INTRODUCTION

How to Use This Manual

This supplement contains information for the 1989 PRELUDE. Refer to following shop manual for service procedures and data not included in this supplement.

Description	Code No.
PRELUDE CHASSIS Maintenance and Repair 88	62SF100
B20A ENGINE Maintenance and Repair	62PK100
D2 MANUAL TRANSMISSION Maintenance and Repair	62PK500
K4 AUTOMATIC TRANSMISSION Maintenance and Repair	62PK400

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

Special Information

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

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

NOTE: Gives helpful information.

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

*(Asterisk) marked sections are not included in this manual.

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HONDA MOTOR CO., LTD.
Service Publication Office

General Info
Special Tools
Specifications
Maintenance
Engine
Fuel and Emissions
Transaxle
Steering*
Suspension*
Brakes
Body
Heater and Air Conditioner
Electrical

Outline of Model Changes

ITEMS	DESCRIPTION	REFERENCE SECTIONS
Engine	Modified	
	• Air intake hose	5
	• Mounting bolts	5
	• Bearing cap	5
Engine Oil Filter	Changed	5
Crankshaft Pulley	Bolt size changed	5
PGM-FI	Fuel supply system modified	6
Carburetion	Emission control system modified	6
Automatic Transmission	Inside parts modified	9
	S_4 switch location changed	9, 14 and 16
ALB Master Cylinder	Changed	13
Dashboard	Modified	14
Heater Assembly	Cool air flow modified	15
Air Conditioner	Compressor control unit modified	15
Fuse and Power Supply Circuit	Changed	16
Battery	Changed	16
Cooling Fan Control	Cooling fan timer adopted	16
High Mount Brake Light	Adopted to KQ model	16
Stereo Sound System	Changed	16
Power Window	Changed	16
Cruise Control System	Clutch switch modified	16
Wiring Diagrams	Modified	16

General Information

Chassis and Engine Numbers 1-2
Identification Number Locations 1-3
Label Locations 1-4
Lift and Support Points 1-6
Towing 1-9
Preparation of Work 1-10
Symbol Marks 1-17
Abbreviation 1-17

Chassis and Engine Numbers

Vehicle Indentification Number (Fuel-Injected)

JHMBA41400C100001

- **Manufacturer Code**
- **Vehicle Type**
  - M: Passenger Car
- **Prelude**
- **Door/Transmission Type**
  - 1: 2-door/5-speed manual
  - 2: 2-door/4-speed automatic
- **Vehicle grade**
  - 4: 2.0 i-16 with B20A7 engine (KF, KW, KB, KE, KT)
    2.0 i-16 with B20A5 engine (KS: Sweden)
    16 i with B20A5 engine (KX)
    2.0 i-16 with B20A6 engine (KQ)
    2.0 Si with B20A7 engine (KY)
  - 8: 2.0 i-16 with B20A5 engine (KG, KW, KS: Norway/Finland)
- **Fixed Code**
- **Auxiliary Number**
- **Factory Code**
  - C: Saitama Factory Sayama Plant
- **Model Year**
  - 1:1989
- **Serial Number**

Vehicle Indentification Number (Carbureted)

JHMBA41300C100001

- **Manufacturer Code**
- **Vehicle Type**
  - M: Passenger Car
- **Prelude**
- **Door/Transmission Type**
  - 1: 2-door/5-speed manual
  - 2: 2-door/4-speed automatic
- **Vehicle grade**
  - 3: EX with B20A3 engine (KX, KS: Sweden)
    EX with B20A4 engine (KF, KW, KB, KE, KT, KY)
  - 7: EX with B20A3 engine (KG, KW, KS: Norway/Finland)
- **Fixed Code**
- **Auxiliary Number**
- **Factory Code**
  - C: Saitama Factory Sayama Plant
- **Model Year**
  - 1:1989
- **Serial Number**

Engine Serial Number

B20A3-2000001

- **Engine Type**
  - B20A3: 2.0 ℓ SOHC Carbureted engine with catalytic converter for KG, KX, KS, KW models
  - B20A4: 2.0 ℓ SOHC Carbureted engine without catalytic converter for European and General models
  - B20A5: 2.0 ℓ DOHC Fuel-Injected engine with catalytic converter for KG, KX, KS, KW models
  - B20A7: 2.0 ℓ DOHC Fuel-Injected engine without catalytic converter for European and General models
- **Model Year**
  - 2:1989
- Transmission/Emission Group
  - 0: 5-speed manual without catalytic converter
  - 5: 4-speed automatic without catalytic converter
  - 7: 5-speed manual with catalytic converter
  - 9: 4-speed automatic with catalytic converter
- **Serial Number**

Engine Serial Number (KQ)

B20A6-2000001

- **Engine Type**
  - B20A6: 2.0 ℓ DOHC Fuel-Injected with catalytic converter
- **Model Year**
  - 2:1989
- **Serial Number**

Manual Transmission Number

D2J4-2000001

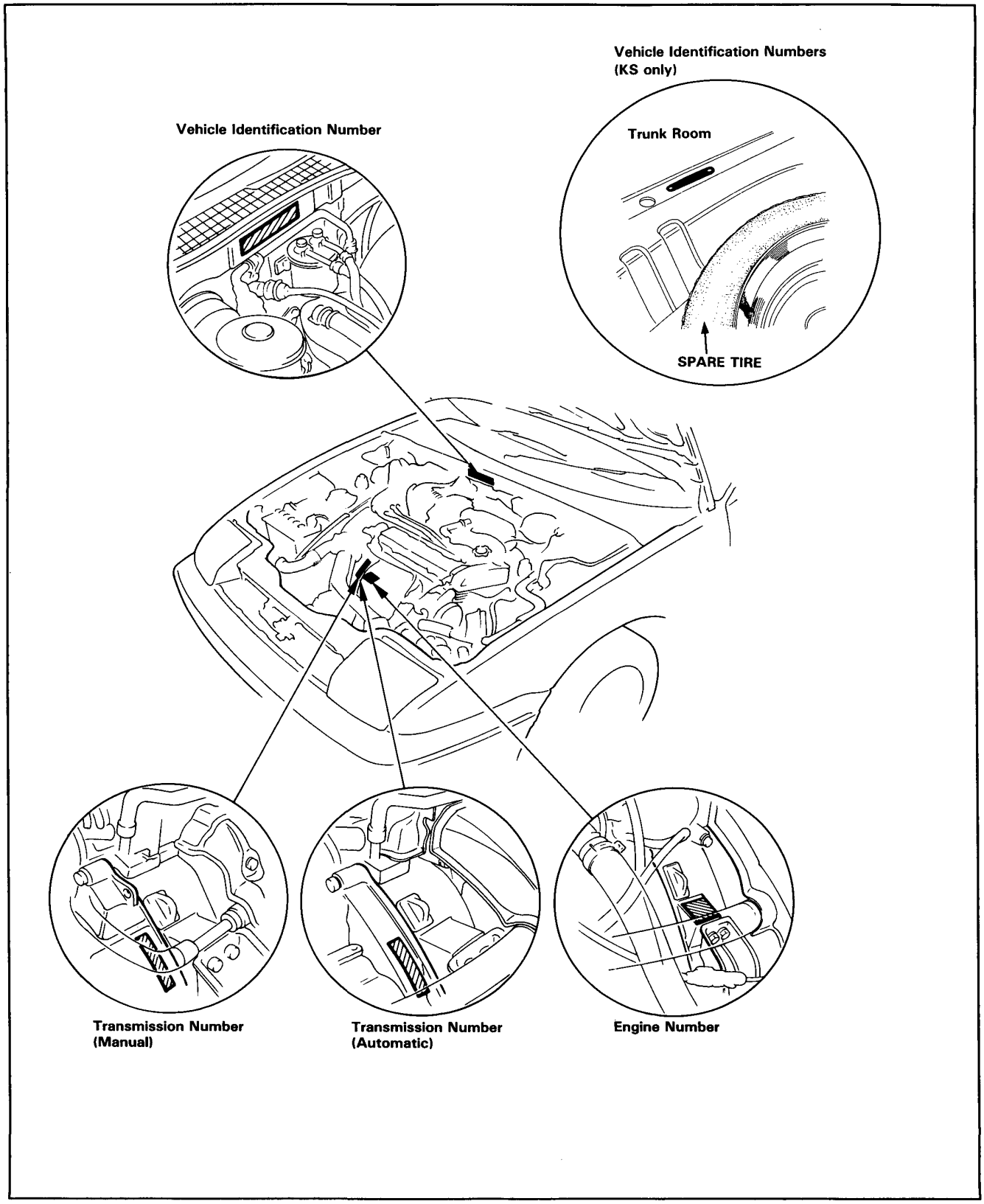
- **Transmission Type**
  - D2J4: for Carbureted engine equipped model (KZ, KS, KT, KY, KW)
  - D2J5: for Carbureted engine equipped model (KF, KG, KX, KB, KE)
    for Fuel-Injected engine equipped model (KS, KQ, KY, KT, KZ, KW)
  - D2L5: for Fuel-Injected engine equipped model (KF, KG, KX, KW, KB, KE)
- **Serial Number**

Automatic Transmission Number

K4-2000001

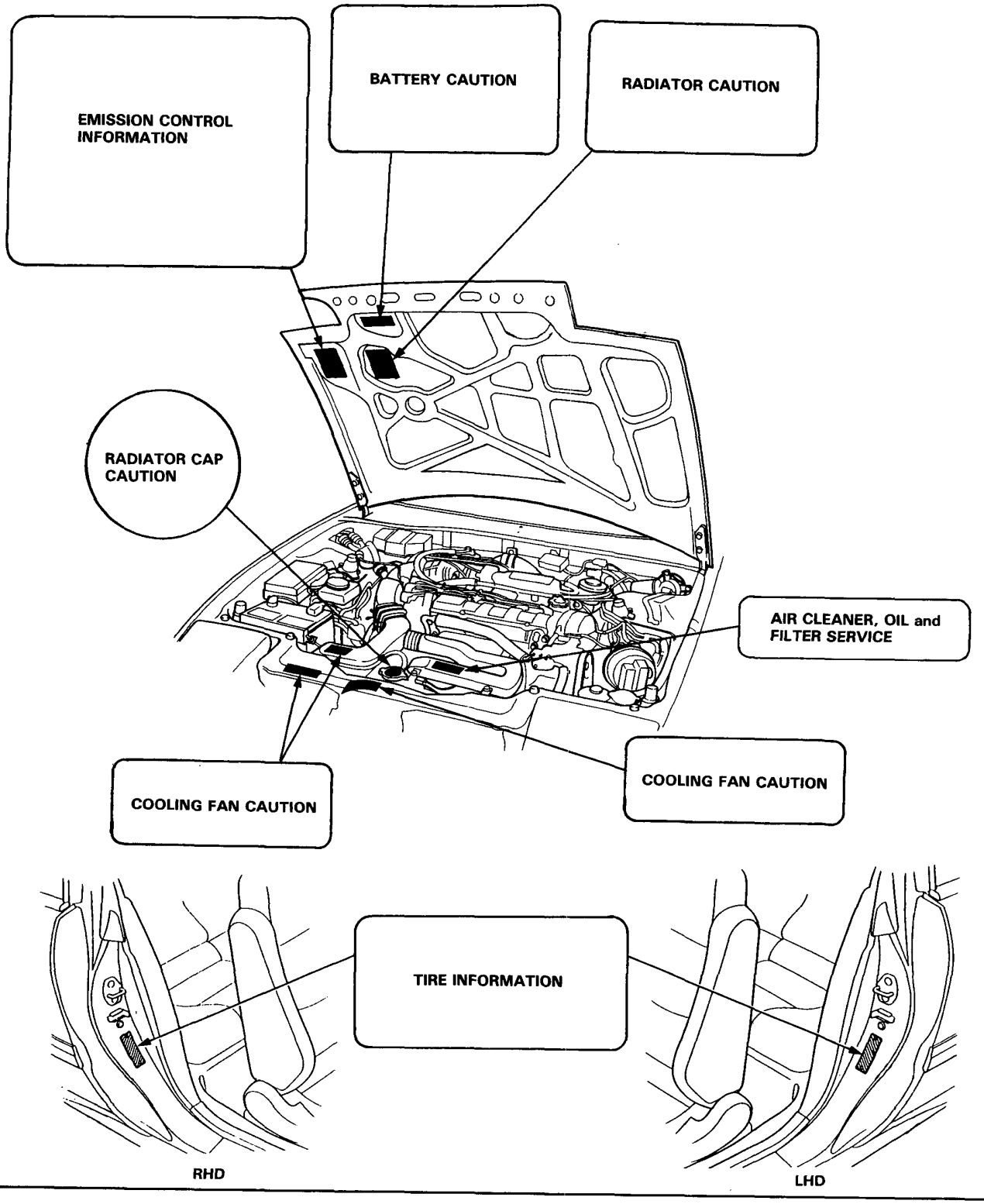
- **Transmission Type**
- **Serial Number**

Identification Number Locations

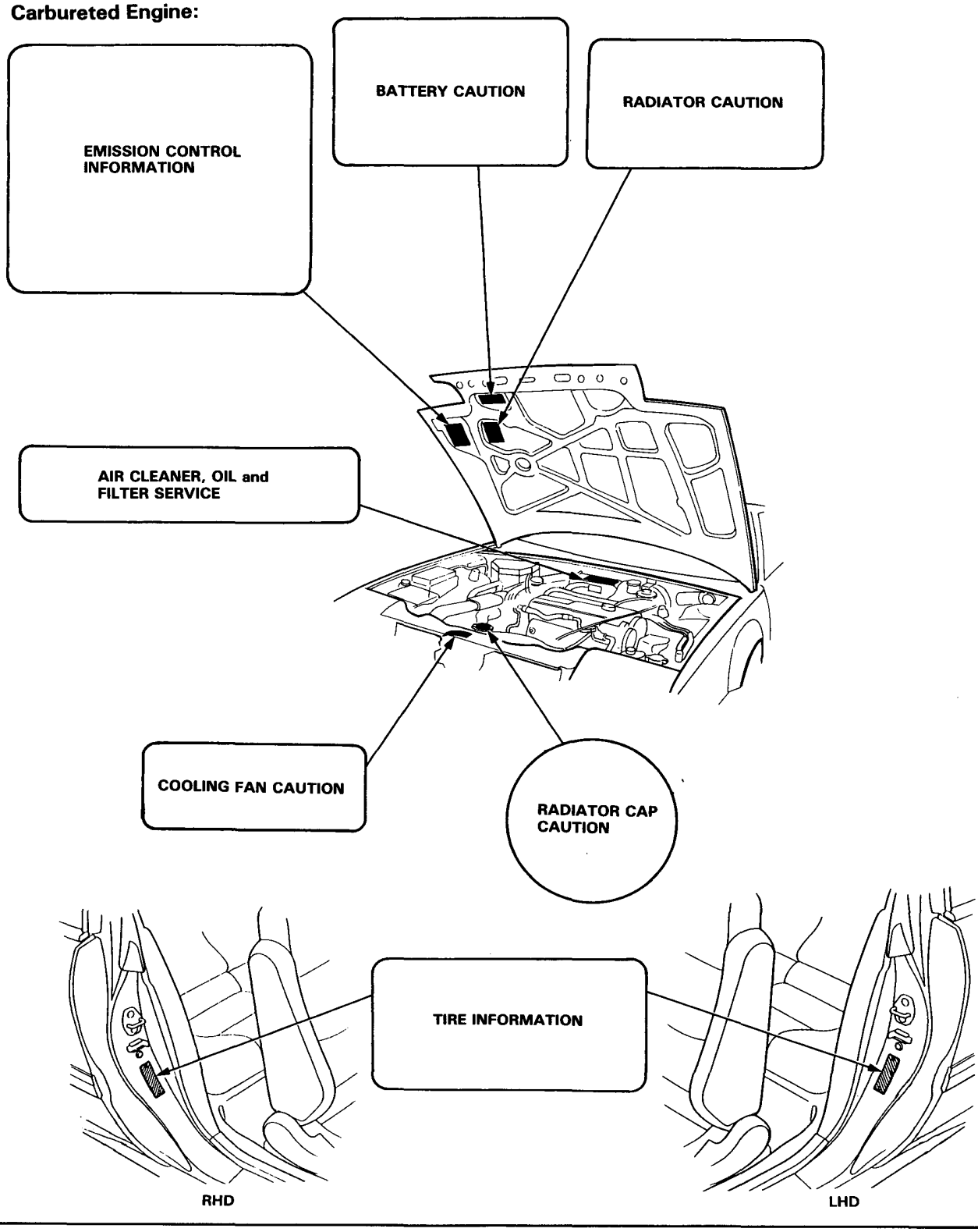


Label Locations

Fuel-Injected Engine:



Carbureted Engine:



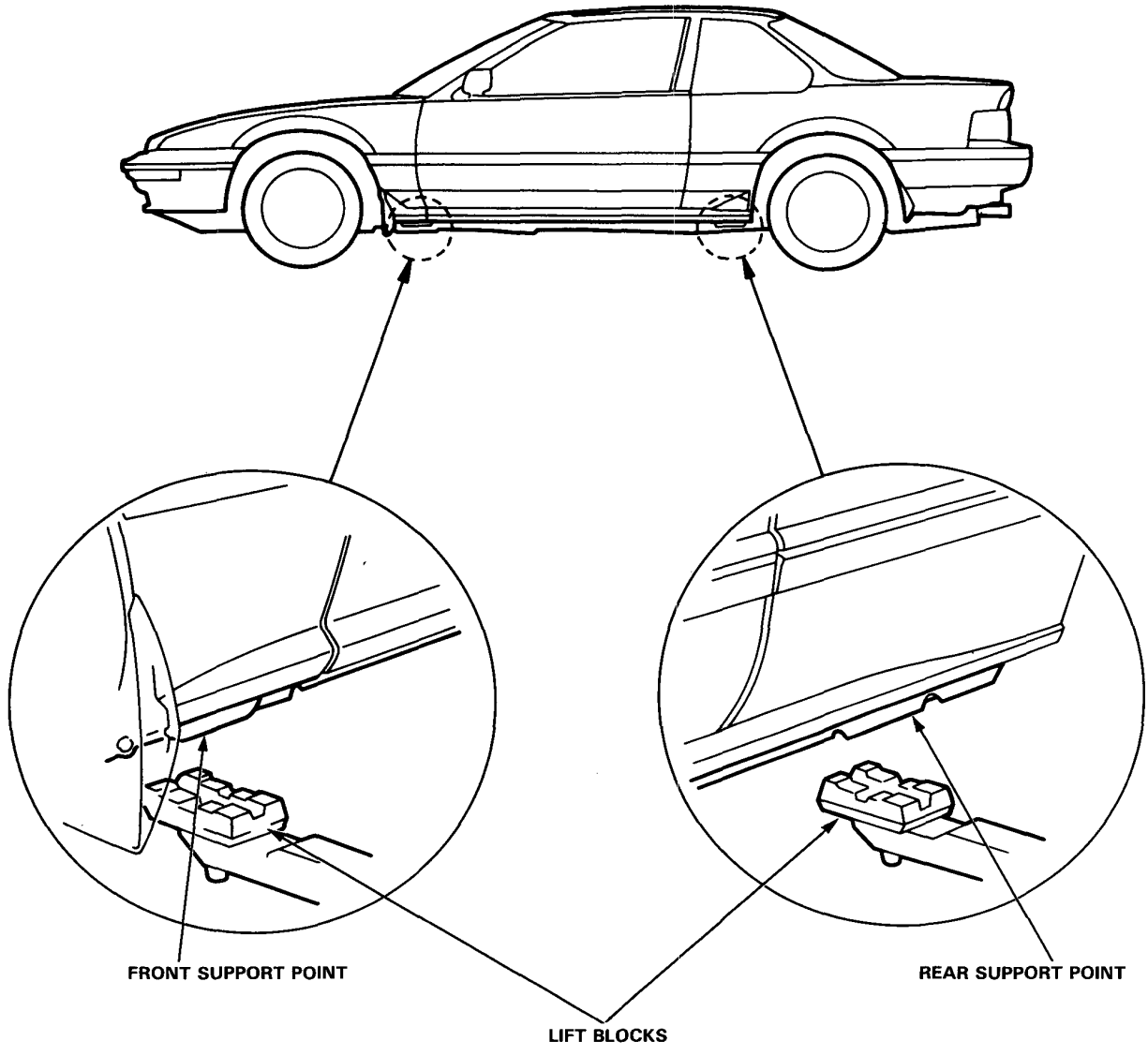
Lift and Support Points

Hoist

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

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

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



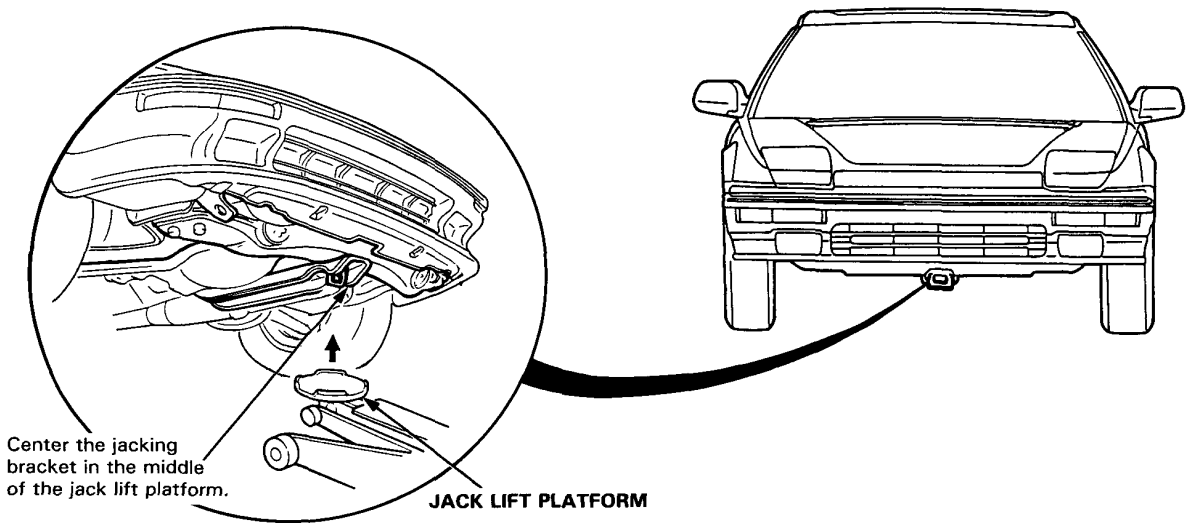
Floor Jack

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse (Automatic in PARK).
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page 1-8 so the car will be approximately level, then lower the car onto the stands.

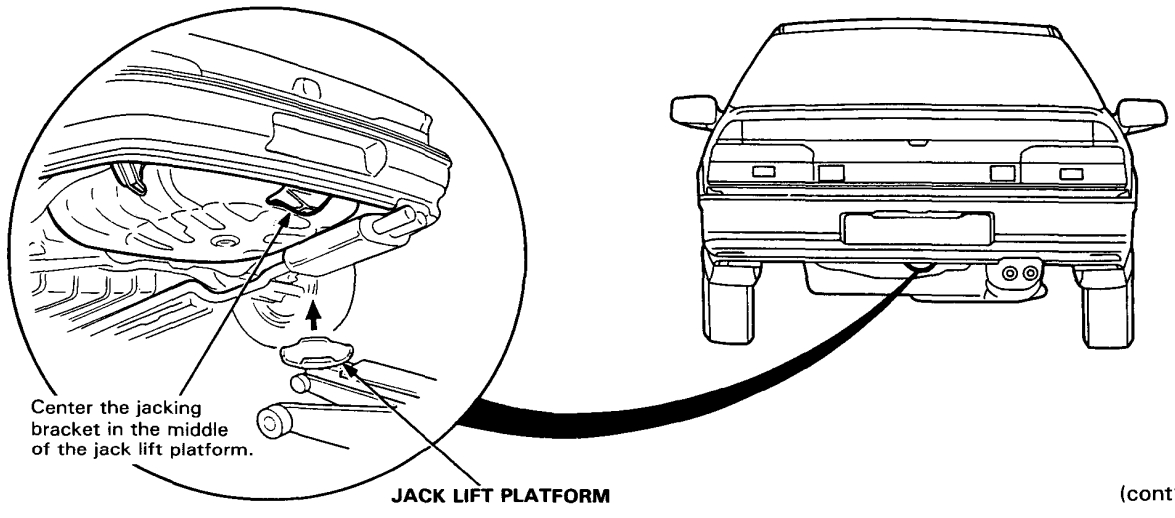
WARNING

- **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



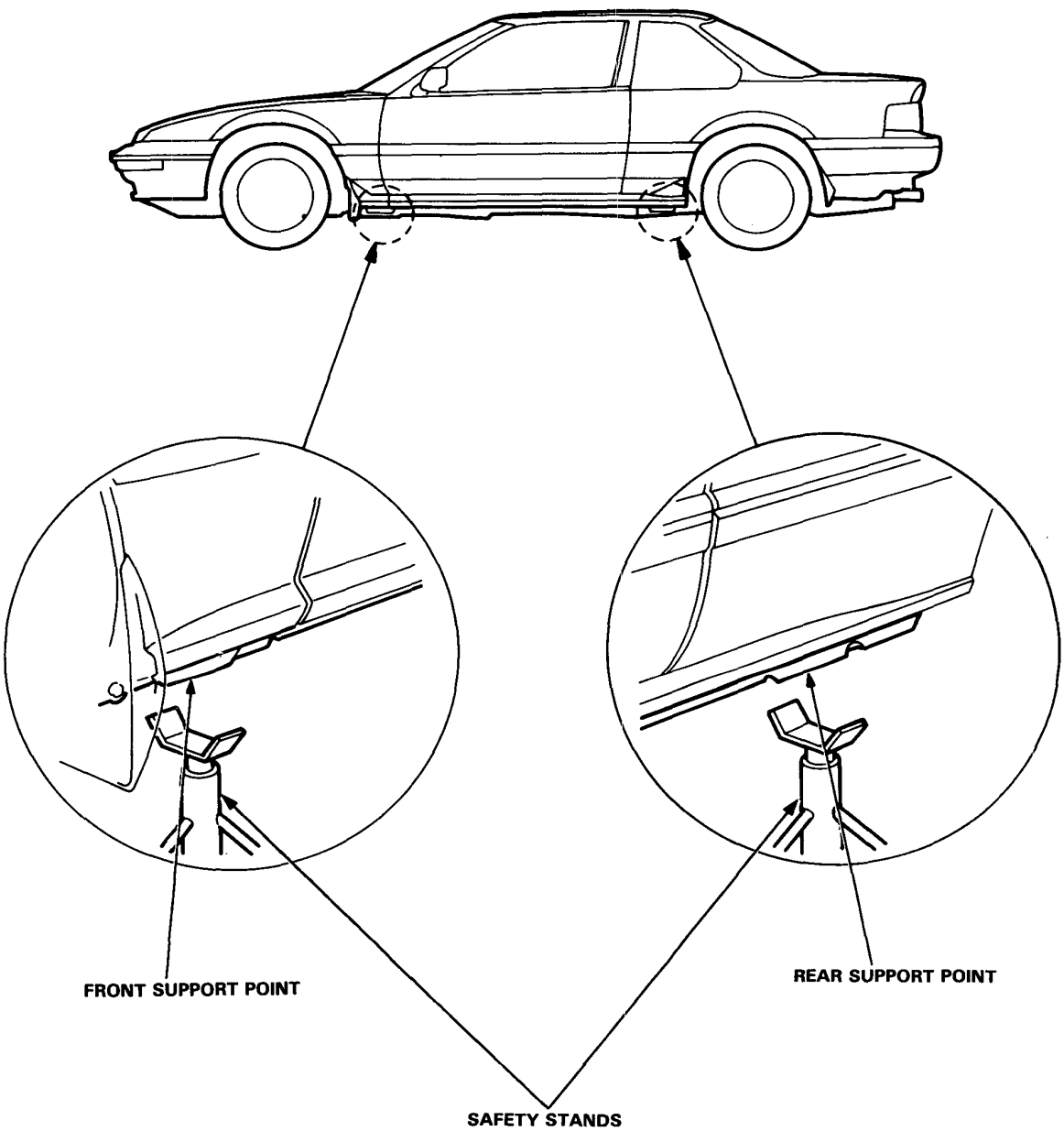
Rear



(cont'd)

Lift and Support Points (cont'd)

Safety Stands



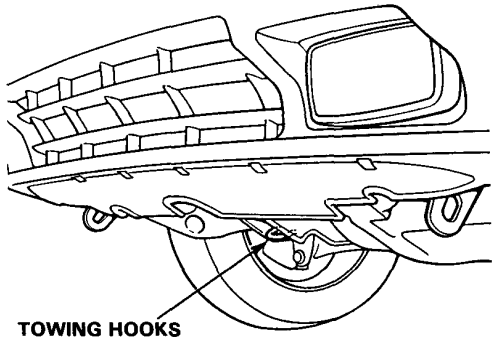
Towing

If towing is necessary, we recommended the following:

Flat Bed Equipment:
Entire car is winched on a flat bed vehicle. This is the best way of towing the car.

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

CAUTION: If a sling type tow is used, the tow truck driver should position wood spacer blocks between 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.
When towing the 4WS model even with the front wheels off the ground, center the steering and tie the steering wheel in place.



TOWING HOOKS

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

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

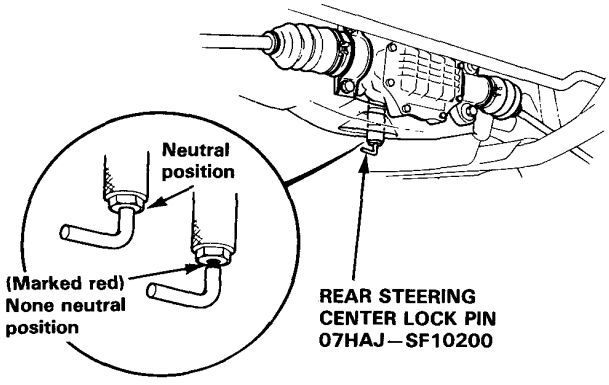
If a frame mount tow bar is used with a four wheel tow:

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

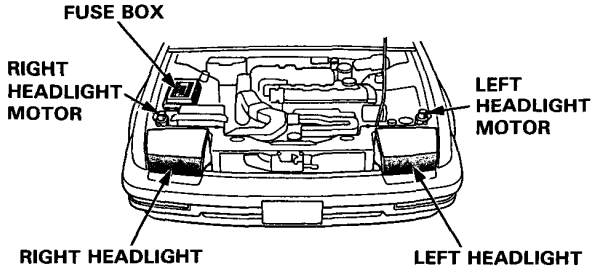
WARNING Never use tow chains or rope to tow a car; your ability to safely control the car may be adversely affected.

Special Caution Items For This Car

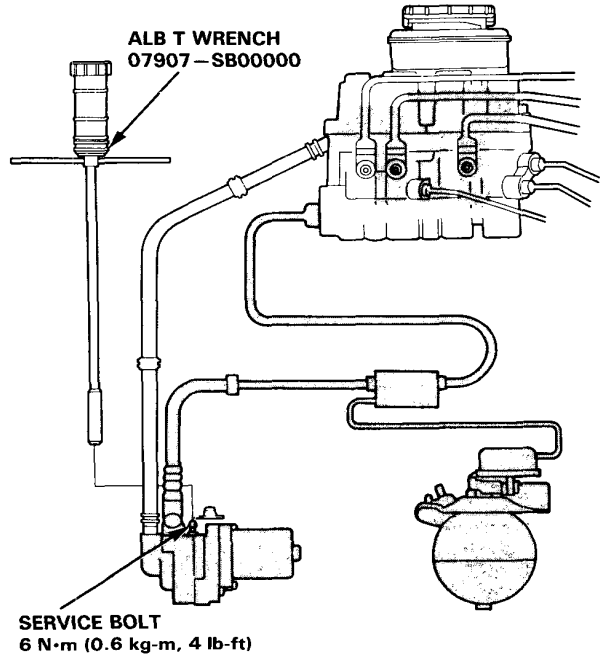
1. 4WS system servicing (with 4WS)
   - Do not disassemble the rear steering gear box.
   - When towing the car even with the front wheels off the ground, center the steering and tie the steering wheel in place.
   - When testing or adjusting the wheel alignment, attach the rear steering center lock pin to the rear steering gear box. Make sure that the rear steering gear box is located at the neutral position.



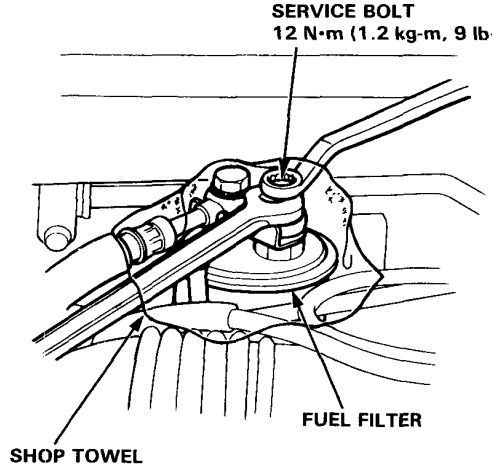
2. Retractable headlights are installed.
   Before manual raising and lowering, the fuse must be removed. When raising and lowering is executed without removing the fuse, injury may be caused by rapid turning of the manual retracting knob, if the motors accidentally start running.



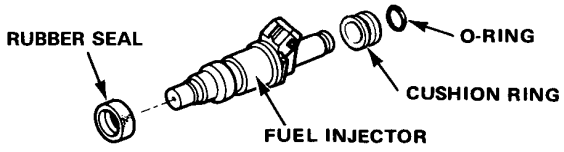
3. ALB piping system servicing.
   - Disassemble the ALB piping system after relieve the high-pressured brake fluid.
   - Otherwise, the high-pressured brake fluid will burst out and it is very dangerous.
   - See section 13 of Base Manual (62SF100) how to relieve the high-pressured brake fluid.



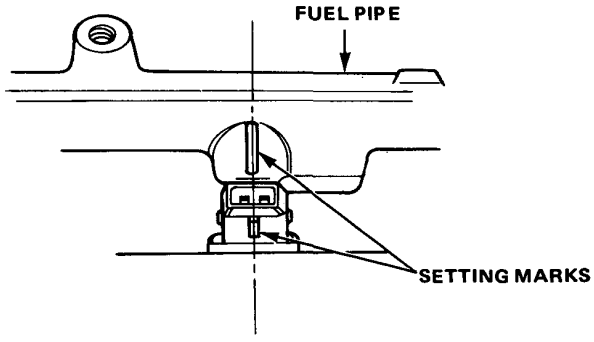
4. Fuel Line Servicing
   - Relieve fuel pressure by loosening the service bolt provided on the top of the fuel filter before disconnecting a fuel hose or a fuel pipe.



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



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



5. 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.

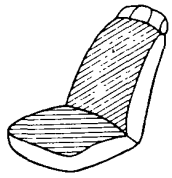
6. Installation of an amateur radio.
   Care has been taken for the control units of the PGM-FI, PGM-CARB., A/T, Cruise control and ALB and its wiring to prevent erroneous operation from external interference, but erroneous operation of the control units may be caused by extremely strong radio waves. Attention must be paid to the following items to prevent erroneous operation of the control units.
   - The antenna and the body of the radio must be at least 200 mm (7.9 in.) away from the control unit.

   The control unit locations:
   - PGM-FI, PGM-CARB, A/T: Passenger's side front flower panel.
   - Cruise control: On the relay bracket, driver's side panel.
   - ALB: Under dush center.
   - Do not lead the antenna feeder and the coaxial cable over a long distance parallel to the car's wiring. When crossing the wiring is required, execute crossing at a right angle.
   - Do not install a radio with a large output (max. 10 W).

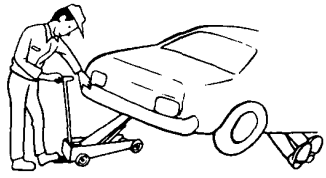
7. Apply liquid gasket to the transmission, oil pump cover, right side cover and water outlet. Use Honda genuine liquid gasket, PART NO. 0Y740—99986.
   - Check that the mating surfaces are clean and dry before applying liquid gasket. Degrease the mating surfaces if necessary.
   - Apply liquid gasket 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 passed after applying liquid gasket. In that case, reapply liquid gasket after removing old one.
   - Wait at least 30 minutes before filling with the appropriate liquid (engine oil, coolant and other similar fluids).

CAUTION: Observe all safety precautions and notes while working.

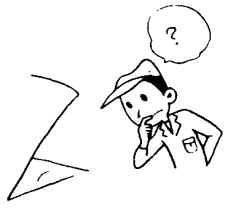
1. Protect all painted surfaces and seats against dirt and scratches with a clean cloth or vinyl cover.



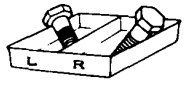
2. Work safely and give your work your undivided attention. When either the front or rear wheels are to be raised, block the remaining wheels securely. Communicate as frequently as possible when a work involves two or more workers. Do not run the engine unless the shop or working area is well ventilated.



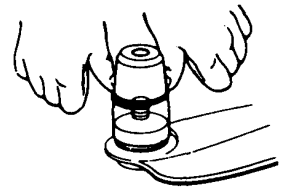
3. Prior to removing or disassembling parts, they must be inspected carefully to isolate the cause for which service is necessary. Observe all safety notes and precautions and follow the proper procedures as described in this manual.



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

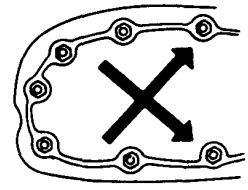


5. Use the special tools when use of such is specified.

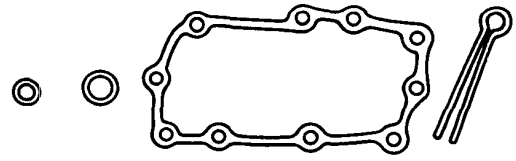


6. Parts must be assembled with the proper torque according to the maintenance standards established.

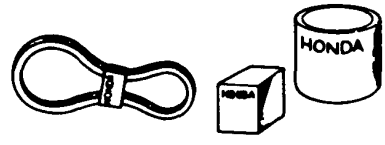
7. When tightening a series bolts or nuts, begin with the center or larger diameter bolts and tighten them in crisscross pattern in two or more steps.



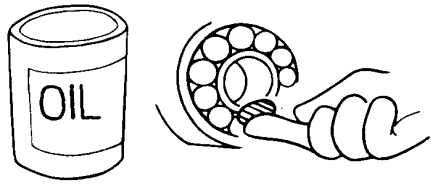
8. Use new packings, gaskets, O-rings and cotter pins whenvere reassembling.



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



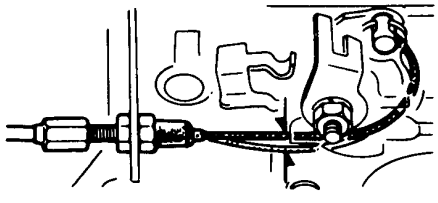
10. Coat or fill parts with specified grease where specified (Page 4-2). Clean all removed parts with solvent upon disassembly.



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 the 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.

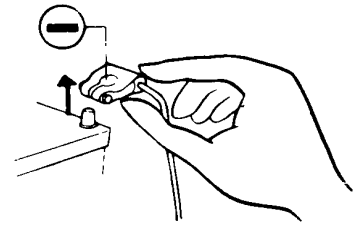
    - Keep disassembled parts from air-borne dust and abrasives.
    - Check that parts are clean before assembly.

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

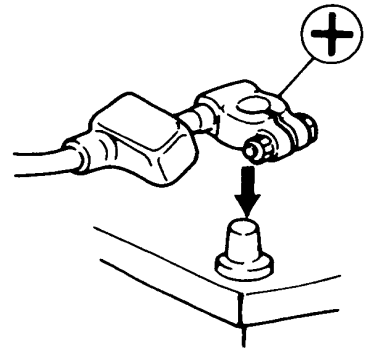


Electrical

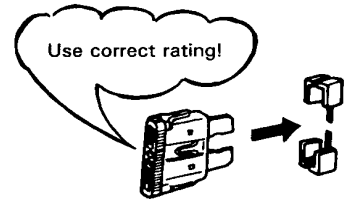
- Before making any repairs on electric wires or parts, disconnect the battery cables from the battery staring with the negative (−) terminal.



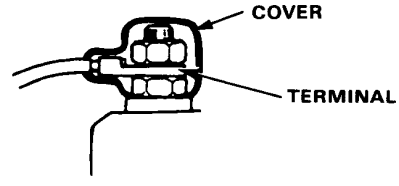
- After making repairs, check each wire or part for proper routing and installation. Also check to see that they are connected properly.
- Always connect the battery positive (+) cable first, then connect the negative (−) cable.



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



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

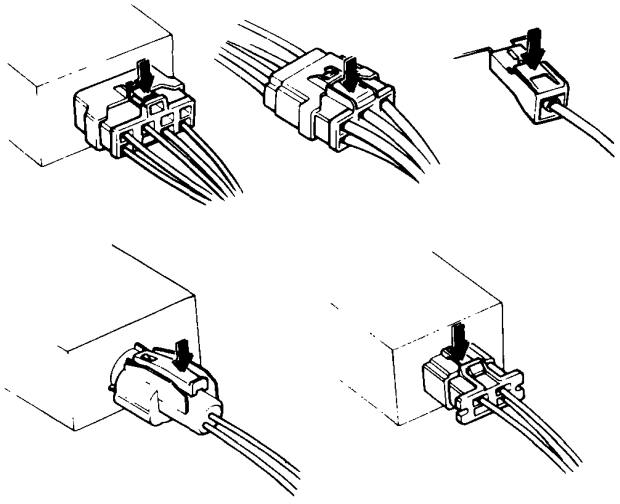


(cont'd)

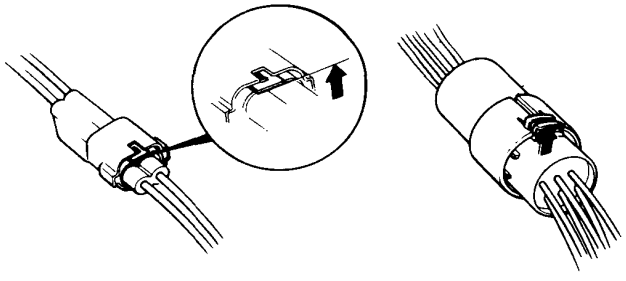
Electrical (cont'd)

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

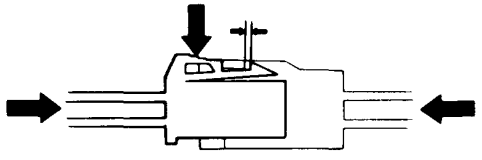
Press to disengage:



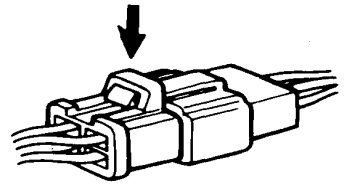
Pull up to disengage:



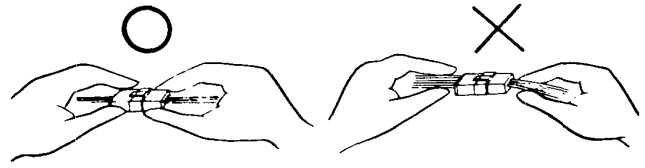
- When disconnecting locks, first press in the coupler tightly (to provide clearance to the locking device), then operate the tab fully and remove the coupler in the designated manner.



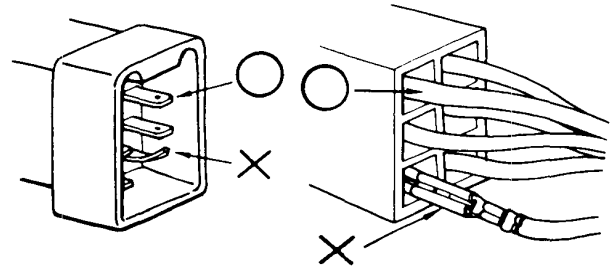
- All plastic plugs have locking tabs that must be released before disconnecting, and must be aligned when reconnecting.



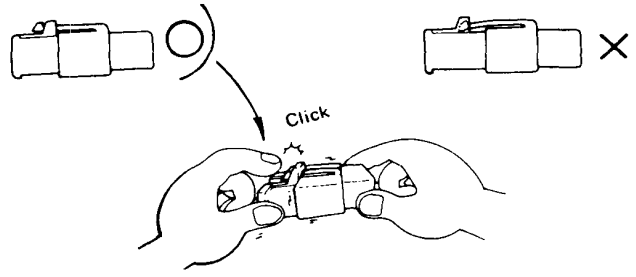
- When disconnecting a coupler, pull it off from the mating coupler by holding on both couplers.
- Never try to disconnect couplers by pulling on their wires.



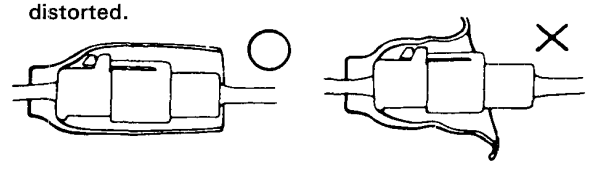
- Before connecting couplers, check to see that the terminals are in place and are not bent or distorted.



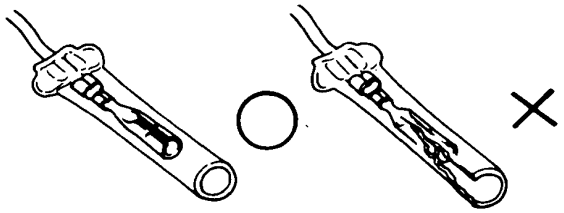
- Insert couplers fully until they will no longer go.
- Some couplers have locking tabs that must be aligned and engaged securely.
- Don't use wire harnesses with a loose wire or coupler.



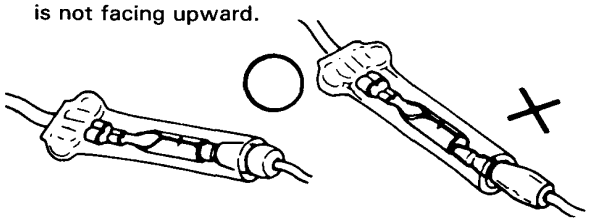
- Place the plastic cover over the mating coupler after reconnecting. Also check that the cover is not distorted.



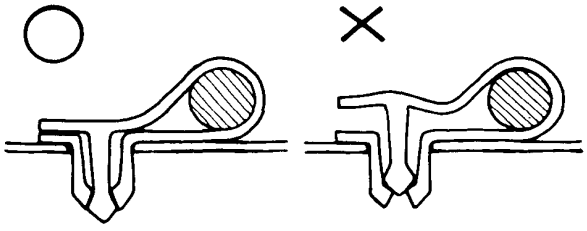
- Before connecting, check each connector cover for damage. Also make sure that the female connector is tight and not loosened from the previous use.



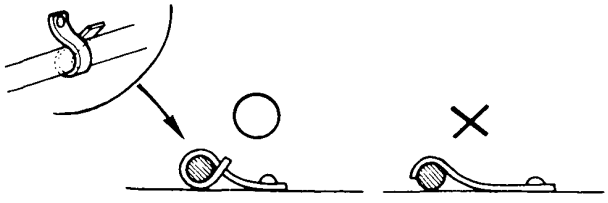
- Insert male connectors into the female connectors fully until they will no longer go.
- Be sure that plastic cover is placed over the connection.
- Position the wires so that the open end of the cover is not facing upward.



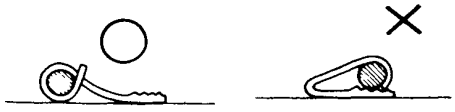
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Position the wiring in the bands so that only the insulated surfaces contact the wires or wire harnesses.



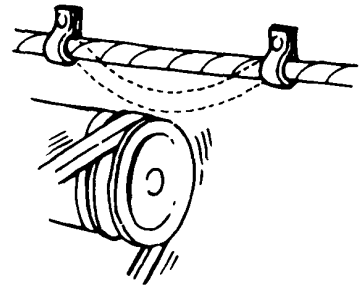
- A loose wire harness or cable can be a hazard to safety. After clamping, check each wire for security in its clamp.



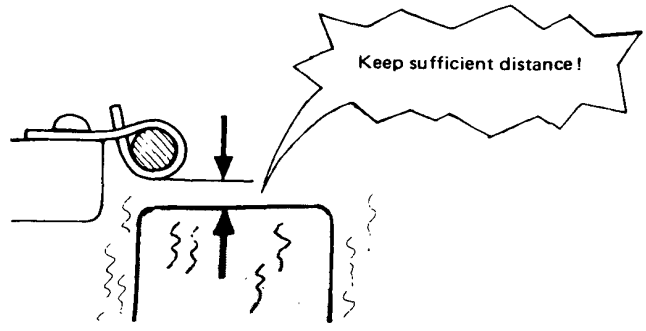
- Do not squeeze wires against the weld when a weld-on clamp is used.



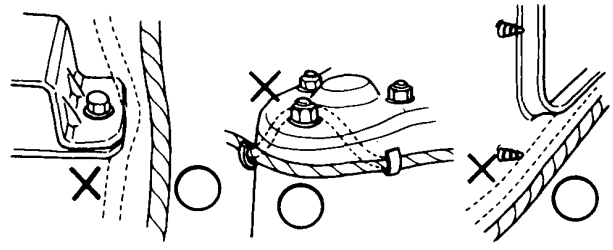
- After calmping, check each harness to be certain that it is not interferring with any moving or sliding parts of the vehicle.
- Keep wire harnesses away from the exhaust pipes and other hot parts.



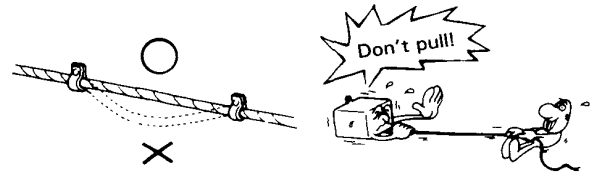
- Always keep a safe distance between wire harnesses and any heated parts.



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



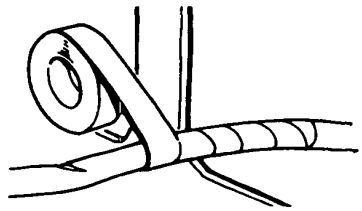
- Route harnesses so they are not pulled taut or excessively slackened.



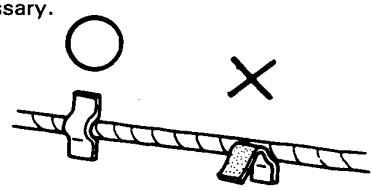
(cont'd)

Electrical (cont'd)

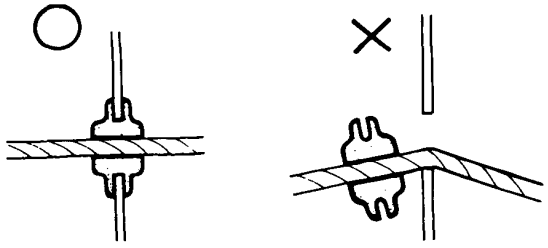
- Protect wires and harnesses with a tape or a tube if they are in contact with a sharp edge or corner.



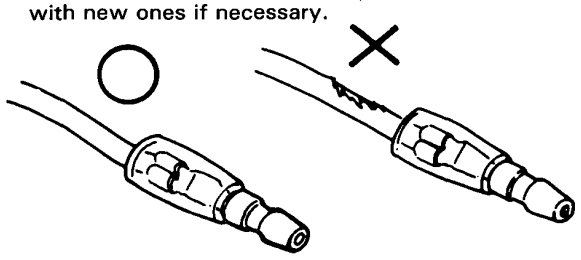
- Clean the attaching surface thoroughly if an adhesive is used. First, wipe with solvent or alcohol if necessary.



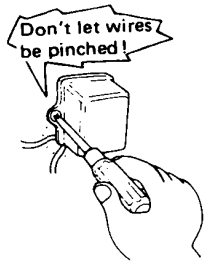
- Seat grommets in their grooves properly.



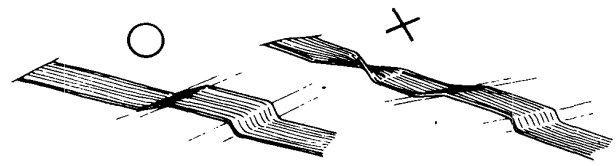
- Do not damage the insulation when connecting a wire.
- Do not use wires or harnesses with a broken insulation.
  Replair by wrapping with protective tape or replace with new ones if necessary.



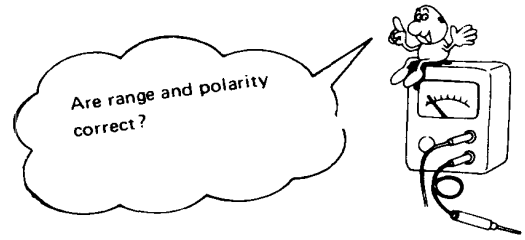
- After installing parts, make sure that wire harnesses are not pinched.



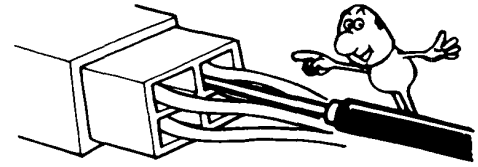
- After routing, check that the wire harnesses are not twisted or kinked.



- 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 DEXRON® or DEXRON® II Automatic Transmission Fluid.

: Apply Power Steering Fluid.


:Apply or check vacuum.

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

Abbreviation

2WS	Two Wheel Steering
4WS	For Wheel Sterring
A/C	Air Conditioner
ALB	Anti Lock Brake
Assy	Assembly
A/T	Automatic Transmission
ATF	DEXRON® or DEXRON® II Automatic Transmission Fluid
ATT	Attachment
EACV	Electronic Air Control Valve
ECU	Electronic Control Unit for Fuel-Injection System
EGR	Exhaust Gas Recirculation
GND	Ground
IG	Ignition
INT	Intermittent
L.	Left
LHD	Left Hand Drive
M/T	Manual Transmission
PCV Valve	Positive Crankcase Ventilation Valve
PGM-FI	Programmed Fuel Injection
PGM-CARB	Programmed Carburetor
P/S	Power Steering
R.	Right
RHD	Right Hand Drive
SW	Switch
SOL. V	Solenoid valve
TDC	Top Dead Center
[P]	Parking
[R]	Reverse
[N]	Neutral
[D]	Drive range
[S]	Sports range
[2]	Fixed at 2nd

Special Tools

Engine 2-2
Fuel and Emissions 2-2
Clutch 2-2
Manual Transmission 2-3
Automatic Transmission 2-3
Driveshafts 2-4
Power Steering 2-4
Suspension 2-5
Brakes 2-6
Body 2-6
Heater and Air Conditioner 2-6
Electrical 2-6

Special Tools

NOTE: Some tools may appear in more than one section of this list if they are used for more than one job.

5. Engine

●: Carbureted Engine only ○: Fuel-Injected Engine only

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD—PH70100	● Valve Seal Installer	1	
②	07GAF—PH60100	Piston Base Head	1	
③	07GAF—PH60200	● Pilot Collar	1	
④	07GAF—PH60300	Piston Pin Base Insert	1	
⑤	07GAF—PH70100	○ Pilot Collar	1	
⑥	07JAB—0010000	Crank Pulley Holder Set	1	for crankshaft pulley bolt
⑥-1	07JAA—0010200	Socket Wrench, 19 mm	(1)	┐
⑥-2	07JAB—0010100	Pulley Holder Attachment	(1)	├ Component tools
⑥-3	07JAB—0010200	Handle	(1)	┘
⑦	07KAK—SJ40100	Engine Tilt Hanger Set	1	
⑧	07406—0030000	Oil Pressure Gauge Adaptor	1	
⑨	07743—0020000	Adjustable Valve Guide Driver	1	
⑩	07746—0010400	Attachment 52 x 55 mm	1	
⑪	07749—0010000	Driver	1	
⑫	07757—PJ10100	Valve Spring Compressor Attachment	1	
⑬	07757—0010000	Valve Spring Compressor	1	
⑭	07912—6110001	Oil Filter Socket	1	Japan-Made type
⑮	——	Oil Filter Wrench	1	France-Made type
⑯	07924—PD20003	Ring Gear Holder	1	
⑰	07942—SA50000	● Valve Guide Driver, 7.0 mm	1	may also be used 07942—8230000
⑱	07942—6570100	Valve Guide Driver, 6.6 mm	1	may also be used 07942—6110000
⑲	07943—6890100	Valve Guide Driver Attachment	1	
⑳	07947—SB00100	Seal Driver	1	
㉑	07948—SB00101	Driver Attachment	1	
㉒	07973—PE00302	Adj. Piston Pin Driver	1	may also be used 07973—PE00301
㉓	07973—6570002	Piston Pin Dis/Assembly Tool Set	1	
㉓-1	07973—6570500	Piston Base	(1)	┐
㉓-2	07973—6570600	Piston Base Spring	(1)	├ Component tools
㉔	07984—SA50000	● Valve Guide Reamer, 7.0 mm	1	may also be used 07984—6890101
㉕	07984—6110000	Valve Guide Reamer, 6.6 mm	1	may also be used 07984—6570101

6. Fuel and Emissions

●: Carbureted Engine only ○: Fuel-Injected Engine only

Number	Tool Number	Description	Q'ty	Remarks
①	07GMJ—ML80100	Inspection Adaptor	1	
②	07HAZ—PJ70000	● ECU Check Adaptor A	1	
③	07HAZ—PJ7010A	● ECU Check Adaptor B	1	
④	07401—0010000	● Float Level Gauge	1	
⑤	07406—0040001	○ Fuel Pressure Gauge	1	
⑥	07411—0020000	Digital Circuit Tester	1	
⑦	07614—0050100	● Fuel Line Clamp	1	
⑧	07999—PD6000A	○ System Checker Harness	1	

7. Clutch

Number	Tool Number	Description	Q'ty	Remarks
①	07GAG—PF50100	Clutch Disc Alignment Tool	1	
②	07924—PD20003	Ring Gear Holder	1	may also be used 07924—PD*20002*

8. Manual Transmission

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD—PG40100	Oil Seal Driver	1	may also be used 07947—SD90100
②	07GAJ—PG20101	Preload Inspection Tool	1	
③	07746—0010300	Attachment, 42 x 47 mm	1	
④	07746—0010400	Attachment, 52 x 55 mm	1	
⑤	07746—0010500	Attachment, 62 x 68 mm	1	
⑥	07746—0030100	Driver	1	
⑦	07749—0010000	Driver	1	
⑧	07936—6340000	Bearing Puller Set	1	
⑨	07936—6890101	Bearing Remover Attachment	1	
⑩	07947—6110500	Oil Seal Driver	1	

9. Automatic Transmission

Number	Tool Number	Description	Q'ty	Remarks
①	07GAB—PF50100	Mainshaft Holder	1	
②	07GAC—PF40210	Bearing Remover Attachment	1	
③	07GAE—PG40001	Clutch Spring Compressor Set	1	
③-1	07GAE—PG40200	Clutch Spring Compressor Bolt Assembly	(1)	
③-2	07HAE—PL50100	Clutch Spring Compressor Attachment	(1)	Component tools
③-3	07960—6120100	Clutch Spring Compressor Attachment	(1)	
④	07GAJ—PG20201	Preload Inspection Tool	1	
⑤	07GMJ—ML80100	Inspection Adaptor Tool	1	
⑥	07HAC—PK40100	Housing Puller	1	may also be used 07GAC—PG40100, 07GAC—PG40101, 07GAC—PG40102
⑦	07HAF—PK40100	Gear Installer	1	
⑧	07406—0020003	Oil Pressure Gauge Set	1	may also be used 07406—0020201
⑨	07746—0010500	Attachment, 62 x 68 mm	1	
⑩	07746—0030100	Driver	1	
⑪	07749—0010000	Driver	1	
⑫	07936—6340000	Bearing Puller Set	1	
⑬	07947—SD90100	Oil Seal Driver	1	may also be used 07GAD—PG40100
⑭	07947—6110500	Oil Seal Driver	1	
⑮	07947—6340201	Driver Attachment E	1	
⑯	07947—6340500	Bearing Driver Attachment E	1	

10. Driveshaft

Number	Tool Number	Description	Q'ty	Remarks
①	07GAD—SE00100	Oil Seal Driver Attachment	1	
②	07746—0010400	Attachment, 52 x 55 mm	1	
③	07746—0010500	Attachment, 62 x 68 mm	1	
④	07746—0040900	Pilot, 40 mm	1	
⑤	07749—0010000	Driver	1	
⑥	07947—SD90200	Oil Seal Driver	1	
⑦	07965—SD90100	Support Base	1	
⑧	07965—SD90200	Support Collar	1	

11. Power Steering (2WS/4WS Community)

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 Sizing Tool	(1)	
①-3	07GAG—SD40300	Cylinder End Seal Slider	(1)	
①-4	07GAG—SD40400	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)	Component tools
②-2	07GAK—SE00120	P/S Joint Adaptor (Hose)	(1)	
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	Pulley Holder	1	
⑥	07746—0010300	Attachment, 42 x 47 mm	1	
⑦	07749—0010000	Driver	1	
⑧	07916—SA50001	40 mm Lock Nut Wrench	1	
⑨	07941—6920003	Ball Joint Remover	1	
⑩	07947—6340300	Driver Attachment	1	
⑪	07953—7190000	Collar Driver	1	
⑫	07974—SA50600	Pinion Seal Guide	1	

11. Power Steering (4WS only)

Number	Tool Number	Description	Q'ty	Remarks
①	07HAA—SF10100	Lock Nut Socket 36 x 41 mm	1	
②	07HAG—SF10000	4WS Tool Kit	1	
②-1	07HAG—SF10100	Piston Seal Ring Guide	(1)	Component tools
②-2	07HAG—SF10200	Piston Seal Ring Sizing Tool	(1)	
②-3	07HAG—SF10300	Pinion Seal Ring Guide	(1)	
②-4	07HAG—SF10400	Pinion Seal Sizing Tool	(1)	
②-5	07HAG—SF10500	Driver Seal Ring Guide	(1)	
②-6	07HAG—SF10600	Tool Box	(1)	
③	07HAJ—SF10100	Rack Adjuster Gauge Holder Set	1	
④	07HAJ—SF10201	Rear Adjuster Center Lock Pin	1	
⑤	07HAJ—SF10300	Stroke Rod Holder Set	1	
⑥	07HAJ—SF10400	Inspection Adaptor	1	
⑦	07703—0010101	Torx Driver Bit T40	1	
⑧	07746—0010700	Attachment 24 x 26 mm	1	

12. Suspension

Number	Tool Number	Description	Q'ty	Remarks
①	07GAE—SE00101	Spring Compressor	1	may also be used 07GAE—SE00100
②	07GAF—SD40700	Hub Dis/Assembly Base	2	
③	07GAF—SE00100	Hub Assembly Pin	1	
④	07GAF—SE00200	Front Assebmly Driver Attachment	1	
⑤	07GAF—SE00401	Front Hub Base	1	
⑥	07GAG—SD40700	Ball Joint Boot Clip Installation Guide	1	
⑦	07GAK—0010100	Wheel Alignment Gauge Attachment	1	
⑧	07HAD—SF10100	Hub Bearing Driver	1	
⑨	07HAF—SF10100	Ball Joint Dis/Assebmly Tool Kit	1	
⑨-1	07HAF—SF10110	Ball Joint Remover Base	(1)	Component tools
⑨-2	07HAF—SF10120	Ball Joint Installer Base	(1)	
⑨-3	07HAF—SF10130	Ball Joint Remover/Installer	(1)	
⑩	07HAF—SF10200	Bearing Supporting Attachment	1	
⑪	07HAJ—SF10201	Rear Steering Center Lock Pin	1	
⑫	07HGJ—0010000	*Toe Inspection Gauge Set*	1	
⑬	07703—0010100	Torx Driver Bit T40	1	
⑭	07746—0010400	Attachment, 52 x 55 mm	1	
⑮	07746—0010500	Attachment, 62 x 68 mm	1	
⑯	07749—0010000	Driver	1	
⑰	07941—6920003	Ball Joint Remover	1	
⑱	07965—SB00000	Ball Joint Dis/Assembly Tool Set	1	
⑱-1	07965—SB00100	Ball Joint Remover Base	(1)	Component tools
⑱-2	07965—SB00200	Ball Joint Installer Base	(1)	
⑱-3	07965—SB00300	Ball Joint Remover/Installer	(1)	
⑲	07965—SD90100	Supporting Base	1	
⑳	07965—6920201	Front Hub Dis/Assembly Tool, B	1	
㉑	07974—SA50700	Ball Joint Boot Clip Installation Guide	1	
㉒	07974—SA50800	Ball Joint Boot Clip Installation Guide	1	

13. Brakes (Conventional Brakes Community)

Number	Tool Number	Description	Q'ty	Remarks
①	07GAG—SE00100	Rod Bolt Adjustment Gauge	1	
②	07HAE—SG00100	Brake Spring Compressor	1	
③	07404—5790300	Vacuum Gauge	1	
④	07406—5790200	Pressure Gauge	2	
⑤	07410—5790100	Pressure Gauge Attachment	2	
⑥	07510—6340100	Pressure Gauge Joint Pipe	2	
⑦	07510—6340300	Vacuum Joint Tube A	1	
⑧	07749—0010000	Driver	1	
⑨	07914—SA50000	Snap Ring Pliers	1	
⑩	07921—0010001	Flare Nut Wrench	1	
⑪	07947—6890300	Driver Attachment, C	1	

13. Brakes (ALB only)

Number	Tool Number	Description	Q'ty	Remarks
①	07HAJ—SG00300	ALB Checker Adaptor	1	
②	07HAK—SG00110	Pressure Gauge Joint Pipe	1	
③	07404—5790300	Vacuum Gauge	1	
④	07406—5790200	Pressure Gauge	2	
⑤	07410—5790100	Pressure Gauge Attachment	2	
⑥	07410—5790500	Tube Joint Adaptor	1	
⑦	07508—SB00000	ALB Checker	1	
⑧	07510—6340100	Pressure Gauge Joint Pipe	1	
⑨	07510—6340300	Vacuum Joint Tube A	1	
⑩	07907—SB00000	ALB-Wrench	1	
⑪	07921—0010001	Flare Nut Wrench	1	
⑫	07965—5790300	Cup Guide	1	

14. Boby

Number	Tool Number	Description	Q'ty	Remarks
①	07GAZ—SE30100	Torsion Rod Assembly Tool	1	

15. Heater and Air Conditioner

Number	Tool Number	Description	Q'ty	Remarks
①	07HAF—SF10300	Seal Seat Remover	1	
②	07HAF—SF10400	Seal Remover/Installer	1	

16. Electrical

Number	Tool Number	Description	Q'ty	Remarks
①	07GAC—SE00200	Fuel Sender Wrench	1	

Specifications

specs

Standards and Service Limits 3-2
Design Specifications 3-12
Body Specifications 3-17
Frame Repair Chart 3-18

Standards and Service Limits

5. Engine/Cylinder Head, Valve Train (Fuel-Injected Engine)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide-open throttle		Nominal Minimum Maximum variation	1,226 kpa (12.5 kg/cm^2, 178 psi) 932 kpa (9.5 kg/cm^2, 135 psi) 196 kpa (2 kg/cm^2, 28 psi)
Cylinder head	Warpage Height		– 132 (5.20)	0.05 (0.002) 131.8 (5.19)
Camshaft	End play Oil clearance Runout Cam lobe height	 IN EX	0.05–0.15 (0.002–0.006) 0.050–0.089 (0.002–0.004) 0.015 (0.0006) max. 33.716 (1.3274) 33.932 (1.3359)	0.5 (0.02) 0.15 (0.006) 0.03 (0.001) – –
Valve	Valve clearance	IN EX	0.08–0.12 (0.003–0.005) 0.16–0.20 (0.006–0.008)	– –
	Valve stem O.D.	IN EX	6.58–6.59 (0.2591–0.2594) 6.55–6.56 (0.2579–0.2583)	6.55 (0.258) 6.52 (0.257)
	Stem-to-guide clearance	IN EX	0.02–0.05 (0.001–0.002) 0.05–0.08 (0.002–0.003)	0.08 (0.003) 0.11 (0.04)
	Stem installed height	IN and EX	42.75 (1.683)	43.54 (1.714)
Valve seat	Width	IN and EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length	Inner Outer	43.50 (1.713) 47.45 (1.868)	42.5 (1.673) 46.45 (1.829)
	Squareness	Inner and Outer	–	1.6 (0.063)
Valve guide	I.D.	IN and EX	6.61–6.63 (0.260–0.261)	6.65 (0.262)

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

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide-open throttle		Nominal Minimum Maximum variation	1.177 kpa (12.0 kg/cm^2, 171 psi) 932 kpa (9.5 kg/cm^2, 135 psi) 196 kpa (2 kg/cm^2, 28 psi)
Cylinder head	Warpage Height		– 90 (3.54)	0.05 (0.002) 89.8 (3.54)
Camshaft	End play Oil clearance Runout Cam lobe height	 No. 1,3 and 5 journals No. 2 and 4 journals IN A IN B EX	0.05–0.15 (0.002–0.006) 0.050–0.089 (0.002–0.004) 0.130–0.169 (0.005–0.007) 0.015 (0.0006) max. 38.604 (1.5198) 38.858 (1.5298) 38.796 (1.5274)	0.5 (0.02) 0.15 (0.006) 0.23 (0.009) 0.03 (0.001) – – –
Valve	Valve clearance	IN EX	0.12–0.17 (0.005–0.007) 0.25–0.30 (0.010–0.012)	– –
	Valve stem O.D.	IN EX	6.58–6.59 (0.2591–0.2594) 6.94–6.95 (0.2732–0.2736)	6.55 (0.258) 6.91 (0.272)
	Stem-to-guide clearance	IN EX	0.02–0.05 (0.001–0.002) 0.06–0.09 (0.002–0.004)	0.08 (0.003) 0.12 (0.005)
	Stem installed height	IN EX	48.59 (1.913) 47.66 (1.876)	49.34 (1.943) 48.41 (1.906)
Valve seat	Width	IN and EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
Valve spring	Free length	IN EX Inner Outer	48.54 (1.91) 42.42 (1.67) 49.06 (1.93)	47.54 (1.87) 41.42 (1.63) 48.06 (1.89)
	Squareness	Inner and Outer	–	1.75 (0.068)
Valve guide	I.D.	IN EX	6.61–6.63 (0.260–0.261) 7.01–7.03 (0.276–0.277)	6.65 (0.262) 7.05 (0.278)
Rocker arm	Arm-to-shaft clearance		0.008–0.054 (0.0003–0.0021)	0.08 (0.003)

5. Engine/Engine Block (Fuel-Injected Engine)

Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.07 (0.0028) max.	0.10 (0.004)
	Bore diameter	A	81.01 – 81.02 (3.1894–3.1898)	81.05 (3.1909)
		B	81.00–81.01 (3.1890–3.1894)	81.04 (3.1905)
	Bore taper		–	0.05 (0.002)
	Reboring limit		–	0.5 (0.02)
Piston	Skirt O.D (At 21 mm (0.83 in) from bottom of skirt)	A	80.98–80.99 (3.1882–3.1886)	80.97 (3.188)
		B	80.97–80.98 (3.1878–3.1882)	80.96 (3.187)
	Clearance in cylinder		0.02–0.04 (0.0008–0.0016)	0.08 (0.003)
	Piston-to-ring clearance	Top	0.030–0.055 (0.0012–0.0022)	0.13 (0.005)
		2nd	0.030–0.055 (0.0012–0.0022)	0.13 (0.005)
Piston ring	Ring end gap	Top	0.20–0.35 (0.008–0.014)	0.6 (0.02)
		2nd	0.40–0.55 (0.016–0.022)	0.7 (0.03)
		Oil	0.20–0.70 (0.008–0.028)	0.8 (0.03)
Connecting rod	Pin-to-rod interference		0.013–0.032 (0.0005–0.0013)	–
	Large end bore diameter		Nominal 51 (2.01)	–
	End play installed on crankshaft		0.15–0.30 (0.006–0.012)	0.40 (0.016)
Crankshaft	Main journal diameter		54.976–55.000 (2.1644–2.1654)	–
	Taper/out-of-round, main journal		0.005 (0.0002) max.	0.010 (0.0004)
	Rod journal diameter		47.976–48.000 (1.8888–1.8900)	–
	Taper/out-of-round, rod journal		0.005 (0.0002) max.	0.010 (0.0004)
	End play		0.10–0.35 (0.004–0.014)	0.45 (0.018)
	Runout		0.010 (0.0004) max.	0.015 (0.0006)
Bearings	Main bearing-to-journal	No. 1, 2, 4, and 5		
	Oil clearance	Journals	0.024–0.042 (0.0010–0.0017)	0.05 (0.002)
		No. 3 Journal	0.030–0.048 (0.0012–0.0019)	0.05 (0.002)
	Rod bearing-to-journal oil clearance		0.026–0.044 (0.0010–0.0017)	0.05 (0.002)

5. Engine/Engine Block (Carbureted Engine)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.07 (0.0028) max.	0.10 (0.004)
	Bore diameter	A	81.01–81.02 (3.1894–3.1898)	81.05 (3.1909)
		B	81.00–81.01 (3.1890–3.1894)	81.04 (3.1905)
	Bore taper		–	0.05 (0.002)
	Reboring limit		–	0.5 (0.02)
Piston	Skirt O.D (At 21 mm (0.83 in) from bottom of skirt)	A	80.98–80.99 (3.1882–3.1886)	80.97 (3.1878)
		B	80.97–80.98 (3.1878–3.1882)	80.96 (3.1874)
	Clearance in cylinder		0.02–0.04 (0.0008–0.0016)	0.08 (0.003)
	Piston-to-ring clearance (top and 2nd)		0.030–0.055 (0.0012–0.0022)	0.13 (0.005)
Piston ring	Ring end gap	Top	0.20–0.35 (0.008–0.014)	0.6 (0.02)
		2nd	0.40–0.55 (0.016–0.022)	0.7 (0.03)
		Oil	0.20–0.70 (0.008–0.020)	0.8 (0.03)
Connecting rod	Pin-to-rod interference		0.013–0.032 (0.0005–0.0013)	–
	Large end bore diameter		Nominal 48 (1.89)	–
	End play installed on crankshaft		0.15–0.30 (0.006–0.012)	0.40 (0.016)
Crankshaft	Main journal diameter		54.976–55.000 (2.1644–2.1654)	–
	Taper/out-of-round, main journal		0.005 (0.0002) max.	0.010 (0.0004)
	Rod journal diameter		44.976–45.000 (1.7707–1.7717)	–
	Taper/out-of-round, rod journal		0.005 (0.0002) max.	0.010 (0.0004)
	End play		0.10–0.35 (0.004–0.014)	0.45 (0.018)
	Runout		0.010 (0.0004) max.	0.015 (0.0006)
Bearings	Main bearing-to-journal	No. 1, 2, 4, and 5		
	Oil clearance	journals	0.024–0.042 (0.0010–0.0017)	0.05 (0.002)
		No. 3 Journal	0.030–0.048 (0.0012–0.0019)	0.05 (0.002)
	Rod bearing-to-journal oil clearance		0.026–0.044 (0.0010–0.0017)	0.05 (0.002)

(cont'd)

Standards and Service Limits (cont'd)

O : Fuel-Injected Engine ● : Carbureted Engine

5. Engine/Engine Lubrication

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (U.S. qt., Imp. qt.)		4.8 (5.1, 4.2) After engine disassembly 3.9 (4.1, 3.4) After oil change, including oil filter 3.4 (3.6, 3.0) After oil change, without oil filter	
Oil pump	Displacement		O 54 ℓ (14.3 U.S. gal., 11.9 Imp. gal.) 5,000 min^{-1} (rpm) ● 54 ℓ (14.3 U.S. gal., 11.9 Imp. gal.) 5,500 min^{-1} (rpm)	
	Inner-to-outer rotor radial clearance Pump body-to-rotor radial clearance Pump body-to-rotor side clearance		0.04—0.16 (0.002—0.006) 0.10—0.19 (0.004—0.007) 0.02—0.07 (0.001—0.003)	0.2 (0.008) 0.21 (0.008) 0.12 (0.005)
Relief valve	Pressure setting 80°C (176°F)	Idle	147 kPa (1.5 kg/cm^2, 21 psi) min.	
		3,000 min^{-1} (rpm)	520—598 kPa (5.3—6.1 kg/cm^2, 75—87 psi)	

5. Engine/Cooling

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
O Radiator	Capacity (includes heater) ℓ (U.S. qt., Imp. qt.) (Includes resvoir tank 0.75 (0.79, 0.66)	7.8 (8.2, 6.9)	
● Radiator	Capacity (Includes heater) ℓ (U.S. qt., Imp. qt.) (Includes reservoir tank 0.75 (0.79, 0.66)	Manual 6.8 (7.2, 6.0) Automatic 7.5 (7.9, 6.6)	
Radiator cap	Pressure cap opening pressure	74—103 kPa (0.75—1.05 kg/cm^2, 11—15 psi)	
Thermostat	Starts to open Full open Valve lift at full open	82°C ± 2 (180°F ± 3) 95°C (203°F) 8 (0.31) max.	86—90°C (187—194°F) 100°C (212°F) OPTIONAL 8 (0.31) max.
O Water pump	Gear ratio (crankshaft) Capacity: ℓ per min/at min^{-1} (rpm)	0.89 158 (41.7 U.S. gal., 34.8 Imp. gal.)/6,000	
● Water pump	Gear ratio (crankshaft) Capacity: ℓ per min/at min^{-1} (rpm)	1.00 145 (38.3 U.S. gal., 31.9 Imp. gal.)/6,000	
Cooling fan	Fan-to-core clearance Thermoswitch "ON" temperature Thermoswitch "OFF" temperature	26.0 (1.02) 87°—93°C (188°—199°F) 83° (181°F) or more (hysteresis 2°C (35°F) or more).	

6. Fuel and Emissions

	MEASUREMENT	STANDARD (NEW)
O Fuel pump	Delivery pressure Displacement Relief valve opening pressure	250 kPa (2.55 kg/cm^2, 36 psi) 230 cm^3/min in 10 seconds 441—588 kPa (4.5—6.0 kg/cm^2, 64—85 psi)
● Fuel pump	Delivery pressure Displacement	8.8—14.7 kPa (0.09—0.15 kg/cm^2, 1.3—2.1 psi) 600 cm^2/min at 12 V (37 cu. in./12 V)
O Pressure regulator	Pressure	230—270kPa (2.35—2.75 kg/cm^2, 33—39 psi)
Fuel Tank	Capacity	60 ℓ (15.9 U.S. gal., 13.2 Imp. gal.)

6. Fuel and Emissions

O : Fuel-Injected Engine ● : Carbureted Engine Unit: mm (in.)

	MEASUREMENT	STANDARD (NEW)	
Throttle valve body or carburetor	Fast idle min^{-1} (rpm)	Manual O 1,000–1,800 ● 1,000–2,000 Automatic O 1,000–1,800 ● 1,000–2,000	
	Idle speed min^{-1} (rpm) with headlights and cooling fan off	O Manual Automatic (in gear)	750 ± 50 (with catalytic converter) 800 ± 50 (without catalytic converter)
		● Manual Automatic (in gear)	M/T: 800 ± 50 A/T: 750 ± 50
	Idle CO	0.1%	
	Float level (from gasket)	15–17 (0.59–0.67)	

7. Clutch

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	207 (8.1) to floor 135–140 (5.3–5.5) 9–15 (0.4–0.6) 92 (3.6) min. to floor	— — — —
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth Surface runout Thickness	1.3 (0.05) min. 0.8 (0.03) max. 8.5–9.2 (0.33–0.36)	0.2 (0.008) 1.0 (0.04) 6.1 (0.24)
Clutch release bearing holder	I.D. Holder-to-guide sleeve clearance	35.00–35.059 (1.378–1.380) 0.05–0.15 (0.002–0.006)	35.09 (1.381) 0.22 (0.009)
Clutch cover	Unevenness of diaphragm spring	0.6 (0.02) max.	0.8 (0.03)

8. Manual Transmission

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (U.S. qt., Imp. qt.)	1.9 (2.0, 1.7) at oil change 2.0 (2.1, 1.8) at assembly	
Mainshaft	End play Diameter of needle bearing contact area Diameter of third gear contact area Diameter of ball bearing contact area Runout	0.10–0.16 (0.004–0.006) 27.987–28.000 (1.1018–1.1024) 37.984–38.000 (1.4954–1.4961) 27.977–27.990 (1.1015–1.1020) 0.04 (0.0016) max.	Adjust with a shim. 27.94 (1.100) 37.93 (1.493) 27.94 (1.100) 0.10 (0.004)
Mainshaft third and fourth gears	I.D. End play Thickness 3rd 4th	43.009–43.025 (1.6933–1.6939) 0.06–0.21 (0.0024–0.0083) 32.42–32.47 (1.2764–1.2783) 30.92–30.97 (1.2173–1.2193)	43.08 (1.696) 0.3 (0.012) 32.3 (1.272) 30.8 (1.213)
Mainshaft fifth gear	I.D. End play Thickness	43.009–43.025 (1.6933–1.6939) 0.06–0.21 (0.0024–0.0083) 30.42–30.47 (1.1976–1.1996)	43.08 (1.696) 0.3 (0.012) 30.3 (1.193)
Countershaft	End play Diameter of needle bearing contact area Diameter of ball bearing contact are Diameter of low gear contact area Runout	0.10–0.35 (0.004–0.014) 33.000–33.015 (1.2992–1.2998) 24.987–25.000 (0.9837–0.9843) 39.984–40.000 (1.5742–1.5748) 0.04 (0.0016)	0.5 (0.02) 32.95 (1.297) 24.94 (0.982) 33.93 (1.336) 0.10 (0.004)
Cuntershaft low gear	I.D. End play	46.009–46.025 (1.8114–1.8120) 0.04–0.06 (0.0016–0.0028)	46.08 (1.814) 0.18 (0.007)
Countershaft second gear	I.D. End play Thickness	50.009–50.025 (1.9689–1.9695) 0.03–0.07 (0.0012–0.0028) 32.92–32.97 (1.2961–1.2980)	50.08 (1.972) Adjust with a collar. 32.8 (1.291)
Spacer collar (Countershaft second gear)	I.D. O.D. Length A B C D E	36.48–36.49 (1.4362–1.4366) 43.989–44.000 (1.7318–1.7323) 29.03–29.05 (1.1429–1.1437) 29.01–29.03 (1.1421–1.1429) 28.99–29.01 (1.1413–1.1421) 28.97–28.99 (1.1405–1.1413) 28.95–28.97 (1.1398–1.1405)	36.5 (1.437) 43.94 (1.730) — — — — —

(cont'd)

Standards and Service Limits (cont'd)

8. Manual Transmission (cont'd)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Spacer collar (Mainshaft fourth and fifth gears)	I.D. O.D. Length	 A B	28.002–28.012 (1.1024–1.1028) 34.989–35.000 (1.3775–1.3780) 55.95–56.05 (2.2028–2.2067) 26.03–26.08 (1.0248–1.0268)	28.06 (1.105) 34.94 (1.376) —
Reverse Idler gear	I.D. Gear-to-reverse gear shaft clearance		20.016–20.043 (0.7880–0.7891) 0.036–0.084 (0.0014–0.0033)	20.09 (0.791) 0.16 (0.006)
Synchro ring	Ring-to-gear clearance (ring pushed against gear)		0.85–1.10 (0.033–0.043)	0.4 (0.016)
Shift fork	Synchro sleeve gear Fork-to-synchro sleeve 	1,2,3 and 4th 5th 1,2,3 and 4th 5th	7.95–8.05 (0.313–0.317) 5.75–5.85 (0.226–0.230) 0.45–0.65 (0.018–0.026) 0.45–0.50 (0.018–0.020)	— — 1.0 (0.04) 0.8 (0.03)
Reverse shift fork	End gap Fork-to-reverse idler gear clearance *Groove width* Fork-to-fifth/reverse shift piece pin clearance		13.0–13.3 (0.512–0.524) 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	I.D. Shift shaft clearance Shift fork diameter of contact area Shift fork clearance	 	15.973–16.000 (0.629–0.630) 0.005–0.059 (0.000197–0.00232) 12.9–13.0 (0.508–0.512) 0.2–0.3 (0.0079–0.012)	— — — 0.6 (0.024)
Select lever	Pin size of contact area Shaft outer diameter Shift arm cover clearance		8.7–8.8 (0.34–0.35) 15.41–15.68 (0.607–0.617) 0.032–0.102 (0.00126–0.00402)	— — —
Shift arm lever	O.D. Transmission housing clearance		15.41–15.68 (0.607–0.617) 0.027–0.139 (0.00106–0.0055)	— —
Inter lock	Bore diameter Shift arm lever clearance		16.0–16.05 (0.630–0.632) 0.032–0.19 (0.00126–0.0075)	— —

9. Automatic Transmission

○ : Fuel-Injected Engine ● : Carbureted Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (U.S. qt., Imp. qt.)		2.8 (3.0, 2.5) at oil change 6.2 (6.6, 5.5) at assembly	
Hydraulic pressure	[N] or [P] Line pressure at 2,000 min^{-1} (rpm)		○ 834–883 kpa (8.5–9.0 kg/cm^2, 121–128 psi) ● 785–834 kpa (8.0–8.5 kg/cm^2, 14–121 psi)	○ 785 kpa (8.0 kg/cm^2, 114 psi) ● 736 kpa (7.5 kg/cm^2, 107 psi)
	[S] or [D] 4th, 3rd, 2nd clutch pressure at 2,000 min^{-1} (rpm)		○ 569–883 kpa (5.8–9.0 kg/cm^2, 82.5–128 psi) ● 569–834 kpa (5.8–8.5 kg/cm^2, 82.5–121 psi)	○ 785 kpa (8.0 kg/cm^2, 114 psi) ● 736 kpa (7.5 kg/cm^2, 107 psi)
	[S] or [D] 1st clutch pressure at 2,000 min^{-1} (rpm) [2] 2nd clutch pressure at 2,000 min^{-1} (rpm)		○ 834–883 kpa (8.5–9.0 kg/cm^2, 121–128 psi) ● 785–834 kpa (8.0–8.5 kg/cm^2, 114–121 psi)	○ 785 kpa (8.0 kg/cm^2, 114 psi) ● 736 kpa (7.5 kg/cm^2, 107 psi)
	[S] or [D] Throttle pressure B	Fully closed	0	—
		Fully opend	○ 834–883 kpa (8.5–9.0 kg/cm^2, 121–128 psi) ● 785–834 kpa (8.0–8.5 kg/cm^2, 114–121 psi)	○ 785 kpa (8.0 kg/cm^2, 114 psi) ● 736 kpa (7.5 kg/cm^2, 107 psi)
Stall speed	Check with car on lever ground		○ 2,600–2,900 min^{-1} (rpm) ● 2,550–2,850 min^{-1} (rpm)	— —
Clutch	Clutch inital clearance Clutch return spring free length Clutch disc thickness	1st 2nd, 3rd, 4th	0.65–0.85 (0.026–0.033) 0.40–0.60 (0.016–0.024) 31.0 (1.22) 1.88–2.00 (0.074–0.079)	— — 29.0 (1.14) Until grooves worn out

Unit: mm (in.)

9. Automatic Transmission

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch (cont'd)	Clutch plate thickness		1.95–2.05 (0.077–0.079)	Discoloration
	Clutch end plate thickness	Mark 1	2.05–2.10 (0.081–0.083)	
		Mark 2	2.15–2.20 (0.085–0.087)	
		Mark 3	2.25–2.30 (0.089–0.091)	
		Mark 4	2.35–2.40 (0.093–0.094)	
		Mark 5	2.45–2.50 (0.096–0.098)	
		Mark 6	2.55–2.60 (0.100–0.102)	
		Mark 7	2.65–2.70 (0.104–0.106)	
		Mark 8	2.75–2.80 (0.108–0.110)	
		Mark 9	2.85–2.90 (0.112–0.114)	
		Mark 10	2.95–3.00 (0.116–0.118)	
		Mark 11	3.05–3.10 (0.120–0.122)	
		Mark 12	3.15–3.20 (0.124–0.126)	
		Mark 13	3.25–3.30 (0.128–0.130)	
		Mark 14	3.35–3.40 (0.132–0.134)	Discoloration
Transmission	Diameter of needle bearing contact area on main and stator shaft		22.980–22.993 (0.9047–0.9052)	Wear or damage
	Diameter of needle bearing contact area on mainshaft 2nd gear		35.975–35.991 (1.4163–1.4169)	
	Diameter of needle bearing contact area on mainshaft 4th gear collar		31.975–31.991 (1.2588–1.2594)	
	Diameter of needle bearing contact area on mainshaft 1st gear collar		30.975–30.991 (1.2195–1.2201)	
	Diameter of needle bearing contact area on countershaft (R side)		38.505–38.515 (1.5159–1.5163)	
	Diameter of needle bearing contact area on countershaft 3rd gear		31.975–31.991 (1.2589–1.2595)	
	Diameter of needle bearing contact area on countershaft 4th gear		27.980–27.993 (1.1016–1.1021)	
	Diameter of needle bearing contact area on countershaft reverse gear collar		31.975–31.991 (1.2589–1.2595)	
	Diameter of needle bearing contact area on countershaft 1st gear collar		31.975–31.991 (1.2589–1.2595)	
	Diameter of needle bearing contact area on reverse idle gear		13.990–14.000 (0.5508–0.5512)	
	Reverse idler shaft holder I.D.		14.416–14.434 (0.5676–0.5683)	
	Mainshaft 2nd gear I.D.		41.000–41.016 (1.6142–1.6148)	
	Mainshaft 1st gear I.D.		36.000–36.016 (1.4173–1.4180)	
	Countershaft 4th gear I.D.		33.000–33.016 (1.2992–1.2998)	
	Countershaft 3rd gear I.D.		38.000–38.016 (1.4961–1.4967)	
	Countershaft 2rd gear I.D.		31.000–31.016 (1.2205–1.2211)	
	Countershaft 1st gear I.D.		38.000–38.016 (1.4961–1.4967)	
	Countershaft reverse gear I.D.		38.000–38.016 (1.4961–1.4967)	
	Reverse idle gear I.D.		18.007–18.020 (0.7089–0.7094)	Wear or damage
	Mainshaft 4th gear end play		0.10–0.22 (0.0039–0.0087)	—
	Mainshaft 2nd gear end play		0.07–0.15 (0.0028–0.0059)	—
	Mainshaft 1st gear end play		0.08–0.24 (0.0031–0.0094)	—
	Countershaft 3rd gear end play		0.07–0.15 (0.0028–0.0059)	—
	Countershaft 2nd gear end play		0.07–0.15 (0.0028–0.0059)	—
	Reverse idler gear end play		0.05–0.18 (0.0020–0.0071)	—
	Countershaft reverse gear end play		0.10–0.25 (0.0039–0.0098)	—
	Reverse gear selector hub O.D.		51.87–51.90 (2.0421–2.0433)	Wear or damage
	Thrust washer thickness Mainshaft 2nd gear	A	3.97–4.00 (0.1563–0.1575)	—
		B	4.02–4.05 (0.1583–0.1594)	—
		C	4.07–4.10 (0.1602–0.1614)	—
		D	4.12–4.15 (0.1622–0.1634)	—
		E	4.17–4.20 (0.1642–0.1654)	—
		F	4.22–4.25 (0.1661–0.1673)	—
		G	4.27–4.30 (0.1681–0.1693)	—
		H	4.32–4.35 (0.1701–0.1713)	—
		I	4.37–4.40 (0.1720–0.1732)	—
	Mainshaft right side bearing		2.95–3.05 (0.1161–0.1201)	Wear or damage
	Mainshaft 1st gear		2.43–2.50 (0.0957–0.0984)	Wear or damage
	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 4th gear collar thickness	A	38.97–39.00 (1.5343–1.5354)	—
		B	39.02–39.05 (1.5362–1.5374)	—
		C	39.07–39.10 (1.5382–1.5394)	—
		D	39.12–39.15 (1.5402–1.5413)	—
		E	39.17–39.20 (1.5421–1.5433)	—
		F	39.22–39.25 (1.5441–1.5453)	—
		G	39.27–39.30 (1.5461–1.5472)	—

(cont'd)

Standards and Service Limits (cont'd)

9. Automatic Transmission (cont'd)

O : Fuel-Injected Engine ● : Carbureted Engine

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Thrust washer thickness (mainshaft 1st gear L side)	1.45–1.50 (0.0571–0.0591)	1.40 (0.0551)
	Mainshaft 1st gear collar length	24.50–24.55 (0.9646–0.9665)	——
	Mainshaft 1st gear collar flange thickness	2.5–2.6 (0.098–0.102)	Wear or damage
	Countershaft reverse gear collar length	12.00–12.10 (0.4724–0.4764)	——
	Countershaft reverse gear collar flange thickness	2.40–2.60 (0.0945–0.1024)	Wear or damage
	Countershaft 1st gear collar length	12.00–12.10 (0.4724–0.4764)	——
	Countershaft 1st gear collar flange thickness	2.4–2.6 (0.095–0.102)	Wear or damage
	Diameter of countershaft one-way clutch contact area	83.339–83.365 (3.2811–3.2821)	Wear or damage
	Diameter of parking gear one-way clutch contact area	66.685–66.698 (2.6254–2.6259)	Wear or damage
	Mainshaft feed pipe A O.D.	8.97–8.98 (0.353–0.354)	8.95 (0.3524)
	Mainshaft feed pipe B O.D.	5.97–5.98 (0.2351–0.2354)	5.95 (0.2343)
	Countershaft feed pipe C O.D.	7.97–7.98 (0.3138–0.3142)	7.95 (0.3130)
	Mainshaft sealing ring 35 mm thickness	1.980–1.995 (0.0780–0.0785)	1.800 (0.0709)
	Mainshaft sealing ring 29 mm thickness	1.980–1.995 (0.0780–0.0785)	1.800 (0.0709)
	Mainshaft bushing I.D.	6.018–6.030 (0.2369–0.2374)	6.045 (0.2380)
	Mainshaft bushing I.D.	9.000–9.015 (0.3543–0.3549)	9.030 (0.3555)
	Countershaft bushing I.D.	8.000–8.015 (0.3150–0.3156)	8.030 (0.3161)
	Mainshaft sealing ring groove width (35 mm and 29 mm)	2.025–2.060 (0.0797–0.0811)	2.080 (0.0819)
Regulator valve body	Sealing ring contact area diameter	35.000–35.025 (1.3780–1.3789)	35.050 (1.3799)
Stator shaft	Sealing ring contact area diameter	29.000–29.013 (1.1417–1.1422)	29.05 (1.1437)
Shifting device and parking brake control	Reverse shift fork thickness	5.90–6.00 (0.2323–0.2362)	5.40 (0.2126)
	Parking brake ratchet pawl	——	Wear or other defect
	Parking gear	——	Wear or other defect
	Throttle cam stopper	19.5–19.6 (0.768–0.772)	——
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: 0.21–0.265 (0.0083–0.0104)	——
		Driven: 0.07–0.125 (0.0028–0.0049)	——
	Stator camshaft needle bearing contact area I.D. (torque converter side)	27.000–27.021 (1.0630–1.0638)	Wear or damage
	Stator camshaft needle bearing contact area I.D. (oil pump side)	29.000–29.013 (1.1417–1.1422)	——
	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

Spring		STANDARD (NEW)			
		Wire Diameter	Outer Diameter	Free Length	Number of Coils
	Low one-way ball spring	0.29 (0.01)	4.0 (0.16)	14 (0.55)	13
	Regulator valve spring A	1.58 x 2.00 (0.06 x 0.08)	14.7 (0.58)	O88.6 (3.49) ●86.5 (3.41)	20.9
	Regulator valve spring B	1.6 (0.06)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	6.0 (0.24)	38.4 (1.51)	30.3 (1.19)	2
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	34.5 (1.36)	12.5
	Relief valve spring	0.8 (0.03)	8.4 (0.33)	47.7 (1.88)	15
	Cooler check valve spring	1.1 (0.04)	8.4 (0.33)	46.8 (1.84)	17
	2nd orifice control spring	0.8 (0.03)	6.6 (0.26)	50.7 (2.00)	35.1
	2nd kick down spring	0.8 (0.03)	6.1 (0.24)	37.7 (1.48)	24.3
	Servo orifice control spring	0.8 (0.03)	6.1 (0.24)	44.8 (1.76)	24.3
	Throttle spring A	0.8 (0.03)	8.6 (0.34)	21.6 (0.85)	6.9
	Throttle adjust spring A (Throttle pressure B)	0.8 (0.03)	6.2 (0.24)	30.0 (1.18)	8
	Throttle spring B	1.4 (0.06)	8.5 (0.33)	41.4 (1.63)	8.4
	1–2 shift spring	1.0 (0.04)	9.6 (0.38)	41.5 (1.63)	14
	1–2 shift ball spring	0.45 (0.02)	4.5 (0.18)	12.7 (0.50)	11
	2–3 shift spring	0.9 (0.04)	9.6 (0.38)	39.6 (1.56)	12
	Low accumulator spring A	2.8 (0.11)	21.5 (0.85)	56.2 (2.21)	8.9
	Low accumulator spring B	2.3 (0.09)	9.8 (0.39)	42 (1.65)	9.2
	4th accumulator spring	3.2 (0.13)	18.6 (0.73)	78 (3.07)	10.8
	2nd accumulator spring	2.7 (0.11)	16.5 (0.65)	87.7 (3.45)	17.5
	3rd accumulator spring	2.8 (0.11)	16.0 (0.63)	78.3 (3.08)	16

O: Fuel-Injected Engine ●: Carbureted Engine Unit: mm (in.)

9. Automatic Transmission

	MEASUREMENT	STANDARD (NEW)			
		Wire Diameter	Outer Diameter	Free Length	Number of Coils
Spring (cont'd)	L/C shift spring	0.9 (0.04)	7.6 (0.30)	73.7 (2.90)	32
	L/C timing spring	0.8 (0.03)	6.6 (0.26)	61.7 (2.43)	40
	O L/C control spring A	0.7 (0.03)	6.6 (0.26)	38.0 (1.50)	14.1
	O L/C control spring B	0.7 (0.03)	6.6 (0.26)	38.0 (1.50)	14.1
	L/C control spring C	0.7 (0.03)	6.6 (0.26)	38.0 (1.50)	14.1
	● L/C control spring D	0.7 (0.03)	6.6 (0.26)	38.0 (1.50)	14.1
	● L/C control spring E	0.7 (0.03)	6.6 (0.26)	38.0 (1.50)	14.1
	Clutch pressure control valve spring A (Modulator pressure)	1.4 (0.06)	9.4 (0.37)	32.4 (1.26)	10.5
	Clutch pressure control valve spring B (Modulator pressure)	1.4 (0.06)	9.4 (0.37)	32.4 (1.26)	10.5
	Clutch pressure control valve spring A (CPC Pressure)	1.4 (0.06)	9.4 (0.37)	38.5 (1.52)	12.6
	Clutch pressure control valve spring B (CPC pressure)	1.4 (0.06)	9.4 (0.37)	38.5 (1.52)	12.6
	3rd kick down spring	0.8 (0.03)	6.6 (0.26)	51.9 (2.04)	35.7
	Servo return spring	2.6 (0.10)	28.8 (1.13)	40.3 (1.59)	3.3

9. Differential

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Ring gear	Backlash	0.087—0.146 (0.0034—0.0057)	0.2 (0.0079)
Differential carrier	Pinion shaft bore diameter	18.000—18.018 (0.7087—0.7094)	18.1 (0.71)
	Carrier-to-pinion shaft clearance	0.017—0.047 (0.0007—0.0019)	0.1 (0.004)
	Driveshaft bore diameter	28.005—28.025 (1.1025—1.1033)	—
	Carrier-to-driveshaft clearance	0.025—0.066 (0.0010—0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05—0.15 (0.002—0.006)	Adjust with a washer.
	Pinion gear bore diameter	18.042—18.066 (0.7103—0.7113)	—
	Pinion gear-to-pinion shaft clearance	0.059—0.095 (0.0023—0.0037)	0.15 (0.006)
Differential taper *roller bearing*	Preload	2.8—4.0 N·m (28—40 kg-cm, 24—35 lb-in) at new bearing 2.5—3.7 N·m (25—37 kg-cm, 22—32 lb-in) at old bearing	Adjust with a shim.

10. Driveshafts

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Driveshaft	Right boot As installed	496 (19.5)	—
	Left boot As installed	496 (19.5)	—

11. Power Steering

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Steering wheel	Play	10 (0.39) Max.	—
	Pinion starting torque N·m (kg-m, ft-lb)	1.2 (0.12, 0.86)	
Power steering	Angle of rack-guide-screw loosened from locked position	25° ± 5° (2WS), 35° ± 5° (4WS)	
	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)	7845—8826 (80—90, 1138—1280)	
	Fluid capacity Reservoir	0.5 ℓ (0.53 U.S. qt., 0.44 Imp. qt.)	
	At change	approx 1.7 ℓ (1.8 U.S. qt., 1.5 Imp. qt.)	
Power steering belt	Deflection midway between pulleys/load	11—13 (0.43—0.51)/98N (10 kg/22 lb) for used belt 9—11 (0.35—0.43)/98N (10 kg/22 lb) after replacement of belt	
Tie-rod end	Moving effort Front	14.6 lbs, (6.6 kg)	
	(maximum load measured Rear	14.6 lbs, (6.6 kg)	
	at the pin hole at the tip of tie-rod end)		

Standards and Service Limits (cont'd)

□: Rear wheel with 4WS

12. Suspension

MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Wheel alignment		Front / Rear	
Camber		0°00' ± 1° / −0°20' ± 1° (□−0°20' ± 30')	
Caster		2°20' ± 30'	
Toe-in		0 ± 2 (0 ± 0.08) / 2 ± 2 (0.08 ± 0.08)	
Side slip		0 ± 2 (0 ± 0.08) / IN 2 ± 2 (IN 0.08 ± 0.08)	
Turning angle (MAX.)	Inward wheel	37°20' ± 2° (□5°00' ± 1°)	
	Outward wheel	30°15' ± 2° (□5°20' ± 1°)	
△ Rear wheel turning angle (when steering wheel angle is at 127°)		□1°30' ± 30'	
Ball joint	Moving effort (Maximum load measured at the pin rock at the tip of tie-rod end) Front/Upper	10.4 lbs. (4.7 kg)	
	Front/Lower	7.9 lbs. (3.6 kg)	
	Rear/Upper	7.7 lbs. (3.5 kg)	
	Rear/Lower	13.9 lbs. (6.3 kg)	
Wheel	Rim runout Steel	0−1.0 (0−0.039)	—
	Aluminum	0−0.3 (0−0.012)	—
	Pitch-circle diameter	100 (3.94)	
	Offset	45 (1.77)	
Wheel bearing	End play Front	0	0.05
	Rear	0	0.05

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

○: Fuel-Injected Engine ●: Carbureted Engine

13. Brake

MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke 200N (20 kg, 44 lbs)		To be locked when pulled 7−11 notches	
Foot brake pedal	Pedal height	M/T	178 (7.0)	—
		H/M	183 (7.2) from floor	—
	Free play		1−5 (0.04−0.20)	5 (0.20)
Master cylinder	Piston-to-push rod clearance		0−0.4 (0−0.016)	—
Disc brake	Disc thickness	Front	○ 21.0 (0.83)	19.0 (0.75)
			● 19.0 (0.75)	17.0 (0.67)
		Rear	10.0 (0.39)	8.0 (0.31)
	Disc runout	Front/Rear	—	0.10 (0.004)/0.15 (0.006)
	Disc parallelism		—	0.015 (0.0006)
	Pad thickness	Front	○ 11.5 (0.45)	3.0 (0.12)
			● 9.0 (0.35)	3.0 (0.12)
		Rear	8.0 (0.31)	2.0 (0.08)

Brake booster	Characteristics	Vacuum (mm Hg)	Pedal Pressure kg (lbs)	Line Pressure kg/cm² (psi)
		0	20 (44)	○ 11.4 (162) ● 13.1 (186)
		300	20 (44)	○ 47.8 (680) ● 54.9 (781)
		500	20 (44)	○ 72.3 (1,028) ● 83.0 (1,180)

16. Electrical

○: Fuel-Injected Engine ●: Carbureted Engine Unit: mm (in.)

	MEASUREMENT		STANDARD (NEW)		
Ignition	Rated voltage		12 Volts		
	Primary winding resistance		1.2—1.5 ohms		
	Secondary winding resistance		9,040—13,560 ohms		
Ignition wire	Resistance		25,000 ohms max.		
Spark plug	Type		Fuel-injected engine:		
			KX, KQ, KS, KZ	BCPR6EY-N11 (NGK) BCPR6E-11 (NGK) Q20PR-U11 (ND)	*1
				BCPR5EY-N11 (NGK) BCPR5E-11 (NGK) Q16PR-U11 (ND)	*2
				BCPR7EY-N11 (NGK) BCPR7E-11 (NGK) Q22PR-U11 (ND)	*3
			KG, KE, KB, KF, KT, KW, KY	BCPR6E-11 (NGK) Q20PR-UL11 (ND) Q20PR-U11 (ND)	*1
				BCPR5E-11 (NGK) Q16PR-UL11 (ND) Q16PR-U11 (ND)	*2
				BCPR7E-11 (NGK) Q22PR-UL11 (ND) Q22PR-U11 (ND)	*3
			Carbureted engine:		
			KG, KE, KB, KF, KT, KW, KY	BCPR6E-11 (NGK) Q20PR-U11 (ND) Q20PR-UL11 (ND)	*1
				BCPR5E-11 (NGK) Q16PR-U11 (ND) Q16PR-UL11 (ND)	*2
				BCPR7E-11 (NGK) Q22PR-U11 (ND) Q22PR-UL11 (ND)	*3
			KS, KZ	BCPR6EY-N11 (NGK) BCPR6E-11 (NGK) Q20PR-U11 (ND)	*1
				BCPR5EY-N11 (NGK) BCPR5E-11 (NGK) Q16PR-U11 (ND)	*2
				BCPR7EY-N11 (NGK) BCPR7E-11 (NGK) Q22PR-U11 (ND)	*3
			KX	BCPR6EY-N11 (NGK) BCPR6E-11 (NGK) Q20PR-U11 (ND)	*1
				BCPR5E-11 (NGK) Q16PR-U11 (ND)	*2
				BCPR7EY-N11 (NGK) BCPR7E-11 (NGK) Q22PR-U11 (ND)	*3
	*1 For all normal driving *2 For cold climates *3 For hot climates or continuous high speed driving				
	Gap		1.0—1.1 (0.039—0.043)		
Ignition timing	At idling	○ Manual ○ Automatic (in neutral)	15 ± 2° BTDC 15 ± 2° BTDC		
		● Manual	15 ± 2° BTDC (KT, KY) 16 ± 2° BTDC (KB, KE, KF, KG, KW) 20 ± 2° BTDC (KS, KX, KZ)		
		● Automatic (in neutral)	10 ± 2° BTDC (KT, KY) 15 ± 2° BTDC (KS, KX, KZ) 16 ± 2° BTDC (KB, KE, KF, KG, KW)		
Battery	Lighting capacity (20-hour ratio)		65 Ampere hours (European Models) 50 Ampere hours (General Models)		
	Starting capacity (5-second ratio)		9.2 V minimum at 300 Ampere draw (European Models) 8.5 V minimum at 300 Ampere draw (General Models)		
Alternator	Output		13.5 V/70 A		
	Coil resistance (rotor)		2.8—3.0 ohms		
	Slip ring O.D.		14.4 (0.57)		
	Brush length		10.5 (0.41)		
	Brush spring tension		300—360 g (10.6—12.7 oz)		
Starting motor	MEASUREMENT		1.0 kW (KE, KQ, KT, KY) 1.4 kW (Except KE, KQ, KT, KY)		
			STANDARD (NEW)	SERVICE LIMIT	
	Mica depth		0.4—0.5 (0.016—0.020)	0.15 (0.006)	
	Commutator runout		0—0.02 (0.0008)	0.05 (0.002)	
	Commutator O.D.		28.0—28.1 (1.102—1.106)	27.5 (1.08)	
	Brush length		14.3—14.7 (0.56—0.58)	9.3 (0.37)	
	Spring pressure (new)		18.1—23.0 N (1.85—2.35 kg, 4.08—5.18 lb.)	——	

Design Specifications

	ITEMS	METRIC	ENGLISH	NOTE
DEMENSIONS	Overall Length	4,460 mm	175.6 in.	
		4,465 mm	175.8 in.	KW
		4,445 mm	175.0 in.	KQ
	Overall Width	1,710 mm	67.3 in.	
	Overall Height	1,295 mm	51.0 in.	
	Wheelbase	2,565 mm	101.0 in.	
	Track F/R	1,480/1,470 mm	58.3/57.9 in.	
	Ground Clearance	145 mm	5.7 in.	
	Seating Capacity	Four		
	Overhang F/R	895/1,000 mm	35.2/39.4 in.	Includes bumper
		900/1,000 mm	35.4/39.4 in.	KW

European Model

WEIGHT	Curb weight				
	2.0 Carbureted without CATA				
		5M/T	1,100 kg	2,425 lb	KF, KB, KW
			1,105 kg	2,436 lb	KE
		4A/T	1,120 kg	2,469 lb	KF, KB, KW
			1,125 kg	2,480 lb	KE
	2.0 Carbureted with CATA				
		5M/T	1,115 kg	2,458 lb	KX, KW, KS
			1,110 kg	2,447 lb	KG
		4A/T	1,135 kg	2,502 lb	KX, KW, KS
			1,130 kg	2,491 lb	KG
	2.0 Fuel-Injected without CATA				
		5M/T	1,155 kg	2,546 lb	KF
			1,145 kg	2,524 lb	KG, KE
			1,155 kg	2,546 lb	KW
		4A/T	1,175 kg	2,590 lb	KF
			1,165 kg	2,568 lb	KG, KE
			1,176 kg	2,593 lb	KW
	2.0 Fuel-Injected with CATA				
		5M/T	1,165 kg	2,568 lb	KX
			1,150 kg	2,535 lb	KG
			1,150 kg	2,535 lb	KW
			1,165 kg	2,568 lb	KS
		4A/T	1,185 kg	2,612 lb	KX
			1,170 kg	2,579 lb	KG
			1,170 kg	2,579 lb	KW
			1,185 kg	2,612 lb	KS

CATA: Catalytic conveterter

General Model (KQ)

WEIGHT	Curb weight				
	2.0 Fuel-Injected	5M/T	1,170 kg	2,579 lb	
		4A/T	1,190 kg	2,623 lb	

General Model (KY)

WEIGHT	Curb weight				
	2.0 Carbureted	5M/T	1,167 kg	2,573 lb	
		4A/T	1,187 kg	2,617 lb	
	2.0 Fuel-Injected	5M/T	1,206 kg	2,659 lb	
		4A/T	1,226 kg	2,703 lb	
		5M/T	1,220 kg	2,670 lb	with 4WS
		4A/T	1,240 kg	2,734 lb	with 4WS

General Model (KT)

WEIGHT	Curb weight				
	2.0 Carbureted	5M/T	1,100 kg	2,425 lb	
		4A/T	1,120 kg	2,469 lb	
	2.0 Fuel-Injected	5M/T	1,145 kg	2,524 lb	
		4A/T	1,165 kg	2,568 lb	

M/T: Manual Transmission, A/T: Automatic Transmission

European Model

	ITEMS		METRIC	ENGLISH	NOTE
WEIGHT	Weight distribution (Front/Rear)				
	2.0 Carbureted without CATA				
		5M/T	665/435 kg	1,466/959 lb	KF, KB, KW
			665/435 kg	1,466/959 lb	KE
		4A/T	685/435 kg	1,510/959 lb	KF, KB, KW
			685/440 kg	1,510/970 lb	KE
	2.0 Carbureted with CATA				
		5M/T	675/440 kg	1,488/970lb	KX, KW, KS
			675/435 kg	1,488/959 lb	KG
		4A/T	695/440 kg	1,532/970 lb	KX, KW, KS
			695/435 kg	1,532/959 lb	KG
	2.0 Fuel-Injected without CATA				
		5M/T	705/450 kg	1,554/992 lb	KF
			695/450 kg	1,532/992 lb	KG, KE
			700/455 kg	1,543/1,003 lb	KW
		4A/T	725/450 kg	1,598/992 lb	KF
			715/450 kg	1,576/992 lb	KG, KE
			720/455 kg	1,587/1,003 lb	KW
	2.0 Fuel-Injected with CATA				
		5M/T	715/450 kg	1,576/992 lb	KX
			700/450 kg	1,543/992 lb	KG
			695/455 kg	1,532/1,003 lb	KW
			705/465 kg	1,554/1,025 lb	KS
		4A/T	735/450 kg	1,620/992 lb	KX
			720/450 kg	1,587/992 lb	KG
			715/455 kg	1,576/1,003 lb	KW
			725/460 kg	1,598/1,014 lb	KS

CATA: Catalytic converter

General Model (KQ)

WEIGHT	Weight distribution (Front/Rear)				
	2.0 Fuel-Injected	5M/T	705/465 kg	1,554/1,025 lb	
		4A/T	725/465 kg	1,598/1,025 lb	

General Model (KY)

WEIGHT	Weight distribution (Front/Rear)				
	2.0 Carbureted	5M/T	707/460 kg	1,559/1,014 lb	
		4A/T	729/458 kg	1,607/1,010 lb	
	2.0 Fuel-Injected	5M/T	733/473 kg	1,616/1,043 lb	
		4A/T	755/471 kg	1,664/1,038 lb	
		5M/T	738/482 kg	1,627/1,063 lb	with 4WS
		4A/T	760/480 kg	1,675/1,058 lb	with 4WS

General Model (KT)

WEIGHT	Weight distribution (Front/Rear)				
	2.0 Carbureted	5M/T	660/440 kg	1,455/970 lb	
		4A/T	680/440 kg	1,499/970 lb	
	2.0 Fuel-Injected	5M/T	695/450 kg	1,532/992 lb	
		4A/T	715/450 kg	1,576/992 lb	

M/T: Manual Transmission, A/T: Automatic Transmission

Design Specifications (cont'd)

	ITEMS		METRIC	ENGLISH	NOTE
ENGINE	Type	Fuel-Injected	Water cooled, 4-cycle D.O.H.C.		
		Carbureted	Water cooled, 4-cycle S.O.H.C.		
	Cylinder Arrangement		4-cylinder in line, transverse		
	Bore and Stroke		81 x 95 mm	3.19 x 3.74 in.	
	Displacement		1,958 cm³ (cc)	119 in.	
	Compression Ratio	Fuel-Injected	9.0 (KS, KX, KZ), 9.4 (KQ), 9.5 (KY), 10.5 (KB, KE, KF, KG, KW, KT)		
		Carbureted	9.1 (KS, KX, KZ), 9.2 (KB, KE, KF, KG, KT, KW, KY)		
	Valve Train	Fuel-Injected	4 Valves Per Cylinder, dual overhead camshafts		
		Carbureted	3 Valves Per Cylinder, single overhead camshaft		
	Lubrication System		Pressure feed		
	Fuel Required		Unleaded grade gasoline with 91 research octane number or higher. (KS, KQ, KX, KZ) Leaded grade gasoline with 91 research octane number or higher. (KT, KY) Leaded grade gasoline with 98 research octane number or higher. (KB, KE, KF, KG, KW)		
	Engine wet Weight	Fuel-Injected	126 kg	278 lb.	except radiator, transmission
		Carbureted	123 kg	271 lb.	
STARTER	Type	MITSUBA	Gear reduction		
	Normal output		1.0 kW (KE, KQ, KT, KY) 1.4 kW (except KE, KQ, KT, KY)		
	Normal voltage		12 V		
	Hour rating		30 seconds		
	Direction of rotation		Clockwise as viewed from gear end		
	Weight	MITSUBA	3.7 kg	8.1 lb.	
TRANSMISSION	Clutch	5-M/T	Single plate dry, diaphragm spring.		
		4-A/T	Torque converter		
	Transmission	5-M/T	5 speeds forward, 1 speed reverse, constant mesh.		
		4-A/T	4 speeds forward, 1 speed reverse, constant mesh.		
			5-M/T		4-A/T		A: KZ, KS, KW, KB, KX (carbureted) KY, KT, KQ B: KE, KF, KX (fuel-injected) C: KE (fuel-injected), KF (fuel-injected), KX D: except KE (fuel-injected), KF (fuel-injected), KX
			A	B	C	D	
	Primary Reduction		1.000	1.000	1.000	1.000	
	Gear Ratio	I	3.166	3.166	2.529	2.529	
		II	1.857	1.772	1.392	1.444	
		III	1.259	1.222	1.030	1.030	
		IV	0.935	0.935	0.763	0.763	
		V	0.794	0.794	—	—	
		Reverse	3.000	3.000	1.904	1.904	
	Final Reduction	5-M/T	Fuel-Injected, carbureted (KX): Single helical gear, 4,062 Carbureted (except KX): Single helical gear, 4,187				
		4-A/T	Single helical gear, 4,066				
	Clutch Facing Area		176 cm²		27.3 sq. in.		

M/T: Manual Transmission A/T: Automatic Transmission

	ITEMS		METRIC	ENGLISH	NOTE
AIR CONDITIONER	Cooling Capacity		2,915 Kcal/h	11,566 BTU/h	
	— Conditions:				
	Compressor min^{-1} (rpm)		1,800 min^{-1} (rpm)		
	Outside air temperature		27.0°C	80.6°F	
	Outside air humidity		50%		
	Condenser air temperature		35°C	95°F	
	Condenser air velocity		4.5 m/sec.	14.8 ft/sec.	
	Blower capacity		390 cm^3/h	13,773 cu. ft/h	
	Compressor	Type	Rotary type		
		No. of cylinders	4—3		
		Bean displacement	130 cc/rev.	7.93 cu. in/rev.	
		Max. min^{-1} (rpm)	7,000 min^{-1} (rpm)		
		Lubricant/capacity	140 cc	4.73 US oz.	
	Receiver Dryer	With dessicant	Includes fusible safety plug.		
	Condenser		Corrugated fin type		
	Evaporator		Corrugated fin type		
	Blower	*Type*	*Sirocco fan*		
		Motor input	145 W (12 V)		
		Speed control	4 position		
		Max. capacity	390 m^3/h	13,773 cu ft/h	
	Temp. Control		Air-mix type		
	Comp. Clutch	Type	Dry, single plate, V-belt		
		Power consumption	48 W max. 12 V		
	Refrigerant	*Type*	R-12		
		Quantity RHD	0.85 ± 0.05 kg	1.76 ± 0.11 lbs	
		LHD	0.90 ± 0.05 kg	1.98 ± 0.11 lbs	
STEERING SYSTEM	Type		Rack and Pinion		
	Overall Ratio		14.9 : 1		
	Turns, lock-to-lock		2.84		
	Steering Wheel Dia.		370 mm	14.6 in.	
	Power Steering Oil Capacity		1.7 lit.	1.8 U.S. qt., 1.5 Imp qt.	
	Power Steering Oil		HONDA Genuine Power Steering Fluid P/N 08208—99961		
SUSPENSION SYSTEM	Type, Front/Rear		Independent by double wishbones, coil springs		
	Shock Absorber	Front/Rear	Telescopic, hydraulic		
WHEEL ALIGNMENT	Wheel alignment				
	Camber	Front	0°		
		Rear	−0°20′		
	Caster	Front	2°20′		
	Toe-in	*Front*	*0 mm*	*0 in.*	
		Rear	2 mm	0.080 in.	
	Kingpin Inclination		9°45′		
BRAKE SYSTEM	Type, Front/Rear		Power assisted self-adjusting ventilated disc		
	Pad Surface Area:	Front/Rear	○ 43.3/21.0 cm^2	6.7/3.3 sq. in.	
			● 35.8/20.9 cm^2	5.5/3.2 sq. in.	
	Effective Disc Dia.	Front	○ 214 mm	8.4 in.	
			● 194 mm	7.6 in.	
		Rear	208 mm	8.2 in.	
	Parking Brake Kind and Type		Mechanical actuating, rear two wheel brakes		
TIRES	Front/Rear		○ 195/60VR 14 (except KY)		
			○ 195/60 R14 85V (KY only)		
			● 185/70R 13 85H		
			● 185/70R 13 86H (KF, KS, KW, KE only)		
	Spare		T135/70D 15 (KE (all) and with ALB)		
			○ T105/70D 14 (KS, KW, KB without ALB)		
			● T105/80D 13 (except KE, KY, KT without ALB)		

○: Fuel-Injected model ●: Carbureted Model

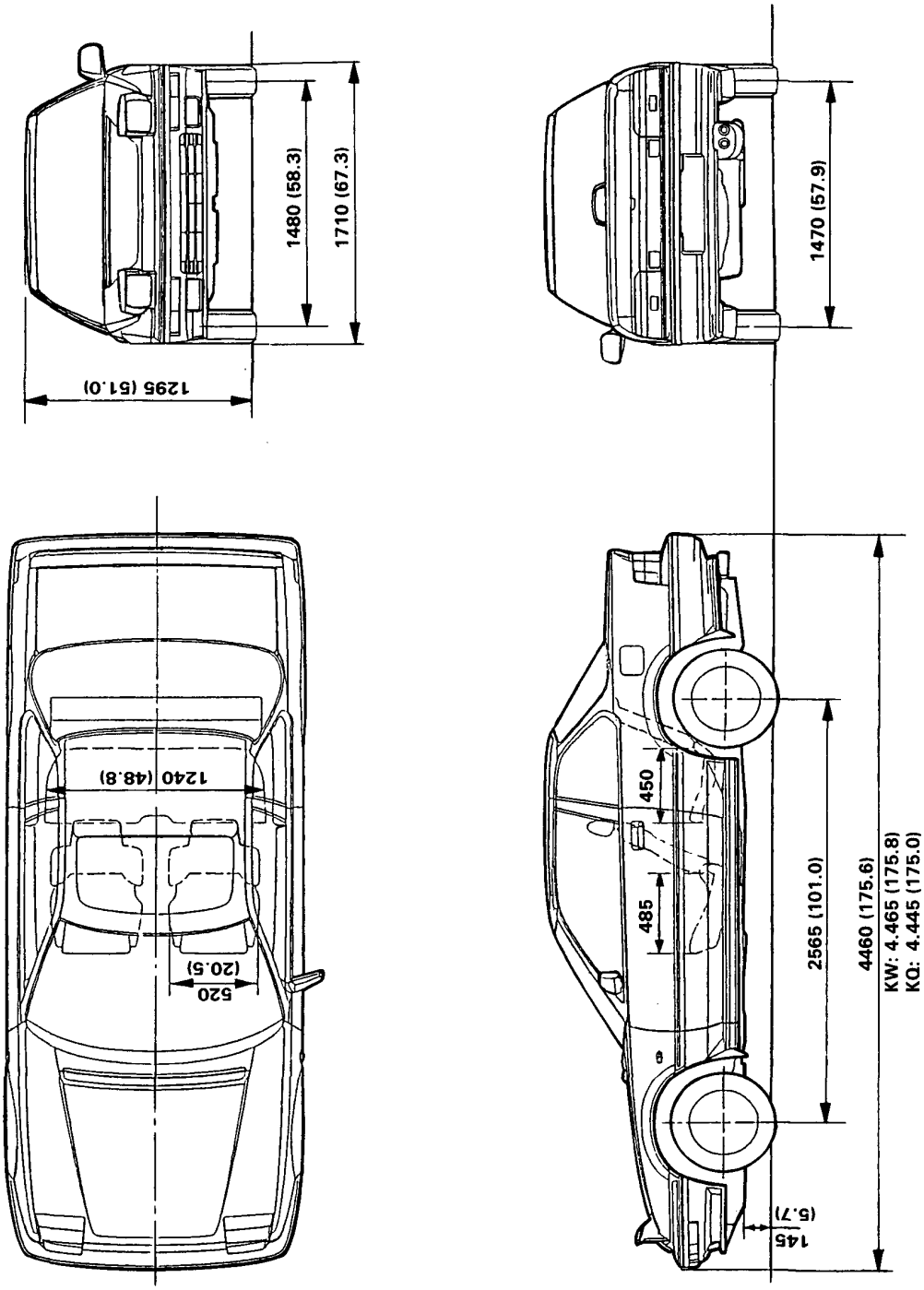
(cont'd)

Design Specifications (cont'd)

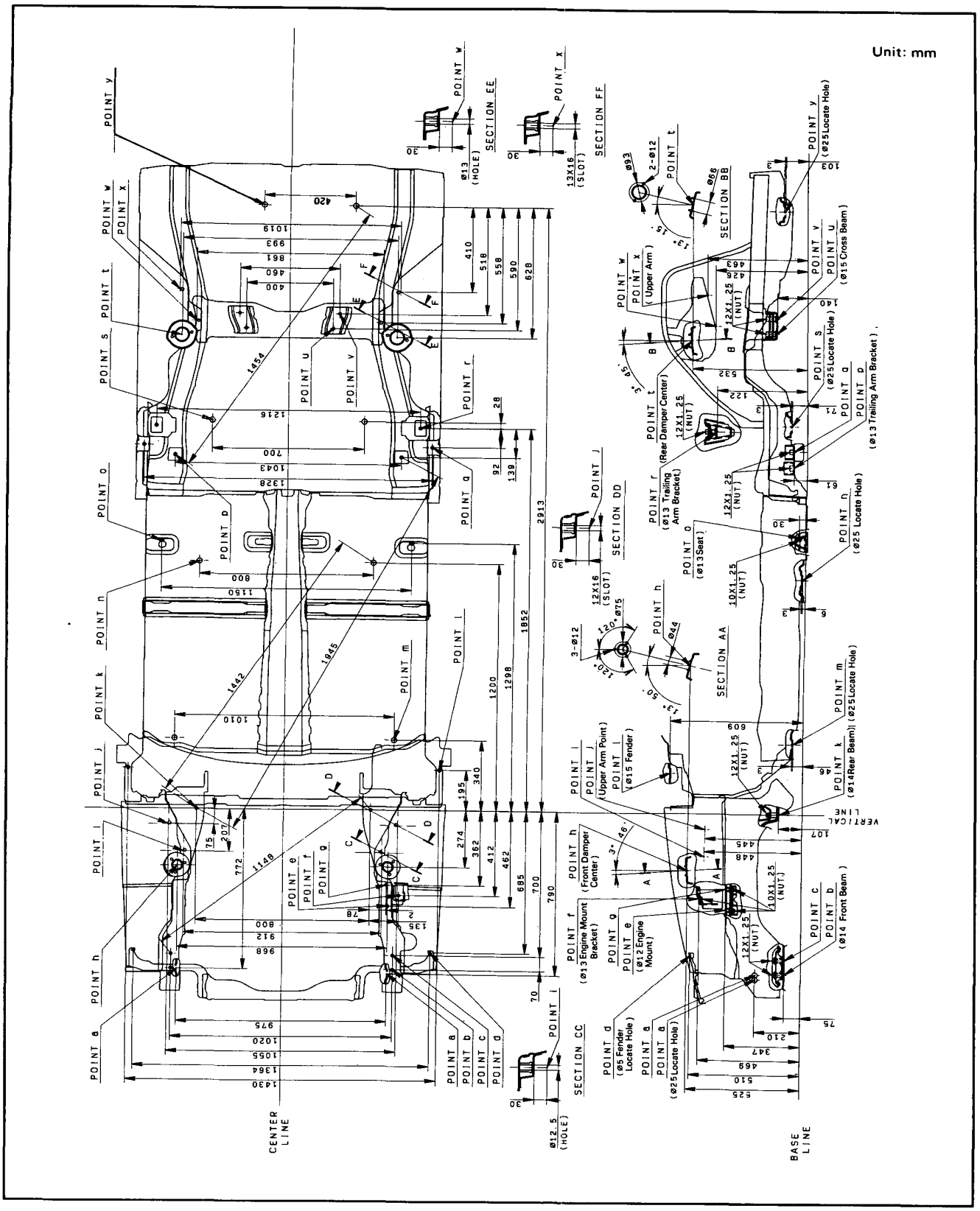
	ITEMS	METRIC	ENGLISH	NOTE
ELECTRICAL	Battery	70D: 12 V—65 AH, MF 55B: 12 V—47 AH, MF 55D: 12 V—50 AH, MF		European Models General Models
	Starter	12 V—1.4 kW		
	Alternator	12 V—70 amps		
	Fuses In the fuse box	7.5 A, 10 A, 15 A, 20 A, 30 A		
	In the relay box	10 A, 15 A, 20 A, 30 A, 40 A, 70 A		
	Headlights High/Low	12 V—60/55 W		
	Day Time Running Lights	12 V—21 W		KS, KW
	Passing Lights	12 V—55 W		Austrian Model
	Front Turn Signal Lights	12 V—21 W		
	Rear Turn Signal Lights	12 V—21 W		
	Side Turn Signal Lights	12 V—5 W		
	Stop/Taillights	12 V—21/5 W		
	Side Marker Lights	12 V—5 W		
	Rear Fog Lights	12 V—21 W		
	Back-up Lights	12 V—21 W		
	License Plate Lights	12 V—5 W, 8 W		
	Gauge Lights	12 V—3.4 W, 1.4 W		
	Indicator Lights	12 V—1.2 W, 1.4 W		
	Warning Lights	12 V—1.4 W		
	Glove Box Lights	12 V—3.4 W		
	Dome Light	12 V—8 W		
	Trunk Light	12 V—3.4 W		
	Fuse Box Light	12 V—3.4 W		
	Illumination and Pilot Lights	12 V—1.4 W, 1.2W 0.91 W, 0.56 W, LED		
	Heater Illumination Lights	12 V—1.4 W		

Body Specifications

Unit: mm (in.)



Frame Repair Chart



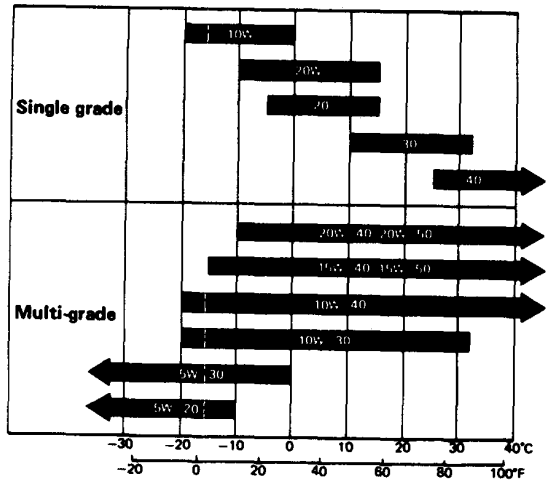
Maintenance

Lubrication Points 4-2
Maintenance Schedule 4-4

Lubrication Points

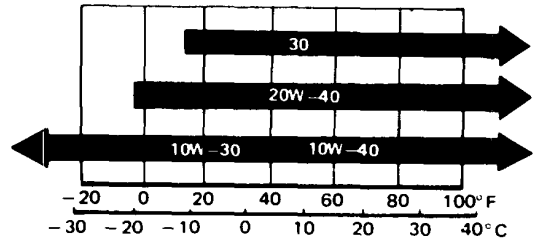
No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SE or SF SAE Viscosity: See chart below
2	Transmission	Manual Automatic	API Service Grade: SE or SF SAE Viscosity: See chart below DEXRON® or DEXRON® II Automatic transmission fluid
3 4	Brake reservoir Clutch reservoir		Brake fluid DOT 3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

Recommended Engine Oil
(SE or SF Grade Only)



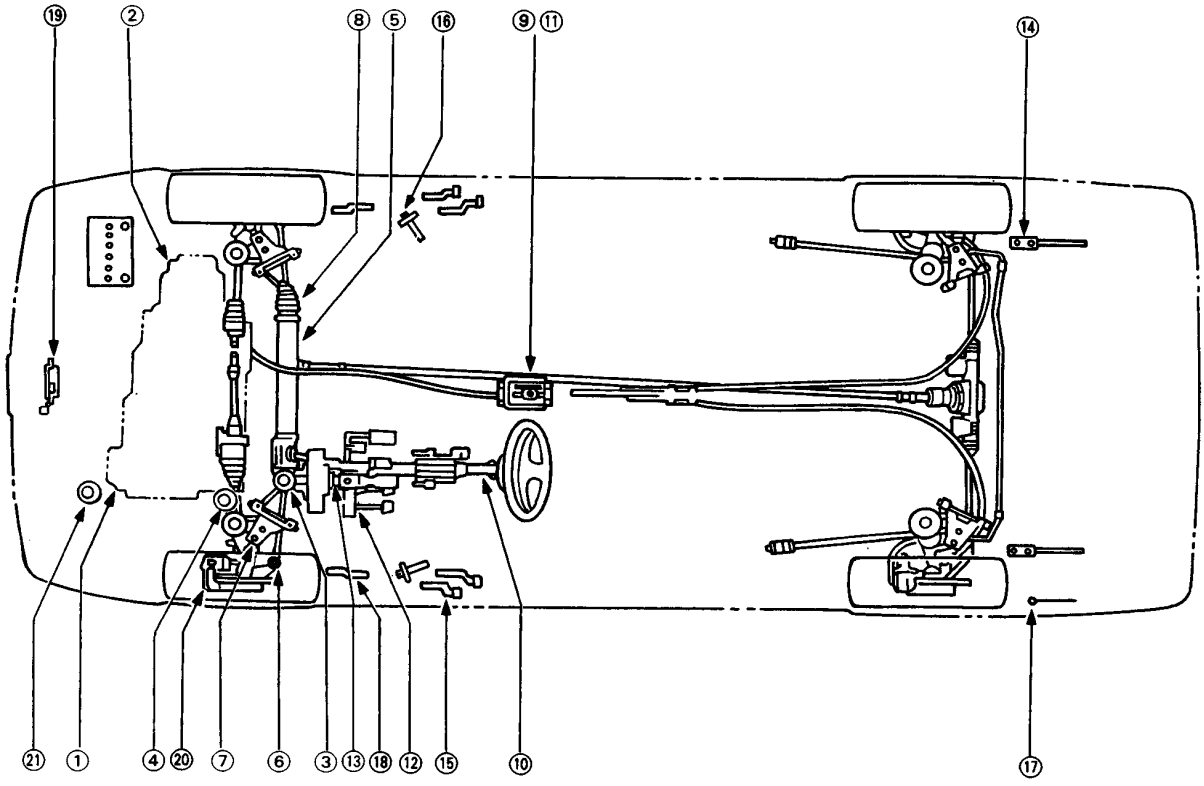
Engine oil viscosity for
ambient temperature ranges.

Recommended Manual Transmission 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.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Maintenance Schedule

	ITEMS		Service at the interval of listed x 1,000 km (or miles) or after that number of months, whichever comes first.					
		x 1,000 km	20	40	60	80	100	
		x 1,000 miles	12	24	36	48	60	
		months	12	24	36	48	60	
	Idle speed and idle CO (except KS, KX types)		I	I	I	I	I	
	Idle speed and idle CO (KS, KX types)						I	
	Valve clearance		I	I	I	I	I	
	Alternator drive belt			I		I		
■	Engine oil and oil filter		Replace every 10,000 km (6,000 miles) or 6 months					
■	Transmission oil			R		R		
■	Radiator coolant					R*1		
	Cooling system, hoses and connections			I		I		
	E.G.R. system (for cars using unleaded gasoline)*2						I	
	Secondary air supply system (for carburetor type)*3						I	
	Air cleaner element (dry type)*4		R	R	R	R	R	
	Air cleaner element (viscous type)*5			R		R		
	Fuel filter (including aux. filter for carburetor type)			R		R		
	Intake air temp. control system (for carburetor type)						I	
	Tank, fuel line and connection			I		I		
	Throtle control system (for carburetor type, except KS, KX types)			I		I		
	Throtle control system (for carburetor type, KS, KX types)						I	
	Choke mechanism (for carburetor type)			I		I		
	Choke opener operation (for carburetor type)						I	
	Evaporative emission control system*6						I	
	Ignition timing and control system (except KS, KX types)			I		I		
	Ignition timing and control system (KS, KX types)						I	
	Spark plug (for cars using unleaded gasoline)			R*7		R*7		
	Spark plug (for cars using leaded gasoline)		R	R	R	R	R	
	Distributor cap and rotor (except KS, KX types)			I		I		
	Distributor cap and rotor (KS, KX types)						I	
	Ignition wiring (except KS, KX types)			I		I		
	Ignition wiring (KS, KX types)						I	
	Positive crankcase ventiration valve (except KS, KX types)			I		I		
	Positive crankcase ventiration valve (KS, KX types)						I	
	Blow-by filter (for carburetor type)			I		I		
	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			I		I		
	Parking brakes		I	I		I		
	Exhaust pipe and muffler		I	I	I	I	I	
	Suspension mounting bolts		I	I	I	I	I	
	Front wheel alignment (except 4WS models)		I	I	I	I	I	
	Front and rear wheel alignment (for 4WS models)		I	I	I	I	I	
	Steering operation, tie rod ends, steering gear box and boots (including center shaft for 4WS models)	except 4WS models	I	I		I		
		for 4WS models	I	I	I	I	I	
	ALB high pressure hose (Standard for some types)					R		
	ALB operation (Standard for some types)		I	I		I		
	Power steering system		I	I	I	I	I	
	Power steering pump belt			I		I		
	Catalytic converter heat shield (car equipped with catalytic converter)						I	

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

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

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

*2 Except KQ type.

*3 For cars using unleaded gasoline.

*4 Except Europian and KQ types.

*5 For Europian and KQ types.

*6 For cars using unleaded gasoline, carburetor type using leaded gasoline and KY type.

*7 For KS type, spark plug replacement at the mileage interval meets Swedish A12 regulation. However, service at the monthly interval is still recommended for low mileage vehicles due to keeping better performance.

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
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 prolong period. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

Engine

Engine Tune-up 5-1
Timing Belt 5-5
Engine Removal/Installation 5-9
Exhaust Pipe and Muffler 5-19

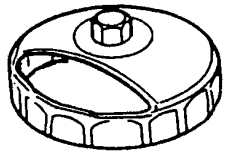
Engine Tune-up

Outline of Model Change

The oil filter has been changed.

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07912–6110001	Oil Filter Socket	1	
②		Oil Filter Wrench (Apply from LABINAL S.A.)	1	Used for FRANCE-MADE Oil Filter



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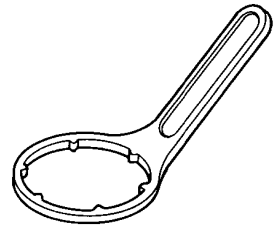

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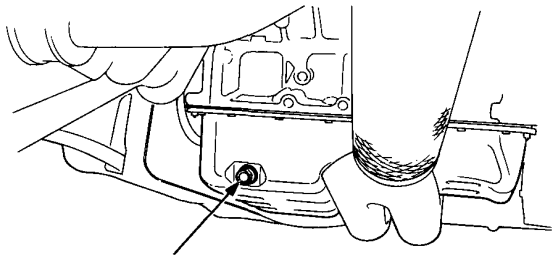
Engine Tune-up

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.



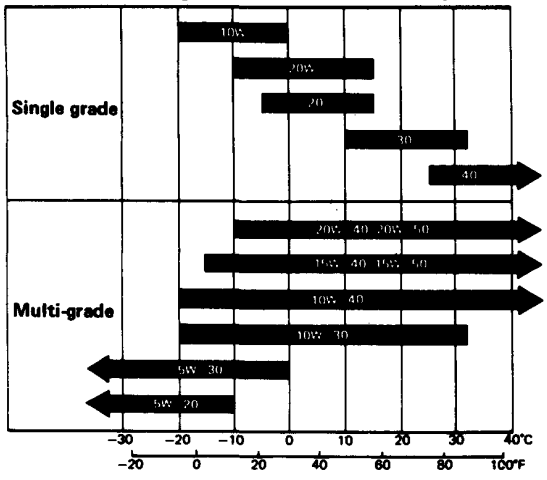
OIL PAN DRAIN PLUG
45 N·m (4.5 kg-m, 33 lb-ft)

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

Capacity	3.4 lit (3.6 U.S. qt., 3.0 Imp. qt.) Exclude Oil filter 3.9 lit (4.1 U.S. qt., 3.4 Imp. qt.) Adding replaced oil filter 4.8 lit (5.1 U.S. qt., 4.2 Imp. qt.) Means designed value
Change	Every 10,000 km (6,000 mi.) or 6 months.

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

Recommended Engine Oil (SE or SF Grade only)



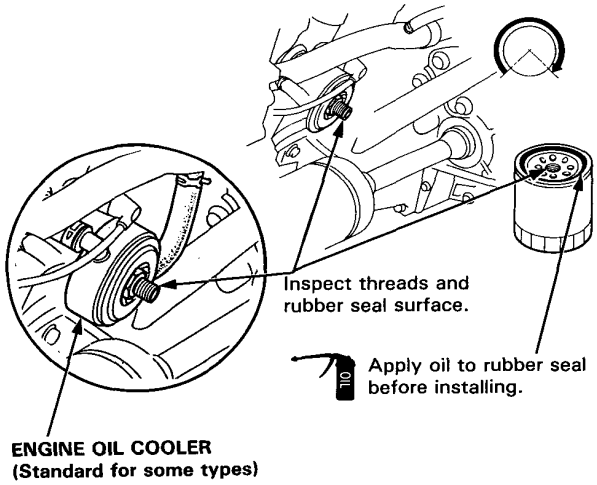
Expected Ambient Temperature before next oil change

Oil Filter Replacement

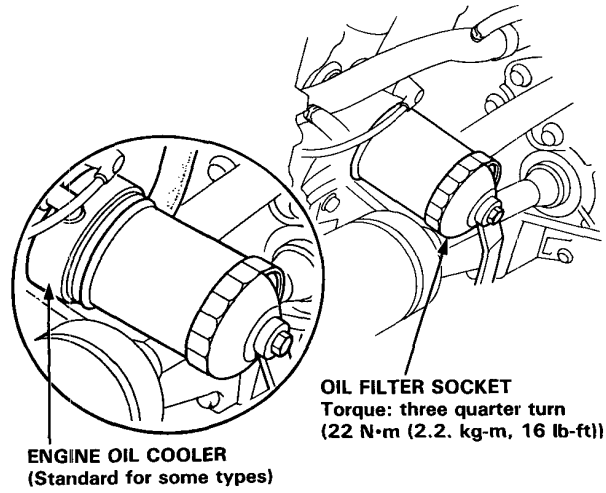
WARNING **After the engine has been run, the exhaust pipes will be hot; be careful when working around the exhaust manifold.**

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.

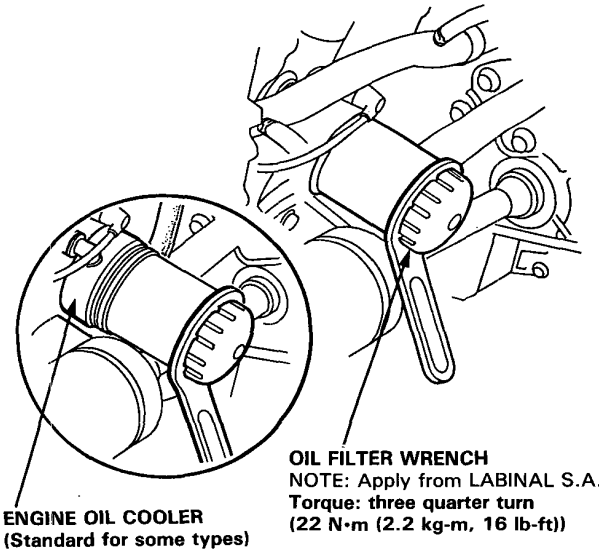
1. Remove the oil filter with the special oil filter socket or wrench.
2. Inspect the threads and rubber seal on the new filter. Wipe off seat on engine block, then apply a light coat of oil to the rubber seal, and install filter.
3. After the rubber seal is seated, tighten the filter by turning approximately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



JAPAN-MADE TYPE (filter size 80.0 mm)



FRANCE-MADE TYPE (filter size 76.2 mm)



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

Timing Belt

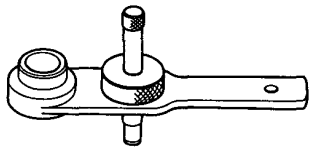
Outline of Model Change

The crankshaft pulley bolt has been changed.

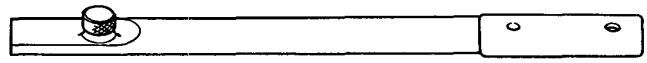
Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07JAB—0010000	Crank Pulley Holder Set	1	Crankshaft pulley
①-1	07JAA—0010200	Socket Wrench, 19 mm	1	Component tools
①-2	07JAB—0010100	Pulley Holder Attachment	1	
①-3	07JAB—0010200	Handle	1	

①-1



①-2



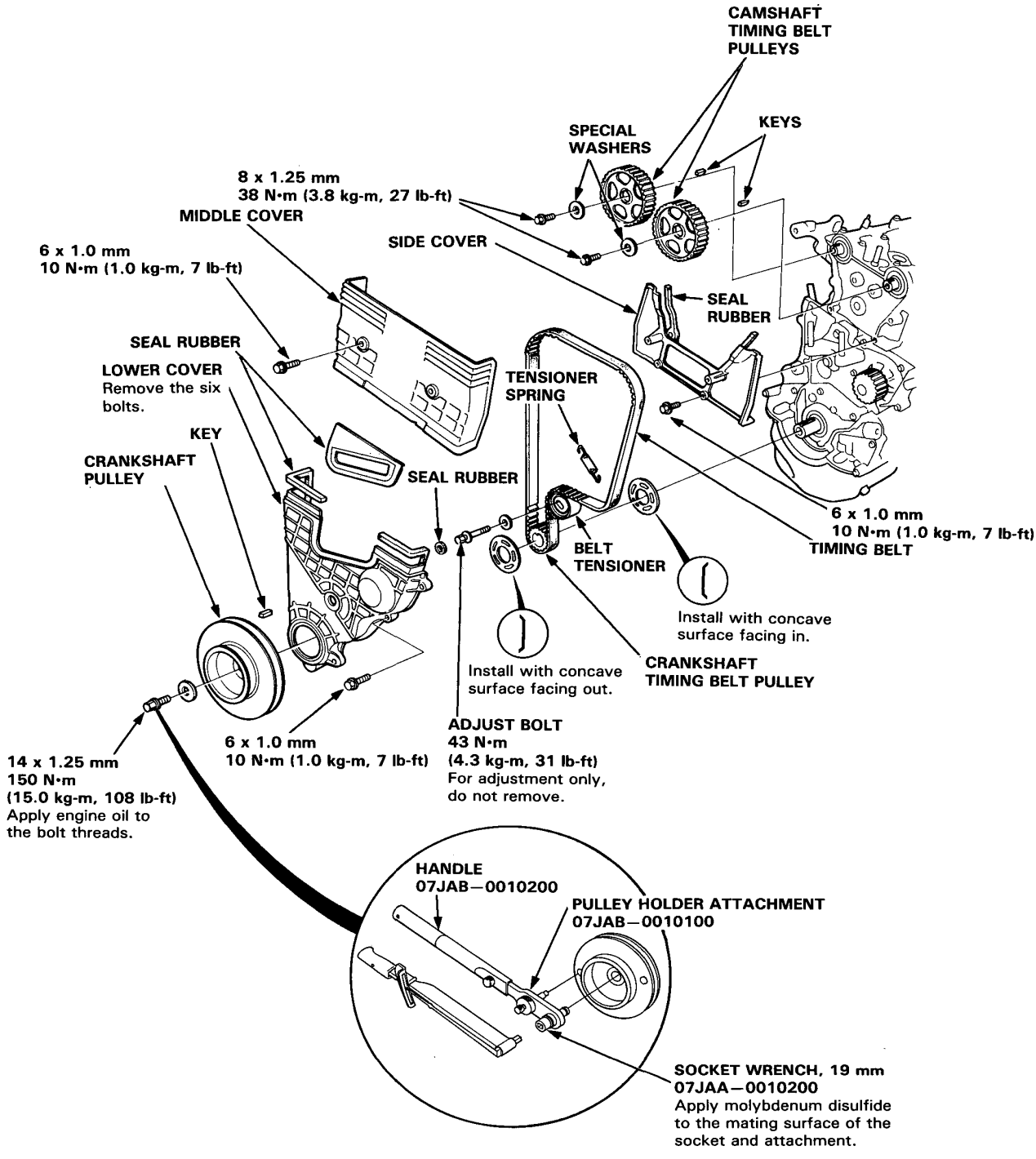
①-3

Timing Belt

Illustrated Index

NOTE:
- Before removing, mark direction of rotation.
- Refer to base manual to position the crankshaft and timing belt pulleys before installing timing belt.

Fuel-Injected Engine:

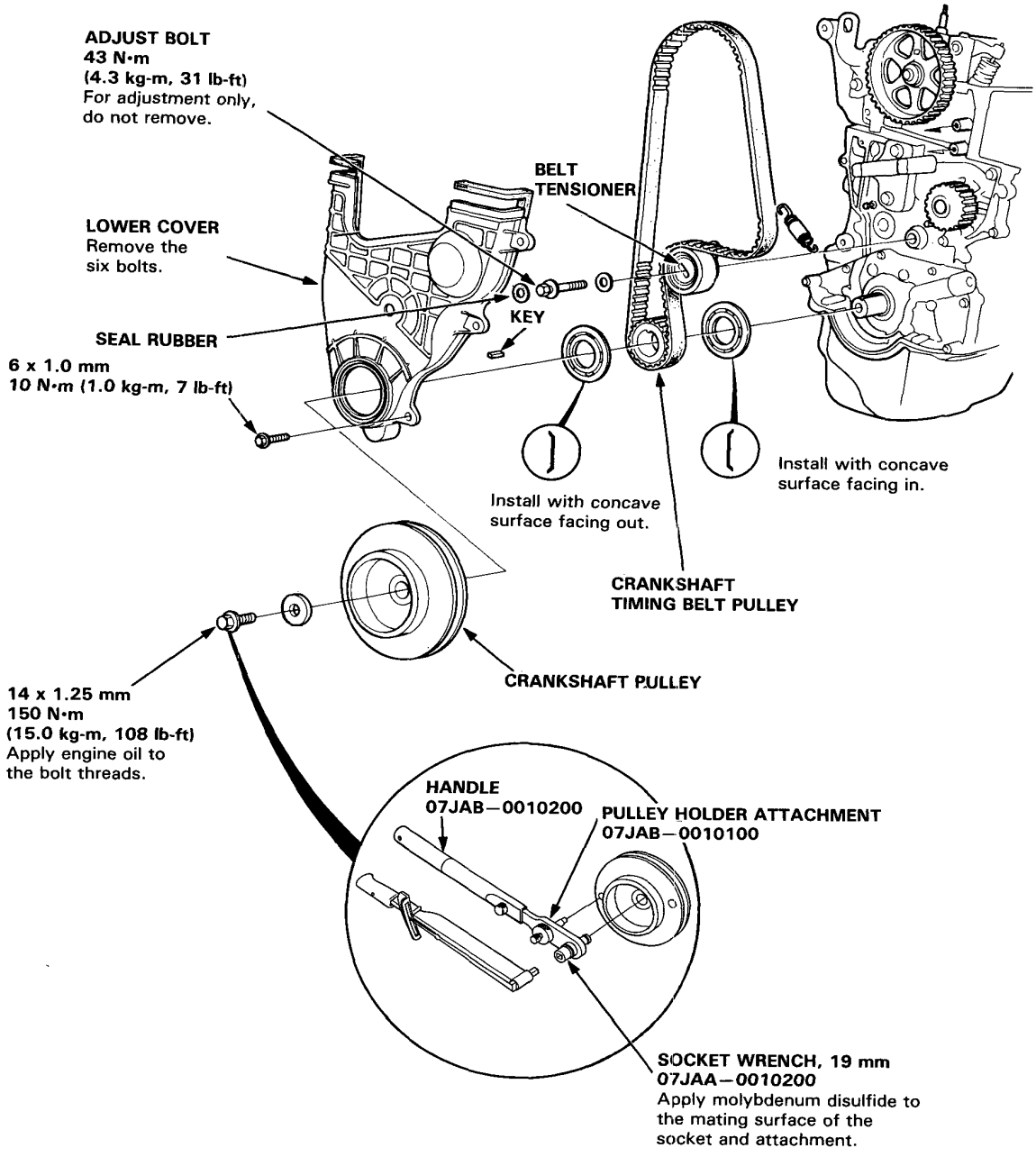


Timing Belt

Illustrated Index

NOTE:
- Before removing, mark direction fo rotation.
- Refer to base manual to position the crankshaft and timing belt pulleys before installing timing belt.

Carbureted Engine:



Engine Removal/Installation

Outline of Model Changes

- The air intake hose of the fuel injected engine has been changed.
- The cruise control actuator has been added to the fuel injected engine.
- The torque values of the engine mounting bolts and nuts have been changed.

WARNING

- **Make sure jacks and safety stands are placed properly (pages 1-6 thru 8), and hoist brackets are attached to *correct positions on the engine (page* 5-16).**
- **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.

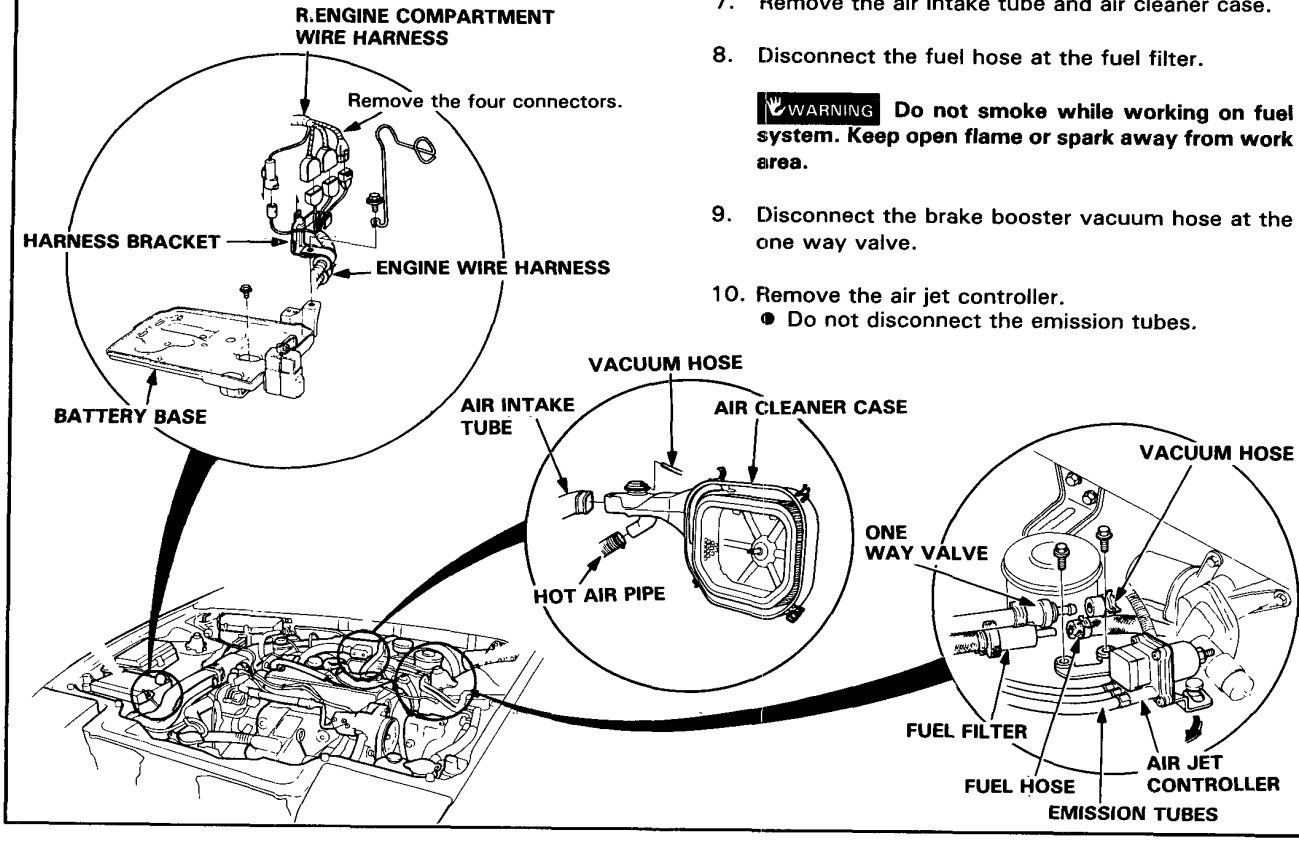
WARNING Use care when removing radiator cap and when draining radiator, engine and transmission, to avoid scalding by hot coolant or oil.

1. Disconnect the battery negative terminal first, then the positive terminal.

2. Unbolt the hood brackets and remove the hood after removing the washer hose.

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

Carbureted Engine:



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.

3. Remove the drain plug to drain engine oil.
   - Remove the filler cap to speed draining.

CAUTION: After draining the engine oil, always replace drain washers with new ones.

4. Drain transmission oil.
   - Use a 3/8" drive socket wrench to remove the drain plug.
   - Remove the level gauge or filler bolt to speed draining.

5. Loosen the drain plug to drain coolant from the radiator.
   - *Remove the radiator cap to speed draining.*

Carbureted Engine (Fuel-Injected Engine, go to step 11.)

6. Remove the battery and battery base.

7. Remove the air intake tube and air cleaner case.

8. Disconnect the fuel hose at the fuel filter.

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

9. Disconnect the brake booster vacuum hose at the one way valve.

10. Remove the air jet controller.
    - Do not disconnect the emission tubes.

Fuel-Injected Engine (Carbureted Engine, go to step 16)

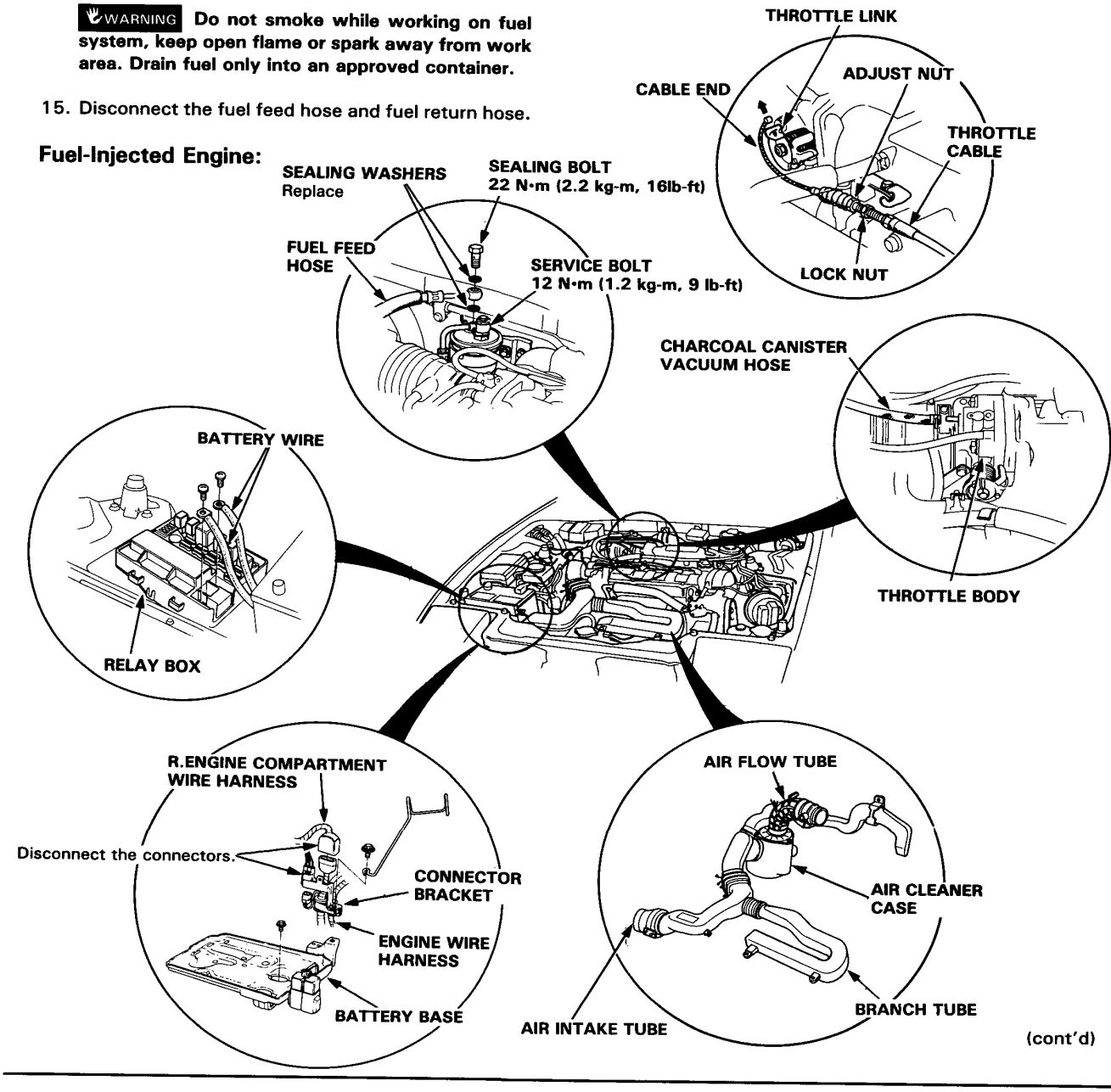
11. Remove the battery and the battery base.
12. Remove the air intake tube air cleaner and branch tube as an assembly.
13. Remove the battery wire from the relay box.
14. Relieve fuel pressure.

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.

15. Disconnect the fuel feed hose and fuel return hose.
16. Disconnect the charcoal canister vacuum hose at the throttle valve.
17. Disconnect the throttle cable at the throttle body or carburetor.

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.

Fuel-Injected Engine:

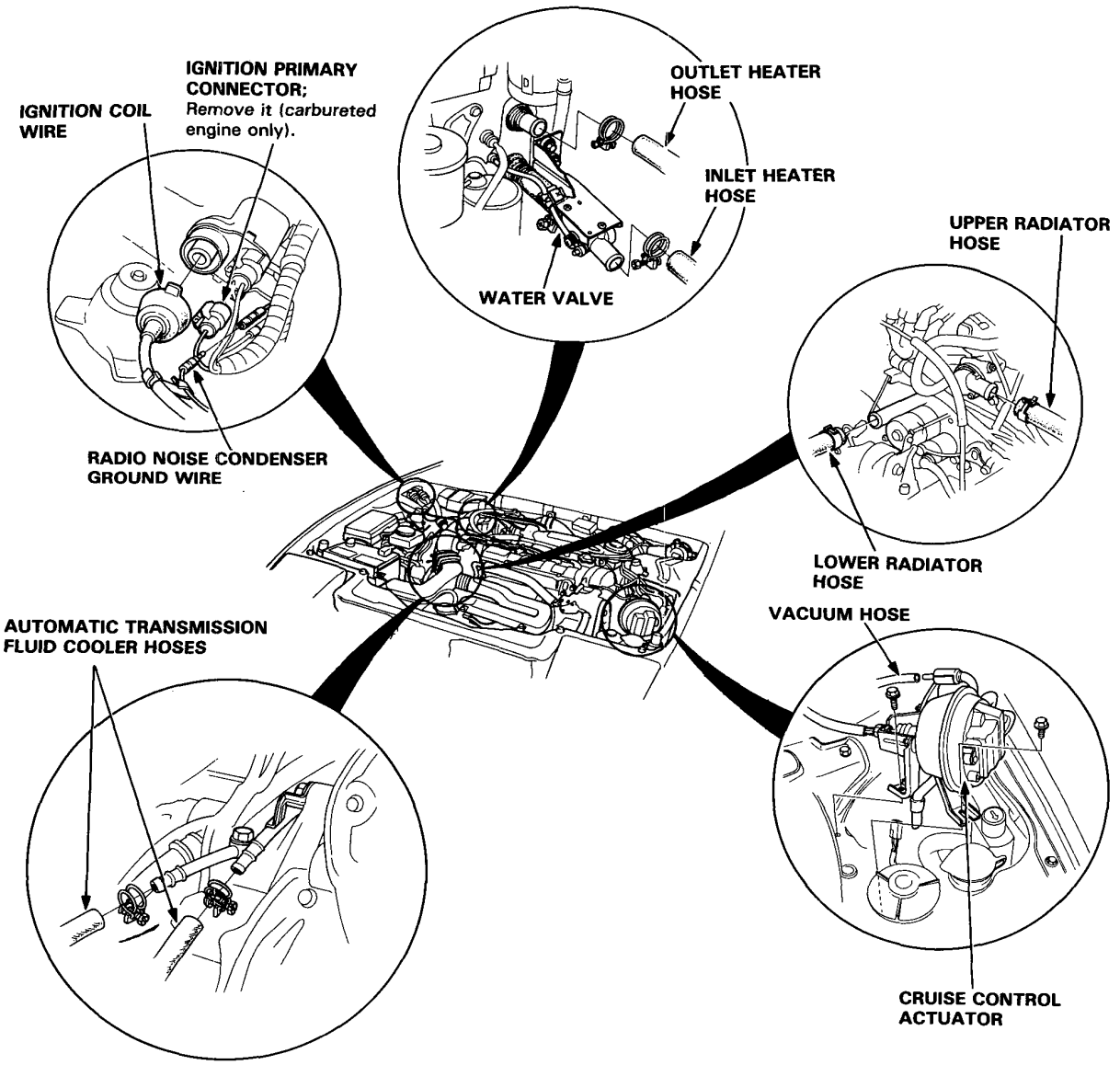


(cont'd)

(cont'd)

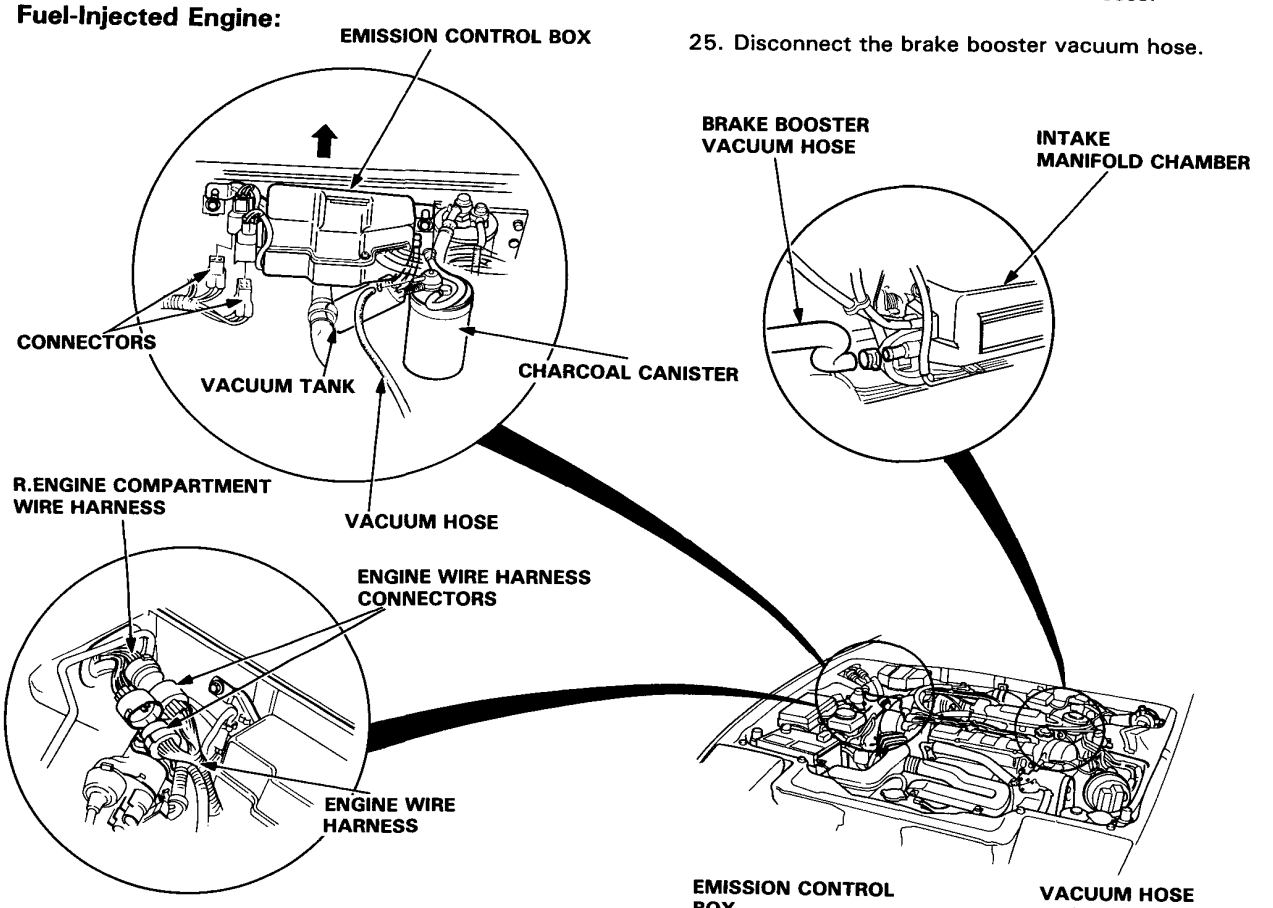
18. Disconnect the ignition coil wire, radio noise condenser ground wire and ignition primary connector (Carbureted Engine only), then remove the distributor.
19. Disconnect the upper and lower radiator hoses.
20. Disconnect the inlet and outlet heater hoses.
21. Disconnect the automatic transmission fluid (ATF) cooler hoses (A/T).
    - Plug the ATF cooler hoses.
22. Disconnect the vacuum hose, then remove the cruise control actuator (if equipped with cruise control).

Fuel-Injected Engine shown; Carbureted Engine similar:



23. Disconnect the engine wire harness connectors from R. engine compartment wire harness (Fuel-Injected Engine only).

Fuel-Injected Engine:

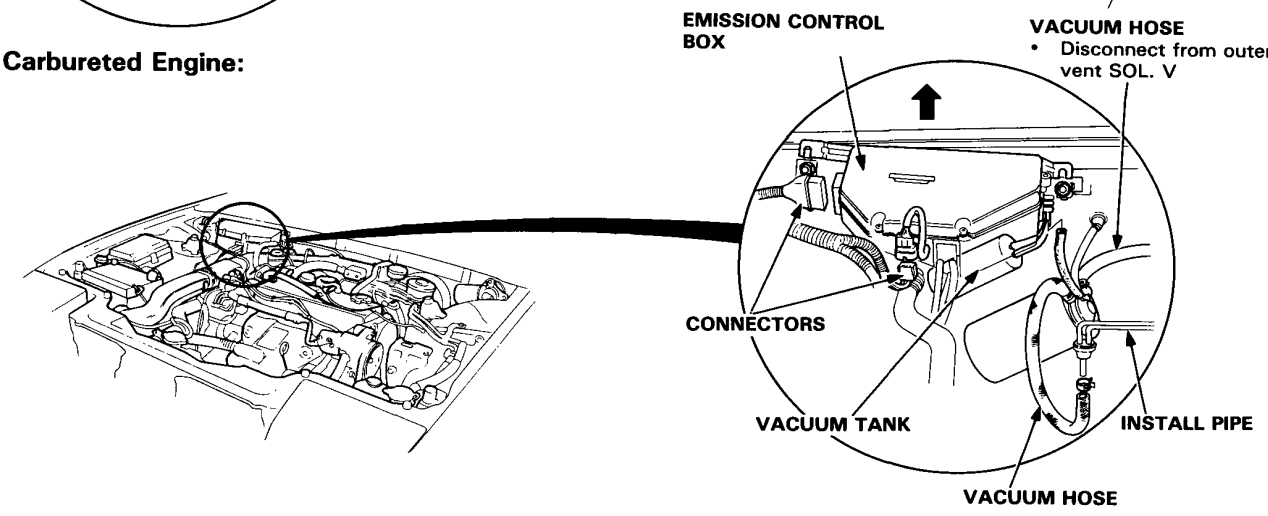


24. Disconnect the two connectors, then remove the emission control box and vacuum tank.

- Don't disconnect the vacuum hoses.

25. Disconnect the brake booster vacuum hose.

Carbureted Engine:



(cont'd)

(cont'd)

26. Remove the power steering pump belt and alternator belt.

27. Disconnect the inlet hose and remove the power steering pump.

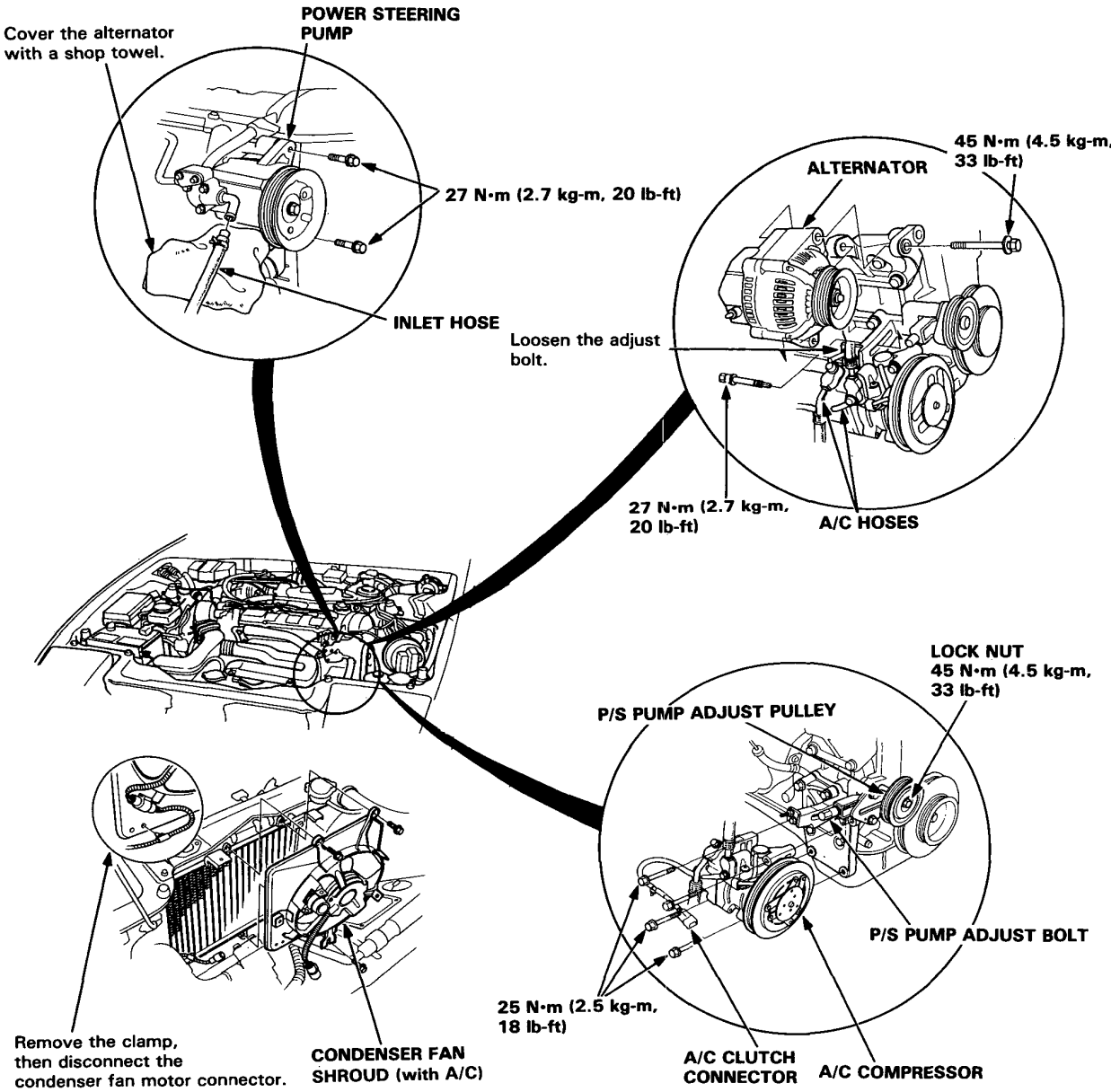
    CAUTION: When the hose is disconnected, fluid will flow out; protect the alternator by covering it with a shop towel.

28. Remove the alternator.

29. Remove the condenser fan shroud.

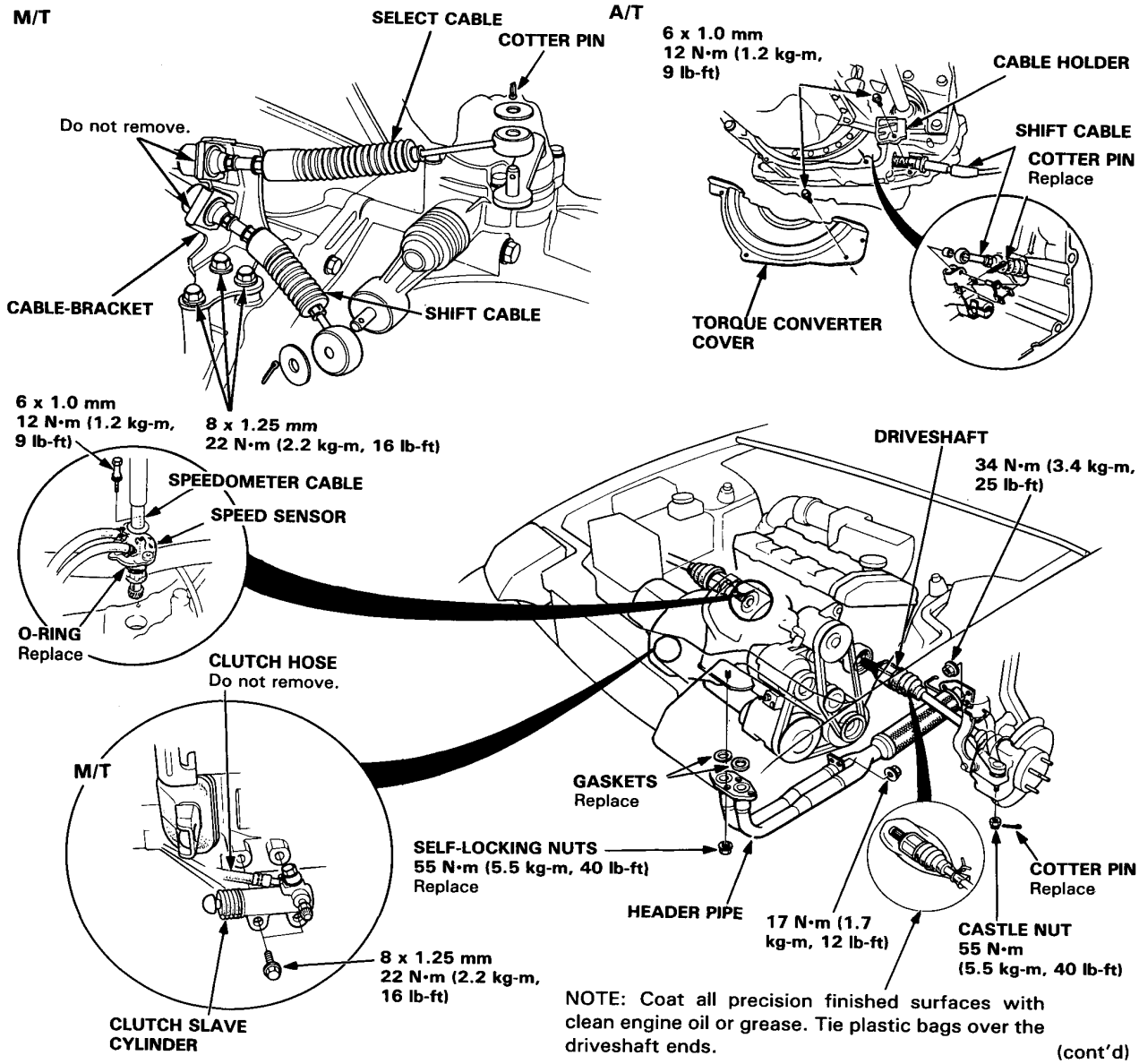
30. Remove the air conditioning (A/C) compressor, then mount compressor on the front beam.
    - Do not disconnect the A/C hoses.

Fuel-Injected Engine shown; Carbureted Engine similar:



31. Disconnect the shift cable and select cable from the transmission, then remove the cable bracket (M/T).
32. Remove the automatic transmission shift cable from the transmission (A/T).
    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.
33. Remove the transmission ground wire.
34. Remove left axle and half shaft.
35. Remove clutch slave cylinder.
    NOTE: Do not disconnect hose from the slave cylinder.
36. Remove speed sensor and speedometer cable.
    NOTE:
    - Take care not to bend the cable when removing it. Do not use pliers to remove the cable. Always replace a kinked cable with a new one.
    - On reassembly, check the cable adjustment.

Fuel-Injected Engine shown; Carbureted Engine similar:



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

(cont'd)

(cont'd)

37. Attach a chain hoist to the engine block and raise the hoist just enough to remove slack from chain.
38. Remove the rear engine mount bolt, then remove the mount bracket.
39. Remove the front engine mount bolt.

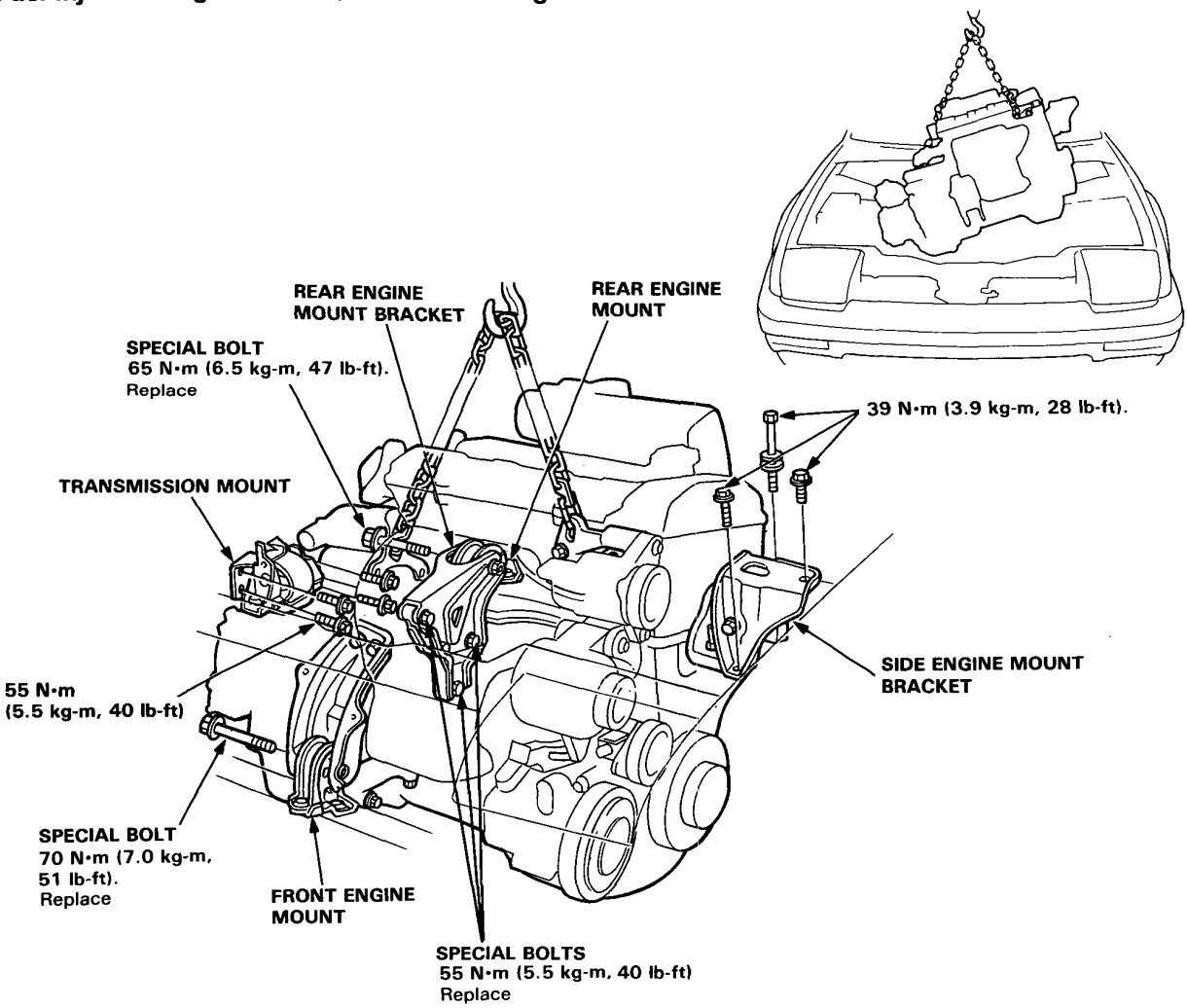
    NOTE: Front and rear engine mount bolts are special bolts. Replace the bolts once they are loosened.

40. Remove the side engine mount bracket bolts.
41. Remove the transmission mount bolt.
42. Check that wires and tubes are completely removed from the engine, and lift the engine slowly with the chain.
43. Tilt the engine, then hoist it out of the engine compartment.

    CAUTION: Use care to avoid damaging the body.

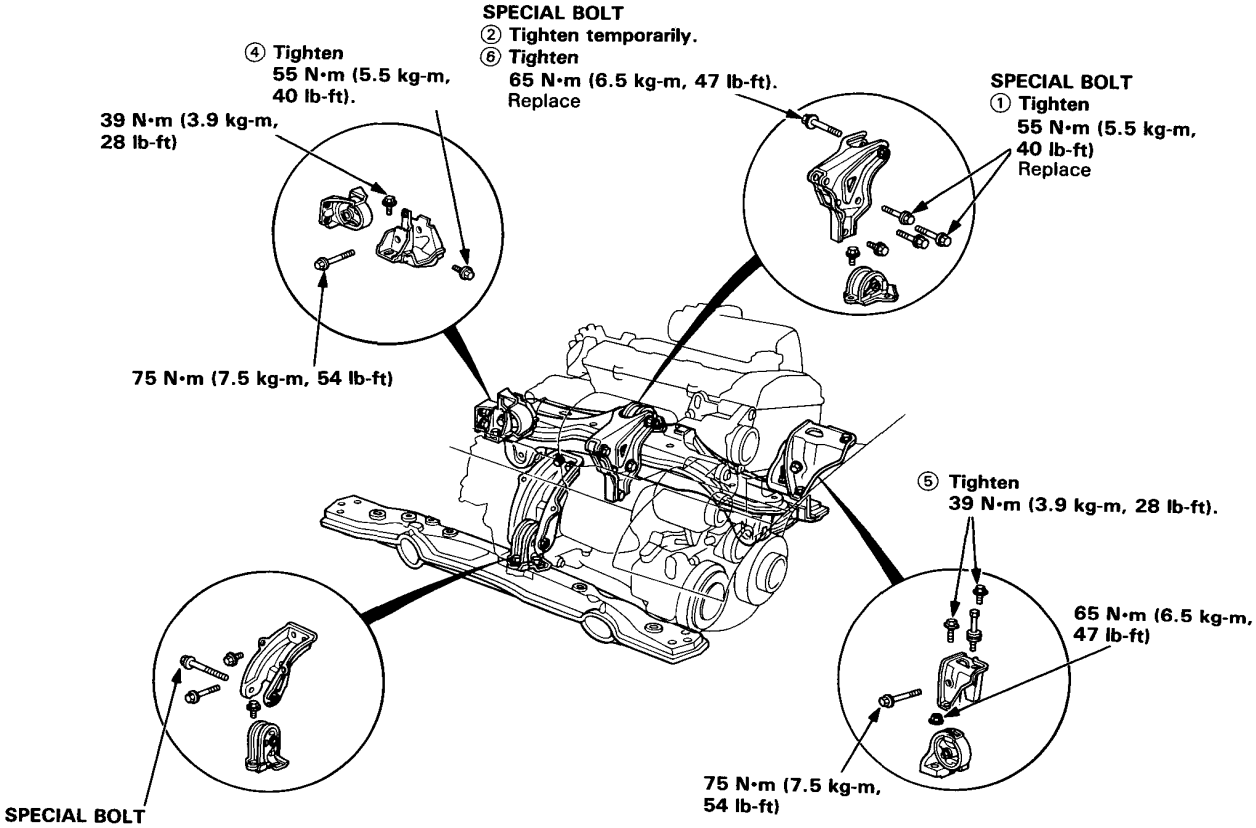
    WARNING Do not crawl under the car when hoisting the engine.

Fuel-Injected Engine shown; Carbureted Engine similar:



NOTE: For proper suppression of noise and vibration, and maximum bushing life, tighten the bolts in the sequence shown with the bushings centered in their mounts.

Fuel-Injected Engine shown; Carbureted Engine similar:



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

- Torque engine mount bolts in sequence shown.

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

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

CAUTION: Use new spring clips on installation.

- Bleed air from the cooling system at the bleed bolt with the heater valve open.
- Adjust the throttle cable tension.
- Adjust the alternator belt and power steering pump belt tension.
- Check the clutch pedal free play.
- Check that the transmission shifts into gear smoothly.
- Install the A/C compressor, connect the wiring and V-belt. (with A/C)
- Clean battery posts and cable terminals with sandpaper, assemble, then apply grease to prevent corrosion.

(cont'd)

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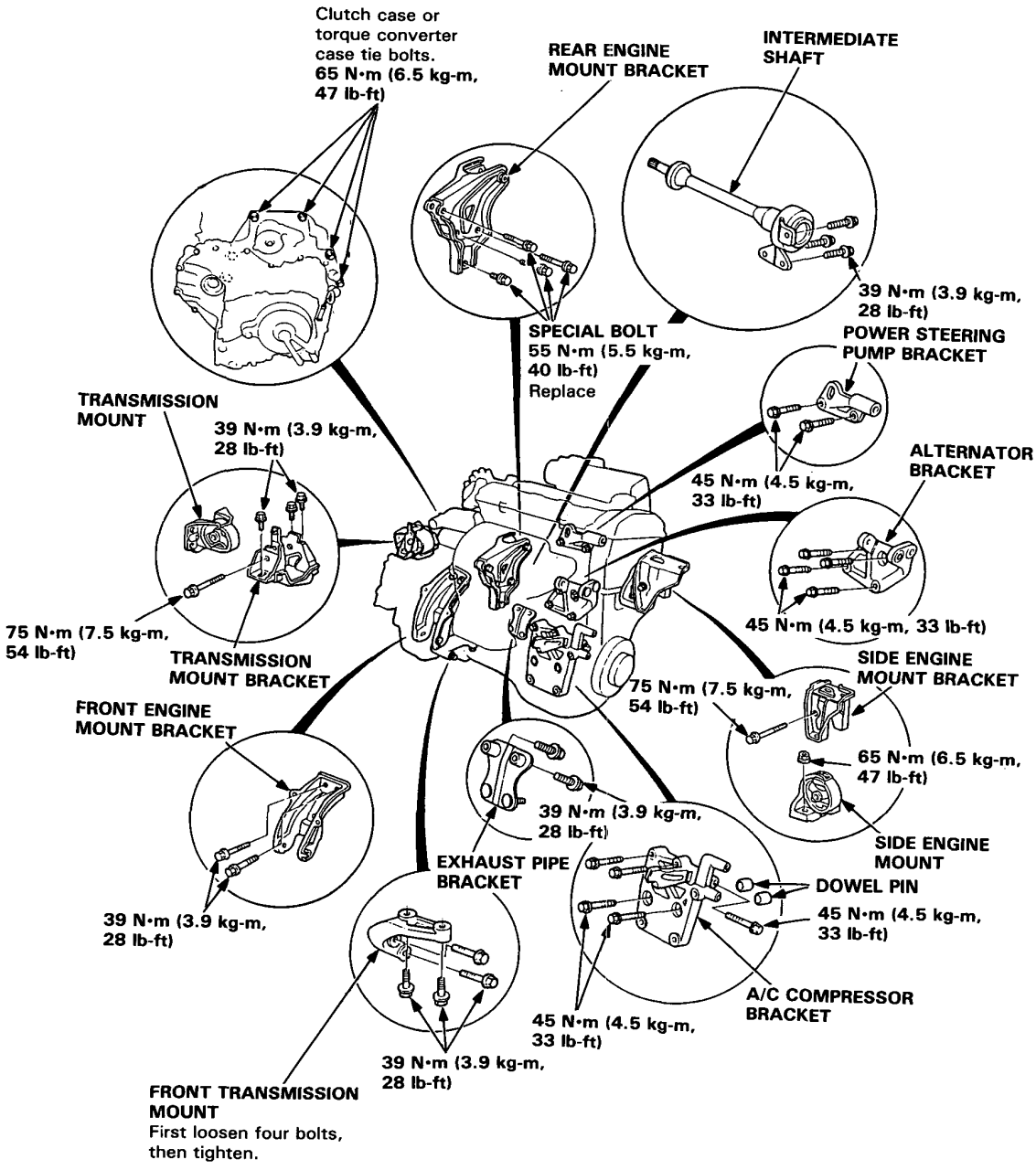
NOTE: For proper suppression of noise and vibration, and maximum bushing life, tighten the bolts to the torque mentioned below.

Fuel-Injected Engine Shown; Carbureted Engine similar:



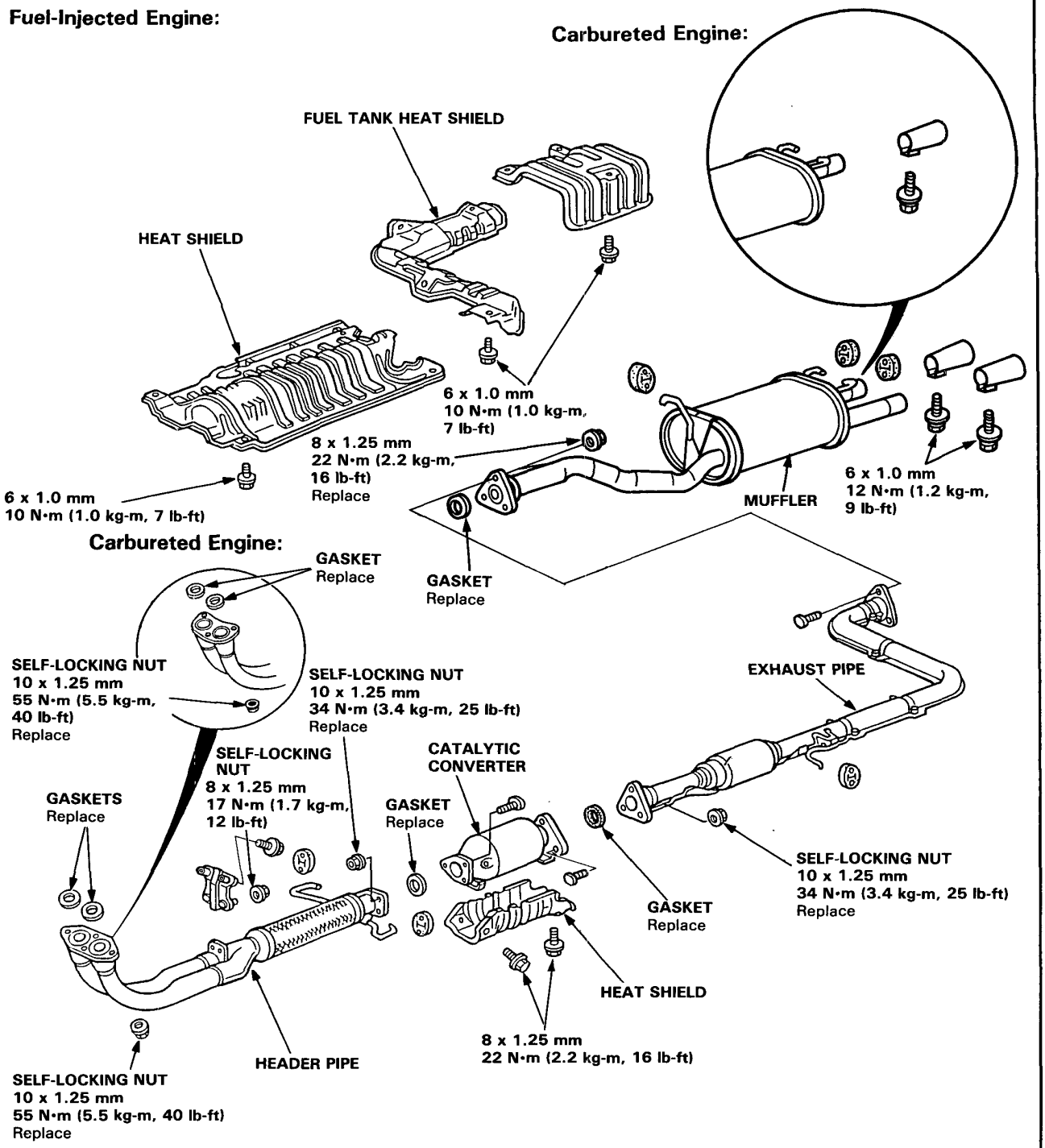
Exhaust Pipe and Muffler

Outline of Model Change

The exhaust muffler finisher has been changed.

Exhaust Pipe and Muffler

Replacement



Fuel and Emissions

Carbureted Engine 6-1
Fuel-Injected Engine 6-65

Fuel and Emissions (Carbureted Engine)

Component Locations
Index 6-2
System Description
Vacuum Connections 6-4
Electrical Connections 6-10
Carburetor
Idle Control System 6-12
Slow Air Jet Control System 6-19
Vacuum Piston Control System 6-22
Idle Speed/Mixture 6-25
Power Valve 6-30
Automatic Choke and Fast Idle
Choke Linkage 6-31
Choke Opener 6-33
Replacement 6-35
Fuel Supply System
Fuel Pump 6-36
Emission Control System
Air Injection Control 6-37
EGR 6-39
Evaporative Emission Control 6-41
PGM- CARB Control System
Troubleshooting Flow Charts
Oxygen Sensor 6-45
Vehicle Speed Sensor 6-47
Manifold Absolute Pressure
Sensor 6-48
Vacuum Switch 6-50
Coolant Temperature (TW)
Sensor 6-53
Ignition Coil Signal 6-55
Intake Air Temperature (TA)
Sensor 6-57
Input Troubleshooting Flow Charts .. 6-59
Clutch Switch Signal 6-60
P/S Oil Pressure Switch Signal 6-62

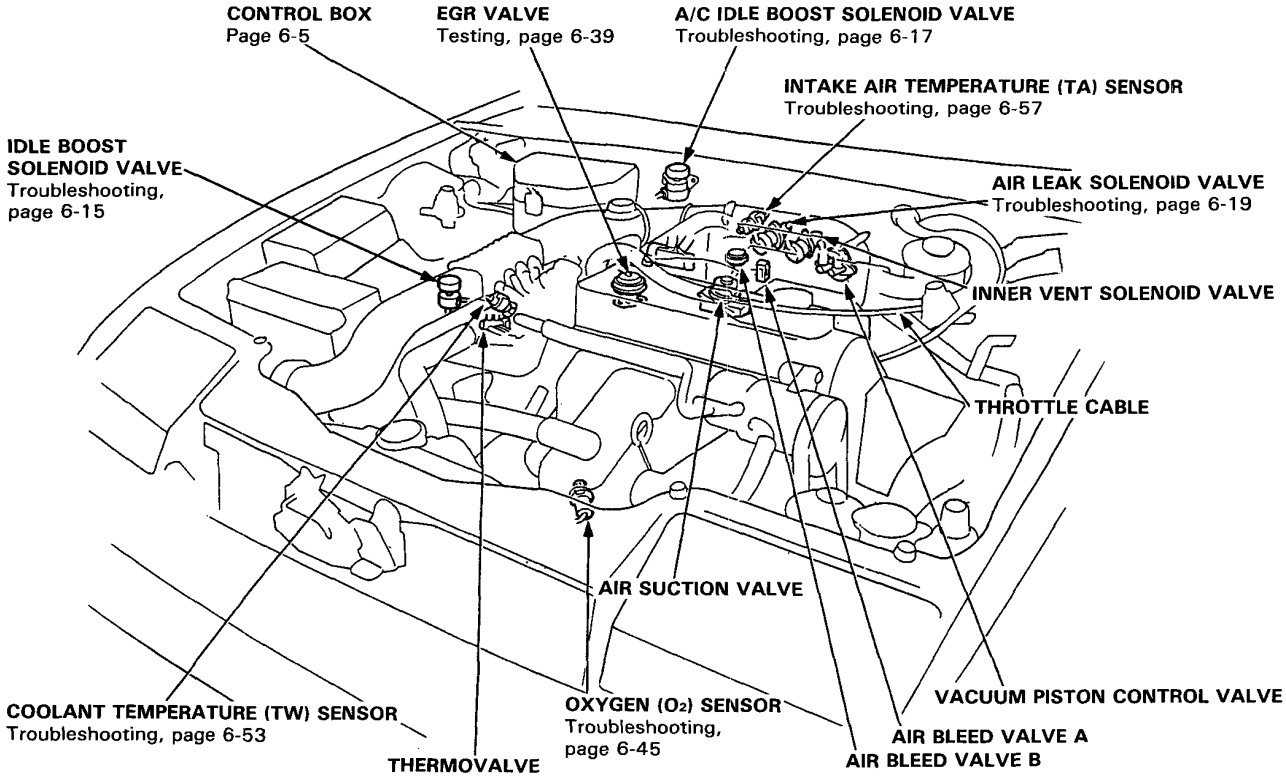
Outline of Model Change

- The idle boost solenoid valve has been adopted. [4WS (except KT, KY model)]
- The air bleed valve C has been adopted. [KX, KS, KZ model]
- The testing of vacuum piston control system has been modified. [KX, KS, KZ model]
- The control box has been modified. [KX, KS, KZ model]
- The testing of power valve has been modified. [KX, KS, KZ model]
- The adjusting of choke linkage has been modified.
- The inspection of cranking leak solenoid valve has been modified.
- The inspection of O_2 sensor, vehicle speed sensor, MAP sensor, vacuum switch, TW sensor, ignition coil signal and TA sensor has been modified. [KX, KS, KZ model]
- The clutch switch has been changed. [KX, KS, KZ model]
- The fuel pump has been modified.

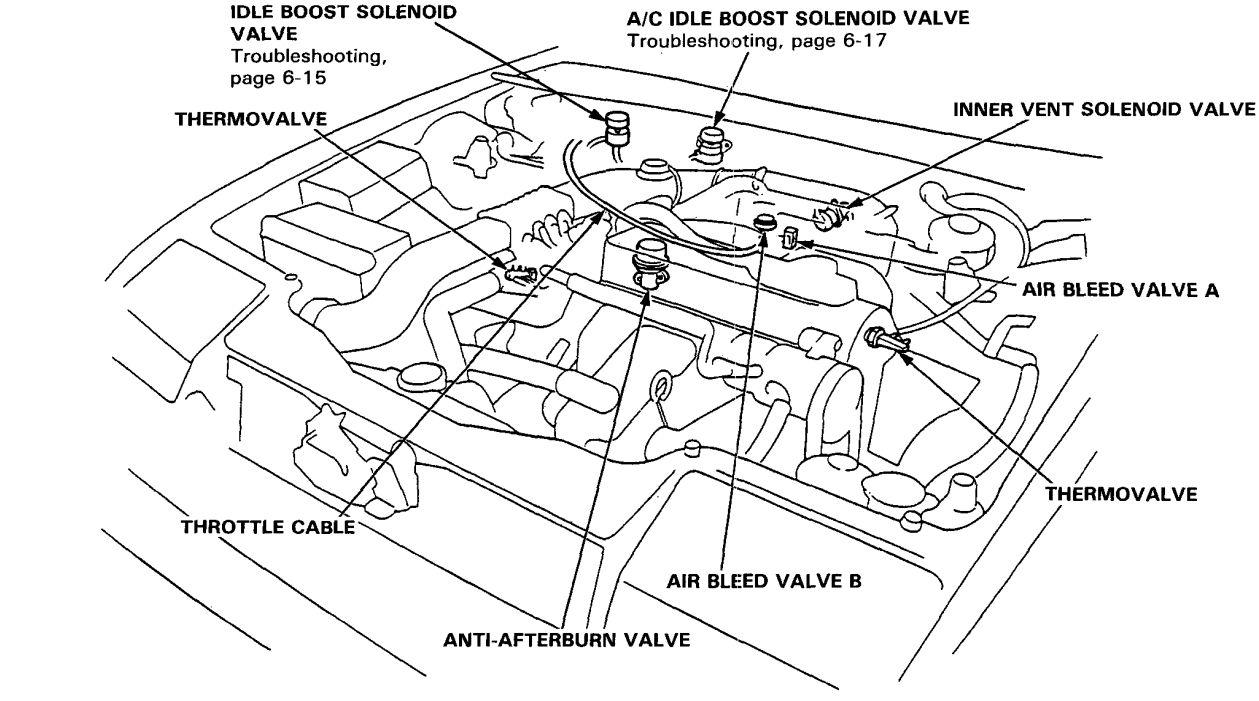
Component Locations

Index

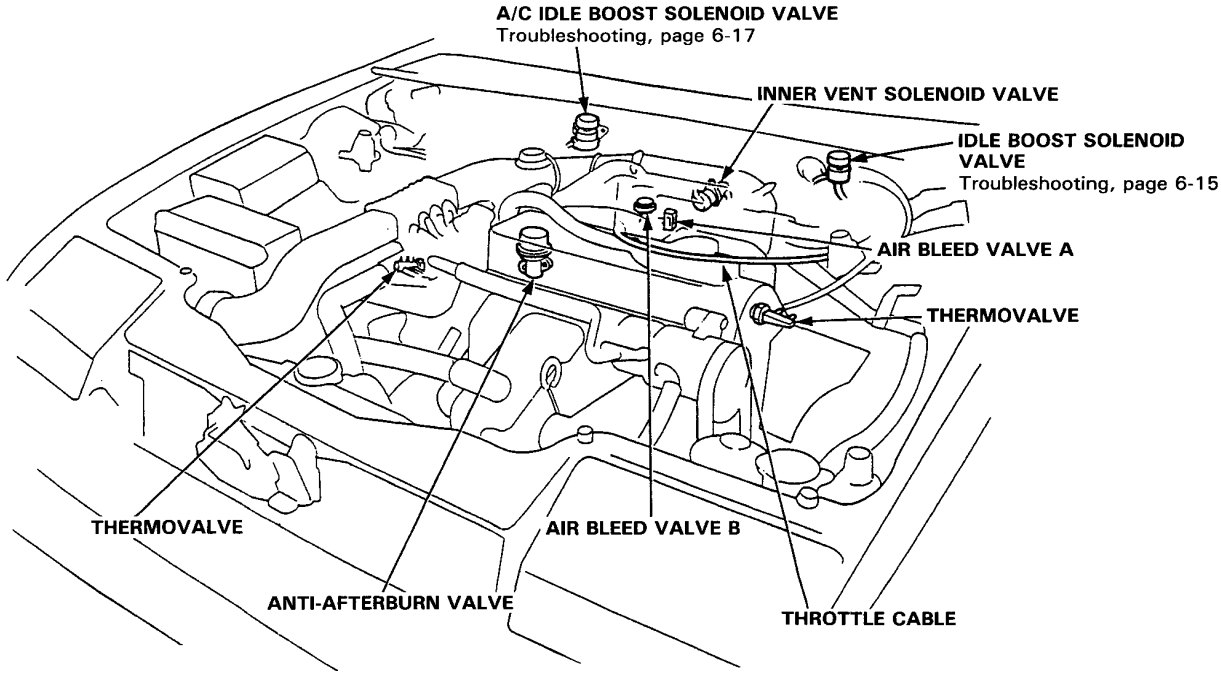
[KX, KS, KZ model (4WS)]



[KF, KG, KW, KB model (4WS)]



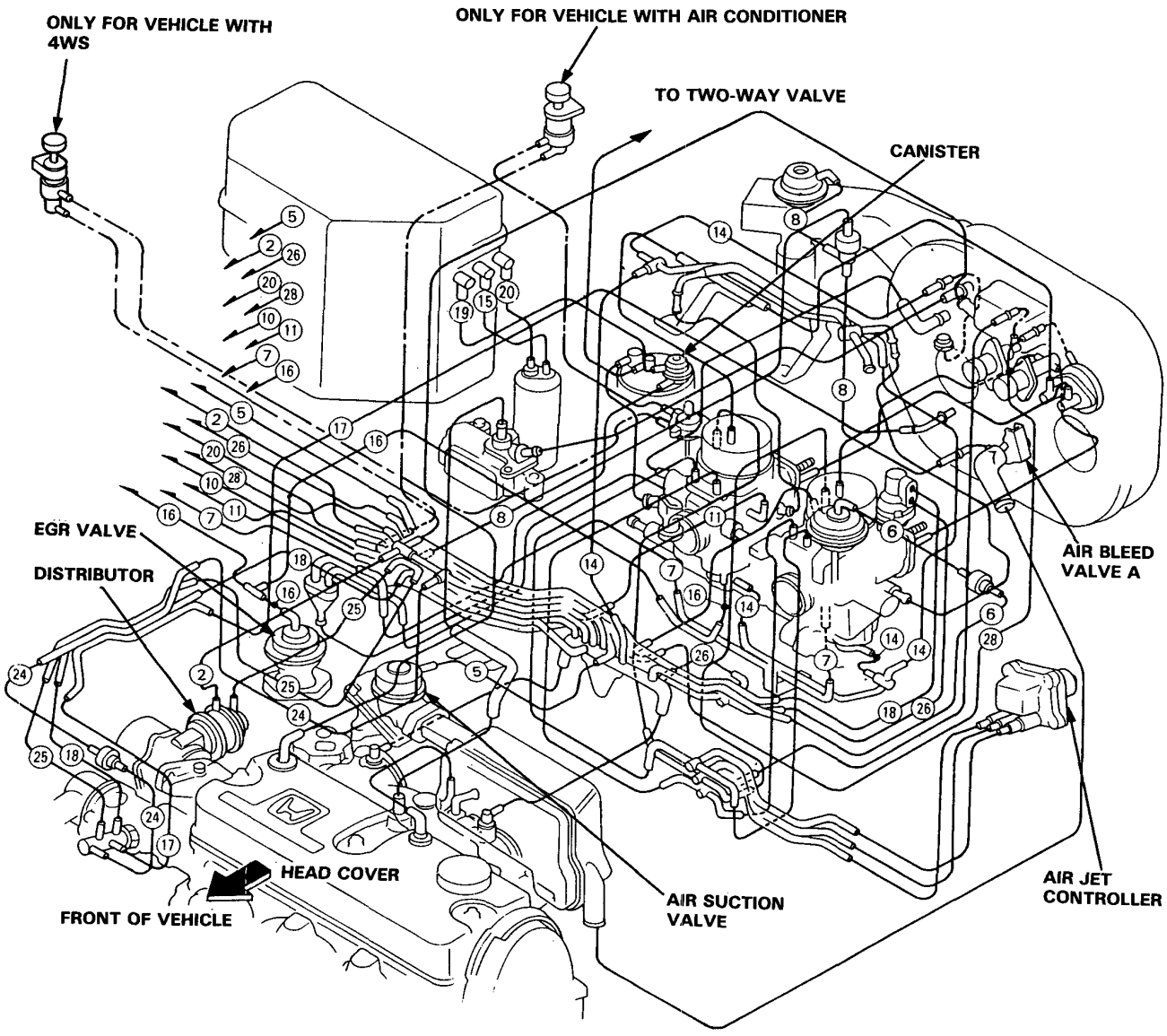
[KE model (4WS)]


A/C IDLE BOOST SOLENOID VALVE
Troubleshooting, page 6-17
INNER VENT SOLENOID VALVE
IDLE BOOST SOLENOID VALVE
Troubleshooting, page 6-15
AIR BLEED VALVE A
THERMOVALVE
THERMOVALVE
AIR BLEED VALVE B
ANTI-AFTERBURN VALVE
THROTTLE CABLE

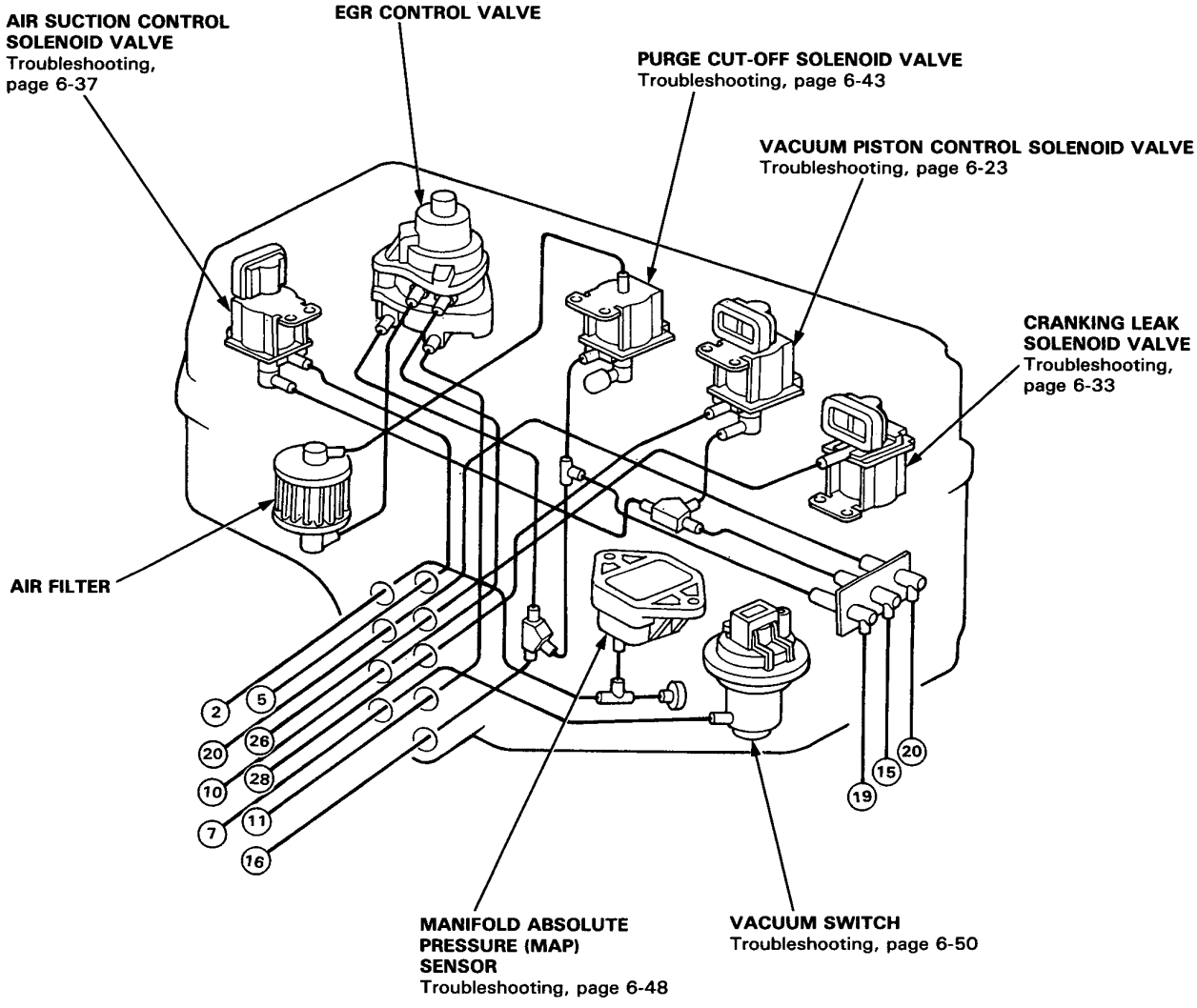
System Description

Vacuum Connections

[KX, KS, KZ model (4WS)]



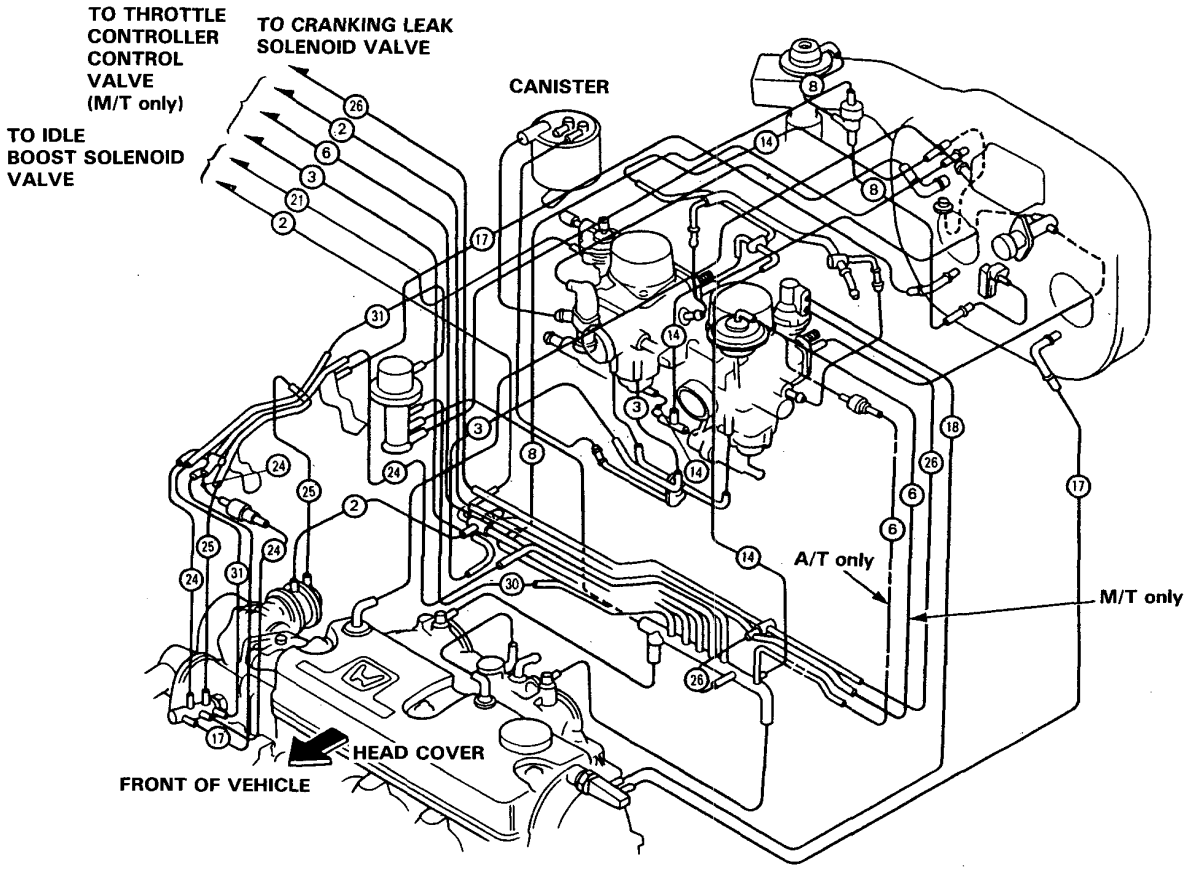
Control Box


AIR SUCTION CONTROL SOLENOID VALVE
Troubleshooting, page 6-37
EGR CONTROL VALVE
PURGE CUT-OFF SOLENOID VALVE
Troubleshooting, page 6-43
VACUUM PISTON CONTROL SOLENOID VALVE
Troubleshooting, page 6-23
CRANKING LEAK SOLENOID VALVE
Troubleshooting, page 6-33
AIR FILTER
2
5
20
26
10
28
7
11
16
19
15
20
MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Troubleshooting, page 6-48
VACUUM SWITCH
Troubleshooting, page 6-50

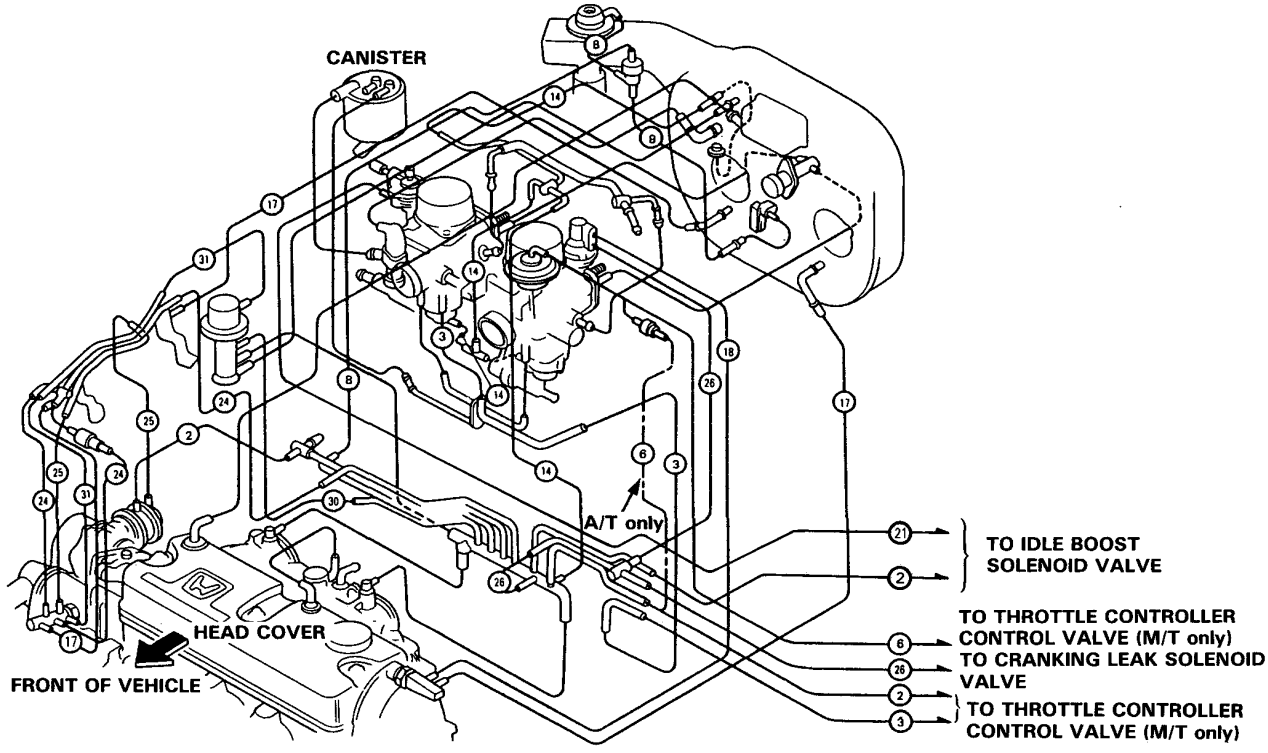
System Description

Vacuum Connections (cont'd)

[KF, KG, KW, KB model (4WS)]



[KE model (4WS)]



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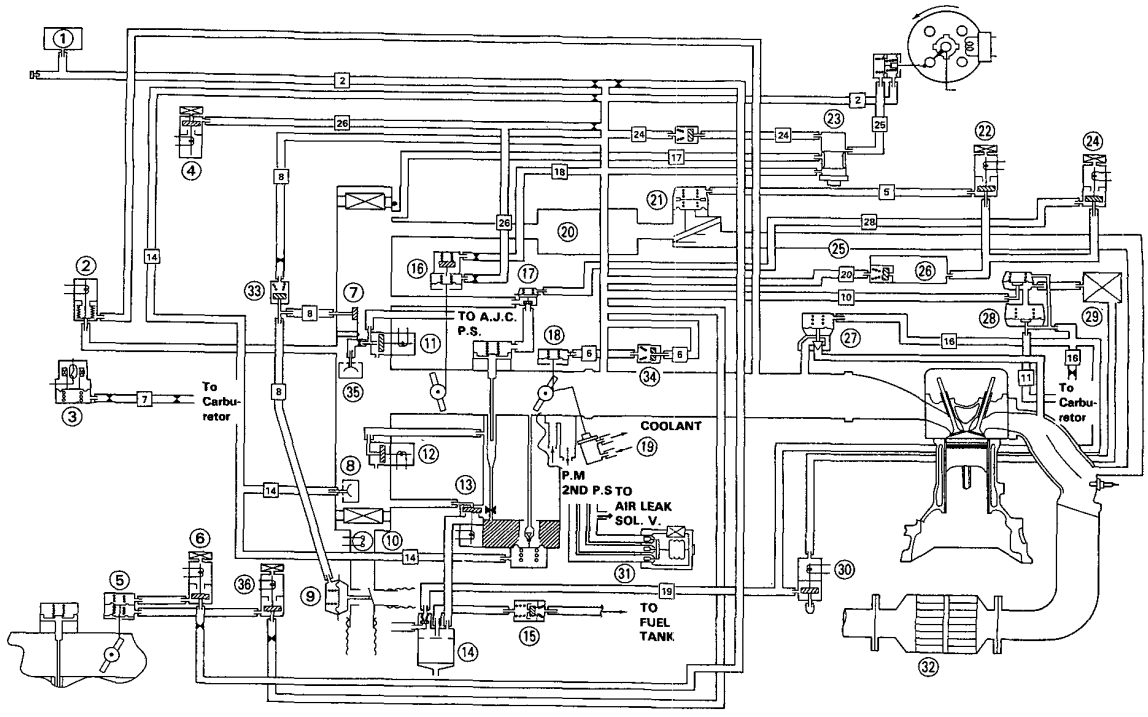
System Description

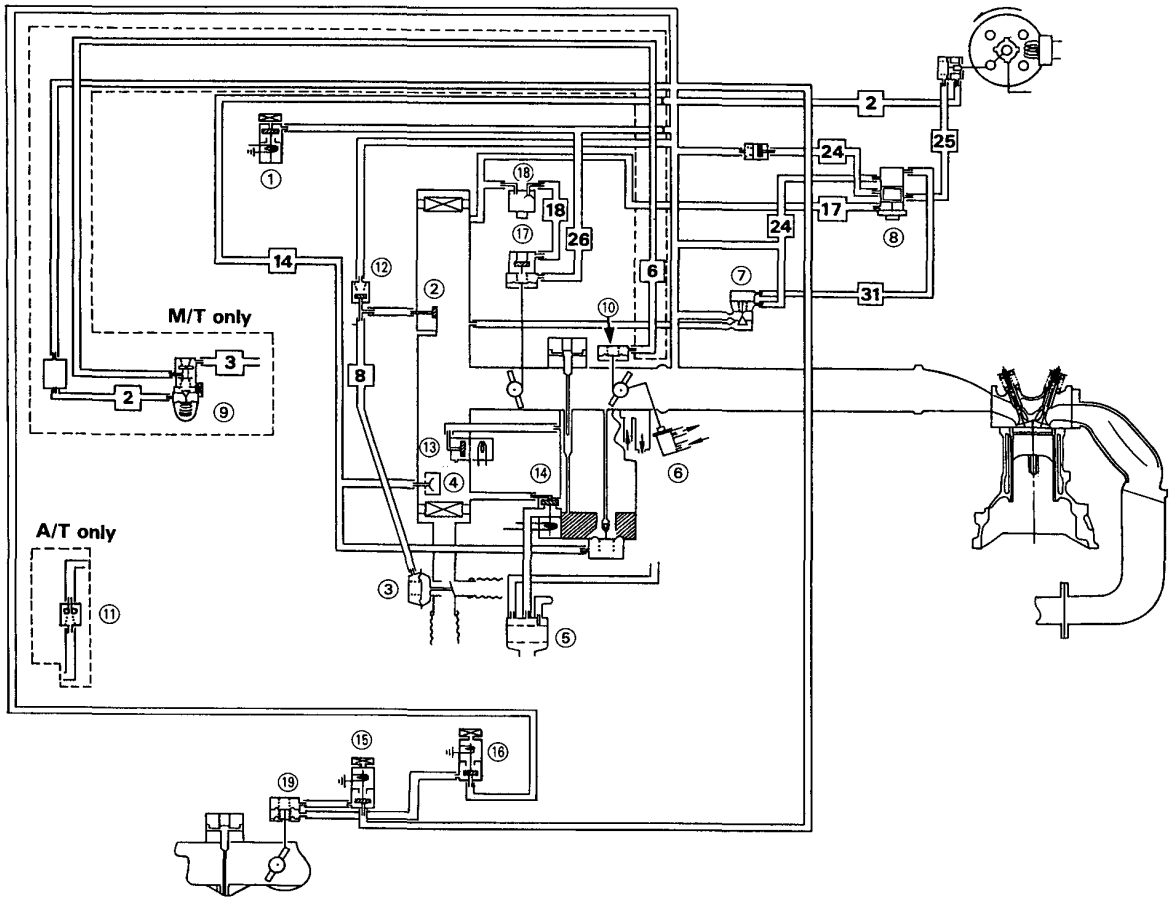
Vacuum Connections (cont'd)

[KX, KS, KZ model (4WS)]



① *MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR*
② EACV
③ VACUUM SWITCH
④ CRANKING LEAK SOLENOID VALVE
⑤ *IDLE BOOST THROTTLE CONTROLLER*
⑥ A/C IDLE BOOST SOLENOID VALVE
⑦ AIR BLEED VALVE A
⑧ AIR BLEED VALVE B
⑨ AIR CONTROL DIAPHRAGM
⑩ INTAKE AIR TEMPERATURE (TA) SENSOR
⑪ AIR LEAK SOLENOID VALVE
⑫ INNER VENT SOLENOID VALVE
⑬ AIR VENT CUT-OFF SOLENOID VALVE
⑭ CANISTER
⑮ TWO-WAY VALVE
⑯ CHOKE OPENER
⑰ VACUUM PISTON CONTROL VALVE
⑱ THROTTLE CONTROLLER
⑲ THERMOWAX VALVE
⑳ SILENCER
㉑ AIR SUCTION VALVE
㉒ AIR SUCTION CONTROL SOLENOID VALVE
㉓ THERMOVALVE
㉔ VACUUM PISTON CONTROL SOLENOID VALVE
㉕ CHECK VALVE C
㉖ AIR CHAMBER
㉗ EGR VALVE
㉘ EGR CONTROL VALVE
㉙ AIR FILTER
㉚ PURGE CUT-OFF SOLENOID VALVE
㉛ AIR JET CONTROLLER
㉜ CATALYTIC CONVERTER
㉝ CHECK VALVE A
㉞ CHECK VALVE C
㉟ AIR BLEED VALVE C
㊱ IDLE BOOST SOLENOID VALVE

[KF, KG, KW, KB, KE model (4WS)]

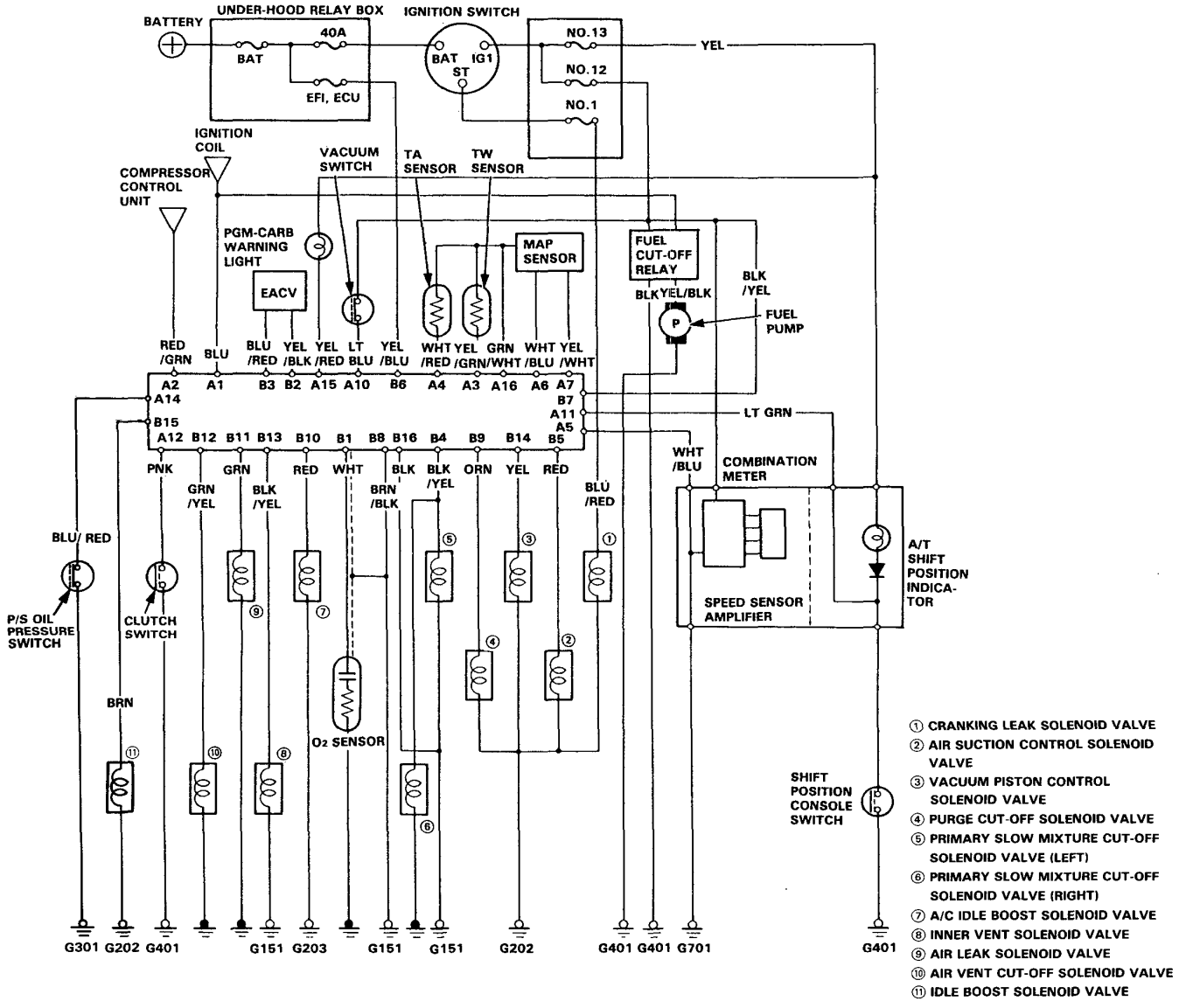


① CRANKING LEAK SOLENOID VALVE
② AIR BLEED VALVE A
③ AIR CONTROL DIAPHRAGM
④ AIR BLEED VALVE B
⑤ CANISTER
⑥ THERMOWAX VALVE
⑦ ANTI-AFTERBURN VALVE
⑧ THERMOVALVE
⑨ THROTTLE CONTROLLER CONTROL VALVE
⑩ THROTTLE CONTROLLER
⑪ CHECK VALVE C
⑫ CHECK VALVE A
⑬ INNER VENT SOLENOID VALVE
⑭ AIR VENT CUT-OFF SOLENOID VALVE
⑮ A/C IDLE BOOST SOLENOID VALVE
⑯ IDLE BOOST SOLENOID VALVE
⑰ CHOKE OPENER
⑱ THERMOVALVE
⑲ IDLE BOOST THROTTLE CONTROLLER

System Description

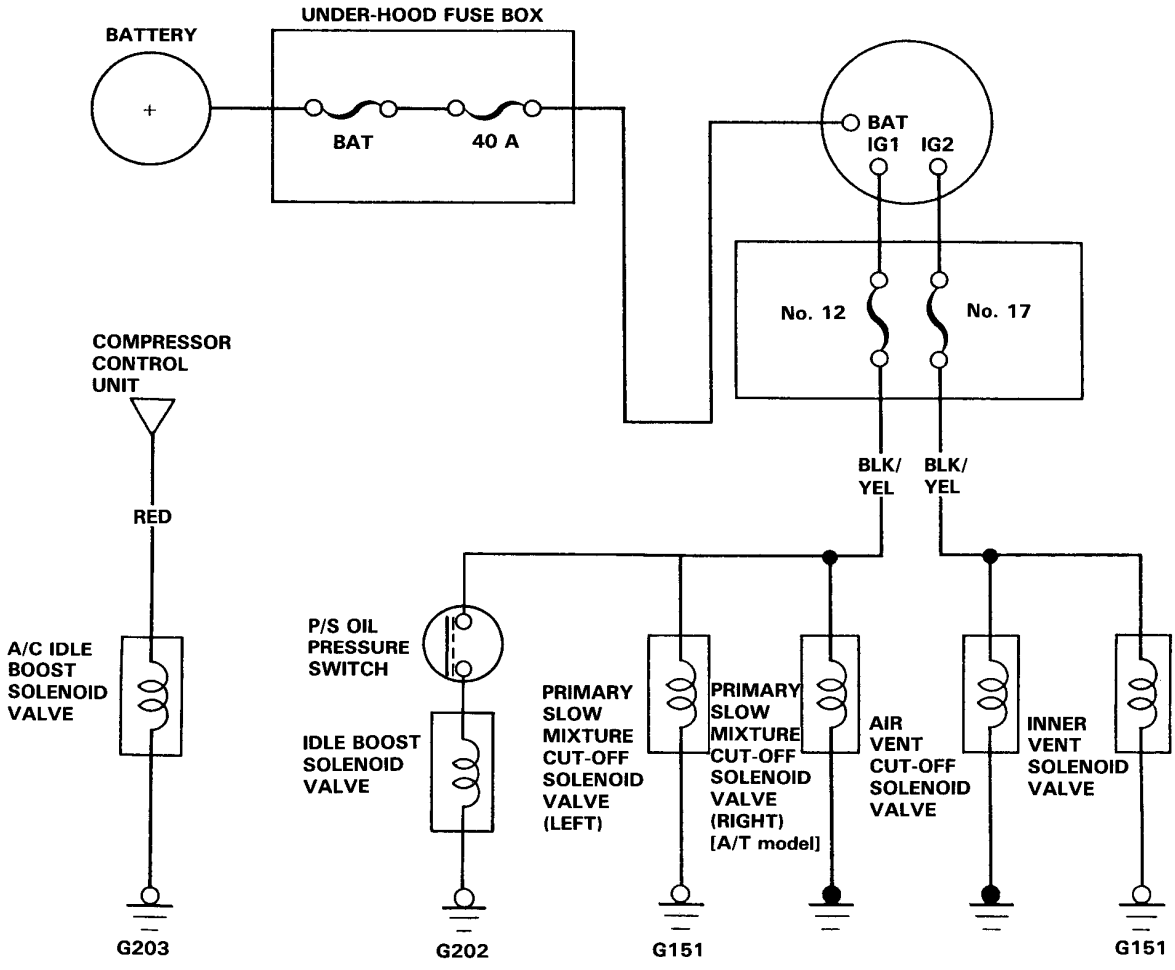
Electrical Connections

[KX, KS, KZ model (4WS)]



① CRANKING LEAK SOLENOID VALVE
② AIR SUCTION CONTROL SOLENOID VALVE
③ VACUUM PISTON CONTROL SOLENOID VALVE
④ PURGE CUT-OFF SOLENOID VALVE
⑤ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE (LEFT)
⑥ PRIMARY SLOW MIXTURE CUT-OFF SOLENOID VALVE (RIGHT)
⑦ A/C IDLE BOOST SOLENOID VALVE
⑧ INNER VENT SOLENOID VALVE
⑨ AIR LEAK SOLENOID VALVE
⑩ AIR VENT CUT-OFF SOLENOID VALVE
⑪ IDLE BOOST SOLENOID VALVE

[Except KX, KS, KZ model (4WS)]



Idle Control System [4WS]

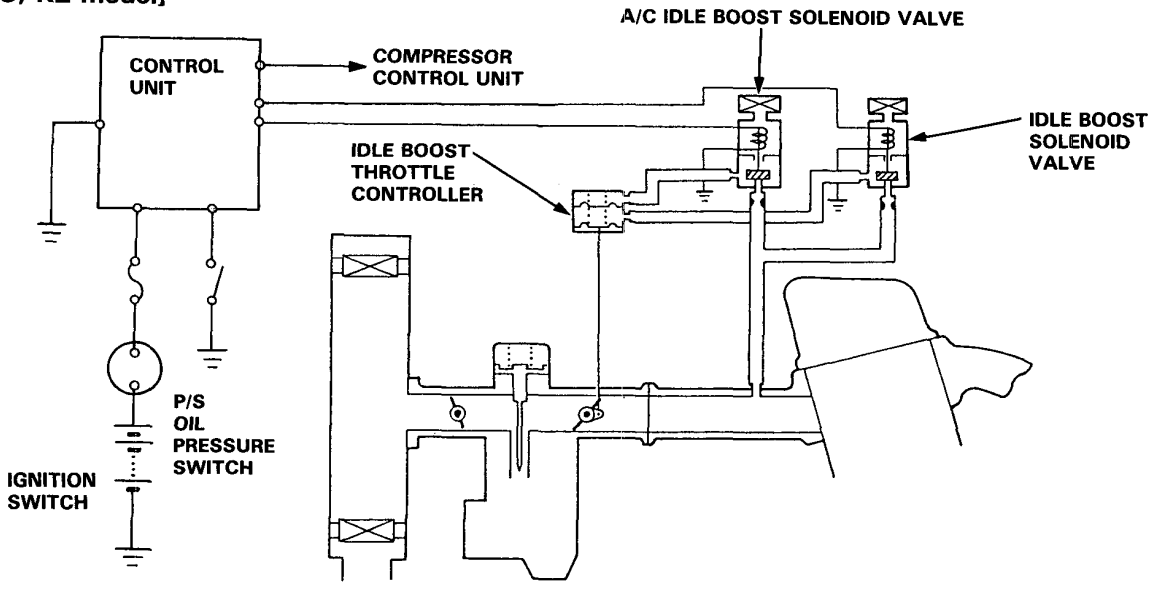
Description

This system prevents the idle speed from dropping while the steering wheel is turning.

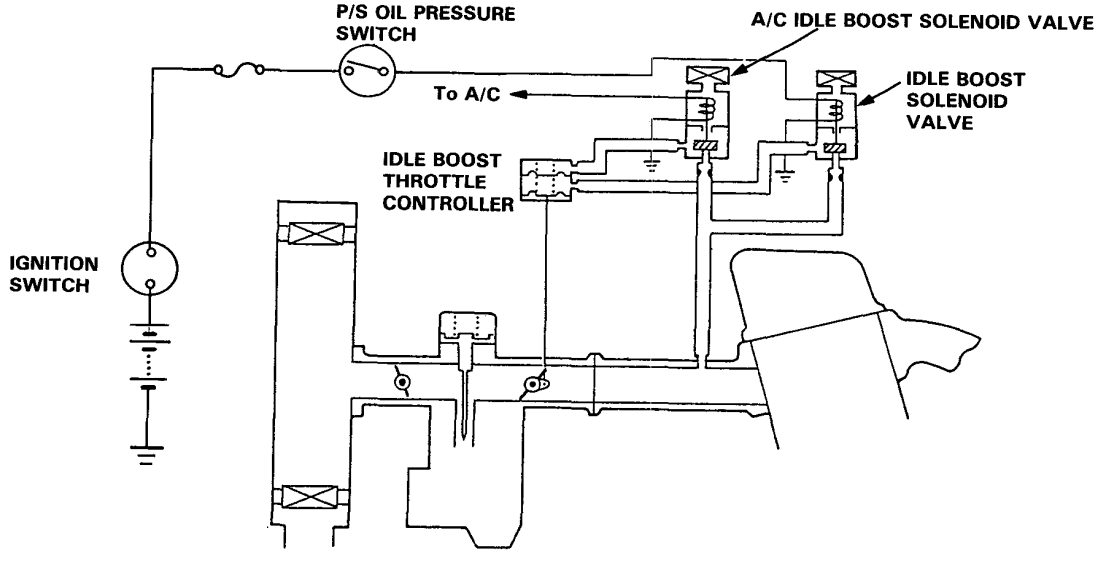
While the steering wheel is turning, manifold vacuum is introduced into the diaphragm chamber of the idle boost controller through the idle boost solenoid valve which is activated by the P/S oil pressure switch. The idle controller's diaphragm rod is retracted to open the throttle valve a certain amount. The amount of this throttle valve opening is adjusted with the idle control screw on the idle controller to maintain the original idle speed.

When the front wheels place in a straight ahead position, the idle boost solenoid valve is deactivated to close the vacuum passage and the vacuum stored in the controller is released through the filter on the solenoid valve.

[KX, KS, KZ model]



[Except KX, KS, KZ model]

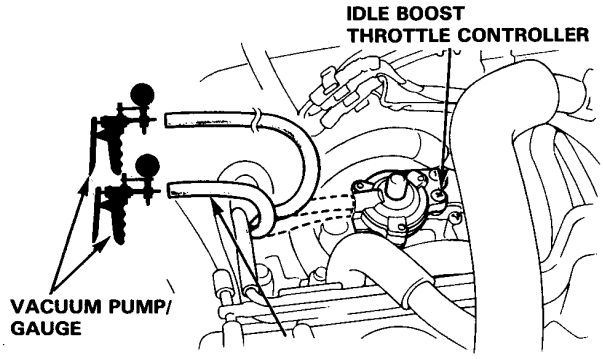


Testing
Idle speed too high in no-load conditions

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

2. Disconnect the two vacuum hoses from the idle boost throttle controller and check each for vacuum.

   There should be no vacuum in both hoses.



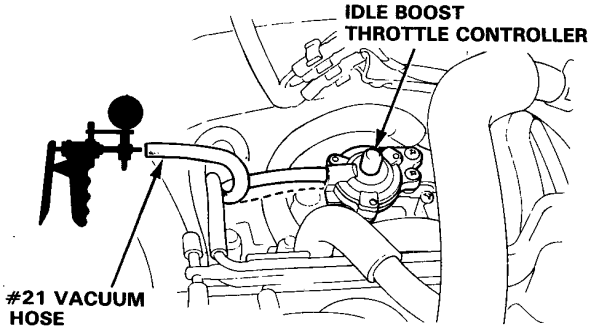
- If there is no vacuum, check the throttle valve shaft for binding or sticking, and replace the idle boost throttle controller.
- If there is vacuum at either hose, go to troubleshooting (#21 hose : page 6-15, outside hose: page 6-17).

Idle speed is rough while the steering wheel is turning

1. KX, KS, KZ model: Check the idle speed is above specified in no-load conditions. when the 2P connector on the P/S oil pressure switch is disconnected.
   Except KX, KS, KZ model: Disconnect the 2P connector on the P/S oil pressure switch, and connect a jumper wire between the 2 terminals on the wire harness. Then check the idle speed is above specified in no-load conditions.

   - If idle speed is as specified in no-load conditions, disconnect the #21 vacuum hose from the idle boost throttle controller and check for 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, check the vacuum hose for proper connection, cracks, blockage or disconnected hose. If OK, go to troubleshooting (page 6-15).

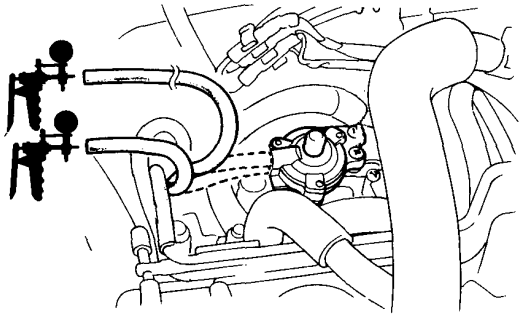
(cont'd)

Idle Control System [4WS] (cont'd)

Idle speed is low with A/C on

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

   There should be vacuum in both hoses.



- If there is vacuum, replace the idle boost throttle controller and recheck.
- If there is no vacuum only at the inside hose, go to troubleshooting (page 6-15).
- If there is no vacuum only at the outside hose, go to troubleshooting (page 6-17).

Troubleshooting Flow Chart

Inspection of Idle Boost Solenoid Valve

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

Disconnect the #21 vacuum hose from the vacuum hose manifold, and connect a vacuum gauge.

Is there vacuum?

YES → Turn the ignition switch OFF.

NO

Turn the ignition switch OFF.

KX, KS, KZ model:
Disconnect the 2P connector on the P/S oil pressure switch.
Except KX, KS, KZ model:
Disconnect the 2P connector on the P/S oil pressure switch, and connect a jumper wire between the 2 terminals on the wire harness.

Turn the ignition switch ON.

(To page 6-16)

KX, KS, KZ model:
Disconnect the 2P connector.
Except KX, KS, KZ model:
Disconnect the 4P connector.

Start the engine.

Measure voltage between BRN (+) terminal and BLK (–) terminal.

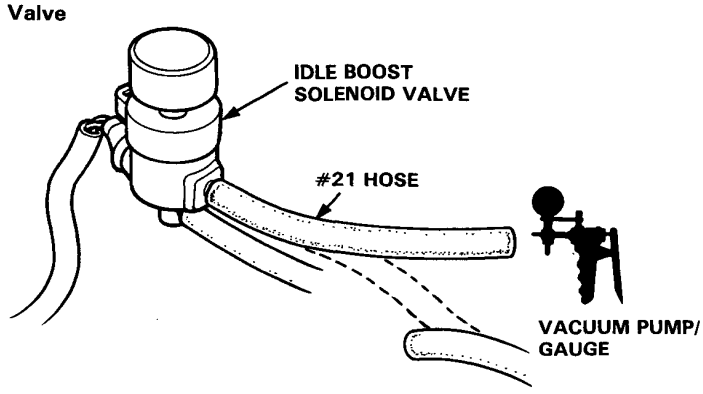
Is there voltage ?

NO → **Replace the solenoid valve.**

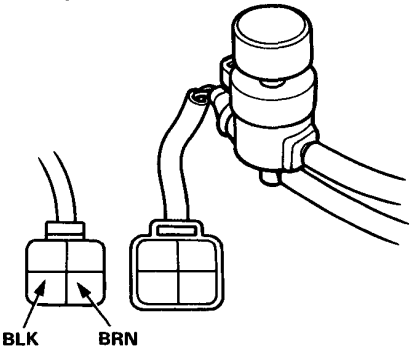
YES

KX, KS, KZ model: Check the self-diagnosis indicator. If OK, check the input troubleshooting (page 6-59).
Except KX, KS, KZ model: Replace the P/S oil pressure switch.

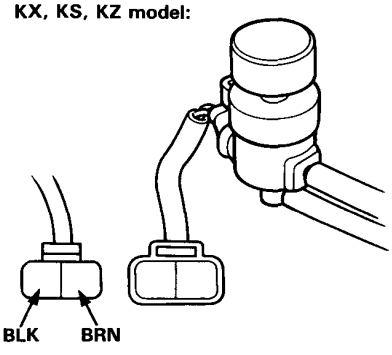
Idle Boost Solenoid Valve



Except KX, KS, KZ model:



KX, KS, KZ model:



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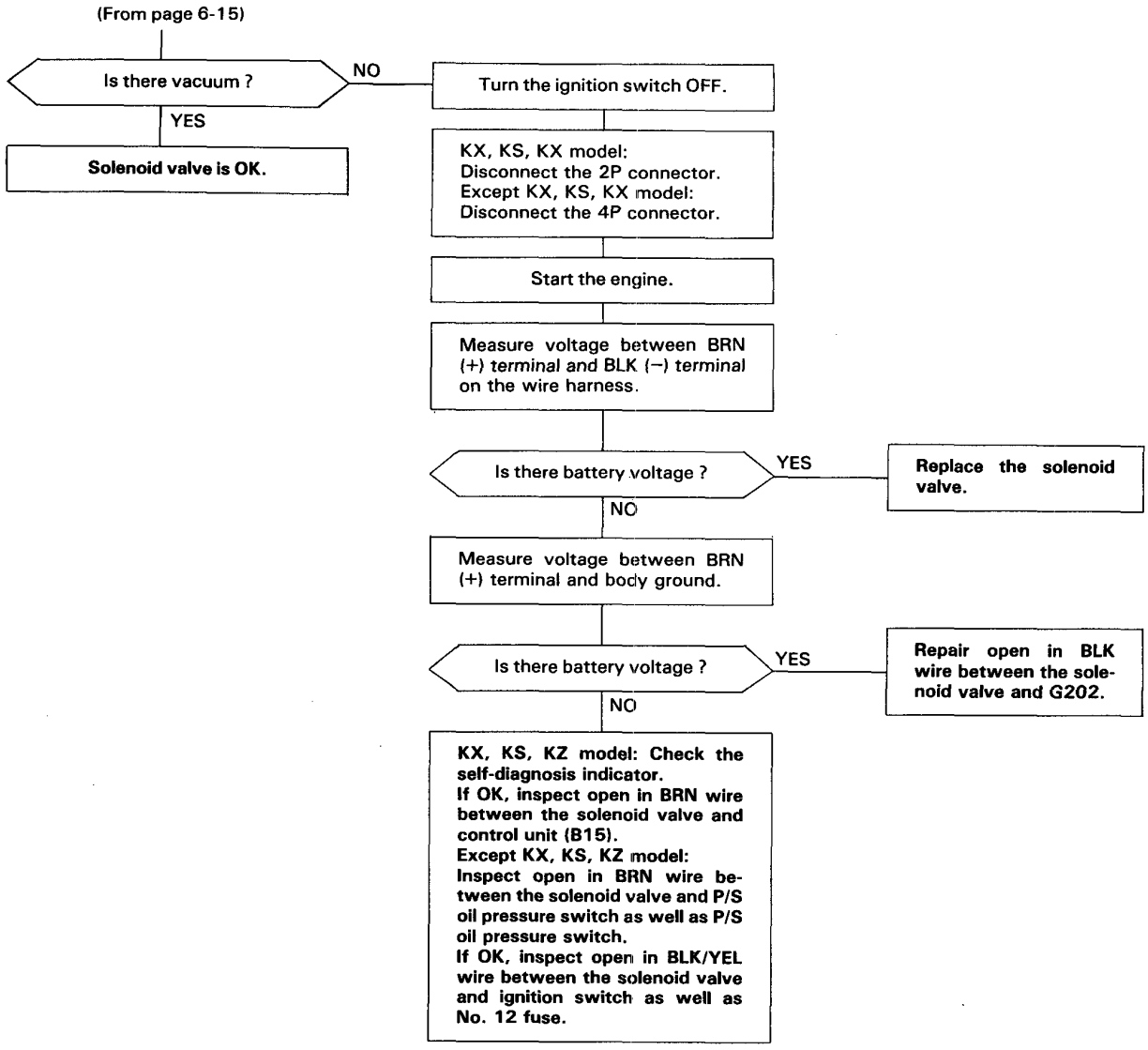
Idle Control System [4WS] (cont'd)



Troubleshooting Flow Chart A/C Idle Boost Solenoid Valve

Inspection of A/C Idle Boost System

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

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

Is there vacuum ? YES → Disconnect the 2P connector near the solenoid valve.

NO

Turn the blower switch ON.

Turn the A/C switch ON.

Is there vacuum ? NO → Disconnect the 2P connector near the solenoid valve.

YES

A/C Idle Boost solenoid valve and A/C signal are OK.

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

(To page 6-18)

Is there vacuum ? YES → **Replace the solenoid valve.**

NO

Inspect the A/C signal.

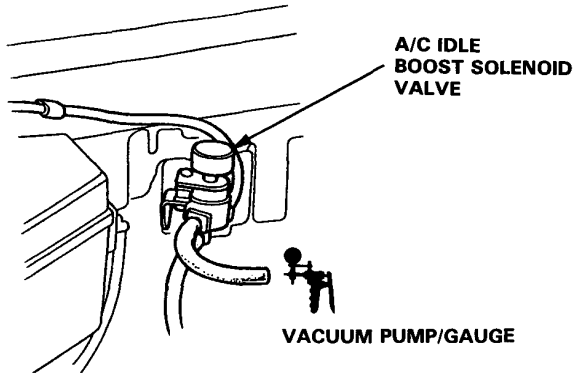
Measure voltage between RED (+) terminal and BLK (−) terminal on the wire harness.

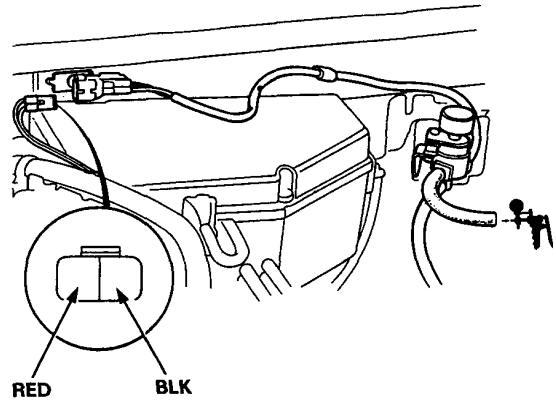
Is there battery voltage ? NO

YES

Disconnect the lower vacuum hose from the solenoid valve and connect a vacuum gauge to the disconnected hose.

(To page 6-18)





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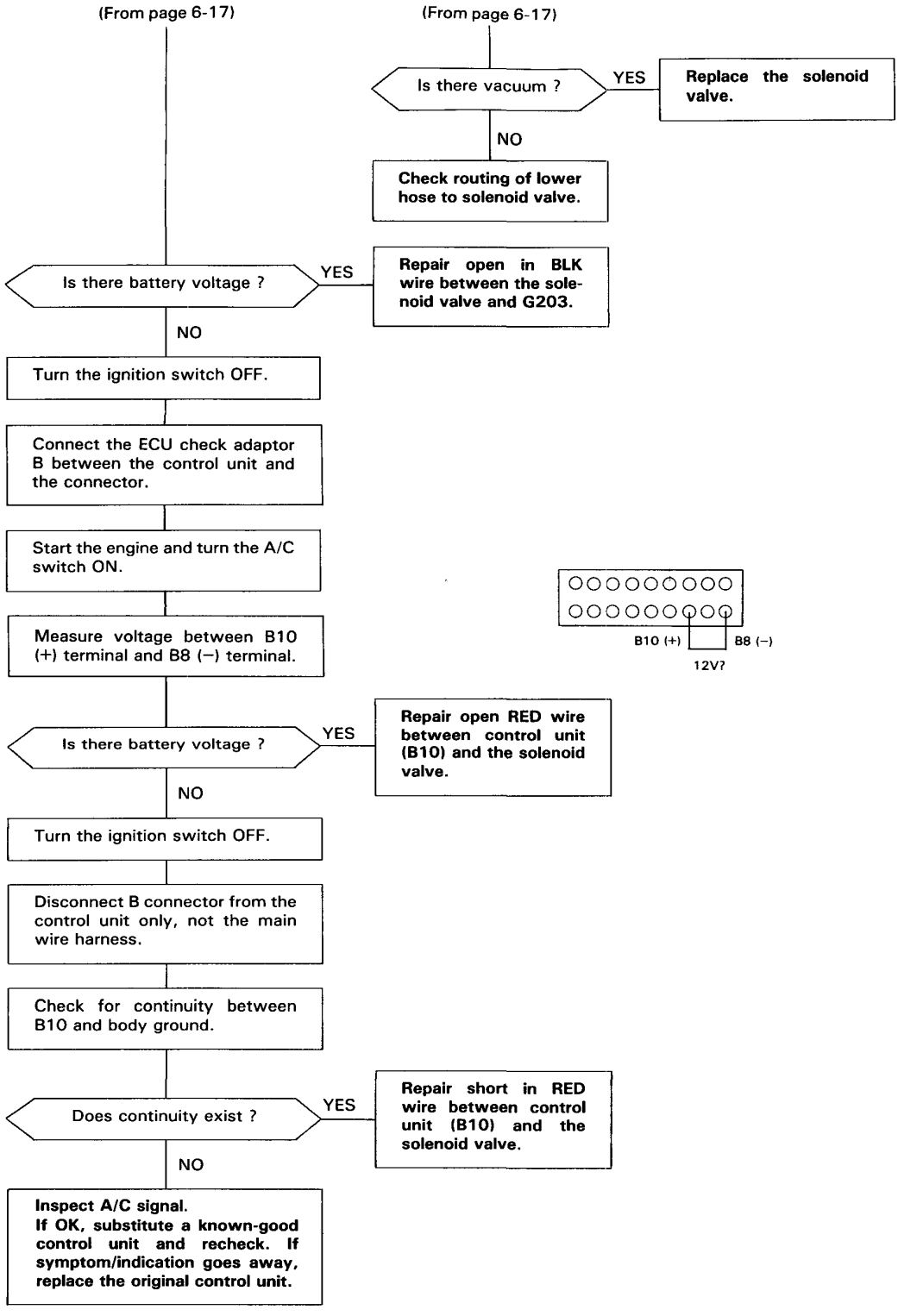
Idle Control System [4WS] (cont'd)



Troubleshooting Flow Chart Air Leak Solenoid Valve

Inspection of Air Leak Solenoid Valve

Remove the air cleaner cover and filter element.

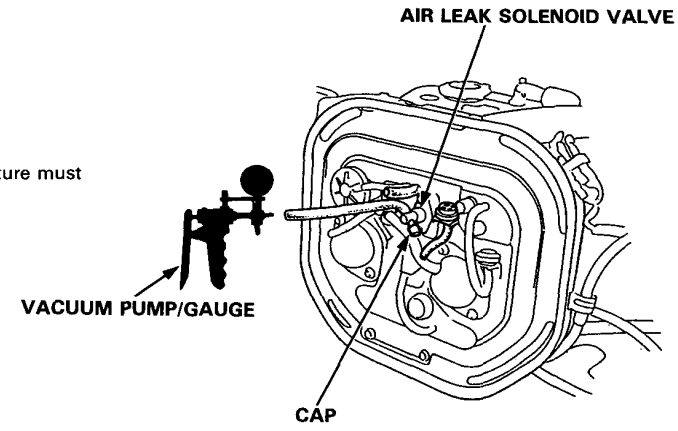
Disconnect the vacuum hose to the air bleed valve C then cap the solenoid valve.

Disconnect the vacuum hose and connect a vacuum pump.

NOTE: Intake air temperature must be below 70°C (158°).

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

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

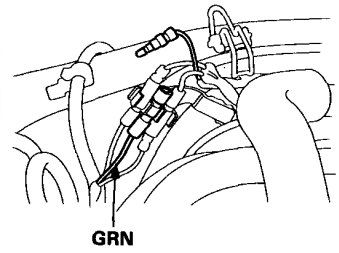


Does solenoid valve hold vacuum ?

NO

Turn the ignition switch OFF.

Disconnect the GRN connector near the air cleaner.



Start the engine.

Measure voltage between GRN (+) and body ground.

Is there battery voltage ?

NO

Check the self-diagnosis indicator. If OK, repair open in GRN wire between the solenoid valve and control unit (B11).

YES

Replace the solenoid valve.

YES

Warm up the engine.

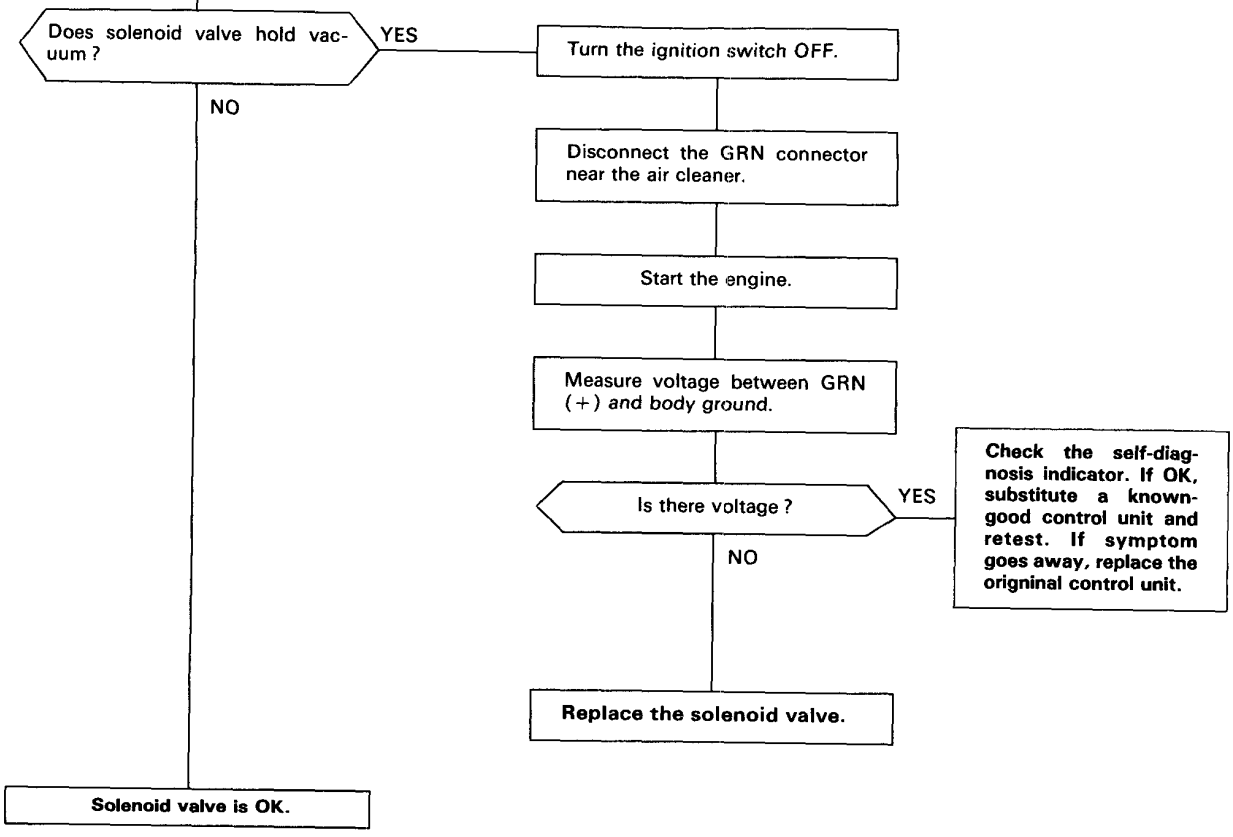
NOTE: If the intake air temperature is below 70° C (158°F), warm the TA sensor with a dryer.

(To page 6-20)

(cont'd)

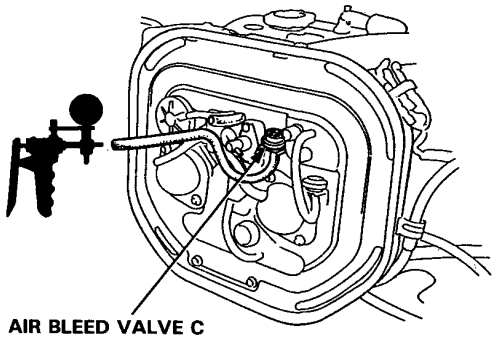
Slow Air Jet Control System [KX, KS, KX] (cont'd)

(From page 6-19)



Air Bleed Valve C Testing

1. Remove the air cleaner cover and filter element.
2. Disconnect the vacuum hose from the air leak solenoid valve, and connect a vacuum pump.



3. Apply vacuum.

   NOTE: Temperature must be below 63°C (145.4°F).

   It should hold vacuum.

   - If it does not hold vacuum, replace the air bleed valve C.

4. Warm the air bleed valve C.
   NOTE: Temperature must be above 63°C (145.4°F).

   It should not hold vacuum.

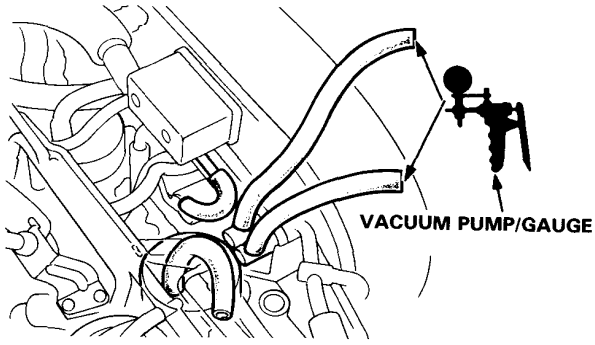
   - If it holds vacuum, replace the air bleed valve C.

Vacuum Piston Control System [KX, KS, KX]

Testing

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

   There should be a restricted vacuum leak.



   - If it does not hold vacuum at all, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, then, if necessary, replace the vacuum piston control valve.

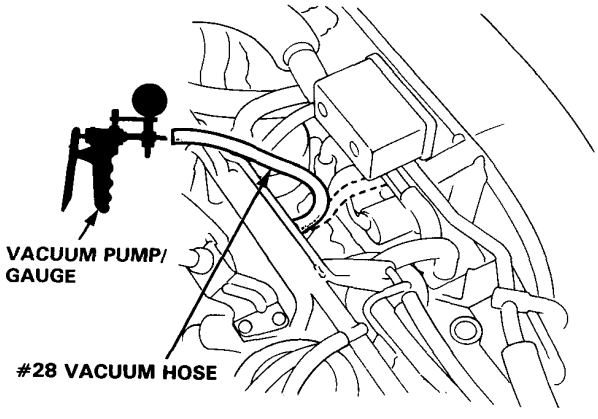
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).

3. Check for vacuum.

   It should not hold vacuum.
   - If it holds vacuum, check the vacuum hose for proper connection or blockage, and go to step 4.
   - If it does not hold vacuum, go to step 5.

4. Disconnect the #28 vacuum hose from the air cleaner and connect a vacuum pump.

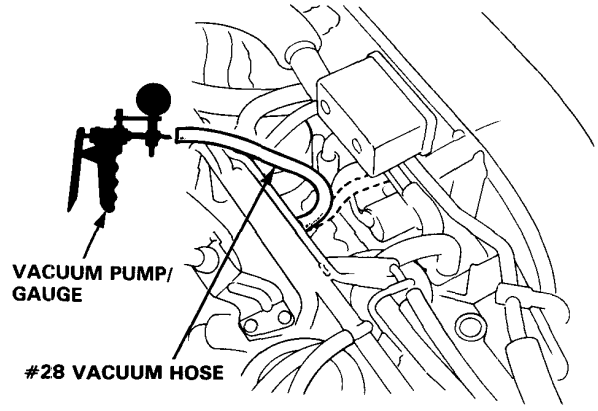
   There should be vacuum.



   - If there is vacuum, replace the vacuum piston control valve.
   - If there is no vacuum, go to troubleshooting (page 6-23).

5. Disconnect the #28 vacuum hose from the air cleaner and connect a vacuum pump.
   Quickly raise engine speed to 3,000 min^{-1} (rpm) and close the throttle suddenly, then check vacuum.

   There should be no vacuum for a moment.



   - If vacuum did not drop momentarily, go to troubleshooting (page 6-23).

Troubleshooting Flow Chart Vacuum Piston Control Solenoid Valve

Inspection of Vacuum Piston Control Solenoid Valve

Remove the control box and open the control box lid.

Disconnect the lower vacuum hose of the solenoid valve from the 3-way joint and connect a vacuum pump.

Disconnect the #28 vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum gauge.

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

Apply vacuum.

Is vacuum indicated on the gauge ?

NO

Turn the ignition switch OFF.

Disconnect the 8P connector on the control box.

Start the engine.

Measure voltage between YEL (+) terminal and BLK (–) terminal on the wire harness.

Is there battery voltage ?

YES

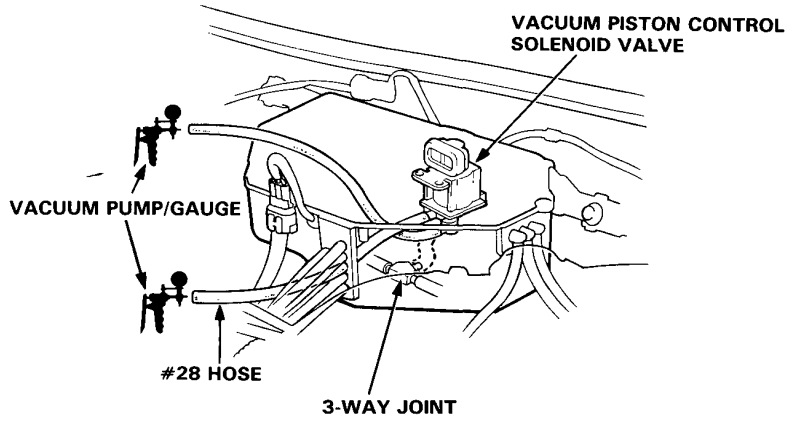
Replace the solenoid valve.

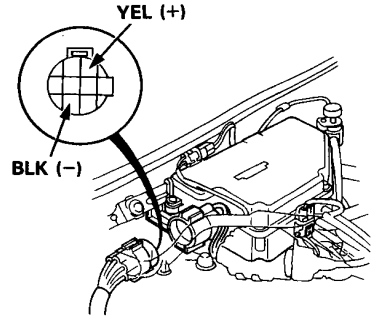
NO

(To page 6-24)

YES

(To page 6-24)





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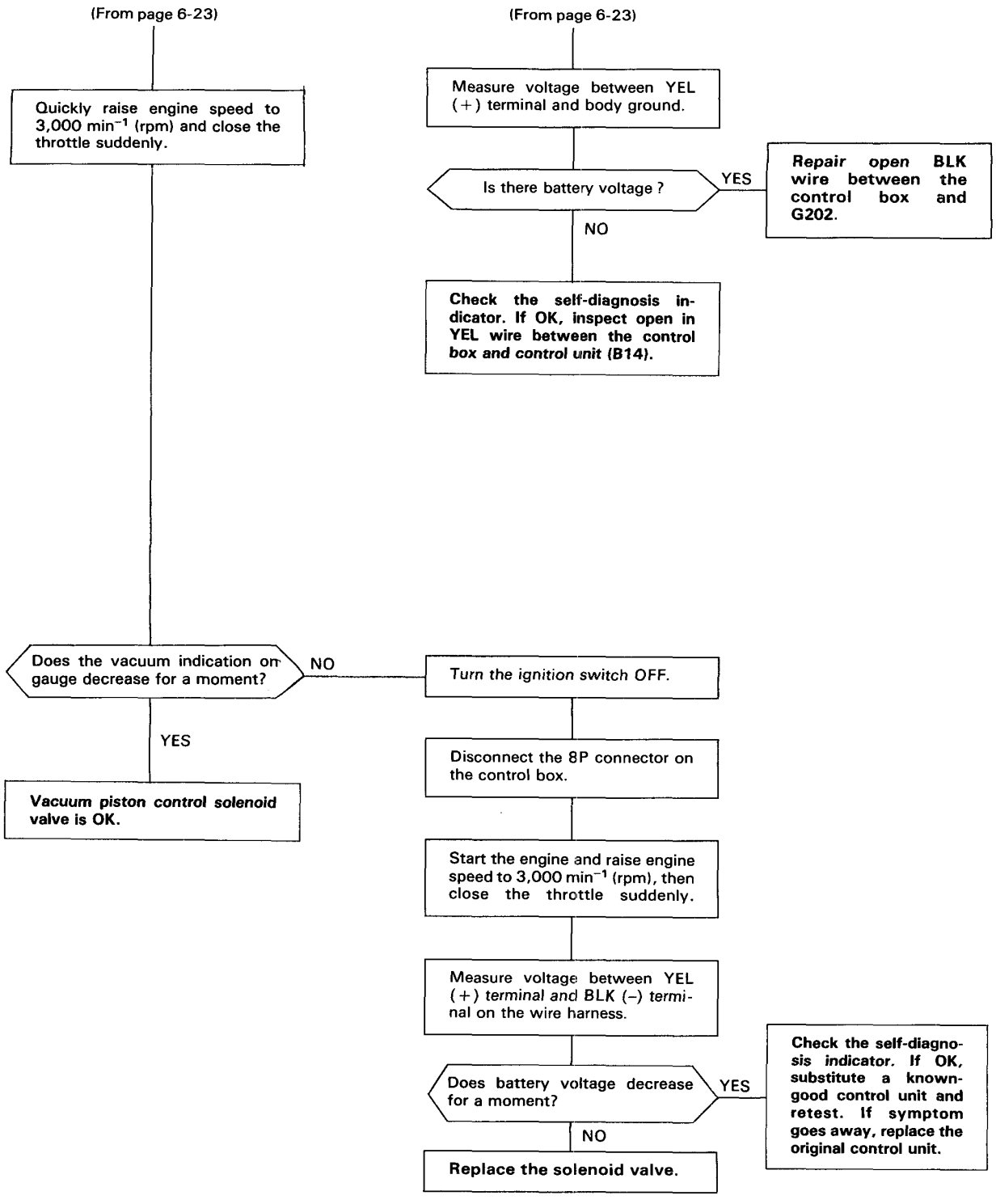
Vacuum Piston Control System [KX, KS, KX] (cont'd)



[KS model]

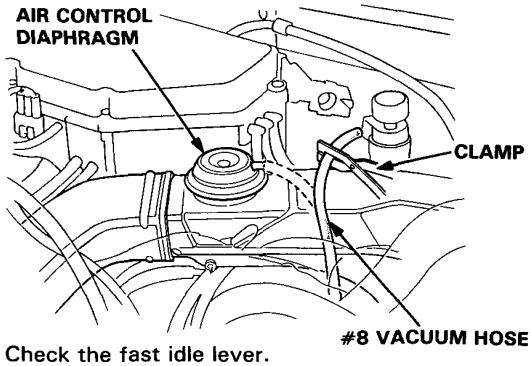
Inspection/Adjustment

Propane Enrichment Method

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

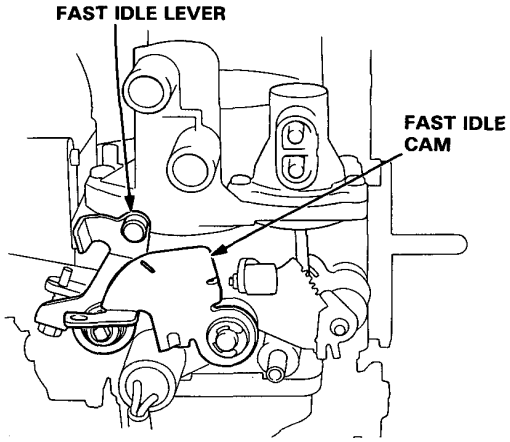
NOTE:
- This procedure requires a propane enrichment kit.
- Check that the carburetors are synchronized properly, self diagnosis indicator before making idle speed and mixture inspections.

1. Start the engine and warm up to normal operating temperature (the cooling fan comes on).
2. Disconnect the #8 vacuum hose from the intake air control diaphragm and clamp the hose end.



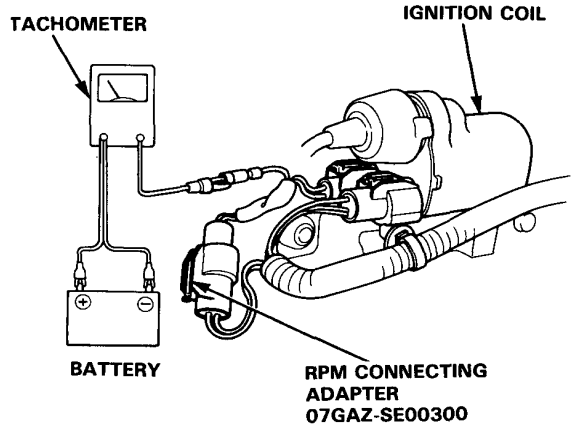
3. Check the fast idle lever.

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



- If the fast idle lever is against the fast idle cam, replace the left carburetor.

4. Connect a tachometer.



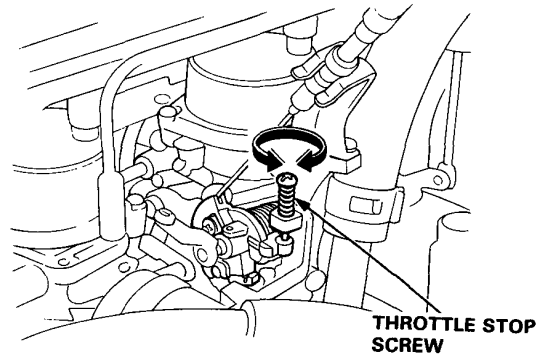
5. Check idle speed with the headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

Idle speed should be:

Manual	800 ±50 min^{-1} (rpm)
Automatic	750 ±50 min^{-1} (rpm) (except "N" or "P")

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

NOTE: If the idle speed is excessively high, check the dashpot system.



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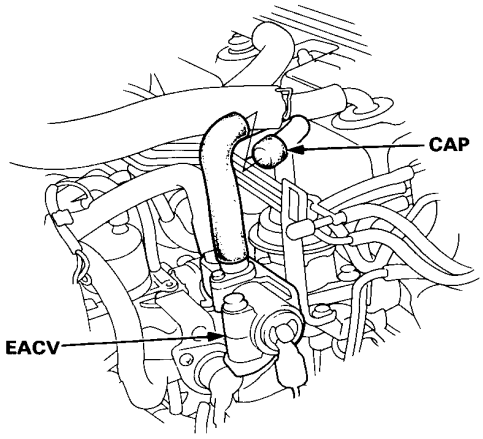
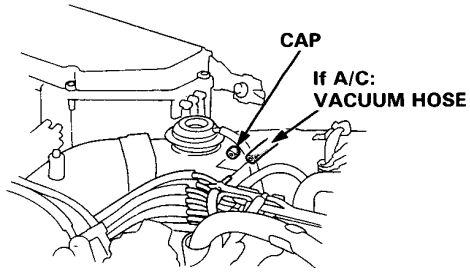
Idle Speed/Mixture (cont'd)

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

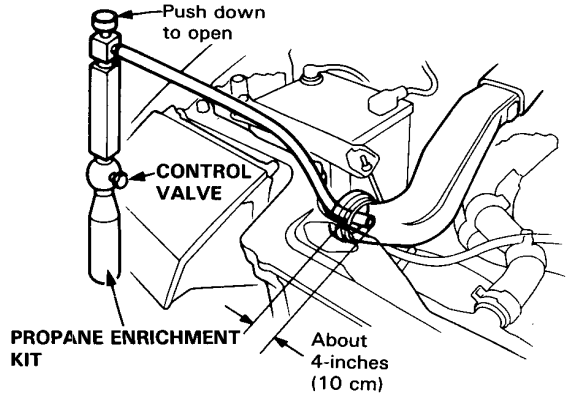


7. Disconnect the cap from vacuum hose manifold.
   If equipped with air conditioner, disconnect the vacuum hose from vacuum hose manifold.
   Disconnect air cleaner intake tube from air intake duct.
   Note the engine speed when starting the engine.



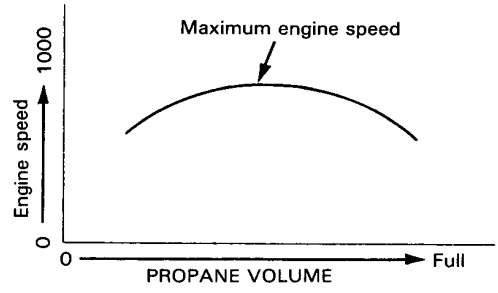
8. Insert the hose of the propane enrichment kit into the intake tube about 4-inches (10 cm).

   NOTE: Check that propane bottle has adequate gas before beginning test.



9. With engine idling, depress push button on top of propane device, then slowly open the propane control valve to obtain maximum engine speed.
   Engine speed should increase as percentage of propane injected goes up.

   NOTE: Open the propane control valve slowly; a sudden burst of propane may stall the engine.

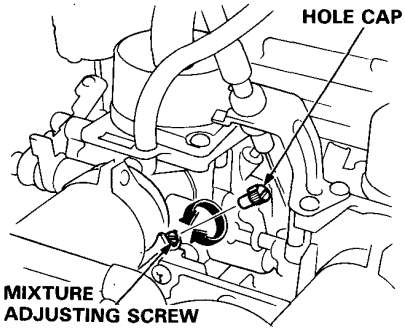


Compared to the idle speed noted in step 7.

Engine speed increase should be;
M/T: 170 ± 20 min^{-1} (rpm)
A/T: 50 ± 10 min^{-1} (rpm) (in "D")

- If engine speed does not increase per specification, mixture is improperly adjusted. Go to step 10.
- If engine speed increases per specification, go to step 11.

10. Remove the mixture adjusting screw hole caps, and recheck maximum propane enriched engine speed.



- If the propane enriched speed is too low, mixture is too rich: turn both mixture screws 1/4-turn clockwise and recheck.
- If the propane enriched speed is too high, mixture is too lean: turn both mixture screws 1/4-turn counterclockwise and recheck.

11. Reconnect the connector and cap or hose. Close the propane control valve.
12. Remove EFI•ECU fuse for 10 seconds to reset control unit and recheck idle speed.
Idle speed should be:

Manual	800 ±50 min^{-1} (rpm)
Automatic	750 ±50 min^{-1} (rpm) (except "N" or "P")

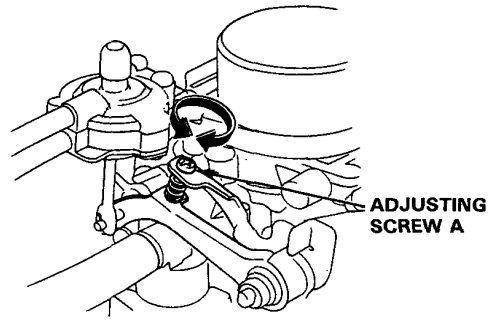
- If idle speed is as specified (step 5), go to step 13.
- If idle speed is not as specified, adjust by turning throttle stop screw, then repeat step 10.

13. Remove propane enrichment kit and reconnect air cleaner intake tube on the air intake duct.
14. Reinstall the mixture adjusting screw hole cap.

15. If equipped with 4WS, check the idle speed when the 2P connector on the P/S oil pressure switch is disconnected.
Idle speed should be:

Manual	950 ± 50 min^{-1} (rpm)
Automatic	830 ± 50 min^{-1} (rpm) (except "N" or "P")

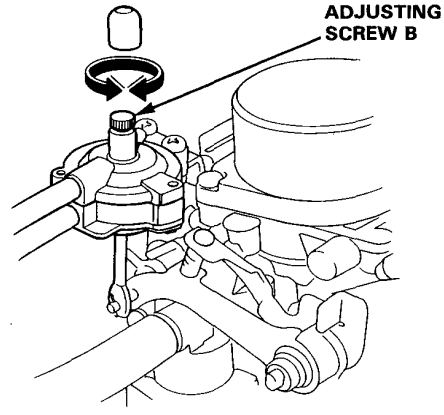
Adjust the idle speed, if necessary, by turning the adjusting screw A.



16. If equipped with 4WS, connect the 2P connector on the P/S oil pressure switch. And check the idle speed while the steering wheel is turning.
Idle speed should be:

Manual	800 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (except "N" or "P")

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



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

(cont'd)

Idle Speed/Mixture (cont'd)

[Except KS model]

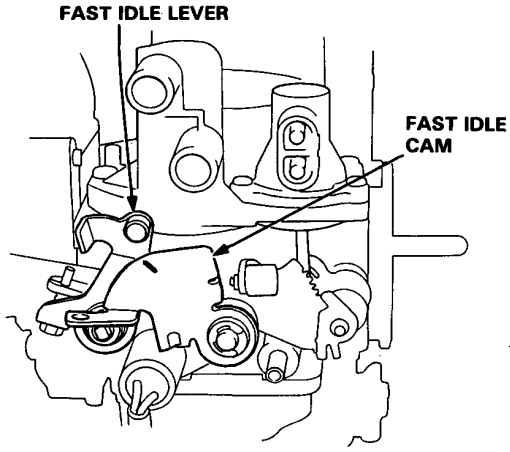
CO Meter Method

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

NOTE: Check that the carburetors are synchronized properly, self-diagnosis indicator (KX model) before making idle speed and mixture inspections.

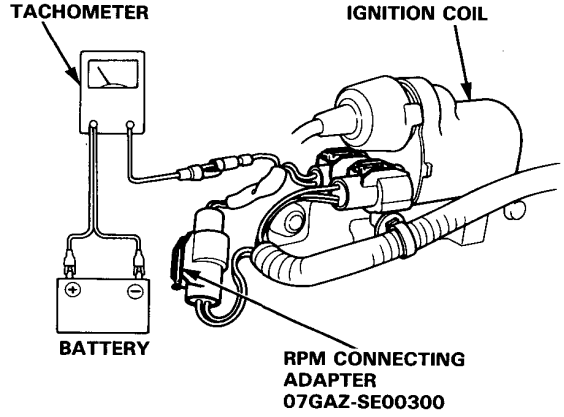
1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).
2. Check the fast idle lever.

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



   - If not, replace the left carburetor.

3. Connect a tachometer.



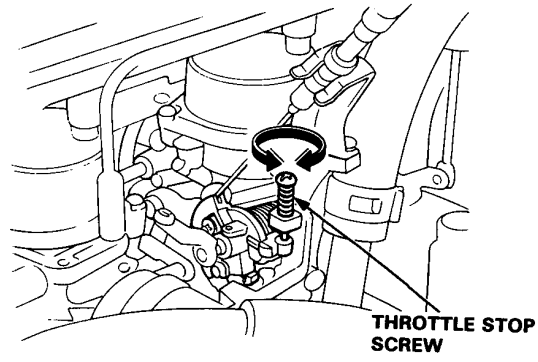
4. Check idle speed with the headlights, heater blower, rear window defogger, cooling fan and air conditioner off.

   Idle Speed should be:

Manual	800 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (except "N" or "P")

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

   NOTE: If the idle speed is excessively high, check the dashpot system.

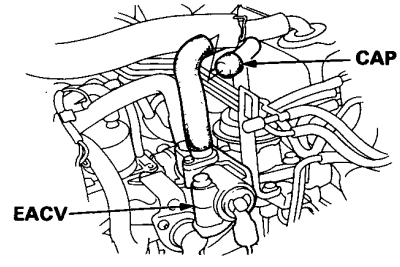


5. Calibrate the NDIR CO Meter in accordance with the manufacturer's recommended procedures. Incert exhaust gas sampling probe into the tailpipe at least 40 cm.
6. Check specification for idle CO with cooling fan, air conditioner OFF and headlights OFF.

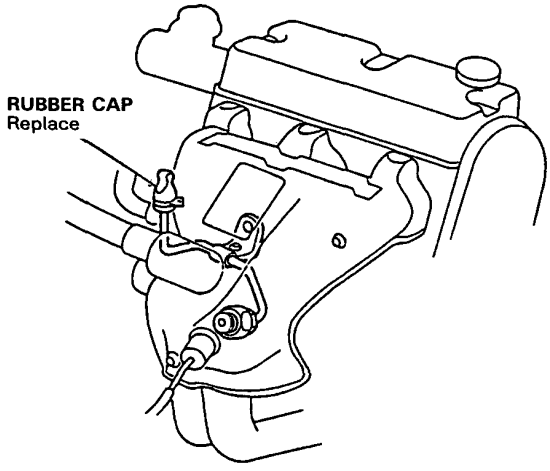
   Specified CO %:
   KX, KZ model: 0.1 %
   Except KX, KZ model: 1 ± 1 %

   - If idle CO is as specified, go to step 14.
   - If not, go to step 7 through 13.

7. KX, KZ model;
   Disconnect the 2P connector from the EACV and disconnect the hose from vacuum hose manifold, then cap the hose end.



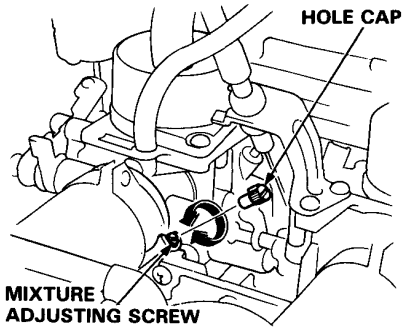
8. Remove the rubber cap from the gas pipe.



9. Check specification for idle CO.

Specified CO % : 2.0 ± 1.0 %

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



— Turning both mixture adjusting screws

clockwise: CO reading decreases
counterclockwise: CO reading increases

Readjust idle speed if necessary, and recheck idle CO.

10. KX model;
Reconnect the connector and hose.
Remove EFI. ECU fuse for 10 seconds to reset control unit.

11. KX, KZ model:
Recheck idle CO.

Specified CO % : 0.1 %

- If idle CO is as specified (step 6), go to step 11.
- If not, check the self-diagnosis indicator. If not, replace the EACV, then repeat step 6.

12. Recheck idle speed.

Idle speed should be:

Manual	800 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (except "N" or "P")

- If idle speed is as specified (step 4), go to step 13.
- If idle speed is not as specified, adjust by turning throttle stop screw, then repeat step 6.

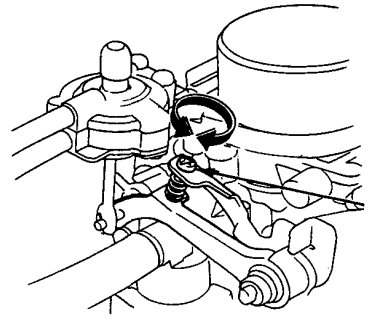
13. Reinstall the mixture adjusting screw hole cap.

14. KF, KG, KW, KB, KE model: If equipped with 4WS, disconnect the 2P connector on the P/S oil pressure switch, and connect a jumper wire between the 2 terminals on the wire harness. Then check the idle speed.
KX, KZ model: If equipped with 4WS, check the idle speed when the 2P connector on the P/S oil pressure switch is disconnected.

Idle speed should be:

Manual	950 ± 50 min^{-1} (rpm)
Automatic	830 ± 50 min^{-1} (rpm) (except "N" or "P")

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



(cont'd)

Idle Speed/Mixture (cont'd)

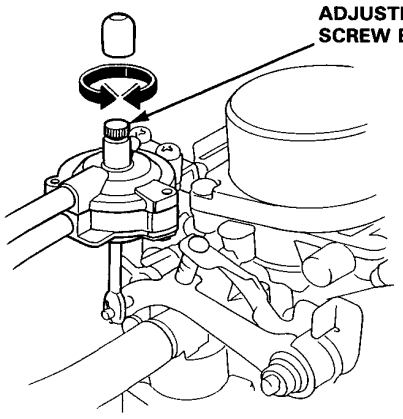
5. KX, KZ model: If equipped with 4WS, connect the 2P connector on the P/S oil pressure switch. And check the idle speed while the steering wheel is turning.
Idle speed should be:

Manual	800 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (except "N" or "P")

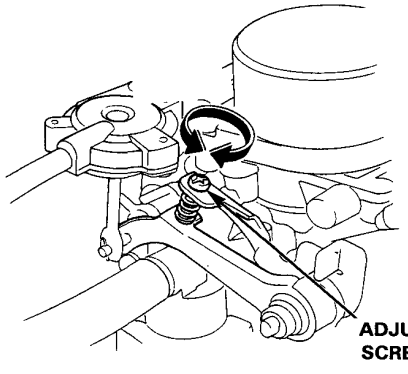
16. If equipped with air conditioner, check the idle speed with the A/C on.

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

4WS:



Except 4WS:



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

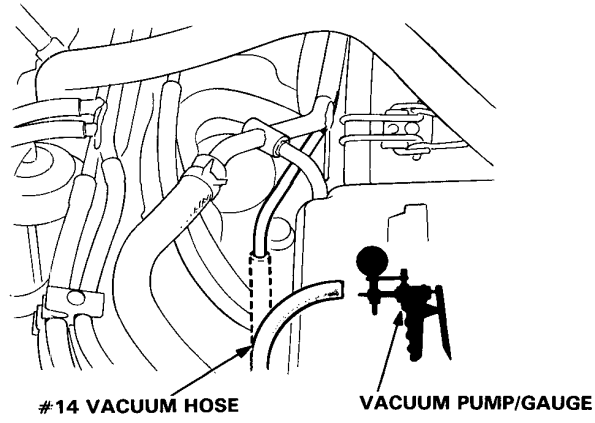
Power Valve [Except KY, KT]

Testing (COLD ENGINE)

NOTE: Intake air temperature must be below 20.5°C (68.5°F)

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

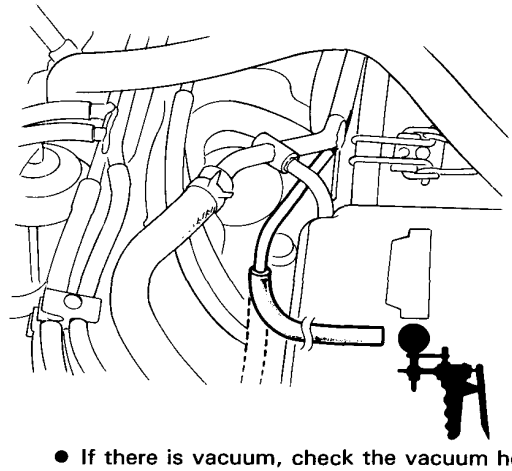
It should hold vacuum.



- If it does not hold vacuum, replace the diaphragm and retest.

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

There should be no vacuum.

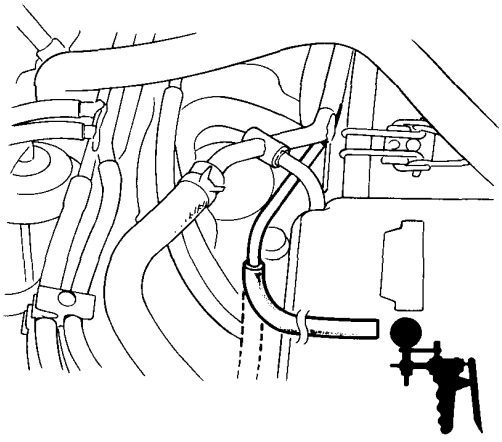


- If there is vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve B.

Testing (HOT ENGINE)

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

   There should be vacuum.



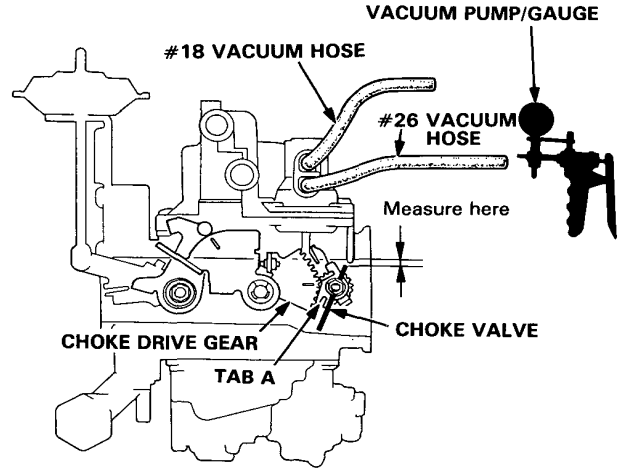
- If there is no vacuum, check the vacuum hose for proper connection, cracks, blockage or disconnected hose, and replace the air bleed valve B.

Choke Linkage

Adjustment

1. Remove the carburetor.
2. Disconnect the #18 vacuum hose from the choke opener and leave open to atmosphere. Disconnect the #26 vacuum hose and connect a vacuum pump. Apply at least 200 mm Hg (8 in. Hg).

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



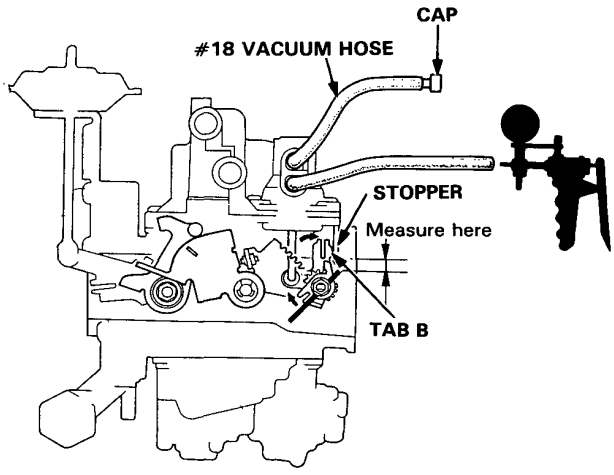
1st Stage Clearance:
1.89 ± 0.09 mm (0.074 ± 0.004 in.)

Adjust clearance by bending Tab A.

(cont'd)

Choke Linkage (cont'd)

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



2nd Stage Clearance;
[KS, KX, KZ model]
M/T: 4.31 ± 0.09 mm (0.172 ± 0.004 in.)
A/T: 4.74 ± 0.09 mm (0.190 ± 0.004 in.)
[Except KS, KX, KZ model]
3.56 ± 0.09 mm (0.140 ± 0.004 in.)

Adjust clearance by bending Tab B.

If the clearance can not adjust, replace the left carburetor.

Choke Opener

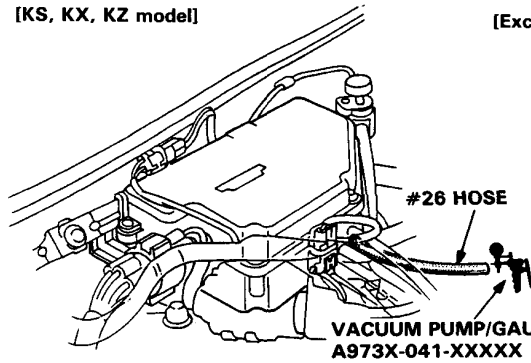
Troubleshooting Flow Chart Cranking Leak Solenoid Valve

Inspection of Cranking Leak Solenoid Valve

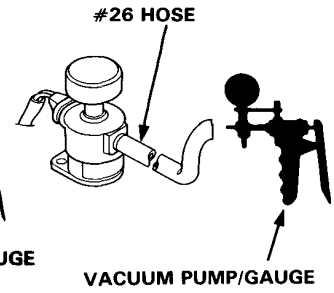
Disconnect #26 vacuum hose from the vacuum hose manifold.

Connect vacuum pump and continually apply vacuum.

[KS, KX, KZ model]



[Except KS, KX, KZ model]



Does the gauge show vacuum?

NO — **— Check the vacuum hose for proper connection or leakage. — Replace the solenoid valve.**

YES

Does vacuum leak?

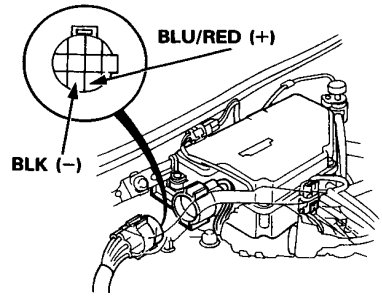
NO — **— Repair vacuum hose pinch or blockage. — Replace the solenoid valve.**

YES

Connect a T-fitting vacuum gauge the between #26 hose and the vacuum hose manifold.

Turn the ignition switch to the START position.

[KS, KX, KZ model]



Is there less than 250 mm Hg (10 in. Hg) of vacuum in the start position?

NO — Turn the ignition switch OFF.

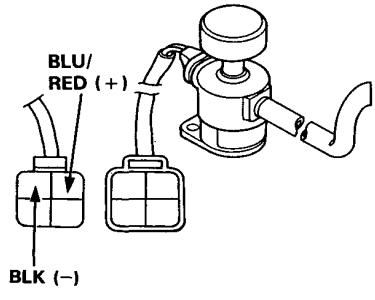
YES

Cranking Lead Solenoid Valve is OK.

Disconnect the connector.

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

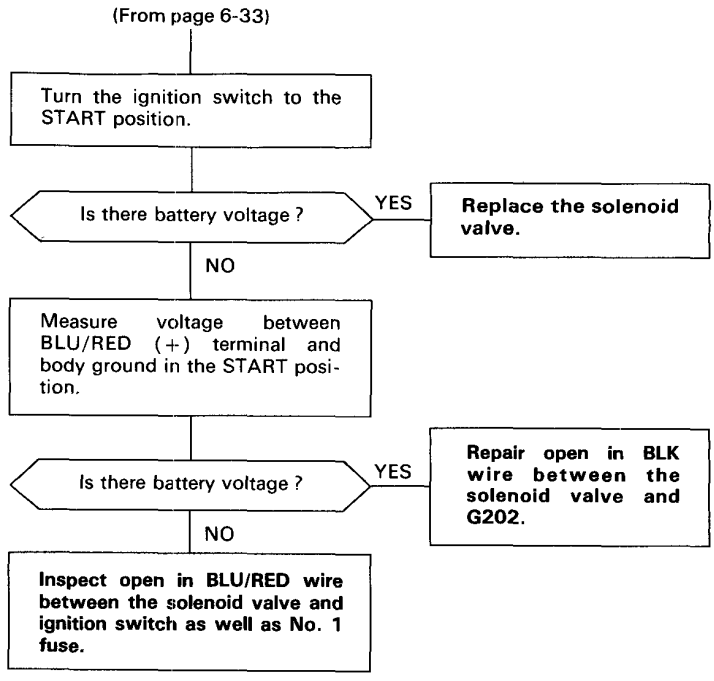
[Except KS, KX, KZ model]



(To page 6-34)

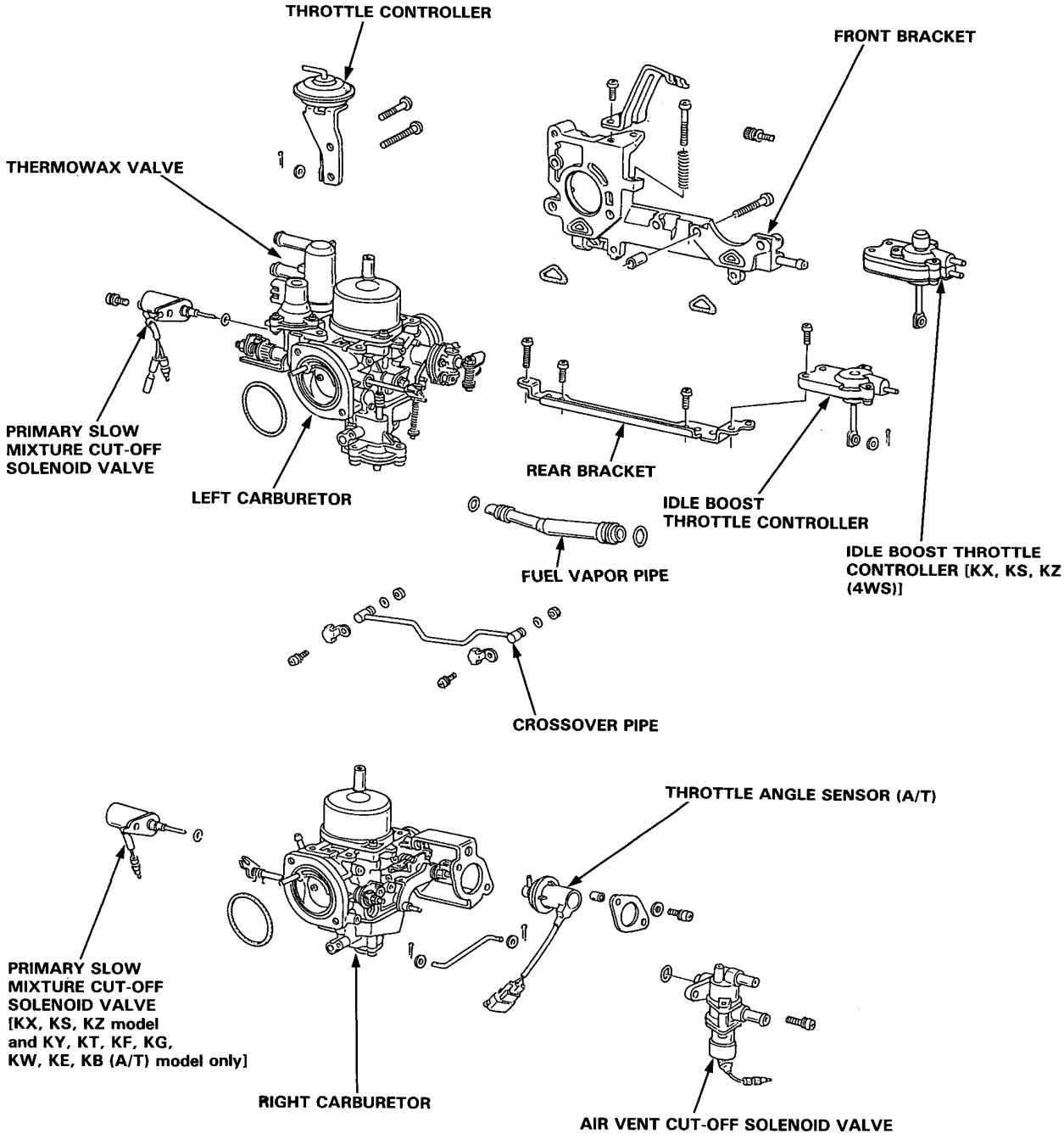
(cont'd)

Choke Opener (cont'd)



Replacement

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



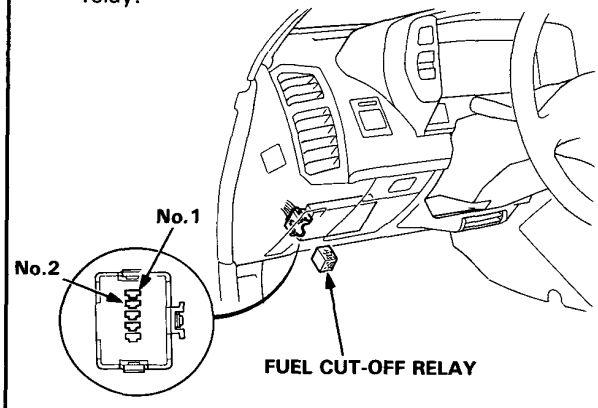
Fuel Pump

Testing

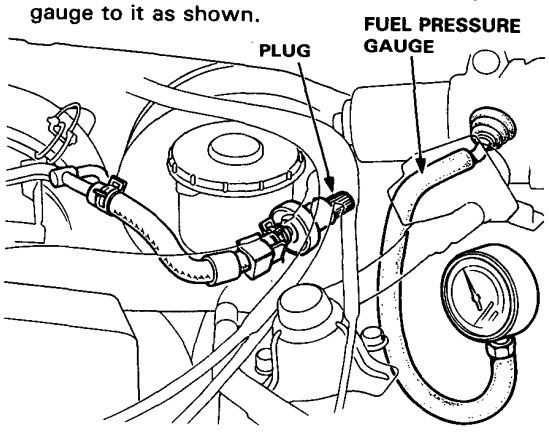
WARNING Do not smoke during the test. Keep any open flame away from your work area.

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

1. Remove the dashboard under cover and the fuel cut-off relay from the fuse box.
2. Connect the No.1 terminal to the No.2 terminal located at the fuse box side of the fuel cut-off relay.



3. Disconnect the fuel line at the fuel filter in the engine compartment, and connect a pressure gauge to it as shown.



4. Turn ignition ON until pressure stabilizes, then turn key off.

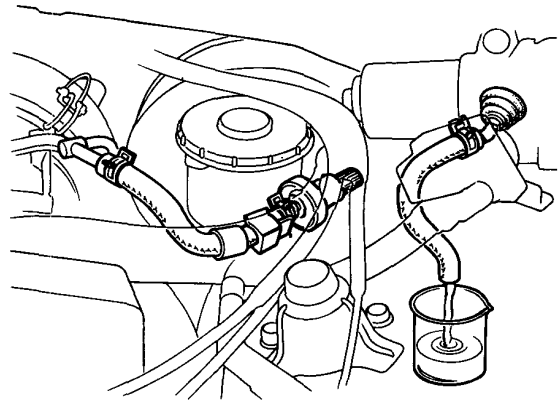
   Pressure should be 8.8—14.7 kPa (1.3—2.1 psi).

   - If gauge shows at least 8.8 kPa (1.3 psi) go on to step 5.
   - If gauge shows less than 8.8 kPa (1.3 psi), replace pump and retest.

5. Remove pressure gauge and hold a graduated container under the hose.
6. Turn ignition ON for 60 seconds, then turn ignition OFF and measure amount of fuel flow.

   Fuel flow should be 600 cm^3 (20 oz.) in 60 seconds.

   - If fuel flow is within specification, reconnect cut-off relay and fuel hose.
   - If fuel flow is less than specified, check the fuel cut-off relay.



Air Injection Control [KX, KS, KZ]

Troubleshooting Flow Chart Air suction Control System

Inspection of Air Suction Control System

Remove the control box and open the control box lid.

Disconnect the lower vacuum hose of the solenoid valve from the 3-way joint and connect a vacuum pump.

Disconnect the #5 vacuum hose of the solenoid valve from the vacuum hose manifold and connect a vacuum gauge.

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

Apply vacuum.

Does solenoid valve hold vacuum ?

NO

Turn the ignition switch OFF.

Disconnect the 8P connector on the control box.

Start the engine.

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

Is there voltage ?

YES

Check the self-diagnosis indicator. If OK, substitute a known-good control unit and retest. If symptom goes away, replace the original control unit.

NO

Replace the solenoid valve.

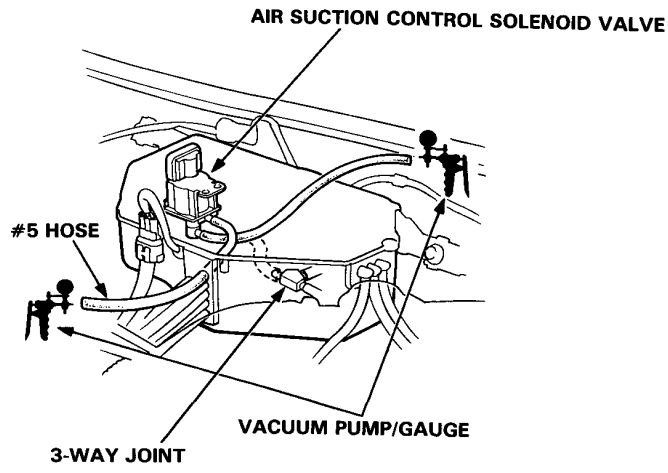
YES

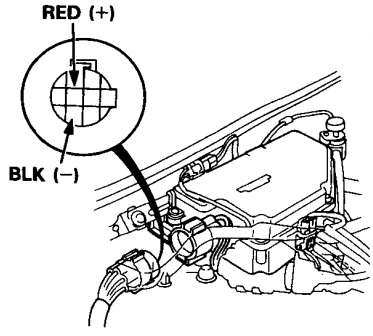
Block rear wheels and set the parking brake. Jack up the front of the car and support with safety stand.

WARNING Block rear wheels before jacking up front of car.

Place the shift or selector (lever in second or "2" and accelerate above 20 km/h, then release the throttle.

(To page 6-38)





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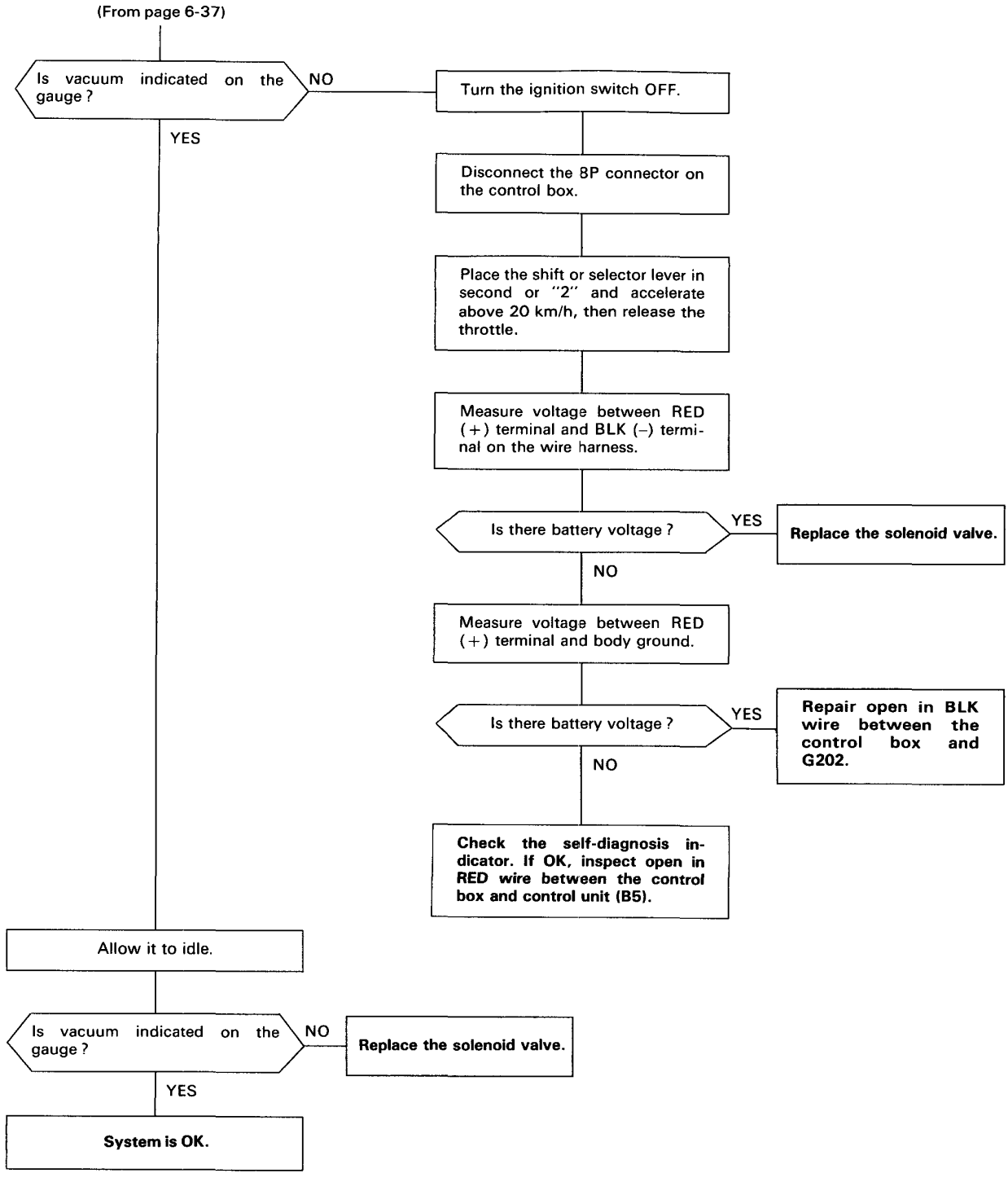
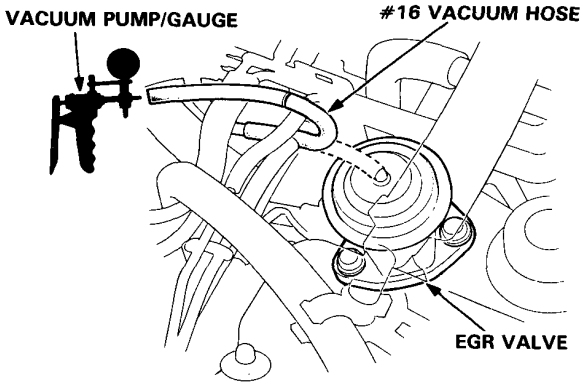
Air Injection Control [KX, KS, KZ] (cont'd)



Testing (COLD ENGINE)

NOTE: The engine coolant temperature must be below 63°C (145.4 °F)

1. Disconnect the #16 vacuum hose from the EGR valve and connect a vacuum pump to the hose.



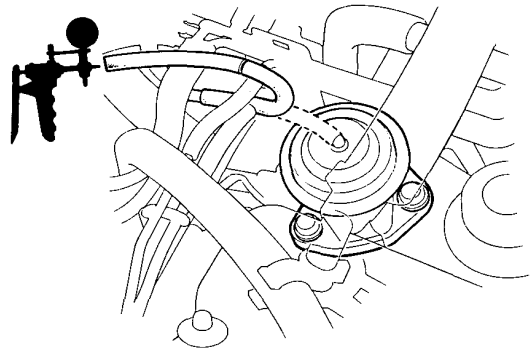
2. Start the engine and raise the engine speed to 3,000 min^{-1} (rpm).

   There should be no vacuum.

   - If there is no vacuum, go on to the hot engine test (next column).
   - If there is vacuum, go to troubleshooting (page 6-43).

Testing (HOT ENGINE)

1. Disconnect the #16 vacuum hose from the EGR valve and connect a vacuum pump to the hose.



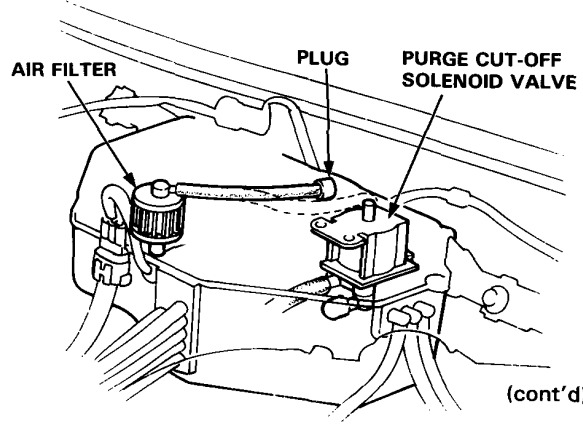
2. Start the engine and warm up to normal operating temperature (the cooling fan comes on).

3. Remove the control box and open the control box lid.

4. Remove the top hose from the purge cut-off solenoid valve and cap the solenoid valve.

   Vacuum should be as shown below:

	Condition	Vacuum at EGR hose
1	Idle	No
2	3,000 min^{-1} (rpm)	Yes, 50—150 mmHg
3	3,000 min^{-1} (rpm) with blocked vacuum bleed	Yes, Less than 50 mmHg
4	Rapid acceleration	Yes, 50—150 mmHg
5	Deceleration	No



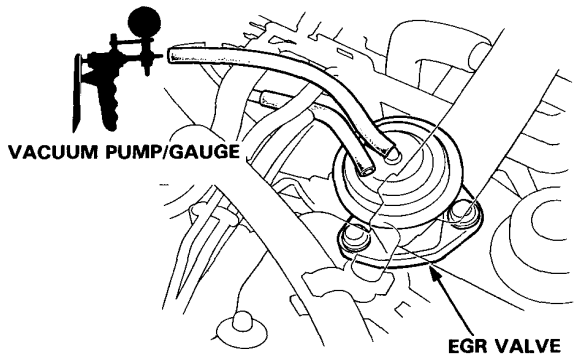
(cont'd)

EGR [KX, KS, KZ] (cont'd)

- If vacuum is available at idle (condition 1) check the vacuum hoses for proper routing and connections, then check for correct idle speed and idle mixture, and make adjustment as necessary.
- If there is no vacuum in conditions 2 and 4, go to troubleshooting (page 6-43).
- If vacuum is more than 50 mmHg in condition 3, replace the EGR control valve and check the vacuum hoses for proper routing and connections.

EGR Valve Test

1. Start engine and allow to idle.
2. Disconnect vacuum hose from EGR valve and connect a vacuum pump to EGR valve.

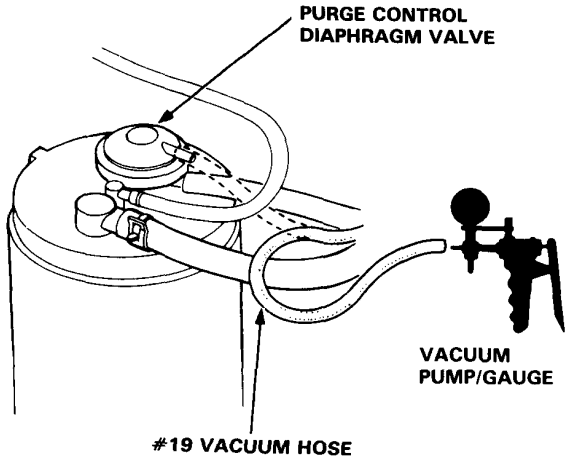


3. Apply 150 mm Hg (6 in. Hg) vacuum to EGR Valve. Vacuum should remain steady and engine should die.
   - If vacuum remains steady and engine dies, EGR valve is working properly. Remove the vacuum pump and reconnect EGR vacuum hose; test is complete.
   - If vacuum does not remain steady and engine does not die, replace EGR valve and retest.
   - If vacuum remains steady but engine does not die: Remove EGR valve; check EGR valve and manifold for blockage, clean or replace as necessary and retest.

Testing (COLD ENGINE)

NOTE: Engine coolant temperature must be below *63°C (145°F)*

1. Disconnect the #19 vacuum hose at purge control diaphragm valve and connect vacuum pump/gauge to the hose.



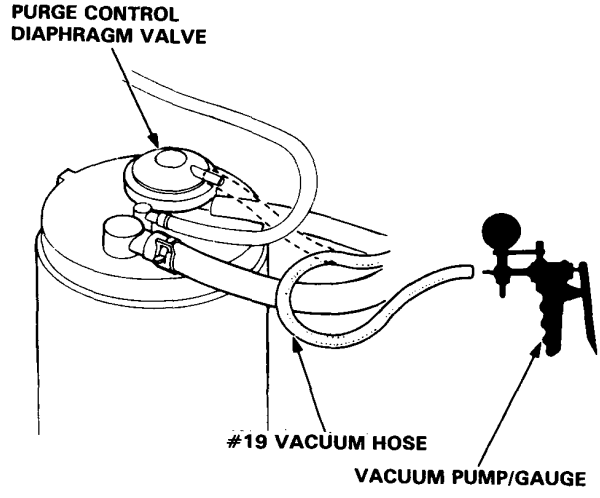
2. Start the engine and allow to idle.

   There should be no vacuum.

   - If there is no vacuum, go to hot engine test (next column).
   - If there is vacuum, go to troubleshooting (page 6-43).

Testing (HOT ENGINE)

1. Disconnect the #19 vacuum hose at the purge control diaphragm valve and connect a vacuum pump/gauge to the hose.



2. *Start the engine and warm up to normal operating* temperature (the cooling fan comes on).
   Block rear wheels and set the parking brake.
   Jack up the front of the car and support with safety stands.

   WARNING Block rear wheels before jacking up front of car.

   Place the shift or selector lever in 2nd gear or "2" range and raise the engine speed to 3,500 min^{-1} (rpm).

   There should be vacuum.

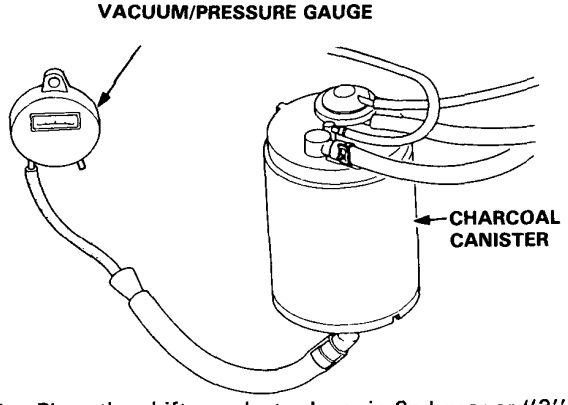
   - If there is vacuum, go to step 3.
   - If there is no vacuum, go to troubleshooting (page 6-43).

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

4. Remove fuel filler cap.

(cont'd)

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

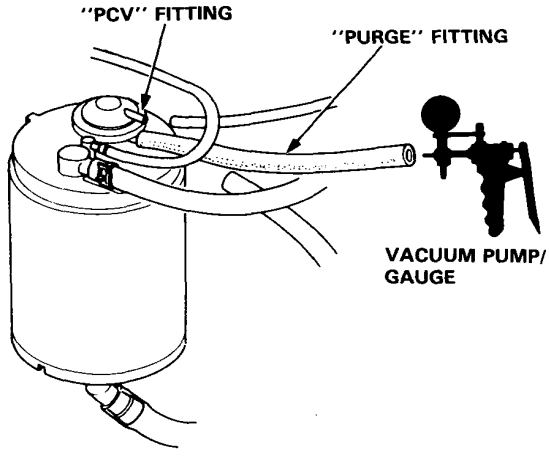


6. Place the shift or selector lever in 2nd gear or "2" range and raise the engine speed to 3,500 min^{-1} (rpm).
   Vacuum should appear on the gauge within 1 minute.
   - If vacuum appears on the gauge in 1 minute, remove the gauge and go on to step 8.
   - If no vacuum, disconnect the vacuum gauge and reinstall the fuel filler cap.

7. Remove the charcoal canister and check for signs of damage.
   - If damaged, replace the canister.
   - If OK, go on to step 8.

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

   Vacuum should remain steady.



   - If vacuum remains steady, go on to step 9.
   - If vacuum drops, replace the canister and retest.

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

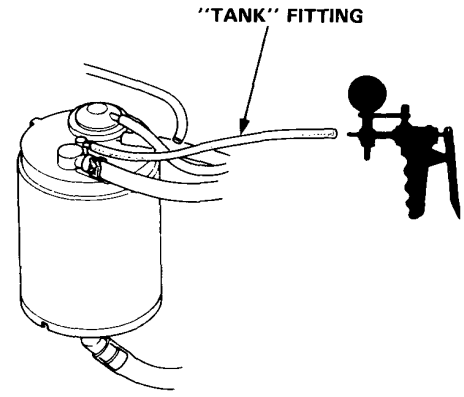
   NOTE: Raise engine to 3,500 min^{-1} (rpm) (in 2nd or "2" range).

   PURGE side vacuum should drop to zero.

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

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

    If should not hold vacuum.



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

Troubleshooting Flow Chart Purge Cut-off Solenoid Valve

Inspection of Purge Cut-off Solenoid Valve

Remove the control box and open the control box lid.

Disconnect the upper vacuum hose of the solenoid valve from the 3-way joint, and connect a vacuum pump.

Start the engine.

NOTE: Engine coolant temperature must be below 63° C (145° F)

Apply vacuum.

Does solenoid valve hold vacuum?

YES

Turn the ignition switch OFF.

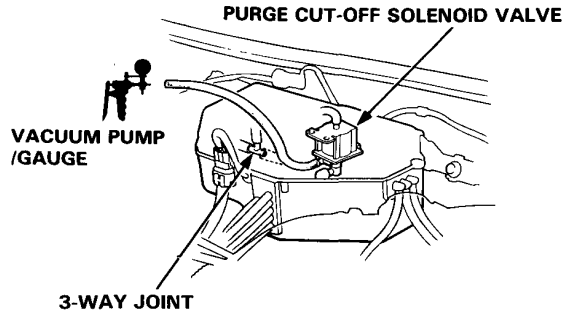
Disconnect the 8P connector on the control box.

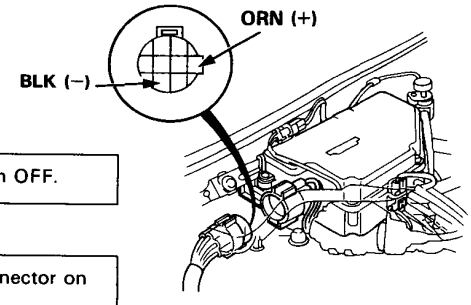
Start the engine.

(To page 6-44)

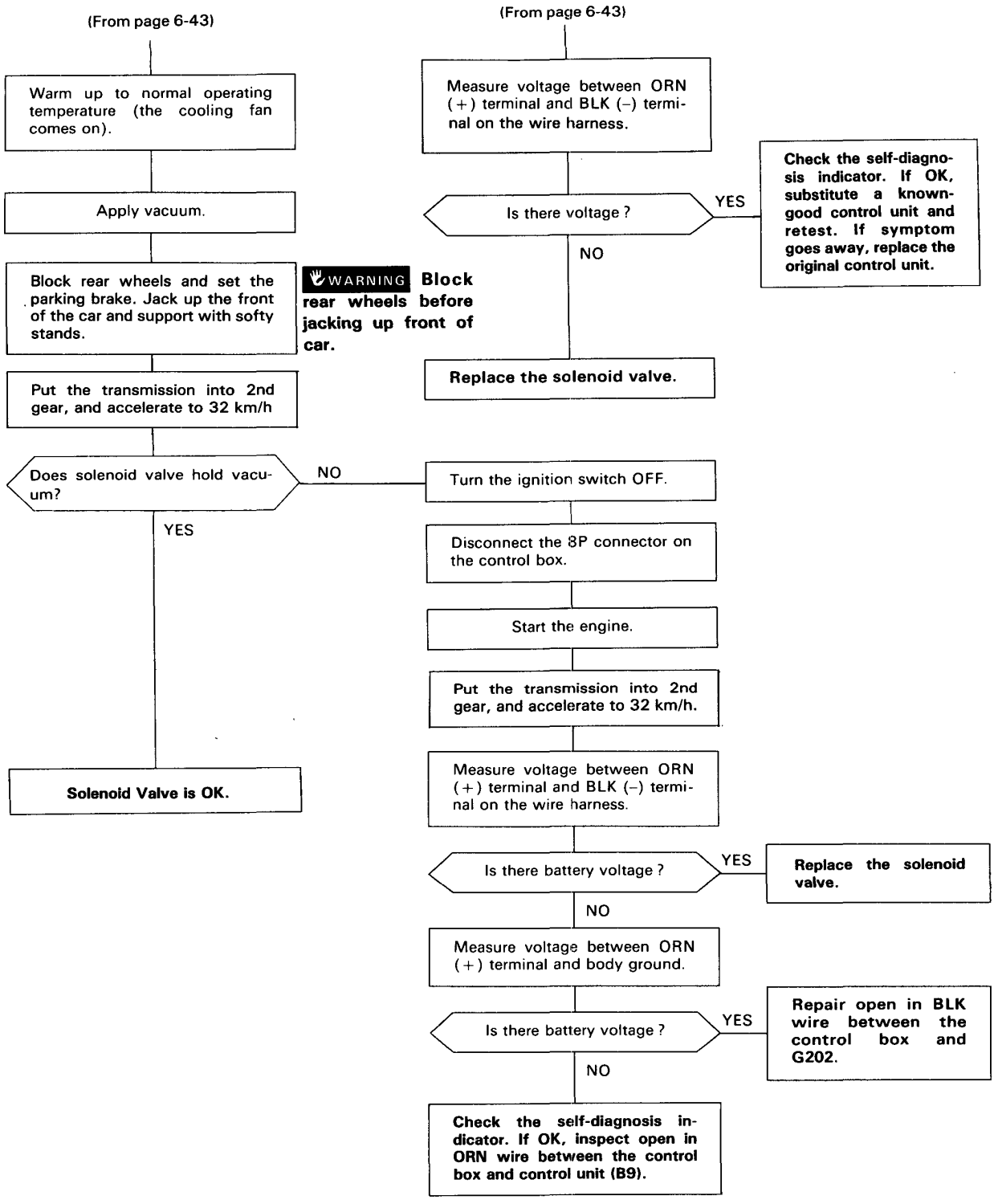
NO

(To page 6-44)





Evaporative Emission Controls (cont'd)



Troubleshooting Flow Chart —— Oxygen Sensor

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

LED indicates CODE 1

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

Turn the ignition switch OFF.

Remove EFI, ECU fuse in the under-hood relay box for 10 seconds to reset control unit.

Start engine and allow to idle for 1 minute.

Raise engine speed to 3,000 min^{-1} (rpm).

Remove #2 and #7 hoses quickly from the vacuum hose manifold and plugs the vacuum hose manifold.

Hold engine speed steady at 3,000 min^{-1} (rpm) for 20 seconds.

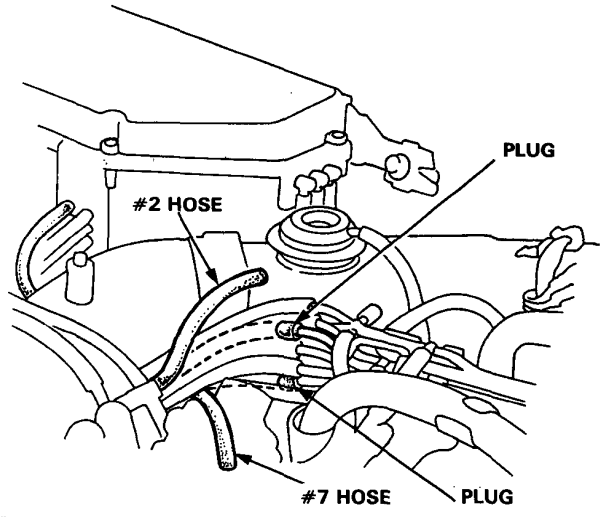
Does LED indicate CODE 1 ?

NO → **Intermittent failure, check and seat connectors at O_2 sensor, at the battery and at the control unit.**

YES

Turn the ignition switch OFF.

(To page 6-46)



(cont'd)

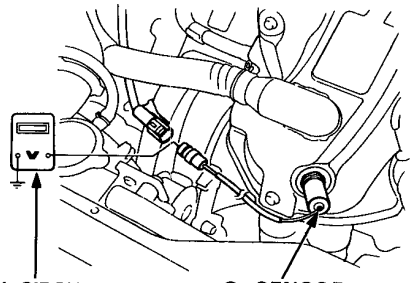
PGM-CARB Control Unit [KX, KS, KZ]

Trubleshooting Flow Chart — O_2 Sensor (cont'd)

(From page 6-45)

Disconnect the wire harness from the O_2 sensor and connect a voltmeter between the O_2 sensor connector and engine ground.

Start the engine and measure the voltage between O_2 sensor connector and engine ground.



DIGITAL CIRCUIT TESTER
07411—0020000

O_2 SENSOR
45 N·m (4.5 kg-m, 33 lb-ft)

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

NO → **Replace O_2 sensor.**

YES

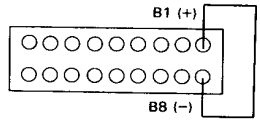
Turn the ignition switch OFF.

Reconnect O_2 sensor.

Connect the ECU check adaptor B between the control unit and connector.

Start the engine.

Measure voltage between B1 (+) terminal and B8 (−) teminal.



Above 0.6 V at full throttle ?
Below 0.4 V when quickly released ?

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

NO → **Repair open or short in WHT wire between the control unit (B1) and O_2 sensor.**

YES

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

Troubleshooting Flow Chart —— Vehicle Speed Sensor

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

LED indicates CODE 2.

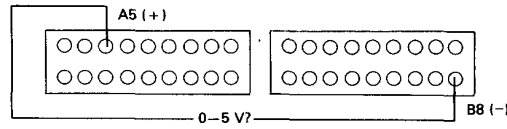
Connect the ECU check adaptor A and B between the control unit and connector.

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

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

Turn the ignition switch ON.

Slowly rotate left front wheel and measure voltage between A5 (+) terminal and B8 (–) terminal.



Does voltage pulse 0V and 5V ?

NO

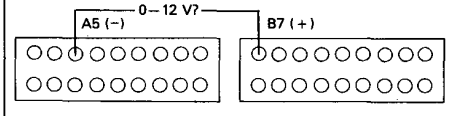
Turn the ignition switch OFF.

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

Turn the ignition switch ON.

YES

- **Raise the engine speed to 3,000 min^{-1} (rpm) with no load, then check if the LED indicates CODE 2. If LED indicates CODE 2, repair vacuum leak in #7 hose or in vacuum switch.**
- ***Substitute a known-good* control unit and recheck. If prescribed voltage is now available replace the original control unit.**



Slowly rotate left front wheel and measure voltage between B7 (+) terminal and A5 (–) terminal.

Does voltage pulse 0V and 12V ?

NO

- **Repair open or short in WHT/BLU wire between control unit (A5) and the speed sensor.**
- **Faulty speed sensor.**

YES

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

NOTE: Because it is an inter-related system, a leak in the vacuum switch or its hose (page 6-50) may cause a "false" code 2 indication.

Troubleshooting Flow Chart —— MAP Sensor (cont'd)

⑤

LED indicates CODE 5.

Turn the ignition switch OFF.

Remove EFI,ECU fuse in the under-hood relay box for 10 seconds to reset control unit

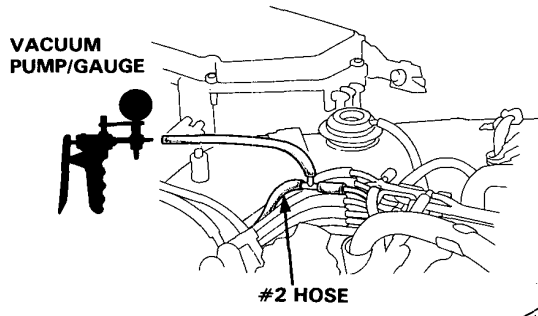
Start engine and keep engine speed at idle.

LED indicate CODE 5 ? NO → **Intermittent failure (test drive may be necessary.)**

YES

Stop engine.

Remove #2 hose from the vacuum hose manifold and connect a T. fitting from a vacuum gauge between the vacuum hose manifold and the MAP sensor.

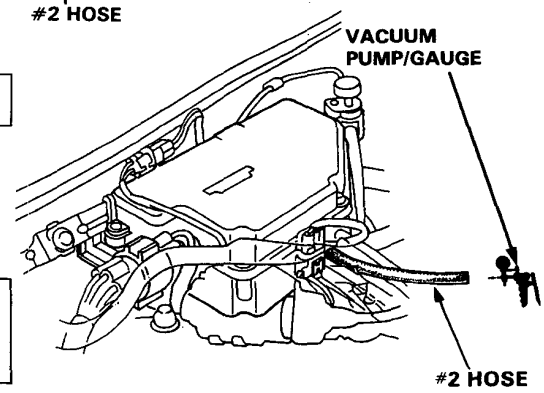


Start engine.

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

YES

Connect a vacuum pump to #2 hose and apply vacuum.



Does it hold vacuum ? NO → Connect a vacuum pump directly to the MAP sensor and apply vacuum.

YES

Does it hold vacuum? NO → **Replace MAP sensor.**

YES

Replace #2 hose.

(To page 6-49)

(From page 6-48)

Stop engine.

Connect the inspection adaptor between the MAP sensor and wire harness.

Turn the ignition switch ON.

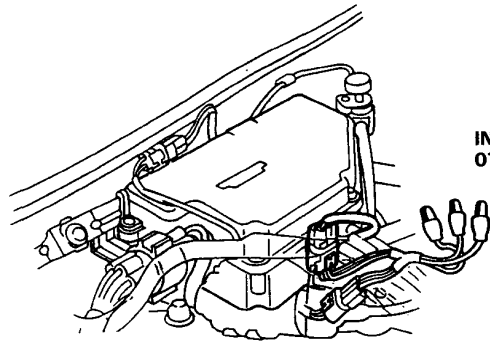
Measure voltage between WHT (+) terminal and GRN (–) terminal.

Is there approx. 3V ?

NO → **Replace MAP sensor.**

YES

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



INSPECTION ADAPTOR 07GMJ—ML80100

Troubleshooting Flow Chart —— Vacuum Switch

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

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

↓

Turn the ignition switch OFF.

↓

Remove EFI,ECU fuse in the under-hood relay box for 10 seconds to reset control unit.

↓

Start the engine and allow to idle for at least 30 seconds.

↓

Does LED indicate CODE 4? — NO → ***Intermittent failure.*** **Check connectors at the control box and control unit.**

YES

↓

Turn the ignition switch OFF.

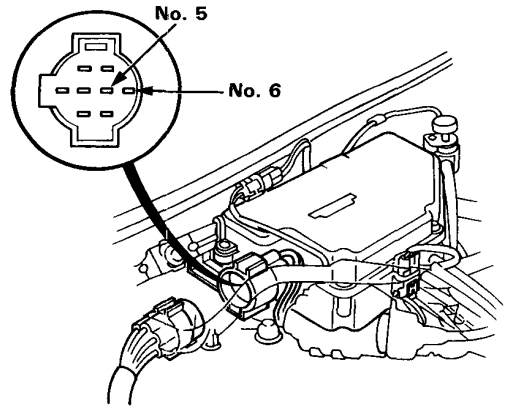
↓

Disconnect the 8P connector on the control box.

↓

Measure resistance between No.5 terminal and No.6 terminal on the control box.

(To page 6-51)



(From page 6-50)

Does continuity exist ?

NO → Remove #7 hose from the vacuum hose manifold and connect a T-fitting from a vacuum gauge between the vacuum hose manifold and the vacuum switch.

YES

Turn the ignition switch ON.

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

Start the engine.

Is there more than 30 mmHg of vacuum?

NO → **– Replace vacuum switch.**
– Repair open in BLK/YEL or WHT wire in the control box.

YES

Check routing of #7 hose.

Is there battery voltage ?

NO → **Repair open in BLK/YEL wire between 8P connector and No. 12 fuse.**

YES

Turn the ignition switch OFF.

Reconnect the 8P connector to the control box.

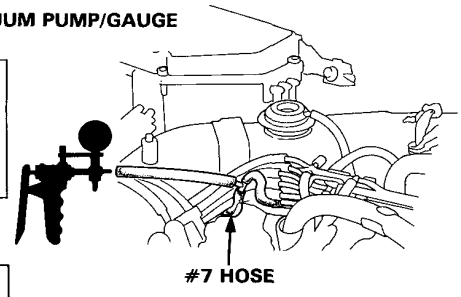
Connect the ECU check adaptor A and B between the control unit and connector.

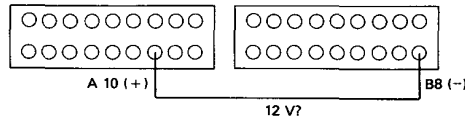
Turn the ignition switch ON.

Maesure voltage between A10 (+) terminal and B8 (–) terminal.

(To page 6-52)

VACUUM PUMP/GAUGE

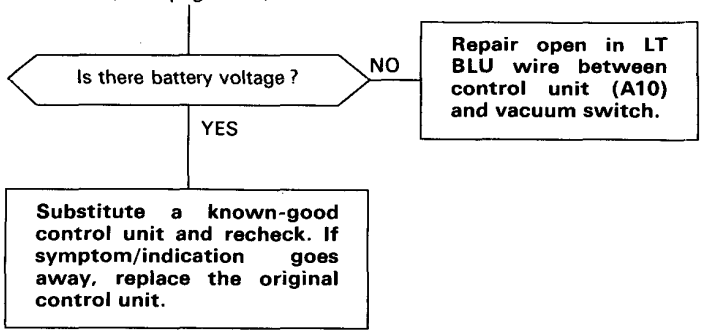




(cont'd)

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

(From page 6-51)



Troubleshooting Flow Chart — TW Sensor

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

LED indicates CODE 6.

Turn the ignition switch OFF.

Remove EFI, ECU fuse in the under-hood relay box for 10 seconds to reset control unit.

Turn the ignition switch ON.

Does LED indicate CODE 6 ?

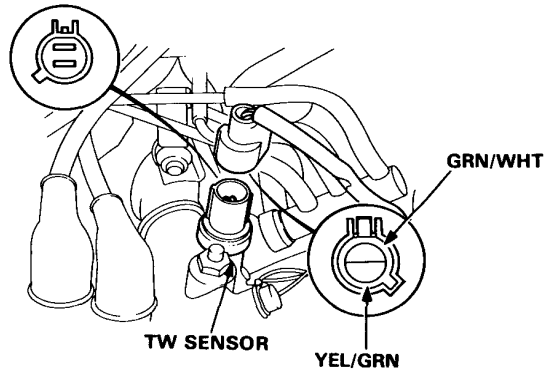
NO → **Intermittent failure. (test drive may be necessary.)**

YES

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

Turn the ignition switch OFF.

Disconnect the 2P connector on the TW sensor.



Measure resistance between the 2 terminals on the TW sensor.

Is there 200—400Ω ?

NO → **Replace TW sensor.**

YES

Turn the ignition switch ON.

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

Is there approx. 5V ?

NO → Turn the ignition switch OFF.

Connect the ECU check adaptor A between the control unit and connector.

(To page 6-54)

YES

(To page 6-54)

(cont'd)

Troubleshooting Flow Chart —— TW Sensor (cont'd)

(From page 6-53)

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

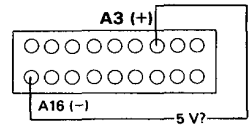
Is there approx. 5V ?

NO → **Repair open in GRN/WHT wire between control unit (A16) and TW sensor.**

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

(From page 6-53)

Turn the ignition switch ON.



Measure voltage between A3 (+) terminal and A16 (–) terminal.

Is there approx. 5 V ?

YES → **Repair open in YEL/GRN wire between control unit (A3) and TW sensor.**

NO

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

Measure voltage between A3 (+) terminal and A16 (–) terminal.

Is there approx. 5V ?

YES →
- **Repair short in YEL/GRN wire between control unit (A3) and TW sensor.**
- **Repair short in YEL/GRN wire between A/T control unit and TW sensor.**

NO → **Substitute a known-good control unit and recheck. If prescribed voltage is now available, replace the original control unit.**

Troubleshooting Flow Chart —— Ignition Coil Signal

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

LED indicates CODE 8.

Turn the ignition switch OFF.

Remove EFI, ECU fuse in the under-hood relay box for 10 seconds to reset control unit.

Start the engine and allow to idle.

Does LED indicate CODE 8? NO → **Intermittent failure. Check the connectors at the ignition coil and control unit.**

YES

Turn the ignition switch OFF.

Disconnect the primary terminals from the ignition coil.

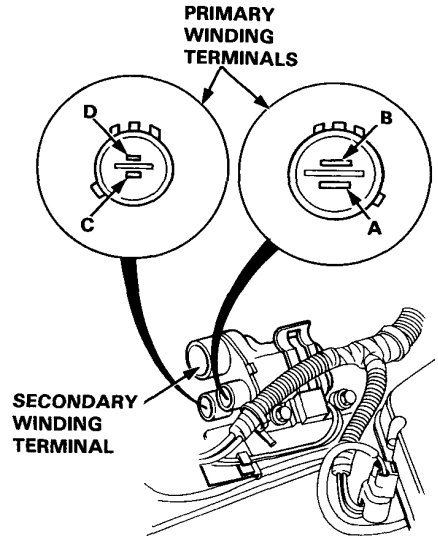
Measure resistance between the B and D terminals.

Is there approx. 2000 Ω? NO → **Replace ignition coil.**

YES

Reconnect the primary terminals to the ignition coil.

(To page 6-56)



(cont'd)

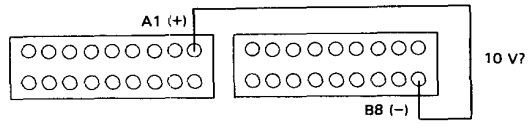
Troubleshooting Flow Chart —— Ignition Coil Signal (cont'd)

(From page 6-55)

Connect the ECU check adaptor A and B to main wire harness, but not the control unit.

Turn the ignition switch ON.

Measure voltage between A1 (+) terminal and B8 (−) terminal.



Is there approx. 10 V?

NO → **Repair open BLU wire between control unit (A1) and ignition coil.**

YES

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

Troubleshooting Flow Chart —— TA Sensor

(10) Self-diagnosis LED indicator blinks ten times: Most likely a problem in the Intake Air Temperature (TA) Sensor circuit.

LED indicates CODE 10

Turn the ignition switch OFF.

Remove EFI, ECU fuse in the under-hood relay box for 10 seconds to reset control unit.

Turn the ignition switch ON.

Does LED indicate CODE 10 ?

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

YES

Turn the ignition switch OFF.

Disconnect the 2P connector on the TA sensor.

Measure resistance between the 2 terminals on the TA sensor.

Is there 1—4 kΩ ?

NO → **Replace TA sensor.**

YES

Turn the ignition switch ON.

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

Is there approx. 5V ?

NO → Turn the ignition switch OFF.

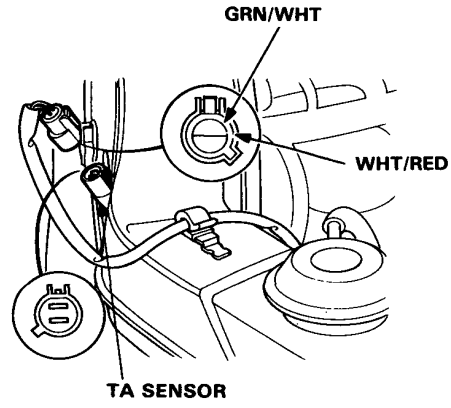
Connect the ECU check adaptor A between the control unit and connector.

(To page 6-58)

YES

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

(To page 6-58)



(cont'd)

Troubleshooting Flow Chart —— TA Sensor (cont'd)

(From page 6-57)

Is there approx. 5V ?

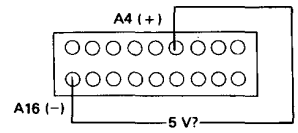
NO → **Repair open in GRN/WHT wire between control unit (A4) and TA sensor.**

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

(From page 6-57)

Turn the ignition switch ON.

Measure voltage between A4 (+) terminal and A16 (–) terminal.



Is there approx. 5V ?

YES → **Repair open in WHT/RED wire between control unit (A4) and TA sensor.**

NO → *Disconnect A connector from the wire harness only, not the control unit.*

Measure voltage between A4 (+) terminal and A16 (–) terminal.

Is there approx. 5V ?

YES → **Repair short in WHT/RED wire between control unit (A4) and TA sensor.**

NO → **Substitute a known-good control unit and recheck. If prescribed voltage is now available, replace the original control unit.**

Input Troubleshooting

If there is no voltage from the control unit when there should be voltage or if there is voltage from the unit when there shouldn't be voltage, inspect as follows and if no defects can be found, replace the control unit and re-test.

PROBLEMATIC CIRCUIT	REFER TO CHECK:		CHECK
A/C Idle Boost Solenoid Valve	M/T	1, 2, 4	1. Inspect the power source (IG1, Bat) and ground. 2. Inspect the clutch switch signal (page 6-60). 3. Inspect the A/T shift position signal. 4. Inspect the air conditioning signal. 5. Inspect the P/S oil pressure signal (page 6-62).
	A/T	1, 3, 4	
Primary Slow Mixture Cut-off Solenoid Valve	M/T	1, 2	
	A/T	1, 3	
Idle Boost Solenoid Valve	1.5		

Input Troubleshooting Flow Chart — Clutch Switch Signal (M/T only)

Inspection of clutch switch signal

Connect the ECU check adaptor A and B between the control unit and connector.

Turn the ignition switch ON.

Measure voltage between A12 (+) terminal and B8 (–) terminal.

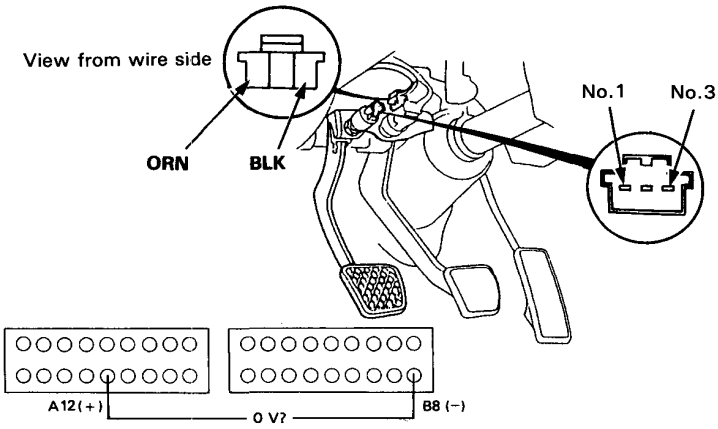
Is there voltage ?

YES → Turn the ignition switch OFF.

NO

Depress the clutch pedal.

(To page 6-61)



Disconnect the 3P connector on the clutch switch.

Check for continuity between the No.1 terminal and No.3 terminal on the clutch switch.

Does continuity exist ?

NO → **—Adjust the clutch switch (section 7). —Replace the clutch switch.**

YES

Turn the ignition switch ON.

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

Is there battery voltage ?

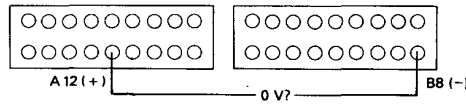
NO → **Repair open in ORN wire between control unit (A12) and the clutch switch.**

YES

Repair open in BLK wire between the clutch switch and G401.

(From page 6-60)

Measure voltage between A12 (+) terminal and B8 (–) terminal.



Is there battery voltage?

NO

Turn the ignition switch OFF.

Disconnect the 3P connector on the clutch switch.

Check for continuity between the No.1 terminal and No.3 terminal on the clutch switch.

Does continuity exist ?

YES

Replace the clutch switch.

NO

- **Repair short in ORN wire between control unit (A12) and clutch switch.**
- **Substitute a known-good control unit and recheck. If prescribed voltage is now available, replace the original control unit.**

YES

Clutch switch signal is OK.

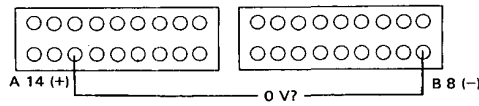
Input Troubleshooting Flow Chart —— P/S Oil Pressure Switch Signal ——

Inspection of P/S Oil Pressure Switch Signal.

Connect the ECU check adaptor A and B between the control unit and connector.

Turn the ignition switch ON.

Measure voltage between A 14 (+) terminal and B8 (−) terminal.



Is there voltage?

YES → Turn the ignition switch OFF.

Disconnect the 2P connector on the P/S oil pressure switch.

Check for continuity between the 2 terminals on the P/S oil pressure switch.

Does continuity exist?

NO → **Replace the P/S oil pressure switch.**

YES

Turn the ignition switch ON.

Measure voltage between A14 (+) terminal and body ground.

Is there battery voltage ?

NO → **Repair open in BLU/RED wire between control unit (A14) and the P/S oil pressure switch.**

YES

Repair open in BLK wire between the P/S oil pressure switch and G202.

NO

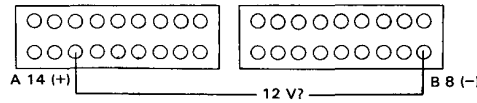
Start the engine.

Turn steering wheel slowly.

(To page 6-63)

(From page 6-62)

Measure voltage between A14 (+) terminal and B8 (−) terminal.



Is there battery voltage?

NO

Turn the ignition switch OFF.

Disconnect the 2P connector on the P/S oil pressure switch.

Check for continuity between the 2 terminals on the P/S oil pressure switch.

Does continuity exist?

YES

Replace the P/S oil pressure switch.

NO

P/S oil pressure switch signal is OK.

- **Repair short in BLU/RED wire between control unit (A14) and P/S oil pressure switch.**
- **Substitute a known-good control unit and recheck. If prescribed voltage is now available, replace the orignal control unit.**

Fuel and Emissions (Fuel-Injected Engine)

Component Locations 6-66
Troubleshooting Procedures 6-69

PGM-FI Control System
Troubleshooting Flow Charts
- Electronic Control Unit 6-70
- Manifold Absolute Pressure (MAP) Sensor 6-73
- Coolant Temperature (TW) Sensor 6-77
- Ignition Output Signal 6-79
- Vehicle Speed Sensor 6-81

Idle Control System
Troubleshooting Flow Charts
- Electronic Air Control Valve (EACV) 6-83
- P/S Oil Pressure Signal 6-86
- A/T Shift Position Signal 6-87
- Air Conditioning Signal 6-89

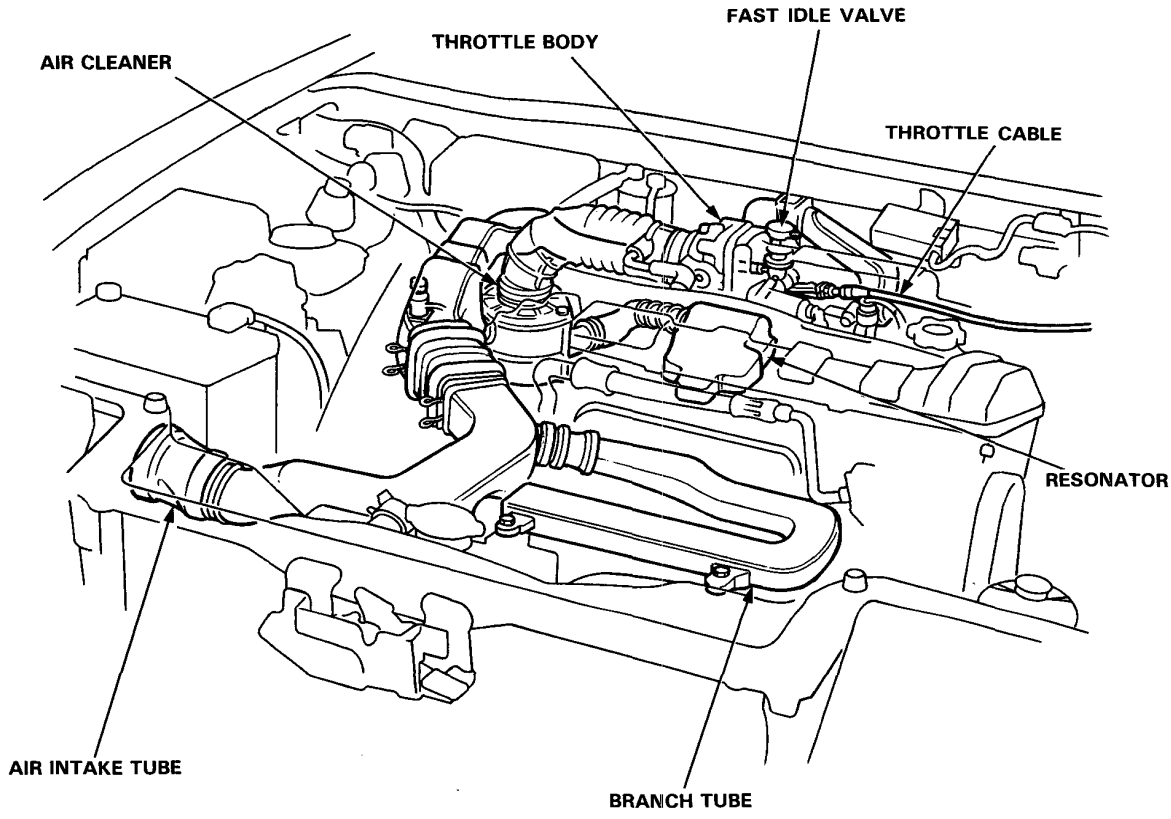
Fuel Supply System
Symptom-to-Sub System Chart 6-91
Injector Resistor 6-92

Outline of Model Changes

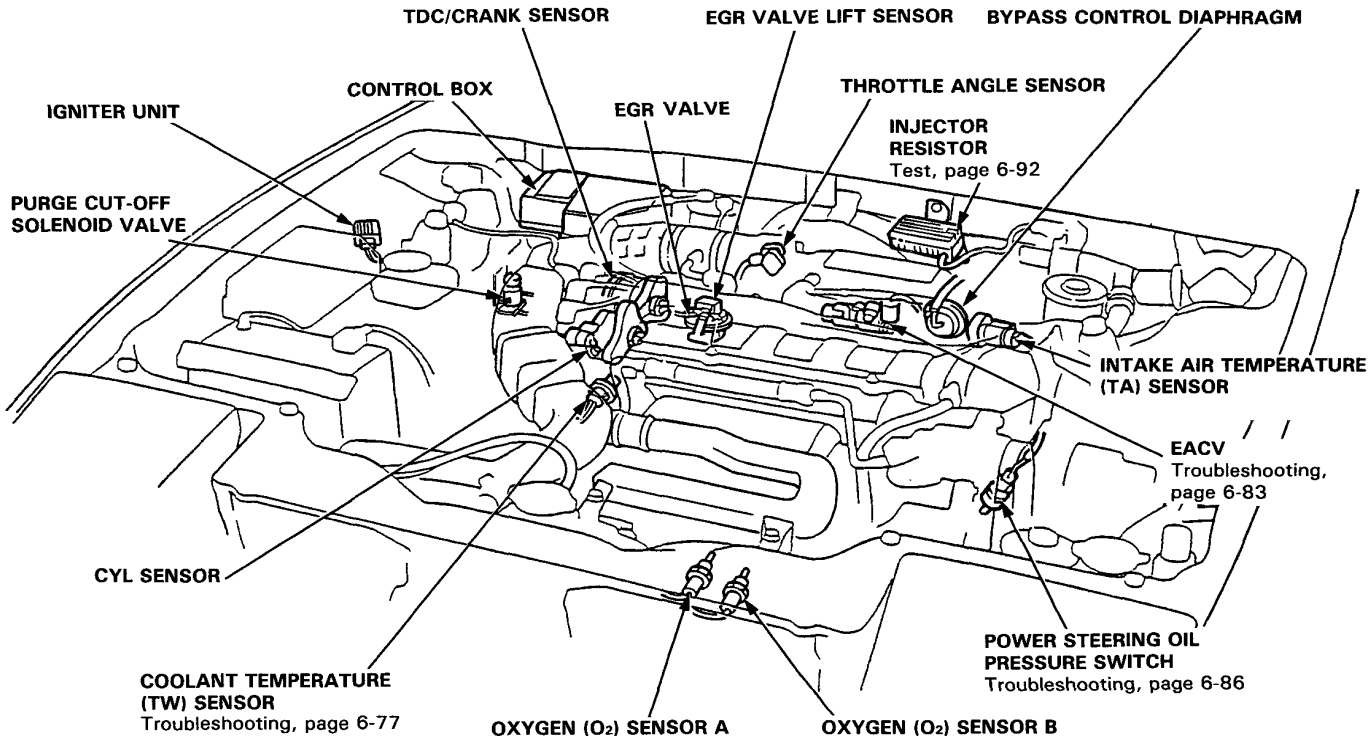
- The air intake tube has been changed.
- *The injector re*sister has been changed.
- The inspection of ECU, MAP sensor, ignition output signal, TW sensor, EACV, P/S oil pressure signal and A/T shift position signal has been modified.
- The fuel supply system has been modified.

Component Location

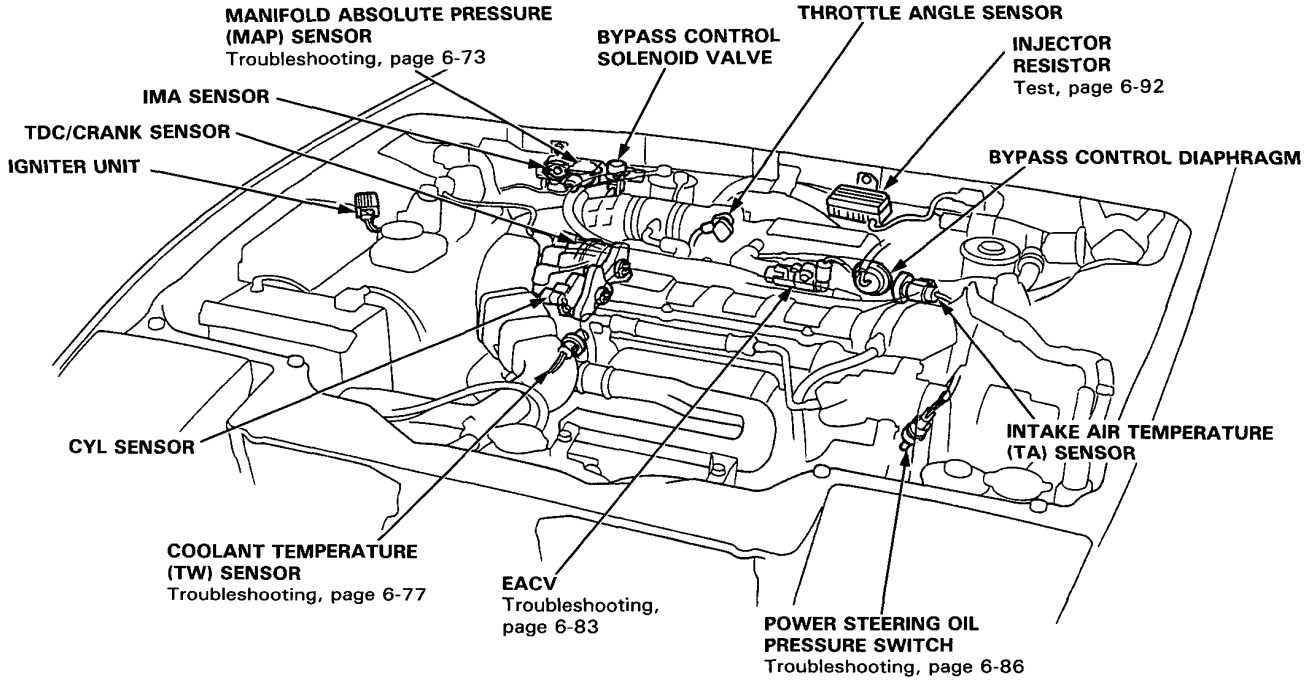
Index



[KX, KS, KZ]



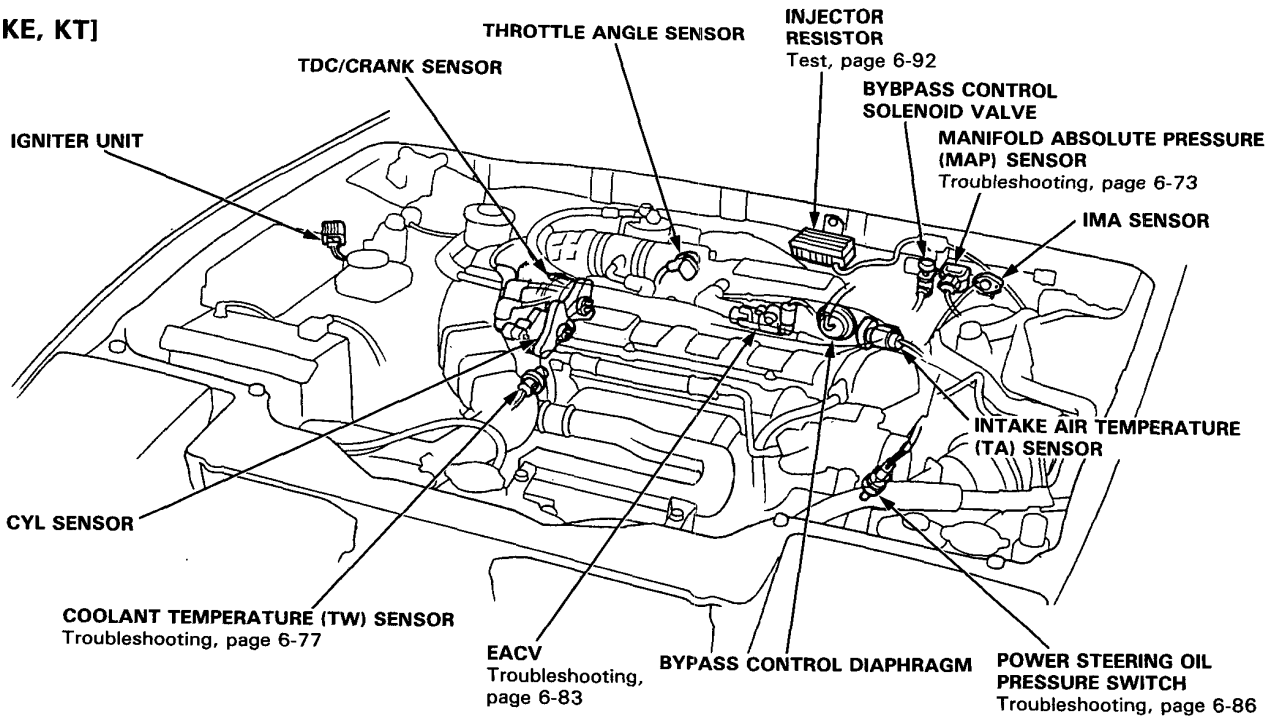
[KY, KF, KG, KW, KB]



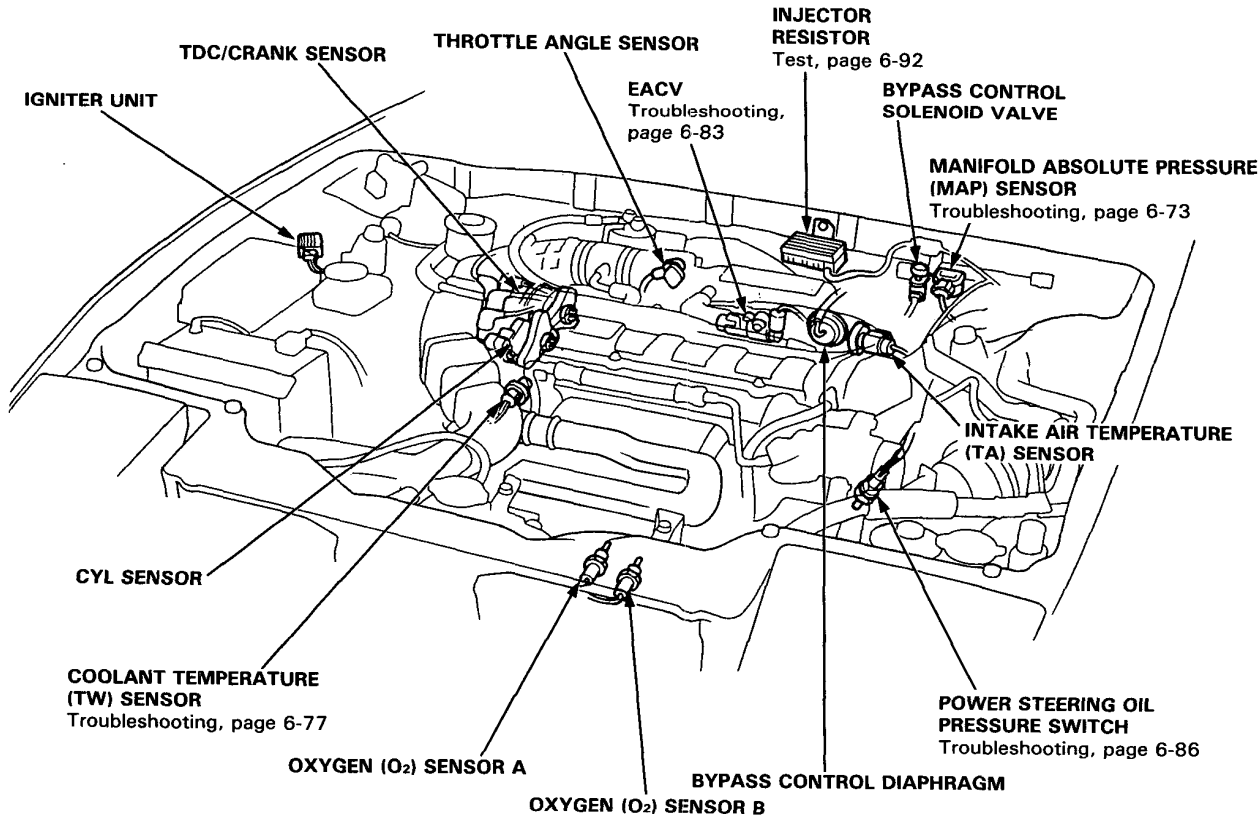
Component Location

Index

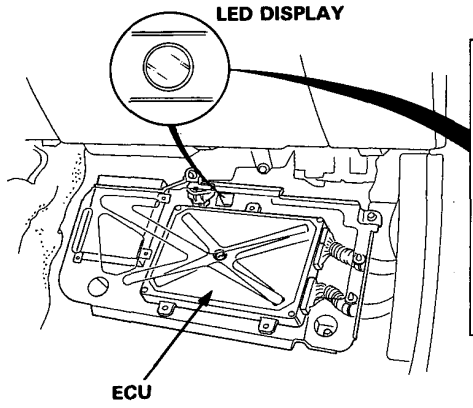
[KE, KT]

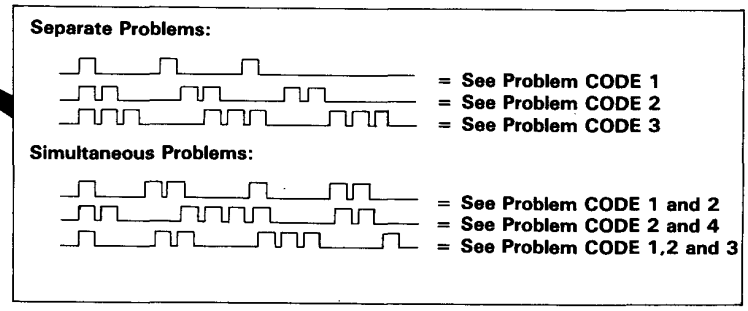


[KQ]



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



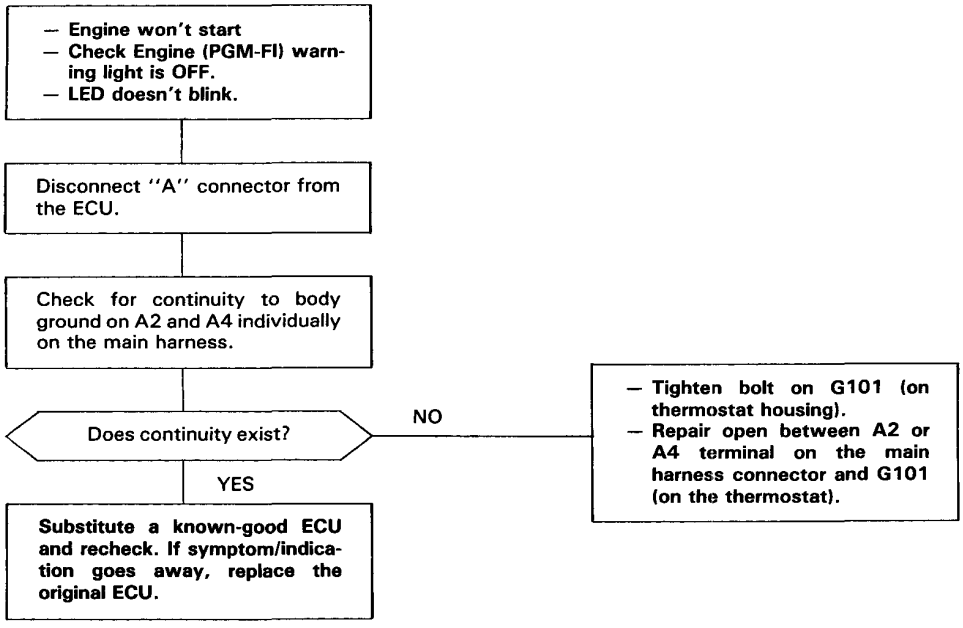


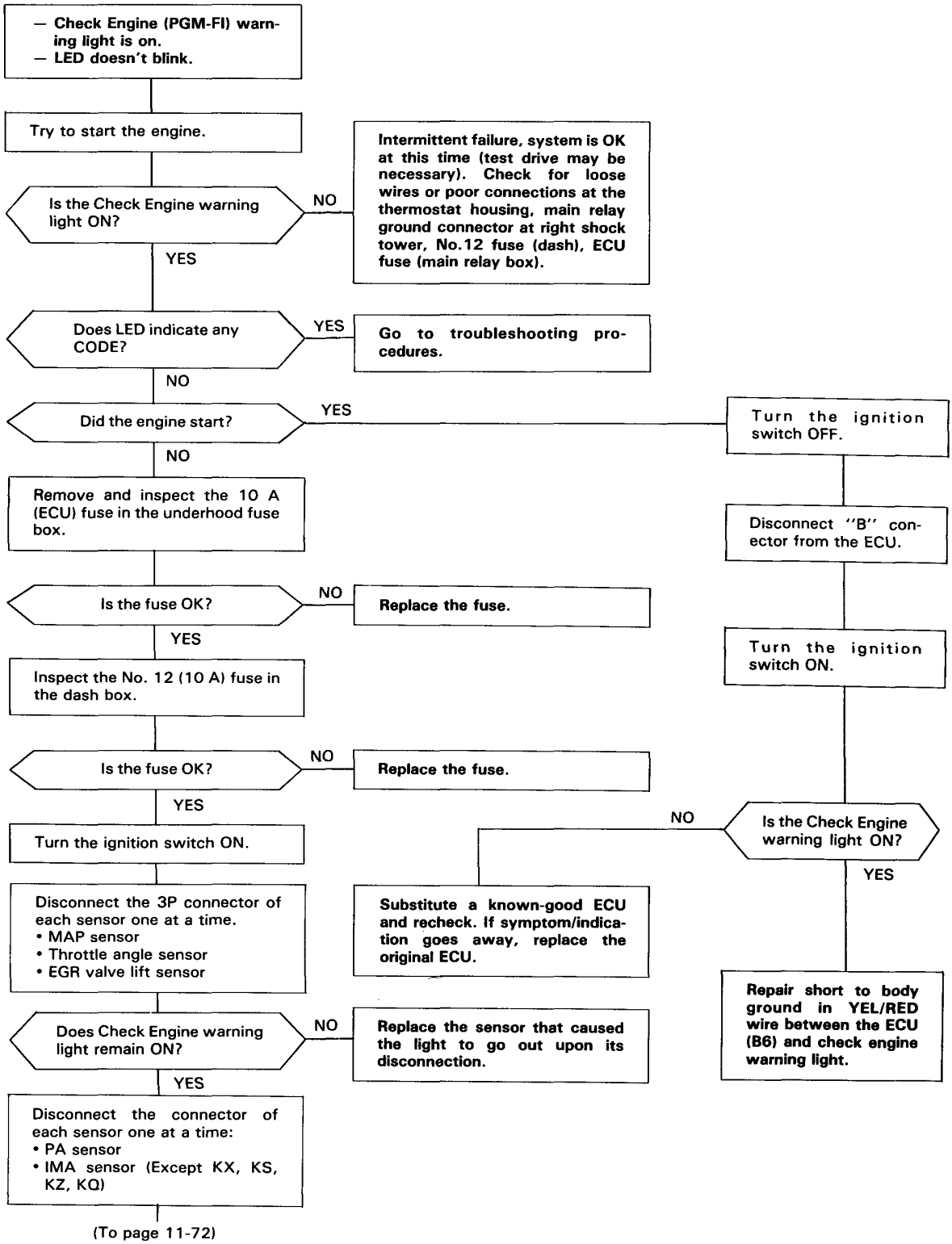
SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE
0	ECU	6-70
1	OXYGEN CONTENT A	—
2	OXYGEN CONTENT B	—
3	MANIFOLD ABSOLUTE PRESSURE	—
5		6-73, 75
4	CRANK ANGLE	—
6	COOLANT TEMPERATURE	6-77
7	THROTTLE ANGLE	—
8	TDC POSITION	—
9	No.1 CYLINDER POSITION	—
10	INTAKE AIR TEMPERATURE	—
11	IMA	—
12	EXHAUST GAS RECIRCULATION SYSTEM	—
13	ATMOSPHERIC PRESSURE	—
14	ELECTRONIC IDLE CONTROL	6-83
15	IGNITION OUTPUT SIGNAL	—
17	VEHICLE SPEED SENSOR	6-89

If CODE 16, or more than 17, count the number of blinks again. If the indicator is in fact blinking these codes, substitute a known-good ECU and recheck. If the indication goes away, replace the original ECU.
The PGM-FI dash warning light and ECU LED may come on, indicating a system problem, when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.

NOTE: Substitute a known-good ECU and check, if the PGM-FI dash warning light is on and does ECU LED stay on.

Troubleshooting Flow Chart —— ECU




– Check Engine (PGM-FI) warning light is on.
– LED doesn't blink.
Try to start the engine.
Is the Check Engine warning light ON?
NO
Intermittent failure, system is OK at this time (test drive may be necessary). Check for loose wires or poor connections at the thermostat housing, main relay ground connector at right shock tower, No.12 fuse (dash), ECU fuse (main relay box).
YES
Does LED indicate any CODE?
YES
Go to troubleshooting procedures.
NO
Did the engine start?
YES
Turn the ignition switch OFF.
NO
Remove and inspect the 10 A (ECU) fuse in the underhood fuse box.
Disconnect "B" conector from the ECU.
Is the fuse OK?
NO
Replace the fuse.
YES
Turn the ignition switch ON.
Inspect the No. 12 (10 A) fuse in the dash box.
Is the fuse OK?
NO
Replace the fuse.
YES
NO
Is the Check Engine warning light ON?
Turn the ignition switch ON.
YES
Disconnect the 3P connector of each sensor one at a time.
• MAP sensor
• Throttle angle sensor
• EGR valve lift sensor
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.
Repair short to body ground in YEL/RED wire between the ECU (B6) and check engine warning light.
Does Check Engine warning light remain ON?
NO
Replace the sensor that caused the light to go out upon its disconnection.
YES
Disconnect the connector of each sensor one at a time:
• PA sensor
• IMA sensor (Except KX, KS, KZ, KQ)
(To page 11-72)
(cont'd)

Troubleshooting Flow Chart — ECU (cont'd)

(From page 6-71)

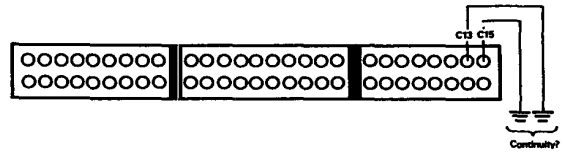
Does LED indicate CODE for the sensor disconnected? — YES → **Replace the PA sensor.**

NO

Reconnect the connector.

Turn the ignition switch OFF.

Connect the system checker harness. But disconnect the "C" connector from the ECU only, not the main wire harness.



Check for continuity between body ground and the following terminals: C13 • C15.

Does continuity exist? — YES → Disconnect the connector C116 and C235.

NO

Reconnect the all connectors. Reconnect the "C" connector to the ECU.

Disconnect the connector C116 and C235. → Does continuity exist? — NO →
- **Repair short to body ground in YEL/WHT[1] wire between C116 and throttle angle sensor.**
- **Repair short to body ground in YEL/WHT[2] wire between C116 and EGR valve lift sensor.**

YES →
- **Repair short to body ground in YEL/WHT wire between ECU (C13) and PA sensor or C235.**
- **Repair short to ground in RED/WHT wire between ECU (C15) and MAP sensor.**

Turn the ignition switch ON.

Individually connect the following terminals to body ground: A16 • A18

Is the Check Engine warning light ON? — NO →
- ***Tighten bolt on G101 (thermostat housing).***
- **Repair open in BLK/RED wire between ECU (A18) and G101.**
- **Repair open in BRN/BLK wire between ECU (A16) and G101.**

YES

Measure voltage between A18 (−) and the following terminals: A13 (+) • A15 (+)

Is there battery voltage? — NO →
- **Repair open in YEL/BLK wire between ECU (A13, A15) and main relay.**
- **Check main relay and wiring connectors at main relay.**

YES

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

Troubleshooting Flow Chart —— MAP Sensor [KX, KS, KZ]

– Check Engine (PGM-FI) warning light has been reported on.
– LED indicates CODE 5.

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box for 10 seconds to reset ECU.

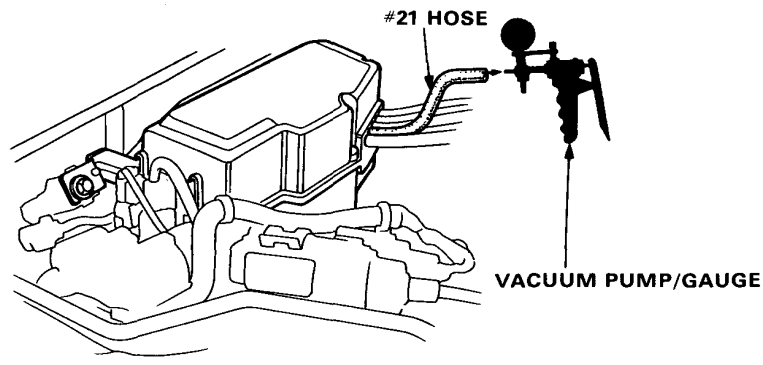
Start engine and keep engine speed at idle.

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

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

YES

Stop engine.



Connect vacuum pump to #21 hose and apply vacuum.

Does it hold vacuum ?

NO → **Replace #21 vacuum hose and recheck. If still no vacuum, replace MAP sensor.**

YES

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

Start engine.

Is there vacuum ?

NO → **Repair vacuum hose manifold.**

YES

(To page 6-74)

(cont'd)

Troubleshooting Flow Chart — MAP Sensor [KX, KS, KZ] (cont'd)

(From page 6-73)

Stop engine.

Connect the inspection adaptor between the MAP sensor and wire harness.

Turn the ignition switch ON.

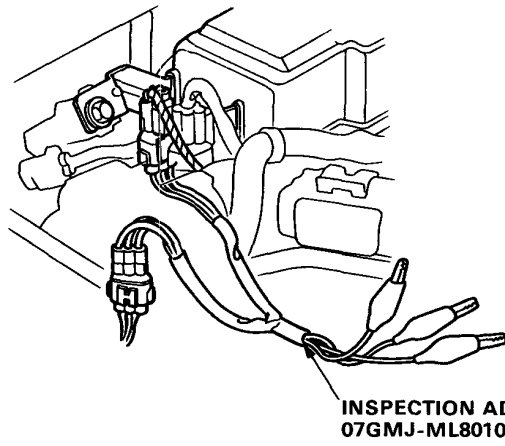
Measure voltage between WHT (+) terminal and GRN (–) terminal.

Is there approx. 3V ?

NO → **Replace MAP sensor.**

YES

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



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07GMJ-ML80100

Troubleshooting Flow Chart — MAP Sensor [Except KX, KS, KZ]

- **Check Engine (PGM-FI) warning light has been reported on.**
- **LED indicates CODE 5.**

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box for 10 seconds to reset ECU.

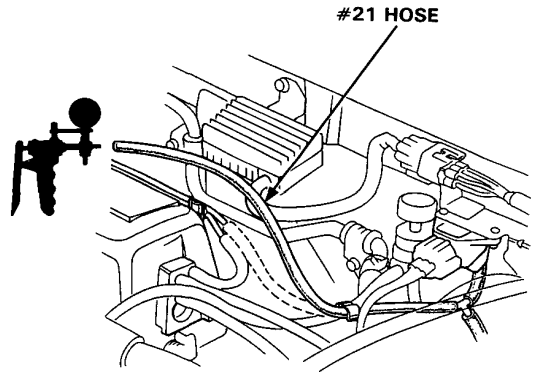
Start engine and keep engine speed at idle.

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

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

YES

Stop engine.



Connect vacuum pump to #21 hose and apply vacuum.

Does it hold vacuum ?

NO → **Replace #21 vacuum hose and recheck. If still no vacuum, replace MAP sensor.**

YES

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

Start engine.

Is there vacuum ?

NO → **Repair vacuum hose manifold.**

YES

(To page 6-76)

(cont'd)

Troubleshooting Flow Chart — MAP Sensor [Except KX, KS, KZ] (cont'd)

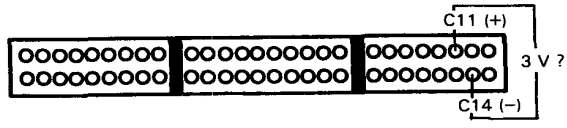
(From page 6-75)

Stop engine.

Connect the system checker harness between the ECU and connector.

Turn the ignition switch ON.

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



Is there approx. 3 V ?

NO → **Replace MAP sensor.**

YES

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

Troubleshooting Flow Chart —— TW Sensor

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

— Check Engine (PGM-FI) warning light is on.
— LED indicates CODE 6.

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 6?

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

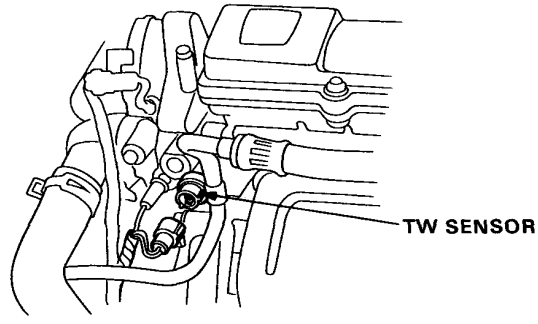
YES

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

Turn the ignition switch OFF.

Disconnect the 2P connector from the TW sensor.

Measure resistance between the 2terminals on the TW sensor.



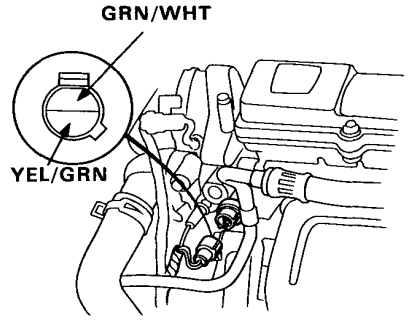
Is there 200—400 Ω ?

NO → **Replace TW sensor.**

YES

Turn the ignition switch ON.

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



(To page 6-78)

(cont'd)

Troubleshooting Flow Chart — TW Sensor (cont'd)

(From page 6-77)

Is there approx. 5V ?

NO → Turn the ignition switch OFF.

Connect the system checker harness between the ECU and connector.

Turn the ignition switch ON.

YES

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

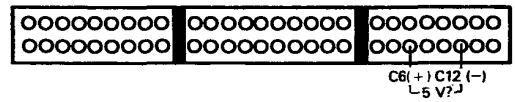
Is there approx. 5V ?

NO → **Repair open in GRN/WHT wire between ECU (C12) and TW sensor.**

YES

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

Measure voltage between C6 (+) terminal and C12 (–) terminal.



Is there approx. 5V ?

YES → **Repair open in YEL/GRN wire between ECU (C6) and TW sensor.**

NO

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

Measure voltage between C6 (+) terminal and C12 (–) terminal.

Is there approx. 5V ?

YES → **– Repair short in YEL/GRN wire between ECU (C6) and TW sensor.**
– Repair short in YEL/GRN wire between TW sensor and A/T control unit (A11).

NO

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

Troubleshooting Flow Chart —— Ignition Output Signal

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

— Check Engine (PGM-FI) warning light is on.
— LED indicates CODE 15.

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box for 10 seconds to reset ECU.

Turn the ignition switch ON.

Is Check Engine warning light on and does LED indicate CODE 15?

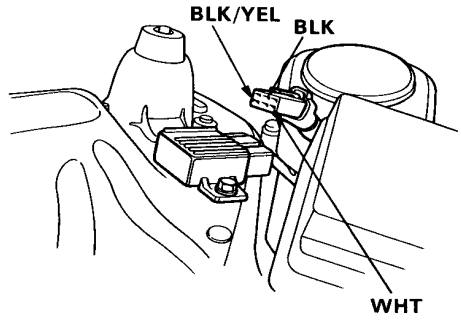
NO → **Intermittent failure (test drive may be necessary).**

YES

Turn the ignition switch OFF.

Disconnect the 6P connector on the igniter unit.

Turn the ignition switch ON.



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

Is there battery voltage ?

NO → **Repair open in the BLK/YEL wire between the igniter unit and ignition switch.**

YES

Turn the ignition switch OFF.

Connect the system checker harness between the ECU and connector.

(To page 6-80)

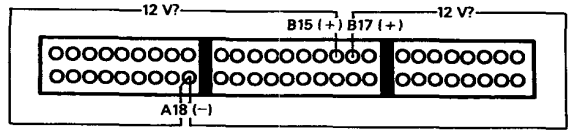
(cont'd)

Troubleshooting Flow Chart — Ignition Output Signal (cont'd)

(From page 6-79)

Reconnect the 6P connector on the igniter unit.

Turn the ignition switch ON.



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

Is there battery voltage ?

NO → Turn the ignition switch OFF.

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

Disconnect the 6P connector on the igniter unit and the system checker harness from the ECU.

Check for continuity of WHT wires between the ECU (B15, B17) and the igniter unit.

Does continuity exist ?

NO → **Repair open in WHT wires between the ECU (B15, B17) and the igniter unit.**

YES

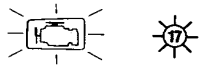
Check for continuity between WHT terminal of 6P connector and body ground.

Does continuity exist ?

YES → ***Repair short in WHT wire.***

NO → **Replace the igniter unit.**

Troubleshooting Flow Chart — Vehicle Speed Sensor



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

— Check Engine (PGM-FI) warning light is on.
— *LED indicates CODE 17.*

Turn the ignition switch OFF.

Remove CLOCK fuse in the under-hood relay box seconds to reset ECU.

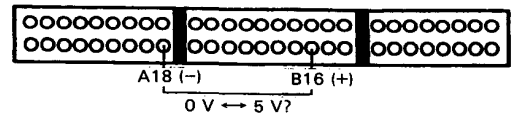
Connect the system checker harness between the ECU and connector.

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

WARNING
Block rear wheels before jacking up front of car.

Turn the ignition switch ON.

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



Does voltage pulse 0V and 5V?

YES → Road test necessary. Place the shift or selector lever in 2nd gear (MT) or 2 position (AT), accelerate to 4,000 min^{-1} (rpm) and decelerate to 1,200 min^{-1} (rpm) with foot off accelerator.

NOTE: The decel from 4,000 min^{-1} (rpm) to 1,200 min^{-1} (rpm) must be at least 6 seconds with your foot off the *accelerator pedal.*

Is check engine warning light is on and does LED indicate CODE 17?

NO → **Intermitten failure seat connectors C252, C263, C417 and C710.**

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

NO

Is there approx. 5V?

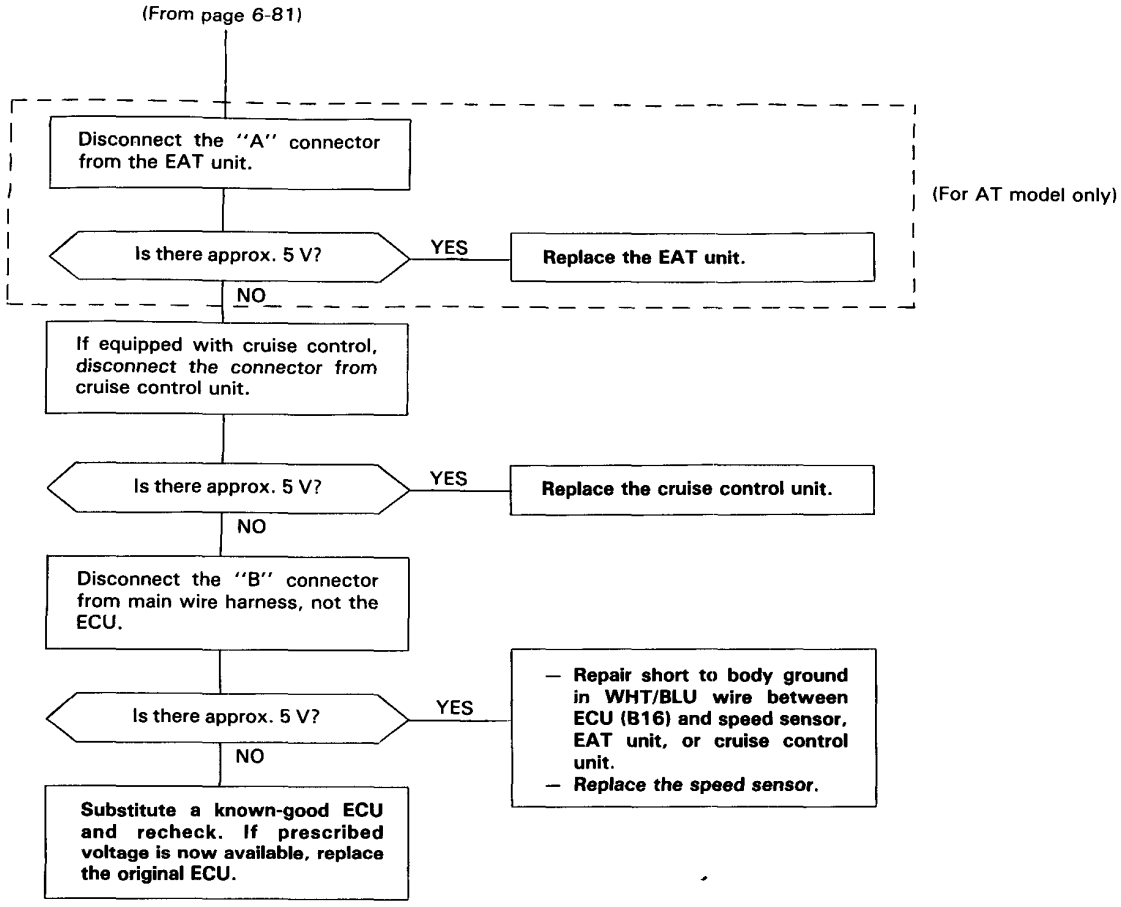
YES → **— Repair open or short in WHT/BLU wire between ECU (B16) and the speed sensor.**
— Replace the speed sensor.

NO

(To page 6-82)

(cont'd)

Troubleshooting Flow Chart — Vehicle Speed Sensor (cont'd)



Troubleshooting Flow Chart —— EACV

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

— Engine is running.
— Check Engine (PGM-FI) warning light is on.
— LED indicates CODE 14.

Turn the ignition switch OFF.

Remove CLOCK fuse in the under hood relay box for 10 seconds to reset ECU.

Start engine.

Is Check Engine warning light on and does LED indicate CODE 14?

NO → **Intermittent failure (test driving may be necessary)**

YES

Stop engine.

Disconnect the 2P connector from the EACV.

Measure resistance between the 2 terminals on the EACV.

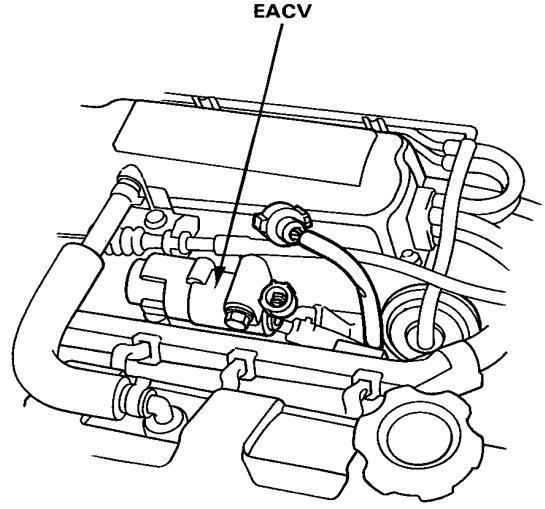
Is there 8—15Ω ?

NO → **Replace EACV.**

YES

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

(To page 6-84)



(cont'd)

Troubleshooting Flow Chart — EACV (cont'd)

(From page 6-83)

Does continuity exist ? YES → **Replace EACV**

NO

Turn the ignition switch ON.

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

Is there battery voltage ? YES → Turn the ignition switch OFF. → Disconnect the A connector from the ECU → Turn the ignition switch ON. → Is there battery voltage ? YES → **Repair short in BLU/RED wire between ECU (A11) and EACV.**

NO → **Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.**

NO

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

Is there battery voltage ? NO → **Repair open in BLK/YEL wire between the EACV and No.12 fuse.**

YES

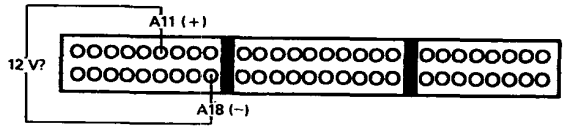
Turn the ignition switch OFF.

Reconnect the 2P connector to EACV.

Connect the system checker harness "A" connector to the wire harness only, not the ECU.

Turn the ignition switch ON.

Measure voltage between A11 (+) terminal and A18 (–) terminal.



(To page 6-85)

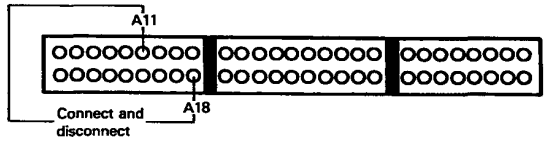
(From page 6-84)

Is there battery voltage ?

NO → **Repair open in BLU/RED wire between ECU (A11) and EACV.**

YES

Connect and disconnect A11 terminal to A18 terminal.



Does EACV click when the connector is connected and disconnected ?

NO → **Replace EACV.**

YES

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

Idle Control System

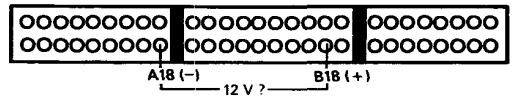
Troubleshooting Flow Chart —— P/S Oil Pressure Signal

Inspection of P/S Oil Pressure Signal

Connect the system checker harness between the ECU and connector.

Turn the ignition switch ON.

Measure voltage between B18 (+) terminal and A18 (–) terminal.



Is there battery voltage ?

YES → Disconnect the 2P connector on the P/S oil pressure switch.

Connect BLU/RED terminal to BLK terminal.

Is there battery voltage ?

YES → **Replace P/S oil pressure switch.**

NO → **Repair open in BLU/RED wire between ECU (B18) and P/S oil pressure switch or BLK wire between P/S oil pressure switch and G301.**

NO → Start engine.

Turn steering wheel slowly.

Measure voltage between B18 (+) terminal and A18 (–) terminal while steering wheel is turning.

Is there battery voltage ?

NO → Disconnect "B" connector from the wire harness only, not the ECU.

Is there battery voltage ?

NO → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES → Reconnect "B" connector to the wire harness and disconnect 2P connector on the P/S oil pressure switch.

Is there battery voltage ?

YES → **Replace P/S oil pressure switch.**

NO → **Repair short in BLU/RED wire between ECU (B18) and the P/S oil pressure switch.**

YES → **P/S oil pressure signal is OK.**

Troubleshooting Flow Chart —— A/T Shift Position Signal

Inspection of A/T Shift Position Signal

Turn the ignition switch ON.

Observe the A/T shift indicator and select each position separately.

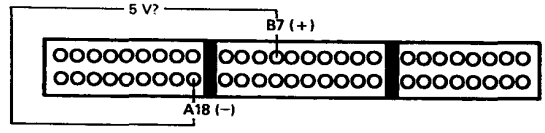
Does the indicator light properly ?

NO → **See A/T shift position Indicator Inspection (section 16).**

YES

Turn the ignition switch OFF.

Connect the system checker harness between the ECU and connector. But disconnect "B" connector from the wire harness only, not the ECU.



Turn the ignition switch ON.

Measure voltage between B7 (+) terminal and A18 (–) terminal.

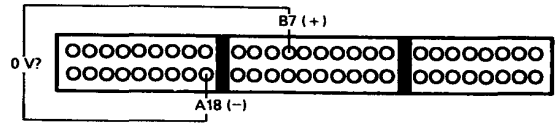
Is there approx. 5 V ?

NO → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

Turn the ignition switch OFF.

Reconnect "B" connector to the wire harness.



Turn the ignition switch ON.

Measure voltage between B7 (+) terminal and A18 (–) terminal in Neutral position.

(To page 6-88)

(cont'd)

Troubleshooting Flow Chart — A/T Shift Position Signal (cont'd)

(From page 6-87)

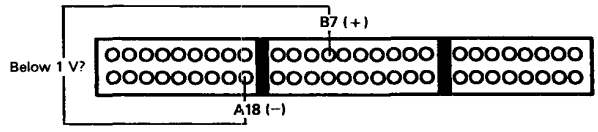
Is voltage below 1V ?

NO

- Repair open in LT GRN wire between ECU (B7) and combination meter.
- Repair open in GRN wire between the combination meter and shift position console switch.

YES

Measure voltage between B7 (+) terminal and A18 (–) terminal in Park position.



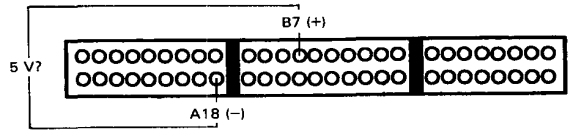
Is voltage below 1V ?

NO

Repair open in GRN/WHT wire between combination meter and shift position console switch.

YES

Measure voltage between B7 (+) terminal and A18 (–) terminal except in Park and Neutral.



Is there approx. 5V?

NO

Repair short in LT GRN wire between ECU (B7) and combination meter.

YES

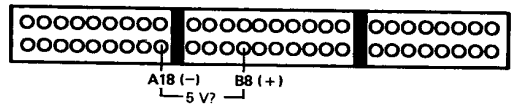
A/T shift position signal is OK.

Troubleshooting Flow Chart —— Air Conditioning Signal

Inspection of Air Conditioning Signal.

Connect the system checker harness between the ECU and connector. But disconnect "B" connector from the wire harness only, not the ECU.

Turn the ignition switch ON.



Measure voltage between B8 (+) terminal and A18 (–) terminal.

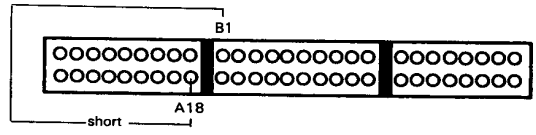
Is there approx. 5 V ?

NO → **Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.**

YES

Turn the ignition switch OFF.

Reconnect "B" connector to the wire harness.

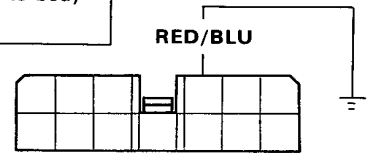


Turn the ignition switch ON.

Connect B1 terminal to A18 terminal.

Does A/C compressor clutch engage? (clicking sound)

NO → Connect the RED/BLU terminal of the 13P connector on the compressor control unit to body ground.



Does A/C compressor clutch engage? (clicking sound)

NO → **See Air conditioner inspection (section 15).**

YES → **Repair open in RED/BLU wire between ECU (B1) and compressor control unit.**

YES

Start engine.

Blower switch ON.

(To page 6-90)

(cont'd)

Troubleshooting Flow Chart — Air Conditioning Signal (cont'd)

(From page 6-89)

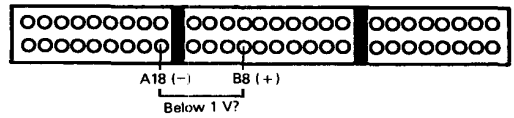
A/C switch ON.

Does A/C operate ?

NO → **See Air conditioner inspection (section 15).**

YES

Measure voltage between B8 (+) terminal and A18 (–) terminal.



Is voltage below 1 V ?

NO → **Repair open in RED/GRN wire between ECU (B8) and A/C switch.**

YES

Air conditioning signal is OK.

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.

PAGE / SUB SYSTEM		FUEL INJECTOR	INJECTOR RESISTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	MAIN RELAY	FUEL TANK	CONTAMI-NATED FUEL
SYMPTOM		—	92	—	—	—	—	—	*
ENGINE WON'T START			③		③	①	②		
FREQUENT STALLING					②	①			②
POOR PERFORM-ANS	MISFIRE	①	②						③
	LOSS OF POWER				①				②

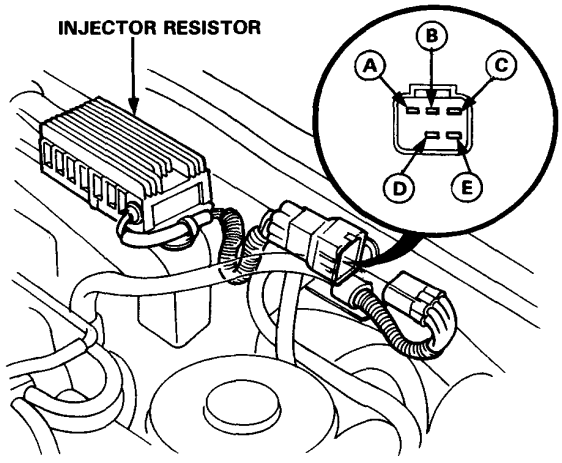
* Fuel with dirt, water or a high percentage of alcohol is considered contaminated.

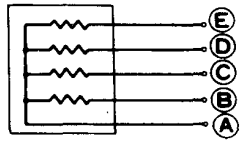
Injector Resistor

Test

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

   Resistance should be: 5—7 Ω





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

Automatic Transmission

Component Locations 9-2
Circuit Diagram 9-8
Electrical System
Troubleshooting Flow Chart 9-10
S_4 Switch 9-11
Hydraulic System
Rord Test 9-12
Stall Speed 9-18
Illustrated Index 9-20
Main Valve Body 9-22
Secondary Valve Body 9-23
Servo Valve Body 9-24
Parking Brake Stopper 9-25
Gearshift Selector 9-26
Shift Cable
  Removal 9-27
  Installation 9-28
  Adjustment 9-29
Throttle Control Cable 9-30

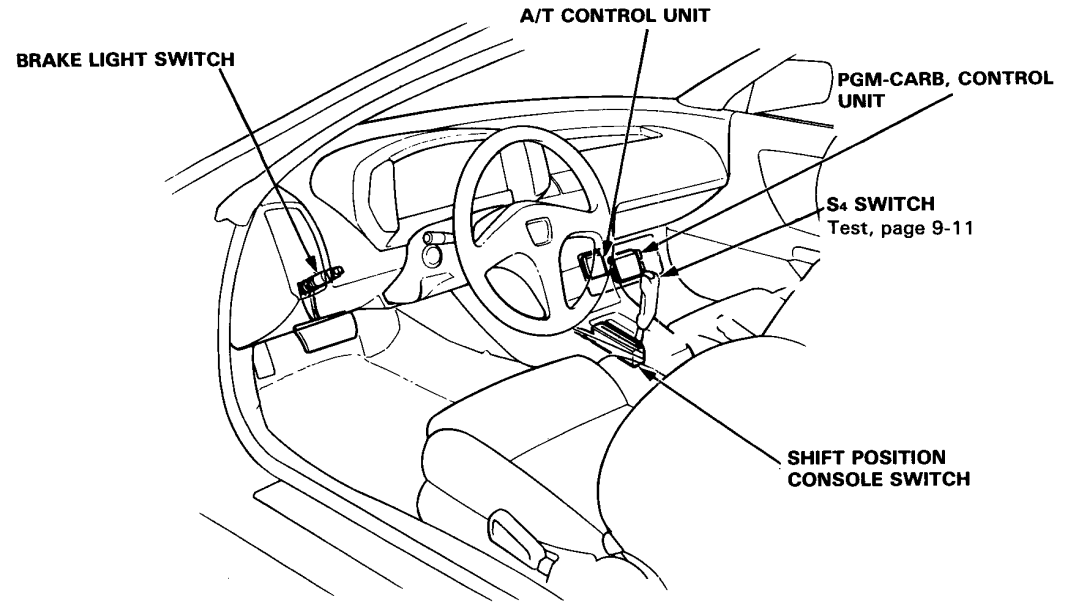
Outline of Model Changes

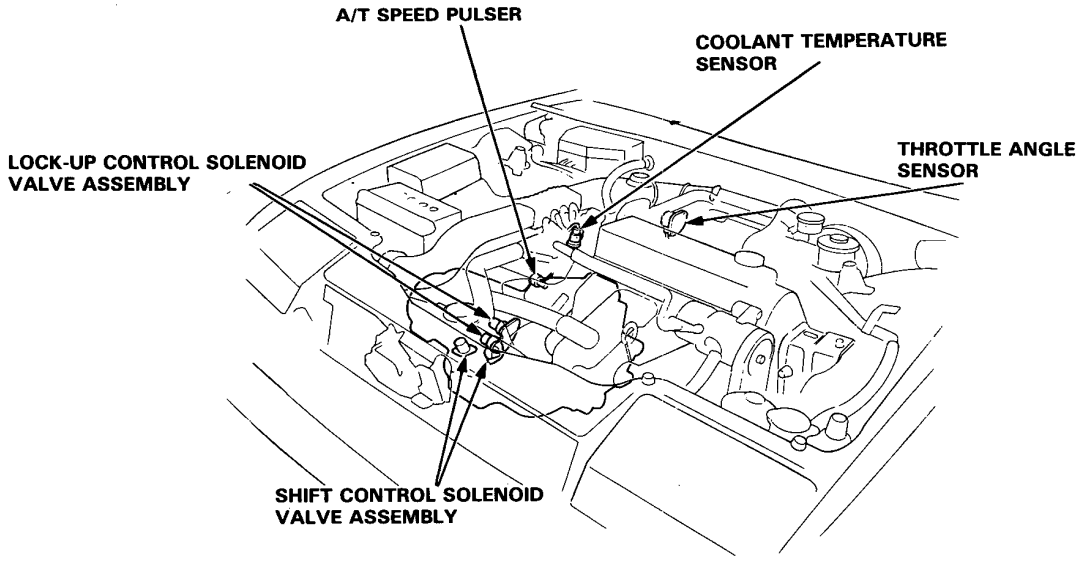
- S_4 switch has been changed.
- On-road test values has been changed.
- Buffle plate has been added.
- Shift cable removal/installation has been added.
- Throttle control cable adjustment has been added.

Component Locations

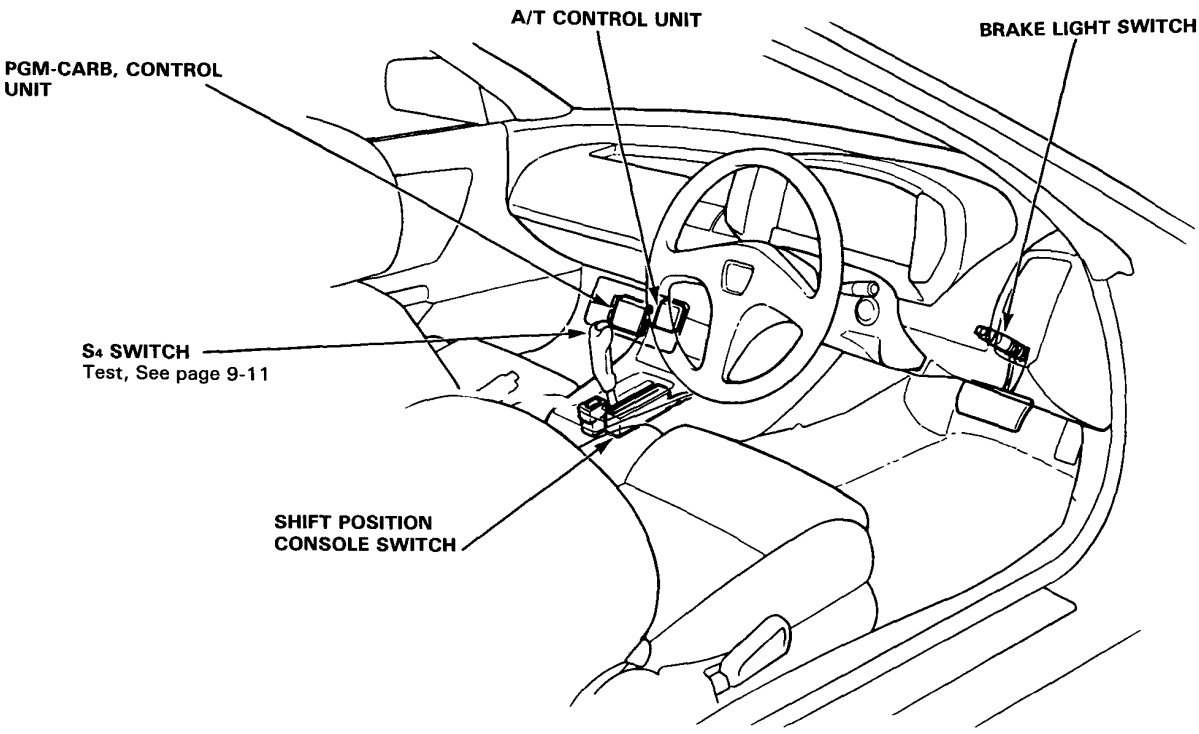
Carbureted engine:

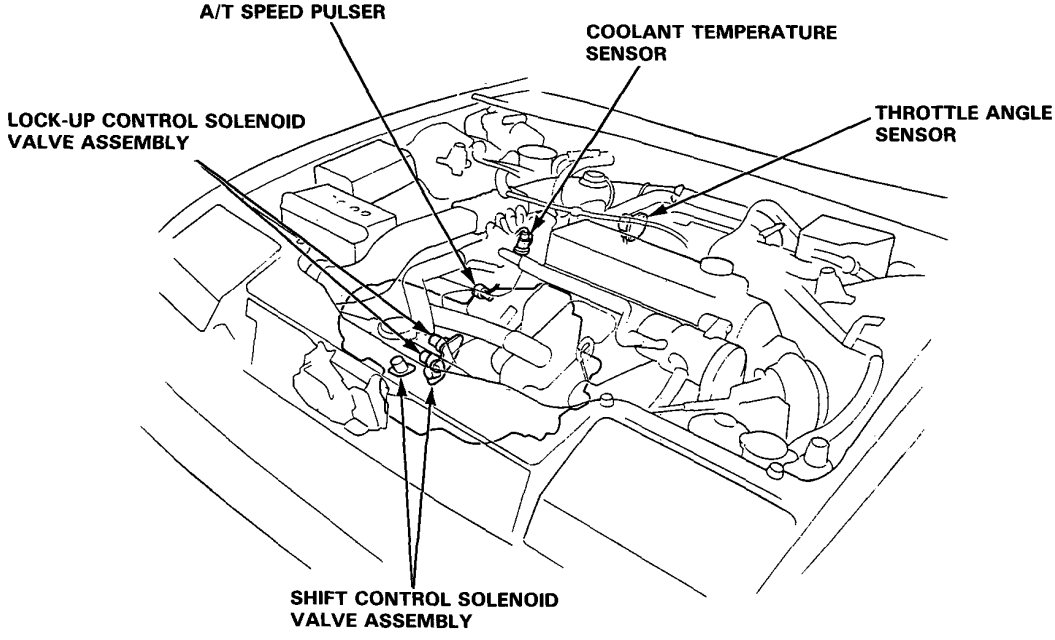
LHD:





RHD:

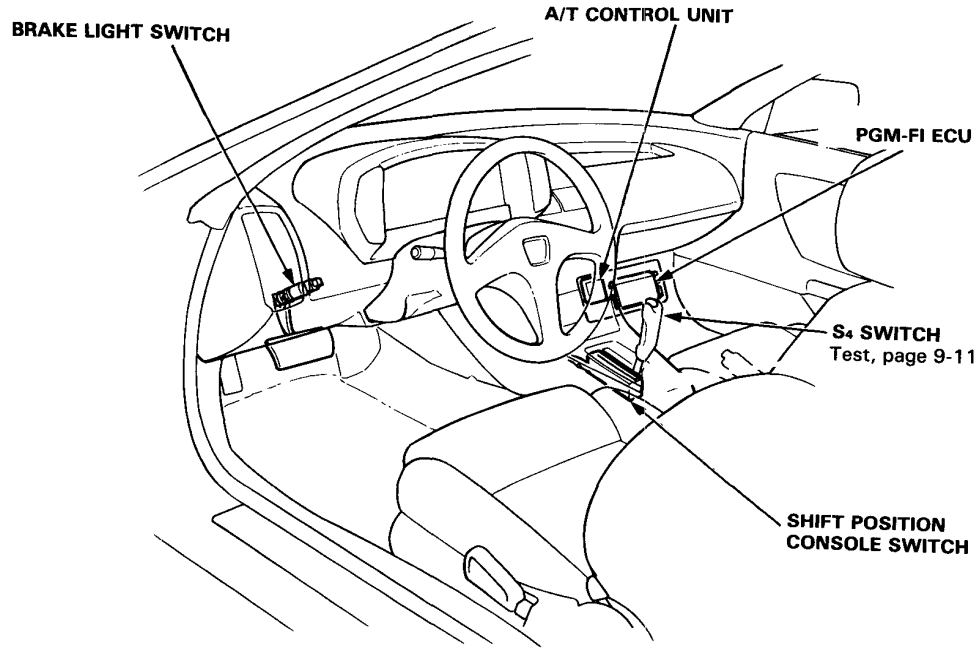

A/T CONTROL UNIT
BRAKE LIGHT SWITCH
PGM-CARB, CONTROL UNIT
S4 SWITCH
Test, See page 9-11
SHIFT POSITION CONSOLE SWITCH

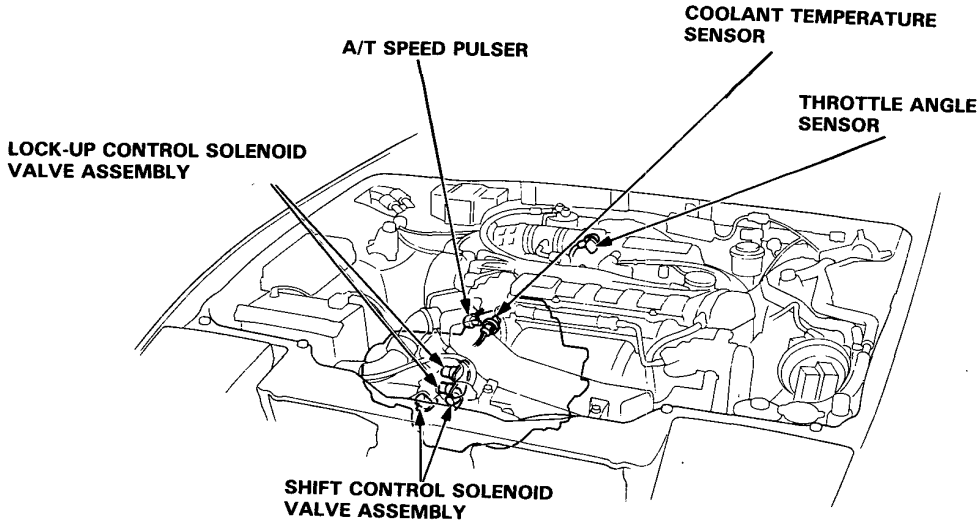

A/T SPEED PULSER
COOLANT TEMPERATURE SENSOR
LOCK-UP CONTROL SOLENOID VALVE ASSEMBLY
THROTTLE ANGLE SENSOR
SHIFT CONTROL SOLENOID VALVE ASSEMBLY

Component Locations

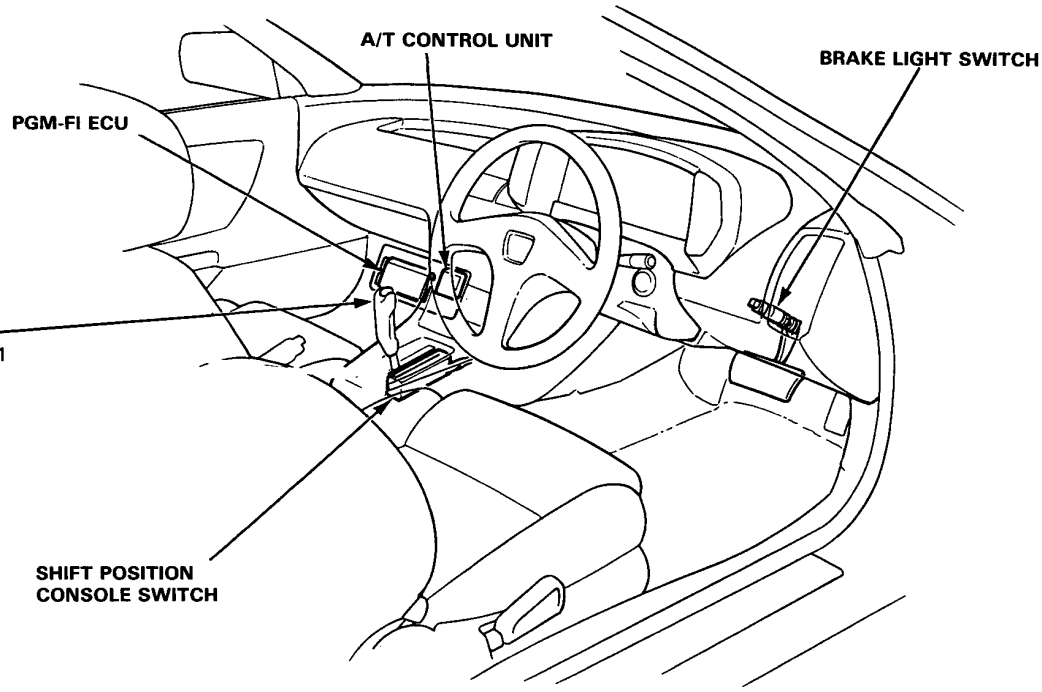
Fuel-Injected engine:

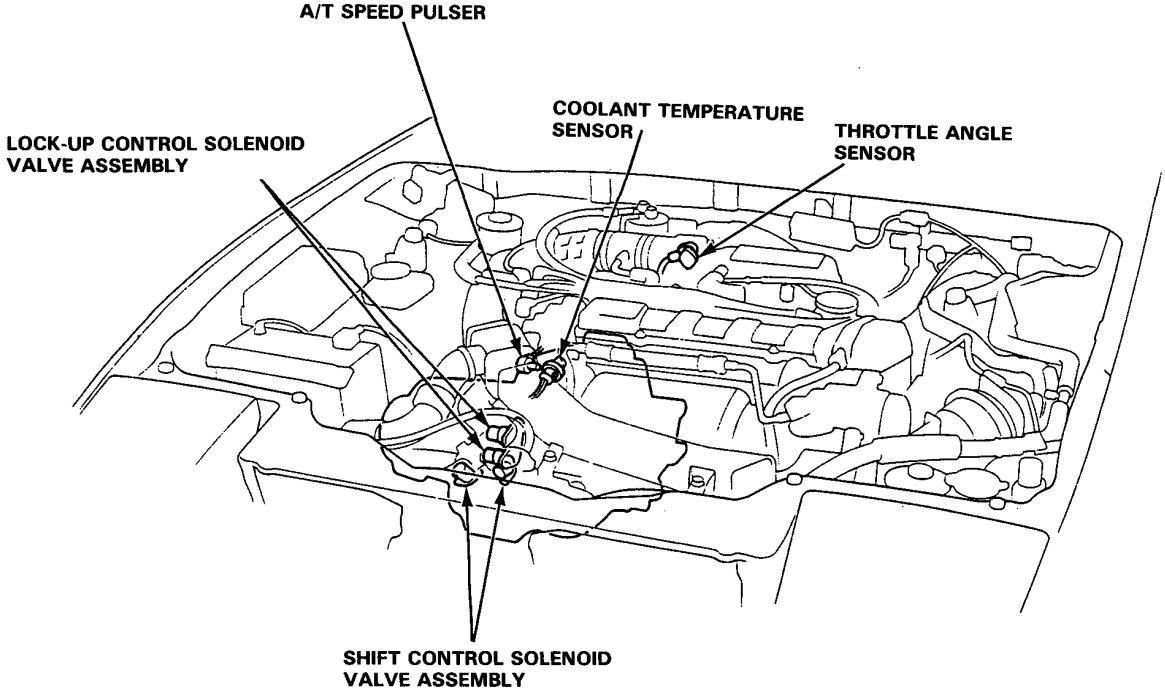
LHD:





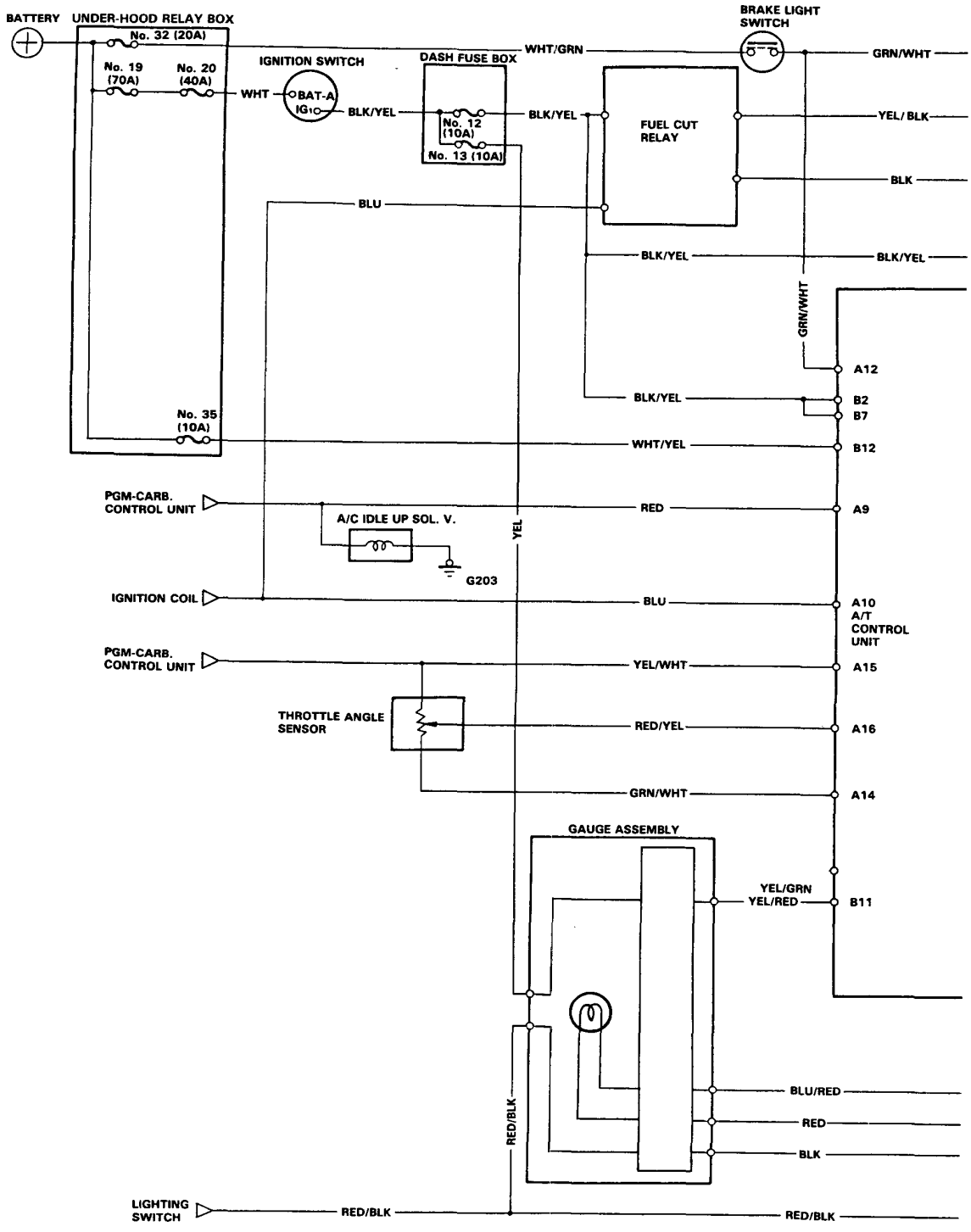
RHD:

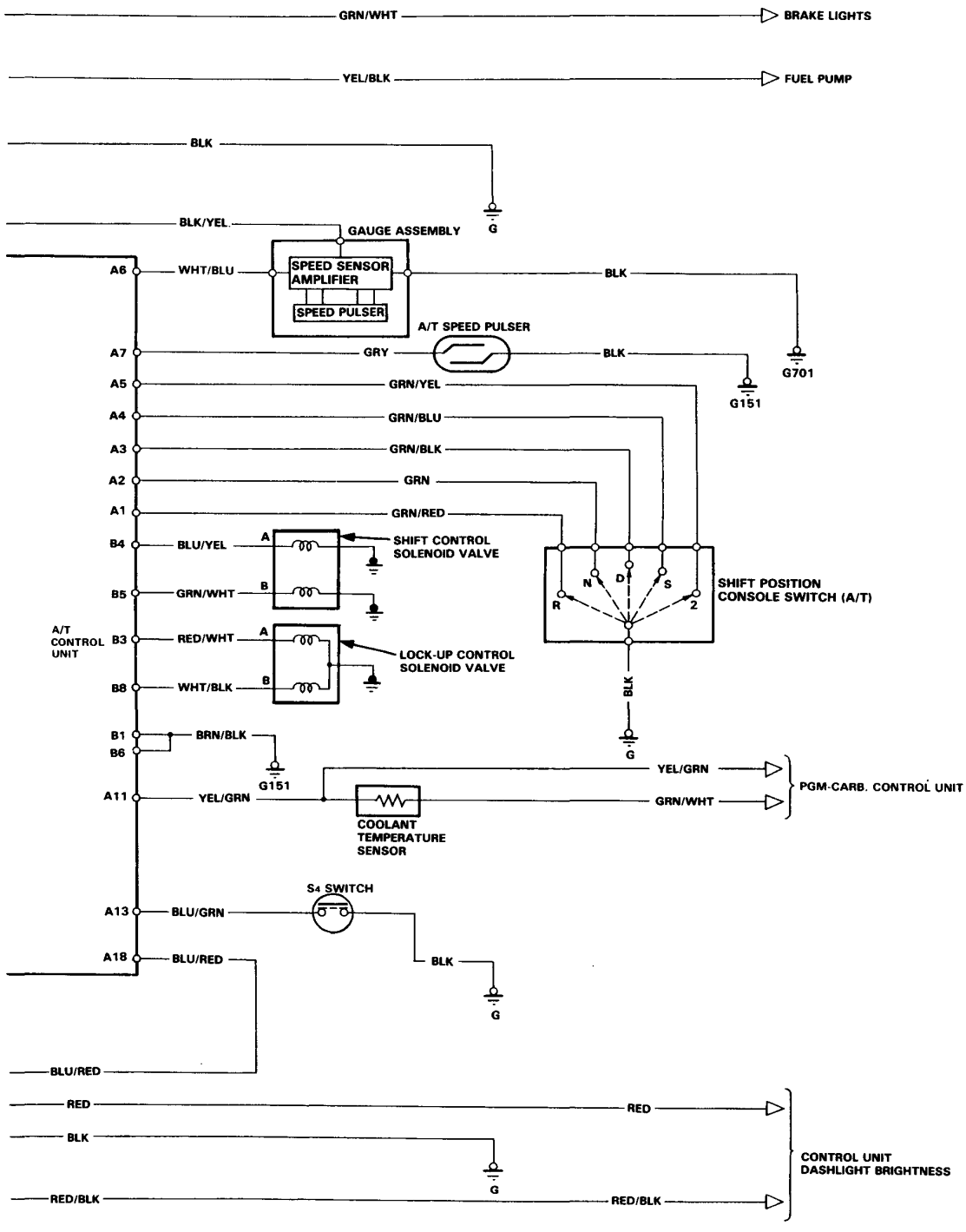

A/T CONTROL UNIT
BRAKE LIGHT SWITCH
PGM-FI ECU
S4 SWITCH
Test, page 9-11
SHIFT POSITION
CONSOLE SWITCH


A/T SPEED PULSER
COOLANT TEMPERATURE
SENSOR
THROTTLE ANGLE
SENSOR
LOCK-UP CONTROL SOLENOID
VALVE ASSEMBLY
SHIFT CONTROL SOLENOID
VALVE ASSEMBLY

Circuit Diagram

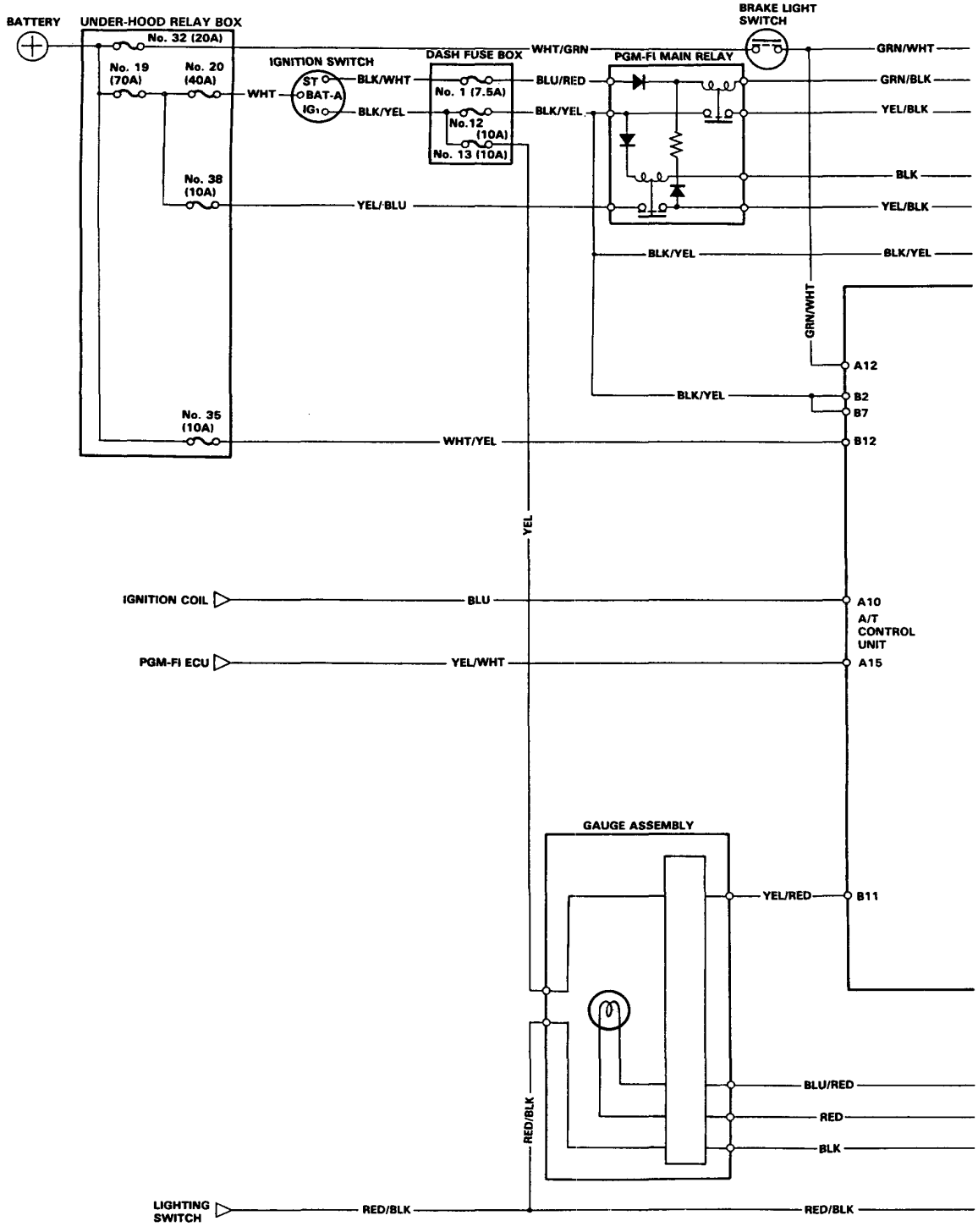
Carbureted engine:

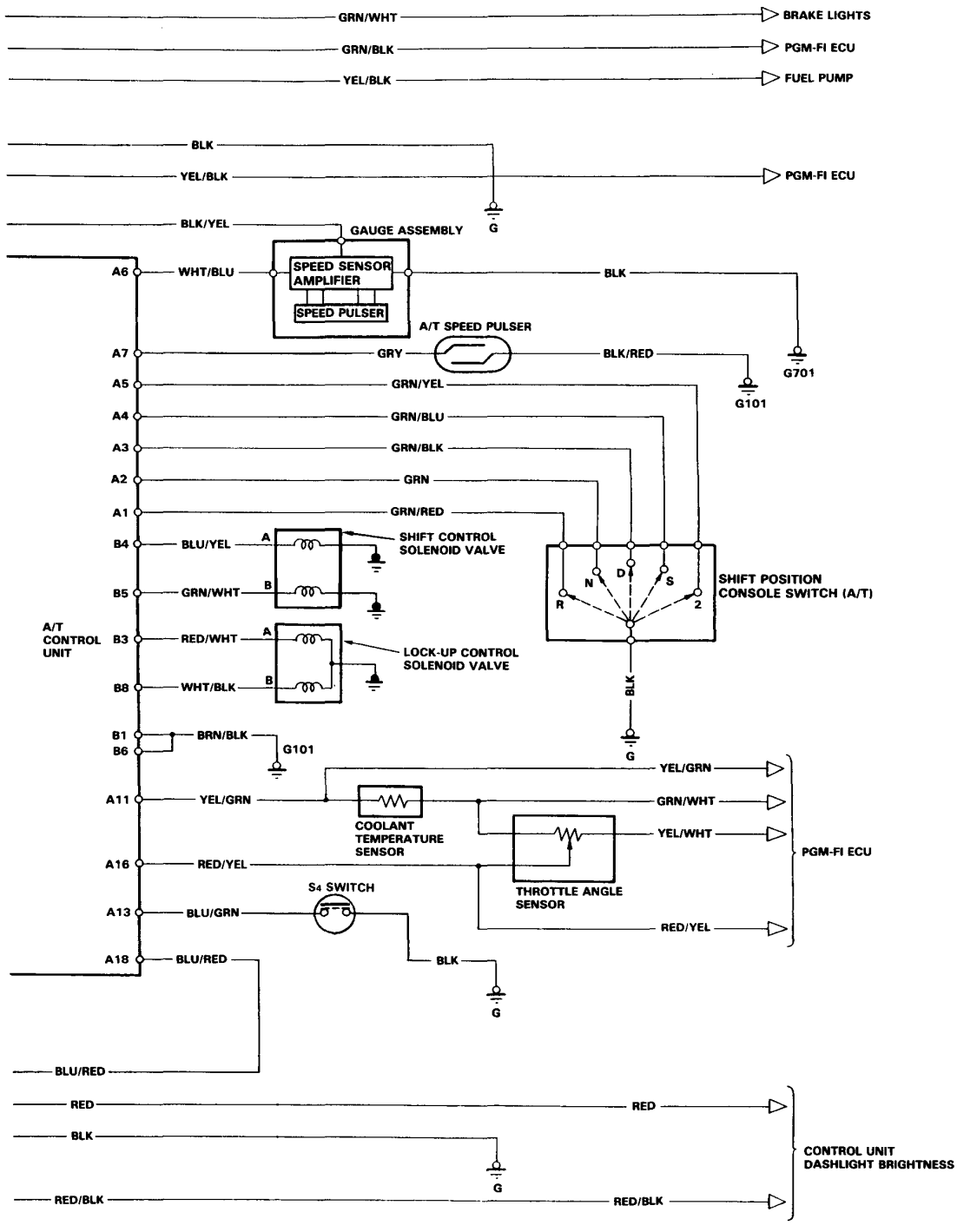



GRN/WHT
BRAKE LIGHTS
YEL/BLK
FUEL PUMP
BLK
G
BLK/YEL
GAUGE ASSEMBLY
A6
WHT/BLU
SPEED SENSOR AMPLIFIER
SPEED PULSER
BLK
A/T SPEED PULSER
A7
GRY
BLK
G701
A5
GRN/YEL
G151
A4
GRN/BLU
A3
GRN/BLK
A2
GRN
A1
GRN/RED
B4
BLU/YEL
A
SHIFT CONTROL SOLENOID VALVE
B5
GRN/WHT
B
N
D
S
R
2
SHIFT POSITION CONSOLE SWITCH (A/T)
A/T CONTROL UNIT
B3
RED/WHT
A
LOCK-UP CONTROL SOLENOID VALVE
B8
WHT/BLK
B
BLK
G
B1
B6
BRN/BLK
G151
YEL/GRN
A11
YEL/GRN
GRN/WHT
PGM-CARB. CONTROL UNIT
COOLANT TEMPERATURE SENSOR
S4 SWITCH
A13
BLU/GRN
A18
BLU/RED
BLK
G
BLU/RED
RED
RED
BLK
G
RED/BLK
RED/BLK
CONTROL UNIT DASHLIGHT BRIGHTNESS

Circuit Diagram

Fuel-injected engine:




GRN/WHT
BRAKE LIGHTS
GRN/BLK
PGM-FI ECU
YEL/BLK
FUEL PUMP
BLK
YEL/BLK
PGM-FI ECU
BLK/YEL
GAUGE ASSEMBLY
G
A6
WHT/BLU
SPEED SENSOR AMPLIFIER
SPEED PULSER
BLK
A/T SPEED PULSER
A7
GRY
BLK/RED
G701
A5
GRN/YEL
G101
A4
GRN/BLU
A3
GRN/BLK
A2
GRN
A1
GRN/RED
B4
BLU/YEL
A
SHIFT CONTROL SOLENOID VALVE
B5
GRN/WHT
B
N
D
S
R
2
SHIFT POSITION CONSOLE SWITCH (A/T)
A/T CONTROL UNIT
B3
RED/WHT
A
LOCK-UP CONTROL SOLENOID VALVE
B8
WHT/BLK
B
BLK
G
B1
B6
BRN/BLK
G101
YEL/GRN
A11
YEL/GRN
GRN/WHT
COOLANT TEMPERATURE SENSOR
YEL/WHT
PGM-FI ECU
A16
RED/YEL
THROTTLE ANGLE SENSOR
S4 SWITCH
A13
BLU/GRN
RED/YEL
A18
BLU/RED
BLK
G
BLU/RED
RED
RED
BLK
G
CONTROL UNIT DASHLIGHT BRIGHTNESS
RED/BLK
RED/BLK

Troubleshooting Flow Chart

Self-diagnosis LED indicator blinks nine times.

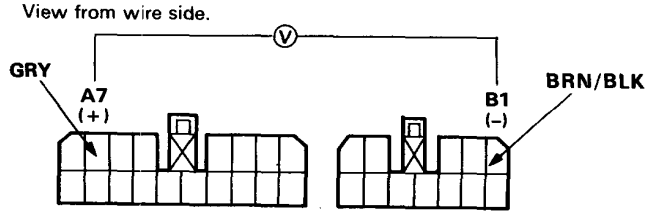
Jack up the front of the car.

WARNING
- **Set the parking brake securely and block the rear wheels.**
- **Jack up the front of the car and support with Jack stands.**

Turn the ignition switch ON.

Rotate the front wheels and measure the voltage between the A7 (GRY) and B1 (BRN/BLK) terminals.

View from wire side.



Do 0 and approx. 5 V appear alternately?

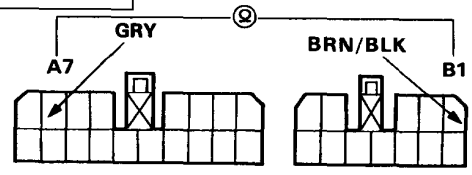
NO → Turn the ignition switch OFF.

YES

Substitute a known-good control unit and recheck.

Disconnect the 18P and 12P connectors from the control unit.

Rotate the front wheels and check for continuity between the A7 (GRY) and B1 (BRN/BLK) terminals.



Do continuity and infinity alternately appear?

NO → **Check for open or short in GRY wire between the A7 terminal and the A/T speed pulser. If wire is OK, check the A/T Speed Pulser.**

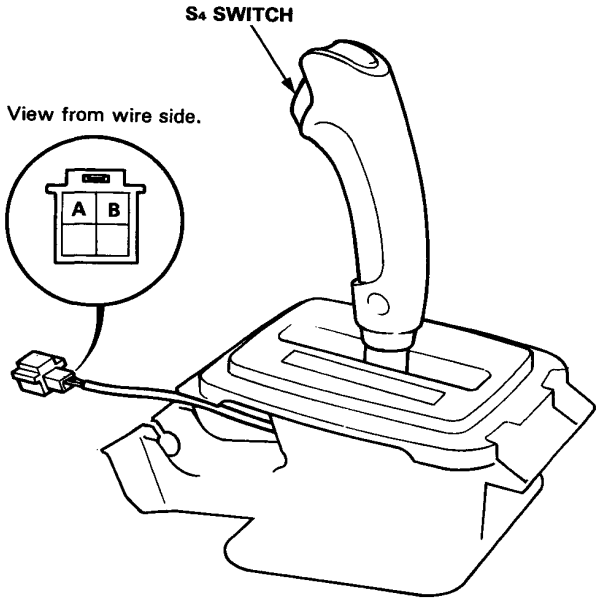
YES

Check for loose control unit connectors. If necessary, substitute a known-good control unit and recheck.

S_4 Switch

Test

1. Remove the center console.
2. Disconnect the switch connector.
3. Check for continuity between A and B terminals. There should be continuity when the switch is pressed.



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.

[D] and [S] Range

1. Apply parking brake and block the wheels. Start the engine, then move the slector to [D] 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.
3. Apply parking brake and block the wheels. Start the engine, then move the selector [S] while depressing the brake pedal. Depress the accelerator pedal, and release it suddenly. Engine should not stall.

KG, KW, KB, KY, KT models:
(Carburetor)

- **Upshift**
  [D]

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	**km/h**	12—16	27—32	44—50	16—20
	mph	7—10	17—20	27—31	10—12
7/16 throttle Acceleration from a stop	**km/h**	32—38	56—63	74—84	98—102
	mph	20—24	35—39	46—52	61—63
Full-throttle Acceleration from a stop	**km/h**	53—60	99—106	147—155	132—136
	mph	33—37	62—66	91—96	82—85

[S] (with S_4 switch in operation)

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	**km/h**	18—22	40—45	46—52	23—27
	mph	11—14	25—28	29—32	14—17
7/16 throttle Acceleration from a stop	**km/h**	37—43	66—73	104—114	121—125
	mph	23—27	41—45	65—71	75—78
Full-throttle Acceleration from a stop	**km/h**	53—60	99—106	147—155	132—136
	mph	33—37	62—66	91—96	82—85

- **Downshift**
  [D]

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	**km/h**	14—18	28—33	——	10—14
	mph	9—11	17—21	——	6—9
7/16 throttle When car is slowed by increased grade, wind, etc.	**km/h**	87—91	——	——	——
	mph	54—57	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	**km/h**	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

[S] (with S_4 switch in operation)

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	**km/h**	21—25	33—38	——	13—17
	mph	13—16	21—24	——	8—11
7/16 throttle When car is slowed by increased grade, wind, etc.	**km/h**	98—102	——	——	——
	mph	61—63	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	**km/h**	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

(PGM-FI)

- Upshift

[D]

		1st–2nd	2nd–3rd	3rd–4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	12–16	27–32	44–50	16–20
	mph	7–10	17–20	27–31	10–12
7/16 throttle Acceleration from a stop	km/h	27–33	51–58	72–82	98–102
	mph	17–21	32–36	45–51	61–63
Full-throttle Acceleration from a stop	km/h	59–66	103–110	157–165	135–139
	mph	37–41	64–68	98–103	84–86

[S] (with S_4 switch in operation)

		1st–2nd	2nd–3rd	3rd–4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	18–22	28–33	45–51	23–27
	mph	11–14	17–21	28–32	14–17
7/16 throttle Acceleration from a stop	km/h	37–43	71–78	104–114	120–124
	mph	23–27	44–48	65–71	75–77
Full-throttle Acceleration from a stop	km/h	59–66	103–110	157–165	135–139
	mph	37–41	64–68	98–103	84–86

- Downshift

[D]

		LC.OFF	4th–3rd	3rd–2nd	2nd–1st
1/12 throttle Coasting or braking to a stop	km/h	14–18	28–33	—	10–14
	mph	9–11	17–21	—	6–9
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	87–91	—	—	—
	mph	54–57	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	131–135	126–135	82–91	42–50
	mph	81–84	78–84	51–57	26–31

[S] (with S_4 switch in operation)

		LC.OFF	4th–3rd	3rd–2nd	2nd–1st
1/12 throttle Coasting or braking to a stop	km/h	21–25	33–38	—	13–17
	mph	13–16	21–24	—	8–11
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	98–102	—	—	—
	mph	61–63	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	131–135	126–135	82–91	42–50
	mph	81–84	78–84	51–57	26–31

(cont'd)

KF, KE models:
(Carburetor)

- Upshift

[D]

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	12—16	27—32	44—50	16—20
	mph	7—10	17—20	27—31	10—12
7/16 throttle Acceleration from a stop	km/h	32—38	56—63	74—84	98—102
	mph	20—24	35—39	46—52	61—63
Full-throttle Acceleration from a stop	km/h	53—60	99—106	147—155	132—136
	mph	33—37	62—66	91—96	82—85

[S] (with S_4 switch in operation)

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	18—22	40—45	46—52	23—27
	mph	11—14	25—28	29—32	14—17
7/16 throttle Acceleration from a stop	km/h	37—43	66—73	104—114	121—125
	mph	23—27	41—45	65—71	75—78
Full-throttle Acceleration from a stop	km/h	53—60	99—106	147—155	132—136
	mph	33—37	62—66	91—96	82—85

- Downshift

[D]

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	14—18	28—33	—	10—14
	mph	9—11	17—21	—	6—9
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	87—91	—	—	—
	mph	54—57	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

[S] (with S_4 switch in operation)

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	21—25	33—38	—	13—17
	mph	13—16	21—24	—	8—11
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	98—102	—	—	—
	mph	61—63	—	—	—
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

(PGM-FI)

- **Upshift**

[D]

		1st–2nd	2nd–3rd	3rd–4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	12–16	27–32	44–50	16–20
	mph	7–10	17–20	27–31	10–12
7/16 throttle Acceleration from a stop	km/h	27–33	51–58	72–82	98–102
	mph	17–21	32–36	45–51	61–63
Full-throttle Acceleration from a stop	km/h	53–60	106–113	152–162	135–139
	mph	33–37	66–70	94–101	84–86

[S] (with S_4 switch in operation)

		1st–2nd	2nd–3rd	3rd–4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	18–22	28–33	45–51	23–27
	mph	11–14	17–21	28–32	14–17
7/16 throttle Acceleration from a stop	km/h	37–43	71–78	104–114	120–124
	mph	23–27	44–48	65–71	75–77
Full-throttle Acceleration from a stop	km/h	53–60	106–113	152–162	135–139
	mph	33–37	66–70	94–101	84–86

- **Downshift**

[D]

		LC.OFF	4th–3rd	3rd–2nd	2nd–1st
1/12 throttle Coasting or braking to a stop	km/h	14–18	28–33	——	10–14
	mph	9–11	17–21	——	6–9
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	88–92	——	——	——
	mph	55–57	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	132–136	126–135	88–97	42–50
	mph	82–85	78–84	55–60	26–31

[S] (with S_4 switch in operation)

		LC.OFF	4th–3rd	3rd–2nd	2nd–1st
1/12 throttle Coasting or braking to a stop	km/h	21–25	33–38	——	13–17
	mph	13–16	21–24	——	8–11
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	99–103	——	——	——
	mph	62–64	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	132–136	126–135	88–97	42–50
	mph	82–85	78–84	55–60	26–31

(cont'd)

KS, KQ, KZ, KX models:
(Carburetor)

- **Upshift**

[D]

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	17—21	33—38	43—49	22—26
	mph	11—13	21—24	27—30	14—16
7/16 throttle Acceleration from a stop	km/h	28—34	56—63	86—96	96—100
	mph	17—21	35—39	53—60	60—62
Full-throttle Acceleration from a stop	km/h	53—60	99—106	148—156	132—136
	mph	33—37	62—66	92—97	82—85

[S] **(with S_4 switch in operation)**

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	17—21	35—40	59—65	37—41
	mph	11—13	22—25	37—40	23—25
7/16 throttle Acceleration from a stop	km/h	28—34	65—72	105—115	115—119
	mph	17—21	40—45	65—71	71—74
Full-throttle Acceleration from a stop	km/h	53—60	99—106	148—156	132—136
	mph	33—37	62—66	92—97	82—85

- **Downshift**

[D]

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	20—24	——	29—34	8—12
	mph	12—15	——	18—21	5—7
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	73—77	——	——	——
	mph	45—48	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

[S] **(with S_4 switch in operation)**

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	34—38	——	29—34	8—12
	mph	21—24	——	18—21	5—7
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	84—88	——	——	——
	mph	52—55	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	129—133	124—133	82—91	38—46
	mph	80—83	77—83	51—57	24—29

(PGM-FI)

- Upshift

[D]

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	21—25	37—42	50—56	22—26
	mph	13—16	23—26	31—35	14—16
7/16 throttle Acceleration from a stop	km/h	28—34	56—63	86—96	96—100
	mph	17—21	35—39	53—60	60—62
Full-throttle Acceleration from a stop	km/h	56—63	105—112	152—160	135—139
	mph	35—39	65—70	94—99	84—86

[S] (with S_4 switch in operation)

		1st—2nd	2nd—3rd	3rd—4th	LC.ON
1/12 throttle Coasting down-hill from a stop	km/h	17—21	38—43	59—65	37—41
	mph	11—13	24—27	37—40	23—25
7/16 throttle Acceleration from a stop	km/h	28—34	65—72	105—115	114—118
	mph	17—21	40—45	65—71	71—73
Full-throttle Acceleration from a stop	km/h	56—63	105—112	152—160	135—139
	mph	35—39	65—70	94—99	84—86

- Downshift

[D]

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	20—24	——	29—34	8—12
	mph	12—15	——	18—21	5—7
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	77—81	——	——	——
	mph	48—50	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	132—136	126—135	85—94	40—48
	mph	82—85	78—84	53—58	25—30

[S] (with S_4 switch in operation)

		LC.OFF	4th—3rd	3rd—2nd	2nd—1st
1/12 throttle Coasting or braking to a stop	km/h	34—38	——	29—34	8—12
	mph	21—24	——	18—21	5—7
7/16 throttle When car is slowed by increased grade, wind, etc.	km/h	85—89	——	——	——
	mph	53—55	——	——	——
Full-throttle When car is slowed by increased grade, wind, etc.	km/h	132—136	126—135	85—94	40—48
	mph	82—85	78—84	53—58	25—30

CAUTION: Do not shift from [D] or [S] to [2] at speeds over 100 km/h (62.5 mph; 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.**

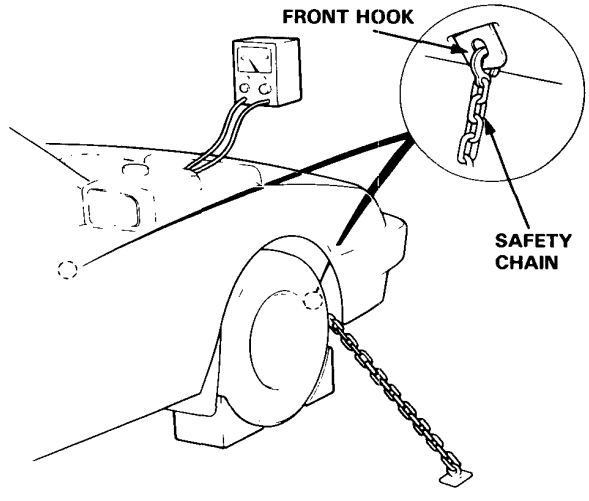
1. Engage parking brake and block the front wheels.
2. Connect safety chains to both front two hooks and attach, with minimum slack, to some strong stationary object.
3. Connect tachometer, and start the engine.
4. After the engine has warmed up to normal operating temperature, shift into [2].
5. Fully depress the brake pedal and accelerator for 6 to 8 seconds, and note engine speed.
6. Allow 2 minutes for cooling, then repeat same test in [D], [S], and [R].

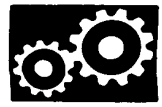
Stall speed in [D], [S], [2] and [R] must be the same, and must also be within limits:

NOTE:
Stall speed test must be made only for checking the cause of trouble.

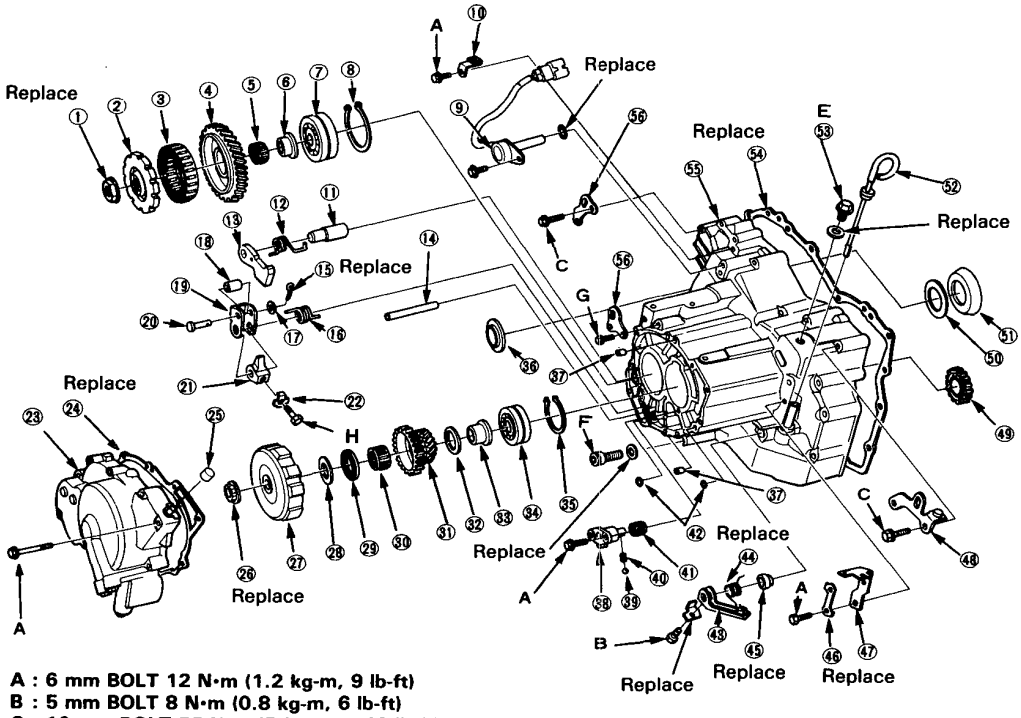
Stall Speed RPM:
(Carbureted Engine)
Standard: 2,700 min^{-1} (rpm)
Service Limit: 2,550—2,850 min^{-1} (rpm)
(Fuel Injected Engine)
Standard: 2,750 min^{-1} (rpm)
Service Limit: 2,600—2,900 min^{-1} (rpm)

TROUBLE	PROBABLE CAUSE
Stall rpm high in [D], [S], [2] & [R]	• Low fluid level or oil pump output. • Clogged oil strainer. • Pressure regulator valve stuck closed. • Slipping clutch.
Stall rpm high in [R]	• Slippage of 4th clutch
Stall rpm high in [2]	• Slippage of 2nd clutch
Stall rpm high in [D] & [S]	• Slippage of 1st clutch or 1st gear one-way clutch
Stall rpm low in [D], [S], [2] & [R]	• Engine output low • Torque converter one-way clutch slipping



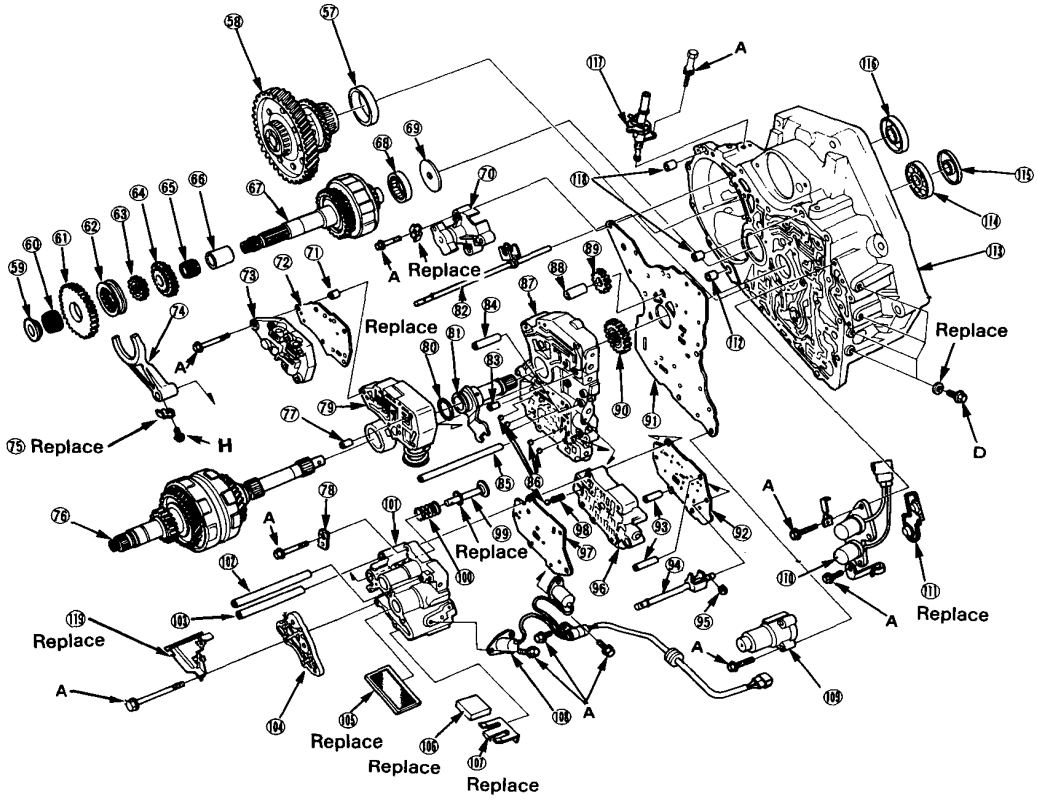


NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Coat all parts with ATF before reassembly.



A : 6 mm BOLT 12 N·m (1.2 kg-m, 9 lb-ft)
B : 5 mm BOLT 8 N·m (0.8 kg-m, 6 lb-ft)
C : 10 mm BOLT 55 N·m (5.5 kg-m, 40 lb-ft)
D : 8 mm SEALING BOLT 18 N·m (1.8 kg-m, 13 lb-ft)
E : 20 mm FILLER BOLT 45 N·m (4.5 kg-m, 33 lb-ft)
F : 14 mm DRAIN PLUG 40 N·m (4.0 kg-m, 29 lb-ft)
G : 8 mm BOLT 22 N·m (2.2 kg-m, 16 lb-ft)
H : 6 mm BOLT 14 N·m (1.4 kg-m, 11 lb-ft)

① LOCK NUT 23 mm 140 → 0 → 140 N·m (14.0 → 0 → 14.0 kg-m, 102 → 0 → 102 lb-ft)
② PARKING GEAR
③ ONE-WAY CLUTCH
④ 1st GEAR
⑤ NEEDLE BEARING 32 x 38 x 14 mm
⑥ 1st GEAR COLLAR
⑦ BALL BEARING 26 x 68 x 18 mm
⑧ SNAP RING 68 mm
⑨ SPEED PULSER
⑩ SPEED PULSER COUPLER STAY
⑪ PARKING PAWL SHAFT
⑫ PARKING PAWL SPRING
⑬ PARKING PAWL
⑭ STOP PIN
⑮ COTTER PIN 1.6 mm
⑯ PARKING PAWL SPRING
⑰ WASHER 6 mm
⑱ PARKING BRAKE ROLLER
⑲ PARKING SHIFT ARM
⑳ ROLLER PIN
㉑ PARKING BRAKE STOPPER
㉒ LOCK WASHER
㉓ END COVER
㉔ GASKET
㉕ BREATHER CAP
㉖ LOCK NUT 19 mm 95 → 0 → 95 N·m (9.5 → 0 → 9.5 kg-m, 69 → 0 → 69 lb-ft)
㉗ 1st CLUTCH ASSEMBLY
㉘ THRUST WASHER 26 mm
㉙ THRUST NEEDLE BEARING 31 x 47 x 2 mm
㉚ NEEDLE BEARING 31 x 36 x 18.5 mm
㉛ 1st GEAR
㉜ THRUST WASHER 31 x 42 x 1.5 mm
㉝ COLLAR 26 mm
㉞ BALL BEARING 26 x 75 x 19 mm
㉟ SNAP RING 75 mm
㊱ OIL SEAL
㊲ DOWEL PIN 8 x 14 mm
㊳ REVERSE IDLER GEAR HOLDER
㊴ STEEL BALL
㊵ IDLER SPRING
㊶ NEEDLE BEARING 14 x 18 x 15 mm
㊷ O-RING 7.7 x 2.3 mm
㊸ THROTTLE CONTROL LEVER
㊹ THROTTLE CONTROL SHAFT SPRING
㊺ OIL SEAL
㊻ LOCK PLATE
㊼ THROTTLE CABLE STAY
㊽ TRANSMISSION HANGER
㊾ REVERSE IDLER GEAR
㊿ DIFFERENTIAL THRUST SHIM
(51) BEARING OUTER RACE
(52) DIPSTICK
(53) FILLER BOLT
(54) GASKET
(55) TRANSMISSION HOUSING
(56) TRANSMISSION HANGER



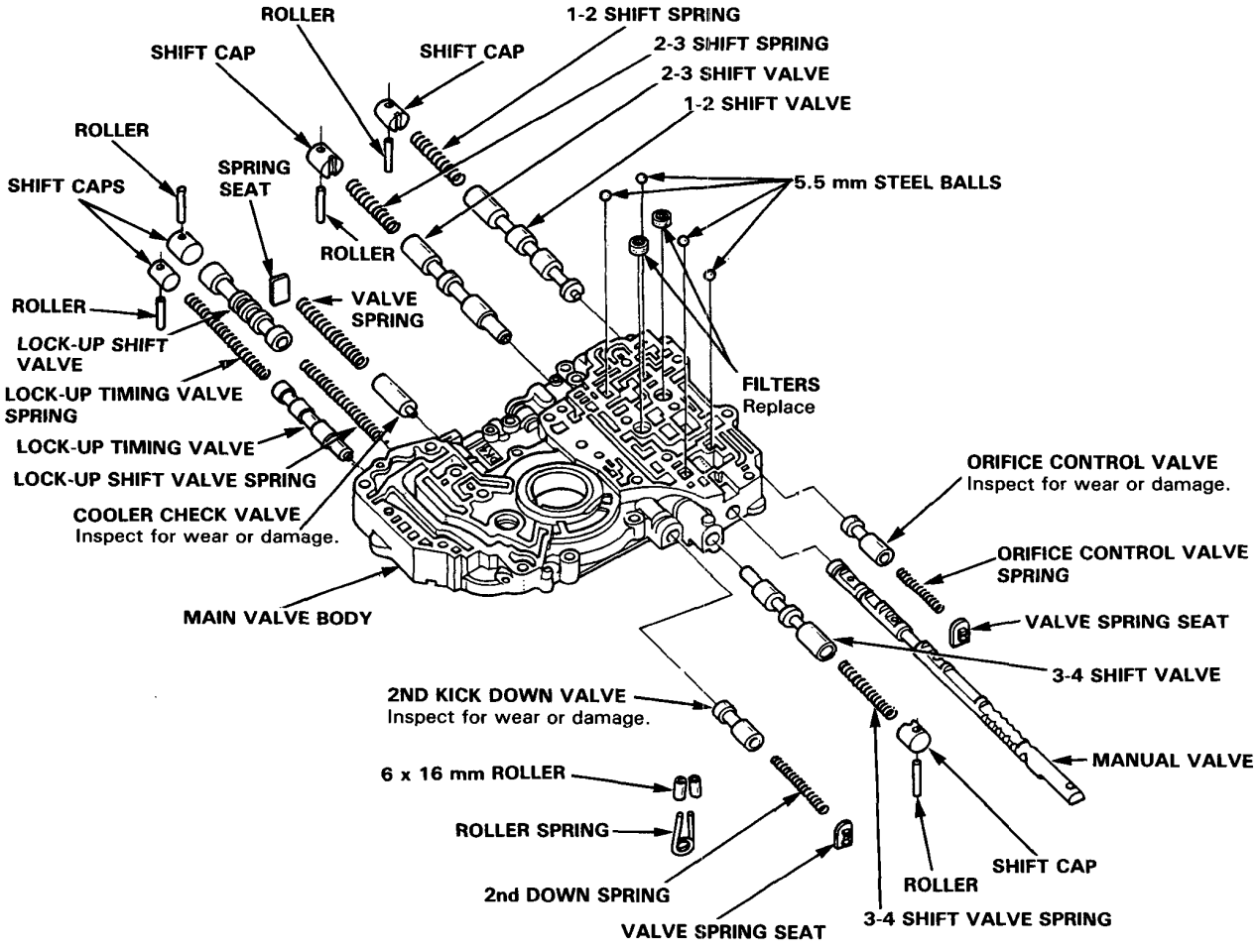
⑤⑦ DIFFERENTIAL BEARING OUTER RACE
⑤⑧ DIFFERENTIAL ASSEMBLY
⑤⑨ REVERSE GEAR COLLAR
⑥⓪ NEEDLE BEARING 32 x 38 x 14 mm
⑥① REVERSE GEAR
⑥② REVERSE GEAR SELECTOR
⑥③ SELECTOR HUB
⑥④ COUNTER SHAFT 4th GEAR
⑥⑤ NEEDLE BEARING 28 x 33 x 20 mm
⑥⑥ DISTANCE COLLAR 28 mm
⑥⑦ COUNTER SHAFT
⑥⑧ ROLLER BEARING 38.5 x 67 x 19 mm
⑥⑨ OIL GUIDE PLATE
⑦⓪ SPEED PULSER ROTOR
⑦① DOWEL PIN 8 X 14 mm
⑦② LOCK-UP TIMING VALVE SEPARATOR PLATE
⑦③ LOCK-UP TIMING VALVE BODY
⑦④ REVERSE SHIFTFORK
⑦⑤ LOCK WASHER
⑦⑥ MAINSHAFT
⑦⑦ DOWEL PIN
⑦⑧ LOCK PLATE
⑦⑨ REGULATOR VALVE BODY
⑧⓪ O-Ring 31 x 1.7 mm
⑧① STATOR SHAFT ARM
⑧② CONTROL SHAFT
⑧③ DOWEL PIN
⑧④ STOP PIN 8 x 80 mm
⑧⑤ 1st CLUTCH PIPE
⑧⑥ STEEL BALLS
⑧⑦ MAIN VALVE BODY
Disassembly, page 9-22
⑧⑧ PUMP GEAR SHAFT
⑧⑨ PUMP DRIVEN GEAR
⑨⓪ PUMP DRIVE GEAR
⑨① MAIN VALVE BODY SEPARATOR PLATE
⑨② SECONDARY SEPARATOR PLATE
⑨③ DOWEL PIN 8 x 40 mm
⑨④ THROTTLE VALVE SHAFT
⑨⑤ E-CLIP 7 mm
⑨⑥ SECONDARY VALVE BODY ASSEMBLY
Disassembly, page 9-23
⑨⑦ SERVO SEPARATOR PLATE
⑨⑧ SPRING
⑨⑨ SHIFT FORK SHAFT
⑩⓪ SERVO RETURN SPRING
⑩① SERVO VALVE BODY
Disassembly, page 9-24
⑩② 4th CLUTCH PIPE
⑩③ 3rd CLUTCH PIPE
⑩④ ACCUMULATOR COVER
⑩⑤ FILTER SCREEN
⑩⑥ TRANSMISSION MAGNET
⑩⑦ MAGNET HOLDER SPRING
⑩⑧ SHIFT CONTROL SOLENOID VALVE ASSEMBLY
⑩⑨ 2nd ACCUMULATOR BODY
⑪⓪ LOCK-UP CONTROL SOLENOID VALVE ASSEMBLY
⑪① LOCK-UP CONTROL SOLENOID BASE GASKET
⑪② DOWEL PIN 14 x 25 mm
⑪③ TORQUE CONVERTER HOUSING
⑪④ BALL BEARING 40 x 68 x 9 mm
⑪⑤ OIL SEAL 44 x 68 x 8 mm
⑪⑥ OIL SEAL 38 x 54 x 8 mm
⑪⑦ SPEED SENSOR ASSEMBLY
⑪⑧ DOWEL PIN 14 x 20 mm
⑪⑨ BAFFLE 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.

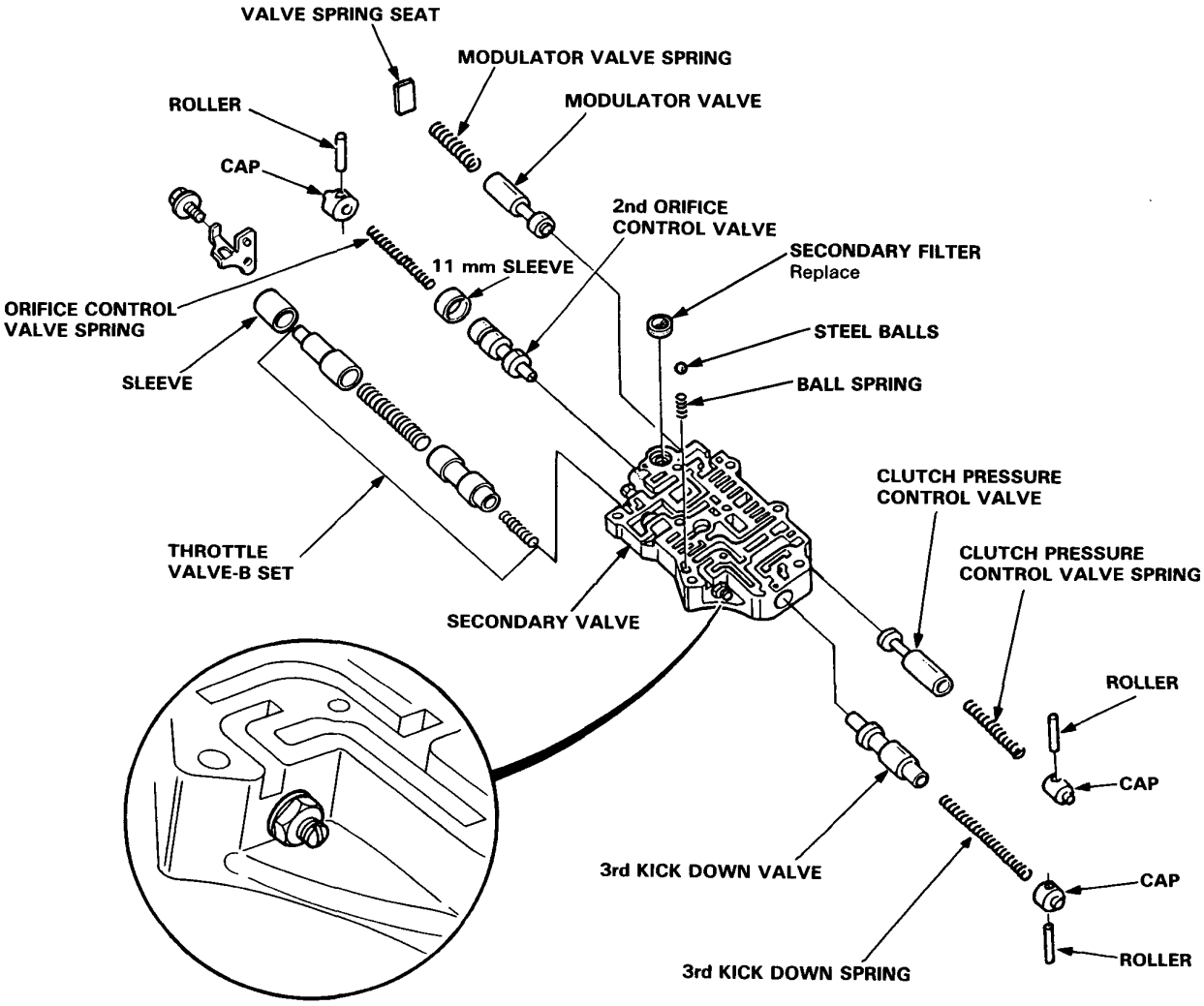


Secondary Valve Body

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 assembly if any parts are worn or damaged.



THROTTLE PRESSURE BOLT B
NOTE: Do not adjust or remove this bolt; it is adjusted at the factory for proper shift point.

Servo Valve Body

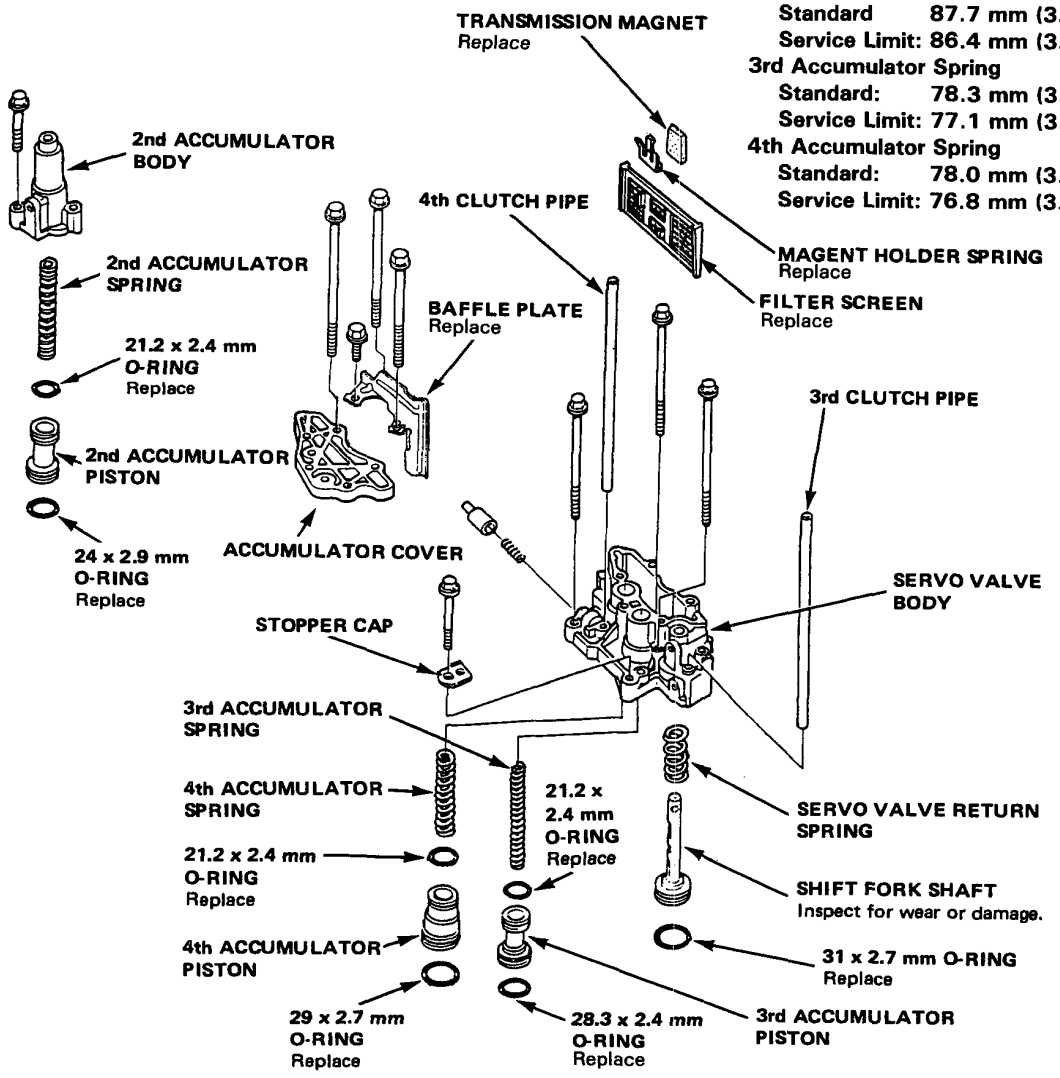
Disassembly/Inspection/Reassembly

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.
- Replace valve body as assembly if any parts are worn or damaged.

SERVO VALVE RETURN SPRING FREE LENGTH
Standard : 40.3 mm (1.59 in)
Service Limit: 36.7 mm (1.44 in)
Accumulator Spring O.D.
2nd Accumulator Spring: 16.5 mm (0.65 in)
3rd Accumulator Spring: 16.0 mm (0.63 in)
4th Accumulator Spring: 18.6 mm (0.73 in)

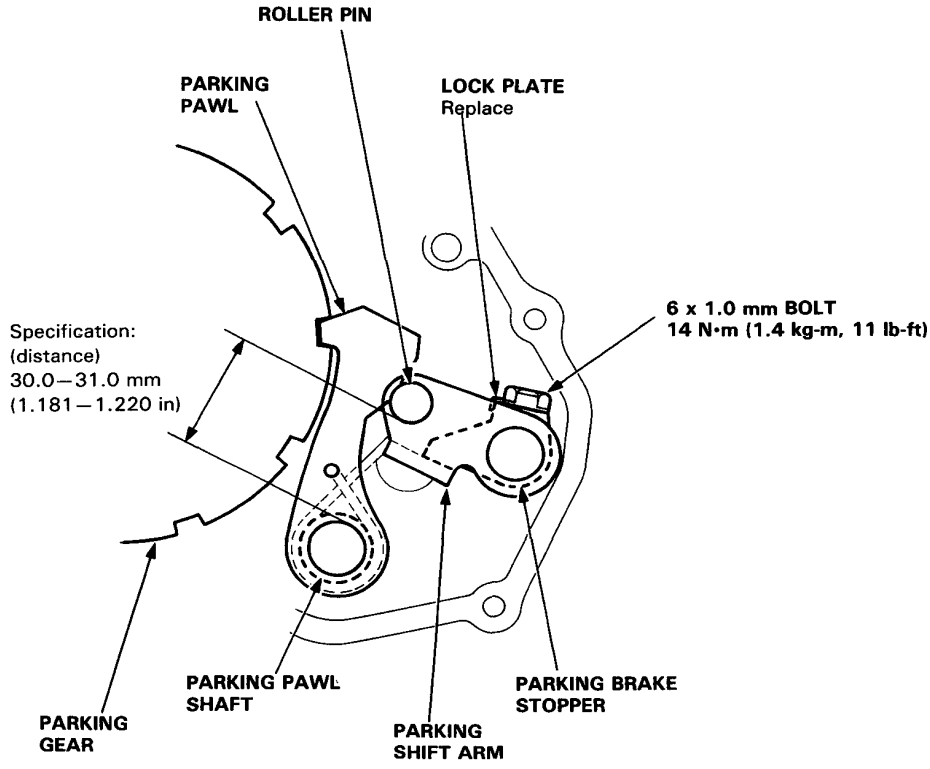
Accumulator Spring Free Length
2nd Accumulator Spring
Standard 87.7 mm (3.45 in)
Service Limit: 86.4 mm (3.40 in)
3rd Accumulator Spring
Standard: 78.3 mm (3.08 in)
Service Limit: 77.1 mm (3.04 in)
4th Accumulator Spring
Standard: 78.0 mm (3.07 in)
Service Limit: 76.8 mm (3.02 in)



Parking Brake Stopper

Inspection/Adjustment

1. Set the parking shift arm in the PARK position.
2. Measure the distance between the outer face of the parking pawl shaft and outer face of the parking shift arm roller pin.

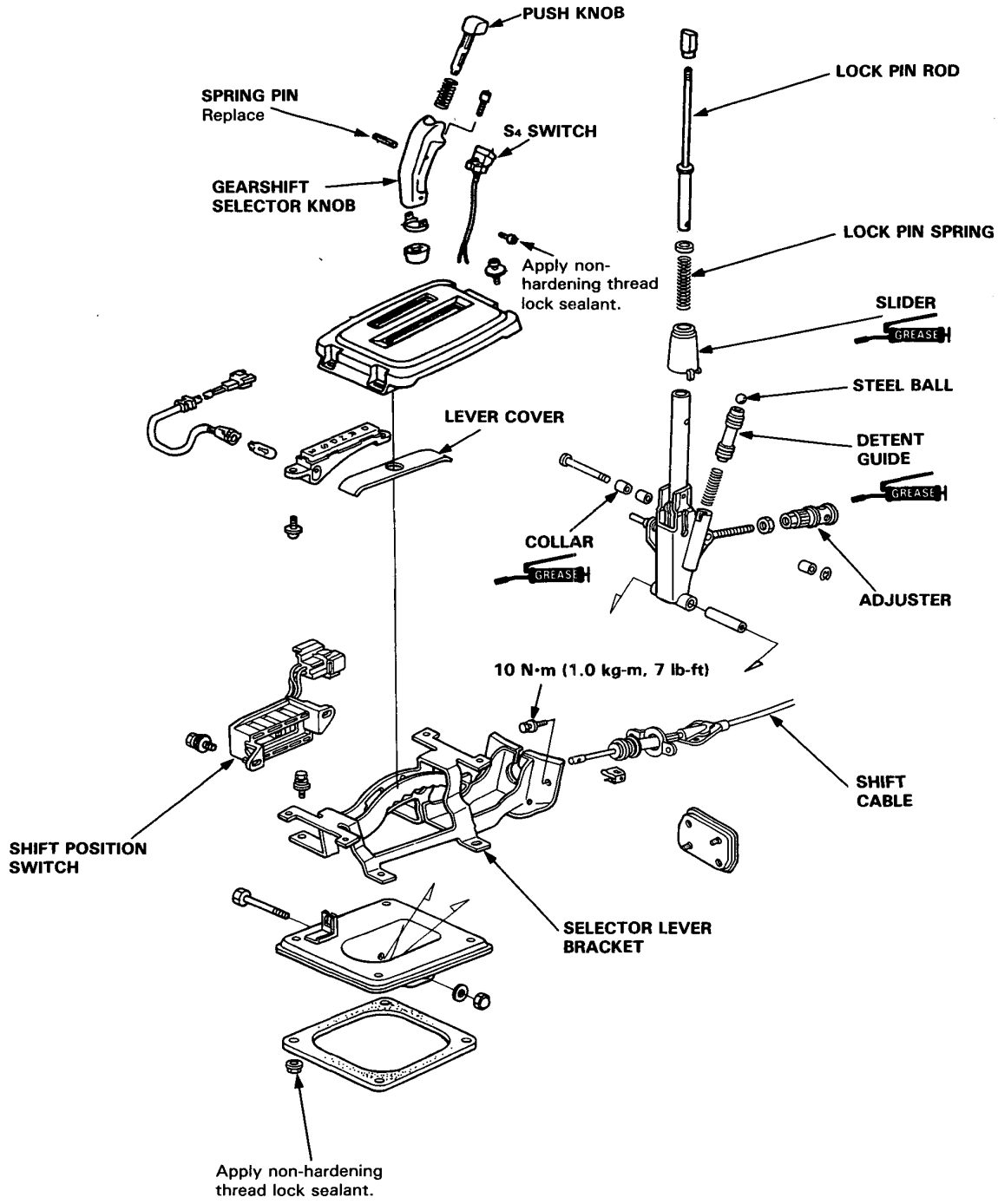


3. If the measurement is out of specification (distance), select the appropriate parking brake stopper using the table below, and install it on the parking shift arm.

No.	PART NUMBER
1	24537—PA9—003
2	24538—PA9—003
3	24539—PA9—003

Gearshift Selector

Disassembly/Reassembly



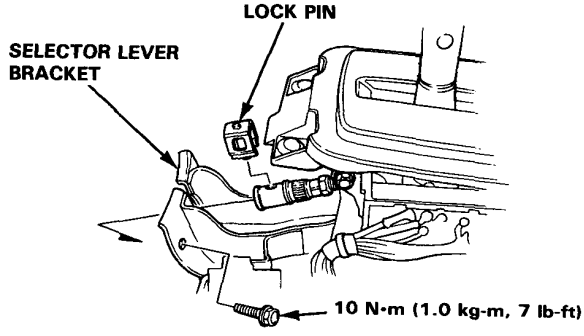
Shift Cable

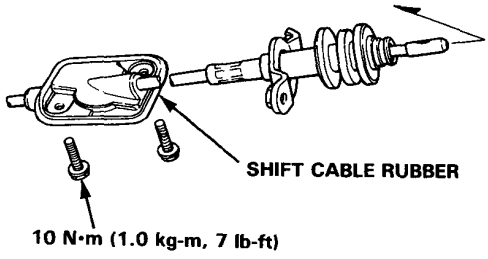
Removal

NOTE: Shift to [2] position before removal.

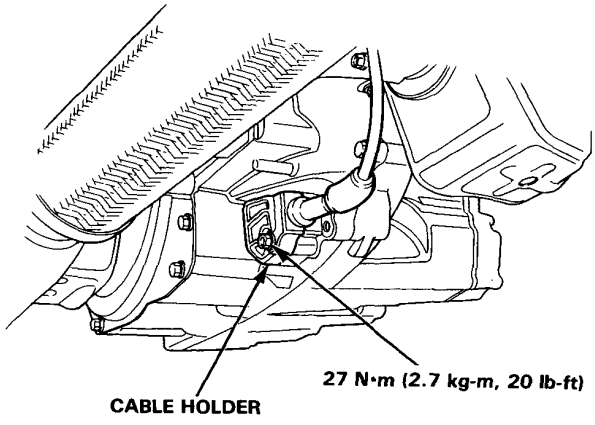
1. Remove the consol and disconnect shift cable by removing the lock pin.
2. Remove the selector lever bracket bolts from inside the car.
3. Remove the shift cable bracket bolt from outside of the car.
   [6 x 1.0 mm Bolt torque 10 N·m (1.0 kg-m, 7 lb-ft)]
4. Remove the bolts for the shift cable rebber from outside of the car.

   NOTE: Slide the rear steering cover by removing bolts. (4WS only)

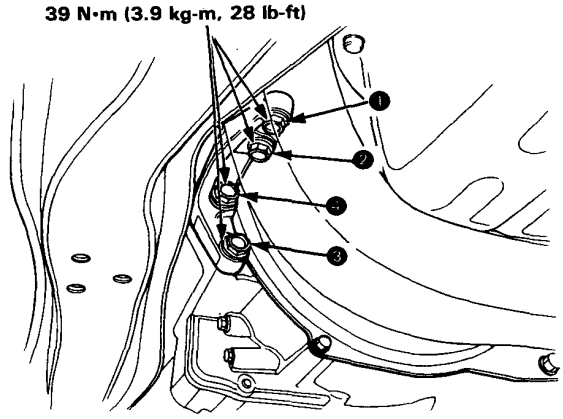




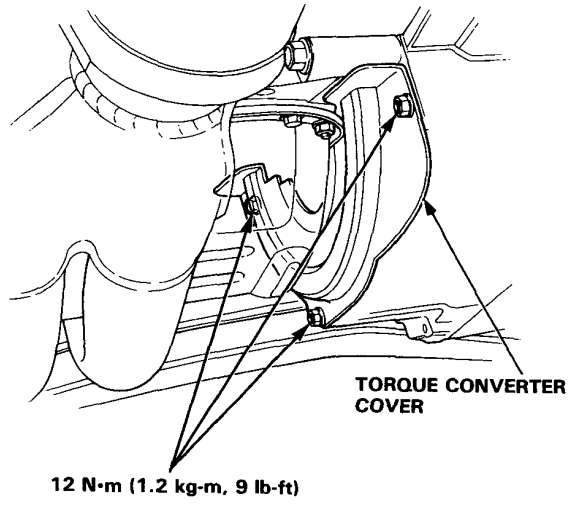
5. Remove the cable holder.



6. Remove the engine stiffener.



7. Remove the torque converter cover.

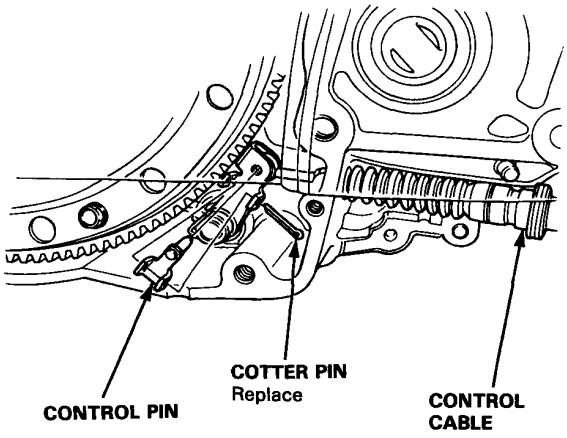


(cont'd)

Shift Cable

Removal (cont'd)

8. Remove the shift cable by removing the control pin.



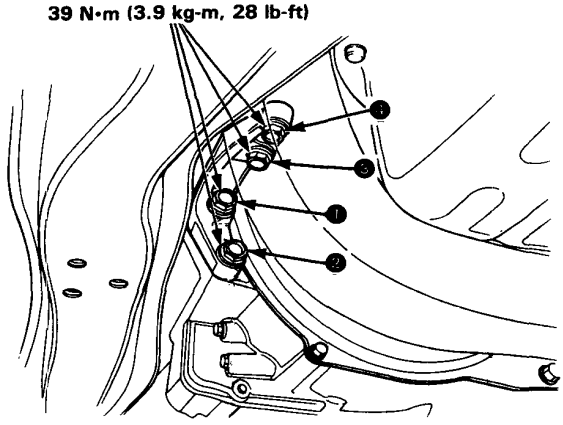
9. Pull the shift cable out of the by setting slot.

   CAUTION: Do not bend the shift cable excessively.

Installation

1. Installation is in the reverse order of removal.

   NOTE: When installing the engine stiffener, loosely install the bolts then, torque them in the order shown.

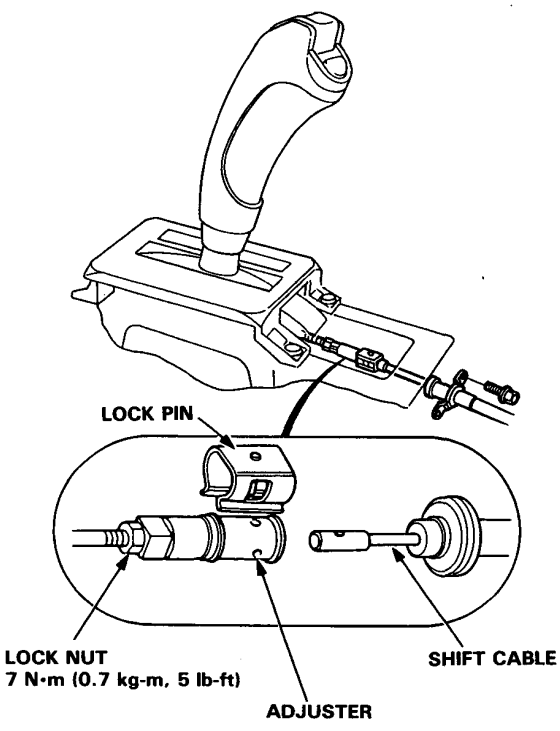


- Shift cable adjustment Page 9-29.

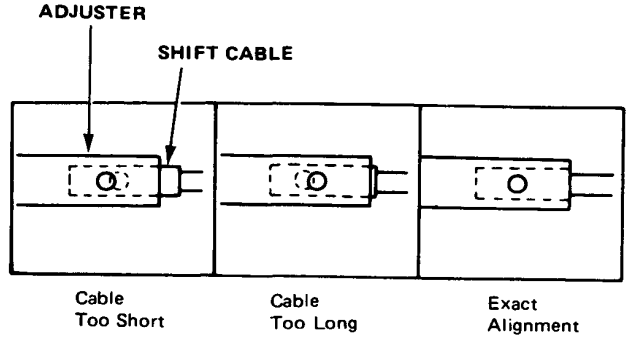
Shift Cable

Adjustment

1. Start the engine. Shift to reverse to see if the reverse gear engages. If not, refer to Troubleshooting.
2. With the engine off, remove the console.
3. Shift to [N] or [R] position, 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 lock nut on shift cable and adjust as required.
6. Tighten the lock nut.
7. Install the lock pin on the adjuster.

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

8. Start the engine and check the shift lever in all gears. If any gear does not work properly, refer to troubleshooting.

Throttle Control Cable

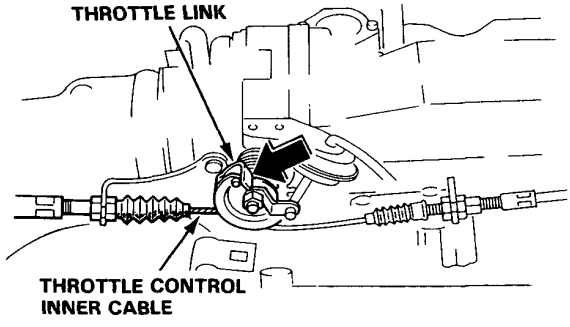
Adjustment/Inspection

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.
- On carbureted cars the distance between the throttle control lever and the throttle control bracket is correct (See "Throttle Control Cable Bracket Adjustment.")

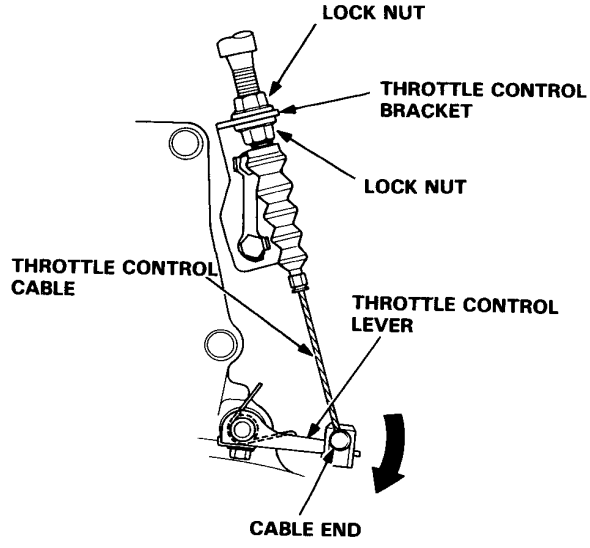
Inspection:
NOTE: On carbureted cars you will need an assistant to depress the accelerator pedal, on fuel-injected cars you can work the throttle linkage body with your hand.

1. Remove the throttle cable free play.
2. 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: To tailor the shift/lock-up characteristics to a particular customers driving expectations, you can adjust the control cable up to 3 mm shorter than the "synchronized" point.



Brakes

Master Cylinder
- **Inspection 13-2**
- **Reassembly 13-3**

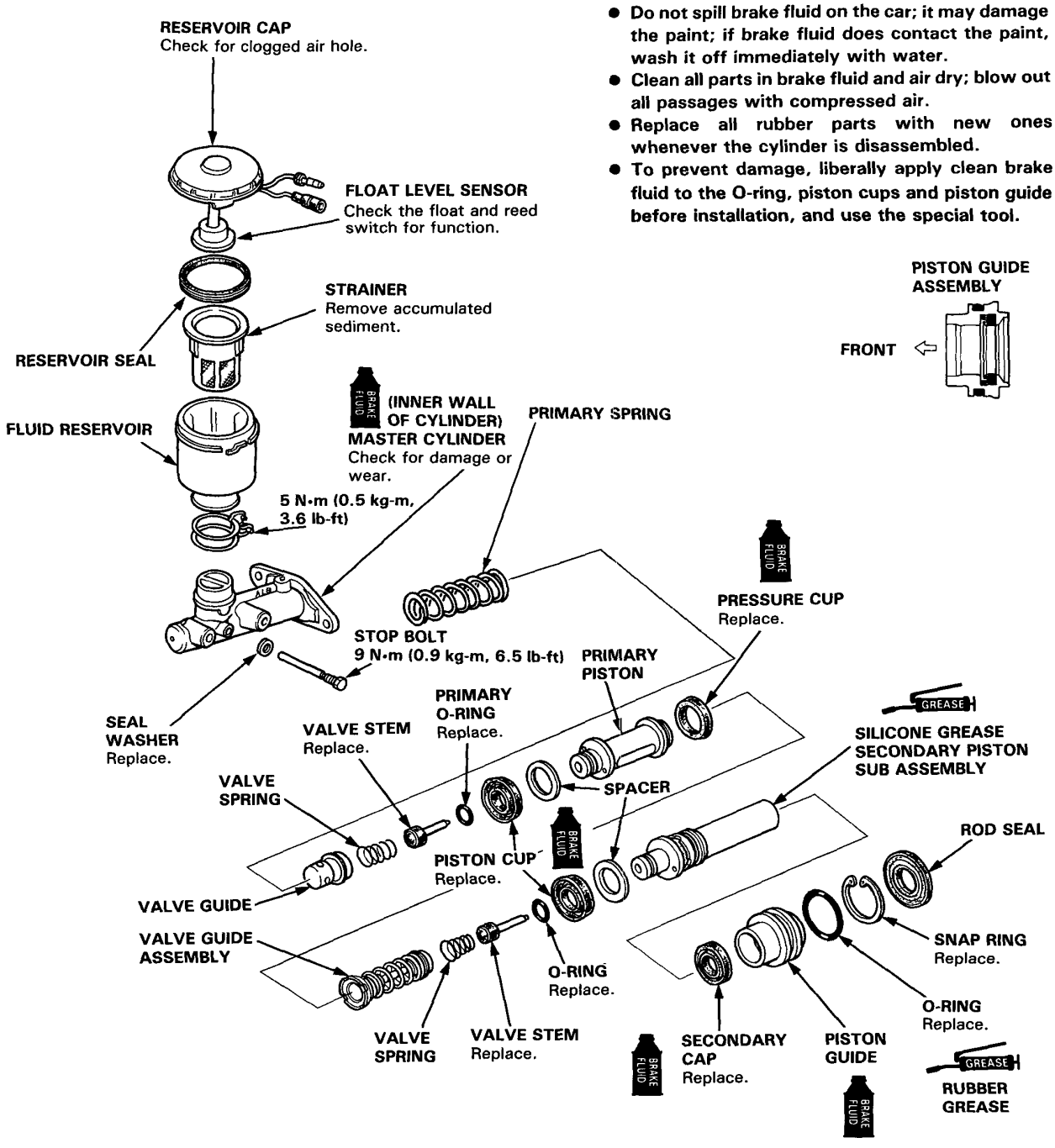
Outline of Model Change

The ALB master cylinder has been changed.

Master Cylinder

Index/Inspection

CAUTION:
- Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Replace all rubber parts with new ones whenever the cylinder is disassembled.
- To prevent damage, liberally apply clean brake fluid to the O-ring, piston cups and piston guide before installation, and use the special tool.



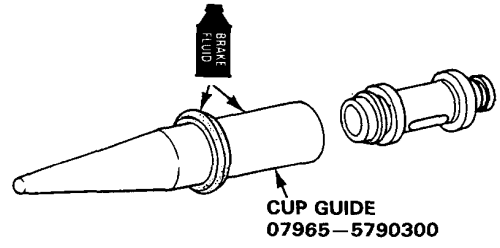
Master Cylinder

Reassembly

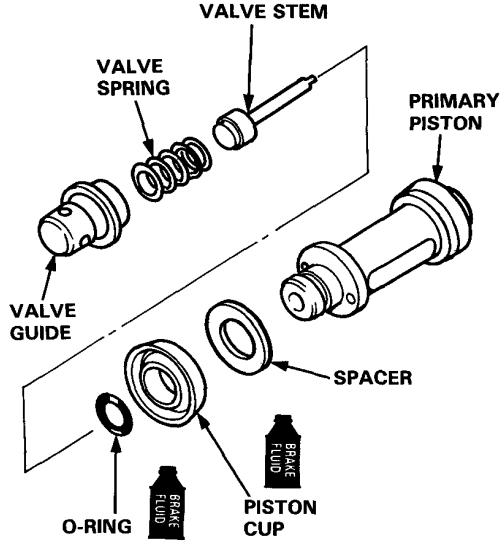
CAUTION:

- **Do not spill brake fluid on the car; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **To prevent spills, cover the hose joints with rags or shop towels.**
- **Clean all parts in brake fluid and air dry; blow out all passages with compressed air.**
- **Use only new clean brake fluid.**
- **Before reassembling, check that all parts are free of dust and other foreign particles.**
- **Replace parts with new ones whenever specified to do so.**
- **Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.**
- **Do not mix different brands of brake fluid as they may not be compatible.**
- **Do not reuse the drained fluid.**

1. Coat the Cup Guide (special tool) with brake fluid, install the cup over the Cup Guide, then slide the cup onto the primary piston.

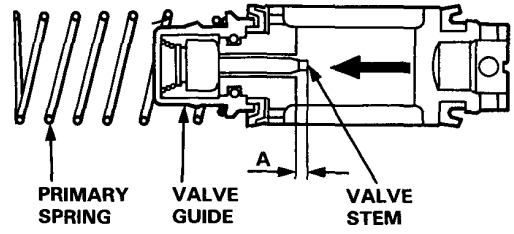


2. Install the spacer, piston cup, O-ring, valve stem and valve spring onto the primary piston.



3. Install the valve guide and primary spring to the primary piston.

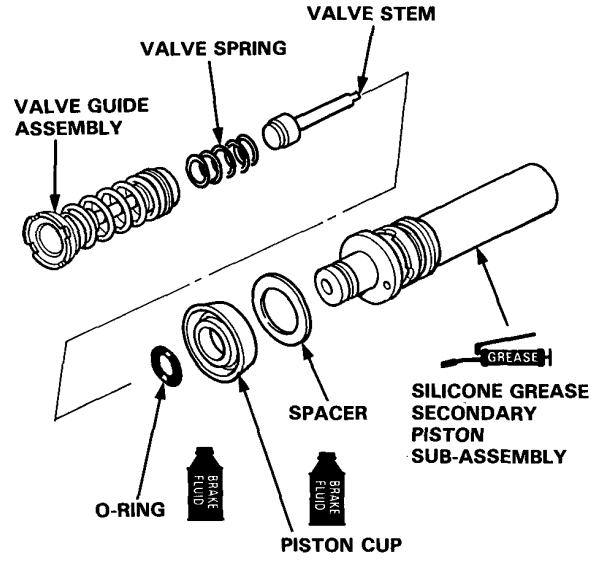
PRIMARY PISTON ASSEMBLY



NOTE:

- Reaching through the primary piston stop bolt hole, lightly press on the valve stem to see if it moves smoothly.
- Make sure that the dimension A is 1.85—2.45 mm.

4. Install the spacer, piston cup, O-ring, valve stem and valve spring onto the secondary piston sub-assembly.



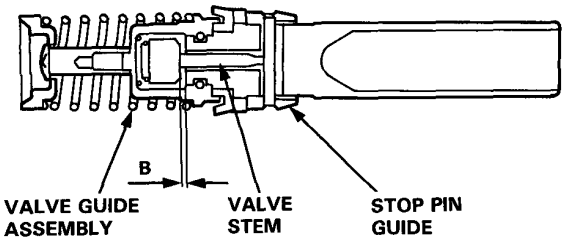
(cont'd)

Master Cylinder

Reassembly (cont'd)

5. Install the valve guide assembly to the secondary piston sub-assembly.

SECONDARY PISTON ASSEMBLY



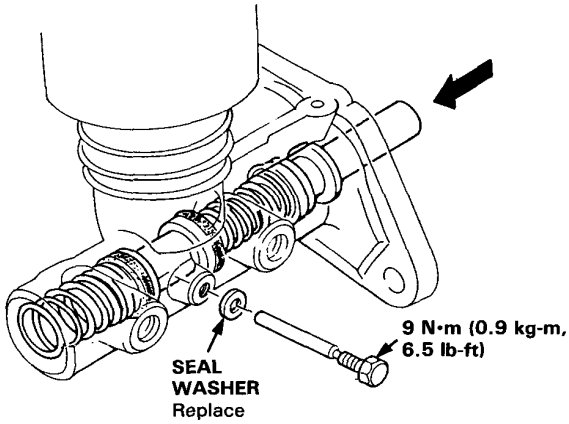
NOTE:
- Install the valve guide assembly after confirming that the dimension B is 0.9–1.5 mm.
- Lightly press the stop pin guide to see if the valve stem moves smoothly.

6. Assemble the primary piston assembly, secondary piston assembly and piston guide assembly in the master cylinder body.

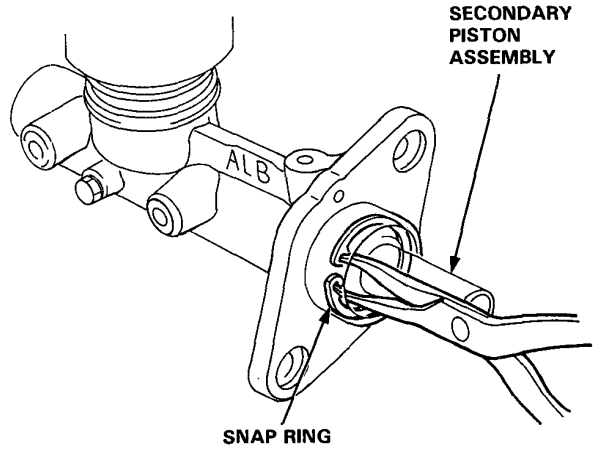
NOTE: Install the primary piston with the slot on the cylinder facing the stop bolt hole side.

7. Push the secondary piston in until the slot aligns with the stop bolt hole, then install and tighten the stop bolt.

CAUTION:
- **Replace the stop bolt seal washer with a new one whenever disassembled.**
- **Apply brake fluid to the inner wall of the cylinder and piston cups, being careful that they are not turned inside out during installation.**

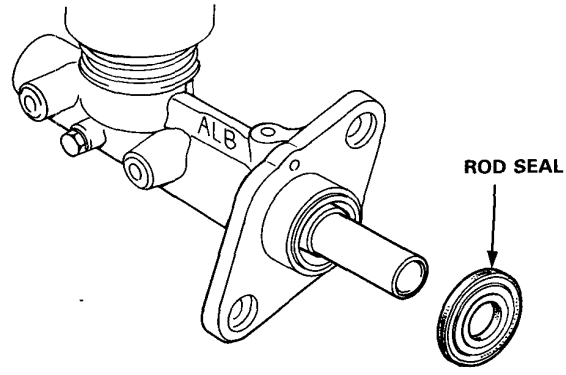


8. Press the secondary piston in and install the snap ring.



CAUTION: Avoid damaging the sliding surface of the secondary piston when installing the snap ring.

9. Install the rod seal.



CAUTION: Make sure that there is no interference between the brake pipes and other parts when installing.

Body

Dashboard

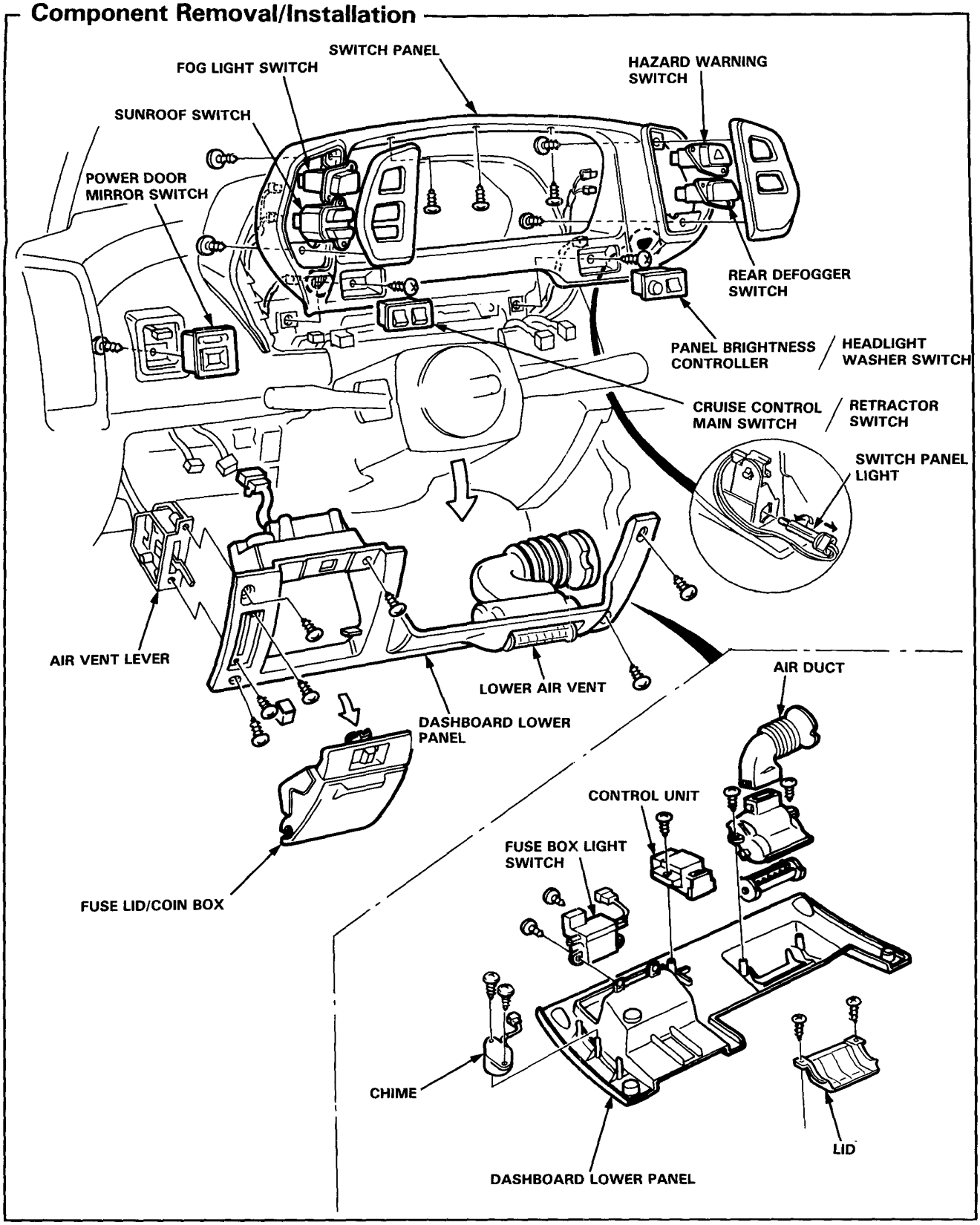
Components 14-2

Outline of Model Change

The switch panel light has been added.

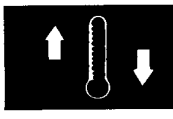
Dashboard

Component Removal/Installation



Heater

Construction 15-2
Heater Door Position 15-3

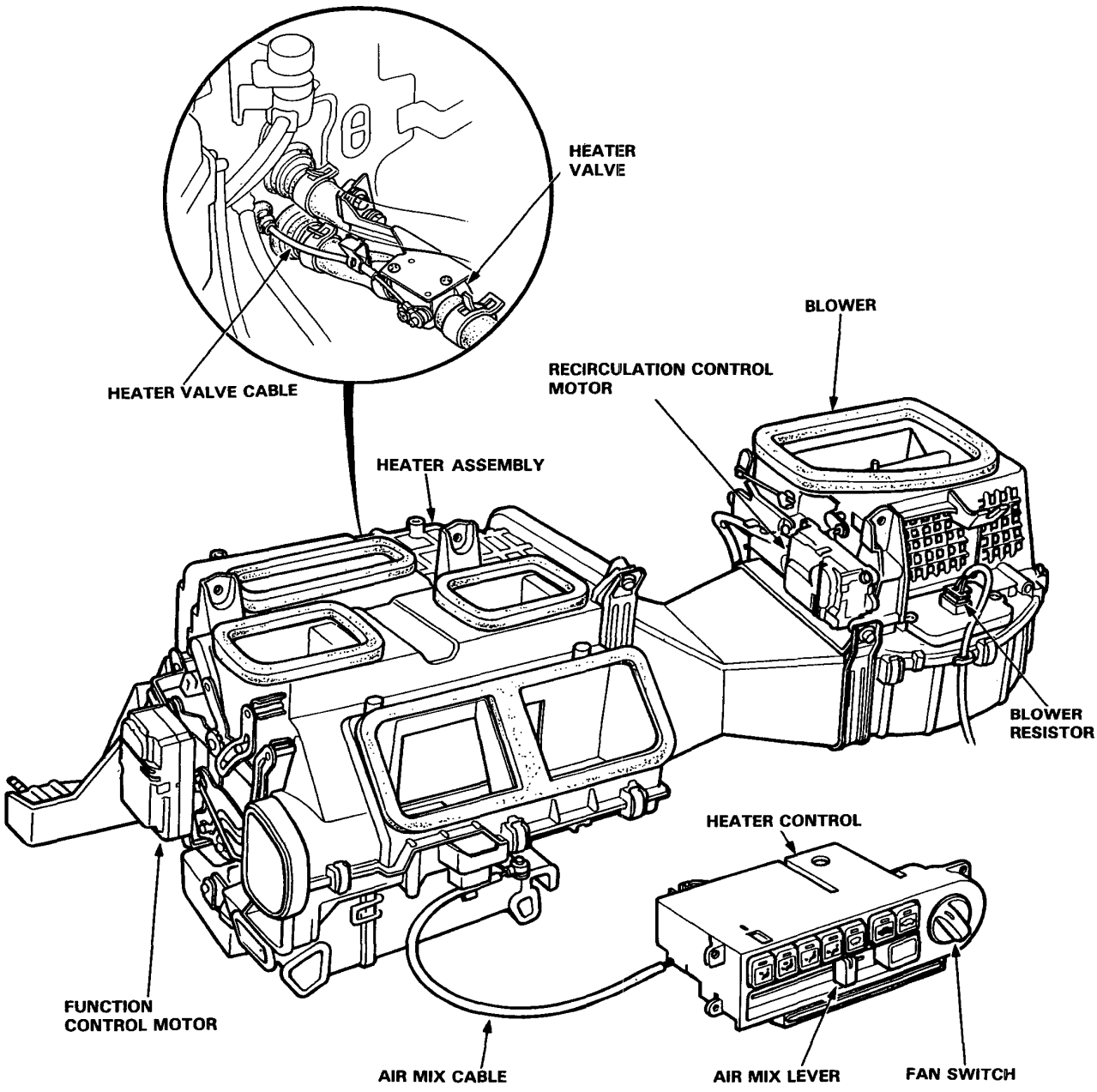


Outline of Model Change

The heater assembly has been modified to increase the cool air flow by changing in its inside part.

Heater

Construction

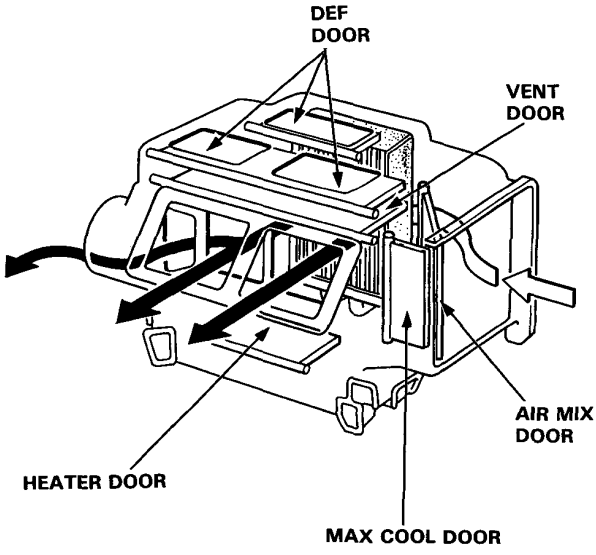


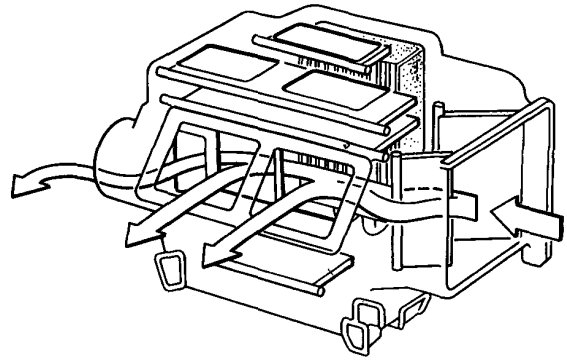
NOTE: LH Drive shown, RH Drive is similar.

Heater Door Position

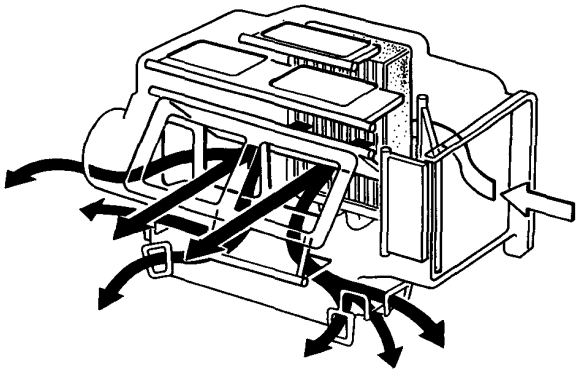
(VENT)

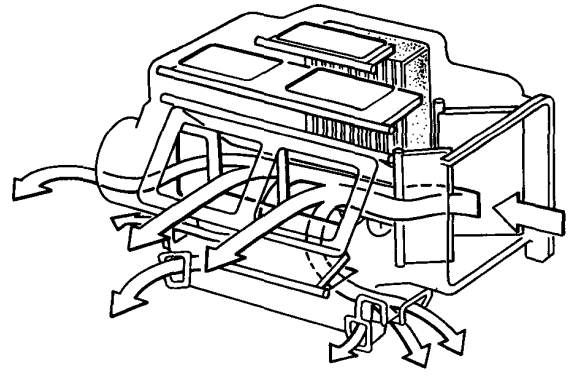
HOT AIR
COOL AIR





(HEAT/VENT)



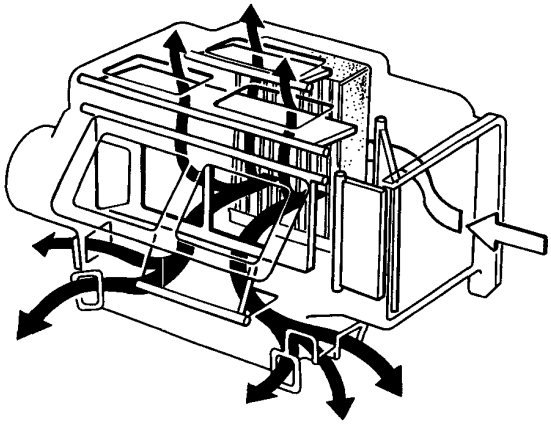


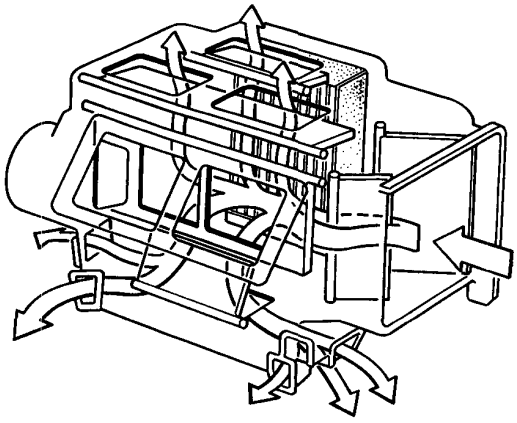
(cont'd)

Heater Door Position (cont'd)

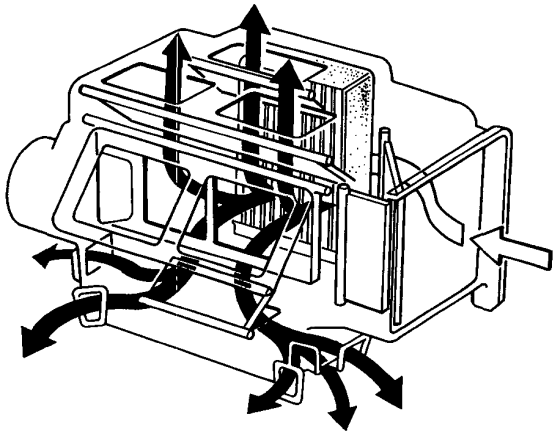
(HEAT)

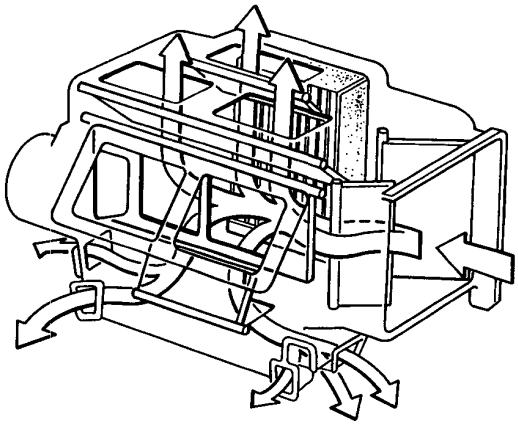
HOT AIR
COOL AIR



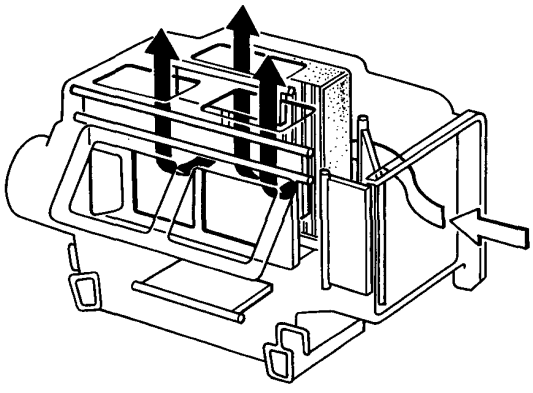


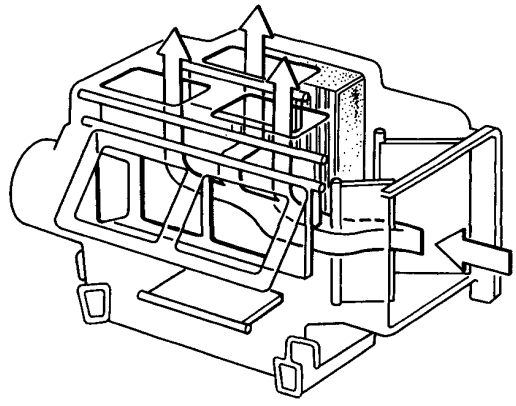
(HEAT/DEF)





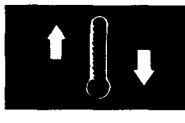
(DEF)





Air conditioner

Construction 15-8
Wire Harness Routing 15-10
Idle Adjustment 15-11
Wiring Diagram 15-12
Compressor Control System 15-14
Troubleshooting 15-16



Outline of Model Changes

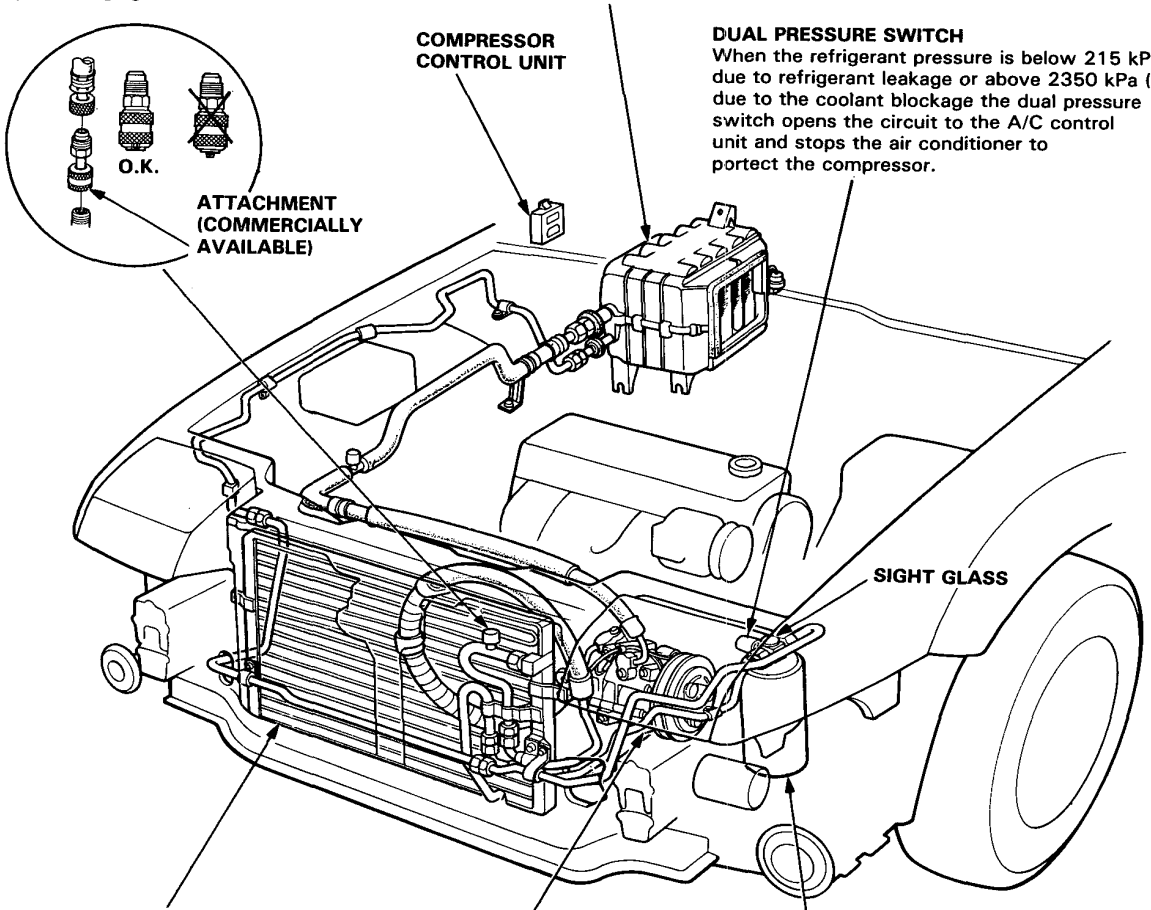
- The cooling fan control unit has been newly adopted.
- The reset procedure of the compressor control unit has been changed.

Air Conditioner

Construction

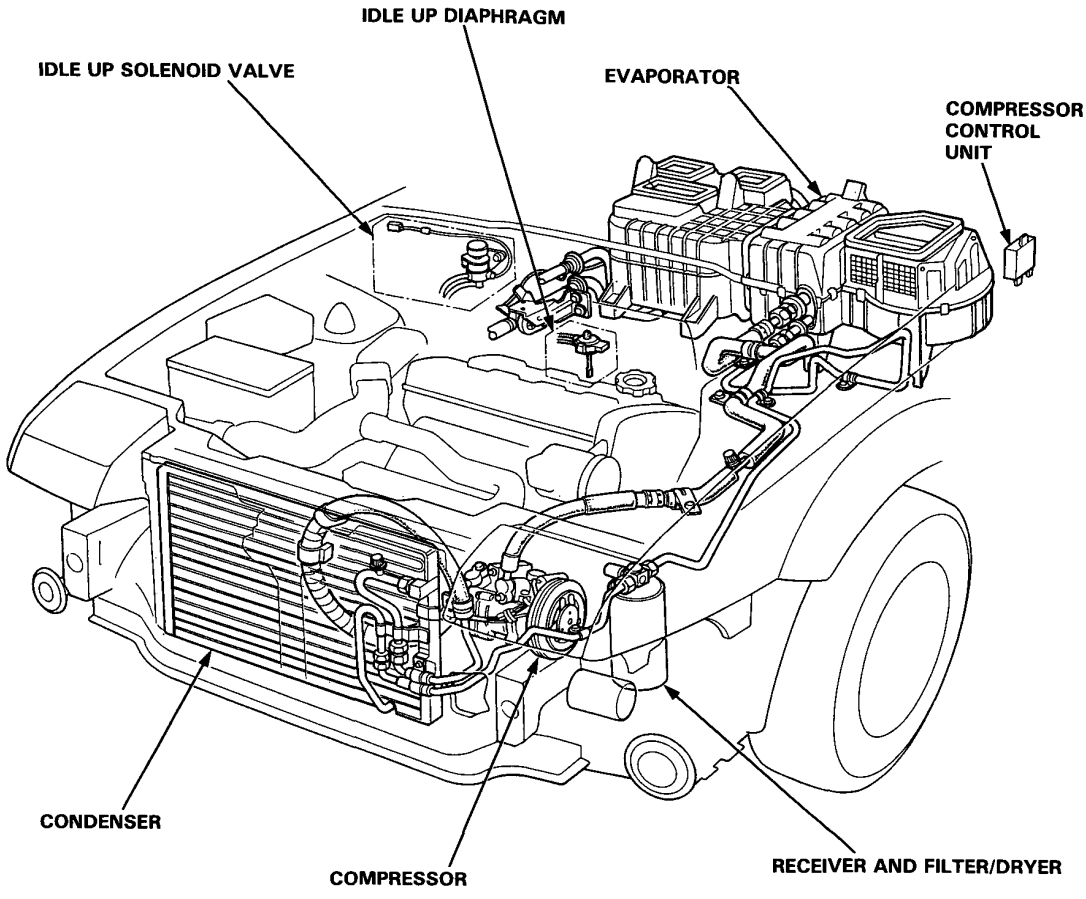
<LHD>

A/C HIGH SIDE ATTACHMENT
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 attachment for the existing hose on your charging station.



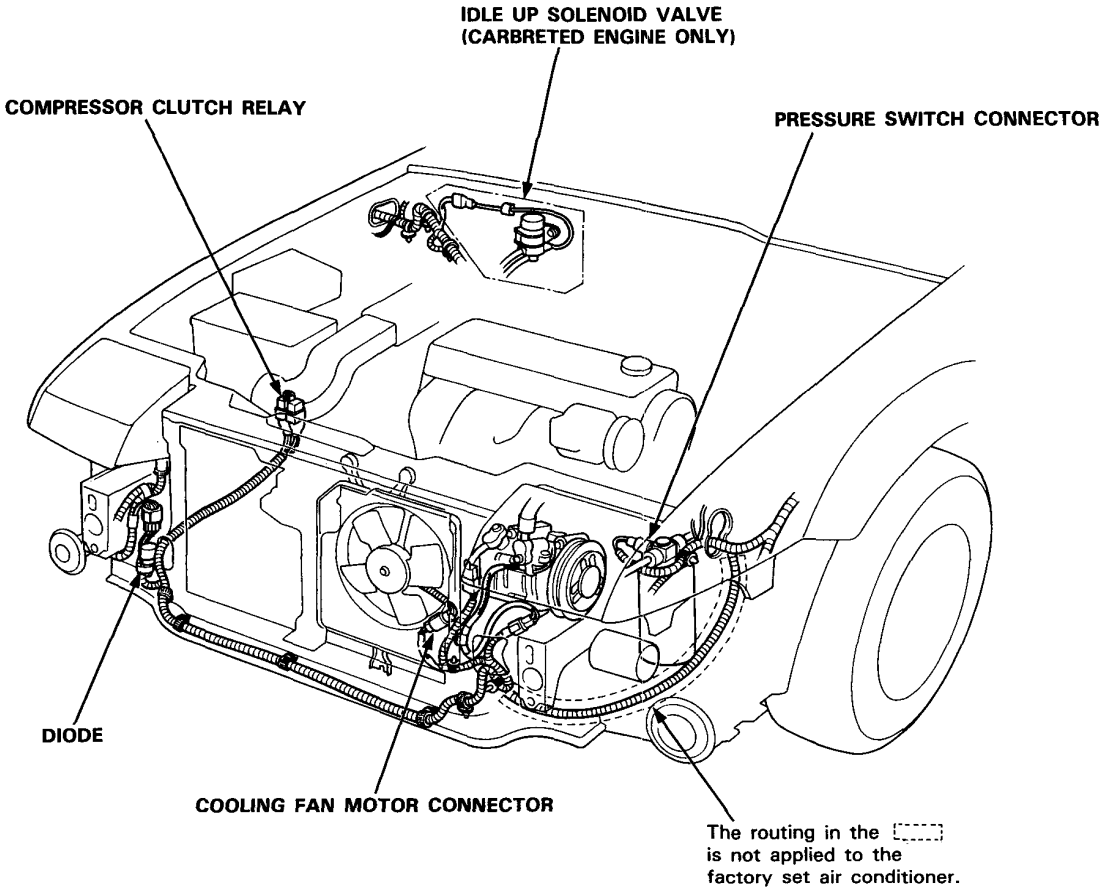
* Charge the system with 900 ± 50 g (32 ± 2 oz.) of refrigerant.

<RHD>



* Charge the system with 850 ± 50 g (30 ± 2 oz.) of refrigerant.

Wire Harness Routing



Idle Adjustment

- **PGM-FI Engine**

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

  Idle should remain stable at:
  - **KX, KS, KZ, KQ**
    750 ± 50 min^{-1} (rpm)
  - **Other models**
    800 ± 50 min^{-1} (rpm)

  NOTE: If the idle speed is not within specifications, see fuel and emissions section 6.

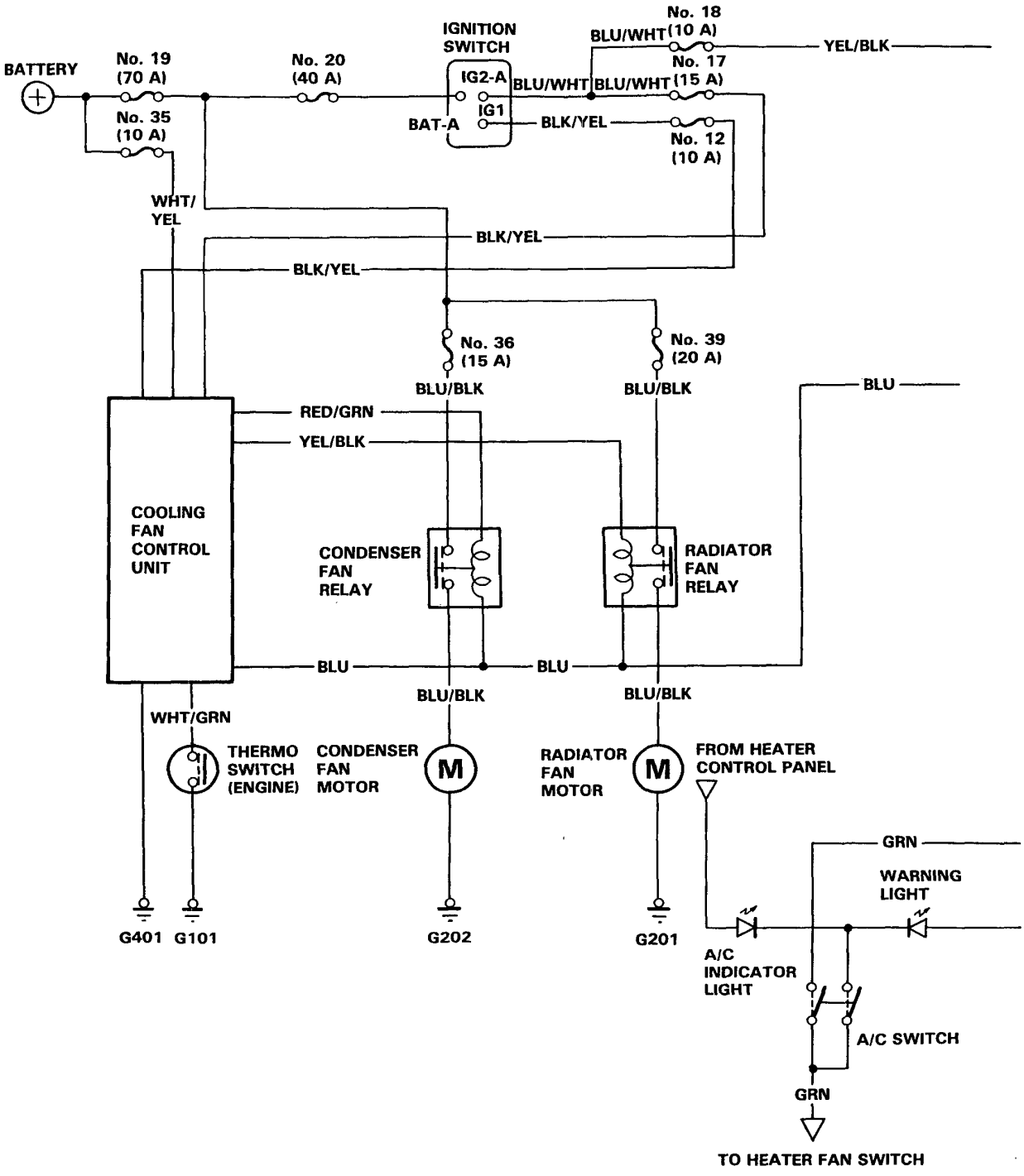
- **Carbureted Engine**

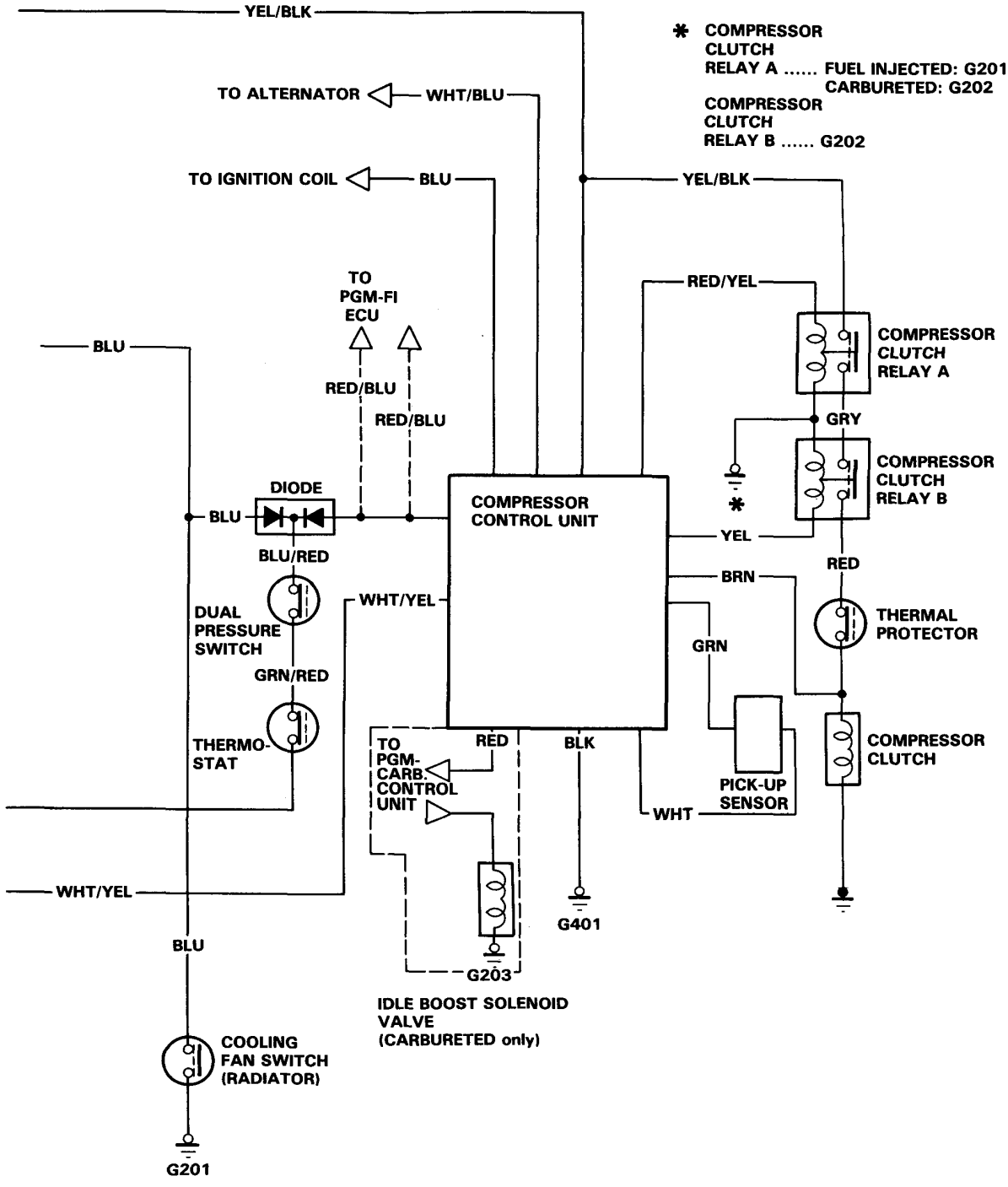
  Idle the engine for one minute with heater fan switch at HI (right end) and air conditioner on, then check the idle speed.

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

  NOTE: If idle speed is not within specification, see fuel and emissions section 6.

Wiring Diagram



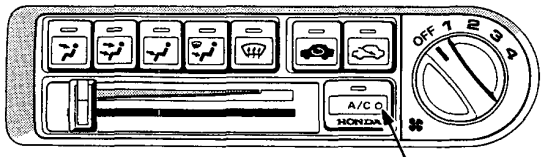

YEL/BLK
* COMPRESSOR CLUTCH RELAY A ..... FUEL INJECTED: G201
CARBURETED: G202
COMPRESSOR CLUTCH RELAY B G202
TO ALTERNATOR
WHT/BLU
TO IGNITION COIL
BLU
YEL/BLK
TO PGM-FI ECU
RED/YEL
BLU
RED/BLU
RED/BLU
COMPRESSOR CLUTCH RELAY A
GRY
COMPRESSOR CLUTCH RELAY B
DIODE
BLU
COMPRESSOR CONTROL UNIT
YEL
BLU/RED
RED
BRN
WHT/YEL
DUAL PRESSURE SWITCH
THERMAL PROTECTOR
GRN
GRN/RED
THERMO-STAT
TO PGM-CARB. CONTROL UNIT
RED
BLK
COMPRESSOR CLUTCH
PICK-UP SENSOR
WHT
WHT/YEL
G401
BLU
G203
IDLE BOOST SOLENOID VALVE (CARBURETED only)
COOLING FAN SWITCH (RADIATOR)
G201

Compressor Control System

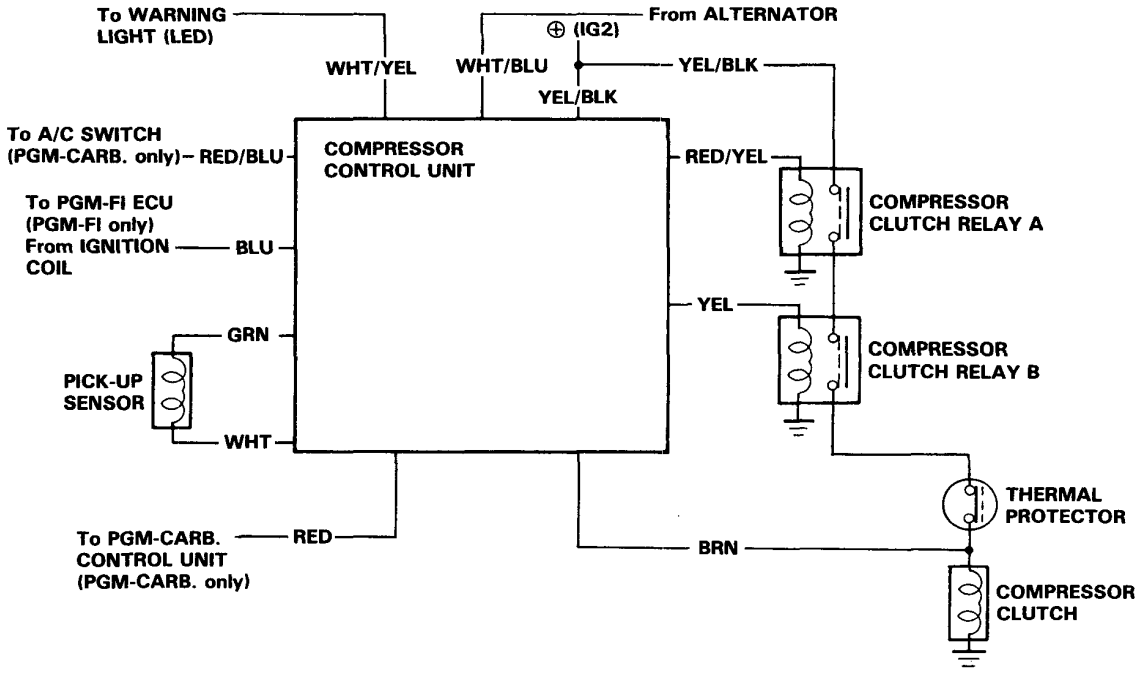
Description

The compressor control unit has a system designed to protect the compressor belt in the event of a seizure, thereby allowing the alternator to continue operating.
This is done by comparing the engine rpm and the compressor pulley rpm. When there is a difference in rpm that continues for more than 3 seconds, the compressor relays are turned off and the warning light comes on.
To reset, push the A/C switch off, then push it on again.

NOTE: If the switch is pushed off and on more than twice, it will be necessary to turn off the ignition to reset.

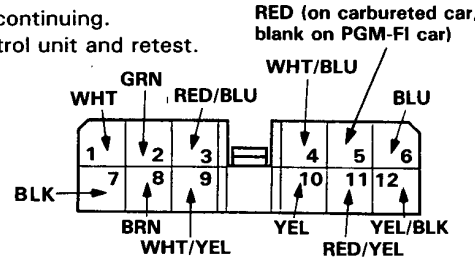


WARNING LIGHT
NOTE: This doesn't show on late model Prelude unless illuminated.



Input Tests

NOTE:
- Make sure all connectors are clean and tight.
- Make all tests from the wire side of the connector with a digital multi-tester.
- Any abnormality found during these tests must be corrected before continuing.
- If all tests produce the desired results, substitute a known-good control unit and retest.



View from wire side.

Perform the following tests with the A/C control unit's 12P connector disconnected, and the ignition switch, blower switch, and A/C switch ON.

WIRE POSITION	CIRCUIT	TEST CONDITION	DESIRED RESULTS	CORRECTIVE ACTION IF DESIRED RESULTS AREN'T OBTAINED
BLK (7)	Ground	Check for continuity to body ground.	Should have continuity.	Repair open to body ground.
YEL/BLK (12)	Power	Check for battery voltage.	Should have battery voltage.	Check #18 fuse; if OK, repair open in YEL/BLK wire.
RED/YEL (11) and YEL (10)	Compressor relay A Compressor relay B	Connect both the RED/YEL (11) and YEL (10) wires to the YEL/BLK (12) wire with jumper wires.	The A/C compressor clutch should click.	Check for an open or short in the RED/YEL or YEL wires.
BLU (6)	Engine speed	Check for battery voltage.	Should have battery voltage.	Check for an open or short in the BLU wire or a faulty coil.
GRN (2) and WHT (1)	Compressor sensor	Check resistance between the GRN and WHT wires (use 20 K scale).	Should be approximately 0.45 to 0.60 ohms on the 20 K scale (450—600 ohms).	Check for open in GRN or WHT wires between the A/C control unit and the compressor pick-up sensor or a faulty pick-up sensor.
BRN (8)	Compressor clutch	Check resistance to body ground.	Should be approximately 4 ohms.	Check for an open in the BRN wire between the A/C control unit and the compressor clutch coil or a faulty compressor clutch.

Perform the following tests with A/C control unit connected, engine running and the A/C system turned ON.

RED/YEL (11)	Compressor relay A	Check for battery voltage.	Should have battery voltage.	Check the connection to the A/C control unit; if OK, substitute a known-good control unit and retest.
YEL (10)	Compressor relay B	Check for battery voltage	Should have battery voltage.	Check the connection to the A/C control unit; if OK, substitute a known-good control unit and retest.
BRN (8)	Thermal protector	Check for system voltage.	Should have system voltage.	Test thermal protector.

Troubleshooting

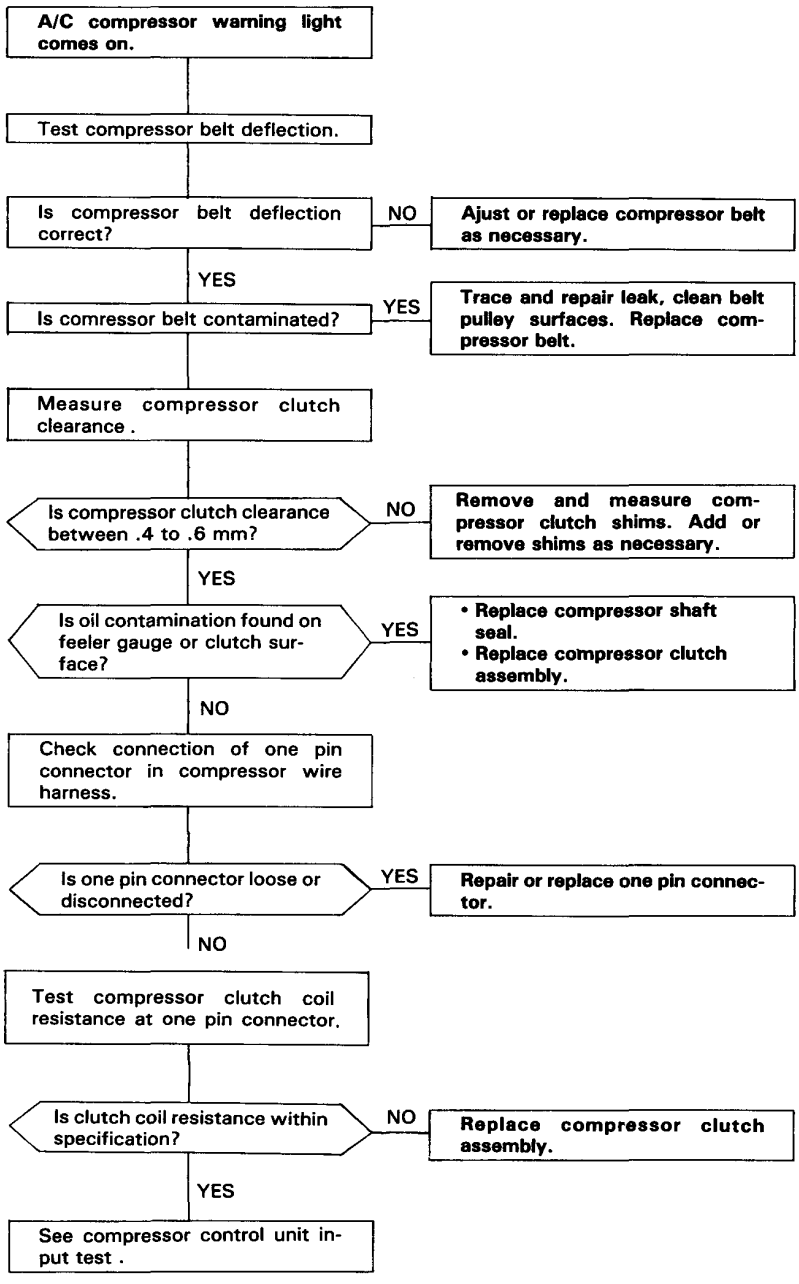
- Any abnormality must be corrected before continuting to the next test.
- Because of the precise measurements needed, use a digital voltmeter and ohmmeter when testing.

Before performing any troubleshooting procedures check:
- Fuses No. 18, 36, 39, 17, 12, 35, 20
- Grounds No. G201, G401, G202, G203
- All electrical connections are clean and tight.

FLOW CHART NO.	SYMPTOM	PAGE
1	A/C compressor warning light comes ON.	15-17
2	Compressor, warning light and cooling fans do not come on.	15-18
3	A/C compressor does not come on and cooling fans come on.	15-20
4	Both fans (condenser and compressor fans) do not run. Compressor operates normally.	15-22
5	One fan (condenser or compressor fan) does not run. Compressor operates normally.	15-24

NOTE: To improve acceleration and engine response, the ECU temporarily stops A/C operation when it receives signals that the vehicle is accelerating. (PGM-FI CAR ONLY)

Flow Chart 1


A/C compressor warning light comes on.
Test compressor belt deflection.
Is compressor belt deflection correct?
NO
Ajust or replace compressor belt as necessary.
YES
Is comressor belt contaminated?
YES
Trace and repair leak, clean belt pulley surfaces. Replace compressor belt.
Measure compressor clutch clearance .
Is compressor clutch clearance between .4 to .6 mm?
NO
Remove and measure compressor clutch shims. Add or remove shims as necessary.
YES
Is oil contamination found on feeler gauge or clutch surface?
YES
• Replace compressor shaft seal.
• Replace compressor clutch assembly.
NO
Check connection of one pin connector in compressor wire harness.
Is one pin connector loose or disconnected?
YES
Repair or replace one pin connector.
NO
Test compressor clutch coil resistance at one pin connector.
Is clutch coil resistance within specification?
NO
Replace compressor clutch assembly.
YES
See compressor control unit input test .

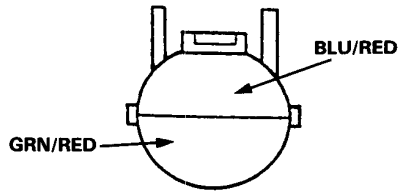
Flow Chart 2

NOTE: Perform all checks with the engine running.

Compressor, warning light and cooling fans do not come on.

Disconnect the dual pressure switch.

Connect a jumper wire between BLU/RED terminal and body ground.



Does the A/C system (compressor and cooling fans) come on?

NO → **Repair open in BLU/RED wire between A/C diodes and dual pressure switch.**

YES

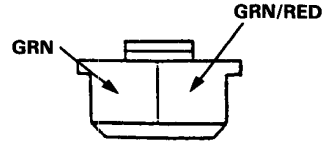
Connect a jumper wire between BLU/RED and GRN/RED terminals.

Does the A/C system come on?

YES → **Check the A/C pressure; if OK, replace the dual pressure switch.**

NO

Reconnect the dual pressure switch and disconnect evaporator sensor connector.



View from wire side

Connect a jumper wire between GRN/RED terminal and body ground.

Does the A/C system come on?

NO → **Repair open in GRN/RED wire between A/C dual pressure switch and body ground.**

YES

Connect a jumper wire between GRN/RED and GRN terminals.

Does the A/C system come on?

YES → **Replace the evaporator sensor.**

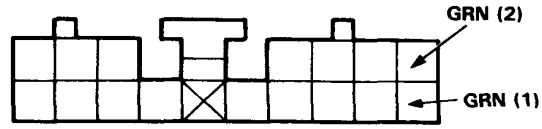
NO

Reconnect the evaporator sensor.

(Continued on next page)

(Continued from previous page)

Disconnect the heater control panel and connect a jumper wire between GRN (1) terminal and body ground.



View from wire side

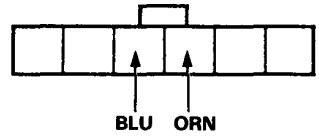
Does the A/C system come on?
- NO → **Repair open in GRN (1) wire between the evaporator sensor and the heater control panel.**
- YES

Connect a jumper wire between GRN (1) and BLK terminals.

Does the A/C system come on?
- NO → **Repair open in BLK wire between the heater control panel and body ground.**
- YES

Reconnect the control panel.

Remove A/C switch and connector.



view from wire side

With switch connected, ground the BLU wire.

Does A/C system come on?
- NO → Replace the heater control panel.
- YES

Turn on A/C switch and ground the ORN wire.

Does A/C system come on?
- NO → Replace the A/C switch.
- YES

Ground GRN (2) at heater control connector.

Does A/C system come on?
- NO → Replace the heater control panel.
- YES

- Check connection of GRN wire to blower switch.
- Test blower switch.

Flow Chart 3

A/C compressor does not come on and cooling fans come on.

Disconnect A/C compressor clutch relays A and B.

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

Is there battery voltage?

NO → **Repair open in YEL/BLK wire between relay and fuse box or a blown No. 18 fuse.**

YES

Connect a jumper wire between YEL/BLK terminal on relay A and RED terminal on relay B.

Does the A/C compressor come on?

NO → **Check the A/C compressor clutch or thermal protector, or an open in RED wire.**

YES

Inspect the compressor clutch relays A and B.

Are the relays OK?

NO → **Replace the relay(s).**

YES

Check for continuity on the GRY terminal between relays A and B.

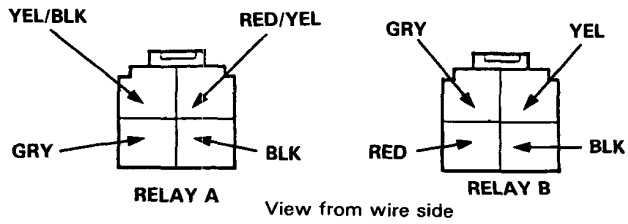
Is there continuity?

NO → **Repair open GRY wire between relays A and B.**

YES

Reconnect relays A and B and remove the A/C diodes (taped to wire harness under right headlight).

(Continued on next page)



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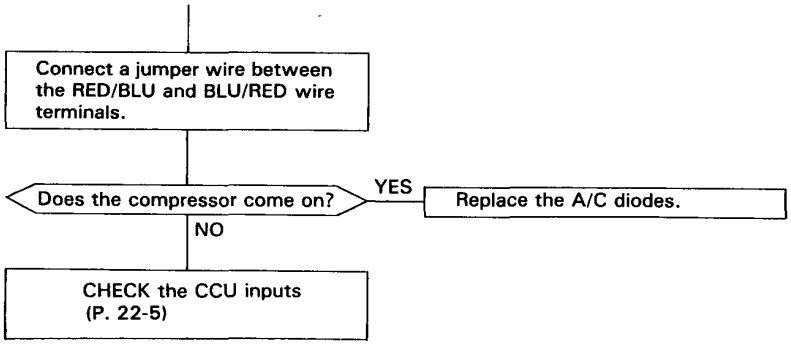


NOTE: Check the A/C signal (A/C CCU ⟷ PGM-FI ECU, PGM-FI ECU ⟷ A/C DIODES) (PGM-FI CAR ONLY) (See electrical section)

CCU: Compressor Control Unit

Flow Chart 4

Both fans (condenser and compressor fans) do not run with A/C on.

Check the fuses No. 18, 35, 39, 13, 34.

Are the fuses OK? NO → **Replace the fuse(s).**

YES

Remove the radiator and condensor fan relays

Are the relays OK? NO → **Replace the relays.**

YES

Check for battery voltage at terminal B (condensor fan) and D (radiator fan)

Is there battery voltage? NO → **Check connection at fuse box. If OK, replace fuse box.**

YES

Torn the ignition ON.

Check for battery voltage at terminal C.

Is there battery voltage? NO → **See cooling fan control unit input test.**

Reinstall both relays.

Remove A/C diode located under right headlight.

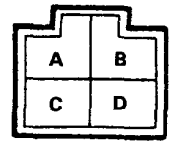
Using a jumper wire, connect the BLU wire to body ground.

Do both fans come on? NO → **Repair open circuit in BLU wire between the underhood relay box and the A/C diode.**

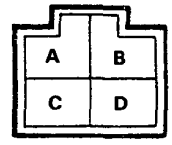
YES

Replace A/C diode.

CONDENSER FAN RELAY SOCKET



RADIATOR FAN RELAY SOCKET



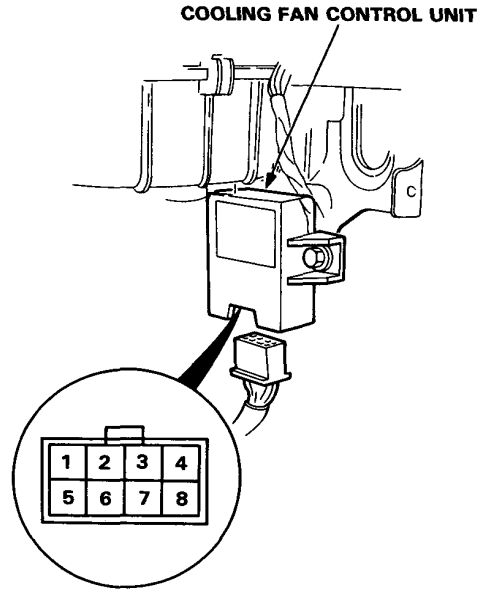
Cooling Fan Control Unit Input Test

- All test should be performed with the key "ON" (unless specified otherwise) and the cooling fan control unit unplugged (unless specified otherwise).
- All test are made from the wire side of the connector.
- Any abnormality must be corrected before continuing to the next test.

Before performing any troubleshooting procedures check:

- Fuses No. 17, 12, 36, 39, 35.
- All electrical connections are clean and tight.

NOTE: If all tests check OK, replace with known-good cooling fan control unit.



View from wire side

WIRE COLOR	TEST CONDITION	IF DESIRED RESULTS ARE NOT OBTAINED:
YEL/BLK	Connect to WHT/YEL using a jumper wire. Condenser fan shoold come on.	Repair open in YEL/BLK between cooling fan control unit and underhood relay box.
BLK/YEL[2]	Check for battery voltage.	Repair open in BLK/YEL[2] between fuse No. 17 and cooling fan control unit.
RED/GRN	Connect to WHT/YEL using a jumper wire. Radiator fan ahould come on.	Repair open in RED/GRN between cooling fan control unit and underhood relay box.
BLK	Check for continuity to ground.	Repair open circuit to body ground.
WHT/YEL	Check for battery voltage.	Repair open between fuse No. 35 and cooling fan control unit.
BLK/YEL[1]	Check for battery voltage.	Repair open in BLK/YEL[1]between fuse No. 12 and cooling fan control unit.

Flow Chart 5

Cooling fan (or radiator fan) does not run.

Check fuse 36 (or 39).

Is the fuse OK? — NO → **Replace the fuse(s).**

YES

Check the relay of the fan motor that does not run.

Is the relay OK? — NO → **Replace the relay.**

YES

Connect a fused jumper from BLU/BLK wire to BLU/BLK. (Disconnect the fan relay connector)

Turn ignition to RUN.

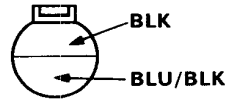
Does cooling fan operate? — YES → B

(continued on nest page.)

NO

Disconnect cooling fan motor connector.

Connect voltmeter between BLU/BLK wire (+) and BLK wire (−).



View from wire side

Is battery voltage present? — YES → **Replace cooling fan motor.**

A — NO

(Continued on next page.)

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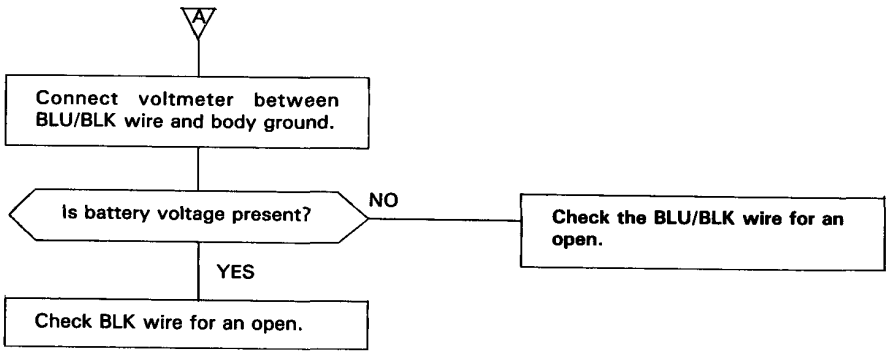

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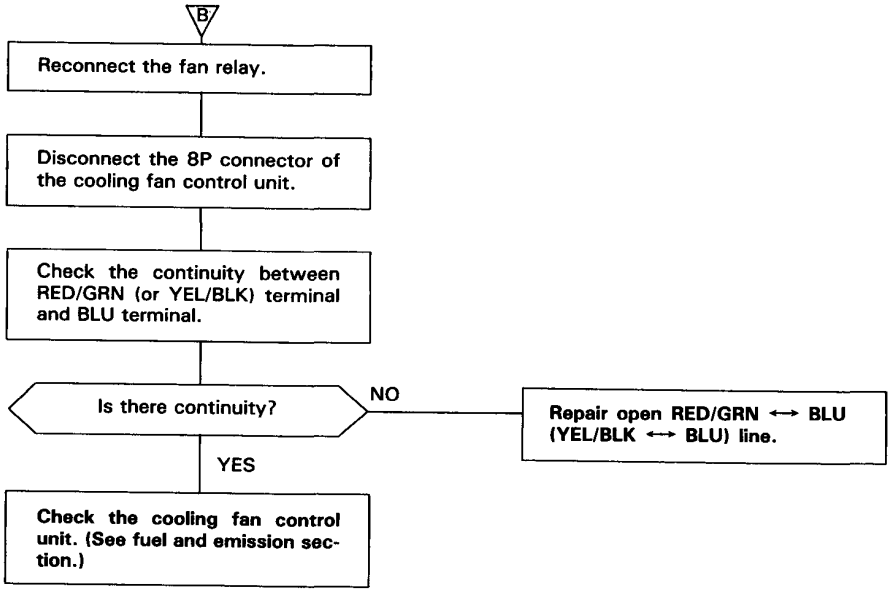


Electrical

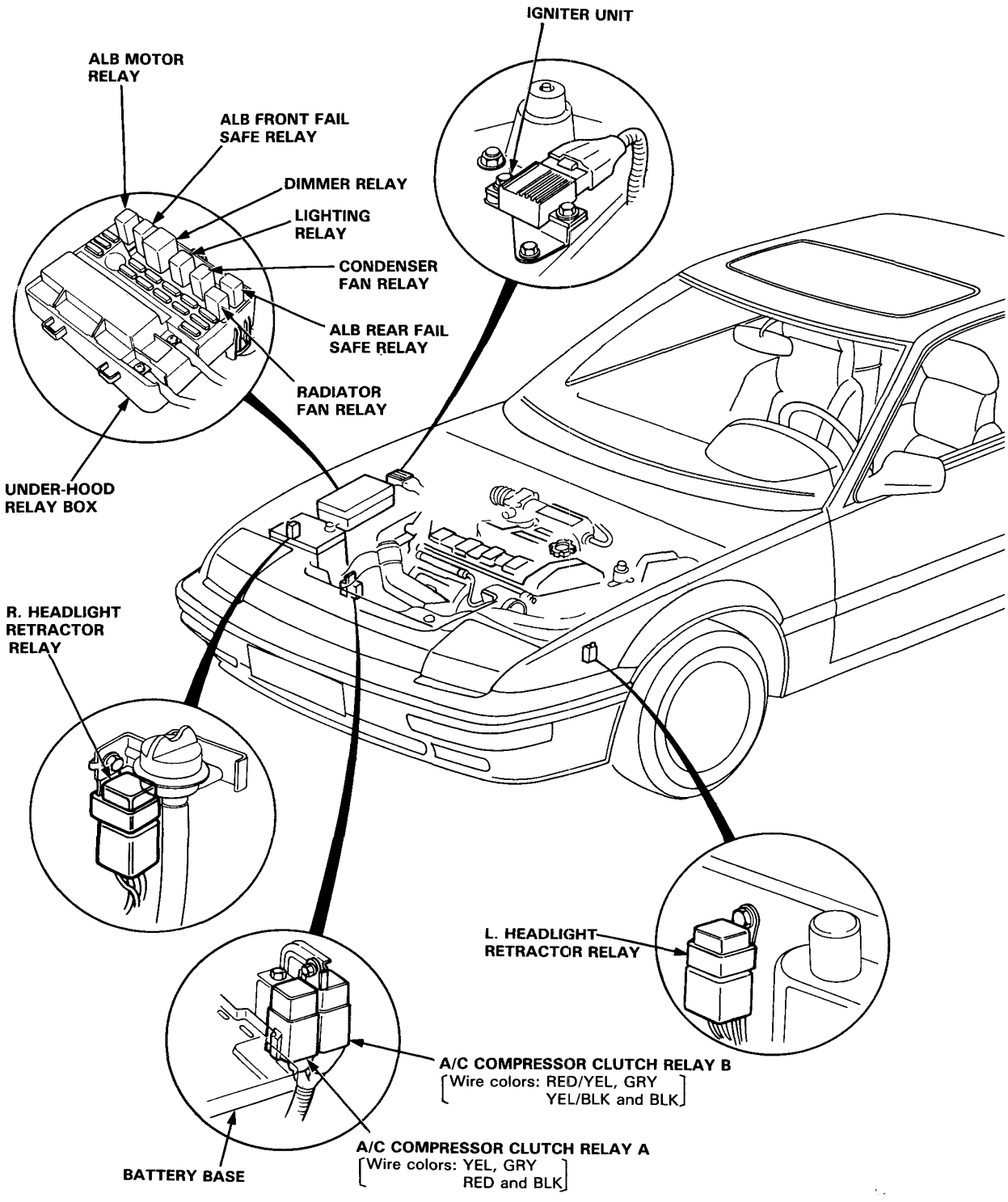
Relays and Control Unit Locations 16-2
Ground and Wire Harness Routing 16-6
Power Distribution 16-16
Ground Distribution 16-19
Battery 16-27
Cooling Fan Control
  Component Location Index 16-28
  Description 16-29
  Circuit Diagram 16-30
  Troubleshooting 16-31
High Mount Brake Light 16-34
Dashlight Brightness Control
  Component Location Index 16-35
  Circuit Diagram 16-35
Stereo Sound System
  Component Location Index/
  Description 16-36
  Circuit Diagram 16-37
Power Window
  Component Location Index 16-41
  Circuit Diagram 16-42
  Troubleshooting 16-43
Cruise Control
  Clutch Switch Test 16-48
Wiring Diagrams 16-50

Outline of Model Changes

- The power supply circuit and ground distribution have been modified.
- The battery, power window and stereo sound system have been changed.
- The cooling fan control has been changed due to the fan timer system addition.
- The high mount brake light has been added to KQ model.
- The dashlight brightness control has been changed due to the new S4 switch and instrument panel light addition.
- The clutch switch of cruise control system has been changed.

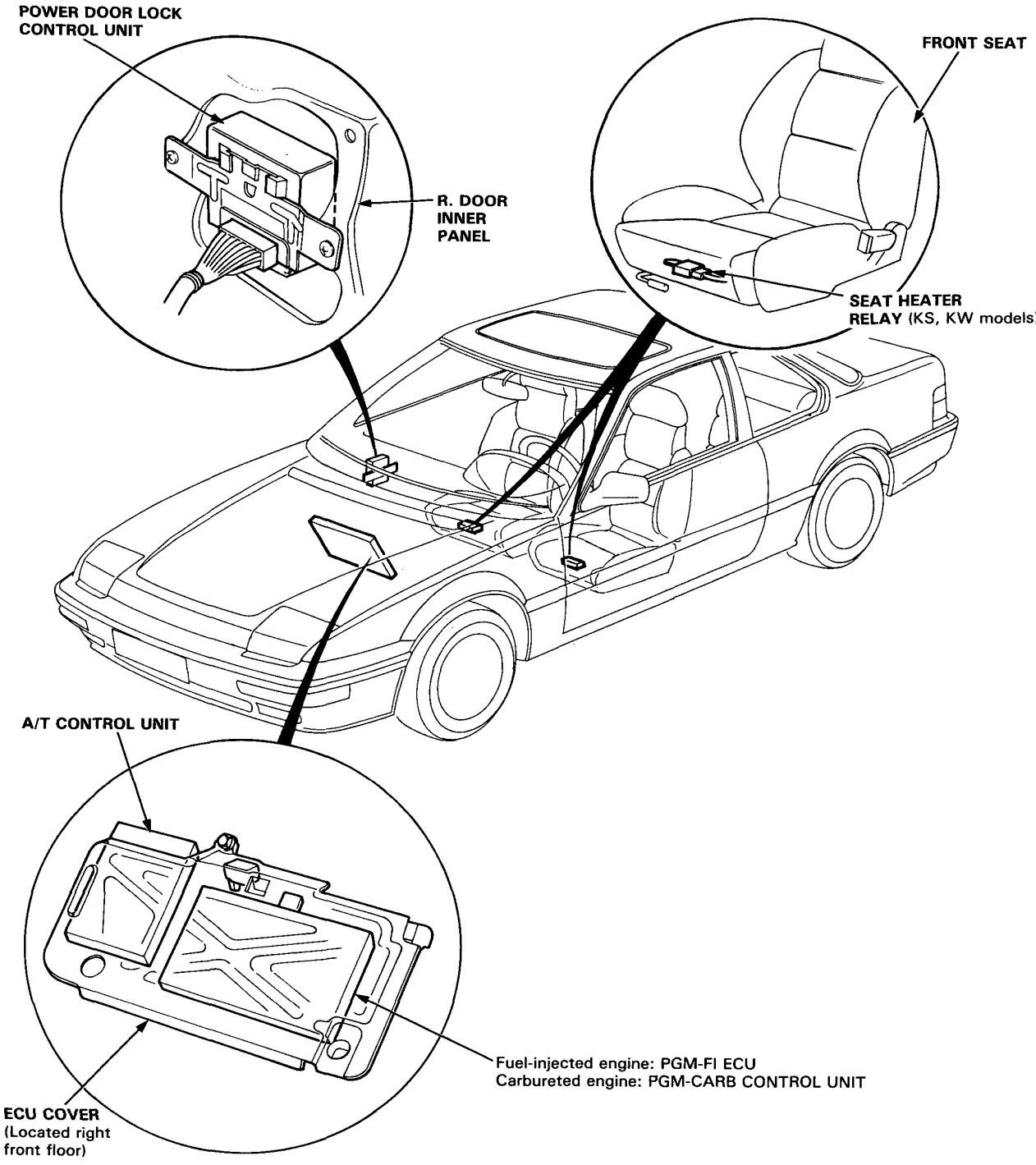
Relays and Control Unit Locations

Engine Compartment



Door and Floor

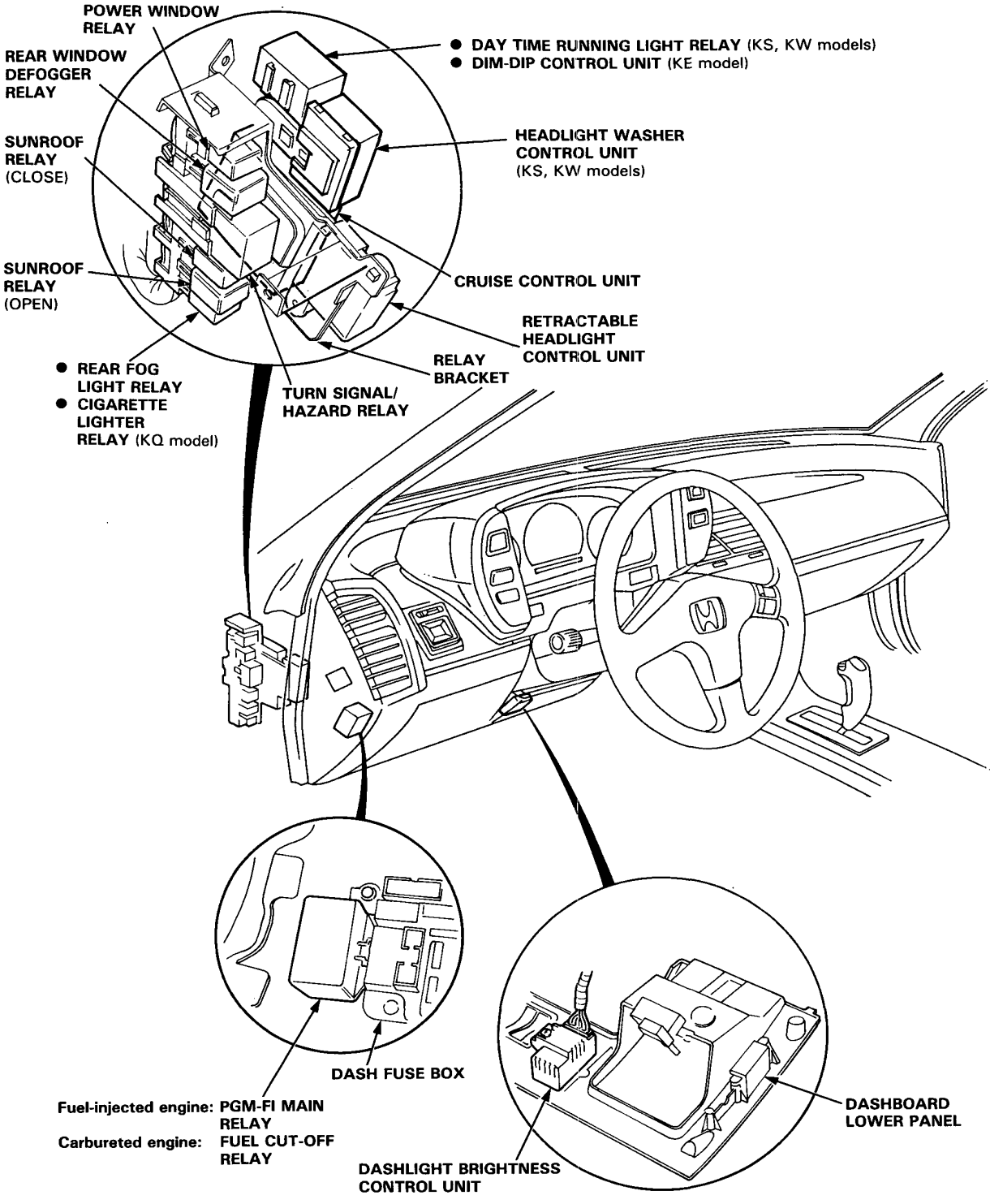
NOTE:
- The illustration is L.H. drive type.
- R.H. drive type is symmetrical to L.H. drive type.



Relays and Control Unit Locations

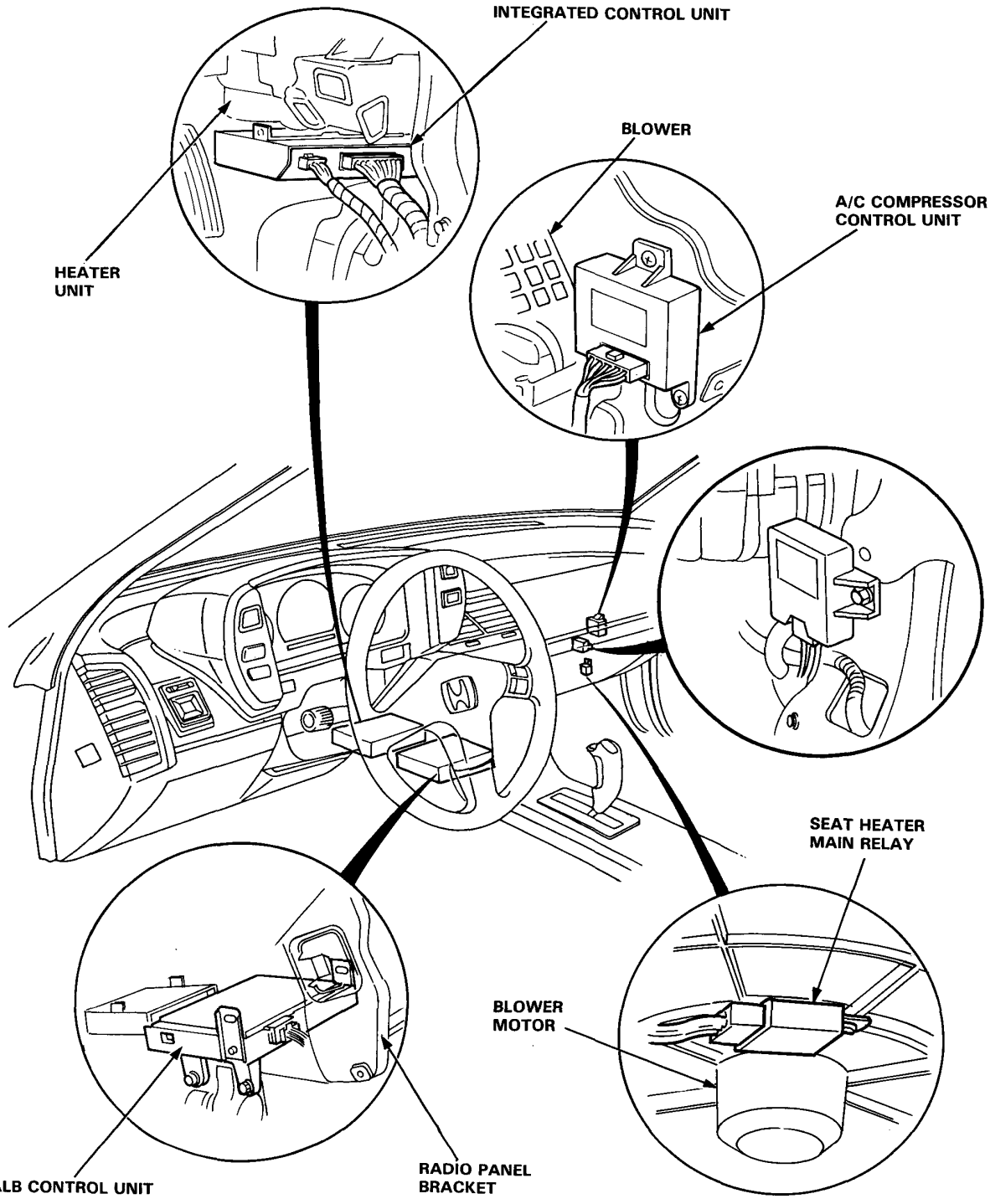
Dashboard

NOTE:
- The illustration is L.H. drive type.
- R.H. drive type is symmetrical to L.H. type.

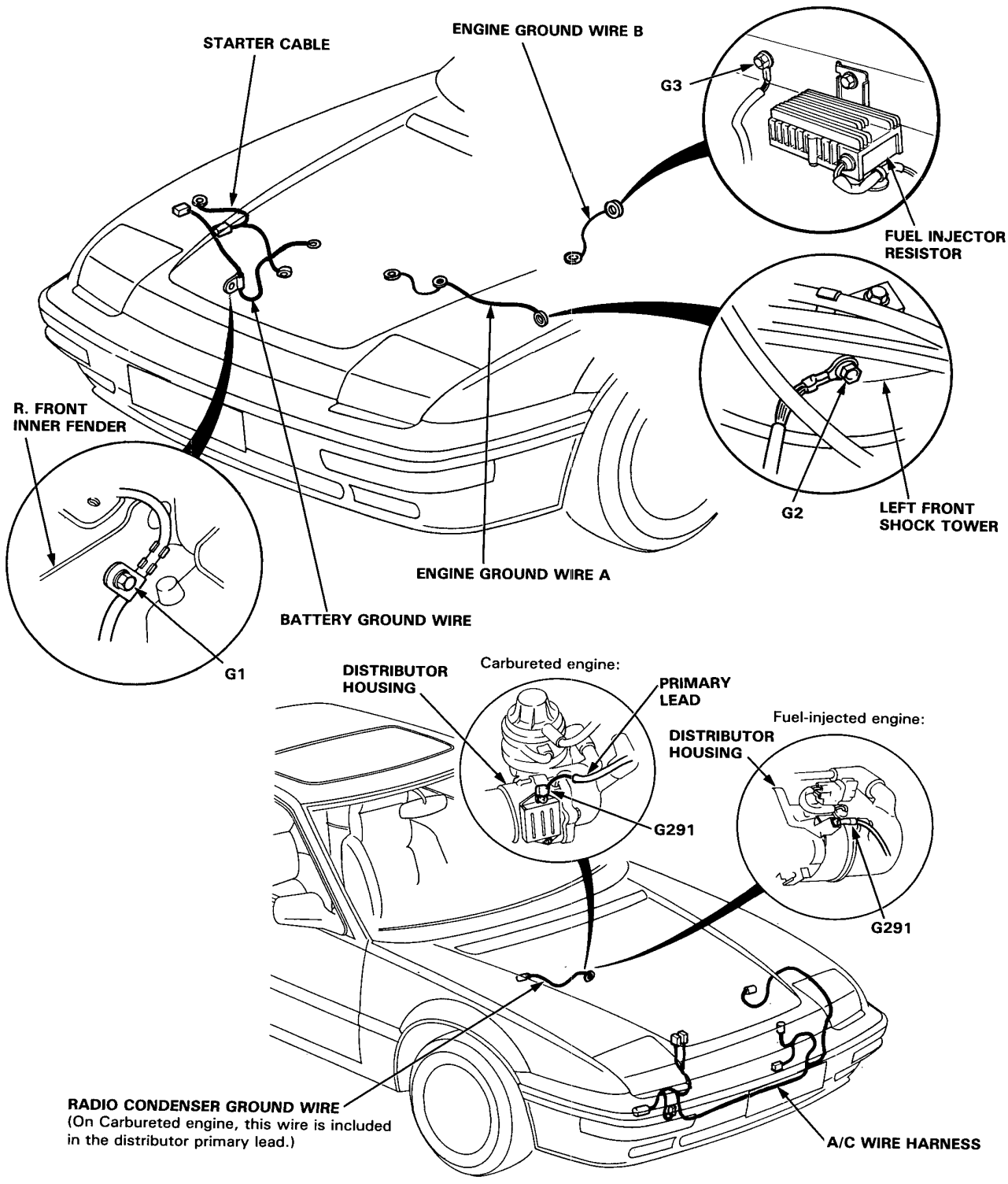


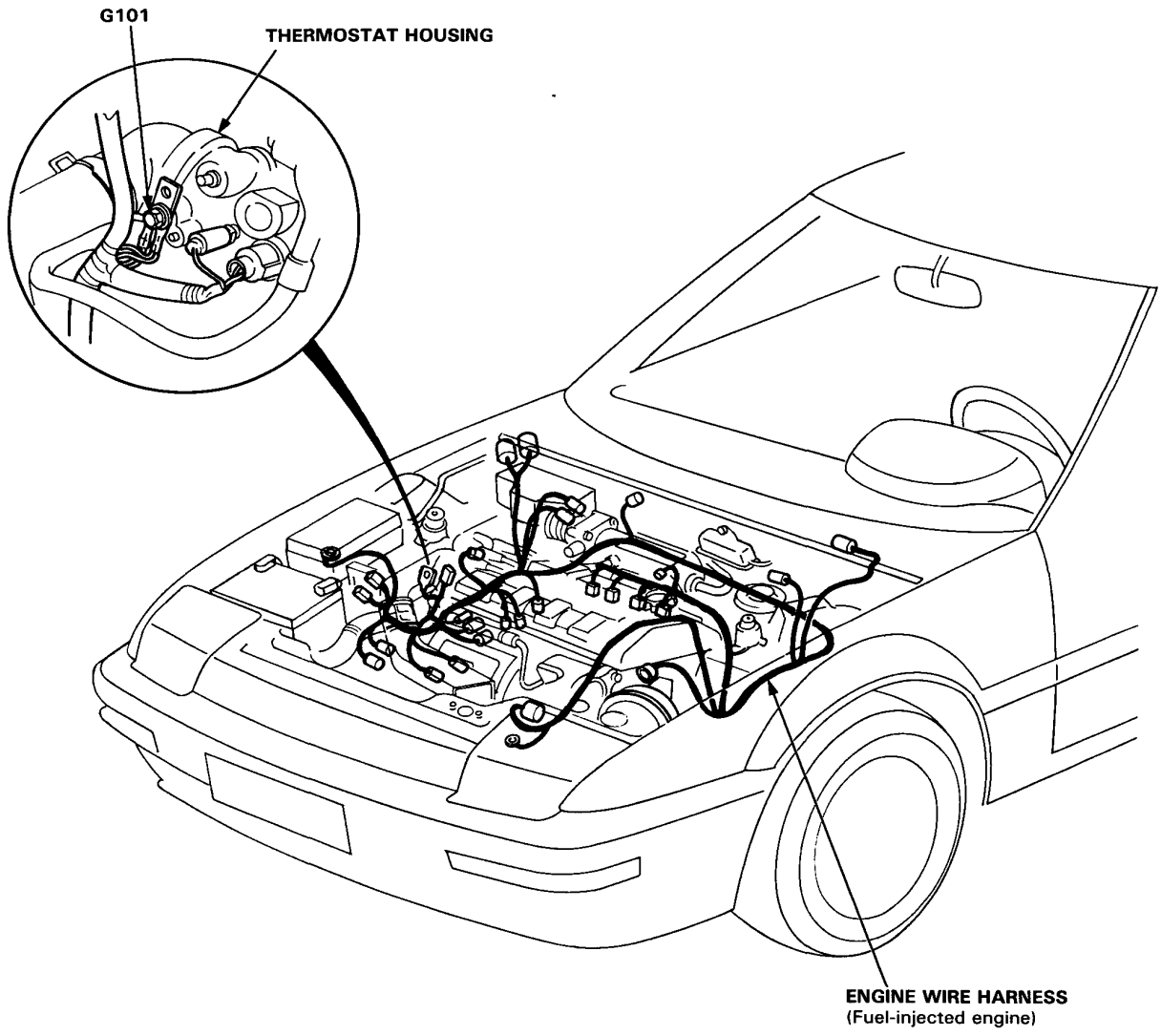
NOTE:

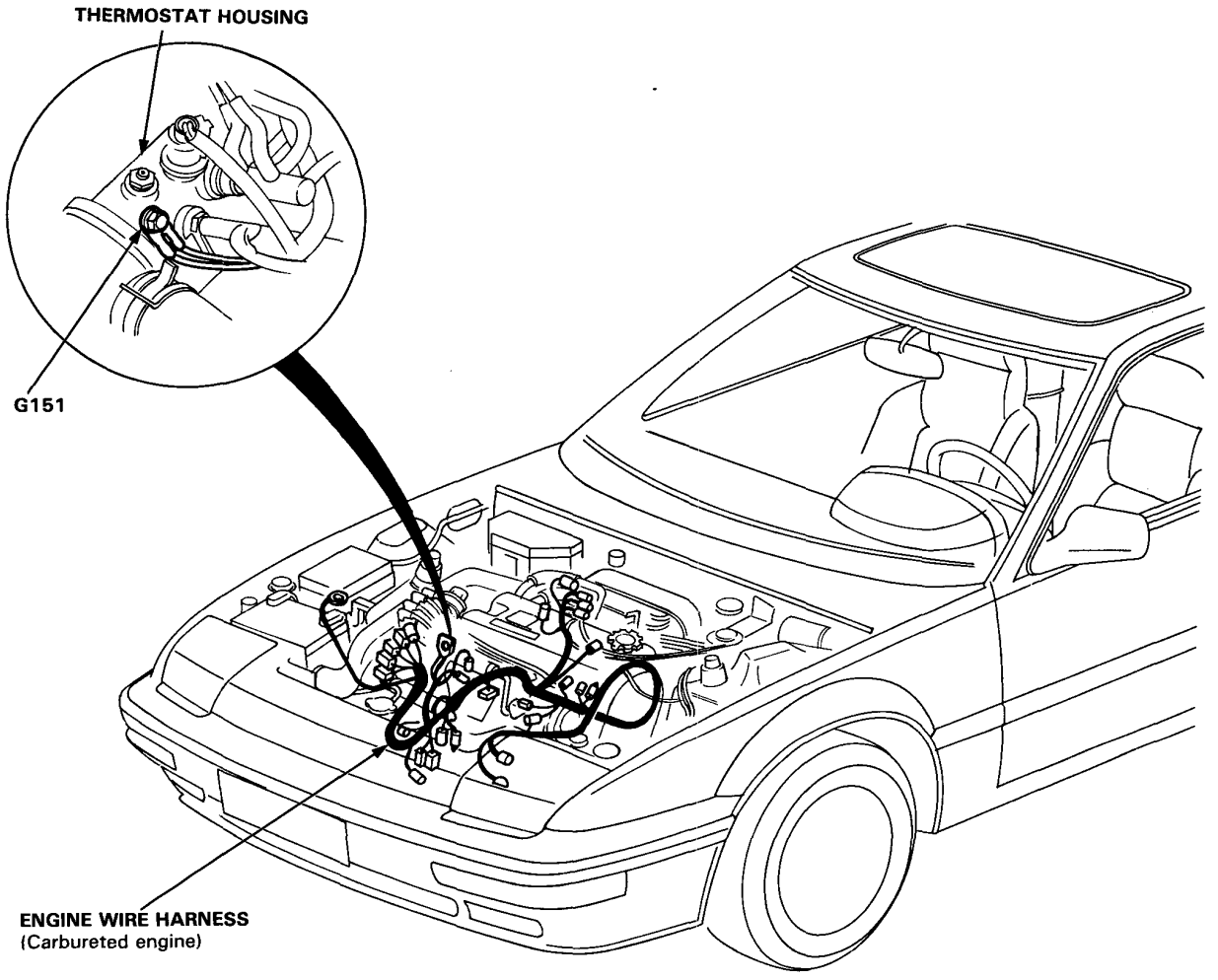
- The illustration is L.H. drive type.
- R.H. drive type is symmetrical to L.H. drive type.



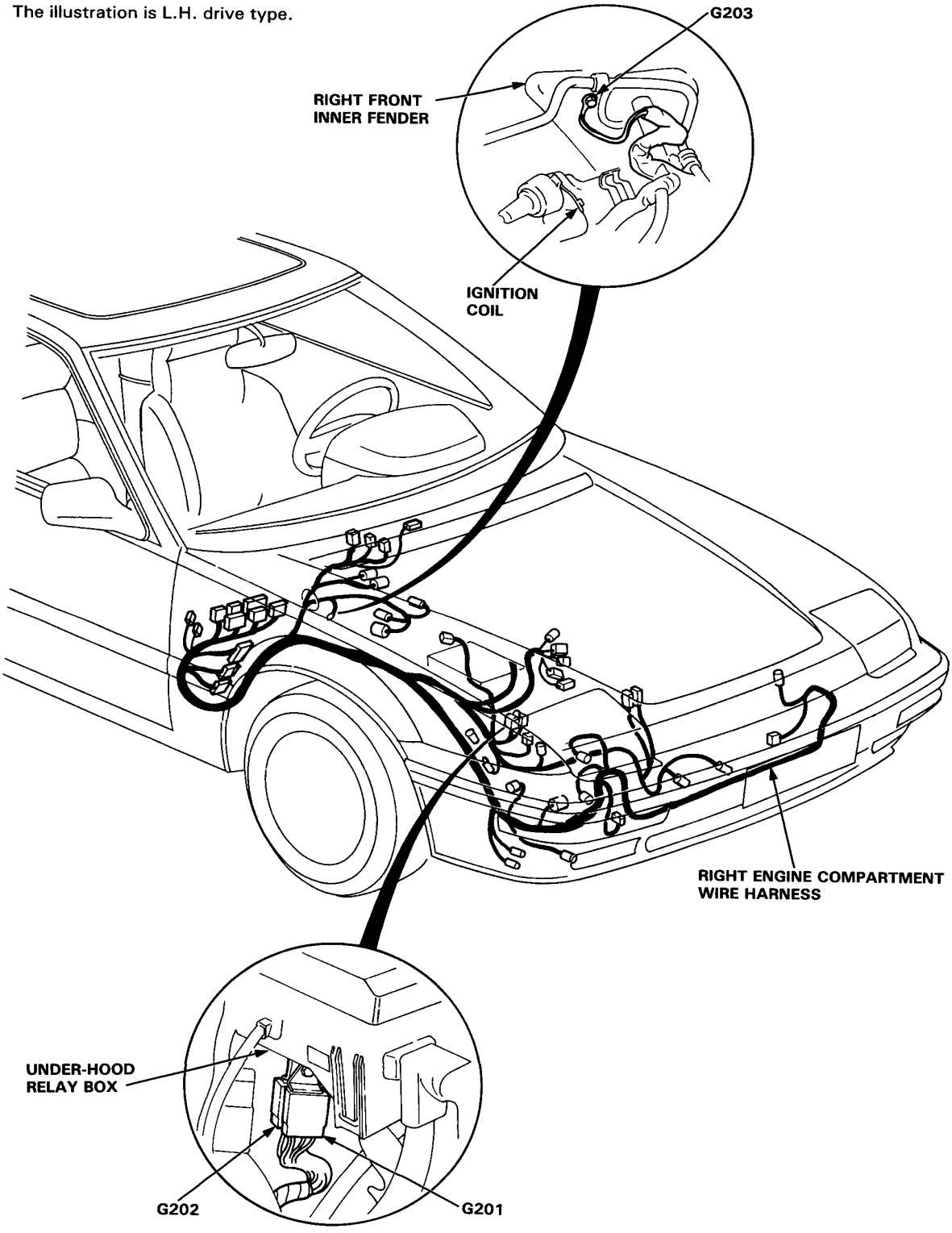
Ground and Wire Harness Routing




G101
THERMOSTAT HOUSING
ENGINE WIRE HARNESS
(Fuel-injected engine)

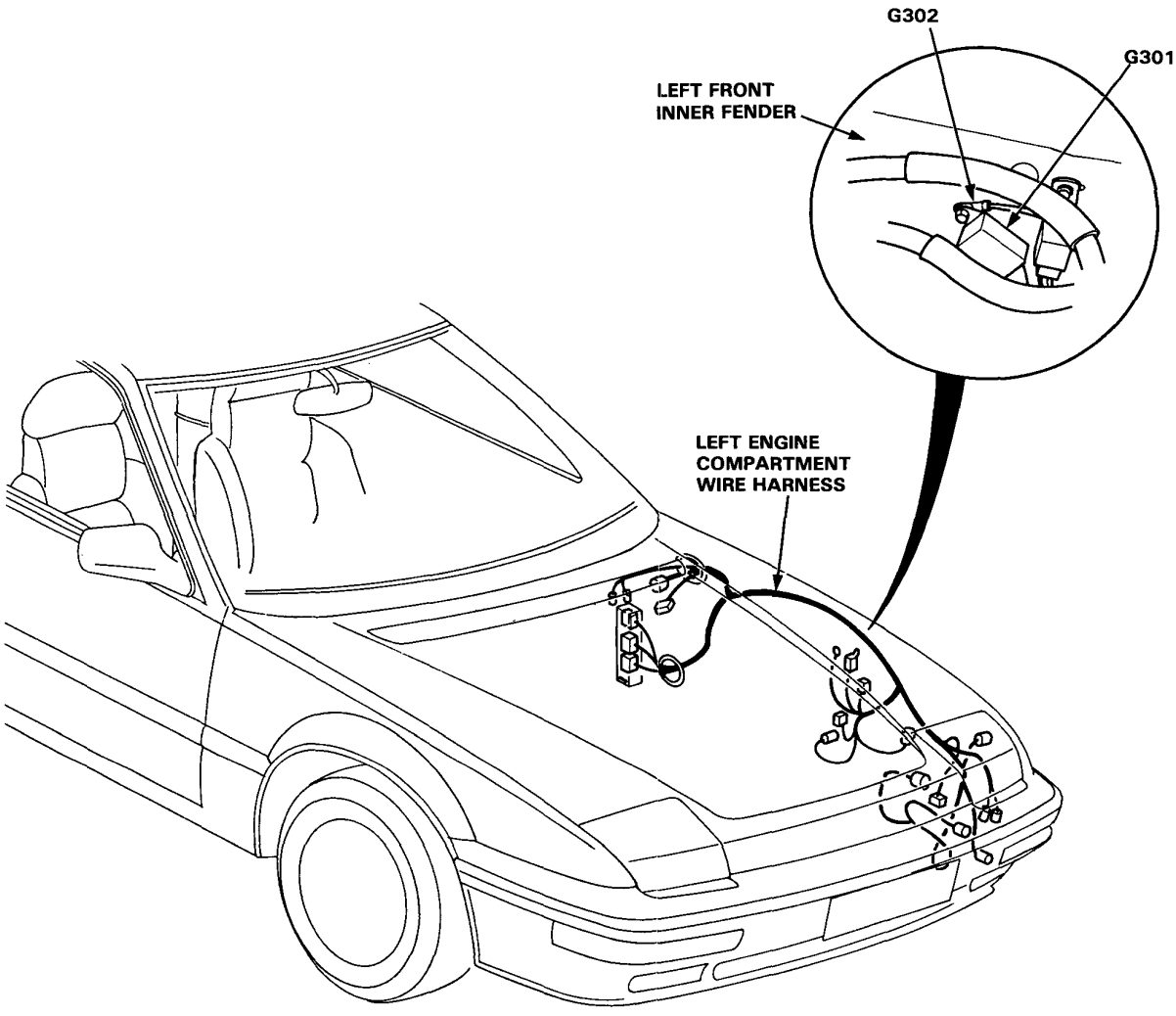

THERMOSTAT HOUSING
G151
ENGINE WIRE HARNESS
(Carbureted engine)

NOTE: The illustration is L.H. drive type.

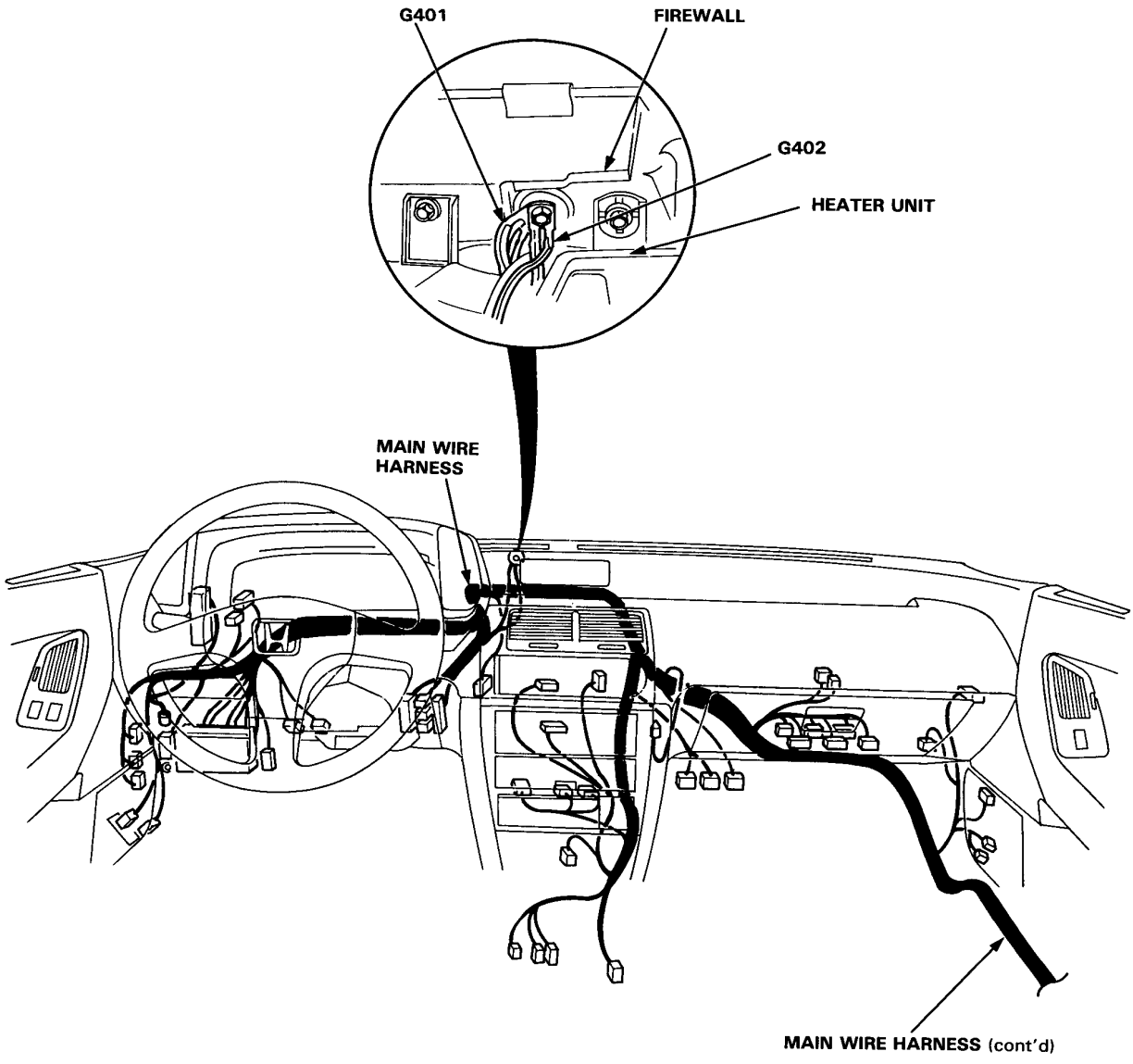


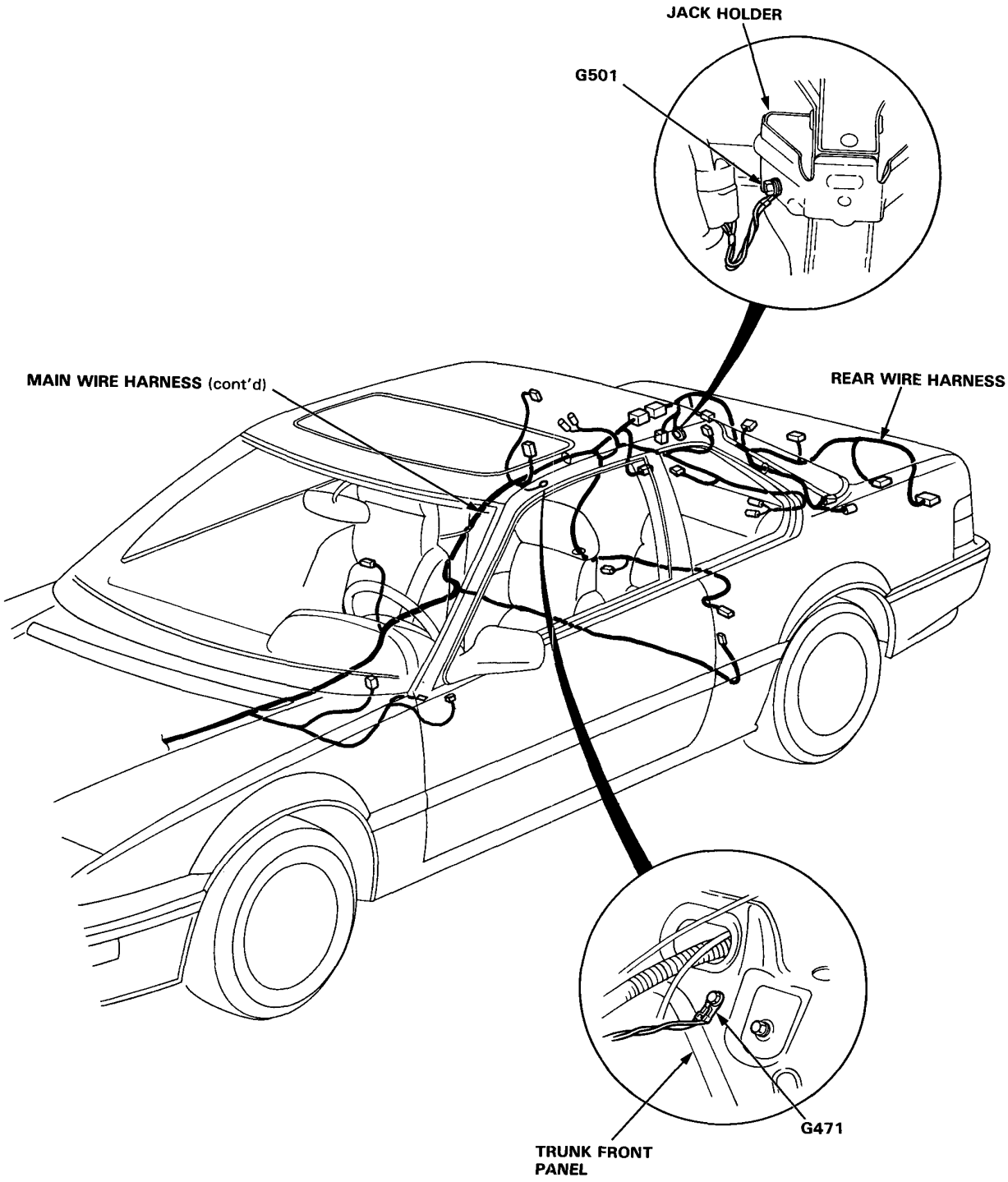
Ground and Wire Harness Routing

NOTE: The illustration is L.H. drive type.

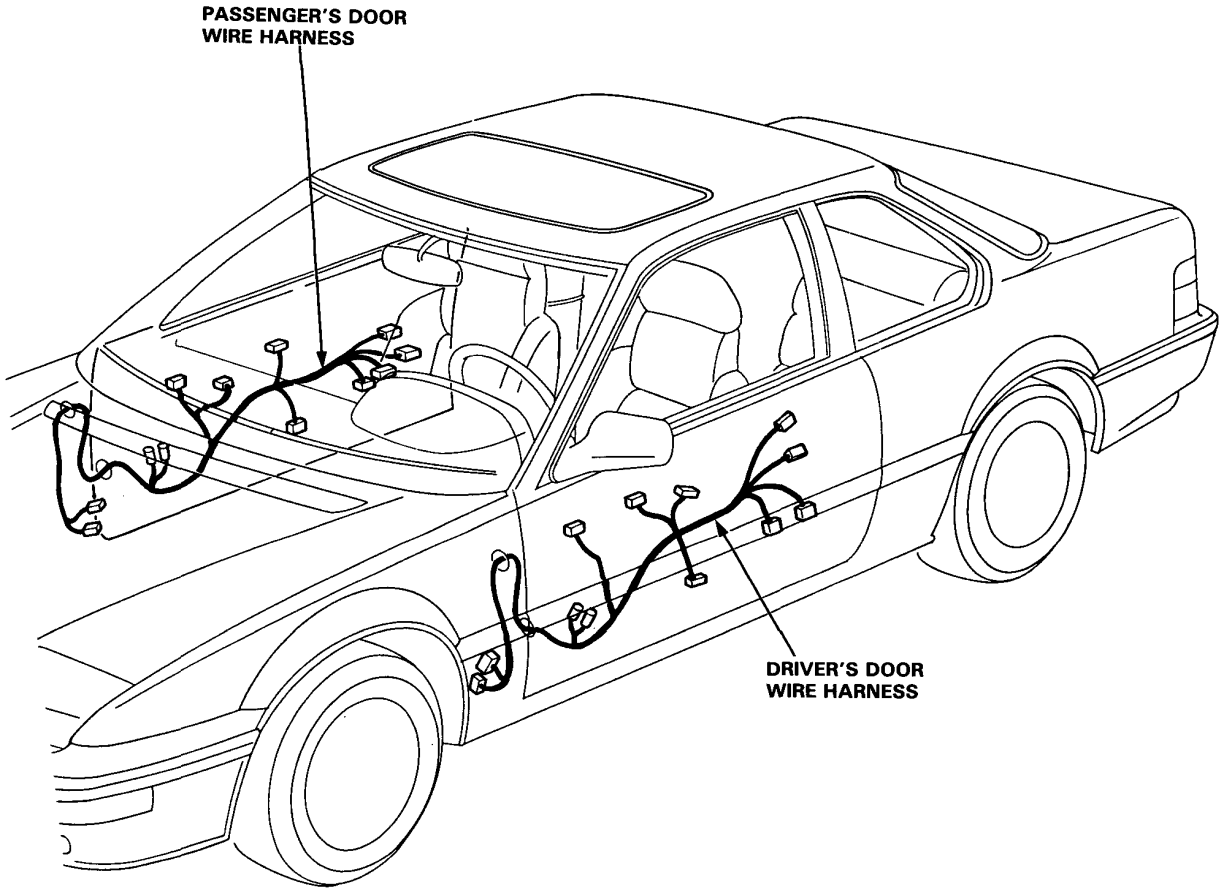


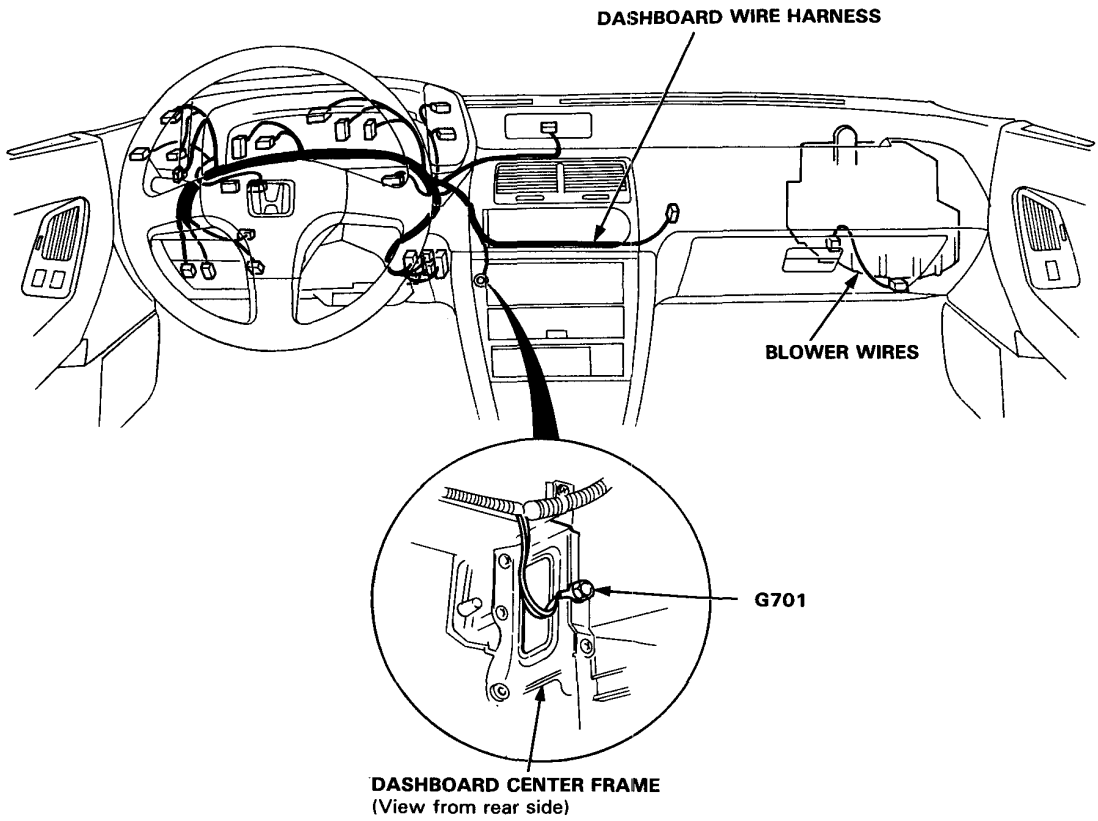
NOTE: The illustration is L.H. drive type.



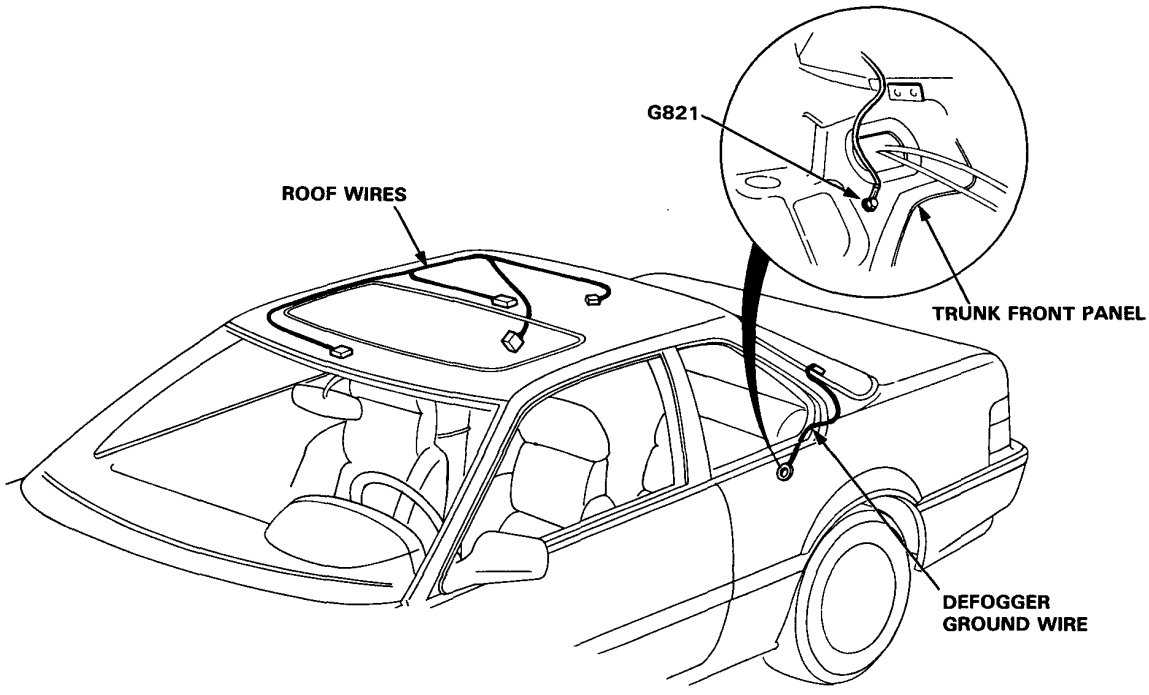

JACK HOLDER
G501
MAIN WIRE HARNESS (cont'd)
REAR WIRE HARNESS
G471
TRUNK FRONT PANEL

NOTE: The illustration is L.H. drive type.



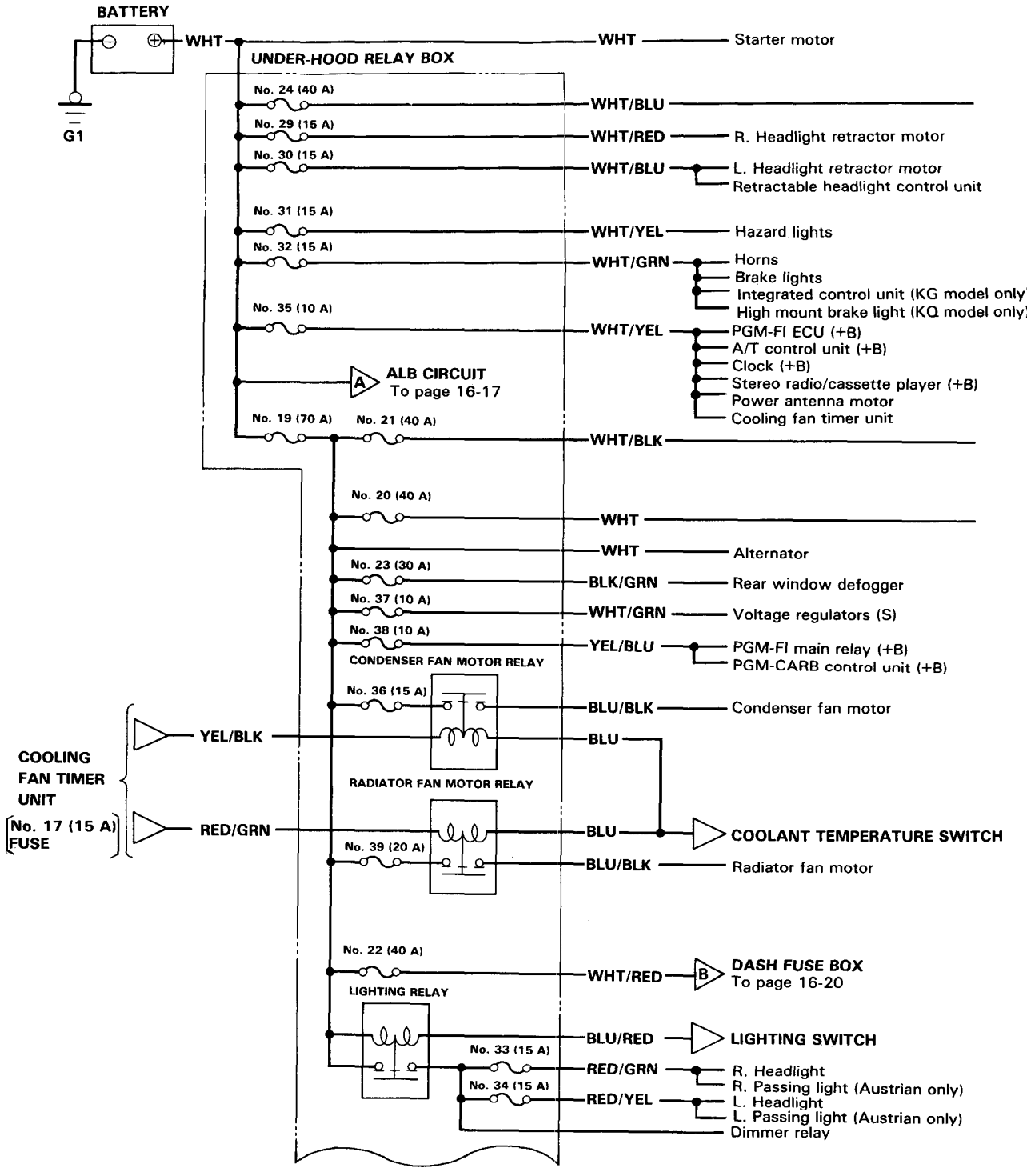

DASHBOARD WIRE HARNESS
BLOWER WIRES
G701
DASHBOARD CENTER FRAME
(View from rear side)

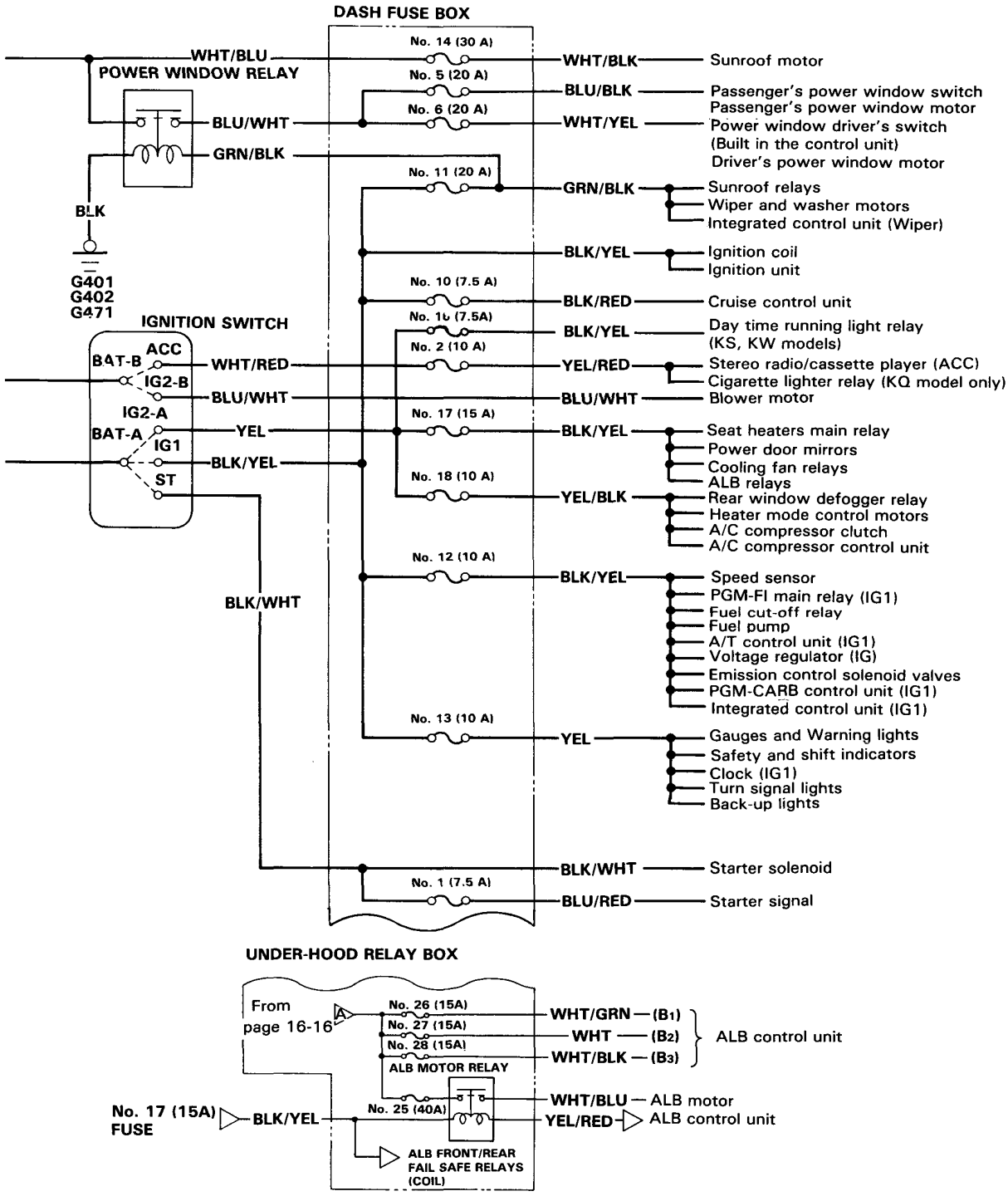
NOTE: The illustration is L.H. drive type.



Power Distribution

Circuit Identification



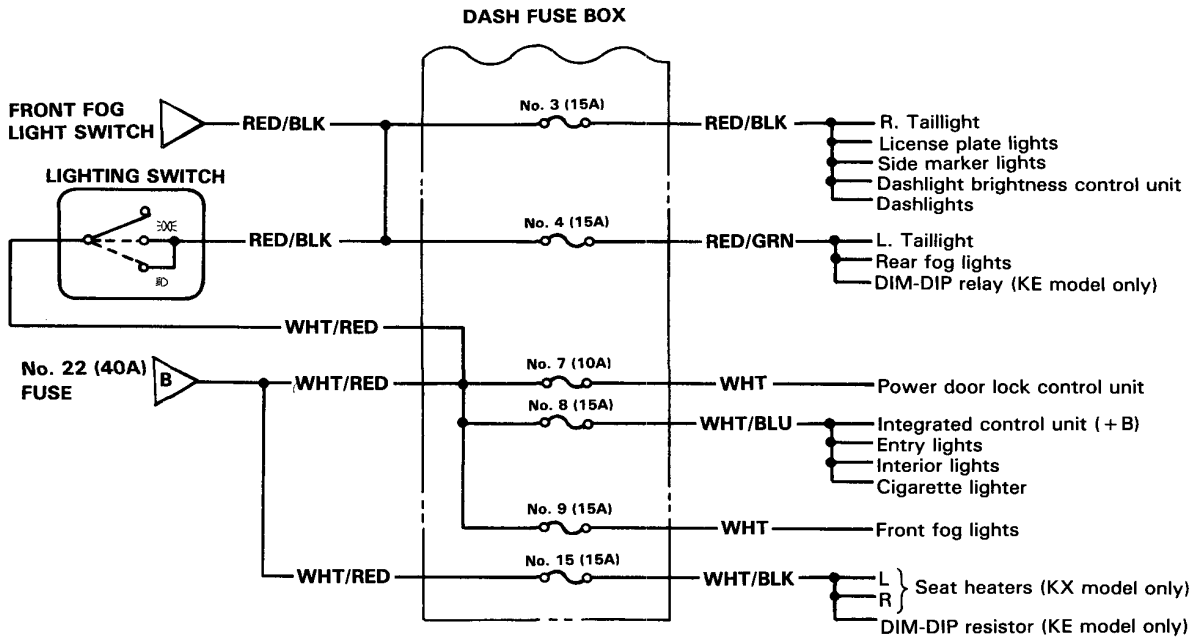

DASH FUSE BOX
No. 14 (30 A)
WHT/BLU
POWER WINDOW RELAY
WHT/BLK
Sunroof motor
No. 5 (20 A)
BLU/BLK
Passenger's power window switch
Passenger's power window motor
No. 6 (20 A)
BLU/WHT
WHT/YEL
Power window driver's switch
(Built in the control unit)
Driver's power window motor
GRN/BLK
No. 11 (20 A)
GRN/BLK
Sunroof relays
Wiper and washer motors
Integrated control unit (Wiper)
BLK
G401
G402
G471
BLK/YEL
Ignition coil
Ignition unit
No. 10 (7.5 A)
BLK/RED
Cruise control unit
IGNITION SWITCH
No. 16 (7.5A)
BLK/YEL
Day time running light relay
(KS, KW models)
ACC
BAT-B
No. 2 (10 A)
WHT/RED
YEL/RED
Stereo radio/cassette player (ACC)
Cigarette lighter relay (KQ model only)
IG2-B
BLU/WHT
BLU/WHT
Blower motor
IG2-A
No. 17 (15 A)
BAT-A
YEL
BLK/YEL
Seat heaters main relay
Power door mirrors
Cooling fan relays
ALB relays
IG1
BLK/YEL
ST
No. 18 (10 A)
YEL/BLK
Rear window defogger relay
Heater mode control motors
A/C compressor clutch
A/C compressor control unit
No. 12 (10 A)
BLK/WHT
BLK/YEL
Speed sensor
PGM-FI main relay (IG1)
Fuel cut-off relay
Fuel pump
A/T control unit (IG1)
Voltage regulator (IG)
Emission control solenoid valves
PGM-CARB control unit (IG1)
Integrated control unit (IG1)
No. 13 (10 A)
YEL
Gauges and Warning lights
Safety and shift indicators
Clock (IG1)
Turn signal lights
Back-up lights
BLK/WHT
Starter solenoid
No. 1 (7.5 A)
BLU/RED
Starter signal
UNDER-HOOD RELAY BOX
From page 16-16
A
No. 26 (15A)
WHT/GRN — (B1)
No. 27 (15A)
WHT — (B2)
ALB control unit
No. 28 (15A)
WHT/BLK — (B3)
ALB MOTOR RELAY
WHT/BLU — ALB motor
No. 17 (15A) FUSE
BLK/YEL
No. 25 (40A)
YEL/RED
ALB control unit
ALB FRONT/REAR FAIL SAFE RELAYS (COIL)

(cont'd)

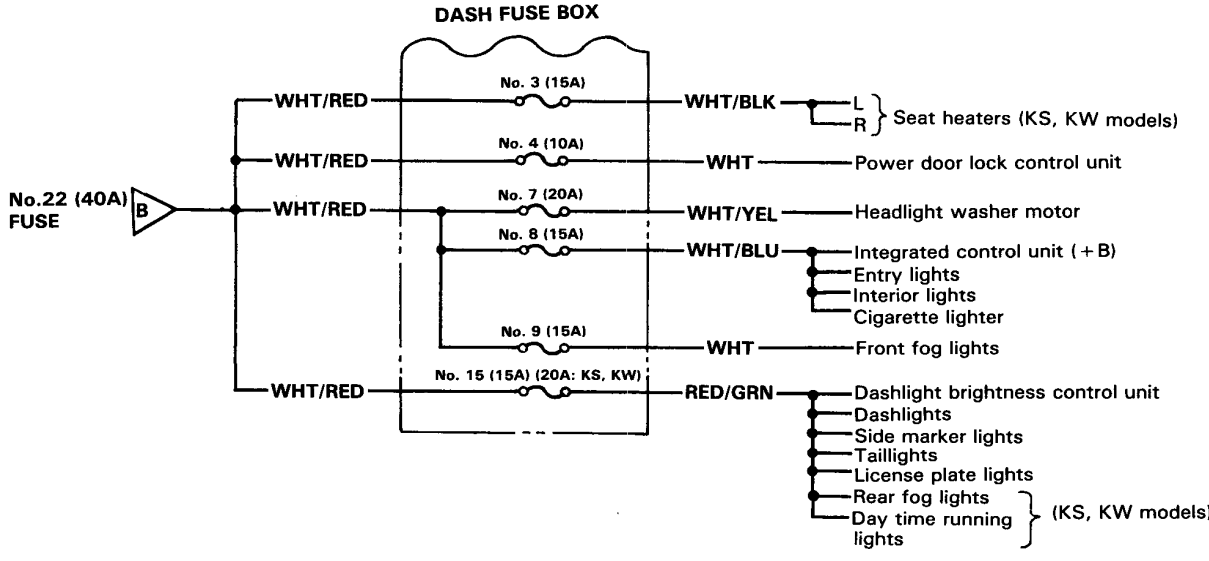
Power Distribution

Circuit Identification (cont'd)

<KG, KB, KX, KF, KE>



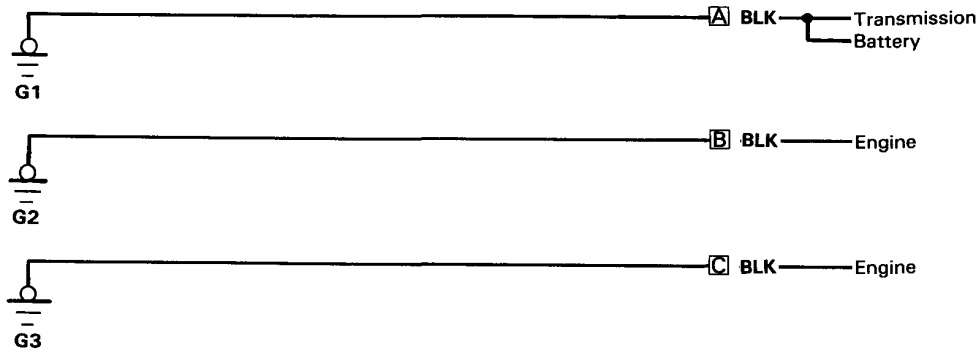
<KS, KW, KQ, KT, KY>



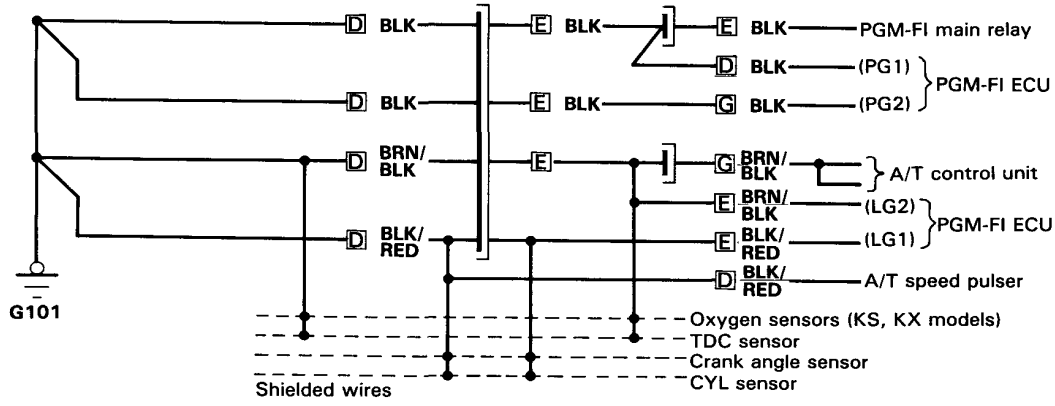
Ground Distribution

Circuit Identification

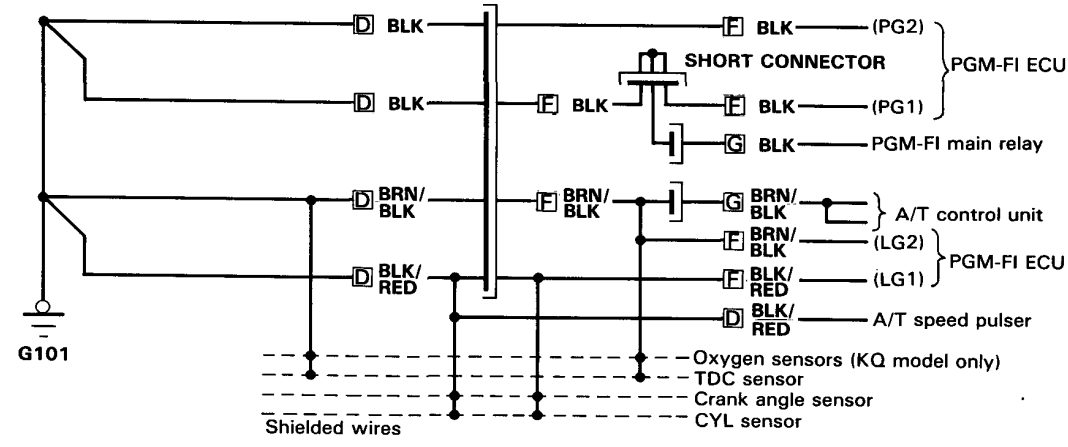
NOTE: See pages 16-6 and 7 for illustrated ground locations.



L.H. Drive:



R.H. Drive:



A: Battery ground wire
B: Engine ground wire A
C: Engine ground wire B
D: Engine wire harness
E: Right engine compartment wire harness
F: Left engine compartment wire harness
G: Main wire harness

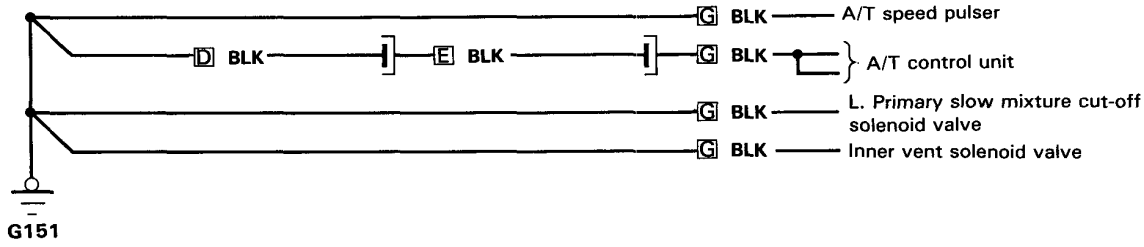
(cont'd)

Ground Distribution

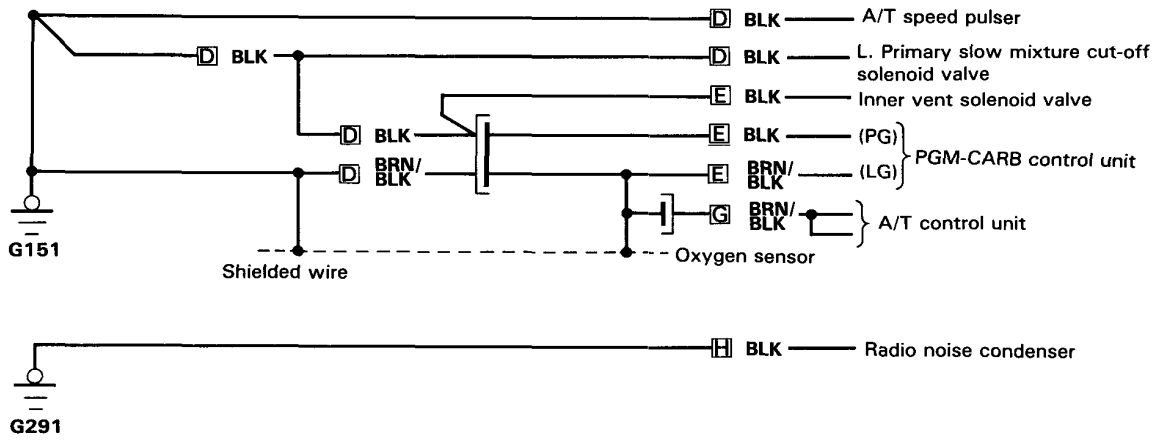
Circuit Identification

NOTE: See pages 16-6 and 8 for illustrated ground locations.

Except KX, KS, KY models:



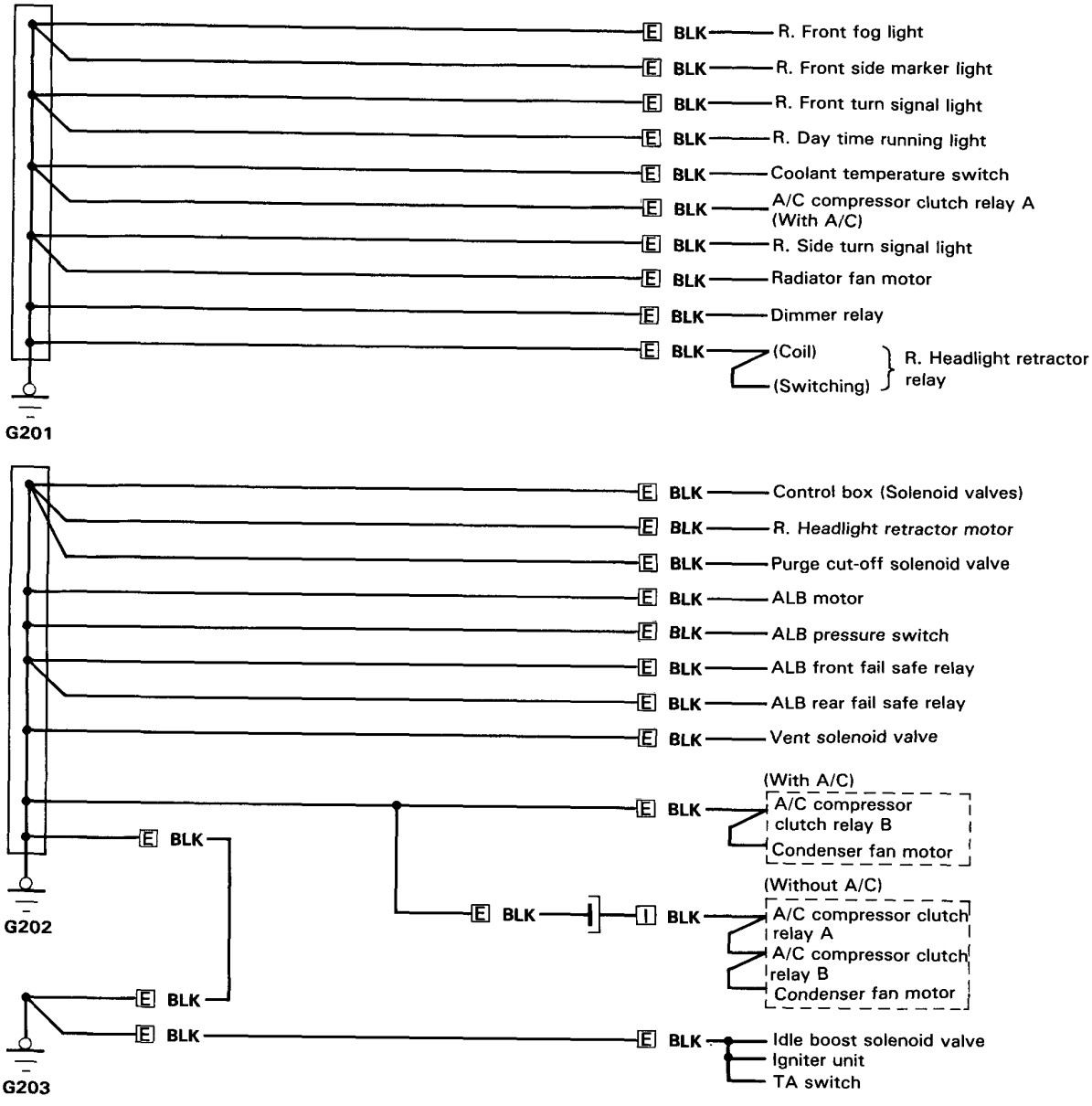
KX, KS, KY models:



D: Engine wire harness
E: Right engine compartment wire harness
G: Main wire harness
H: Radio condenser ground wire (On Carbureted engine, this wire is included in the distributor primary lead)

L.H. Drive:

NOTE: *See page 16-9 for illustrated ground locations.*



E: Right engine compartment wire harness
I: A/C wire harness

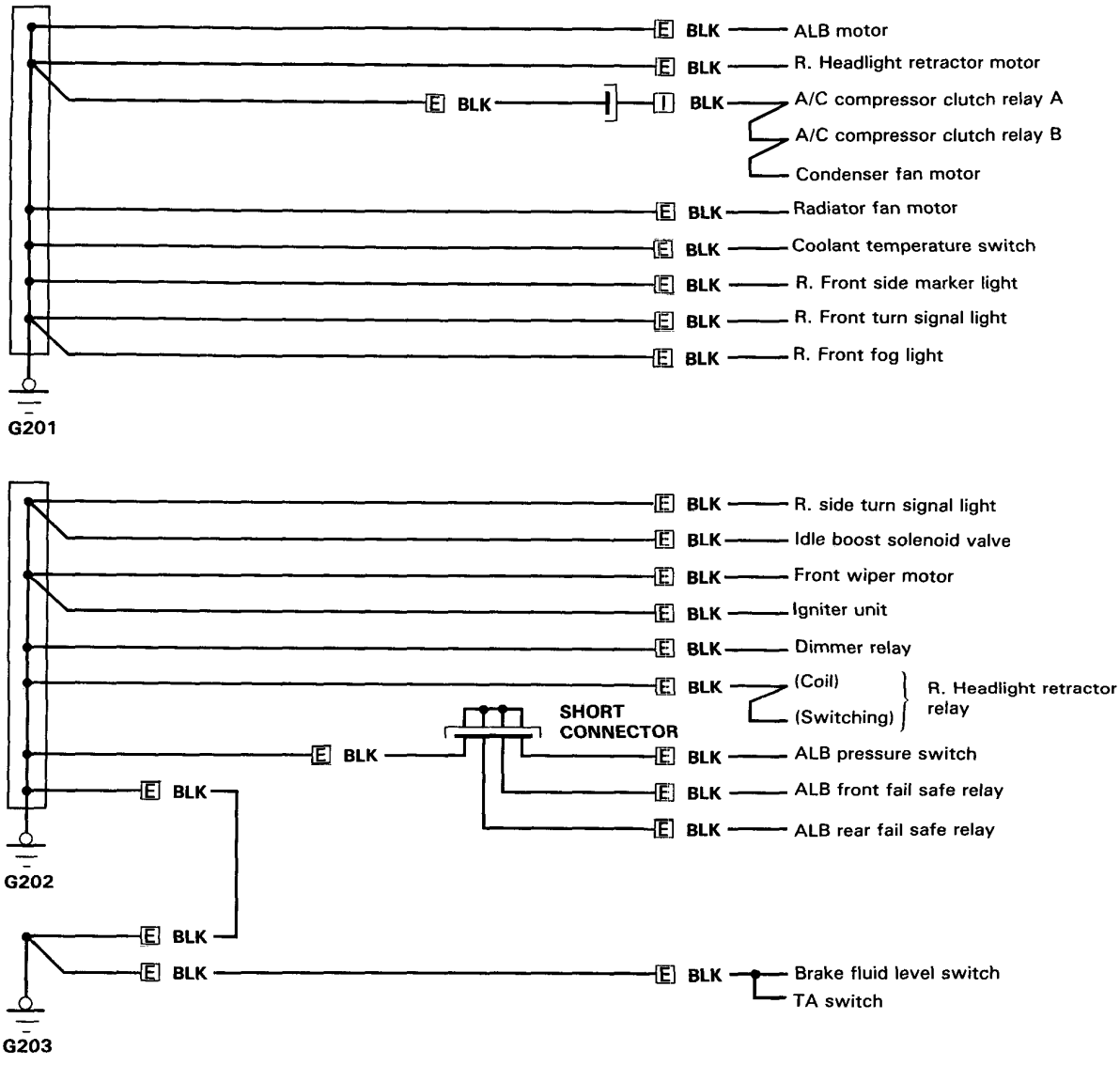
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

R.H. Drive:

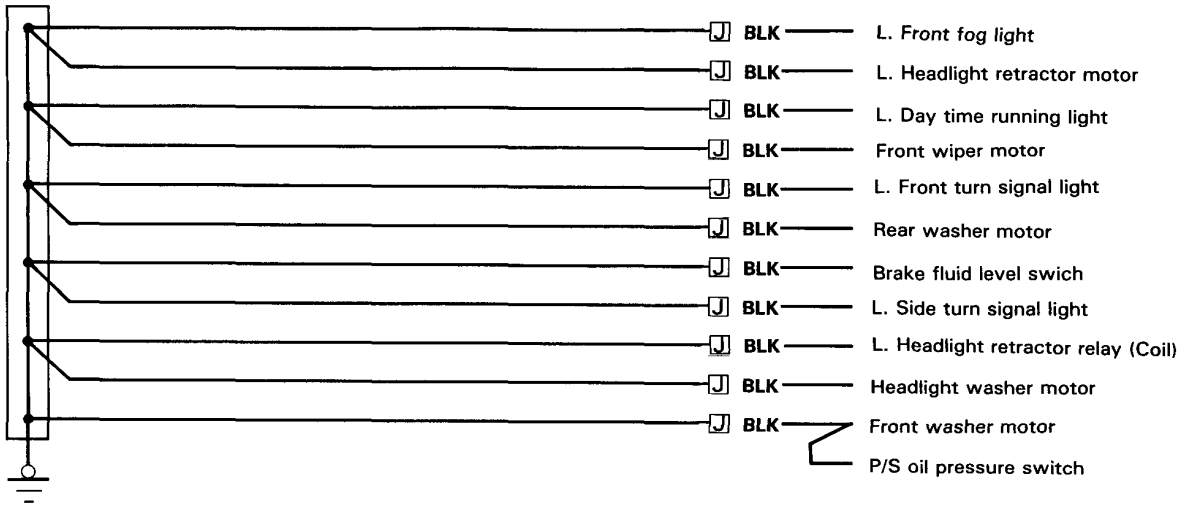
NOTE: See page 16-9 for illustrated ground locations.



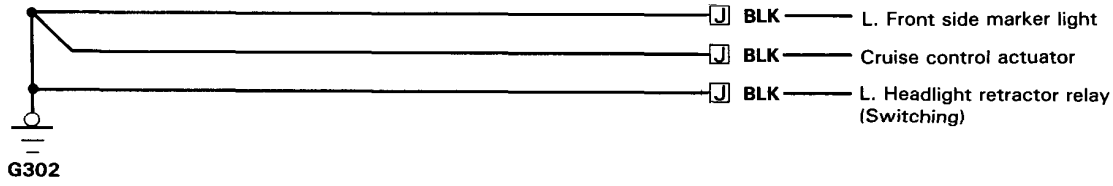
E: Right engine compartment wire harness
I: A/C wire harness

NOTE: See page 16-10 for illustrated ground locations.

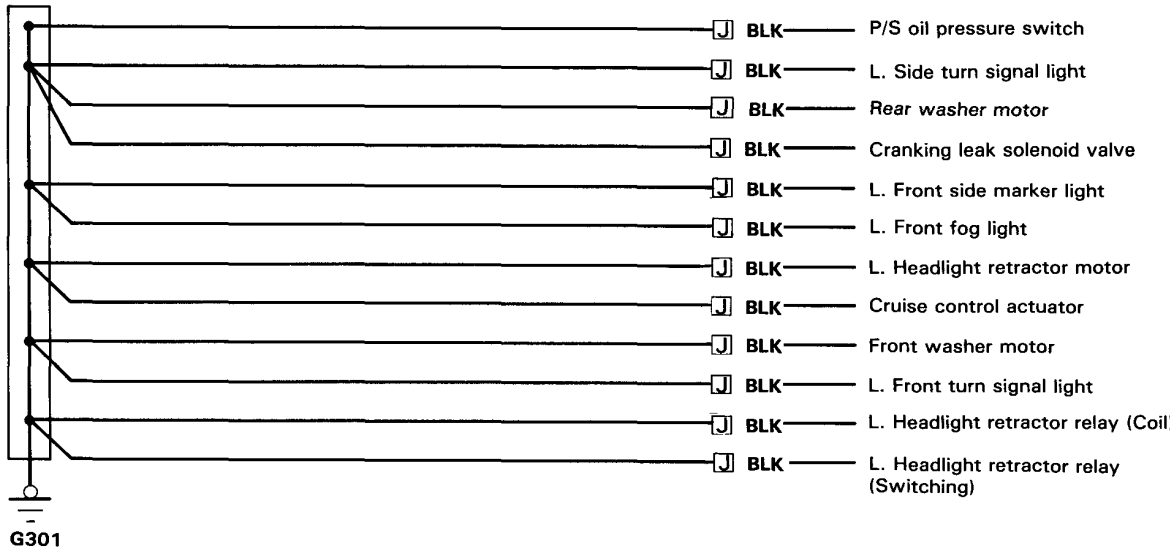
L.H. Drive:



L.H. Drive:



R.H. Drive:



J: Left engine compartment wire harness

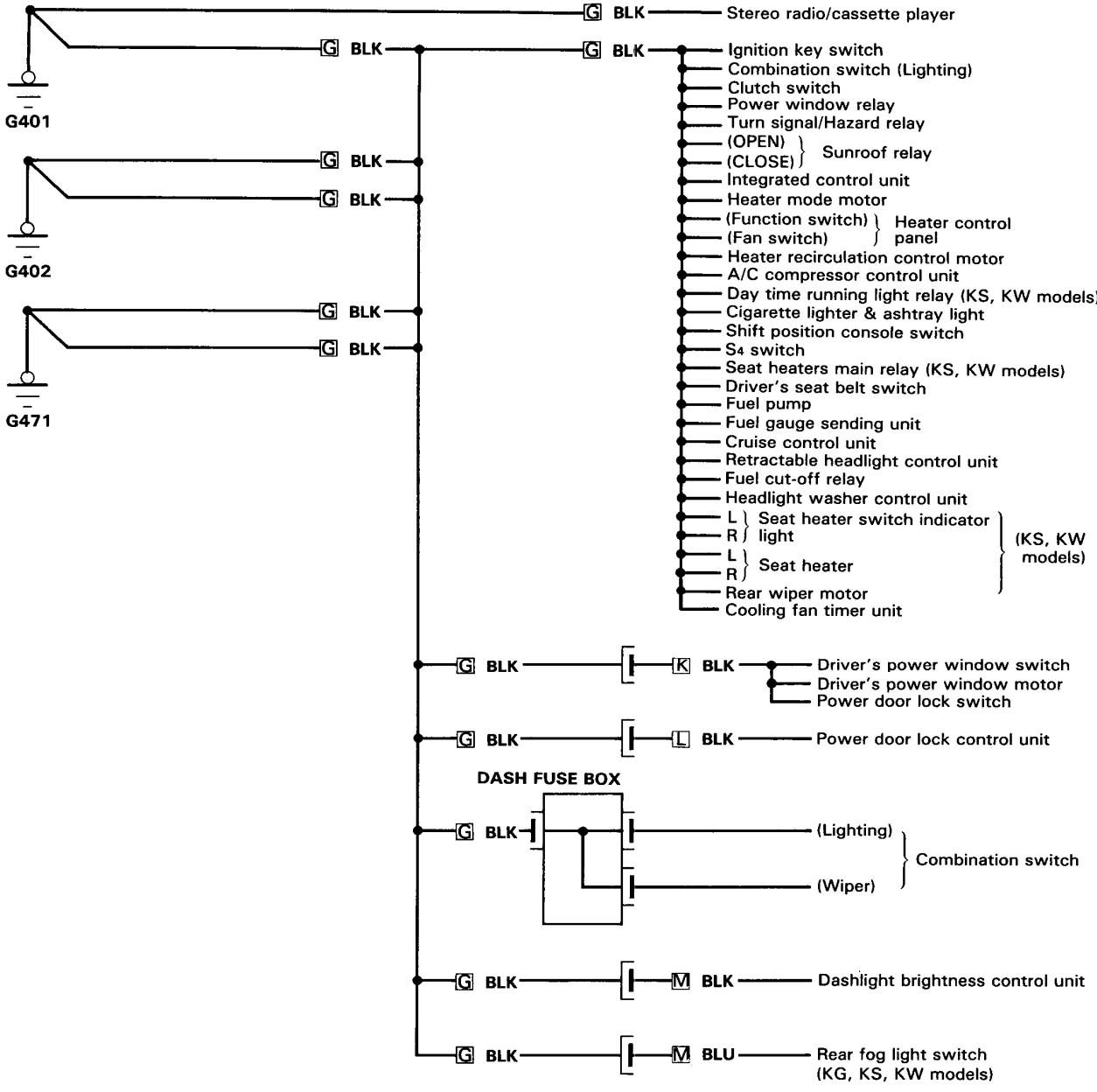
(cont'd)

Ground Distribution

Circuit Identification (cont'd)

L.H. Drive:

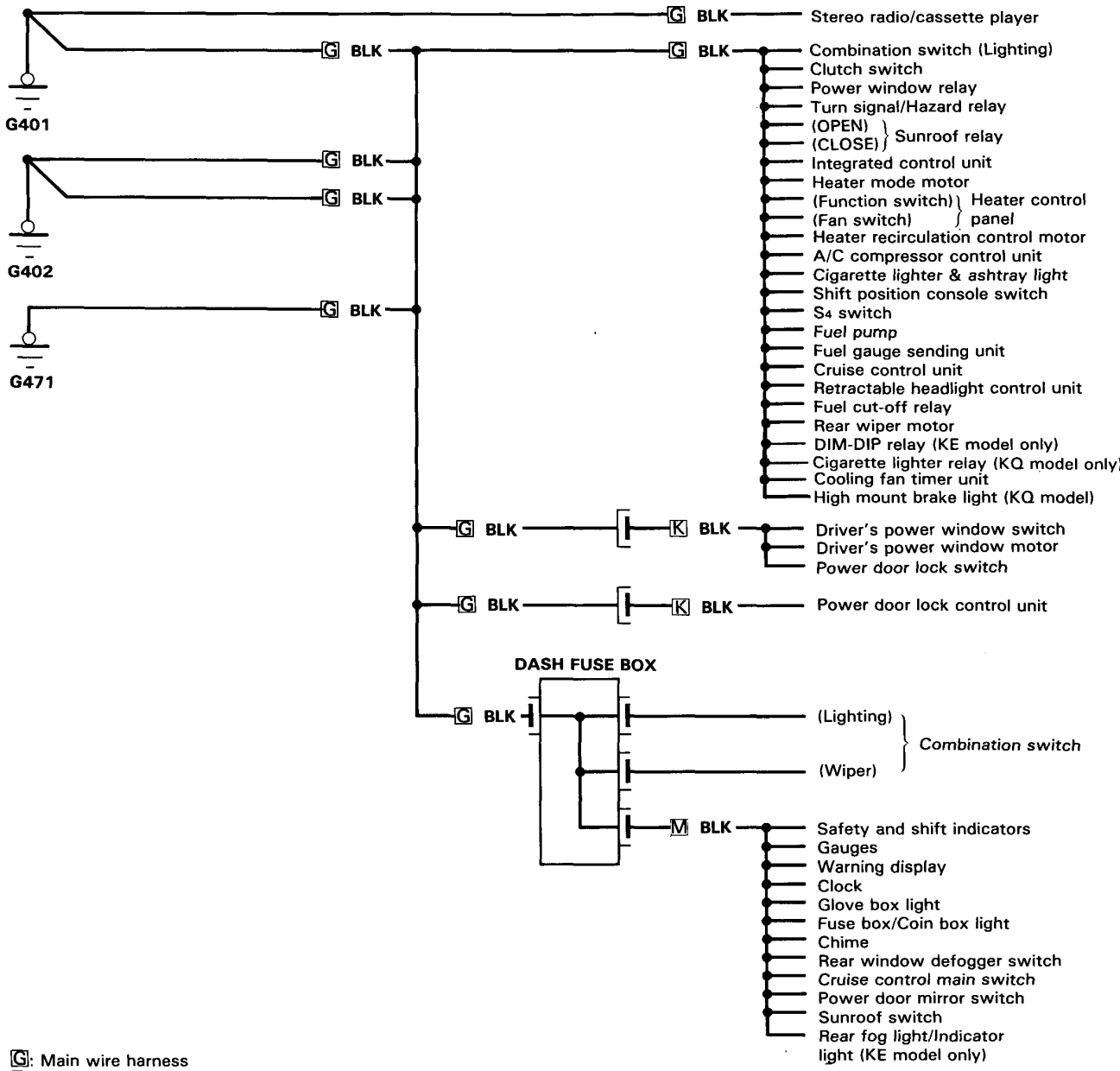
NOTE: See pages 16-11 and 12 for illustrated ground locations.



G: Main wire harness
K: Driver's door wire harness
L: Passenger's door wire harness
M: Dashboard wire harness

R.H. Drive:

NOTE: See pages 16-11 and 12 for illustrated ground locations.



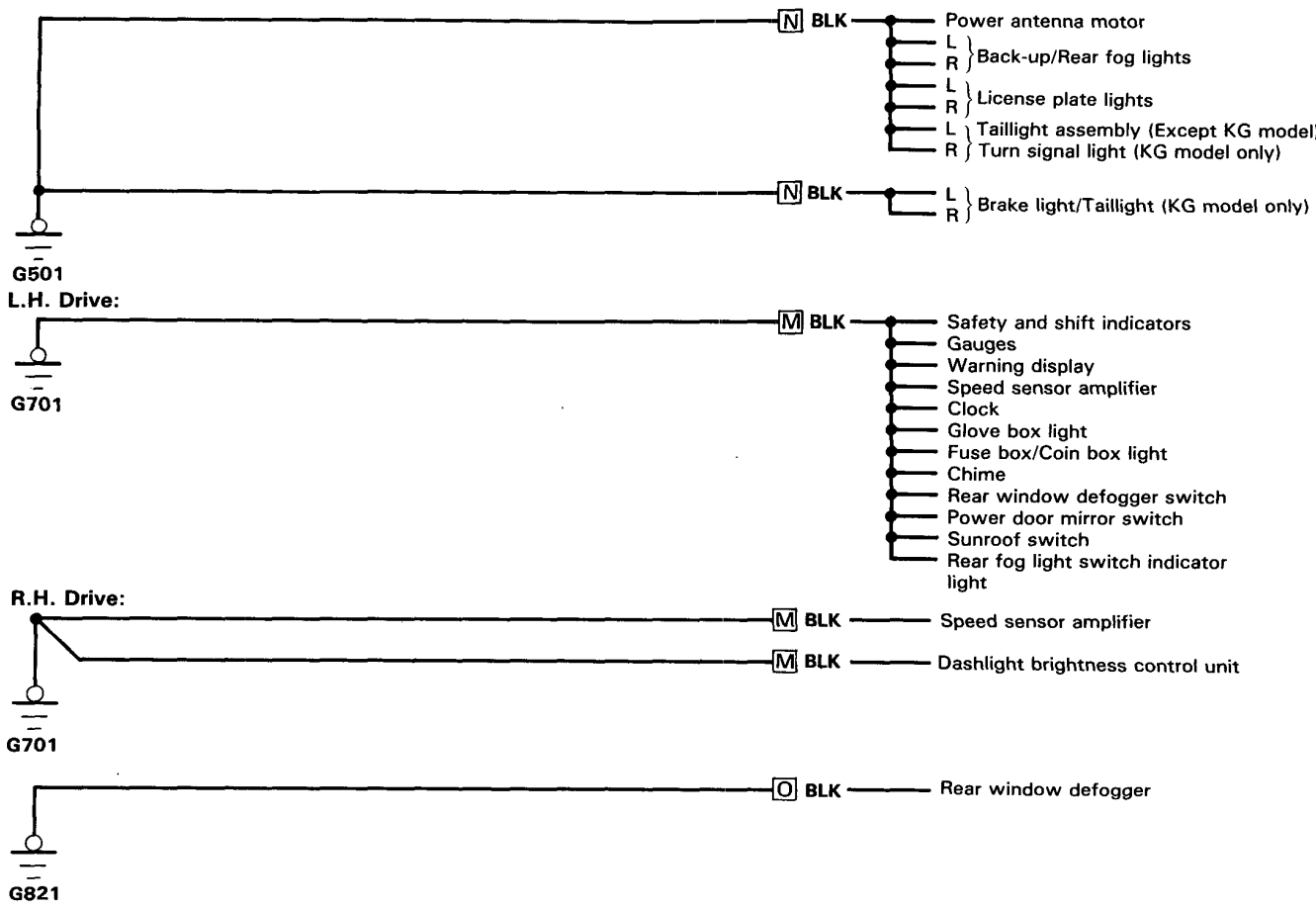
G: Main wire harness
K: Driver's door wire harness
L: Passenger's door wire harness
M: Dashboard wire harness

(cont'd)

Ground Distribution

Circuit Identification (cont'd)

NOTE: See pages 16-12 and 15 for illustrated ground locations.



M: Dashboard wire harness
N: Rear wire harness
O: Defogger ground wire

Test

NOTE: To get accurate results, the temperature of the electrolyte must be between 15 and 38°C (59 and 100°F) before testing.

Test Equipment Required:

- Battery tester with:
  Voltmeter with 0–18 V scale, Ammeter with 0–100 A and 0–500 A scales, and a carbon pile with 0–300 W.
- 12 V Battery Charger:
  Fast charge capability of 50 A and slow charge capability of 5 A.

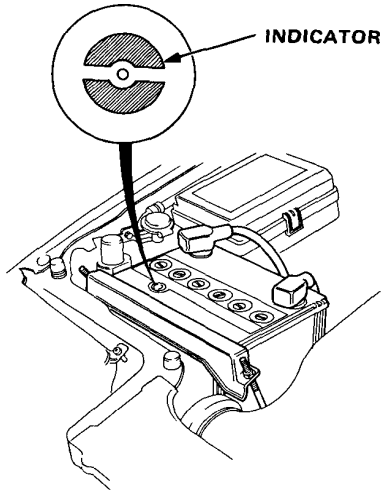
Test Procedure:

WARNING **Keep sparks, flames and cigarettes away while charging battery.**

CAUTION: Battery electrolyte is a sulfuric acid solution.

- If it spills on painted surfaces, clothing, or skin, rinse it off with water immediately to minimize the damage.
- Always wear safety goggles or a face shield when servicing a battery.

1. Check for damage: If the case is cracked or the posts are loose, replace the battery.
2. Check indicator (for basic charge condition): Blue or Green is OK. If the indicator is red, peel the tape off, remove the caps, and add distilled water; then reinstall the caps and tape. If the indicator is clear, go to step 3.



3. Test battery load capacity by connecting a battery tester, and applying a load of 3 times the battery ampere hour rating.
   When the load has been applied for exactly 15 seconds, the battery voltage reading should stay above 9.6 V.
   - If the reading stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
   - If the reading is between 6.5 and 9.6 V, fast charge the battery by connecting a battery charger, for 3 minutes at an initial rate of 40 amps.

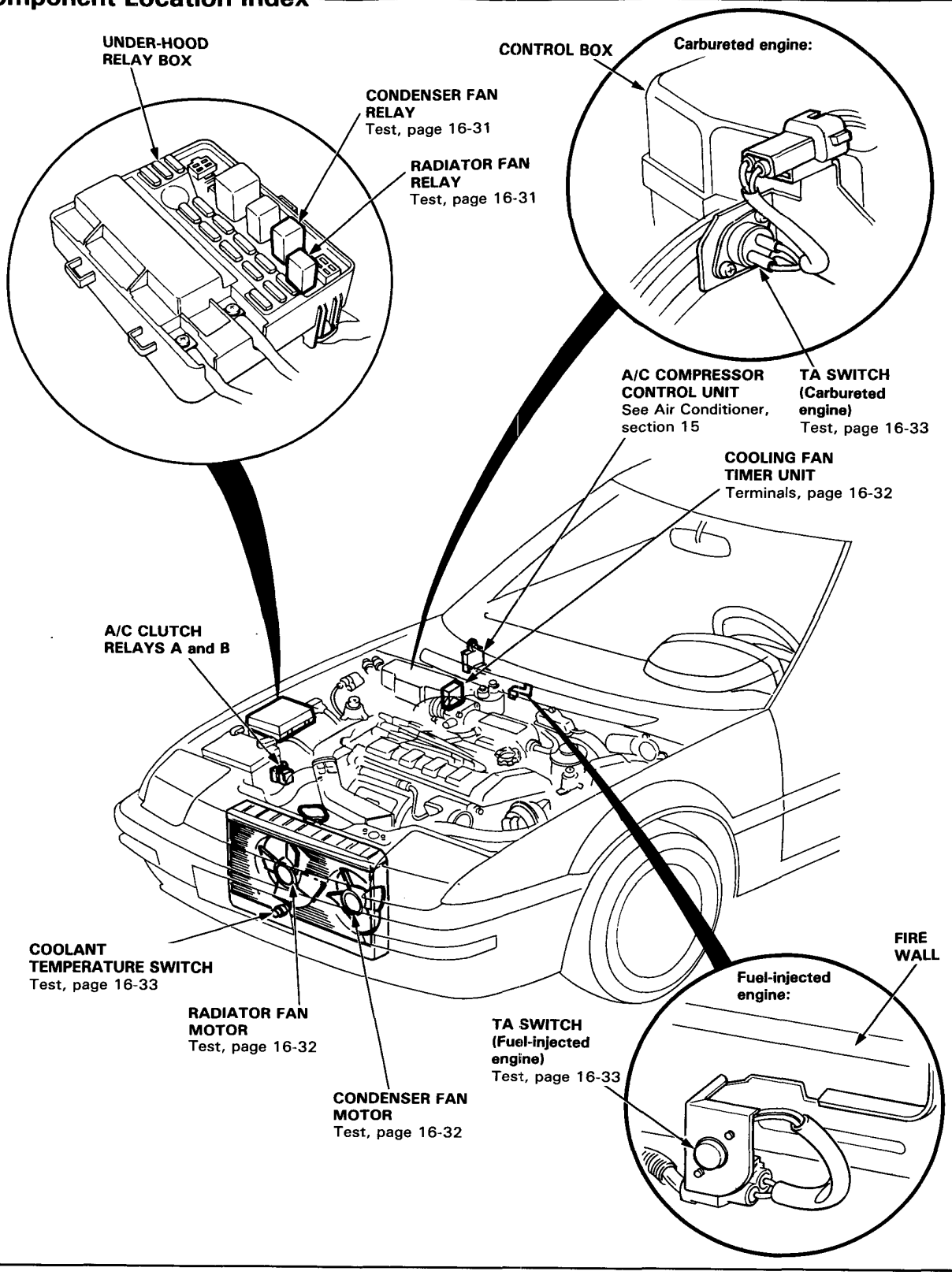
   CAUTION: Amperage will drop as voltage increases; do not increase the amperage to compensate or you may damage the battery.

   Watch the battery voltage during the entire 3 minutes; the highest reading should stay below 15.5 V.
   - If the reading stays below 15.5 V, the battery is OK; clean its terminals and case, and reinstall it.
   - If the reading exceeds 15.5 V any time during the 3 minutes of fast charge, the battery is no good; replace it.

   - If the reading drops below 6.5 V, slow charge the battery by connecting a battery to charger, at 5 amps for no more than 24 hours, (or until the indicator shows full charge, or the specific gravity of the electrolyte is at least 1.250).
     Then test load capacity again.
     - If the voltage stays above 9.6 V, the battery is OK; clean its terminals and case, and reinstall it.
     - If the voltage still drops below 6.5 V, the battery is no good; replace it.

Cooling Fan Control

Component Location Index



Description

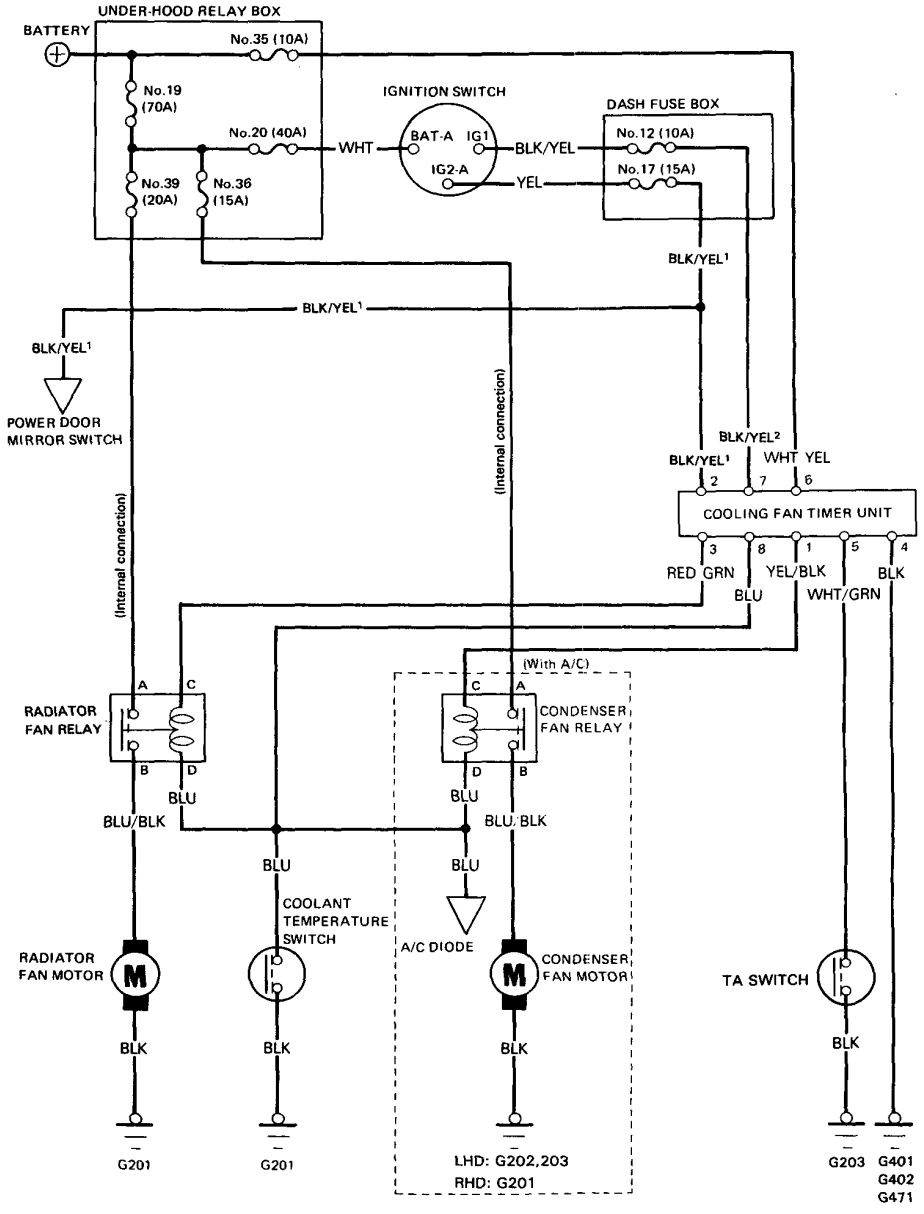
Fan Timer System:
When the air temperature of engine room is above approx. 60°C (140°F) after the engine is stopped, the condenser fan goes into operation to cool the engine for a maximum of 10 minutes.
When the temperature falls below 42°C (108°F), the fan is stopped.
The TA switch is located on the control box bracket (carbureted engine) or firewall (fuel-injected engine) and the fan timer unit is located right side under dash.

	Ignition Switch					
	ON		ON → OFF		ON	
	Coolant Temp. Switch A		Air Temp. (TA) switch		A/C System	
	Above 90°C (194°F)	Below 83°C (181°F)	Above 60°C (140°F)	Below 42°C (108°F)	ON	OFF
Radiator Fan	ON	OFF	ON (10 min)	OFF	ON	OFF
Condenser Fan	ON	OFF	OFF	OFF	ON	OFF

Cooling Fan Control

Circuit Diagram

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



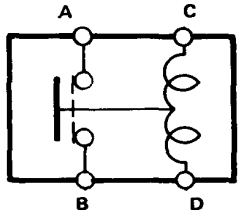
Troubleshooting

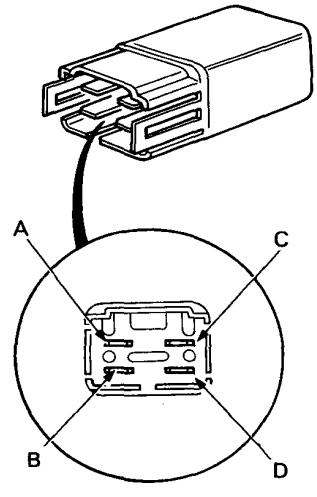
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom \ Item to be inspected		Blown No. 39 (20 A) No. 36 (15A) or No. 35 (10 A) fuse (in the under-hood relay box)	Radiator fan or condenser fan relay	Blown No. 17 (15 A) fuse (in the dash fuse box)	Blown No. 12 (10 A) fuse (in the dash fuse box)	Coolant temperature switch	TA switch	Radiator fan or condenser fan motor	Faulty fan timer unit	A/C system	Poor ground	Open circuit in wires or loose or disconnected terminals
Only one fan operates (with engine and A/C ON).		1	2					3			G201 G202 G203	BLU/BLK[1], BLU/BLK[2] or BLU
Fans do not rotate	Under all conditions.			1		3	2		4		G203	BLK/YEL[1]. BLK/YEL[2]
	A/C ON									1		BLU
Fan timer unit falls to function properly.		1							2	3	G401 G402 G471	WHT/GRN, BLU WHT/YEL

Relay Test

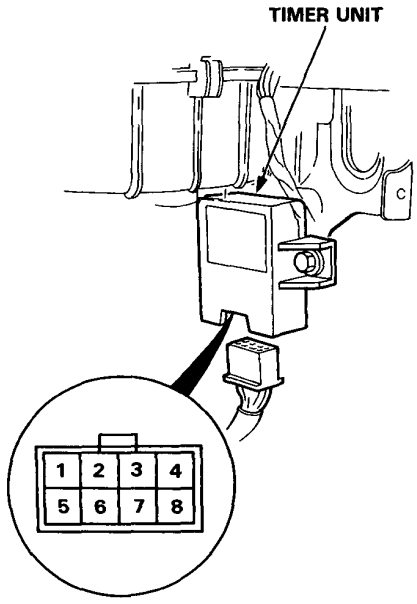
1. Remove the radiator or condenser relay in the under-hood relay box.
2. There should be continuity between the A and B terminals when he battery is connected to the C and D terminals.
   There should be no continuity when the battery is disconnected.





Cooling Fan Control

Timer Unit Terminals

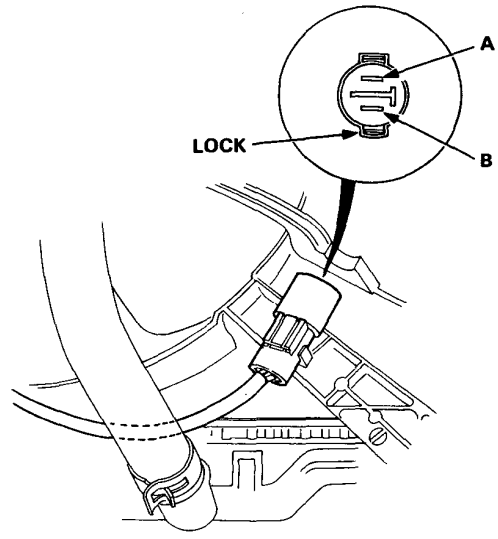


Terminal	Wire	Destination
1	YEL/ BLK	Condenser fan relay ⊕
2	BLK/ YEL[1]	Power supply (for condenser and radiator fan relay by way of timer unit with ignition switch ON)
3	RED/ GRN	Cooling fan relay ⊕
4	BLK	Ground
5	WHT/ GRN	TA switch
6	WHT/ YEL	Constant power (For condenser fan motor relay by way of timer unit)
7	BLK/ YEL[2]	IG1 (Timer reset signal)
8	BLU	Condenser and radiator fan relay ⊖

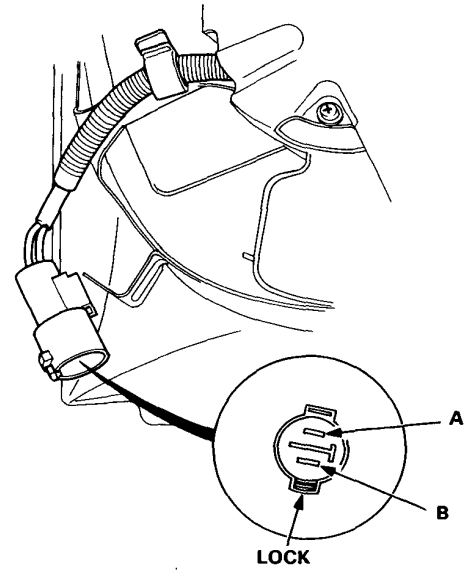
Fan Motor Test

1. Disconnect the 2-P connector from the fan motor.
2. Test motor operation by connecting battery positive to the A terminal, and negative to the B terminal.
3. If the motor fails to run smoothly, replace it.

Radiator Fan Motor:

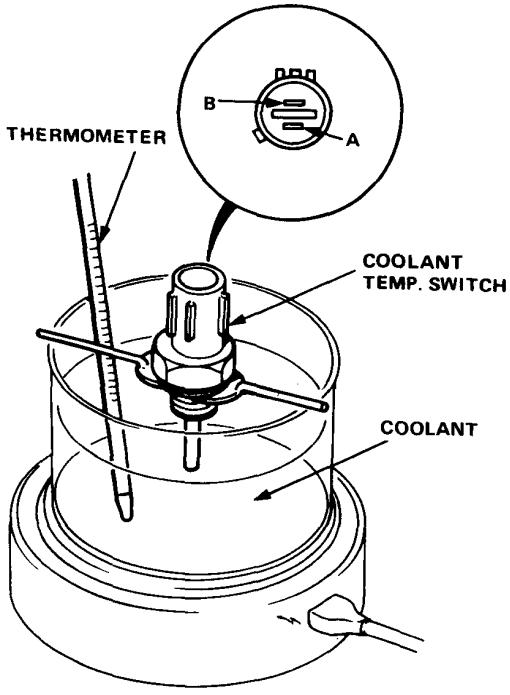


Condenser Fan Motor:



Coolant Temperature Switch Test

1. Remove the coolant temperature switch from the radiator.
2. Suspend the coolant temperature switch in a container of coolant as shown.

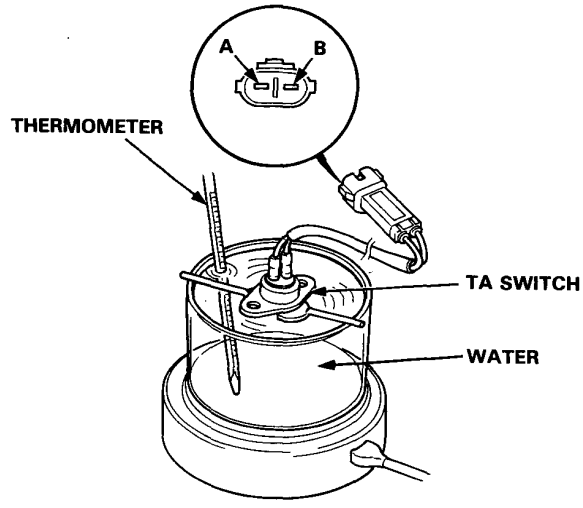


3. Heat the coolant and check coolant temperature with a thermometer.
4. Measure the resistance between the A and B terminals according to the table.

Temperature \ Terminal		A	B
Above	87–93°C (189–199°F)	○	○
Below	80–91°C (176–196°F)		

TA Switch Test

1. Remove the TA switch.
2. Suspend the TA switch in a container of water as shown.



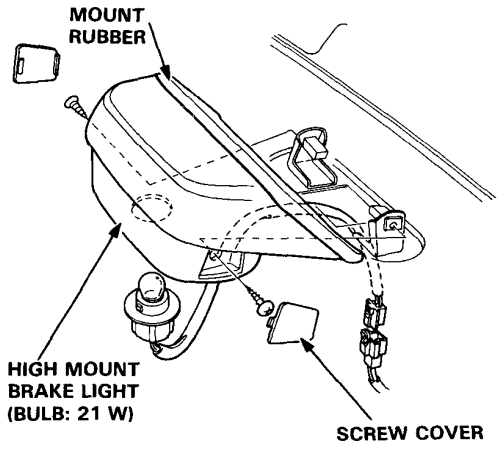
3. Heat the water and check water temperature with a thermometer.
4. Check for continuity between the A and B terminals according to the table.

Temperature \ Terminal		A	B
Below	37–47°C (99–116°F)	○	○
Above	57–63°C (135–145°F)		

High Mount Brake Light

Replacement

1. Remove the 2 screw covers and screws, then remove the high mount brake light on the rear shelf.
2. Disconnect the 2-P connector from the light assembly.

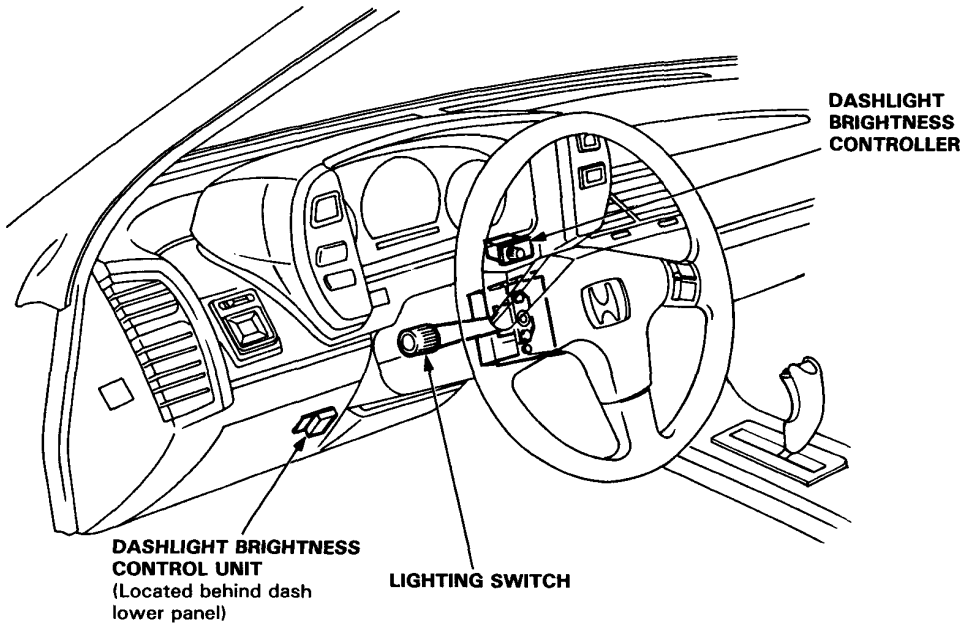


3. Turn the socket 45° counterclockwise to remove the bulb.
4. Install the high mount brake light in the reverse order of removal, and clean the rear window glass before installing.

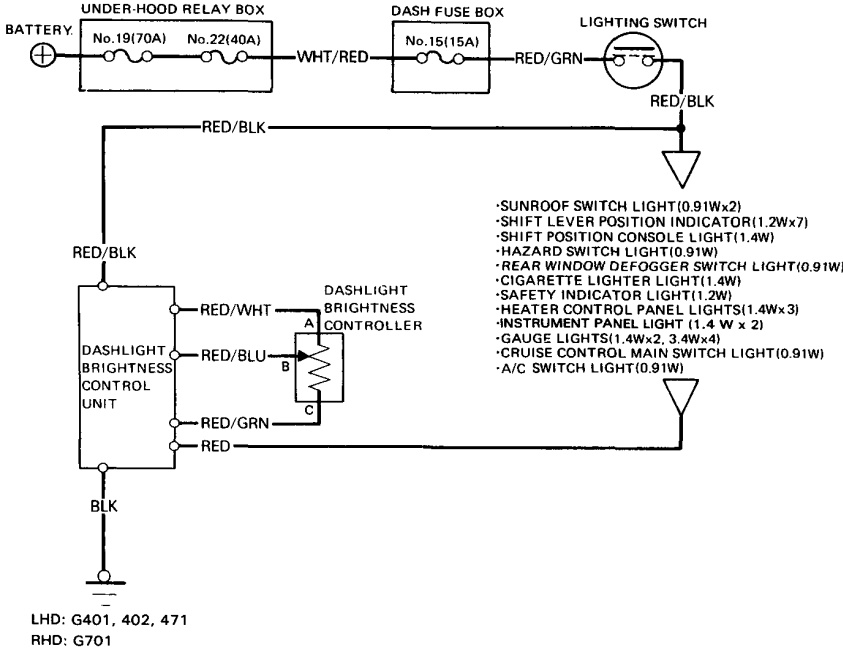
   CAUTION: When installing the high mount brake light, make sure the mount rubber is sealed evenly to the rear window glass.

Dashlight Brightness Control

Component Location Index

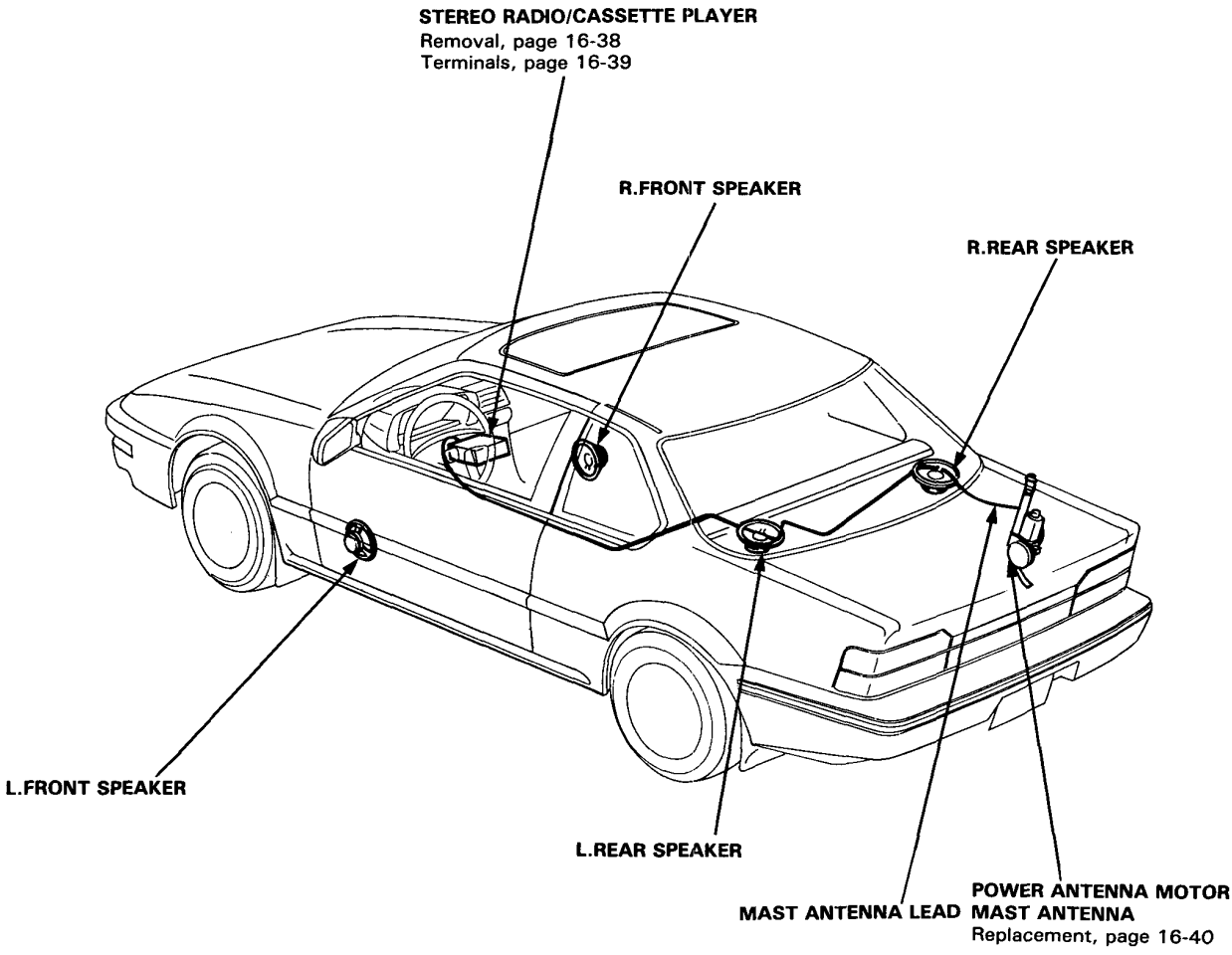


Circuit Diagram



Stereo Sound System

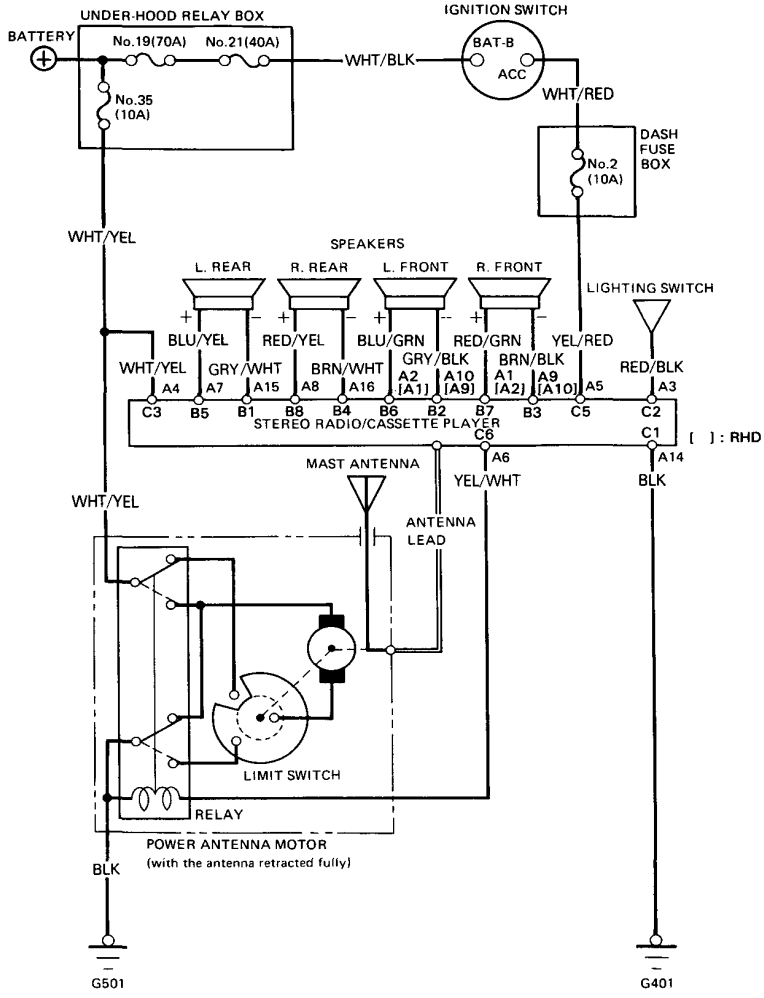
Component Location Index



Description

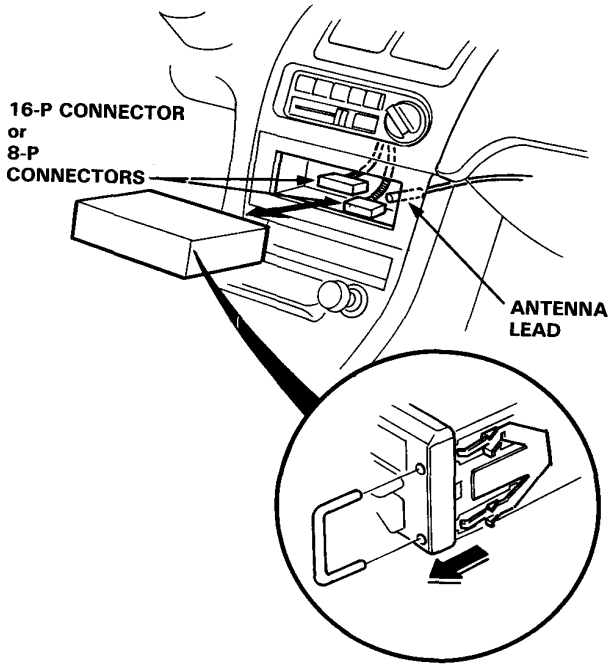
For the stereo radio/cassette player description, please see the owner's manual.
The automatic antenna mast is controlled entirely by the radio ON/OFF switch. It will extend fully any time the radio switch is on and the ignition switch is on. When the radio is shut off, it retracts fully. The power antenna motor has a built-in relay together with a limit switch for this function.

Circuit Diagram



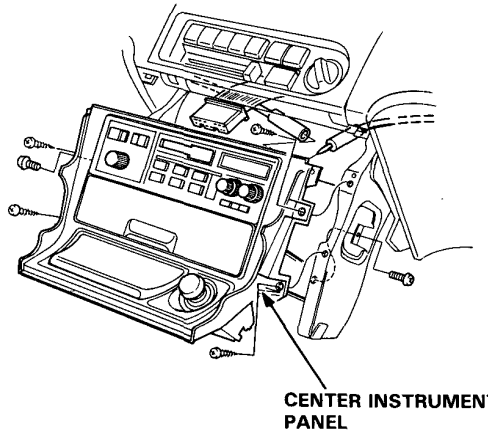
Unit Removal

A-Type:

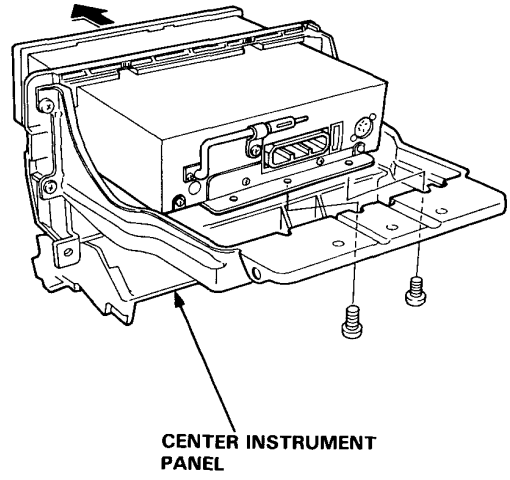


B-Type:

1. Remove the front console.
2. Remove the 6 screws and the center instrument panel with the stereo radio/cassette player, then disconnect the 16-P connector, the mast antenna lead, and the 4-P connector from the cigarette lighter.

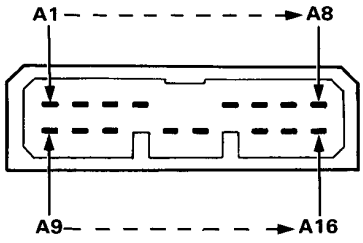


3. Remove the 2 screws, then pull the stereo radio/cassette player out of the center instrument panel.



Unit Terminals

Except PHILIPS:

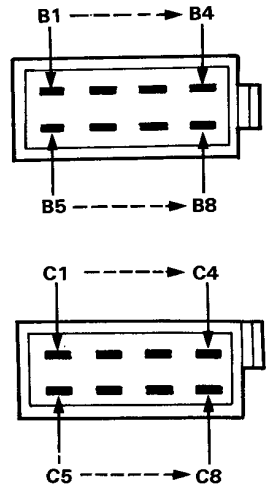


View from terminal side of unit

Terminal	Wire	Destination
A1[A2]	RED/GRN	Right front speaker ⊕
A2[A1]	BLU/GRN	Left front speaker ⊕
A3	RED/BLK	Light-on signal
A4	WHT/YEL	Constant power (Tuning memory)
A5	YEL/RED	ACC (Main stereo power supply)
A6	YEL/WHT	Radio switched power (To antenna)
A7	BLU/YEL	Left rear speaker ⊕
A8	RED/YEL	Right rear speaker ⊕
A9[A10]	BRN/BLK	Right front speaker ⊖
A10[A9]	GRY/BLK	Left front speaker ⊖
A11		(Not used)
A12		(Not used)
A13		(Not used)
A14	BLK	Ground
A15	GRY/WHT	Left rear speaker ⊖
A16	BRN/WHT	Right rear speaker ⊖

[ ] : RHD

PHILIPS only:



View from terminal side of unit

Terminal	Wire	Destination
B1	GRY/WHT	Left rear speaker ⊖
B2	GRY/BLK	Left front speaker ⊖
B3	BRN/BLK	Right front speaker ⊖
B4	BRN/WHT	Right rear speaker ⊖
B5	BLU/YEL	Left rear speaker ⊕
B6	BLU/GRN	Left front speaker ⊕
B7	RED/GRN	Right front speaker ⊕
B8	RED/YEL	Right rear speaker ⊕

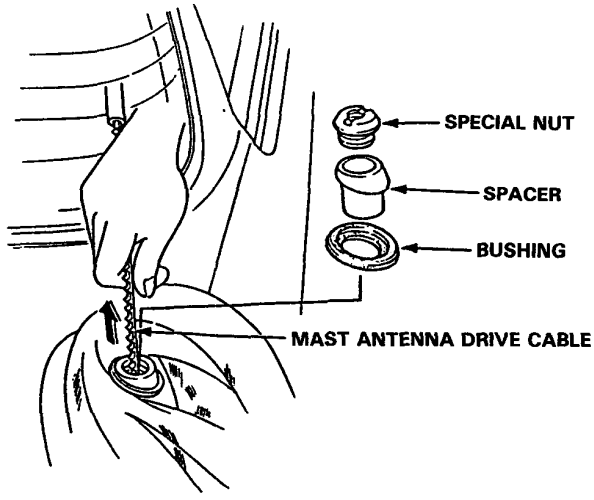
C1	BLK	Ground
C2	RED/BLK	Light-on signal
C3	WHT/YEL	Constant power (Tuning memory)
C4		(Not used)
C5	YEL/RED	ACC (Main stereo power supply)
C6	YEL/WHT	Radio switched power (To antenna)
C7		(Not used)
C8		(Not used)

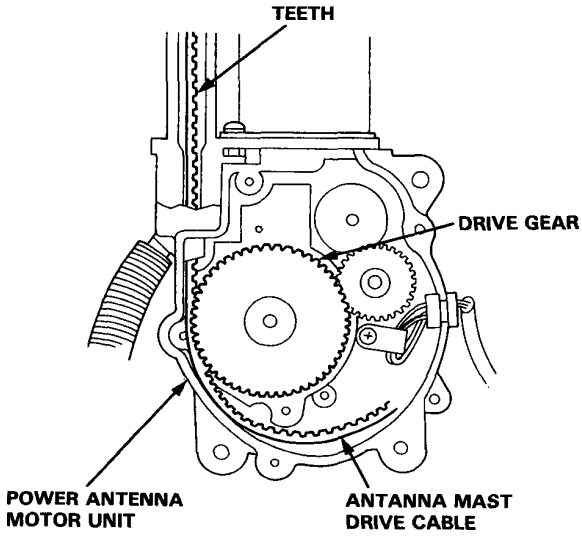
Mast Antenna Replacement

Removal

NOTE: The antenna mast alone can be replaced without having to remove the power antenna motor unit.

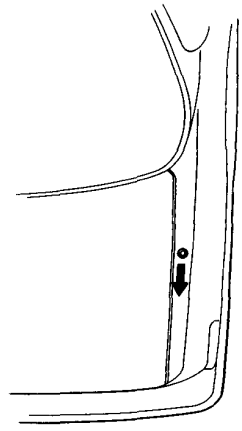
1. Remove the special nut, spacer and bushing.
2. Carefully withdraw the antenna mast while extending it by turning the radio switch "ON".





Installation

1. Carefully direct the teeth of antenna mast drive cable as shown, and insert the drive cable into the antenna housing.

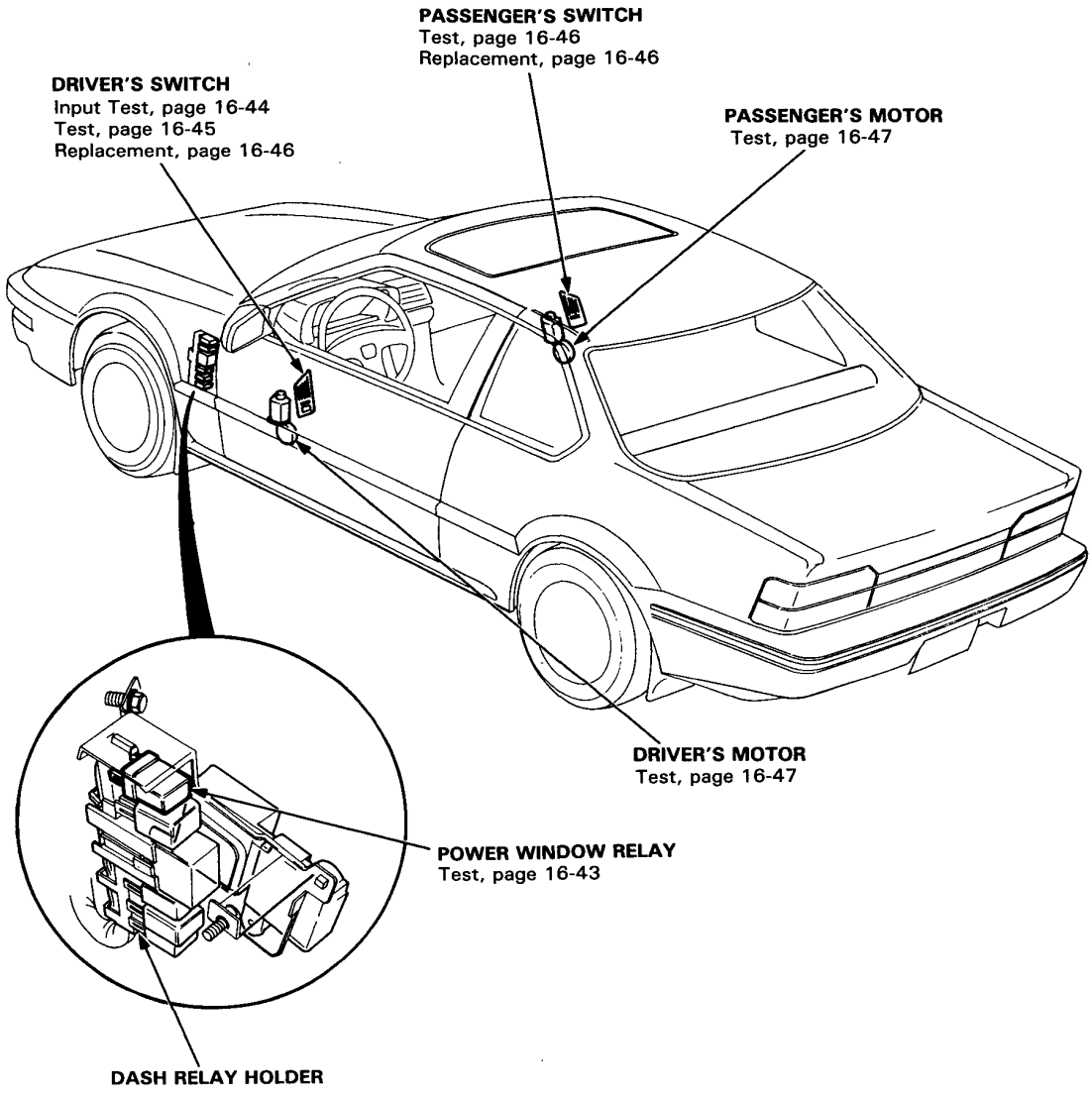


Direction of the teeth.

2. Check for engagement of the cable teeth to the drive gear; by carefully moving the cable up and down.
3. Turn the radio switch "OFF", and let the motor pull the drive cable inside the antenna housing.
4. Insert the antenna mast into the antenna housing, and install the bushing and spacer, tighten the special nut.
5. Check that the mast antenna retracts and extends fully when the radio switch is turned ON and OFF repeatedly.

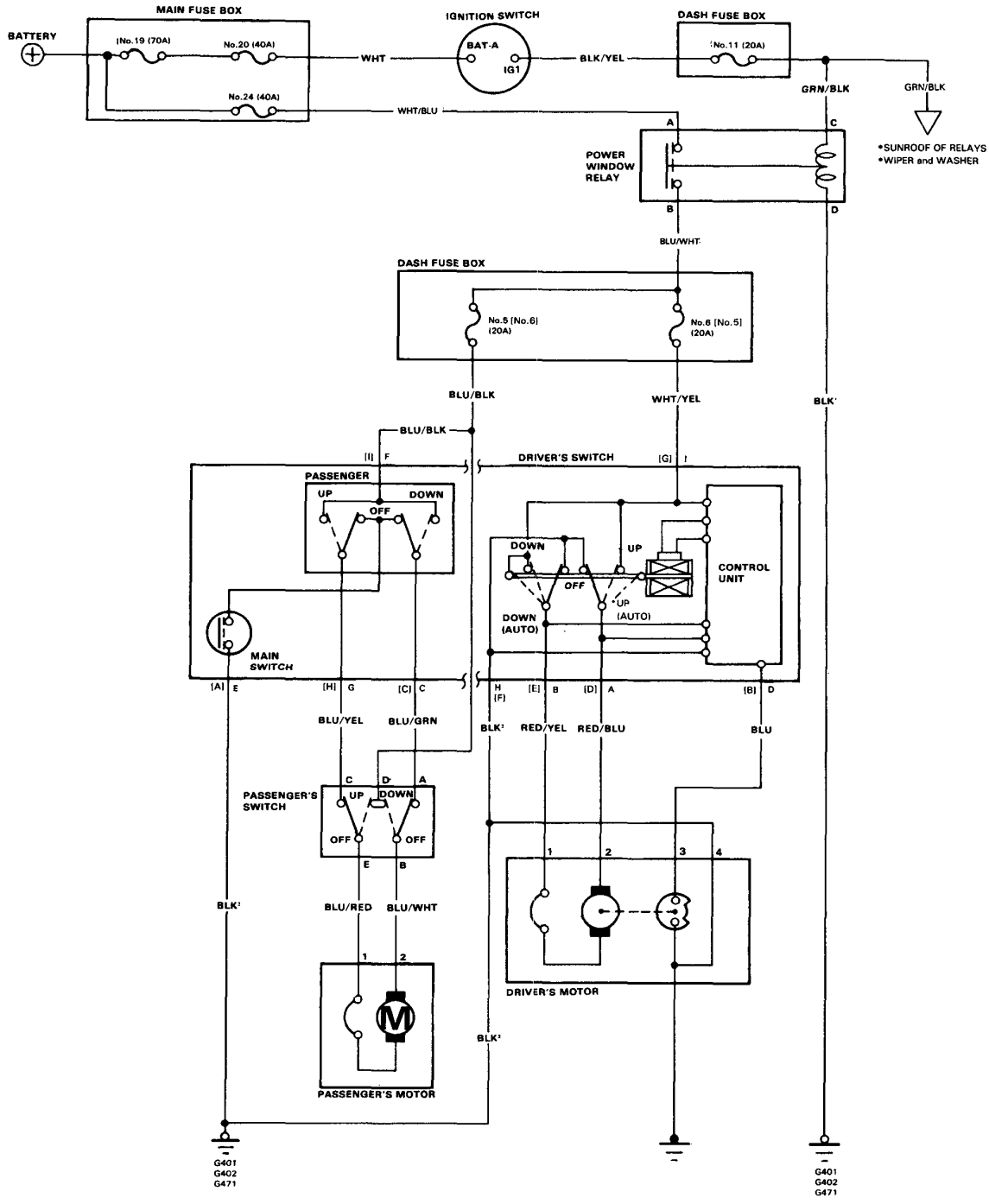
Power Windows

Component Location Index



Power Window

Circuit Diagram



*UP(AUTO)...Standard for some types
[ ]...RHD

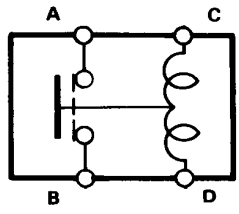
Troubleshooting

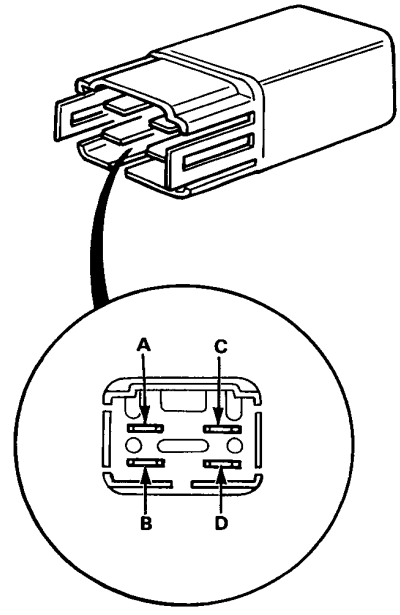
NOTE: The numbers in the table show the troubleshooting sequence.

Item to be inspected / Symptom	State of charge and clean and tight connections of battery	Power window relay	in the dash fuse box			Drivers door switch input	Driver's switch	Passenger's switch	Driver's motor	Pulser (in driver's motor)	Passenger's motor	Window regulator	Poor ground	Open circuit in wires or loose or disconnected terminals
			No. 5 (20 A)	No. 6 (20 A)	No. 11 (20 A)									
All windows do not operate.	1	3			2								G401, 402, 471	GRN/BLK, WHT/BLU, BLU/WHT[1] or BLK
Driver's window does not operate in any position.				1		4	2		3			5		WHT/YEL
Driver's window does not operate in AUTO.						3	1			2				BLU
Passenger's window does not operate.			1				2	3			4	5		BLU/BLK

Relay Test

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





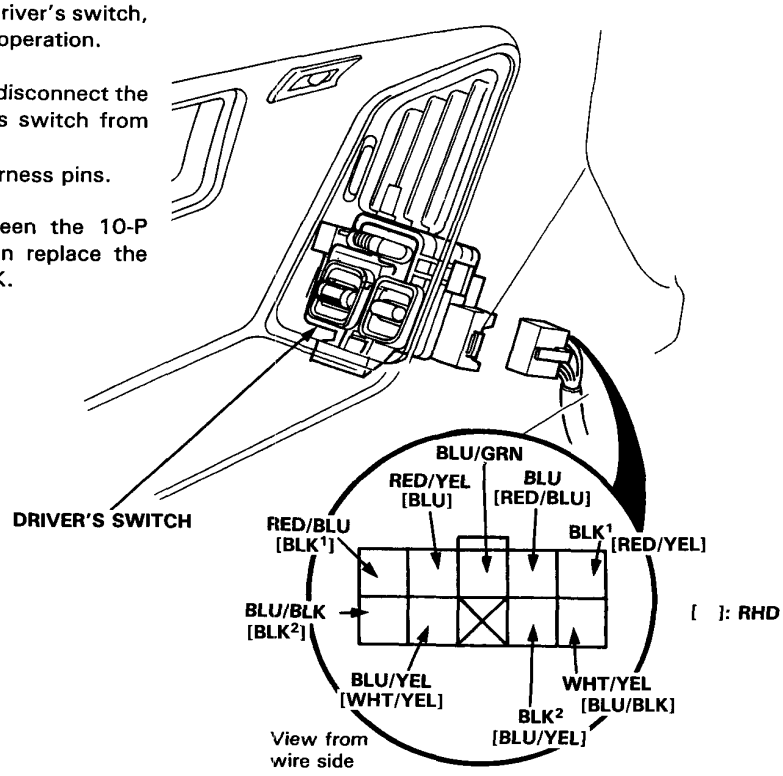
Power Window

Driver's Switch Input Test

NOTE: The control unit is built into the driver's switch, and only controls driver's door window operation.

Remove the driver's door trim panel and disconnect the 10-P connector and remove the driver's switch from the door trim panel.
Make the following input tests at the harness pins.

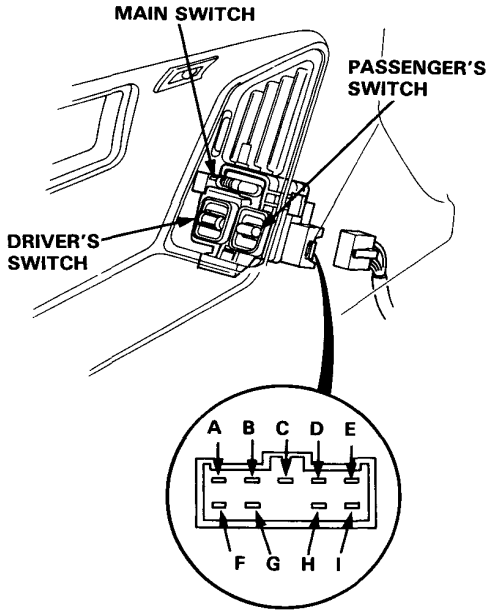
NOTE: Recheck the connections between the 10-P connector and the driver's switch, then replace the driver's switch if all input tests prove OK.



No.	Terminal	Test condition	Test: desired result	Possible cause (if result is not obtained)
1	BLK¹	Under all conditions.	Check for continuity to ground: should be continuity.	• Poor ground (G401, 402, 471). • An open in the wire.
2	WHT/YEL BLU/BLK	Ignition switch ON.	Check for voltage to ground: should be battery voltage.	• Blown No. 5 or 6 (20 A) fuse. • Faulty power window relay. • An open in the wire.
3	RED/BLU and RED/YEL	Connect the WHT/YEL terminal to the RED/BLU terminal, and the RED/YEL terminal to the BLK terminal, then ignition switch ON.	Check the driver's motor operation: should run.	• Faulty driver's motor. • An open in the wire.
4	BLU/YEL and BLU/GRN	Connect the BLU/BLK terminal to the BLU/YEL terminal, and the BLU/GRN terminal to the BLK terminal, then ignition switch ON.	Check the passenger's motor operation: should run.	• Faulty passenger's motor • Faulty passenger's switch • An open in the wire.
5	BLU and BLK²	Connect the WHT/YEL terminal to the RED/YEL terminal, and the BLK¹ terminal to the RED/BLU terminal, then ignition Switch ON.	Check for resistance between the BLU and BLK² terminals: should indicate between 20—50 ohms as the dirver's motor runs.	• Faulty pulser. • Faulty driver's motor. • An open in the wire.

Driver's Switch Test

1. Remove the door trim panel.
2. Check for continuity between the terminals in each switch position according to the tables.



View from terminal side

LHD:

Driver's Switch

Position \ Terminal	A	B	H	I
UP (AUTO)*	○			○
UP	○			○
OFF	○	○	○	
DOWN		○		○
DOWN (AUTO)		○		○

Passenger's Switch

Position	Main switch \ Terminal	C	E	F	G
UP	ON		○	○	○
	OFF			○	○
OFF	ON	○	○		○
	OFF	○			○
DOWN	ON	○		○	
	OFF	○		○	

RHD:

Driver's Switch

Position \ Terminal	D	E	F	G
UP (AUTO)*	○			○
UP	○			○
OFF	○	○	○	
DOWN		○		○
DOWN (AUTO)		○		○

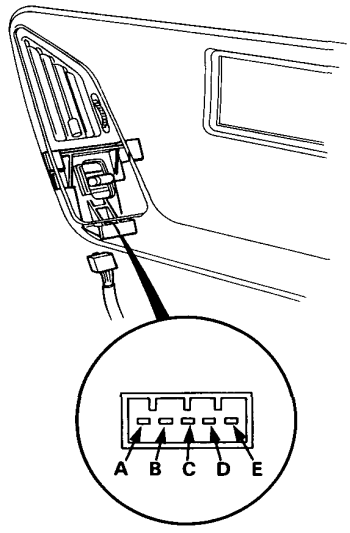
Passenger's Switch

Position	Main switch \ Terminal	A	C	H	I
UP	ON	○		○	○
	OFF			○	○
OFF	ON	○	○	○	
	OFF		○	○	
DOWN	ON	○			○
	OFF		○		○

*UP (AUTO...Standard for some types

Passenger's Switch Test

1. Remove the door trim panel.
2. Check for continuity between the terminals in each switch position according to the table.



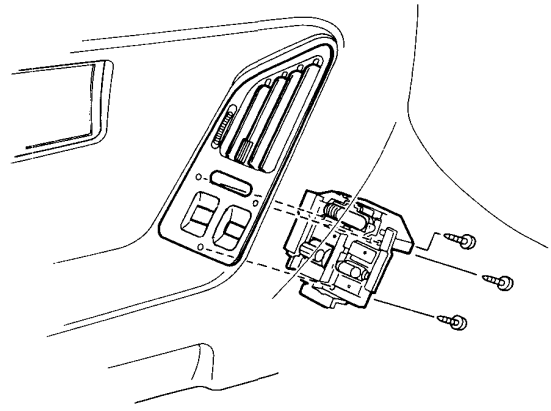
View from wire side

Position \ Terminal	A	B	C	D	E
UP				○—○	
OFF	○—○		○—○		
DOWN		○—○			

Switch Replacement

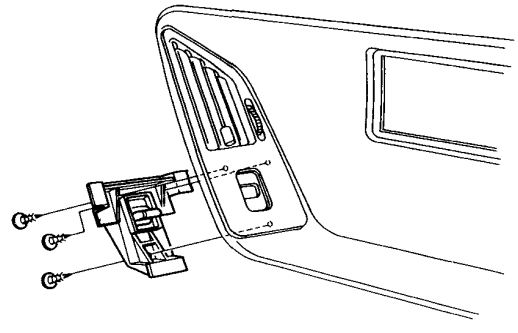
Driver's Switch:

1. Remove the door trim panel.
2. Remove the switch from the door trim panel by releasing the 3 mounting screws.



Passenger's Switch:

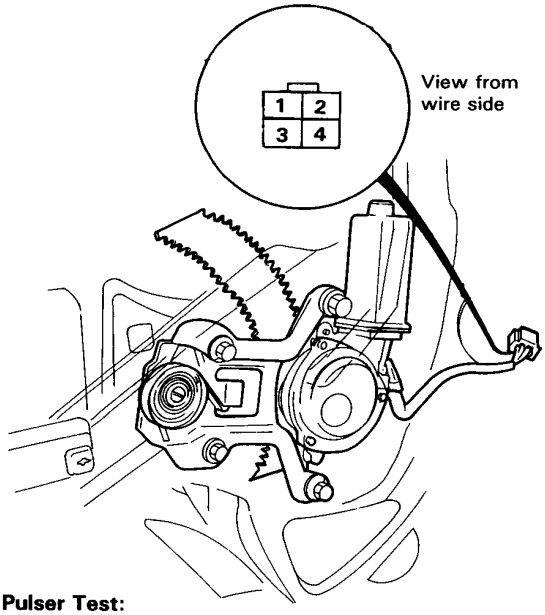
1. Remove the door trim panel.
2. Remove the switch from the door trim panel by releasing the 3 mounting screws.



Driver's Motor Test

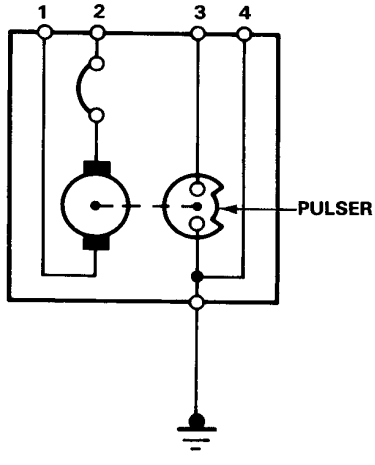
Motor Test:

1. Remove the door trim panel.
2. Disconnect the 4-P connector from the power window control unit.
3. Test motor operation by connecting battery voltage to the No. 1 and No. 2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.



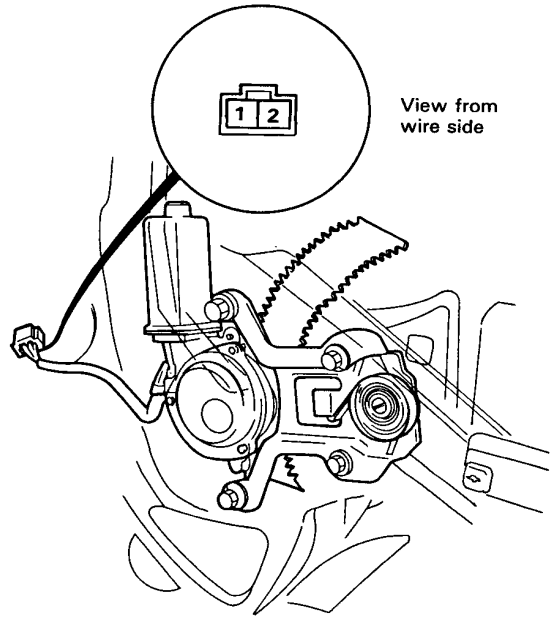
Pulser Test:

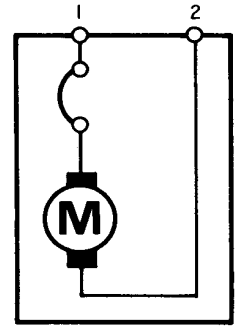
Measure resistance between the No. 3 and No. 4 terminals when running the motor by connecting battery voltage to the No. 1 and No. 2 terminals.
Ohmmeter should indicate between 20—50 ohms as the motor runs.



Passenger's Motor Test

1. Remove the door trim panel.
2. Disconnect the 2-P connector from the motor.
3. Test motor operation by connecting battery voltage to the No. 1 and No. 2 terminals.
   Test the motor in each direction, by switching the leads from the battery.
4. If the motor does not run, replace it.

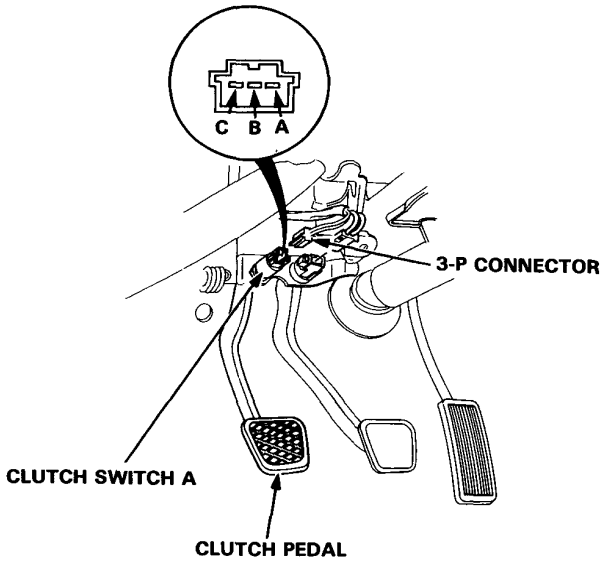




Clutch Switch Test

1. Disconnect the 3-P connector from the switch.
2. Check for continuity between the terminals according to the table.

Terminal / Clutch Pedal	A	B	C
RELEASED	O	O	O
PUSHED			



3. If necessary, adjust the switch position or replace the switch.

Wiring Diagrams

Index

Air Conditioner System 14
ALB System 7
A/T Control System 13
Battery 1
Carburetor Solenoids (Except KS,KX,KZ) 12
Charging System 1
Cigarette Lighter 9
Clock 9
Cooling System 2
Cruise Control System 11
Dashlight Brightness Control Unit 7
Fuel Pump Carbureted Engine 13
  Fuel Injected Engine 12
Gauges 2
Headlight Washer System 11
Heater Control System 14
Ignition Switch 1
Ignition System 1
Indicator Lights
  Air Conditioner 12
  Cruise Control Main Switch 11
  Hazard Light(Except KQ,KT,KY) 8
  Rear Defogger 9
  Rear Fog Light KE 4
  KS,KW,KQ,KT,KY 5
  KB,KF,KG,KX 6
  S4 Switch 13
  Seat Heater 11
Instrument Panel Light 3
Integrated Control Unit 3
Lighting System KB,KF,KG,KX 6
  KE 4
  KS,KW,KQ,KT,KY 5
Lights
  Brake Light 8
  Dome Light 2
  Door Key Light 3
  Fuse Box Light 8
  Fog Lights KE 4
  KB,KF,KG,KX 6
  KS,KW,KQ,KT,KY 7
  Gauge Light 2
  Grove Box Light 8
  Headlight KB,KF,KG,KX 6
  KE 4
  KS,KW,KQ,KT,KY 5
  Ignition Key Light 3
  Safety Indicator Light 2
  Trank Light 2
  Turnsignal Light 8
PGM—CARB Control System 13
PGM—FI Control System 12
Power Door Lock System 10
Power Door Mirror System 9
Power Window System 10
Rear Window Defogger System 9
Rear Window Wiper/Washer System 10
Safety Indicator 2
Seat Heater System 11
Shift Lever Position Indicator 3
Starting System 1
Stereo Sound System 8
Sunroof System 9
Warning Lights
  ALB Warning 7
  Brake Warning 2
  Charge Warning 1
  Compressor Warning 14
  Low Fuel Warning 2
  Oil Pressure Warning 3
  PGM—FI Warning 12
  Seat Belt Reminder 4
Windshield Wiper/Washer System 10