

# Chassis and Engine Numbers

## Vehicle Identification Number

JHM ED9 3700S200001

**Manufacturer, Make and Type of Vehicle**

JHM: HONDA MOTOR CO., LTD., JAPAN.

HONDA, Passenger car

**Line/Body and Engine type**

ED9: CIVIC COUPE CRX 1600

EE6: CIVIC COUPE CRX 1400

**Transmission and Body type**

3: 5-speed manual/2-door Coupe

4: 4-speed automatic/2-door Coupe

**Vehicle Grade**

2: GL (EE6, 1400 SOHC)

6: 1.6i (ED9, 1600 SOHC)

7: 1.6i 16 (ED9, 1600 DOHC)

**Fixed Code**

**Auxiliary Number**

**Factory Code**

S: Suzuka Factory

**Model Year**

2: 1990

**Serial Number**

## Engine Number

D14A1-1400001

**Engine Type**

D14A1: 1.4ℓ SOHC Carbureted Engine without catalytic converter for KB model

D16A7: 1.6ℓ SOHC PGM-FI Engine without catalytic converter for KY model

D16A8: 1.6ℓ DOHC PGM-FI Engine with catalytic converter for KX, KW, KQ models

D16A9: 1.6ℓ DOHC PGM-FI Engine without catalytic converter for KF, KW, KB, KE, KU models

D16Z5: 1.6ℓ DOHC PGM-FI Engine with catalytic converter for KG, KS models

**Serial Number**

D16A7: 3000001 ~

D14A1, D16A8, D16A9: 1400001 ~

D16Z5: 1200001 ~

## Transmission Number

L3-2000001

**Transmission Type**

L3: Manual 5-speed

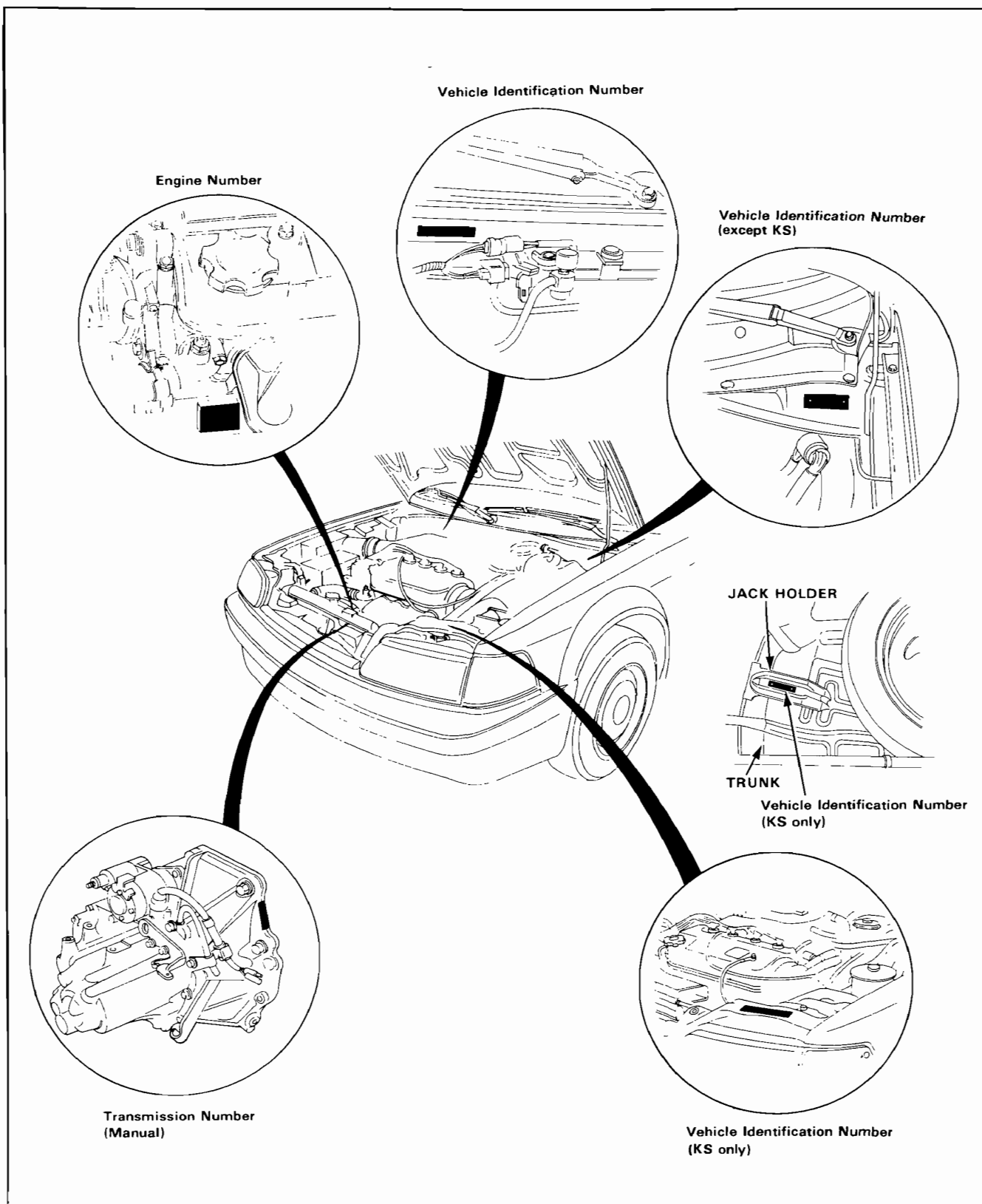
L4: Automatic 4-speed

**Serial Number**

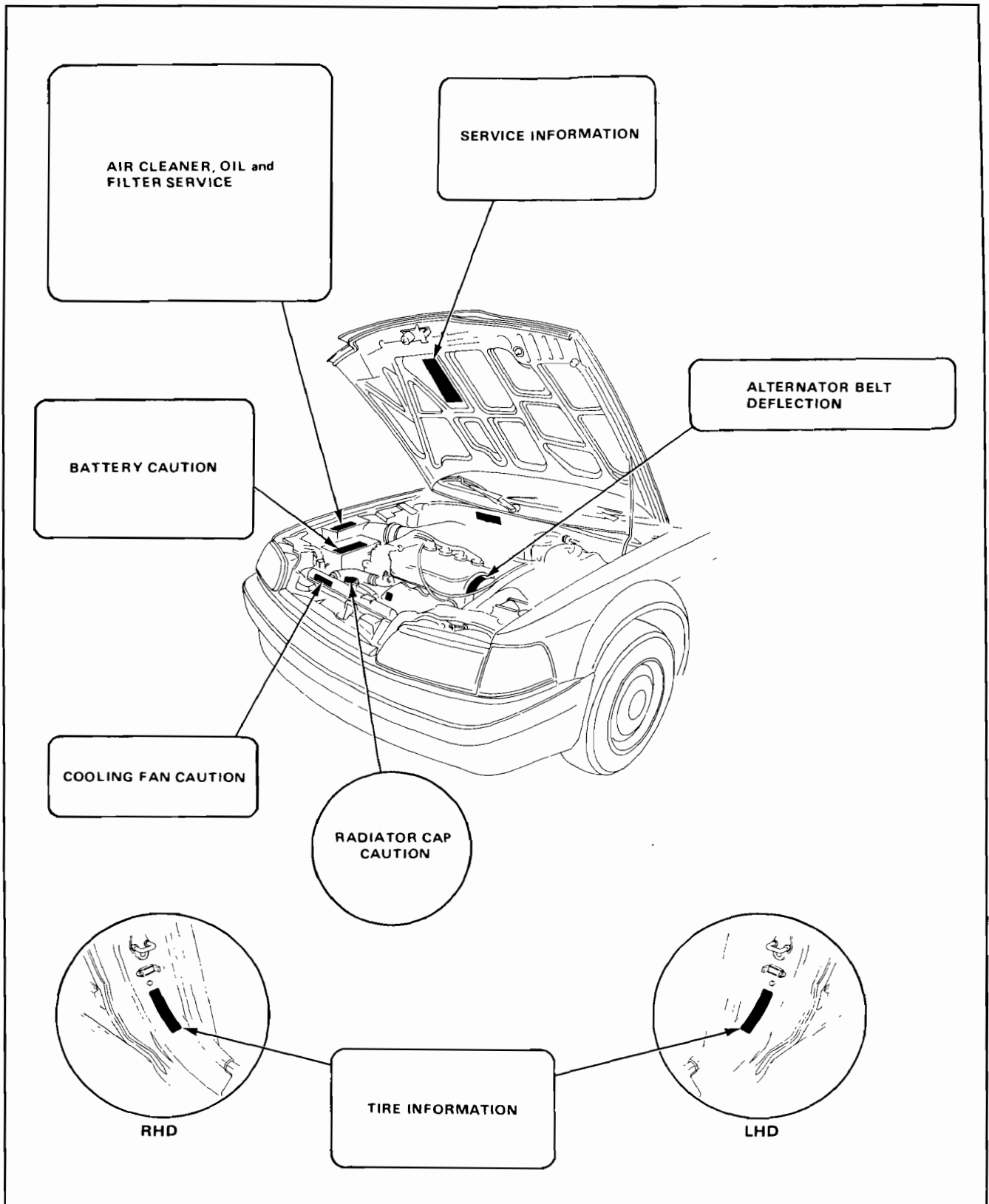
L3: 2000001 ~

L4: 5000001 ~

# Identification Number Locations



# Label Locations



# Lift and Support Points

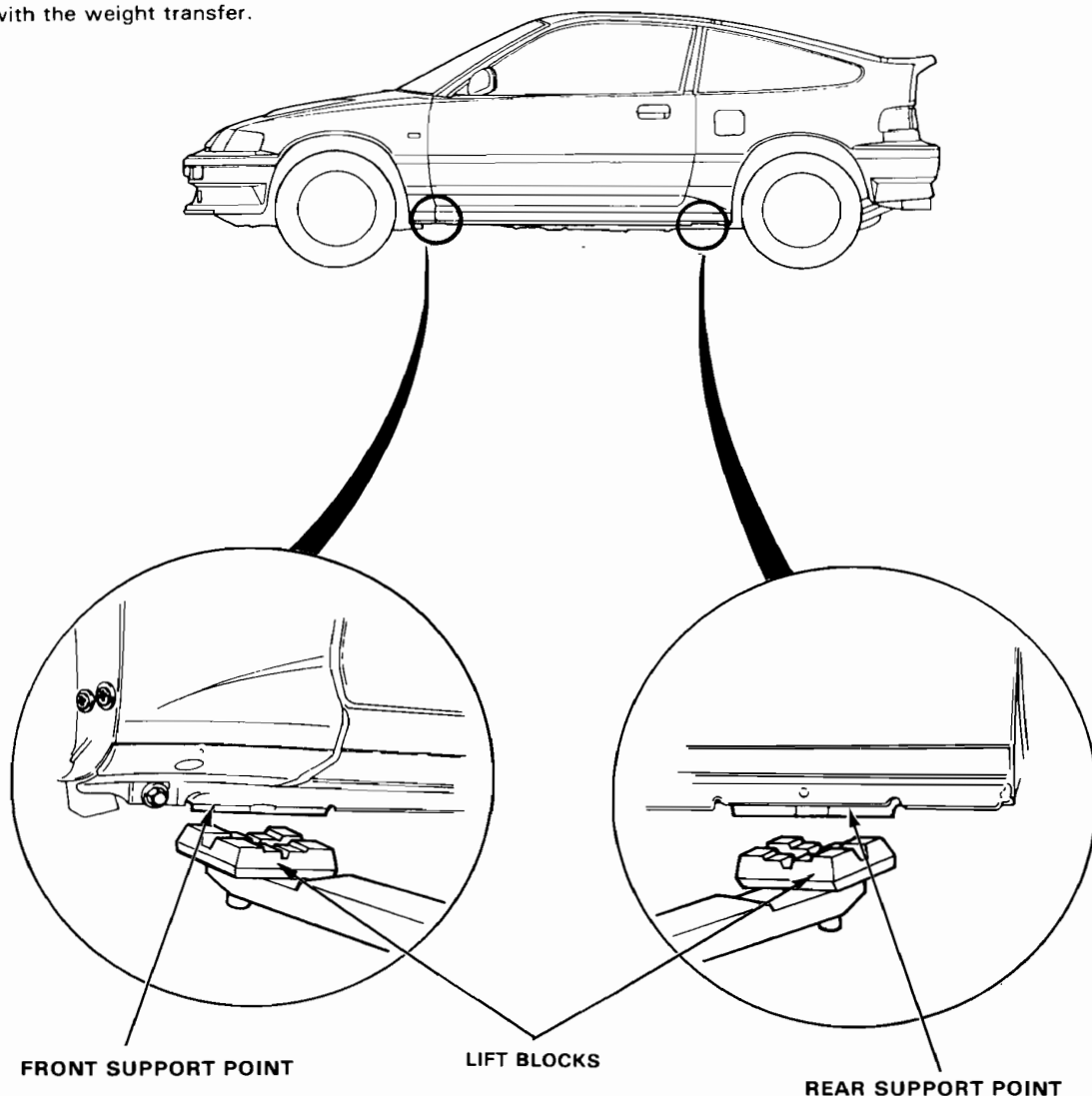


## Hoist

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

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

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



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# Lift and Support Points (cont'd)

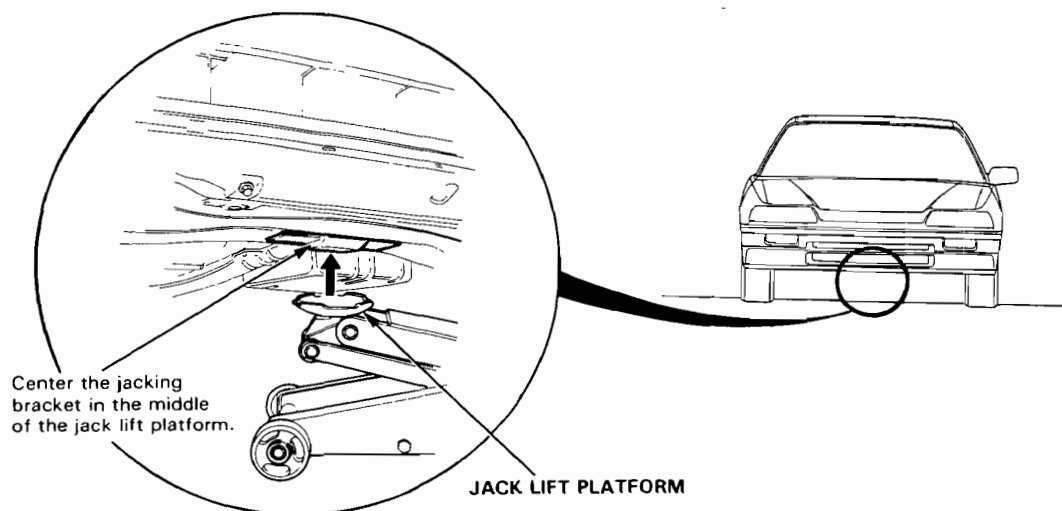
## Floor Jack

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.
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.

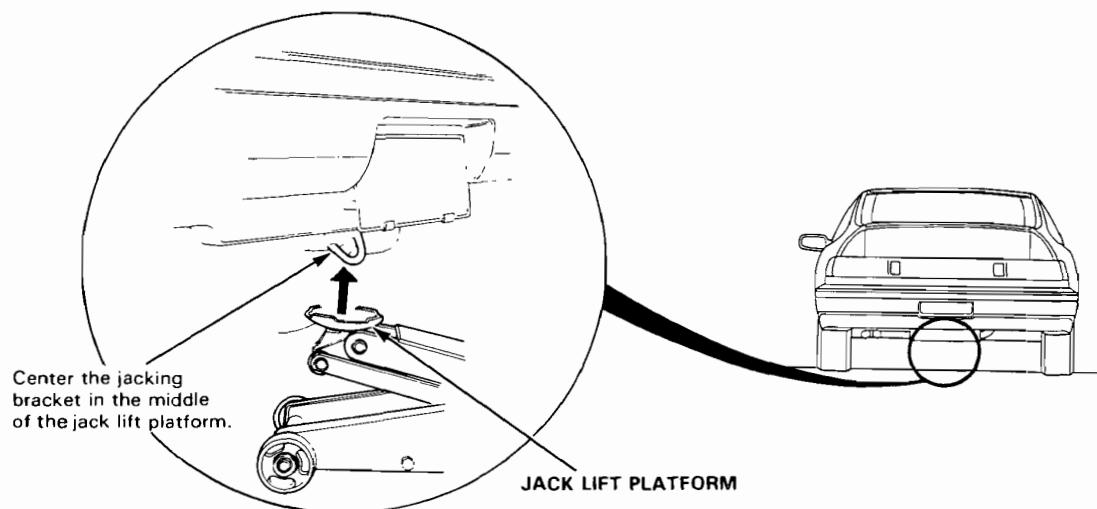
### ▲WARNING

- 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

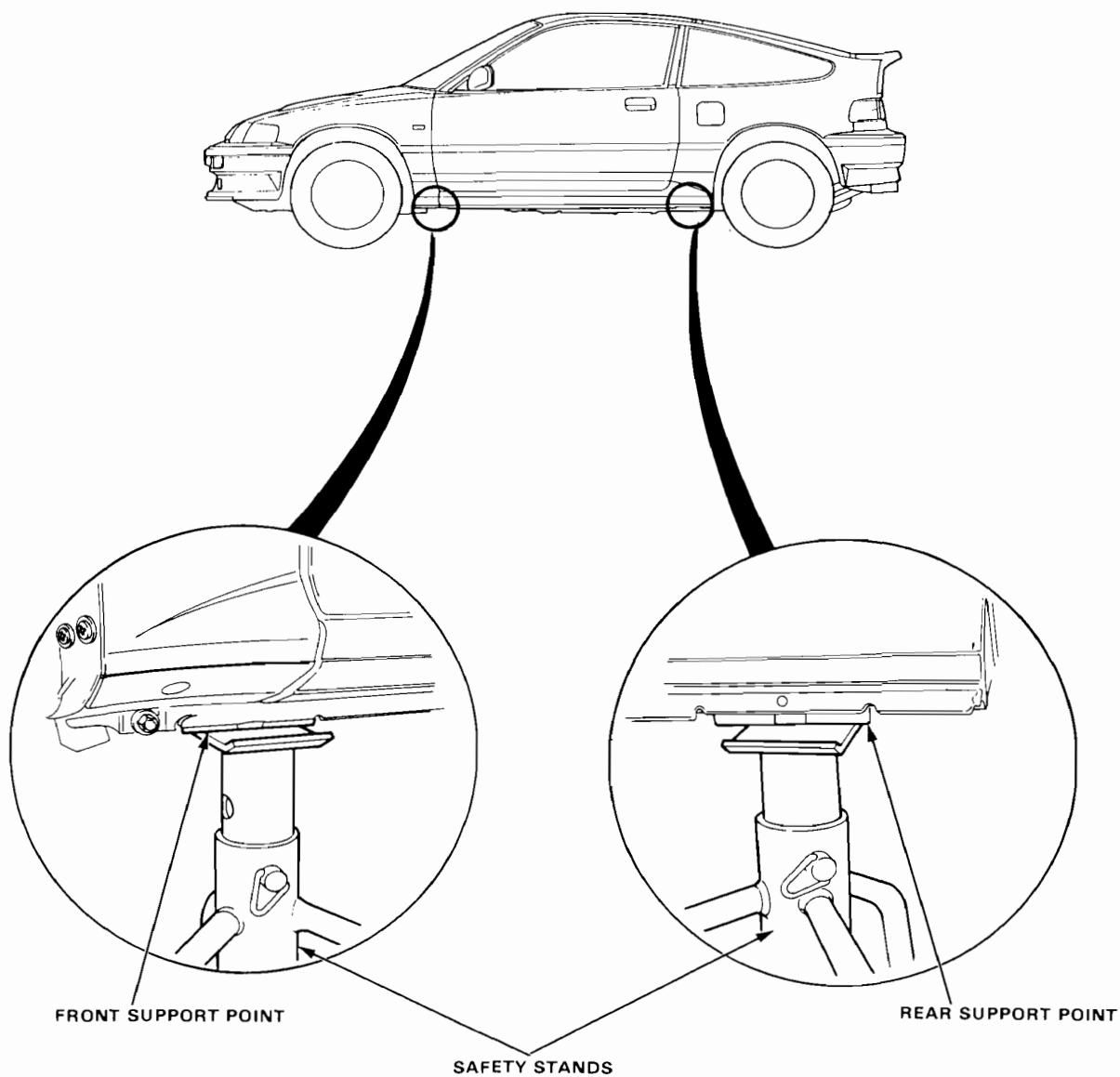


## Rear





## 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 the chains and lift straps, to avoid damaging the bumper and the body. Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing. A rope may be attached to the hook shown in the illustration. Do not attach a tow bar to either bumper.

**⚠ WARNING** Do not push or tow a car to start it. The forward surge when the engine starts could cause a collision. (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**

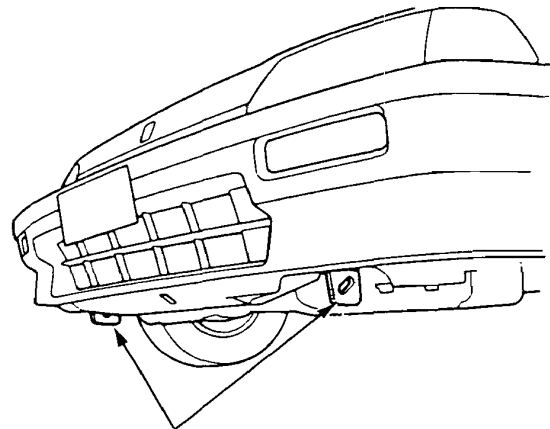
Shift the transmission to Neutral and turn the ignition key to the "I" position.

## **Automatic Transmission**

First, check the automatic transmission fluid level (see Section 9). Start the engine and shift 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).



**TOWING HOOKS**

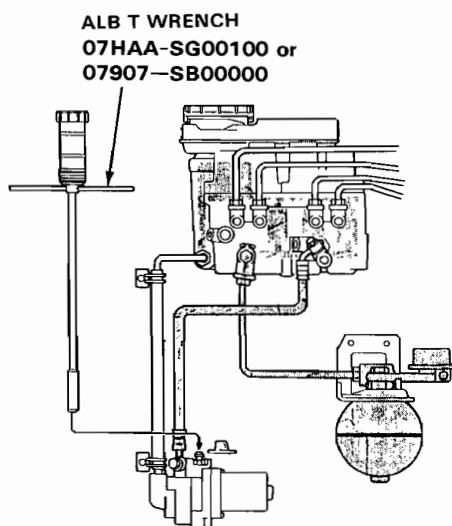
# Preparation of Work



## Special Caution Items For This Car

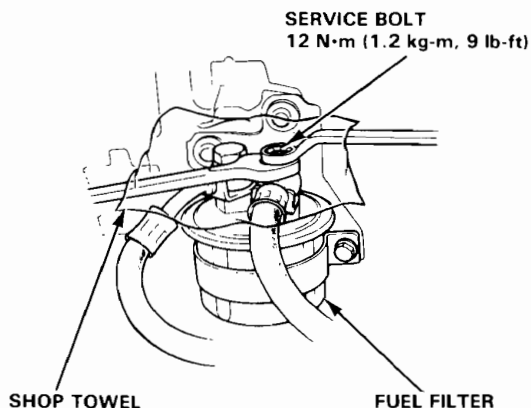
### 1. ALB piping system servicing

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

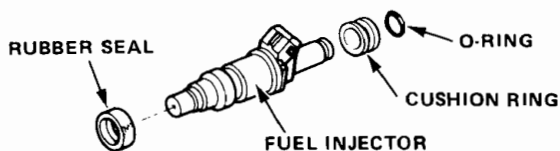


### 2. Fuel Line Servicing

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

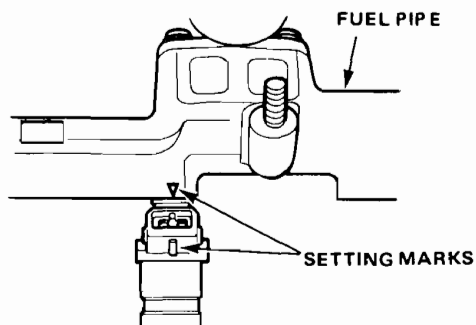


- Be sure to replace washers, O-rings, and rubber seals with new ones when servicing fuel line parts.
- Always apply oil to the surfaces of O-rings and seal rings before installation. Never use brake fluid, radiator fluid, vegetable oils or alcohol-based oils.





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



### 3. Inspection for fuel leakage

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

### 4. Installation of an amateur radio.

Care has been taken for the PGM-FI ECU (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 computer.

The control unit location:

- PGM-FI ECU : Passenger's side front floor panel
- ALB control unit : Rear luggage area Right front of floor panel.
- A/T control : Driver's side front floor panel
- Do not lead the antenna feeder and the coaxial cable over a long distance parallel to the car's wiring. When crossing with the wiring is required, execute crossing at a right angle.
- Do not install a radio with a large output (max. 10 W).

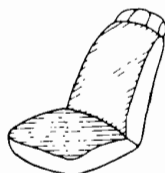
### 5. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use Honda genuine liquid gasket, Part NO. OY740-99986.

- 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. In that case, 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).

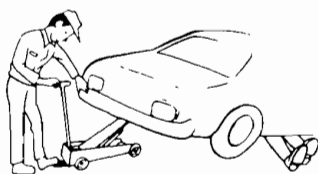


**CAUTION:** Observe all safety precautions and notes while working.

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



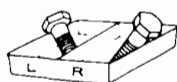
2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate as frequently as possible when work involves two or more workers. Do not run the engine unless the shop or working area is well ventilated.



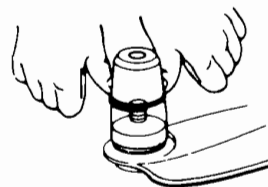
3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



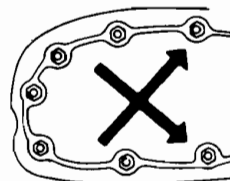
4. Mark or place all removed parts in order in a parts rack so they can be reassembled in their original places.



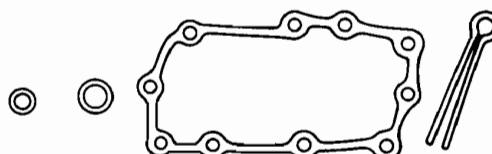
5. Use the special tools when use of such is specified.



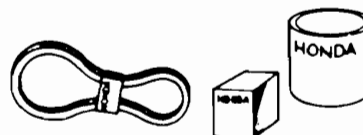
6. Parts must be assembled with the proper torque according to the maintenance standards established.
7. When tightening a series bolts or nuts, begin with the center or large diameter bolts and tighten them in crisscross pattern in two or more steps.



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



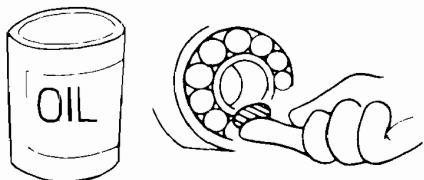
9. Use genuine HONDA parts and lubricants or those equivalent. When parts are to be reused, they must be inspected carefully to make sure they are not damaged or deteriorated and are in good usable condition



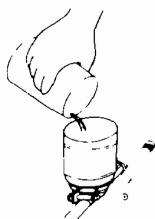
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# Preparation of Work

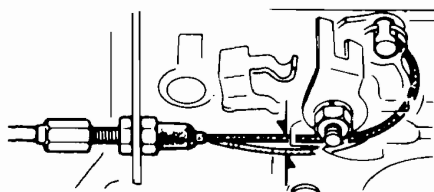
10. Coat or fill parts with specified grease as specified (Page 4-2). Clean all removed parts with solvent upon disassembly.



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.
  - Brake fluid can cause damage to painted surfaces. Wipe up spilled fluid at once.
  - After disconnecting brake hoses or pipes, be sure to plug the openings to prevent loss of brake fluid.
  - Clean all disassembled parts only in clean BRAKE FLUID. Blow open all holes and passages with compressed air.

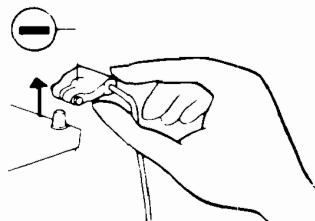


- Keep disassembled parts from air-borne dust and abrasives.
  - Check that parts are clean before assembly
12. Avoid oil or grease getting on rubber parts and tubes, unless specified.
  13. Upon assembling, check every part for proper installation and operation.

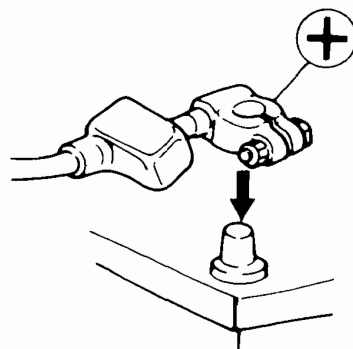


## Electrical

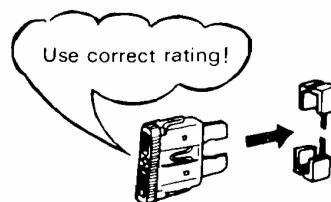
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery starting with the negative (–) terminal.



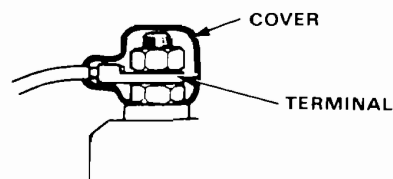
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (–) cable.



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



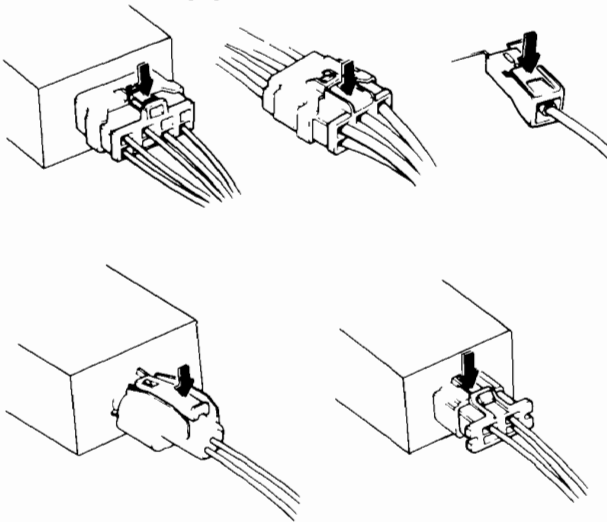
- Be sure to install the terminal cover over the connections after a wire or wire harness has been connected



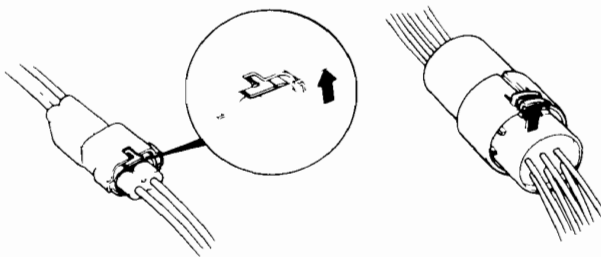


- When removing locking couplers, be sure to disengage the lock before disconnecting.
- Couplers may be of two types, those in which the lock is pressed to remove, and those in which the lock is pulled up to remove. Be sure to ascertain the type of locking device before beginning work. The following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

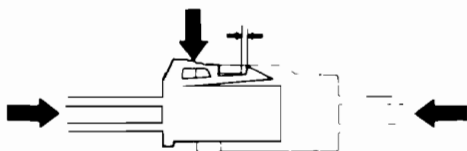
**Press to disengage:**



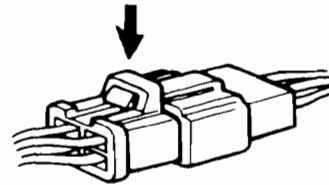
**Pull up to disengage:**



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



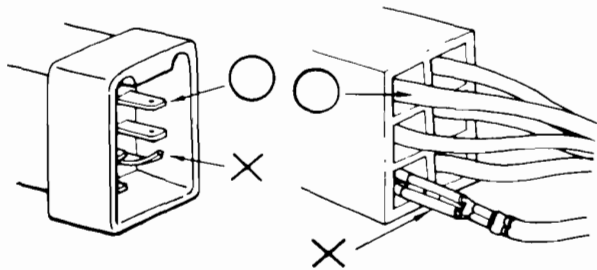
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when re-connecting.



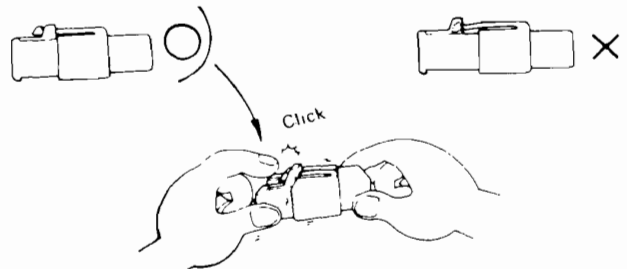
- When disconnecting a coupler, pull it off from the mating coupler by holding on both couplers.
- Never try to disconnect couplers by pulling on their wires.



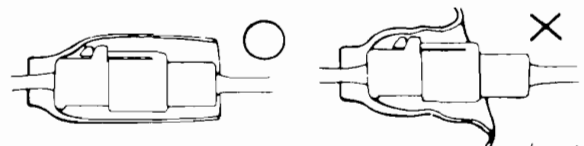
- Before connecting couplers, check to see that the terminals are in place and are not bent or distorted.



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



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

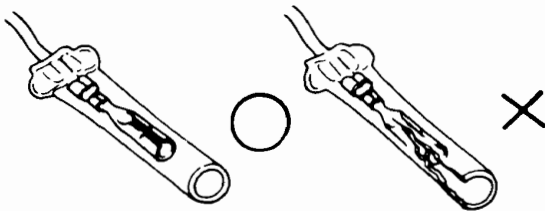


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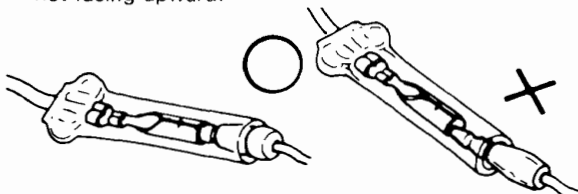
# Preparation of Work

## Electrical (cont'd)

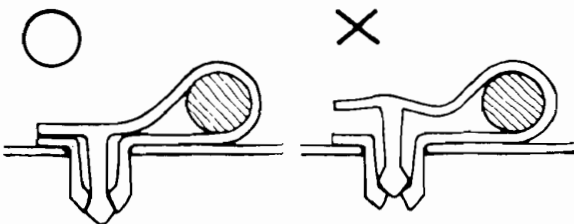
- Before clamping, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



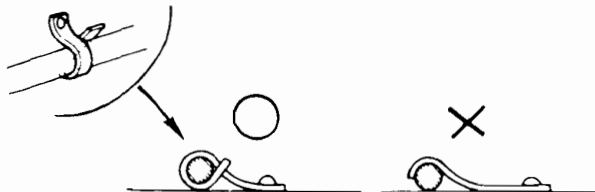
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover is not facing upward.



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



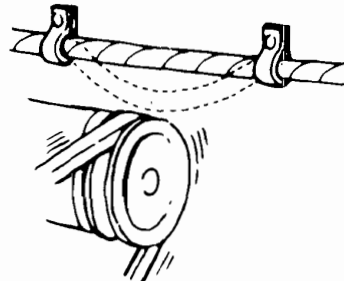
- A loose wire harness or cable can be a hazard to safety. After clamping, check each wire for security in its clamp.



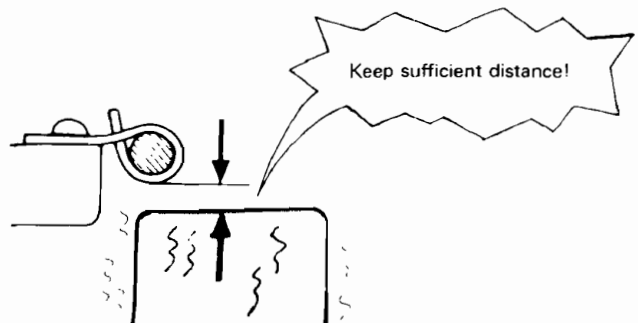
- Do not squeeze wires against the weld when a weld-on clamp is used.



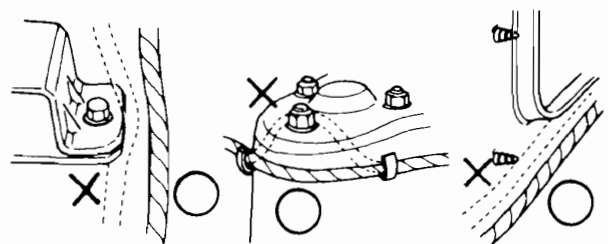
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



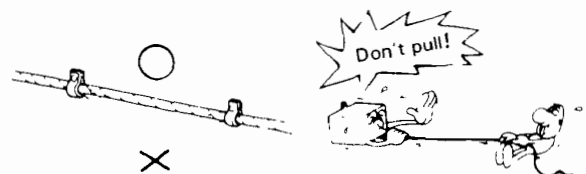
- Always keep a safe distance between wire harnesses and any heated parts.



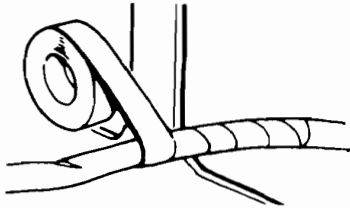
- Do not bring wire harnesses in direct contact with sharp edges or corners.
- Also avoid contact with the projected ends of bolts, screws and other fasteners.



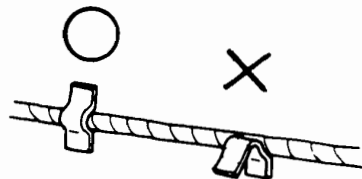
- Route harnesses so they are not pulled taut or slackened excessively



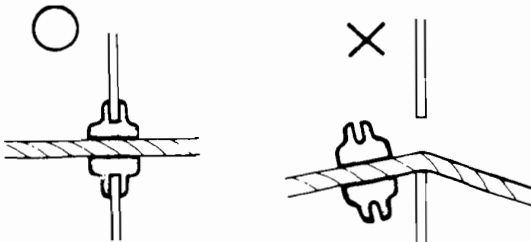
- Protect wires and harnesses with tape or a tube if they are in contact with a sharp edge or corner.



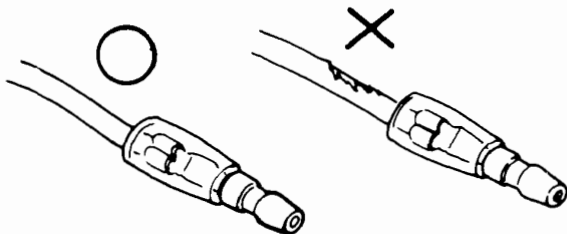
- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol if necessary.



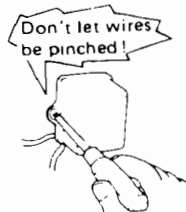
- Seat grommets in their grooves properly.



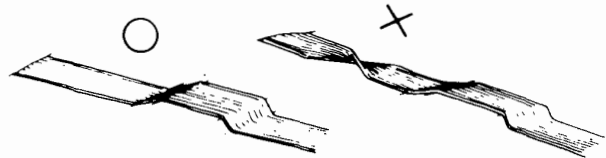
- Do not damage the insulation when connecting a wire.
- Do not use wires or harnesses with a broken insulation. Repair by wrapping with protective tape or replace with new ones if necessary.



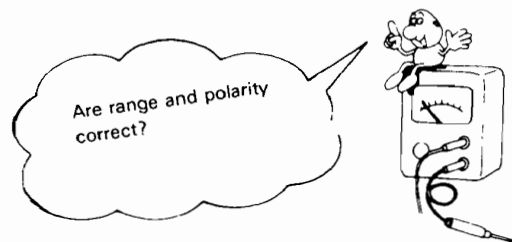
- After installing parts, make sure that wire harnesses are not pinched.



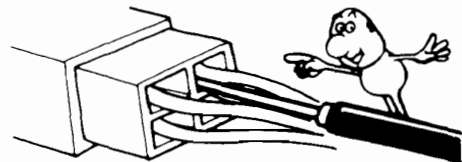
- After routing, check that the wire harnesses are not twisted or kinked.



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



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



- Do not drop parts.



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



## Symbol Marks

The following symbols stand for:



:Apply engine oil.



:Apply brake fluid.



:Apply grease.



:Apply Automatic Transmission Fluid



: Apply Power Steering Fluid.



:Apply or check vacuum.

①, ②, ③, ..... : Sequence for removal or installation  
 ①, ②, ③, ..... : Sequence for removal or installation

## Abbreviation

A/C	Air Conditioner
ALB	4-channel Anti Lock Brake
Assy	Assembly
A/T	Automatic Transmission
ATF	Automatic Transmission Fluid
ATT	Attachment
B or BAT	Battery
CATA	Catalytic Converter
EACV	Electronic Air Control Valve
ECU	PGM-FI Electronic Control Unit
EGR	Exhaust Gas Recirculation
EX	Exhaust
GND	Ground
IG	Ignition
IN	Intake
INT	Intermittent
L.	Left
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 <sub>1</sub>	Drive Position (1st~4th)
D <sub>2</sub>	Drive Position (1st~3rd)
2	2nd Position

# Special Tools

## 5 . Engine

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD-PH70100	Valve Guide Seal Installer	1	For DOHC engine
②	07HAD-PJ70100	Driver	1	For crankshaft seal (Pulley side)
③	07HAD-PJ70200	Valve Guide Seal Installer	1	For SOHC engine
④	07HAH-PJ70100	Valve Guide Reamer , 5.5 mm	1	For SOHC engine
⑤	07JAB-0010000	Crank Pulley Holder Set	1	
⑤-1	07JAA-0010100	Socket Wrench 17 mm	(1)	} -Component tools
⑤-2	07JAB-0010100	Pulley Holder Attachment	(1)	
⑤-3	07JAB-0010200	Handle	(1)	
⑥	07JAZ-SH20100	RPM Connecting Adaptor	1	
⑦	07JGG-0010100	Belt Tension Gauge	1	
⑧	07KAK-SJ40100	Engine Tilt Hanger Set	1	
⑨	07406-0030000	Oil Pressure Gauge Adaptor	1	
⑩	07742-0010100	Valve Guide Driver , 5.5 mm	1	For SOHC engine
⑪	07742-0010200	Valve Guide Driver , 6.6 mm	1	For DOHC engine
⑫	07743-0020000	Adjustable Valve Guide Driver	1	
⑬	07744-0010400	Pin Driver , 5 mm	2	Used to set the camshafts at TDC(DOHC engine).
⑭	07749-0010000	Driver	1	
⑮	07757-0010001	Valve Spring Compressor	1	07957-3290001 may also be used.
⑯	07912-6110001	Oil Filter Socket Wrench	1	Used for Japan-made oil filter
⑰		Oil Filter Wrench(Apply from LABINAL S . A .)	1	Used for France-made oil filter
⑱	07924-PD20003	Ring Gear Holder	1	07924-PD20002 may also be used .
⑲	07944-6110200	Pin Driver 8 mm	1	
⑳	07947-SB00100	Oil Seal Driver	1	
㉑	07948-SB00800	Seal Driver Attachment	1	For crankshaft seal (Clutch side)
㉒	07973-PE00200	Pilot Collar	1	
㉓	07973-PE00310	Piston Pin Driver Shaft	1	} ㉒,㉓,㉔,㉕,㉖ are used with 07973-6570002
㉔	07973-PE00320	Piston Pin Driver Head	1	
㉕	07973-PE00400	Piston Pin Base Insert	1	
㉖	07973-SB00100	Piston Base Head	1	
㉗	07973-6570002	Piston Pin Dis/Assembly Tool Set	1	
㉗-1	07973-6570500	Piston Base	(1)	} -Component tools
㉗-2	07973-6570600	Piston Spring	(1)	
㉘	07984-6570101	Valve Guide Remover , 6.6 mm	1	For DOHC engine

## 6 . Fuel and Emissions

Number	Tool Number	Description	Q'ty	Remarks
①	07GMJ-ML80100	Test Harness	1	
②	07JAZ-SH20100	RPM Connecting Adaptor	1	
③	07406-0040001	Fuel Pressure	1	
③-1	07406-0040100	Pressure Gauge	(1)	} -Component tools
③-2	07406-0040201	Hose Assy	(1)	
④	07411-0020000	Digital Circuit Tester	1	
⑤	07999-PD6000A	PGM-FI Test Harness	1	

## 7 . Clutch

Number	Tool Number	Description	Q'ty	Remarks
①	07JAF-PM70100	Clutch Disc Alignment Tool	1	
②	07401-0010000	Float Level Gauge	1	
③	07614-0050100	Fuel Line Clamp	1	
④	07746-0010100	Attachment , 32×35 mm	1	
⑤	07749-0010000	Driver	1	
⑥	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	
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 mm	1	
③	07744-0010400	Pin Driver , 5 mm	1	
④	07746-0010300	Attachment , 42×47 mm	1	
⑤	07746-0010401	Attachment , 52×55 mm	1	
⑥	07746-0030100	Driver	1	
⑦	07746-0030400	Driver , 35 mm	1	
⑧	07749-0010000	Driver	1	
⑨	07936-6340000	Bearing	1	
⑩	07944-SA00000	Pin Driver , 4 mm	1	
⑪	07947-6110500	Oil Seal Driver	1	
⑫	07947-6340500	Oil Seal Driver Attachment E	1	
⑬	07948-SC20200	Oil Seal Driver	1	
⑭	07979-PJ40001	Magnet Stand Base	1	

## 9 . Automatic Transmission

Number	Tool Number	Description	Q'ty	Remarks
①	07GAC-PF040210	Bearing Remover Attachment	1	Use in place of 07936-634000 attachment
②	07GAE-PG40001	Clutch Spring Compressor Set	1	
②-1	07GAE-PG40200	Compressor Bolt Assembly	(1)	} -Component tools
②-2	07HAE-PG40200	Compressor Attachment	(1)	
②-3	07960-6120100	Compressor Attachment	(1)	
③	07HAC-PK40100	Transminion Housing Puller	1	
④	07HAD-SF10100	Attachment	1	
⑤	07JAD-PH80400	Pilot Driver 28×30 mm	1	
⑥	07406-0020003	Oil Pressure Gauge Set	1	
⑥-1	07406-0020201	Oil Pressure Gauge Hose Attachment	(1)	Component tool
⑦	07406-0070000	Low Pressure Gauge	1	
⑧	07746-0010500	Attachment , 62×68 mm	1	07947-6340400 may also be used .
⑨	07746-0030100	Inner Handle C	1	
⑩	07749-0010000	Driver	1	07949-6110000 may also be used .
⑪	07923-6890202	Mainshaft Holder	1	
⑫	07936-6340000	Bearing Remover Set	1	
⑬	07944-SA00000	Pin Driver , 4.0 mm	1	
⑭	07947-6110501	Driver Attachment E	1	
⑮	07947-6340201	Oil Seal Driver	1	
⑯	07947-6340500	Driver Attachment E	1	
⑰	07948-SC20200	Oil Seal Driver	1	

# Special Tools

## 10 . Driveshafts

Number	Tool Number	Description	Q'ty	Remarks
①	07JAD-SH30100	Oil Seal Driver Attachment	1	
②	07JAF-SH20400	Support Base Attachment	1	
③	07746-0010300	Attachment , 42×47 mm	1	
④	07746-0010400	Attachment , 52×55 mm	1	
⑤	07746-0010500	Attachment , 62×68 mm	1	
⑥	07746-0030100	Inner Handle C	1	
⑦	07746-0040800	35 mm Pilot	1	
⑧	07746-0040900	40 mm Pilot	1	
⑨	07749-0010000	Driver	1	
⑩	07947-SD90100	Oil Seal Driver Attachment	1	
⑪	07947-6340201	Driver Attachment B	1	
⑫	07965-SD90100	Support Base	1	
⑬	07965-SD90200	Support Collar	1	

## 11 . Manual Steering

Number	Tool Number	Description	Q'ty	Remarks
①	07916-SA50001	Steering Gearbox Lock Nut Wrench	1	07916-6920100 may also be used .
②	07941-6920003	Ball Joint Remover	1	
③	07974-SA50800	Ball Joint Boot Clip Guide B	1	

## 11 . Power Steering

Number	Tool Number	Description	Q'ty	Remarks
①	07GAG-SD40000	P/S Tool Kit	1	
①-1	07GAG-SD40100	Piston Seal Ring Guide	(1)	} -Component tools
①-2	07GAG-SD40200	Piston Seal Ring Sizing Tool	(1)	
①-3	07GAG-SD40300	Cylinder End Seal Slider	(1)	
①-4	07GAG-SD40400	Cylinder End Seal Guide	(1)	
①-5	07GAG-SD40600	Tool Box	(1)	
②	07GAK-SE00100	P/S Pressure Gauge Adaptor Set	1	
②-1	07GAK-SE00110	P/S Joint Adaptor (Pump)	(1)	07406-0011100 may also be used .
②-2	07GAK-SE00120	P/S Joint Adaptor (Hose)	(1)	07406-0011200 may also be used .
③	07406-0010101	Bypass Tube Joint	1	
④	07406-0010200	P/S Pressure Gauge Set	1	
④-1	07406-0010300	Pressure Control Valve	(1)	} -Component tools
④-2	07406-0010400	Pressure Gauge	(1)	
⑤	07725-0030000	Universal Holder	1	07725-0010101 may also be used .
⑥	07746-0010300	Attachment , 42×47 mm	1	
⑦	07749-0010000	Driver	1	07949-6110000 may also be used .
⑧	07916-SA50001	Steering Gearbox Lock Nut Wrench	1	
⑨	07941-6920003	Ball Joint Remover	1	
⑩	07947-6340300	Driver Attachment	1	
⑪	07974-SA50600	Piston Seal Guide	1	

②-1 and ②-2 : Component tools



## 12. Suspension

Number	Tool Number	Description	Q'ty	Remarks
①	07GAE-SE00100	Spring Compressor	1	
②	07GAF-SE00200	Hub Assembly Guide Attachment	1	
③	07GAF-SE00401	Hub Dis/Assembly Base	1	
④	07HGK-0010100	Wheel Alignment Gauge Attachment	1	
⑤	07JAF-SH20110	Hub Dis/Assembly Pilot, 38mm	1	
⑥	07JAF-SH20120	Hub Dis/Assembly Shaft, 22.4×25.4mm	1	
⑦	07JAF-SH20200	Ball Joint Remover Base	1	
⑧	07746-0010400	Attachment, 52×55mm	1	
⑨	07746-0010600	Attachment, 72×75mm	1	
⑩	07749-0010000	Driver	1	
⑪	07941-6920003	Ball Joint Remover	1	
⑫	07965-SB00100	Ball Joint Remover/Installer	1	
⑬	07965-SB00200	Ball Joint Installer Base	1	
⑭	07965-6340301	Hub Dis/Assembly Base	1	
⑮	07965-6920201	Hub Dis/Assembly Base	1	
⑯	07974-SA50700	Ball Joint Boot Clip Guide A	1	
⑰	07974-SA50800	Ball Joint Boot Clip Guide B	1	

## 13. Brakes

Number	Tool Number	Description	Q'ty	Remarks
①	07GAG-SE00100	Pushrod Adjustment Gauge	1	
②	07HAE-SG00100	Brake Spring Compressor	1	
③	07404-5790300	Vacuum Gauge	1	
④	07406-5790200	Oil Pressure Gauge	2	
⑤	07410-5790100	Pressure Gauge Attachment C	2	
⑥	07410-5790500	Tube Joint Adaptor	1	
⑦	07510-6340101	Pressure Gauge Joint Pipe	2	
⑧	07510-6340300	Vacuum Joint Tube A	1	
⑨	07749-0010000	Driver	1	
⑩	07914-SA50001	Snap Ring Pliers	1	07949-6110000 may also be used.
⑪	07921-0010001	Flare Nut Wrench	1	
⑫	07947-6890300	Driver Attachment C	1	

## 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/installation
③	07746-0030100	Driver C	1	Pulley installation

## 16. Electrical

Number	Tool Number	Description	Q'ty	Remarks
①	07920-SB20000	Fuel Sender Wrench	1	

# Standards and Service Limits

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

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min <sup>-1</sup> (rpm) and wide-open throttle	Normal Minimum Maximum variation	— — —	1,275 kPa (13.0 kg/cm <sup>2</sup> , 185 psi) 932 kPa (9.5 kg/cm <sup>2</sup> , 135 psi) 196 kPa (2 kg/cm <sup>2</sup> , 28 psi)
Cylinder head	Warpage Height		94.95–95.05	0.05 (0.002)
Camshaft	End play		0.05–0.15 (0.002–0.006)	0.5 (0.02)
	Oil clearance		0.050–0.089 (0.002–0.004)	0.15 (0.006)
	Runout		0–0.03 (0–0.001) max.	0.06 (0.002)
	Cam lobe height	IN 1.6 $\varnothing$	36.957 (1.4515)	—
		1.4 $\varnothing$	36.603 (1.4411)	—
		EX 1.6 $\varnothing$	36.996 (1.4565)	—
		1.4 $\varnothing$ M/T	36.747 (1.4467)	—
		1.4 $\varnothing$ A/T	36.750 (1.4468)	—
Valve	Valve clearance	IN	0.17–0.22 (0.007–0.009)	—
		EX	0.22–0.27 (0.009–0.011)	—
	Valve stem O.D.	IN	5.48–5.49 (0.2157–0.2161)	5.45 (0.2147)
		EX	5.45–5.46 (0.2147–0.2150)	5.42 (0.2134)
	Stem-to-guide clearance	IN	0.02–0.05 (0.001–0.002)	0.08 (0.003)
		EX	0.05–0.08 (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 (1.9278–1.9263)	49.685 (1.9561)
Valve seat	Width	IN	0.85–1.15 (0.033–0.045)	1.6 (0.06)
		EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length	IN	48.58 (1.9126)	47.64 (1.8756)
		EX	49.19 (1.9366)	48.32 (1.9024)
	Squareness	IN/EX	—	1.70/1.72 (0.0669/0.0677)
Valve guide	I.D.	IN and EX	5.51–5.53 (0.2169–0.2177)	5.55 (0.2185)
Rocker arm	Arm-to-shaft clearance	IN	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 <sup>-1</sup> (rpm) and wide-open throttle		Nominal Minimum Maximum variation	1,324 kPa (13.5 kg/cm <sup>2</sup> , 192 psi) 932 kPa (9.5 kg/cm <sup>2</sup> , 135 psi) 196 kPa (2 kg/cm <sup>2</sup> , 28 psi)
Cylinder head	Warpage Height		131.95–132.05	0.05 (0.002)
Camshaft	End play		0.05–0.15 (0.002–0.006)	0.5 (0.02)
	Oil clearance		0.050–0.089 (0.002–0.004)	0.15 (0.006)
	Runout		0–0.03 (0–0.001) max.	0.06 (0.002)
	Cam lobe height	IN EX	33.021 (1.3000) 32.382 (1.2749)	— —
Valve	Valve clearance	IN	0.12–0.17 (0.005–0.007)	—
		EX	0.14–0.19 (0.006–0.008)	—
	Valve stem O.D.	IN	6.58–6.59 (0.2591–0.2595)	6.55 (0.2579)
		EX	6.55–6.56 (0.2579–0.2583)	6.52 (0.2567)
	Stem-to-guide clearance	IN	0.02–0.05 (0.001–0.002)	0.08 (0.003)
		EX	0.05–0.08 (0.002–0.003)	0.11 (0.004)
	Stem installed height	IN	45.545–46.015 (1.7931–1.8116)	46.265 (1.8215)
		EX	44.735–45.205 (1.7612–1.7797)	45.455 (1.7896)
Valve seat	Width	IN and EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length	IN	47.49 (1.8697)	46.46 (1.8291)
	Squareness	EX IN/EX	46.89 (1.8461) —	45.93 (1.8083) 1.66/1.64 (0.065/0.065)
Valve guide	I.D.	IN and EX	6.61–6.63 (0.2602–0.2610)	6.55 (0.2579)

## 5. Engine/Engine Block

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface Bore diameter Bore taper Reboring limit	0.07 (0.0028) max. 75.00–75.02 (2.9526–2.9535) — —	0.10 (0.004) 75.07 (2.9555) 0.05 (0.002) 0.5 (0.02)
Piston	Skirt O.D. At 16 mm (0.63 in) from bottom of skirt Clearance in cylinder Piston-to-ring clearance	74.98–74.99 (2.9520–2.9524) 0.01–0.04 (0.0004–0.0016) 0.03–0.06 (0.0012–0.0024) 0.030–0.055 (0.0012–0.0022)	74.97 (2.9517) 0.05 (0.002) 0.13 (0.005) 0.13 (0.005)
Piston ring	Ring end gap	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 End play installed on crankshaft	0.014–0.040 (0.0006–0.0016) Nominal 48.0 (1.89) Nominal 43.0 (1.69) 0.15–0.30 (0.006–0.012)	— — — 0.40 (0.016)
Crankshaft	Main journal diameter Taper/out-of-round, main journal Rod journal diameter Taper/out-of-round, rod journal End play Runout	54.976–55.000 (2.1644–2.1654) 44.976–45.000 (1.7707–1.7716) 0.0025 (0.0001) max. 44.976–45.000 (1.7707–1.7765) 39.976–40.000 (1.5793–1.5748) 0.0025 (0.0001) max. 0.10–0.35 (0.004–0.014) 0.015 (0.0006) max.	— — 0.010 (0.004) — — 0.010 (0.004) 0.45 (0.018) 0.03 (0.002)
Bearings	Main bearing-to-journal oil clearance 1.4ℓ (No. 1, 5 journals) 1.6ℓ (No. 2, 3, 4 journals) 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)

## 5. Engine/Engine Lubrication

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (U.S. qt., Imp. qt)	SOHC DOHC	4.0 (4.2, 3.5) After engine disassembly 3.5 (3.7, 3.1) After oil change, including oil filter 4.3 (4.5, 3.8) After engine disassembly 3.8 (4.0, 3.3) After oil change, including oil filter
Oil pump	Displacement	SOHC DOHC	44 ℓ (11.6 U.S. gal., 9.7 Imp. gal.) 6,250 min <sup>-1</sup> (rpm) 62 ℓ (16.4 U.S. gal., 13.7 Imp. gal.) 6,750 min <sup>-1</sup> (rpm)
	Inner-to-outer rotor radial clearance Pump body-to-rotor radial clearance Pump body-to-rotor side clearance	0.14 (0.006) 0.10–0.175 (0.004–0.007) 0.03–0.08 (0.001–0.003)	0.2 (0.008) 0.2 (0.008) 0.15 (0.006)
Relief valve	Pressure setting 80 C° (176 F)	Idle 3,000 min <sup>-1</sup> (rpm)	69 kPa (0.7 kg/cm <sup>2</sup> , 10 psi)min 343 kPa (3.5 kg/cm <sup>2</sup> , 50 psi)min

## 5. Engine/Cooling

5. Engine/ Cooling		
	MEASUREMENT	STANDARD (NEW)
Radiator	Capacity (Includes heater) ℓ (U.S.qt.,Imp.qt.) (Includes reservoir tank 0.4 (0.42, 0.35))	DOHC 5.5 (5.8, 4.8) SOHC (1.6ℓ, 1.4ℓ M/T) : 5.4 (5.7, 4.8) 1.4ℓ A/T 5.3 : (5.6, 4.7)
Radiator cap	Pressure cap opening pressure	74—103 kPa (0.75—1.05 kg/cm <sup>2</sup> , 11—15 psi)
Thermostat	Starts to open Full open Valve lift at full open	76 C—80 C (169—176 F) 90 C (194 F) 8 (0.31) min.
Water pump	Pulley ratio (crankshaft) Capacity: ℓ per min/at min <sup>-1</sup> (rpm)	1 : 1 SOHC 85 (22.4 U.S. gal., 18.7 Imp. gal.)/4,000 min <sup>-1</sup> (rpm) DOHC 76 (20.0 U.S. gal., 16.7 Imp. gal.)/4,000 min <sup>-1</sup> (rpm)
Cooling fan	Fan-to-core clearance Thermoswitch "ON" temperature Thermoswitch "OFF" temperature	28.0 (1.10) 88.5—91.5 C (191—197 F) Subtract 5±1.5 C (9±2.7 F) from actual "ON" temperature.

(cont'd)

## Standards and Service Limits (cont'd)

### 6. Fuel and Emissions (PGM-FI Engine)

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure Displacement Relief valve opening pressure	250 kPa (2.55 kg/cm <sup>2</sup> , 36psi) 230 cm <sup>3</sup> (7.8 oz) in 10 seconds at 12V. 441–588 kPa (4.5–6.0 kg/cm <sup>2</sup> , 64–85 psi)
Pressure regulator	Pressure	245–255 kPa (2.5–2.6 kg/cm <sup>2</sup> , 36–37 psi)
Fuel tank	Capacity	45 l (11.9 U.S. gal., 9.9 Imp. gal.)
Fast idle		1,000–2,000 min <sup>-1</sup> (rpm)
Idle speed	with headlights and cooling fan off SOHC KY DOHC KQ except KQ	780 ± 50 min <sup>-1</sup> (rpm) 750 ± 50 min <sup>-1</sup> (rpm) 800 ± 50 min <sup>-1</sup> (rpm)
Idle CO	With Catalytic Converter Without Catalytic Converter	0.1% max. 1.0 ± 1.0%

### 6. Fuel and Emissions (Carbureted Engine)

	MEASUREMENT	STANDARD (NEW)
Fuel pump	Delivery pressure Displacement	6.8–22.6 kPa (0.07–0.23 kg/cm <sup>2</sup> , 1.0–3.2 psi) 833.3 cc/minutes in 10 seconds min.
Fuel Tank	Capacity	45 l (11.9 US gal, 9.9 Imp gal)
Fast idle		1,500–2,500 min <sup>-1</sup> (rpm)
Idle speed	with headlights and cooling fan off	M/T 750 ± 50 min <sup>-1</sup> (rpm) A/T (except "N" or "P") 700 ± 50 min <sup>-1</sup> (rpm)
Idle CO		0.5% max./1.0% max.

### 7. Clutch




	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal free play Disengagement height	LHD 213 (8.39) to floor RHD 208 (8.19) to floor LHD 140–150 (5.5–5.9) RHD 135–145 (5.31–5.71) 15–20 (0.59–0.79) LHD 70 (2.76) min. to floor RHD 65 (2.56) min. to floor	— — — — — — —
Clutch release arm	Free play at arm	3.0–4.0 (0.12–0.16)	
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth 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) 8.1–8.8 (0.32–0.35)	0.2 (0.008) 1.0 (0.04) 3.4 (0.134) 5.7 (0.224)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance	31.00–31.15 (1.220–1.226) 0.050–0.239 (0.002–0.009)	31.2 (1.228) 0.28 (0.011)
Clutch cover	Unevenness of diaphragm spring	0.8 (0.03) max.	1.0 (0.04)

## 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 (1.3380–1.2713) 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	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 (when torqued properly) 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)
Countershaft Second gear	I.D. End play (when torqued properly) 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	0.072–0.130 (0.0028–0.0051)	0.18 (0.007)
Differential carrier	Pinion shaft bore diameter Carrier-to-pinion shaft clearance Driveshaft bore diameter Carrier-to-driveshaft clearance Carrier-to-intermediate shaft clearance Side clearance	18.000–18.018 (0.7087–0.7094) 0.017–0.047 (0.0007–0.0019) 26.025–26.045 (1.0246–1.0254) 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-pinion shaft 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)

# Standard and Service Limits

## 9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity <i>l</i> (U.S. qt., Imp. qt.)	2.4 (2.5, 2.1) at oil change 5.4 (5.7, 4.8) at assembly	
Hydraulic pressure	Line pressure at 2,000 min <sup>-1</sup> (rpm)	785—834 kPa (8.0—8.5 kg/cm <sup>2</sup> , 114—121 psi)	736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi)
	2nd, 3rd, 4th clutch pressure at 2,000 rpm in  and 	412 kPa (4.2 kg/cm <sup>2</sup> , 60 psi) Throttle control lever full closed   785—834 kPa (8.0—8.5 kg/cm <sup>2</sup> , 114—121 psi) Throttle control lever opened 2/8 or more	363 kPa (3.7 kg/cm <sup>2</sup> , 53 psi) (closed)   736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi) (2/8 opened)
	2nd clutch pressure at 2,000 min <sup>-1</sup> (rpm) in 	785—834 kPa (8.0—8.5 kg/cm <sup>2</sup> , 114—121 psi)	736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi)
	1st clutch pressure at 2,000 min <sup>-1</sup> (rpm)		
	Governor pressure at 60 km/h (37.5 mph)	151—162 kPa (1.54—1.64 kg/cm <sup>2</sup> , 22—23 psi)	146 kPa (1.49 kg/cm <sup>2</sup> , 21 psi)
	Throttle pressure B Full closed Full open	0 785—834 kPa (8.0—8.5 kg/cm <sup>2</sup> , 114—121 psi)	— 736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi)
	Throttle pressure A Full closed  Full open	0—4.9 kPa (0—0.05 kg/cm <sup>2</sup> , 0—0.7 psi)  505—520 kPa (5.15—5.30 kg/cm <sup>2</sup> , 73—75 psi)	—  500 kPa (5.1 kg/cm <sup>2</sup> , 73 psi)

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# Standards and Service Limits

## 9. Automatic Transmission (cont'd)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	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)	Wear or damage
	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)	
	Countershaft distance collar length	38.97—39.00 (1.5342—1.5354)	Wear or damage
		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)	
		25.00—25.15 (0.9843—0.9902)	
		2.5—2.6 (0.098—0.102)	
	Mainshaft 4th gear collar length	14.50—14.55 (0.5709—0.5728)	Wear or damage
	Mainshaft 1st gear collar length	2.45—2.55 (0.0965—0.1004)	
	Countershaft reverse gear collar thickness	14.50—14.55 (0.5709—0.5728)	
	Countershaft reverse gear collar flange thickness	2.45—2.55 (0.0965—0.1004)	
	Countershaft 1st gear collar length	14.50—14.55 (0.5709—0.5728)	
	Countershaft 1st gear collar flange thickness	2.45—2.55 (0.0965—0.1004)	
	Diameter of countershaft one-way clutch contact area	74.414—74.440 (2.9297—2.9307)	
	Diameter of parking gear one-way clutch contact area	57.755—57.768 (2.2738—2.2743)	
	Mainshaft feed pipe A O.D. (at 15 mm from end)	8.97—8.98 (0.353—0.354)	
	Mainshaft feed pipe B O.D. (at 12 mm from end)	5.97—5.98 (0.2351—0.2354)	
	Countershaft feed pipe O.D. (at 20 mm from end)	7.97—7.98 (0.3138—0.3142)	Wear or damage
	Mainshaft sealing ring 32 mm thickness	1.980—1.995 (0.0780—0.0785)	
	Mainshaft bushing I.D.	6.018—6.030 (0.2369—0.2374)	
	Mainshaft bushing I.D.	9.000—9.015 (0.3543—0.3549)	
	Countershaft bushing I.D.	8.000—8.015 (0.3150—0.3156)	
	Mainshaft sealing ring groove width	2.025—2.060 (0.0797—0.0811)	
	Statorshaft distance collar 20 mm I.D.	26.000—26.013 (1.0236—1.0241)	
Regulator valve body	Sealing ring contact area diameter	32.000—32.025 (1.2598—1.2608)	32.050 (1.2618)
Shifting device and parking brake control	Reverse shift fork thickness	5.90—6.00 (0.2323—0.2362)	5.40 (0.2126)
	Parking brake ratchet pawl	—	Wear or other defect
	Parking gear 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)	—
	Stator camshaft needle bearing bore I.D. (R side)	26.000—26.013 (1.0236—1.0241)	Wear or damage
	Stator camshaft needle bearing contact and I.D. (Stator side)	24.000—24.021 (0.9449—0.9457)	Wear or damage
	Oil pump driven gear I.D.	14.016—14.034 (0.5518—0.5525)	Wear or damage
	Oil pump shaft O.D.	13.980—13.990 (0.5504—0.5508)	Wear or damage

## 9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)			
		Wire Diameter	O.D.	Free Length	No. of Coils
Springs	Regulator valve spring A	1.58 x 2.00 (0.06 x 0.08)	14.7 (0.58)	86.5 (3.41)	20.9
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44 (1.73)	7.5
	Stator reaction spring	6 (0.24)	38.4 (1.51)	30.3 (1.20)	2
	Throttle modulator spring	1.2 (0.05)	9.4 (0.37)	27.2 (1.07)	8
		1.2 (0.05)	9.4 (0.37)	26.3 (1.04)	8
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
	Relief valve spring	1.0 (0.04)	8.4 (0.33)	52 (2.05)	23
	Governor spring A	1.0 (0.04)	18.8 (0.74)	20.4 (0.80)	4
	Governor spring B	0.8 (0.03)	11.8 (0.46)	26.7 (1.05)	6
	2nd orifice control spring	0.8 (0.03)	6.6 (0.26)	46.3 (1.82)	27.6
	Servo orifice control spring	0.9 (0.04)	6.1 (0.24)	35.9 (1.41)	20
				22.2 (0.87)	6
	Throttle A spring	1.0 (0.04)	8.5 (0.33)	22.1 (0.87)	5.5
	Throttle B adjust spring	0.8 (0.03)	6.2 (0.24)	30 (1.18)	8
	Throttle A adjust spring	0.8 (0.03)	6.2 (0.24)	27 (1.06)	8.5
	Throttle B spring	1.4 (0.06)	8.5 (0.33)	41.4 (1.63)	8.4
	1-2 shift spring	0.5 (0.02)	4.5 (0.18)	44.5 (1.75)	35.1
	1-2 shift ball spring	0.4 (0.02)	4.5 (0.18)	11.3 (0.44)	8
	2-3 shift spring	0.7 (0.03)	7.6 (0.23)	43 (1.69)	12.7
	2-3 shift ball spring	0.4 (0.02)	4.5 (0.18)	14.7 (0.58)	7.3
	3-4 shift spring	0.7 (0.03)	9.6 (0.38)	32.9 (1.30)	6.4
	3-4 shift ball spring	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	0.7 (0.03)	8.1 (0.32)	39.0 (1.54)	15.4
	L/C timing spring B	1.0 (0.04)	6.6 (0.26)	52.3 (2.06)	30.1
	L/C control valve spring	0.7 (0.03)	6.6 (0.26)	32.5 (1.28)	14
	CPC valve spring	1.4 (0.06)	9.4 (0.37)	31.6 (1.24)	10.9
	L/C cut spring	0.7(0.028)	7.6(0.299)	29.0(1.142)	18
	Reverse control spring	0.7(0.028)	7.6(0.299)	37.2(1.465)	15.3
	Kick down valve spring	0.9(0.035)	10.1(0.398)	40.8(1.606)	14.5
	Shift timing spring	0.9(0.035)	8.6(0.339)	42.9(1.689)	21.4
	4 th exhaust spring	0.9(0.035)	6.1(0.240)	43.7(1.720)	20.3
	3-2 timing spring	1.2(0.047)	7.7(0.303)	45.1(1.776)	19.8
	Reverse timing spring	0.7(0.028)	5.6(0.220)	43.8(1.724)	21.7
	Servo control spring	1.0(0.039)	7.6(0.299)	44.0(1.732)	18.2
	1 st accumulator one way ball spring	0.29(0.011)	4.0(0.157)	14.0(0.551)	13

## Standard and Service Limits (cont'd)

### 10. Driveshaft

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

### 11. Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) max.	—
Gear box	Pinion starting torque N·m (kg-m, lb-ft) with P/S	0.39—1.37 (0.04—0.14, 0.29—1.01)	
	Angle of rack-guide-screw loosened from locked position with P/S	0.98 (0.1, 0.72) max. 10°—15° 20°—25°	
Pump	Pump pressure with valve closed (Oil temp./ speed: 40°C (104°F) min/idle. Do not run for more than 5 seconds) kPa (kg/cm², psi)	7,845—8,826 (80—90, 1,138—1,280)	
Power steering fluid	Fluid capacity Reservoir At change	0.4 ℓ (0.42 U.S. qt., 0.35 Imp. qt.) approx 1.2 ℓ (1.3 U.S. qt., 1.1 Imp. qt.)	
Power steering belt	Deflection when 98 N (10 kg, 22 lb) between the pulleys Belt tension between the pulleys N (kg, lb) (Measured with the 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	
Rack end	Pivoting resistance N·m (kg-m, lb-ft)	0.49—1.96 (0.05—0.20, 0.36—1.45)	

## 12. Suspension

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

## 13. Brake

	MEASUREMENT		STANDARD (NEW)		SERVICE LIMIT	
Parking brake lever	Play in stroke 200N (20 kg, 44 lbs)		To be locked when pulled 6—10 notches			
Foot brake pedal	Pedal height	RHD	161 (6.3) from floor		—	
	Free play	LHD	153 (6.0) from floor 1—5 (0.04—0.20)		5 (0.20)	
Master cylinder	Piston-to-push rod clearance		0—0.4 (0—0.016)		—	
Brake disc	Disc thickness	Front	1.6 ± 0.1	19.0 (0.75)	17.0 (0.67)	
		Rear	1.4 ± 0.1	17.0 (0.67)	15.0 (0.59)	
	Disc runout	Front		10.0 (0.39)	8.0 (0.32)	
		Rear		—	0.1 (0.004)	
	Disc parallelism	Front		—	0.15 (0.006)	
		Rear		—	0.015 (0.0006)	
Pad thickness	Front		9.0 (0.35)		3.0 (0.12)	
	Rear		8.0 (0.32)		1.6 (0.06)	
Brake Drum	I.D.		180(7.09)		181(7.13)	
	Lining thickness		4.5(0.18)		2.0(0.08)	
Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)		Line Pressure kPa (kg/cm², psi)	
					1.6 ± 0.1	1.4 ± 0.1
		0	20 (44)		1.362 (13.9, 198)	1.577 (16.1, 229)
		300	20 (44)		4.508 (46.0, 654)	4.297 (43.8, 623)
		500	20 (44)		6.605 (67.4, 960)	6.096 (62.2, 885)

## 15. Air Conditioner

	MEASUREMENT		STANDARD (NEW)	
Air conditioner system	Lubricant capacity cc (US oz, Imp oz)	Condenser	10 (0.34, 0.28)	
		Evaporator	30 (1.00, 0.84)	
		Line or hose	10 (0.34, 0.28)	
		Reservoir	10 (0.34, 0.28)	
Compressor	Lubricant capacity cc (US oz, Imp oz)		130—140 (4.40—4.73, 3.66—3.94)	
	Stator coil resistance at 20°C (68°F) Ω		3.1—3.5	
Compressor belt	Pulley-to-pressure plate clearance		0.4—0.6 (0.016—0.024)	
	Deflection when 98 N (10 kg, 22 lb) between the pulleys		9.0—11.0 (0.35—0.43) with used belt 7.0—9.0 (0.28—0.35) with new belt	
	Belt tension between the pulleys N (kg, lb)		343—441 (35—45, 77—99) with used belt 441—686 (45—70, 99—154) with new belt	
	(Measured with belt tension gauge)			

# Standards and Service Limit

## 16. Electrical

	MEASUREMENT	STANDARD (NEW)			
Ignition coil	Rated voltage	12 Volts			
	Primary winding resistance	0.3—0.5 ohms			
	Secondary winding resistance	9,440—14,160 ohms			
Ignition wire	Resistance	25,000 ohms max.			
Spark plug	Type		Makes	Standard	Option
		With Catalytic converter	NGK	BCPR6E-11	BCPR7E-11
			ND	Q20PR-UL11	Q20PR-U11 Q22PR-U11 Q22PR-UL11
		Without catalytic converter * : DOHC only	NGK	BCPR6E-11	BCPR7E-11* BCPR6EY-N11* BCPR7EY-N11*
			ND	Q20PR-U11	Q22PR-U11
	Gap	1.0—1.1 (0.039—0.043)			
Ignition timing	At idling	18° ± 2° (Red) BTDC			
	1.6 l SOHC 1.6 l DOHC 1.4 l SOHC (2-Carb.)	16° ± 2° (Red) BTDC 18° ± 2° (Red) BTDC			
Battery	Lighting capacity (20-hour ratio)	47(European), 45(General) Ampere Hours			
	Starting capacity (5-second ratio)	8.6 V min. at 300 Ampere draw			
Alternator belt	Deflection when 98 N (10 kg, 22 lb) between the pulleys	9—11 (0.35—0.43) with used belt 7—9 (0.28—0.35) with new belt			
	Belt tension between the pulleys N (kg, lb) (Measure with belt tension gauge)	294—392 (30—40, 66—88) with used belt 392—588 (40—60, 88—132) with new belt			
Alternator	Output	13.5V / 60A			
	MEASUREMENT	STANDARD (NEW)		SERVICE LIMIT	
	Coil resistance (rotor)	2.8—3.0 ohm		± 0.1 ohm	
	Slip ring O.D.	32.5 (1.28)		32.1 (1.26)	
	Brush length	13.5 (0.53)		4.5 (0.18)	
	Brush Spring tension	300—500g (10.6—17.6 oz)		—	
Starting motor		ND 1.0 kW, 1.2 kW		MITSUBA 1.0 kW, 1.4 kW	
	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT	STANDARD (NEW)	SERVICE LIMIT
	Mica depth	0.5—0.8 (0.020—0.031)	0.2 (0.008)	0.4—0.5 (0.016—0.020)	0.15 (0.006)
	Commutator	0—0.02 (0.0008)	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

**specs**

	ITEMS	METRIC	ENGLISH	NOTES
<b>DIMENSIONS</b>	Overall Length	3,775 mm	148.6 in.	KQ, KY
		3,780 mm	148.8 in.	except KQ, KY
	With registration plate guard	3,790 mm	149.2 in.	
	Overall Width	1,675 mm	65.9 in.	KQ, KY
		1,670 mm	65.7 in.	except KQ, KY
	Overall Height	1,270 mm	50.0 in.	KQ
		1,265 mm	49.8 in.	KY
		1,280 mm	50.4 in.	
	Wheel Base	2,300 mm	90.6 in.	
	Track, Front/Rear	1,450/1,455 mm	57.1/57.3 in.	except KQ, KY
<b>WEIGHTS</b>		1,445/1,455 mm	56.9/57.3 in.	KY
		1,450/1,455 mm	57.1/57.3 in.	KQ
	Ground Clearance	160 mm	6.3 in.	Without Catalytic Converter
		150 mm	5.9 in.	With Catalytic Converter
	Overhang, Front/Rear	785/695 mm	30.9/27.4 in.	} Including bumper
	With registration plate guard	795/695 mm	31.3/27.4 in.	} Including bumper SF
	Engine Weight (Wet)			
	1.6ℓ SOHC	107 kg	236 lb.	
	1.6ℓ DOHC	113 kg	249 lb.	
	1.4ℓ	98 kg	216 lb.	KB
<b>ENGINE</b>	Curb Weight			
	1.6ℓ DOHC without CATA	940 kg	2,073 lb	KB, KF, KE
	1.6ℓ DOHC with CATA	940 kg	2,073 lb	KG, KX
		935 kg	2,062 lb	KS
		930 kg	2,051 lb	KW (A)
		995 kg	2,194 lb	KQ
	1.6ℓ SOHC	975 kg	2,149 lb	KY
	1.4ℓ 5 M/T	900 kg	1,984 lb	KB
	4 A/T	920 kg	2,029 lb	KB
	Weight Distribution (Front/Rear)			
<b>ENGINE</b>				
	1.6ℓ DOHC without CATA	580/360 kg	1,279/794 lb	KB, KF, KE
	1.6ℓ DOHC with CATA	580/360 kg	1,279/794 lb	KG, KX
		575/360 kg	1,268/794 lb	KS
		570/360 kg	1,257/794 lb	KW (A)
		580/365 kg	1,279/805 lb	KQ
	1.6ℓ SOHC	614/361 kg	1,354/796 lb	KY
	1.6ℓ 5 M/T	555/345 kg	1,224/761 lb	KB
	4 AT	575/345 kg	1,268/761 lb	KB
	Max. Permissible Weight (EC)	1,290 kg	2,844 lb.	except KS
<b>ENGINE</b>	Max. Loaded Vehicle Weight	1,140 kg	2,513 lb	KS
		1,190 kg	2,623 lb.	KY
	Type	. Water cooled 4-cycle S.O.H.C. Water cooled 4-cycle D.O.H.C. 4-cylinder in-line, transverse		
	Cylinder arrangement			
	Bore and Stroke	1.6ℓ 75×90 mm	2.95×3.54 in.	
		1.4ℓ 75×79 mm	2.95×3.11 in.	
	Displacement	1.6ℓ 1,590 cm <sup>3</sup> (cc)	97 cu. in.	
		1.4ℓ 1,396 cm <sup>3</sup> (cc)	85 cu.in	
	Compression Ratio			
	1.6ℓ Without Catalytic Converter		9.1	
<b>ENGINE</b>	1.6ℓ With catalytic Converter		9.5	
			9.3	
	Valve Train	4 valves per cylinder, single or double overhead camshafts		
	Lubrication System	Forced and wet sump.		
	Fuel Required			
	DOHC with Catalytic Converter	Unleaded gasoline with 95 R.O.N. or higher		
	SOHC with Catalytic Converter	Unleaded gasoline with 91 R.O.N. or higher		
	Without Catalytic Converter	Leaded gasoline with 97 R.O.N. or higher or unleaded gasoline with 95 R.O.N. or higher		

A : Austria, E : Spain, DK : Denmark, SF : Finland

(cont'd)

# Design Specifications

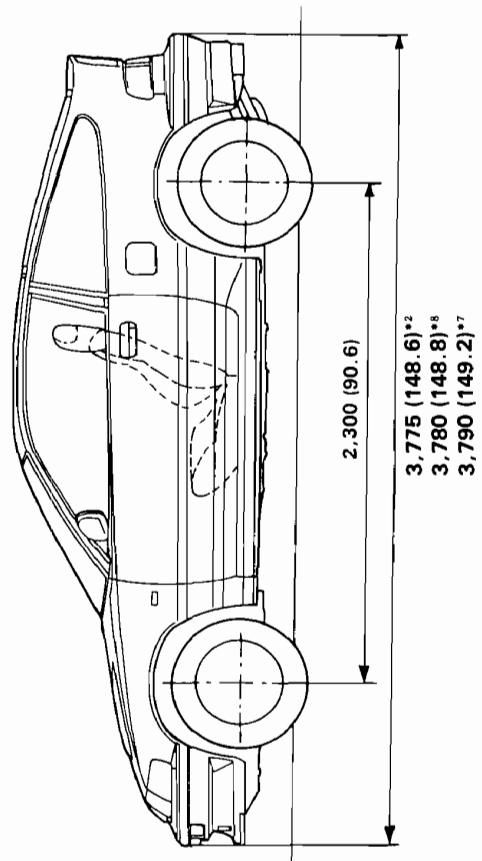
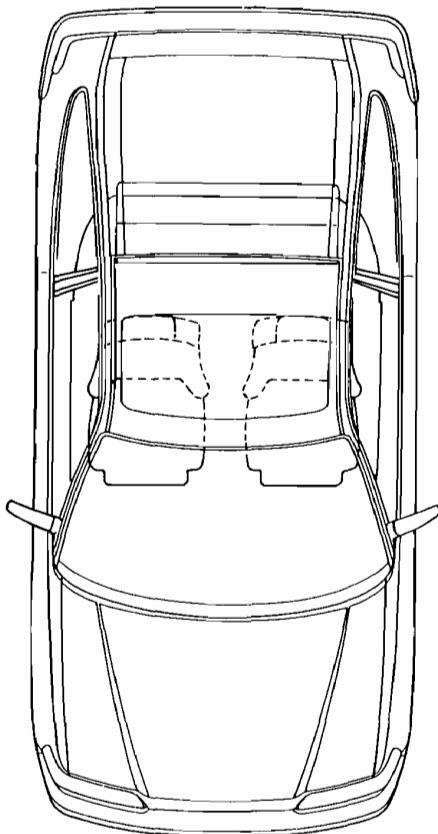
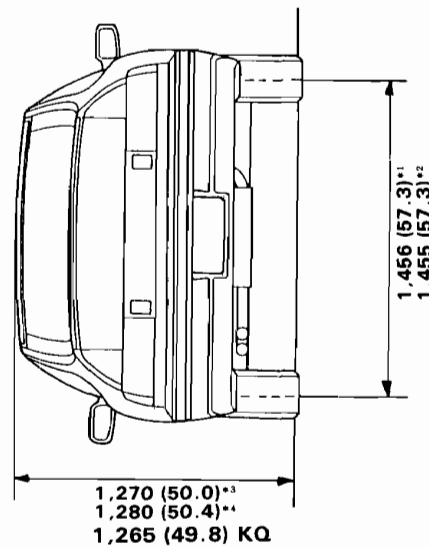
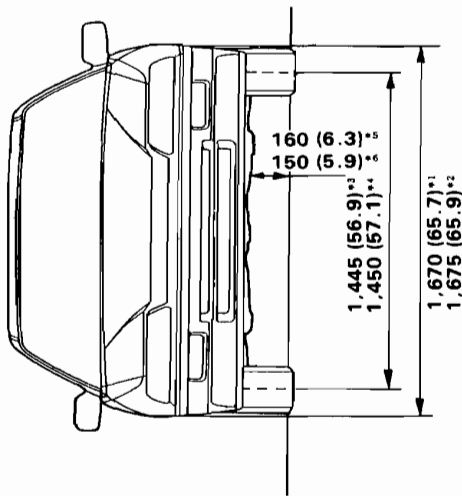
	ITEMS	METRIC	ENGLISH	NOTES	
STARTER	Type	Gear reduction			
	Normal Output	1.0 kW, 1.2 kW, 1.4 kW			
	Normal Voltage	12V			
	Hour Rating	30 seconds			
	Direction of Rotation	Clockwise as viewed from gear end			
	Weight	1.0 kW MITUBA	3.4 kg		7.5 lb
	1.0 kW, 1.2 kW ND	3.85 kg	8.5 lb.		
1.4 kW MITSUBA	3.7 kg	8.2 lb.			
TRANSMISSION	Clutch	M/T	Single plate dry, diaphragm spring		
		A/T	Torque converter with lock-up clutch		
	Clutch Facing Area	1.4 ℓ M/T	160 cm <sup>2</sup>		24.8 sq. in.
		1.6 ℓ M/T	176 cm <sup>2</sup>		27.3 sq. in.
	Transmission Type		5-speed forward, synchromesh, 1 reverse, constant mesh		
		A/T	4-speed forward, automatic 1 reverse		
	Primary Reduction		1.000		
	Gear Ratio		1.6 ℓ SOHC M/T		1.6 ℓ DOHC M/T
	1st		3.250		3.250
	2nd		1.894		1.944
	3rd		1.259		1.346
	4th		0.937		1.033
	5th		0.771		0.878
	Reverse		3.153		3.153
	Gear Ratio		1.4 ℓ M/T		1.4 ℓ A/T
	1st		3.250		2.705
	2nd		1.894		1.560
3rd		1.259	1.027		
4th		0.937	0.780		
5th		0.771			
Reverse		3.153	1.954		
Final Reduction	1.6 ℓ SOHC M/T	Single helical gear, 4.250			
1.6 ℓ DOHC M/T	Single helical gear, 3.888				
1.4 ℓ M/T	Single helical gear, 4.250				
1.4 ℓ A/T	Single helical gear, 3.933				
AIR CONDI-TIONER	Cooling Capacity	3,850 Kcal/h			
	Conditions:	1,800 min <sup>-1</sup> (rpm)			
	Compressor Revolution Speed	27.0°C	81°F		
	Outside Air Temperature	50%			
	Outside Air Humidity	35°C	95°F		
	Condenser Air Temperature	4.5 m/sec.	14.8 ft/sec.		
	Condenser Air Velocity	440 m <sup>3</sup> /h	15,118 cu. ft/h		
	Blower Capacity				
	Compressor (MATSUSHITA)	Type	Vane rotary type		
		Number of Vane	3		
		Displacement	130cc/rev	7.93 cu. in. /rev	
		Max. speed	7,500 min <sup>-1</sup> (rpm)		
		Lubricant Capacity	130 cc	7.93 cu. in	
	Receiver Dryer With Desiccant	Includes fusible safety plug.			
	Condenser	Corrugated fin type			
Evaporator	Corrugated fin type				
Blower	Type	Sirocco fan			
	Motor Input	170 W (12 V)			
	Speed Control	4 speed			
	Max. Capacity	390 m <sup>3</sup> /h	13,773 cu. ft/h		
Temp. Control	Air-mix type				



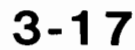
	ITEMS		METRIC	ENGLISH	NOTES	
AIR CONDI- TIONER (cont'd)	Comp. Clutch	Type Power Consumption	Dry, single plate, V-belt 32 W max. 12 V			
	Refrigerant	Type Quantity	0.9±0.05 kg	R-12 1.98±0.11 lb		
STEERING SYSTEM	Type		Rack and pinion		{ } : Variable ratio	
	Overall Ratio	Manual Power	19.8 (18–20.4): 1 17.7: 1			
	Turns, Lock-to-lock	Manual Power	4.1 3.65			
	Steering Wheel Diameter		370 mm	14.6 in.		
SUSPENSION SYSTEM	Type Shock Absorber	Front/Rear Front Rear	Independent by double wishbones, coil springs Telescopic, nitrogen gas-filled Telescopic, nitrogen gas-filled			
WHEEL ALIGNMENT	Wheel Alignment					
	Camber	Front Rear	0°00' ± 1° –0°30' ± 1°			
	Caster	Front Rear	2°59' ± 1°			
	Toe-in	Front Rear	0 ± 2 mm 2 ± 1 mm	0 ± 0.08 in. 0.08 ± 0.01 in.		
BRAKE SYSTEM	Type	Front Rear	Power assisted self-adjusting disc Power assisted self-adjusting disc		KB	
			Power assisted self-adjusting drum			
	Lining Surface Area	Front	44.1 mm²	6.84 sq. in.		
			36.8 mm²	5.70 sq. in.		
		Rear	21.0 mm²	3.25 sq. in.		
			50.2 mm²	7.78 sq. in.		
	Effective Disc Diameter	Front	194 mm	7.64 in.		
			190 mm	7.48 in.		
		Rear	208 mm	8.19 in.		
			180 mm	7.09 in.		
	Brake Drum ID					
	Parking Brake Kind and Type		Mechanically actuating, rear two wheel brakes			
TIRES	Front/Rear	1.6 L SOHC (KY), 14 L (KB) 1.6 L DOHC (except KQ) 1.6 L DOHC (KQ)	185/60 R14 82H 185/60 VR14 185/60R14 82 V T105/80D 13 T 135/70 D 15			
	Spare	except KE with ALB KE with ALB				
	ELECTRICAL	Battery		12V-47AH 12V-45AH		European General  20A*: Finland, Norway only
		Starter		12V-1.2 kW, 1.4 kW		
Alternator			12V-60 amps			
Fuses		In the dash fuse box In the main fuse box	10A, 15A, 20A*, 30A 10A, 15A, 20A, 50A, 60A			
Headlights High/Low			12V-60/55W			
Front Turn Signal Lights			12V-21W			
Rear Turn Signal Lights			12V-21W			
Side Turn Signal Lights			12V-5W			
Stop/Tailights			12V-21/5W			
Back-up Lights			12V-21W			
License Plate Lights			12V-5W			
Gauge Lights			12V-3.4W, 3.0W, 1.4W			
Indicator Lights			12V-1.4W			
Warning Lights			12V-5W			
Dome Light			12V-5W			
Trunk Light			12V-3.4W			
Illumination and Pilot Lights			12V-1.4W			
Heater Illumination Lights			0.91W, 0.84W, LED 12V-1.4W			

# Body Specifications

Unit: mm (in.)



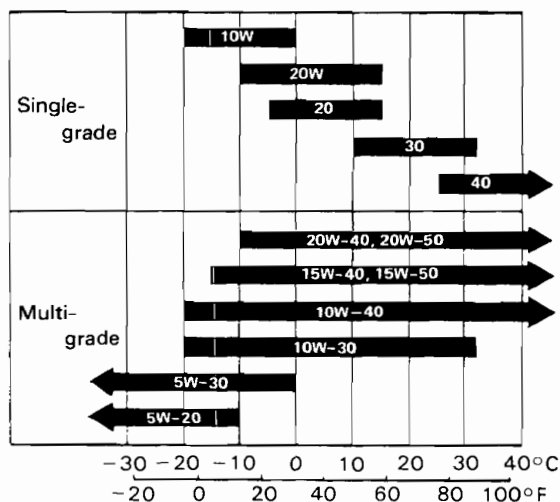
\* 1: except KQ, KY \* 2: KQ, KY \* 3: except KY \* 4: KY \* 5: without CATA \* 6: with CATA  
\* 7: European with registration plate guard \* 8: European without registration plate guard

**specs**

# Lubrication Points

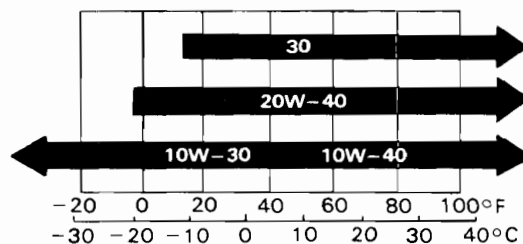
No.	LUBRICATION POINTS	LUBRICANT
1	Engine	API Service Grade: SE, SF or SG SAE Viscosity: See chart below
2	Transmission Manual	API Service Grade: SE or SF SAE Viscosity: See chart below
3	Brake Line (alb line for ALB mode)	Brake fluid DOT 3 or DOT 4
4	Power steering system	Honda power steering fluid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

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



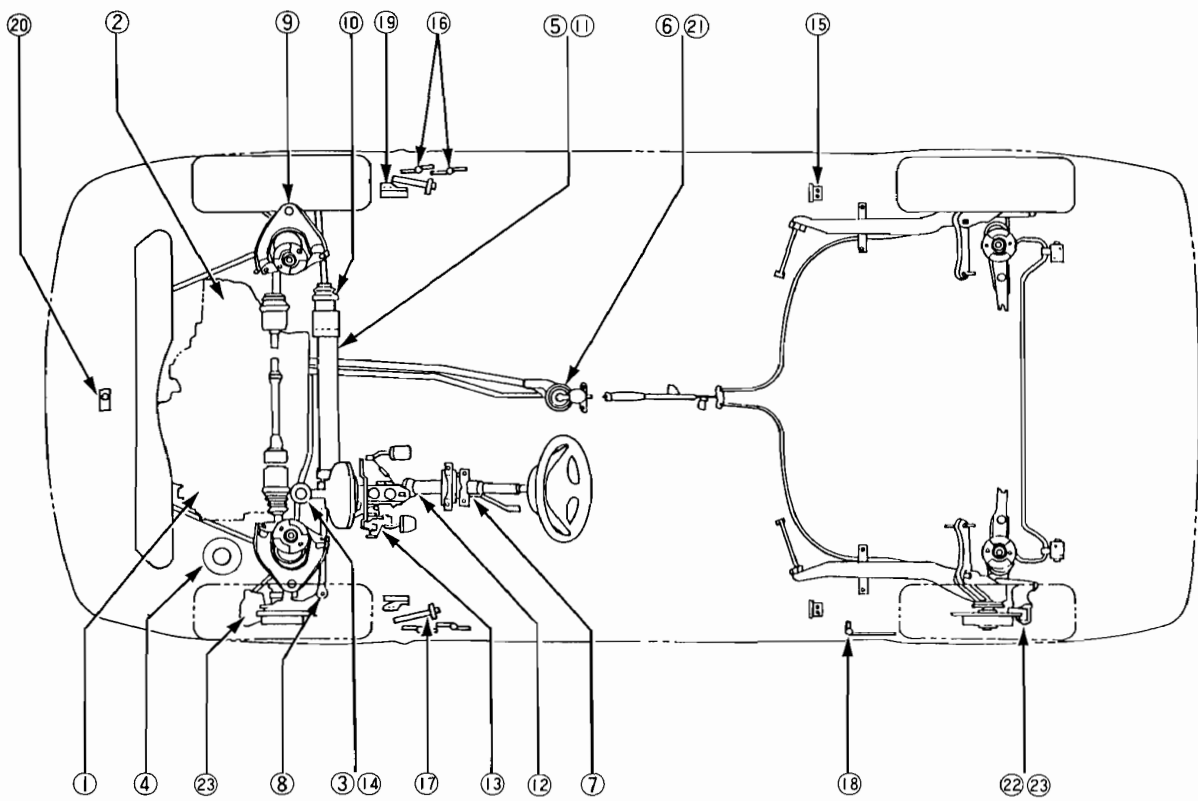
Engine oil viscosity for  
ambient temperature ranges

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.



# Maintenance Schedule

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.	R—Replace C—Clean	I—Inspect. After inspection, clean, adjust, repair or replace if necessary.				
ITEM	x 1,000 km x 1,000 miles months	20 12 12	40 24 24	60 36 36	80 48 48	100 60 60
Idle speed and idle CO* <sup>3</sup>		I	I	I	I	I
Idle speed and idle CO* <sup>4</sup>						I
Valve clearance		I	I	I	I	I
Alternator drive belt			I		I	
Timing belt						R
Water pump						I
■ Engine oil and oil filter		Replace every 10,000 km (6,000 miles) or 6 months				
■ Transmission oil			R		R	
■ Radiator coolant					R* <sup>1</sup>	
Cooling system hoses and connections			I		I	
Air cleaner element (Viscous type for European and KQ models)			R		R	
Air cleaner element (Dry type except European and KQ models)		R	R	R	R	R
Fuel filter			R		R	
Tank, fuel line and connections			I		I	
Intake air temp. control system* <sup>5</sup>						I
Throttle control system* <sup>5</sup>			I		I	
Choke mechanism* <sup>5</sup>			I		I	
Choke mechanism* <sup>6</sup>				C* <sup>7</sup>		I
Evaporative emission control system (for cars using unleaded gasoline and KY model)						I
Ignition timing and control system* <sup>3</sup>			I		I	
Ignition timing and control system* <sup>4</sup>						I
Spark plugs (for cars using unleaded gasoline)			R* <sup>2</sup>		R* <sup>2</sup>	
Spark plugs (for cars using leaded gasoline)		R	R	R	R	R
Distributor cap and rotor* <sup>3</sup>			I		I	
Distributor cap and rotor* <sup>4</sup>						I
Ignition wiring* <sup>3</sup>			I		I	
Ignition wiring* <sup>4</sup>						I
Positive crankcase ventilation valve* <sup>3</sup>			I		I	
Positive crankcase ventilation valve* <sup>4</sup>						I
Blow-by filter* <sup>5</sup>			I		I	

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

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

\*<sup>2</sup> For KS type, replace every 2 years or 40,000 km (24,000 miles) whichever comes first after 30,000 km (18,000 miles).

\*<sup>3</sup> Except KS, KX models

\*<sup>4</sup> KS, KX models

\*<sup>5</sup> Only for carbureted types (except KS model)

\*<sup>6</sup> Only for carbureted type (KS model)

\*<sup>7</sup> Recommended by manufacturer only



Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.	R—Replace		I—Inspect. After inspection, clean, adjust, repair or replace if necessary.			
ITEM	x 1,000 km x 1,000 miles months	20 12 12	40 24 24	60 36 36	80 48 48	100 60 60
Brake hoses and lines (Including ALB hoses and pipes for ALB models)		I	I	I	I	I
Brake fluid (Including ALB fluid for ALB models)			R		R	
Front brake discs and calipers		I	I	I	I	I
Front brake pads		Inspect every 10,000 km (6,000 miles) or 6 months				
Rear brake discs, calipers and pads (for rear disk brake type)			I		I	
Rear brake drums, wheel cylinders and linings (for rear drum brake type)			I		I	
Parking brake		I	I		I	
Clutch release arm travel		I	I	I	I	I
Exhaust pipe and muffler		I	I	I	I	I
Suspension mounting bolts		I	I	I	I	I
Front wheel alignment		I	I	I	I	I
Steering operation, tie rod ends, steering gear box and boots		I	I		I	
ALB high pressure hose (for ALB models)					R	
ALB operation (for ALB models)		I	I		I	
Power steering system (Standard for some types)		I	I	I	I	I
Power steering pump belt (Standard for some types)			I		I	
Catalytic converter heat shield (Standard for some types)					I	

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

Severe driving conditions include :

A : Repeated short distance driving

B : Driving in dusty conditions

C : Driving in severe cold weather

D : Driving in areas using road salt or other corrosive materials

E : Driving on rough and/or muddy roads

F : Towing a trailer

R—Replace.

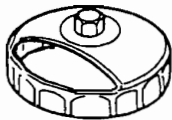
I— Inspect. After inspection, clean, adjust, repair or replace if necessary.

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

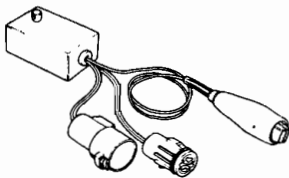
**CAUTION:** Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used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

# Special Tools

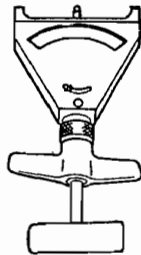
Special Tools				
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07912-610001	Oil Filter Socket	1	
②	07JAZ-SH20100	R.P.M. Connecting Adaptor	1	
③	07JGG-0010100	Belt Tension Gauge	1	



①



②



③



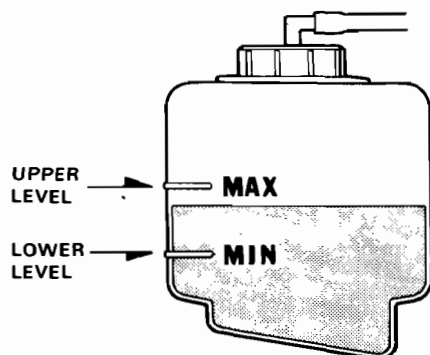


# Engine Tune-up

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



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

### NOTE:

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

### CAUTION:

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

Radiator Coolant Refill Capacity :

ℓ (US qt, Imp qt)

DOHC	4.5 (4.7, 4.0)
SOHC M/T	4.4 (4.6, 3.9)
SOHC A/T	4.3 (4.5, 3.8)

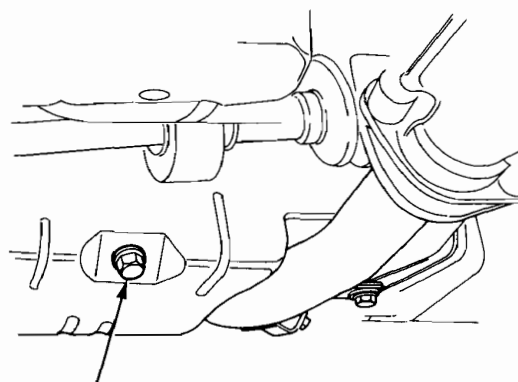
(including the reservoir capacity : 0.4 ℓ  
(0-42 US qt, 0-35 Imp qt))

## Engine Oil Replacement

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

**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.



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

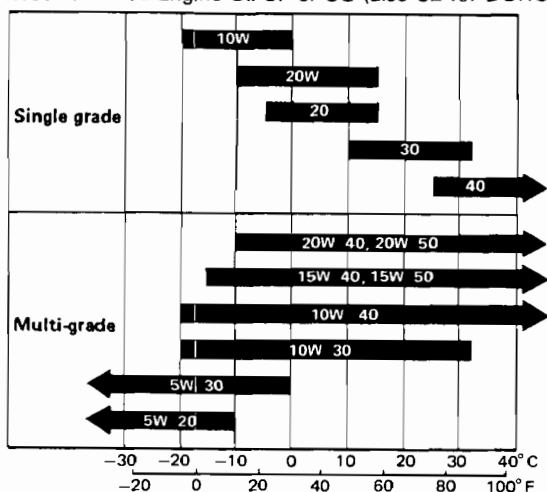
3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

# Engine Tune-up

## Engine Oil Replacement (cont'd)

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

Recommended Engine Oil SF or SG (also SE for DOHC).



Engine oil viscosity for ambient temperature ranges.

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

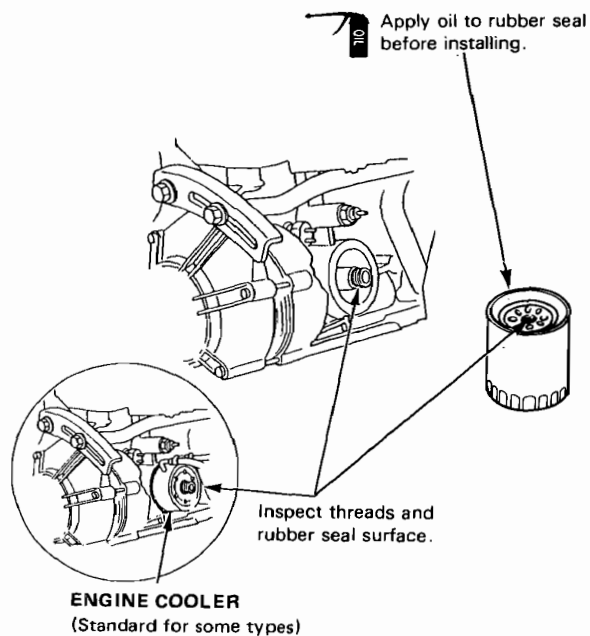
## Oil Filter Replacement

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

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

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

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



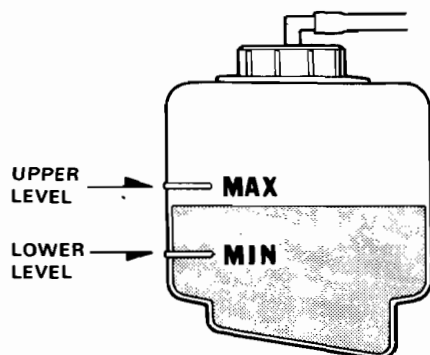


# Engine Tune-up

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



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

### NOTE:

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

### CAUTION:

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

Radiator Coolant Refill Capacity :

ℓ (US qt, Imp qt)

DOHC	4.5 (4.7, 4.0)
SOHC M/T	4.4 (4.6, 3.9)
SOHC A/T	4.3 (4.5, 3.8)

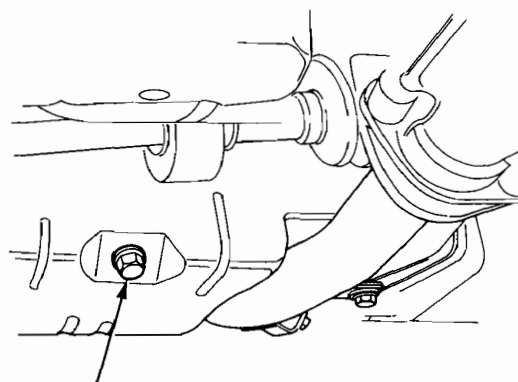
(including the reservoir capacity : 0.4 ℓ  
(0-42 US qt, 0-35 Imp qt))

## Engine Oil Replacement

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

**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.



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

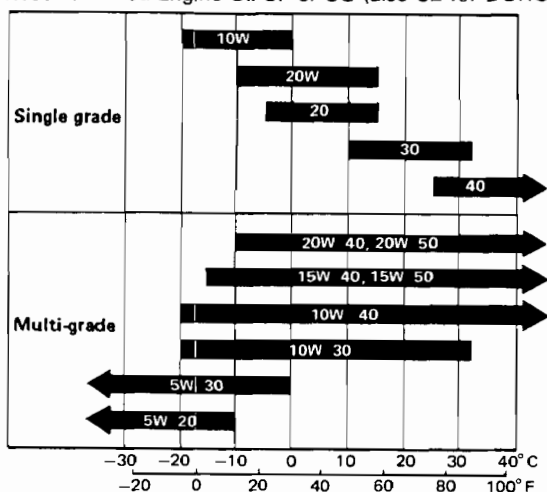
3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

# Engine Tune-up

## Engine Oil Replacement (cont'd)

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

Recommended Engine Oil SF or SG (also SE for DOHC).



Engine oil viscosity for ambient temperature ranges.

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

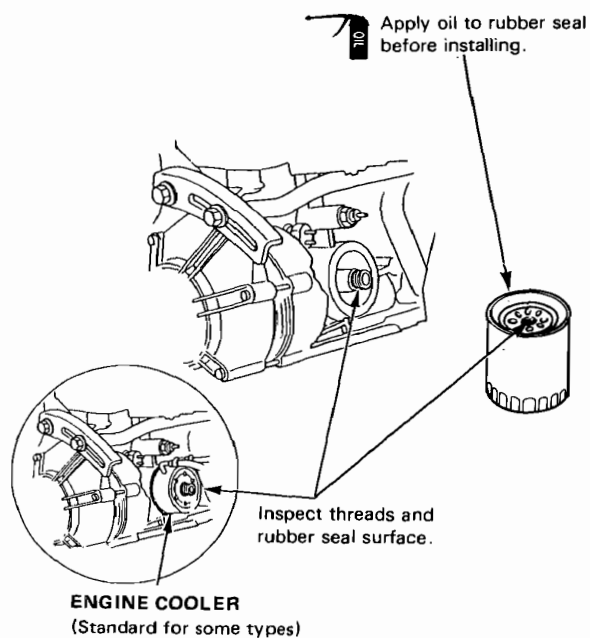
## Oil Filter Replacement

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



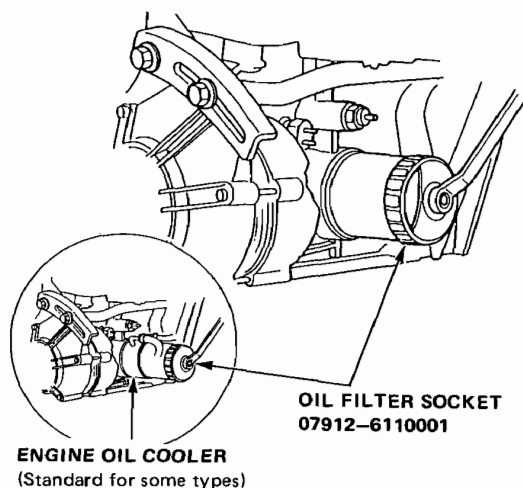


3. Install the oil filter by hand.
4. After the rubber seal is seated, tighten the oil filter clockwise with the special tool.

**Tighten:** 7/8 turn clockwise.

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

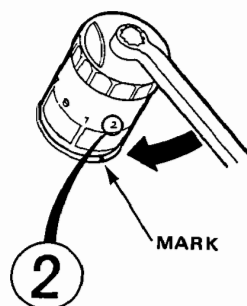
**CAUTION:** Installation other than the above procedure could result in serious engine defects due to oil leakage.



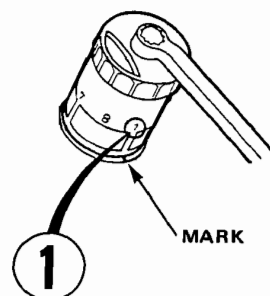
Eight numbers (1 to 8) are printed on the surface of the filter.

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

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



Number when rubber seal is seated.



Number after tightening.

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

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

# Engine Tune-up

## Air Cleaner Element Inspection/Replacement

### Inspection

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

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

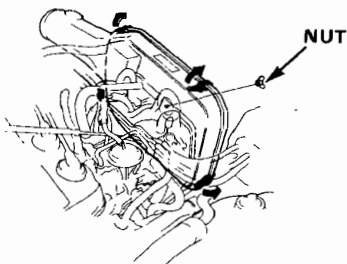
**Replace: every two years**

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

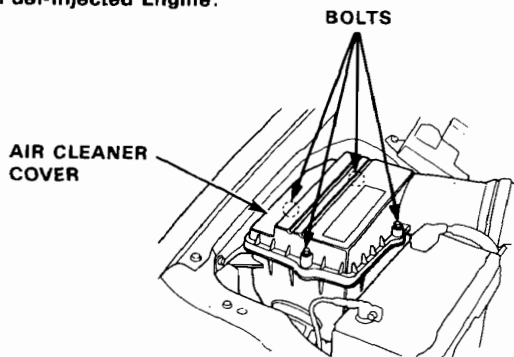
### Replacement

1. Remove the air cleaner cover.

#### 2-Carbureted Engine:



#### Fuel-Injected Engine:



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

## Drive Belts Inspection

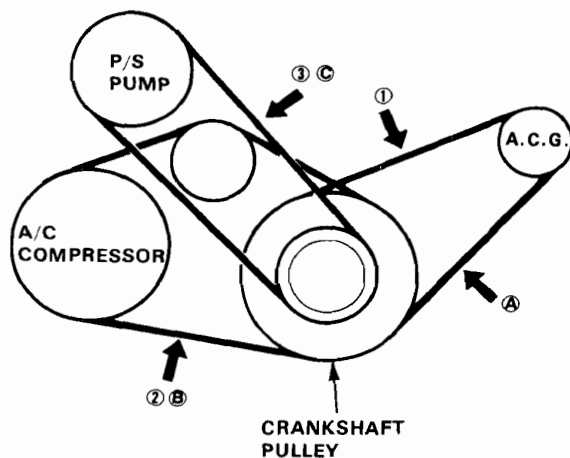
### Drive Belts Deflection:

(When applying a force of 98 N (10 kg, 22 lb))

	Used Belt	New Belt
① Alternator Belt	9.0-11.0 mm (0.35-0.43 in.)	7.0-9.0 mm (0.28-0.35 in.)
② A/C Compressor Belt	9.0-11.0 mm (0.35-0.43 in.)	7.0-9.0 mm (0.28-0.35 in.)
③ P/S Pump Belt	9.0-12.0 mm (0.35-0.47 in.)	7.0-10.0 mm (0.28-0.39 in.)

### Measure with the belt tension gauge:

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



# Engine Tune-up



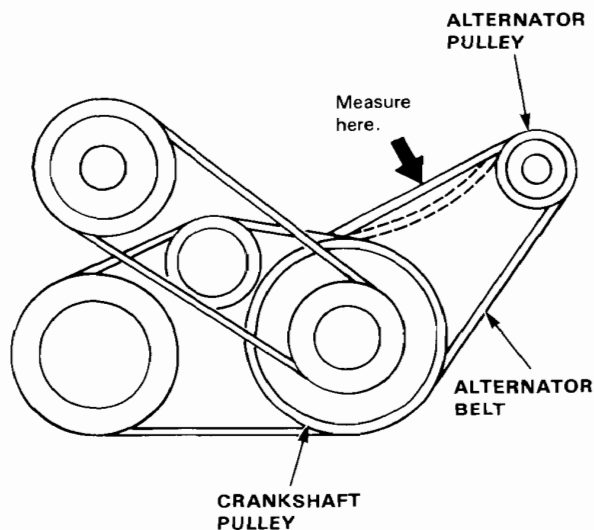
## Alternator Belt Adjustment

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

Deflection : 9.0-11.0 mm (0.35-0.43in)

### NOTE:

- On a brand-new belt, the deflection should be 7.0-9.0 mm (0.28-0.35 in.) when first measured.
- If there are cracks or any damage evident on the belt, replace it with a new one.



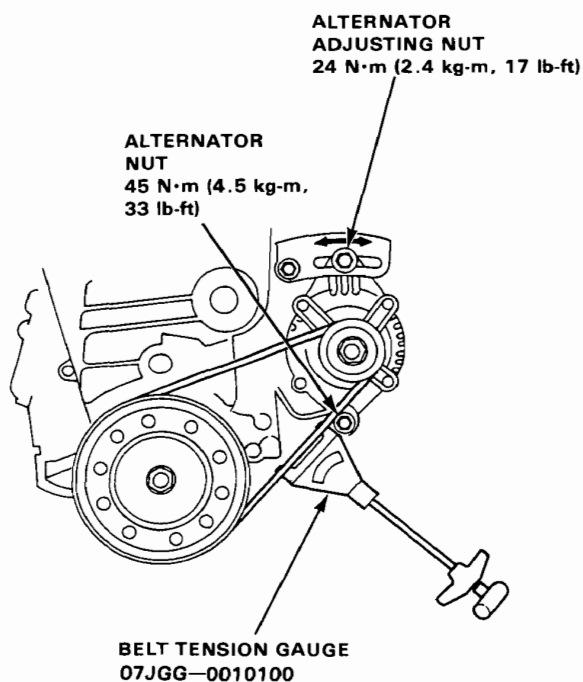
### Measure with the belt tension gauge:

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

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

### NOTE:

- On a brand-new belt, the tension should be 392-588 N (40-60 kg, 88-132 lb) when first measured.
- See the instruction for the belt tension gauge.
- If there are cracks or any damage evident on the belt, replace it with a new one.



2. Loosen the alternator adjusting bolt and alternator nut.
3. Move the alternator to obtain the proper belt tension, then retighten the adjusting bolt and alternator nut.
4. Recheck the deflection of the belt.
5. After adjusting, if necessary, adjust the A/C compressor belt (See page 5 - 8) and P/S pump belt (See page 5 - 9).

# Engine Tune-up

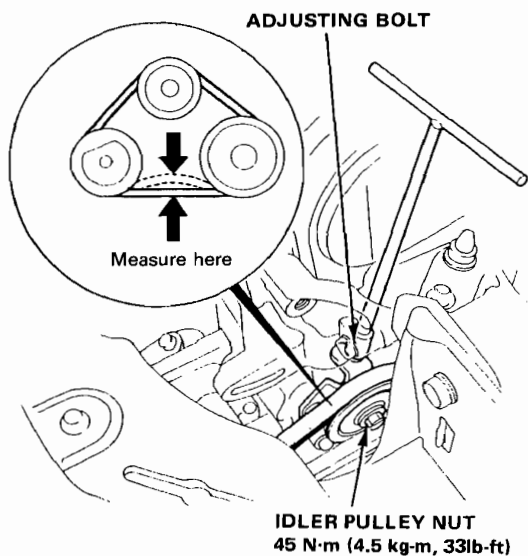
## A/C Compressor Belt Adjustment

**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 : 9.0-11.0 mm (0.35-0.42in.)

**NOTE :** On a brand-new belt, the deflection should be 7.0-9.0 mm (0.28-0.35 in.) when first measured.



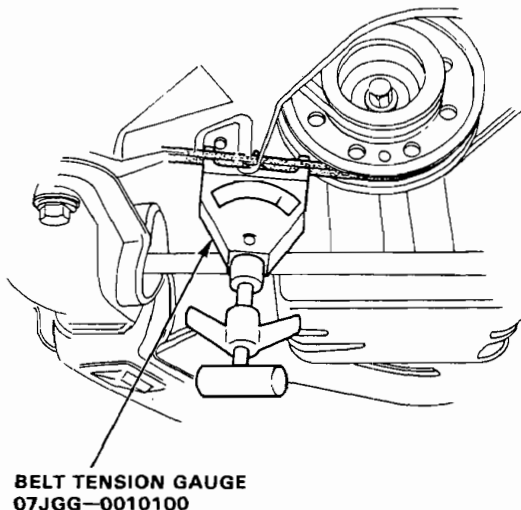
### Measure with the belt tension gauge:

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

Tension : 343-441 N (35-45 kg, 77-99 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.



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





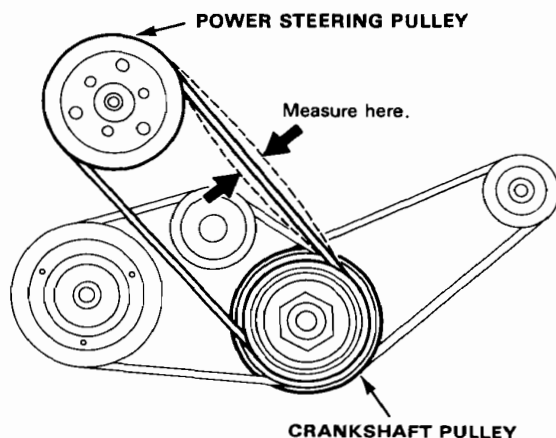
## P/S Pump Belt Adjustment

**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 P/S pump pulley and the crankshaft pulley.

Deflection : 9.0-12.0 mm (0.35-0.47 in.)

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



### Measure with the belt tension gauge:

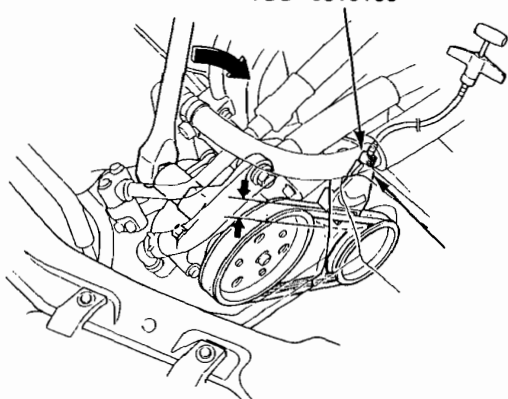
Attach the belt tension gauge to the belt and measure the tension of the belt.

Tension : 343-490 N (35-50 kg, 77-10 lb)

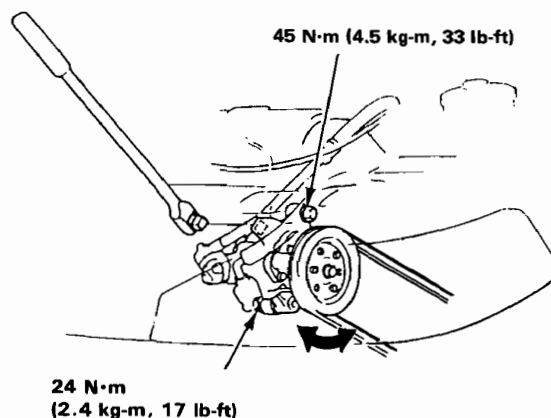
### NOTE:

- 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 bolts and move the power steering pump to get proper tension, then retighten the special bolts.



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

# Engine Tune-up

## Valve Clearance Adjustment

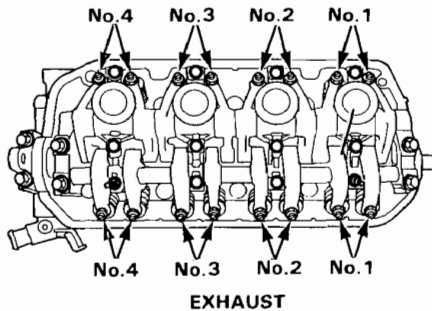
**CAUTION:** Do not overtighten the locknuts, for the rocker arms are made of aluminum.

**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 crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

1. Remove valve cover.

**INTAKE**

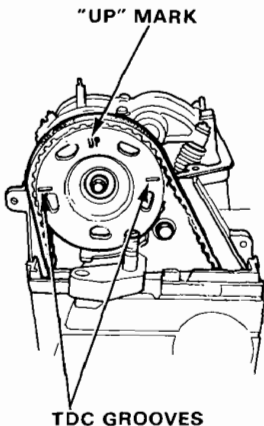


**EXHAUST**

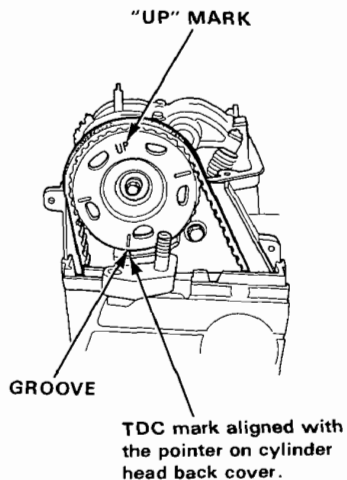
2. Set No. 1 piston at TDC. "UP" mark on the pulley should be at top, and TDC grooves on the pulley should align with cylinder head surface. The distributor rotor must be pointing towards No. 1 plug wire.

**Number 1 piston at TDC**

except 1.6ℓ :

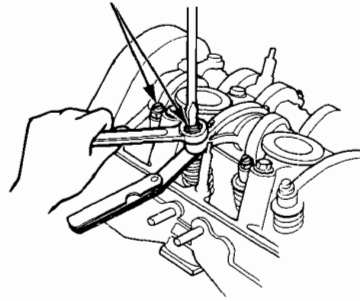


1.6ℓ :



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

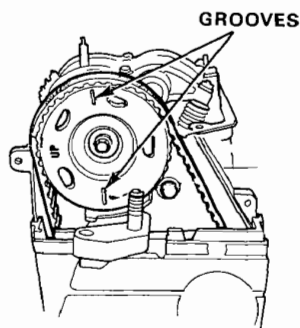
**INTAKE and EXHAUST VALVE  
LOCKNUTS 7 x 0.75 mm  
14 N·m (1.4 kg-m, 10 lb-ft)**



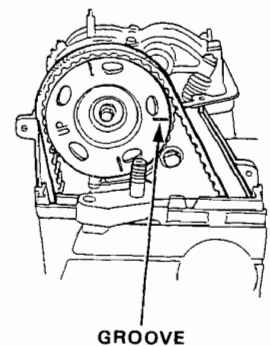
5. Tighten locknut and check clearance again. Repeat adjustment if necessary.
6. Rotate crankshaft 180° counterclockwise (cam pulley turns 90°). The "UP" mark should be at exhaust side. Distributor rotor should point to No. 3 plug wire. Adjust valves on No. 3 cylinder.

**Number 3 piston at TDC**

except 1.6ℓ :



1.6ℓ :

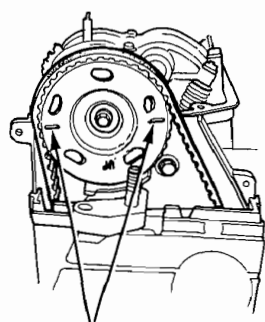




7. Rotate crankshaft 180° counterclockwise to bring No. 4 piston to TDC. Both TDC grooves are once again visible and distributor rotor points to No. 4 plug wire. Adjust valves on No. 4 cylinder.

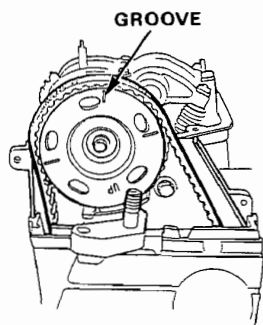
**Number 4 piston at TDC**

**except 1.6 l :**



**GROOVES**

**1.6 l :**

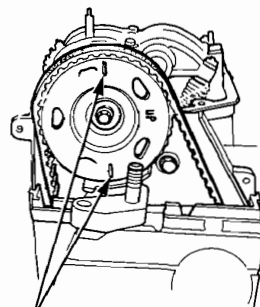


**GROOVE**

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**

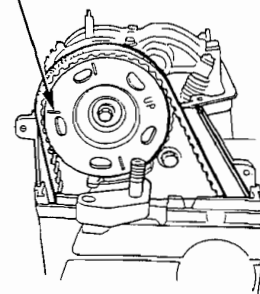
**except 1.6 l :**



**GROOVES**

**1.6 l :**

**GROOVE**



# Engine Tune-up

## Idle Speed Inspection/Adjustment

### Carbureted Engine :

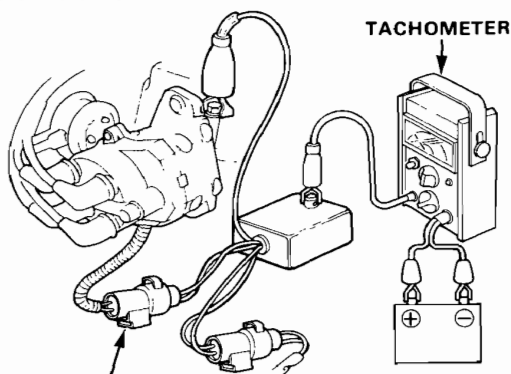
#### NOTE:

- 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 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

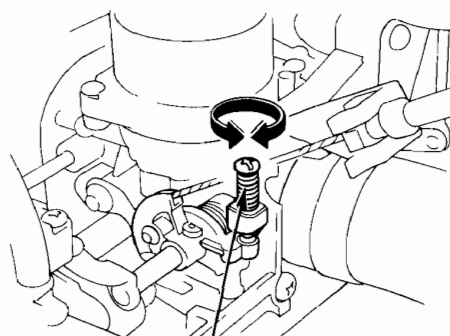
3. Check the idle speed with no load.

Idle speed should be:

Manual	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
Automatic	$700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

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

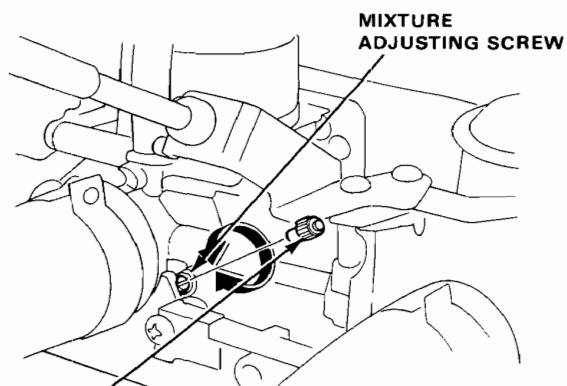


THROTTLE  
STOP SCREW

5. Check specification for idle CO with no load.

Specified CO %: below 0.1 %

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



HOLE CAP

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

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



### (Carbureted Engine)

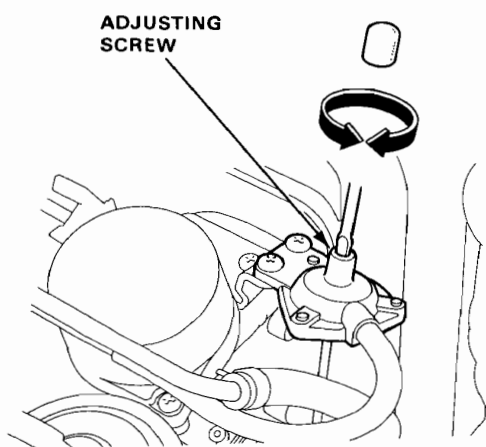
7. Install the hole plug.

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

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

Idle speed should be:  $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

If not, adjust the idle speed by turning the adjusting screw.



### Tailpipe Emissions : Inspection

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

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

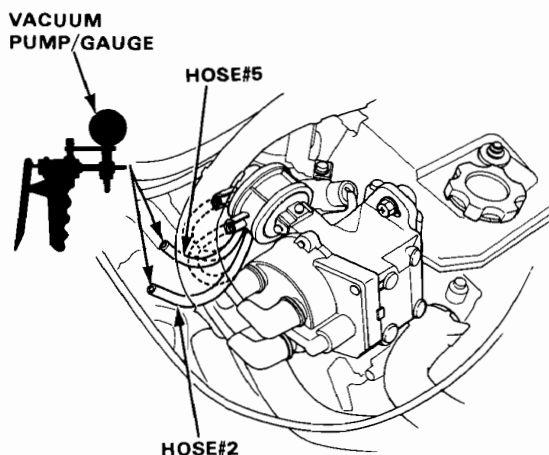
1. Follow steps the propane enrichment method.
2. Warm up and calibrate the CO meter according to the meter manufacture's instructions.
3. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%; 1.0%

### Ignition Timing Inspection and Setting

#### Carbureted Engine :

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



2. Start the engine and let it idle.
3. When the engine is cool.  
Coolant temperature is below  $[45^{\circ}\text{C}(113^{\circ}\text{F})]$ .  
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 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.  
If the #5 and #10 hoses, and the check valve have no problem, replace the 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.

(cont'd)



### (Carbureted Engine)

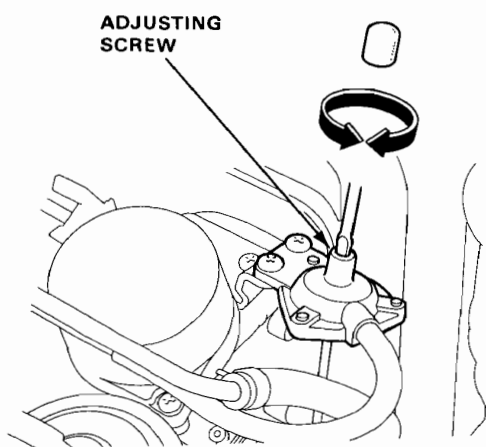
7. Install the hole plug.

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

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

Idle speed should be:  $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

If not, adjust the idle speed by turning the adjusting screw.



### Tailpipe Emissions : Inspection

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

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

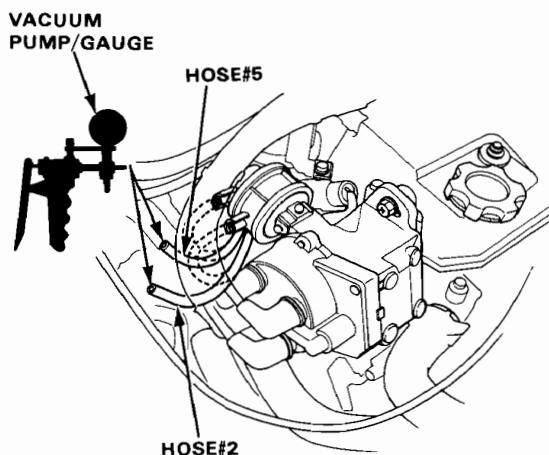
1. Follow steps the propane enrichment method.
2. Warm up and calibrate the CO meter according to the meter manufacture's instructions.
3. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

Specified CO%; 1.0%

### Ignition Timing Inspection and Setting

#### Carbureted Engine :

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

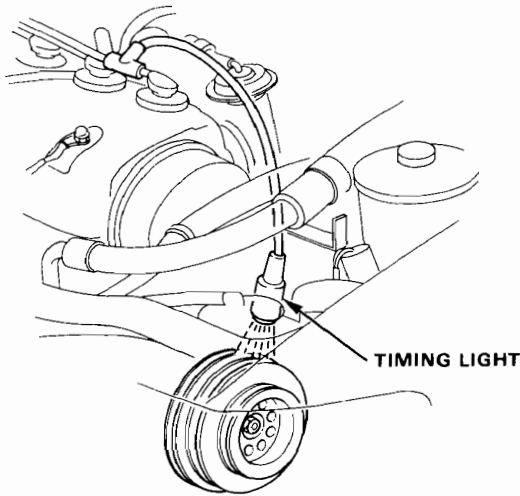


2. Start the engine and let it idle.
3. When the engine is cool.  
Coolant temperature is below  $[45^{\circ}\text{C}(113^{\circ}\text{F})]$ .  
Check each hose for vacuum. The #2 and #5 hoses should have vacuum.
  - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
  - If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.  
If the #5 and #10 hoses, and the check valve have no problem, replace the 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.

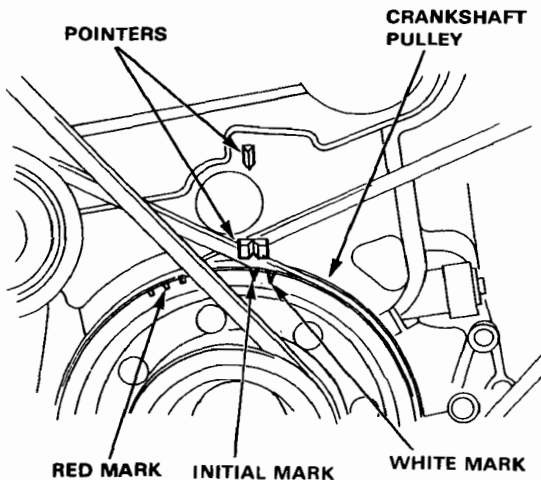
(cont'd)

# Engine Tune-up

## Ignition Timing Inspection and Setting (cont'd)



9. While the engine idles, point the light toward the pointer on the timing belt cover.
10. Align the timig initial mark on the crankshaft pulley to the pointer.



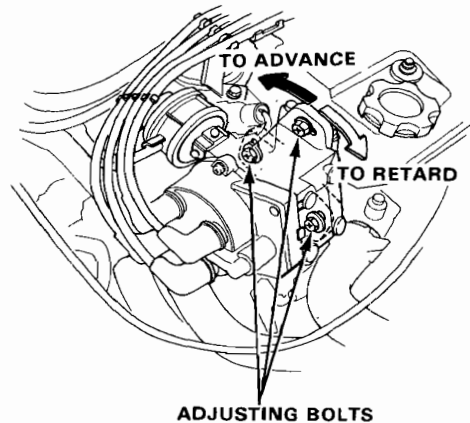
11. Read initial timing when initial timing mark is aligned to the pointer.

### 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

#### 18° ± 2° 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]

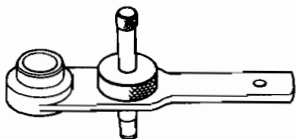
If advance is not as specified, check the vacuum advance diaphragm and distributor advance mechanism.

# Special Tools

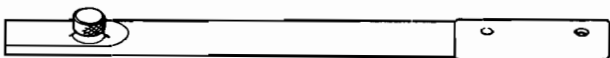
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB-0010000	Crank Pulley Holder Set	1	for Crankshaft pulley bolt
①-1	07JAA-0010100	Socket wrench 17 mm	(1)	
①-2	07JAB-0010100	Pulley Holder Attachment	(1)	
①-3	07JAB-0010200	Handle	(1)	



①-1



①-2



①-3





# Timing Belt

## Illustrated Index

### NOTE :

- Refer to page 5-21 for positioning crank and pulley before installing belt.
- Refer to page 5-7, for alternator belt adjustment.
- Refer to page 5-8, for A/C compressor belt adjustment.
- Refer to page 5-9, for P/S pump belt adjustment.
- Before removing, mark direction of rotation.

### TIMING BELT

Replace every 100,000 km  
(60,000 miles) or 60 months.

8 x 1.25 mm  
38 N·m (3.8 kg-m,  
27 lb-ft)  
Apply lubricant.

WASHER and  
GROMMET

CROWN NUT 6 x 1.0 mm  
10 N·m (1.0 kg-m, 7 lb-ft)

VALVE COVER

CAMSHAFT  
PULLEY

RUBBER SEALS

ADJUST BOLT

45 N·m  
(4.5 kg-m, 33 lb-ft)  
For adjustment only,  
do not remove.

UPPER COVER

6 x 1.0 mm  
10 N·m (1.0 kg-m, 7 lb-ft)

LOWER COVER

Remove the  
four bolts.

TIMING BELT  
BACK COVER

6 x 1.0 mm  
10 N·m (1.0 kg-m,  
7 lb-ft)

KEY

BELT  
TENSIONER

Install with concave  
surface facing in.

CRANKSHAFT  
PULLEY

6 x 1.0 mm  
10 N·m  
(1.0 kg-m, 7 lb-ft)

CRANKSHAFT  
TIMING BELT  
PULLEY

Install with concave  
surface facing out.

RUBBER SEAL

PULLEY HOLDER ATTACHMENT  
07JAB-0010100

HANDLE  
07JAB-00100200

SOCKET WRENCH, 17 mm  
07JAA-0010100

Apply molybdenum disulfide to  
mating surface of the socket  
and attachment.

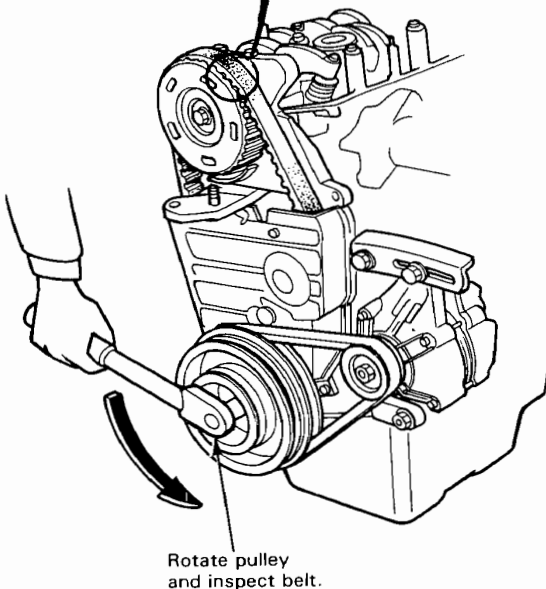
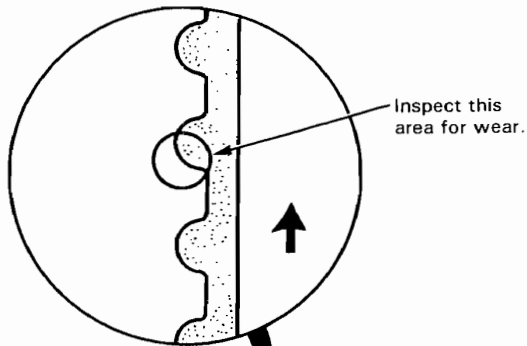
14 x 1.25 mm  
165 N·m  
(16.5 kg-m, 119 lb-ft)  
Apply engine oil to  
the bolt threads.

# Timing Belt

## Inspection

### NOTE:

- Replace belt if oil soaked.
- Remove any oil or solvent that gets on the belt.
- If pulley bolt broke loose while turning 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:

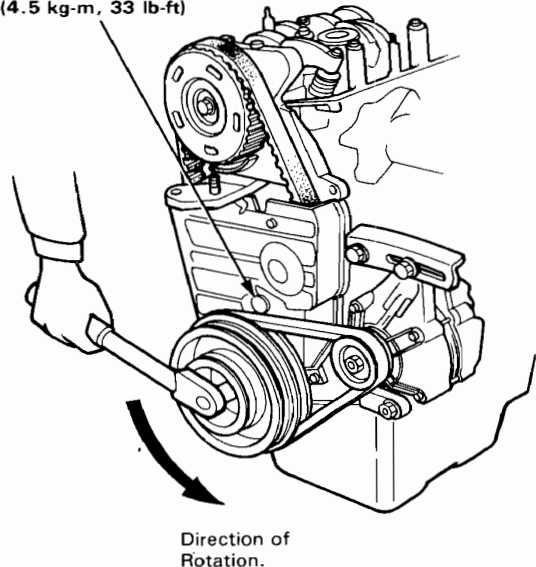
- Tensioner is spring-loaded to apply proper tension to the belt automatically after making the following adjustment:
- Inspect the timing belt before belt tension adjustment.

1. Set the No. 1 piston at TDC.
2. Loosen, but do not remove, the adjust bolt.

### ADJUST BOLT

45 N·m

(4.5 kg-m, 33 lb-ft)



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

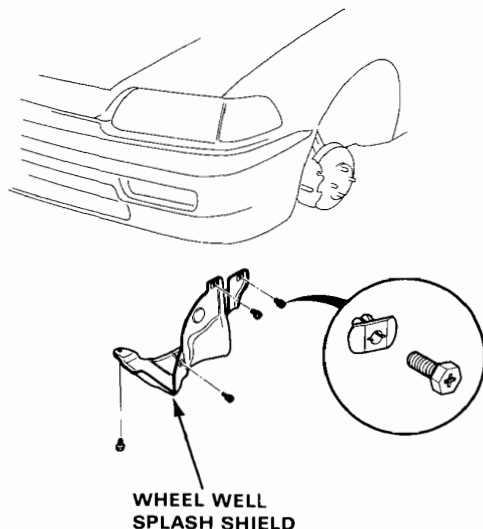
**NOTE:** Put transmission in gear and set parking brake before retorquing pulley bolt.



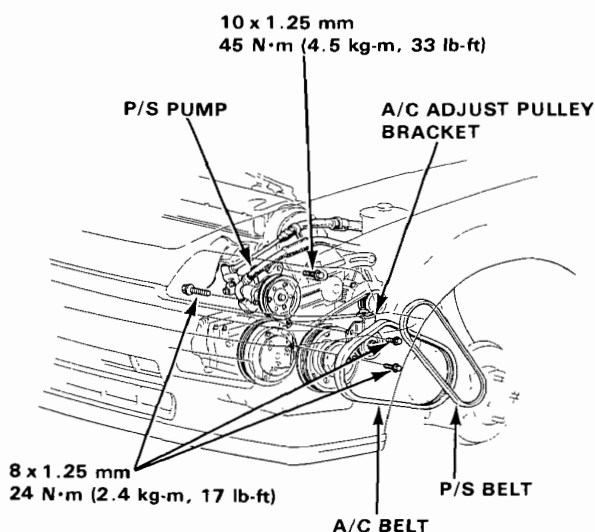
## Replacement

**NOTE:** Inspect the water pump after removing the timing belt.

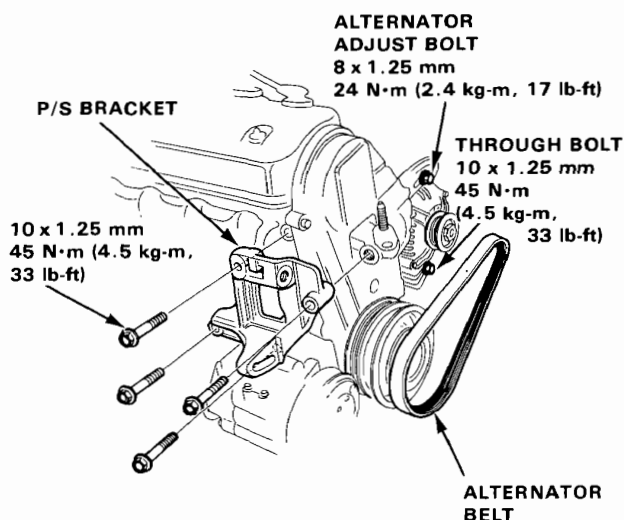
1. Remove the wheel well splash shield.



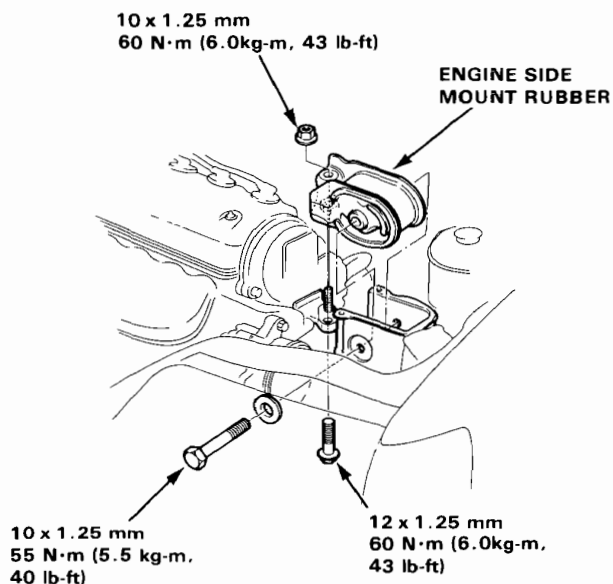
2. Remove the power steering belt and pump (Standard for some types).
3. Remove the A/C compressor adjust pulley with bracket and the belt (Standard for some types).



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 5-7 for alternator belt tension adjustment. See Page 5-8 for A/C compressor belt tension adjustment. See Page 5-9 for power steering pump belt tension adjustment.
7. Remove the engine support bolts and nut, then remove the side mount rubber.

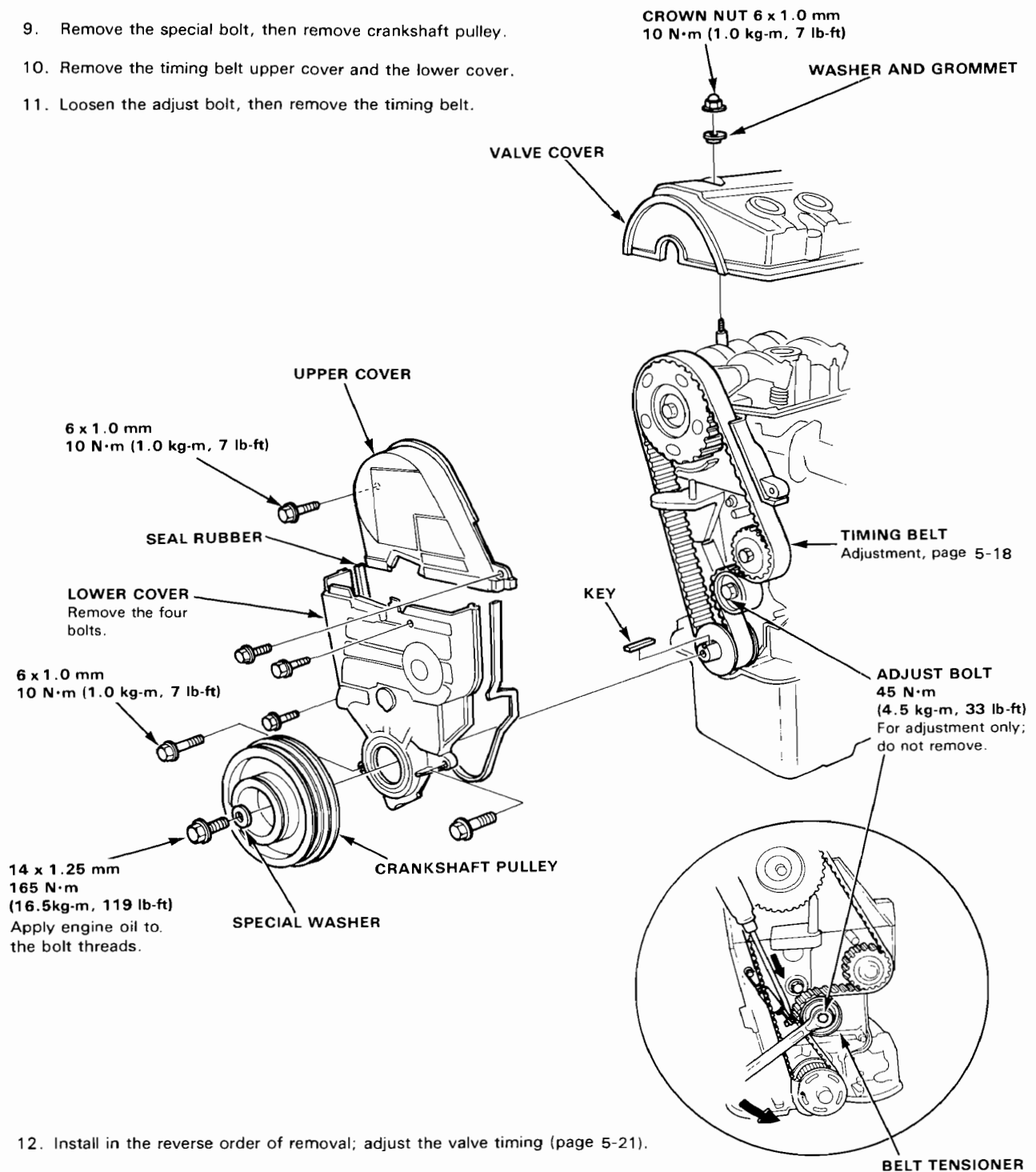


(cont'd)

# 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.



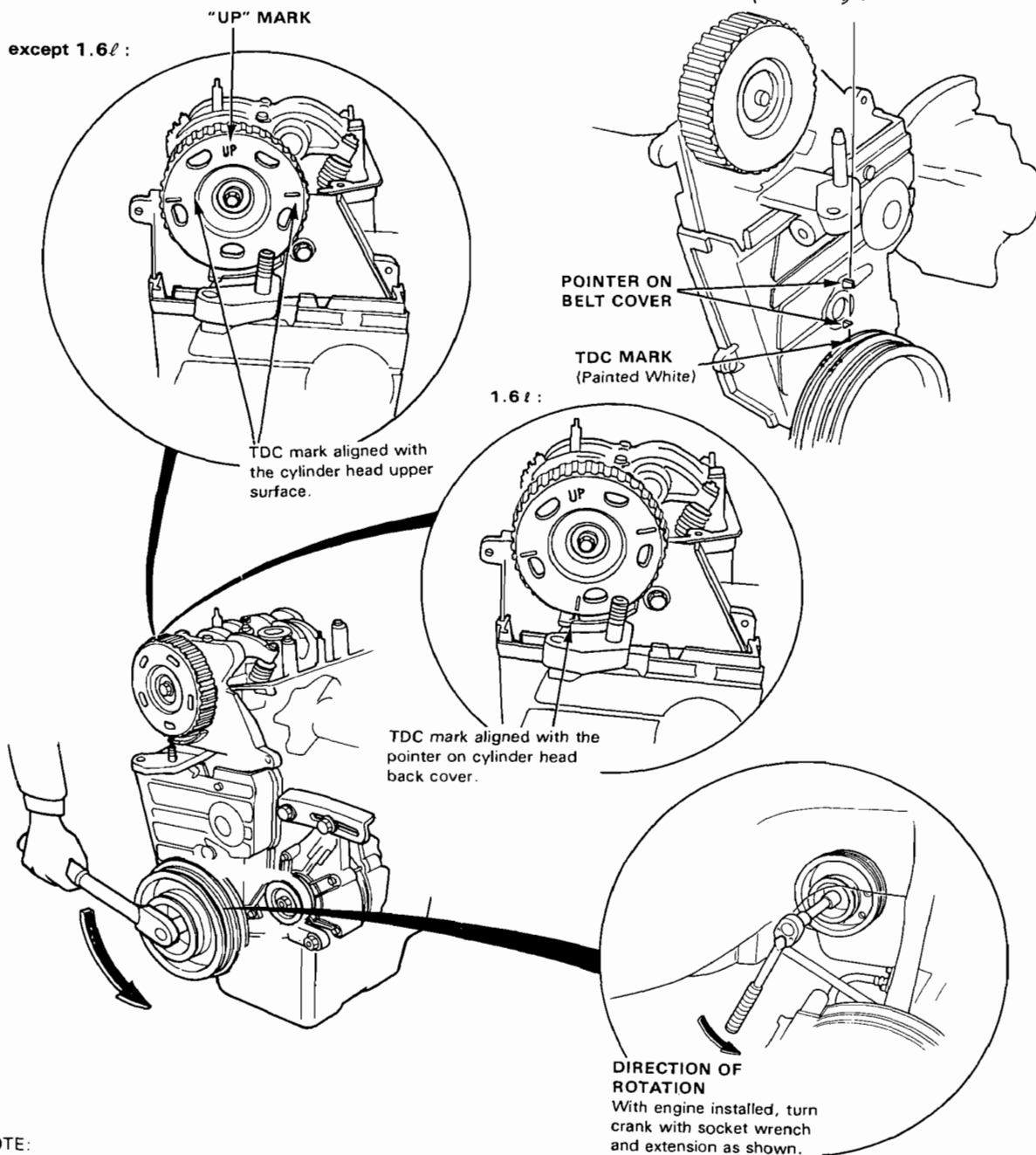


## Positioning Crankshaft Before Installing Timing Belt

### 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 crank, retorque it to 165 N·m (16.5 kg-m, 119 lb-ft).

except 1.6ℓ :



### NOTE:

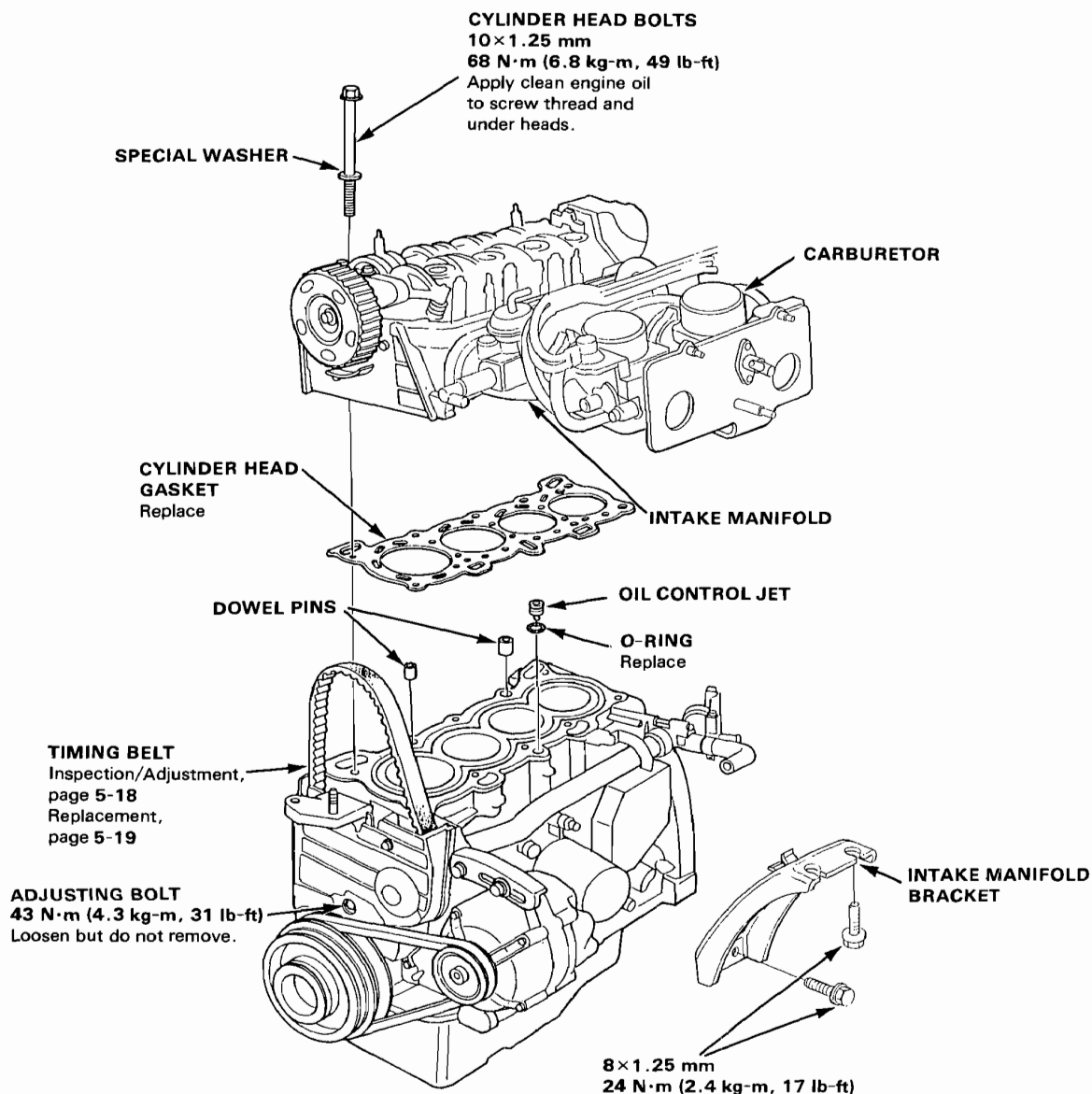
- To set the crankshaft to TDC, install the timing belt guide plates, timing belt drive pulley, timing belt lower cover, crankshaft pulley, and crankshaft pulley bolt.

# 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.

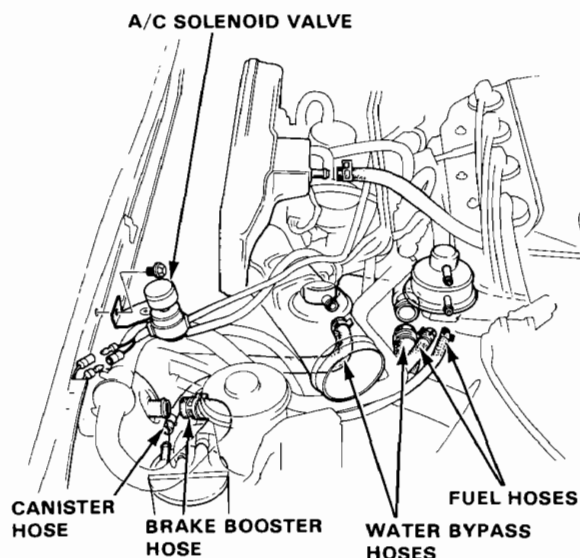
**NOTE:**

- 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 hoses before disconnecting them.

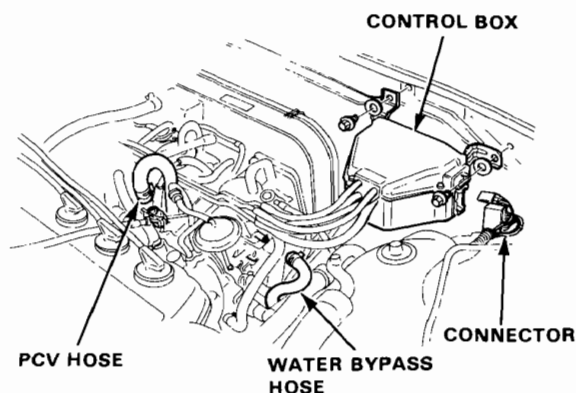
1. Disconnect the negative terminal from the battery.
2. Drain the cooling system (See page 5-78).
3. Remove the brake booster vacuum hose from the brake master power booster.
4. Remove the engine secondary ground cable from the valve cover.
5. Remove the air cleaner cover and air cleaner

**⚠ 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.

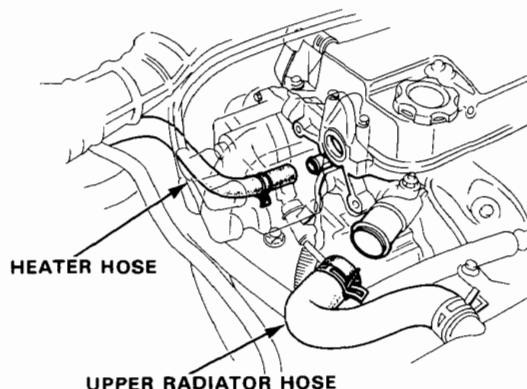
6. Disconnect the fuel hose and fuel return hose.
7. Remove the air intake hose and resonator hose.
8. Disconnect the throttle cable at the throttle body (See Section 5).
9. Disconnect the throttle control cable at the throttle body (A/T only).
10. Disconnect the charcoal canister hose at the throttle valve.
11. Disconnect the vacuum hoses 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 master power booster.



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

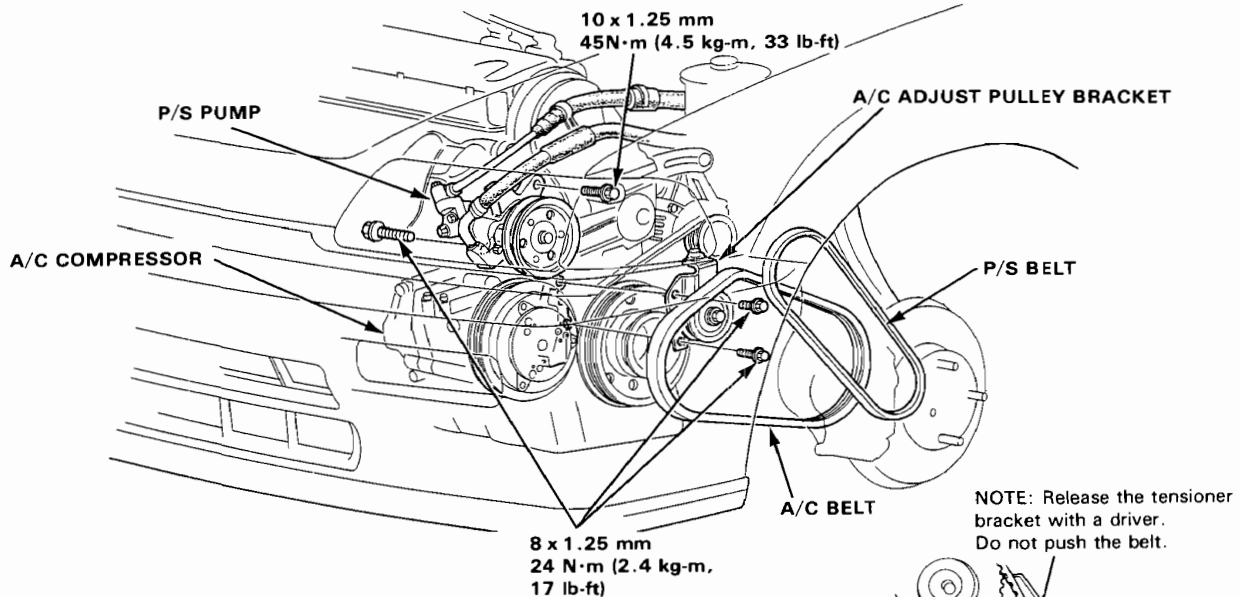


14. Disconnect the engine wire connectors and clamps from the cylinder head, throttle body, and IN/EX manifolds.
  - Ignition coil connector (from distributor)
  - EACV connector
  - Engine ground wire
  - Thermounit connector
  - Coolant temperature sensor connector
  - Carburetor solenoid valve, inner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

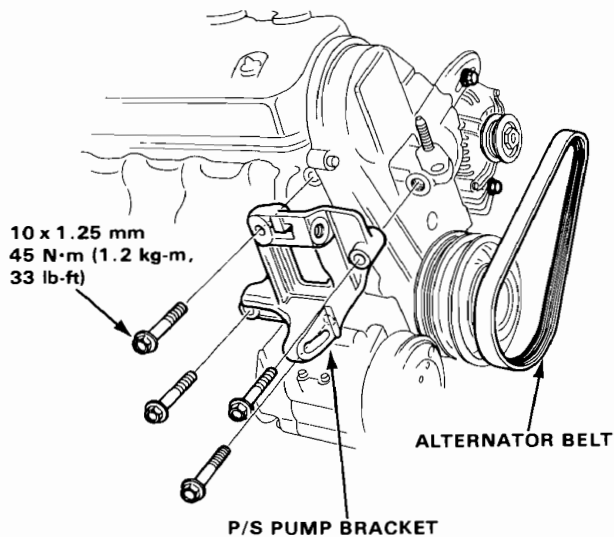
(cont'd)

# Cylinder Head

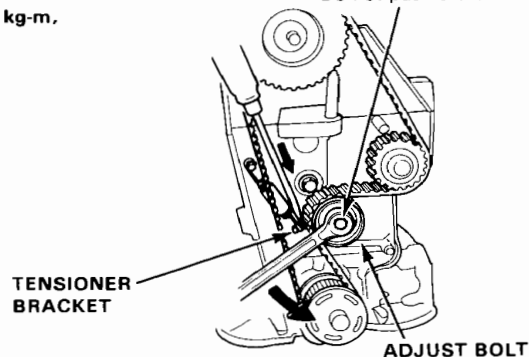
## Removal (engine removal not required) (cont'd)



15. Remove the P/S belt.
16. Remove the P/S hoses and P/S pump.
17. Remove the P/S bracket.
18. Remove the alternator belt.

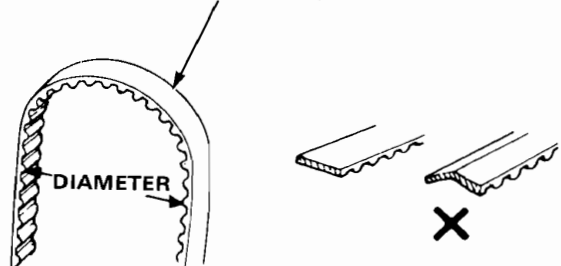


19. Remove the intake manifold bracket.
20. Remove the exhaust manifold bracket, then remove the header pipe.



21. Remove the exhaust manifold shroud, then remove exhaust manifold.
22. Remove the distributor and valve cover.
23. Remove the timing belt upper cover.
24. 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.



25. Remove the cylinder head.
26. Remove the intake manifold from the cylinder head.





## Installation

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

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

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

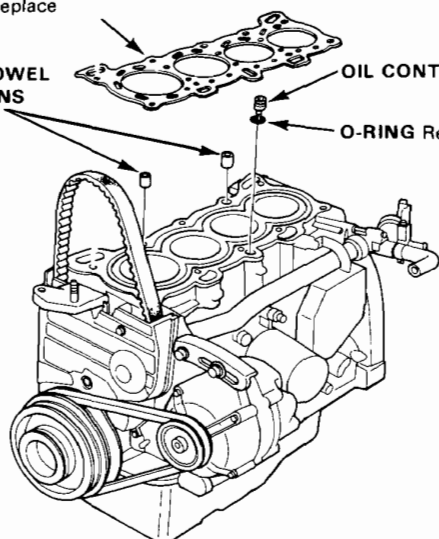
#### CYLINDER HEAD GASKET

Replace

#### DOWEL PINS

#### OIL CONTROL JET

O-RING Replace



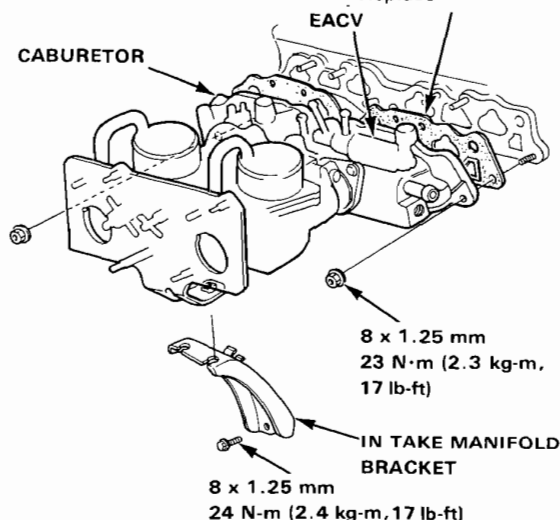
### 3. Install the intake manifold and tighten the nuts in a criss-cross pattern, beginning with the inner nuts.

#### IN TAKE MANIFOLD GASKET

Replace

#### EACV

#### CABURETOR



8 x 1.25 mm

23 N·m (2.3 kg-m, 17 lb-ft)

#### IN TAKE MANIFOLD BRACKET

8 x 1.25 mm

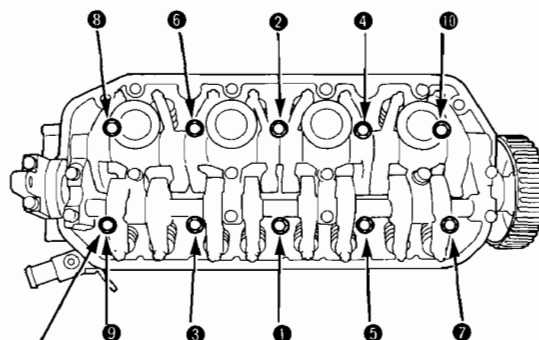
24 N·m (2.4 kg-m, 17 lb-ft)

### 4. Tighten cylinder head bolts in two steps.

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

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

#### CYLINDER HEAD TORQUE SEQUENCE



#### CYLINDER HEAD BOLT

10 x 1.25 mm

68 N·m (6.8 kg-m, 49 lb-ft)

### 5. Adjust the valve timing.

### 6. Install the exhaust manifold and bracket.

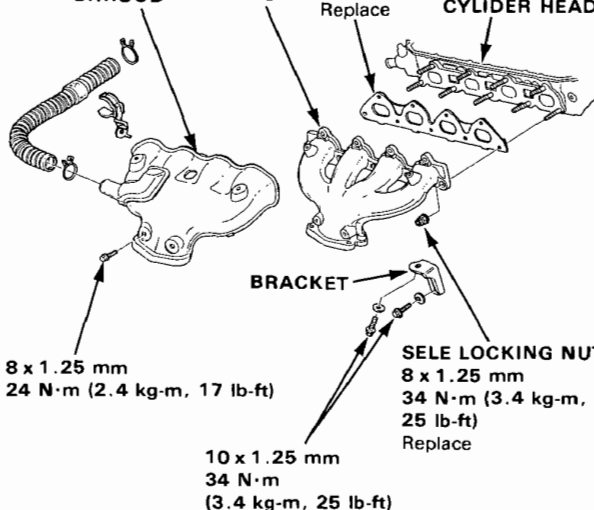
#### SHROUD

#### EXHAUST MANIFOLD

#### EXHAUST MANIFOLD GASKET

Replace

#### CYLINDER HEAD



8 x 1.25 mm

24 N·m (2.4 kg-m, 17 lb-ft)

10 x 1.25 mm

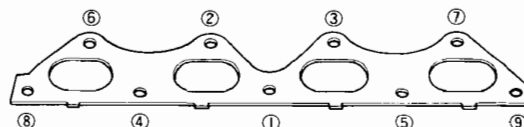
34 N·m (3.4 kg-m, 25 lb-ft)

#### SELE LOCKING NUT

8 x 1.25 mm

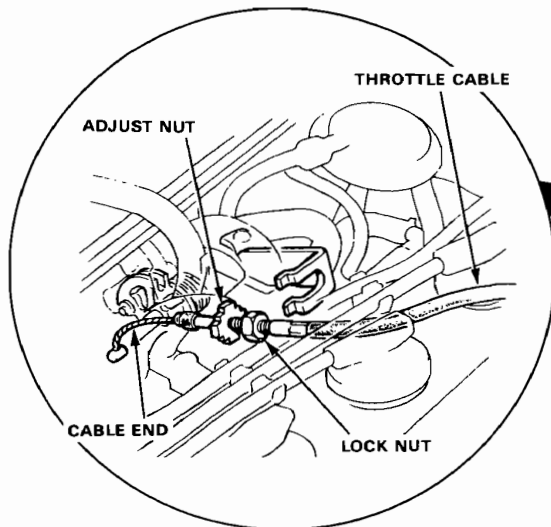
34 N·m (3.4 kg-m, 25 lb-ft)  
Replace

#### EXHAUST MANIFOLD TORQUE SEQUENCE



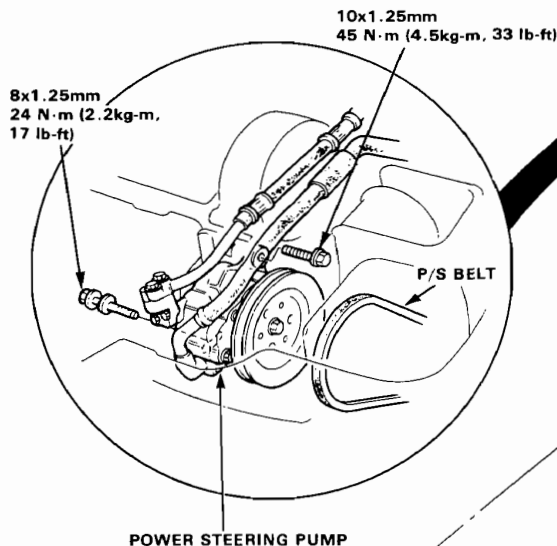
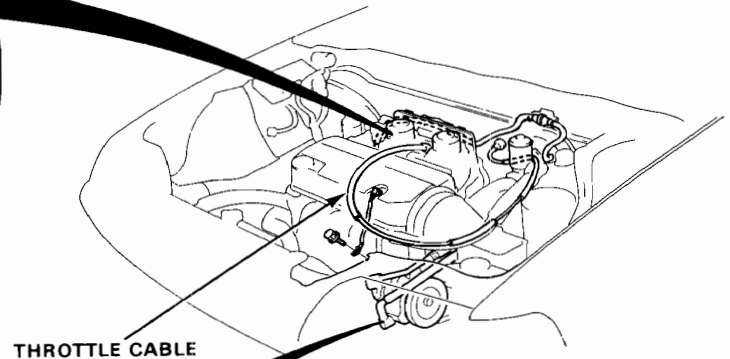
# Engine Removal/Installation

## Carbureted Engine

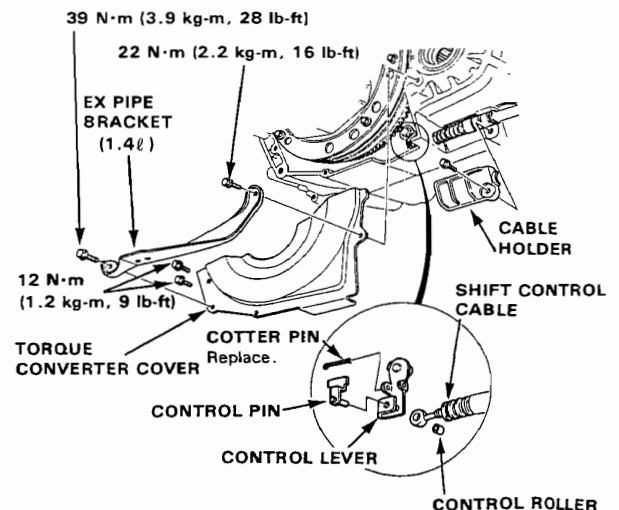


- Remove the throttle cable by loosening lock the nut and the throttle cable adjust nut, then slip the cable end out of the throttle bracket and accelerator linkage.

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



- 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.



(On Automatic Transmission Cars:)

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

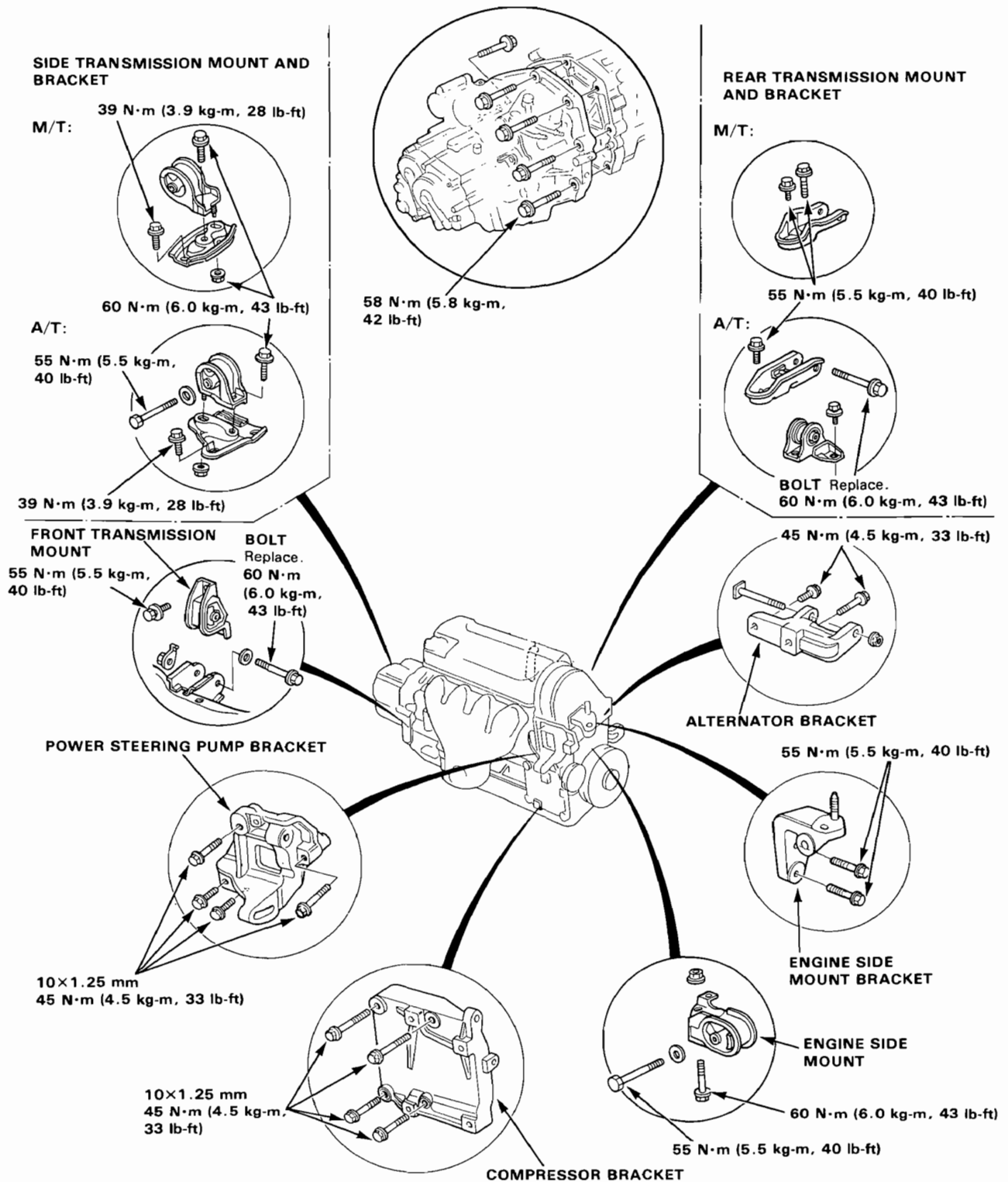
**CAUTION:** Be careful not to damage the shift control cable during engine removal. On installation, check the cable is not kinked or binding.

### 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)



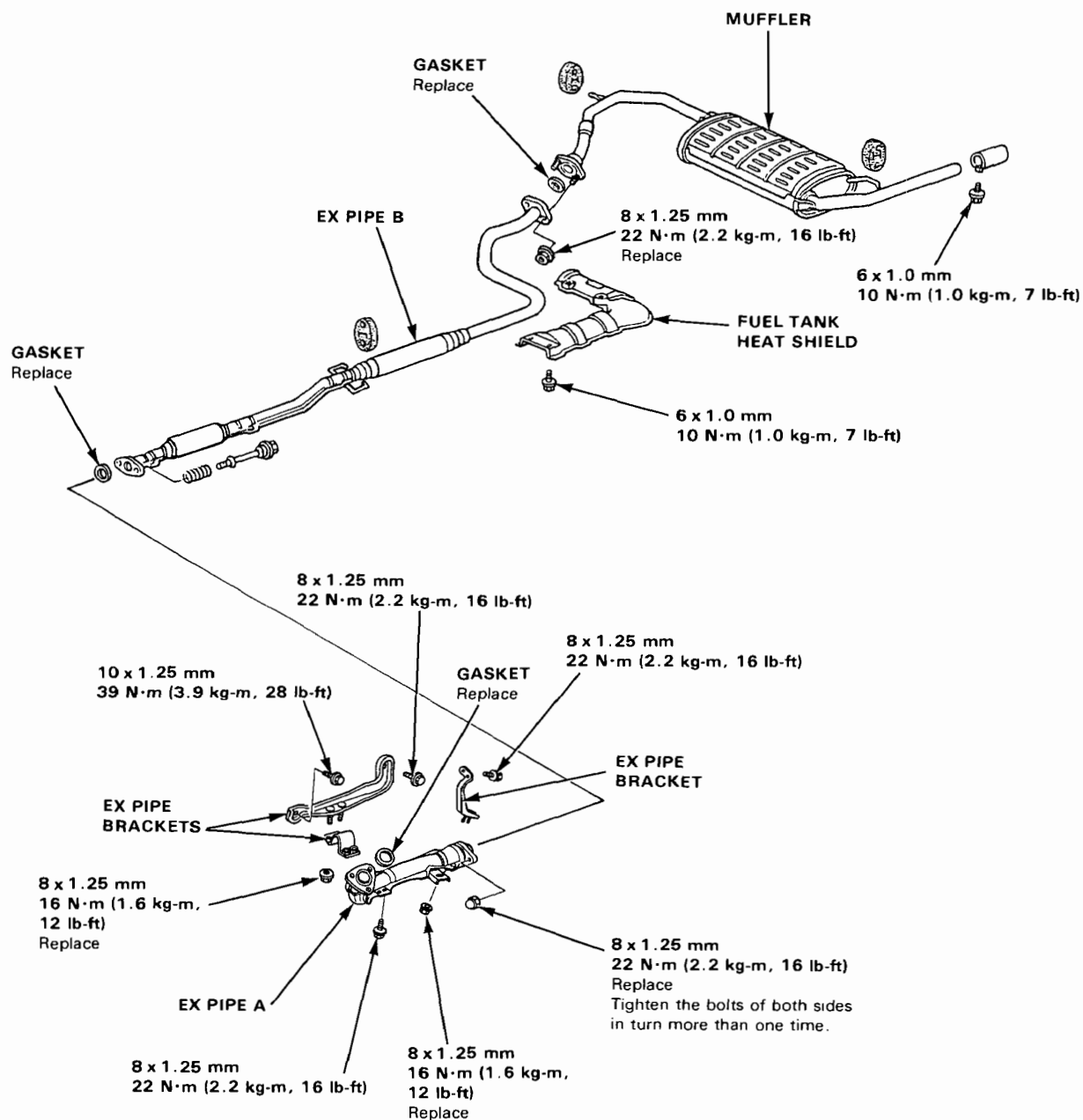
**Additional Torque Specifications:**



# Exhaust Pipe and Muffler

## Replacement

1.4ℓ :



# Radiator

## Illustrated Index

SOHC Carbureted Engine :

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

**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 (Incl. heater, and reservoir 0.4 liters) :

M/T : 5.4ℓ (5.7 US qt, 4.8 Imp qt)

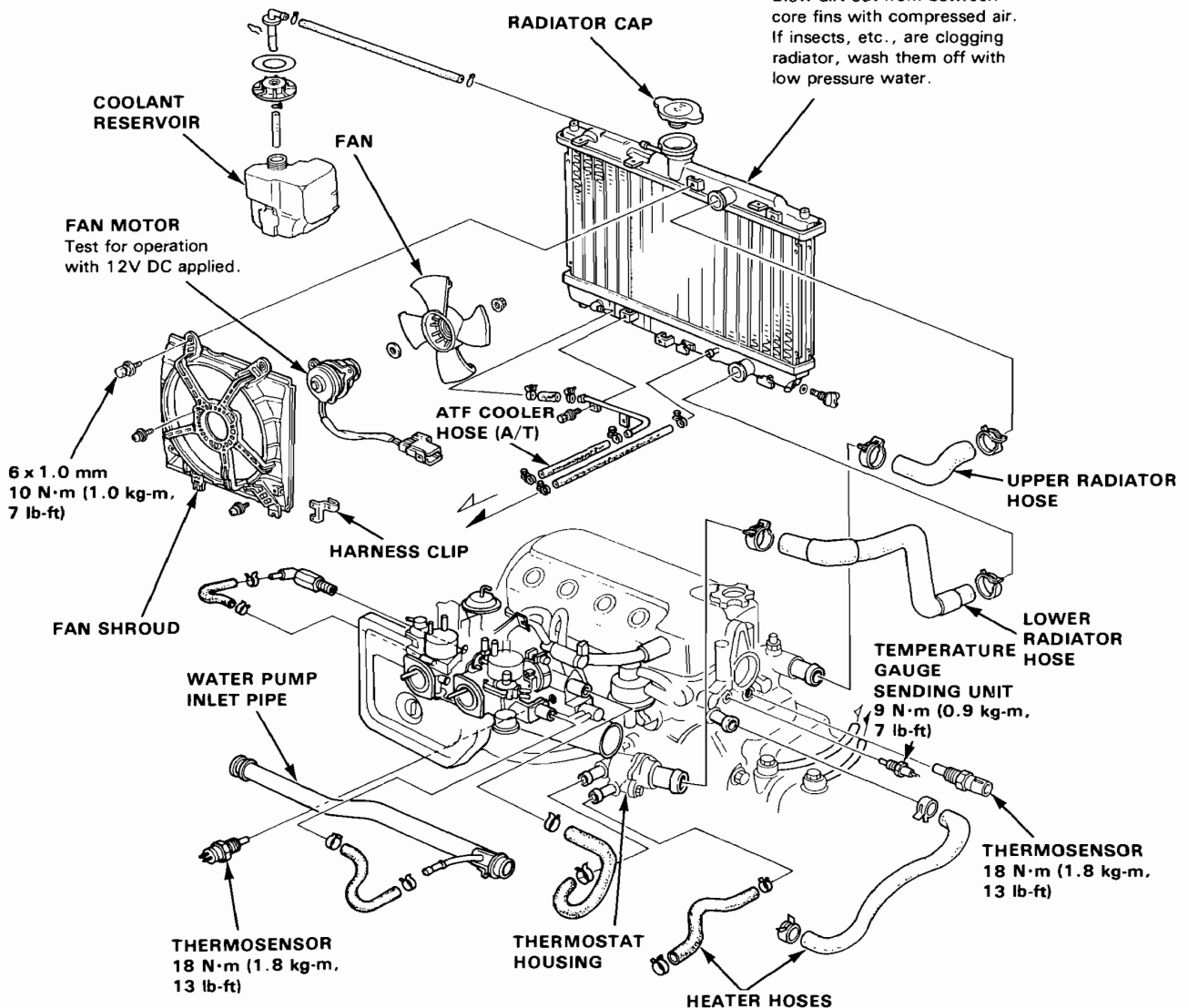
A/T : 5.3ℓ (5.6 US qt, 4.7 Imp qt)

**NOTE:**

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

### RADIATOR

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.



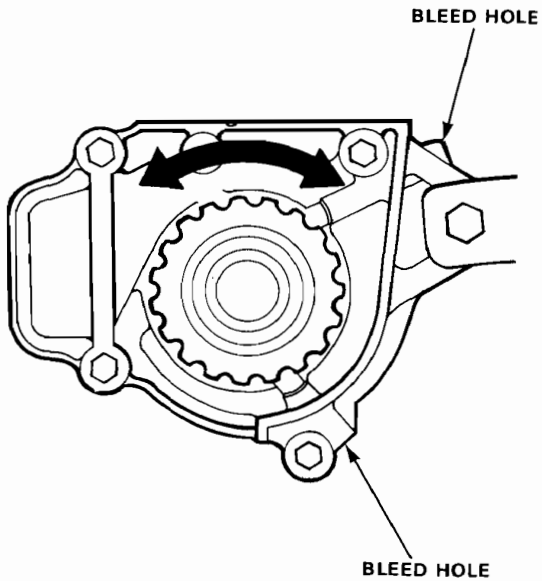
# Water Pump



## Inspection

1. Remove the timing belt (page 5 - 19).
2. Check the water pump pulley turns freely.
3. Check the signs of seal leakage.

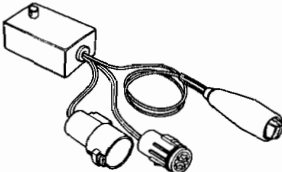
NOTE: Small amount of "weeping" from the bleed hole is normal.



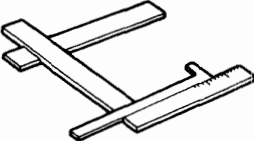
# Special Tools

## Special Tools

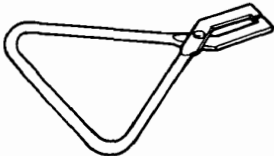
Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAZ—SH20100	R.P.M. Connecting Adaptor	1	
②	07401—0010000	Float Level Gauge	1	
③	07614—0050100	Fuel Line Clamp	1	
④	07411—0020000	Digital Circuit Tester	1	




①



②



③



④

# Component Locations

## Index (cont'd)



[2-Carbureted Engine, LHD]

**A/C IDLE BOOST  
SOLENOID VALVE**  
Troubleshooting, page  
6-8

**INTAKE AIR CONTROL  
DIAPHRAGM**

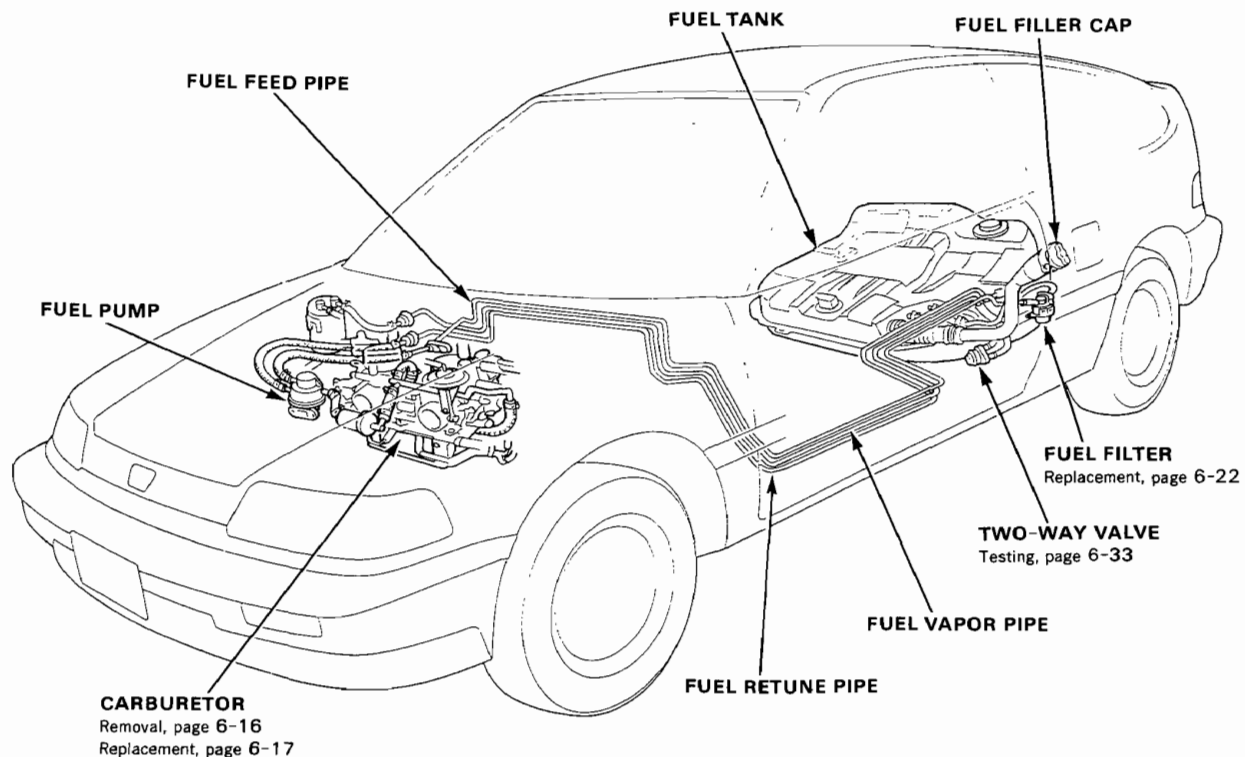
**AIR CLEANER ELEMENT**

Replace every 1 year or  
20,000 km (12,000 miles) whichever  
comes first.

**AIR INTAKE  
TUBE**

**THROTTLE CABLE**

Inspection/Adjustment, page 6-27  
Replacement, page 6-26

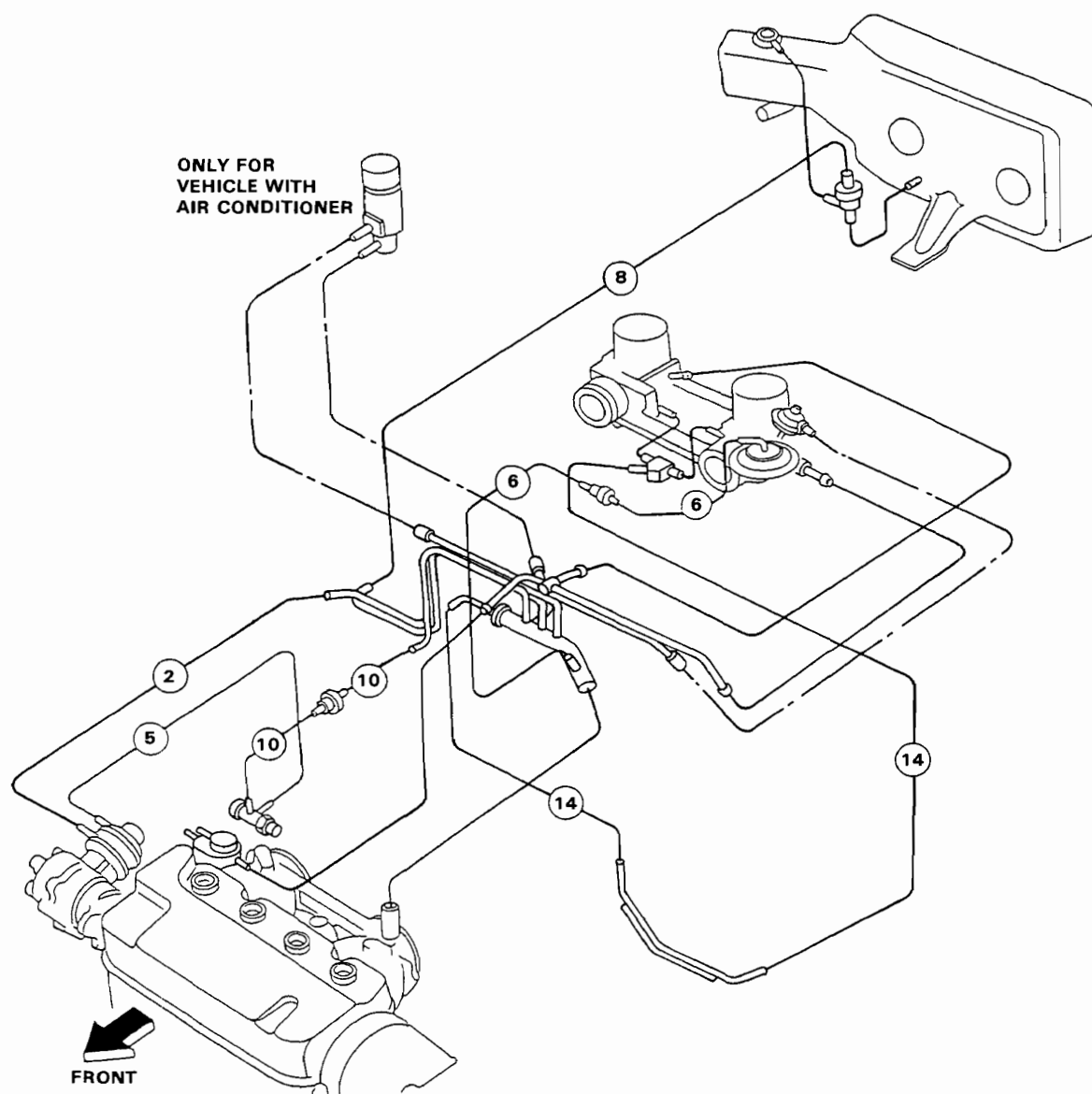


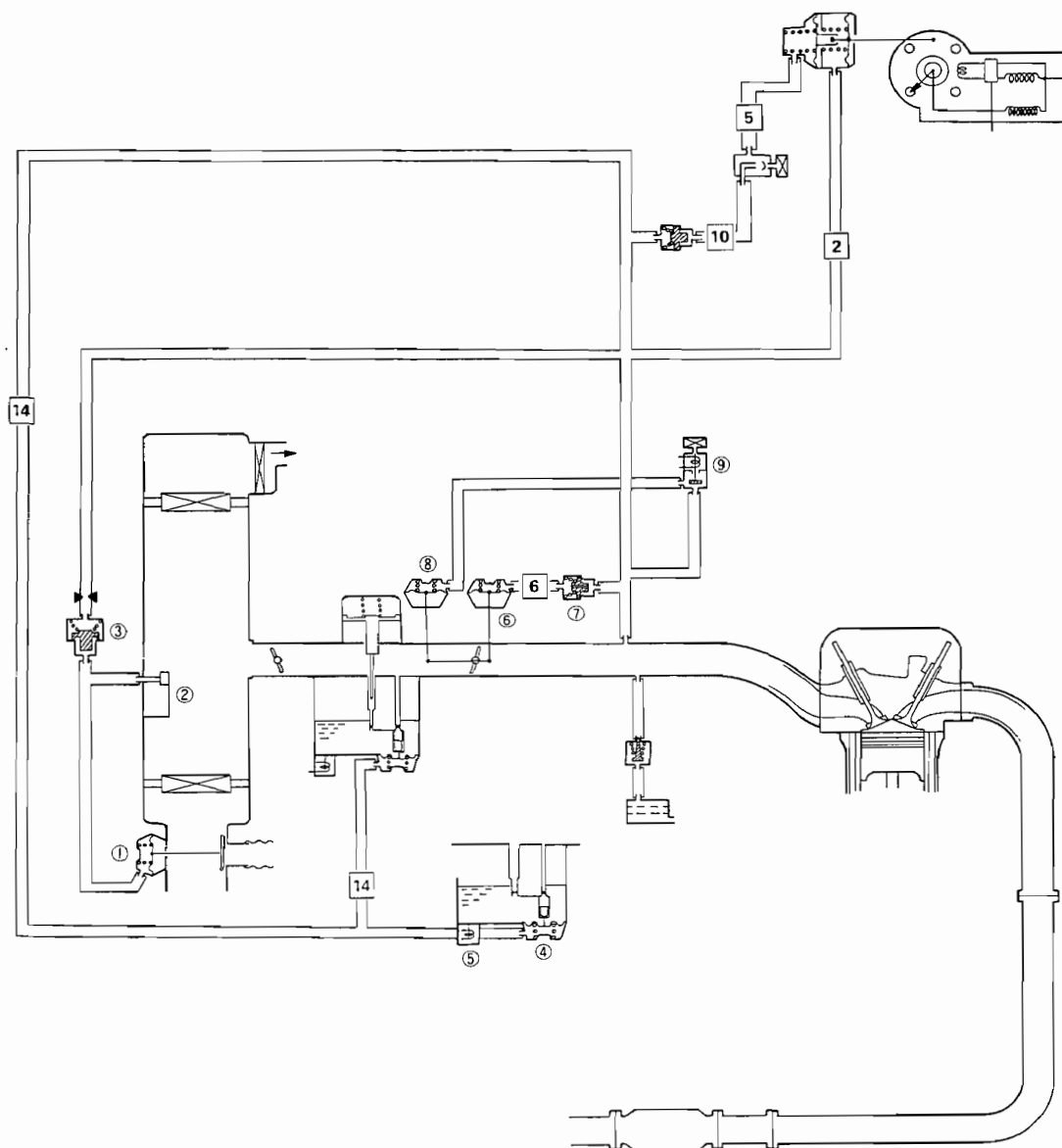


# System Descriptions

## Vacuum Connections

---





- 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

# 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 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	CARBURETOR					FUEL SUPPLY	
			IDLE SPEED/ MIXTURE	IDLE CONTROL	MANUAL CHOKE/ FAST IDLE SYSTEM	POWER VALVE	PRIMARY SLOW/ MIXTURE CUT-OFF SOLENOID VALVE		ACCELE- RATOR PUMP
SYMPTOM			12	7	14	10	11	—	21
ENGINE WON'T START							②		①
DIFFICULT TO START ENGINE WHEN COLD	WHEN COLD				①		①	②	
	WHEN WARM			②			①		
IRREGULAR IDLING	WHEN COLD FAST IDLE OUT OF SPECIFICATION				①		②		
	WHEN WARM ENGINE SPEED TOO HIGH	①	②	③					
	WHEN WARM ENGINE SPEED TOO LOW	①	①						
	ROUGH IDLE/ FLUCTUATION	①	②						
FREQUENT STALLING	WHILE WARMING UP			③	②		①		③
	AFTER WARMING UP	①	②				①		③
POOR PERFORM- ANCE	MISFIRE OR ROUGH RUNNING				①				②
	LOSS OF POWER					①		③	②
	AFTERBURN		①						
	HESITATION/ SURGE	①						②	



## Idle Control System

### Testing

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

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Check the idle speed with headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

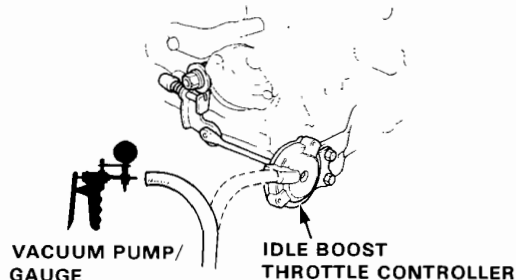
Idle speed should be:

Manual	$750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$
Automatic	$700 \pm 50 \text{ min}^{-1} \text{ (rpm)}$ (except "N" or "P")

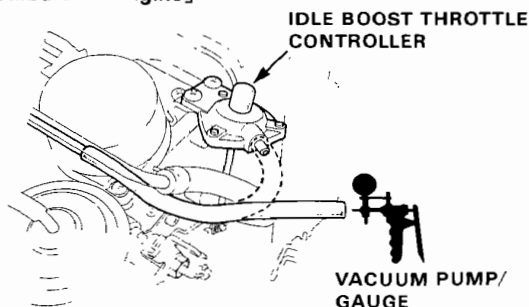
- If OK, go to step 4.
  - If not, go to step 3.
3. Disconnect the vacuum hose from the idle boost throttle controller and check the vacuum.

There should be no vacuum.

### [1-Carbureted Engine]



### [2-Carbureted Engine]



- If there is no vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.
- If there is vacuum, go to troubleshooting (page 6-8).

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

Idle speed should be:  $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$

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

There should be vacuum.

- If there is vacuum, check the throttle valve shaft for binding or sticking and replace the idle boost throttle controller.
- If there is no vacuum, go to troubleshooting (page 6-8).

(cont'd)

# Carburetor

## Idle Control System

### Troubleshooting Flow Chart A/C Idle Boost Solenoid Valve

Inspection of A/C Idle Boost Solenoid Valve.

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

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

Start the engine.

Apply vacuum.

Does solenoid valve hold vacuum?

NO

Disconnect the connector near the solenoid valve.

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

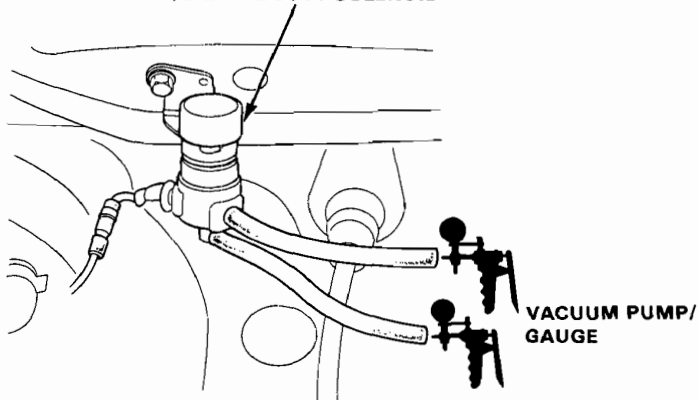
YES

Turn the A/C switch ON.

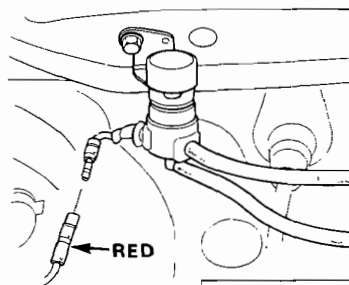
Apply vacuum.

(To page 6-9)

A/C IDLE BOOST SOLENOID VALVE



VACUUM PUMP/ GAUGE



Is there voltage?

YES

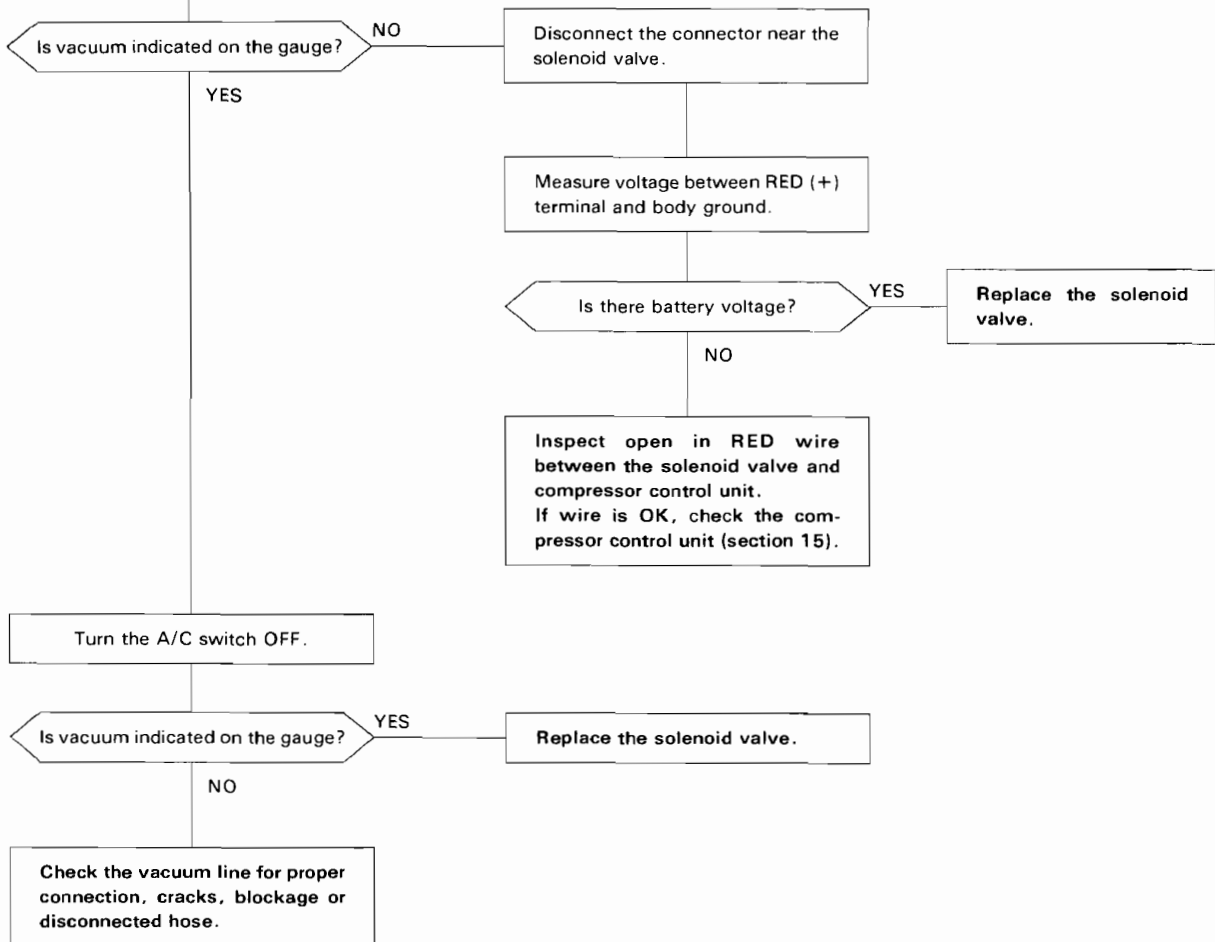
Check the compressor control unit .

NO

Replace the solenoid valve.



(From page 6-8)

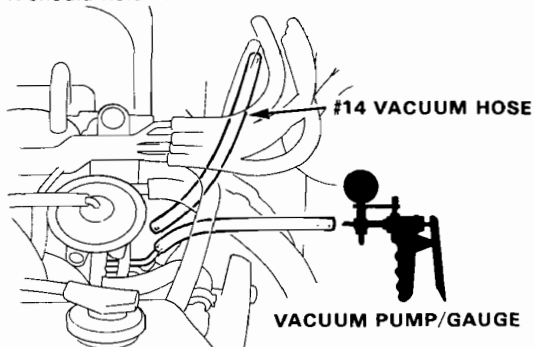


# Carburetor

## Power Valve

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

It should hold vacuum.

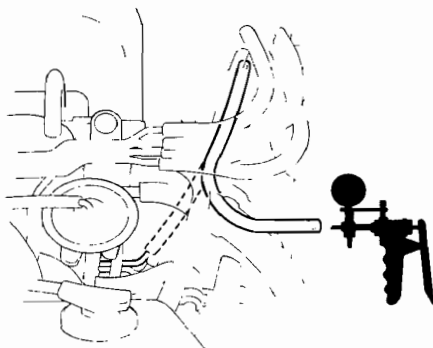


- If it does not hold vacuum, replace the diaphragm and retest (page 6-18).
2. Start the engine and disconnect the #14 vacuum hose from the vacuum hose manifold, and connect a vacuum pump.

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

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

There should be vacuum.



- If not: check the vacuum hose for proper connection, cracks, blockage or disconnected hose.



## Primary Slow Mixture Cut-off Solenoid Valve

### Troubleshooting Flow Chart Primary Slow Mixture Cut-off Solenoid Valve

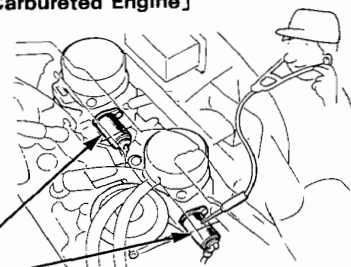
Inspection of Primary Slow Mixture Cut-off Solenoid Valve.

Turn the ignition switch ON.

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

[2-Carbureted Engine]

PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE



Does the solenoid valve click?

NO

Turn the ignition switch OFF.

YES

Solenoid valve is OK.

Disconnect the 8P connector.

Turn the ignition switch ON.

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

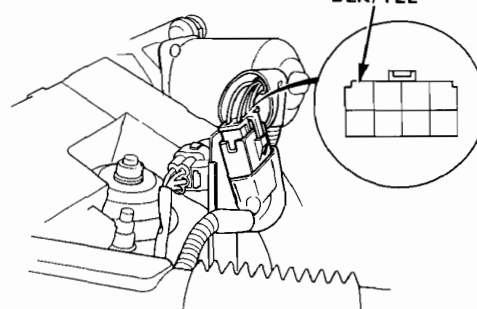
Is there battery voltage?

YES

NO

Repair open or short in BLK/YEL wire between the 8P connector and the ignition switch as well as No. 14 fuse.

BLK/YEL



Repair open or short in BLK/YEL wire between the solenoid valve and the 8P 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.



# Carburetor

## Idle Speed/Mixture

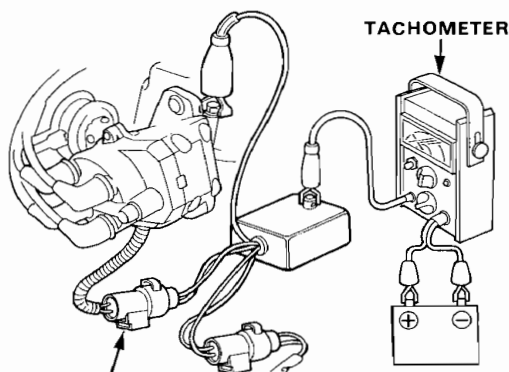
### NOTE:

- 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 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

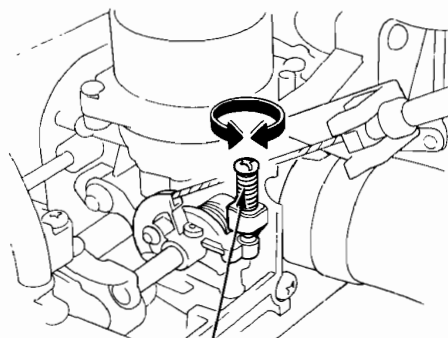
3. Check the idle speed with no load.

Idle speed should be:

Manual	750 ± 50 min <sup>-1</sup> (rpm)
Automatic	700 ± 50 min <sup>-1</sup> (rpm)

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

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

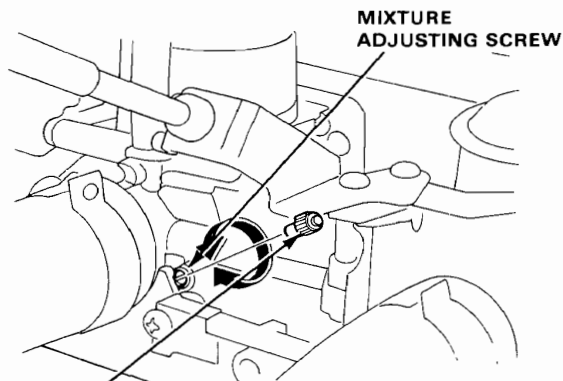


THROTTLE  
STOP SCREW

5. Check specification for idle CO with no load.

Specified CO %: below 0.1 %

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



HOLE CAP

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

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



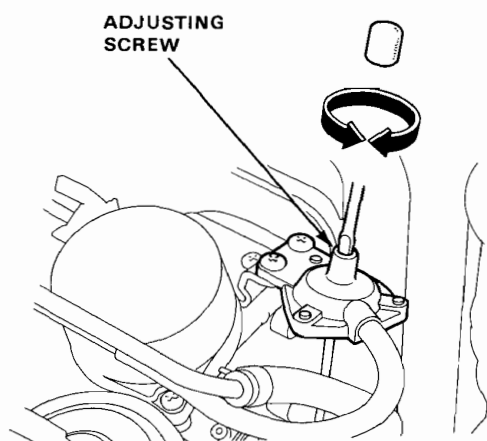
7. Install the hole plug.

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

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

**Idle speed should be:  $750 \pm 50 \text{ min}^{-1} \text{ (rpm)}$**

If not, adjust the idle speed by turning the adjusting screw.



# Carburetor

## Float Level

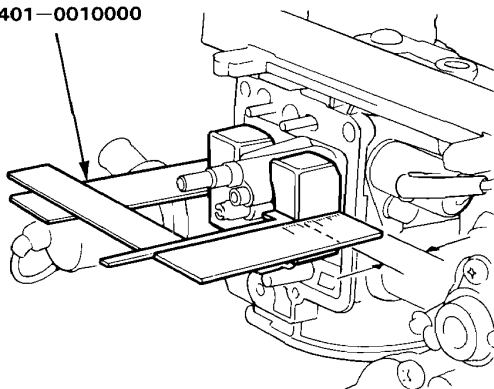
### Inspection

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

1. Remove the carburetors (page 6-16).
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.

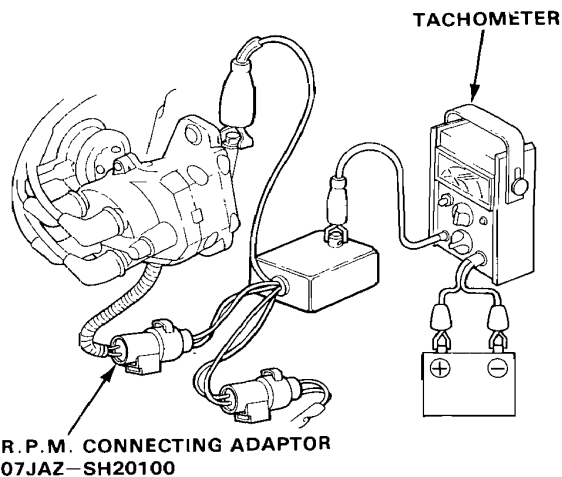
Float Level:  $16 \pm 1$  mm ( $0.6 \pm 0.04$  in.)

FLOAT LEVEL GAUGE  
07401-0010000

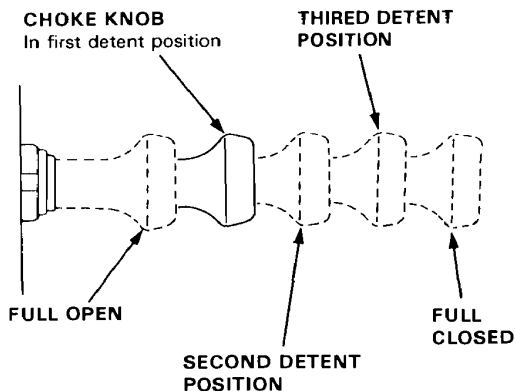


## Manual Choke / Fast Idle

1. Connect a tachometer.



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



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

# Carburetor

## Float Level

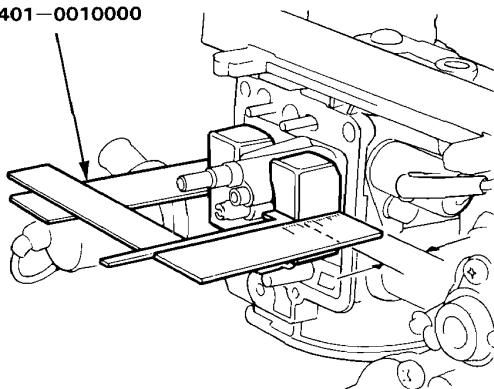
### Inspection

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

1. Remove the carburetors (page 6-16).
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.

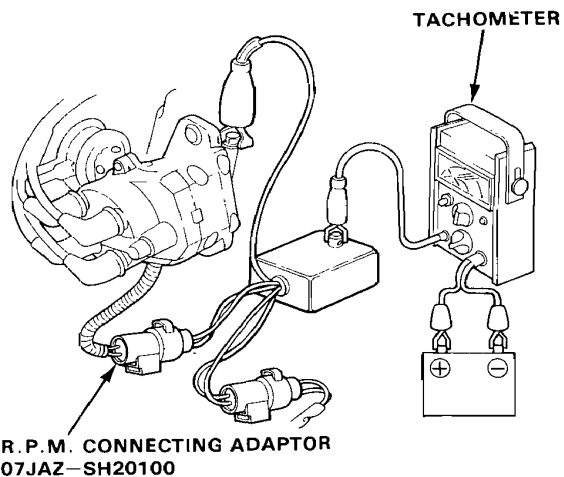
Float Level:  $16 \pm 1$  mm ( $0.6 \pm 0.04$  in.)

FLOAT LEVEL GAUGE  
07401-0010000

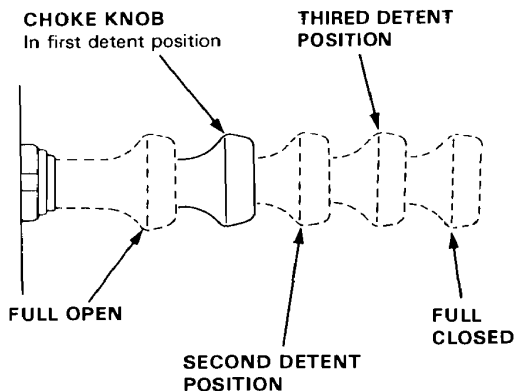


## Manual Choke / Fast Idle

1. Connect a tachometer.



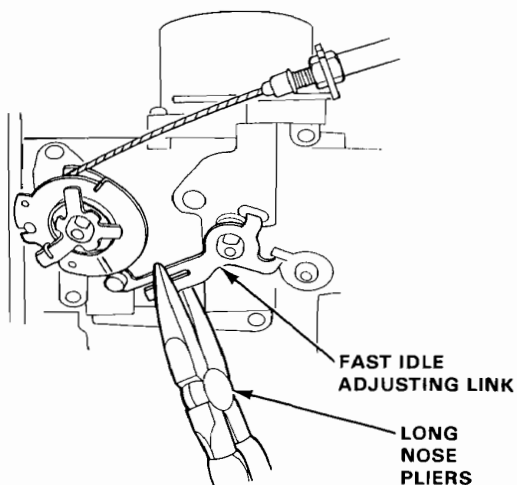
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
3. Place choke control knob in first detent position.



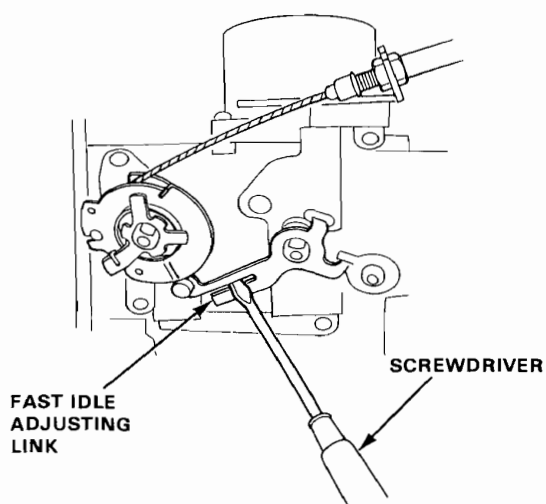
Fast idle should be:  $1,500-2,500 \text{ min}^{-1}$  (rpm)



- 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.

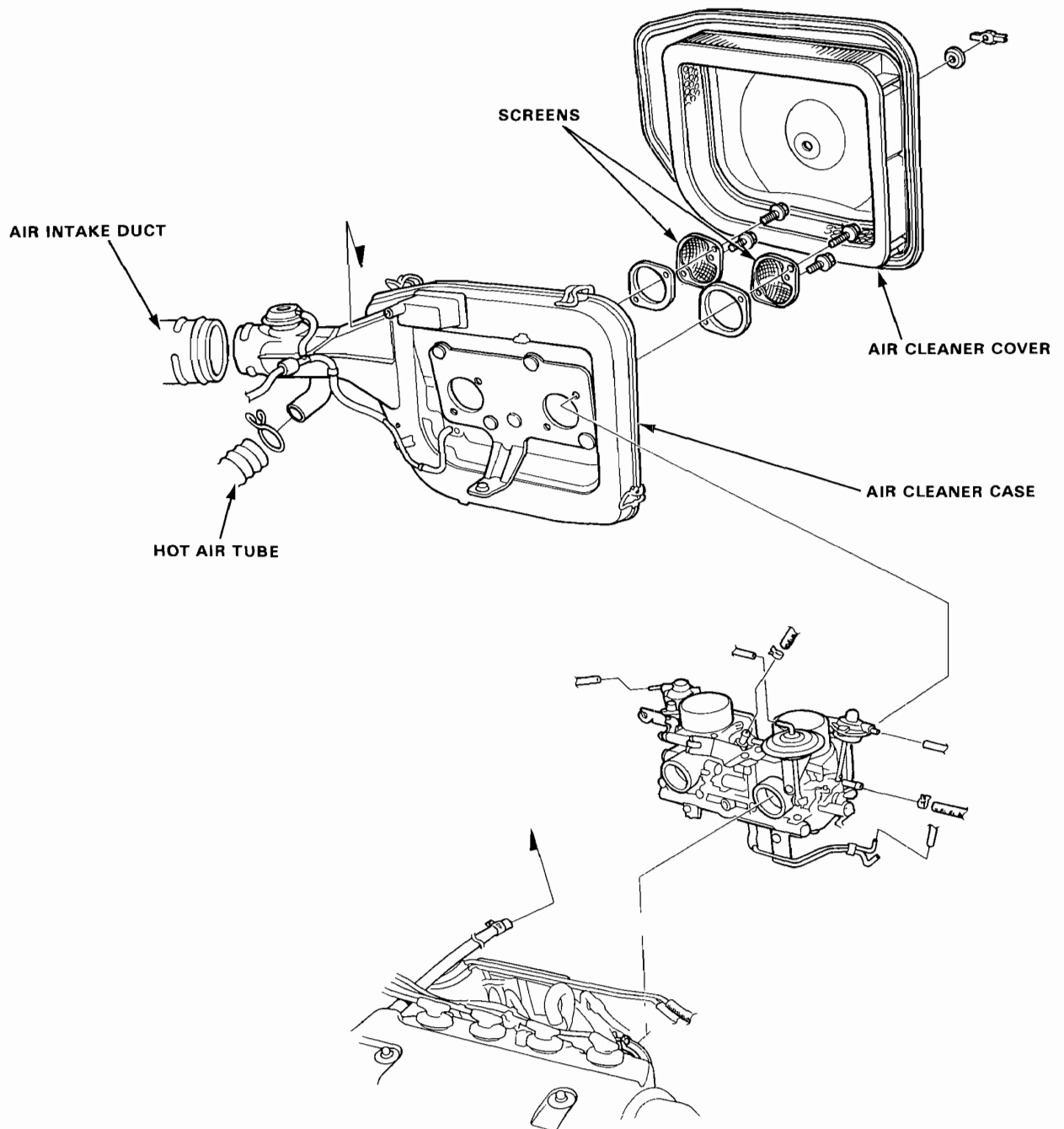


- If the engine speed is too low, insert a screwdriver in the fast idle adjusting link slot and widen the slot. Make adjustments in small increments.



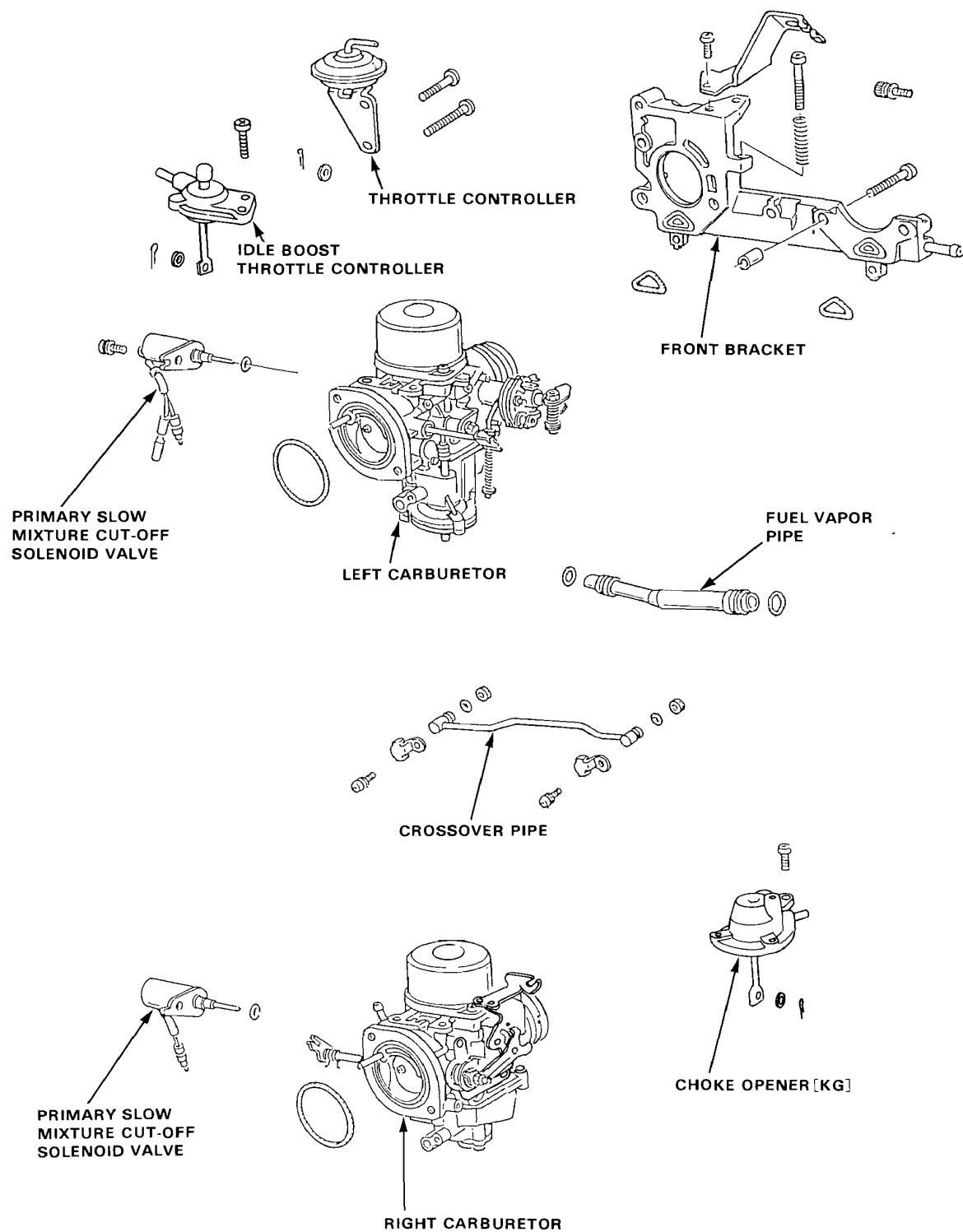
# Carburetor

## Removal



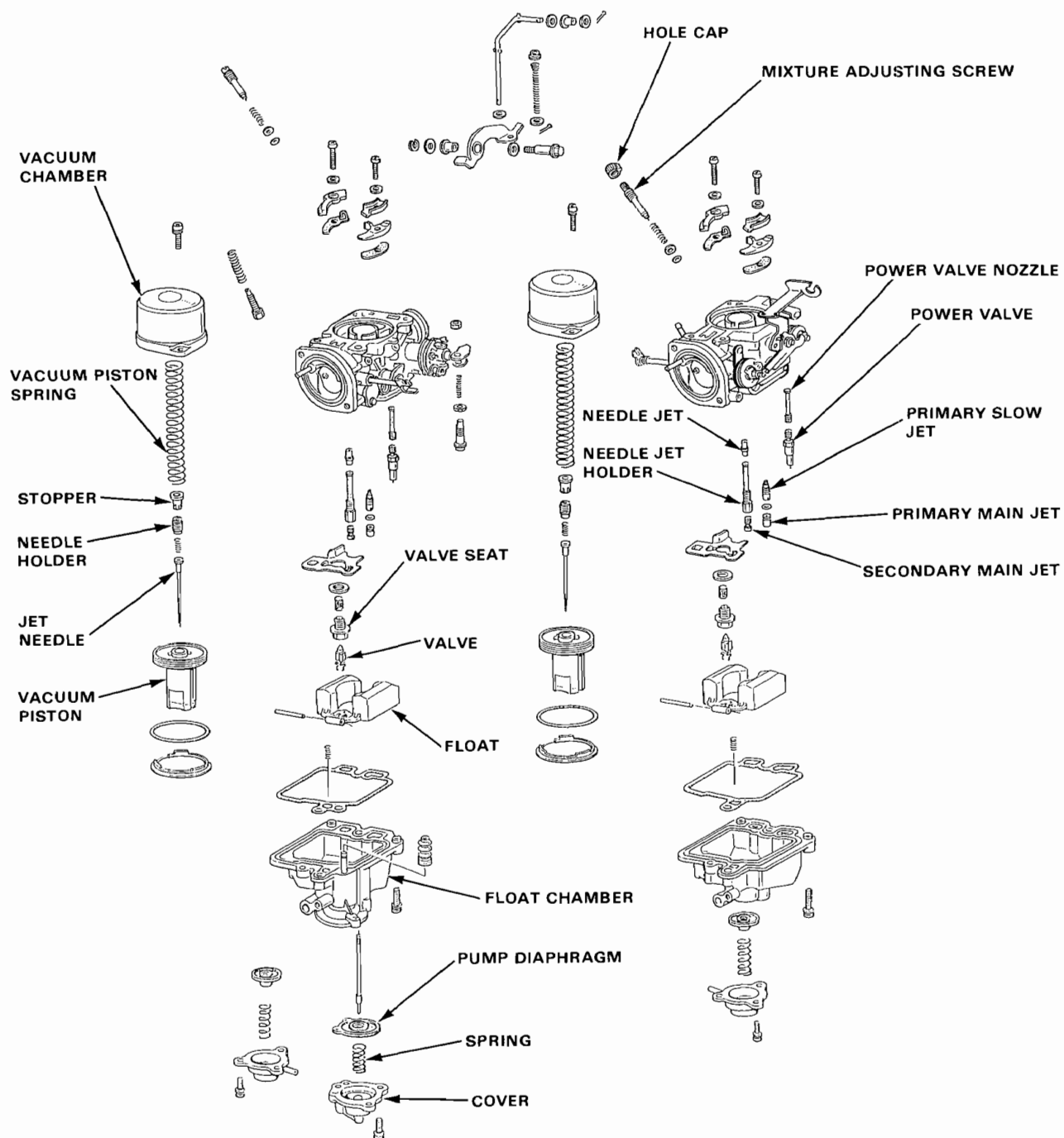


## Replacement



(cont'd)

## Replacement (cont'd)

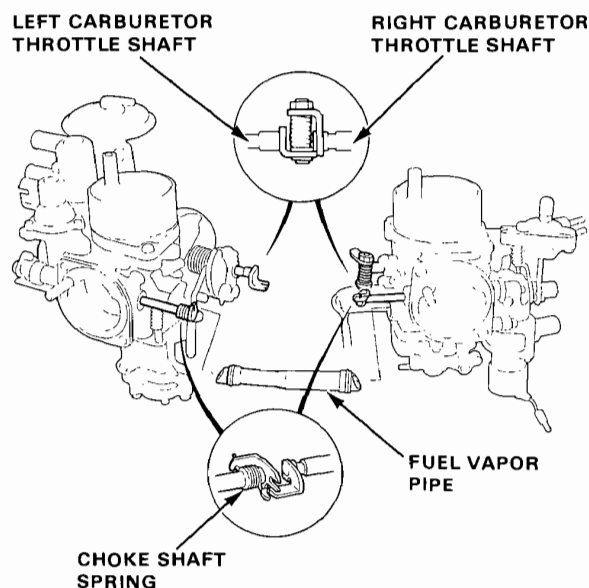






## Reassembly

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

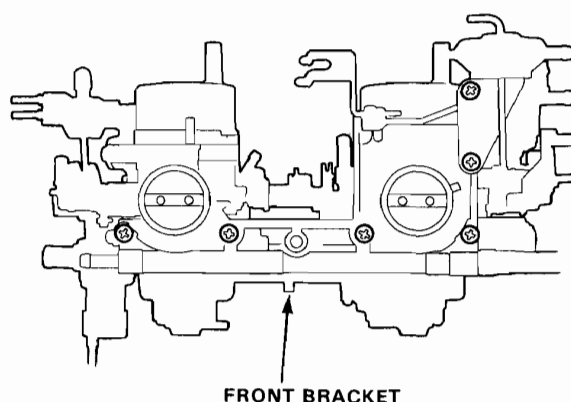


4. Connect the choke shaft spring.
5. Install the front bracket, with new gaskets, but don't tighten its screws yet.

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

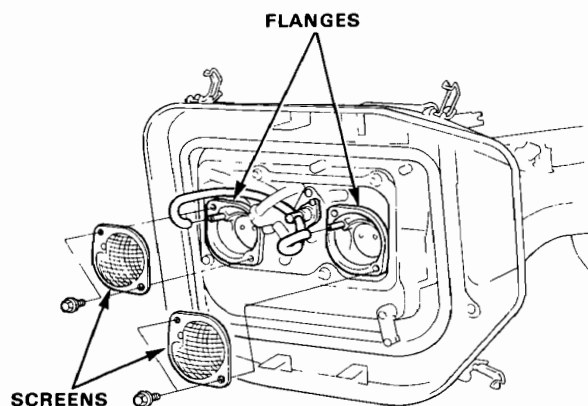
6. Check that the choke and throttle shafts move smoothly without binding.

7. Tighten the screws in the sequence shown.

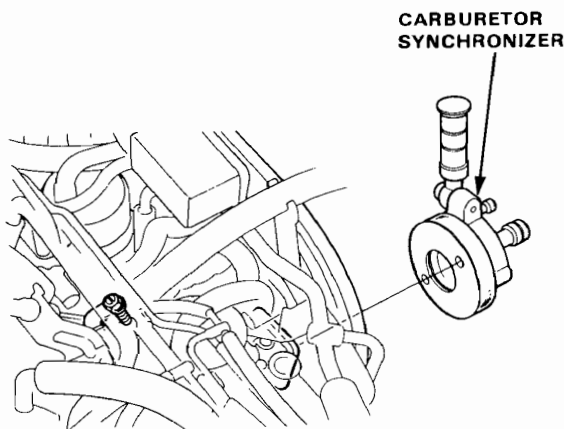


## Synchronization [2-Carbureted Engine]

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



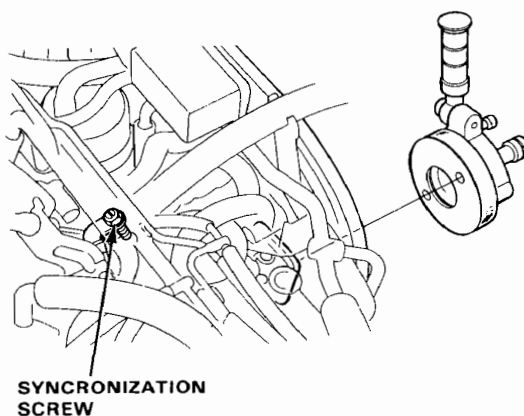
3. Install the carburetor synchronizer.



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

5. Measure the air flow using the carburetor synchronizer.

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



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

# Fuel Supply System



## 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 FILTERS	FUEL PUMP	FUEL TANK	CONTAMI- NATED FUEL
SYMPTOM			22	22	24	*
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 Supply System

## Fuel Filters

### Replacement

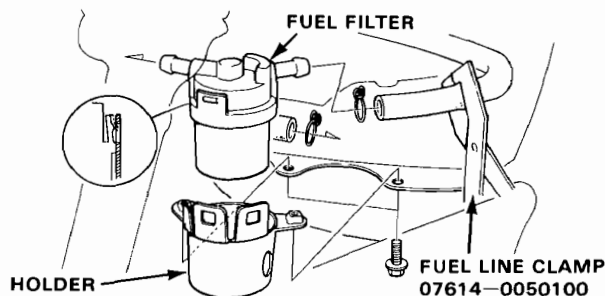
Replace both front and rear filters at every 2 years or 40,000 km (24,000 miles) whichever comes first.

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

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.



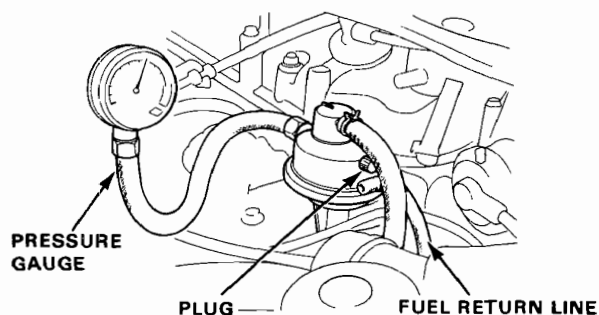
## Fuel Pump

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



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

**Pressure should be:**

6.8–22.6 kPa (0.07–0.23 kg/cm<sup>2</sup>, 1.0–3.2 psi)

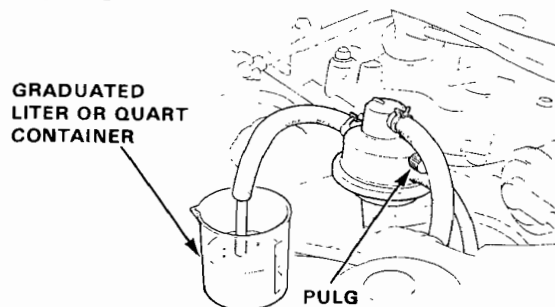
- If gauge shows at least 6.8 kPa (0.07 kg/cm<sup>2</sup>, 1.0 psi), go on to step 4.
- If gauge shows less than 6.8 kPa (0.07 kg/cm<sup>2</sup>, 1.0 psi), replace pump and re-test.

4. Remove pressure gauge and hold a graduated container under the hose.
5. Start the engine, and allow it to idle for 60 seconds, then stop the engine.

**Fuel volume should be 833.3 cm<sup>3</sup> (27.9 oz).**

- If fuel volume is less than specified, replace the fuel pump and re-test.

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



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

# Fuel Supply System

## Fuel Filters

### Replacement

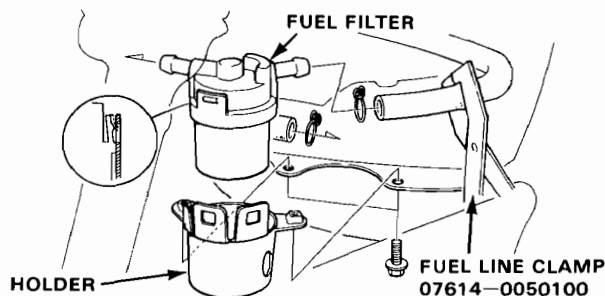
Replace both front and rear filters at every 2 years or 40,000 km (24,000 miles) whichever comes first.

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

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.



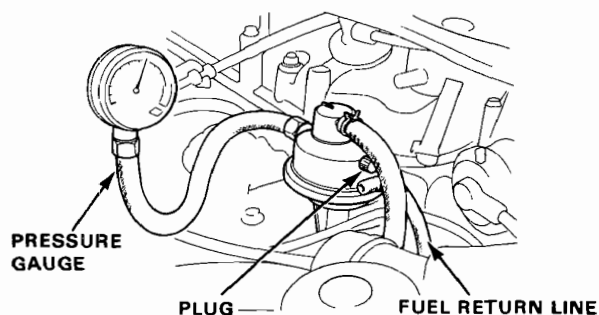
## Fuel Pump

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



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

**Pressure should be:**

6.8–22.6 kPa (0.07–0.23 kg/cm<sup>2</sup>, 1.0–3.2 psi)

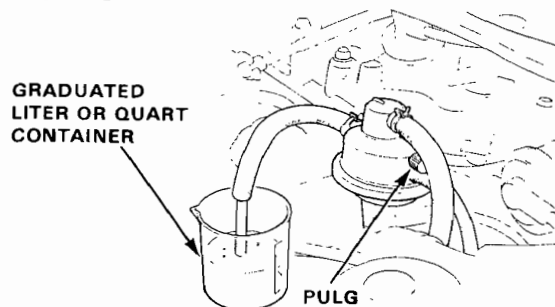
- If gauge shows at least 6.8 kPa (0.07 kg/cm<sup>2</sup>, 1.0 psi), go on to step 4.
- If gauge shows less than 6.8 kPa (0.07 kg/cm<sup>2</sup>, 1.0 psi), replace pump and re-test.

4. Remove pressure gauge and hold a graduated container under the hose.
5. Start the engine, and allow it to idle for 60 seconds, then stop the engine.

**Fuel volume should be 833.3 cm<sup>3</sup> (27.9 oz).**

- If fuel volume is less than specified, replace the fuel pump and re-test.

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



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

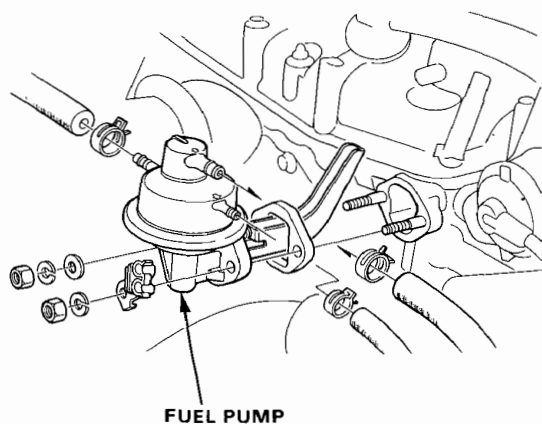


## Replacement

**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 Supply System

## Fuel Tank

### Replacement

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

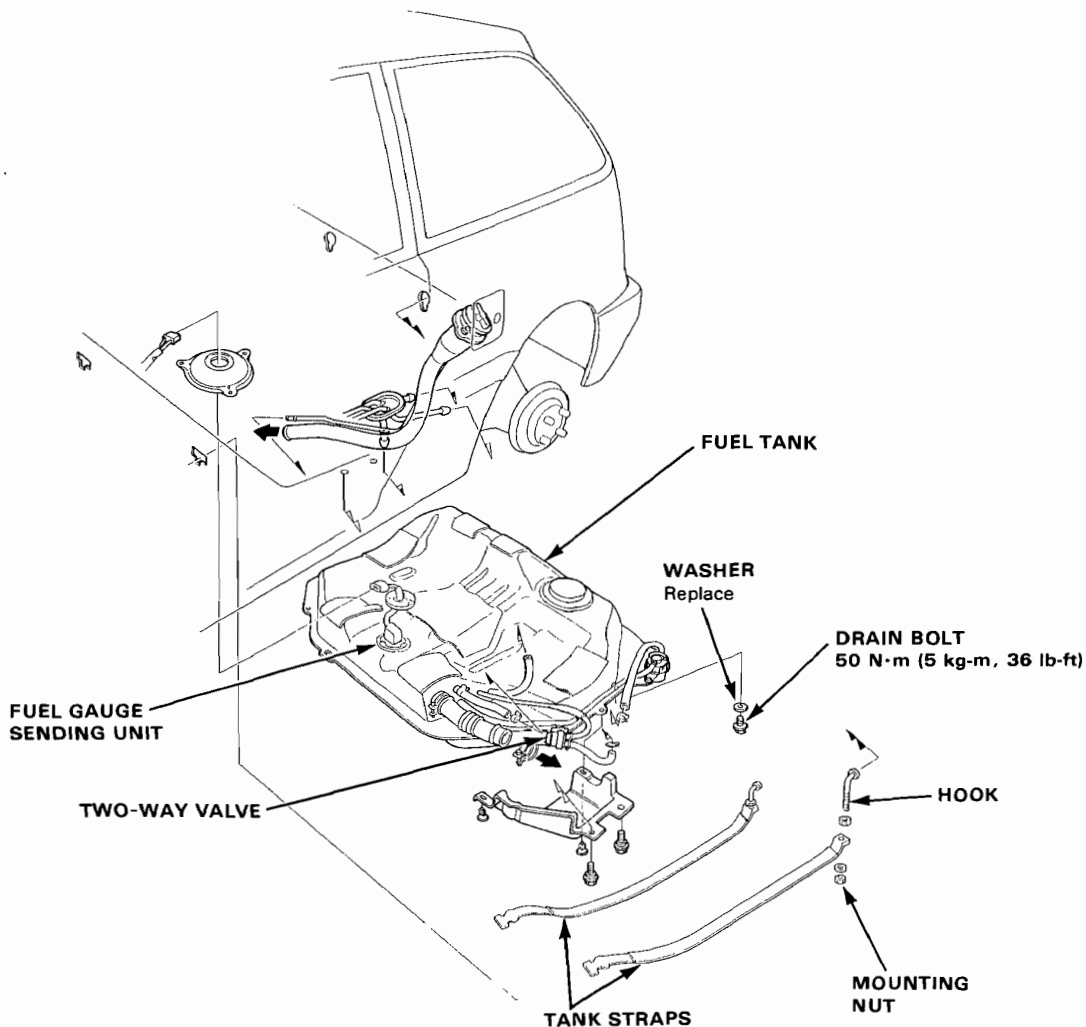
1. Block front wheels. Jack up the rear of the car and support with jackstands.
2. Remove the drain bolt and drain the fuel into an approved container.
3. Disconnect the fuel gauge sending unit connector.
4. Disconnect the hoses.

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

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

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

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



# Air Intake System



## Symptom-to-sub System Chart

- NOTE:
- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
  - Before starting inspection, check that oher 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
		26	29
SYMPTOM			
LOSS OF POWER			①
AFTERBURN			①
HESITATION/SURGE			①

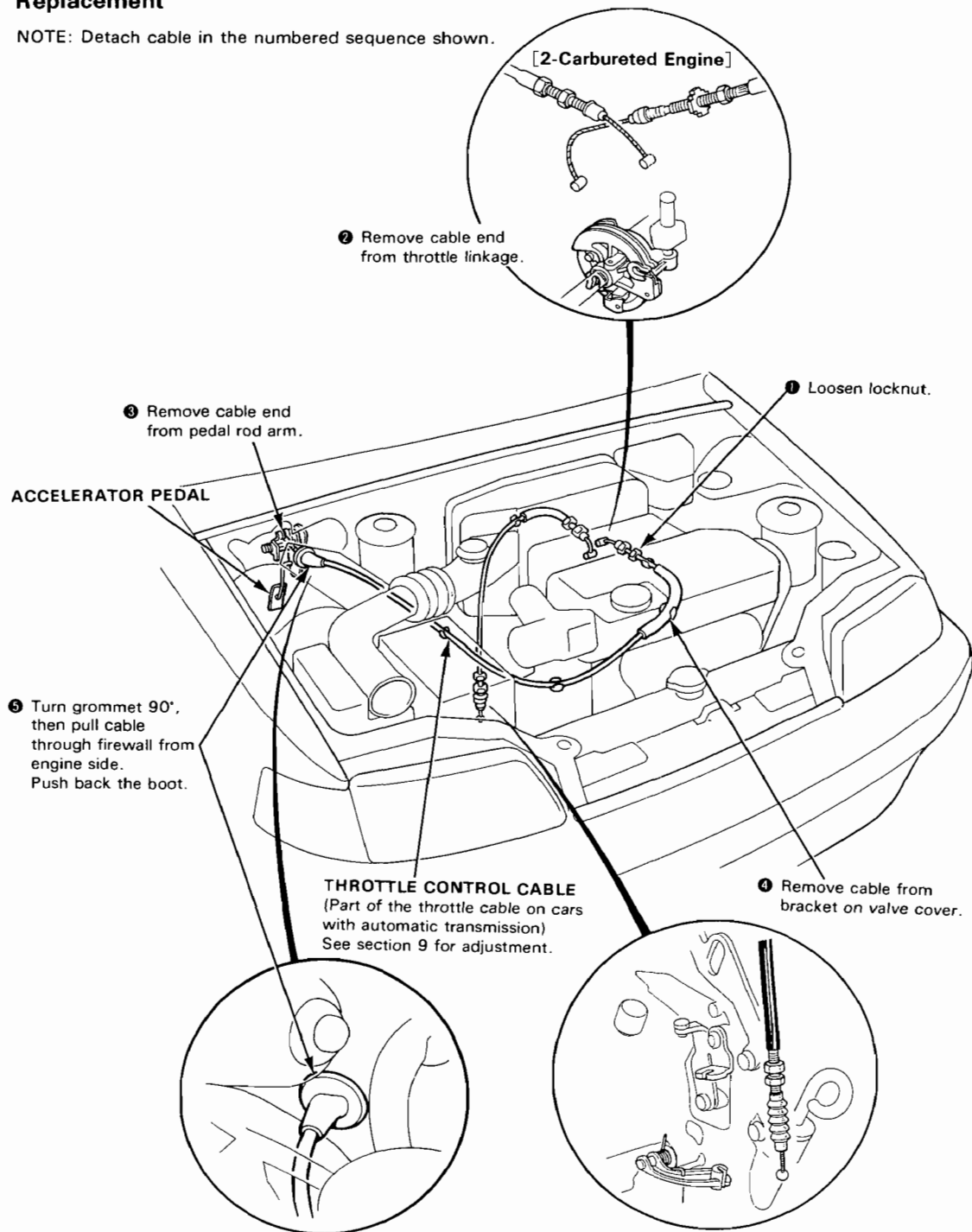


# Air Intake System

## Throttle Cable

### Replacement

NOTE: Detach cable in the numbered sequence shown.

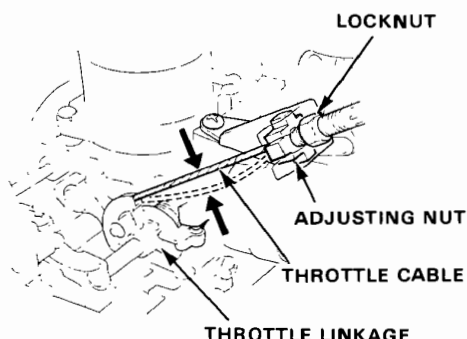


- ⑥ Install the cable in reverse order of removal.  
Apply sealant to grommet mating surface, when installing cable.



## 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.)

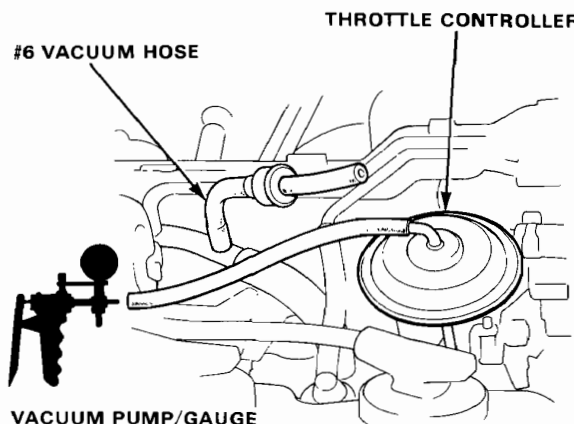


4. If deflection is not within specs, loosen locknut and turn adjusting nut until you can deflect cable as specified. Then tighten locknut.
5. With cable properly adjusted, check throttle valve to be sure it opens fully when you push accelerator pedal to the floor.

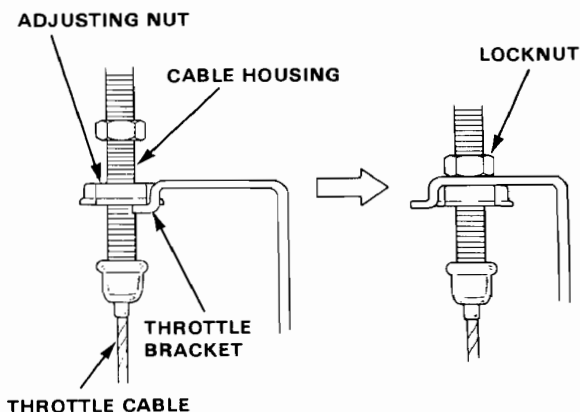
**CAUTION:** Check throttle valve to be sure it returns to idle position whenever you release accelerator.

## Installation

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



2. Fully open the throttle valve, then install the throttle cable in the throttle linkage and install the cable housing in the throttle bracket.
3. Warm up the engine to normal operating temperature (the cooling fan comes on).
4. Remove the cable housing from the throttle bracket, set the adjusting nut on the throttle bracket. Adjust the 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.

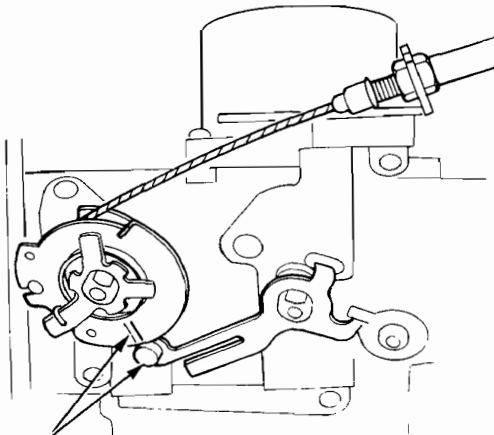


6. Disconnect the vacuum pump and connect the #6 vacuum hose.

# Air Intake System

## Choke Cable

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



**ADJUSTING  
MARKS**

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



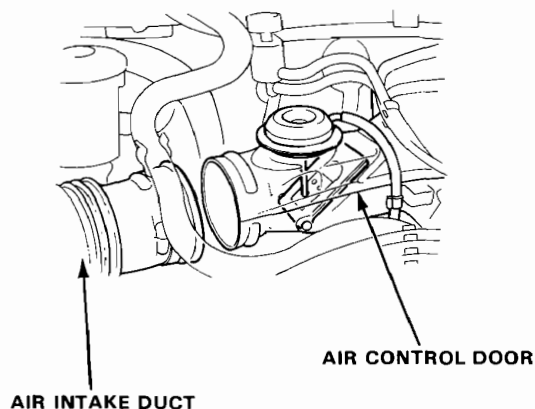
## Intake Air Control System

### Testing (COLD ENGINE)

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

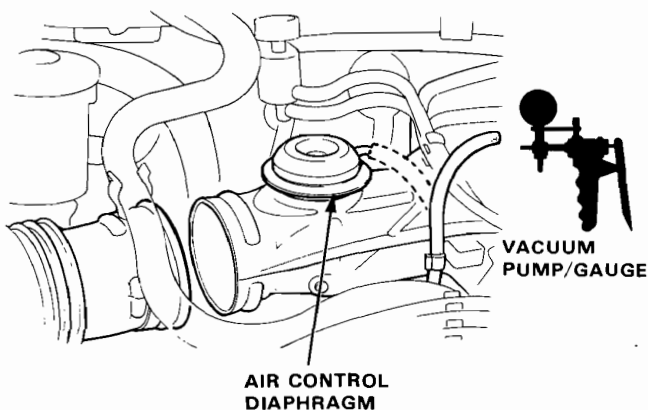
1. Disconnect the air intake duct and start the engine.

The air control door should rise.



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

There should be vacuum.

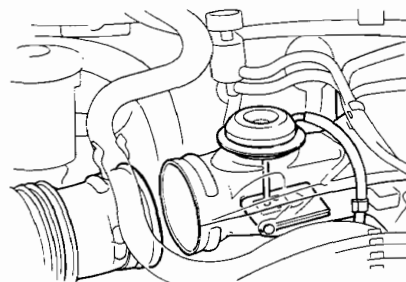


- If there is vacuum, replace the air control diaphragm and retest.
- If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve.

### Testing (HOT ENGINE)

1. Start the engine and warm up to normal 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 and retest.

# Emission Control System

## Tailpipe Emissions

### Inspection

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

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

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

**Specified CO%; 1.0%**

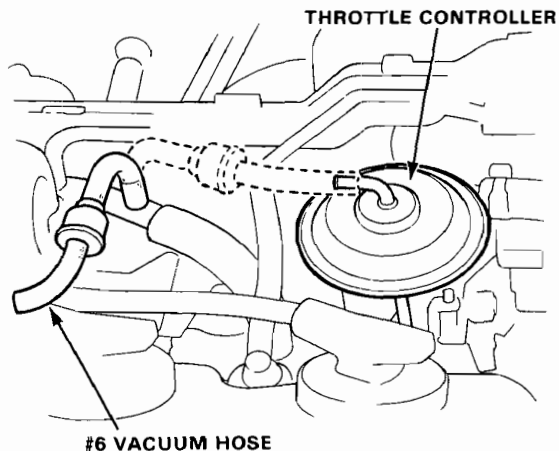
## Throttle Control System

### Testing (HOT ENGINE)

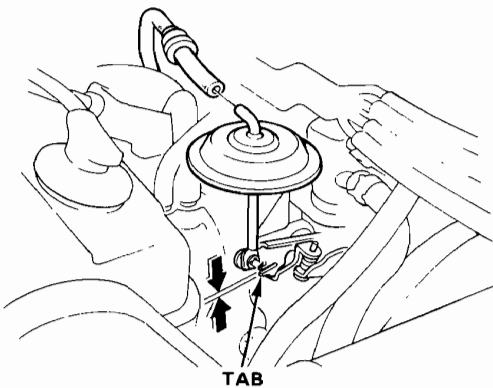
1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #6 vacuum hose from the throttle controller and check the engine speed.

**Engine speed should be:**

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

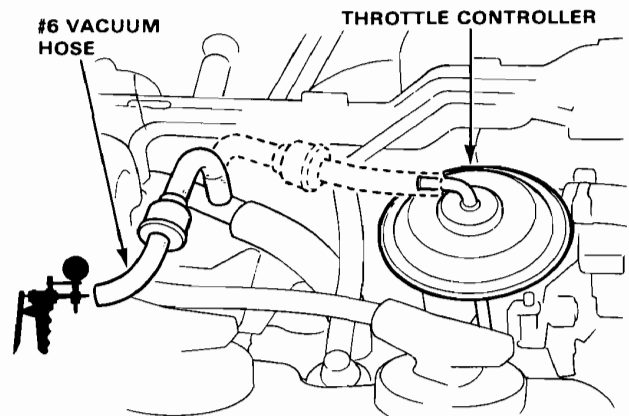


- If the engine speed is excessively high: adjust by bending TAB.



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

There should be vacuum.



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

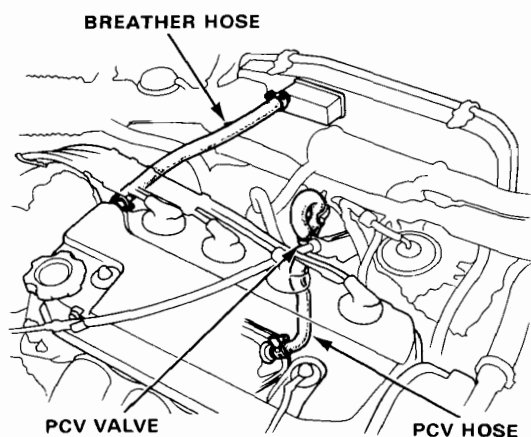
Idle speed should be within specification (page 6-53).

# Emission Control System

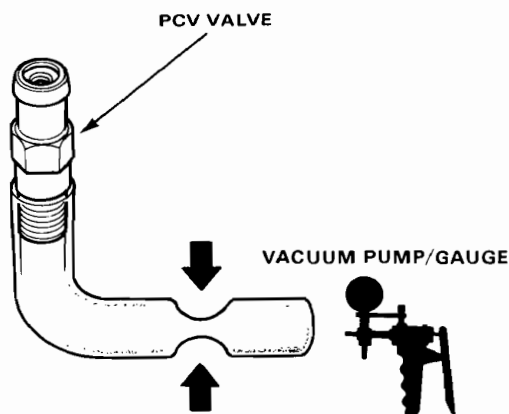
## Positive Crankcase Ventilation

### PCV Valve Test

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



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



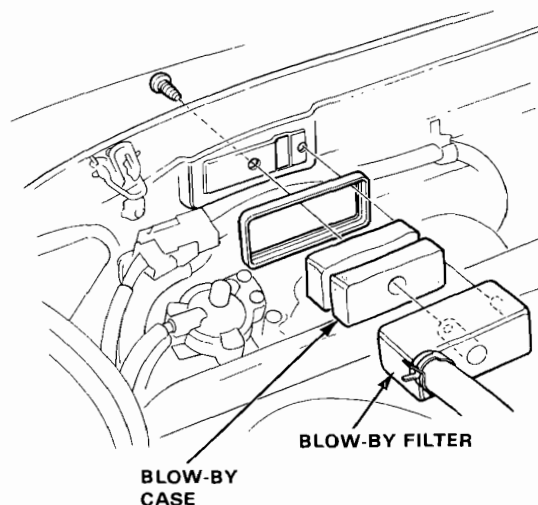
3. Pinch the hose as illustrated above, apply 400–500 mmHg (16–20 in. Hg) of vacuum, unpinch the hose and promptly check for a clicking sound at the PCV valve.

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

### Blow-by Filter Test

Inspect the condition of the blow-by filter.

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

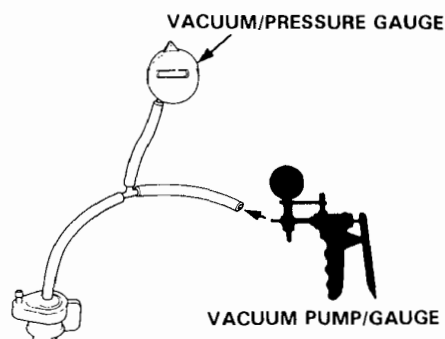




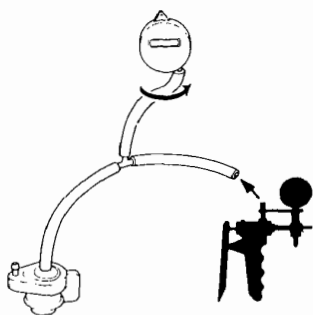
## Two-Way Valve

[Ex. KY, KQ]

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



3. Slowly draw a vacuum while watching the gauge. Vacuum should stabilize at 15 to 30 mmHg (0.6 to 1.2 in. Hg).
  - If vacuum stabilizes momentarily (Two-way Valve opens) between 15 and 30 mmHg (0.6 and 1.2 in. Hg), go on Step 4.
  - If vacuum stabilizes (valve opens) below 15 mmHg or above 30 mmHg (1.2 in.Hg), install new valve and retest.
4. Move vacuum pump hose from vacuum to pressure fitting, and move vacuum gauge hose from vacuum to pressure side as shown.



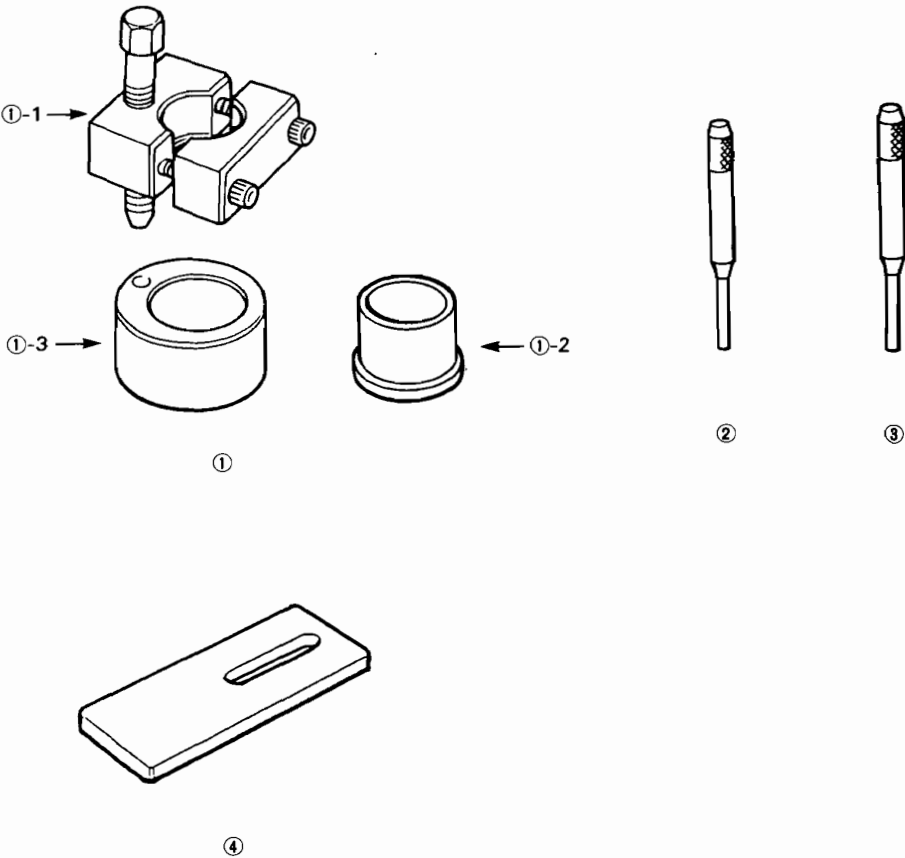
5. Slowly pressurize the vapor line while watching the gauge. Pressure should stabilize at 10 to 25 mmHg (0.4 to 1.0 in. Hg).
  - If pressure momentarily stabilizes (Valve opens) at 10 to 25 mmHg (0.4 to 1.0 in. Hg), the valve is OK.
  - If pressure stabilizes below 10 mmHg (0.4 in. Hg) or above 25 mmHg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



# Special Tools

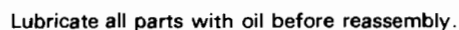
## Special Tools

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	07979-PJ40001	Magnet Stand Base	1	

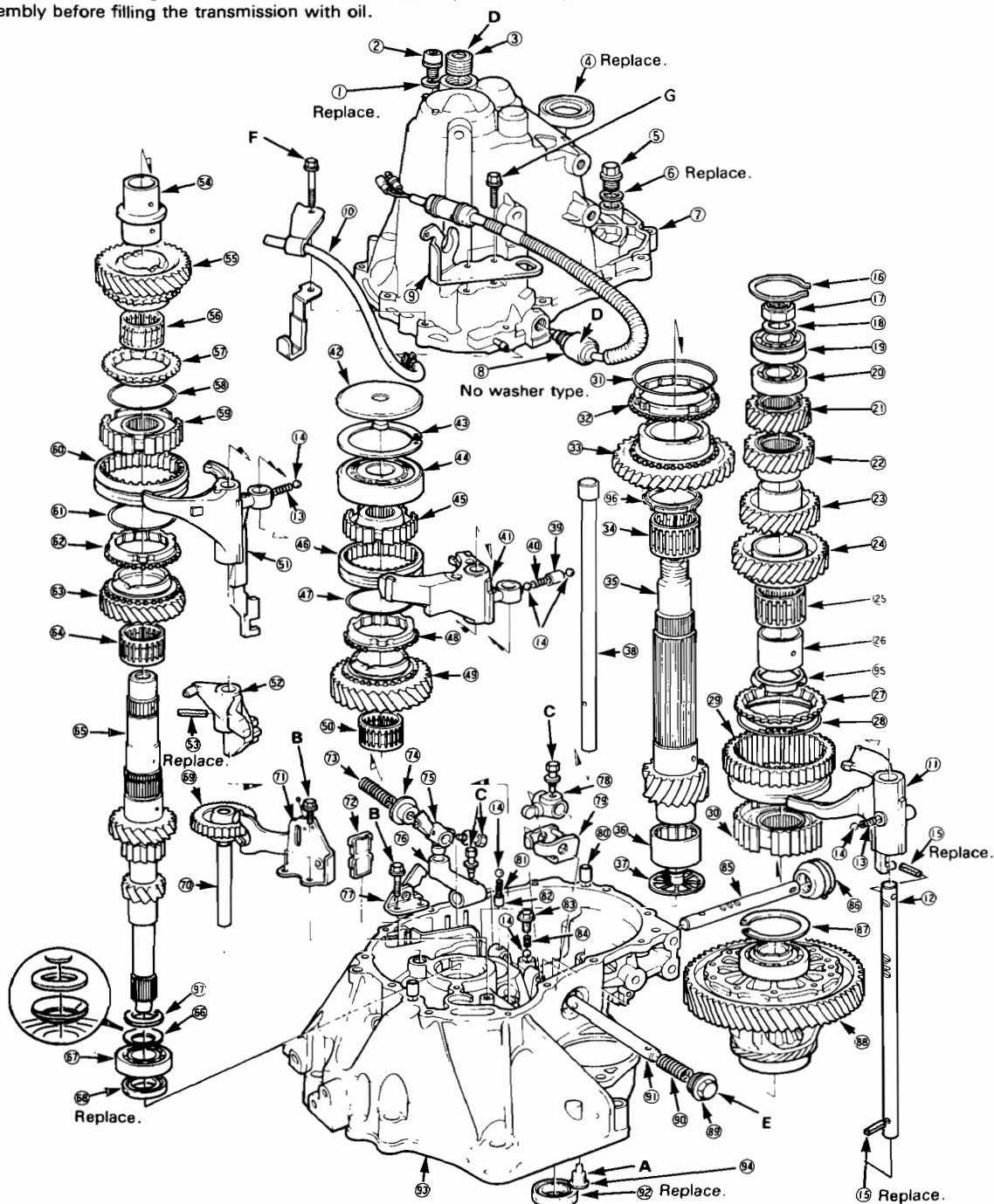


## Illustrated Index

Refer to the drawing below for the transmission disassembly/reassembly.  
Clean all parts thoroughly in solvent and dry with compressed air.



**NOTE:** This transmission uses no gaskets between the major housings; use PART NO. DY746-99986 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)

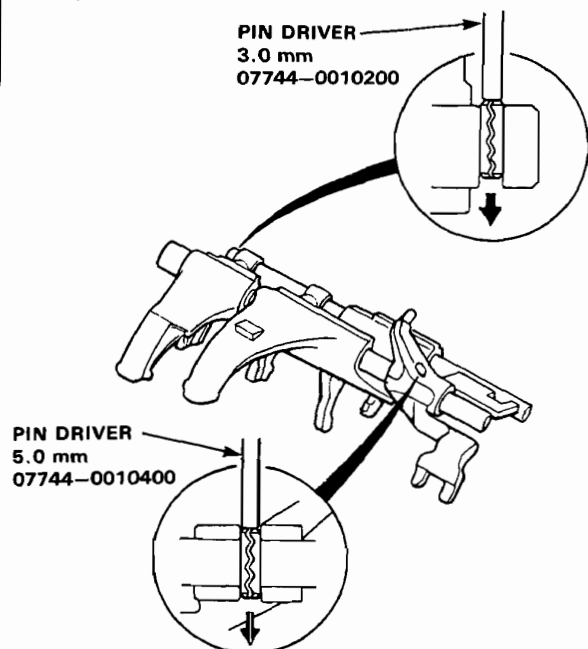
NOTE: Always clean the magnet ⑦② whenever the transmission housing is disassembled.

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>① SEALING WASHER</li> <li>② OIL DRAIN PLUG<br/>40 N·m (4.0 kg-m, 29 lb-ft)</li> <li>③ 32 mm SEALING BOLT</li> <li>④ OIL SEAL</li> <li>⑤ OIL FILLER PLUG<br/>45 N·m (4.5 kg-m, 33 lb-ft)</li> <li>⑥ SEALING WASHER</li> <li>⑦ TRANSMISSION HOUSING</li> <li>⑧ BACK-UP LIGHT SWITCH<br/>25 N·m (2.5 kg-m, 18 lb-ft)</li> <li>⑨ CLUTCH CABLE BRACKET</li> <li>⑩ BREATHER TUBE</li> <li>⑪ 1st/2nd SHIFT FORK</li> <li>⑫ 1st/2nd SHIFT FORK SHAFT</li> <li>⑬ SHIFT FORK SPRING</li> <li>⑭ STEEL BALL</li> <li>⑮ SPRING PIN</li> <li>⑯ SNAP RING</li> <li>⑰ COUNTERSHAFT LOCKNUT<br/>110→0→110 N·m (11.0→0→11.0 kg-m,<br/>80→0→80 lb-ft)</li> <li>⑱ WASHER</li> <li>⑲ BALL BEARING<br/>Disassembly, page 8-10<br/>Reassembly, page 8-11</li> <li>⑳ NEEDLE BEARING</li> <li>㉑ COUNTERSHAFT 5th GEAR</li> <li>㉒ COUNTERSHAFT 4th GEAR</li> <li>㉓ COUNTERSHAFT 3rd GEAR</li> <li>㉔ COUNTERSHAFT 2nd GEAR</li> <li>㉕ NEEDLE BEARING</li> <li>㉖ DISTANCE COLLAR</li> <li>㉗ SYNCHRO RING</li> <li>㉘ SYNCHRO SPRING</li> <li>㉙ REVERSE GEAR</li> <li>㉚ SYNCHRO HUB</li> </ul> | <ul style="list-style-type: none"> <li>㉛ SYNCHRO SPRING</li> <li>㉜ SYNCHRO RING</li> <li>㉝ COUNTERSHAFT 1st GEAR</li> <li>㉞ NEEDLE BEARING</li> <li>㉟ COUNTERSHAFT</li> <li>㊱ NEEDLE BEARING</li> <li>㊲ OIL GUIDE PLATE</li> <li>㊳ 5th/REVERSE SHIFT FORK<br/>SHAFT</li> <li>㊴ ROLLER</li> <li>㊵ 5th DETENT SPRING</li> <li>㊶ 5th SHIFT FORK</li> <li>㊷ OIL GUIDE PLATE</li> <li>㊸ THRUST SHIM<br/>Selection, page 8-7</li> <li>㊹ BALL BEARING</li> <li>㊺ SYNCHRO HUB</li> <li>㊻ SYNCHRO SLEEVE</li> <li>㊼ SYNCHRO SPRING</li> <li>㊽ SYNCHRO RING</li> <li>㊾ 5th GEAR</li> <li>㊿ NEEDLE BEARING</li> <li>① 3rd/4th SHIFT FORK</li> <li>② SHIFT PIECE</li> <li>③ SPRING PIN</li> <li>④ SPACER COLLAR</li> <li>⑤ 4th GEAR</li> <li>⑥ NEEDLE BEARING</li> <li>⑦ SYNCHRO RING</li> <li>⑧ SYNCHRO SPRING</li> <li>⑨ SYNCHRO HUB</li> <li>⑩ SYNCHRO SLEEVE</li> <li>⑪ SYNCHRO SPRING</li> <li>⑫ SYNCHRO RING</li> <li>⑬ 3rd GEAR</li> </ul> | <ul style="list-style-type: none"> <li>⑭ NEEDLE BEARING</li> <li>⑮ MAINSHAFT</li> <li>⑯ SPRING WASHER</li> <li>⑰ BALL BEARING</li> <li>⑱ OIL SEAL</li> <li>⑲ REVERSE IDLER GEAR</li> <li>㉑ REVERSE IDLER SHAFT</li> <li>㉒ REVERSE SHIFT HOLDER</li> <li>㉓ MAGNET</li> <li>㉔ REVERSE SELECT SPRING</li> <li>㉕ REVERSE RETURN SELECT</li> <li>㉖ SHIFT ARM C</li> <li>㉗ SHIFT ARM A</li> <li>㉘ REVERSE LOCK CAM</li> <li>㉙ SHIFT ARM B</li> <li>㉚ INTERLOCK</li> <li>㉛ DOWEL PIN</li> <li>㉜ SPRING</li> <li>㉝ SPRING COLLAR</li> <li>㉞ SPRING BOLT</li> <li>㉟ SPRING</li> <li>㊱ SHIFT ROD</li> <li>㊲ BOOT</li> <li>㊳ SHIM</li> <li>㊴ DIFFERENTIAL ASSEMBLY</li> <li>㊵ 28 mm PLUG</li> <li>㊶ 1st/2nd SELECT SPRING</li> <li>㊷ SHIFT ARM SHAFT</li> <li>㊸ OIL SEAL</li> <li>㊹ CLUTCH HOUSING</li> <li>㊺ INTERLOCK GUIDE BOLT</li> <li>㊻ FRICTION DAMPER (2nd gear side)<br/>Disassembly, page 8-10<br/>Reassembly, page 8-11</li> <li>㊼ FRICTION DAMPER (1st gear side)<br/>Disassembly, page 8-10<br/>Reassembly, page 8-11</li> <li>㊽ THRUST WASHER</li> </ul> |
|---|---|---|

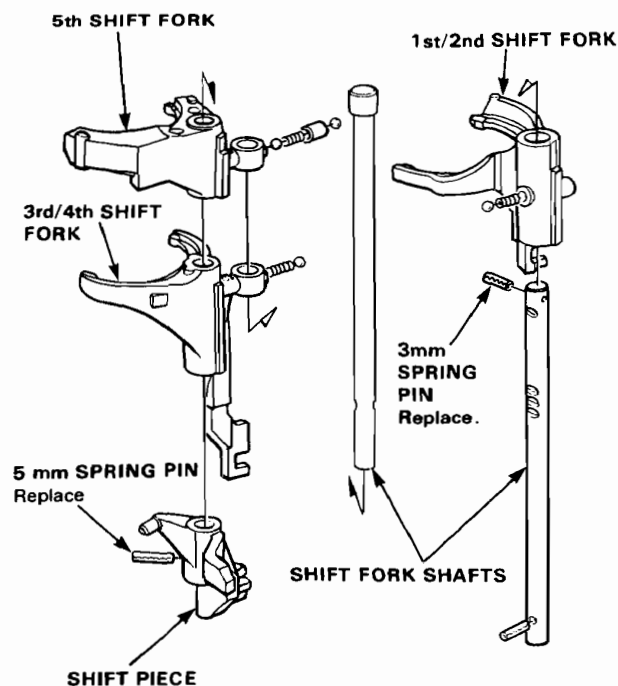
# Shift Fork

## Disassembly

1. Remove the shift fork shaft by removing the spring pins from the shift forks.



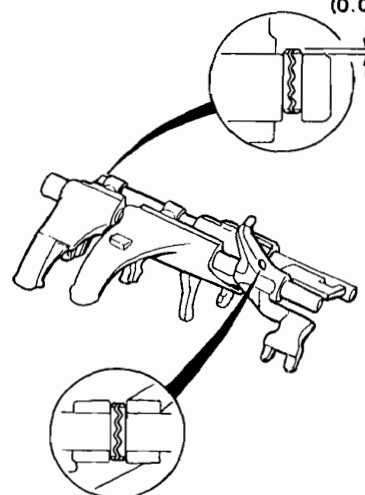
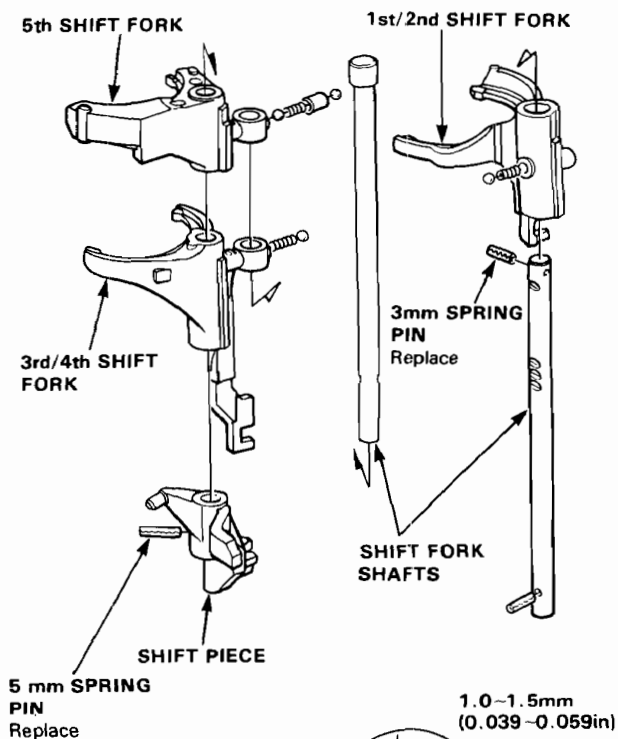
**CAUTION:** Do not lose the spring-loaded detent while disassembling the shift forks and shift fork shafts.



## 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.

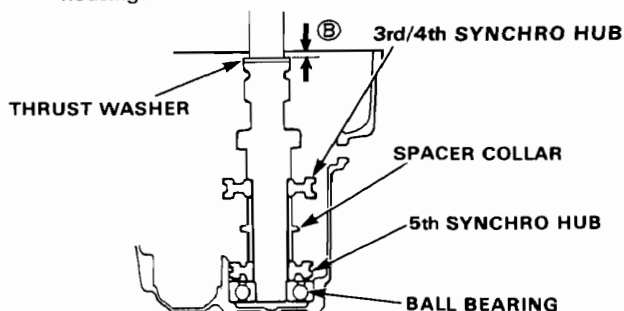


# Mainshaft Thrust Shim



## 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.

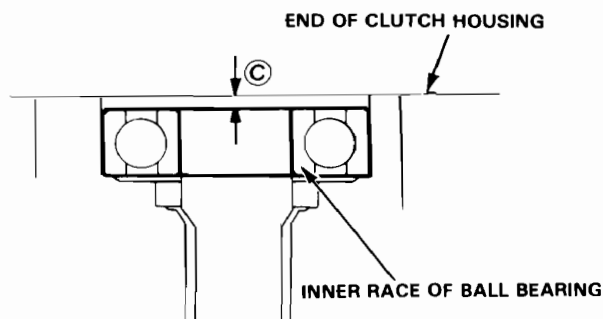
### NOTE:

- 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) = 2.09 mm  
subtract the spring washer height (0.95mm) = the required thrust shim (1.14mm)

## D14A : 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)

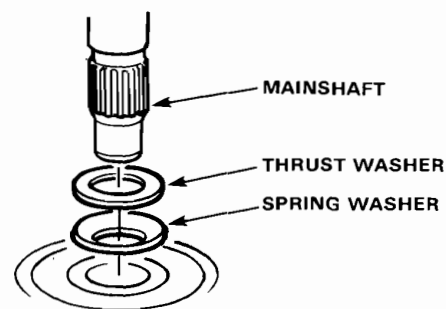
# Mainshaft Thrust Shim

## Adjustment (cont'd)

### D16A: 70 mm Thrust Shim

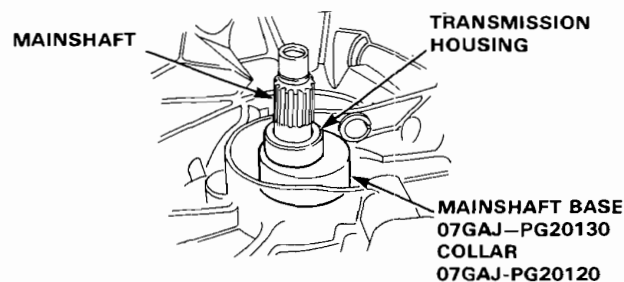
	PART NUMBER	THICKNESS
A	23931-PL3-B00	0.60 mm (0.0236 in.)
B	23932-PL3-B00	0.63 mm (0.0284 in.)
C	23933-PL3-B00	0.66 mm (0.0260 in.)
D	23934-PL3-B00	0.69 mm (0.0272 in.)
E	23935-PL3-B00	0.72 mm (0.0283 in.)
F	23936-PL3-B00	0.75 mm (0.0295 in.)
G	23937-PL3-B00	0.78 mm (0.0307 in.)
H	23938-PL3-B00	0.81 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:

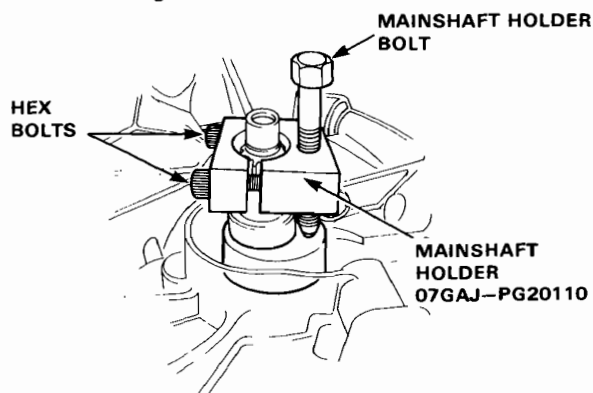
- Clean the thrust washer, spring washer and shim thoroughly before installation.
  - Install the thrust washer, spring washer and shim properly.
- c. Install the mainshaft in the clutch housing.
  - d. Place the transmission housing over the mainshaft and onto the clutch housing.
  - e. Tighten the 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:

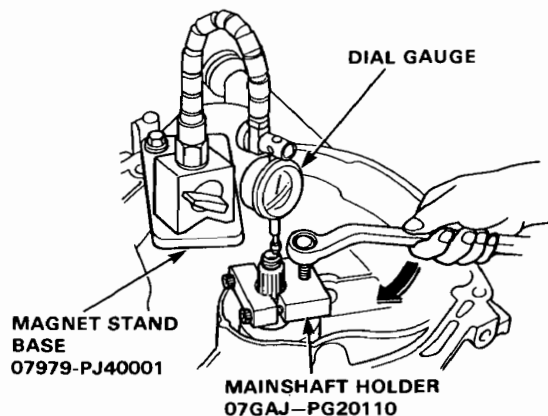
- Back-out the mainshaft holder bolt and loosen the two hex bolts.
- Fit the holder over the mainshaft so its lip is towards the transmission.
- Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



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.

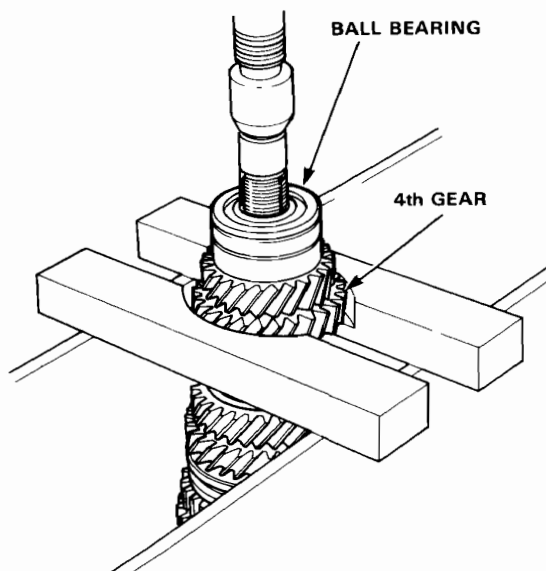
g. Clearance is correct if reading is between 0.13–0.20mm (0.0051–0.0079 in).

If not, recheck necessary shim thickness.

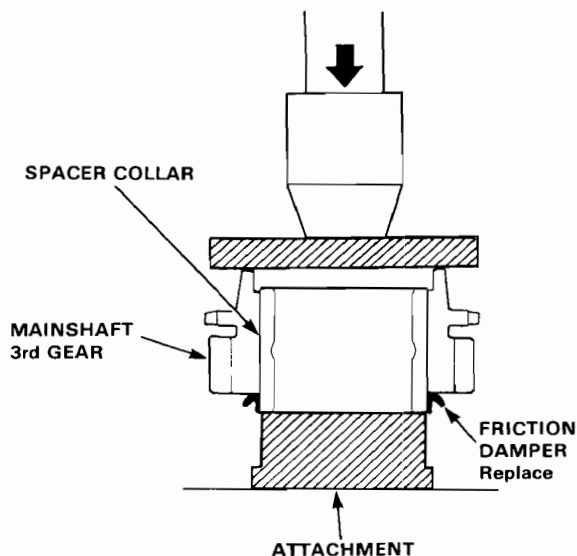
# Countershaft

## Disassembly

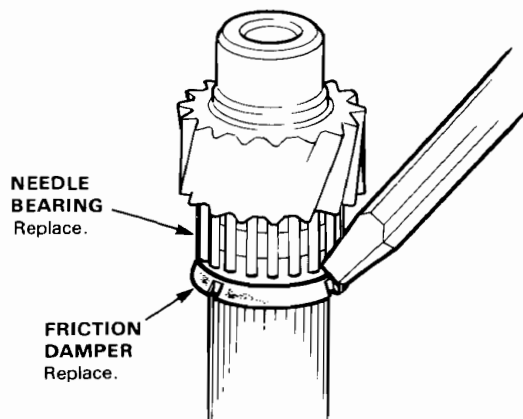
1. Raise the locknut tab from the groove of the shaft and remove the locknut and the spring washer.
2. Support 4th gear on steel blocks as shown and press the shaft out of ball bearing.  
**CAUTION:** Remove the ball bearing using a press and steel blocks as shown. Use of a jaw-type puller can cause 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.

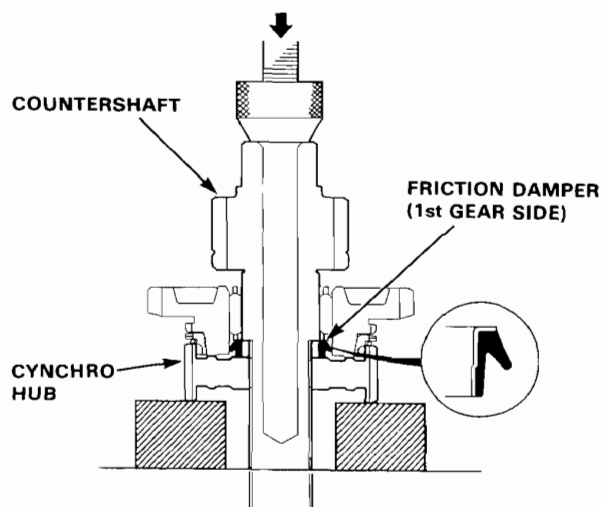




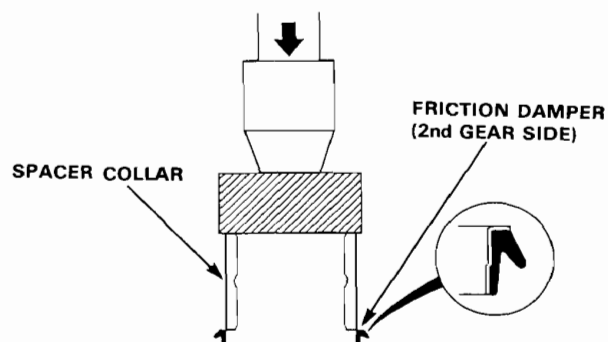


## Reassembly

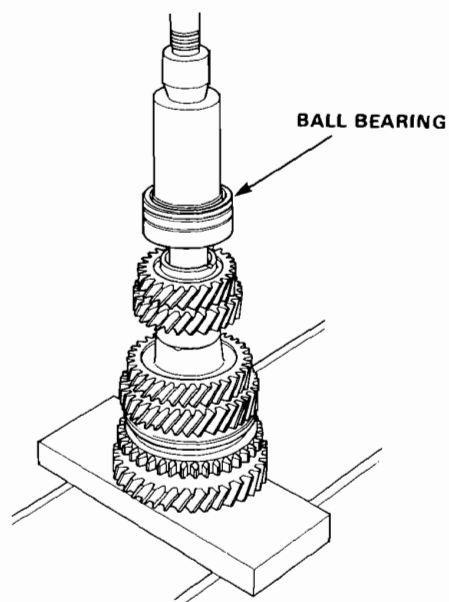
1. Using a press, install the friction damper (1st gear side) to the countershaft as shown.



2. Using a press, install the friction damper (2nd gear side) to the spacer collar.



3. Install the ball bearing using a press as shown.



4. Install the spring washer, tighten the locknut and then stake the locknut tab into the groove.

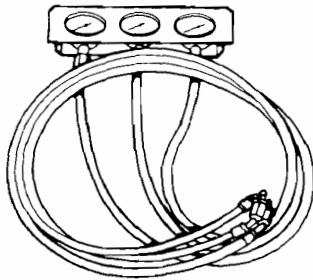
### LOCKNUT

110 → 0 → 110 N·m (11.0 → 0 → 11.0kg-m, 80 → 0 → 80 lb-ft)

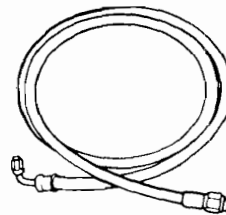
# Special Tools

## Special Tools

Ref. No.	Tool Number	Description	Q'ty	Page Reference
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	07947-6110501	Oil Seal Driver Attachment E	1	
④	07HAD-SF10100	Attachment	1	
⑤	07JAD-PH80400	Pilot Driver 28 x 30 mm	1	
⑥	07749-0010000	Driver	1	



①



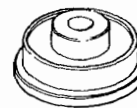
①-1



②



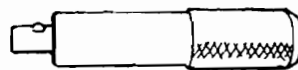
③



④



⑤



⑥

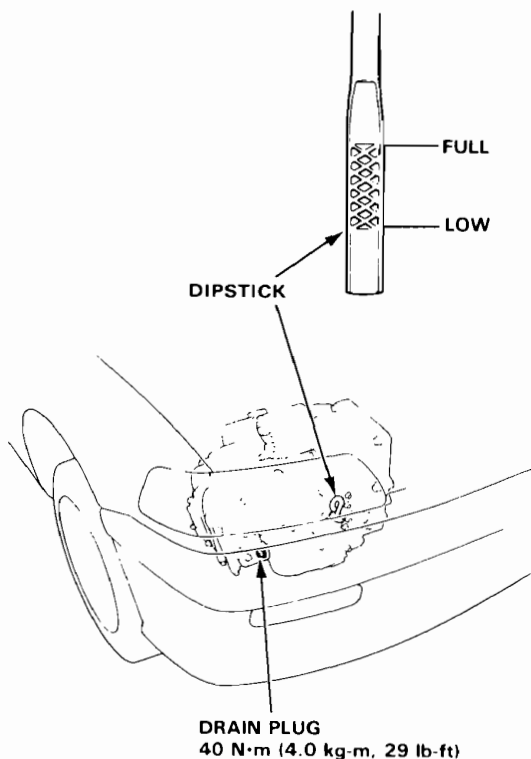


# Fluid Level

## 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-<sup>II</sup> 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

# 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

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 converter 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 on/off control valve stuck
25	On/off 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)

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 assy and replace oil screen and thoroughly clean trans, flush torque converter and cooler and lines. If bottom of 3rd clutch is swirled and trans makes gear noise, replace countershaft and ring gear
R	Be very careful not to damage the torque converter case when replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body, this will result in oil pump seizure if not detected. Use proper tools
S	Install the main seal flush with the torque converter case. If you push it into the torque converter case until it bottoms out, it will block the oil return passage and result in damage
T	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer cam stopper. Throttle cable adjustment may clear this problem. See page 9-37
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

# Pressure

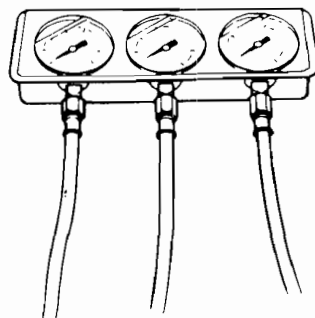
## Testing

**CAUTION:** Before testing, be sure transmission is filled to proper level.

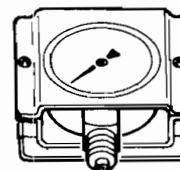
**NOTE.**

- Stop engine when attaching hoses for pressure tests.
- Torque hose fitting to 18 N·m (1.8 kg-m, 12 lb-ft).
- Do not reuse aluminum washers.

**GAUGE SET 07406-0020003**  
(includes pressure hose set 07406-0020201)



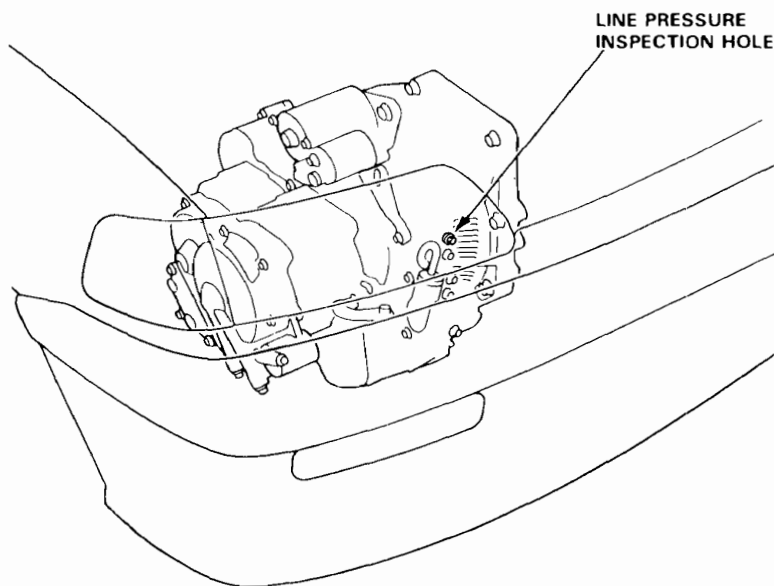
**LOW PRESSURE GAUGE**  
(07406-0070000)



**HOSE FITTING**

**Line Pressure Measurement**

1. Set the parking brake securely.
2. Run the engine at 2,000 min<sup>-1</sup> (rpm).



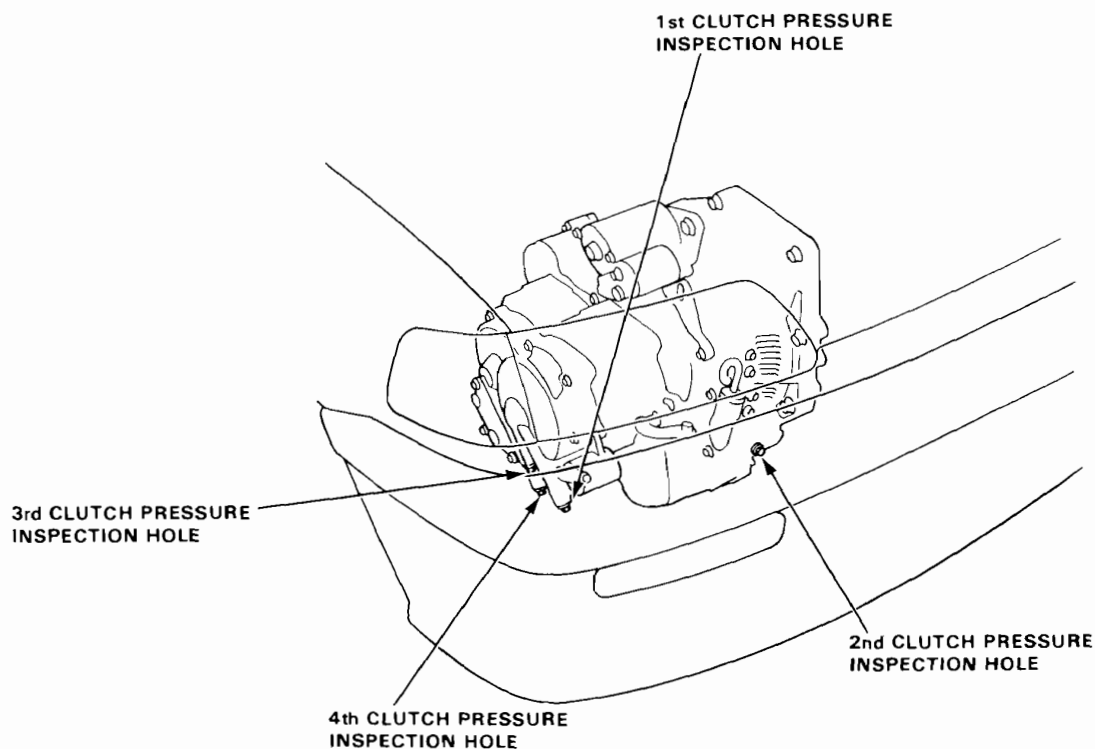
**LINE PRESSURE  
INSPECTION HOLE**

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 <sup>2</sup> , 114-121 psi)	736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi)



### Clutch 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 the engine at 2,000  $\text{min}^{-1}$  (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 $\text{kg}/\text{cm}^2$ , 114–121 psi)	736 kPa (7.5 $\text{kg}/\text{cm}^2$ , 107 psi)
2nd Clutch (2nd hold)	2	No or low 2nd pressure	2nd Clutch	785–834 kPa (8.0–8.5 $\text{kg}/\text{cm}^2$ , 114–121 psi)	736 kPa (7.5 $\text{kg}/\text{cm}^2$ , 107 psi)
2nd Clutch	D3 or D4	No or low 2nd pressure	2nd Clutch	412 kPa (4.2 $\text{kg}/\text{cm}^2$ , 60 psi) (throttle control lever fully closed)	363 kPa (3.7 $\text{kg}/\text{cm}^2$ , 53 psi) (throttle control lever fully closed)
3rd Clutch	D3	No or low 3rd pressure	3rd Clutch	785–834 kPa (8.0–8.5 $\text{kg}/\text{cm}^2$ , 114–121 psi) (throttle open more than 1/4)	736 kPa (7.5 $\text{kg}/\text{cm}^2$ , 107 psi) (throttle open more than 1/4)
4th Clutch	D4	No or low 4th pressure	4th Clutch	785–834 kPa (8.0–8.5 $\text{kg}/\text{cm}^2$ , 114–121 psi)	736 kPa (7.5 $\text{kg}/\text{cm}^2$ , 107 psi)
	R		Servo valve or 4th Clutch	785–834 kPa (8.0–8.5 $\text{kg}/\text{cm}^2$ , 114–121 psi)	736 kPa (7.5 $\text{kg}/\text{cm}^2$ , 107 psi)

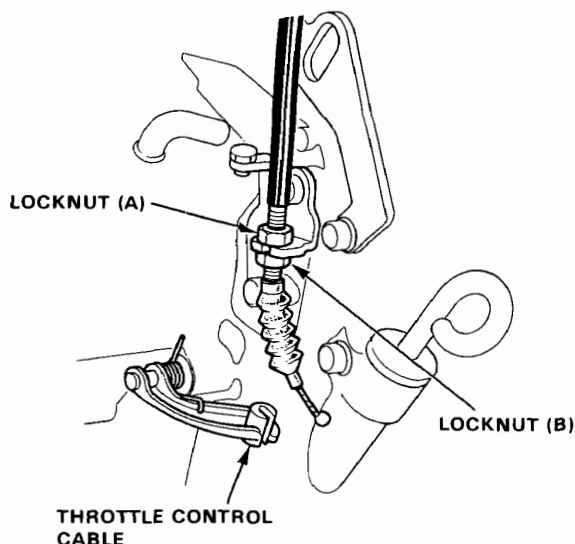
(cont'd)

# Pressure

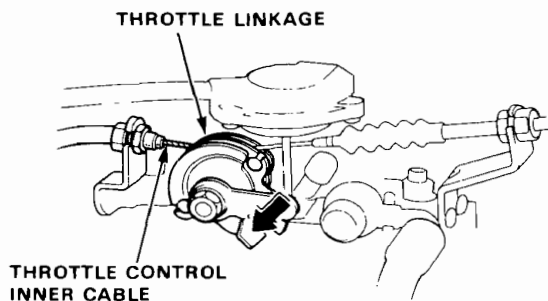
## Testing (cont'd)

### Low/High Pressure Test

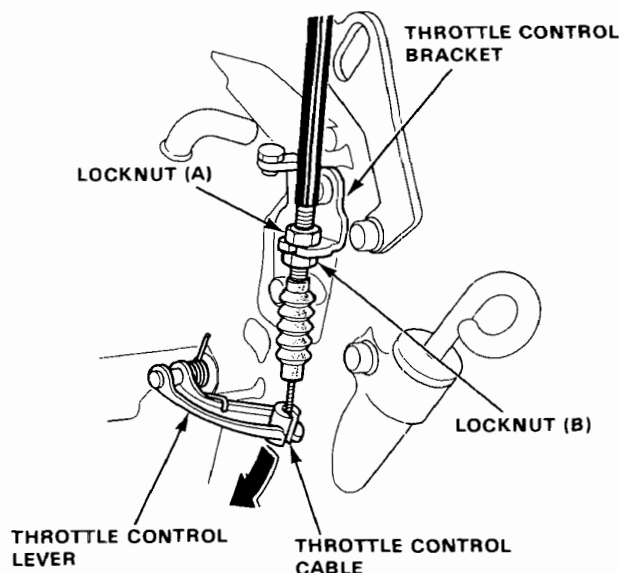
1. Raise car and support with safety stands.
2. Attach the gauge set to the appropriate pressure test port.
3. Remove the cable end of the throttle control cable from the throttle control lever.  
**NOTE:** Do not loosen the locknuts, simply unhook the cable end.



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.

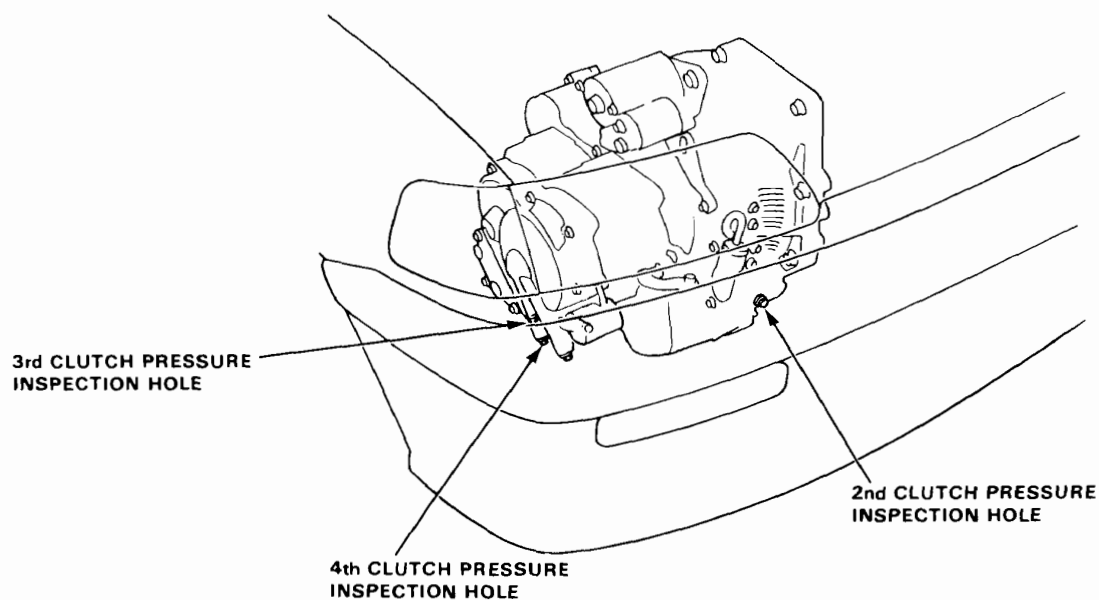


8. With the engine idling, lift the throttle control lever up approximately 1/2 of its possible travel and increase the engine rpm until pressure is indicated on the appropriate gauge. Record the highest pressure reading obtained.



9. Repeat step 8 for each clutch pressure being inspected.





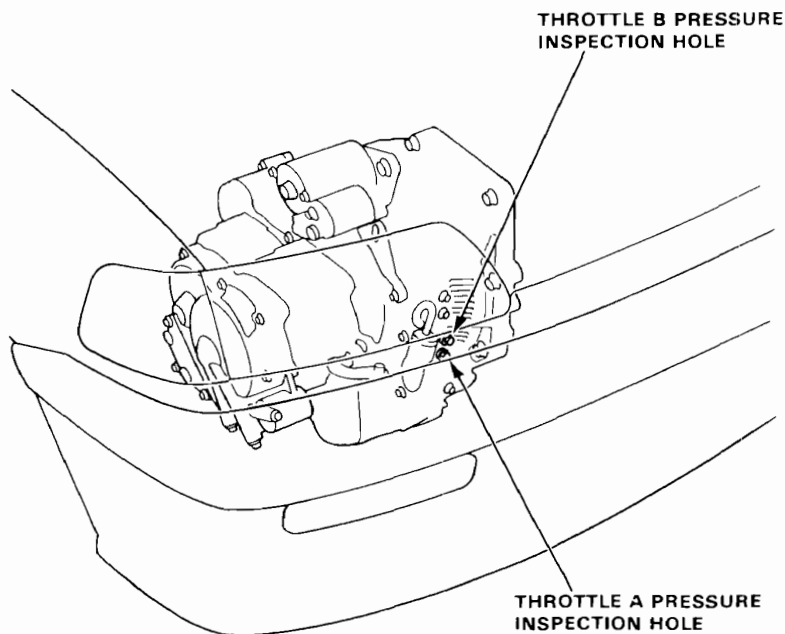
PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
2nd Clutch	D <sub>2</sub> or D <sub>4</sub>	No or low 2nd pressure	2nd Clutch	412–834 kPa (4.2–8.5 kg/cm <sup>2</sup> , 60–121 psi) varies with throttle opening	363 kPa (3.7 kg/cm <sup>2</sup> , 53 psi) with lever released. 736 kPa (7.5 kg/cm <sup>2</sup> , 107 psi) with lever in full throttle position.
3rd Clutch	D <sub>2</sub> or D <sub>4</sub>	No or low 3rd pressure	3rd Clutch		
4th Clutch	D <sub>4</sub>	No or low 4th pressure	4th Clutch		

# Pressure

## Testing (cont'd)

### Throttle Pressure Measurement

1. Set the parking brake securely and block the wheels.
2. Run the engine at  $1,000 \text{ min}^{-1}(\text{rpm})$ .
3. Disconnect the throttle control cable from the throttle lever.

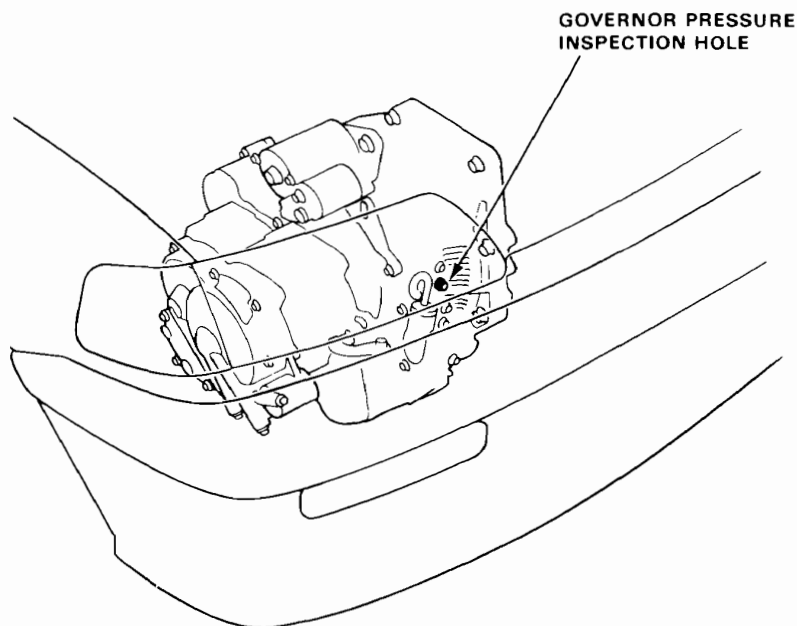


PRESSURE	SELECTOR POSITION	SYMPTOM	PROBABLE CAUSE	FLUID PRESSURE	
				Standard	Service Limit
Throttle A	D3 or D4	No (or low) throttle pressure	Throttle valve A Throttle modulator valve	0 - 4.9 kPa (0 - 0.05 kg/cm <sup>2</sup> , 0 - 0.7 psi) with lever released 505 - 520 kPa (5.15 - 5.30 kg/cm <sup>2</sup> , 73.2 - 75.4 psi) with lever in full throttle position	500 kPa (5.1 kg/cm <sup>2</sup> , 72.5 psi) with lever in full throttle position
Throttle B	D3 or D4	No (or low) throttle pressure	Throttle valve B	0 kPa (0 kg/cm <sup>2</sup> , 0 psi) with lever released 785 - 834 kPa (8.0 - 8.5 kg/cm <sup>2</sup> , 114 - 121 psi) with lever in full throttle position	736 kPa (7.5 kg/cm <sup>2</sup> , 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 pres- sure	Governor valve	151—161kPa(1.54— 1.64 kg/cm <sup>2</sup> , 22—23 psi)	146 kPa(1.49kg/cm <sup>2</sup> , 21 psi)

# 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

		1st→2nd	2nd→3rd	3rd→4th	Lock-up. ON
<b>Full-throttle</b> Acceleration from a stop	km/h	54—58	97—105	143—151	140—148
	mph	33.6—36	60.3—65.3	88.9—93.8	87—92
<b>Half-throttle</b> Acceleration from a stop	km/h	36—43	66—72	95—108	—
	mph	22.4—26.7	41—44.7	59—67.1	—
<b>1/8-throttle</b> Coasting down-hill from a stop	km/h	20—23	42—48	53—58	46—55
	mph	12.4—14.3	26.1—29.8	33—36	28.6—34.2

### ● Downshift

		4th→3rd	3rd→2nd	2nd→1st
<b>Full-throttle</b> When car is slowed by increased grade, wind, etc.	km/h	122—131	79—88	39—45
	mph	75.8—81.4	49.1—54.7	24.2—28

		4th→2nd	2nd→1st
<b>1/8-throttle</b> Coasting or braking to a stop	km/h	16—19	10—12
	mph	10—11.8	6.2—7.5

3. Accelerate to about 56 km/h (35 mph) so the transmission is in 4 th, 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 62.5 mph (100km/h); you may damage the transmission.

## 2 (2nd Gear)

1. Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage.
2. Upshifts and downshifts should not occur with the selector in this range.

## R (Reverse)

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

## P (Park)

Park car on a slope (approx. 16°), apply the parking brake, and shift into Park. Release the brake, the car should not move.

# 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 **D<sub>4</sub>**.
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 **2**, and **R**.

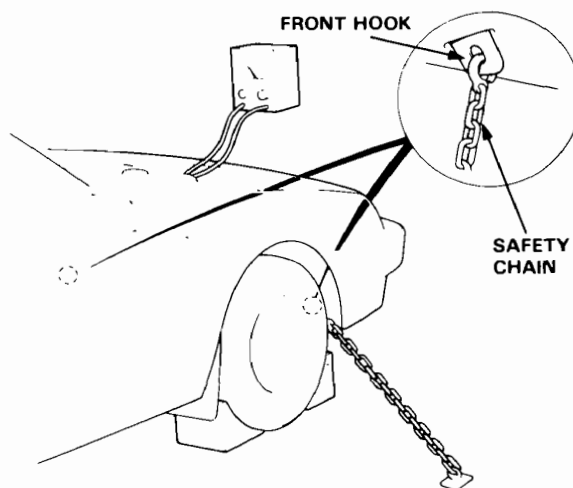
NOTE: Stall speed in **D<sub>4</sub>**, **2** and **R** must be the same, and must also be within limits:

### Stall Speed RPM:

Specification: 2,750 min<sup>-1</sup> (rpm)

Service Limit: 2,300—2,900 min<sup>-1</sup> (rpm)

TROUBLE	PROBABLE CAUSE
Stall rpm high in <b>2</b> , <b>D<sub>4</sub></b> , and <b>R</b>	<ul style="list-style-type: none"><li>• Low fluid level or oil pump output.</li><li>• Clogged oil strainer.</li><li>• Pressure regulator valve stuck closed.</li><li>• Slipping clutch.</li></ul>
Stall rpm high in and <b>D<sub>4</sub></b> only	<ul style="list-style-type: none"><li>• Slippage of 1st clutch.</li></ul>
Stall rpm low in <b>2</b> , <b>D<sub>4</sub></b> , and <b>R</b>	<ul style="list-style-type: none"><li>• Engine output low, throttle cable misadjusted.</li><li>• Oil pump seized.</li><li>• Torque converter one-way clutch slipping.</li></ul>



# 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.

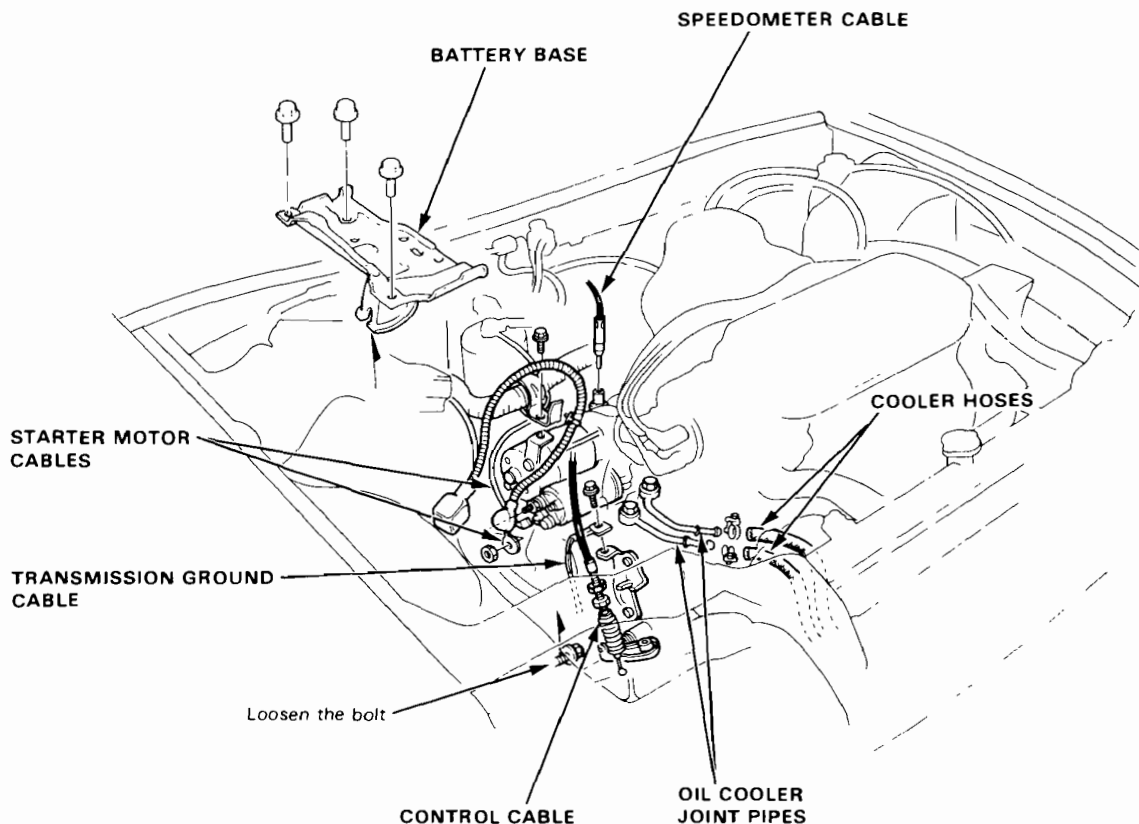
**CAUTION:** Use fender covers to avoid damaging painted surfaces.

1. Disconnect the battery negative (–) and positive (+) cables from the battery, and remove the battery.
2. Remove the 3 mount bolts and loosen the 1 bolt located at the side of the battery base, and intake hose band of the throttle body.
3. Remove the air cleaner case complete with the intake hose.
4. Disconnect the starter motor and transmission ground cables.
5. Disconnect the speedometer cable.

NOTE: Do not disassemble speedometer gear holder

6. Disconnect the control cable at the control lever.
7. 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.
8. 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.

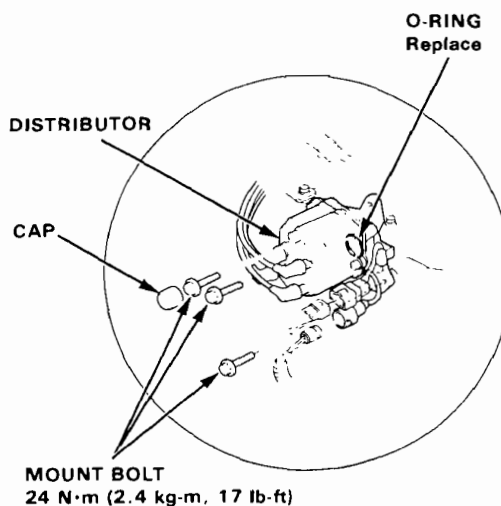


# Transmission

## -Removal (cont'd)

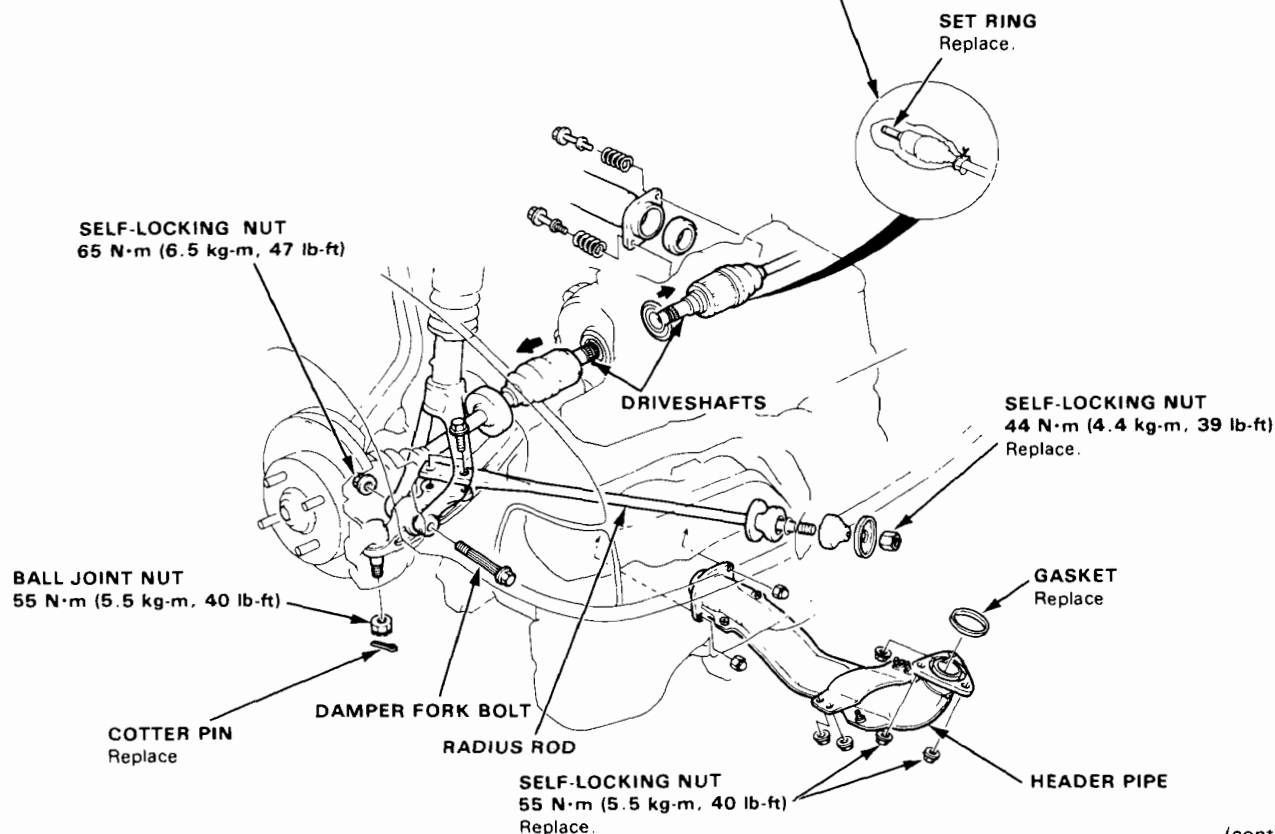


9. Disconnect the connectors and remove the mount bolts, then remove the distributor from the cylinder head.



10. Remove the engine splash shield and the right wheelwell splash shield.
11. Remove the header pipe.
12. Remove the cotter pin and lower arm ball joint nut, separate the ball joint and lower arm.
13. Remove the bolts and nut, then remove the right radius rod.
14. Remove the right and left driveshafts.

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



(cont'd)

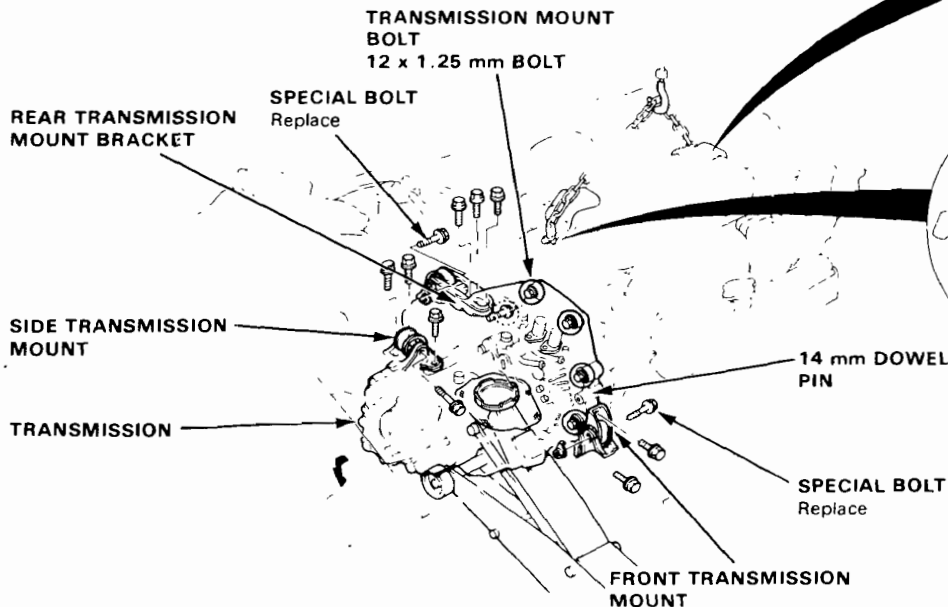
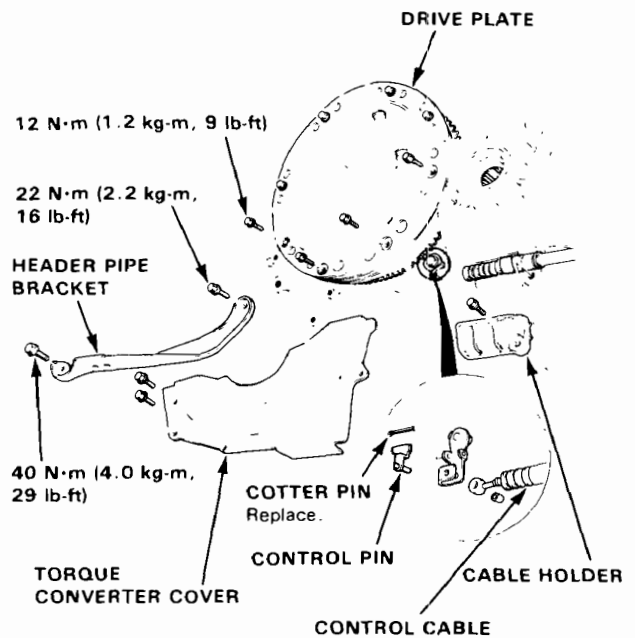
# Transmission

## Removal (cont'd)

15. Remove the header pipe bracket, torque converter cover and cable holder.
16. Remove the shift control cable by removing :
  - The cotter pin
  - The control pin
  - The control lever roller from the control lever

**CAUTION:** Take care not to bend the cable when removing it and lift the cable hanging by wire it up to the body.

17. Remove the plug, then remove the drive plate bolts one at a time while rotating the crankshaft pulley.
18. Install the bolts at the cylinder head and attach a hoist chain to the bolt and the other end to the engine hanger plates, then lift the engine slightly to unload the mounts.
19. Place a jack under the transmission and raise transmission just enough to take weight off mounts.
20. Remove the bolts from the front transmission mount.
21. Remove the rear transmission mount bracket by removing the 4 mounting bolts.
22. Remove the 4 mounting bolts, then remove the side transmission mount.
23. Remove the 5 transmission mount bolts.



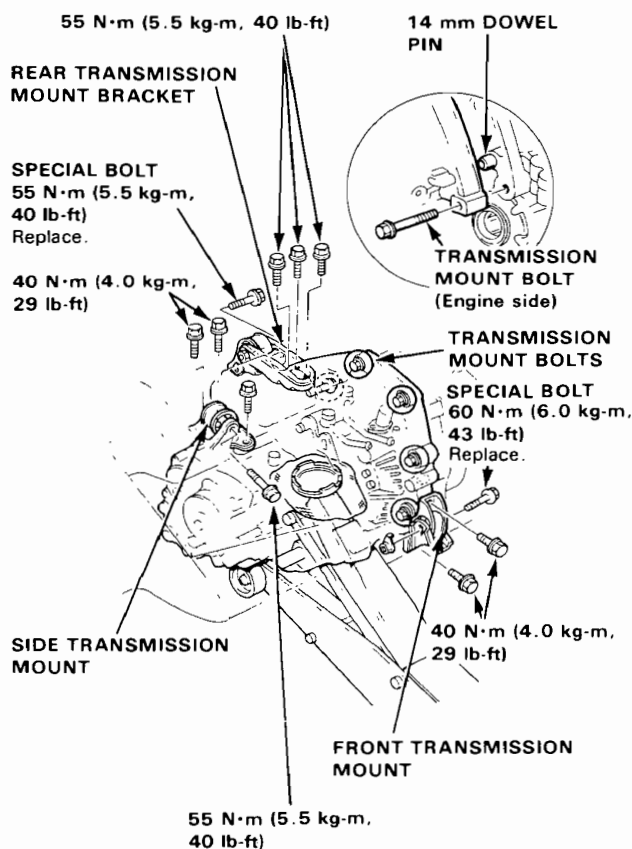
24. Pull the transmission away from the engine until it clears the 14 mm dowel pins, then lower on the transmission jack.





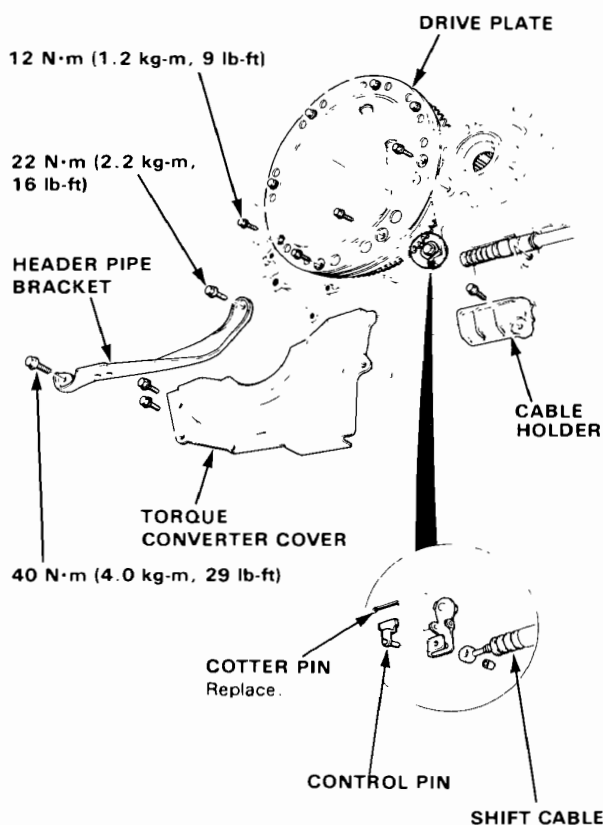
## Installation

1. Place the transmission on the transmission jack, and raise to the engine level.
2. Check that the two 14 mm dowel pins are installed in the torque converter housing.
3. Loosely install the 4 transmission mount bolts, then torque in the sequence shown.
4. Secure the transmission to engine with the engine side mounting bolt (12 x 1.25 x 70 mm) and torque to 68 N·m (6.8 kg-m, 50 lb-ft).
5. Install the transmission to rear transmission mount bracket.
6. Install the transmission to the front and side transmission mounts.



7. Remove the transmission jack.
8. Remove the chain hoist by removing the hanger plates and bolts.
9. Attach the torque converter to the drive plate with eight (6 x 1.0 x 12 mm) bolts, and torque to 12 N·m (9 lb-ft). Rotate the crank as necessary to tighten bolts to 1/2 torque, then final torque, in a criss-cross pattern. Check for free rotation after tightening the last bolt.
10. Install the shift cable and cable holder.

**CAUTION:** Take care not to bend the cable when installing it.



11. Install the torque converter cover and header pipe bracket

(cont'd)

# Transmission

## Installation (cont'd)

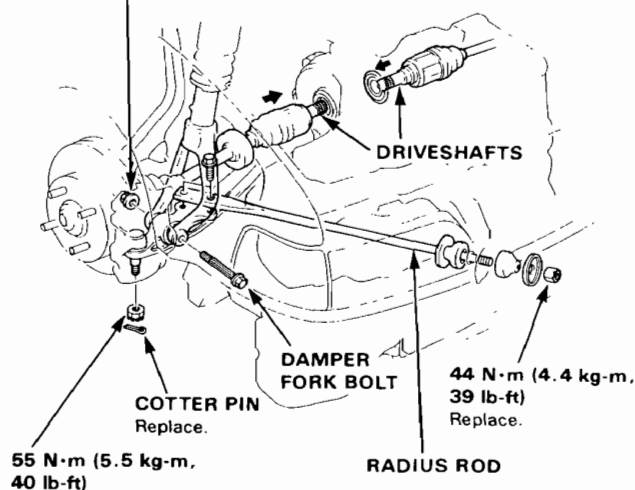
12. Install a new set ring on the end of each driveshaft.

13. Install the right and left driveshafts.

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.

### SELF LOCK NUT

65 N·m (6.5 kg-m, 47 lb-ft)

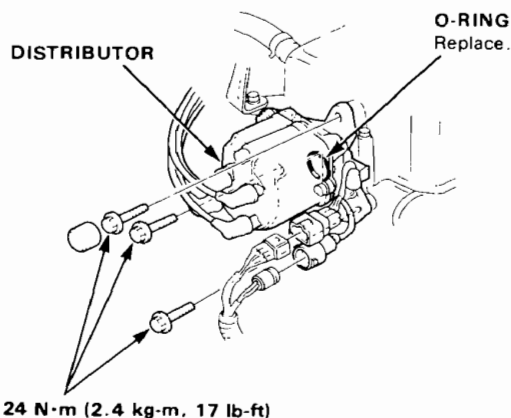


14. Install the damper fork bolt and radius rod.

15. Install the ball joint to the lower arm.

16. Install the splash shields and exhaust header pipe.

17. Install the distributor.

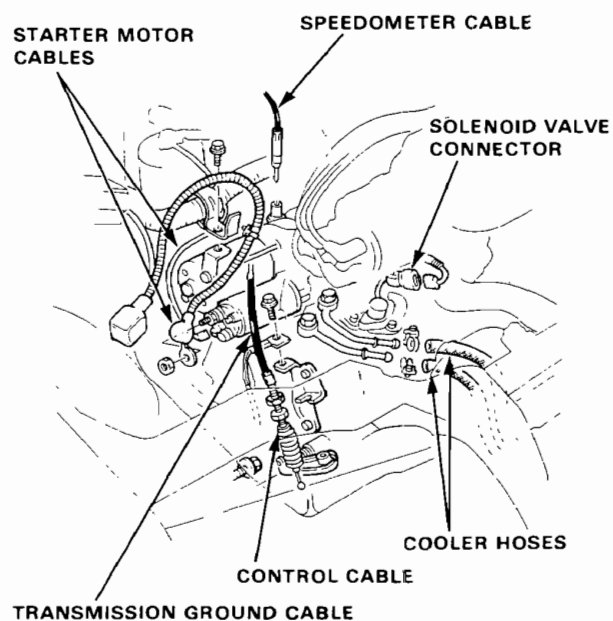


18. Connect the cooler hoses to the joint pipes.

19. Connect the control cable to the control lever

20. Connect the speedometer cable.

21. Install the 3 bolts located at the side of the battery base, and retighten the intake hose band of the throttle body.



22. Flush the ATF cooler.

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.

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.

29. Let the engine reach operating temperature with the transmission in Neutral or Park, then turn it off and check the fluid level.

30. Road test as described on page 9 - 12 .

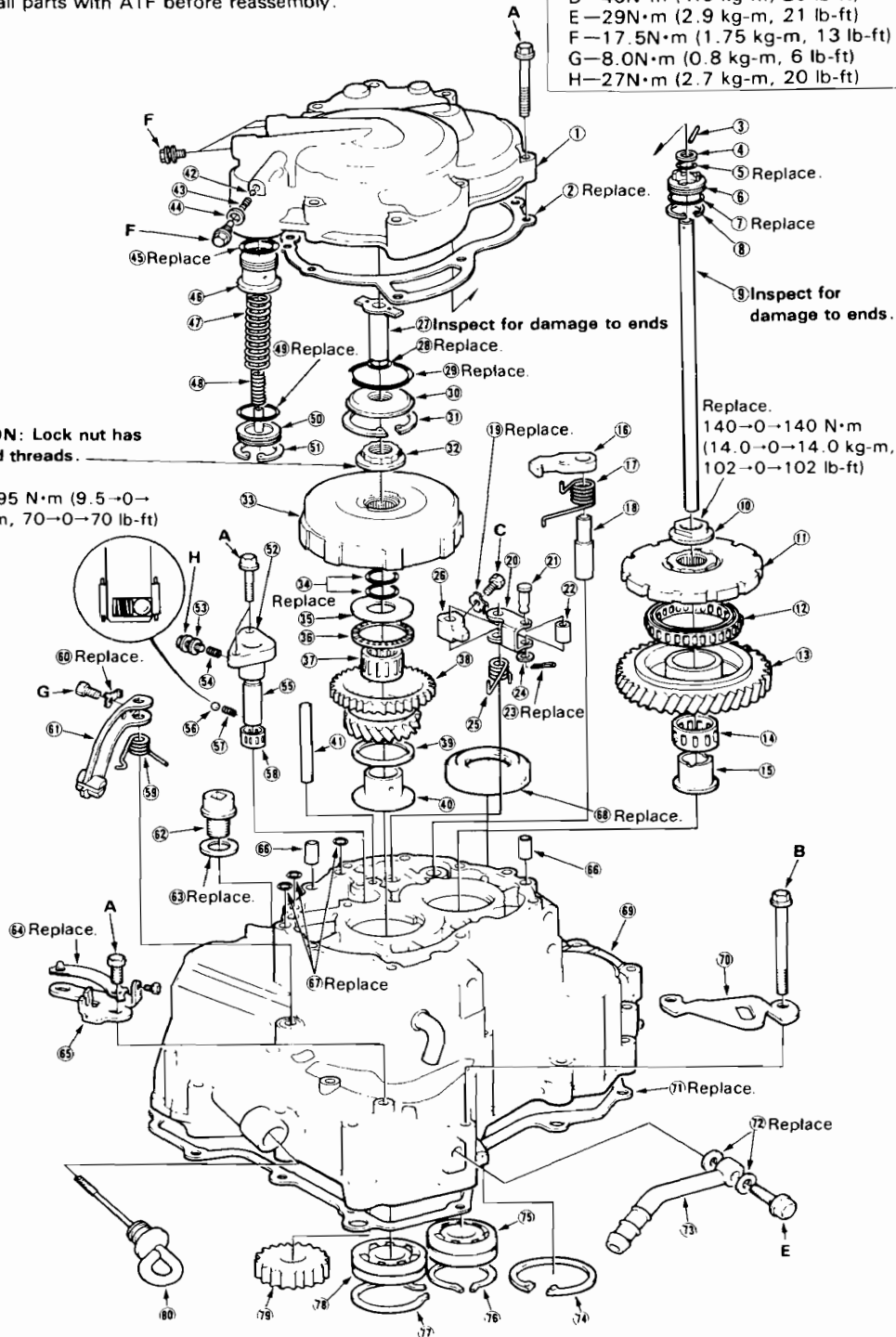
# Illustrated Index

## 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

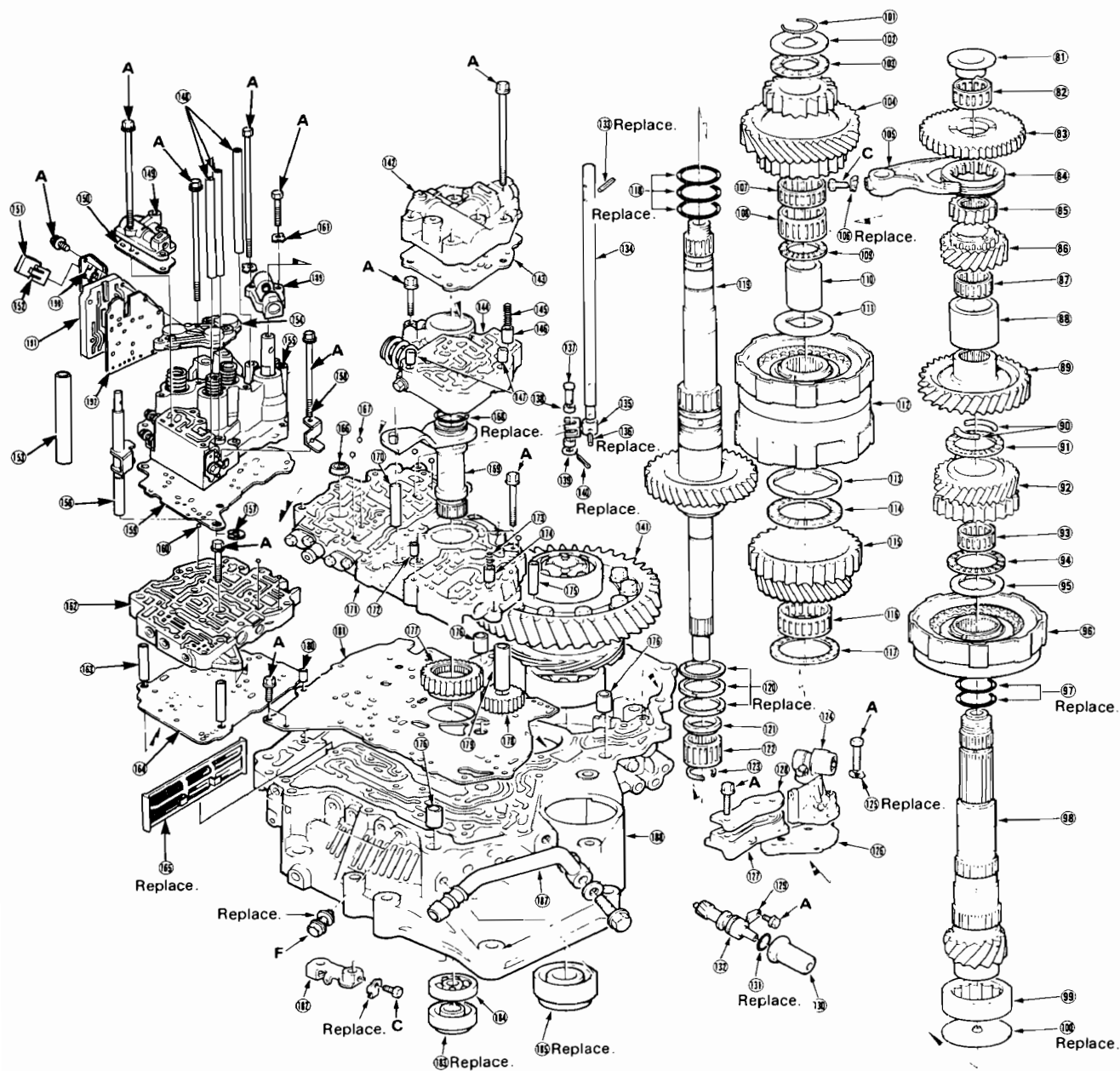
**CAUTION: Lock nut has left-hand threads.**  
Replace.  
95→0→95 N·m (9.5→0→9.5 kg-m, 70→0→70 lb-ft)





- 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
- ⑧ NEEDLE BEARING  
14 x 18 x 15 mm
- ⑨ THROTTLE LEVER SPRING
- ⑩ LOCK WASHER
- ⑪ THROTTLE CONTROL LEVER
- ⑫ DRAIN PLUG
- ⑬ SEALING WASHER
- ⑭ LOCK PLATE
- ⑮ THROTTLE CABLE BRACKET
- ⑯ DOWEL PIN 8 x 14 mm
- ⑰ O-RING 7.7 x 2.3 mm
- ⑱ OIL SEAL 35 x 63 x 9 mm
- ⑲ TRANSMISSION HOUSING
- ⑳ 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

# Illustrated Index





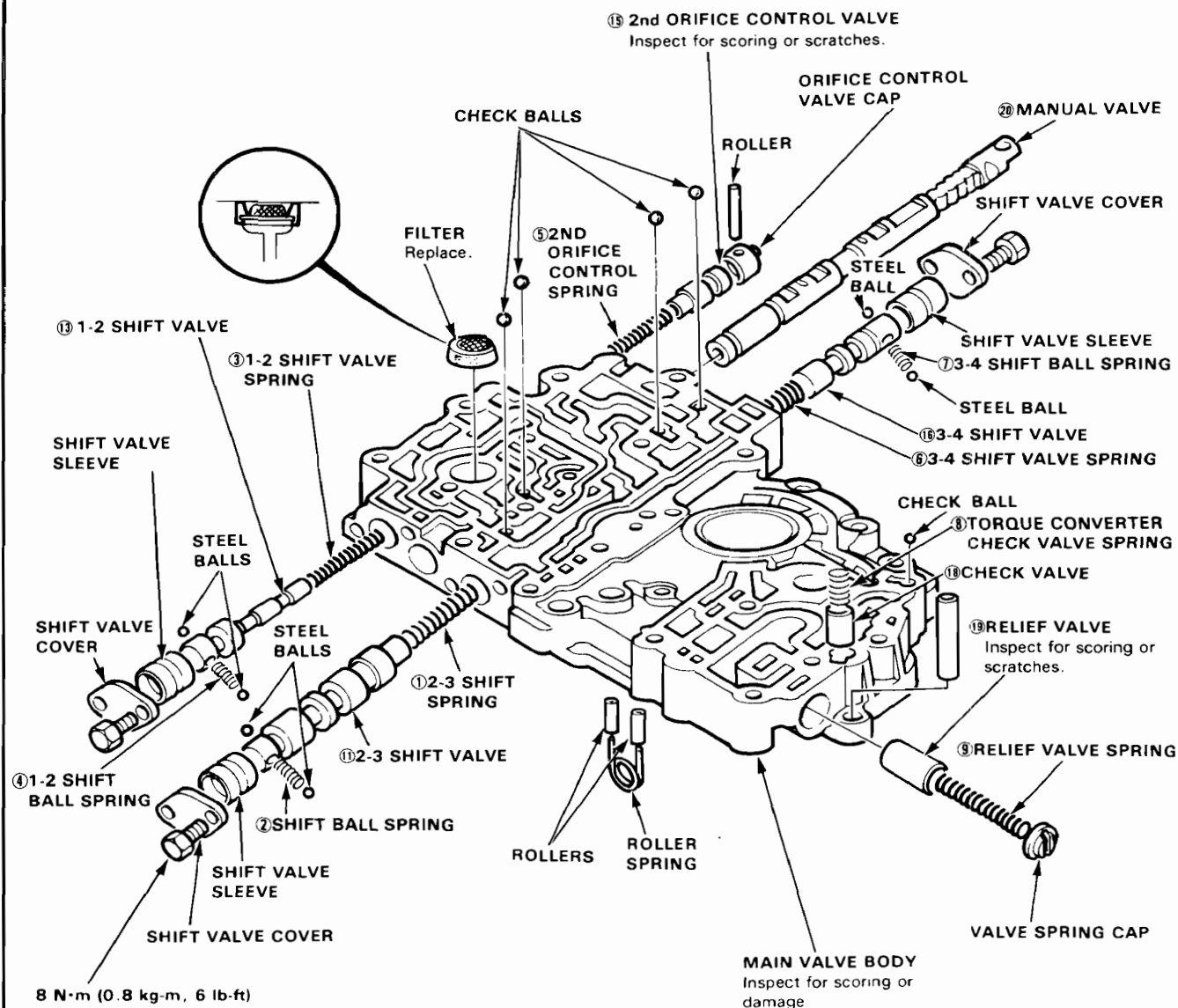
- 81 REVERSE GEAR COLLAR
- 82 NEEDLE BEARING  
31 x 36 x 14 mm
- 83 COUNTERSHAFT REVERSE GEAR
- 84 REVERSE GEAR SELECTOR
- 85 SELECTOR HUB
- 86 COUNTERSHAFT 4th GEAR
- 87 NEEDLE BEARING  
28 x 33 x 20 mm
- 88 DISTANCE COLLAR 28 mm
- 89 COUNTERSHAFT 2nd GEAR
- 90 COTTER WASHER
- 91 THRUST NEEDLE BEARING  
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 COOLER PIPE
- 187 TORQUE CONVERTER HOUSING
- 188 SERVO VALVE HOLDER
- 189 MAGNET COVER
- 190 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.



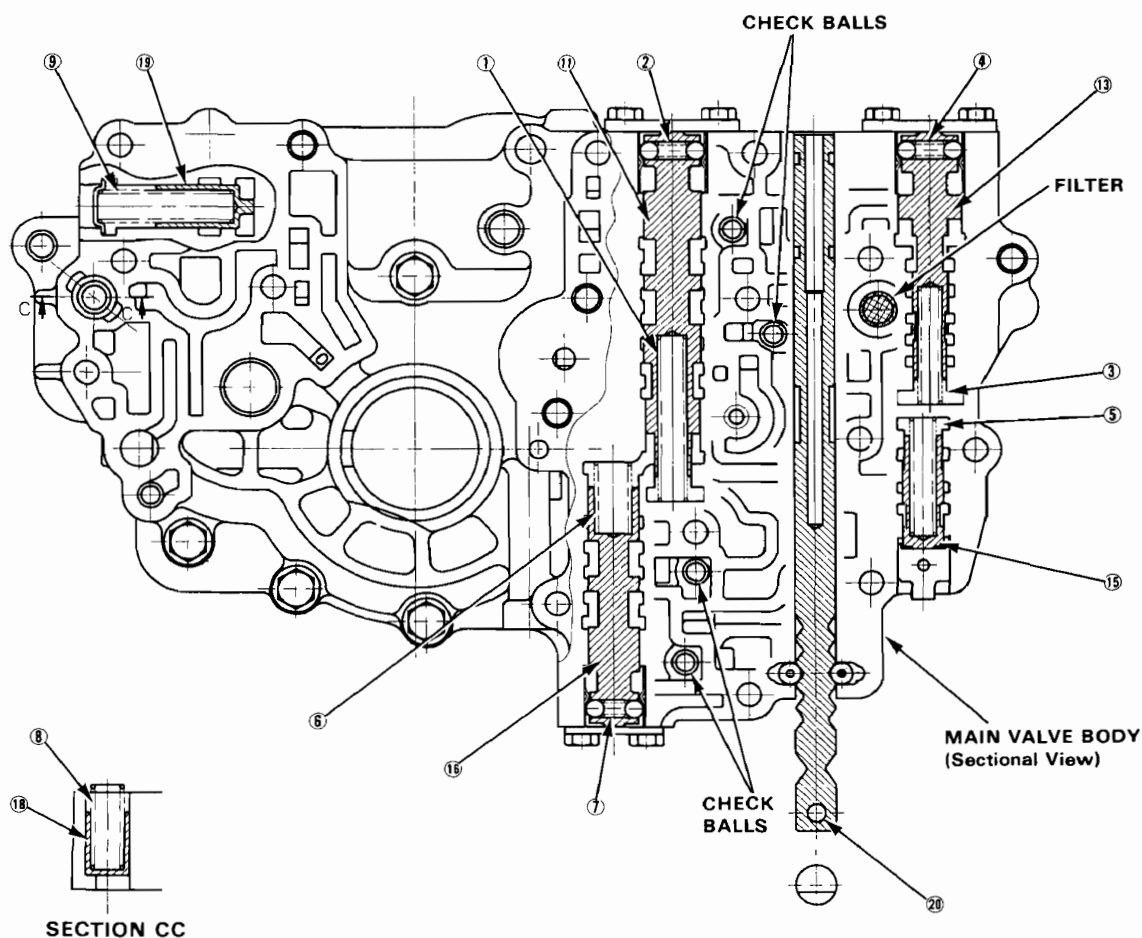


## Spring Specifications

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	0.4(0.016)	4.5(0.177)	14.7(0.579)	7.3
③	1-2 shift spring	0.5(0.020)	4.5(0.177)	44.5(1.752)	35.1
④	1-2 shift ball spring	0.4(0.016)	4.5(0.177)	11.3(0.445)	8
⑤	2nd orifice control spring	0.8(0.031)	6.6(0.260)	46.3(1.823)	27.6
⑥	3-4 shift spring	0.7(0.028)	9.6(0.378)	32.9(1.295)	6.4
⑦	3-4 shift ball spring	0.45(0.018)	4.5(0.177)	12.0(0.472)	6.7
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



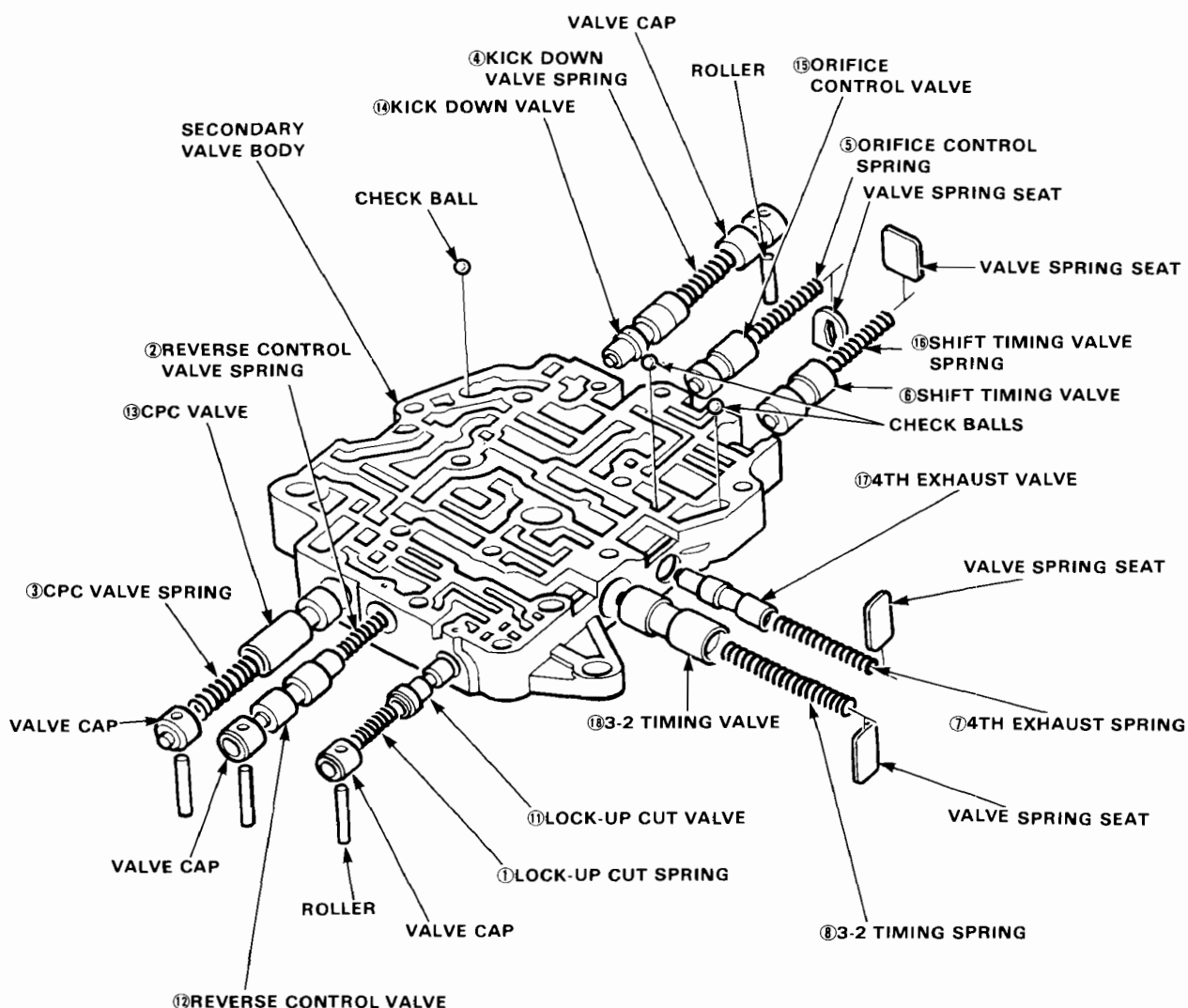


# Secondary Valve Body

## 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.
- Replace as an assembly if any parts are worn or damaged.

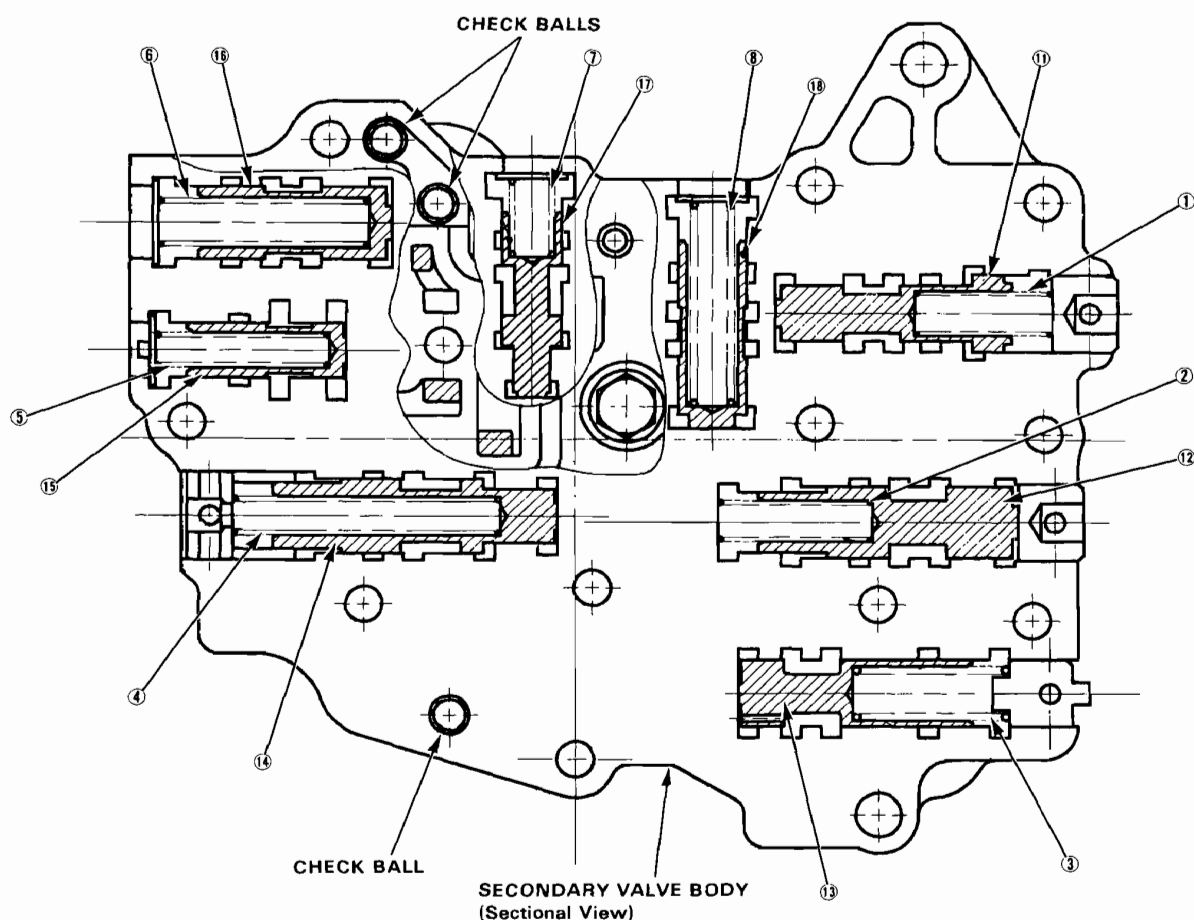




## Spring Specifications

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



# Regulator Valve Body

## Disassembly/Inspection/Reassembly

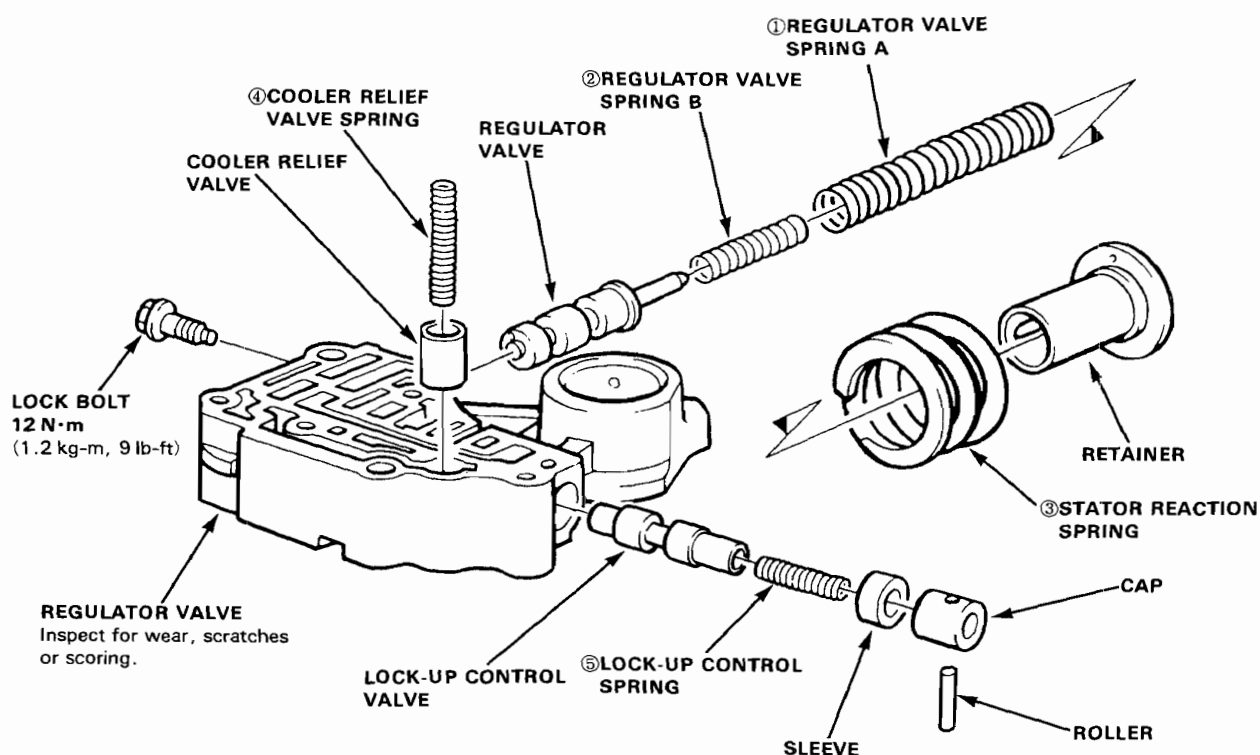
### NOTE:

- 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.



Spring Specifications

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A	1.58 x 2.00 (0.062 x 0.079)	14.7(0.579)	86.5(3.406)	20.9
②	Regulator valve spring B	1.8(0.071)	9.6(0.378)	44.0(1.732)	7.5
③	Stator reaction spring	6.0(0.236)	38.4(1.512)	30.3(1.193)	2
④	Cooler relief valve spring	1.1(0.043)	8.4(0.331)	36.4(1.433)	12
⑤	Lock-up control spring	0.7(0.028)	6.6(0.260)	32.5(1.280)	14

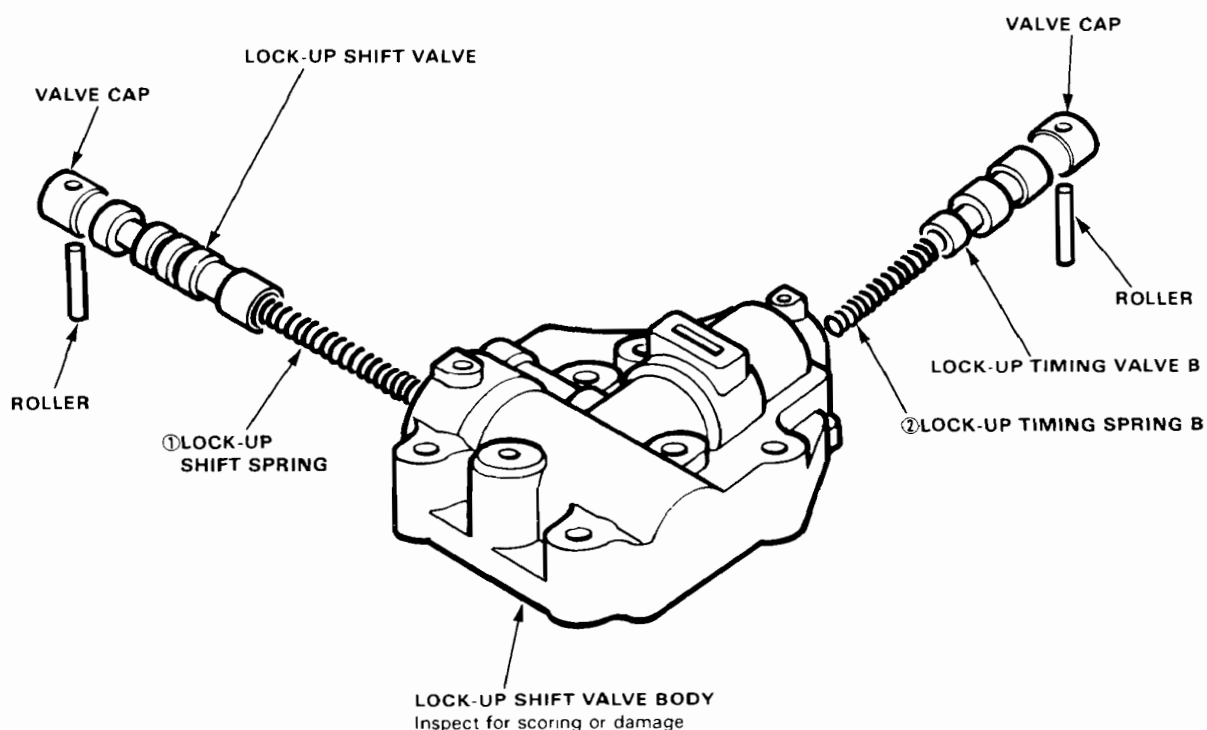


# Lock-Up Shift Valve Body

## Disassembly/Inspection

### NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement; if any fail to slide freely, see Valve Body Repair.
- Coat all parts with ATF before reassembly.



Spring Specifications

Unit of length mm (in.)

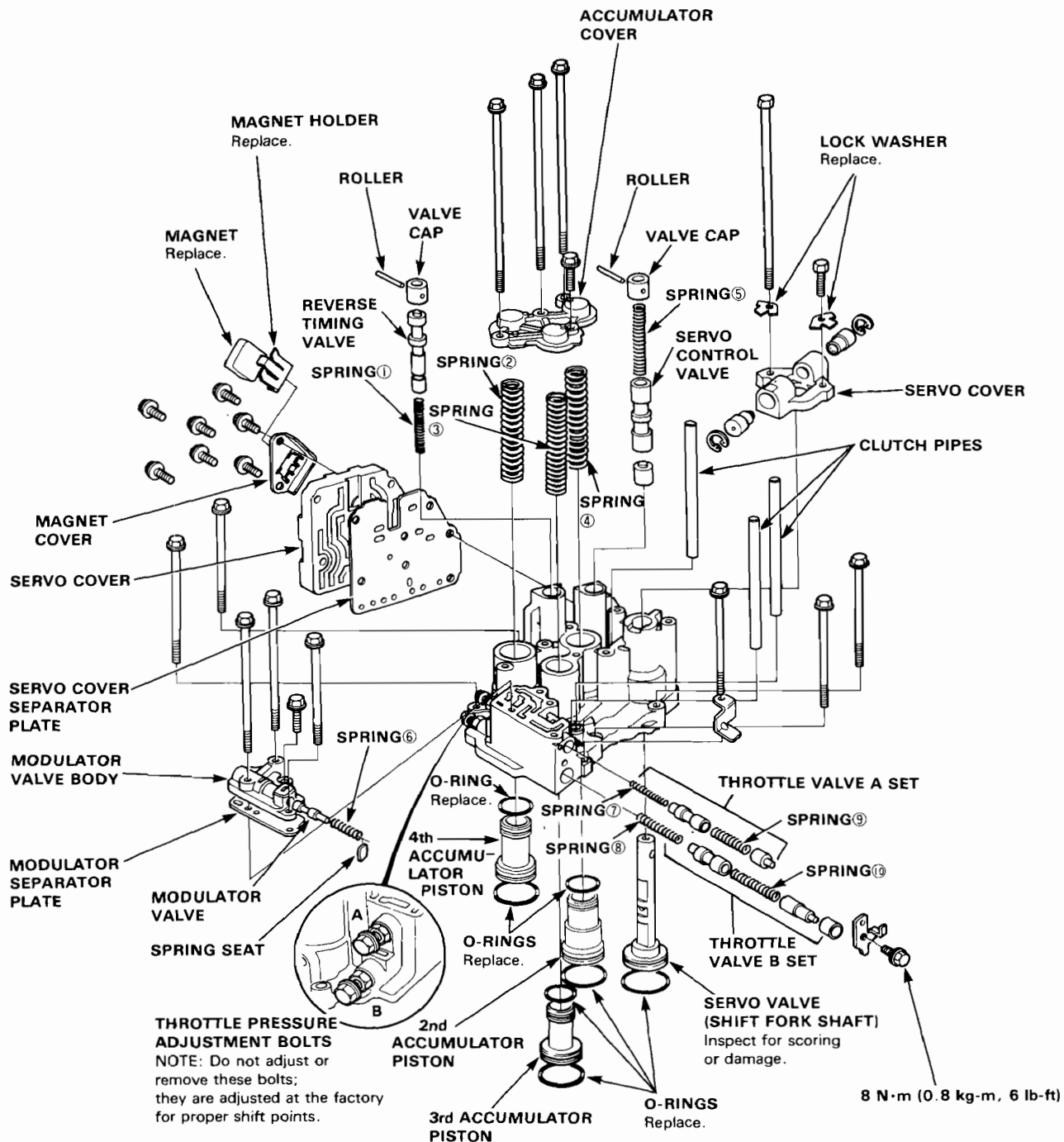
No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Lock-up shift spring	0.7(0.028)	8.1(0.319)	39.0(1.535)	15.4
②	Lock-up timing spring B	1.0(0.039)	6.6(0.260)	52.3(2.059)	30.1

# 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.)

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	1.2(0.047)	9.4(0.370)	27.2(1.071)	8
		1.2(0.047)	9.4(0.370)	26.3(1.035)	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
		1.0(0.039)	8.5(0.335)	22.1(0.870)	5.5
⑩	Throttle B spring	1.4(0.055)	8.5(0.335)	41.4(1.630)	8.4

# Governor Valve

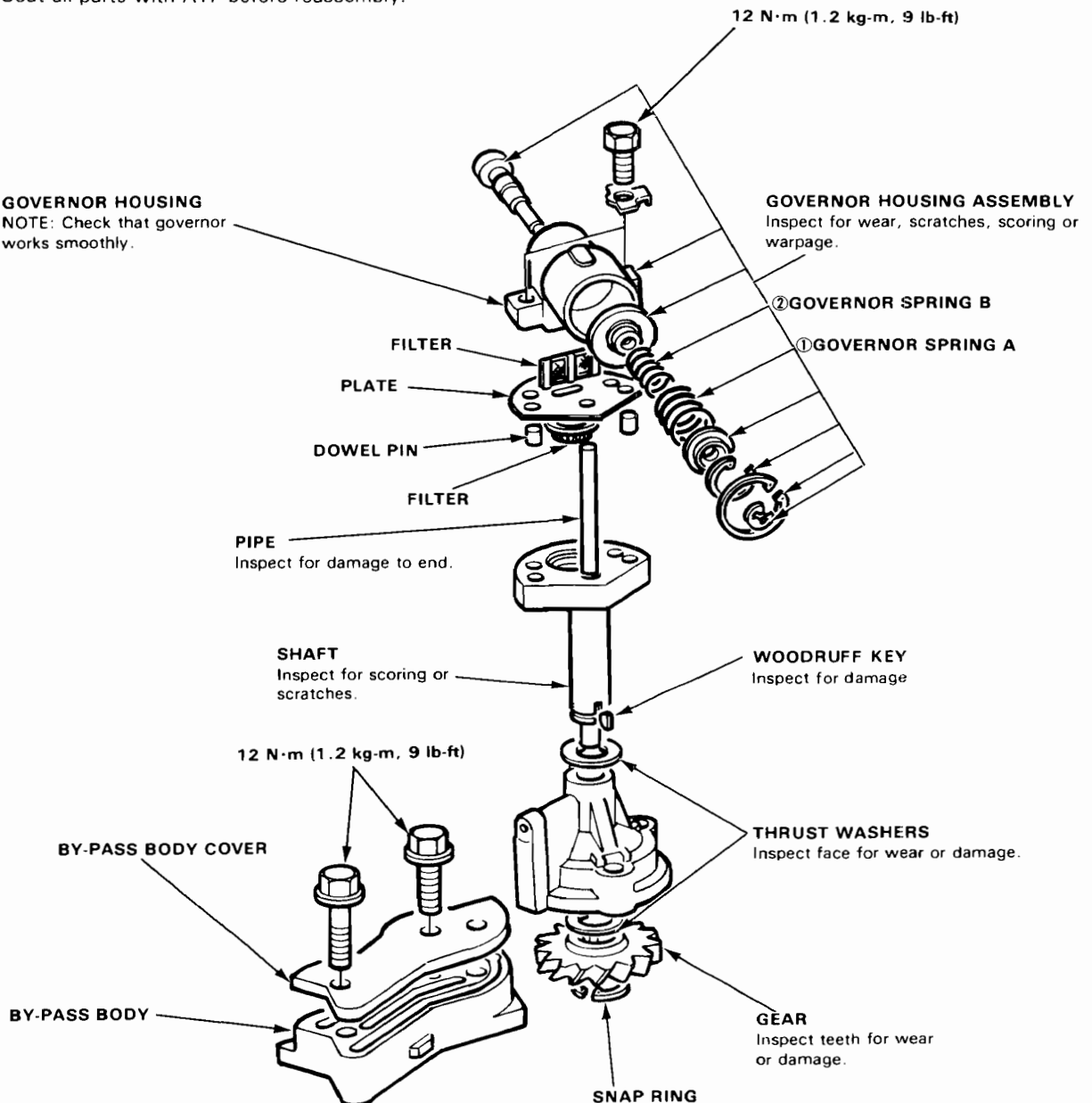
## Disassembly/Inspection/Reassembly

### 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.

### GOVERNOR HOUSING

NOTE: Check that governor works smoothly.



### Spring Specifications

Unit of length mm (in.)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Governor spring A	1.0(0.039)	18.8(0.740)	20.4(0.803)	4
②	Governor spring B	0.8(0.031)	11.8(0.465)	26.7(1.051)	6

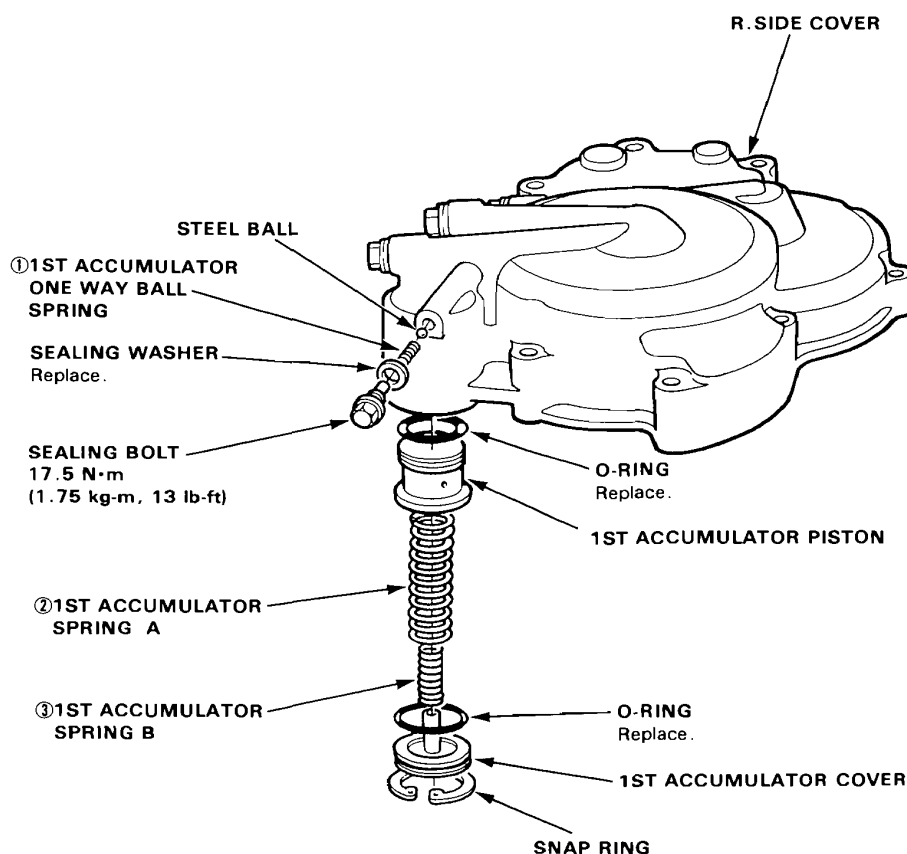
# 1st Accumulator



## 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

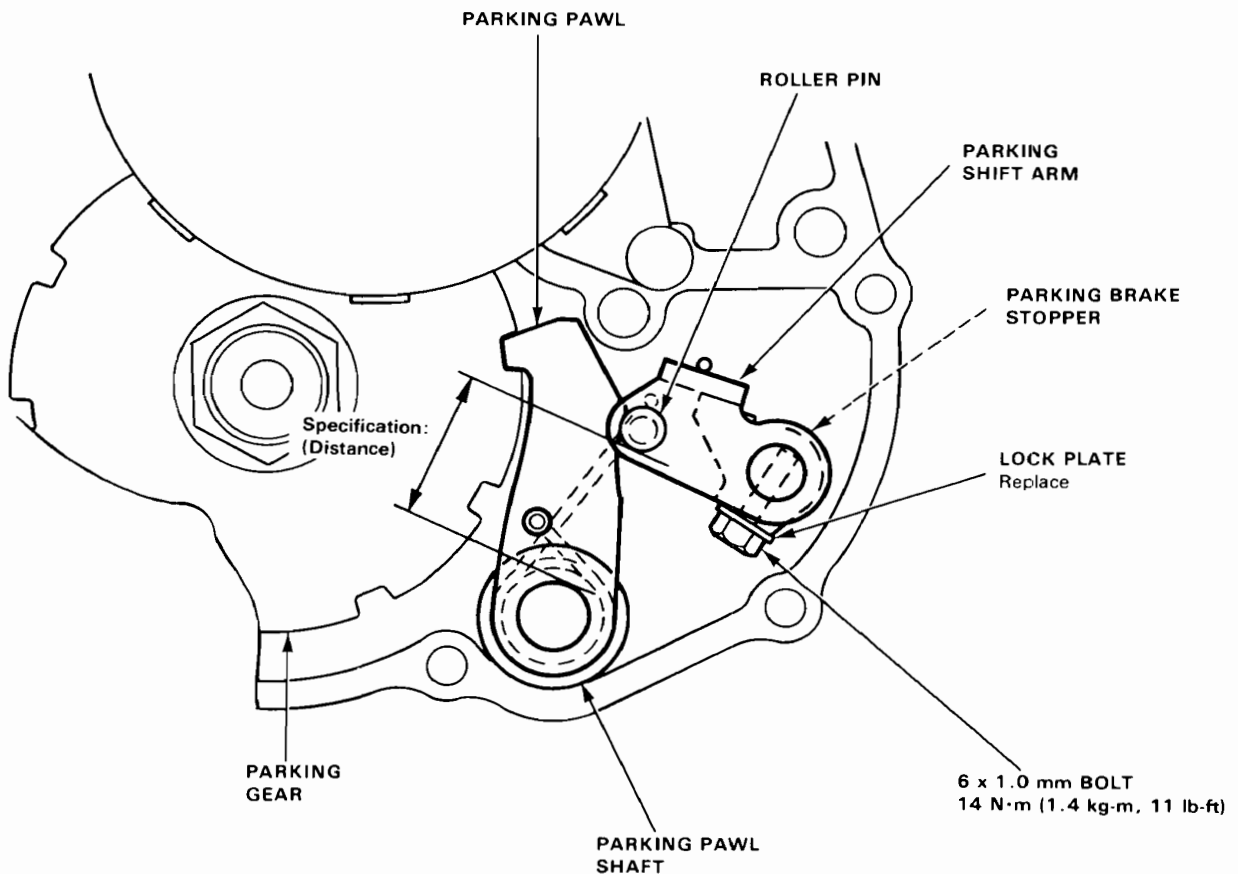


# Parking Brake Stopper

## 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.

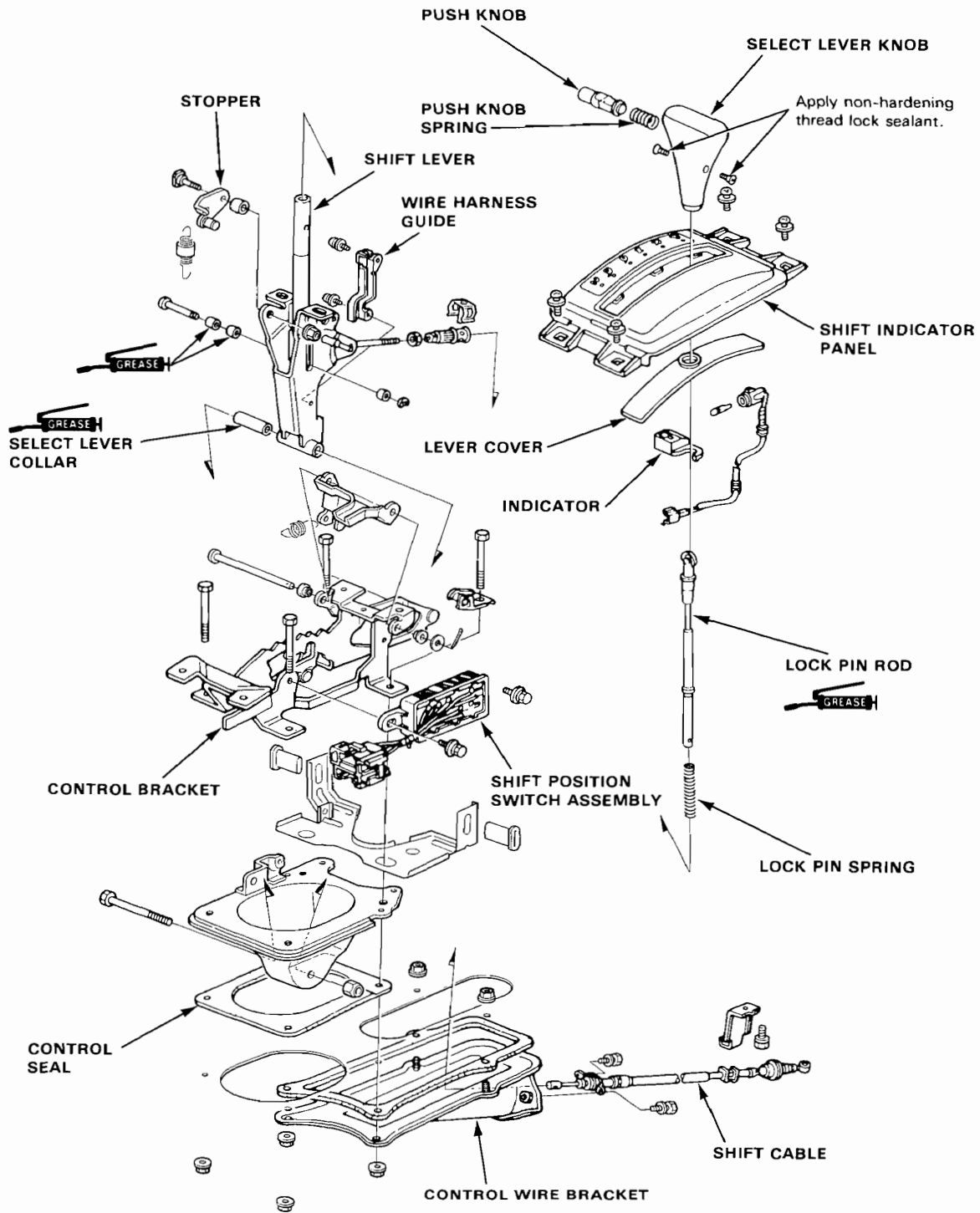
**SPECIFICATION (distance): 28.7–29.7 mm (1.130–1.169 in.)**



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

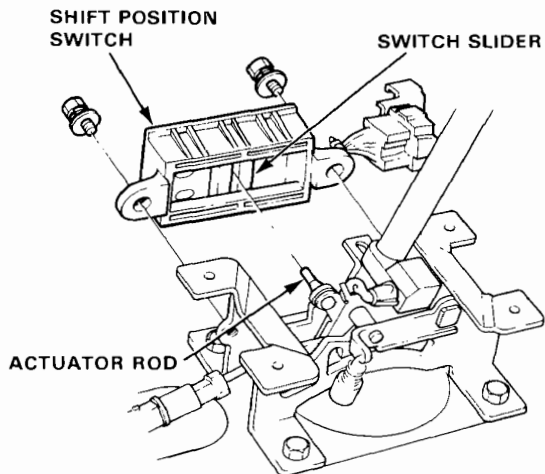
# Gear Shift Selector



## Shift Position Switch

### Installation

1. Position the switch slider in neutral as shown.
2. Shift selector lever to neutral.
3. Align the switch lug with the actuator rod.

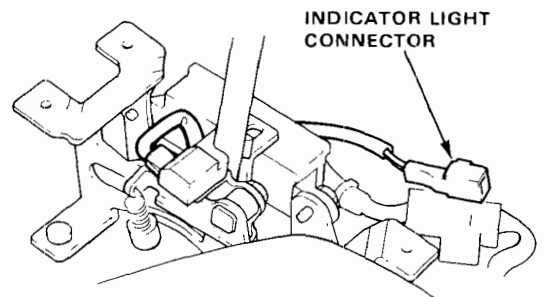


4. Tighten the bolts.

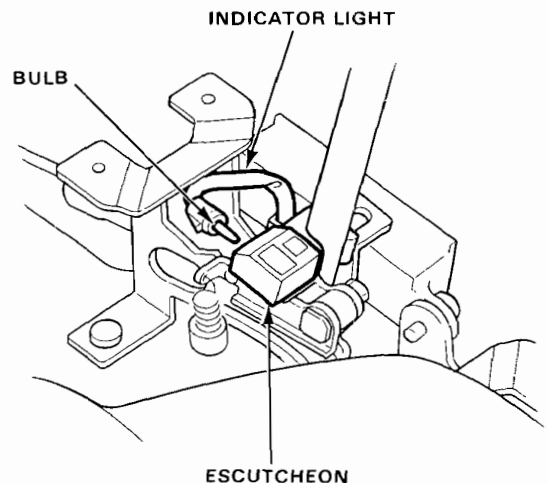
## Shift Indicator Light

### Check and Installation

1. Check for continuity between indicator light connector terminals as shown. If there is no continuity, check for burned out bulb or open circuit.



2. Install the indicator bulb in the bulb housing. Insert the bulb housing into slot in escutcheon, then turn 90° to bulb housing.



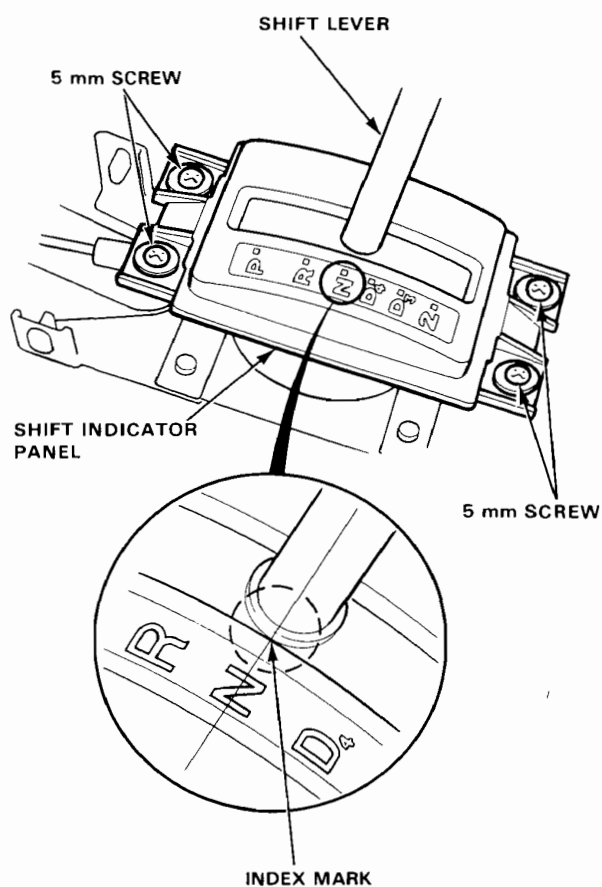


# Shift Indicator Panel

## Adjustment

1. Check that the index mark of the indicator aligns with the N mark of the shift indicator panel with the transmission in NEUTRAL.
2. If not aligned, remove the panel mounting screws and adjust by moving panel.

NOTE: Whenever escutcheon is removed for indicator bulb replacement etc., reinstall the panel as described above.



# Shift Cable

## Removal/Installation

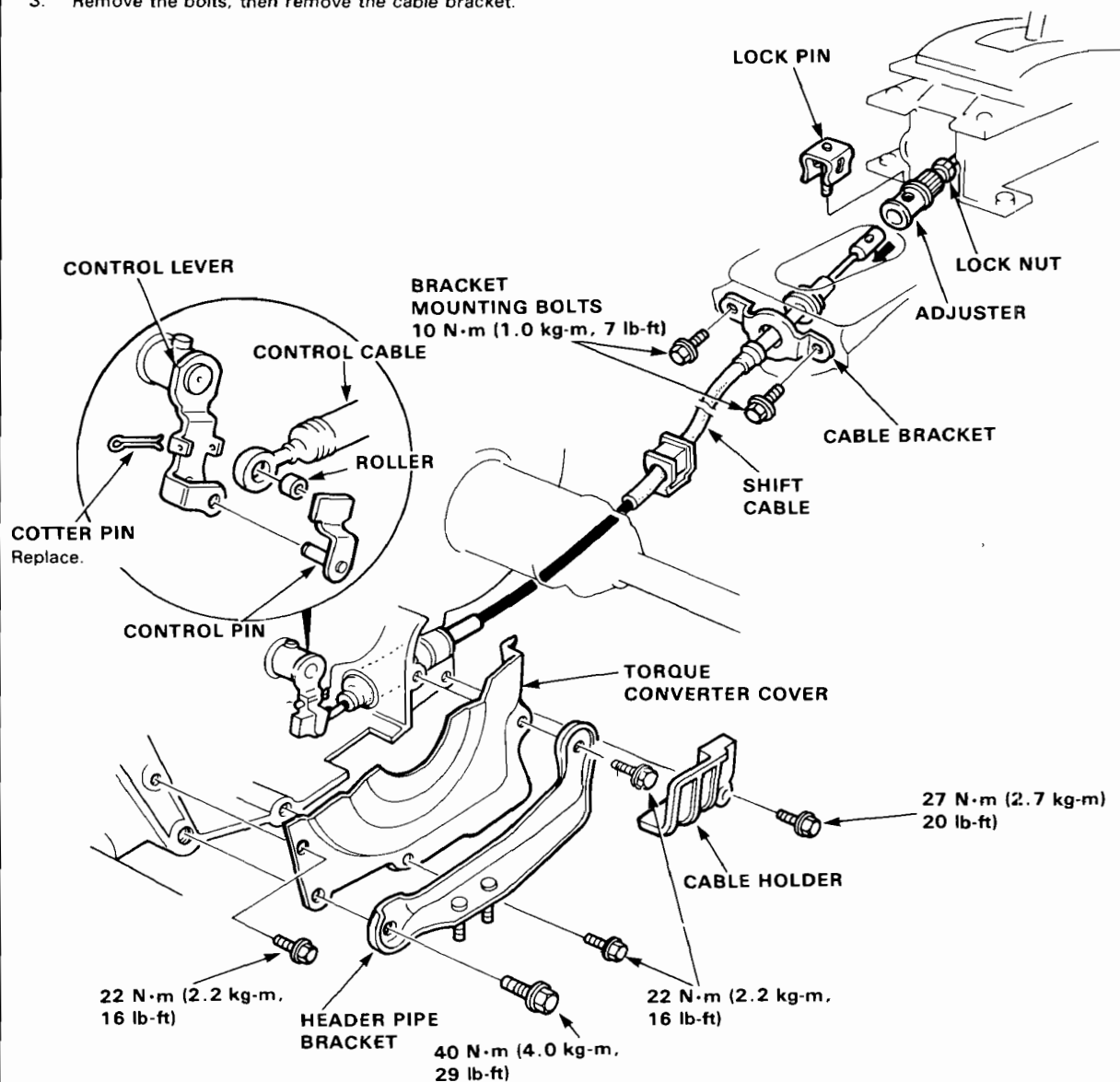
### WARNING

- Make sure jacks and safety stands are placed properly and hoist brackets are attached to correct positions on the engine. (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.
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.

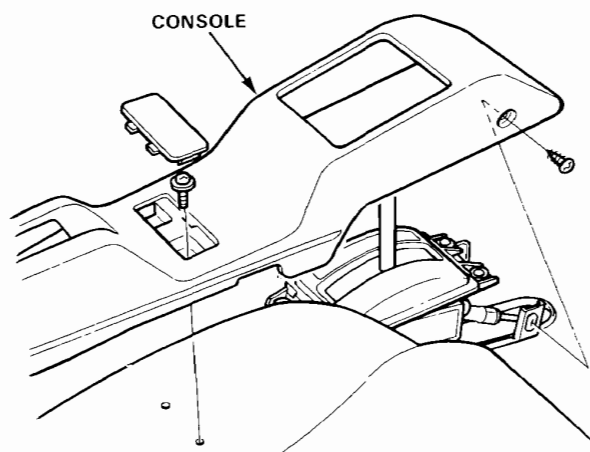
6. Install the shift cable in the reverse order of removal.  
**NOTE:** On reassembly, check the cable adjustment.



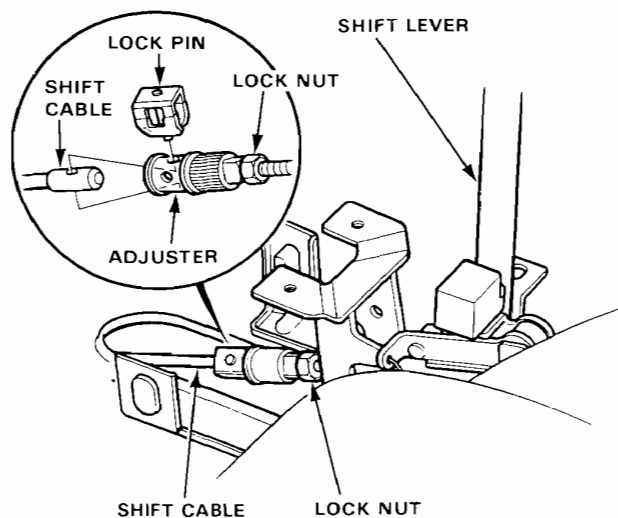


## Adjustment

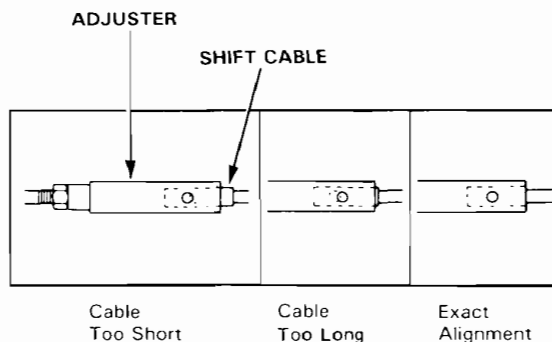
1. Start the engine. Shift to reverse to see if the reverse gear engages.
2. With the engine off, remove the console.



3. Shift to **Neutral**, then remove the lock pin from the cable adjuster.



4. Check that the hole in the adjuster is perfectly aligned with the hole in the shift cable.



NOTE: There are two holes in the end of the shift cable. They are positioned 90° apart to allow cable adjustments in 1/4 turn increments.

5. If not perfectly aligned, loosen the locknut on shift cable and adjust as required.
6. Tighten the locknut.
7. Install the lock pin on the adjuster.

NOTE: If you feel the lock pin binding as you re-install it, the cable is still out of adjustment and must be readjusted again.

8. Start the engine and check the shift lever in all gears. If any gear does not work properly, refer to Troubleshooting on page 9 - 4

# Throttle Control Cable

## Adjustment/Inspection

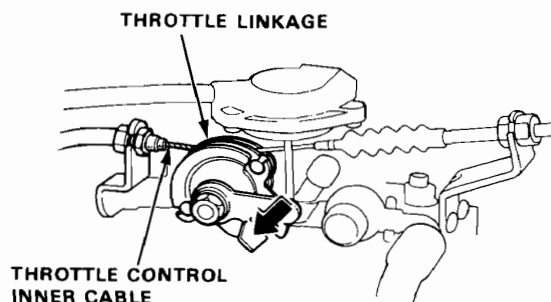
NOTE: Before adjusting the throttle control cable, make sure:

- The throttle cable free play is correct.
- The engine is at normal operating temperature (cooling fan comes on).
- The idle speed is correct.

Inspection:

NOTE: You can work the throttle linkage body with your hand.

1. Remove the throttle cable free play.
2. Make sure that the choke is released.
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:

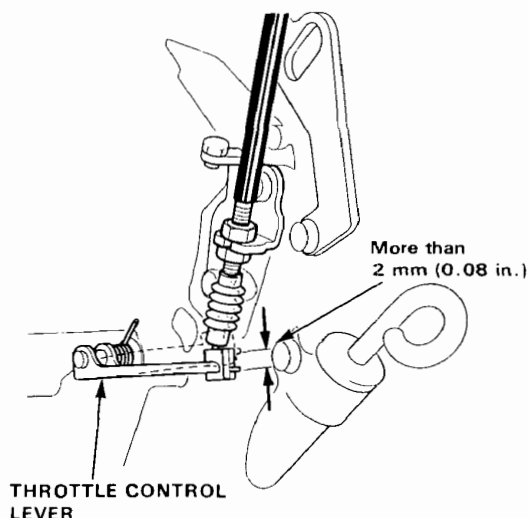
1. Loosen the nuts on the control cable at the transmission end and synchronize the control lever to the throttle.

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.



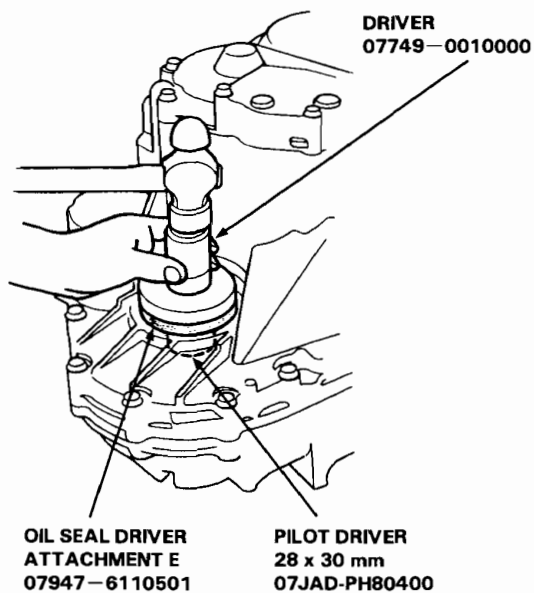
- Check that the cable moves freely by depressing the accelerator.



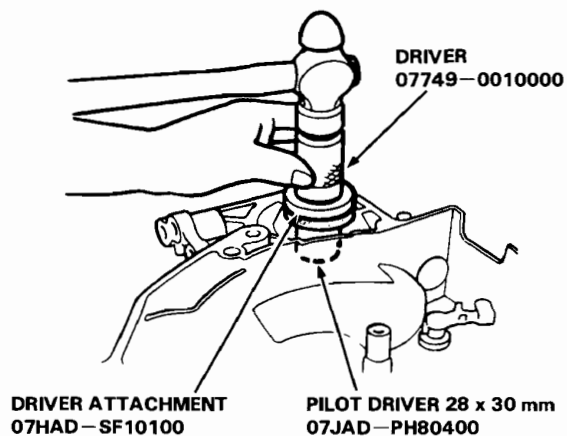
# Differential

## Oil Seal Installation

1. Install the oil seal in the transmission housing.



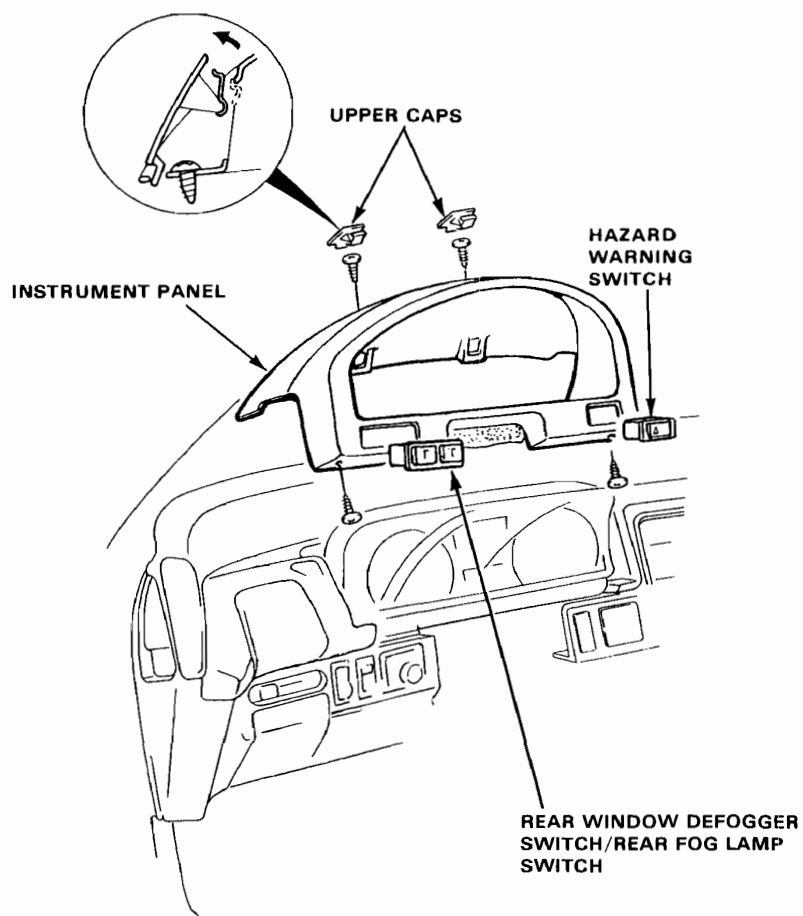
2. Install the oil seal in the torque converter housing.





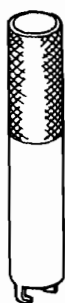
# Dashboard

## Instrument Panel Replacement

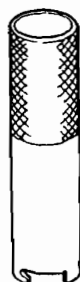


## Special Tools

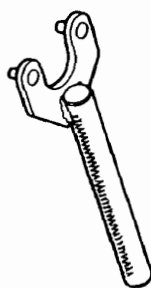
Ref. No.	Tool Number	Description	Q'ty	Page Reference
①	07HAF-SF10300	SEAL SEAT REMOVER	1	15-16
②	07HAF-SF10400	SEAL REMOVER/INSTALLER	1	15-16
③	07925-6920001	A/C CLUTCH HOLDER	1	15-23, 26
④	07935-805003	FLY WHEEL PULLER	1	15-23
⑤	07JAC-SH20100	A/C PULLEY PULLER	1	15-24
⑥	07JAC-SH20300	SHAFT RING REMOVER	1	15-25, 28
⑦	07965-6340100	BEARING DRIVER	1	15-28
⑧	07947-6340500	DRIVER ATTACHMENT	1	15-29



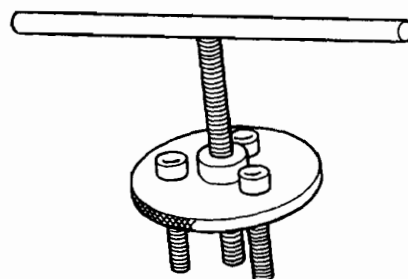
①



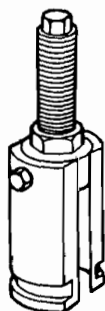
②



③



④



⑤



⑥



⑦



⑧

# Air Conditioner

## Illustrated Index



(LHD)

### A/C HIGH SIDE ADAPTER

The A/C high side charging fitting's O.D. size is reduced from 7/16" to 3/8" to prevent you from accidentally connecting the low side hose to the high side fitting. Consequently, you'll need an adapter for the existing hose on your charging station.

### DUAL PRESSURE SWITCH

When the refrigerant pressure is below 215 kPa (33 psi) due to refrigerant leakage or above 2350 kPa (340 psi) due to the coolant blockage the dual pressure switch opens the circuit to the A/C control unit and stops the air conditioner to protect the compressor.

### EVAPORATOR

As refrigerant circulates, heat is absorbed from the surrounding passenger compartment air.

### SIGHT GLASS

### CONDENSER

Dissipates the heat which was absorbed by the refrigerant.

### RECEIVER AND FILTER/DRYER

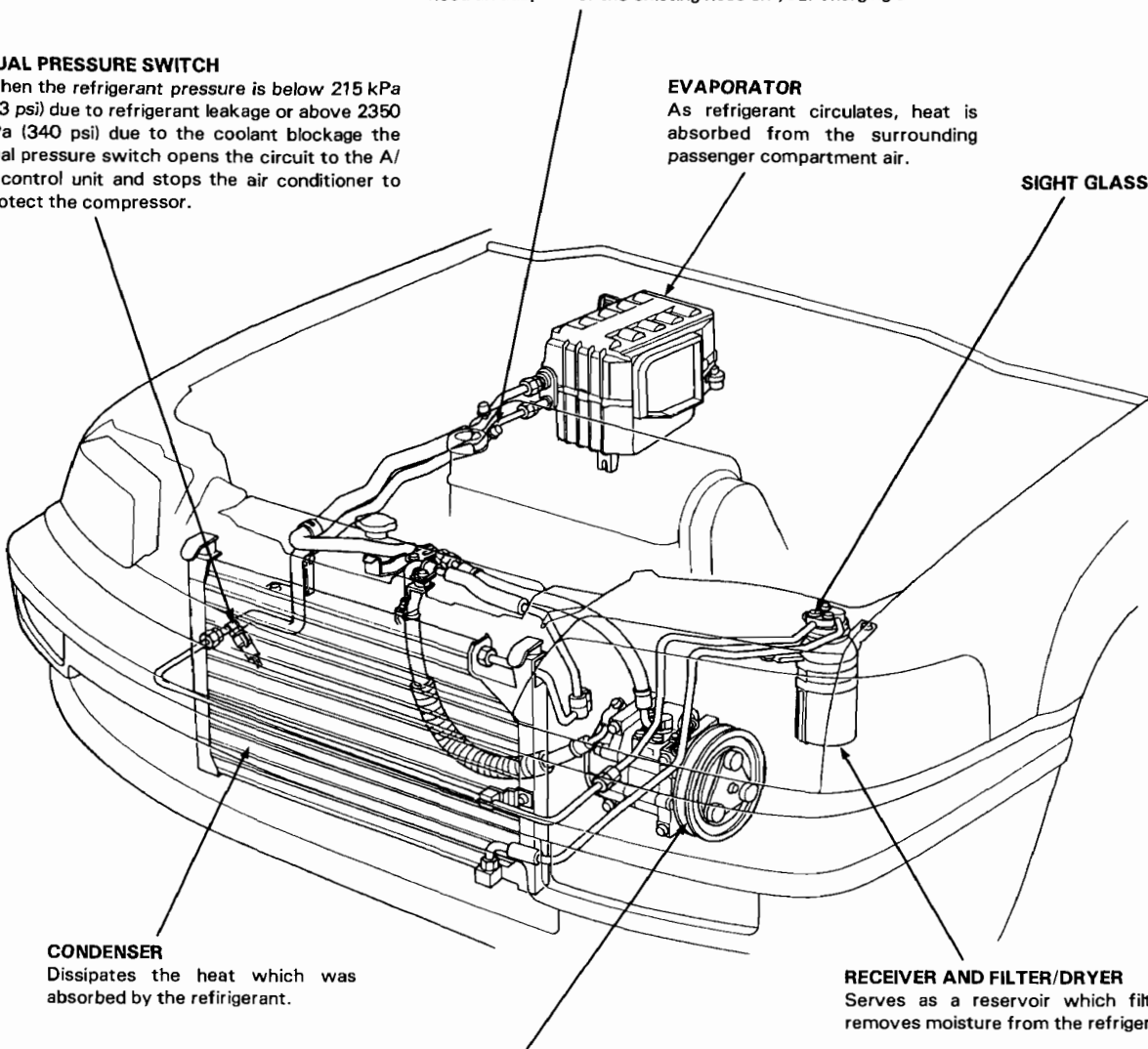
Serves as a reservoir which filters and removes moisture from the refrigerant.

### COMPRESSOR

Compresses the refrigerant and then forces it through the condenser.

There are two types:

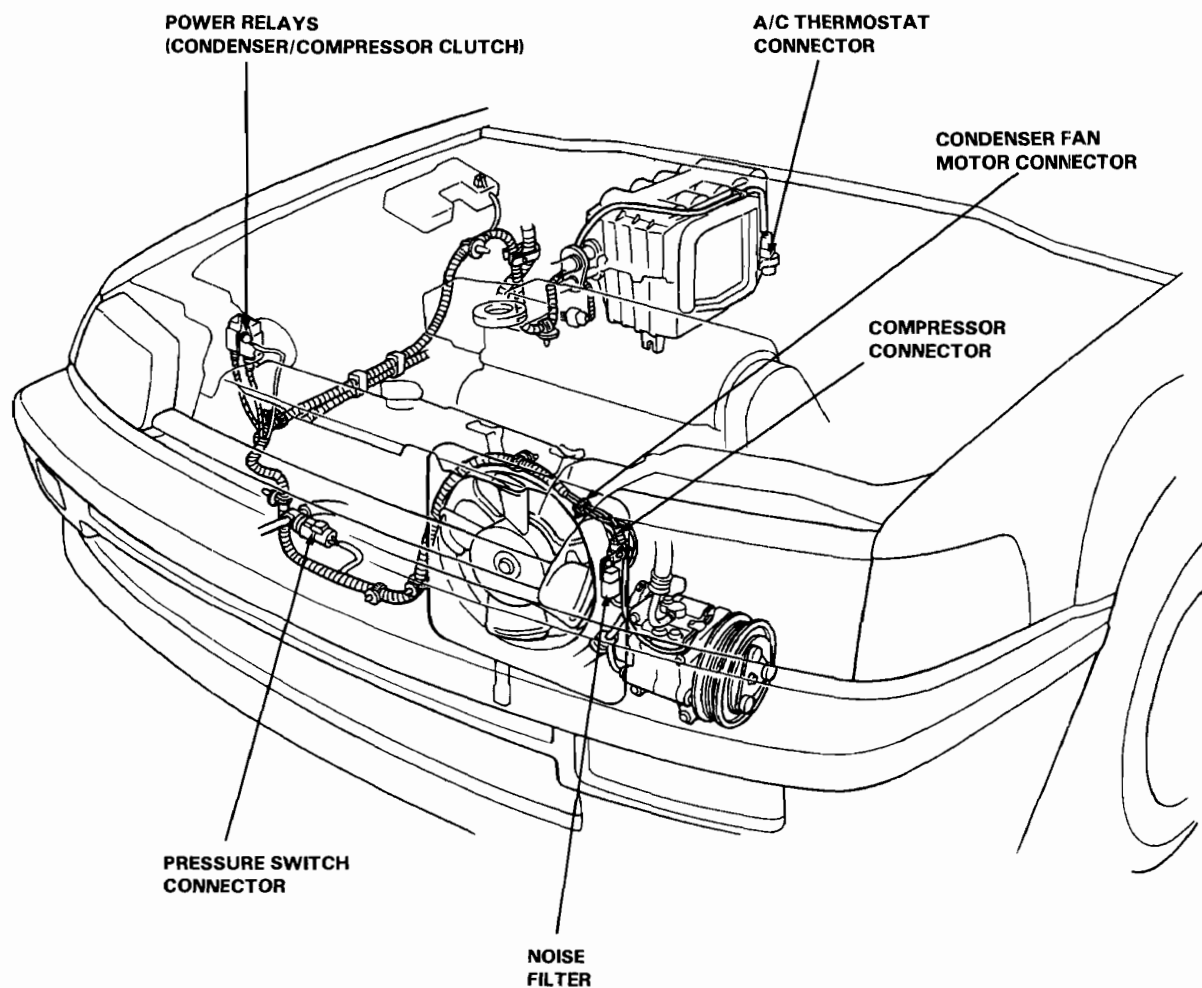
1. **MATSUSHITA**, Replacement, page 15-9
2. **SANDEN**, Replacement, page 15-18



# Air Conditioner

## Wire Harness Routing

(LHD)



# Air Conditioner



## 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)

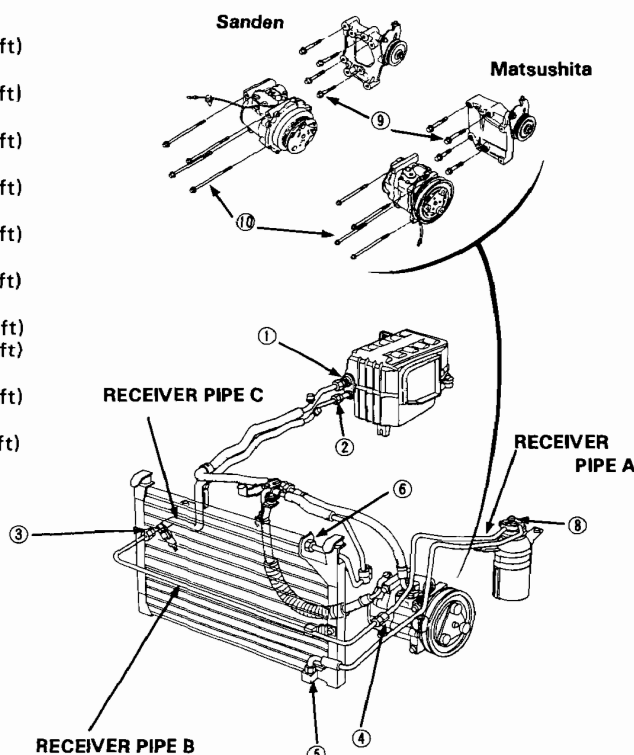
Compressor .....On compressor replacement, subtract the volume of oil drained from the removed compressor from 130cc (4.4 fl oz) or 120 cc (4 fl oz) , and drain the calculated volume of oil from the new compressor :

130 cc (4.4 fl oz) - Volume of removed compressor = Draining volume (Matsushita)

120 cc (4fl oz) - Volume of removed compressor = Draining volume (Sanden)

### 7. Torque specifications

- ① Suction hose evaporator side ..... 32 N·m (3.2 kg·m , 23 lb-ft)
- ② Receiver pipe C evaporator side ..... 17 N·m (1.7 kg·m , 12 lb-ft)
- ③ Receiver pipe C to Receiver pipe B ..... 17 N·m (1.7 kg·m , 12 lb-ft)
- ④ Receiver pipe B to Receiver pipe A ..... 17 N·m (1.7 kg·m , 12 lb-ft)
- ⑤ Condenser pipe to Condenser ..... 17 N·m (1.7 kg·m , 12 lb-ft)
- ⑥ Discharge hose to Condenser ..... 22 N·m (2.2 kg·m , 16 lb-ft)
- ⑦ Compressor hose mounting bolts ..... 30 N·m (3.0 kg·m , 22 lb-ft)
- ⑧ Receiver tank ..... 17 N·m (1.7 kg·m , 12 lb-ft)
- ⑨ Compressor bracket mounting bolts ..... 48 N·m (4.8 kg·m , 35 lb-ft)
- ⑩ Compressor mounting bolts ..... 25 N·m (2.5 kg·m , 18 lb-ft)



### ▲ WARNING

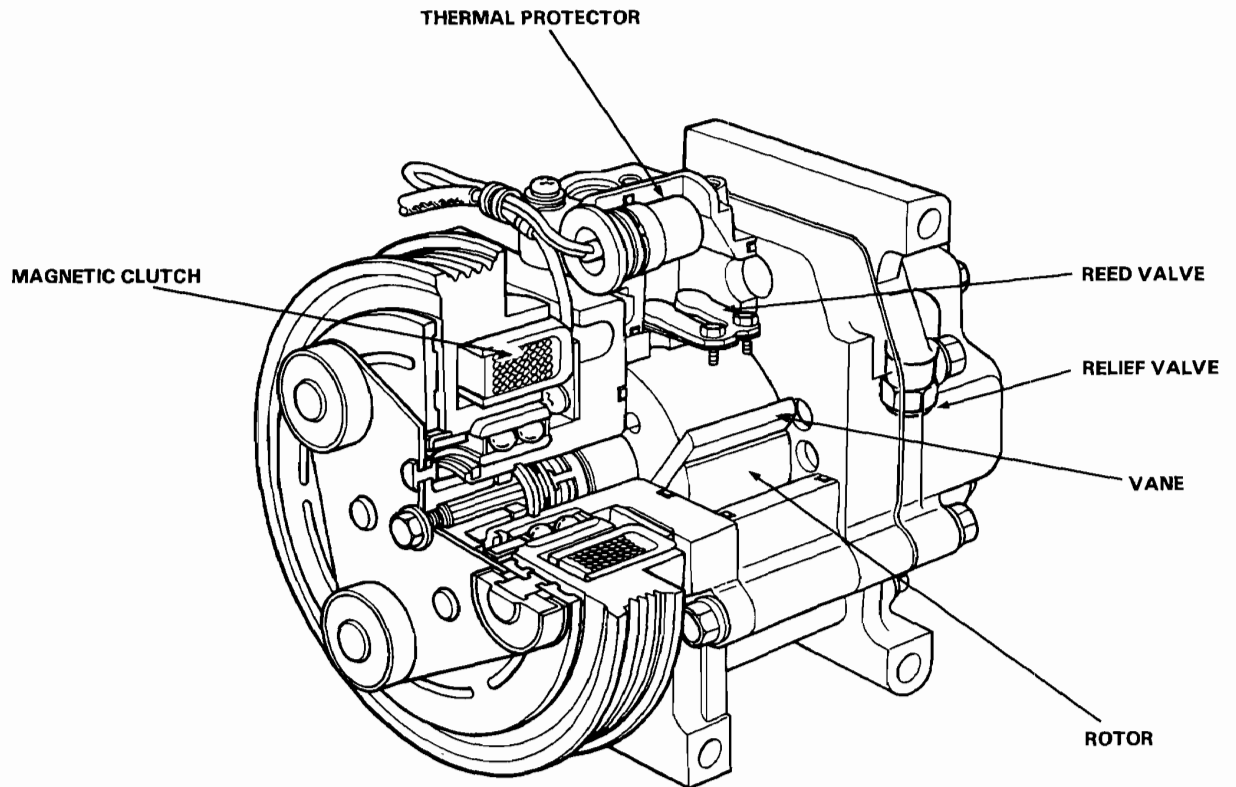
#### When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
  - Do not rub your eyes or skin.
  - Splash large quantities of cool water in your eyes or on your skin.
  - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce a poisonous gas.
- The ozone is a fragile layer surrounding the earth which acts as a shield against the sun's ultraviolet radiation. Chlorine from chemicals called Chlorofluorocarbons (CFCs) destroy the ozone in the stratosphere. Automotive air conditioning systems currently use Chlorofluorocarbons as the refrigerant. Auto air conditioning service equipment has been developed to minimize the release of CFCs to the atmosphere. All service procedures should be performed using this equipment and the manufactures instructions.

# Compressor

## 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.

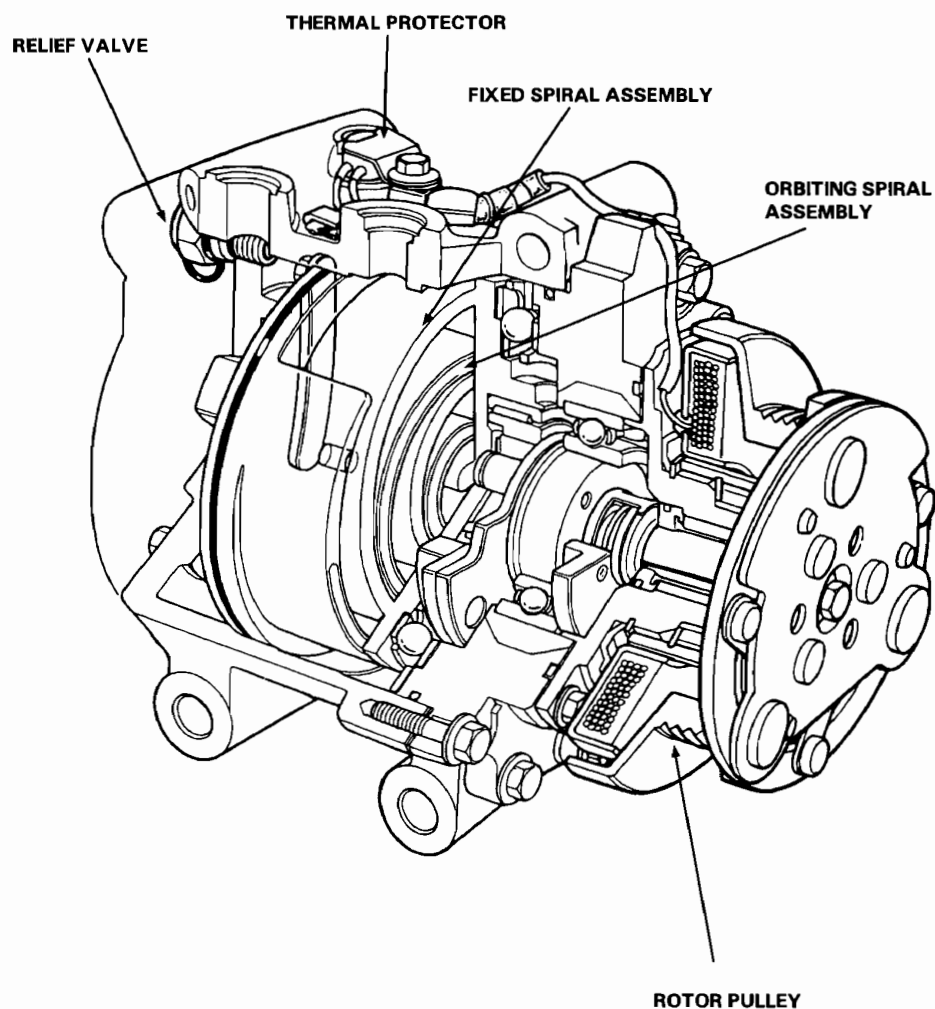


# Compressor



## Description (Sanden)

This compressor is the spiral type. Refrigerant is compressed between a fixed spiral assembly and an orbiting spiral assembly. A thermal protector is installed on this compressor.



# Compressor

## Troubleshooting

NOTE: Performance Test on page 22-50.

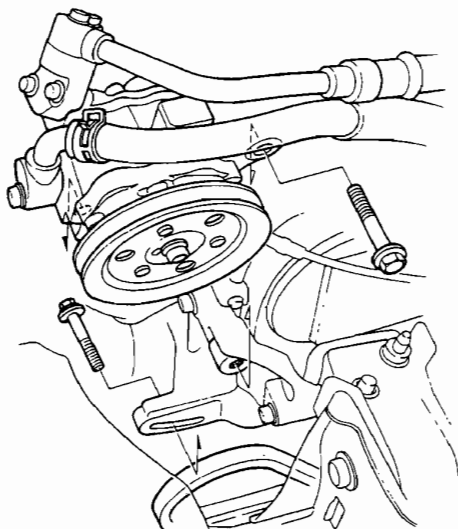
TEST RESULTS	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system; then re-charge Evacuation: page 15-30 Recharging: 15-32
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as required
	Reduced or no air flow through condenser.	<ul style="list-style-type: none"> <li>• Clogged condenser or radiator fins</li> <li>• Condenser or radiator fan not working properly</li> </ul>	<ul style="list-style-type: none"> <li>• Clean</li> <li>• Check voltage and fan rpm</li> </ul>
	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	<ul style="list-style-type: none"> <li>• Charge system</li> <li>• Check for leak</li> </ul>
	High and low pressures are balanced soon after stopping compressor	<ul style="list-style-type: none"> <li>• Faulty compressor discharge or inlet valve</li> <li>• Faulty compressor seal</li> </ul>	Replace compressor
	Outlet of expansion valve is not frosted, low pressure gauge indicates vacuum	<ul style="list-style-type: none"> <li>• Faulty expansion valve</li> </ul>	Repair or Replace
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	Insufficient refrigerant <ul style="list-style-type: none"> <li>• Frozen expansion valve</li> <li>• Faulty expansion valve</li> </ul>	Check for leaks. Charge as required. Replace expansion valve
	Discharge temperature is low and the air flow from vents is restricted	Frozen evaporator	Run the fan with compressor off then check the thermostat and capillary tube.
	Expansion valve frosted	Clogged expansion valve	Clean or Replace
	Receiver dryer is cool (should be warm during operation)	Clogged receiver dryer	Replace
Suction pressure abnormally high	Low pressure hose and check joint are cooler than around evaporator	<ul style="list-style-type: none"> <li>• Expansion valve open too long</li> <li>• Loose expansion valve</li> </ul>	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	<ul style="list-style-type: none"> <li>• Faulty gasket</li> <li>• Faulty high pressure valve</li> <li>• Foreign particle stuck in high pressure valve</li> </ul>	Replace compressor
Suction and discharge pressures abnormally high	Reduced air flow through condenser	<ul style="list-style-type: none"> <li>• Clogged condenser or radiator fins</li> <li>• Condenser or radiator fan not working properly</li> </ul>	<ul style="list-style-type: none"> <li>• Clean condenser and radiator</li> <li>• Check voltage and fan rpm</li> </ul>
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Discharge refrigerant as necessary.
Suction and discharge pressure abnormally low	Low pressure hose and metal end areas are cooler than evaporator	Clogged or kinked low pressure hose parts	Repair or Replace
	Temperature around expansion valve is too low compared with that around receiver—dryer.	Clogged high pressure line	Repair or Replace
Refrigerant leaks	Compressor 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





## Replacement (Matsushita)

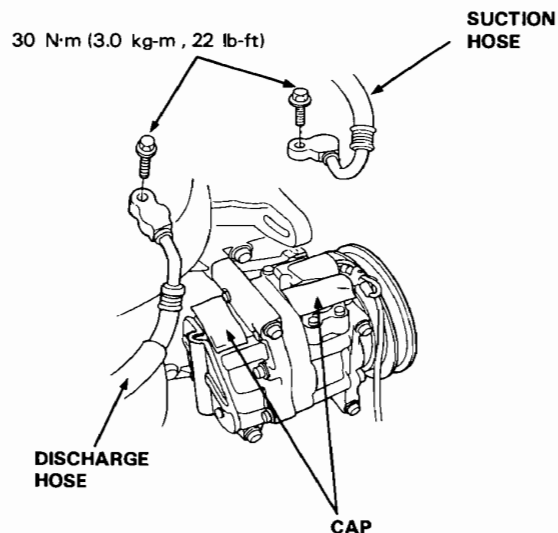
1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system
3. Remove the mounting bolts (2) the power steering pump belt, and the power steering pump.



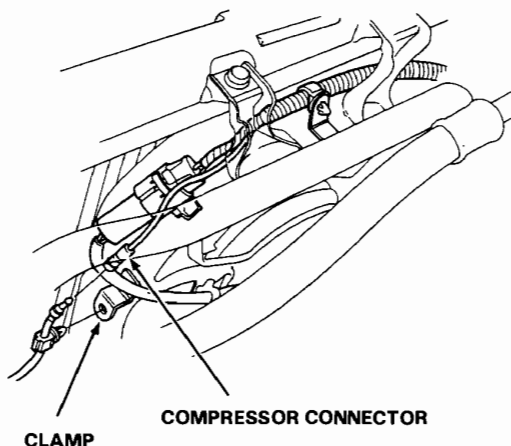
4. Disconnect the suction and discharge hoses from the compressor.

### CAUTION:

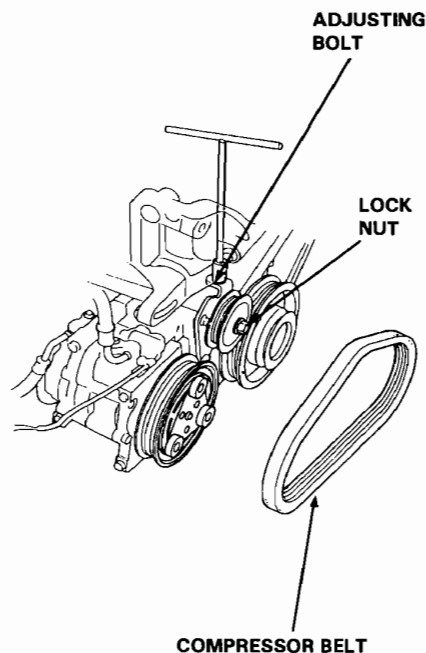
Cap the open fittings immediately to keep moisture and dirt out of the system.



5. Disconnect the compressor connector and the clamp.



6. Loosen the adjusting bolt and lock nut, then remove the compressor belt.

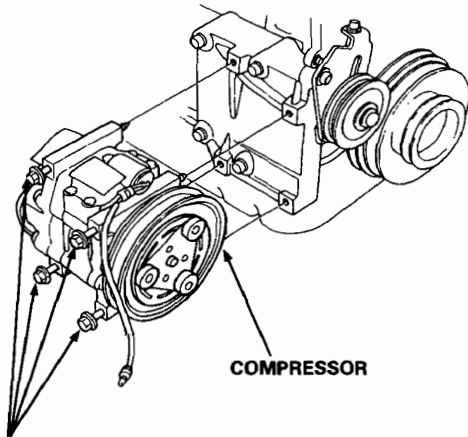


(cont'd)

# Compressor (Matsushita)

## Replacement (cont'd)

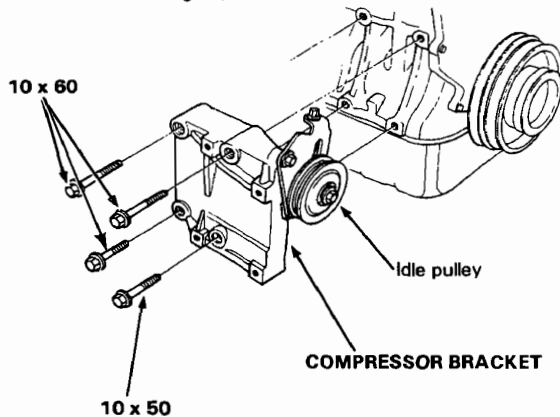
7. Remove the compressor mounting bolts (4) and compressor. Rest the compressor on the front beam.



**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:

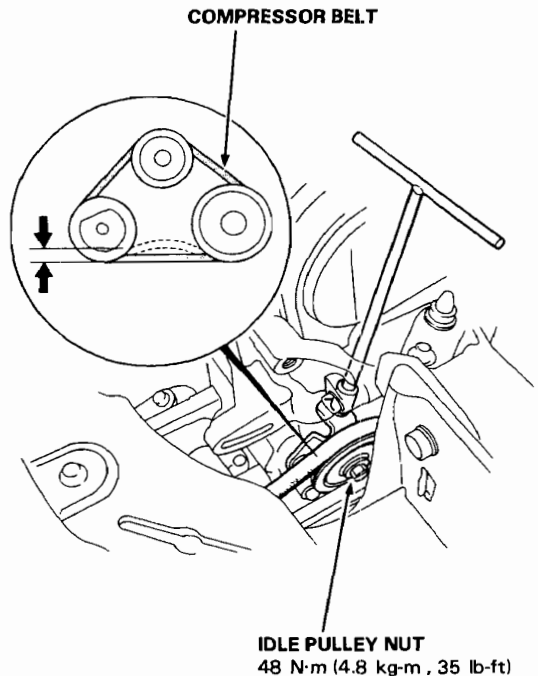
- If a new compressor is installed, calculate the amount of refrigerant to be drained through the suction fitting on the compressor:  
150 cc (5 fl oz.) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the compressor belt and the power steering belt.

### NOTE:

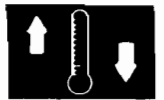
Measure the deflection when 98 N (10 kg, 22 lb) force is applied between the pulleys.

**Compressor belt Adjustment.**  
9–11 mm (0.4–0.4 in)

When new belt is installed:  
7–9 mm (0.3–0.4 in)

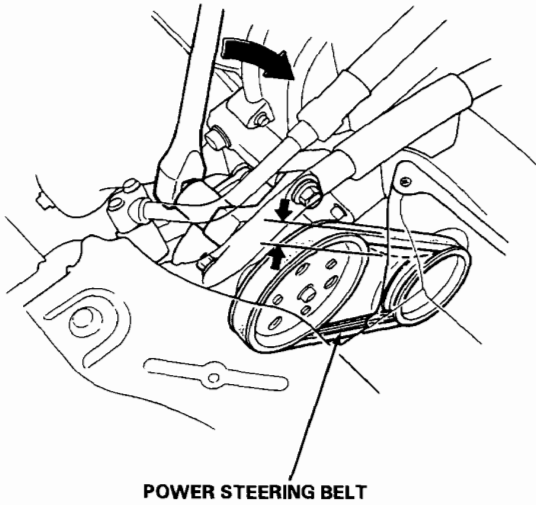


- Charge the system.
- Test the performance.



11. Power steering belt adjustment.  
9—12 mm (0.4—0.5 in)

When new belt is installed:  
7—10 mm (0.3—0.4 in)

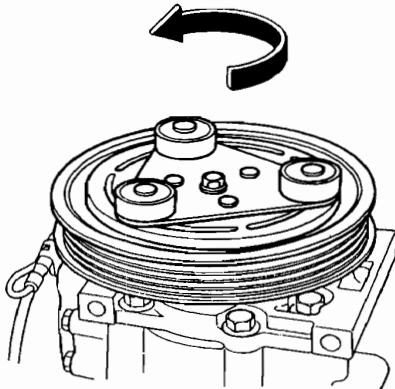


# Compressor (Matsushita)

## 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.

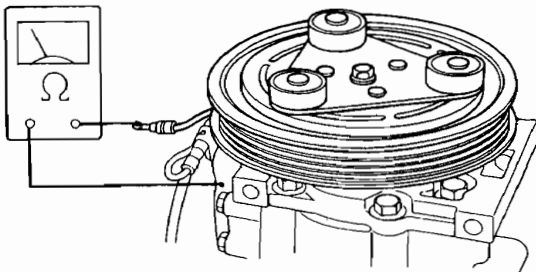
ROTOR PULLEY



- Check resistance of the field coil:

**Field Coil Resistance:**  
 $3.33 \pm 0.17$  ohm at 20°C (68°F)

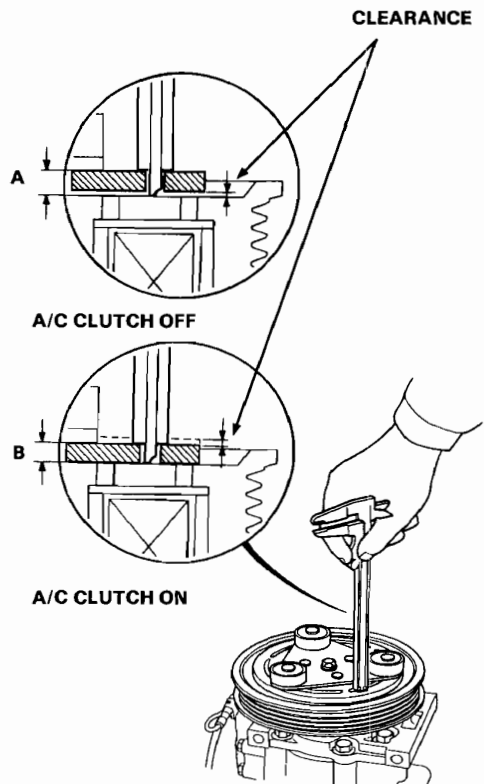
If resistance is not within specifications, replace the coil.



- Measure the clearance between the pulley and pressure plate. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

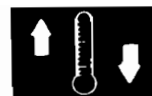
**CLEARANCE:** 0.4—0.6 mm (0.016 — 0.02 in)

$CLEARANCE = A(CLUTCH OFF) - B(CLUTCH ON)$



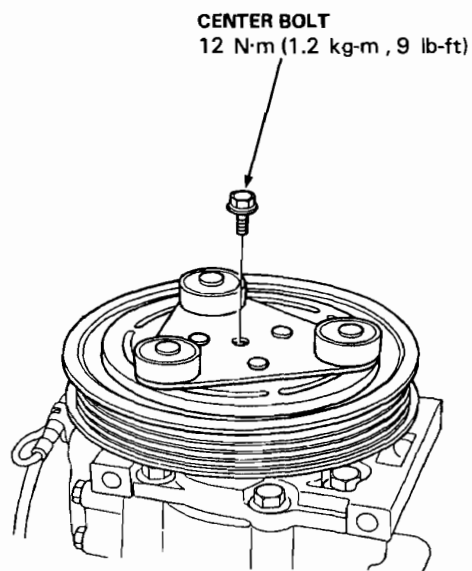
### NOTE:

The shims are available in two sizes: 0.2 mm and 0.5 mm of thickness.

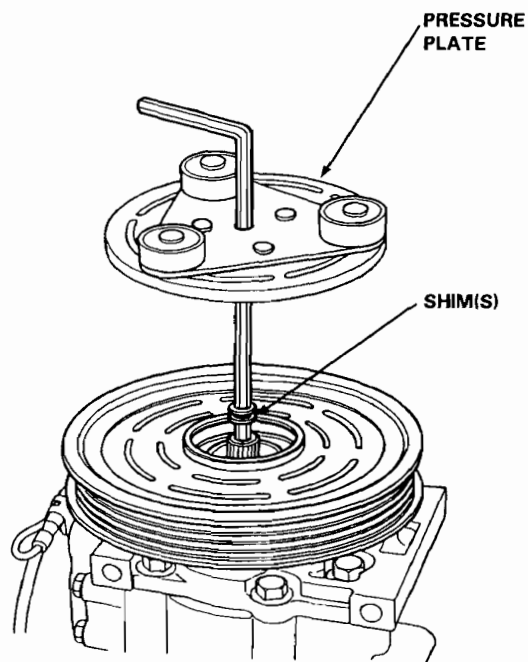


## Clutch Overhaul

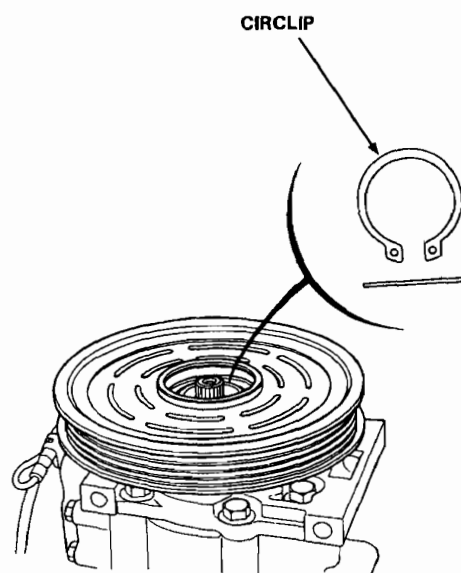
1. Remove the center bolt and washers.



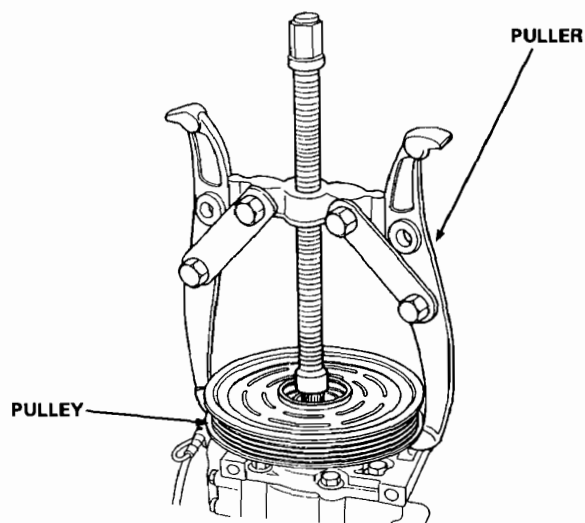
2. Remove the pressure plate and shim(s) taking care not to lose the shims.



3. Use circlip pliers to remove the circlip.



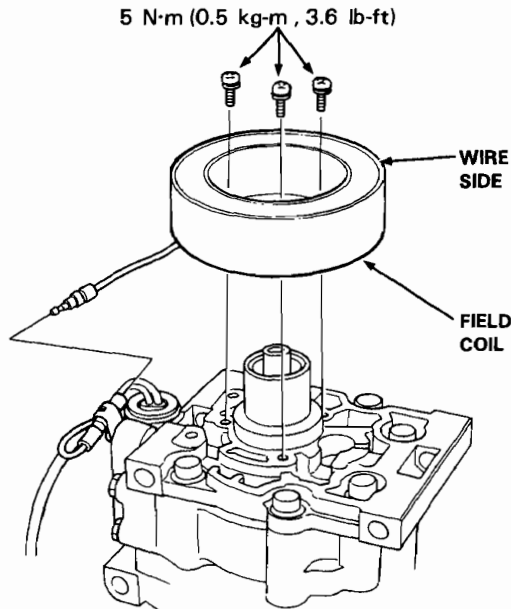
4. Remove the pulley from the shaft using a 2 or 3 jaw puller.
5. Check the pulley, replace the assembly if the pulley is damaged or deformed.



# Compressor (Matsushita)

## Clutch Overhaul (cont'd)

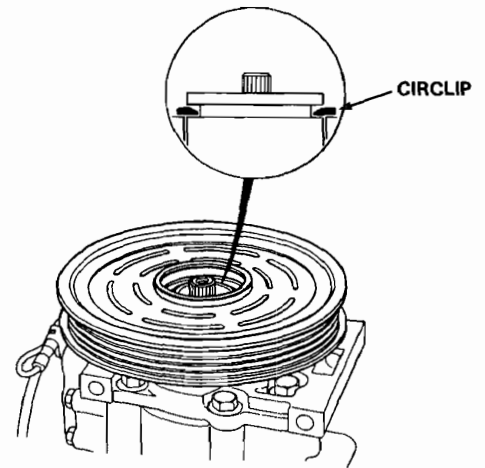
6. Disconnect the field coil connector and remove the screws (3) and field coil.



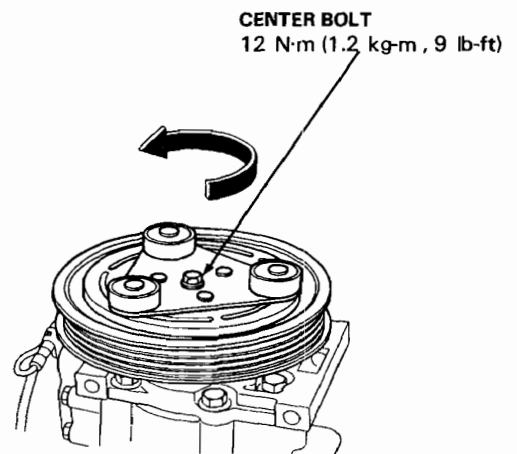
7. Install in the reverse order of removal and:

- 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.



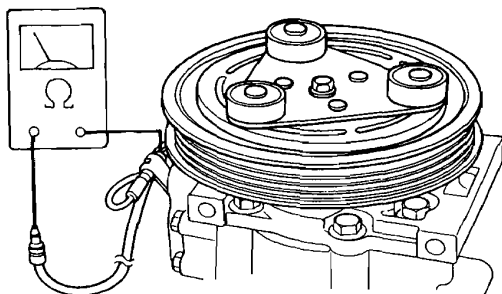


## Thermal Protector Inspection

Check for continuity between the 1 and 3 terminals of the compressor connector.

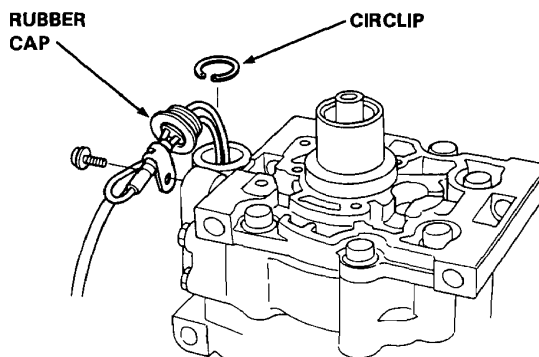
There should be continuity.

- If no continuity, replace the thermal protector.



## Thermal Protector Replacement

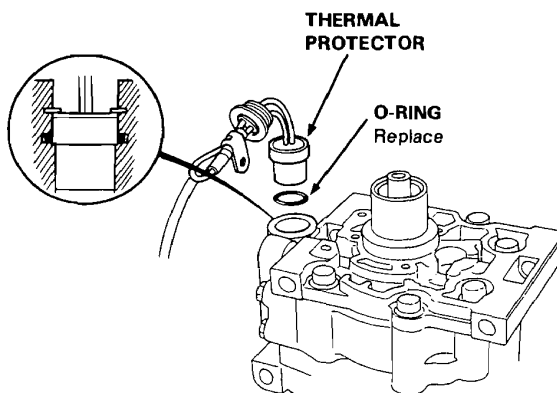
1. Remove the pressure plate and field coil (page 22-29).
2. Pull the rubber cap out from the thermal protector.
3. Remove the screws and wire clips.
4. Remove the circlip and thermal protector.



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:

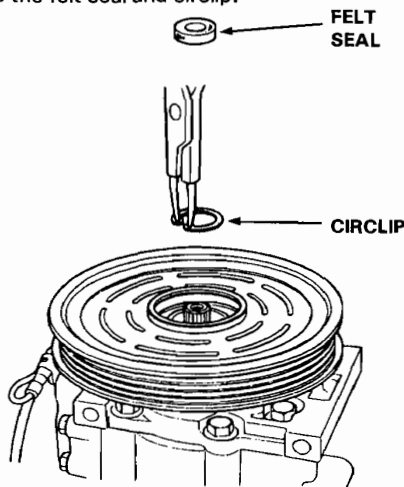
Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the pressure plate.

### NOTE:

Removal of the clutch pulley and coil is not necessary.

2. Remove the felt seal and circlip.

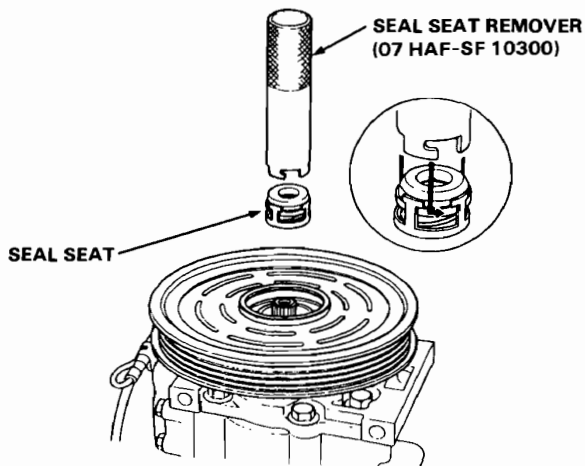


3. Remove the shim(s).

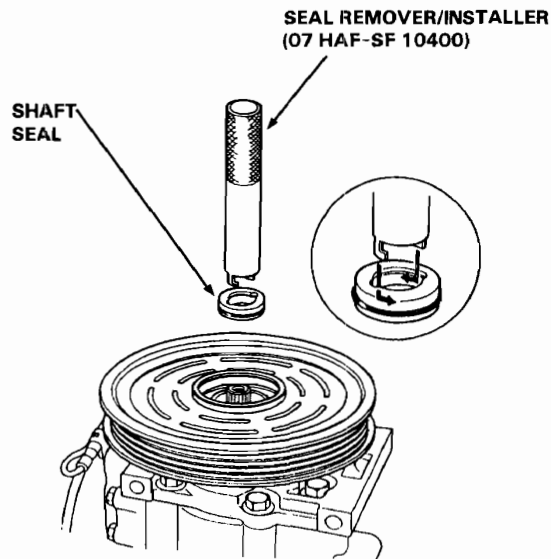
### NOTE:

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.

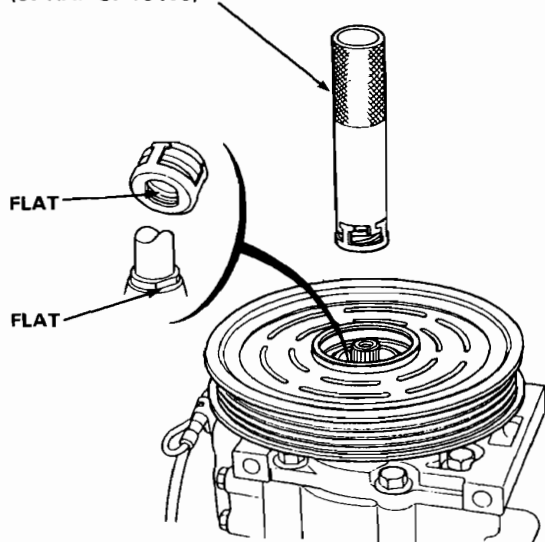




13. Liberally lubricate the compressor shaft with refrigerant oil.

14. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.

**SEAL REMOVER/INSTALLER  
(07 HAF-SF 10400)**



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.

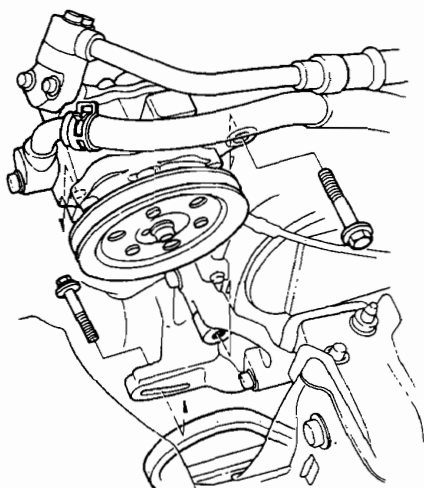
20. Install the shim(s).

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 — 0.6mm (0.016 — 0.02 in)] shims must be added or removed as required.

# Compressor (Sanden)

## Replacement

1. If the compressor is marginally operable, run the engine at idle speed and turn on the air conditioner fan a few minutes, then shut the engine off and disconnect the battery negative terminal.
2. Discharge the refrigerant very slowly from the system
3. Remove the two mounting bolts, the power steering pump belt, and the power steering pump.

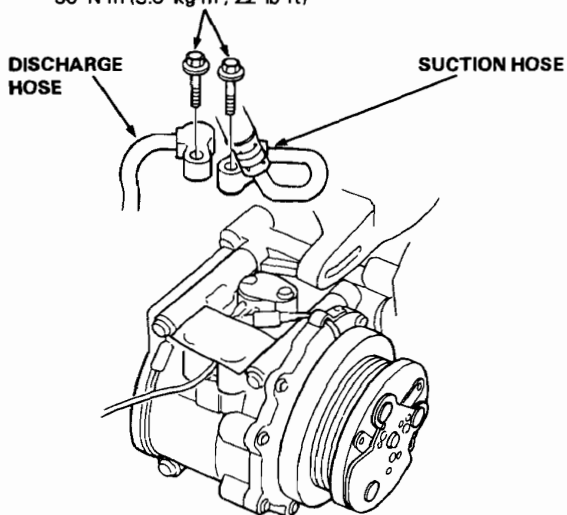


4. Disconnect the suction and discharge hoses from the compressor.

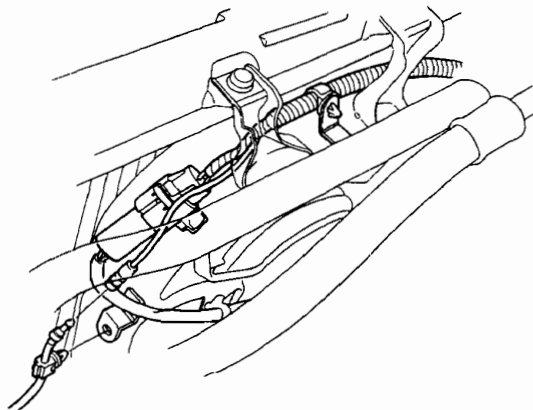
### CAUTION:

Cap the open fittings immediately to keep moisture and dirt out of the system.

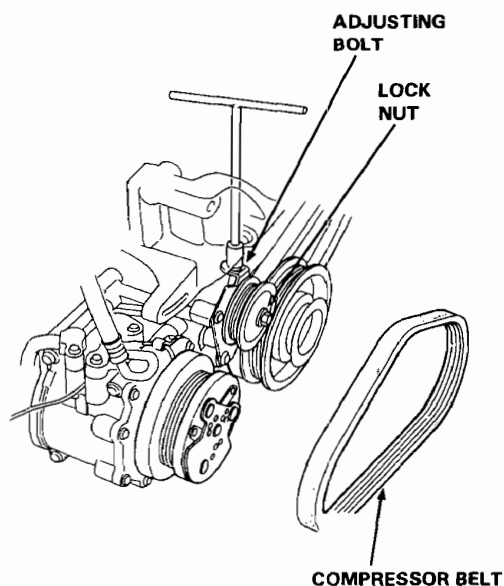
30 N·m (3.0 kg-m, 22 lb-ft)



5. Disconnect the compressor connector and the clamp.



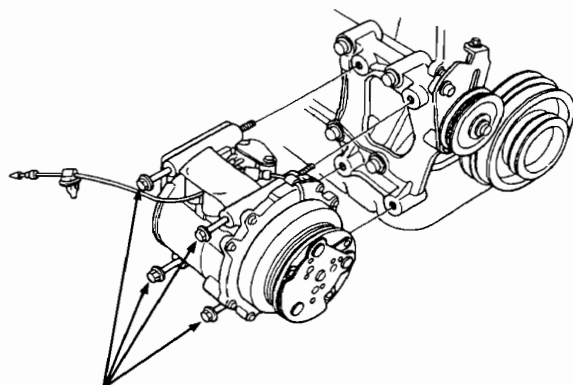
6. Loosen the lock nut and adjusting bolt, then remove the compressor belt.



(cont'd)



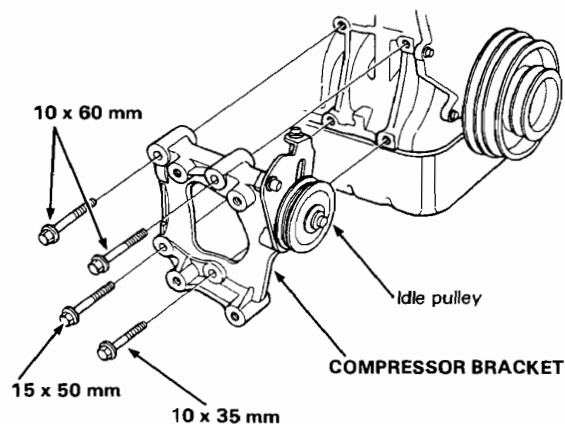
7. Remove the four compressor mounting bolts and compressor. Rest the compressor on the front beam.



**MOUNTING BOLTS**

25 N·m (2.5 kg-m , 18 lb-ft)

8. Remove the four mounting bolts and compressor bracket with idle pulley.



**MOUNTING BOLTS**

48 N·m (4.8 kg-m , 35 lb-ft)

9. Remove the compressor.

10. Install in the reverse order of removal and:

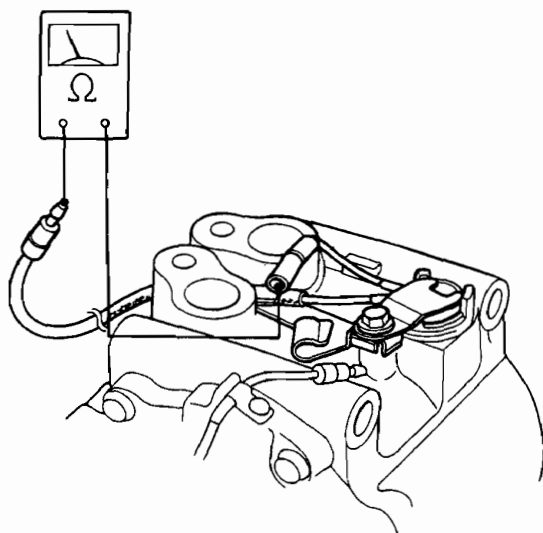
- If a new compressor is installed, calculate the refrigerant oil as below and drain through the suction fitting on the compressor:  
120 cc (4 fl oz) minus contents of old compressor, equals amount to drain from new compressor.
- Adjust the belt
- Charge the system
- Test the performance

# Compressor (Sanden)

## Thermal Protector Inspection

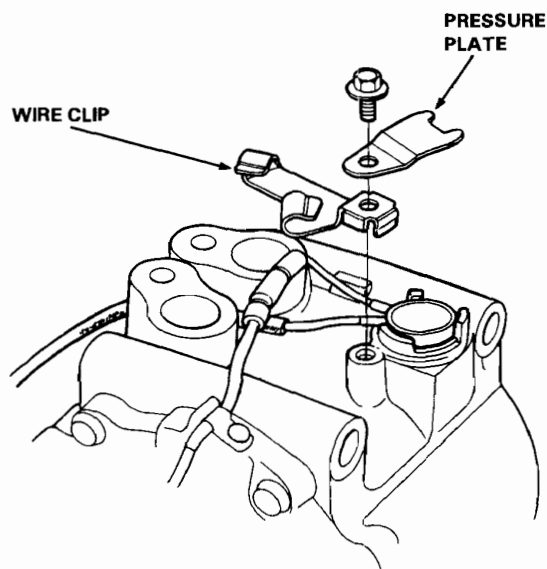
Check for continuity between A and B terminals of the thermal protector connector. There should be continuity.

- If no continuity, replace the thermal protector.



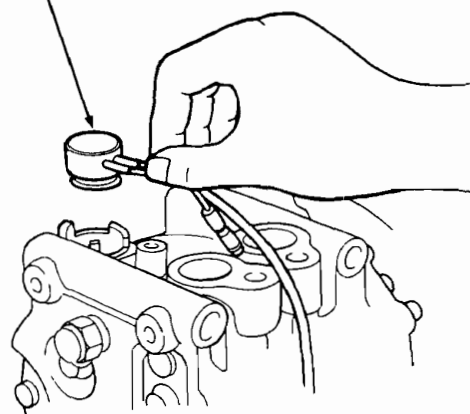
## Thermal Protector Replacement

1. Remove the bolt, pressure plate and the wire clip.



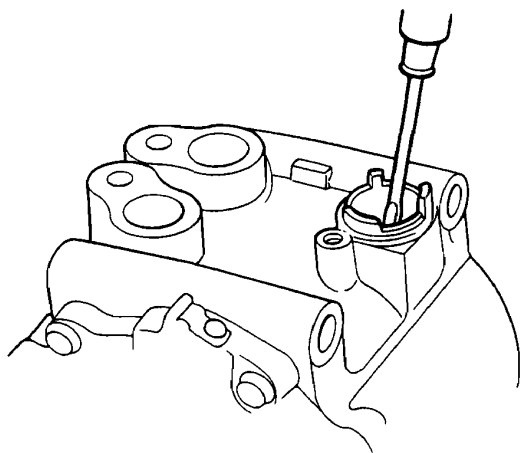
2. Disconnect the thermal protector and field coil connector, then remove the thermal protector.

THERMAL PROTECTOR

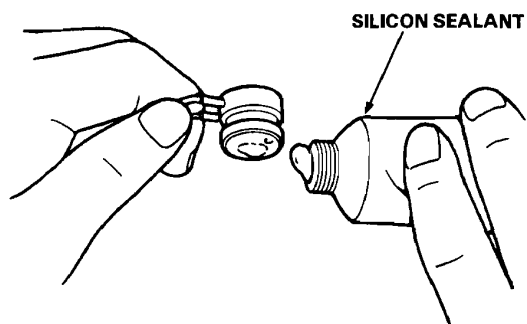




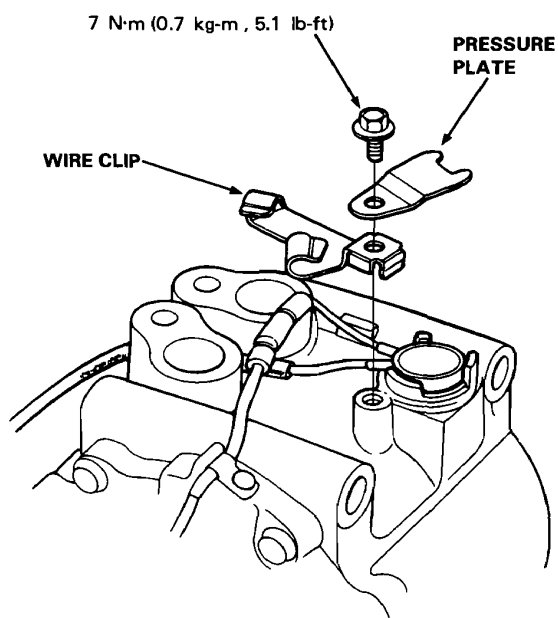
3. Remove the old silicon sealant from the cup of thermal protector.



4. Lubricate the new thermal protector with silicon sealant, then install the thermal protector into compressor.



5. Connect the thermal protector wire, then install the wire with the pressure plate and the wire clip.

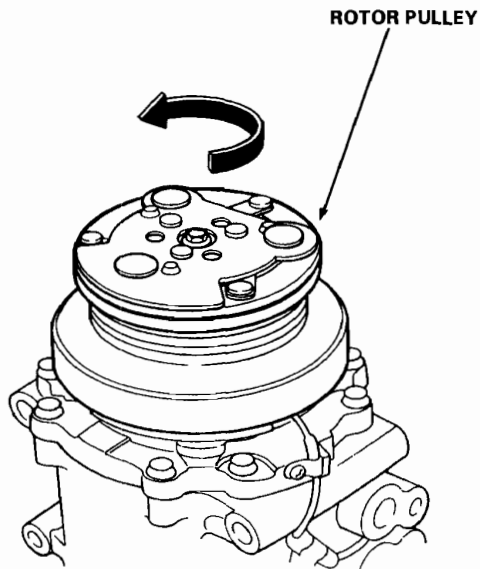


- Make sure that the thermal protector has continuity.

# Compressor (Sanden)

## 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 or drag.

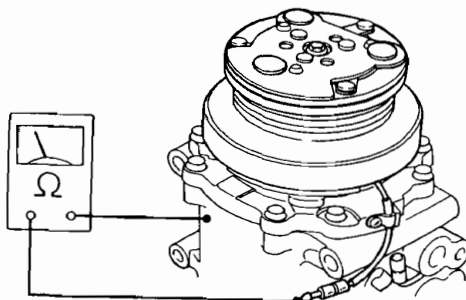


- Check resistance of the field coil:

### Field Coil Resistance:

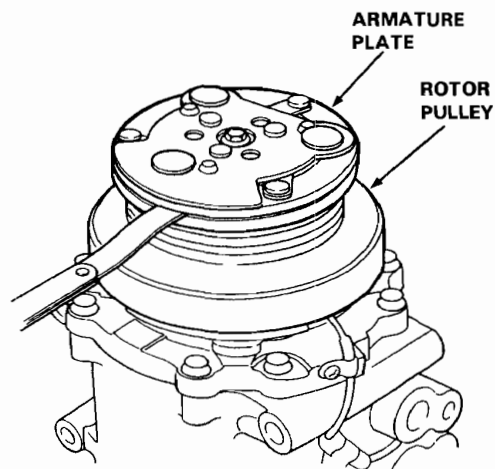
$3.58 \pm 0.15$  ohm at 20°C (68°F)

If resistance is not within specifications, replace the coil.



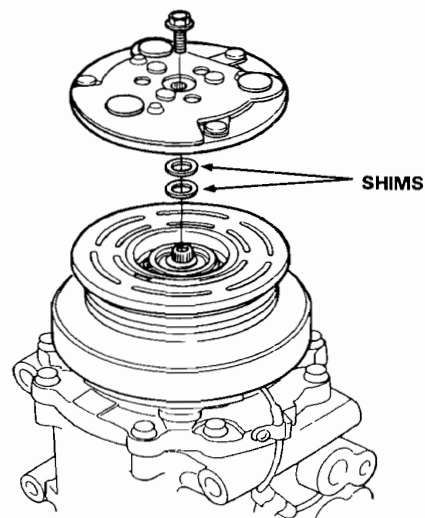
- Measure the clearance between the rotor pulley and armature plate all the way around. If the clearance is not within specified limits, the pressure plate must be removed and shims added or removed as required.

**CLEARANCE:** 0.35—0.65 mm (0.014—0.026 in)



### NOTE:

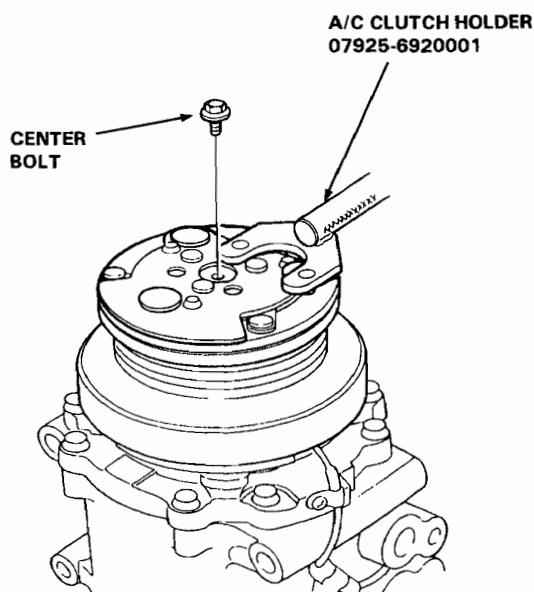
The shims are available in four sizes: 0.1 mm, 0.2 mm, 0.4 mm and 0.5 mm of thickness.



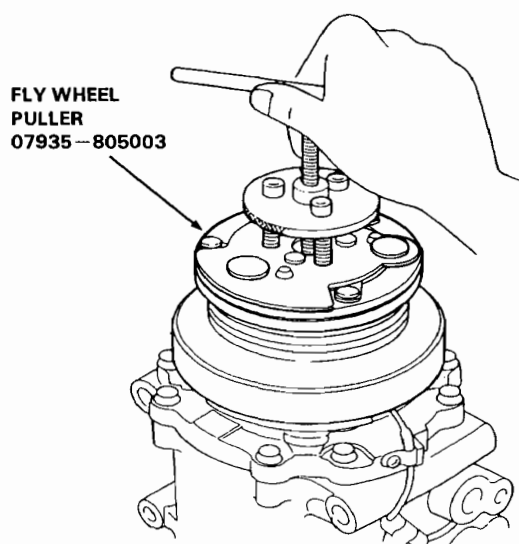


## Clutch Overhaul

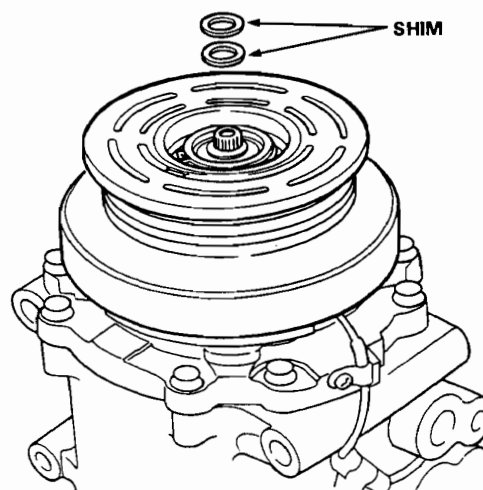
1. Use an A/C clutch holder to assist removing the center bolt.



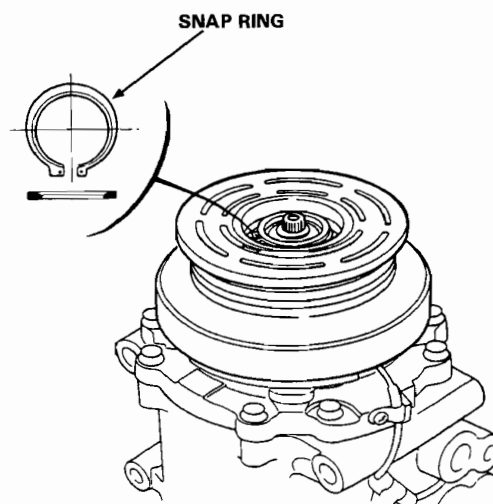
2. Remove the armature plate. (If you can't by hand, use a puller.)



3. Remove the two shims, taking care not to lose them.



4. Use snap ring pliers to remove the snap ring.

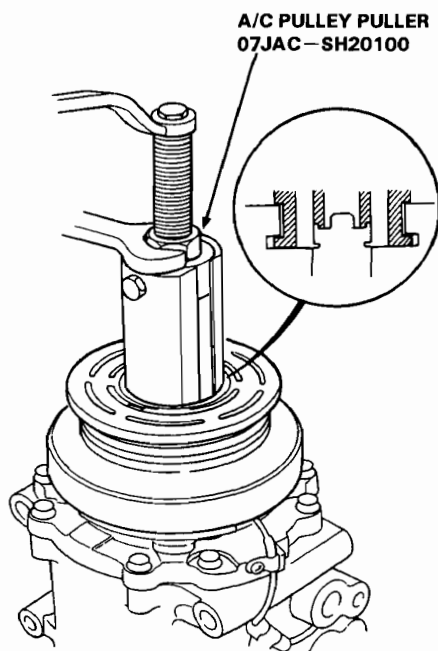


(cont'd)

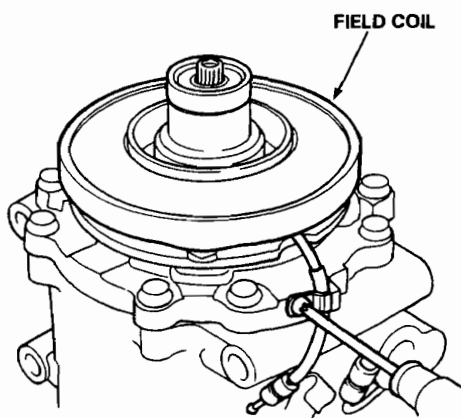
# Compressor (Sanden)

## Clutch Overhaul (cont'd)

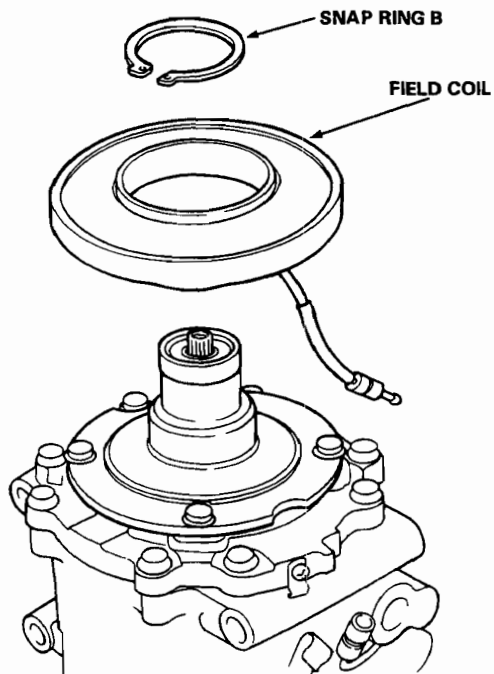
5. Remove the clutch rotor using the special tool.



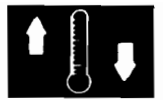
6. Remove the screw and disconnect the wire.



7. Remove the snap ring B using snap ring pliers and remove the field coil.

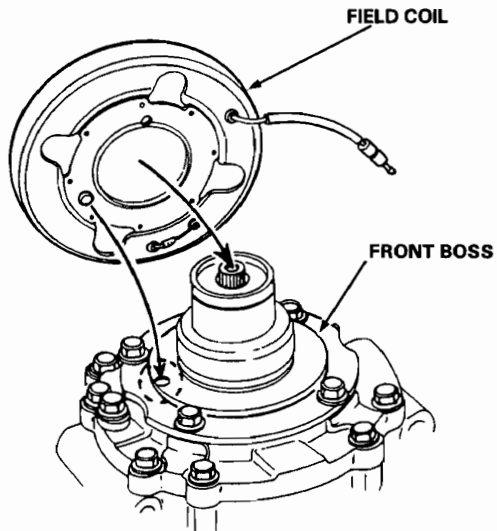




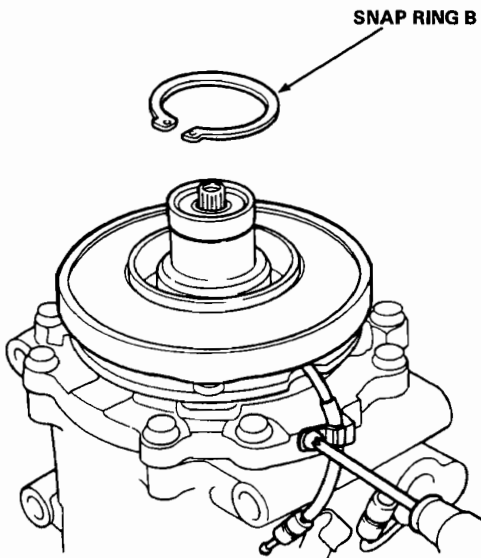


### ★Installation

8. Fit the lug of field coil on the slot of front boss.



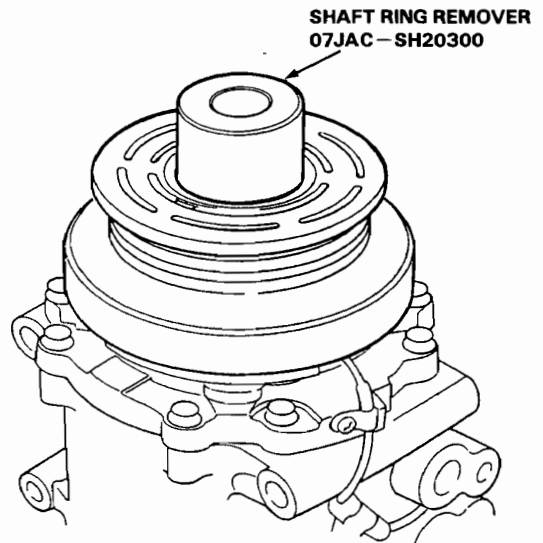
9. Install the snap ring B and wire.



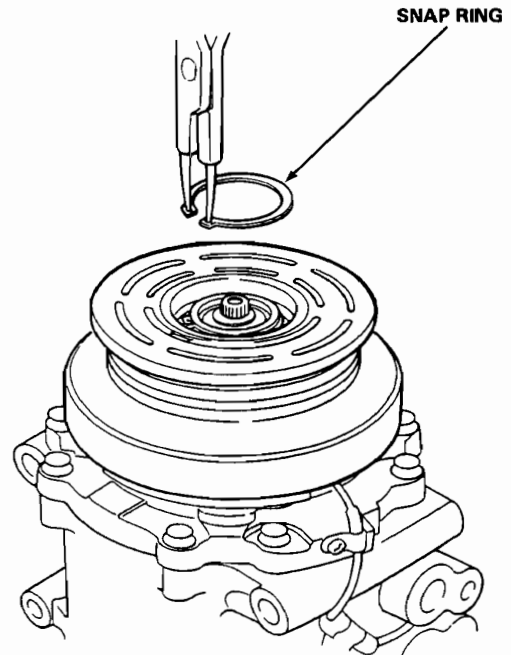
10. Press rotor pulley onto field coil with shaft ring remover.

### CAUTION:

Maximum press load: 1.5 tons.



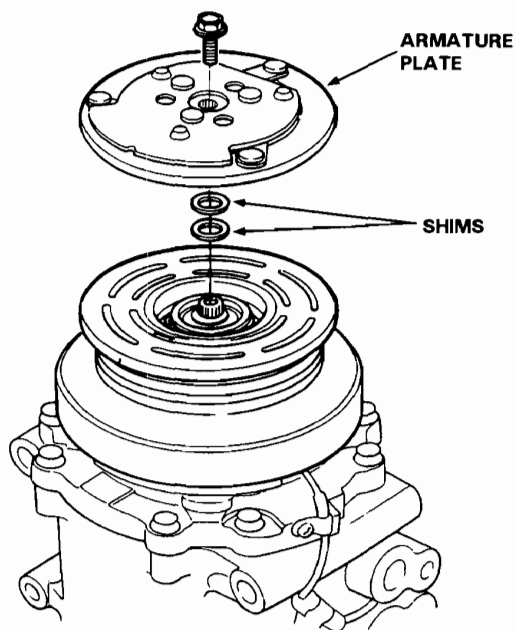
11. Secure the rotor pulley with the snap ring.



# Compressor (Sanden)

## Clutch Overhaul (cont'd)

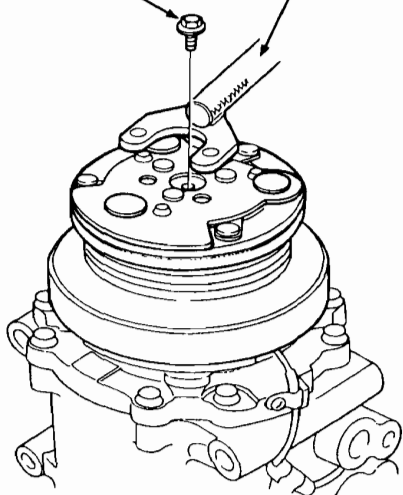
12. Set the armature plate onto rotor pulley with shims(2).



13. Use A/C clutch holder to secure armature plate while tightening bolt.

12 N·m (1.2 kg-m , 9 lb-ft)

A/C CLUTCH HOLDER  
07925-6920001



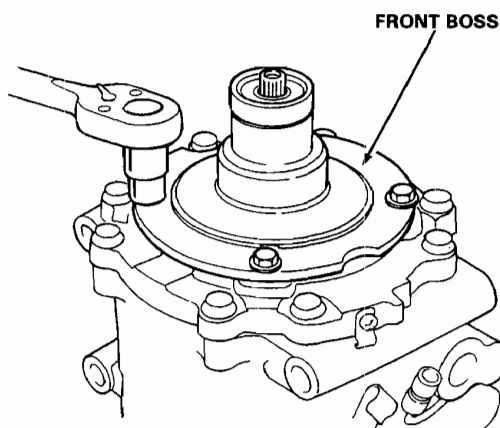
Make sure that the rotor pulley turns smoothly.

## Shaft Seal Replacement

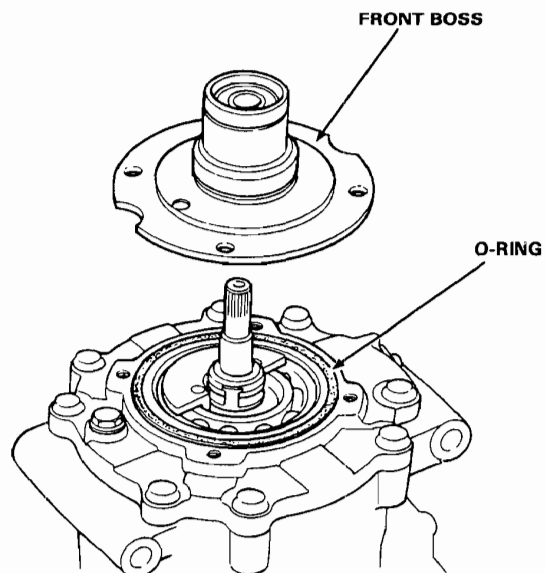
### NOTE:

Make sure that the suction and discharge joints are plugged with the caps.

1. Remove the armature, rotor pulley and field coil, then remove the four bolts.

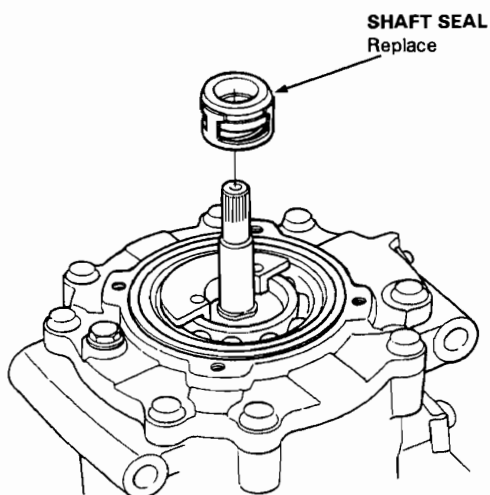


2. Remove the front boss and O-ring.

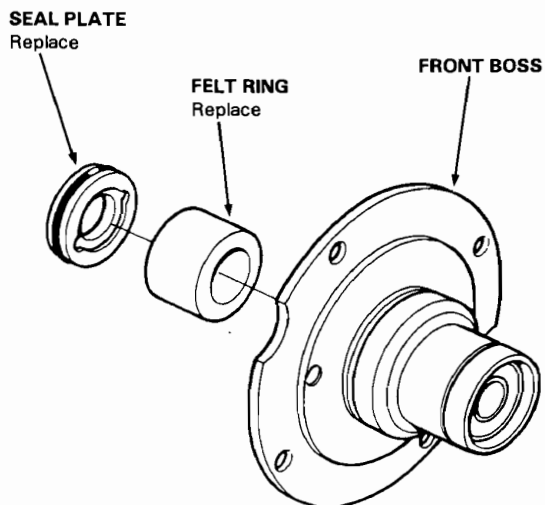




3. Remove the shaft seal.



4. Remove the felt ring and seal plate from the front boss.



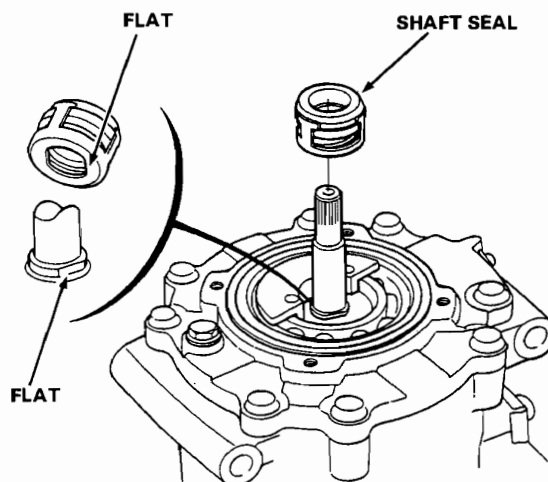
5. Clean the new shaft seal thoroughly with cleaning solvent.

6. Lubricate the shaft seal with refrigerant oil (SUNISO 5GS)

**NOTE:**

- Use only clean refrigerant oil.
- Do not touch the sealing surfaces of the shaft seal after Lubricating.
- Liberally lubricate the compressor shaft with refrigerant oil.

7. Install the shaft seal onto the compressor shaft aligning the seal case flats with the shaft flats.



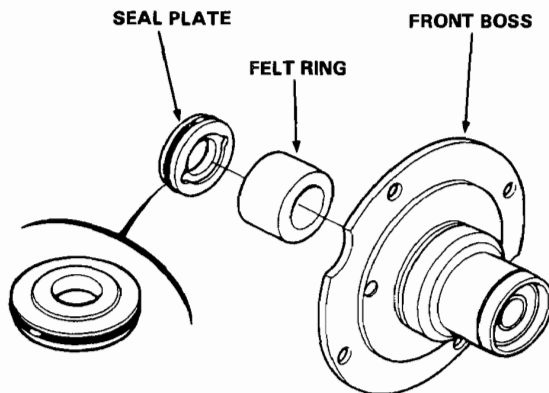
# Compressor (Sanden)

## Shaft Seal Replacement (cont'd)

8. Install the felt ring and seal plate into the front boss.

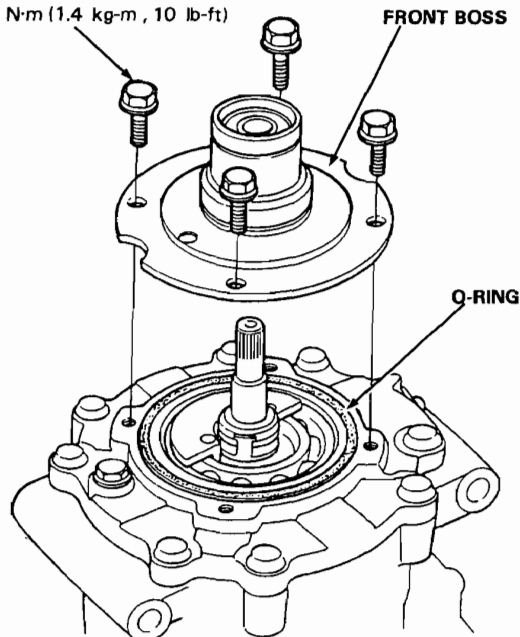
### NOTE:

- Clean the seal with cleaning solvent, then lubricate the seal seat with refrigerant oil (SUNISO 5GS).
- Use only clean refrigerant oil.
- Do not touch the sealing surface of the seal plate after lubricated.



9. Set the O-ring into the front end plate and install the front boss with 4 bolts.

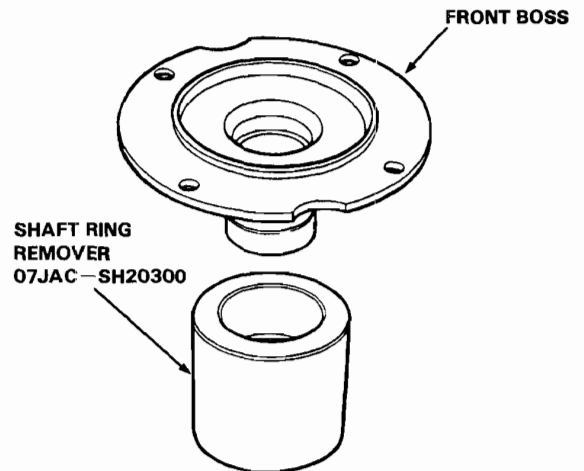
14 N·m (1.4 kg-m, 10 lb-ft)



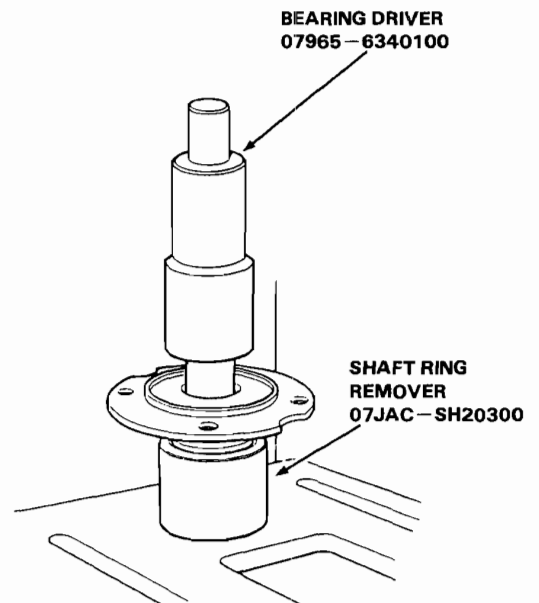
10. Install the field coil.

## Shaft Bearing Replacement

1. Remove armature plate, rotor pulley and field coil.
2. Remove front boss, seal plate and felt ring.
3. Set the front boss onto shaft ring remover.



4. Use Bearing Driver with a hydraulic press to remove the bearing.

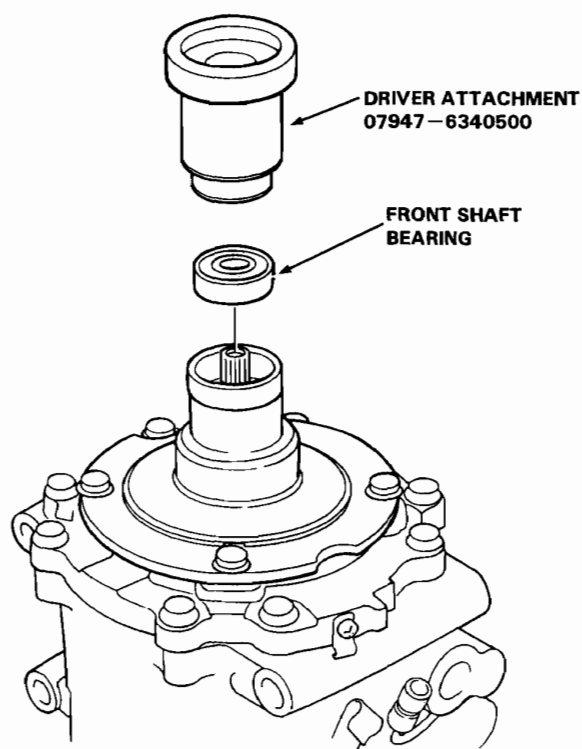




5. Install the shaft seal, seal plate and felt ring.
6. Install the front boss onto compressor.
7. Install the bearing using the driver attachment and a hydraulic press. Center the tool on the bearing before pressing. Recheck tool centering as soon as the press first contacts the attachment.

**CAUTION:**

**Maximum press load: 0.4 tons.**



8. Install the field coil, rotor pulley and armature plate.

# 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.

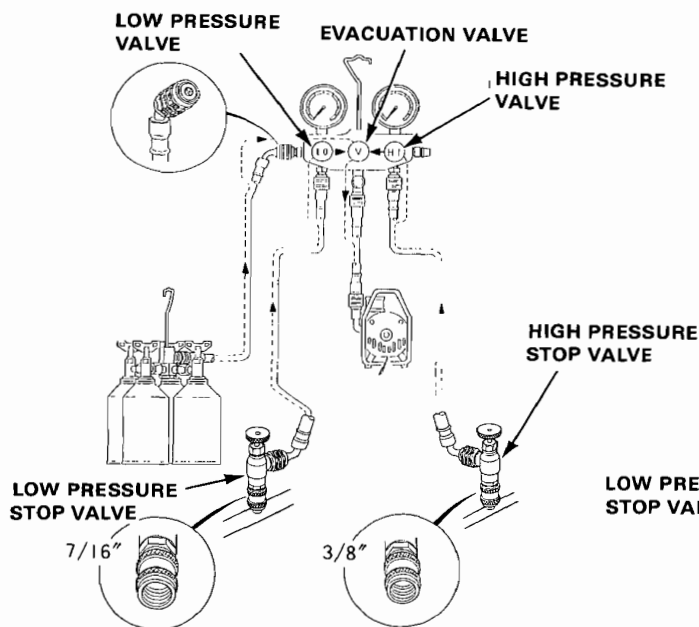
1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).
2. Connect a gauge, pump and refrigerant containers (cans of R-12) as shown.  
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 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 700 mmHg (27 in-Hg) and remain steady with the valves closed.

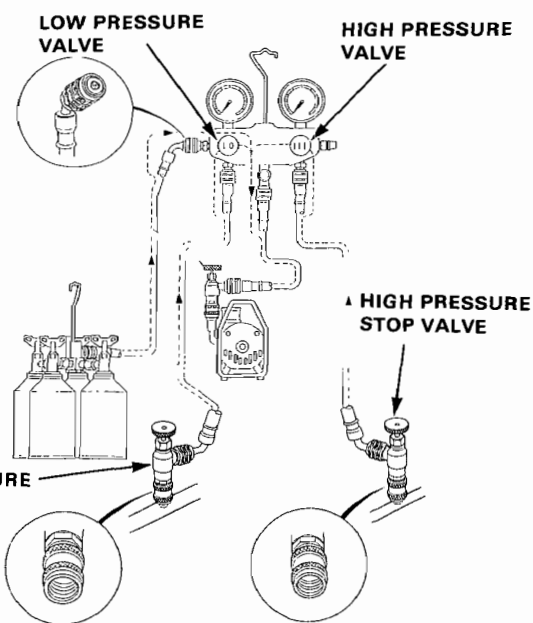
NOTE: If low pressure does not reach more than 700 mmHg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test).

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 from R-12 into the atmosphere.

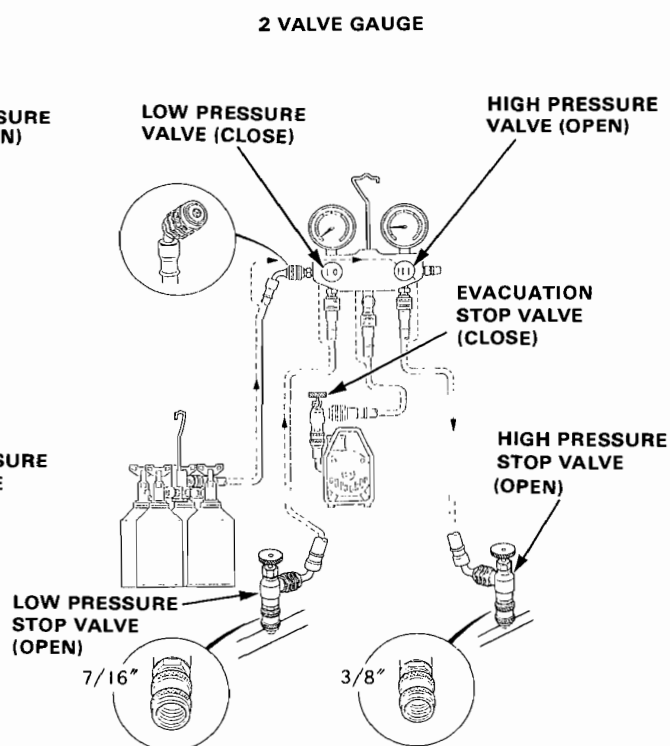
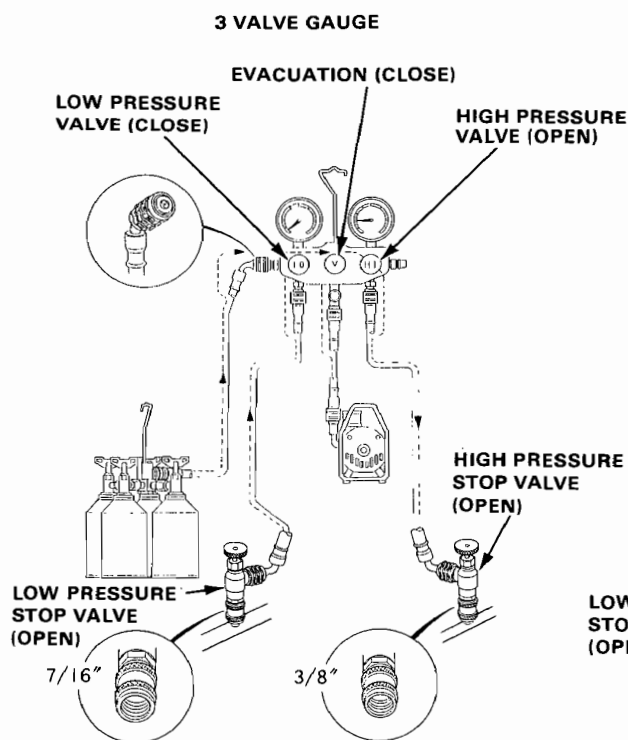
### **⚠ WARNING** When handling refrigerant (R-12):

- 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 ment. 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: Particularly check for leaks around the compressor, condenser, and receiver-driver.
5. If you find any leaks, tighten the joint nuts and 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).



# System Charging

## Charging Procedures

The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of from R-12 into the atmosphere.

**▲ WARNING** When handling refrigerant (R-12):

- Always wear eye protection.
- Donot 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 ment. 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 balow 1500 rpm.

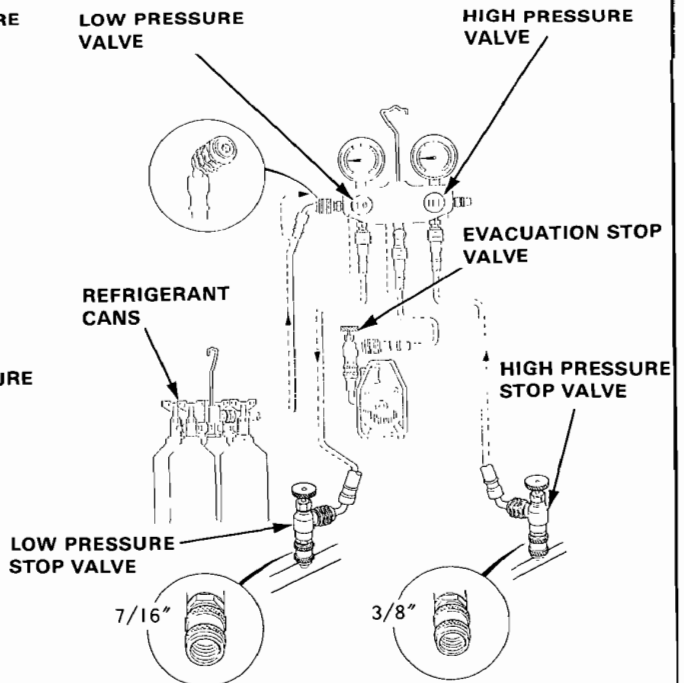
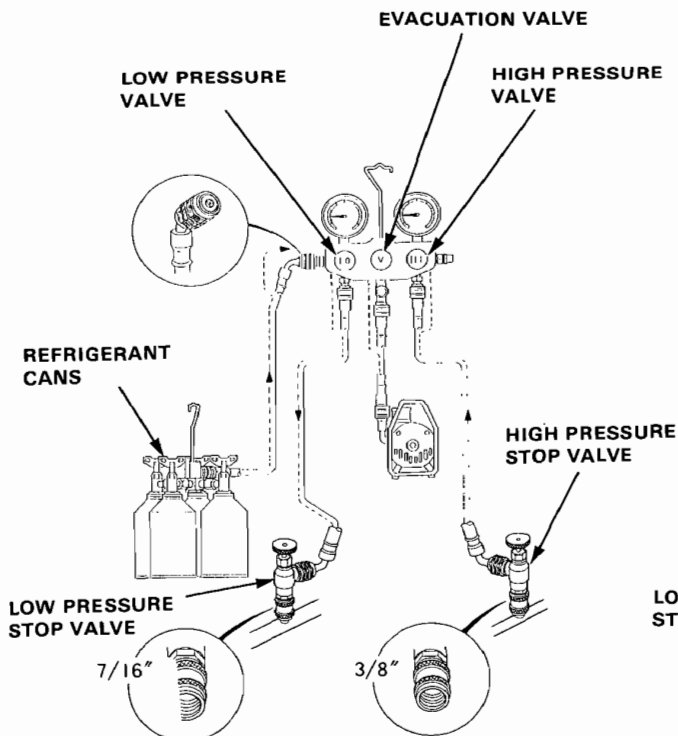
2. Open the front door.  
Turn the A/C switch on.  
Turn the air mix dial (lever) to COOL.  
Turn the function control switch (lever) on  
Turnthe heater fan switch on "E" (MAX).
3. Open the low pressure valve and charge with ant.

**▲ WARNING**

- Do not open the high gauge valve.
  - Do not turn the cans upside down.
4. Charge the system with refrigerant capacity.  
Refrigerant capacity:  $900 \pm 50$  g ( $32 \pm 2$  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





# System Charging

## Supplement



The following are the procedures to be adhered to when servicing air conditioners to reduce the amount of from R-12 into the atmosphere.

### ▲WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Donot 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 ment. 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 apump and refrigerant containers (can:250 g x 2) as shown.

NOTE: Do not open cans.

3. Open both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve), start the pump. The low gauge should indicate above 700 mmHg (27 in-Hg), then run the pump about 1 minute.

4. Close both pressure valves and evacuation valve (2 valve gauge: evacuation stop valve). Open both pressure stop valve.
5. Start the engine and turn on A/C switch.
6. Stop the engine and check for leaks using a leak detector.

NOTE: Particularly check for leaks around the compressor, condenser, and receiver-dryer.

7. Test the system using the pressure test and inspection data.

Test condition:

- Start the engine.
- Turn the air mix dial (lever) to COOL.
- Turn the function control switch (lever) on
- Turn the recirculation control switch on
- Turn the heater fan switch on "E" (MAX).

If there is insufficient refrigerant in system, continue to charge system.

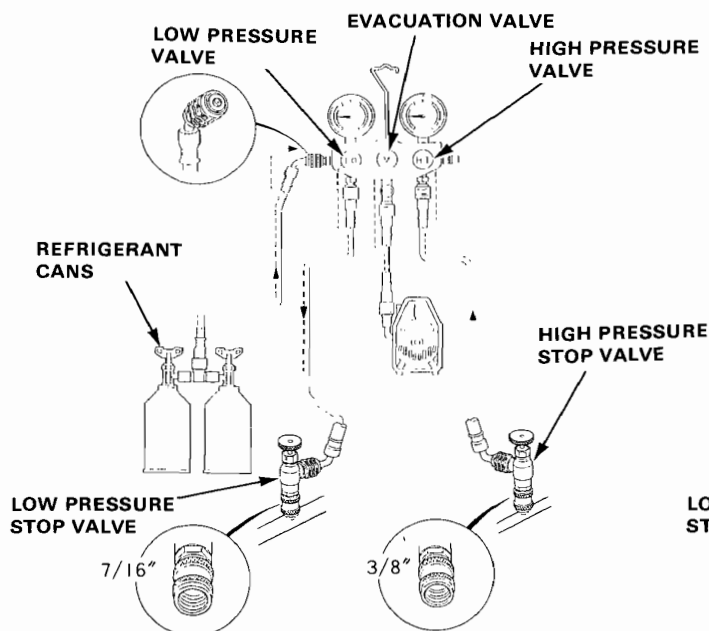
8. Open one or two cans, open the low pressure gauge. Charge the system untill there are no bubbles in the sight glass.

### ▲WARNING

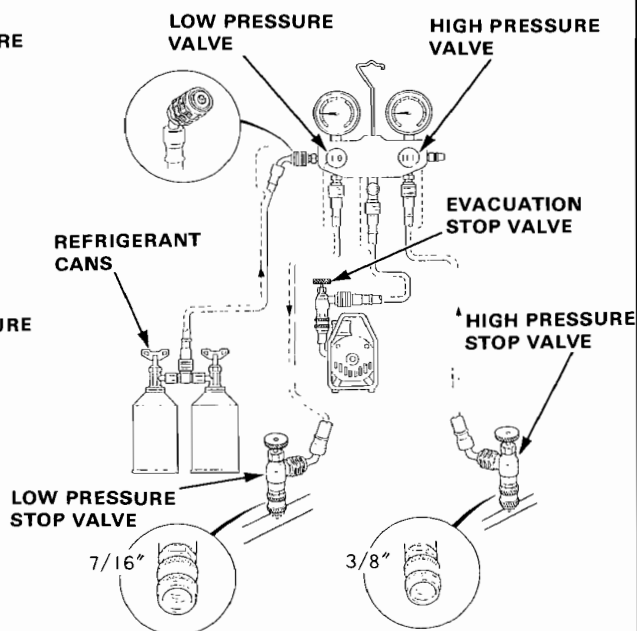
- Do not open the high gauge valve.
- Do not turn the cans upside down.

9. After adding supplemental refrigerant, close the pressure stop valve. Open the low pressure valve and gradually open the high pressure valve. When pressure gauge read same, close the low pressure stop valve and stop the engine.
10. Disconnect the charge hose quickly.
11. Check the system for leaks using a leak detector.

3 VALVE GAUGE



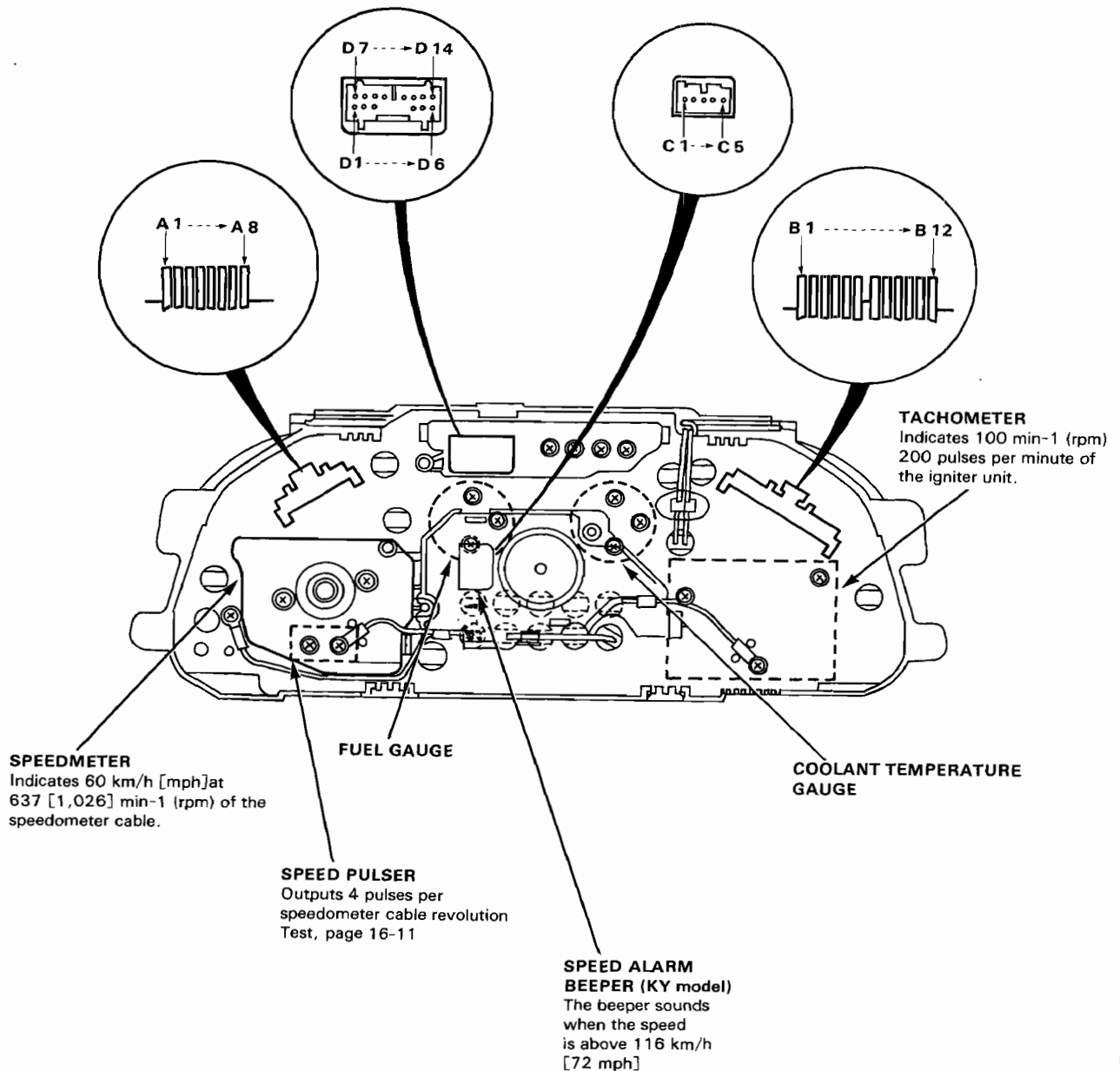
2 VALVE GAUGE



# Gauge Assembly

## Gauge / Indicator Location Index(With Tachometer)

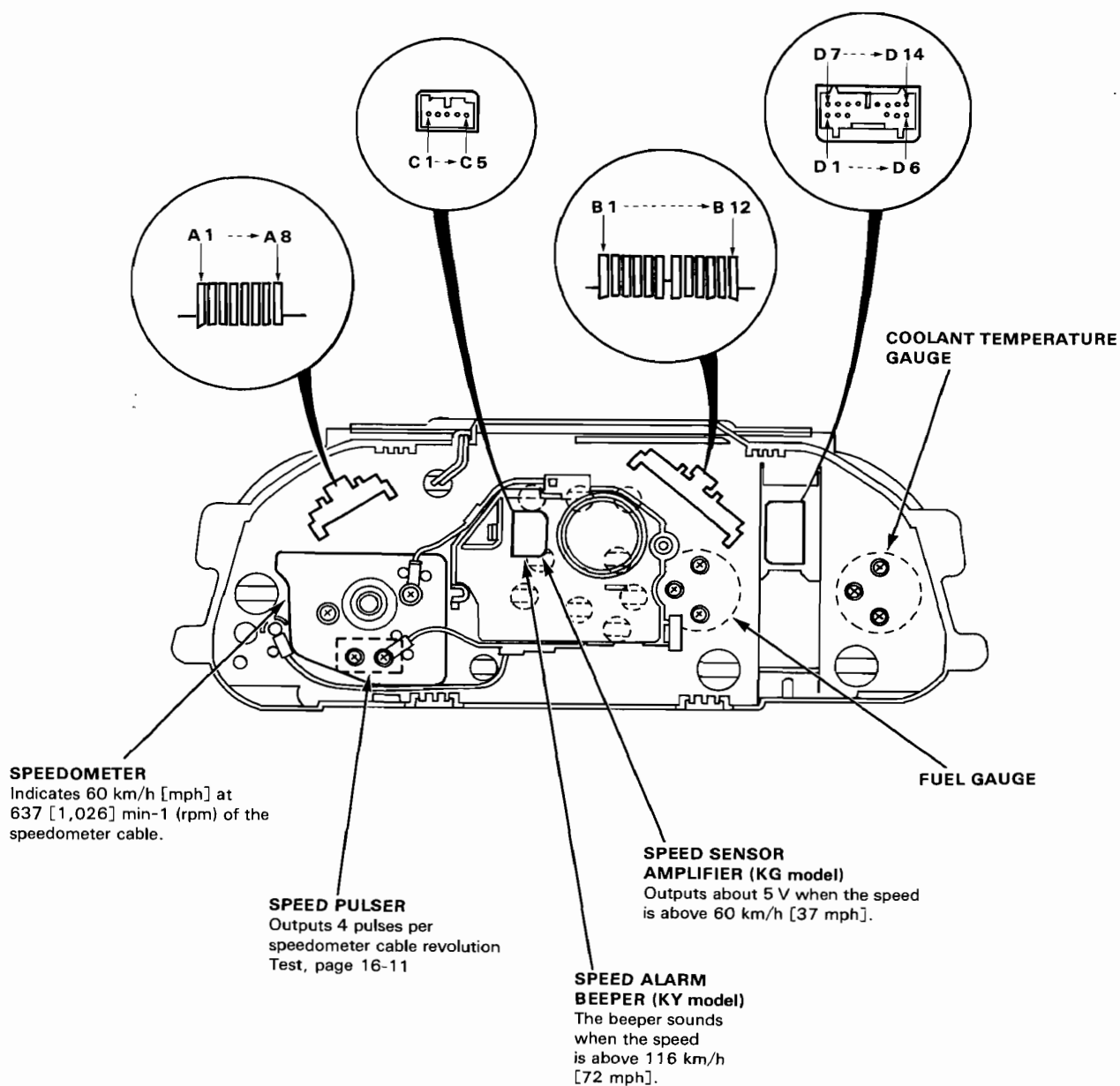
- Gauge Assembly
- Removal, page 16-10
- Disassembly, page 16-6





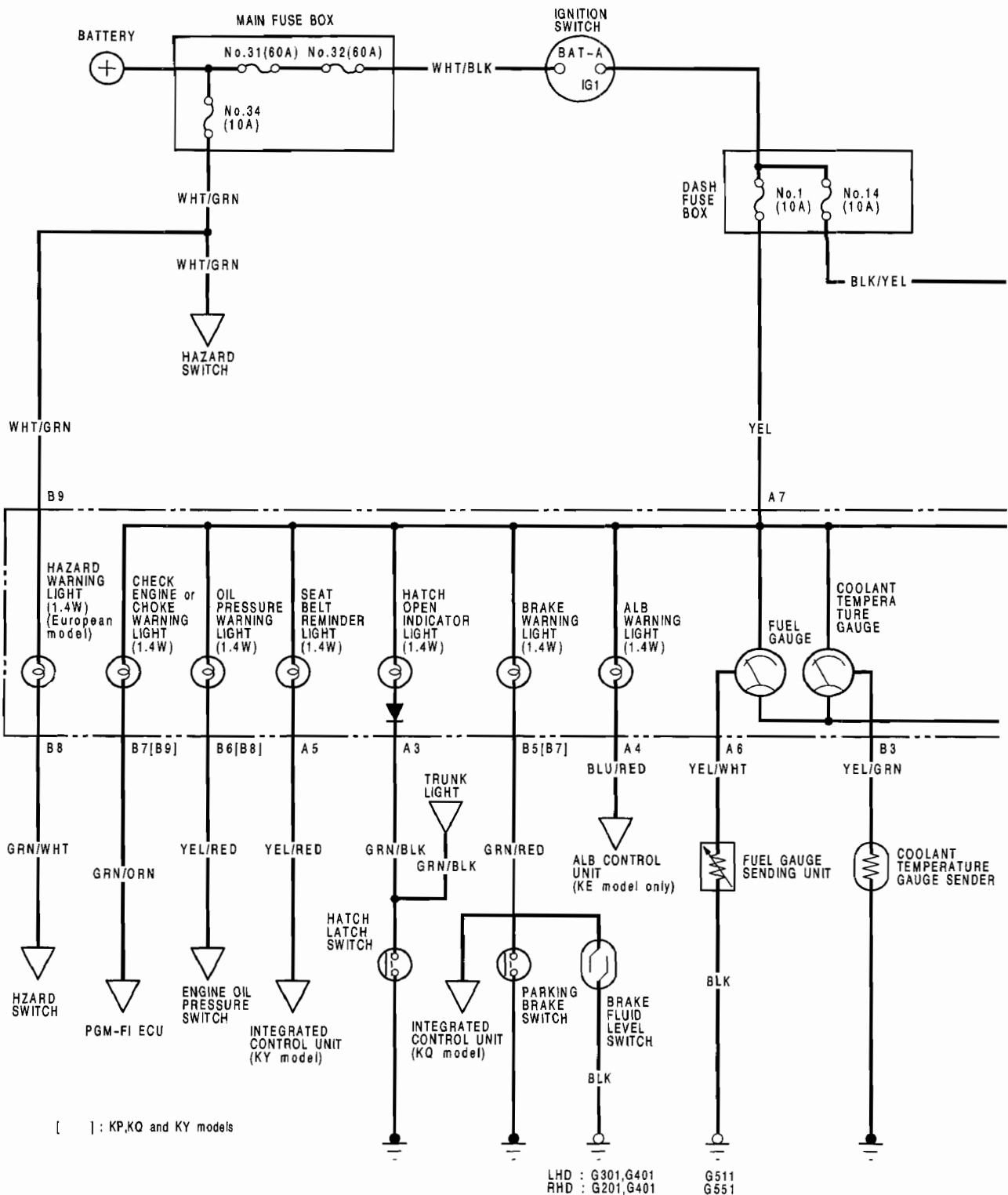
## (Without Tachometer)

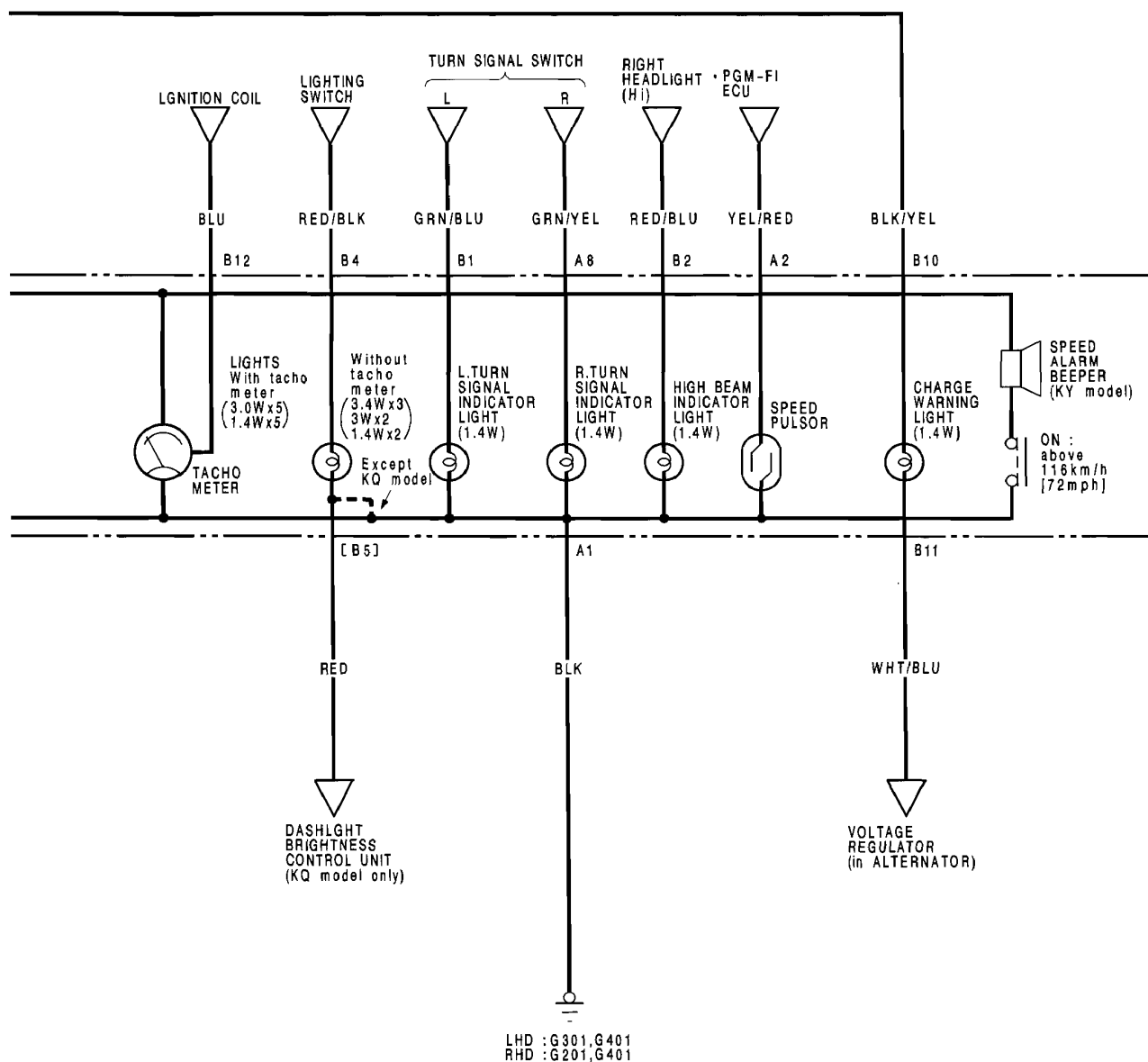
- Gauge Assembly  
Removal, page 16-10  
Disassembly, page 16-7



# Gauge Assembly

## Circuit Diagram

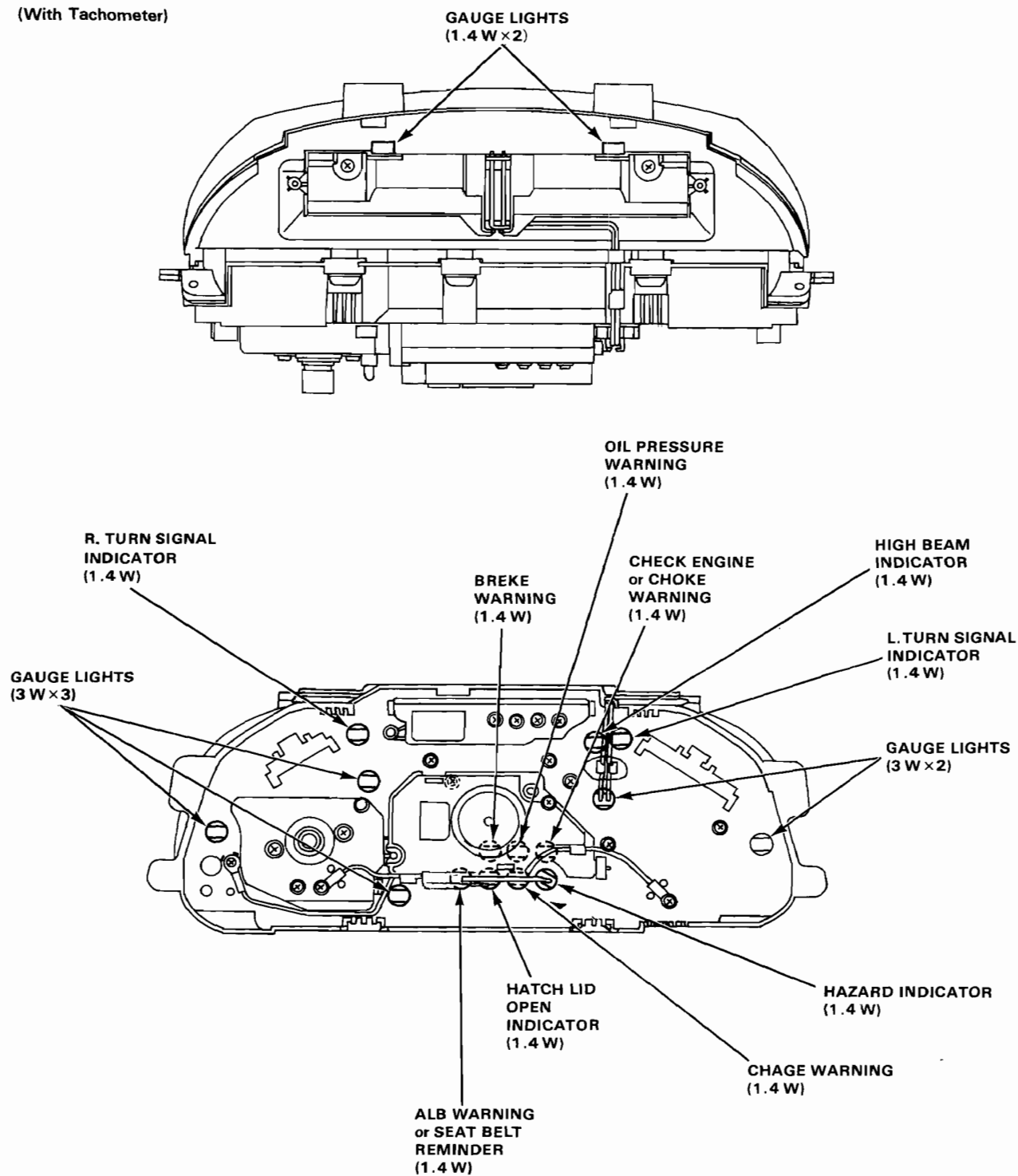




# Gauge Assembly

## Bulb Locations

(With Tachometer)





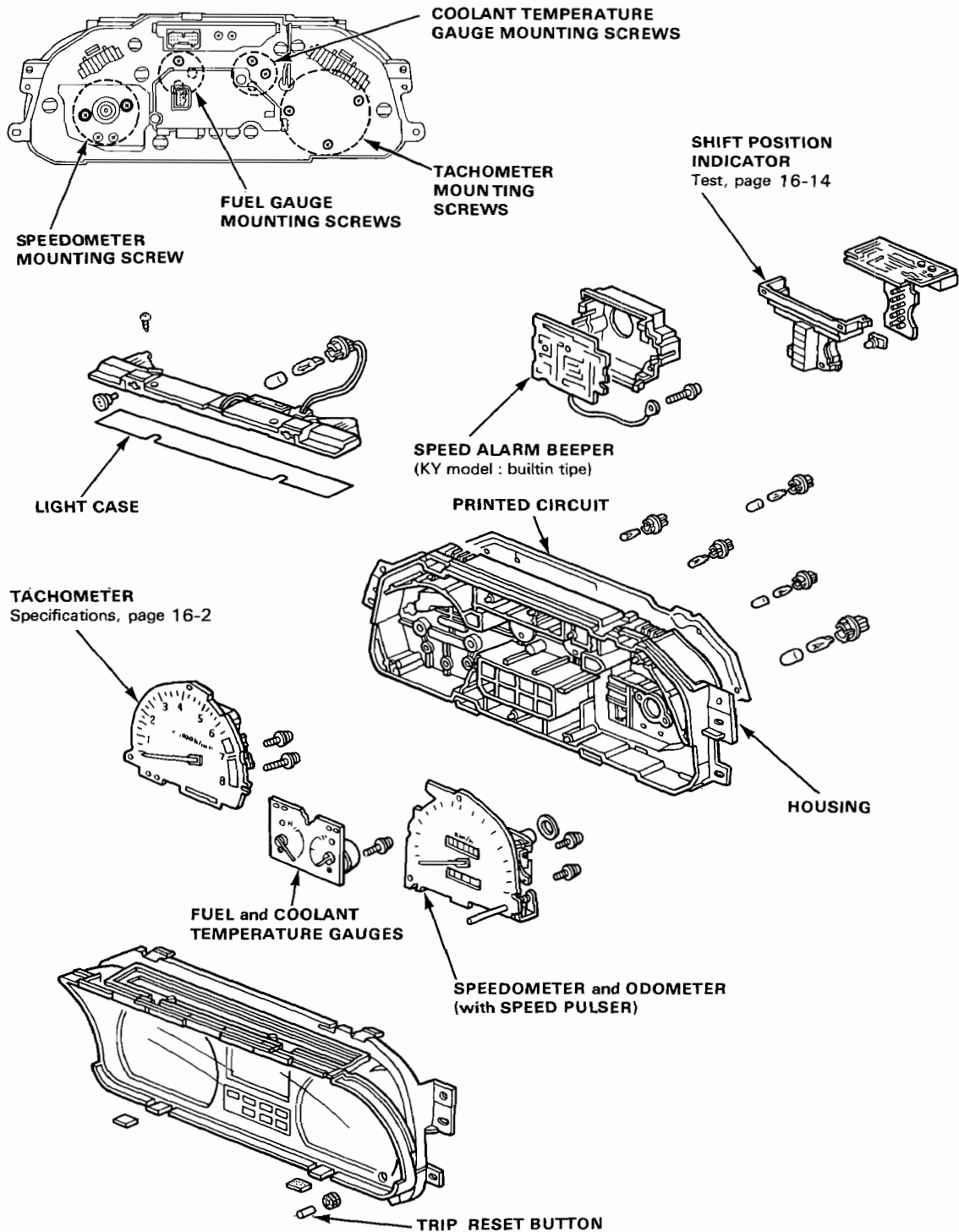
# Gauge Assembly

## Disassembly

(With Tachometer)

### NOTE :

- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is show below.



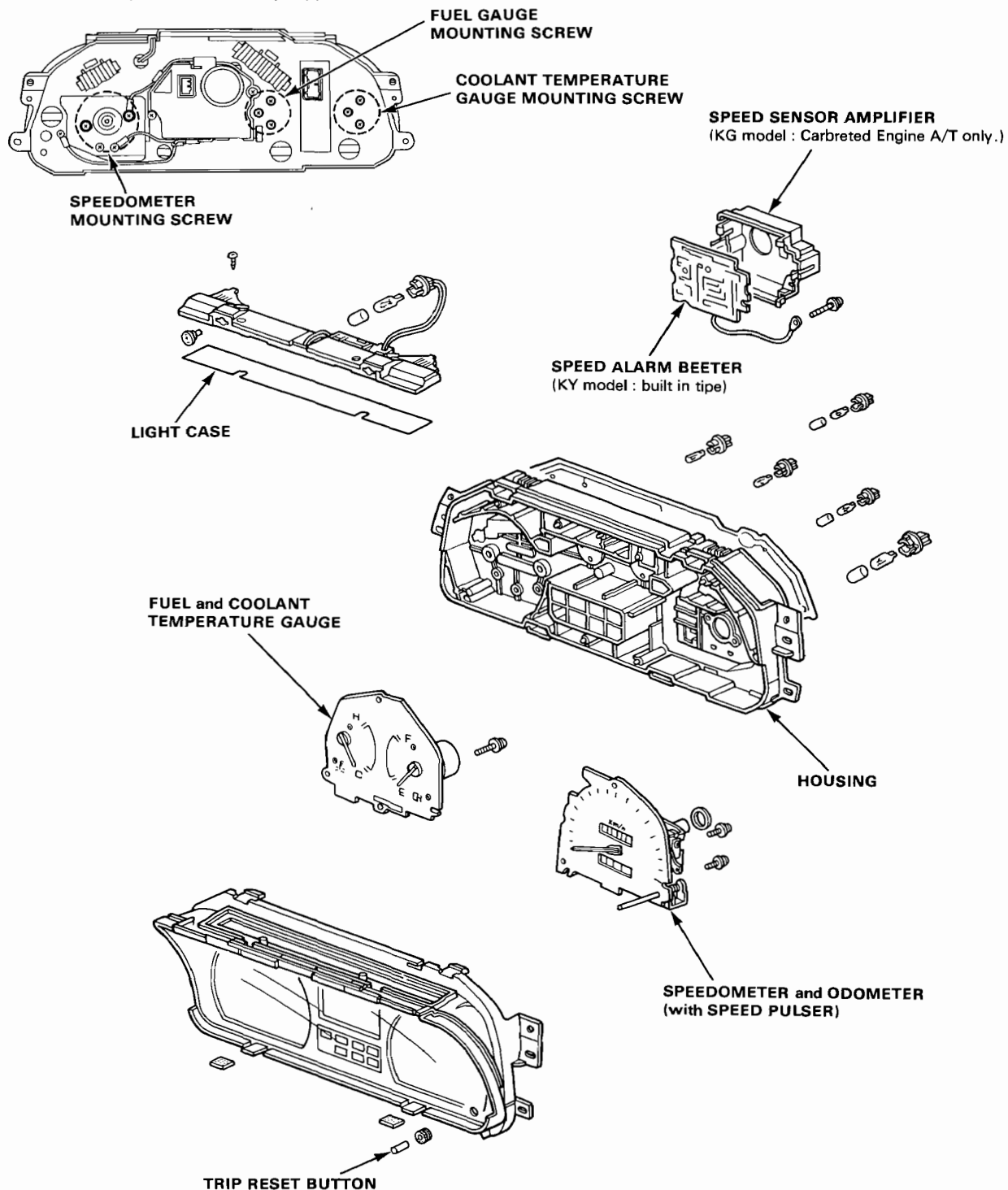




(Without Tachometer)

NOTE :

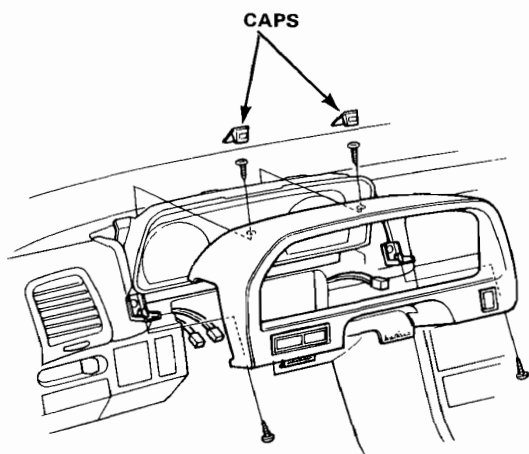
- Handle the terminals and printed circuits carefully to avoid damaging them.
- Gauge assembly manufactured by Nippon Seiki is shown below.



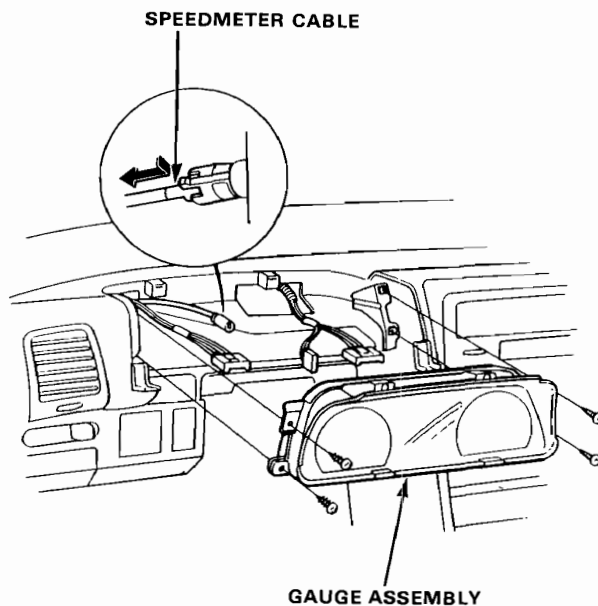
# Gauge Assembly

## Removal

1. Remove the dashboad lower panel.
2. Remove the 2 caps and 4 screws, then remove the instrument panel from the dashboard.



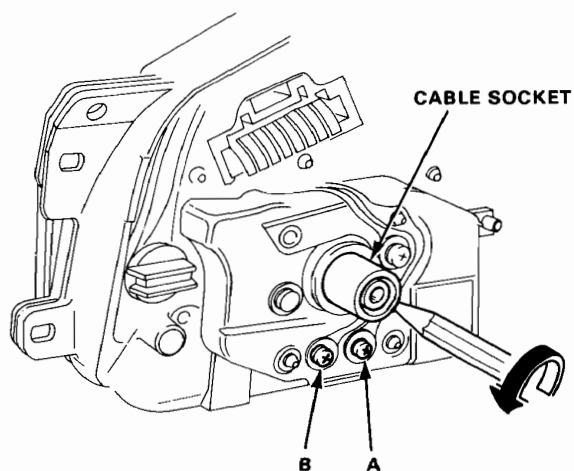
3. Remove the 4 screws, then remove the gauge assembly half-way and disconnect the speedometer cable and connectors.





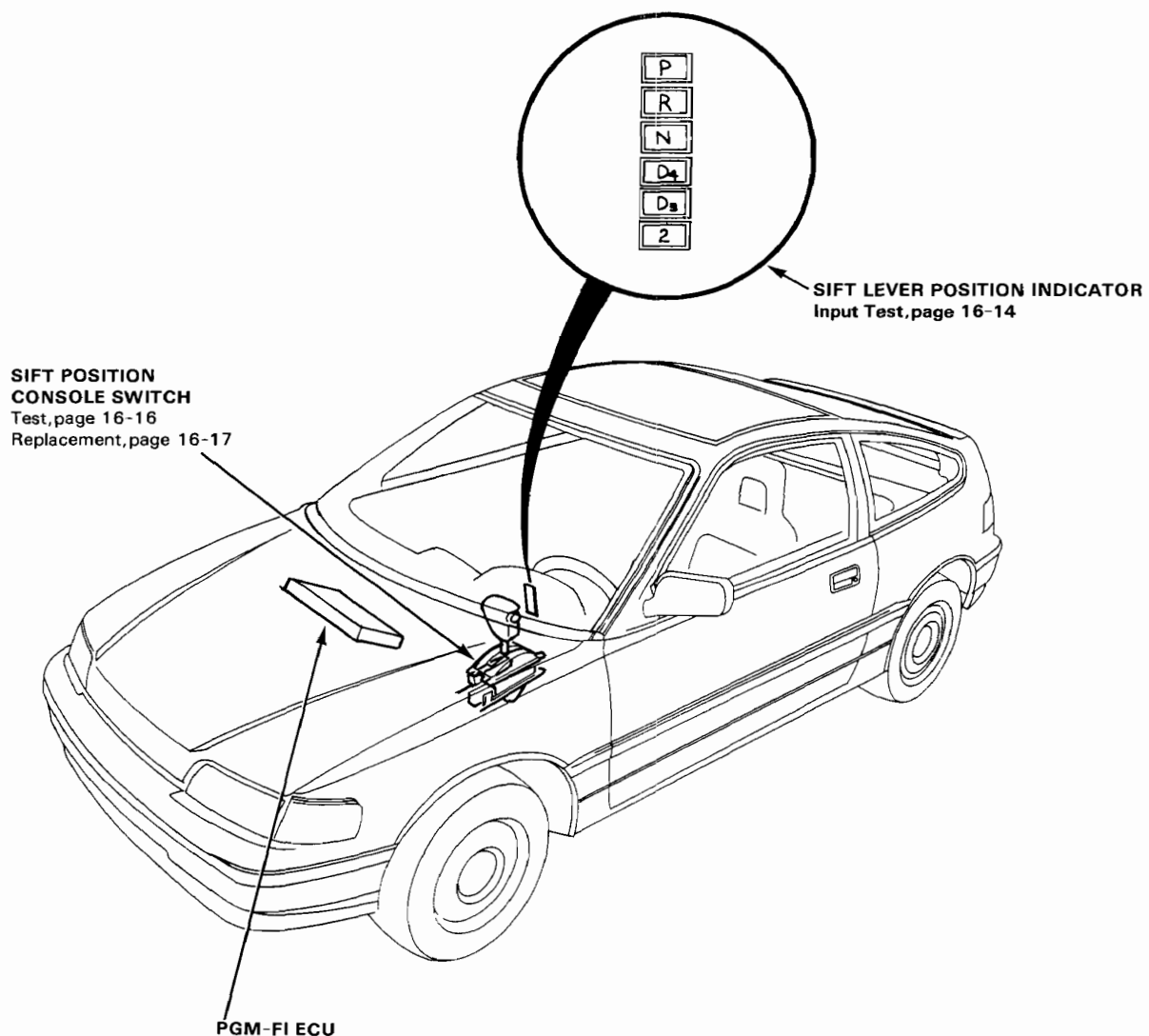
## Speed Pulser Test

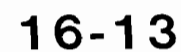
1. Remove the gauge assembly from the dashboard, then turn it over.
2. Break the lead off a pencil tip then insert the pencil into the speedometer cable connector socket and turn it. Connect an ohmmeter between the A and B terminals. There should be continuity 4 times between the A and B terminals per revolution.



# Shift Lever Position Indicator

## Component Location Index





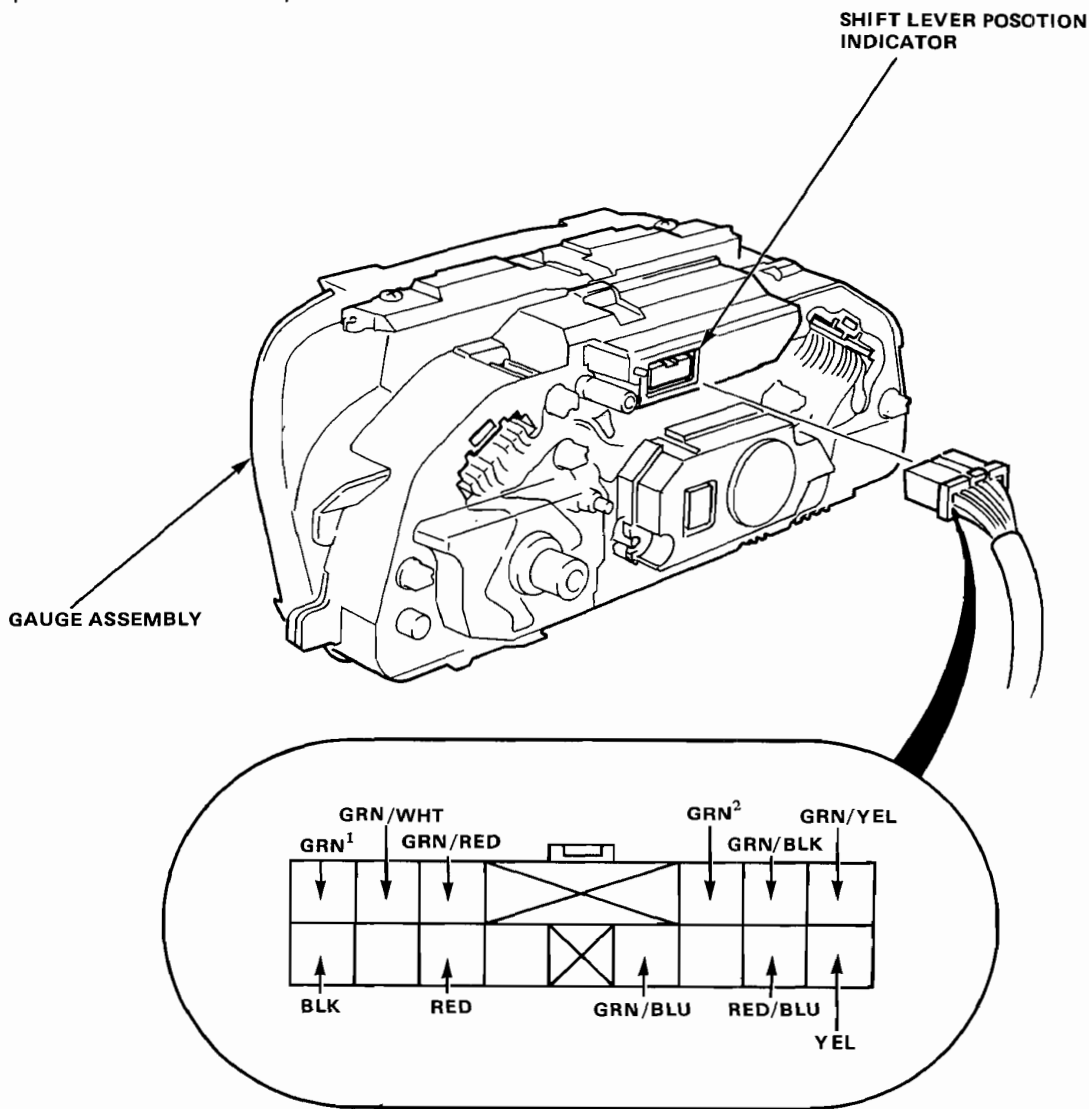
# Shift Lever Position Indicator

## 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.





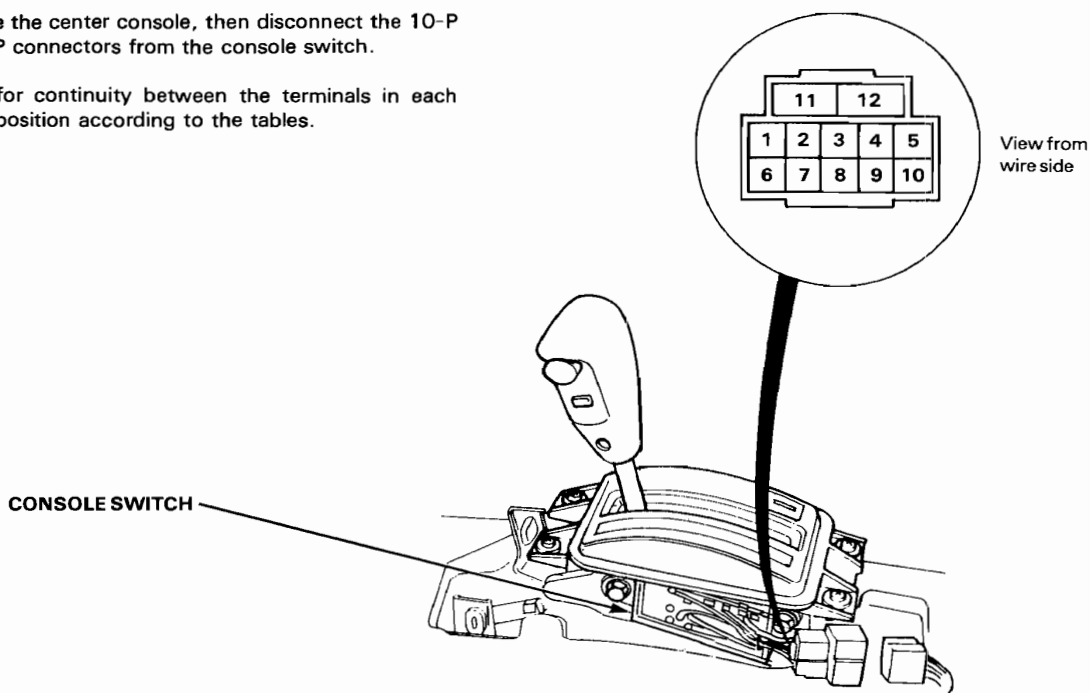
No.	Wire	Test condition	Test : desired result	Possible cause(if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	<ul style="list-style-type: none"> <li>• Poor ground (G201, G401).</li> <li>• An open in the wire.</li> </ul>
2	YEL	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	<ul style="list-style-type: none"> <li>• Blown No. 1 (10 A) fuse.</li> <li>• An open in the wire.</li> </ul>
3	GRN/WHT	Shift lever position in P.	Check for continuity to ground: should be continuity.	<ul style="list-style-type: none"> <li>• Faulty shift position console switch.</li> <li>• Poor ground (G511 or G551).</li> <li>• An open in the wire.</li> </ul>
	GRN/RED	Shift lever position in R.		
	GRN <sup>2</sup>	Shift lever position in N.		
	GRN/BLK	Shift lever position in D <sub>4</sub> .		
	GRN/BLU	Shift lever position in D <sub>3</sub> .		
	GRN/YEL	Shift lever position in 2.		
4	RED/BLK	Lighting Switch ON	Check for voltage to ground: should be battery voltage	<ul style="list-style-type: none"> <li>• Faulty Lighting switch.</li> <li>• An open in the wire.</li> </ul>
※ <sup>1</sup> 5	RED/BLK and RED <sub>1</sub>	Lighting switch ON and dashlight brightness control dial on full bright.	Check for voltage between RED/BLK and RED <sub>1</sub> terminals: should be battery voltage.	<ul style="list-style-type: none"> <li>• Faulty dashlight brightness control system.</li> <li>• An open in the wire.</li> </ul>
6	GRN <sup>1</sup>	Ignition switch ON.	Check for voltage to ground: should be about 5 V.	<ul style="list-style-type: none"> <li>• Faulty PGM-FI system.</li> <li>• An open in the wire.</li> </ul>

※<sup>1</sup>KQ model only

# Shift Lever Position Indicator

## 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.



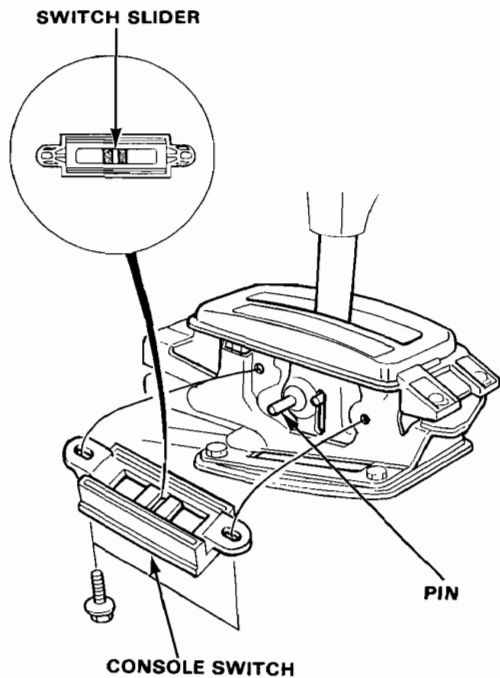
Shift Position Console switch								Back up Light Switch		Neutral Safety Switch	
Terminal Position	7	8	9	10	5	4	6	2	3	11	12
2	○	○									
D <sub>3</sub> or S	○		○								
D <sub>4</sub> or D	○			○							
N	○				○					○	○
R	○					○		○	○		
P	○						○			○	○





## Shift Position Console Switch Replacement

1. Remove the console, then disconnect the 10-P and 2-P connectors from the console switch.
2. Remove the 2 console switch mounting bolts.



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. Attach the switch with the 2 bolts.
6. Test the console switch with P and N position of shift lever (see page 16-16).

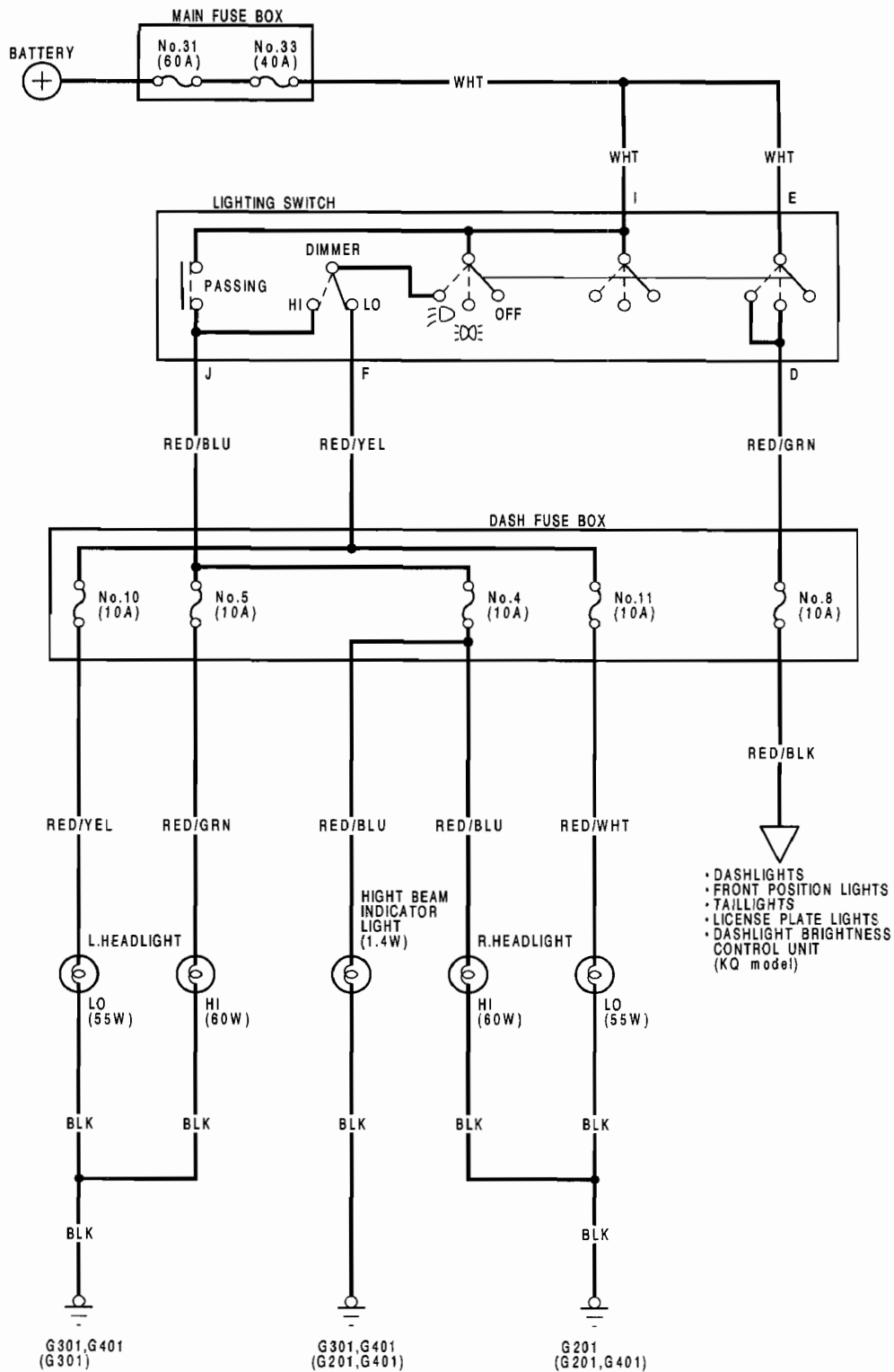
**NOTE:** The engine should start when the shift lever is in the N position in the range of free play.

7. Connect the 10-P and 2-P connectors, clamp the harness and install the console.

# Lighting System

## Circuit Diagram

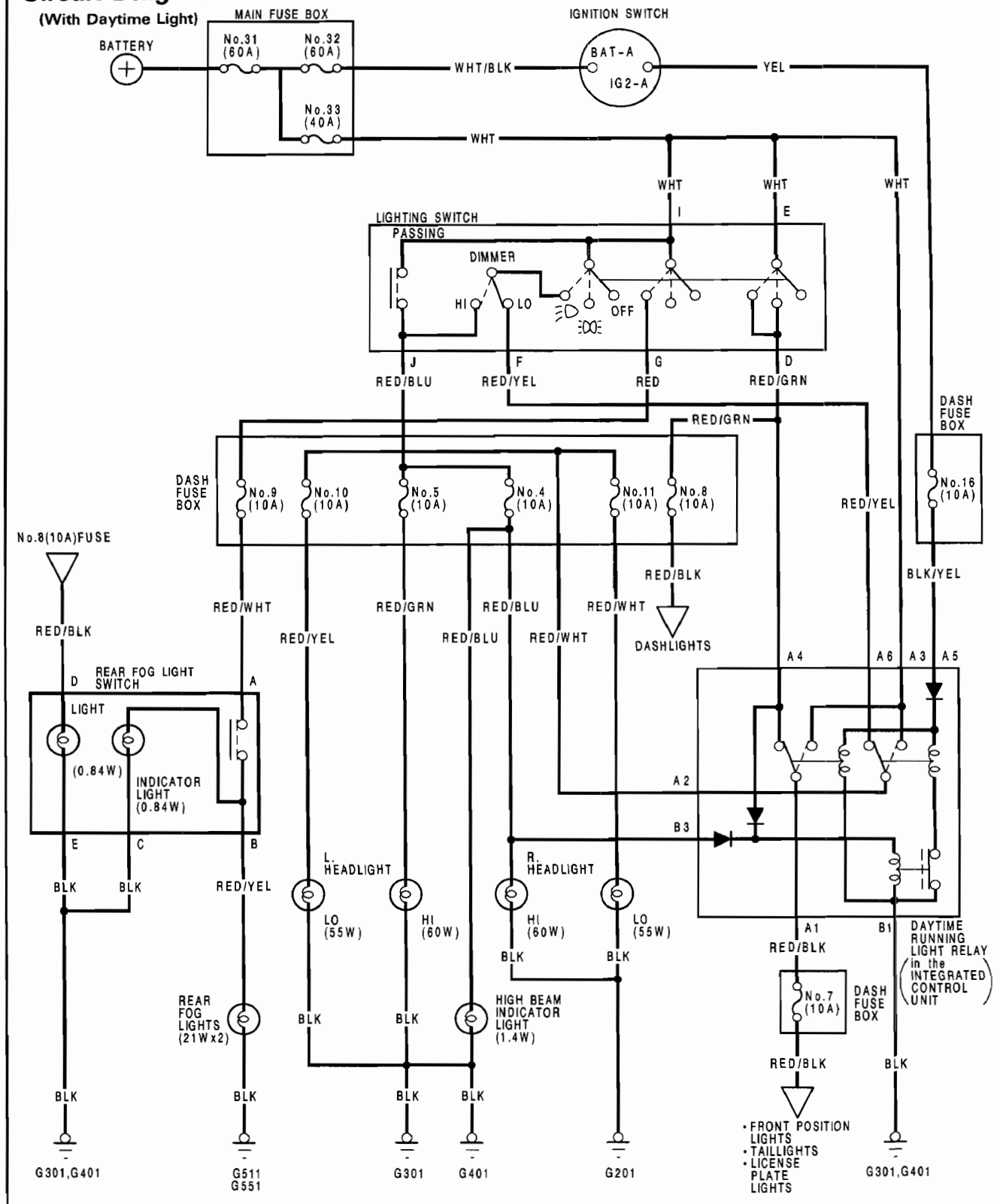
(KQ and KY models)



( ) : RHD

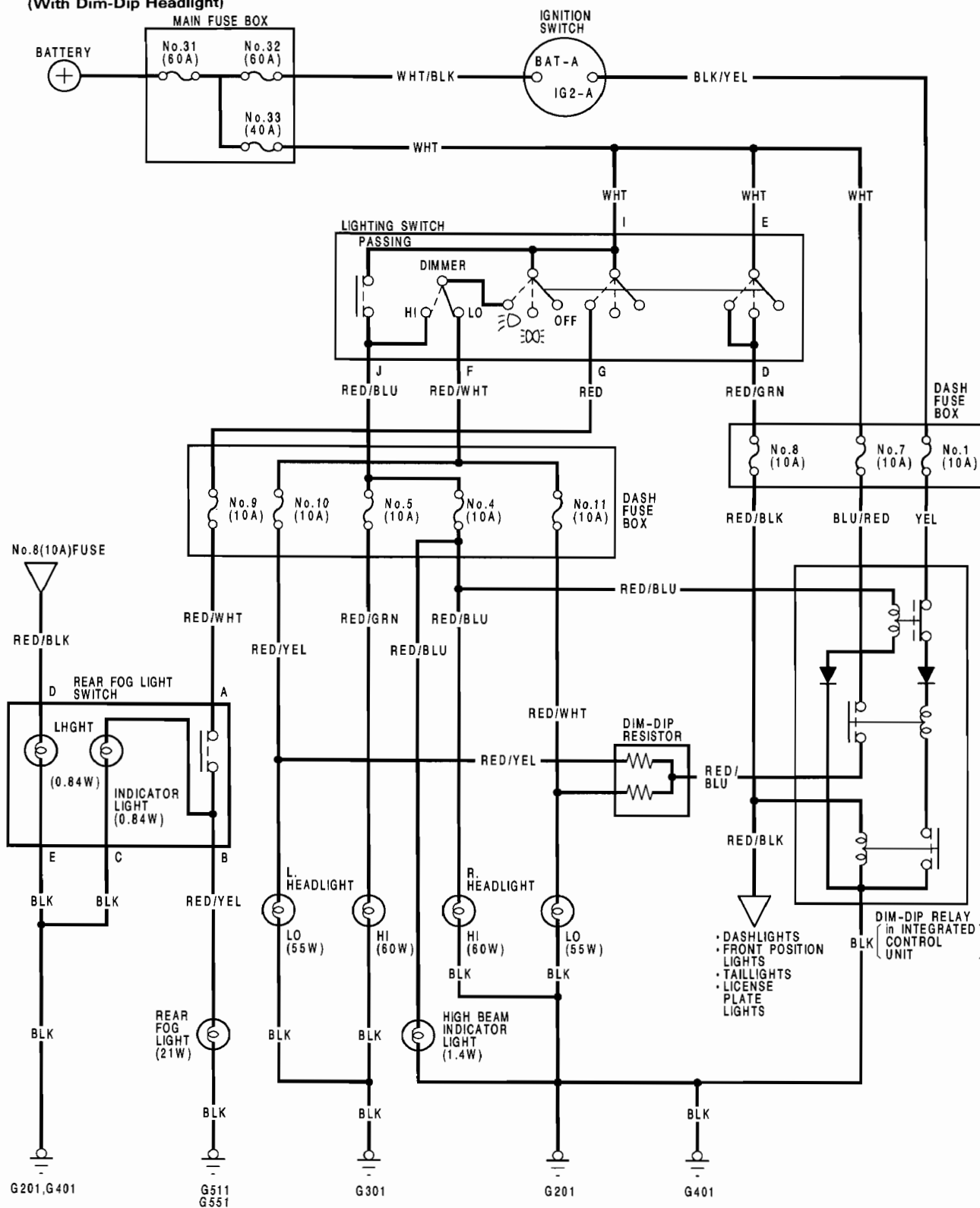


### -Circuit Diagram-





(With Dim-Dip Headlight)



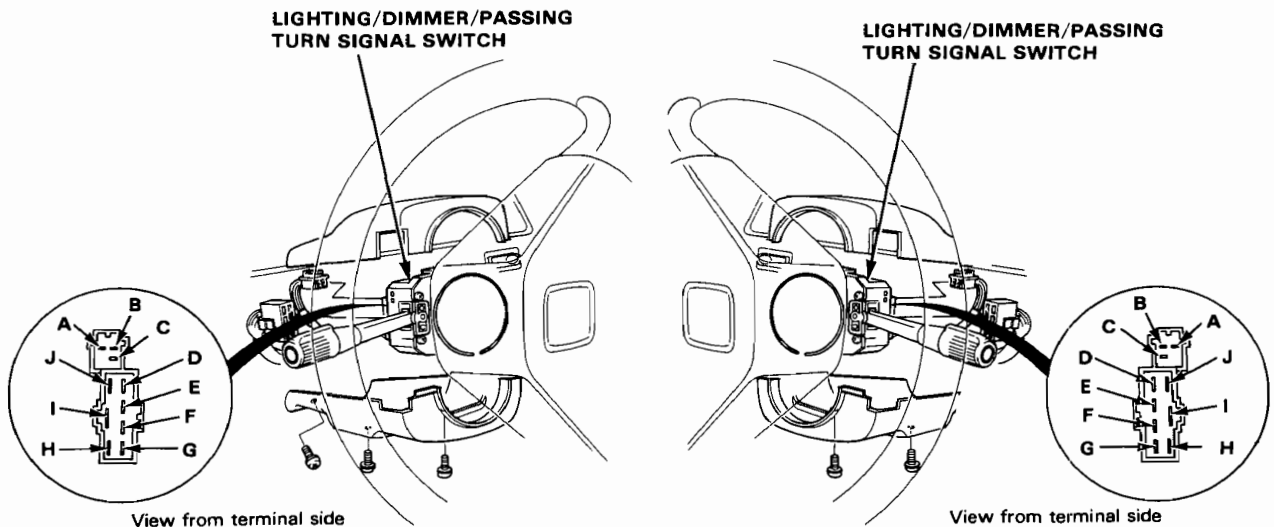
# Lighting System

## Lighting/Turn Signal Switch Test

1. Remove the column covers.
2. Disconnect the 7-P and 4-P connectors from the switch.
3. Check for continuity between the terminals in each switch position according to the tables.

LHD:

RHD:



Lighting/Dimmer/Passing Switch

Terminal		D	E	F	G	I	J
Position							
Lighting switch	OFF						
	⌂	○	○				
	⌂				○	○	
Dimmer switch *	LOW			○		○	
	HIGH					○	○
Passing switch	OFF						
	ON					○	○

\*: With lighting switch position in ( ⌂ )

Turn Signal Switch

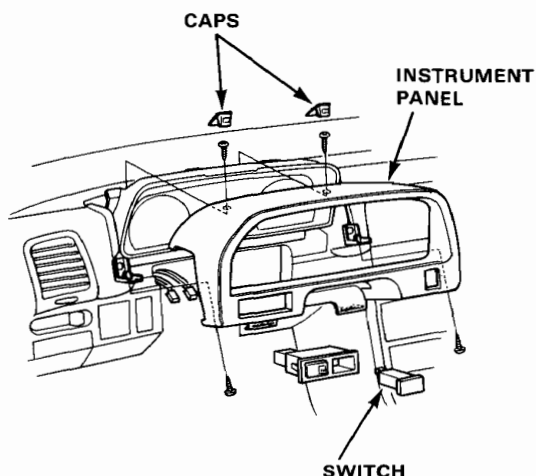
Terminal		A	B	C
Position				
LHD:	R	○		○
	NEUTRAL			
	L	○	○	
RHD:	R	○	○	
	NEUTRAL			
	L	○		○



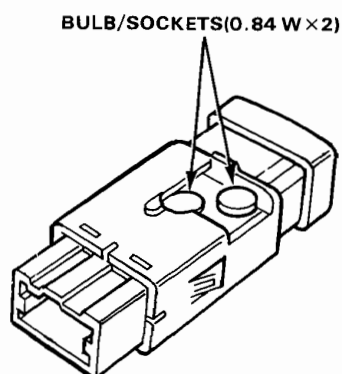
## Rear Fog Light Switch Removal

1. Remove the caps, then remove the 4 screws.
2. Remove the instrument panel from the dashboard.
3. Disconnect the 10-P connector from the switch.
4. Remove the switch from the instrument panel.

NOTE : LHD type shown, RHD type similar.



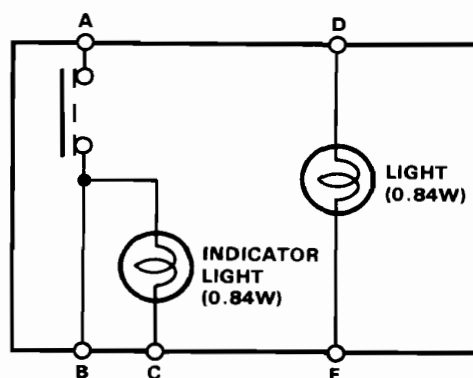
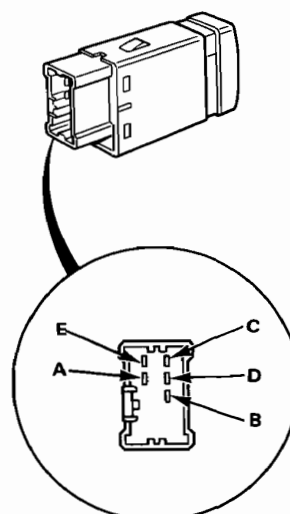
5. Turn the socket 45° counterclockwise sockets to remove it.



## Rear Fog Light Switch Test

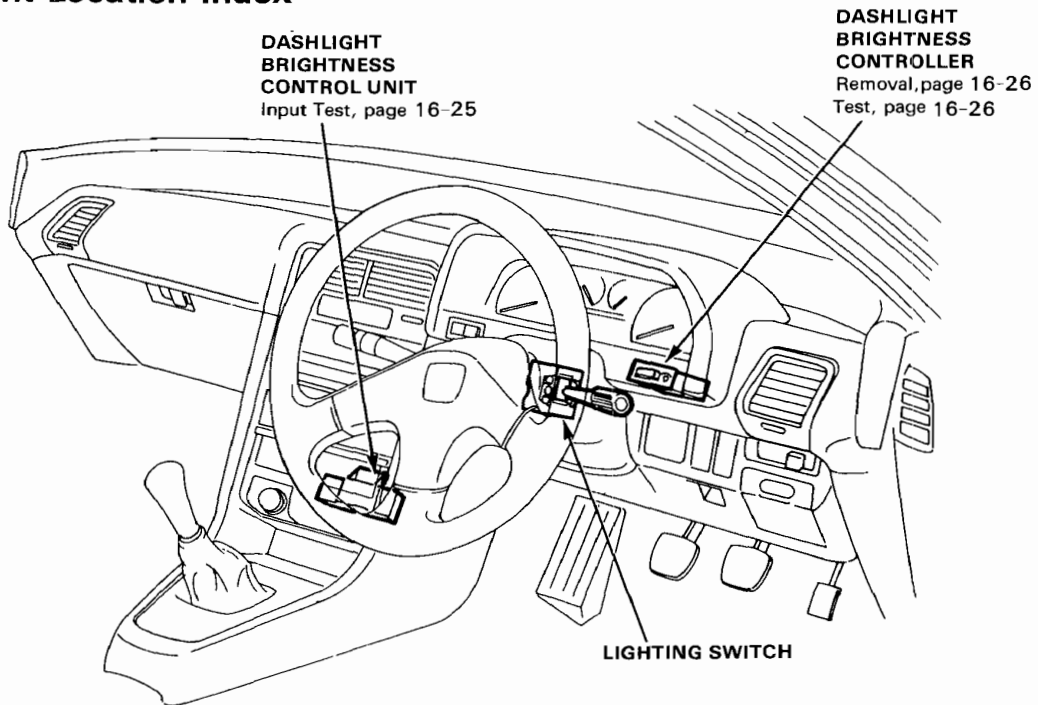
1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal Position	A	B	C	D	E
ON	○	○	○	○	○
OFF					

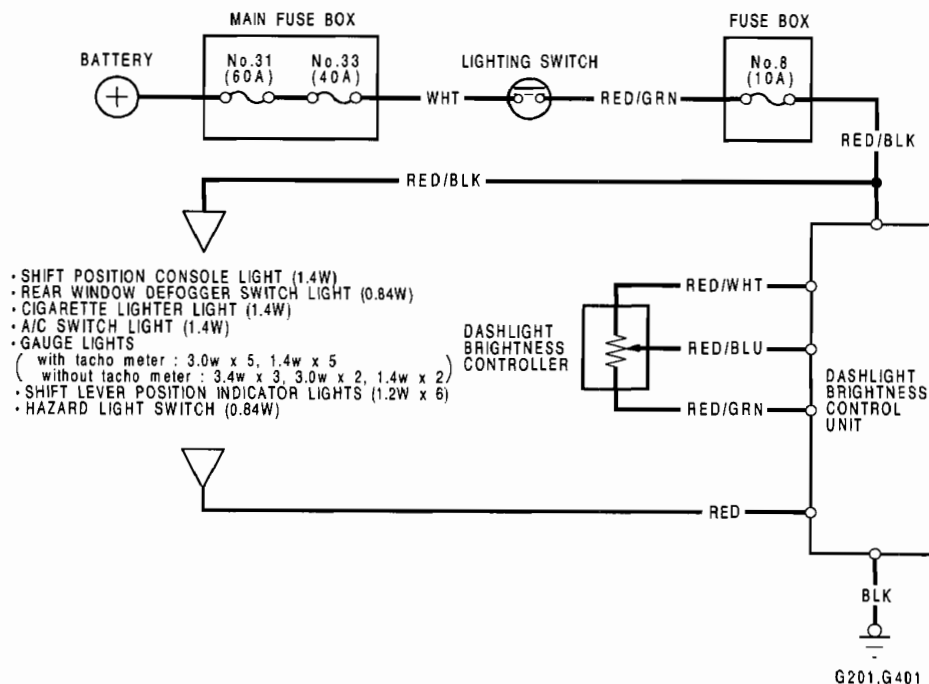


# Dashlight Brightnes Control (KQ model only)

## Component Location Index



## Circuit Diagram



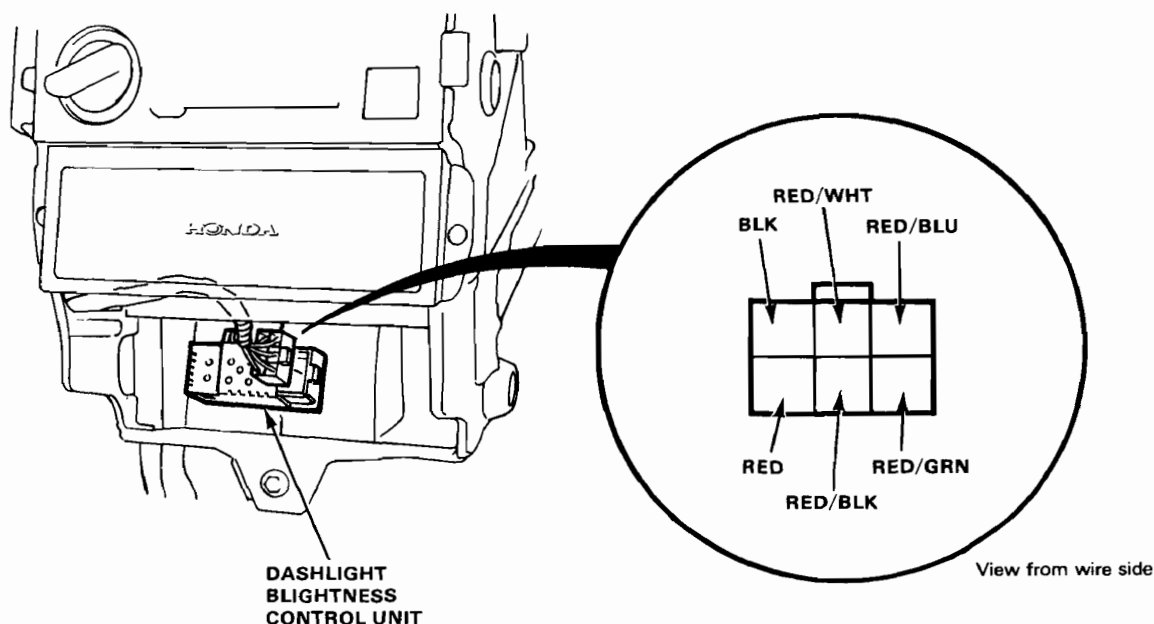




## Control Unit Input Test

Remove the center console and disconnect the 6-P connector from the control unit.

Make the following input tests at the harness pins. If all tests prove OK, yet the dash lights still cannot be controlled, check the connector for a good connection. If OK, substitute a known-good control unit and recheck.

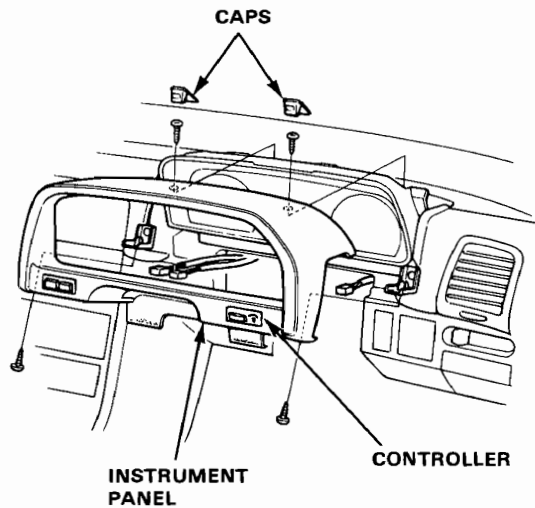


No.	Wire	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK	Under all conditions.	Check for continuity to ground: should be continuity.	<ul style="list-style-type: none"> <li>• Poor ground (G201 G401).</li> <li>• An open in the wire.</li> </ul>
2	RED/BLK	Lighting switch ON.	Check for voltage to ground: should be battery voltage.	<ul style="list-style-type: none"> <li>• Blown No. 8 (10A)</li> <li>• Faulty lighting switch.</li> <li>• An open in the wire.</li> </ul>
3	RED	Lighting switch ON.	Attach to ground Dash lights should come on full bright.	<ul style="list-style-type: none"> <li>• An open in the RED/BLK or RED wire.</li> </ul>
4	RED/GRN or RED/WHT	Adjusting dial rotated.	Check for resistance between the RED/GRN and RED/WHT terminals: should be 8 – 12 k $\Omega$ at all time.	<ul style="list-style-type: none"> <li>• Faulty controller.</li> <li>• An open in the wires.</li> </ul>
5	RED/BLU and RED/WHT	Adjusting dial rotated.	Check for resistance between the RED/BLU and RED/WHT terminals: should vary from 0 to 10,000 ohms as the dial is rotated	

# Dashlight Brightness Control (KQ model only)

## Controller Removal

1. Remove the caps, then remove the 4 screws.
2. Remove the instrument panel from the dashboard.
3. Disconnect the 3-P connector from the controller.
4. Remove the switch from the instrument panel.



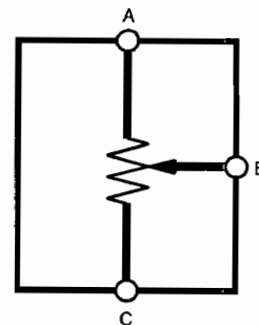
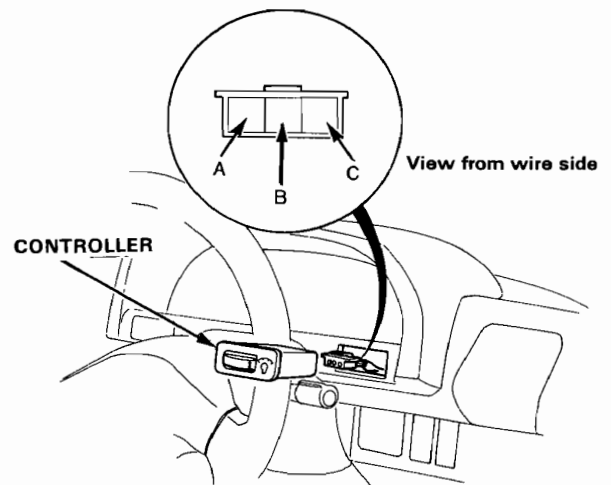
## Controller Test

1. Remove the instrument panel from the dashboard.
2. Measure resistance between the A and C terminals.

**Resistance : 8,000-12,000 ohms**

**NOTE :** Resistance will vary slightly with temperature.

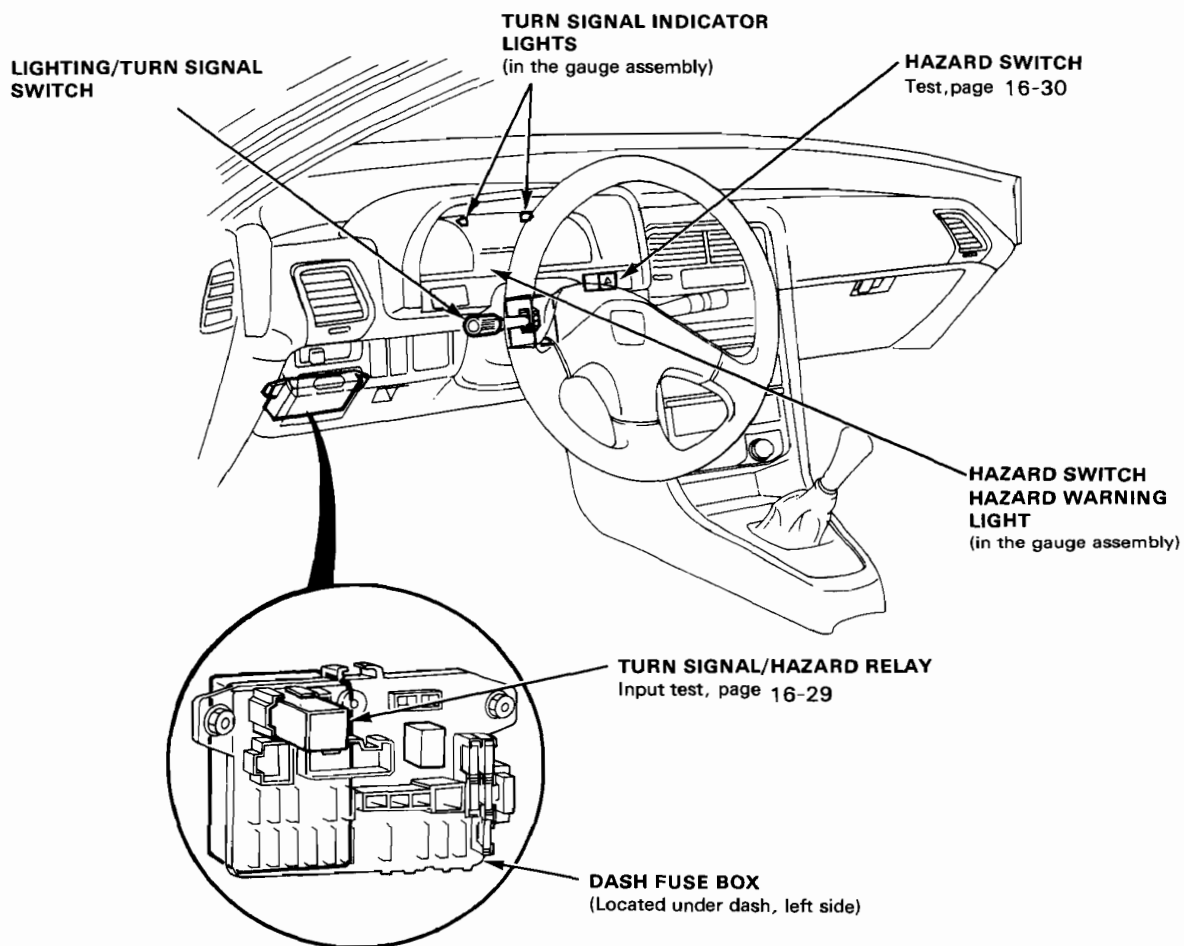
3. Measure resistance between the B and C terminals while rotating the adjusting dial. Resistance should vary from 0 to 10,000 ohms as the dial is rotated.





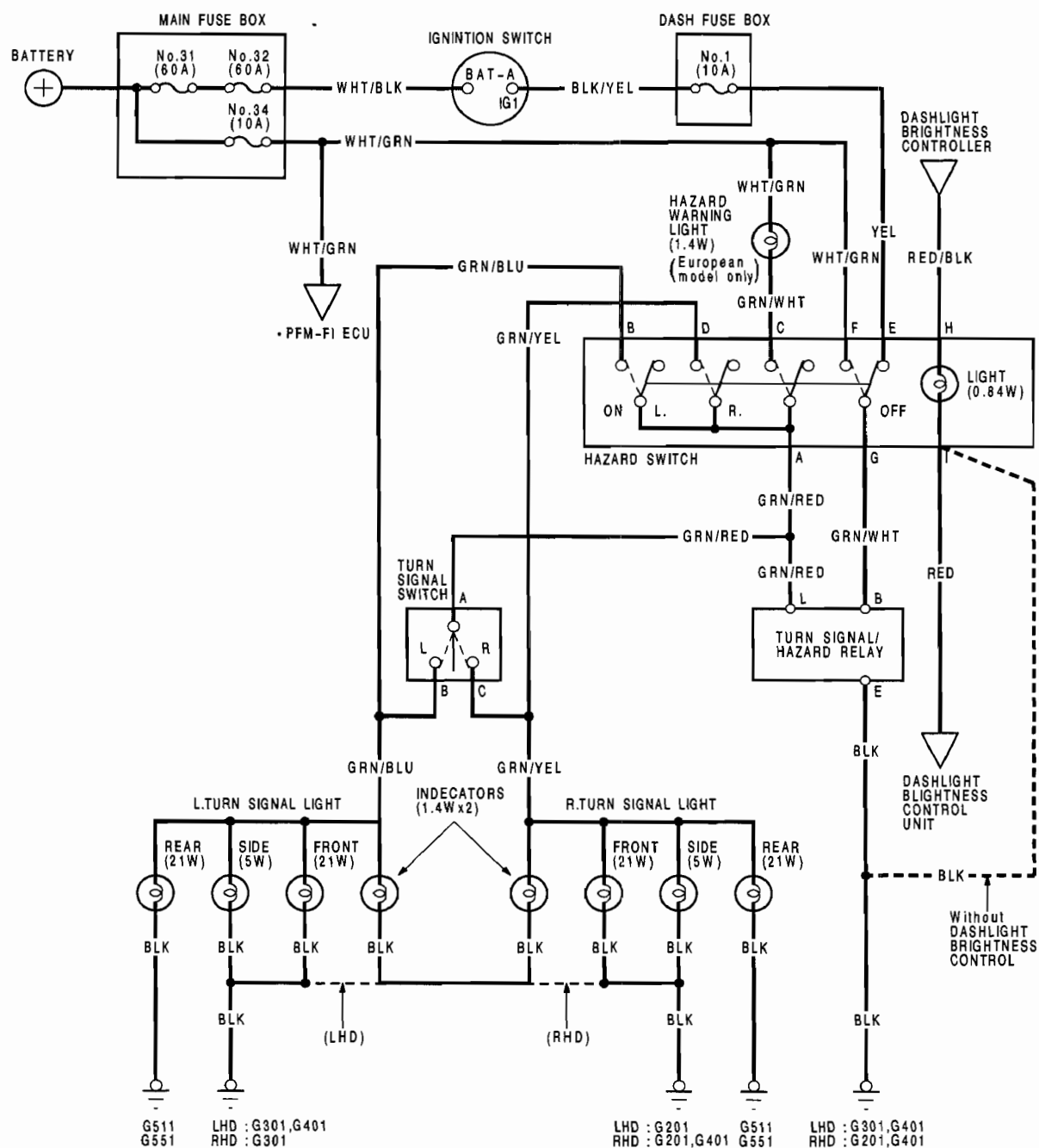
# Turn Signal/Hazard Flasher System

## Component Location Index



# Turn Signal/Hazard System

## Circuit Diagram



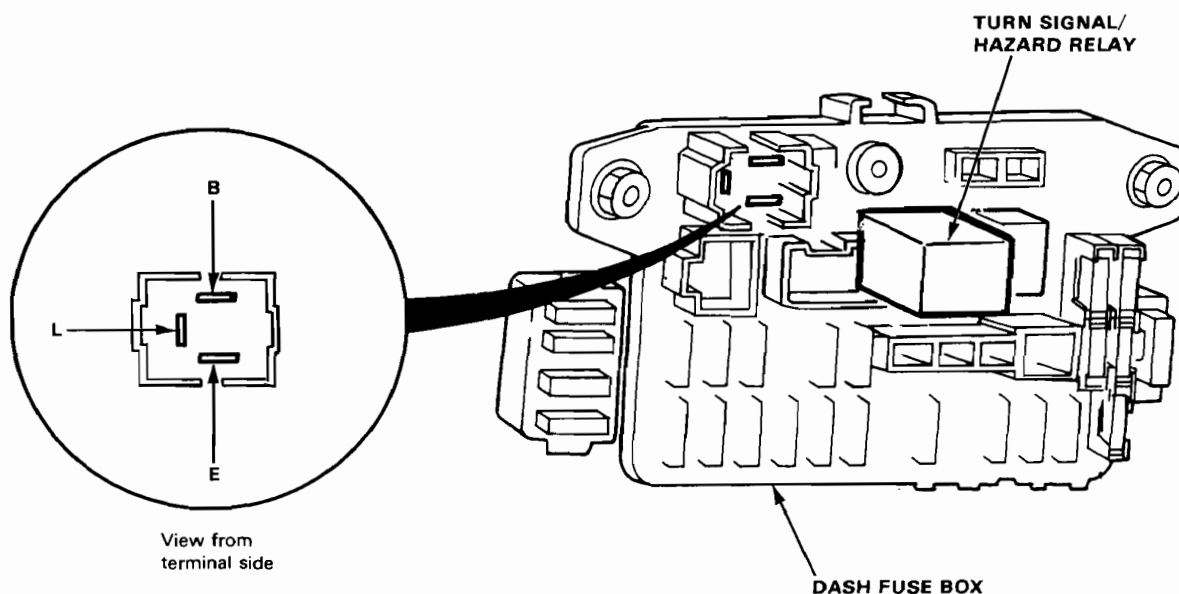


## Turn Signal/Hazard Relay Input Test

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.	<ul style="list-style-type: none"> <li>• Poor ground (G301, G401 (G201, G401) )</li> <li>• An open in the BLK wire.</li> </ul>
2	B	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	<ul style="list-style-type: none"> <li>• Blown No.1 (10A) fuse.</li> <li>• An open in the YEL or GRN/WHT wire.</li> <li>• Faulty hazard switch.</li> </ul>
3	B and L	Hazard switch ON and connect the B terminal to the L terminal.	Hazard lights should come on.	<ul style="list-style-type: none"> <li>• Blown No.34 (10A) fuse.</li> <li>• Blown bulb.</li> <li>• Poor ground.</li> <li>• Faulty hazard switch.</li> <li>• An open in the WHT/GRN, GRN/RED, GRN/YEL or GRN/BLU wire.</li> </ul>
		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.	<ul style="list-style-type: none"> <li>• Faulty turn signal switch.</li> </ul>

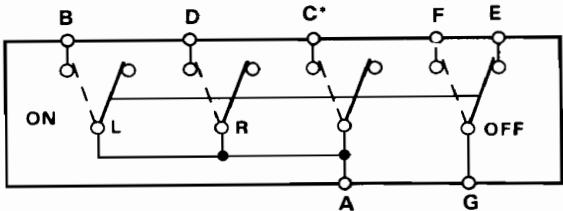
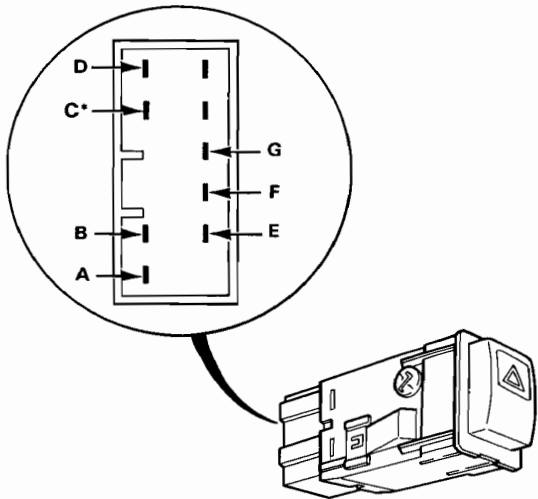
( ): RHD

# Turn Signal / Hazard System

## 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							

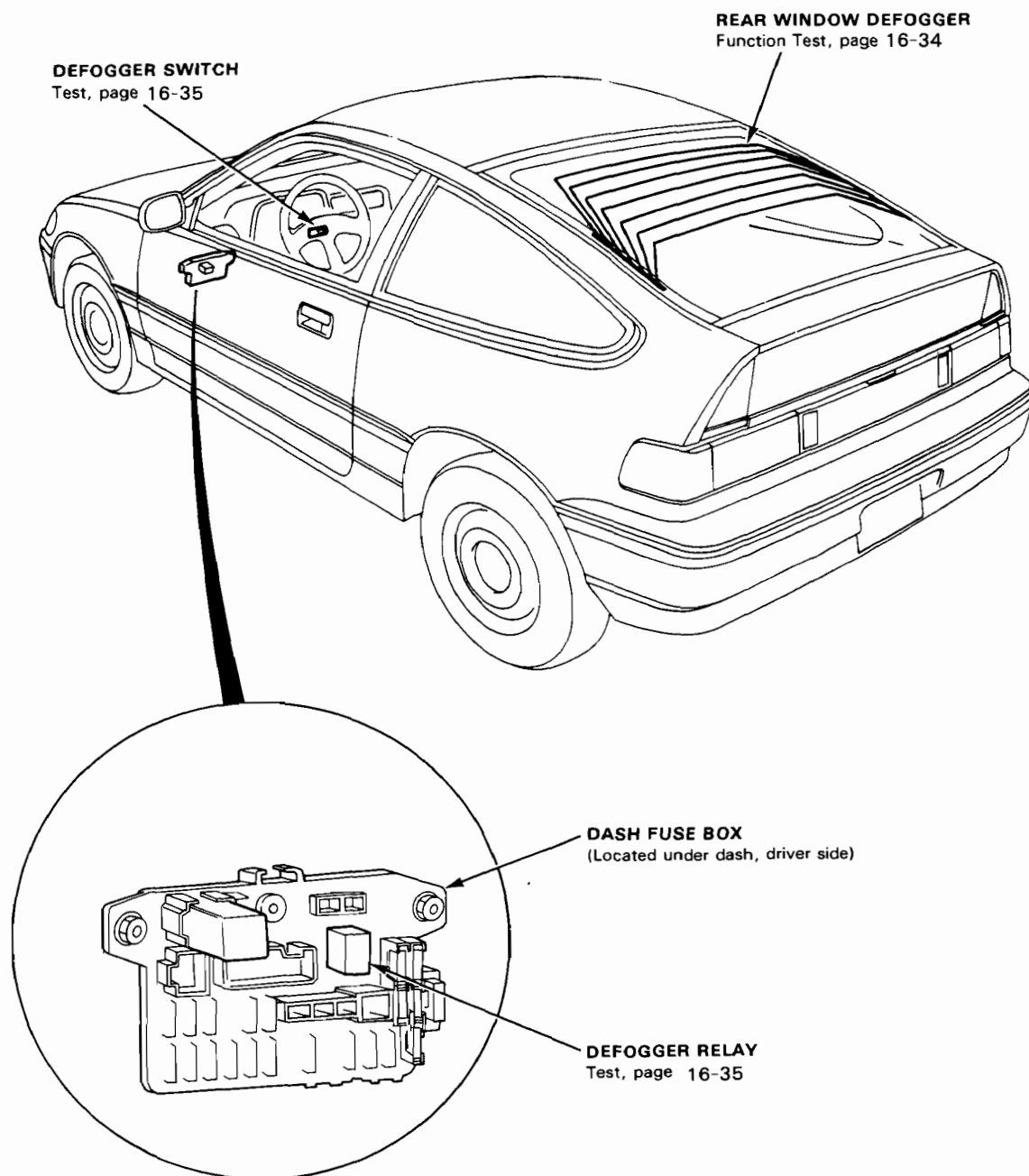


C\*.....European model only

# Rear Window Defogger



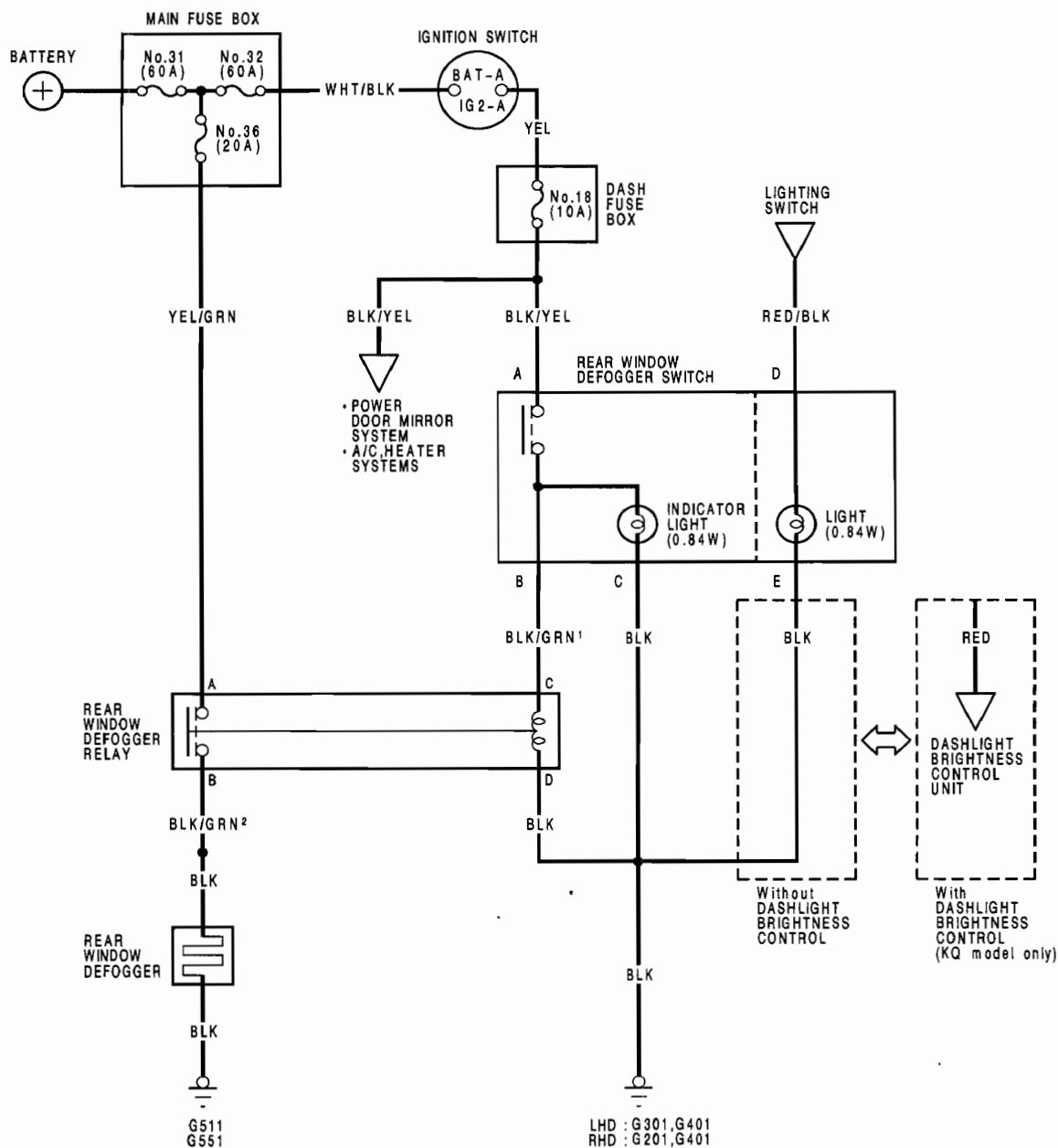
## Component Location Index



# Rear Window Defogger

## Circuit Diagram

NOTE : Several different wires have the same color. They have been given a number suffix to distinguish them (for example BLK/GRN<sup>1</sup> and BLK/GRN<sup>2</sup> are not the same.)







## Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected							
	Blown indicator light bulb	Blown No. 18 (10A) fuse (in the dash fuse box)	Blown No. 36 (20A) fuse (in the main fuse box)	Defogger switch	Function test	Defogger relay	Repair defogger wire	Poor ground
Defogger operates, but indicator light does not go on.	1							
Defogger does not operate and indicator light does not go on.		1		2			G301, G401 [G201, G401]	BLK/YEL or BLK/GRN <sup>1</sup>
Defogger does not operate, but indicator light goes on.			1		2	3	G511, G551	YEL/GRN or BLK/GRN <sup>2</sup>
Broken defogger wire						1		

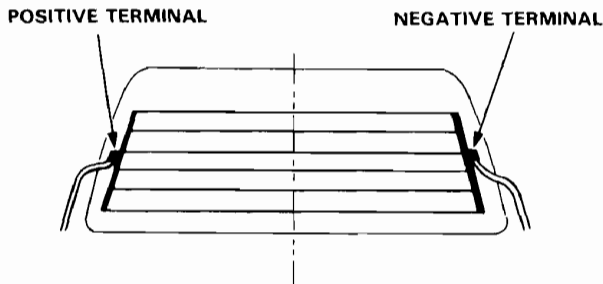
[ ] : RHD

# Rear Window Defogger

## Function Test

**CAUTION:** Be careful not to scratch or damage the defogger wires with the tester probe end.

1. Check for voltage between the positive terminal and body ground with the ignition switch and the defogger switch ON.  
There should be battery voltage.
  - If there is no voltage, check for:
    - Faulty defogger relay.
    - An open in the BLK, BLK/GRN<sup>2</sup> or YEL/GRN wire.
  - If there is battery voltage, go to step 2.

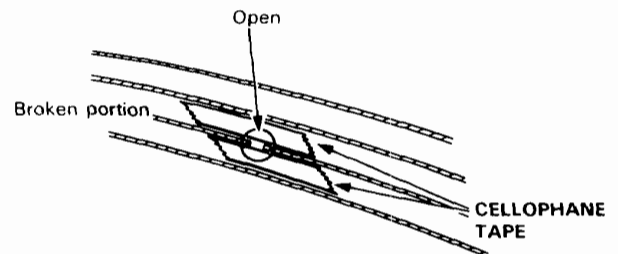


2. Check for continuity between the negative terminal and body ground.  
If no continuity, check for open in the defogger ground wire.
3. Lightly touch the voltmeter positive probe to the center of each defogger wire, and the negative probe to the negative terminal.  
There should be approximately 6 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 the positive side from the center.

## Defogger Wire Repair

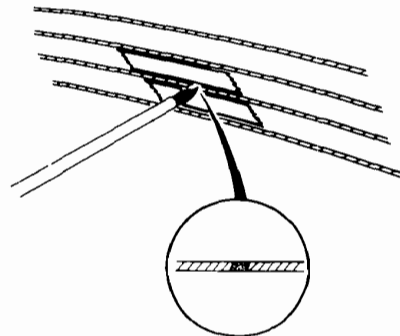
**NOTE:** Repair section must be no longer than one inch.

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.



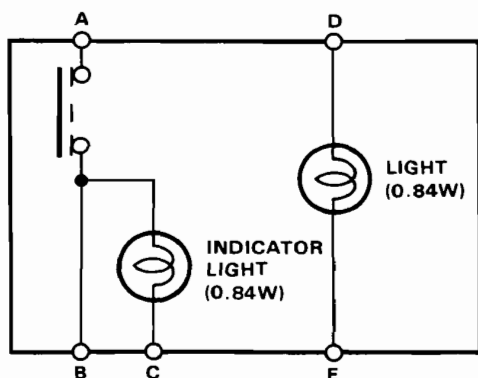
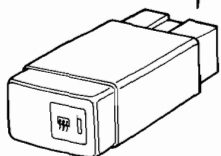
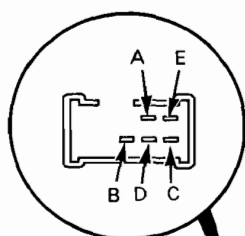
4. Check for proper operation with a voltmeter (approximately 6 V at the mid-point).
5. Apply a second coat of paint in the same manner. Dry 3 hours before removing tape.



## Switch Test

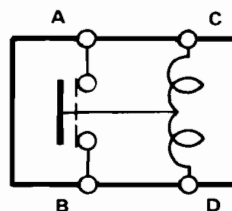
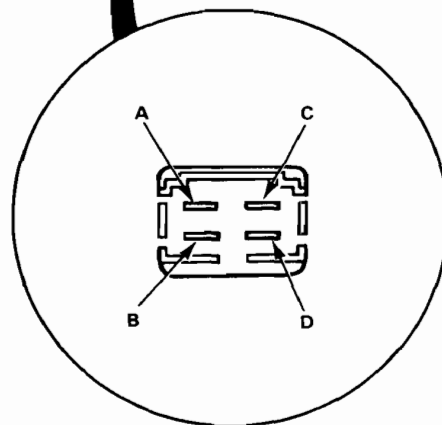
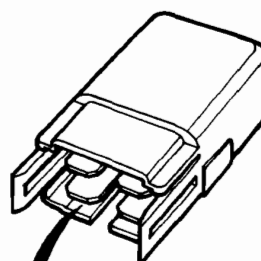
1. Remove the switch from the instrument panel.
2. Check for continuity between the terminals according to the table.

Terminal Position	A	B	C	D	E
ON	○	○	○	○	○
OFF					



## Relay Test

1. Remove the defogger relay from the dash fuse box.
2. There should be continuity between the A and B terminals when the battery is connected to the C and D terminals. There should be no continuity when the battery is disconnected.

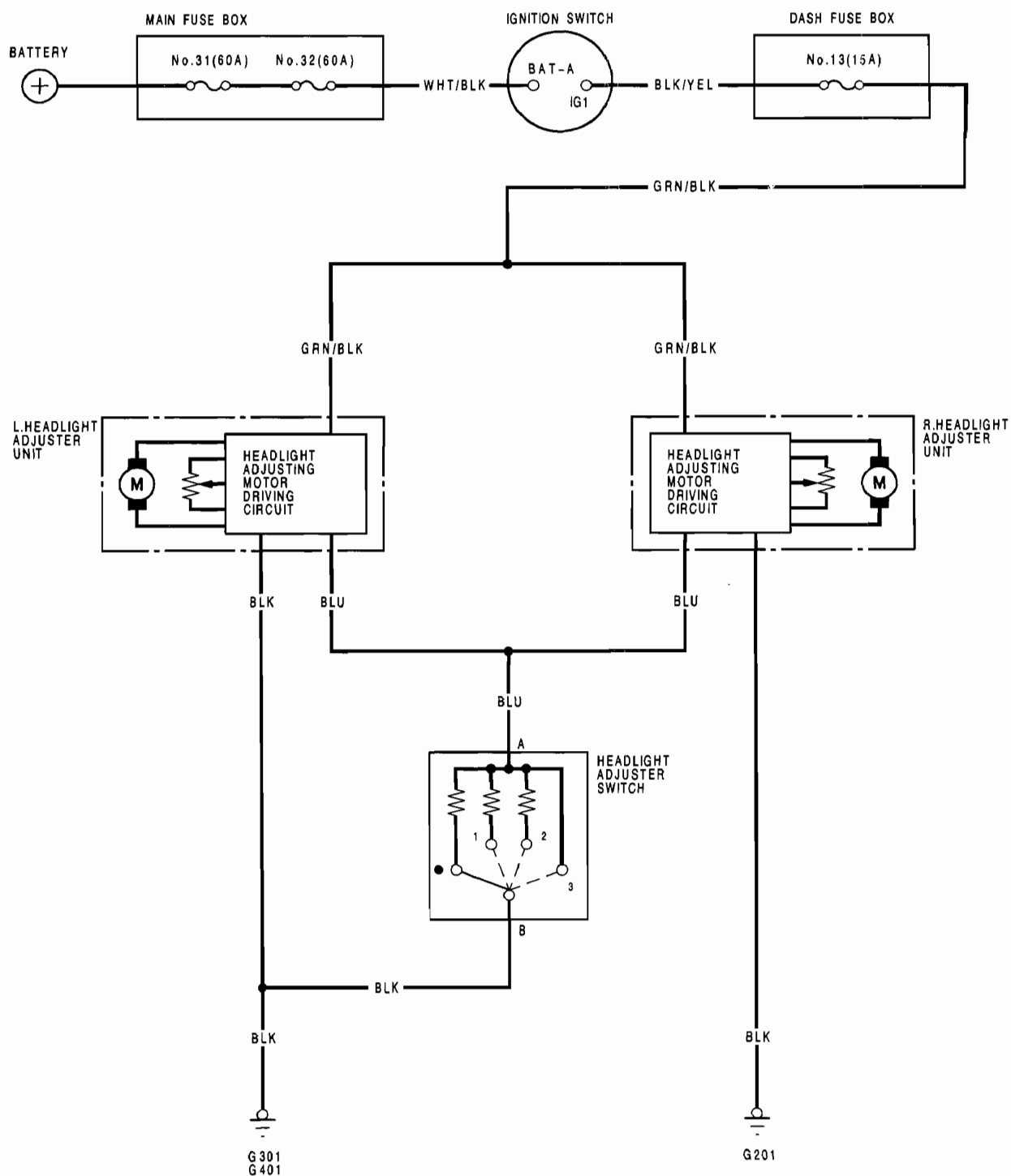


# Headlight Adjuster (KG model only)

## Circuit Diagram

### Discription :

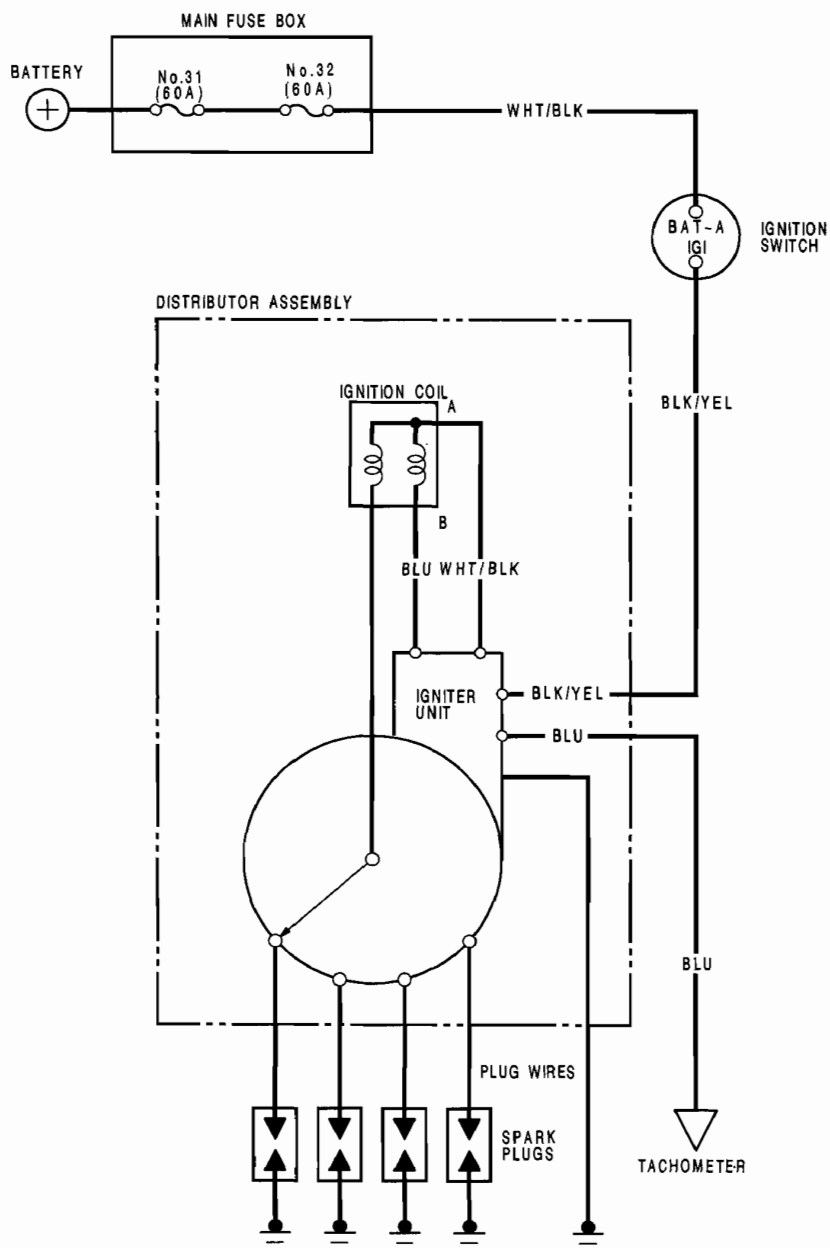
The motor-driven type headlight adjuster is mounted behind the headlight unit. When you operate the adjuster switch, the motor driving circuit senses the ground through each resistor and the headlight adjuster is actuated.



# Ignition System



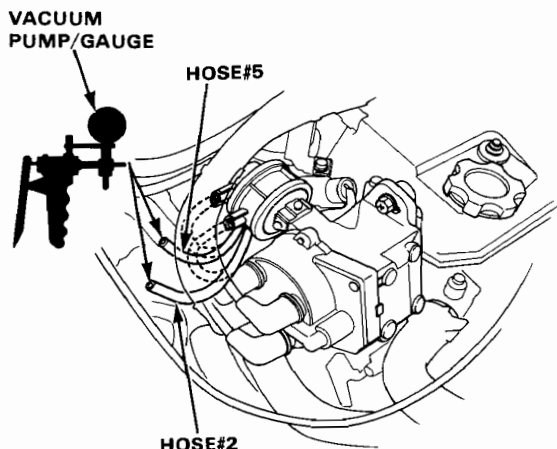
## Circuit Diagram (Carbureted Engine)



# Ignition System

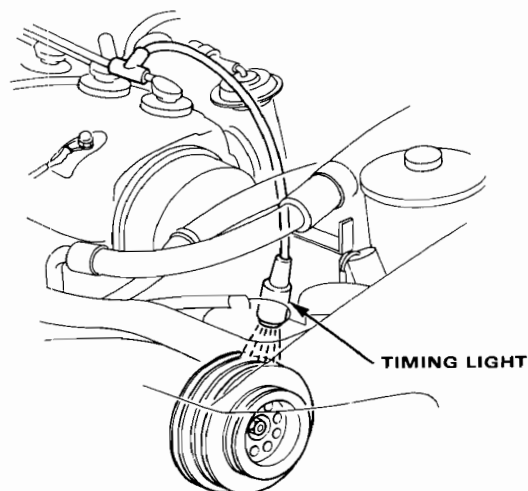
## Ignition Timing Inspection and Setting (2-Carbureted Engine)

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



2. Start the engine and let it idle.
3. When the engine is cool. Coolant temperature is below [45°C(113°F)]. Check each hose for vacuum. The #2 and #5 hoses should have vacuum.
  - If the #2 hose has no vacuum, check the #2 hose of proper connection, cracks, blockage or disconnected hose.
  - If the #5 hose has no vacuum, check the #5 and #10 hoses for proper connections, cracks, blockage or disconnected hoses, and the check valve is not clogged.  
If the #5 and #10 hoses, and the check valve have no problem, replace the thermostatic valve and recheck the #5 hose for vacuum.

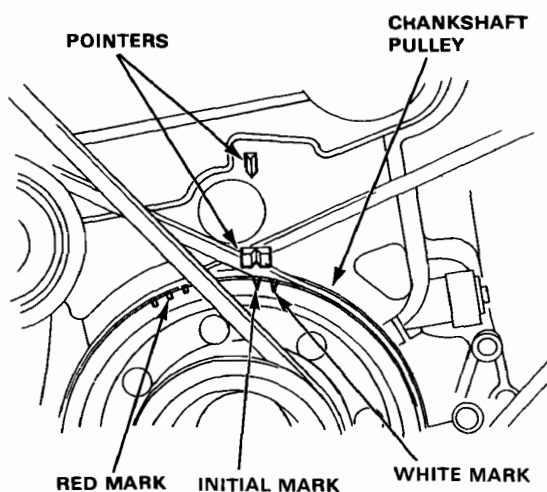
4. Connect the vacuum hoses to the vacuum advance diaphragm and allow the engine to warm up. (cooling fan comes on).
5. Disconnect the #5 hose from the vacuum advance diaphragm and connect the vacuum pump/gauge to the #5 hose.
6. Check the #5 hose for vacuum. The #5 hose should have no vacuum.
  - If 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.

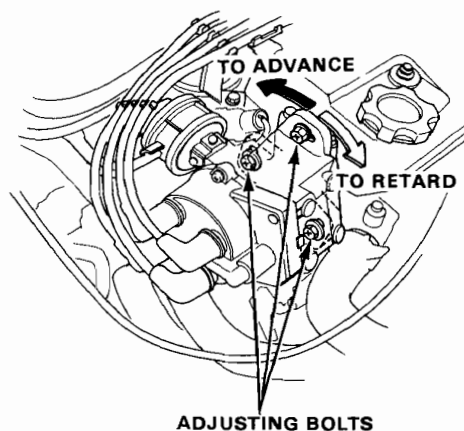


11. Read initial timing when initial timing mark is aligned to the pointer.

**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**

**18° ± 2° 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.