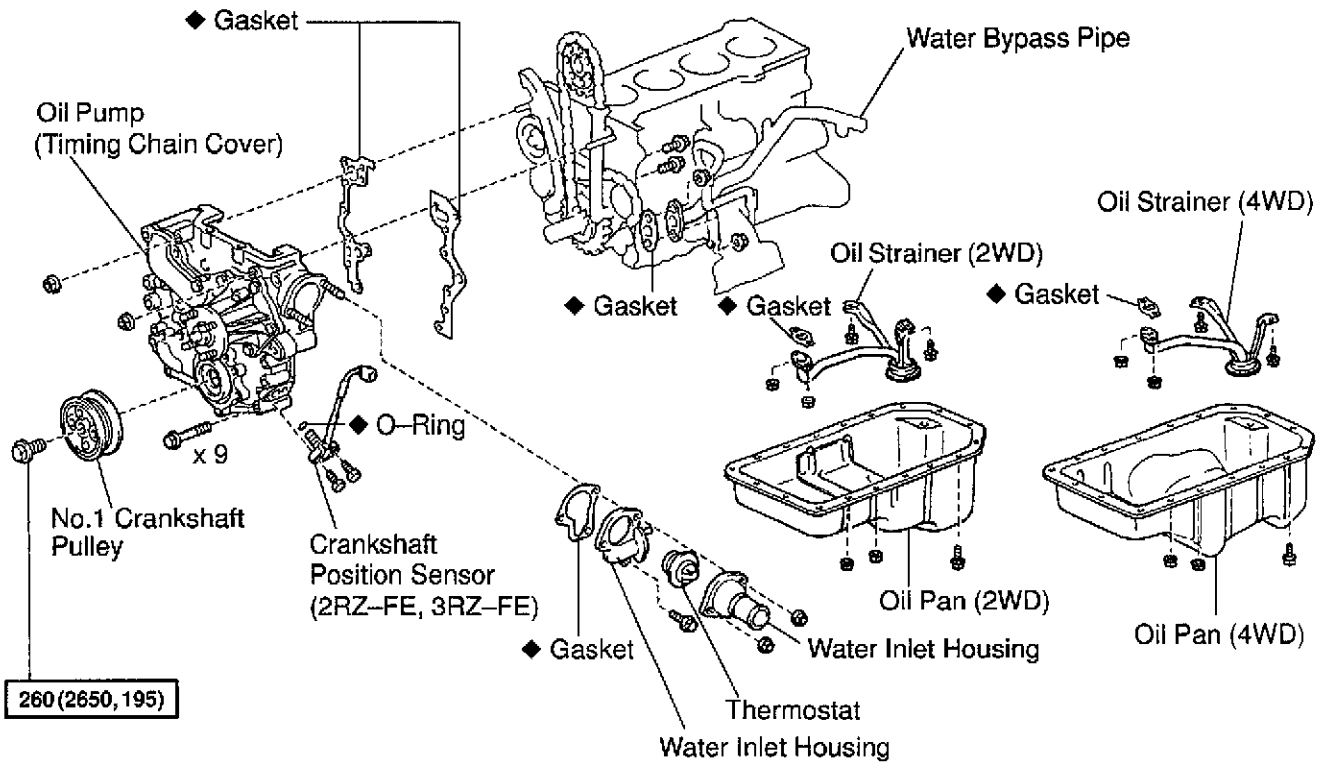
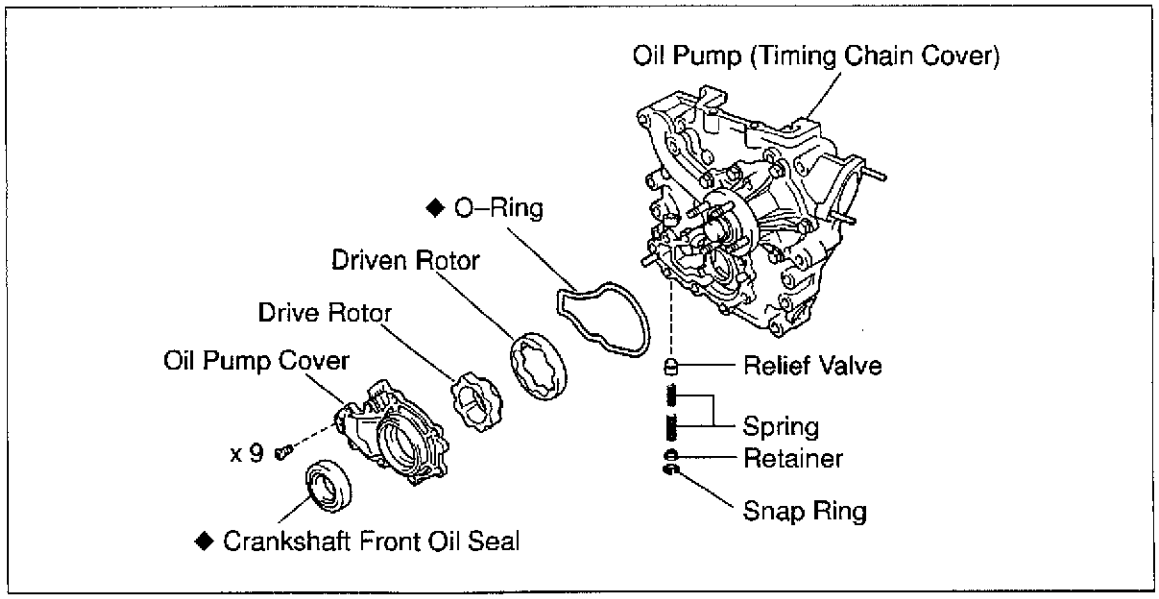
OIL PUMP

COMPONENTS

LU03W–01





◆ Non–reusable part

N·m (kgf·cm, ft·lbf) : Specified torque

A01716

LU03X-01

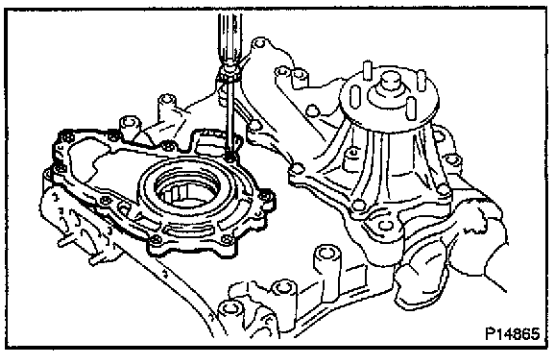
REMOVAL

1. **REMOVE CYLINDER HEAD ASSEMBLY**
   (See page EM–33)
2. **REMOVE OIL PAN**
3. **REMOVE WATER INLET AND WATER INLET HOUSING**

(a) Remove the 2 nut, water inlet and thermostat.

(b) Remove the bolt and water inlet housing and gasket.

4. **REMOVE TIMING CHAIN COVER**
   (See page EM–21)



LU08Y–01

DISASSEMBLY

1. REMOVE DRIVE AND DRIVEN ROTORS

Remove the 9 screws, pump cover, drive rotor, driven rotor and O–ring.

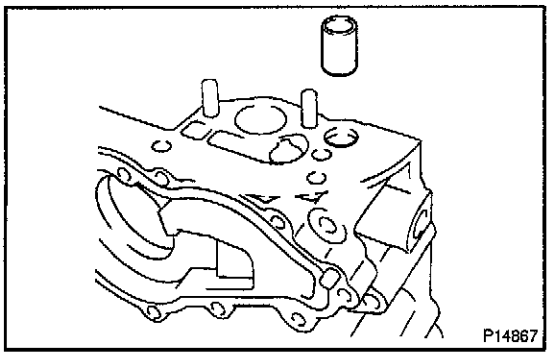
2. REMOVE RELIEF VALVE

(a) Using snap ring pliers, remove the snap ring.

(b) Remove the retainer, spring(s) and relief valve.

LU03Z-01

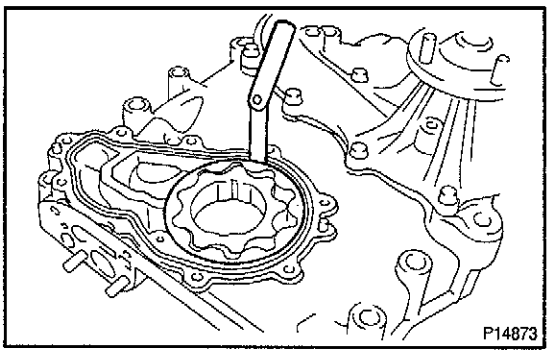
INSPECTION



1. INSPECT RELIEF VALVE

Coat the valve with engine oil and check that it falls smoothly into the valve hole by its own weight.

If it does not, replace the relief valve. If necessary, replace the oil pump assembly.



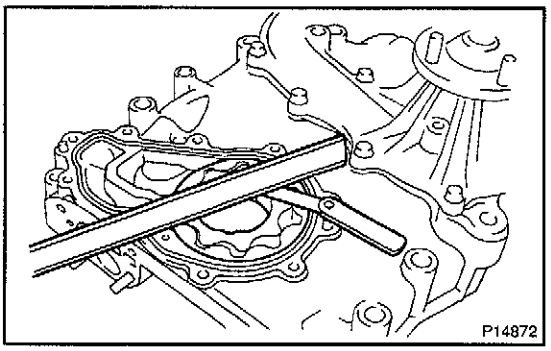
2. INSPECT ROTOR BODY CLEARANCE

Using a thickness gauge, measure the clearance between the driven rotor and body.

Standard body clearance:
0.100 – 0.175 mm (0.0039 – 0.0069 in.)
Maximum body clearance:
0.30 mm (0.0118 in.)

If the body clearance is greater than maximum, replace the rotors as a set. If necessary, replace the oil pump assembly.

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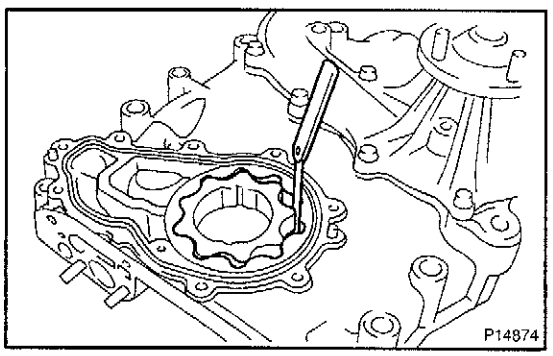


3. INSPECT ROTOR SIDE CLEARANCE

Using a thickness gauge and precision straight edge, measure the clearance between the rotors and precision straight edge.

Standard side clearance:
0.030 – 0.090 mm (0.0012 – 0.0035 in.)
Maximum side clearance: 0.15 mm (0.0059 in.)

If the side clearance is greater than maximum, replace the rotors as a set. If necessary, replace the oil pump assembly.



4. INSPECT ROTOR TIP CLEARANCE

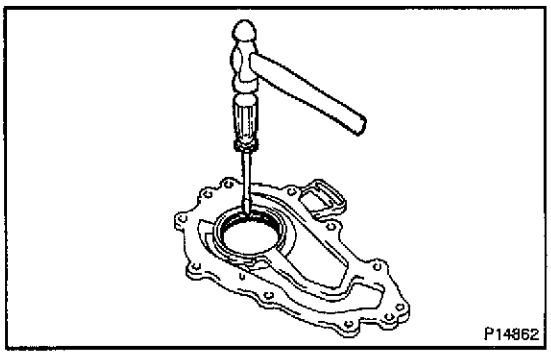
Using a thickness gauge, measure the clearance between the drive and driven rotor tips.

Standard tip clearance:
0.110 – 0.240 mm (0.0043 – 0.0094 in.)
Maximum tip clearance:
0.25 mm (0.0098 in.)

If the tip clearance is greater than maximum, replace the rotors as a set.

LU040-01

REPLACEMENT

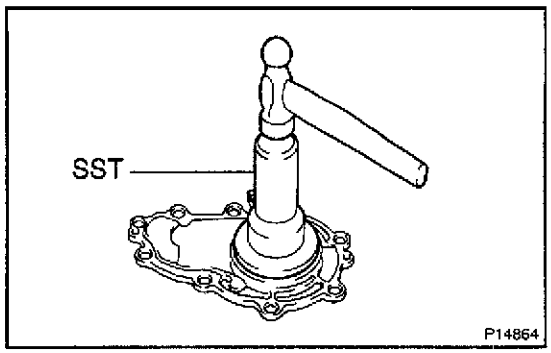


HINT:

There are 2 methods (A and B) to replace the oil seal which are as follows:

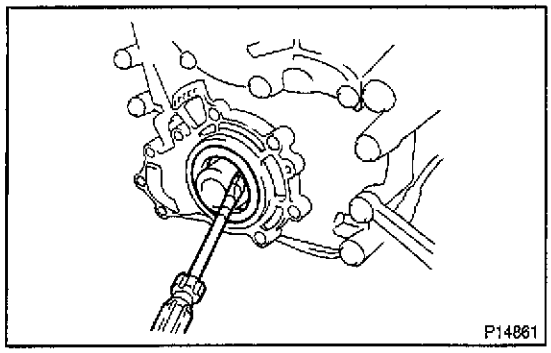
1. IF OIL PUMP IS REMOVED FROM CYLINDER BLOCK

(a) Using a screwdriver and a hammer, tap out the oil seal.



(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump case edge.
SST 09223–50010

(c) Apply MP grease to the oil seal lip.

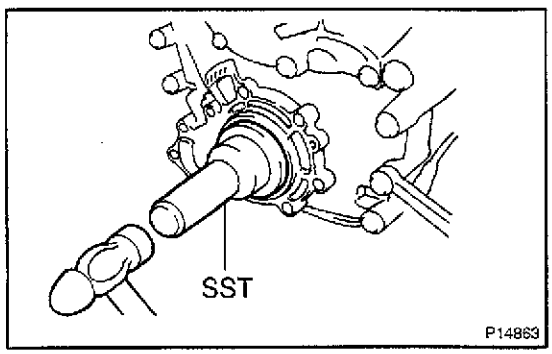


2. IF OIL PUMP IS INSTALLED TO CYLINDER BLOCK

(a) Using a screwdriver, pry out the oil seal.

NOTICE:

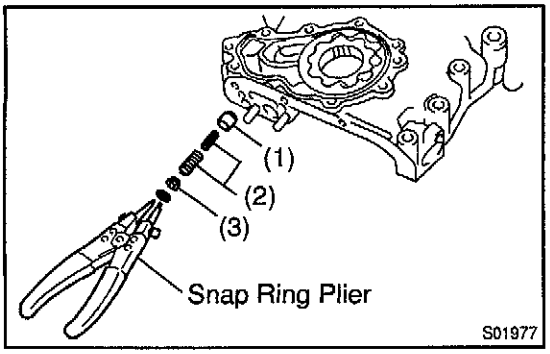
Be careful not to damage the crankshaft. Tape the screwdriver tip.



(b) Apply MP grease to a new oil seal lip.

(c) Using SST and a hammer, tap in the oil seal until its surface is flush with the oil pump case edge.
SST 09223–50010

LU041-01

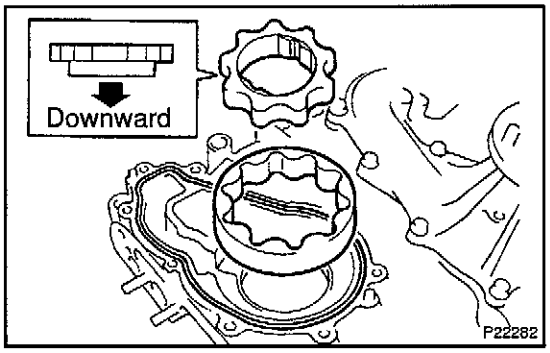


REASSEMBLY

1. INSTALL RELIEF VALVE

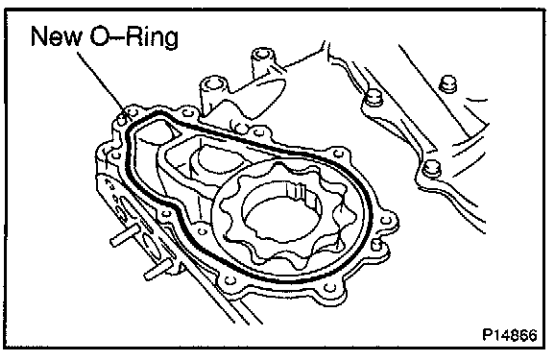
(a) Install these parts:
  (1) Relief valve
  (2) Spring(s)
  (3) Retainer

(b) Using snap ring pliers, install the snap ring.



2. INSTALL DRIVE AND DRIVEN ROTORS

(a) Place the drive and driven rotors into the pump body.



(b) Place a new O–ring to the pump body.

(c) Install the pump cover with the 9 screws.

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LU042-01

INSTALLATION

1. INSTALL TIMING CHAIN COVER.
   (See page EM–25)
2. INSTALL WATER INLET AND WATER INLET HOUSING
3. INSTALL OIL PAN
4. INSTALL CYLINDER HEAD ASSEMBLY.
   (See page EM–54)