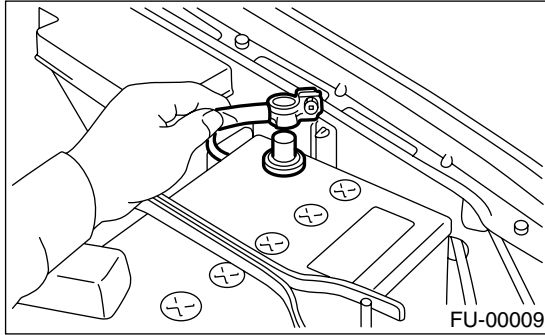


4. Oil Pump

A: REMOVAL

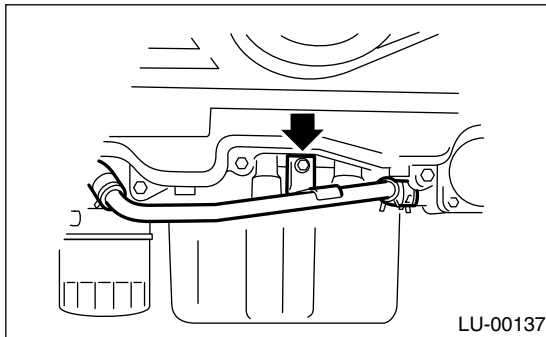
1) Disconnect the ground cable from battery.



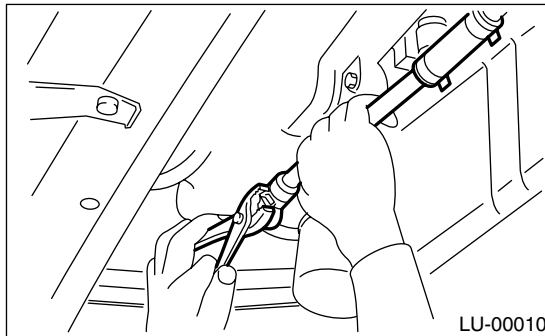
2) Lift-up the vehicle.

3) Remove the under cover.

4) Remove the bolts which install the water pipe of oil cooler to oil pump.

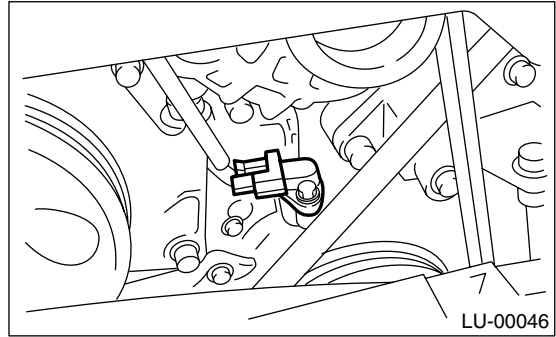


5) Remove the water pipe and hoses between oil cooler and water pump.



6) Remove the radiator. <Ref. to CO(H4DOTC)-22, REMOVAL, Radiator.>

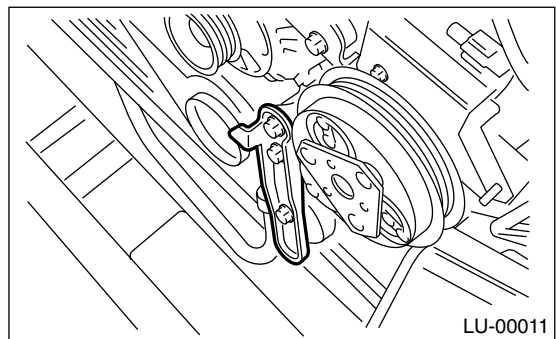
7) Remove the crankshaft position sensor.



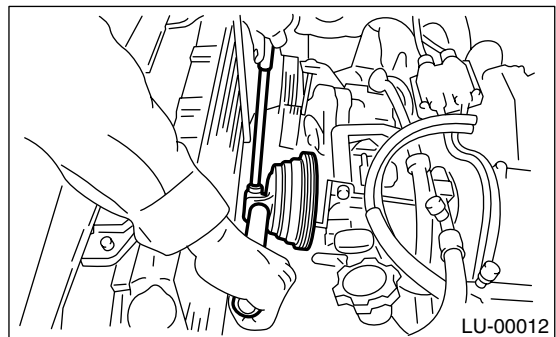
8) Remove the V-belts.

<Ref. to ME(STi)-41, REMOVAL, V-belt.>

9) Remove the rear side V-belt tensioner.

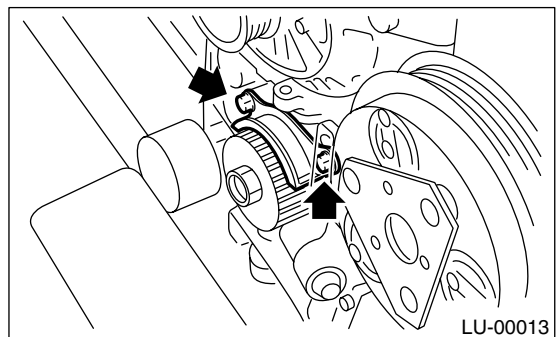


10) Remove the crankshaft pulley by using ST. <Ref. to ME(STi)-44, REMOVAL, Crankshaft Pulley.>

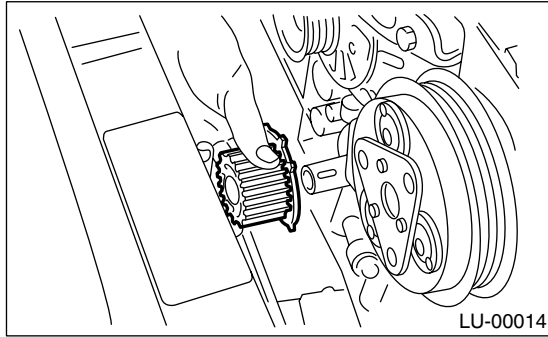


11) Remove the water pump. <Ref. to CO(H4DOTC)-19, REMOVAL, Water Pump.>

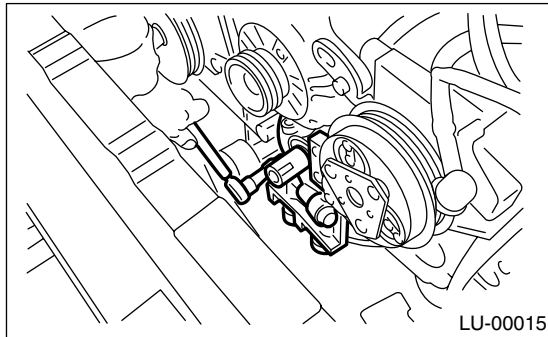
12) Remove the timing belt guide.



13) Remove the crankshaft sprocket.

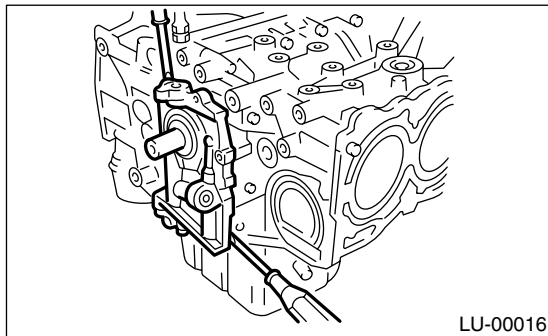


14) Remove the bolts which install the oil pump onto cylinder block.



15) Remove the oil pump using the flat tip screwdriver.

CAUTION:
Be careful not to scratch the mating surfaces of cylinder block and oil pump.



B: INSTALLATION

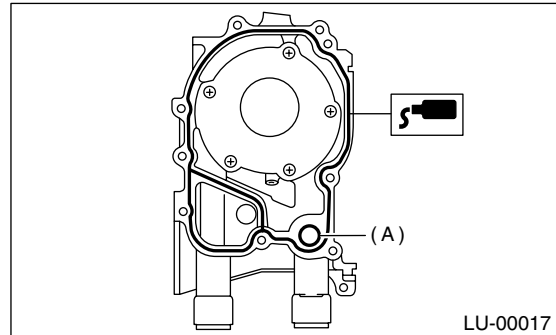
Install in the reverse order of removal.

Do the following:

1) Apply fluid packing to the matching surfaces of oil pump.

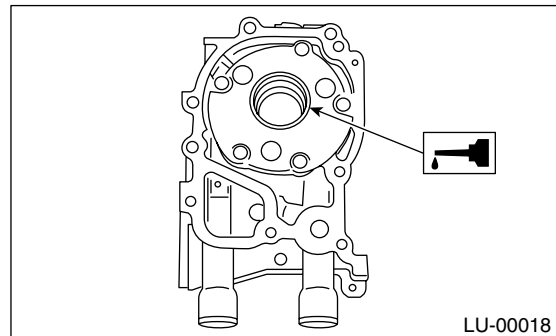
Fluid packing:

THREE BOND 1215 (Part No. 004403007) or equivalent



2) Replace the O-ring (A) with a new one.

3) Apply a coat of engine oil to the inside of oil seal.



4) Be careful not to scratch the oil seal when installing the oil pump on cylinder block.

5) Position the oil pump, aligning the notched area with crankshaft, and push the oil pump straight.

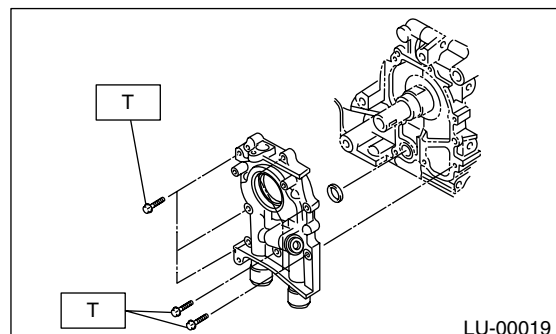
CAUTION:

Make sure the oil seal lip is not folded.

6) Install the oil pump.

Tightening torque:

6.4 N·m (0.65 kgf·m, 4.7 ft·lb)



OIL PUMP

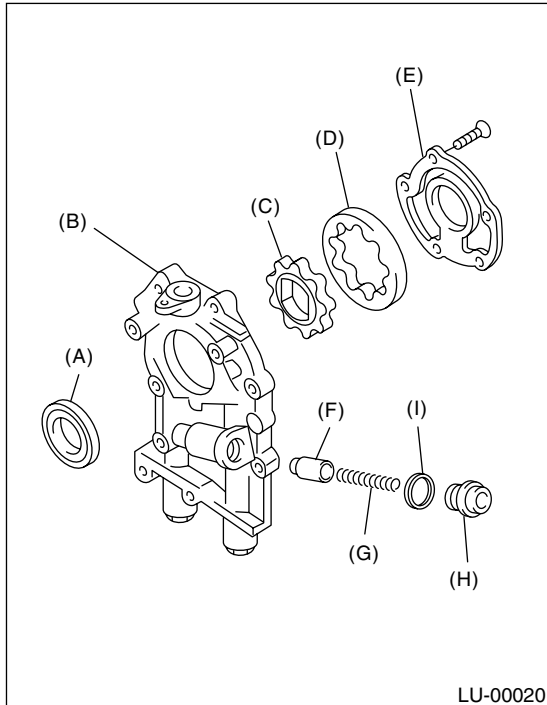
LUBRICATION

C: DISASSEMBLY

Remove the screws which secure the oil pump cover and disassemble oil pump. Inscribe alignment marks on the inner and outer rotors so that they can be replaced in their original positions during reassembly.

CAUTION:

Before disassembling the oil pump, remove the relief valve.



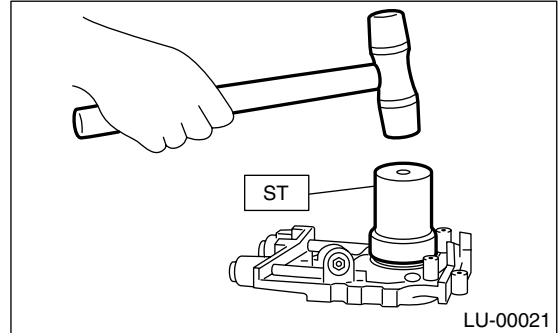
- (A) Oil seal
- (B) Pump case
- (C) Inner rotor
- (D) Outer rotor
- (E) Pump cover
- (F) Relief valve
- (G) Relief valve spring
- (H) Plug
- (I) Gasket

D: ASSEMBLY

1) Install the front oil seal by using ST.
ST 499587100 OIL SEAL INSTALLER

NOTE:

Use a new oil seal.



2) Apply a coat of engine oil to the inner and outer rotors.

3) Install the inner and outer rotors in their original positions.

4) Install the oil relief valve, relief valve spring and plug.

NOTE:

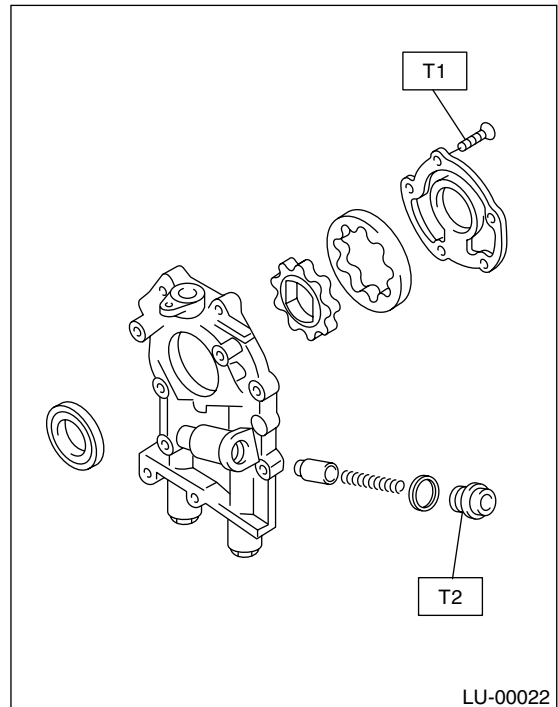
Use a new gasket.

5) Install the oil pump cover.

Tightening torque:

T1: 5 N·m (0.5 kgf-m, 3.6 ft-lb)

T2: 44 N·m (4.5 kgf-m, 32.5 ft-lb)



E: INSPECTION**1. TIP CLEARANCE**

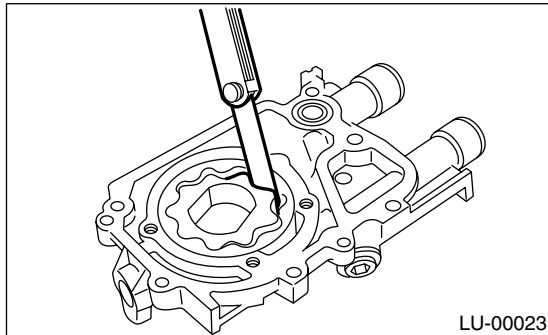
Measure the tip clearance of rotors. If clearance exceeds the limit, replace the rotors as a matched set.

Tip clearance:**Standard**

0.04 — 0.14 mm (0.0016 — 0.0055 in)

Limit

0.18 mm (0.0071 in)

**2. CASE CLEARANCE**

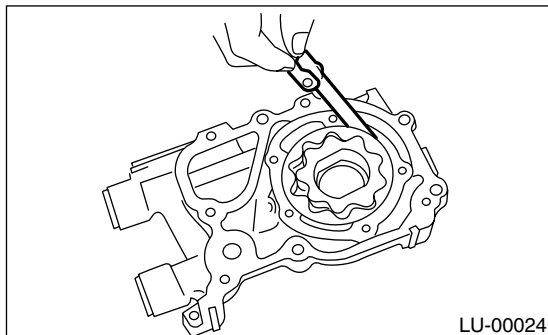
Measure the clearance between outer rotor and oil pump rotor housing. If clearance exceeds the limit, replace the rotor.

Case clearance:**Standard**

0.10 — 0.175 mm (0.0039 — 0.0069 in)

Limit

0.20 mm (0.0079 in)

**3. SIDE CLEARANCE**

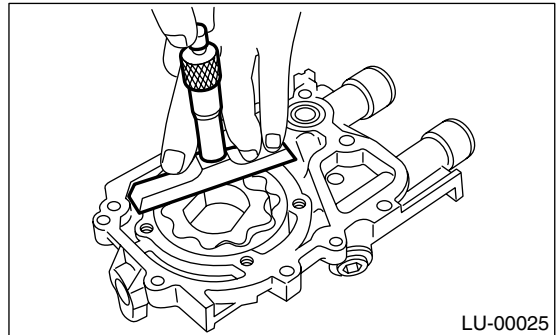
Measure the clearance between the oil pump inner rotor and pump cover. If clearance exceeds the limit, replace the rotor or pump body.

Side clearance:**Standard**

0.02 — 0.07 mm (0.0008 — 0.0028 in)

Limit

0.12 mm (0.0047 in)

**4. OIL RELIEF VALVE**

Check the valve for fitting condition and damage, and the relief valve spring for damage and deterioration. Replace the parts if defective.

Relief valve spring:**Free length**

73.7 mm (2.902 in)

Installed length

54.7 mm (2.154 in)

Load when installed

93.1 N (9.49 kgf, 20.88 lb)

5. OIL PUMP CASE

Check the oil pump case for worn shaft hole, clogged oil passage, worn rotor chamber, cracks, and other faults.

6. OIL SEAL

Check the oil seal lips for deformation, hardening, wear, etc. and replace if defective.