SERVICE MANUAL

DAIHATSU

L500, L501

FOREWORD

This manual is a service manual for model L500,L501.

In this service manual, the entire portion is divided into 21 sections. Each section has an index along with a table of contents in the beginning.

All information used in this service manual was in effect at the time when the manual was printed. However, the specifications and procedures may be revised owing to continuing improvements in the design without advance notice and without incurring any obligation to us.

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DAIHATSU MOTOR CO., LTD

 9198-LE

LGI00000-00000

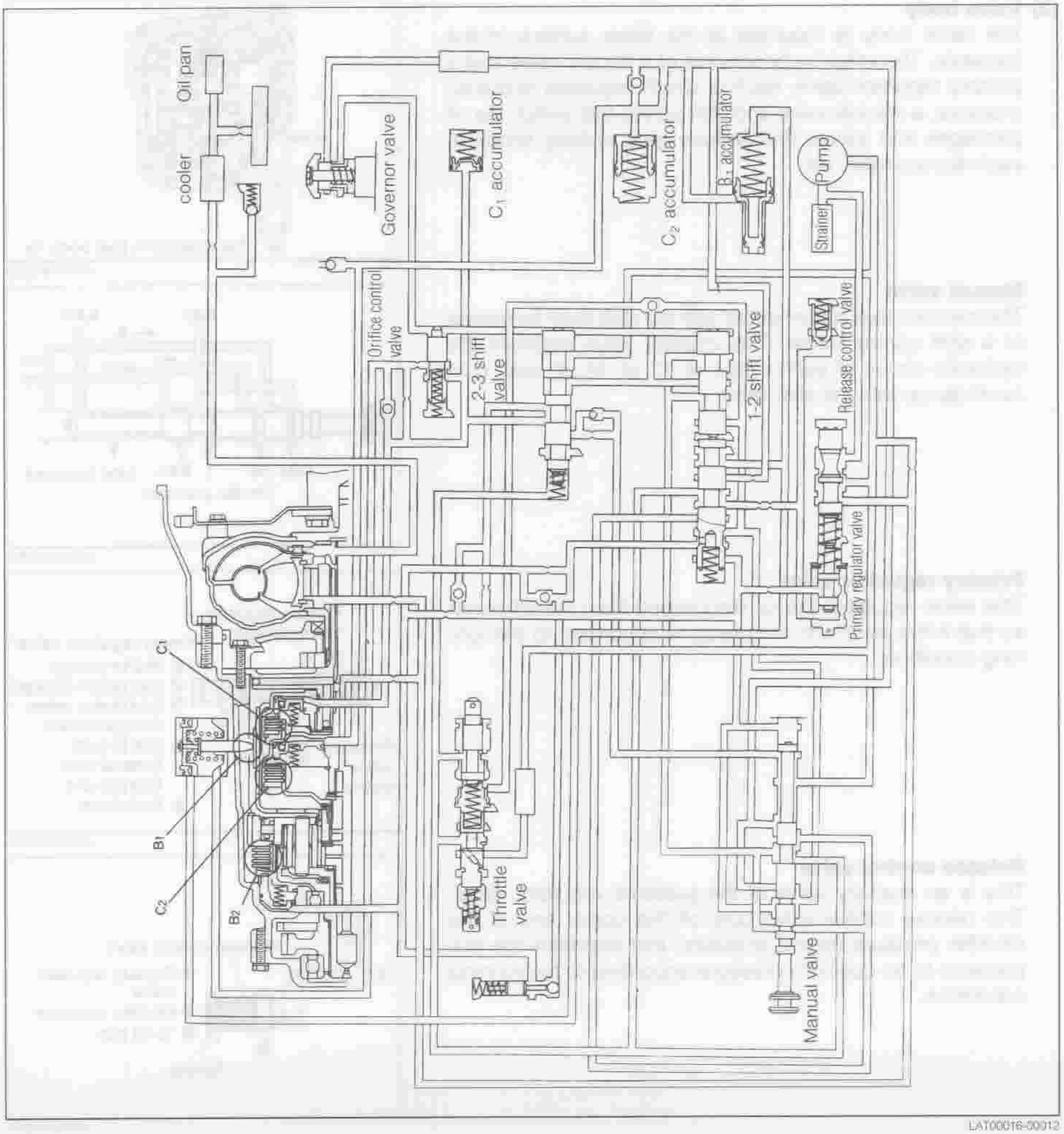
HYDRAULIC CONTROL SYSTEM

DESCRIPTION

The hydraulic control system regulates the hydraulic pressure, such as the line pressure and throttle pressure, and switches the oil passage to each shift control element of the power train mechanism so as to perform gear shifts in the transmission.

CONSTRUCTION

The hydraulic control system is composed of an oil pump, various control valves that switch oil passages, an accumulator-incorporated valve body that regulates hydraulic pressure, a cooling device that cools the transmission fluid and so forth.



LAT00016-00012

TESTING

STALL TEST

The purpose of this test is to check the overall performance of the automatic transmission and engine by measuring the maximum engine speeds in the D and R ranges.

CAUTION:

(a) Perform the stall test at the normal fluid operating temperature (70 - 90°C or 158 - 194°F).
(b) Do not conduct this test continuously for more than five seconds.
(c) Wait at least one minute before the switching is made from the D range to the R range.
(d) Be sure to turn OFF the air conditioner (if equipped so on).

Measurement of stall speed

(a) Place chocks at the four wheels.
(b) Install an engine tachometer.
(c) Fully apply the parking brake.
(d) Keep depressing the brake pedal firmly by your left foot during the test.
(e) Start the engine.
(f) Move the shift lever to the D range. Depress the accelerator pedal fully by your right foot. Quickly read the highest engine rpm at this time.
Stall Speed: 3050 - 3650 rpm
(g) Perform the same test in the R range.

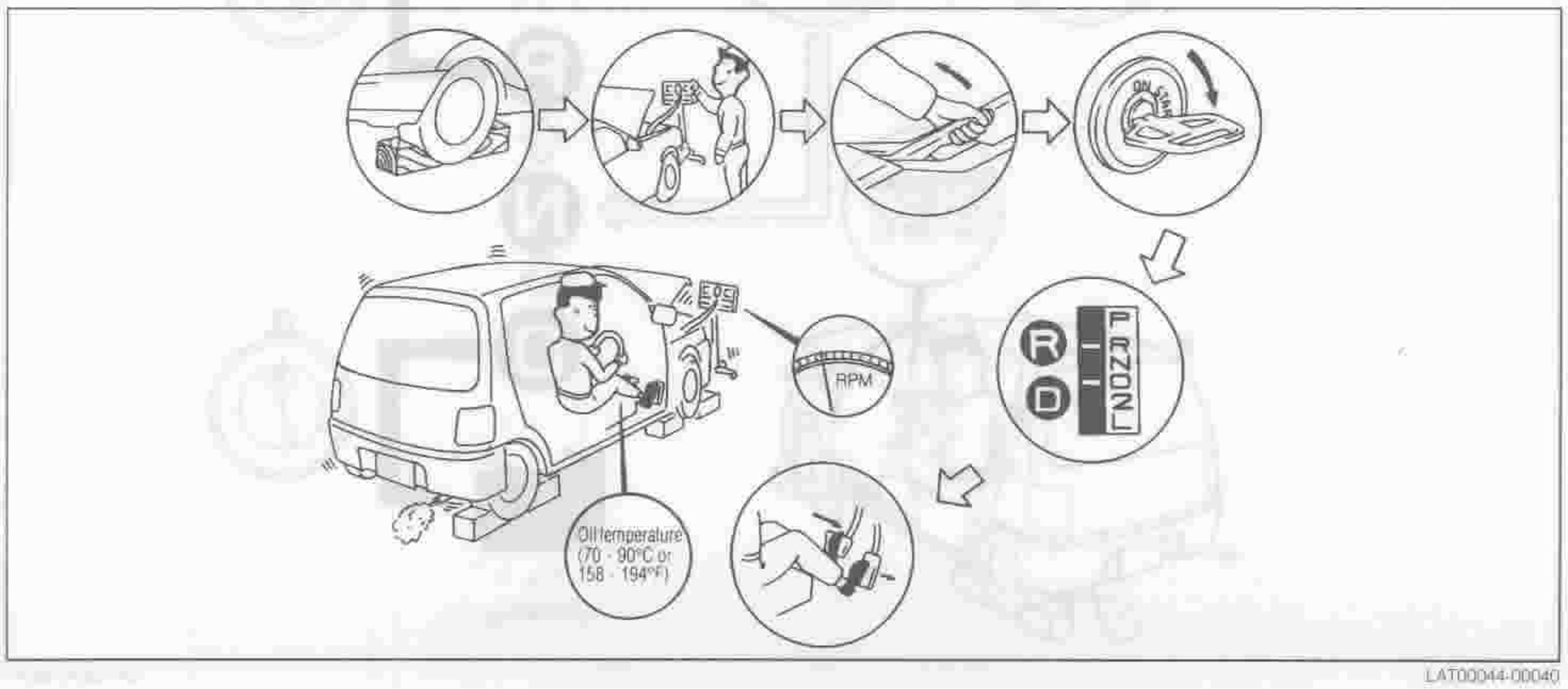
Evaluation

(a) If the engine speed is the same for both ranges (D, R) but lower than specified value:
- Engine output probably insufficient (e.g. throttle valve is not opened fully.)
- Torque convertor malfunctioning

(b) If the stall speed at the D range is higher than specified value:
- Line pressure too low
- Forward clutch slipping
- Torque convertor malfunctioning

(c) If the stall speed in the R range is higher than specified value:
- Line pressure too low
- Direct clutch slipping
- First & reverse brake slipping

(d) If the stall speed in the R and D ranges is higher than specified value:
- Line pressure too low
- Fluid level improper



LAT00044-00040

(5) Case where 2nd brake band (B_1) backpressure is deviated from specified value:

Malfunction Symptoms / Possible causes	Line pressure improper	2nd brake band piston malfunctioning	Rear clutch piston malfunctioning	Orifice restricted	Manual valve improperly adjusted	Valve body/oil pump attaching bolts loose	Valve body and oil pump casting porosity	Foreign matter lodged at mate surface of valve body and oil pump	2-3 shift valve and timing valve malfunctioning
Rear clutch pressure is too high.	●								
Rear clutch pressure too low.	●	●	●	●	●	●	●	●	●

Are other line pressures normal?
- NG → Proceed to "Case where all line pressures are deviated from specified value."
- OK ↓

Remove the oil pan.

Is adjustment of the neutral switch of the manual value OK?
- NG → Adjust the neutral position of the manual valve.
- OK ↓

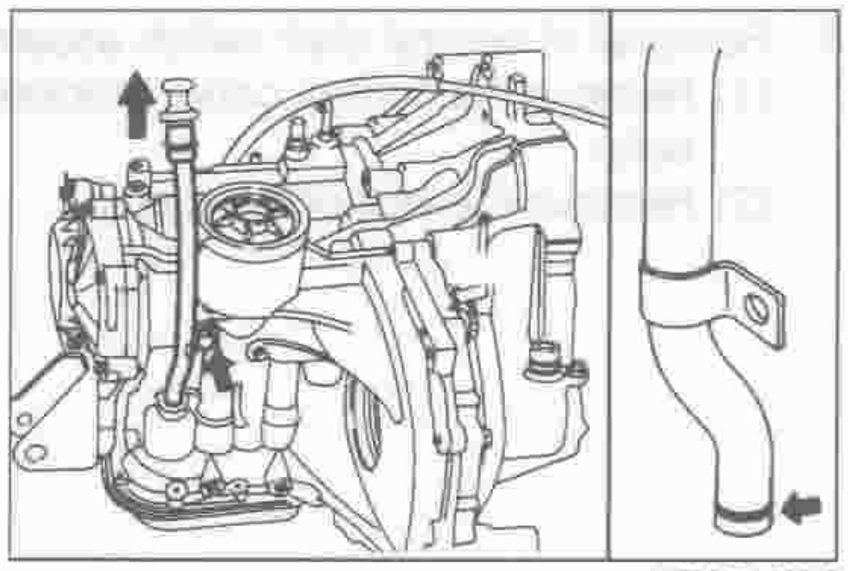
Replace valve body. Is malfunction remedied?
- YES → The valve body is malfunctioning
- NO ↓

Remove the automatic transmission from the vehicle.
Disassemble and check the automatic transmission.
<Points>
Disassemble and check the 2nd brake band.

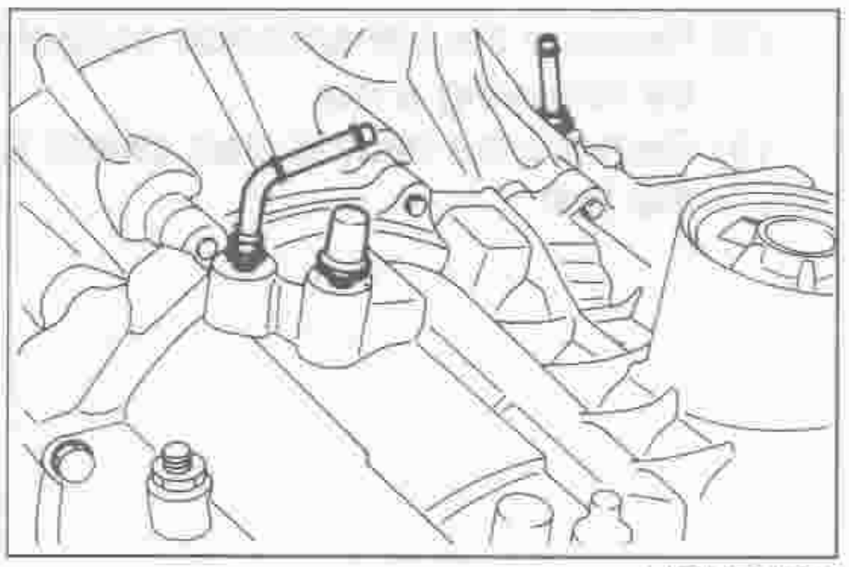
LAT00234-00000

REMOVAL

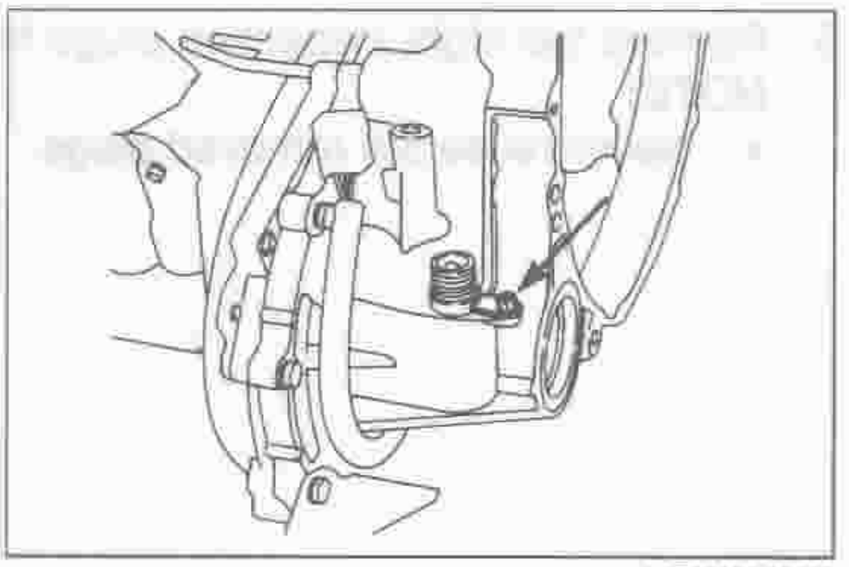
1. Remove the bolt of the transmission oil filler tube subassembly.
2. Pull out the transmission oil filler tube subassembly toward upside.
3. Remove the O-ring from the transmission oil filler tube subassembly.
   NOTE:
   - Never reuse the removed O-ring.


LAT00054-00048

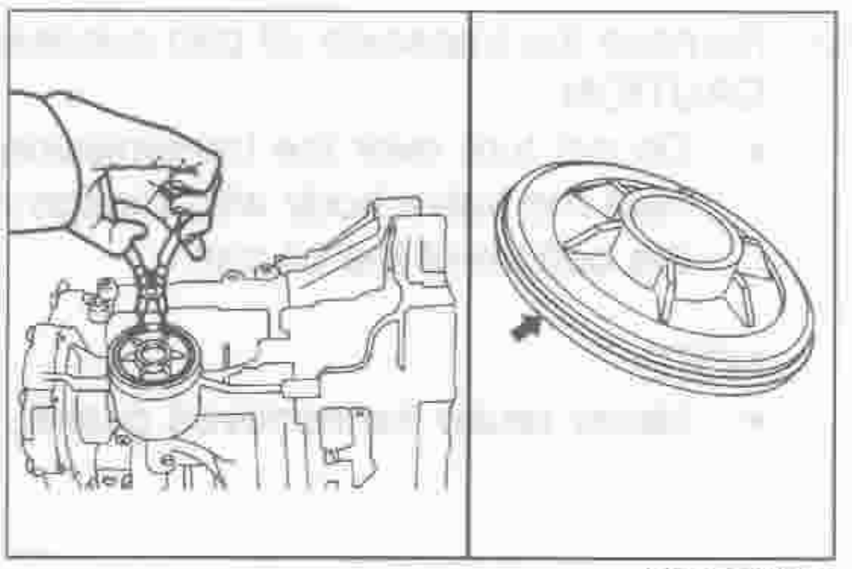
4. Remove the breather plug and unions (for oil cooler).
   NOTE:
   - Never reuse the removed union.


LAT00055-00049

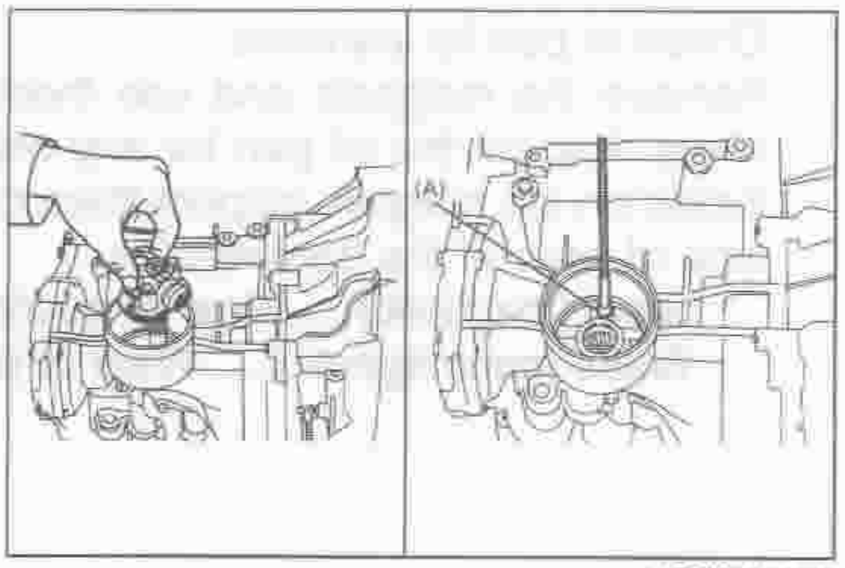
5. Remove the speedometer sleeve lock plate by removing a bolt.
6. Remove the speedometer shaft sleeve subassembly, using the standard flat driver.


LAT00056-00050

7. Removal of governor valve
   (1) Remove the hole snap ring, using the standard snap ring plier.
   (2) Remove the governor cover with the O-ring installed, using the standard plier.
   (3) Remove the O-ring from the governor cover.
   NOTE:
   - Never reuse the removed O-ring.

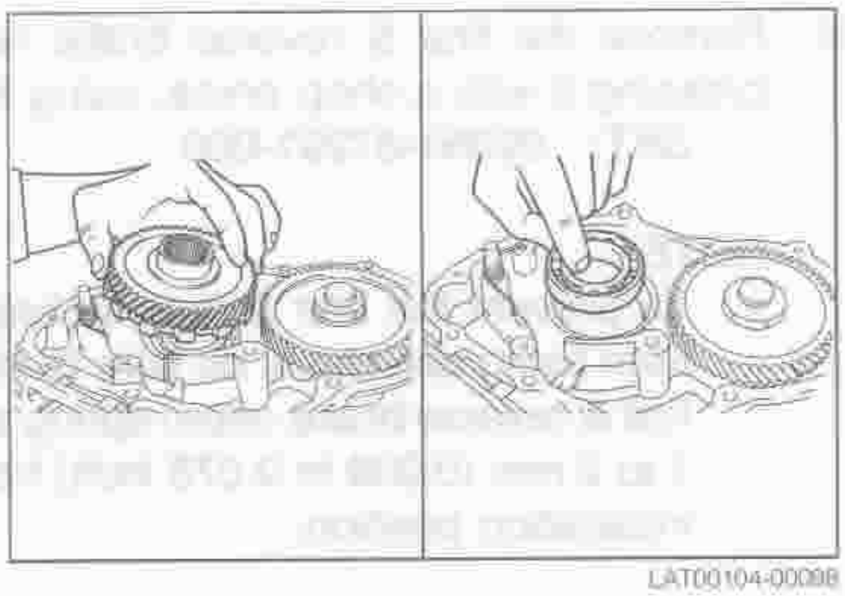

LAT00057-00051

   (4) Remove the governor body assembly form the transaxle case.
   (5) Remove the ball (A), using the standard magnet hand.

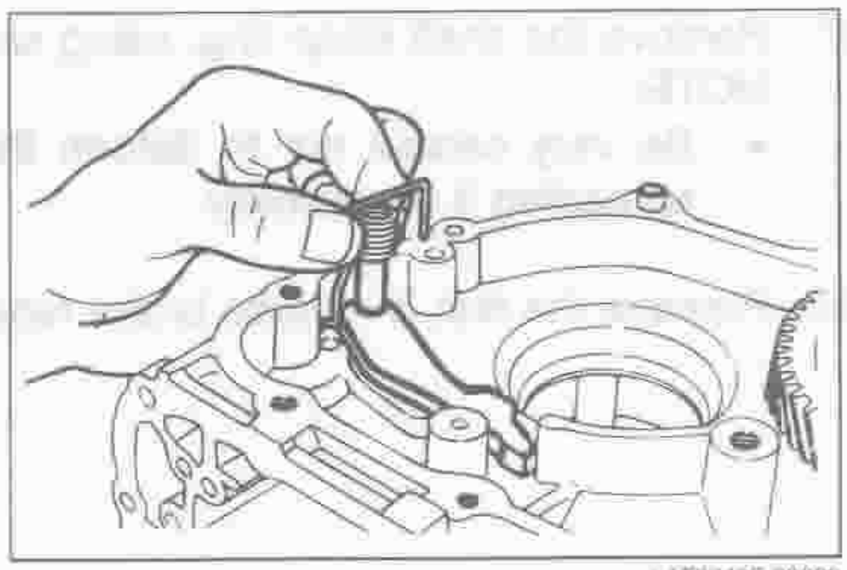


LAT00058-00052

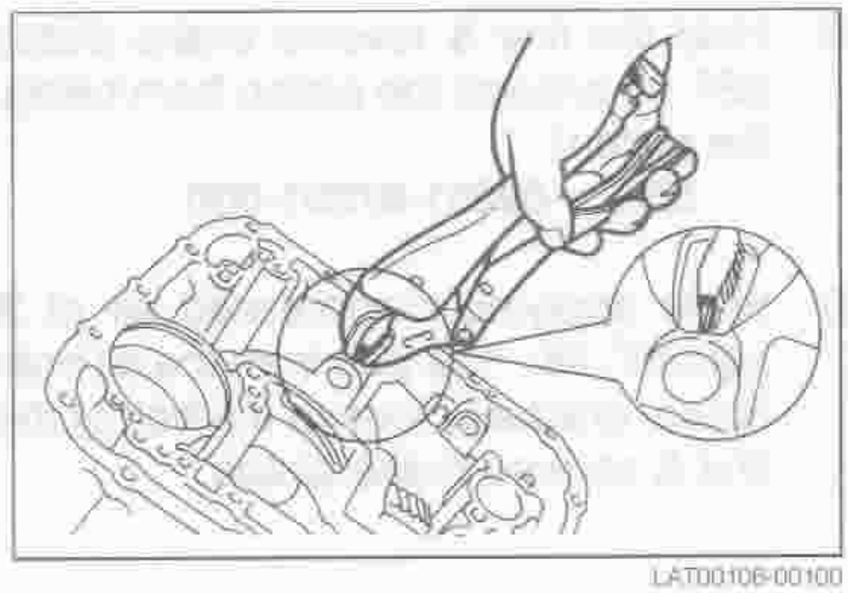
(8) Remove the reduction drive gear.
(9) Remove the radial ball bearing.
NOTE:
- If any difficulty is encountered in removing the radial ball bearing, remove it by applying a light impact from the inside of the transmission case, using a suitable brass bar in combination with a plastic hammer.


LAT00104-00098

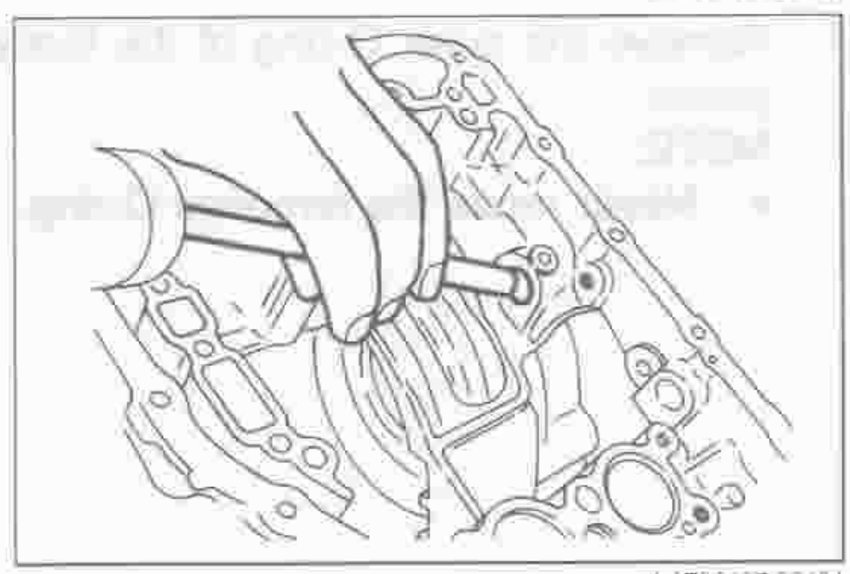
60. Remove the torsion spring.
61. Remove the parking lock pawl.
62. Remove the parking lock pawl shaft.


LAT00105-00099

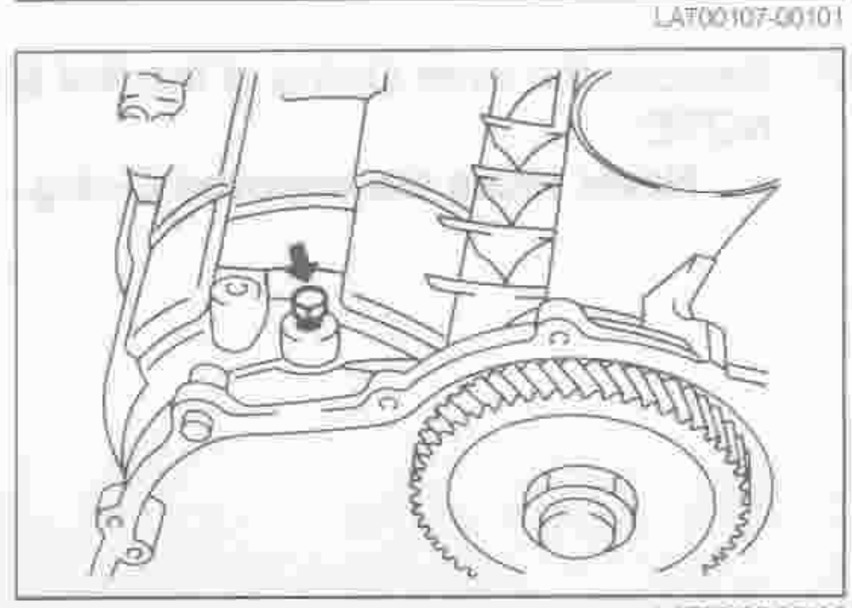
63. Remove the slotted spring pin, using a vice clip.
NOTE:
- Securely pinch the slotted spring pin by means of a vice clip. Turn the pin clockwise and counterclockwise and pull the slotted spring pin.
- Never reuse the removed slotted spring pin.


LAT00106-00100

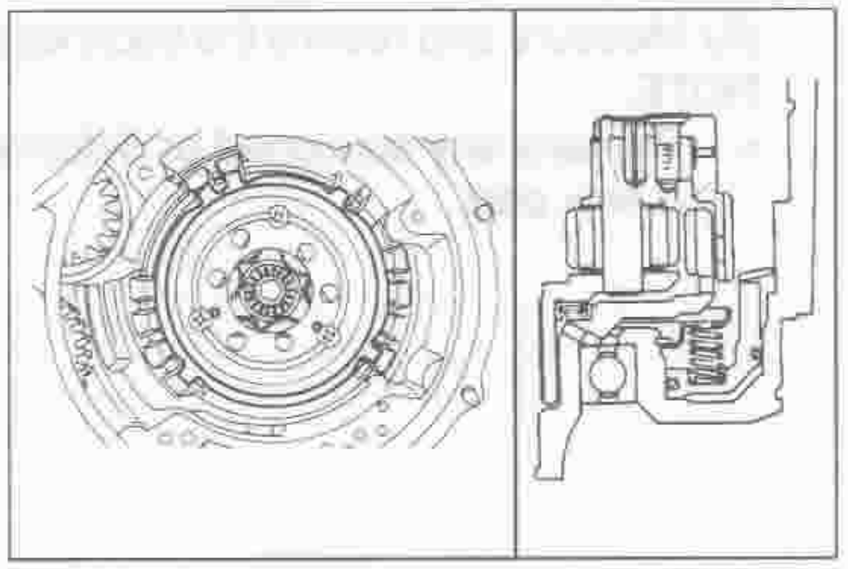
64. Remove the parking lock pawl cam support, using a suitable brass bar and a hammer.


LAT00107-00101

65. Temporarily install the removed B_2 inspection plug to the transaxle.

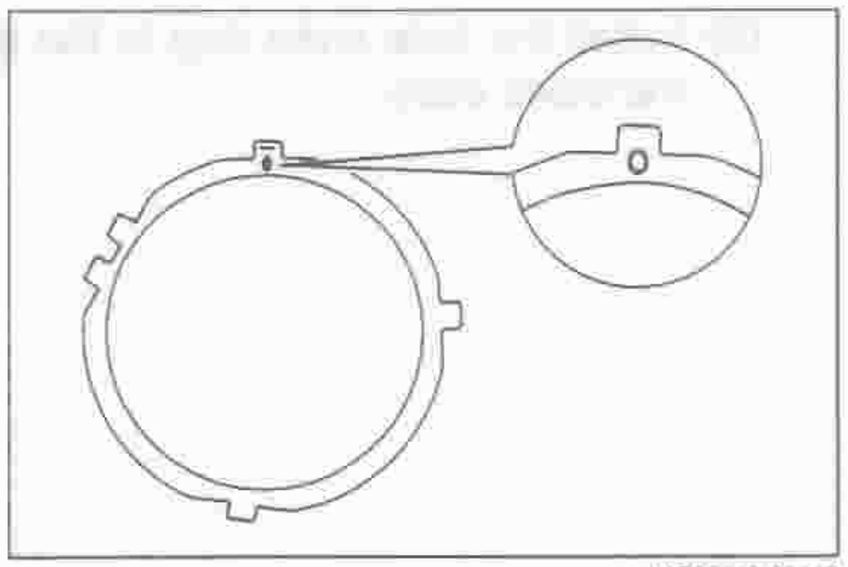

LAT00108-00102

31. Installation of first & reverse brake
(1) Install the brake cushion plate.



LAT00148-00141

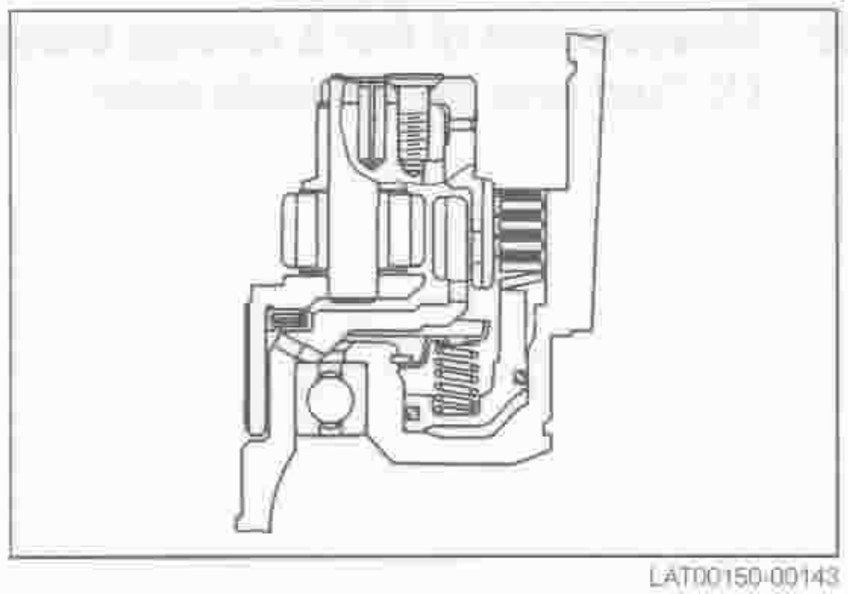
NOTE:
- Ensure that the stamped mark "O" of the brake chushion plate faces toward the upper side.



LAT00149-00142

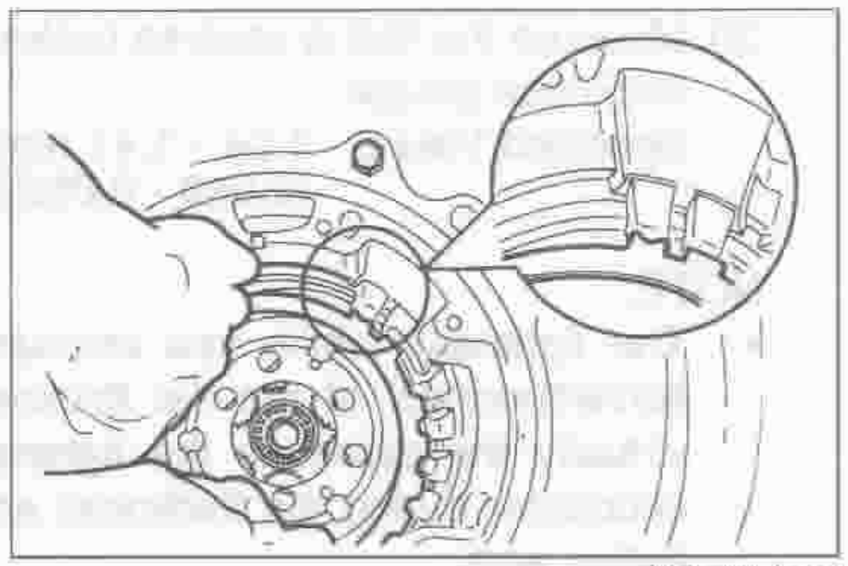
(2) Install the plates and discs in the following order.
P = Brake plate, D = Brake disc
P → D → P → D → P → D → P → D

NOTE:
- Before assembling new discs, soak them in the ATF for at least two hours.



LAT00150-00143

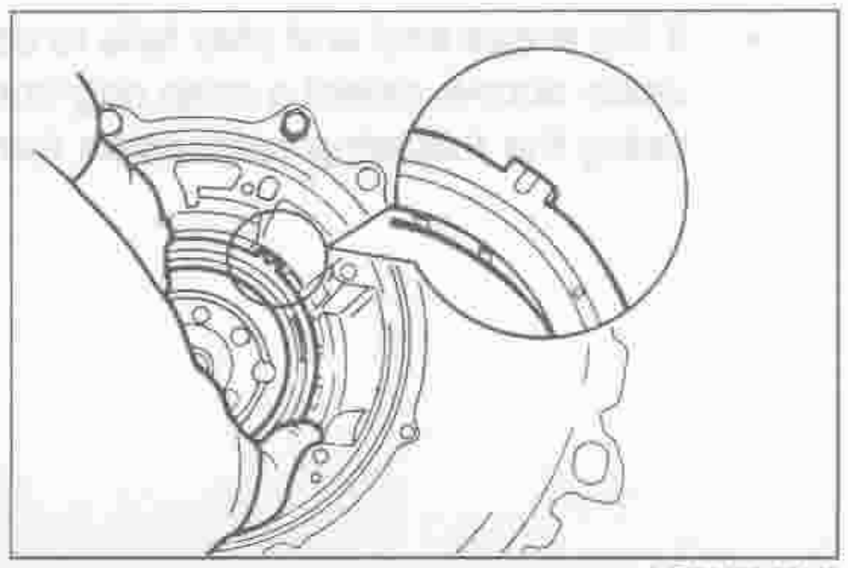
NOTE:
- Be sure to align the cut-out section of the brake plate with the protruding section of the transaxle when installing the brake plate.



LAT00151-00144

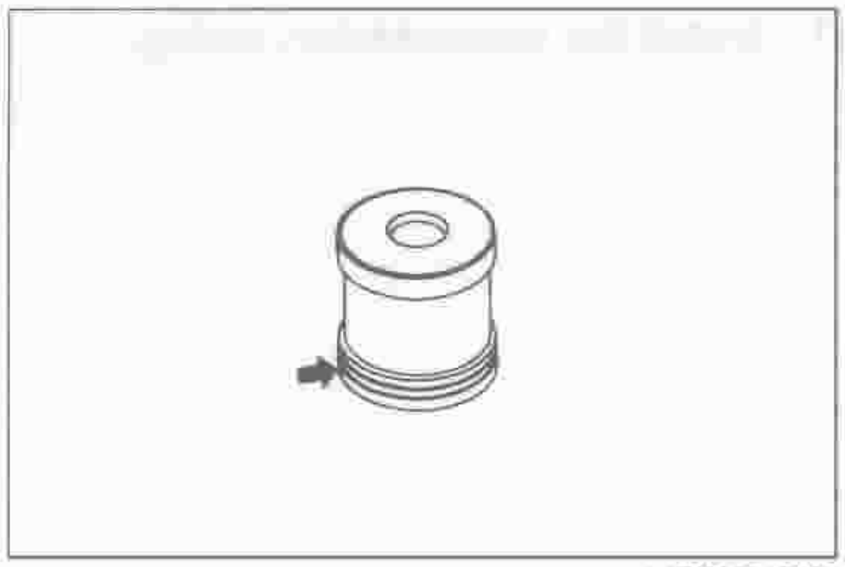
(3) Coat the sliding section of the one-way clutch and planetary gear assembly with the ATF.
(4) Install the one-way clutch.

NOTE:
- Ensure that the one-way clutch with the snap ring faces toward the upside.
- Align the cut-out section at the inside of the transaxle case with the protruding section provided with the groove (O mark) of the one-way clutch.

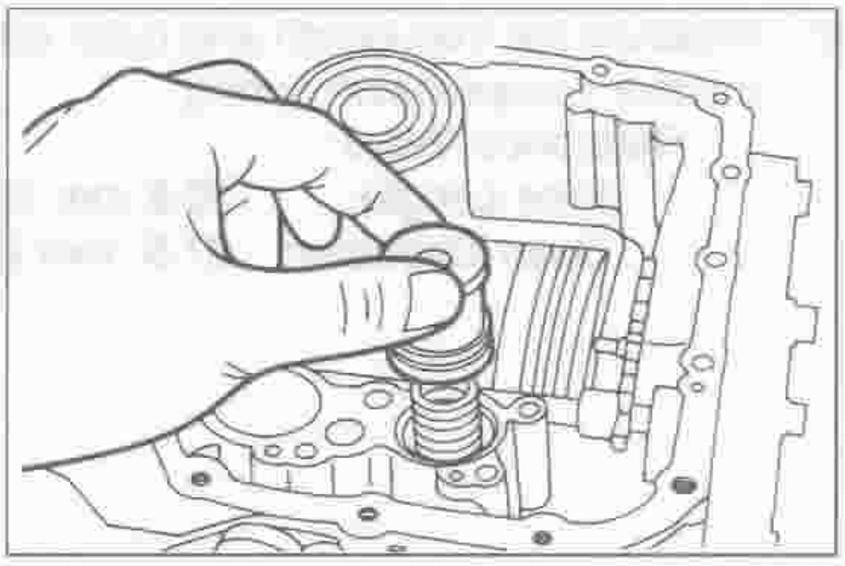


LAT00152-00146

74. Coat a new C_2 accumulator seal No. 1 ring with the ATF.
75. Install the C_2 accumulator seal No. 1 ring to the accumulator No. 2 piston.
    NOTE:
    - Do not spread the ring end excessively.


LAT00198-00189

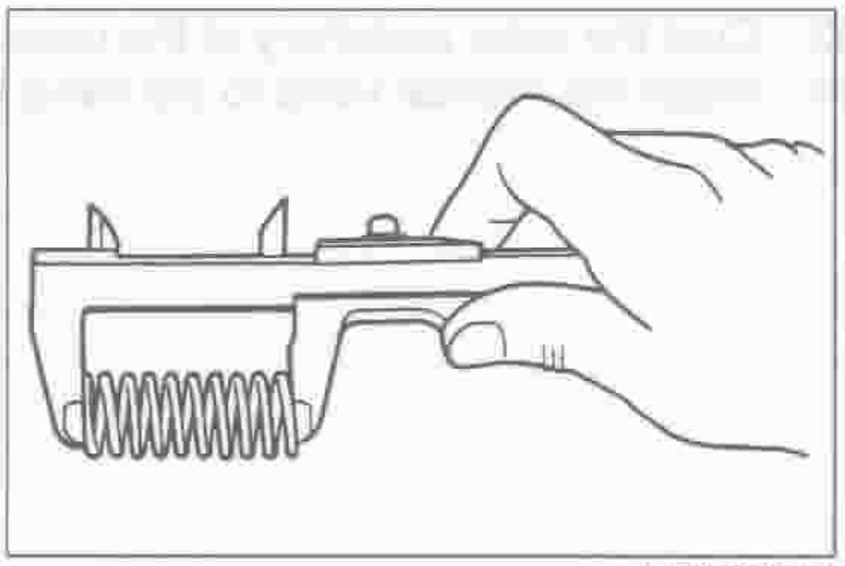
76. Install the compression spring and accumulator No. 2 piston to the transaxle case.


LAT00199-00190

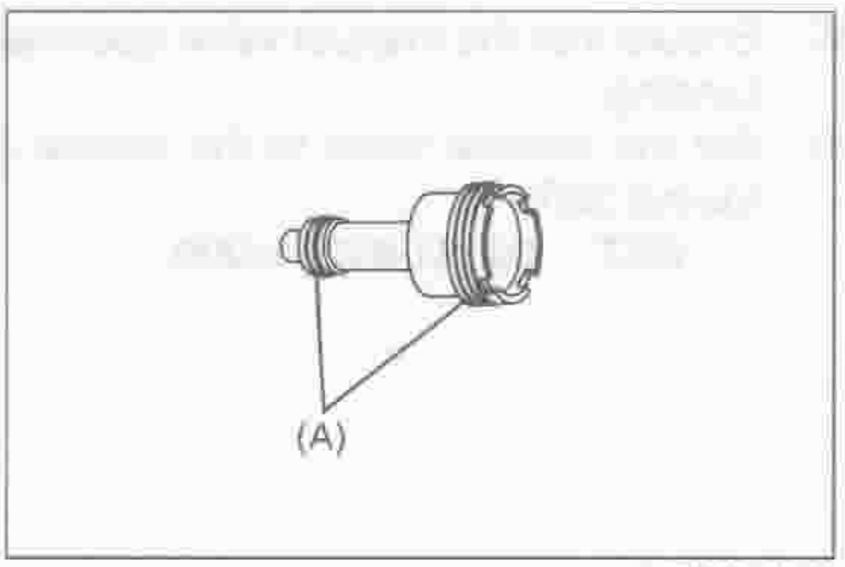
77. Measure the free length and outer diameter of the B_1 accumulator compression spring.
    Reference Value:

Free Length:	53 mm (2.08 inch)
Outer Diameter:	20 mm (0.78 inch)

Free Length:	53 mm (2.08 inch)
Outer Diameter:	14.5 mm (0.57 inch)

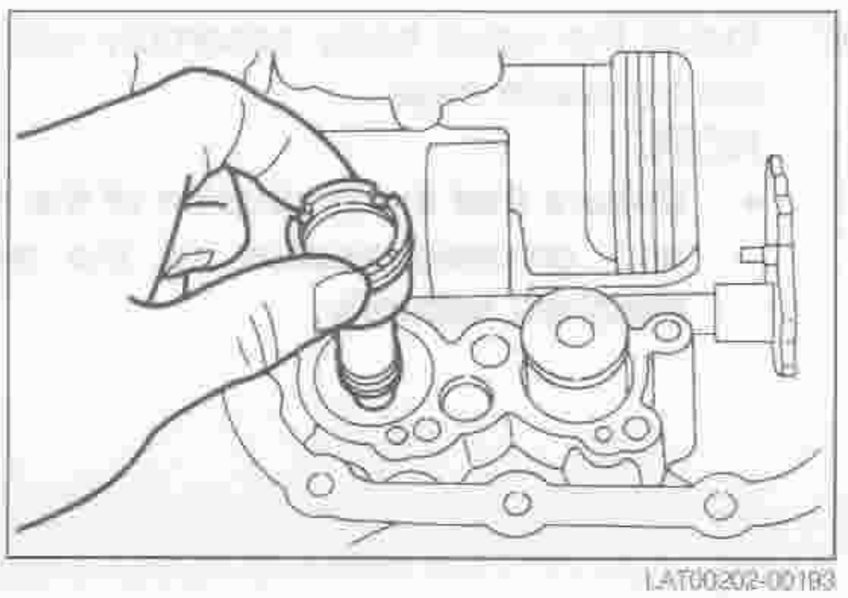

LAT00200-00191

78. Coat the A section of the new accumulator seal No. 1 and No. 2 ring with ATF.
79. Install the accumulator seal No. 1 and No. 2 ring to the accumulator No. 1 piston.
    NOTE:
    - Do not spread the seal ring end excessively.

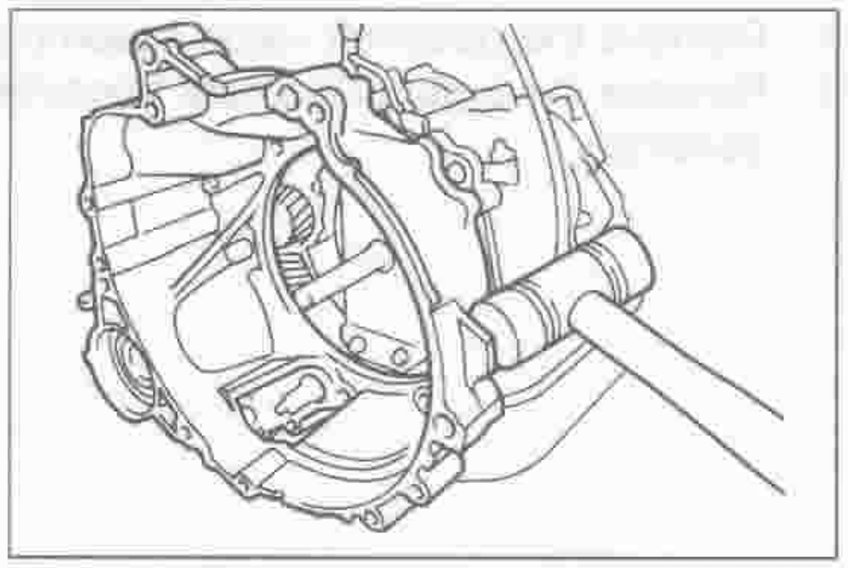


LAT00201-00192

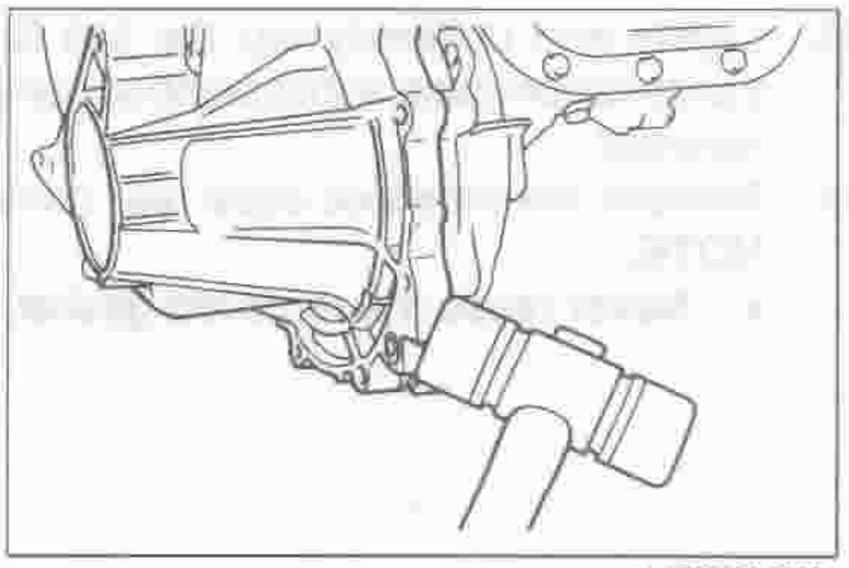
80. Install the accumulator No. 1 piston to the transaxle case.


LAT00202-00193

6. Lightly and uniformly tap the two lib sections of the torque convertor & differential case, using the standard plastic hammer.
7. Remove the transmission gasket.
   NOTE:
   - Never reuse the removed gasket.

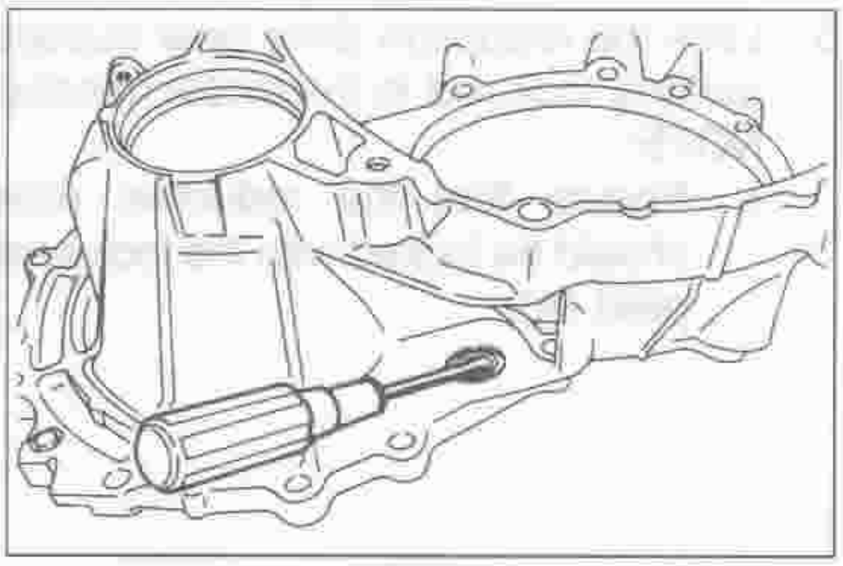


LAT00238-00230



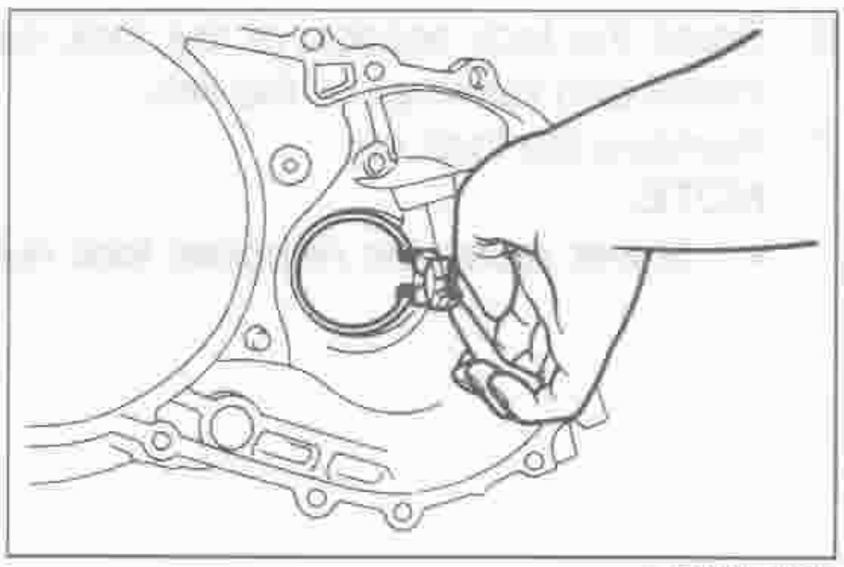
LAT00000-00231

8. Remove the T-type oil seal, using the standard flat driver or the like.
   NOTE:
   - Never reuse the removed oil seal.



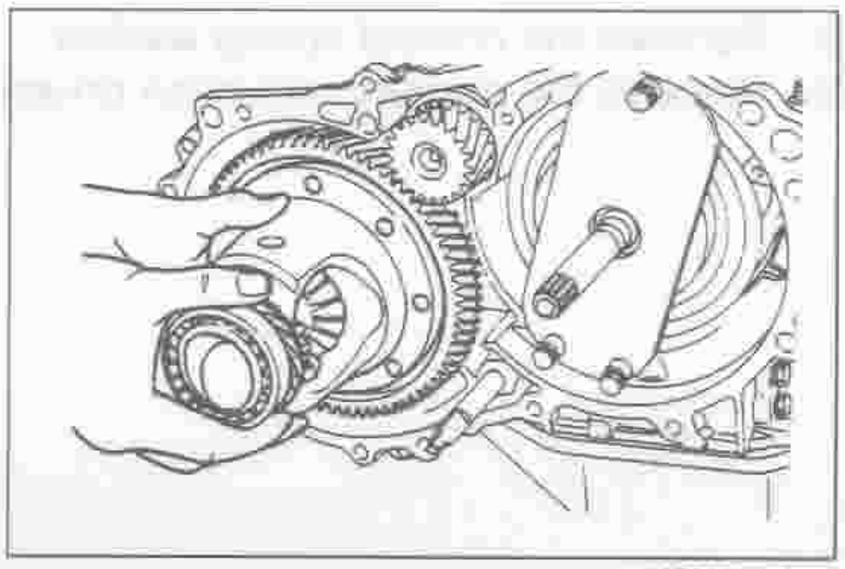
LAT00239-00232

9. Remove the hole snap ring, using the standard snap ring plier.



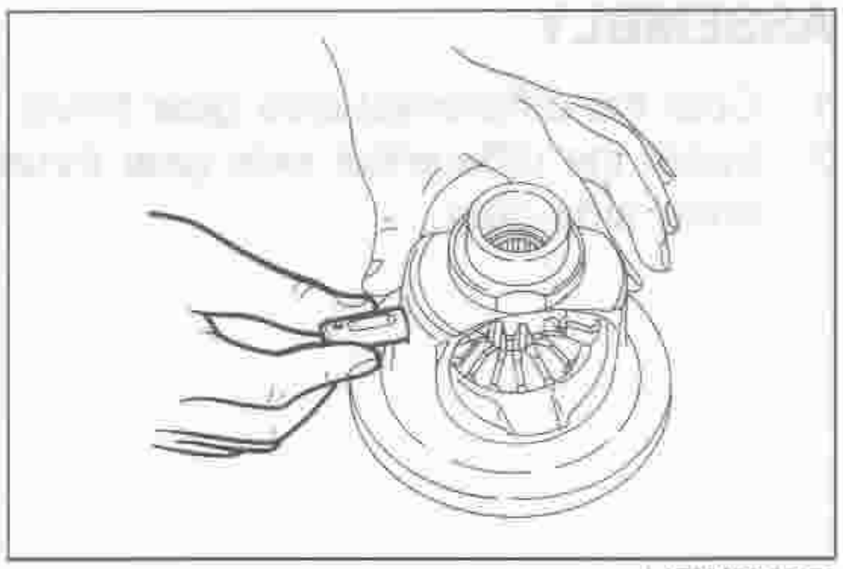
LAT00240-00233

10. Remove the differential assembly.



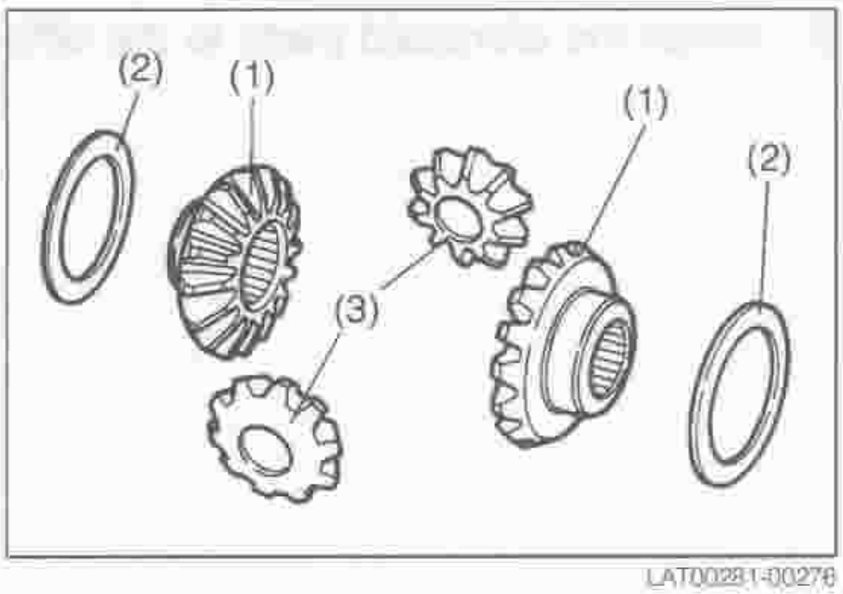
LAT00241-00234

10. Remove the differential pinion shaft from the differential case.



LAT00280-00275

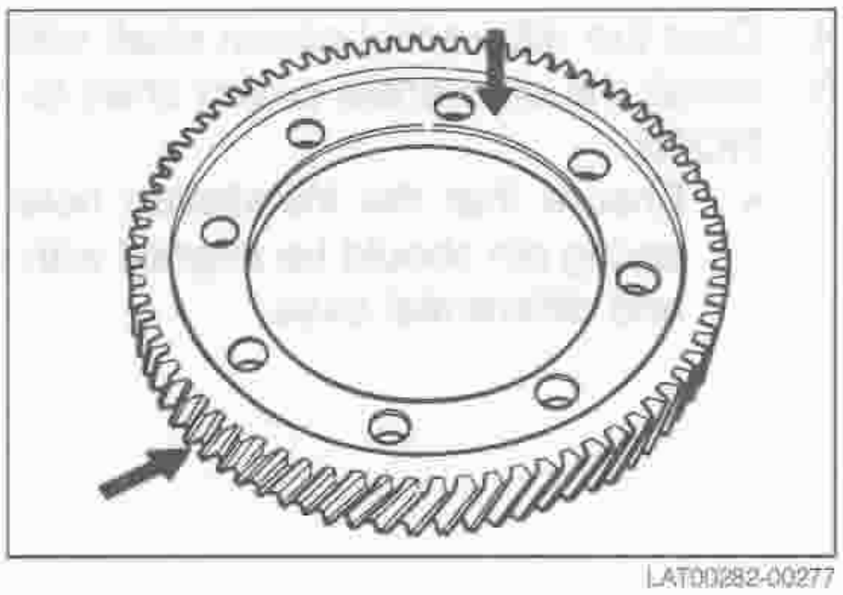
11. Remove the following parts from the differential case.
    (1) Differential side gear ..... 2 pcs
    (2) Differential side gear thrust washer ..... 2 pcs
    (3) Differential pinion gear ..... 2 pcs



LAT00281-00276

INSPECTION

1. Visually inspect the damage or wear for installation section of the differential ring gear.

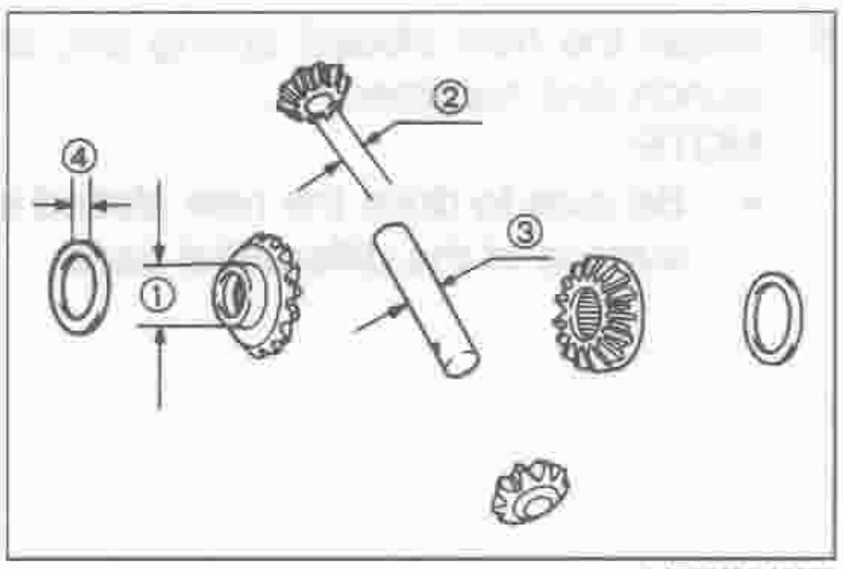


LAT00282-00277

2. Measure and visually inspect the wear or damage for the following parts.

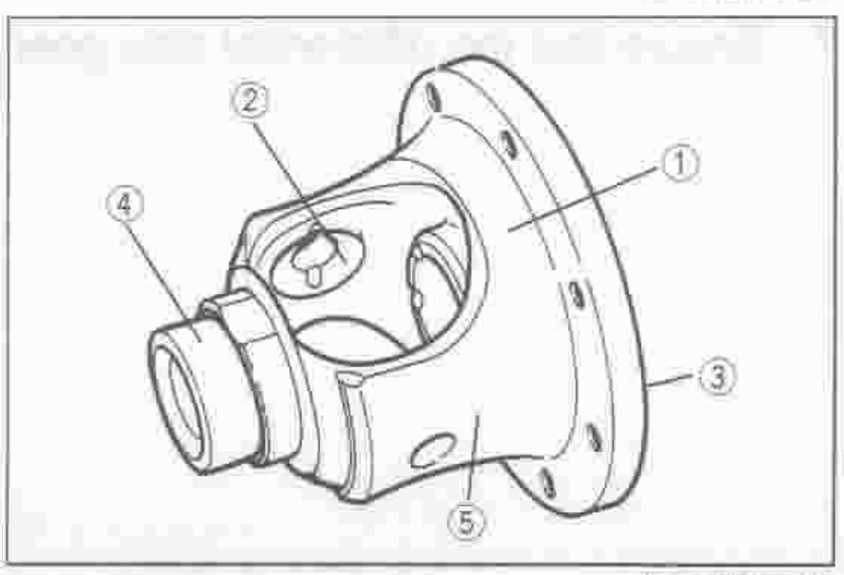
Unit: mm (inch)

		Specified value	Allowable limit
①	Side gear outer diameter	31.95 - 31.975 (1.257 - 1.258)	31.9 (1.255)
②	Pinion gear inner diameter	15.03 - 15.08 (0.591 - 0.593)	15.13 (0.595)
③	Pinion shaft outer diameter	14.944 - 14.954 (0.588 - 0.589)	14.9 (0.586)
④	Thrust washer thickness	0.75 - 0.85 (0.029 - 0.033)	0.7 (0.027)



LAT00283-00278

3. Visually inspect the differential case of the following section for wear and damage.
    (1) Side gear contacting section
    (2) Pinion gear contacting section
    (3) Ring gear installation section
    (4) Bearing pressing section
    (5) Whole of differential case self.



LAT00284-00279

TIGHTENING TORQUE

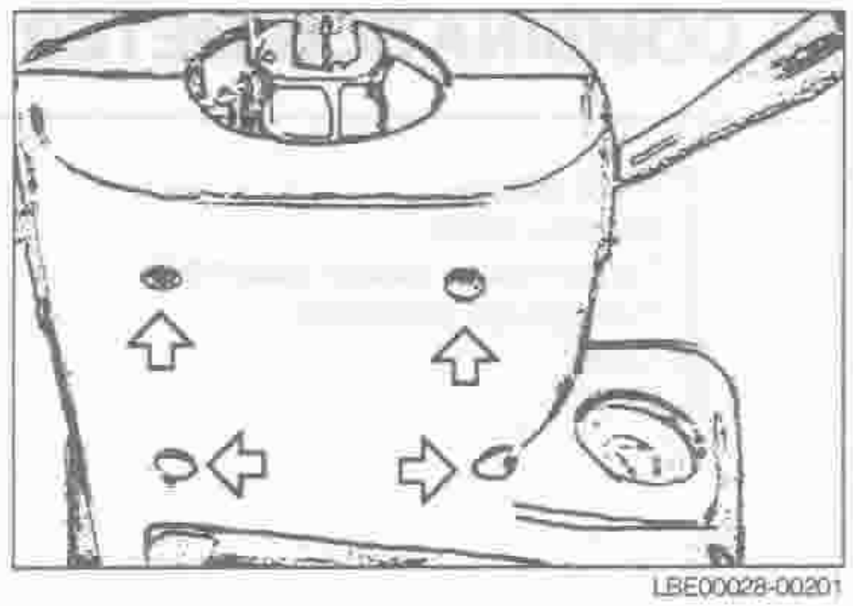
Tightening components	Tightening torque		
	N·m	kgf-m	ft-lb
Drive plate × Crank shaft	39.0 - 49.0	4.0 - 5.0	28.9 - 36.2
Transaxle × Engine direct-connecting bolt	49.0 - 69.0	5.0 - 7.0	36.2 - 50.6
Torque convertor × Drive plate	29.0 - 44.0	3.0 - 4.5	21.7 - 32.5
Rear transmission case cover × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Engine mounting lower left bracket × Transmission case	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Starter shaft & oil pump × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Nut (for brake band anchor bolt) × Transmission case	22.5 - 30.4	2.3 - 3.1	16.6 - 22.4
Valve body × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Manual detent spring × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Transaxle oil pan × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Inspection plugs × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Neutral start switch × Transmission case	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Transmission control shaft lever × Manual shaft lever	9.8 - 16.0	1.0 - 1.6	7.2 - 11.6
Control cable bracket × Transmission case	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Unions × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Oil strainer × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Speedometer sleeve lock plate × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2
Transmission oil filler tube × Transmission case	6.9 - 9.8	0.7 - 1.0	5.1 - 7.2

LAT00298-00000

02 IGNITION SWITCH

Unit inspection

1. Disconnect the battery cable from the negative terminal of the battery.
2. Remove steering column lower cover.
3. Disconnect the wire harness connector of the ignition switch.
4. Remove the ignition switch unit from the ignition key assembly by removing the screw.

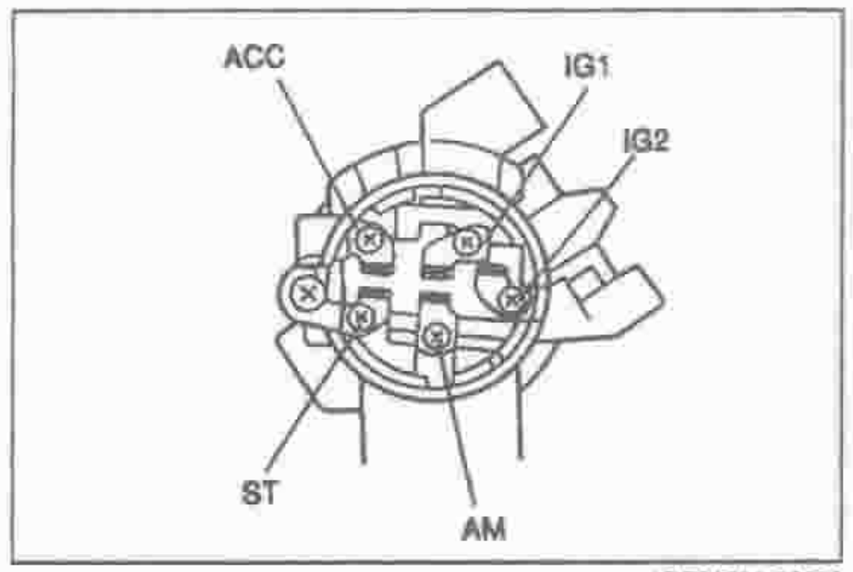


LBE00028-00201

5. Ensure that continuity exists between the respective terminals as indicated in the continuity table.

Continuity table of ignition switch

	AM	ACC	IG_1	IG_2	ST
LOCK					
ACC	○——	——○			
ON	○——	——○	——○	——○	
START	○——	——○	——○	——○	——○

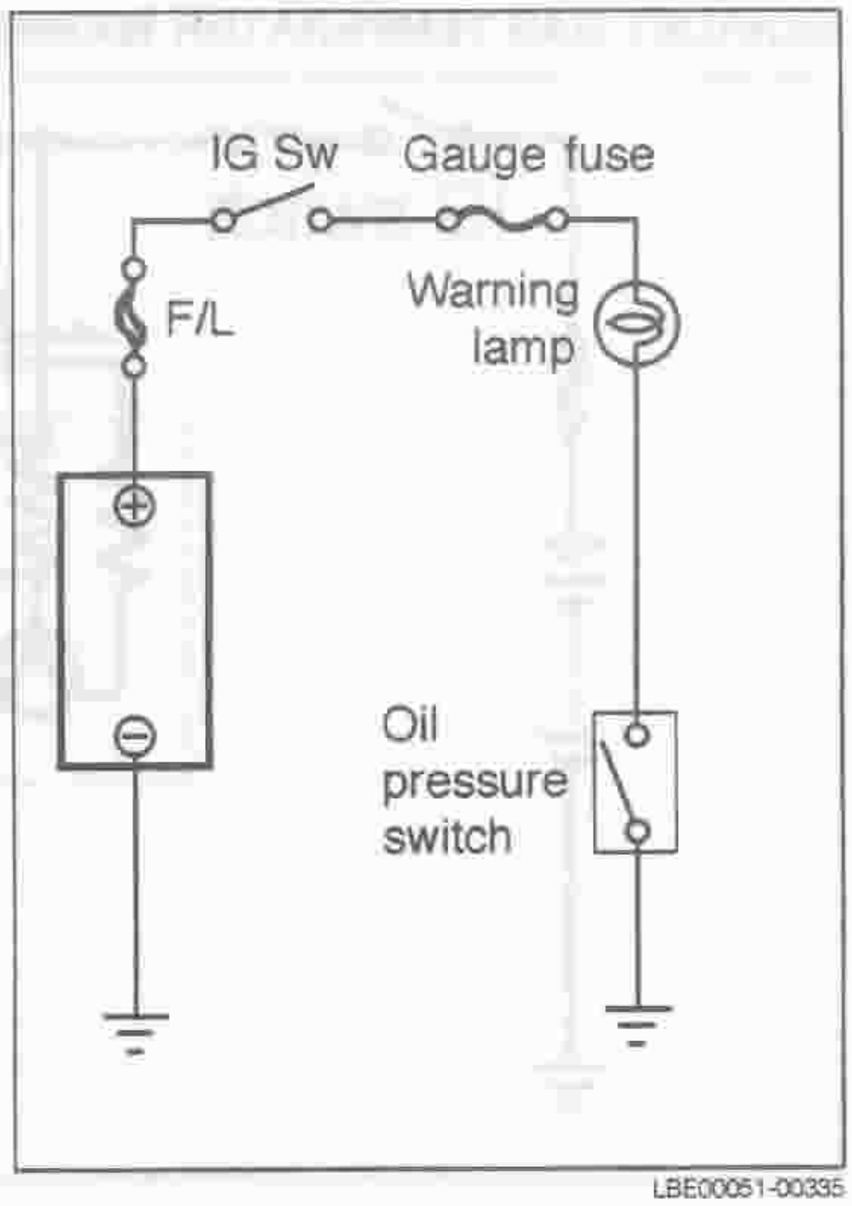


LBE00029-00202

OIL PRESSURE WARNING

Description

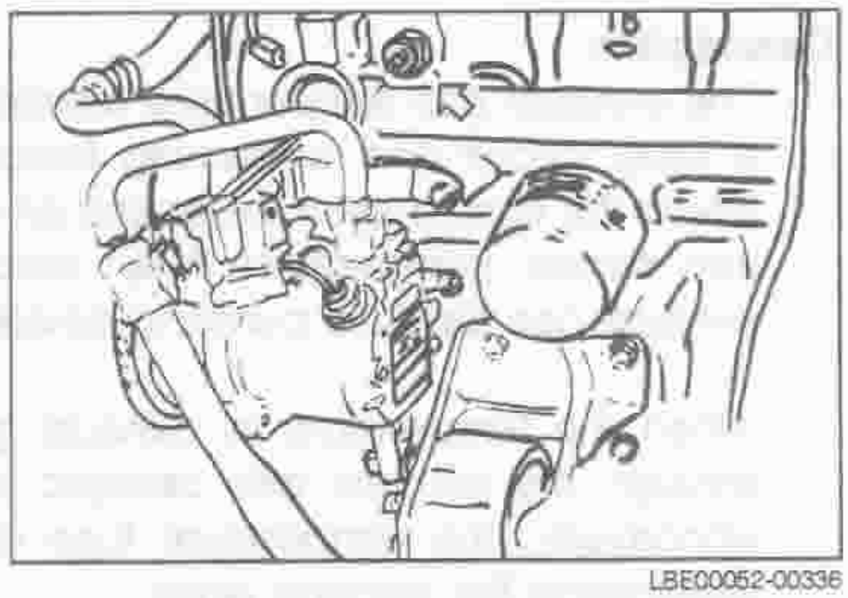
The oil pressure warning circuit consists of an oil pressure switch provided at the discharge port of the lubrication oil pump of the engine and a warning lamp located inside the combination meter.
When the ignition switch is turned ON and the engine has not started yet, the pressure of the engine lubrication oil is lower than the specified oil pressure. Therefore, the oil pressure switch is turned ON, thereby lighting the warning lamp. Then, when the pressure of the lubricating oil rises above the specified pressure level after the engine has started, the oil pressure switch is turned OFF. As a result, the warning lamp goes out.



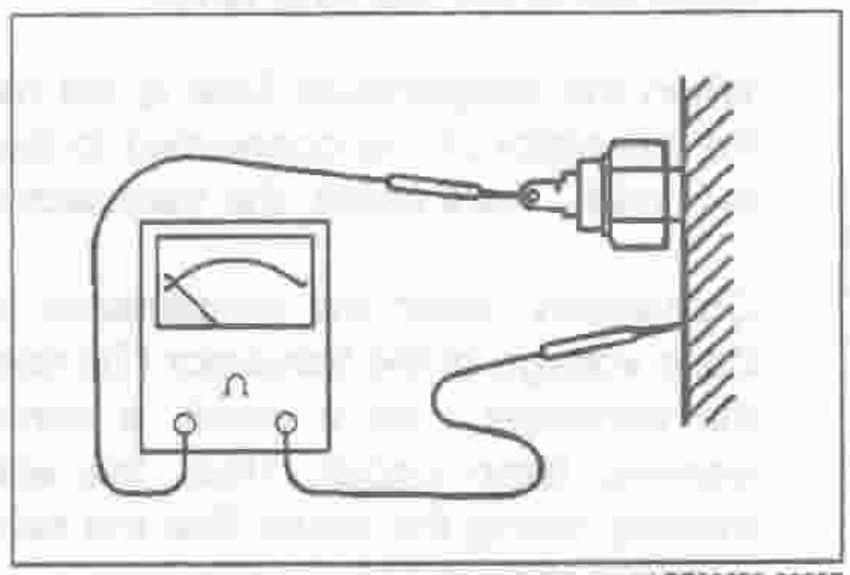
LBE00051-00335

In-vehicle inspection

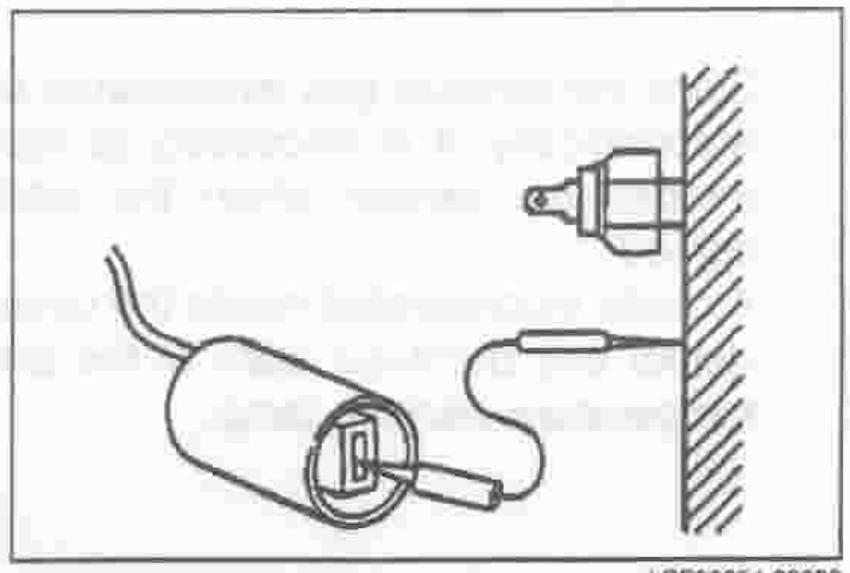
1. Disconnect the connector of the oil pressure warning switch.


LBE00052-00336

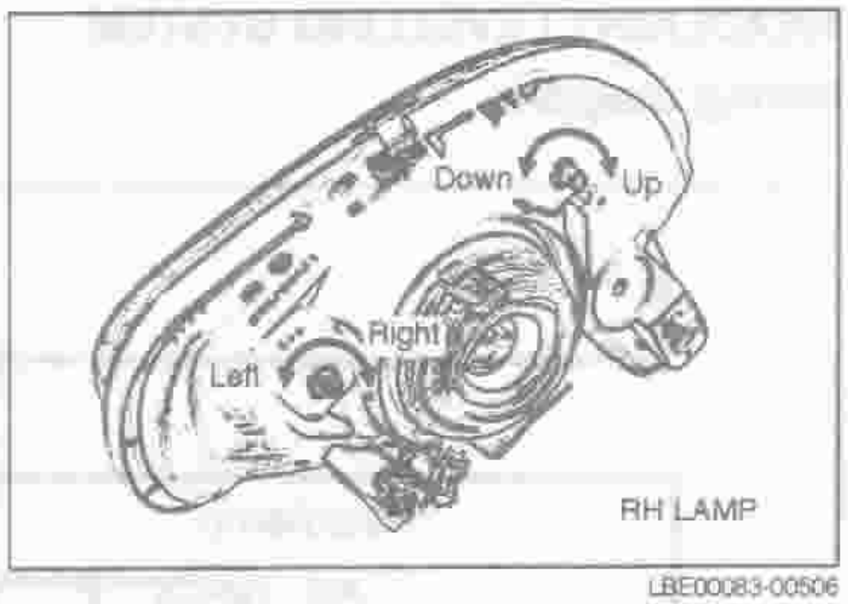
2. Use an ohmmeter to measure the oil pressure switch for continuity.
3. If no continuity exsists between the terminal and engine ground, replace the oil pressure switch.
4. Start the engine. Then, ensure that the no continuity exists between the terminal and ground.
   If not, replace the oil pressure switch.


LBE00053-00337

5. Use a test wire to connect the wire harness and engine ground. Then, ensure that the oil warning lamp in the combination meter goes on.
6. If not, Check the wire harness and replace the wire harness as required.

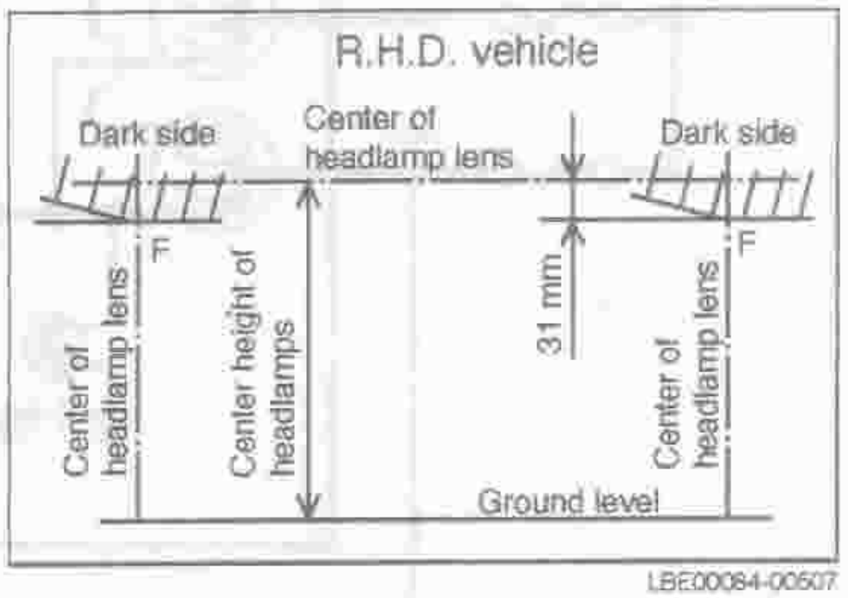

LBE00054-00338

6. Setting of reference points on screen
   a. Measure the center height "H" of the headlamps. (At 3 m from the lamp)
      Draw an adjustment line on the screen at ;
      - L.H.D vehicle ; 31 mm below the center height "H."
      - R.H.D vehicle ; 31 mm below the center height "H."
      - Vehicle with headlamp levelling system ; 36 mm below the center height "H."



LBE00083-00506

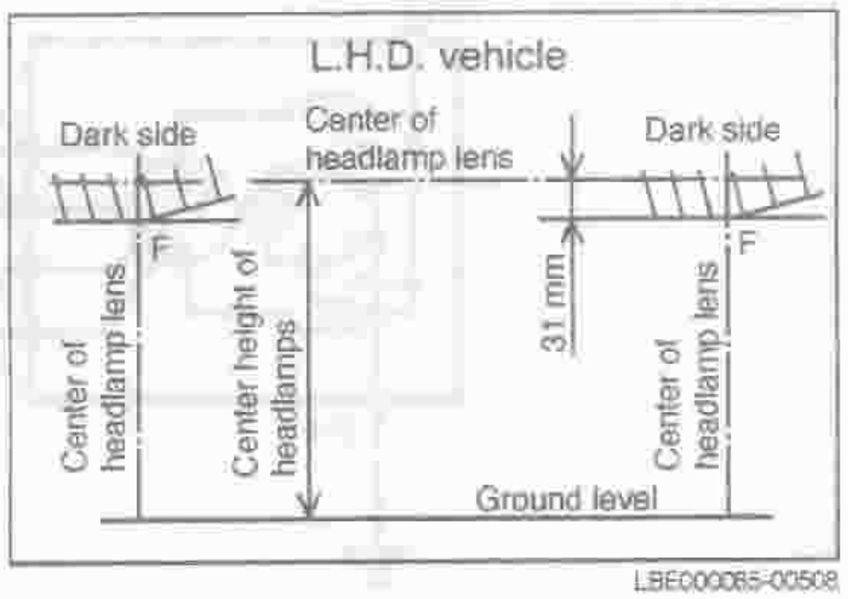
   b. Draw a vertical straight line on the screen at each center of the headlamps on both right and left sides.
      Thus, establish each intersection "F" made by the vertical center line and the adjustment line.



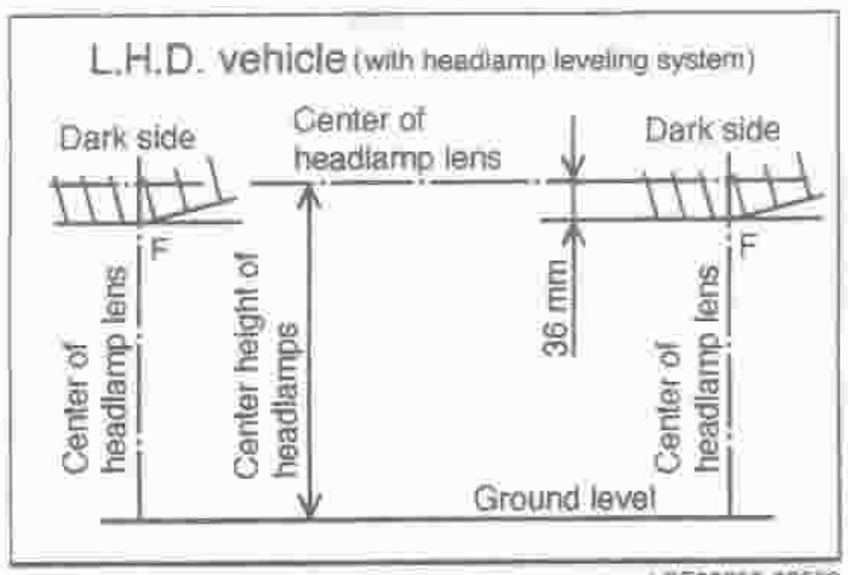
LBE00084-00507

   c. Ensure that the photometric axis moves down ward when the headlamp levelling switch is turned 0–1–2–3.

Position	Stroke
0 – 1	40 mm
1 – 2	43 mm
2 – 3	43 mm

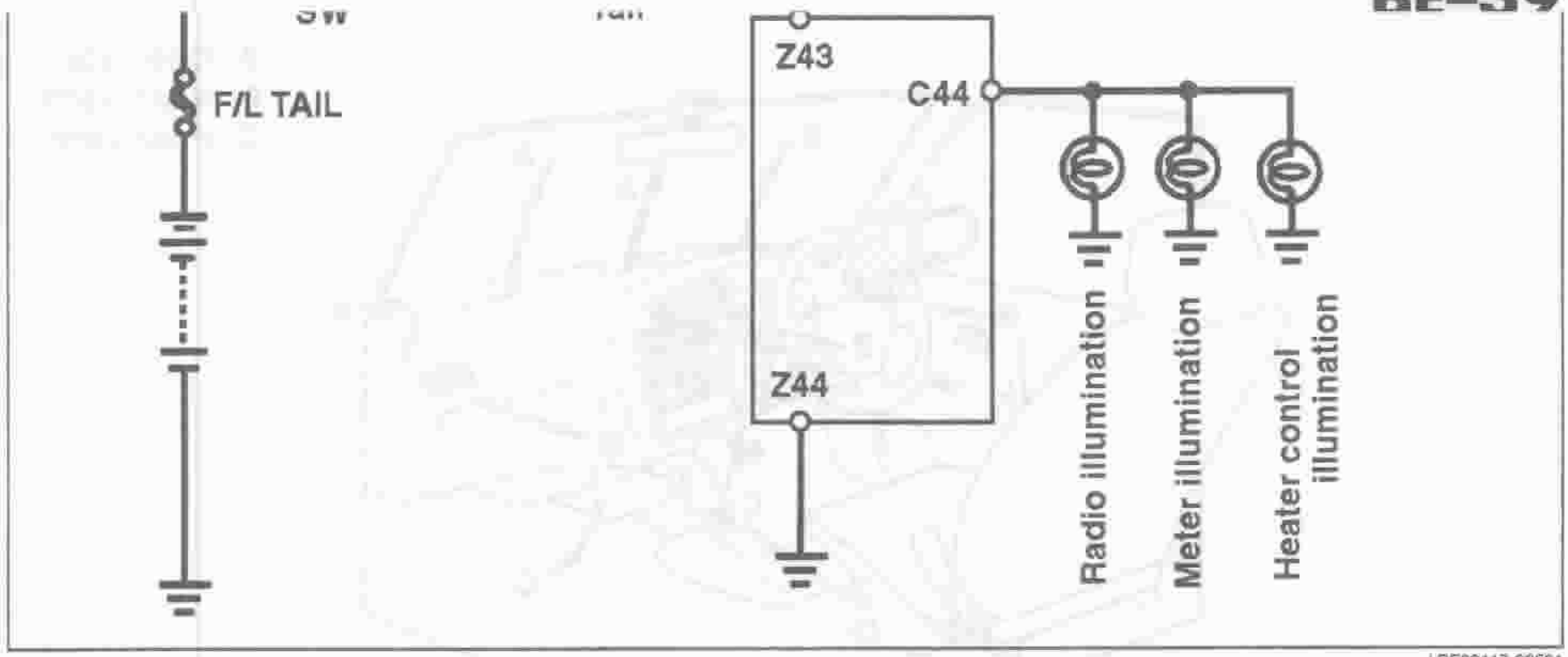


LBE00085-00508



LBE00000-00509

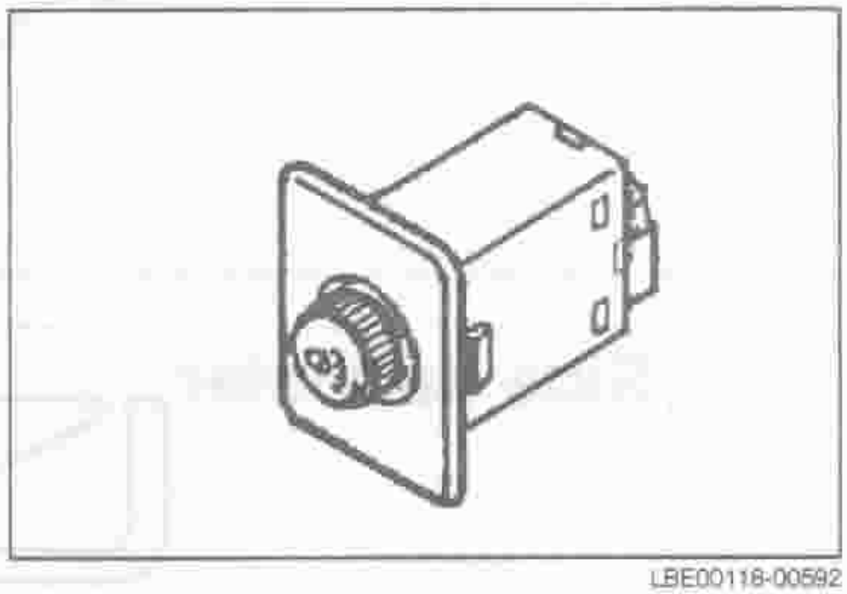
NOTE:
- The headlamp levelling system functions only when the headlamp switch is turned ON.



LBE00117-00591

Removal of switch

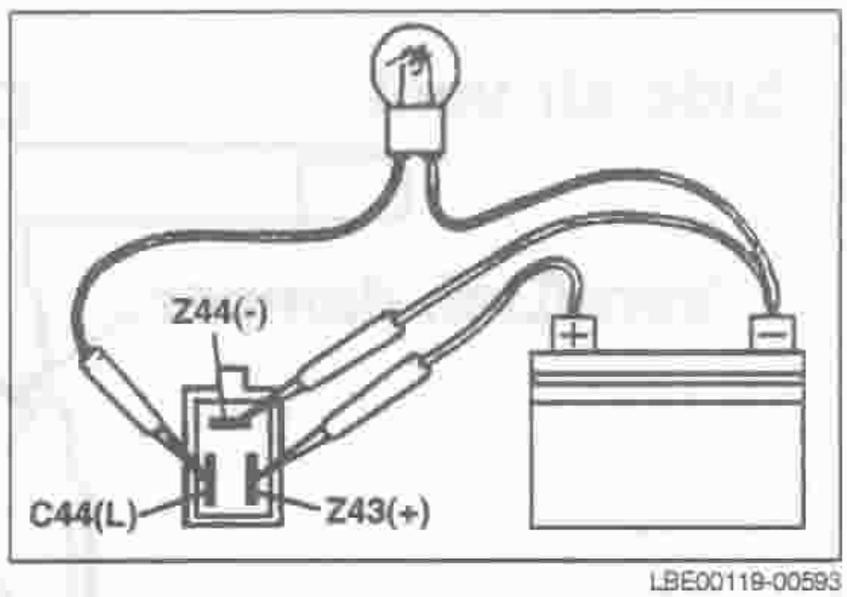
1. Remove the rheostat control switch by pushing it with your hingers at the back side of the instrument panel.
2. Disconnect the connector of the wire harness.
3. Remove the switch from the instrument panel.



LBE00118-00592

In-vehicle inspection

1. Connect the battery (+) to the Z43 terminal and a 3.4 wattage test bulb (+) to the C44 terminal.
   Connect the battery (–) to the Z44 terminal and test bulb (–) to the Z44 terminal.
2. Ensure that the luminous intensity of the test lamp varies when the rheostat control dial is turned slowly.
   If not, replace the control switch.

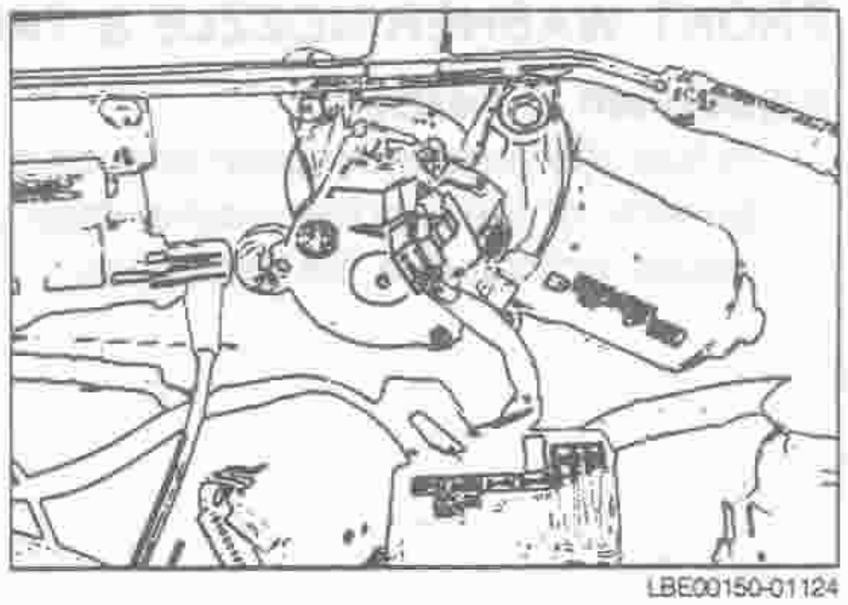


LBE00119-00593

Installation

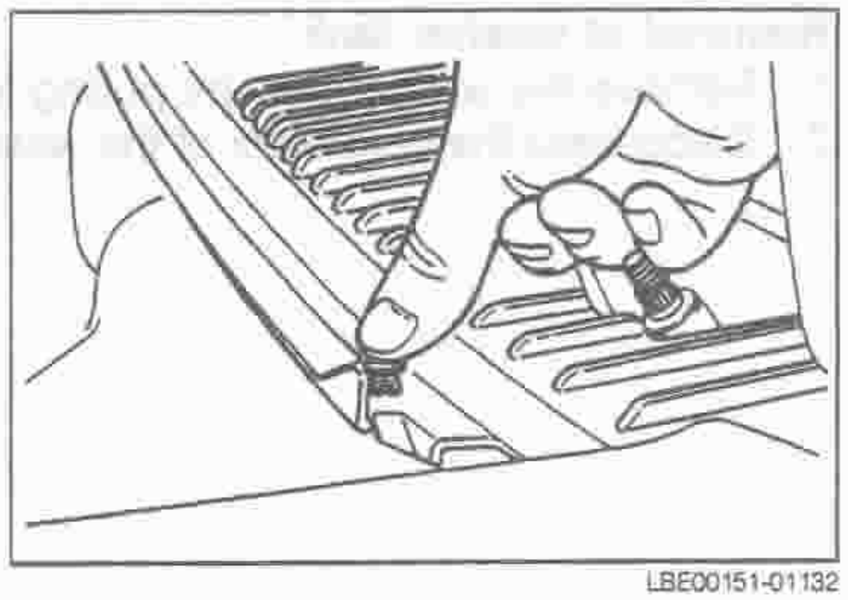
1. Install the wiper link assembly.
2. Installation of wiper motor
   (1) Connect the wiper link to the wiper motor.
   (2) Install the wiper motor to the dash panel with the bolts.
   Tightening Torque: 7 - 10 N·m

   (3) Connect the connector.



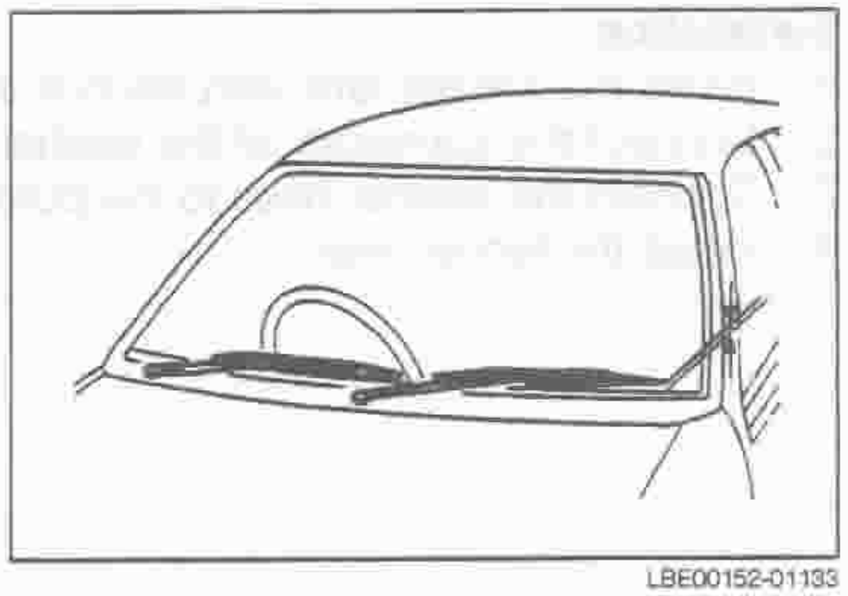
LBE00150-01124

3. Install the cowl top ventilator louver.



LBE00151-01132

4. Installation of wiper arm
   (1) Operate the wiper motor and set it to the automatic stopping position.
   (2) Set the wiper arm to the position, as specified values.
   (3) Tighten the set screw.
   Tightening Torque: 15 - 25 N·m



LBE00152-01133

DAIHATSU

L500, L501

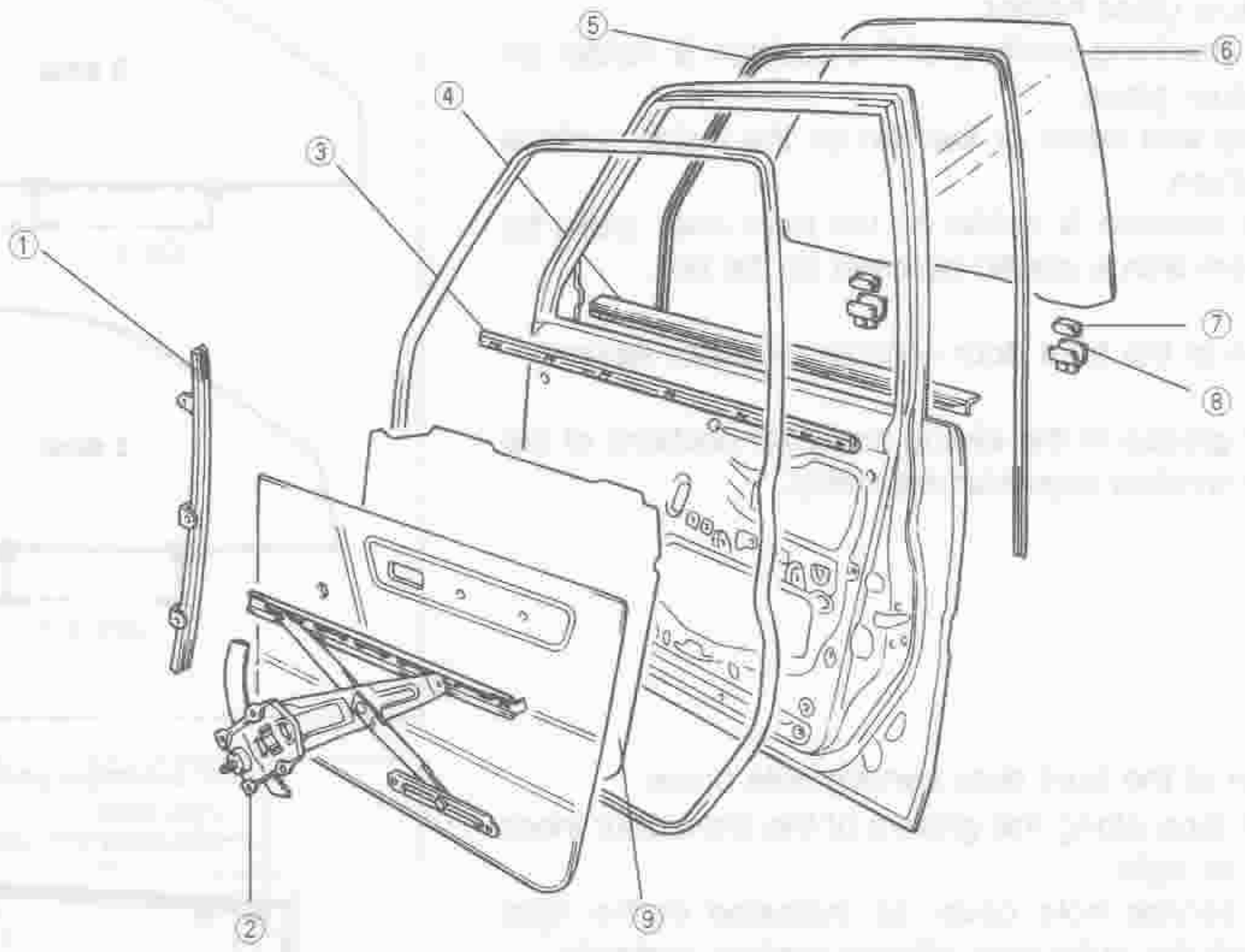
BODY

LBO00001-00000

NO. 9198-LE

FRONT DOOR GLASS & REGULATOR

COMPONENTS

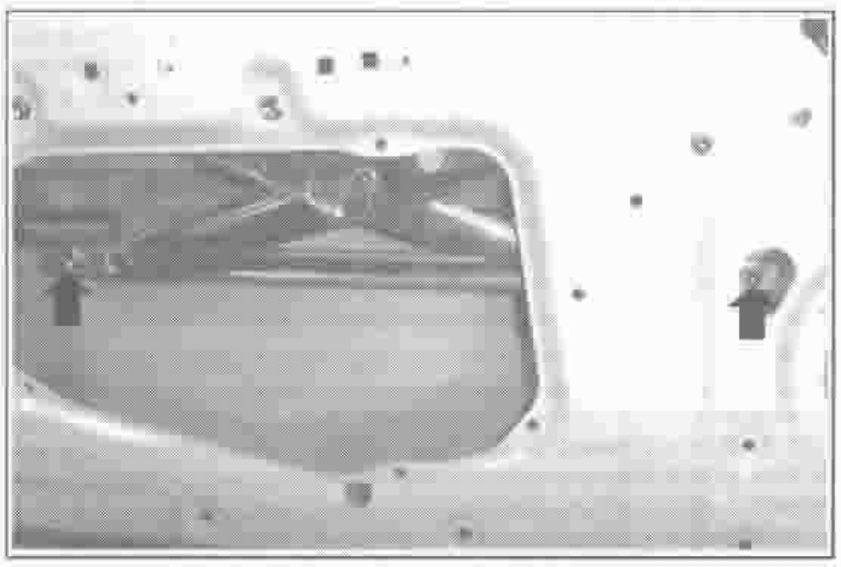


① Front door front lower frame
② Front door window regulator assembly
③ Front door glass inner weatherstrip
④ Front door glass outer weatherstrip
⑤ Front door glass run
⑥ Front door glass
⑦ Door glass holder cushion
⑧ Door glass holder
⑨ Front door service hole cover

LBO00031-00024

REMOVAL

1. Remove the front door trim. (See page BO-9)
2. Front door speaker. (Moulded trim)
3. Remove the front door service hole cover.
4. Let down the front door glass to the position indicated in the right figure.
   Remove attaching bolts. Remove the front door glass.



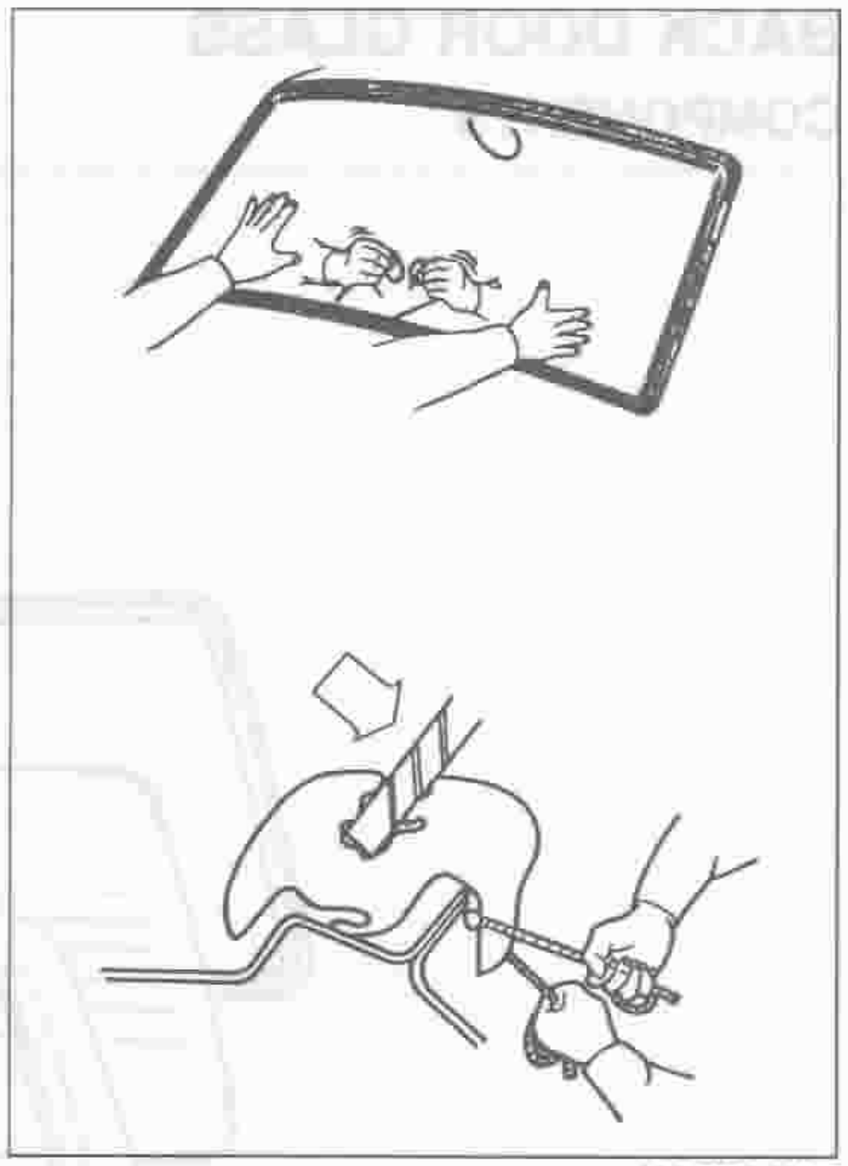
LBO00032-00025

5. Remove each component in the order following named.
   ① Front door window regulator
   ② Front door glass outer weatherstrip
   ③ Front door glass inner weatherstrip
   (Except the vehicle equipped with moulded trim)
   ④ Front door glass run
   ⑤ Front door front lower frame

LBO00033-00000

(3) Fit the windshield glass in such a way that the center part of the weatherstrip section may be fitted into the body flange.
(4) Hold the one end of the rope that is suspending in the vehicle interior. Pull the rope in such an angle that allows the weatherstrip to cross over the flange. While so doing, pound the surface of the glass at points adjacent to the weatherstrip using one's palm from the outside of the vehicle in order that the windshield may be installed into position.
(5) Furthermore, pound the surface of the glass using one's palm from the outside of the vehicle so that the windshield may be settled in place.

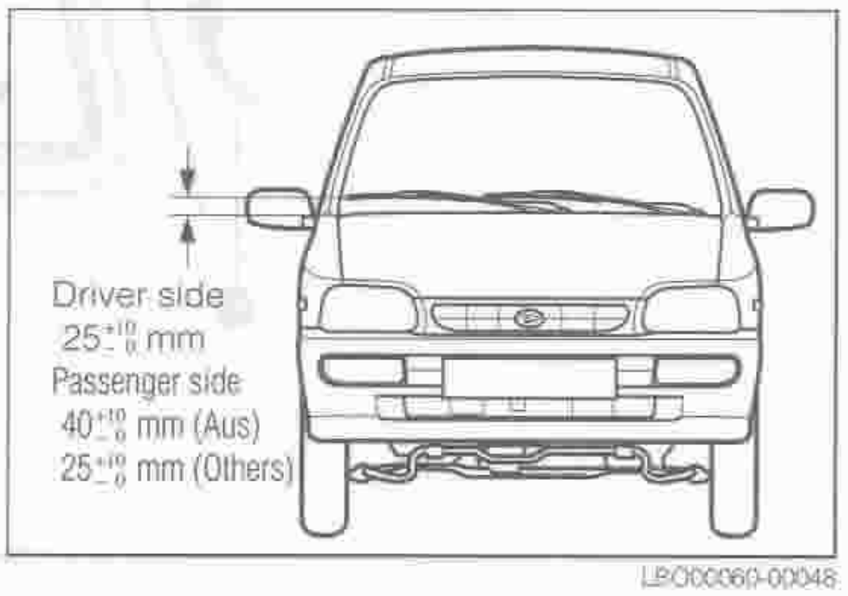
3. Install the inner rear-view mirror assembly with two bolts.
4. Install the cowl top ventilator louver and hood-to-cowl top weatherstrip.



LBO00059-00047

5. Installation of windshield wiper arm assembly
   Tightening Torque: 14.7 - 25.5 N·m (1.5 - 2.6 kgf-m, 10.8 - 18.8 ft-lb)

(1) Operate the wiper motor, until it assumes the automatic stopping position.
(2) Set the wiper arms at the positions indicated in the right figure.
(3) Tighten the nut and attach the front wiper arm cover.



LBO00060-00048

QUARTER WINDOW GLASS

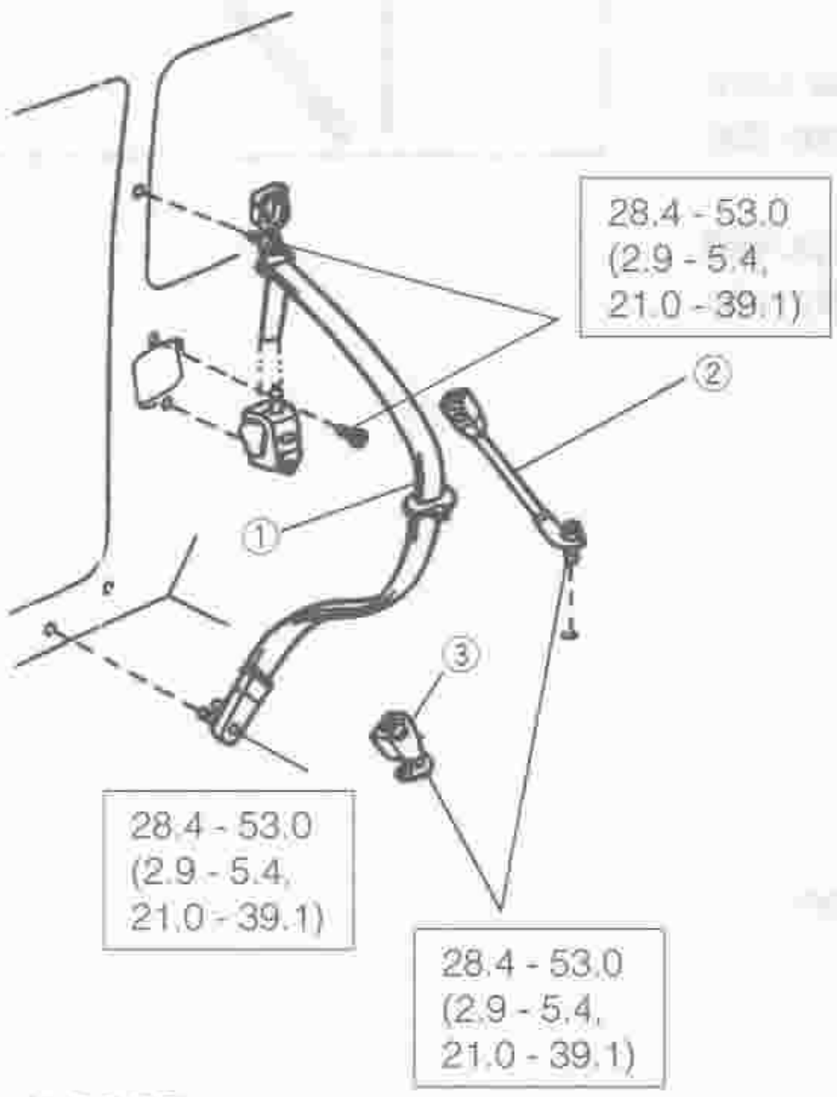
Remove and install the quarter window glass in the same procedure as with the front window glass.

LBO00061-00000

FRONT SEAT BELT

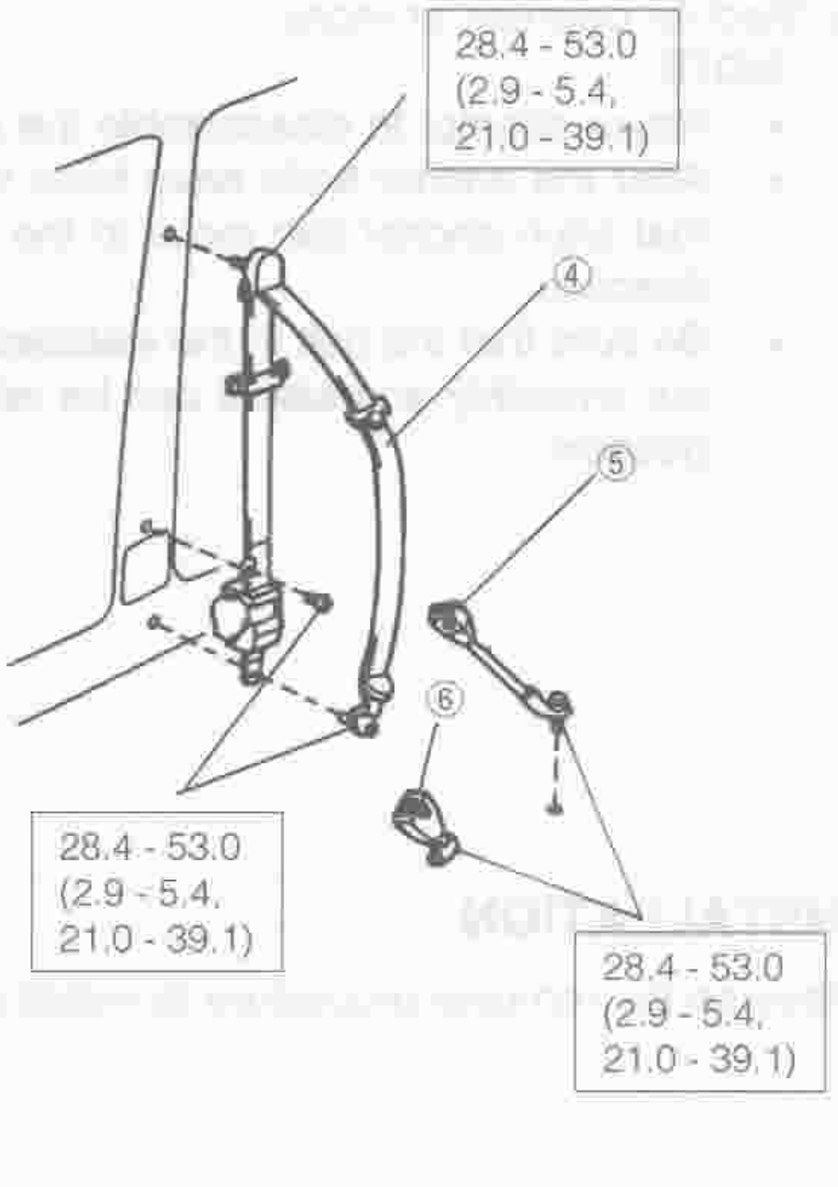
COMPONENTS

□ : Tightening torque
Unit : N·m (kgf-m, ft-lb)



(3 DOOR)

① Outer seat belt assembly
② Inner seat belt assembly
③ Inner seat belt assembly (European spec)



(5 DOOR)

④ Outer seat belt assembly
⑤ Inner seat belt assembly
⑥ Inner seat belt assembly (European spec)

LBO00088-00068

REMOVAL (3 DOOR)

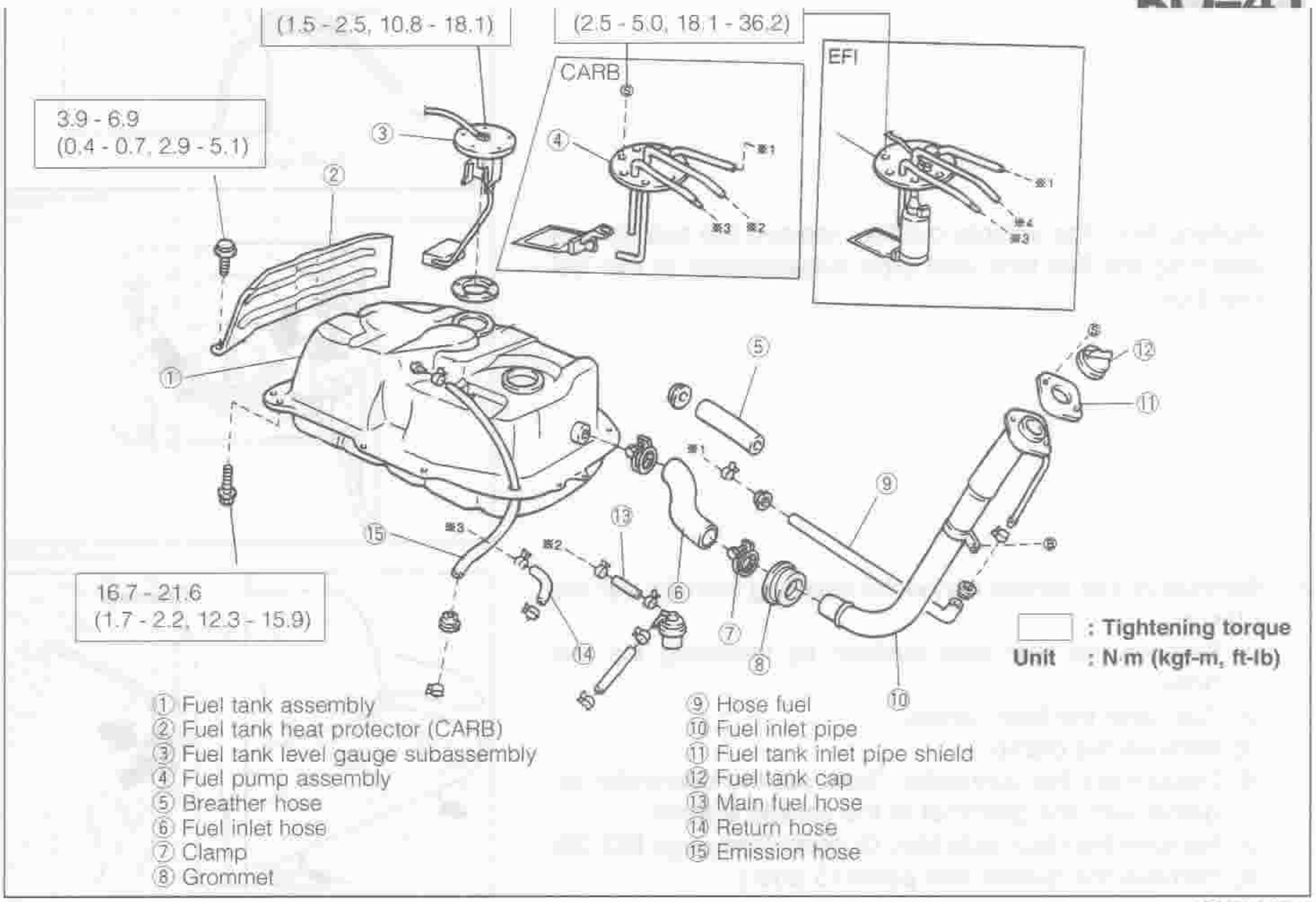
Remove each component in the order following named.
① Quarter trim panel (See page BO–26)
② Front seat inner seat belt assembly
③ Front seat outer seat belt assembly

LBO00089-00000

REMOVAL (5 DOOR)

Remove each component in the order following named.
① Center pillar lower garnish (See page BO–26)
② Front seat inner seat belt assembly
③ Front seat outer seat belt assembly

LBO00090-00000



LBO000115-00082

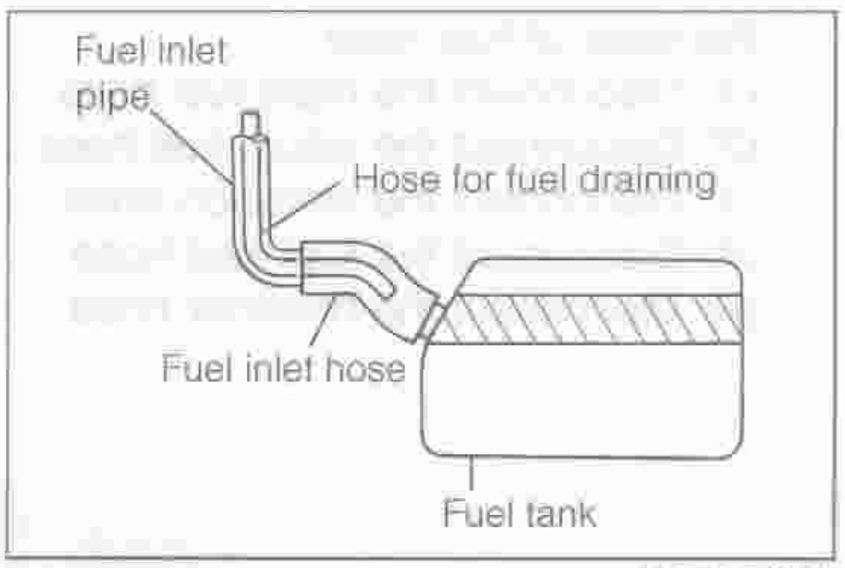
WARNING:

- Never work on the fuel system in proximity of a fire.
- Never allow any fire to be brought near the working site.
- When emptying the fuel, do not drain the fuel by inserting a hose or the like into the fuel inlet.

LBO000116-00000

REMOVAL

1. Jack up the vehicle and support it with safety stands.
2. Drain the fuel from the fuel tank.
   (1) When draining the fuel at the top of the tank, insert the hose for fuel draining into the fuel inlet pipe to drain the fuel.

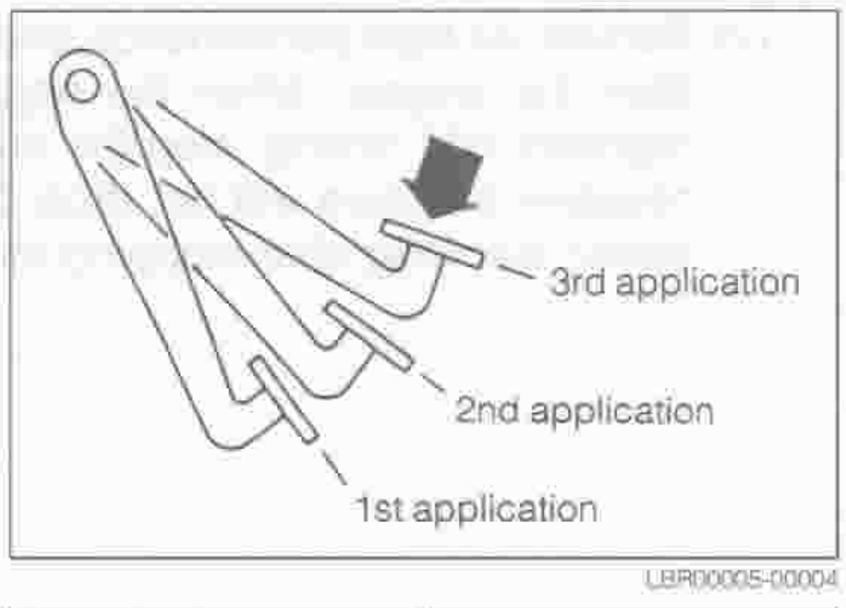


LBO000117-00083

OPERATIONAL TEST OF BRAKE BOOSTER

1. SIMPLE CHECK

(1) Booster air-tight performance check
Start the engine. After running the engine for one to two minutes, stop the engine. Depress the brake pedal several times, applying a force used during normal brake applications. If the position of the brake pedal rises progressively at the second and third applications, it indicates the brake booster is functioning properly.

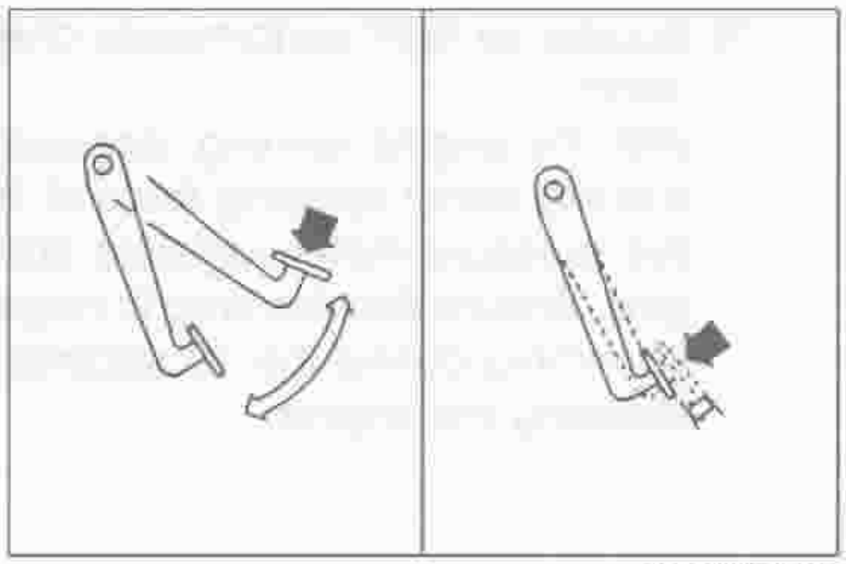


LBR00005-00004

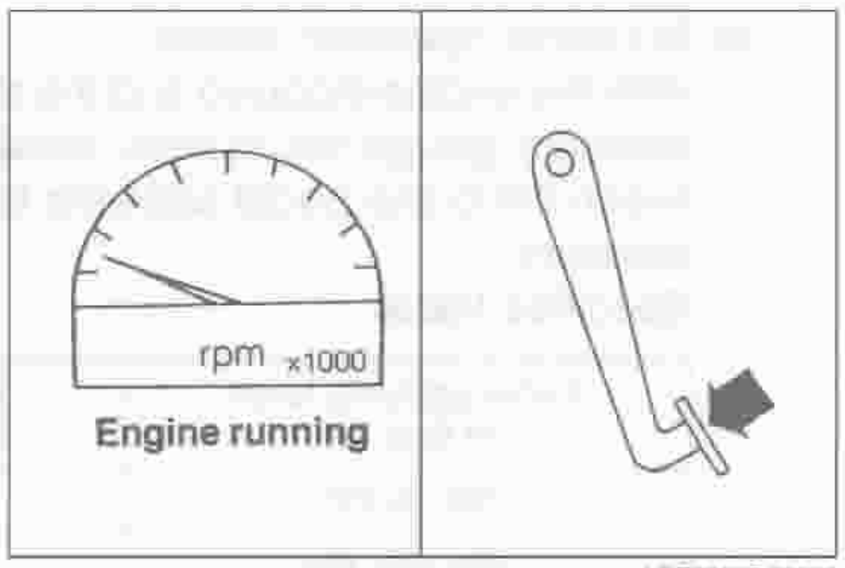
NOTE:

- Intervals between the first and second applications as well as between the second and third applications should be at least five seconds.

(2) Booster operation check
With the engine stopped, depress the brake pedal several times, applying the same force at each application. Ensure that the brake pedal height will not vary at each application. Then, start the engine while depressing the brake pedal. If the brake pedal moves in slightly, it indicates the brake booster is functioning properly.


LBR00006-00005

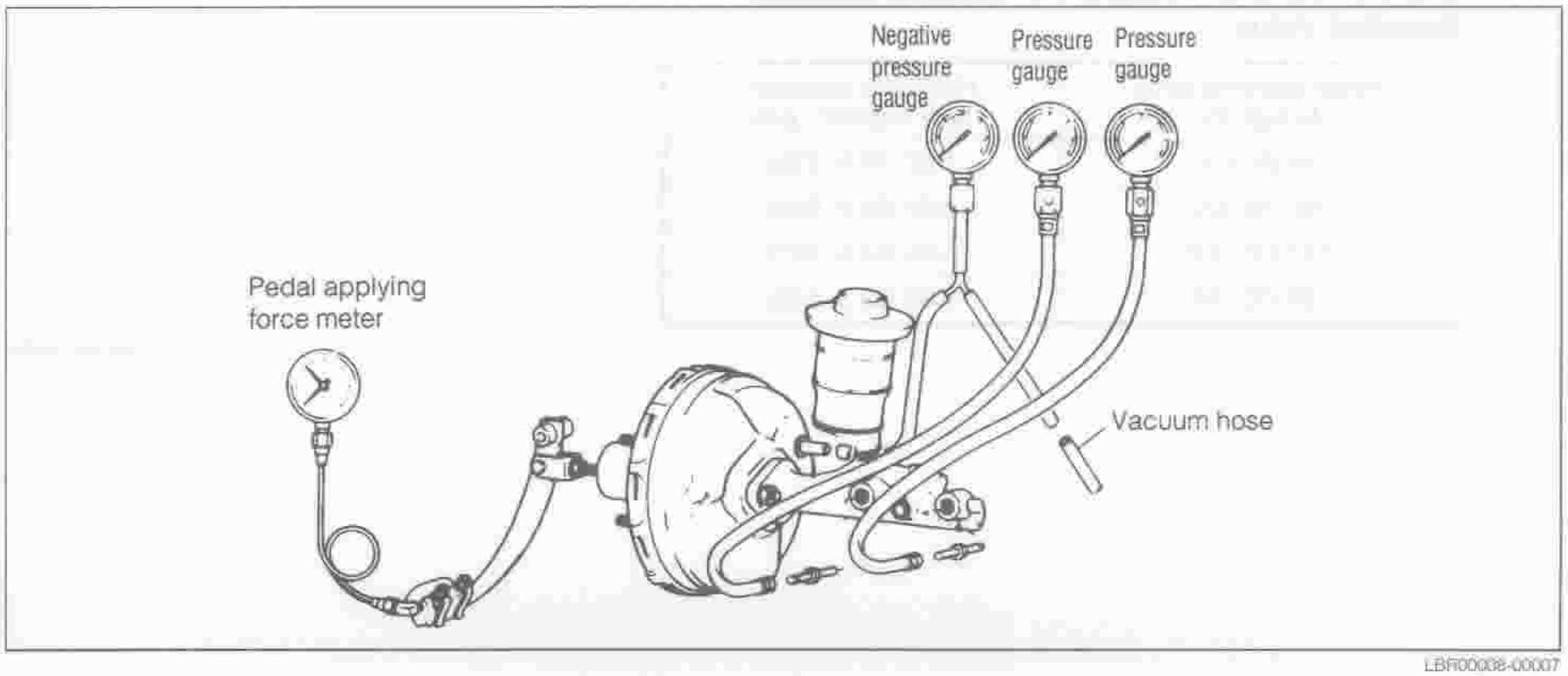
(3) Booster air-tight performance check under loaded condition
With the engine running, depress the brake pedal. While maintaining this condition, stop the engine. If the brake pedal height remains at the same level at least 30 seconds, it indicates the brake booster is functioning properly.



LBR00007-00006

2. CHECK EMPLOYING PORTABLE BRAKE BOOSTER TESTER

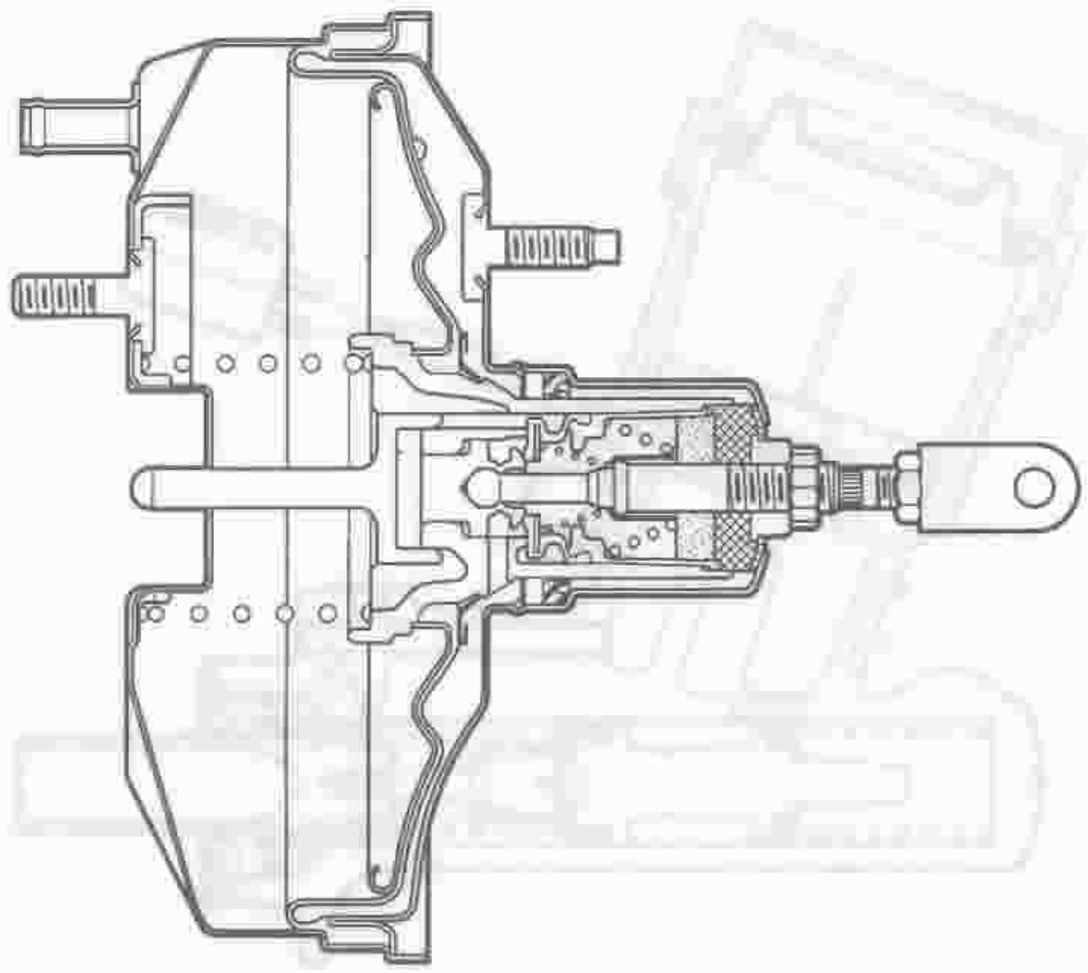
(1) Connection of portable brake booster tester
Connect a brake booster tester as indicated in the figure. After performing air bleeding, carry out each test.



LBR00008-00007

BRAKE BOOSTER

SECTIONAL VIEW



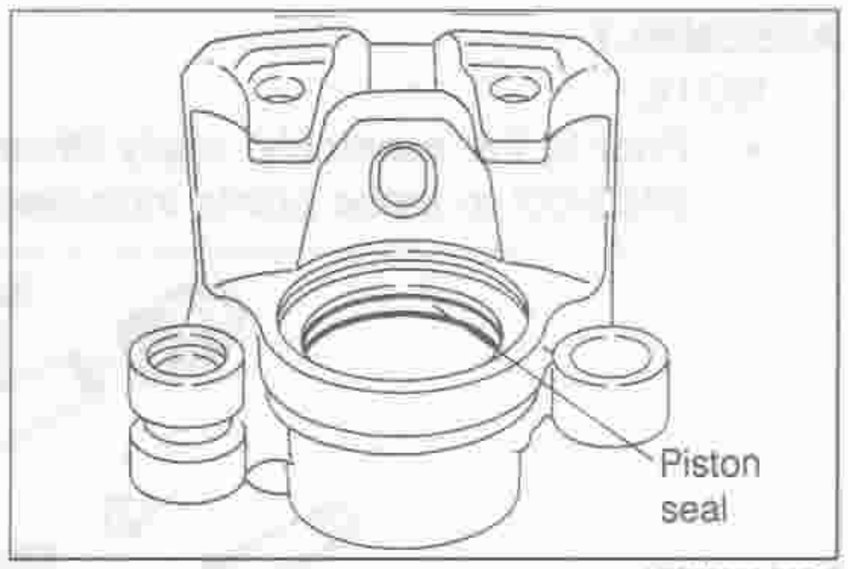
LBR00033-00028

NOTE:

- The brake booster is of a non-disassembling type.
  Never attempt to disassembly the brake booster.

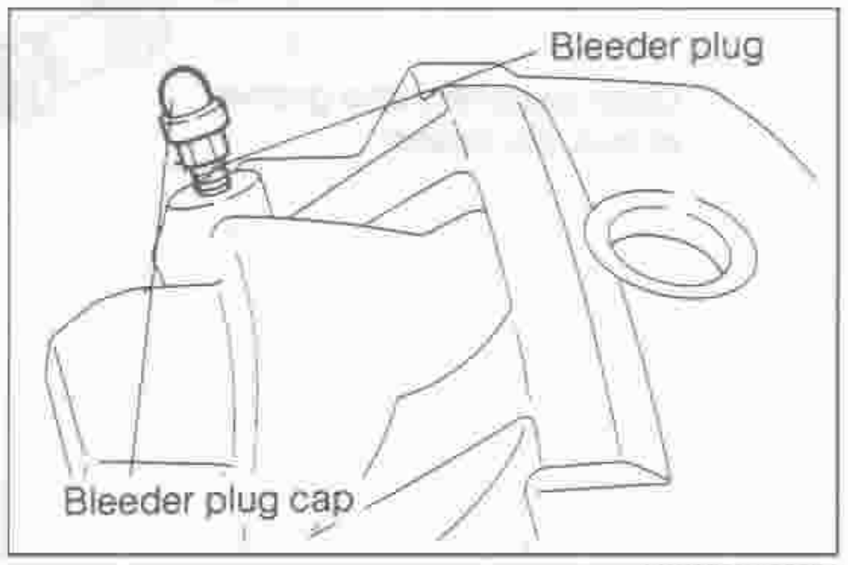
LBR00034-00000

7. Remove the piston seal from the disc brake caliper.



LBR00062-00053

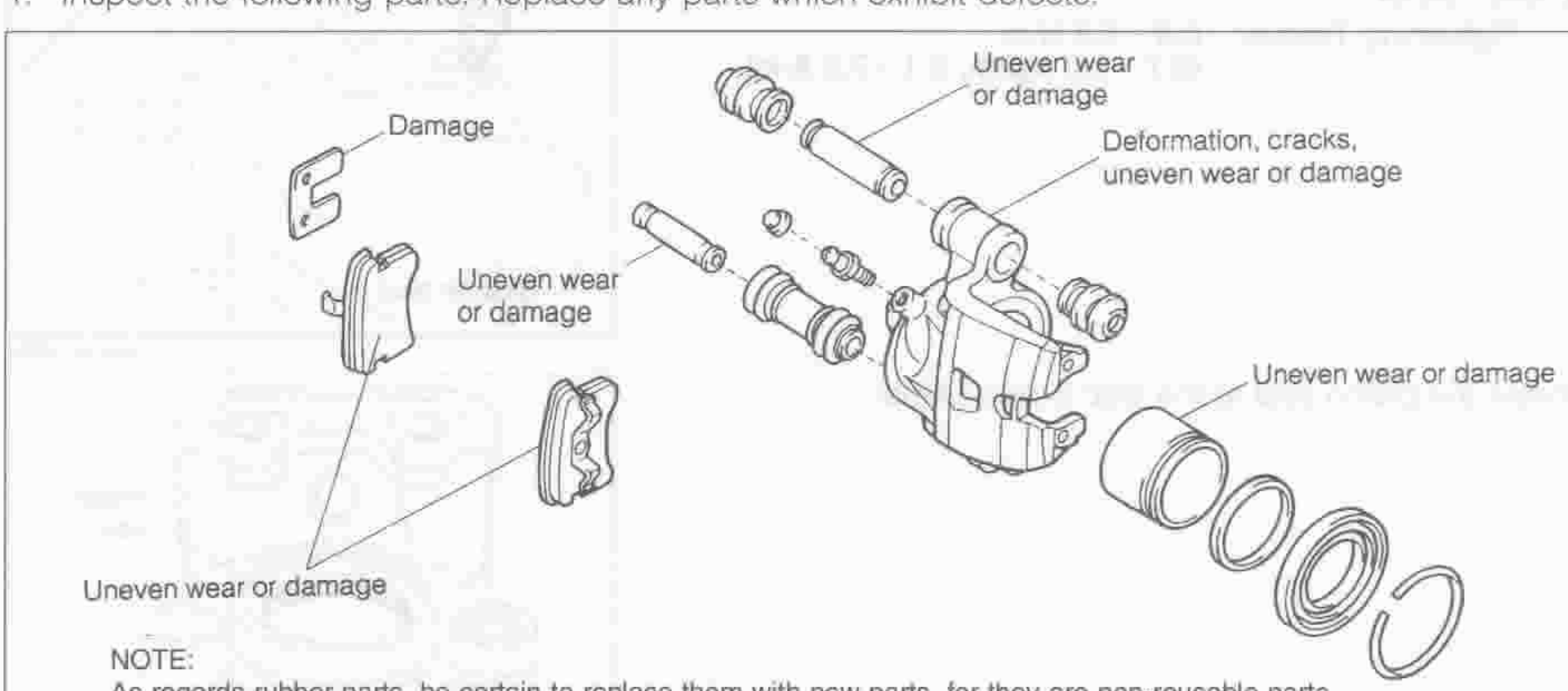
8. Remove the bleeder plug cap and bleeder plug from the disc brake caliper.



LBR00063-00054

INSPECTION

1. Inspect the following parts. Replace any parts which exhibit defects.



NOTE:
As regards rubber parts, be certain to replace them with new parts, for they are non-reusable parts.

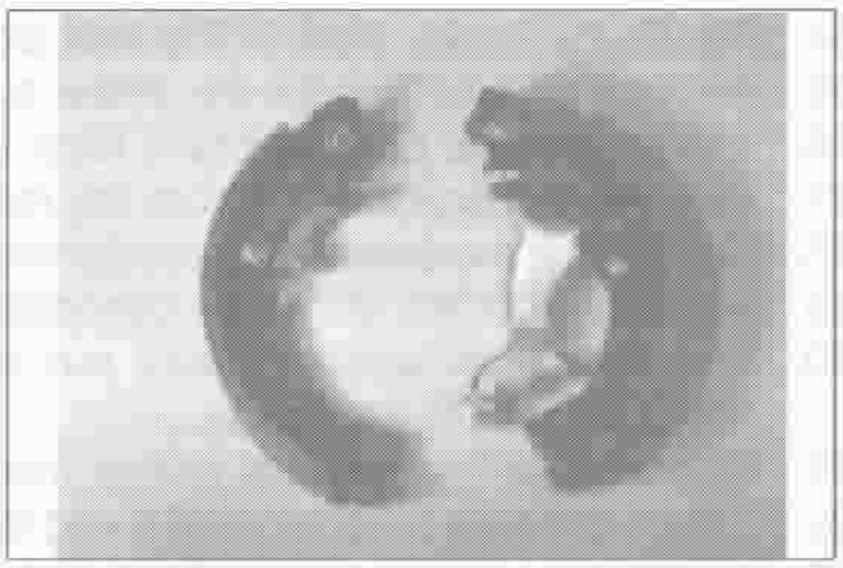
LBR00064-00055

2. Check the thickness of the pad lining.
   Specified Value: 9 mm (0.35 inch)
   Allowable Limit: 1 mm (0.039 inch)

   NOTE:
   - If the thickness of the pad lining is below the allowable limit, replace the pad.

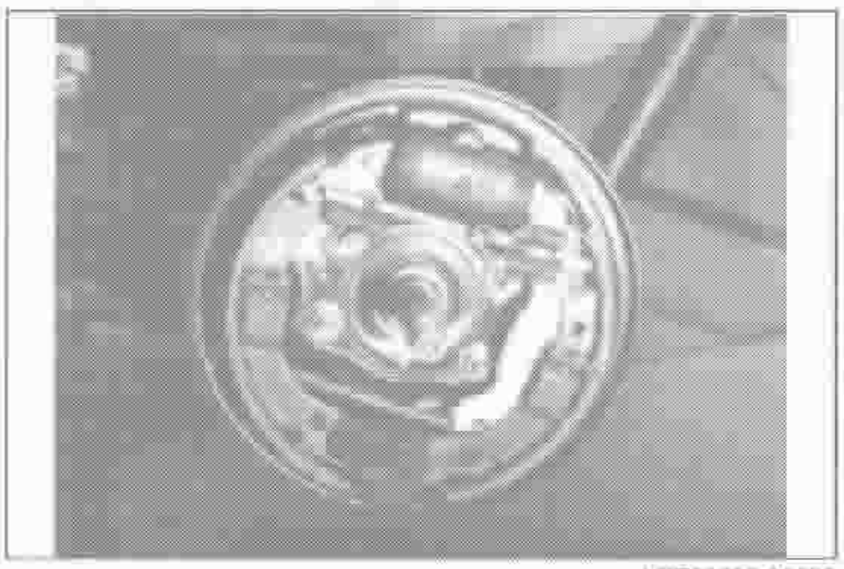
LBR00065-00000

9. Install the automatic adjust lever, latch, pin and tension spring No. 3 to the brake shoe assembly.
   Secure them with the E-ring.
10. Install the parking brake shoe lever to the brake shoe assembly. Secure them with the E-ring.


LRR00096-00087

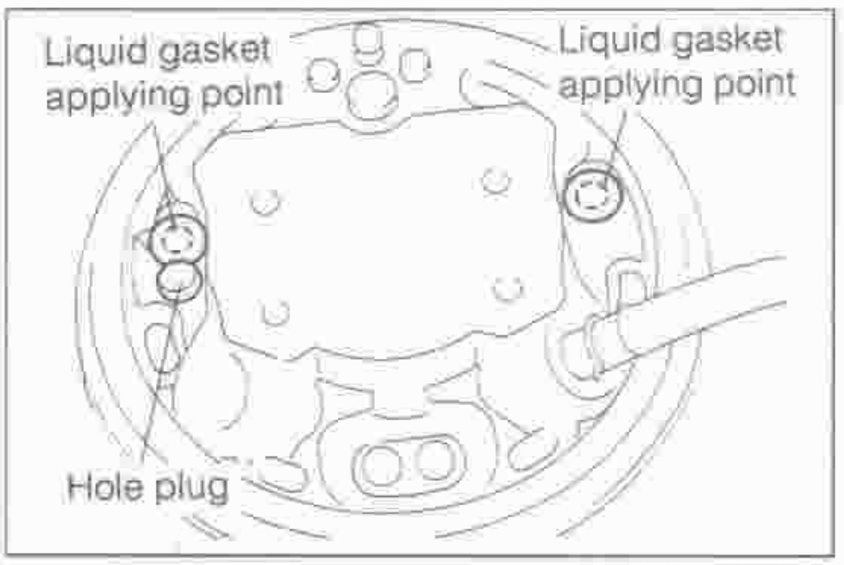
11. Install the brake shoe assembly, the brake shoe assembly with parking brake shoe lever and the parking brake shoe strut to the rear brake assembly.
    NOTE:
    - The parking brake cable should be connected to the parking brake shoe lever.

12. Secure the brake shoe assemblies by means of the shoe-hold-down springs and shoe hold-down spring pins.
13. Install the tension spring, tension spring No. 4 and tension spring No. 2 to the rear brake assembly.
    NOTE:
    - Both ends of the parking brake shoe strut should be attached securely to the installing section of the brake shoe assembly.


LSR00099-00088

NOTE:
1. Apply liquid gasket to around the attaching sections of the shoe hold-down spring pins, working from the back side of the rear brake backing plate.
   Designated Liquid Gasket: Daihatsu Bond No. 4 [999-6304-6323-00]

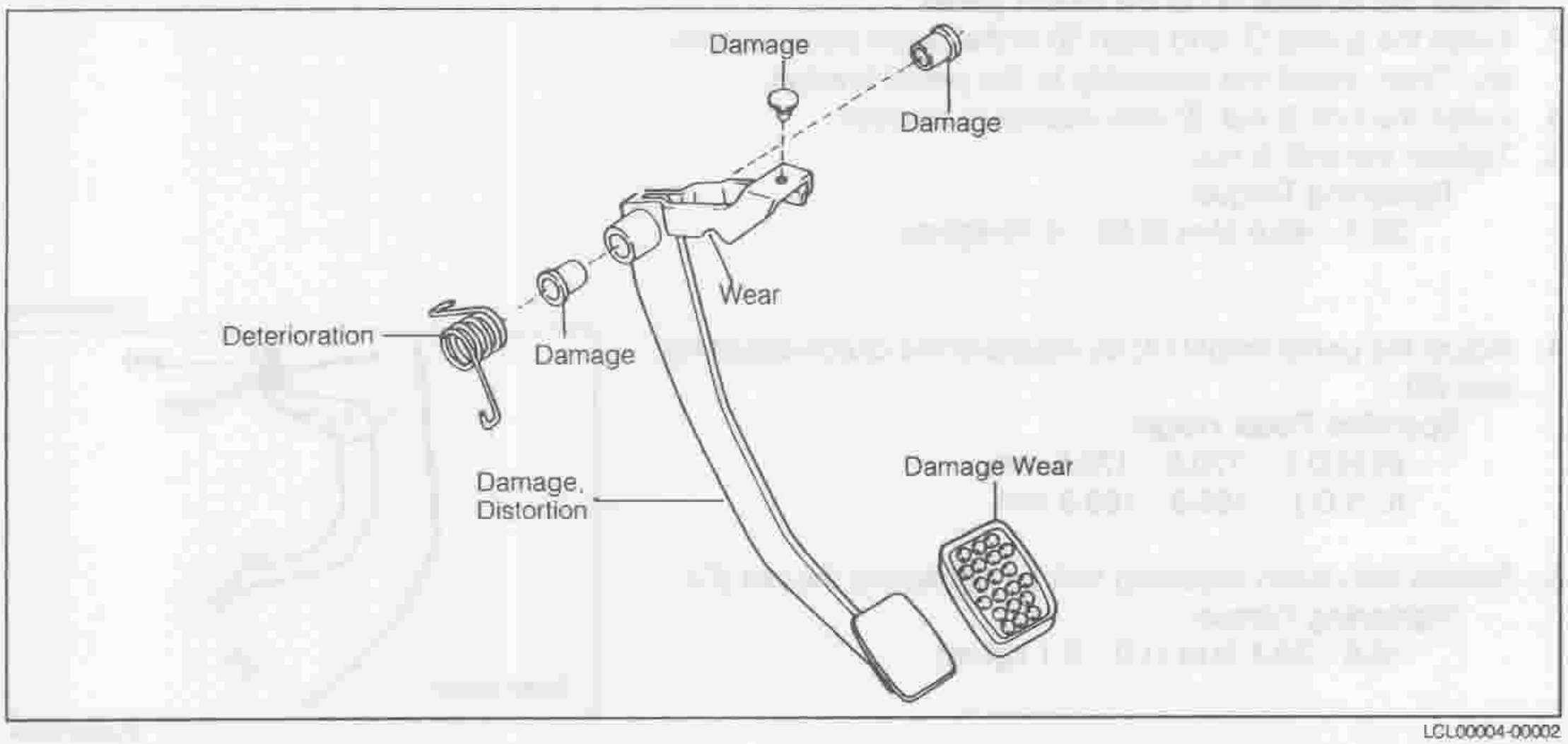
2. Install the hole plug to the backing plate.



LSR00100-00089

INSPECTION

Inspect the parts for wear or damage, and replace any defective parts.

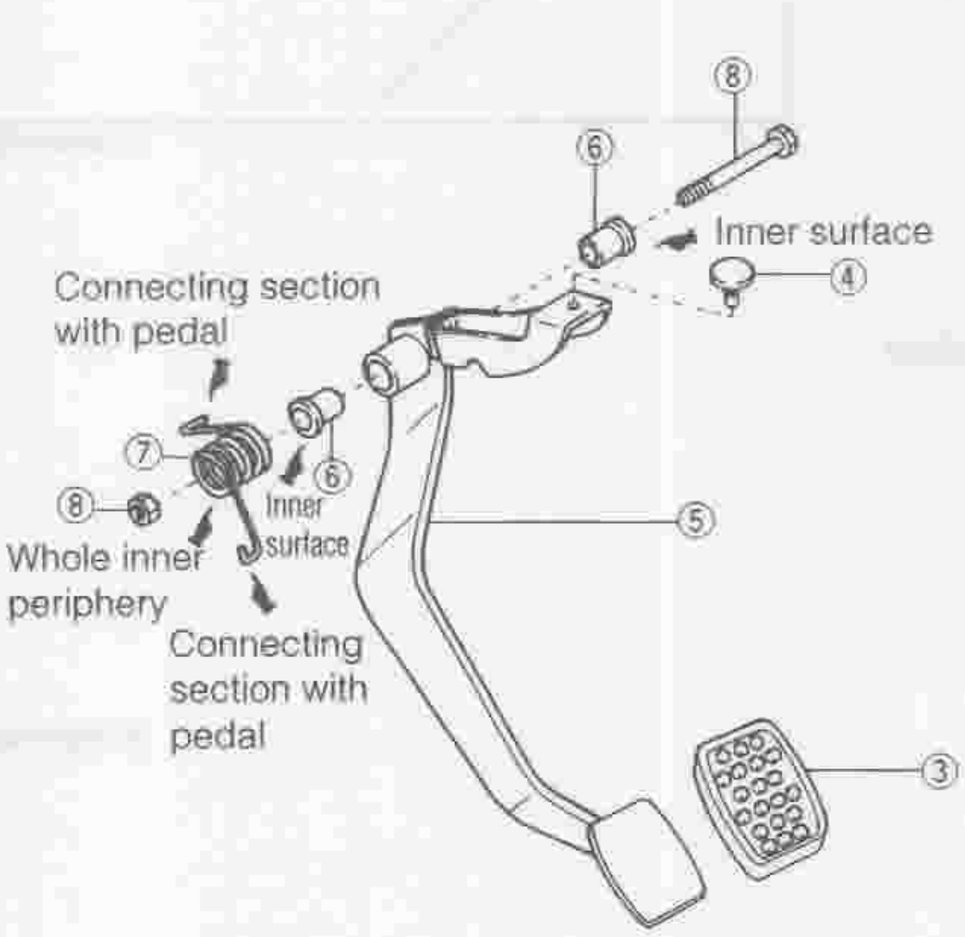


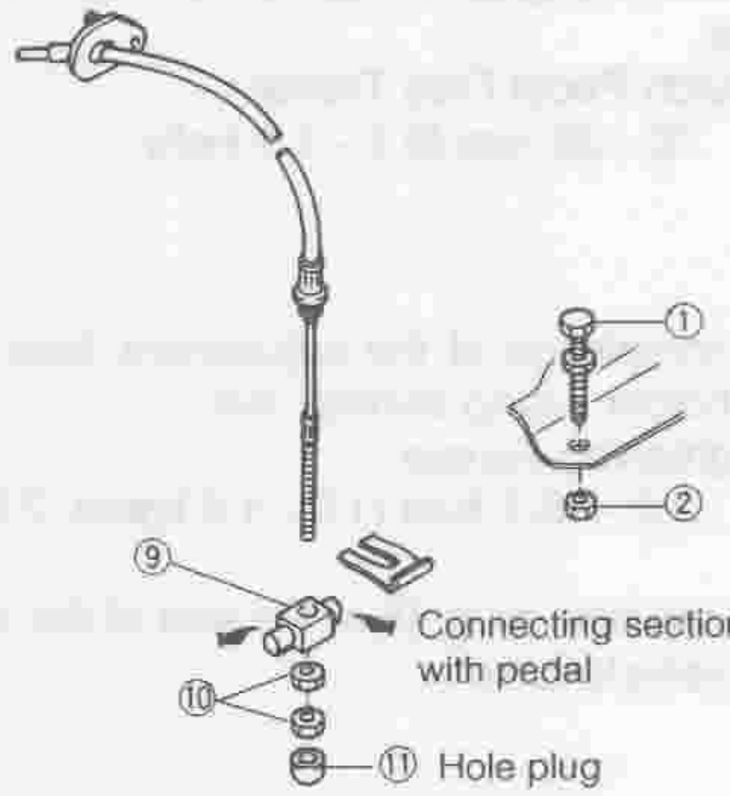
LCL00004-00002

INSTALLATION

NOTE:

- Apply lithium base multi-purpose grease (NLGI No. 2) or equivalent of DAIHATSU MP grease (999-2102-8483-000) to those points specified in the figure below during the assembling.



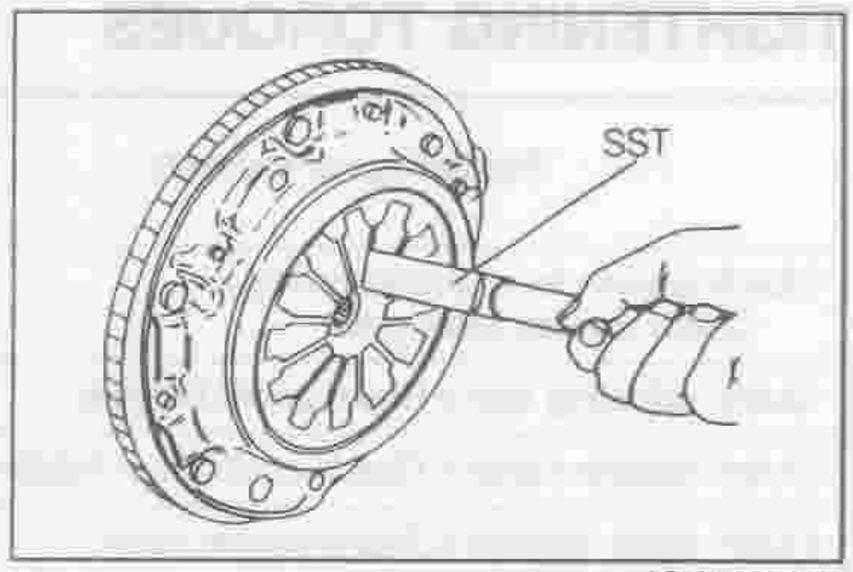


① Clutch adjusting bolt
② Nut
③ Clutch pedal pad
④ Cushion
⑤ Clutch pedal
⑥ Bush
⑦ Torsion spring
⑧ Bolt & Nut
⑨ Clutch cable inner holder
⑩ Nut
⑪ Hole pulg (LHD)

LCL00005-00003

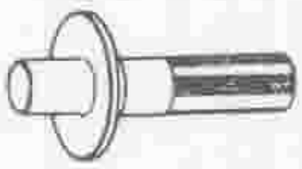
NOTE:

- If the variation in height at the diaphragm spring tips exceeds the allowable limit, adjust the variation in height, using the following SST.
  SST: 09301-00012-000



LCL00040-00034

SSTs

Figure	Part No.	Part name
	09301-00012-000	Clutch diaphragm spring aligner tool set
	09301-87701-000	Clutch guide tool
	09302-87701-000	Clutch diaphragm spring height No. 4 gauge

LCL00041-00035

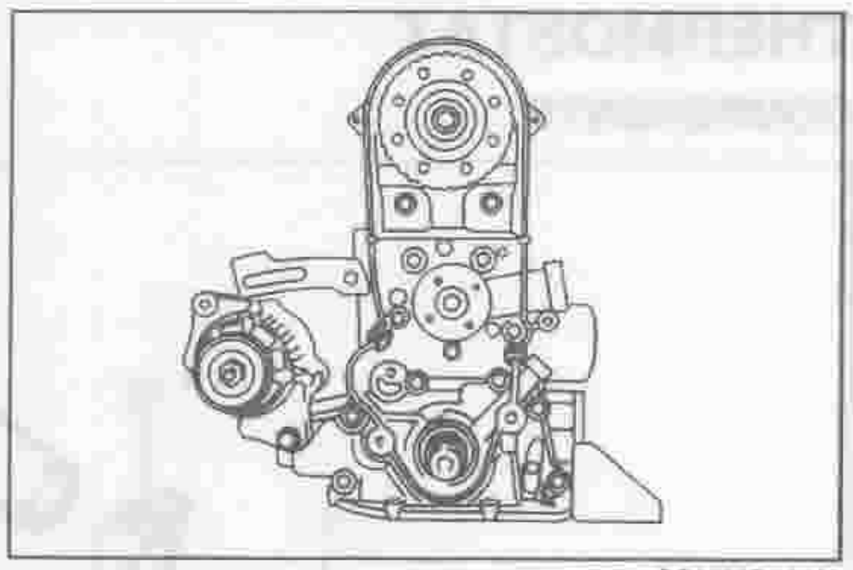
SERVICE SPECIFICATIONS

Unit: mm (inch)

Item			Specified value	Allowable limit	Remarks
Clutch disc	Rivet depth		—	0.3 (0.012)	Remaining lining
	Runout		—	1.0 (0.039)	
Clutch cover	Variation in height of diaphragm spring		—	0.7 (0.028)	
Clutch pedal	Height	RHD	157 - 163 (6.18 - 6.37)	—	
		LHD	156 - 161 (6.14 - 6.33)	—	
	Free travel		10 - 30 (0.4 - 1.2)	—	

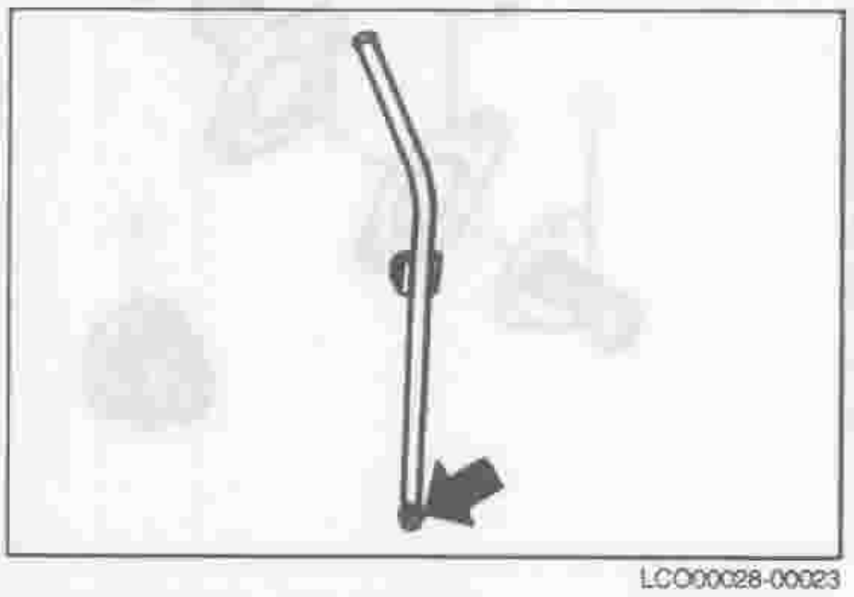
LCL00042-00000

8. Install the dust seal between oil pump and water pump.



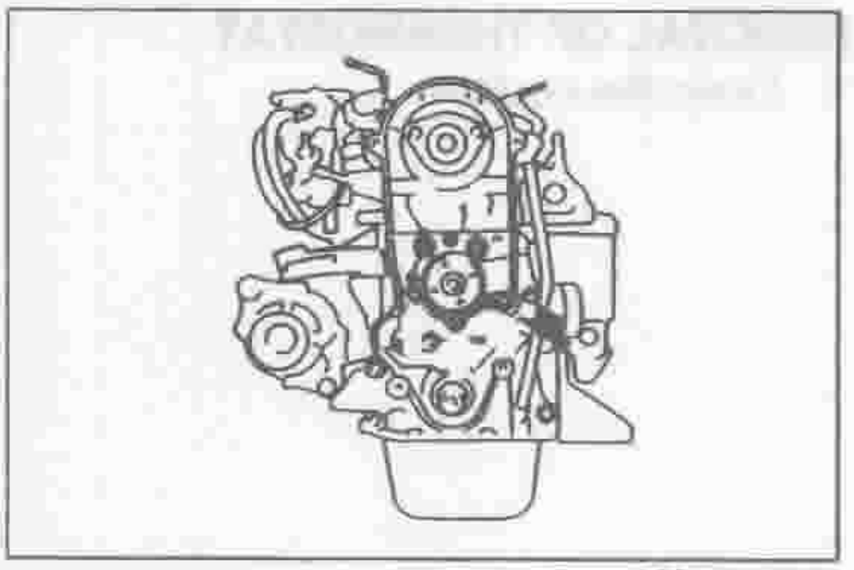
LCO00027-00022

9. Replace the O-ring of the oil level gauge guide.



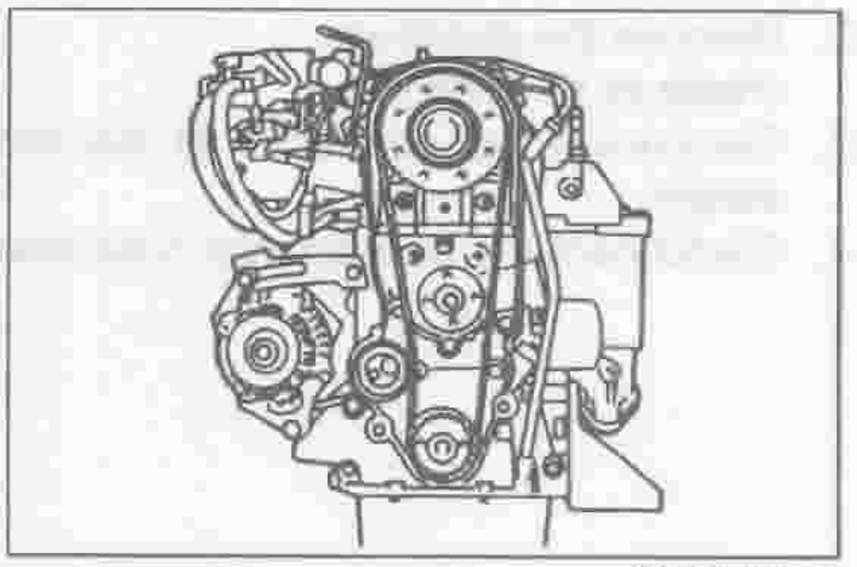
LCO00028-00023

10. Install the oil level gauge guide and tighten the attaching bolt.



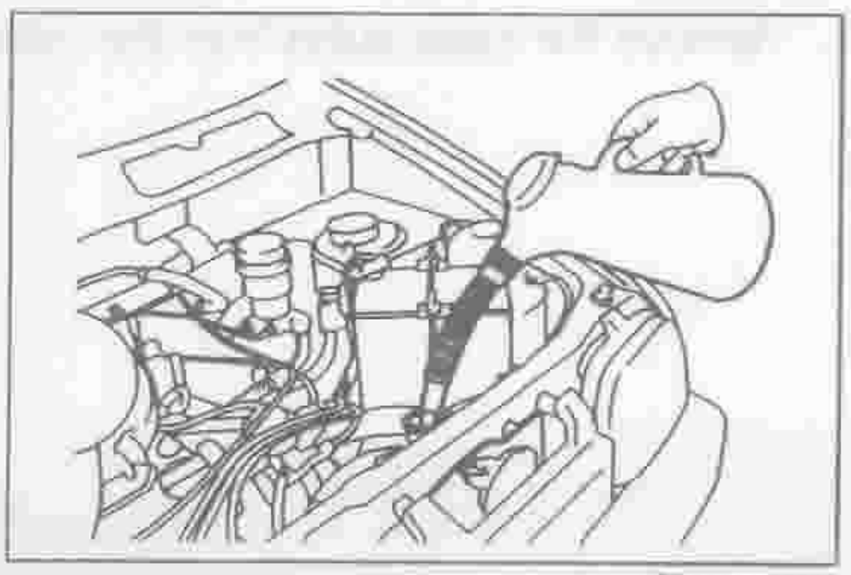
LCO00029-00024

11. Install the timing belt.
(Refer to the EM section.)



LCO00030-00025

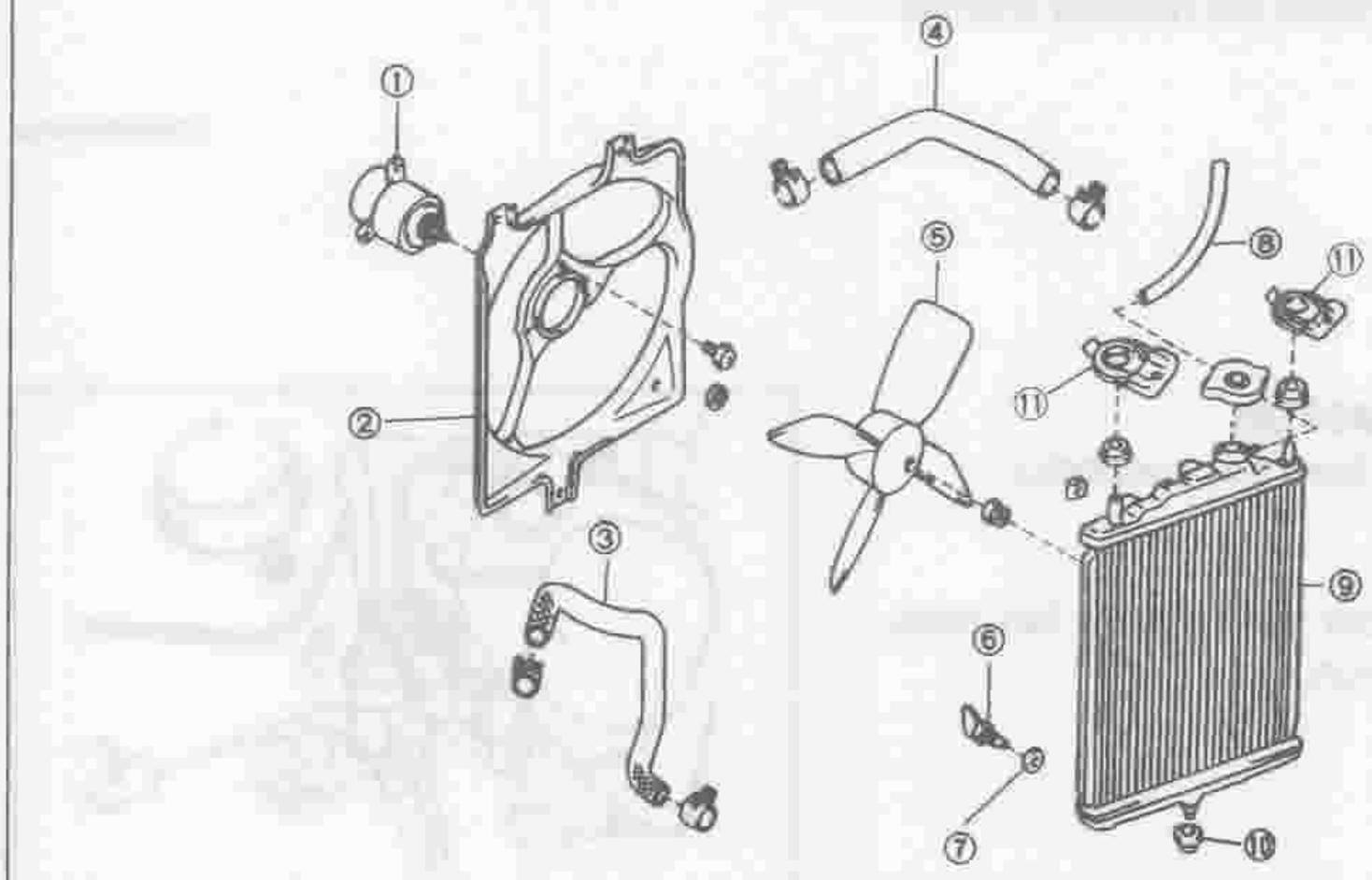
12. Fill coolant.
13. Start the engine. Ensure that no water leakage is present.



LCO00031-00026

ELECTRIC COOLING FAN

COMPONENTS



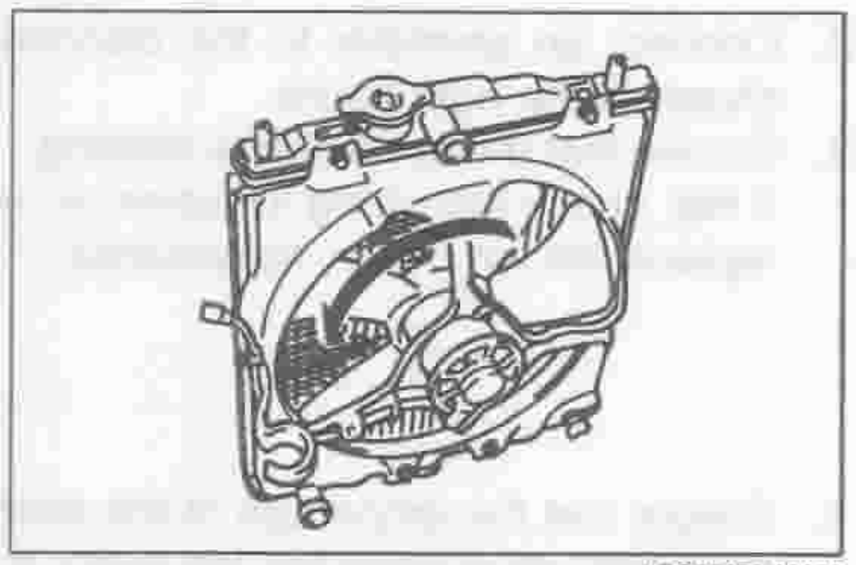
LCO00070-00065

IN-VEHICLE INSPECTION

1. Turn ON the ignition switch.
   Ensure that the fan motor is not rotating when the coolant temperature is below 85°C.
   If the fan motor is rotating, check the radiator thermo-control switch, fan motor relay and wiring for short circuit.

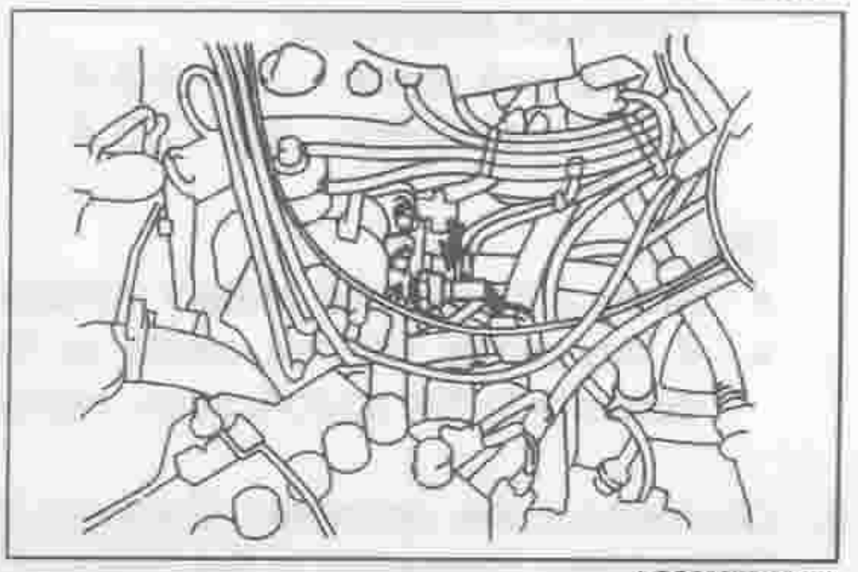
LCO00071-00000

2. Ensure that the fan is rotating after the radiator thermo-control switch connector is disconnected and when the disconnected connector is connected to the engine ground.
   If the fan motor is not rotating, check the fan motor, fan motor relay and wiring for open circuit.



LCO00072-00066

3. Turn OFF the ignition switch.
4. Connect the disconnected connector to the radiator thermo control switch.



LCO00073-00067

EC-2

OUTLINE OF EMISSION CONTROL SYSTEM

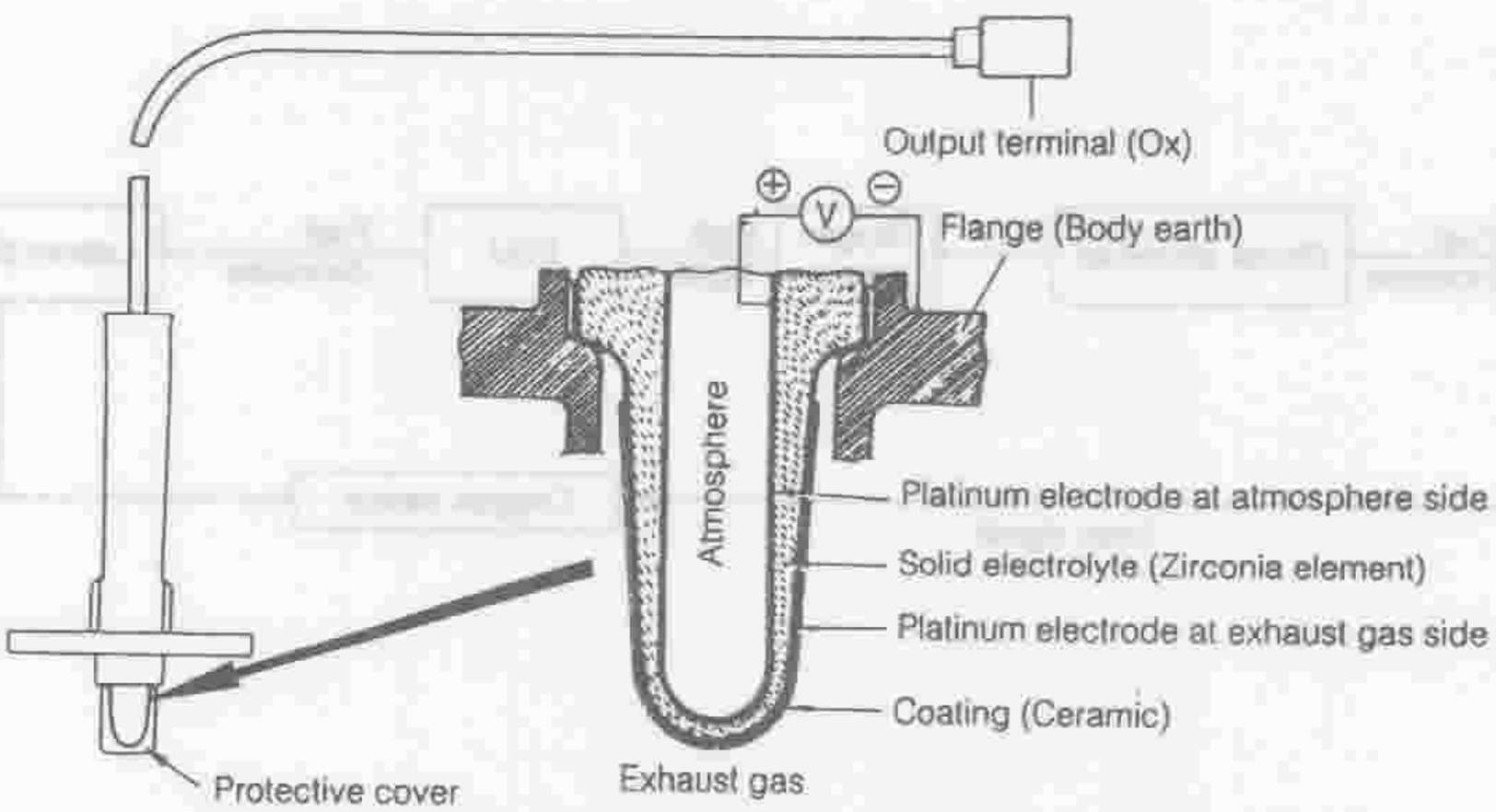
PURPOSE OF SYSTEMS

	Engine type			Pollutants to be controlled			Purpose and function
	EF-EL	ED-10	ED-20				
Specifications	Aus., Hongkong Singapore	General	EC	HC	CO	NOx	
Blow-by gas recirculating	○	○	○	○	○		A system whereby the blow-by gas generated inside the engine is introduced to the intake manifold, instead of releasing it to the atmosphere, in order that it may be burnt again in the combustion chamber.
Choke warning	—	○	—	○	○		A telltale system which turns ON the warning lamp so as to tell the driver that he has failed to return the choke lever to its original position. Thus, this prevents increase of HC and CO emissions.
Three-way catalyst	○	—	○	○	○	○	A device whereby HC and CO contained in the exhaust gas are oxidized and NOx is deoxidized by the monolithic type catalytic converter, thereby reducing those emissions of HC, CO and NOx to be-released to the atmosphere.
Fuel evaporative emission control	○	○	○	○			A system whereby HC emitted from the carburetor and the fuel tank is absorbed to a charcoal canister, thereby preventing HC from being released to the atmosphere.
Feedback control	○	—	○	○	○	○	The feedback control system ensures a proper air-to-fuel ratio required by the engine. Also, it ensures an optimum amount of oxygen to be contained in the exhaust gas so as to obtain high purification rate of the three- way catalyst.

LEC00002-00000

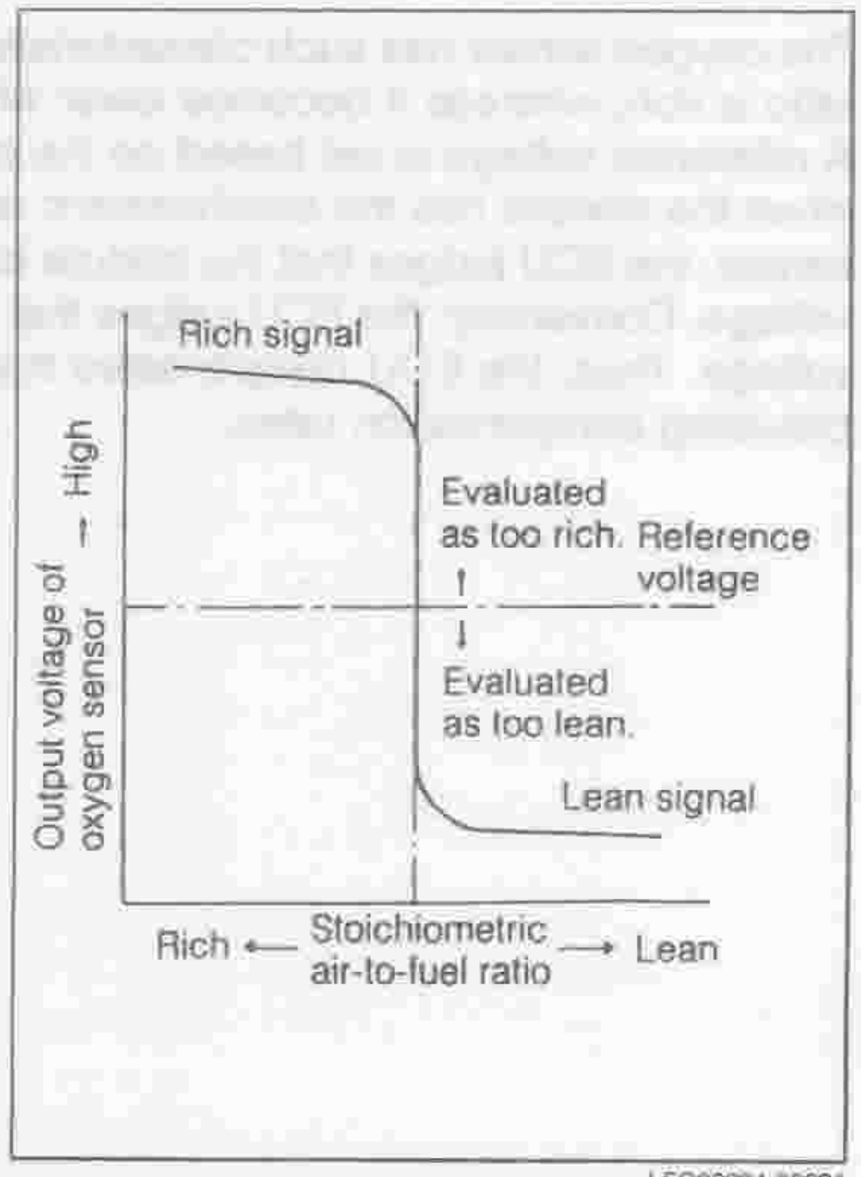
Oxygen Sensor

The oxygen sensor is a compact sensor installed at the exhaust manifold, which detects the oxygen concentration (air-to-fuel ratio) in the exhaust gas. In cases where the fuel is burnt completely, if the air-to-fuel ratio is larger than the stoichiometric ratio (too lean), the exhaust gas still contains oxygen. This is because air was excessive against the air required for the fuel combustion. Conversely, if the air-to-fuel ratio is smaller than the stoichiometric ratio (too rich), the exhaust gas contains no oxygen. Hence, evaluation can be made as to whether the actual air-to-fuel ratio is richer or leaner compared with the stoichiometric air-to-fuel ratio by detecting the oxygen concentration in the exhaust gas. The oxygen sensor has been so constructed that both sides of a measuring-tube-shaped solid electrolyte (Zirconia element) are coated with a thin film of platinum.



LEC00023-00020

The Zirconia element has such characteristics that an electromotive force is generated if the oxygen concentration differs between both sides of the element. Moreover, when the temperature of the oxygen sensor becomes high, the oxygen sensor has such characteristics that the electromotive force changes suddenly in the neighborhood of the stoichiometric air-to-fuel ratio owing to the platinum catalysis.
(See the right figure.)
The outside of the oxygen sensor is exposed to the exhaust gas, whereas the atmosphere is introduced into the inside of the sensor. Utilizing the characteristics above, correct evaluation can be performed as to whether the oxygen concentration in the exhaust gas, i.e. the air-to-fuel ratio, is too rich or too lean. When the air-to-fuel ratio is richer than the stoichiometric ratio, the electromotive force of the oxygen sensor is high, sending a rich signal to the ECU. Conversely, when the air-to-fuel ratio is leaner than the stoichiometric ratio, the electromotive force of the oxygen sensor is low, sending a lean signal to the ECU. The oxygen sensor starts its operation at about 300°C.



LEC00024-00021

TROUBLE SHOOTING

TROUBLE SHOOTING HINTS

1. In most cases, engine troubles are attributable to systems other than the EFI system.
   Prior to starting the trouble shooting for the EFI system, check other systems.
   (1) Power supply
   - Battery voltage
   - Fuse blown
   - Fusible link blown

   (2) Body ground
   (3) Fuel supply
   - Fuel leakage
   - Fuel filter clogged
   - Fuel pump malfunctioning

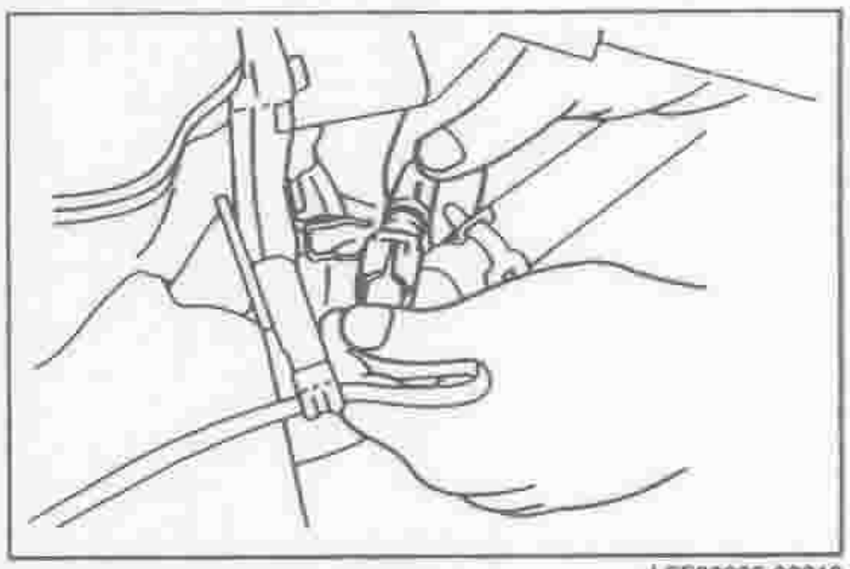
   (4) Ignition system
   - Spark plugs faulty
   - Spark plug wires faulty
   - Distributor and igniter faulty
   - Ignition coil faulty

   (5) Air induction system
   - Admission of air

   (6) Others
   - Ignition timing adjusted improperly
   - ISC valve malfunctioning
   - etc.

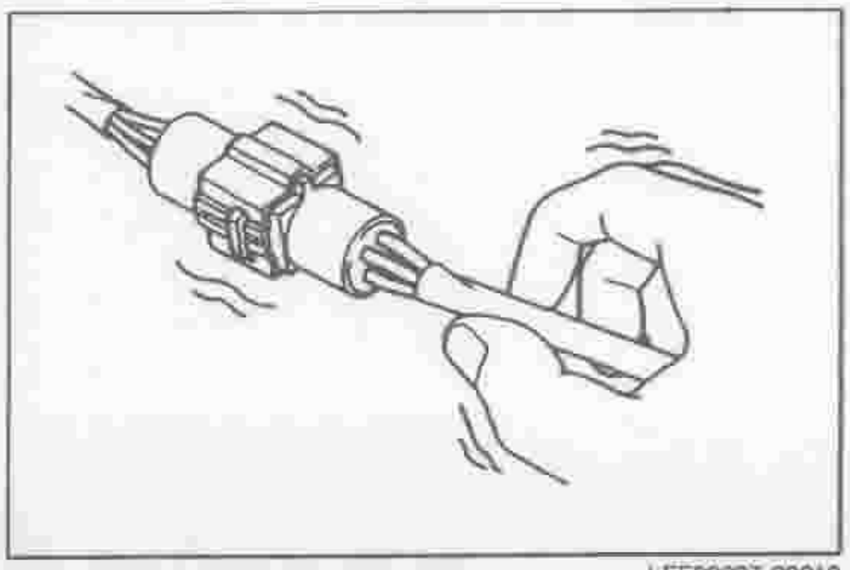
LEF00025-00000

2. Most of troubles related to the EFI system are merely caused by poor wire connections.
   Ensure that connectors are connected securely.
   Check connectors, being careful as to the following points.
   (1) Visually inspect that terminals are not bent.
   (2) Ensure that connectors are securely connected and locked.



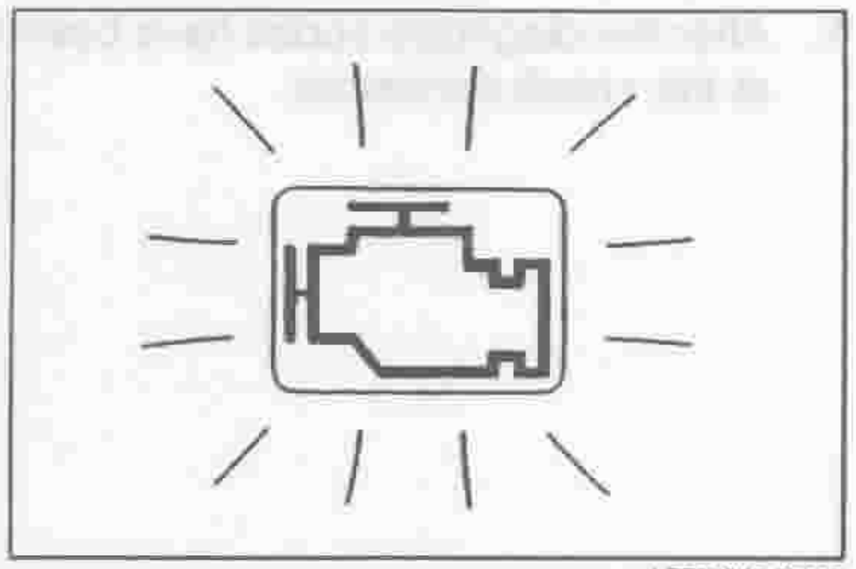
LEF00026-00018

   (3) Check to see if the malfunction phenomenon takes place when applying light vibration to the connector or the wire connected to the connector.



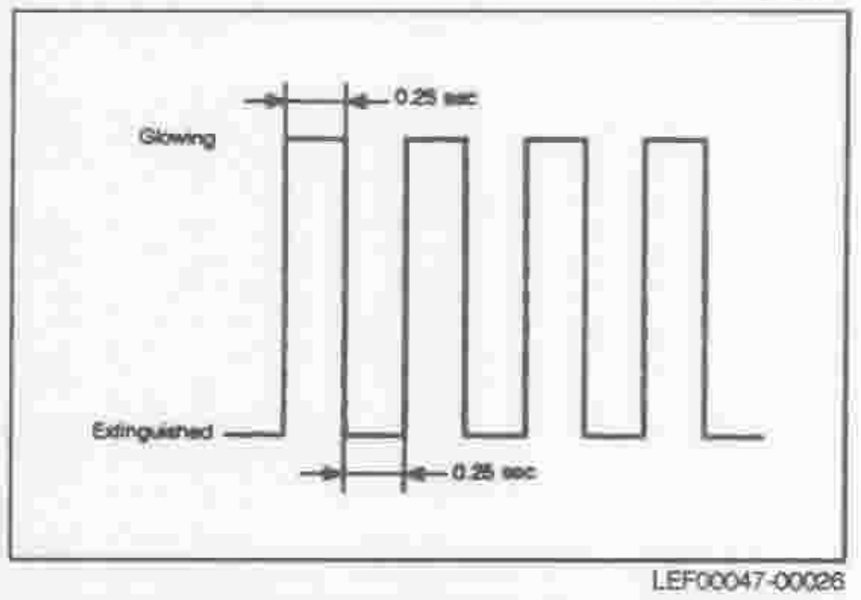
LEF00027-00019

3. Set the ignition switch to the ON position.
   At this time, be careful not to start the engine.
4. Read the diagnosis code by observing the blinking number of the check engine lamp.
   NOTE:
   - If the check engine lamp fails to blink, it is likely that the ECU is malfunctioning. Hence, proceed to the inspection of the diagnosis system circuit.


LEF00046-00025

Output of diagnosis code

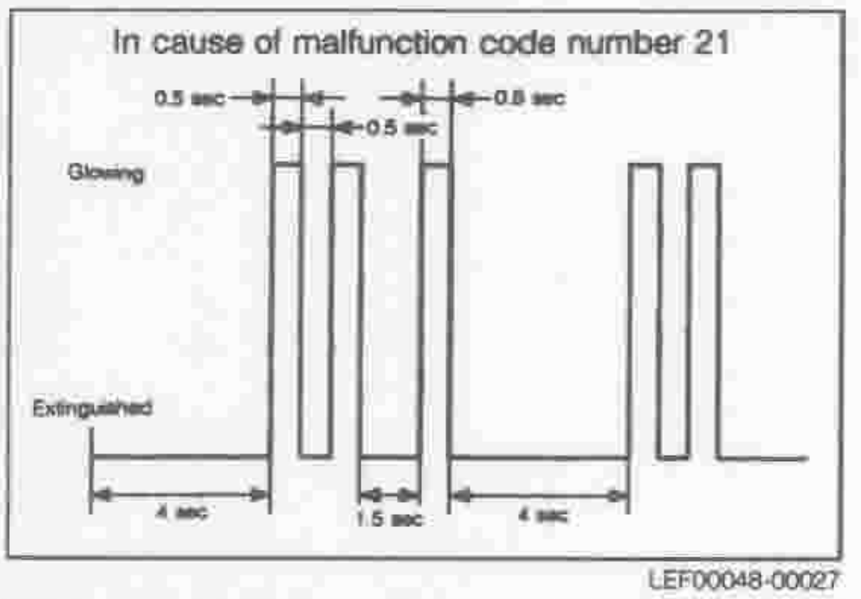
(1) Indication of normal code
The engine check lamp glows for 0.25 second, 0.25 second later after the ignition switch has been turned ON. After a lapse of 0.25 second, the check engine lamp again glows for 0.25 second.
Then, this pattern will be repeated.



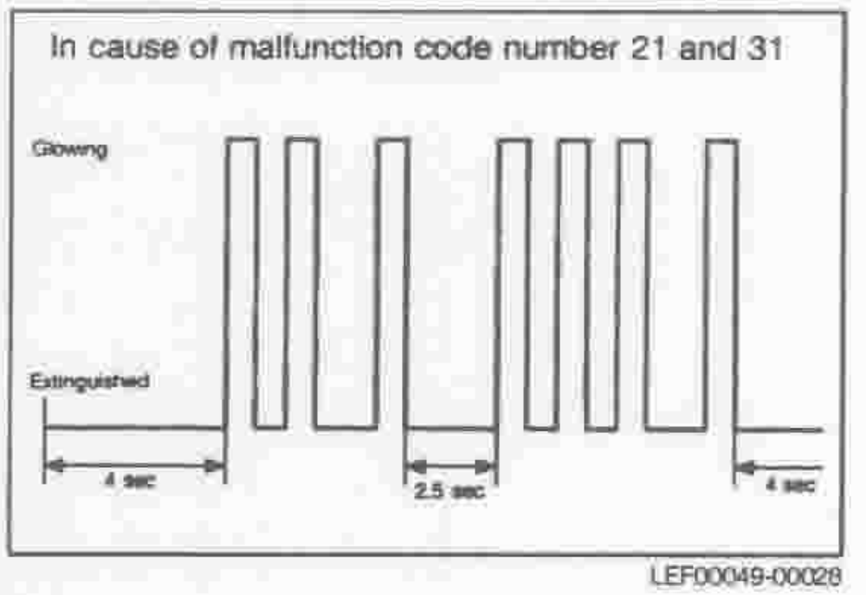
LEF00047-00026

(2) Indication of malfunction code

- When a single malfunction code is indicated:
  The diagnosis code is composed of two digits. These two numbers are indicated by blinking of the check engine lamp. Four seconds later after the ignition switch has been turned ON, the check lamp indicates first the number of the tens digit of the diagnosis code by glowing the same times as the number. The lamp glows for 0.5 second each time and then it is extinguished for 0.5 second. After a pause of 1.5 seconds, the check lamp indicates the number of the units digit of the diagnosis code by glowing the same times as the number. The lamp glows for 0.5 second each time and then it is extinguished for 0.5 second. Then, this pattern will be repeated after a pause of 4 seconds.



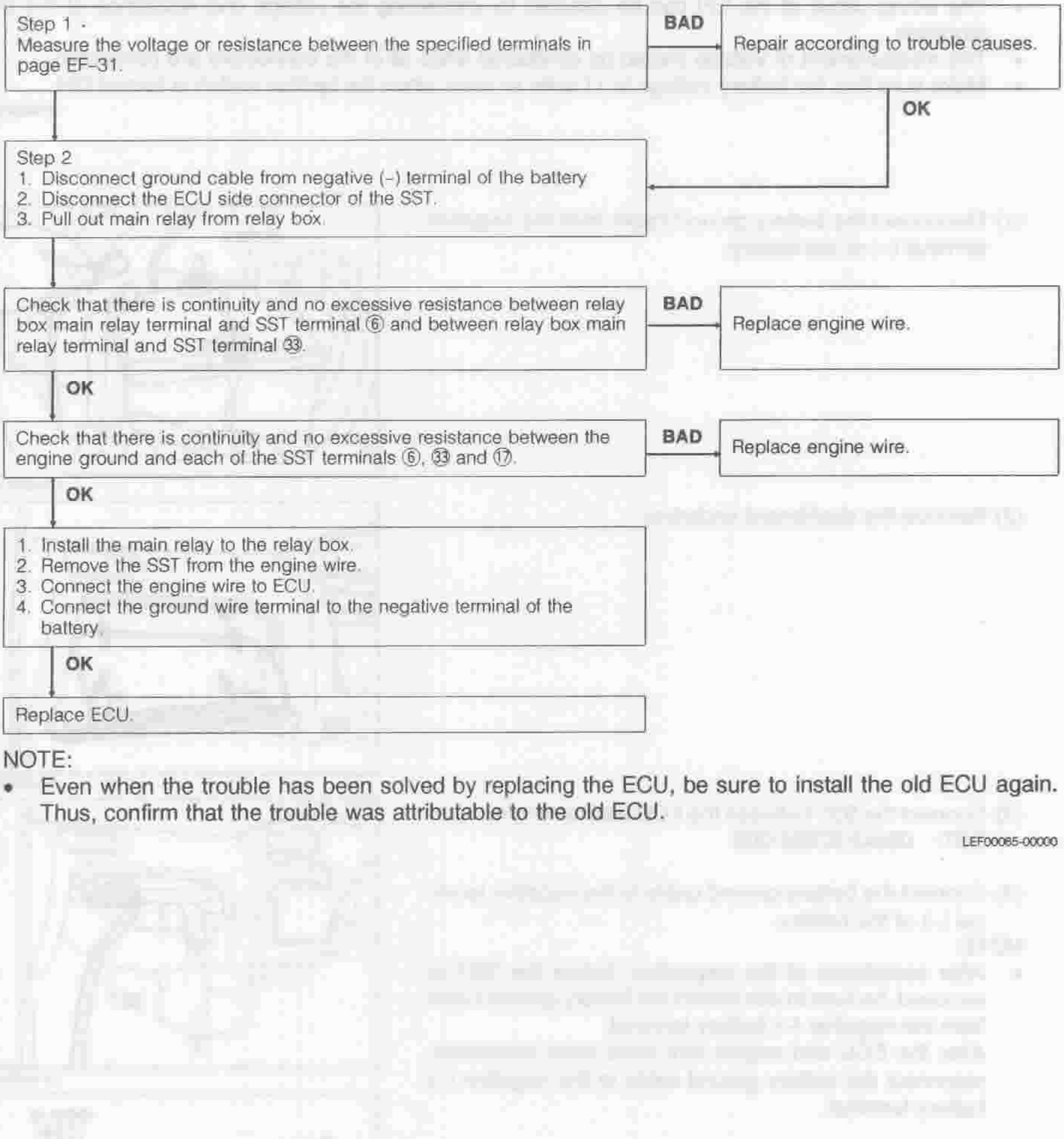
LEF00048-00027



LEF00049-00028

- When plural malfunction codes are indicated:
  In cases where plural malfunction codes have been detected, the two-digit diagnosis codes are indicated in the sequence of the code number, starting from a smaller number. Each diagnosis code is indicated in the above described pattern. A pause of 2.5 seconds occurs between the outputs of respective diagnosis codes, thus separating one from the others. After all of the plural diagnosis codes that have been detected are indicated, the check engine lamp is extinguished for four seconds. Then, the detected plural diagnosis codes will be indicated again.

(2) Measure the voltage or resistance between each specified terminal. Then, check that the measured voltage and resistance conform to the specifications. Perform the check and repair in accordance with the flow chart given below.

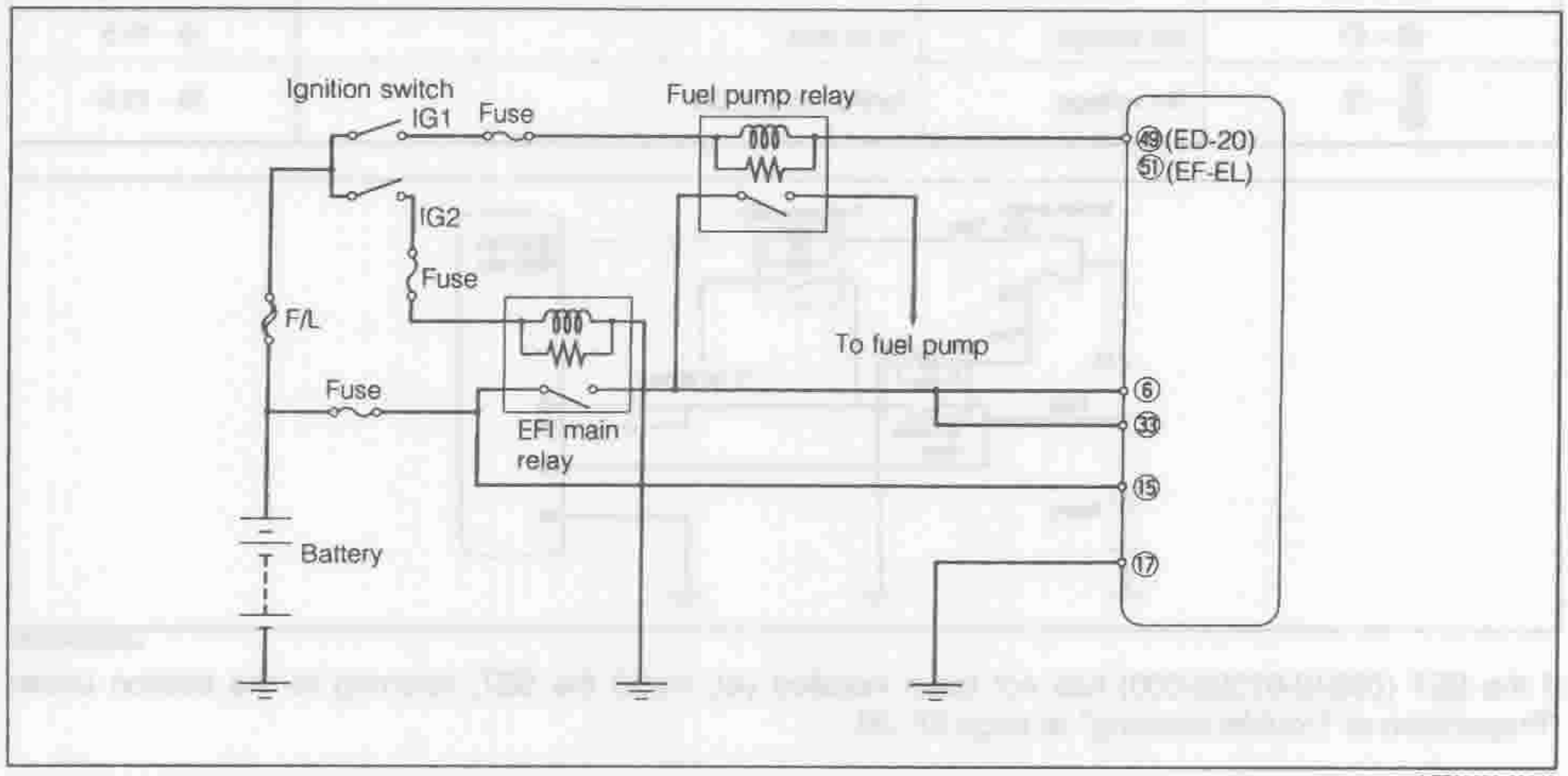


NOTE:

- Even when the trouble has been solved by replacing the ECU, be sure to install the old ECU again. Thus, confirm that the trouble was attributable to the old ECU.

LEF00085-00000

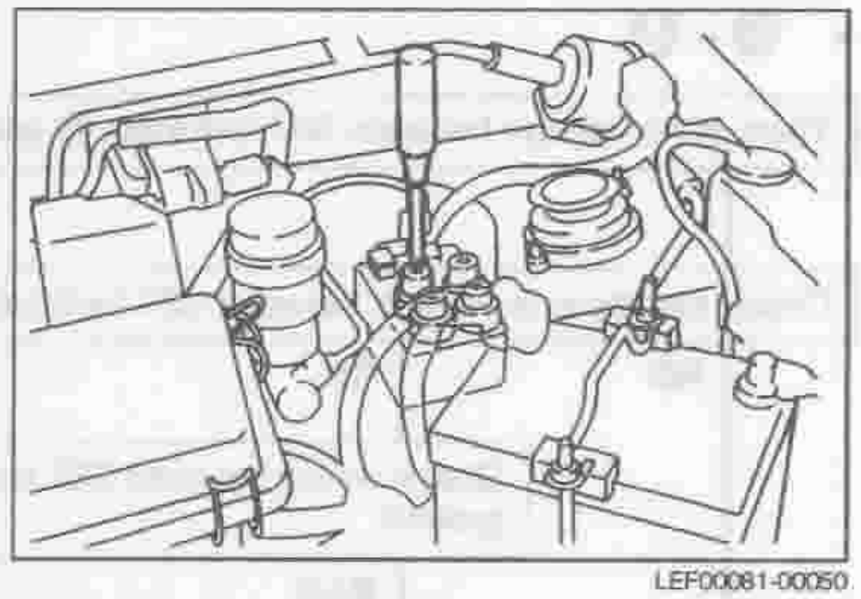
MAIN RELAY



LEF00080-00049

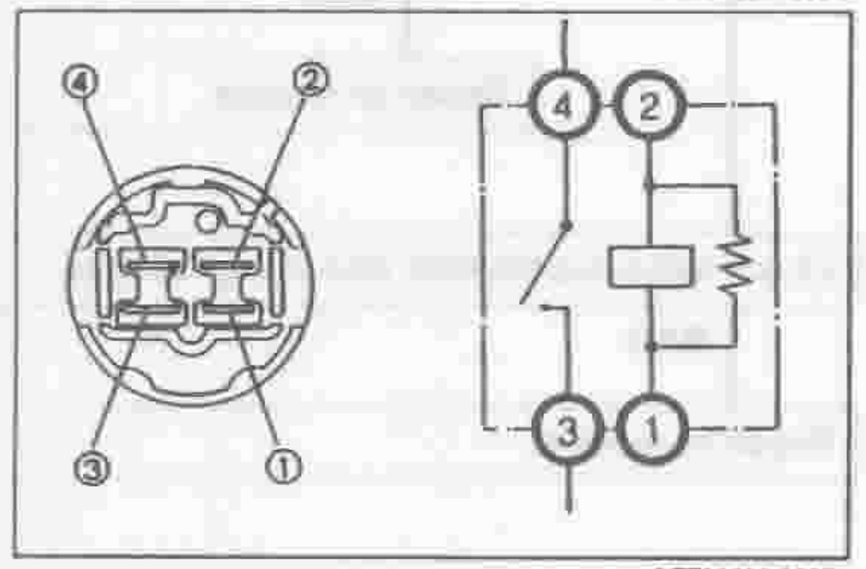
Inspection of EFI main relay

1. Check of main relay operation
   When the ignition switch is turned ON, check to see if the relay emits an operating sound. Or check to see if you will feel an operating vibration with a screwdriver or the like placed on the relay.
   CAUTION:
   - The relay may become very hot during the operation. Hence, do not touch the relay with your hand.



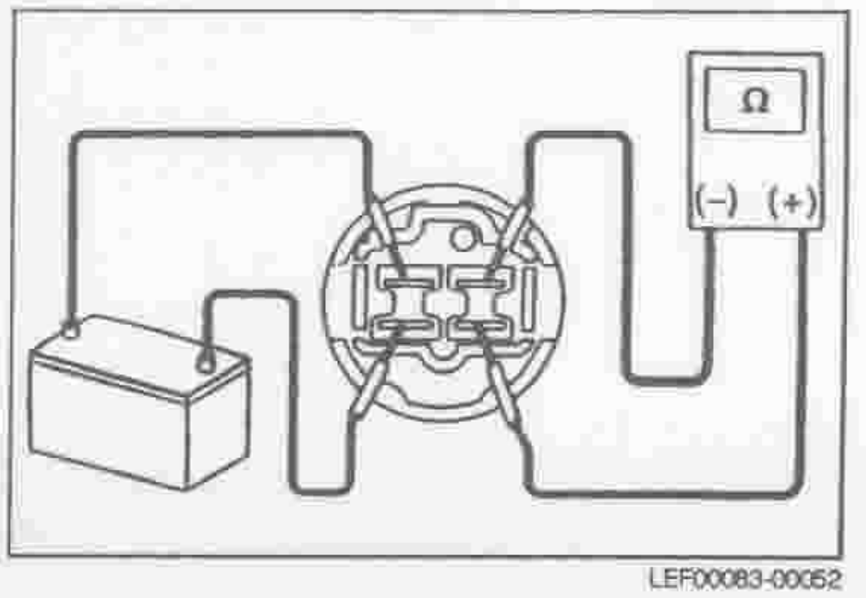
LEF00081-00050

2. Inspection of relay continuity
   (1) Check that there is the specified resistance between the terminals ① and ②.
   Resistance: 40 - 100 Ω
   (2) Check that there is no continuity between the terminals ③ and ④.
   (3) Check that there is no continuity between the terminals ① and ③ and also between the terminals ① and ④.
   (4) Check that there is no continuity between the terminals ② and ③ and also between the terminals ② and ④.
   If the continuity test results do not conform to specifications, replace the relay.



LEF00082-00051

3. Inspection of relay operation
   (1) Apply the battery voltage across the terminals ① and ②.
   (2) Check that there is continuity between the terminals ③ and ④.
   If the operation test results do not conform to specifications, replace the relay.

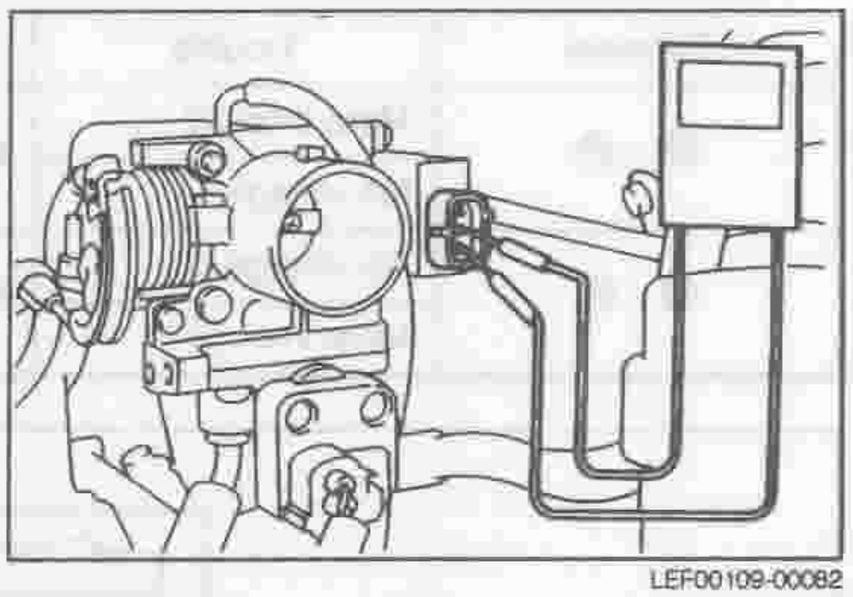


LEF00083-00052

(2) Measure the resistance between ㊺ and ㊹ under the following condition.

Throttle valve closed fully	No continuity exist
Throttle valve opened fully	Continuity exist

If measured resistance does not conform to the specification, replace the throttle body.

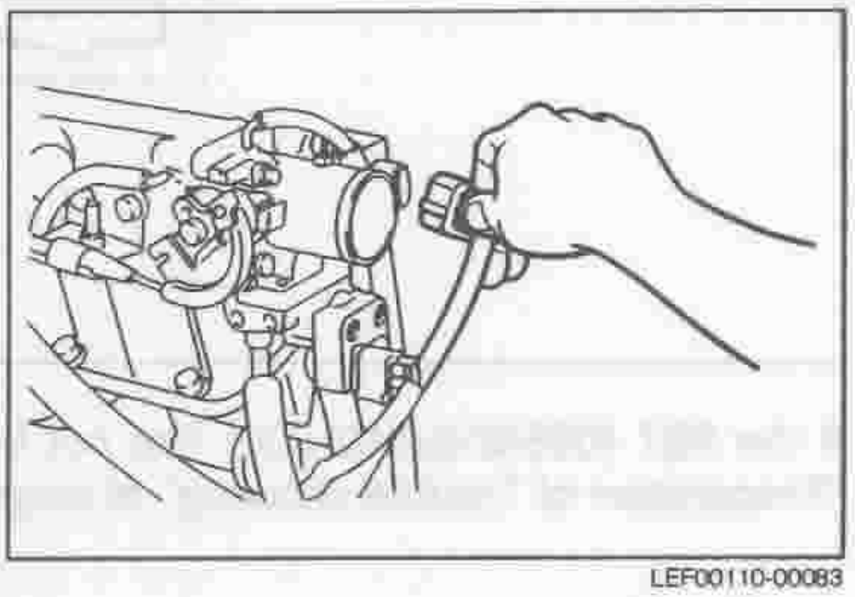


LEF00109-00082

CAUTION:

- Be very careful not to damage the terminal.

3. Connect the throttle position sensor connector.
   CAUTION:
   - When connecting the connector, care must be exercised to ensure that no excessive load is applied to the throttle position sensor.



LEF00110-00083

Measured voltage	Remedy
• 0 V	1) Check oxygen sensor circuit for open wire or short circuit. **BAD** → Repair or replace. **OK** ↓ 2) Remedy causes of too-lean fuel mixture. • Pressure sensor • Pressure regulator • Fuel line • Fuel filter • Fuel pump • Injector **BAD** → Repair or replace. **OK** ↓ Replace oxygen sensor.
• The measured voltage varies mainly within a range under 0.45 V.	Remedy causes of too-lean fuel mixture. • Pressure sensor • Pressure regulator • Fuel line • Fuel filter • Fuel pump • Injector
• The measured voltage varies within a range of 0 - 1.0 V, centering around 0.45 V. However, the reaction speed is low. (The pointer of voltmeter swings less than 8 times within 10 seconds.)	Check ECU **BAD** → Repair/replace ECU. **OK** ↓ Replace oxygen sensor.
• The measured voltage varies mainly within a range above 0.45 V.	Remedy causes of too-rich fuel mixture. • Pressure sensor • Fuel line • Pressure regulator • Injector
• 1.0 V	Remedy causes of too-rich fuel mixture. • Pressure sensor • Fuel line • Pressure regulator • Injector **BAD** → Repair or replace.
• More than 1.0 V	Check oxygen sensor circuit for short circuit with other positive line. ↓ Repair or replace.

LEF00136-00000

(13) Stop the engine.
(14) Removal of SST for ECU
  ① Disconnect the ground cable from the negative (–) terminal of the battery.
  ② Remove the SST by disconnecting its connectors from the ECU and engine wire connectors.
  ③ Connect the engine wire connectors to the ECU.
  ④ Install the glove box.
  ⑤ Reconnect the ground cable to the negative (–) terminal of the battery.
(15) Removal of SST for diagnosis connector
  ① Remove the SST from the diagnosis connector.
  ② Install the cap to the diagnosis connector.

LEF00137-00000

ISC-1

Inspection procedure

[1] Ensure that the engine idle speed is within specified value.
Specified Engine Idle Speed: EF-EL Engine ... 800 rpm
ED-20 Engine ... 800 rpm (MT), 850 rpm (AT)

NG

Measure the voltage between the SST terminals ㉓ – ⑰ and ㉔ – ⑰.
NOTE:
• Ensure that measured voltage is stabilized at certain level according with warming up state.

NG | **OK**

Perfom the unit inspection of ISC valve. (See page EF-66)

Check the harness between ECU and ISC valve.
[1] Ensure that there is no short circuit between ECU terminal ㉓ and ISC valve connector terminal.
[2] Ensure that there is continuity between ECU terminal ㉓ and ISC valve connector terminal
[3] Ensure that there is no short circuit between ECU terminal ㉔ and ISC valve connector terminal.
[4] Ensure that there is continuity between ECU terminal ㉔ and ISC valve connector terminal.

NG | **OK**

Check/replace the relay related circuit.

Perfom the unit inspection of ISC valve. (See page EF-66)

NG | **OK**

Replace the ISC valve.

Inspect the ECU circuit.

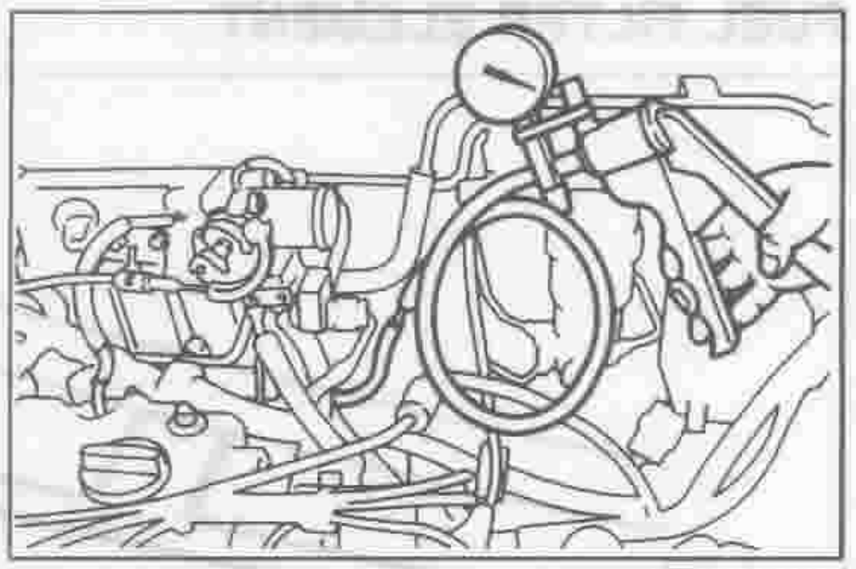
[2] Ensure that the engine idle speed is within specified value even when each of following switch are turned ON.
Specified Engine Idle Speed: EF-EL Engine ... 925 ± 50 rpm (MT), 975 ± 50 (AT)
ED-20 Engine ... 800 ± 50 rpm (MT), 850 ± 50 rpm (AT)

Defogger switch → **NG** → Ensure that measuring voltage between the SST terminals ㊱ – ⑰ is within specified voltage. **NG** / **OK**
Specified Voltage: Switch ON ... Approx. battery voltage
Switch OFF ... Less than 0.5 V

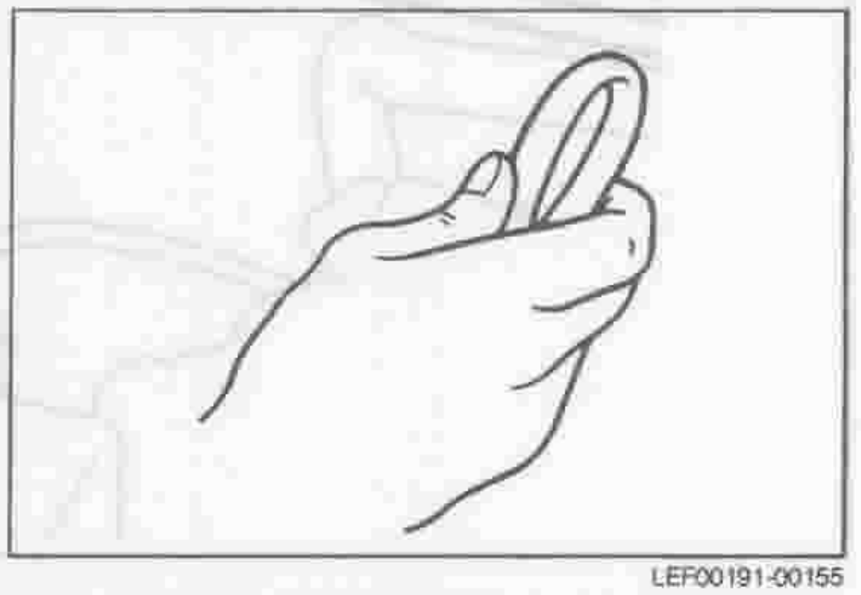
Heater blower fan switch → **NG** → Ensure that measuring voltage between the SST terminals ㊲ – ⑰ is within specified voltage. **NG** / **OK**
Specified Voltage: Switch ON ... Less than 0.5 V
Switch OFF ... Approx. battery voltage

Lighting switch → **NG** → Ensure that measuring voltage between the SST terminals ㊳ – ⑰ is within specified voltage. **NG** / **OK**
Specified Voltage: Switch ON ... Approx. battery voltage
Switch OFF ... Less than 0.5 V

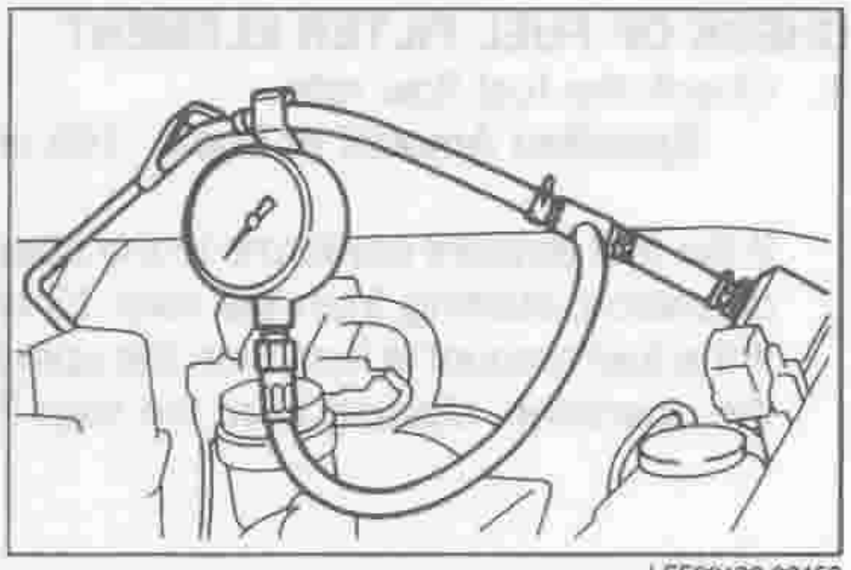
12. Turn OFF the ignition switch.
13. Remove the Mityvac and hose from the fuel pressure regulator.
14. Remove the SST form the ECU.


LEF00190-00154

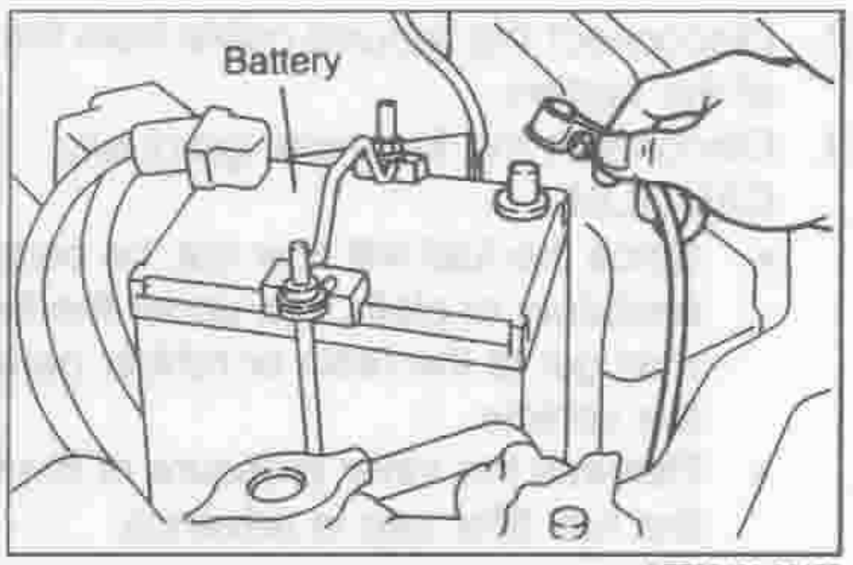
15. Turn OFF the ignition switch after turning ON the ignition switch temporality.
16. Immediately after the operation described above, stop the flowing of the fuel by bending the fuel hose between the fuel filter and the fuel pressure regulator.
    Read the fuel pressure under this condition.


LEF00191-00155

17. After holding the fuel hose in a bend state for three minutes, check that the fuel pressure has dropped compared with that measured in step 15.
    Replace the fuel pump if the fuel pressure has dropped.
    Replace the fuel pressure regulator if the fuel pressure will not drop

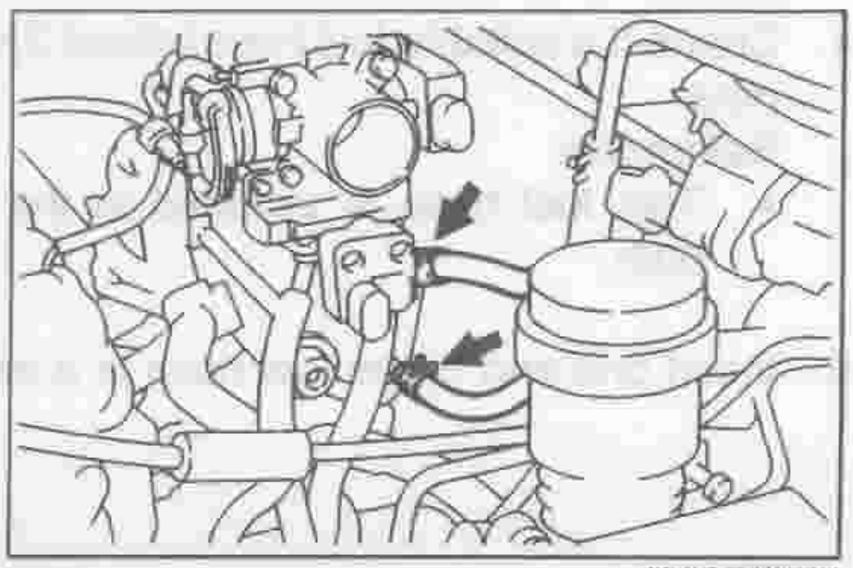

LEF00192-00156

18. Disconnect the ground cable from the negative (–) terminal of the battery.
19. Remove the SST (fuel presser gauge) from the fuel line.
20. Reconnect the fuel hose between the fuel pipe and the fuel filter.



LEF00193-00157

21. Reconnect the ground cable to the negative (–) terminal of the battery.
22. Start the engine. Check to see if any leakage is present. Repair any defective part if fuel leakage exists.


LEF00194-00158

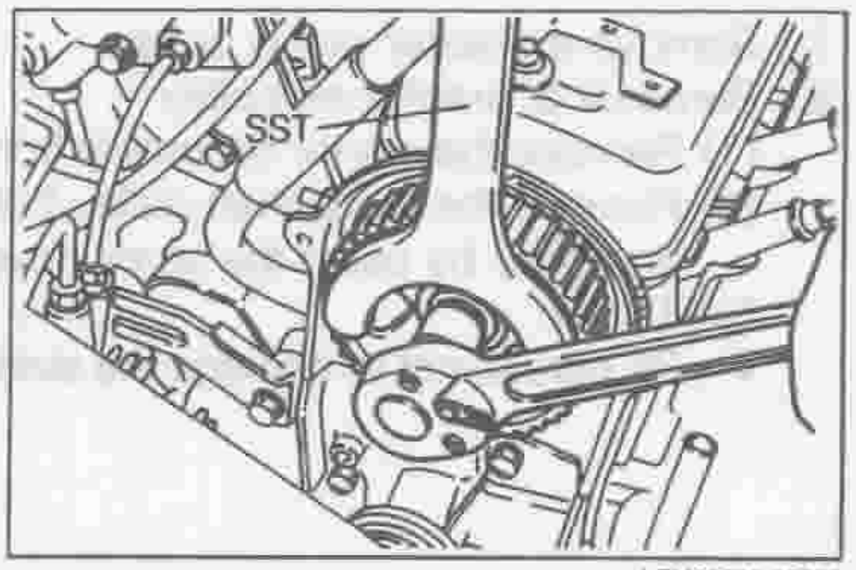
ABBREVIATION CODES

The abbreviation codes that appear in this service manual stand for the following, respectively.

Ay	Assembly
API	American Petroleum Institute
BDC	Bottom Dead Center
BTDC	Before Top Dead Center
BVSV	Bimetal Vacuum Switching Valve
C/W	Choke warning
C/O	Choke opener
CB	Chock Braker
ECU	Electronic Control Unit
EFI	Electronic Fuel Injection
EX	Exhaust (Manifold, Valve)
EVAP	Fuel evaporative emission control
FL	Fusible Link
HIC	Hot Idle Compensator
IN	Intake (Manifold, Valve)
ITC	Intake air Temperature Compensating valve
ISO	International Organization for Standardization
LH	Left Hand side
LHD, L.H.D	Left Hand Drive
LLC	Long Life Coolant
L/	Less
MP	Multipurpose
M/T, MT	Manual Transmission
O/S	Over Size
PCV	Positive Crankcase Ventilation
PVSV	Pressure Vacuum Switching Valve
RH	Right Hand side
RHD, R.H.D	Right Hand Drive
SST	Special Service Tool
STD	Standard
SD	Spark delay
S/A	Sub-Assembly
SAE	Society Automotive Engineers
TDC	Top Dead Center
TP	Throttle positioner
TWC	Three-way catalyst
T	Torque
TVSV	Thermostatic vacuum switching valve
U/S	Under size
VSV	Vacuum Switching Valve
VTV	Vacuum Transmitting Valve
W/	With
W/O	without

LEM00002-00000

15. Removal of timing belt pulley
While preventing the camshaft timing belt pulley from turning with the following SST, remove the attaching bolt and plate washer. Then, remove the camshaft timing belt pulley.
SST: 09278-87201-000 [EF-EL Engine]
09511-87202-000 [ED-10, ED-20 Engine]

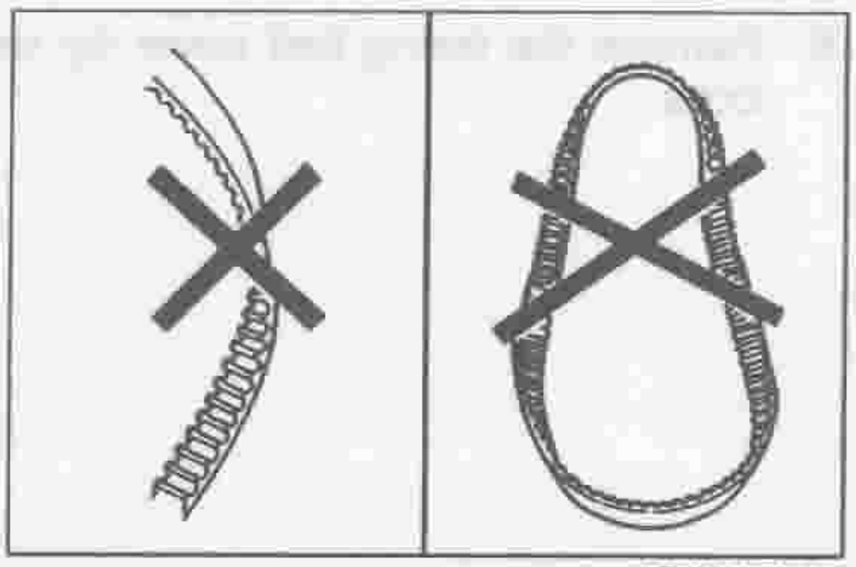


LEM00030-00020

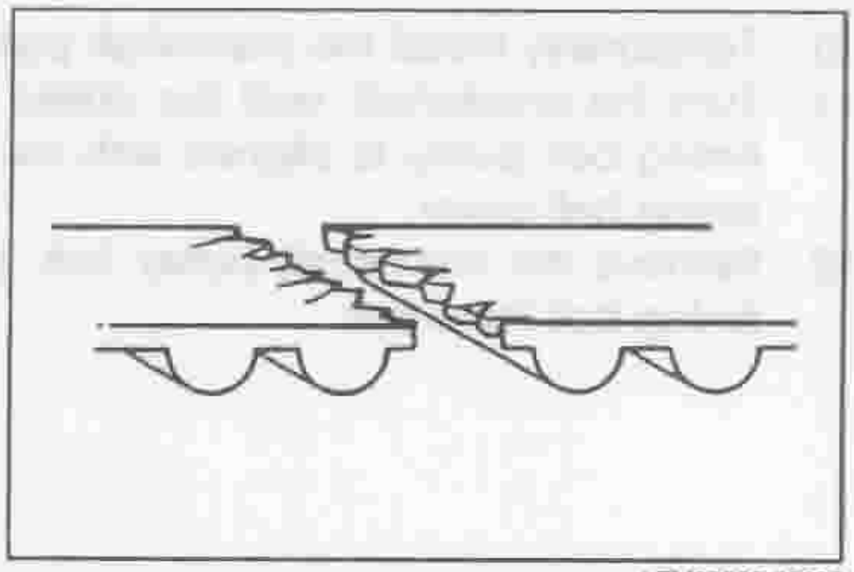
CAUTION:
- If the camshaft alone should be turned, damage may be made to the engine because of interference of the pistons with the valves. Hence, never turn the camshaft alone.

INSPECTION OF COMPONENTS

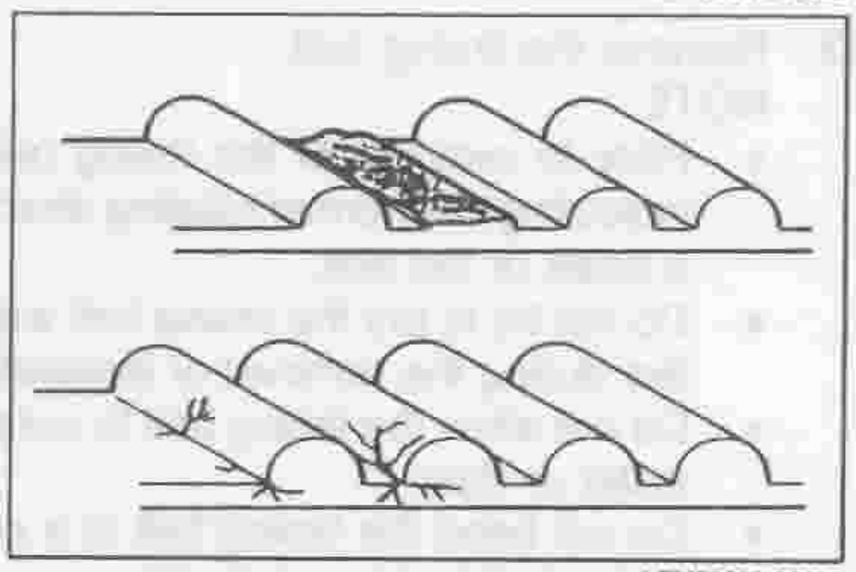
1. Timing belt inspection
CAUTION:
- Do not bend, twist or turn the belt inside out.
- Do not allow the belt to come into contact with oil, water or steam.


LEM00031-00021

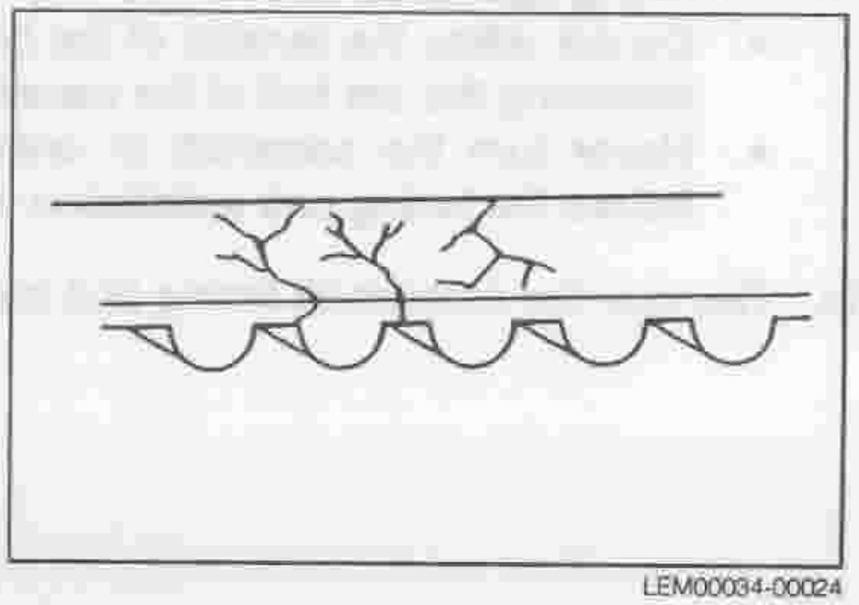
If there are defects, as shown in the figures, check the following points and replace the timing belt, if necessary.
(1) Premature separation
- Check for proper installation.
- Check the timing gear cover gaskets for damage and check for correct installation.


LEM00032-00022

(2) If the belt teeth are cracked or damaged, check to see if the camshaft is seized.


LEM00033-00023

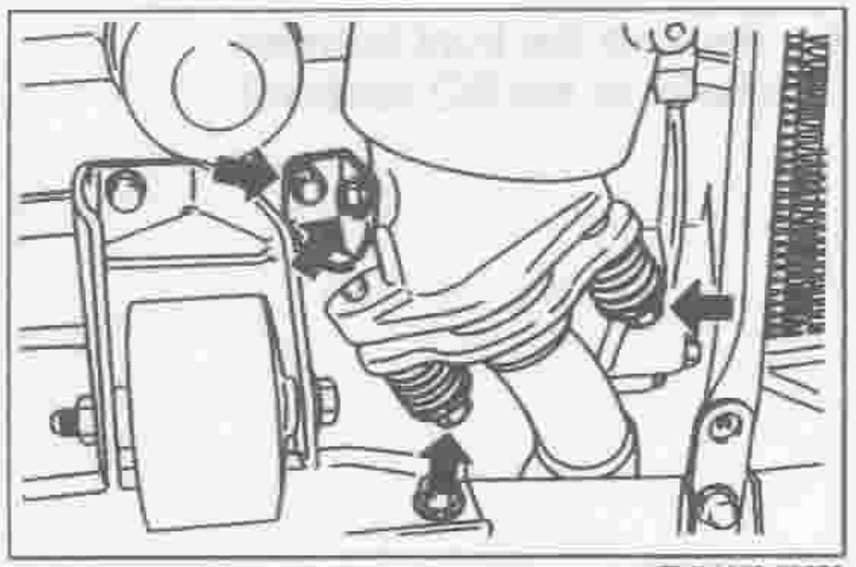
(3) If there is noticeable wear or cracks on the belt face, check to see if there are nicks on one side of the idler pulley lock.


LEM00034-00024

9. Remove the exhaust manihold heat insulator by removing

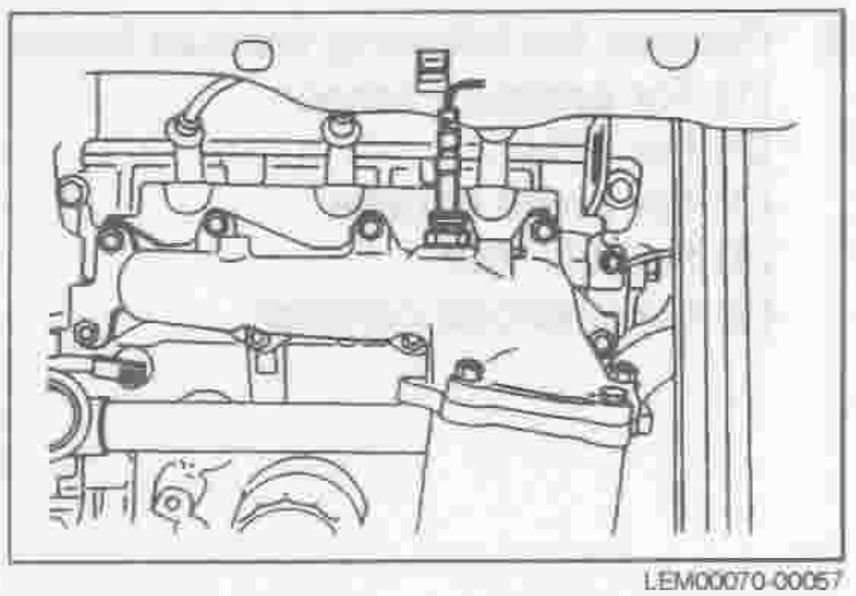
LEM00068-00055

10. Remove the exhaust manifold stay.
11. Remove the exhaust pipe from the exhaust manifold.



LEM00069-00056

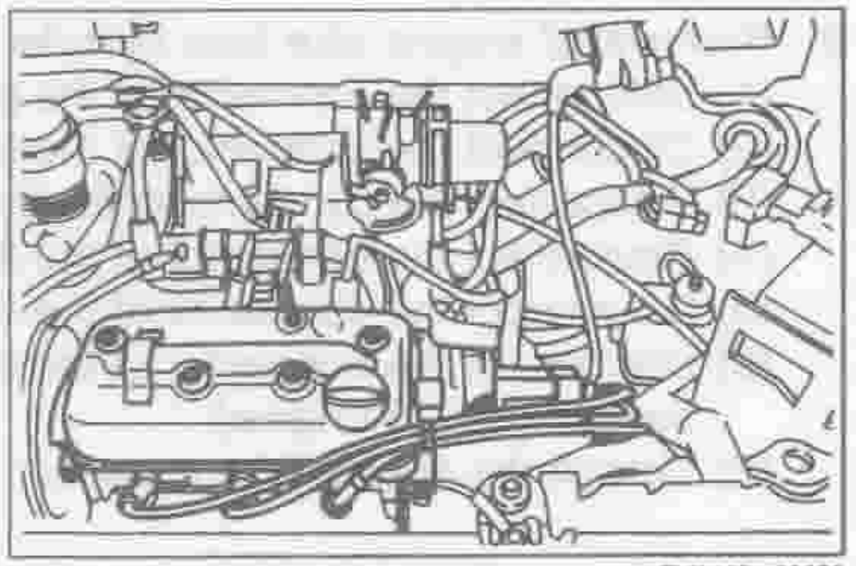
12. Disconnect the connectors of the oxygen sensor and exhaust gas temperature sensor.



LEM00070-00057

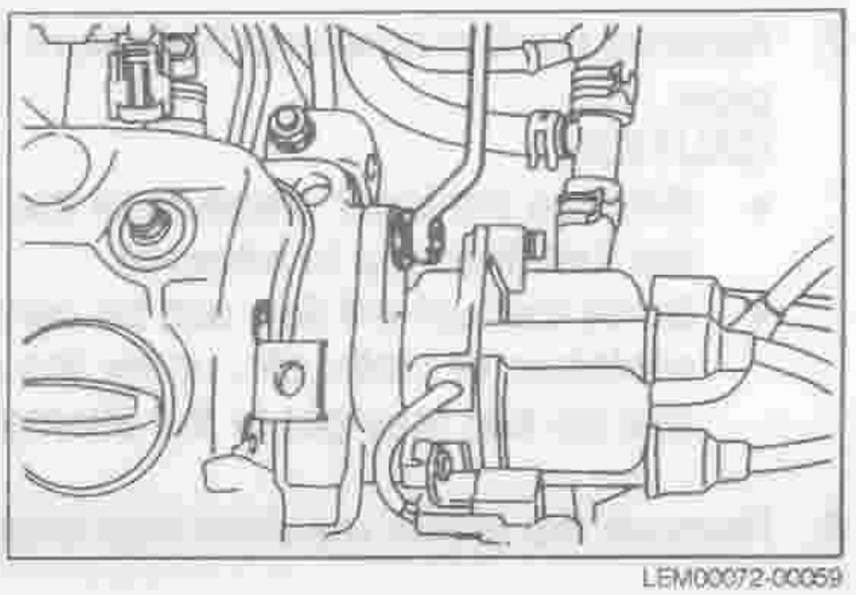
13. Removal of distributor
    (1) Remove the resistive cords.
    NOTE:
    - Do not hold the cord portion during the disconnection of the resistive cord. Be sure to disconnect the cord by holding the rubber boot.

    (2) Remove the spark plugs.



LEM00071-00058

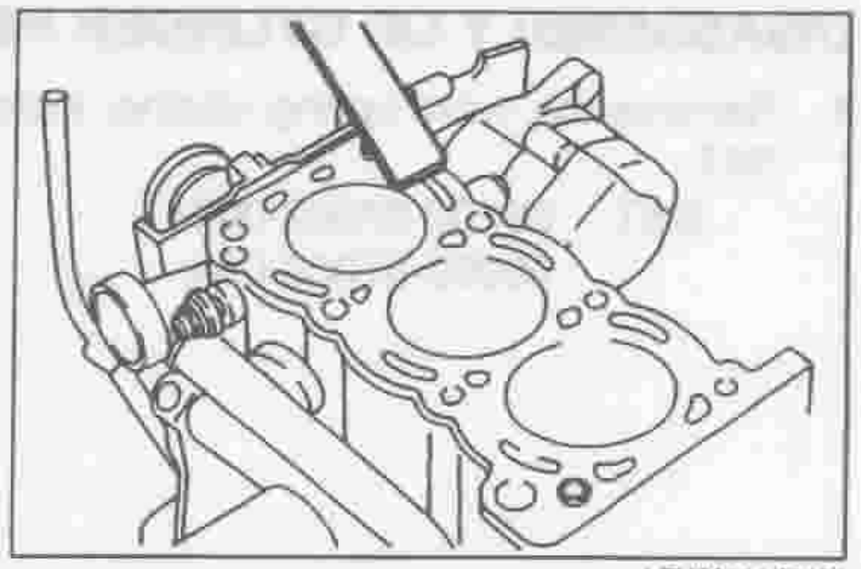
    (3) Disconnect the connector of the distributor.
    (4) Remove the distributor.



LEM00072-00059

INSPECTION, CLEANING AND REPAIRS OF CYLINDER HEAD-RELATED PARTS

1. Cleaning of top of each piston and cylinder block
   (1) Turn the crankshaft until each piston is brought to the top dead center.
   Using a gasket scraper, remove all carbon deposits from the piston tops.
   (2) Using a gasket scraper, remove any remaining gasket material from the top of the cylinder block.
   Blow carbon deposits, water and oil from the bolt holes.



LEM00114-00101

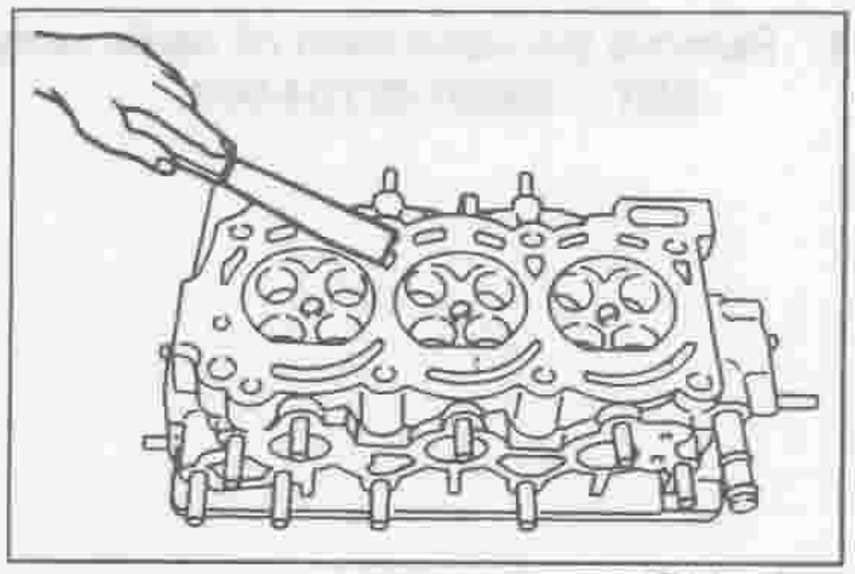
WARNING:
- Protect your eyes during the cleaning operation using compressed air.

CAUTION:
- Do not scratch the cylinder head side surfaces of the piston and cylinder block.

(3) Set the piston No. 1 to the top dead center.

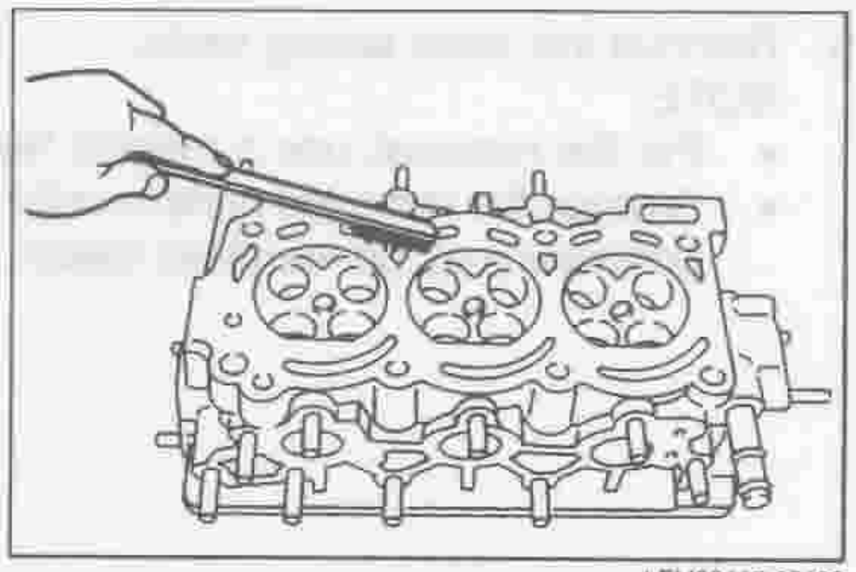
LEM00115-00000

2. Removal of gasket material
   Using a gasket scraper, remove any remaining gasket material from the cylinder head and manifold surfaces.



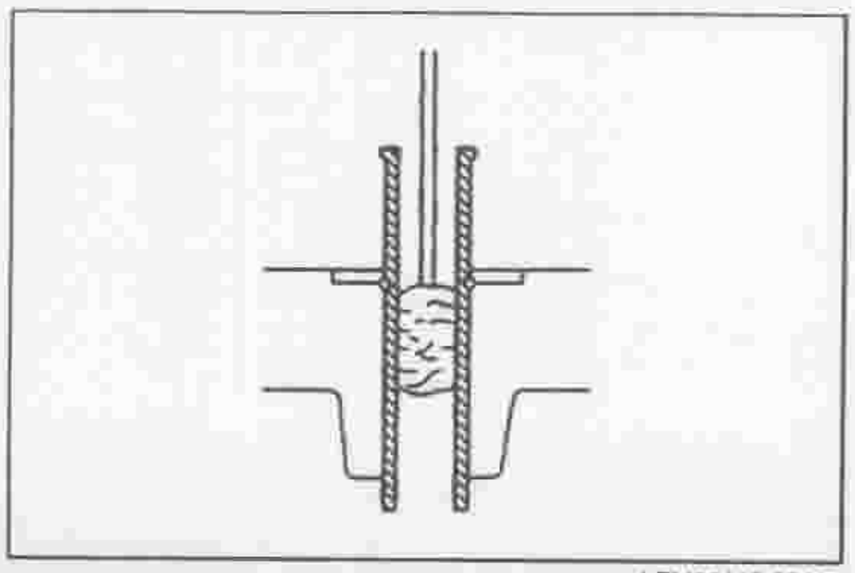
LEM00116-00102

3. Cleaning of combustion chamber
   Using a wire brush, remove all carbon deposits from the combustion chambers.
   CAUTION:
   - Be very careful not to scratch the cylinder head gasket contact surfaces.



LEM00117-00103

4. Cleaning of valve guide bushings
   Using a valve guide brush and solvent, clean all the valve guide bushings.



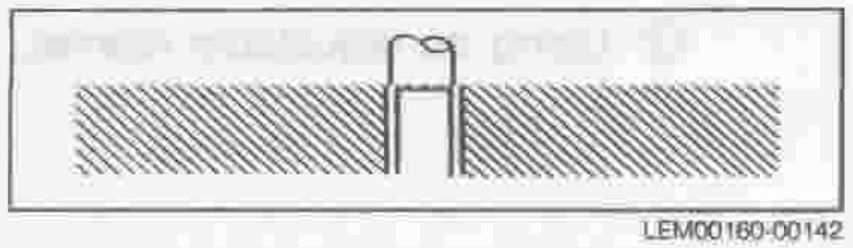
LEM00118-00104

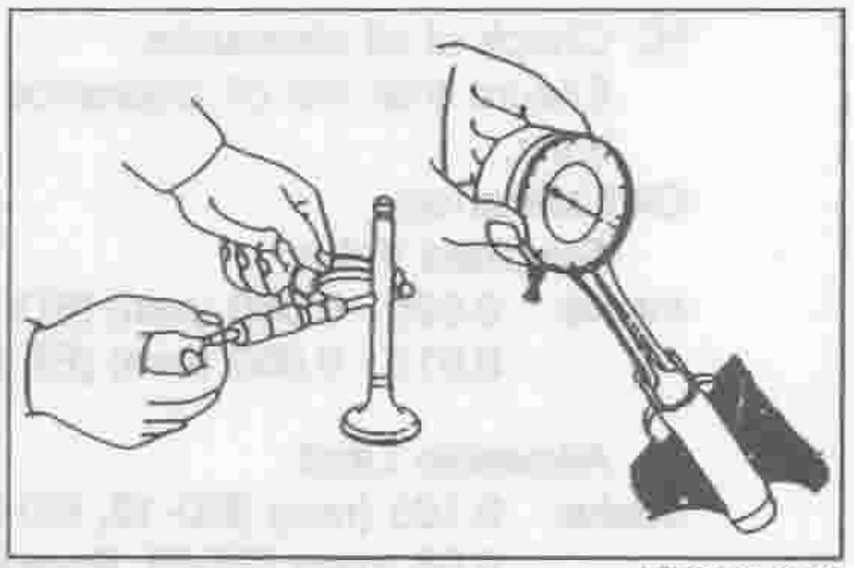
CAUTION:
bush to remove any burr or the like.

NOTE:
- This reaming should be made only enough to remove the burr or the like.

④ Inspection of oil clearance
Ensure that the oil clearance meets the specifications.

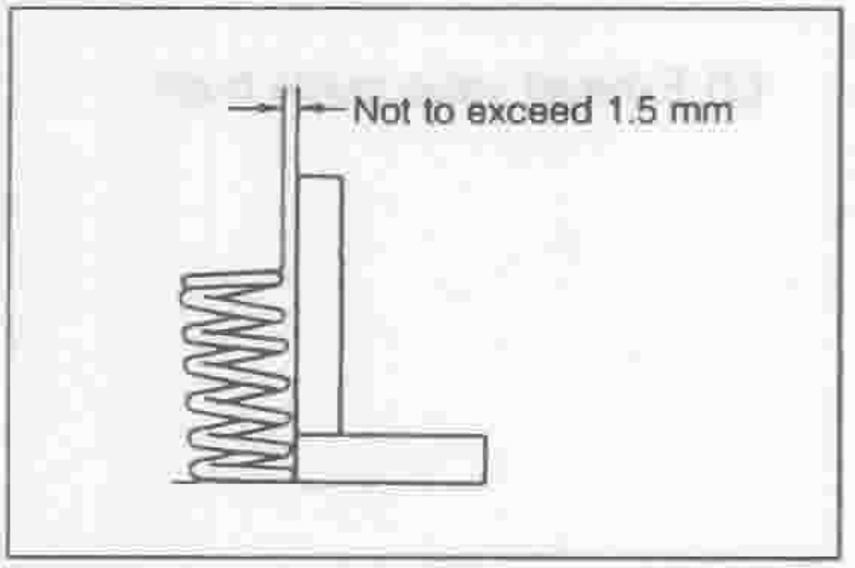
Oil Clearance:
Specified Value:
Exhaust: 0.030 - 0.065 (mm) [ED-10, ED-20 Engine]
0.030 - 0.065 (mm) [EF-EL Engine]
Allowable Limit:
Exhaust: 0.110 (mm) [ED-10, ED-20 Engine]
0.08 (mm) [EF-EL Engine]


LEM00160-00142


LEM00161-00143

16. Inspection of valve springs
(1) Check the valve spring for squareness, using a steel square.
Maximum Squareness:
1.6 (mm) [ED-10, ED-20 Engine]
1.5 (mm) [EF-EL Engine]

If the squareness exceeds the maximum limit, replace the valve spring.



LEM00162-00144

(2) Measure the valve spring for free length and spring tension, using a spring tester.
Minimum Free Length:

(mm)

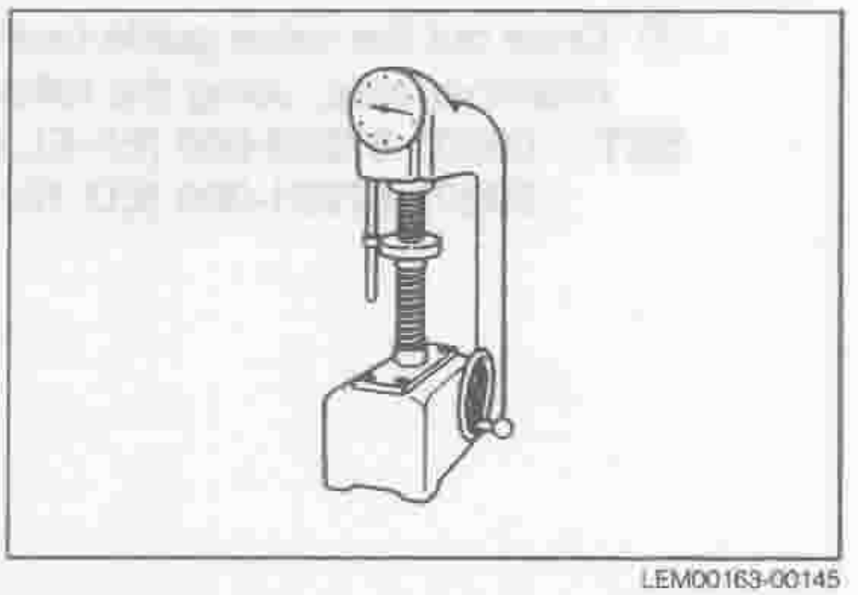
	ED-10, ED-20 Engine	EF-EL Engine
IN	45.9	41.5
EX	45.9	41.0

Minimum Tension/Installation Height:

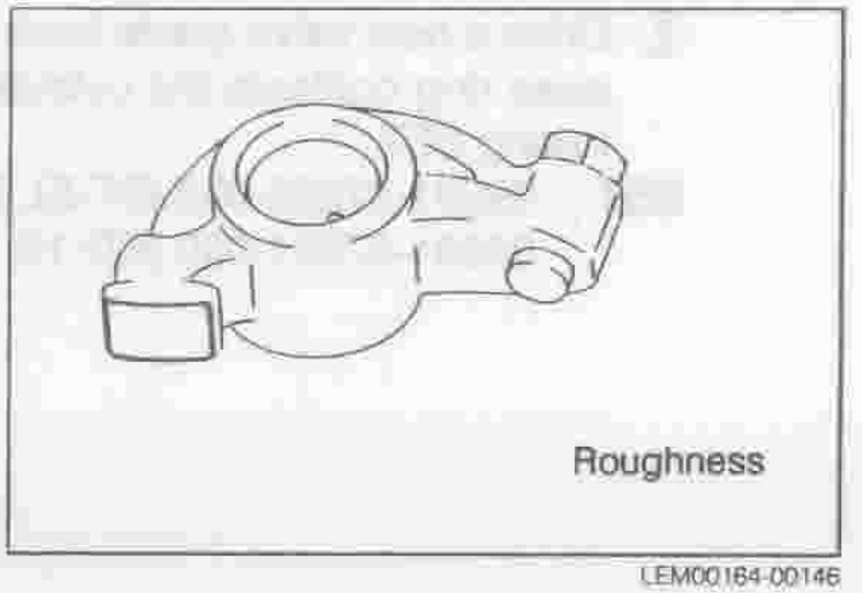
[N (kgf)/mm]

	ED-10, ED-20 Engine	EF-EL Engine
IN	273.6 (27.9)/38.0	88.2 (9.0)/39.0
EX	273.6 (27.9)/38.0	147.0 (15.0)/37.0

If the minimum free length and/or minimum tension is less than the minimum limit, replace the valve spring.


LEM00163-00145

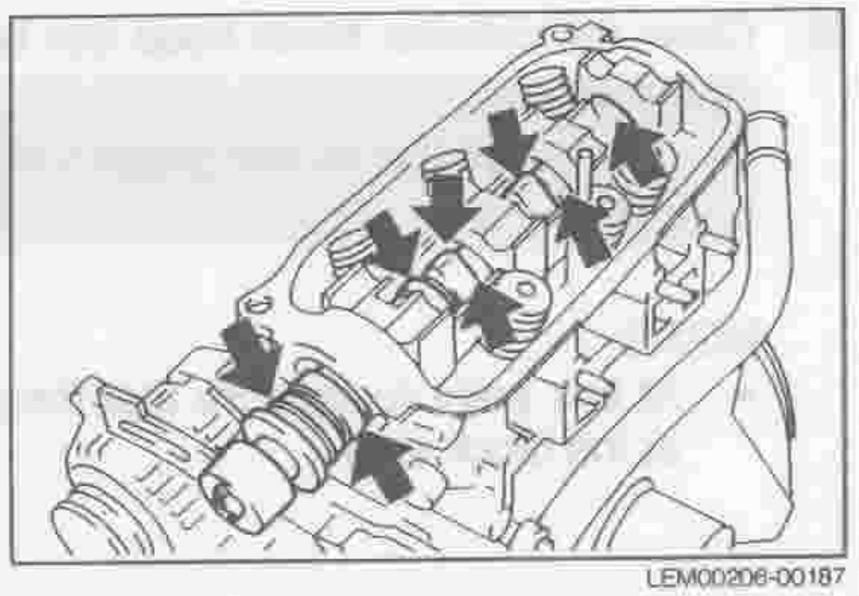
17. Inspection of valve rocker arms and valve rocker shaft
(1) Visually inspect the valve rocker arm for cracks, seizure or wear.
Replace the valve rocker arm, if necessary.
(2) If the valve rocker arm-to-cam contact surface is worn excessively, replace the rocker arm.



LEM00164-00146

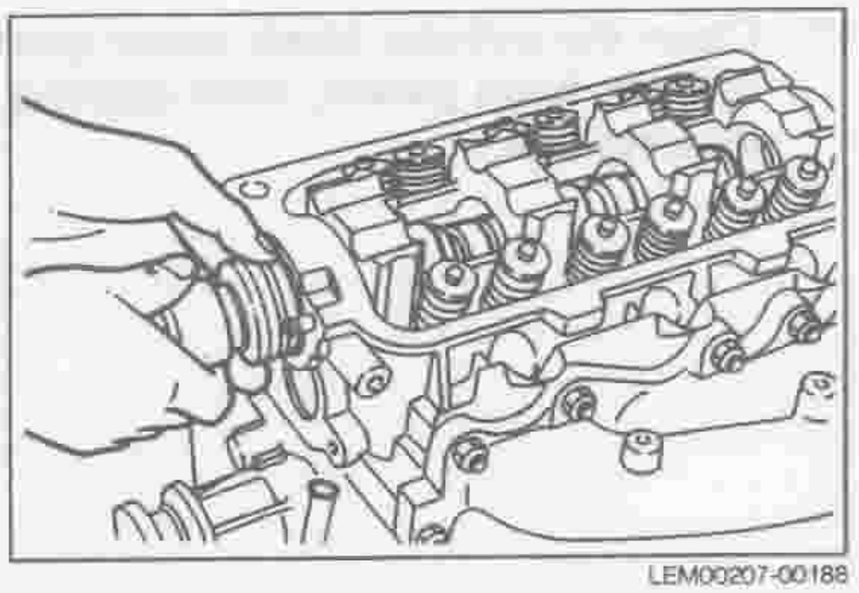
- Make sure that all the bolts are tightened uniformly to a constant level, not only they are tightened within the specified torque.

22. Installation of camshaft
    (1) Apply engine oil to the camshaft journal section of the cylinder head as well as to the journal section of the camshaft.

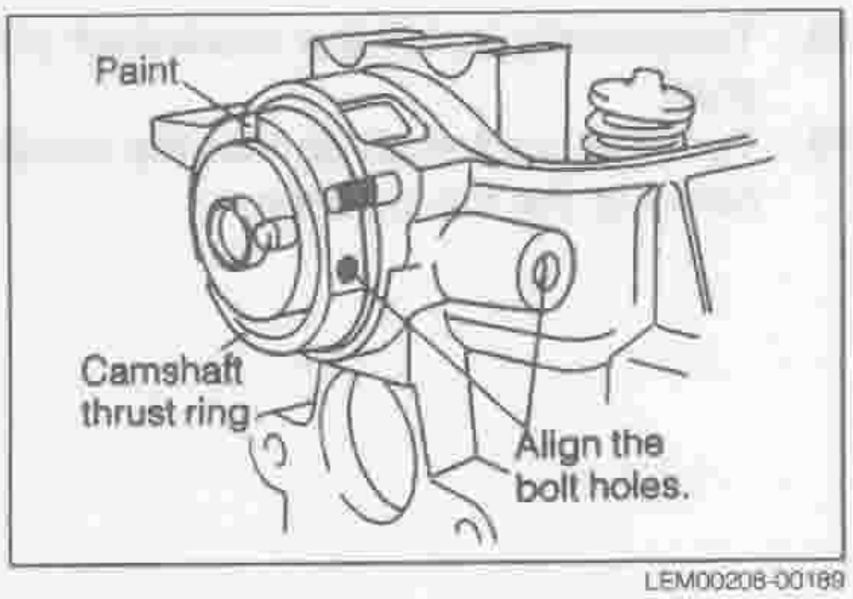

LEM00206-00187

    (2) Insert the camshaft into the cylinder head.

NOTE:
- Be very careful not to damage the camshaft journal section during the assembly.

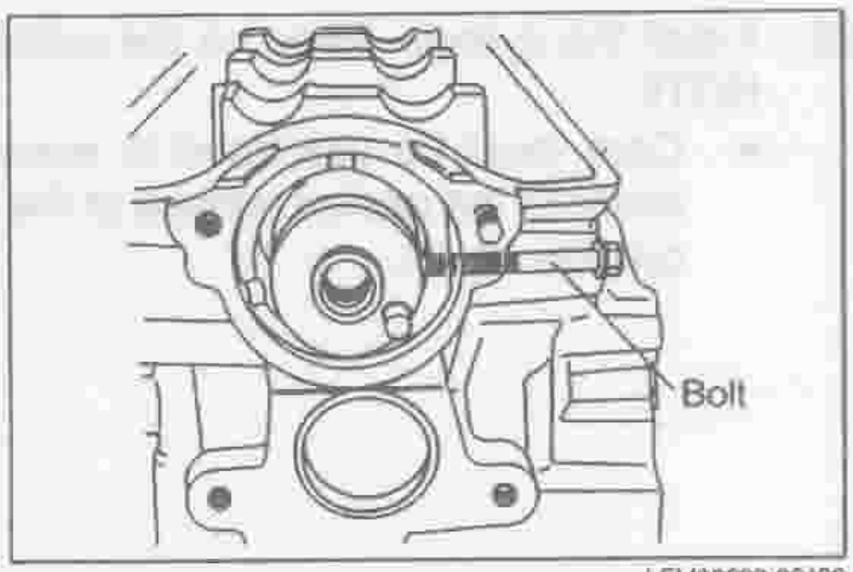

LEM00207-00188

    (3) Install the camshaft thrust ring, while aligning its bolt hole with the camshaft thrust ring attaching bolt hole at the cylinder head.



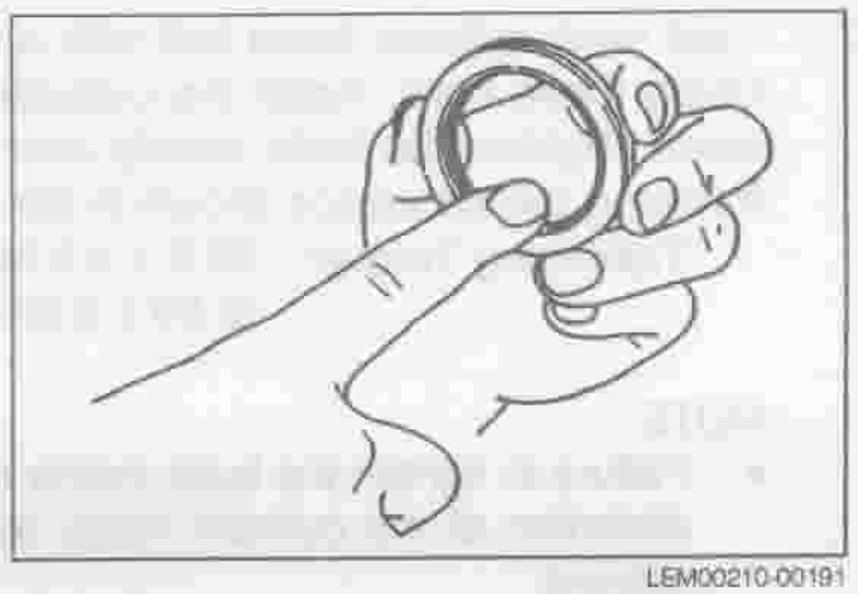
LEM00208-00189

    (4) Install the camshaft thrust ring attaching bolt with a gasket interposed.
    Tightening Torque: 8.8 ± 1.8 N·m
    (0.90 ± 0.18 kgf-m)



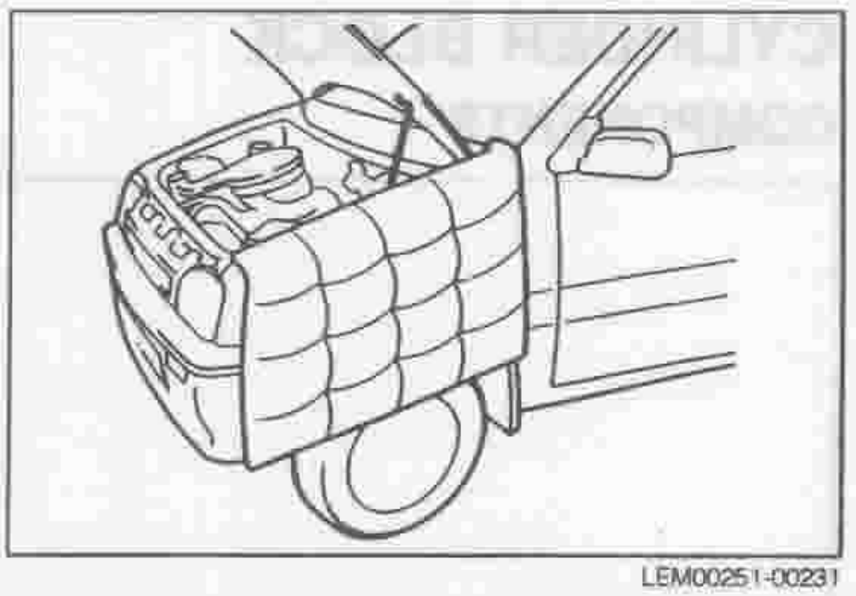
LEM00209-00190

23. Installation of camshaft front oil seal
    (1) Apply engine oil to the inner surface of the camshaft front oil seal.


LEM00210-00191

INSTRUCTION PRIOR TO OPERATION

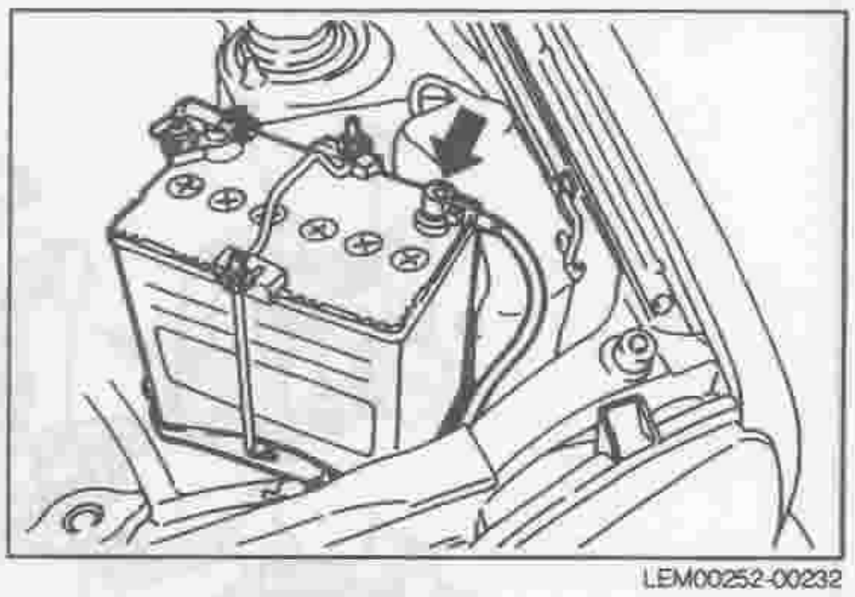
Install fender covers to the fenders so that no scratch may be made to the fenders.



LEM00251-00231

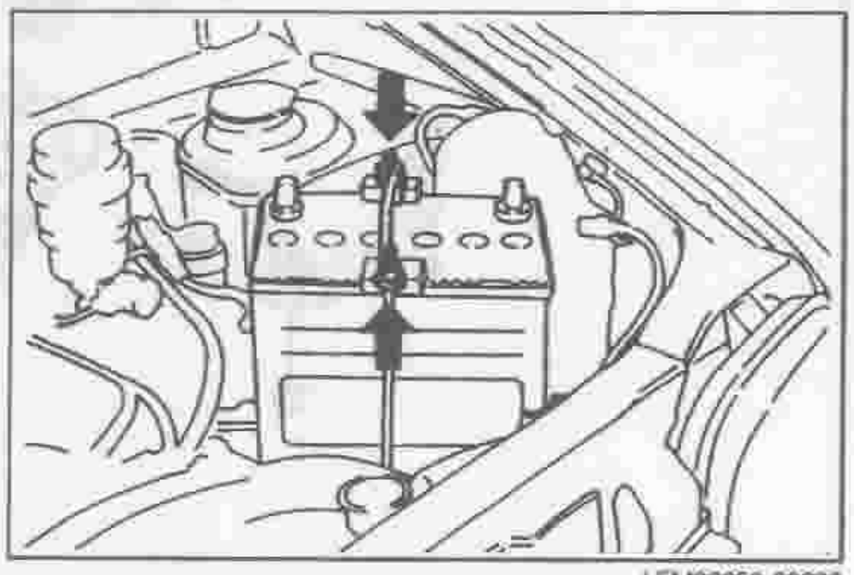
ENGINE REMOVAL

1. Disconnect the battery ground cable from the negative (–) terminal of the battery.
2. Disconnect the wires of the positive (+) terminal from the battery positive terminal.
3. Remove the engine hood, as follows:
   (1) Disconnect the windshield washer hose from the three-way joint. Remove the hose from the clamp of the engine hood.
   (2) Remove the hood, being very careful not to scratch the body and hood.
4. Drain the coolant.
   (Refer to the MA section.)
5. Drain the engine oil.
   (Refer to the MA section.)
6. Drain the transmission oil.
   (Refer to the MT or AT section.)
7. Remove the air cleaner assembly from the engine.
8. Remove the front bumper. (Refer to the BO section.)



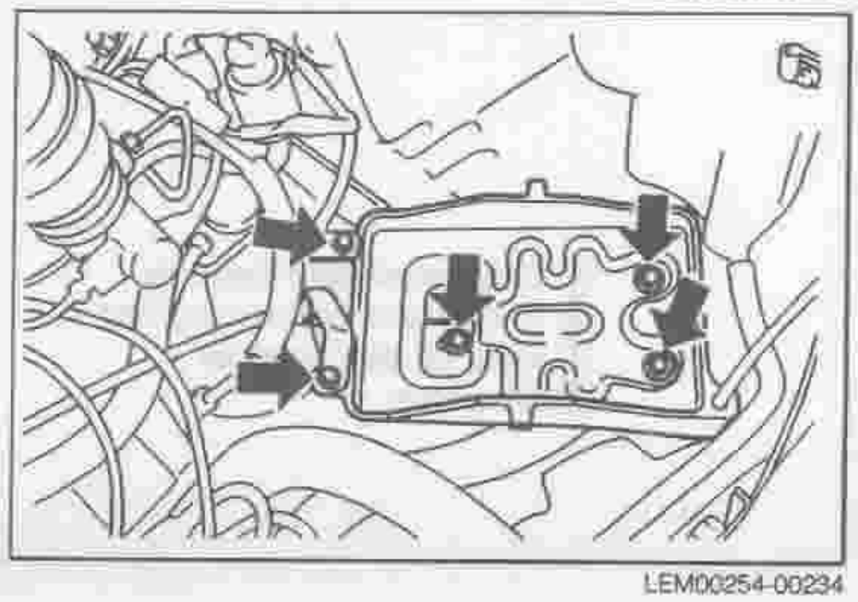
LEM00252-00232

9. Remove the battery hold-down clamp and battery clamp bolts.
10. Remove the battery.
    CAUTION:
    - Handle the battery carefully. Never allow any flame to be brought to the battery.



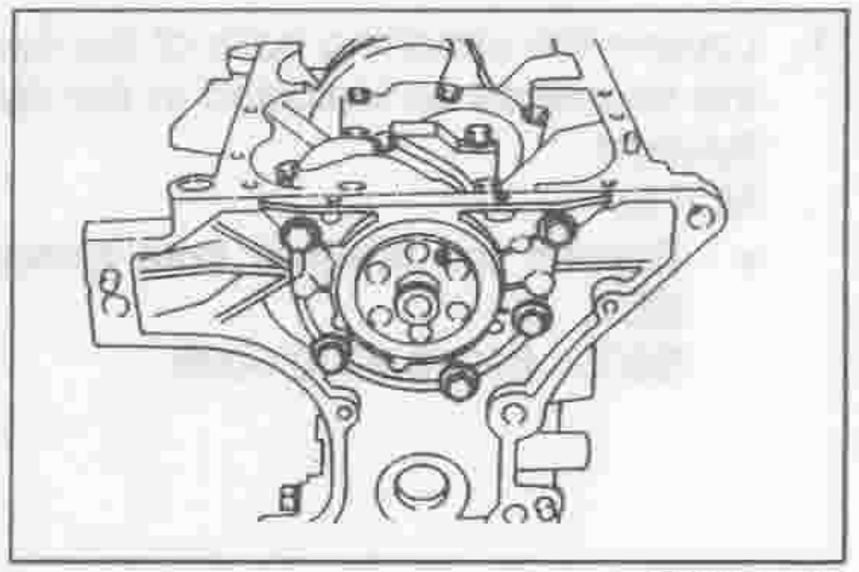
LEM00253-00233

11. Removal of battery carrier
    (1) Remove the wiring clamp bolt.
    (2) Remove the ground cable from the clamp.
    (3) Remove the speedometer cable clamp attaching screw.
    (4) Remove the battery carrier by removing the three bolts.



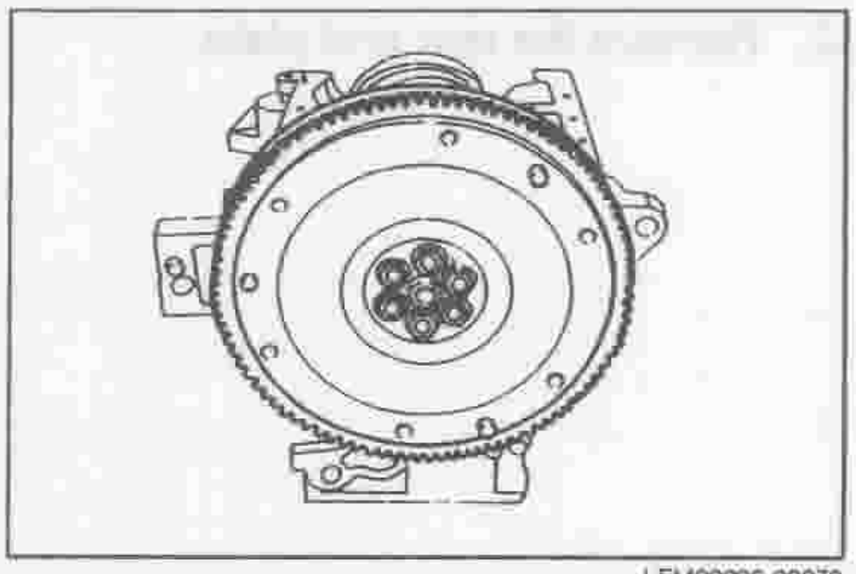
LEM00254-00234

17. Remove the rear oil seal retainer.
18. Remove the gasket material from the cylinder block and oil seal retainer.



LEM00295-00277

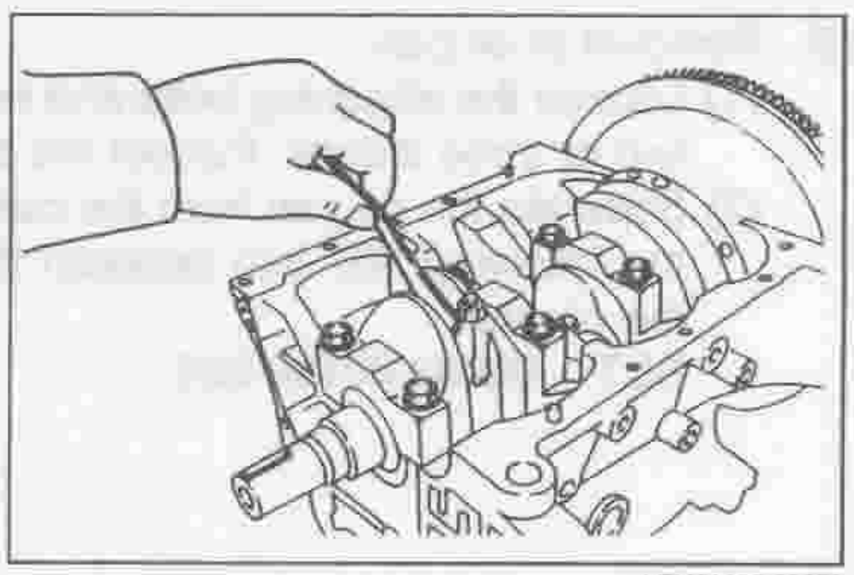
19. Install the flywheel temporarily.



LEM00296-00278

20. Measurement of connecting rod thrust clearance
    Measure the thrust clearance between the connecting rod and the crankshaft, using a thickness gauge.
    Thrust Clearance:
    Standard: 0.15 - 0.25 mm
    Maximum Limit: 0.3 mm

NOTE:
- The thrust clearance should be measured while the connecting rod is being pushed against either side of the crankshaft in the axial direction. Measure the thrust clearance at the opposite side.

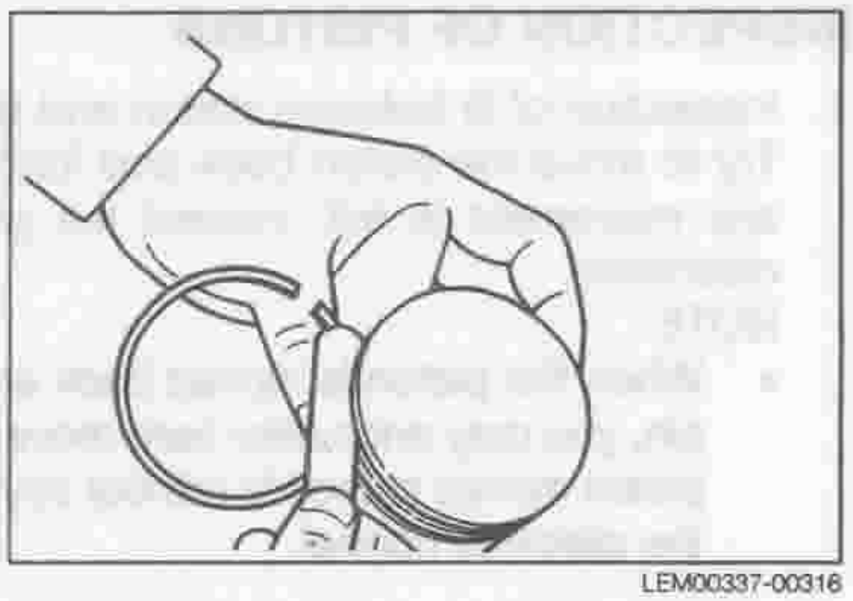


LEM00297-00279

If the clearance exceeds the specified value, replace the connecting rod or the crankshaft, or both of them, referring to the width of the big end of the connecting rod in the thrust direction and the side width of the crankpin journal.

LEM00298-00000

6. Inspection of piston ring groove side clearance
   Measure the side clearances of the piston rings No.1 and No.2 over the entire periphery of each groove, using a thickness gauge.
   The maximum measured value is regarded as the piston ring side clearance.



LEM00337-00316

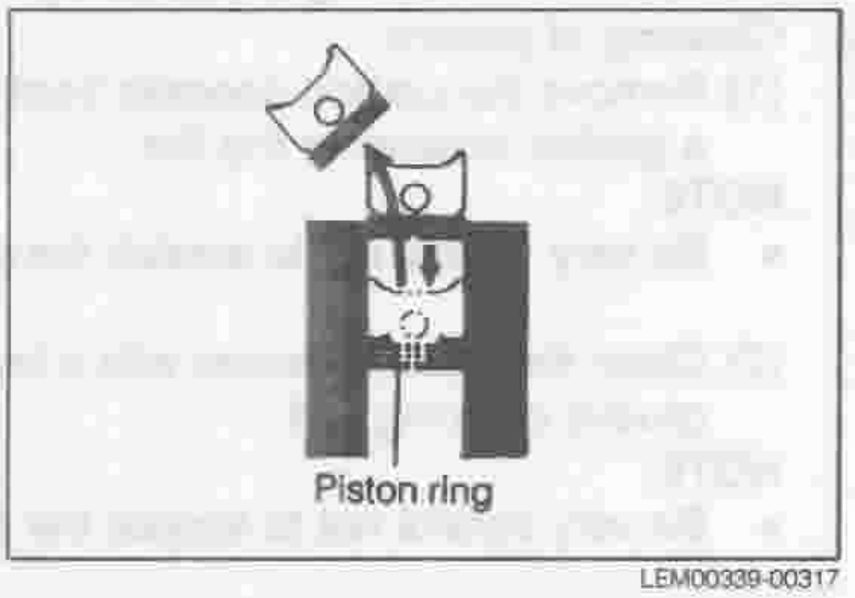
Piston ring side clearance

	Specified value (mm)	Allowable limit (mm)
Compression ring No. 1	0.03 - 0.07	0.12
Compression ring No. 2	0.02 - 0.06	0.11

Replace the piston ring and/or piston so that the piston ring side clearance may become less than the allowable limit.
NOTE:
- When replacing the piston rings, a set of piston rings for one cylinder should be replaced.

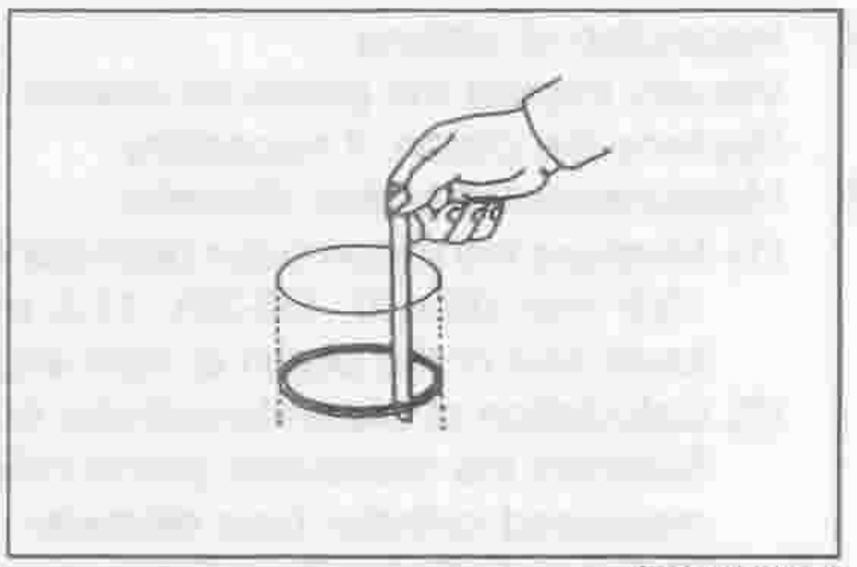
LEM00338-00000

7. Inspection of piston ring end gap
   (1) Apply engine oil to the cylinder walls.
   (2) Insert the piston rings into the cylinder bore.
   (3) Using a piston, push down the piston ring to a point 45 mm measured from the cylinder block upper surface.



LEM00339-00317

   (4) Measure the piston ring end gap, using a thickness gauge or a feeler gauge.



LEM00340-00318

Piston ring end gap

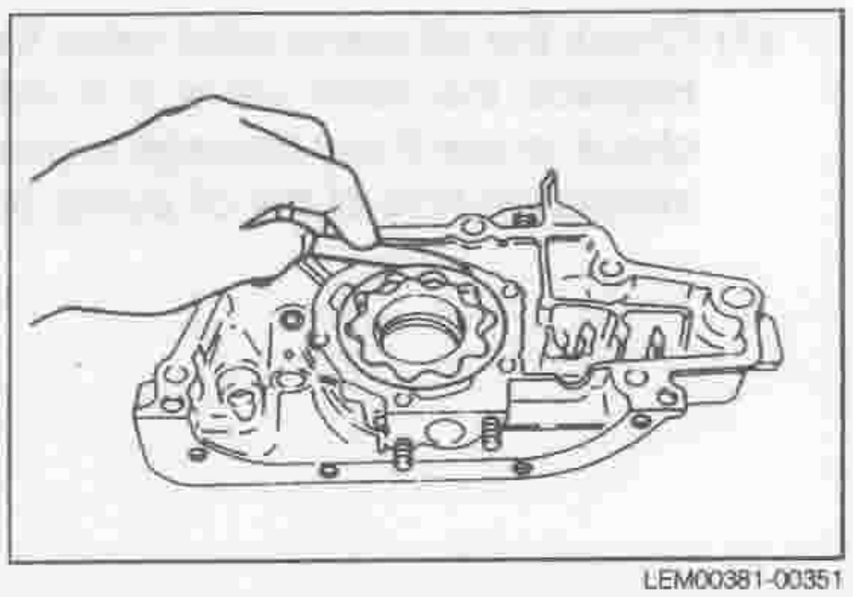
	Specified value (mm)	Allowable limit (mm)
Compression ring No. 1	0.25 - 0.40	0.65
Compression ring No. 2	0.20 - 0.35 [ED-10, ED-20 Engine] 0.40 - 0.55 [EF-EL Engine]	0.65
Oil ring (Side rail)	0.20 - 0.70	1.0

If the piston ring end gap exceeds the allowable limit, a set of piston rings for one cylinder should be replaced.

LEM00341-00000

(2) Measure the body clearance between the oil pump body and the outer rotor, using a thickness gauge.
Body Clearance: 0.10 - 0.185 mm
Maximum Limit: 0.25 mm

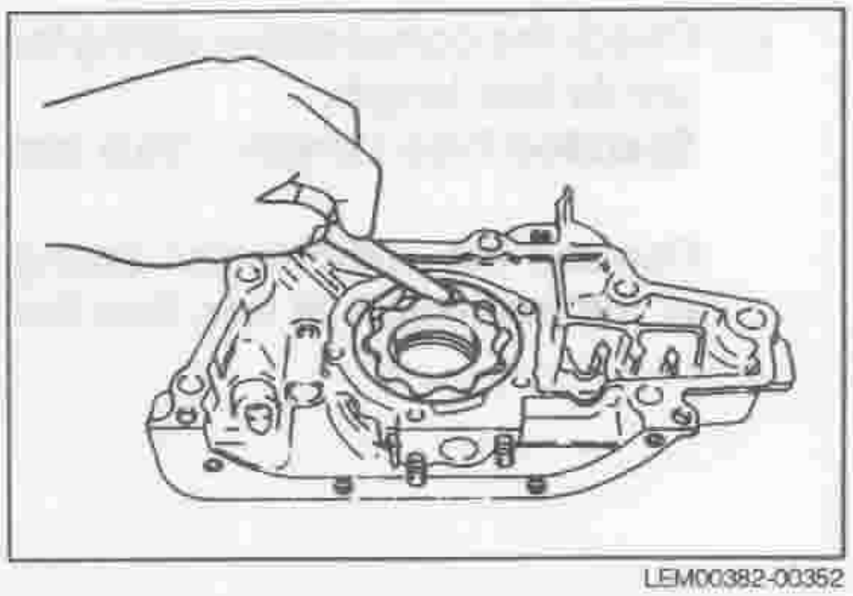
Replace the oil pump if the body clearance exceeds the specified value.



LEM00381-00351

(3) Measure the tip clearance of the rotor set, using a thickness gauge.
Tip Clearance: 0.17 - 0.24 mm
Maximum Limit: 0.35 mm

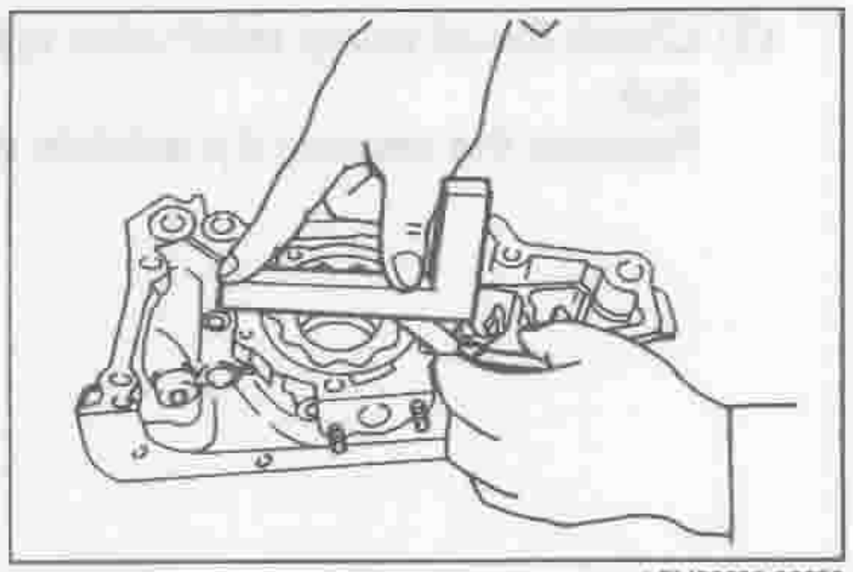
Replace the rotor set if the tip clearance exceeds the specified value.



LEM00382-00352

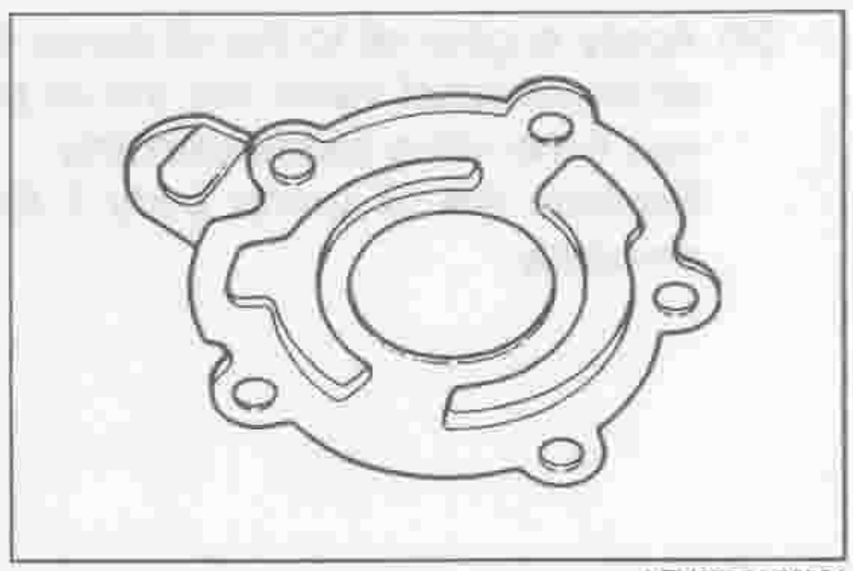
(4) Measure the side clearance between the oil pump body and the rotor set, using a straightedge and a thickness gauge.
Side Clearance: 0.035 - 0.070 mm
Maximum Limit: 0.15 mm

Replace the oil pump if the side clearance exceeds the specified value.



LEM00383-00353

8. Check to see if any wear is present at the rotor set mate surface of the pump cover.
Replace the oil pump cover if it exhibits wear.



LEM00384-00354

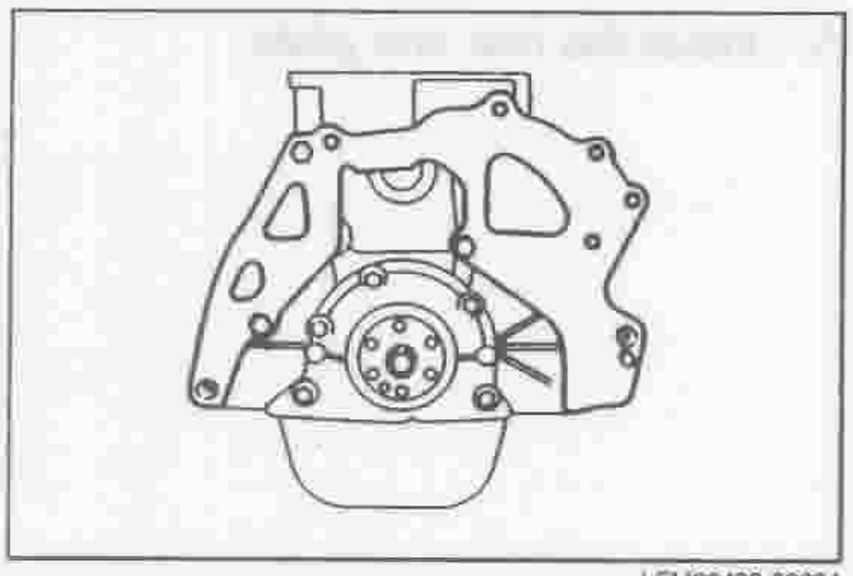
ASSEMBLY OF OIL PUMP

NOTE:
- Wash those parts to be assembled in cleaning solvent. Dry them using compressed air.

WARNING:
- When you use compressed air, be sure to protect your eyes,wearing safety goggles.

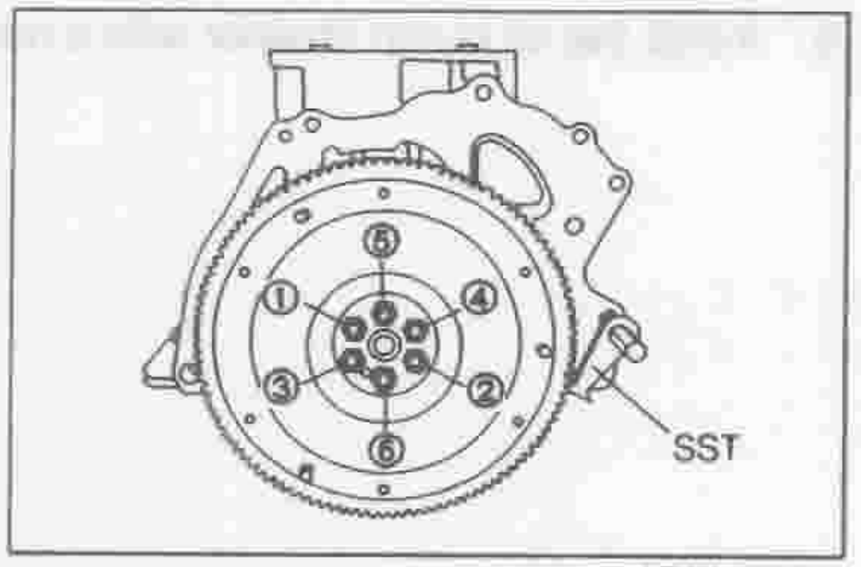
LEM00385-00000

8. Install the rear end plate to the cylinder block.



LEM00428-00394

9. Installation of flywheel
   (1) Assemble the flywheel, aligning it with the knock pin of the crankshaft.
   (2) Temporarily tighten the flywheel attaching bolts to the following torque in the sequence indicated in the right figure.
   Tightening Torque: 29.4 - 34.3 N·m
   (3.00 - 3.50 kgf-m)



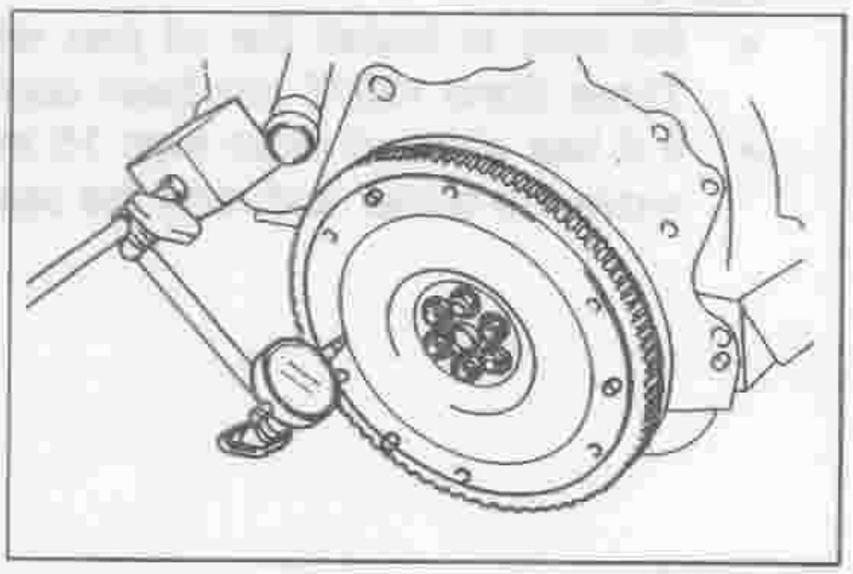
LEM00429-00395

NOTE:
- Prevent the crankshaft from turning at the ring gear section, using the following SST.
  SST: 09210-87701-000

   (3) Tighten the flywheel attaching bolts to the specified torque in the sequence indicated in the right figure.
   Tightening Torque: 44.1 ± 4.9 N·m
   (4.50 ± 0.50 kgf-m)

NOTE:
- Prevent the crankshaft from turning at the ring gear section, using the following SST.
  SST: 09201-87701-000

LEM00430-00000



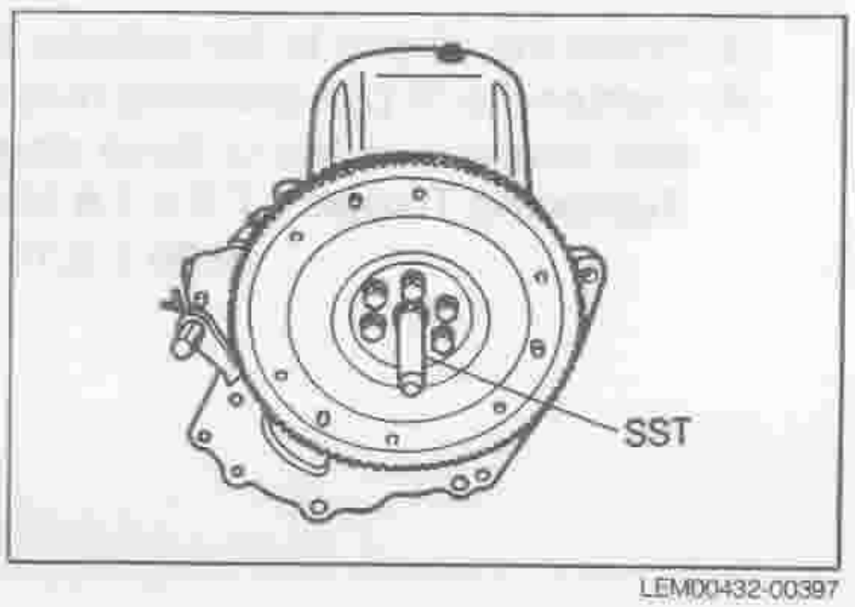
10. Measure the flywheel runout, using a dial gauge.
    Allowable Runout Limit: 0.1 mm

NOTE:
- Replace the flywheel if its runout exceeds the allowable limit.

LEM00431-00396

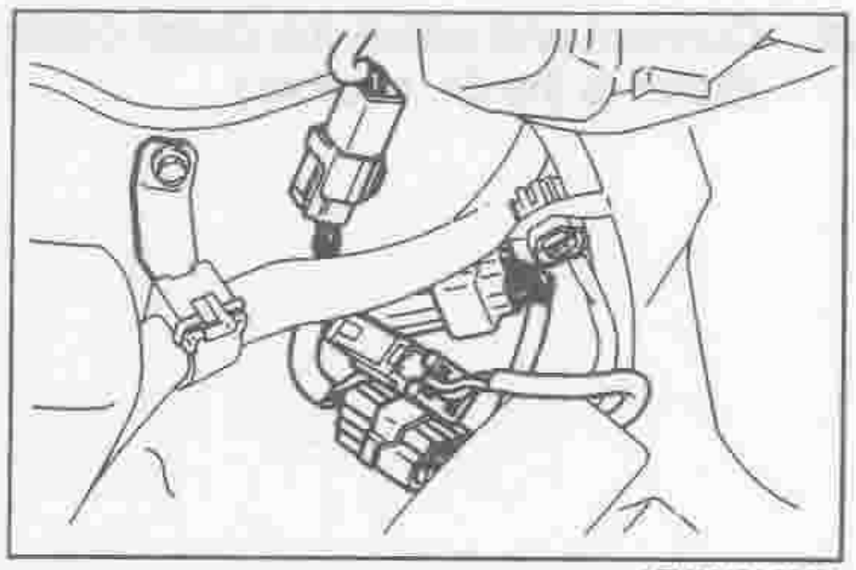
11. Assembly of clutch disc and pressure plate
    (1) Insert the following SST into the crankshaft rear end.
    SST: 09301-87701-000

    (2) Install the clutch disc.



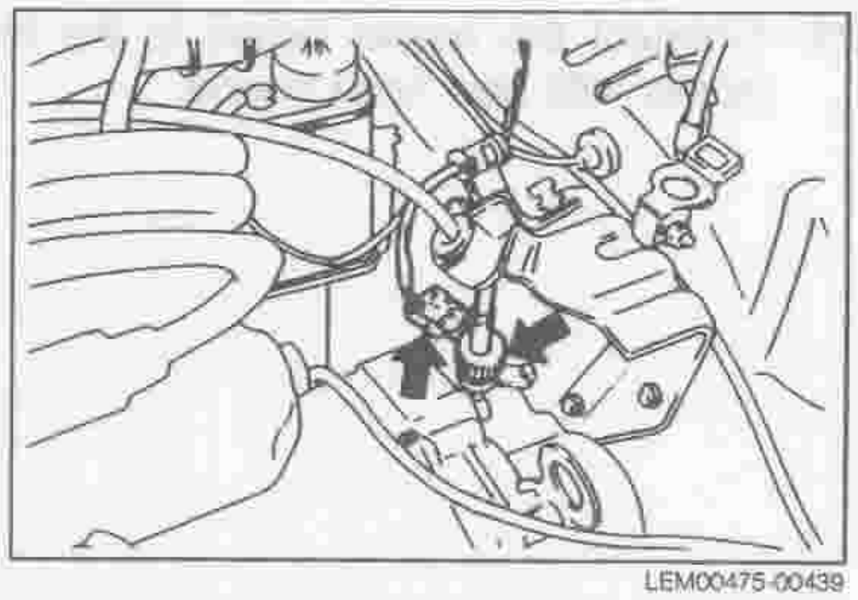
LEM00432-00397

27. Connect the engine wire connectors.
28. Attach the clamp of the engine wire with bolts.



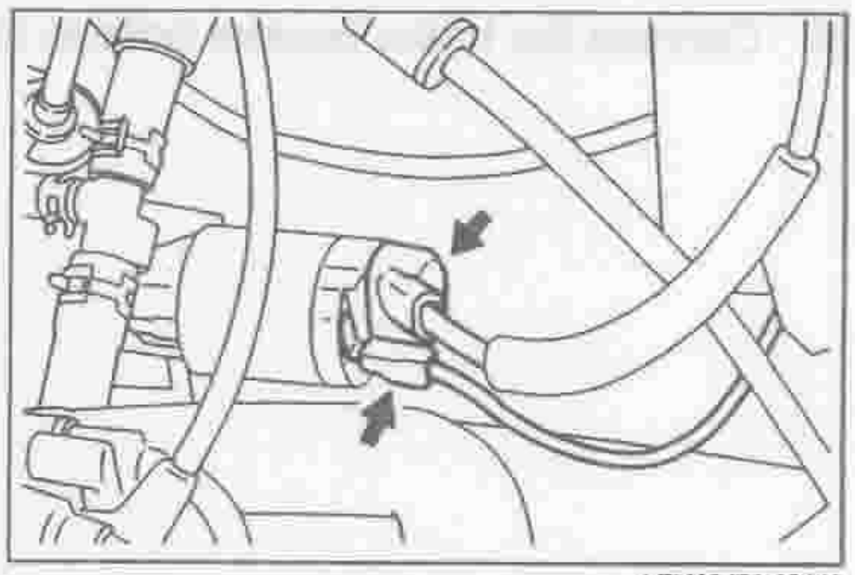
LEM00474-00438

29. Connect the speedometer cable to the transmission.
30. Connect the backup lamp switch connector.



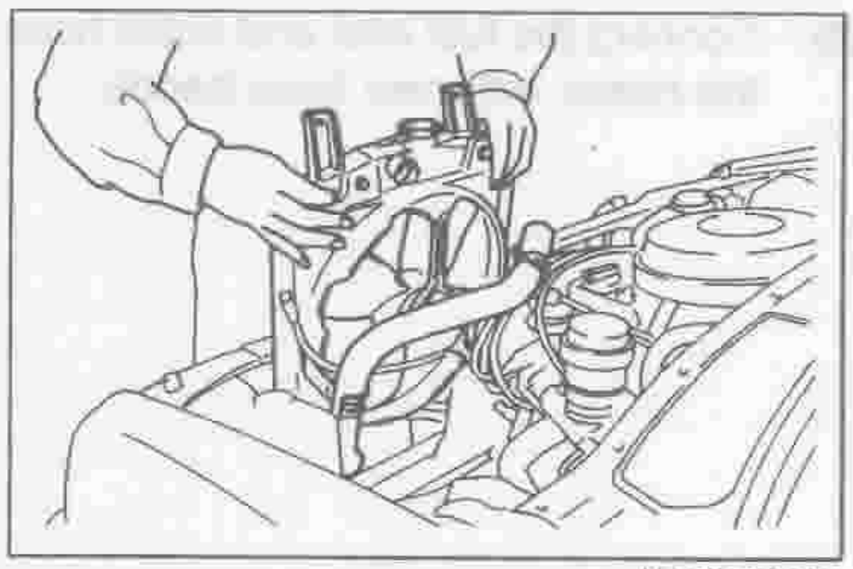
LEM00475-00439

31. Connect the starter terminal B and terminal ST to the starter.



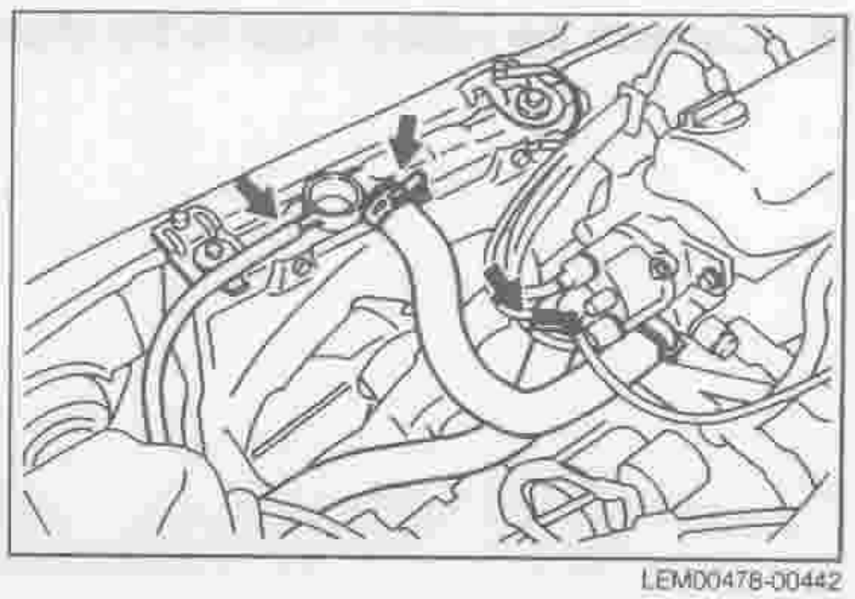
LEM00476-00440

32. Install the radiator.
(Refer to the CO section.)



LEM00477-00441

33. Connect the radiator reserve tank hose.
34. Connect the radiator lower hose to the water inlet pipe. Secure the hose with a new hose band.
35. Connect the radiator upper hose to the radiator and secure the hose with a new hose band.



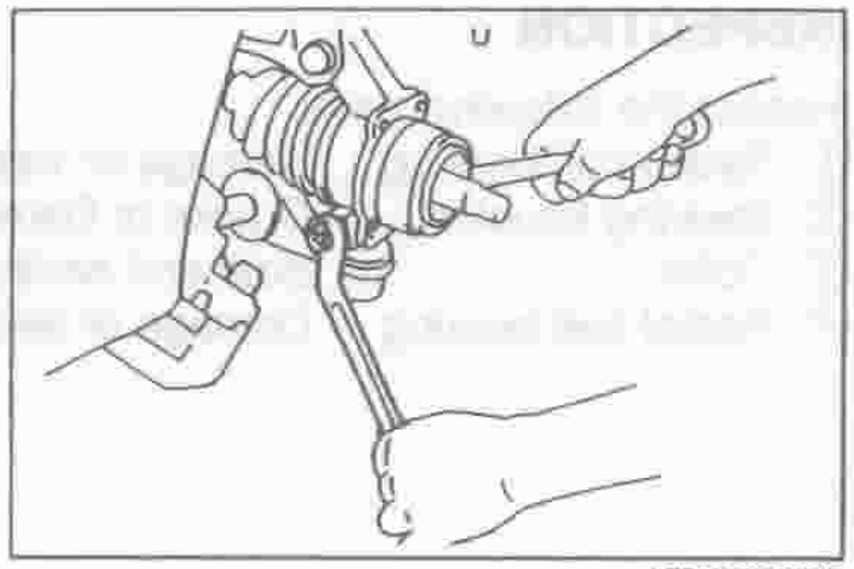
LEM00478-00442

Components	Item		Engine type		
			ED-10	ED-20	EF-EL
Cylinder	Oil clearance between piston-to-cylinder				
		STD	0.035 - 0.055		0.025 - 0.045
		Maximum limit	0.110		0.100
	Reference				
	Cylinder bore diameter				
	(When over size piston is used)	STD	66.600 - 66.630		68.000 - 68.030
		O/S 0.25	66.850 - 66.880		68.250 - 68.280
		O/S 0.50	67.100 - 67.130		68.500 - 68.530
		O/S 0.75	67.350 - 67.380		68.750 - 68.780
		O/S 1.00	67.600 - 67.630		69.000 - 69.030
	NOTE: The boring and/or honing operation should be carried out in accordance with the size of the replacement piston.	(mm)			
Piston, piston pin and piston rings	Piston-to-cylinder bore oil clearance				
		STD	0.035 - 0.055		0.025 - 0.045
		Maximum limit	0.110		0.100
	Reference				
	Piston outer diameter				
		STD	66.555 - 66.585		67.965 - 67.995
		O/S 0.25	66.805 - 66.835		68.215 - 68.245
		O/S 0.50	67.055 - 67.085		68.465 - 68.495
		O/S 0.75	67.305 - 67.335		68.715 - 68.745
		O/S 1.00	67.555 - 67.585		68.965 - 68.995
	NOTE: The boring and/or honing operation should be carried out in accordance with the size of the replacement piston.	(mm)			
	Piston ring groove-to-piston ring side clearance				
	STD	No. 1	0.03 - 0.07		
		No. 2	0.02 - 0.06		
	Maximum limit	No. 1	0.12		
		No. 2 (mm)	0.11		
	Piston ring end gap				
	STD	No. 1	0.25 - 0.40		0.25 - 0.40
		No. 2	0.20 - 0.35		0.40 - 0.55
		Oil	0.20 - 0.70		0.20 - 0.70
	Maximum limit	No. 1	0.65		0.65
		No.2	0.65		0.65
		Oil (mm)	1.00		1.00
	Piston-to-piston pin oil clearance				
		STD	0.005 - 0.011		
		Maximum limit (mm)	0.05		
	Piston pin-to-connecting rod interference fit				
		STD	0.012 - 0.044		
		Maximum limit (mm)	0.044		
	Reference				
	Piston pin outer diameter	(mm)	17.991 - 17.994		
Connecting rod	Big end thrust clearance				
		STD	0.15 - 0.25		
		Maximum limit (mm)	0.3		
	Reference				
	Big end thrust side width	(mm)	19.80 - 19.85		
	Maximum bend		0.05		
	Maximum twist	(mm)	0.05		

(2) Remove the lower ball joint by removing the bolt and nut.

NOTE:

- Do not reuse the bolt and nut.

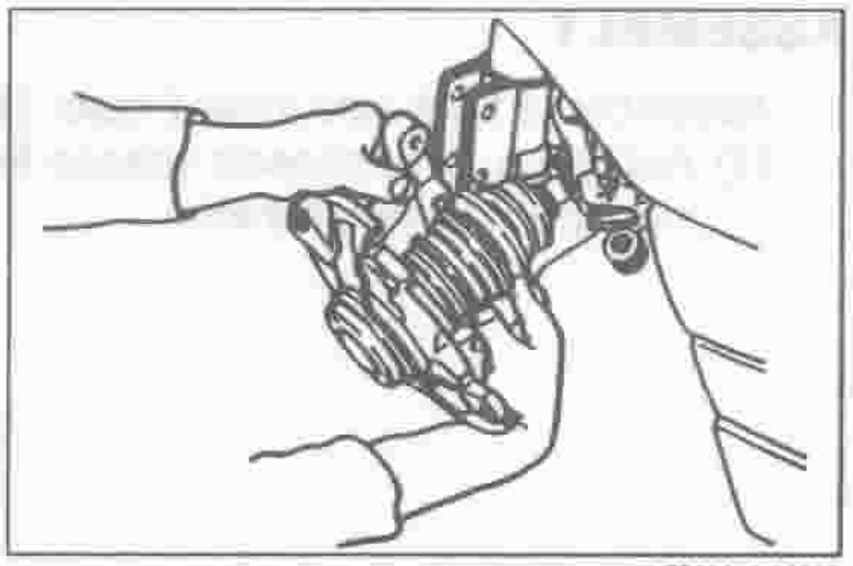


LFS00009-00007

(3) While supporting the steering knuckle, draw out the attaching bolts of the shock absorber lower bracket.
(4) Disengage the front axle hub from the drive shaft. Remove the steering knuckle.

NOTE:

- Protect the drive shaft boot with cloth or the like so that it may not be damaged during the operation.
- Care must be exercised not to distort the disc brake dust cover.



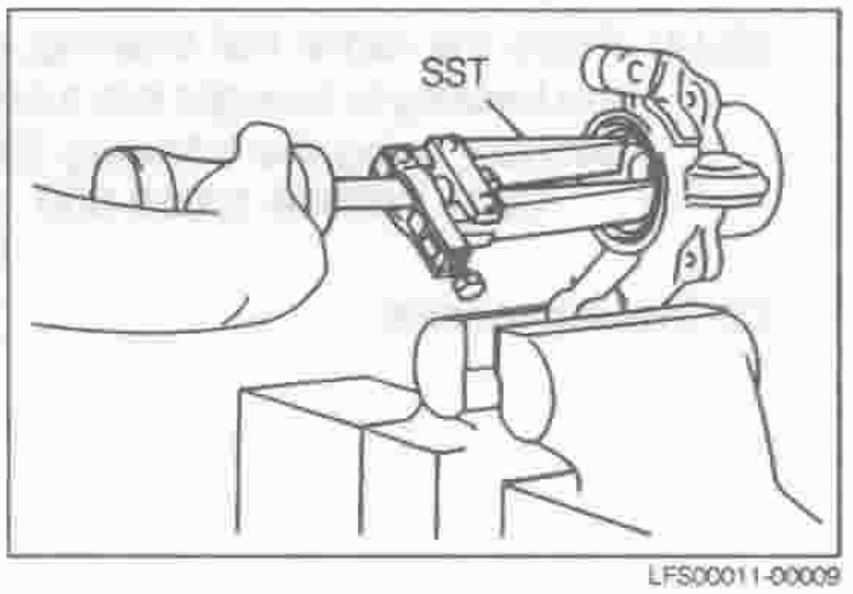
LFS00010-00008

DISASSEMBLY

1. Remove the inner (outer) oil seal, using the following SST.
   SST: 09308-00010-000

   NOTE:

   - Do not reuse the oil seal.

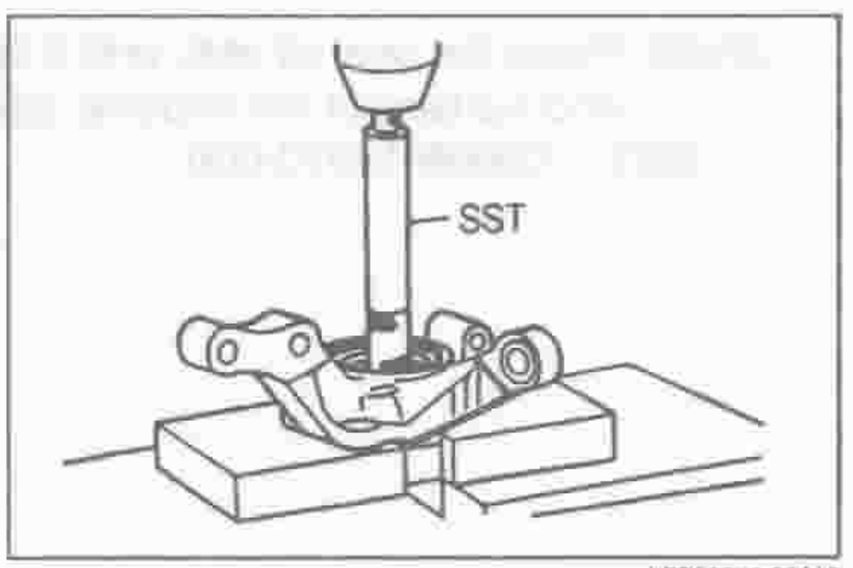


LFS00011-00009

2. Remove the bearing, using the following SST.
   SST: 09608-12010-000

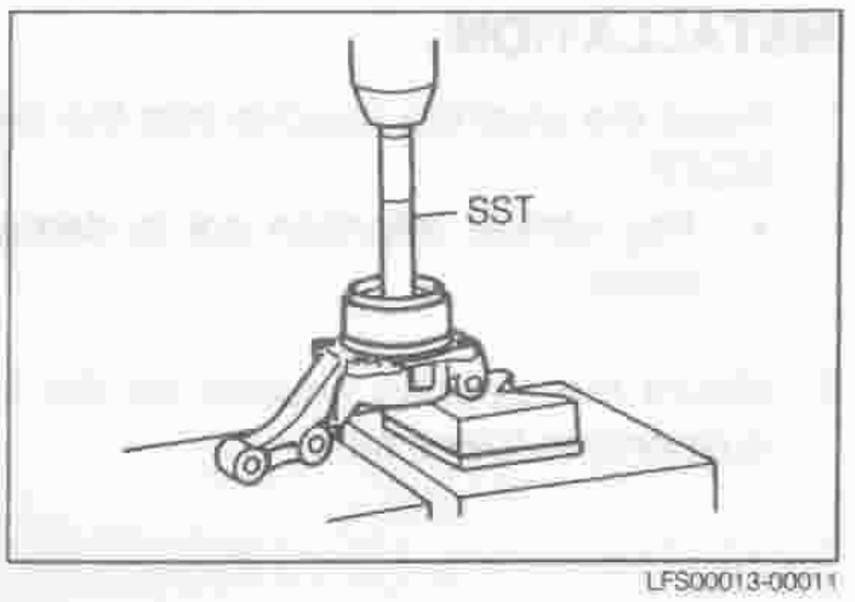
   NOTE:

   - Remove the collar by pushing it.



LFS00012-00010

3. Remove the inner (outer) bearings, using the following SST.
   SST: 09608-12010-000



LFS00013-00011

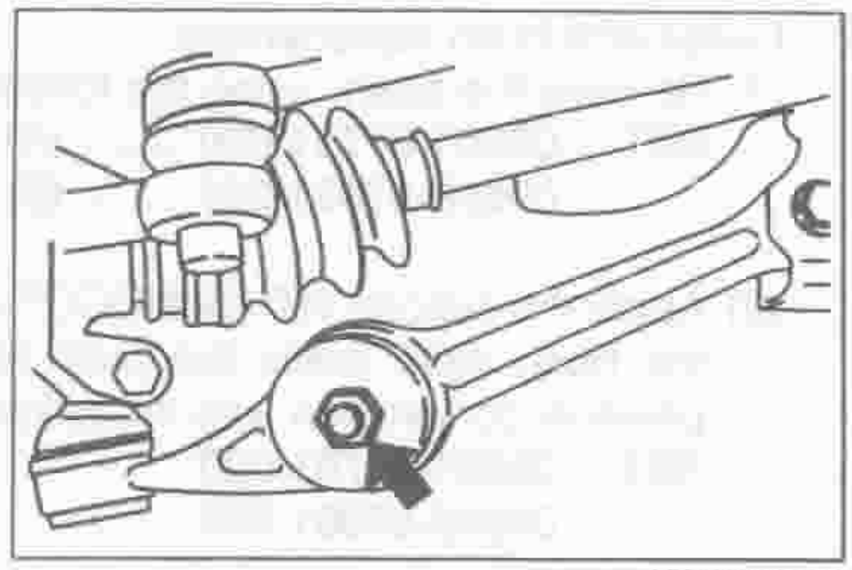
SUSPENSION LOWER ARM

REMOVAL

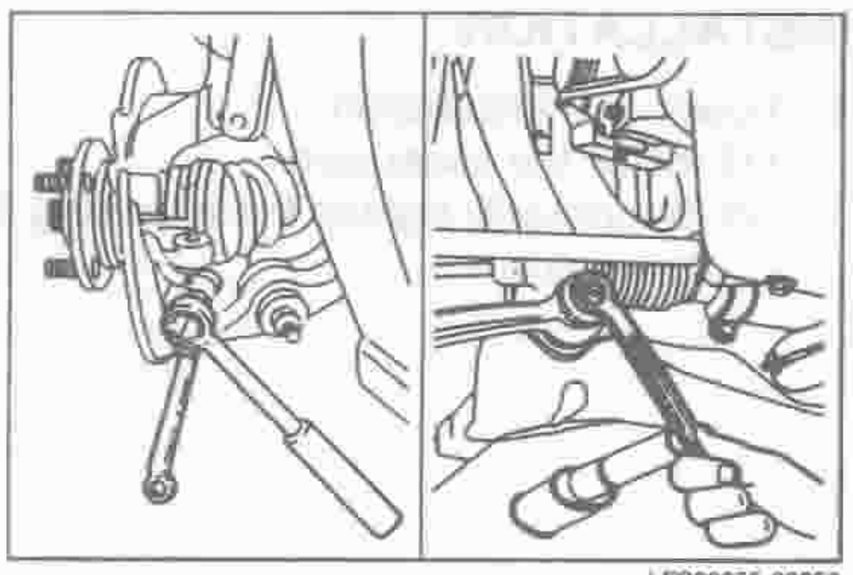
1. Jack up the vehicle.
   NOTE:
   - Be sure to support the vehicle securely with safety stands.

2. Remove the front wheel.
3. Remove the front stabilizer bar and suspension lower arm attaching nut.
   .NOTE:
   - Do not reuse the nut.
4. Suspension lower arm removal
   (1) Remove the attaching bolt and nut of the ball joint.
   NOTE:
   - Do not reuse the nut.

   (2) Remove the attaching bolt of the suspension lower arm at the body side.
   (3) Remove the suspension lower arm.



LFS00054-00052

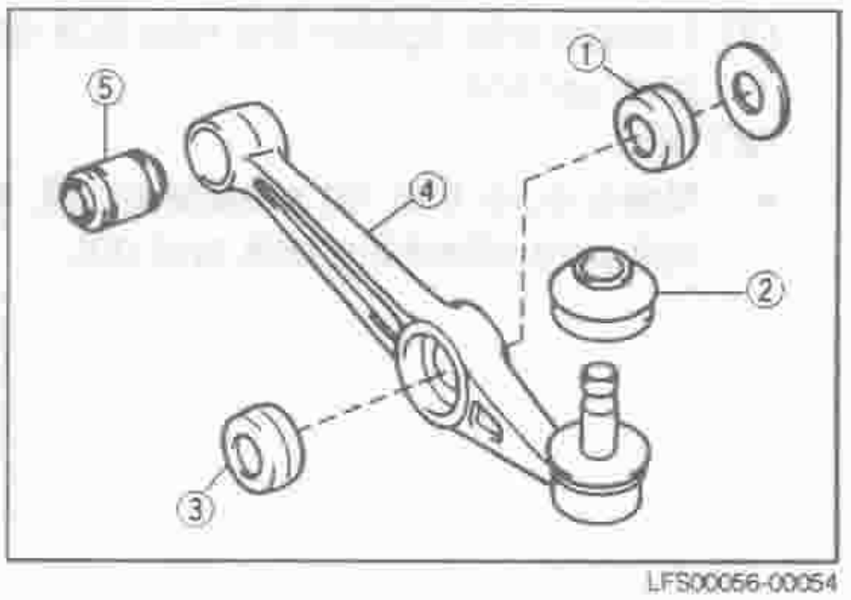


LFS00055-00053

INSPECTION

Inspect the following parts.

① Strat bar cushion ..... Deterioration
② Ball joint dust cover ..... Deterioration
③ Strat bar cushion ..... Deterioration
④ Suspension lower arm ..... Damage, cracks
⑤ Lower arm bush ..... Deterioration



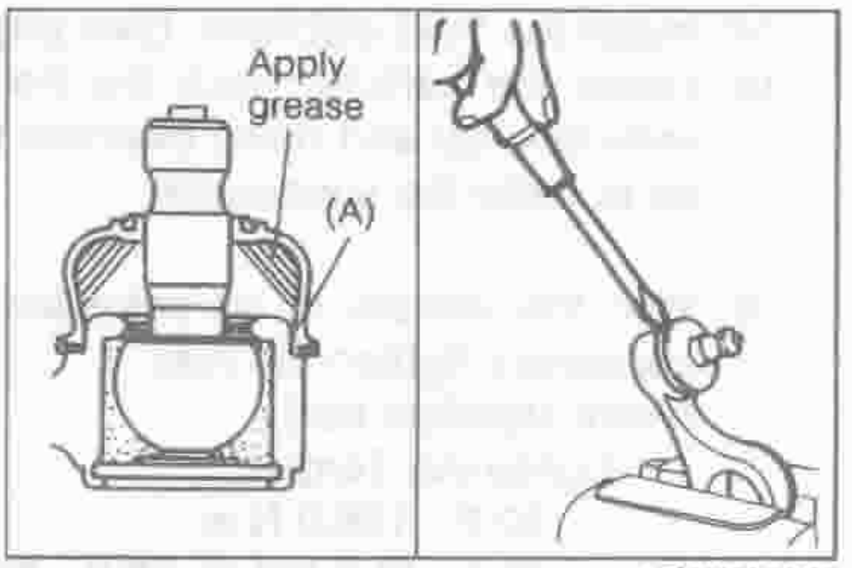
LFS00056-00054

DISASSEMBLY & ASSEMBLY

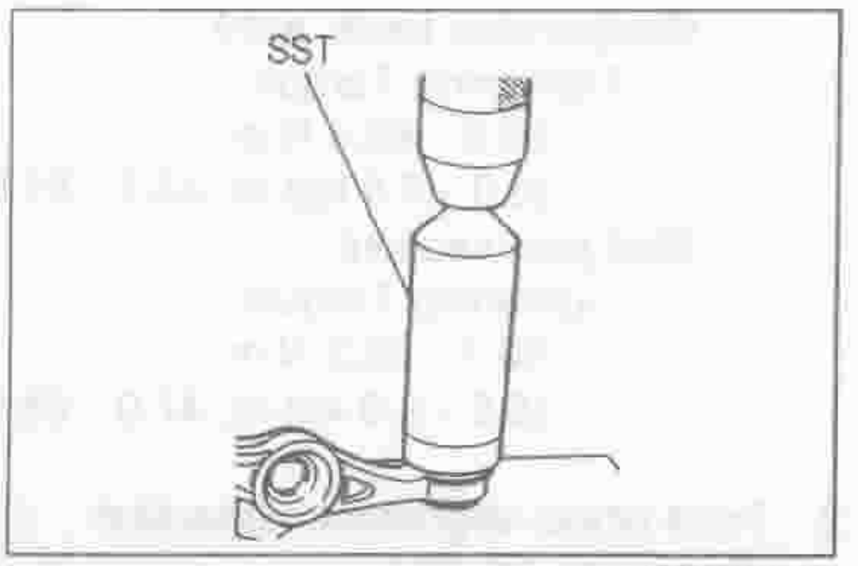
1. Lower ball joint dust cover replacement
   (1) Remove the dust cover, using a screwdriver.
   NOTE:
   - Be very careful not to damage the socket section.

   (2) When assembling the lower ball joint dust cover, apply grease to the illustration.
   NOTE:
   - Make sure that no grease or oil gets to the socket section (A) during the press operation.

   (3) Press the new dust cover into position, using a press in combination with the SST.
   SST: 09618-87301-000

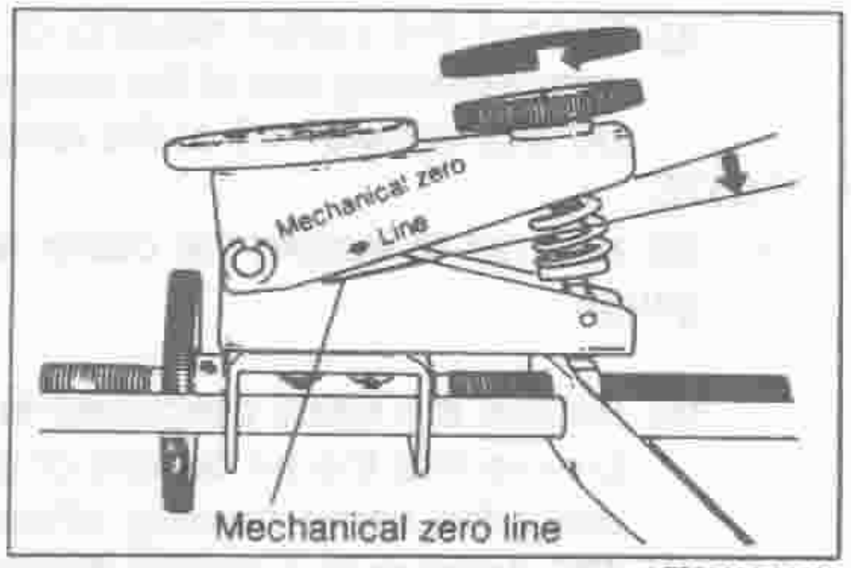


LFS00057-00055



LFS00058-00056

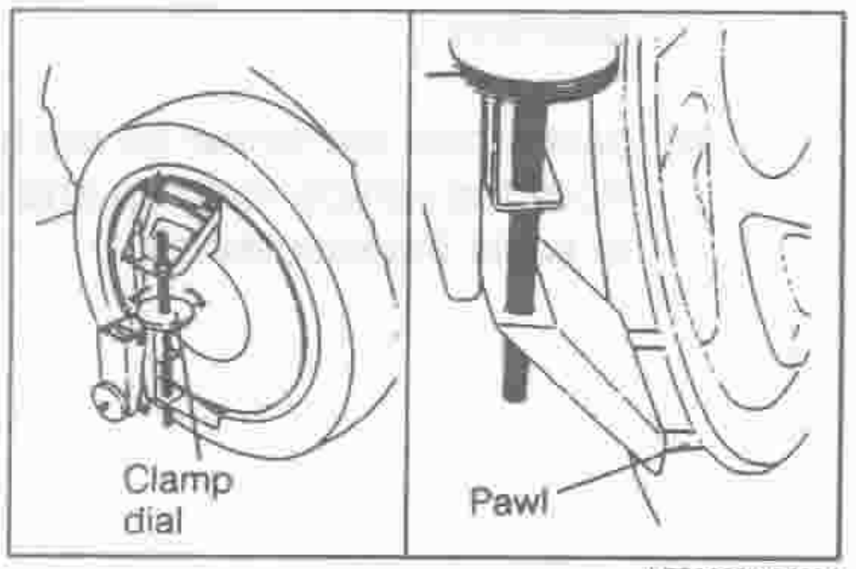
(a) Jack up the vehicle.
(b) Before installing the CCK gauge to the wheel, set the CCK gauge compensator to the mechanical zero line by turning the compensating dial of the compensator.



LFS00096-00093

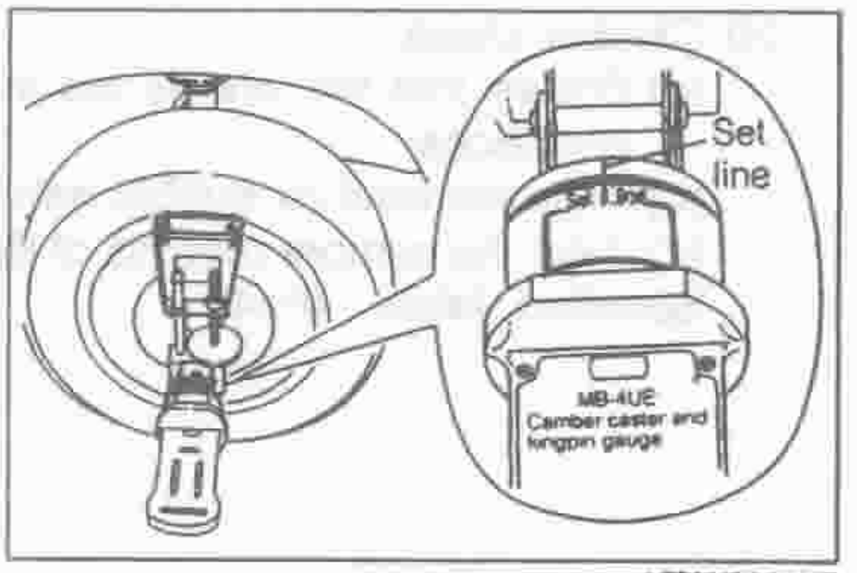
(c) While turning the clamp dial of the CCK gauge compensator, hook the four pawls to the wheel edges securely. While pushing the compensator, lock the compensator positively by turning the clamp dial.

NOTE:
- In order to prevent the wheel edges from being scratched, affix tapes on the wheel edge sections to which the four pawls of the compensator are hooked.



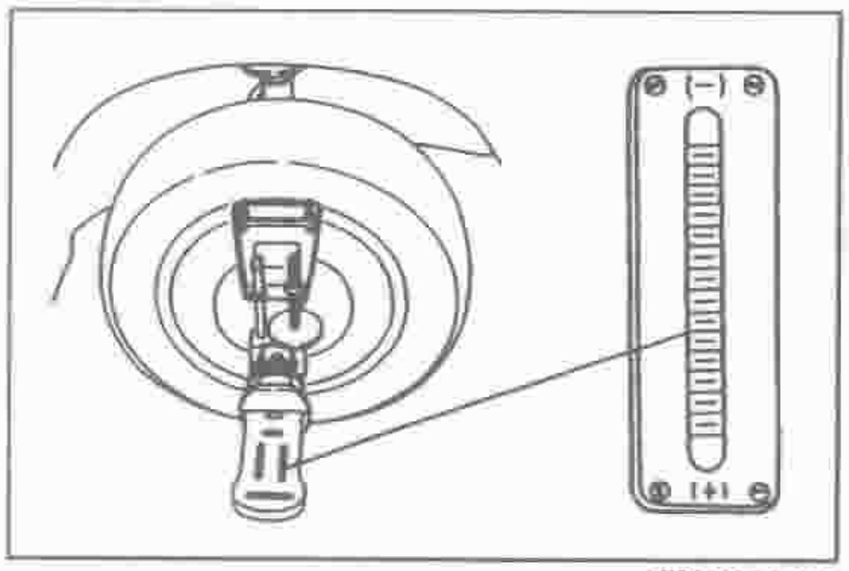
LFS00097-00094

(d) Set the camber caster and kingpin gauge to the installation plate of the CCK gauge compensator.
At this point, align the lines on the gauge and compensator with each other.



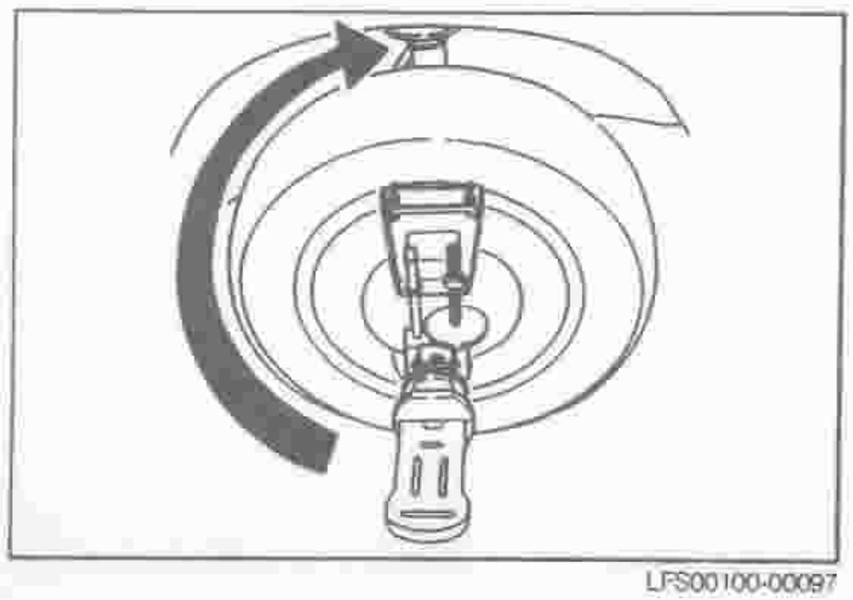
LFS00098-00095

(e) Turn the wheel so that the level air bubble in the gauge comes to the central position.
At this position, turn the caster adjusting screw of the gauge so that the caster air bubble may be aligned with the graduation zero position.



LFS00099-00096

(f) Turn the wheel 180 degrees so that the gauge may be turned over. Proceed to align the set lines on the gauge and compensator with each other.
Next, turn the wheel so that the level air bubble in the gauge comes to the central position.

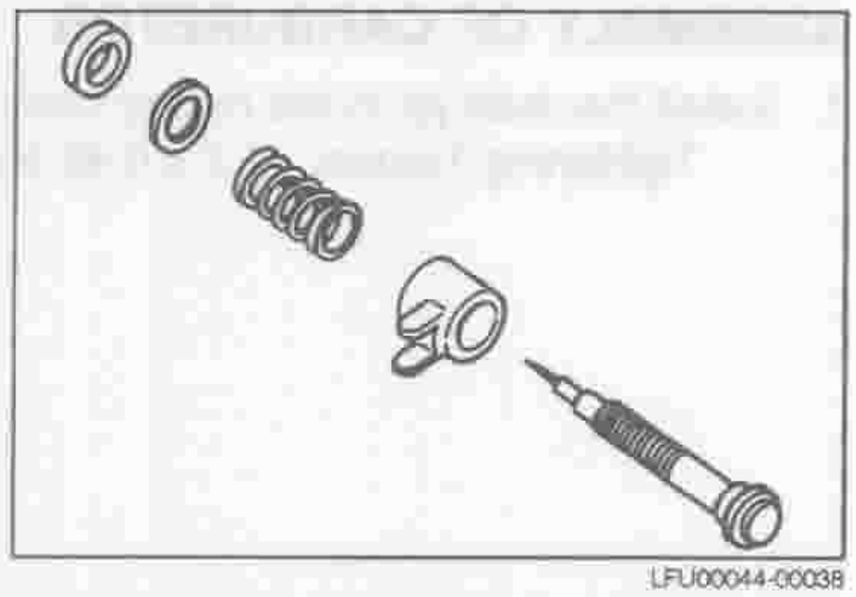

LFS00100-00097

PRECAUTIONS

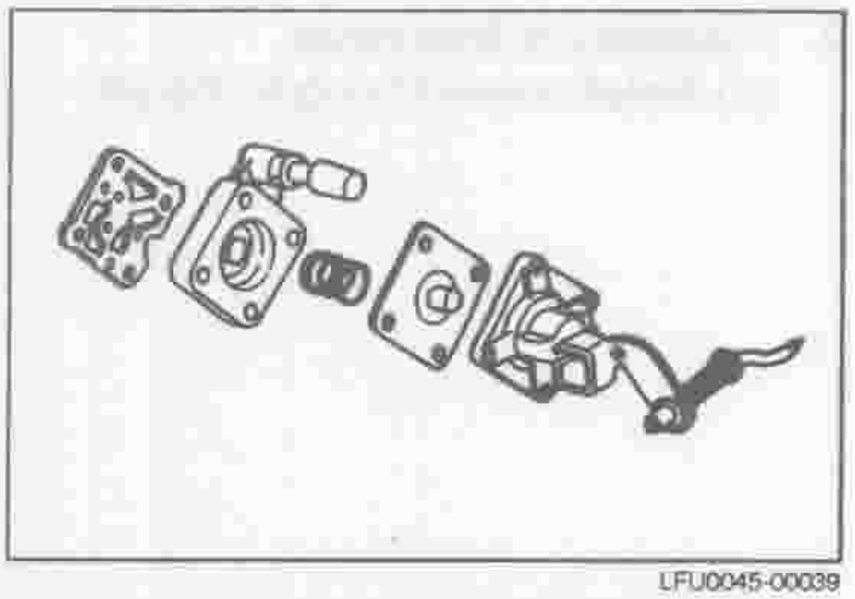
1. Before working on the fuel system, be sure to disconnect the ground cable from the negative (–) terminal of the battery.
2. When working on the fuel system, never allow any naked fire to be brought near the working site. Also, never smoke cigarette or the like.
3. Do not allow the fuel to get to any parts made of rubber or resin.
4. Do not work on the fuel system of more than one vehicle at the same time.
5. Be certain to keep each part of the fuel system from contamination.
6. Be very careful not to allow any dirt or the like be mixed into the fuel system during the servicing operation.
7. Make sure to keep the working site clean. Also, be sure not to loose any part, specifically small parts.
8. Never loose nor mix up those pins, clips and springs with each other.

LFU00008-00000

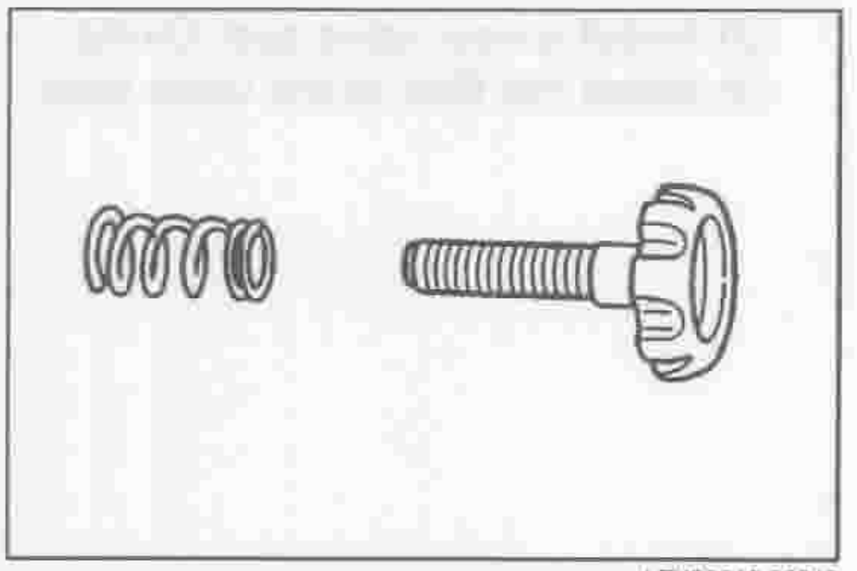
6. Idle mixture adjusting screw
   (1) Check the mixture adjusting screw for wear or damage.
   (2) Check the cap for wear or damage.
   (3) Check the spring for damage.
   (4) Check the washer for damage or wear.


LFU00044-00038

7. Acceleration pump
   (1) Check the cover assembly for smooth operation, damage or air passage restriction.
   (2) Check the spring for damage.
   (3) Check the diaphragm for damage.
   (4) Check the pump body assembly for restriction of air passage or fuel passage.

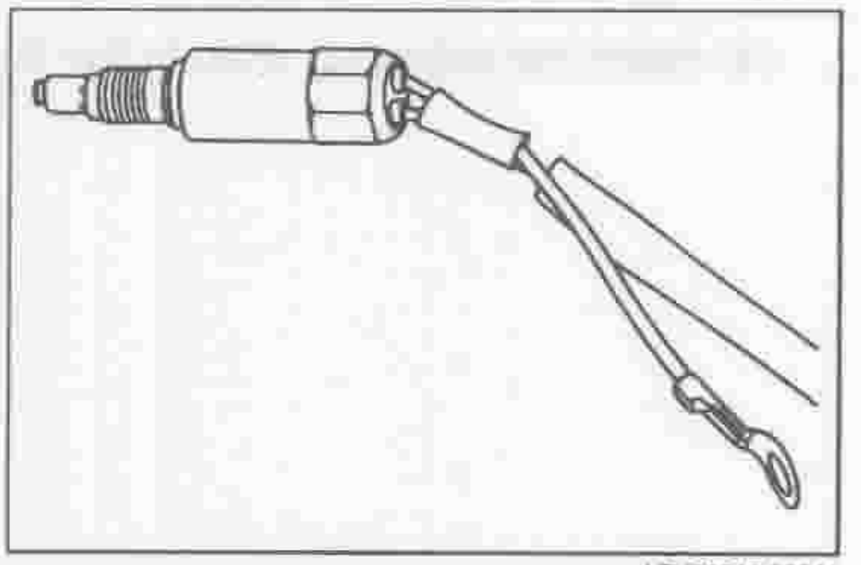

LFU0045-00039

8. Throttle adjusting screw
   (1) Check the throttle adjusting screw for damage.
   (2) Check the spring for damage.

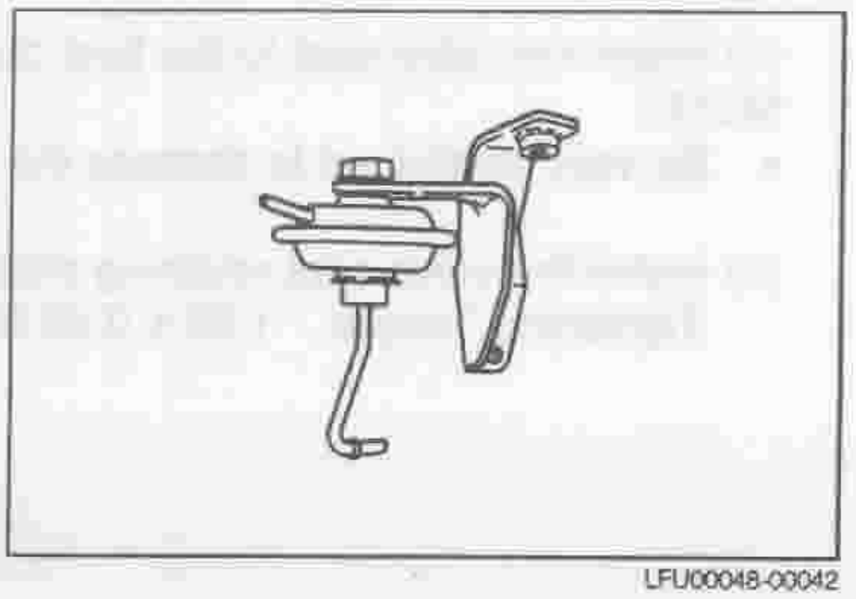

LFU00046-00040

9. Solenoid valve
   CAUTION:
   - Never remove the valve from the solenoid.

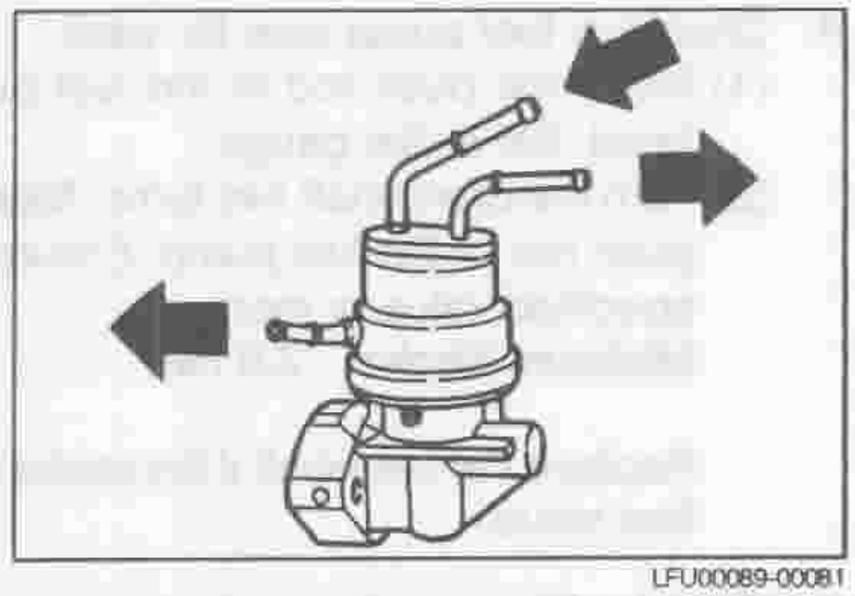
   Ensure that the valve is opened when the solenoid valve is energized. Also, ensure that the valve is closed when the solenoid valve is not energized.


LFU00047-00041

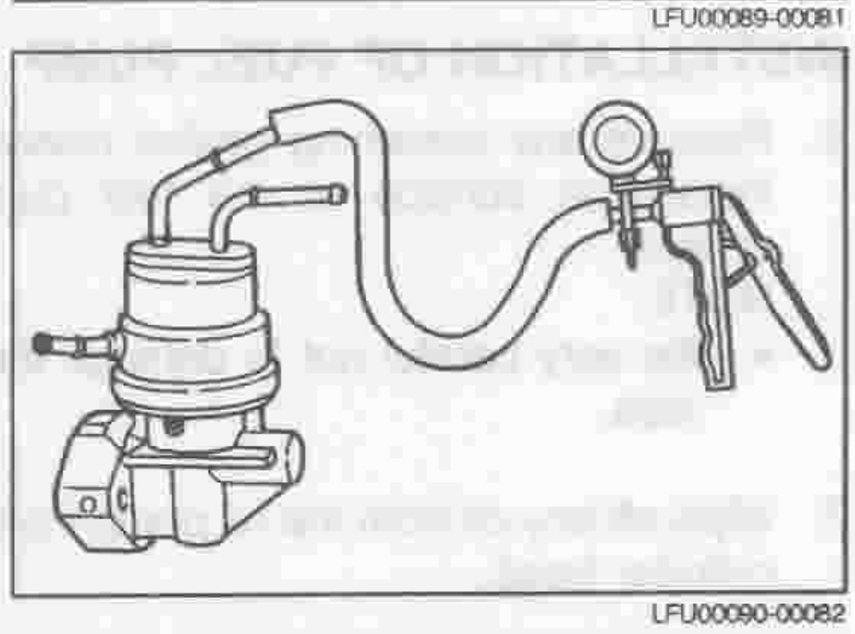
10. Depression chamber body assembly
    Ensure that the rod is drawn into the chamber when negative pressure is applied to the depression chamber. Also, ensure that the applied pressure will not change.


LFU00048-00042

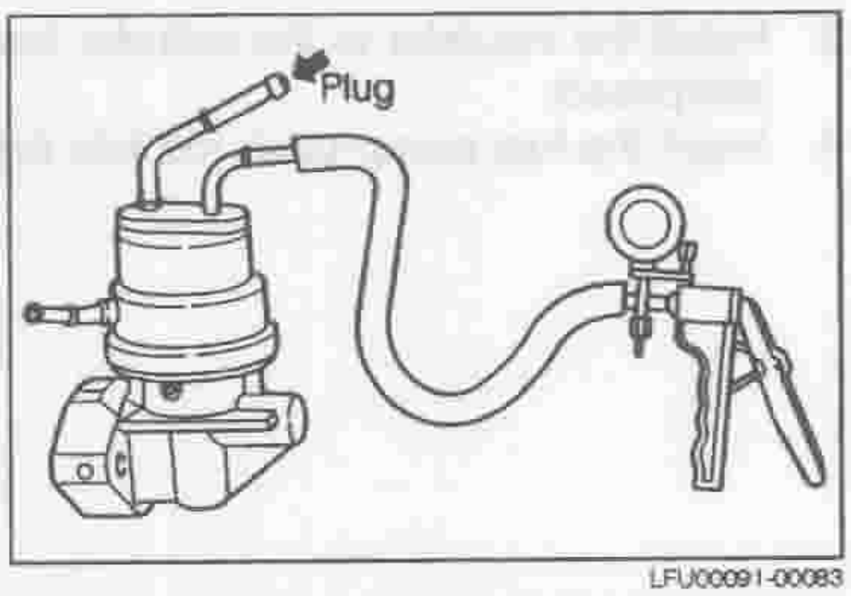
(1) Blow air from the inlet side of the fuel pump. Ensure that air continuity exists.
Replace the fuel pump if no air continuity exists.


LFU00089-00081

(2) Install a MityVac to the inlet side of the fuel pump and apply a negative pressure. Ensure that the applied pressure is retained.
Replace the fuel pump if the pressure is not retained.


LFU00090-00082

(3) Plug the inlet pipe and return pipe of the fuel pump. Install a MityVac to the outlet pipe and apply a negative pressure. Ensure that the applied pressure is retained.
Replace the fuel pump if the pressure is not retained.



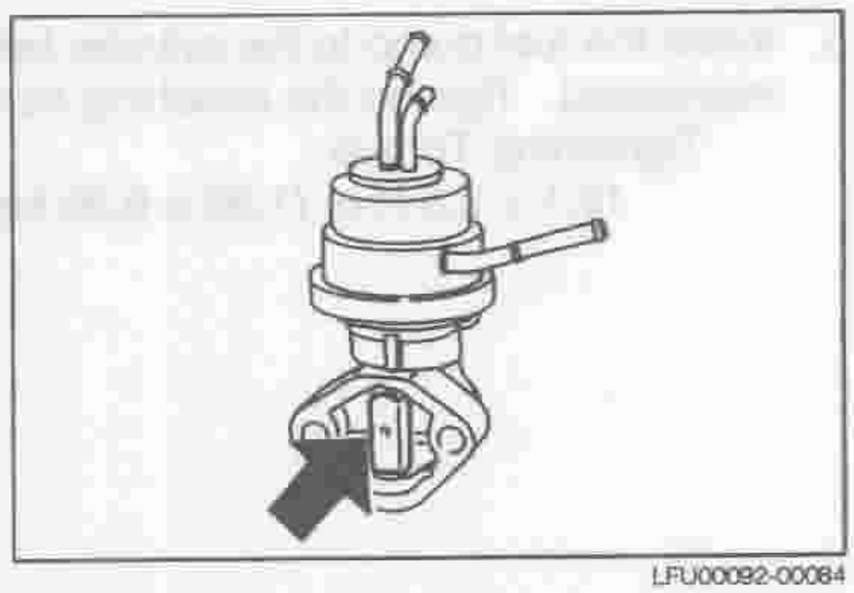
LFU00091-00083

(4) Visually inspect the push rod-contact-surface of the fuel pump.

NOTE:

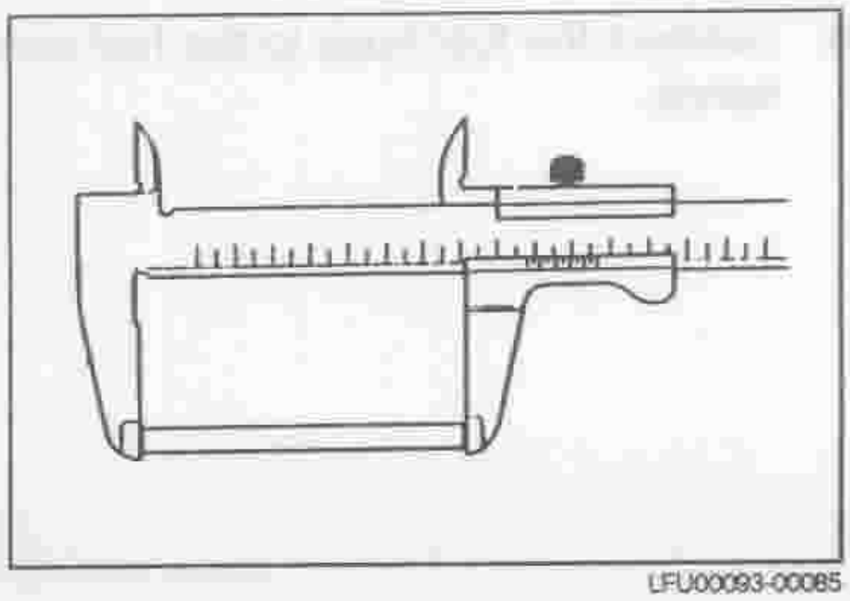
- When the contact surface is not a mirror-like surface, it means that the contact surface is worn out.

  Replace the fuel pump if the contact surface exhibits wear.


LFU00092-00084

3. Inspection of fuel pump push rod
   Ensure that the overall length of the push rod is the specified value or more.
   Minimum Limit: 57.50 mm
   Reference
   STD: 57.95 - 58.25 mm

   Replace the push rod if its overall length is less than the specified value.


LFU00093-00085

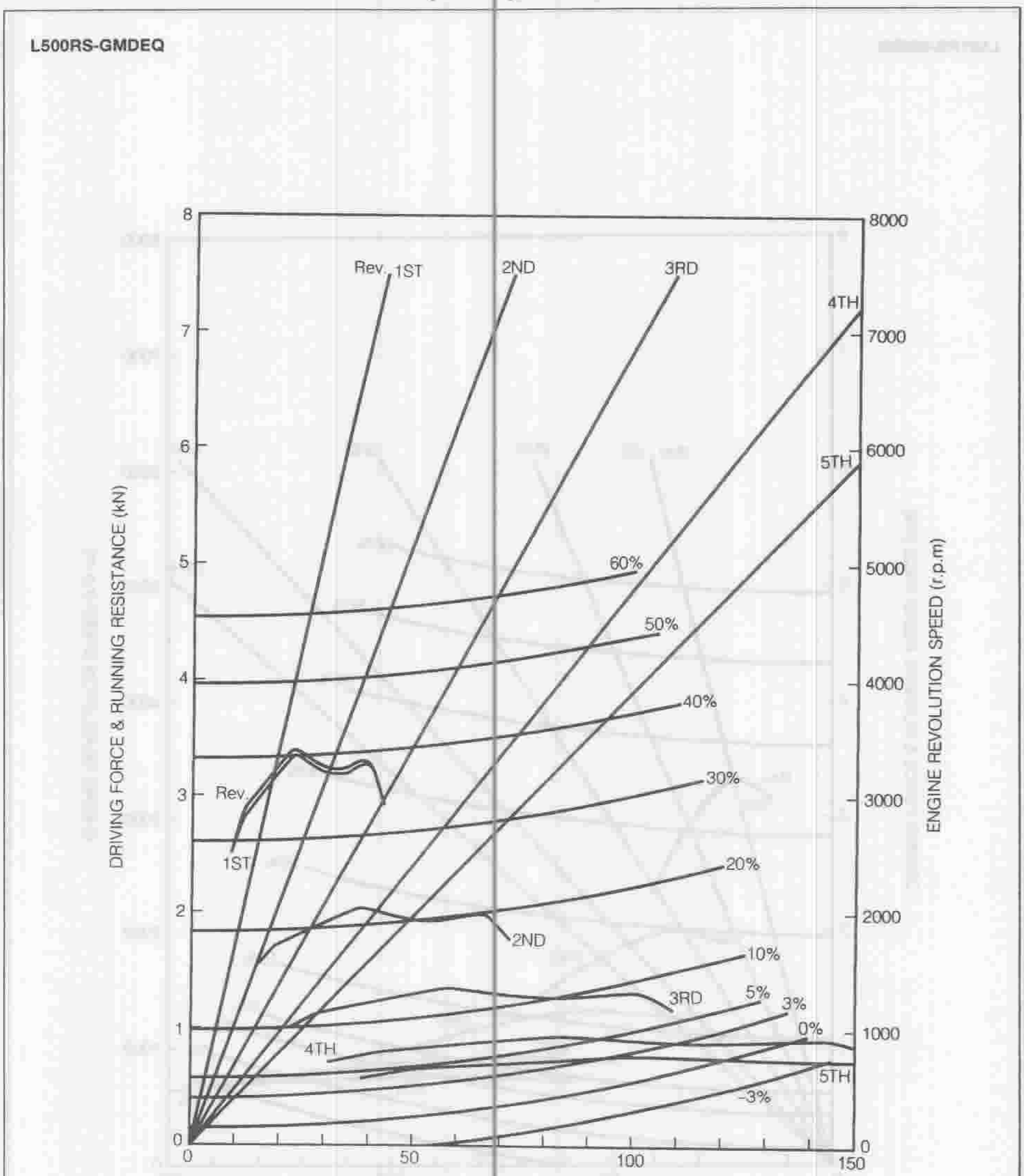
SERVICE SPECIFICATIONS

FUEL SYSTEM

Carburetor	Number of backing-off of idle mixture adjusting screw	2 turns
	Solenoid valve Resistance	40 - 70 Ω
	Float level Dimension "H"	36.5 mm
	Choke valve Throttle valve opening angle	20° (At time when choke is fully pulled)
	Throttle valve Full opening angle	90 ± 1°
	Throttle positioner/idle-up during cold period Throttle valve opening angle	13°
Fuel pump (ED-10 Engine)	Suction force	–10.7 kPa (–80 mmHg)
	Push rod length Standard Minimum limit	57.95 - 58.25 mm 57.5 mm
	Push rod stroke Standard Minimum limit	3.4 mm 3.3 mm
Fuel pump (EF-EL & ED-20 Engine)	Delivery pressure	343 kPa (3.5 kgf/cm²)
	Delivery output	More than 40 dm³/h
	Cut-off pressure	392 - 588 kPa (4 - 6 kgf/cm²)

LFU00126-00000

PERFORMANCE DIAGRAMS (No. 2)



LGI00015-00006

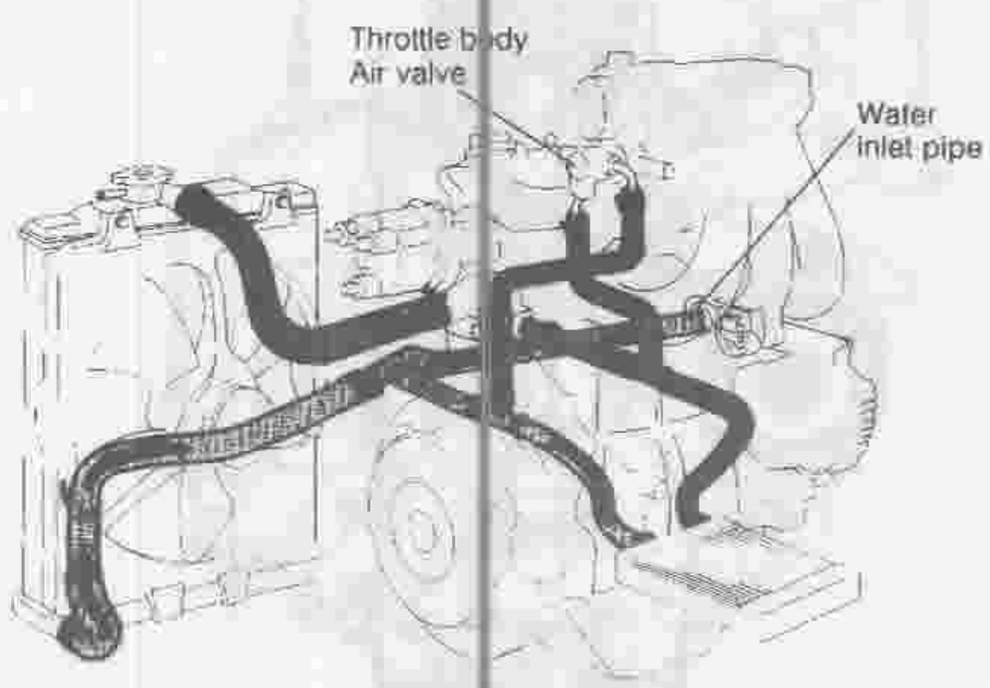
COOLING SYSTEM OUTLINE

Description

The cooling system is a water-cooled, forced-circulation type. In this system, the radiator is cooled mainly by the air flow developed by the forward motion of the vehicle, and is cooled forcibly by a fan motor (electric motor) for only a limited period of time.
The cooling system includes the following components: the radiator, water pump, thermostat, various water jackets of the cylinder, cylinder head and intake manifold, water hoses connecting these components to each other, radiator thermo control switch and fan motor.
ED-20, EF-EL Engine equipped vehicle; the cooling system includes a passage whereby the cooling water warmed by the engine is led to the throttle body and then returned to the outlet pipe of the heater.

[Cooling System Layout]

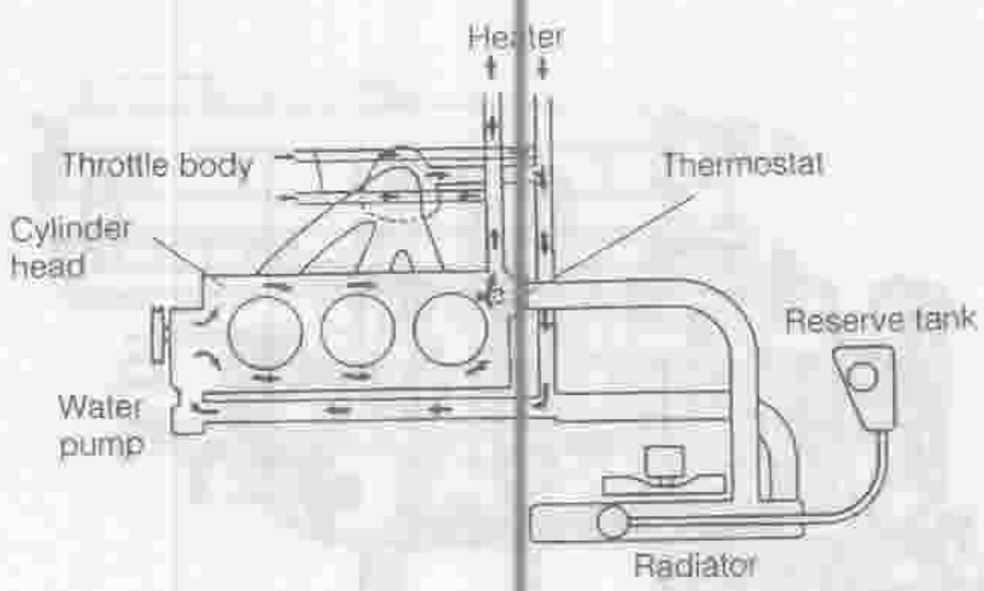
ED-20, EF-EL Engine



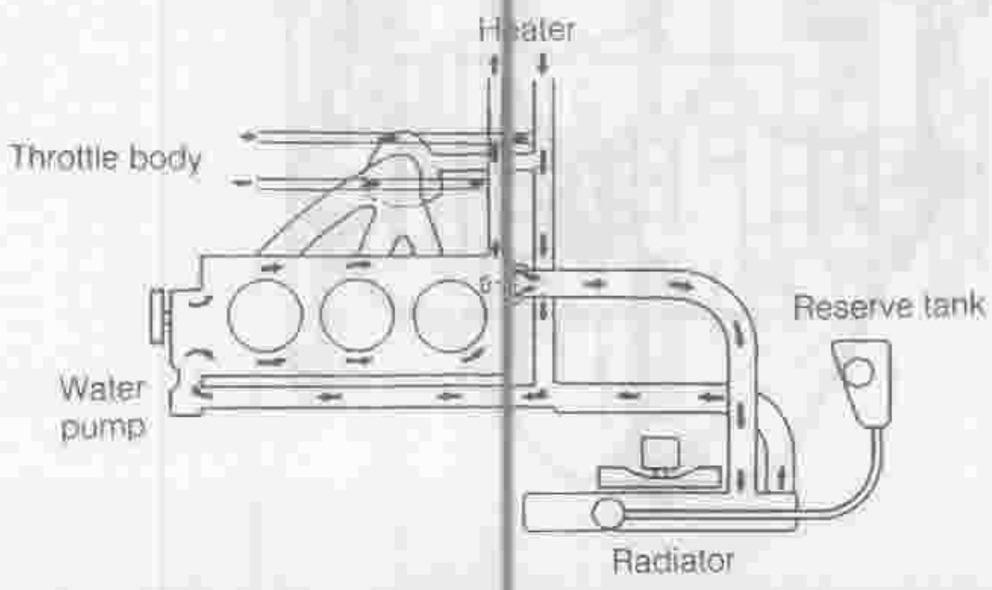
LGI00025-00013

[Cooling System Operation]

When engine is cold



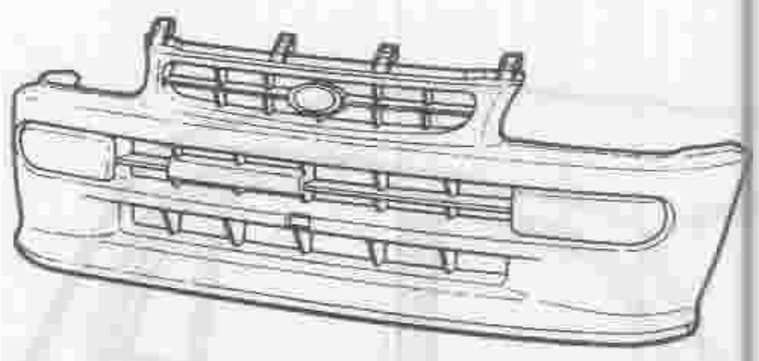
When engine is hot



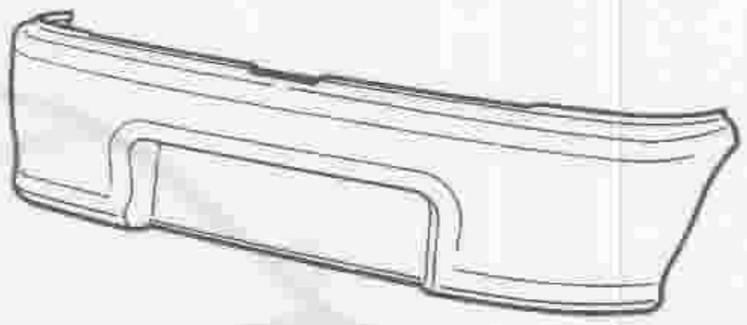
LGI00026-00014

3. FRONT/REAR BUMPERS

Both the front and rear bumpers are rounded so as to look united with the body.
The standard colour is dark grey, but coloured bumpers are optionally available for all body colours.
For the European specifications, a model with fog lamps is available with a lamp on the rear bumper on the driver side. The fog lamps are optional for the LHD models and standard for the RHD models for the European specifications.



Front bumper

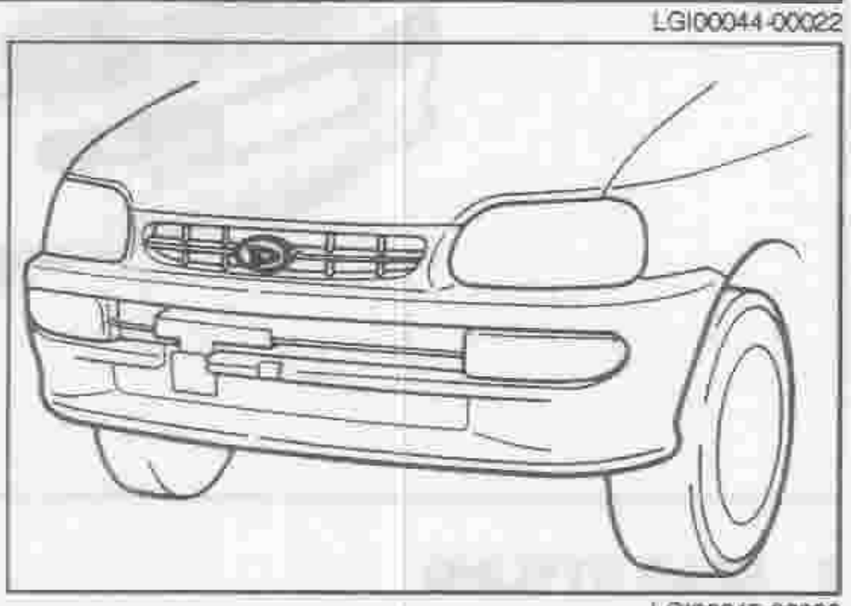


Rear bumper

LGI00044-00022

4. FRONT GRILLE MARK

In conformity with other models, the front grille has a "D" mark in the centre.



LGI00045-00023

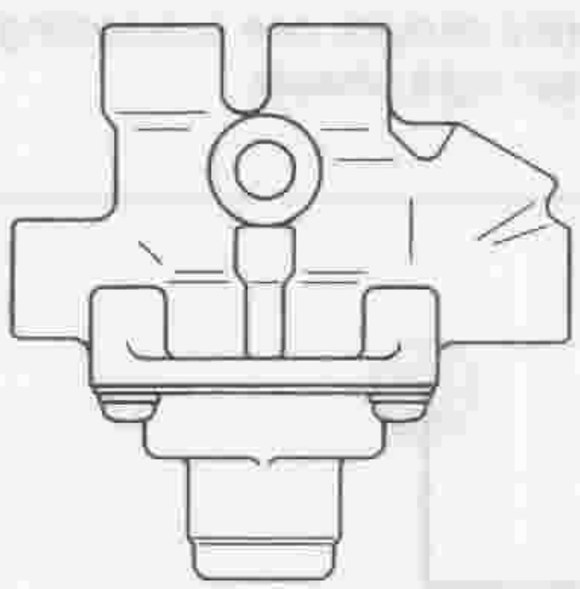
5. REAR MODEL MARK

The designs of the CUORE, DOMINO and MIRA logotypes have all been renovated to create much softer images that are in line with the new styling.

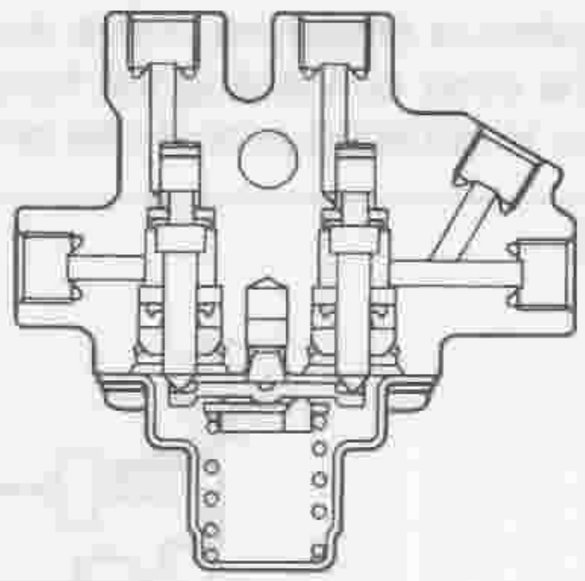
LGI00046-00024

PROPORTIONING VALVE

A twin proportioning valve has been employed.



Side view



Sectional view

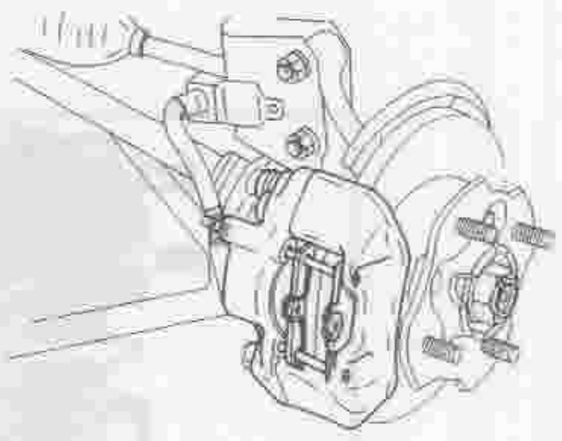
LGI00075-00045

Item \ Model		Australian specifications
Turning point hydraulic pressure	kPa (kgf/cm^2, psi)	2697 (27.5, 391)
Inclination	tan θ	0.4
Remarks		Twin type

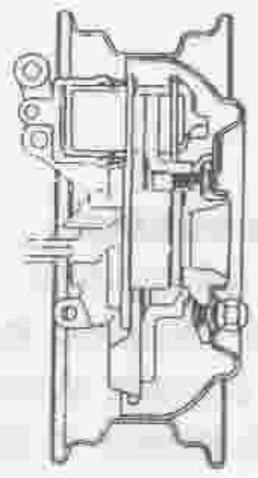
LGI00076-00000

FRONT BRAKE

A disc brake has been employed on all models.



External view of solid disc brake



Sectional view of solid disc brake

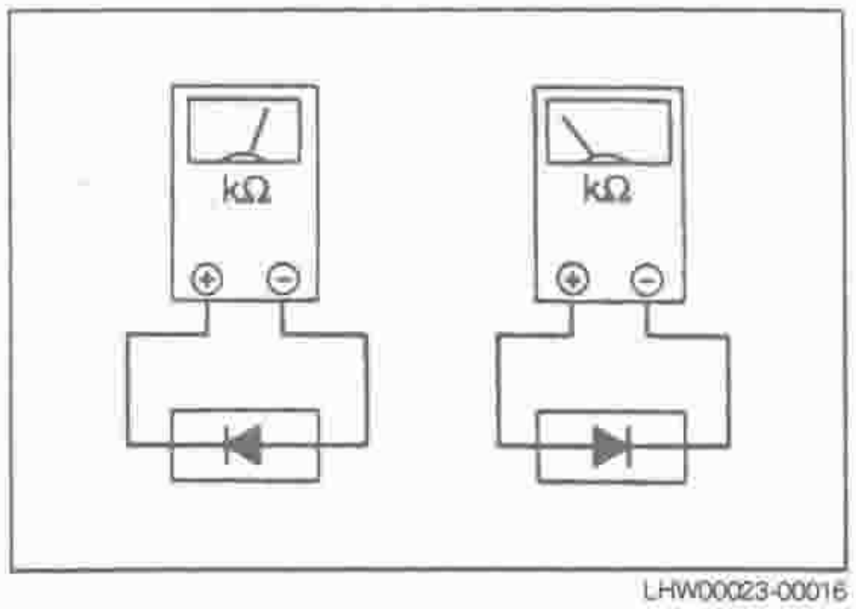
LGI00077-00046

Item		
Brake type		Disc (solid)
Disc rotor outer diameter	mm	211
Effective disc diameter	mm	172
Disc rotor thickness	mm	10
Wheel cylinder bore diameter	mm	51.1
Pad dimensions	mm	78.2 × 47.5 × 9.0
Pad area	cm^2	32 × 2 pcs. × 2 wheels
Pad thickness	mm	9.0
Pad material		Asbestos-free type

LGI00078-00000

INSPECTION OF CIRCUIT WITH TESTER

If a diode is built in the circuit, perform continuity test by changing the polarities of the measuring terminals.
In case of a general type tester, ensure that continuity exists when the negative (–) lead of the tester is connected to the positive (+) side of the diode; the positive (+) lead of the tester to the negative (–) side of the diode. Also ensure that no continuity exists when the polarities are changed.



LHW00023-00016

Since some testers have different polarities, be sure to read the instruction manual of a tester to be used for the check before using it.

LHW00024-00000

The inspection procedure for light emitting diodes (LED) is the same as normal diodes. However, there may be cases where the LED emits no light, unless a tester with LED check mode is used. If an adequate tester is not available, apply the battery voltage to the LED and ensure that the LED emits light.

LHW00025-00000

INSPECTION OF SHORT CIRCUIT

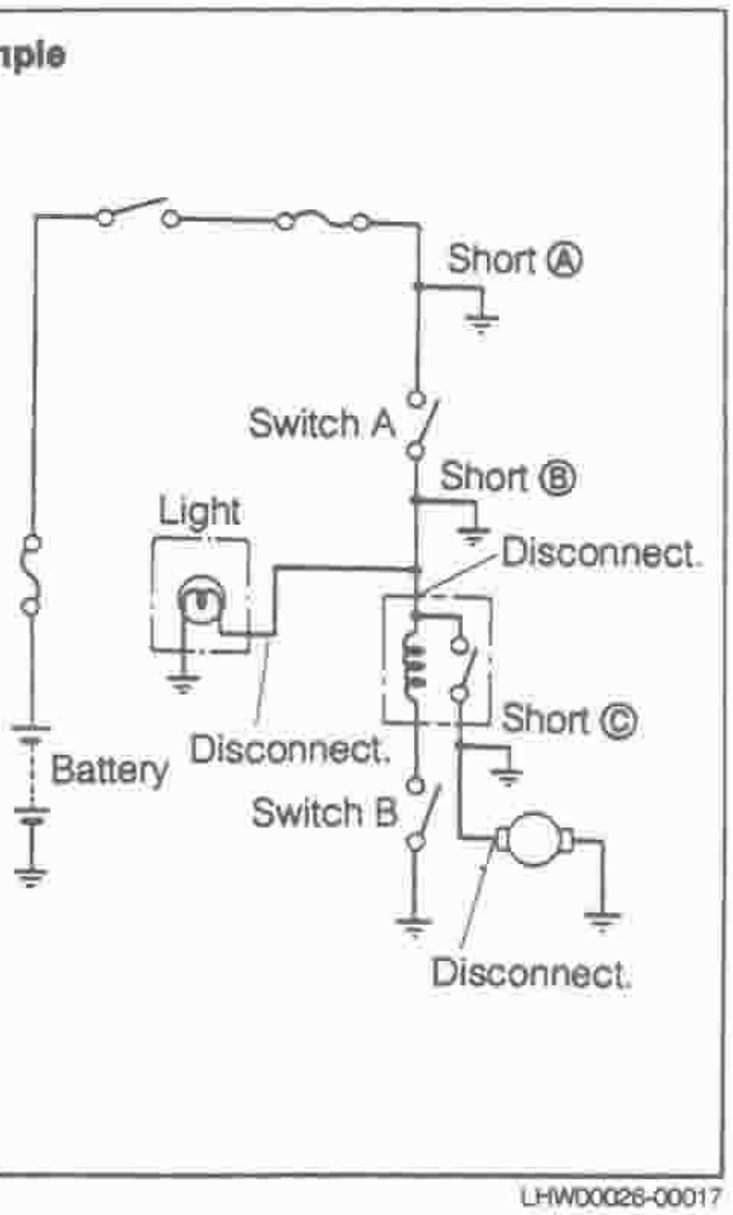
(1) Remove a melt fuse or fusible link.
(2) Disconnect all connectors for loads being applied to the melt fuse.
(3) Connect a test lamp at the position where the melt fuse or fusible link was installed.
(4) Search for the short circuit by providing the minimum conditions which make the test lamp glow.

Example

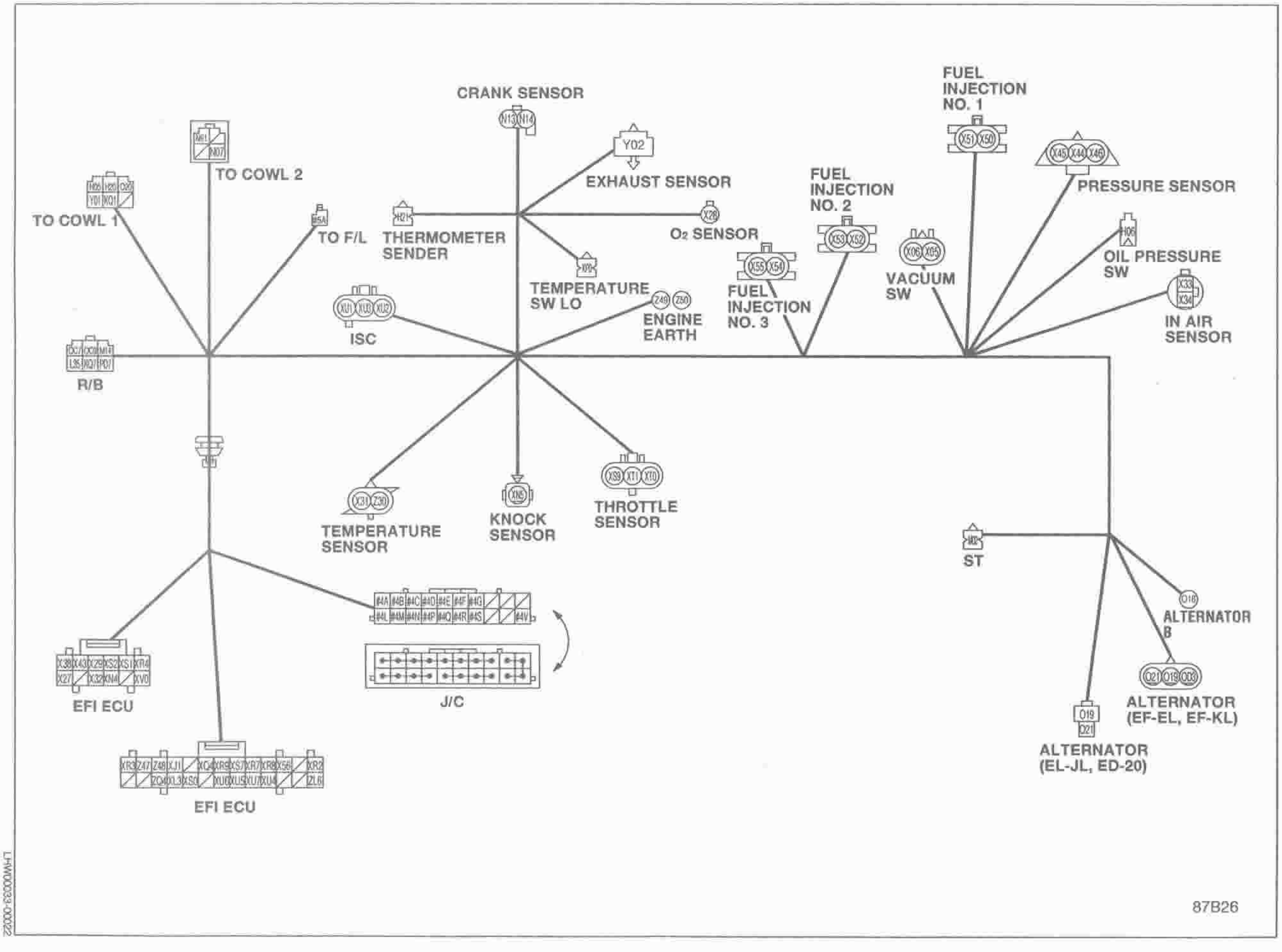
Short section	Connecting conditions
Ⓐ	Ignition switch is turned ON.
Ⓑ	Ignition switch and switch A are turned ON.
Ⓒ	Ignition switch, switch A and switch B are turned ON with relay energized.

(5) Perform repairs or wiring harness replacement, as required.

Example



LHW00026-00017



LHM00033-00022

87210L

LHW00039-00228

WIRE, COWL (EF-EL/AT)

From			To	
Location	Terminal	Color	Terminal	Location
BATT + (01)	#5A	B-R	O12	IG SW (AM)
IG SW (IG2)	N30	B-W	N60	J/B IG2 (+)
IG SW (IG1)	N01	B-Y	N59	J/B IGT (+)
IS SW (ACC)	R01	L-	R02	FUSE ACC (B)
FUSE STOP (B)	E18	G-Y	OC4	F/L TAIL (L)
#5A – O12		B-R	A22	LGHTNG SW (B)
LGHTNG SW (L)	A23	R-	A50	FUSE H-LP (B)
FUSE H-LP LH (L)	A01	R-	A02	H-LP LH (B)
J/B H-LP LOL (–)	AA0	P-L	A04	H-LP LH (LO)
J/B H-LP HIL (–)	AA2	P-	A03	H-LP LH (HI)
HI BEAM IND (+)	A10	R-G	A98	J/B H BM IND (+)
H-LP RH (LO)	A08	P-B	A99	J/B H-LP LOR (–)
J/B H-LP HIR (–)	AA1	R-Y	A07	H-LP RH (HI)
FUSE H-LP RH (L)	A05	R-B	A06	H-LP RH (B)
COWL RH J/C (03)	#0C	W-B	Z02	DIM SW (E)
COWL RH J/C (02)	#0B	W-B	#3F	EARTH J/C (06)
COWL RH J/C (03)	#0C	W-B	Z02	DIM SW (E)
TAIL LP SW (L)	CE2	R-L	C01	FUSE TAIL (B)
J/B CLA LP (LH+)	C06	R-L	C12	CLA LP LH (+)
COWL LH J/C (03)	#1C	W-B	Z31	CIG LGT (E)
#1C – Z31		W-B	Z23	HTR CON ILM (E)
#1C – Z31		W-B	Z06	HTD MIR LH (–)
#1C – Z31		W-B	ZN7	A/T K/LK SOL (–)
COWL LH J/C (02)	#1B	W-B	#3D	EARTH J/C (04)
FLOOR J/C (15)	#2R	W-B	Z05	RR COM LP RH (–)
FLOOR J/C (06)	#2F	R-L	C07	TAIL LP RH (+)
TAIL LP LH (+)	C08	R-L	C16	LICENSE LP R (+)
FLOOR J/C (01)	#2A	R-L	C08	TAIL LP LH (+)
FLOOR J/C (02)	#2B	R-L	CE8	J/B TL LP (L)
J/B CLA LP (RH+)	C09	Y-B	C10	CLA LP RH (+)
C09 – C10		Y-B	C59	J/B TAIL BUZ (+)
FR FOG LP SW (L)	C24	R-G	#1L	COWL LH J/C (11)
COWL LH J/C (12)	#1M	R-G	C26	FR FOG LP LH (+)
FUSE FOG (L)	CE7	R-Y	C23	FR FOG LP SW (B)
FLOOR J/C (12)	#2M	W-B	Z79	LICENSE LP R (–)
FLOOR J/C (11)	#2L	W-B	Z06	RR COM LP LH (–)
FLOOR J/C (14)	#2P	W-B	ZD4	BODY EARTH (FLSD)
E18 – OC4		G-Y	CE1	TAIL LP SW (B)
C06 – C12		R-L	CE0	FLOOR ILM (+)
C06 – C12		R-L	C28	RADIO (ILM+)
C06 – C12		R-L	C19	HTR CON ILM (+)
#1D – ZM6		W-B	Z28	CLA LP LH (–)
COWL LH J/C (08)	#1H	W-B	ZR6	FLOOR ILM (–)
#1H – ZR8		W-B	ZE9	P RANGE SW (PCOU)
#1H – ZR8		W-B	ZH3	A/T S/LK RLY (E)
#1D – ZM6		W-B	ZD3	FR FOG LP LH (–)
C06 – C12		R-L	C21	MET (ILM+)

From			To	
Location	Terminal	Color	Terminal	Location
CE2 – C01		R-L	CE6	FUSE FOG (B)
COWL LH J/C (14)	#1P	R-G	C25	FR FOG LP RH (+)
#0F – ZM5		W-B	Z27	CLA LP RH (–)
#0F – ZM5		W-B	ZD2	FR FOG LP RH (–)
FLOOR J/C (07)	#2G	G-Y	E15	STOP LP LH (+)
FLOOR J/C (08)	#2H	G-Y	E13	J/B STOP LP (+)
FLOOR J/C (10)	#2K	G-Y	E14	STOP LP RH (+)
FLOOR J/C (09)	#2J	G-Y	E16	H.M. STOP LP (+)
#2R – Z05		W-B	Z68	H.M. STOP LP (–)
#2P – ZD4		W-B	ZC6	FUEL POMP (E)
ROOM LP (DR)	D03	W-L	D06	CTY SW FR RH (+)
IG KEY SW (–)	D14	G-	D61	J/B K/WNG (BUZB)
IG KEY SW (+)	D13	B-O	D58	J/B KEY SW (+)
J/B ROOM LP (+)	D01	B-	D02	ROOM LP (+)
D03 – D06		W-L	D07	CTY SW FR LH (+)
D03 – D06		W-L	D59	J/B K/WNG (BUZE)
COWL RH J/C (20)	#0V	G-R	G03	BACK LP SW (–)
FLOOR J/C (17)	#2S	G-R	G05	BACK LP LH (+)
COWL RH J/C (19)	#0U	G-R	H28	MET A/T IND (R+)
COWL RH J/C (18)	#0T	G-R	D62	J/B R/WNG (BUZB)
BACK LP SW (+)	G02	L-R	G21	J/B BACK LP (SW+)
COWL RH J/C (17)	#0S	G-R	#2T	FLOOR J/C (18)
FLOOR J/C (20)	#2V	G-R	G04	BACK LP RH (+)
J/B R/TRN LP (LH+)	F04	G-B	F05	RR TRN LP RH (+)
SID TRN LP L (+)	F11	GR-R	F53	J/B F/TRN LP (LH)
FR TRN LP LH (+)	F09	GR-R	F11	SID TRN LP L (+)
TRN IND LH (+)	F19	GR-	F54	J/B TRN IND (LH)
J/B R/TRN LP (RH+)	F06	G-	F07	RR TRN LP RH (+)
SID TRN LP R (+)	F16	V-Y	F52	J/B F/TRN LP (RH)
FR TRN LP RH (+)	F14	V-Y	F16	SID TRN LP R (+)
TRN IND RH (+)	F21	V-W	F55	J/B TRN IND (RH)
CHK TML ABS (E)	ZT2	W-B	Z04	BODY EARTH (FINL)
FR TRN LP LH (–)	ZM3	W-B	ZM6	SID TRN LP L (–)
COWL LH J/C (04)	#1D	W-B	ZM6	SID TRN LP L (–)
COWL RH J/C (06)	#0F	W-B	ZM5	SID TRN LP R (–)
FR TRN LP RH (–)	ZM4	W-B	ZM5	SID TRN LP R (–)
COWL RH J/C (01)	#0A	W-B	Z08	MET EARTH (E)
HORN RH (+)	E02	G-W	E04	J/B HORN (–)
HORN RH (–)	E03	G-B	E19	HORN SW (+)
HORN RH (–)	E03	G-B	E19	HORN SW (+)
HORN RH (+)	E02	G-W	E04	J/B HORN (–)
HORN RH (–)	E03	G-B	E19	HORN SW (+)
MET (CHG)	Q20	W-R	Q21	ALT (L)
COWL LH J/C (15)	#1Q	W-	N61	FUSE ENG (L)
#1Q – N61		W-	#4V	E/G J/C (20)
#1Q – N61		W-	N05	IG COIL (+)
COWL LH J/C (18)	#1T	W-	L33	RDI FAN RLY (COL+)

From			To	
Location	Terminal	Color	Terminal	Location
RDI FAN MTR (+)	L01	R-W	L34	RDI FAN RLY (L)
RDI FAN MTR (–)	ZQ0	W-B	Z04	BODY EARTH (FINL)
ZQ0 – Z04		W-B	#1A	COWL LH J/C (01)
MET THRM G (+)	H20	Y-	H21	THRM SENDER (+)
MET FUEL G (+)	H22	Y-L	H23	FUEL SENDER (+)
EARTH J/C (05)	#3E	BR-W	Z74	MET GAUGE (E)
VL6 – XQ2		R-Y	N58	MET (REV)
MET (IG)	H61	R-W	H67	J/B MET (+)
MET OIL PRES (–)	H05	Y-R	H06	OIL PRES SW (B)
COWL LH J/C (07)	#1G	W-B	Z11	BRK O/LEV SW (–)
COWL RH J/C (09)	#0J	R-	G07	PK BRK SW (+)
COWL RH J/C (07)	#0G	R-	G06	MET BRK WNG (–)
COWL RH J/C (10)	#0K	R-	G08	BRK O/LEV SW (+)
MET EXG WRN (–)	Y01	O-	Y02	EXG TEMP SSR (+)
MET SB WRN (–)	H56	O-B	H58	SEAT BELT SW (+)
#2P – ZD4		W-B	Z40	SEAT BELT SW (–)
N01 – N59		R-Y	R96	D-OPT (IG1+)
MET A/T IND (L)	H24	Y-G	H62	A/T NSS (L)
MET A/T IND (2)	H25	G-O	H63	A/T NSS (2)
MET A/T IND (D)	H26	LG-B	H64	A/T NSS (D)
MET A/T IND (P)	H29	G-W	H66	A/T NSS (P)
MET A/T IND (N)	H27	G-Y	H65	A/T NSS (N)
ST RLY (COL–)	M07	L-R	M20	A/T IND DIOD (B)
IG SW (ST)	M01	B-O	M15	ST RLY (COL+)
#1G – Z11		W-B	Z53	A/T NSS (E)
H27 – H65		G-Y	M22	A/T IND DIOD (N)
H29 – H66		G-W	M21	A/T IND DIOD (P)
EARTH J/C (03)	#3C	W-B	Z03	BODY EARTH (FINR)
FR WSH MTR (+)	I03	L-Y	I60	FR WSH SW (L)
FR WSH MTR (+)	I03	L-Y	I60	FR WSH SW (L)
FR WIP MTR (HI)	I20	L-	I57	FR WIP SW (2)
FR WIP MTR (HI)	I20	L-	I57	FR WIP SW (2)
FR WIP MTR (LO)	I18	L-R	I56	FR WIP SW (1)
FR WIP MTR (LO)	I18	L-R	I56	FR WIP SW (1)
J/B F/WIP MO (S)	I23	B-Y	I24	FR WIP MTR (S)
J/B F/WIP MO (L)	I21	V-	I22	FR WIP MTR (+B)
#3C – Z03		W-B	Z09	FR WSH MTR (–)
FR WSH SW (L)	I60	L-Y	I64	FR WSH MTR (T/C+)
#1G – Z11		W-B	ZS3	FR WSH MTR (T/C–)
RR WIP MTR (–)	I30	W-R	I31	RR WIP SW (B)
RR WIP MTR (+)	I29	L-B	I58	J/B R/WIP (L)
RR WSH SW (B)	I28	V-R	I59	JB R/WSH (L)
RR WSH MTR (+)	I26	L-O	I54	RR WSH SW (L)
FLOOR J/C (15)	#2Q	W-B	ZN0	RR WSH MTR (E)
#3C – Z03		W-B	Z18	RR-WIP SW (E)
DEF SW (L)	K28	L-	K29	DEF (+)
COWL RH J/C (04)	#0D	W-B	Z42	DEF SW (E)

From			To	
Location	Terminal	Color	Terminal	Location
J/B DEF (L)	KQ3	L-Y	K27	DEF SW (B)
RTL MR SW (R)	RB4	L-R	RB6	RTL MR R MT (R)
E MIRROR SW (VL)	R18	Y-	R22	E MIRROR LH (V)
E MIRROR SW (HL)	R20	O-	R23	E MIRROR LH (H)
E MIRROR SW (VR)	R19	R-G	R24	E MIRROR RH (V)
E MIRROR SW (HR)	R21	R-B	R25	E MIRROR RH (H)
RTL MR SW (F)	RB3	G-Y	RB5	RTL MR R MT (F)
E MIRROR SW (C)	R17	R-Y	R26	E MIRROR RH (C)
R17 – R26		R-Y	R27	E MIRROR LH (C)
RB4 – RB6		L-R	RB8	RTL MR L MT (R)
RB2 – R15		L-	R16	E MIRROR SW (B)
RB3 – RB5		G-Y	RB7	RTL MR L MT (F)
#0C – Z02		W-B	ZN2	E MIRROR SW (E)
E02 – E04		G-W	RC1	MR CNT RLY (B)
ITC ECU (MRR)	Q46	P-	RC2	MR CNT RLY (COIL–)
MR CNT RLY (L)	RB9	L-	R16	E MIRROR SW (B)
K28 – K29		L-	R58	HTD MIROR RH (+)
#0D – Z42		W-B	ZQ5	HTD MIROR RH (–)
<<< – R58		L-	R60	HTD MIROR LH (+)
FUSE ACC (L)	RB2	L-	R15	CIG LTR (+)
FUSE PMWT (L)	CE9	B-	C30	RADIO (B/UP)
RADIO (SPL–)	R08	LG-R	R09	SP FR LH (–)
RADIO (SPL+)	R06	LG-	R07	SP FR LH (+)
RADIO (SPR+)	R10	G-R	R11	SP FR RH (+)
RADIO (SPR–)	R12	LG-B	R13	SP FR RH (–)
EARTH J/C (04)	#3D	BR-	Z30	RADIO (E)
BODY EARTH (FLSD)	ZY2	W-R	#3F	EARTH J/C (06)
FLOOR J/C (04)	#2D	R-L	CJ9	RR SP LH (ILM+)
RADIO (SRR–)	R29	W-	R33	RR SP RH (–)
RADIO (SRR+)	R28	O-	R32	RR SP RH (+)
FLOOR J/C (13)	#2N	W-B	ZK2	RR SP LH (ILM–)
RADIO (SRL+)	R30	B-	R34	RR SP LH (+)
RADIO (SRL–)	R31	Y-	R35	RR SP LH (–)
FUSE PMWT (L)	CE9	B-	Q01	D/L CTR RLY (B)
D/L CTR RLY (ULSW)	Q02	G-	Q25	D/LOCK SW (U/L+)
D/L CTR RLY (U/L+)	Q03	L-	#0M	COWL RH J/C (12)
D/L CTR RLY (LOK+)	Q05	L-W	#0Q	COWL RH J/C (15)
#1B – #3D		W-B	ZR0	D/LOCK RLY (E)
#0D – Z42		W-B	ZS1	D/LOCK SW (E)
D/L MTR FRLH (LOK+)	Q28	L-W	#0P	COWL RH J/C (14)
D/L MTR FRLH (U/L+)	Q27	L-	#0N	COWL RH J/C (13)
D/L MTR RRRH (U/L+)	Q29	L-	#0L	COWL RH J/C (11)
D/L MTR RRRH (LOK+)	Q30	L-W	#0R	COWL RH J/C (16)

TIGHTENING TORQUE FOR MAIN COMPONENTS

1. When you want to find out a suitable tightening torque for a bolt, first determine the strength division of the said bolt, using the table below. Then, locate suitable tightening torque in the tightening torque table described later.
2. As for the tightening torque for a nut, find out suitable tightening torque in the same way as with the paragraph 1 above, based on the mating bolt.
3. Tightening torque posted in the workshop manual is a standard value for steel fasteners. It is, therefore, necessary to modify these tightening torque when you tighten fasteners made of materials other then steel.
   This rule also applies to such instances where bolts are undergoing heat or other stress, such as vibratory loads and so forth.

METHOD TO IDENTIFY STRENGTH DIVISION OF BOLTS

1. Identification Method by Checking Bolts Themselves

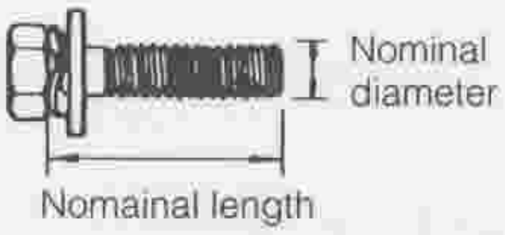
	Configuration and how to determine strength division		Strength division		Configuration and how to determine strength division		Strength division
Hexagon bolt		Bolt having an embossed or stamped figure at its head section	4 = 4T 5 = 5T 5 = 5T 7 = 7T	**Welded bolt**			4T
		No mark	4T	**Stud bolt**		No mark	4T
		Bolt having two embossed lines at its head section	5T 6T			Bolt having about 2 mm deep recess at one end or both ends	6T
		Bolt having three embossed lines at its head section	7T				

2. Identification Method by Part Numbers

Hexagon Bolt

Part number example 9 1 1 1 1 - 4 0 6 2 0

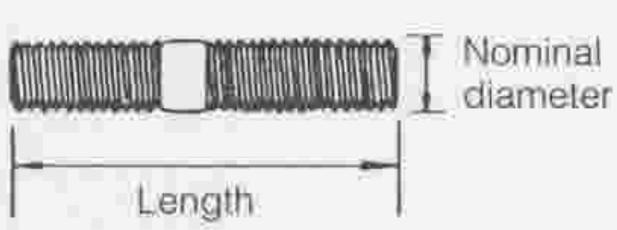
- 4 0 6 2 0 — Nominal length (mm)
- 4 0 6 2 — Nominal diameter (mm)
- 4 — Strength division



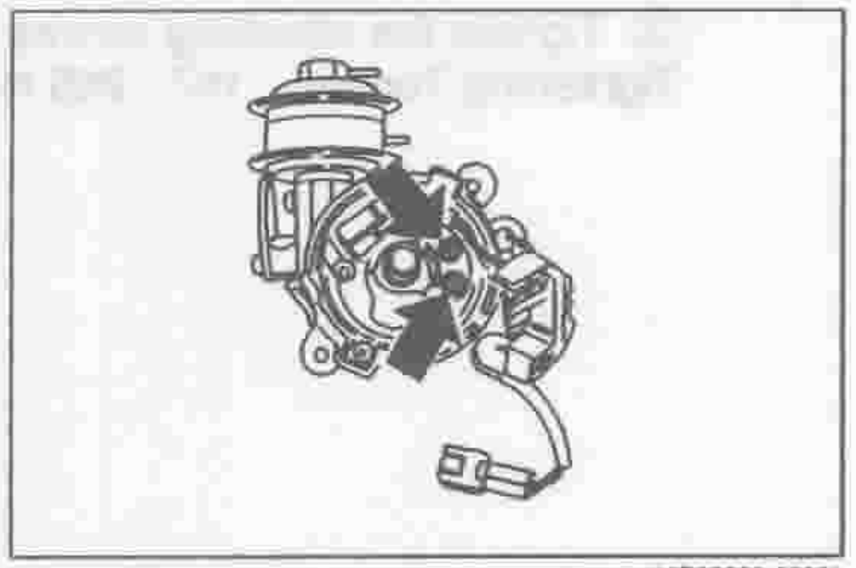
Stud Bolt

Part number example 9 1 1 1 1 - 4 0 6 2 0

- 4 0 6 2 0 — Nominal length (mm)
- 4 0 6 2 — Nominal diameter (mm)
- 4 — Strength division



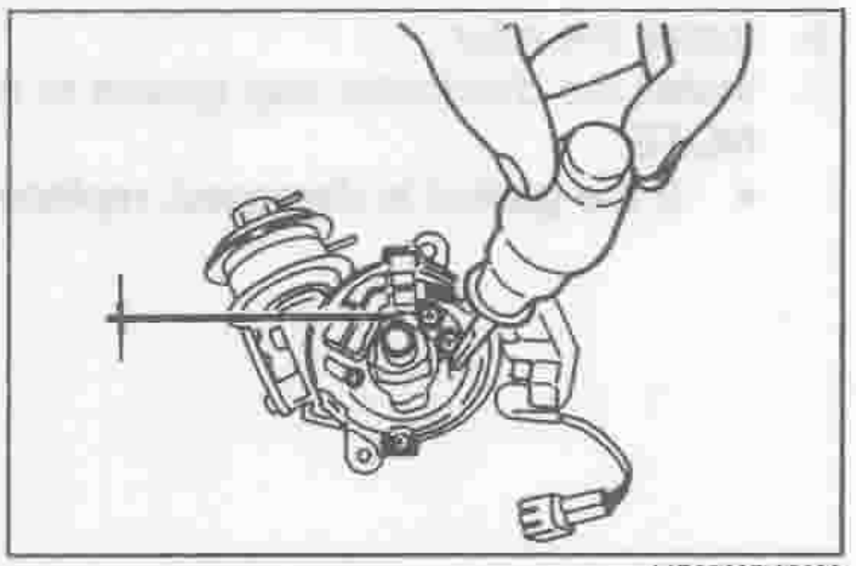
(8) Tighten the attaching screws of the signal generator.
Specified Value: 118 - 206 N·cm (12 - 21 kgf-cm)



LIG00026-00021

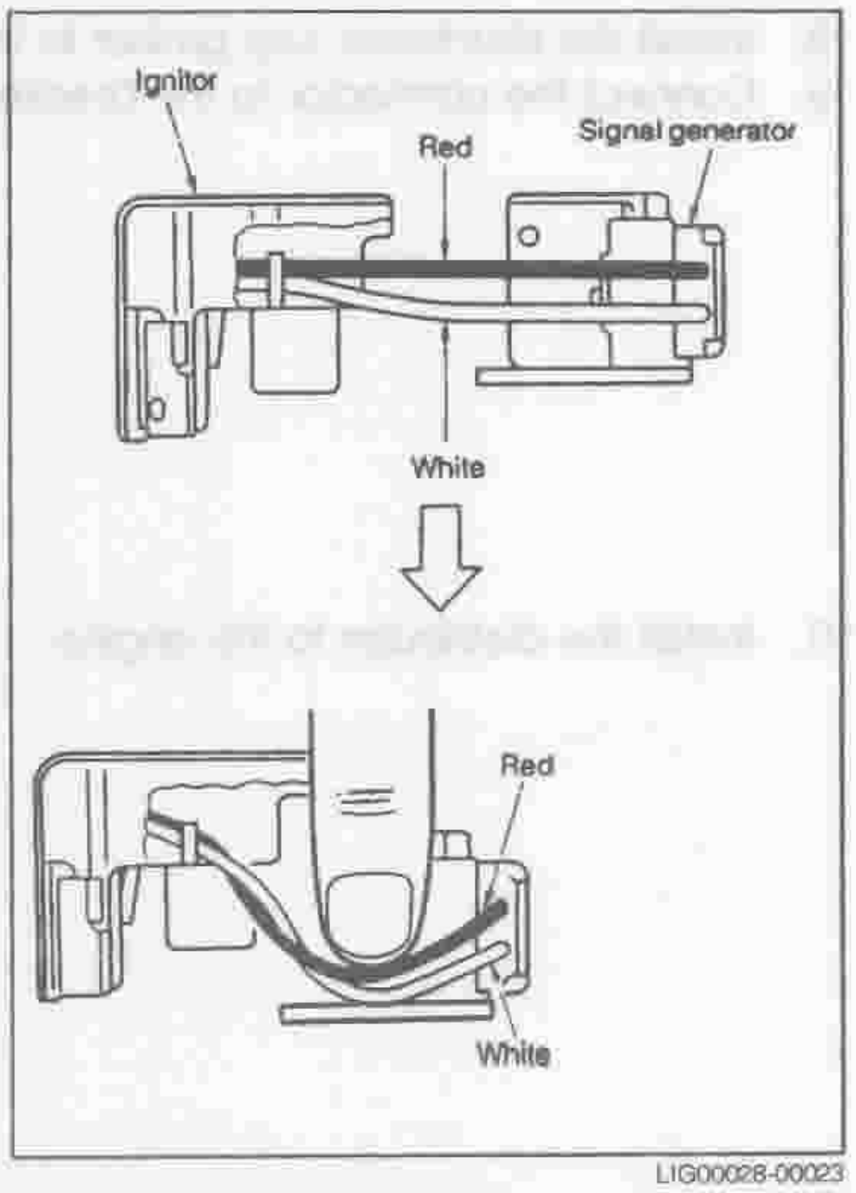
(9) Check the air gap.
Specified Value: 0.2 - 0.4 mm

If the air gap fails to conform to the specified value, adjust the air gap again.



LIG00027-00022

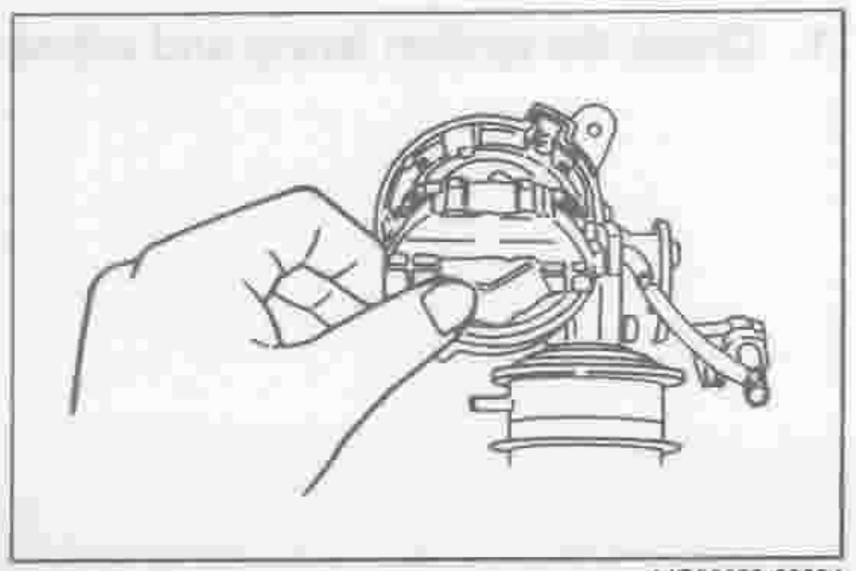
(10) Installation of ignitor
① Install the ignitor in such a position that two lead wires (red & white) are twisted 360° in the clockwise direction as viewed from the ignitor.
Hold the lead wires using a clamp provided on the inner side of the housing.



LIG00028-00023

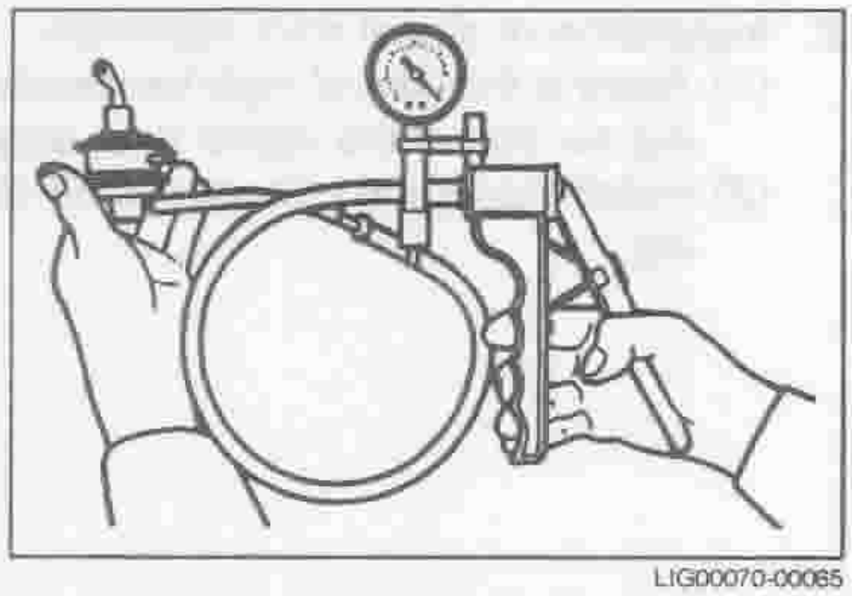
② Care should be exercised to keep ignitor's mounting surface clean.

NOTE:
- It should be noted that if any foreign object is present between the ignitor and the housing, heat generated by the ignitor will not be radiated properly.



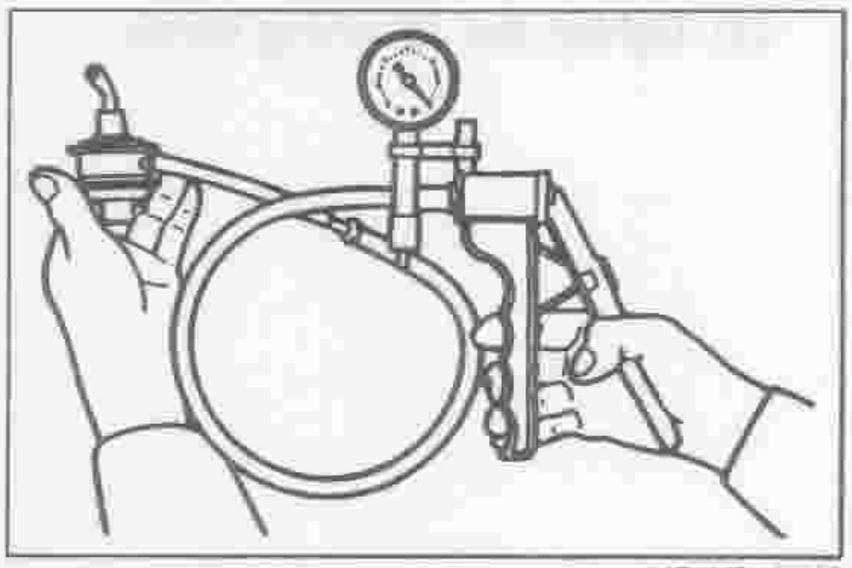
LIG00029-00024

5. Inspection of vacuum advancer
   (1) Gradually apply a negative pressure to the main diaphragm of the vacuum advancer. Ensure that the rod of the vacuum advancer is drawn into the diaphragm room side, corresponding to the negative pressure.
   Replace the vacuum advancer if the rod will not be drawn.



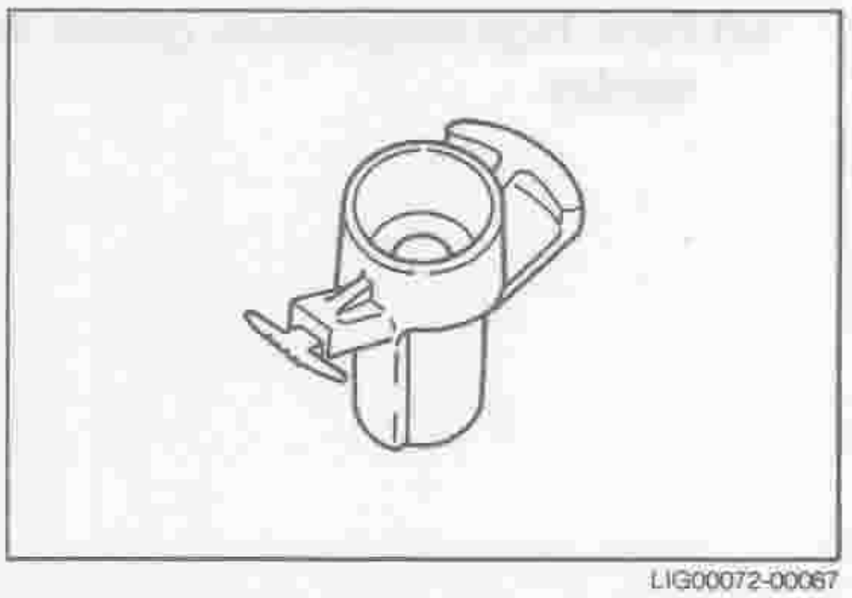
LIG00070-00065

   (2) Gradually apply a negative pressure to the sub diaphragm of the vacuum advancer. Ensure that the rod of the vacuum advancer is drawn into the diaphragm room side, corresponding to the negative pressure.
   Replace the vacuum advancer if the rod will not be drawn.



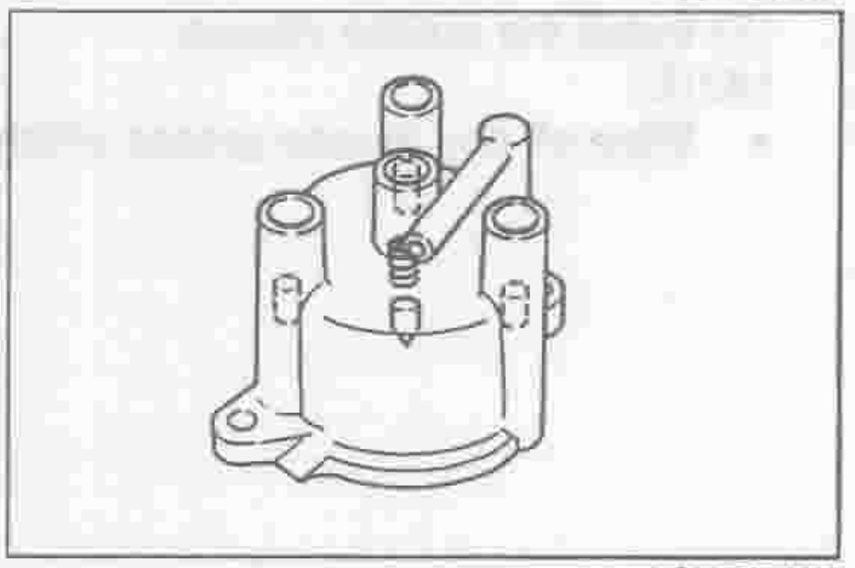
LIG00071-00066

6. Inspection of rotor
   Check the center carbon contacting surface and electrode for damage, such as wear, electronic corrosion and cracks.
   If the surface or electrolytic exhibits damage, replace the rotor, as required.



LIG00072-00067

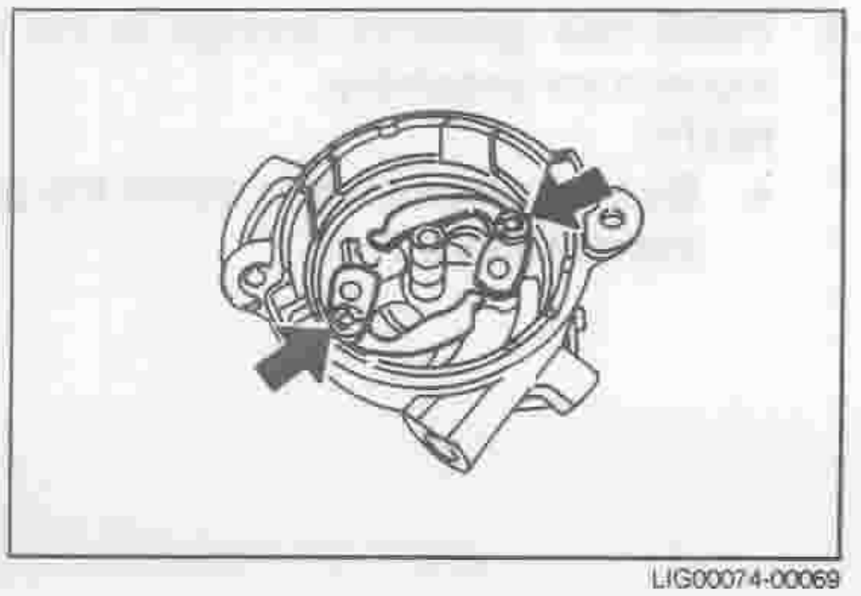
7. Inspection of distributor cap
   Check the distributor cap for cracks. Also, check the electrode and center carbon for damage, such as wear.
   Replace the distributor cap if the cap, electrode or carbon exhibits damage.



LIG00073-00068

ASSEMBLY OF DISTRIBUTOR

1. Install the governor weight to the distributor housing. Install the snap washer.
   NOTE:
   - Apply a thin film of high-temperature grease to the sliding section.



LIG00074-00069

SERVICE SPECIFICATIONS

Ignition coil	Resistance (at 20°C) Primary coil Secondary coil		(Ω) (kΩ)	 1.35 - 1.65 22 - 30
Resistive cord	Resistance		(kΩ/m)	10 - 22
Spark plug	Recommended spark plug gap		(mm)	
	ED-10	NIPPONDENSO	W20EXR-U	0.7 - 0.8
		NGK	BPR-6EY	0.8 - 0.9
	ED-20	NIPPONDENSO	W20EXR-U11	1.0 - 1.1
		NGK	BPR6EY-11	1.1 - 1.2
			BPR6ES-11	1.1 - 1.2
	[EF-EL]	NIPPONDENSO	QL22TR-S	0.9 - 1.0
		NGK	BCPR7EKD	0.9 - 1.0
Distributor	Ignition timing	ED-10	(B.T.D.C. °/rpm)	5.0 ± 2.0 /900
		ED-20	(B.T.D.C. °/rpm)	5.0 ± 2.0 /900
		EF-EL	(B.T.D.C. °/rpm)	5.0 ± 2.0 /800
	Air gap		(mm)	0.2 - 0.4

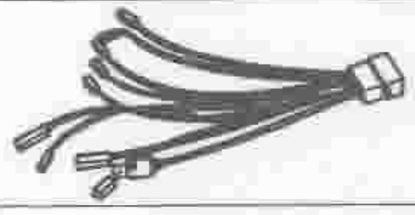
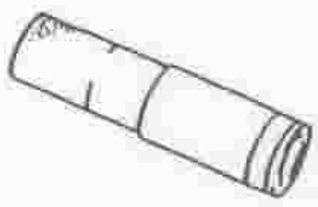
LIG00112-00000

TIGHTENING TORQUE

Tightening components	Tightening torque			Remarks
	N·m	kgf-m	ft-lb	
Distributor × Cylinder head	19.1 ± 3.8	1.95 ± 0.39	14.1 ± 2.8	
Spark plug × Cylinder head	17.6 ± 2.9	1.80 ± 0.30	13.0 ± 2.2	

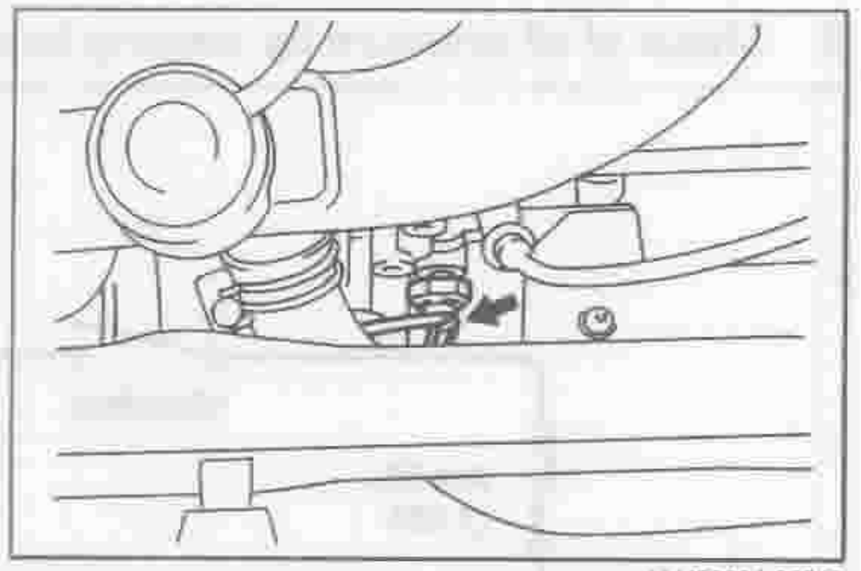
LIG00113-00000

SSTs

Shape	Part number	Part name	Remarks
	09258-00030-000	Plug set	
	09991-87604-000	Tachometer pulse pickup wire	
	09991-87203-00	Engine control system inspection sub harness	
	09268-87703-000	Plug wrench	

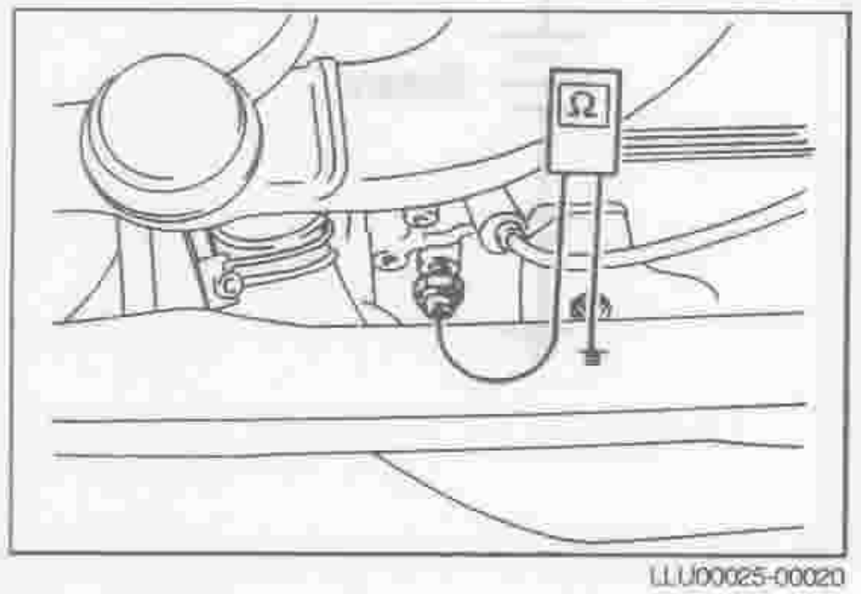
LIG00114-000107

(2) Disconnect the connector from the oil pressure switch.



LLU00024-00019

(3) Ensure that continuity exists between the terminal of the oil pressure switch and the engine ground when engine is under stopped state.
If not, replace the oil pressure switch.

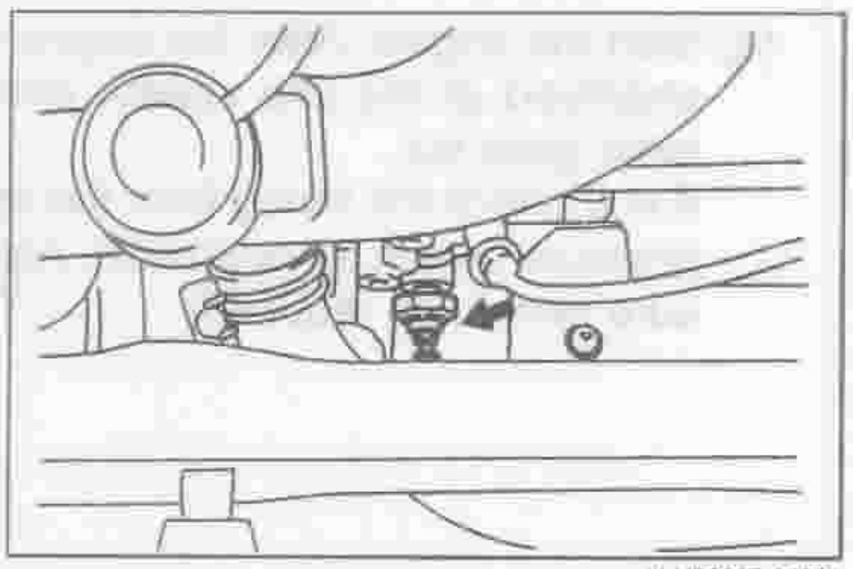


LLU00025-00020

(4) Start the engine. Ensure that no continuity exists between the terminal of the oil pressure switch and the engine ground.
If not, check the oil pressure.
(5) Connect the connector to the oil pressure switch.
(6) Connect the four clips of the front grill to the radiator support.

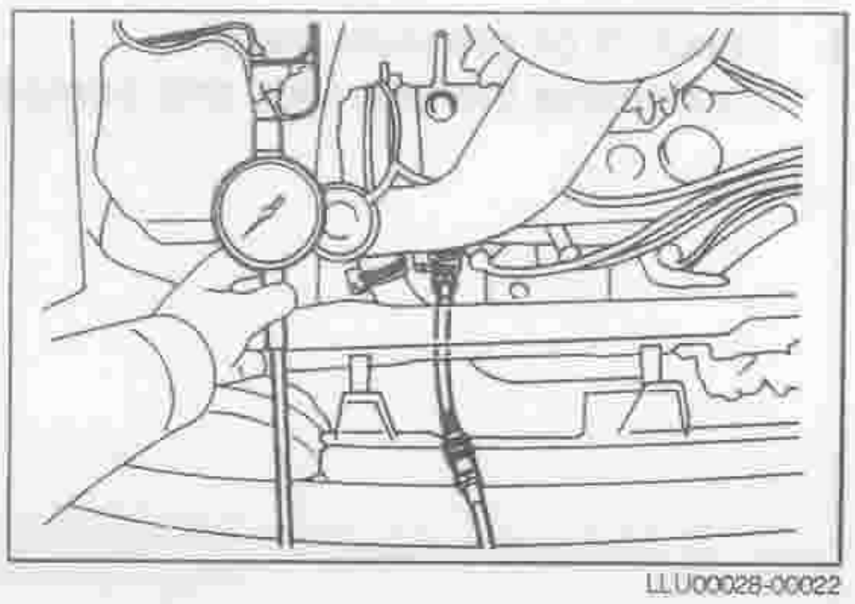
LLU00026-00000

5. Check of oil pressure
(1) Remove the oil pressure switch.



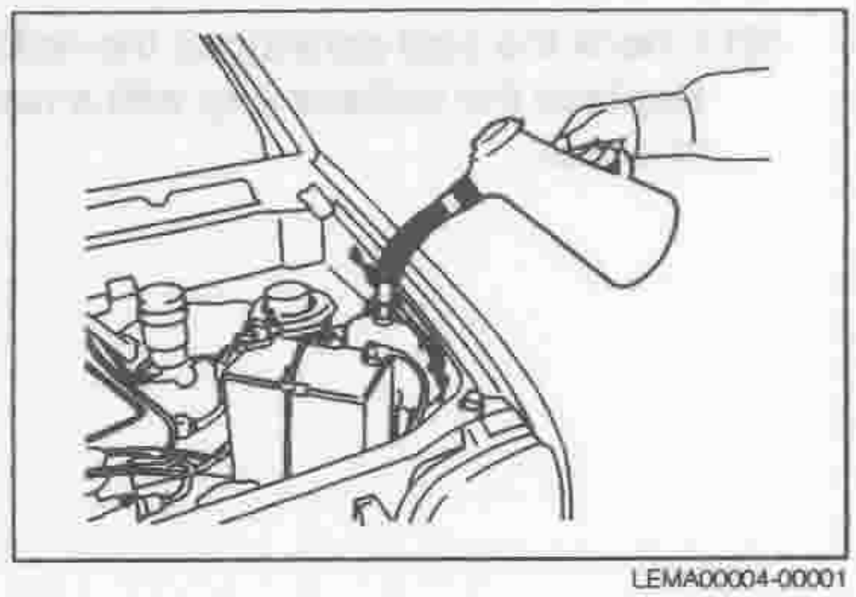
LLU00027-00021

(2) Install the oil pressure gauge.
NOTE:
- The oil pressure gauge is available as the following SST.
SST: 09990-87702-000



LLU00028-00022

COLD ENGINE OPERATION


LEMA00004-00001

1. Inspection of engine coolant level

Check to see if coolant level is between the LOW and FULL lines of the reserve tank.

If coolant level is near the LOW level or bellow the LOW level, add the coolant up to the full level.

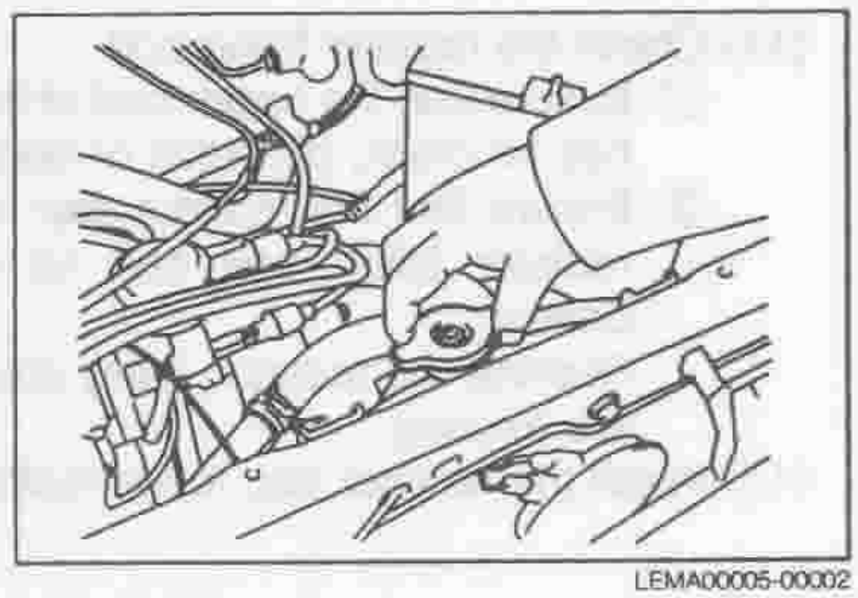
WARNING:

- Never open the radiator cap when the engine is still hot. Failure to observe this caution will cause you to get scalded.

NOTE:

- If no coolant is present in the reserve tank or the coolant level is very low, check for water leakage, using a radiator cap tester.
- Here, the coolant refers to the coolant having an adequate freezing protection rating.

2. Inspection of radiator cap and radiator filling port

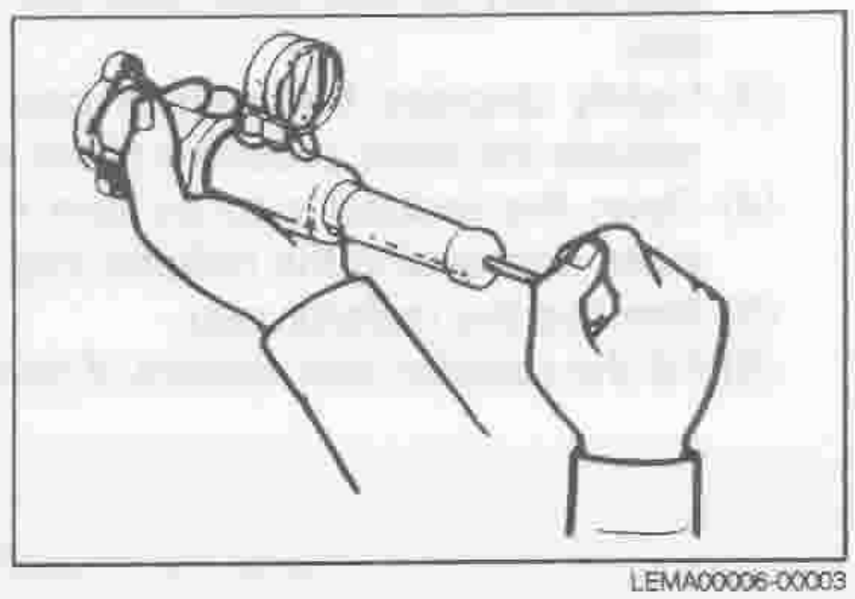

LEMA00005-00002

WARNING:

- Never open the radiator cap when the engine is still hot. Failure to observe this caution will cause you to get scalded.

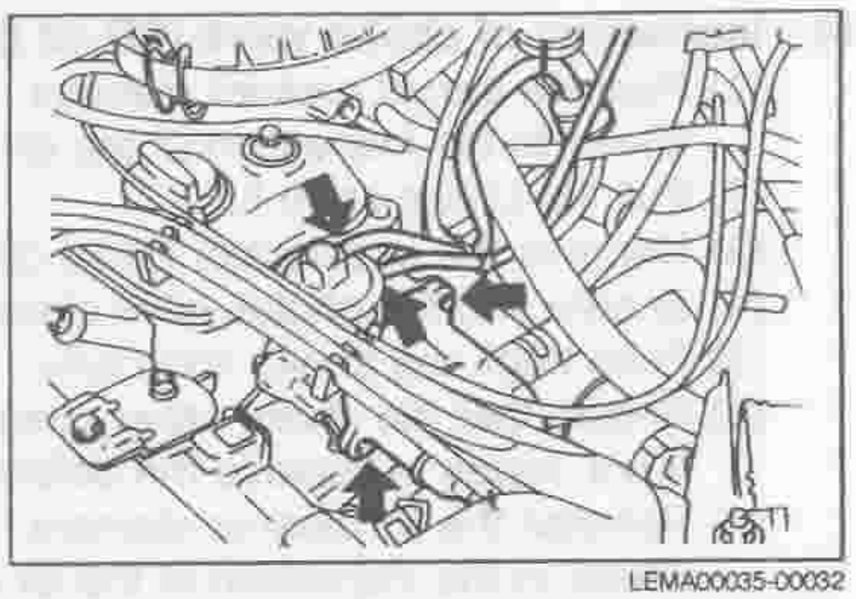
(1) Ensure that the engine coolant temperature is nearly atmosphere temperature.
(2) Turn the radiator cap to opening direction (counterclockwise) for one step (until the first detention will be felt).
(3) Lightly depress the radiator cap one to two times to release the inner pressure of radiator.
(4) Open the radiator cap by turn it to counterclockwise while depressing the radiator cap.
(5) Remove the radiator cap.

(6) Install the radiator cap to the radiator cap tester.
(7) Check the radiator cap by means of a radiator cap tester to see if the relief valve opens at a pressure of 88 ± 14.7 kPa (0.9 ± 0.15 kgf/cm^2).
If the radiator cap fails to confirm to the specification, replace the radiator cap.
(8) Remove the radiator cap from the radiator cap tester.

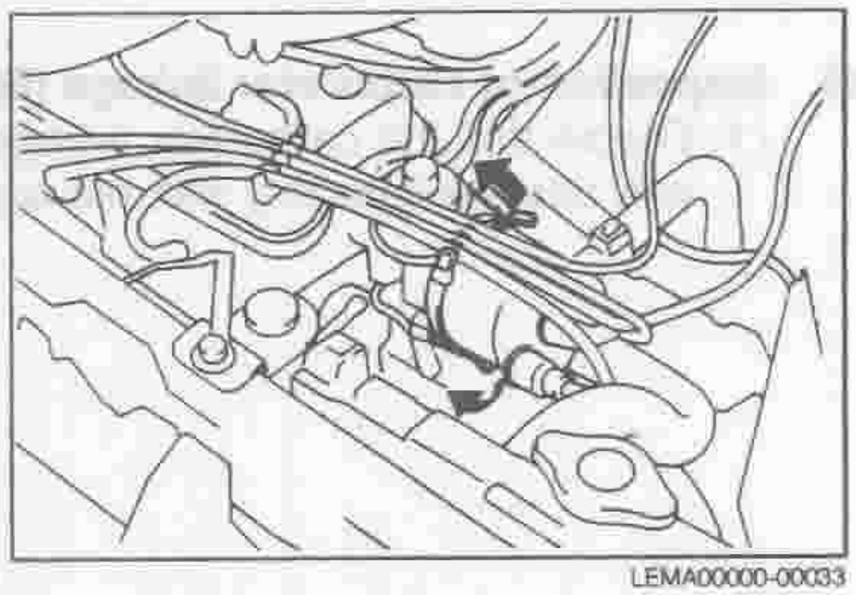

LEMA00006-00003

12. Inspection of the ignition timing advance device. [ED-10 Engine]

(1) Disconnect the vacuum hose from the vacuum advancer.
(2) Remove the distributor cap.



LEMA00035-00032



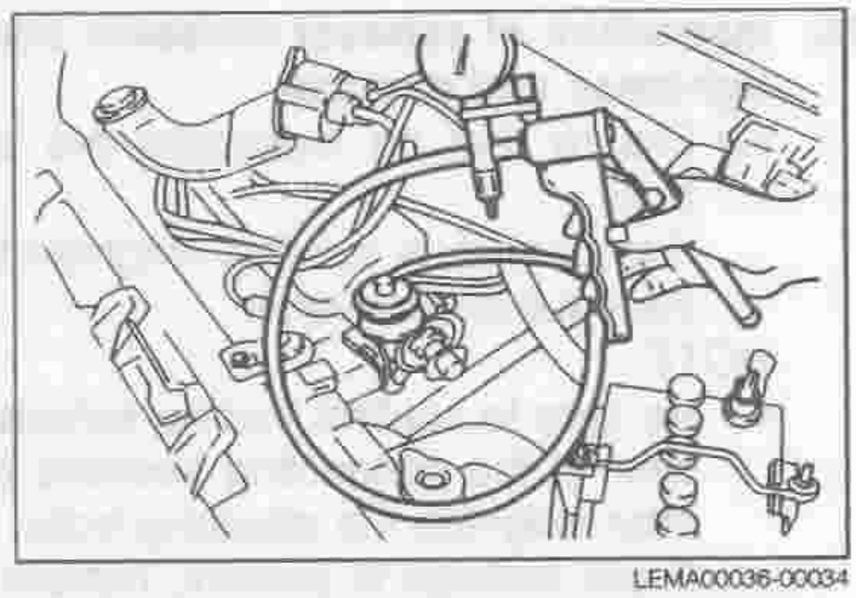
LEMA00000-00033

(3) Connect a MityVac to the vacuum advancer.
(4) Ensure that the vacuum advancer will operate when the vacuum is applied to the vacuum advancer.

NOTE:

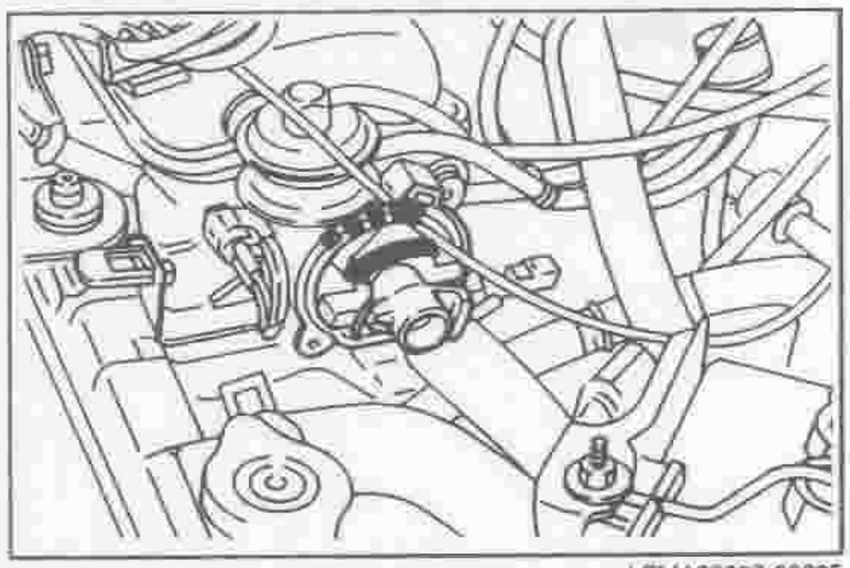
- The inspection should be performed at the main chamber and sub-chamber.

  If the vacuum advancer will not operate, check or repair the vacuum advancer.



LEMA00036-00034

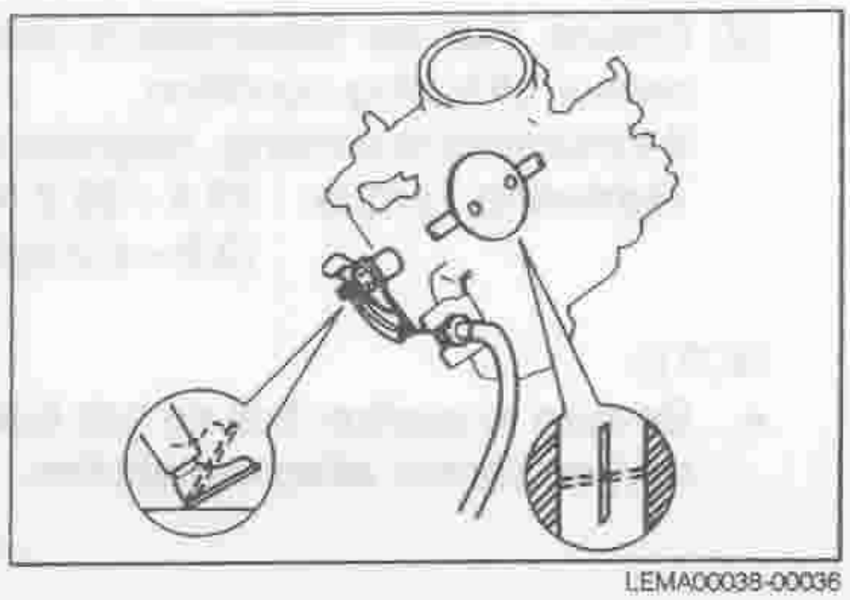
(5) Turn the rotor counterclockwise and release it.
Ensure that the rotor returns clockwise rapidly.
Repair or replace the governor advancer, as required, if the rotor will not return to the original position.
Check the rotor for excessive play.
Repair or replace the governor advancer, if it exhibits an excessive play.



LEMA00037-00035

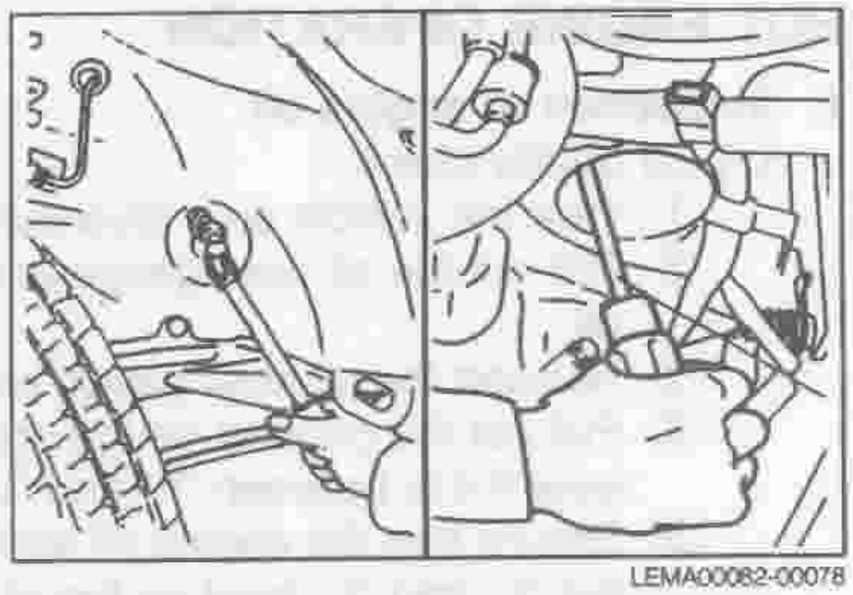
13. Inspection of throttle valve

(1) Remove the air cleaner element.
(Refer to the inspection of the air cleaner element.)
(2) Ensure that the throttle valve operates smoothly with out rattle, when the accelerator pedal is depressed gradually.
If not, check and repair the accelerator pedal, linkage or throttle valve.
(3) Reinstall the air cleaner element.
(Refer to the inspection of the air cleaner element.)

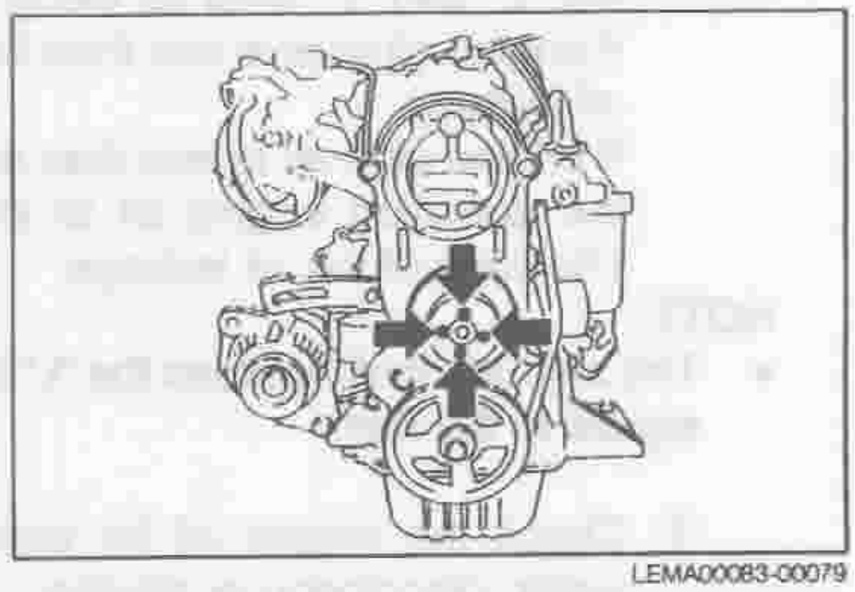


LEMA00038-00036

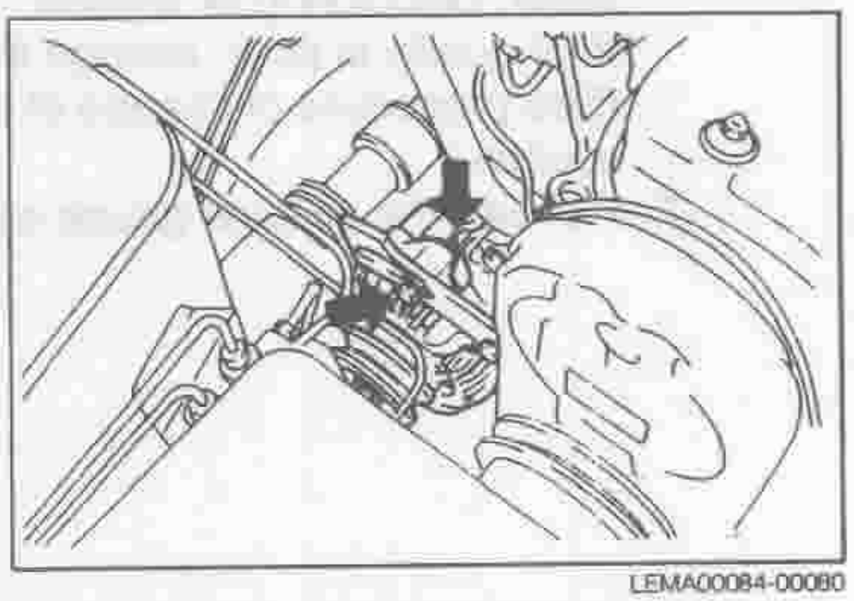
(32) Installation of crankshaft pulley bolt
① Install the crankshaft pulley.
② Tighten the crankshaft pulley bolt while preventing the ring gear from turning with the screwdriver.
Tightening Torque: 88.3 - 108 N·m
(9.0 - 11.0 kgf-m)


LEMA00082-00078

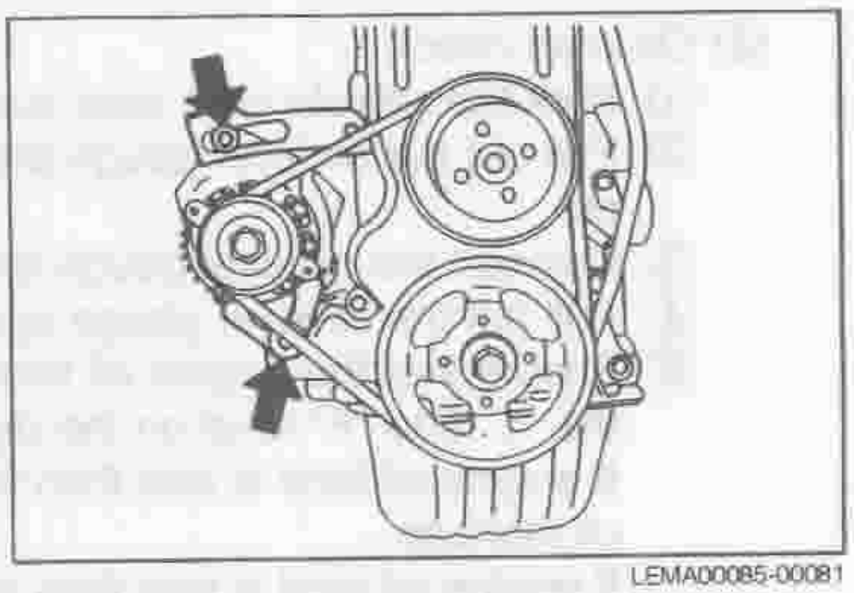
(33) Temporarily install the water pump pulley with the four bolts.


LEMA00083-00079

(34) Install the alternator adjusting bar side bolt and nut.

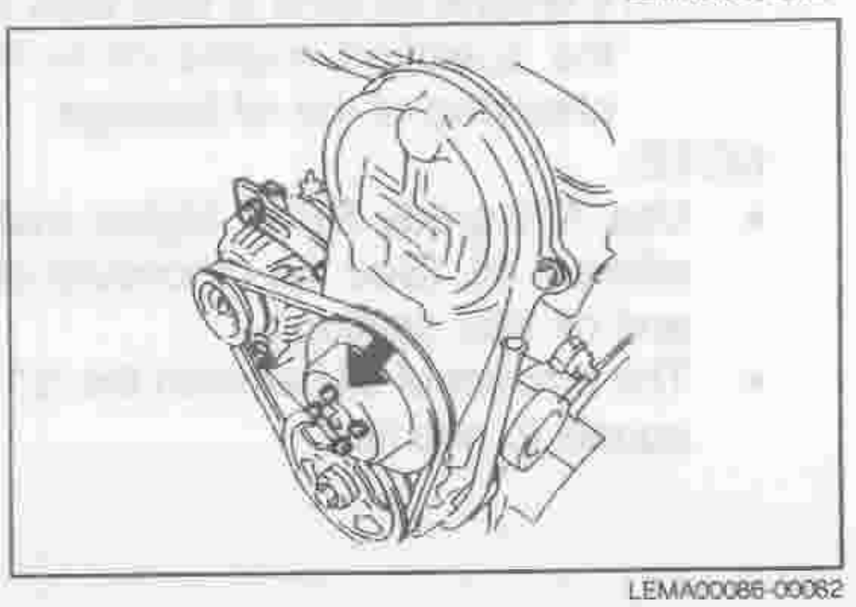

LEMA00084-00080

(35) Install the drive belt.
(36) Adjust the drive belt tension.
(See page EM–9.)


LEMA00085-00081

(37) Tighten the water pump pulley attaching bolts.
Tightening Torque: 4.3 - 6.5 N·m (0.44 - 0.66 kgf-m)

(38) Insert the oil level gauge into the oil level gauge guide.
(39) Install the air cleaner assembly with air intake duct.
(40) Connect the battery ground cable to the negative (–) terminal of the battery.

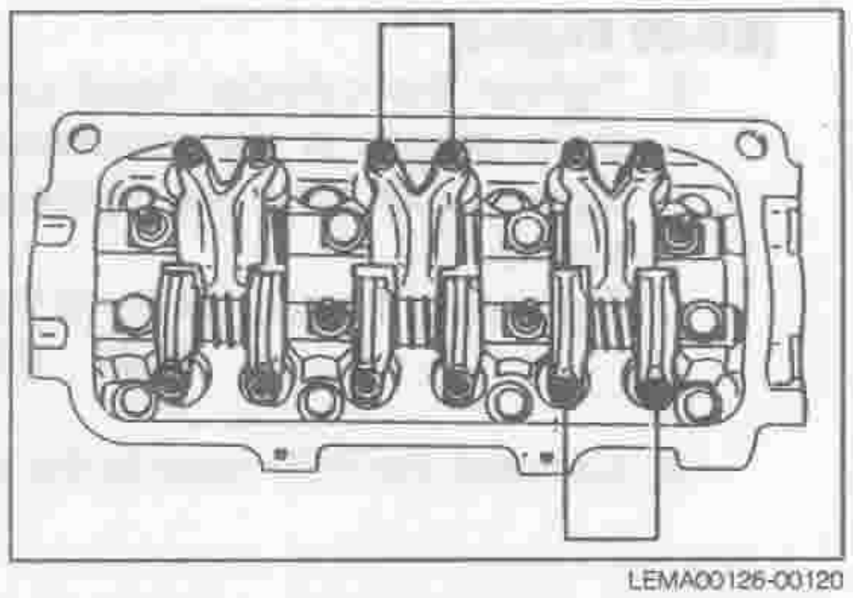

LEMA00086-00082

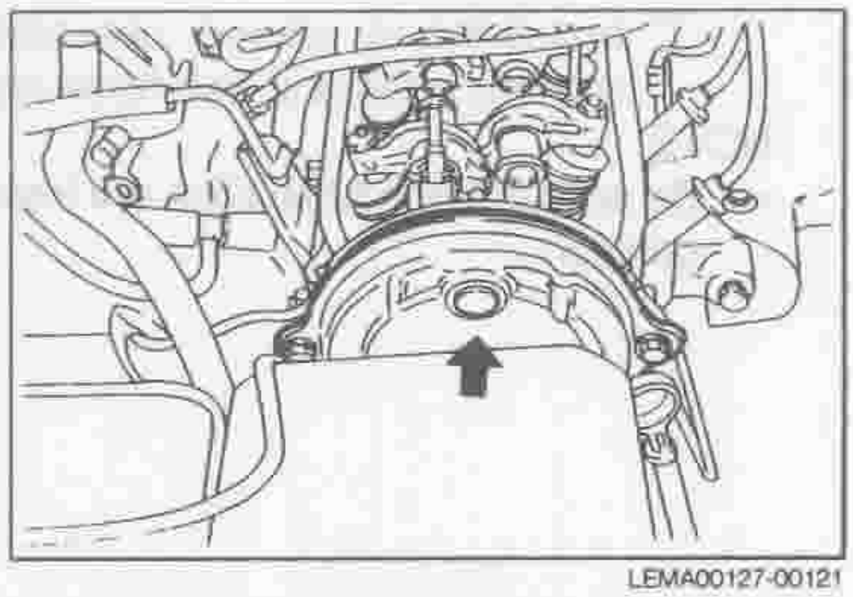
④ Turn the crankshaft 360 degrees.
(At this time, the No.1 piston is set to the top dead center at the end of the exhaust stroke.)
⑤ Proceed to check and adjust the remaining valve clearances.

Crank angle \ Cylinder		1	2	3
When No.1 piston s set at end of exhaust stroke	IN		○	
	EX			○

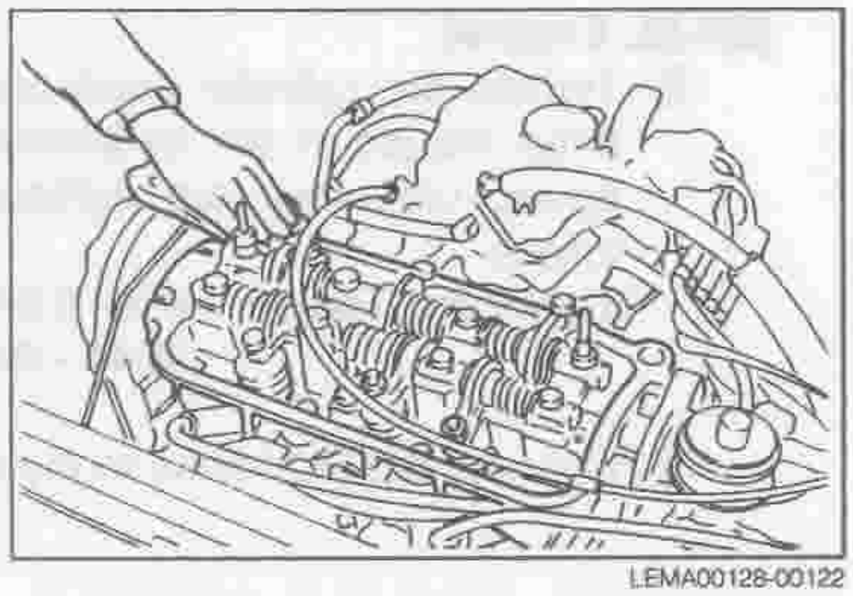
The "○" mark denotes those valves that can be adjusted under that setting.
The specified values are the same as with the step 3.

⑥ Install the hole plug of the timing belt cover.


LEMA00126-00120

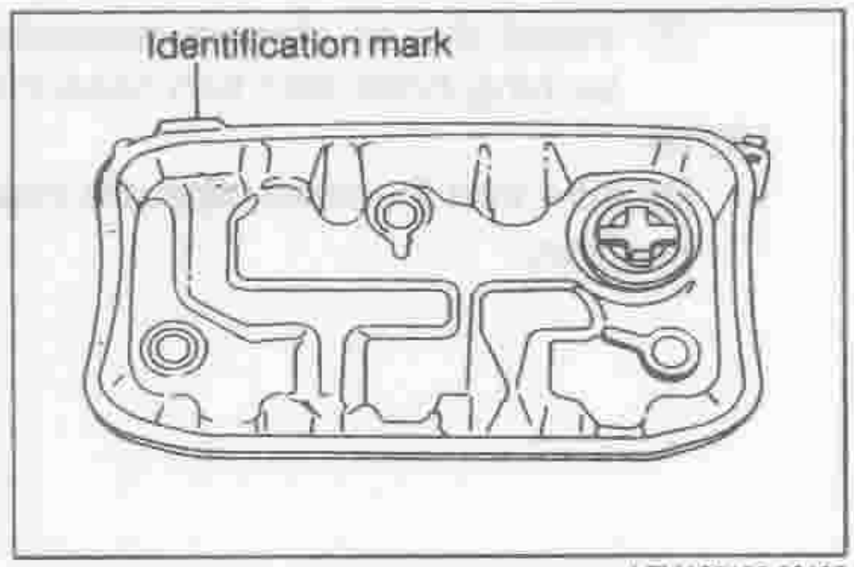

LEMA00127-00121

(3) Installation of cylinder head cover
① Wipe off the oil from the gasket attaching surface of the cylinder head.


LEMA00128-00122

② Check the cylinder head cover gasket for evidence of damage.
Replace the gasket, as required.

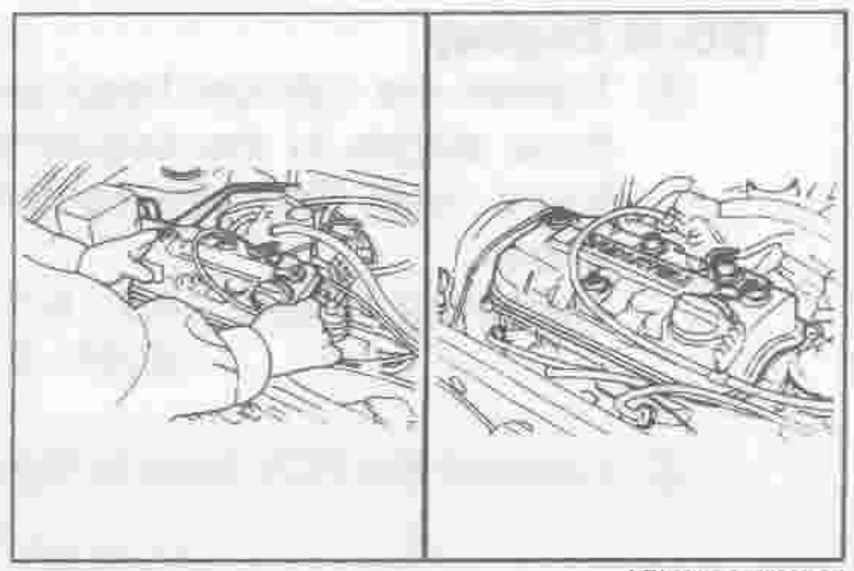
NOTE:
- Install the cylinder head cover gasket in such a direction that the identification mark may come at the exhaust side.



LEMA00129-00123

③ Install the cylinder head cover on the cylinder head.
④ Install the seal washer.

NOTE:
- Ensure that the seal washer exhibits no damage.
- If the seal washer exhibits damage, replace the seal washer with a new part.


LEMA00130-00124

CAUTION:
- Use a good brand of ethylene-glycol base antifreeze solution.

Coolant Capacity:

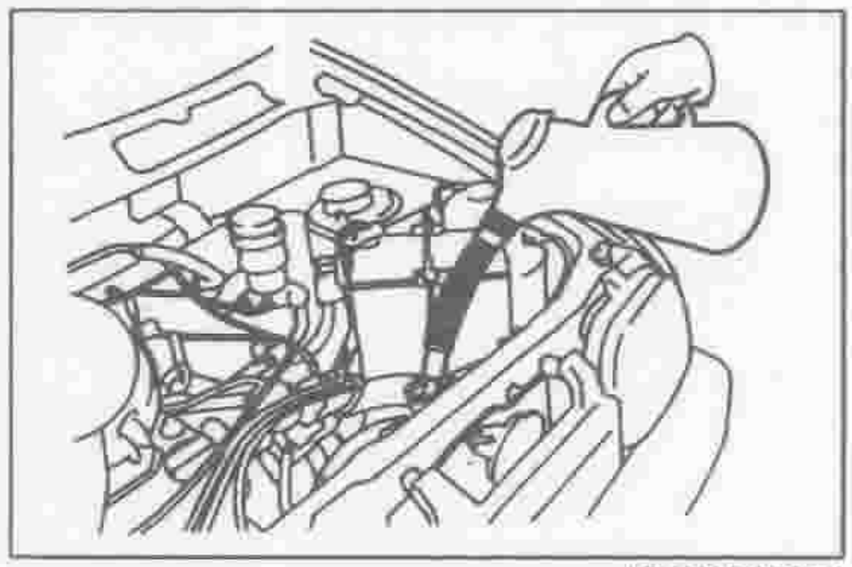
Unit: Liter

	EF-EL Engine	ED-20 Engine	ED-10 Engine
General specification	—	—	3.4
European specification	—	3.4 M/T, 3.3 A/T	—
Hong Kong specification	3.3 M/T 3.5 A/T	—	—
Australian specification		—	—

NOTE:
- The amount above includes 0.6 liter for the reserve tank.

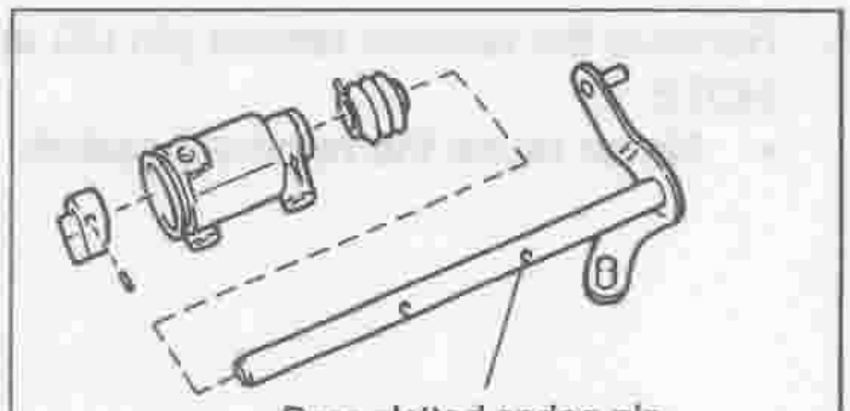
(28) Fill the water to the radiator and reserve tank.
(29) Start the engine.
NOTE:
- If the water level in the radiator drops, replenish the water to full level.

(30) Close the radiator cap.
(31) Ensure that no water leakage is present.
If water leakage is present, repair the water leakage.
(32) Warm up the engine, until the radiator fan motor starts to rotate.
(33) Stop the engine.
(34) Cool down the coolant temperature to the ambient temperature.
(35) Ensure that the coolant level in the reserve tank is not decrease.
If the coolant level in the reserve tank is decreased excessively or no coolant remain in the reserve tank, check the coolant level in the radiator whether coolant in the radiator is in full or not. If not replenish the water to the radiator, and repeat the steps (28) through (35) again.
(36) Turn the radiator cap one step in an opening direction (counterclockwise direction) until you feel the first resistance.
(37) Lightly press the radiator cap for two three times to release the inner pressure of the radiator.
(38) Remove the radiator cap.
(39) Ensure that the concentration of antifreeze solution in the radiator is meets to the instruction of the manufacturer of antifreeze solution by the densitometer.
Adjust the concentration of the antifreeze solution in the radiator to the instruction of the manufacturer of antifreeze solution, if concentration dose not meets to the instruction of the manufacturer of antifreeze solution.
(40) Secure the radiator cap.
(41) Drain the water in the reserve tank.
(42) Pour the coolant as mixed with antifreeze solution and water in accordance with the instruction of the manufacturer of antifreeze solution to the full level of the reserve tank.
(43) Secure the reserve tank cap.



LEMA00169-00154

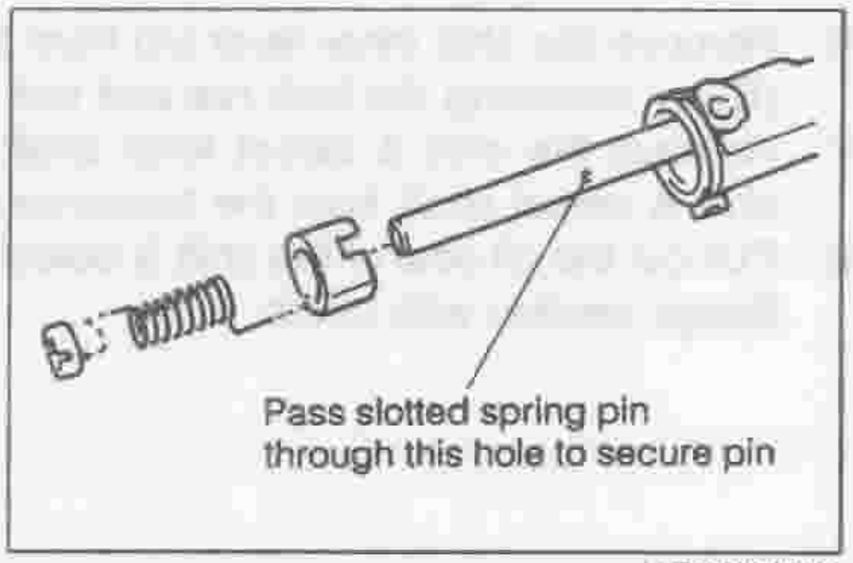
1. Assembly of shift & select lever shaft support
   (1) Install the dust boot to the shift & select lever shaft support.
   (2) Insert the shift & select lever shaft into the shift &select lever shaft support.
   (3) Pass the reverse restrict cam through the shift & select lever shaft. Secure it with a new slotted spring pin.



LMT00027-00023

   (4) Pass the shift lever holder subassembly, torsion spring and spring stopper through the shift & select lever shaft. Secure them with a new slotted spring pin.

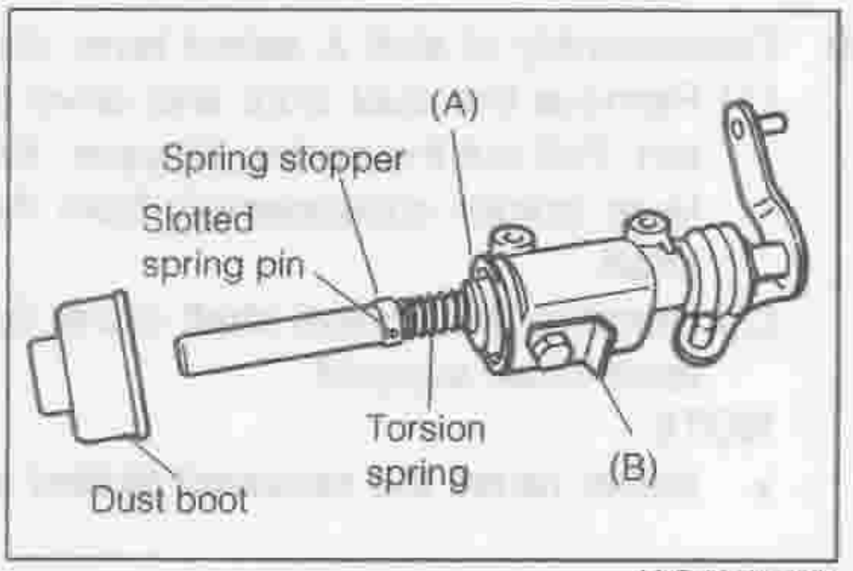
NOTE:
- Positively insert the both ends of the torsion spring into the shift lever holder subassembly and the spring stopper, respectively, as shown in the right figure.



LMT00028-00024

   (5) With the forward end of the attaching bolt aligned with the cut-out section of the shift lever holder subassembly (A), install the control shaft cover (B) to the shift & select lever shaft support.
   Tightening Torque:
   29.4 - 44.1 N·m (3.0 - 4.5 kgf-m, 21.7 - 32.5 ft-lb)

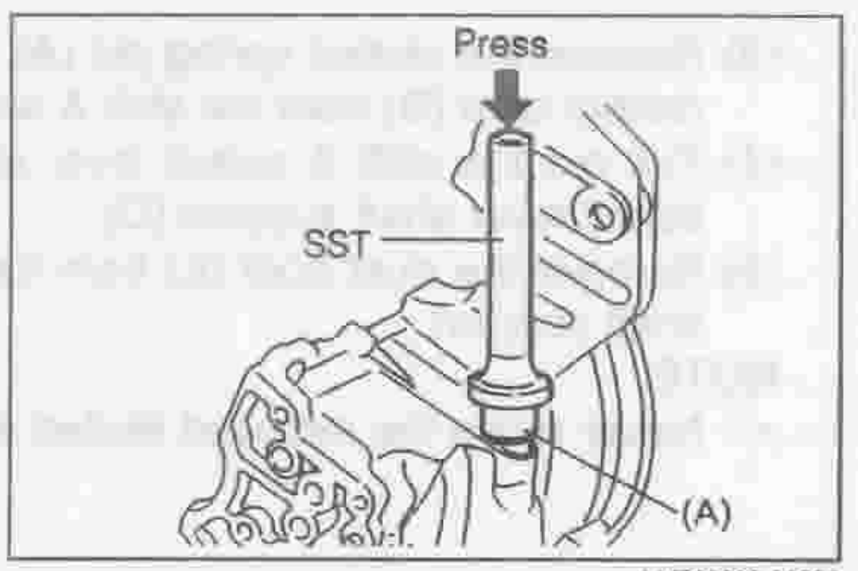
   (6) Install the dust boot to the shift & select lever shaft support.



LMT00029-00025

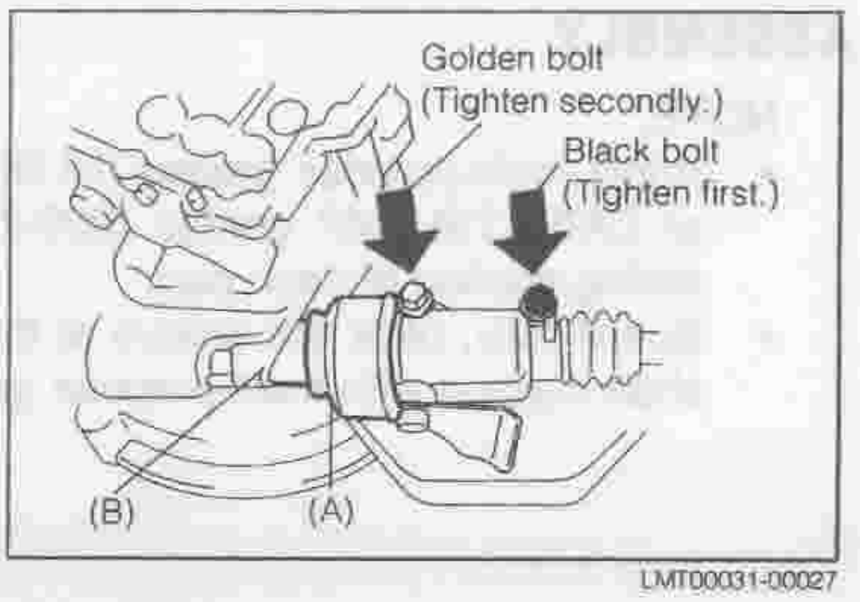
2. Press the oil seal (A) of the shift & select shaft in place, using the following SST.
   SST: 09515-87201-000

NOTE:
- Apply the designated oil to the lip section of the oil seal.



LMT00030-00026

3. Insert the shift & select shaft into the transmission case. Install the shift & select lever shaft support.
   NOTE:
   1. Positively fit the lip of the dust boot (A) onto the flange (B) of the shift & select shaft oil seal.
   2. Be sure to tighten the attaching bolts of the shift& select lever shaft support in the sequence of the number sindicated in the figure.
   Tightening Torque:
   14.7 - 21.6 N·m (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)

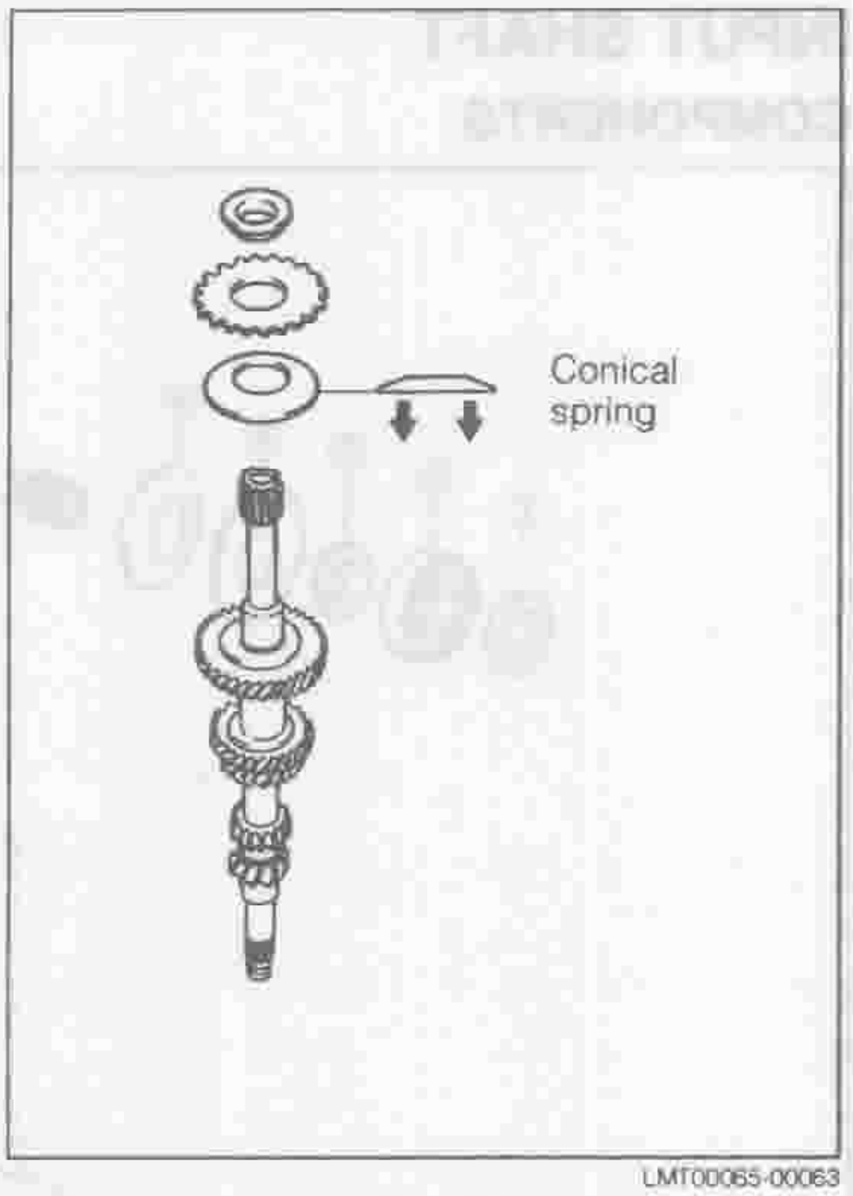


LMT00031-00027

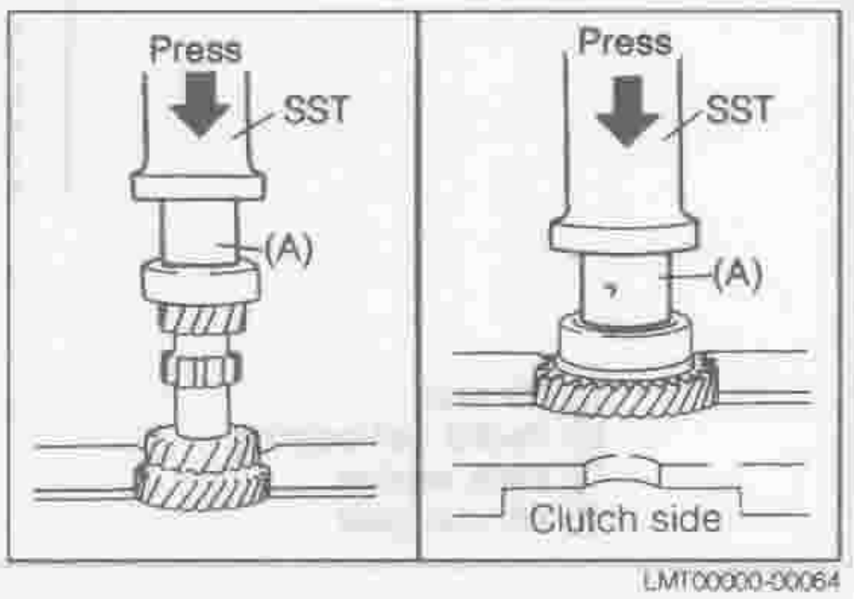
ASSEMBLY

1. Install the conical spring, new sub gear and new plate washer to the input shaft.
2. Install the radial ball bearings to the input shaft, using the 1st gear bearing inner race (A) in combination with a press and the following SST.
   SST: 09309-87201-000

   NOTE:
   1. Hook the 1st gear bearing inner race on the bearing inner race.
   2. The used 1st bearing inner race must be used exclusively for this operation. Never use it as a replacement part.

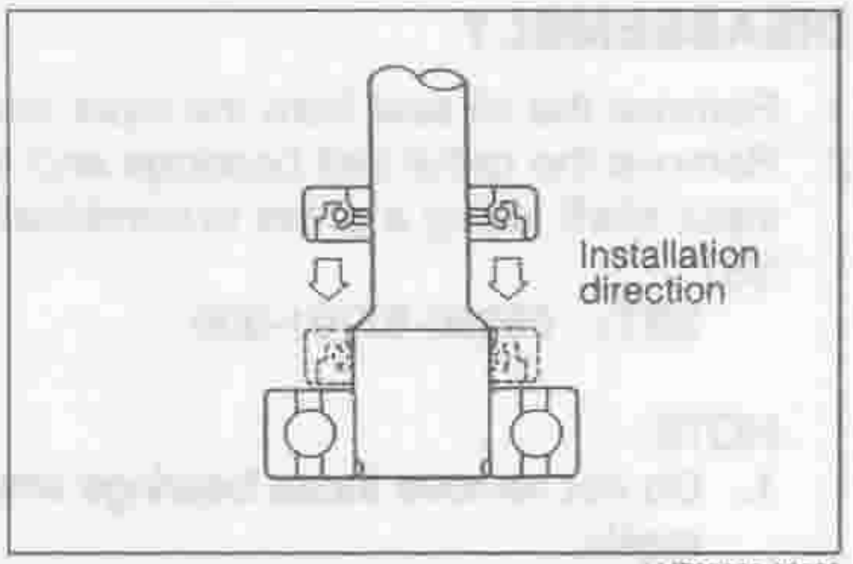


LMT00065-00063



LMT00000-00064

3. Install an oil seal to the input shaft.
   NOTE:
   1. Install the oil seal in the correct installing position and direction.
   2. Be careful not to damage the oil seal lip section.



LMT00066-00065

Wear or damage of output shaft

Unit: mm (inch)

Part		Specified value	Allowable limit
Outer diameter of output shaft section contacting needle roller bearing	①	$32.5\ ^{-0.009}_{-0.025}$ ($1.280\ ^{-0.0004}_{-0.0010}$)	32.46 (1.278)
	②	$30.0\ ^{-0.009}_{-0.025}$ ($1.181\ ^{-0.0004}_{-0.0010}$)	29.96 (1.180)
	③	$25.0\ ^{+0.017}_{+0.002}$ ($0.984\ ^{-0.0007}_{-0.0001}$)	24.98 (0.983)
Tooth surface of gear and spline		Visually check to see if any excessive damage or wear is present.	

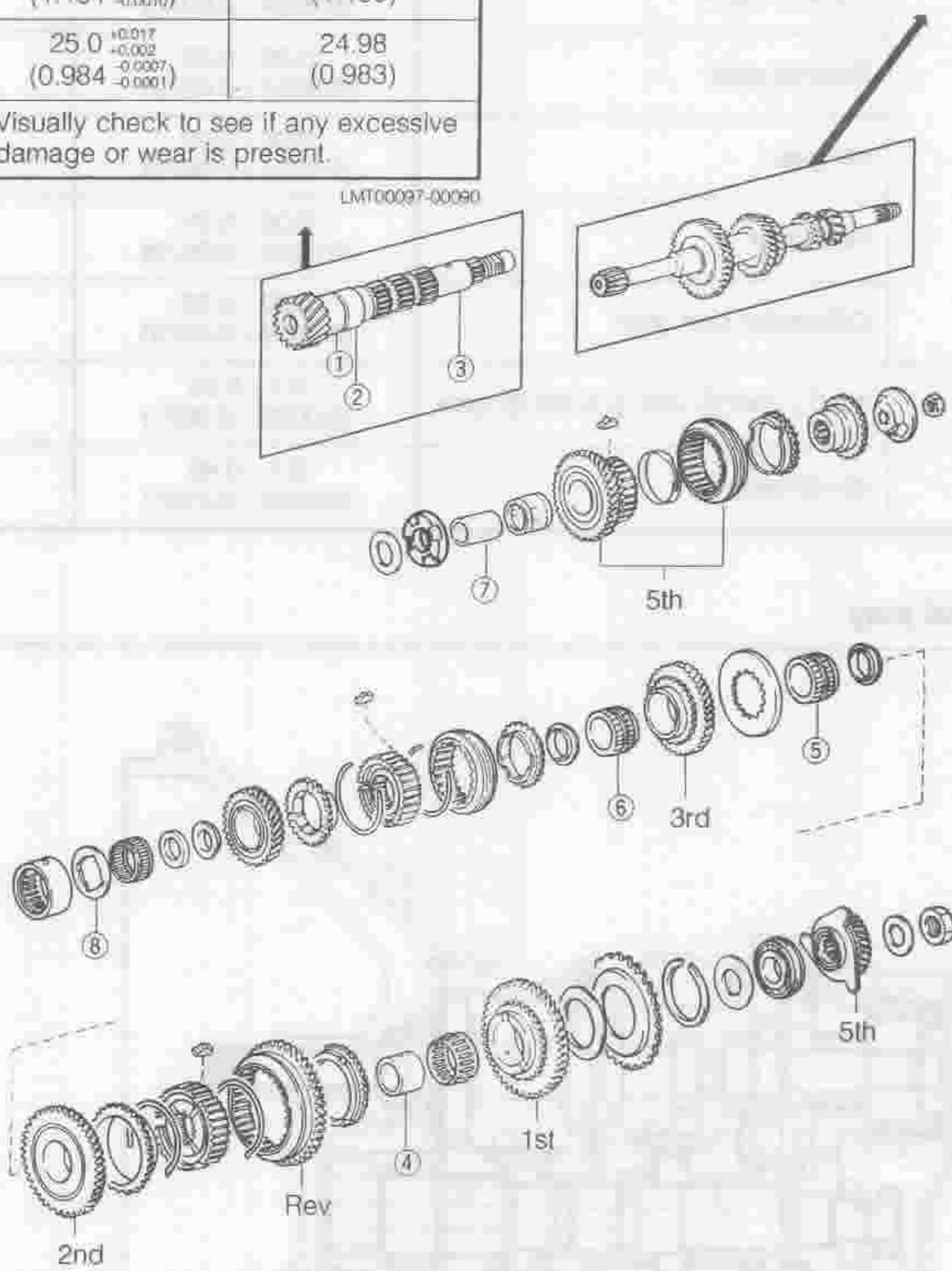
LMT00097-00090

Wear or damage of input shaft

Unit: mm (inch)

Part	Specified value	Allowable limit
Tooth surface of gear and spline	Visually check to see if any excessive damage or wear is present.	

LMT00098-00090



Wear or damage of bush, roller bearing inner race and splined section

Unit: mm (inch)

Part	Specified value	Allowable limit
1st gear bearing inner race outer dia. ④	$32.0\ ^{-0.009}_{-0.025}$ ($1.260\ ^{-0.0004}_{-0.0010}$)	31.96 (1.258)
2nd gear bush outer dia. ⑤	$40.0\ ^{-0.040}_{-0.070}$ ($1.575\ ^{-0.0016}_{-0.0028}$)	39.89 (1.571)
3rd gear bush outer dia. ⑥	$35.0\ ^{-0.040}_{-0.080}$ ($1.378\ ^{-0.0016}_{-0.0031}$)	34.89 (1.374)
5th gear bearing inner race outer dia. ⑦	$25.0\ ^{0}_{-0.013}$ ($0.984\ ^{-0}_{-0.0005}$)	24.98 (0.984)
Splined section	Visually check to see if any excessive damage or wear is present	

LMT00099-00090

Wear or damage of thrust washer end surface

Unit: mm (inch)

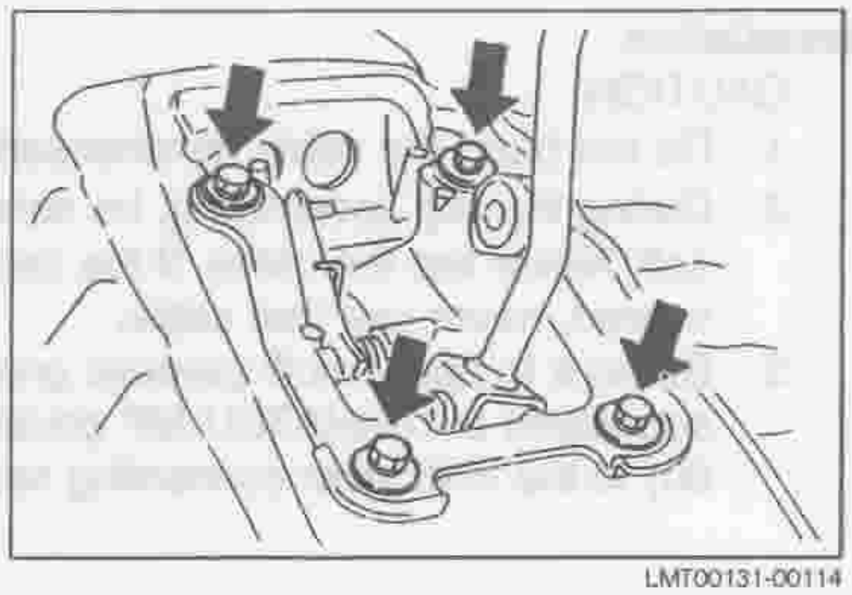
Part	Specified value	Allowable limit
Plate washer thickness ⑧	2.0 ±0.05 (0.0787 ± 0.020)	1.85 (0.0728)

LMT00100-00090

SHIFT LEVER

Removal

1. Remove the shift & select cable (see page MT-41).
2. Disconnect the shift lever side of the shift & select cable.
3. Remove the bolts and pull the shift lever assembly upward.



LMT00131-00114

Installation

1. Tighten the shift lever assembly to the body with the four bolts.

   Tightening Torque:

   9.8 - 15.7 N·m (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)

   NOTE:

   - Ensure that the shift lever boot retainer is placed correctly.

2. Connect the shift & select cable to the shift lever.
3. Install the shift & select cable (see page MT-42).

LMT00132-00000

DAIHATSU

L500, L501

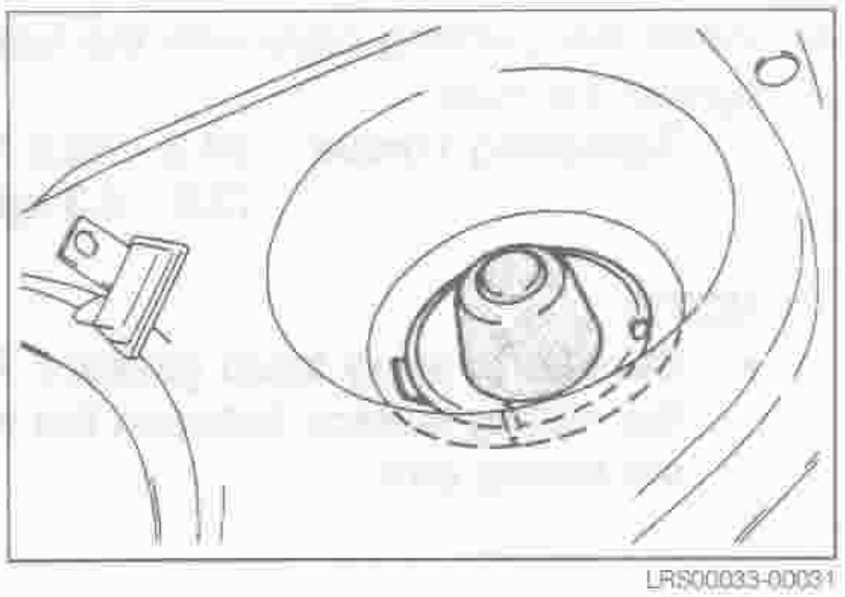
REAR AXLE & SUSPENSION

LRS00001-00000

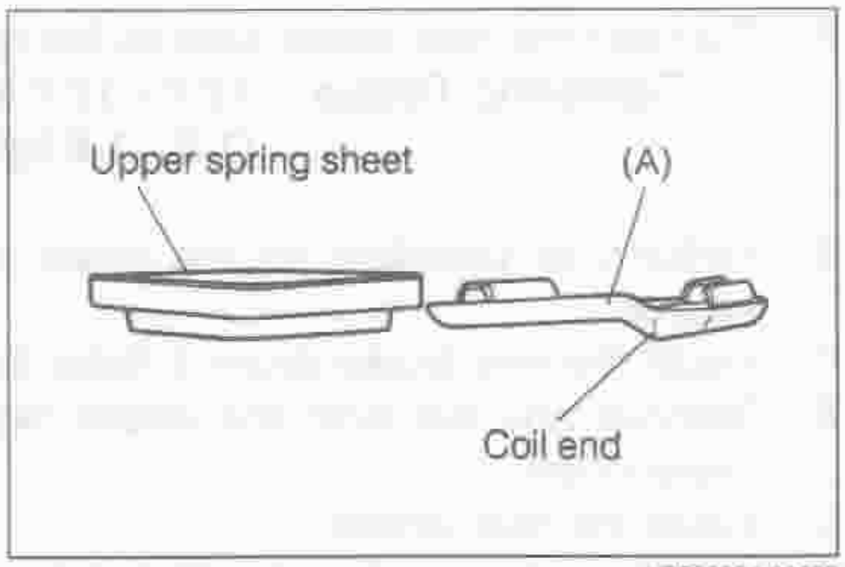
NO. 9198-LE

INSTALLATION

1. Install the rear bumper spring with the nut.
   Tightening Torque: 14.7 - 21.6 N.m
   (1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)

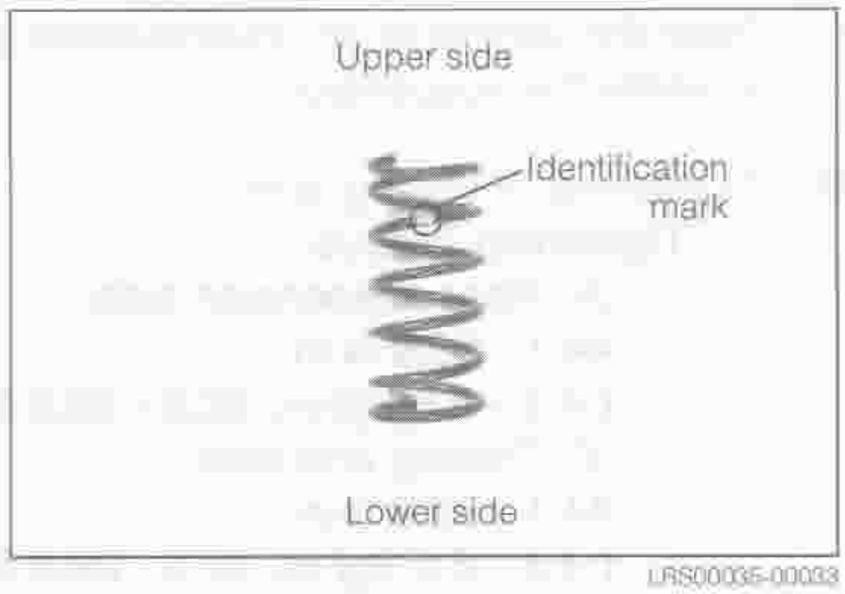

LRS00033-00031

2. Installation of rear spring and spring sheets
   (1) Insert the lower spring sheet (A) into the position.
   NOTE:
   - Securely assemble the lower spring sheet, while aligning the lower spring sheet with the stopper section of the trailing arm subassembly.



LRS00034-00032

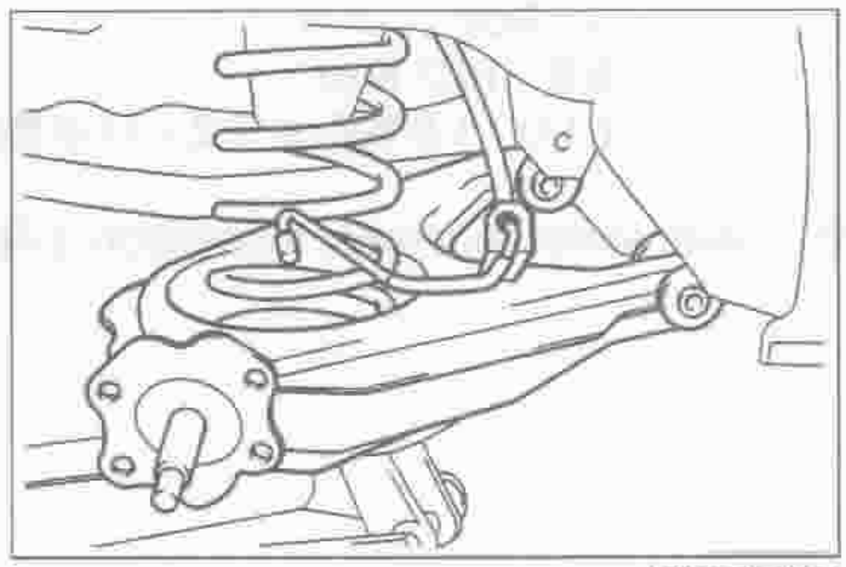
   (2) Put on the rear coil spring with the upper sheet.
   NOTE:
   - Make sure to place the coil spring in such a direction that the identification mark comes at the upper side.



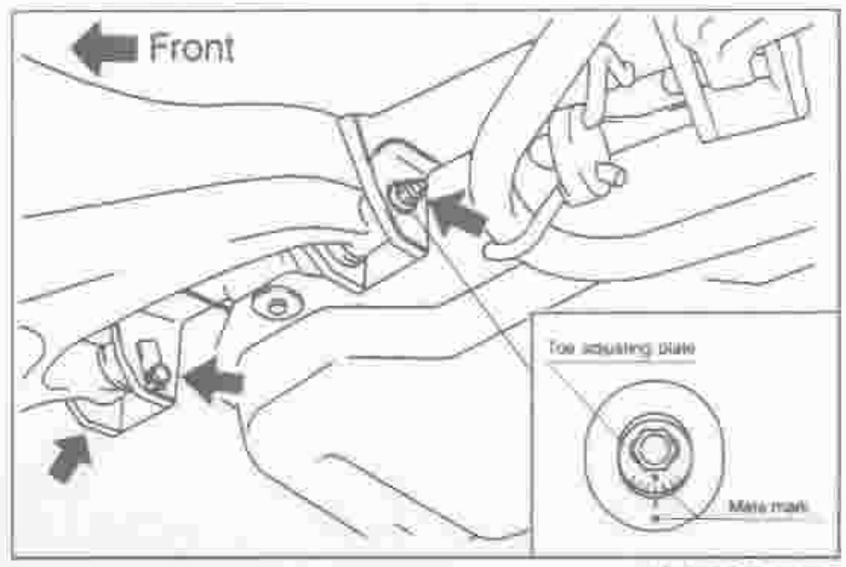
LRS00035-00033

3. Installation of trailing arm
   (1) Jack up the trailing arm with the rear coil spring installed.
   (2) Connect the brake tube to the flexible hose.
   NOTE:
   - Make sure that no flexible hose is twisted during installation.

   (3) Install the clip.


LRS00036-00034

   (4) Install the trailing arm with bolts and new nuts temporarily.
   NOTE:
   - Temporarily tighten the bolts, while aligning the scale for the toe adjustment of the bolt plate with the marked position.



LRS00037-00035

REMOVAL

1. Disconnect the battery negative (–) terminal.
2. Remove the steering wheel from the steering main shaft. (Refer to SR–3)
3. Turn over carpets or silencers, as required, at the sections where the steering main shaft and universal joint pass through.
4. Remove the steering shaft dust cover with dust cover retainer from the dash panel.


LSR00009-00008

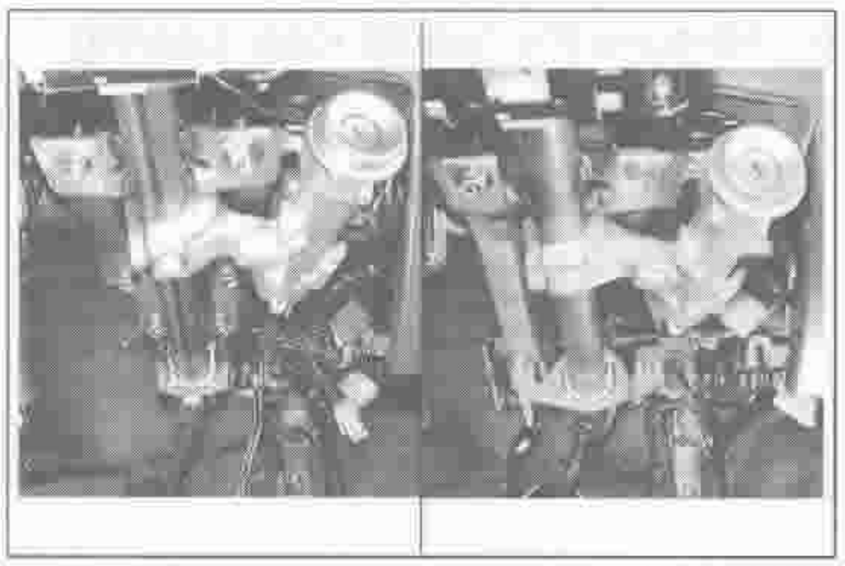
5. Remove the bolts connecting the unversal joint.


LSR00010-00009

6. Remove the steering column lower cover.
7. Disconnect all connectors of the wire harness of the multiuse lever switch. Disconnect the connector of the ignition key switch.
8. Remove the intermediate link joint protector. (EUR, only)

LSR00011-00010

9. Remove the steering column assembly with multiuse lever switch and steering column upper cover.

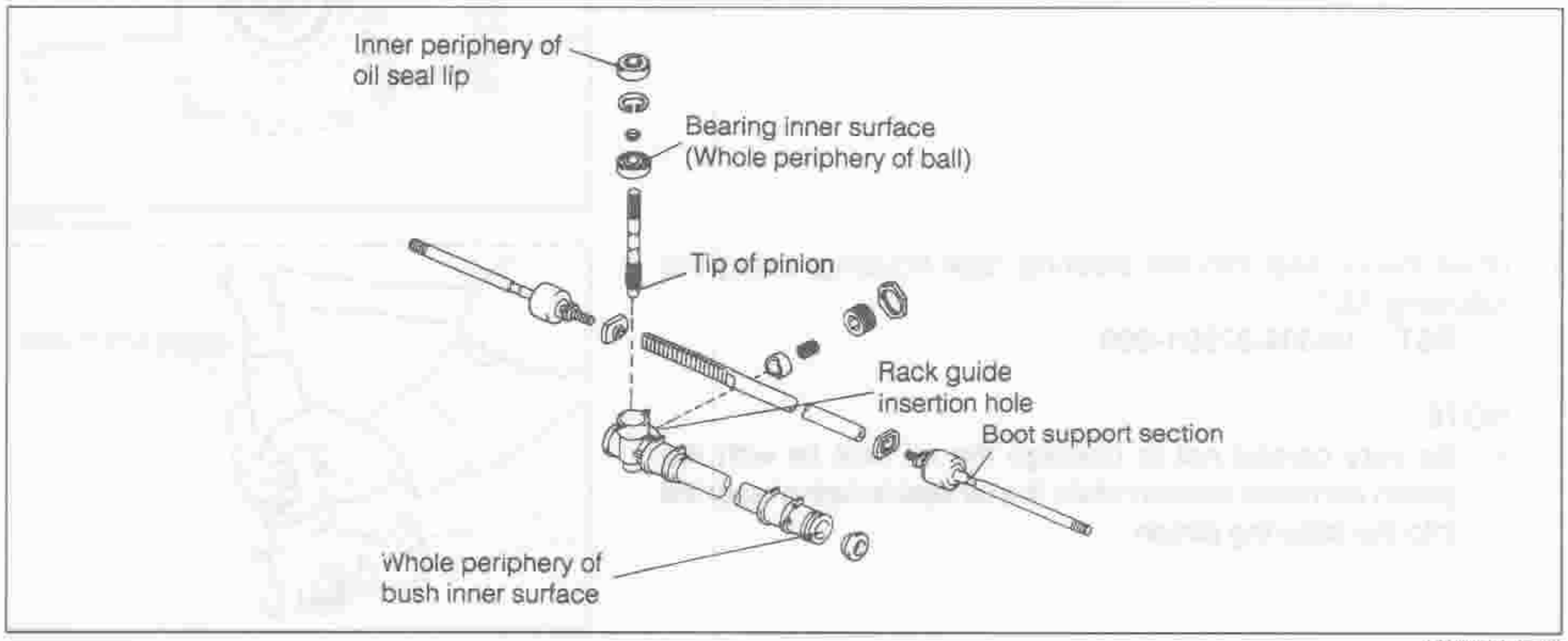

LSR00012-00011

10. Remove the universal joint from the steering pinion.


LSR00013-00012

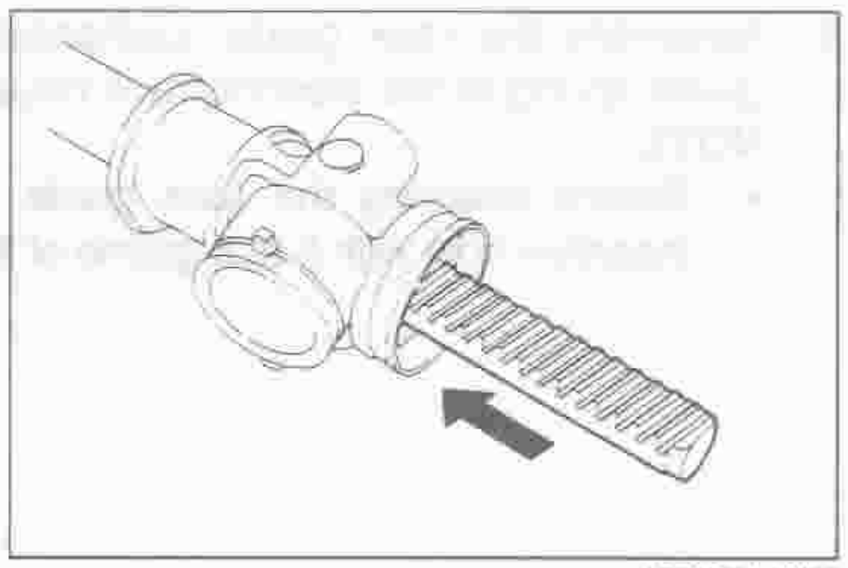
ASSEMBLY

1. Apply the designated grease to the points given below.
   Designated Grease: Molybdenum disulphide lithium base grease (NLGI No. 2)
   [Daihatsu EP grease: 999-2404-8483-00]



LSR00053-00052

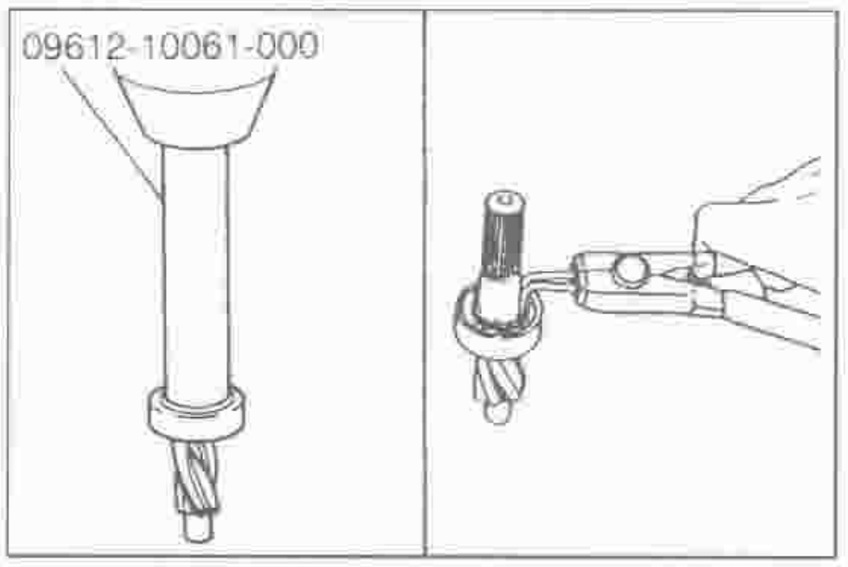
2. Insert the steering rack into the steering rack housing.
   NOTE:
   - Be sure to insert the rack from the pinion installing side so that no damage is made to the rack bush by the rack tooth.
   - Insert the rack straight without turning it.
   - Be careful to avoid getting grease on both ends of the rack.



LSR00054-00053

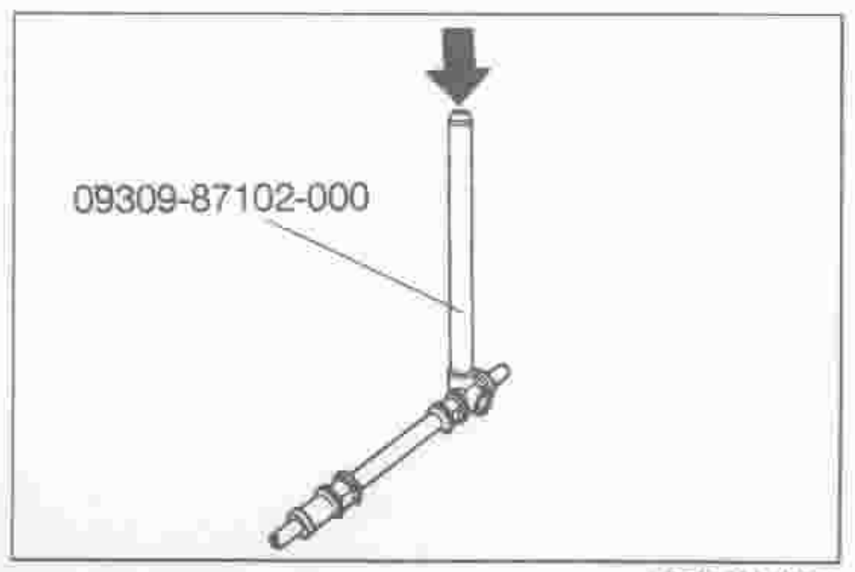
3. Drive the radial ball bearing into the steering pinion, using the following SST.
   SST: 09612-10061-000

4. Secure the radial ball bearing to the steering pinion with the shaft snap ring.



LSR00055-00054

5. Drive the steering pinion and radial ball bearing into the steering rack housing, using the following SST.
   SST: 09309-87102-000



LSR00056-00055

DAIHATSU

L500, L501

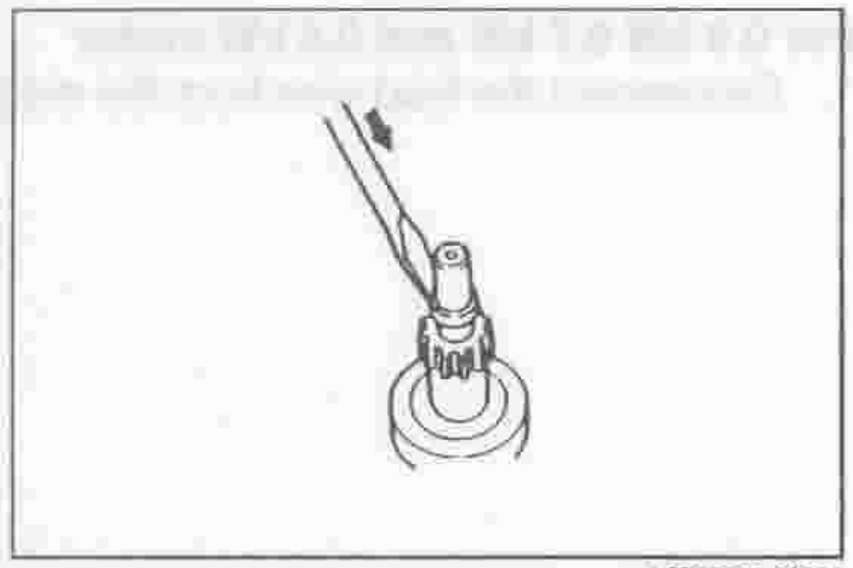
STARTING SYSTEM

ST

LST00001-00000

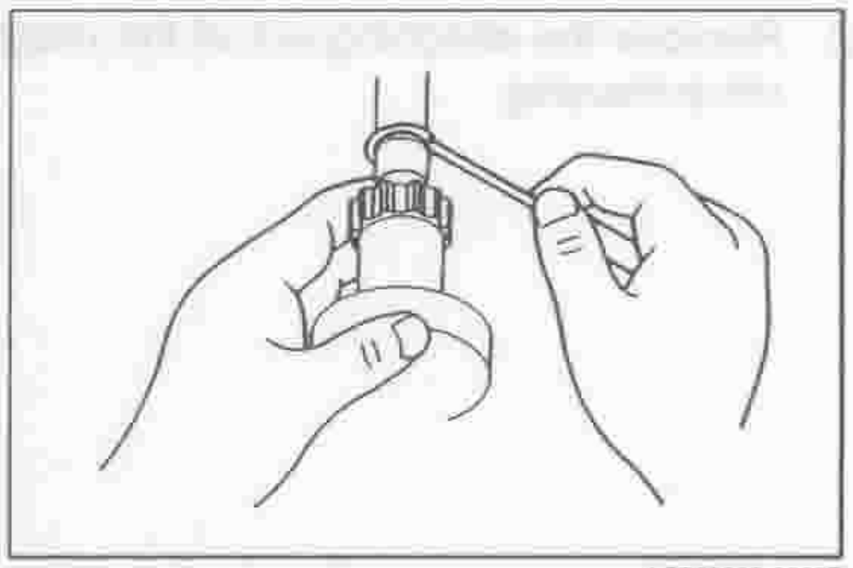
NO. 9198-LE

11. Remove the stop collar from the snap ring by tapping the collar with a screwdriver or the like placed on it.



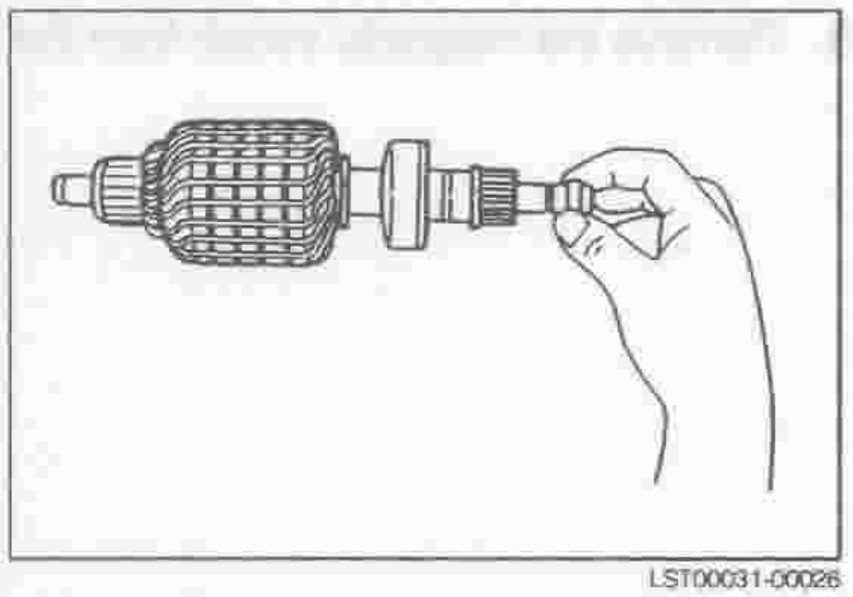
LST00029-00024

12. Remove the snap ring by prying it off with a screwdriver.



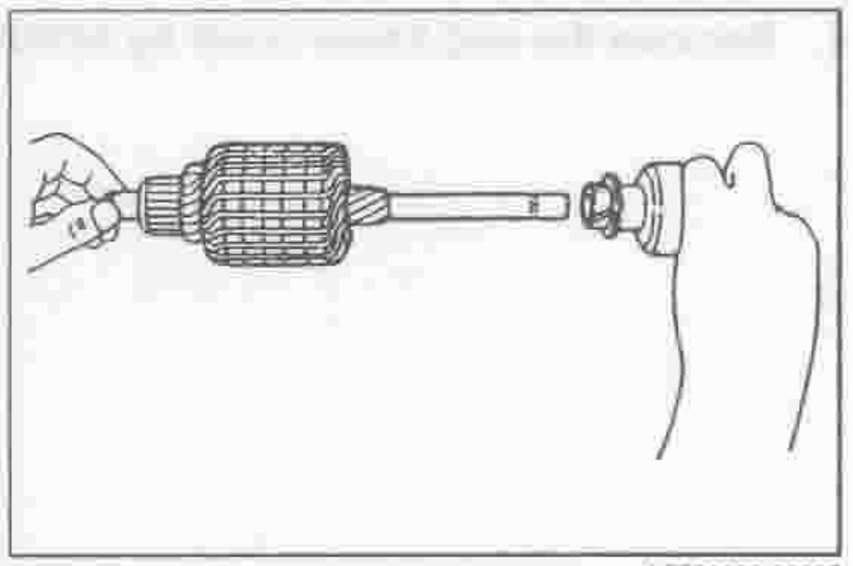
LST00030-00025

13. Remove the collar.



LST00031-00026

14. Remove the clutch.



LST00032-00027