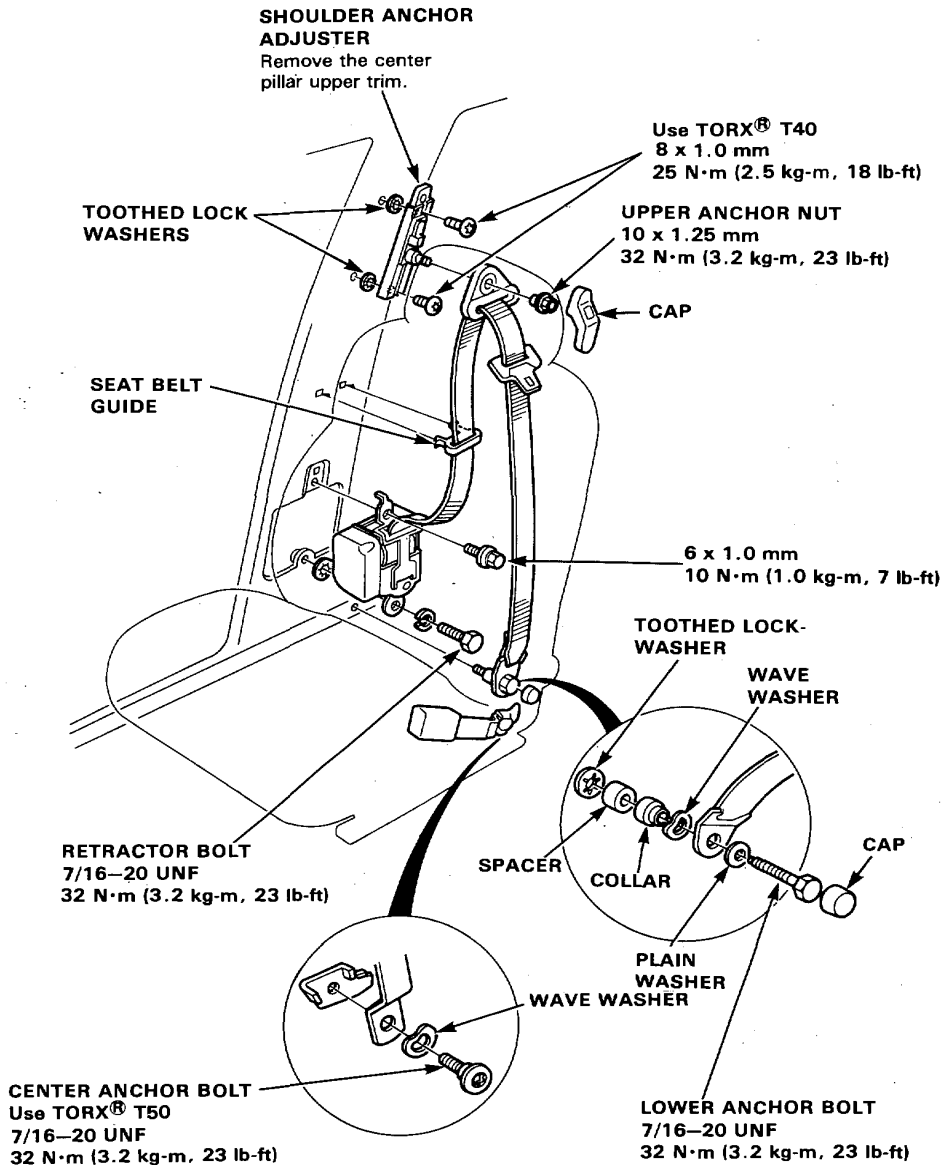


Front Seat Belts

Replacement

CAUTION: Check the seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the center pillar lower trim.
2. Remove the upper anchor nut, lower anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.
3. Remove the front seat, then remove the bolt and the center anchor.



4. Check that the retractor locking mechanism functions as described on page 14-46.
5. Install the front seat belts in the reverse order of removal.

NOTE:

- Make sure you assemble the washers and collars on the upper and lower anchor bolts as shown.
- Before attaching the center pillar lower trim, make sure there are no twists or kinks in the belts.

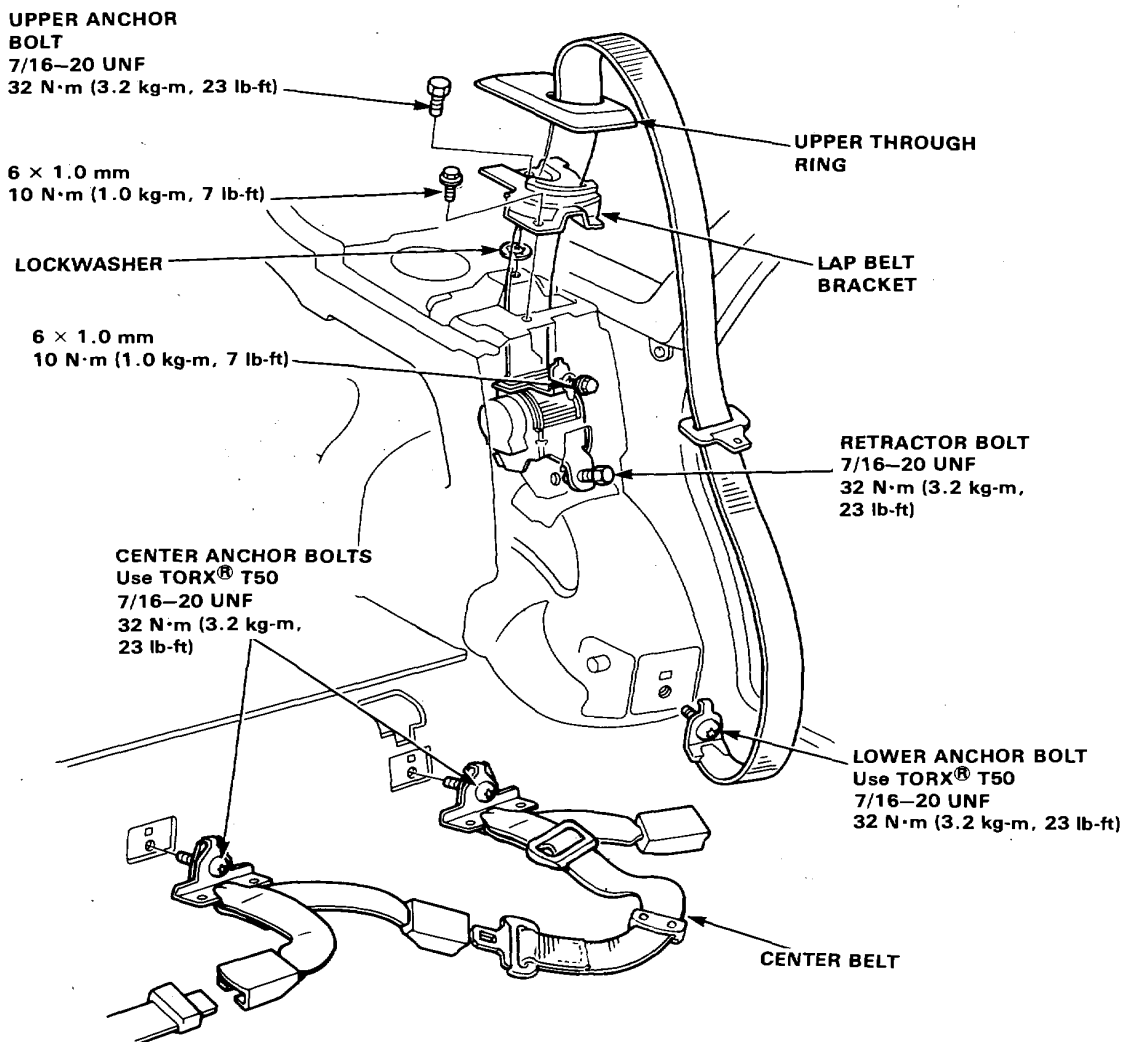


Rear Seat Belts

Replacement

CAUTION: Check the seat belts for damage and replace them if necessary. Be careful not to damage them during removal and installation.

1. Remove the rear seat (page 14-43).
2. Remove the quarter trim panel and side shelf (page 14-39).
3. Remove the upper anchor bolt and retractor bolt with a 17 mm socket or box-end wrench.



4. Remove the lower anchor bolt and center anchor bolt, then remove the rear seat belts.
5. Check that the retractor locking mechanism functions as described on page 14-46.
6. Install the seat belt in the reverse order of removal.

NOTE: Before attaching the quarter trim panel and rear seat, make sure there are no twists in the belts.

Seat Belts

Inspection

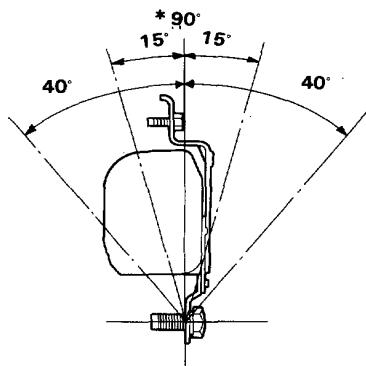
Retractor Inspection

1. With the retractor installed, check that the belt can be pulled out freely.
2. Make sure that the belt does not lock when the retractor is leaned slowly, up to 15° from the mounted position. The belt should lock when the retractor is leaned over 40°.

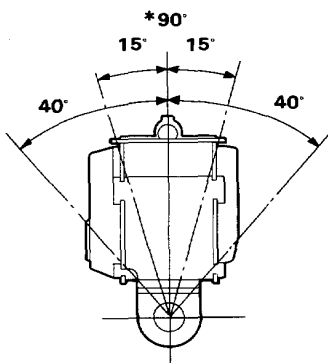
CAUTION: Do not attempt to disassemble the retractor.

* : Mounted Position.

Front:



Rear:

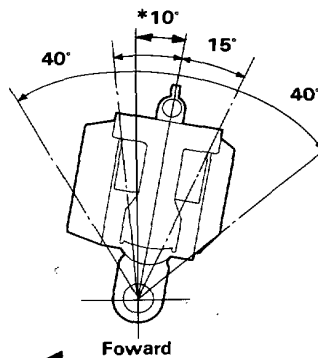


On the Car Belt Inspection

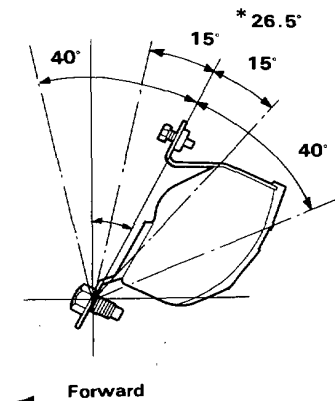
1. Check that the belt is not twisted or caught on anything.
2. After installing the anchors, check for free movement on its retaining bolt, if necessary, remove the bolt and check that the washers and other parts are not damaged or improperly installed.
3. Check the belts for damage or discoloration. Clean with a shop towel if necessary.

CAUTION: Use only soap and water to clean.

4. Check that the belt does not lock when pulled out slowly. The belt is designed to lock only during a sudden stop or impact.
5. Make sure that the belt will retract automatically when released.
6. Replace the belt with a new one if there is any abnormality.



Forward



Forward

3. Replace the belt with a new one if there is any abnormality.



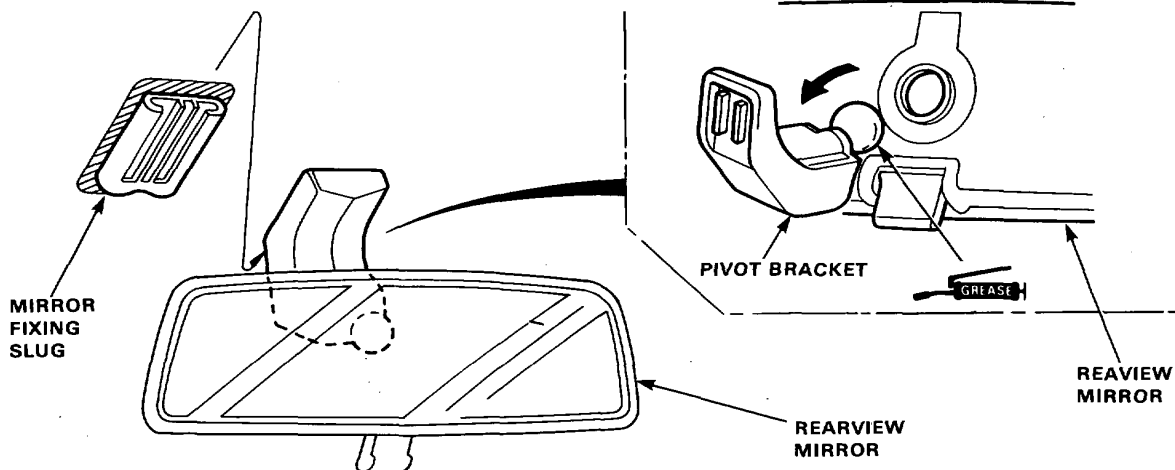
Rearview Mirror/Console

Rearview Mirror Replacement

1. Carefully slide up the rearview mirror pivot bracket from the slug.

NOTE: Take care not to scratch the windshield.

2. Install the rearview mirror, heat the pivot and mirror side with a low powered heater gun for several minutes.

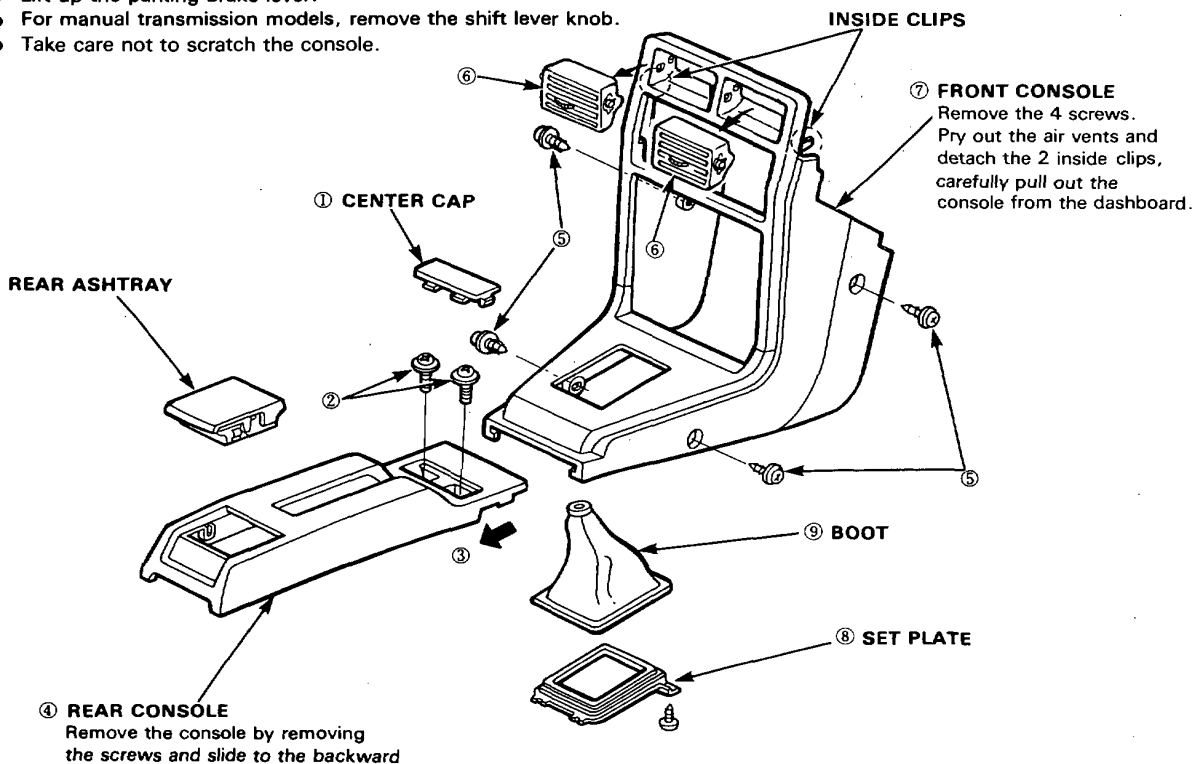


Console Replacement

Disassemble in numbered sequence:

NOTE:

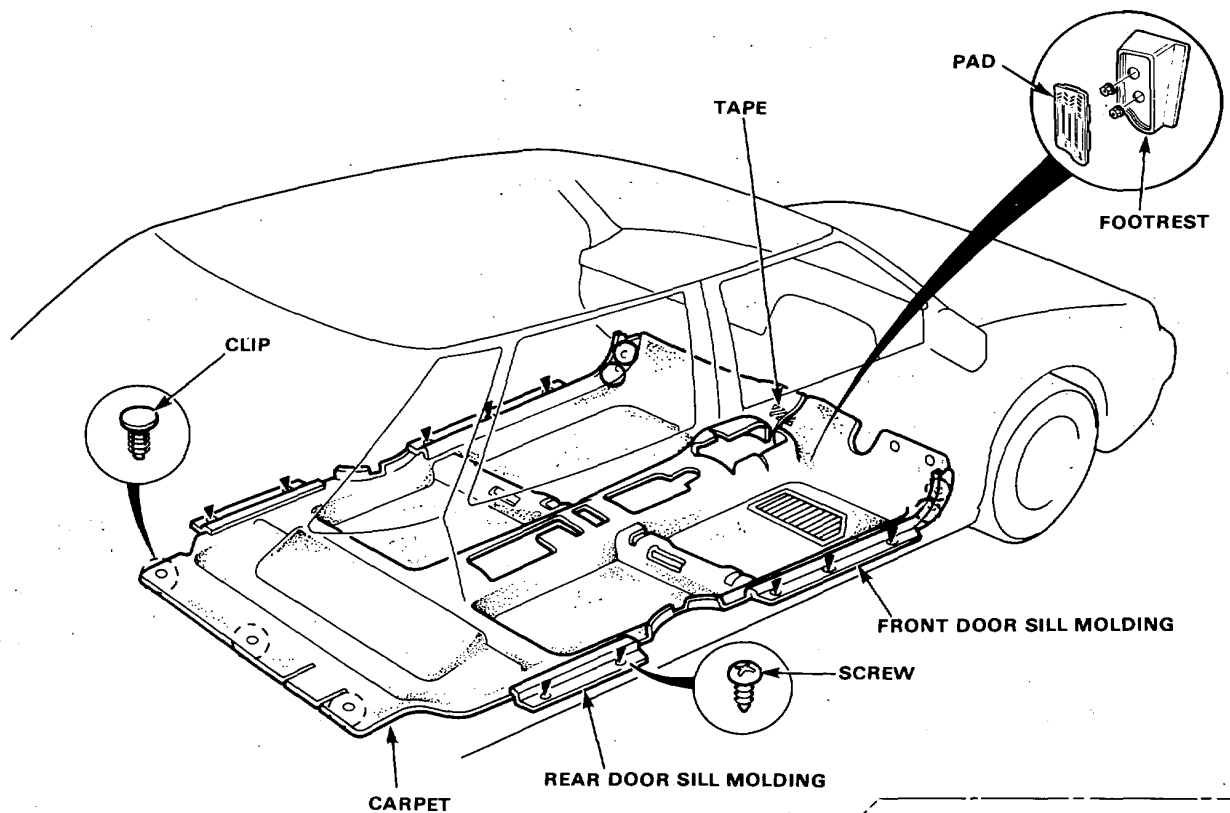
- Lift up the parking brake lever.
- For manual transmission models, remove the shift lever knob.
- Take care not to scratch the console.



Carpet/Door Sill Moldings

Replacement

1. Remove:
 - Front seats.
 - Rear seat cushion.
 - Console.
 - Opener cover (page 14-57).
2. Remove the screws, then pull up the door sill moldings.
3. Pry out the clips at the rear edge and under the dashboard, peel off the tape and remove the clip.

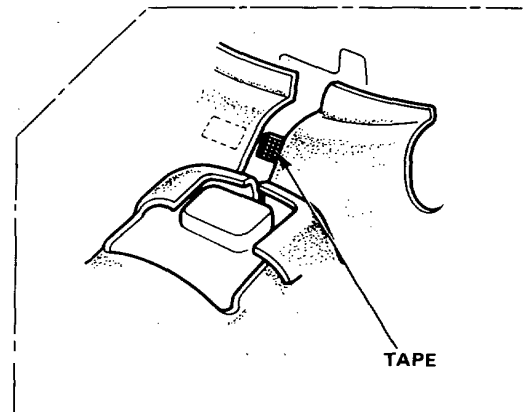


- Clip Locations
■ Screw Locations

4. Remove the carpet.
5. Install the carpet in the reverse order of removal.

NOTE:

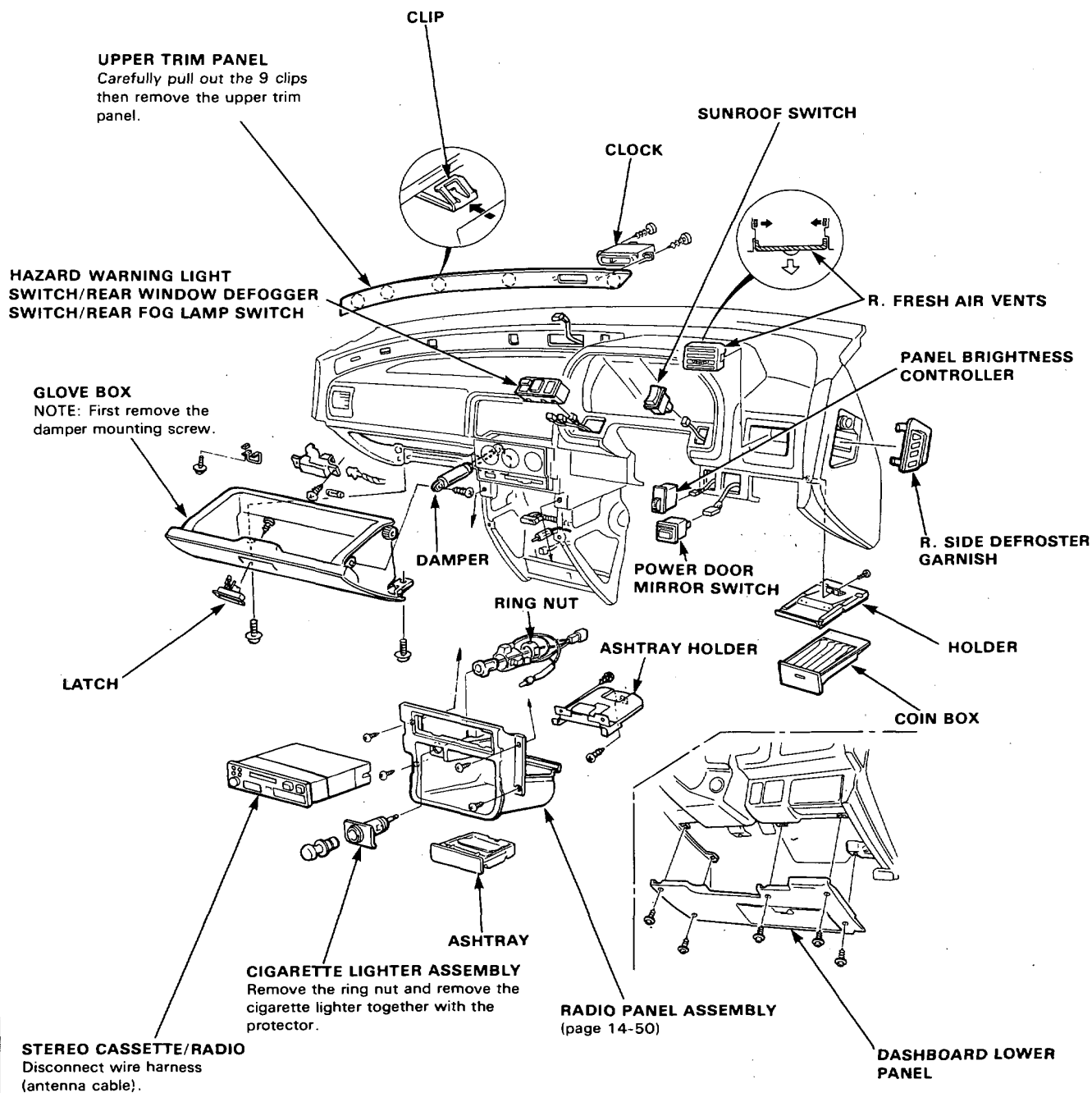
- Reattach the cut areas with tape and tie bands.





Dashboard

Component Removal/Installation

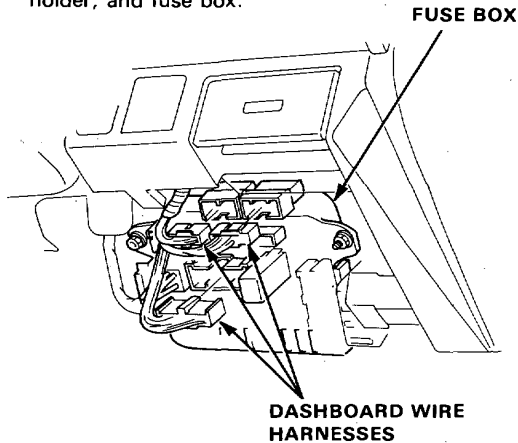


Dashboard

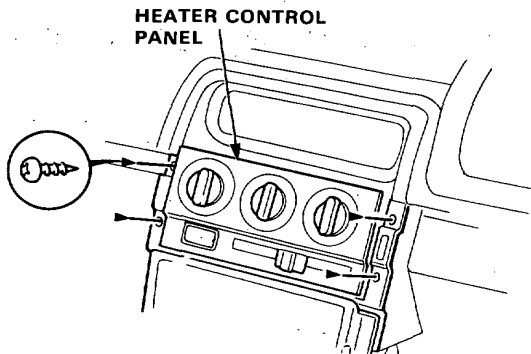
Replacement

NOTE: Take care not to scratch or score the dashboard and use protective tape on the bottom of the front pillar trim.

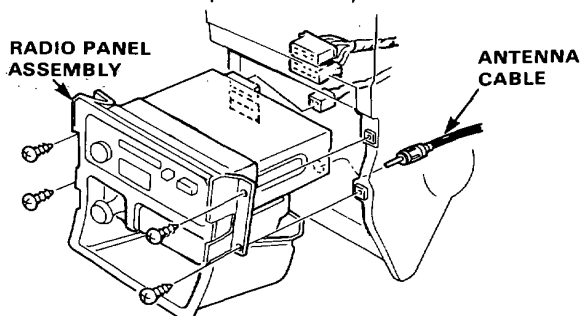
1. To remove the dashboard, first slide the seats back fully and remove the:
 - Dashboard lower panel (page 14-49).
 - Center console (page 14-47).
2. Disconnect the wire harnesses from the connector holder, and fuse box.



3. Remove the 4 screws attaching the heater control panel to the dashboard.

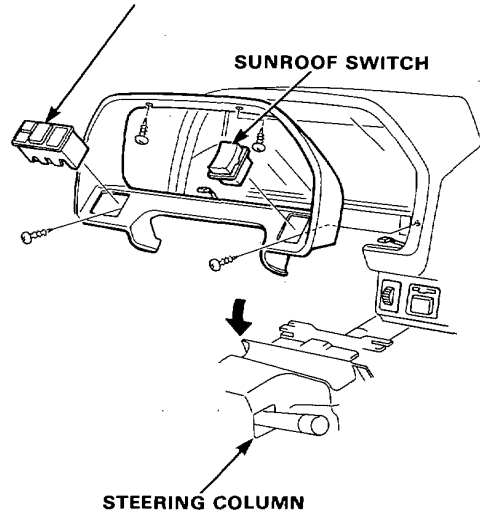


4. Remove the 4 screws and radio panel, then disconnect the wire connectors and antenna cable.
5. Remove the radio panel assembly.

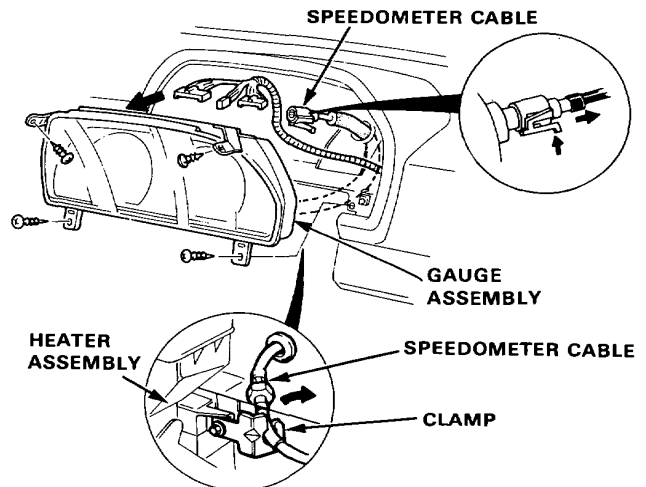


6. Lower the steering column (See section 11).
7. Remove the switches from the dashboard and instrument panel, then disconnect the connectors.
8. Remove the 4 screws, then remove the instrument panel.

HAZARD WARNING LIGHT SWITCH/REAR WINDOW DEFOGGER SWITCH/REAR FOG LAMP SWITCH



9. Disconnect the speedometer cable from the speed sensor (See section 5).
10. Remove the speedometer cable from the cable clamp.
11. Remove the 4 screws, then remove the gauge assembly half-way disconnect the speedometer cable and connectors.

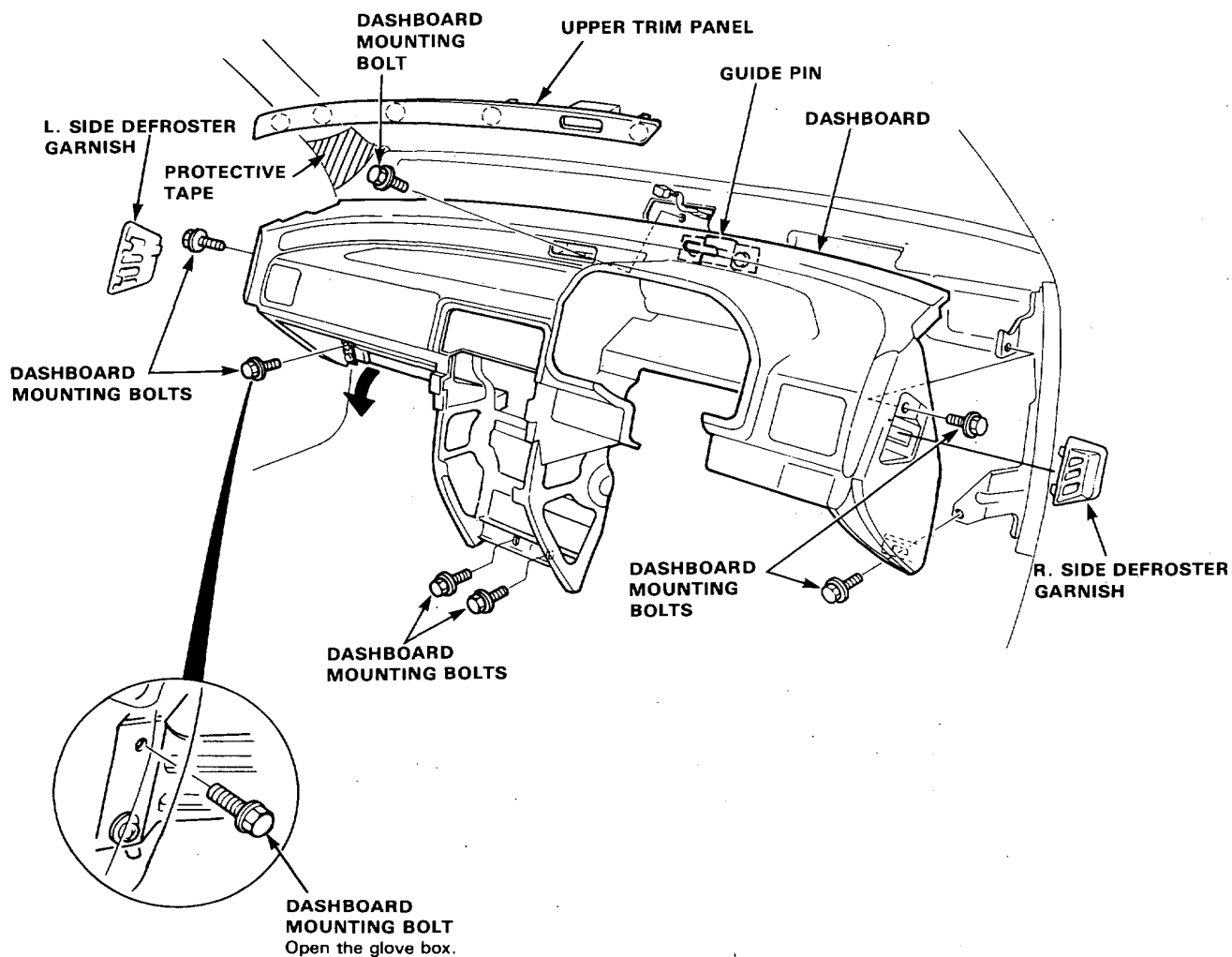




12. Disconnect the main wire harness connectors.
13. Remove the upper trim panel from the top of the dashboard.
14. Remove the side defroster garnishes from both ends of the dashboard.
15. Remove the dashboard mounting bolts.
16. Lift and remove the dashboard.

Reassembly NOTE:

- Make sure the dashboard fits onto the guide pin correctly.
- Before tightening the dashboard mounting bolts, make sure the dashboard wires are not pinched, and that the dashboard is not interfering with the heater control cable.
- Pull speedometer cable to make sure it is secure.

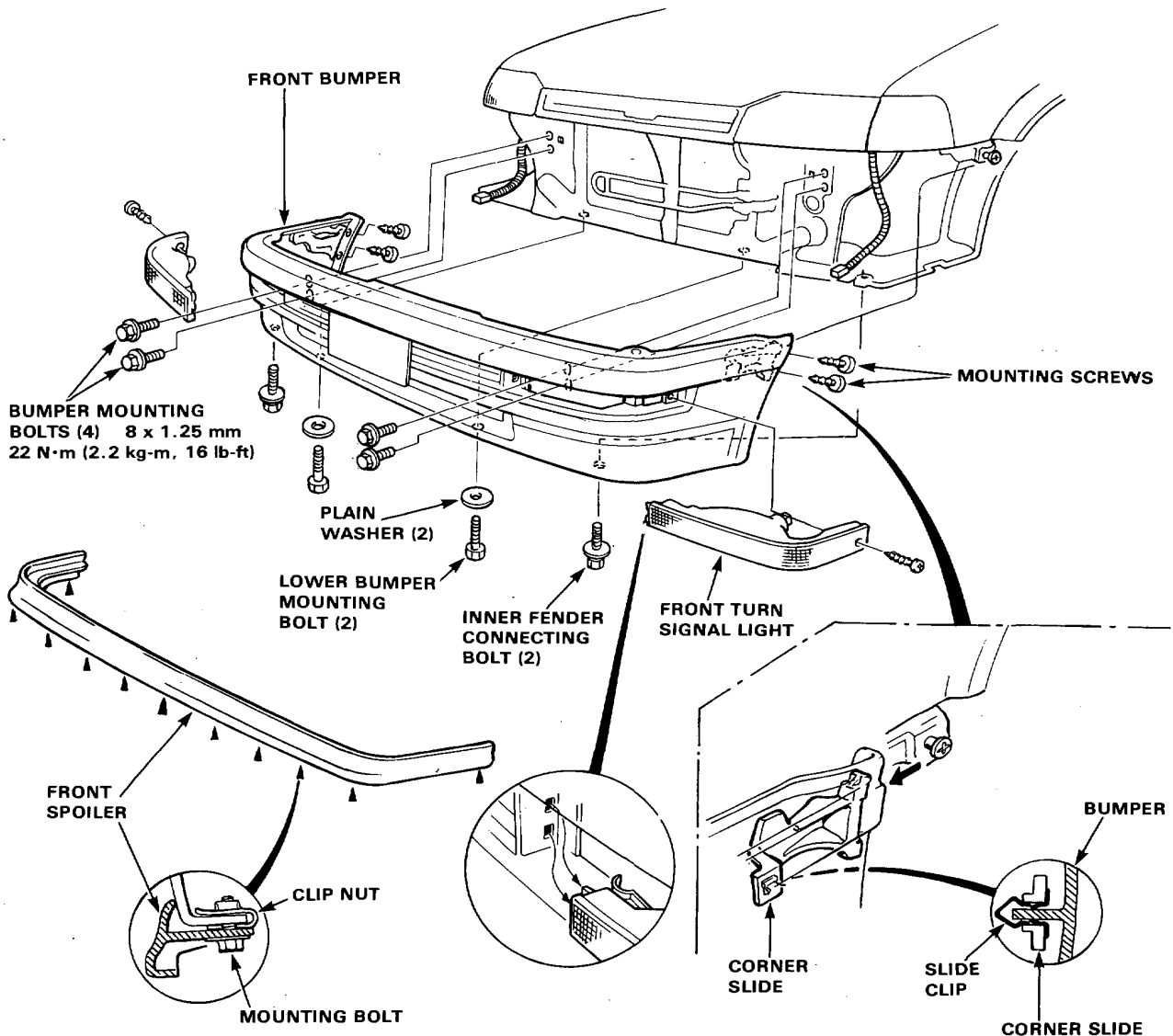


Front Bumper

Replacement

1. Remove the right and left front turn signal lights.
2. Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
3. Remove the 2 lower bumper mounting bolts and inner fender connecting bolts.
4. Remove the 4 bumper mounting bolts and bumper by sliding it forward.
5. Installation sequence is essentially the reverse order of removal.

NOTE: Take care not to scratch the bumper face.



6. Installation sequence is essentially the reverse order of removal.

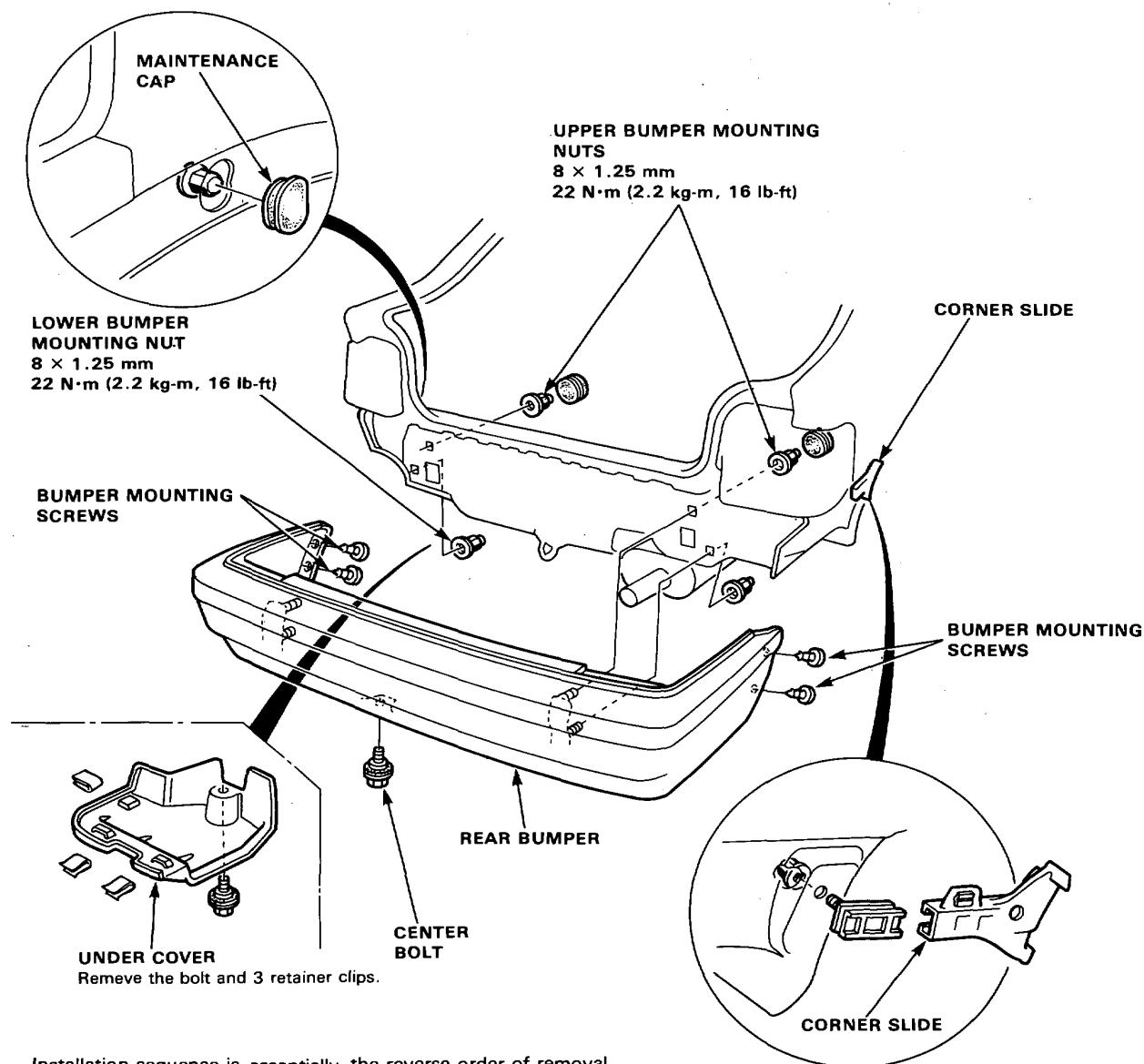


Rear Bumper Replacement

1. Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
2. Remove the under cover (left side), then remove the 2 lower bumper mounting nuts from under the trunk floor and center bolt.
3. Pry off the maintenance caps, then remove the 2 upper bumper mounting nuts from the trunk area.
4. Remove the bumper by sliding it to the rear.

NOTE:

- Do not damage the threads of the bumper bolts.
- Take care not to scratch the bumper face.

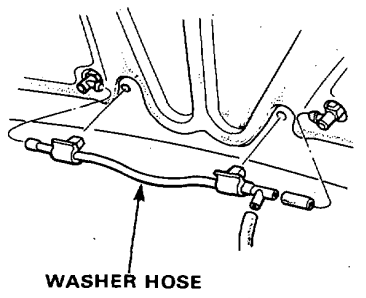


5. Installation sequence is essentially the reverse order of removal.

Hood

Replacement/Adjustment

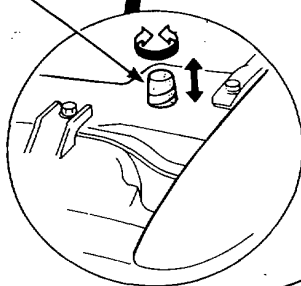
1. Pull the windshield washer hose out of the hood.
2. Hold the hood up and remove the 2 hood mounting bolts on each side, then remove the hood.
3. To remove the hood hinges, remove the front windshield wiper and air scoop.
4. When installing the hood, don't tighten the hinge bolts until you've checked the adjustments shown below.



HOOD EDGE CUSHION

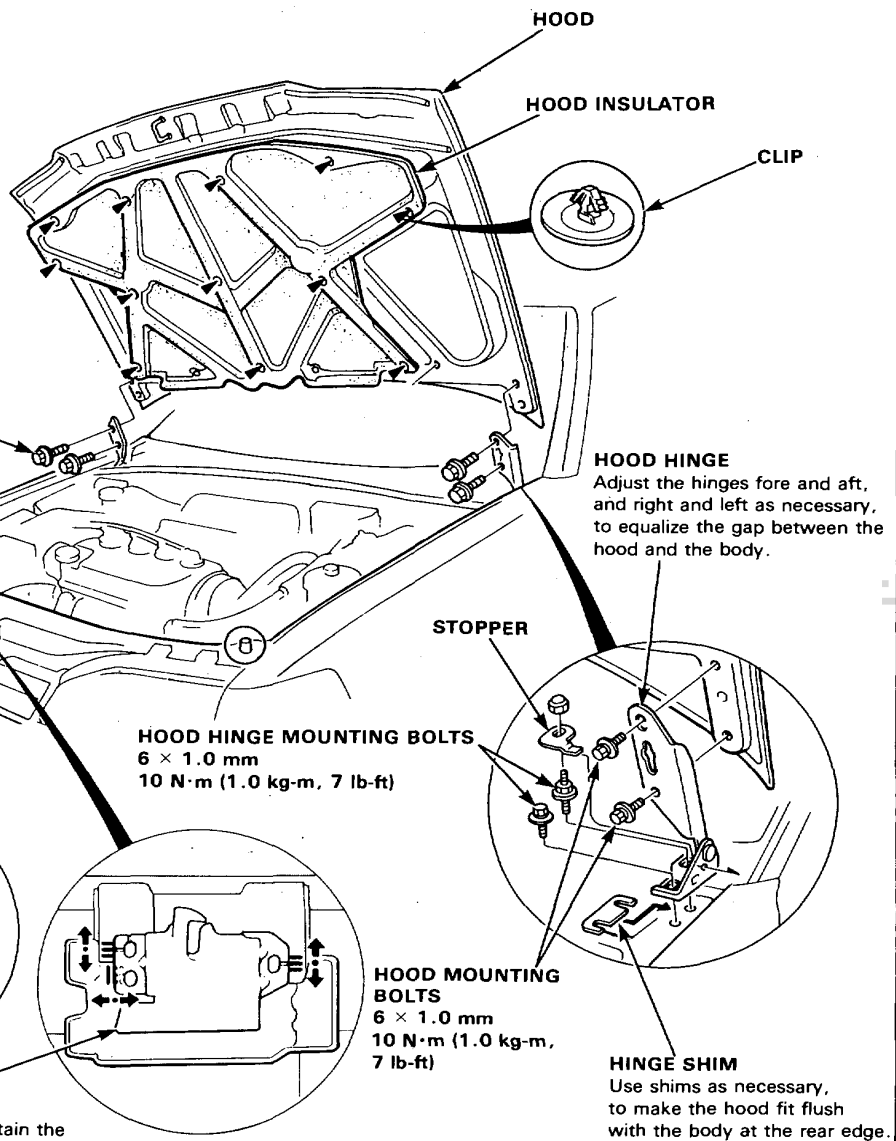
Turn as necessary, to make the hood fit flush with the body at front and side edges.

HOOD EDGE CUSHION



HOOD LATCH

Adjust the hood latch to obtain the proper height at center and front edge.

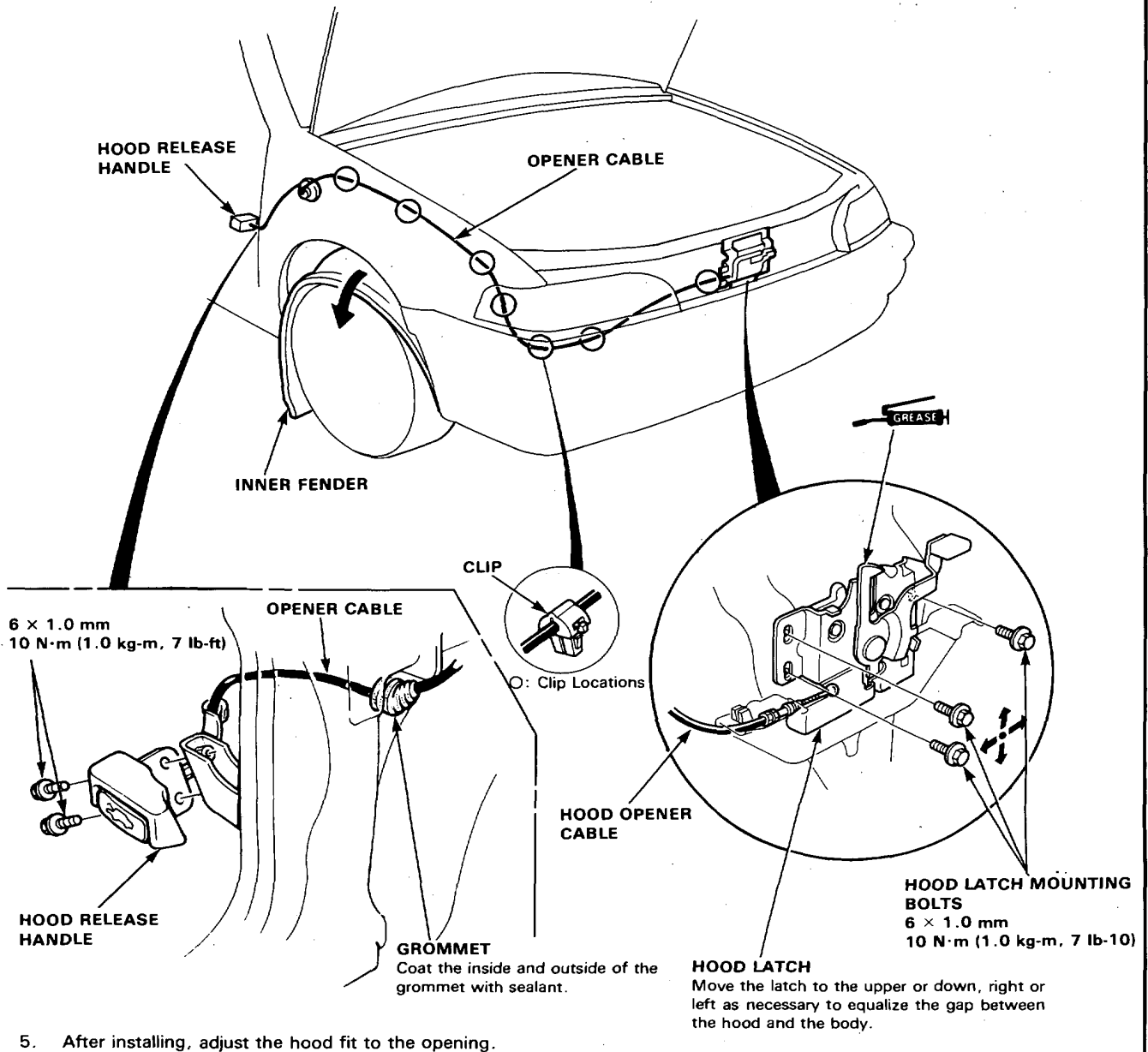




Opener and Latch Replacement

1. Remove the bolts, then remove the hood release handle and disconnect the opener cable.
2. Remove the front grille (page 14-58).
3. Remove the 3 mounting bolts, then remove the hood latch and disconnect the opener cable.
4. Remove the right side inner fender, then pull out the opener cable.

NOTE: Before pulling out the opener cable, tie a string to the cable so you can pull it back in later.



Tailgate

Replacement/Adjustment

1. Remove the screws and detach the clips, then remove the tailgate trim panel.
2. Pull the wire harness out of the tailgate and disconnect the washer hose.
NOTE: Before pulling out the wire harness, tie a string to the end of it so you can pull it back in when the tailgate is reinstalled.
3. Turn and pull off the retainer clips, then remove the tailgate support struts.
NOTE: Let an assistant hold the tailgate when removing the struts.
4. Remove the tailgate by removing the tailgate mounting bolts.
NOTE: Take care not to damage the roof panel.

If necessary:

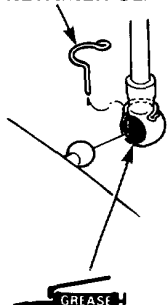
- Lower the rear of the headliner just enough to gain access to the hinge mounting nuts, then remove the hinge by removing the hinge mounting nuts.

TAILGATE EDGE CUSHION

Turn as necessary, to make the tailgate fit flush with the body at rear and side.

PIVOT BOLT
8 x 1.25 mm
25 N·m (2.5 kg-m,
18 lb-ft)

RETAINER CLIP



TAILGATE SUPPORT STRUT

UPPER TRIM

SIDE TRIM

TAILGATE TRIM PANEL

GROMMET

WASHER HOSE

TAILGATE MOUNTING BOLTS
6 x 1.0 mm
10 N·m (1.0 kg-m, 7 lb-ft)

MOUNTING SCREW CLIP

◀ : Clip Locations

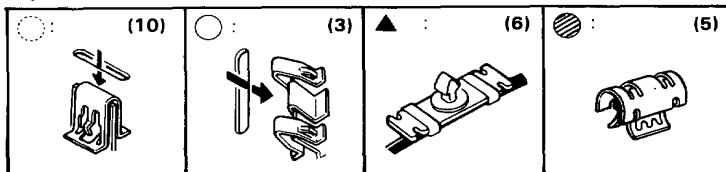
HINGE

Apply the sealant

HINGE MOUNTING NUTS

8 x 1.25 mm
22 N·m (2.2 kg-m,
16 lb-ft)

Clip Locations:



5. Installation sequence is essentially the reverse order of removal. However, observe the following:
 - Before tightening the mounting bolts, adjust the tailgate fit and striker (page 14-57).
 - Use care when pulling the wire harness back in to avoid damaging the body.
 - Coat the inside and outside of the grommet with sealant.



Fuel Filler Opener/Tailgate Opener

Replacement

RHD:

- To remove the opener cables, remove the following parts:
 - Right side door sill moldings, right and rear half of carpet.
 - Left quarter trim panel, trunk side panel and rear trim panel.
- Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts.
- Remove the fuel filler lid latch by turning it 90°.
- Remove the bolt, then remove the tailgate lock cylinder.
- Remove the latch cover and 3 bolts, then remove the tailgate latch.
- Disconnect the opener cable, connector and lock rod.

OPENER COVER

RELEASE LEVERS

OPENER CABLES

NOTE: Take care not to bend the cable.

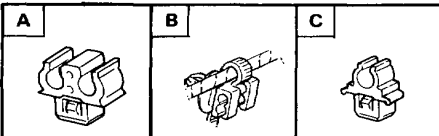
OPENER

STRIKER

STOPPER

Forward

Clip Locations :



HARNESS PROTECTOR

OPENER CABLES

TAILGATE LATCH

TAILGATE LOCK CYLINDER

LOCK ROD

LATCH COVER

FUEL FILLER LID LATCH

MOUNTING BOLTS

FUEL FILLER LID

Before tightening the mounting bolts, adjust the filler lid fit and latch.

GREASE

Use TORX® T40

OPENER CABLE

STRIKER LINK

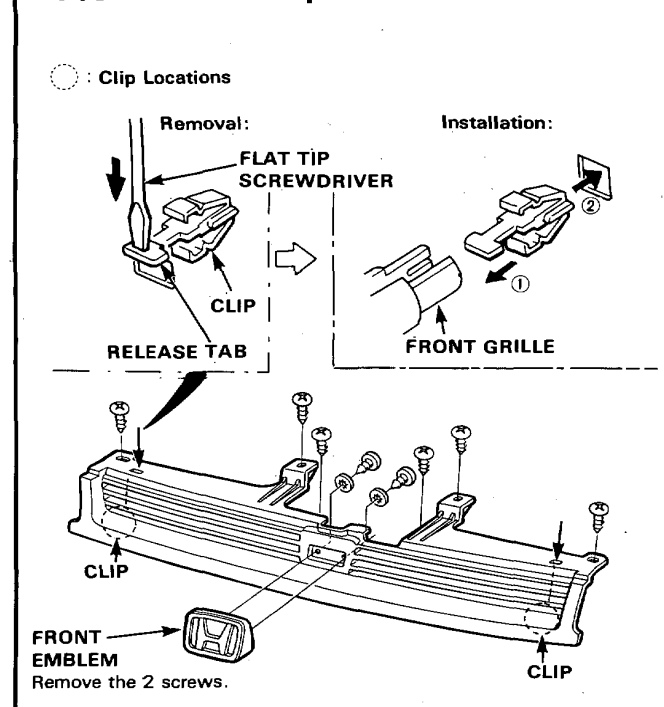
STRIKER ADJUSTMENT

Adjust the tailgate fit to the gate opening by moving the striker.

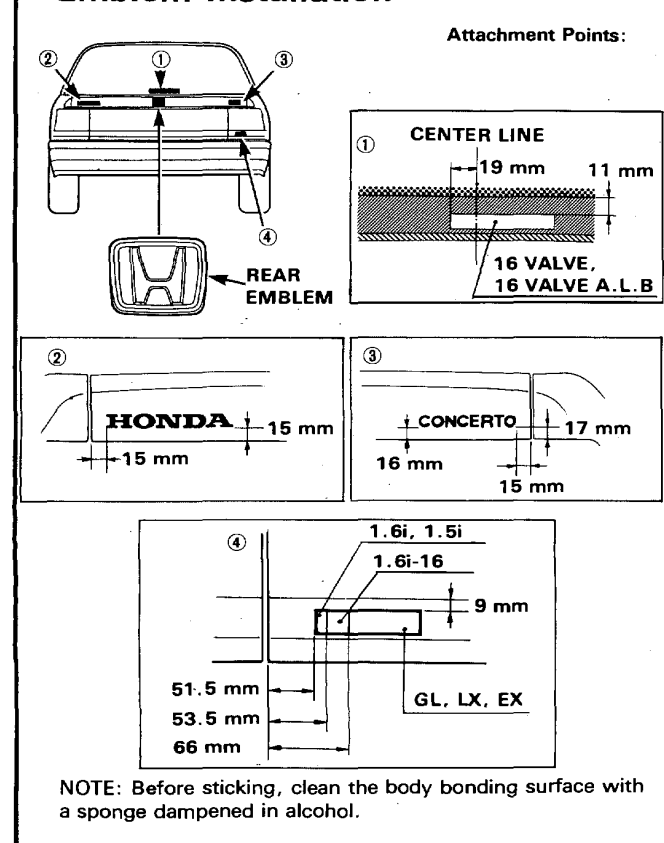
- To install, reverse the removal procedure.
Check that the tailgate and fuel filler lid opener cables are routed and connected properly.

Front Grille/Emblem

Front Grille Replacement



Emblem Installation

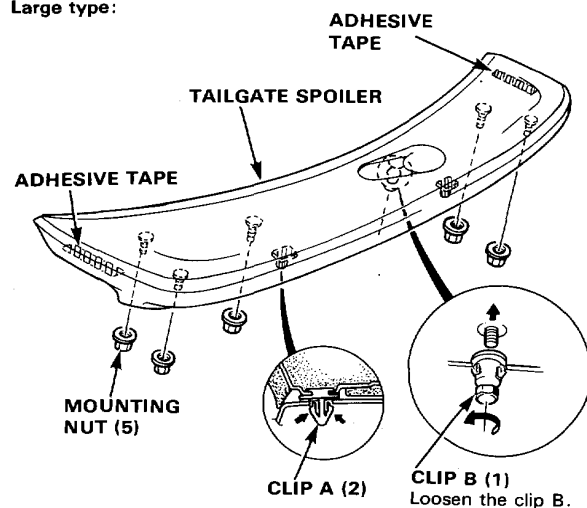


Tailgate Spoiler

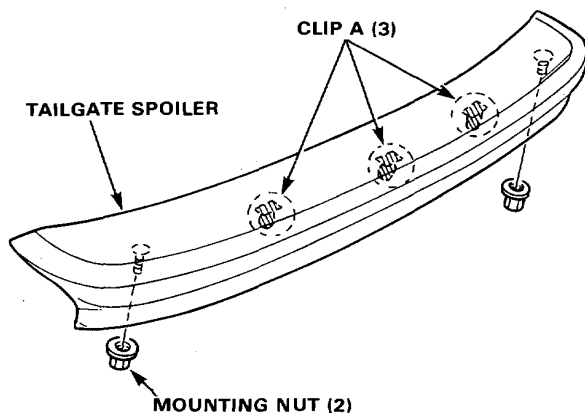
Replacement

1. Detach the clips and remove the mounting nuts, then carefully pull the spoiler and off of the tailgate.
NOTE: Take care not to scratch or score the tailgate.

Large type:



Small type:



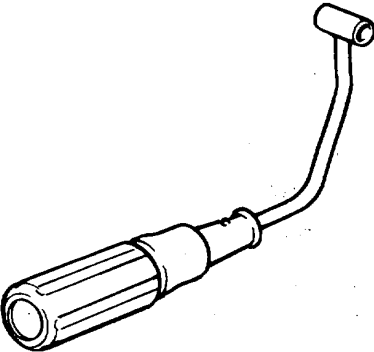
2. Install the spoiler in the reverse order removal.

NOTE:

- If necessary, replace any damaged clips.
- Before installing, clean the tailgate bonding surface with a sponge dampened in alcohol.

Special Tools

No.	Tool Number	Description	Q'ty	Remarks
①	07GAZ—SE30100	Torsion Bar Assembly Tool	1	



①

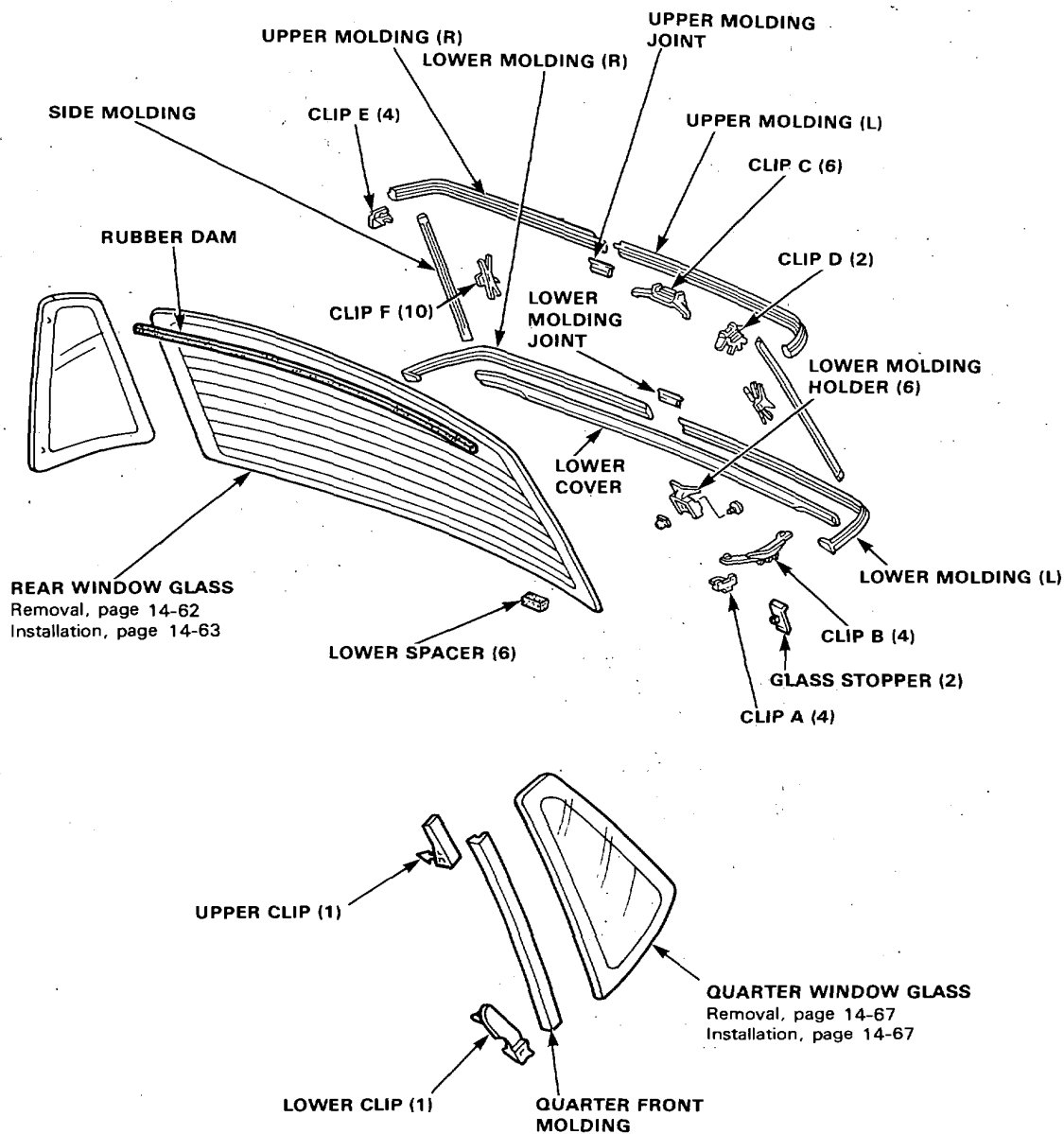
cardiagn.com

Rear Window Glass, Quarter Window Glass

Index



(): Quantity of part used.



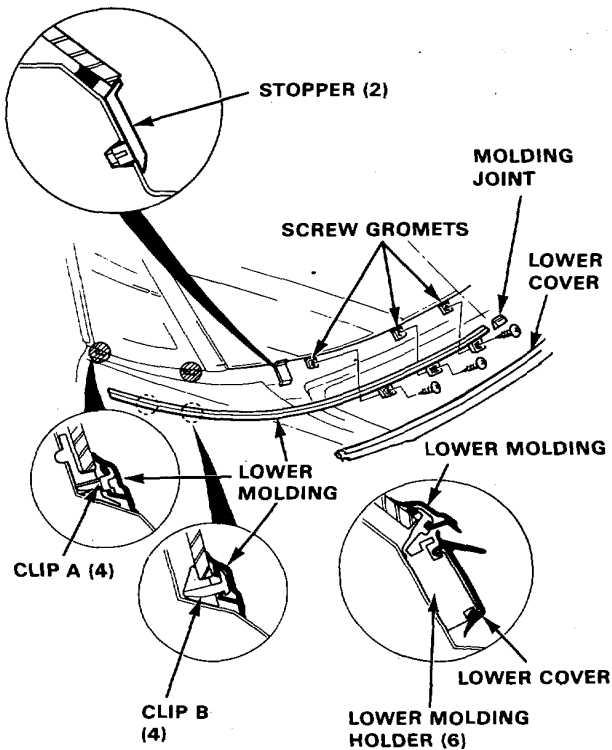
Rear Window Glass

Removal

CAUTION:

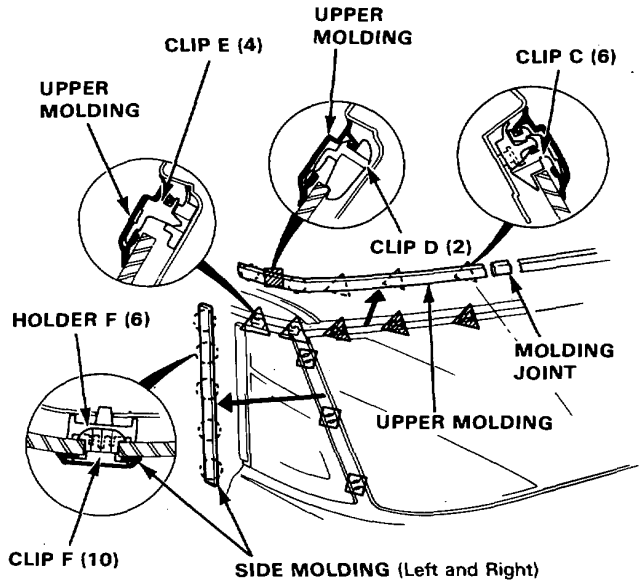
- Wear gloves to remove and install the glass.
- Do not damage the defroster grid lines.
- Use seat covers to avoid damaging surface.

1. Remove the trunk lid (page 14-72).
 2. To remove the rear glass, first remove:
 - Quarter window trim panel (page 14-70).
 - Rear shelf (page 14-70).
 3. Disconnect the defroster leads, and remove their holders.
- NOTE: Avoid scratching or scoring the glass with the cutter blade.
4. Remove the lower cover and screws, then remove the lower moldings.
 5. Remove the left and right stoppers.

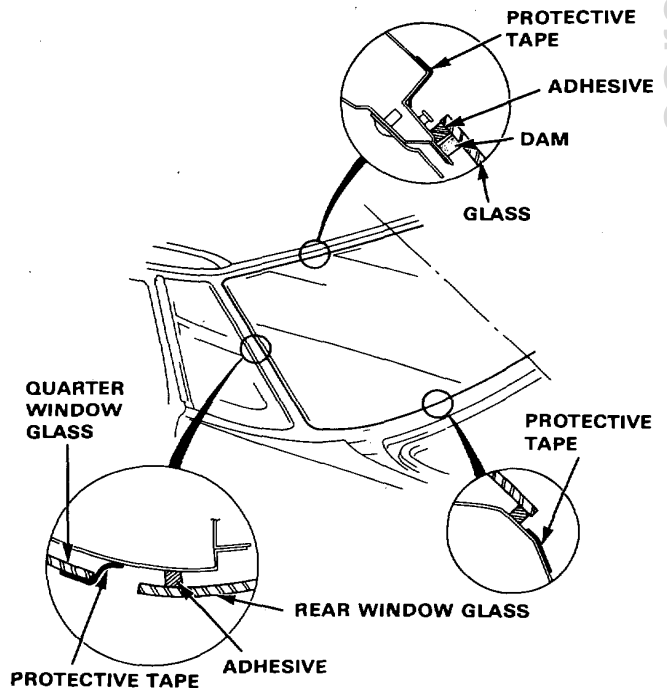


6. If necessary remove the screw gromets.

7. Detach the 12 clips and remove the upper moldings.
8. Detach the 10 clips and remove the side moldings.



9. Lower the rear of the headliner (page 14-40).
CAUTION: Take care not to bend the headliner excessively.
10. Apply protective tape along the edge of the body next to the glass as shown.

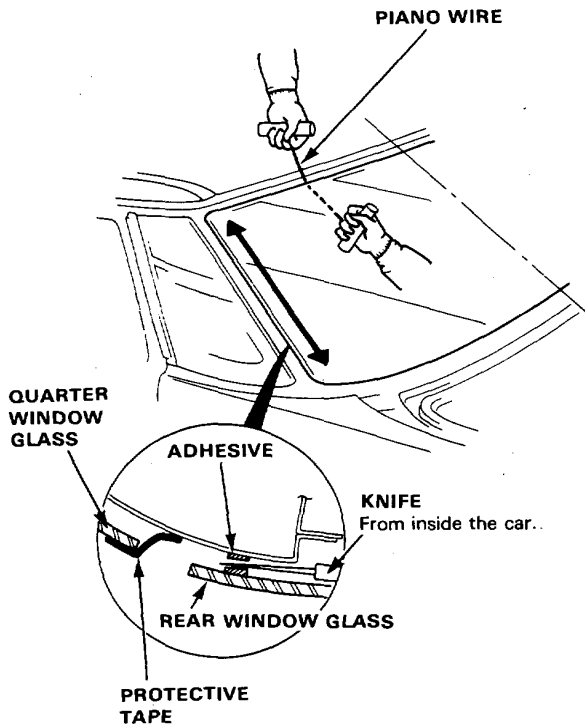




Installation

11. Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.
12. With a helper on the outside, pull the wire back and forth in a sawing motion and carefully cut through the adhesive around the entire glass.

CAUTION: Hold the piano wire as close to the glass as possible to prevent damage to the body.



13. Remove the molding clips and the rubber dam and spacers.

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire glass flange.

NOTE

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove all traces of the rubber spacer and dam material from the body.
- Mask off surrounding surfaces before applying primer.

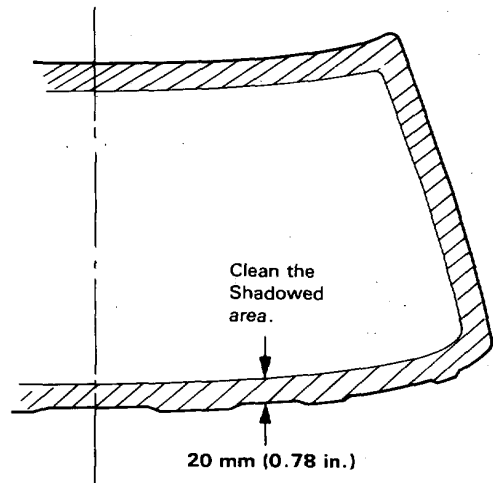
2. Clean the body bonding surface with a sponge dampened in alcohol.

NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

NOTE: Make sure the bonding surface is kept free of water, oil and grease.

CAUTION: Avoid setting the glass on its edges; small chips may later develop into cracks.

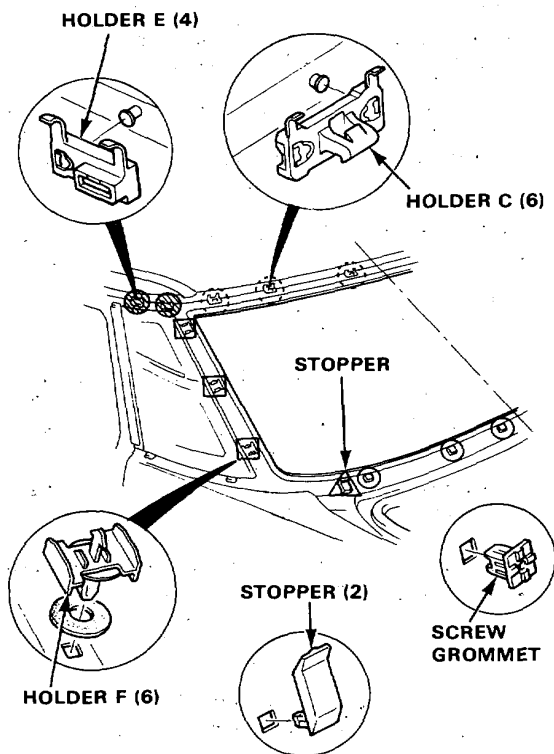


(cont'd)

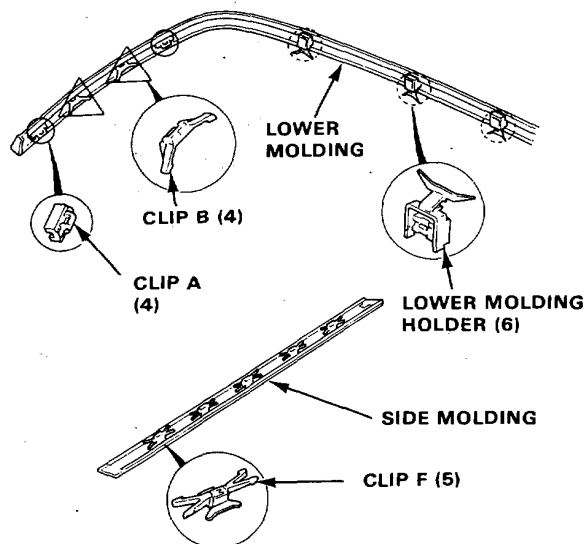
Rear Window Glass

Installation (cont'd)

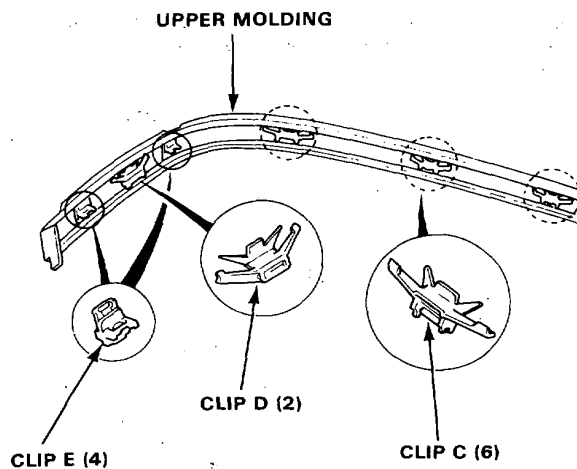
4. Install the screw grommets, stoppers and holders as shown.



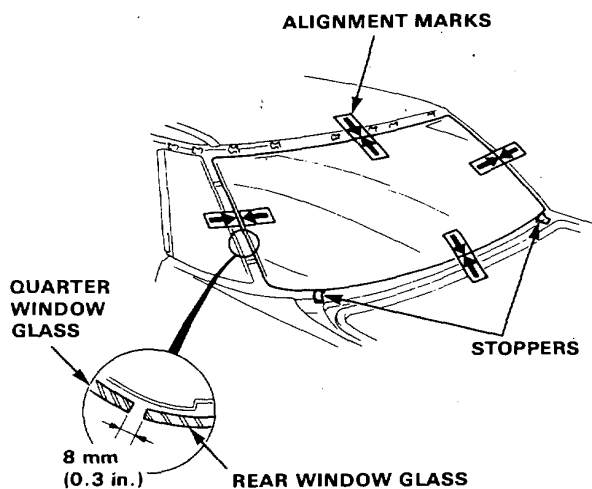
5. Attach the clips to the side and lower moldings as shown.



6. Attach the clips to the upper moldings as shown.



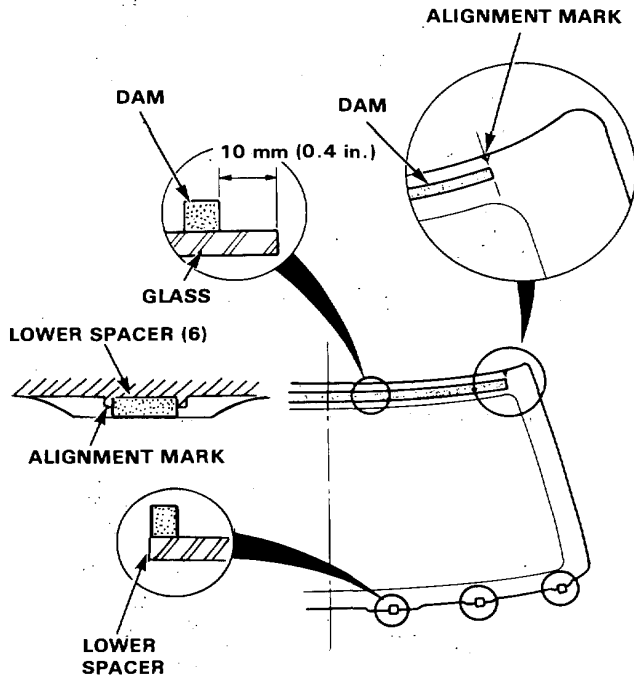
7. Set the glass upright on the stoppers, and center it in the opening. Make the location by marking lines across the glass and body with a grease pencil at the four points shown.





8. Glue the rubber dam and lower spacers to the inside face of the glass as shown, to contain the adhesive during installation.

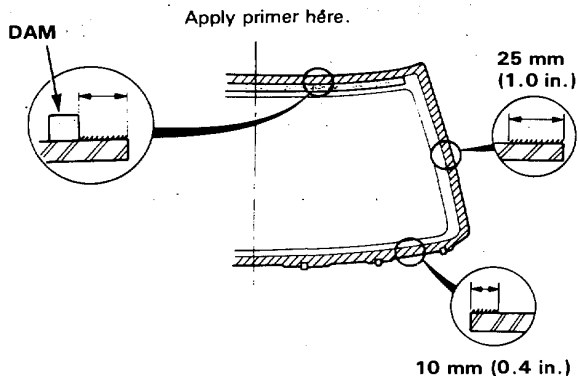
NOTE: Be careful not to touch the glass where adhesive will be applied.



9. With a sponge, apply a light coat of glass primer around the edge of the glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

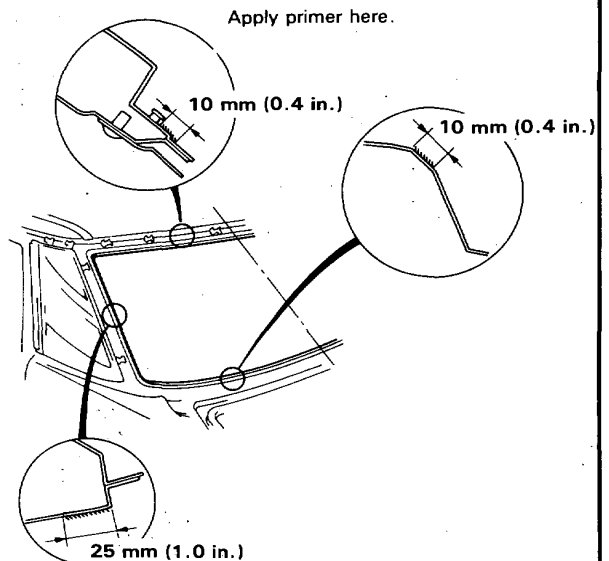
- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water, dust, and abrasive materials away from the primed surface.



10. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

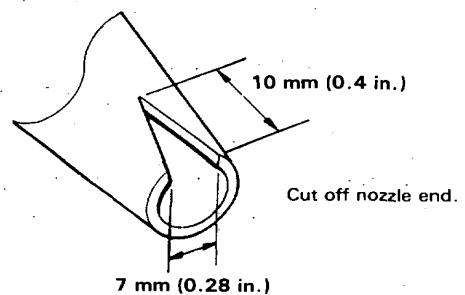


11. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE: Clean the plate with a sponge and alcohol before mixing.

12. Follow the instructions that came with the adhesive

13. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



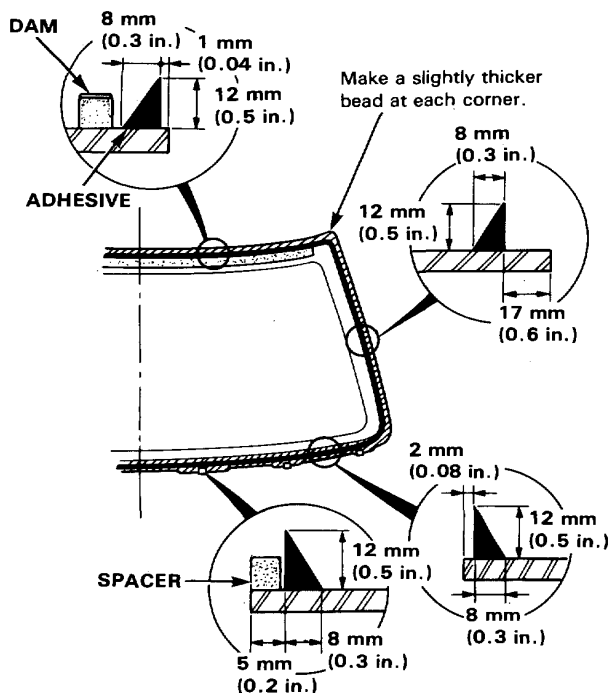
(cont'd)

Rear Window Glass

Installation (cont'd)

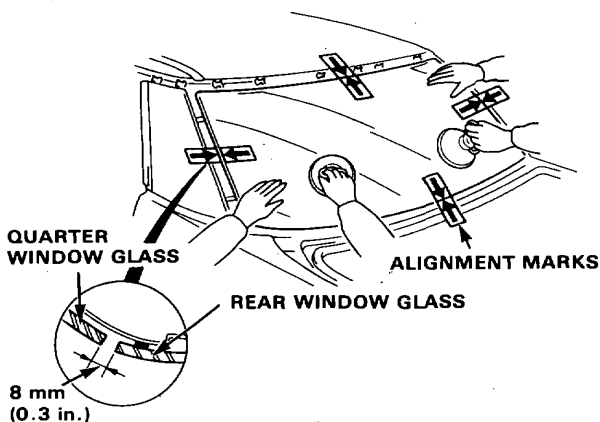
14. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.

NOTE: Peel off the backing of dam.



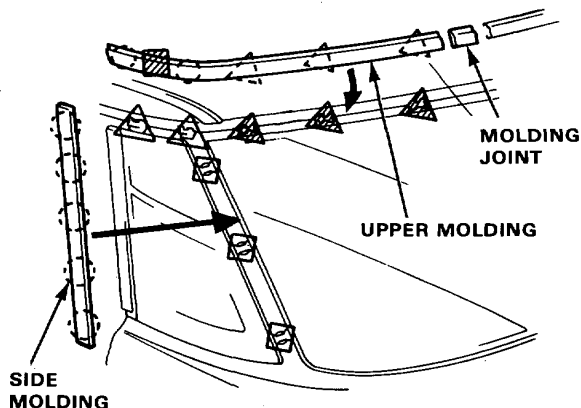
15. Use suction cups to hold the glass over the opening, align it with the marks made in step 7 and set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not close or open the doors until adhesive is dry.

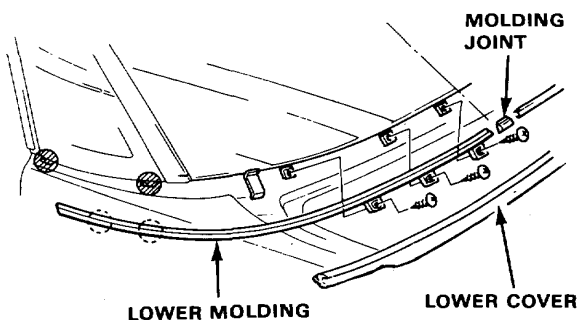


16. Install the right and left side moldings.

17. Install the molding joint and the upper moldings.



18. Install the lower moldings and lower cover.



19. Scrape or wipe the excess adhesive off with a putty knife or gauze.

NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

20. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for at least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

21. Fix the headliner back into position then install:

- Quarter window trim panel.
- Rear shelf.

Quarter Window Glass



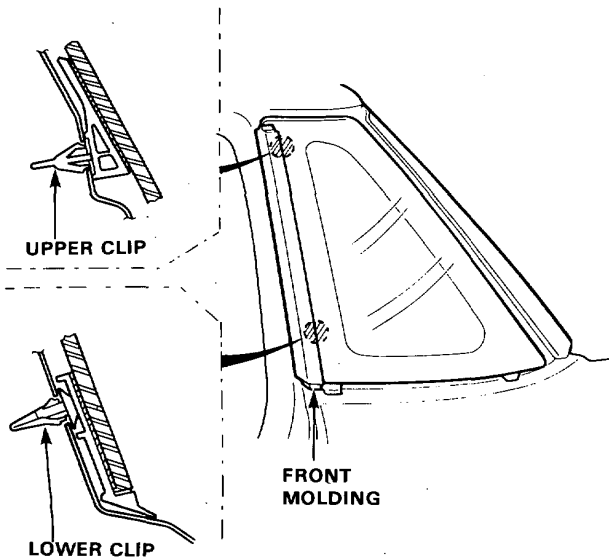
Removal

CAUTION:

- Wear gloves to remove and install the glass.
- Take care not scratch or score the quarter window moldings.
- Use seat covers to avoid damaging surface.

1. Remove the quarter window trim panel (page 14-70).
2. Remove the rear upper molding, side molding and lower molding (page 14-62).
3. Use a knife to cut through the glass adhesive from inside car, all the way around, the glass area (page 14-27).
4. Use a knife to cut the clips from inside the car, then remove the quarter glass.

NOTE: Be careful not to cut the molding.



NOTE: Using an awl, make a hole through the glass adhesive from inside the car. Push piano wire through the hole and wrap each end around a piece of wood.

NOTE: Apply protective plate along the edge of the body next to the glass (page 14-27).

5. If necessary, remove the quarter front molding.
6. Carefully take off the clips.

NOTE: Before removing the clips, note the upper and lower clip locations.

Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire window glass flange.

NOTE:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Mask off surrounding surfaces before applying primer.

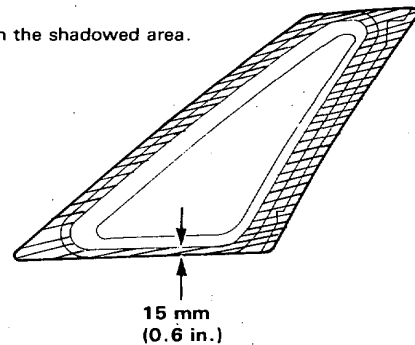
2. Clean the body bonding surface with a sponge dampened in alcohol.

NOTE: After cleaning, keep oil, grease or water from getting on the surface.

3. If the glass is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the glass surface with alcohol where new adhesive is to be applied.

NOTE: Make sure the bonding surface is kept free of water, oil and grease.

Clean the shadowed area.

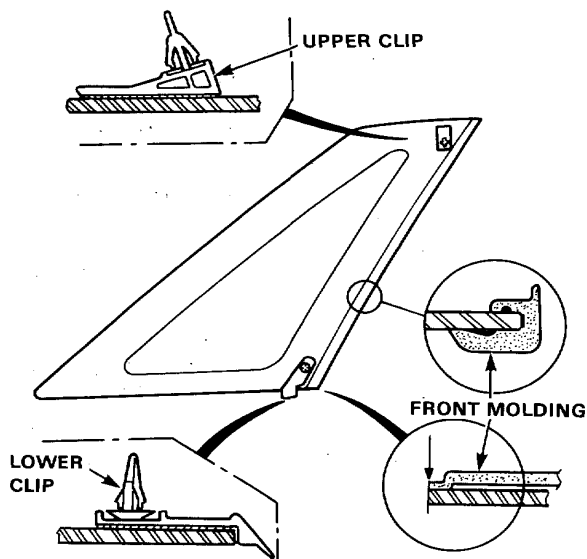


(cont'd)

Quarter Window Glass

Installation (cont'd)

4. Glue the upper, lower and front molding to the glass as shown.

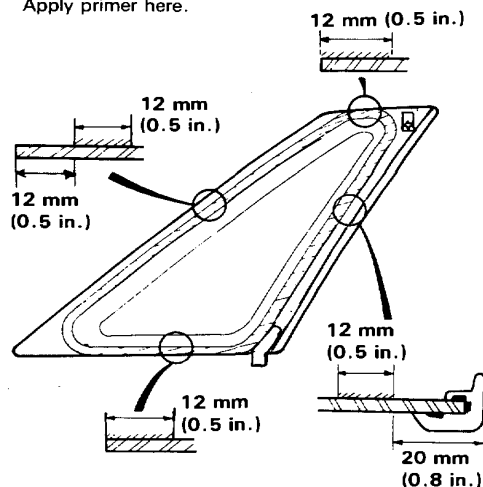


5. With a sponge, apply a light coat of glass primer around the edge of glass as shown, then lightly wipe it off with gauze or cheesecloth.

NOTE:

- Do not apply body primer to the glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the glass properly, causing a leak after the glass is installed.
- Keep water dust, and abrasive materials away from the primed surface.

Apply primer here.

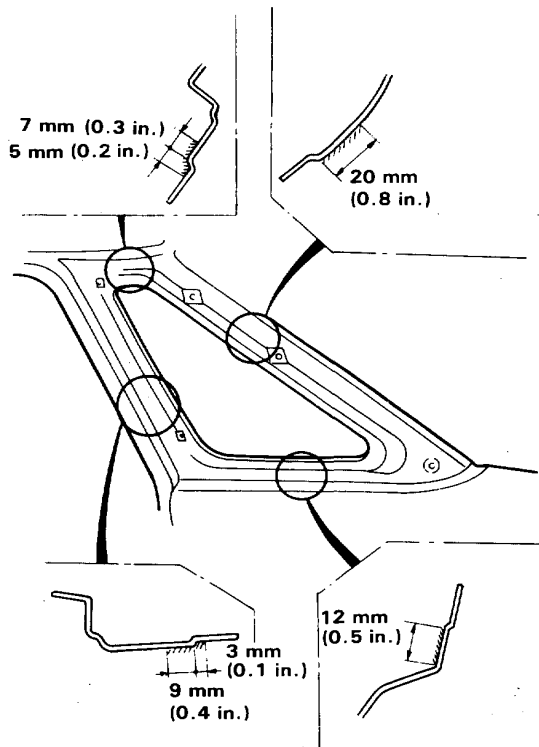


6. With a sponge, apply a light coat of body primer to the original adhesive remaining around the window opening flange.

NOTE:

- Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
- Never touch the primed surfaces with your hands.

Apply primer here.

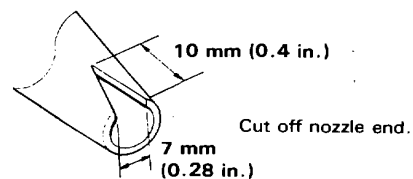


7. Thoroughly mix all the adhesive and hardener together on a glass or metal plate with a putty knife.

NOTE:

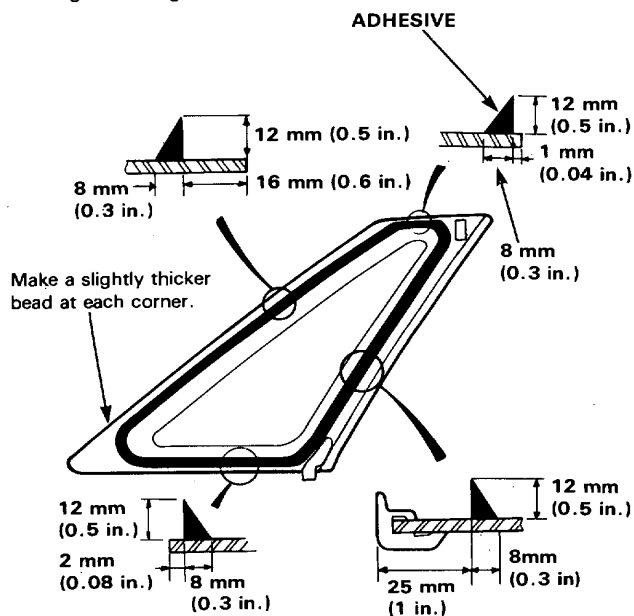
- Clean the plate with a sponge and alcohol before mixing.
- Follow the instructions that come with the adhesive.

8. Before filling a cartridge, cut off the end of the nozzle at the angle shown.



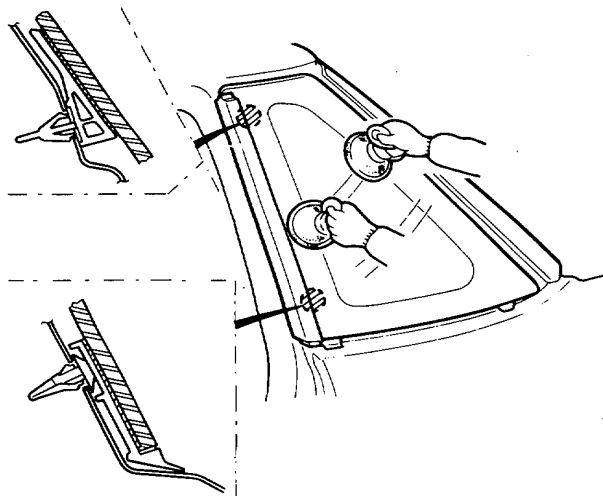


9. Pack adhesive into the cartridge without air pockets, to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the glass as shown.



10. Use suction cups to hold the glass over the opening, then set it down on the adhesive. Lightly push on the glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open and close the doors until the adhesive is dry.



11. Scrape or wipe the excess adhesive off with a putty knife or gauze.

12. Install the rear upper molding, side molding and lower molding.

NOTE: Use a soft shop towel dampened with alcohol or unleaded gasoline to remove adhesive from a painted surface or glass.

13. After the adhesive is dry, spray water over the glass and check for leaks. Mark leaking areas and let the glass dry, then seal with sealant.

NOTE: Let the car stand for least 4 hours after glass installation. If the car has to be used within the first 4 hours, it must be driven slowly.

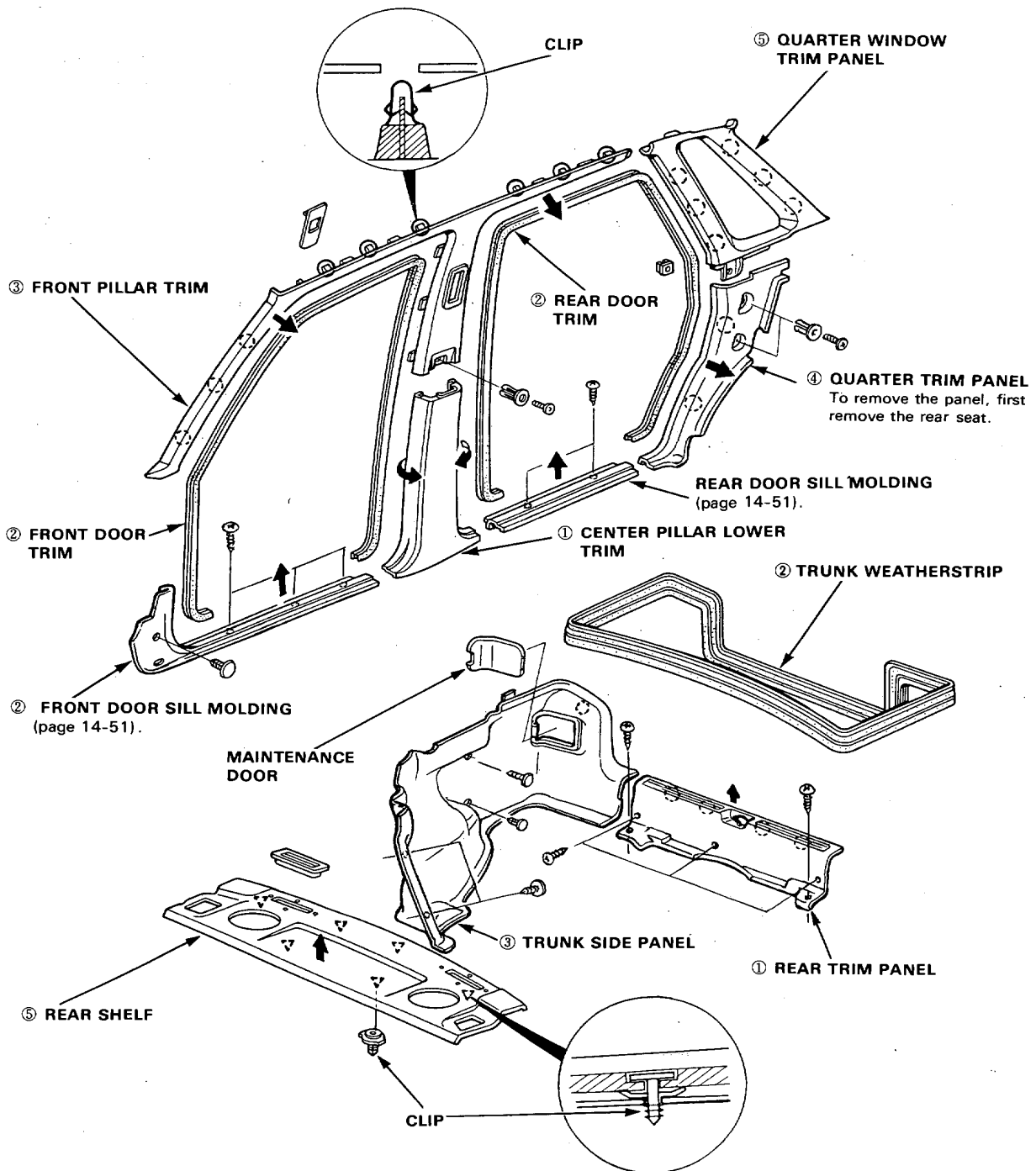
14. Reassemble all remaining removed parts.

Interior Trim

Replacement

Disassemble in numbered sequence.

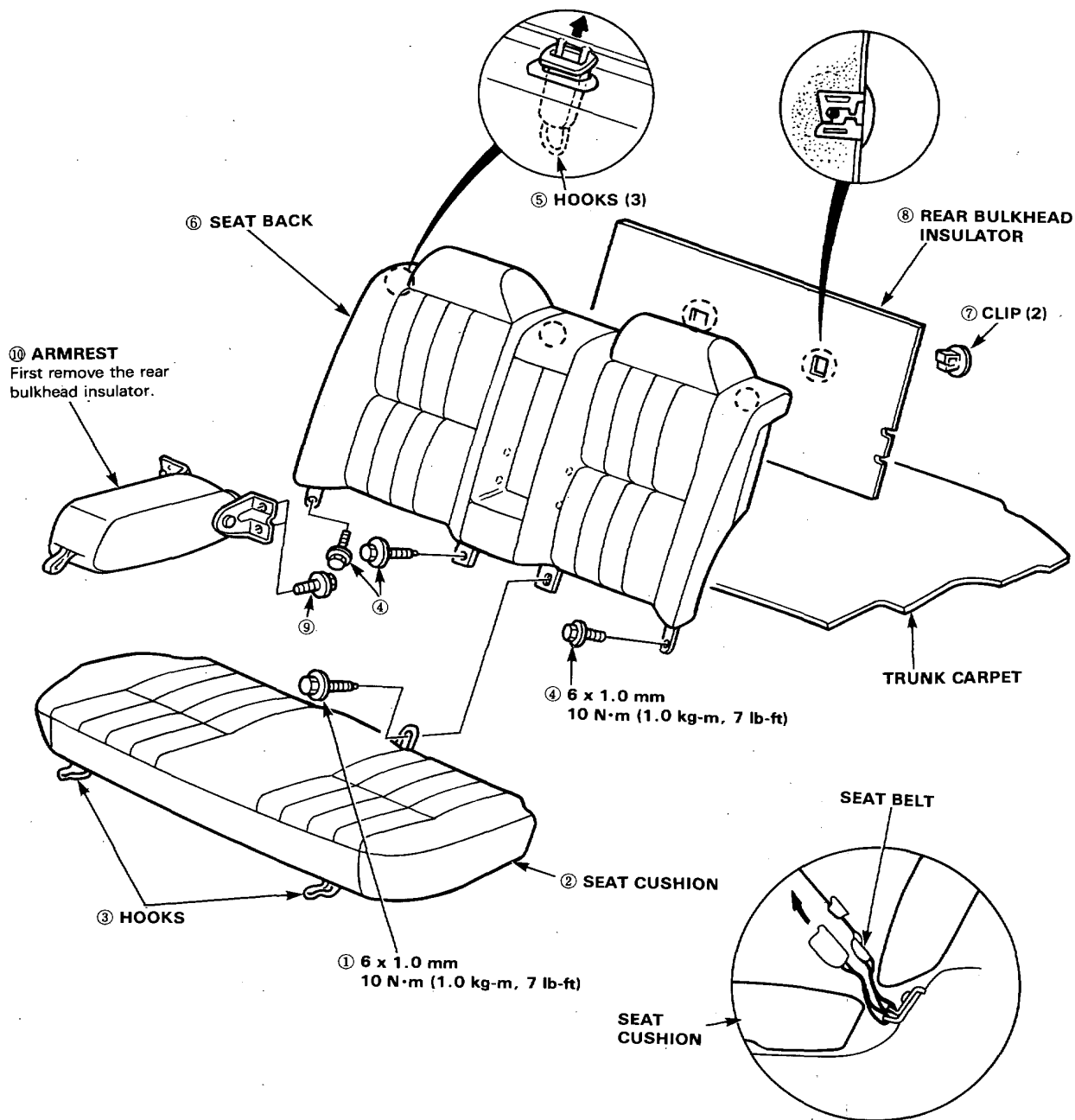
○ : Clip locations.





Rear Seats Replacement

Disassemble in numbered sequence.



NOTE: Attaching the seat cushion, make sure there are no twists in the seat belts.

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Trunk Lid

Replacement/Adjustment

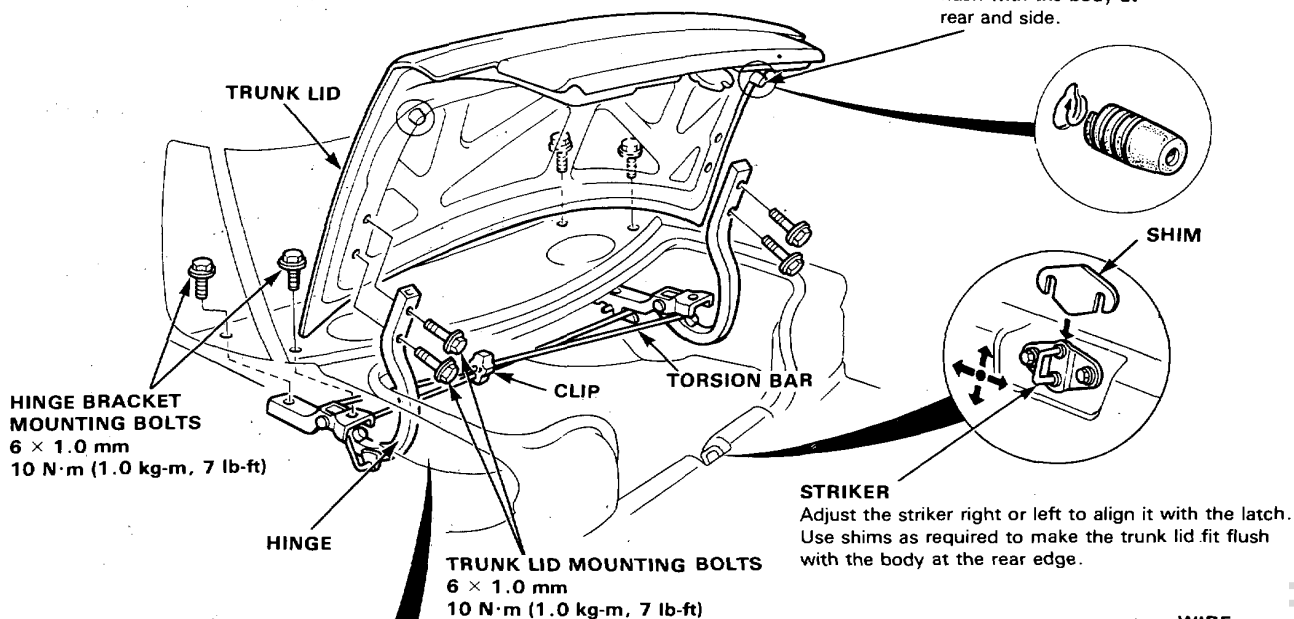
1. Pull the harness and trunk lid opener cable (page 14-73) out of the trunk lid.

NOTE: Before pulling out the wire harness and opener cable, tie a string to the end of it so you can pull it back in when the trunk lid is reinstalled.

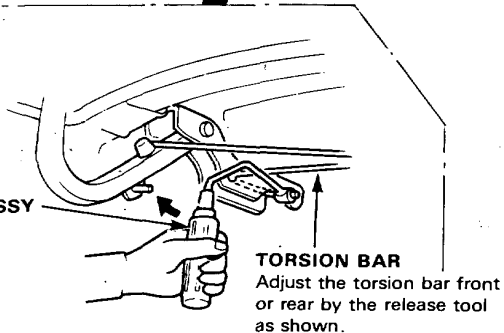
2. Remove the trunk lid mounting bolts, then lift off the lid.
3. Remove the torsion bar using a assembly tool.
4. Remove the rear shelf.
5. Remove the hinge bracket mounting bolts, then remove the hinges from the trunk.

TRUNK LID EDGE CUSHION

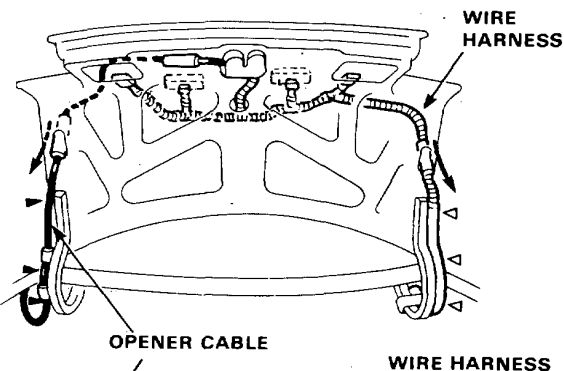
Turn as necessary, to make the trunk lid fit flush with the body at rear and side.



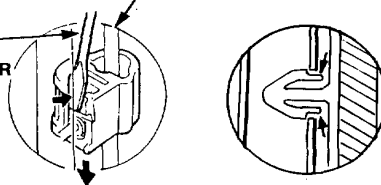
TORSION BAR ASSY TOOL 07GAZ-SE30100



● = Normal tension
● = Higher tension



FLAT TIP SCREWDRIVER



► : Locations

► : Locations

6. Assemble in the reverse order.

NOTE: Before tightening the trunk lid mounting bolts, adjust the trunk lid fit and striker.

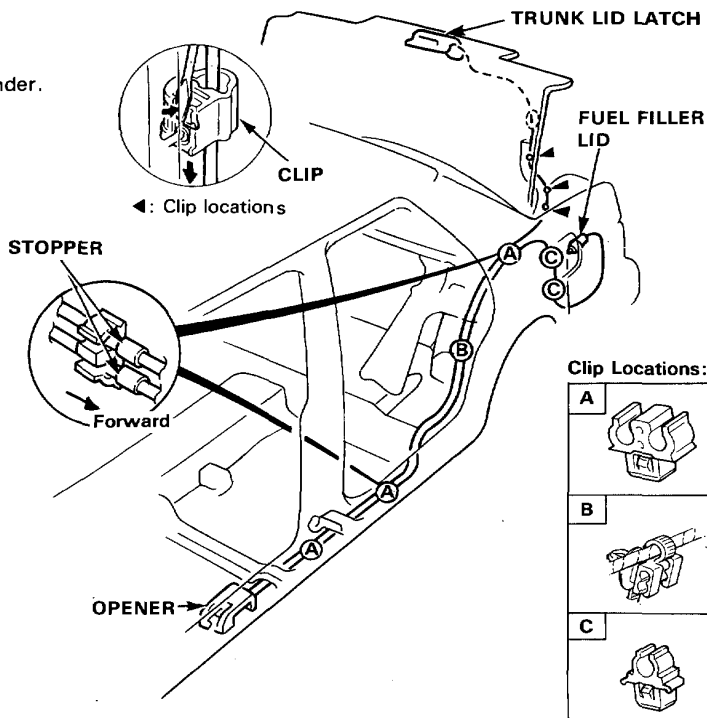
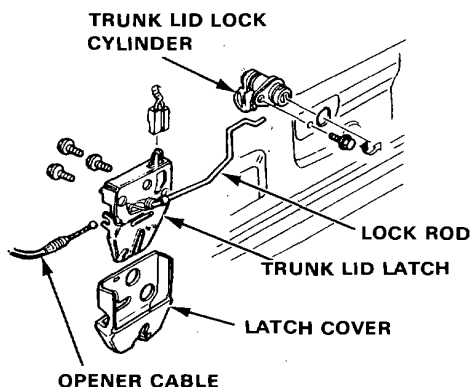


Trunk Lid Opener/Emblem

Trunk Lid Opener Replacement

LHD:

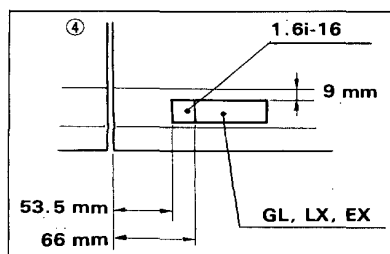
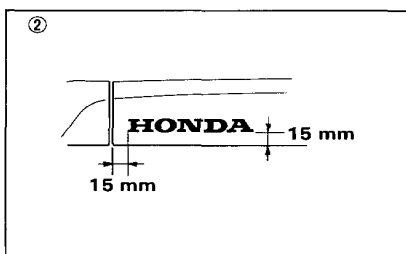
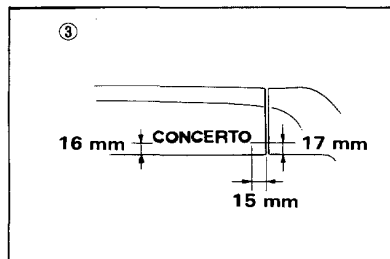
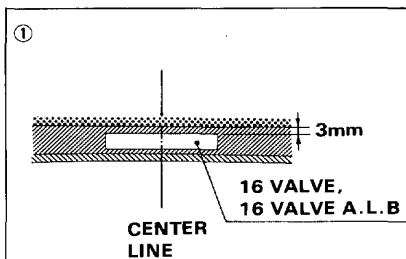
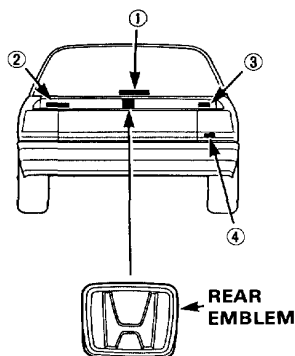
- To remove the opener cables, remove the following parts:
 - Left side door sill moldings, left and rear half of carpet.
 - Left quarter trim panel, and left trunk side panel.
- Remove the screw and the release levers, then remove the opener cover. Remove the opener by removing the 2 bolts (page 14-57)
- Remove the fuel filler lid latch by turning it 90° (page 14-57).
- Remove the rear panel garnish.
- Remove the bolt, then remove the trunk lid lock cylinder.
- Remove the 3 bolts, then remove the trunk lid latch.
- Disconnect the opener cable, connector and lock rod.



- To install, reverse the removal procedure. Check that the trunk lid and fuel filler lid opener cables are routed and connected properly.

Emblem Installation

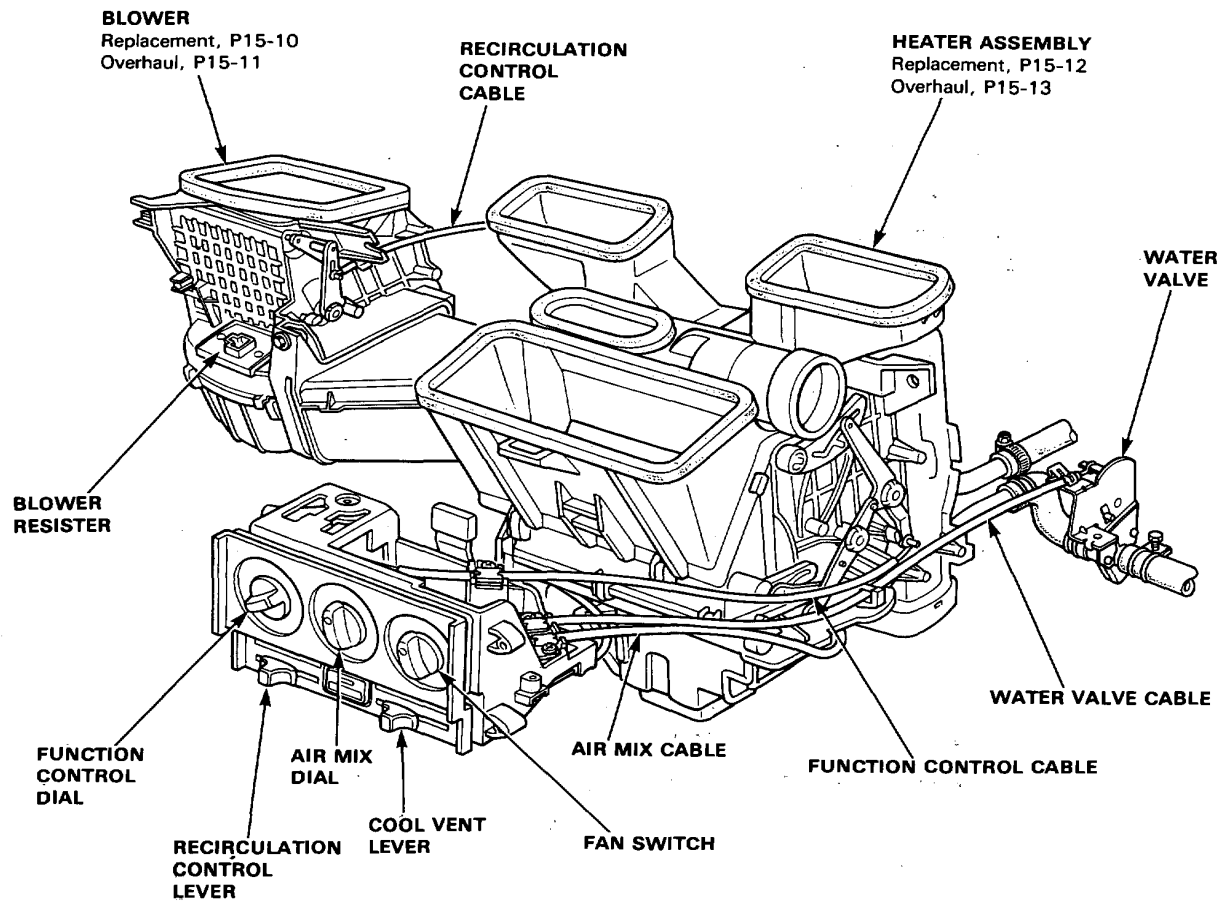
Attachment Points:

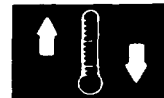


NOTE: Before sticking, clean the body bonding surface with a sponge dampened in alcohol.

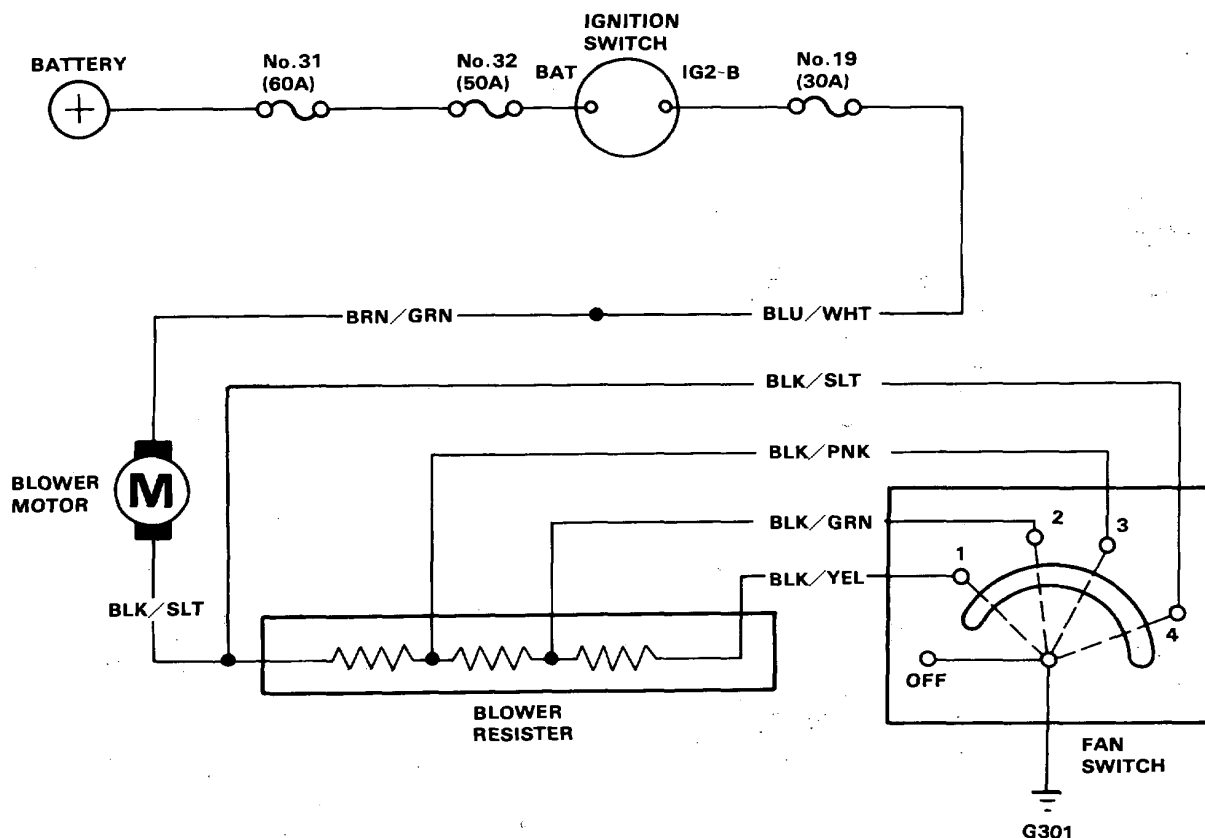
Heater

Illustrated Index





Circuit Diagram



Troubleshooting

Symptom Chart

SYMPTOM		REMEDY
No hot air flow	Blower motor does not run	Perform the flowchart (page 15-6)
	Blower motor runs	Check following: • Clogged heater duct • Clogged blower outlet • Clogged heater valve • Faulty air mix door • Air mix cable adjustment • Faulty thermostat
Hot air flow is low	Blower speed does not change	Perform flow chart (page 15-8)
	Blower runs properly	Check following: • Clogged heater duct • Clogged blower outlet • Incorrect door position

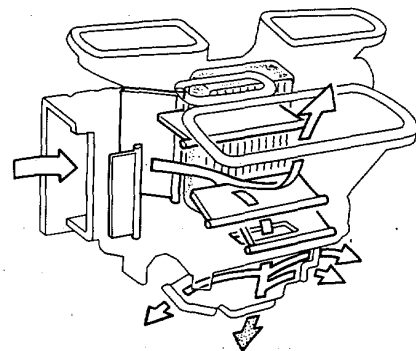
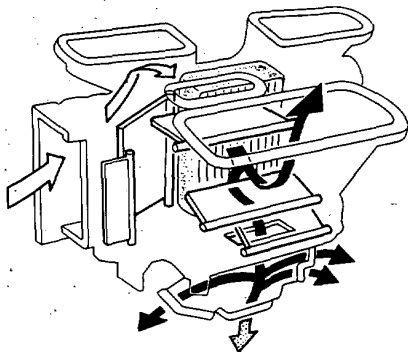
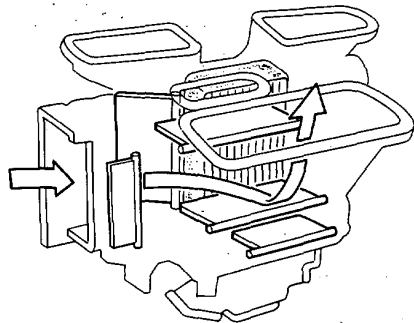
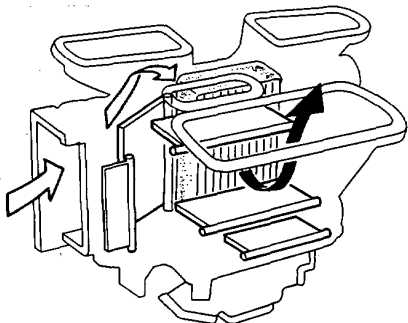
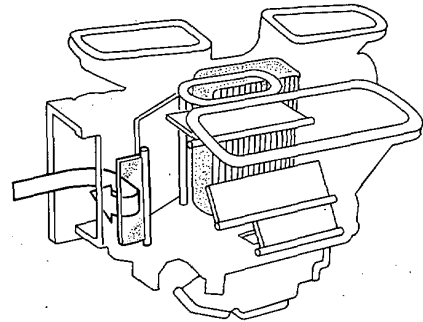
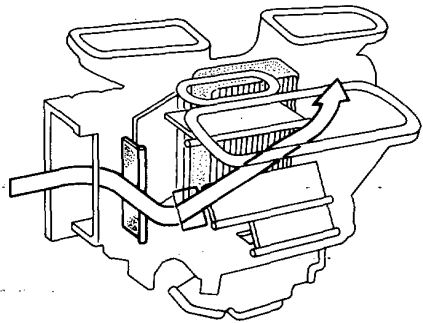
Heater Door Position

← HOT

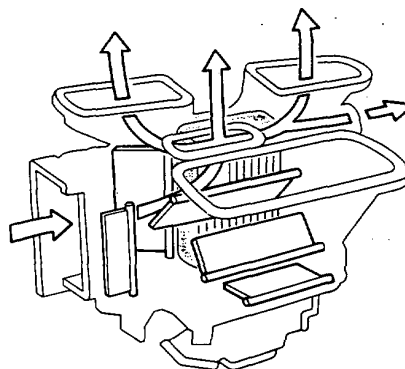
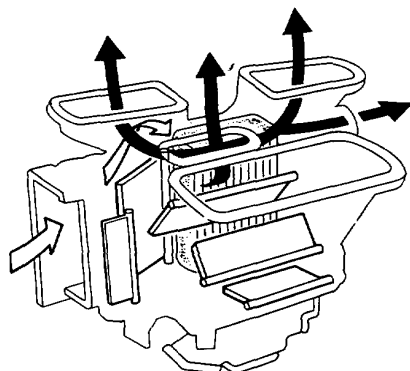
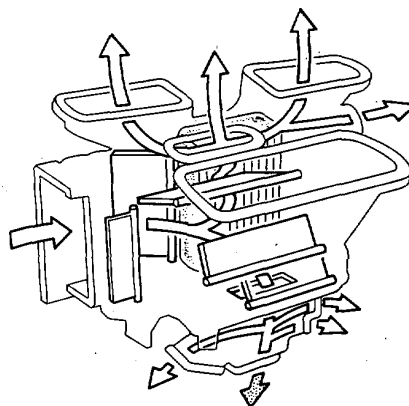
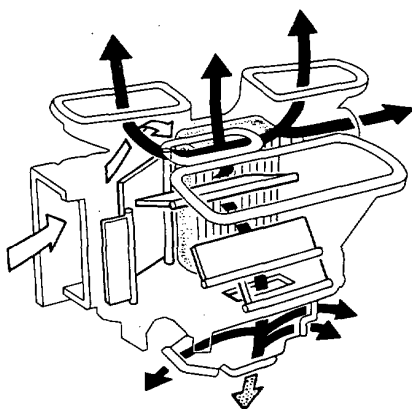
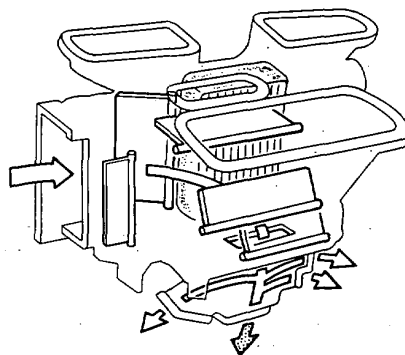
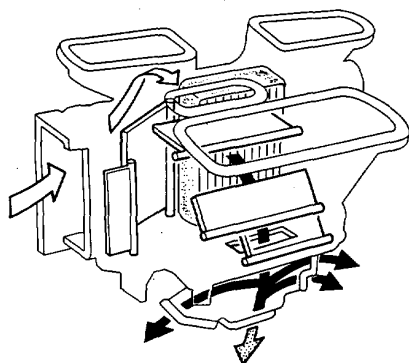
← COLD



COOL VENT

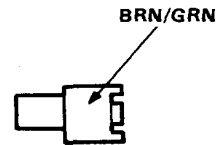
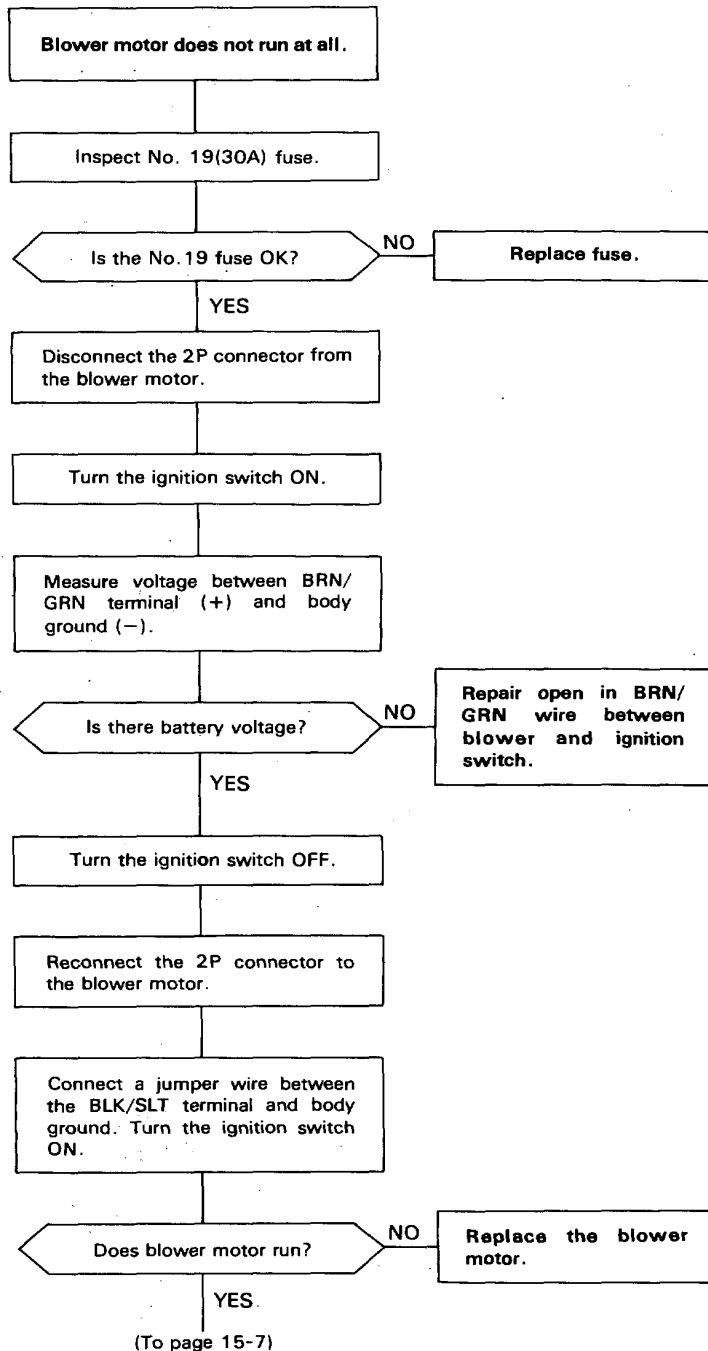


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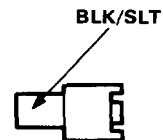


Troubleshooting

Flow Chart-Blower



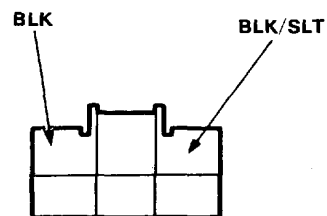
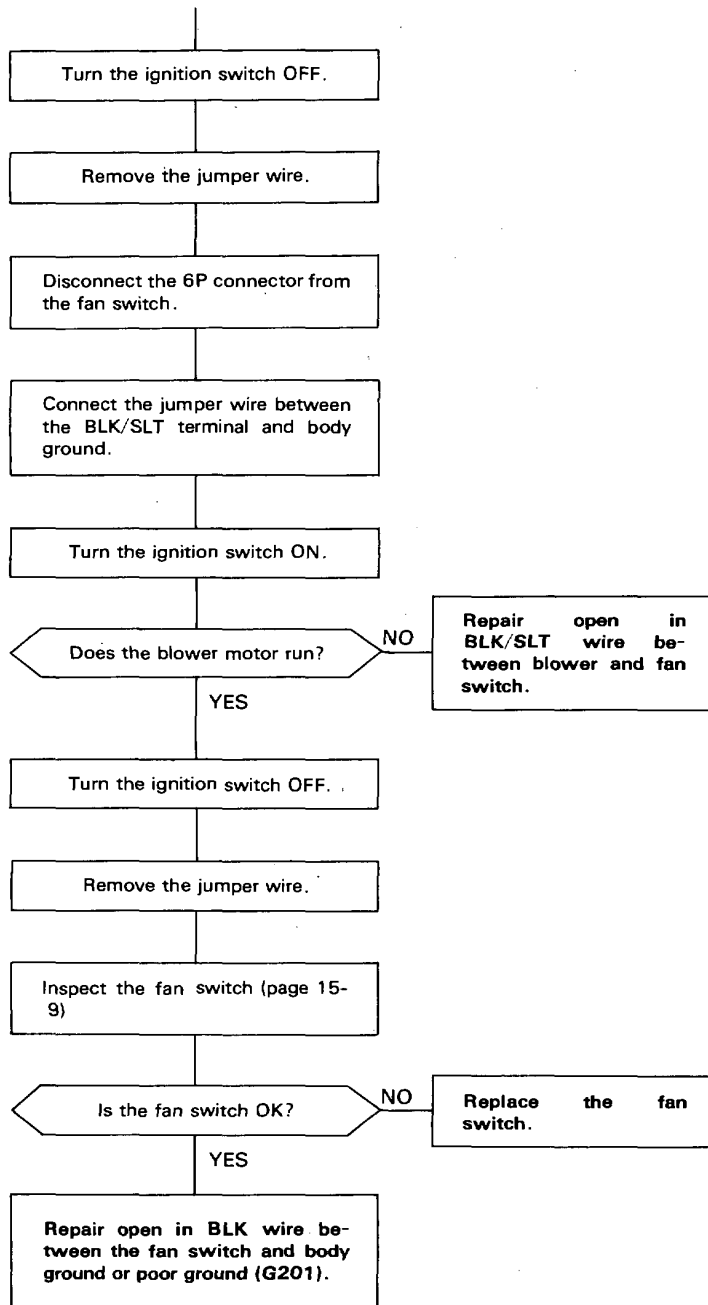
View from wire side



View from wire side

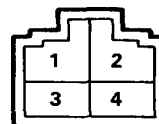
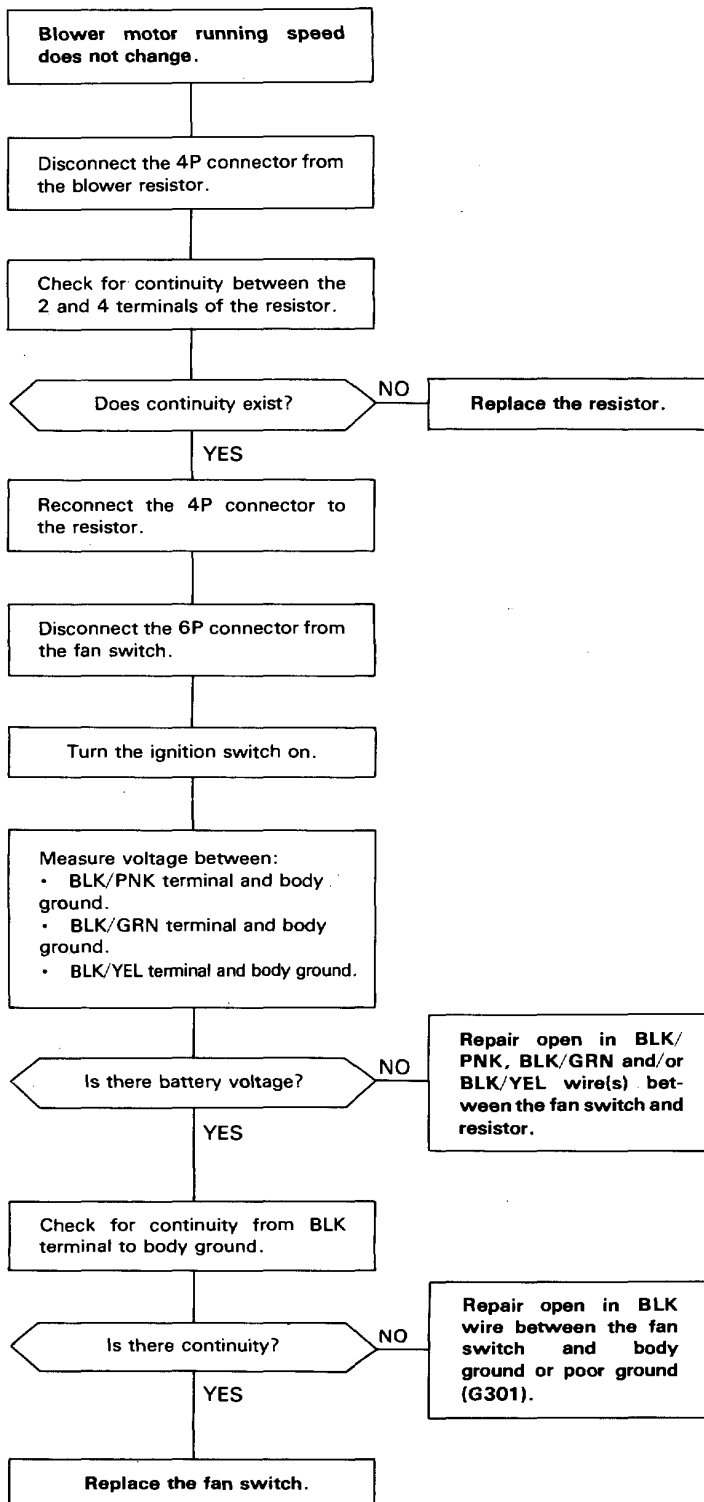


(From page 15-6)

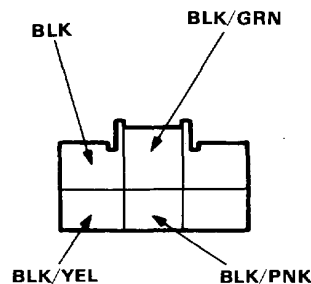


View from wire side

Troubleshooting



View from terminal side



View from wire side



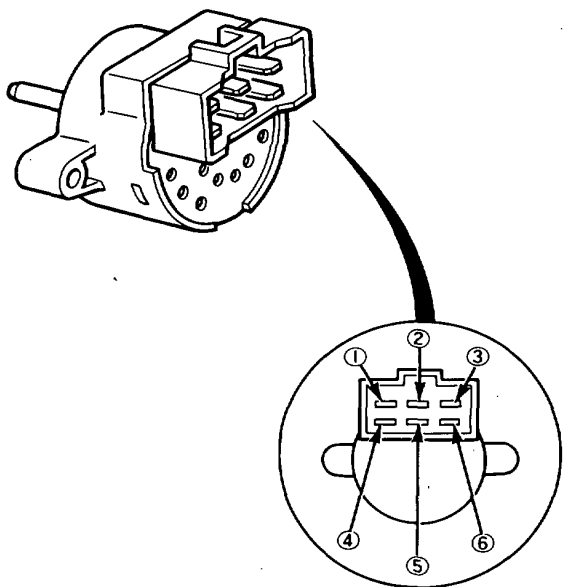
Test

Fan Switch

1. Disconnect the 6P connector from the fan switch.
2. Check for continuity between the terminals of the fan switch according to the table below.

SWITCH CONNECTION

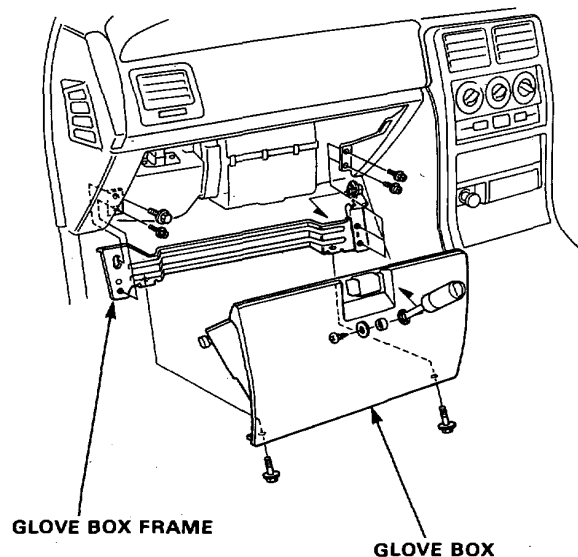
Terminal Position	①	②	③	④	⑤	⑥
OFF						
1	○			○		○
2	○	○				○
3	○				○	○
4	○		○			○



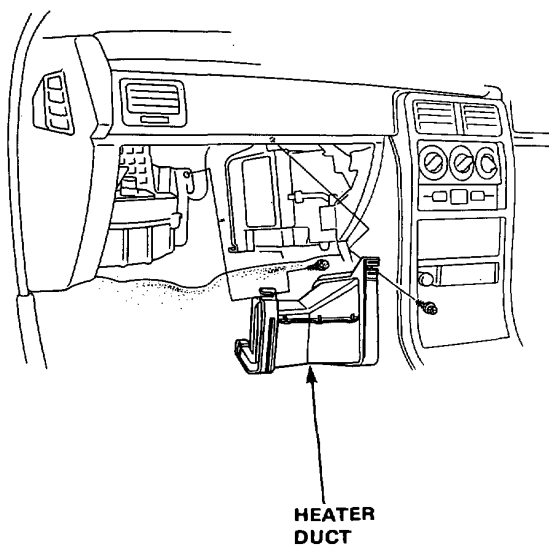
Blower

Replacement

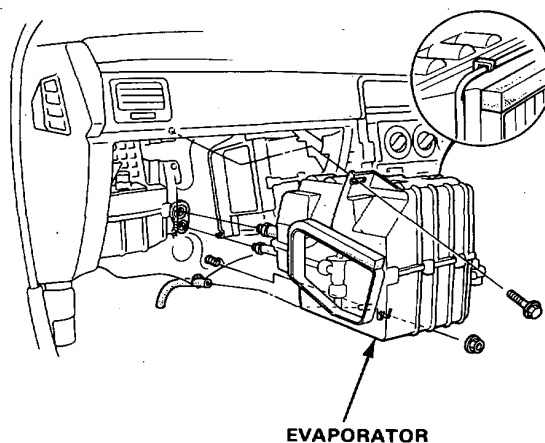
1. Disconnect the battery negative terminal.
2. Remove the glove box and glove box frame.



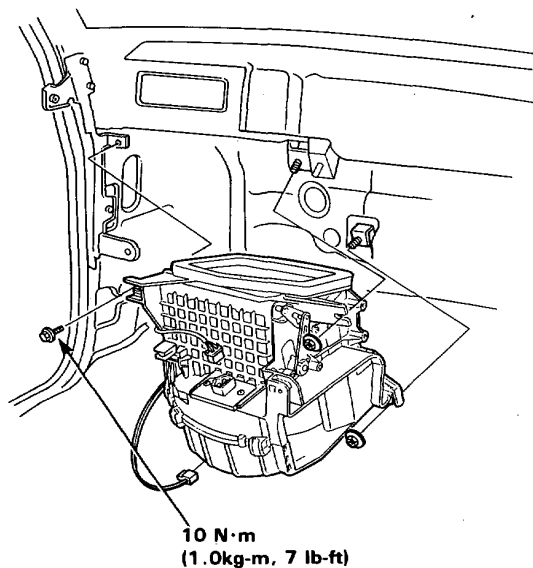
- 3-a. Remove the tapping screws (2) and remove the heater duct.



- 3-b. Remove the A/C band and the evaporator.



4. Remove the mounting bolts (3).
5. Disconnect the connectors from the blower motor, resistor then remove the blower.



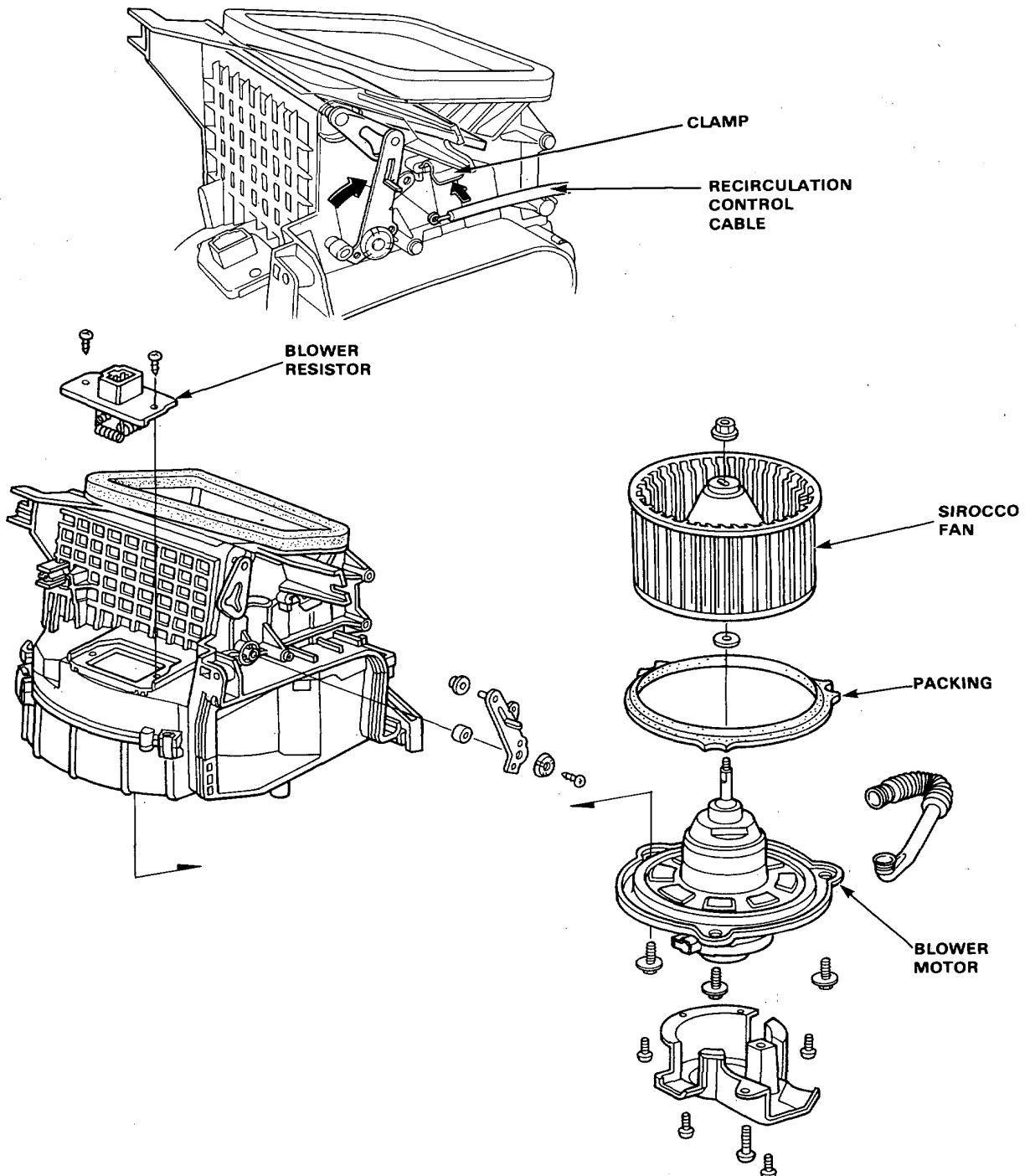
6. Install the blower in the reverse order of removal and make sure there is no air leakage.



Overhaul

NOTE:

- Before reassembly, make sure that the air door and linkage move smoothly without binding.
- RECIRCULATION CONTROL CABLE ADJUSTMENT**
Side the recirculation control lever to "RECIRC". Then connect the control cable to the arm while holding the air doors shut.



Heater assembly

Replacement

1. When the engine is cool, drain coolant from the radiator (Section 5).

⚠ WARNING

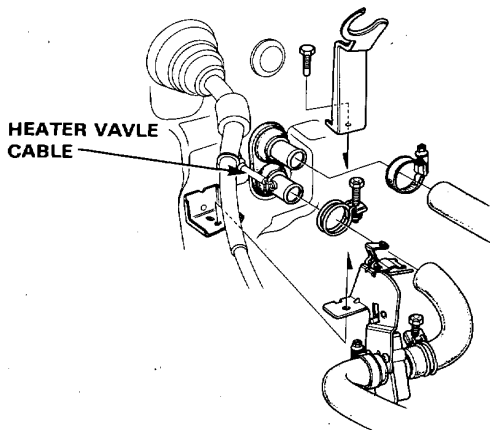
- Do not remove the radiator cap when the engine is hot; the coolant is under pressure and could severely scald you.
- Keep hands away from the radiator fan. The fan may start automatically without warning and run for up to 30 minutes, even after the engine is turned off.

CATION: Radiator coolant will damage paint. Quickly rinse any spilled coolant from painted surfaces.

2. Disconnect the heater hoses at the heater.

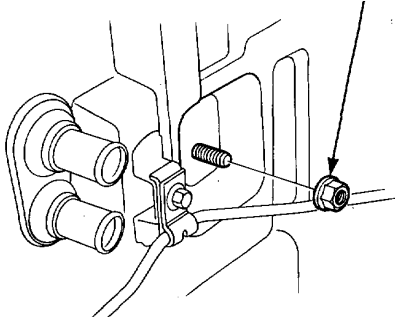
NOTE: Coolant will run out when the hoses are disconnected, drain it into a clean drip pan.

3. Disconnect the heater valve cable from the heater valve.

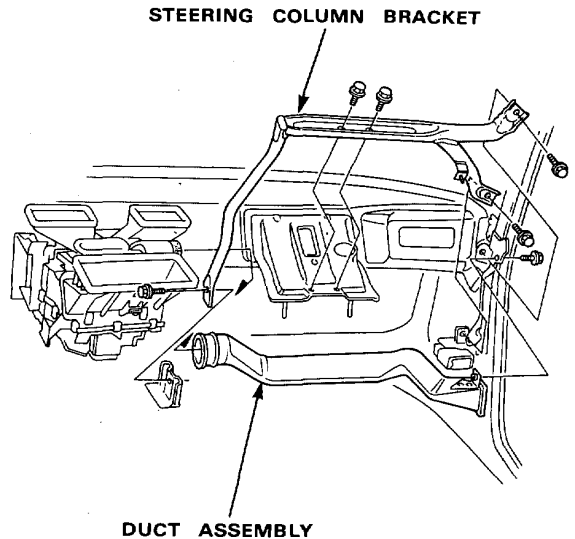


4. Remove the dashboard (Section 14).
5. Remove the heater duct (page 15-10).
6. Remove the heater lower mounting nut.

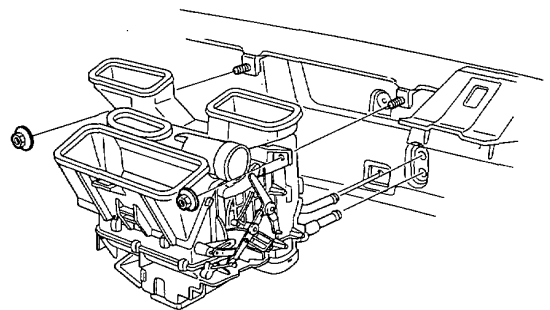
TORQUE: 1.9—2.5kg-m



7. Remove the steering column bracket and duct assembly.

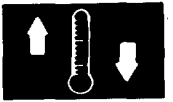


8. Remove the heater mounting bolts (2) and clip, then remove the heater assembly.



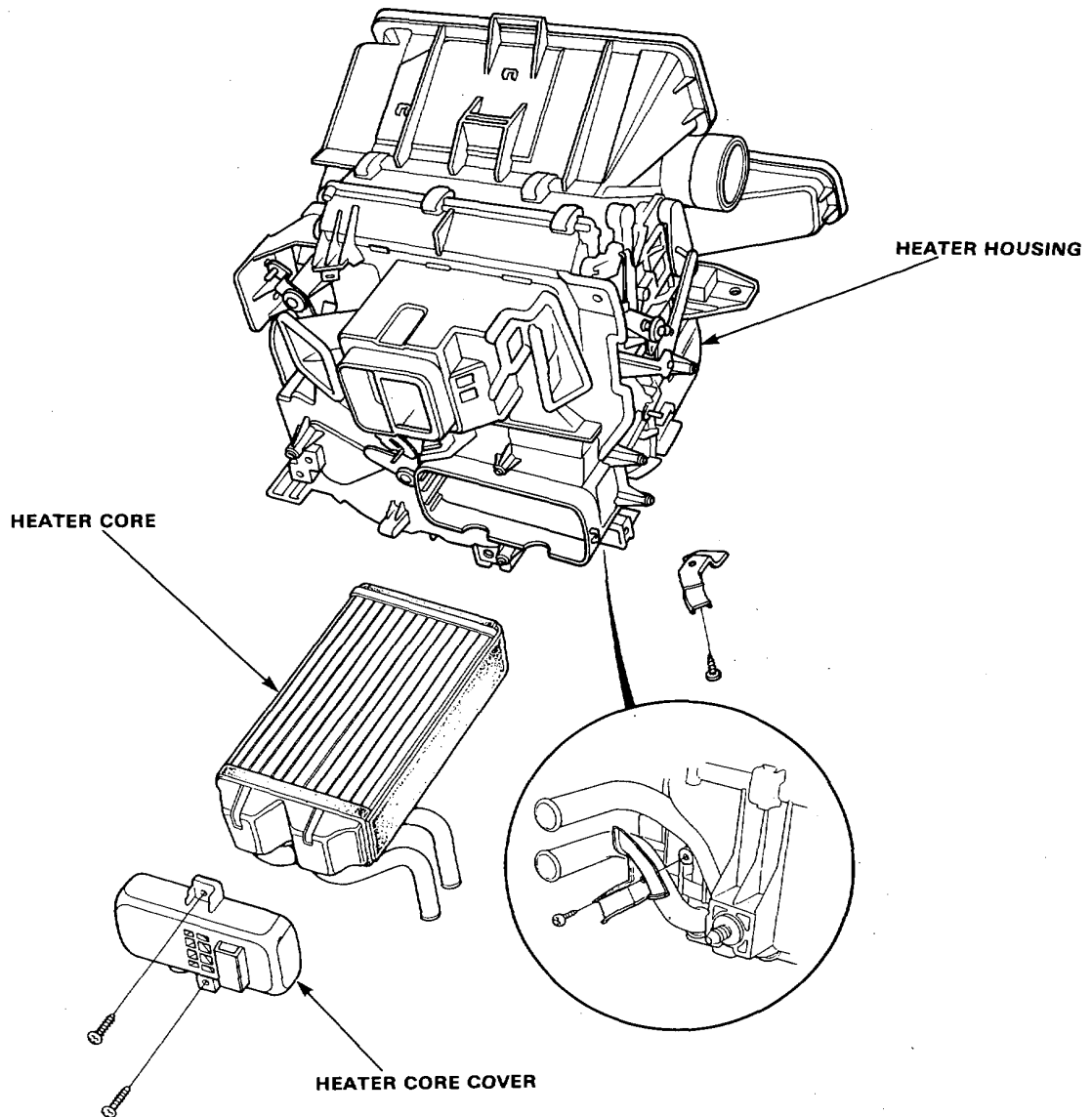
9. Install in the reverse order of removal, and:

- Apply a sealant to the grommets.
- Do not interchange the inlet and outlet hoses. Make sure that the hose clamps are secure.
- Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.
- Connect all cables and make sure they are properly adjusted (page 15-16).



Overhaul

1. Remove the heater assembly.
2. Remove the tapping screws (2) and heater core cover.
3. Remove the tapping screw and clamp.
4. Pull out the heater core from the heater housing.



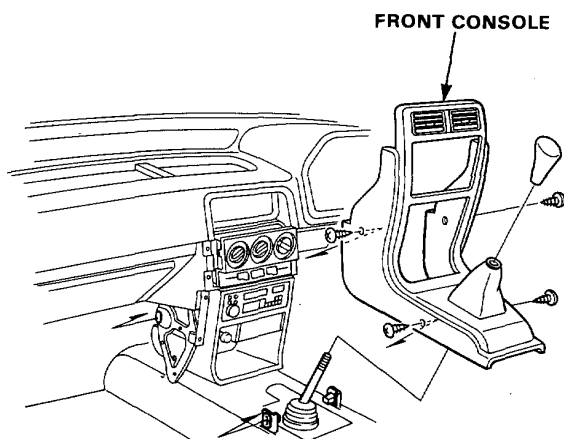
Install in the reverse order of removal and:

Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper coolant mixture. Tighten the bleed bolt when all the trapped air has escaped and coolant begins to flow from it.

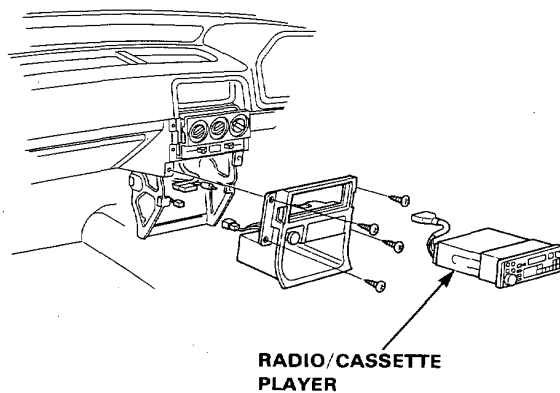
Heater Control Panel

Replacement

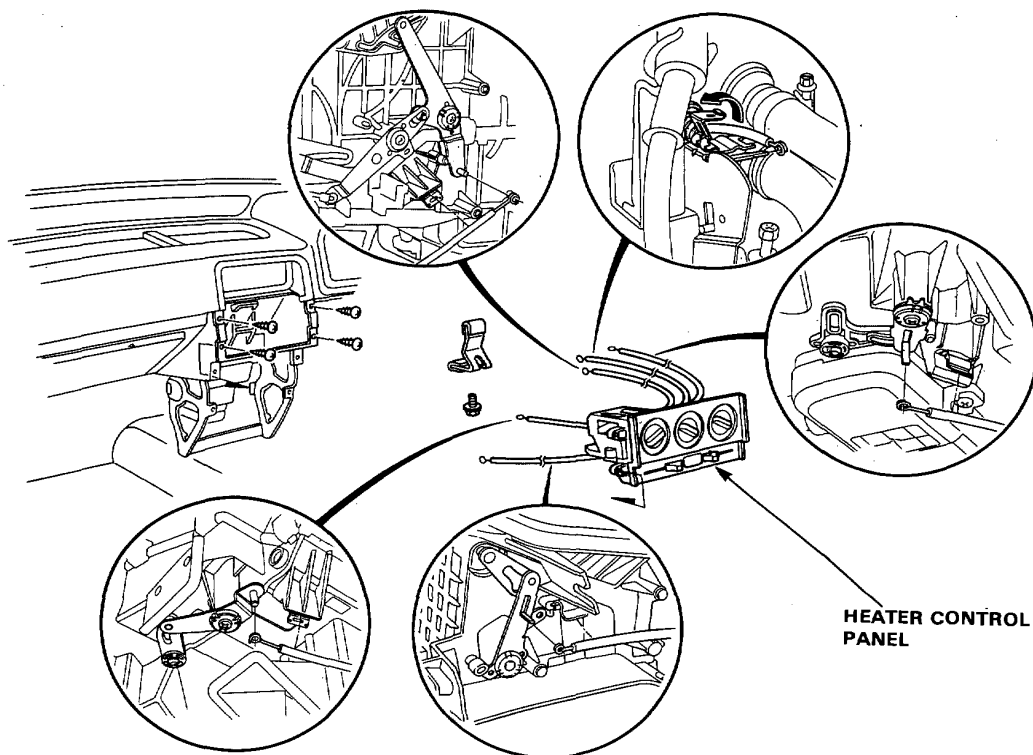
1. Remove the front console.



2. Remove the radio/cassette player.

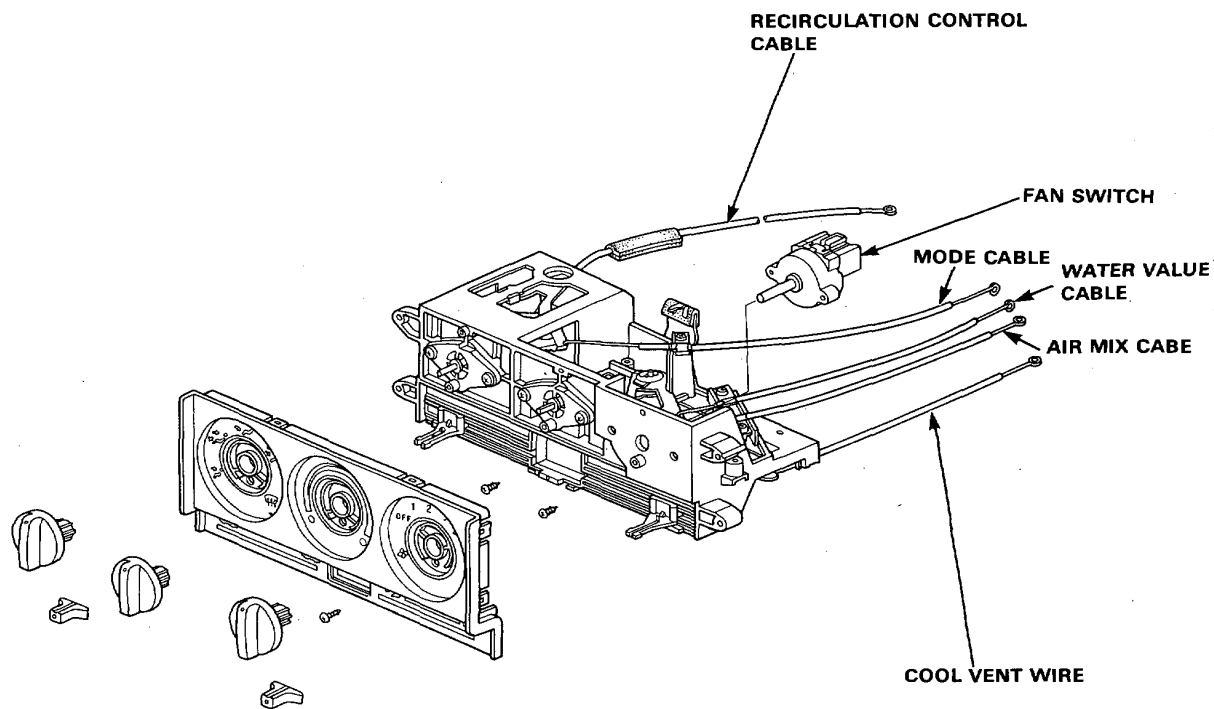


3. Remove the heater control panel.





Overhaul

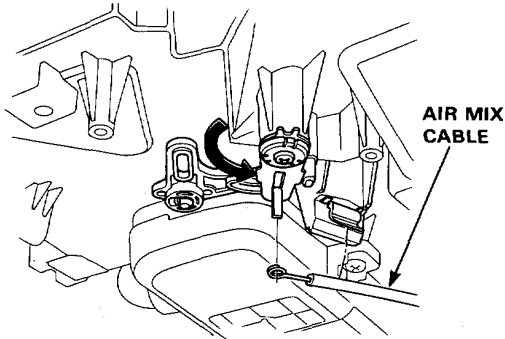


Heater Control Cables

Adjustment

● Air Mix Cable

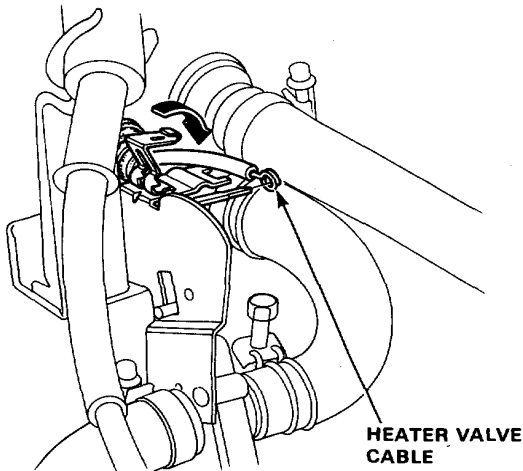
1. Slide the temperature control lever to HOT.
2. Turn the air mix door shaft arm to the left and connect the end of the cable to the arm.
3. Gently slide the cable outer housing back from the end enough to take up any slack in the cable, but not enough to make temperature control lever move, then snap the cable housing into the clamp.



NOTE: Heater valve cable should be adjusted if the air mix cable has been disconnected.

● Heater valve Cable

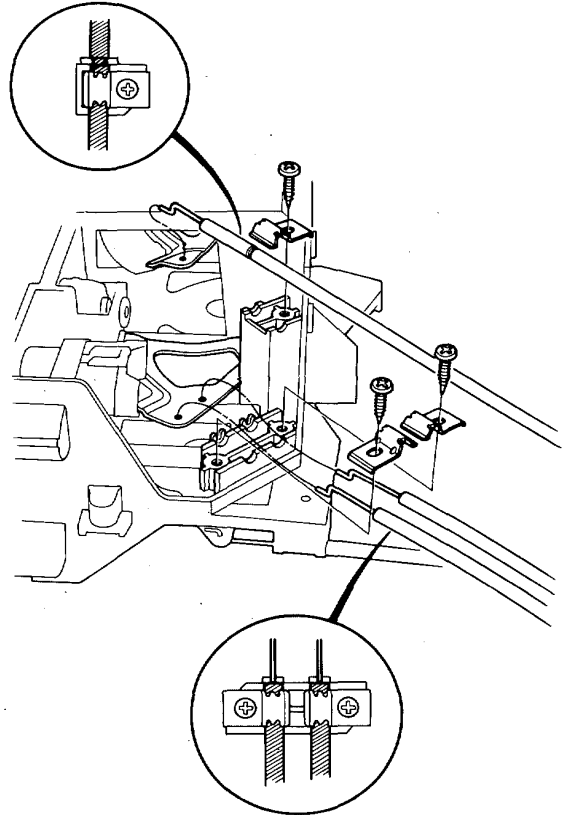
1. Slide the temperature control lever to HOT.
2. Gently slide the cable housing back from the end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then hold the cable housing and snap it in the clamp.



NOTE: Air mix cable should be adjusted if the heater valve cable has been disconnected.

Replacement

Remove the tapping screw, then replace the control cable.



Air Conditioner

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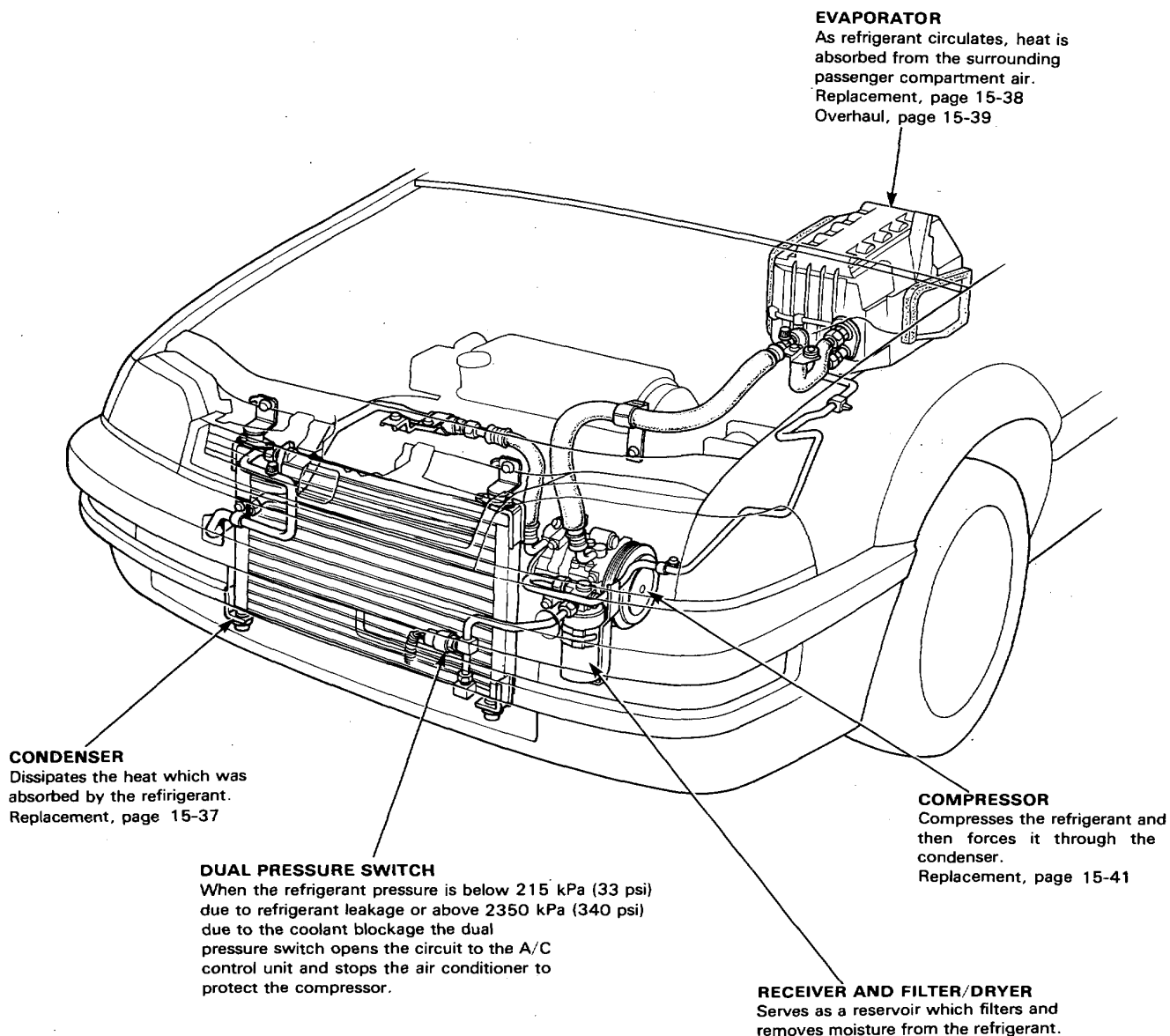
Special Tools

Ref. No.	Tool Number.	Description	Q'ty	Page Reference
①	07HAF-SF10300	SHAFT SEAL REMOVER	1	15-48
②	07HAF-SF10400	SEAL REMOVER/INSTALLER	1	15-48,49



Illustrated Index

<RHD>



* Delay control unit is installed on heater unit assembly side.
(Carbureted engine only)



<LHD>

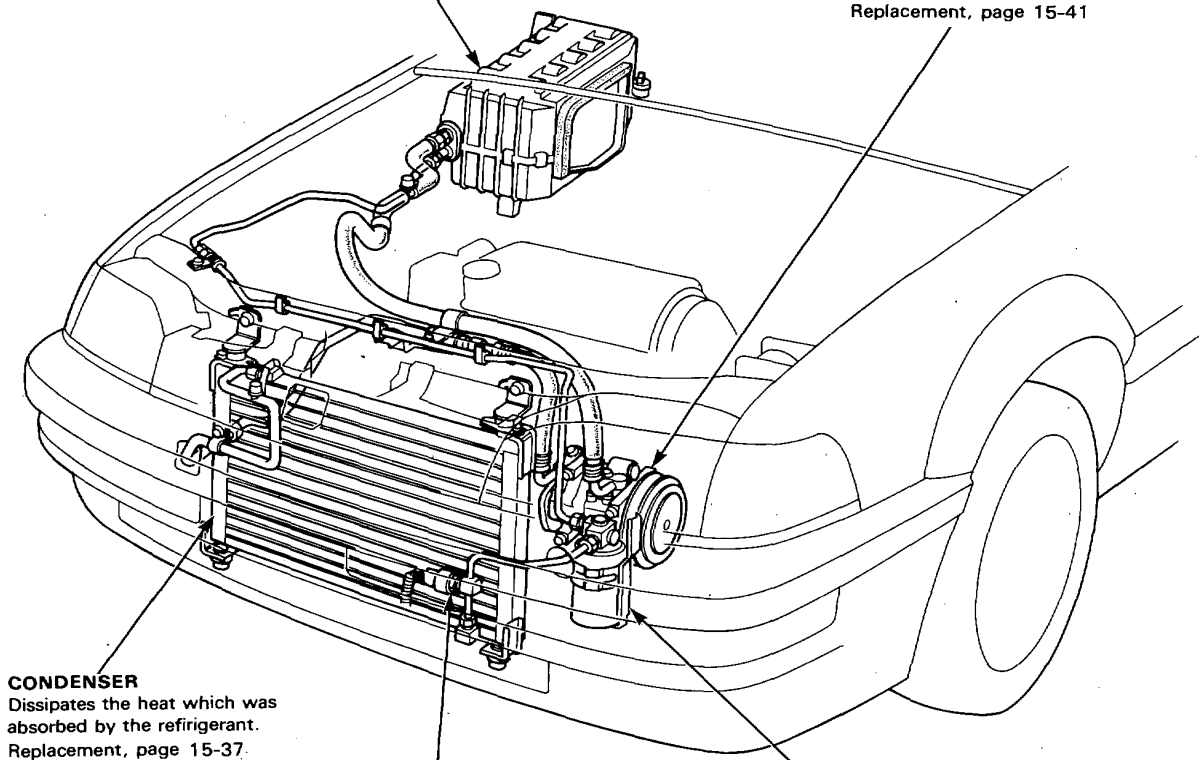
EVAPORATOR

As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.

COMPRESSOR

Compresses the refrigerant and then forces it through the condenser.

Replacement, page 15-41



CONDENSER

Dissipates the heat which was absorbed by the refrigerant.

Replacement, page 15-37

DUAL PRESSURE SWITCH

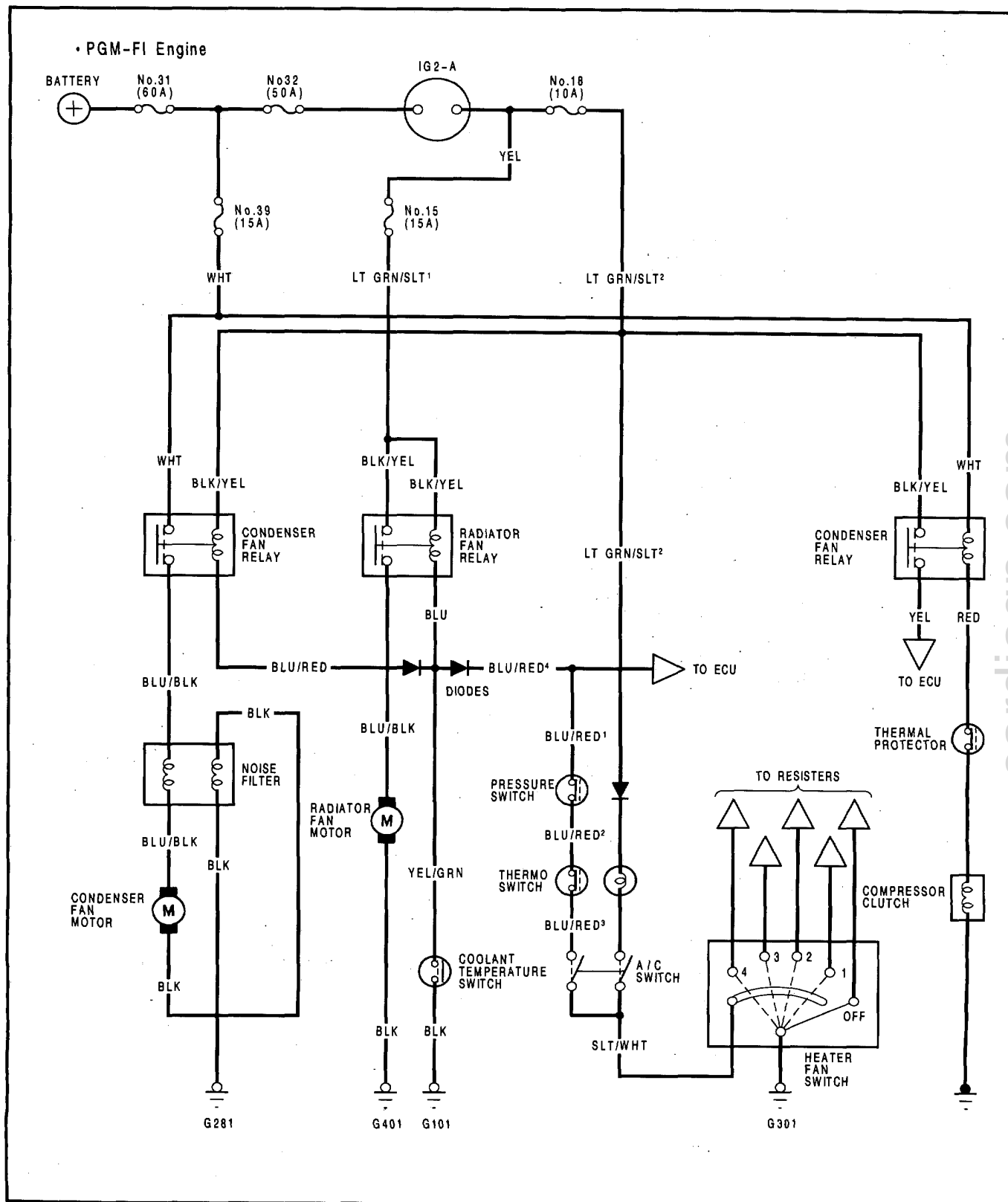
When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi) due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to protect the compressor.

RECEIVER AND FILTER/DRYER

Serves as a reservoir which filters and removes moisture from the refrigerant.

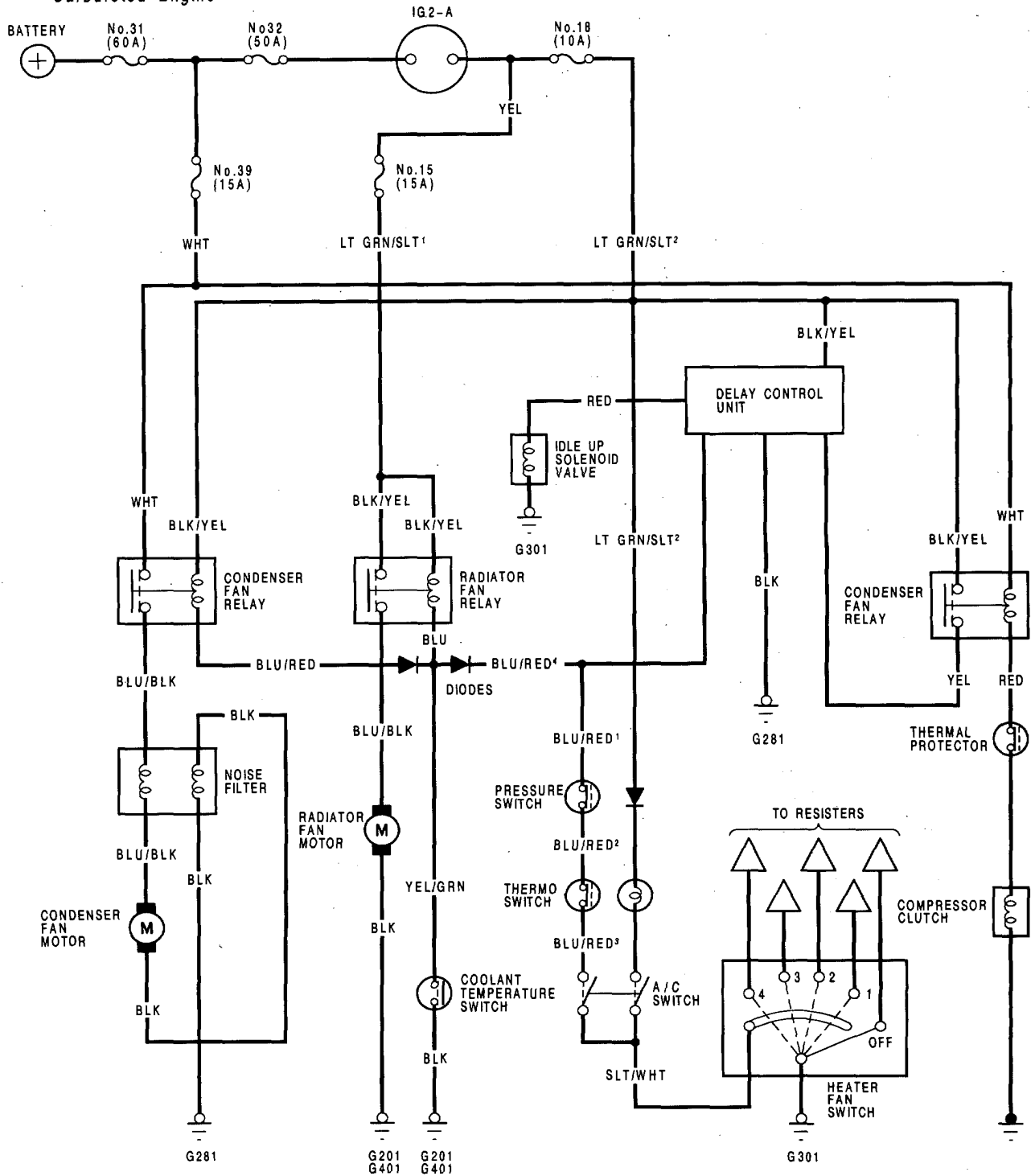
* Delay control unit is installed on heater unit assembly side.
(Carbureted engine only)

Circuit Diagram





• Carbureted Engine



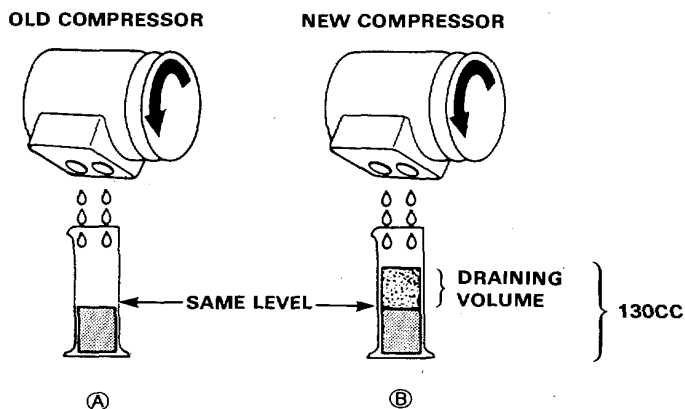
Service Tips

CAUTION:

1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil after replacing the following parts;

Condenser	10 cc (1/3 fl oz)
Evaporator	30 cc (1 fl oz)
Line or hose	10 cc (1/3 fl oz)
Receiver	10 cc (1/3 fl oz)
Compressor	On compressor replacement, subtract the volume of oil drained from the removed compressor from 130 cc (3.7 fl oz), and drain the calculated volume of oil from the new compressor:

$$130 \text{ cc (3.7 fl oz)} - \text{Volume of removed compressor} = \text{Draining volume.}$$



⚠ WARNING

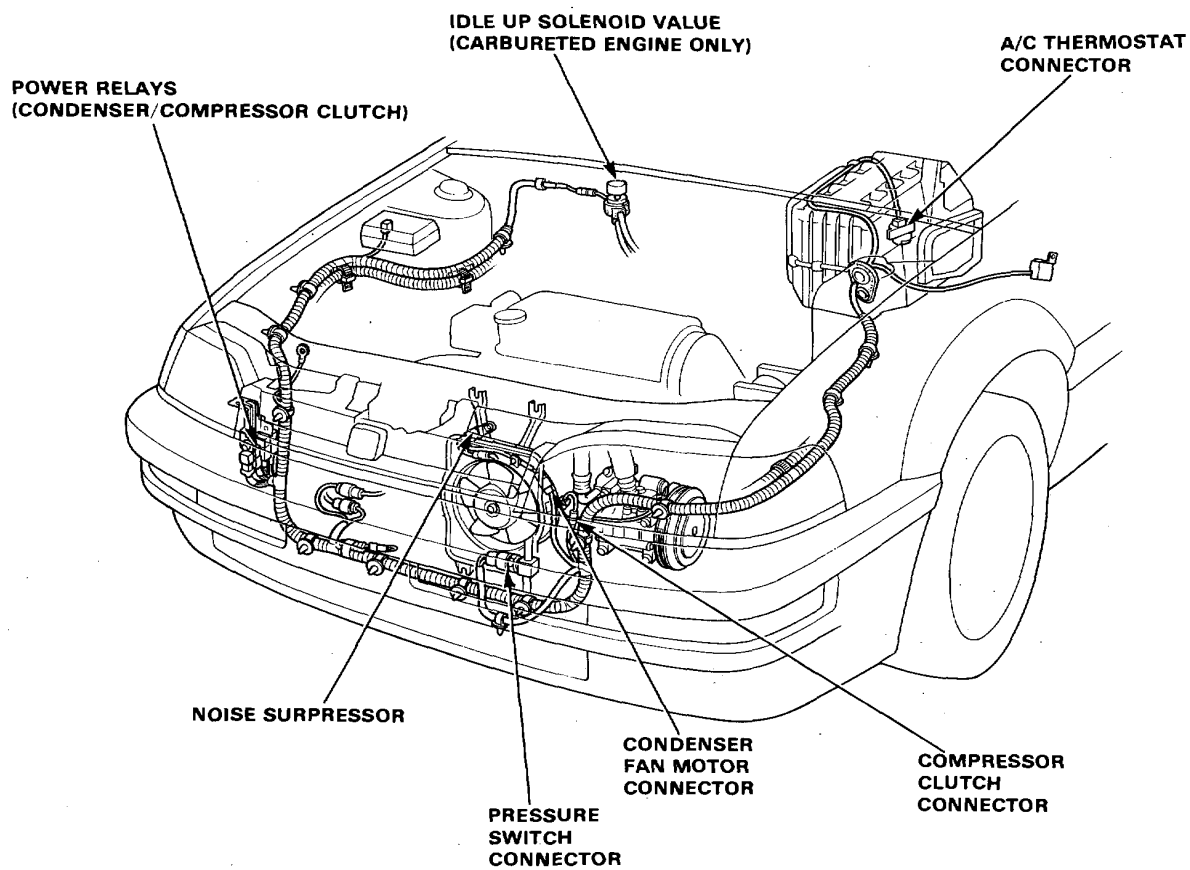
When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes; if it does:
 - Do not rub your eyes or skin.
 - Splash large quantities of cool water in your eyes or on your skin.
 - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce a poisonous gas.



- 15-23**

Wire Harness Routing



* Diodes are taped with A/C harness.

Troubleshooting



- Any abnormality must be corrected before continuing to the next test.
- Because of the precise measurements needed, use a digital voltmeter and ohmmeter when testing.

Before performing any troubleshooting procedures check:

Fuses	Grounds
No.32	G301 G101
No.31	G201 G281
No.18, 39 (Condenser & Compressor)	G401
No.15 (Cooling fan)	

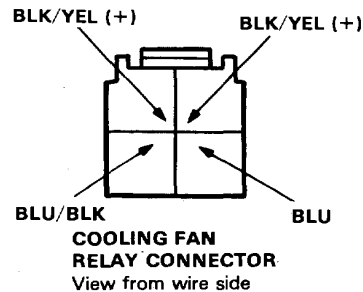
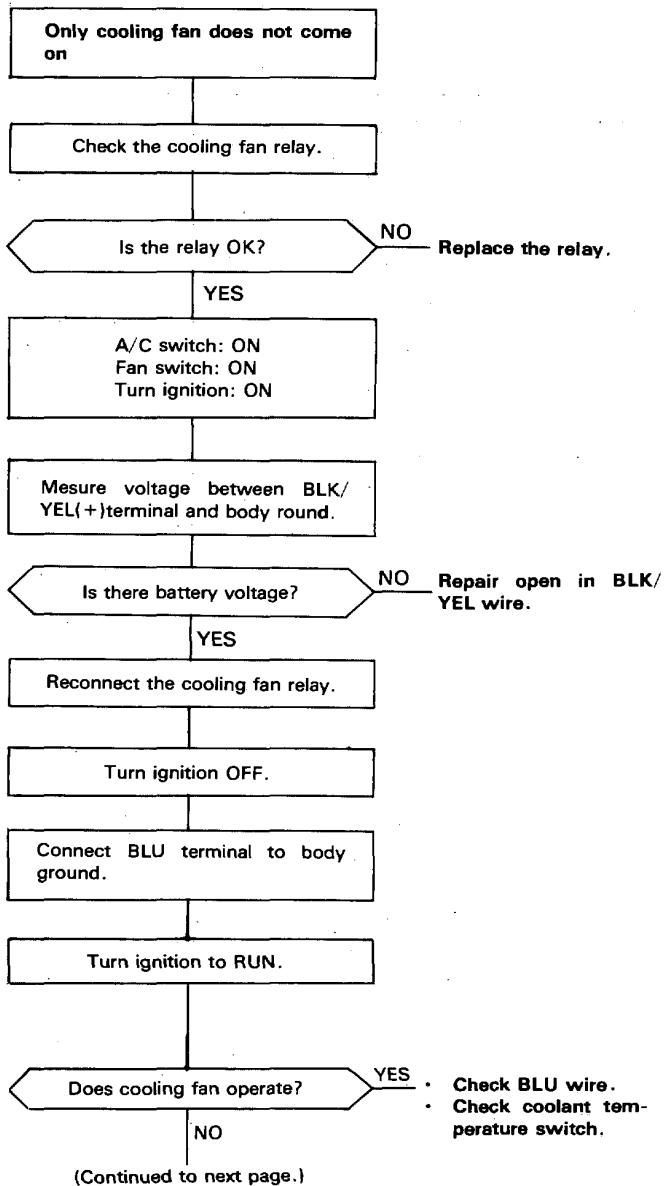
- All electrical connetions are clean and tight.

Symptom Chart

SYMPTOM	PAGE	CHART NO.
Only cooling fan does not run.	15-26	1
Only condenser fan does not run.	15-28	2
Compressor and cooling fans do not run.	15-30	3
A/C compressor does not come on. Cooling fans operate normally.	15-32	4

Troubleshooting

Flow Chart: 1





(Continued from previous page.)

Disconnect the cooling fan motor connector.

Is cooling fan motor OK?

NO Replace the motor.

YES

Measure resistance between BLK wire and ground.

Is continuity present?

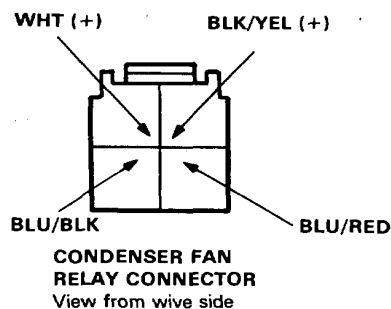
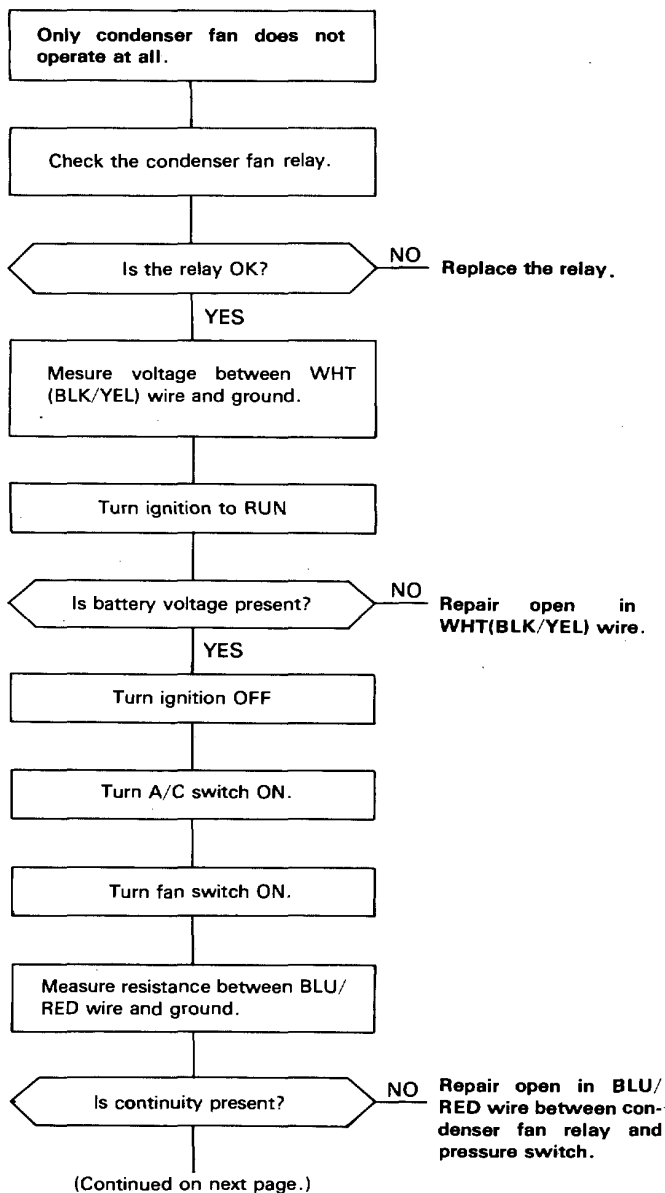
NO Repair open in BLK wire.

YES

Repair open in BLU/BLK wire between cooling fan relay and motor.

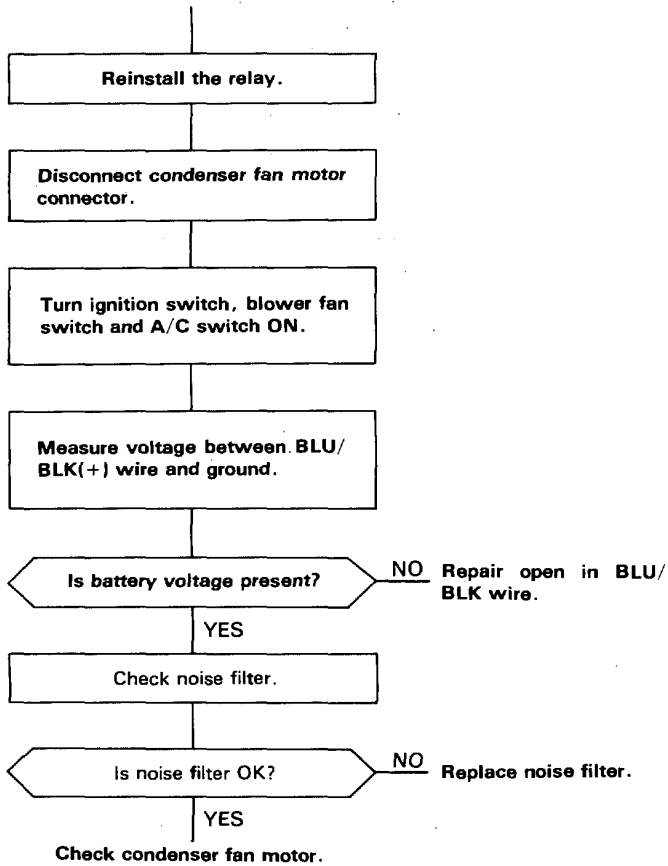
Troubleshooting

Flow Chart:2





(Continued from previous page)



Troubleshooting

Flow Chart:3

A/C compressor clutch does not engage and cooling fans do not run.

- Ignition SW:ON
- A/C SW:ON
- FAN SW:ON

Does A/C ON indicator light?

NO

YES

Is A/C pressure switch open?
(should be closed)

YES

Check refrigerant pressure.
If pressure is good, replace A/C pressure switch.

Is A/C thermostat open?(should be closed)

YES

Check evaporator temperature.
If temperature is above 41°F, replace A/C thermostat.

NO

Measure resistance BLU/RED₂ wire between pressure switch and A/C thermostat.

Is there continuity?

NO

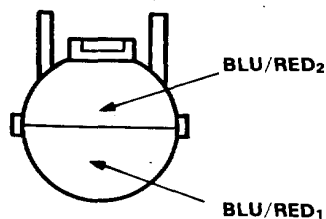
Repair open in BLU/RED₂ wire

YES

Measure resistance BLU/RED₃ wire between thermostat and A/C switch



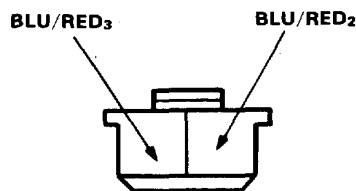
(Continued on next page.)



PRESSURE SWITCH CONNECTOR



(Continued on next page.)

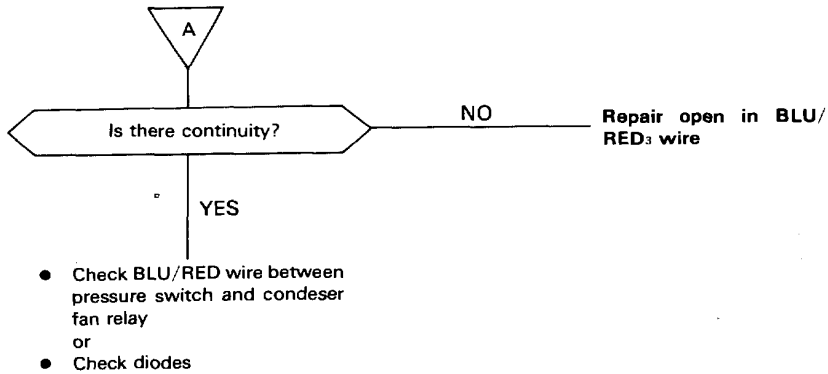


View from wire side

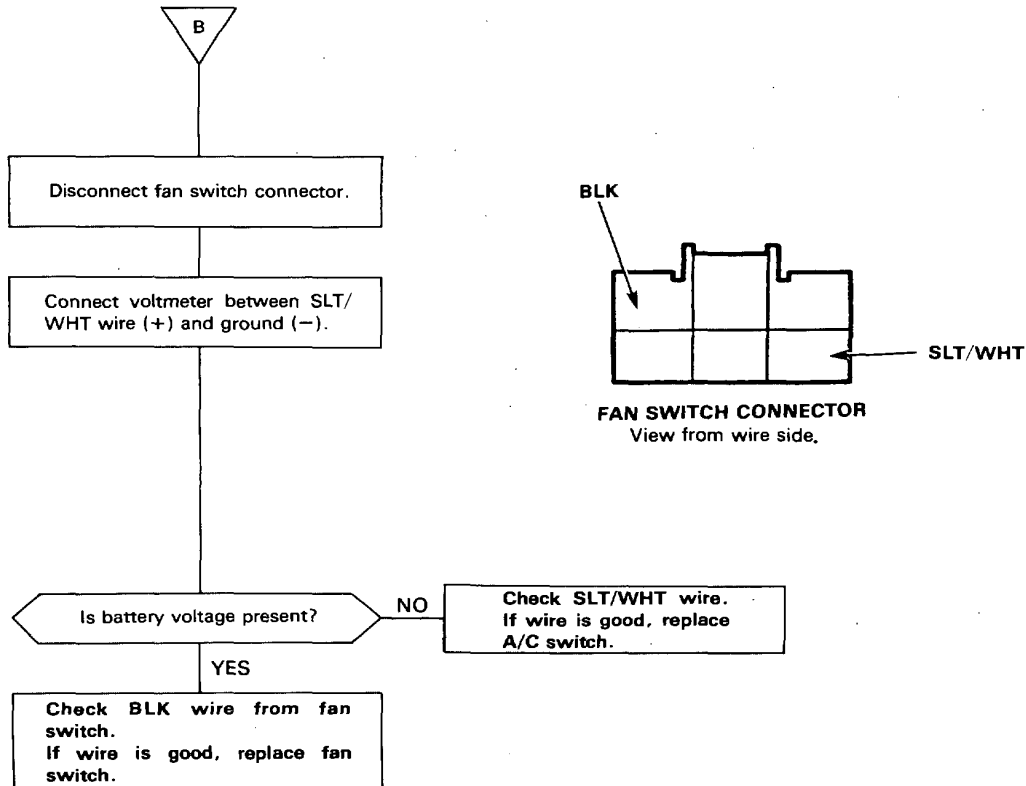
A/C THERMOSTAT CONNECTOR



(Continued from previous page.)

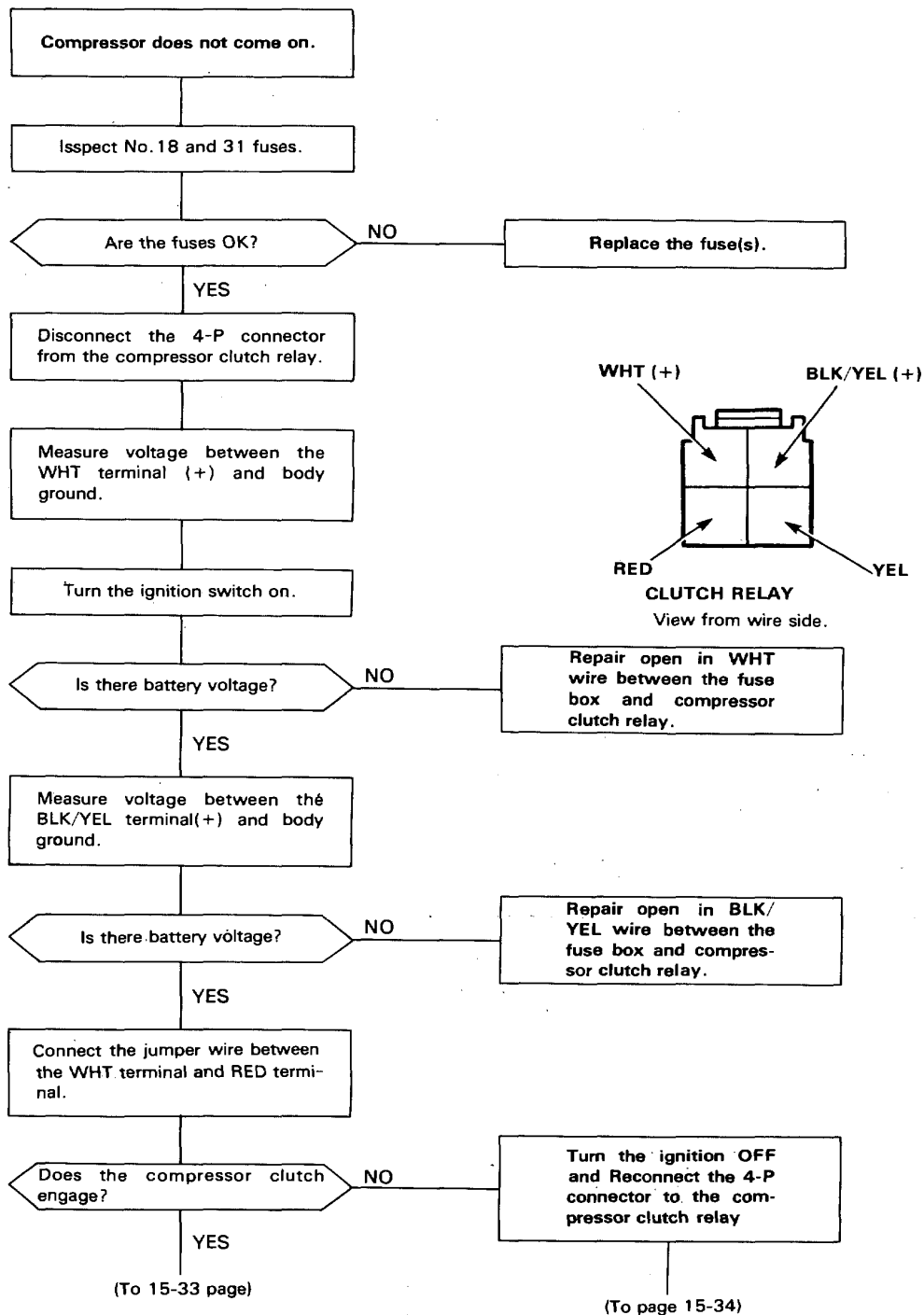


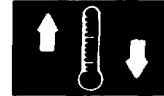
(Continued from previous page.)



Troubleshooting

Flow Chart:4

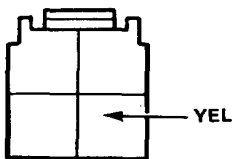




(from 15-32 page)

Turn the ignition switch OFF and reconnect the 4-P reconector 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

• PGM-FI Engine

Check the A/C signals.
Compressor clutch relay — ECU
A/C switch — ECU
See fuel and emissions section.

• Carbureted Engine

Disconnect 6P connector from the delay control unit.

Connect a jumper wire between YEL terminal and body ground.

Does the compressor clutch engage?

NO

Repair open in YEL wire between compressor relay and delay control unit.

YES

Measure voltage between the BLK/YEL terminal (+) and body ground.

Is there battery voltage?

NO

Repair open in BLK/YEL wire between the fuse box and delay control unit.

YES

Check the continuity between BLK terminal and body ground.

Is there continuity?

NO

Repair open in BLK wire between delay control unit and body ground or poor ground.

YES

Check the continuity BLU/RED4 terminal between delay control unit and body ground. Then A/C, heater fan switches ON.

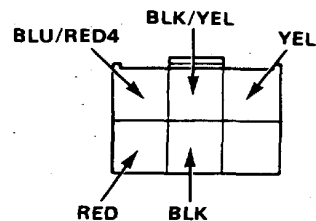
Is there continuity?

NO

Repair open in BLU/RED4 wire between delay control unit and body ground.

YES

Faulty delay control unit.



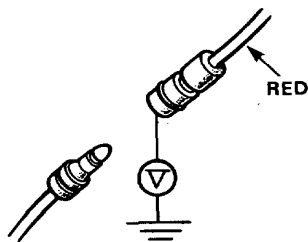
Troubleshooting

Flow Chart: 4 (cont'd)

(From page 15-32)

Disconnect the RED terminal and turn the ignition switch on.

Measure voltage between the RED terminal(+) and body ground.



Is ther battery voltage?

NO

Repair open in RED wire between the compressor clutch relay and compressor clutch connector.

YES

Turn the ignition switch OFF and check the thermal protector(page 22-32, 35).

Is the thermal protector OK?

NO

Replace the thermal protector.

YES

Replace the compressor clutch.



Pressure Check

NOTE: Performance Test on page 15-56

TEST RESULTS	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) Pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system; then recharge Evacuation: page 15-50 Recharging: 15-52
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as required
	Reduced or no air flow through condenser.	• Clogged condenser or 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	Insufficient refrigerant	Check for leaks. Charge as required. Replace expansion valve
	Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	• Frozen expansion valve • Faulty 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

Discharge Procedure

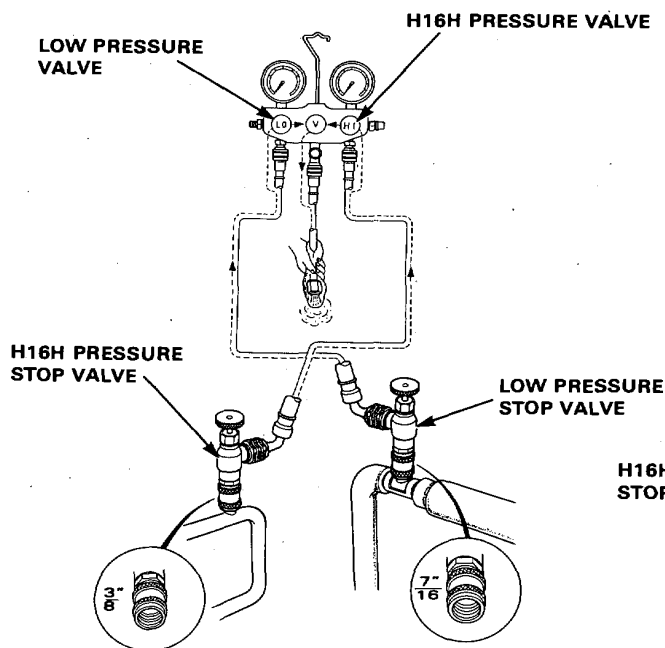
- Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.
 - Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.
1. Connect the gauges as shown.
 2. Disconnect the center hose of the gauge set and place the free end in a shop towel.
 3. Open the both stop valves and the evacuation valve (2 valve gauge: evacuate stop valve).

4. Slowly open the high side manifold valve slightly to let refrigerant flow from the center hose only. Do not open the valve too wide. Check the shop towel to make sure no oil is being discharged with the refrigerant.

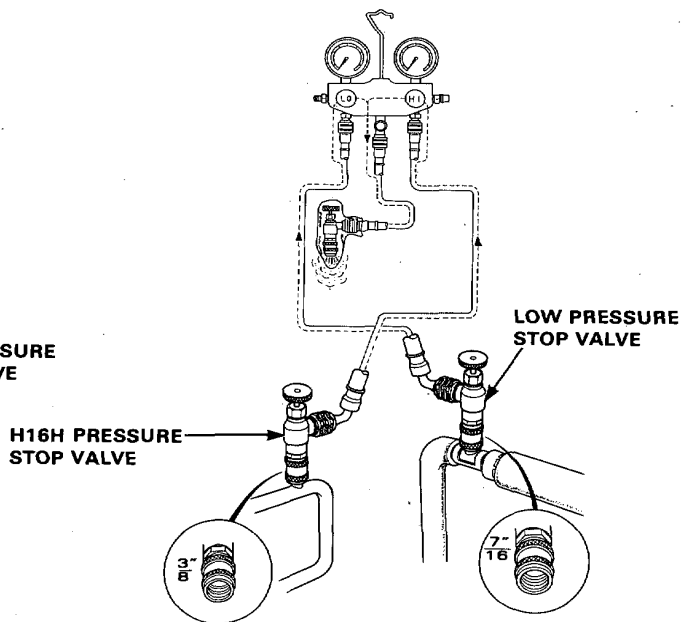
CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.

5. 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.
6. Note the gauge reading and, as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 psi).

(3 valve gauge)



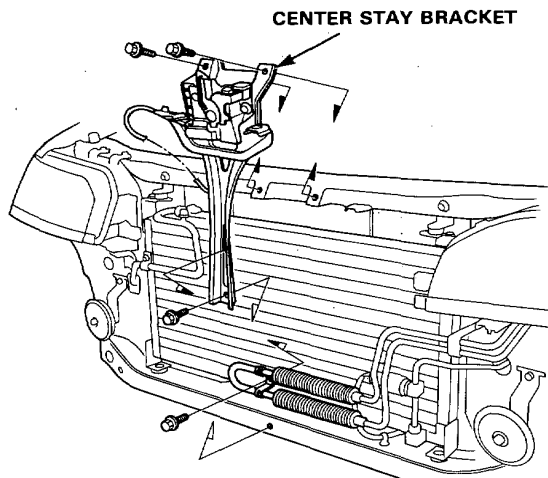
(2 valve gauge)



Condenser

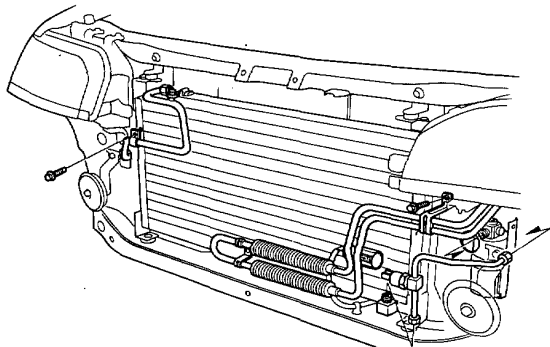
Replacement

1. Discharge the refrigerant.
2. Remove the bumper.
3. Remove the center stay bracket.

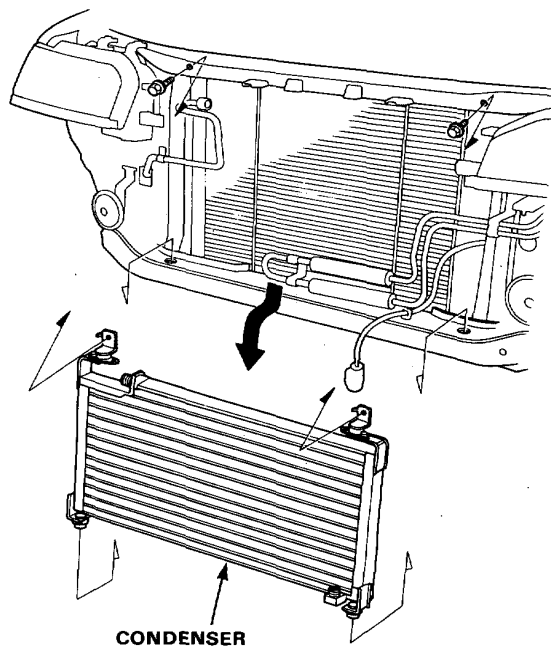


4. Disconnect the condenser pipe and discharge pipe from the condenser.

CAUTION: Cap the open fittings immediately to keep moisture and dirt out of system.



5. Remove the mounting bolts (2) and condenser.

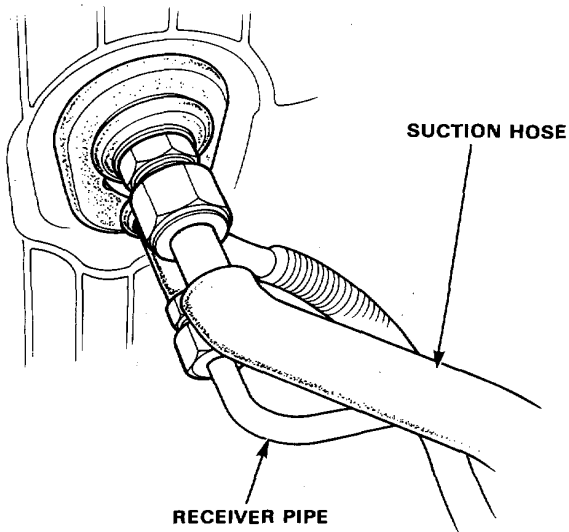


Install in the reverse order of removal, charge the system (page 15-50) and test performance (page 15-56).

Evaporator Replacement

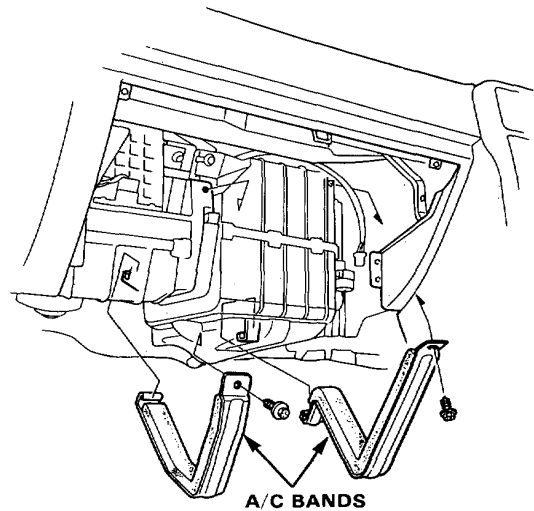
1. Disconnect the battery negative terminal.
2. Discharge the refrigerant (page 15-36).
3. Disconnect the receiver line and suction hose from the evaporator.

CAUTION: Cap the open fittings immediately to keep moisture out of the system.

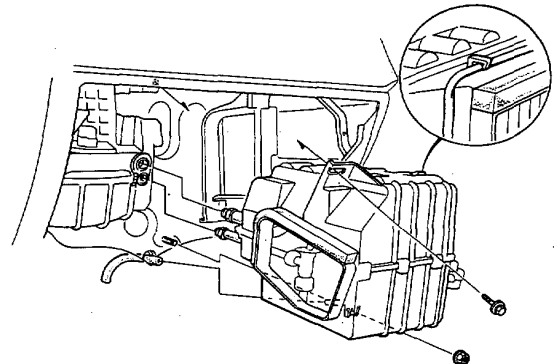


4. Remove the glove box.
5. Disconnect the connector from the A/C thermostat pull off the wire harness from the clamps.

6. Remove the tapping screws (2) and A/C bands.



7. Remove the mounting bolts (2) and evaporator.



8. Install in the reverse order of removal, and:
 - Apply a sealant to the grommets.
 - Make sure that there is no air leakage.
 - Charge the system (page 15-50) and test performance (page 15-56).

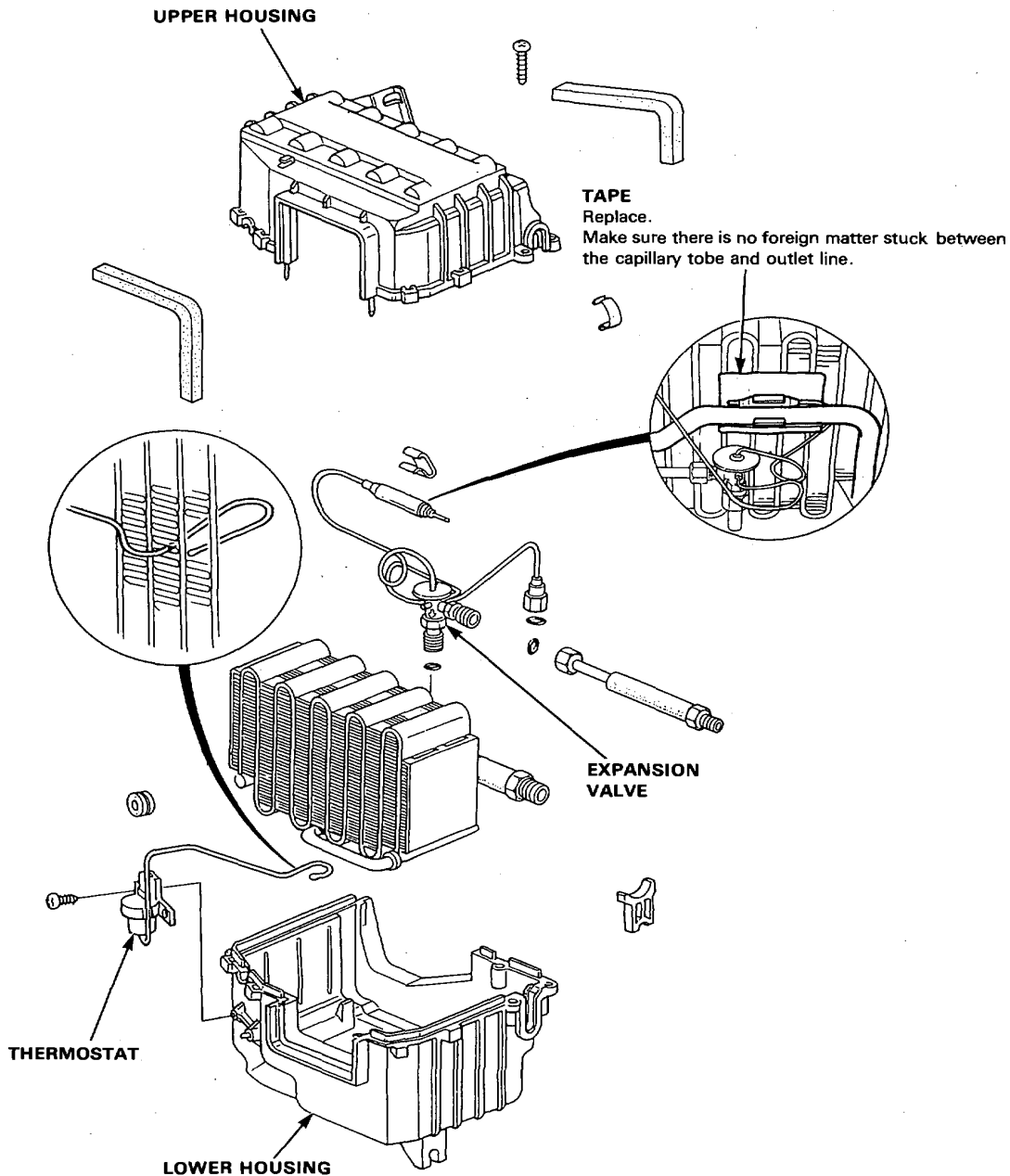


Overhaul

1. Pull out the evaporator sensor from the evaporator fins.
2. Remove the tapping screws and clips from the housing.
3. Carefully separate the hoses and remove the evaporator covers.
4. Remove the expansion valve if necessary.

Assemble the evaporator in the reverse order of disassembly, and:

- Install the expansion valve capillary tube against the suction line, and wrap it with tape.
- Reinstall A/C thermostat in its original location.

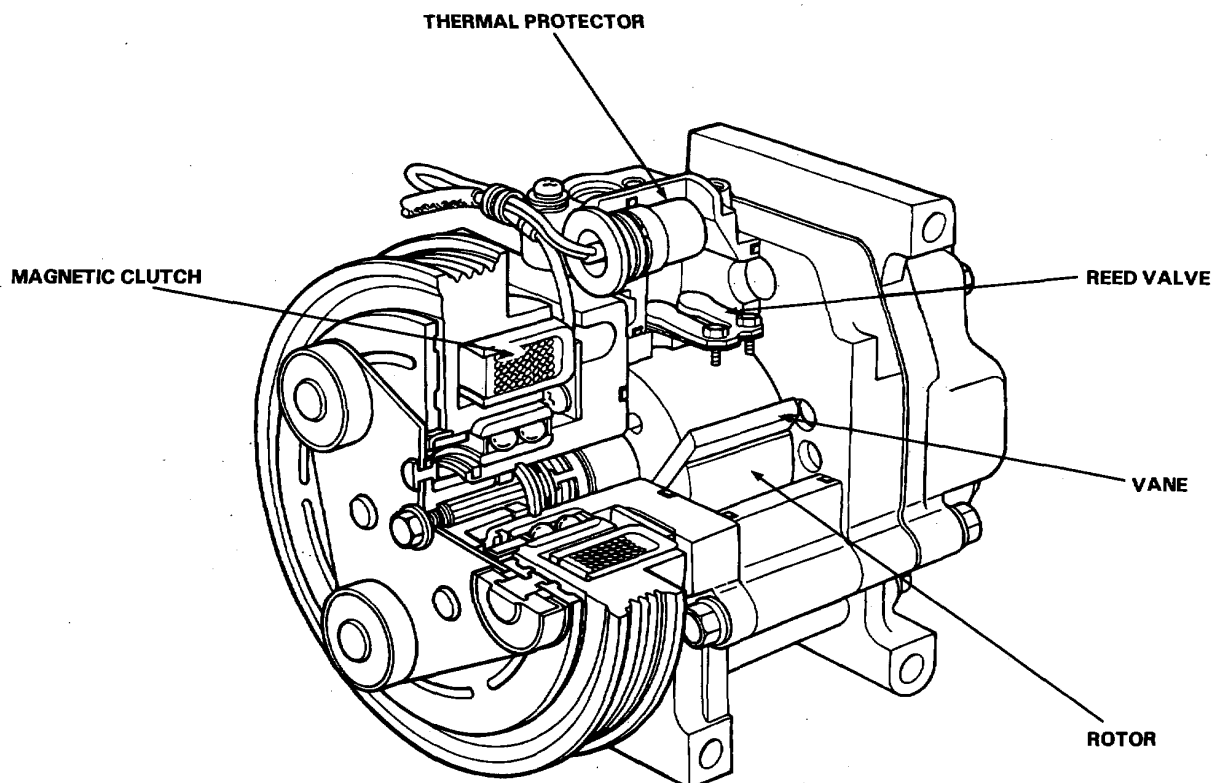


Compressor

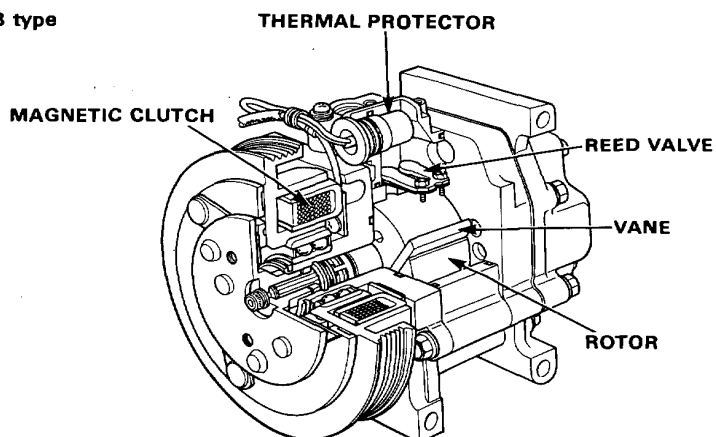
Description (Matsushita)

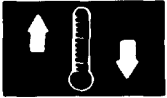
This compressor is a three-vane, rotary type and consists of three vanes that come out of the rotor to the cylinder wall, reed valve that prevents backflow, and magnetic clutch. A thermal protector is installed on this compressor.

A type



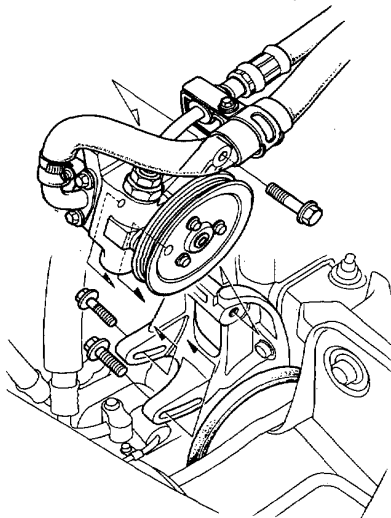
B type





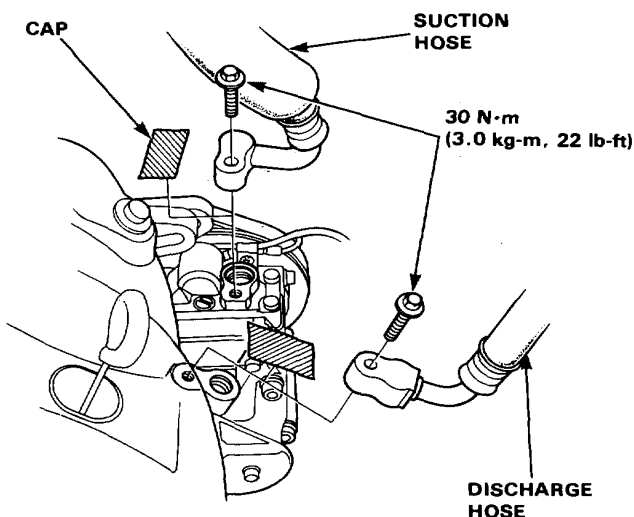
Replacement

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 (15-36).
3. Remove the mounting bolts (2) the power steering pump belt, and the power steering pump.

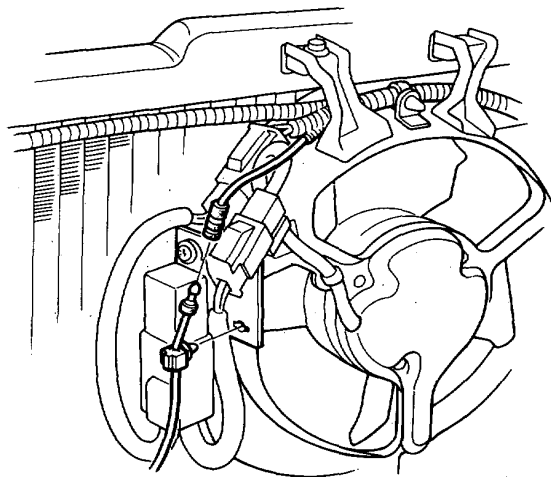


4. Disconnect the suction and discharge hoses from the compressor.

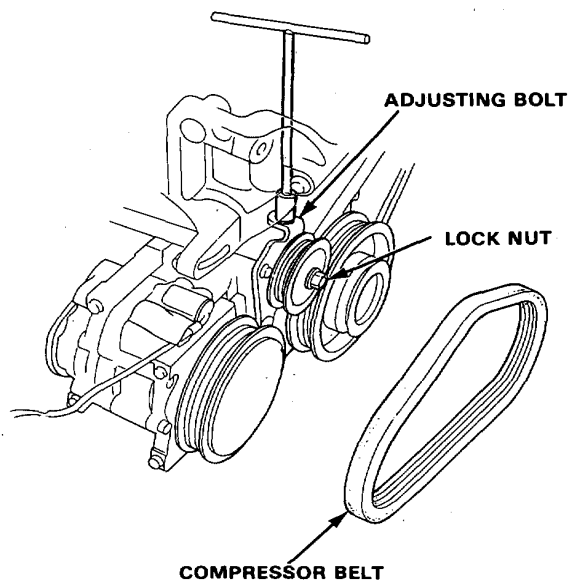
CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.



5. Disconnect the compressor connector and the clamp.



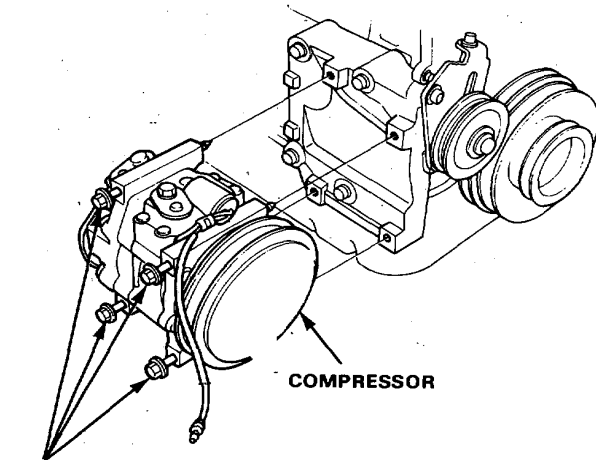
6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.



Compressor

Replacement (cont'd)

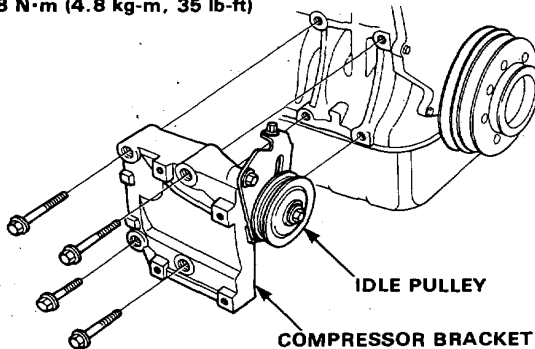
7. Remove the compressor mounting bolts(4) and compressor. Rest the compressor on the front beam.



COMPRESSOR MOUNTING BOLTS
25 N·m
(2.5 kg-m, 18 lb-ft)

8. Remove the mounting bolts (4) and compressor bracket with idle pulley.

ALL TORQUE:
48 N·m (4.8 kg-m, 35 lb-ft)



9. Remove the compressor.

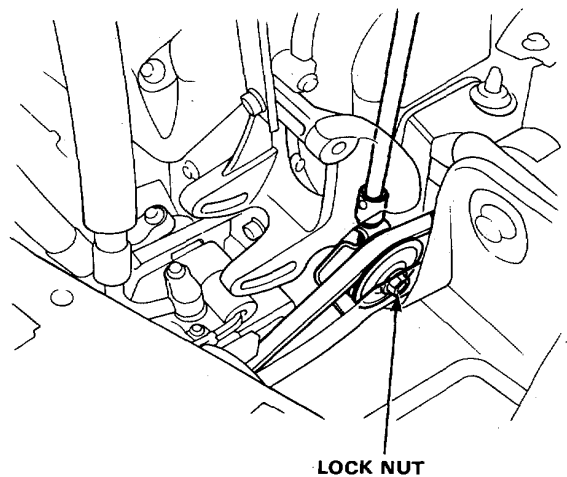
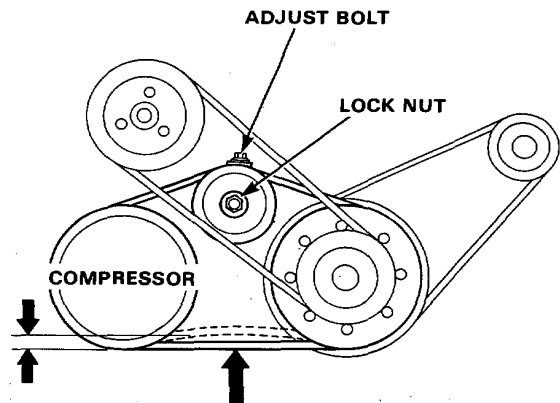
10. Install in the reverse order of removal and:

- If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:
150cc (5fl oz.) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the compressor belt and the power steering belt.

NOTE: Measure the deflection when 98 N (10kg, 22lb) force is applied between the pulleys.

Compressor belt Adjustment.
9–11 mm (0.35–0.43 in)

{ 7–9 mm (0.28–0.35 in) when new belt is intalled }

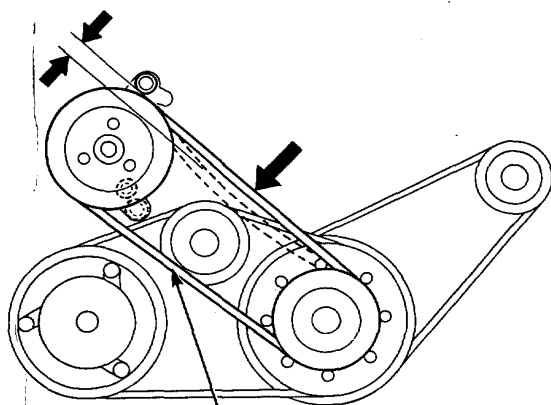


- Charge the system (page 15-50).
- Test the performance (page 15-56).



11. Power steering belt adjustment.
9–12 mm (0.35–0.47 in).

(7–10 mm (0.28–0.39 in) when new belt is intalled)



POWER STEERING BELT

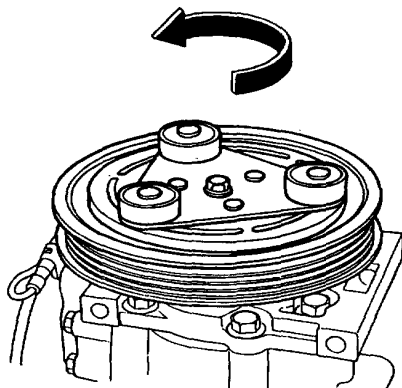
Compressor (Matsushita)

Clutch Inspection

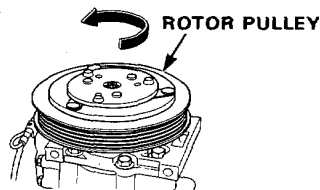
- Check pulley bearing play and drag by rotating the pulley by hand. Replace the pulley with a new one if it is noisy or has excessive play/drag.

ROTOR PULLEY

A type



B type



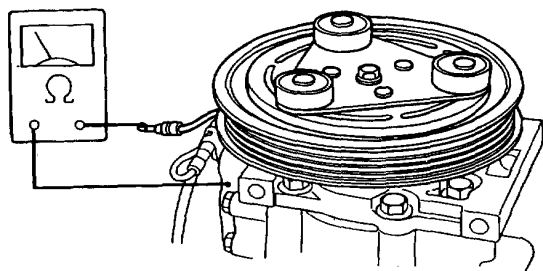
- Check resistance of the field coil:

Field Coil Resistance:

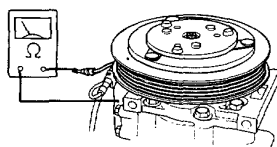
3.33 ± 0.17 ohm at 20°C (68°F)

If resistance is not within specifications, replace the coil.

A type



B type

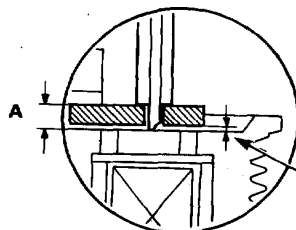


- Measure the clearance between the pulley and pressure plate. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

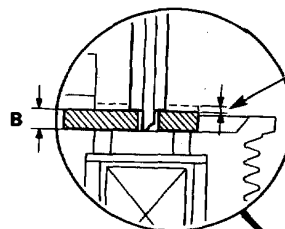
A type:

CLEARANCE: 0.4–0.6 mm (0.016–0.024 in)

$\text{CLEARANCE} = A(\text{CLUTCH OFF}) - B(\text{CLUTCH ON})$

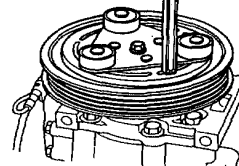


A/C CLUTCH OFF



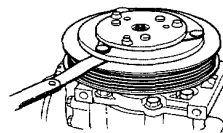
A/C CLUTCH ON

CLEARANCE



B type:

CLEARANCE: 0.4–0.6 mm (0.016–0.024 in)



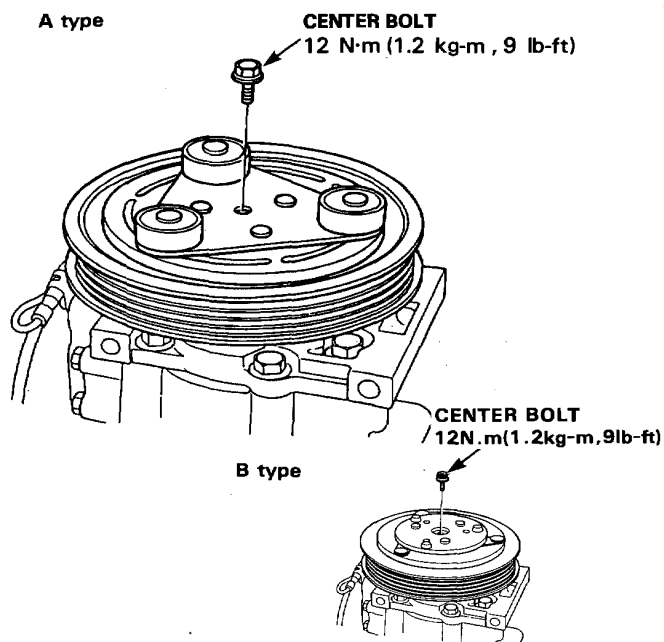
NOTE:

The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

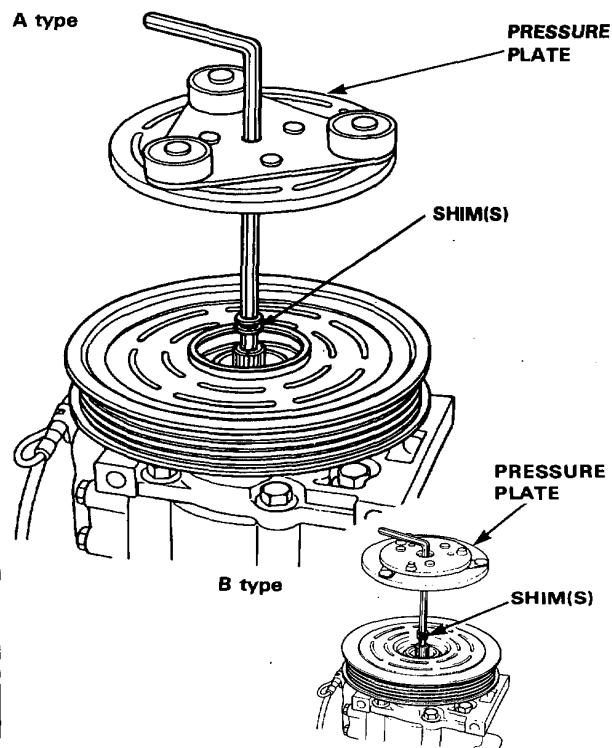


Clutch Overhaul

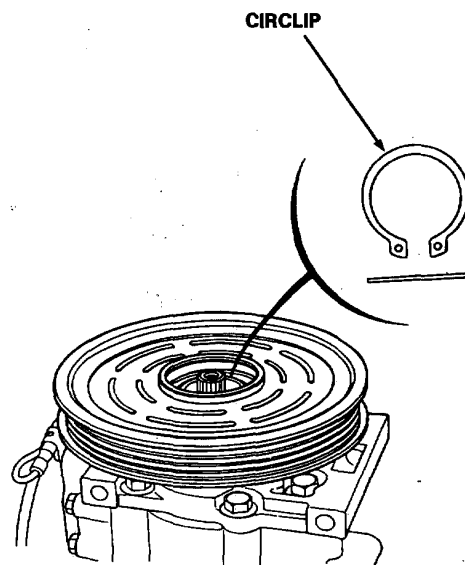
1. Remove the center bolt and washers.



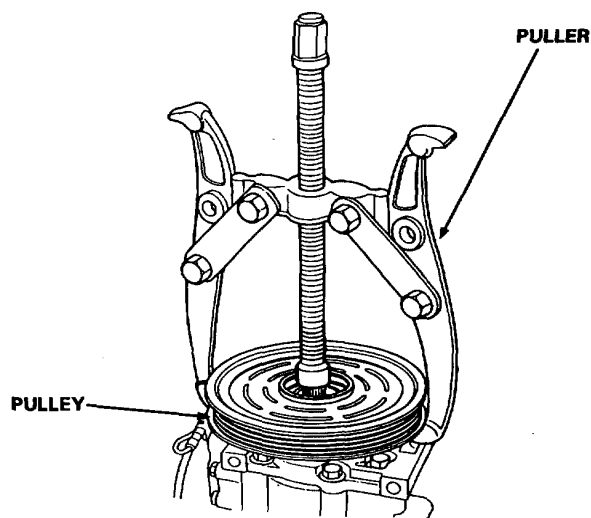
2. Remove the pressure plate and shim(s) taking care not to lose the shims.



3. Use circlip pliers to remove the circlip.



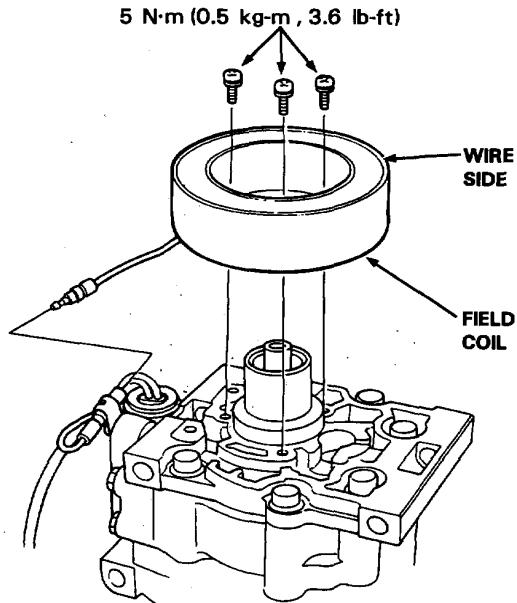
4. Remove the pulley from the shaft using a 2 or 3 jaw puller.
5. Check the pulley, replace the assembly if the pulley is damaged or deformed.



Compressor (Matsushita)

Clutch Overhaul (cont'd)

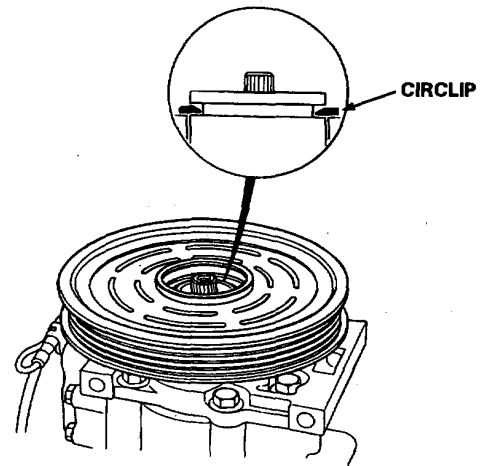
6. Disconnect the field coil connector and remove the screws (3) and field coil.



7. Install in the reverse order of removal and:

- Install the field coil with the wire side facing up (see above).
- Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
- Check the pulley bearings for excessive play.

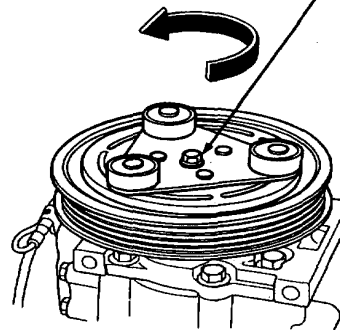
- Make sure the circlip is fitted to the groove properly.



- Apply locking agent to the thread of the center bolt and tighten it securely.
- Make sure that the pulley turns smoothly.

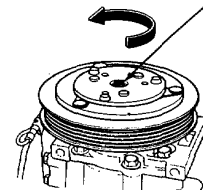
A type

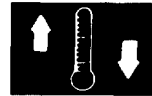
CENTER BOLT
12 N·m (1.2 kg-m, 9 lb-ft)



B type

CENTER BOLT
12 N·m (1.2 kg-m, 9 lb-ft)





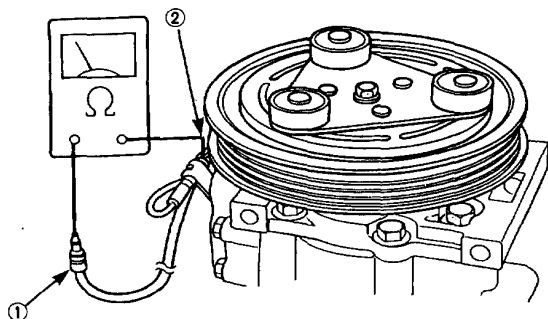
Thermal Protector Inspection

Check for continuity between the 1 and 2 terminals of the compressor connector.

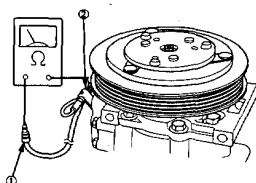
There should be continuity.

- If no continuity, replace the thermal protector.

A type

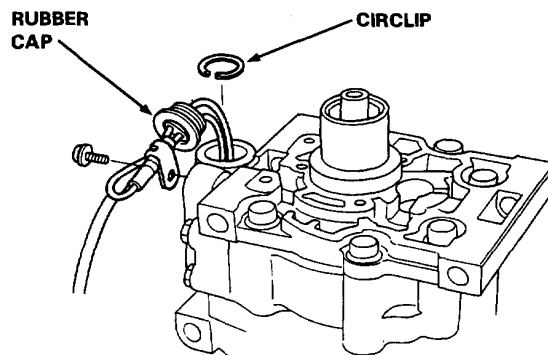


B type



Thermal Protector Replacement

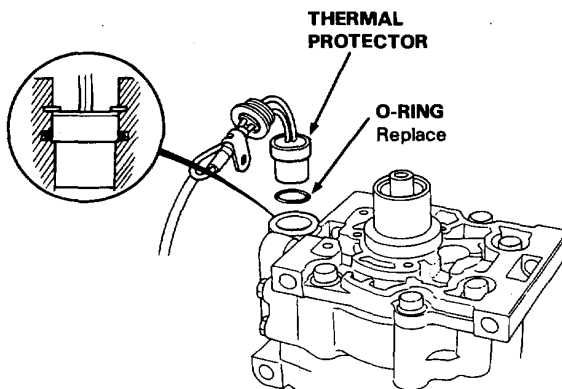
1. Remove the pressure plate and field coil (page 22-29).
2. Pull the rubber cap out from the thermal protector.
3. Remove the screws and wire clips.
4. Remove the circlip and thermal protector.



5. Install in the reverse order of removal.

NOTE:

- Replace the O-rings with new ones.
- Set the new O-rings in place as shown.



Compressor (Matsushita)

Shaft Seal Replacement

NOTE:

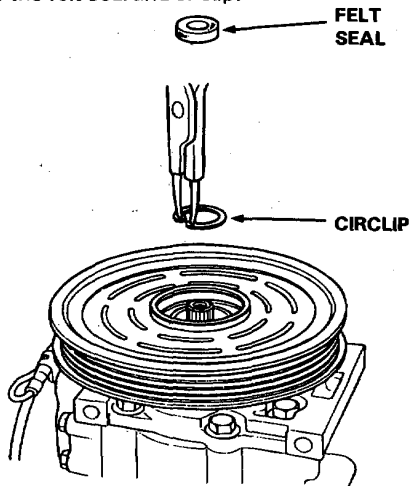
Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate (page 24-29).

NOTE:

Removal of the clutch pulley and coil is not necessary.

2. Remove the felt seal and circlip.

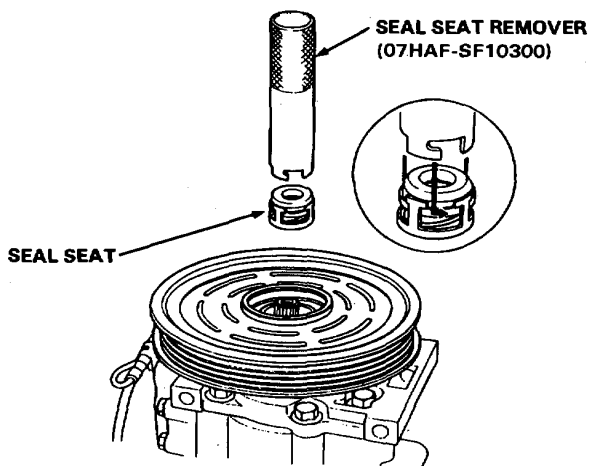


3. Remove the shim(s).

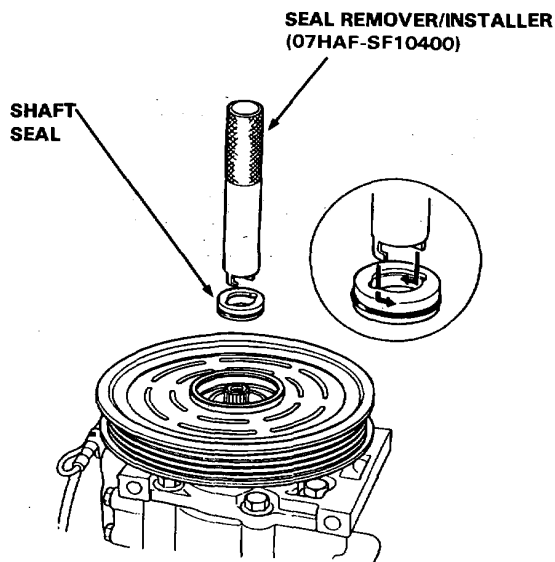
NOTE:

After removing, place shim(s) safely in a parts rack.

4. Insert the special tool into the compressor aligning the cutout of the remover with the groove of the seal seat.
5. Rotate the special tool counterclockwise to make sure that the cutout is engaged with the seal seat.
6. Pull out the seal seat.



7. Insert the special tool into the compressor aligning the cutout of the remover with the metal pawl of the seal case.
8. Rotate the special tool counter clock wise to make sure that the cutout is engaged with the metal pawl.



9. Withdraw the remover.
10. Lay down the compressor and clean the shaft seal contacting face of the compressor with cleaning solvent.

CAUTION:

- Keep the cleaning solvent and dirt out of the compressor.
- Do not use any cloth for cleaning, clean only by rinsing with solvent.
- Do not spill the refrigerant oil from the compressor. Refill the same amount of the oil if the oil is spilled out.

11. Clean the new shaft seal thoroughly with cleaning solvent.
12. Lubricate the shaft seal with refrigerant oil (SUNISO 5GS or equivalent) and install it on the shaft seal remover.

NOTE:

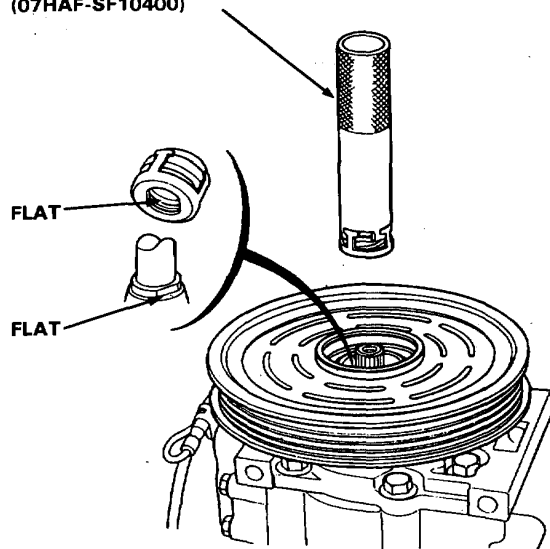
- Use only clean refrigerant oil.
- Do not touch the sealing surfaces of the shaft seal after lubricating.



13. Liberally lubricate the compressor shaft with refrigerant oil.

14. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.

**SEAL REMOVER/INSTALLER
(07HAF-SF10400)**



15. Clean the seal seat with cleaning solvent, then lubricate the seal seat with refrigerant oil (SUNISO 5GS or equivalent).

NOTE:

- Use only clean refrigerant oil.
- Do not touch the sealing surface of the seal plate after lubricated.

16. First slide the seal seat into the compressor by hand as far as possible.

17. Press the seal seat with the grip side of the remover.

18. Install the circlip with its chamfered edge inside.

19. Press the circlip with the grip side of the remover, then install the felt seal.

20. Install the shim(s).

21. Install the pressure plate. Measure the clearance between the pulley and pressure plate all the way around. If the clearance is not within the specified limits, (0.4—0.6 mm (0.016—0.024)) shims must be added or removed as required.

System Charging

System Evacuation

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Freon R-12 into the atmosphere.

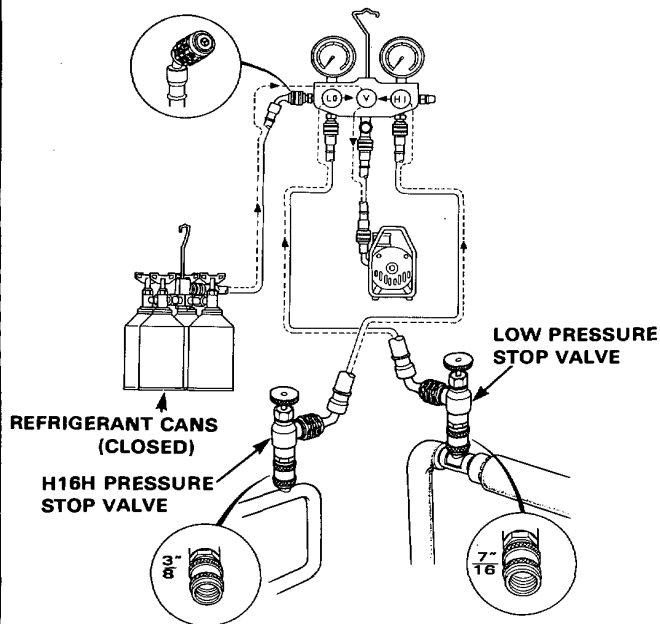
1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).
2. Connect a gauge, pump and refrigerant containers (cans of R-12) as shown.
NOTE: Do not open the cans.
3. Start the pump, then open the both pressure valves, both pressure stop valves and evacuation valve (2 valve gauge: evacuation stop valve). Run the pump for about 15 minutes. Close the both pressure valves and

evacuation valve (2 valve gauge: evacuation stop valve) and stop the pump. The low gauge should indicate above 700mmHg (27 in-Hg) and remain steady with the valves closed.

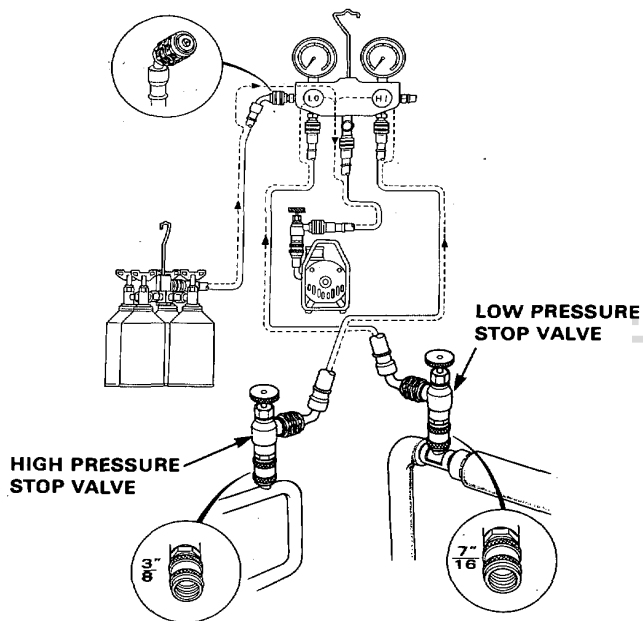
NOTE: If low pressure does not reach more than 700 mmHg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test).

4. If there are no leaks open the valves and continue pumping for at least another 15 minutes, then close both valves, stop the pump.

3 VALVE GAUGE



2 VALVE GAUGE





Leak Test

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of R-12 into the atmosphere.

⚠ WARNING When handling refrigerant (R-12):

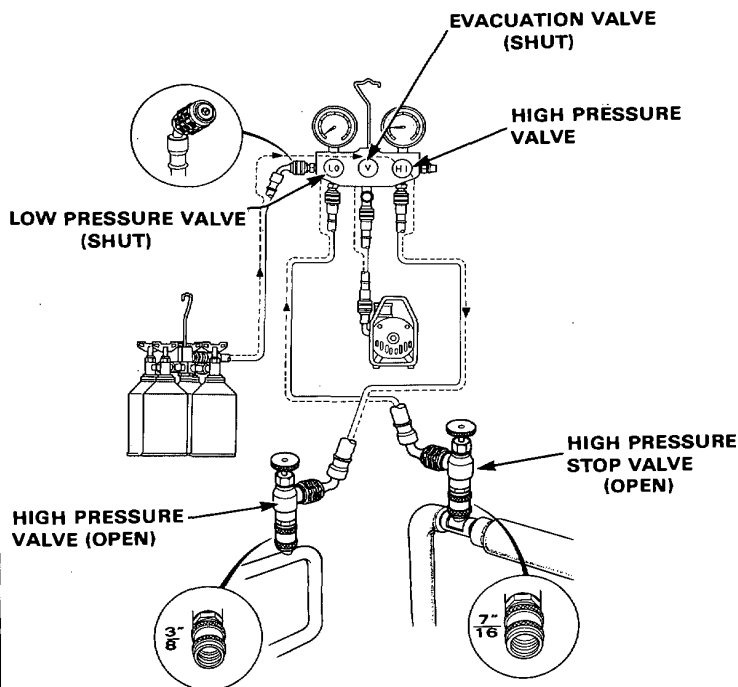
- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes.
If it does:
 - Do not rub your eyes or skin.
 - Splash large quantities of cool water in your eyes or on your skin.
 - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- 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.

NOTE: Check for leaks after evacuation.

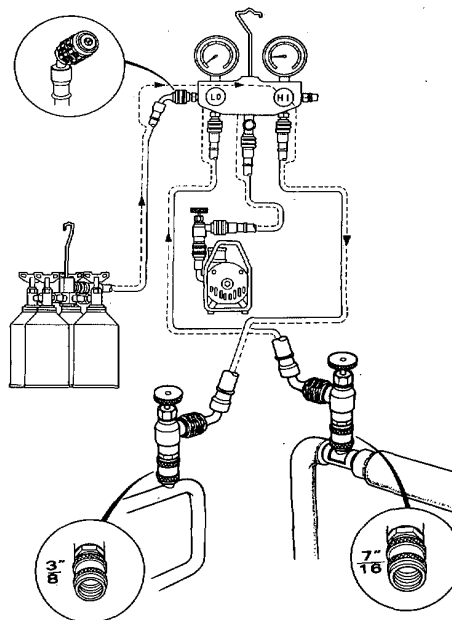
1. Close the evacuation valve (2 valve gauge; evacuation stop valve).

2. Open the cans.
3. Open high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.
NOTE: Close the low pressure valve.
4. Check the system for leaks using a leak detector.
NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.
5. If you find any leaks, tighten the joint nuts and bolts to the specified torque.
6. Recheck the system for leaks using a leak detector.
7. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system.
8. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 15-81).

3 VALVE GAUGE



2 VALVE GAUGE



System Charging

Charging Procedures

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Freon R-12 into the atmosphere.

⚠ WARNING

When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
 - Do not rub your eyes or skin.
 - Splash large quantities of cool water in your eyes or on your skin.
 - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40 °C (100 °F).
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.
- Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. After leak test, check that the high pressure valve is closed and start the engine.

NOTE: Run the engine below 1500 rpm.

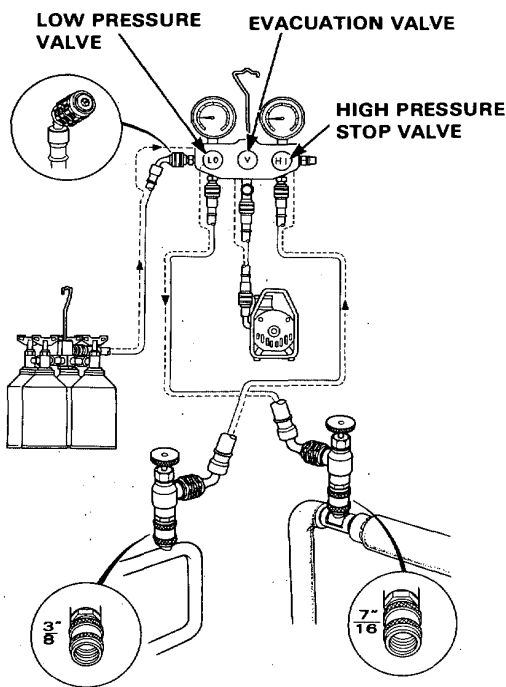
2. Open the front door.
 - Turn the A/C switch on.
 - Turn the air mix dial (lever) to COOL.
 - Turn function control switch (lever) on
 - Turn the heater fan switch on "E" (MAX).
3. Open the low pressure valve and charge with refrigerant.

⚠ WARNING

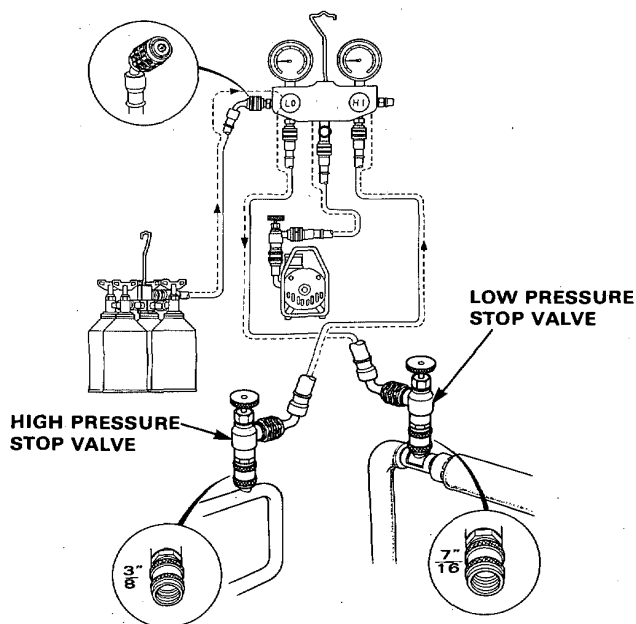
- Do not open the high gauge valve.
 - Do not turn the cans upside down.
4. Charge the system with refrigerant capacity.
Refrigerant capacity: $900^{+0}_{-50}g$ ($32^{+0}_{-2}oz$)
 5. When fully charged, close the low pressure valve and the refrigerant cans. Check the system.
 6. Close the high pressure stop valve.
 7. Open the low pressure valve and gradually open the high pressure valve. When both pressure gauge are the same, close the low pressure stop valve and stop the engine.
 8. Disconnect the charge hose quickly.
 9. Check the system for leaks using a leak detector.

NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.

3 VALVE GAUGE



2 VALVE GAUGE





The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of Freon R-12 into the atmosphere.

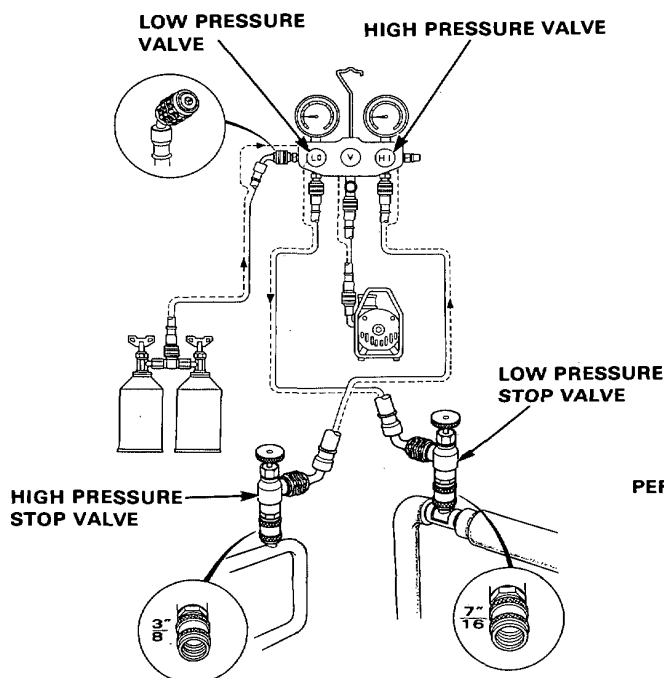
⚠ WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
 - Do not rub your eyes or skin.
 - Splash large quantities of cool water in your eyes or on your skin.
 - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40 °C (100 °F).
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.
- Work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. Connect the gauge as shown, close both pressure stop valves. Purge air from the charge hose A, then loosen the stop valve connector.
2. Attach a pump and refrigerant containers (can: 250 g x 2) as shown.
NOTE: Do not open cans.
3. Open both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve), start the pump. The low gauge should indicate above 700 mmHg (27 in-Hg), then run the pump about 1 minute.

3 VALVE GAUGE



4. Close both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve). Open both pressure stop valve.
5. Start the engine and turn on A/C switch.
6. Stop the engine and check for leaks using a leak detector.
NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.
7. Test the system using the pressure test and inspection data.

Test condition:

- Start the engine.
- Turn the air mix dial (lever) to COOL.
- Turn the function control switch (lever) on.
- Turn the recirculation control switch on.
- Turn the heater fan switch on MAX.

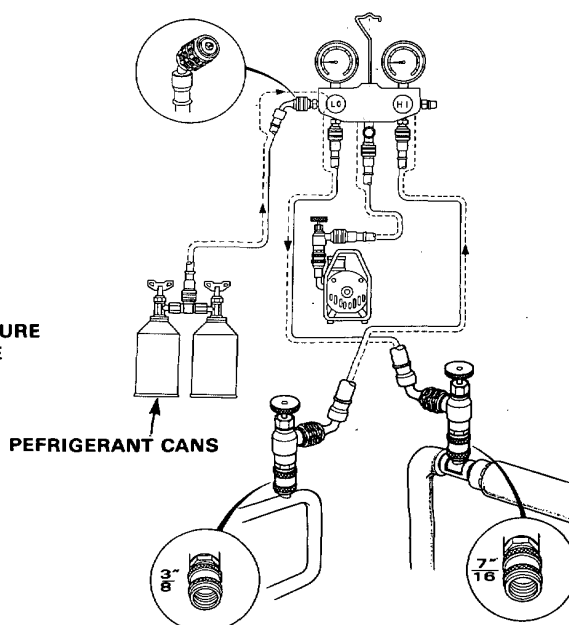
If there is insufficient refrigerant in system, continue to charge system.

8. Open one or two cans, open the low pressure gauge. Charge the system until there are no bubbles in the sight glass.

⚠ WARNING

- Do not open the high gauge valve.
 - Do not turn the cans upside down.
9. After adding supplemental refrigerant, close the high pressure stop valve. Open the low pressure valve and gradually open the high pressure valve. When pressure gauges read same, close the low pressure stop valve and stop the engine.
 10. Disconnect the charge hose quickly.
 11. Check the system for leaks using a leak detector.

2 VALVE GAUGE



Test

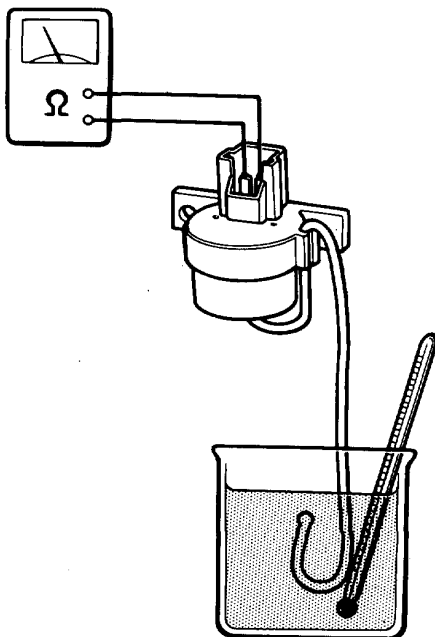
A/C Thermostat

Dip A/C thermostat into a pan filled with ice water, and check for continuity between the terminals.

Cut off 1.5—0.5°C (35—33°F)

Cut in 2.5—5°C (36—41°F)

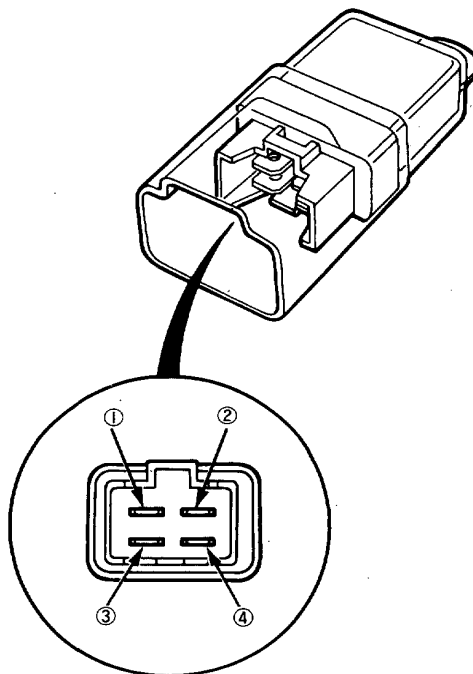
If cut off or cut in temperature is too low or too high, replace the thermostat switch.



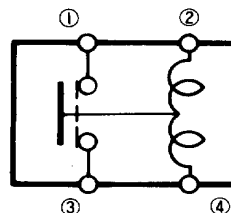
Relay

NOTE: All A/C system relay 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.



Relay circuit

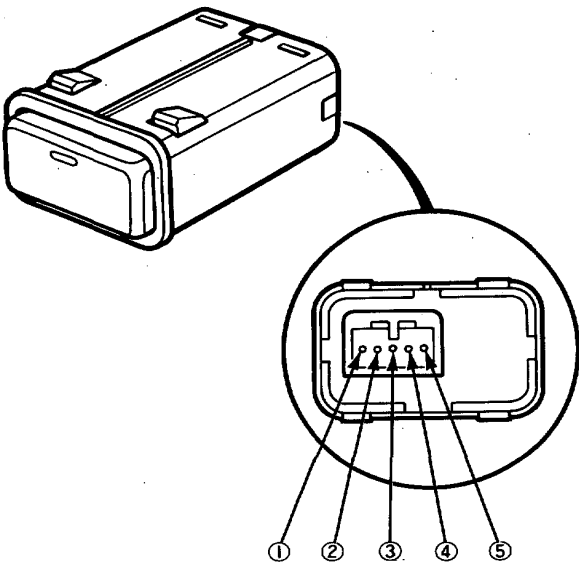




A/C Switch

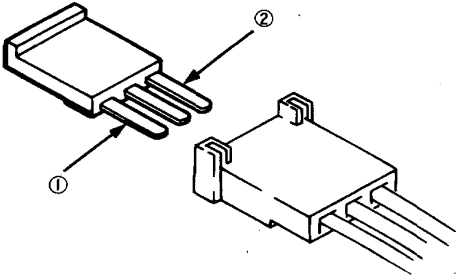
Check for continuity between the terminals according to the table.

Terminal No. Position	①	②	③	④	⑤
OFF	○	○	○	○	○
ON	○	○	○	○	○



Diodes

Check for continuity to ① from ② terminals.

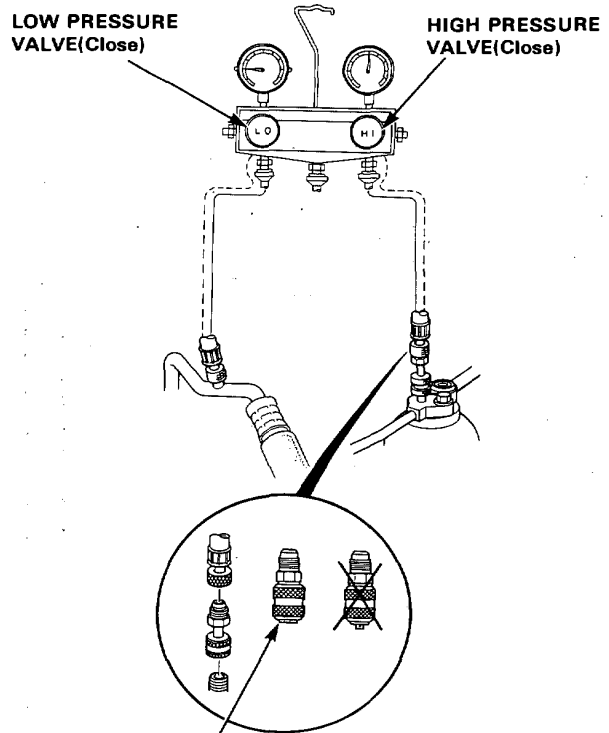
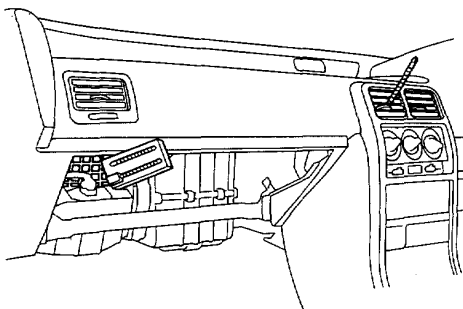


* Diodes are taped with A/C harness.

Performance Test

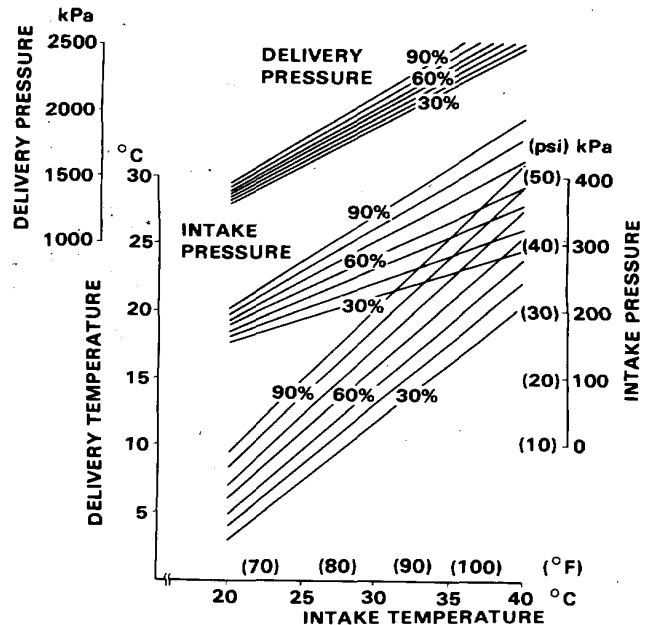
The performance test will help determine if the air conditioning system is operating within specifications.

1. Connect the gauges as shown.
2. Insert a thermometer in the vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.
3. Test conditions:
 - Avoid direct sunlight.
 - Open engine hood.
 - Open front doors.
 - Set the temperature control dial to max and push the vent and fresh air buttons.
 - Turn the fan switch to MAX.
 - Run the engine at 1,500 RPM.
 - No driver or passengers in vehicle
4. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the dash vent and the high and low system pressure from the A/C gauges.
5. To complete the charts:
 - Make the delivery temperature along the vertical line.
 - Mark the intake temperature (ambient air temperature) 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.



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.



Idle Speed Setting



1. Before setting (with A/C ON), check that the idle speed is adjusted properly (Section 6).
2. After charging, adjust the idle speed by turning the idle adjusting screw in or out as required with the air conditioner ON.
 - Apply the parking brake and block the wheels.
 - Headlights.....OFF
 - A/C temperature dial MAX COLD
 - Function lever VENT
 - Fan switch MAX
 - Recirculation lever.....RECIRC

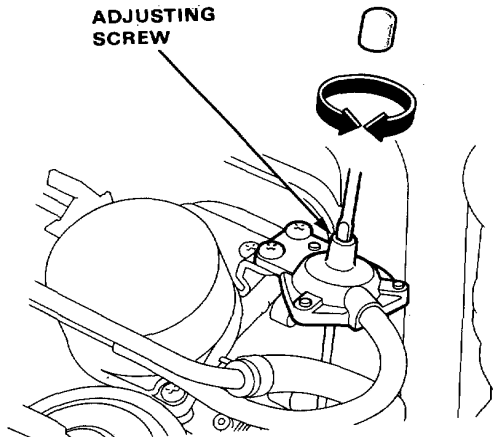
● Carbureted Engine

Idle speed should be:

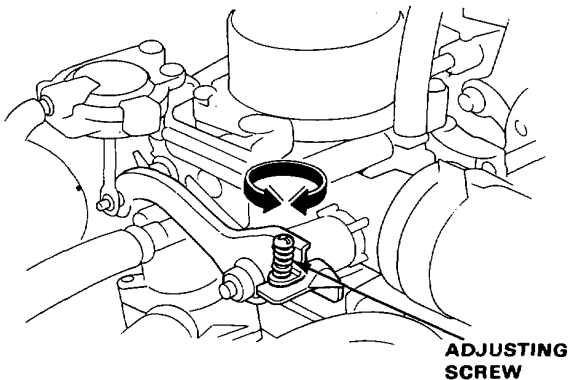
Manual	750±50 min ⁻¹ (rpm)
Automatic	750±50 min ⁻¹ (rpm) (N or P)

Adjust the idle speed, if necessary, by turning the adjusting screw.

(1.4 l Engine)



(1.6 l Engine)



● Fuel-Injected Engine

(1.5 l Engine)

Idle speed should be:
800±50 min⁻¹ (rpm)

(1.6 l Engine)

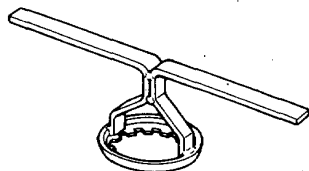
Idle speed should be:
(SOHC)
810 ± 50 min⁻¹ (rpm)
(DOHC with CATA)
800 ± 50 min⁻¹ (rpm)
(DOHC without CATA)
M/T: 800 ± 50 min⁻¹ (rpm)
A/T: 750 ± 50 min⁻¹ (rpm)

NOTE: If the idle speed is not within specifications, see section 6.

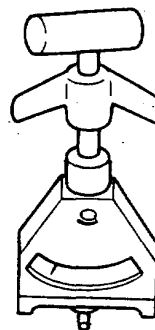
Special Tool/Troubleshooting

Special Tool

Ref. No	Tool Number	Description	Q'ty	Page Reference
①	07GAC-SE0020	Fuel Sender Wrench	1	16-89
②	07JGG-0010100	Belt Tension Gauge	1	16-76



①



②

Troubleshooting Precautions

Before Troubleshooting

- Check the main fuse and the fuse box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

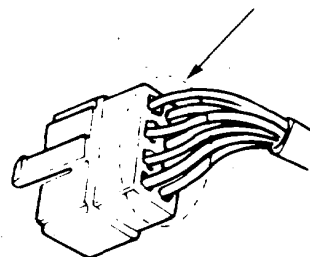
CAUTION:

- Do not quick-charge a battery unless the battery ground cable has been disconnected, or you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable connected incompletely or you will severely damage the wiring.

While You're Working

- Make sure connectors are clean, and have no loose pins or receptacles.
- Make sure multiple pin connectors are packed with grease (except watertight connectors).

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)			
Mast 		Window 				
RELAY (In normal condition)			CONDENSER			
Normal open relay 		Normal closed relay 				
SWITCH (In normal condition)			LUMINOUS DIODE (LED)			
Normal open switch 		Normal closed switch 				
CONNECTION		CONNECTOR		REED SWITCH		
Input 	Output 	Male Female 				

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics.

WHT	White	SLT	SLATE
YEL	Yellow	PUP	RURPLE
BLK	Black		
BLU	Blue		
GRN	Green		
RED	Red		
ORN	Orange		
PNK	Pink		
BRN	Brown		
GRY	Gray		
LT BLU	Light Blue		
LT GRN	Light Green		

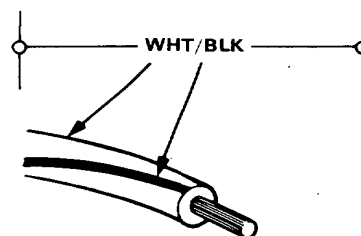
Wire insulator has one color or one color with another color stripe. The second color is the stripe.

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics.

WHT	White	SLT	SLATE
YEL	Yellow	PUP	RURPLE
BLK	Black		
BLU	Blue		
GRN	Green		
RED	Red		
ORN	Orange		
PNK	Pink		
BRN	Brown		
GRY	Gray		
LT BLU	Light Blue		
LT GRN	Light Green		

Wire insulator has one color or one color with another color stripe. The second color is the stripe.



Relays and Control Unit Locations

Engine Compartment

NOTE: RH Drive type shown. LH Drive type is similar.

ALB MOTOR RELAY

Wire colors: WHT/RED, WHT/BLU,
LT GRN/SLT and YEL/RED

ALB REAR FAIL SAFE RELAY

Wire colors: BLU/BLK, BLK,
LT GRN/SLT and YEL/GRN

ALB FRONT FAIL SAFE RELAY

Wire colors: BRN/BLK, BLK,
LT GRN/SLT and YEL/GRN

RADIATOR FAN RELAY

Wire colors: BLK/YEL,
BLU, BLK/YEL and
BLU/BLK

A/C DIODE

CONDENSER FAN RELAY

Wire colors: BLU/RED,
BLU/BLK, WHT and
BLK/YEL

A/C COMPRESSOR CLUTCH RELAY

Wire colors: YEL,
RED, WHT and BLK/YEL

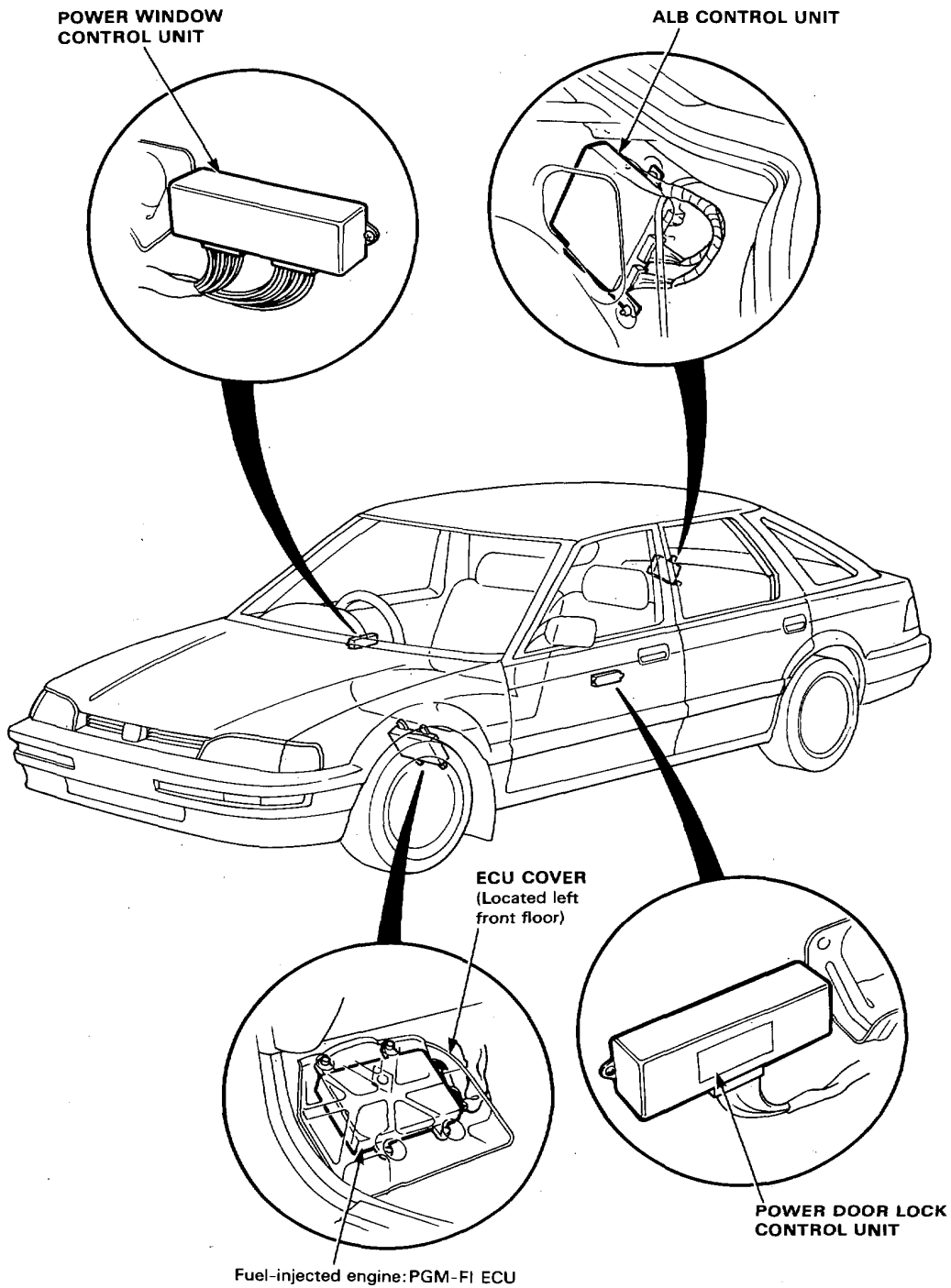
DISTRIBUTOR

(Built-in ignition coil
and igniter unit)



Door and Floor

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.

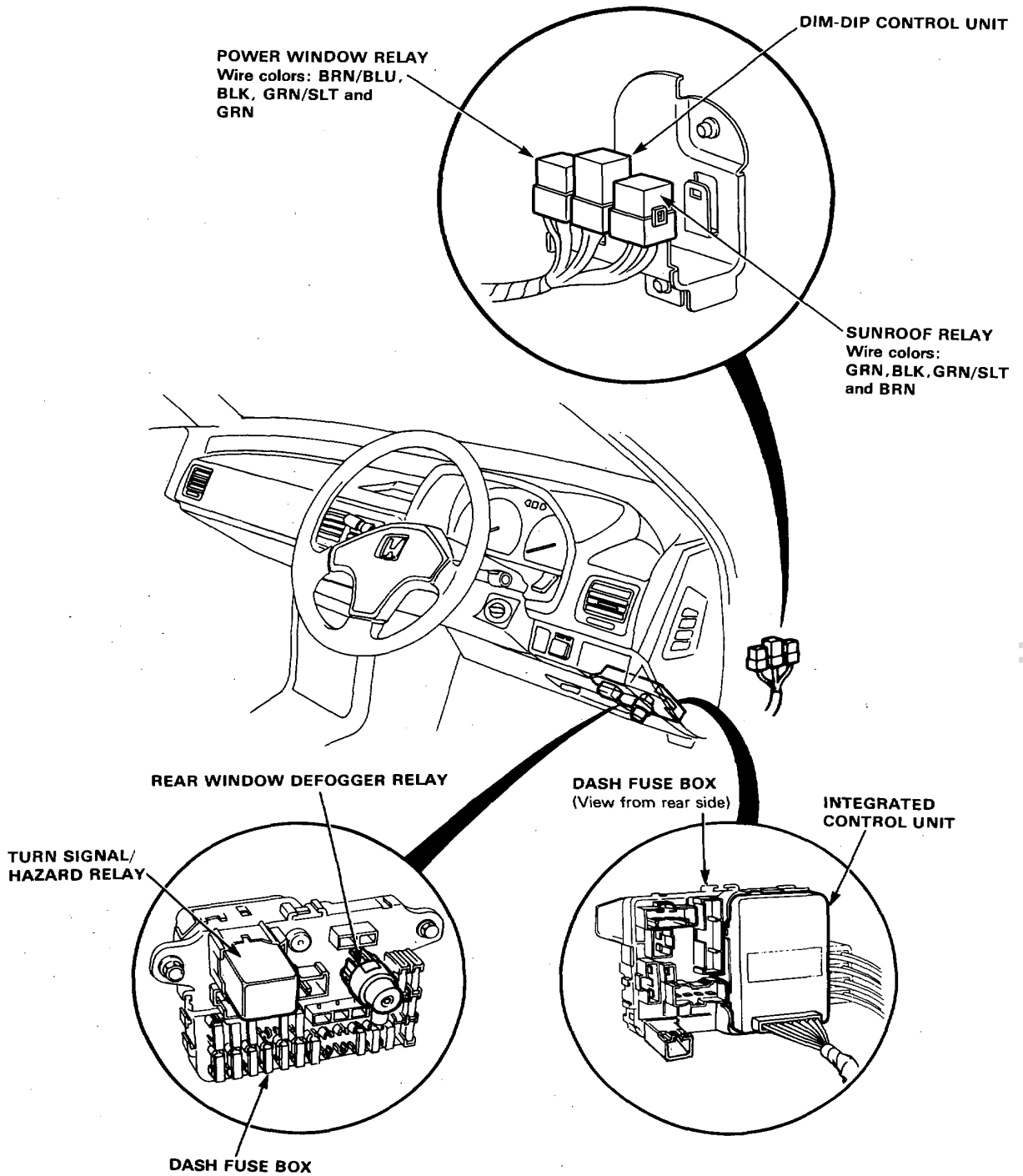


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Relays and Control Unit Locations

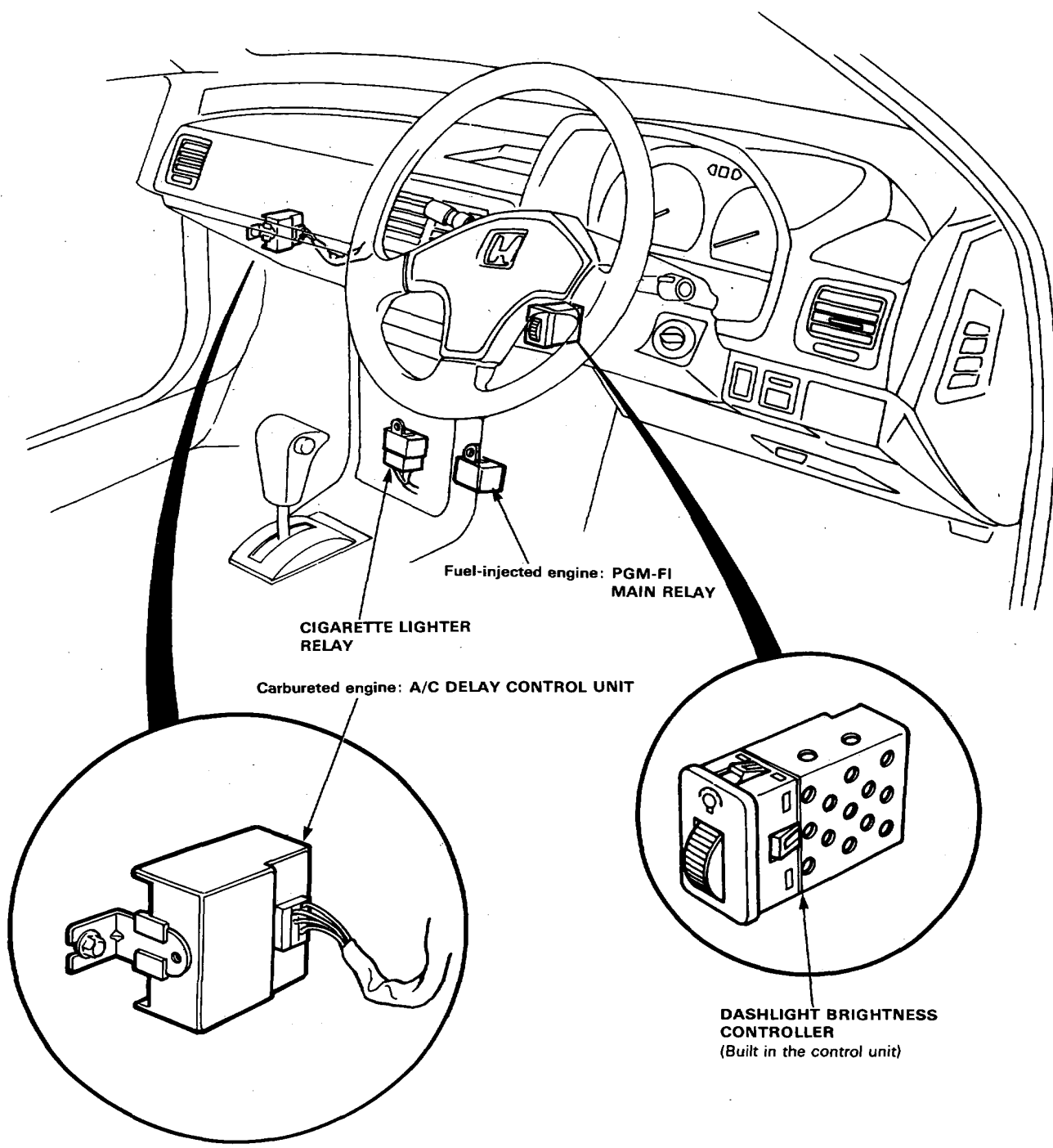
Dashboard

NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.





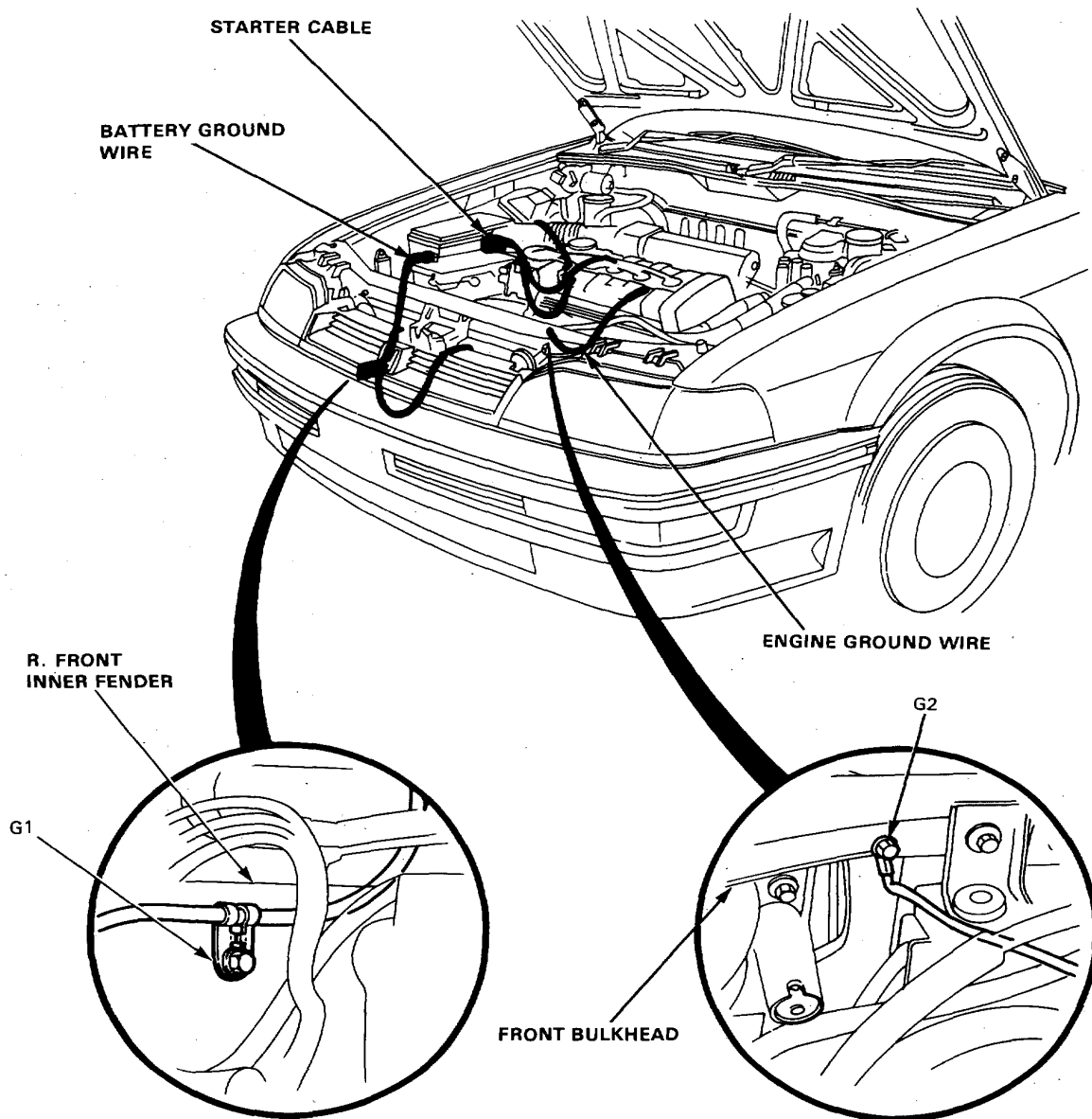
NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.



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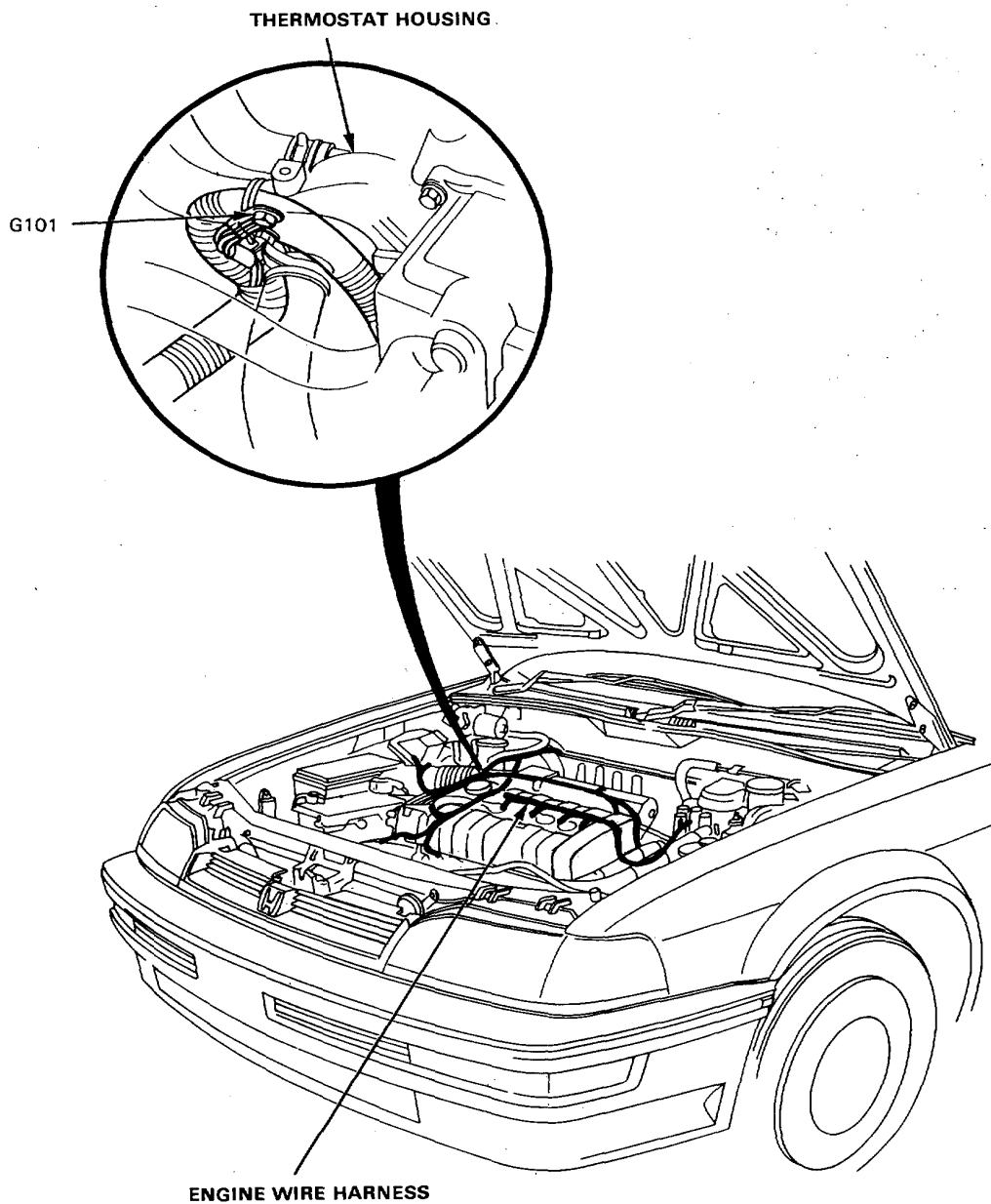
Ground and Wire Harness Routing

NOTE: RH Drive type shown. LH Drive type is similar.





NOTE: RH Drive type shown. LH Drive type is similar.

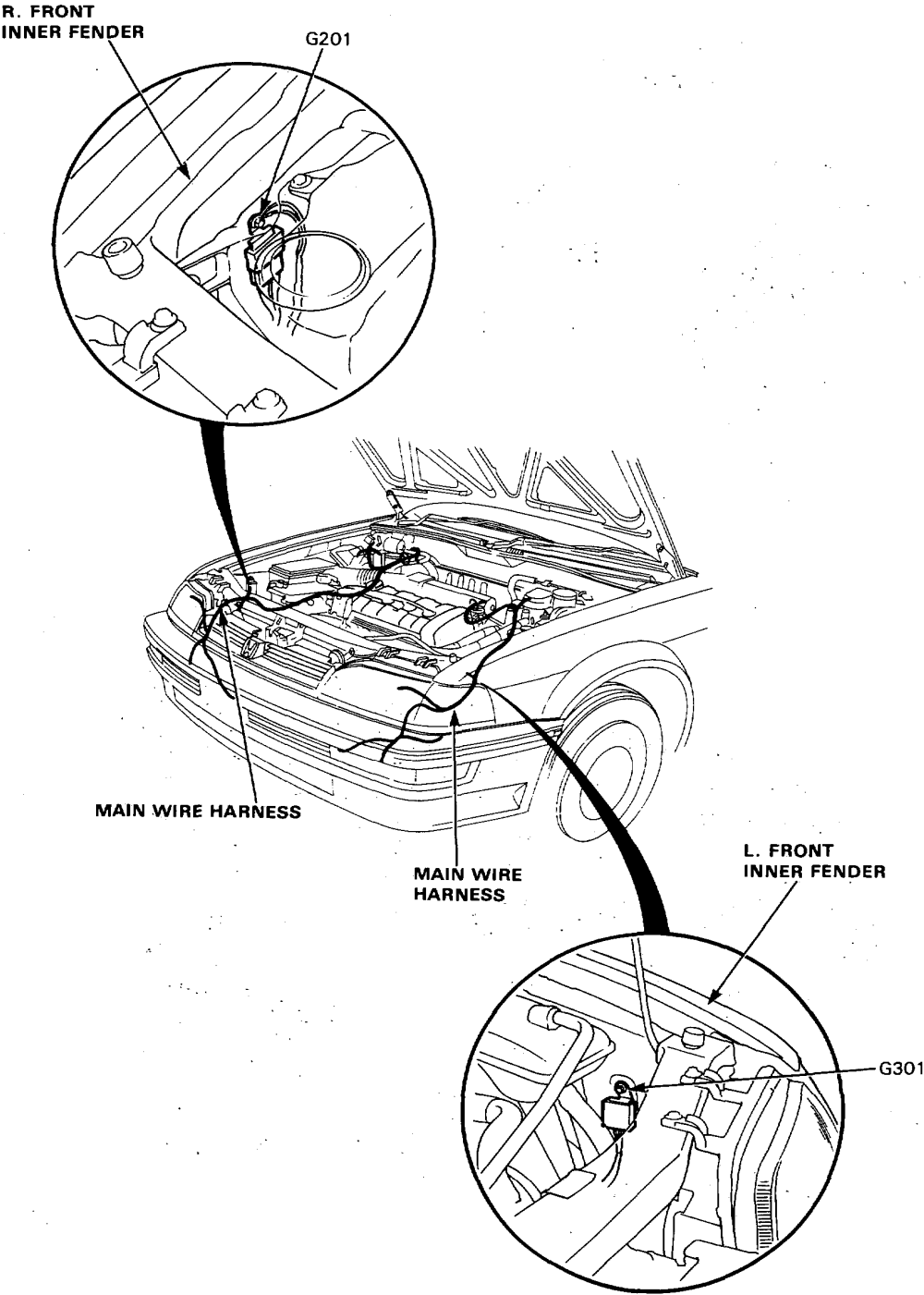


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Ground and Wire Harness Routing

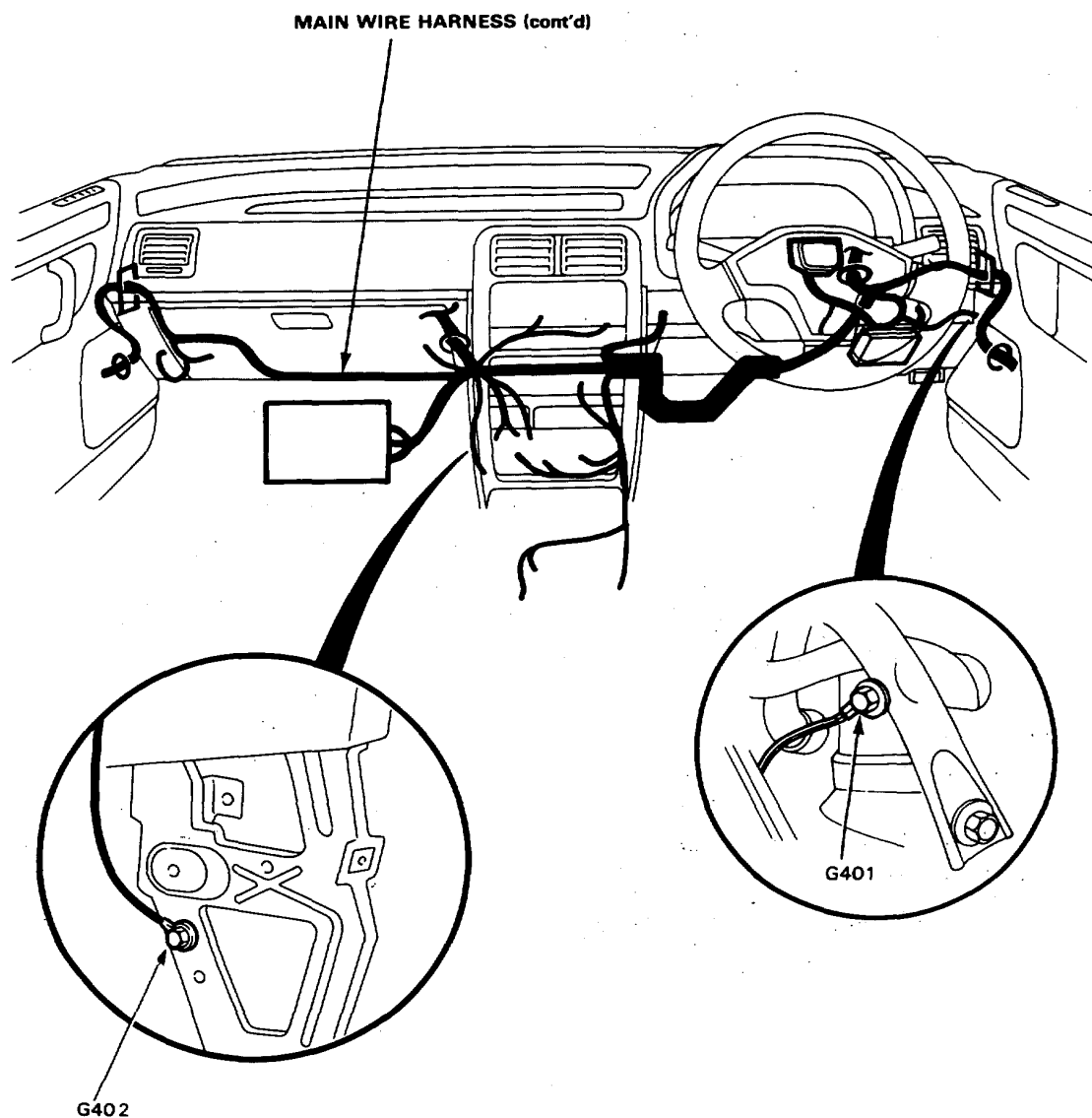
NOTE: RH Drive type shown. LH Drive type is similar.



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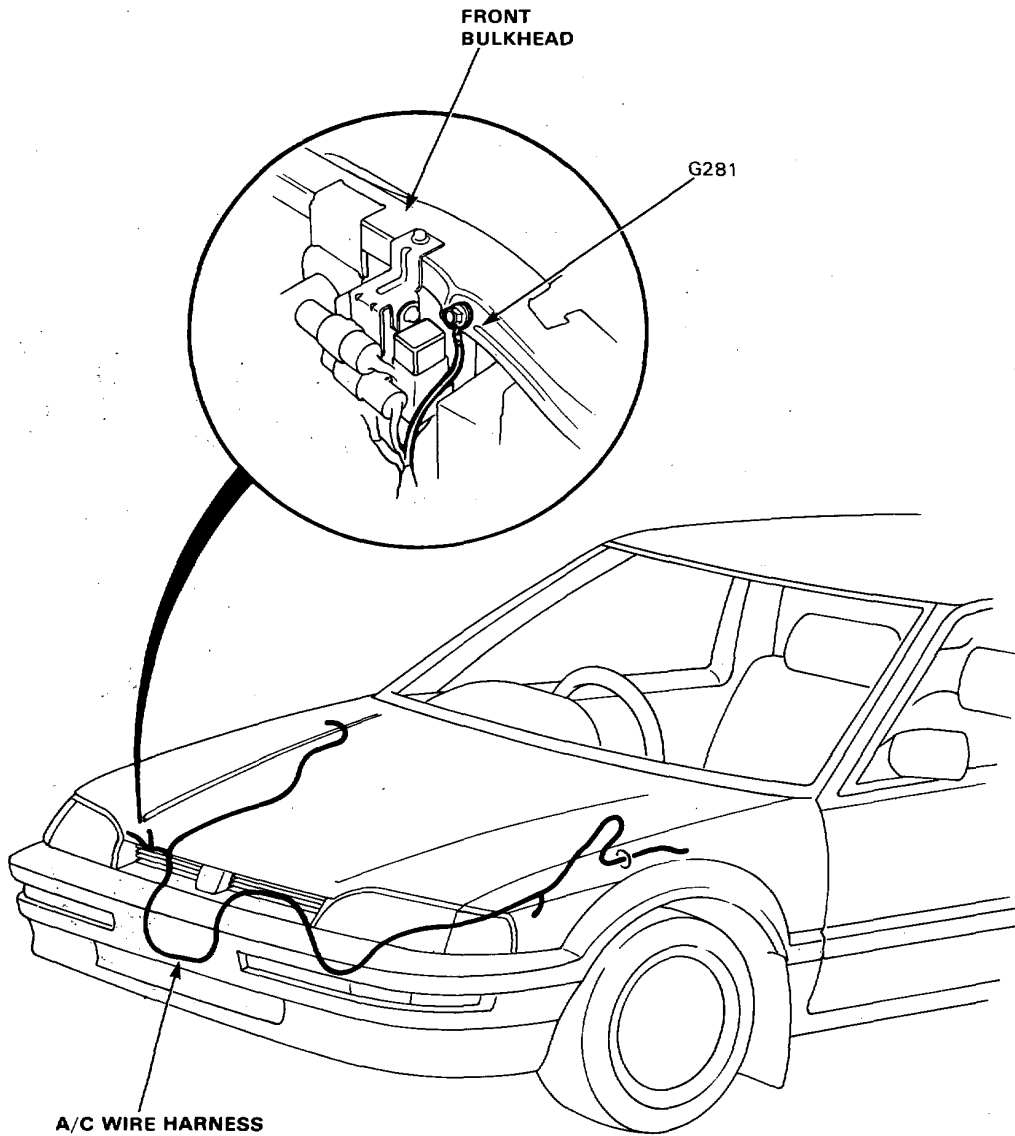
NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.



(cont'd)

Ground and Wire Harness Routing

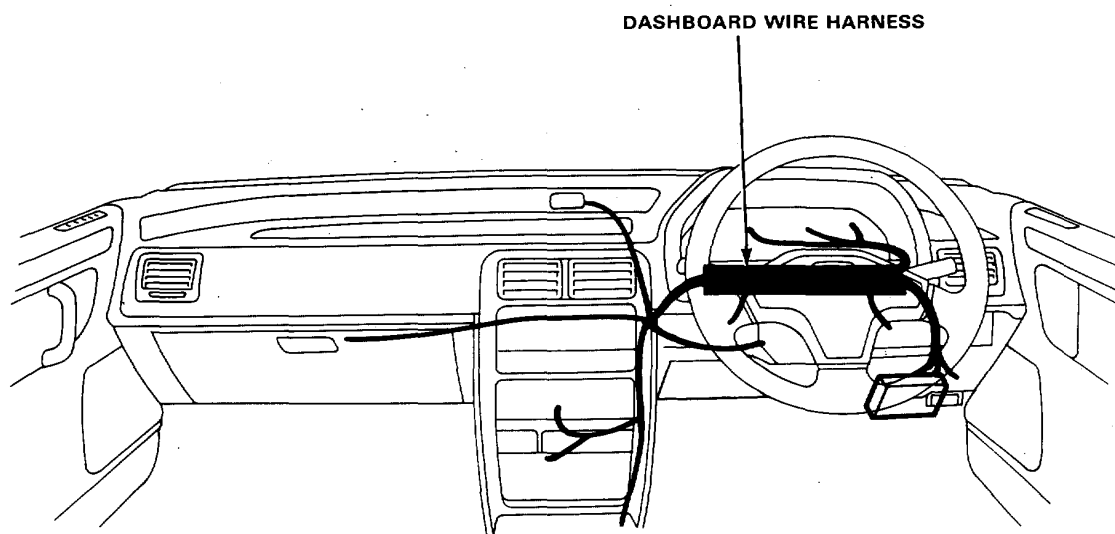
NOTE: RH Drive type shown. LH Drive type is similar.



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NOTE: RH Drive type shown. LH Drive type is symmetrical to RH Drive type.

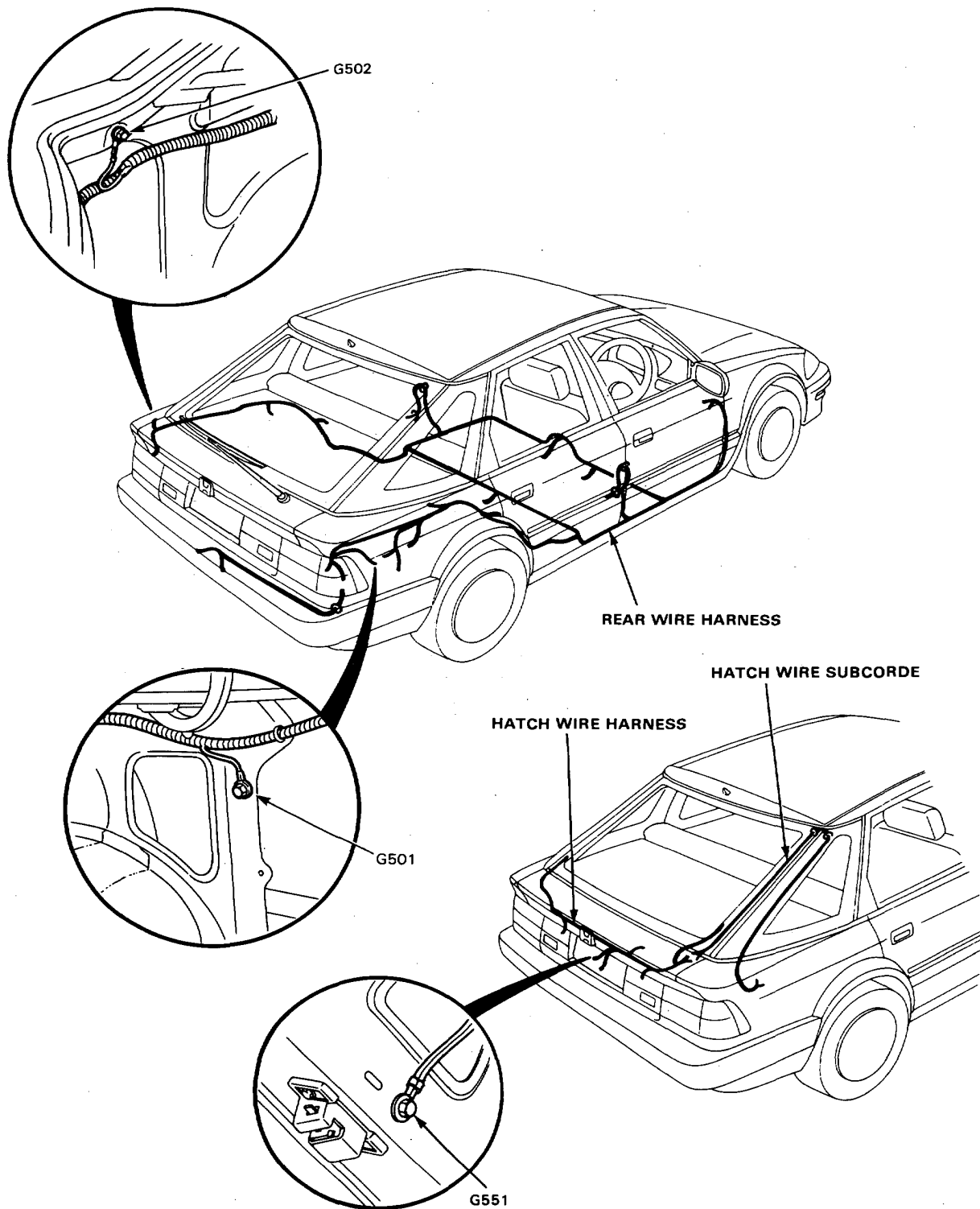


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(cont'd)

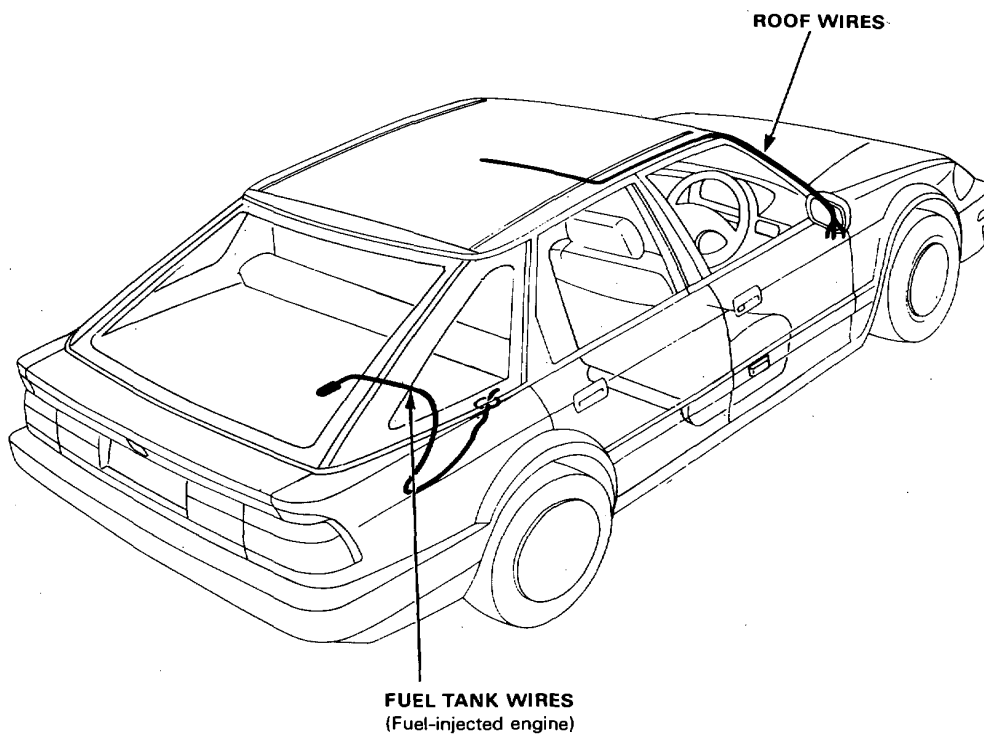
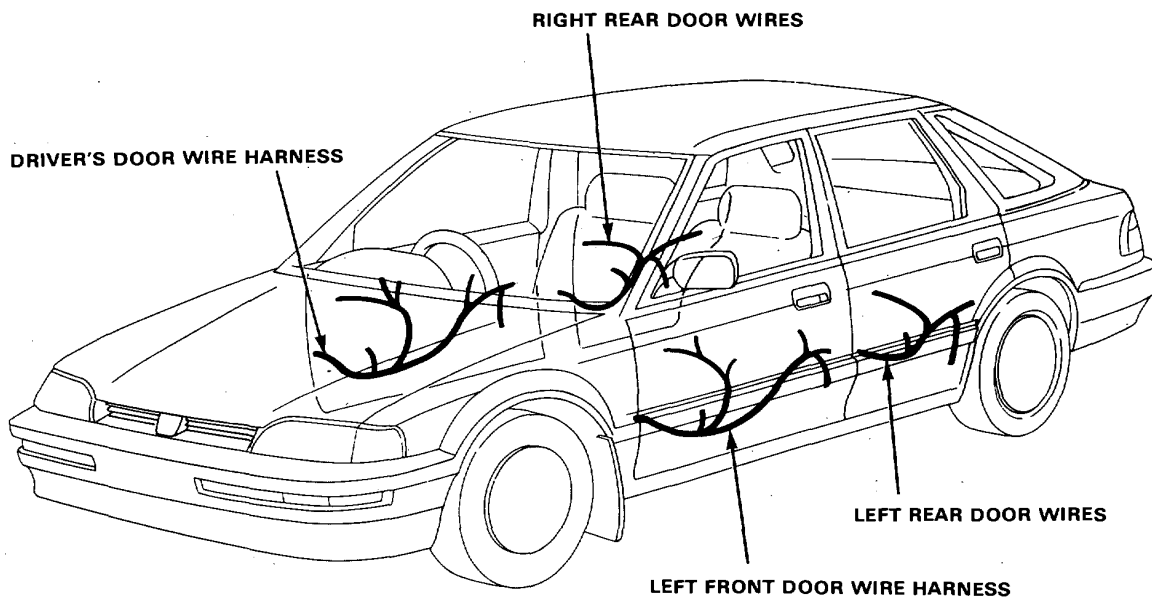
Ground and Wire Harness Routing

NOTE: RH Drive type shown. LH Drive type is similar.





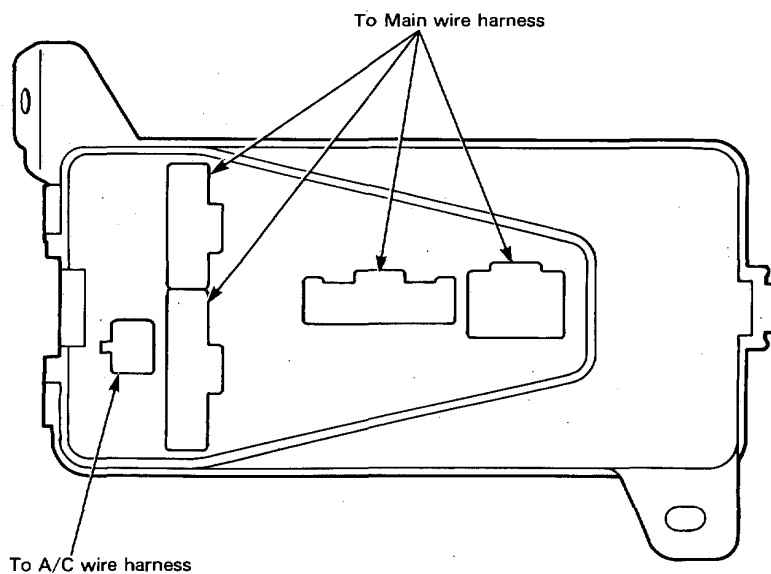
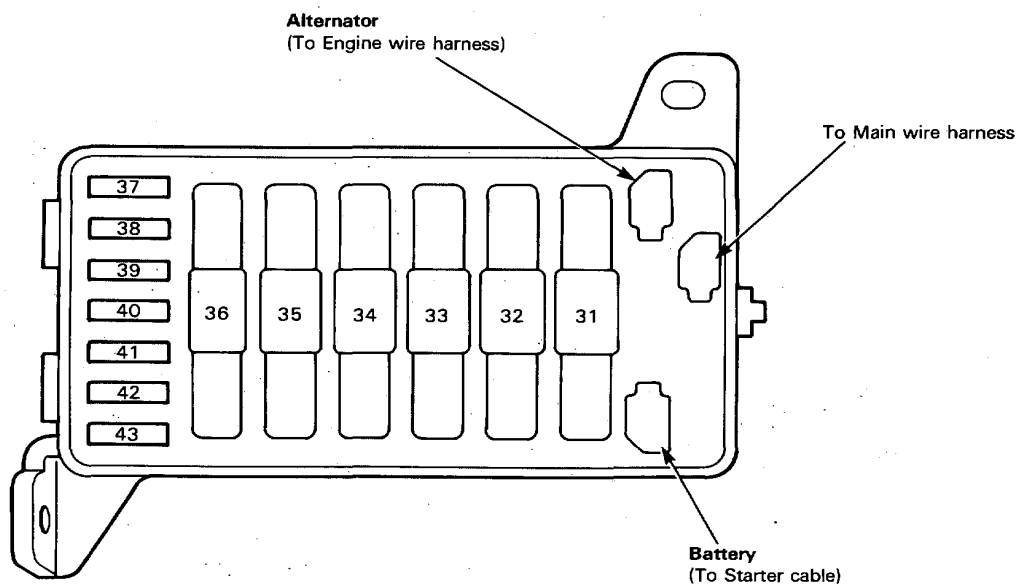
NOTE: RH Drive type shown. LH Drive type is similar.



Fuses

Main Fuse Box

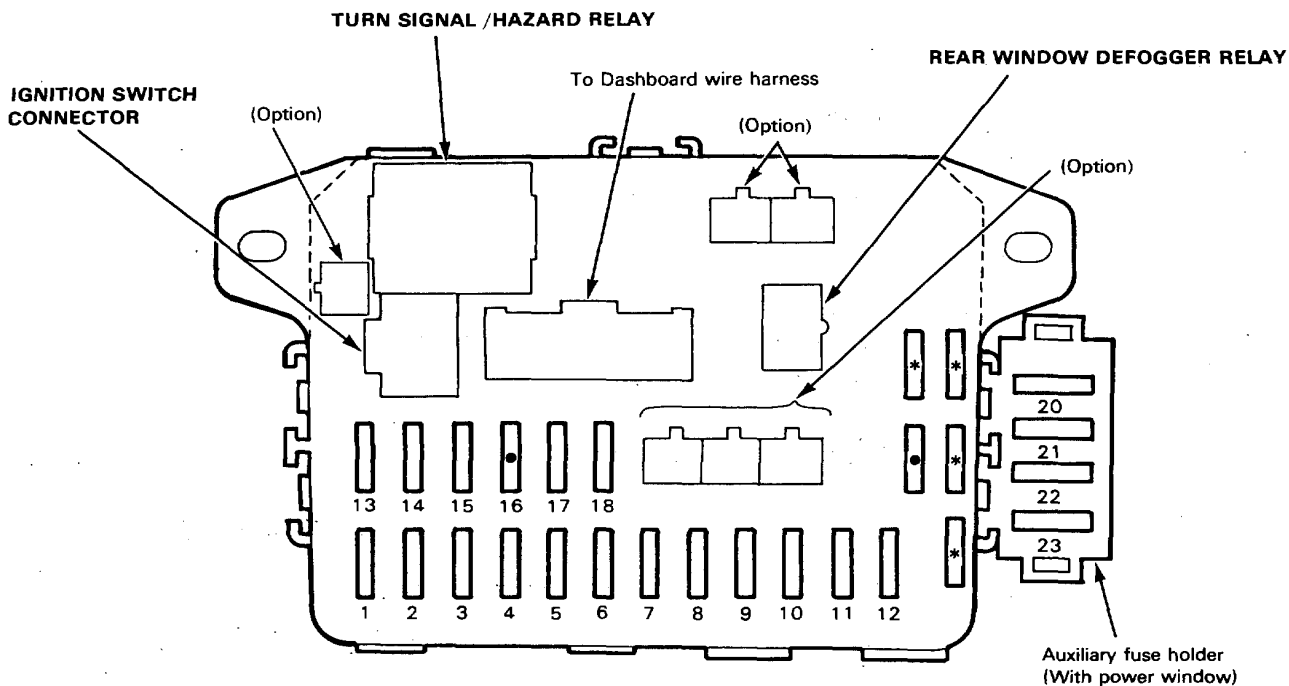
NOTE: Main fuse box is located right side, engine compartment.



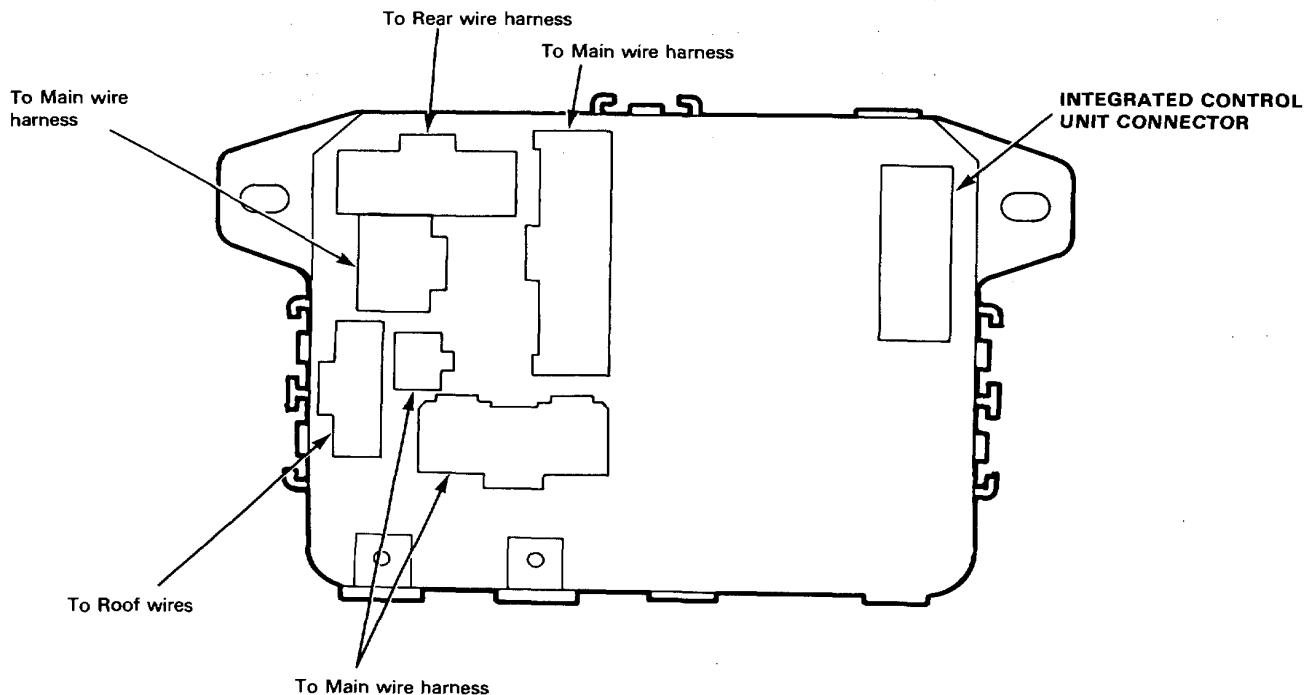


Dash Fuse Box

NOTE: Dash fuse box is located right side, under dash.

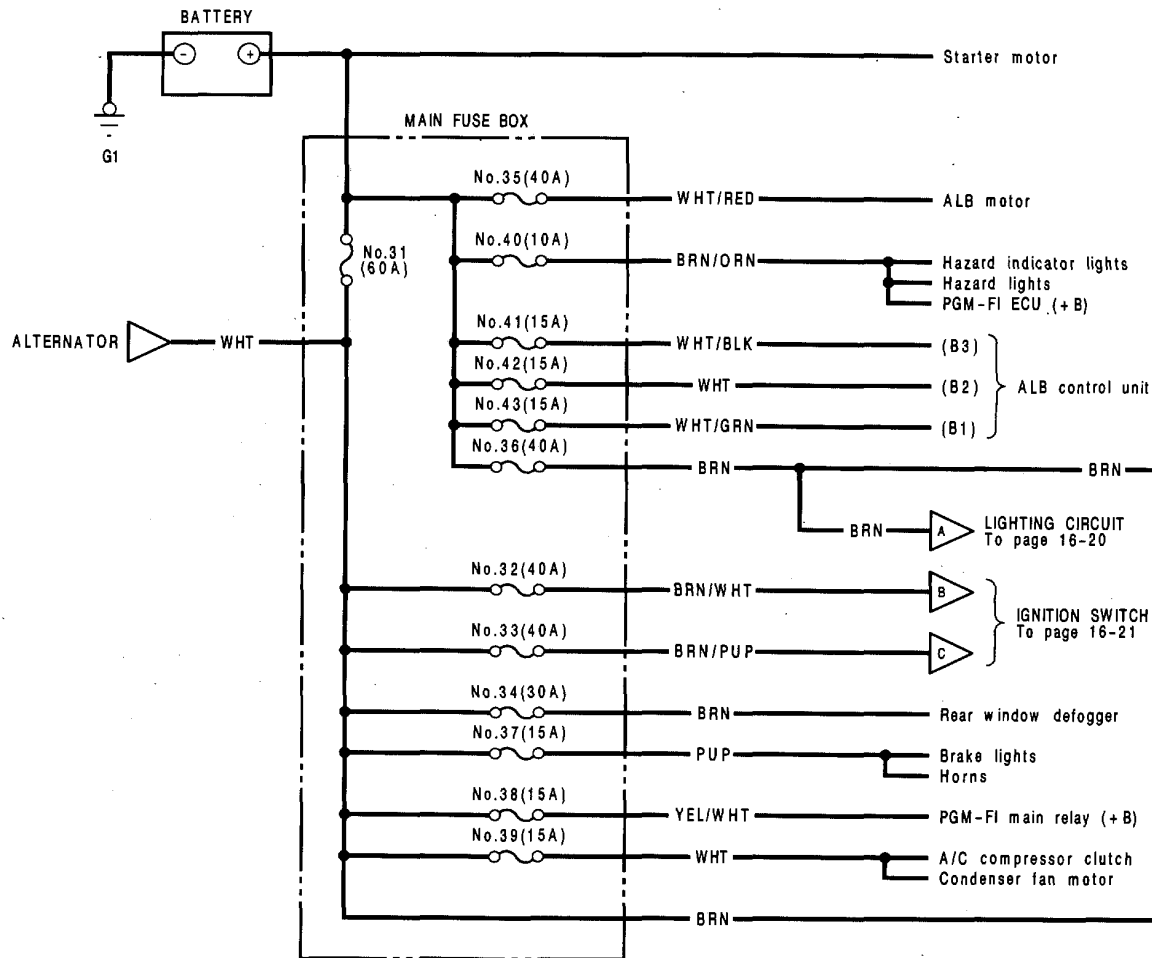


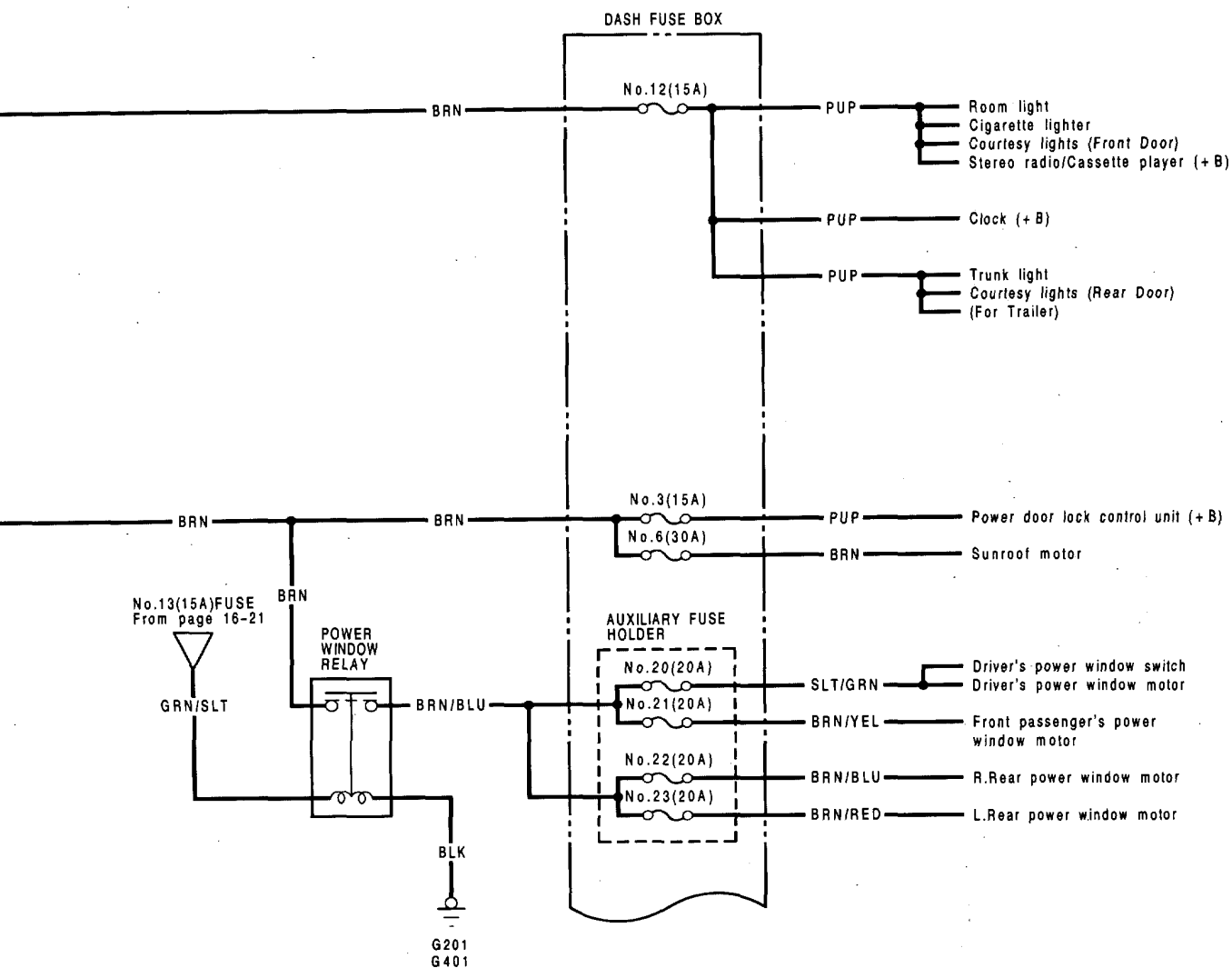
* : SPAER FUSE
● : Not used



Power Distribution

Circuit Identification

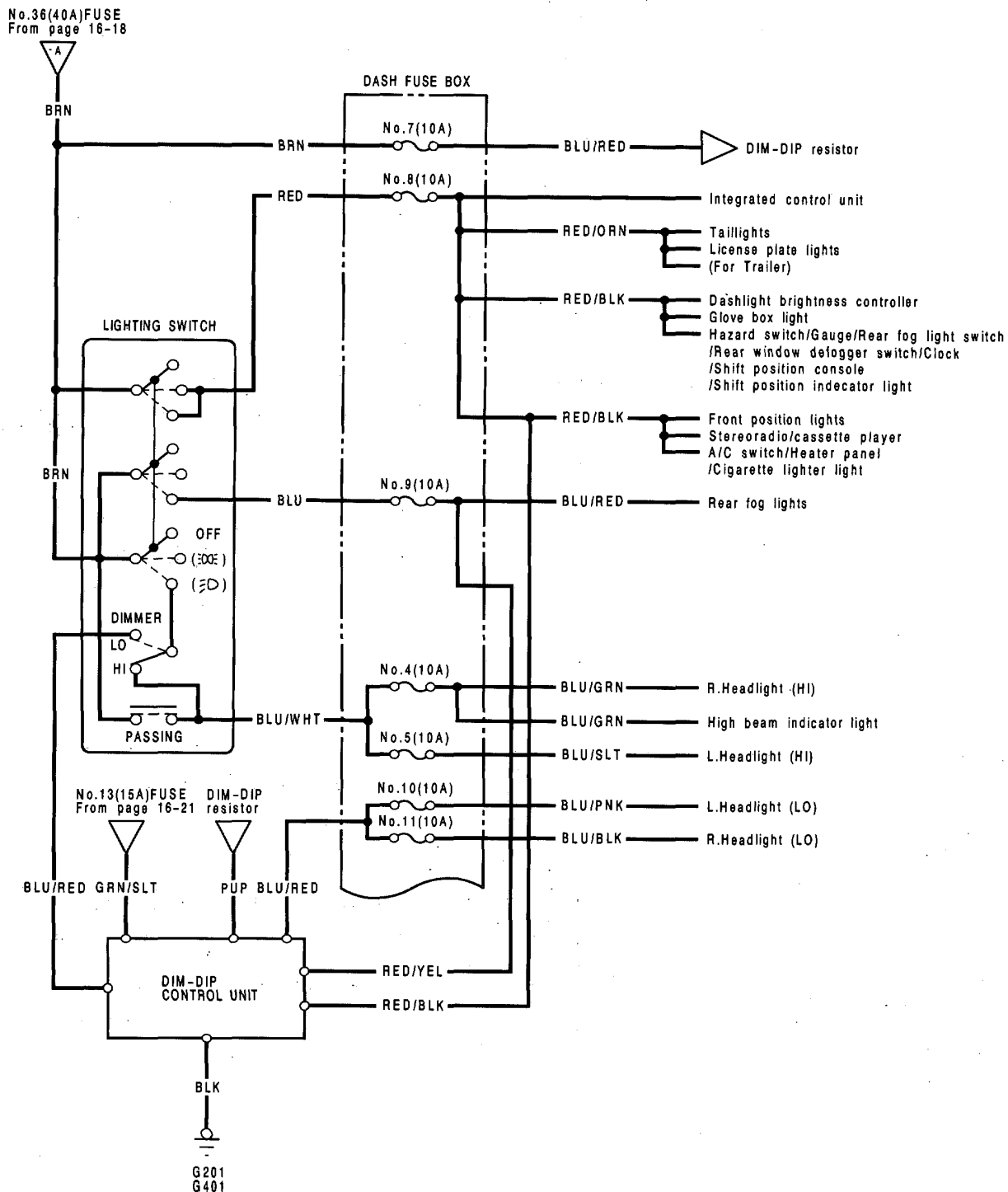




(cont'd)

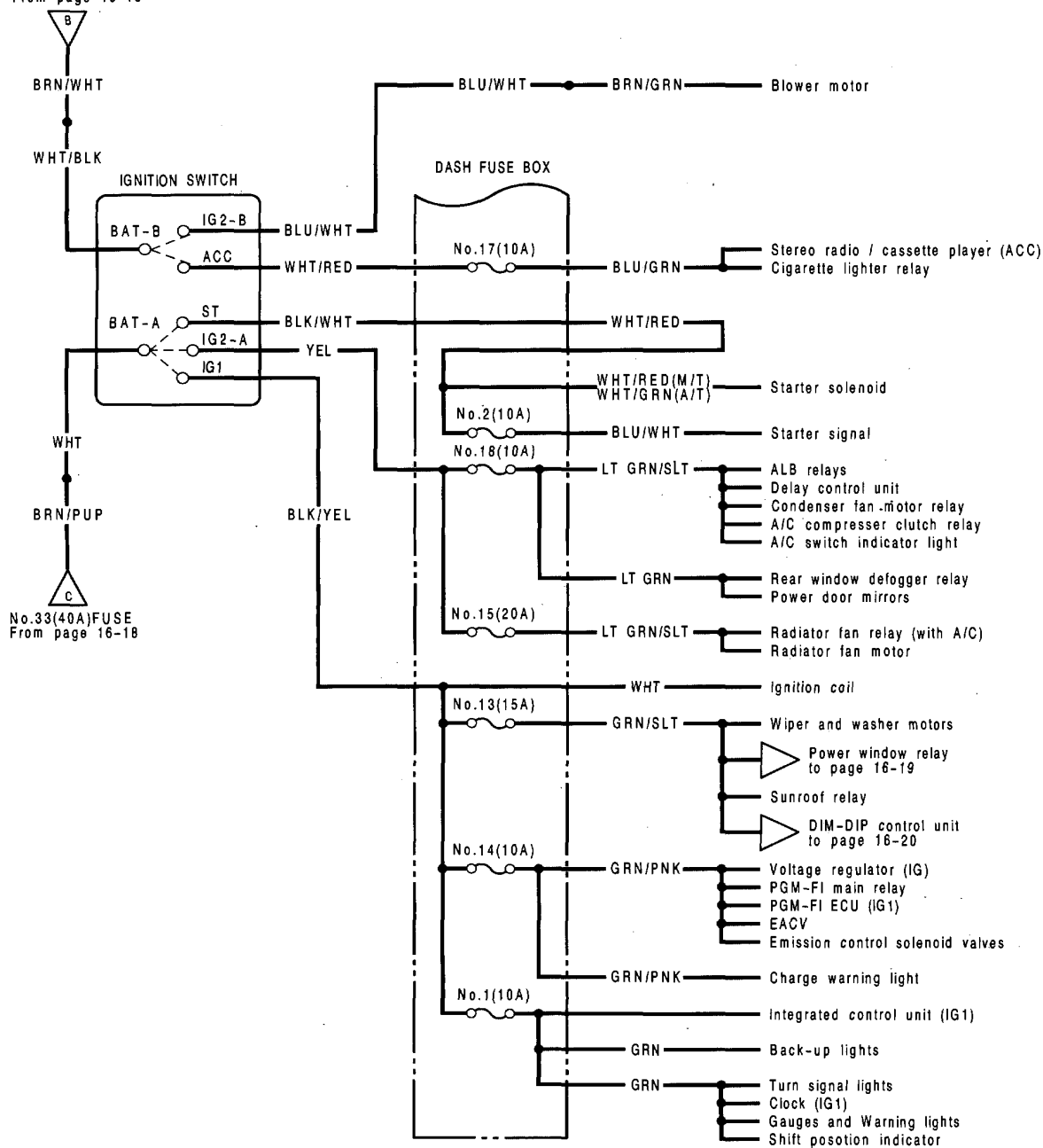
Power Distribution

Circuit Identification (cont'd)





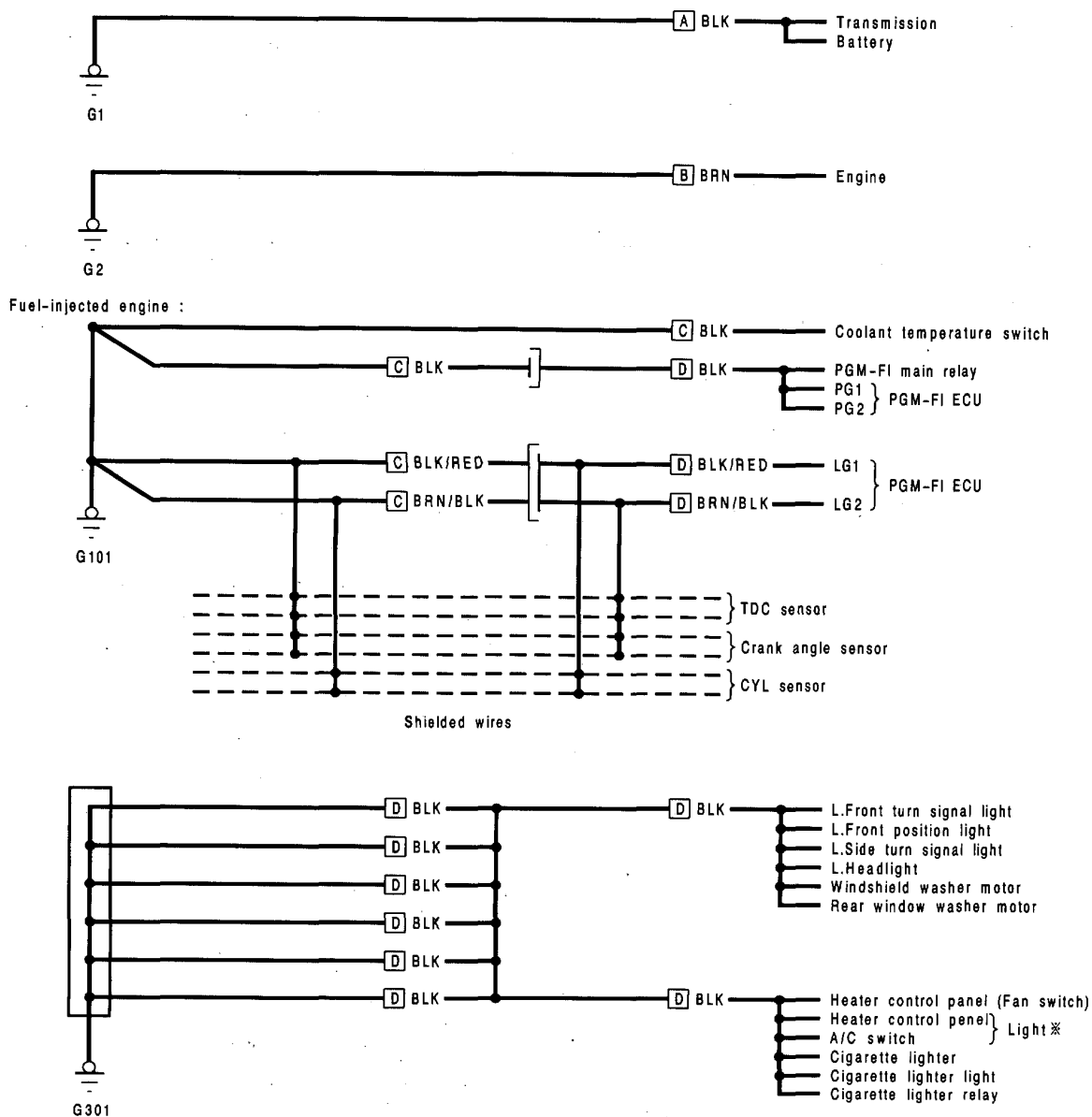
No.32(40A)FUSE
From page 16-18



Ground Distribution

Circuit Identification

NOTE : See page 16-8 to 10 for illustrated ground locations.



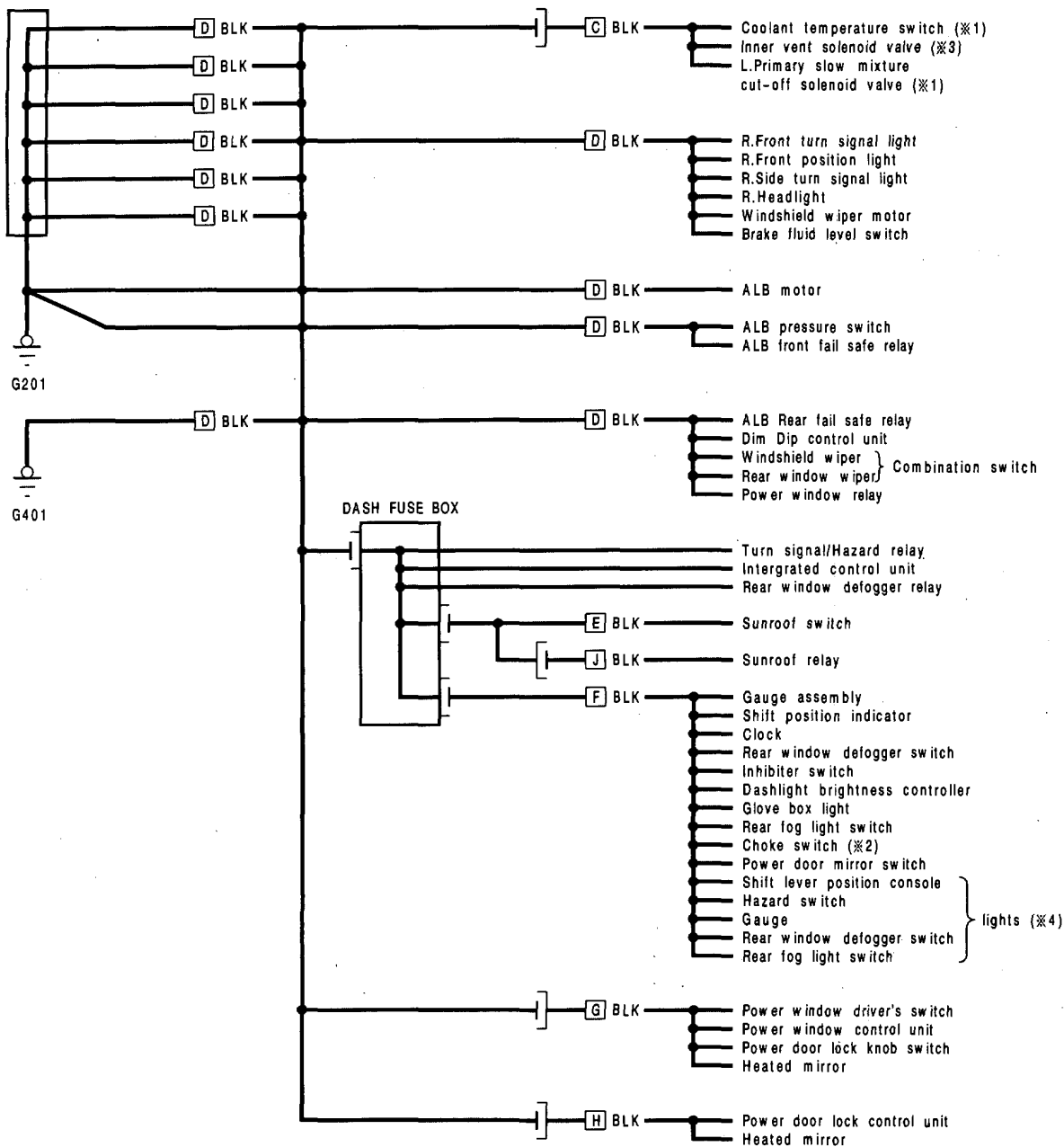
[A] : Battery ground wire
[B] : Engine ground wire

[C] : Engine wire harness
[D] : Main wire harness

※ : Wituout dashlight brightness control



NOTE : See pages 16-10 and 11 for illustrated ground locations.



[C] : Engine wire harness
[D] : Main wire harness
[E] : Roof wire
[F] : Dashboard wire harness

[G] : Driver door wire harness
[H] : Front passenger's door wire harness
[J] : Sunroof switch subcord

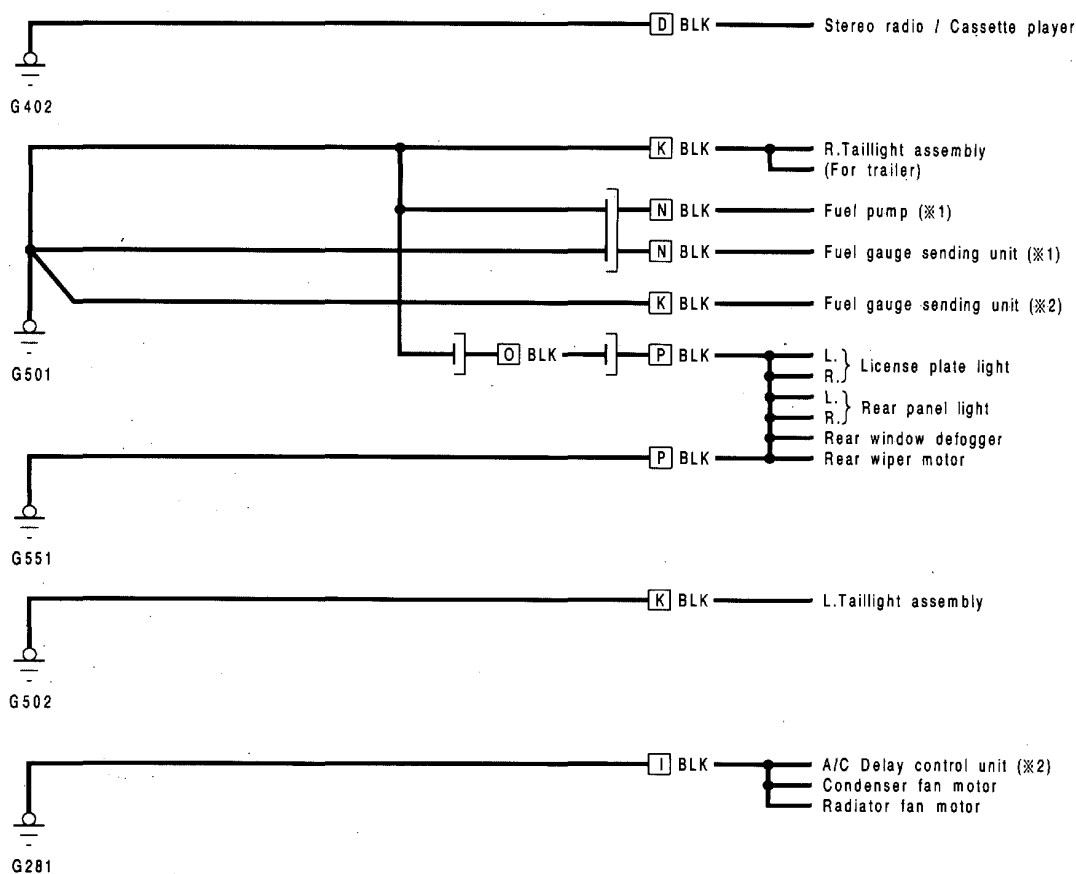
(※1) : Carbureted engine
(※2) : 1.4L Carbureted engine
(※3) : 1.6L Carbureted engine
(※4) : Without dashlight brightness control

(cont'd)

Ground Distribution

Circuit Identification (cont'd)

NOTE : See pages 16-12 and 14 for illustrated ground locations.



D : Main wire harness

I : A/C wire harness

K : Rear wire harness

N : Fuel tank wires

O : Hatch subcord

P : Hatch wire harness

(※1) : Fuel-injected engine

(※2) : Carbureted engine

Battery

Test

NOTE: To get accurate results, the temperature of the electrolyte must be between 15 and 38°C (59 and 100°F) before testing.

Test Equipment Required :

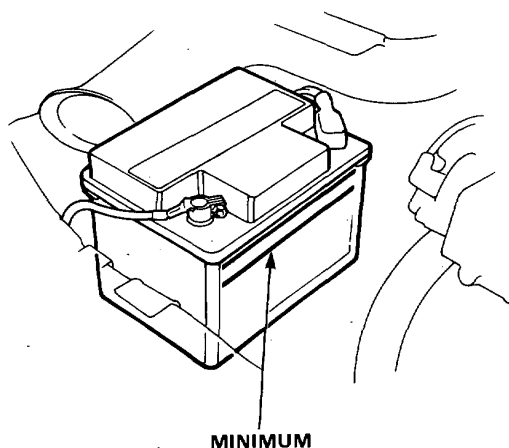
- Battery tester with :
Voltmeter with 0-18 V scale, Ammeter with 0-100 A and 0-500 A scales, and a carbon pile with 0-300 W.
- 12 V Battery Charger :
Fast charge capability of 50 A and slow charge capability of 5 A.

Test Procedure :

WARNING Keep sparks, flames and cigarettes away while charging battery.

CAUTION : Battery electrolyte is a sulfuric acid solution.

- If it spills on painted surfaces, clothing, or skin, rinse it off with water immediately to minimize the damage.
 - Always wear safety goggles or a face shield when servicing a battery.
1. Check for damage : If the case is cracked or the posts are loose, replace the battery.
 2. Check the battery electrolyte level :
Check the electrolyte level in each cell.



3. Test battery load capacity by connecting a battery tester, and applying a load of 3 times the battery ampere hour rating.
When the load has been applied for exactly 15 seconds, the battery voltage reading should stay above 9.6 V.

- If the reading stays above 9.6V, the battery is OK ; clean its terminals and case, and reinstall it.
- If the reading is between 6.5 and 9.6 V, fast charge the battery by connecting a battery charger, for 3 minutes at an initial rate of 40 amps.

CAUTION : 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 15.5V.

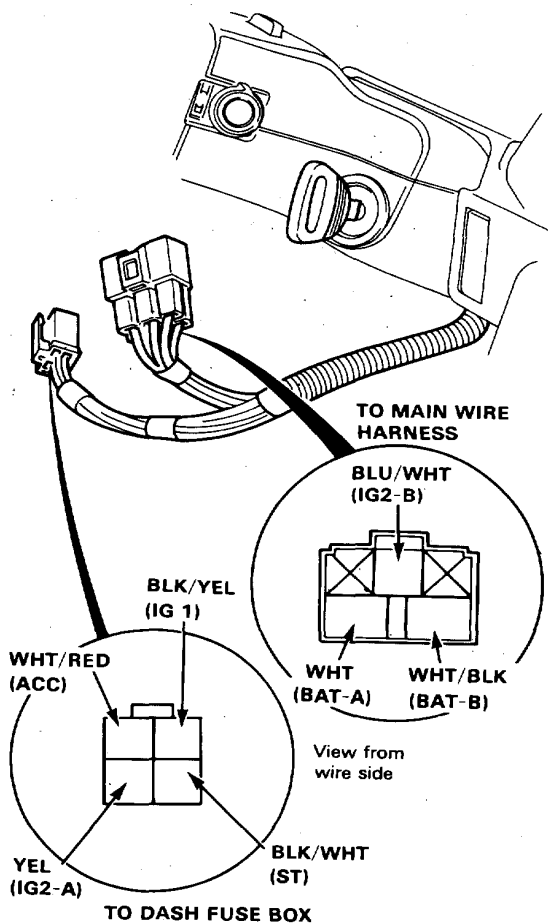
- If the reading stays below 15.5 V, the battery is OK ; clean its terminals and case, and reinstall it.
- If the reading exceeds 15.5 V any time during the 3 minutes of fast charge, the battery is no good ; replace it.
- If the reading drops below 6.5 V, slow charge the battery by connecting a battery and charge, at 5 amps for no more than 24 hours, (or until the indicator shows full charge, or the specific gravity of the electrolyte is at least 1.250) .
Then test load capacity again.
- If the voltage stays above 9.6 V, the battery is OK ; clean its terminals and case, and reinstall it.
- If the voltage still drops below 6.5 V, the battery is no good ; replace it.

Ignition Switch

Test

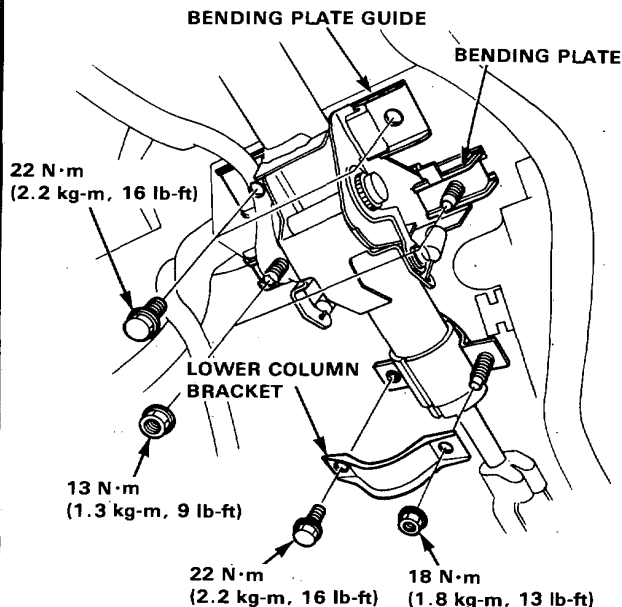
1. Remove the dashboard lower panel.
2. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	WHT/ RED (ACC)	WHT/ BLK (BAT -B)	BLU/ WHT (IG2 -B)	WHT (BAT -A)	BLK/ YEL (IG 1)	YEL (IG2 -A)	BLK/ WHT (ST)
0							
I	○	○					
II	○	○	○	○	○	○	
III				○	○		○

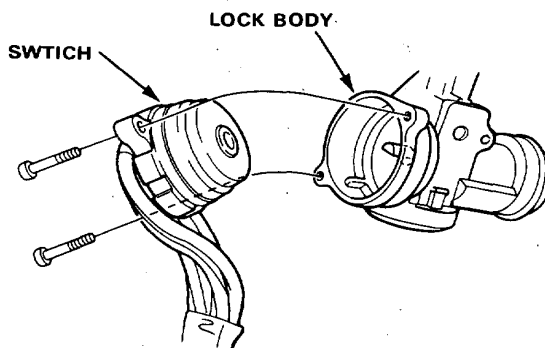


Electrical Switch Replacement

1. Remove the steering wheel, then remove the steering column covers.
2. Remove the dashboard lower panel.
3. Remove the lower column bracket.
4. Remove the nuts attaching the bending plate guide and bending plate.



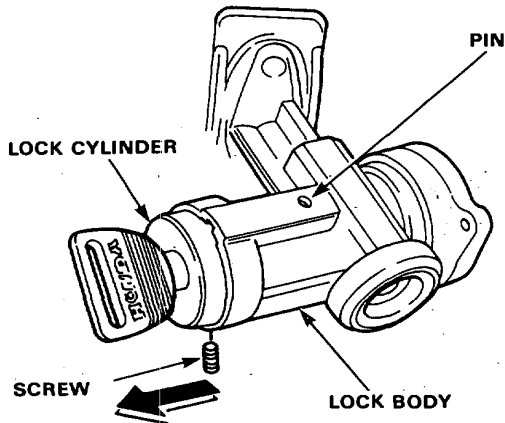
5. Disconnect the 4-P connector from the dash fuse box and 5-P connector from the main wire harness.
6. Insert the key and turn it to "0."
7. Remove the 2 screws and replace the base of the switch.



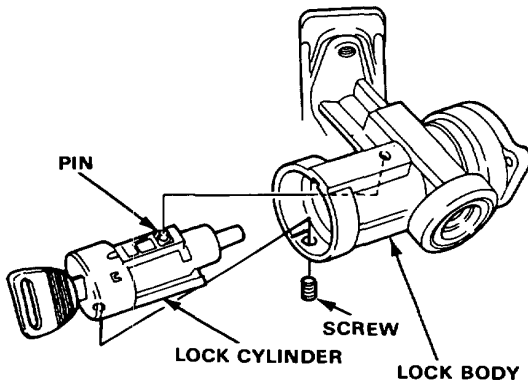


Lock Cylinder Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Turn the ignition key to "I".
4. Remove the screw from the lock body.
5. Push the pin in and remove the lock cylinder from the lock body.



6. Turn the key to "0" and align the lock cylinder with the lock body.
7. Turn the key almost to "I" and insert the lock cylinder until the pin touches the body.
8. Turn the key to the "I", push the pin and insert the lock body cylinder into the lock until the pin clicks into place.
9. Install the screw to the lock body.

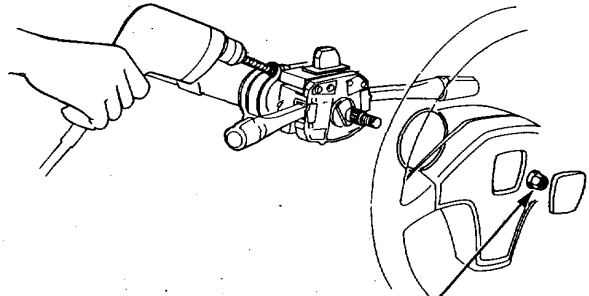


Steering Lock Replacement

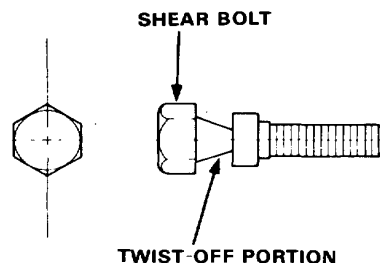
1. Remove the dashboard lower panel.
2. Remove the steering wheel, then remove the steering column covers.
3. Remove the lower column bracket.
4. Remove the nuts attaching the bending plate guide and bending plate. (see page: 16-26)
5. Center punch each of the 2 shear bolts and drill their heads off with a 3/16 in. drill bit.

CAUTION: Do not damage the switch body when removing the shear heads.

6. Remove the shear bolts from the switch body.



7. Install the new ignition switch without the key inserted.
 8. Loosely tighten the new shear bolts.
- NOTE:** Make sure the projection on the ignition switch is aligned with the hole in the steering column.
9. Insert the ignition key and check for proper operation of the steering wheel lock and that ignition key turns freely.
 10. Tighten the shear bolts until the hex heads twist off.



Starting System

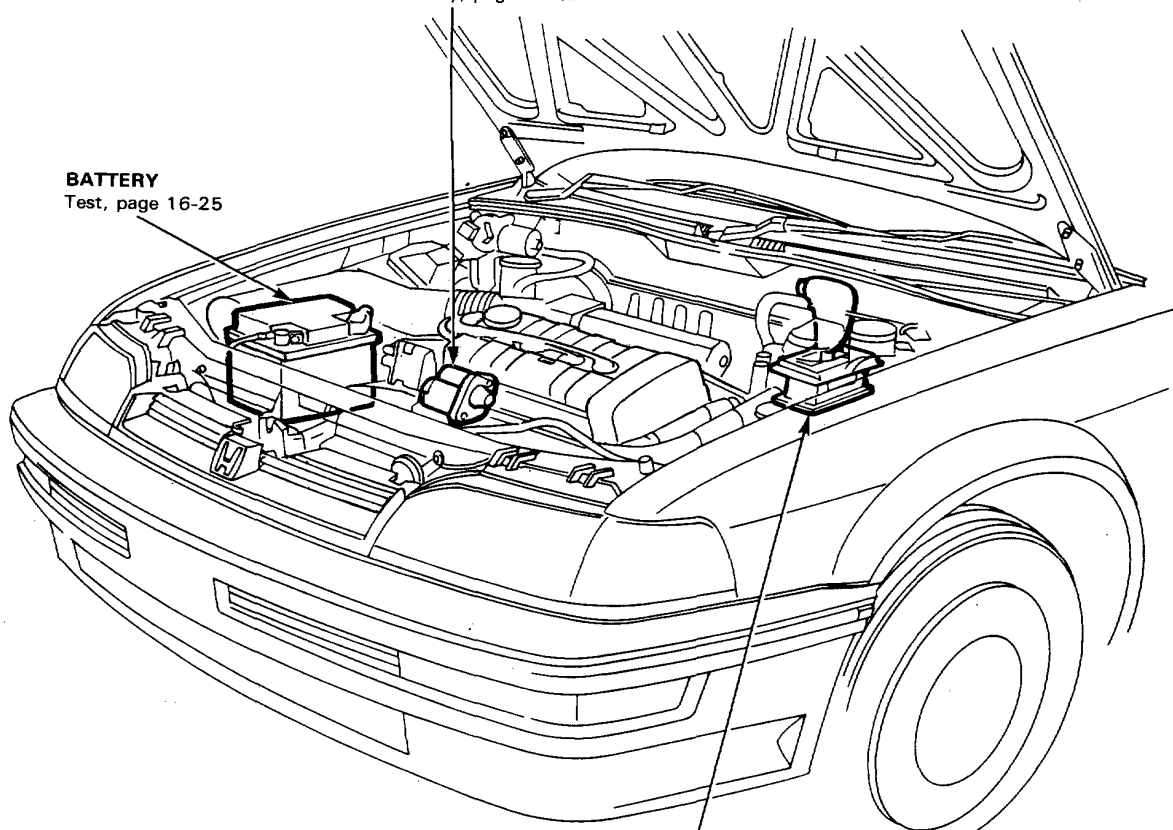
Component Location Index

STARTER

Test, page 16-30
Solenoid Test, page 16-32
Replacement, page 16-33
Overhaul, page 16-34
Reassembly, page 16-42

BATTERY

Test, page 16-25

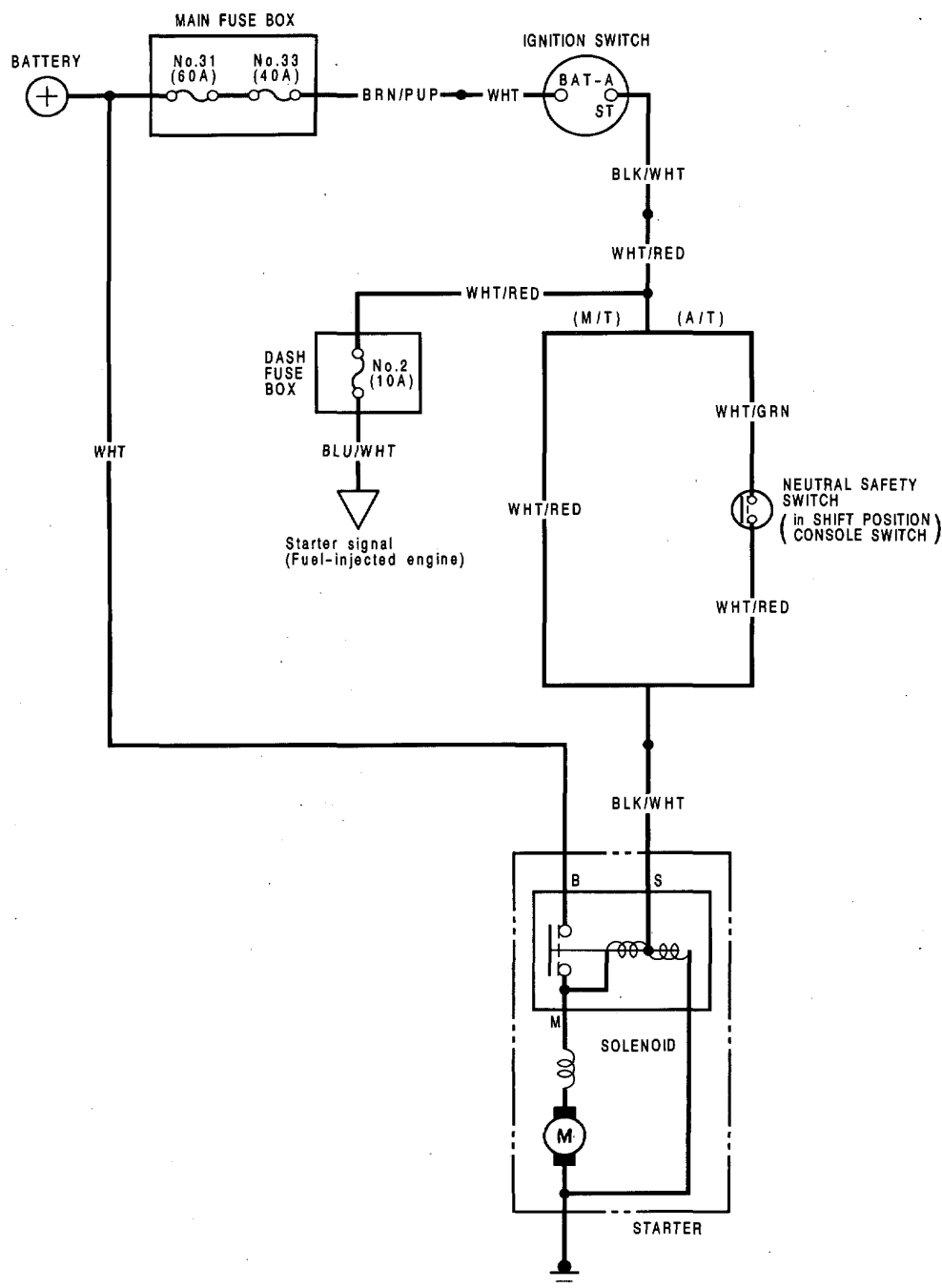


SHIFT POSITION CONSOLE SWITCH (NEUTRAL SAFETY SWITCH)

(A/T only)
Test, page 16-98
Replacement, page 16-98



Circuit Diagram



Starting System

Starter Test

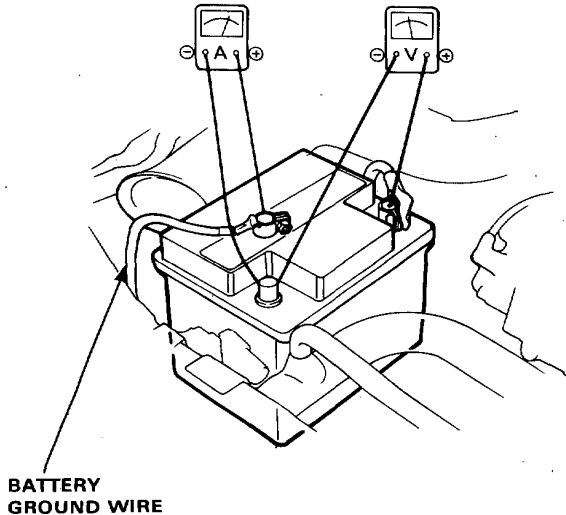
NOTE: The air temperature must be between 15 and 38°C (59 and 100°F) before testing.

Recommended Procedure :

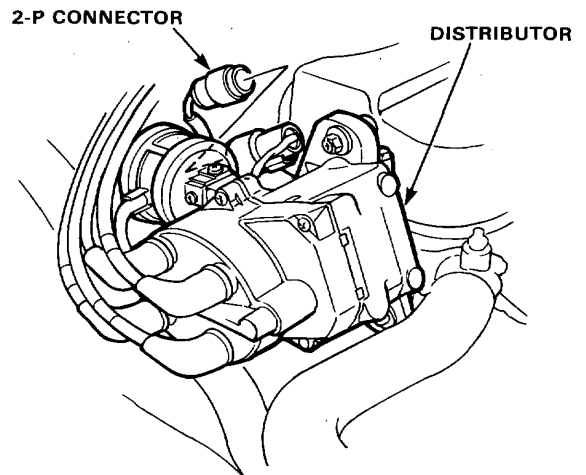
Use a starter system tester.
Connect and operate the equipment in accordance with manufacturer's instructions.
Test and troubleshoot as described.

Alternate Procedure :

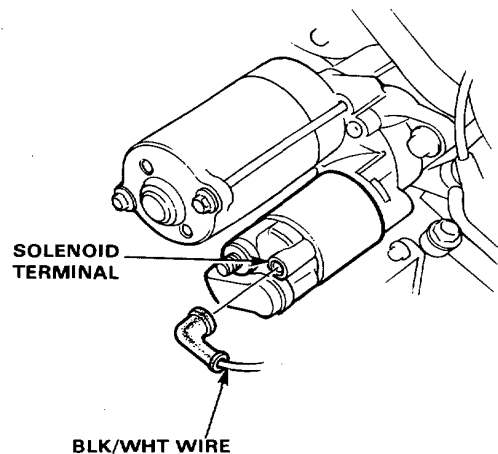
- Use the following equipment :
 - Ammeter, 0-400 A
 - Voltmeter, 0-20 V (accurate within 0.1 volt)
 - Tachometer, 0-1200 rpm
- Hook up voltmeter and ammeter as shown.



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. On cars with automatic transmission, check the shift position console switch (neutral safety switch) and connector.

3. Check for wear or damage :

The starter should crank the engine smoothly and steadily.

If the starter engages, but cranks the engine erratically, remove the starter motor. Inspect the starter, drive gear, and flywheel ring gear for damage.

Check the drive gear overrunning clutch for binding or slipping when the armature is rotated with the drive gear held. Replace the gears if damaged.

4. Check cranking voltage and current draw,

Voltage should be no less than specified below :

1.2kw and 1.4kw : 8 volts

1.0kw : 8.5 volts

Current should be no greater than specified below :

1.0kw : 230 amperes

1.2kw : } 350 amperes

1.4kw : }

If voltage is too low, or current draw too high, check for :

- Battery fully charged.
- Open circuit in starter armature commutator segments.
- Starter armature dragging.
- Should armature winding.
- Excessive drag in engine.

5. Check cranking min^{-1} (rpm) :

Engine speed during cranking should be above 100 min^{-1} (rpm).

- Loose battery or starter terminals.
- Excessively worn starter brushes.
- Open circuit in commutator segments.
- Dirty or damaged helical spline or drive gear.
- Defective drive gear overrunning clutch.

6. Check the starter disengagement :

Turn the ignition switch to "Start" and release to "Run." The starter drive gear should disengage from the flywheel ring gear.

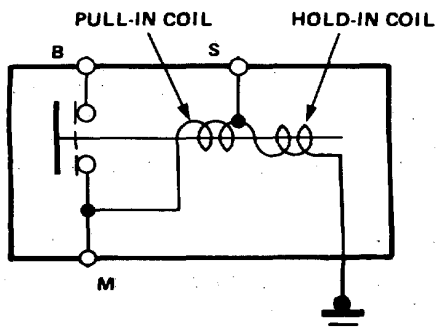
If the drive gear hangs up on the flywheel ring gear, check :

- Solenoid plunger and switch for malfunction.
- Drive gear assembly for dirty or damaged overrunning clutch.

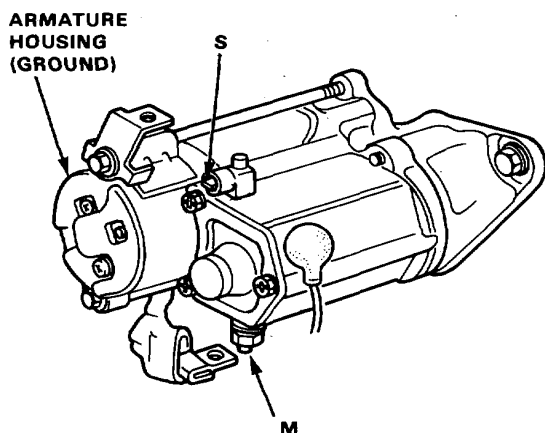
Starting System

Starter Solenoid Test

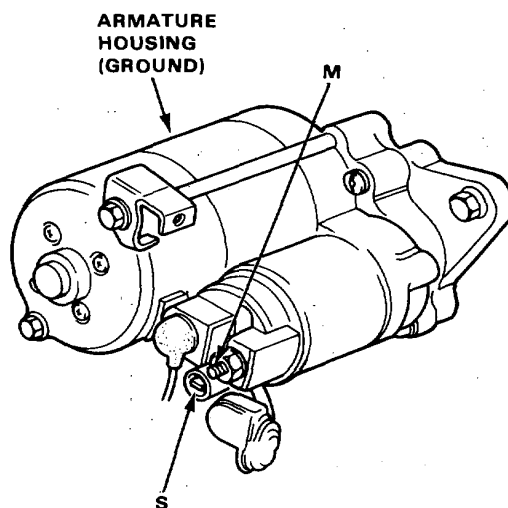
1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground).
Coil is OK if there is continuity.
2. Check the pull-in coil for continuity between the S and M terminals.
Coil is OK if there is continuity.



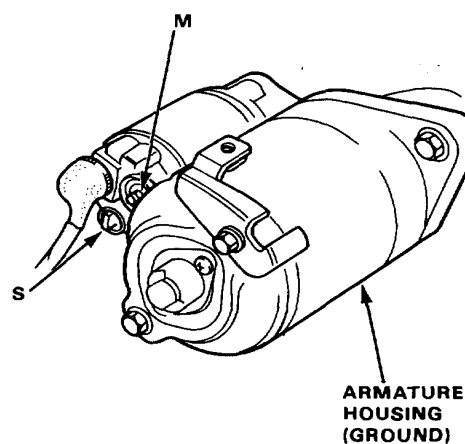
Nippon Denso (1.0 kw and 1.2 kw) type:



Mitsuba (1.0 kw and 1.4 kw) type:

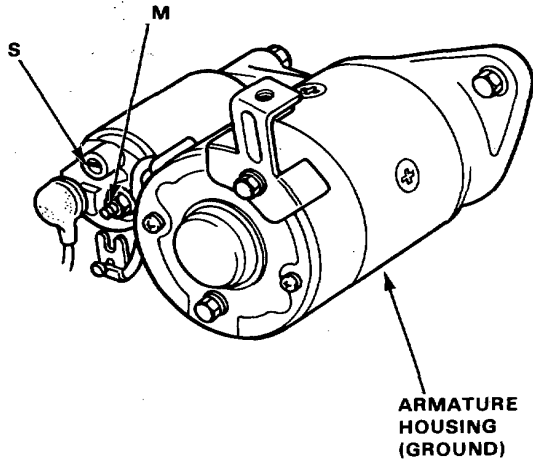


Nippon Denso (0.8 kw) type:





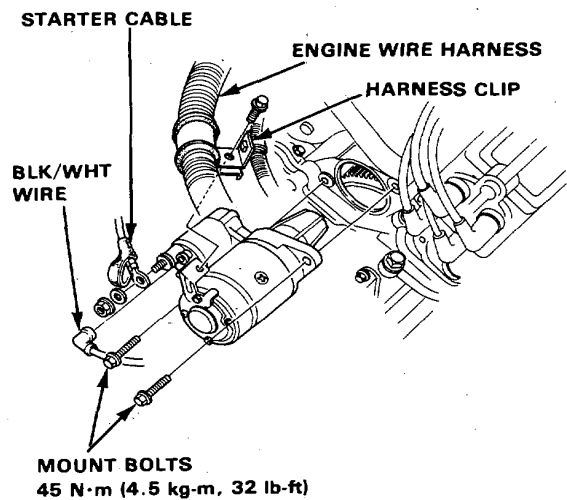
Hitachi (0.8 kw) type:



Starter Replacement

NOTE: After installation, make sure that the wires are clamped.

1. Disconnect the ground wire from the battery negative (-) post.
2. Remove the engine wire harness from the harness clip on the starter motor.
3. Disconnect the starter cable from the B terminal on the solenoid, and the BLK/WHT wire from the S terminal.
4. Remove the 2 bolts holding the starter, and remove the starter.

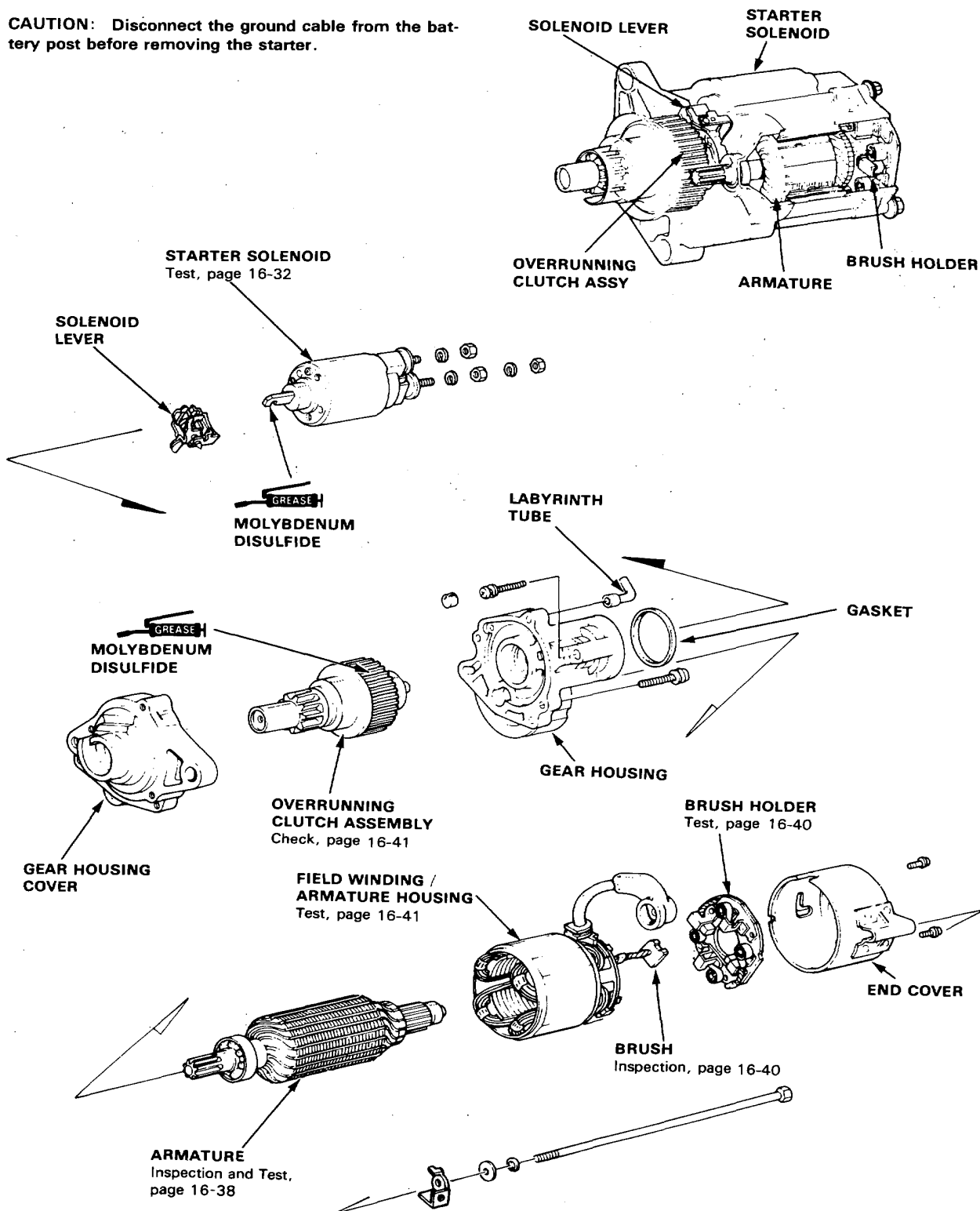


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Starting System

Starter Overhaul (Gear Reduction 1.0kw and 1.4kw, Mitsuba type)

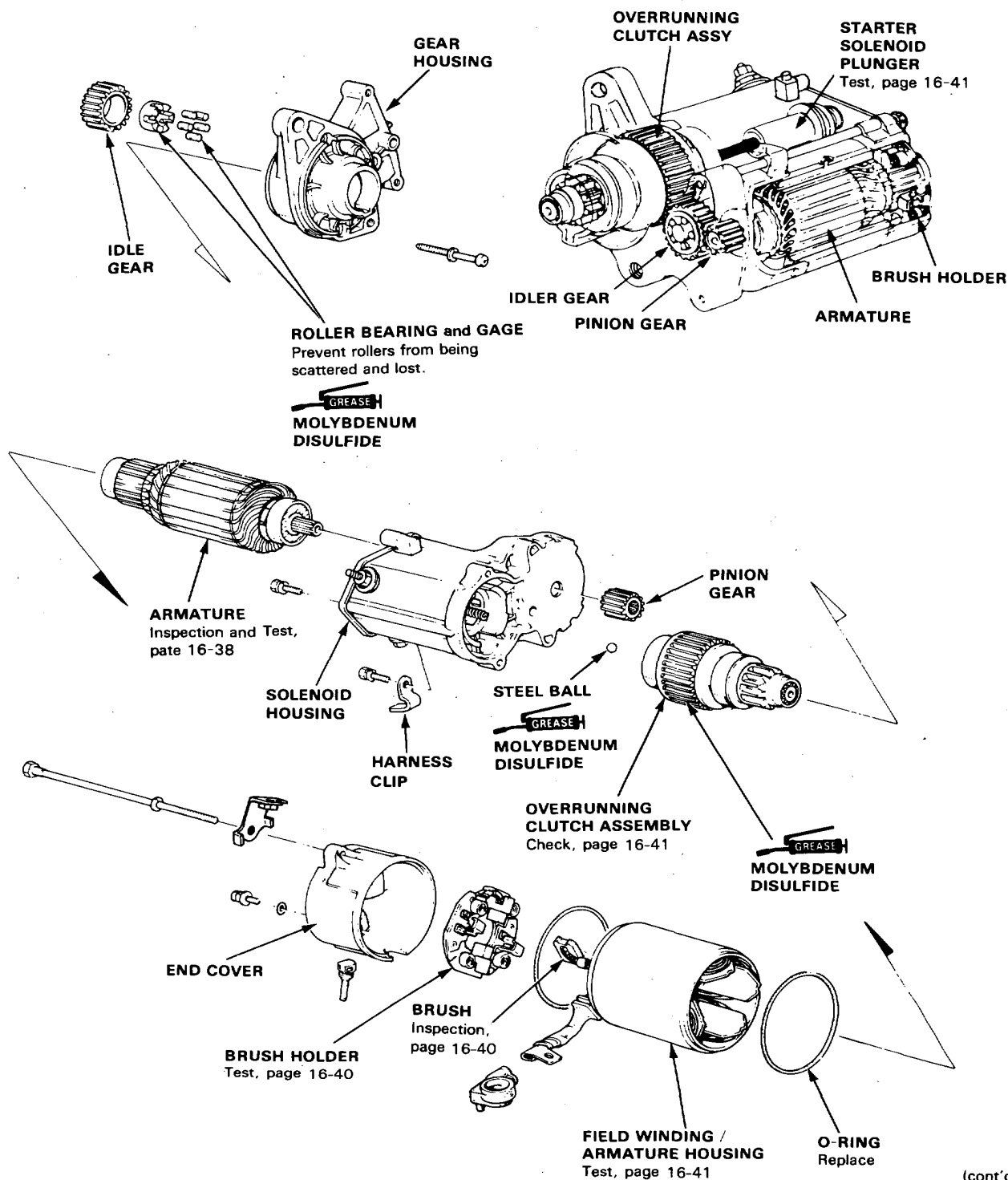
CAUTION: Disconnect the ground cable from the battery post before removing the starter.





Starter Overhaul (Gear Reduction 1.0kw and 1.2kw, ND type)

CAUTION: Disconnect ground wire from the battery post before removing the starter.

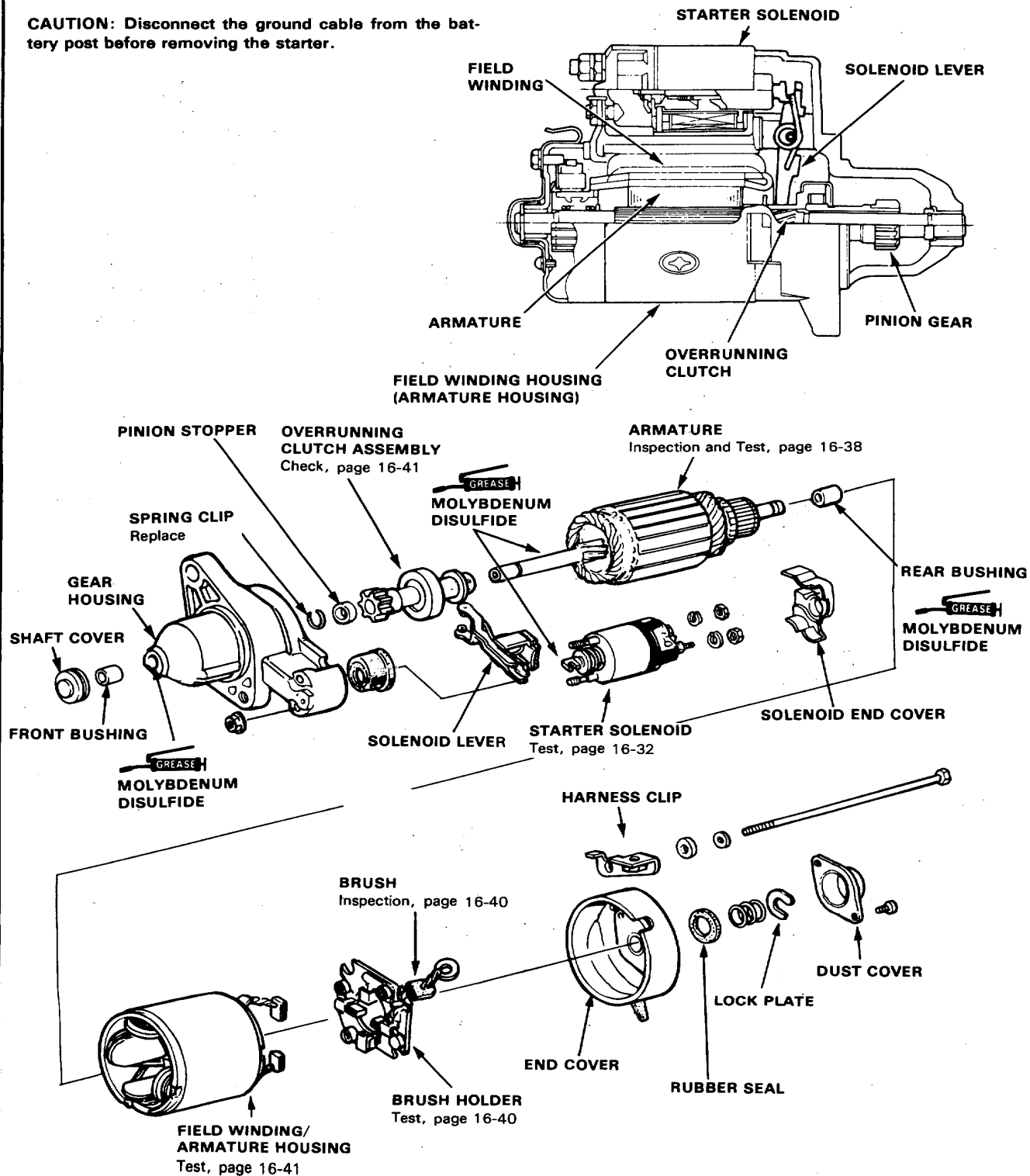


(cont'd)

Starting System

Starter Overhaul (cont'd) (Direct Drive 0.8 kw, ND type)

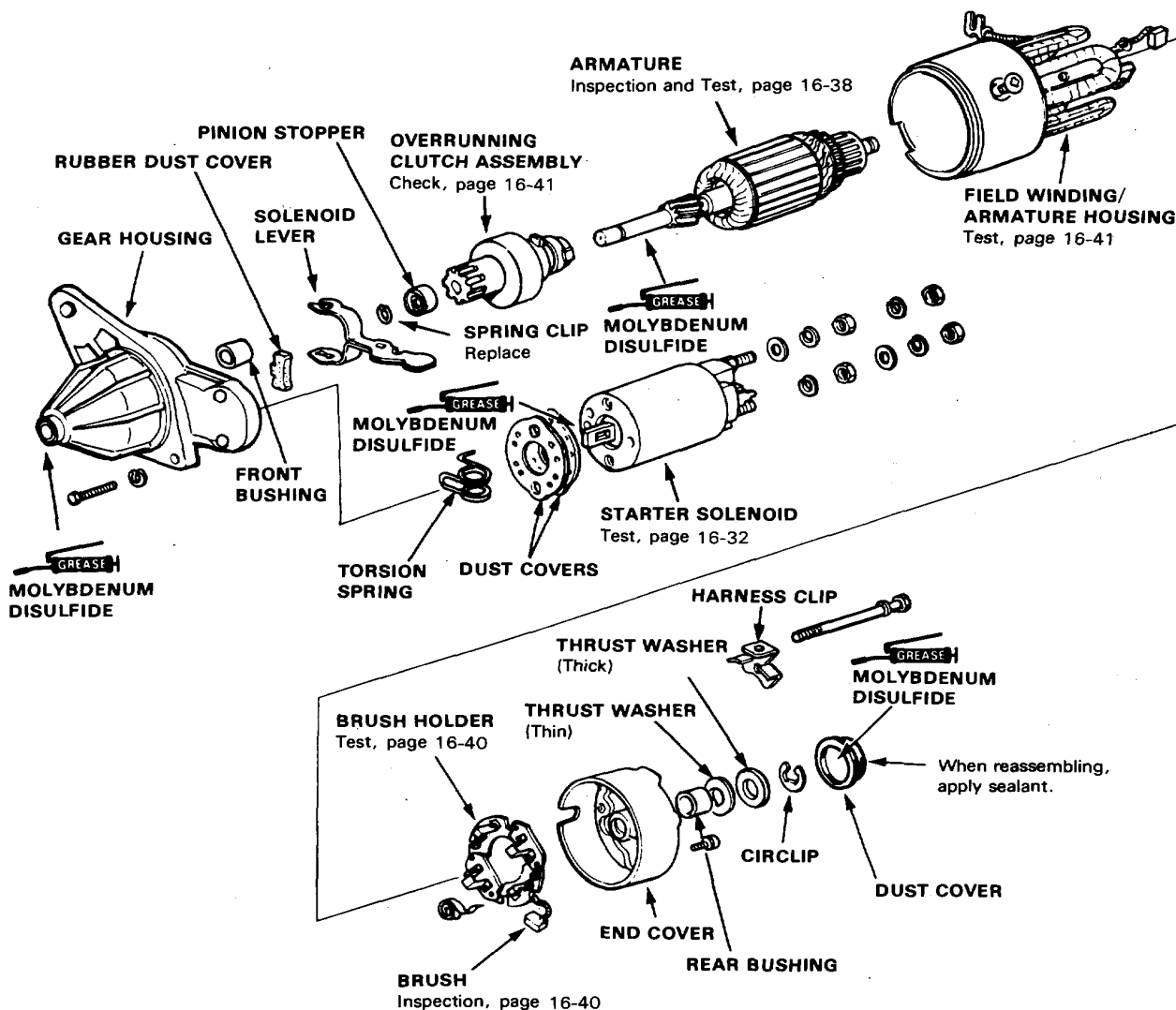
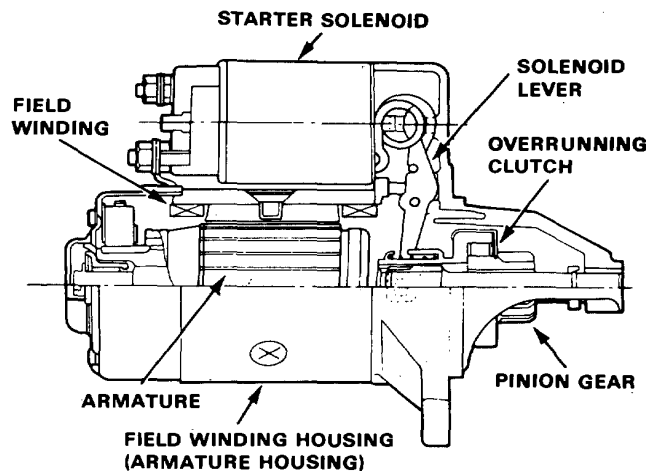
CAUTION: Disconnect the ground cable from the battery post before removing the starter.





Starter Overhaul (Direct Drive 0.8 kw, Hitachi type)

CAUTION: Disconnect the ground cable from the battery post before removing the starter.

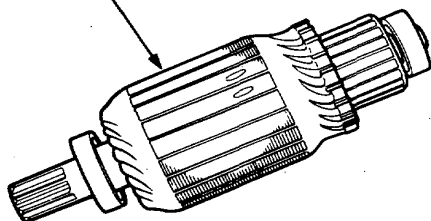


Starting System

Armature Inspection and Test

1. Inspect the armature for wear or damage due to contact with the field coil magnets.

Inspect for damage.

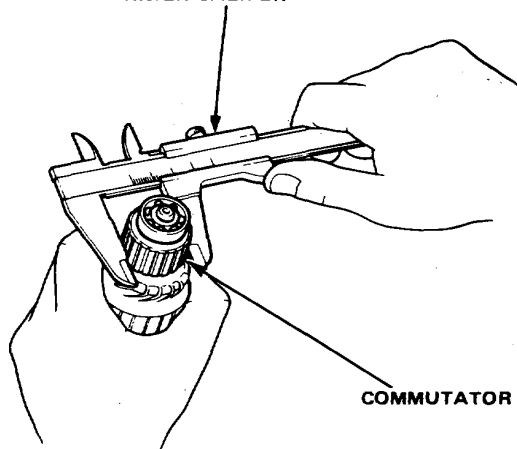


2. A dirty or burnt commutator surface may be resurfaced with emery cloth or a lathe within the following specifications.

Commutator Diameter

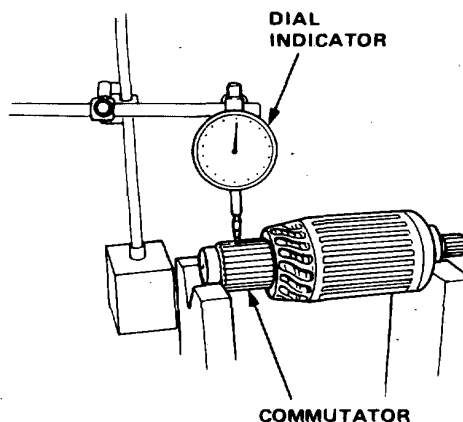
	Standard (New)	Service Limit
ND (1.0kw and 1.2kw)	29.9—30.0 mm (1.177—1.181 in)	29.0 mm (1.14 in)
Mitsuba (1.0kw and 1.4kw)	28.0—28.1 mm (1.102—1.106 in)	27.5 mm (1.08 in)
ND (0.8 kw)	28.0 mm (1.102 in)	27.0 mm (1.06 in)
Hitachi (0.8 kw)	40 mm (1.57 in)	39.0 mm (1.54 in)

VERNIER CALIPER



Commutator Runout

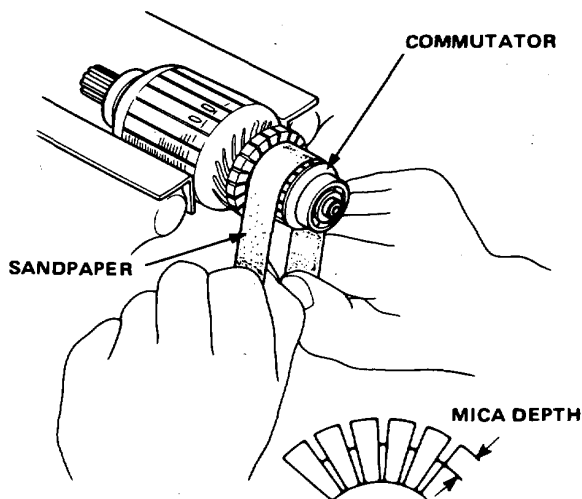
	Standard (New)	Service Limit
ND (1.0 kw and 1.2 kw) and Mitsuba (1.0 kw and 1.4 kw)	0—0.02 mm (0—0.001 in)	0.05 mm (0.002 in)
ND (0.8 kw)	0—0.05 mm (0—0.002 in)	0.4 mm (0.016 in)
Hitachi (0.8 kw)	0—0.1 mm (0—0.004 in)	0.4 mm (0.016 in)



3. If the commutator runout and diameter are within limits, check the commutator for damage or for carbon dust or brass chips between the segments.



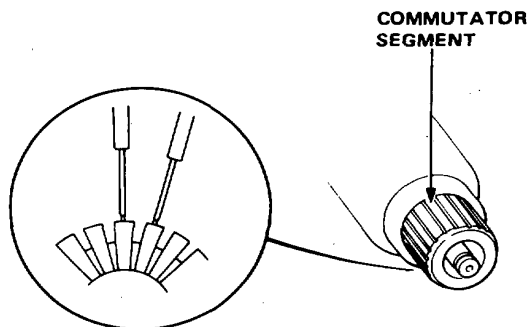
4. If surface is dirty, recondition it with a #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth.



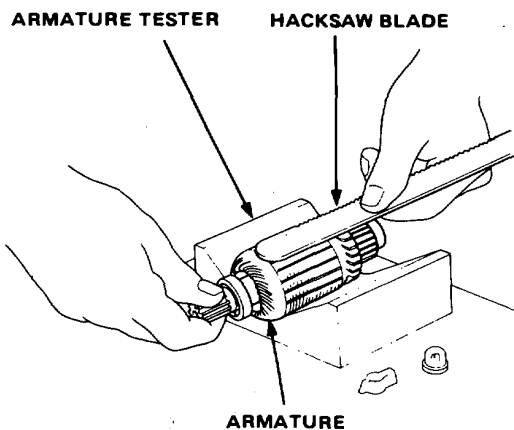
Commutator Mica Depth

	Standard (New)	Service Limit
ND (0.8 kw, 1.0 kw and 1.2 kw) and Hitachi (0.8 kw)	0.5—0.8 mm (0.020—0.031 in)	0.2mm (0.008 in)
Mitsuba (1.0 kw and 1.4 kw)	0.4—0.5mm (0.016—0.020 in)	0.15 mm (0.006 in)

5. Check for continuity between each segment of the commutator. If an open circuit exists between any segment, replace the armature.

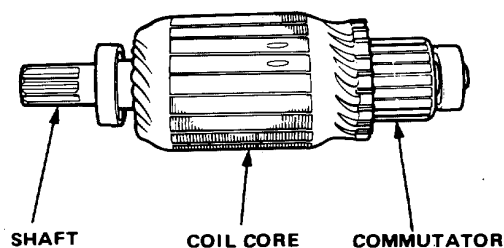


6. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.



If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

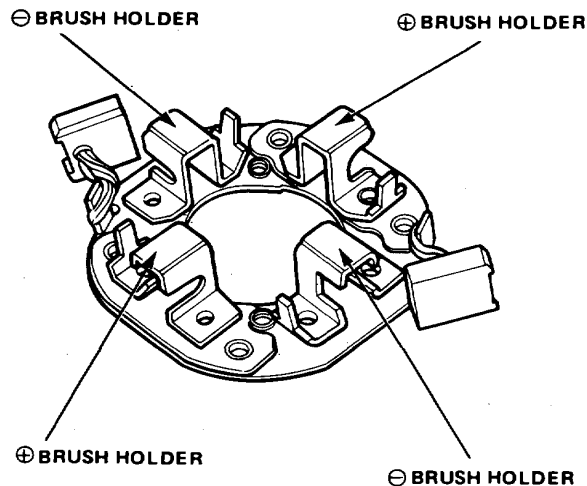
7. With an ohmmeter, check that no continuity exists between the commutator and armature coil core, and between the commutator and armature shaft. If continuity exists, replace the armature.



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.



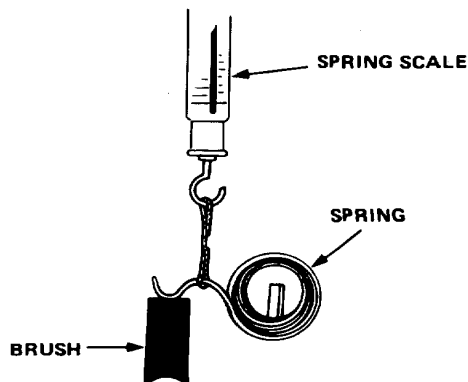
2. Insert the brush into the brush holder, and bring the brush into contact with commutator, then attach a spring scale to the spring. Measure the spring tension at the moment the spring lifts off the brush.

Spring Tension:

ND (1.0 kw and 1.2 kw): 18.5—24.4 N (1.85—2.44 kg, 4.1—5.41 lb)

Mitsuba (1.0 kw and 1.4 kw): 20.5—27.0 N (2.05—2.70 kg, 4.5—6.016 lb)

ND (0.8kw) and Hitachi (0.8kw): 16 N (1.6 kg, 3.52 lb)

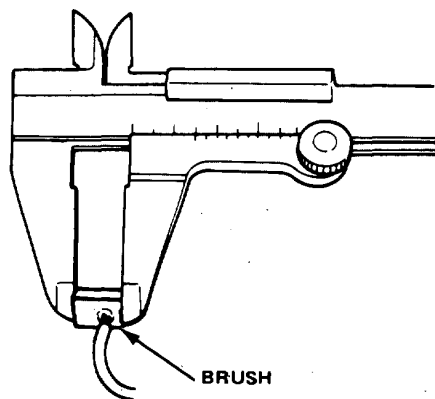


Starter Brush Inspection

Measure brush length. If not within service limit, replace the armature housing and brush holder assembly.

Brush Length

	Standard (New)	Service Limit
ND (1.0 kw and 1.2 kw)	12.5—13.5 mm (0.49—0.53 in)	8.5 mm (0.33 in)
Mitsuba (1.0 kw and 1.4 kw)	14.3—14.7 mm (0.56—0.58 in)	9.3mm (0.37in)
ND (0.8 kw)	15.5—16.5mm (0.61—0.65 in)	10.0 mm (0.39 in)
Hitachi (0.8 kw)	14.5—15.5 mm (0.57—0.61 in)	11.0 mm (0.43 in)

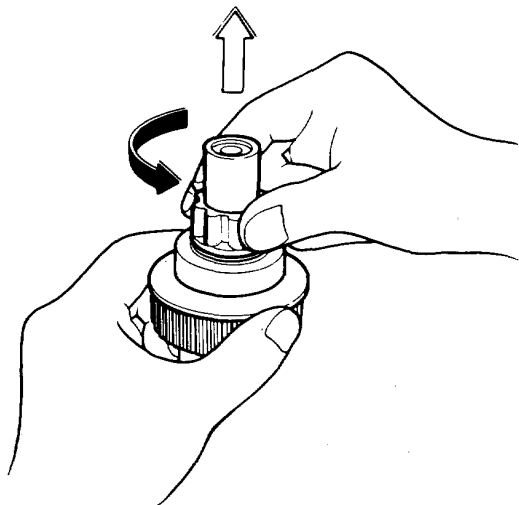


NOTE: To seat new brushes after installing them in their holders, slip a strip of #500 or #600 sandpaper, with the grit side up, over the commutator, and smoothly rotate the armature. The contact surface of the brushes will be sanded to same contour as the commutator.



Overrunning Clutch Check

1. Check if the overrunning clutch moves along the shaft freely. If not, replace the overrunning clutch assembly.
2. Check if the overrunning clutch locks in one direction and rotates smoothly in reverse. If it does not lock in either direction or it locks in both directions, replace the overrunning clutch assembly.

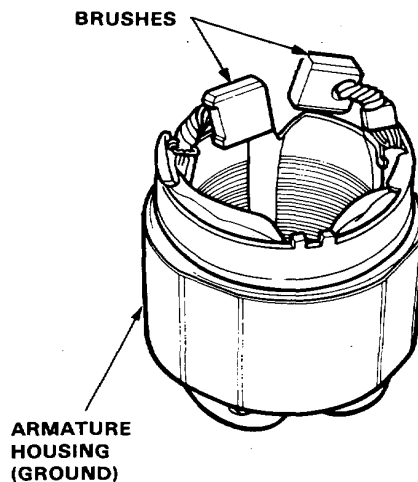


3. Check if the starter drive gear is worn or damaged. If the gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

NOTE: Check condition of the flywheel or torque converter ring gear if the starter drive gear teeth are damaged.

Starter Field Winding Test

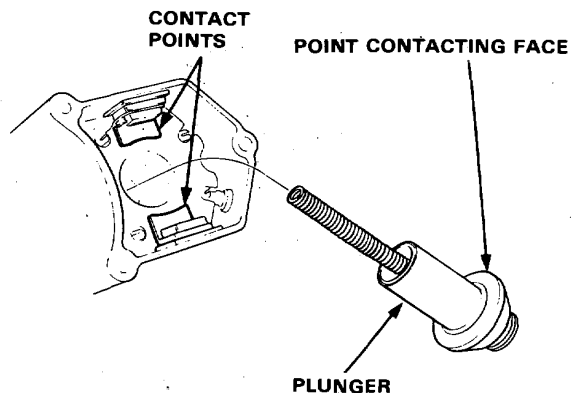
1. Check for continuity between the brushes. If no continuity, replace the armature housing.
2. Check for continuity between each brush and the armature housing (ground). If continuity exists, replace the armature housing.



Starting System

Solenoid Plunger Inspection (1.0kw and 1.2kw, ND type)

Check the contact points, and face of the starter solenoid plunger for burning, pitting or any other defects. If surfaces are rough, recondition with a strip of #500 or #600 sandpaper.

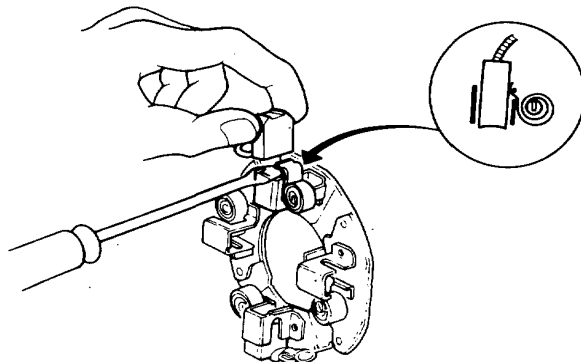


Starter Reassembly

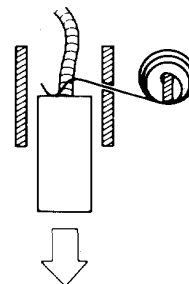
Reassembly the starter in the reverse order of disassembly.

Nippon Denso (1.0kw and 1.2kw) and Mitsubishi (1.0kw and 1.4kw) type.

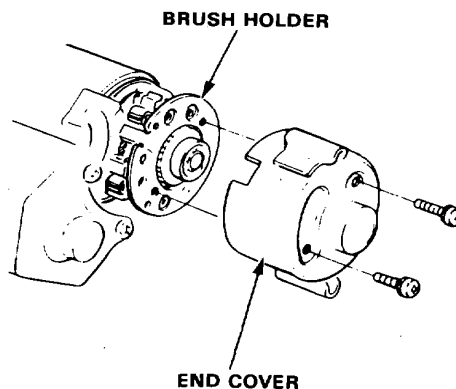
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



2. Install the armature in the housing. Next pry back each brush spring again and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



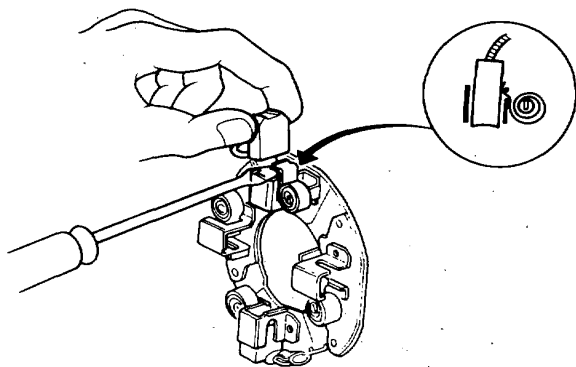
3. Install the end cover on the brush holder.



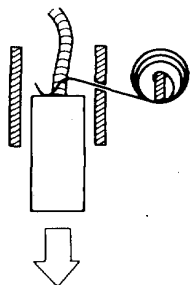


Nippon Denso (0.8 kw) and Hitachi (0.8 kw) type:

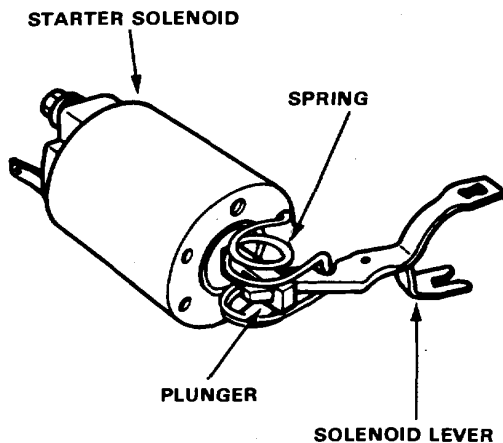
1. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.



2. Install the armature in the housing. Next pry back each brush spring again and push the brush down until it seats against the commutator, then release the spring against the end of the brush.

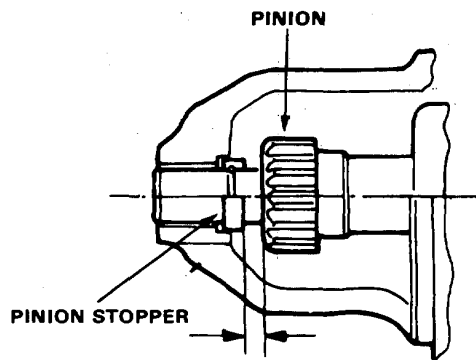


3. For Hitachi (0.8 kw), install the spring as shown.



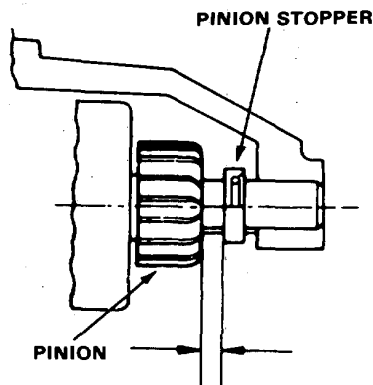
4. After assembling measure the clearance between the pinion stopper and the pinion with the clutch pushed out by the starter solenoid.

Nippon Denso (0.8 kw):



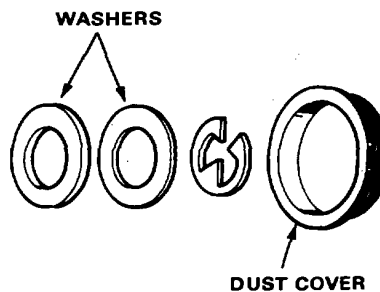
Specified Clearance: 0.1—4.0 mm
(0.004—0.157 in.)

Hitachi (0.8 kw):



Specified Clearance: 0.3—2.5 mm
(0.012—0.098 in.)

If out of the specifications, adjust by changing the number of washers used.



Ignition System

Component Location Index

IGNITION TIMING CONTROL SYSTEM

Troubleshooting, section 6

Inspection and Setting, page 16-47 thru 49

DISTRIBUTOR

Advance Diaphragm Inspection, page 16-52

Top End Inspection, page 16-52

Reluctor and Stator Air Gap Inspection, page 16-53

Reluctor Replacement, page 16-53

Removal/Installation, page 16-54 and 55

Overhaul, page 16-56 and 57

Reassembly, page 16-58

Ignition Coil Test/Replacement, page 16-59 thru 61

IGNITER UNIT Test, page 16-50 and 16-51

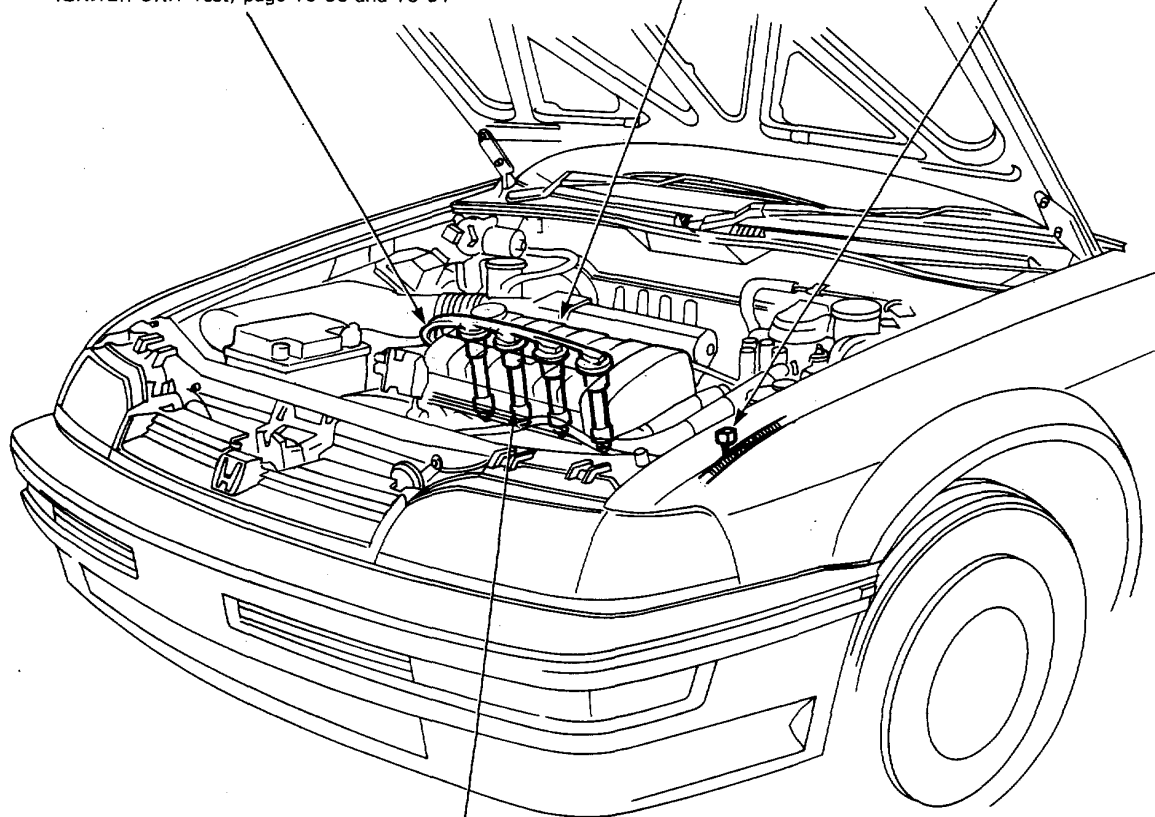
IGNITION WIRES

Inspection and Test, page 16-63

IGNITION TIMING

ADJUSTING CONNECTOR

(Fuel-injected engine)

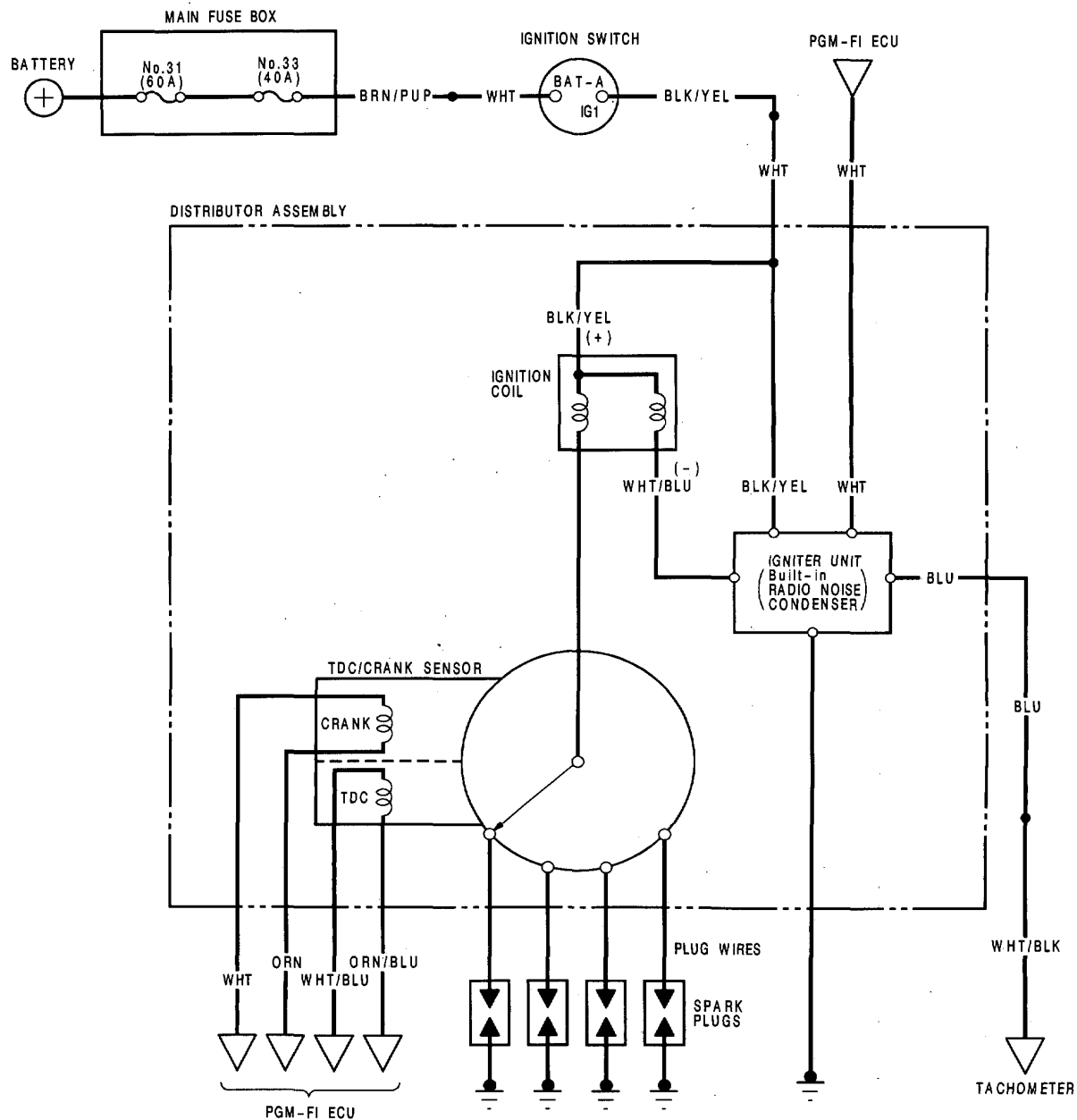


SPARK PLUG

Inspection, page 16-62



Circuit Diagram (Fuel-Injected Engine)

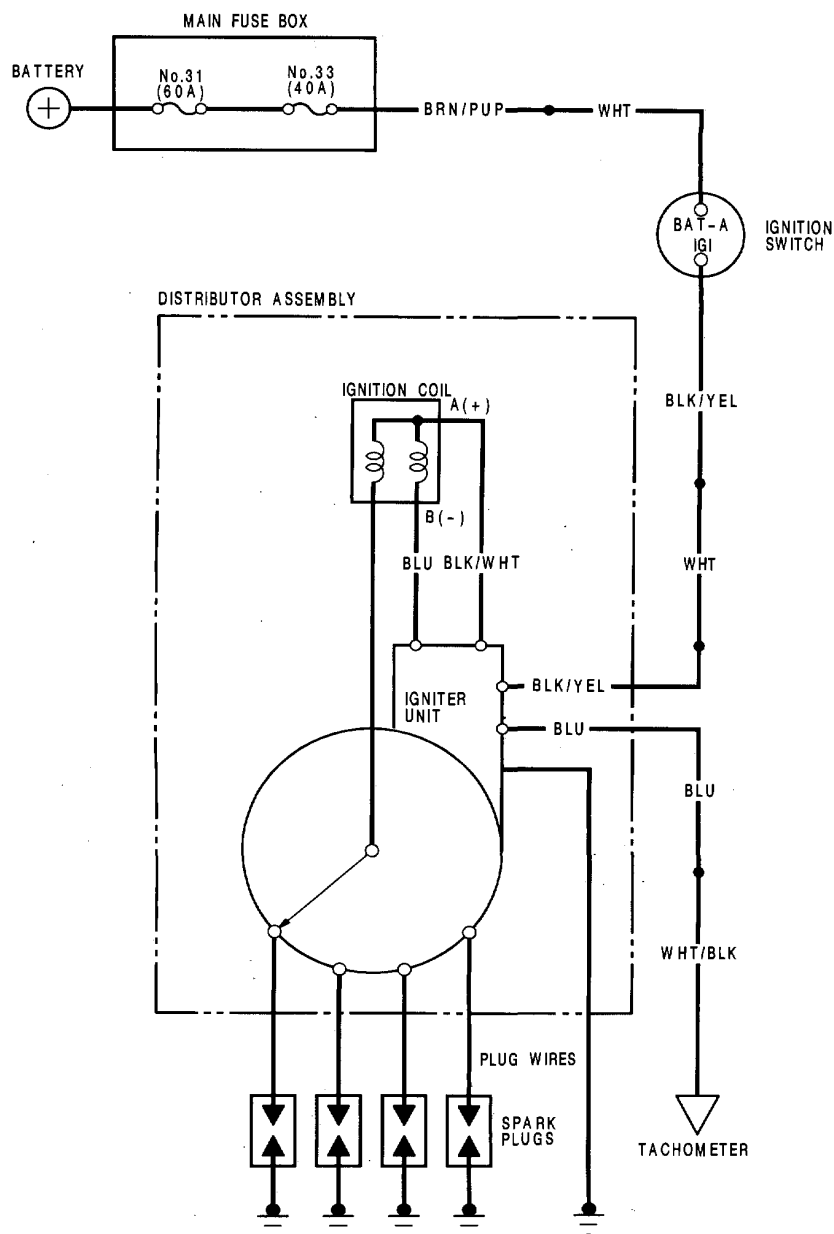


Ignition System

└ Circuit Diagram (Carbureted Engine)

Ignition System

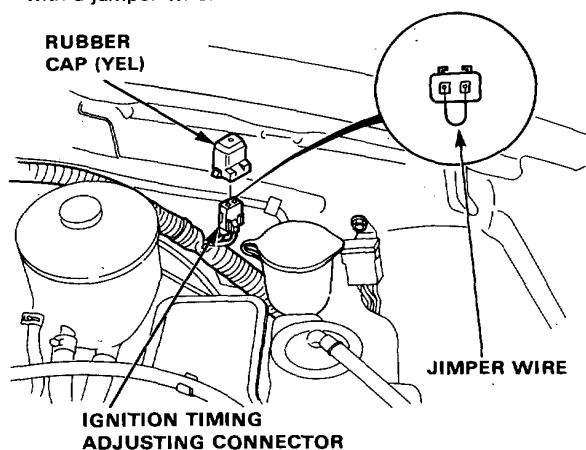
└ Circuit Diagram (Carbureted Engine)



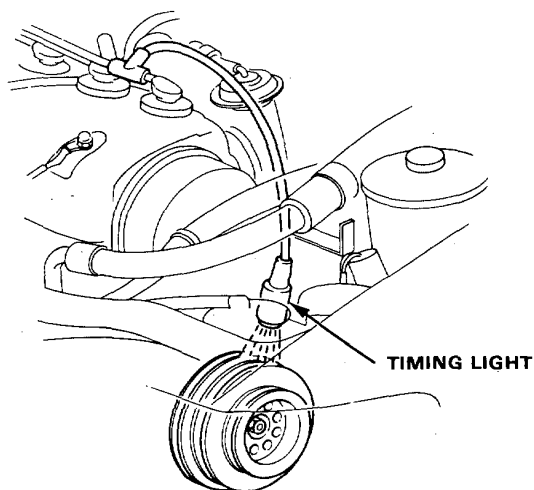


Ignition Timing Inspection and Setting (Fuel-Injected Engine)

1. Start the engine and allow it to warm up (cooling fan comes on.)
2. Remove the rubber cap (YEL) from the ignition timing adjusting connector located left front engine compartment and connect the BRN and GRN/WHT terminals with a jumper wire.



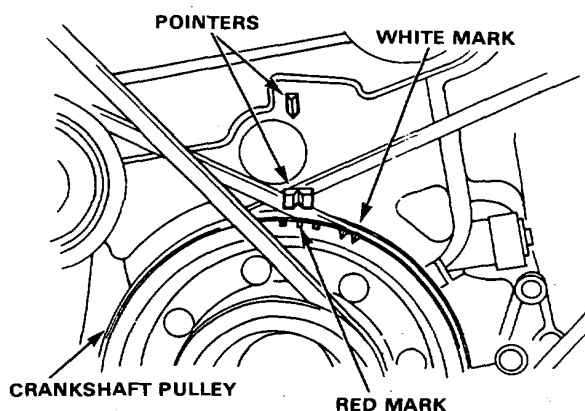
3. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



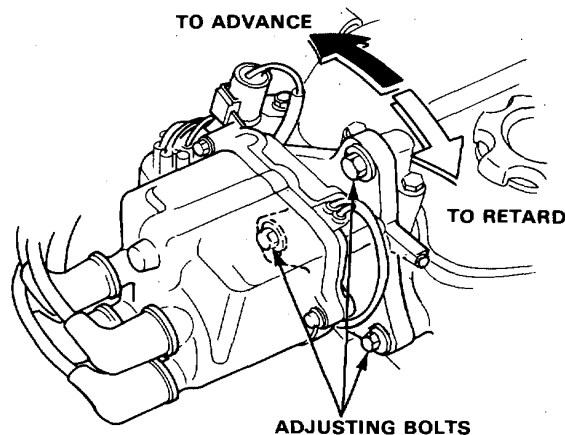
4. Adjust ignition timing, if necessary, to the following specifications.

Ignition Timing

- 1.5 l SOHC (MT, AT)
 - 18°±2° BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral
- 1.6 l SOHC (MT, AT)
 - 18°±2° BTDC (RED) at 780±50 min⁻¹ (rpm) in neutral
- 1.6 l DOHC (MT):
 - 16°±2° BTDC (RED) at 800±50 min⁻¹ (rpm) in neutral
- 1.6 l DOHC (AT):
 - 16°±2° BTDC (RED) at 750±50 min⁻¹ (rpm) in neutral



5. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing counter-clockwise to advance the timing, or clockwise to retard the timing.

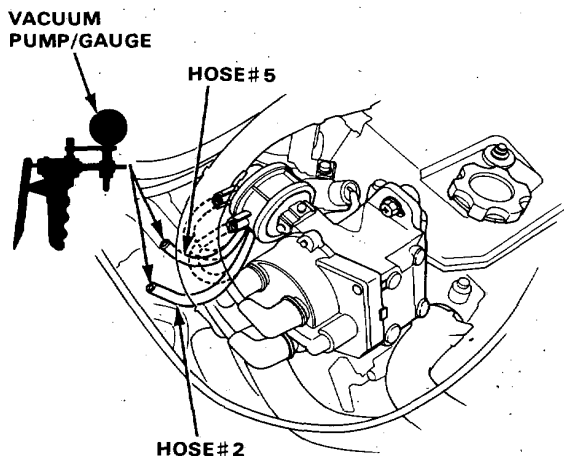


6. Tighten the adjusting bolts and recheck the timing.
7. Remove the jumper wire and install the rubber cap to the ignition timing adjusting connector.

Ignition System

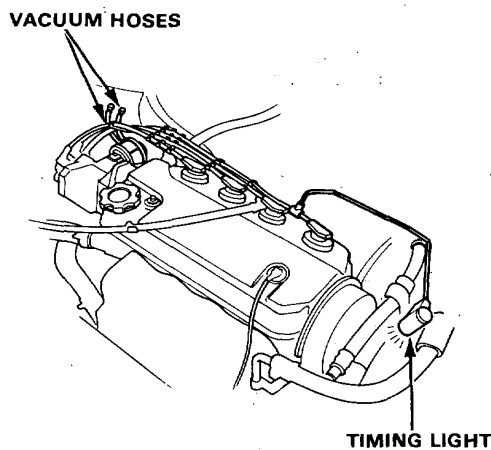
Ignition Timing Inspection and Setting (2-Carbureted Engine)

1. Disconnect the vacuum hoses from the vacuum advance diaphragm, then connect the vacuum pump/gauge to the vacuum hoses.



2. Start the engine and let it idle.
3. When the engine is cool.
Coolant temperature is below [45°C (113°F)]
Check each hose for vacuum. The #2 and #5 hoses should have vacuum.
 - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
 - If the #5 hose has no vacuum, check the #5 hose for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged. If the #5 hose, and the check valve have no problem, replace the thermostatic valve and recheck the #5 hose for vacuum.

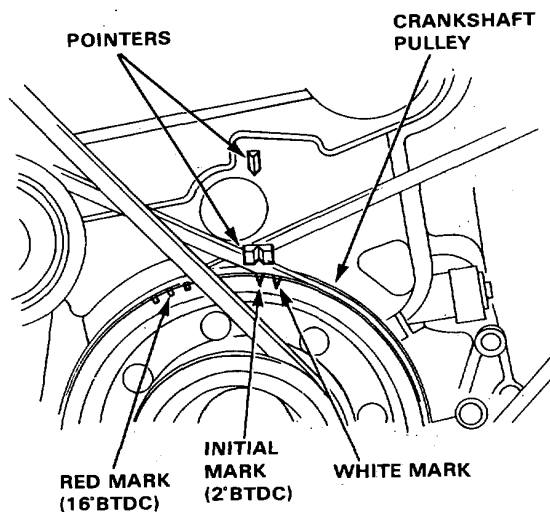
4. Connect the vacuum hoses to the vacuum advance diaphragm and allow the engine to warm up. (cooling fan comes on).
5. Disconnect the #5 hose from the vacuum advance diaphragm and connect the vacuum pump/gauge to the #5 hose.
6. Check the #5 hose for vacuum.
The #5 hose should have no vacuum.
 - If the #5 hose has vacuum, replace the thermostatic valve and recheck the #5 hose for vacuum.
7. Disconnect the vacuum hoses from the vacuum advance diaphragm and plug them.
8. Connect a timing light.



9. While the engine idles, point the light toward the pointer on the timing belt cover.



10. Align the timing initial mark on the crankshaft pulley to the pointer.

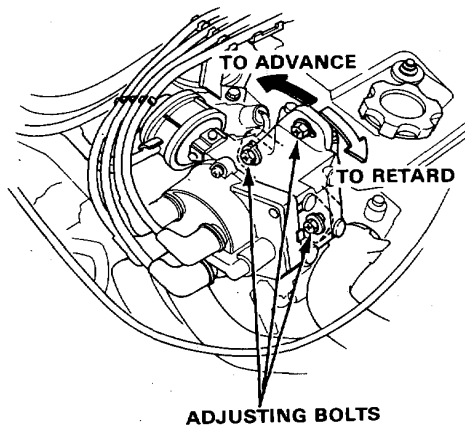


11. Timing when initial timing mark is aligned to the pointer.

Initial Timing
2° BTDC

- Manual Transmission [at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral]
- Automatic Transmission [at $700 \pm 50 \text{ min}^{-1}$ in gear]

12. Adjust as necessary by loosening the distributor adjusting bolts, and turn the distributor housing clockwise to retard the timing, or counterclockwise to advance the timing.



13. Tighten the distributor adjusting bolts, then recheck the timing.
14. Connect the vacuum hose to the vacuum advance diaphragm and inspect ignition timing at idle.

Ignition Timing

- 1.6 l : $16^\circ \pm 2^\circ$ BTDC (Red)
1.4 l : $18^\circ \pm 2^\circ$ BTDC (Red)

- Manual Transmission [at $750 \pm 50 \text{ min}^{-1}$ (rpm) in neutral]
- Automatic Transmission [at $700 \pm 50 \text{ min}^{-1}$ in gear]

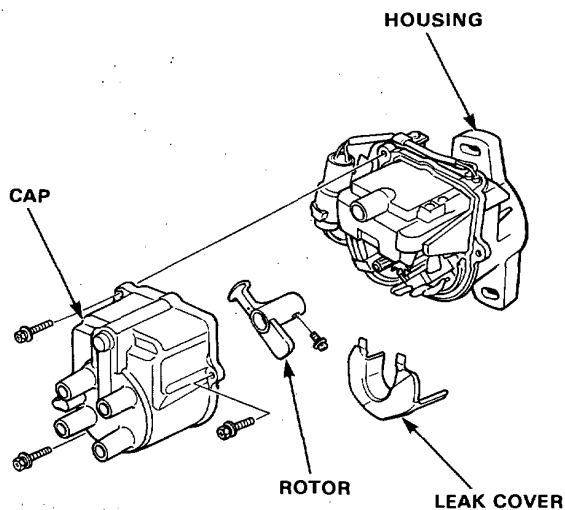
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

Ignition System

Igniter Unit Input Test (Fuel-injected engine)

NOTE: If the check engine warning light comes on, see section 6.

1. Remove the distributor cap.
2. Remove the rotor and rearm cover.

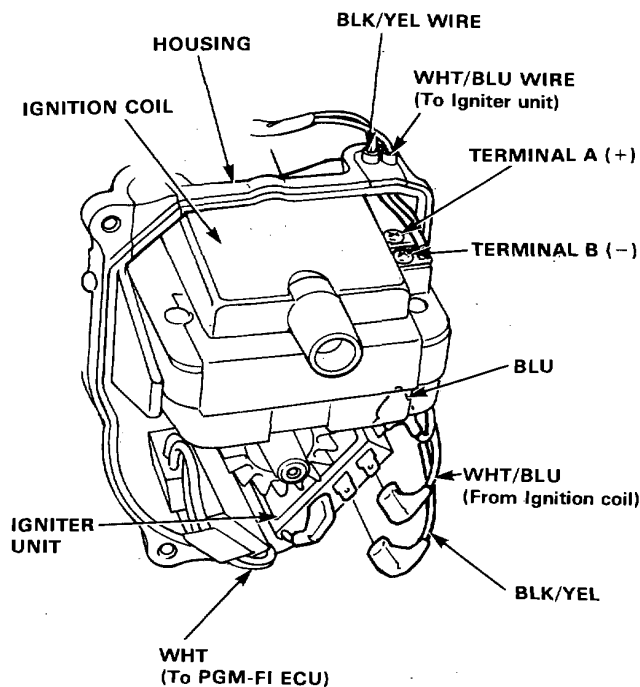


3. With the ignition switch on, there should be battery voltage between the terminal (+) and body ground.

- If there is battery voltage, go to step 4.
- If there is no voltage, check for
 - An open in the WHT wire or BLK/YEL wire.
 - Disconnected terminals.

4. Disconnect the BLK/YEL wire from the igniter unit. There should be battery voltage between the BLK/YEL (+) wire and body ground.

- If there is battery voltage, go to step 5.
- If there is no voltage, check for an open in the BLK/YEL wire between the ignition coil and igniter unit.



5. Disconnect the WHT/BLU wire from the igniter unit. There should be battery voltage between the WHT/BLU (+) wire and body ground.

- If there is battery voltage, go to step 6.
- If there is no voltage, check for;
 - Ignition coil test.
 - An open in the WHT/BLU wire between the ignition coil and igniter unit.
 - Disconnected terminals.

6. Check for continuity between the igniter body and distributor housing.

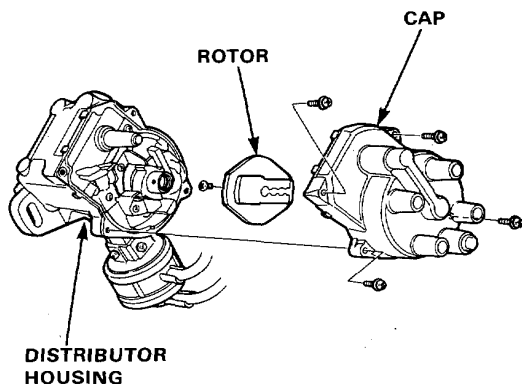
7. If all tests ok, yet the system still fails to work, replace the igniter unit assembly.



Igniter Unit Input Test (Carbureted Engine)

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU¹ and BLU² are not the same).

1. Remove the cap and rotor from the distributor.
(Ensure caps contact point ~ see next page * is clear of distributor body before lifting out cap).



2. With the ignition switch ON. Check the battery voltage between the BLK/YEL (+) wire and body ground.

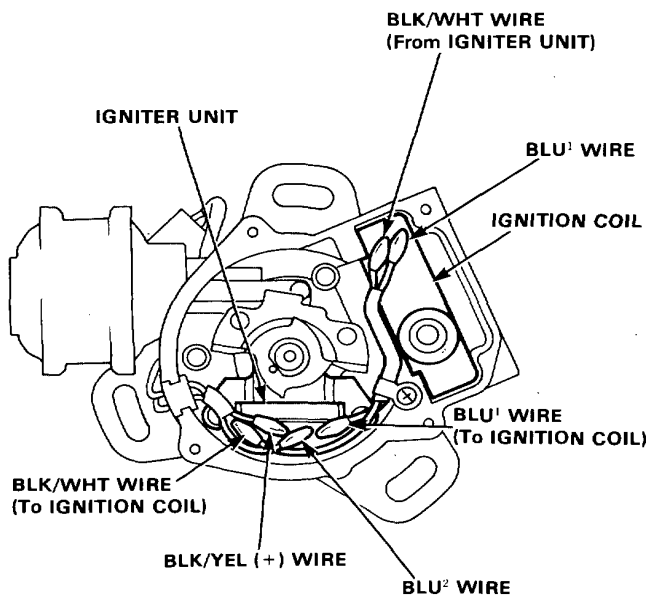
- If there is battery voltage, go to step 3.
- If there is no voltage, check for an open in WHT or BLK/YEL wire.

3. With the ignition switch OFF. Check for continuity between the BLK/WHT wire and BLU¹ wire on the igniter unit.

- If there is continuity, go to step 4.
- If there is no continuity, check for:
 - An open in the BLK/WHT wire or BLU¹ wire between the igniter unit and ignition coil.
 - Ignition coil test (see page 16-55)

4. Check for continuity between the igniter unit and distributor housing.

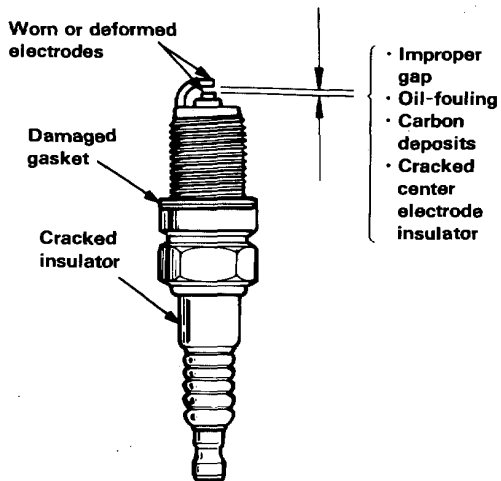
5. If all tests OK, yet the system still fails to work, replace the igniter unit assembly.



Ignition System

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for :



Burned or worn electrodes may be caused by :

- Lean fuel mixture
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

Fouled plug may be caused by :

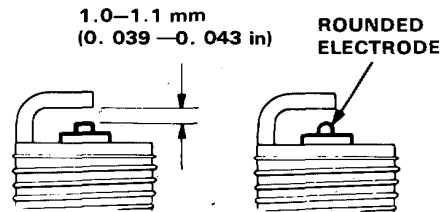
- Rich fuel mixture
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below.

Spark Plug :

Standard
BCPR6E-11 (NGK)
Q20PR-V11 (ND)

Optional
BCPR7E-11 (NGK)
Q22PR-U11 (ND)



3. Adjust the gap with a suitable gapping tool.

Electrode Gap: 1.0—1.1 mm (0.039—0.043 in)

4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft) .

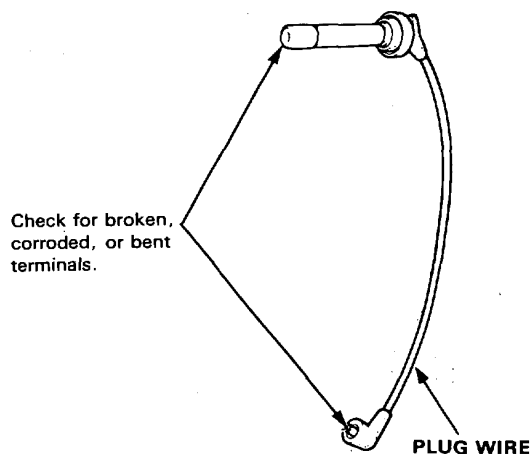
NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.



Ignition Wire Inspection and Test

CAUTION: Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wire or the conductor may be broken.

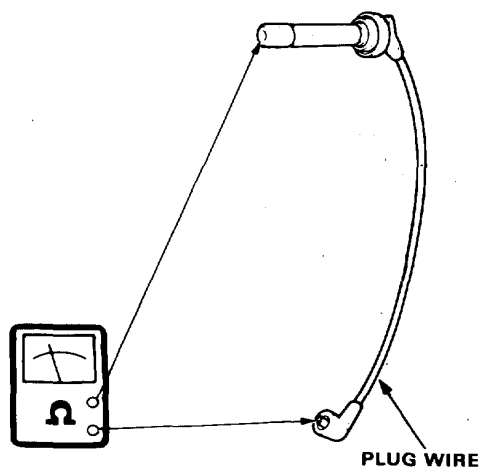
1. Check the condition of the wire terminals. If any terminal is corroded, clean it, and if it is broken or distorted, replace the wire.



2. Connect ohmmeter probes and measure resistance.

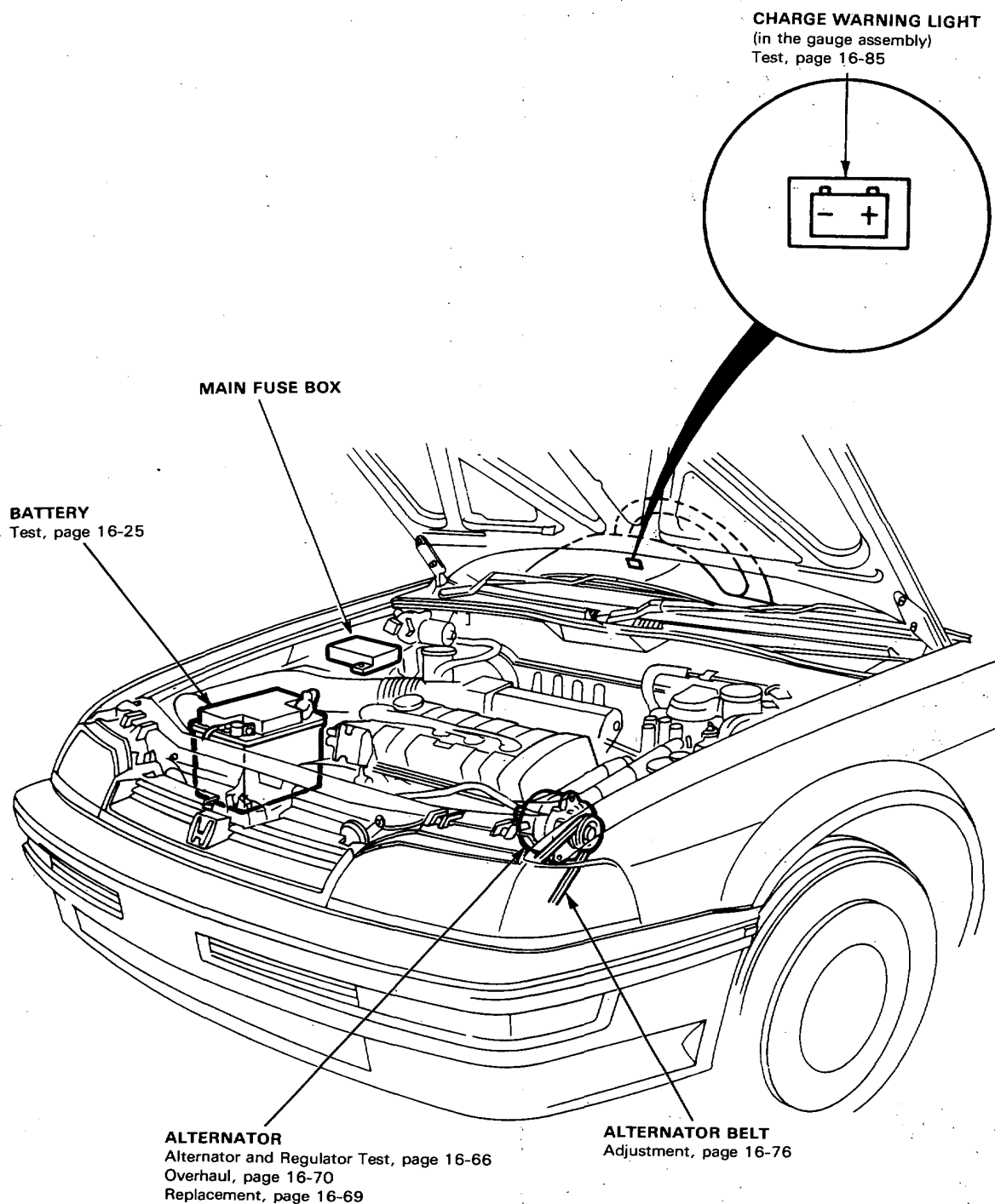
Ignition Wire Resistance :
25, 000 ohms max. at 20°C (70°F)

3. If resistance exceeds 25,000 ohms, replace the ignition wire.



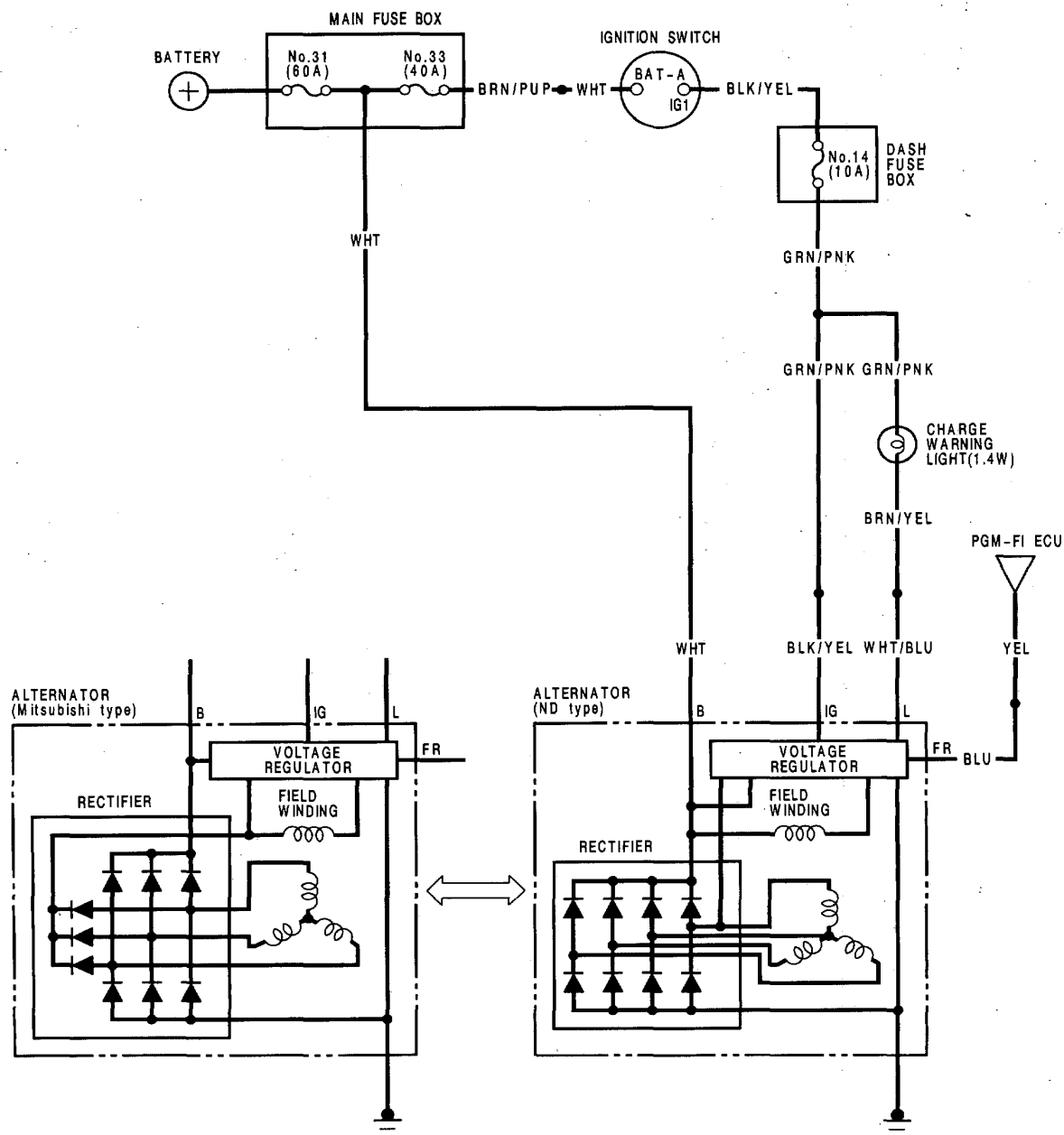
Charging System

Component Location Index





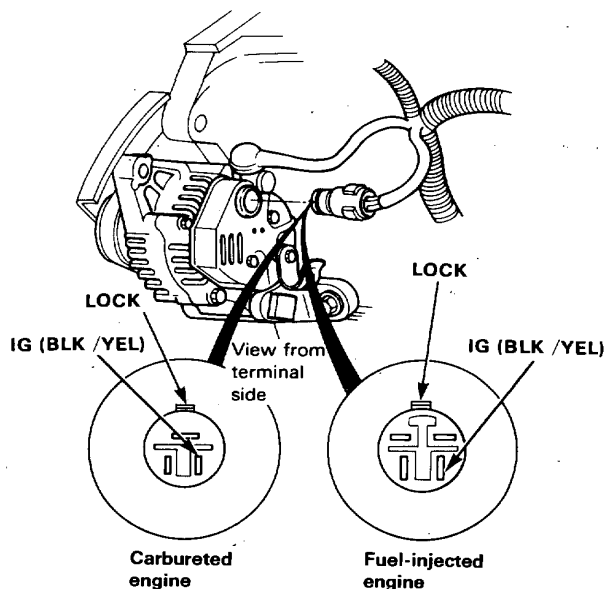
Circuit Diagram



Charging System

Alternator and Regulator Test

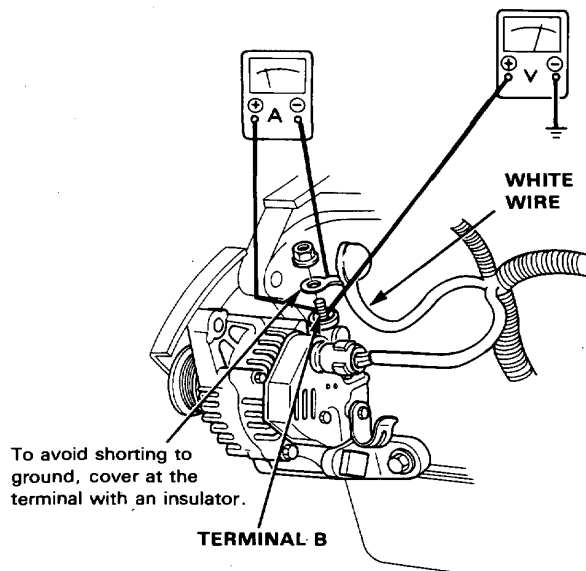
1. First make sure you have a good battery, and that the alternator belt, and connections at the alternator and main fuses are good. Next, check the No. 14 (10A) fuse in the dash fuse box. (If blown, the charge warning light will come on even if the system is working properly.)
2. Disconnect the alternator connector from the alternator.
With the ignition switch on, there should be battery voltage between the IG (BLK /YEL) terminal and body ground.



- If there is no voltage, check for an open in the BLK /YEL wire between the dash fuse box and voltage regulator.
- If there is battery voltage, go to step 3.

3. If these check OK, connect a voltmeter between the alternator terminal B and body ground, and an ammeter (100 amp capacity or higher) between the alternator terminal B and the white wire as shown. (An inductive pick up can be used instead of disconnecting the white wire.)

NOTE: Disconnect the negative terminal of battery and disconnect the WHT wire of B terminal, and connect the ammeter as shown.



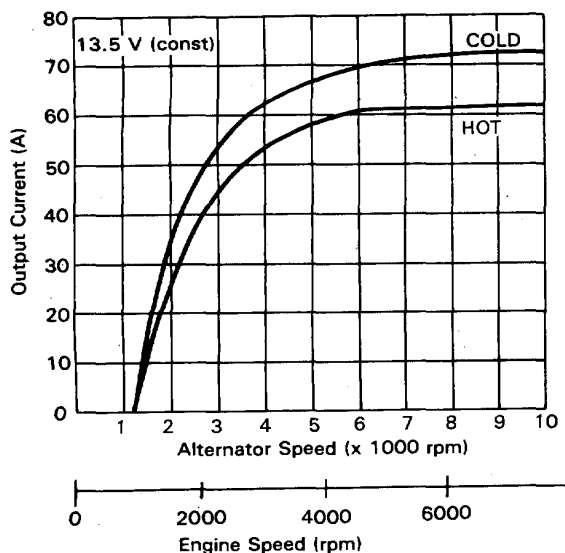
4. Start the engine, and turn on the headlights, blower motor, rear window defogger, etc.

NOTE: If voltage stays above 13.5 V, apply electrical load more to lower the voltage to less than 13.5 V. If the voltage exceeds 16 V, stop the engine and replace the voltage regulator.



5. Compare the readings to the chart below. If no output or below specification, go to step 7. If output is within specification, go to step 6.

NOTE: Subtract 5 to 10 amperes from the maximum reading due to engine operation.



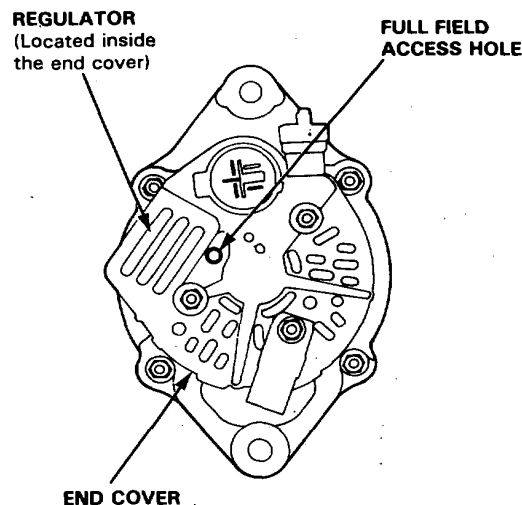
6. Turn off all loads in step 4, then measure the alternator output voltage at 1,500 rpm.

- If the voltage is between 13.9 V and 15.1 V, the alternator and regulator are OK. If the charge warning light is still on, see Charge Warning Light Test. (see page 16-68)

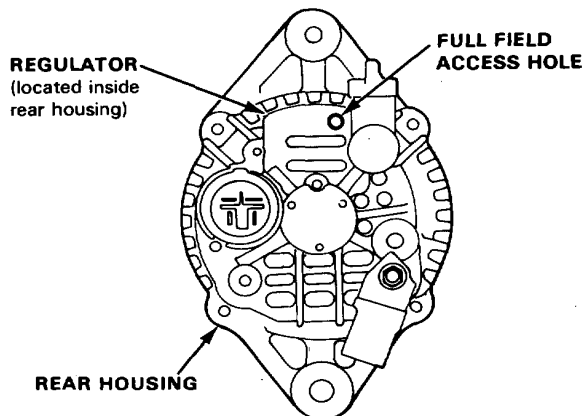
7. Perform a full-field test: Insert a short screwdriver into the full field access hole at the back of the alternator. While grounding the screwdriver and check amperage reading.

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.

Nippon Denso type:



Mitsubishi type:



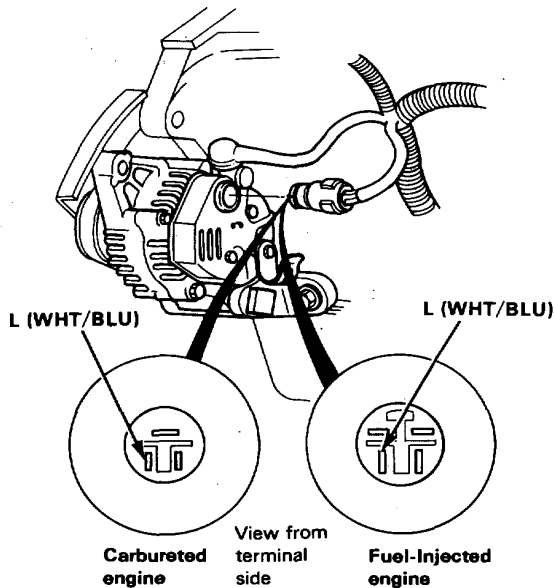
- If the amperage is not within specification, replace the alternator.
- If the amperage is within specification, replace the voltage regulator.

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 16-66).

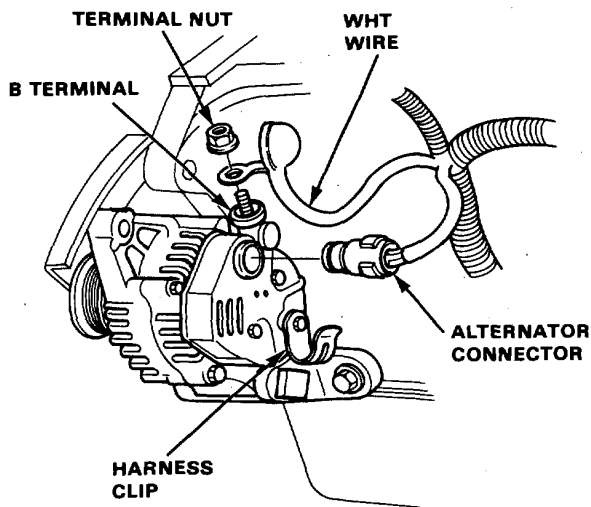
2. Start the engine and let it idle. The charge warning light should go off. If it stays on this time, check the alternator and regulator (see page 16-66).



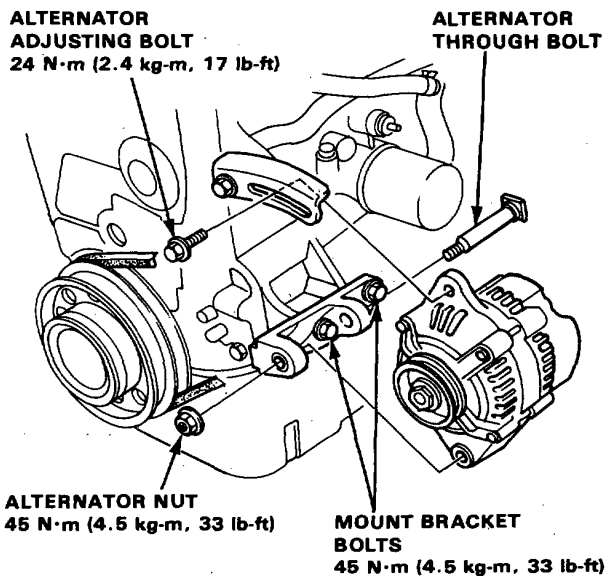
Alternator Replacement

NOTE: After installation, make sure that the wires are clamped.

1. Disconnect the ground wire from the battery negative (-) post.
2. Remove the washer fluid Reservoir.
3. Disconnect the alternator connector from the alternator.
4. Remove the terminal nut and the WHT wire from the B terminal.



5. Remove the adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.
6. Remove the alternator through bolt, then remove the alternator.



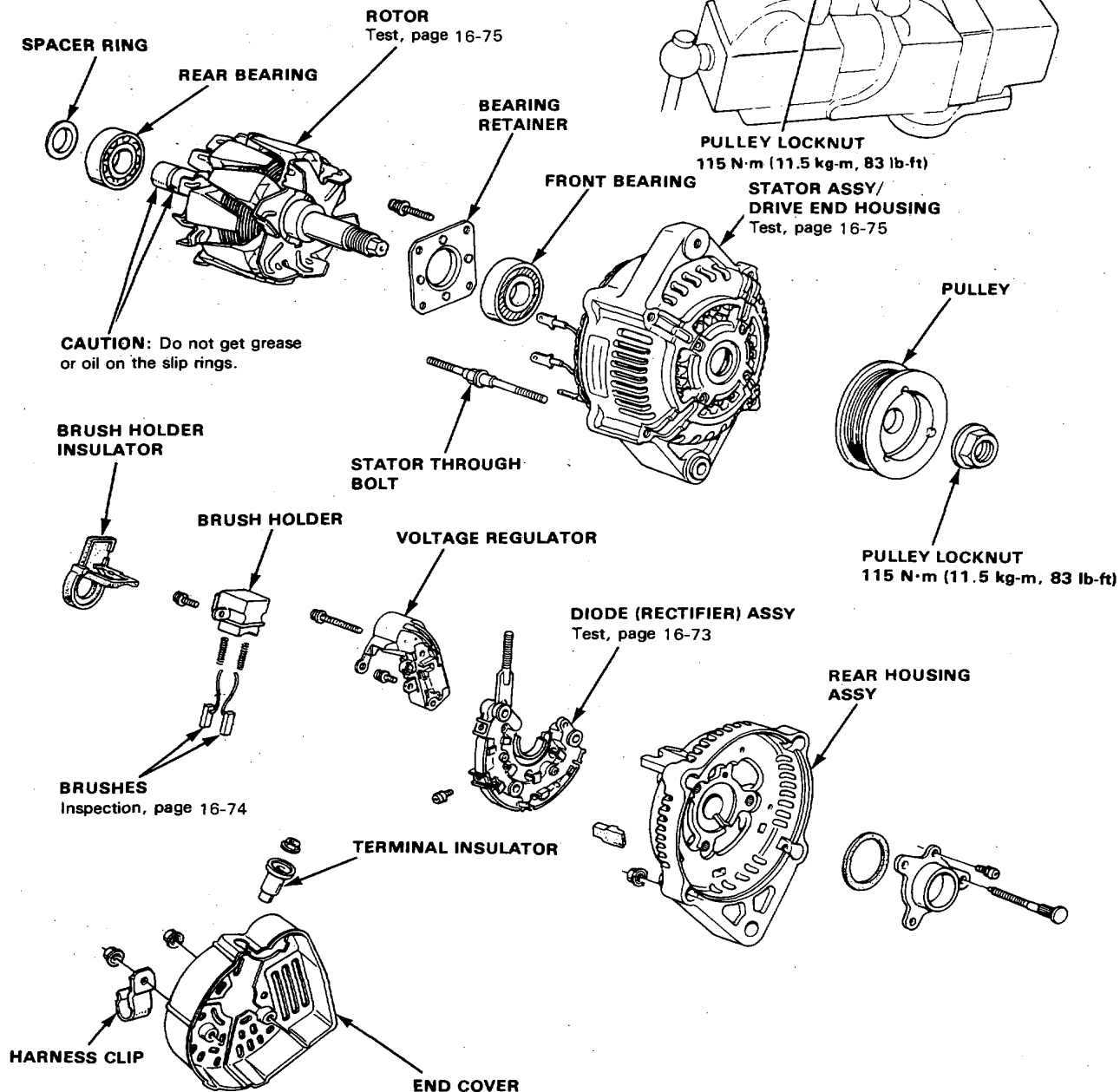
7. If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.
8. adjust the alternator belt tension after installation (see page 16-76).

Charging System

Alternator Overhaul (ND type)

NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

To remove the pulley and rotor, use 10 mm and 22 mm box wrenches to loosen the pulley locknut. Use an impact wrench to remove the nut if necessary.

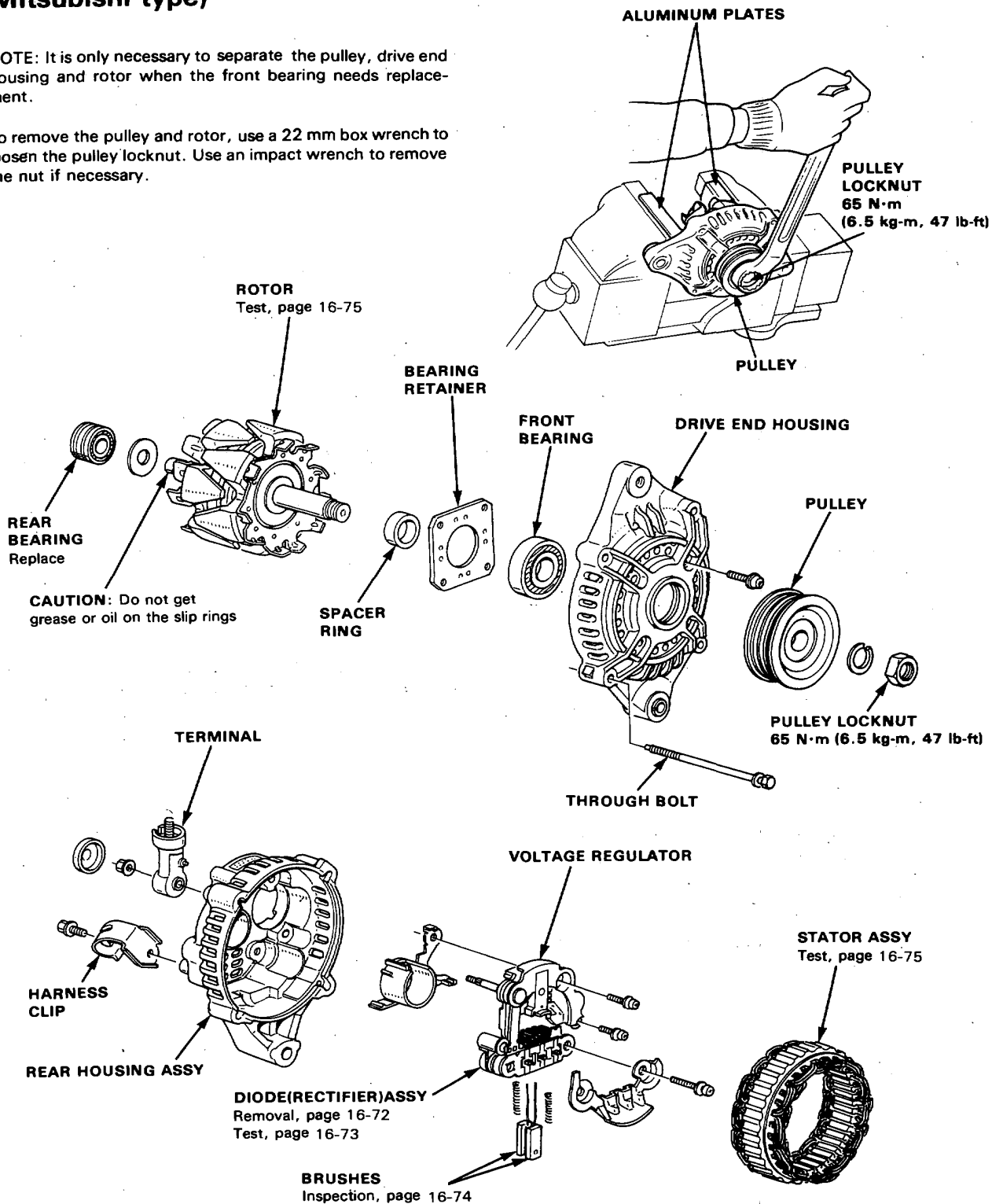




(Mitsubishi type)

NOTE: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

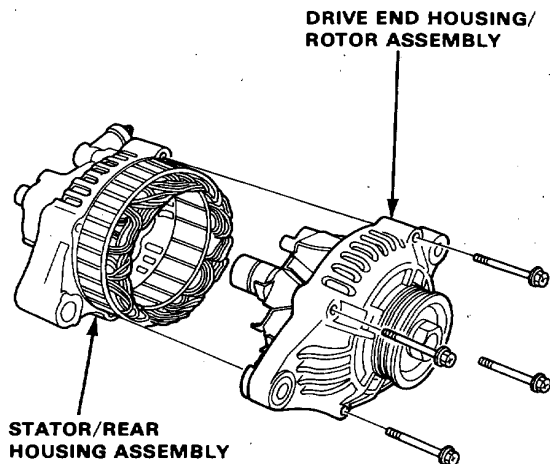
To remove the pulley and rotor, use a 22 mm box wrench to loosen the pulley locknut. Use an impact wrench to remove the nut if necessary.



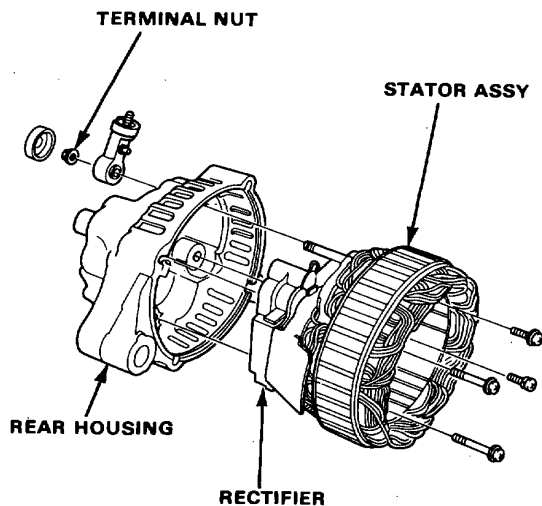
Charging System

Rectifier Removal (Mitsubishi type)

1. Separate the drive end housing/rotor assembly from the stator/rear housing assembly by removing 4 bolts.

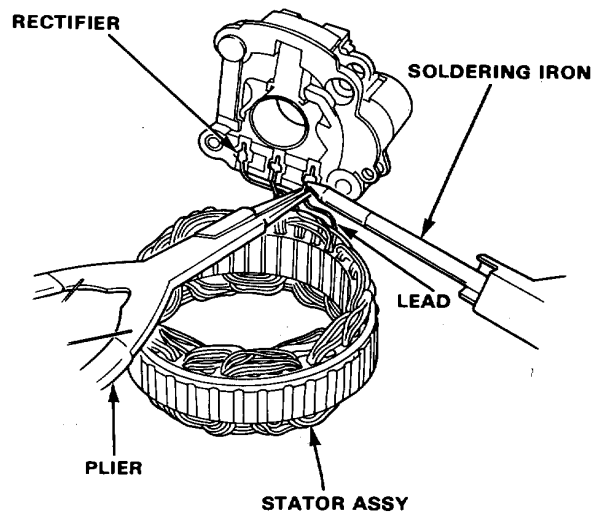


2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut from the rear housing.



3. Unsolder the rectifier from the stator leads.

NOTE: Pinch the stator lead with pliers to take away heat.



CAUTION: When installing the rectifier, use only a rosin core type solder or solder joints will corrode.

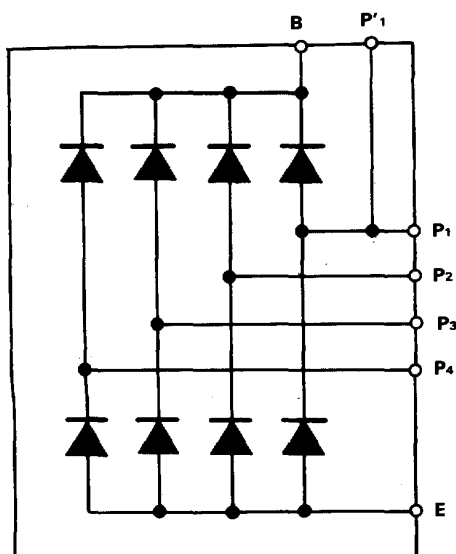
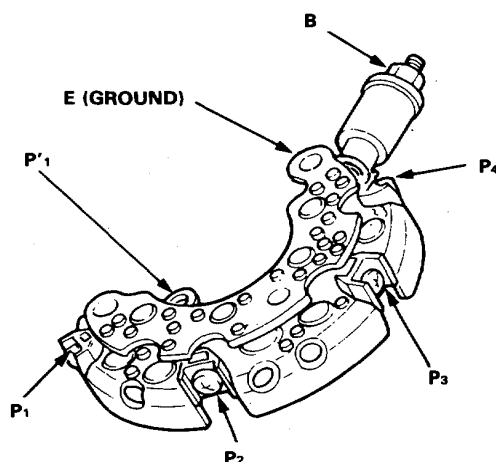


Rectifier Test

Nippon Denso type:

NOTE: The diodes are designed to pass current in one direction and block current in the opposite direction. Since the alternator rectifier is made up of eight diodes (4 pairs), each diode must be tested for continuity in both directions; a total of 16 checks.

1. Check for continuity in each direction, between the B and P (of each diode pair) terminals, and between the E (ground) and P (of each diode pair) terminals. All diodes should have continuity in only one direction.

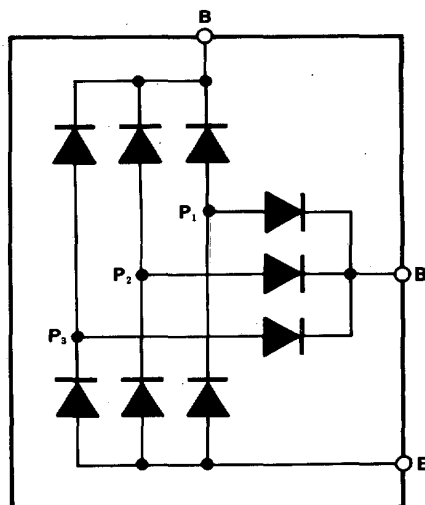
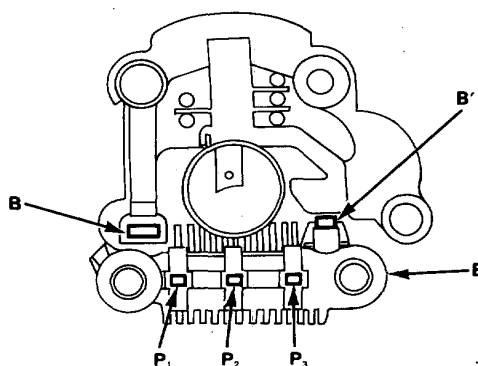


2. If any of the 8 diodes fails, replace the rectifier assembly (diodes are not available separately).

Mitsubishi type:

NOTE: The diodes are designed to pass current in one direction and block current in the opposite direction. Since the alternator rectifier is made up of nine diodes, each diode must be tested for continuity in both directions: a total of 18 checks.

1. Check for continuity in each direction, between the B and P (of each diode pair) terminals, and E (ground) and P (of each diode pair) terminals, and B' and P (of each diode pair) terminals. All diodes should have continuity in only one direction.



2. If any of the 9 diodes fails, replace the rectifier assembly (diodes are not available separately).

Charging System

Alternator Brush Inspection

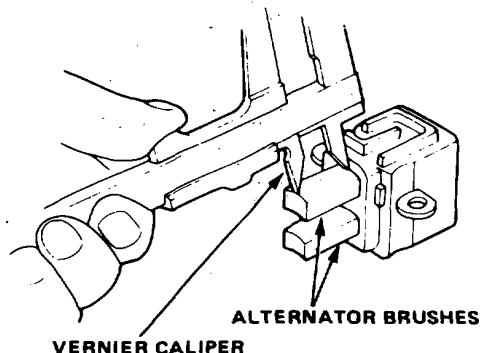
CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

Nippon Denso type:

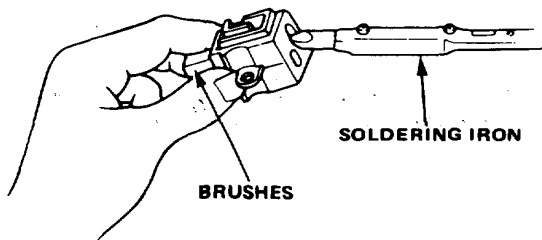
1. Remove the end cover, then take out the brush holder by removing its 2 screws.
2. Measure length of the brushes with a vernier caliper.

Alternator Brush Length:

Standard : 15.5 mm (0.61 in)
Service Limit: 5.3 mm (0.21 in)



If the brushes are not within the service limit, replace them.

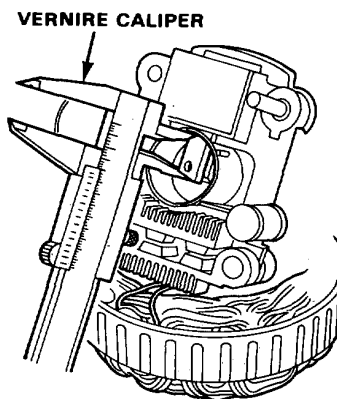


Mitsubishi type:

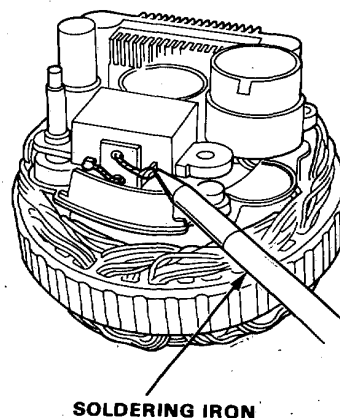
1. Separate the drive end housing /rotor assembly from the stator/rear housing assembly by removing 4 screws (see page 16-72).
2. Separate the rear housing from the stator assembly by removing 4 screws and the terminal nut from the rear housing (see page 16-72).
3. Measure length of the brushes with a vernier caliper.

Alternator Brush Length:

Standard : 22.0 mm (0.90 in)
Service Limit : 8.0 mm (0.31 in)



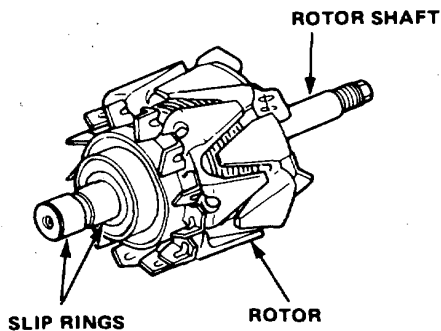
If the brushes are not within the service limit, replace them.





Rotor Slip Ring Test

1. Check that there is continuity between the slip rings.
2. Check that there is no continuity between the rings and the rotor or rotor shaft.

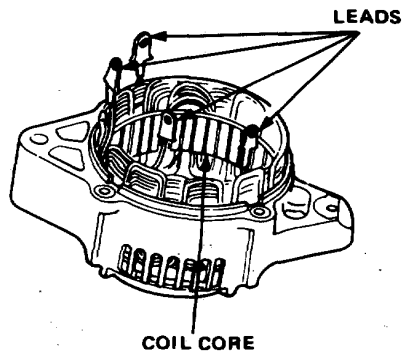


3. If the rotor fails either continuity check, replace it.

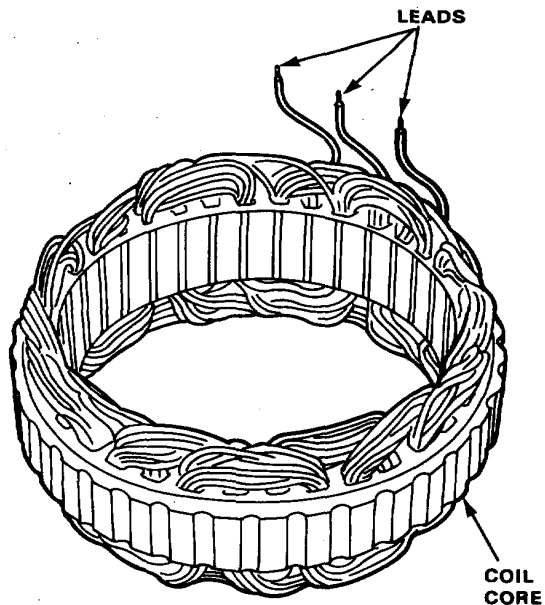
Stator Test

1. Check that there is continuity between each pair of leads.
2. Check that there is no continuity between each lead and the coil core.

Nippon Denso type:



Mitsubishi type:



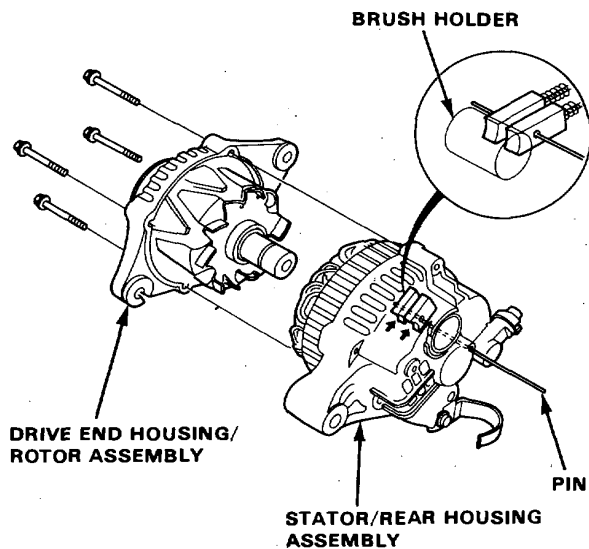
3. If the coil fails either continuity check, replace the stator.

Charging System

Alternator Reassembly (Mitsubishi type)

Reassemble the alternator in the reverse order of disassembly.

1. Insert a pin into a hole on the brush holder to prevent the brushes from protruding.



2. Set the drive end housing /rotor assembly into the stator/rear housing assembly, tighten the through bolts, then pull out the pin.

Alternator Belt Adjustment

1. Apply a force of 98 N (10 kg, 22 lb) and measure the deflection between the alternator and the crankshaft pulley.

Deflection: 9—11 mm (0.35—0.43 in)

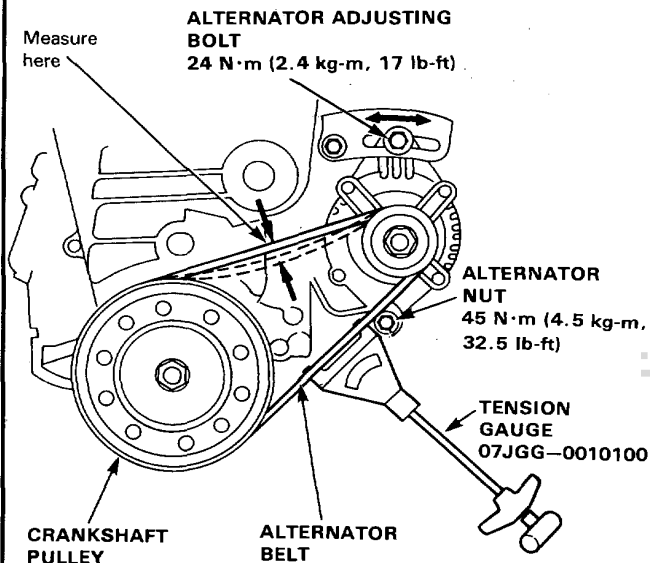
NOTE: On a brand-new belt, the deflection should be 7—9 mm (0.25—0.35 in) when first measured.

With Tension Gauge Test

Attach the tension gauge to the alternator belt as shown. Measure the belt tension.

Tension: 35 kg (77 lb)

NOTE: On a brand-new belt, the tension should be 50 kg (110 lb) when first measured.



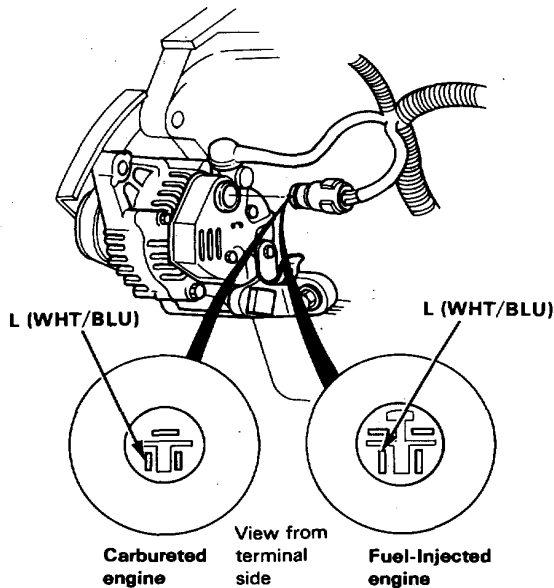
2. Loosen the alternator adjusting bolt and nut.
3. Move the alternator to obtain the proper belt tension, then retighten the adjusting bolt and nut.
4. Recheck the deflection of the belt.

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 16-66).

2. Start the engine and let it idle. The charge warning light should go off. If it stays on this time, check the alternator and regulator (see page 16-66).



Cooling Fan System

Component Location Index

A/C DIODE
See Air Conditioner,
section 15

**CONDENSER FAN
RELAY**
Wire colors: BLU/RED,
BLU/BLK, WHT and
BLK/YEL
Test, page 16-80

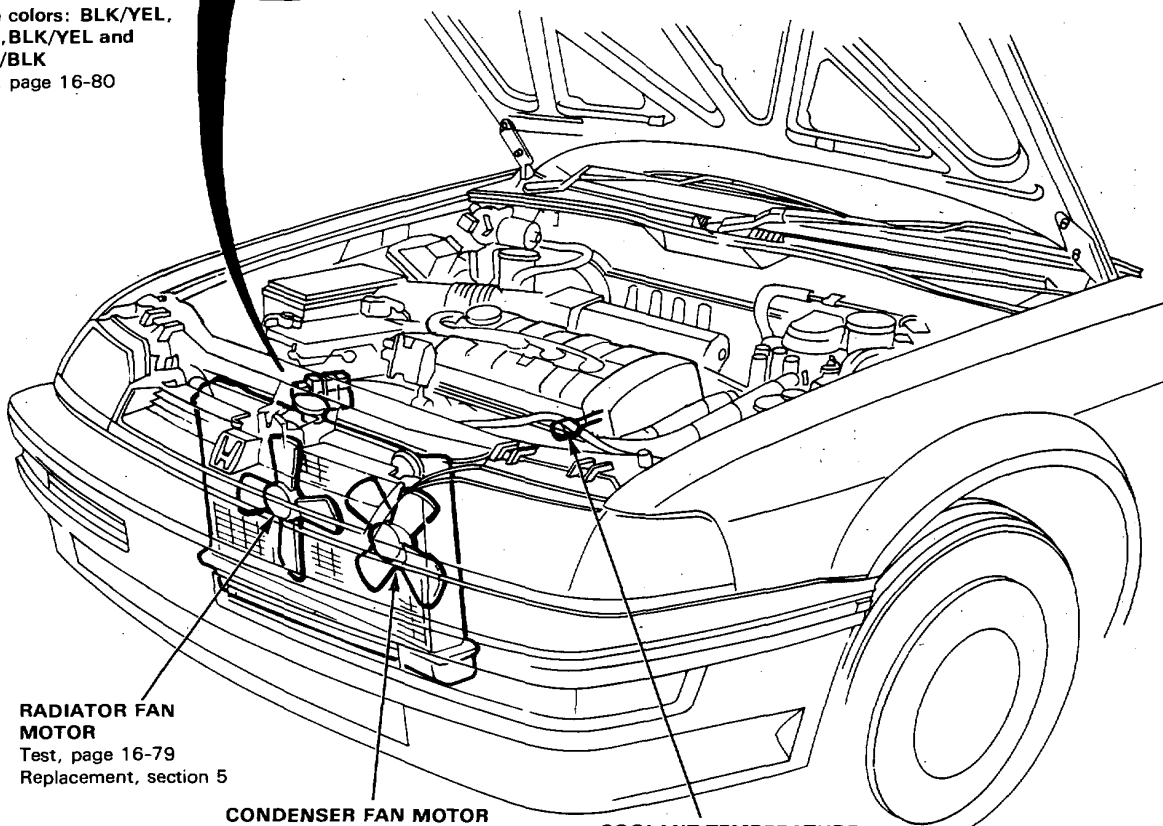
A/C COMPRESSOR CLUTCH RELAY
Wire colors: YEL, RED, WHT
and BLK/YEL

**RADIATOR FAN
RELAY**
Wire colors: BLK/YEL,
BLU, BLK/YEL and
BLU/BLK
Test, page 16-80

**RADIATOR FAN
MOTOR**
Test, page 16-79
Replacement, section 5

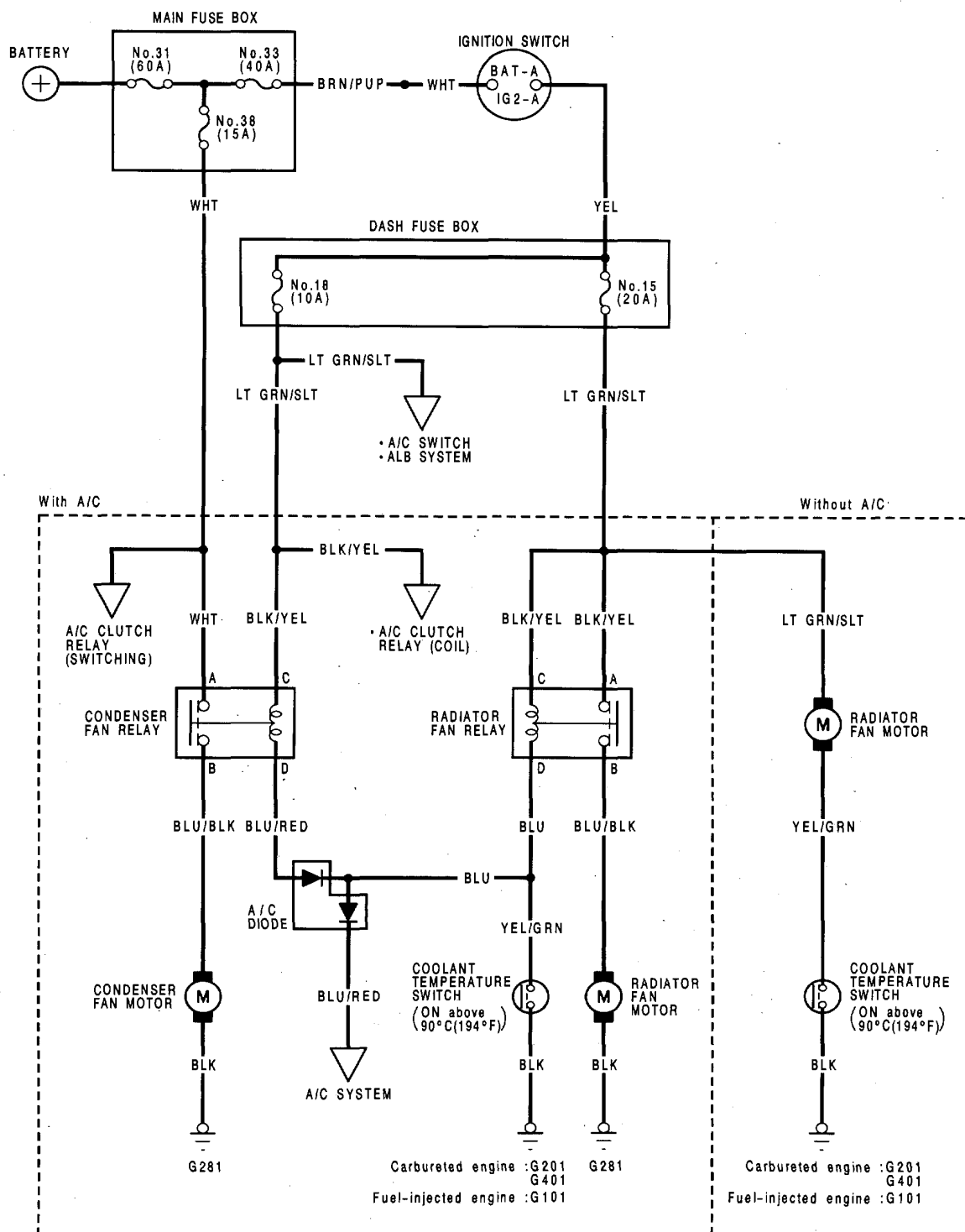
CONDENSER FAN MOTOR
Test, page 16-79
Replacement, section 5

**COOLANT TEMPERATURE
SWITCH**
Test, page 16-80



Cooling Fan System

Circuit Diagram

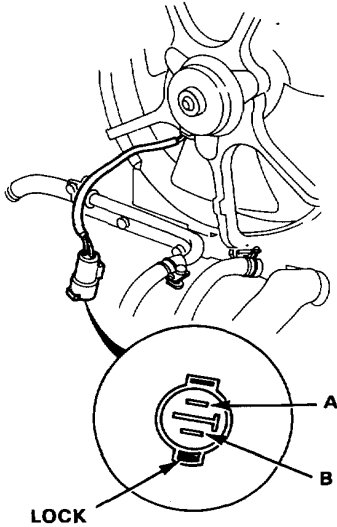




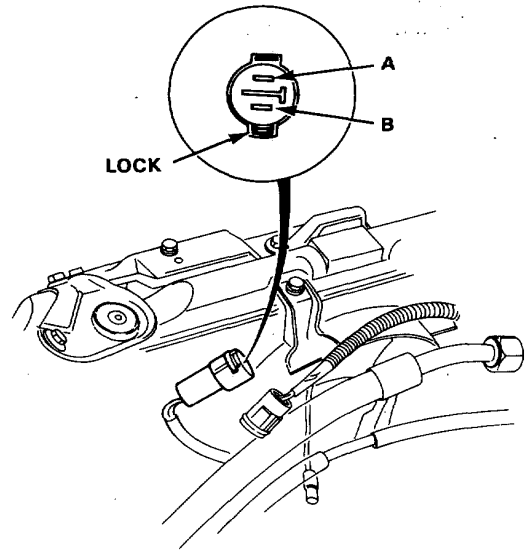
Fan Motor Test

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.

Radiator Fan Motor :



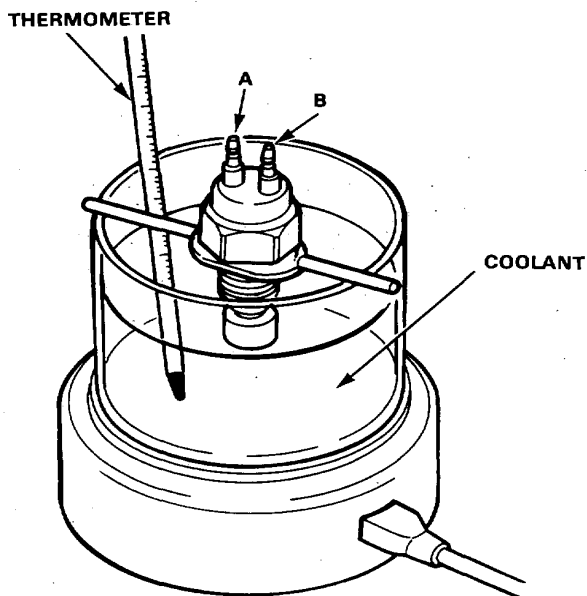
Condenser Fan Motor :



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.

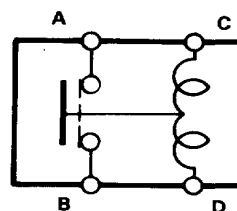
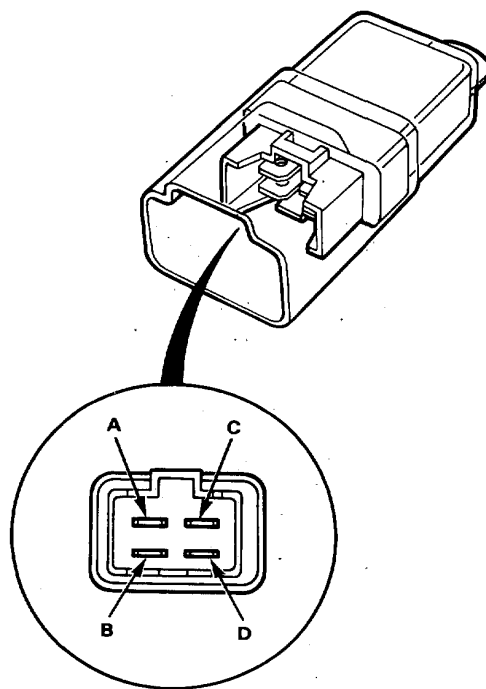


3. Heat the coolant and check coolant temperature with a thermometer (see table below).
4. Check for continuity between the A and B terminals according to the table.

Temperature		Terminal	
		A	B
Above	88.5-91.5 °C (191 —197 °F)	○ — ○	
Below	83.5-89.5 °C (182 —193 °F)		

Relay Test

1. Remove the radiator fan relay or condenser fan relay.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.

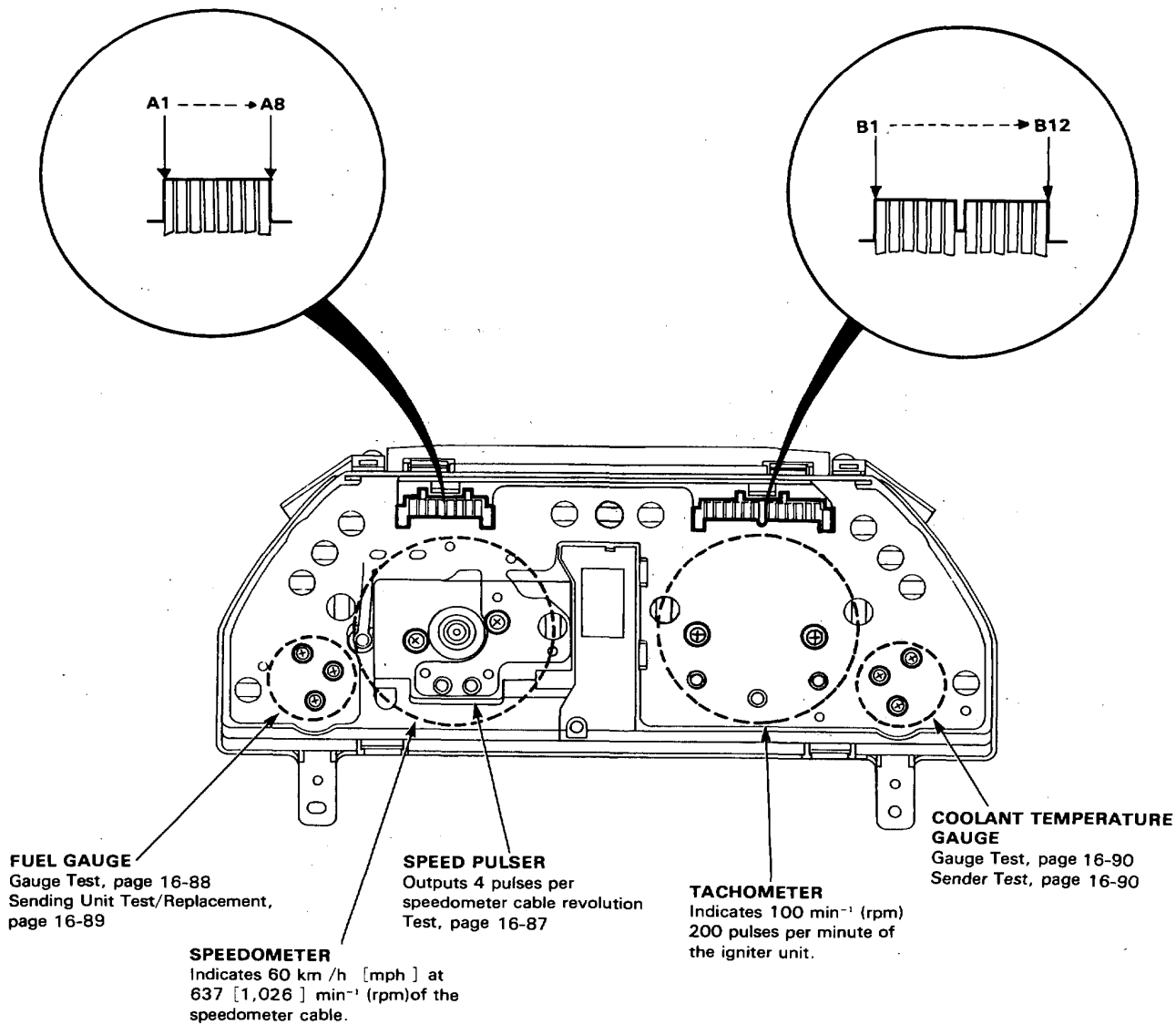




Gauge Assembly

Gauge/Indicator Location Index

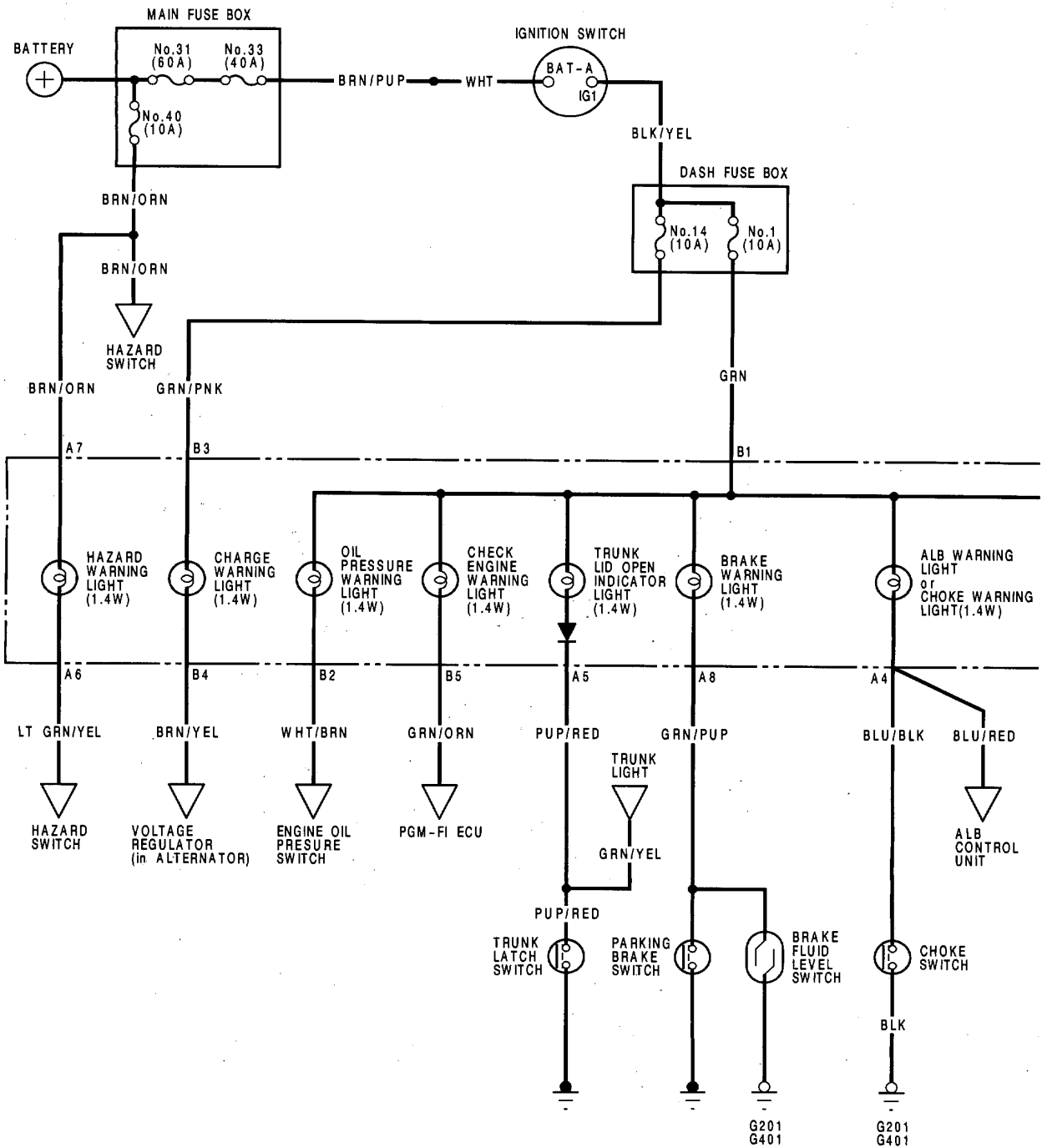
- GAUGE ASSEMBLY
 - Removal, page 16-84
 - Disassembly, page 16-86

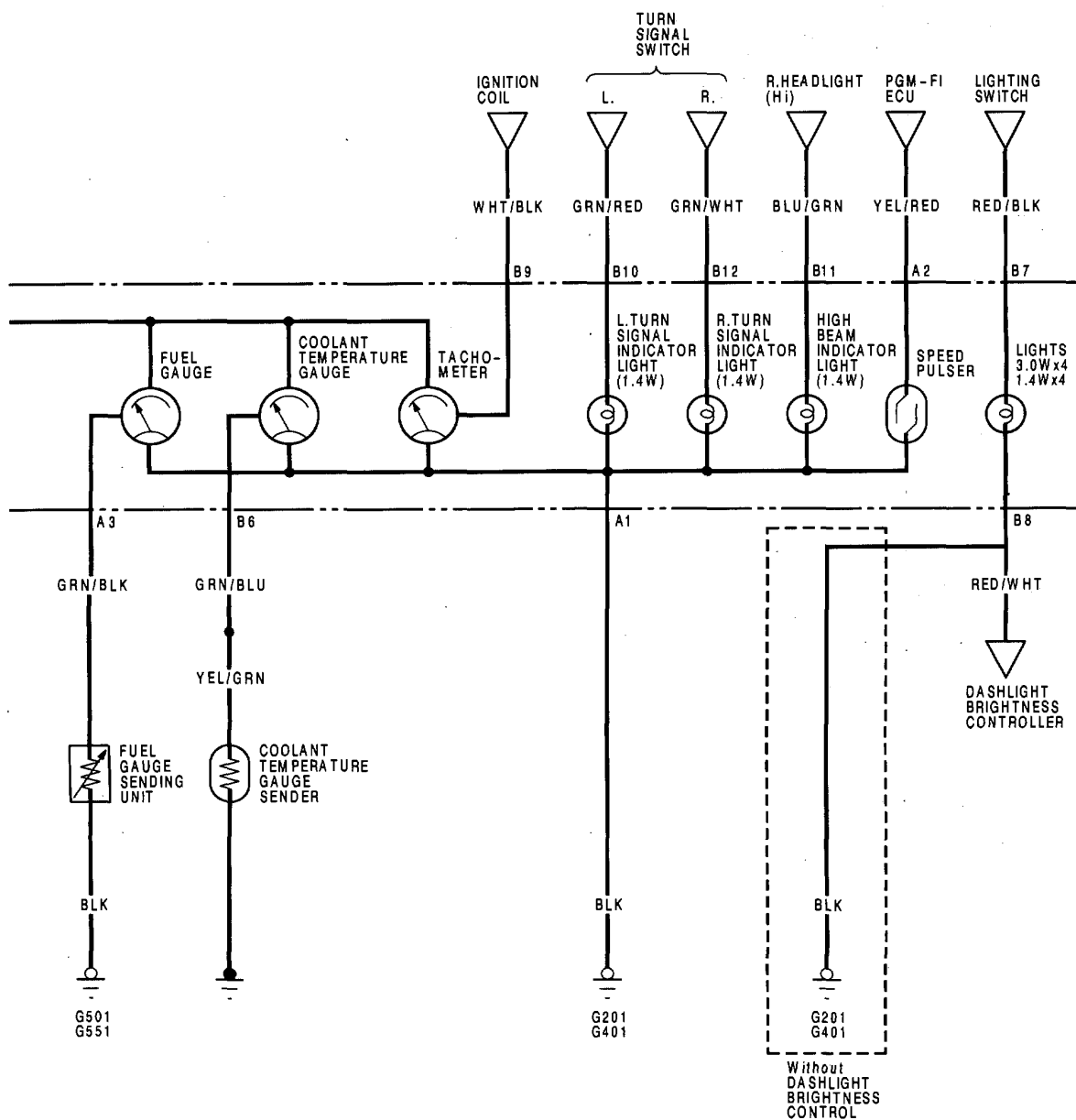


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Gauge Assembly

Circuit Diagram

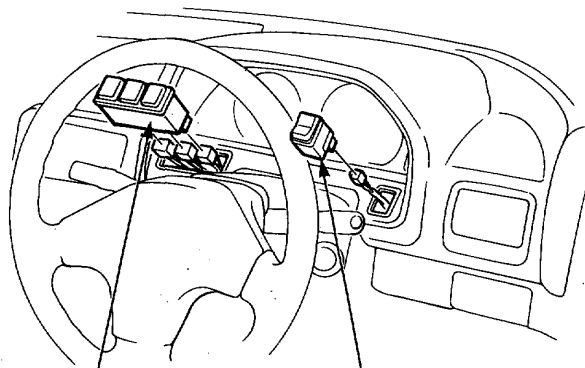




Gauge Assembly

Removal

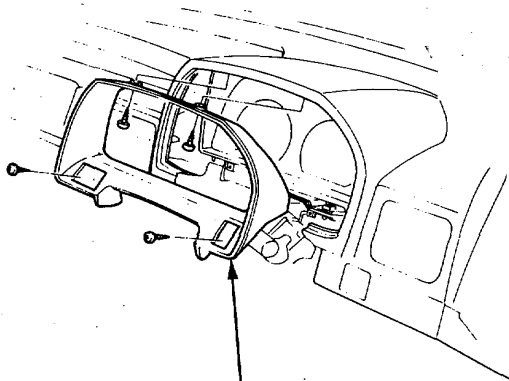
1. Remove the rear window defogger switch and lid.



REAR WINDOW
DEFOGGER SWITCH
HAZARD SWITCH
REAR FOGLIGHT SWITCH

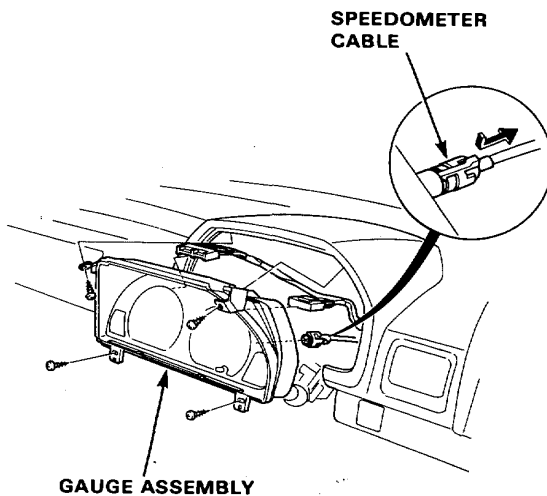
SUN ROOF SWITCH

2. Remove the 4 screws, then remove the instrument panel.



INSTRUMENT PANEL

3. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.

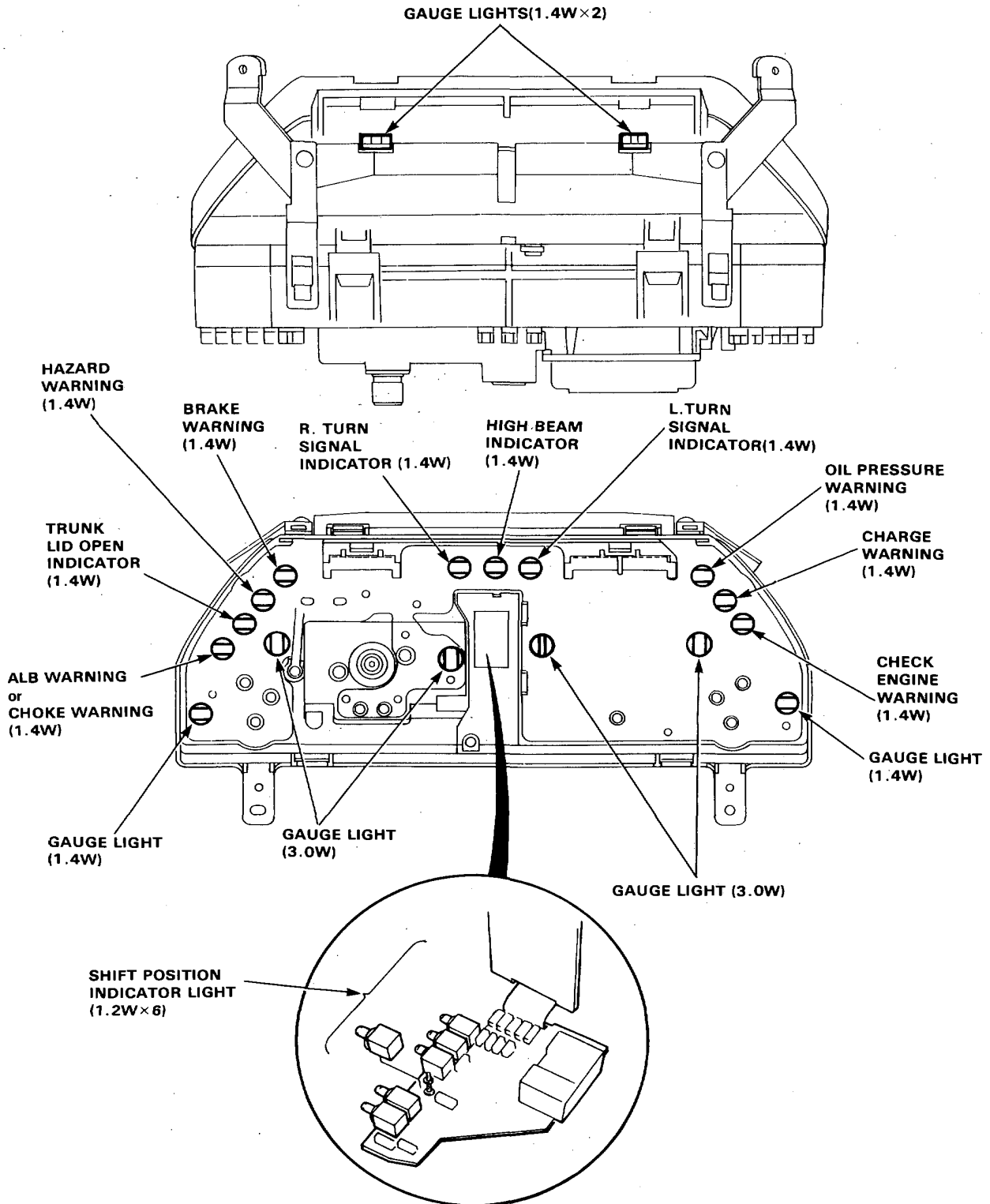


SPEEDOMETER
CABLE

GAUGE ASSEMBLY



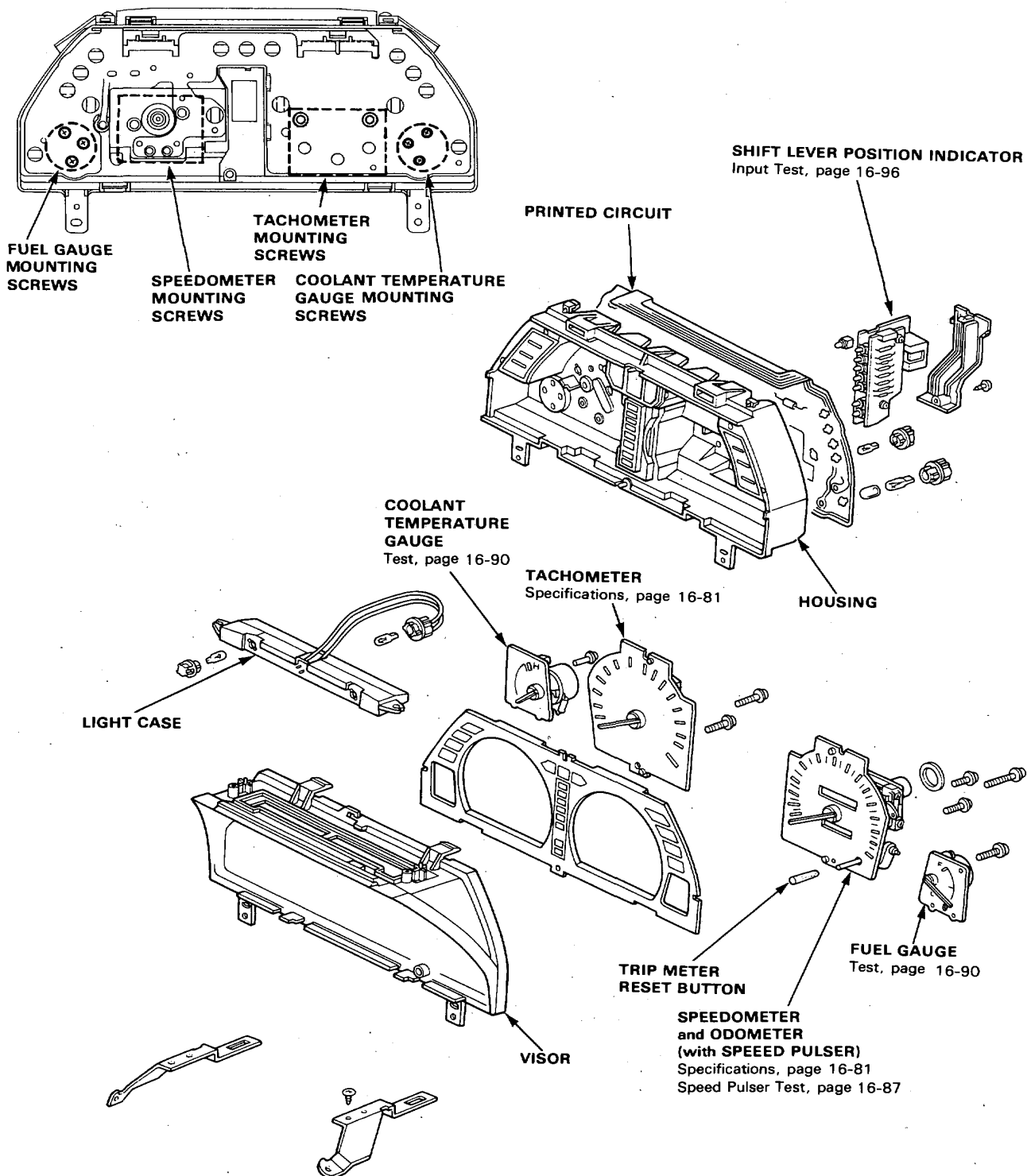
Bulb Locations



Gauge Assembly

Disassembly

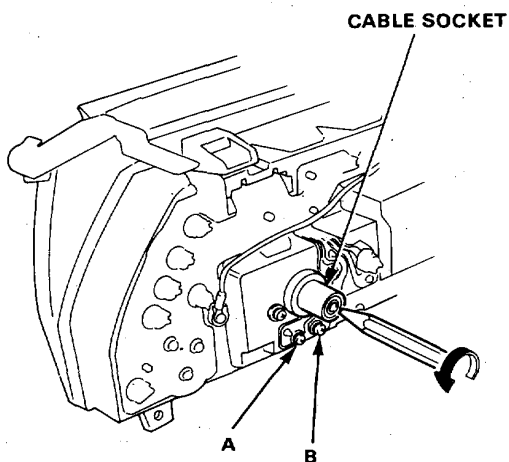
NOTE: Handle the terminals and printed circuits carefully to avoid damaging them.





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.

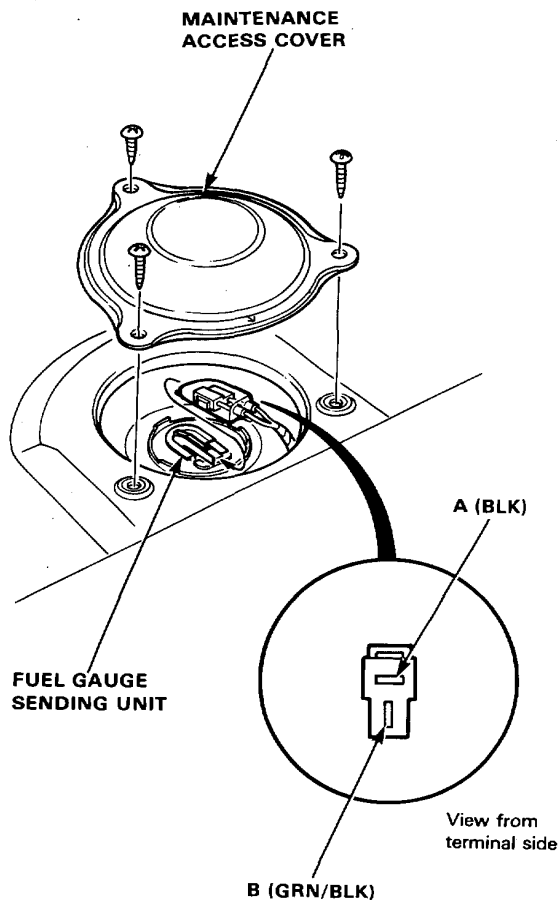


Fuel Gauge

Gauge Test

NOTE: Refer to page 16-82 for wiring description of the fuel gauge circuit.

1. Fold down rear seat back, remove trunk carpet and board, then remove the maintenance access cover. (Care should be taken not to damage paint work if leaning in from rear hatch).
2. Disconnect the 2-P connector from the fuel gauge sending unit.



3. Connect the voltmeter positive probe to the B (GRN/BLK) terminal and the negative probe to the A (BLK) terminal, then turn the ignition switch ON. There should be battery voltage.

- If there is battery voltage, go to step 4.
- If the voltage is not specified, check for:
 - Blown No. 1 (10A) fuse in the dash fuse box.
 - An open in the GRN, GRN/BLK or BLK wire.
 - Poor ground (G501).

4. Turn the ignition switch OFF. Attach a jumper wire between the A (BLK) and B (GRN/BLK) terminals.

Turn the ignition switch ON.

Check that the pointer of the fuel gauge starts moving toward "F" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "F" mark on the gauge dial. Failure to turn the ignition switch OFF before the pointer reaches the "F" mark may cause damage to the fuel gauge.

NOTE: The fuel gauge is a bobbin(cross coil)type, hence the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

- If the pointer of the fuel gauge does not swing at all, replace the gauge.
- Inspect the fuel gauge sending unit if the gauge is OK.

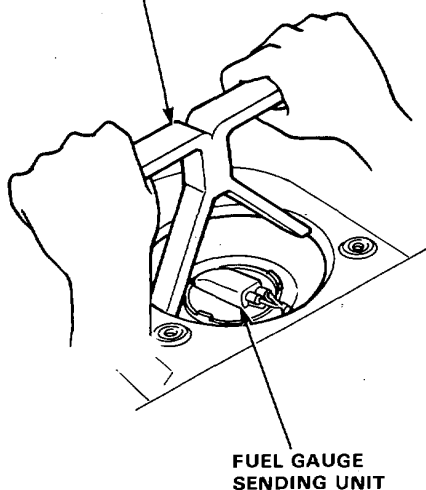


Sending Unit Test / Replacement

WARNING Do not smoke while working on fuel system. Keep open flame away from work area.

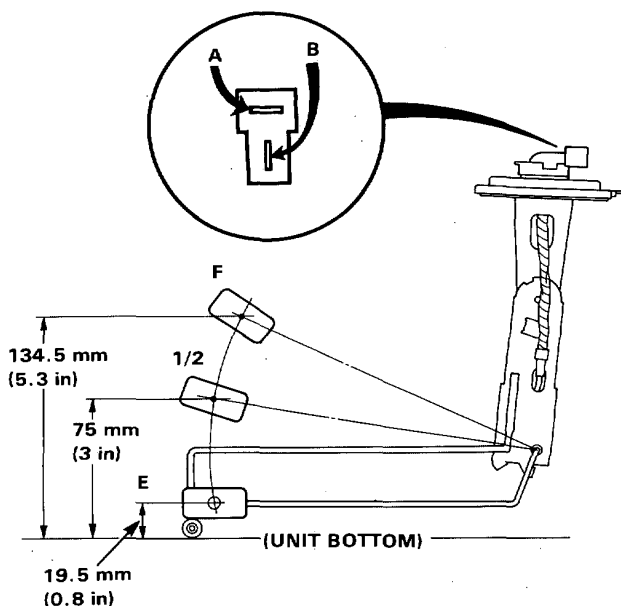
1. Pull down the rear seat (see section 14), then remove the maintenance access cover.
2. Check that the ignition switch OFF, then disconnect the 2-P connector from the fuel gauge sending unit.
3. Remove the fuel gauge sending unit.

FUEL SENDER WRENCH
07920-SB20000



4. Measure the resistance between the A and B terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance(Ω)	100-105	25.5-39.5	2-5



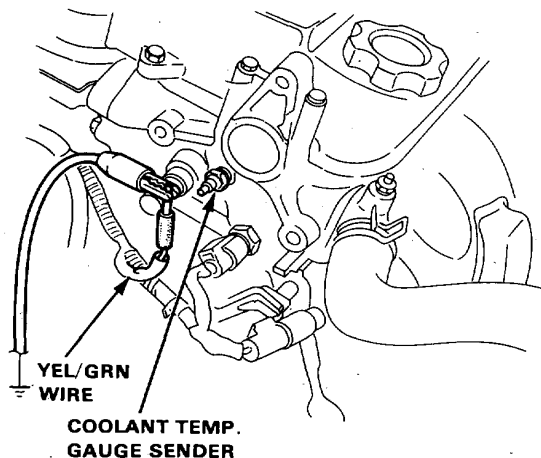
5. If unable to obtain the above readings, replace the fuel gauge sending unit.

Coolant Temperature Gauge

Gauge Test

NOTE: Refer to page 16-83 for wiring description of the coolant temperature gauge circuit.

1. Make sure the ignition switch is OFF, then disconnect the YEL/GRN wire from the coolant temperature gauge sender and ground it with a jumper wire.



2. Turn the ignition switch ON. Check that the pointer of the coolant temperature gauge starts moving toward "H" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "H" mark on the gauge dial. Failure to turn the ignition OFF quickly enough may cause damage to the gauge.

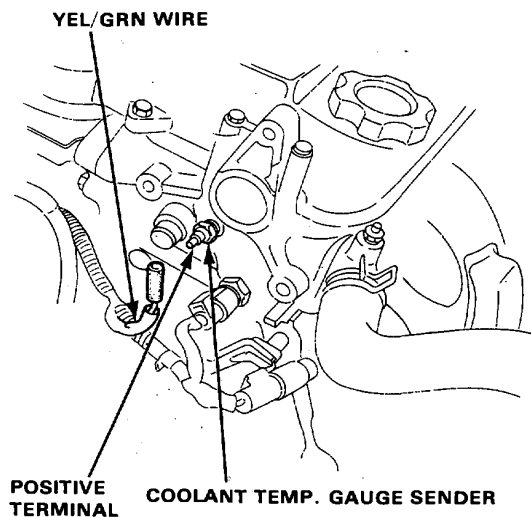
- If the pointer of the gauge does not swing at all, check for :
 - Blown No. 1 (10 A) fuse in the dash fuse box.
 - An open in the GRN, GRN/BLU or YEL/GRN wire.

Replace the coolant temperature gauge if the fuse and wiring are normal.

- Inspect the gauge sender if the gauge is OK.

Sender Test

1. Disconnect the YEL /GRN wire from the sender.
2. With the engine cold, use an ohmmeter to measure resistance between the positive terminal and the engine (ground).



3. Check the temperature of the coolant.
4. Run the engine and measure the change in resistance with the engine at operating temperature (cooling fan comes on).

Temperature	56°C (133°F) ["C" mark]	85°C (185°F) — 100°C (212°F)
Resistance(Ω)	142	49—32

5. If obtained readings are substantially different from specifications above, replace the gauge sender.

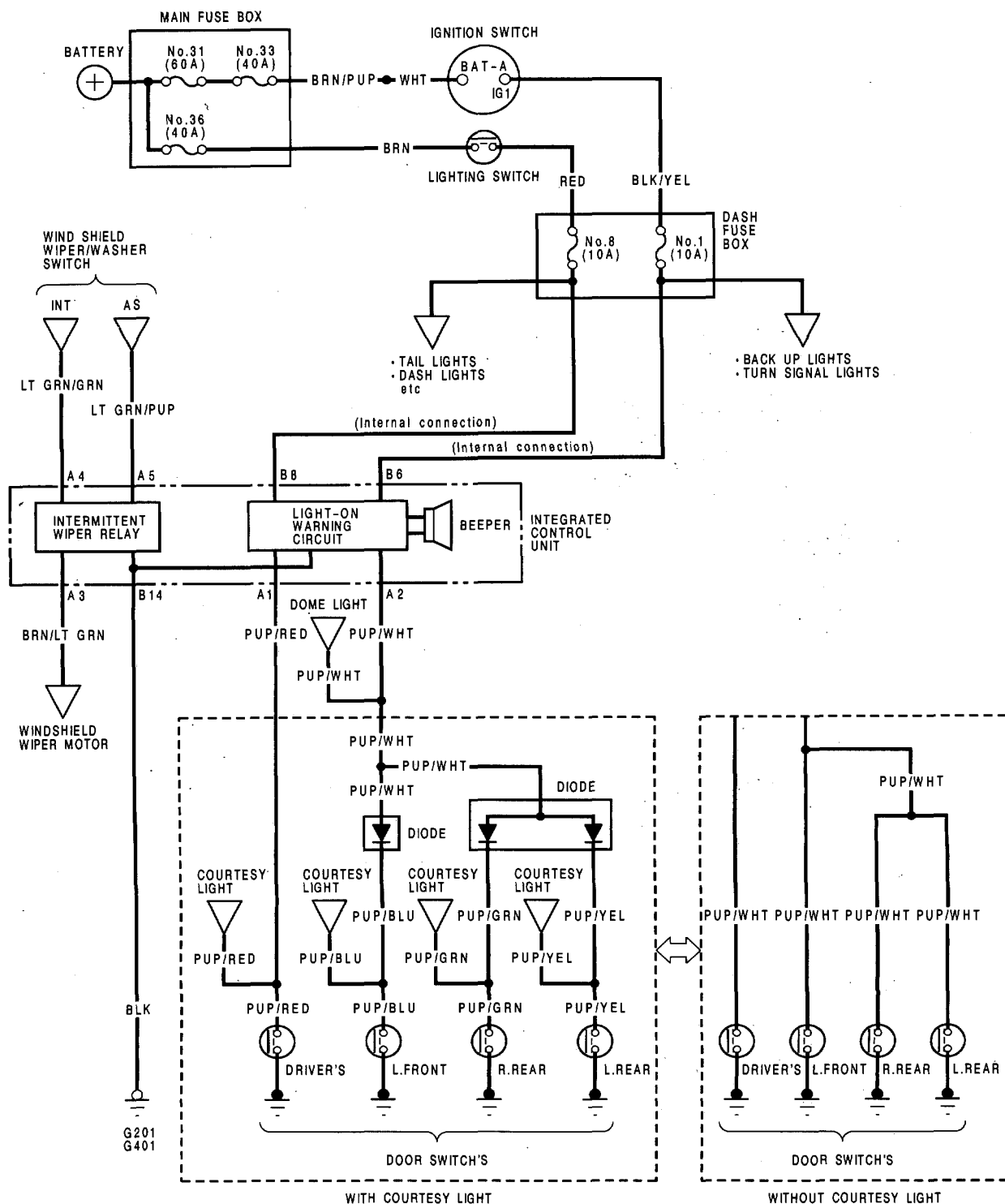


Integrated Control Unit

Circuit Diagram

Description:

A multi function control unit located under the driver side of the dashboard, light-on warning circuit and intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.

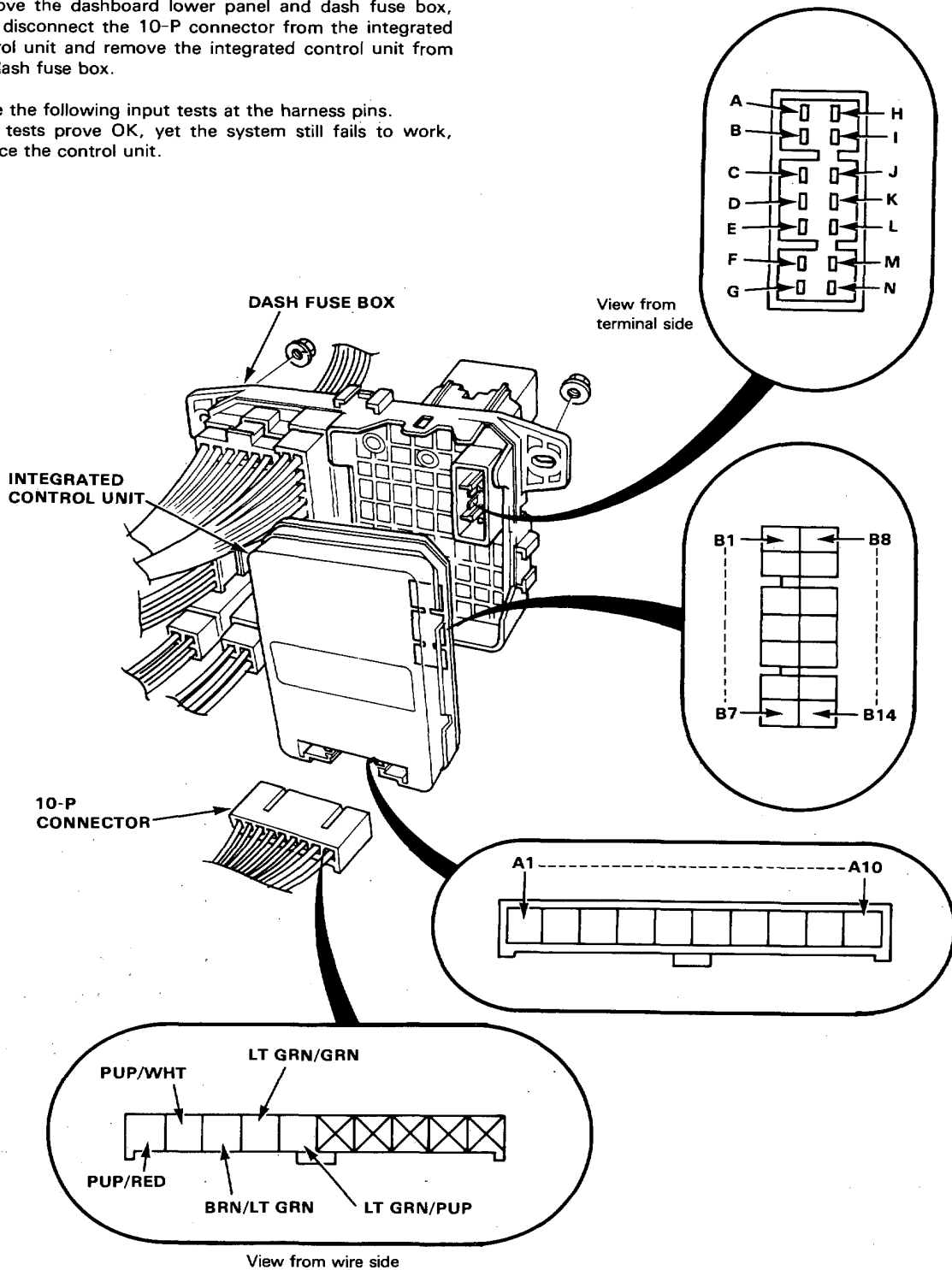


Integrated Control Unit

Input Test

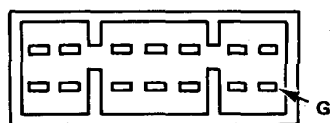
Remove the dashboard lower panel and dash fuse box, then disconnect the 10-P connector from the integrated control unit and remove the integrated control unit from the dash fuse box.

Make the following input tests at the harness pins. If all tests prove OK, yet the system still fails to work, replace the control unit.

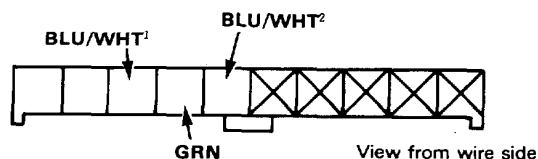




Wiper System:



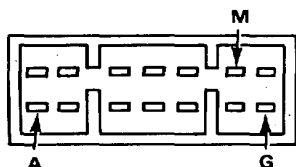
View from terminal side



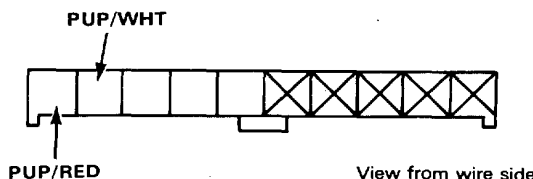
View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause(if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401)
2	BRN/LT GRN and LT GRN/PUP	Wiper switch OFF or INT and wiper blades in park position.	Check for continuity between the BRN/LT GRN and LT GRN/PUP terminals: should be continuity.	• Faulty wiper switch. • Faulty wiper motor. • An open in the wire.
3	LT GRN/GRN	Ignition switch ON and wiper switch INT.	Check for voltage to ground: should be battery voltage.	• Blown No. 13 (15A) fuse. • Faulty wiper switch. • An open in the wire.

Light-on Warning System:



View from terminal side



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause(if result is not obtained)
1	G	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401) • An open in the wire.
2	A	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	M	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 1 (10A) fuse. • An open in the wire.
4	PUP/WHT	L. Front door open. R. Rear door open. L. Rear door open.	Check for continuity to ground: should be continuity. NOTE: Before testing remove No. 12 (15A) fuse.	• Faulty passenger door switch. • An open in the wire.
5	PUP/RED	Driver door open.	Check for continuity to ground: should be continuity.	• Faulty driver door switch. • An open in the wire.

(cont'd)

Shift Lever Position Indicator

Component Location Index

• SHIFT POSITION CONSOLE SWITCH

test, page 16-98

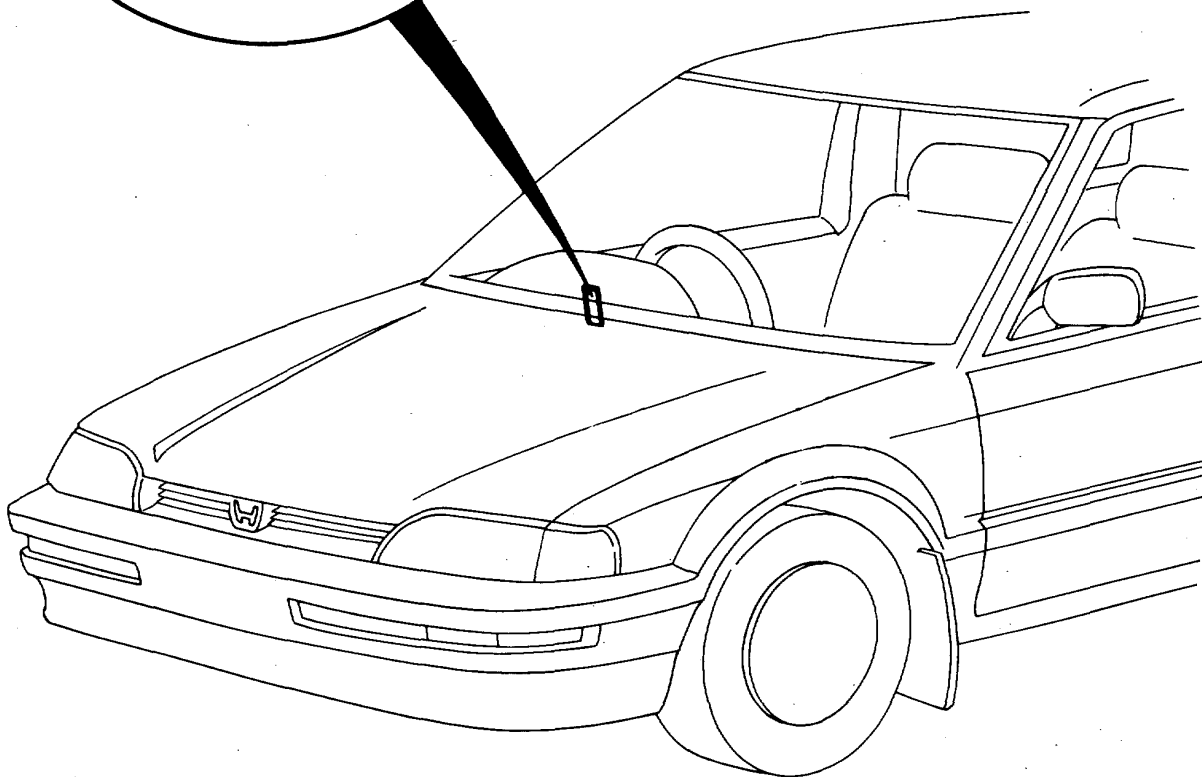
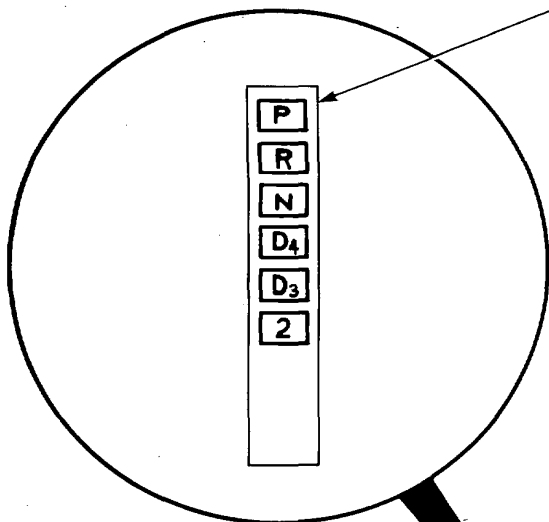
Replacement, page 16-98

SHIFT LEVER POSITION INDICATOR

Removal, page 16-84

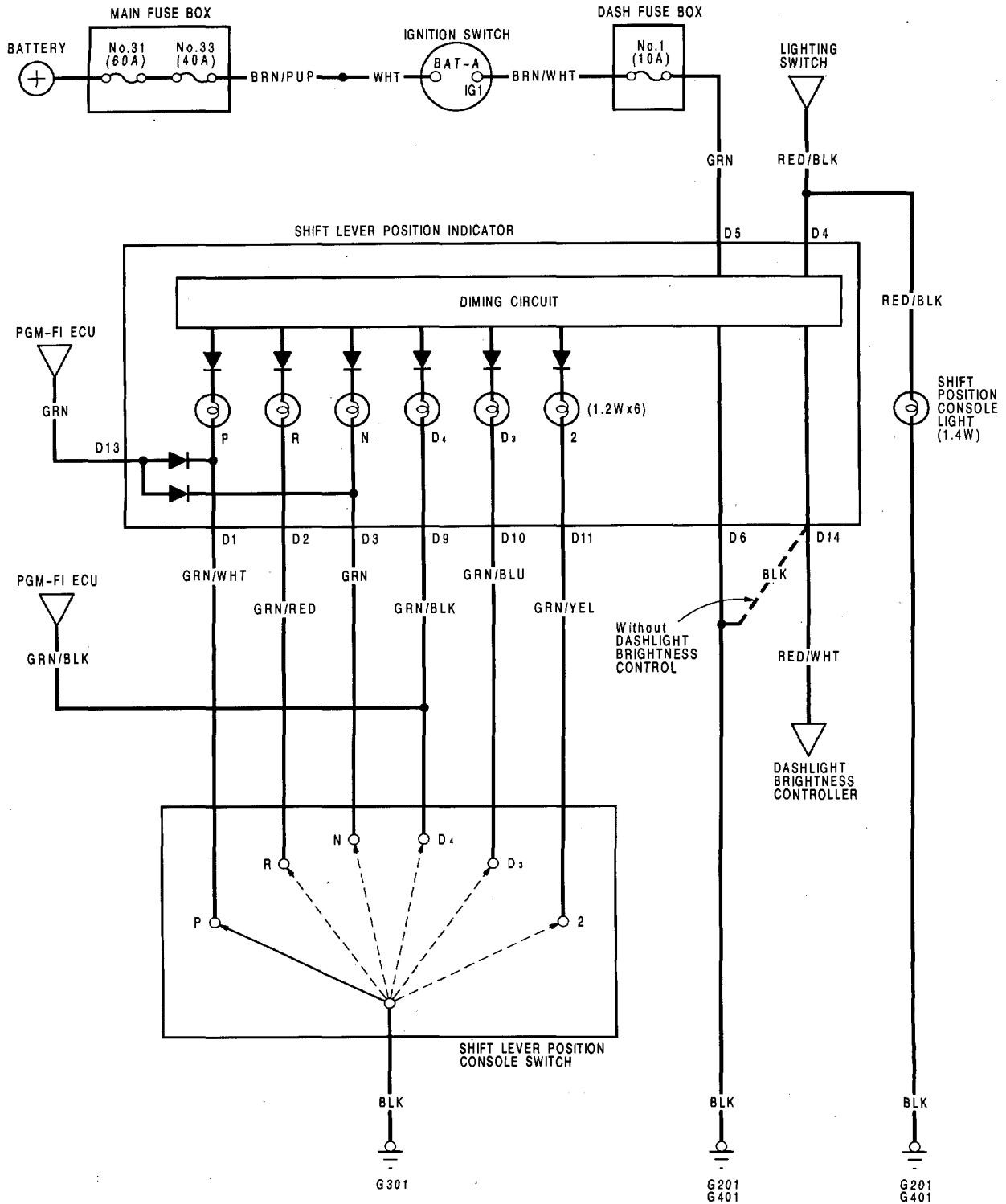
Input Test, page 16-96

Bulb Replacement, page 16-85





Circuit Daiagram

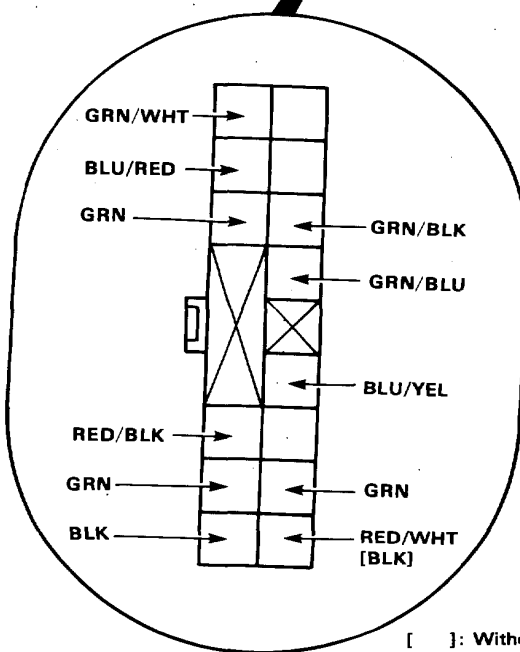
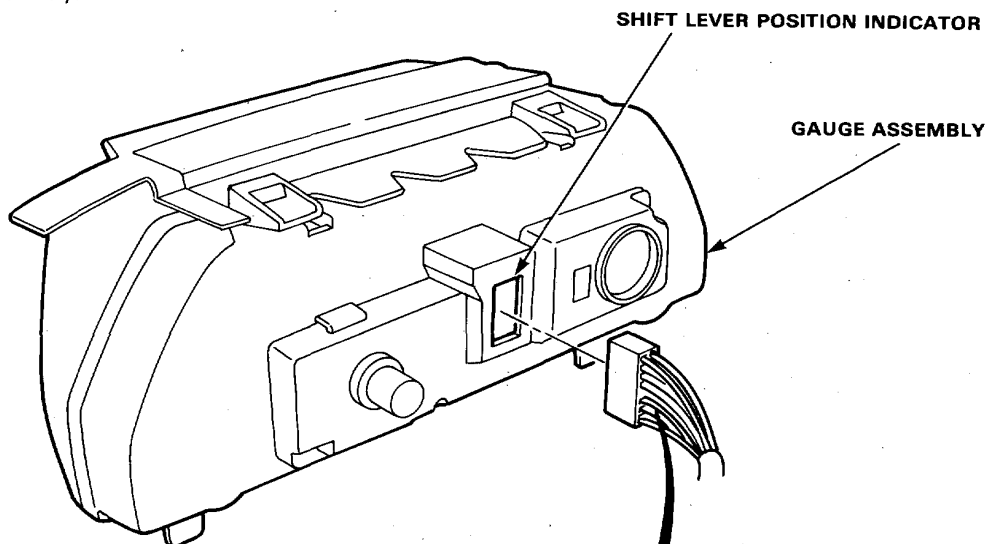


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Shift Lever Position Indicator

Indicator Input Test

Remove the gauge assembly from the dashboard and disconnect the 14-P connector from the indicator. Make the following input tests at the harness pins. If all tests prove OK, yet the indicator still fails to work, replace the indicator assembly.



View from wire side

[]: Without DASHLIGHT BRIGHTNESS CONTROL

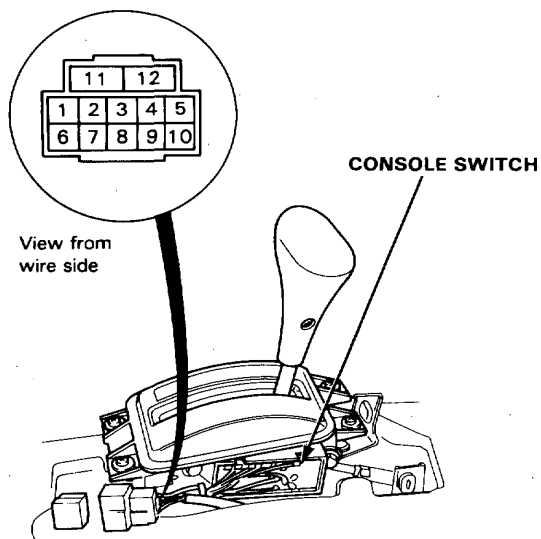


No.	Wire	Test condition	Test : desired result	Possible cause(if result is not obtained)
1	BLK ¹ and [BLK ²]	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201). • An open in the wire.
2	GRN ¹	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 1 (10 A) fuse. • An open in the wire.
3	GRN/WHT	Shift lever position in P.	Check for continuity to ground: should be continuity.	• Faulty shift position console switch. • Poor ground (G201). • An open in the wire.
	BLU/RED	Shift lever position in R.		
	GRN	Shift lever position in N.		
	GRN/BLK	Shift lever position in D ₄ .		
	GRN/BLU	Shift lever position in D ₃ .		
	BLU/YEL	Shift lever position in 2.		
4	RED/BLK and RED/WHT	Lighting switch ON and dashlight brightness control dial on full bright.	Check for voltage between RED/BLK and RED/WHT terminals: should be battery voltage. NOTE: If the fuse blows, the RED/ WHT and the RED/BLK wires are connected.	• Faulty dashlight brightness control system. • An open in the wire.
5	GRN ²	Ignition switch ON.	Check for voltage to ground: should be about 5 V.	• Faulty PGM-FI system. • An open in the wire.

Shift Position console switch

Test

1. Remove the center console, then disconnect the 10-P and 2-P connectors from the console switch.
2. Check for continuity between the terminals in each switch position according to the tables.



Shift Position Switch

Terminal Position	7	8	9	10	5	4	6
2	○	○					
D ₃	○		○				
D ₄	○			○			
N	○				○		
R	○					○	
P	○						○

Neutral Safety Switch

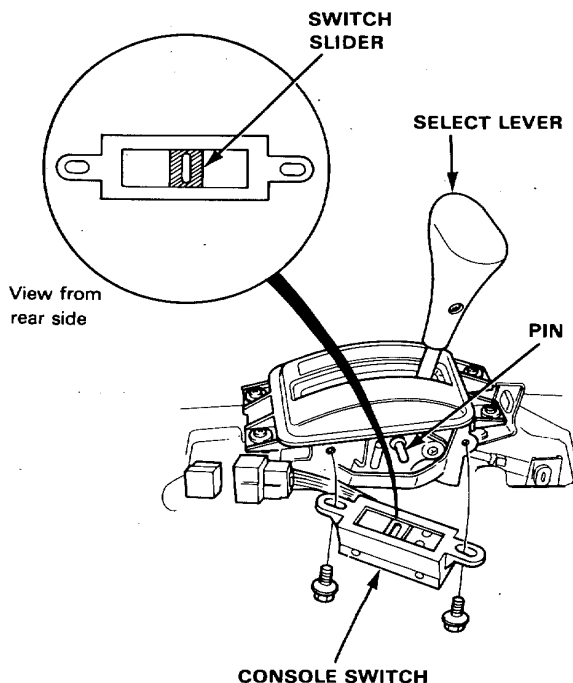
Terminal Position	11	12
2		
D ₃		
D ₄		
N	○	○
R		
P	○	○

Back-up Light Switch

	2	3
2		
D ₃		
D ₄		
N		
R	○	○
P		

Replacement

1. Remove the center console, then disconnect the 10-P and 2-P connectors from the console switch.
2. Remove the 2 bolts to replace the console switch.



3. Position the switch slider to "Neutral" as shown above.
4. Shift the select lever to "Neutral", then slip the console switch into position.
5. Tighten the switch with the 2 bolts.

Brake Warning System

Description

NOTE: Refer to page 16-114 for wiring description of the brake warning circuit.

Description:

The brake warning light goes on if the parking brake is applied, if the brake fluid level is low, and as a circuit test while cranking the engine.

Parking Brake:

With the ignition switch in "Run" or "Start", and the parking brake switch closed, the brake warning light operates to remind the driver that the parking brake is applied.

Brake Fluid Level:

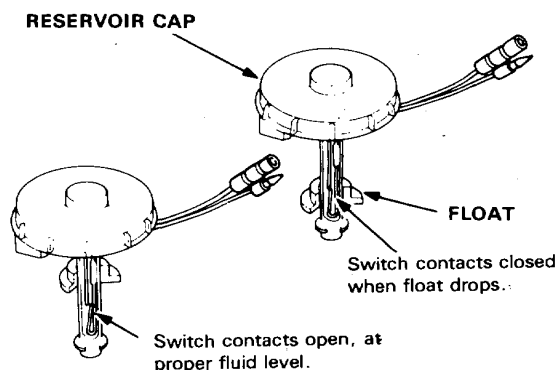
With the ignition switch in "Run" or "Start", and the brake fluid level switch closed, the brake warning light operates to warn the driver of low brake fluid level in the brake master cylinder.

NOTE: Low fluid level indicates brake wear or system leaks; check brake pad wear before adding fluid.

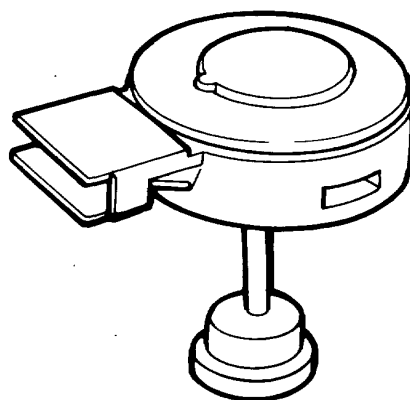
Brake Fluid Level Switch Test

1. Remove the reservoir cap. Check that the float moves up and down freely.
Replace the reservoir cap assembly if the float does not move freely.
2. Check for continuity between the terminals with the float up and down.
There should be continuity with the float down and no continuity with the float up.
Replace the reservoir cap assembly if necessary.

with A.L.B

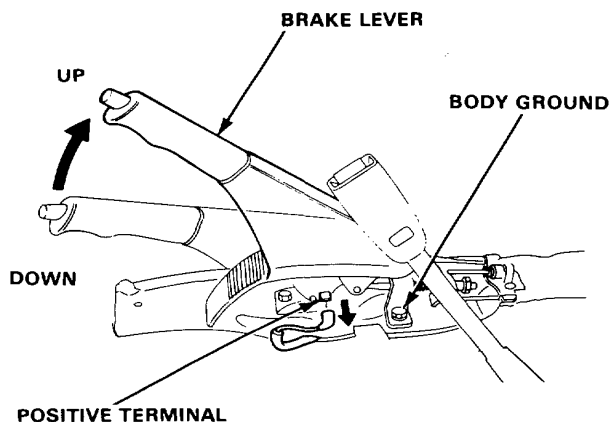


with out A.L.B



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.



Oil Pressure Warning System

Description

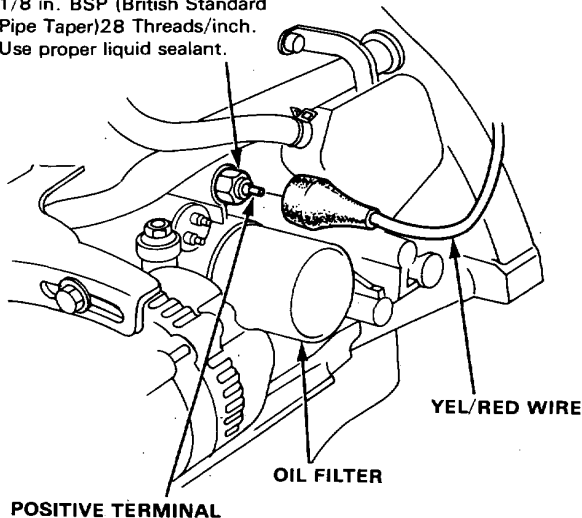
NOTE: Refer to page 16-82 for wiring description of the oil pressure warning circuit.

With the engine running and normal oil pressure, the oil pressure switch is open and the oil pressure warning light does not operate. If engine oil pressure falls below 29kpa(0.3 kg/cm², 4.3 psi), the oil pressure switch is closed, current flows through the oil pressure warning light and the oil pressure switch to ground, and the oil pressure light goes on.

Oil Pressure Switch Test

1. Disconnect the YEL /RED wire from the oil pressure switch.
2. There should be continuity between the positive terminal and the engine (ground) with the engine stopped. There should be no continuity when the engine runs.

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 5).

Light-on Warning System

Description

NOTE: Refer to 16-91 for wiring description of the light-on warning circuit, and page 16-91 for the input test of the warning circuit.

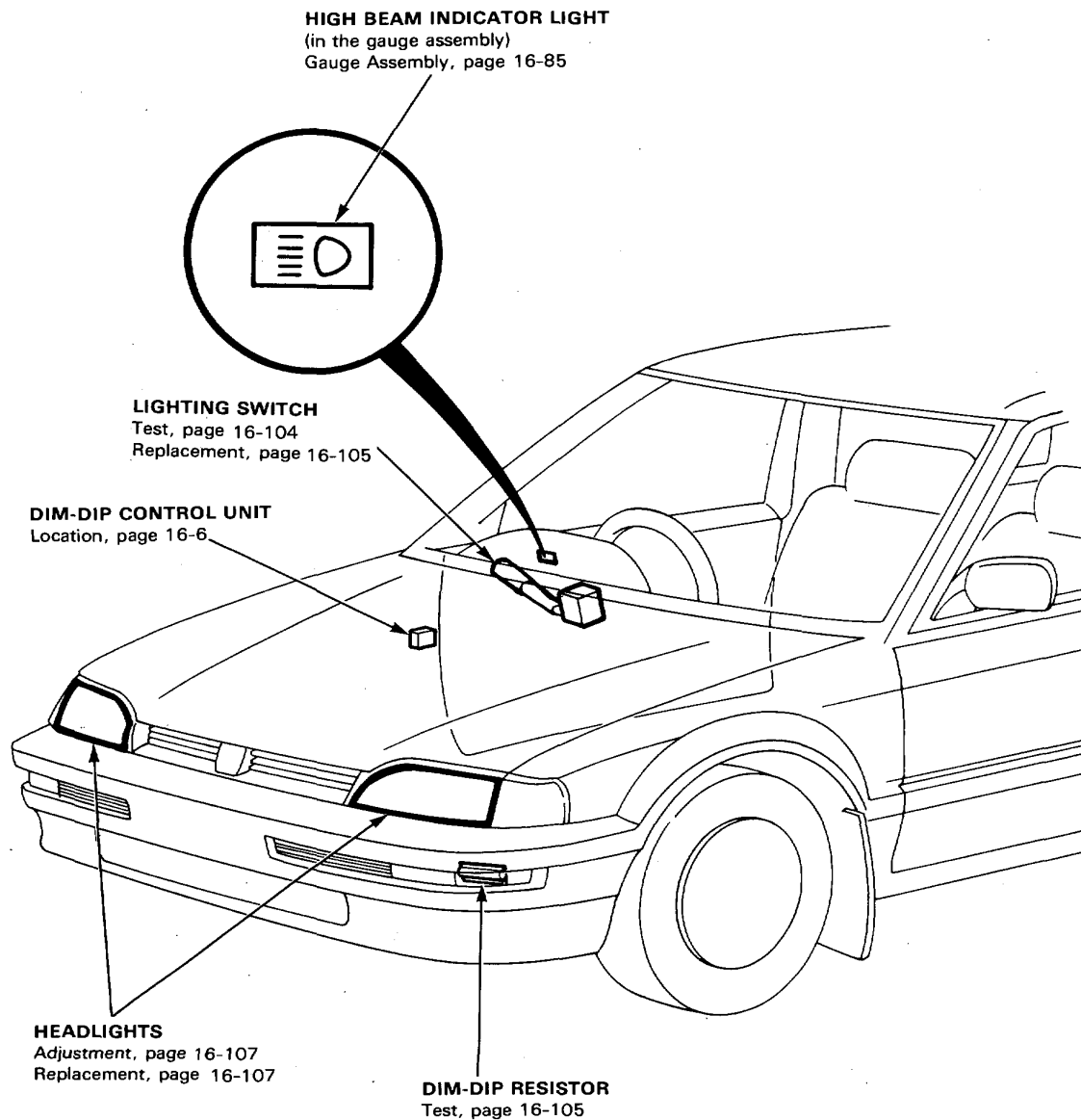
When the light on, voltage is applied to the warning circuit on the integrated control unit. When you open the driver's door, the warning circuit senses ground through closed door switch.

With voltage at the "B8" terminal, ground at the "B14" terminal, the beeper is activated to remind the driver to turn off the lights.



Lighting System

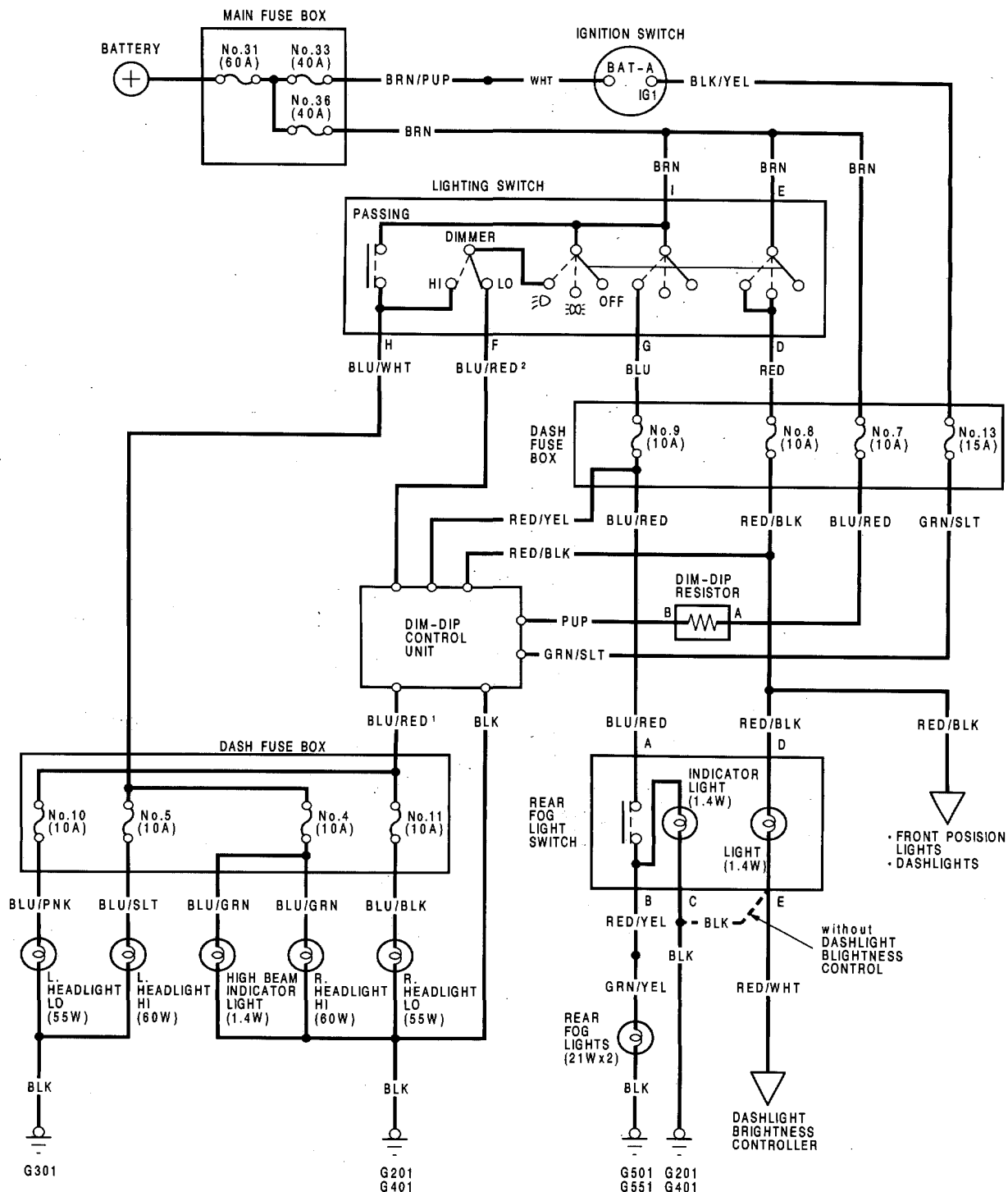
Component Location Index



Lighting System

Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/RED¹ and BLU/RED² are not the same).





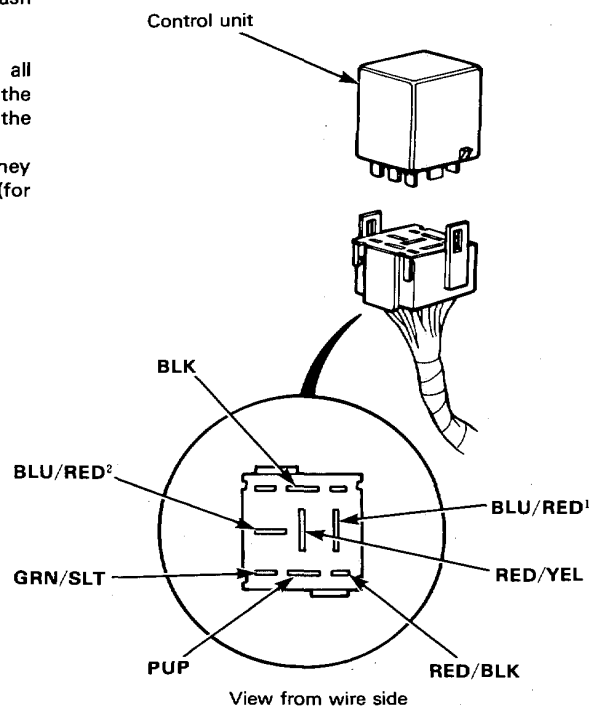
DIM-DIP Control Unit Input Test

Remove the dashboard lower panel, then slide the dash fuse box.

Disconnect the 7-P connector from the control unit.

Make the following input tests at the harness pins. If all tests prove OK, yet system still fails to work, check the connector for good connection. If OK, then replace the control unit.

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLU/RED¹ and BLU/RED² are not the same).



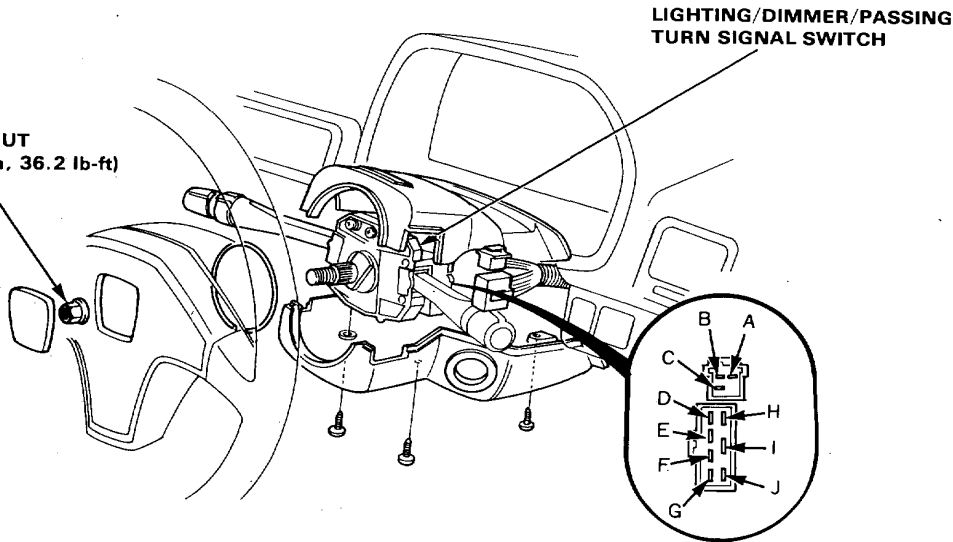
No.	Terminal	Test condition	Test: desired result	Possible cause(if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G201, G401). • Ah open in the wire.
2	PUP	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.7 (10A) fuse. • Faulty DIM-DIP resistor. • Ah open in the wire.
3	RED/BLK	Lighting switch ON (㊦).	Check for voltage to ground: should be battery voltage.	• Blown No.8 (15A) fuse. • An open in the wire.
4	BLU/RED ²	Lighting switch ON (㊦) and dimmer switch LO.	Check for voltage to ground: should be battery voltage.	• Faulty lightig switch.
5	BLU/RED ¹	Lighting switch ON (㊦) and dimmer switch LO.	Connect the BLU/RED ¹ terminal to the BLU/RED ² terminal: Headlights (LO) should come on.	• Blown No.10 (10A) and No.11 (10A) fuses. • Poor ground (G201, G401). • An open in the wire.
6	RED/YEL	Lighting switch ON (㊦).	Check for voltage to ground: should be battery voltage.	• Blown No.9 (10A) fuse. • An open in the wire.
7	GRN/SLT	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No.13 (15A) fuse. • An open in the wire.

Lighting System

Lighting/Turn Signal Switch Test

- 1. Remove the dashboard lower panel.
- 2. Remove the steering wheel.
- 3. Remove the steering column covers then disconnect the 7-P and 4-P connectors.
- 4. Check for continuity between the terminals in each position according to the tables.

SELF LOCKING NUT
50 N·m (5.0 kg-m, 36.2 lb-ft)
Replace



View from terminal side

Lighting/Dimmer/Passing Switch

Terminal		D	E	F	G	H	I
Position							
Lighting switch	OFF						
	⊗	○	○				
	⊙				○	○	○
Dimmer switch	LOW			○	○	○	○
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

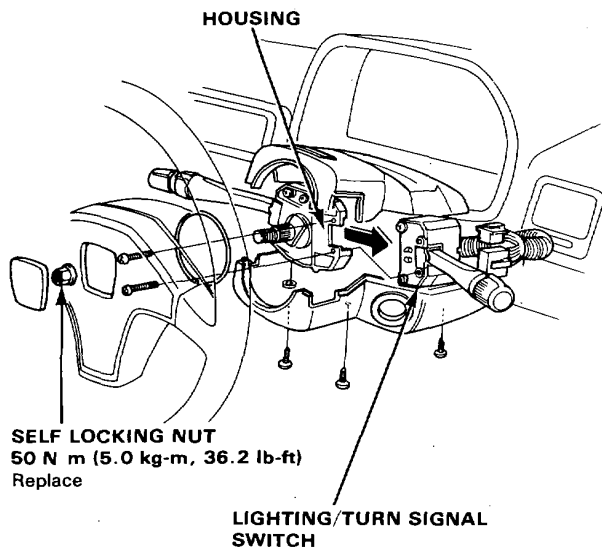
Turn Signal Switch

Terminal		A	B	C
Position				
R		○	○	
NEUTRAL				
L		○		○



Lighting/Turn Signal Switch Replacement

1. Remove the dashboard lower panel.
2. Remove the steering wheel.
3. Remove the steering column covers then disconnect the 7-P and 4-P connectors from behind the switch.
4. Remove the 2 screws and slide the lighting switch out of housing as shown.

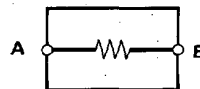
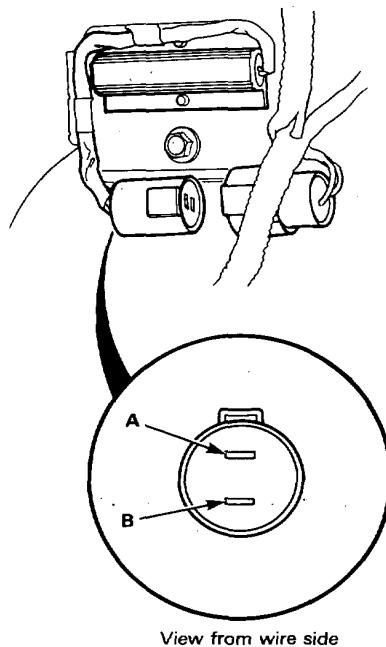


DIM-DIP Resistor Test

CAUTION: Dim-Dip resistor becomes very hot in use of Dim-Dip headlights; do not touch it or the attaching hardware immediately after they have been turned off.

1. Disconnect the 3-P connector from the resistor.
2. There should be continuity between A and C; between B and C terminals.

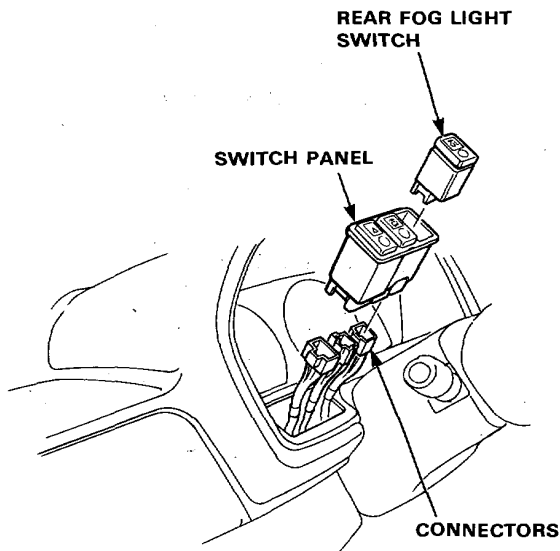
RESISTOR (Located left side, engine compartment)



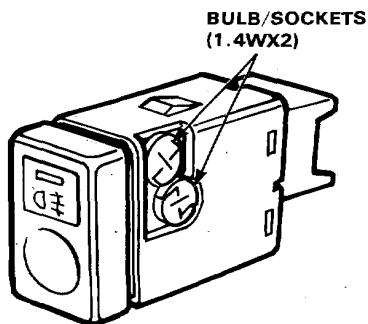
Lighting System

Rear Fog Light Switch Removal

1. Remove the dashboard lower panel. Push out the switches from behind the instrument panel, then disconnect the connectors from the switches.
2. Remove the rear fog light switch from the switch panel.



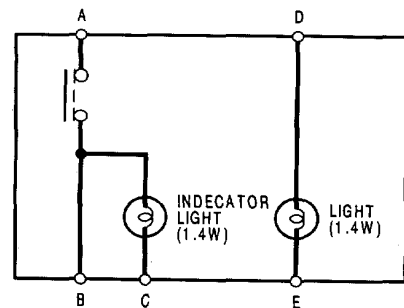
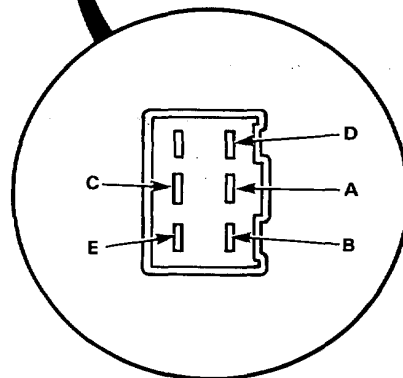
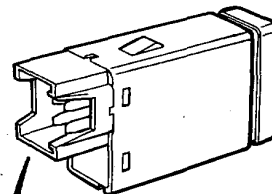
3. Turn the socket 45° counterclockwise (1.4W).



Rear Fog Light Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

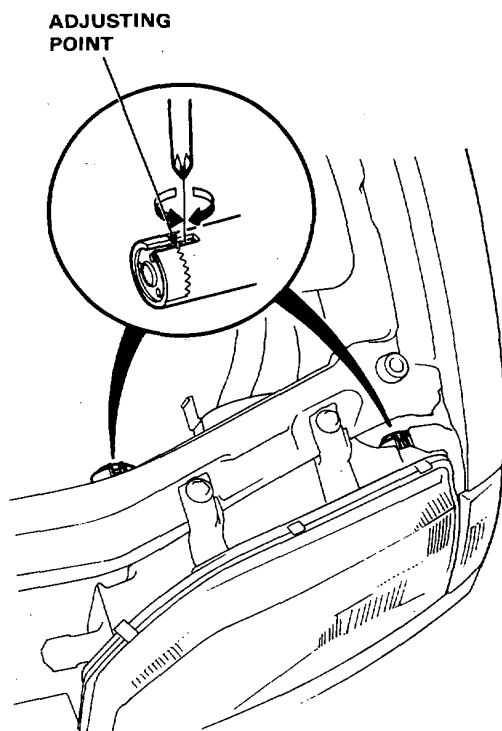
Terminal Position	A	B	C	D	E
ON	○	○	○	○	○
OFF		○	○	○	○



Headlights

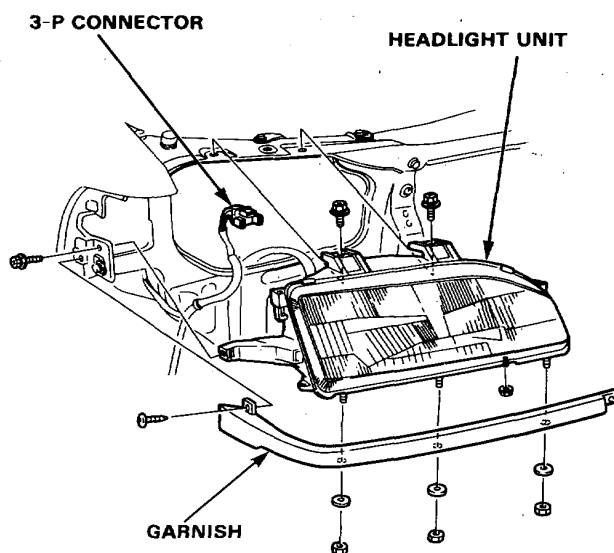
Adjustment

NOTE: Adjust the headlights to local requirements.



Replacement

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and front position /side turn light.
3. Remove the screw and bolts and nut, then remove the unit.
4. Remove the nuts, then remove the garnish from the unit.
5. After installing the unit, adjust the headlights to local requirements.

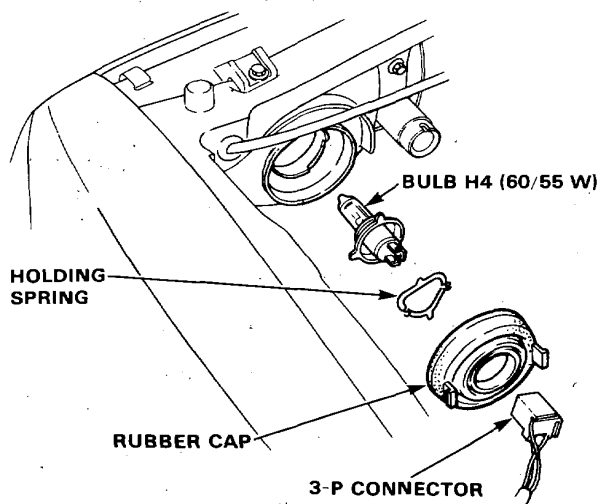


Headlights

Bulb Replacement

CAUTION:

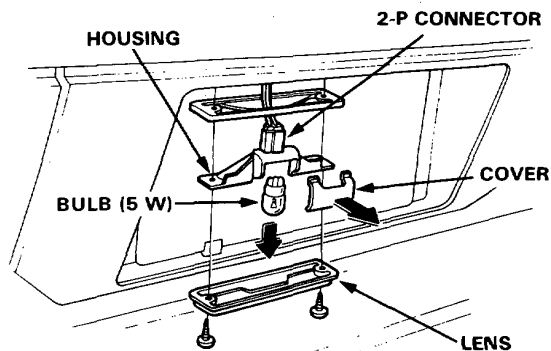
- Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.
- Do not try to replace or clean the headlights with the lights on.



License Plate Light

Bulb Replacement

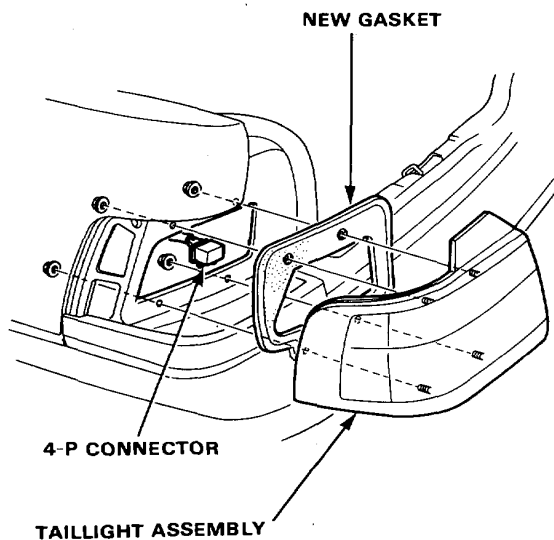
1. Remove the 2 screws and pull out the light assembly from the lid.
2. Disconnect the 2-P connector from the housing.



Taillights Assembly

Replacement

1. Open the trunk lid and remove the trunk side panel.
2. Disconnect the 4-P connector from behind the taillight.
3. Remove the 4 mounting nuts and the taillight assembly.



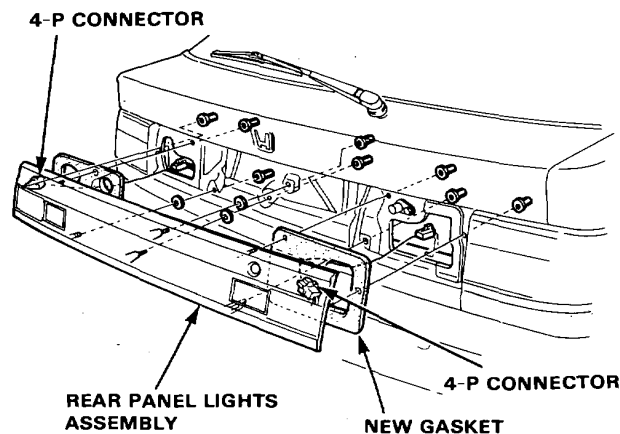
4. Inspect the gasket; replace if it is distorted or overly compressed.

Rear Panel Lights Assembly



Replacement

1. Open the trunk lid and remove the rear trim cover.
2. Disconnect the 4-P connectors from behind the rear panel lights.
3. Remove the 8 mounting nuts and the rear panel lights assembly.



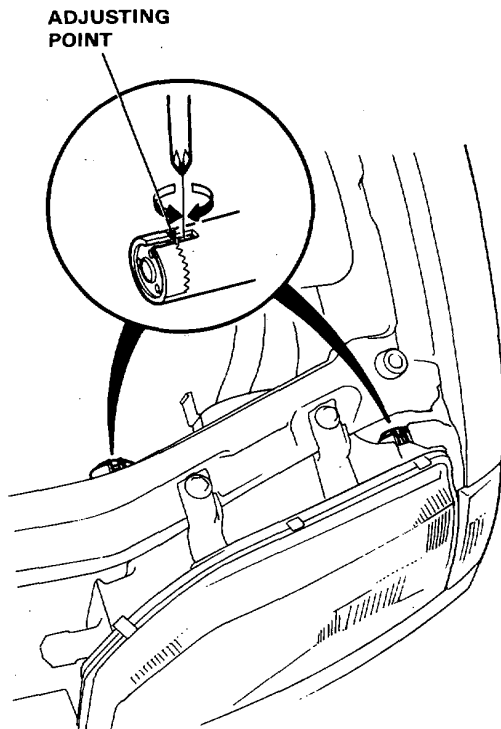
4. Inspect the gasket; replace if it is distorted or overly compressed.

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Headlights

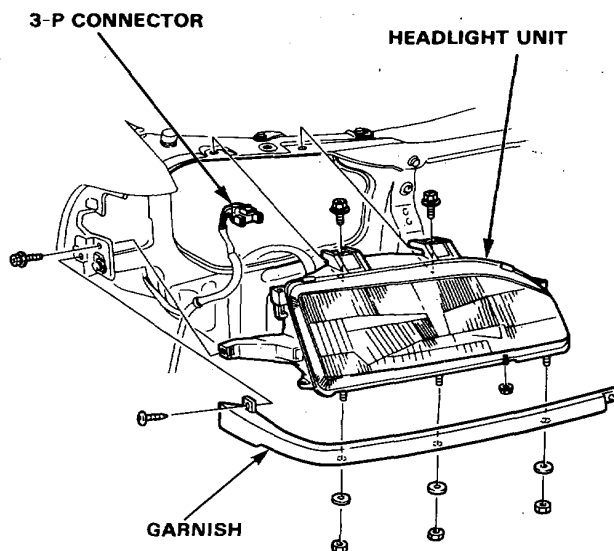
Adjustment

NOTE: Adjust the headlights to local requirements.



Replacement

1. Disconnect the 3-P connector from behind the unit.
2. Remove the front bumper and front position /side turn light.
3. Remove the screw and bolts and nut, then remove the unit.
4. Remove the nuts, then remove the garnish from the unit.
5. After installing the unit, adjust the headlights to local requirements.

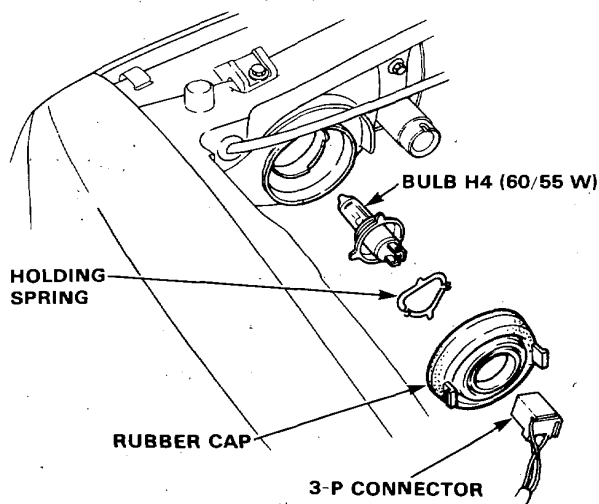


Headlights

Bulb Replacement

CAUTION:

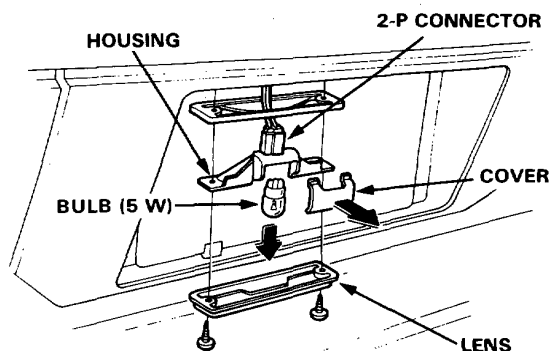
- Halogen headlights can become very hot in use; do not touch them or the attaching hardware immediately after they have been turned off.
- Do not try to replace or clean the headlights with the lights on.



License Plate Light

Bulb Replacement

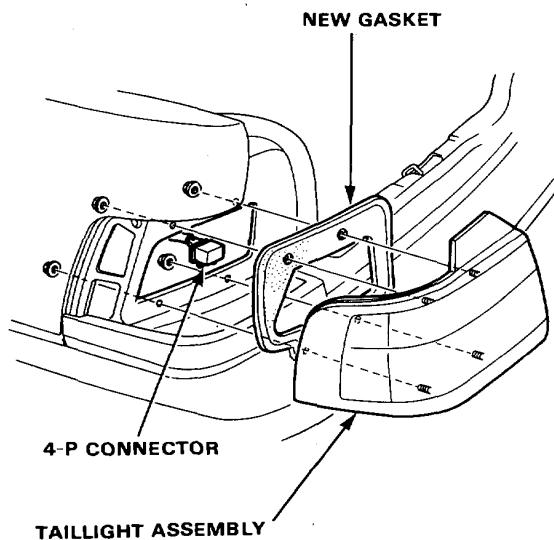
1. Remove the 2 screws and pull out the light assembly from the lid.
2. Disconnect the 2-P connector from the housing.



Taillights Assembly

Replacement

1. Open the trunk lid and remove the trunk side panel.
2. Disconnect the 4-P connector from behind the taillight.
3. Remove the 4 mounting nuts and the taillight assembly.



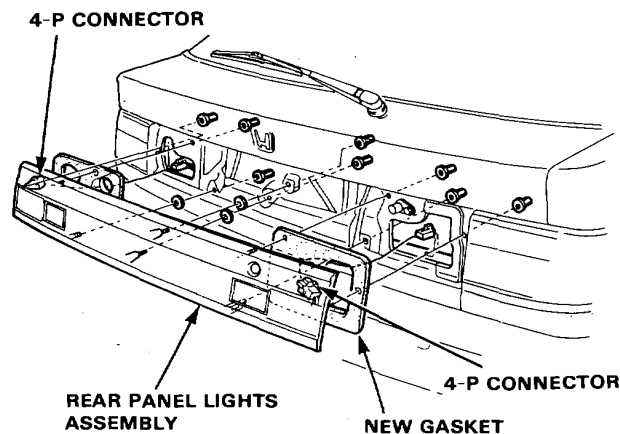
4. Inspect the gasket; replace if it is distorted or overly compressed.

Rear Panel Lights Assembly



Replacement

1. Open the trunk lid and remove the rear trim cover.
2. Disconnect the 4-P connectors from behind the rear panel lights.
3. Remove the 8 mounting nuts and the rear panel lights assembly.



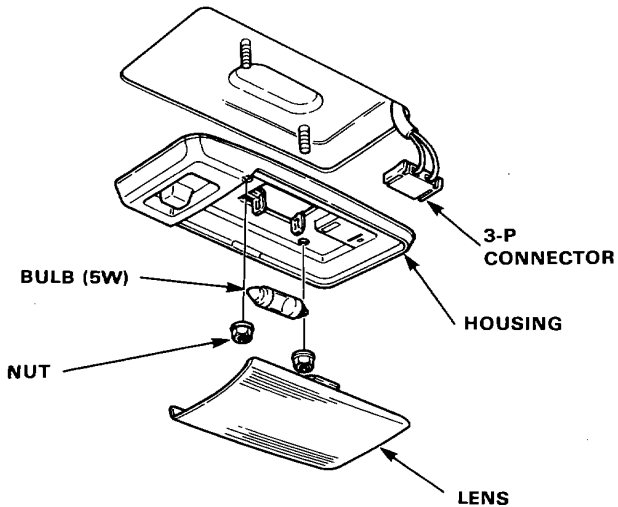
4. Inspect the gasket; replace if it is distorted or overly compressed.

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Room Light

Test

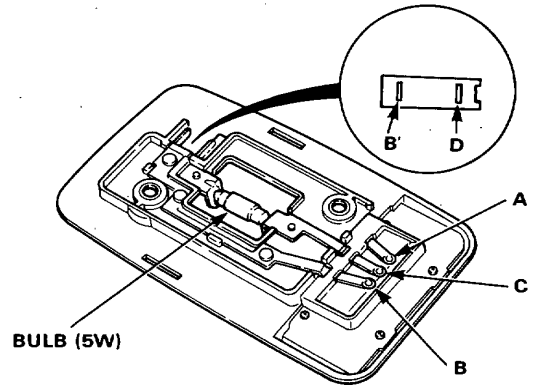
1. Turn the light switch OFF.
2. Pry off the lens.
3. Remove the 2 nuts (with sunroof) or screw (without sunroof) and housing.
4. Disconnect the 3-p connector from the housing.
5. Remove the room light.



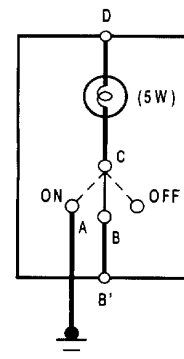
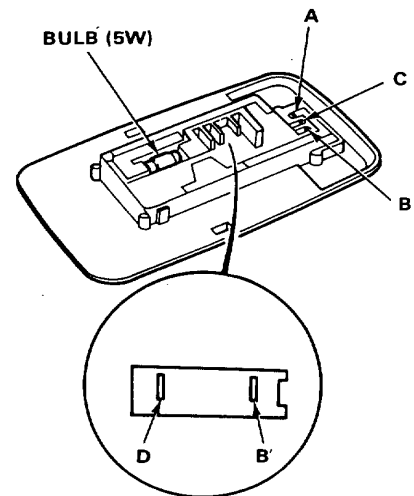
6. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	A	B or B'	C		D
OFF			○	⊗	○
DOOR		○	○	⊗	○
ON	○		○	⊗	○

WITH SUNROOF:



WITHOUT SUNROOF:

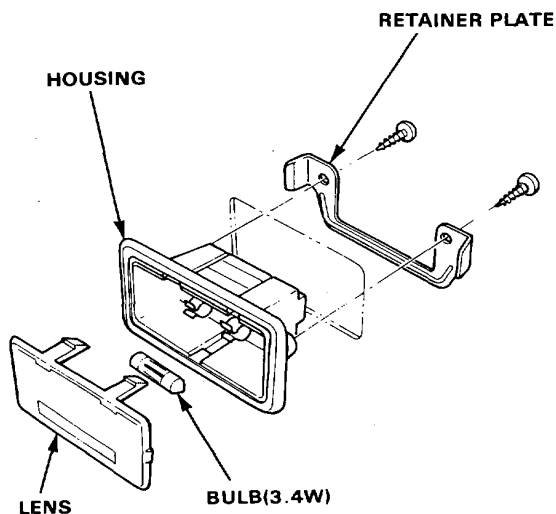


Courtesy Lights

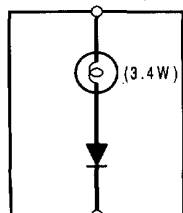
Replacement

NOTE: The bulb or lens alone can be replaced without having to remove the door trim panel.

1. Remove the door trim panel.
2. Remove the 2 screws and the retainer plate to remove the light from the door trim panel.



From No.12(15A)FUSE

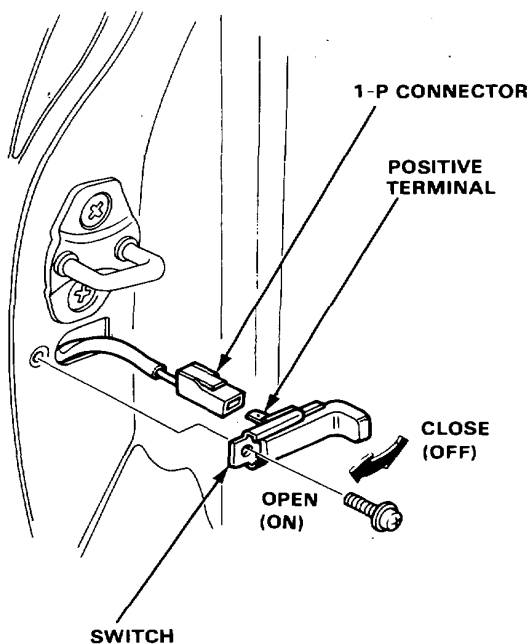


To DOOR SWITCH

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.

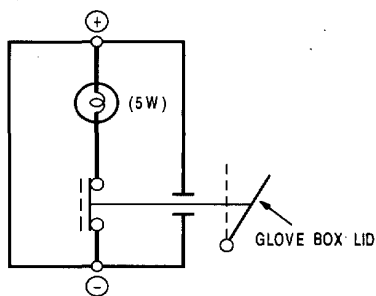
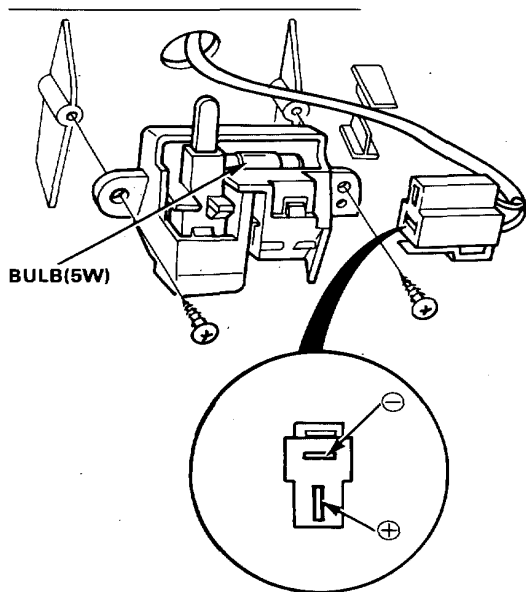


4. There should be continuity between the positive terminal and base plate (ground) with the switch released (door opened). There should be no continuity with the switch pushed (door closed).

Glove Box Light

Test

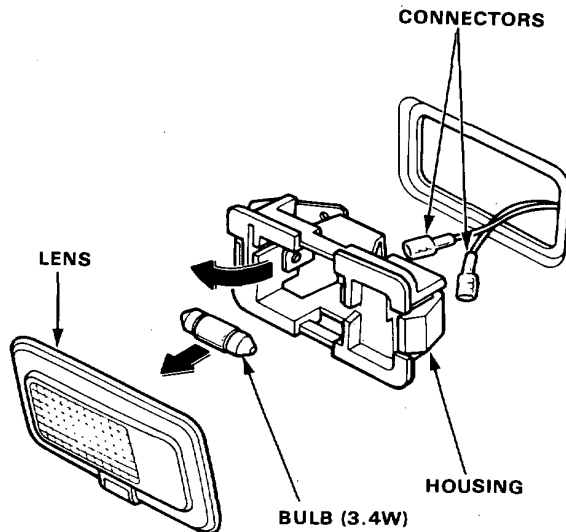
1. Open the glove box.
2. Disconnect the 2P connector from the light.
3. There should be continuity between the $\oplus$ and $\ominus$ terminals with a bulb installed.



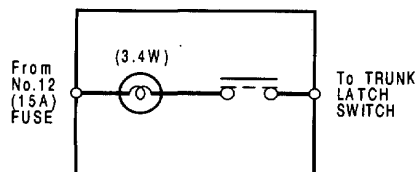
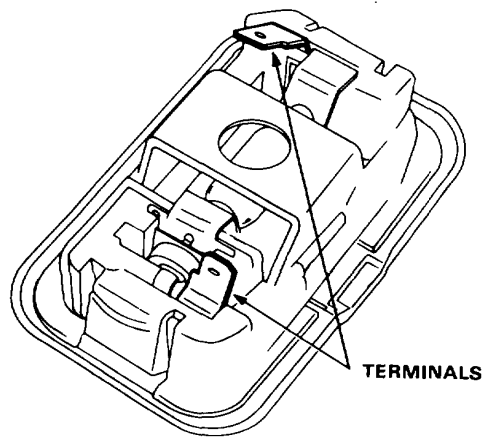
Trunk Light

Test

1. Pry off the trunk light lens from the housing.
2. Pry off the light assembly.
3. Disconnect the connectors from the housing.



4. Make sure that the bulb, is in good condition. Set the trunk light switch in the ON position and check for continuity between terminals.

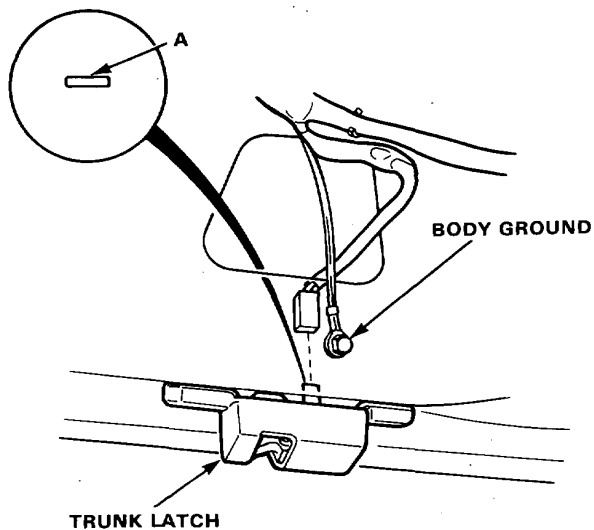




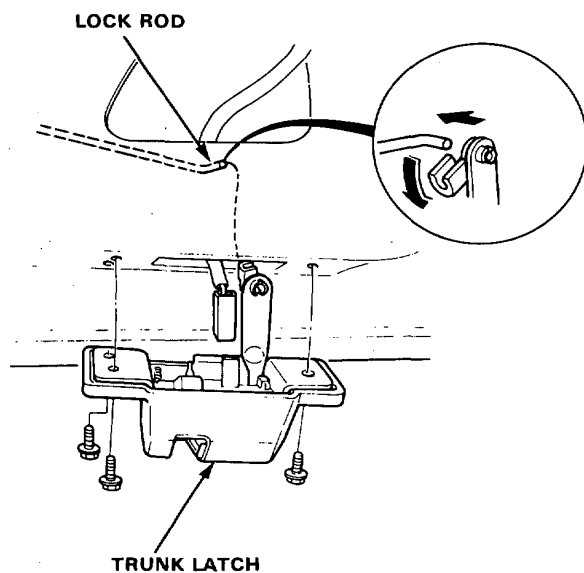
Latch Switch

Test/Replacement

1. Open the trunk lid.
2. Disconnect the connector from the trunk latch.
3. There should be continuity between the A terminal and body ground.

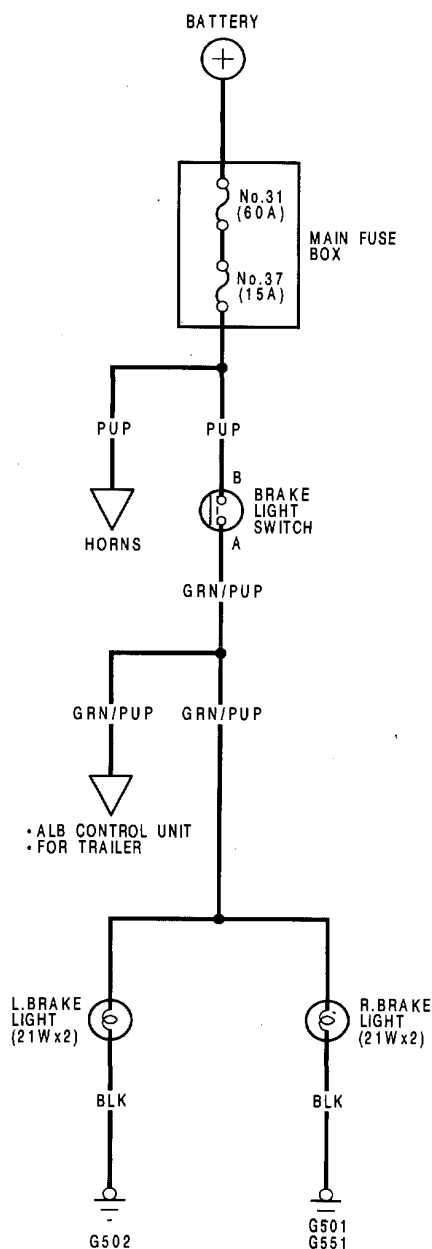


4. If necessary, remove the 3 bolts to pull out the latch from the trunk lid, then disconnect the lock rod from the latch.



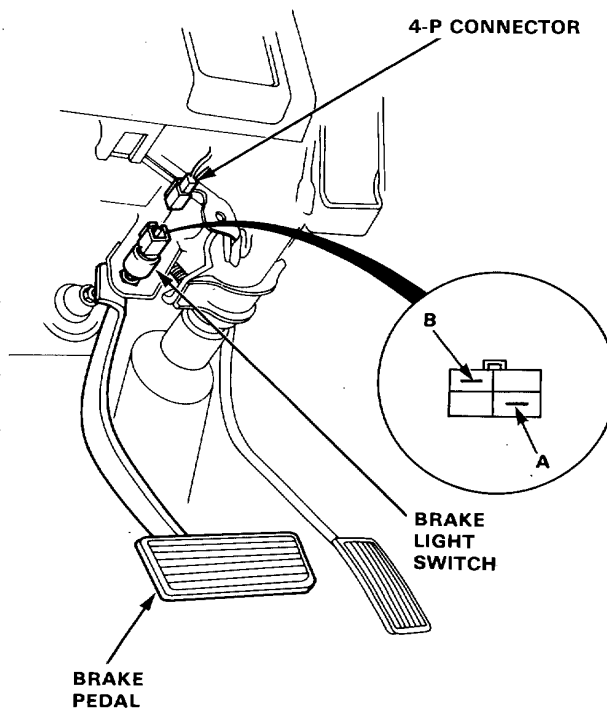
Brake Lights

Circuit Diagram



Test

1. If the brake lights and high mount brake light do not go on, check the No. 37 (15A) fuse in the main fuse box, and the brake light bulbs in the taillight, rear panel light and high mount brake light.
2. If the fuse and bulbs are OK, disconnect the 4-P connector from the brake light switch.

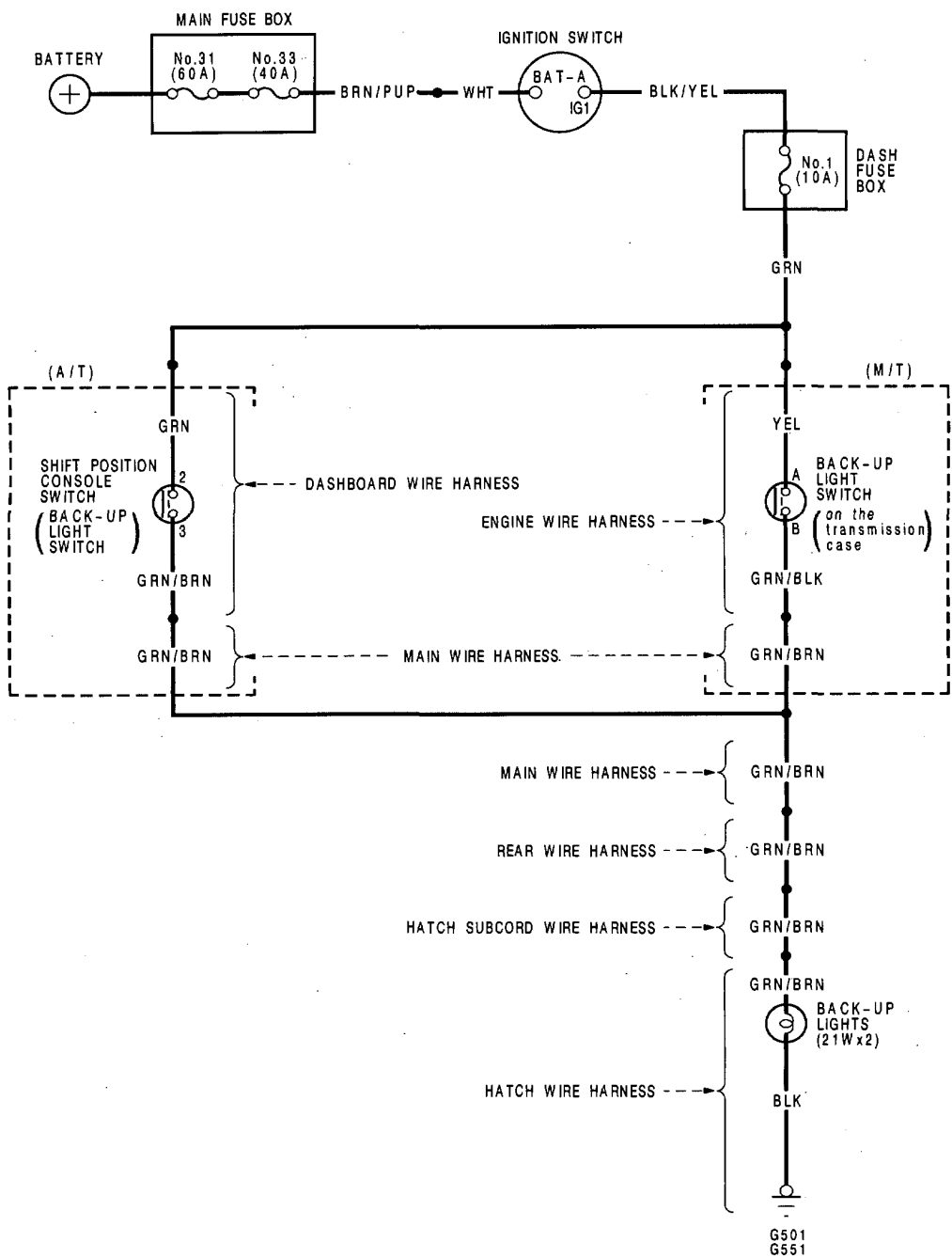


3. Check for continuity between the A and B terminals. There should be continuity with the brake pedal pushed.
 - If no continuity, adjust pedal height or replace the switch (see section 13).
 - If there is continuity, but the brake lights do not go on:
 - Poor ground (G501, G551, G502).
 - An open in the PUP or GRN/PUP wire.



Back up Lights

Circuit Diagram



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Back-up Lights

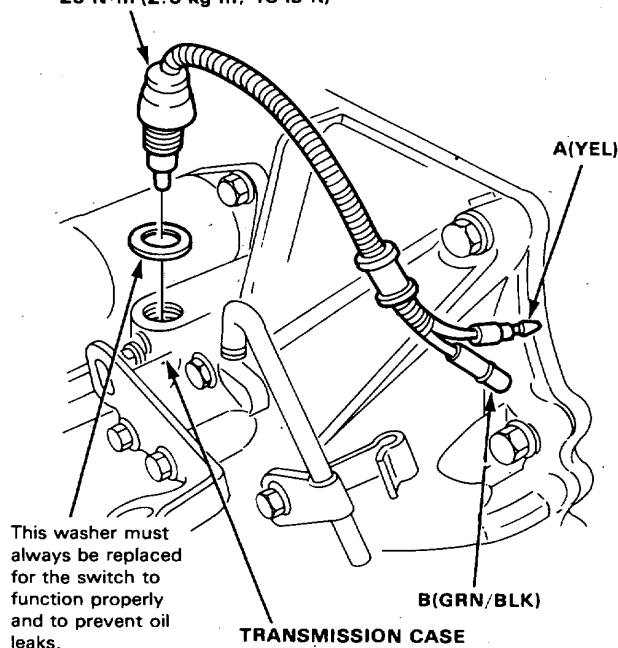
Test

Manual Transmission :

1. Test back-up light switch by placing the select lever in reverse and turning the ignition switch ON.
2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the rear panel light assembly.
3. If the fuse and bulbs are OK, disconnect the connectors from the back-up light switch.

SWITCH

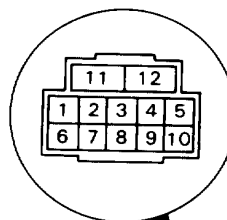
25 N·m (2.5 kg-m, 18 lb-ft)



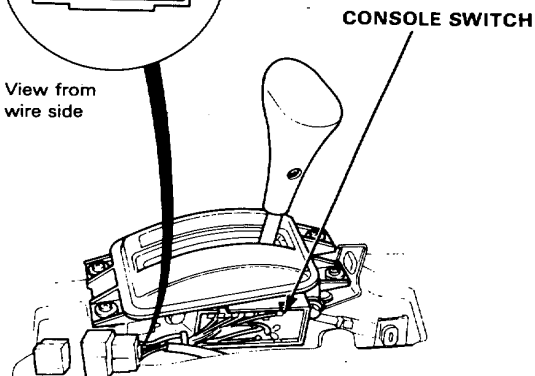
4. Check for continuity between the A and B wires with the switch installed to the transmission case. There should be continuity as the select lever engages "R".
 - If no continuity, replace the switch.
 - If there is continuity, but the back-up lights do not go on :
 - Poor ground (G501, G551).
 - An open in the GRN or YEL or GRN/BLK or GRN/BRN wire.

Automatic Transmission :

1. Test back-up light switch by shifting the select lever to "R" and turning the ignition switch ON.
2. If the back-up lights do not go on, check the No.1 (10A) fuse in the dash fuse box and the back-up light bulbs in the rear panel light assembly.
3. If the fuse and bulbs are OK, remove the center console, then disconnect the 10-P connector from the shift position console switch (back-up light switch).



View from
wire side



4. Check for continuity between No.2 and No.3 terminals. There should be continuity as the select lever engages "R".
 - If no continuity, replace the switch assembly (see page 16-88).
 - If there is continuity, but the back-up lights do not go on :
 - Poor ground (G501, G551).
 - An open in the GRN or GRN/BRN wire.

Turn Signal/Hazard Flasher System

Component Location Index



HAZARD SWITCH

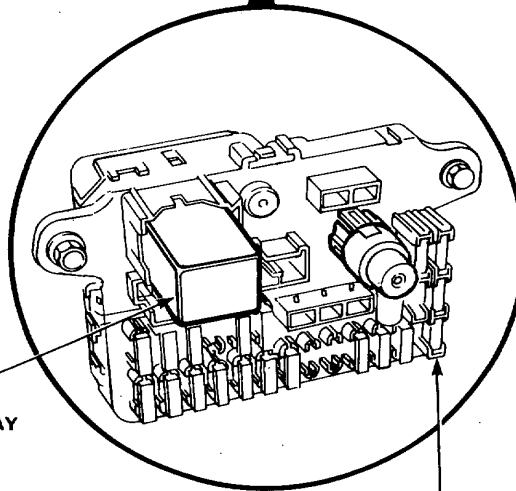
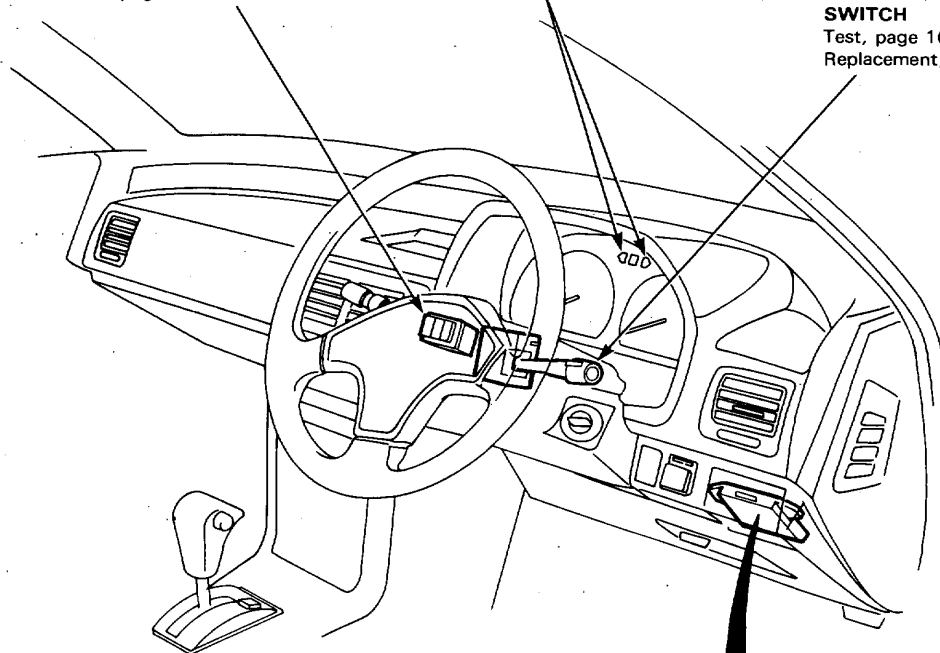
Removal, page 16-120
Test, page 16-120

TURN SIGNAL INDICATOR LIGHTS

(in the gauge assembly)
Gauge Assembly, page 16-85

LIGHTING/TURN SIGNAL SWITCH

Test, page 16-104
Replacement, page 16-105



TURN SIGNAL/HAZARD RELAY

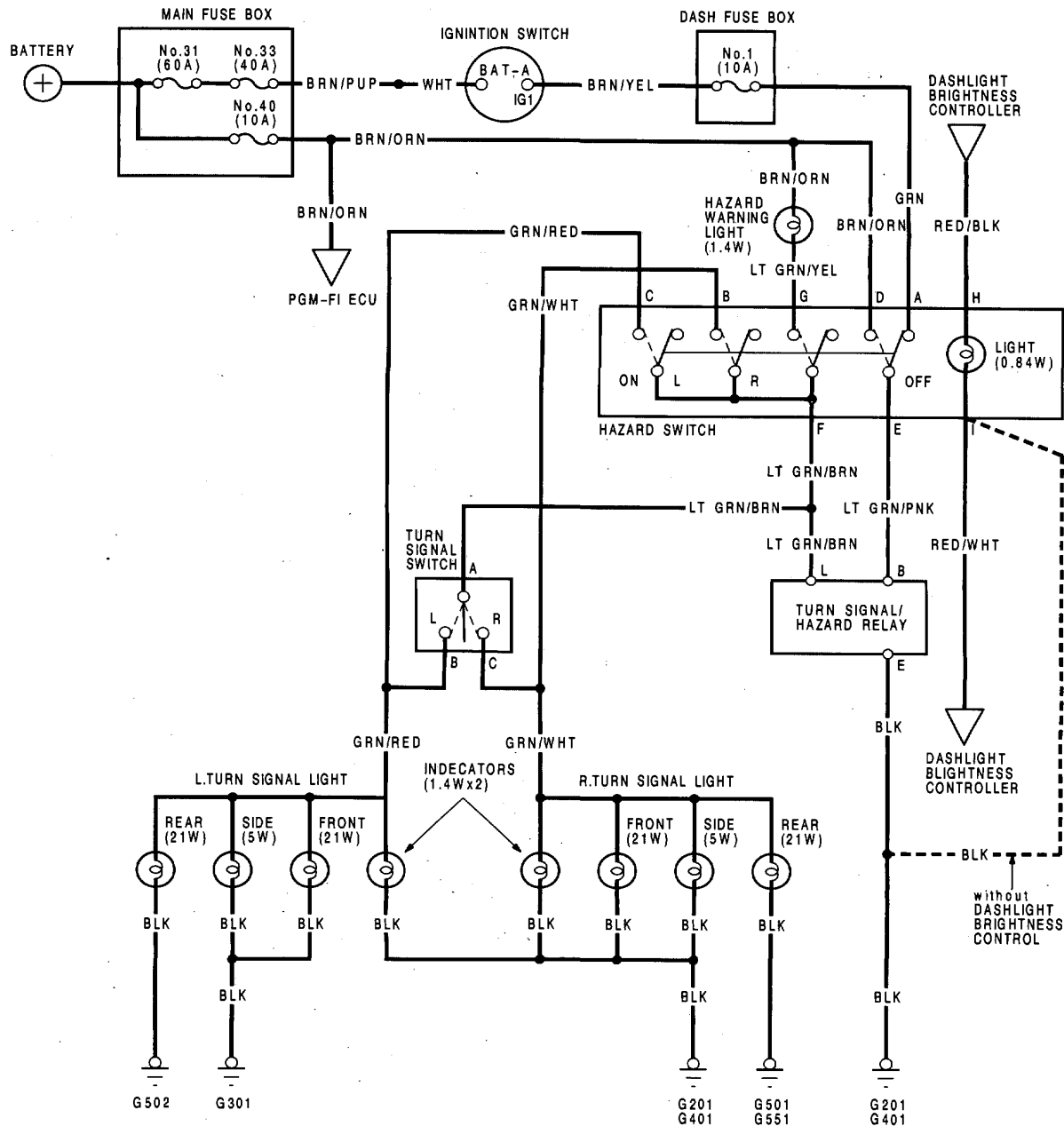
Input test, page 16-119

DASH FUSE BOX

(Located under dash, driver side)

Turn Signal/Hazard Flasher System

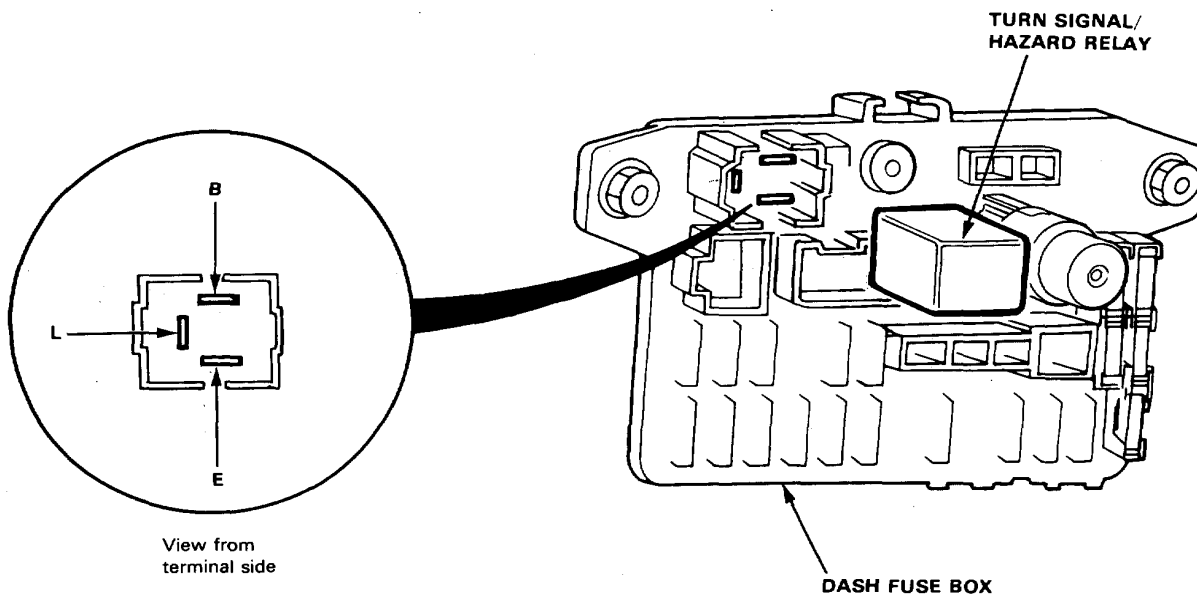
Circuit Diagram





Turn Signal/Hazard Relay Input Test

Remove the dashboard lower panel, then remove the turn signal/hazard relay from the dash fuse box.
Make the following input tests at the relay holder pins.
If all tests prove OK, but the relay fails to work, replace the turn signal/hazard relay.

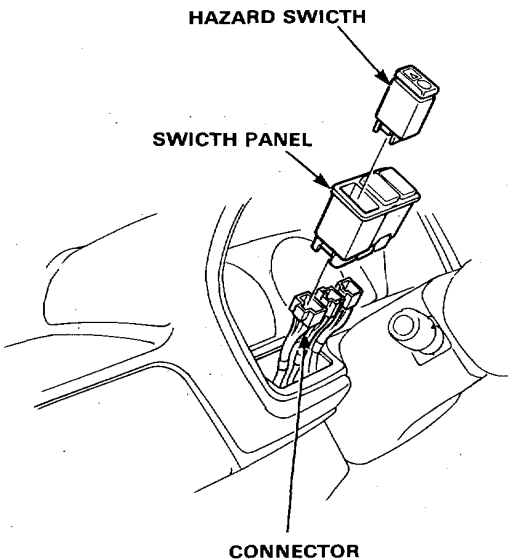


No.	Terminal	Test condition	Test : desired result	Possible cause (if result is not obtained)
1	E	Under all conditions.	Check for continuity to ground : should be continuity	• Poor ground (G201, G401) • An open in the BLK wire.
2	B	Ignition switch ON.	Check for voltage to ground : should be battery voltage.	• Blown No.1 (10A) fuse. • An open in the BRN or LT GRN/PNK wire. • Faulty hazard switch.
3	B and L	Hazard switch ON and connect the B terminal to the L terminal.	Hazard lights should come on.	• Blown No.40 (10A) fuse. • Blown bulb. • Poor ground (G201, G301, G401, G501, G502). • Faulty hazard switch. • An open in the BRN/ORN, LT GRN/BRN GRN/RED or GRN/WHT wire.
		Ignition switch ON and turn signal switch in R or L and connect the B terminal to the L terminal.	R or L side turn lights should come on.	• Faulty turn signal switch.

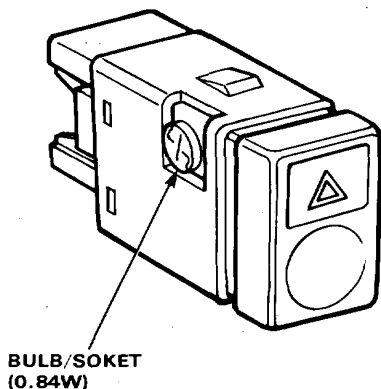
Turn Signal/Hazard Flasher System

Hazard Switch Removal

1. Remove the dashboard lower panel. Push out the switches from behind the instrument panel, then disconnect the connectors from the switches.
2. Remove the hazard switch from the switch panel.



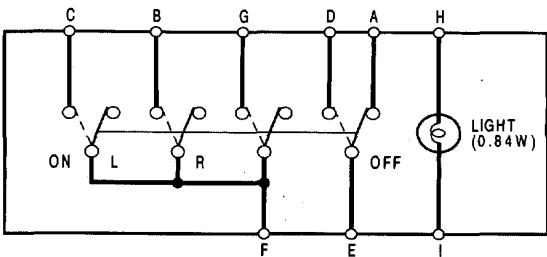
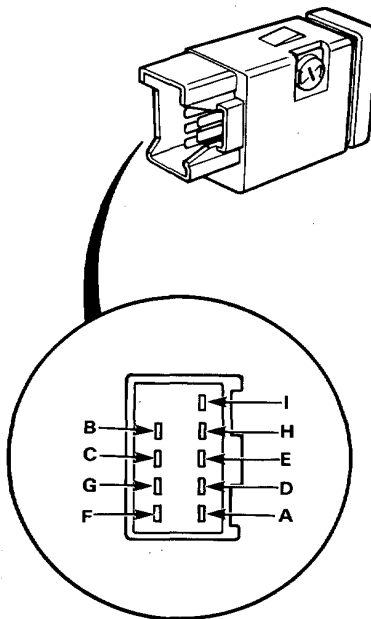
3. Turn the socket 45° counterclockwise (0.84W)



Hazard Switch Test

1. Remove the hazard switch.
2. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	A	B	C	D	E	F	G
OFF	○				○		
ON		○	○	○	○	○	○





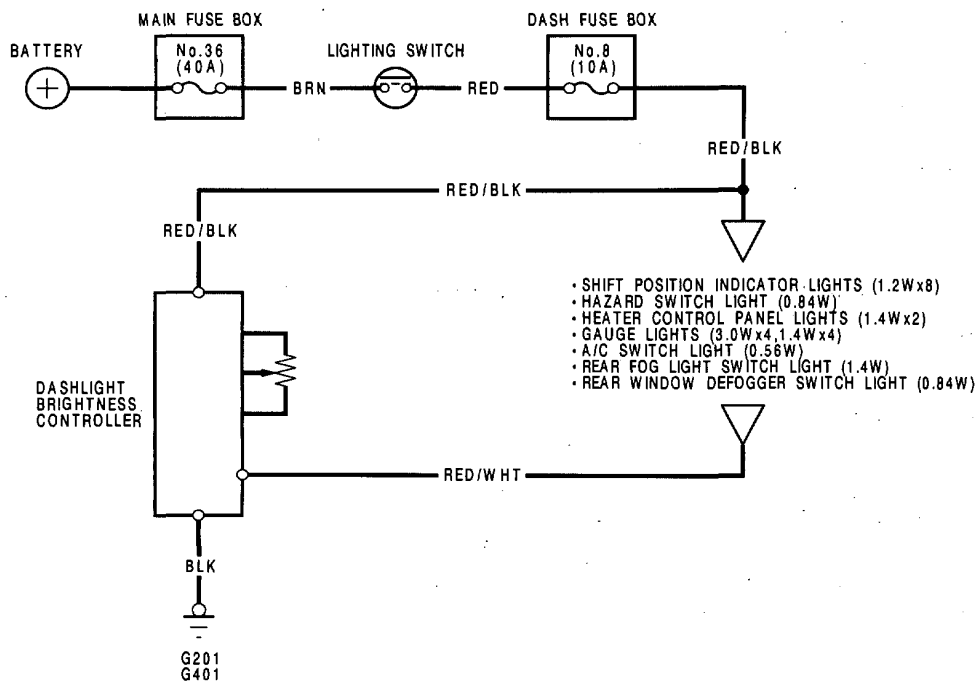
Dashlight Brightness Control

Component Location Index

**DASHLIGHT
BRIGHTNESS
CONTROLLER**
Removal, page 16-122
Input Test, page 16-122

LIGHTING SWITCH
Test, page 16-104
Replacement, page 16-105

Circuit Diagram



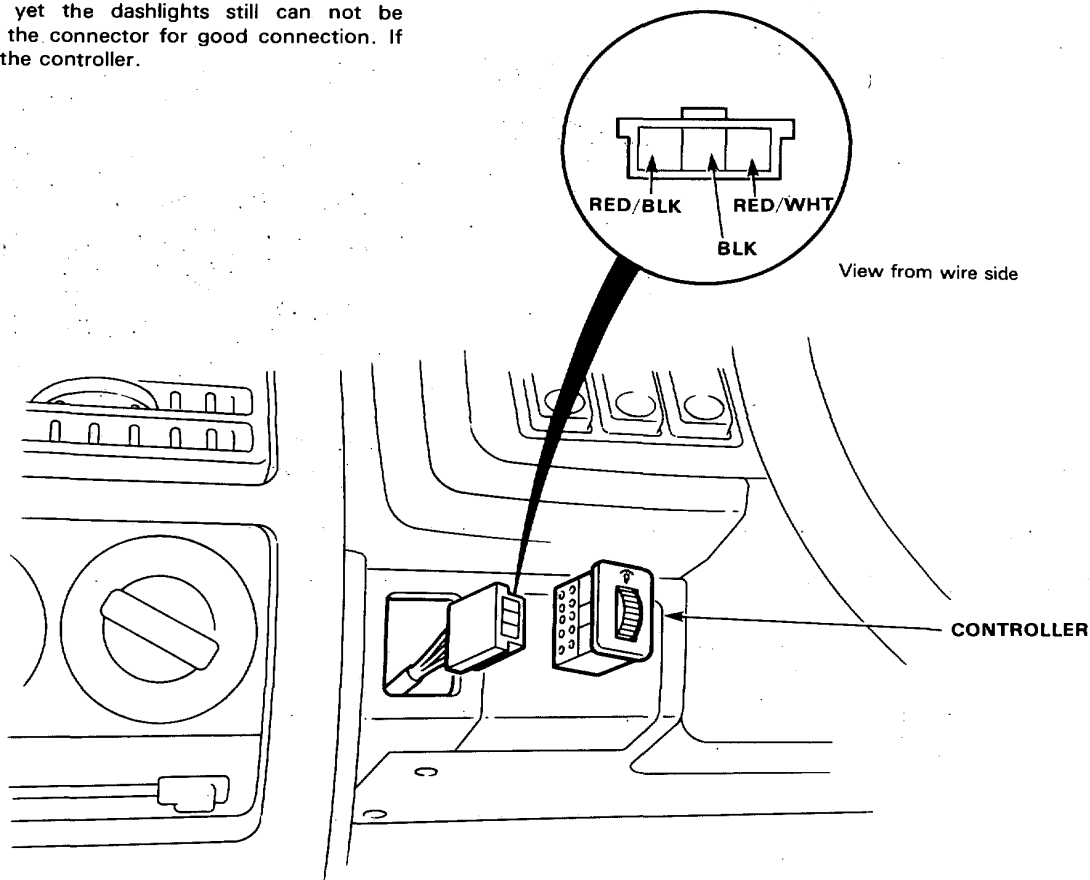
Dashlight Brightness Control

Controller Input Test

NOTE: The control unit is built in the dashlight brightness controller.

Remove the dashboard lower panel. Push out the controller from behind the instrument panel, then disconnect the 3-P connector from the controller.

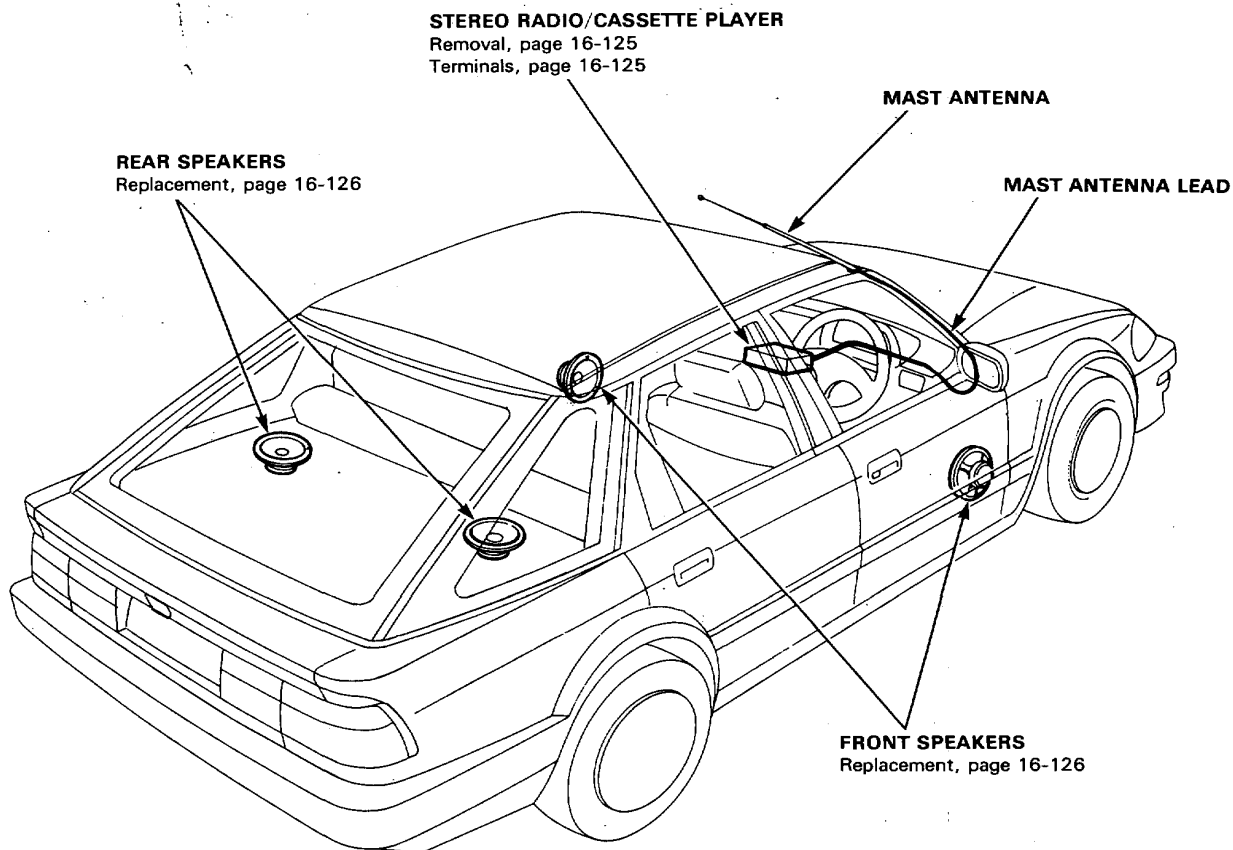
Make the following input tests at the harness pins. If all tests prove OK, yet the dashlights still can not be controlled, check the connector for good connection. If OK, then replace the controller.



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground : should be continuity.	• Poor ground (G201, G401) • An open in the wire.
2	RED/BLK	Lighting switch ON.	Check for voltage to ground : should be battery voltage.	• Blown No.8 (10A) fuse. • Faulty lighting switch. • An open in the wire.
3	RED	Lighting switch ON.	Attach to ground : dashlights should come on full bright. NOTE: If the fuse blows, the RED/WHT and the RED/BLK wires are connected.	• An open in the RED/BLK or RED/WHT wire.

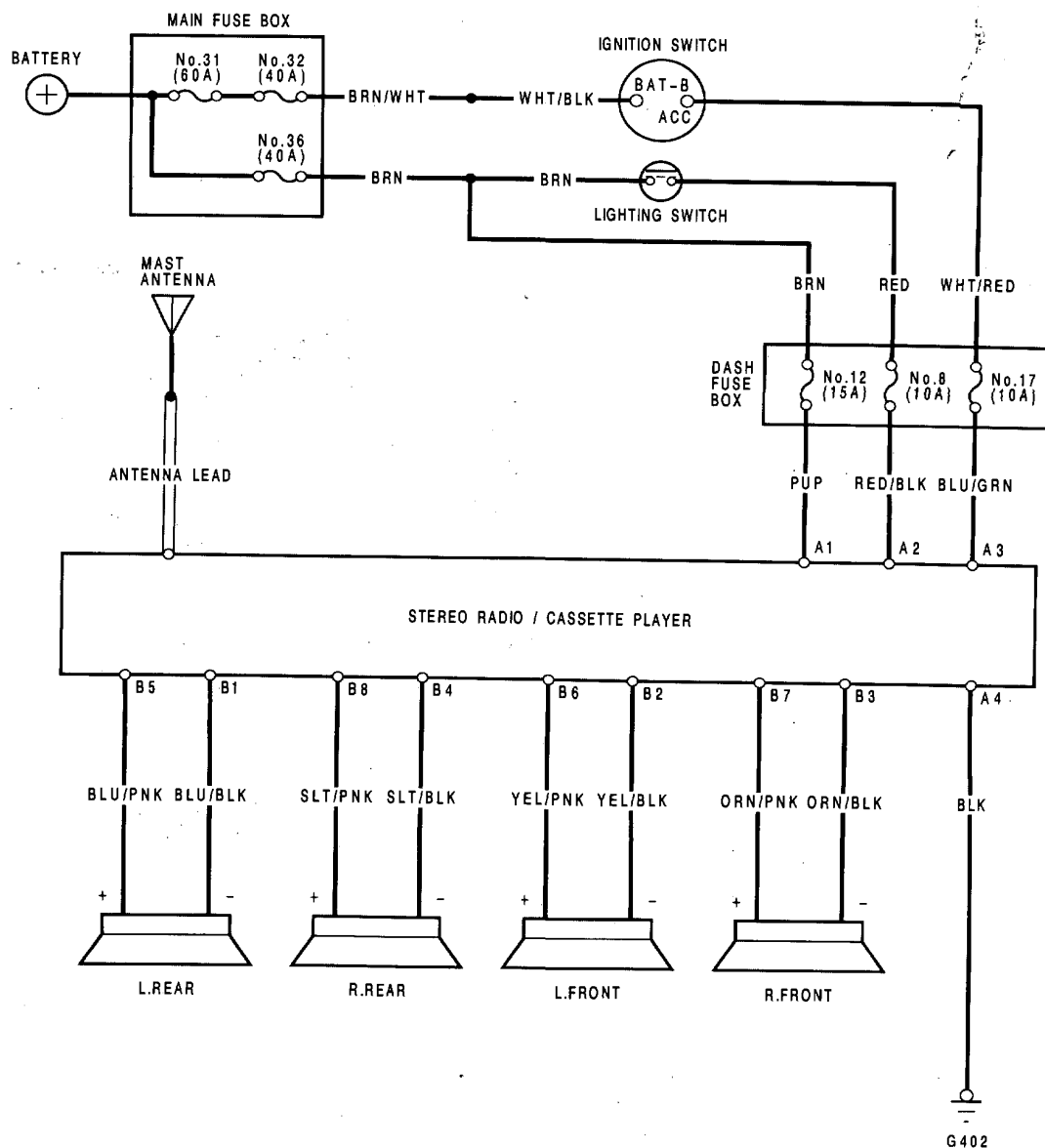
Stereo Sound System

Component Location Index



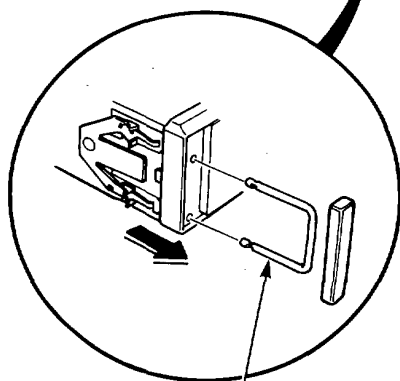
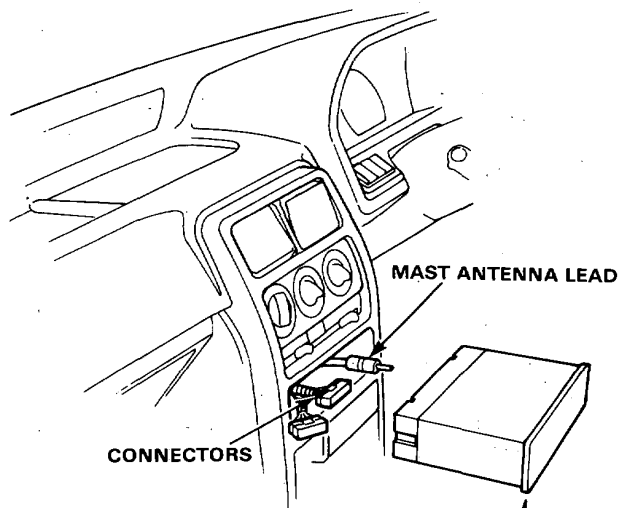
Stereo Sound System

Circuit Diagram



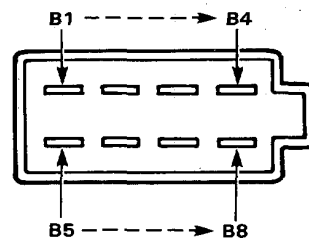
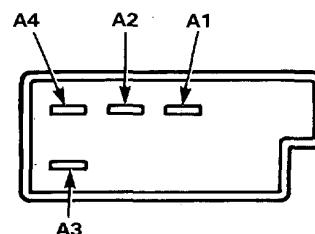


Unit Removal



REMOVER

Unit Terminals



Terminal	Wire	Destination
A1	PUP	Constant power (Tuning memory)
A2	RED/BLK	Light-ON signal
A3	BLU/GRN	ACC (Main stereo power supply)
A4	BLK	Ground

Terminal	Wire	Destination
A1	PUP	Constant power (Tuning memory)
A2	RED/BLK	Light-ON signal
A3	BLU/GRN	ACC (Main stereo power supply)
A4	BLK	Ground

Terminal	Wire	Destination
B1	BLU/BLK	Left rear speaker ⊖
B2	YEL/BLK	Left front speaker ⊖
B3	ORN/BLK	Right front speaker ⊖
B4	SLT/BLK	Right rear speaker ⊖
B5	BLU/PNK	Left rear speaker ⊕
B6	YEL/PNK	Left front speaker ⊕
B7	ORN/PNK	Right front speaker ⊕
B8	SLT/PNK	Right rear speaker ⊕

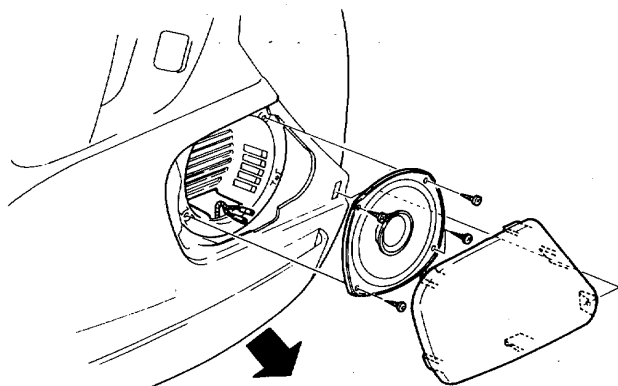
Terminal	Wire	Destination
B1	BLU/BLK	Left rear speaker ⊖
B2	YEL/BLK	Left front speaker ⊖
B3	ORN/BLK	Right front speaker ⊖
B4	SLT/BLK	Right rear speaker ⊖
B5	BLU/PNK	Left rear speaker ⊕
B6	YEL/PNK	Left front speaker ⊕
B7	ORN/PNK	Right front speaker ⊕
B8	SLT/PNK	Right rear speaker ⊕

Stereo Sound System

Speaker Replacement

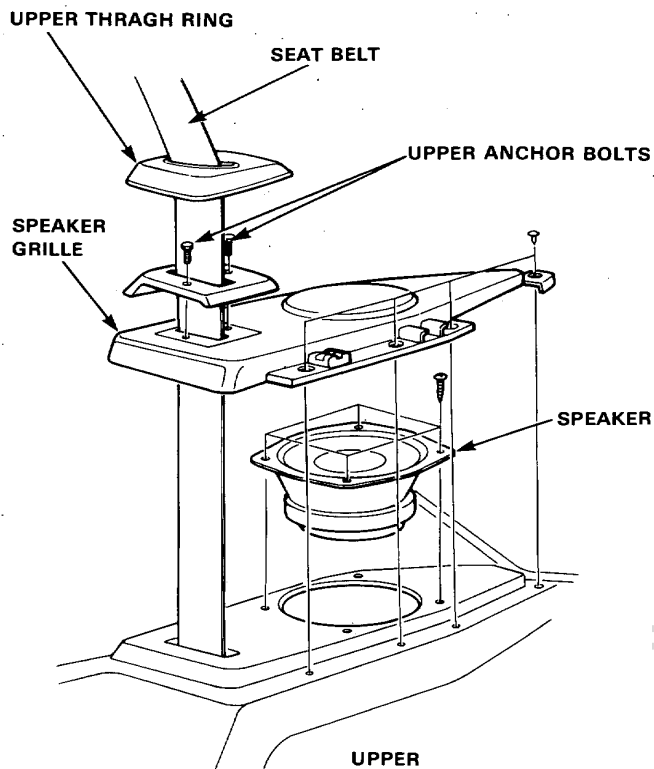
Front Speakers :

1. Remove the door trim panel.
2. Remove the 4 screws and disconnect the wires then remove the speaker.



Rear Speakers:

1. Remove the upper anchor bolt. (see 14 section).
2. Remove the speaker grille.
3. Remove the 4 screws and disconnect the wires then remove the speaker.



Cigarette Lighter

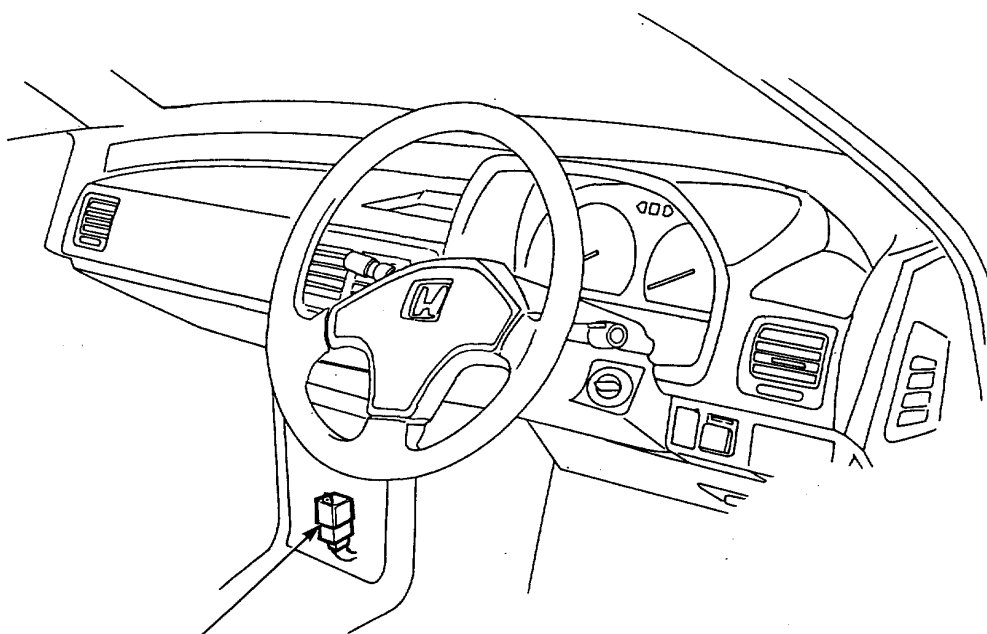
Component Location Index



• CIGARETTE LIGHTER

Test, page 16-128

Replacement, page 16-129



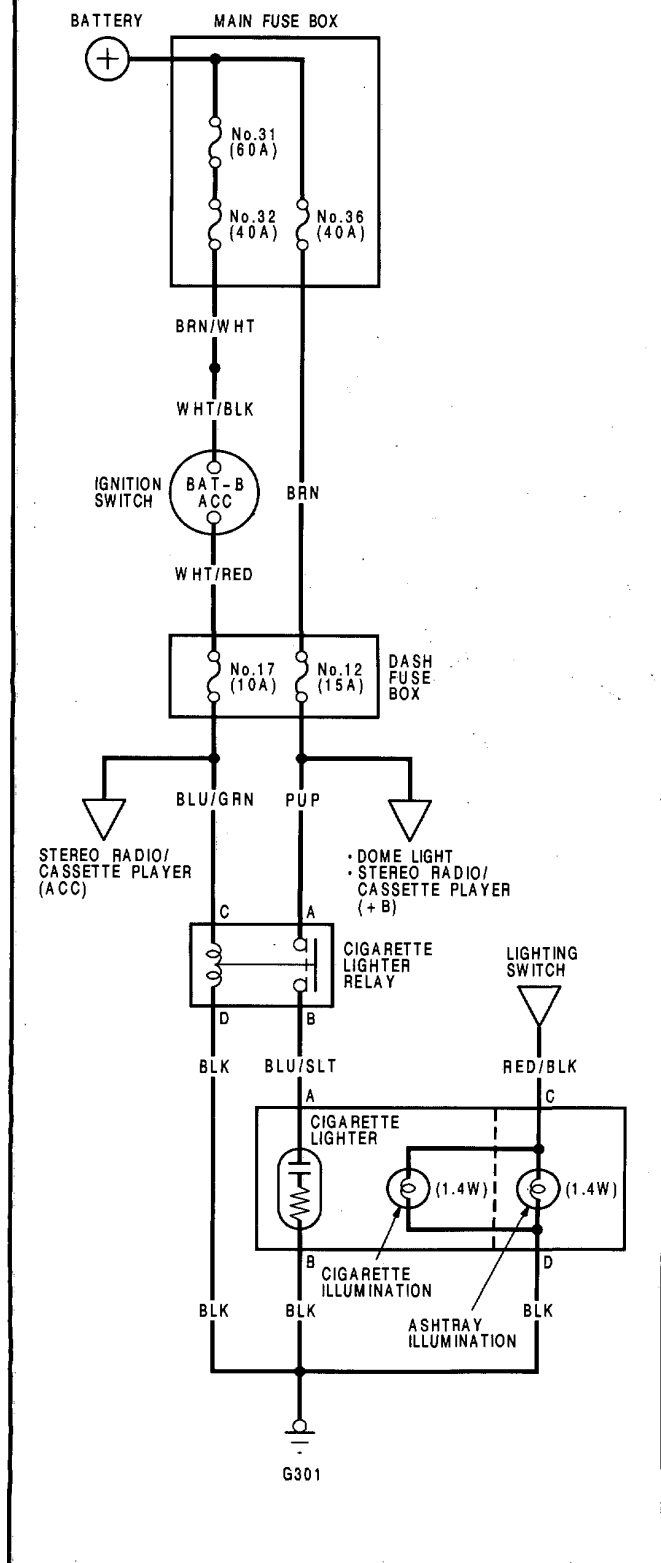
CIGARETTE LIGHTER RELAY

[Wire colors: BLU/SLT, BLK, BLU/GRN and pup]

Test, page 16-129

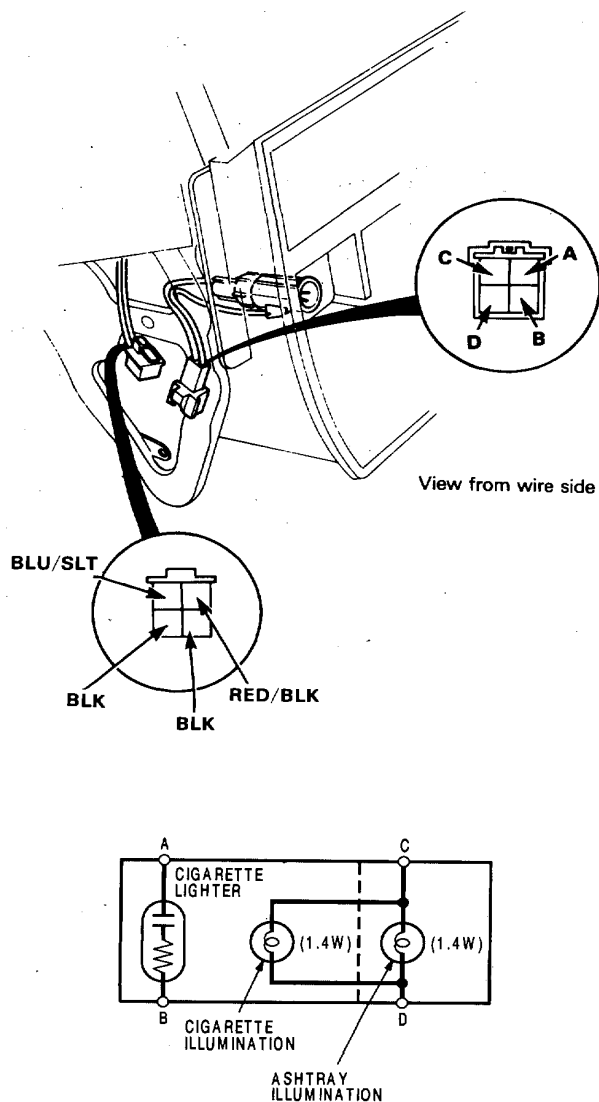
Cigarette Lighter

Circuit Diagram



Test

1. Remove the center instrument panel, then disconnect the 4-P connector from the cigarette lighter.
2. Check for voltage between the BLU/SLT and the BLK terminal.
There should be battery voltage.
 - If there is no voltage, check for
 - Blown No. 12 (15A) or No. 17 (10A) fuse in the dash fuse box.
 - An open in the Pup or BLU/SLT wire.
 - Faulty cigarette lighter relay. (Test, page 16-)
 - If there is battery voltage, replace the cigarette lighter assy.

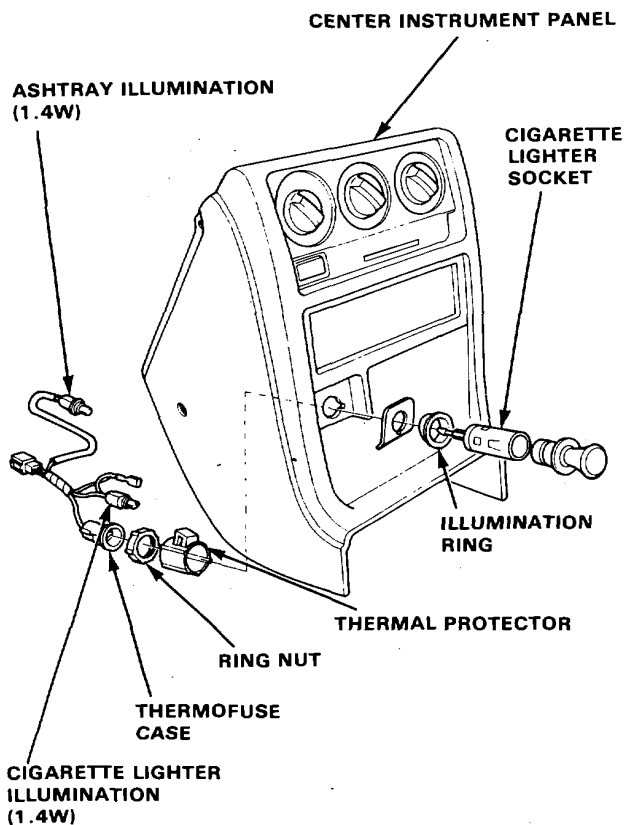




Replacement

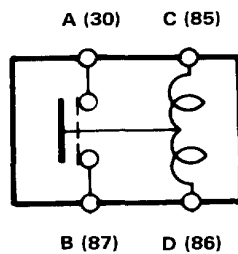
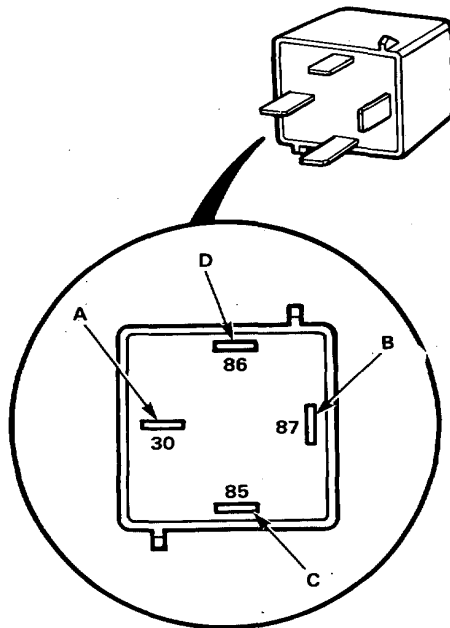
1. Remove the center instrument panel, then disconnect the 4-P connector from the cigarette lighter.
2. Disconnect the thermofuse case from the socket end.
3. Remove the ring nut and separate the cigarette lighter socket.

NOTE: When installing the cigarette lighter, align the lug on the cigarette lighter socket with the slot in the panel.



Cigarette Lighter Relay Test

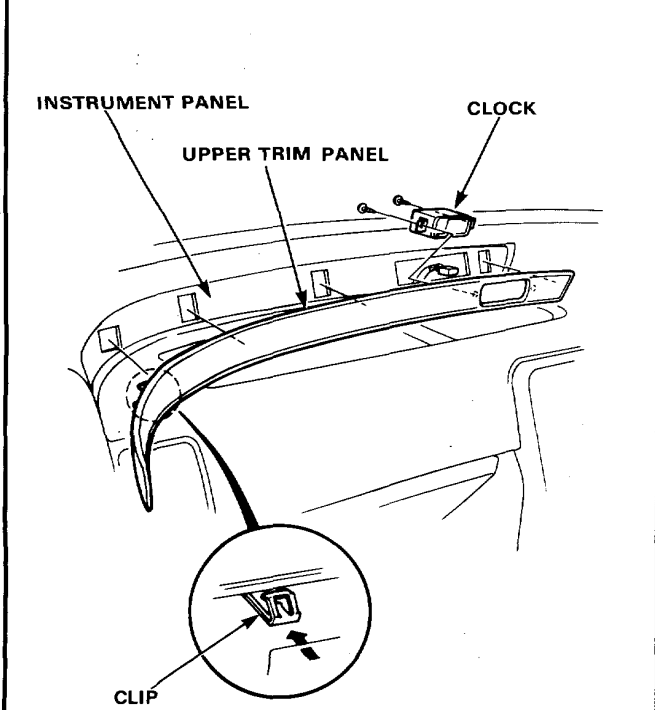
There should be continuity between the A and B terminals when the battery is connected to the C and D terminals. There should be no continuity when the battery is disconnected.



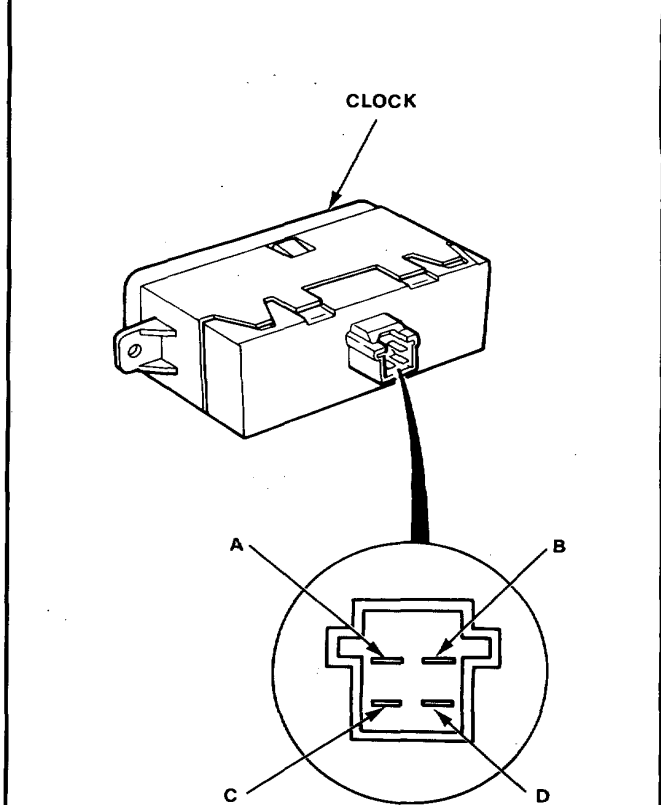
Clock

Removal

- 1. Remove the upper trim panel from the instrument panel, then carefully pull out the 10 clips.
- 2. Disconnect the 4-P connector from the clock.
- 3. Remove the 2 screws and clock from the panel.



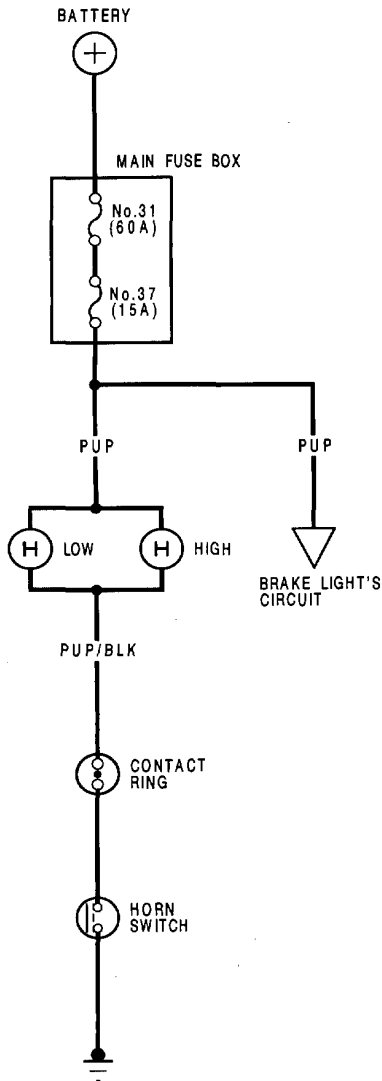
Terminals



Terminal	Wire	Destination
A	WHT/BLU	Constant power (Time memory)
B	YEL	IG1 (Main clock power supply)
C	RED/BLK	Light-on signal
D	BLK	Ground

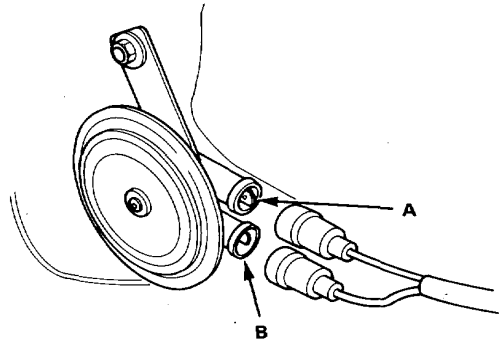
Horn

Circuit Diagram



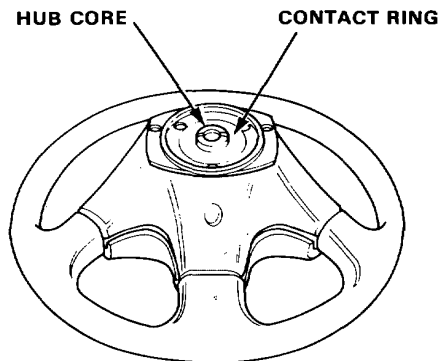
Horn Test

1. Remove the front bumper.
 - Remove the right and left front turn signal lights.
 - Remove the 2 bumper mounting screws on each side at the corner edge of the bumper.
 - Remove the 2 lower bumper mounting bolts and the 4 bumper mounting bolts.
 - Lift and remove the bumper by sliding it forward.
 - Installation sequence is essentially the reverse order of removal.
2. Disconnect the wires from the horn.
3. Test the horn by connecting battery voltage to the A and B terminals. The horn should sound.
4. If the horn fails to sound, replace it.



Switch Test

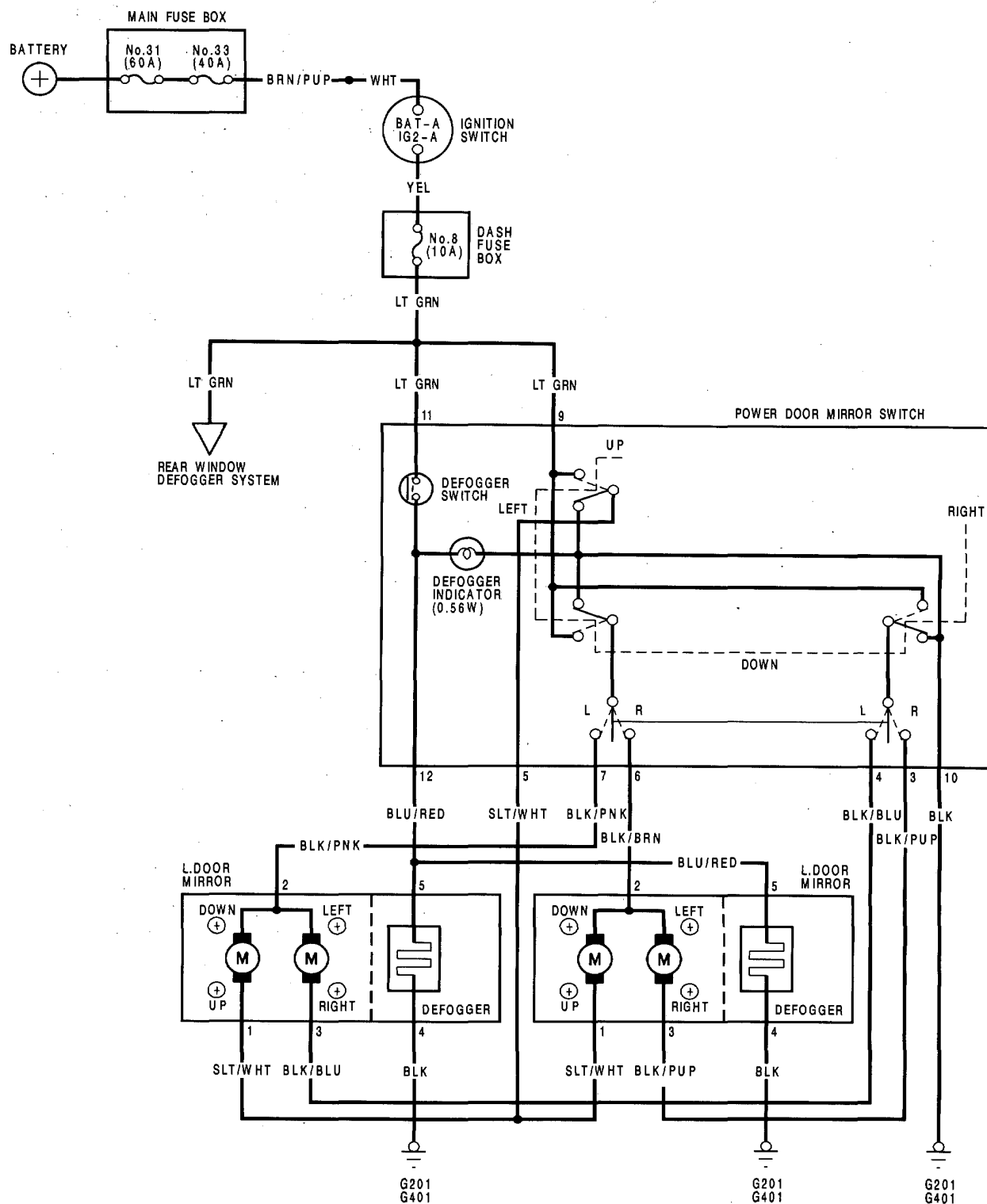
1. Remove the steering wheel, then turn it over. (see, page 16-104)
2. Check for continuity between the contact ring and hub core on the steering wheel with the horn switch pressed. There should be continuity.



3. If there is no continuity, repair the horn switch.

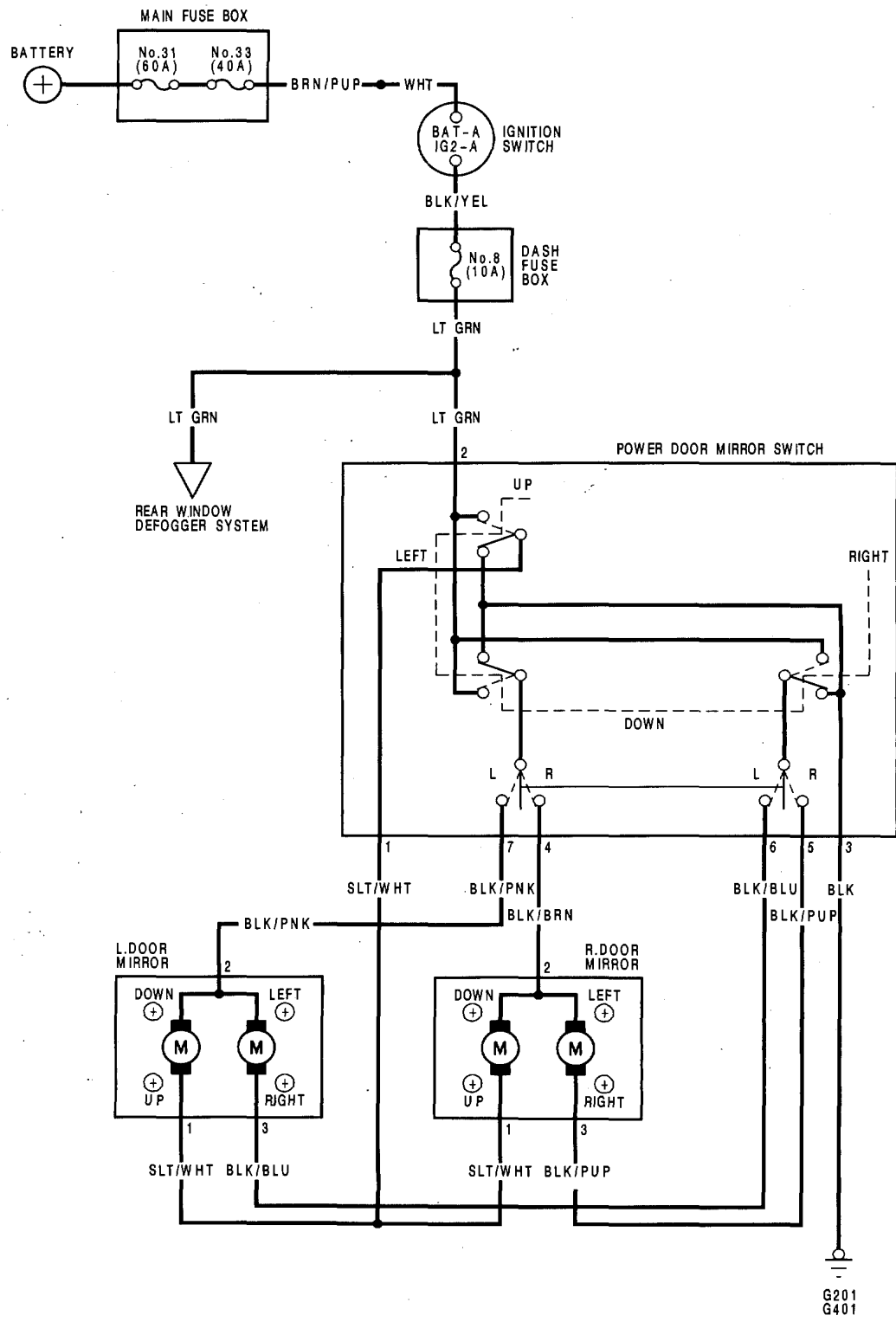
Power Door Mirrors

Circuit Diagram (with Defogger)





(Without Defogger)



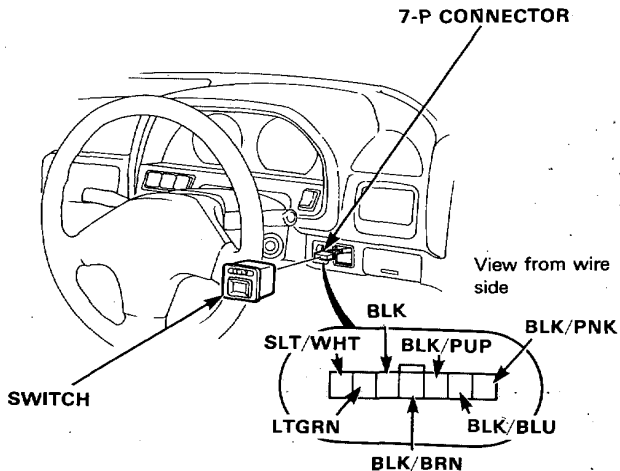
cardiagn.com

Power Door Mirrors

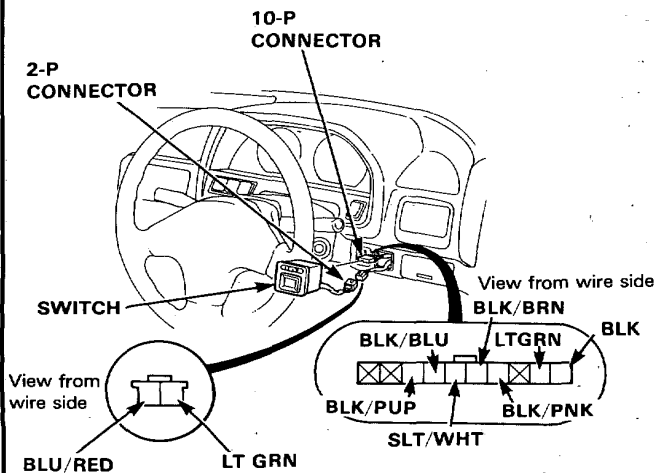
Function Test

NOTE: Before testing, remove the dashboard lower panel and push out the switch from behind the instrument panel, then disconnect the 7-P connector (and 10-P connector and 2-P connector) to remove the switch.

Without defogger:



With defogger:



Mirror Test

One or both inoperative:

1. Check for voltage between the LT GRN terminal and body ground with the ignition switch ON. There should be battery voltage.
 - If there is no voltage, check for
 - Blown No.8 (10A) fuse in the dash fuse box.
 - An open in the LT GRN wire.
 - If there is battery voltage, go to step 2.
2. Check for continuity between the BLK terminal and body ground. There should be continuity.
 - If there is no continuity, check for
 - An open in the BLK wire.
 - Poor ground (G201, G401).

Right inoperative:

Connect the BLK/BRN terminal to the BLU/GRN terminal and the SLT/WHT (or BLK/PUP) terminal to the body ground with jumper wires.

The right mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the right door trim panel and check for open in the SLT/WHT (or BLK/PUP) wire between the right door mirror and the switch. If the wire is OK, check the right door mirror.
- If the mirror neither tilts down nor swings left, repair the BLK/BRN wire.
- If the mirror operates properly, check the mirror switch.

Left inoperative:

Connect the LT GRN terminal to the BLK/PNK terminal and the SLT/WHT (or BLK/BLU) terminal to the body ground with jumper wires.

The left mirror should tilt down (or swing left) when the ignition switch is turned ON.

- If the mirror does not tilt down (or does not swing left), remove the left door trim panel and check for open in the SLT/WHT (or BLK/BLU) wire between the left door mirror and switch. If the wire is OK, check the left door mirror.
- If the mirror neither tilts down nor swings left, repair the BLK/PNK wire.
- If the mirror operates properly, check the mirror switch.

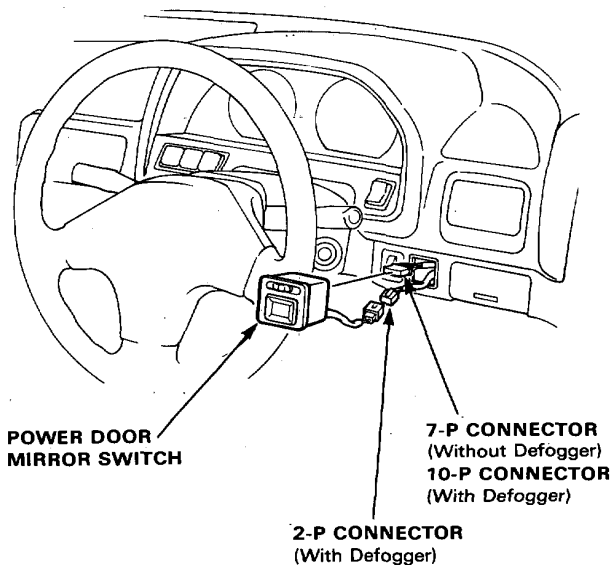


Defogger Test

1. Check for voltage between the LT GRN terminal of the 2-P connector and body ground with the ignition switch ON.
There should be battery voltage.
 - If there is no voltage, check for:
 - Blown No.8 (10A) fuse in the dash fuse box.
 - An open in the LT GRN wire between the dash fuse box and the defogger switch.
 - If there is battery voltage, go to step 2.
2. Connect the LT GRN terminal of the 2-P connector to the BLU/RED terminal with a jumper wire. Both the right and left mirrors should gradually warm up when the ignition switch is turned ON.
 - If neither warm up, repair the BLU/RED wire.
 - If only one fails to warm up, check its mirror defogger element.
 - If both warm up, check the switch.

Switch Removal

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 7-P connector (without Defogger) or 10-P and 2-P connector's (with Defogger) to remove the switch.



Power Door Mirrors

Switch Test

- 1. Remove the power door mirror switch from the instrument panel.
- 2. Check for continuity between the terminal's in each switch position according to the table.

With Defogger: Mirror switch

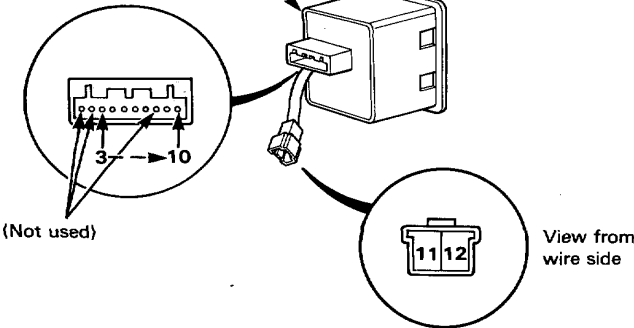
Terminal		3	4	5	6	7	9	10
Position								
R	OFF	○	—	○	○			○
	UP			○	—	○		
	DOWN				○	—	○	
	LEFT				○	—	○	
	RIGHT	○	—				○	
L	OFF		○	○	—	○		○
	UP			○	—	○		
	DOWN					○	○	
	LEFT					○	○	
	RIGHT		○	—			○	

Defogger Switch

Terminal		11	12		10
Position					
OFF			○	○	○
ON		○	○	○	○

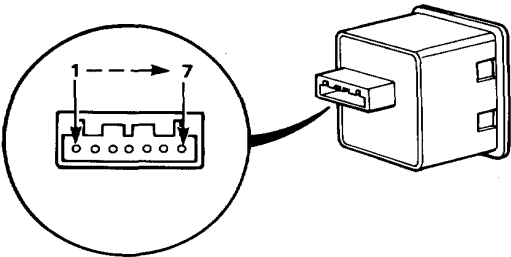
(Internal connection)

BLUB/SOCKET
(0.56W)



Without Defogger: Mirror switch

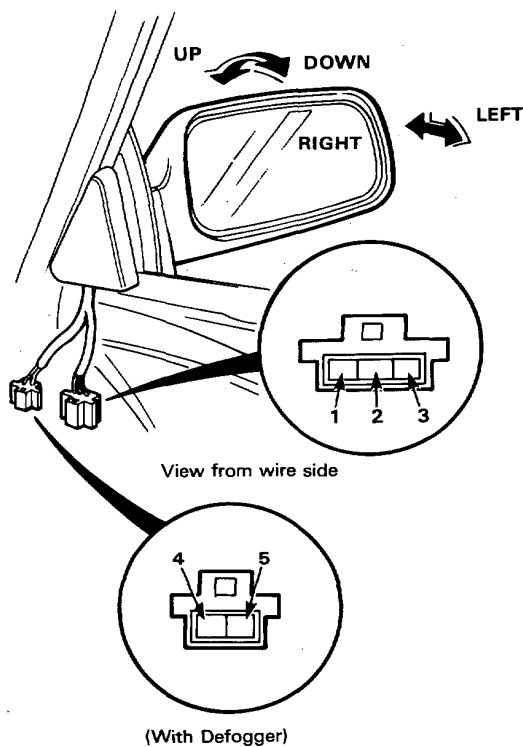
Terminal		1	2	3	4	5	6	7
Position								
R	OFF	○	—	○	○	○		
	UP	○	○					
	DOWN		○	—	○			
	LEFT		○	—	○			
	RIGHT		○	—	○	○		
L	OFF	○	—	○	—	○	○	○
	UP	○	○					
	DOWN		○	—	○			○
	LEFT		○	—	○			○
	RIGHT		○	—	○	○		





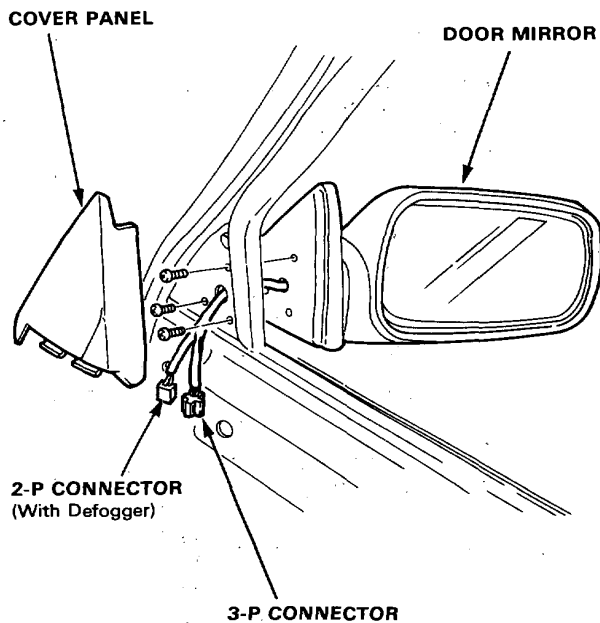
Door Mirror Test

1. Remove the door trim panel, then disconnect the 3-P connector from the mirror.
2. Test actuator operation:
TILT UP: Connect battery positive to the No.1 terminal and negative to the No.2 terminal.
TILT DOWN: Connect battery positive to the No.2 terminal and negative to the No.1 terminal.
SWING LEFT: Connect battery positive to the No.2 terminal and negative to the No.3 terminal.
SWING RIGHT: Connect battery positive to the No.3 terminal and negative to the No.2 terminal.
3. If the mirror fails to operate properly, replace it.
4. For with defogger, check for continuity between the No.4 and No.5 terminals (R x 10³ scale). There should be continuity.



Door Mirror Replacement

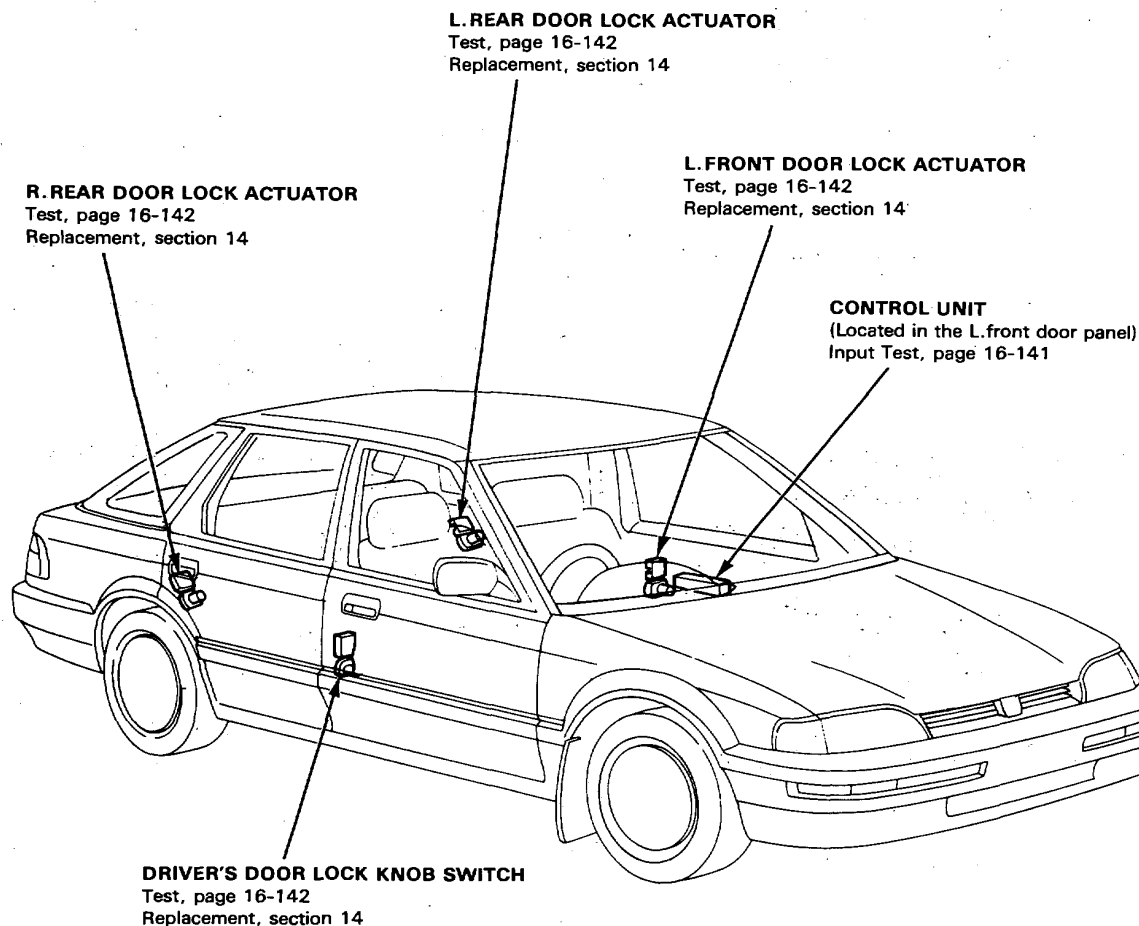
1. Remove the door trim panel, then disconnect the 3-P connector (and 2-P connector) from the mirror.
2. Carefully pry out the cover panel with a flat tip screwdriver.
3. While holding the mirror with one hand, remove its mount screws with the other.



Power Door Locks

Component Location Index

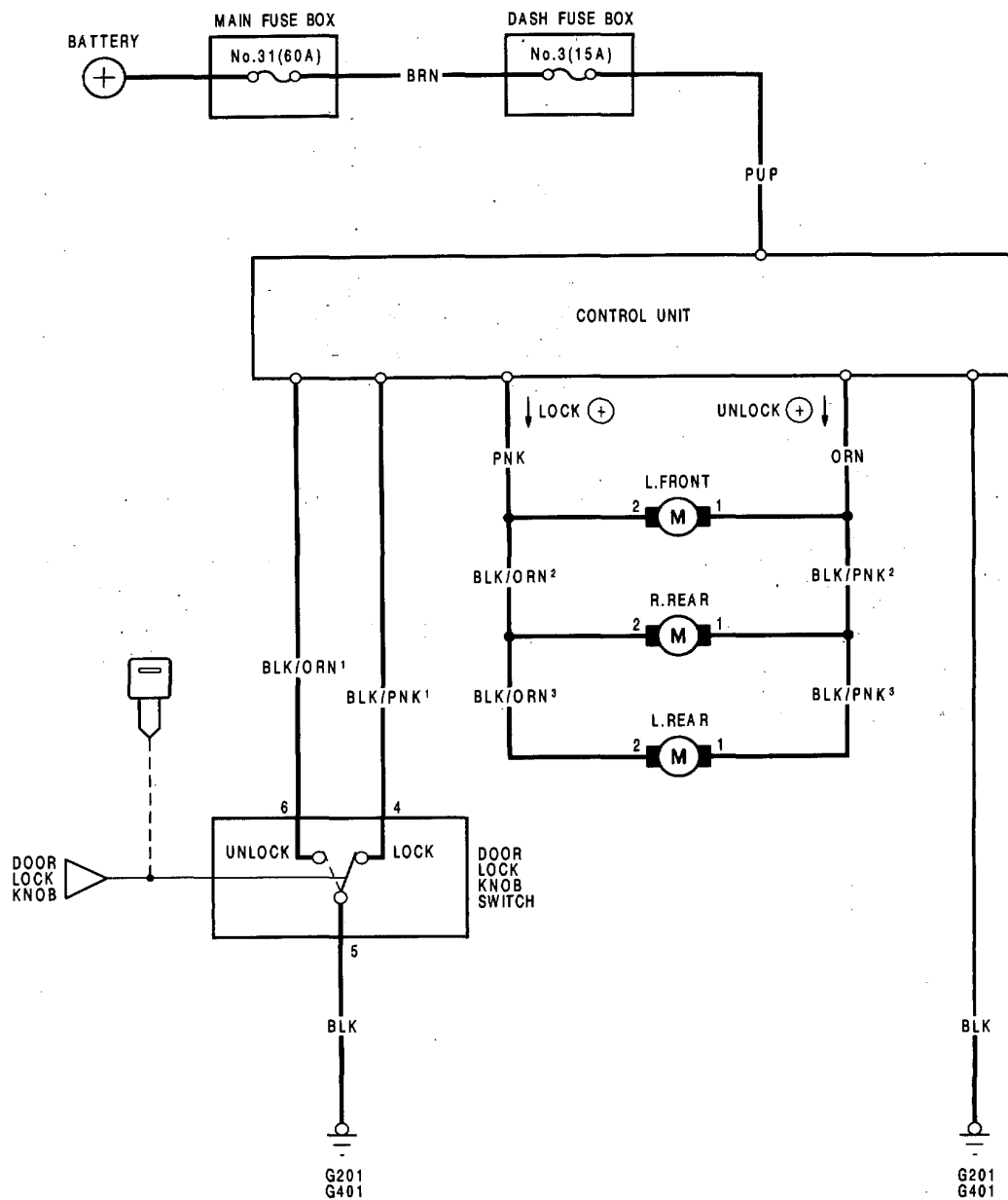
• Troubleshooting, page 16-129





Circuit Diagram

NOTE: Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/ORN¹ and BLK/ORN² are not same).



Power Door Locks

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom		Item to be inspected							
			Blown No.3 (15A) fuse (in the dash fuse box)	Door lock knob switch	Control unit input	Passenger door actuator	Disconnected or obstructed door lock rod/linkage	Poor ground	Open circuit in wires or loose or disconnected terminals
Power door lock system do not operate at all.			1		2			G201 G401	BRN or PUP
Doors do not lock or unlock with driver's door lock knob switch.	All passenger doors.		1	2	3		4	G201 G401	BLK/ORN ¹ , BLK/PNK ¹ PNK or ORN
	One or more passenger door..					1			PNK, ORN BLK/ORN ² or BLK/PNK ²

CAUTION: To prevent damage to the motor,
apply battery voltage momentarily.

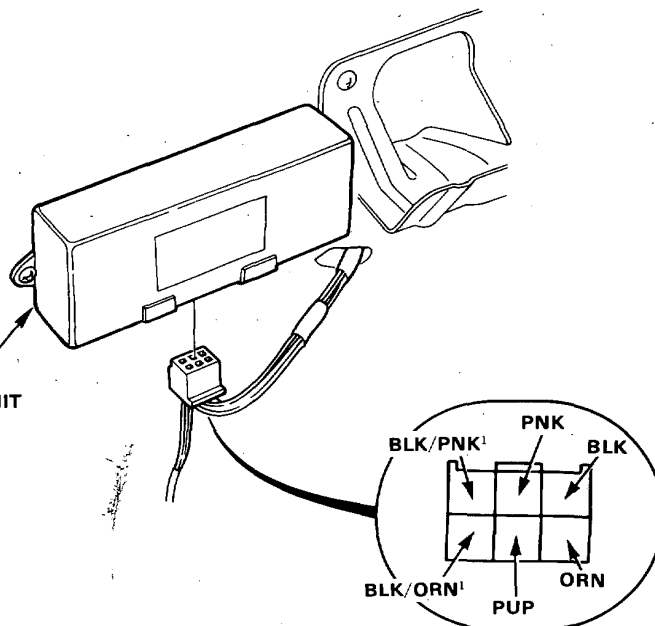


Control Unit Input Test

1. Remove the L.front door trim panel.
2. Remove the 2 screws and the control unit from the door panel.
3. Disconnect the 6-P connector from the control unit. Make the following input tests at the harness pins.

NOTE : Recheck the connections between the 6-P connector and the control unit, then replace the control unit if all input tests prove OK.

CONTROL UNIT



View from wire side

No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground : should be continuity.	• Poor ground (G201, G401) • An open in the wire.
2	PUP	Under all conditions.	Check for voltage to ground: should be battery voltage.	• Blown No.3 (15A) fuse. • An open in the wire.
3	BLK/PNK¹	Driver's door lock knob in LOCK.	Check for continuity to ground : should be continuity.	• Faulty door lock knob switch. • Poor ground (G201, G401). • An open in the wire.
4	BLK/ORN¹	Driver's door lock knob in UNLOCK.	Check for continuity to ground : should be continuity.	• Faulty door lock knob switch. • Poor ground (G201, G401). • An open in the wire.
5	ORN and PUP	Connect the PUP terminal to the PNK terminal, and the ORN terminal to the BLK terminal momentarily.	Check door lock operation : Passenger doors should lock as the battery is connected momentarily.	• Faulty actuators. • An open in the wire.
		Connect the PUP terminal to the ORN terminal, and the PNK terminal to the BLK terminal momentarily.	Check door lock operation : Passenger doors should unlock as the battery is connected momentarily.	

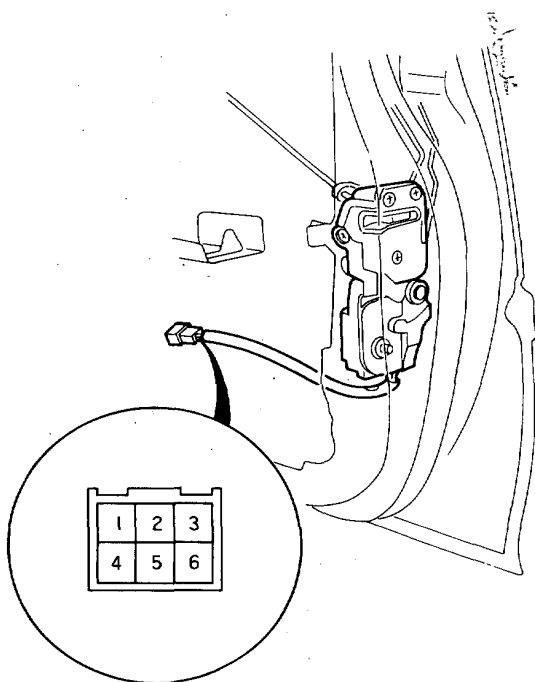
CAUTION : To prevent damage to the motor, apply battery voltage momentarily.

Power Door Locks

Door Lock Knob Switch Test

1. Remove the driver's door trim panel.
2. Disconnect the 6-P connector from the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal	4	5	6
Position			
UNLOCK		○	○
LOCK	○	○	

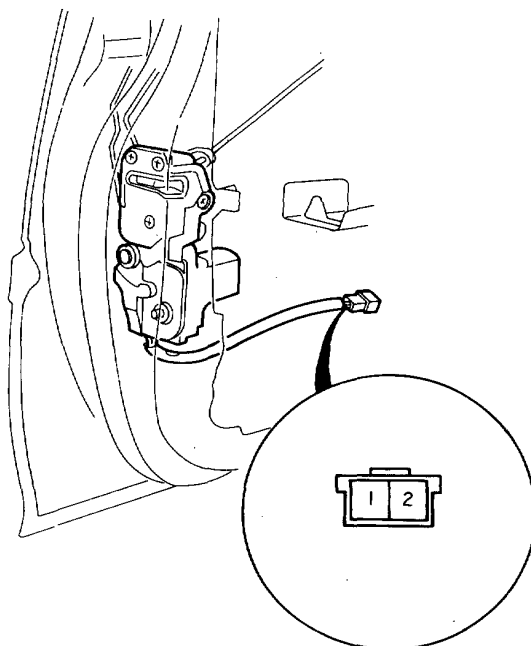


View from wire side

Passenger Door Actuator Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the actuator.
3. Test actuator operation by applying battery voltage to the No. 1 and No. 2 terminals. Test the actuator in each direction, by switching the leads from the battery.

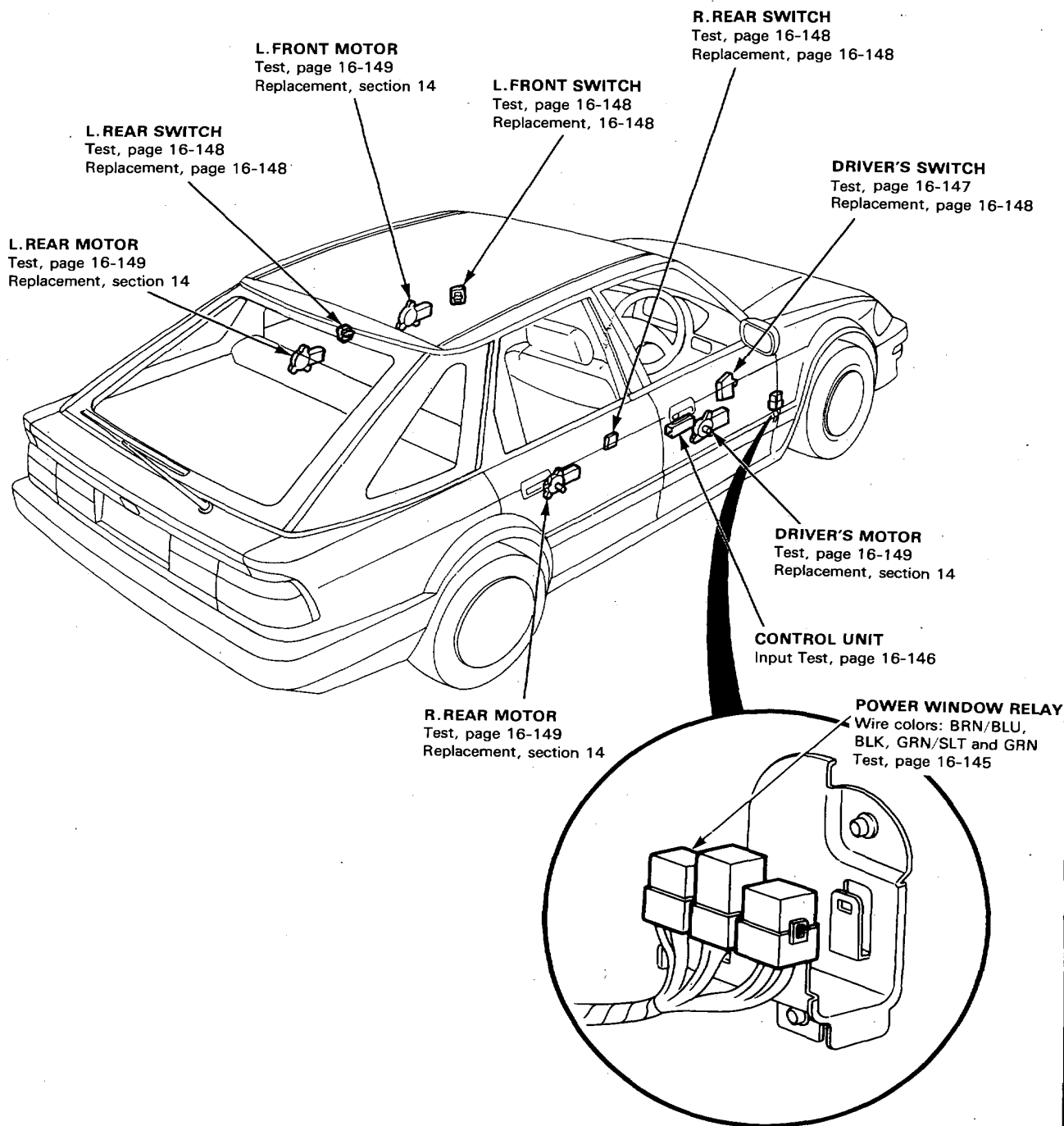
CAUTION: To prevent damage to the motor, apply battery voltage momentarily.



View from wire side

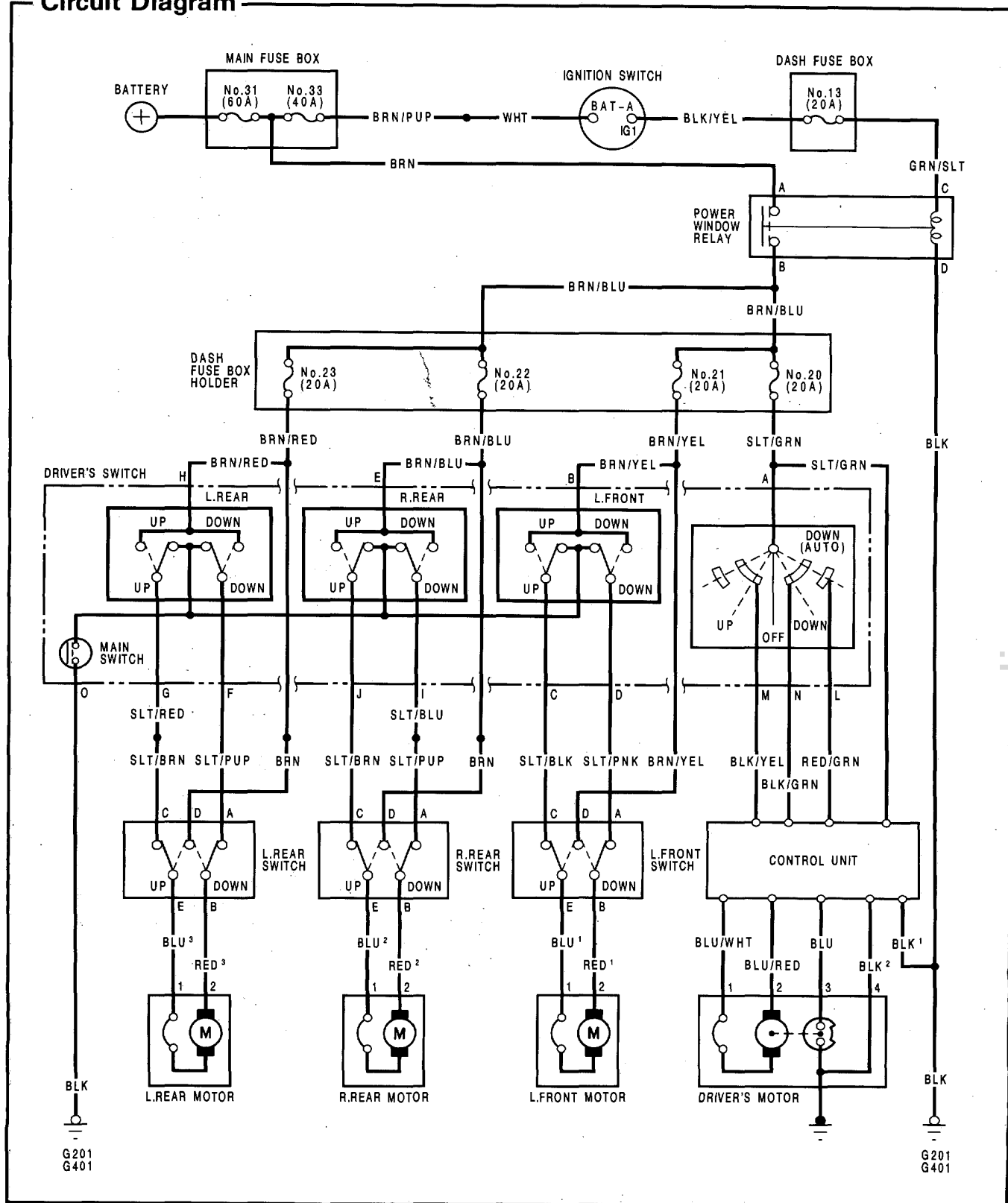
Power Windows

Component Location Index



Power Windows

Circuit Diagram





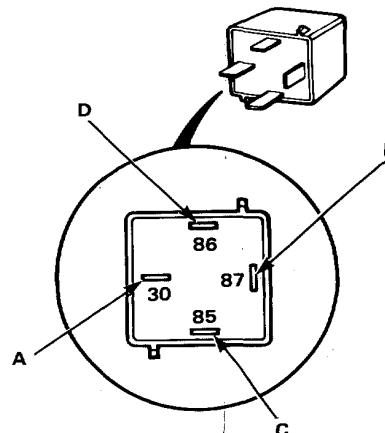
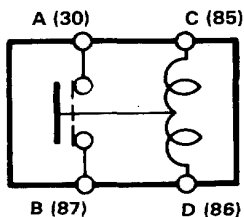
Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Item to be inspected		State of charge and clean and tight connections of battery				in the dash fuse box holder				Driver's door switch	Passenger switch	Driver's motor	Control unit input test	Passenger's motor	Window regulator	Poor ground	Open circuit in wires or loose or disconnected terminals
		Blown No. 13 (20A) fuse (in the dash fuse box)	Power window relay	Blown No. 20 (20A) fuse	Blown No. 21 (20A) fuse	Blown No. 22 (20A) fuse	Blown No. 23 (20A) fuse										
Symptom		1	2	3													
All windows do not operate.		1	2	3												G201 G401	BLK/YEL, BRN GRN/SLT or BRN/BLU
Driver's window does not operate.					1				3		4	2		5			SLT/GRN
Driver's window does not operate in AUTO.											2	1					BLU
Passenger windows do not operate.	Left front					1			2	3			4	5			BRN/YEL
	Left rear							1	2	3			4	5			BRN/RED
	Right rear						1		2	3			4	5			BRN/BLU

Relay Test

1. Remove the relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals.
There should be no continuity when the battery is disconnected.

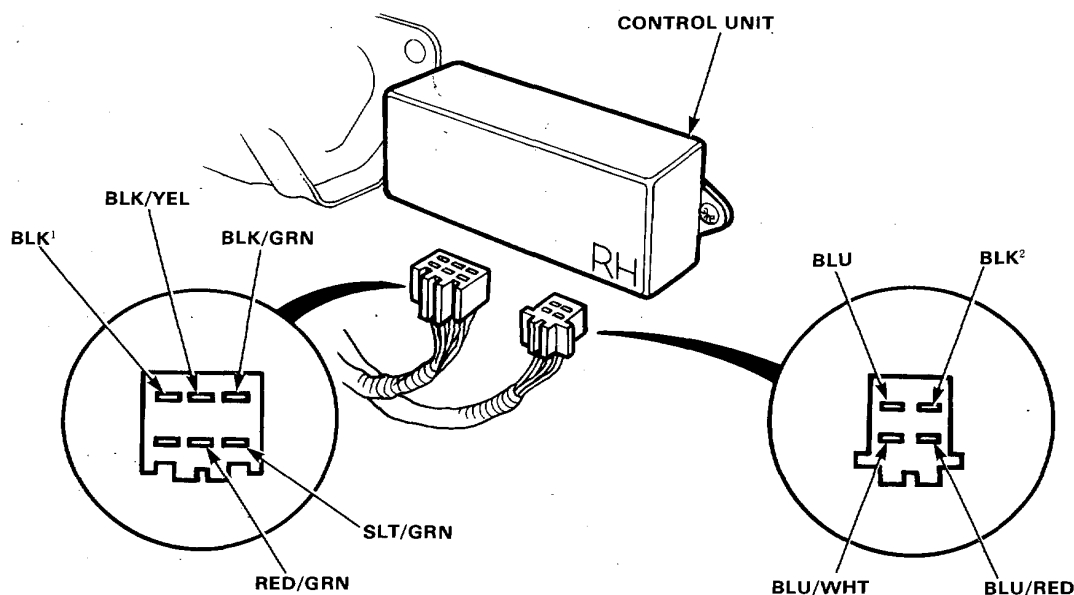


Power Windows

Control Unit Input Test

1. Remove the driver's door trim panel.
2. Remove the 2 screws and the control unit from the door panel.
3. Disconnect the 5-P and the 4-P connectors from the control unit. Make the following input tests at the harness pins.

NOTE: Recheck the connections between the connectors and the control unit, then replace the control unit if all input tests prove OK.

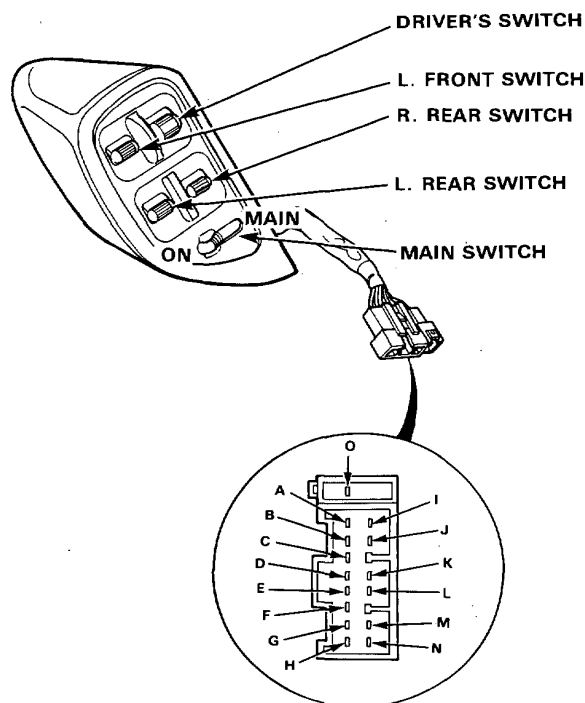


No.	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK ¹ Under all conditions.	Check for continuity to ground: There should be continuity.	• Poor ground (G201, G401). • An open in the wire.
2	SLT/GRN Ignition switch "ON".	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) or No. 13 (20A) fuse. • Faulty power window relay. • An open in the wire.
3	BLK/YEL Ignition switch "ON". Driver's switch "UP".	Check for voltage to ground: There should be battery voltage.	• Faulty driver's switch. • An open in the wire.
4	BLK/GRN Ignition switch "ON". Driver's switch "DOWN".		
5	RED/GRN Ignition switch "ON". Driver's switch "DOWN(AUTO)".		
6	BLU or BLK ² Connect the WHT/YEL terminal to the BLU/WHT terminal, and the BLK ¹ terminal to the BLU/RED terminal.	Check for resistance between the BLU and BLK ² terminals: Should indicate between 20-50 ohms as the motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire.



Driver's Switch Test

1. Remove the door trim panel.
2. Dis connect the 15-P connectors from the driver's door harness.
3. Check for continuity between the terminals in each switch position according to the tables.



DRIVER'S SWITCH

Terminal		A	L	M	N
Position					
OFF					
UP		○	—	○	
DOWN		○	—	—	○
DOWN(AUTO)		○	○		

L.FRONT SWITCH

Terminal		B	C	D	O
Position	Main switch				
OFF	ON		○	○	○
	OFF		○	○	
UP	ON			○	○
	OFF	○	○		
DOWN	ON		○		○
	OFF	○		○	

R.REAR SWITCH

Terminal		E	I	J	O
Position	Main switch				
OFF	ON		○	○	○
	OFF		○	○	
UP	ON		○		○
	OFF	○		○	
DOWN	ON			○	○
	OFF	○	○		

L.REAR SWITCH

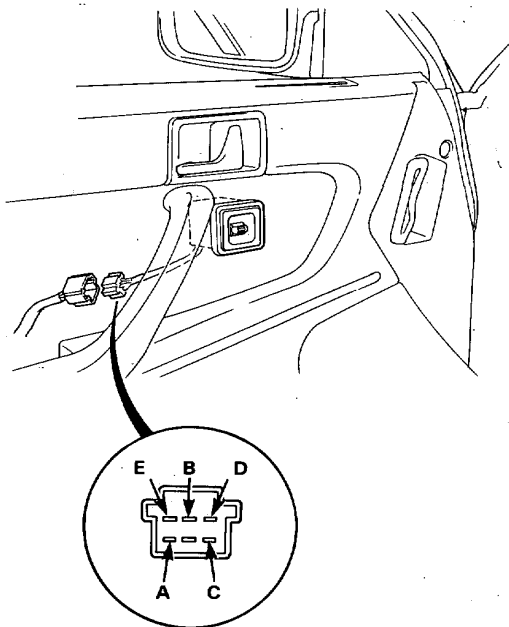
Terminal		F	G	H	O
Position	Main switch				
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○			○
	OFF		○	○	
DOWN	ON		○		○
	OFF	○		○	

Power Windows

Passenger Switch Test

- 1. Remove the door trim panel.
- 2. Check for continuity between the terminals in each switch position according to the table.

NOTE: Left front switch shown, rear switches similar.



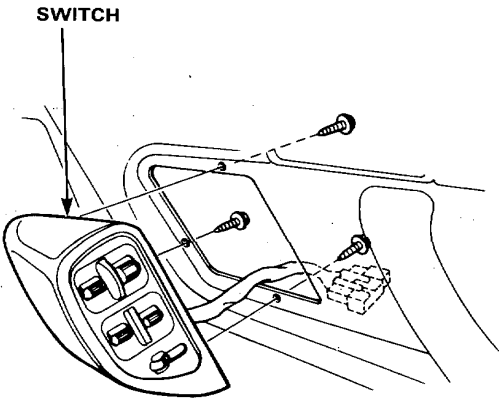
View from wire side

Terminal	A	B	C	D	E
Position					
UP				○	○
OFF	○	○	○		○
DOWN		○		○	

Switch Replacement

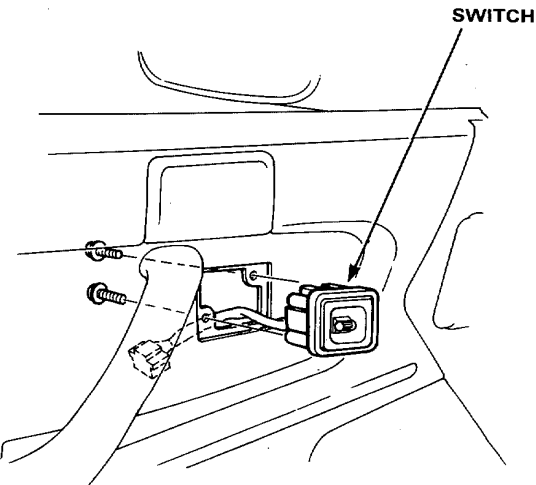
Driver's Switch :

- 1. Remove the door trim panel.
- 2. Disconnect the 15-P connector's from the driver's door harness.
- 3. Remove the switch from the door trim panel by releasing the 3 mounting screws.



Passenger Switches :

- 1. Remove the door trim panel.
- 2. Disconnect the 5-P connector's from the passenger door harness.
- 3. Remove the switch from the door trim panel by removing the 2 mounting screws.

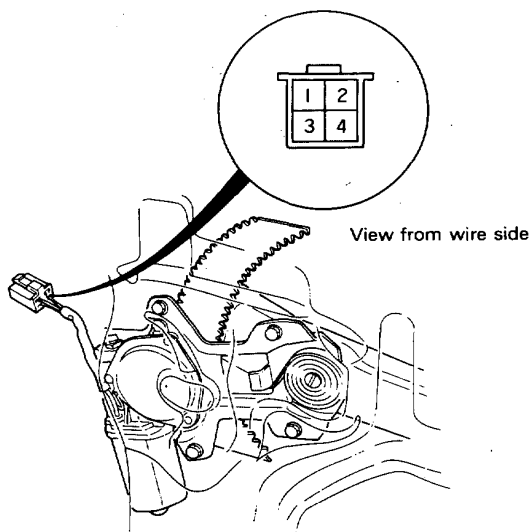




Driver's Motor Test

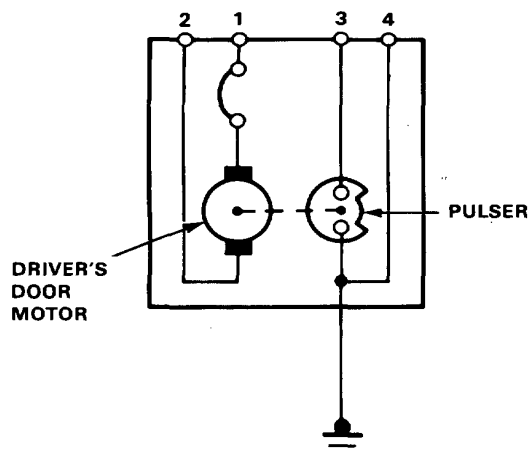
Motor Test :

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Test motor operation by connecting battery voltage to the No.1 and No.2 terminals.
Test the motor in each direction, by switching the leads from battery.
4. If the motor does not run, replace it.



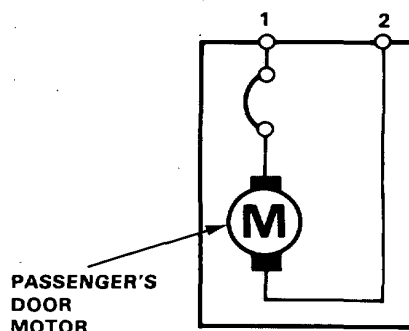
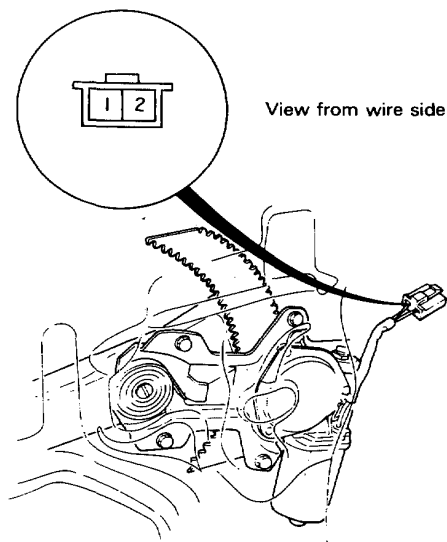
Pulser Test :

Measure resistance between the No.3 and No.4 terminals when running the motor by connecting battery voltage to the No.1 and No.2 terminals.
Ohmmeter should indicate between 20-50 ohms as the motor runs.



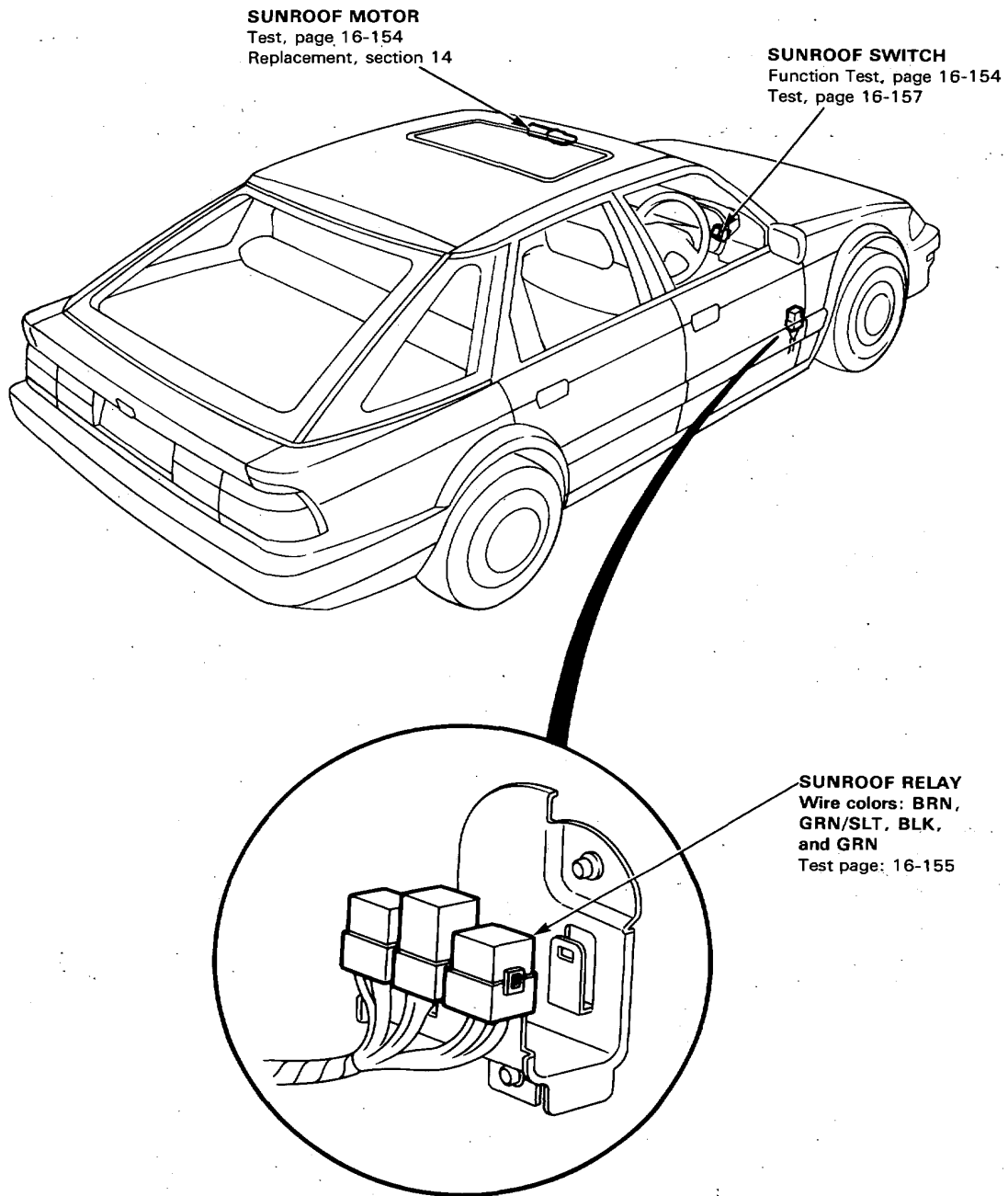
Passenger's Motor Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the motor.
3. Test motor operation by applying battery voltage to the No.1 and No.2 terminals.
Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.



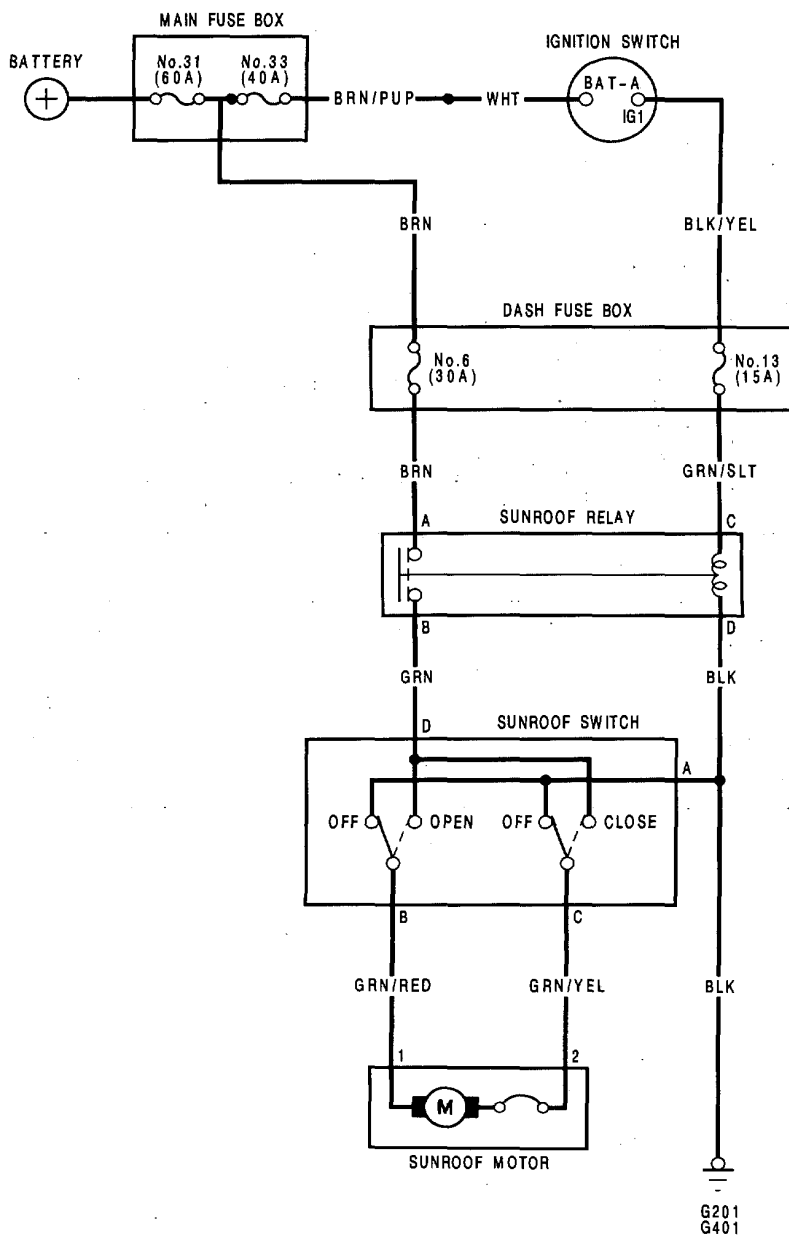
Sunroof

Component Location Index





Circuit Diagram



Sunroof

Electrical Troubleshooting

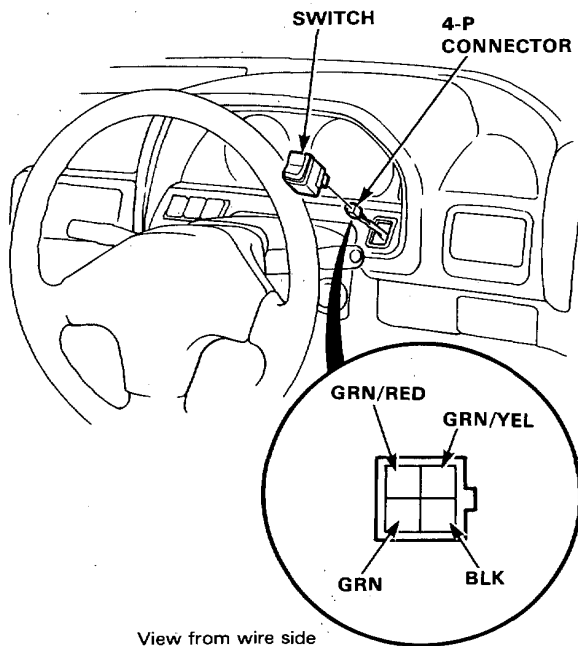
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected		Clutch out of adjustment, foregin matter stuck between guide rail and sunroof, or outer cable not attached properly	Blown No.6 (30A) fuse (in the dash fuse box)	Blown No.13 (15A) fuse (in the dash fuse box)	Function test	Sunroof relay	Sunroof motor	Sunroof switch	Poor ground	Open circuit in wires or loose or disconnected terminals
Sunroof does not move, but motor turns.		1								
Sunroof does not move and motor does not turn (sunroof can be moved with sunroof wrench).	Switch in any position.		1	2	3	4	5		G201,G401	BRN, GRN/SLT, GRN
	With OPEN switch.							1		GRN/RED
	With CLOSE switch							1		GRN/YEL



Function Test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 4-P connector to remove the switch.



3. Check for continuity between the BLK terminal and body ground.
There should be continuity.

- If there is no continuity, check for
 - An open in the BLK wire.
 - Poor ground (G201, G401)
- If there is continuity, go to step 4.

4. Check for voltage between the GRN terminal and the BLK terminal with ignition switch ON.
There should be battery voltage.

- If there is no voltage, check for
 - Blown No. 13 (15A) or No. 6 (30A) fuse in the dash fuse box.
 - An open in the GRN/SLT, GRN or BRN wire.
 - Faulty sunroof relay.
- If there is battery voltage go to step 5.

5. Connect the GRN terminal to the GRN/RED terminal, and the GRN/YEL terminal to the BLK terminal with jumper wires.
The sunroof should open when the ignition switch is turned ON.

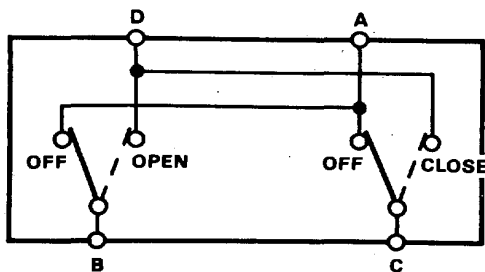
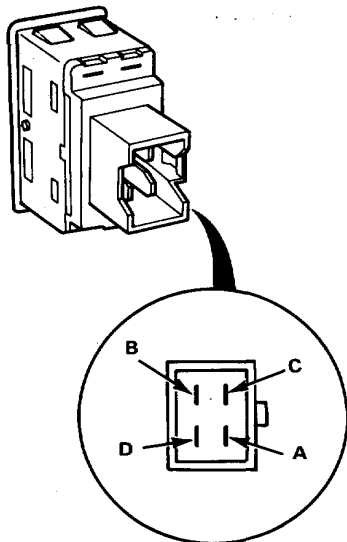
- If the sunroof opens, check the switch.
- If sunroof does not open, remove the headliner and check the motor.

Sunroof

Switch Test

1. Remove the dashboard lower panel.
2. Push out the switch from behind the instrument panel, then disconnect the 4-P connector to remove the switch.
3. Check for continuity between the terminals in each switch position according to the table.

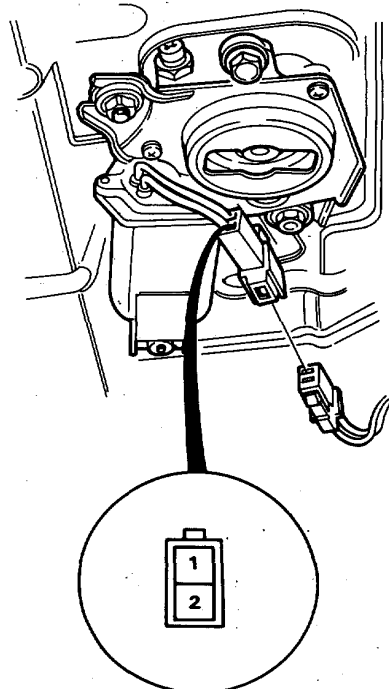
Terminal Position	A	B	C	D
OFF	○	○	○	
OPEN		○		○
CLOSE			○	○



Motor Test

1. Remove the headliner. (see, 14 Section)
2. Disconnect the 2-P connector from the sunroof motor.
3. Test motor operation by connecting a battery to the No.1 and No.2 terminals. Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.

NOTE: See Closing Force Check in section 14 for motor clutch test.

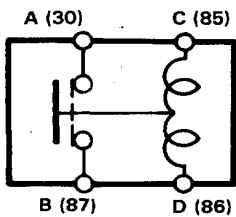
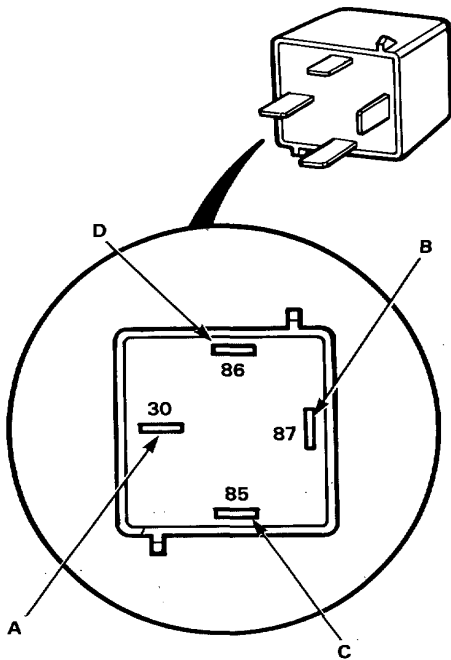


View from wire side.



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.



Rear Window Defogger

Component Location Index

REAR WINDOW DEFOGGER

Troubleshooting, page 16-158

Function test, page 16-159

Wire repair, page 16-159

DEFOGGER SWITCH

Removal, page 16-160

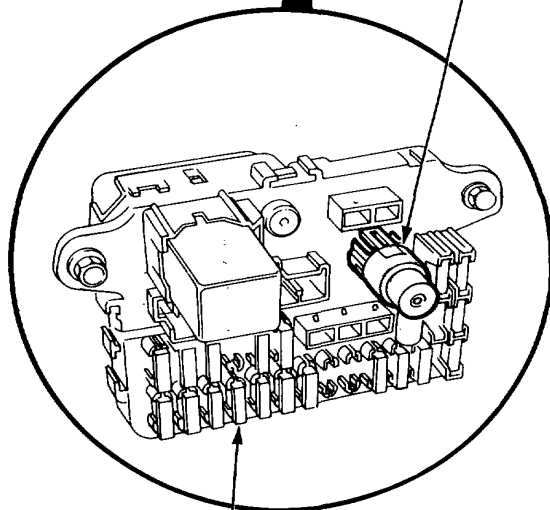
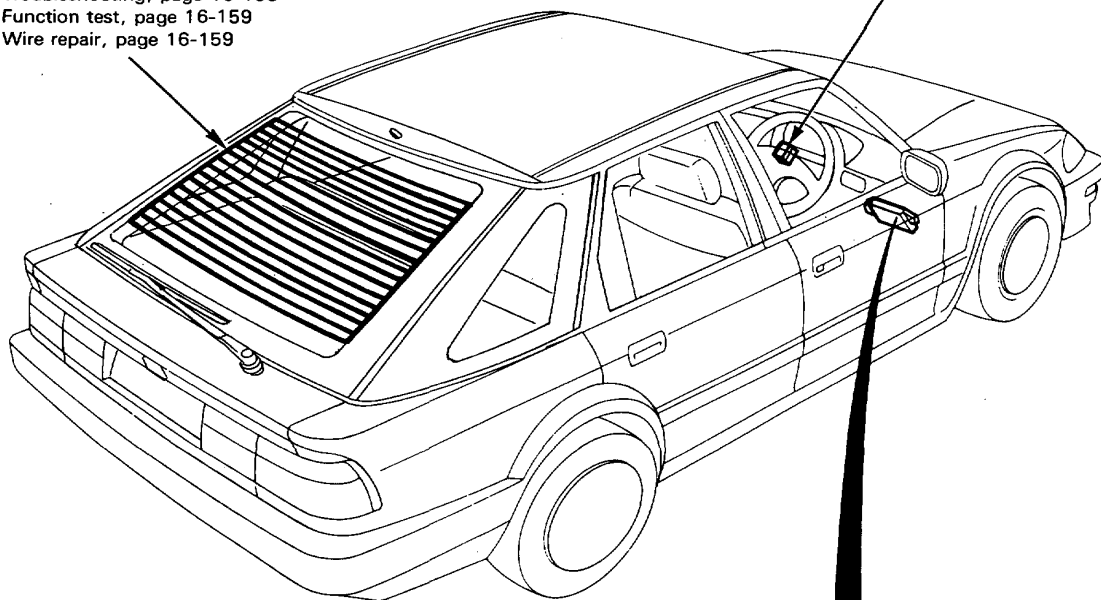
Test, page 16-160

DEFOGGER RELAY

Test, page 16-161

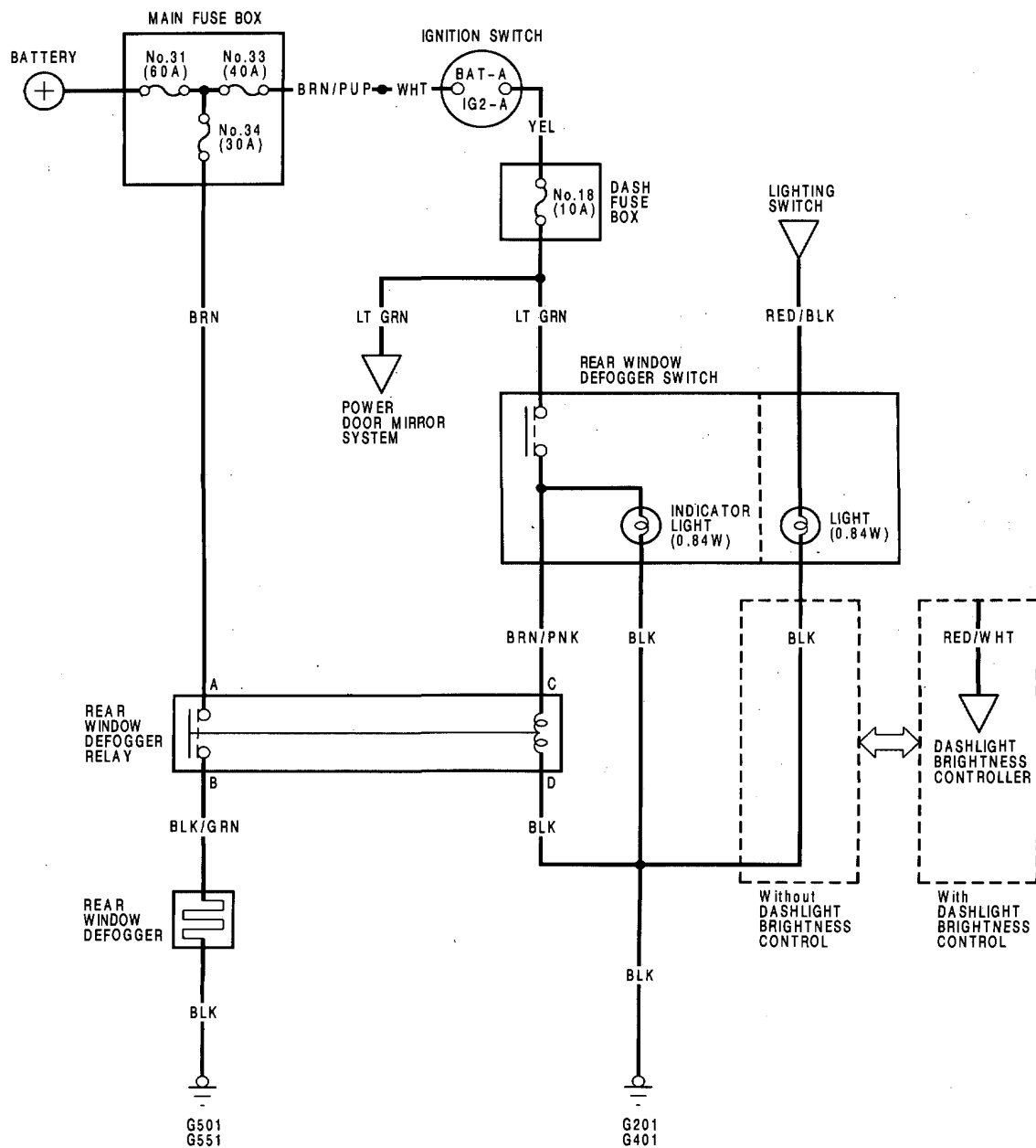
DASH FUSE BOX

(Located under dash, driver side)





Circuit Diagram



Rear Window Defogger

Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

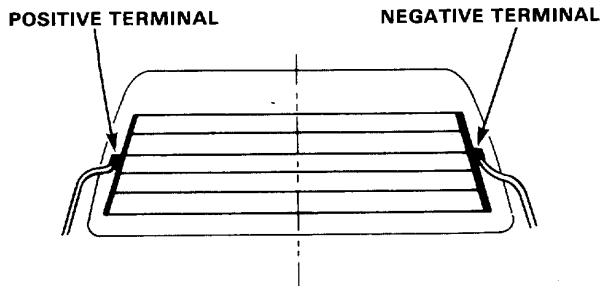
Item to be inspected Symptom	Blown indicator light bulb	Blown No. 18 (10A) fuse (in the dash fuse box)	Blown No. 34 (30A) fuse (in the main fuse box)	Defogger switch	Function test	Defogger relay	Repair defogger wire	Poor ground	Open circuit in wires or loose or disconnected terminals
Defogger operates, but indicator light does not go on.	1								
Defogger does not operate and indicator light does not go on.		1		2				G201, G401	LT GRN or BRN/PNK
Defogger does not operate, but indicator light goes on.			1		2	3		G501 G551	BRN or BLK/GRN
Broken defogger wire							1		



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.

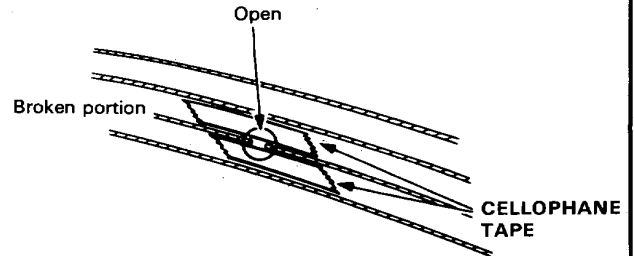


2. Check for continuity between the negative terminal and body ground.
If no continuity check for open in the defogger ground wire.
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.
There should be approximately 6 V with 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

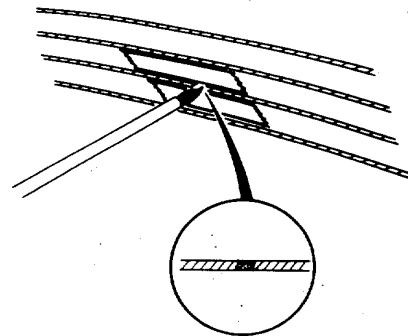
NOTE: Repair section must be no longer than one inch.

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.

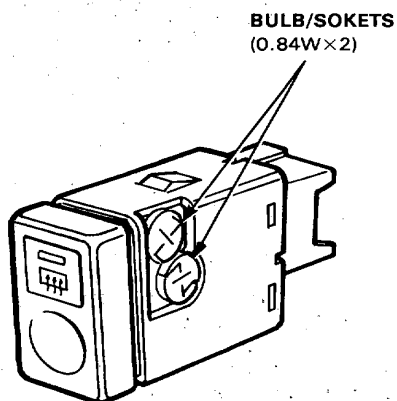
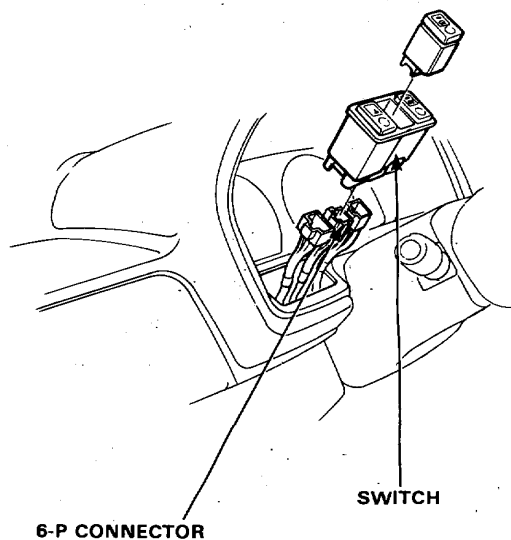


4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).
5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.

Rear Window Defogger

Switch Removal

1. Carefully pull out the switch from the instrument panel, then disconnect the 6-P connector from the switch.

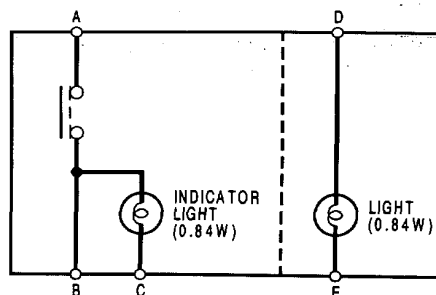
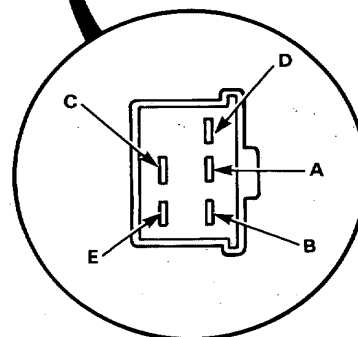
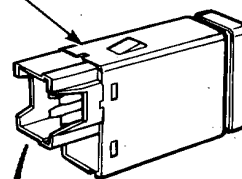


Switch Test

1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal Position	A	B		C	D		E
ON	○	○	⊕	○	○	⊕	○
OFF		○	⊕	○	○	⊕	○

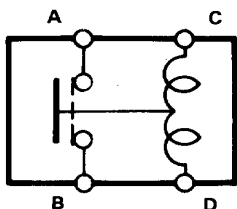
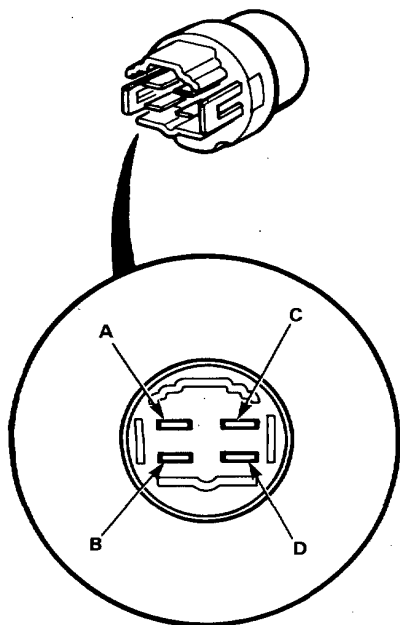
REAR WINDOW
DEFOGGER
SWITCH





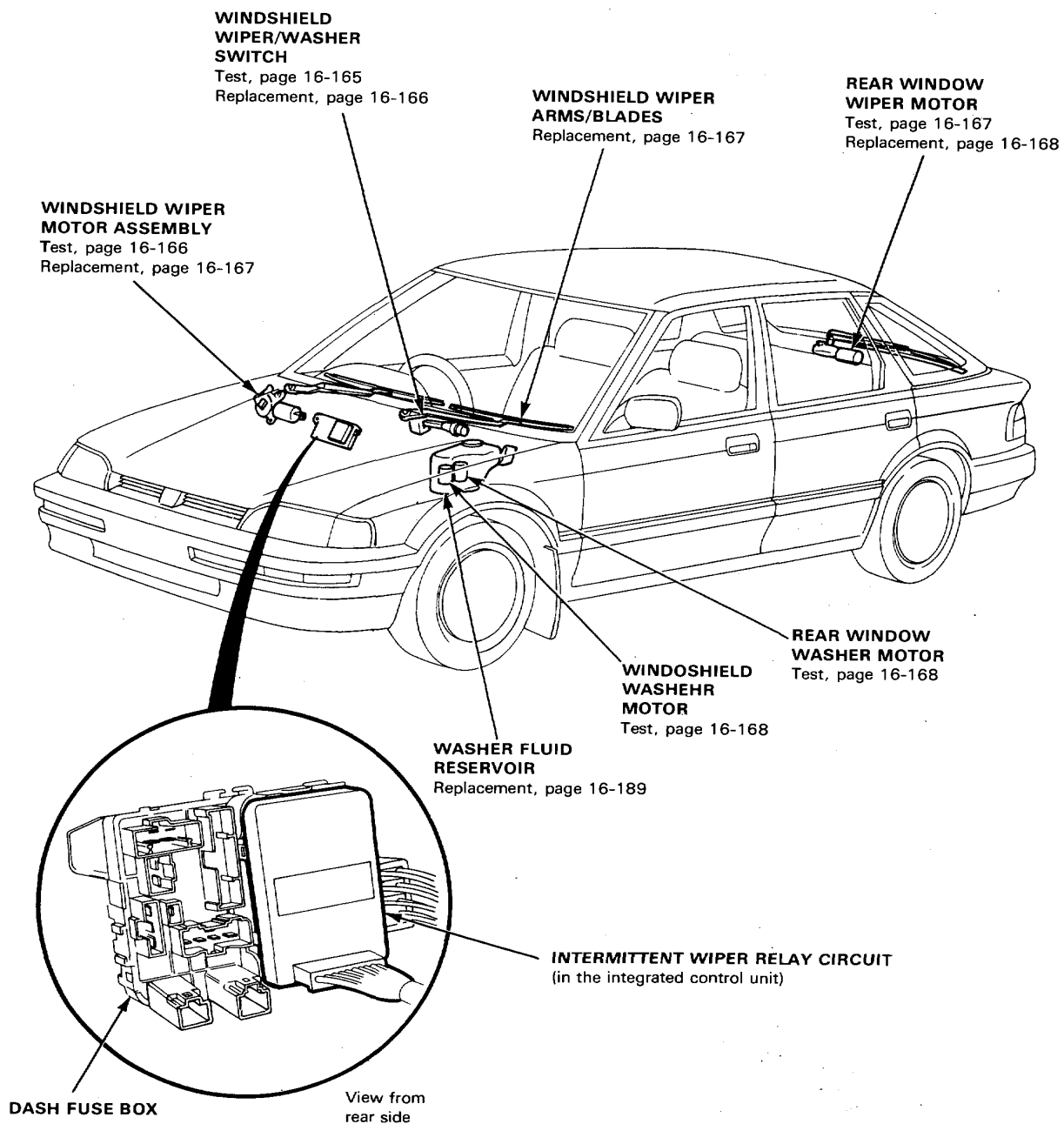
Relay Test

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.



Wipers/Washers

Component Location Index



Wipers/Washers

Troubleshooting

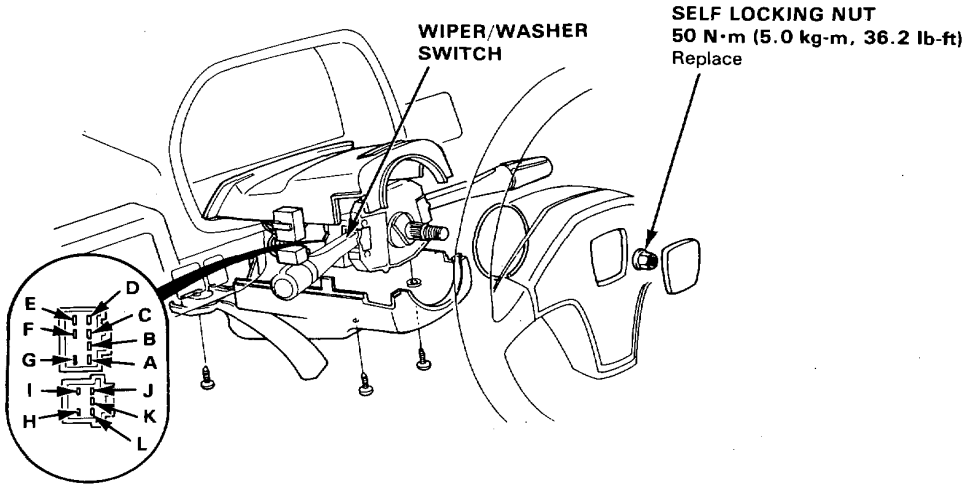
NOTE: The numbers in the table show the troubleshooting sequence.

Items 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, loose or disconnected terminals
				Front	Rear								
Front wiper does not operate.	In all positions	1	4	2							3	G201 G401	GRN/SLT
	In INT		1					2					GRN ¹ , BLU/WHT ¹
	In LO or HI		1										
	In MIST		1										
Rear window wiper does not operate.			1		2							G551	GRN/BLK ¹ , LT GRN/BLK
Blades do not return to park position when wipers are turned OFF.	Front wiper		2	1									BRN/LT GRN
	Rear wiper				1								BRN/GRN
Erratic intermittent cycle or wipers do not operate intermittently.			1					2					
Little or no washer fluid is pumped.						4	3		1	2		G301	LT GRN/BLK ¹ , LT GRN/BLK ²



Wiper/Washer Switch Test

- 1. Remove the steering wheel and the column covers.
- 2. Disconnect 8-P and 6-P connectors from the switch.
- 3. Check for continuity between the terminal in each switch position according to the table.



Windshield

Terminal Position	A	B	C	D	E	F	G
OFF	○					○	
INT	○		○	○		○	
LO	○						○
HI		○					○
Mist Switch "ON"		○					○
Washer Switch "ON"				○	○		

Rear Window

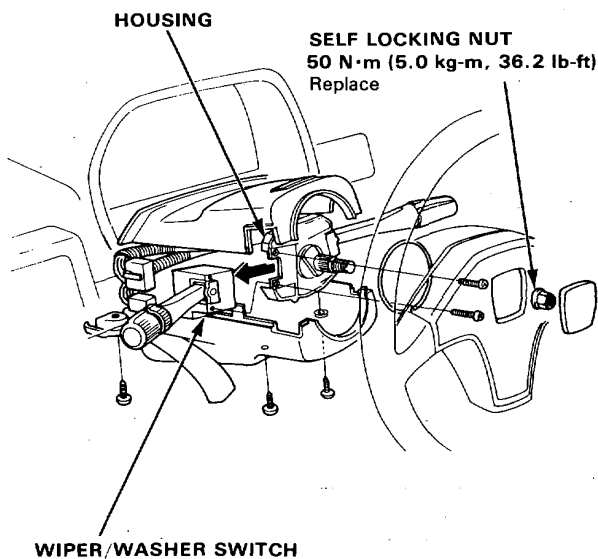
Terminal Position	H	I	J	K	L
Washer Switch "ON"	○	○			
OFF			○	○	
ON			○		○
Washer Switch "ON"	○	○			

Wipers/Washers

Wiper/Washer Switch Replacement

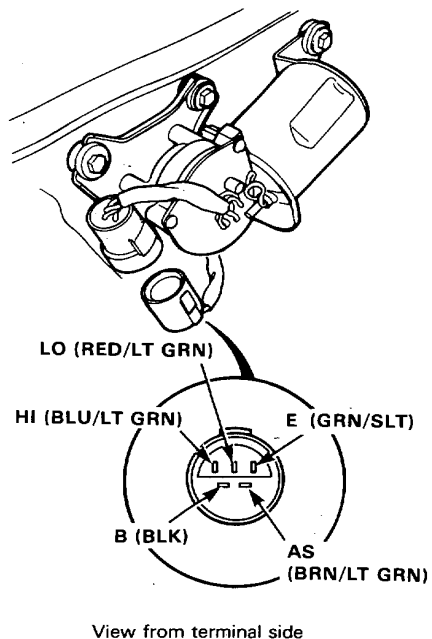
1. Remove the steering wheel and the lower and upper covers from the steering column.
2. Disconnect the 8-P and 6-P connectors from the wiper/washer switch.
3. Remove the 2 screws and slide the wiper/washer switch out of the housing as shown.

NOTE: Be careful not to damage the steering wheel cover.



Windshield Wiper Motor Test

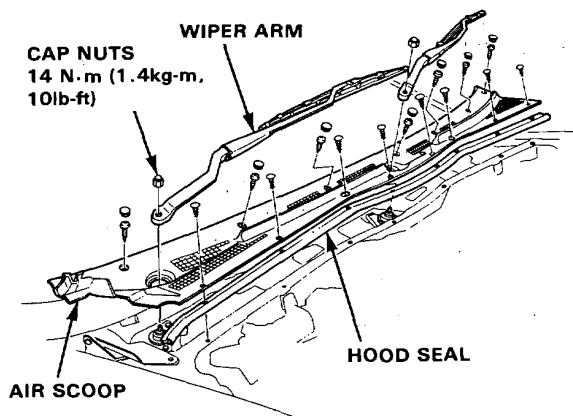
1. Disconnect the 5-P (or the 6-P) connector of the wiper motor assembly.
2. Test motor operation :
LOW SPEED: Connect battery positive to the Lo (RED/LT GRN) terminal and negative to the B (BLK) terminal.
HIGH SPEED: Connect battery positive to the Hi (BLU/LT GRN) terminal and negative to the B (BLK) terminal.
3. If the motor fails to run smoothly, replace it.



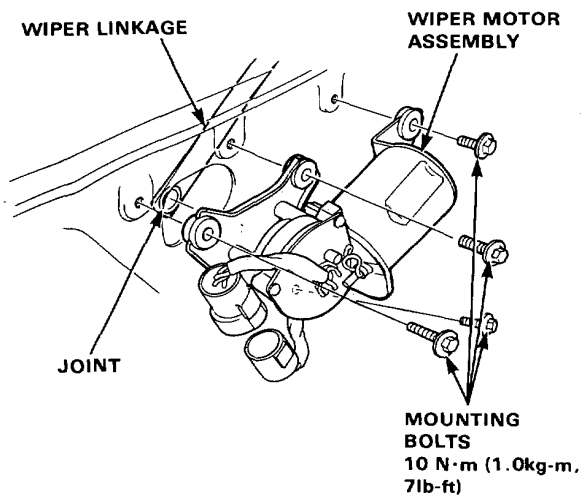


Windshield Wiper Motor Replacement

1. Remove the cap nuts and the wiper arms.
2. Remove the hood seal and air scoop by prying off the trim clips and removing the screws.



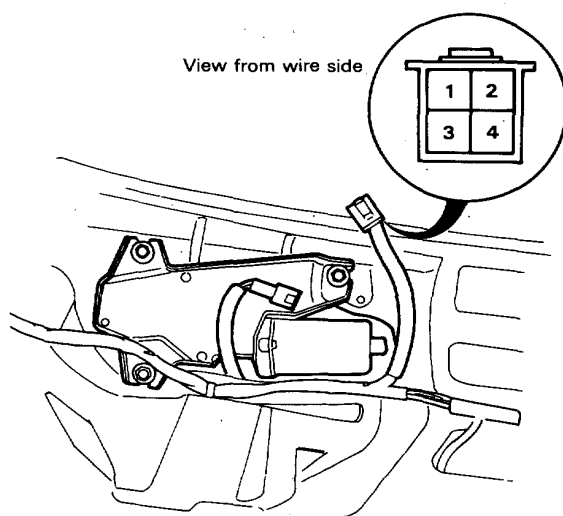
3. Pry the wiper linkage off the motor arm with a screw driver.
4. Disconnect the 5-P connector from the wiper motor assembly, then remove the 4 mounting bolts and the wiper motor assembly.



5. Install the wiper motor assembly in the reverse order of removal.

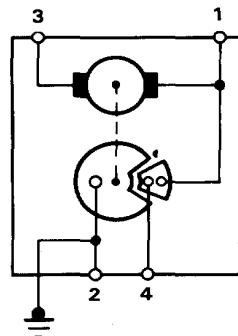
Rear Window Wiper Motor Test

1. Remove the hatch trim panel.
2. Disconnect the 4-P connector.
3. Test wiper motor operation by connecting battery positive wire to the No.2 terminal and 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.

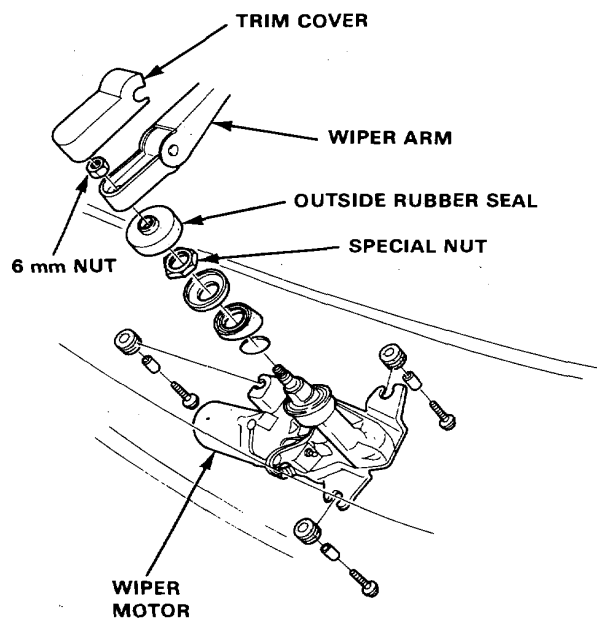
Terminal	1	2	3
Wiper Blade			
At park position		○	○
At center position	○		○



Wipers/Washers

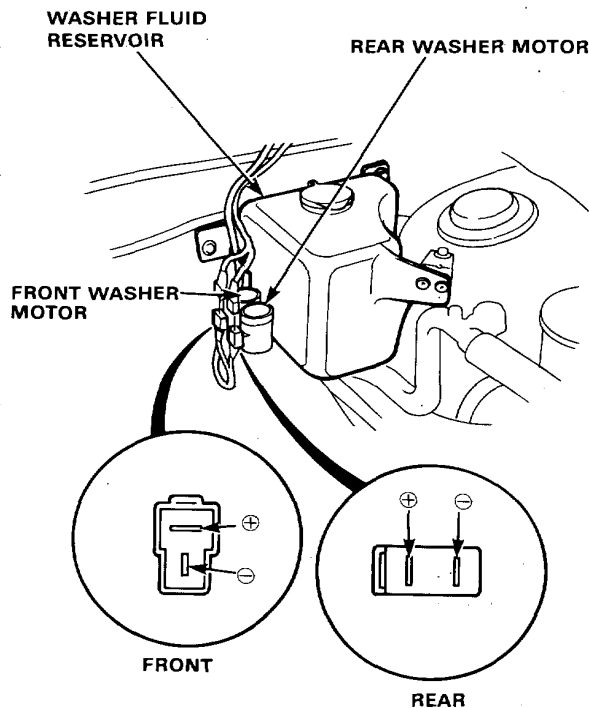
Rear Window Wiper Motor Replacement

1. Remove the hatch trim panel.
2. Remove the trim cover, 6 mm nut, wiper arm, and the outside seal rubber.
3. Disconnect the 4-P connector from the wiper motor.
4. Remove the 3 mount bolts and the wiper motor.



Washer Motor Test

1. Disconnect the 2-P connector from the washer motor.
2. Test either washer motor operation by connecting battery positive to the $\oplus$ terminal and negative to the $\ominus$ terminal.



- If the motor fails to run smoothly, replace it.
- If the motor runs smoothly but little or no washer fluid is pumped, check for disconnected or blocked washer-hose, or clogged pump outlet in the motor.

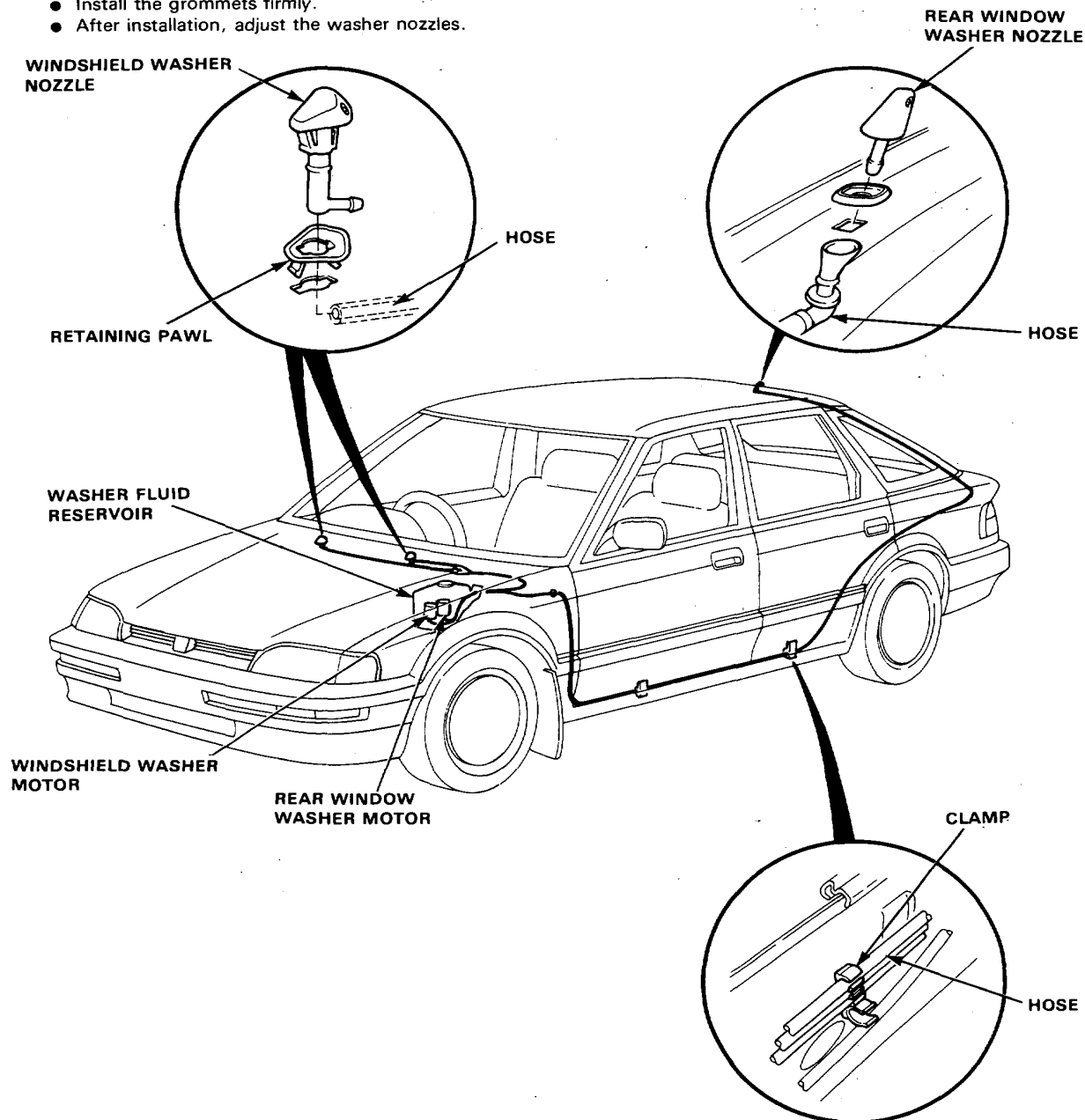


Washer Replacement

1. Remove the washer reservoir: by removing the 3 mount bolts and 1 nut.
2. Disconnect the hoses and the 2-P connectors from the front and the rear washer motors.
3. Remove the washer nozzles by releasing the retaining pawls and pushing them out from the underside.
(Rear window washer nozzle: Remove the rear spoiler)

NOTE :

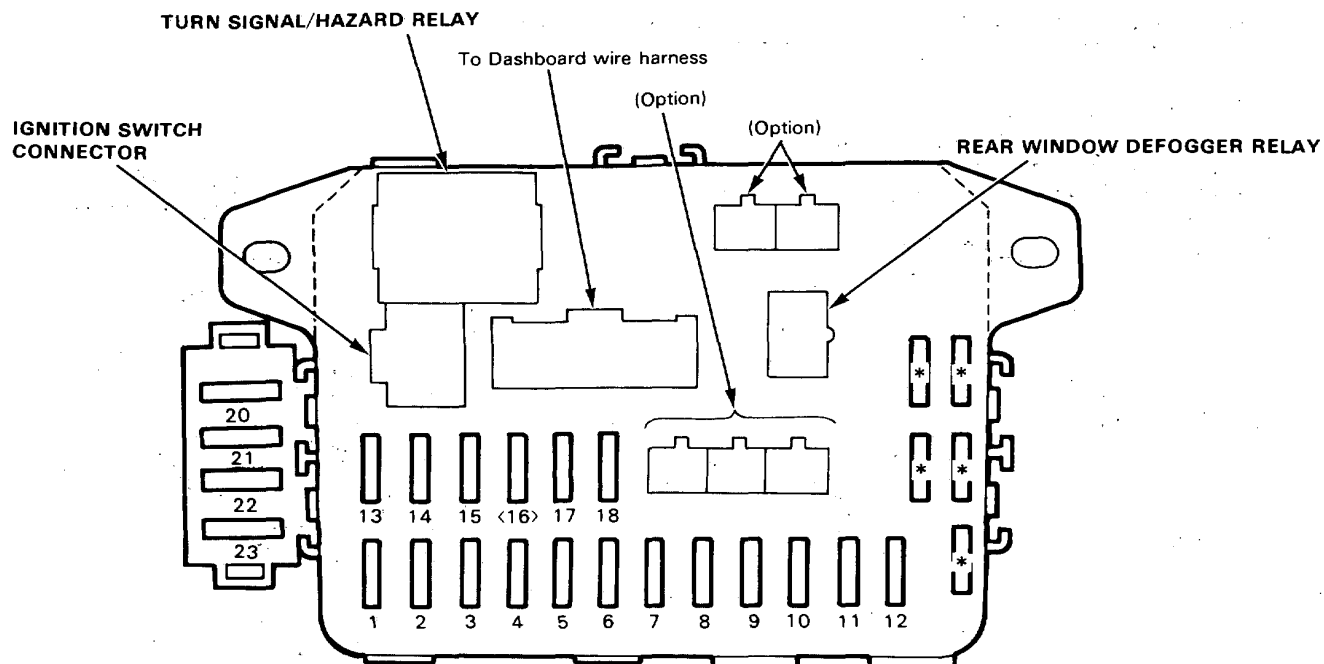
- Clamp the hoses with the wire harness in the left front fender.
- Take care not to pinch hoses during reinstallation.
- Install the grommets firmly.
- After installation, adjust the washer nozzles.



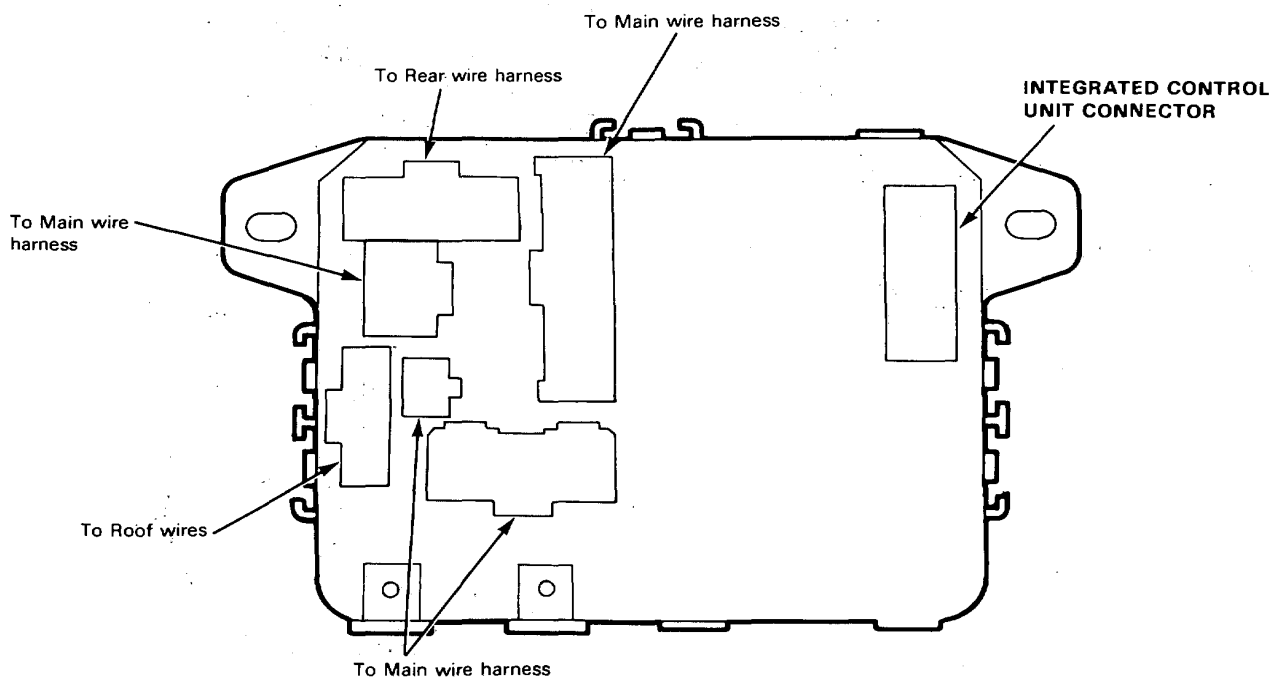
Fuses

Dash Fuse Box (LHD)

NOTE: Dash fuse box is located left side, under dash.



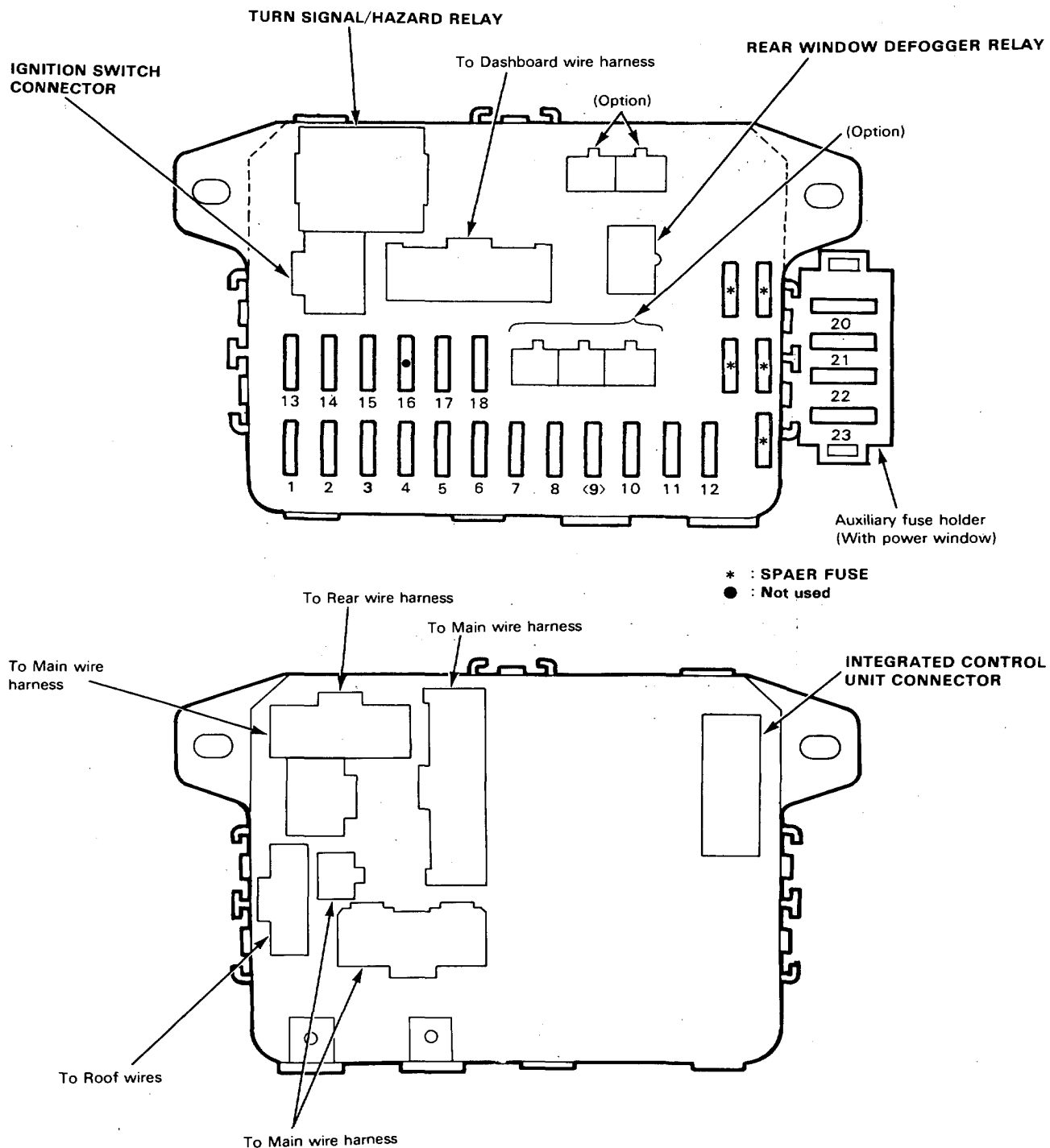
* : SPARE FUSE
< > : NOT USED





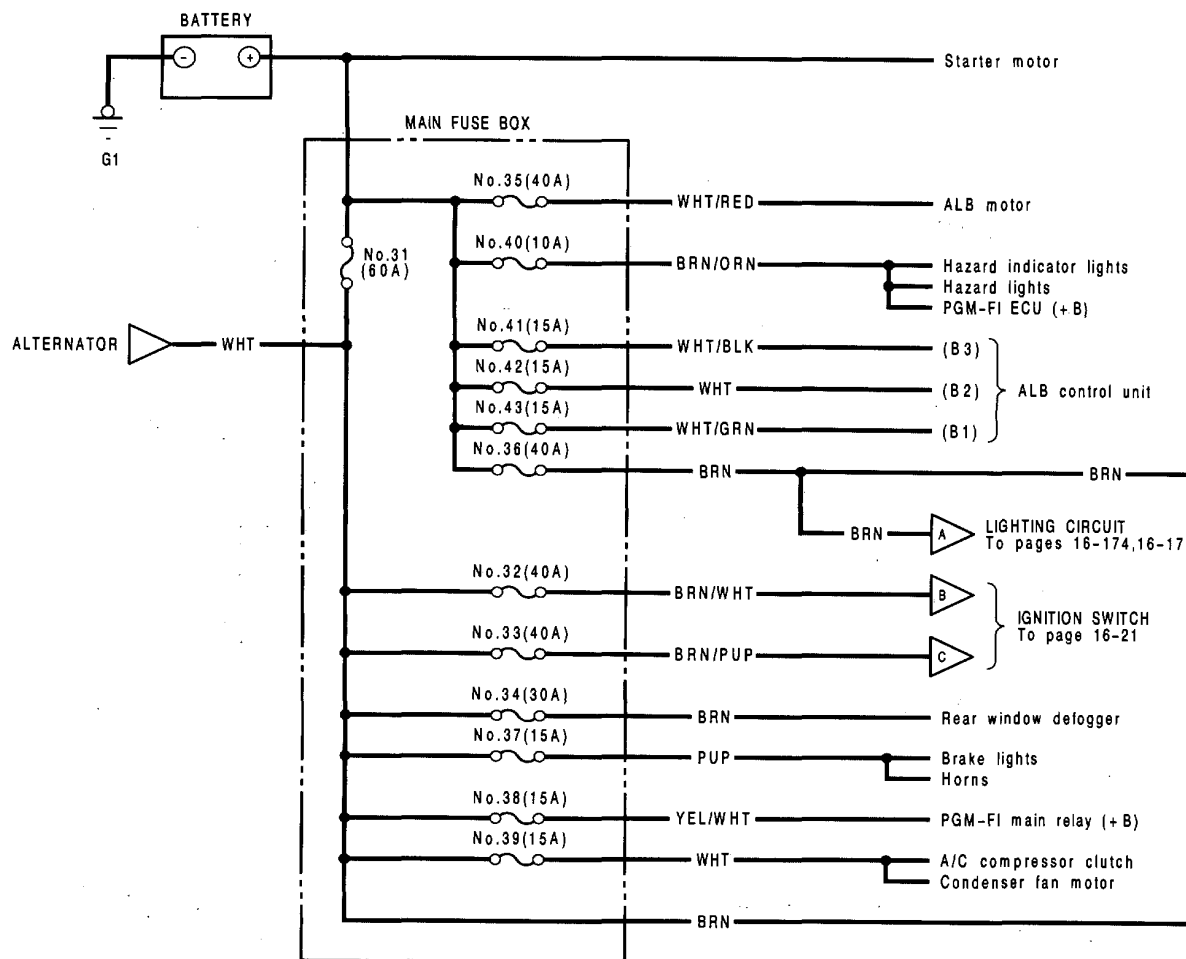
(RHD)

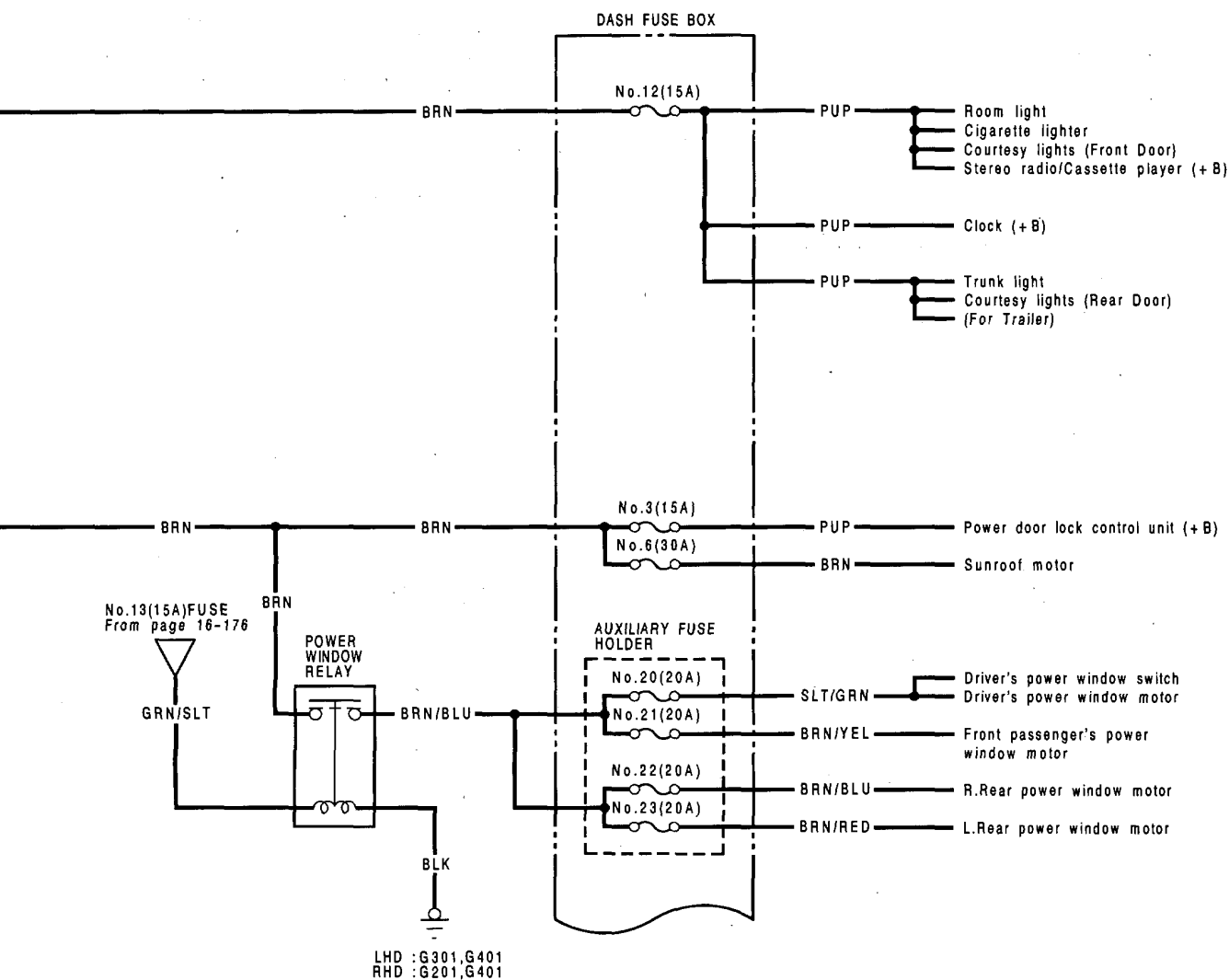
NOTE: Dash fuse box is located right side, under dash.



Power Distribution

Circuit Identification





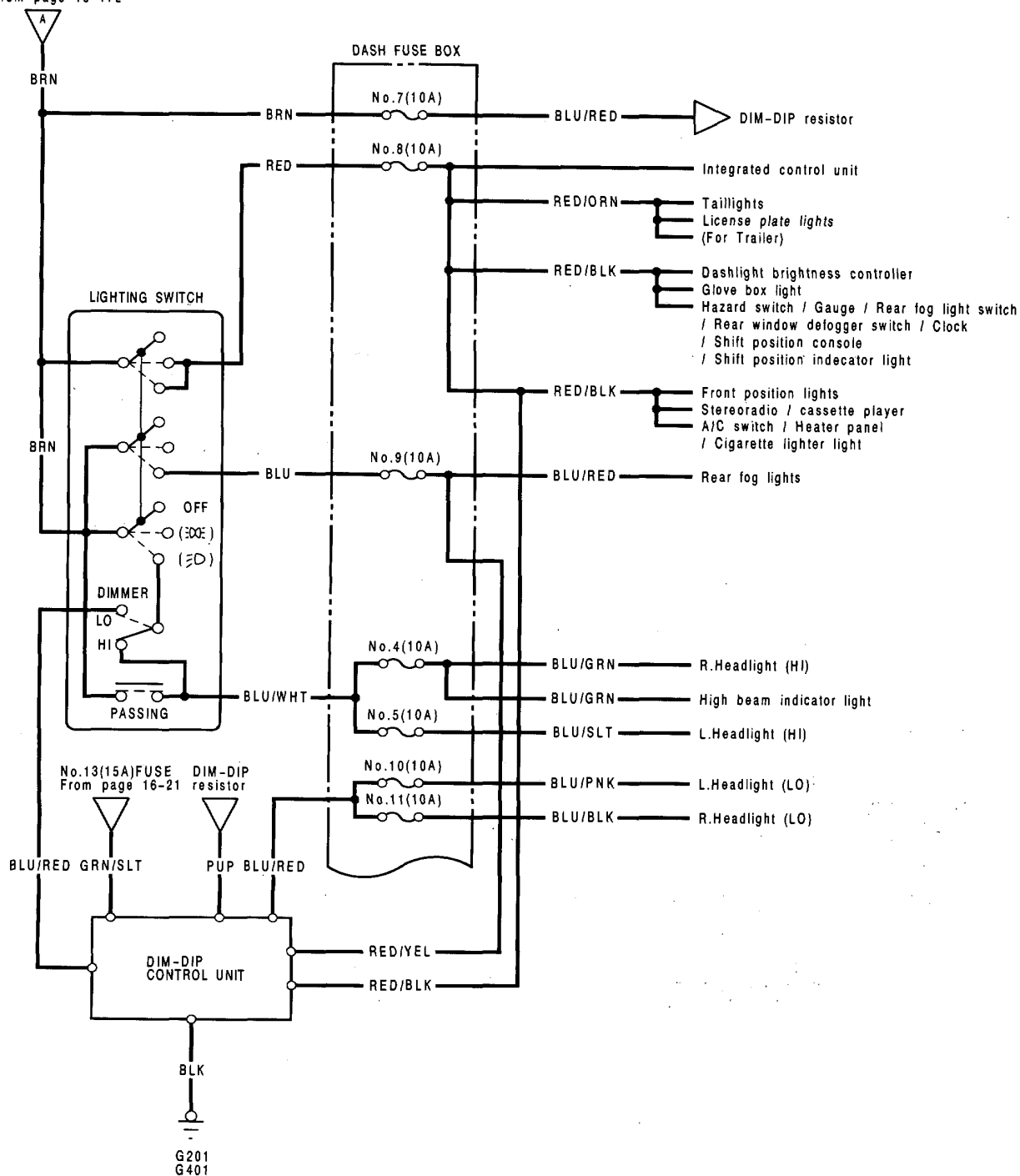
(cont'd)

Power Distribution

Circuit Identification (cont'd)

KE model:

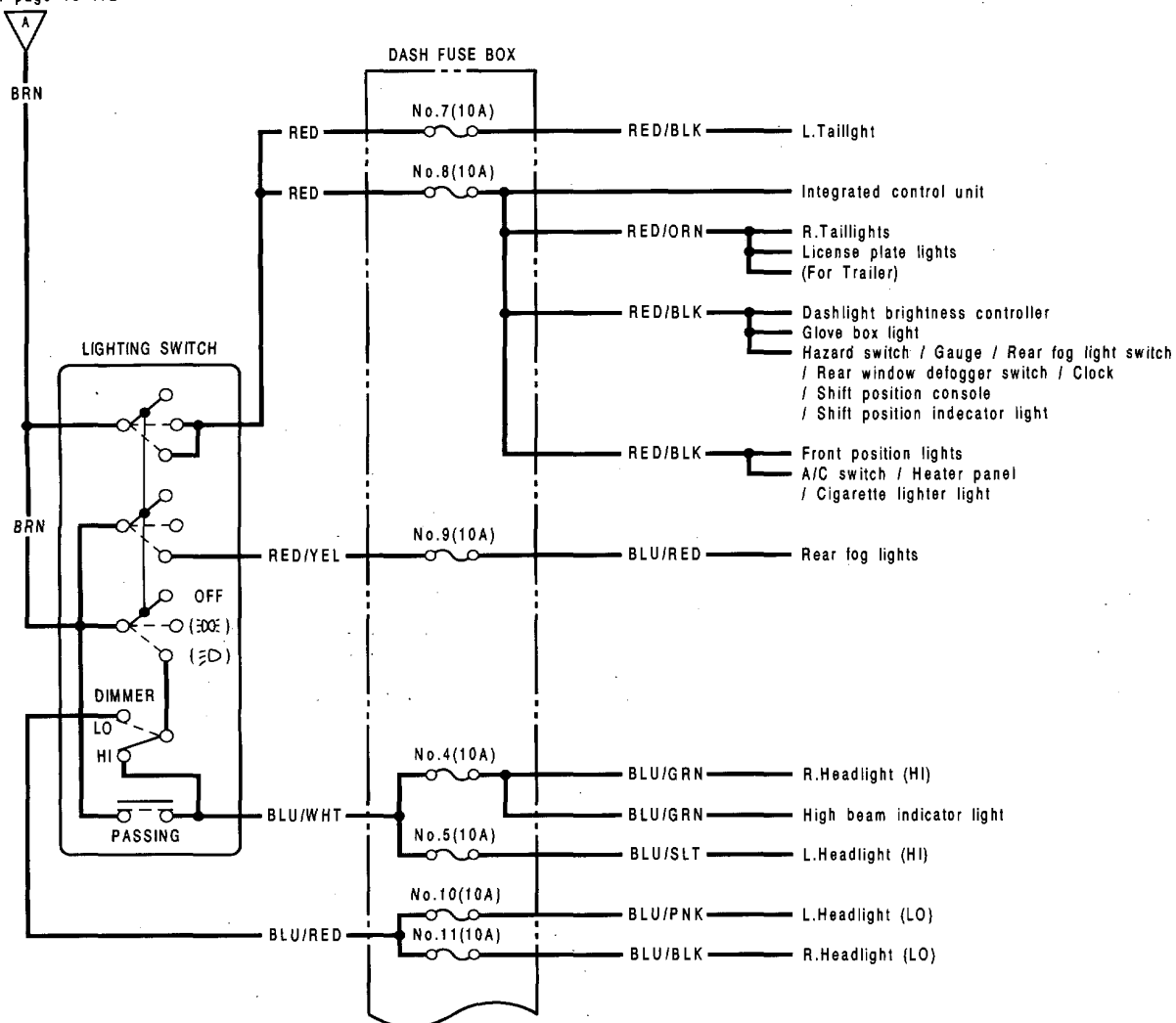
No.36(40A) FUSE
From page 16-172





Except KE model:

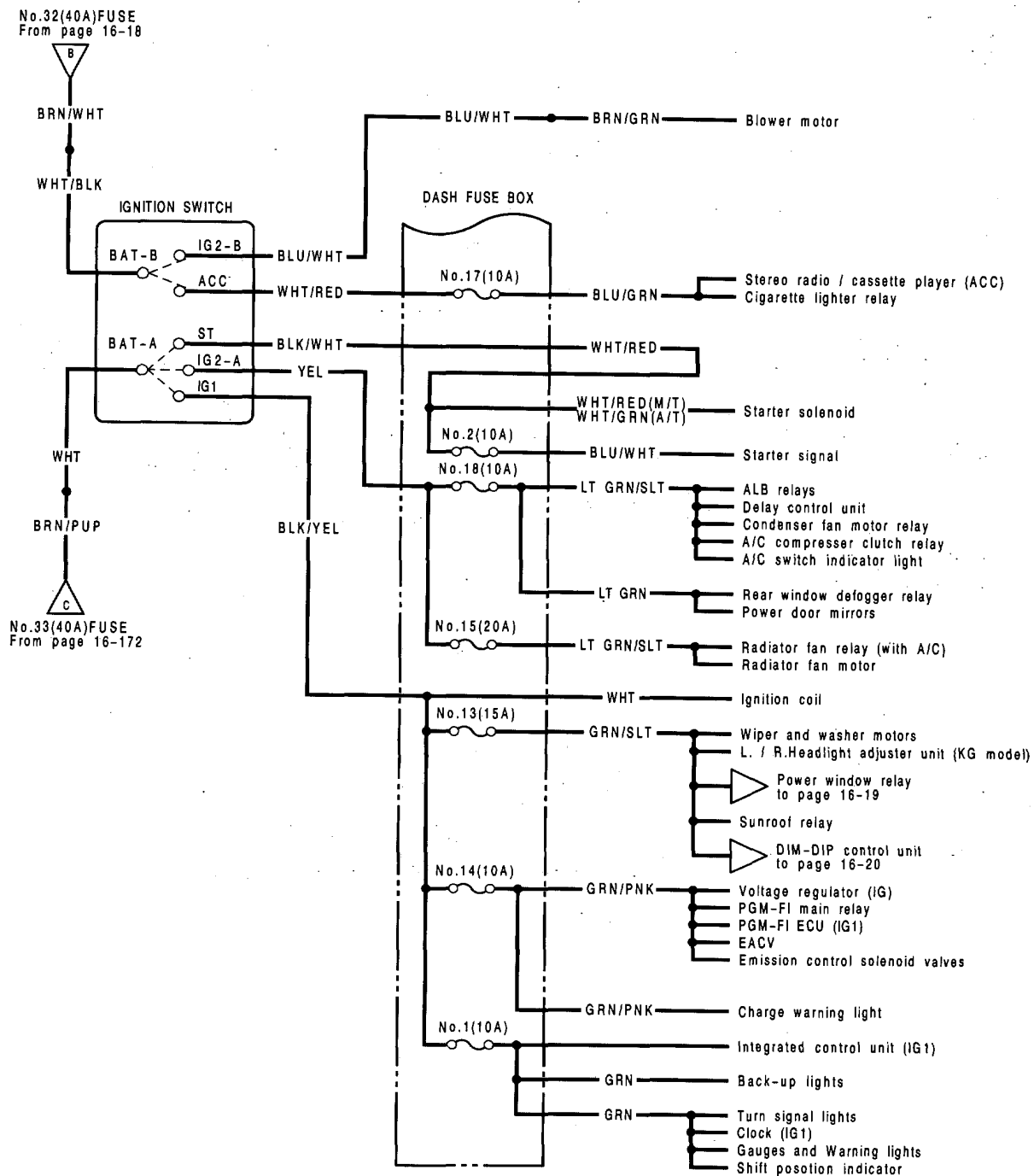
No.36(40A) FUSE
From page 16-172



(cont'd)

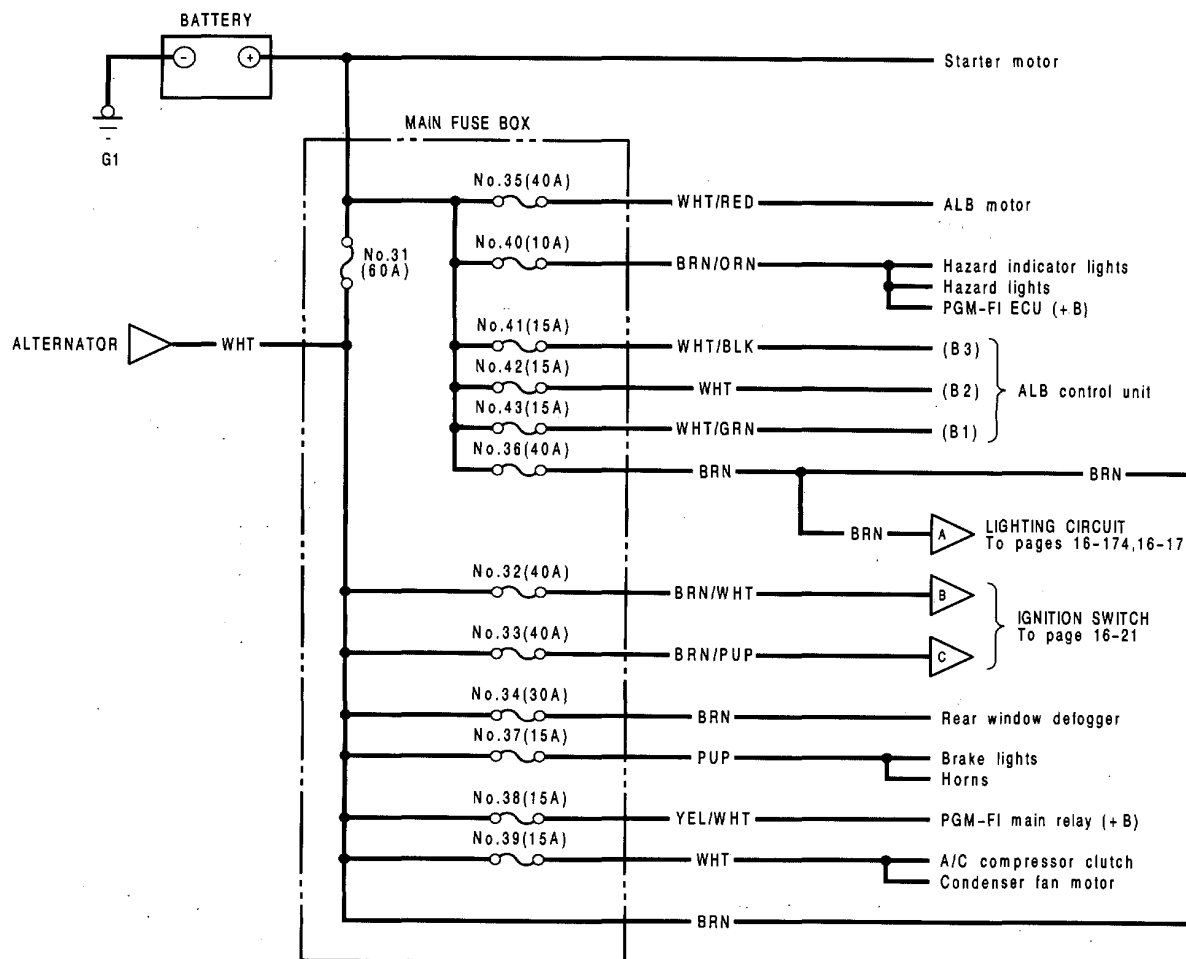
Power Distribution

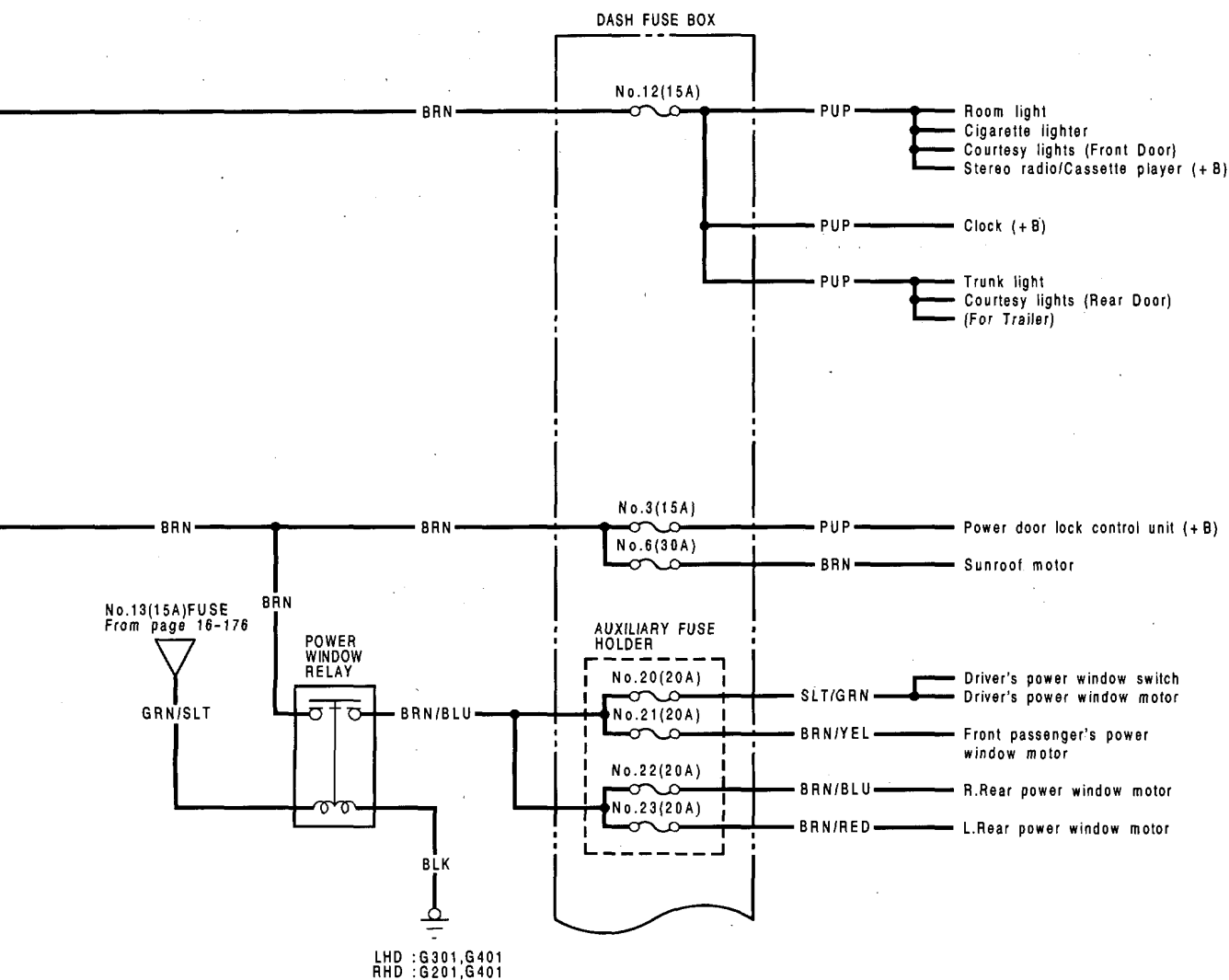
Circuit Identification (cont'd)



Power Distribution

Circuit Identification





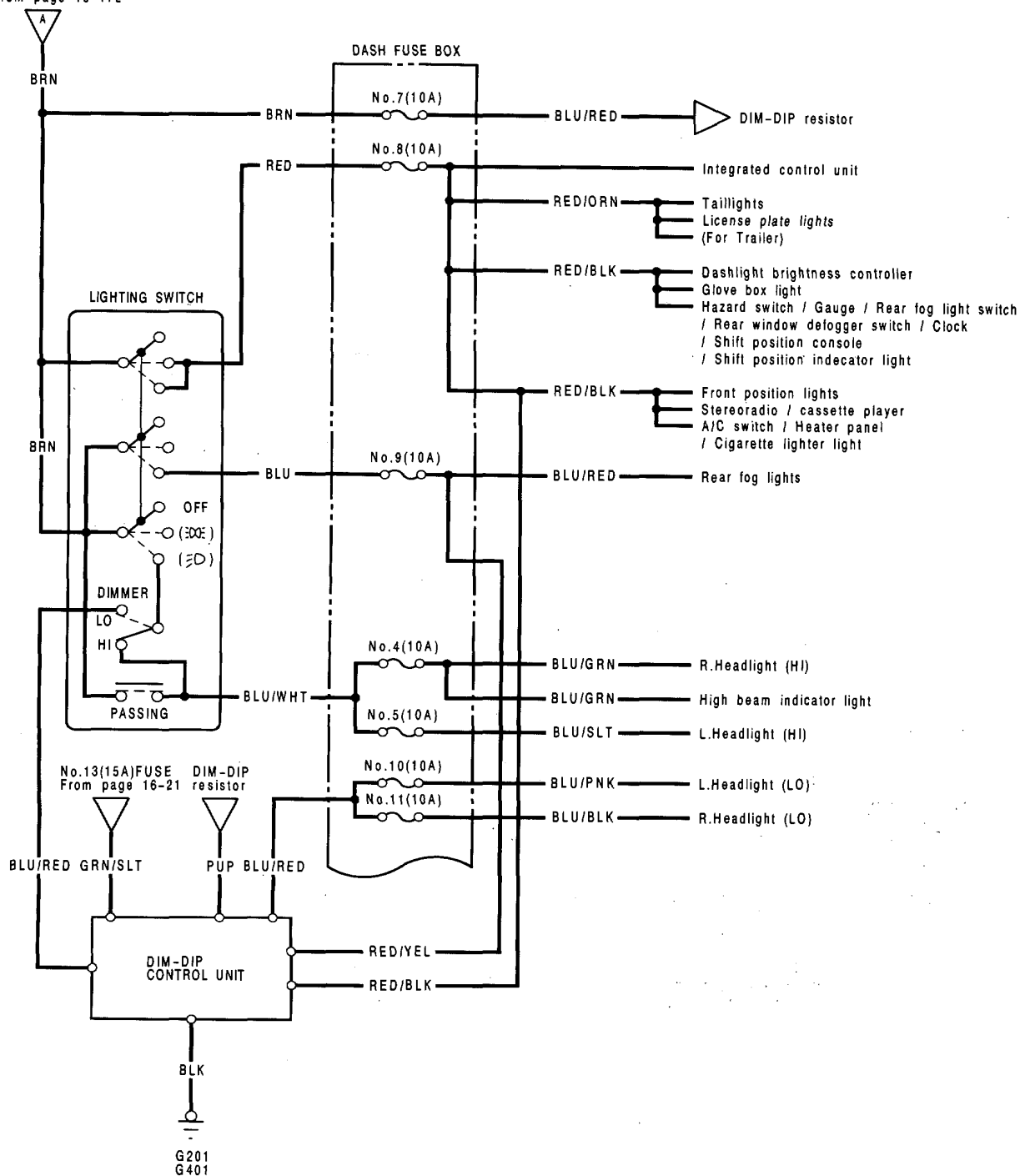
(cont'd)

Power Distribution

Circuit Identification (cont'd)

KE model:

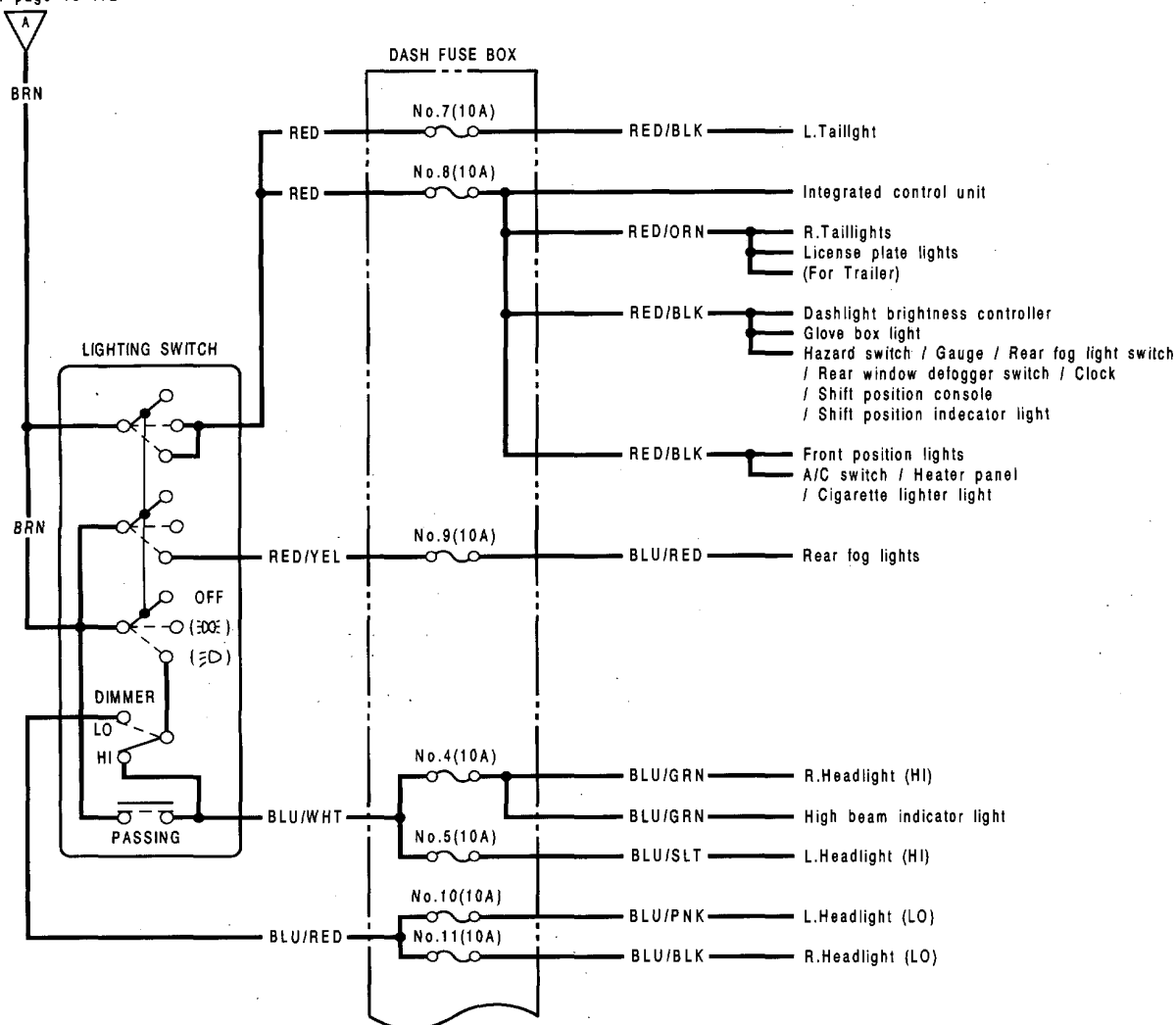
No.36(40A) FUSE
From page 16-172





Except KE model:

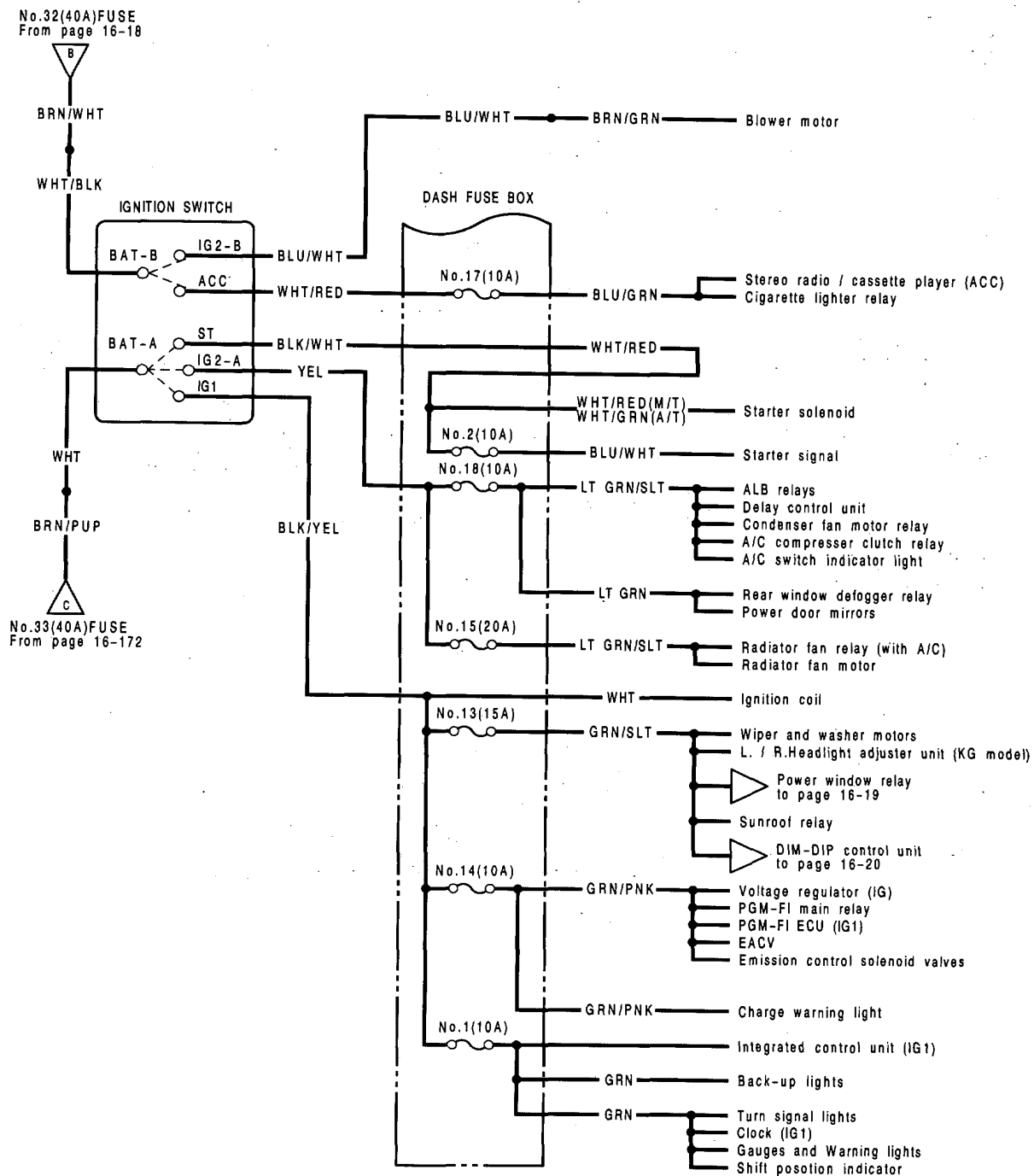
No.36(40A) FUSE
From page 16-172



(cont'd)

Power Distribution

Circuit Identification (cont'd)

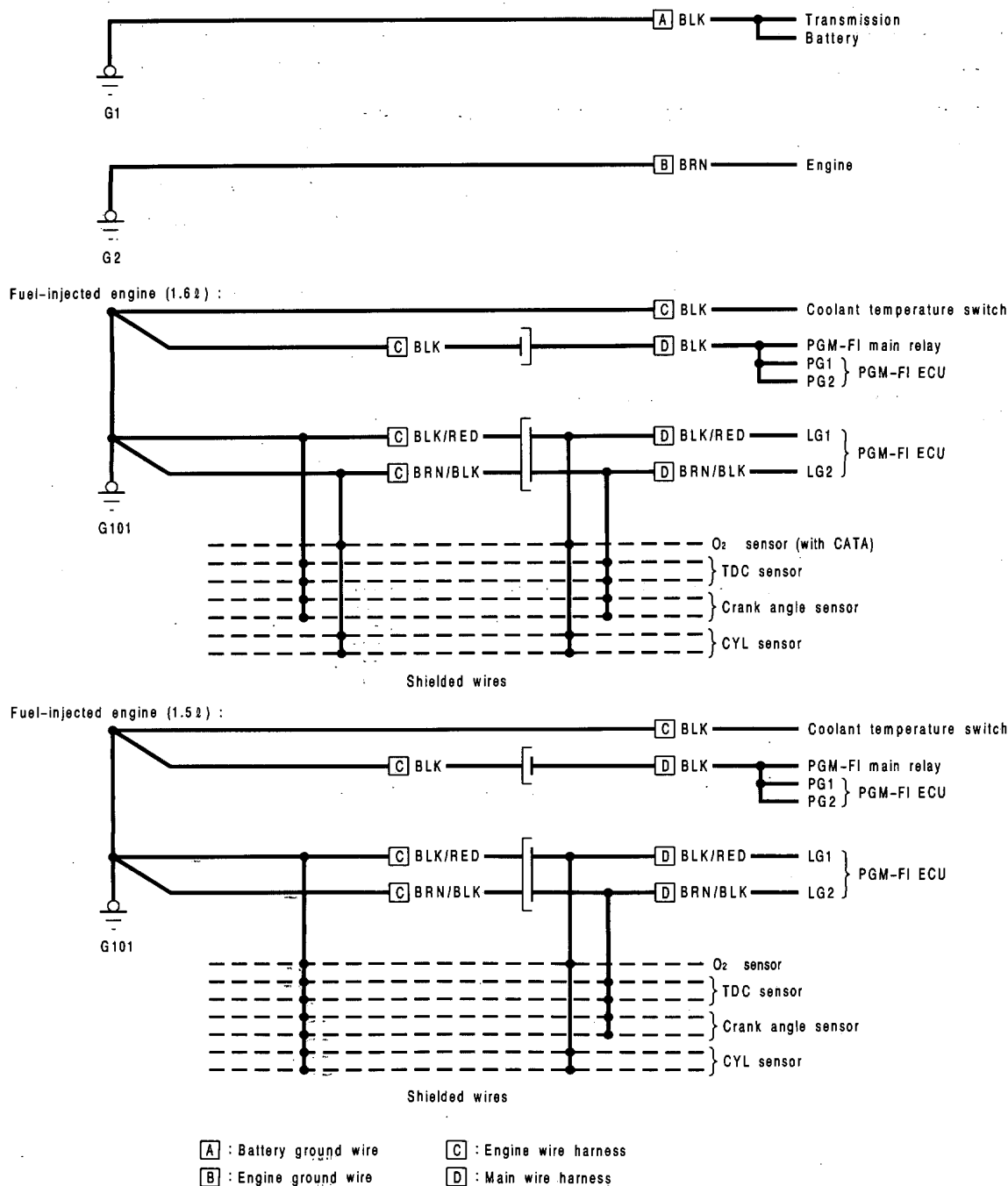


Ground Distribution

Circuit Identification



NOTE: See page 16-8 and 9 for illustrated ground locations.



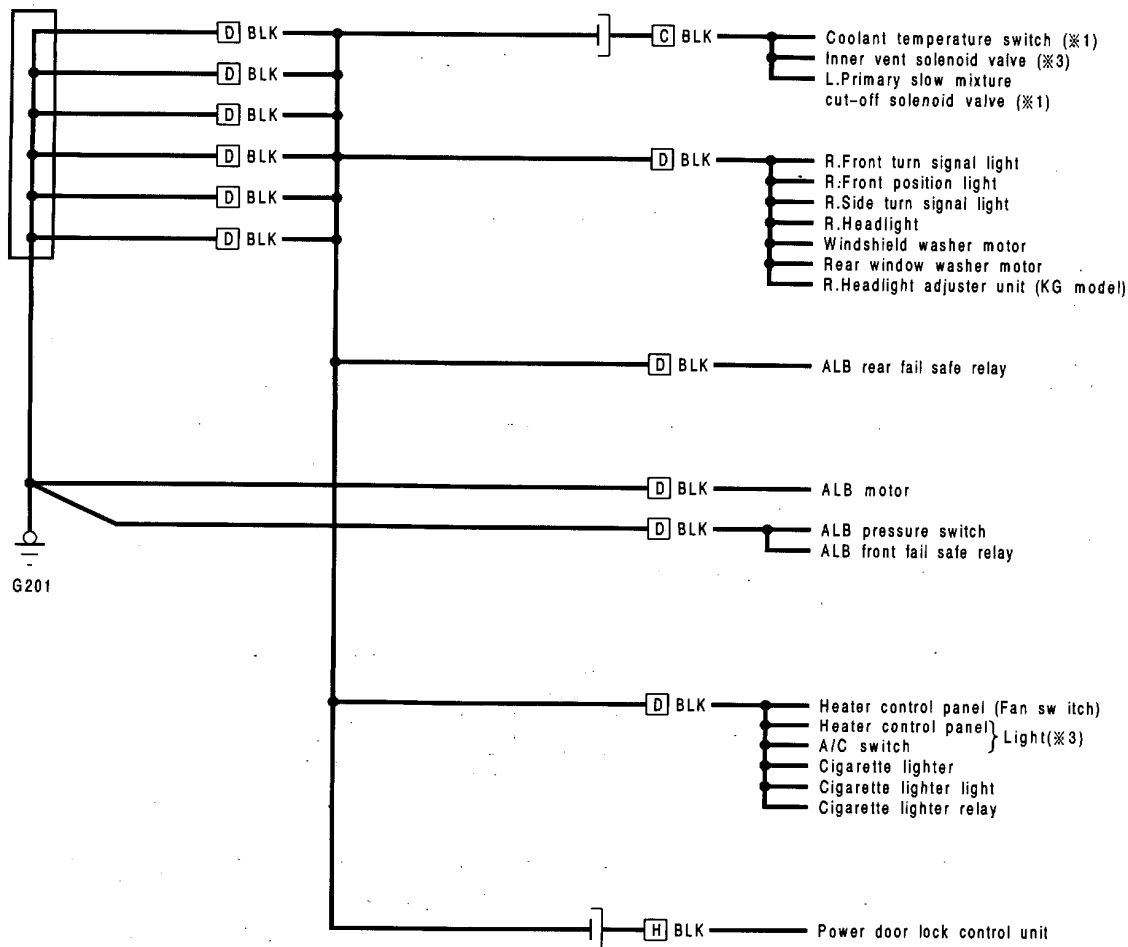
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

LHD:

NOTE: See pages 16-10 for illustrated ground locations.



[C] : Engine wire harness

[D] : Main wire harness

[H] : Front passenger's door wire harness

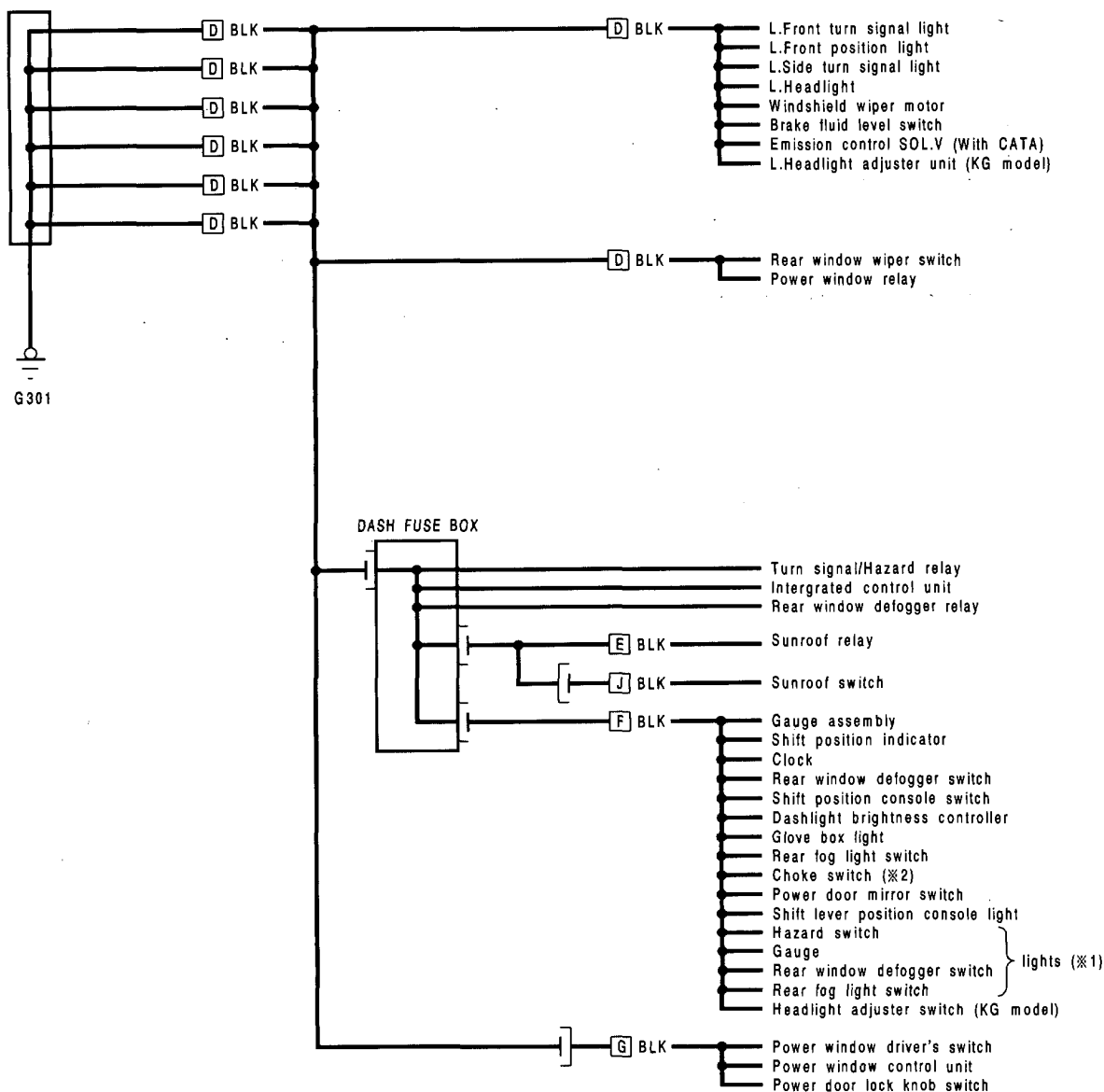
(※1) : Carbureted engine

(※2) : 1.6L Carbureted engine

(※3) : Without dashlight brightness control

**LHD:**

NOTE: See page 16-10 and 11 for illustrated ground locations.



(※1) : Without dashlight brightness control

(※2) : 1.4L Carbureted engine

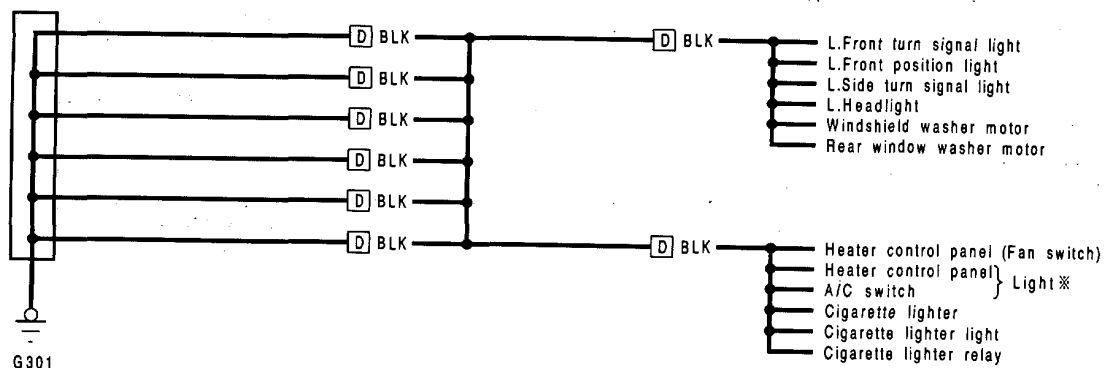
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

RHD:

NOTE: See page 16-10 for illustrated ground locations.



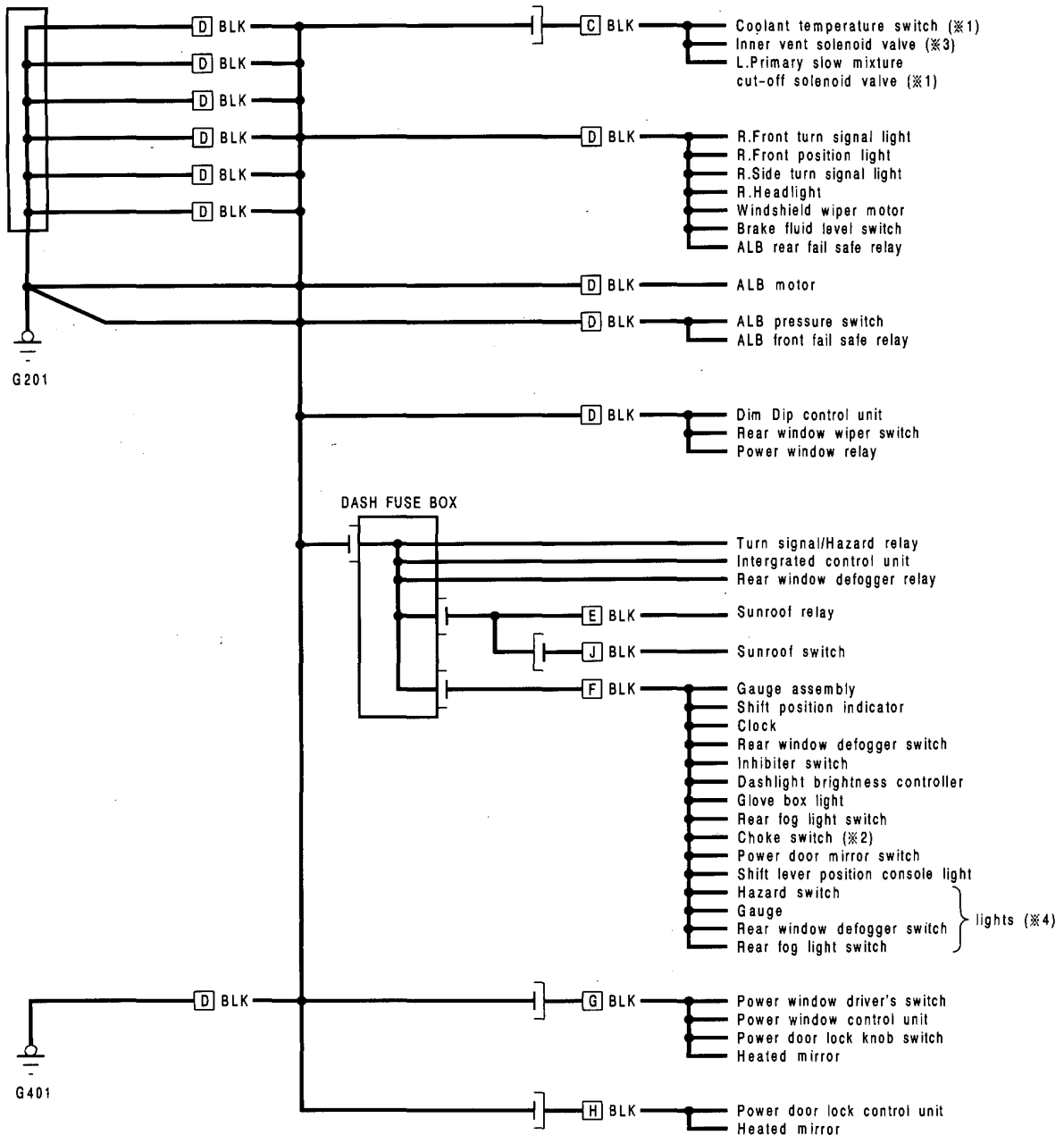
D : Main wire harness

※ : Wituout dashlight brightness control



RHD:

NOTE: See pages 16-10 and 11 for illustrated ground locations.



[C] : Engine wire harness

[D] : Main wire harness

[E] : Roof wire

[F] : Dashboard wire harness

[G] : Driver door wire harness

[H] : Front passenger's door wire harness

[J] : Sunroof switch subcord

(※1) : Carbureted engine

(※2) : 1.4L Carbureted engine

(※3) : 1.6L Carbureted engine

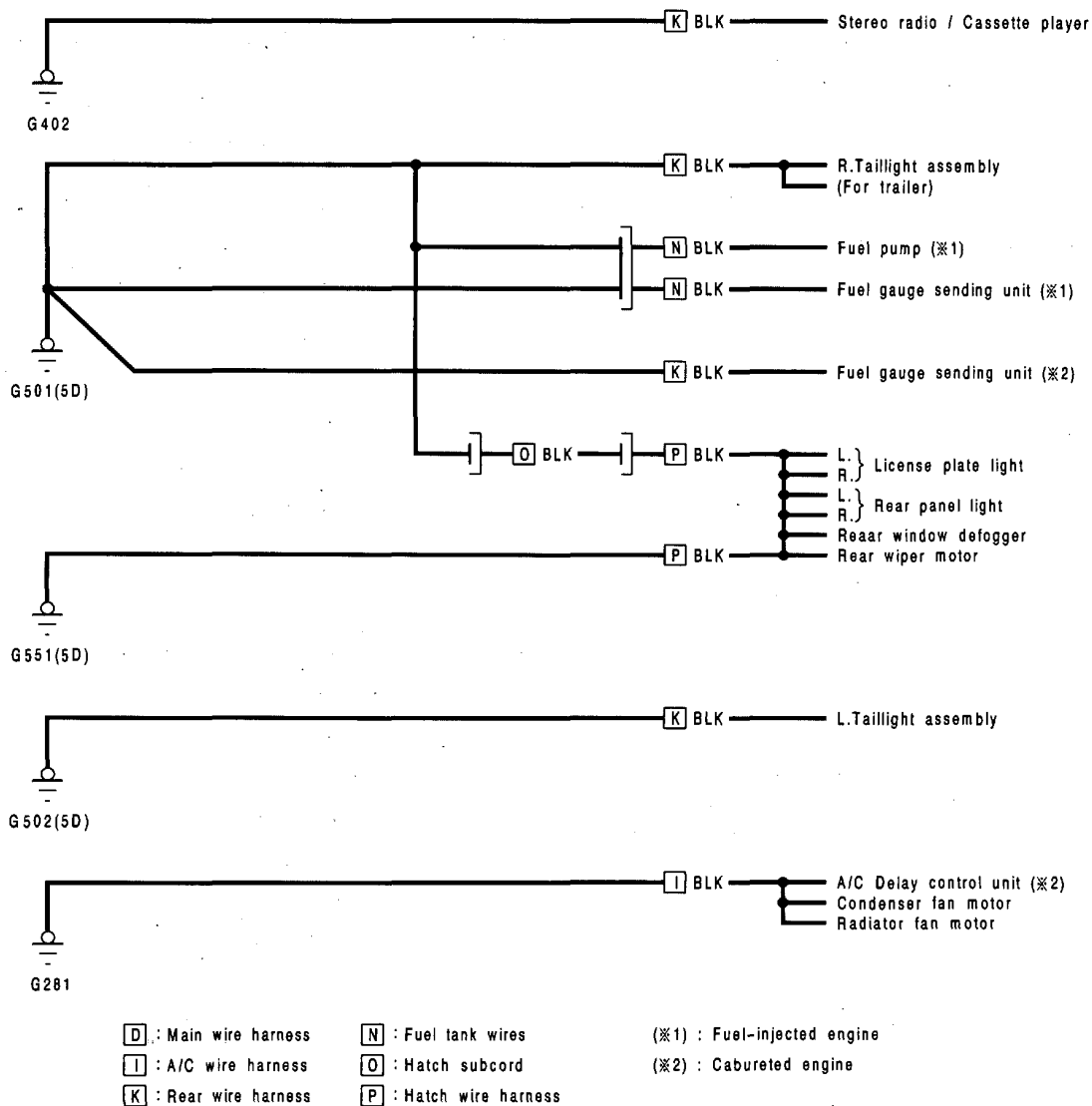
(※4) : Without dashlight brightness control

(cont'd)

Ground Distribution

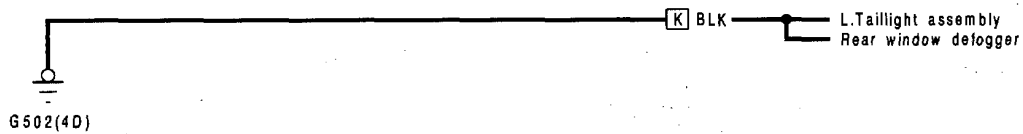
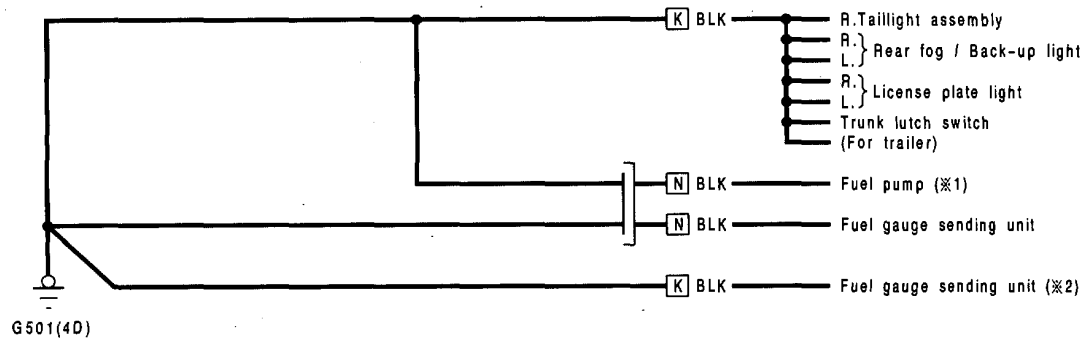
Circuit Identification (cont'd)

NOTE: See pages 16-12 and 14 for illustrated ground locations.





NOTE : See pages 16-14 for illustrated ground locations.

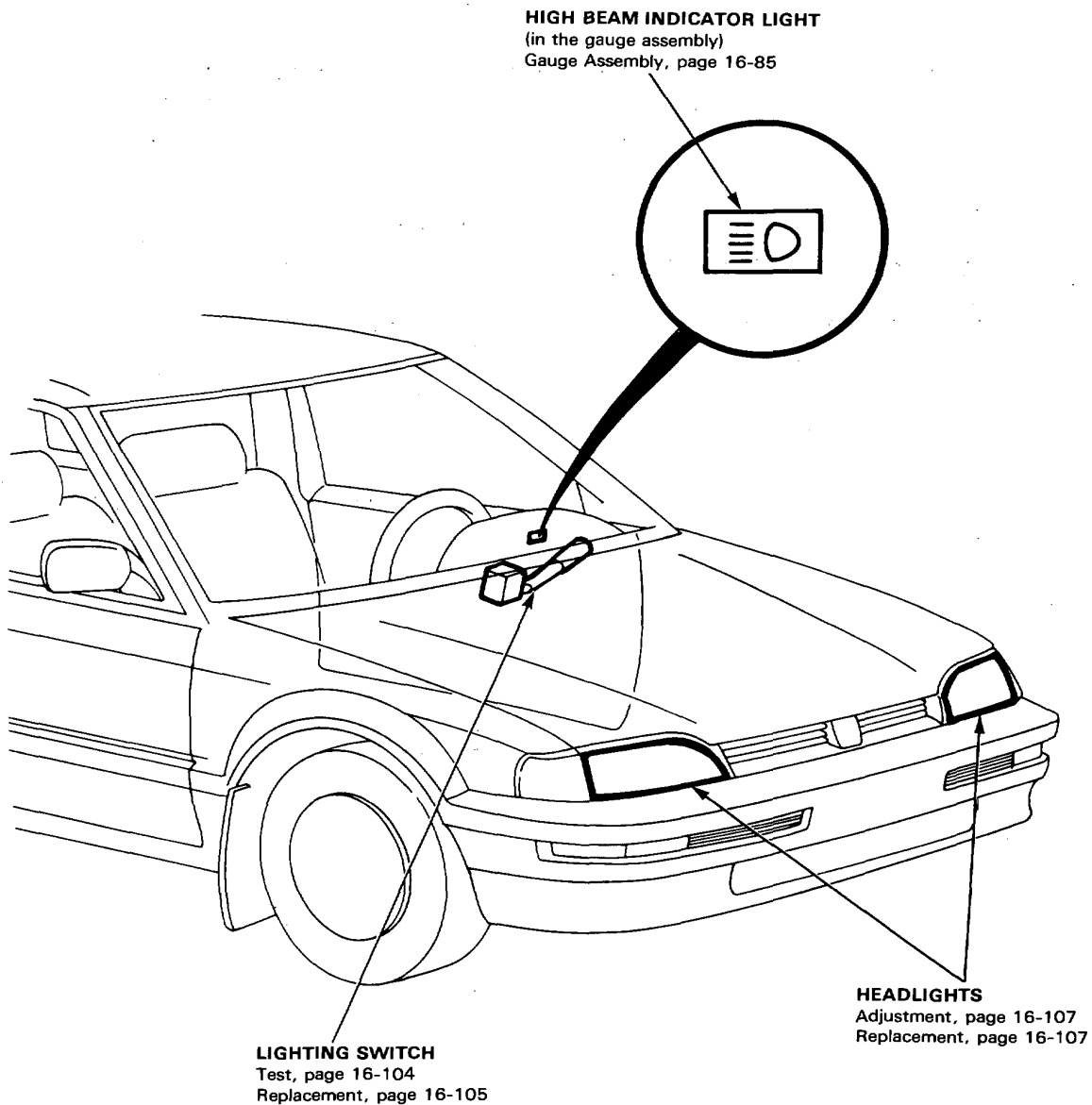


[K] : Rear wire harness
[N] : Fuel tank wires

(※1) : Fuel-injected engine
(※2) : Carbureted engine

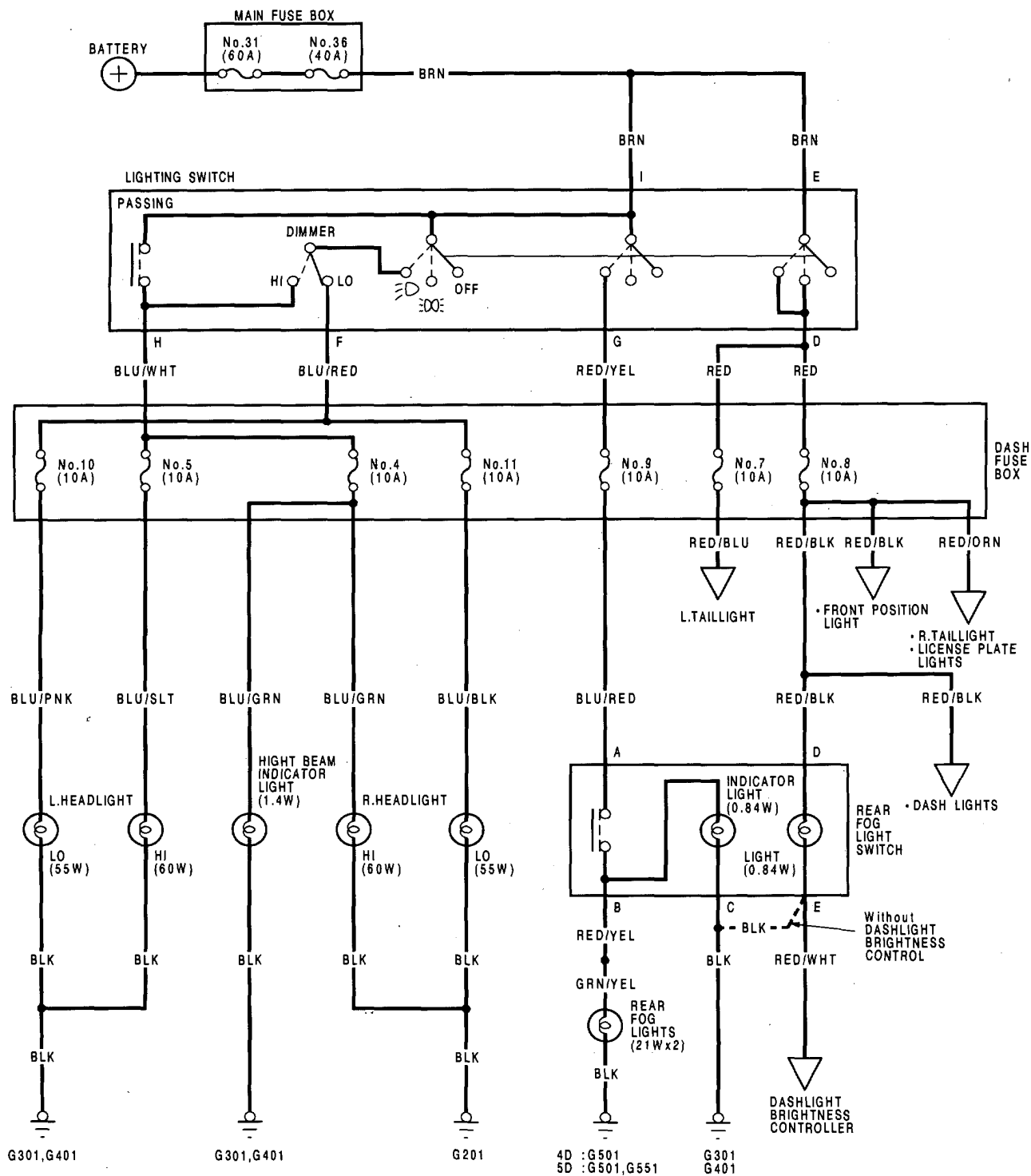
Lighting System (Except KE model)

Component Location Index





Circuit Diagram



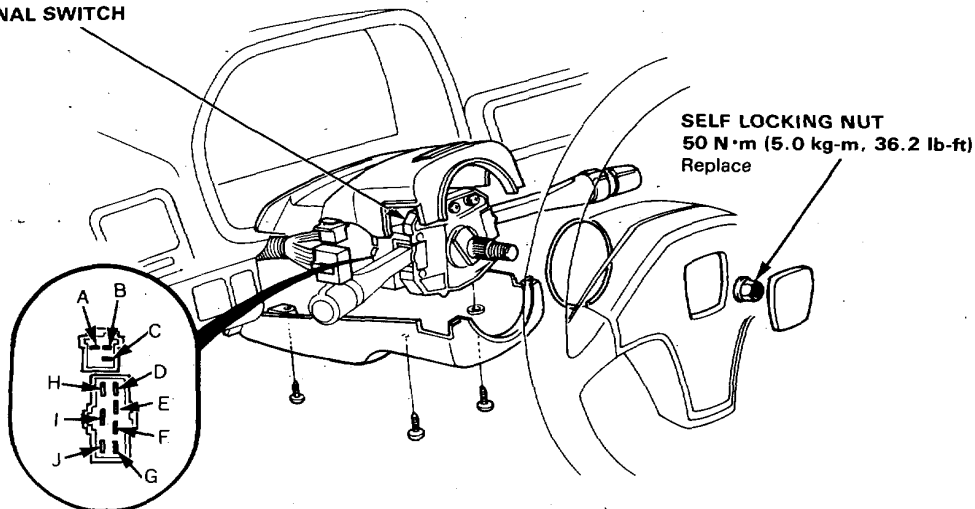
cardiagn.com

Lighting System (Except KE model)

Lighting/Turn Signal Switch Test

1. Remove the dashboard lower panel.
2. Remove the steering wheel.
3. Remove the steering column covers then disconnect the 7-P and 4-P connectors.
4. Check for continuity between the terminals in each position according to the tables.

LIGHTING/DIMMER/PASSING
TURN SIGNAL SWITCH



Lighting/Dimmer/Passing Switch

Terminal		D	E	F	G	H	I
Position							
Lighting switch	OFF						
	☺	○	○				
	☹				○	○	○
Dimmer switch *	LOW			○	○	○	○
	HIGH				○	○	○
Passing switch	OFF						
	ON					○	○

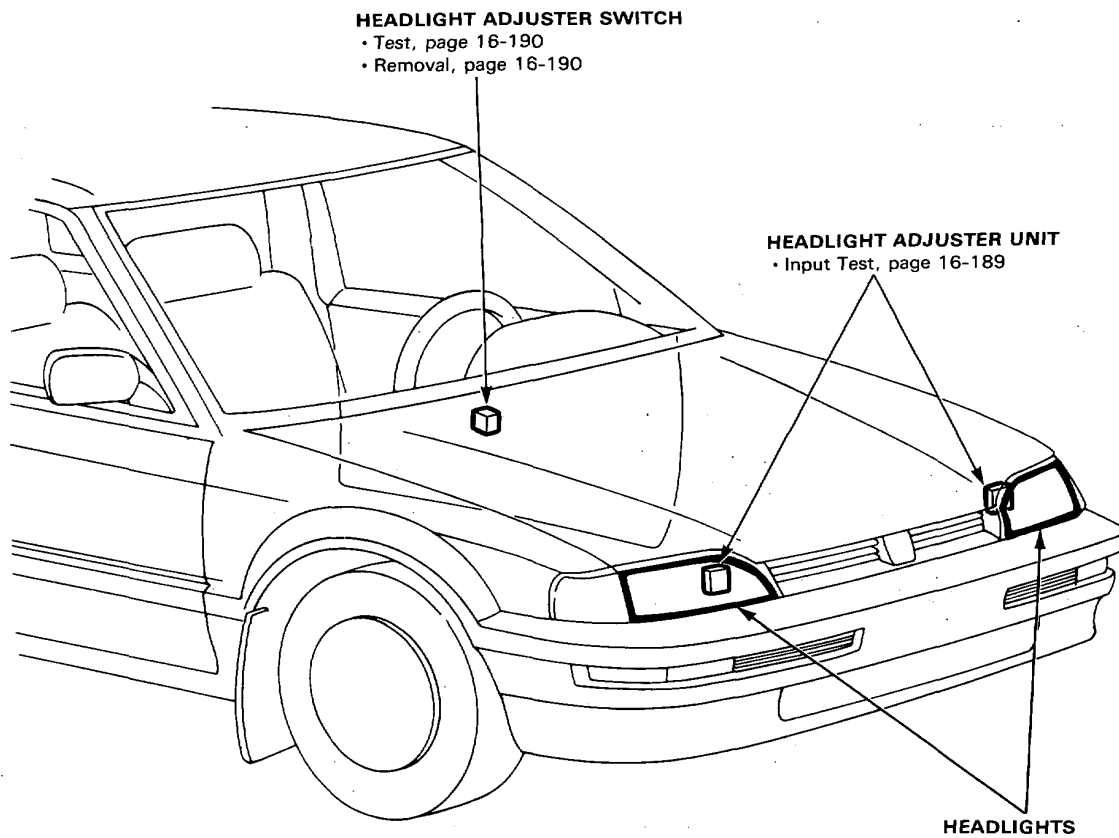
* : With lighting switch position in (☹)

Turn Signal Switch

Terminal		A	B	C
Position				
R		○		○
NEUTRAL				
L		○	○	

Headlight Adjuster (KG model)

Component Location Index



Circuit Diagram

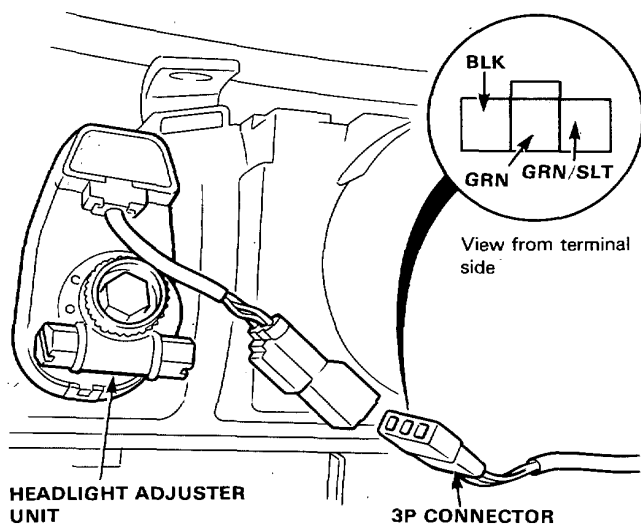




Unit Input Test

NOTE: Check for blown No.13 (15A) fuse in the dash fuse box before input test.

1. Disconnect the 3-P connectors for the R and L headlight adjuster units.



2. Check for continuity between the BLK terminal and body ground.
There should be continuity.
 - If there is no continuity, check for.
 - An open in the BLK wire.
 - Poor ground (Right side: G201, Left side: G301)
 - If there is continuity, go to step 3.
3. Check for voltage between the GRN/SLT terminal and body ground with the ignition switch ON, There should be battery voltage.
 - If there is no voltage, check for an open in the GRN/SLT wire.
 - If there is battery voltage, go to step 4.

4. Using an ohmmeter. When the ignition switch OFF, measure resistance between the GRN terminal and body ground and between the GRN/SLT and GRN terminal in each adjuster switch position according to the table.

Terminal Position	Resistance (Approx. k Ω)	
	GRN-body ground	GRN/SLT-GRN
0	0.7	1.1
1	0.6	—
2	0.5	—
3	0.4	—

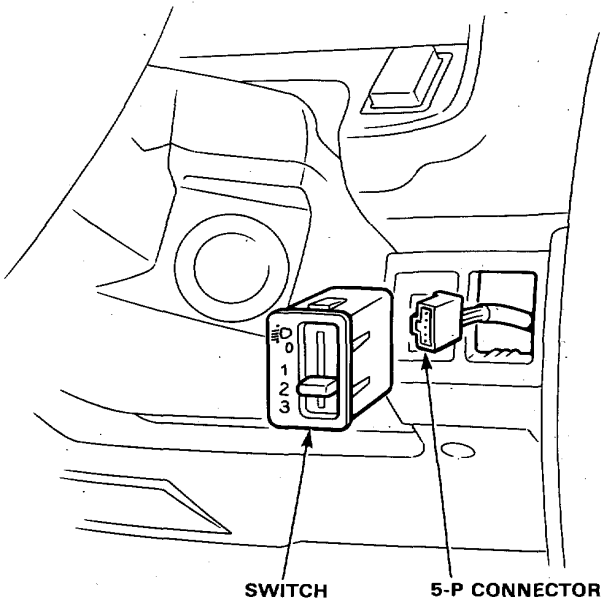
- If resistance is not within specification, check for
 - An open in the GRN wire.
 - Faulty headlight adjuster switch.
 - If resistance is within specification, go to step 5.
5. If all tests are normal, but the headlight adjuster unit does not operate, check for frozen, stuck or improperly installed the headlight adjuster unit. If mechanical check is OK, replace the headlight adjuster unit.

NOTE: Check for connection of 3-P connectors after test, For example, malfunction of headlight adjuster is occurred by improper connection of one side.

Headlight Adjuster (KG model)

Switch Removal

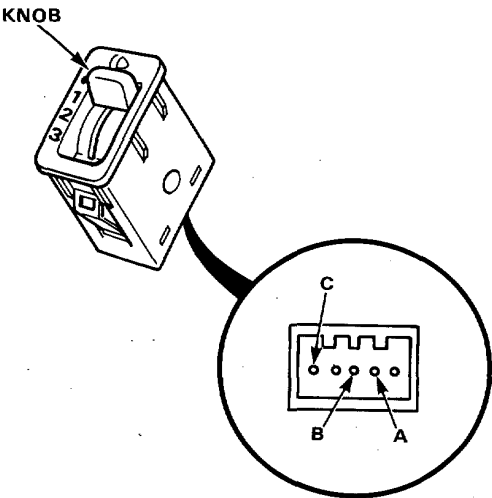
- 1. Remove the dashboard lower panel and push out the switch from behind the instrument panel.
- 2. Disconnet 5-P connector from the switch.



Switch Test

- 1. Remove the switch from the instrument panel.
- 2. Measure the resistance between the A and B terminals at 0, 1, 2 and 3 positions by moving the knob, and measure resistance between the A and C terminal in 0 position of switch.

Replace the switch if the resistance is not within specifications.



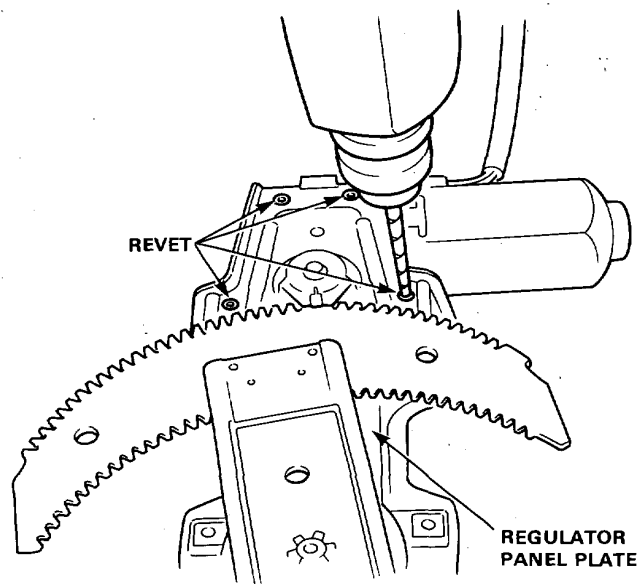
Terminal Position	Resistance (Approx. kΩ)	
	A—B	A—C
0	0.7	1.1
1	0.6	—
2	0.5	—
3	0.4	—



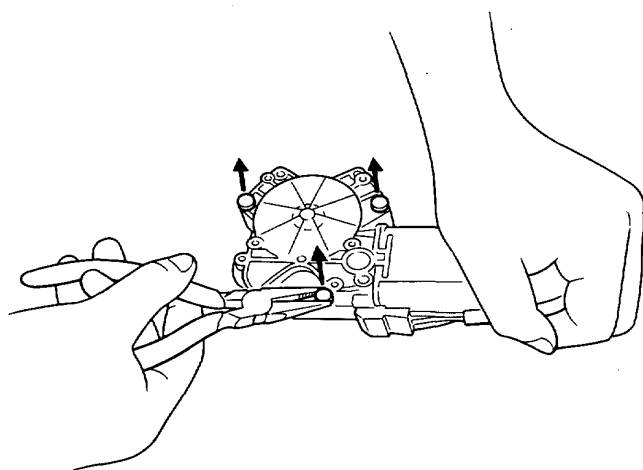
Power Windows

Motor Replacement

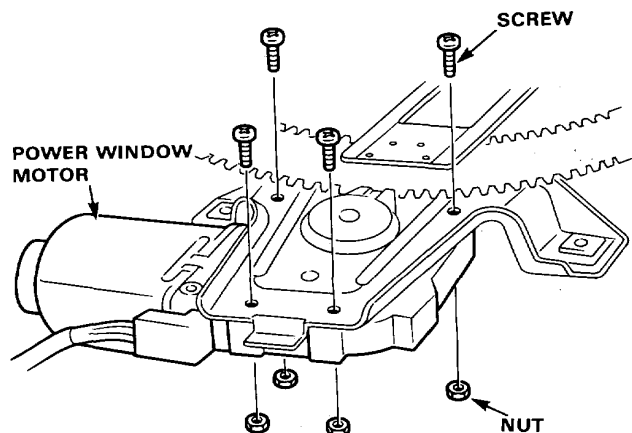
1. Remove the door trim panel.
2. Disconnect the 4-P connector from the door wire harness.
3. Remove the regulator assembly. (See section 14)
4. Remove the 4 rivets from the regulator panel plate, with a drill diameter 4.2 mm.



5. Pull out the rivets from the motor.



6. Fix the motor with 4 screws and 4 nuts on the regulator panel plate.



7. Add a drop of "LOCTITE" glue on the nuts to secure.
8. Assemble the regulator assembly in the reverse order of disassembly. (See section 14)
9. After installation, check the smooth movement of door glass.