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DAIHATSU

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***TERIOS***

**J100**

**LU**

## **LUBRICATION SYSTEM**

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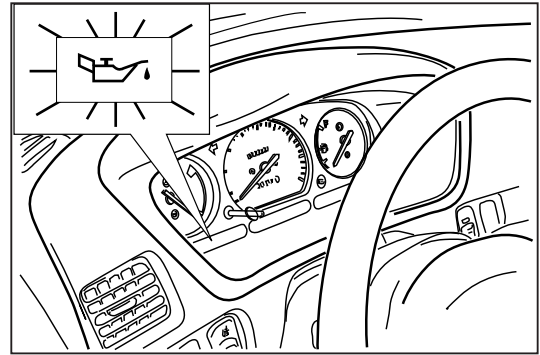
JLU00001-00001

## OIL PRESSURE WARNING

1. Check to see if the oil pressure warning will be illuminated when the ignition switch is turned on.

### NOTE:

- If the warning lamp will not go on, check to see if the bulb in the combination meter is burnt out. (Refer to the BE section of the service manual.)
- If the warning lamp is illuminated when the engine has started, perform the following checks. (In advance, be sure to check that the engine oil is at a sufficient level.)



JLU00002-00011

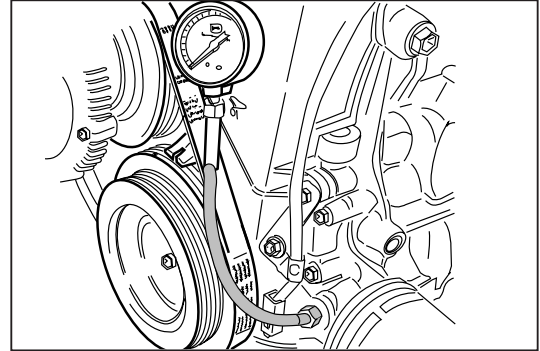
## OIL PRESSURE CHECK

1. Remove the engine undercover.
2. Disconnect the oil pressure switch connector.
3. Remove the oil pressure switch.

### NOTE:

- Use a hexagonal long box wrench for removal.

4. Install a suitable oil pressure gauge.



JLU00003-00101

5. Measuring of oil pressure  
Start the engine and warm it up to the normal operating temperature.

Ensure that the oil pressure is within the specification.

### Specified Oil Pressure

- At Idle Speed: 20 kPa or more
- At 3000 rpm: 245 - 490 kPa

### NOTE:

- If the measured value fails to conform to the specified value, check and repair the oil pump.

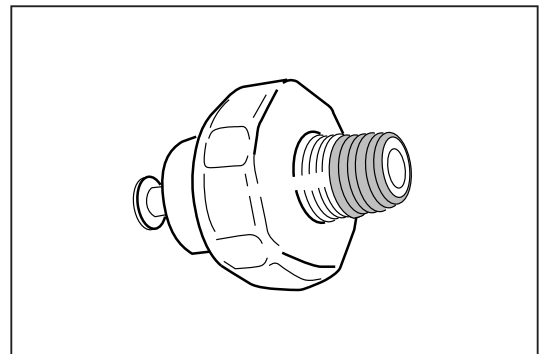
6. Stop the engine.
  7. Remove the oil pressure gauge.
  8. Clean the threaded portion of the oil pressure switch.
  9. Wind seal tape around the threaded portion of the oil pressure switch.
10. Install the oil pressure switch to the oil pump.

Tightening Torque: 11.8 - 19.6 Nm

### NOTE:

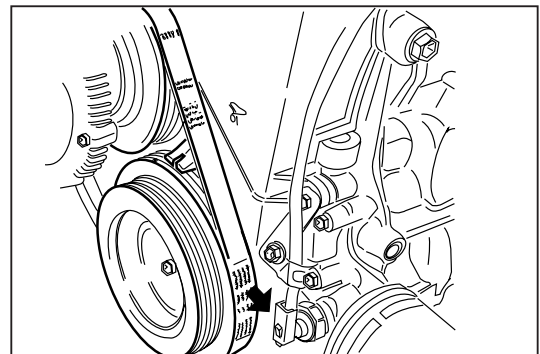
- Use a hexagon long box wrench for the installation of the oil pressure switch.
- The new oil pressure switch is coated with sealer.
- Therefore, when replacing the oil pressure switch with the new one, remove the sealer thoroughly before winding seal tape.
- Be sure to clean the hole threads at the oil pump side before installation of the oil pressure switch.

11. Connect the connector of the engine wire to the oil pressure switch.
12. Start the engine and check it for oil leakage.



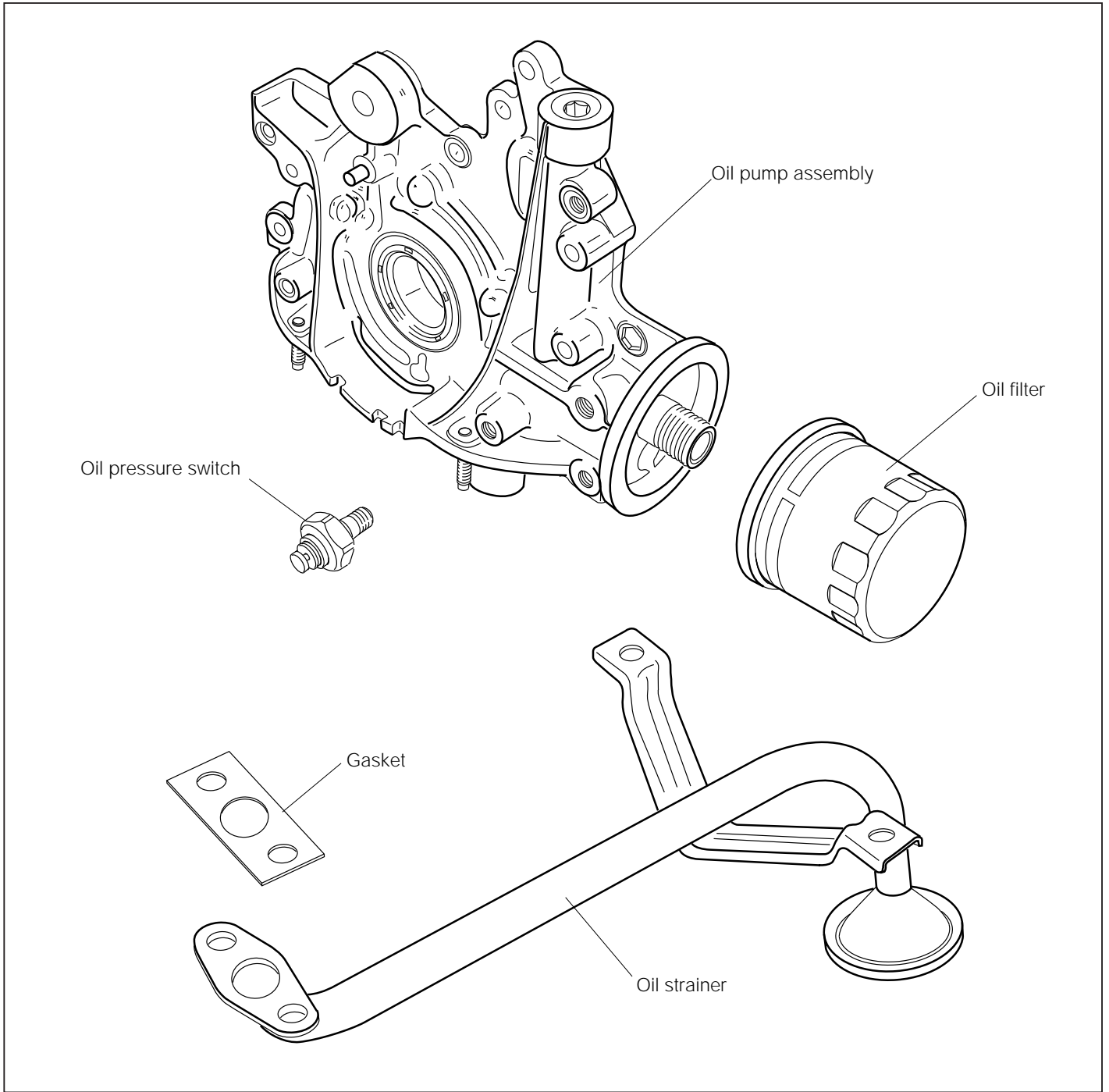
JLU00004-00102

JLU00005-00103



JLU00006-00104

**OIL PUMP  
COMPONENTS**

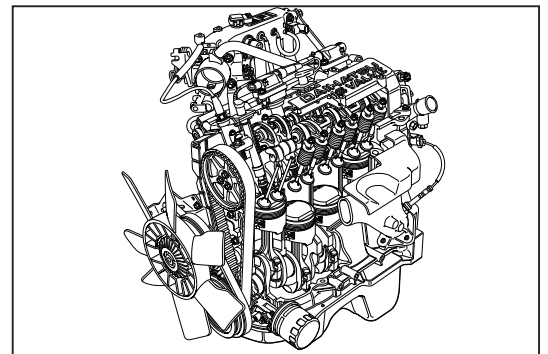


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**REMOVAL**

**NOTE:**

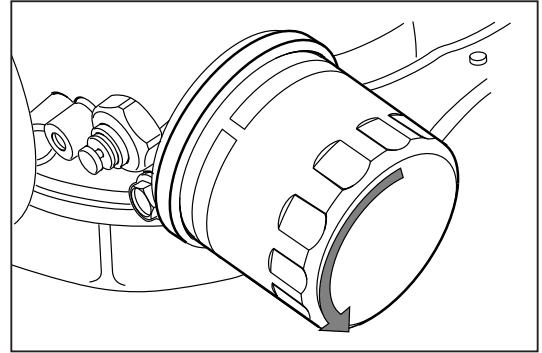
- In order to remove/install the oil pump, it is necessary to remove the oil pan. For a reliable service, it is not recommended to perform this operation with the engine mounted on the vehicle. Therefore, this manual describes only for the operation that is to be performed after the engine has been removed from the vehicle.
- For the operations that precede the removal of the oil pump, refer to the EM section of this manual.



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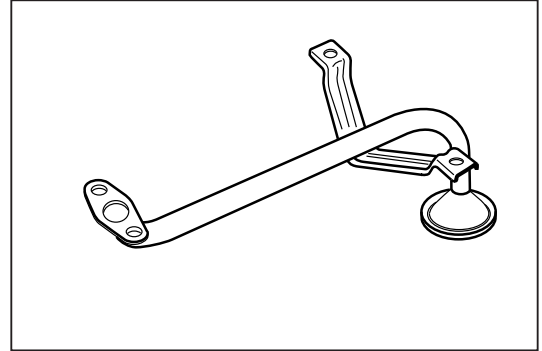
# LU-4

1. Install the engine unit to the suitable engine stand.  
Refer to EM section of the service manual.
2. Remove the oil filter element.
3. Remove the attaching bolts and nuts of the oil pan.
4. Separate the oil pan from the cylinder block.



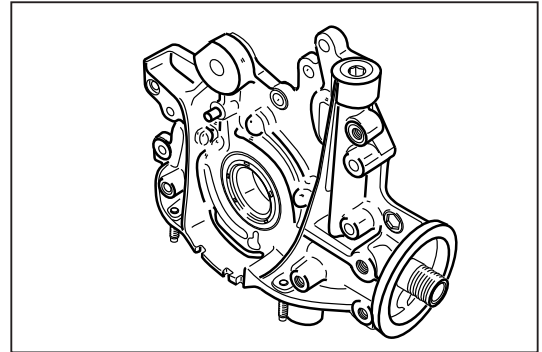
JLU00009-00203

5. Remove the oil strainer by removing the attaching bolts.



JLU00010-00204

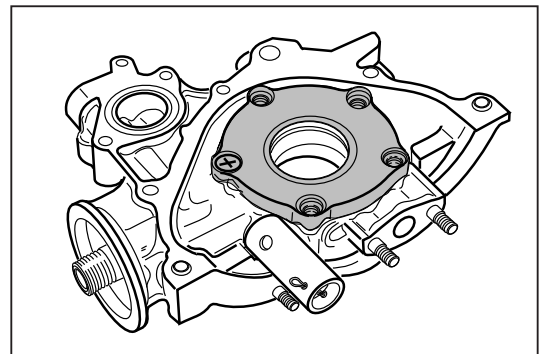
6. Remove the attaching bolts of the oil pump assembly evenly.
7. Remove the oil pump from the cylinder block.



JLU00011-00205

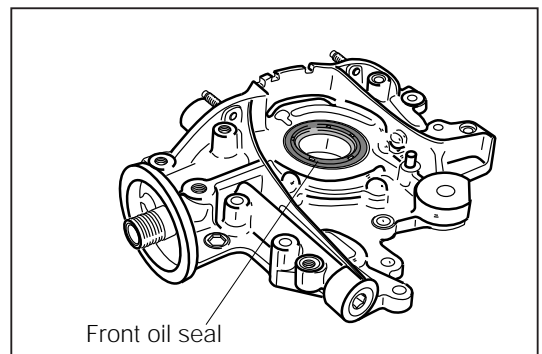
## DISASSEMBLY

1. Detach the oil pump cover by removing the attaching screws.



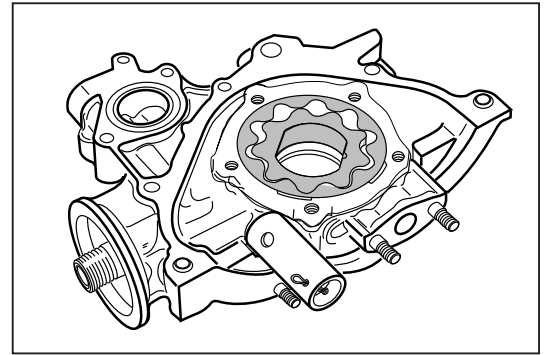
JLU00012-00301

2. Remove the front oil seal.



JLU00013-00302

3. Remove the oil pump rotor set.



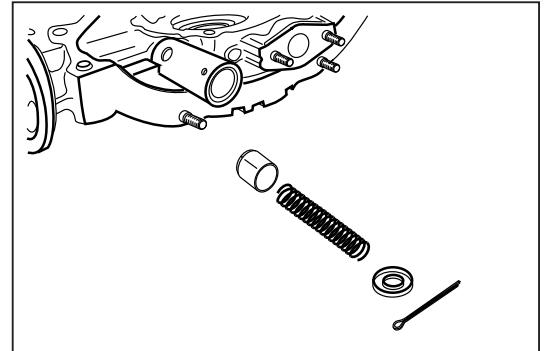
JLU00014-00303

4. Pull out the cotter pin, while pushing the spring retainer with nose pliers or the like.

**NOTE:**

- Put an appropriate cloth, etc. on the retainer spring so that it may not jump out.

5. Remove the oil pump relief valve spring retainer, compression spring and oil pump relief valve.



JLU00015-00304

6. Inspection of each part

- (1) Wash the disassembled parts in cleaning solvent.
- (2) Check the pump body for damage.
- (3) Check the rotor set for damage.
- (4) Check the oil pump relief valve for damage.
- (5) Check the oil pump relief valve spring retainer for damage.

**NOTE:**

- Replace the each parts if it exhibits damage.

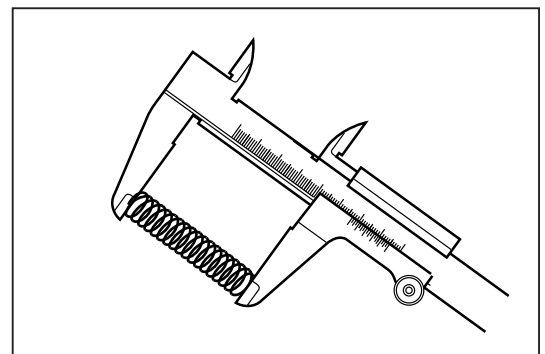
JLU00016-00305

(6) Check the compression spring for damage. Also, measure its free length.

**Specified Free Length: 57 mm**

**NOTE:**

- Replace the compression spring if it exhibits damage or the free length is less than the specified value.

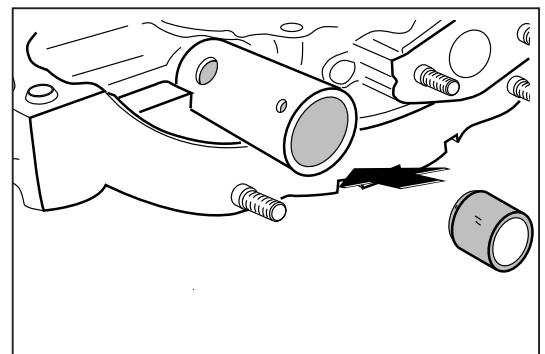


JLU00017-00306

(7) Apply engine oil to the oil pump relief valve. Insert the oil pump relief valve into the oil pump body. Check to see if the valve slides smoothly.

**NOTE:**

- Replace the oil pump body if the valve fails to slide smoothly.

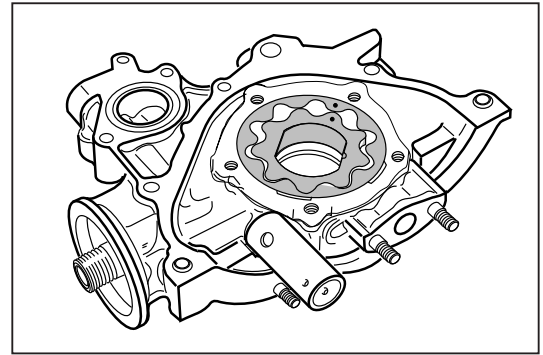


JLU00018-00307

# LU-6

## 7. Measurement of body clearance, tip clearance and side clearance

(1) Apply a thin film of engine oil to the rotor mate surface of the oil pump body as well as to the rotor set. Assemble the rotor set in the oil pump body in such a way that the drilled mark may be seen from the outside.



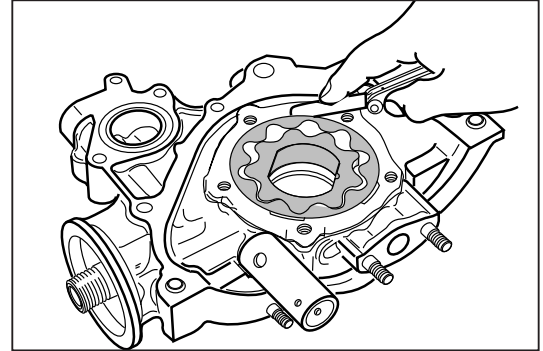
JLU00019-00308

(2) Measure the body clearance between the oil pump body and the outer rotor, using a thickness gauge.

**Body Clearance:** 0.20 - 0.28 mm

### NOTE:

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



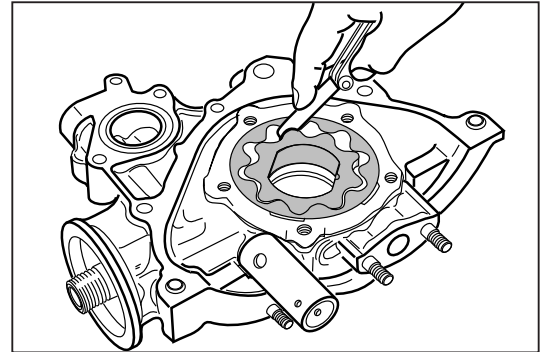
JLU00020-00309

(3) Measure the tip clearance of the rotor set, using a thickness gauge.

**Tip Clearance:** 0.16 - 0.24 mm

### NOTE:

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



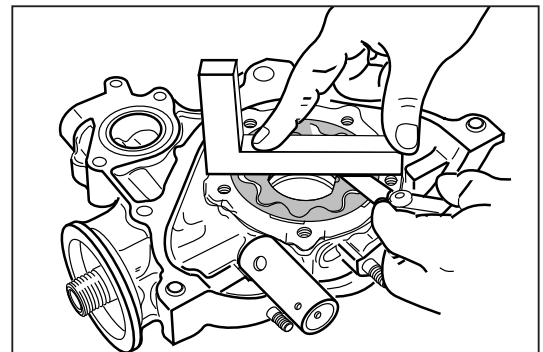
JLU00021-00310

(4) Measure the side clearance between the oil pump body and the rotor set, using a straightedge and a thickness gauge.

**Side Clearance:** 0.04 - 0.08 mm

### NOTE:

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

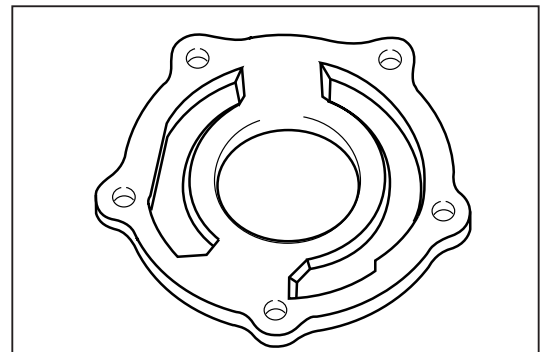


JLU00022-00311

## 8. Check to see if any wear is present at the rotor set mate surface of the pump cover.

### NOTE:

- Replace the oil pump cover if it exhibits wear.



JLU00023-00312

## ASSEMBLY

### NOTE:

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

### WARNING:

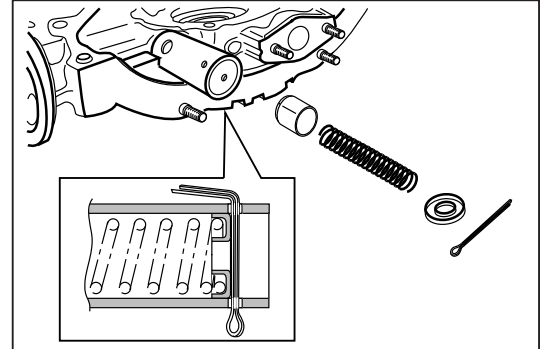
- When you use compressed air, be sure to protect your eyes, wearing goggles.

JLU00024-00411

1. Apply engine oil to the relief valve. Then, insert the relief valve into the oil pump body.
2. Insert the compression spring and retainer into the oil pump body.

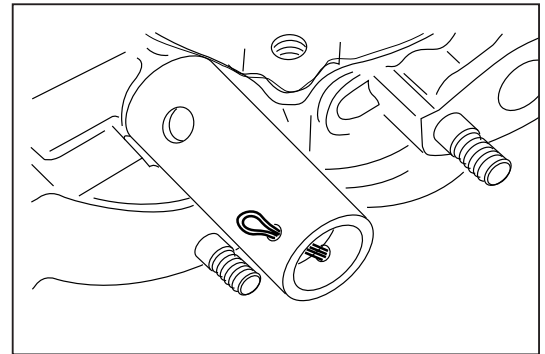
### CAUTION:

- Install the retainer in such a direction that its projected side may come at the compression spring side.



JLU00025-00412

3. Insert a new cotter pin into the retainer while the retainer is being compressed with pliers, etc. Split the end of the cotter pin to form an anchor-like shape.

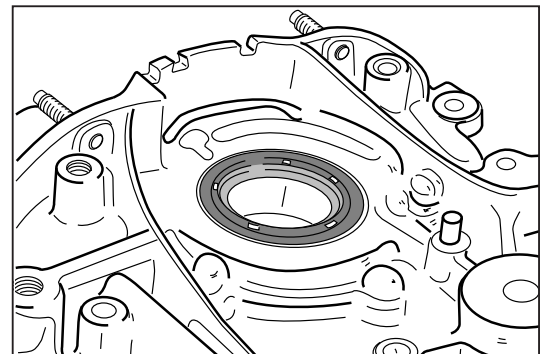


JLU00026-00413

4. Drive a new oil seal into position if the oil seal exists damaged, using a hydraulic press.

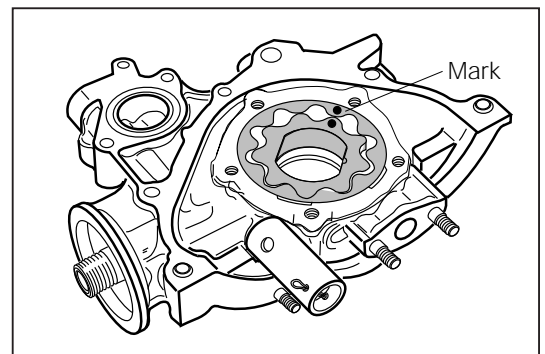
### NOTE:

- Be very careful not damage the oil pump during the removal and the installation of the oil seal.
- Make sure that the oil seal is not driven into position in a tilted state.



JLU00027-00414

5. Apply engine oil to the rotor set. Assemble the rotor set in the pump body in such a direction that the drilled mark of the rotor may be seen from the outside.



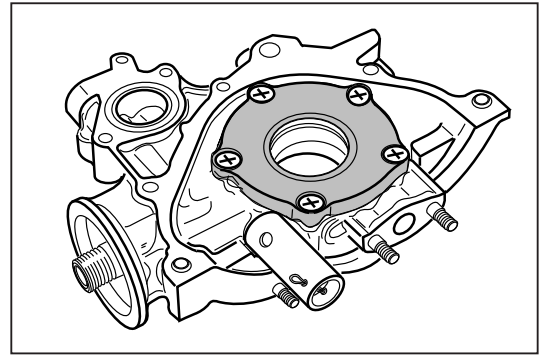
JLU00028-00415



# LU-8

6. Install the oil pump cover. Tighten the cover to the specified torque.

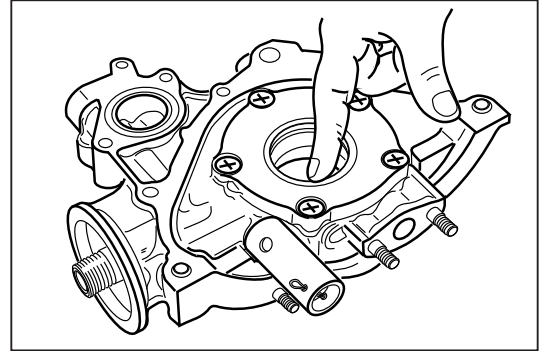
Tightening Torque: 7.8 - 12.7 N·m



JLU00029-00416

7. Turn the rotor by hand. Ensure that the rotor turns smoothly.

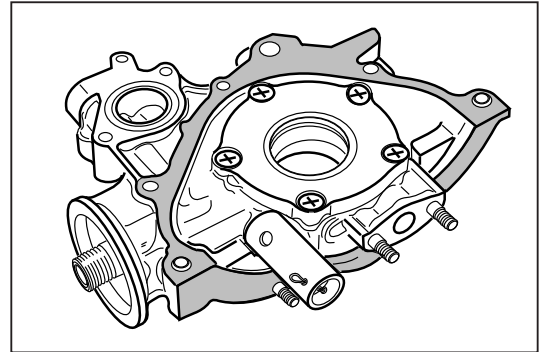
If the rotor will not turn smoothly, overhaul the oil pump.



JLU00030-00417

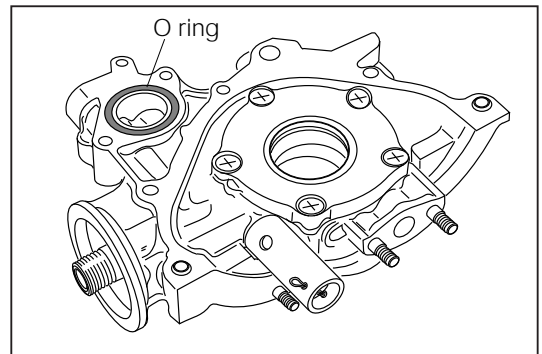
## INSTALLATION

1. Remove the gasket material of the sealer from the oil pump and cylinder block.
2. Apply the Three Bond 1207-F (or 1207-C) to the oil pump installation surface of the cylinder block, as indicated in the illustration.



JLU00031-00511

3. Apply engine oil to the inner surface of the oil seal.
4. Replace the O-ring of the oil pump with a new part.



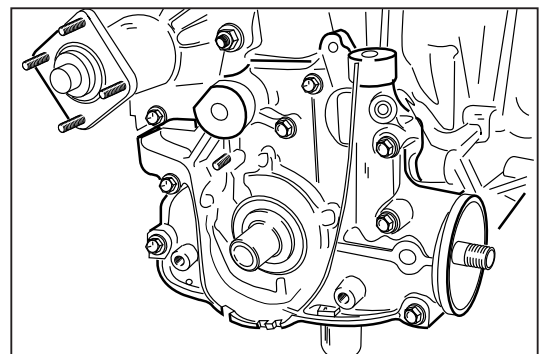
JLU00032-00512

5. Install the oil pump to the cylinder block with the attaching bolts.

Tightening Torque: 5.9 - 8.8 N·m

### CAUTION:

- Be very careful not to damage the crankshaft oil seal during the oil pump installation.
- Be very careful not to drop the O-ring during the oil pump installation.

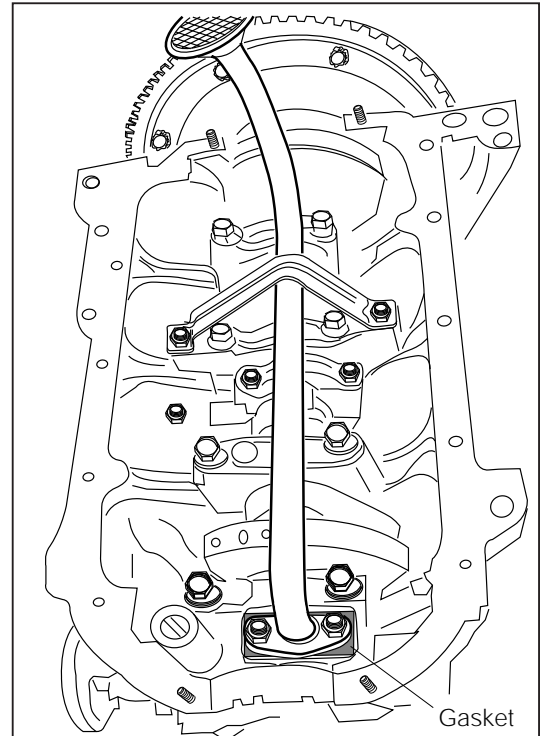


JLU00033-00513



6. Install the oil strainer to the cylinder block with a new gasket interposed.

Tightening Torque: 14.7 - 21.6 N·m

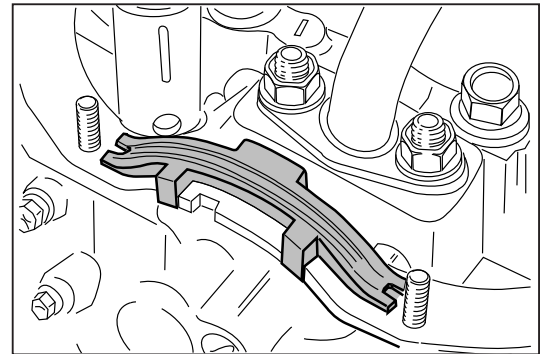


JLU00034-00514

7. Attach the oil pan gaskets to the cylinder block.

**NOTE:**

- The oil pan gaskets are provided at two points; one at the oil pump side and the other at the flywheel side. Fit the protruding section of the gasket into the cut-out section of the cylinder block.

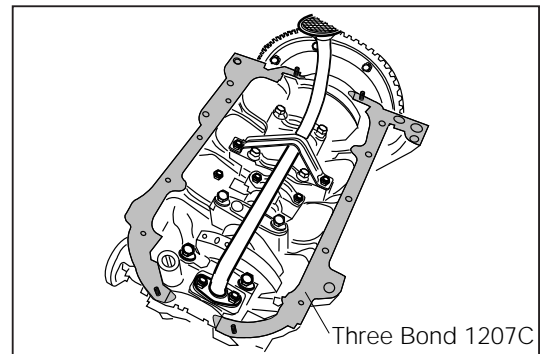


JLU00035-00515

8. Apply the Three Bond 1207-F (or 1207-C) to the cylinder block attaching section of the oil pan as shown in the right figure.

**NOTE:**

- Be sure to apply the Three Bond to both ends of the oil pan gasket in such a way that the applied portions may be overlapped.

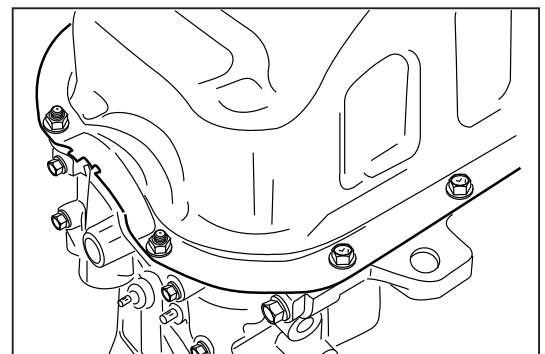


JLU00036-00516

9. Install the oil pan to the cylinder block with the attaching bolts and nuts.

10. Tighten the oil pan attaching bolts and nuts to the specified torque evenly over two or three stages.

Tightening Torque: 6.9 - 11.8 N·m



JLU00037-00517

# LU-10

## TIGHTENING TORQUE

Tightening components	Tightening torque		Remarks
	N·m	kgf·m	
Oil pressure switch × Oil pump	11.8 - 19.6	1.2 - 2.0	
Oil pump cover × Oil pump	7.8 - 12.7	0.8 - 1.3	
Oil pump × Cylinder block	5.9 - 8.8	0.6 - 0.9	
Oil strainer × Cylinder block	14.7 - 21.6	1.5 - 2.2	
Oil pan × Cylinder block	6.9 - 11.8	0.7 - 1.2	

JLU00038-00801